

## Q1-17 DR25 TCE Parameters

TCE	Run Type	KOI?	Period (Days)	Epoch (BKJD)	Depth (ppm)	Duration (Hours)	MES	SNR	$R_{\star}$ ( $R_{\odot}$ )	$T_{\star}$ (K)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
003117514-01	OBS	No	1.091938	131.641378	53.4	7.431	8.5	8.6	0.69	5469	0.58	1075.44
003117514-02	OBS	No	33.369509	157.503651	669.9	2.906	10.4	7.1	0.69	5469	1.99	11.26
003117514-03	OBS	No	24.379621	144.629800	722.9	3.062	8.6	9.5	0.69	5469	2.03	17.11
003117514-04	OBS	No	30.423736	143.081360	695.1	1.951	9.0	7.8	0.69	5469	2.08	12.73
003117514-05	OBS	No	57.642773	136.377881	920.7	2.879	8.3	8.8	0.69	5469	2.33	5.43
003117514-06	OBS	No	37.233493	132.857621	1420.0	1.430	8.7	9.1	0.69	5469	2.63	9.73
003117514-07	OBS	No	41.695704	159.649434	657.5	3.150	8.3	7.7	0.69	5469	2.12	8.36
003117514-08	OBS	No	62.634001	187.247617	761.8	3.290	8.2	7.4	0.69	5469	2.25	4.86
003117514-09	OBS	No	17.554198	145.730643	403.9	5.160	8.6	8.0	0.69	5469	1.62	26.51
003117514-10	OBS	No	47.900949	141.379946	1639.1	2.000	8.1	-1.0	0.69	5469	2.79	6.95

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003117514-01	OBS	FP	0.00	1	0	1	0	LPP_DV—LPP_ALT—CENT_RESOLVED_OFFSET—HALO_GHOST
003117514-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
003117514-03	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_RESOLVED_OFFSET—HALO_GHOST
003117514-04	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_RESOLVED_OFFSET
003117514-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
003117514-06	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_DV—CENT_FEW_DIFFS
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003117514-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
003117514-09	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_RESOLVED_OFFSET
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**Notes:** OBS = Observed. INJ = Injected. INV = Inverted. SCR = Scrambled.

N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

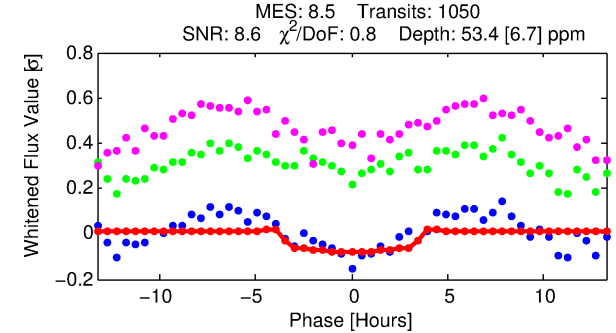
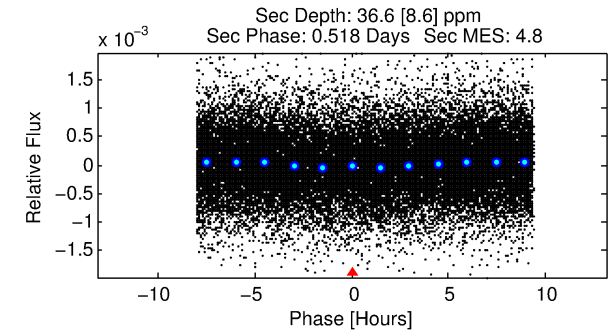
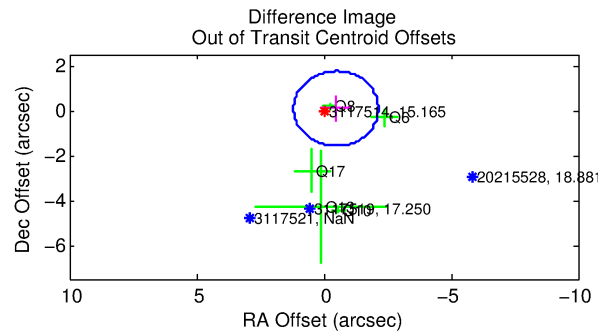
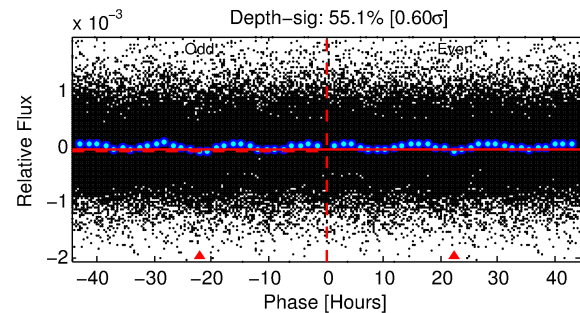
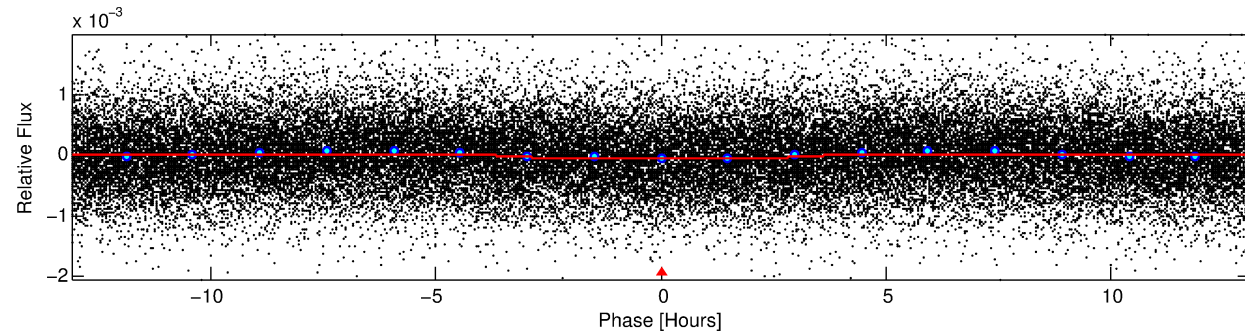
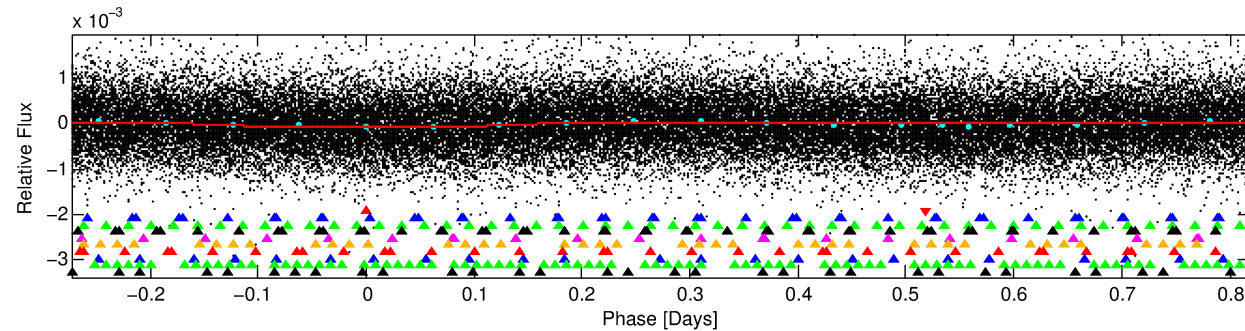
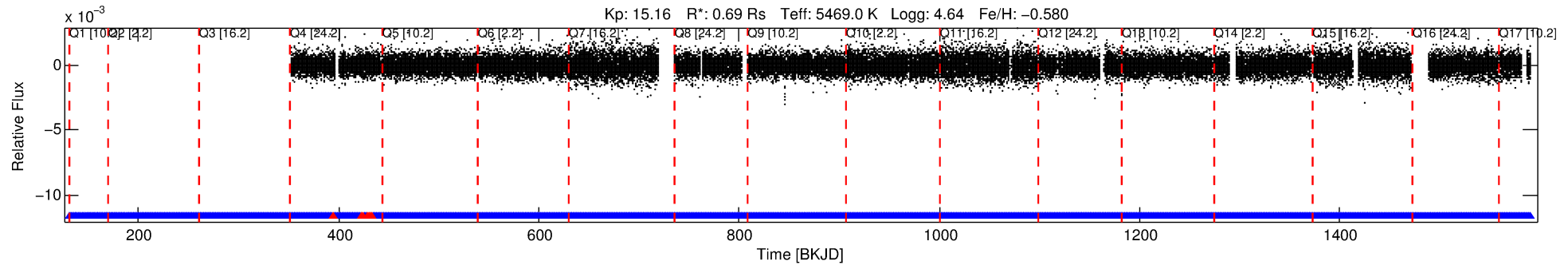
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 003117514-01

No Significant Match Found

# DV One-Page Summary

KIC: 3117514 Candidate: 1 of 10 Period: 1.092 d



## DV Fit Results:

Period = 1.09194 [0.00002] d  
Epoch = 131.6414 [0.0077] BKJD  
Rp/R\* = 0.0077 [0.0049]  
a/R\* = 1.09 [0.52]  
b = 0.86 [0.90]  
Seff = 1075.44 [260.41]  
Teq = 1460 [88] K  
Rp = 0.59 [0.39] Re  
a = 0.0190 [0.0026] AU  
Ag = 21.19 [27.76] [0.73 $\sigma$ ]  
Teffp = 4844 [1578] K [2.14 $\sigma$ ]

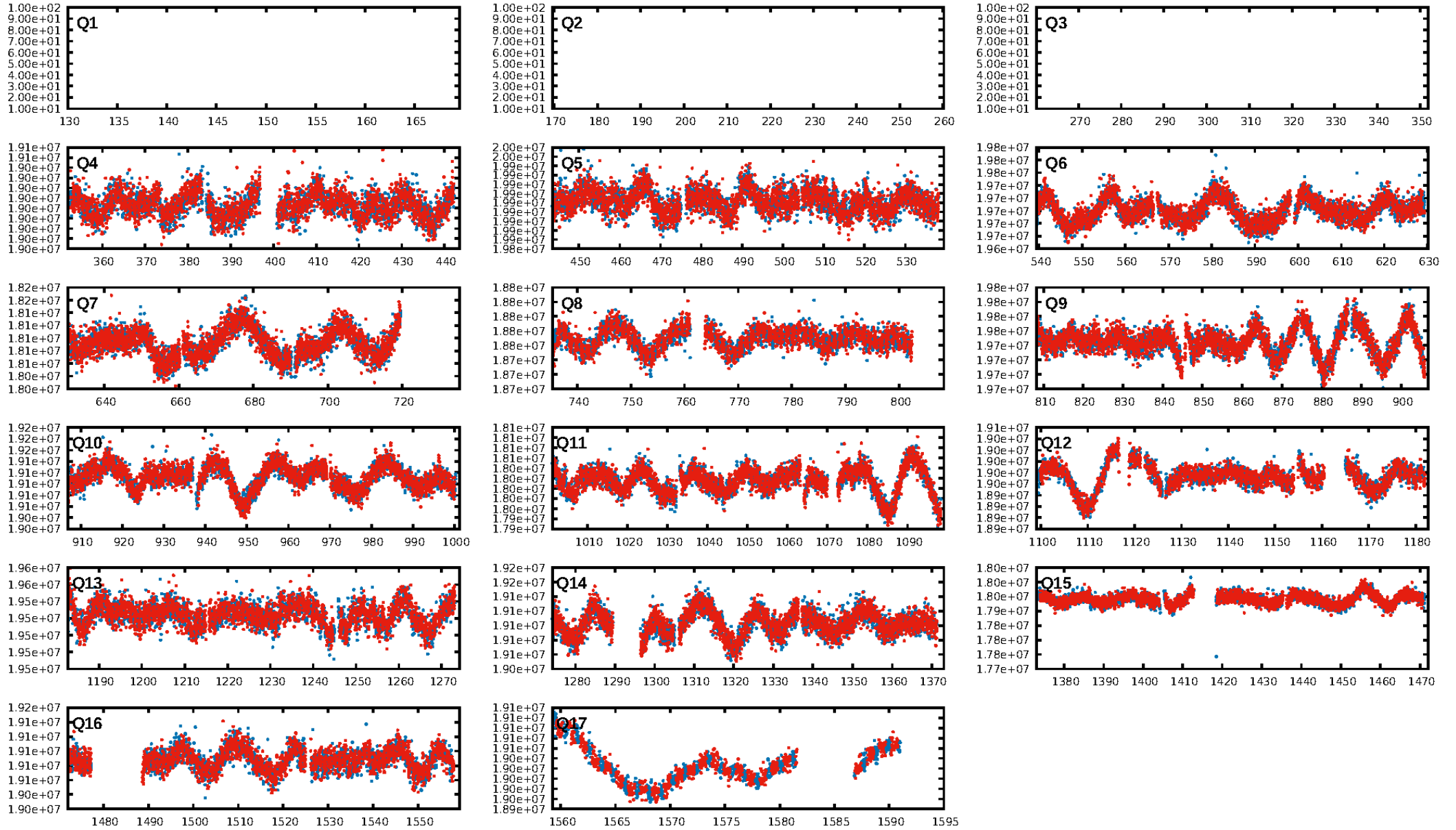
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [43.67 $\sigma$ ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 0.99 [1018/1025]  
GhostDiagnostic-chr: 0.0475  
Centroid-sig: 0.0%  
Centroid-so: 5.652 arcsec [7.45 $\sigma$ ]  
OotOffset-rm: 0.482 arcsec [0.87 $\sigma$ ]  
OotOffset-st: 2/0/1/2 [5]  
KicOffset-rm: 8.393 arcsec [14.23 $\sigma$ ]  
KicOffset-st: 2/0/2/2 [6]  
DiffImageQuality-fgm: 0.83 [5/6]  
DiffImageOverlap-fno: 1.00 [14/14]

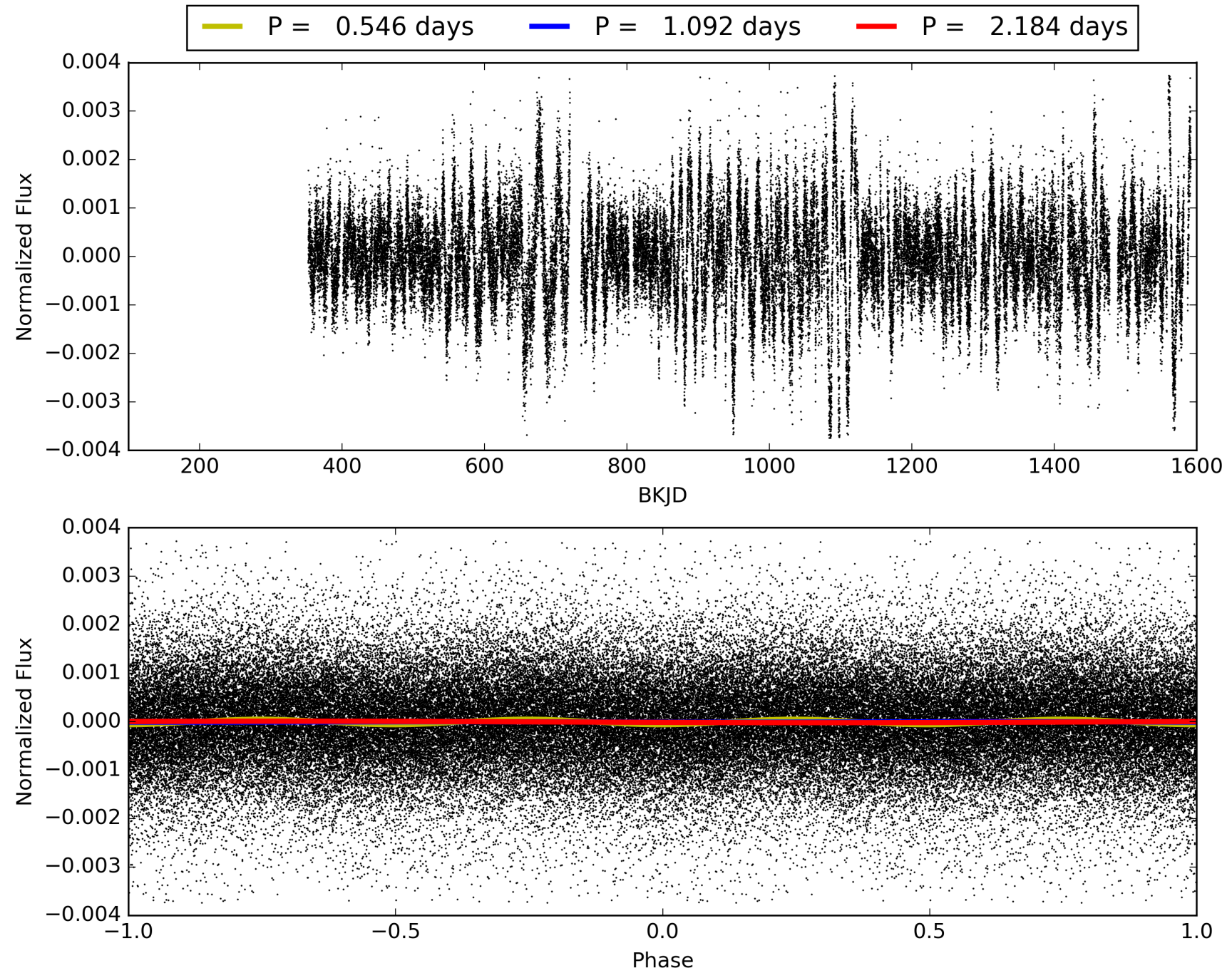
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 06:33:56 Z

This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 003117514-01, PDC Light Curves



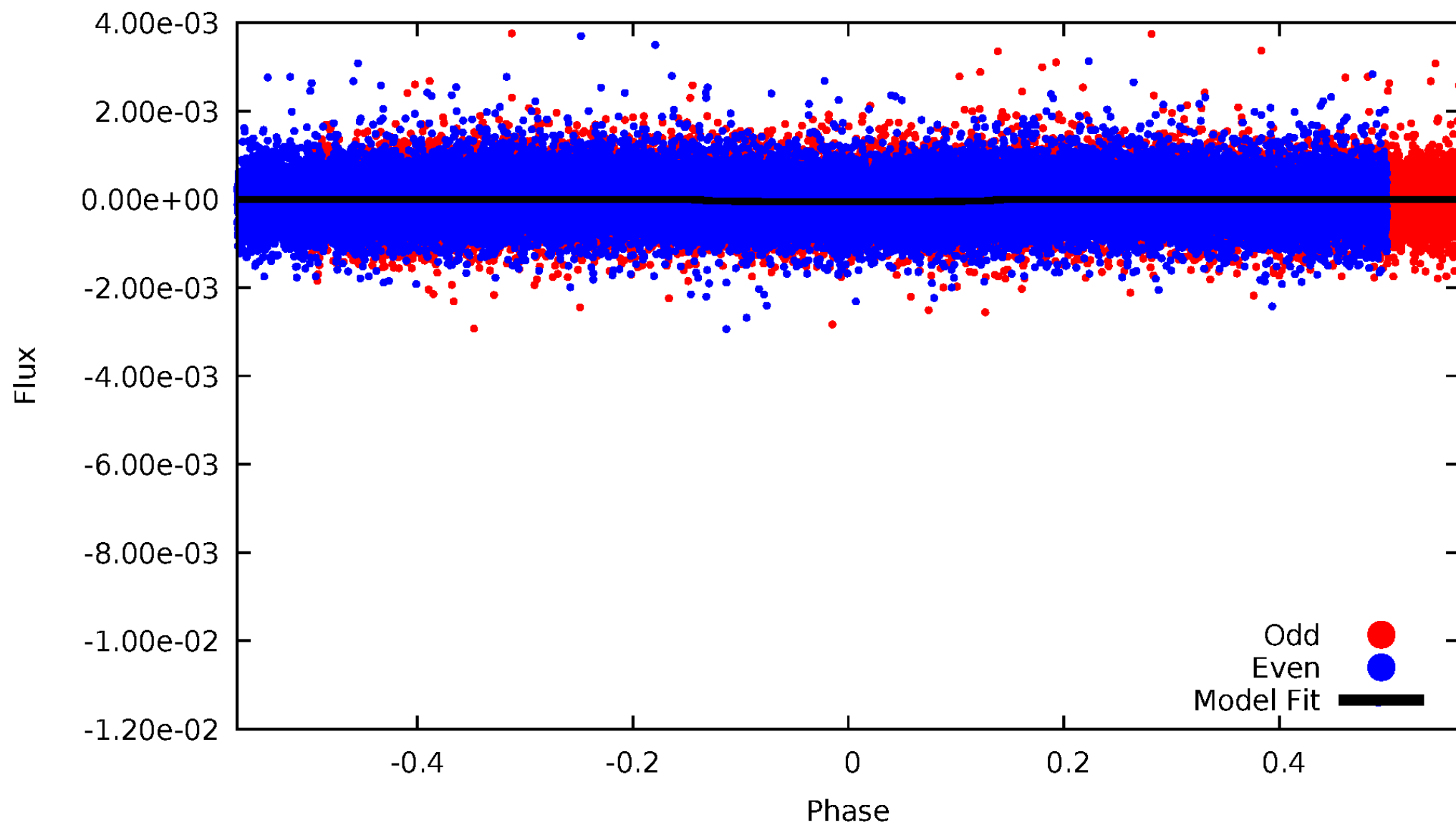
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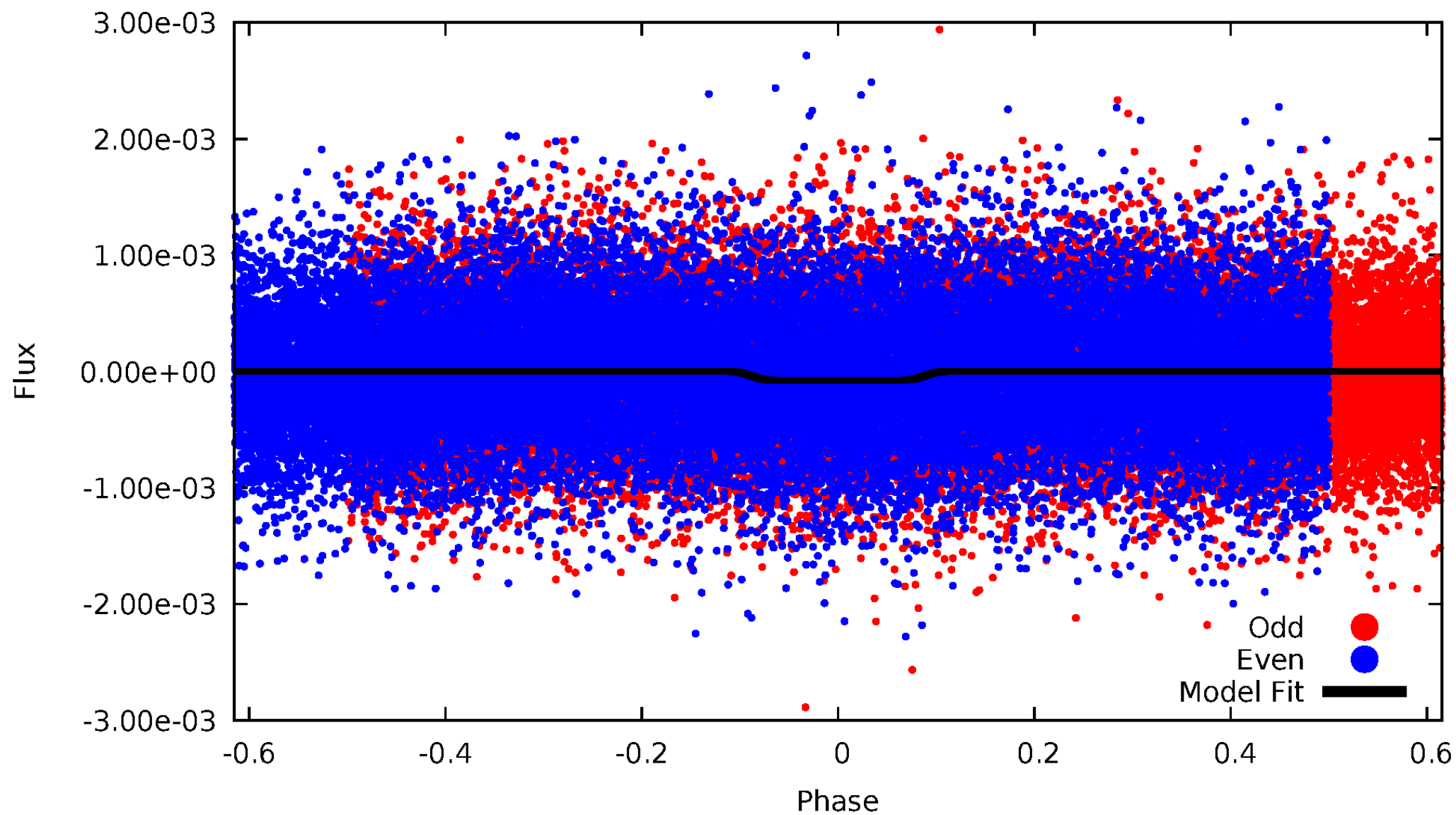
DV Odd/Even

TCE 003117514-01



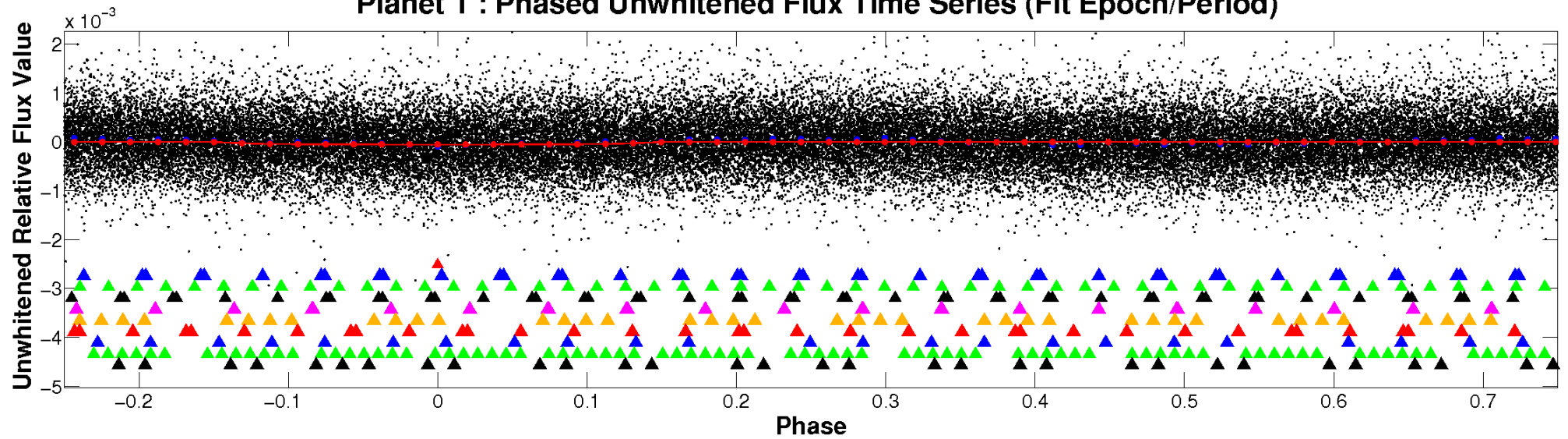
# ALT Odd/Even

TCE 003117514-01

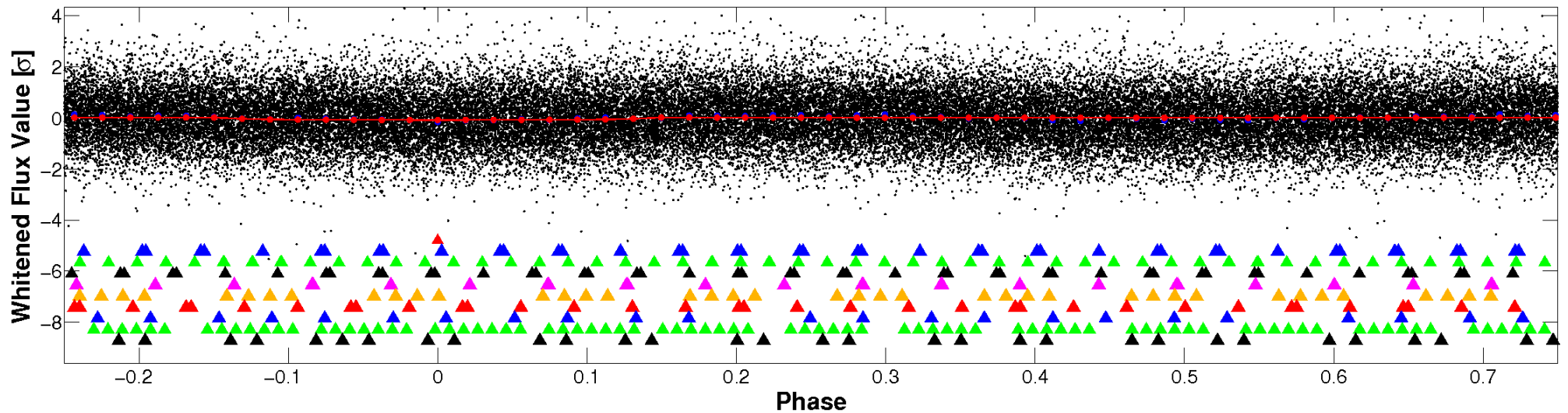


# Non-Whitened Vs. Whitened Light Curve

**Planet 1 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)**

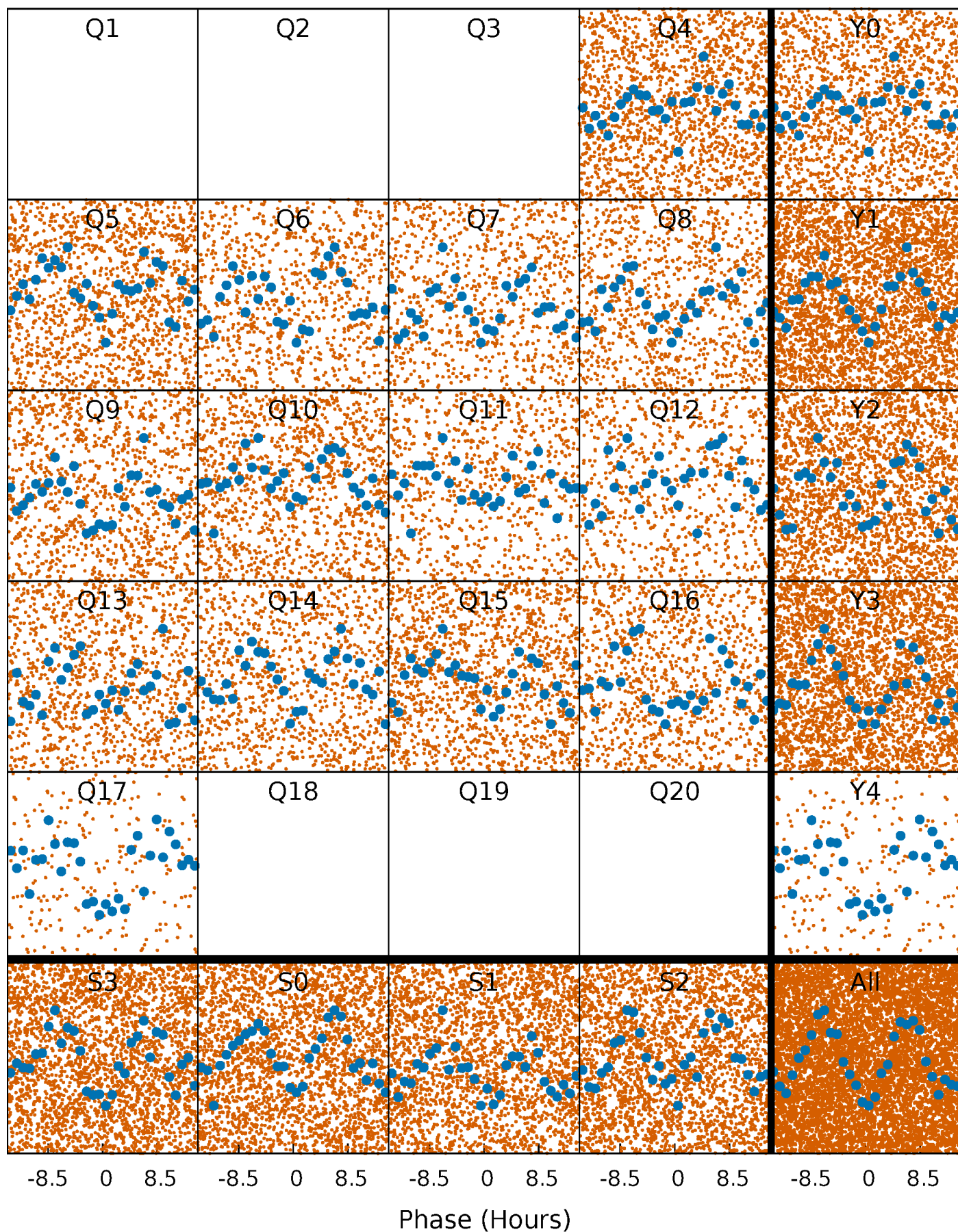


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

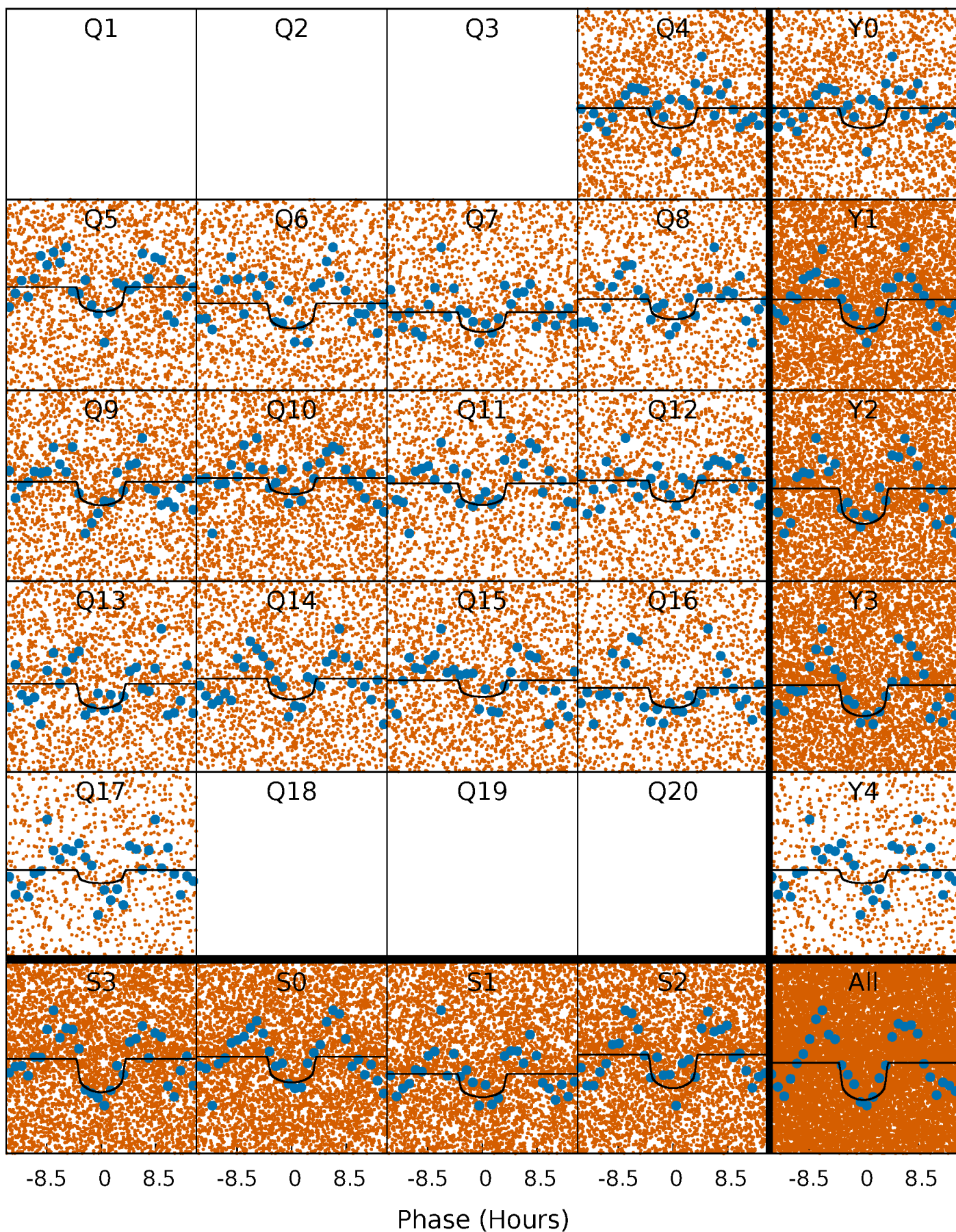
TCE 003117514-01 P= 1.091938 Days  $T_0=131.641378$  (BKJD)





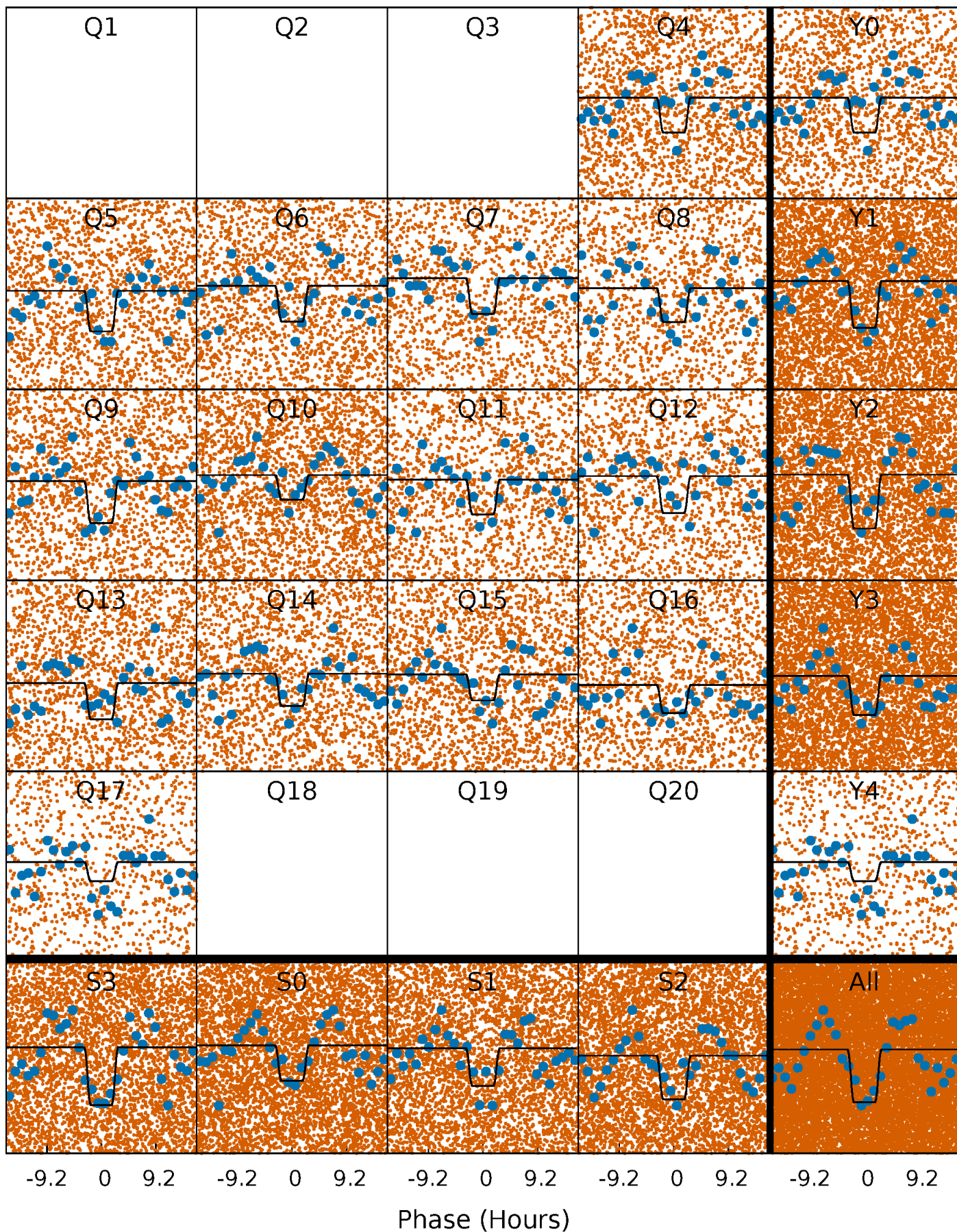
# DV Quarter-Phased Transit Curves

TCE 003117514-01 P= 1.091938 Days  $T_0=131.641378$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 003117514-01 P= 1.091968 Days  $T_0=131.625688$  (BKJD)

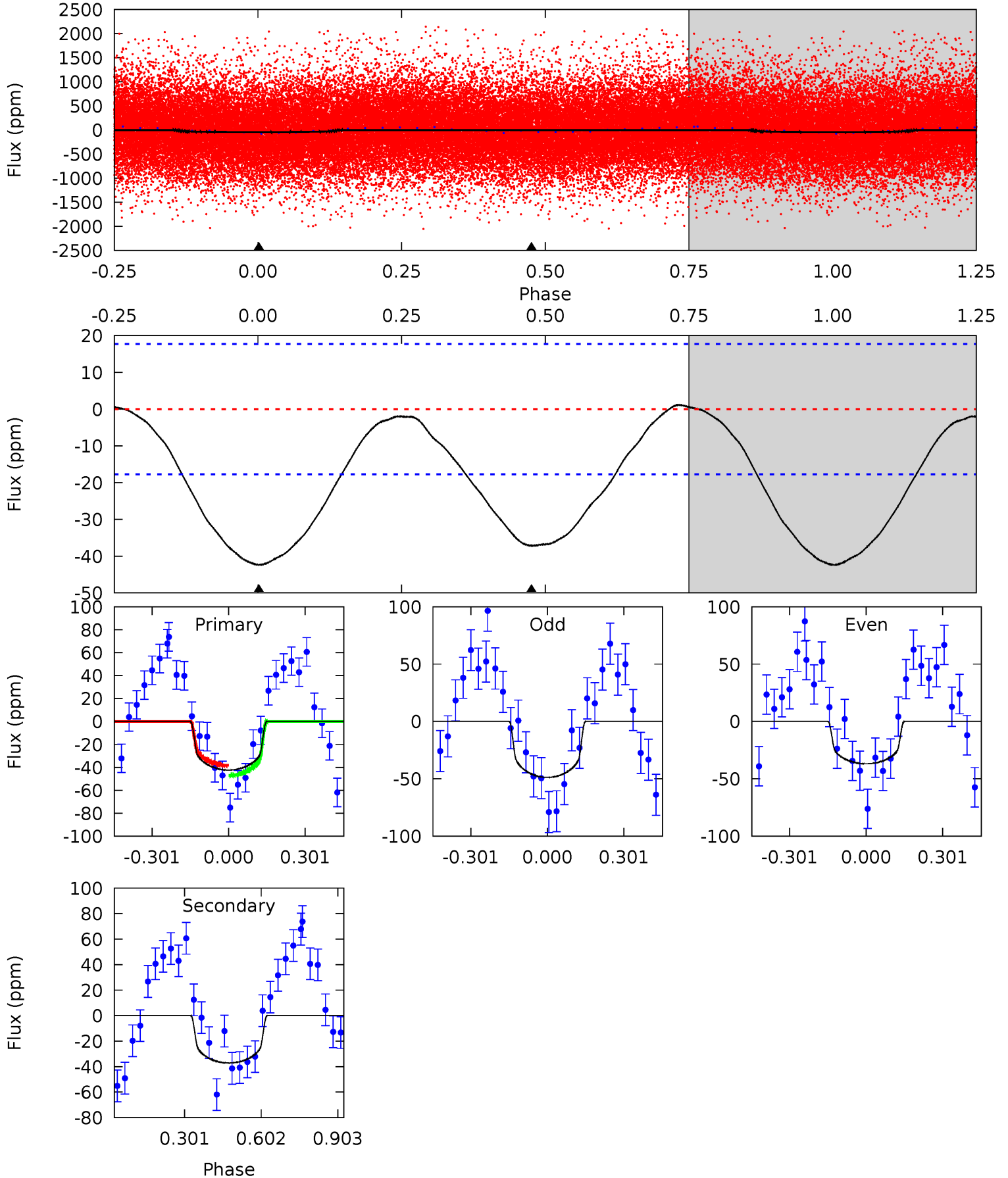




# DV Model-Shift Uniqueness Test

003117514-01, P = 1.091938 Days, E = 131.641378 Days

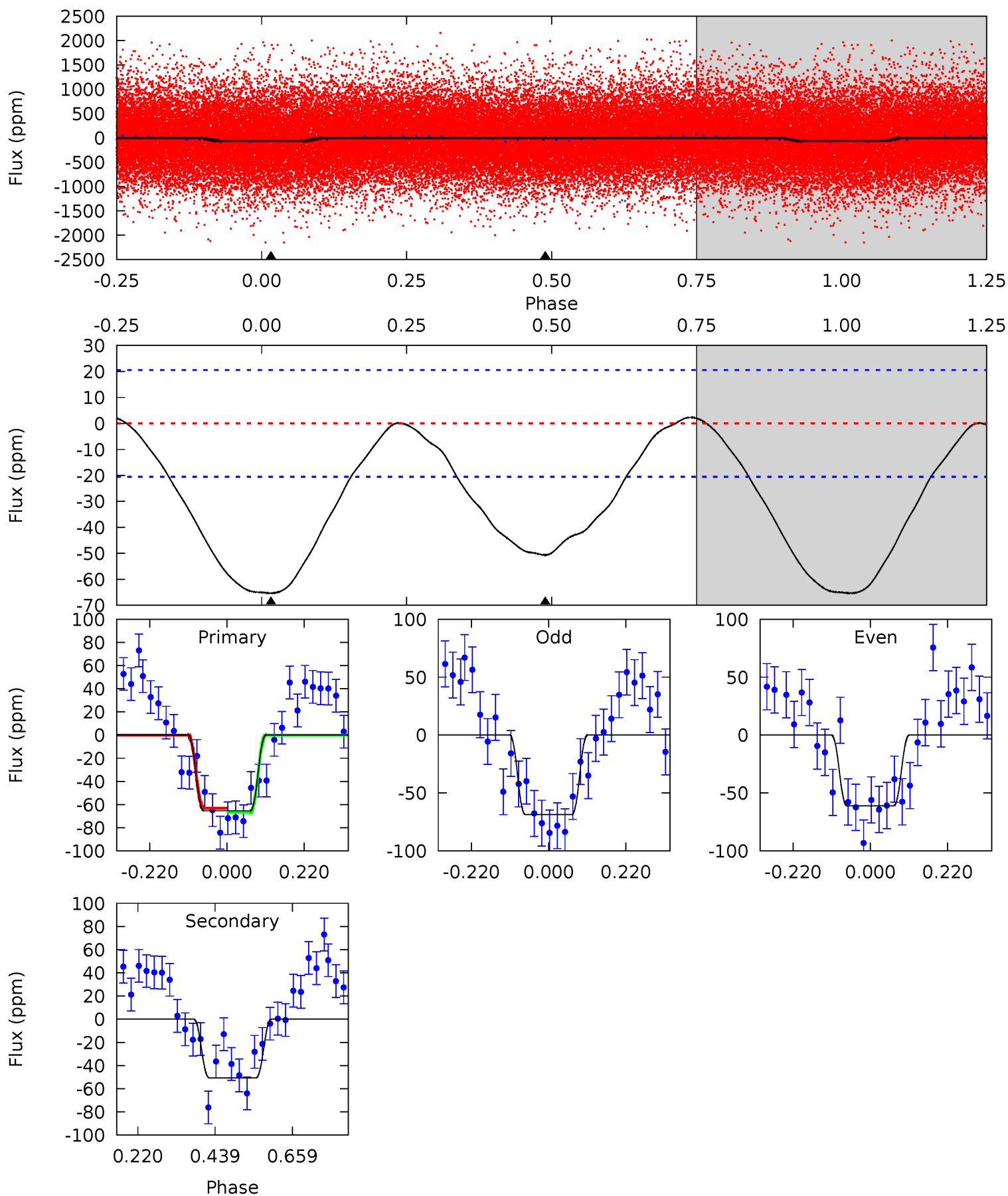
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.3	9.07	0	0	4.33	1.03	0.31	10.3	10.3	9.07	9.07	1.45	1.15	0.03	1.09



# Alt Model-Shift Uniqueness Test

003117514-01, P = 1.091968 Days, E = 131.625688 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
14.0	10.8	0	0	4.40	1.23	0.46	14.0	14.0	10.8	10.8	0.80	1.09	0.03	0.38





### Stellar Parameters For KIC 003117514

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (g \cdot \text{cm}^{-3})$
	$5469^{+196}_{-196}$	$4.637^{+0.032}_{-0.104}$	$-0.580^{+0.300}_{-0.300}$	$0.695^{+0.117}_{-0.050}$	$0.778^{+0.073}_{-0.081}$	$3.264^{+0.482}_{-1.044}$
	+4%/-4%	+1%/-2%	+52%/-52%	+17%/-7%	+9%/-10%	+15%/-32%
Source	KIC0	KIC0	KIC0	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology  
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

### Secondary Eclipse Parameters for KIC 003117514-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-37 \pm 4$	$0.64^{+0.38}_{-0.32}$	$2068^{+97}_{-84}$	$4796^{+1964}_{-788}$	$19^{+57}_{-12}$
Alt.	$-51 \pm 5$	$0.69^{+0.39}_{-0.38}$	$2070^{+99}_{-94}$	$4984^{+2467}_{-841}$	$21^{+89}_{-12}$

$T_{max}$  = Theoretical Maximum Planetary Temperature

$T_{obs}$  = Observed Planetary Temperature (Assuming  $A=0.3$ )

$A_{obs}$  = Observed Albedo (Assuming  $T=0$ )

If a secondary eclipse is present, the system is likely an EB if  $T_{obs} \gg T_{max}$  AND  $A_{obs} \gg 1.0$

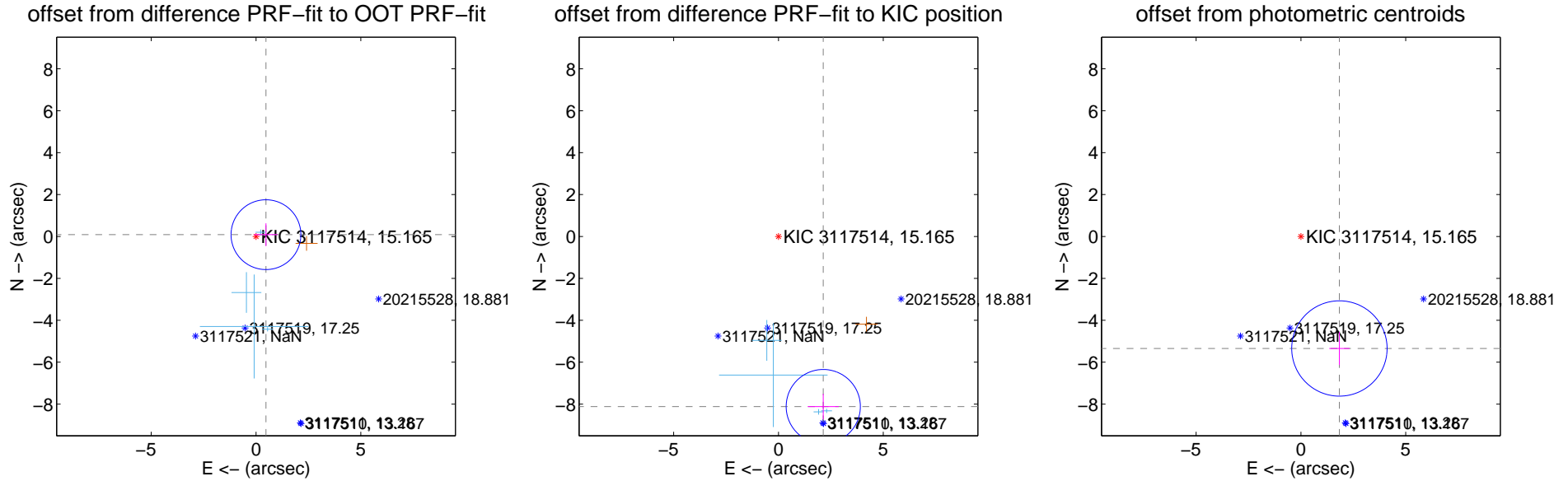
## DV Centroid Data

Supplemental centroid analysis for 003117514-01. Kepler magnitude: 15.16. Transit SNR 8.61

There are 5 quarters with good PRF difference image offsets

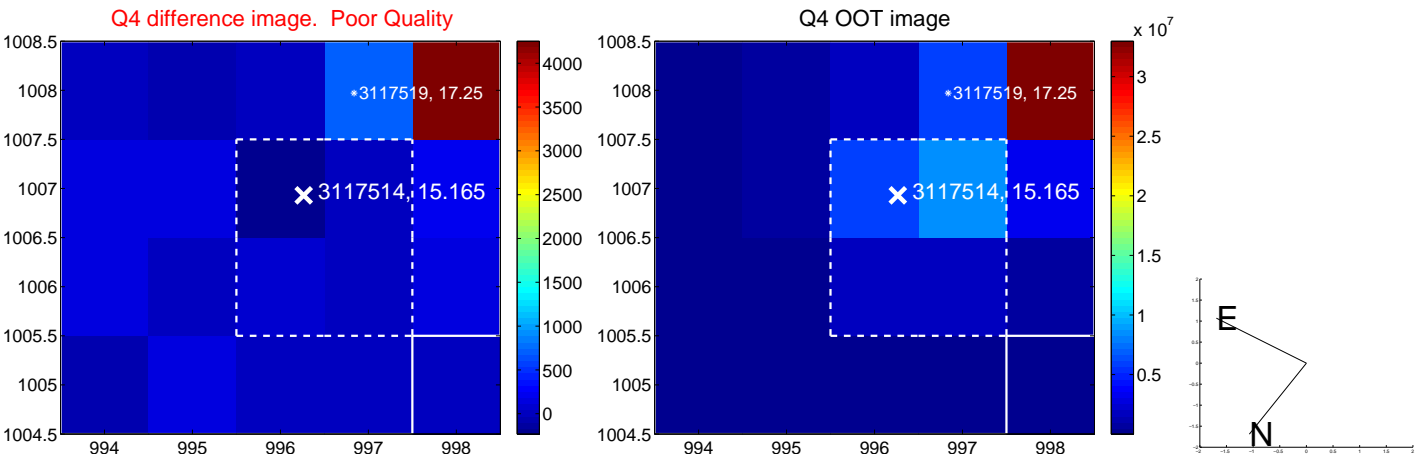
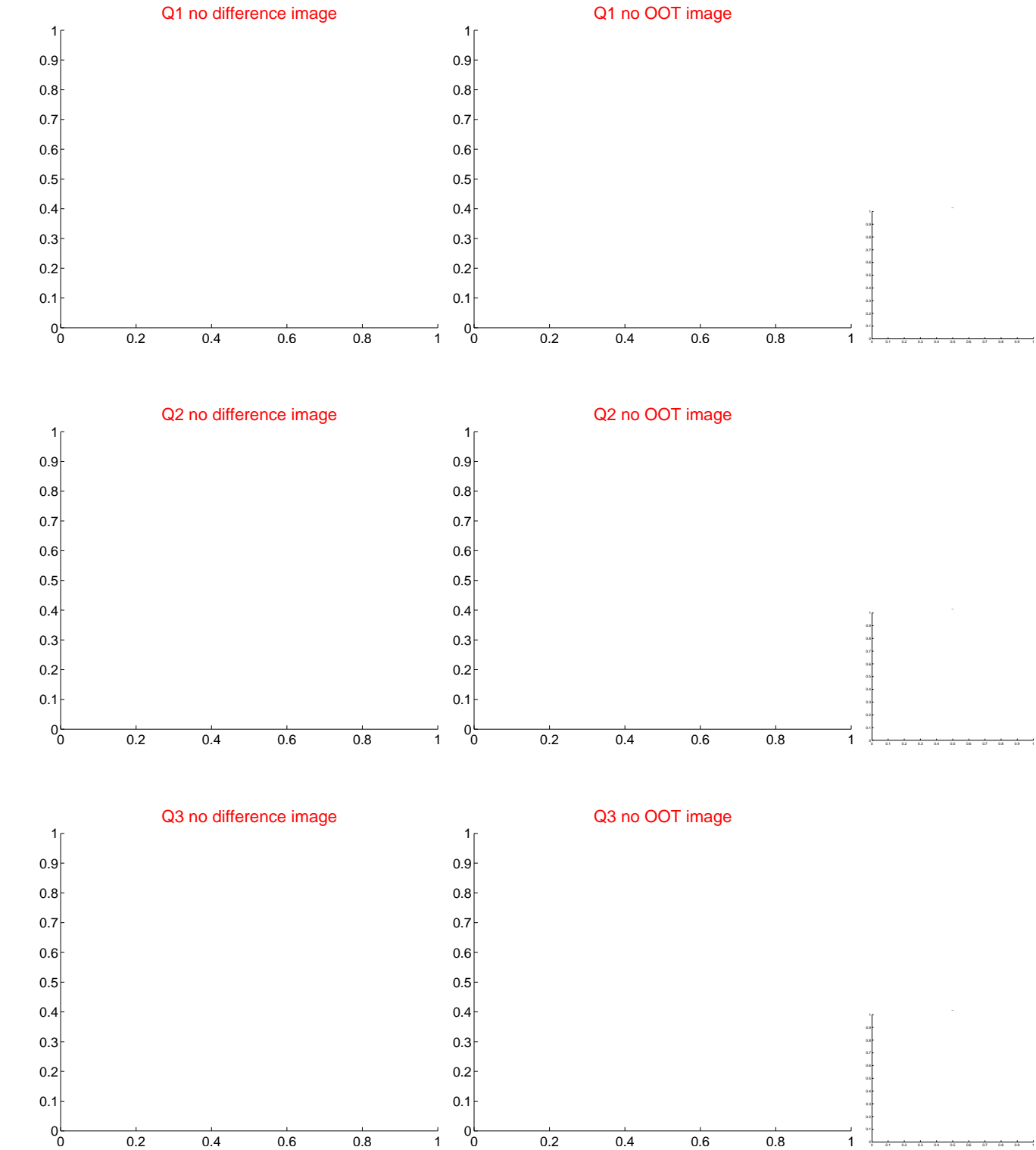
The OOT PRF centroid is offset from the target star catalog position by about 2.29 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.482 \pm 0.555$	0.87	$-0.474 \pm 0.555$	$0.086 \pm 0.542$
PRF-fit source offset from KIC position	$8.393 \pm 0.590$	14.23	$-2.137 \pm 0.739$	$-8.117 \pm 0.608$
photometric centroid source offset	$5.65 \pm 0.76$	7.45	$-1.84 \pm 0.48$	$-5.34 \pm 0.78$

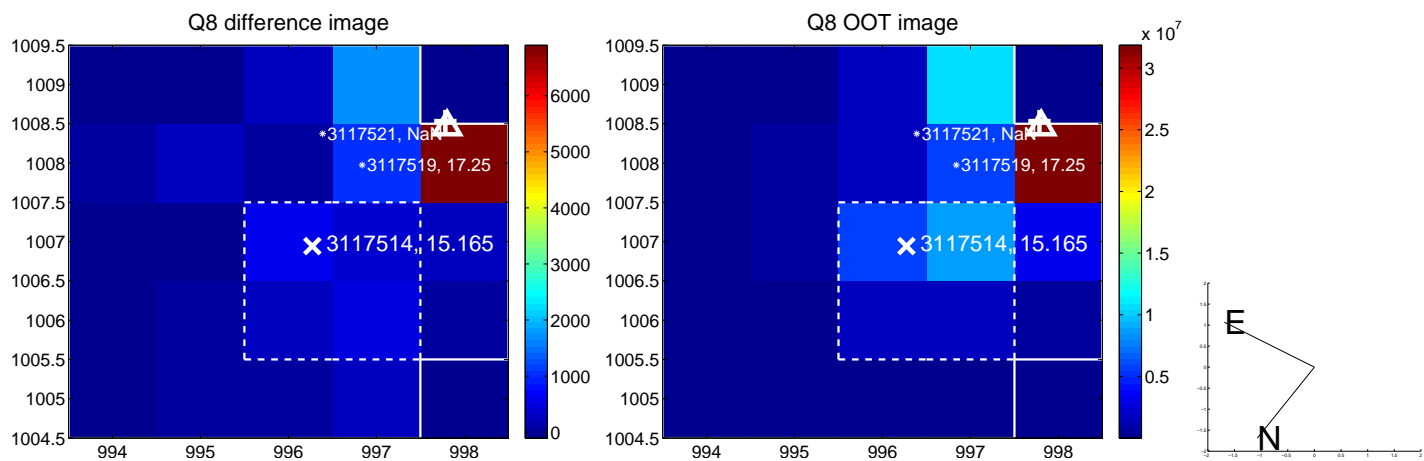
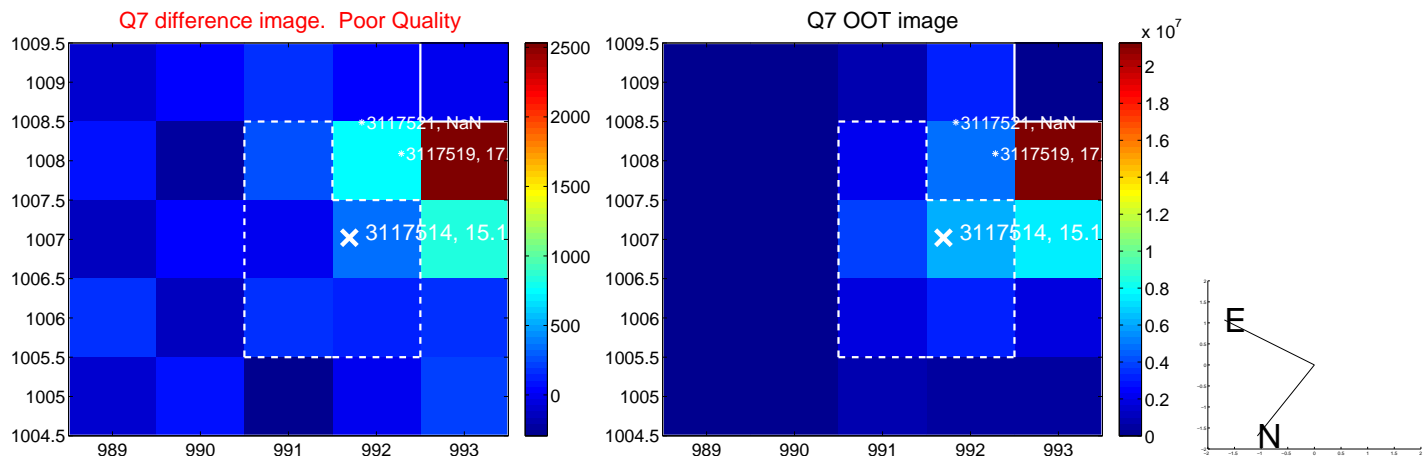
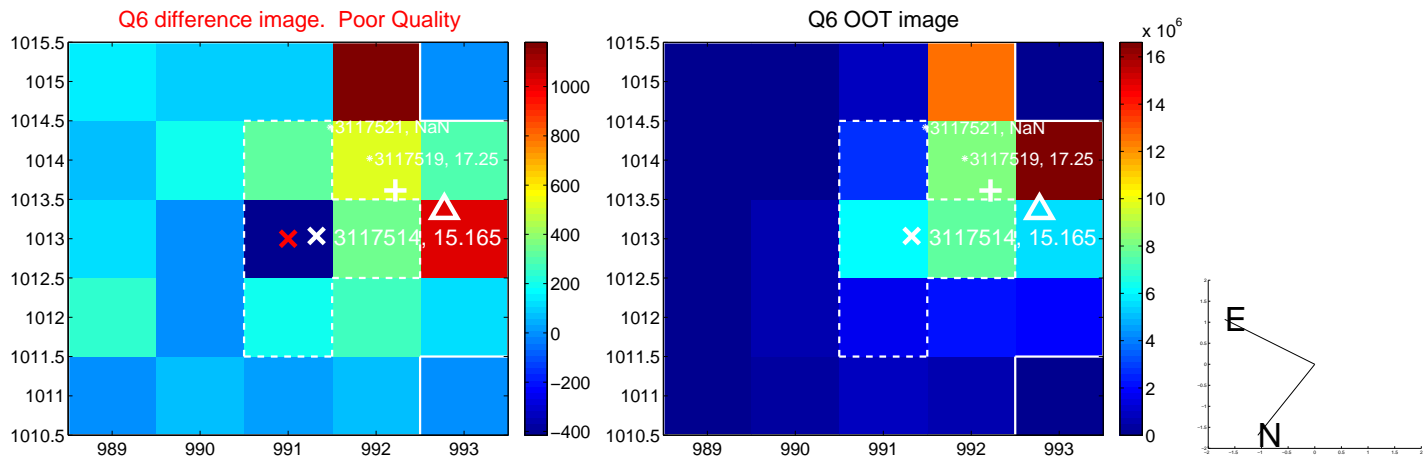
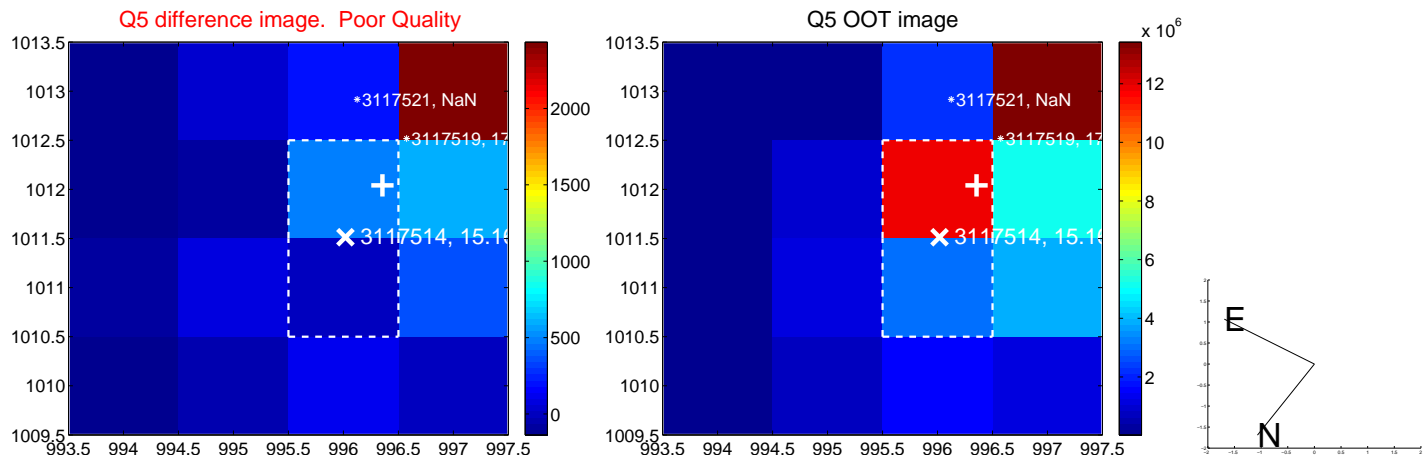


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three- $\sigma$ . Red \*: target star. Blue \*: Other stars. Text next to a star gives its KIC ID and kepmag. KIC IDs > 15,000,000 are from the UKIRT catalog.

white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

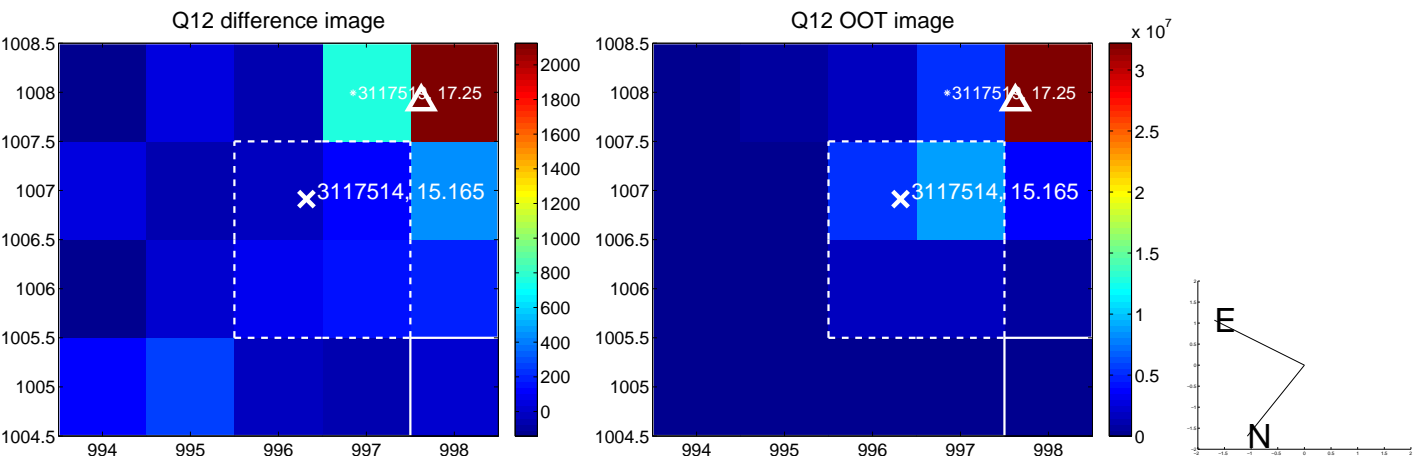
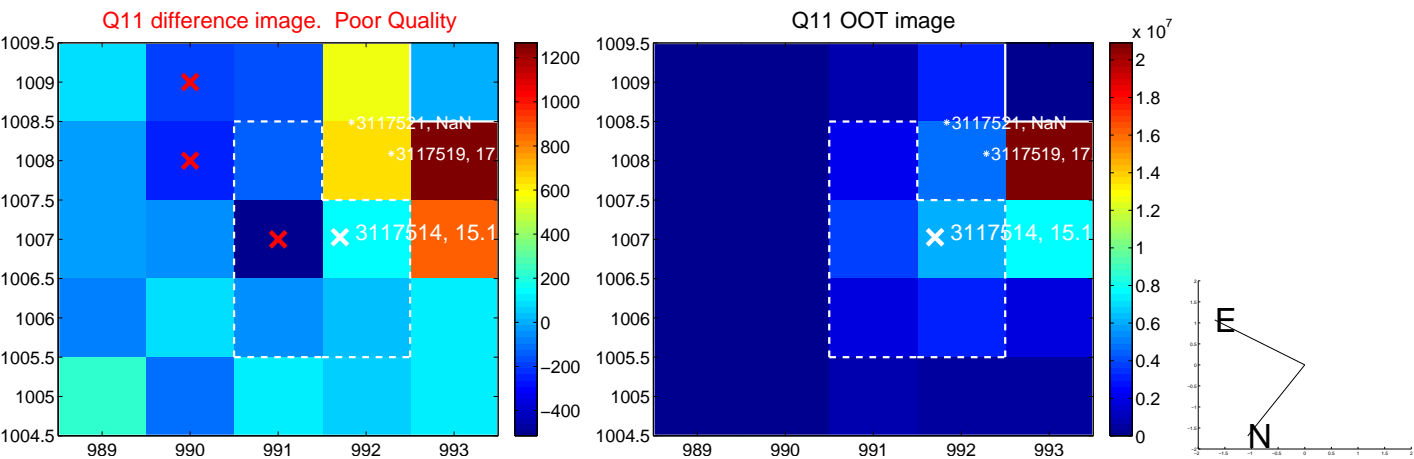
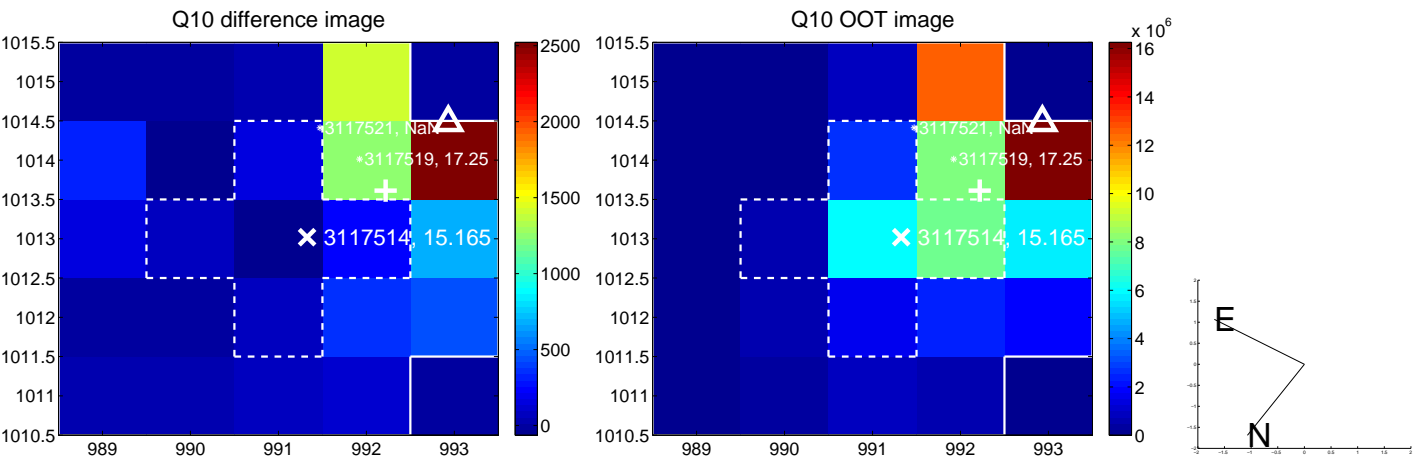
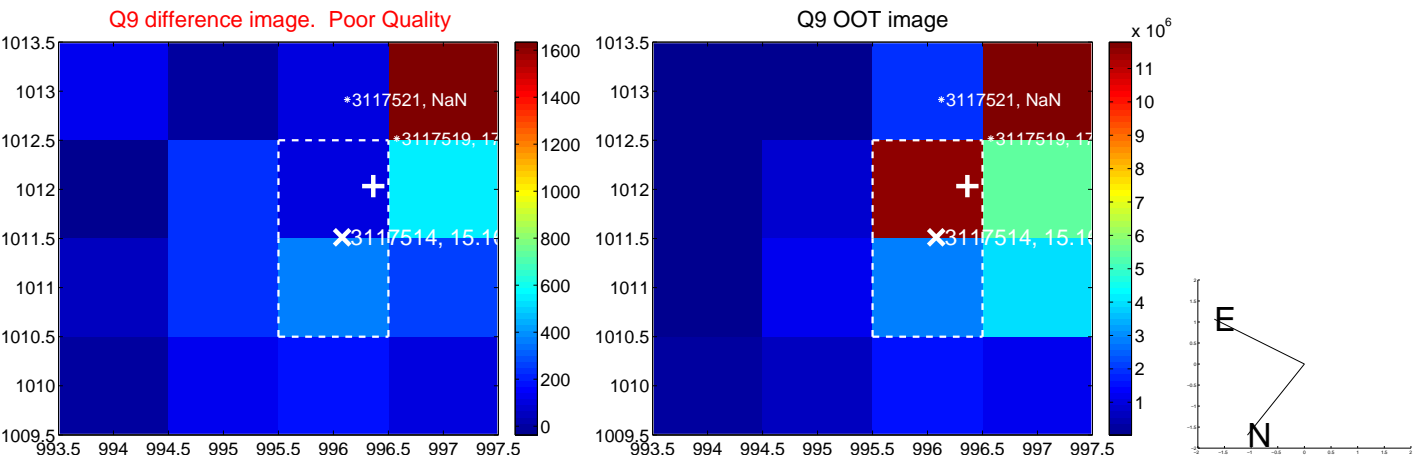


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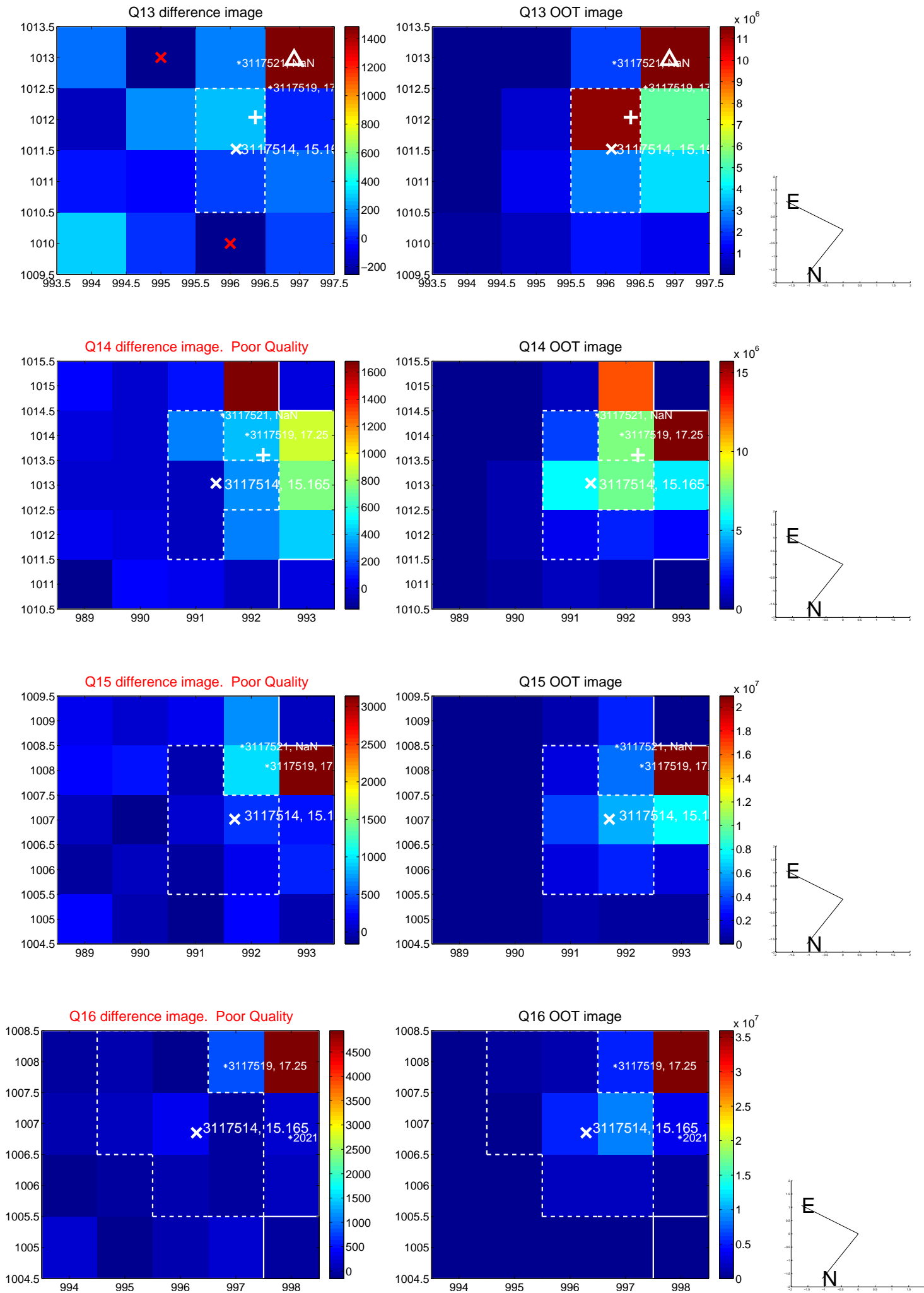




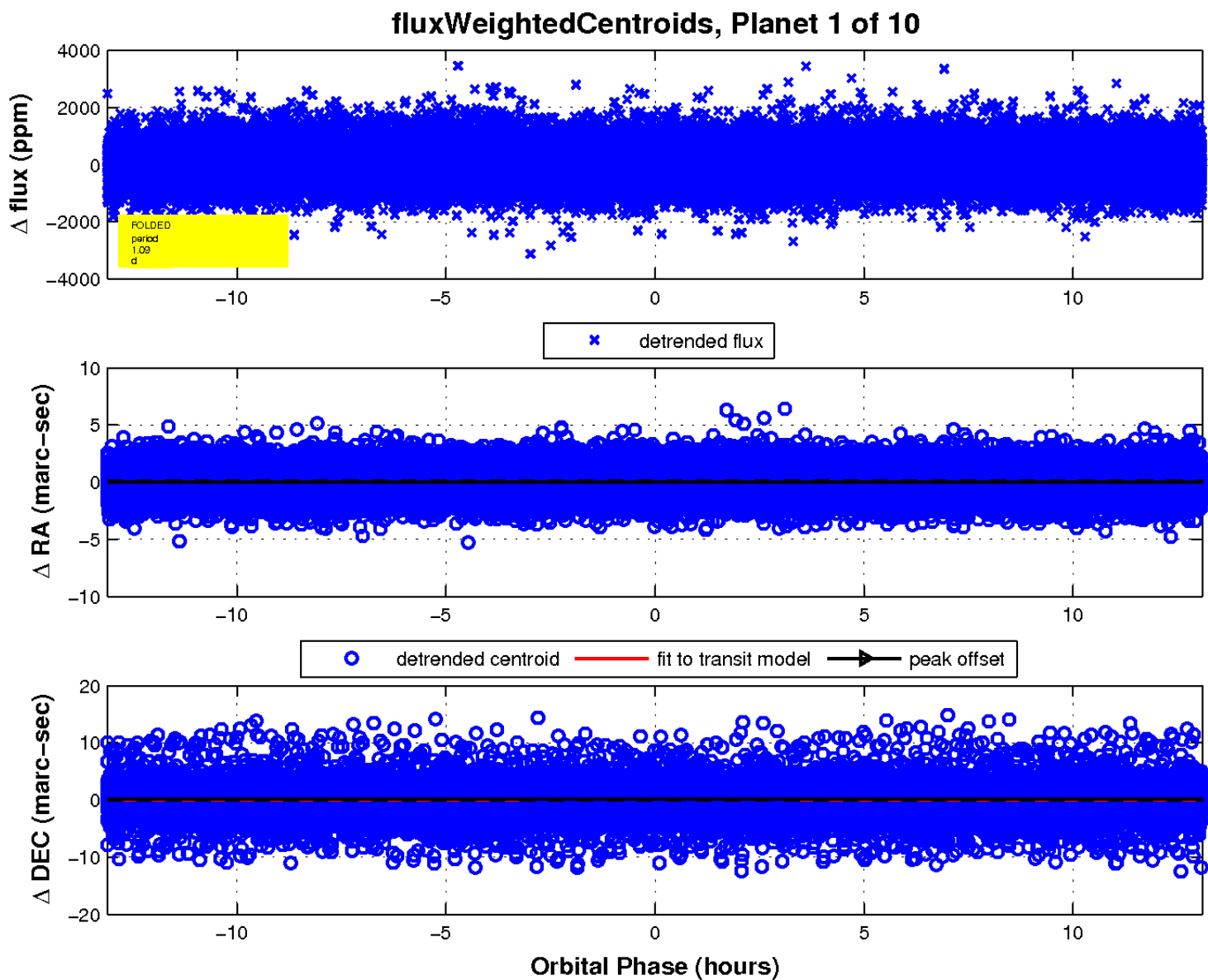
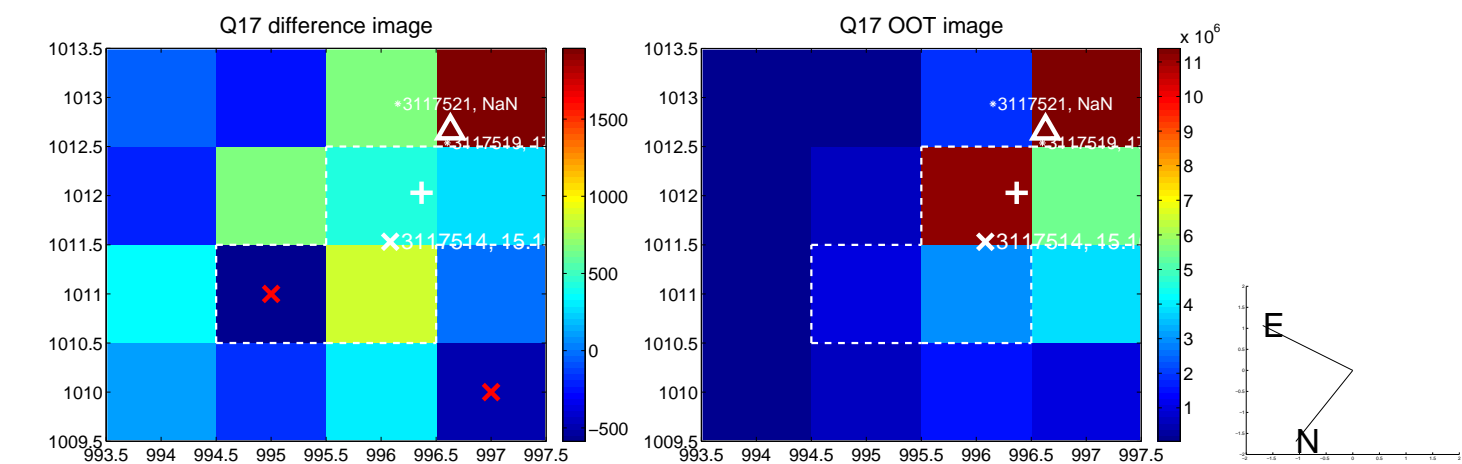
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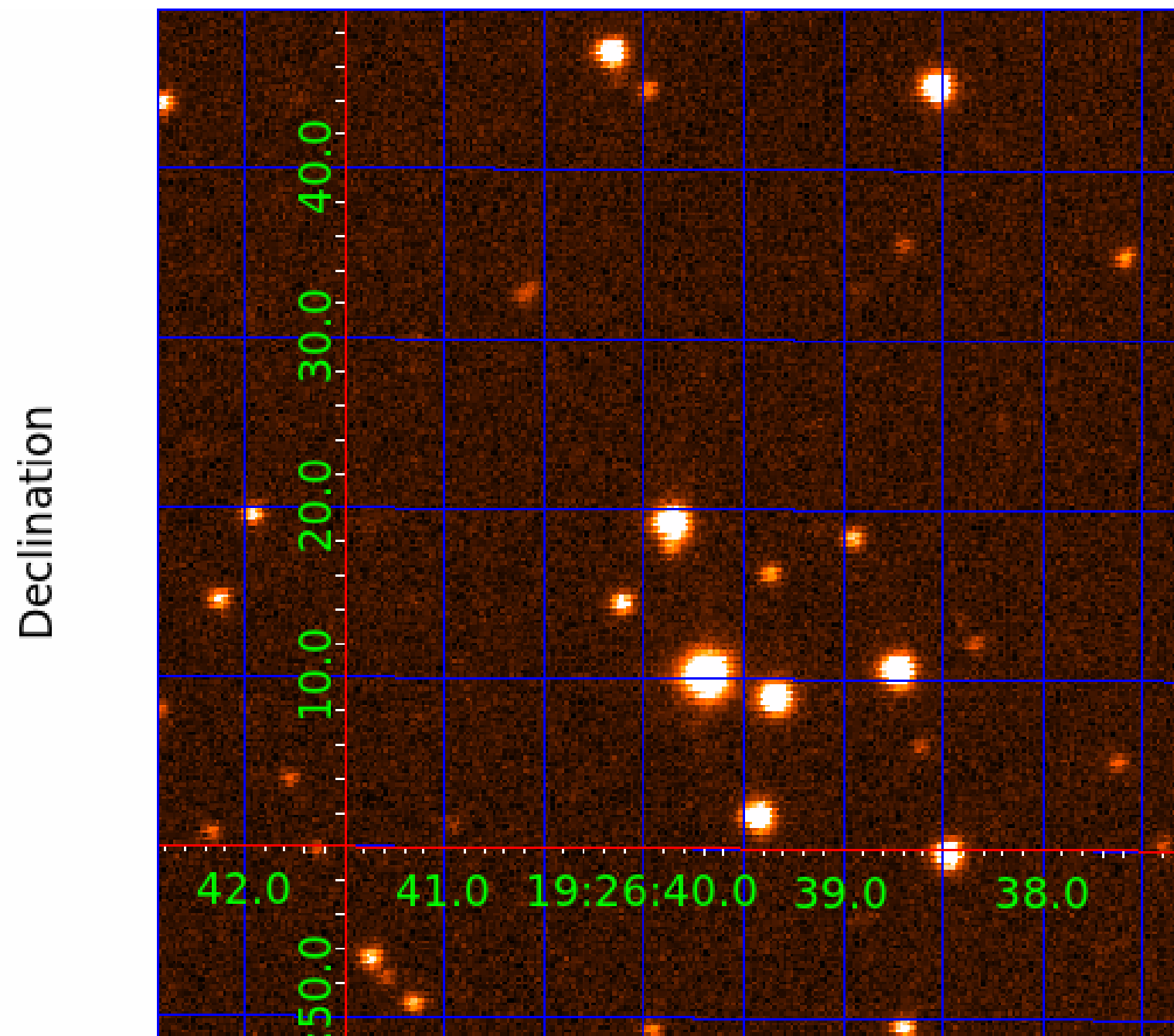
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UKIRT Image





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**Notes:** OBS = Observed. INJ = Injected. INV = Inverted. SCR = Scrambled.

N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

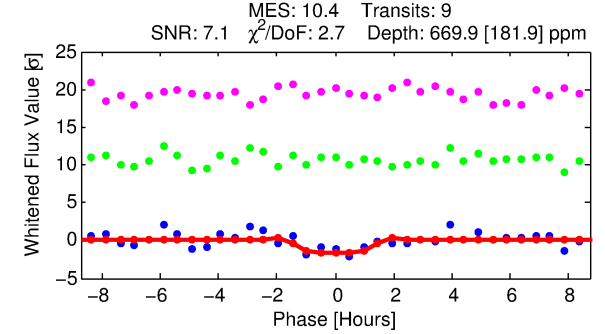
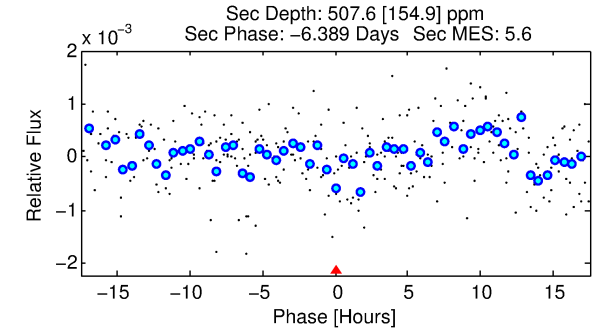
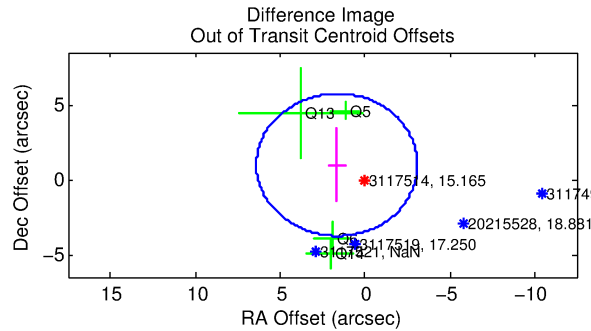
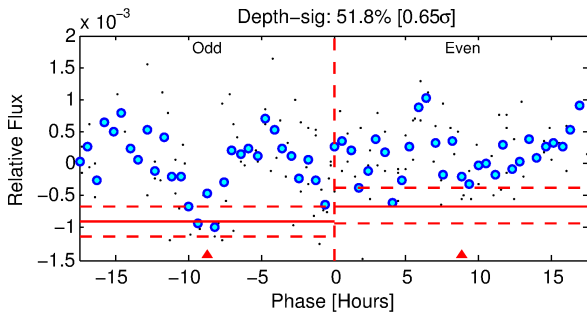
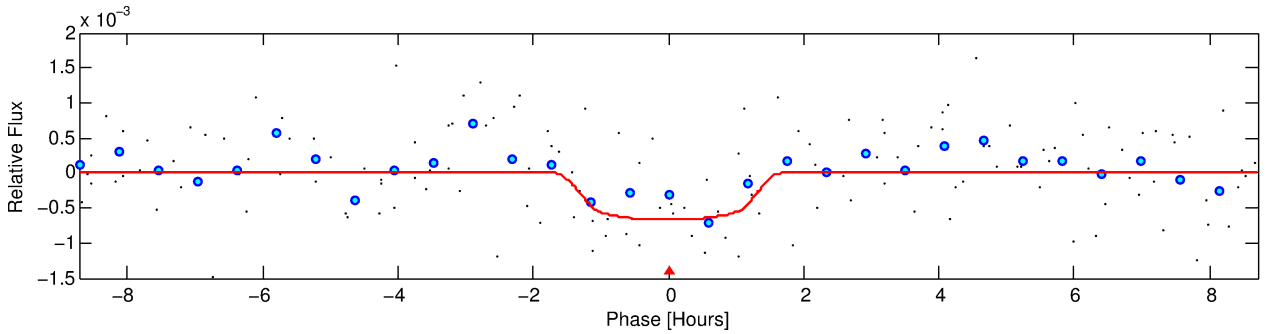
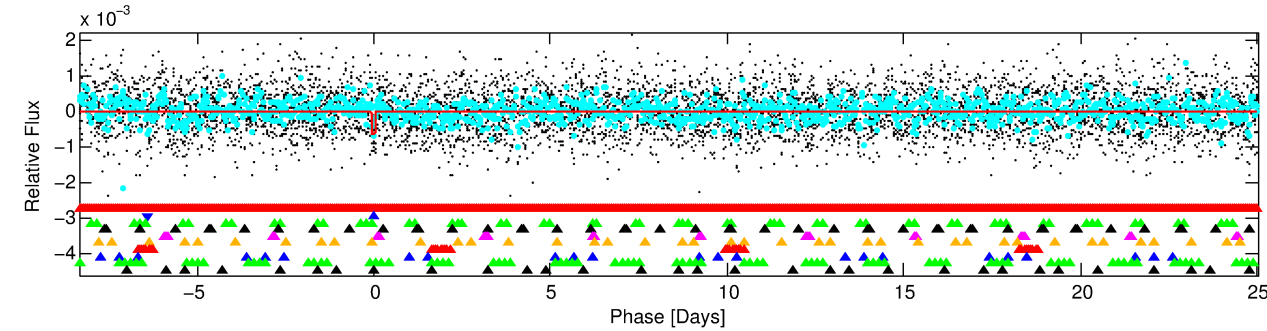
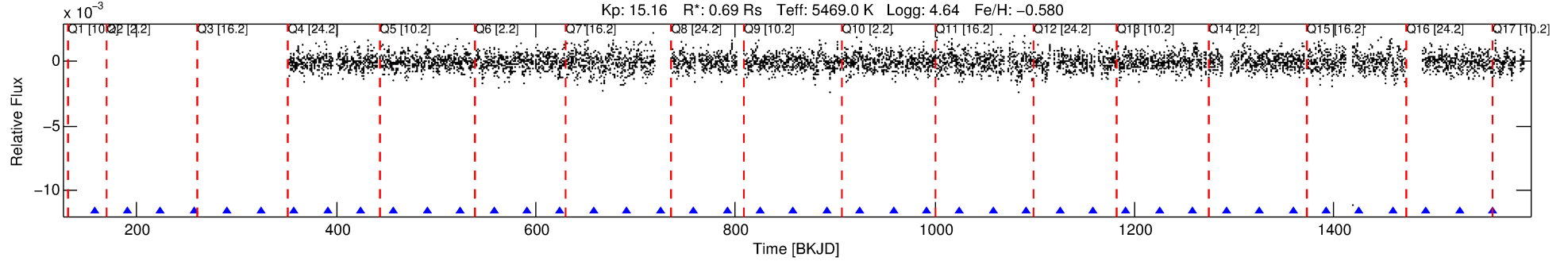
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 003117514-02

No Significant Match Found

# DV One-Page Summary

KIC: 3117514 Candidate: 2 of 10 Period: 33.370 d



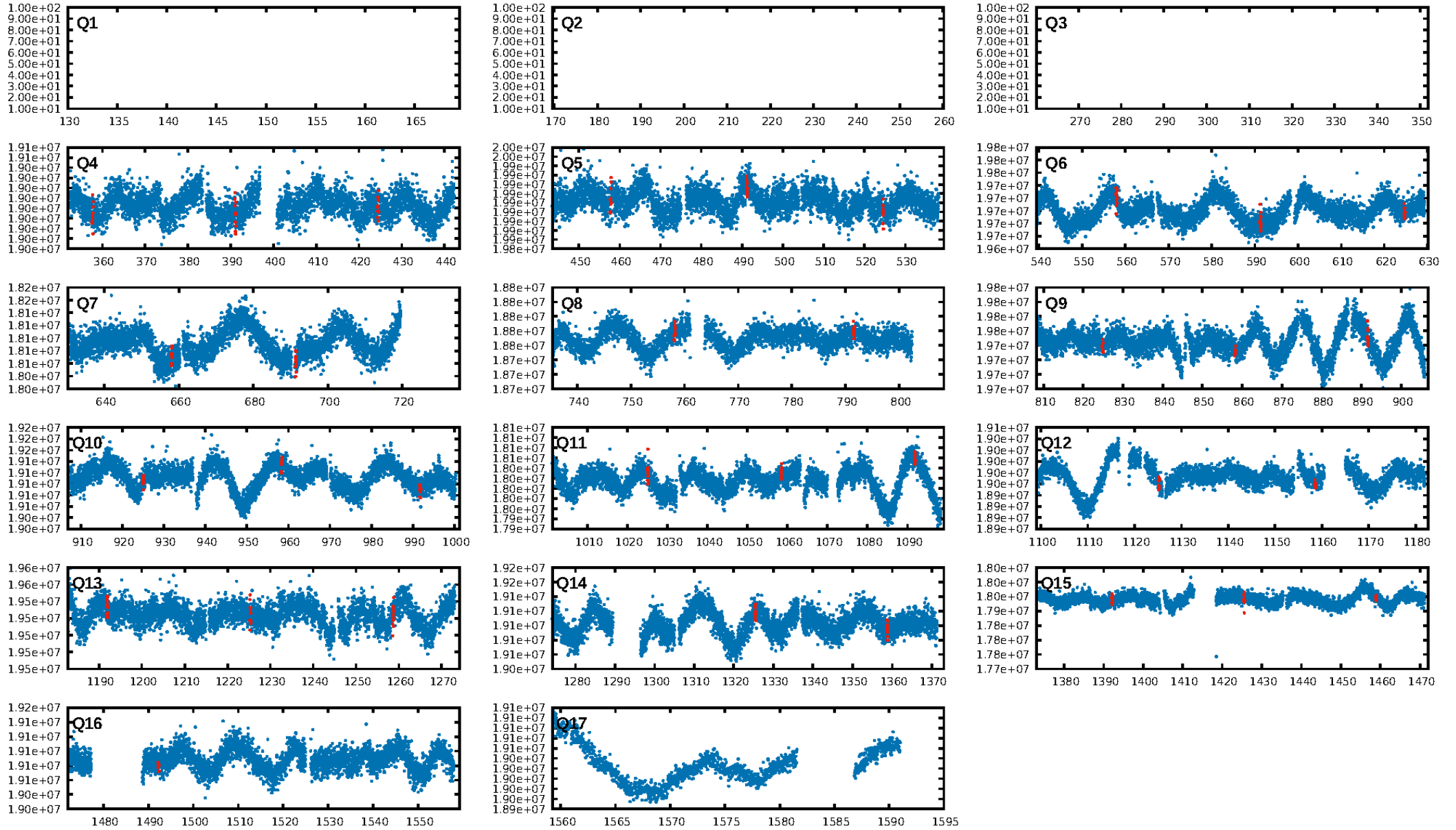
## DV Fit Results:

Period = 33.36951 [0.00077] d  
Epoch = 157.5037 [0.0199] BKJD  
Rp/R\* = 0.0262 [0.0402]  
a/R\* = 57.21 [382.57]  
b = 0.79 [3.20]  
Seff = 11.26 [2.73]  
Teq = 467 [28] K  
Rp = 1.99 [3.07] Re  
a = 0.1855 [0.0255] AU  
Ag = 2423.89 [7480.53] [0.32 $\sigma$ ]  
Teffp = 5067 [3906] K [1.18 $\sigma$ ]

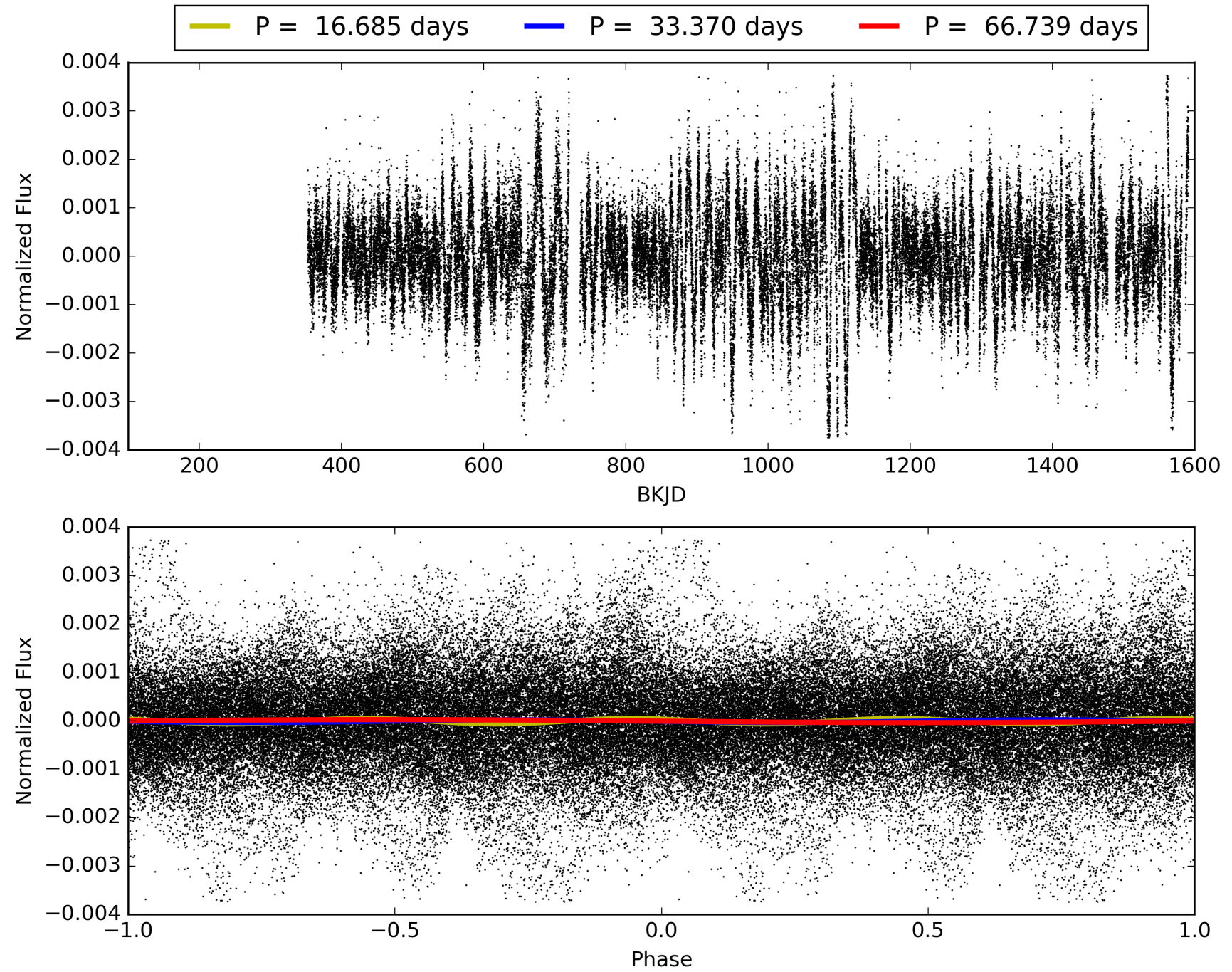
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [20.20 $\sigma$ ]  
LongPeriod-sig: 100.0% [28.63 $\sigma$ ]  
ModelChiSquare2-sig: 0.0%  
ModelChiSquareGof-sig: 76.8%  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [9/9]  
GhostDiagnostic-chr: -2.202  
Centroid-sig: 49.5%  
Centroid-so: 3.579 arcsec [7.50 $\sigma$ ]  
OotOffset-rm: 1.915 arcsec [1.21 $\sigma$ ]  
OotOffset-st: 2/0/0/2 [4]  
KicOffset-rm: 4.732 arcsec [3.65 $\sigma$ ]  
KicOffset-st: 2/3/2/2 [9]  
DiffImageQuality-fgm: 0.00 [0/9]  
DiffImageOverlap-fno: 0.31 [4/13]

# TCE 003117514-02, PDC Light Curves

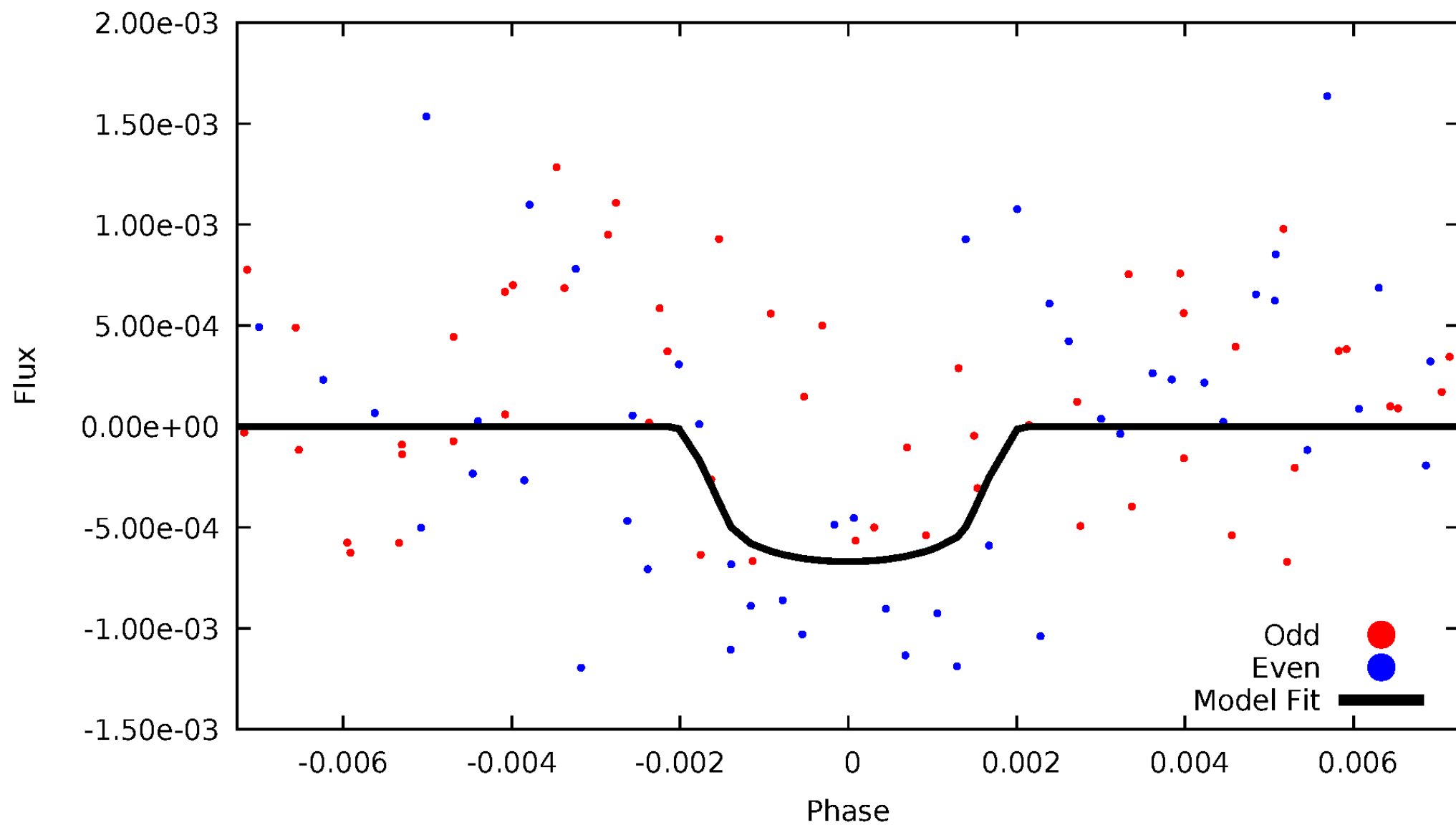


# TCE 003117514-02



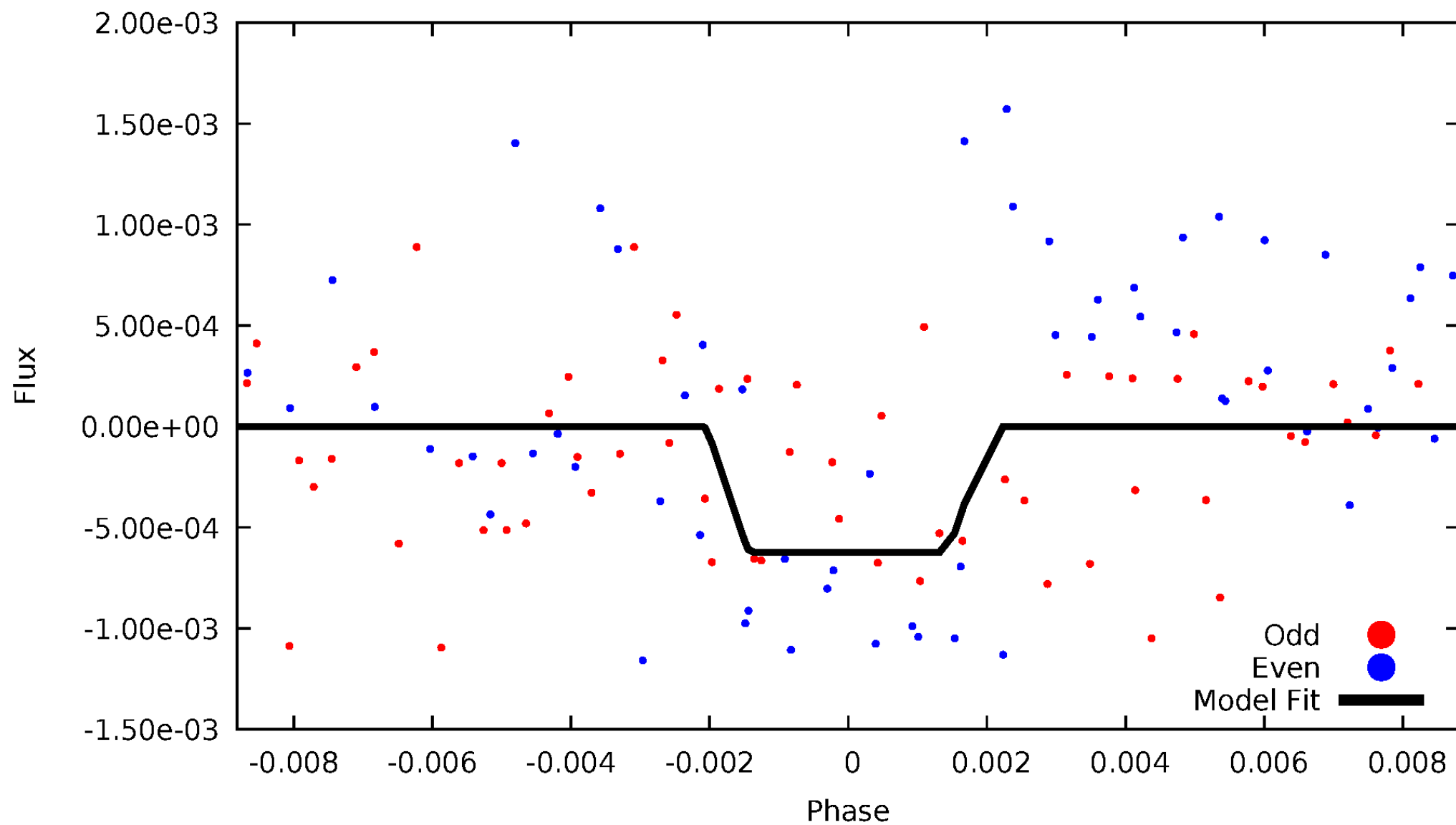
# DV Odd/Even

TCE 003117514-02



# ALT Odd/Even

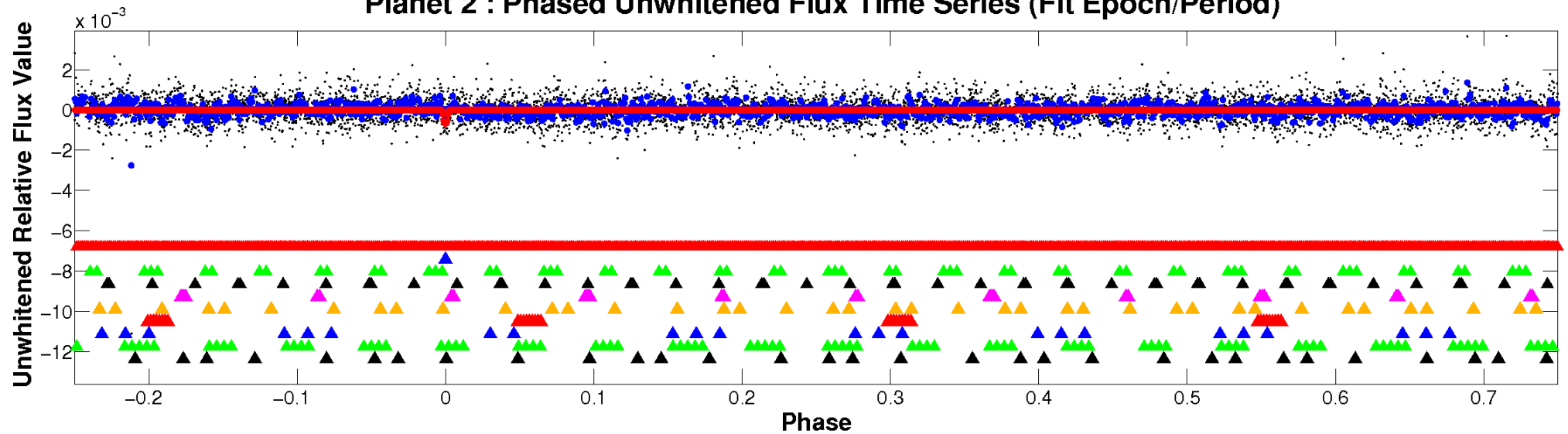
TCE 003117514-02



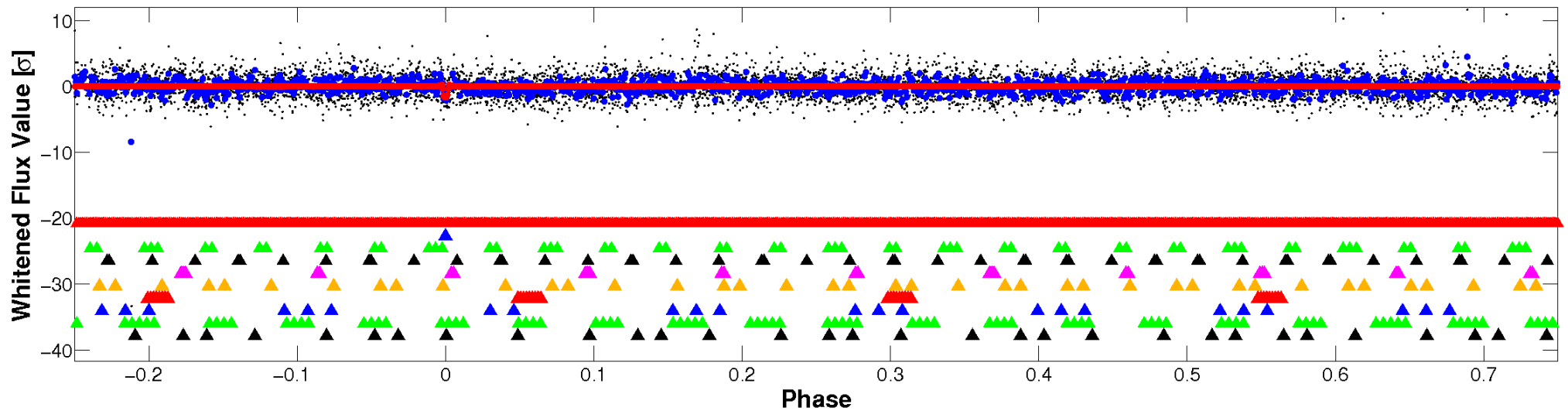


# Non-Whitened Vs. Whitened Light Curve

## Planet 2 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

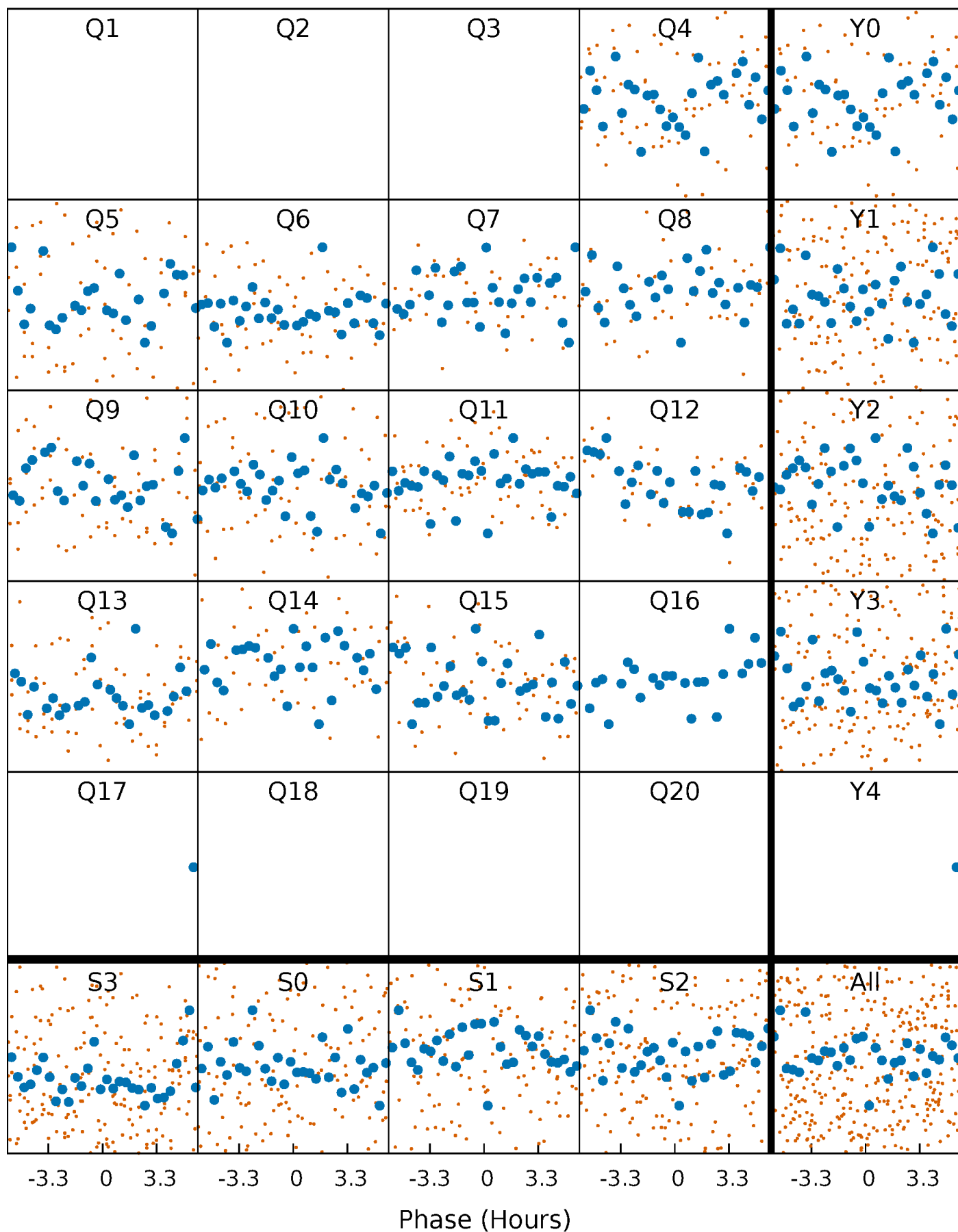


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



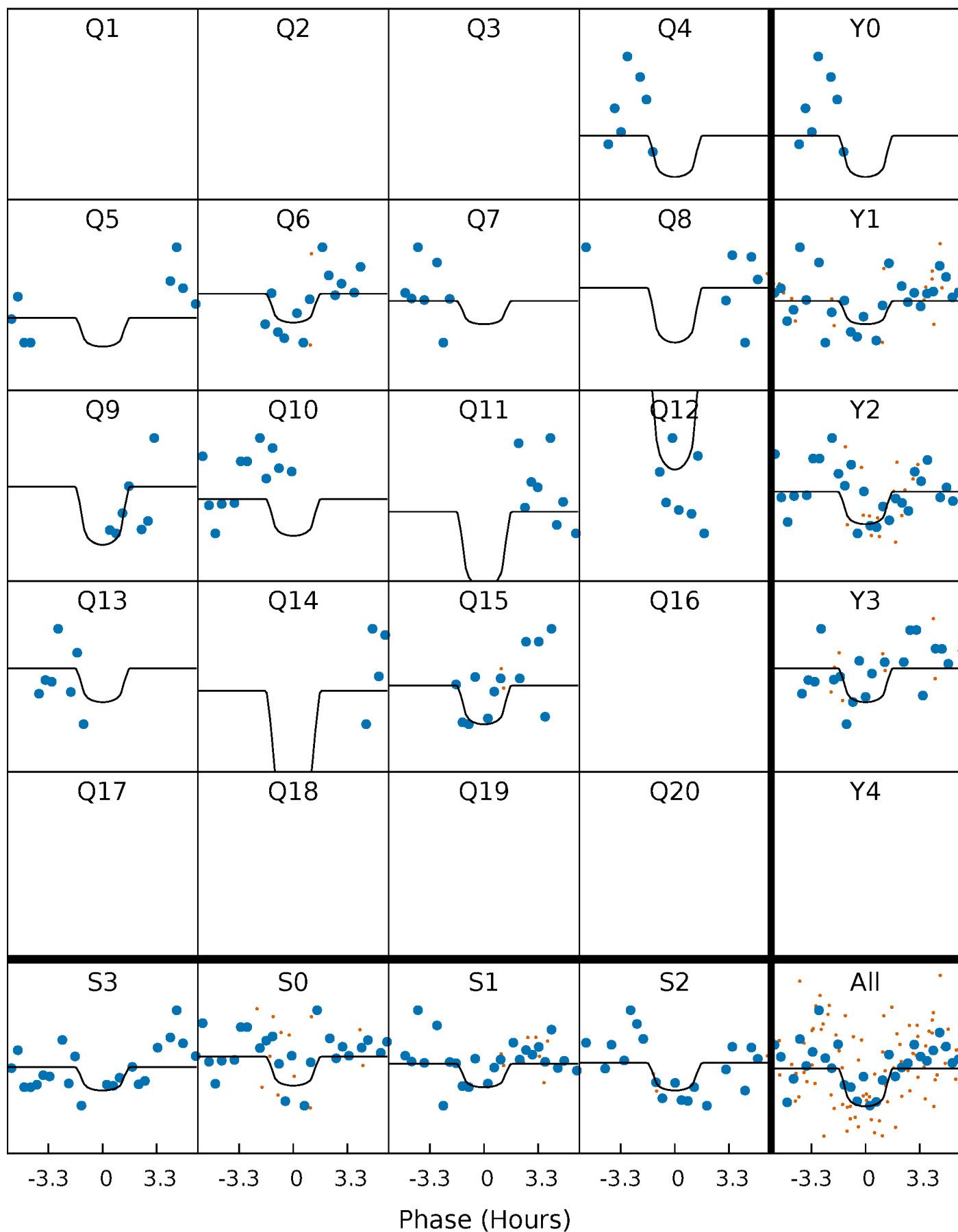
# PDC Quarter-Phased Transit Curves

TCE 003117514-02 P= 33.369509 Days  $T_0=157.503651$  (BKJD)



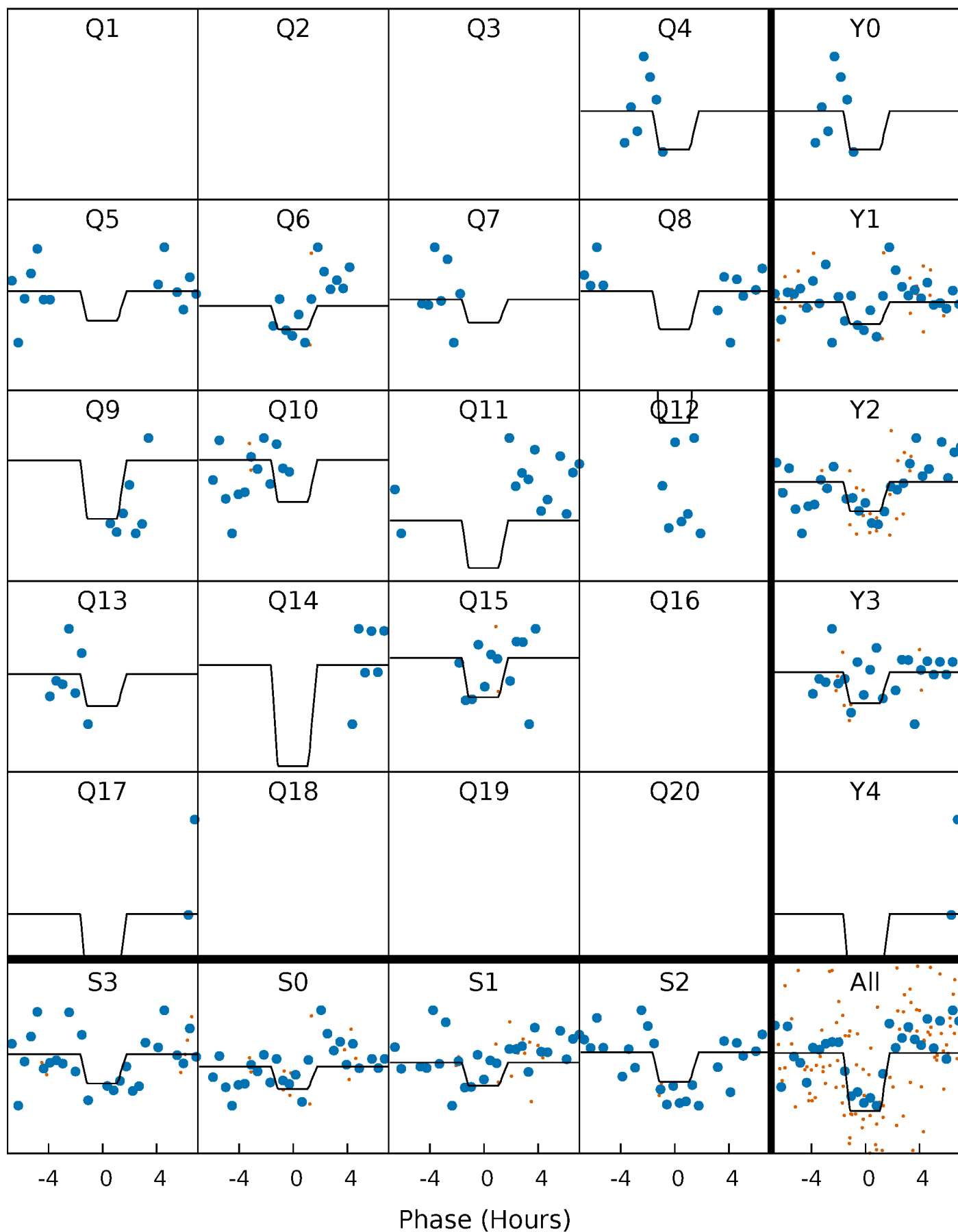
# DV Quarter-Phased Transit Curves

TCE 003117514-02 P= 33.369509 Days  $T_0=157.503651$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

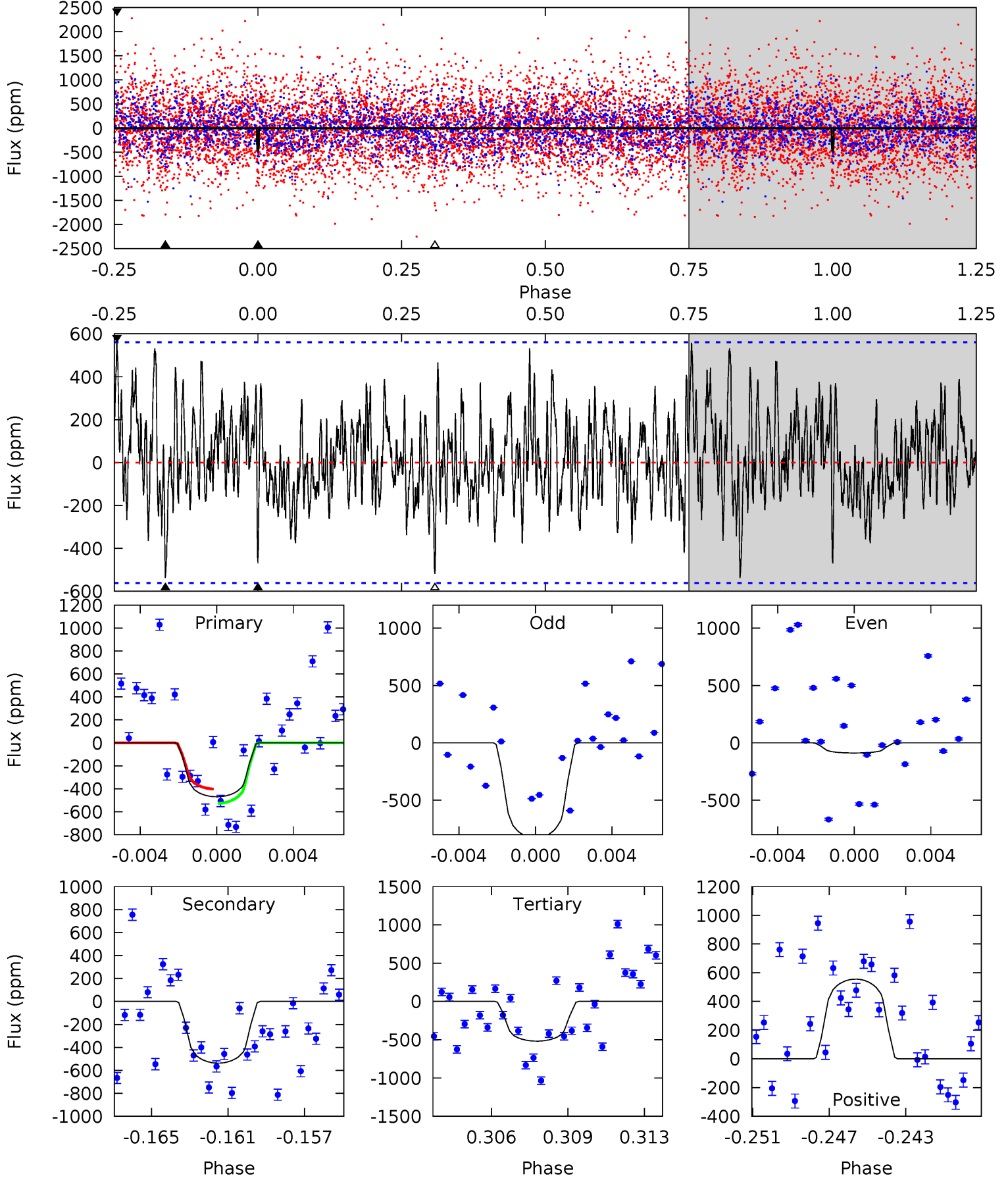
TCE 003117514-02 P= 33.370124 Days  $T_0=157.486909$  (BKJD)



# DV Model-Shift Uniqueness Test

003117514-02, P = 33.369509 Days, E = 157.503651 Days

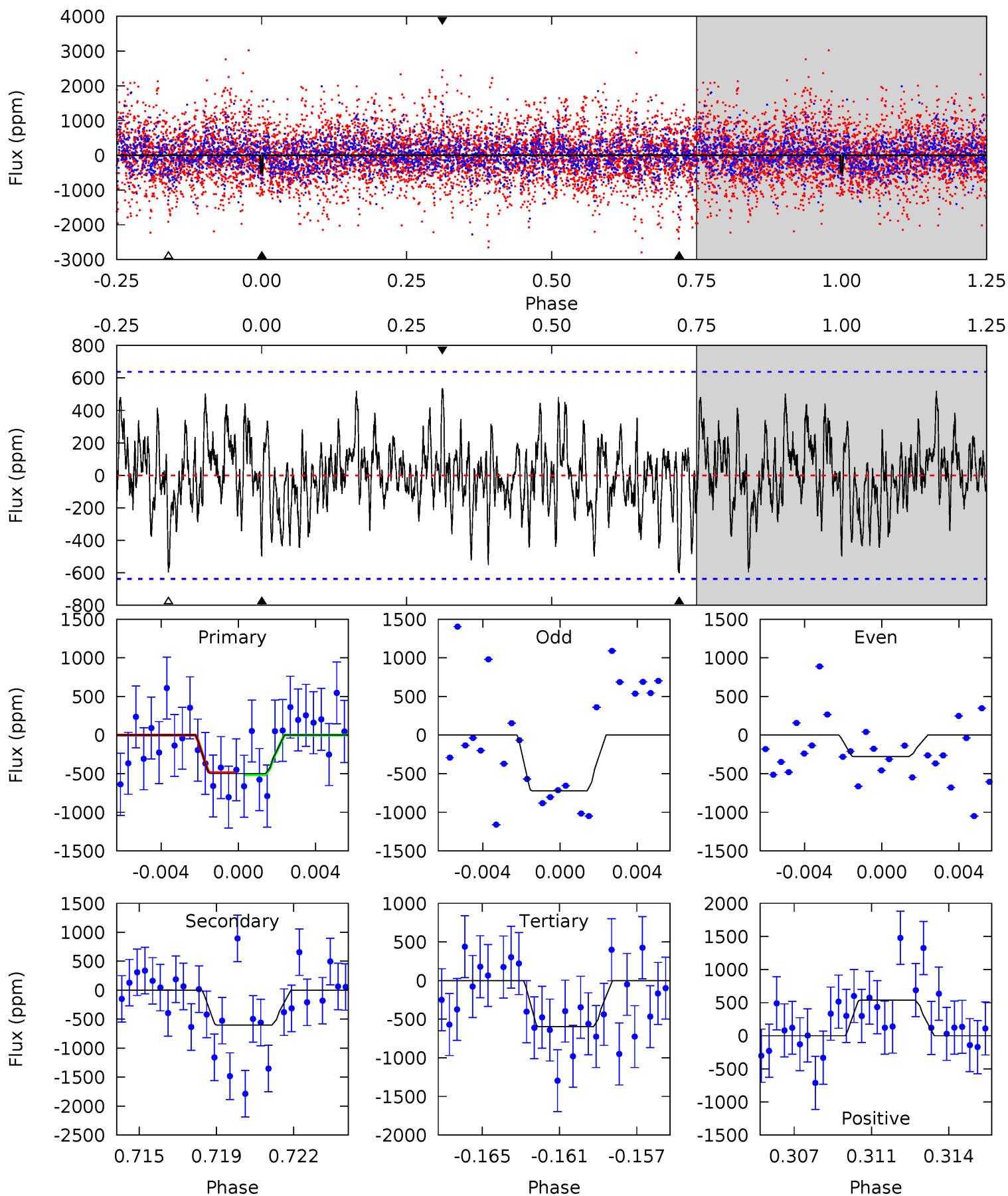
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4.36	4.98	4.81	5.15	5.20	2.88	1.59	-0.45	-0.80	0.17	-0.17	3.43	0.56	0.51	0.58



# Alt Model-Shift Uniqueness Test

003117514-02, P = 33.370124 Days, E = 157.486909 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4.07	4.92	4.88	4.39	5.21	2.90	1.48	-0.80	-0.31	0.05	0.54	1.82	0.85	0.47	0.11





### Stellar Parameters For KIC 003117514

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5469^{+196}_{-196}$	$4.637^{+0.032}_{-0.104}$	$-0.580^{+0.300}_{-0.300}$	$0.695^{+0.117}_{-0.050}$	$0.778^{+0.073}_{-0.081}$	$3.264^{+0.482}_{-1.044}$
	+4%/-4%	+1%/-2%	+52%/-52%	+17%/-7%	+9%/-10%	+15%/-32%
Source	KIC0	KIC0	KIC0	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology  
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

### Secondary Eclipse Parameters for KIC 003117514-02 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-537 \pm 108$	$2.92^{+2.82}_{-1.95}$	$661^{+30}_{-29}$	$4436^{+3003}_{-932}$	$1162^{+8960}_{-852}$
Alt.	$-602 \pm 122$	$3.12^{+2.56}_{-2.02}$	$662^{+29}_{-28}$	$4485^{+2828}_{-893}$	$1183^{+8376}_{-844}$

$T_{\text{max}}$  = Theoretical Maximum Planetary Temperature

$T_{\text{obs}}$  = Observed Planetary Temperature (Assuming  $A=0.3$ )

$A_{\text{obs}}$  = Observed Albedo (Assuming  $T=0$ )

If a secondary eclipse is present, the system is likely an EB if  $T_{\text{obs}} \gg T_{\text{max}}$  AND  $A_{\text{obs}} \gg 1.0$

## DV Centroid Data

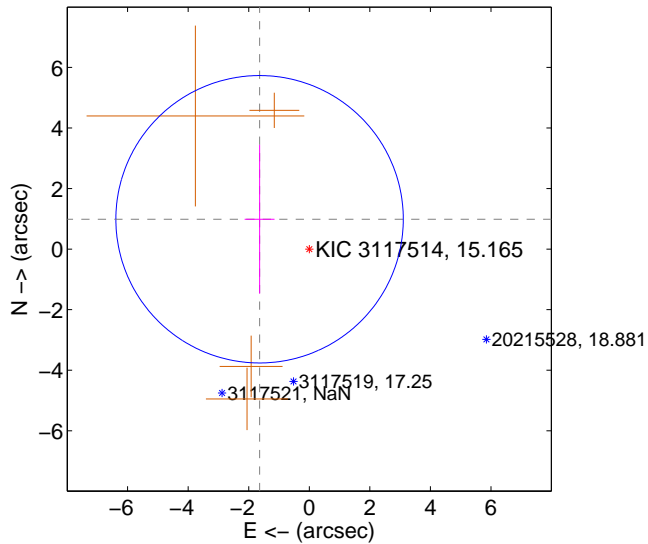
Supplemental centroid analysis for 003117514-02. Kepler magnitude: 15.16. Transit SNR 7.15

There are 0 quarters with good PRF difference image offsets

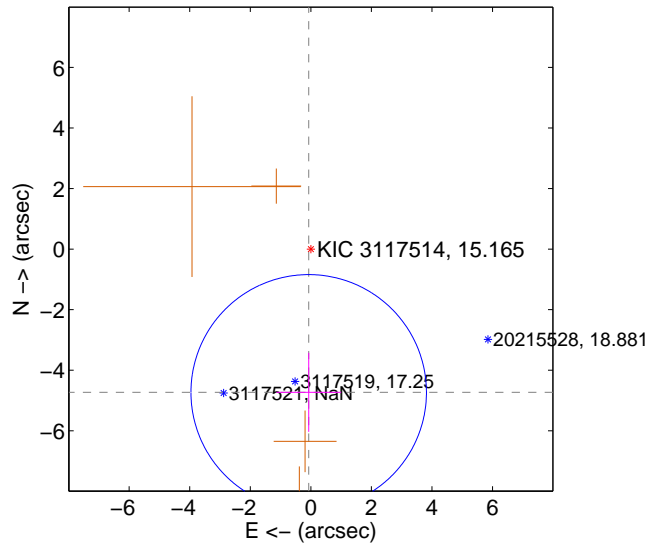
The OOT PRF centroid is offset from the target star catalog position by about 3.67 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.915 \pm 1.582$	1.21	$1.642 \pm 0.494$	$0.986 \pm 2.457$
PRF-fit source offset from KIC position	$4.732 \pm 1.296$	3.65	$0.071 \pm 1.071$	$-4.731 \pm 1.305$
photometric centroid source offset	$3.58 \pm 0.48$	7.50	$-1.57 \pm 0.33$	$-3.22 \pm 0.51$

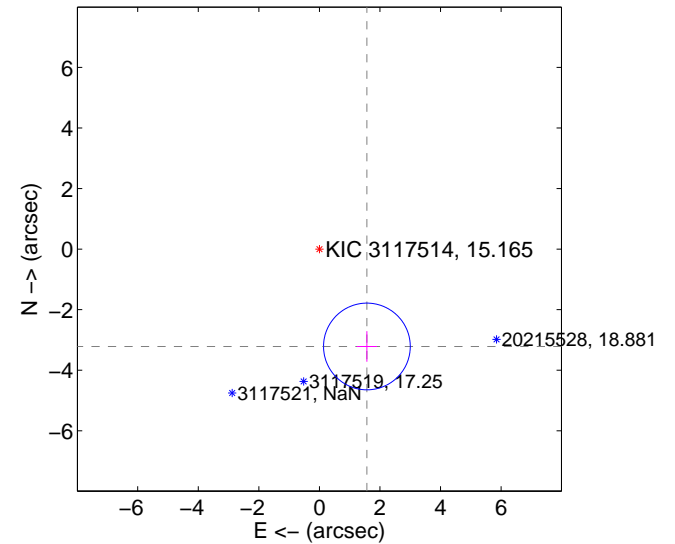
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



offset from photometric centroids



Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three- $\sigma$ . Red \*: target star. Blue \*: Other stars. Text next to a star gives its KIC ID and kepmag. KIC IDs > 15,000,000 are from the UKIRT catalog.

white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

Q1 no difference image



Q1 no OOT image



Q2 no difference image



Q2 no OOT image



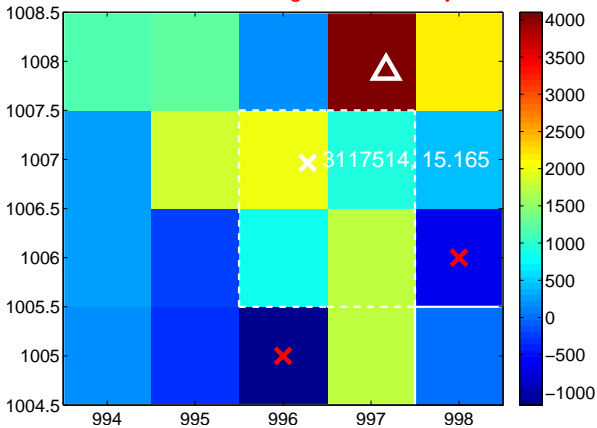
Q3 no difference image



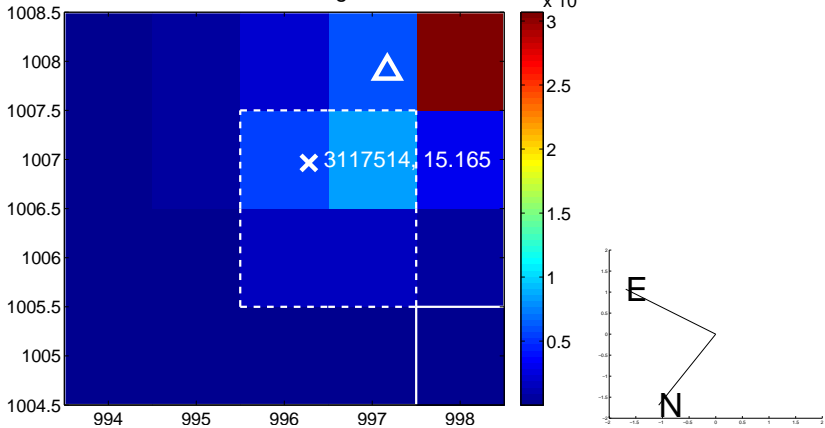
Q3 no OOT image



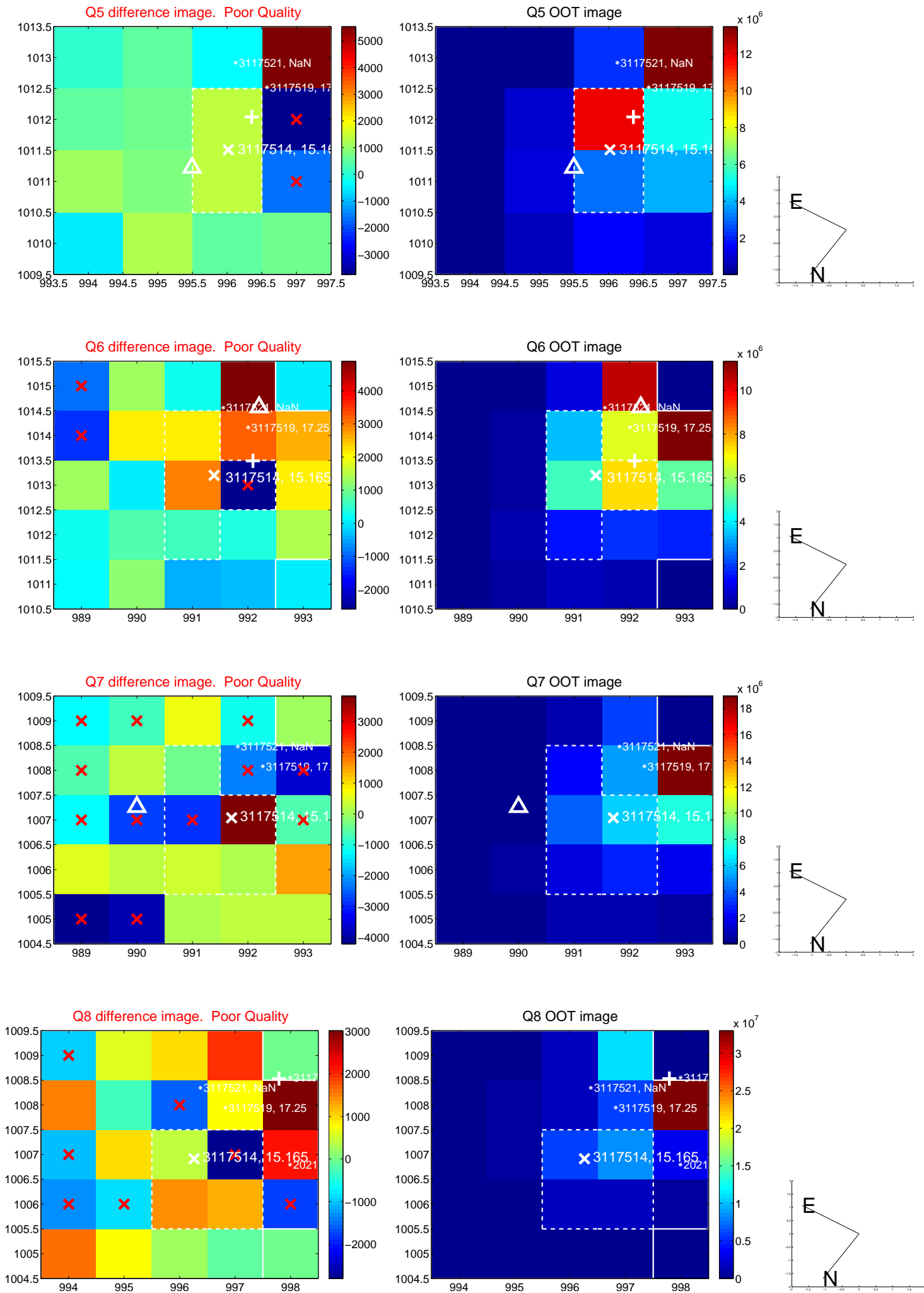
Q4 difference image. Poor Quality



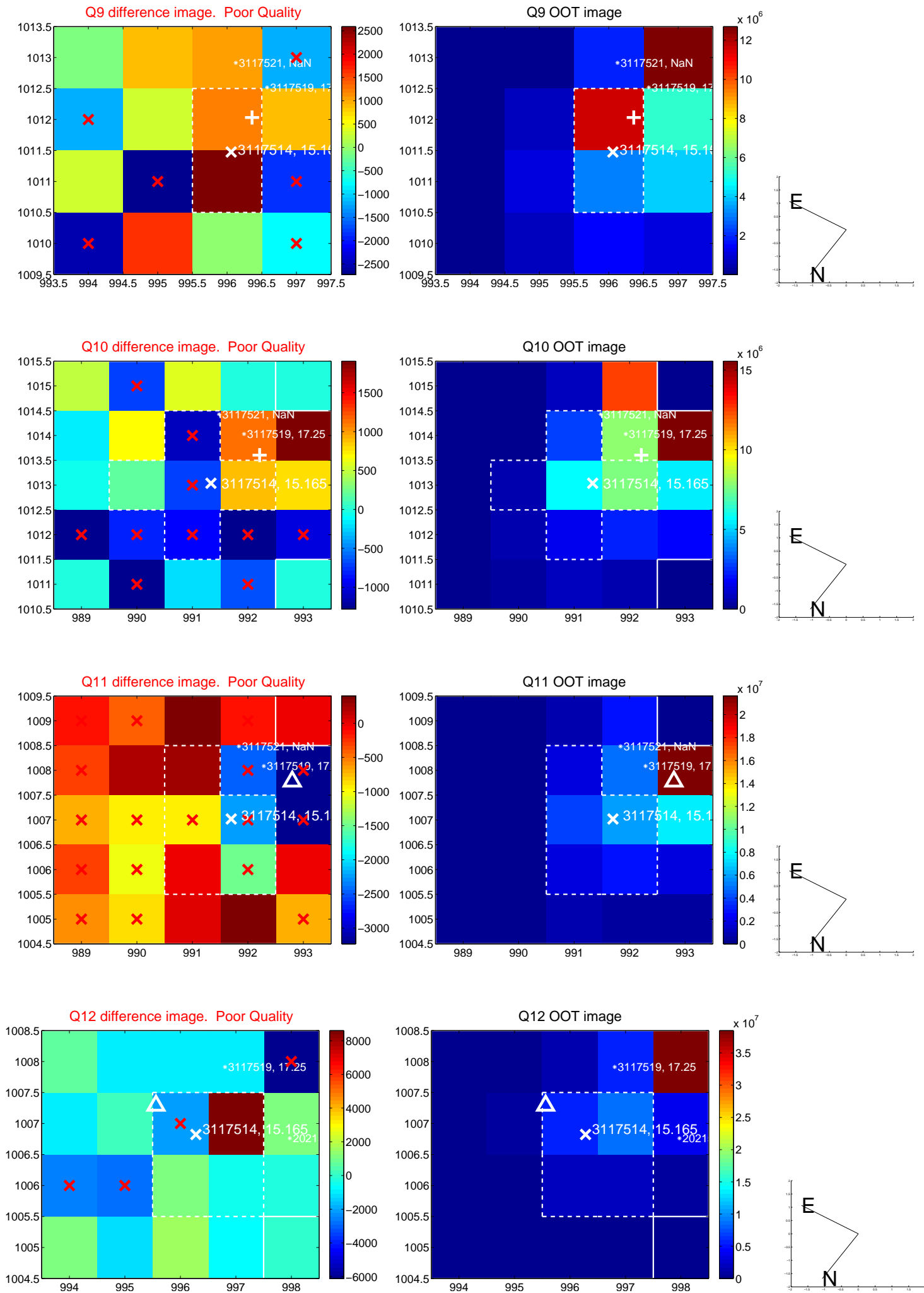
Q4 OOT image



white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

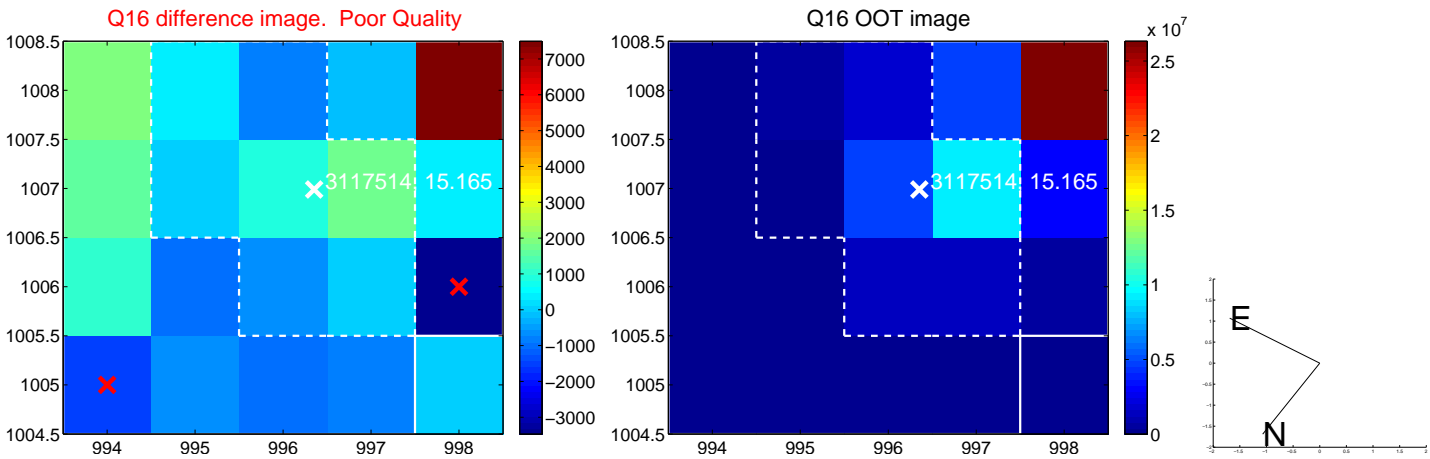
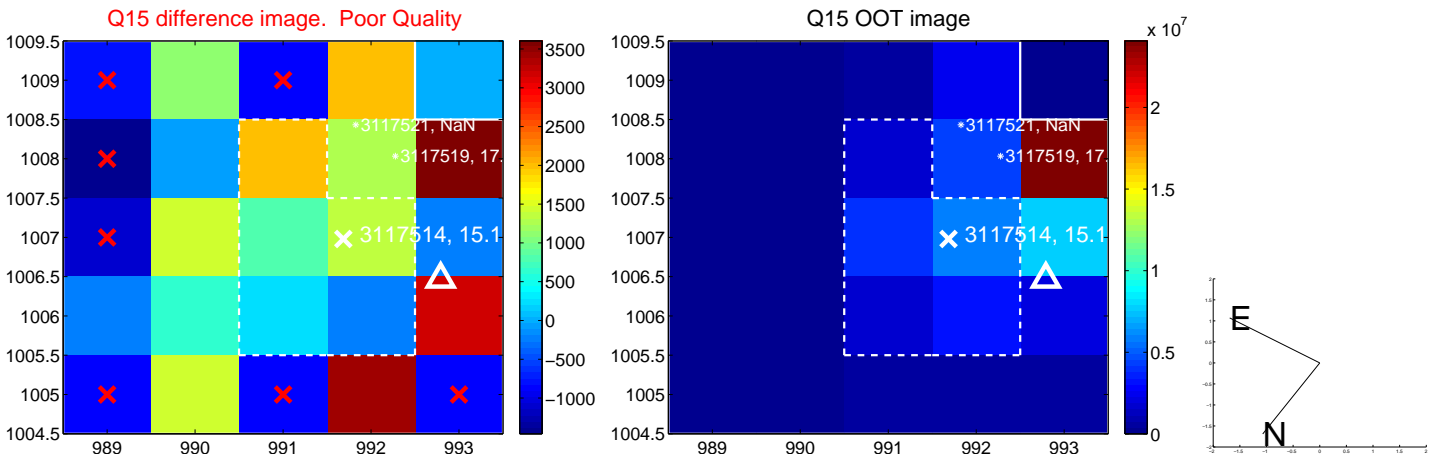
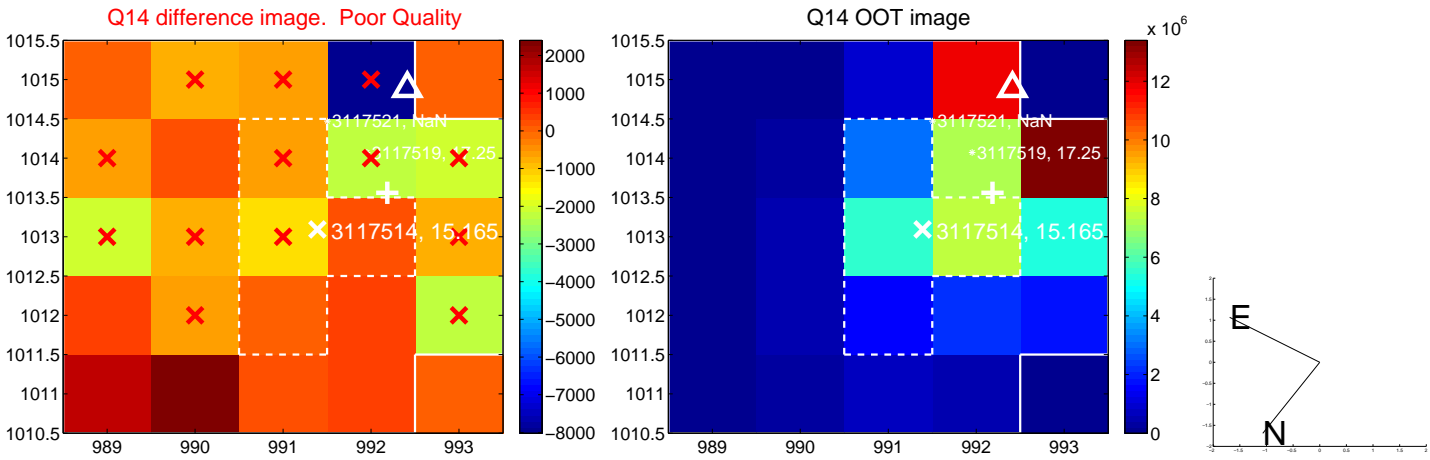
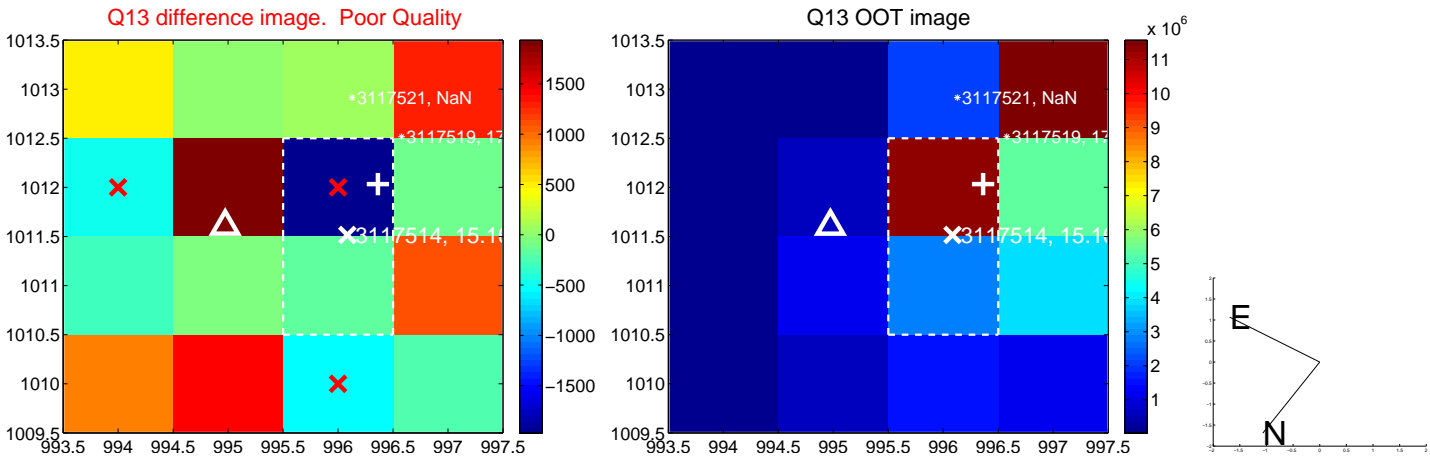


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

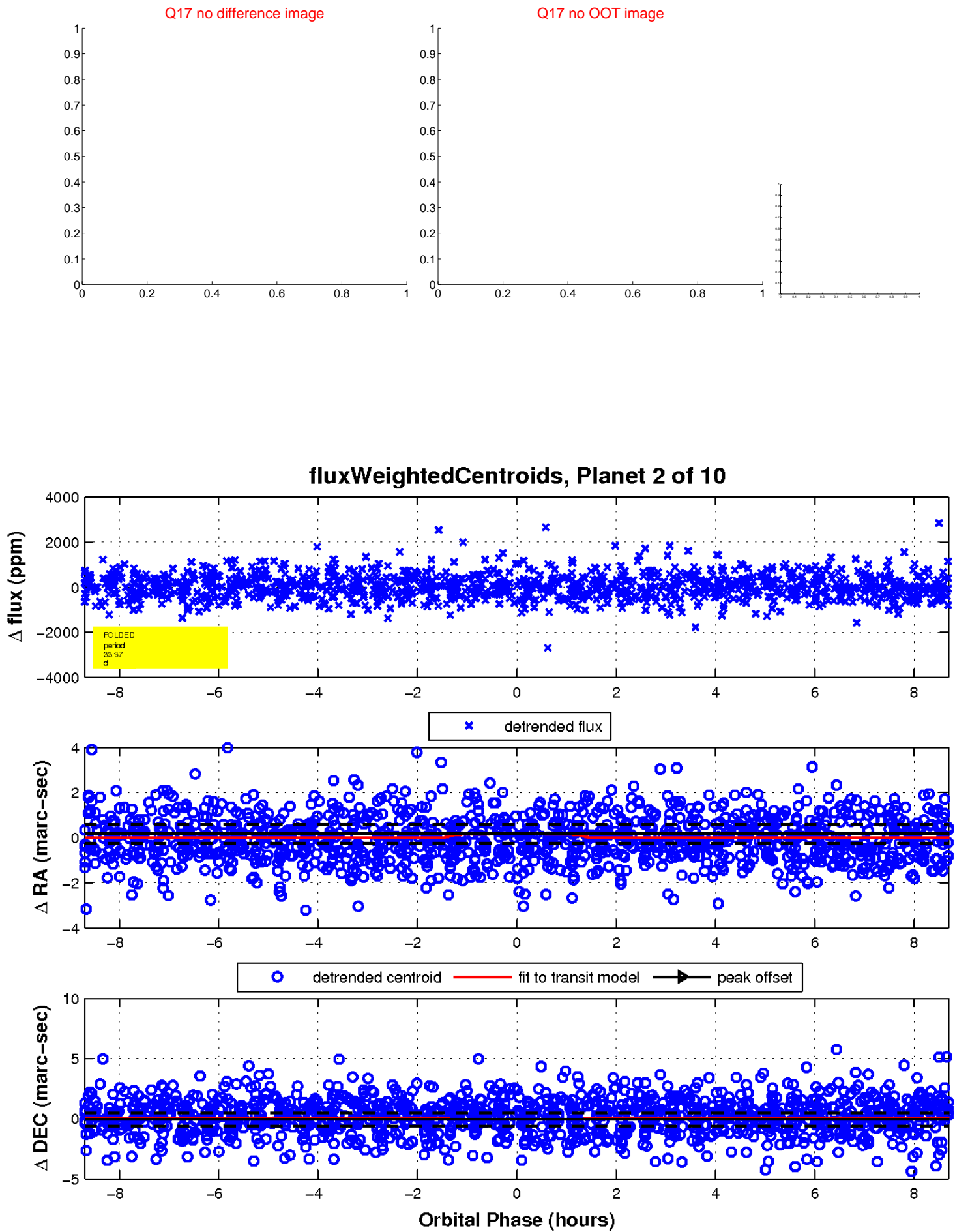




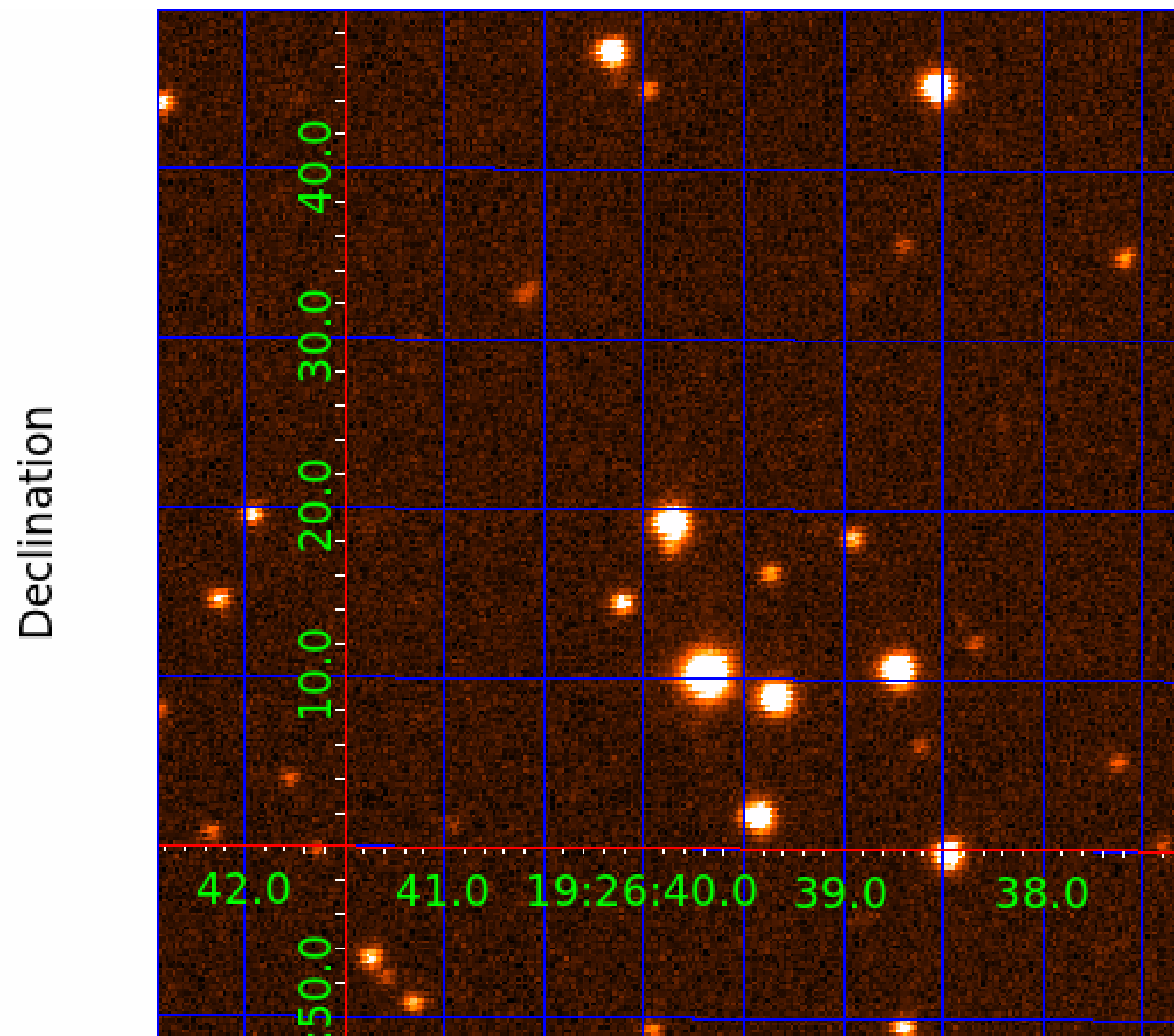
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image



## Q1-17 DR25 TCE Parameters

TCE	Run Type	KOI?	Period (Days)	Epoch (BKJD)	Depth (ppm)	Duration (Hours)	MES	SNR	$R_{\star}$ ( $R_{\odot}$ )	$T_{\star}$ (K)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
003117514-01	OBS	No	1.091938	131.641378	53.4	7.431	8.5	8.6	0.69	5469	0.58	1075.44
003117514-02	OBS	No	33.369509	157.503651	669.9	2.906	10.4	7.1	0.69	5469	1.99	11.26
003117514-03	OBS	No	24.379621	144.629800	722.9	3.062	8.6	9.5	0.69	5469	2.03	17.11
003117514-04	OBS	No	30.423736	143.081360	695.1	1.951	9.0	7.8	0.69	5469	2.08	12.73
003117514-05	OBS	No	57.642773	136.377881	920.7	2.879	8.3	8.8	0.69	5469	2.33	5.43
003117514-06	OBS	No	37.233493	132.857621	1420.0	1.430	8.7	9.1	0.69	5469	2.63	9.73
003117514-07	OBS	No	41.695704	159.649434	657.5	3.150	8.3	7.7	0.69	5469	2.12	8.36
003117514-08	OBS	No	62.634001	187.247617	761.8	3.290	8.2	7.4	0.69	5469	2.25	4.86
003117514-09	OBS	No	17.554198	145.730643	403.9	5.160	8.6	8.0	0.69	5469	1.62	26.51
003117514-10	OBS	No	47.900949	141.379946	1639.1	2.000	8.1	-1.0	0.69	5469	2.79	6.95

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003117514-01	OBS	FP	0.00	1	0	1	0	LPP_DV—LPP_ALT—CENT_RESOLVED_OFFSET—HALO_GHOST
003117514-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
003117514-03	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_RESOLVED_OFFSET—HALO_GHOST
003117514-04	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_RESOLVED_OFFSET
003117514-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
003117514-06	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_DV—CENT_FEW_DIFFS
003117514-07	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_RESOLVED_OFFSET
003117514-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
003117514-09	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_RESOLVED_OFFSET
003117514-10	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_NOFITS

**Notes:** OBS = Observed. INJ = Injected. INV = Inverted. SCR = Scrambled.

N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

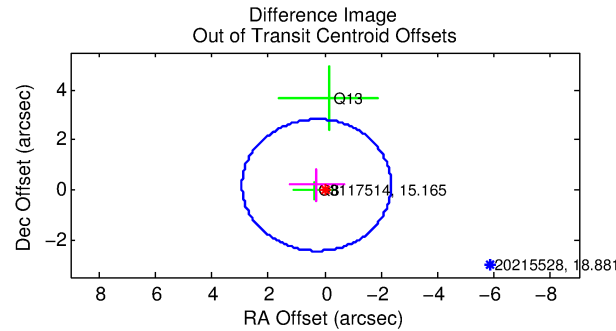
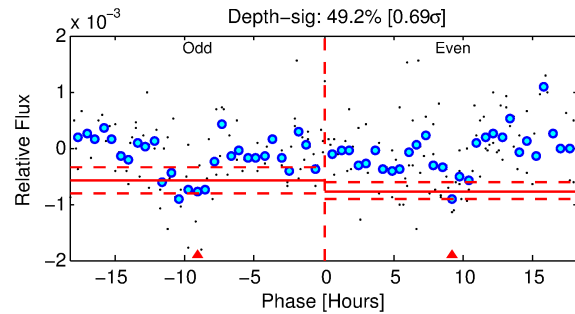
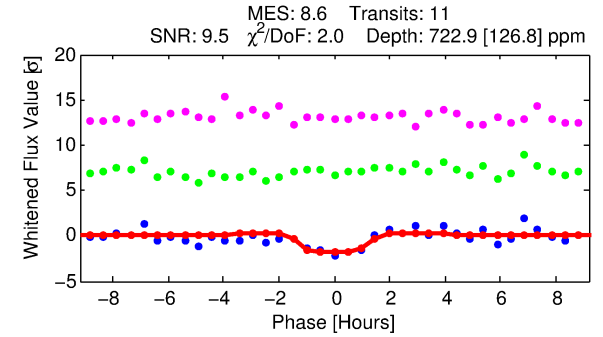
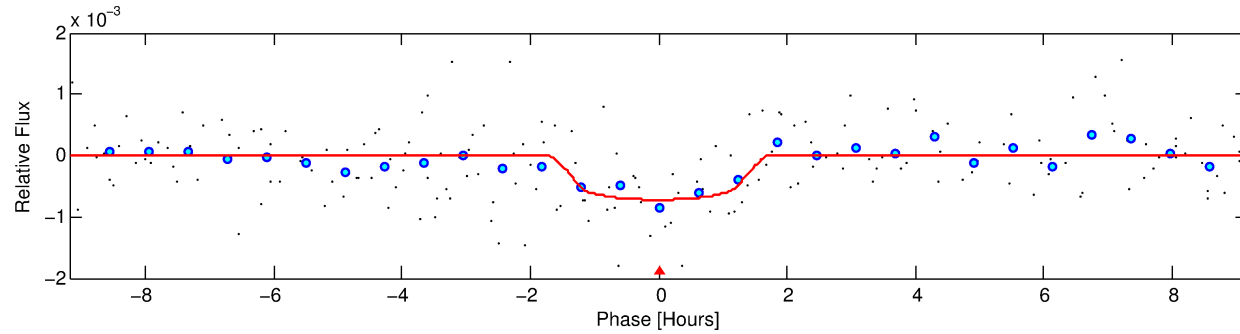
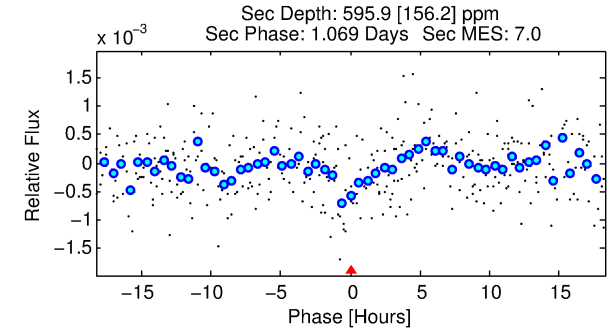
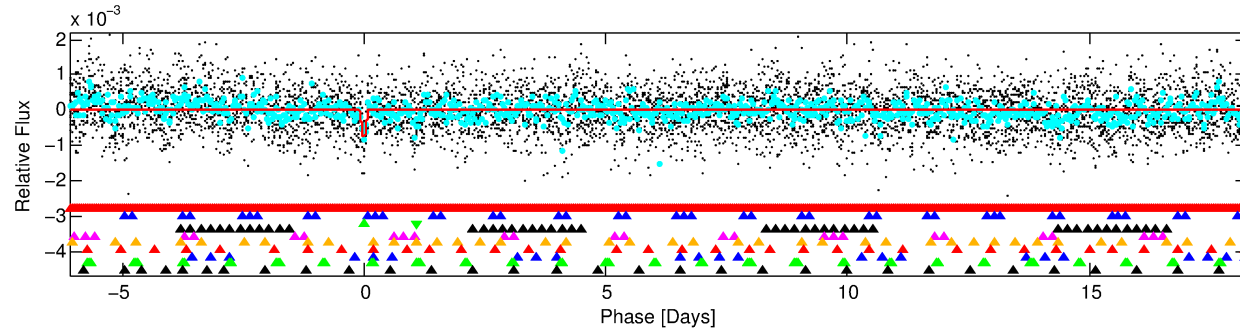
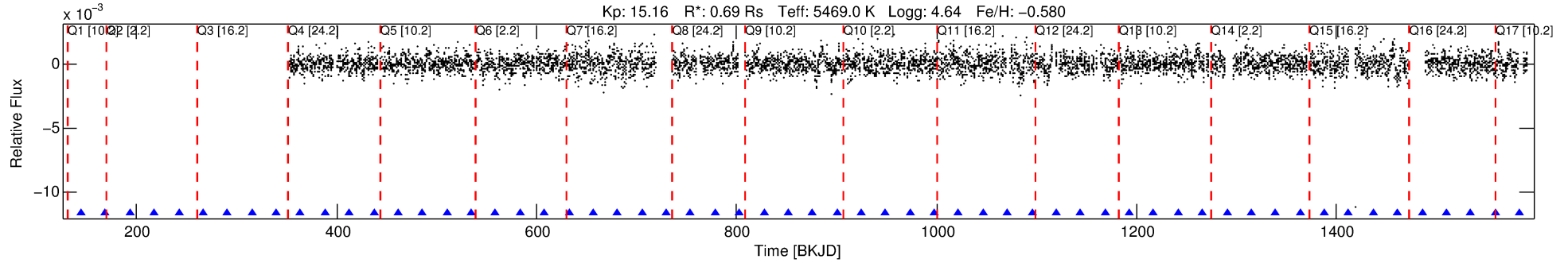
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 003117514-03

No Significant Match Found

# DV One-Page Summary

KIC: 3117514 Candidate: 3 of 10 Period: 24.380 d



## DV Fit Results:

Period = 24.37962 [0.00049] d  
Epoch = 144.6298 [0.0163] BKJD  
Rp/R\* = 0.0268 [0.0506]  
a/R\* = 42.45 [352.37]  
b = 0.75 [4.83]  
Seff = 17.11 [4.14]  
Teq = 519 [31] K  
Rp = 2.03 [3.85] Re  
a = 0.1504 [0.0207] AU  
Ag = 1794.90 [6804.21] [0.26σ]  
Teffp = 5219 [4943] K [0.95σ]

## DV Diagnostic Results:

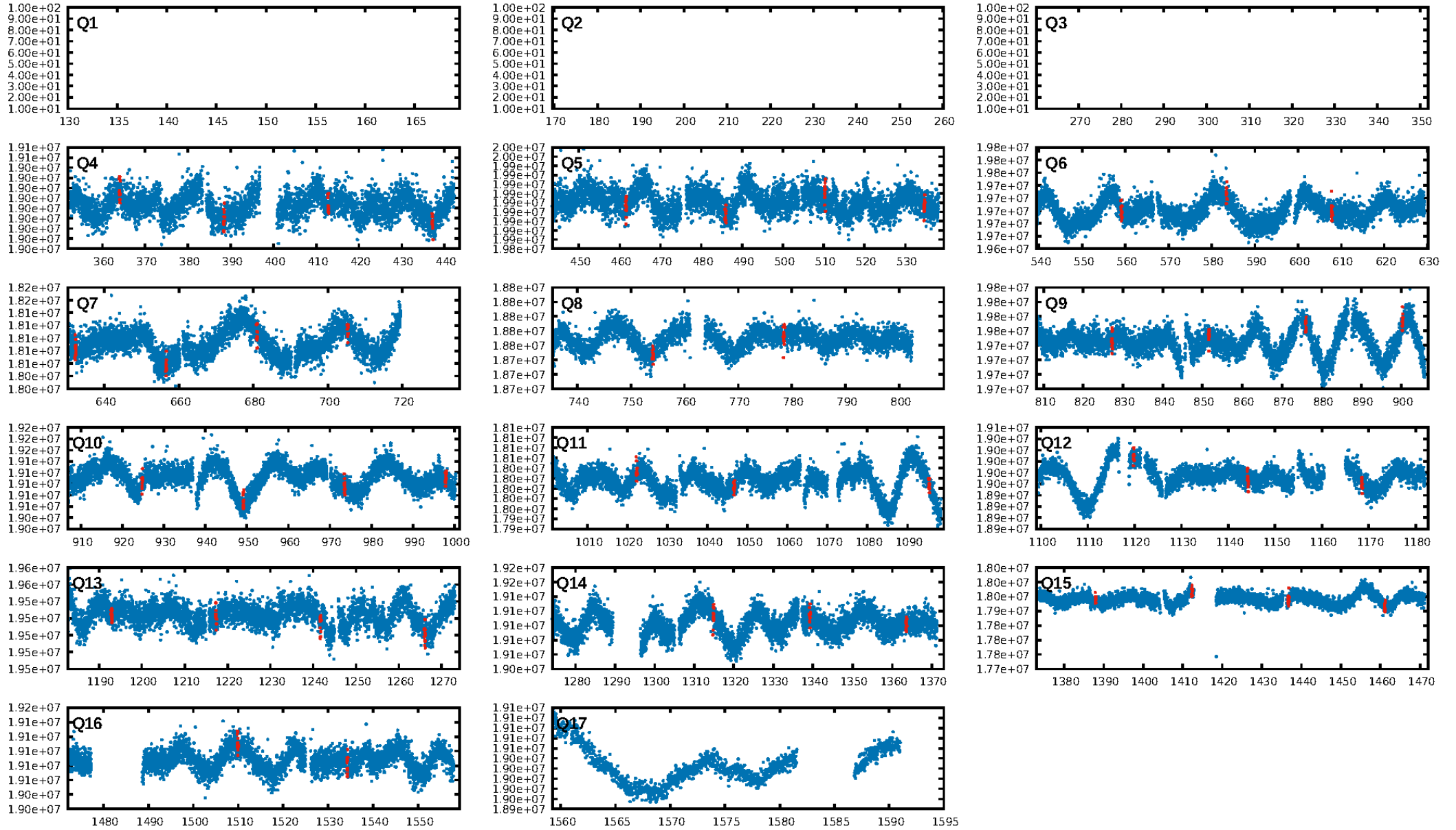
ShortPeriod-sig: 100.0% [27.30σ]  
LongPeriod-sig: 100.0% [39.95σ]  
ModelChiSquare2-sig: 0.4%  
ModelChiSquareGof-sig: 99.8%  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [11/11]  
GhostDiagnostic-chr: -0.1252  
Centroid-sig: 99.1%  
Centroid-so: 3.569 arcsec [9.35σ]  
OotOffset-rm: 0.335 arcsec [0.38σ]  
KicOffset-rm: 7.512 arcsec [4.73σ]  
OotOffset-st: 0/0/1/1 [2]  
KicOffset-st: 1/2/3/1 [7]  
DiffImageQuality-fgm: 0.43 [3/7]  
DiffImageOverlap-fno: 0.38 [5/13]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 06:34:09 Z

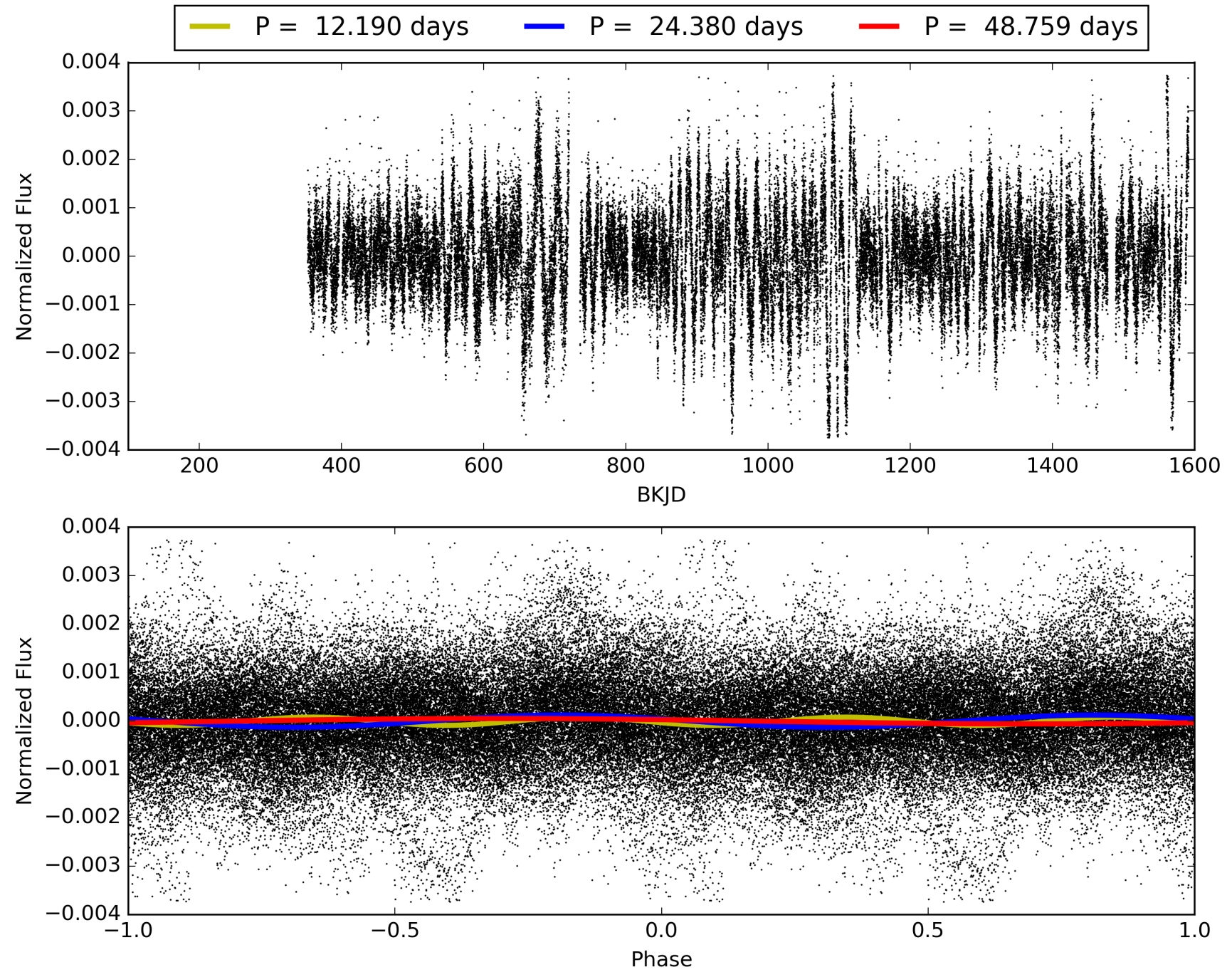
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center



# TCE 003117514-03, PDC Light Curves

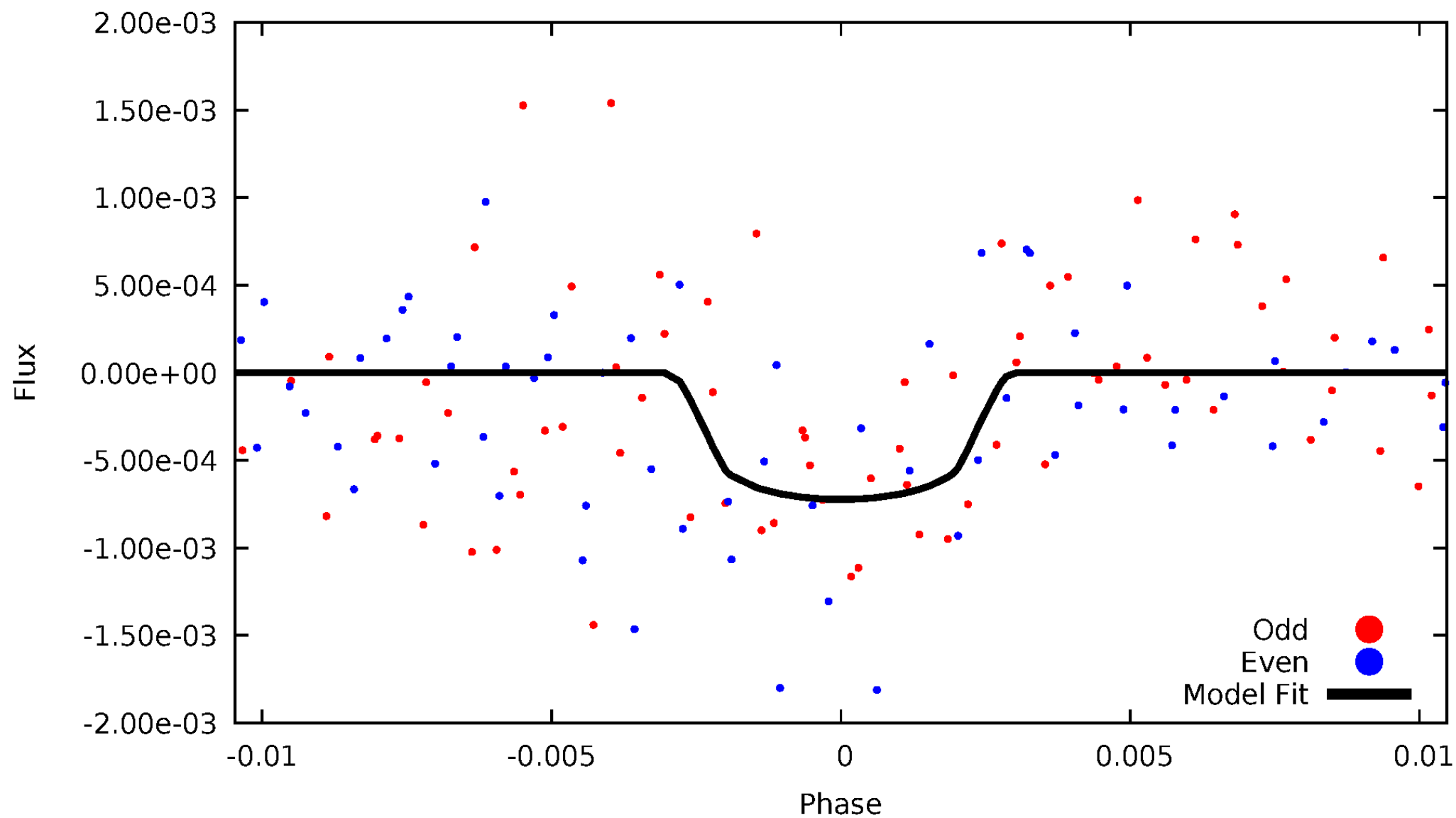


# TCE 003117514-03



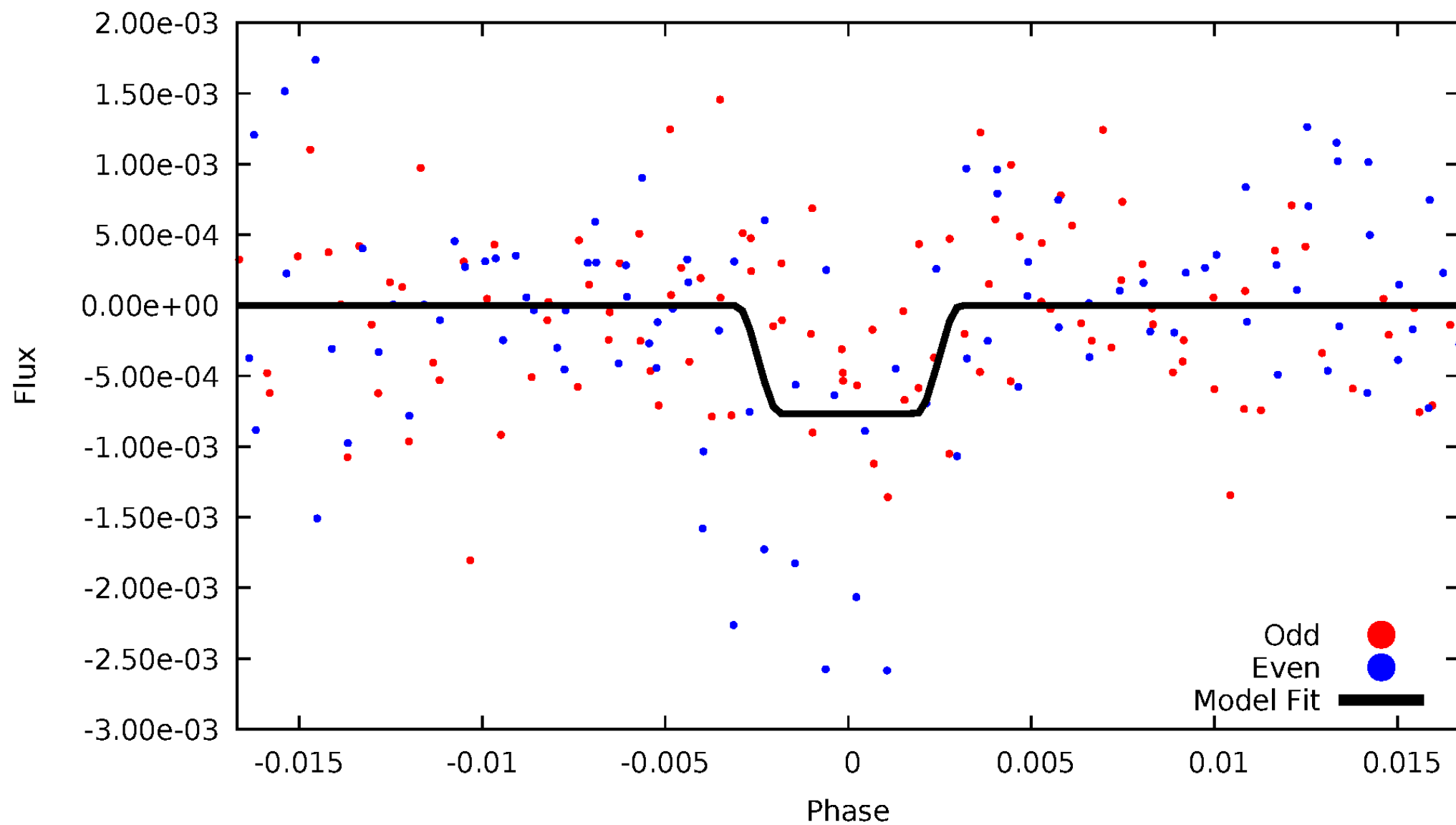
# DV Odd/Even

TCE 003117514-03



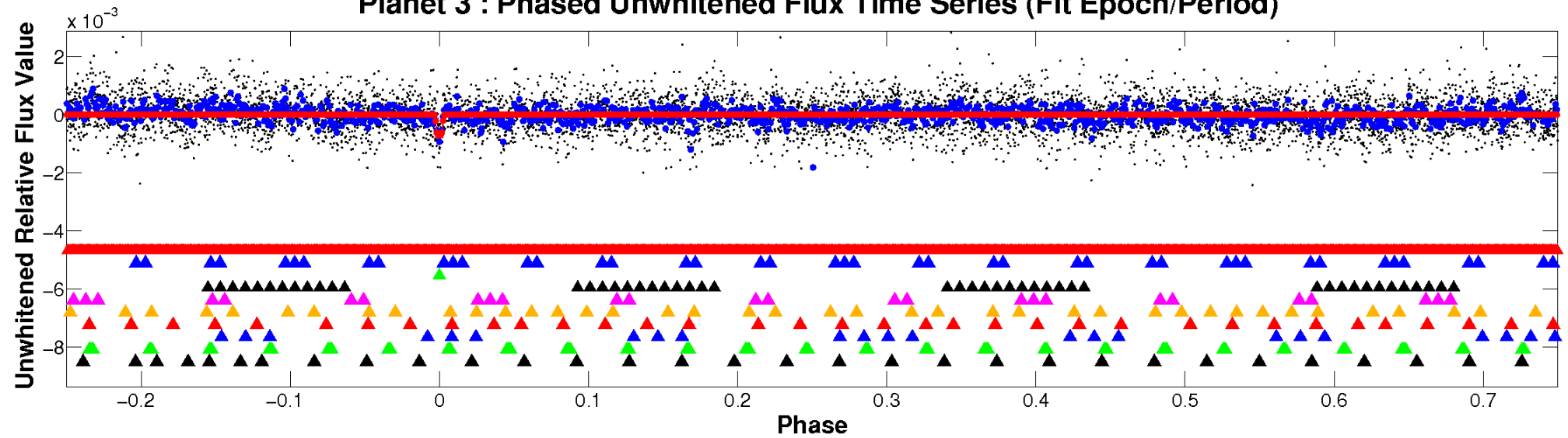
# ALT Odd/Even

TCE 003117514-03

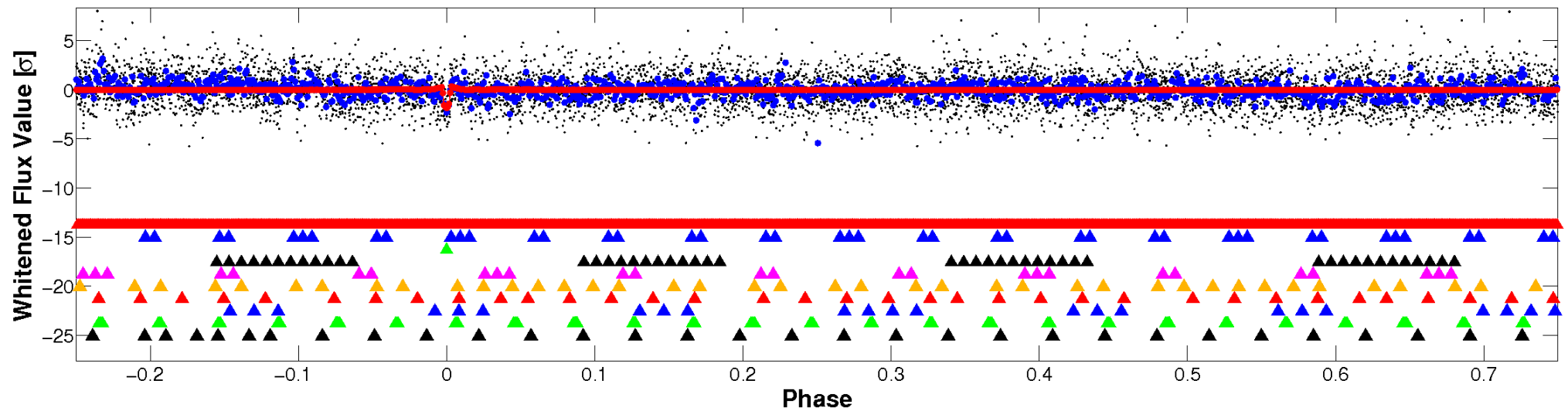


# Non-Whitened Vs. Whitened Light Curve

## Planet 3 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

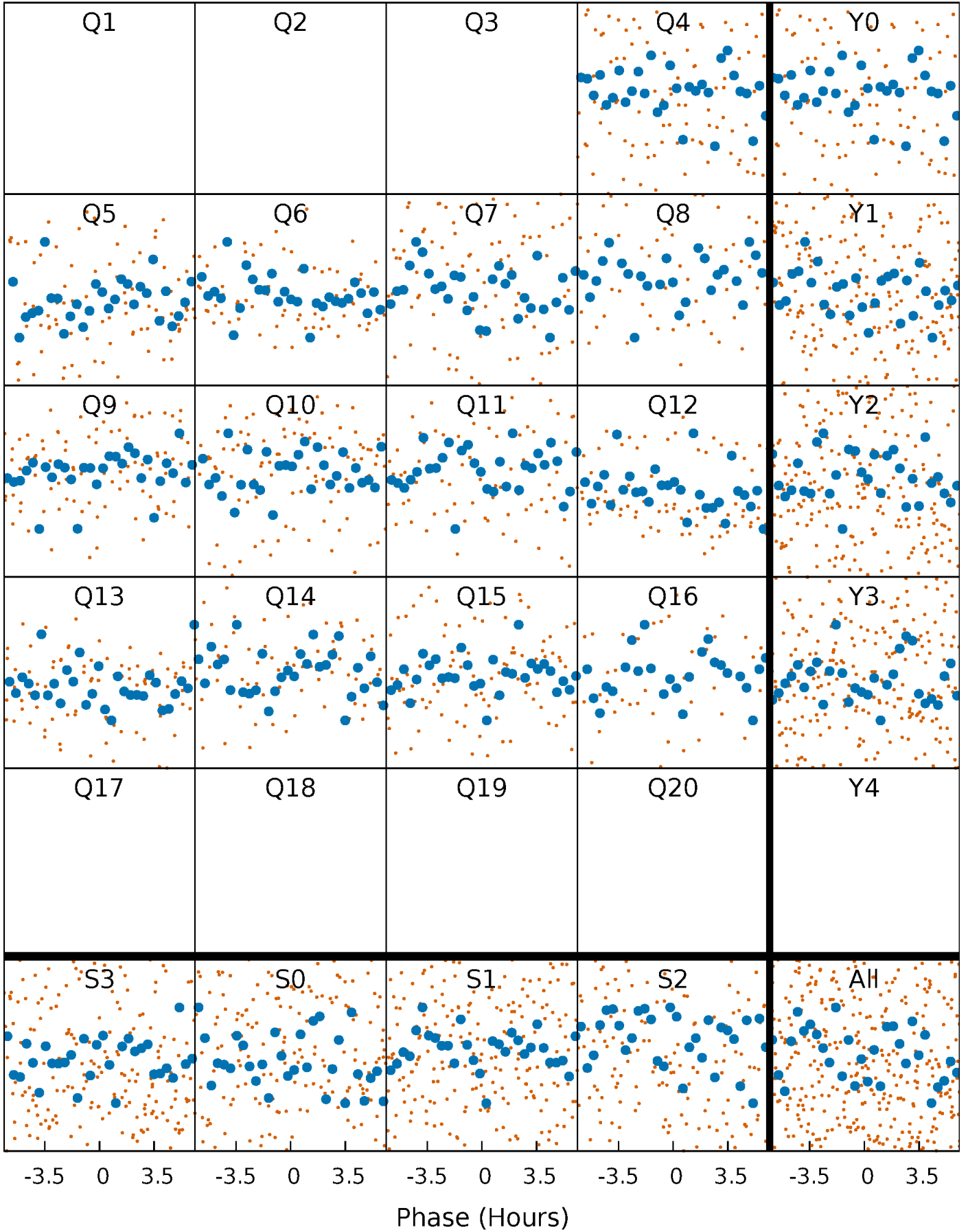


## Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

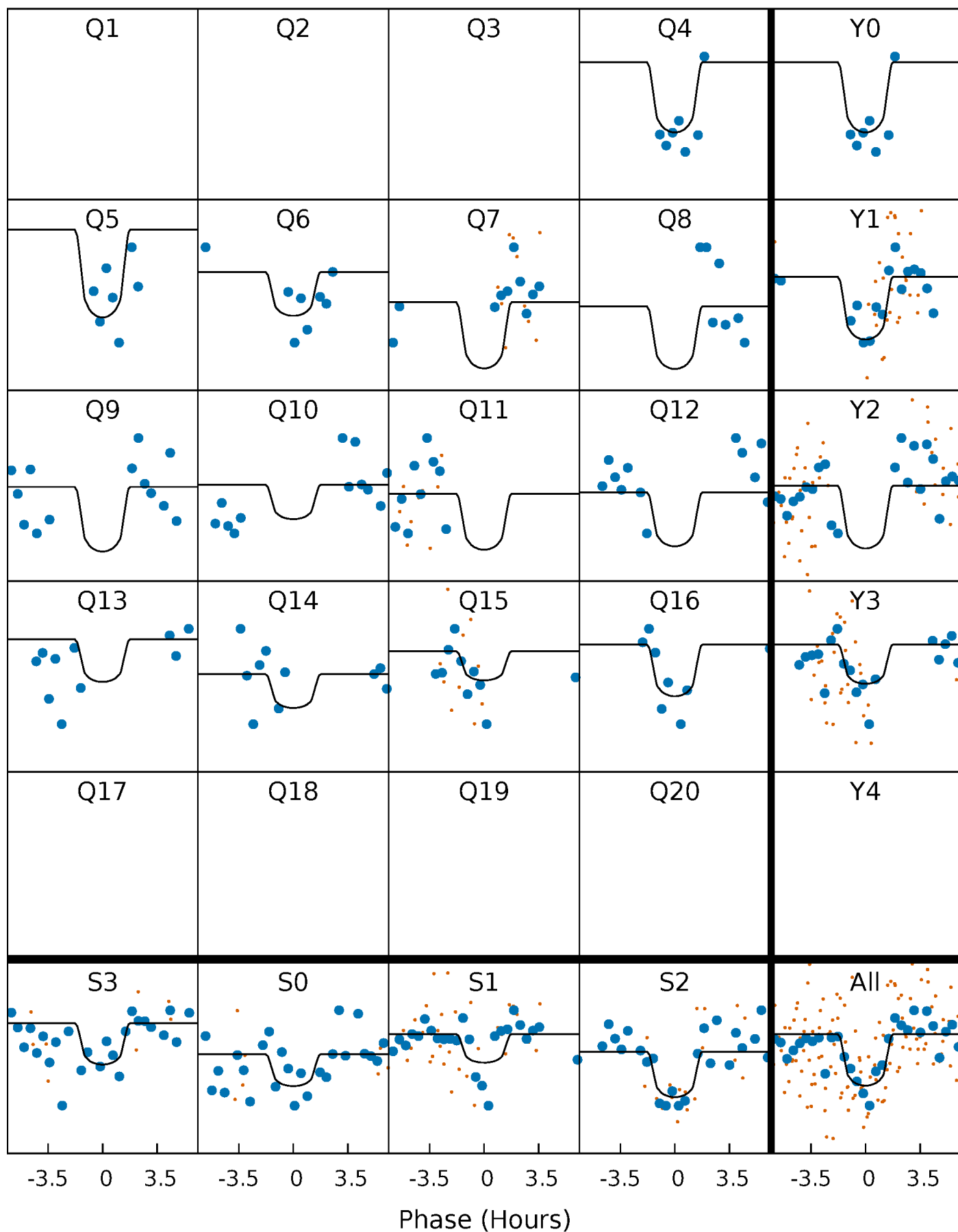
TCE 003117514-03 P= 24.379621 Days  $T_0=144.629800$  (BKJD)





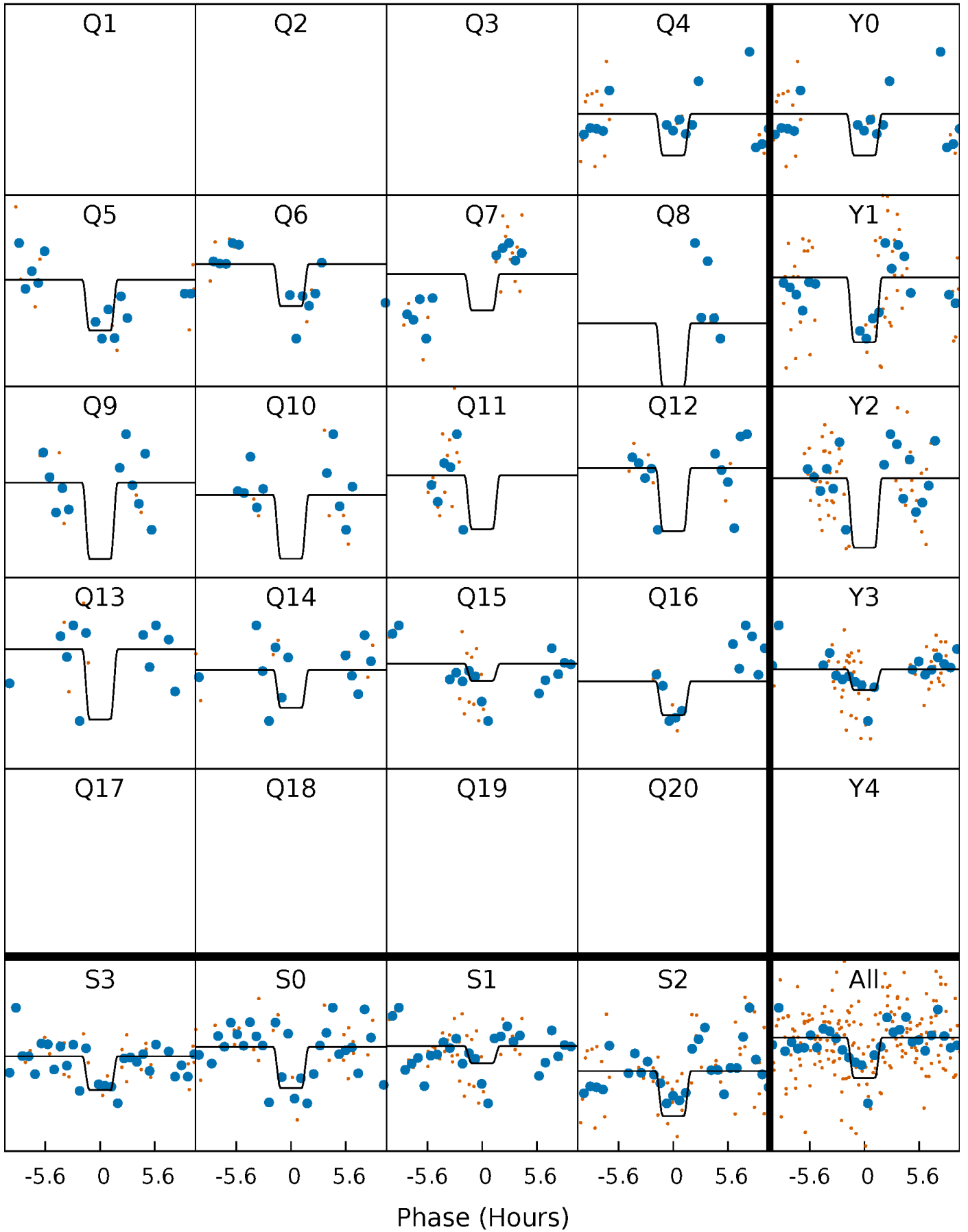
# DV Quarter-Phased Transit Curves

TCE 003117514-03 P= 24.379621 Days  $T_0=144.629800$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

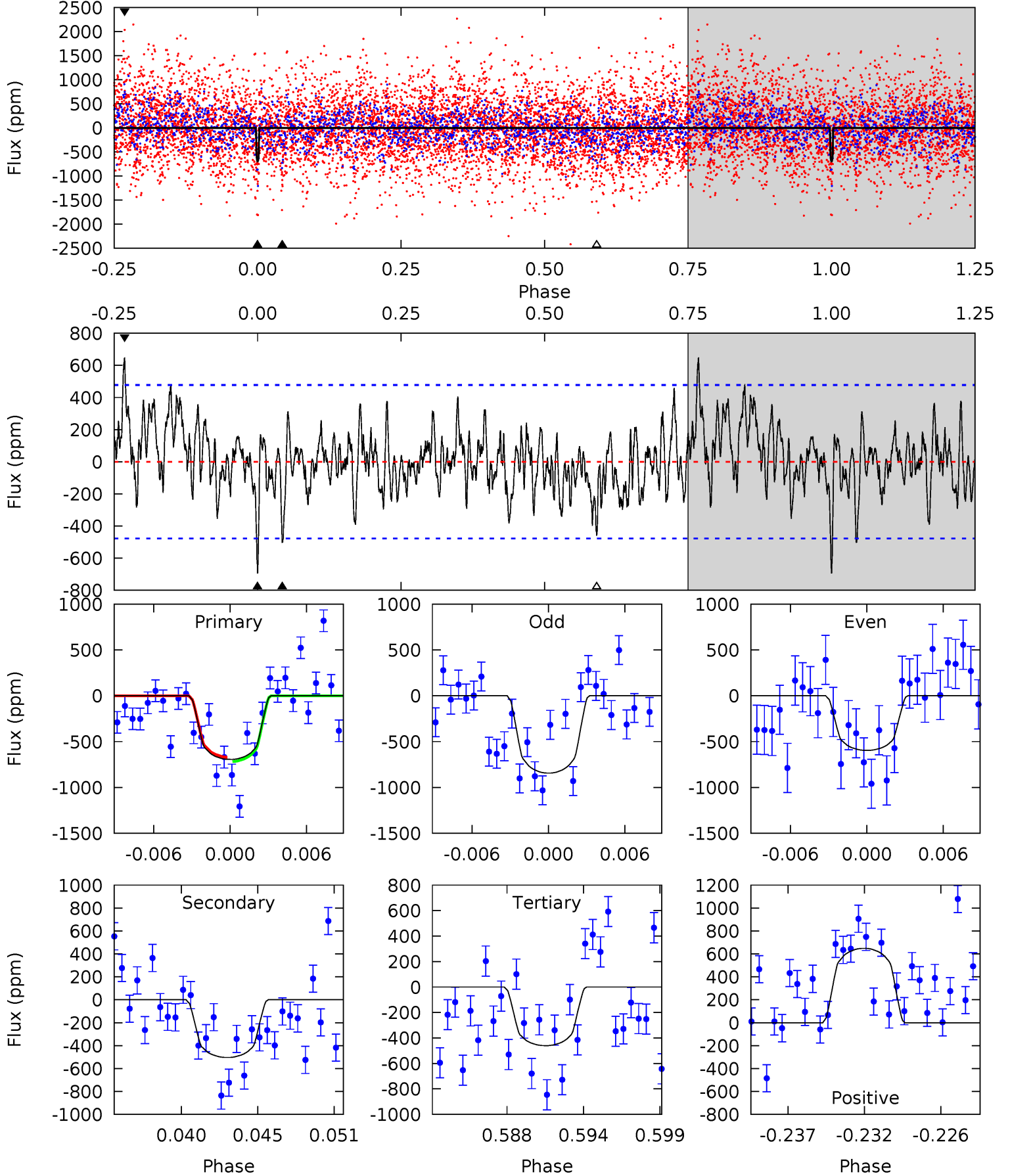
TCE 003117514-03     $P = 24.379932$  Days     $T_0 = 144.602475$  (BKJD)



# DV Model-Shift Uniqueness Test

003117514-03, P = 24.379621 Days, E = 144.629800 Days

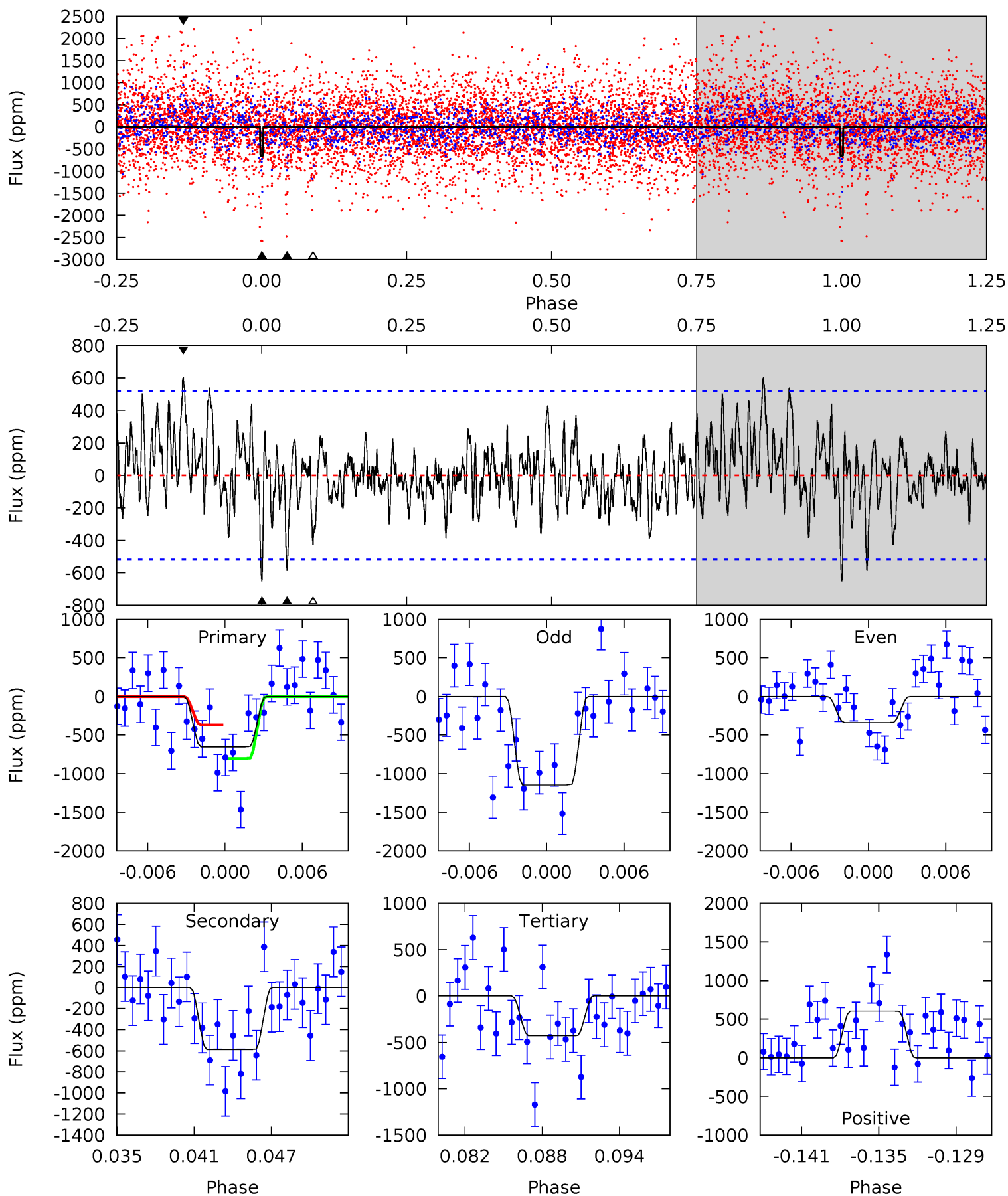
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.46	5.41	4.94	6.97	5.13	2.77	1.76	2.51	0.49	0.46	-1.56	1.31	0.82	0.48	0.25



# Alt Model-Shift Uniqueness Test

003117514-03, P = 24.379932 Days, E = 144.602475 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.44	5.80	4.23	5.97	5.13	2.76	1.60	2.21	0.47	1.57	-0.17	3.86	2.08	0.48	2.13



### Stellar Parameters For KIC 003117514

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5469^{+196}_{-196}$	$4.637^{+0.032}_{-0.104}$	$-0.580^{+0.300}_{-0.300}$	$0.695^{+0.117}_{-0.050}$	$0.778^{+0.073}_{-0.081}$	$3.264^{+0.482}_{-1.044}$
	+4%/-4%	+1%/-2%	+52%/-52%	+17%/-7%	+9%/-10%	+15%/-32%
Source	KIC0	KIC0	KIC0	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology  
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

### Secondary Eclipse Parameters for KIC 003117514-03 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-503 \pm 93$	$3.83^{+3.35}_{-2.56}$	$734^{+35}_{-31}$	$3978^{+2363}_{-760}$	$415^{+3340}_{-302}$
Alt.	$-588 \pm 101$	$3.61^{+3.42}_{-2.52}$	$738^{+32}_{-36}$	$4256^{+2977}_{-908}$	$591^{+5347}_{-450}$

$T_{max}$  = Theoretical Maximum Planetary Temperature

$T_{obs}$  = Observed Planetary Temperature (Assuming  $A=0.3$ )

$A_{obs}$  = Observed Albedo (Assuming  $T=0$ )

If a secondary eclipse is present, the system is likely an EB if  $T_{obs} \gg T_{max}$  AND  $A_{obs} \gg 1.0$

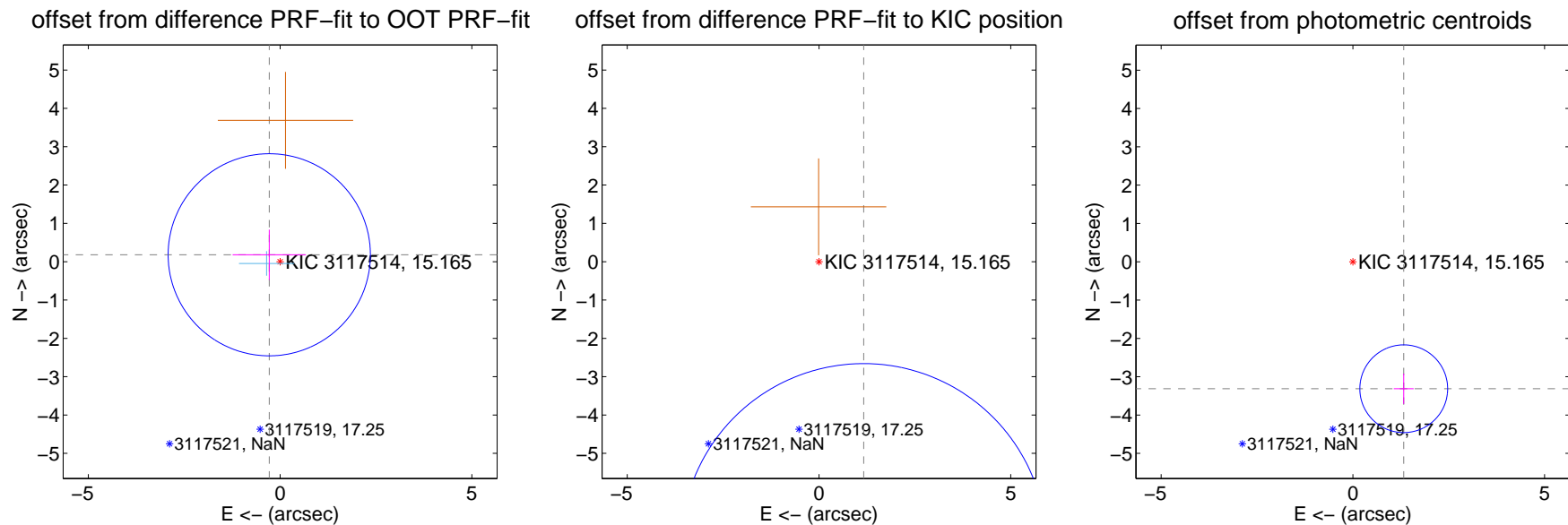
## DV Centroid Data

Supplemental centroid analysis for 003117514-03. Kepler magnitude: 15.16. Transit SNR 9.50

There are 3 quarters with good PRF difference image offsets

The OOT PRF centroid is offset from the target star catalog position by about 2.26 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.335 \pm 0.879$	0.38	$0.283 \pm 0.955$	$0.180 \pm 0.655$
PRF-fit source offset from KIC position	$7.512 \pm 1.588$	4.73	$-1.166 \pm 1.396$	$-7.421 \pm 1.475$
photometric centroid source offset	$3.57 \pm 0.38$	9.35	$-1.33 \pm 0.26$	$-3.31 \pm 0.40$



Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three- $\sigma$ . Red \*: target star. Blue \*: Other stars. Text next to a star gives its KIC ID and kepmag. KIC IDs > 15,000,000 are from the UKIRT catalog.



white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

Q1 no difference image



Q1 no OOT image



Q2 no difference image



Q2 no OOT image



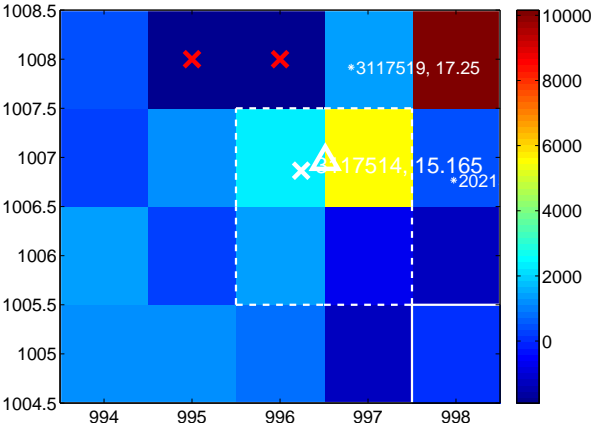
Q3 no difference image



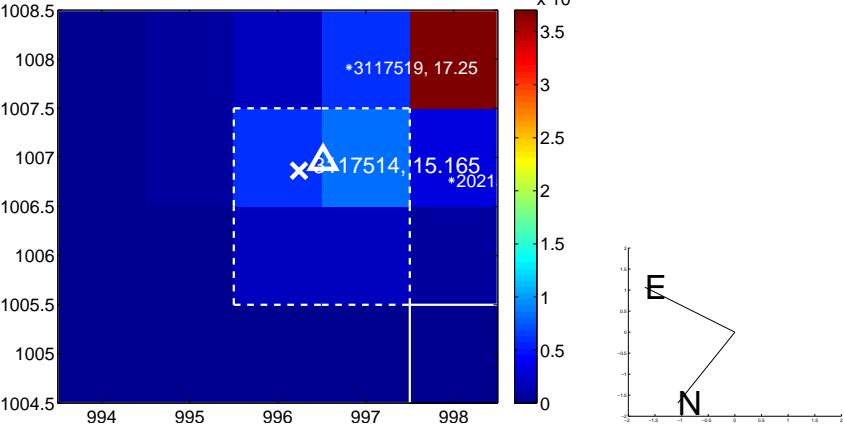
Q3 no OOT image



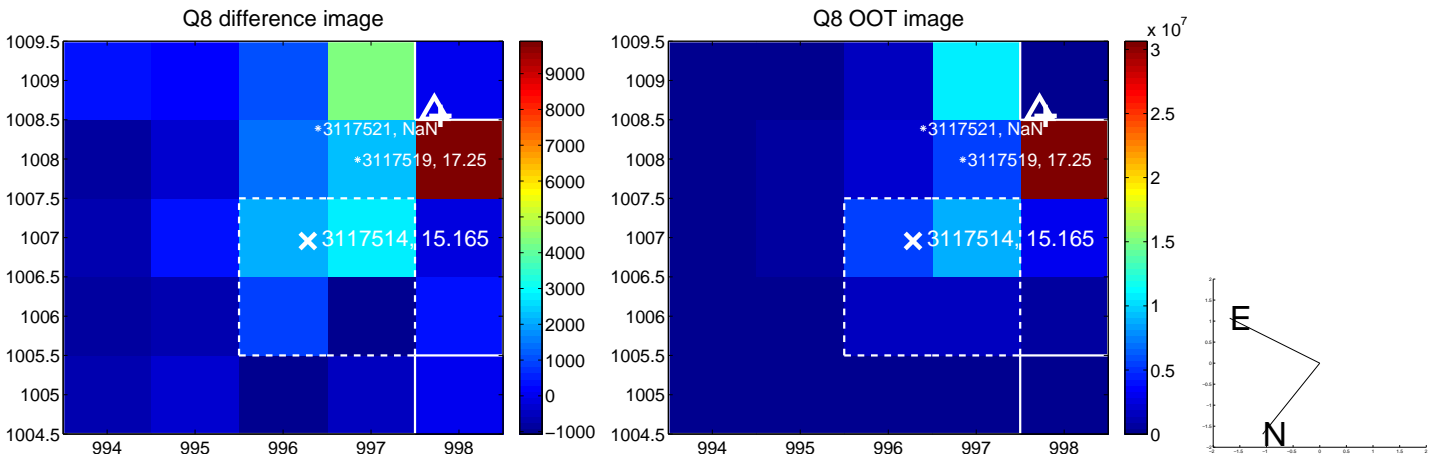
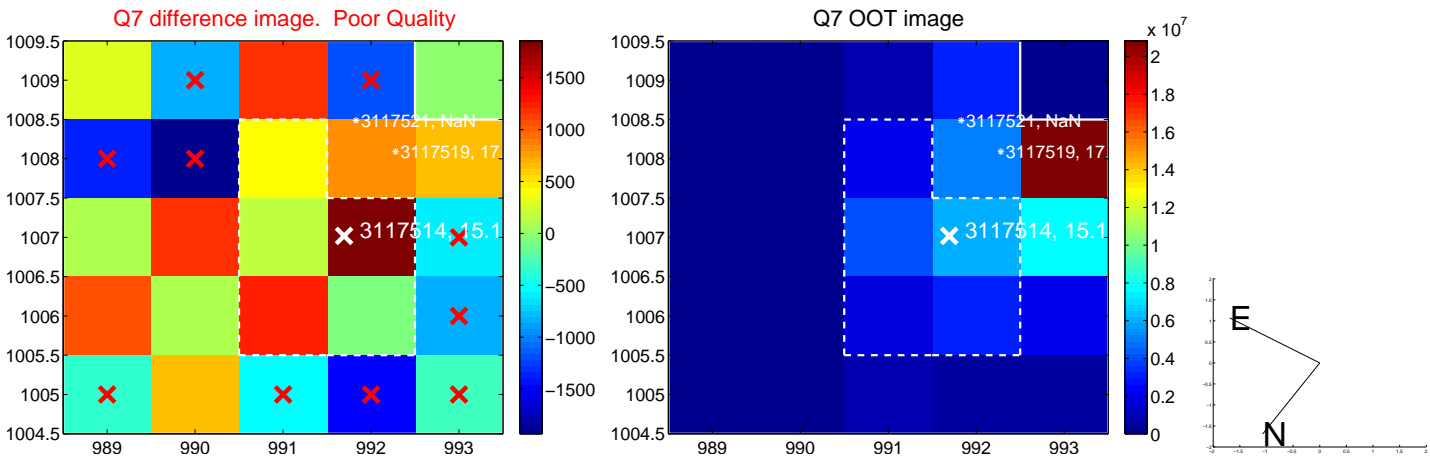
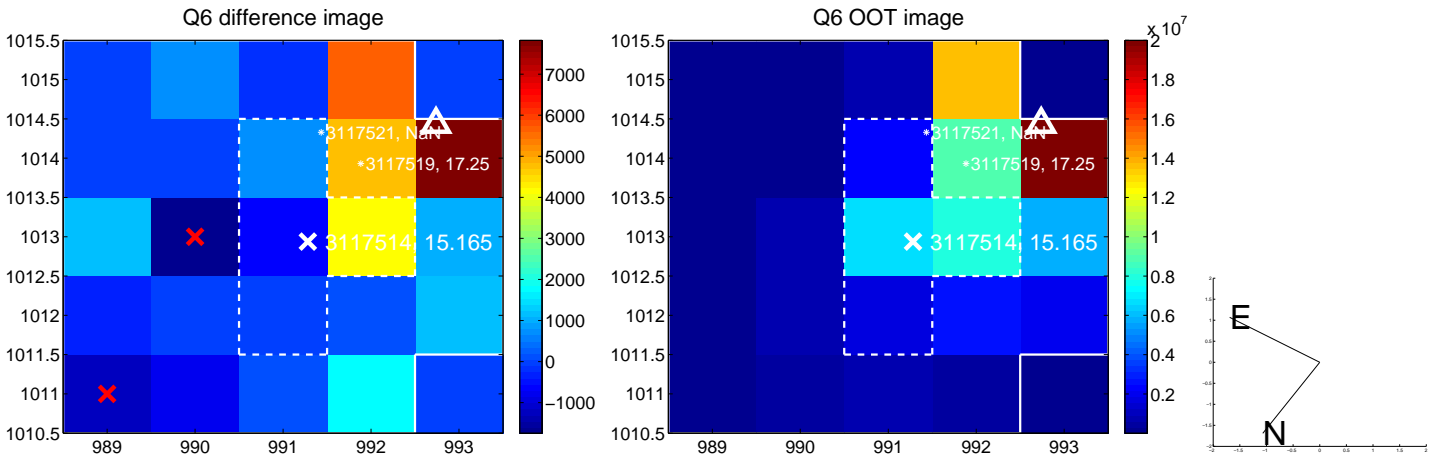
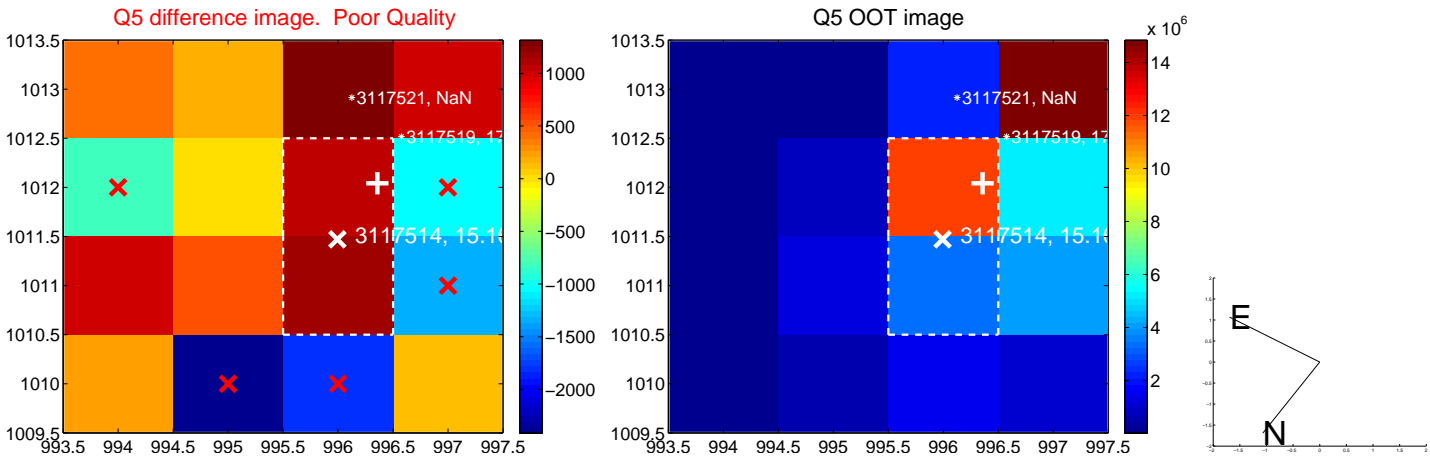
Q4 difference image. Poor Quality



Q4 OOT image

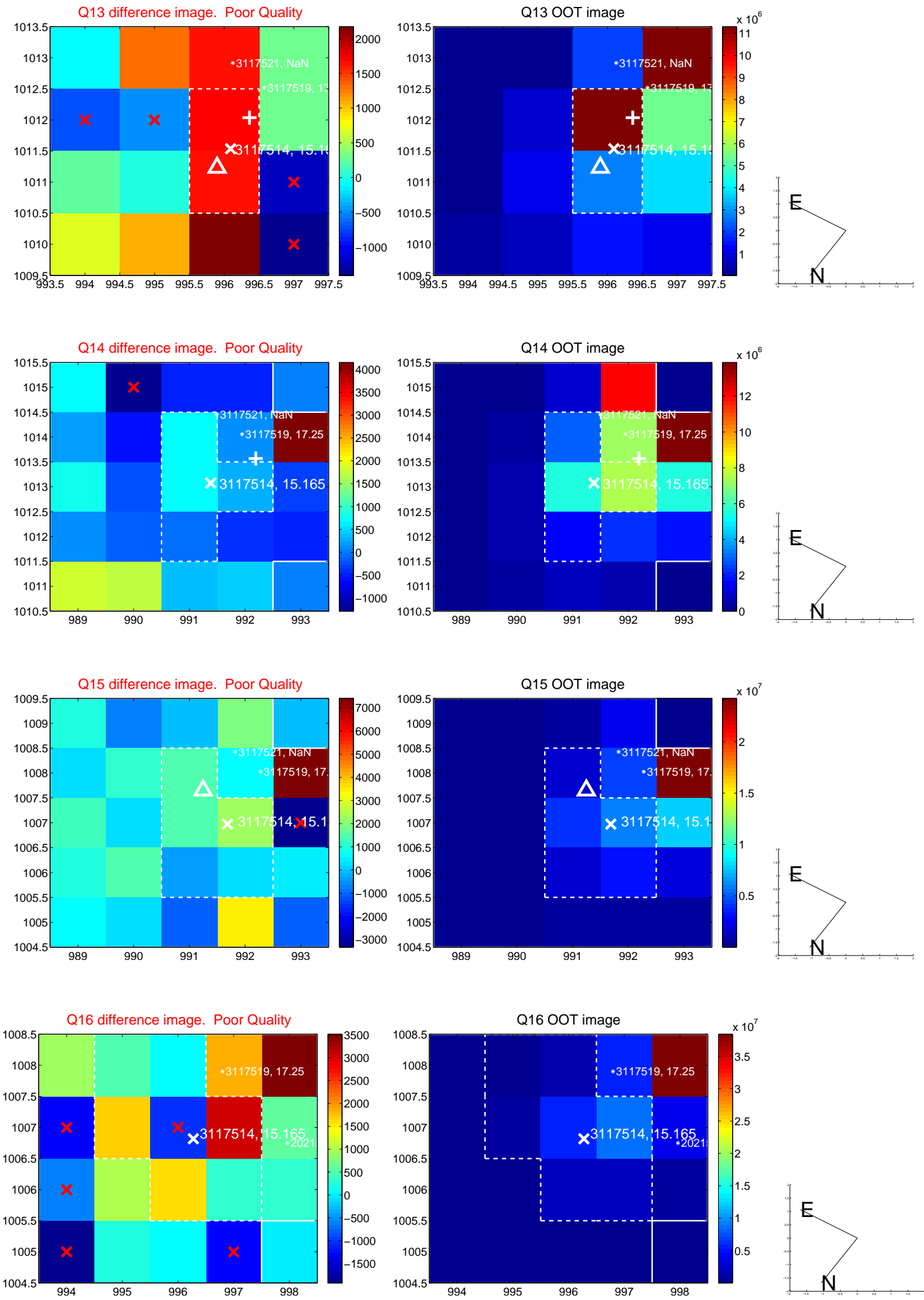


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

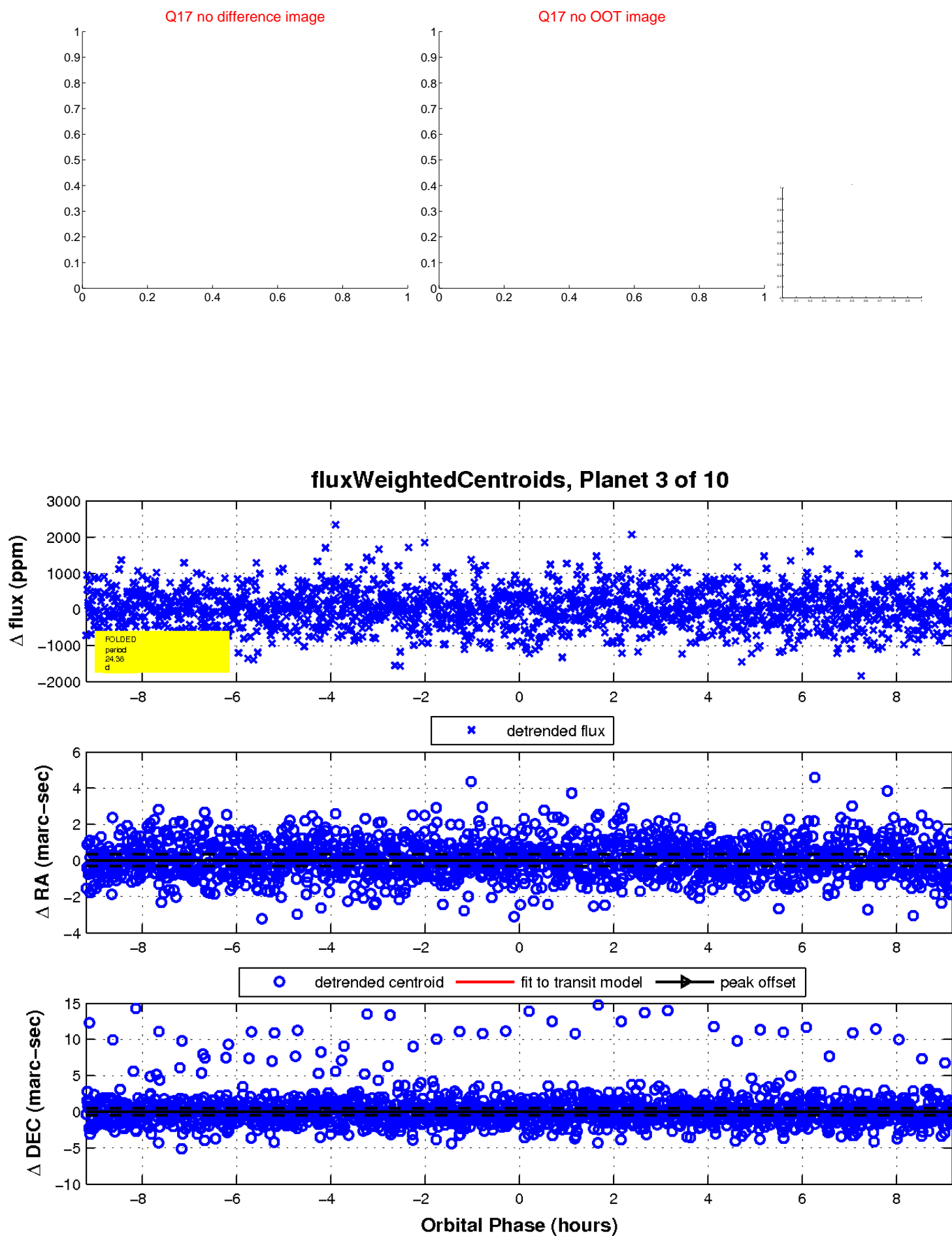




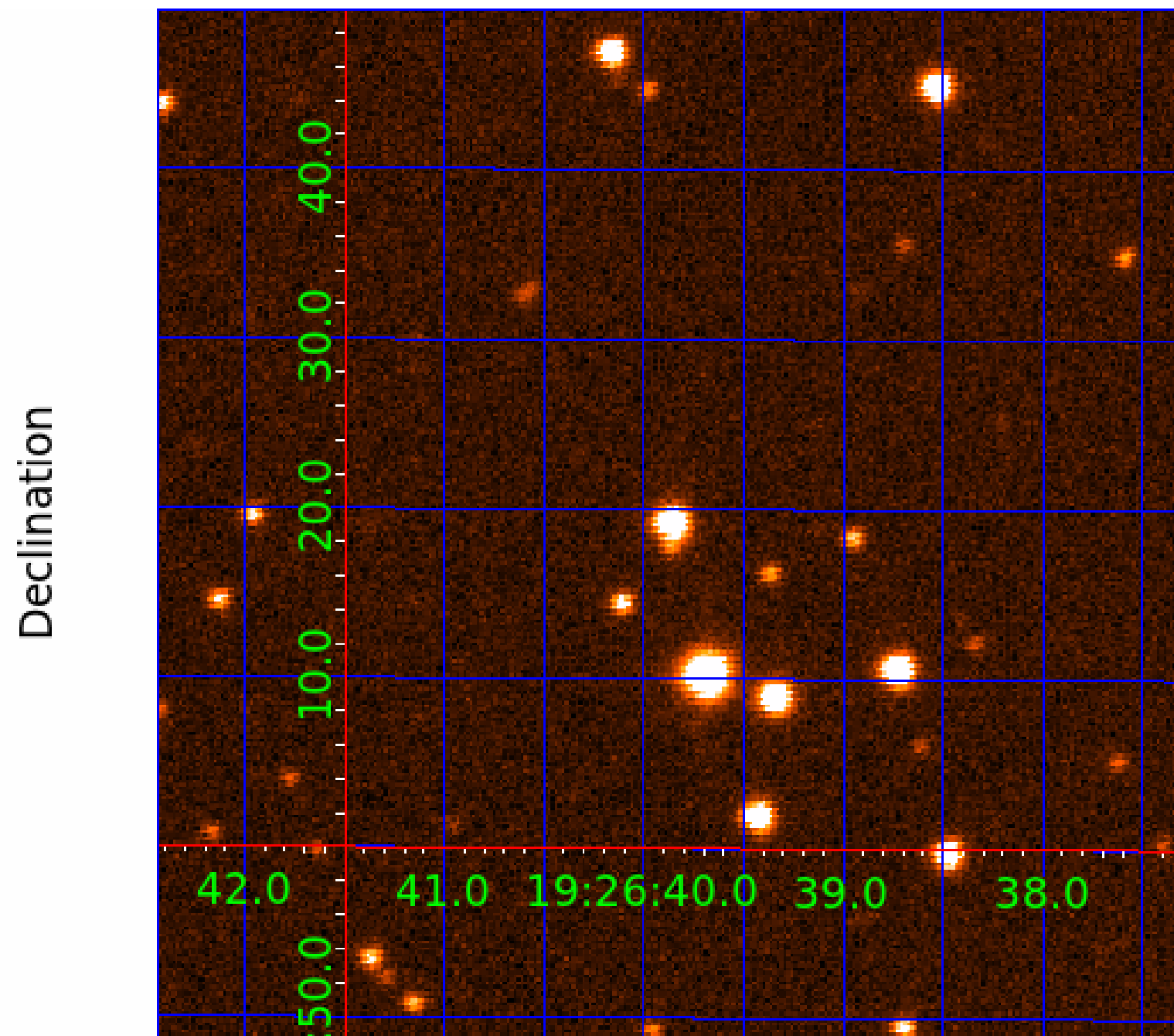
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image



## Q1-17 DR25 TCE Parameters

TCE	Run Type	KOI?	Period (Days)	Epoch (BKJD)	Depth (ppm)	Duration (Hours)	MES	SNR	$R_{\star}$ ( $R_{\odot}$ )	$T_{\star}$ (K)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
003117514-01	OBS	No	1.091938	131.641378	53.4	7.431	8.5	8.6	0.69	5469	0.58	1075.44
003117514-02	OBS	No	33.369509	157.503651	669.9	2.906	10.4	7.1	0.69	5469	1.99	11.26
003117514-03	OBS	No	24.379621	144.629800	722.9	3.062	8.6	9.5	0.69	5469	2.03	17.11
003117514-04	OBS	No	30.423736	143.081360	695.1	1.951	9.0	7.8	0.69	5469	2.08	12.73
003117514-05	OBS	No	57.642773	136.377881	920.7	2.879	8.3	8.8	0.69	5469	2.33	5.43
003117514-06	OBS	No	37.233493	132.857621	1420.0	1.430	8.7	9.1	0.69	5469	2.63	9.73
003117514-07	OBS	No	41.695704	159.649434	657.5	3.150	8.3	7.7	0.69	5469	2.12	8.36
003117514-08	OBS	No	62.634001	187.247617	761.8	3.290	8.2	7.4	0.69	5469	2.25	4.86
003117514-09	OBS	No	17.554198	145.730643	403.9	5.160	8.6	8.0	0.69	5469	1.62	26.51
003117514-10	OBS	No	47.900949	141.379946	1639.1	2.000	8.1	-1.0	0.69	5469	2.79	6.95

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003117514-01	OBS	FP	0.00	1	0	1	0	LPP_DV—LPP_ALT—CENT_RESOLVED_OFFSET—HALO_GHOST
003117514-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
003117514-03	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_RESOLVED_OFFSET—HALO_GHOST
003117514-04	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_RESOLVED_OFFSET
003117514-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
003117514-06	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_DV—CENT_FEW_DIFFS
003117514-07	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_RESOLVED_OFFSET
003117514-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
003117514-09	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_RESOLVED_OFFSET
003117514-10	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_NOFITS

**Notes:** OBS = Observed. INJ = Injected. INV = Inverted. SCR = Scrambled.

N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

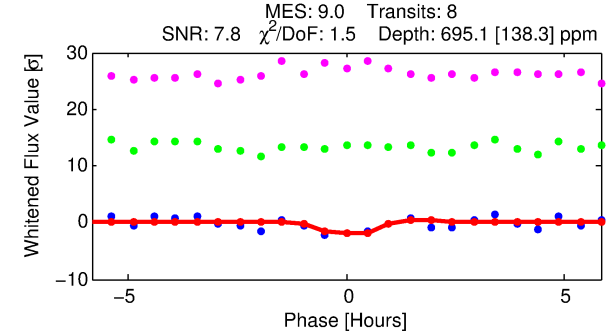
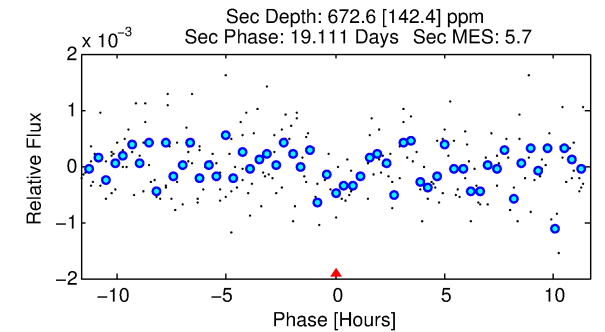
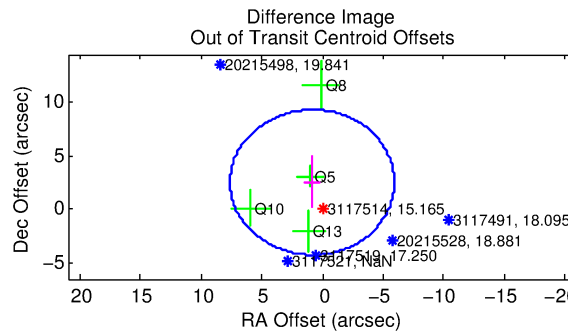
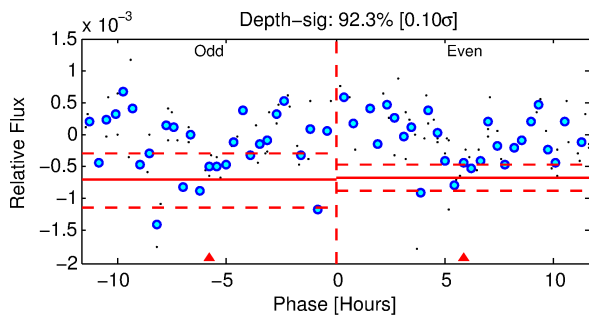
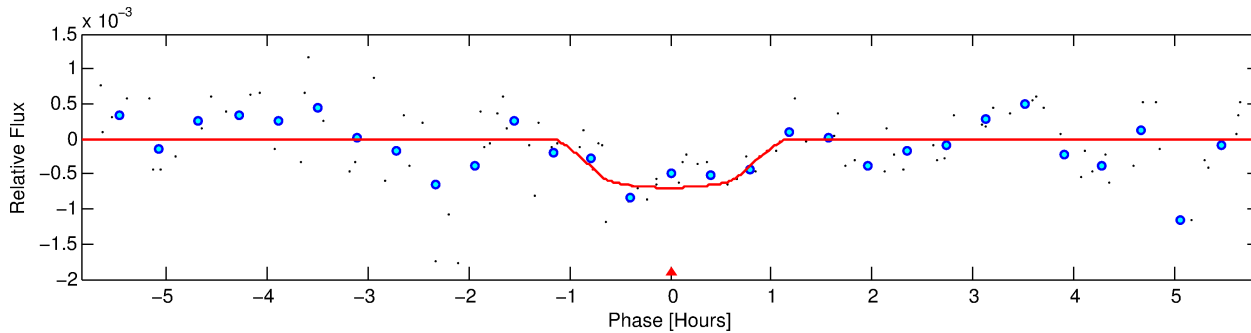
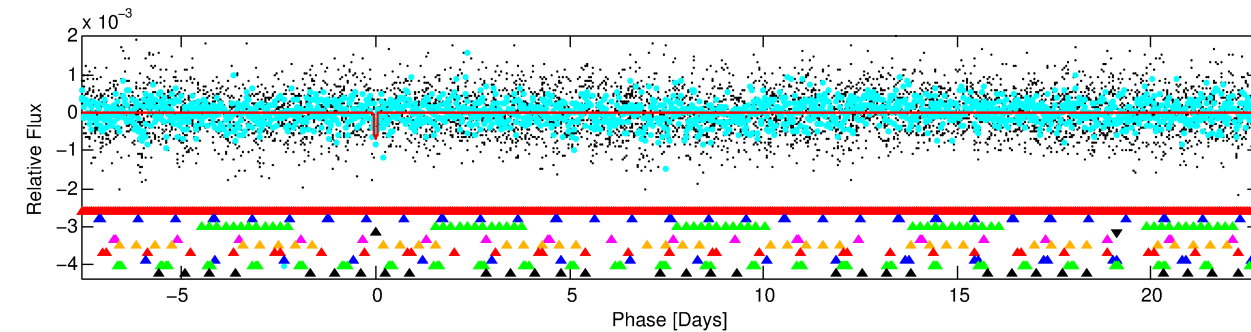
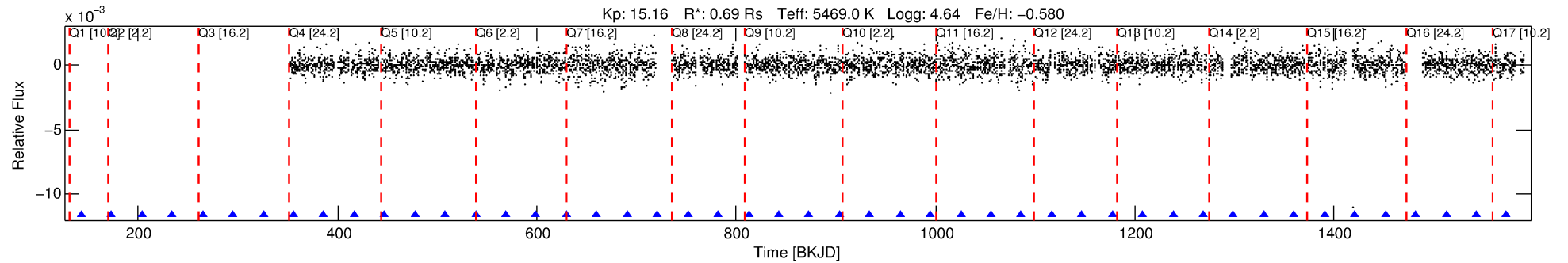
Ephemeris Match Information For 003117514-04

No Significant Match Found



# DV One-Page Summary

KIC: 3117514 Candidate: 4 of 10 Period: 30.424 d



## DV Fit Results:

Period = 30.42374 [0.00039] d  
Epoch = 143.0814 [0.0099] BKJD  
Rp/R\* = 0.0274 [0.0262]  
a/R\* = 70.82 [296.35]  
b = 0.84 [1.52]  
Seff = 12.73 [3.08]  
Teq = 482 [29] K  
Rp = 2.08 [2.02] Re  
a = 0.1744 [0.0240] AU  
Ag = 2597.47 [5014.96] [0.52 $\sigma$ ]  
Teffp = 5317 [2560] K [1.89 $\sigma$ ]

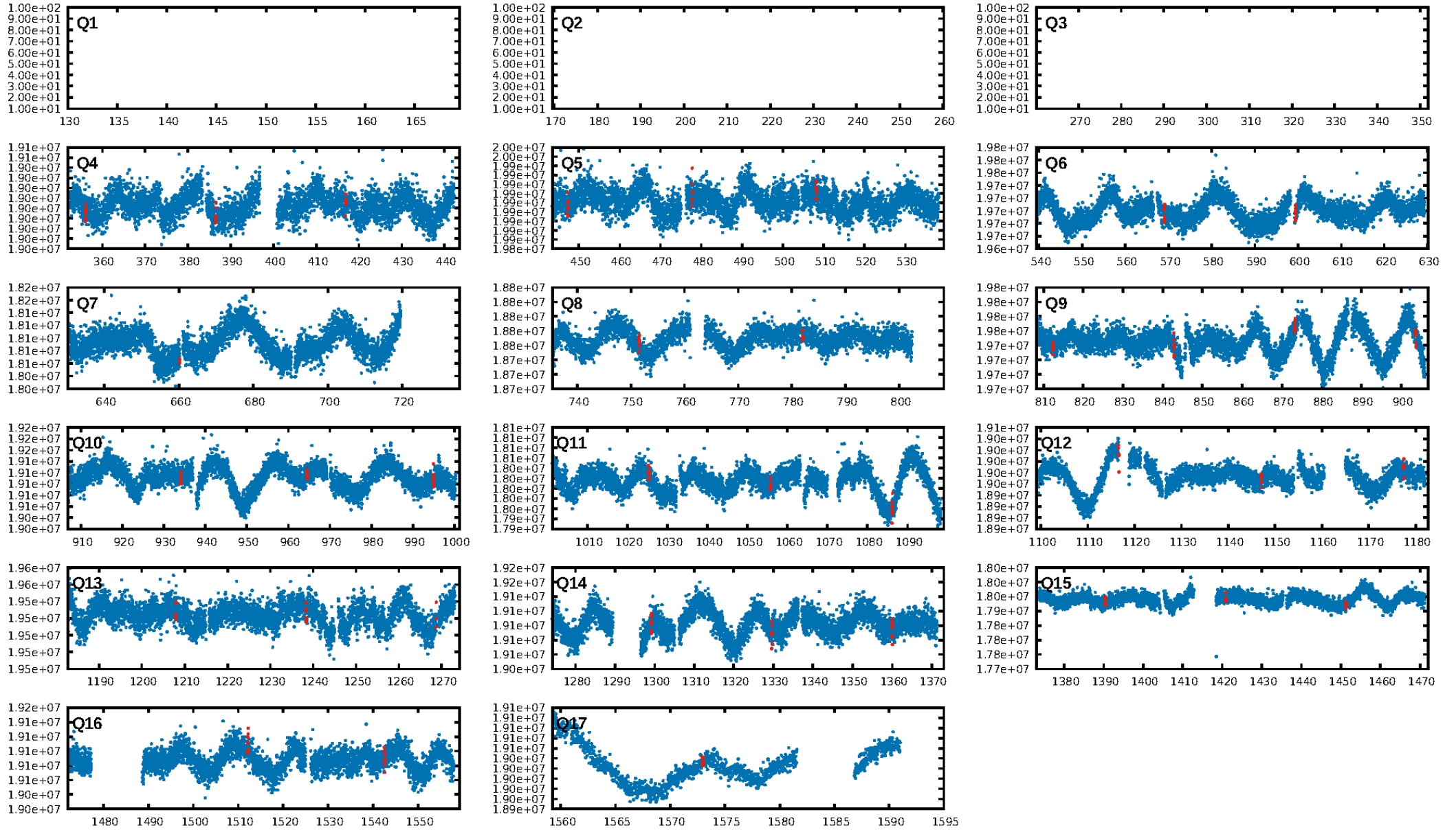
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [39.95 $\sigma$ ]  
LongPeriod-sig: 100.0% [20.20 $\sigma$ ]  
ModelChiSquare2-sig: 72.1%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [8/8]  
GhostDiagnostic-chr: -0.4525  
Centroid-sig: 66.7%  
Centroid-so: 3.482 arcsec [6.54 $\sigma$ ]  
OotOffset-rm: 2.667 arcsec [1.18 $\sigma$ ]  
KicOffset-rm: 1.130 arcsec [1.17 $\sigma$ ]  
OotOffset-st: 1/0/1/2 [4]  
KicOffset-st: 2/1/3/2 [8]  
DiffImageQuality-fgm: 0.00 [0/8]  
DiffImageOverlap-fno: 0.54 [7/13]

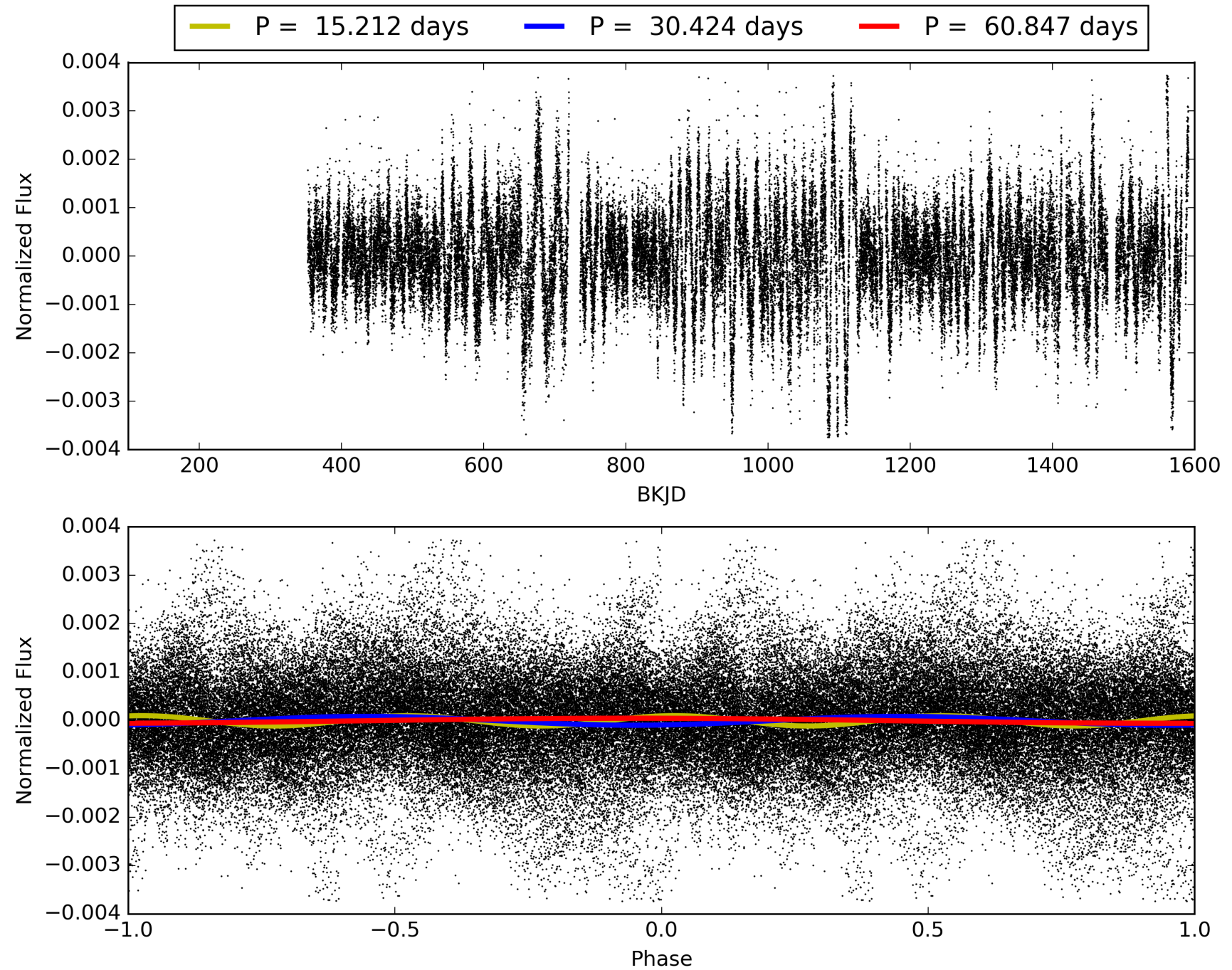
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 06:34:12 Z

This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 003117514-04, PDC Light Curves

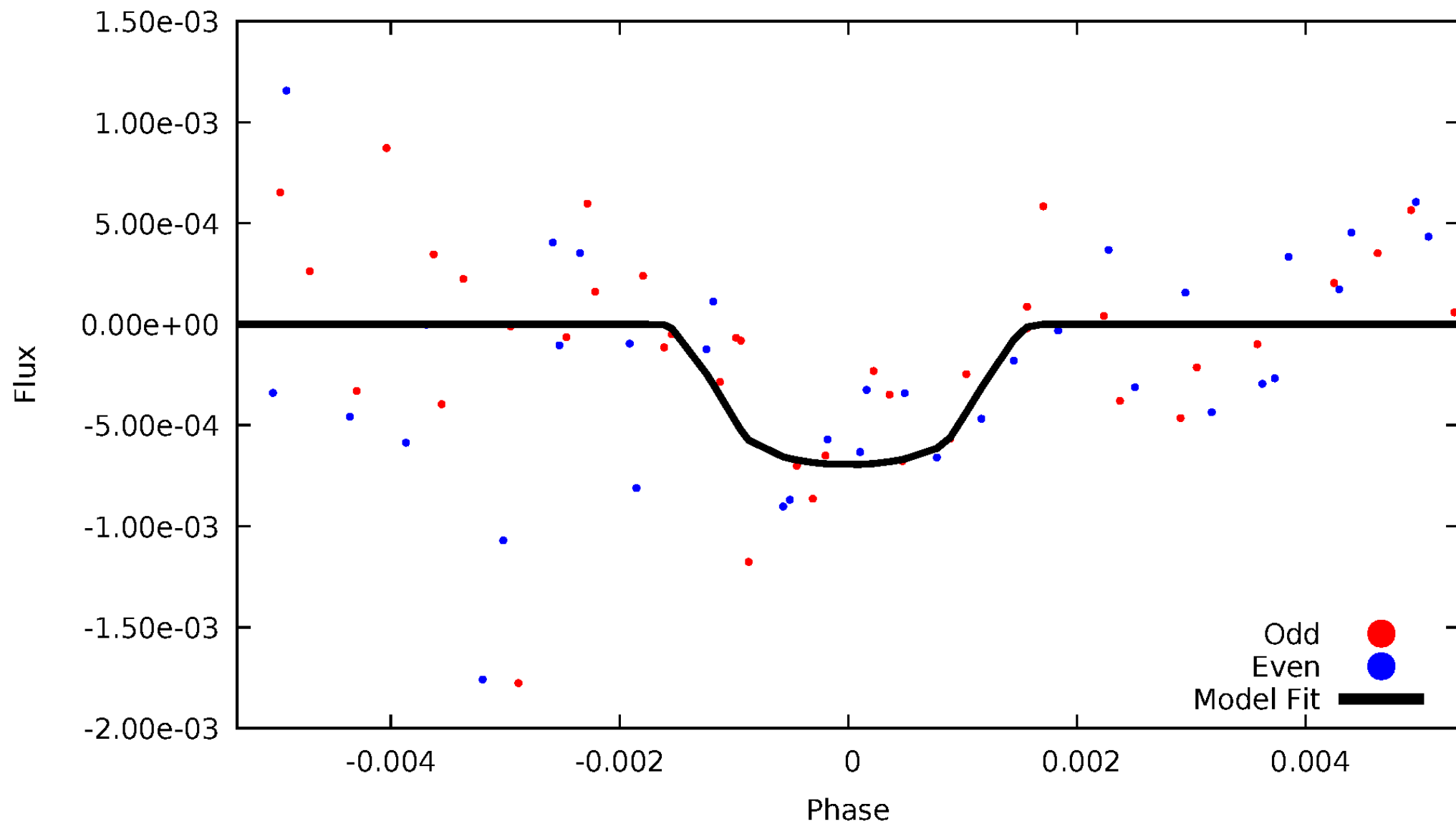


# TCE 003117514-04



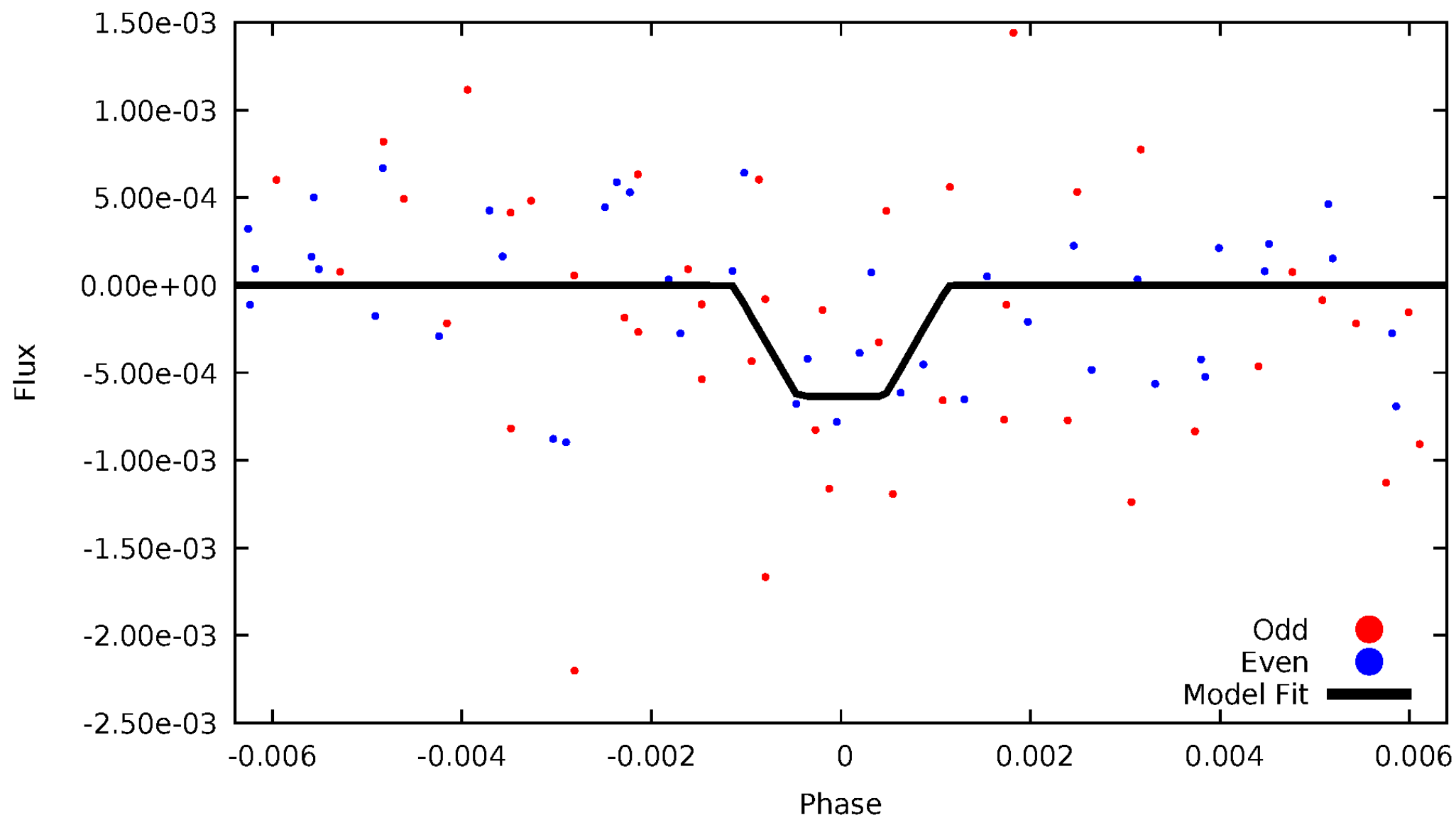
# DV Odd/Even

TCE 003117514-04



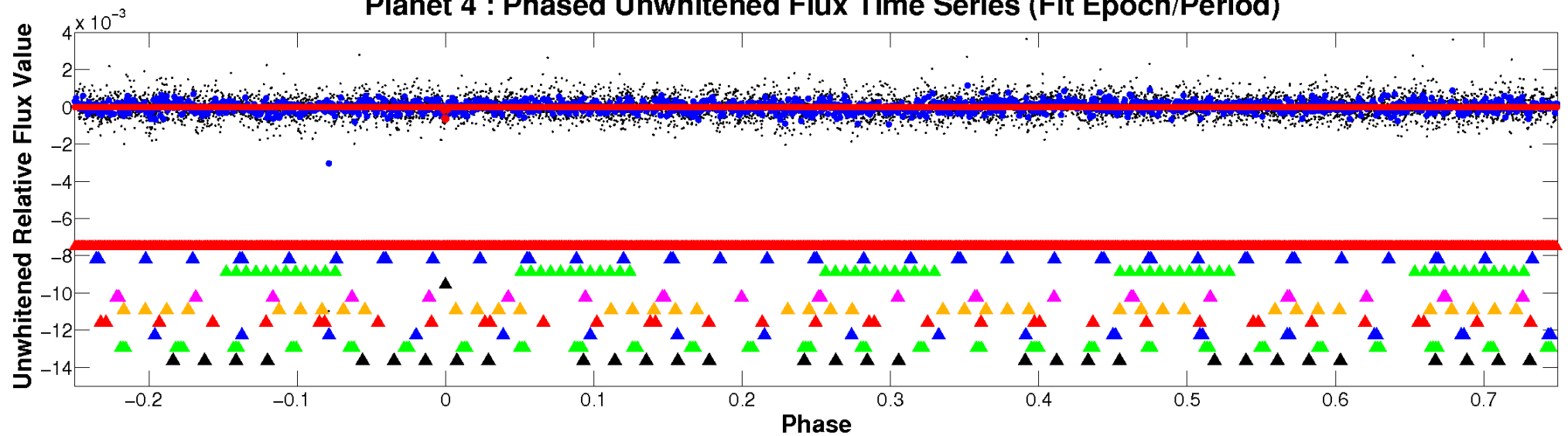
# ALT Odd/Even

TCE 003117514-04

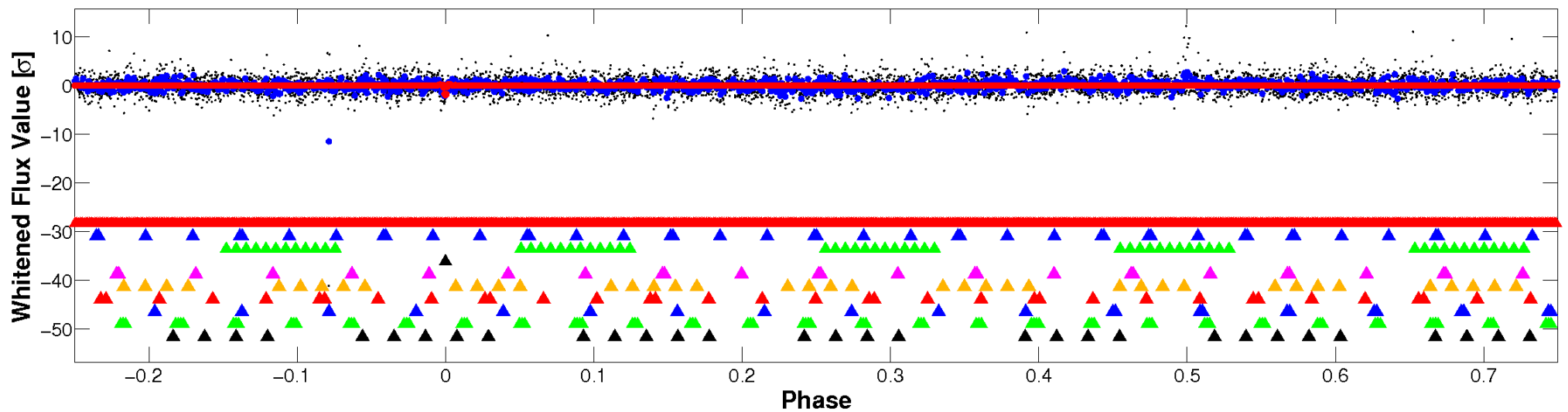


# Non-Whitened Vs. Whitened Light Curve

## Planet 4 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

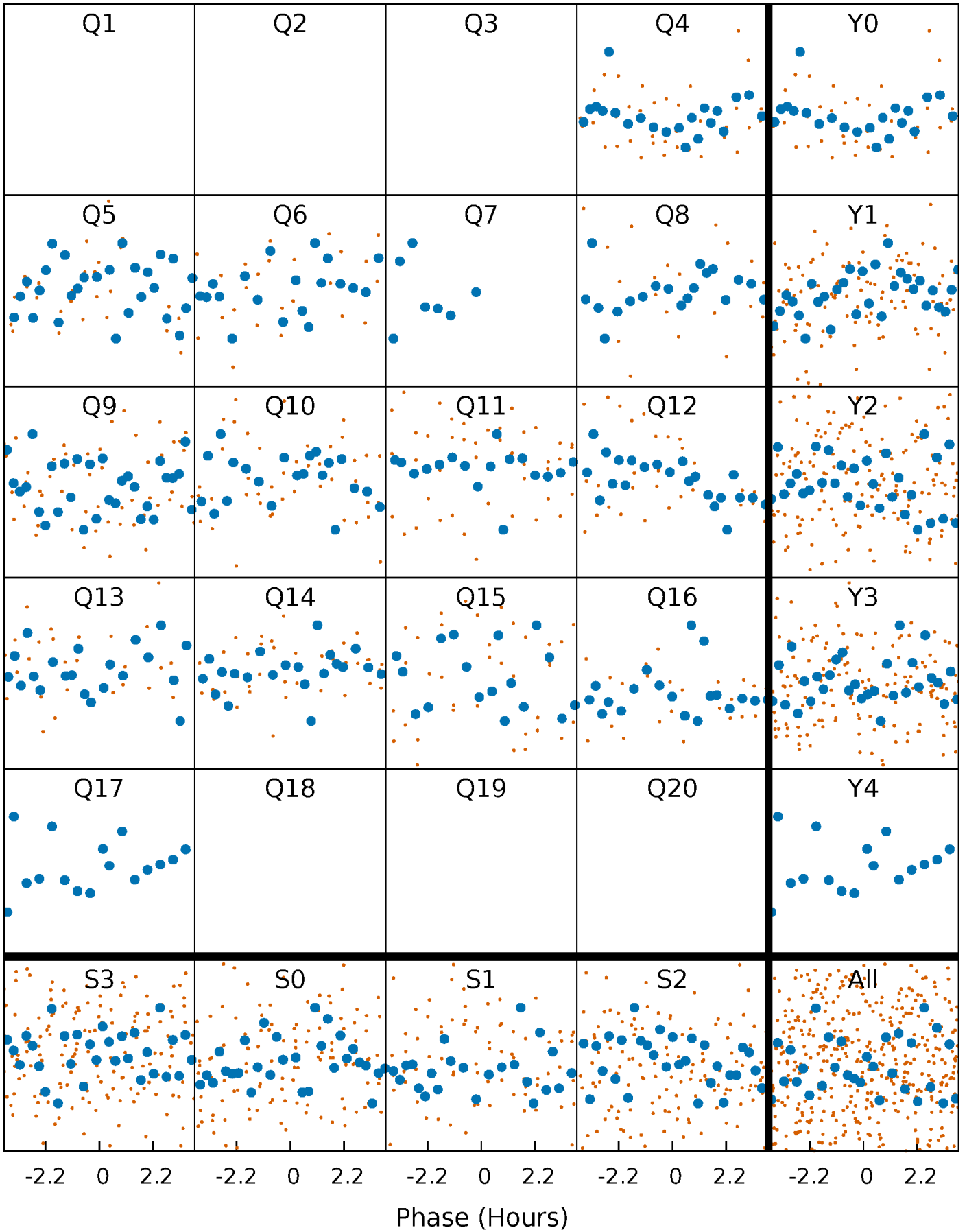


## Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

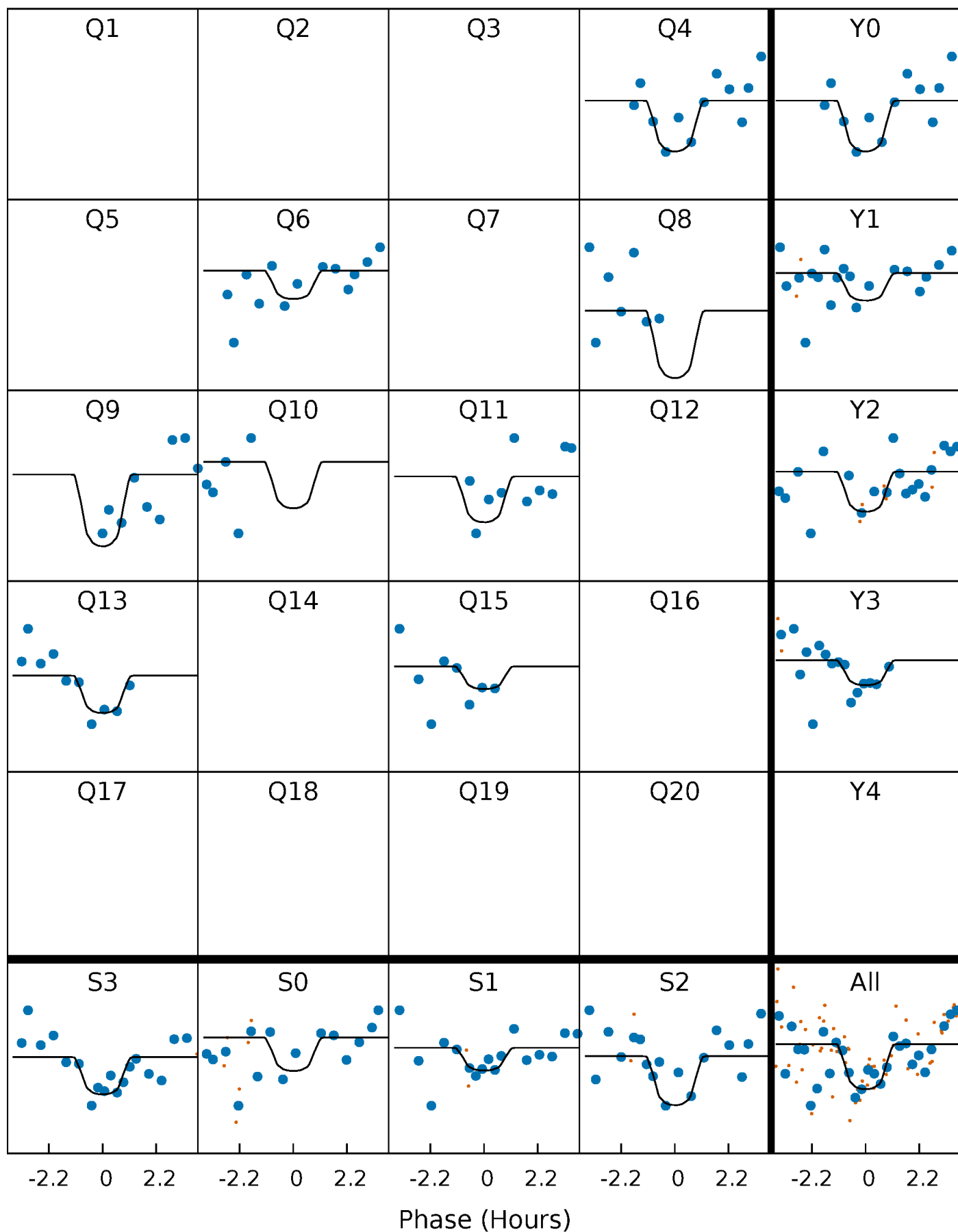
TCE 003117514-04   P= 30.423736 Days    $T_0=143.081360$  (BKJD)





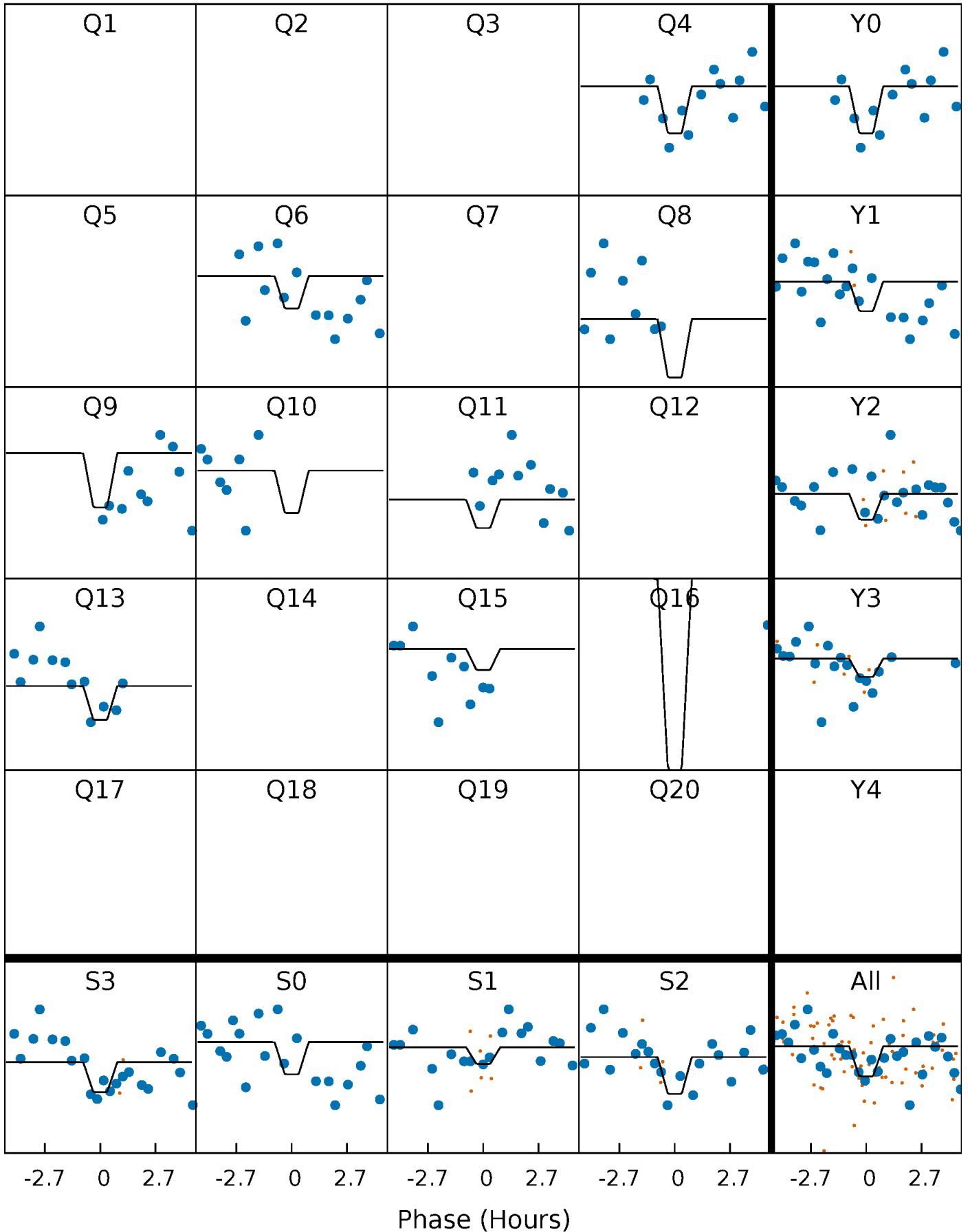
# DV Quarter-Phased Transit Curves

TCE 003117514-04 P= 30.423736 Days  $T_0=143.081360$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

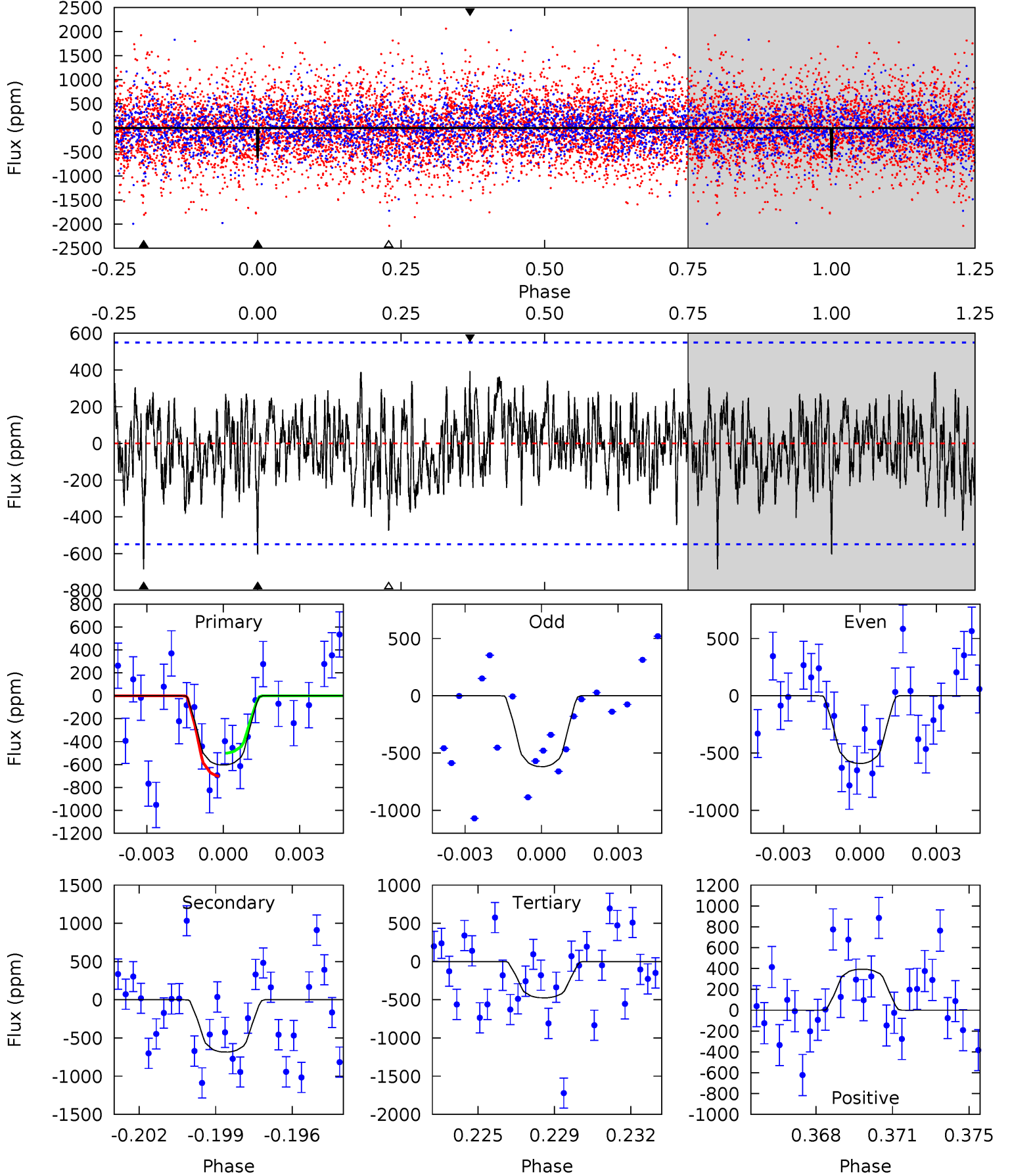
TCE 003117514-04     $P = 30.423826$  Days     $T_0 = 143.075168$  (BKJD)



# DV Model-Shift Uniqueness Test

003117514-04, P = 30.423736 Days, E = 143.081360 Days

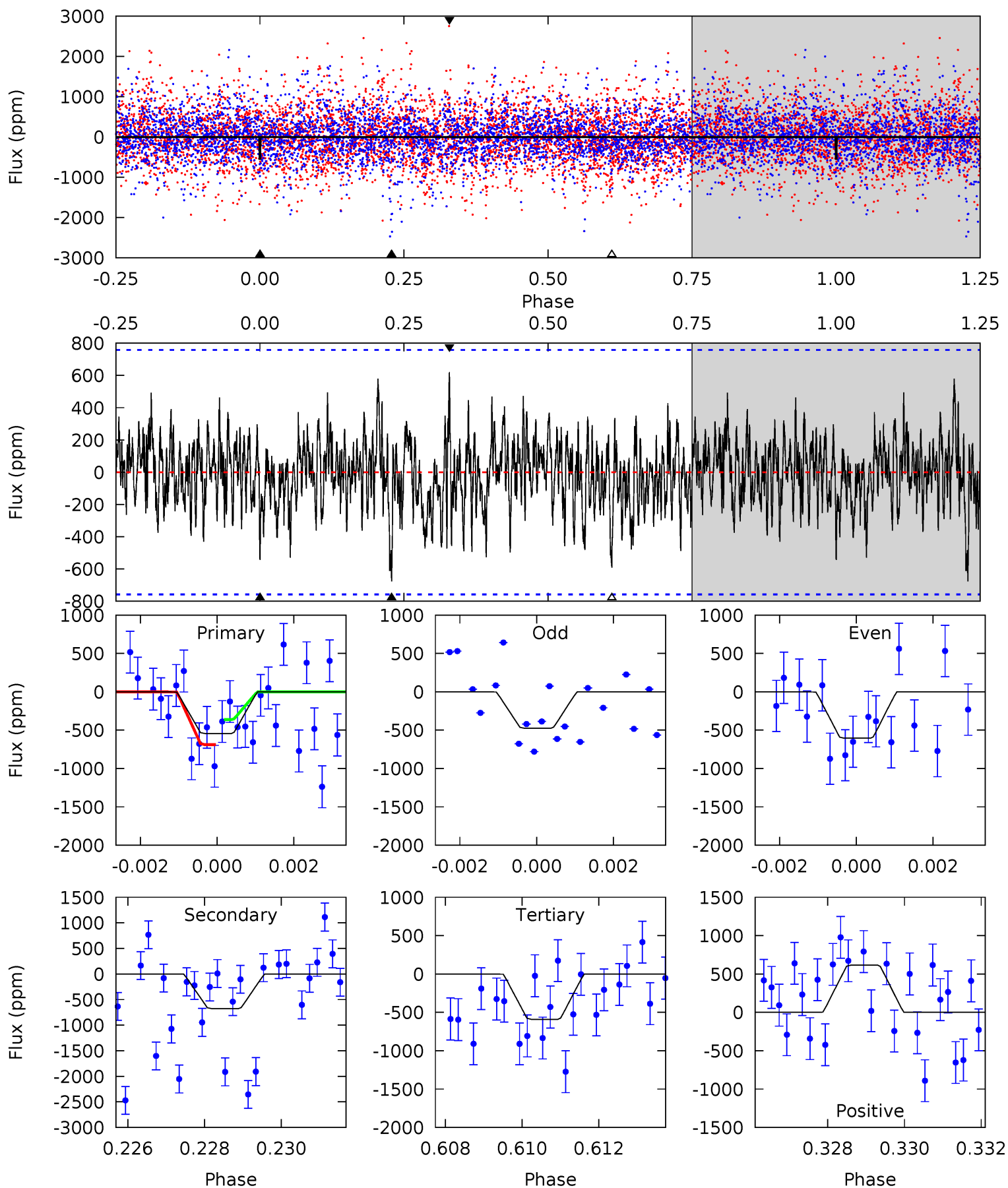
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.76	6.53	4.52	3.75	5.23	2.94	1.43	1.24	2.01	2.00	2.78	0.13	1.03	0.36	0.97



# Alt Model-Shift Uniqueness Test

003117514-04, P = 30.423826 Days, E = 143.075168 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3.81	4.74	4.14	4.31	5.31	3.07	1.32	-0.33	-0.50	0.60	0.43	0.44	0.93	0.48	1.15



### Stellar Parameters For KIC 003117514

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5469^{+196}_{-196}$	$4.637^{+0.032}_{-0.104}$	$-0.580^{+0.300}_{-0.300}$	$0.695^{+0.117}_{-0.050}$	$0.778^{+0.073}_{-0.081}$	$3.264^{+0.482}_{-1.044}$
	+4%/-4%	+1%/-2%	+52%/-52%	+17%/-7%	+9%/-10%	+15%/-32%
Source	KIC0	KIC0	KIC0	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology  
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

### Secondary Eclipse Parameters for KIC 003117514-04 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-685 \pm 105$	$2.55^{+1.67}_{-1.52}$	$684^{+31}_{-30}$	$4978^{+2968}_{-915}$	$1772^{+9462}_{-1123}$
Alt.	$-676 \pm 143$	$2.45^{+1.82}_{-1.54}$	$680^{+33}_{-27}$	$5000^{+3247}_{-1013}$	$1843^{+11248}_{-1253}$

$T_{max}$  = Theoretical Maximum Planetary Temperature

$T_{obs}$  = Observed Planetary Temperature (Assuming  $A=0.3$ )

$A_{obs}$  = Observed Albedo (Assuming  $T=0$ )

If a secondary eclipse is present, the system is likely an EB if  $T_{obs} \gg T_{max}$  AND  $A_{obs} \gg 1.0$

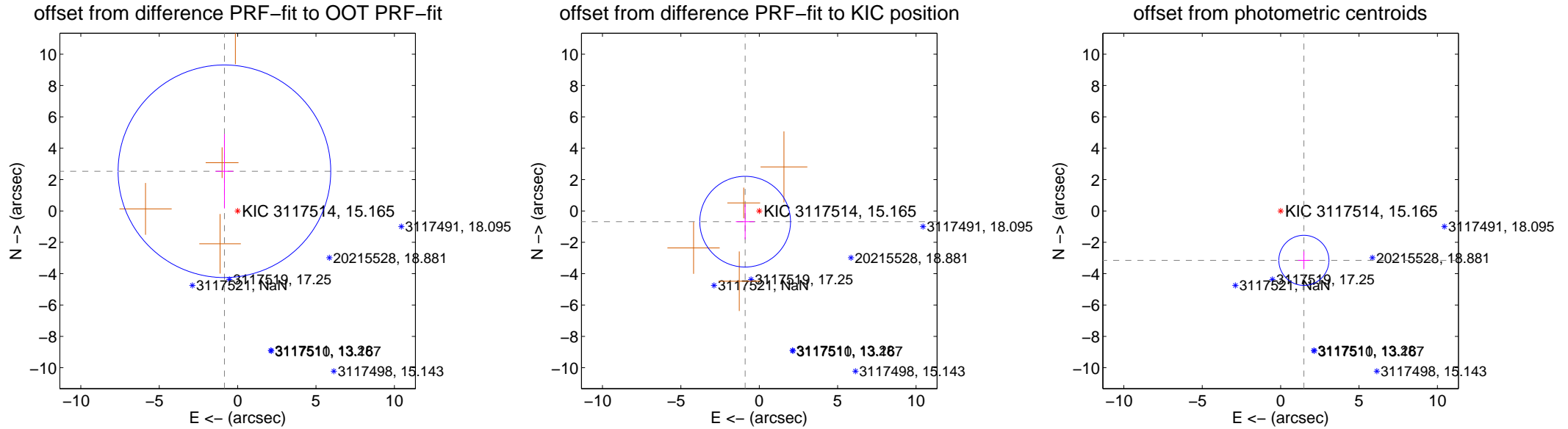
## DV Centroid Data

Supplemental centroid analysis for 003117514-04. Kepler magnitude: 15.16. Transit SNR 7.79

There are 0 quarters with good PRF difference image offsets

The OOT PRF centroid is offset from the target star catalog position by about 2.39 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$2.667 \pm 2.260$	1.18	$0.841 \pm 0.564$	$2.531 \pm 2.374$
PRF-fit source offset from KIC position	$1.130 \pm 0.964$	1.17	$0.899 \pm 0.597$	$-0.684 \pm 1.119$
photometric centroid source offset	$3.48 \pm 0.53$	6.54	$-1.48 \pm 0.37$	$-3.15 \pm 0.56$



white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

Q1 no difference image



Q1 no OOT image



Q2 no difference image



Q2 no OOT image



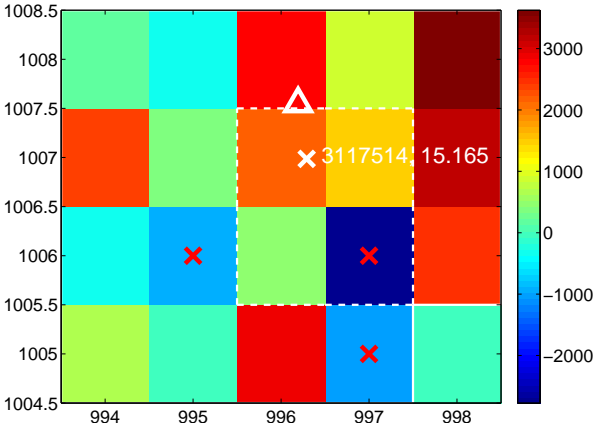
Q3 no difference image



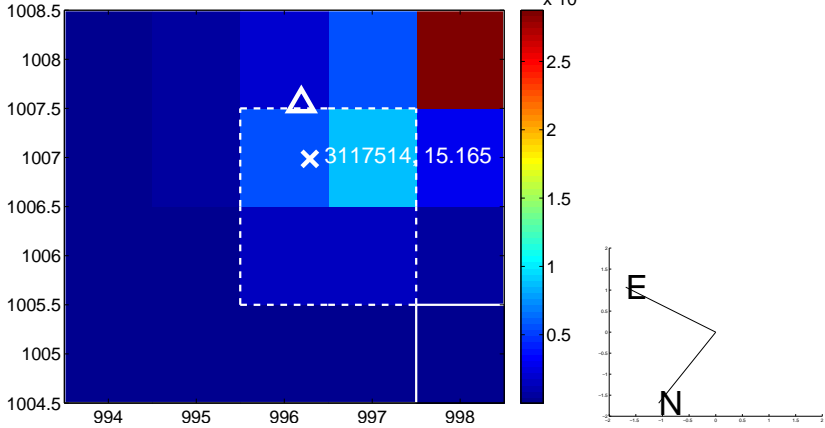
Q3 no OOT image



Q4 difference image. Poor Quality

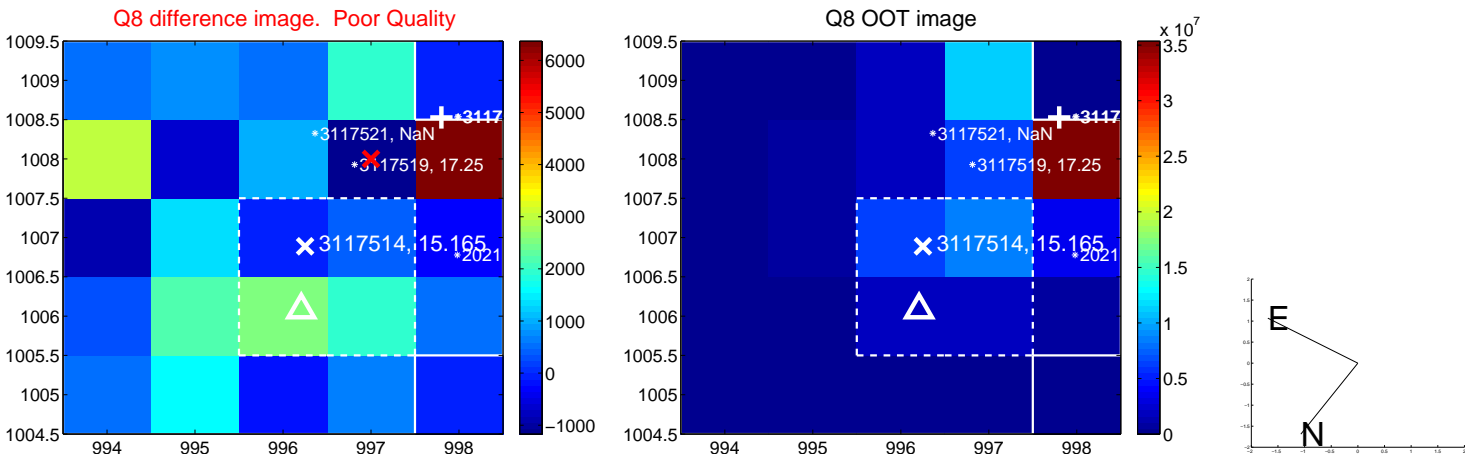
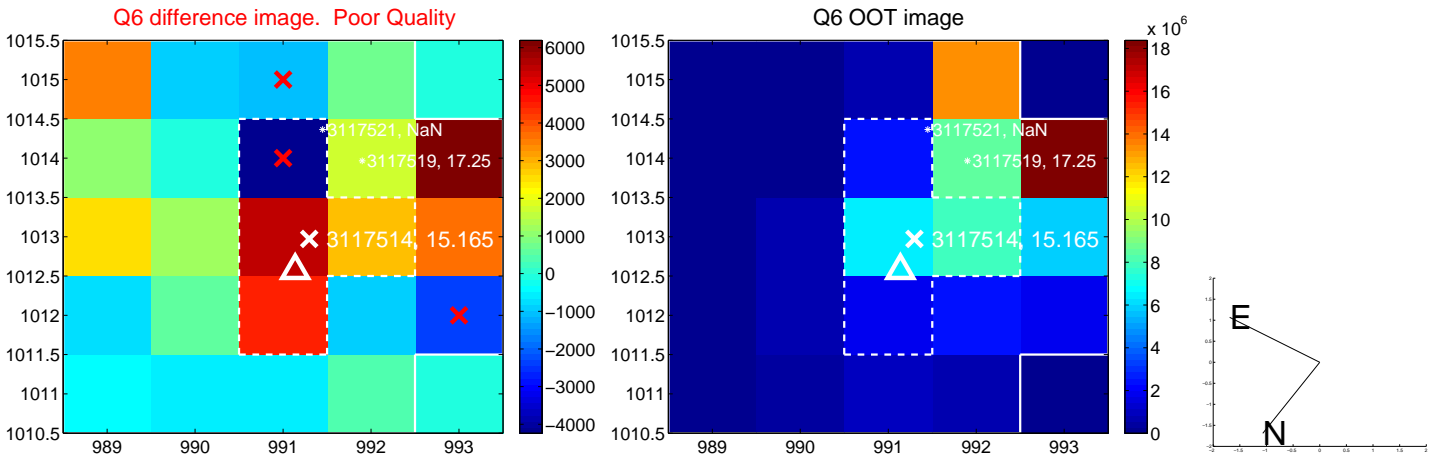
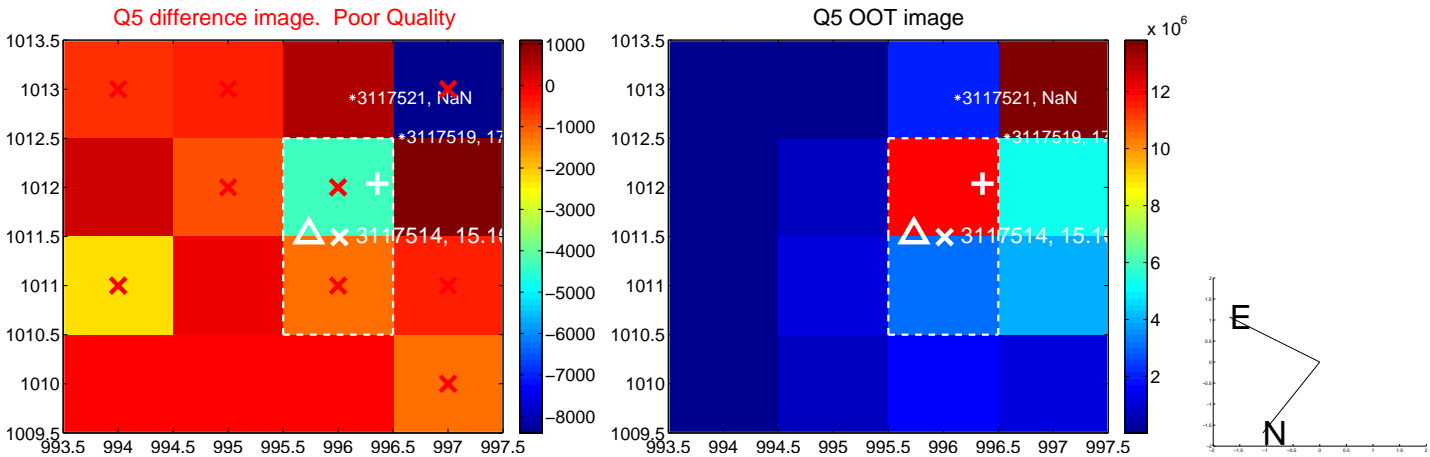


Q4 OOT image

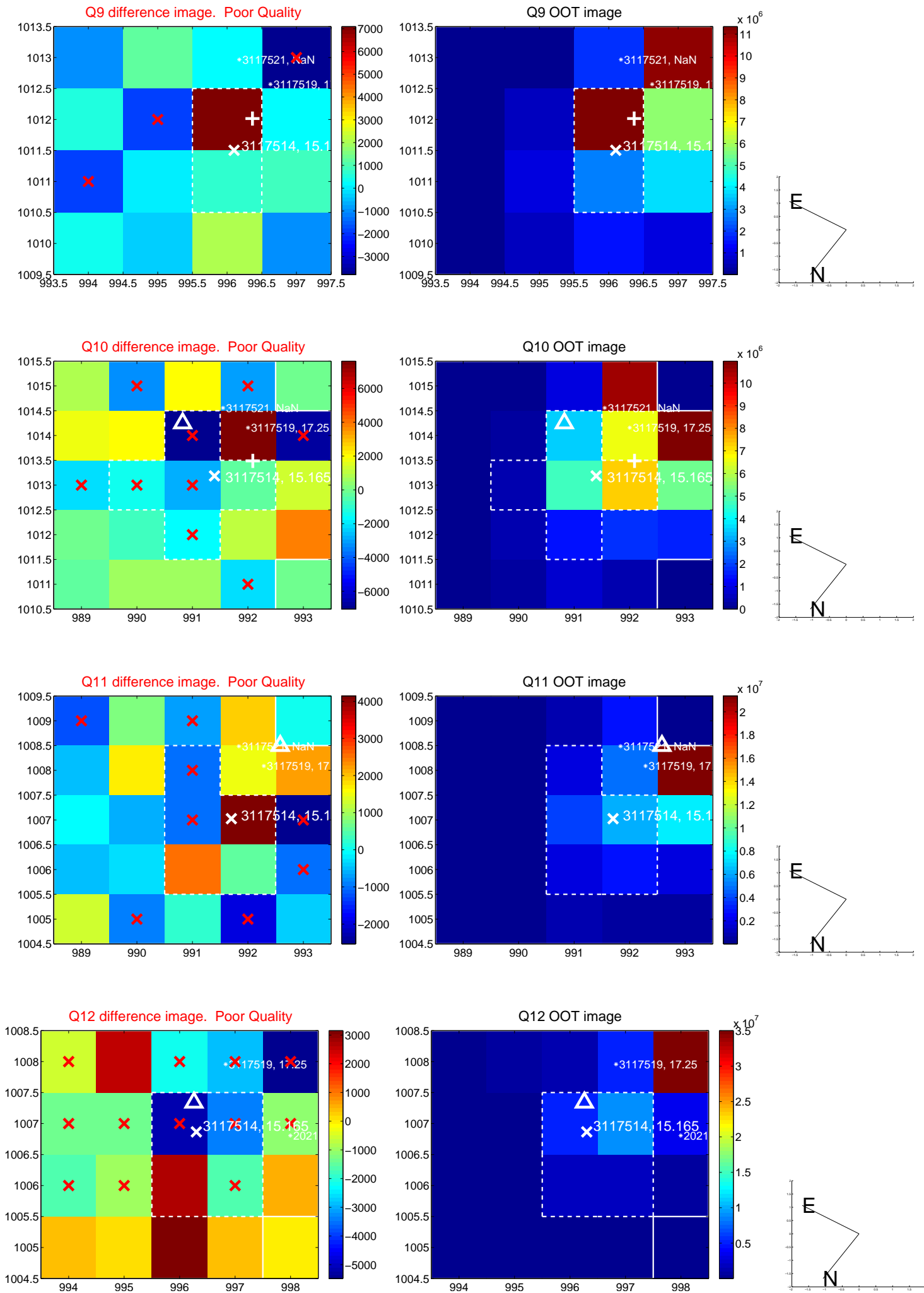




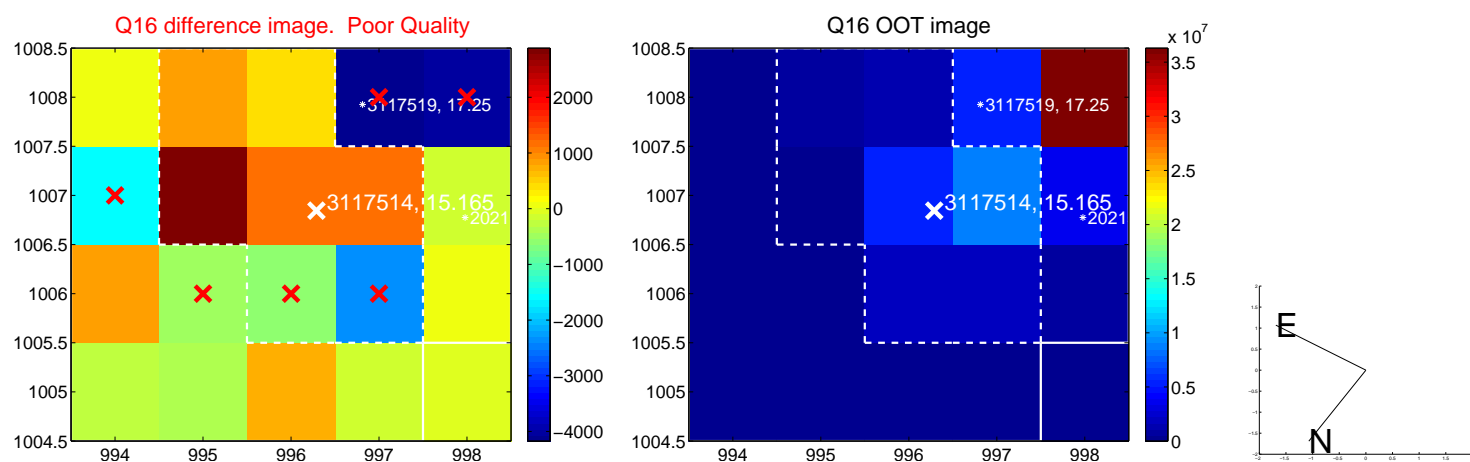
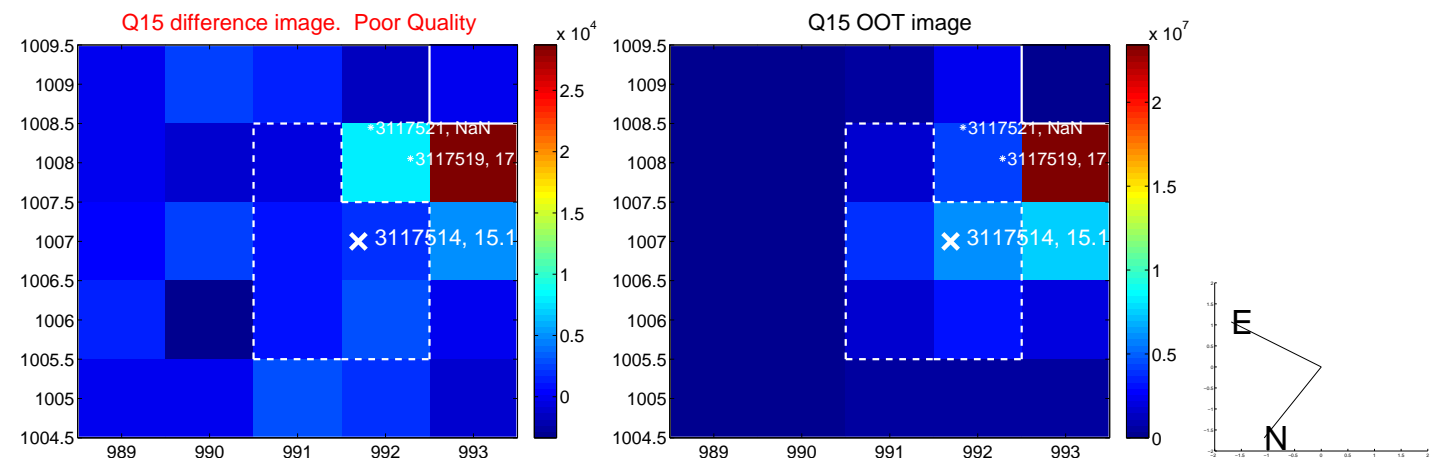
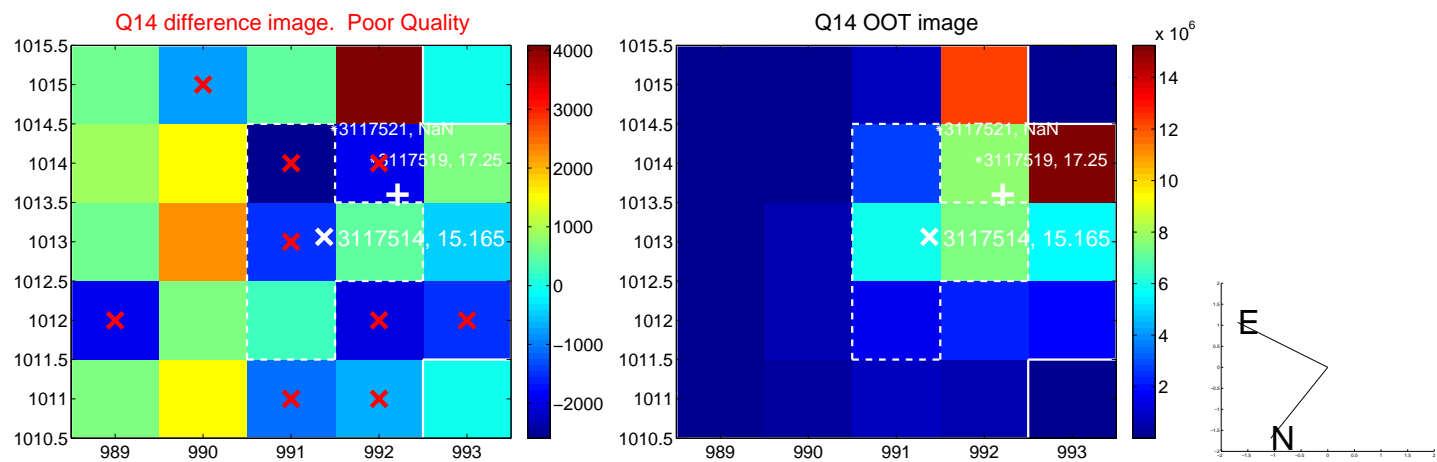
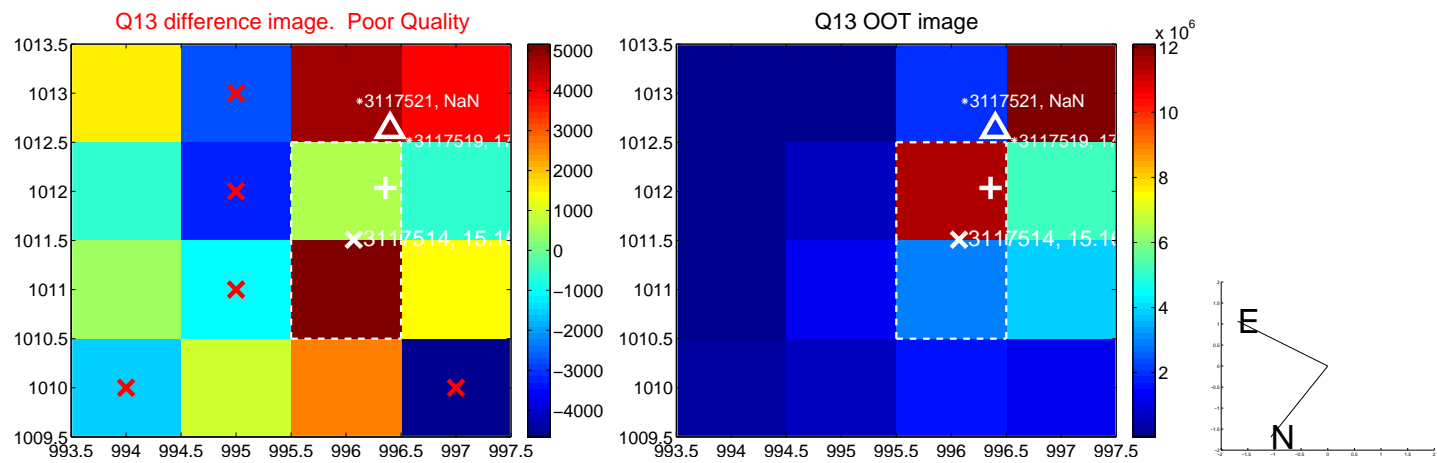
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



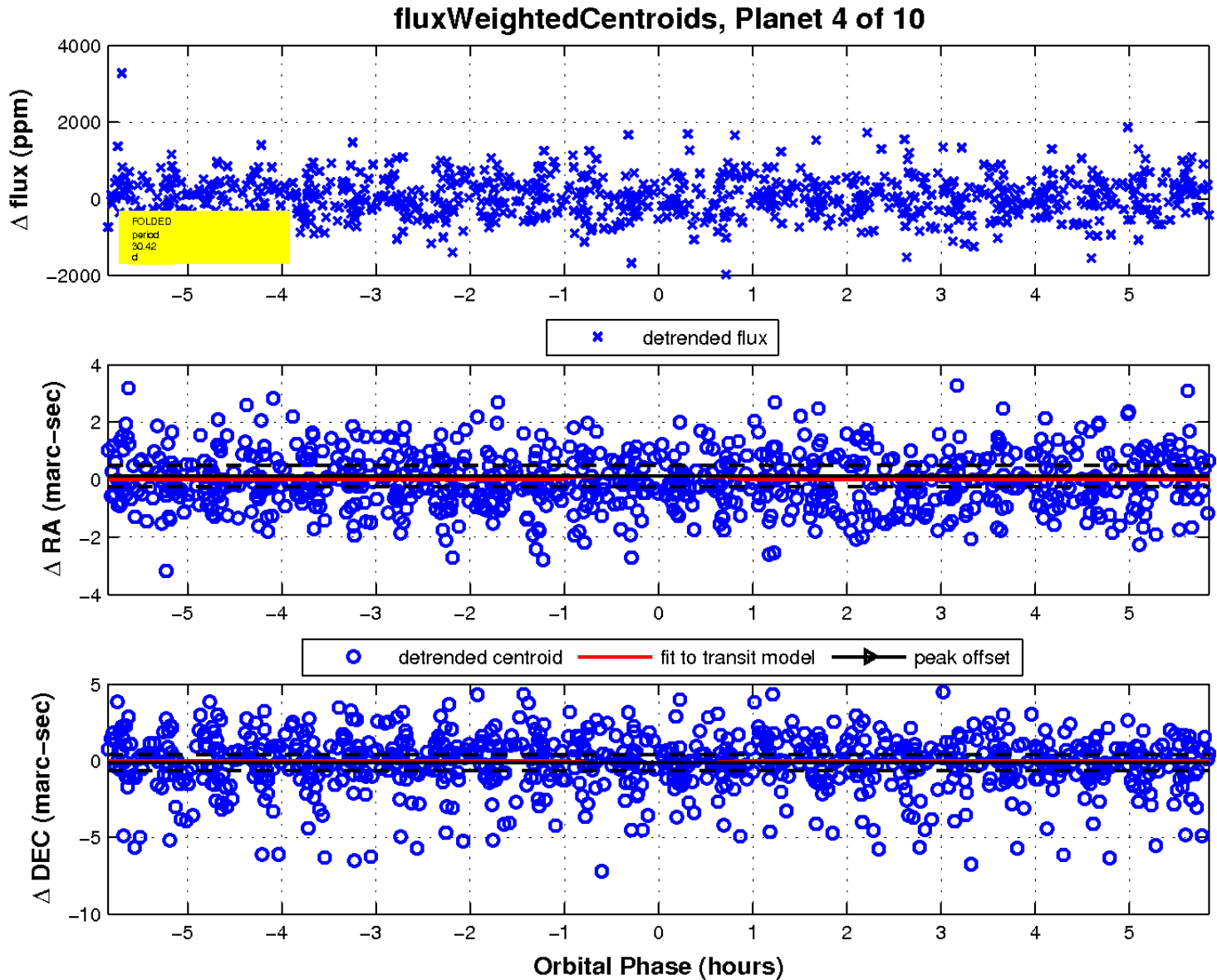
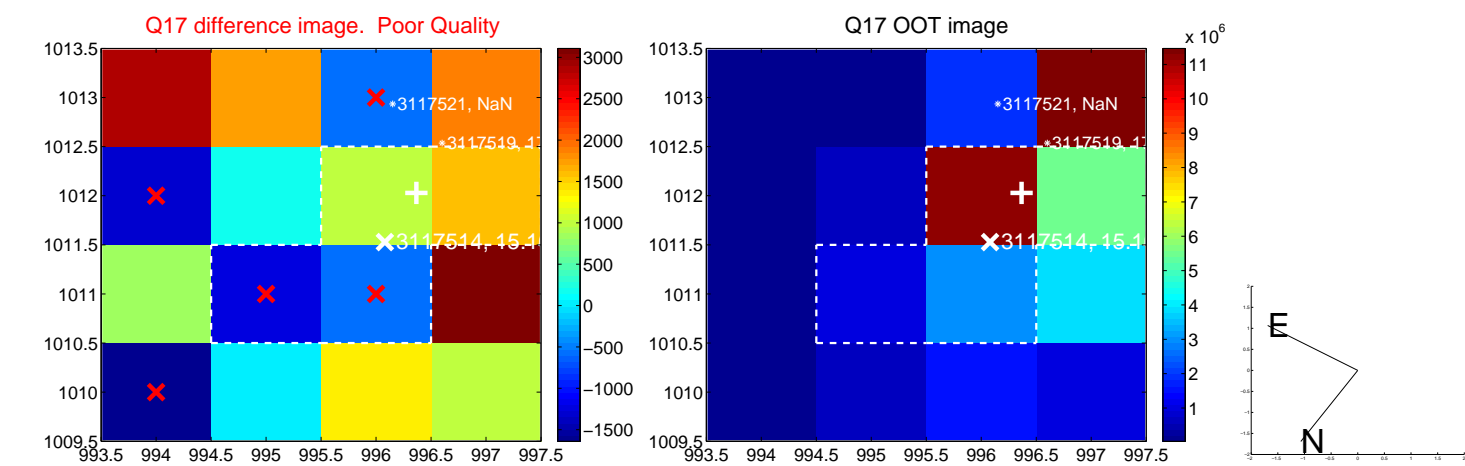
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



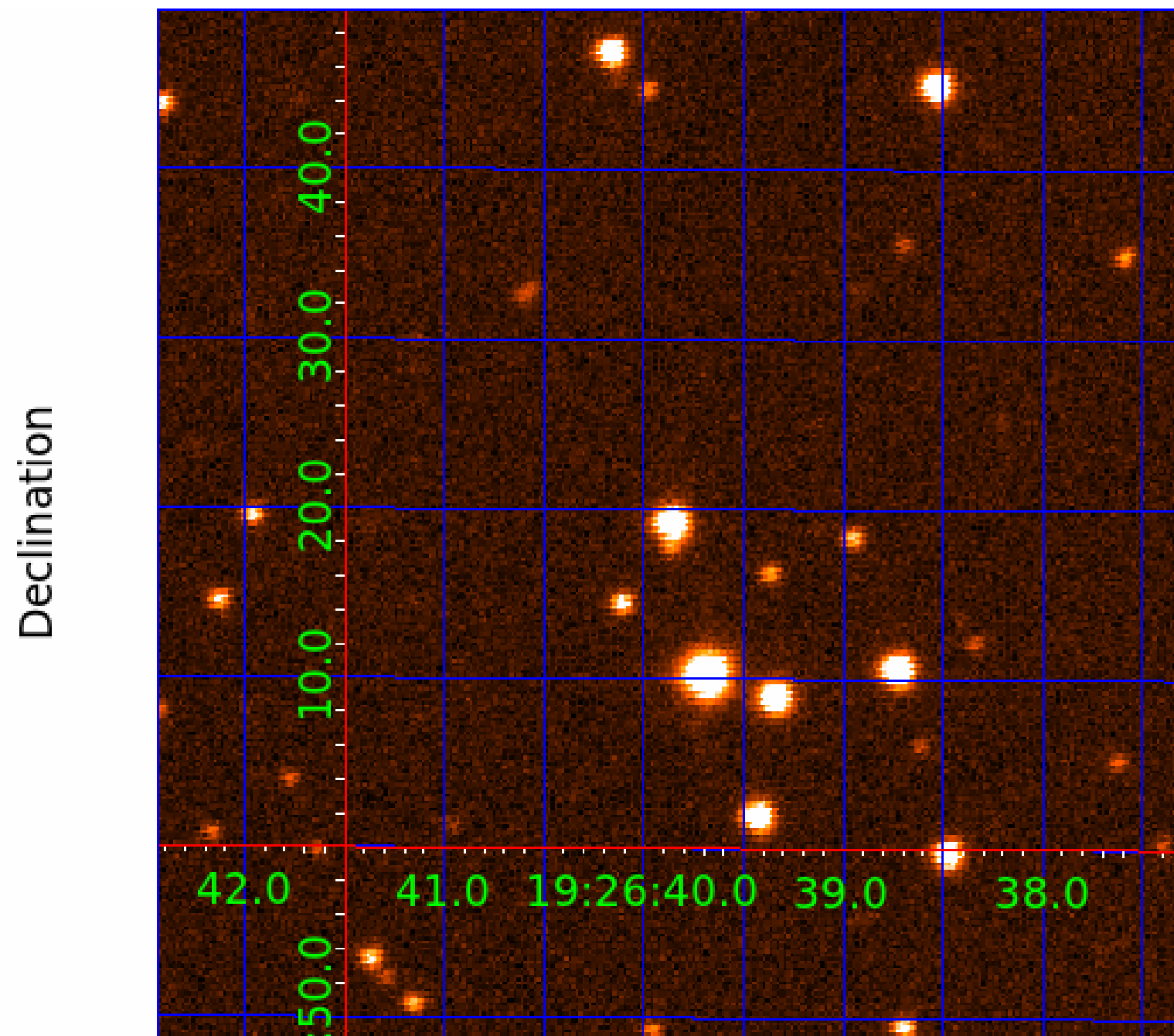
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image



## Q1-17 DR25 TCE Parameters

TCE	Run Type	KOI?	Period (Days)	Epoch (BKJD)	Depth (ppm)	Duration (Hours)	MES	SNR	$R_{\star}$ ( $R_{\odot}$ )	$T_{\star}$ (K)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
003117514-01	OBS	No	1.091938	131.641378	53.4	7.431	8.5	8.6	0.69	5469	0.58	1075.44
003117514-02	OBS	No	33.369509	157.503651	669.9	2.906	10.4	7.1	0.69	5469	1.99	11.26
003117514-03	OBS	No	24.379621	144.629800	722.9	3.062	8.6	9.5	0.69	5469	2.03	17.11
003117514-04	OBS	No	30.423736	143.081360	695.1	1.951	9.0	7.8	0.69	5469	2.08	12.73
003117514-05	OBS	No	57.642773	136.377881	920.7	2.879	8.3	8.8	0.69	5469	2.33	5.43
003117514-06	OBS	No	37.233493	132.857621	1420.0	1.430	8.7	9.1	0.69	5469	2.63	9.73
003117514-07	OBS	No	41.695704	159.649434	657.5	3.150	8.3	7.7	0.69	5469	2.12	8.36
003117514-08	OBS	No	62.634001	187.247617	761.8	3.290	8.2	7.4	0.69	5469	2.25	4.86
003117514-09	OBS	No	17.554198	145.730643	403.9	5.160	8.6	8.0	0.69	5469	1.62	26.51
003117514-10	OBS	No	47.900949	141.379946	1639.1	2.000	8.1	-1.0	0.69	5469	2.79	6.95

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003117514-01	OBS	FP	0.00	1	0	1	0	LPP_DV—LPP_ALT—CENT_RESOLVED_OFFSET—HALO_GHOST
003117514-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
003117514-03	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_RESOLVED_OFFSET—HALO_GHOST
003117514-04	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_RESOLVED_OFFSET
003117514-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
003117514-06	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_DV—CENT_FEW_DIFFS
003117514-07	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_RESOLVED_OFFSET
003117514-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
003117514-09	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_RESOLVED_OFFSET
003117514-10	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_NOFITS

**Notes:** OBS = Observed. INJ = Injected. INV = Inverted. SCR = Scrambled.

N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

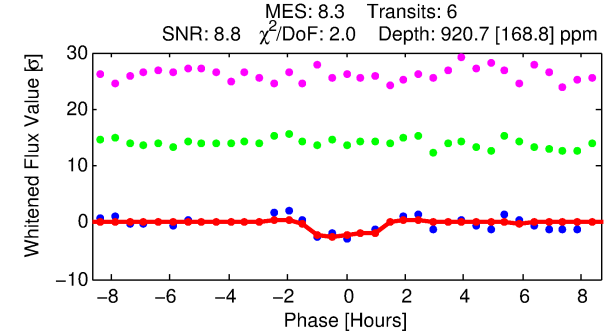
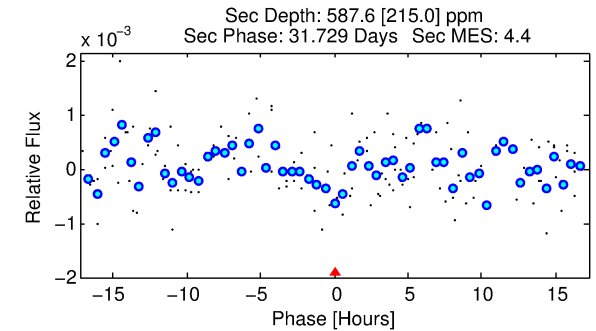
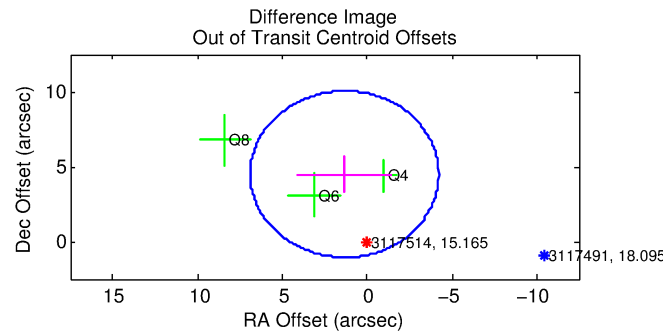
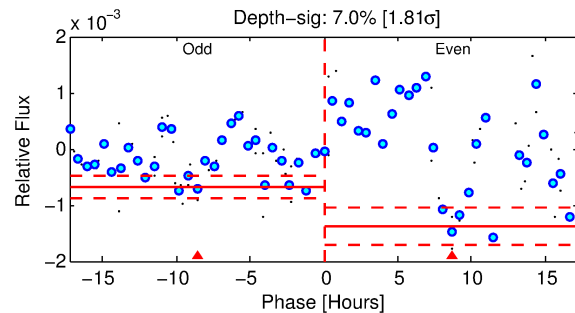
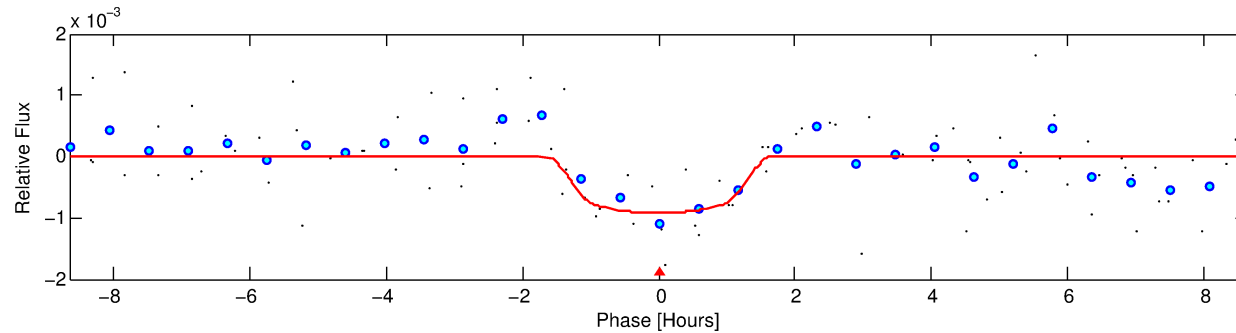
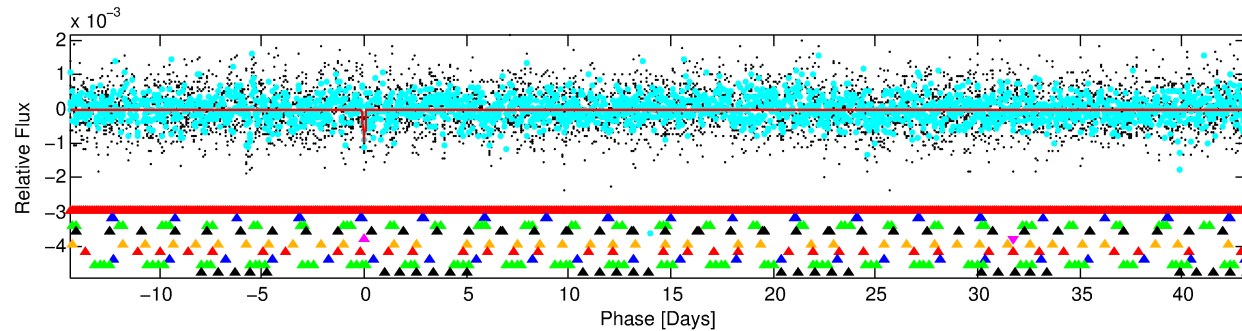
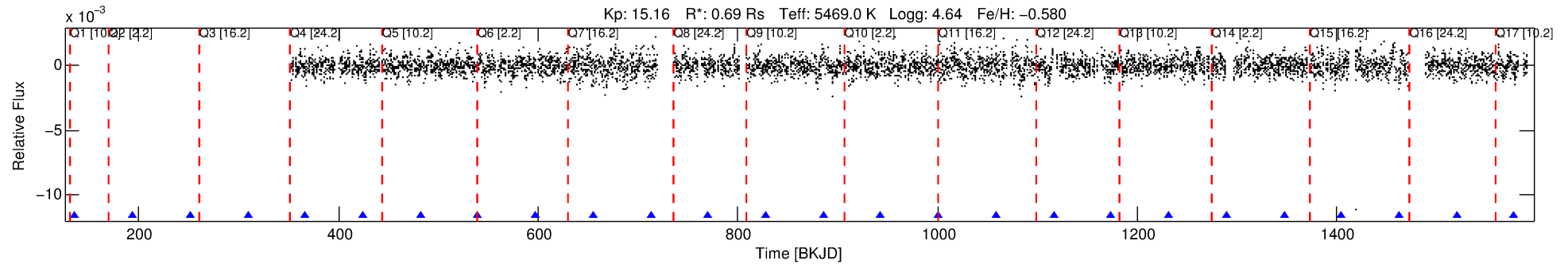
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 003117514-05

No Significant Match Found

# DV One-Page Summary

KIC: 3117514 Candidate: 5 of 10 Period: 57.643 d



## DV Fit Results:

Period = 57.64277 [0.00084] d  
Epoch = 136.3779 [0.0109] BKJD  
Rp/R\* = 0.0307 [0.0268]  
a/R\* = 102.17 [390.80]  
b = 0.78 [1.89]  
Seff = 5.43 [1.32]  
Teq = 389 [24] K  
Rp = 2.33 [2.07] Re  
a = 0.2670 [0.0368] AU  
Ag = 4260.27 [7657.65] [0.56 $\sigma$ ]  
Teffp = 4862 [2179] K [2.05 $\sigma$ ]

## DV Diagnostic Results:

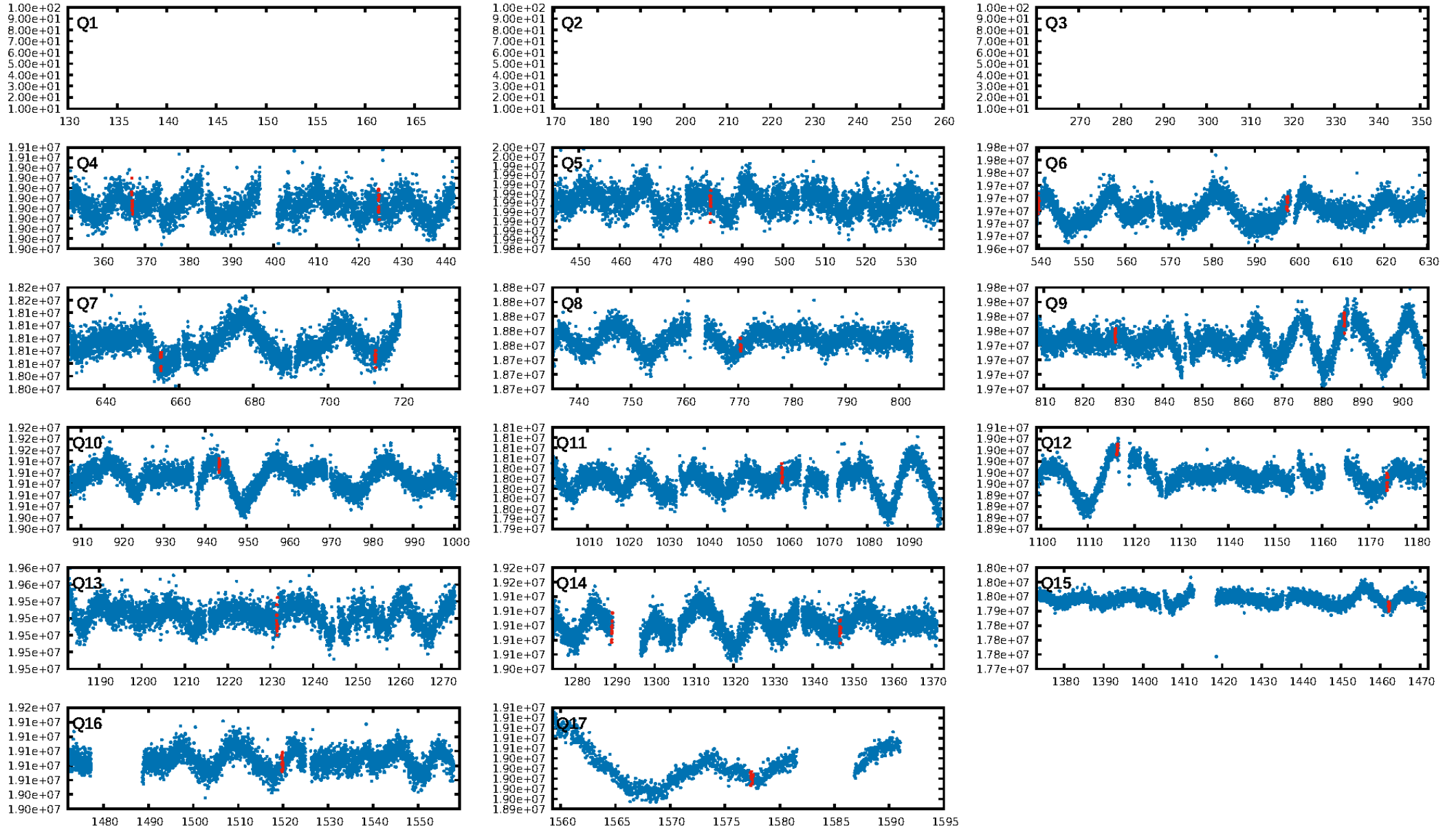
ShortPeriod-sig: 100.0% [66.69 $\sigma$ ]  
LongPeriod-sig: 100.0% [27.40 $\sigma$ ]  
ModelChiSquare2-sig: 7.6%  
ModelChiSquareGof-sig: 99.9%  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [6/6]  
GhostDiagnostic-chr: -1.024  
Centroid-sig: 10.4%  
Centroid-so: 3.244 arcsec [7.49 $\sigma$ ]  
OotOffset-rm: 4.689 arcsec [2.53 $\sigma$ ]  
KicOffset-rm: 2.464 arcsec [2.47 $\sigma$ ]  
OotOffset-st: 1/0/2/0 [3]  
KicOffset-st: 2/2/3/0 [7]  
DiffImageQuality-fgm: 0.00 [0/7]  
DiffImageOverlap-fno: 0.15 [2/13]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 06:34:16 Z

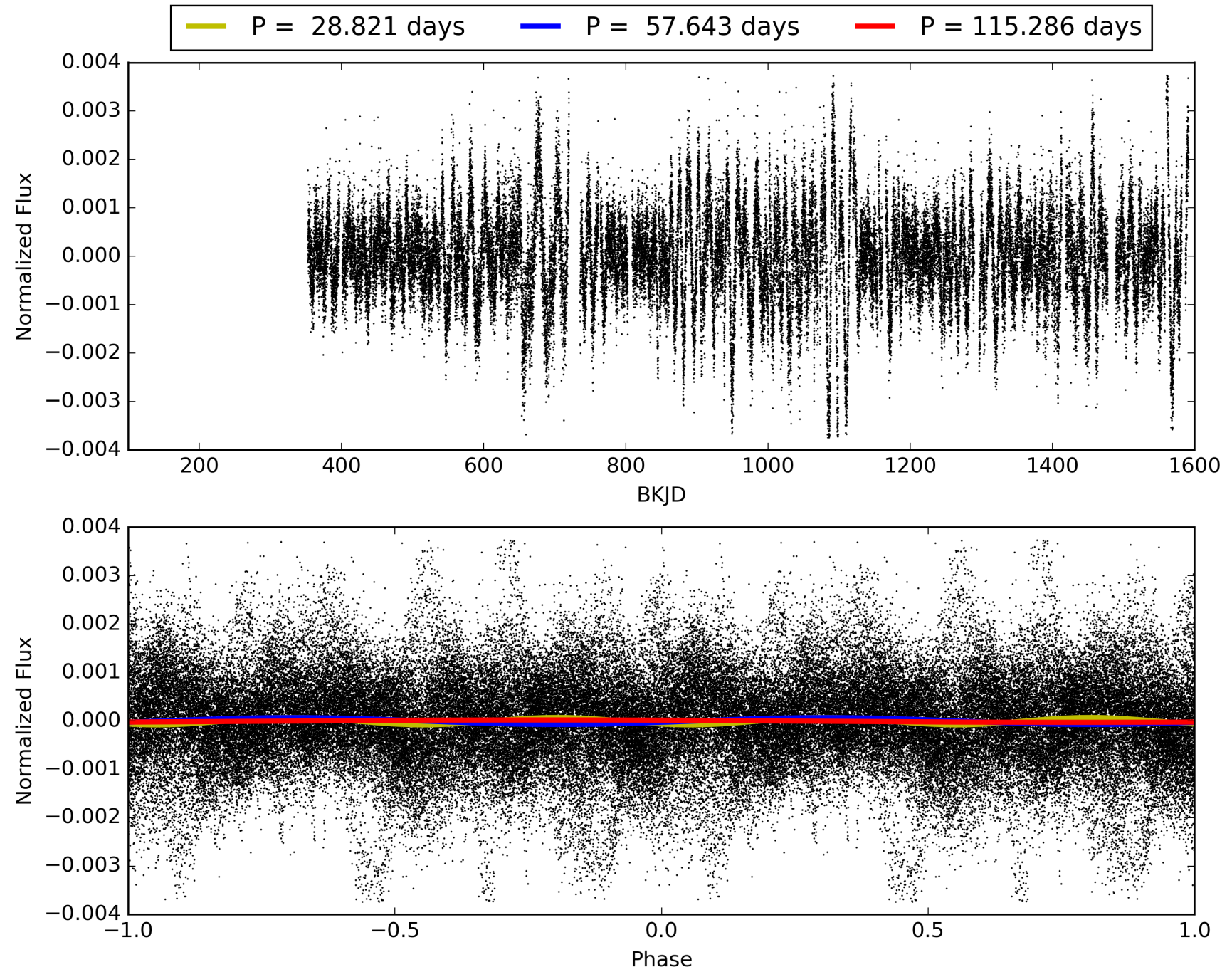
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center



# TCE 003117514-05, PDC Light Curves

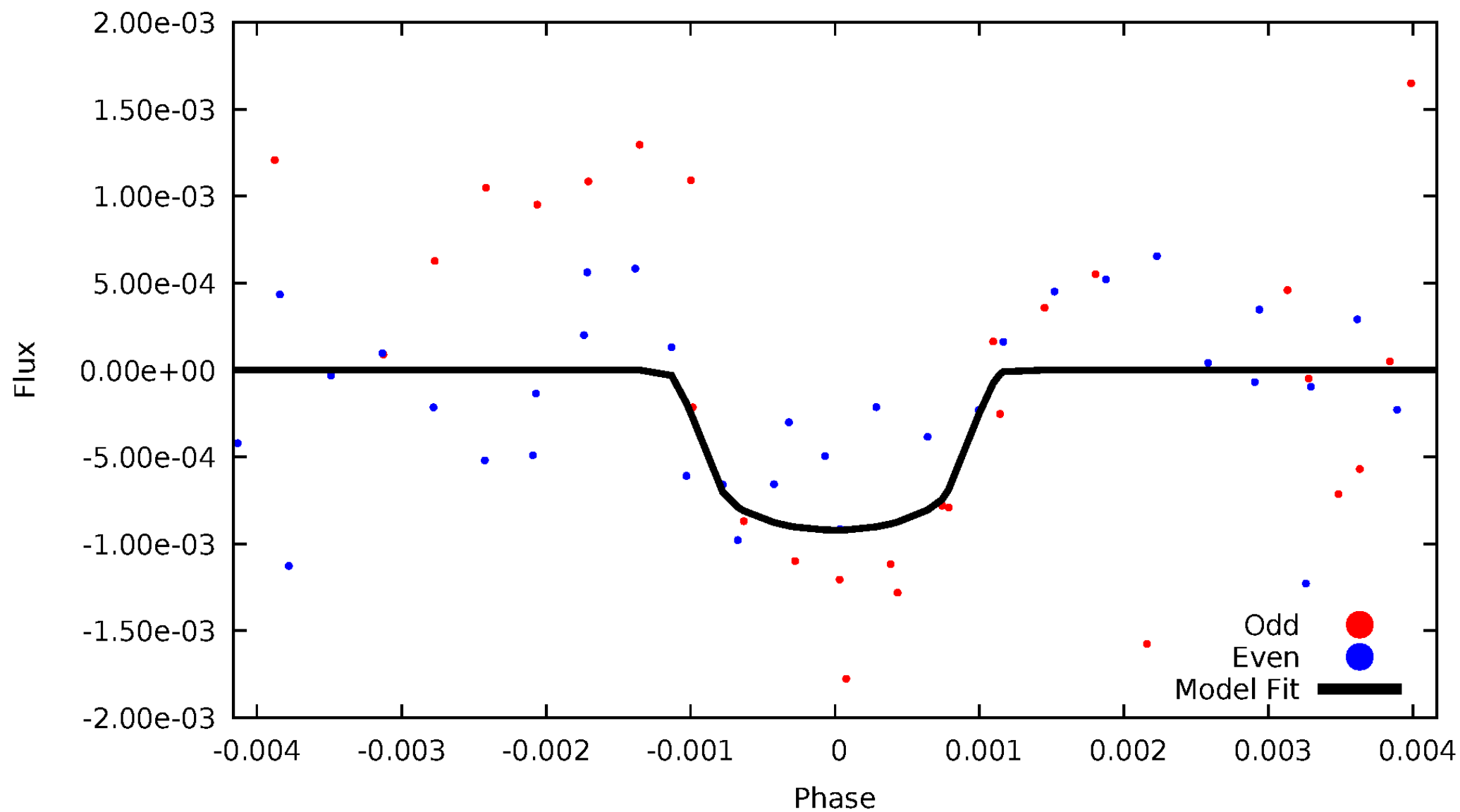


# TCE 003117514-05



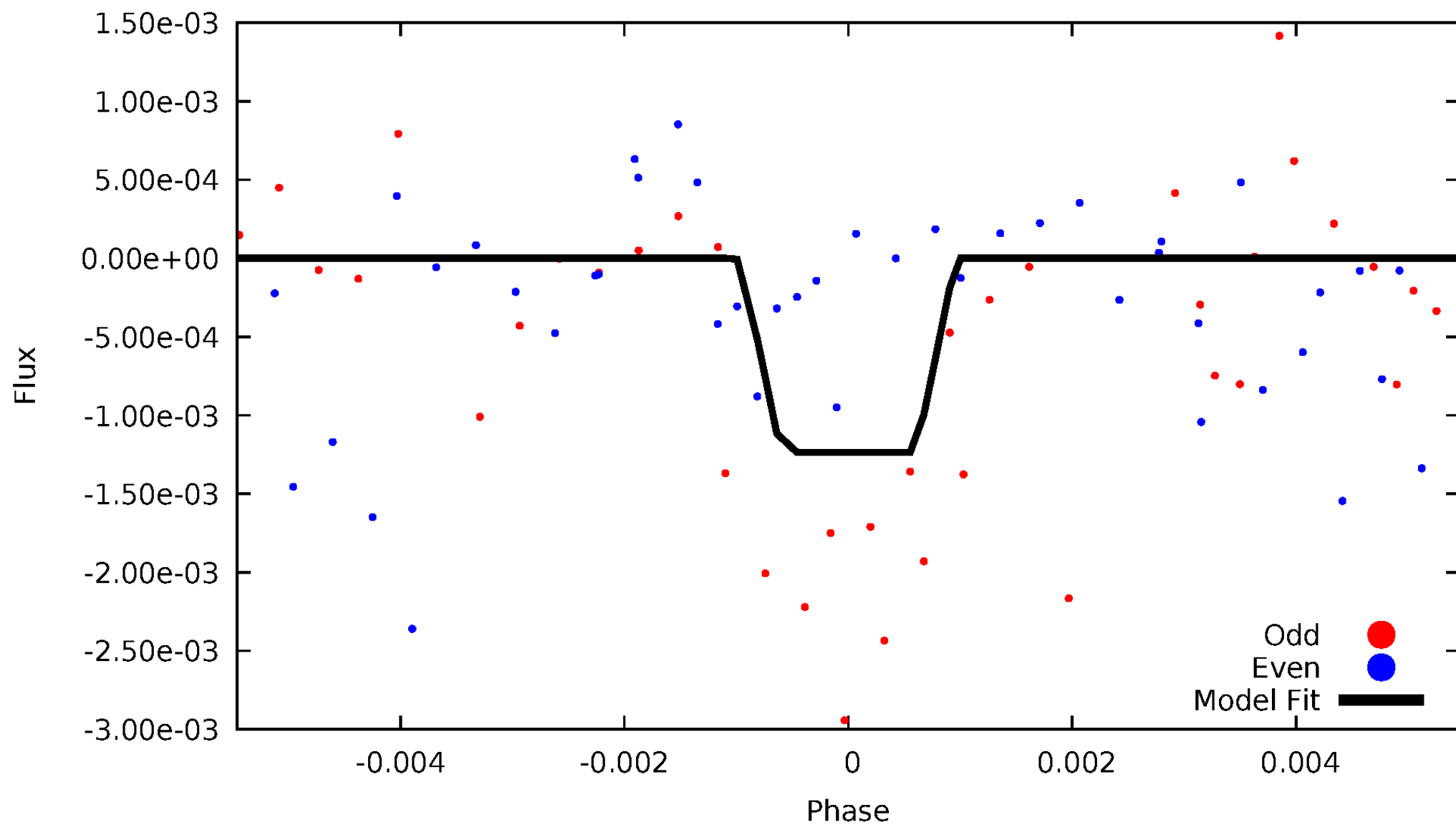
# DV Odd/Even

TCE 003117514-05



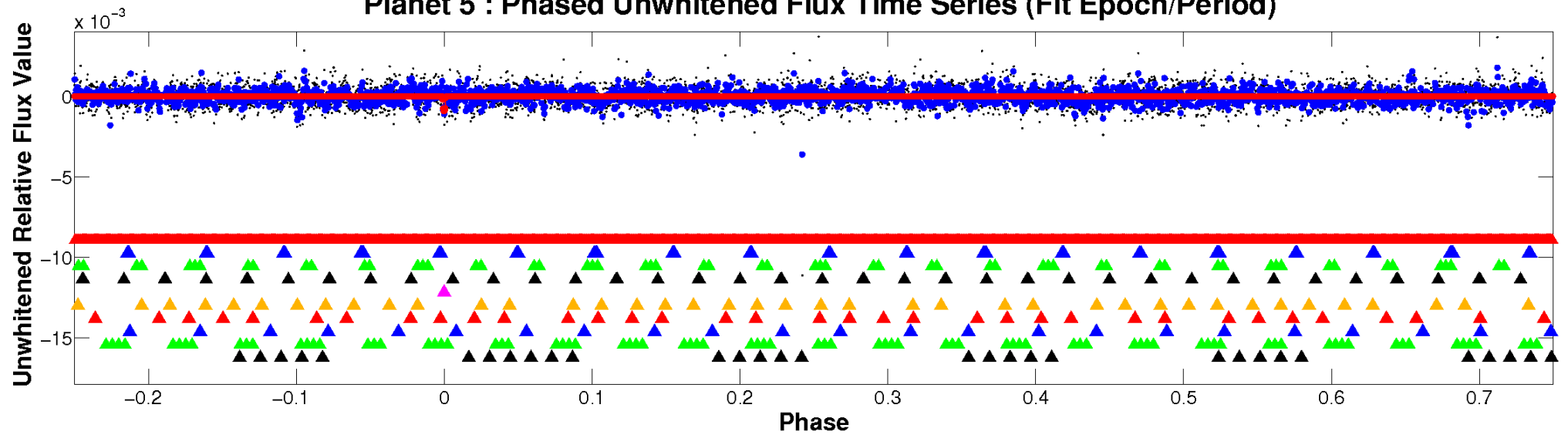
# ALT Odd/Even

TCE 003117514-05

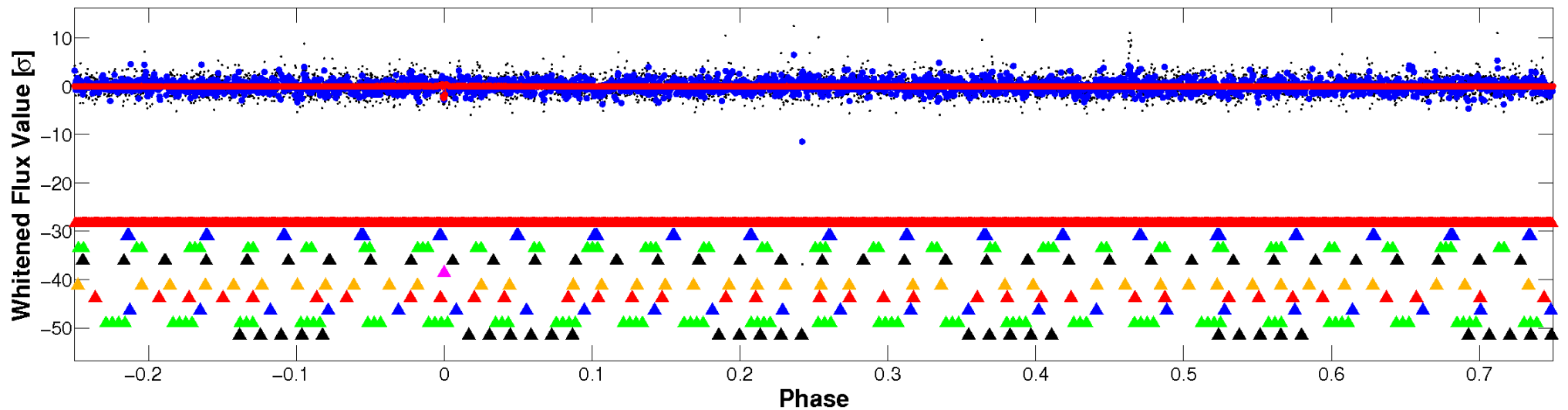


# Non-Whitened Vs. Whitened Light Curve

## Planet 5 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

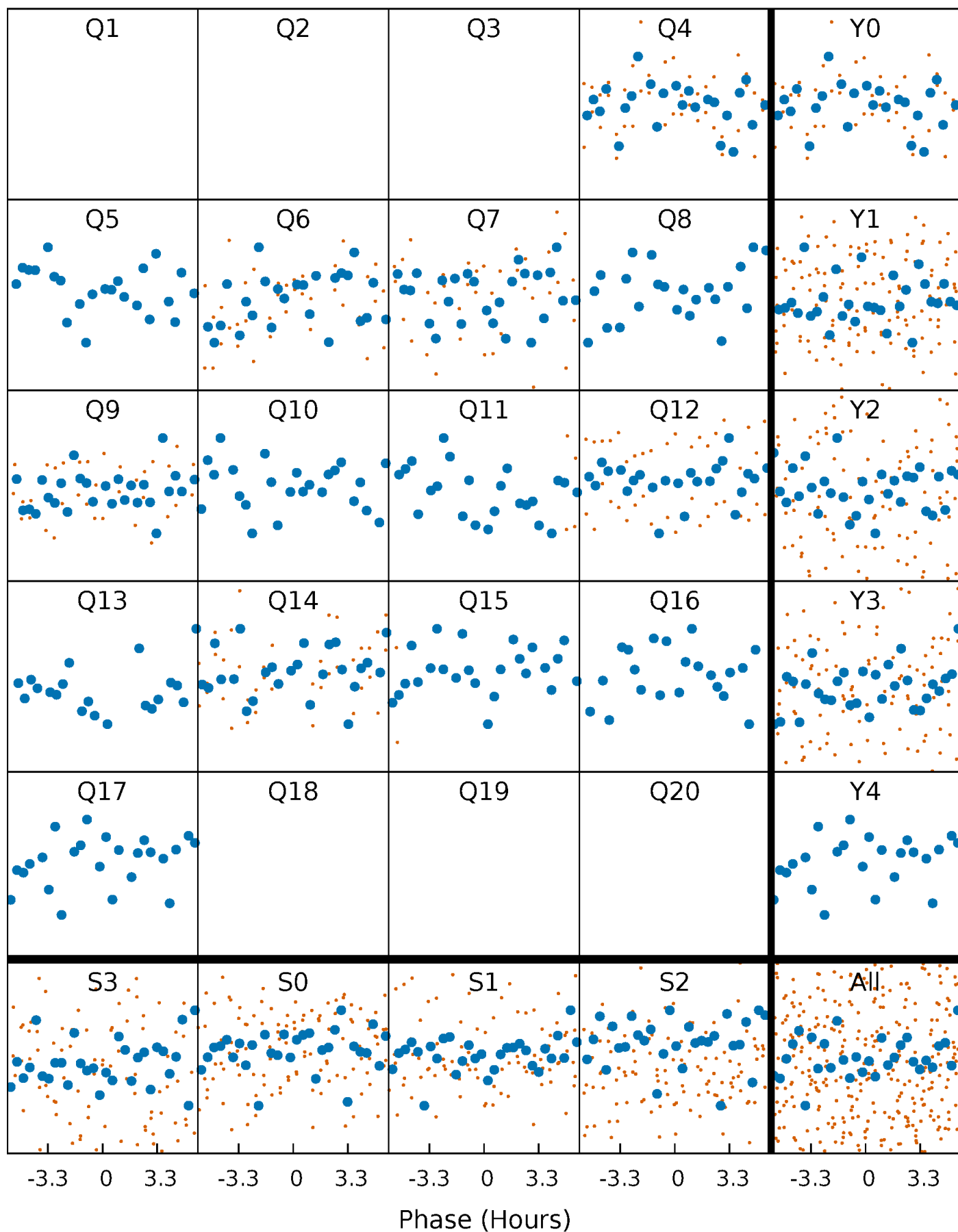


## Planet 5 : Phased Whitened Flux Time Series (Fit Epoch/Period)



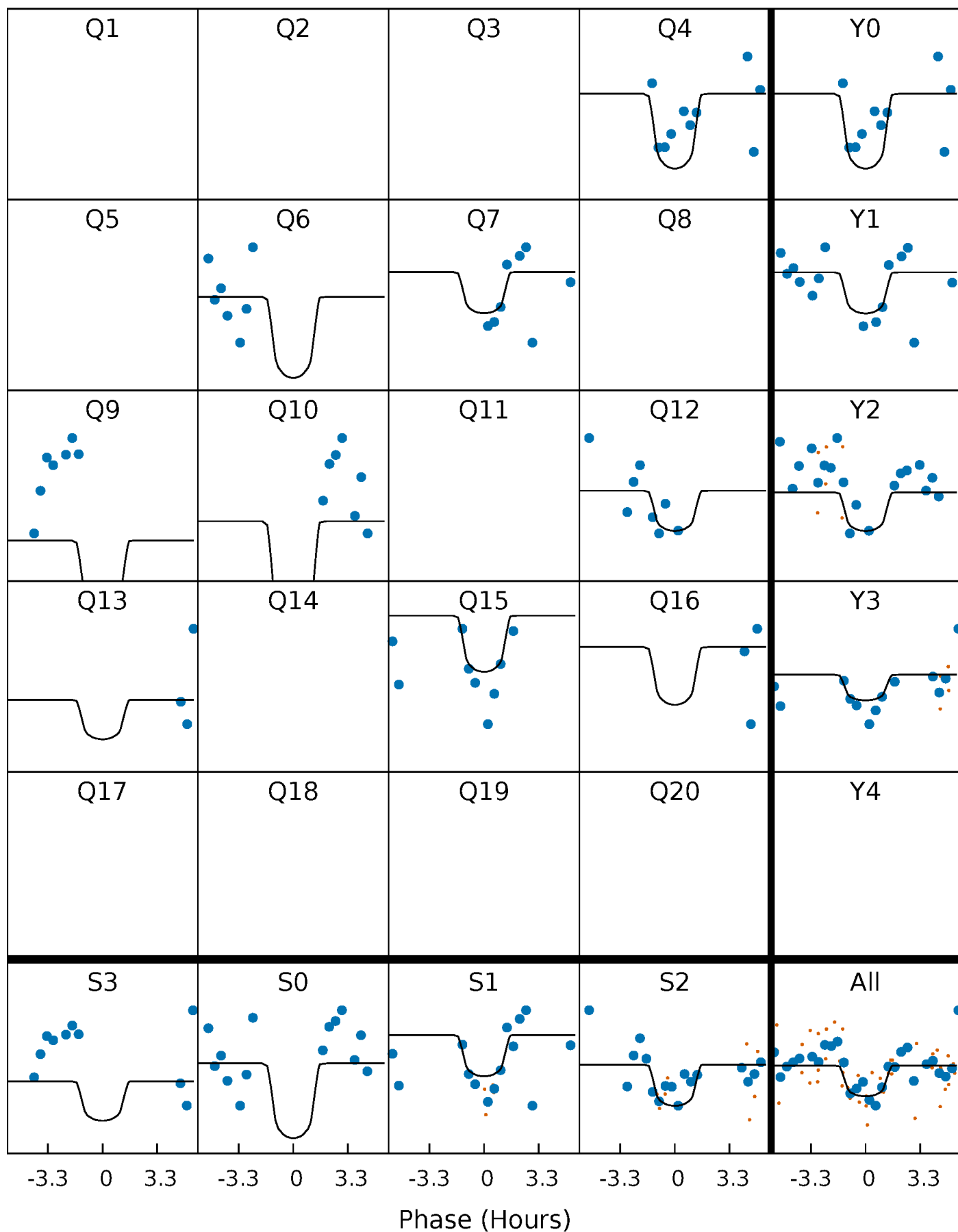
# PDC Quarter-Phased Transit Curves

TCE 003117514-05   P= 57.642773 Days    $T_0=136.377881$  (BKJD)



# DV Quarter-Phased Transit Curves

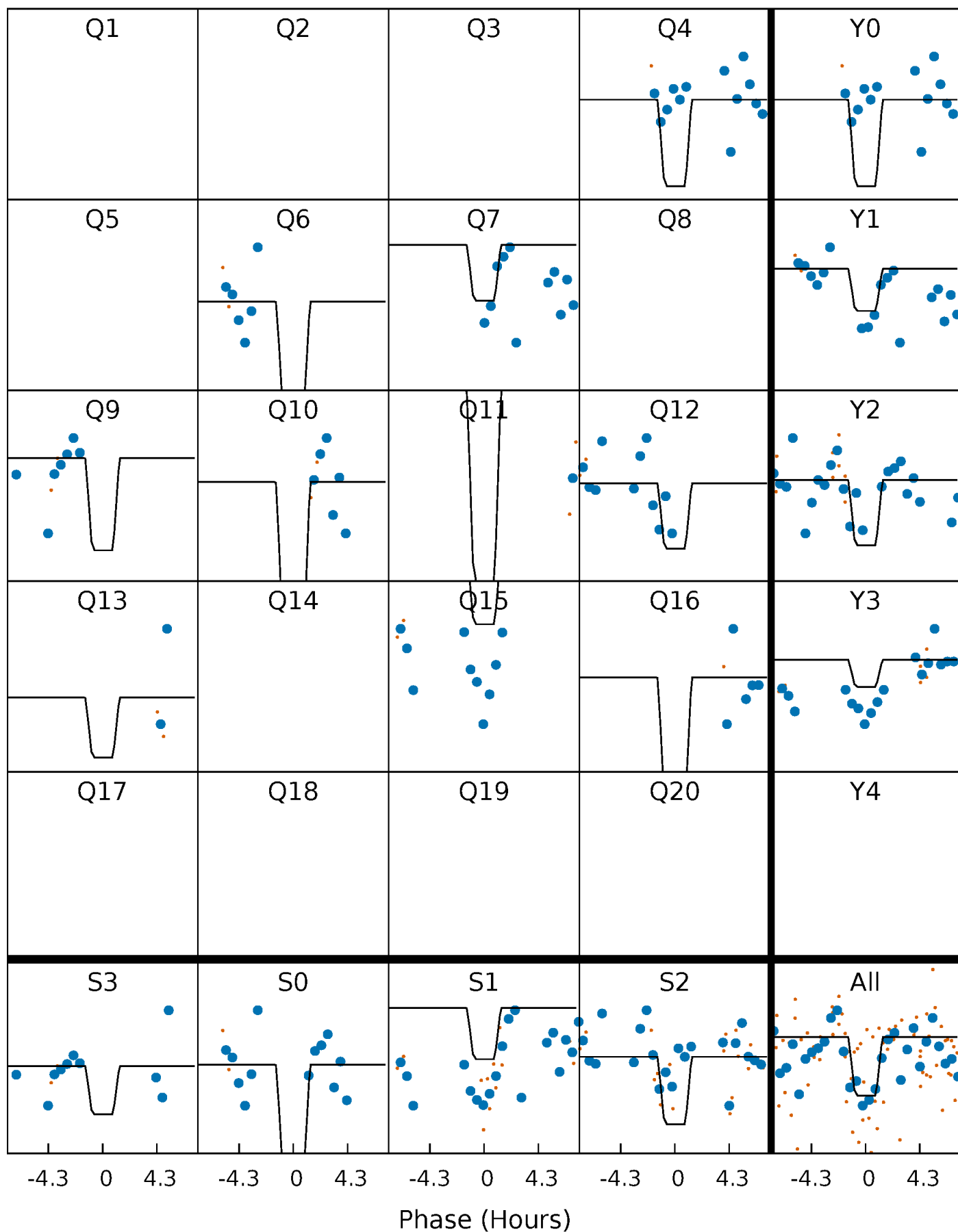
TCE 003117514-05   P= 57.642773 Days    $T_0=136.377881$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

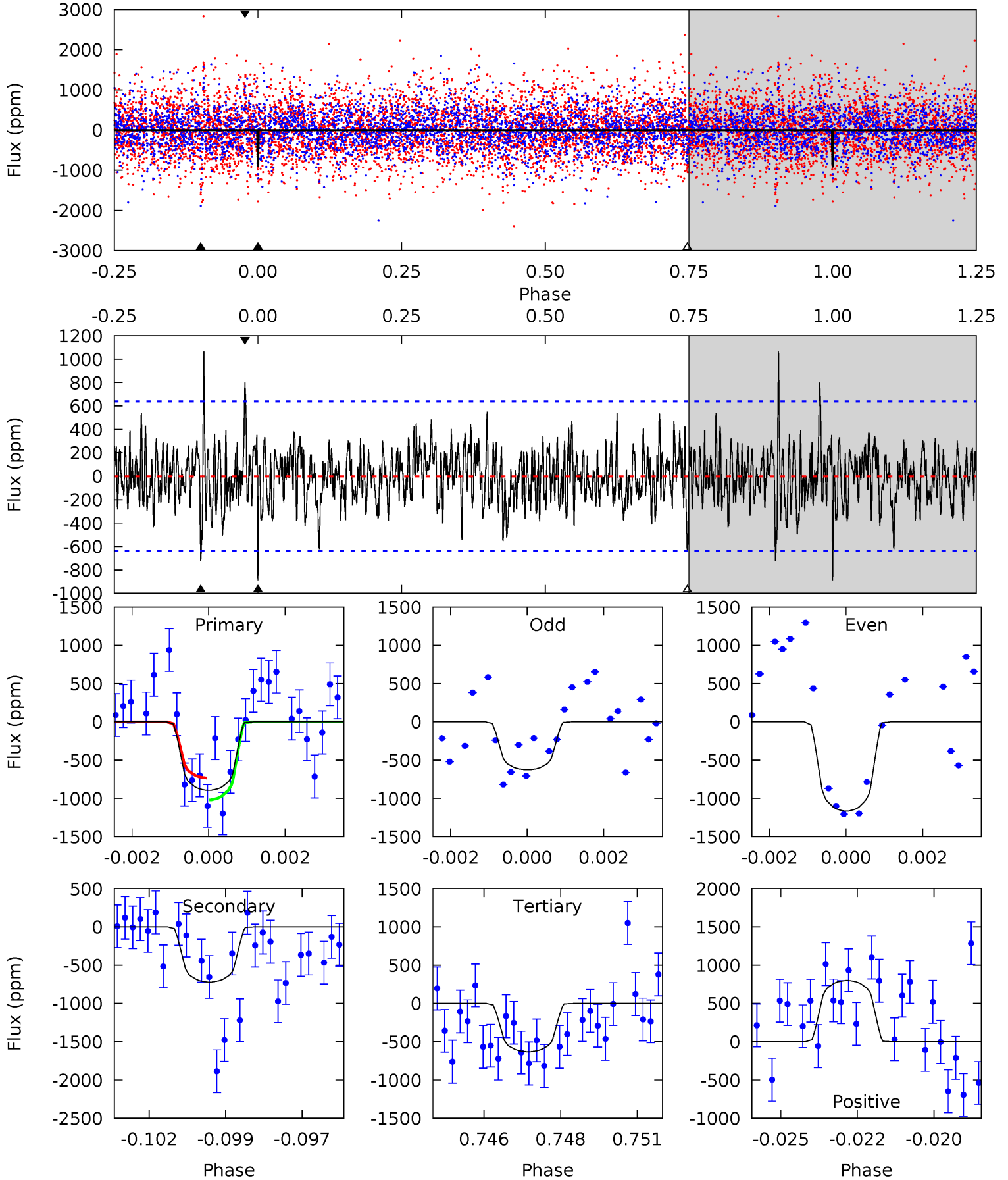
TCE 003117514-05     $P = 57.642457$  Days     $T_0 = 136.391604$  (BKJD)



# DV Model-Shift Uniqueness Test

003117514-05,  $P = 57.642773$  Days,  $E = 136.377881$  Days

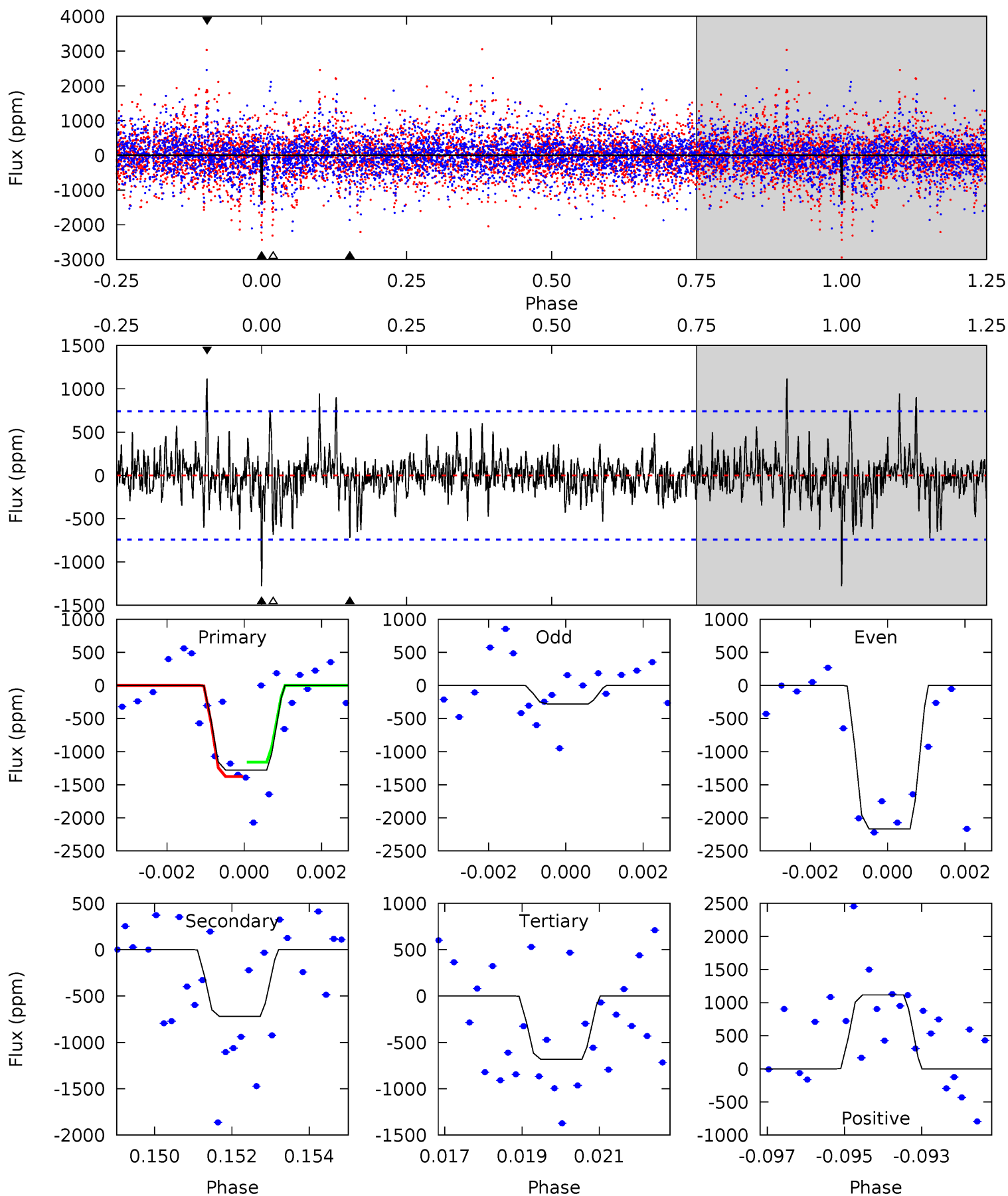
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.40	5.96	5.22	6.61	5.29	3.03	1.65	2.18	0.79	0.74	-0.65	2.22	0.97	0.54	1.17



# Alt Model-Shift Uniqueness Test

003117514-05, P = 57.642457 Days, E = 136.391604 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.21	5.17	4.93	8.05	5.34	3.11	1.37	4.29	1.17	0.25	-2.87	6.79	1.06	0.47	0.78



### Stellar Parameters For KIC 003117514

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5469^{+196}_{-196}$	$4.637^{+0.032}_{-0.104}$	$-0.580^{+0.300}_{-0.300}$	$0.695^{+0.117}_{-0.050}$	$0.778^{+0.073}_{-0.081}$	$3.264^{+0.482}_{-1.044}$
	+4%/-4%	+1%/-2%	+52%/-52%	+17%/-7%	+9%/-10%	+15%/-32%
Source	KIC0	KIC0	KIC0	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology  
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

### Secondary Eclipse Parameters for KIC 003117514-05 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-721 \pm 121$	$2.77^{+2.00}_{-1.60}$	$553^{+27}_{-23}$	$4866^{+2592}_{-946}$	$3687^{+17778}_{-2455}$
Alt.	$-718 \pm 139$	$2.97^{+2.00}_{-1.73}$	$553^{+27}_{-24}$	$4735^{+2436}_{-876}$	$3108^{+14253}_{-1964}$

$T_{max}$  = Theoretical Maximum Planetary Temperature

$T_{obs}$  = Observed Planetary Temperature (Assuming  $A=0.3$ )

$A_{obs}$  = Observed Albedo (Assuming  $T=0$ )

If a secondary eclipse is present, the system is likely an EB if  $T_{obs} \gg T_{max}$  AND  $A_{obs} \gg 1.0$

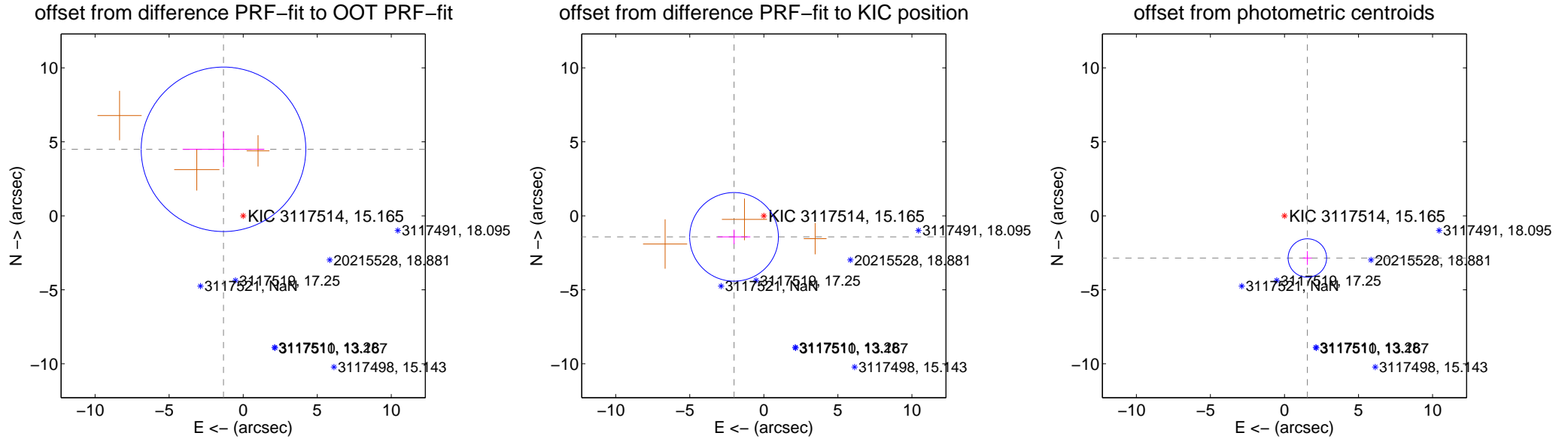
## DV Centroid Data

Supplemental centroid analysis for 003117514-05. Kepler magnitude: 15.16. Transit SNR 8.79

There are 0 quarters with good PRF difference image offsets

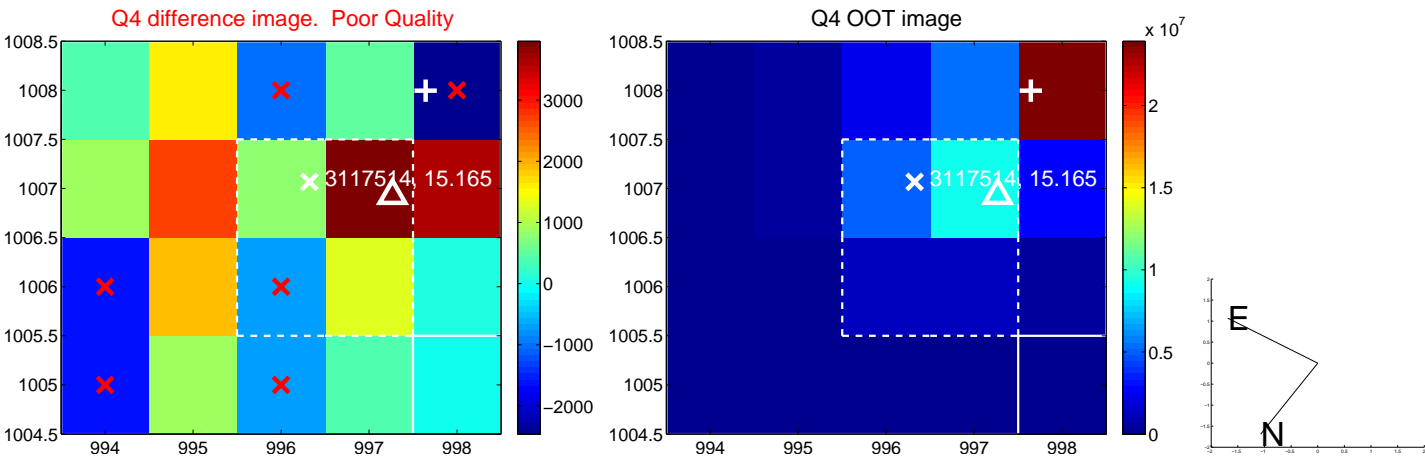
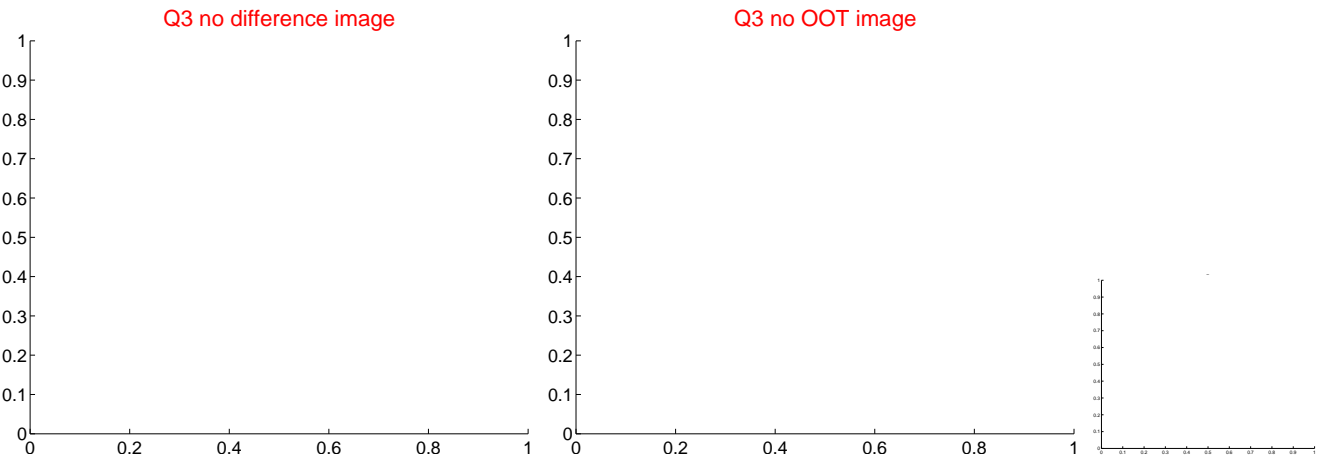
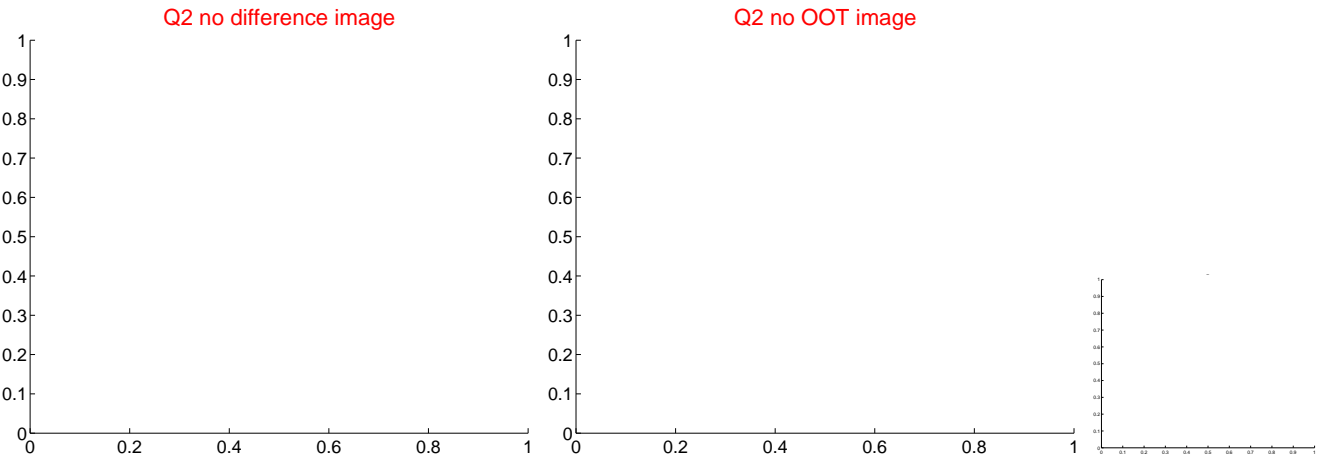
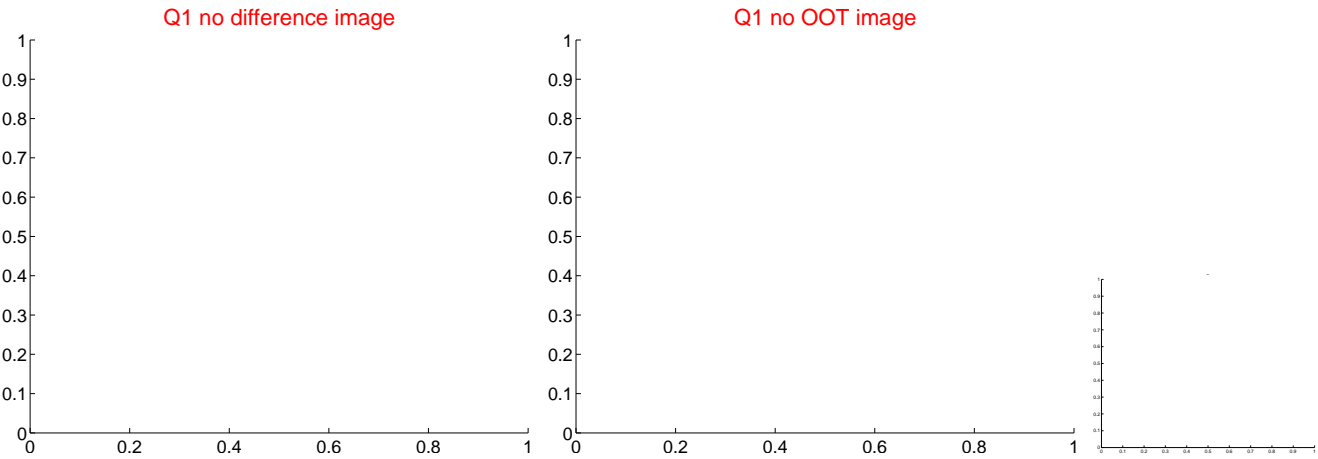
The OOT PRF centroid is offset from the target star catalog position by about 8.84 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$4.689 \pm 1.853$	2.53	$1.330 \pm 2.758$	$4.497 \pm 1.217$
PRF-fit source offset from KIC position	$2.464 \pm 0.999$	2.47	$2.012 \pm 1.103$	$-1.423 \pm 0.487$
photometric centroid source offset	$3.24 \pm 0.43$	7.49	$-1.55 \pm 0.30$	$-2.85 \pm 0.47$

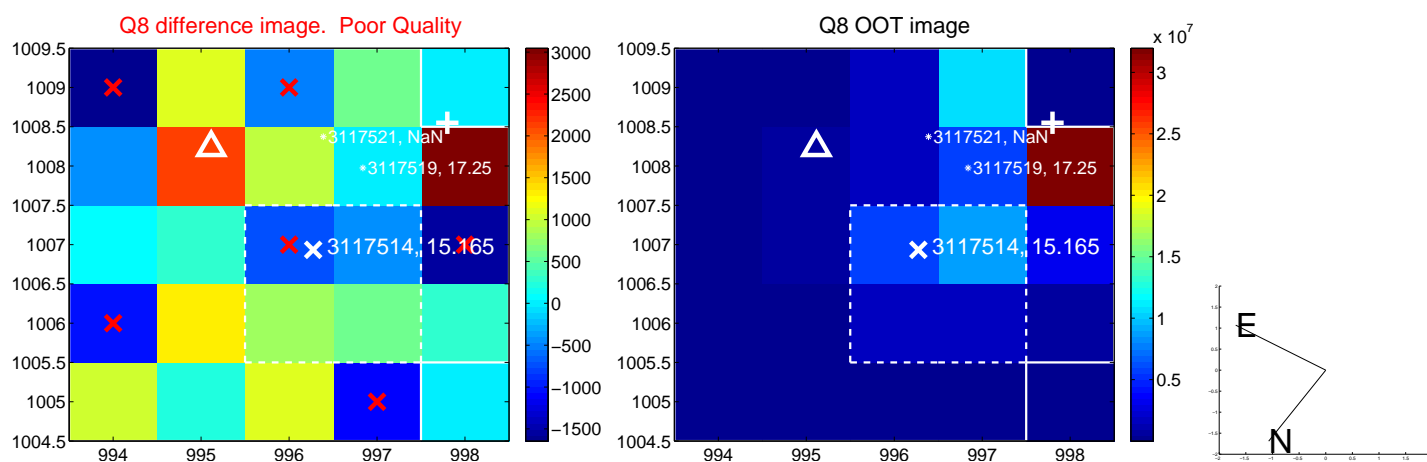
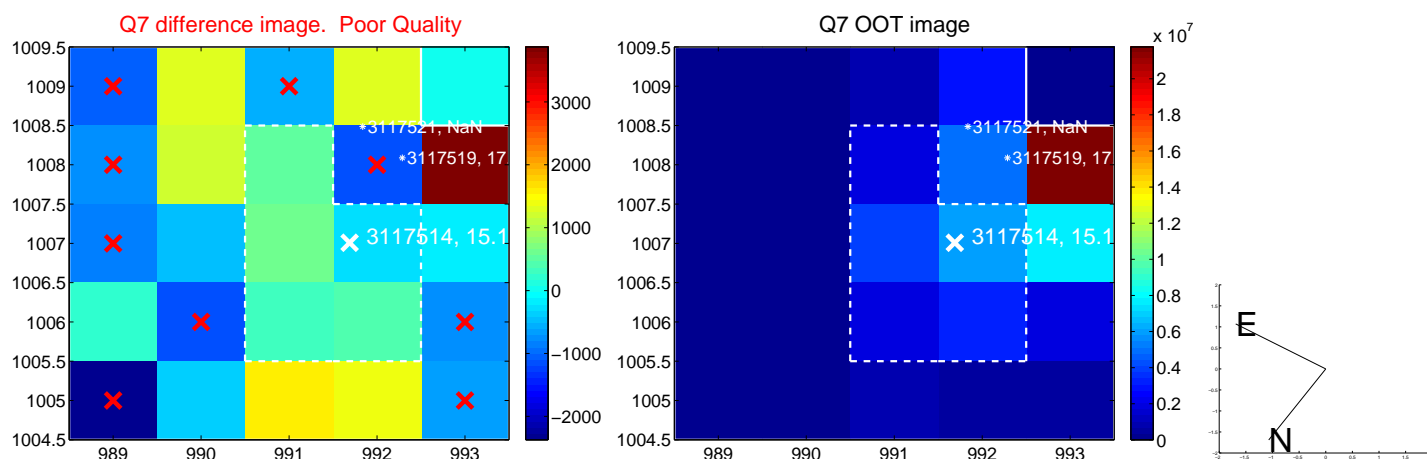
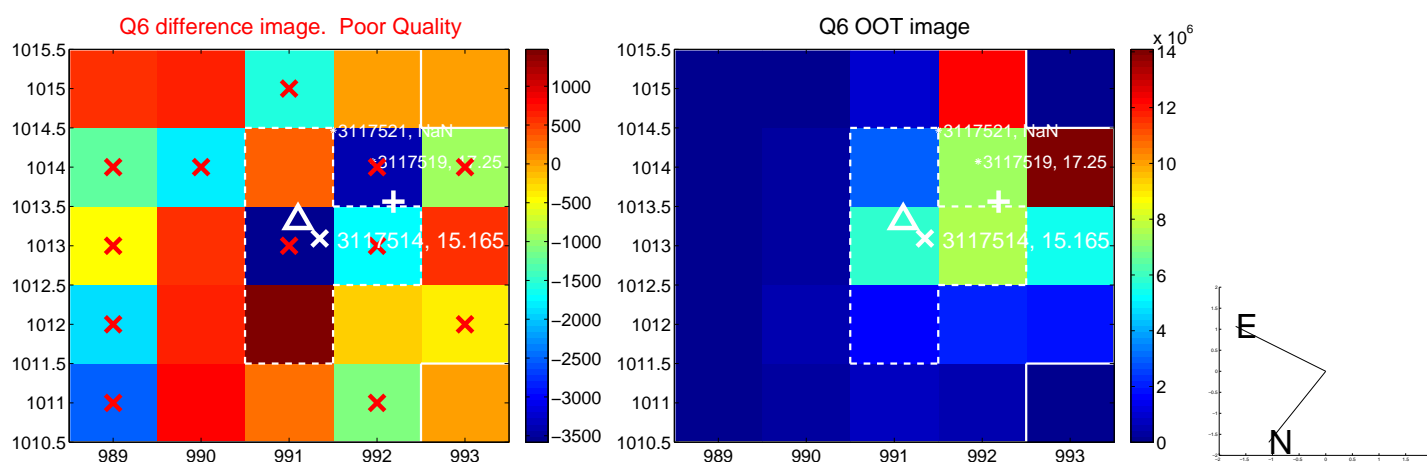
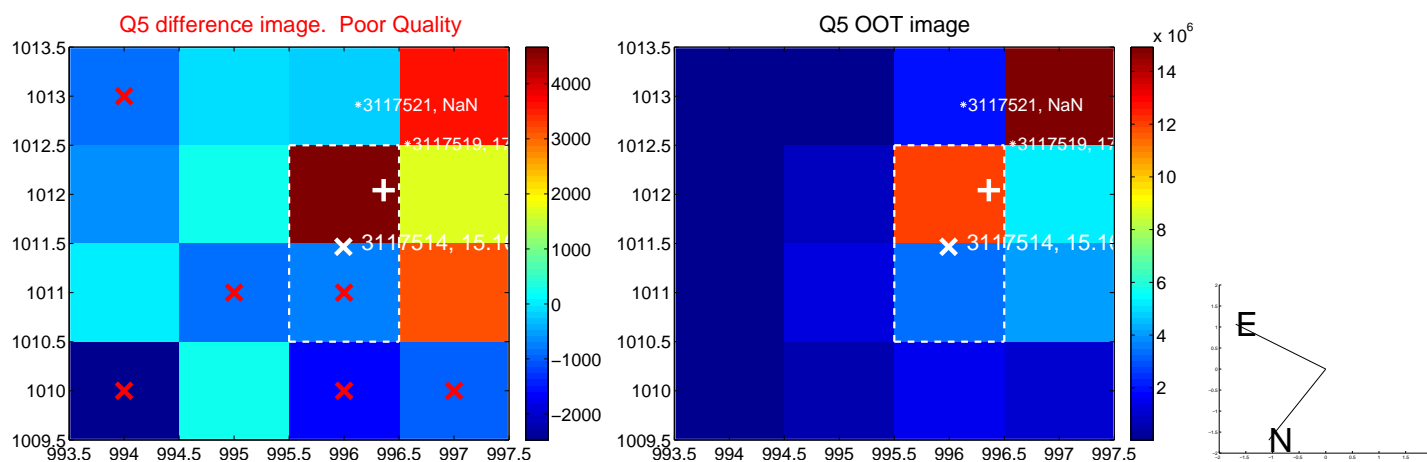


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three- $\sigma$ . Red \*: target star. Blue \*: Other stars. Text next to a star gives its KIC ID and kepmag. KIC IDs > 15,000,000 are from the UKIRT catalog.

white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

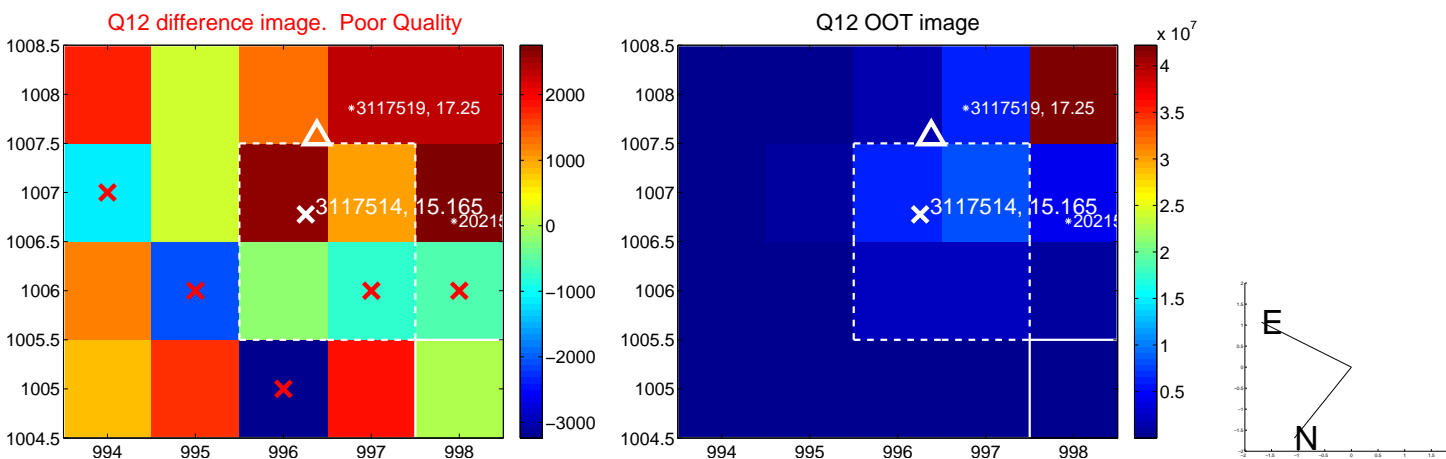
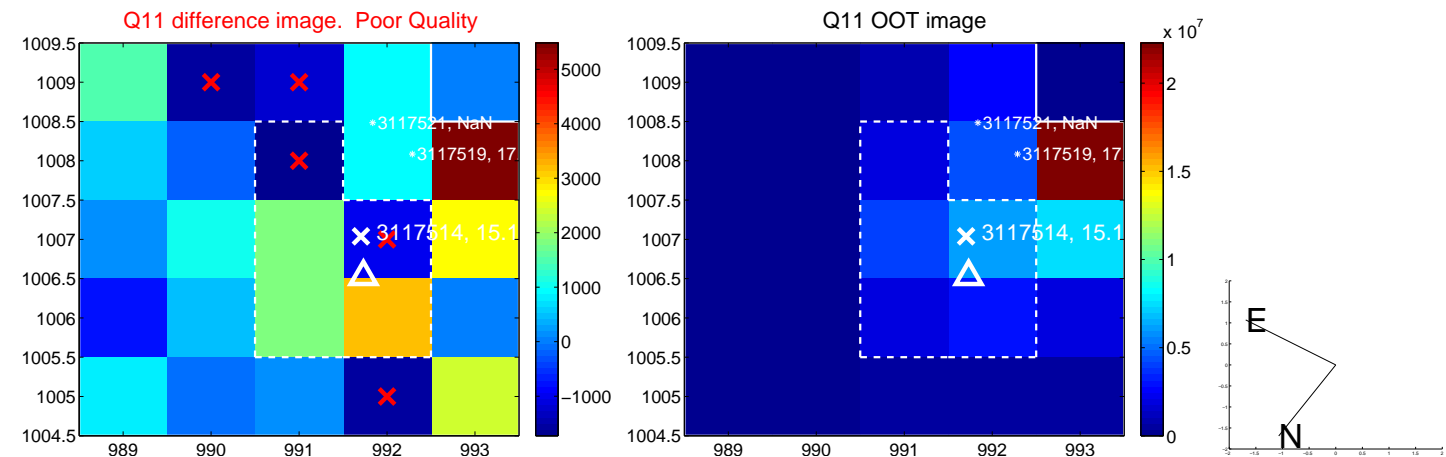
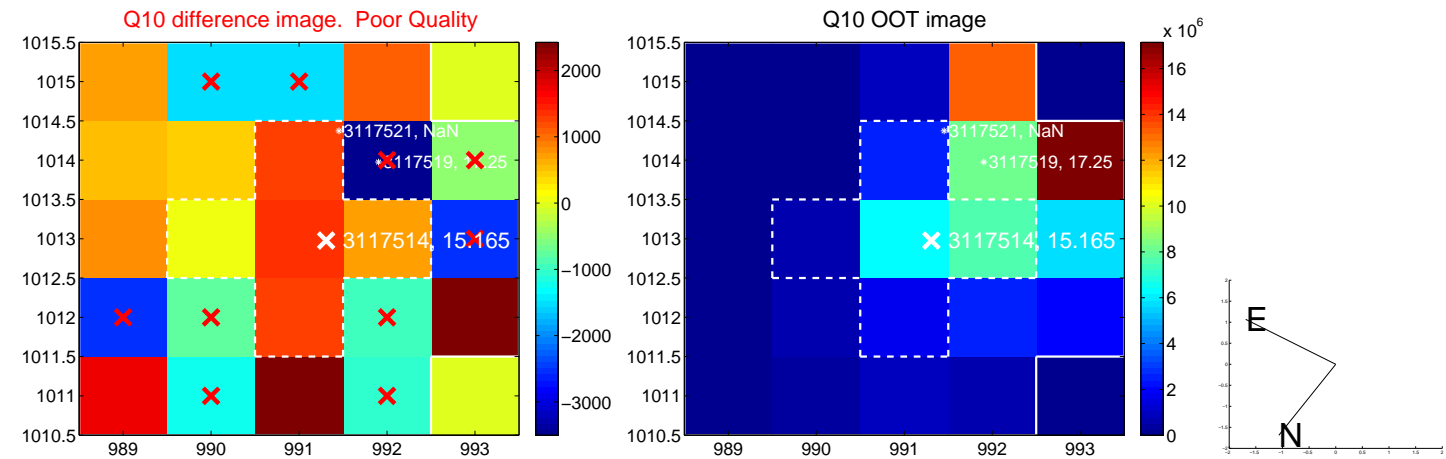
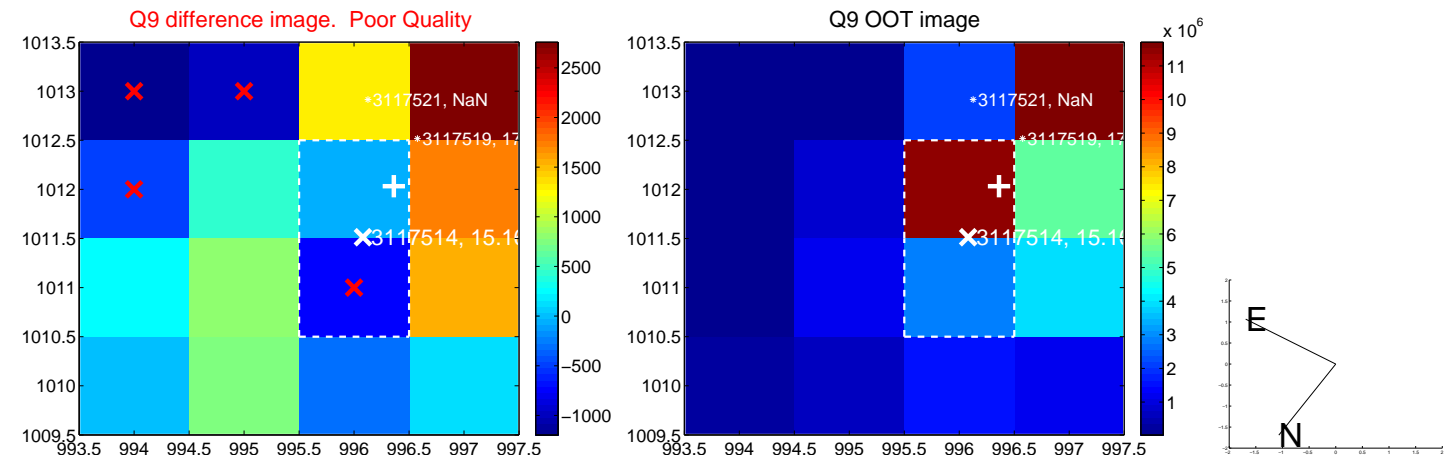


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.





white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

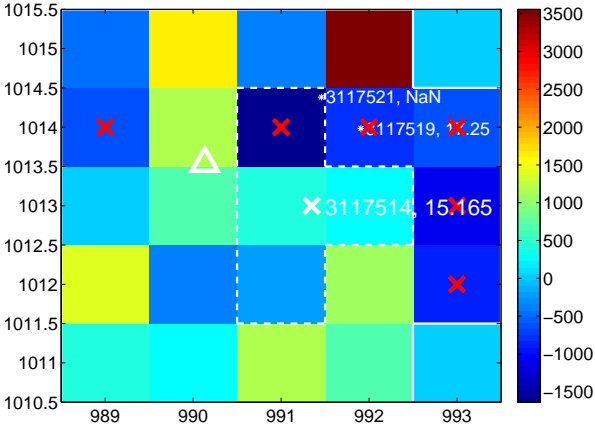
Q13 no difference image



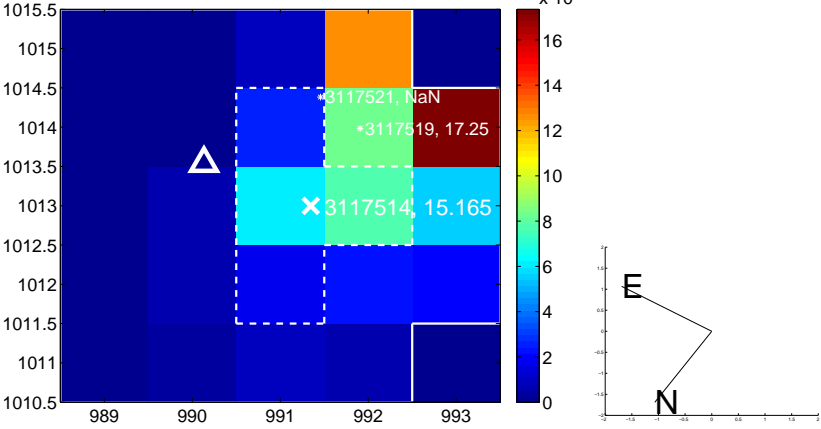
Q13 no OOT image



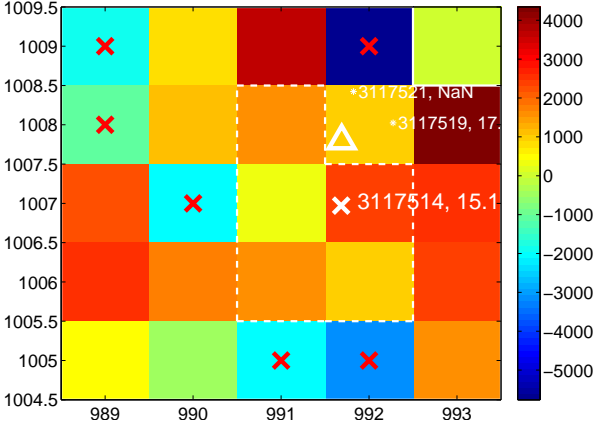
Q14 difference image. Poor Quality



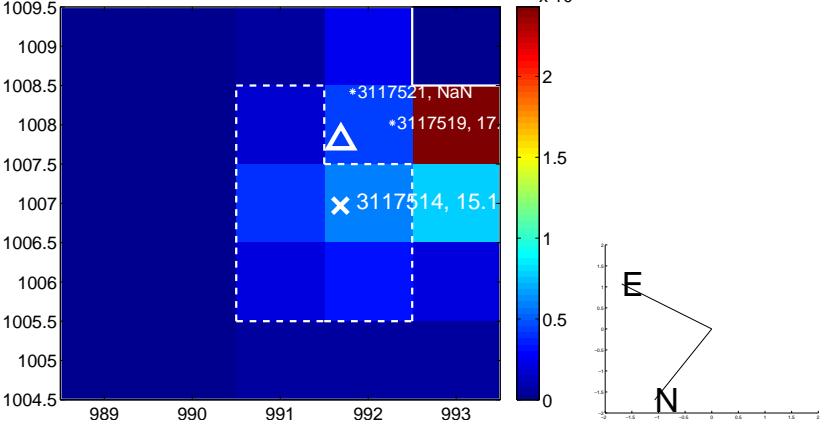
Q14 OOT image



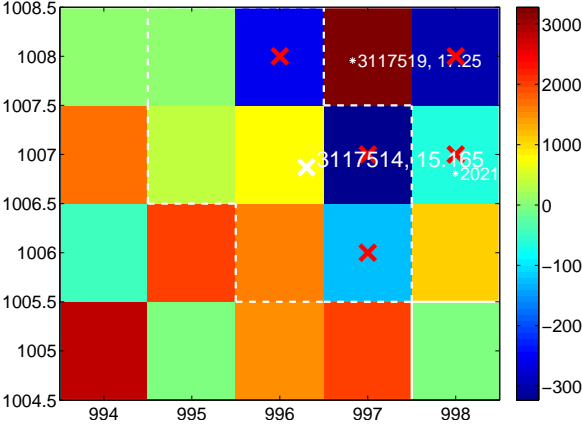
Q15 difference image. Poor Quality



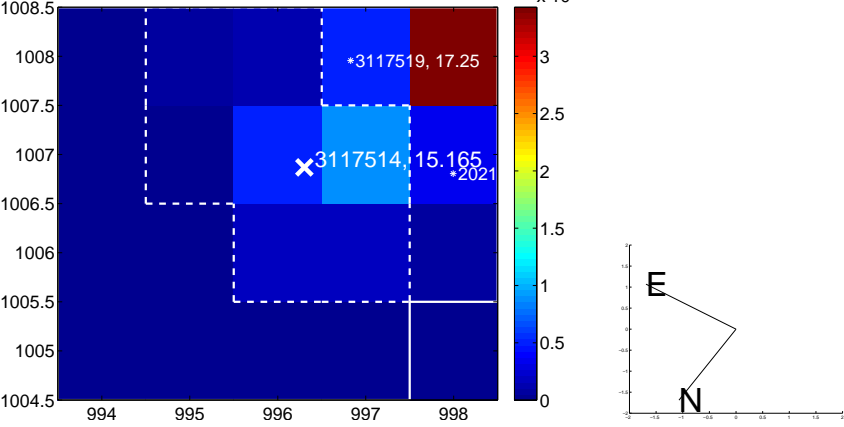
Q15 OOT image



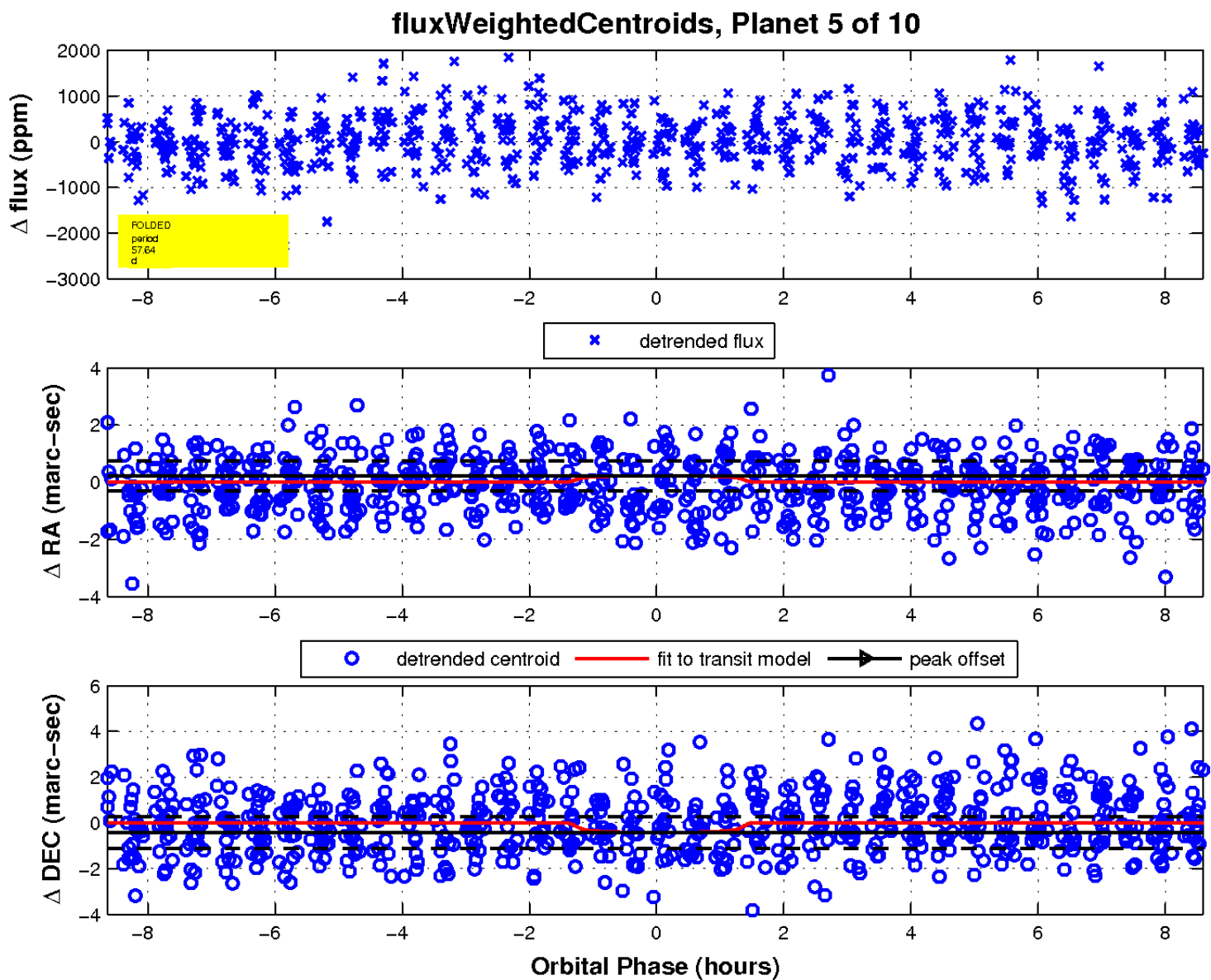
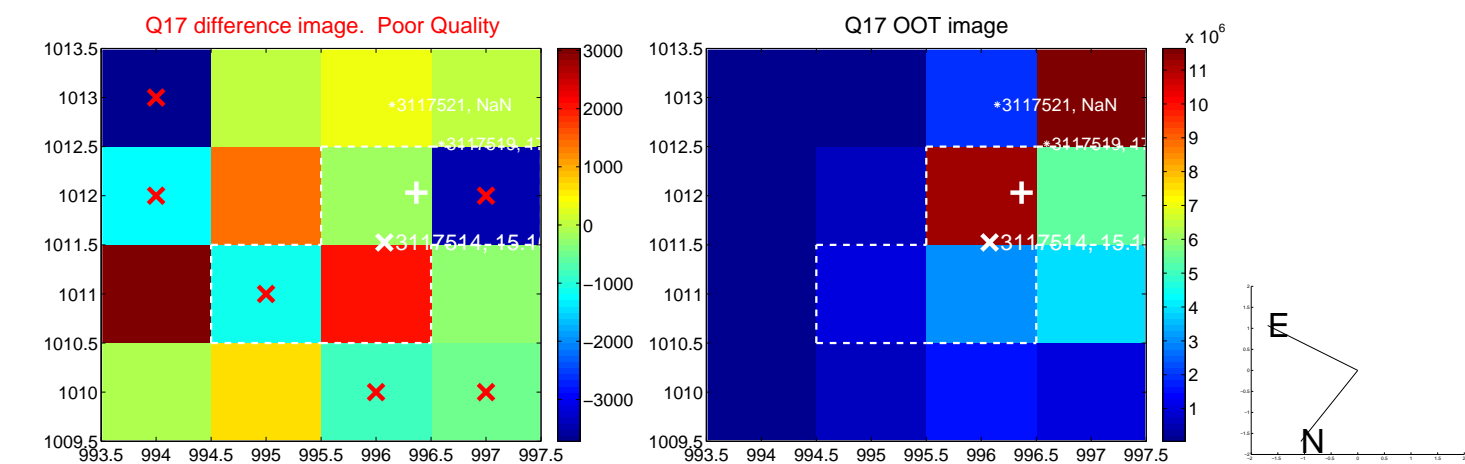
Q16 difference image. Poor Quality



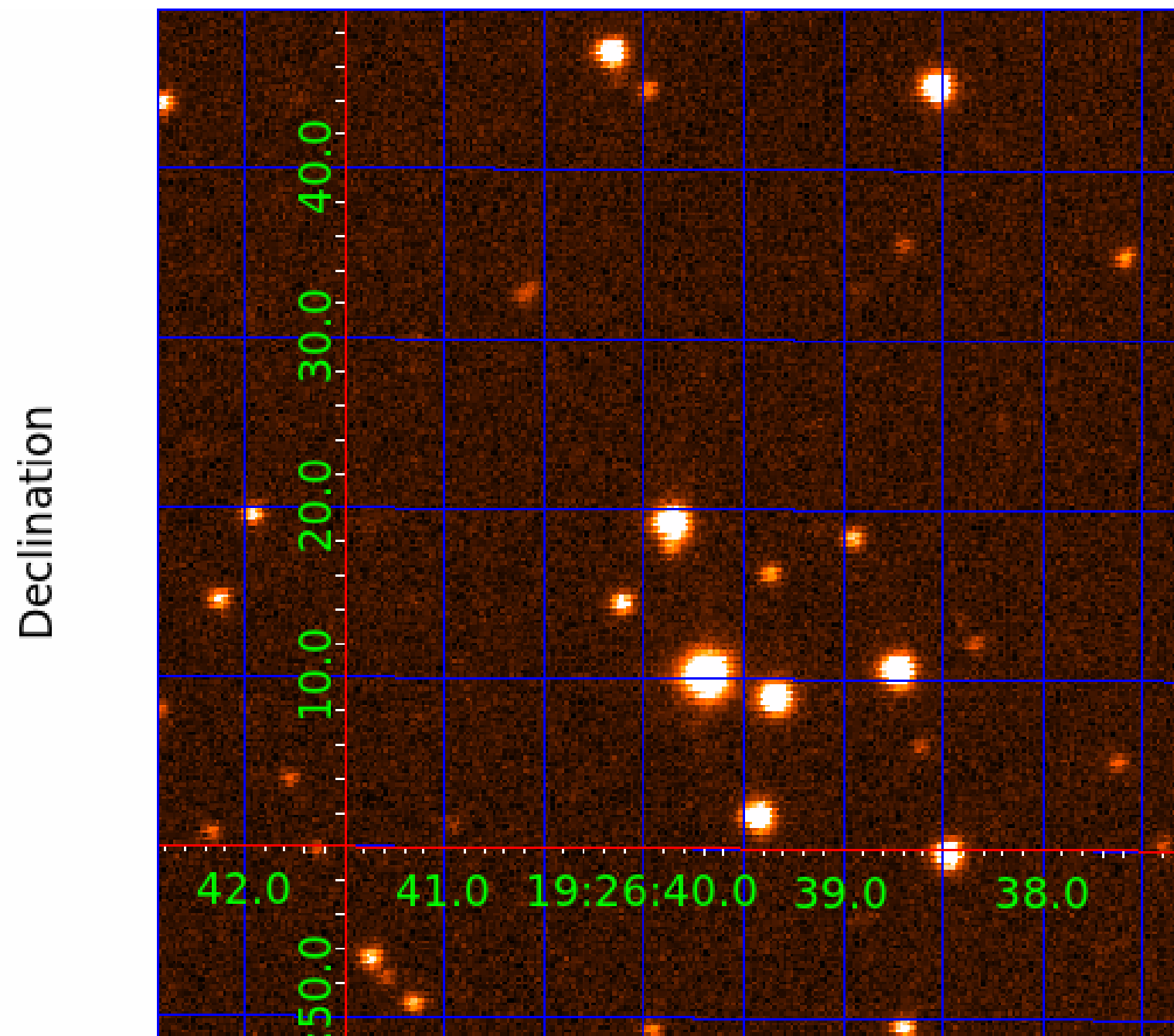
Q16 OOT image



white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image



## Q1-17 DR25 TCE Parameters

TCE	Run Type	KOI?	Period (Days)	Epoch (BKJD)	Depth (ppm)	Duration (Hours)	MES	SNR	$R_{\star}$ ( $R_{\odot}$ )	$T_{\star}$ (K)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
003117514-01	OBS	No	1.091938	131.641378	53.4	7.431	8.5	8.6	0.69	5469	0.58	1075.44
003117514-02	OBS	No	33.369509	157.503651	669.9	2.906	10.4	7.1	0.69	5469	1.99	11.26
003117514-03	OBS	No	24.379621	144.629800	722.9	3.062	8.6	9.5	0.69	5469	2.03	17.11
003117514-04	OBS	No	30.423736	143.081360	695.1	1.951	9.0	7.8	0.69	5469	2.08	12.73
003117514-05	OBS	No	57.642773	136.377881	920.7	2.879	8.3	8.8	0.69	5469	2.33	5.43
003117514-06	OBS	No	37.233493	132.857621	1420.0	1.430	8.7	9.1	0.69	5469	2.63	9.73
003117514-07	OBS	No	41.695704	159.649434	657.5	3.150	8.3	7.7	0.69	5469	2.12	8.36
003117514-08	OBS	No	62.634001	187.247617	761.8	3.290	8.2	7.4	0.69	5469	2.25	4.86
003117514-09	OBS	No	17.554198	145.730643	403.9	5.160	8.6	8.0	0.69	5469	1.62	26.51
003117514-10	OBS	No	47.900949	141.379946	1639.1	2.000	8.1	-1.0	0.69	5469	2.79	6.95

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003117514-01	OBS	FP	0.00	1	0	1	0	LPP_DV—LPP_ALT—CENT_RESOLVED_OFFSET—HALO_GHOST
003117514-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
003117514-03	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_RESOLVED_OFFSET—HALO_GHOST
003117514-04	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_RESOLVED_OFFSET
003117514-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
003117514-06	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_DV—CENT_FEW_DIFFS
003117514-07	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_RESOLVED_OFFSET
003117514-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
003117514-09	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_RESOLVED_OFFSET
003117514-10	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_NOFITS

**Notes:** OBS = Observed. INJ = Injected. INV = Inverted. SCR = Scrambled.

N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

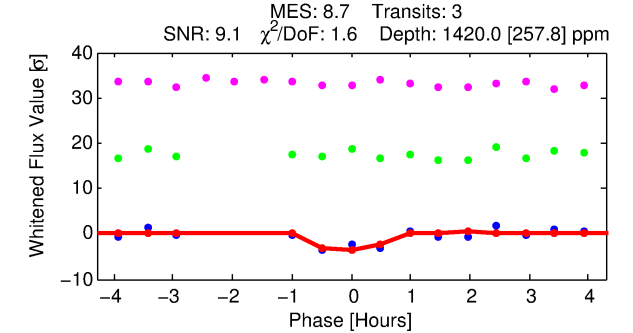
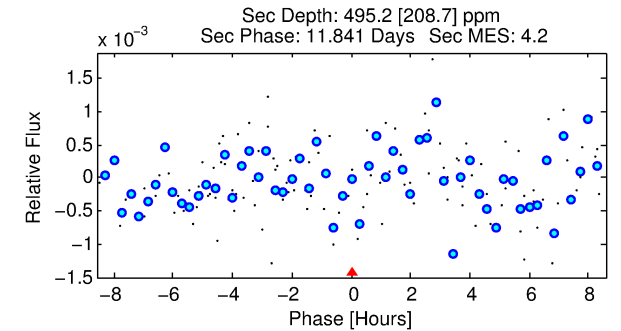
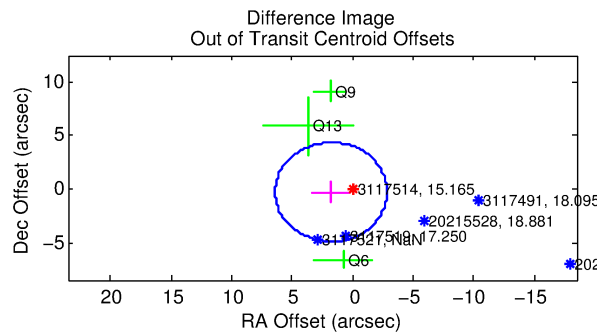
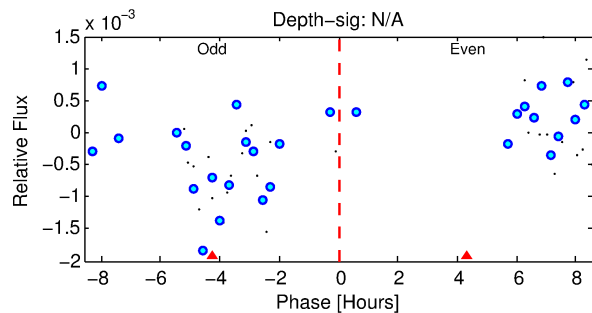
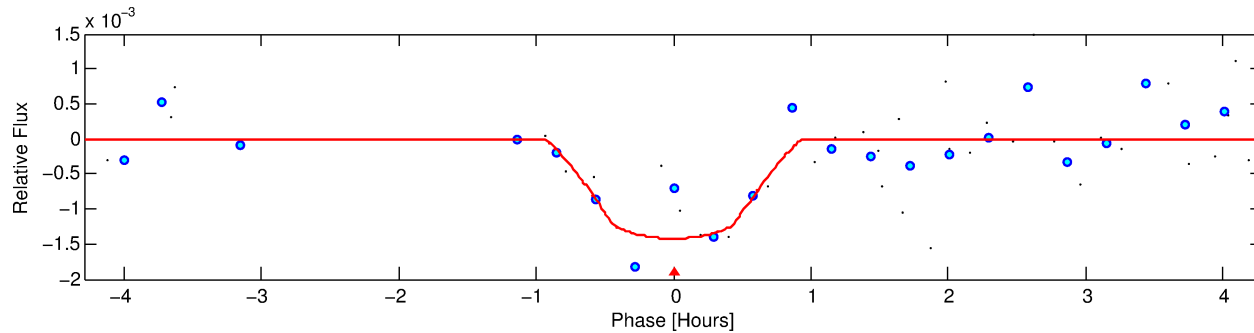
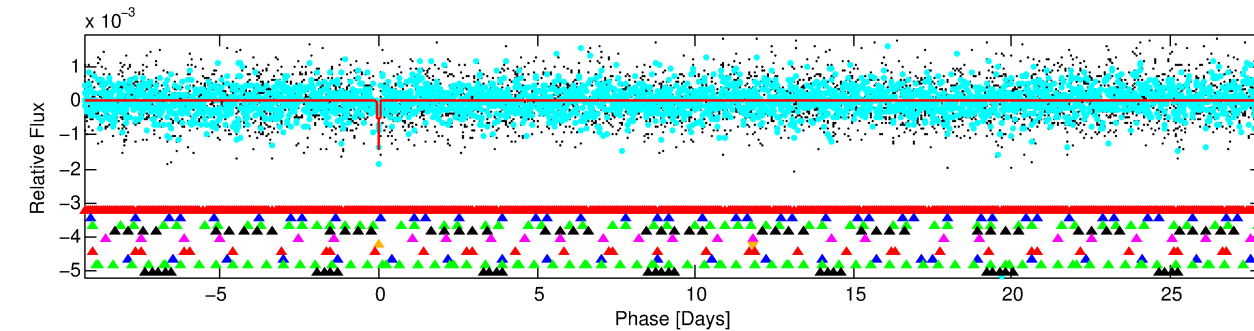
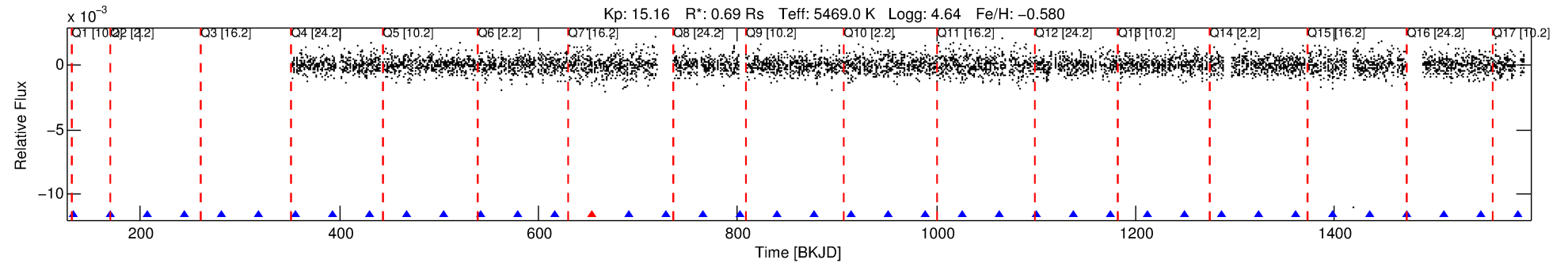
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 003117514-06

No Significant Match Found

# DV One-Page Summary

KIC: 3117514 Candidate: 6 of 10 Period: 37.233 d



## DV Fit Results:

Period = 37.23349 [0.00047] d  
Epoch = 132.8576 [0.0122] BKJD  
Rp/R\* = 0.0347 [0.0658]  
a/R\* = 196.21 [1626.39]  
b = 0.31 [24.16]  
Seff = 9.73 [2.36]  
Teff = 450 [27] K  
Rp = 2.63 [5.01] Re  
a/R\* = 0.1995 [0.0275] AU  
Ag = 1563.97 [5972.65] [0.26σ]  
Teffp = 4378 [4178] K [0.94σ]

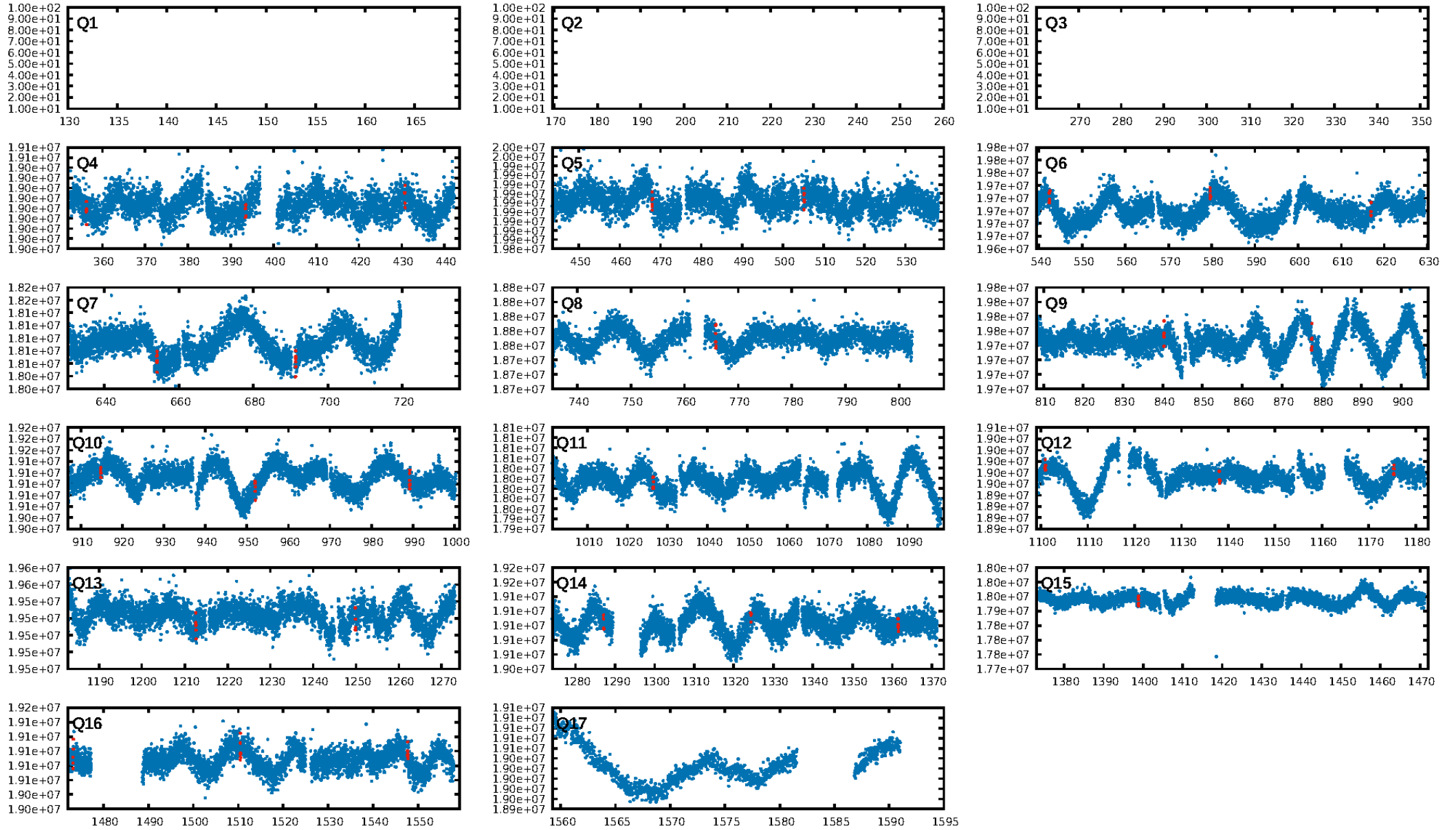
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [28.63σ]  
LongPeriod-sig: 100.0% [30.96σ]  
ModelChiSquare2-sig: 50.9%  
ModelChiSquareGof-sig: 65.2%  
Bootstrap-pfa: N/A  
RollingBand-fgt: 0.67 [2/3]  
GhostDiagnostic-chr: 0.3672  
Centroid-sig: 2.7%  
Centroid-so: 3.733 arcsec [11.34σ]  
OotOffset-rm: 1.807 arcsec [1.17σ]  
KicOffset-rm: 3.333 arcsec [1.14σ]  
OotOffset-st: 1/0/0/2 [3]  
KicOffset-st: 1/2/0/2 [5]  
DiffImageQuality-fgm: 0.00 [0/5]  
DiffImageOverlap-fno: 0.46 [6/13]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 06:34:20 Z

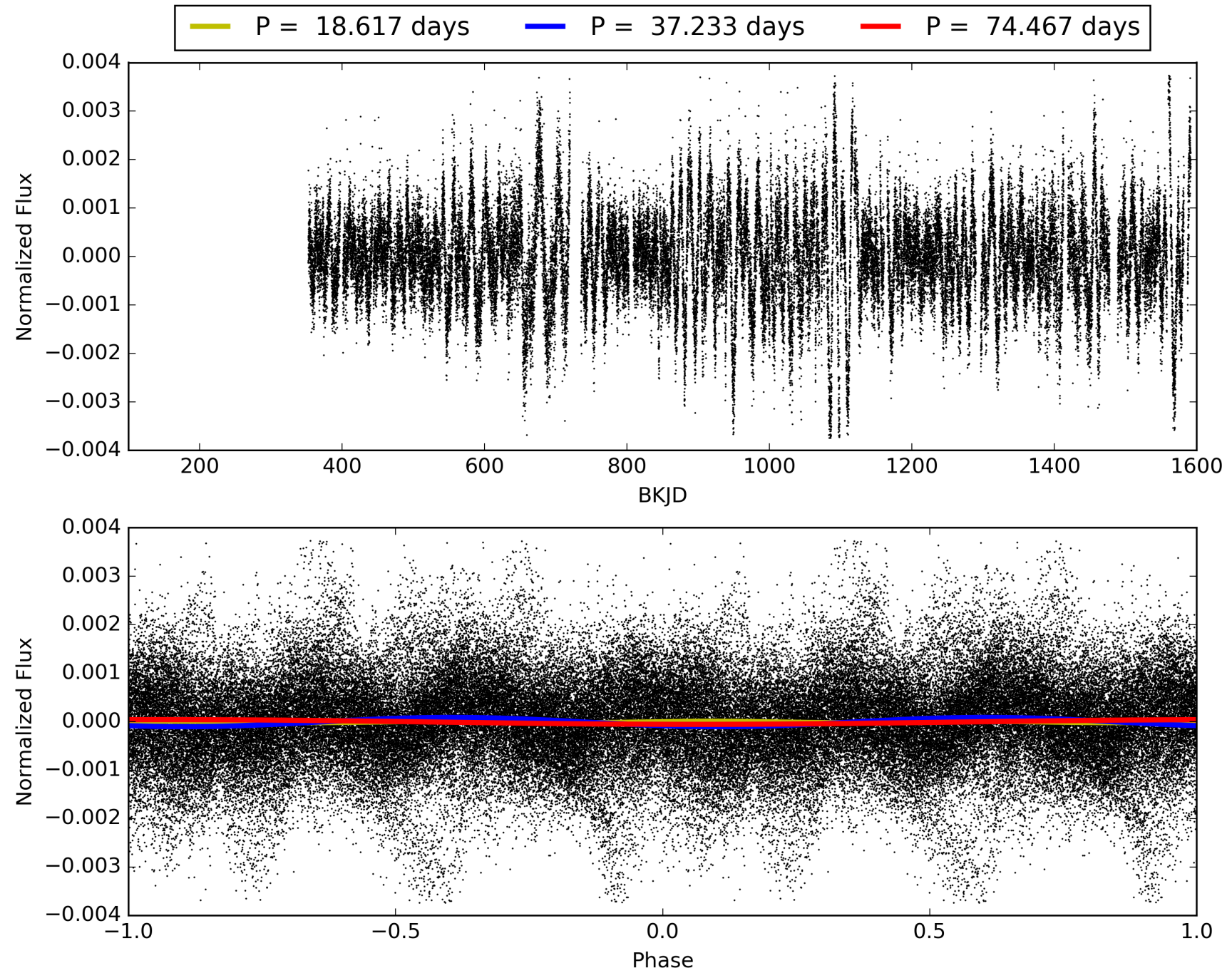
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 003117514-06, PDC Light Curves



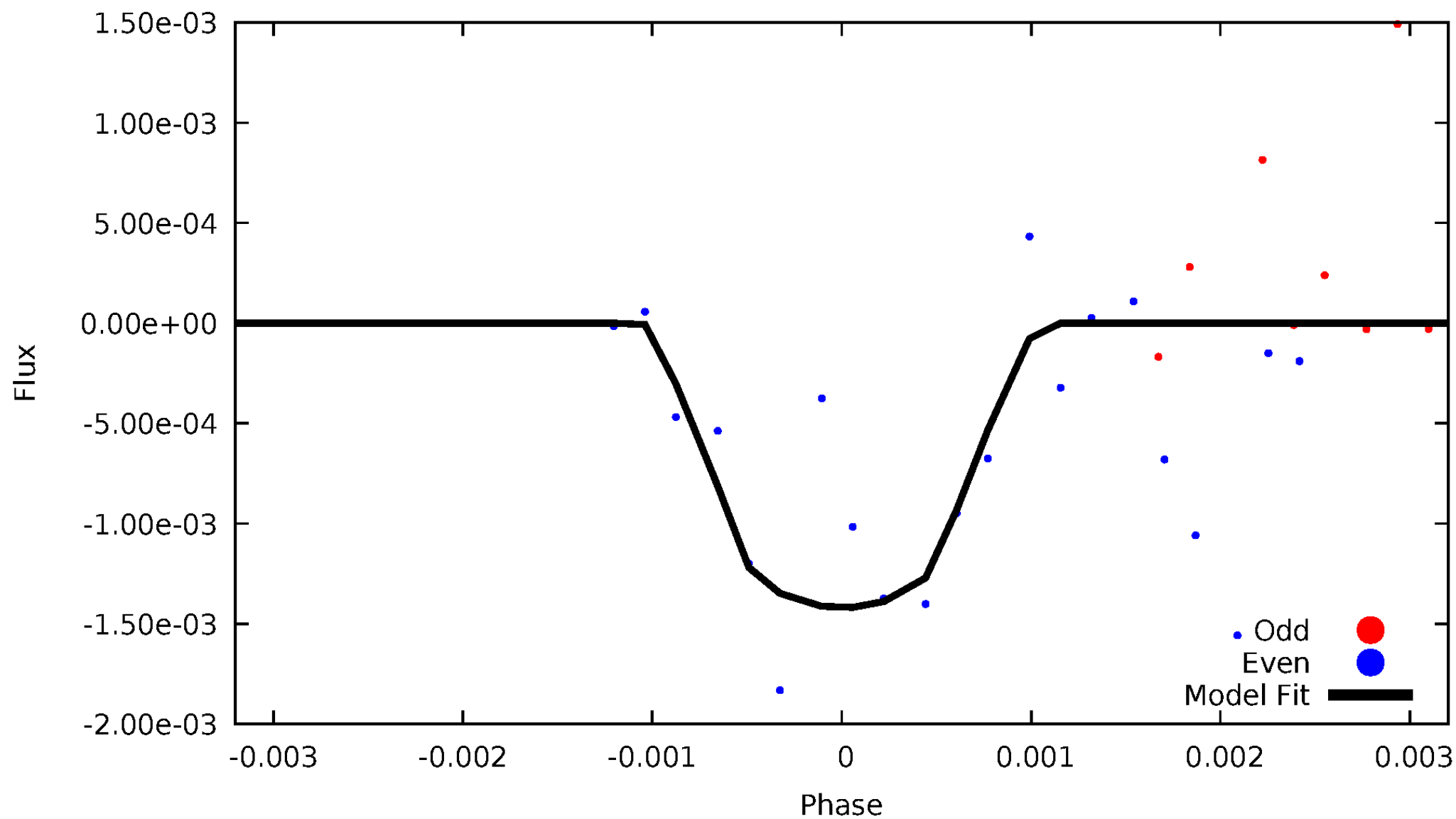


TCE 003117514-06



# DV Odd/Even

TCE 003117514-06



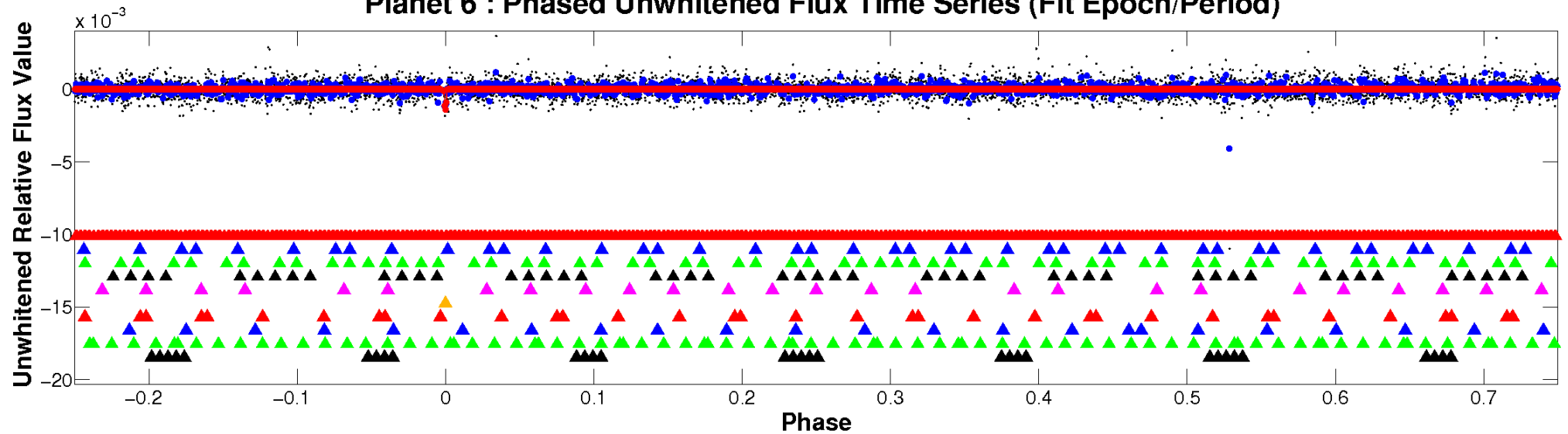


ALT Odd/Even

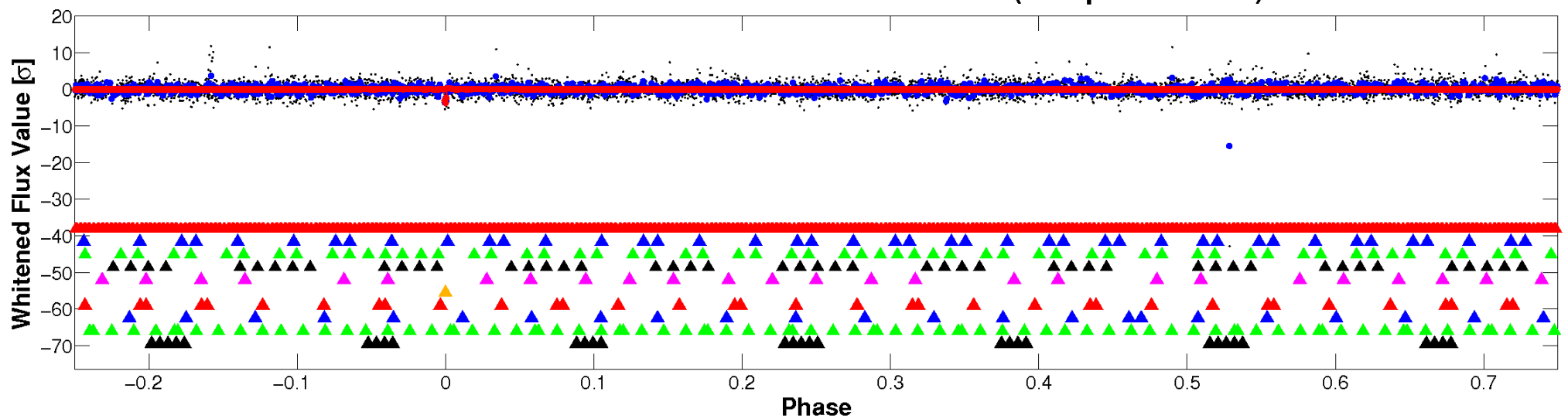
This plot does not exist for this TCE.

# Non-Whitened Vs. Whitened Light Curve

## Planet 6 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

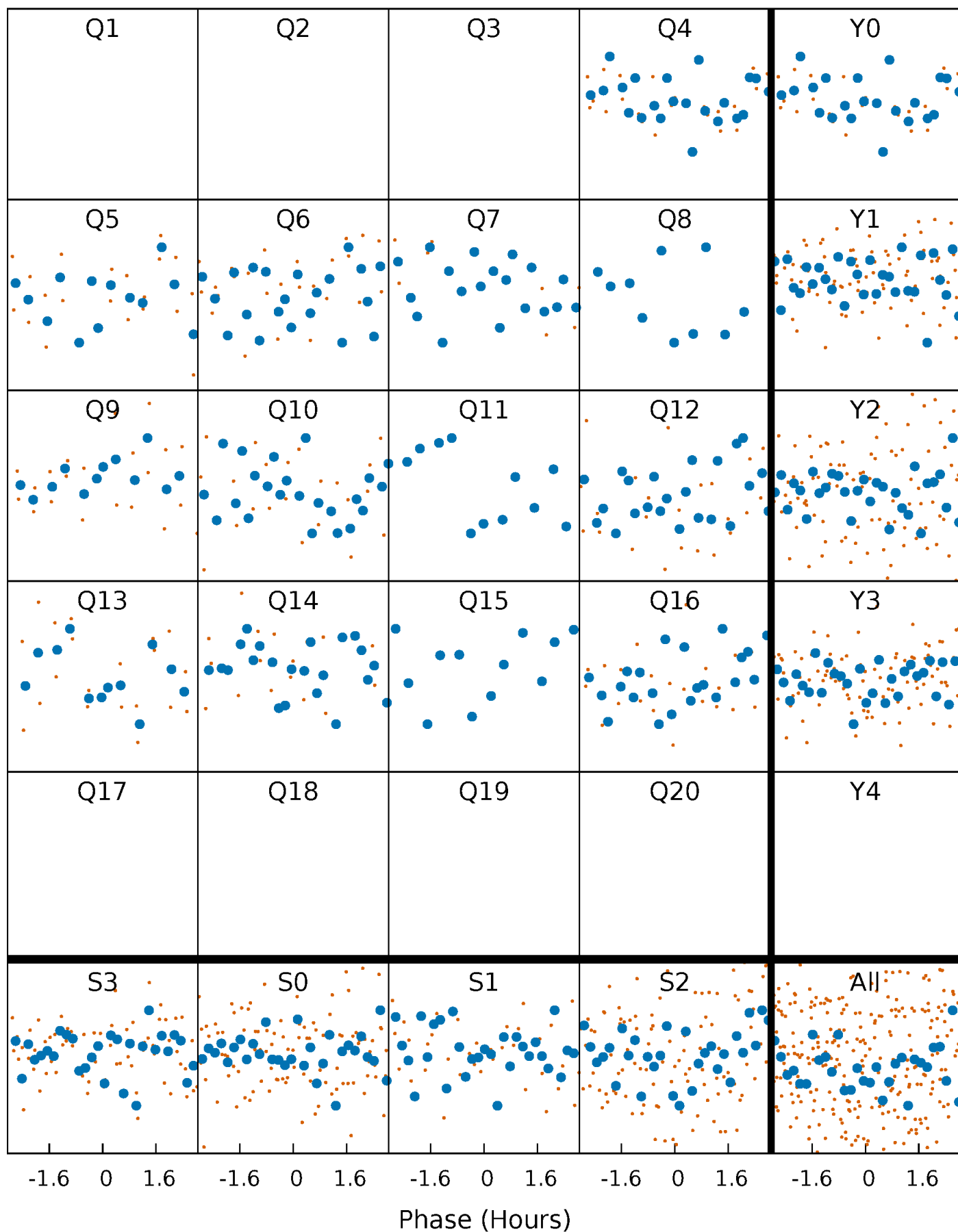


## Planet 6 : Phased Whitened Flux Time Series (Fit Epoch/Period)



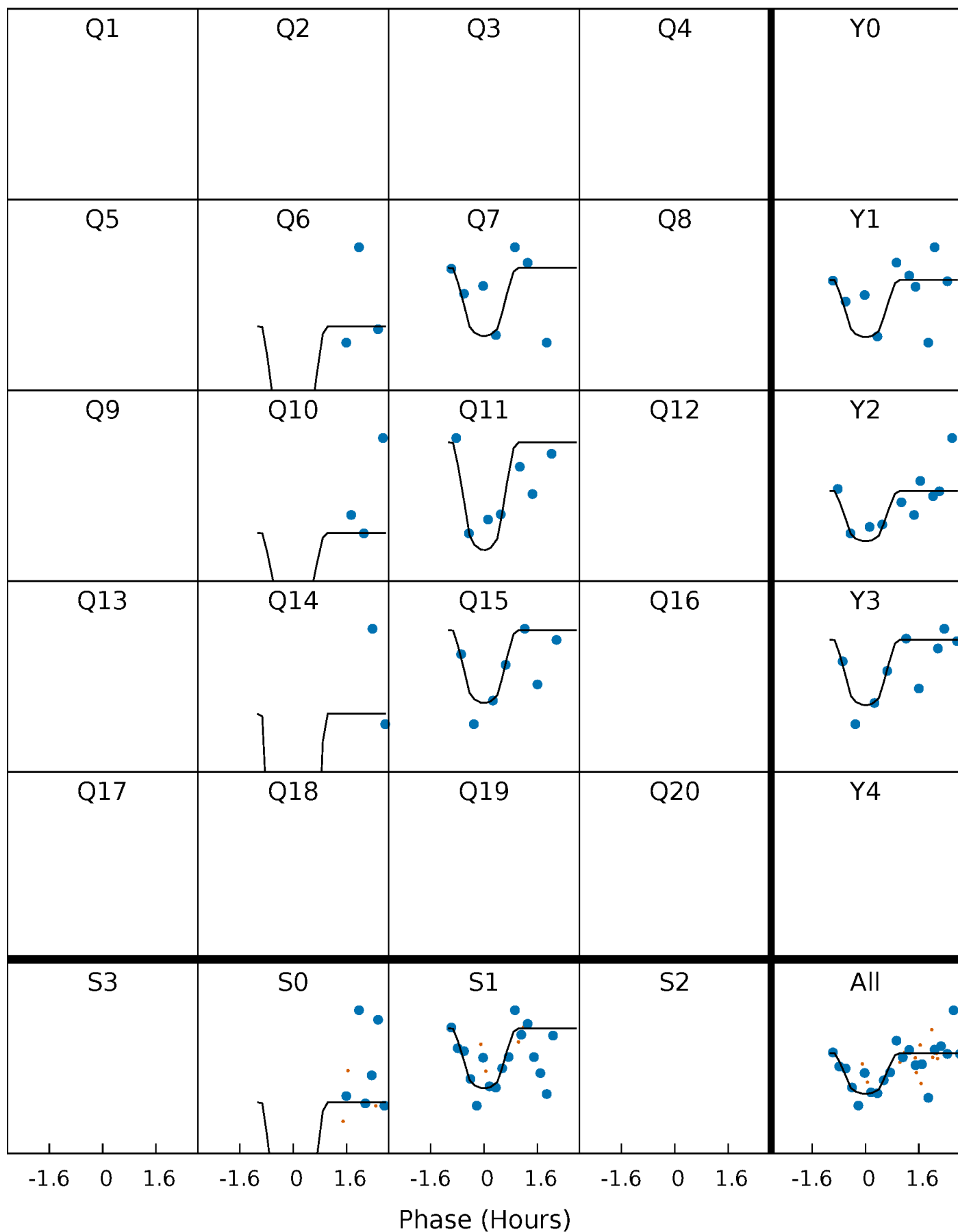
# PDC Quarter-Phased Transit Curves

TCE 003117514-06 P= 37.233493 Days  $T_0=132.857621$  (BKJD)



# DV Quarter-Phased Transit Curves

TCE 003117514-06 P= 37.233493 Days  $T_0=132.857621$  (BKJD)



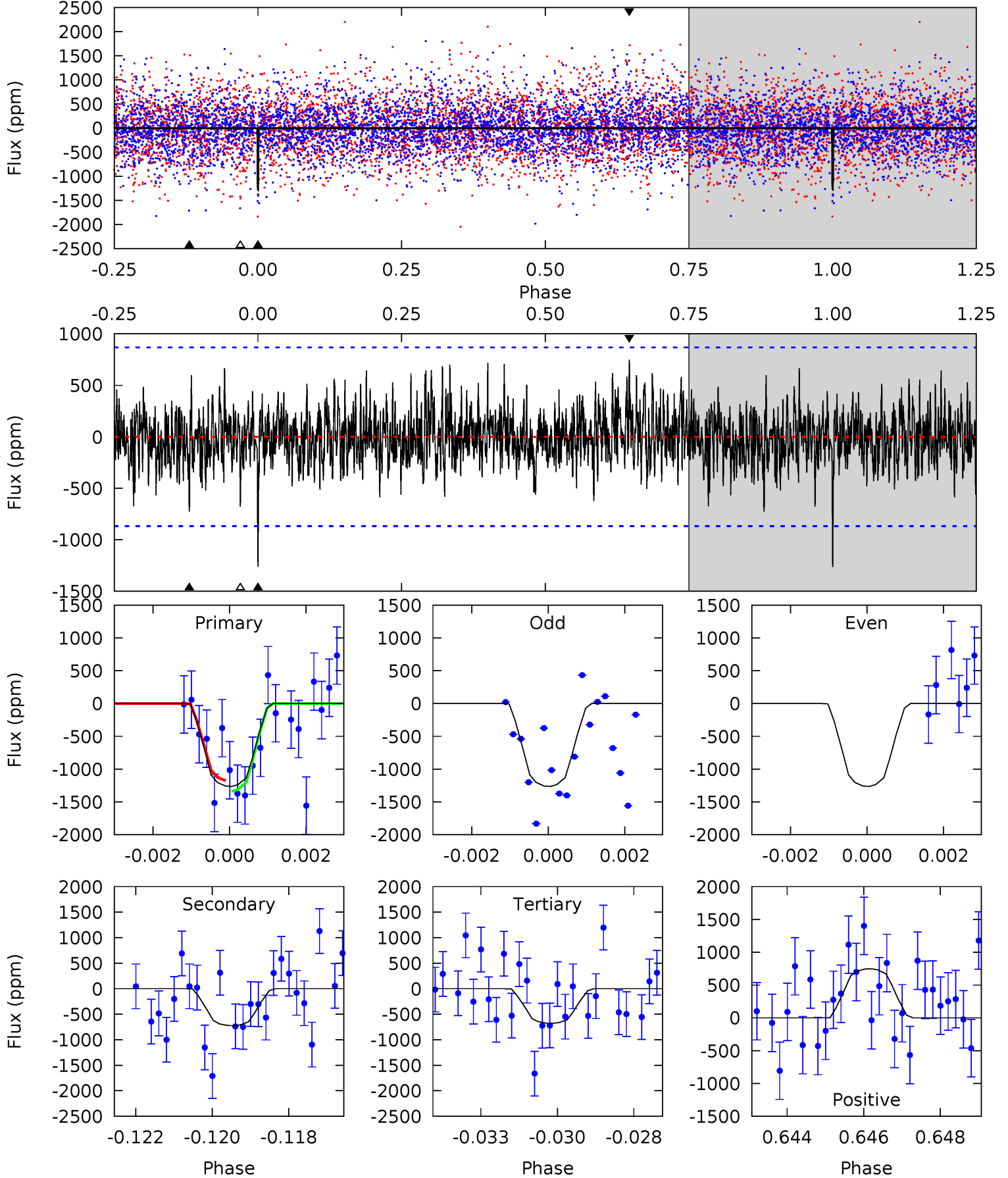
This plot does not exist for this TCE.



# DV Model-Shift Uniqueness Test

003117514-06, P = 37.233493 Days, E = 132.857621 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.75	4.45	4.16	4.59	5.32	3.09	1.30	3.59	3.16	0.28	-0.15	0	1.03	0.37	0.50



## Alt Model-Shift Uniqueness Test

This plot does not exist for this TCE.

### Stellar Parameters For KIC 003117514

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (g \cdot \text{cm}^{-3})$
	$5469^{+196}_{-196}$	$4.637^{+0.032}_{-0.104}$	$-0.580^{+0.300}_{-0.300}$	$0.695^{+0.117}_{-0.050}$	$0.778^{+0.073}_{-0.081}$	$3.264^{+0.482}_{-1.044}$
	+4%/-4%	+1%/-2%	+52%/-52%	+17%/-7%	+9%/-10%	+15%/-32%
Source	KIC0	KIC0	KIC0	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology  
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

### Secondary Eclipse Parameters for KIC 003117514-06 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-724 \pm 163$	$4.77^{+4.42}_{-3.13}$	$638^{+30}_{-27}$	$3907^{+2177}_{-713}$	$650^{+4988}_{-462}$
Alt.	N/A	N/A	N/A	N/A	N/A

$T_{max}$  = Theoretical Maximum Planetary Temperature

$T_{obs}$  = Observed Planetary Temperature (Assuming  $A=0.3$ )

$A_{obs}$  = Observed Albedo (Assuming  $T=0$ )

If a secondary eclipse is present, the system is likely an EB if  $T_{obs} \gg T_{max}$  AND  $A_{obs} \gg 1.0$

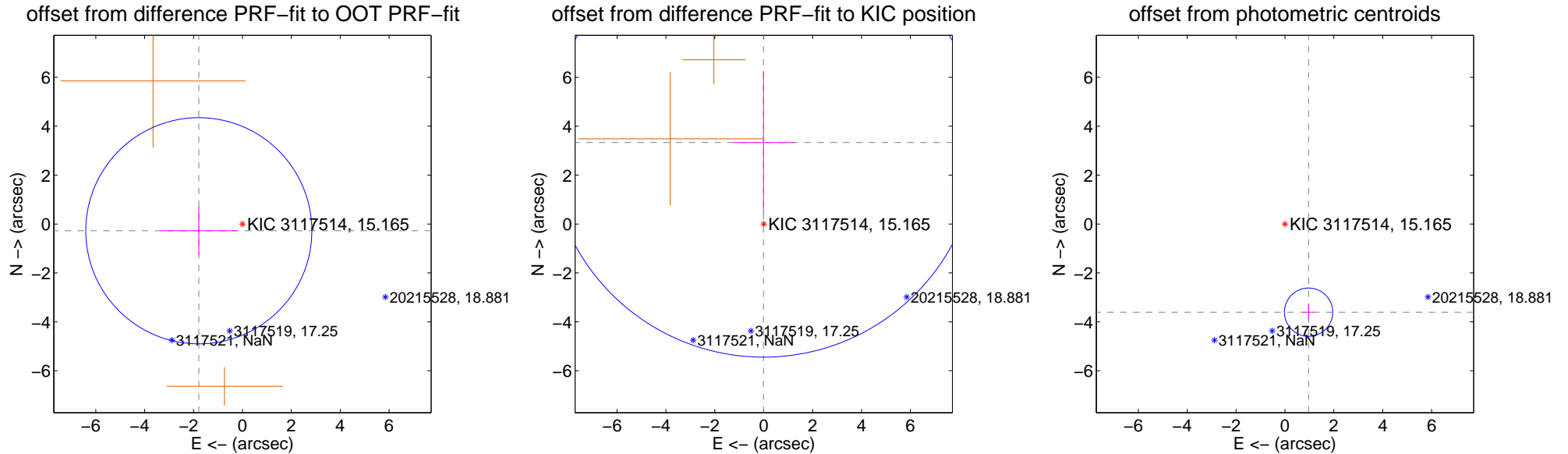
## DV Centroid Data

Supplemental centroid analysis for 003117514-06. Kepler magnitude: 15.16. Transit SNR 9.10

There are 0 quarters with good PRF difference image offsets

The OOT PRF centroid is offset from the target star catalog position by about 2.37 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.807 \pm 1.542$	1.17	$1.786 \pm 1.552$	$-0.276 \pm 1.006$
PRF-fit source offset from KIC position	$3.333 \pm 2.926$	1.14	$0.008 \pm 1.259$	$3.333 \pm 2.923$
photometric centroid source offset	$3.73 \pm 0.33$	11.34	$-0.97 \pm 0.22$	$-3.61 \pm 0.34$



Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three- $\sigma$ . Red \*: target star. Blue \*: Other stars. Text next to a star gives its KIC ID and kepmag. KIC IDs > 15,000,000 are from the UKIRT catalog.

white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.

Q1 no difference image



Q1 no OOT image



Q2 no difference image



Q2 no OOT image



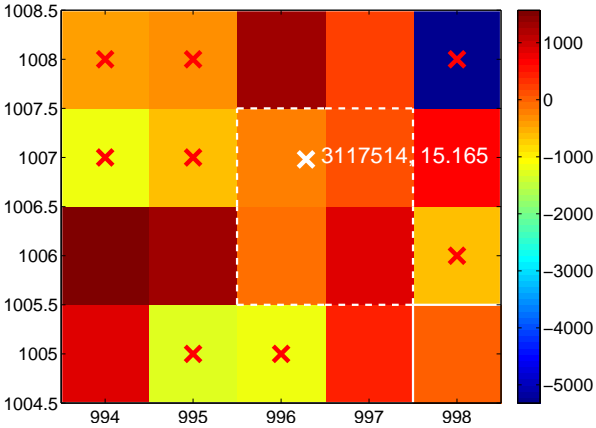
Q3 no difference image



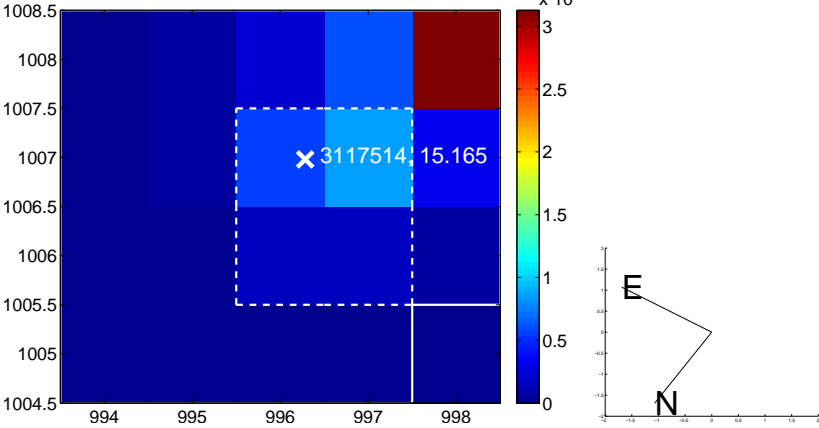
Q3 no OOT image



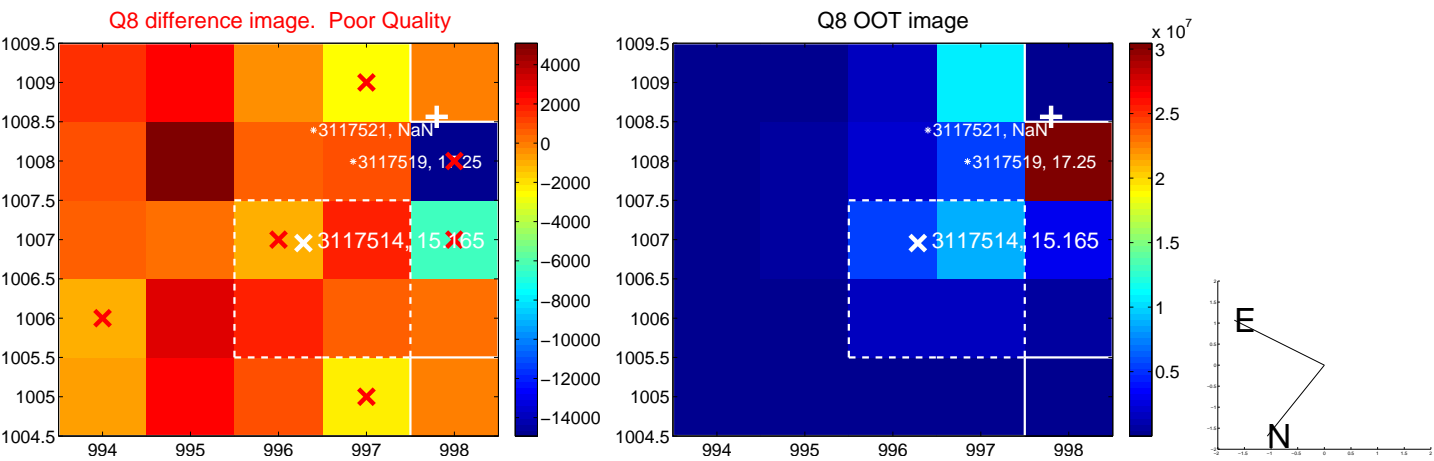
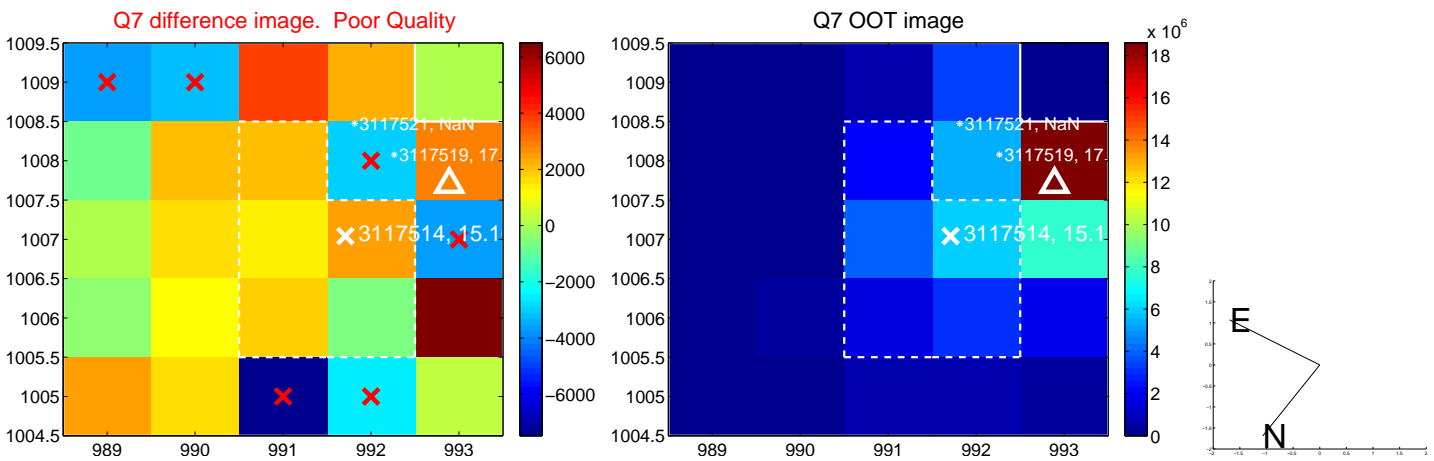
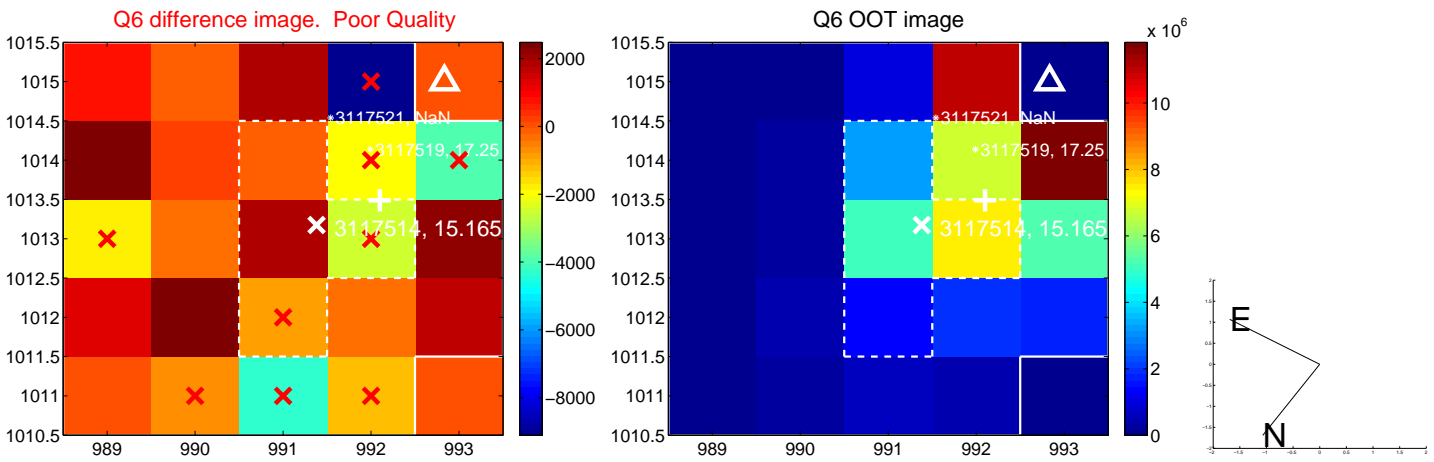
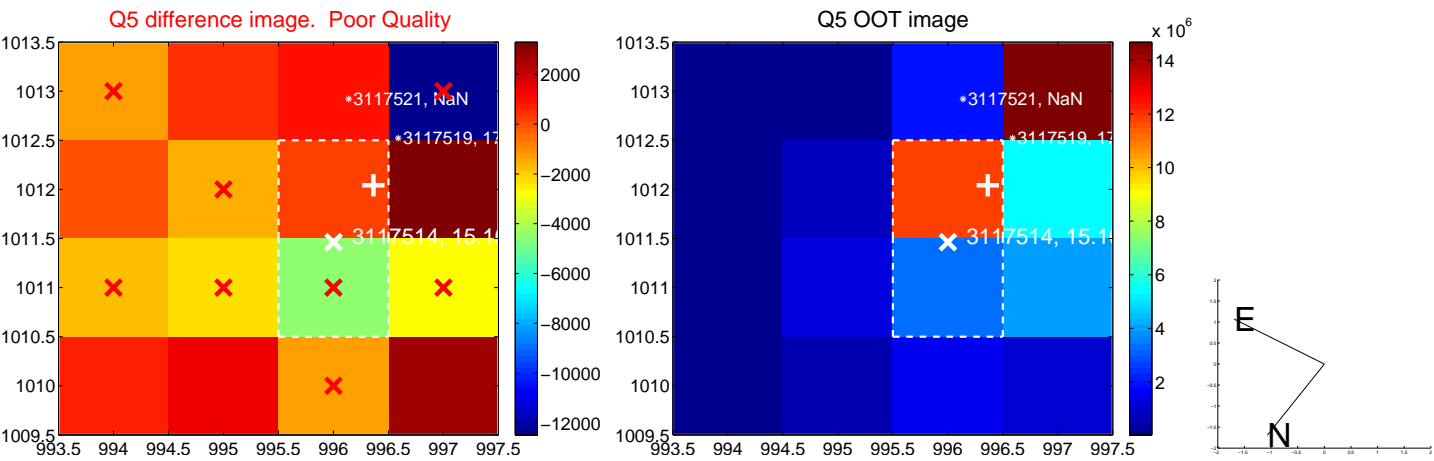
Q4 difference image. Poor Quality



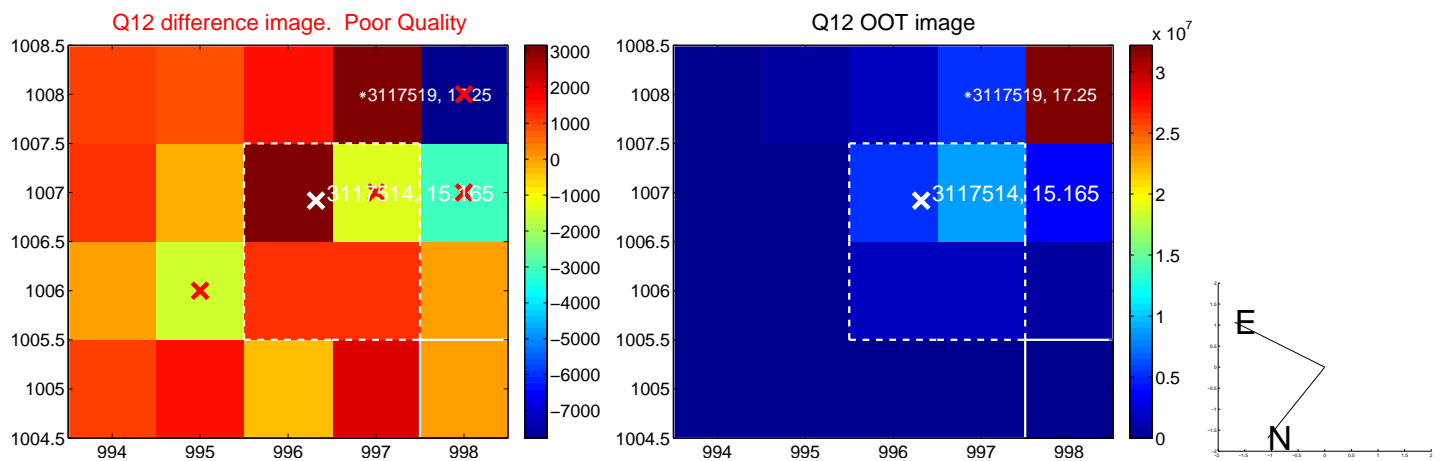
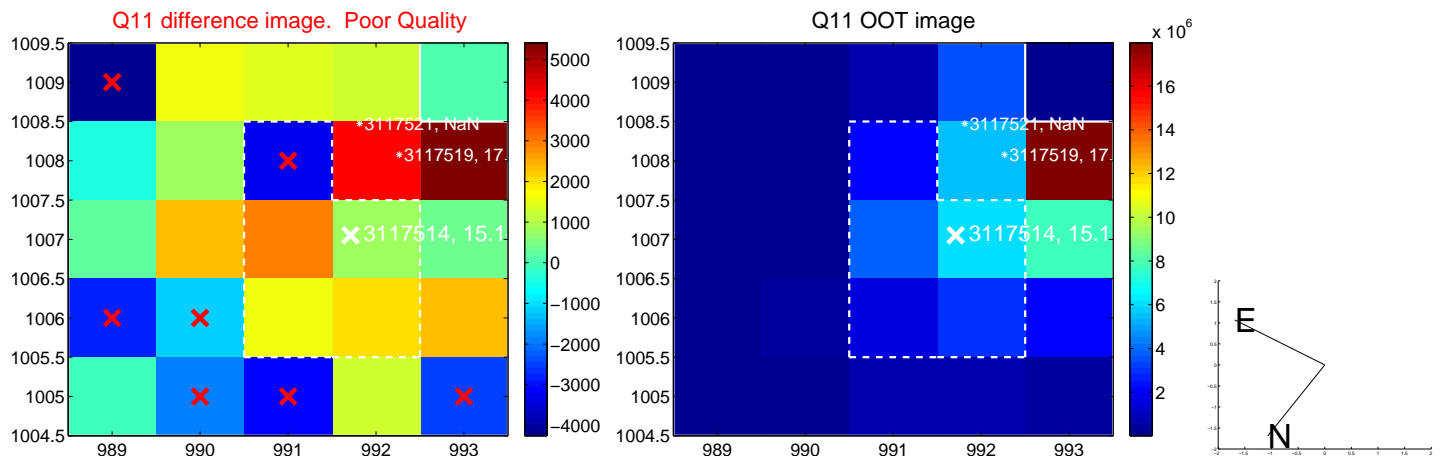
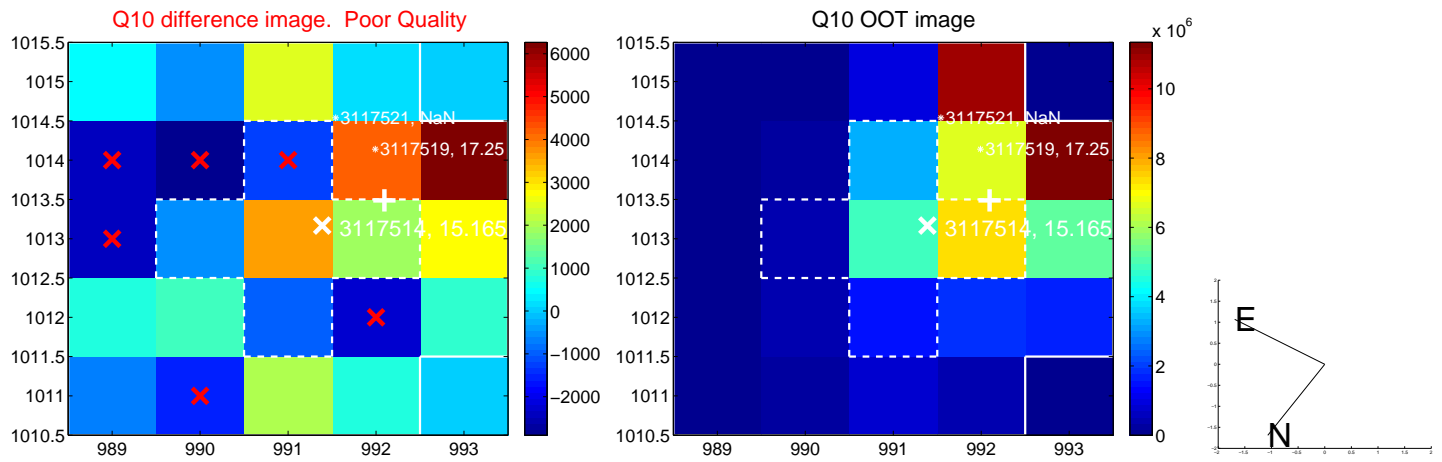
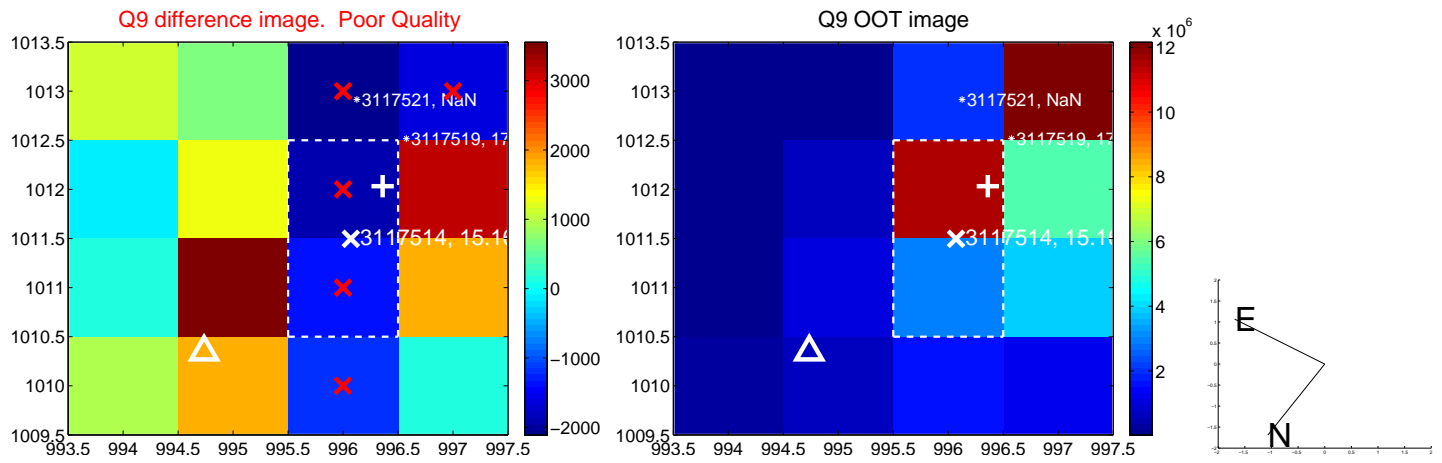
Q4 OOT image



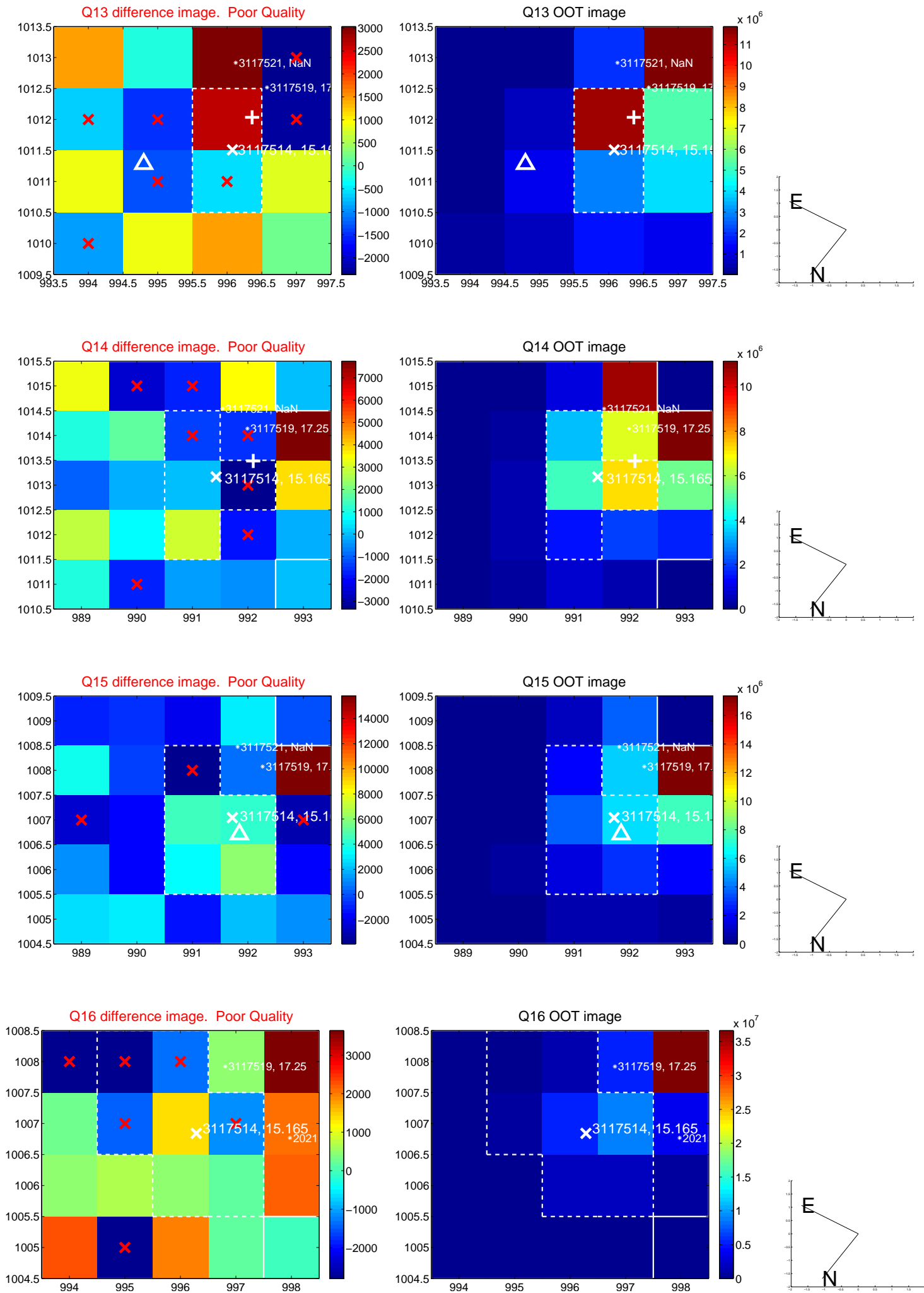
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\Delta$ : difference centroid. red  $\times$ : large negative pixel value.

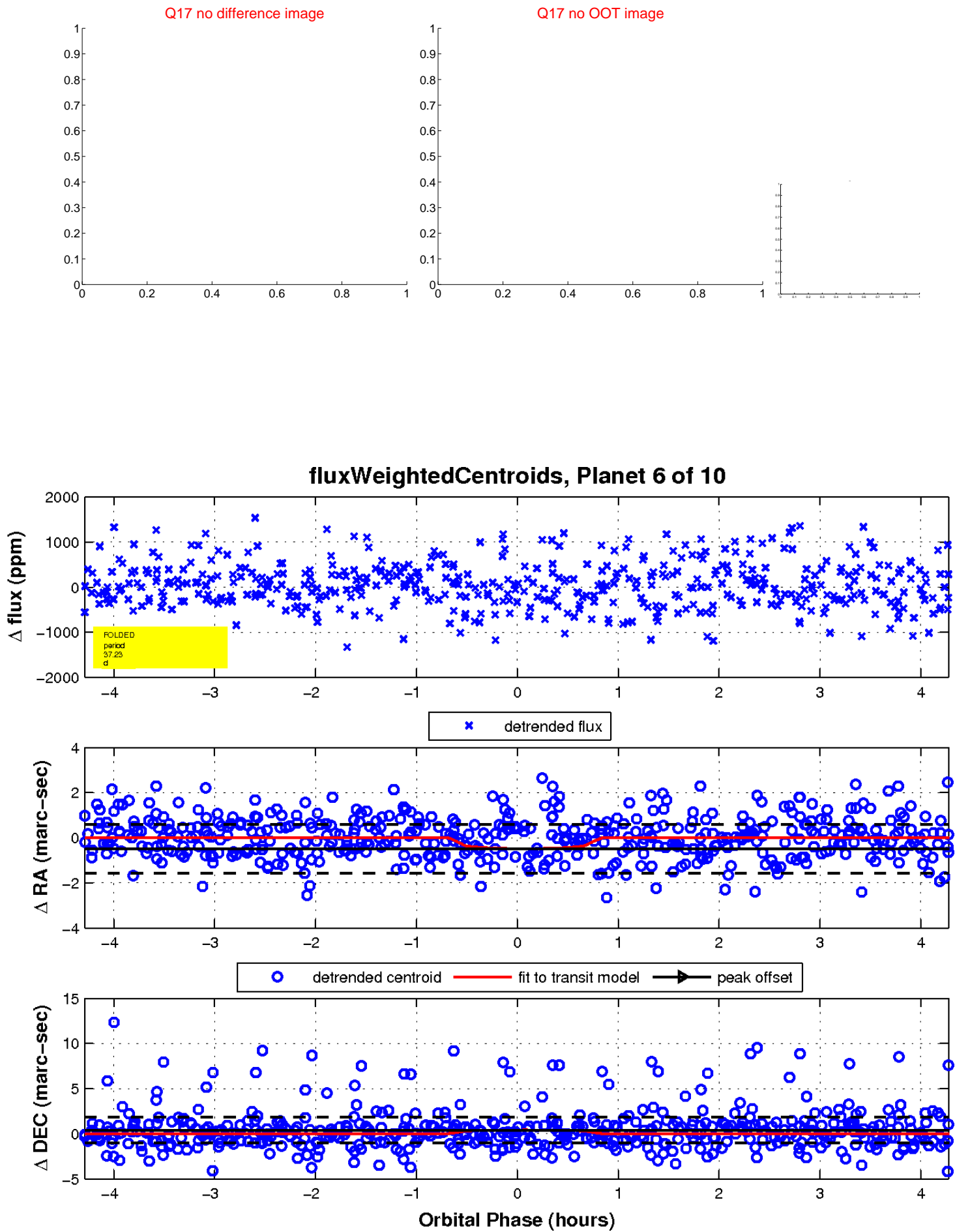


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

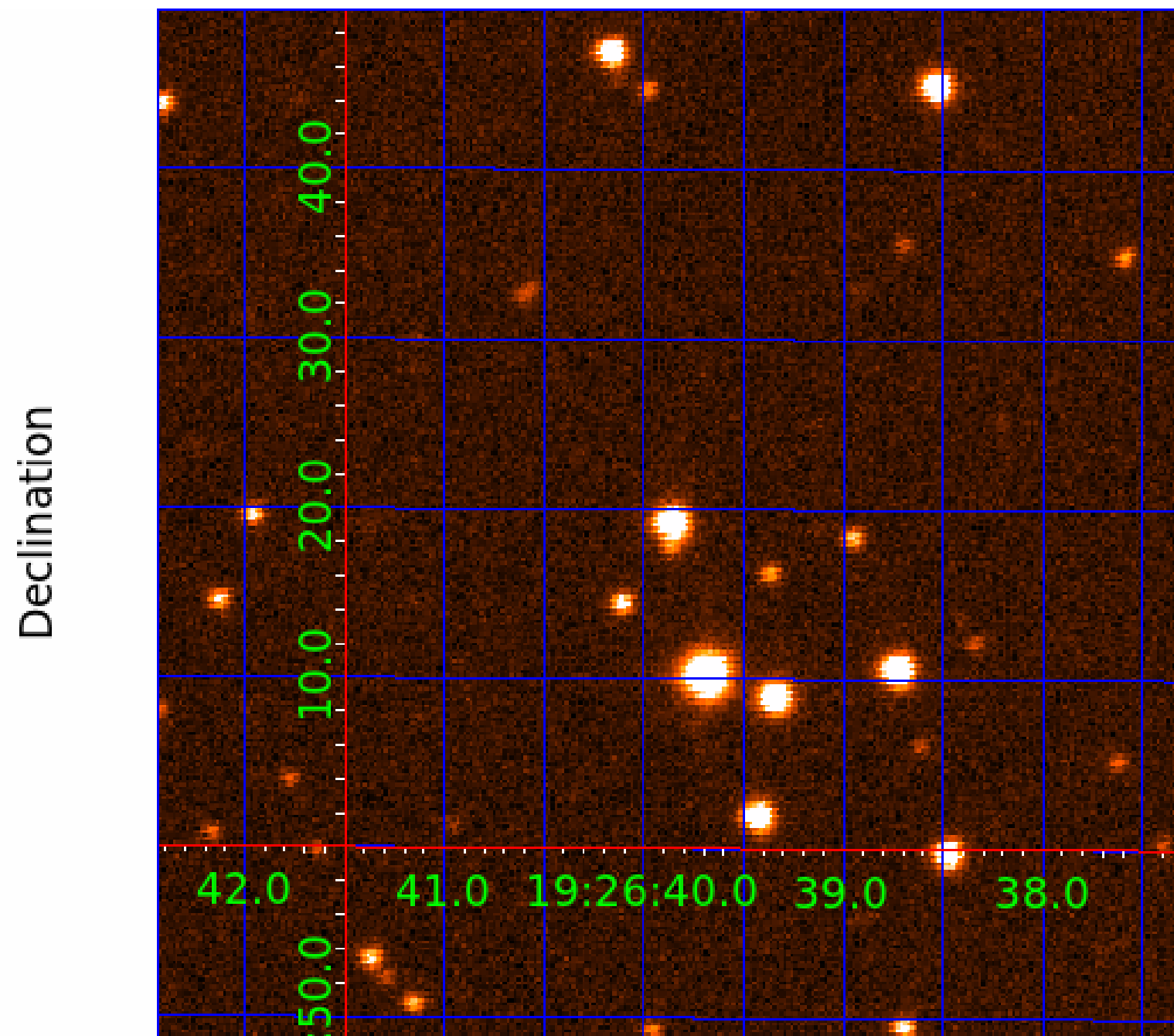




white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image



## Q1-17 DR25 TCE Parameters

TCE	Run Type	KOI?	Period (Days)	Epoch (BKJD)	Depth (ppm)	Duration (Hours)	MES	SNR	$R_{\star}$ ( $R_{\odot}$ )	$T_{\star}$ (K)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
003117514-01	OBS	No	1.091938	131.641378	53.4	7.431	8.5	8.6	0.69	5469	0.58	1075.44
003117514-02	OBS	No	33.369509	157.503651	669.9	2.906	10.4	7.1	0.69	5469	1.99	11.26
003117514-03	OBS	No	24.379621	144.629800	722.9	3.062	8.6	9.5	0.69	5469	2.03	17.11
003117514-04	OBS	No	30.423736	143.081360	695.1	1.951	9.0	7.8	0.69	5469	2.08	12.73
003117514-05	OBS	No	57.642773	136.377881	920.7	2.879	8.3	8.8	0.69	5469	2.33	5.43
003117514-06	OBS	No	37.233493	132.857621	1420.0	1.430	8.7	9.1	0.69	5469	2.63	9.73
003117514-07	OBS	No	41.695704	159.649434	657.5	3.150	8.3	7.7	0.69	5469	2.12	8.36
003117514-08	OBS	No	62.634001	187.247617	761.8	3.290	8.2	7.4	0.69	5469	2.25	4.86
003117514-09	OBS	No	17.554198	145.730643	403.9	5.160	8.6	8.0	0.69	5469	1.62	26.51
003117514-10	OBS	No	47.900949	141.379946	1639.1	2.000	8.1	-1.0	0.69	5469	2.79	6.95

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003117514-01	OBS	FP	0.00	1	0	1	0	LPP_DV—LPP_ALT—CENT_RESOLVED_OFFSET—HALO_GHOST
003117514-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
003117514-03	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_RESOLVED_OFFSET—HALO_GHOST
003117514-04	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_RESOLVED_OFFSET
003117514-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
003117514-06	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_DV—CENT_FEW_DIFFS
003117514-07	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_RESOLVED_OFFSET
003117514-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
003117514-09	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_RESOLVED_OFFSET
003117514-10	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_NOFITS

**Notes:** OBS = Observed. INJ = Injected. INV = Inverted. SCR = Scrambled.

N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

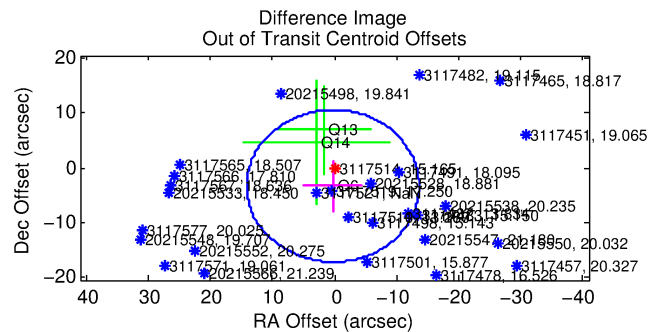
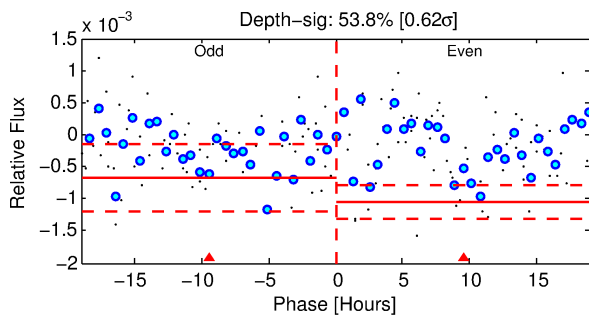
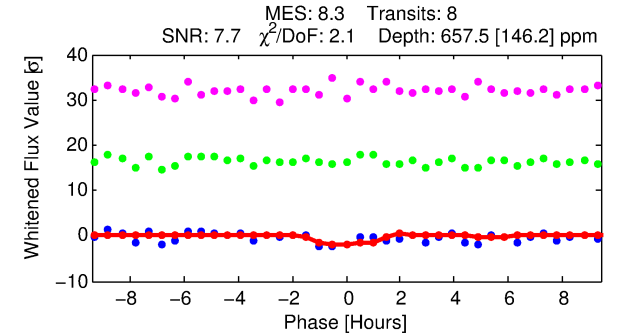
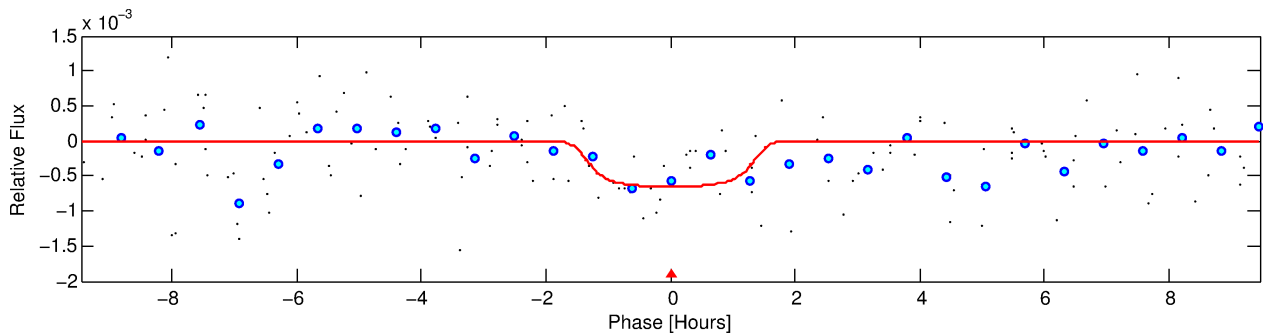
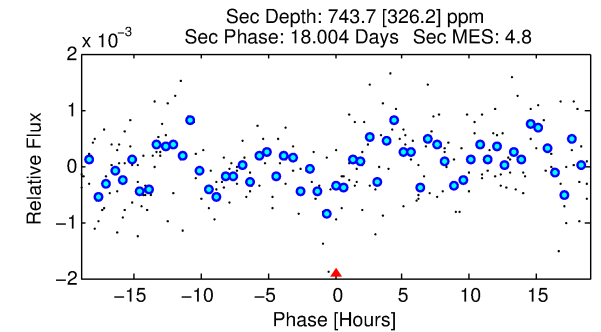
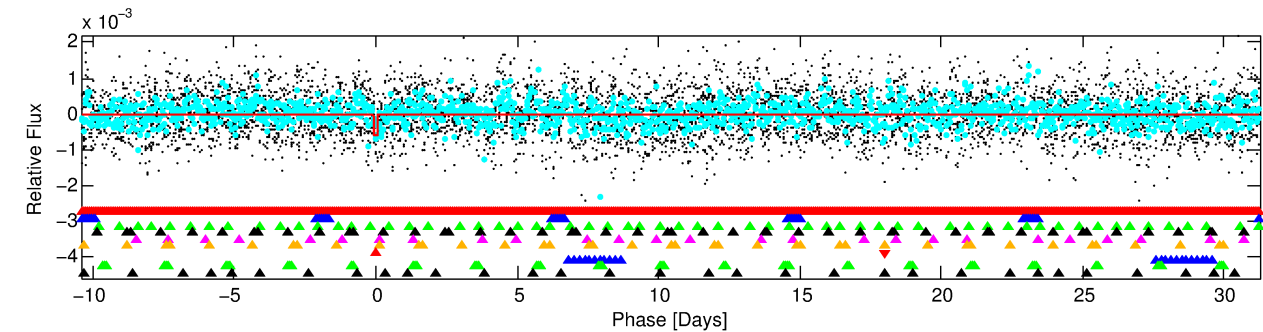
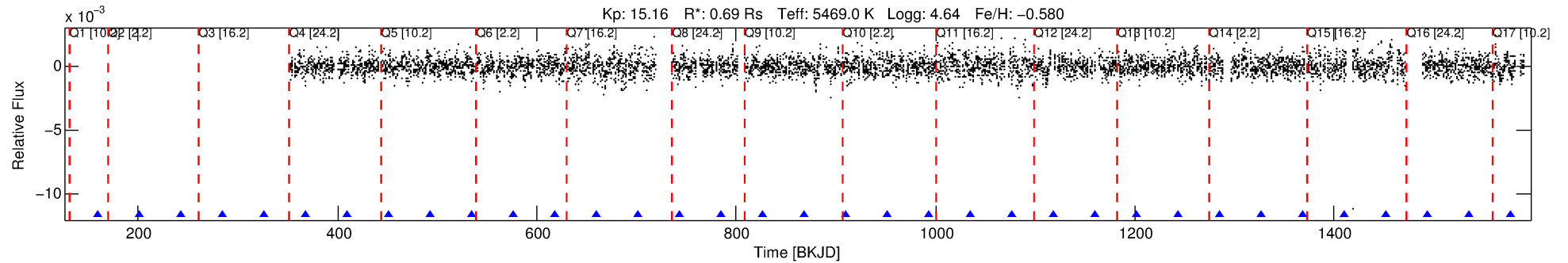
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 003117514-07

No Significant Match Found

# DV One-Page Summary

KIC: 3117514 Candidate: 7 of 10 Period: 41.696 d



## DV Fit Results:

Period = 41.69570 [0.00065] d  
Epoch = 159.6494 [0.0143] BKJD  
Rp/R\* = 0.0279 [0.0267]  
a/R\* = 50.43 [220.00]  
b = 0.90 [0.95]  
Seff = 8.36 [2.03]  
Teq = 434 [26] K  
Rp = 2.12 [2.05] Re  
a = 0.2152 [0.0296] AU  
Ag = 4220.11 [8308.29] [0.51σ]  
Teff = 5404 [2654] K [1.87σ]

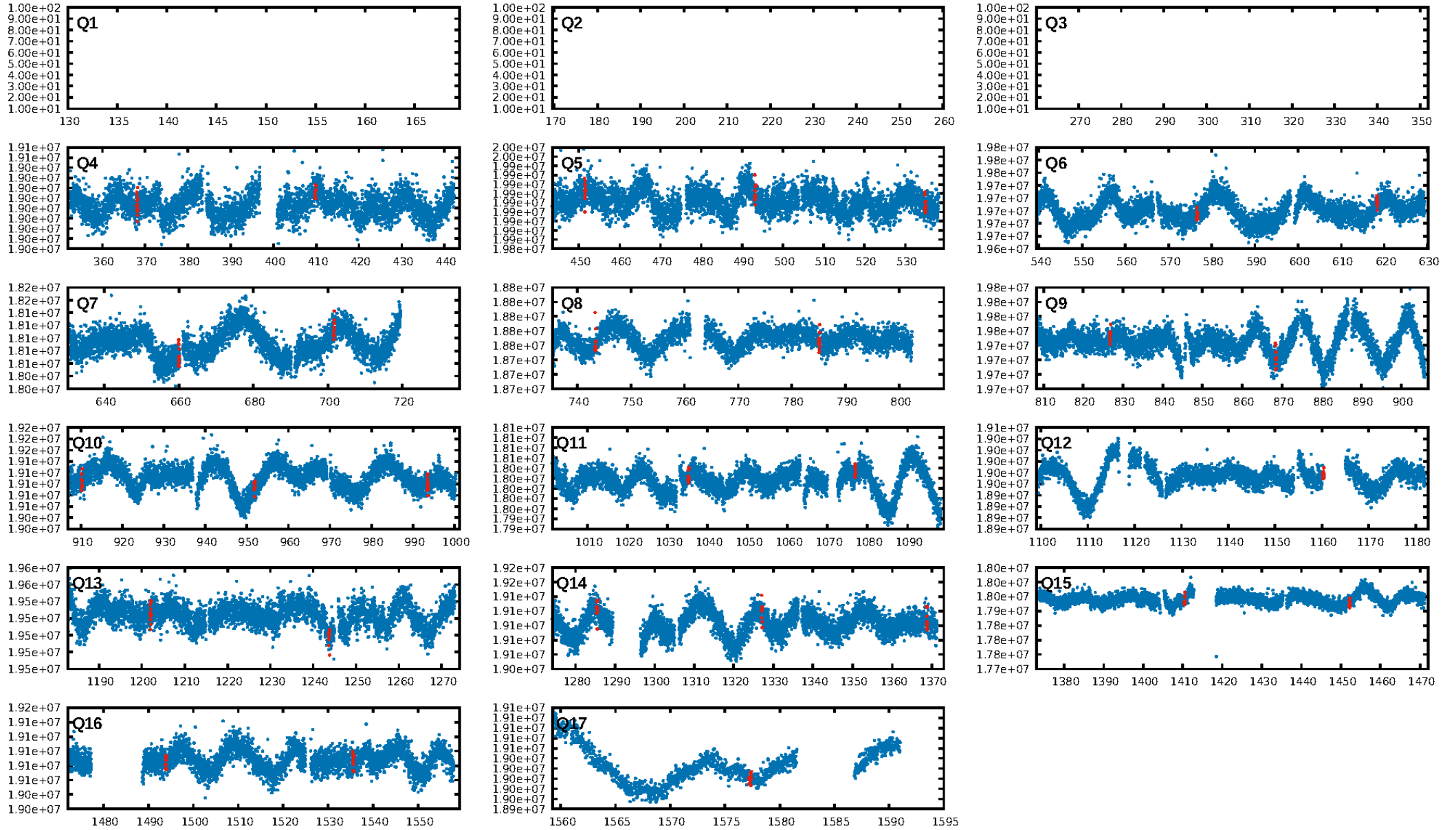
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [30.96σ]  
LongPeriod-sig: 100.0% [39.91σ]  
ModelChiSquare2-sig: 4.2%  
ModelChiSquareGof-sig: 99.7%  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [8/8]  
GhostDiagnostic-chr: 0.986  
Centroid-sig: 68.8%  
Centroid-so: 3.385 arcsec [6.43σ]  
OotOffset-rm: 3.354 arcsec [0.72σ]  
KicOffset-rm: 7.013 arcsec [2.50σ]  
OotOffset-st: 2/0/0/1 [3]  
KicOffset-st: 2/2/0/1 [5]  
DiffImageQuality-fgm: 0.20 [1/5]  
DiffImageOverlap-fno: 0.23 [3/13]

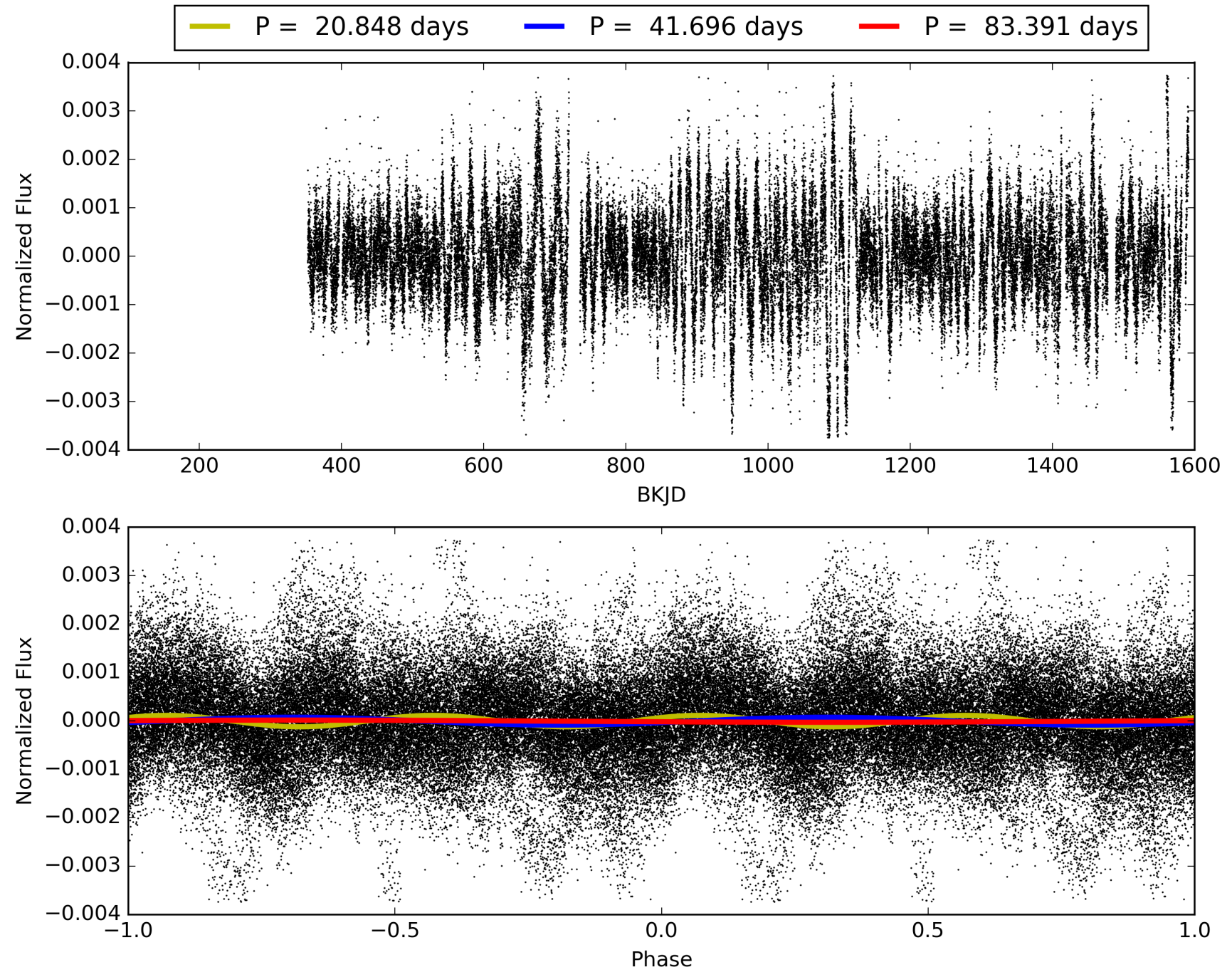
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 06:34:23 Z

This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 003117514-07, PDC Light Curves



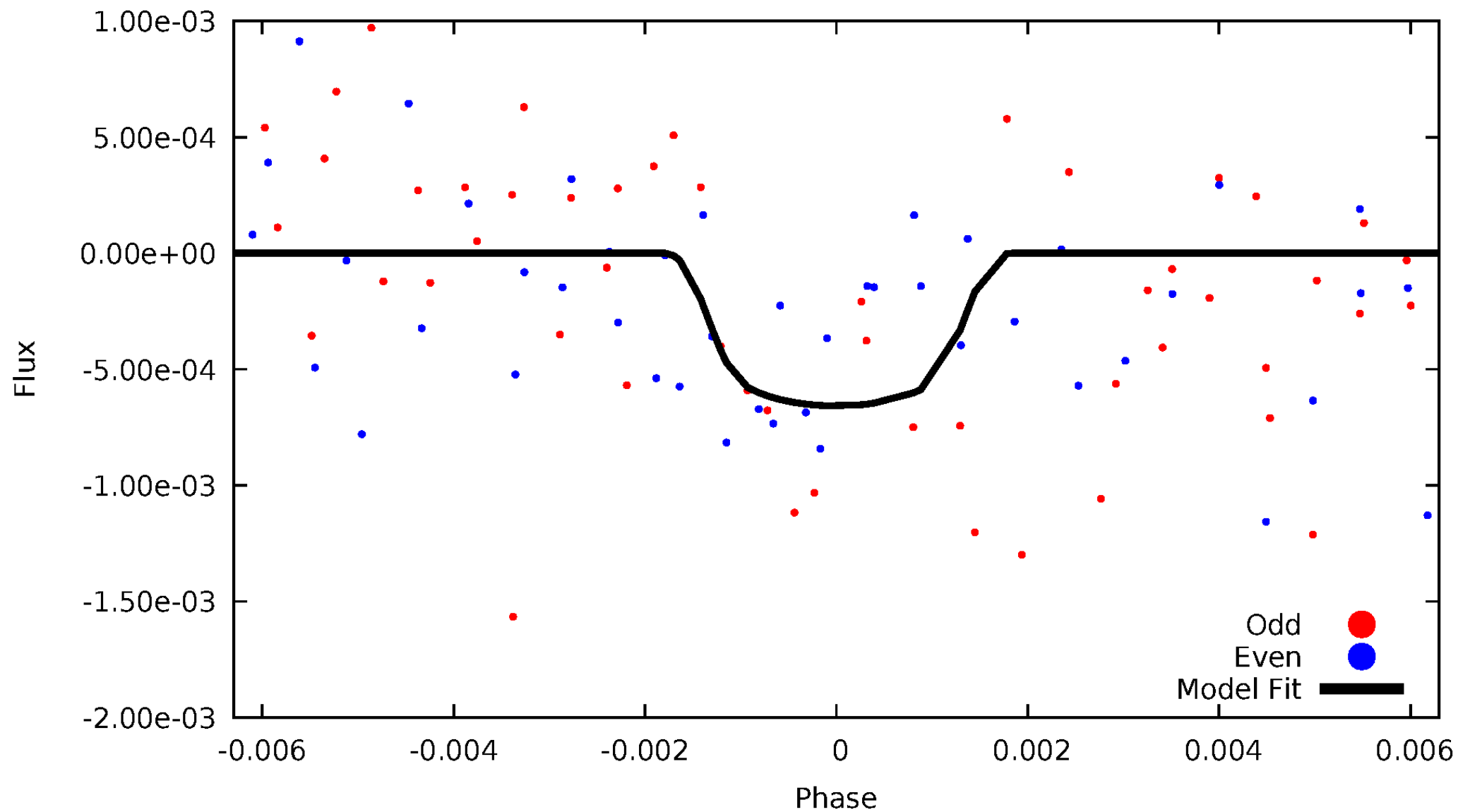
# TCE 003117514-07





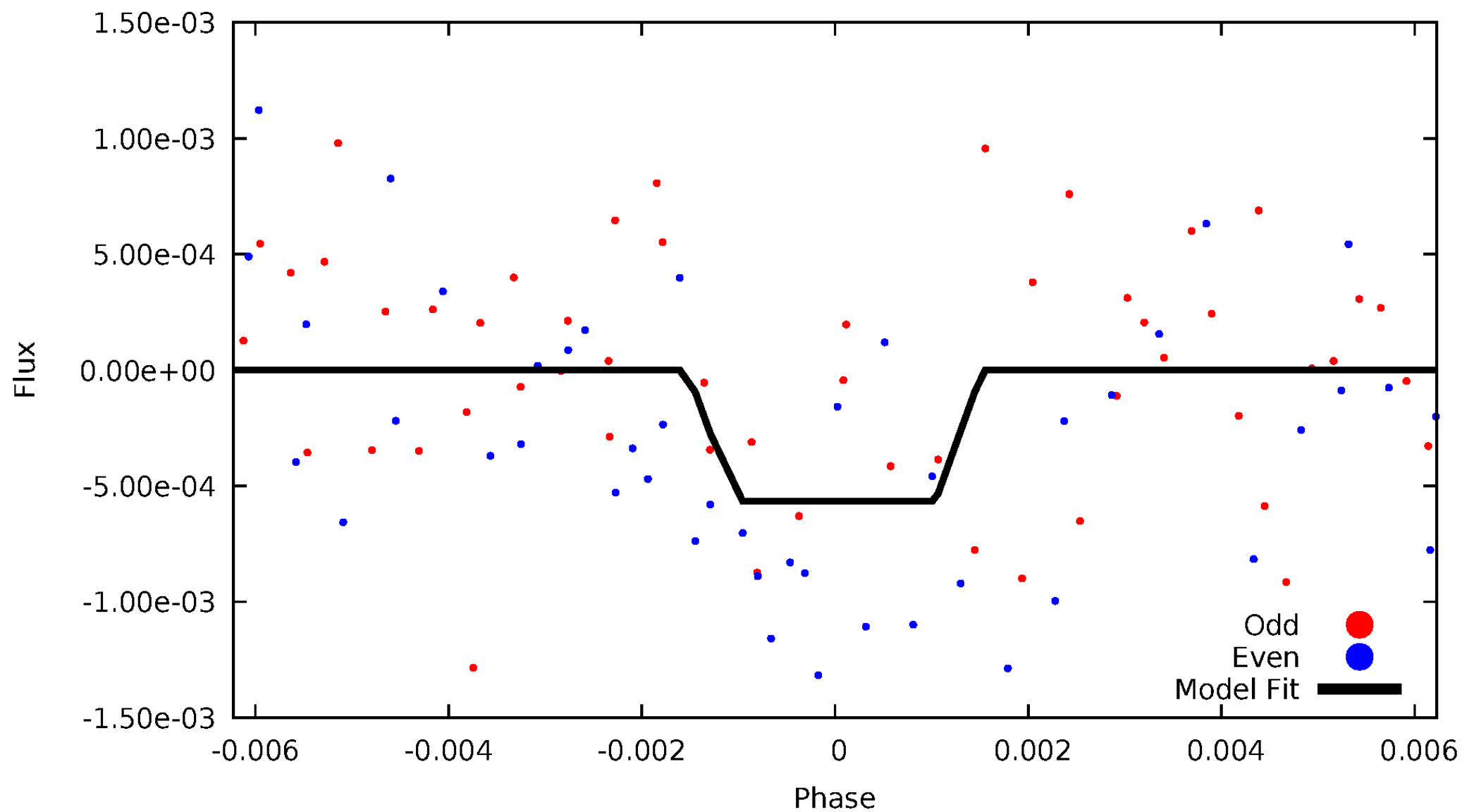
# DV Odd/Even

TCE 003117514-07



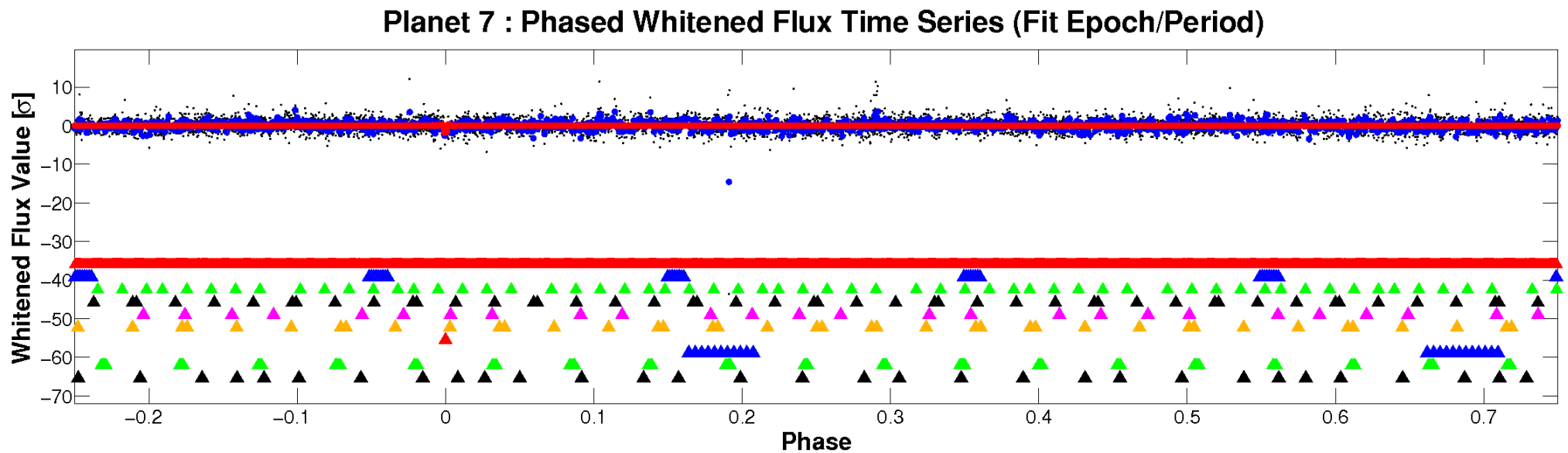
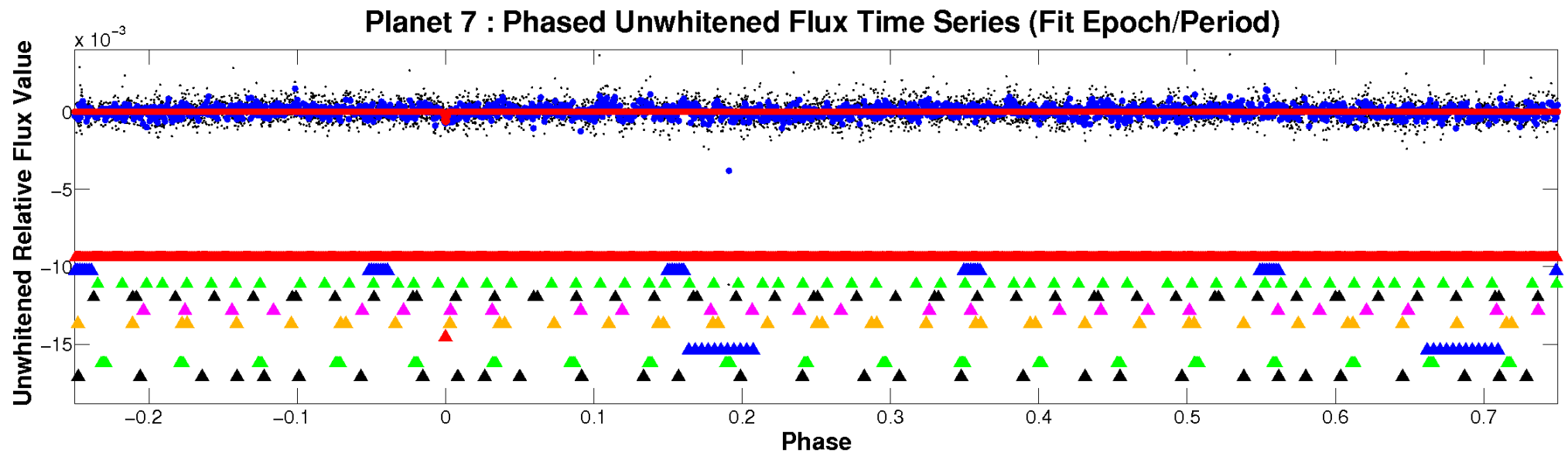
# ALT Odd/Even

TCE 003117514-07



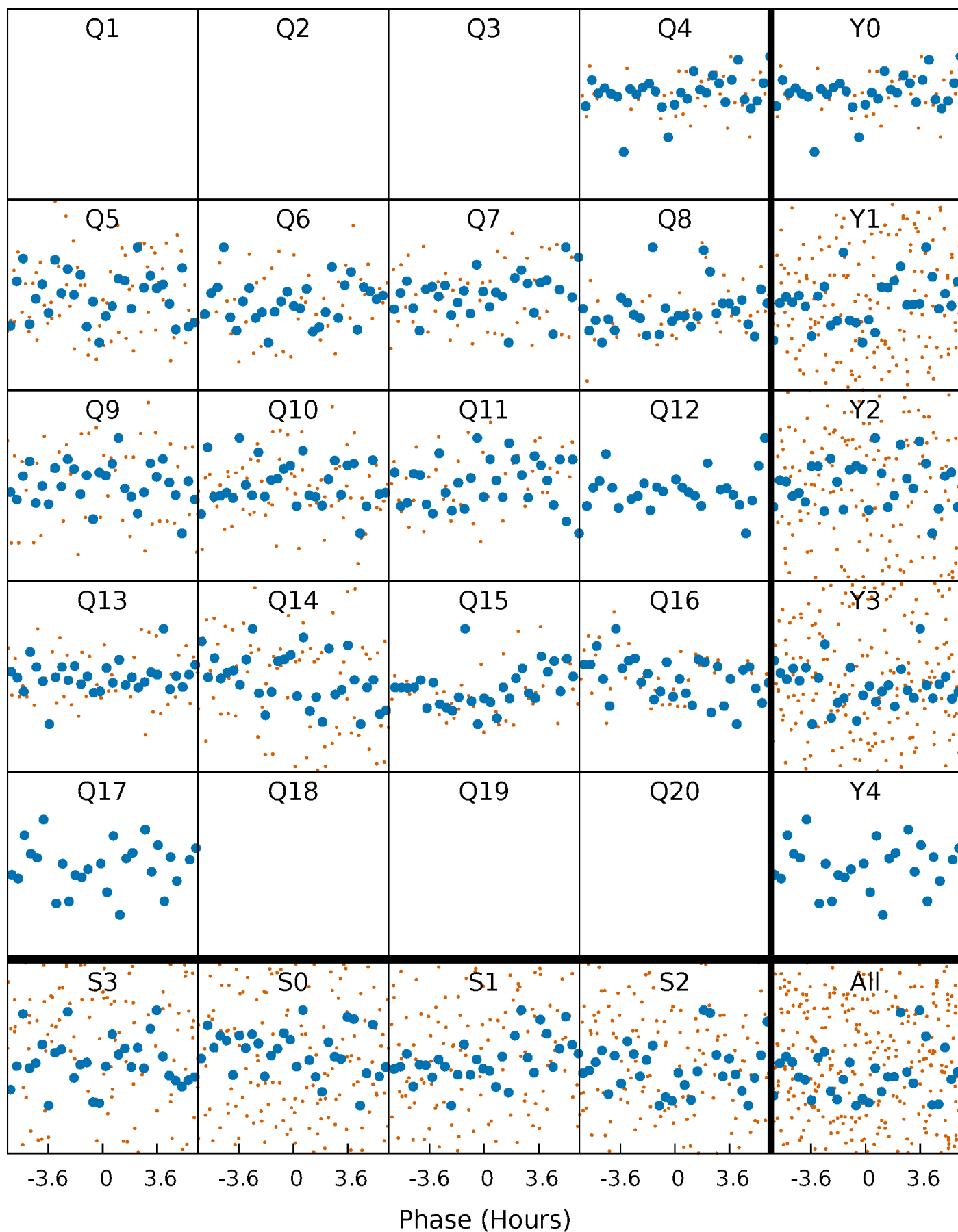


# Non-Whitened Vs. Whitened Light Curve



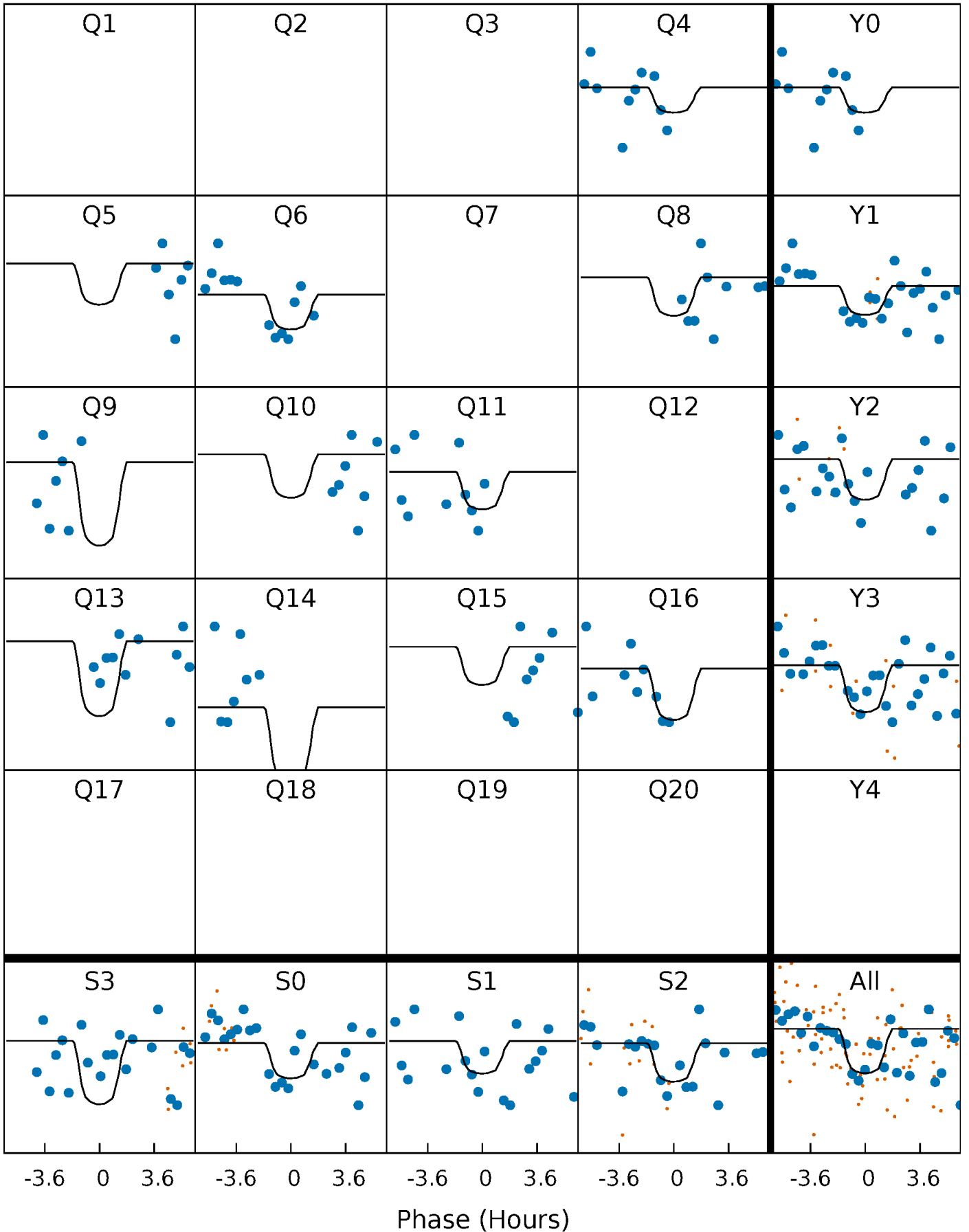
# PDC Quarter-Phased Transit Curves

TCE 003117514-07     $P = 41.695704$  Days     $T_0 = 159.649434$  (BKJD)



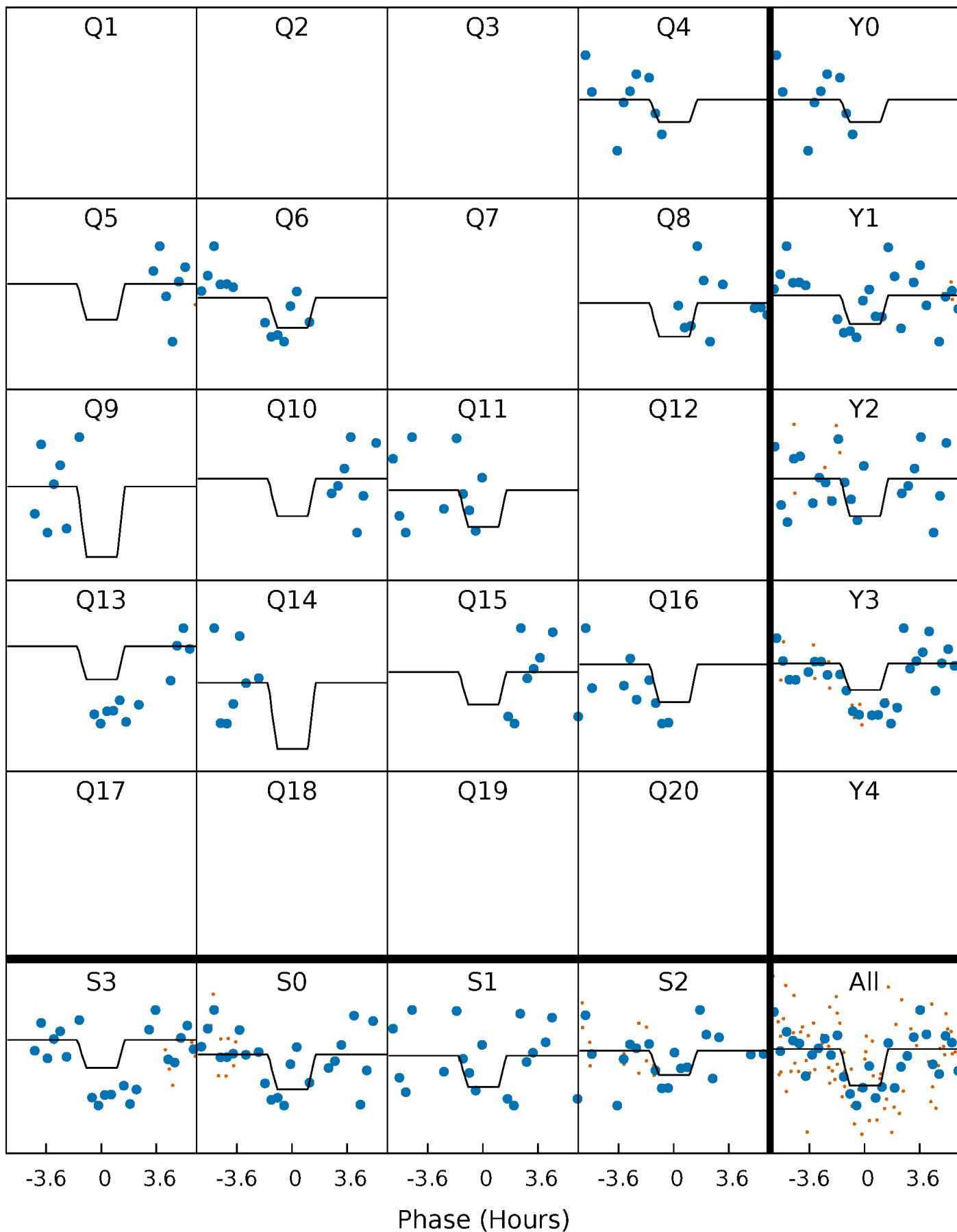
# DV Quarter-Phased Transit Curves

TCE 003117514-07     $P = 41.695704$  Days     $T_0 = 159.649434$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

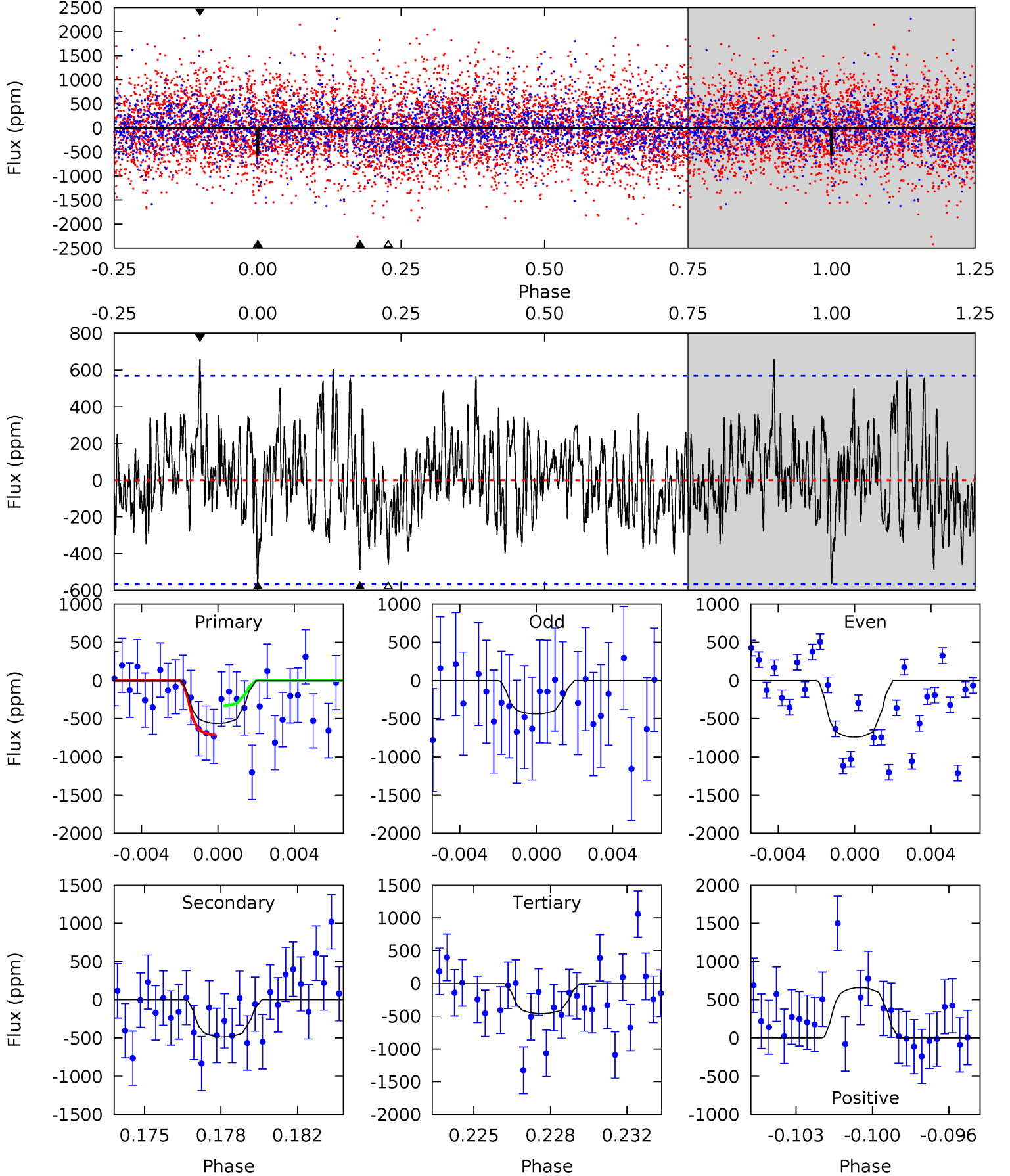
TCE 003117514-07   P= 41.695123 Days    $T_0=159.667624$  (BKJD)



# DV Model-Shift Uniqueness Test

003117514-07, P = 41.695704 Days, E = 159.649434 Days

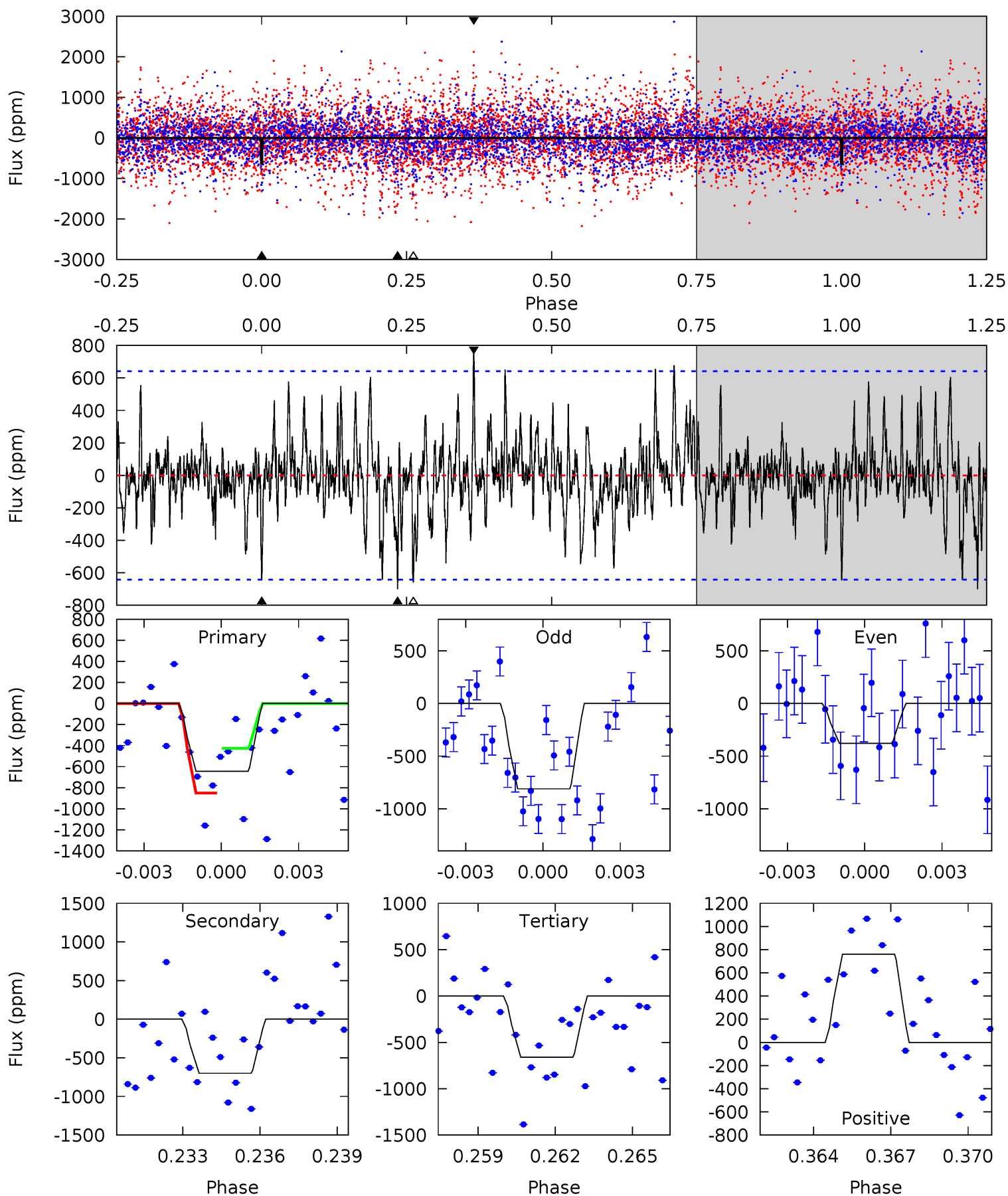
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.18	4.48	4.24	6.06	5.22	2.91	1.70	0.94	-0.88	0.24	-1.58	1.42	0.90	0.54	1.74



# Alt Model-Shift Uniqueness Test

003117514-07, P = 41.695123 Days, E = 159.667624 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.27	5.74	5.41	6.23	5.26	2.98	1.56	-0.14	-0.96	0.32	-0.50	1.72	1.03	0.52	1.75



### Stellar Parameters For KIC 003117514

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5469^{+196}_{-196}$	$4.637^{+0.032}_{-0.104}$	$-0.580^{+0.300}_{-0.300}$	$0.695^{+0.117}_{-0.050}$	$0.778^{+0.073}_{-0.081}$	$3.264^{+0.482}_{-1.044}$
	+4%/-4%	+1%/-2%	+52%/-52%	+17%/-7%	+9%/-10%	+15%/-32%
Source	KIC0	KIC0	KIC0	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology  
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

### Secondary Eclipse Parameters for KIC 003117514-07 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-487 \pm 109$	$2.61^{+1.74}_{-1.58}$	$614^{+30}_{-25}$	$4601^{+2238}_{-837}$	$1827^{+8780}_{-1202}$
Alt.	$-700 \pm 122$	$2.43^{+1.87}_{-1.47}$	$614^{+28}_{-27}$	$5093^{+3302}_{-1037}$	$2931^{+17377}_{-1990}$

$T_{max}$  = Theoretical Maximum Planetary Temperature

$T_{obs}$  = Observed Planetary Temperature (Assuming  $A=0.3$ )

$A_{obs}$  = Observed Albedo (Assuming  $T=0$ )

If a secondary eclipse is present, the system is likely an EB if  $T_{obs} \gg T_{max}$  AND  $A_{obs} \gg 1.0$

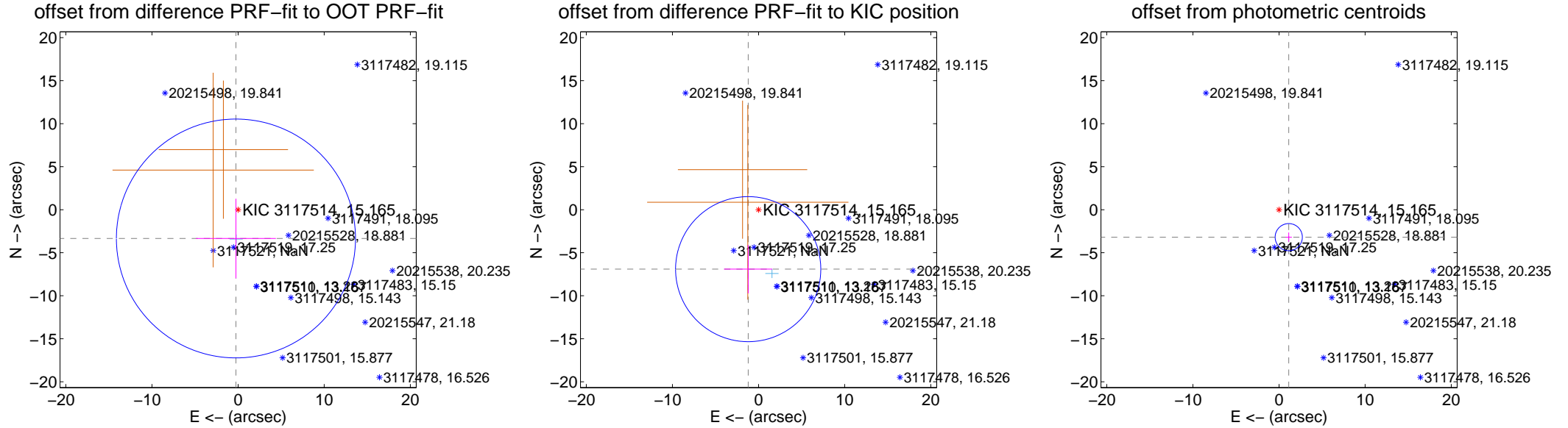
## DV Centroid Data

Supplemental centroid analysis for 003117514-07. Kepler magnitude: 15.16. Transit SNR 7.73

There are 1 quarters with good PRF difference image offsets

The OOT PRF centroid is offset from the target star catalog position by about 4.09 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$3.354 \pm 4.626$	0.72	$0.249 \pm 4.637$	$-3.344 \pm 4.626$
PRF-fit source offset from KIC position	$7.013 \pm 2.810$	2.50	$1.204 \pm 2.803$	$-6.909 \pm 2.810$
photometric centroid source offset	$3.38 \pm 0.53$	6.43	$-1.13 \pm 0.36$	$-3.19 \pm 0.54$



Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three- $\sigma$ . Red \*: target star. Blue \*: Other stars. Text next to a star gives its KIC ID and kepmag. KIC IDs > 15,000,000 are from the UKIRT catalog.



white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.

Q1 no difference image



Q1 no OOT image



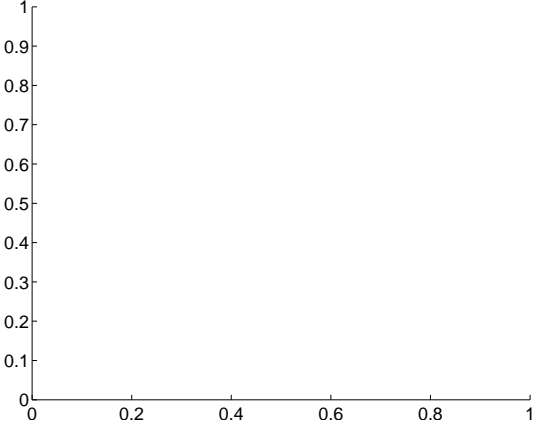
Q2 no difference image



Q2 no OOT image



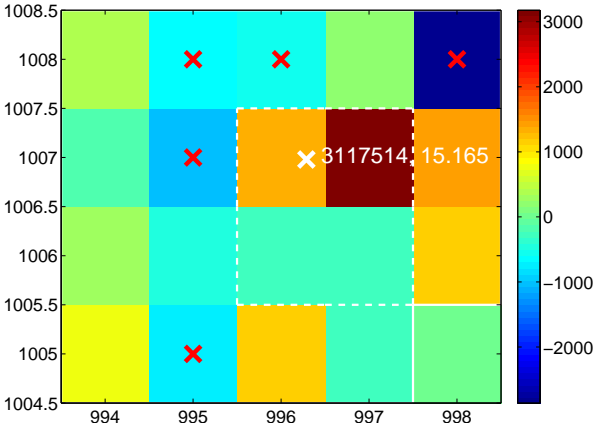
Q3 no difference image



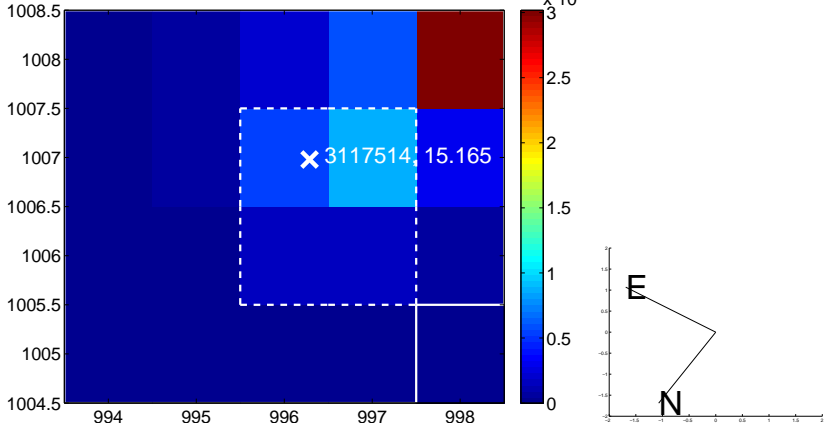
Q3 no OOT image



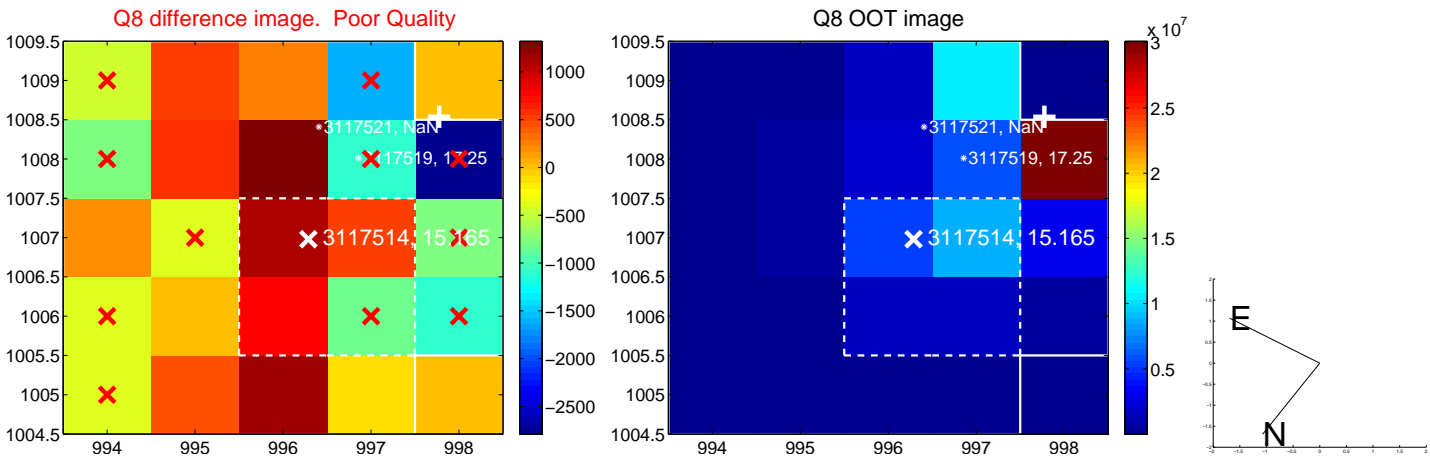
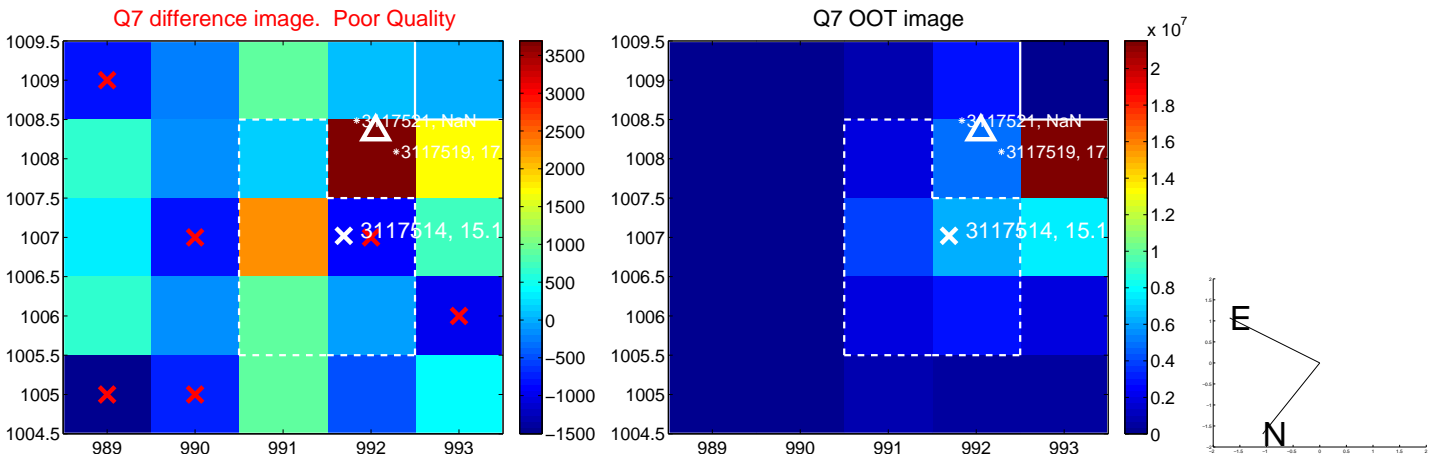
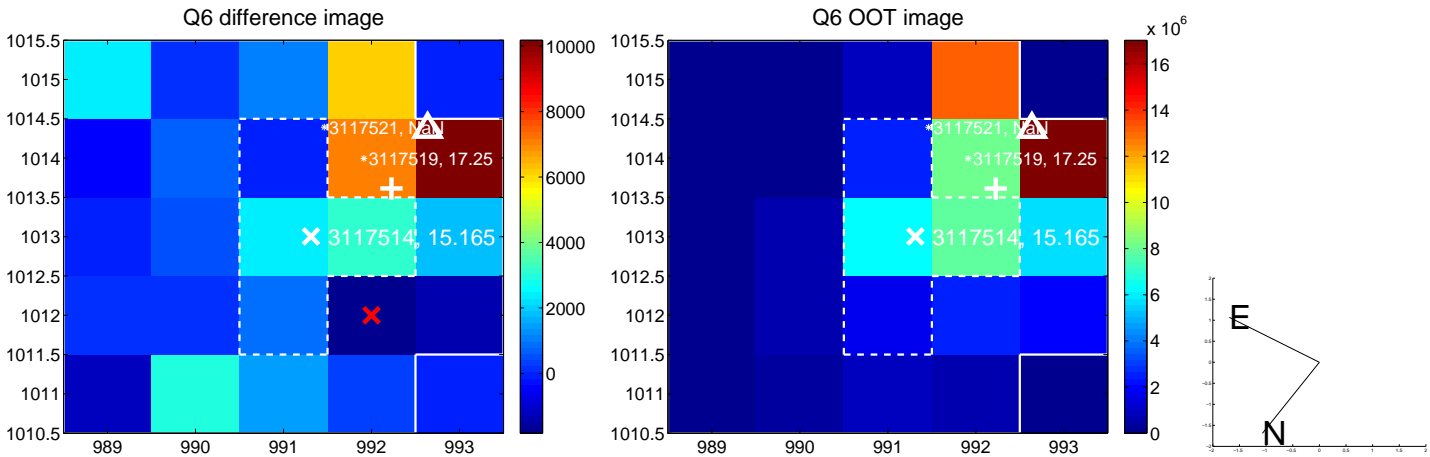
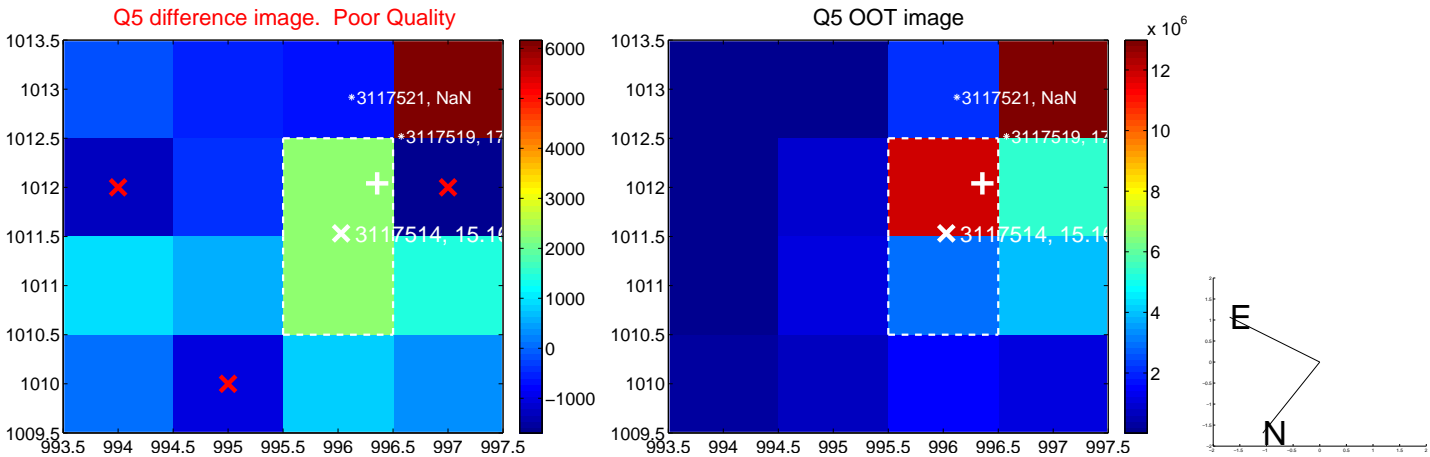
Q4 difference image. Poor Quality



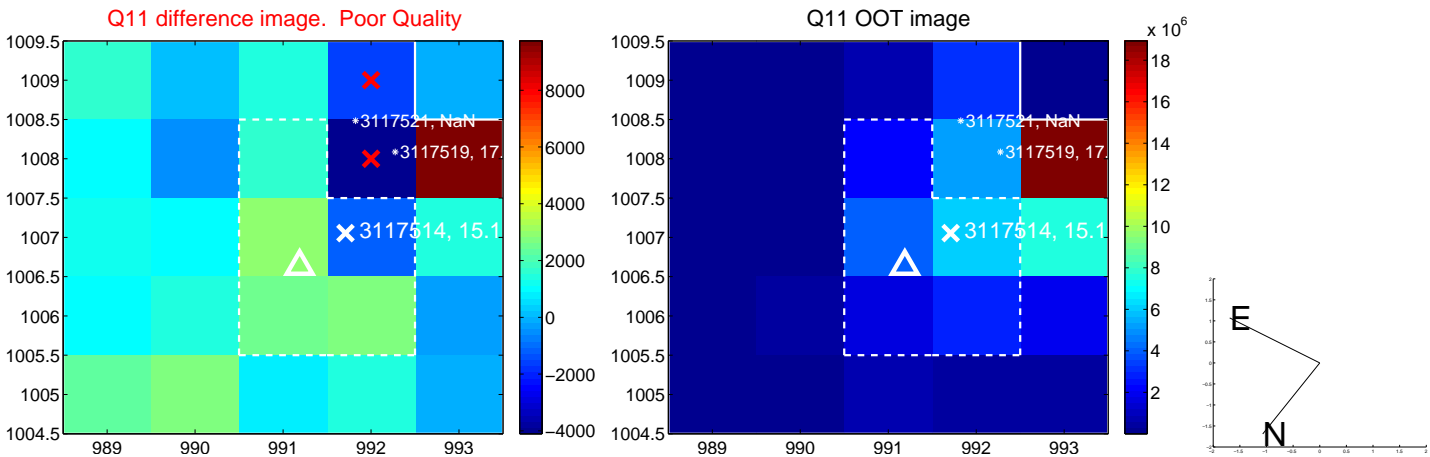
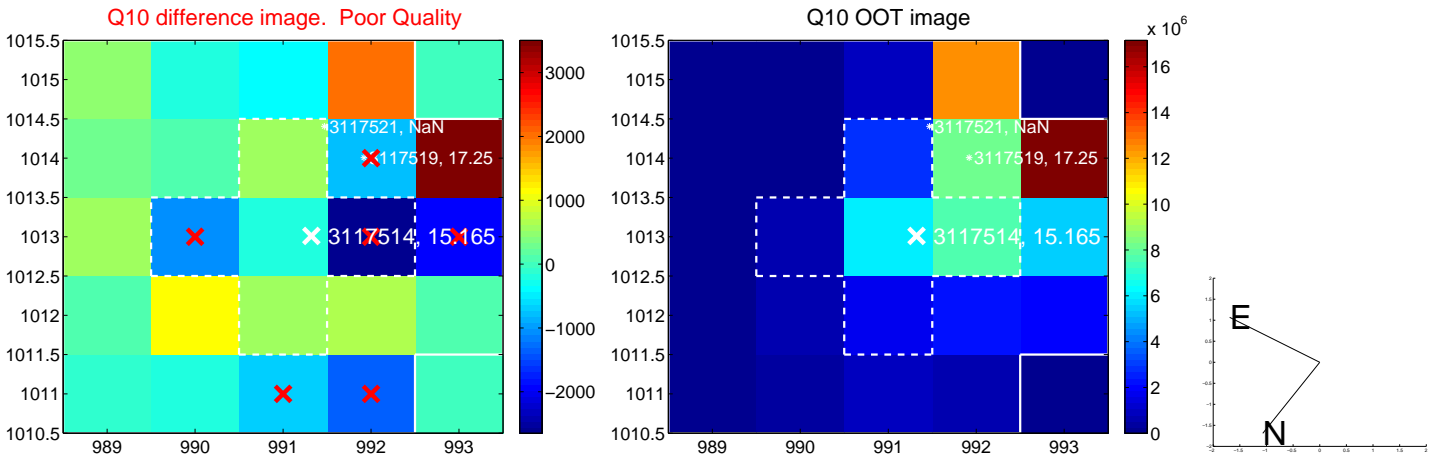
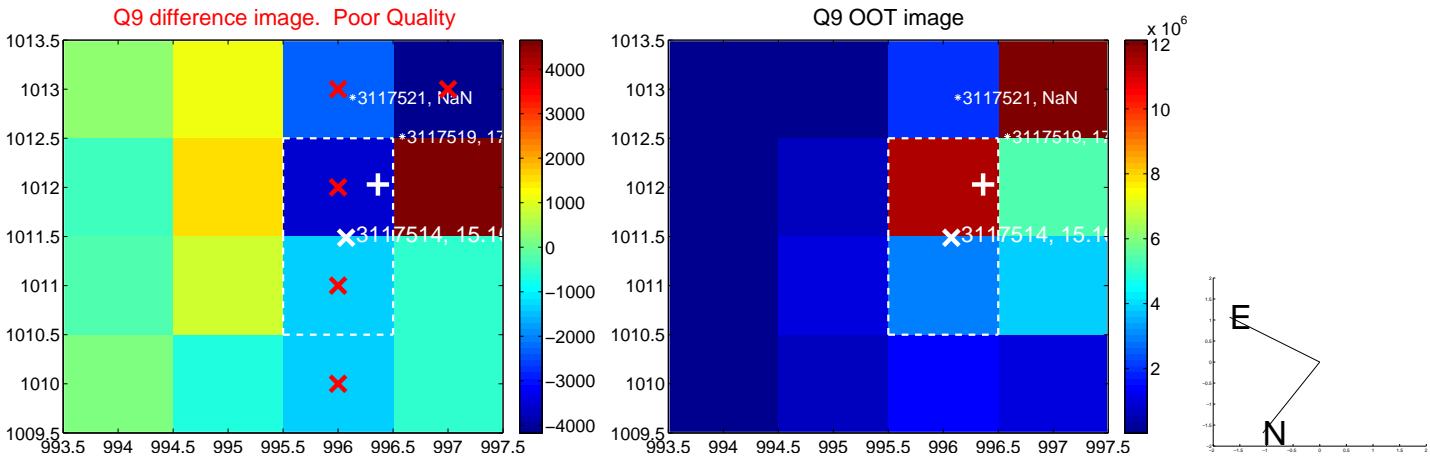
Q4 OOT image



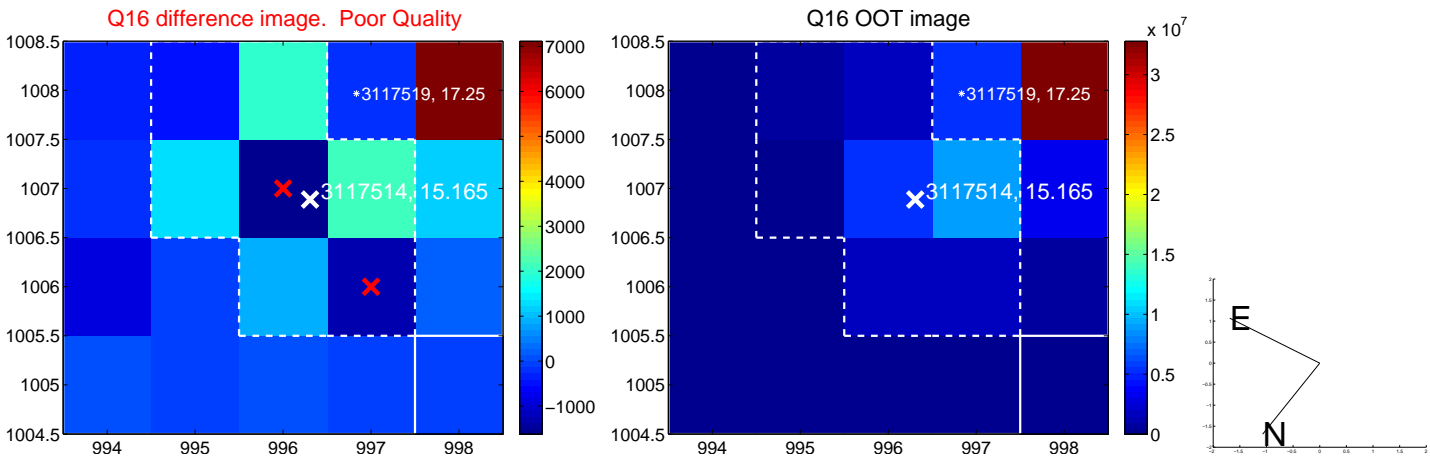
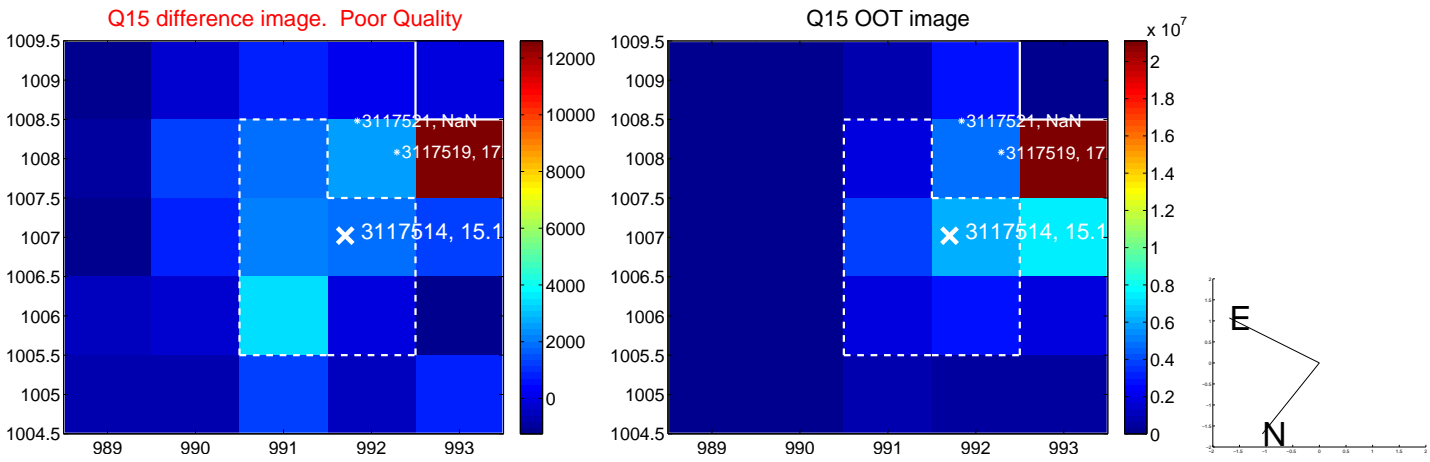
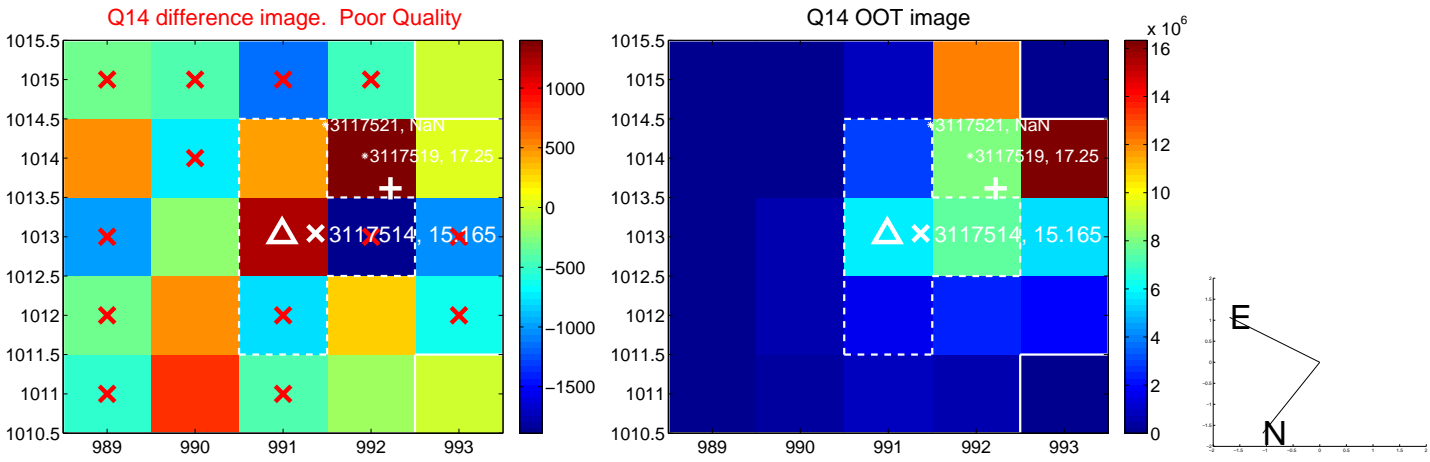
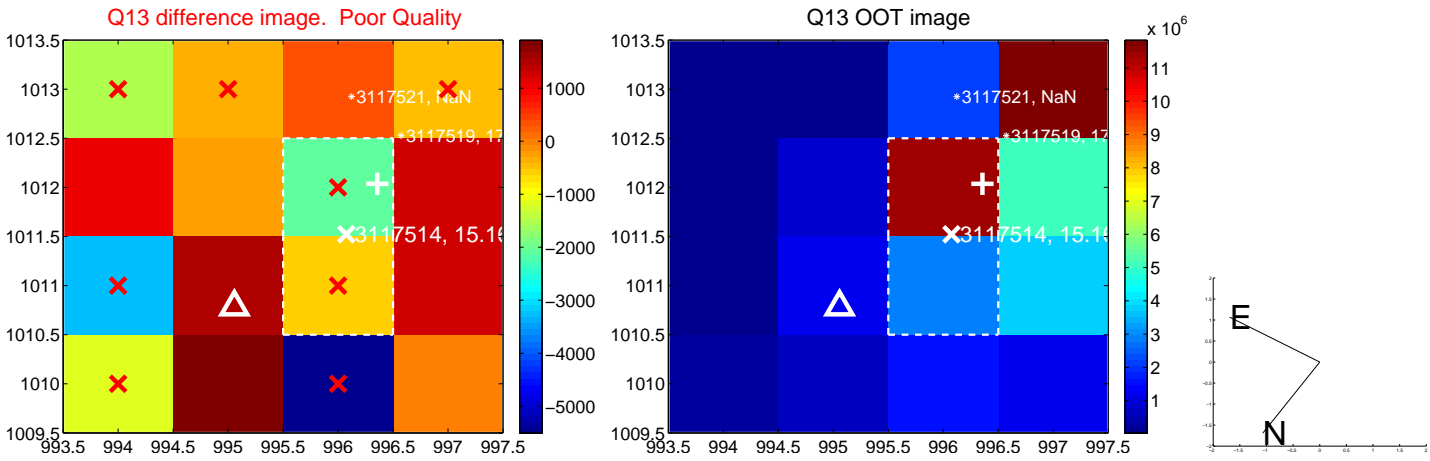
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



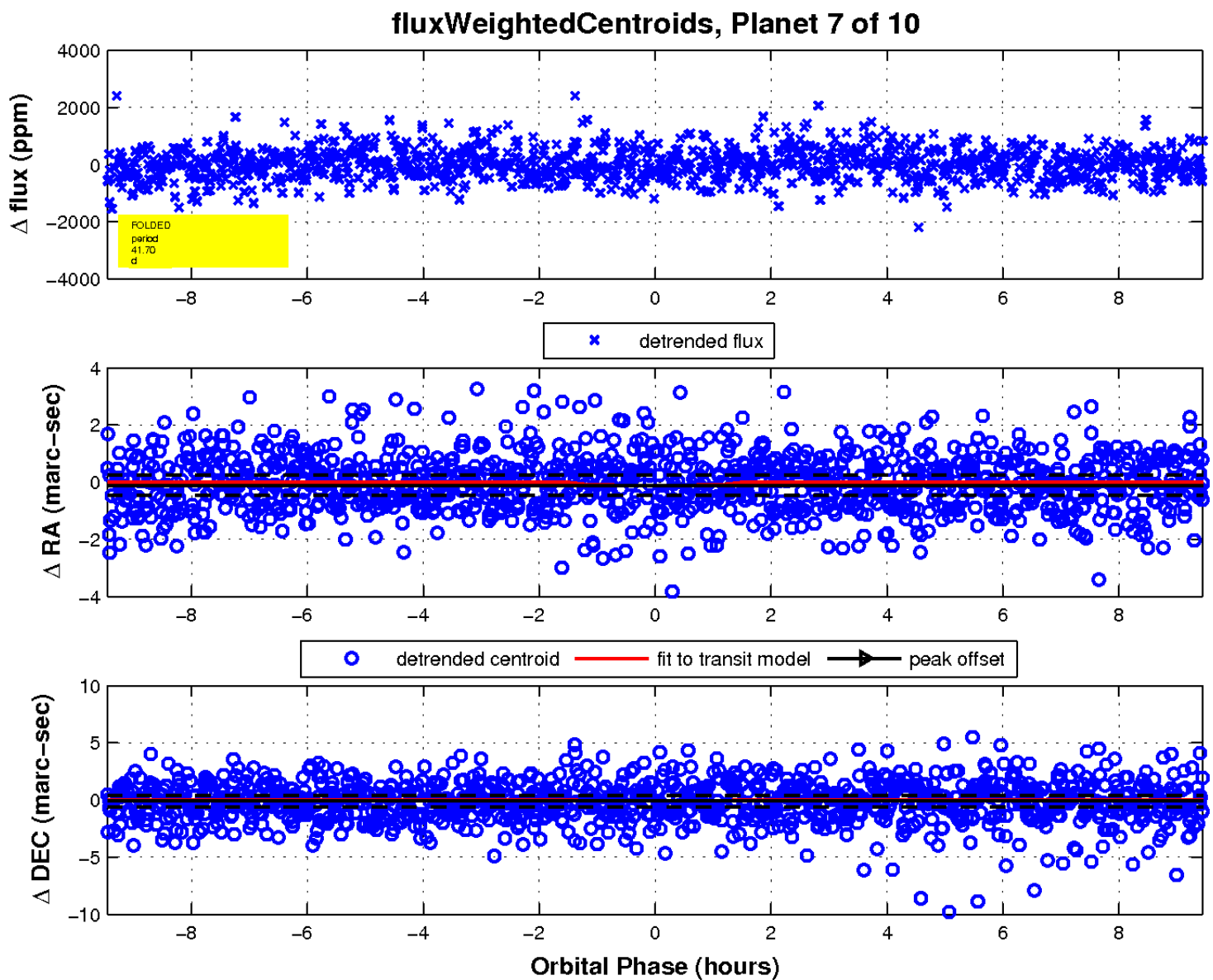
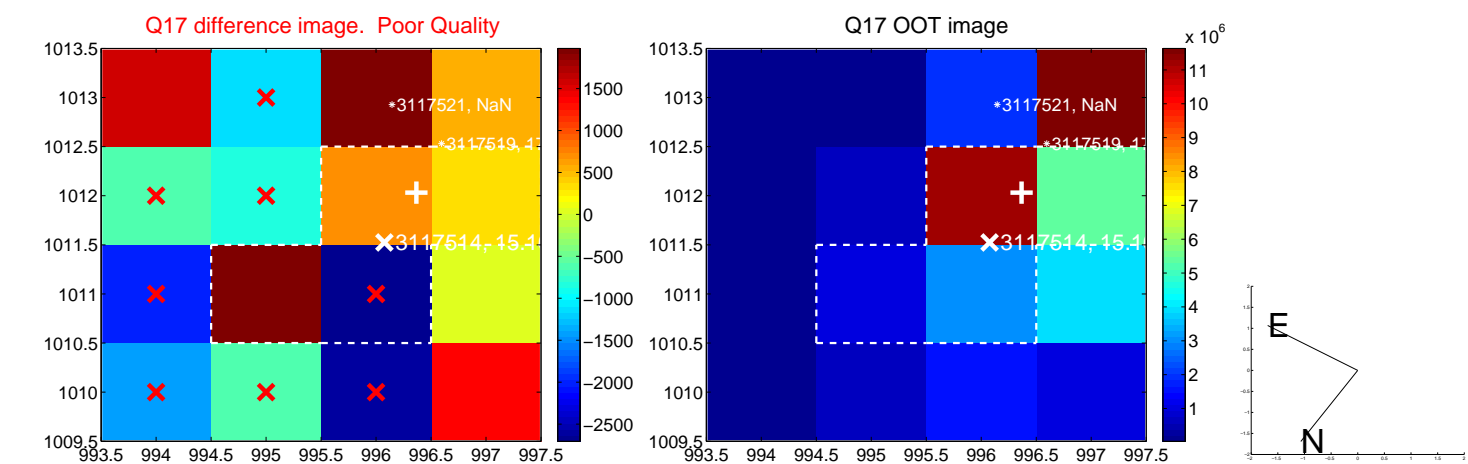
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



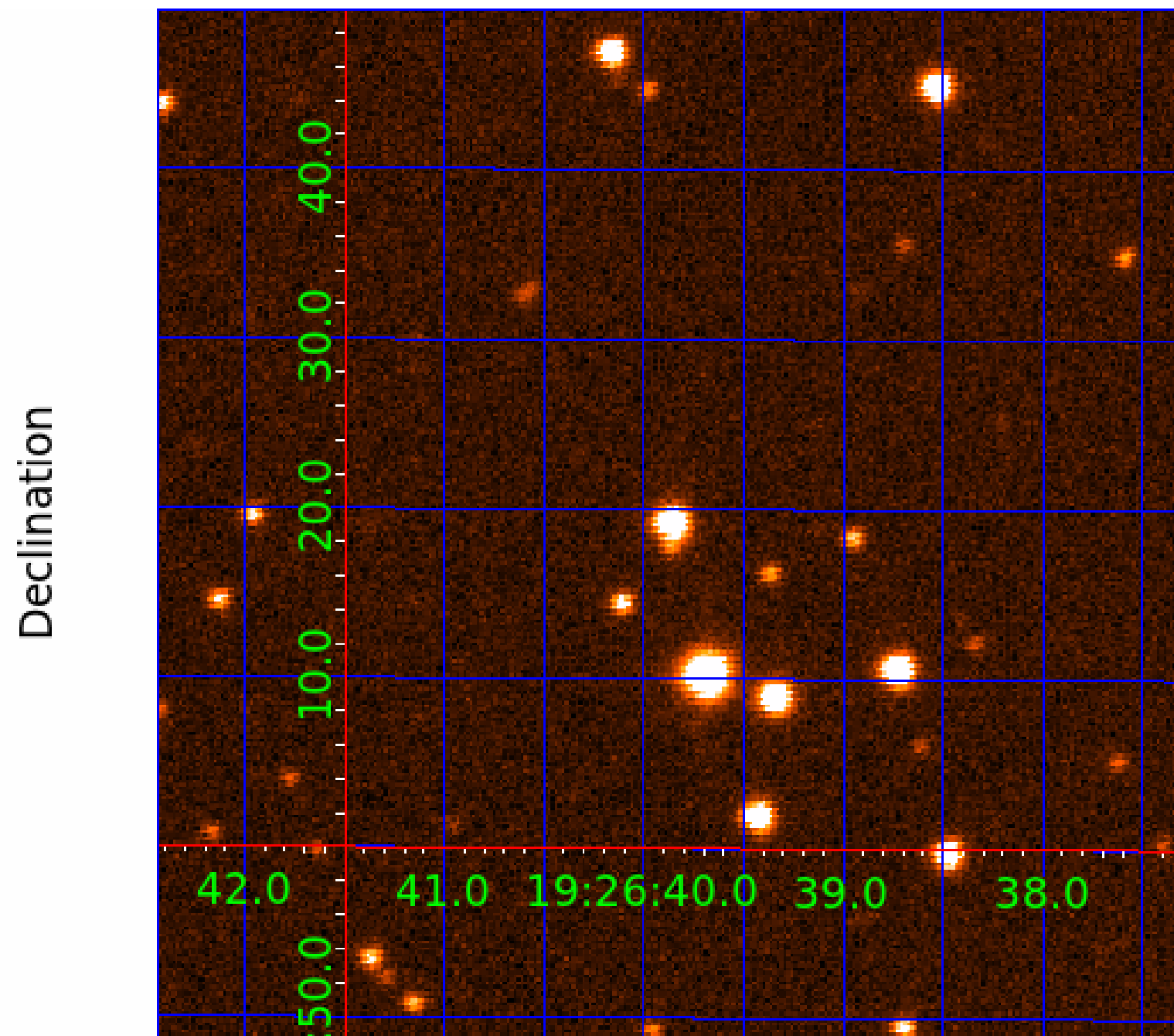
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image



## Q1-17 DR25 TCE Parameters

TCE	Run Type	KOI?	Period (Days)	Epoch (BKJD)	Depth (ppm)	Duration (Hours)	MES	SNR	$R_{\star}$ ( $R_{\odot}$ )	$T_{\star}$ (K)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
003117514-01	OBS	No	1.091938	131.641378	53.4	7.431	8.5	8.6	0.69	5469	0.58	1075.44
003117514-02	OBS	No	33.369509	157.503651	669.9	2.906	10.4	7.1	0.69	5469	1.99	11.26
003117514-03	OBS	No	24.379621	144.629800	722.9	3.062	8.6	9.5	0.69	5469	2.03	17.11
003117514-04	OBS	No	30.423736	143.081360	695.1	1.951	9.0	7.8	0.69	5469	2.08	12.73
003117514-05	OBS	No	57.642773	136.377881	920.7	2.879	8.3	8.8	0.69	5469	2.33	5.43
003117514-06	OBS	No	37.233493	132.857621	1420.0	1.430	8.7	9.1	0.69	5469	2.63	9.73
003117514-07	OBS	No	41.695704	159.649434	657.5	3.150	8.3	7.7	0.69	5469	2.12	8.36
003117514-08	OBS	No	62.634001	187.247617	761.8	3.290	8.2	7.4	0.69	5469	2.25	4.86
003117514-09	OBS	No	17.554198	145.730643	403.9	5.160	8.6	8.0	0.69	5469	1.62	26.51
003117514-10	OBS	No	47.900949	141.379946	1639.1	2.000	8.1	-1.0	0.69	5469	2.79	6.95

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003117514-01	OBS	FP	0.00	1	0	1	0	LPP_DV—LPP_ALT—CENT_RESOLVED_OFFSET—HALO_GHOST
003117514-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
003117514-03	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_RESOLVED_OFFSET—HALO_GHOST
003117514-04	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_RESOLVED_OFFSET
003117514-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
003117514-06	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_DV—CENT_FEW_DIFFS
003117514-07	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_RESOLVED_OFFSET
003117514-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
003117514-09	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_RESOLVED_OFFSET
003117514-10	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_NOFITS

**Notes:** OBS = Observed. INJ = Injected. INV = Inverted. SCR = Scrambled.

N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

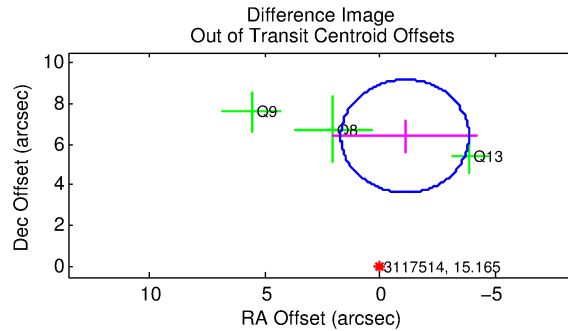
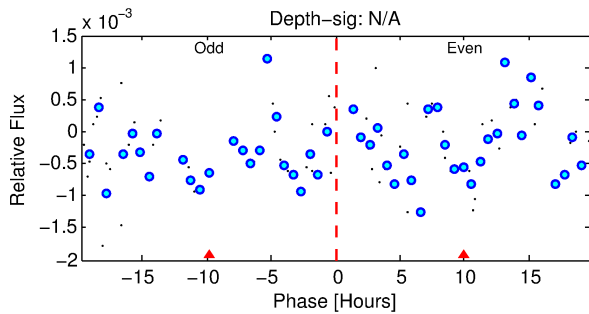
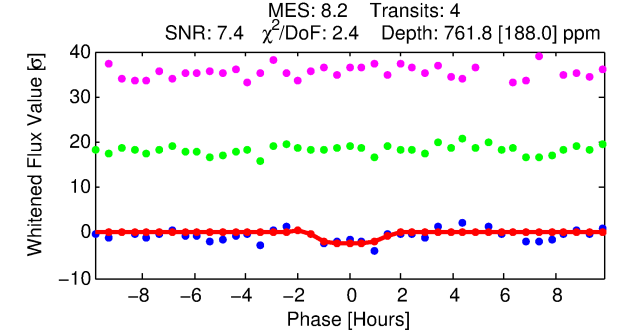
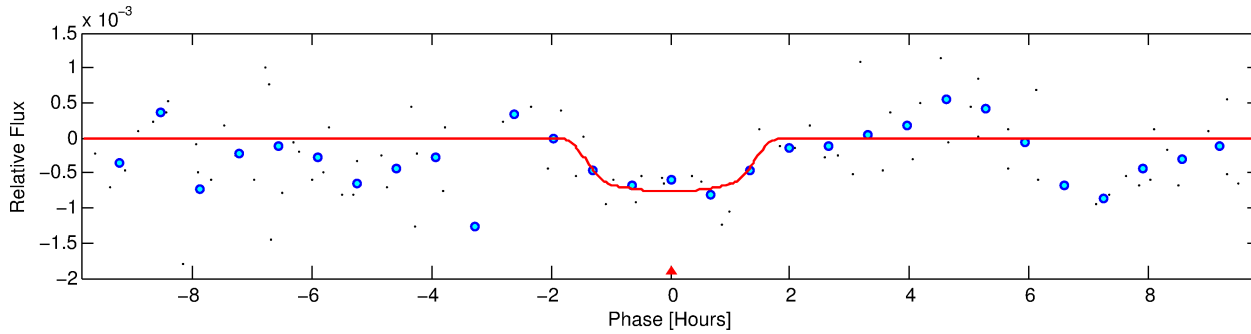
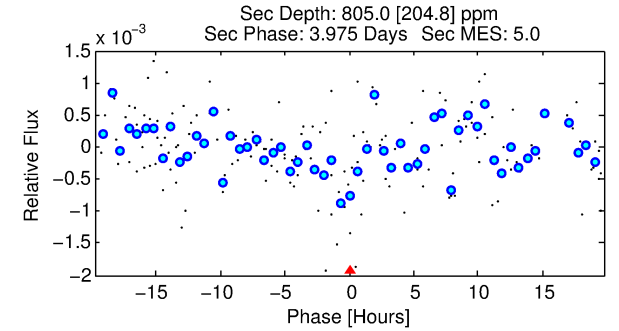
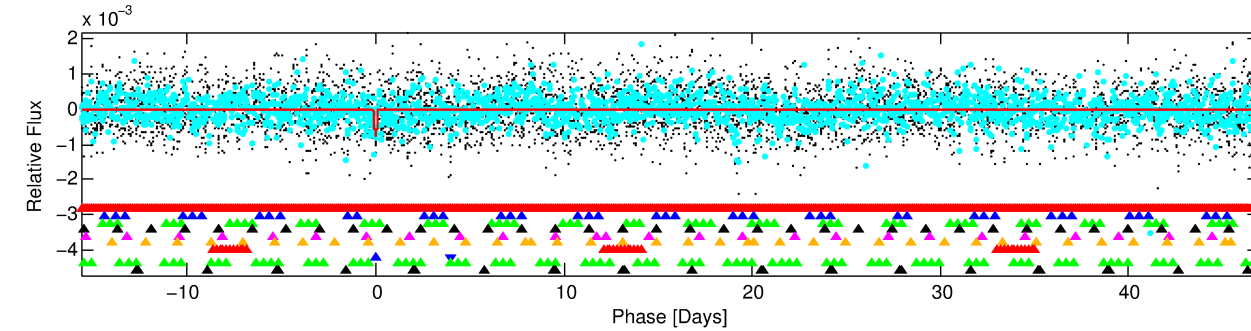
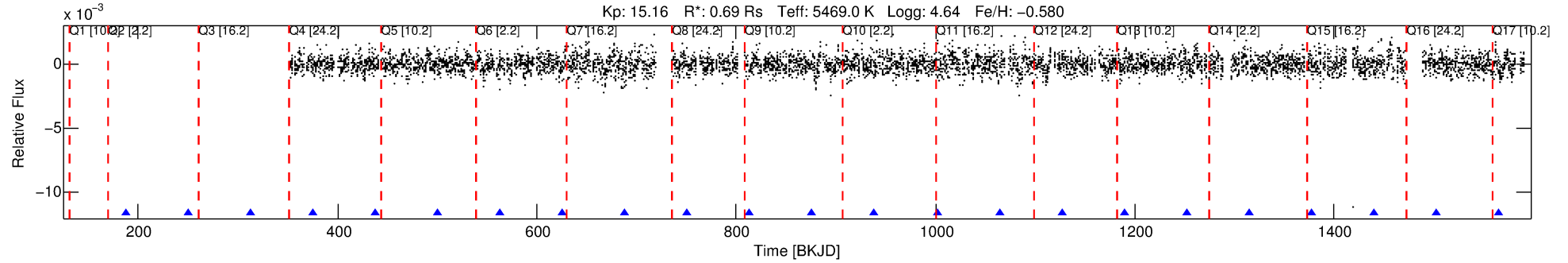
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 003117514-08

No Significant Match Found

# DV One-Page Summary

KIC: 3117514 Candidate: 8 of 10 Period: 62.634 d



## DV Fit Results:

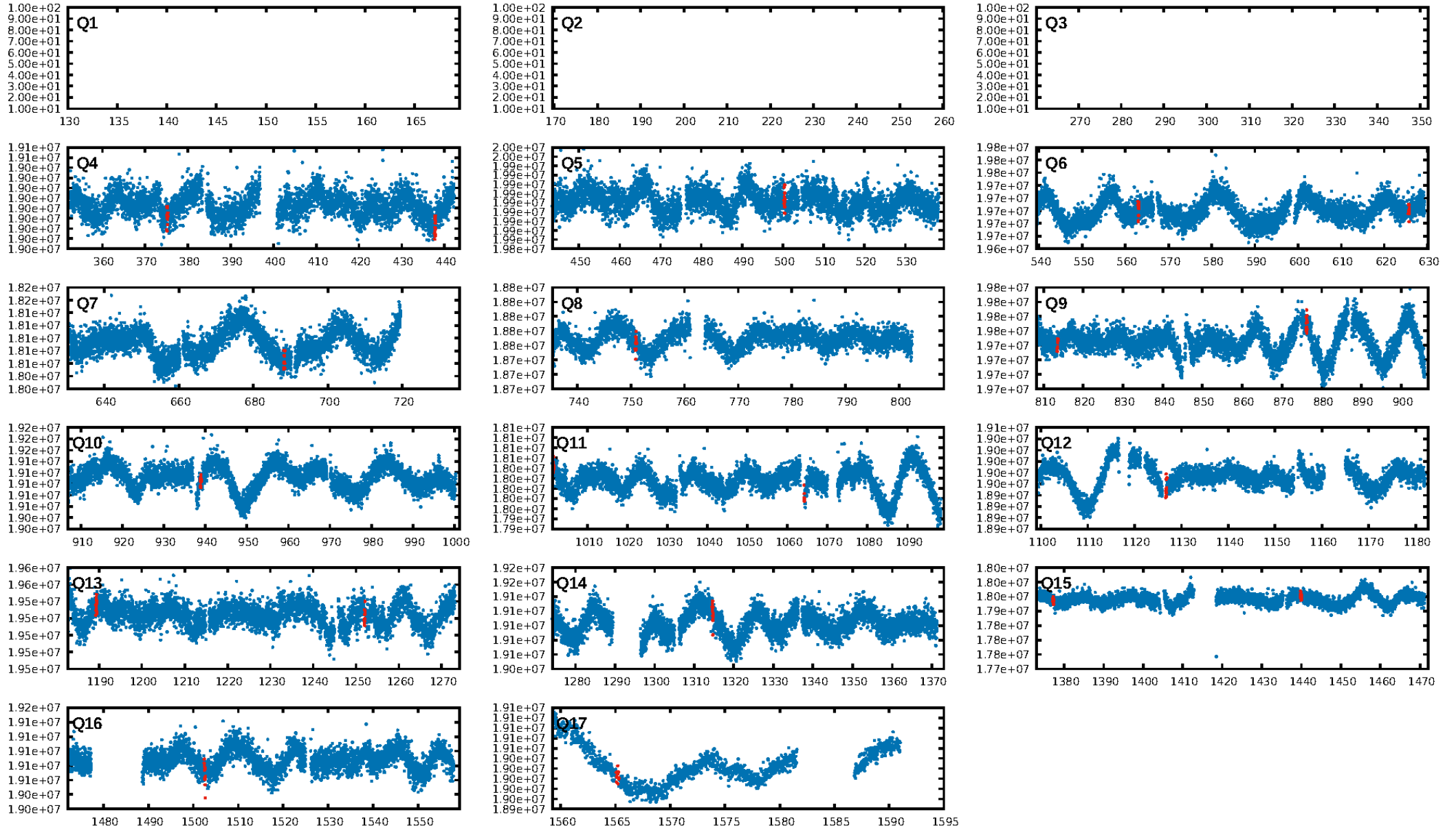
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Epoch = 187.2476 [0.0213] BKJD  
Rp/R\* = 0.0297 [0.0228]  
a/R\* = 76.16 [253.08]  
b = 0.89 [0.83]  
Seff = 4.86 [1.18]  
Teq = 379 [23] K  
Rp = 2.25 [1.77] Re  
a = 0.2822 [0.0389] AU  
Ag = 6939.57 [10887.49] [0.64σ]  
Teffp = 5343 [2088] K [2.38σ]

## DV Diagnostic Results:

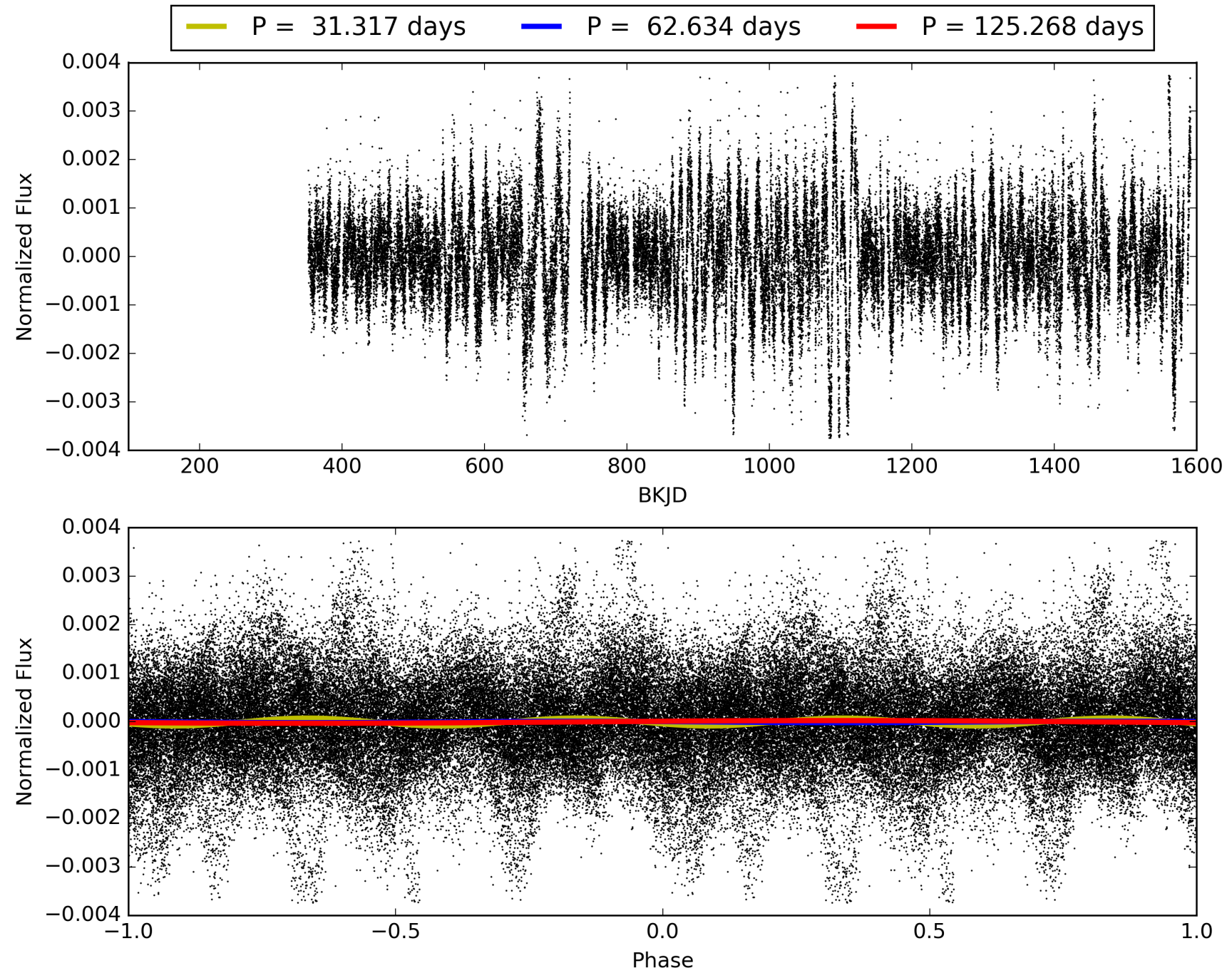
ShortPeriod-sig: 100.0% [27.40σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 93.1%  
ModelChiSquareGof-sig: 99.7%  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [4/4]  
GhostDiagnostic-chr: -5.502  
Centroid-sig: 28.1%  
Centroid-so: 3.609 arcsec [6.74σ]  
OotOffset-rm: 6.481 arcsec [7.03σ]  
KicOffset-rm: 3.392 arcsec [1.48σ]  
OotOffset-st: 0/0/1/2 [3]  
KicOffset-st: 0/1/2/2 [5]  
DiffImageQuality-fgm: 0.20 [1/5]  
DiffImageOverlap-fno: 0.18 [2/11]



# TCE 003117514-08, PDC Light Curves

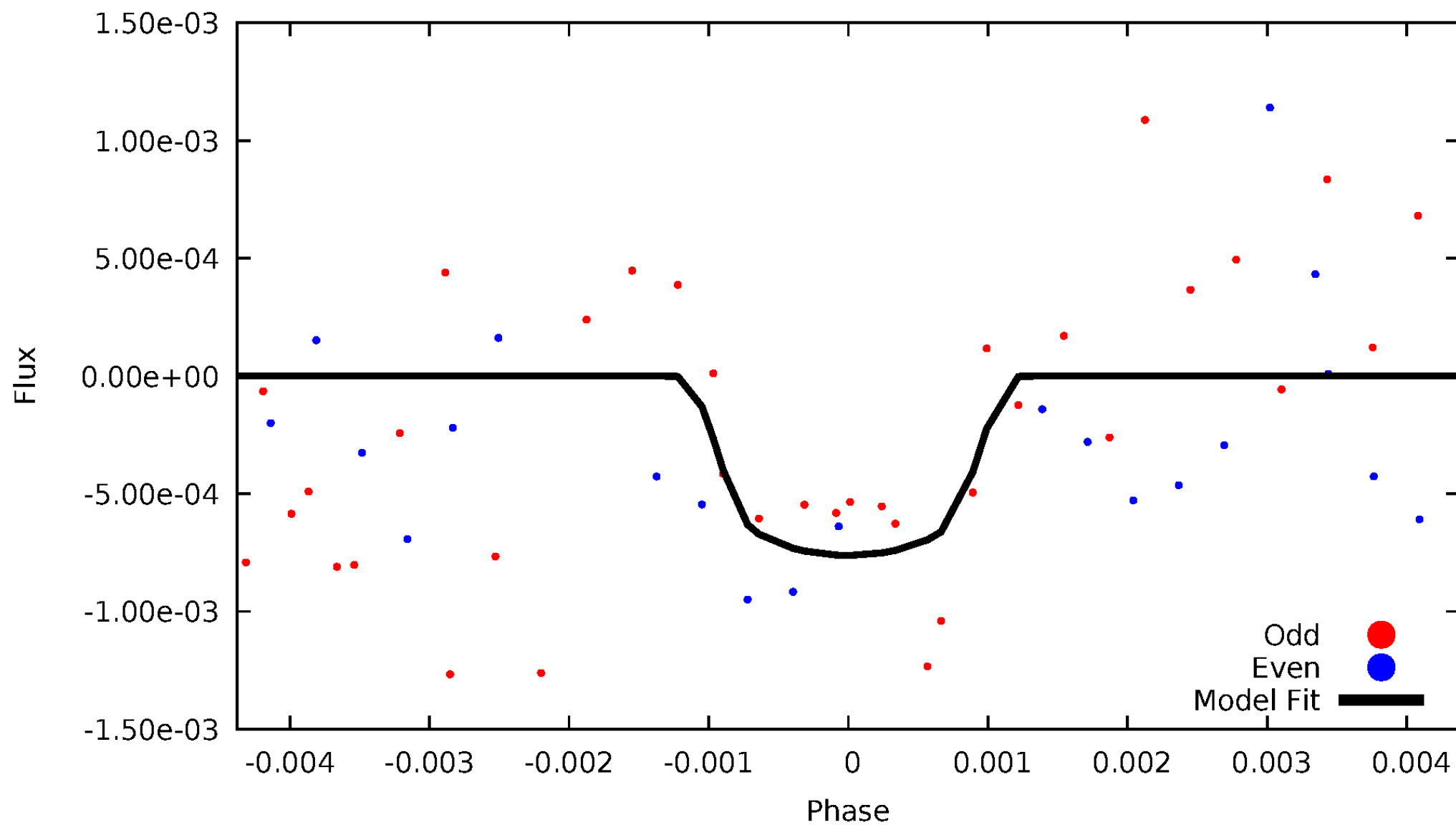


# TCE 003117514-08



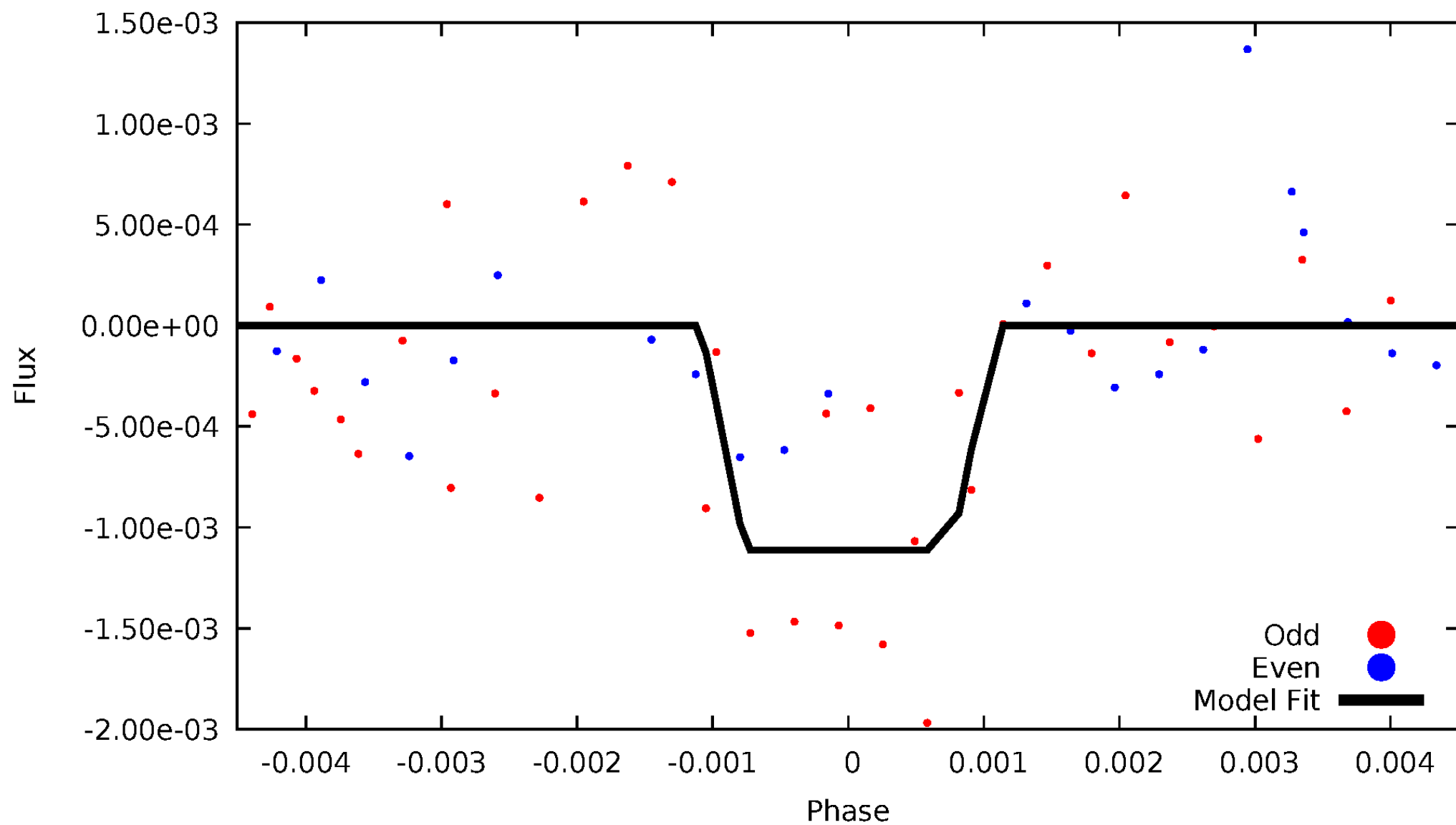
# DV Odd/Even

TCE 003117514-08



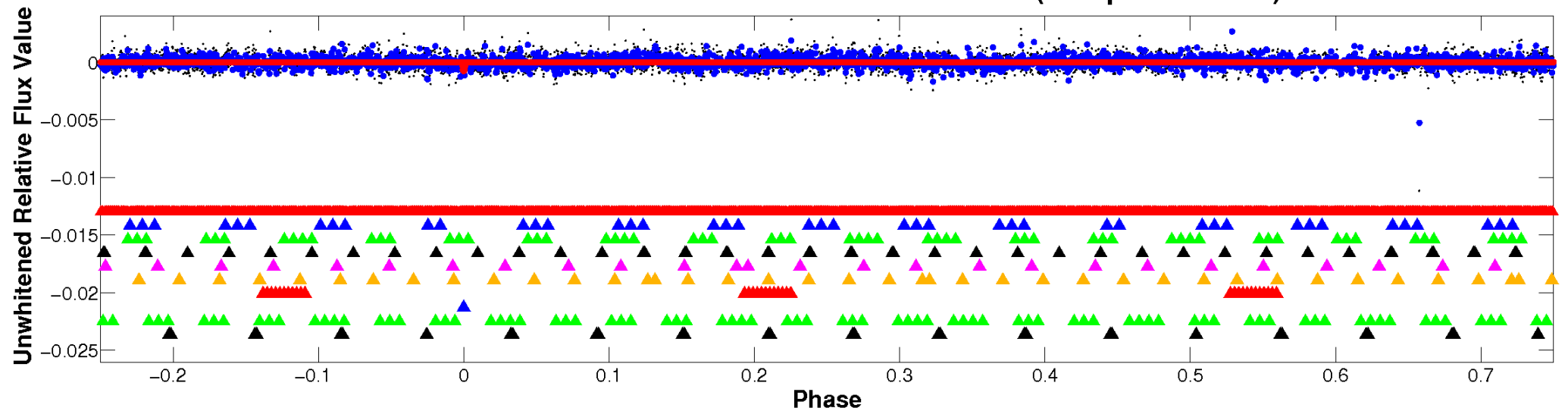
# ALT Odd/Even

TCE 003117514-08

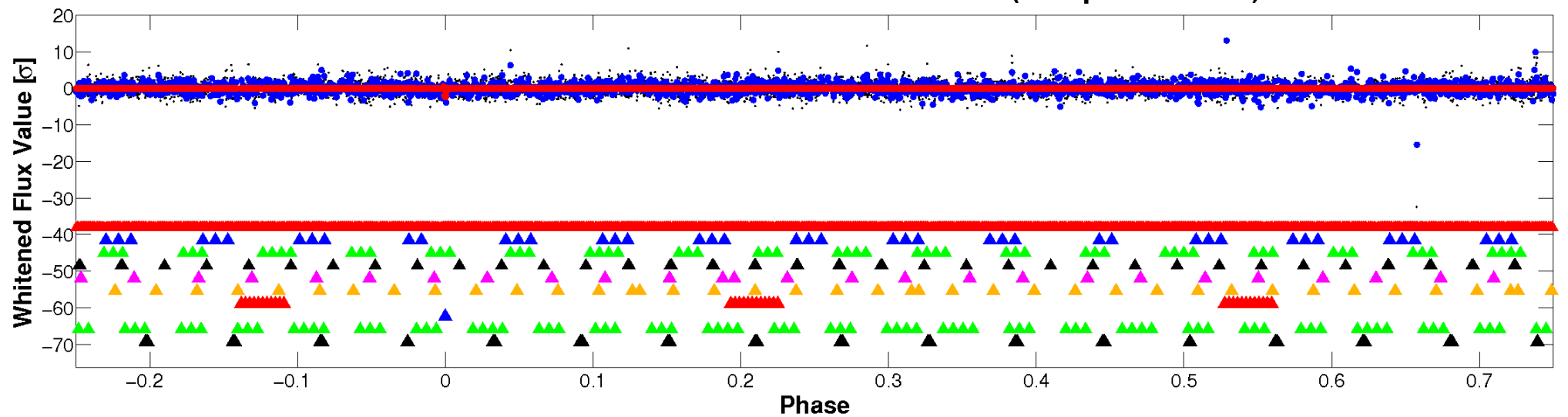


# Non-Whitened Vs. Whitened Light Curve

## Planet 8 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

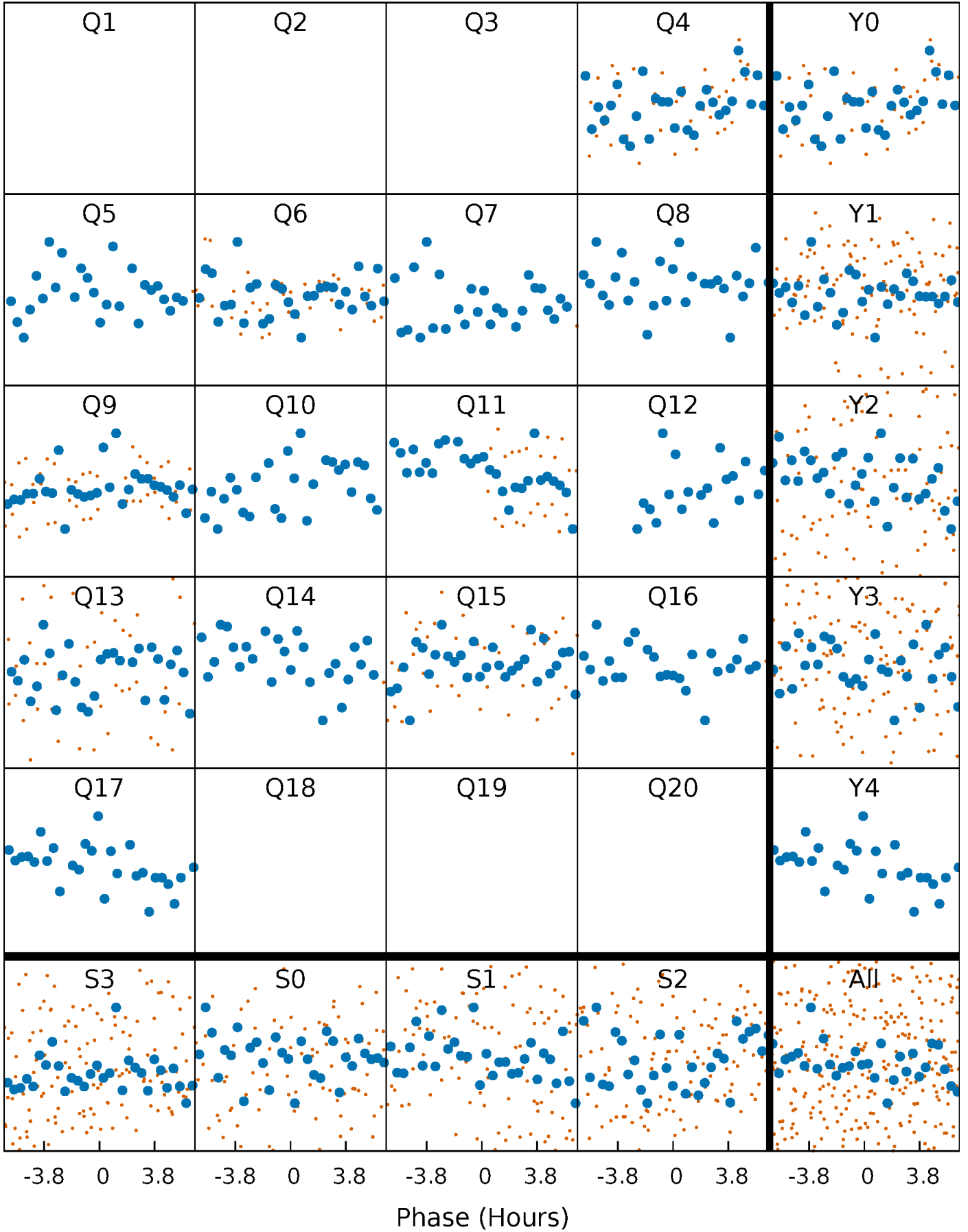


## Planet 8 : Phased Whitened Flux Time Series (Fit Epoch/Period)



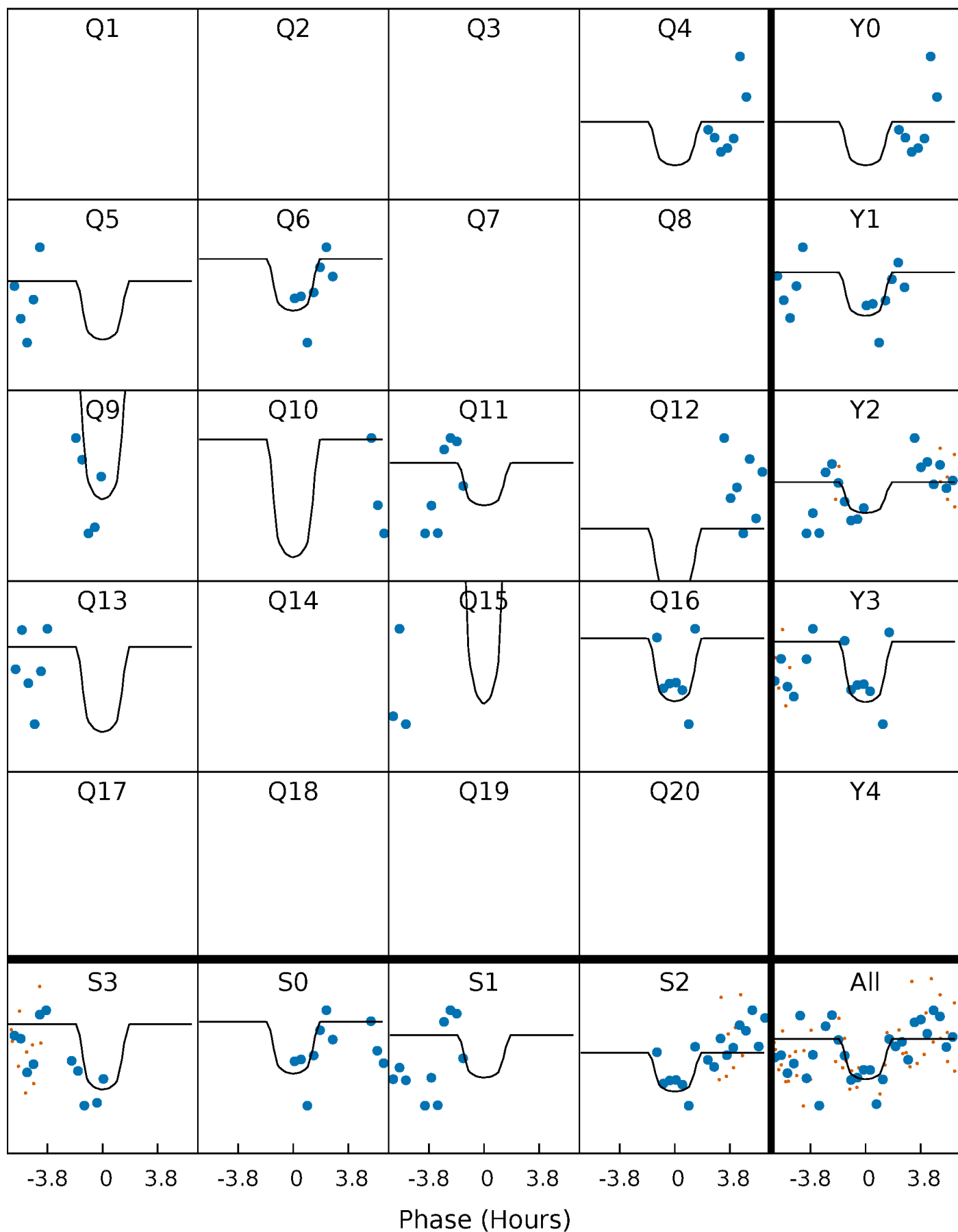
# PDC Quarter-Phased Transit Curves

TCE 003117514-08   P= 62.634001 Days    $T_0=187.247617$  (BKJD)



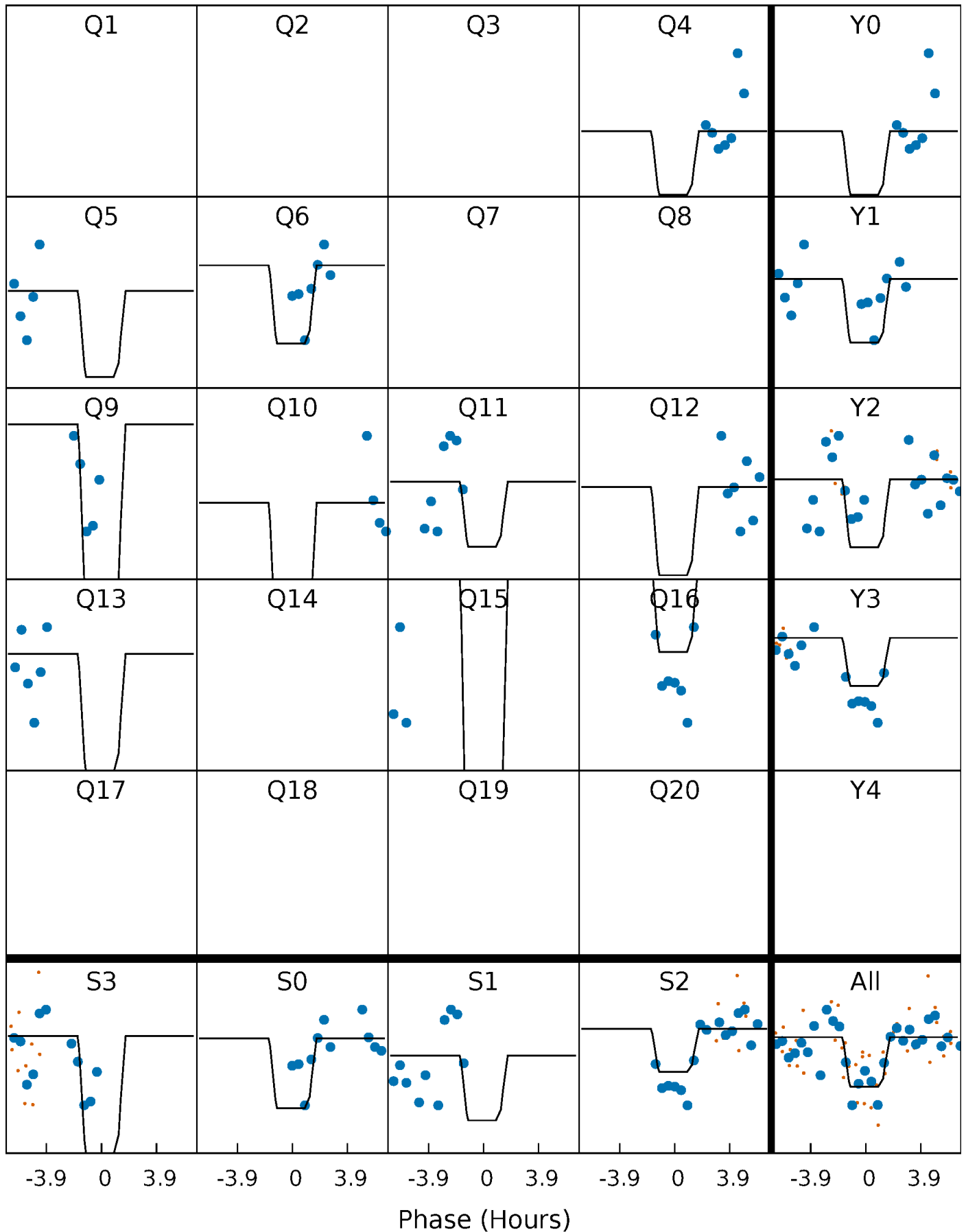
# DV Quarter-Phased Transit Curves

TCE 003117514-08 P= 62.634001 Days  $T_0=187.247617$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 003117514-08 P= 62.634032 Days  $T_0=187.252157$  (BKJD)

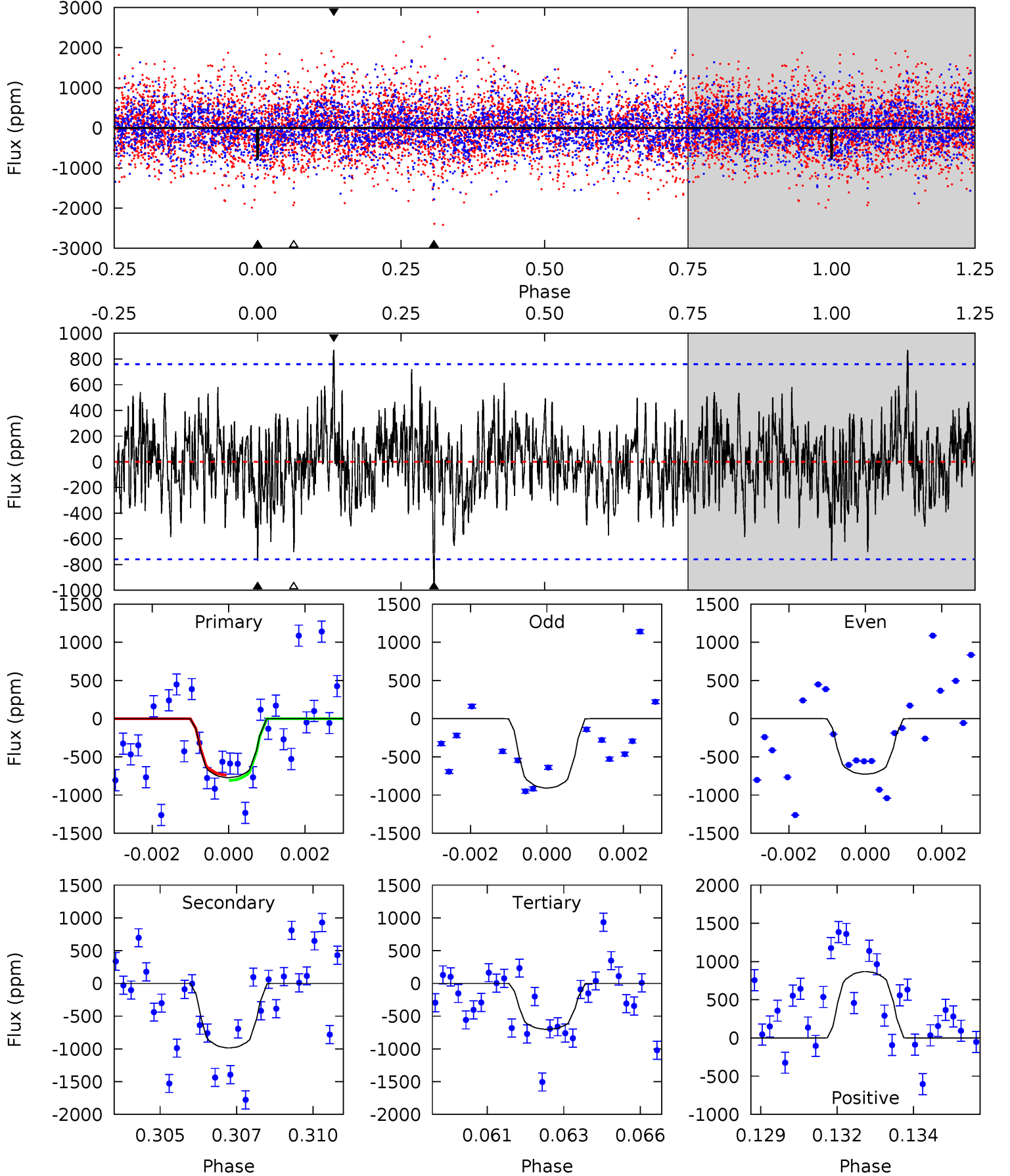




# DV Model-Shift Uniqueness Test

003117514-08, P = 62.634001 Days, E = 187.247617 Days

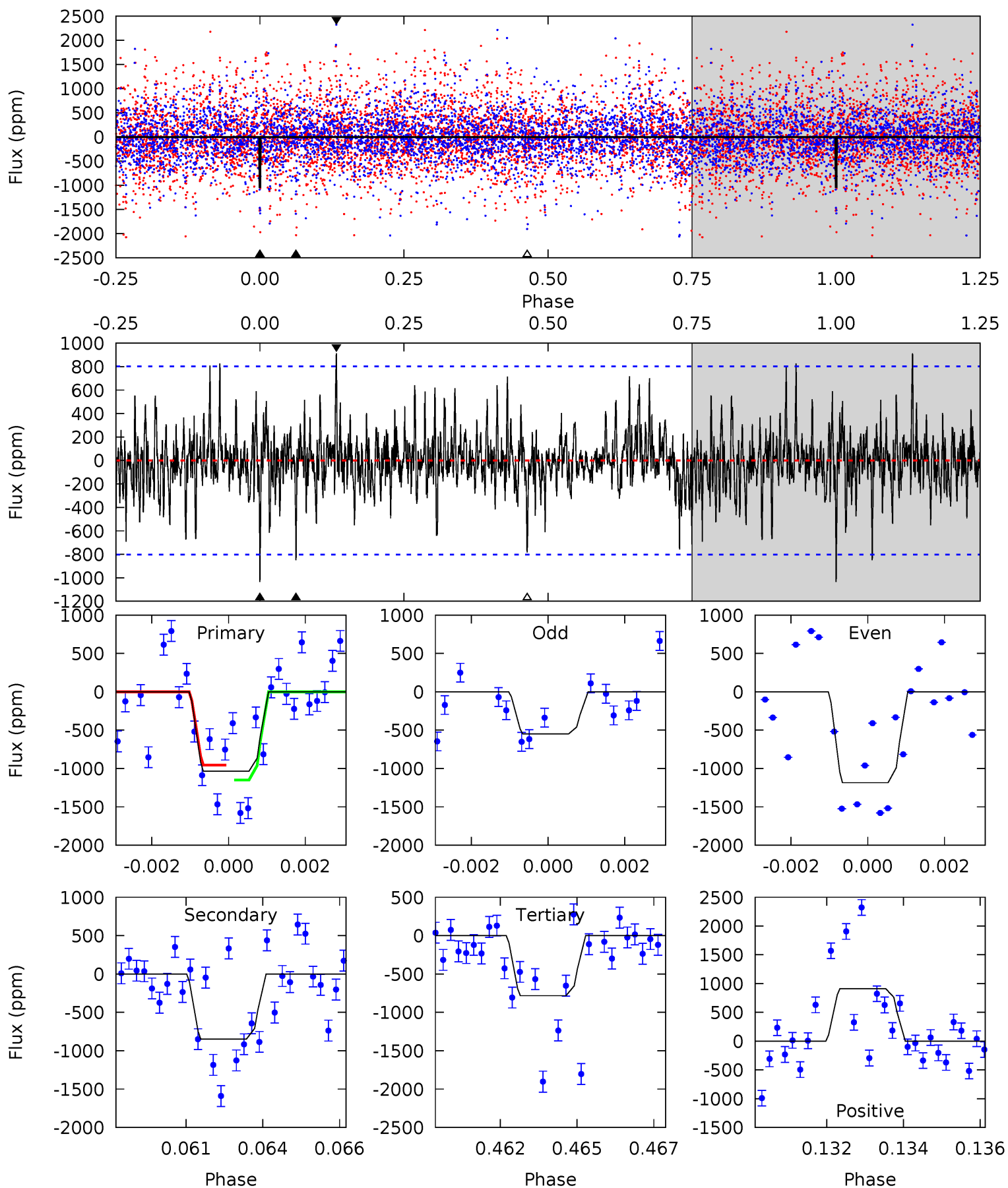
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.38	6.87	4.89	6.06	5.29	3.03	1.55	0.49	-0.68	1.98	0.81	0.54	0.99	0.47	0.25



# Alt Model-Shift Uniqueness Test

003117514-08, P = 62.634032 Days, E = 187.252157 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.86	5.61	5.18	6.04	5.31	3.06	1.37	1.67	0.82	0.43	-0.43	1.73	1.55	0.47	0.65



### Stellar Parameters For KIC 003117514

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5469^{+196}_{-196}$	$4.637^{+0.032}_{-0.104}$	$-0.580^{+0.300}_{-0.300}$	$0.695^{+0.117}_{-0.050}$	$0.778^{+0.073}_{-0.081}$	$3.264^{+0.482}_{-1.044}$
	+4%/-4%	+1%/-2%	+52%/-52%	+17%/-7%	+9%/-10%	+15%/-32%
Source	KIC0	KIC0	KIC0	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology  
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

### Secondary Eclipse Parameters for KIC 003117514-08 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-986 \pm 144$	$2.50^{+1.67}_{-1.43}$	$538^{+26}_{-24}$	$5482^{+3180}_{-1118}$	$6853^{+29713}_{-4473}$
Alt.	$-848 \pm 151$	$2.75^{+1.74}_{-1.46}$	$536^{+26}_{-23}$	$5047^{+2185}_{-921}$	$4885^{+15830}_{-3129}$

$T_{max}$  = Theoretical Maximum Planetary Temperature

$T_{obs}$  = Observed Planetary Temperature (Assuming  $A=0.3$ )

$A_{obs}$  = Observed Albedo (Assuming  $T=0$ )

If a secondary eclipse is present, the system is likely an EB if  $T_{obs} \gg T_{max}$  AND  $A_{obs} \gg 1.0$

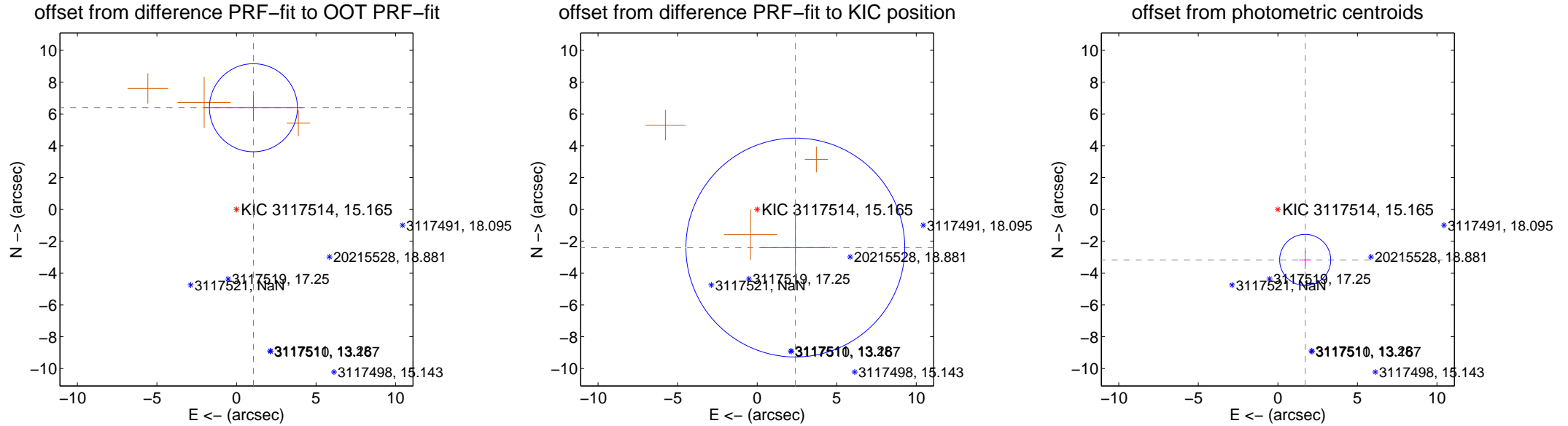
## DV Centroid Data

Supplemental centroid analysis for 003117514-08. Kepler magnitude: 15.16. Transit SNR 7.44

There are 1 quarters with good PRF difference image offsets

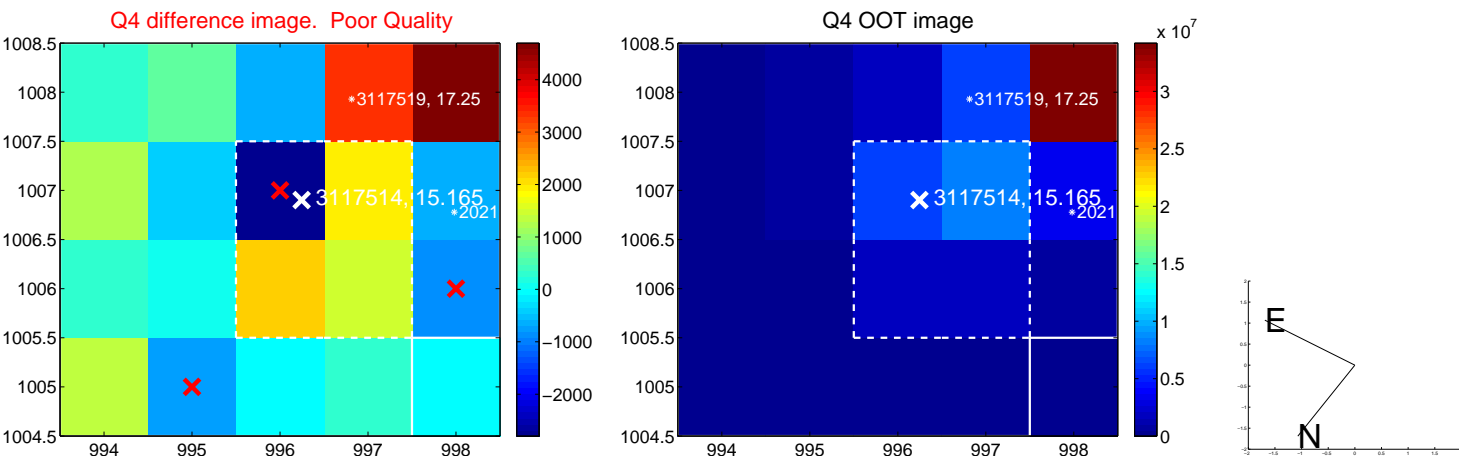
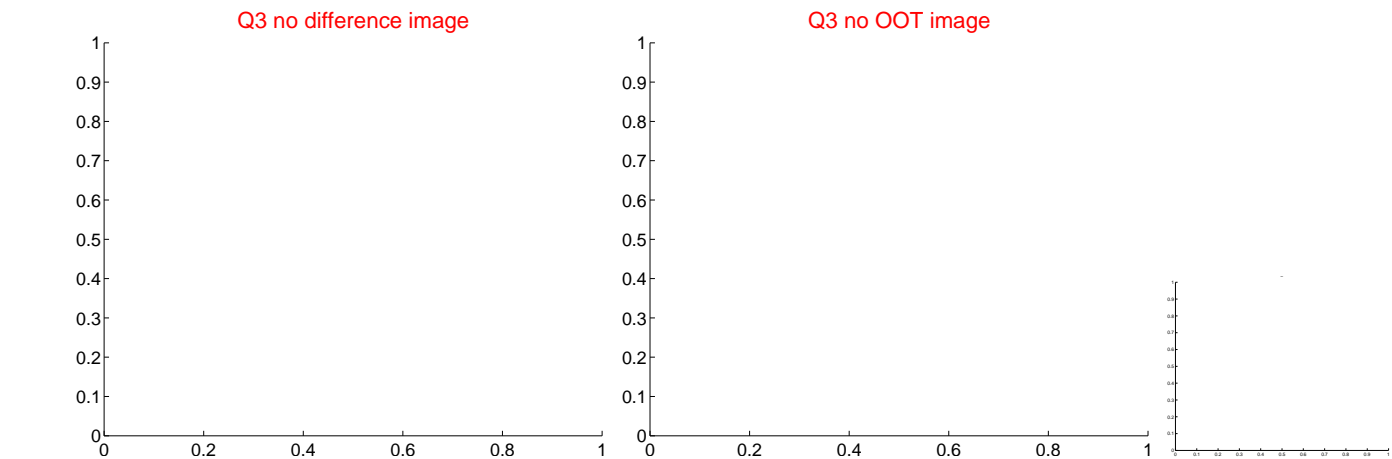
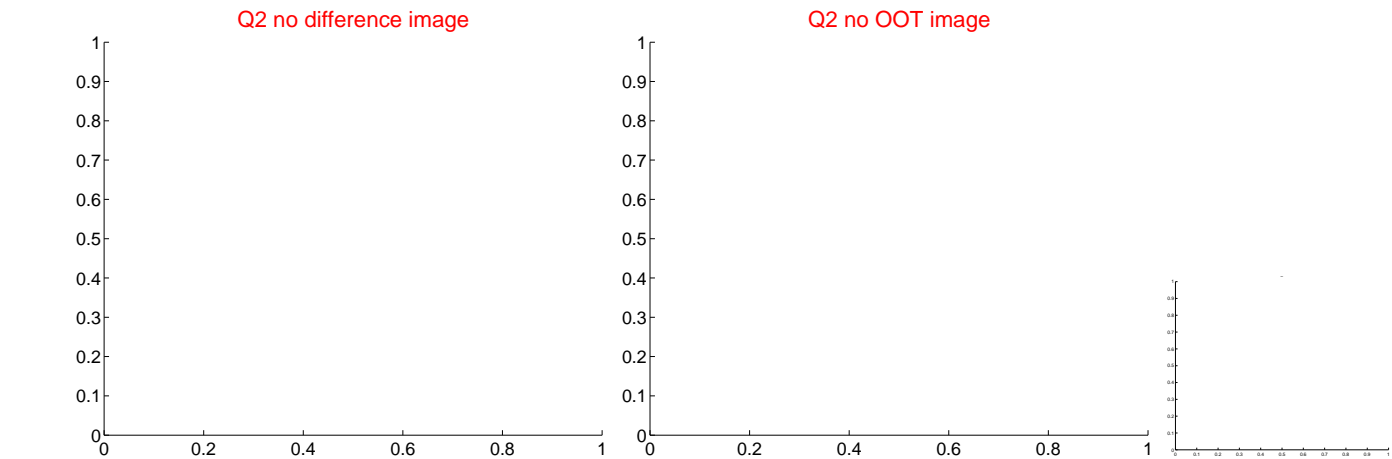
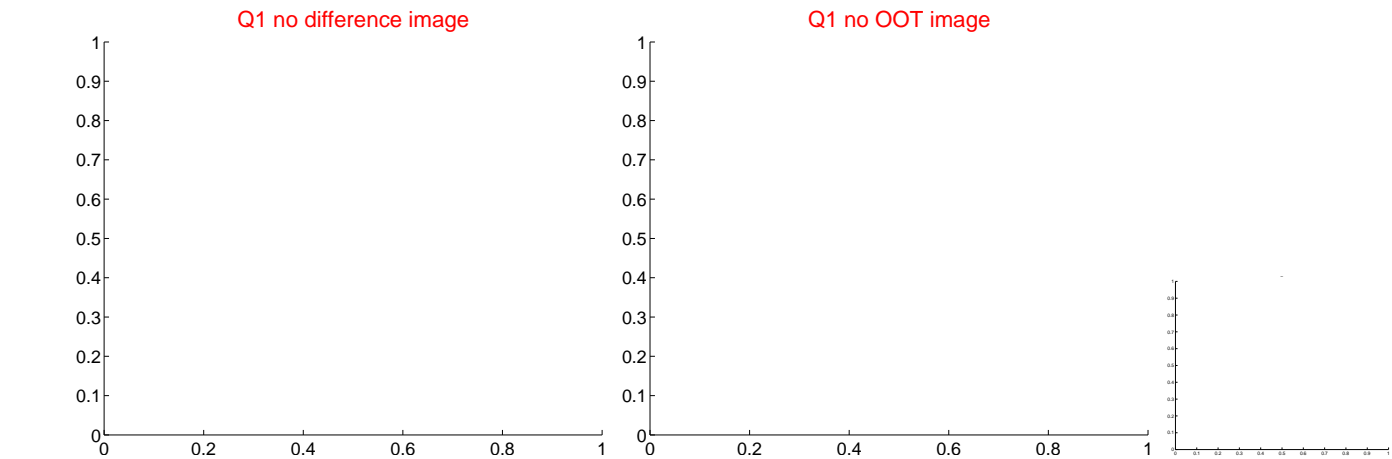
The OOT PRF centroid is offset from the target star catalog position by about 2.28 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$6.481 \pm 0.922$	7.03	$-1.067 \pm 3.104$	$6.393 \pm 0.778$
PRF-fit source offset from KIC position	$3.392 \pm 2.293$	1.48	$-2.401 \pm 2.186$	$-2.396 \pm 2.396$
photometric centroid source offset	$3.61 \pm 0.54$	6.74	$-1.72 \pm 0.38$	$-3.17 \pm 0.57$

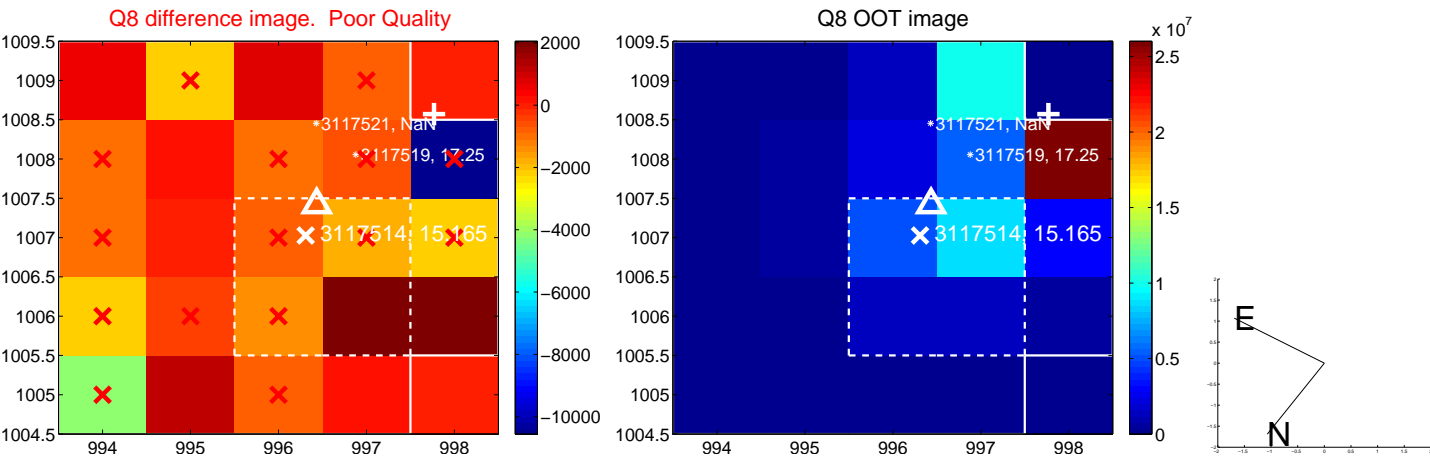
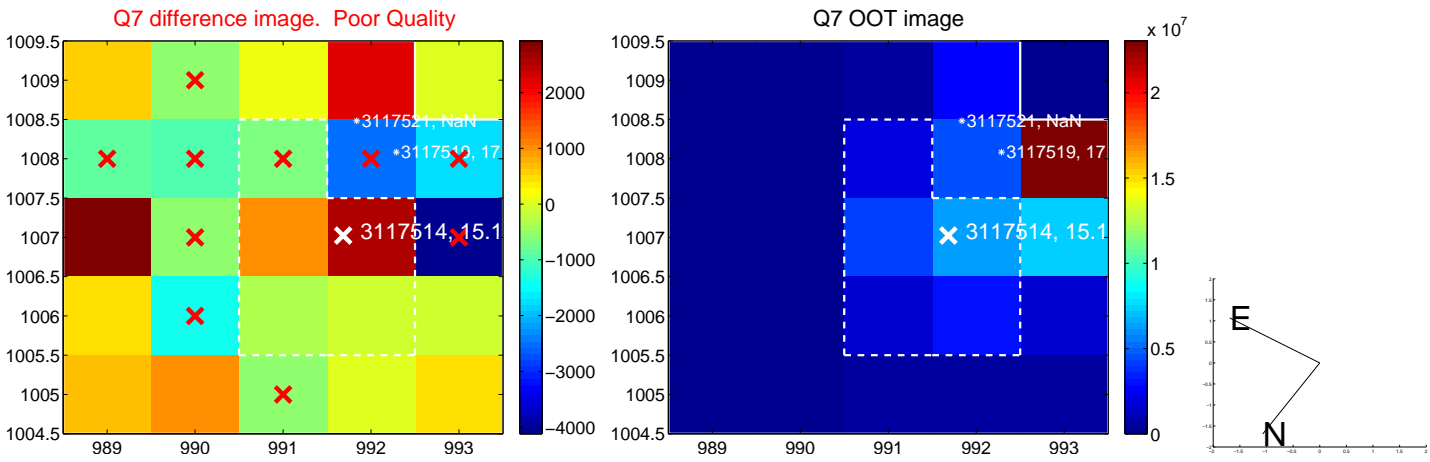
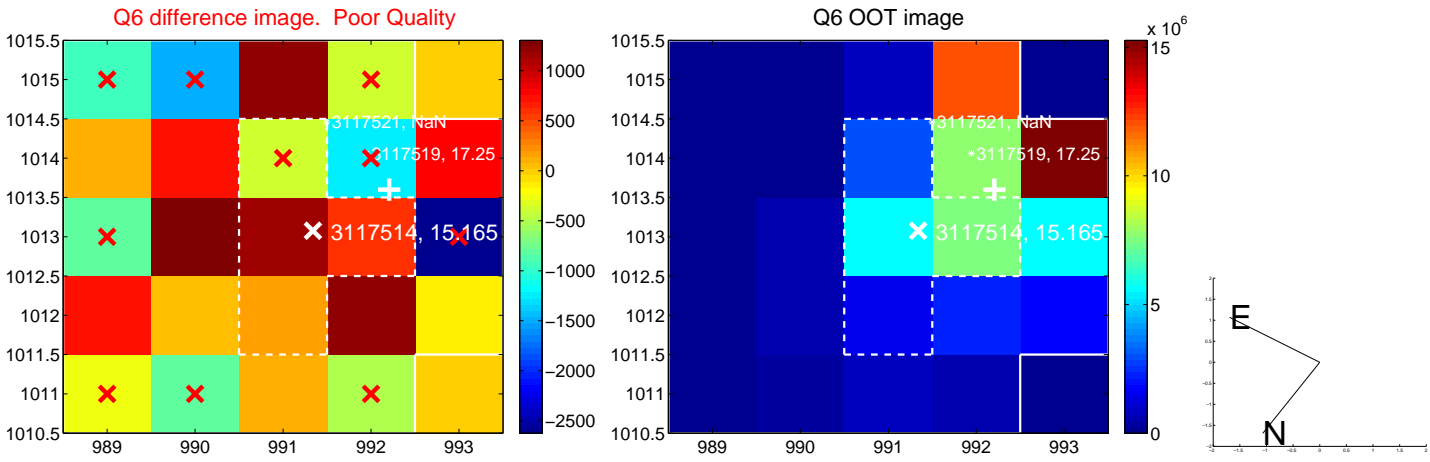
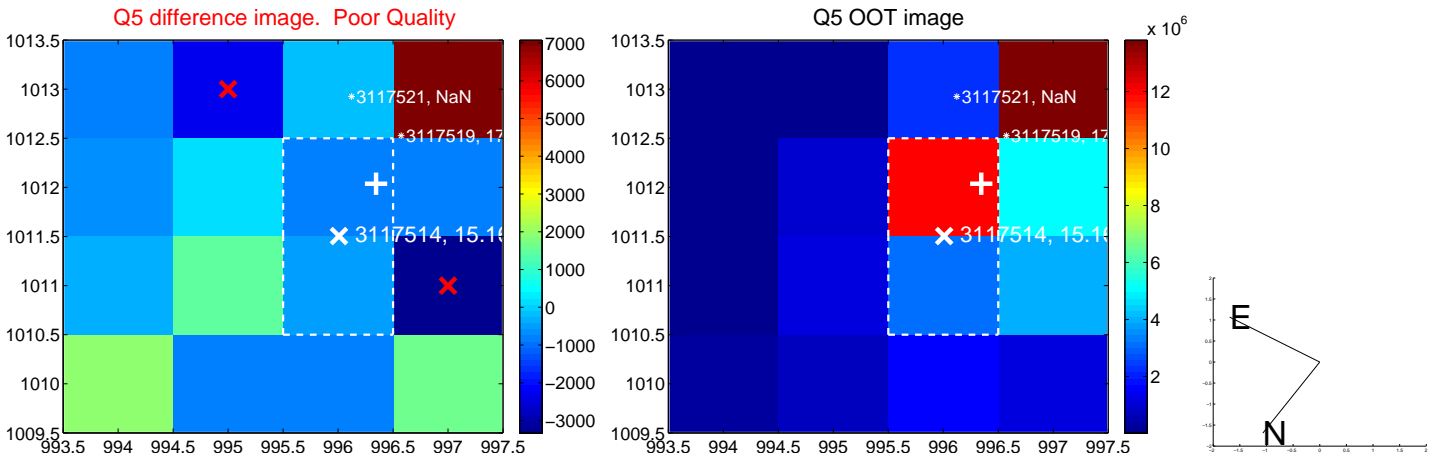


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three- $\sigma$ . Red \*: target star. Blue \*: Other stars. Text next to a star gives its KIC ID and kepmag. KIC IDs > 15,000,000 are from the UKIRT catalog.

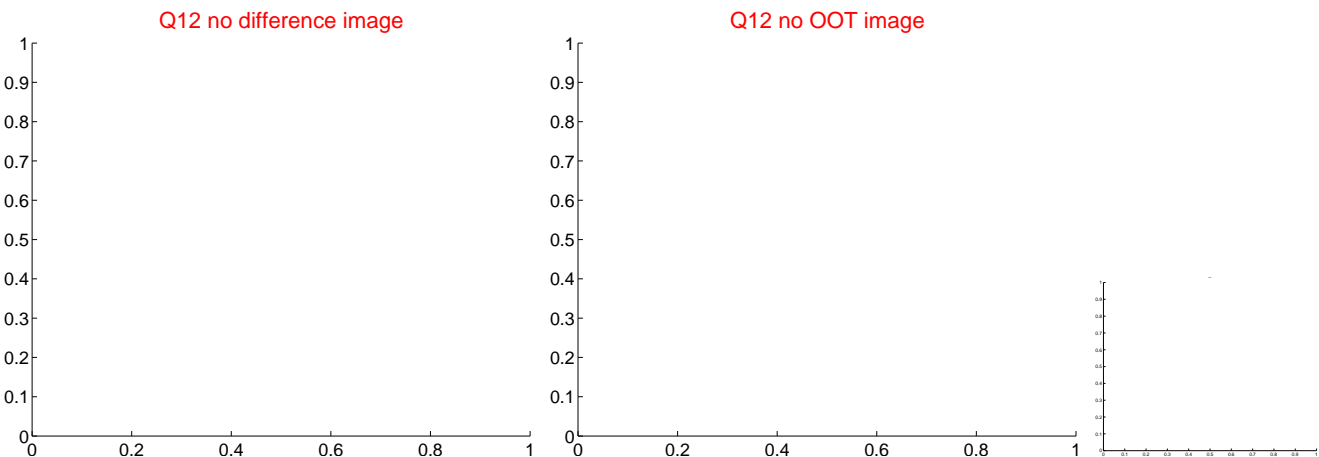
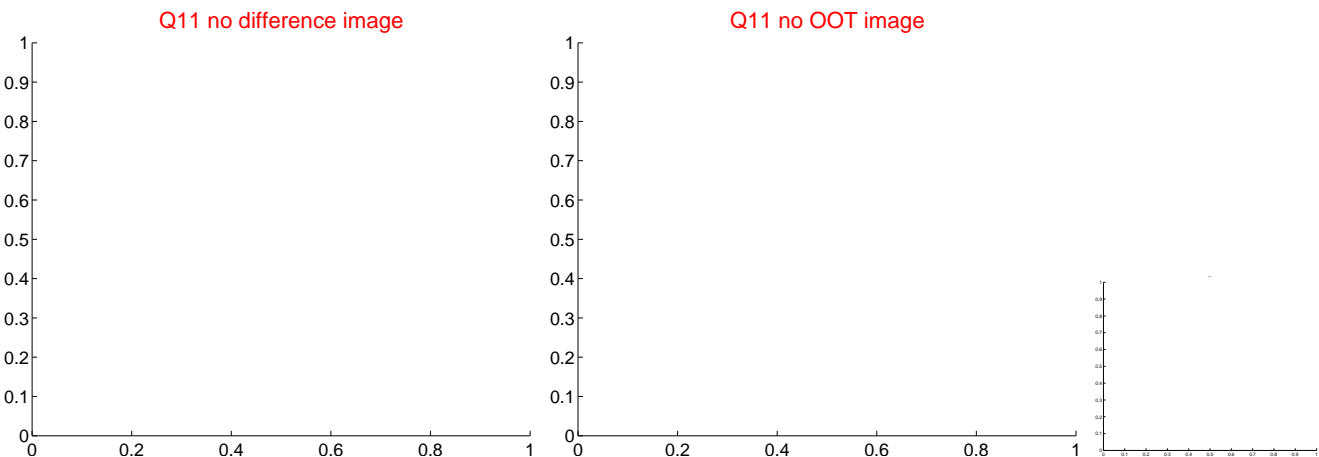
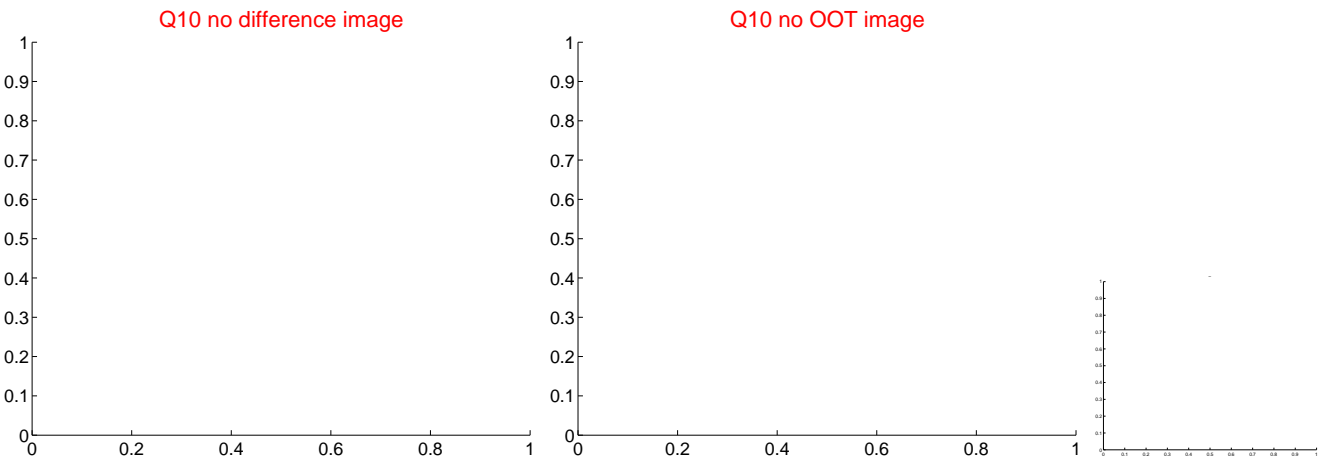
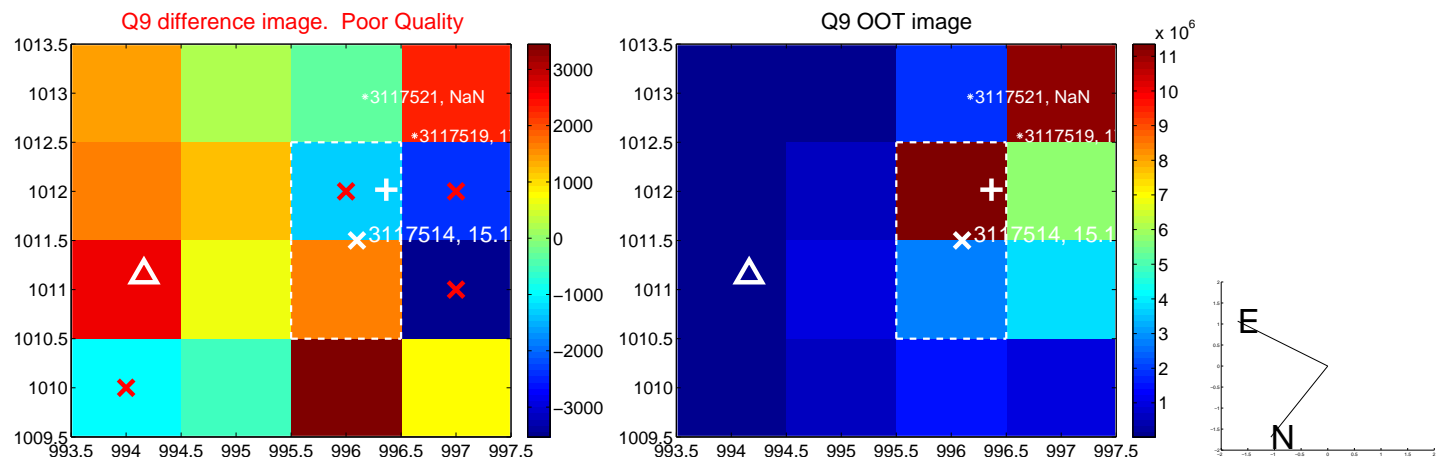
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



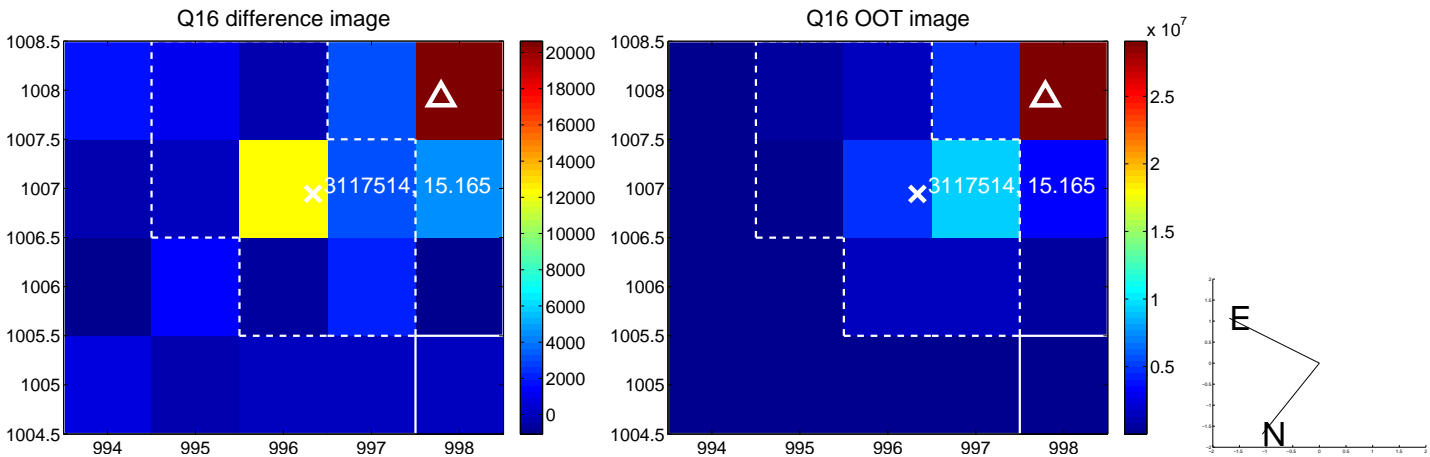
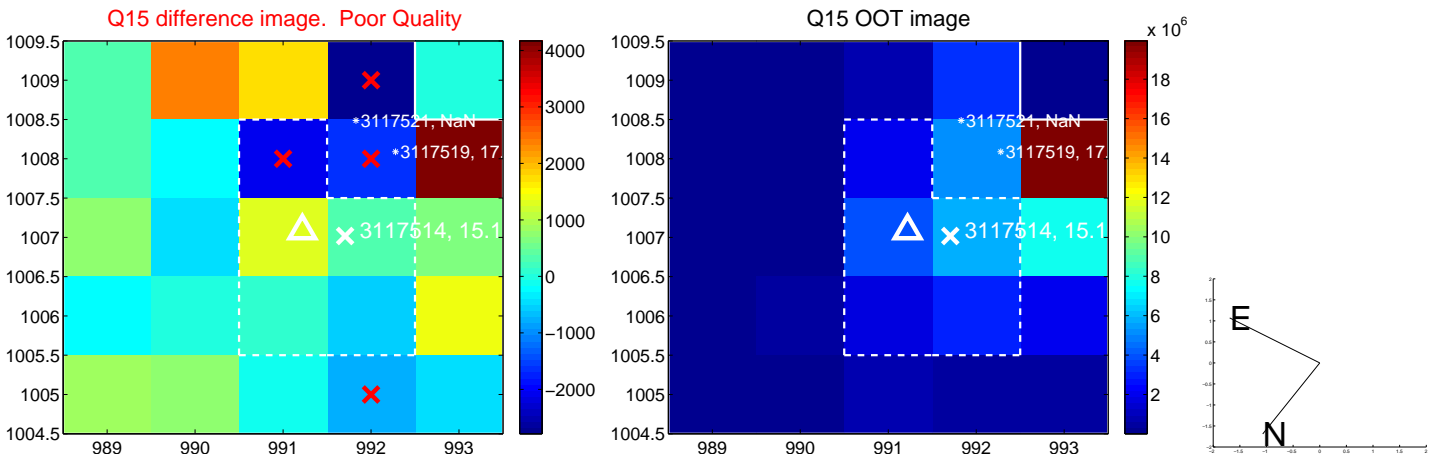
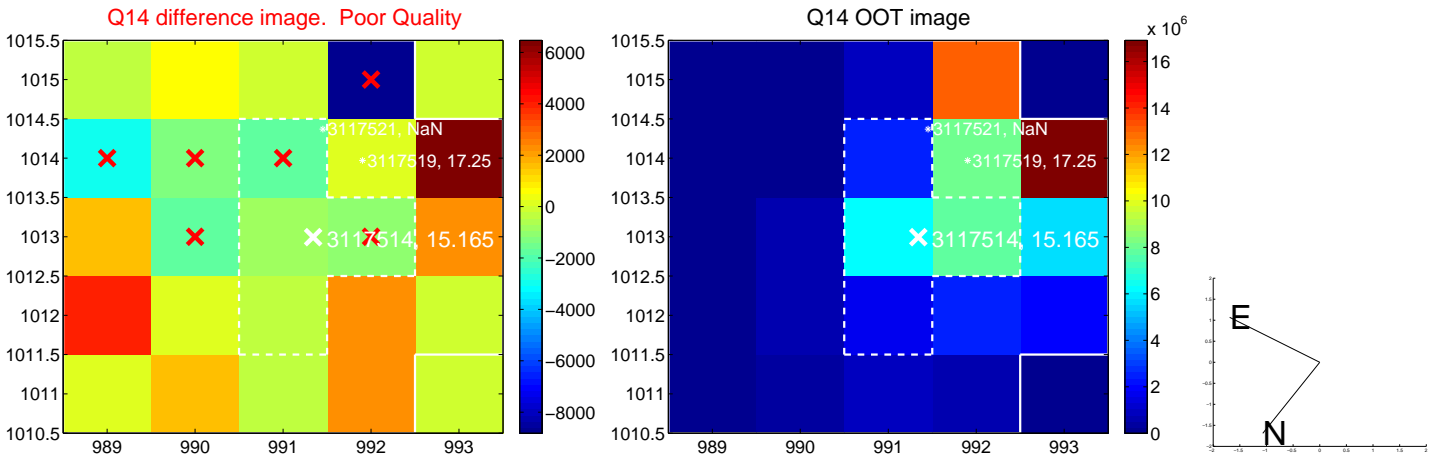
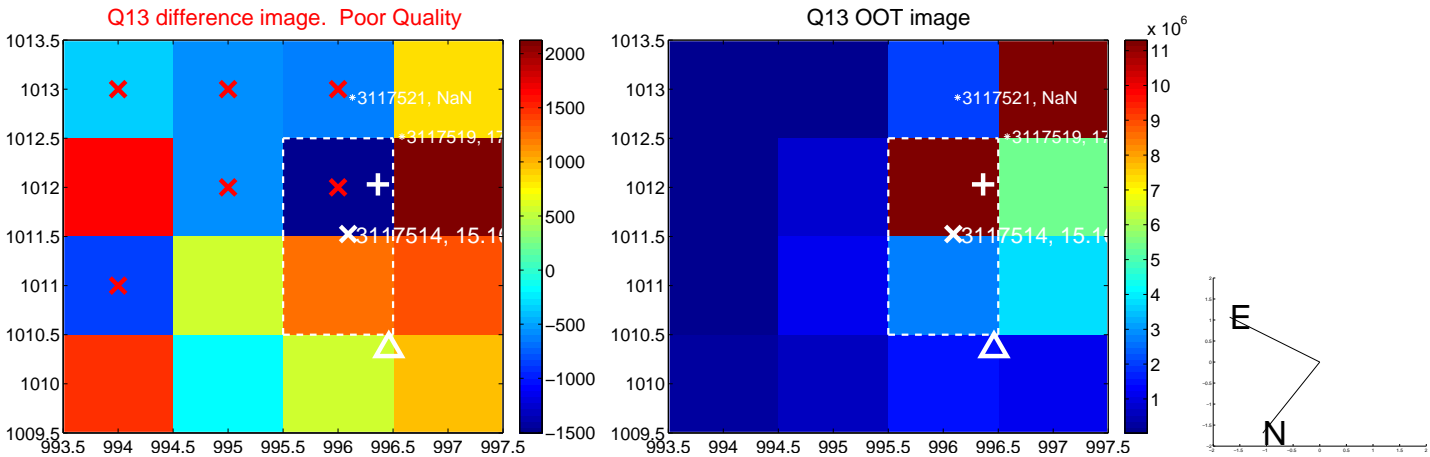
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

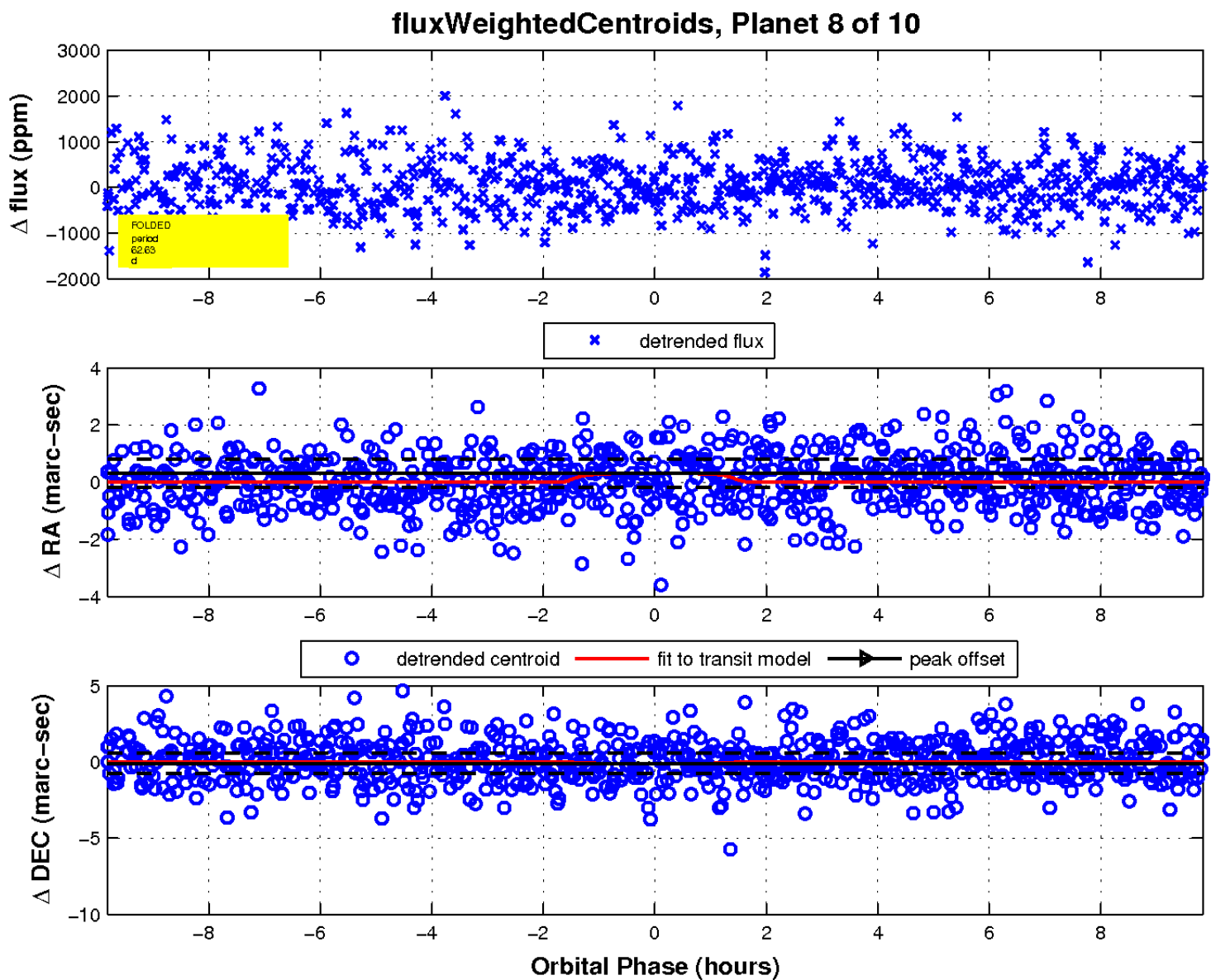
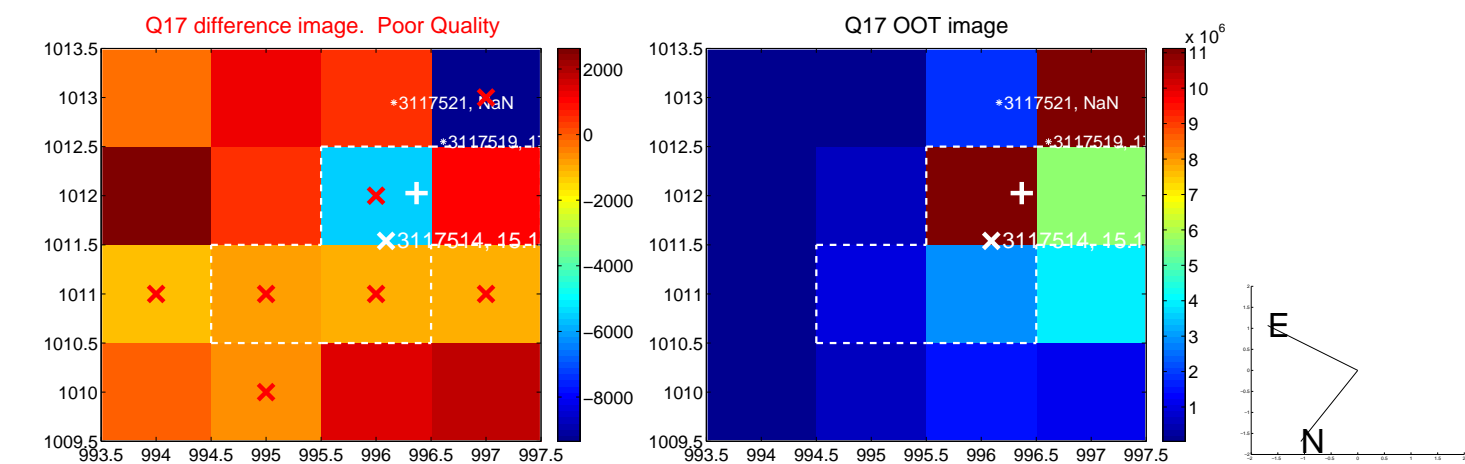


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

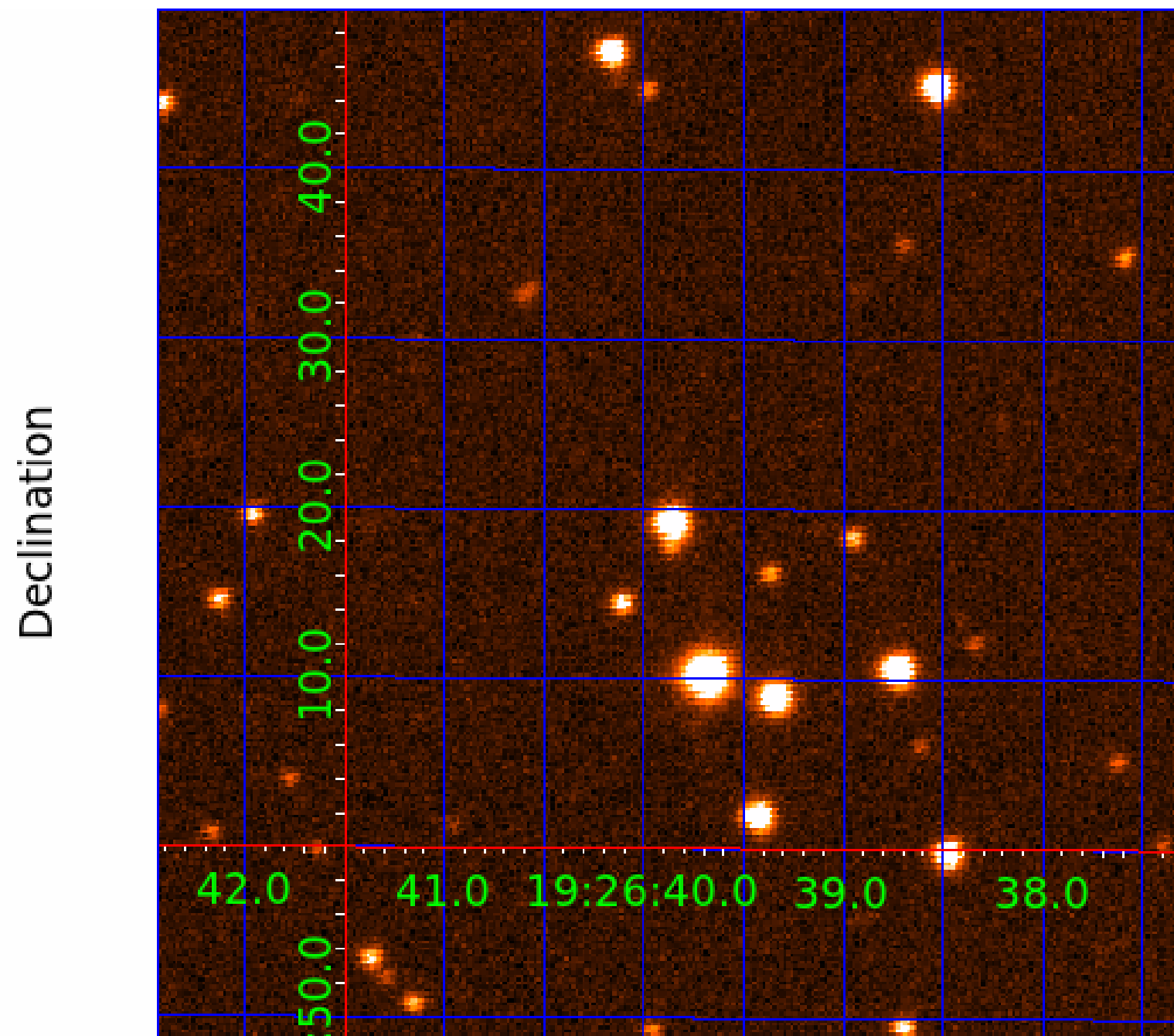




white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image



## Q1-17 DR25 TCE Parameters

TCE	Run Type	KOI?	Period (Days)	Epoch (BKJD)	Depth (ppm)	Duration (Hours)	MES	SNR	$R_{\star}$ ( $R_{\odot}$ )	$T_{\star}$ (K)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
003117514-01	OBS	No	1.091938	131.641378	53.4	7.431	8.5	8.6	0.69	5469	0.58	1075.44
003117514-02	OBS	No	33.369509	157.503651	669.9	2.906	10.4	7.1	0.69	5469	1.99	11.26
003117514-03	OBS	No	24.379621	144.629800	722.9	3.062	8.6	9.5	0.69	5469	2.03	17.11
003117514-04	OBS	No	30.423736	143.081360	695.1	1.951	9.0	7.8	0.69	5469	2.08	12.73
003117514-05	OBS	No	57.642773	136.377881	920.7	2.879	8.3	8.8	0.69	5469	2.33	5.43
003117514-06	OBS	No	37.233493	132.857621	1420.0	1.430	8.7	9.1	0.69	5469	2.63	9.73
003117514-07	OBS	No	41.695704	159.649434	657.5	3.150	8.3	7.7	0.69	5469	2.12	8.36
003117514-08	OBS	No	62.634001	187.247617	761.8	3.290	8.2	7.4	0.69	5469	2.25	4.86
003117514-09	OBS	No	17.554198	145.730643	403.9	5.160	8.6	8.0	0.69	5469	1.62	26.51
003117514-10	OBS	No	47.900949	141.379946	1639.1	2.000	8.1	-1.0	0.69	5469	2.79	6.95

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003117514-01	OBS	FP	0.00	1	0	1	0	LPP_DV—LPP_ALT—CENT_RESOLVED_OFFSET—HALO_GHOST
003117514-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
003117514-03	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_RESOLVED_OFFSET—HALO_GHOST
003117514-04	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_RESOLVED_OFFSET
003117514-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
003117514-06	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_DV—CENT_FEW_DIFFS
003117514-07	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_RESOLVED_OFFSET
003117514-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
003117514-09	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_RESOLVED_OFFSET
003117514-10	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_NOFITS

**Notes:** OBS = Observed. INJ = Injected. INV = Inverted. SCR = Scrambled.

N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

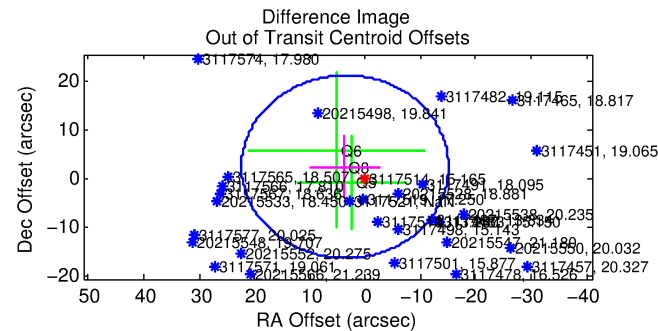
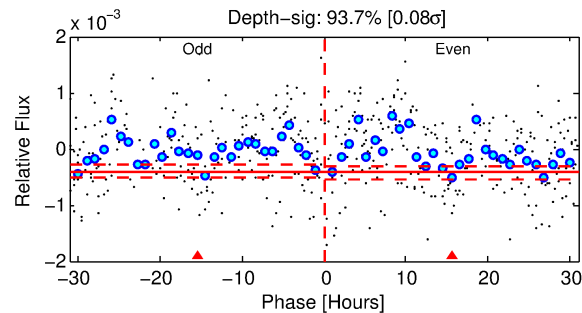
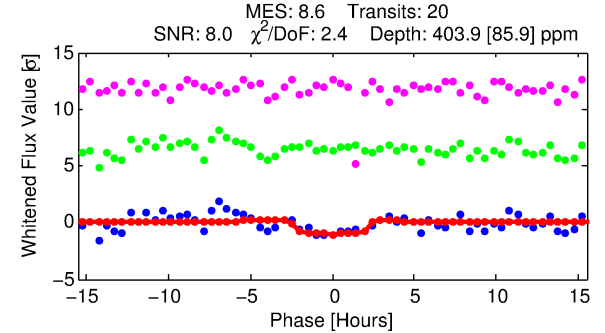
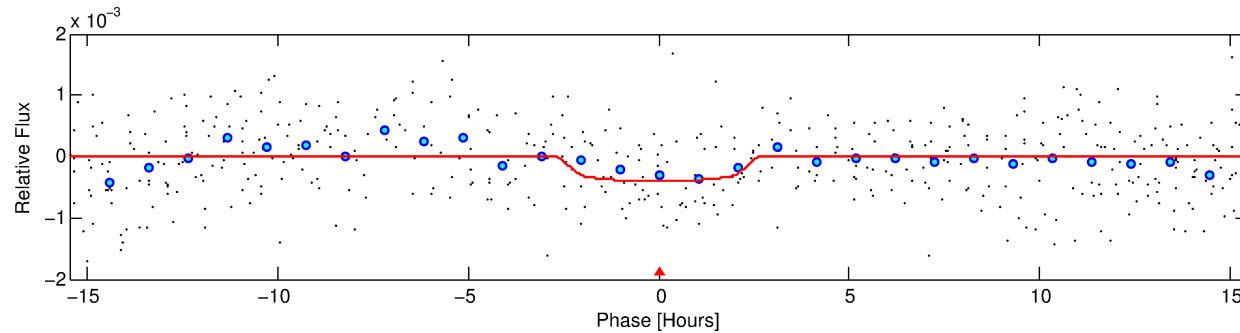
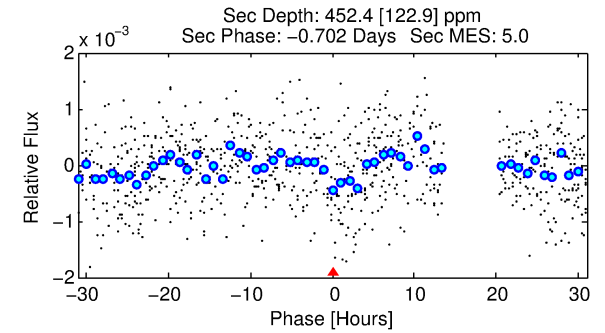
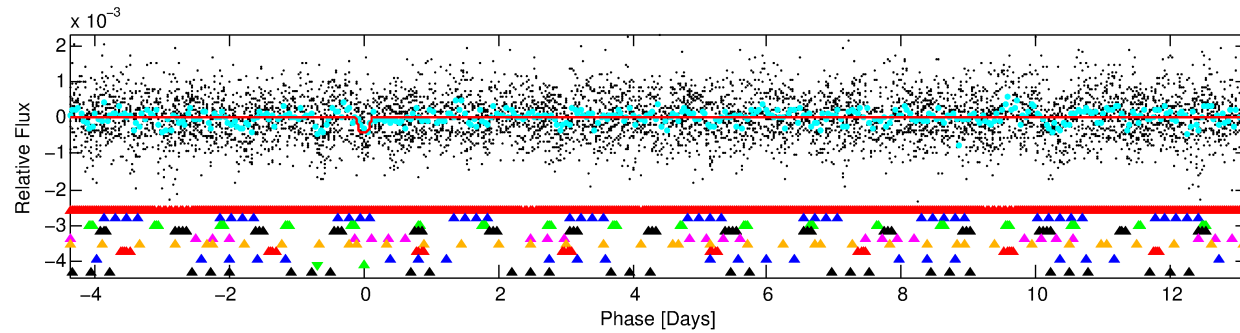
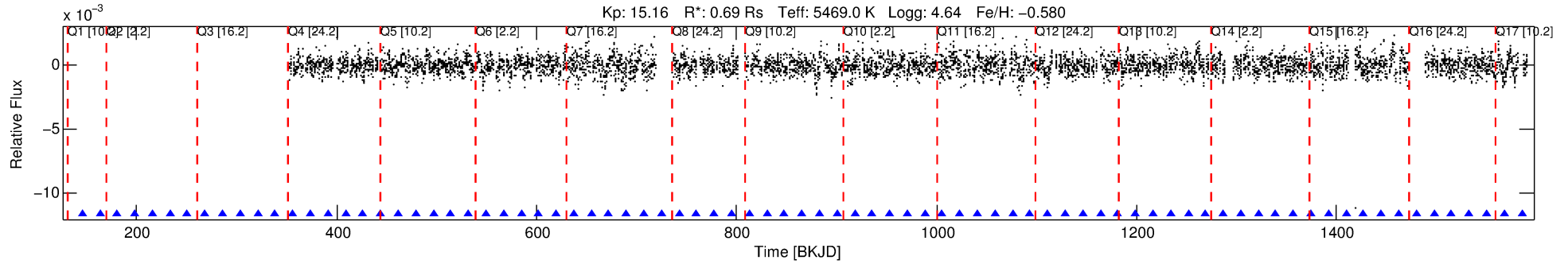
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 003117514-09

No Significant Match Found

# DV One-Page Summary

KIC: 3117514 Candidate: 9 of 10 Period: 17.554 d



## DV Fit Results:

Period = 17.55420 [0.00058] d  
Epoch = 145.7306 [0.0291] BKJD  
Rp/R\* = 0.0214 [0.0138]  
a/R\* = 13.85 [39.47]  
b = 0.87 [0.80]  
Seff = 26.51 [6.42]  
Teq = 579 [35] K  
Rp = 1.62 [1.08] Re  
a = 0.1209 [0.0166] AU  
Ag = 1385.15 [1852.06] [0.75σ]  
Teffp = 5457 [1815] K [2.69σ]

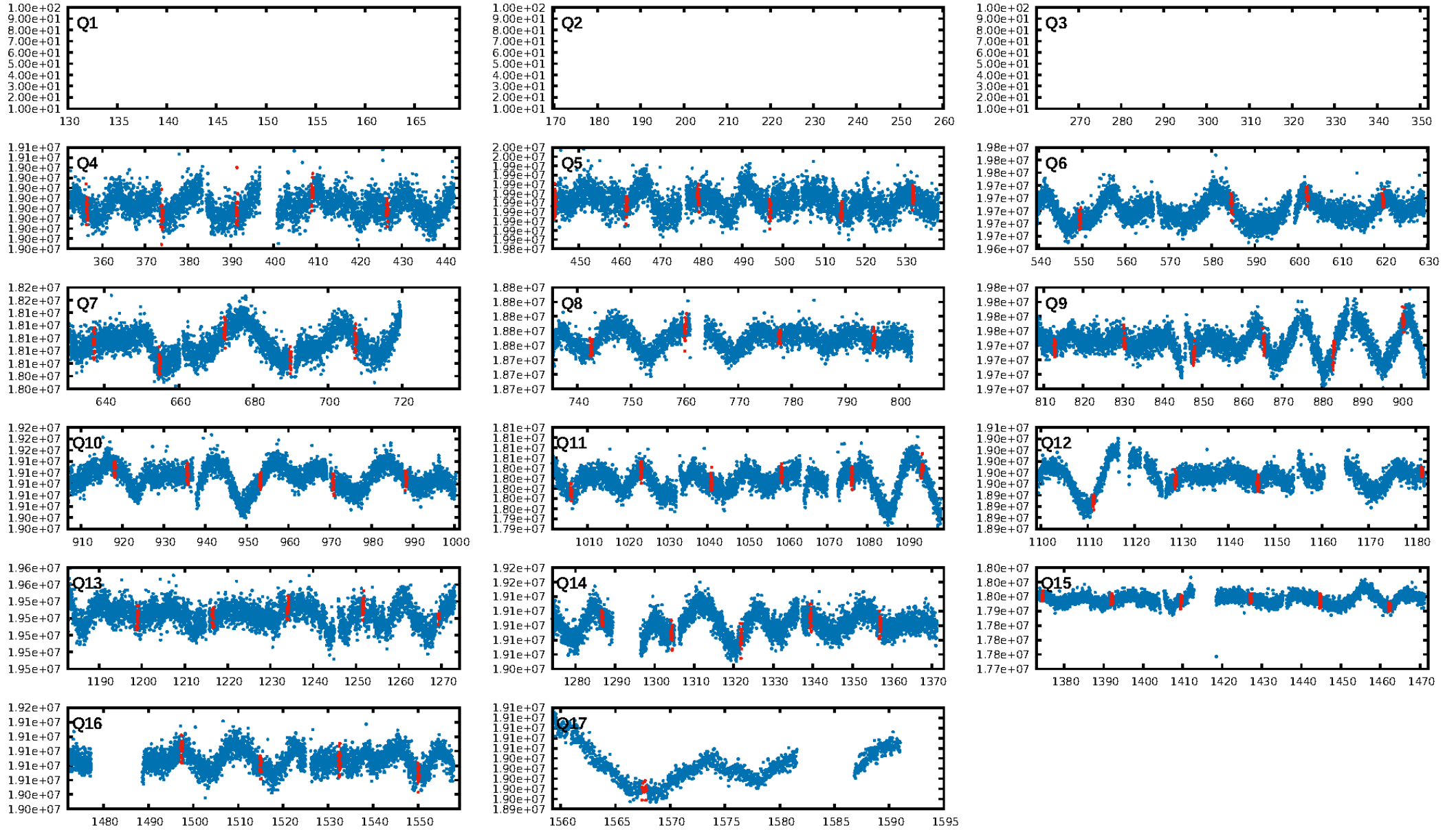
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [43.67σ]  
LongPeriod-sig: 100.0% [27.30σ]  
ModelChiSquare2-sig: 0.0%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [20/20]  
GhostDiagnostic-chr: 14.26  
Centroid-sig: 13.0%  
Centroid-so: 3.936 arcsec [8.10σ]  
OotOffset-rm: 4.409 arcsec [0.71σ]  
KicOffset-rm: 6.338 arcsec [1.02σ]  
OotOffset-st: 1/0/1/1 [3]  
KicOffset-st: 1/0/1/1 [3]  
DiffImageQuality-fgm: 0.00 [0/3]  
DiffImageOverlap-fno: 0.00 [0/14]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 06:34:30 Z

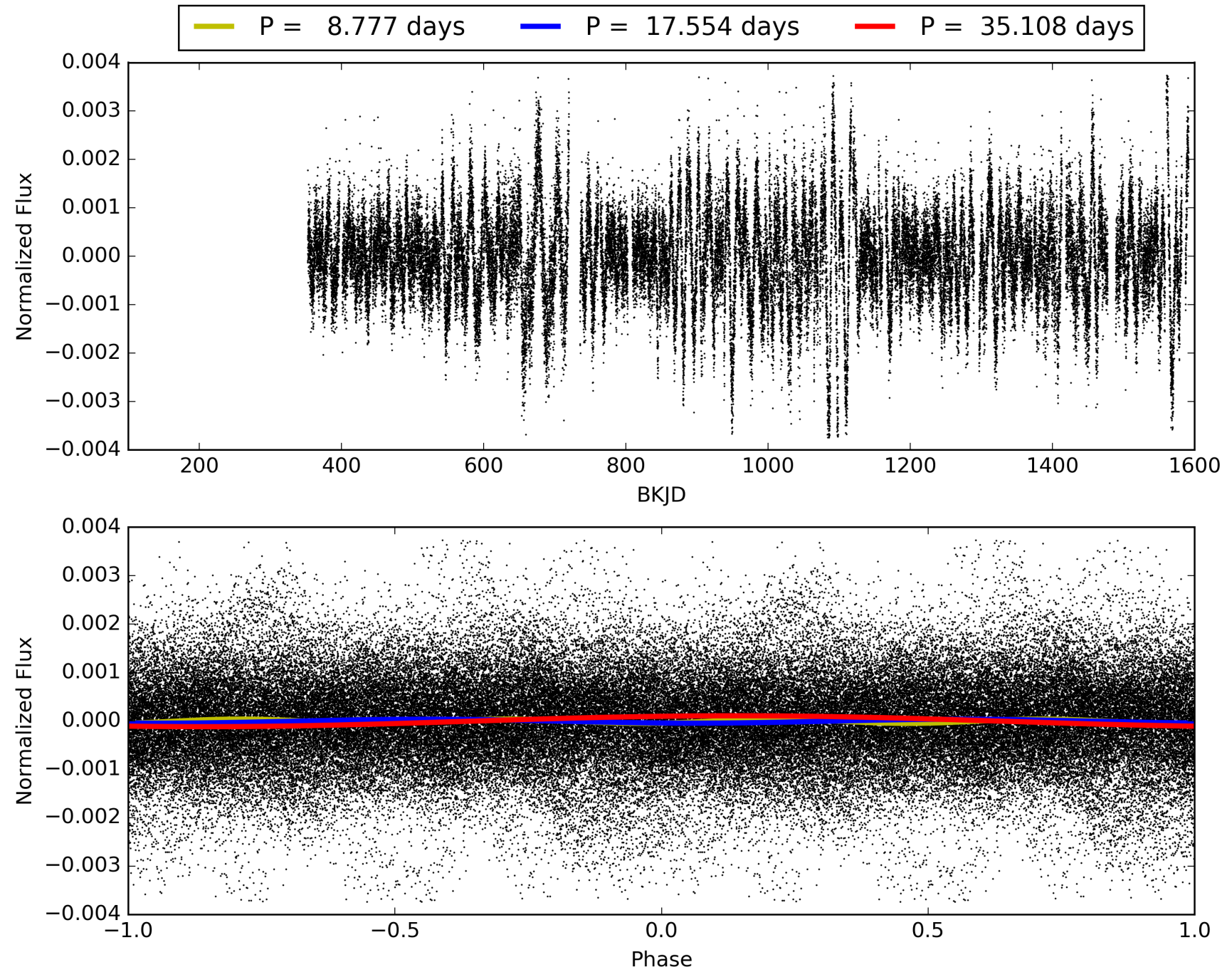
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 003117514-09, PDC Light Curves



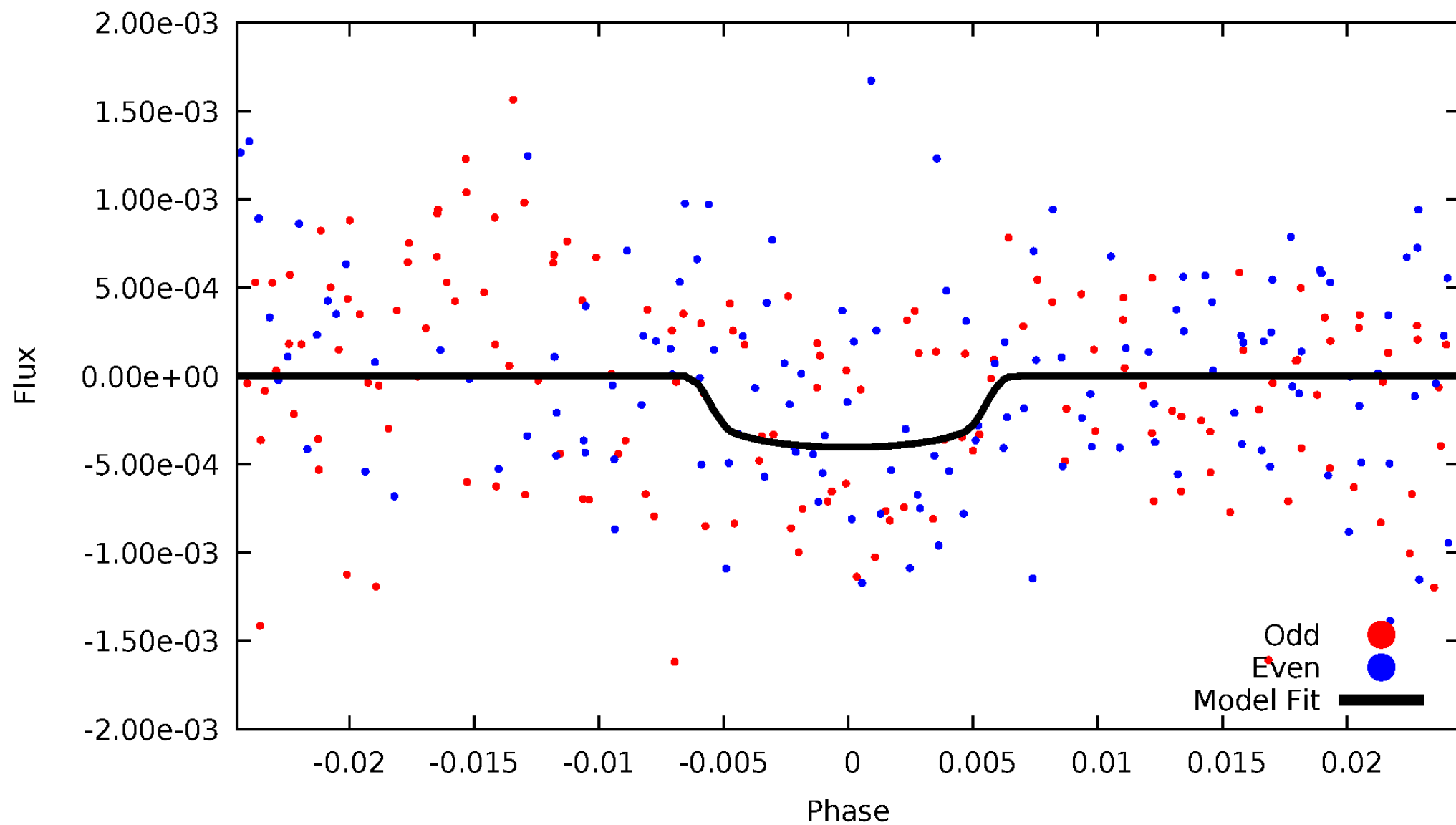


# TCE 003117514-09



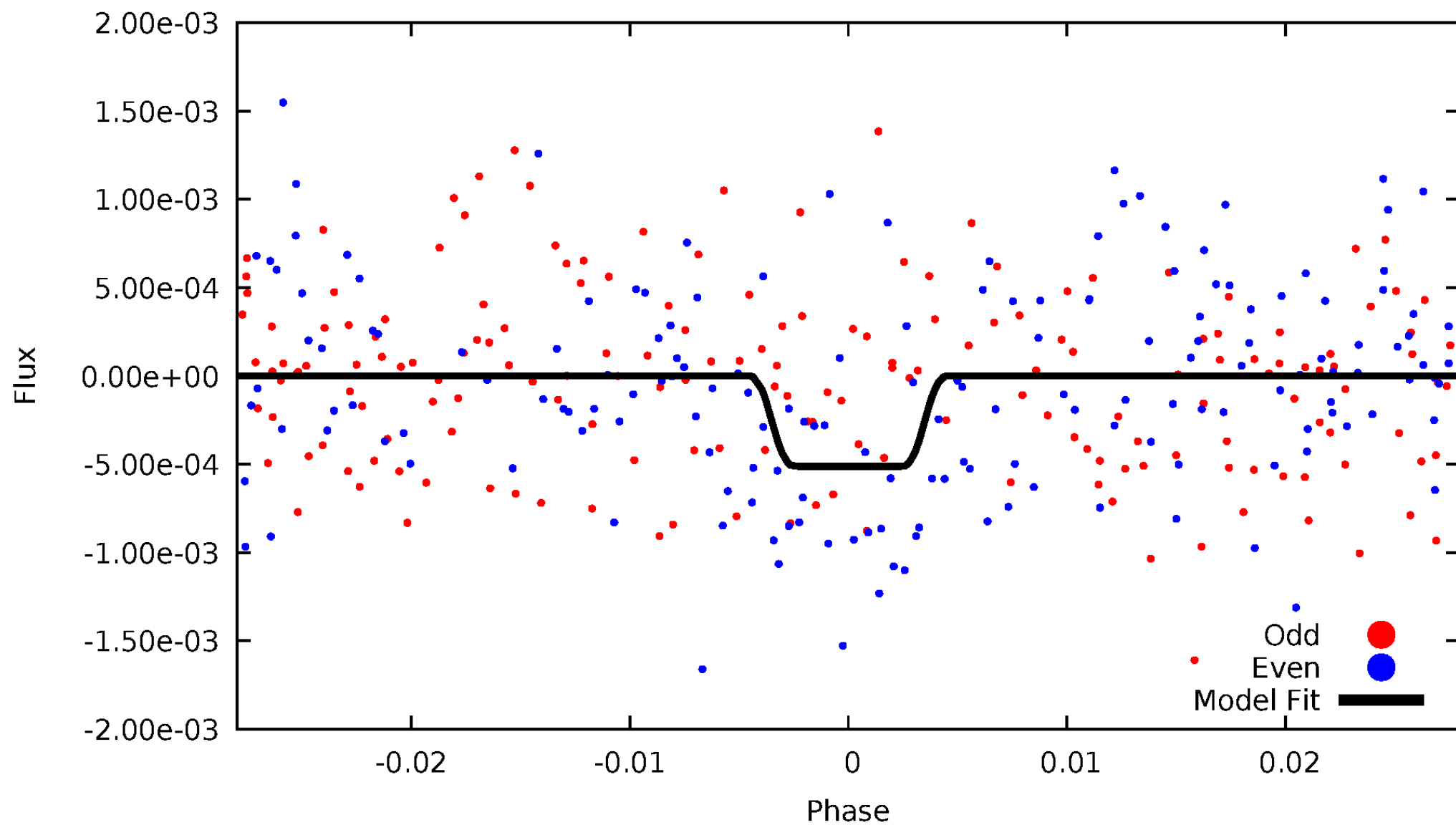
# DV Odd/Even

TCE 003117514-09



# ALT Odd/Even

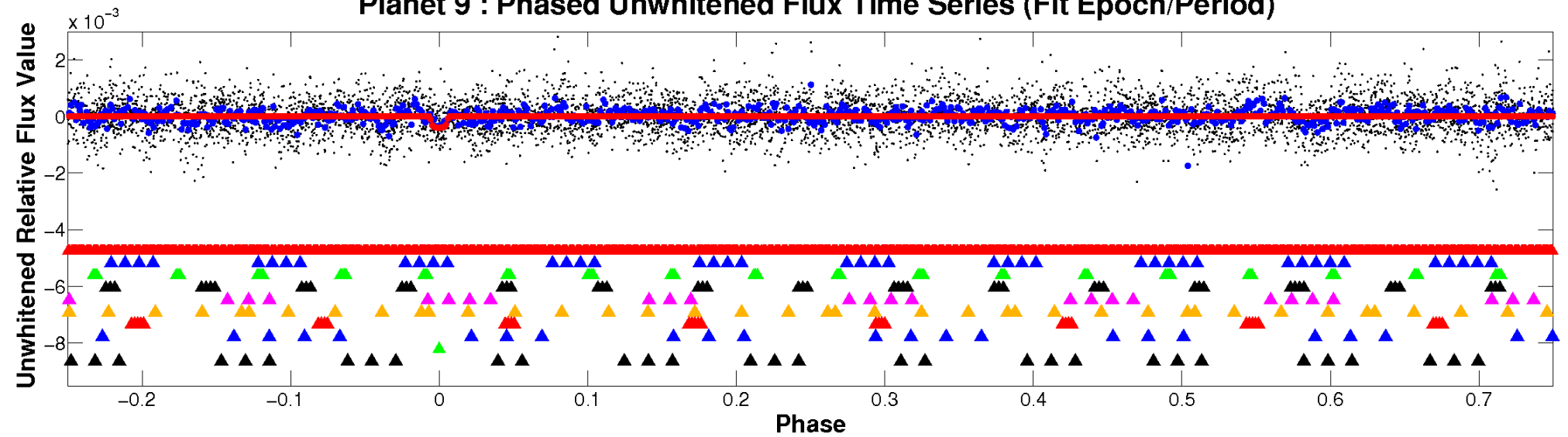
TCE 003117514-09



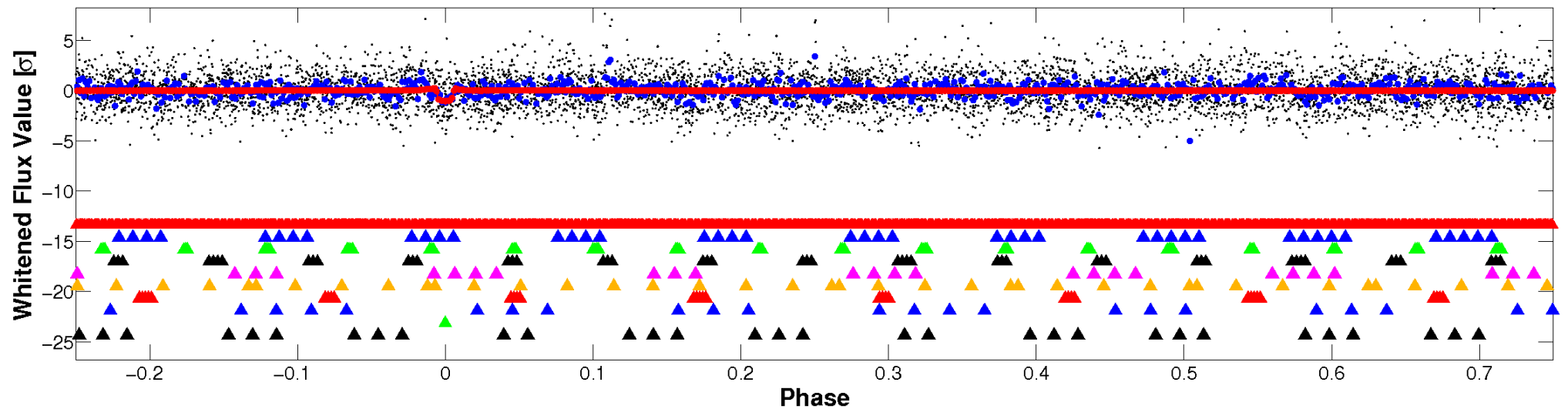


# Non-Whitened Vs. Whitened Light Curve

## Planet 9 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

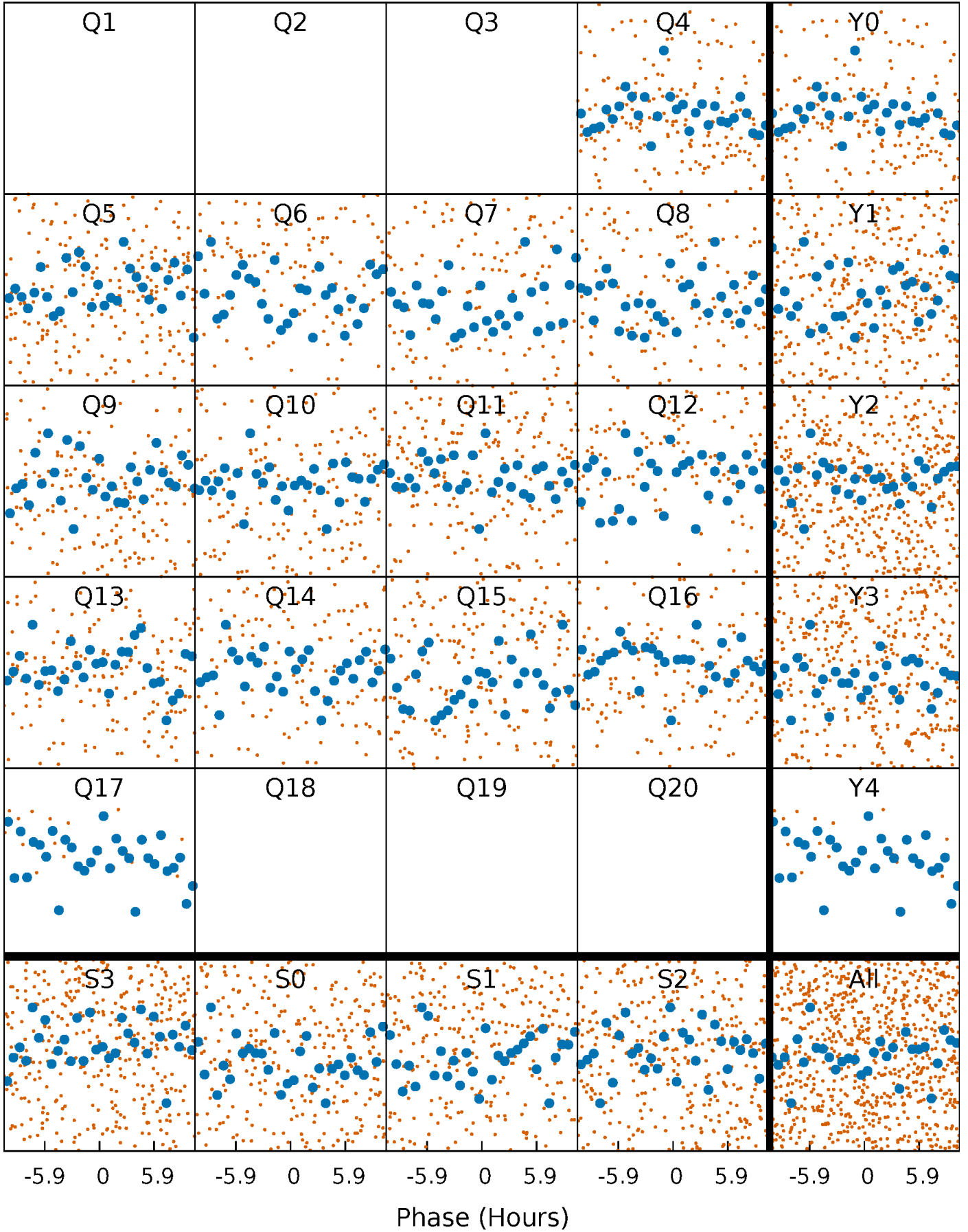


## Planet 9 : Phased Whitened Flux Time Series (Fit Epoch/Period)



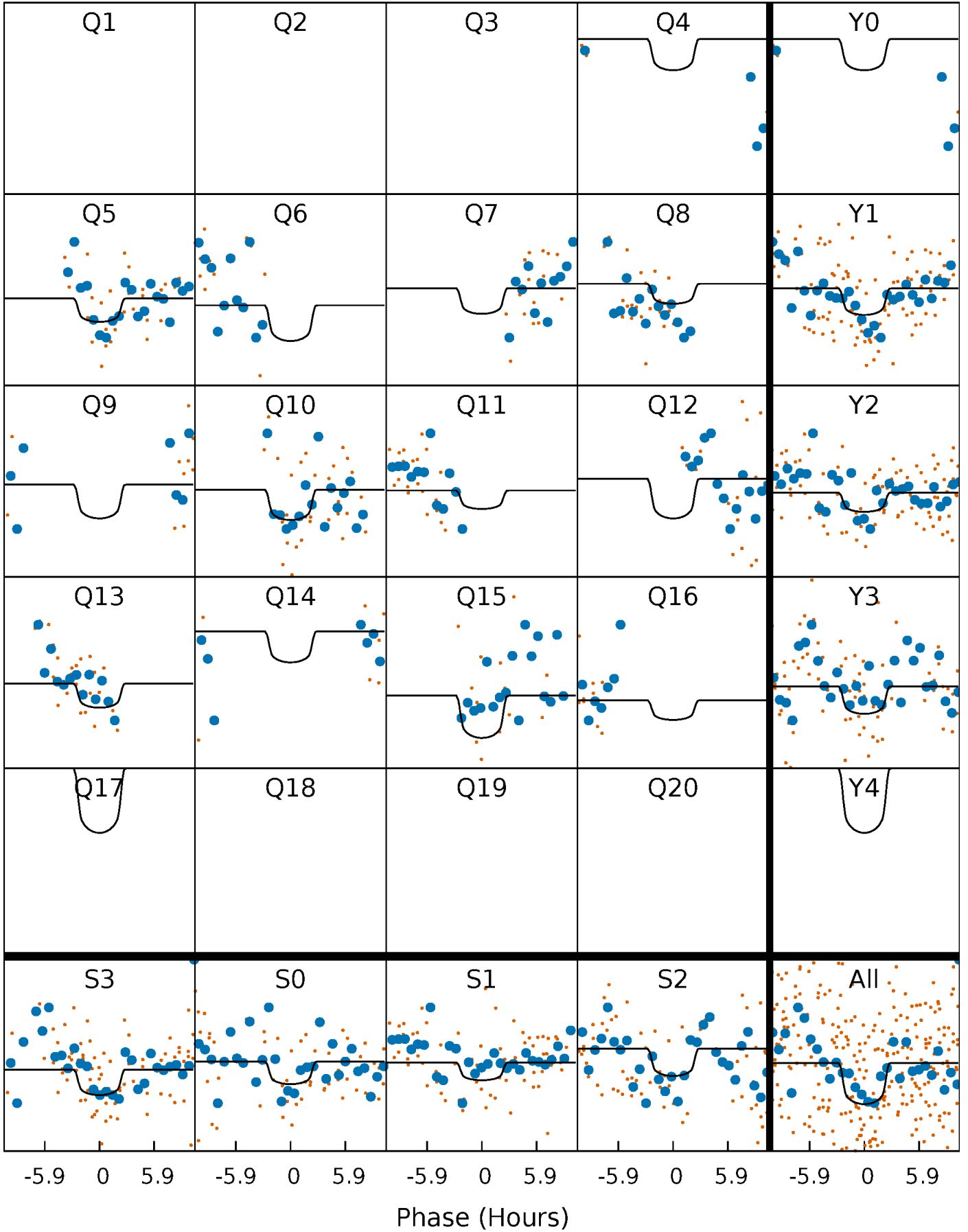
# PDC Quarter-Phased Transit Curves

TCE 003117514-09 P= 17.554198 Days  $T_0=145.730643$  (BKJD)



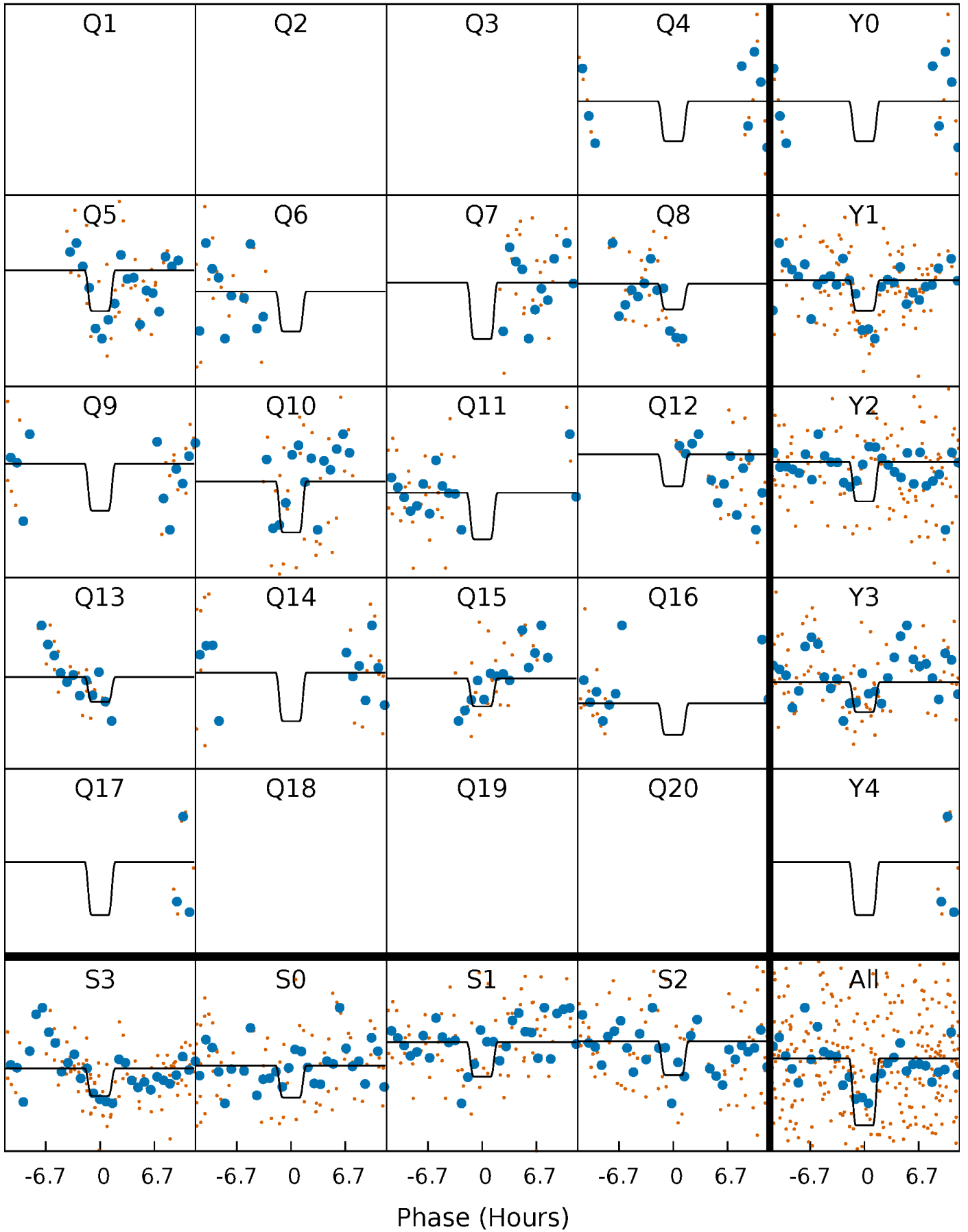
# DV Quarter-Phased Transit Curves

TCE 003117514-09   P= 17.554198 Days    $T_0=145.730643$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

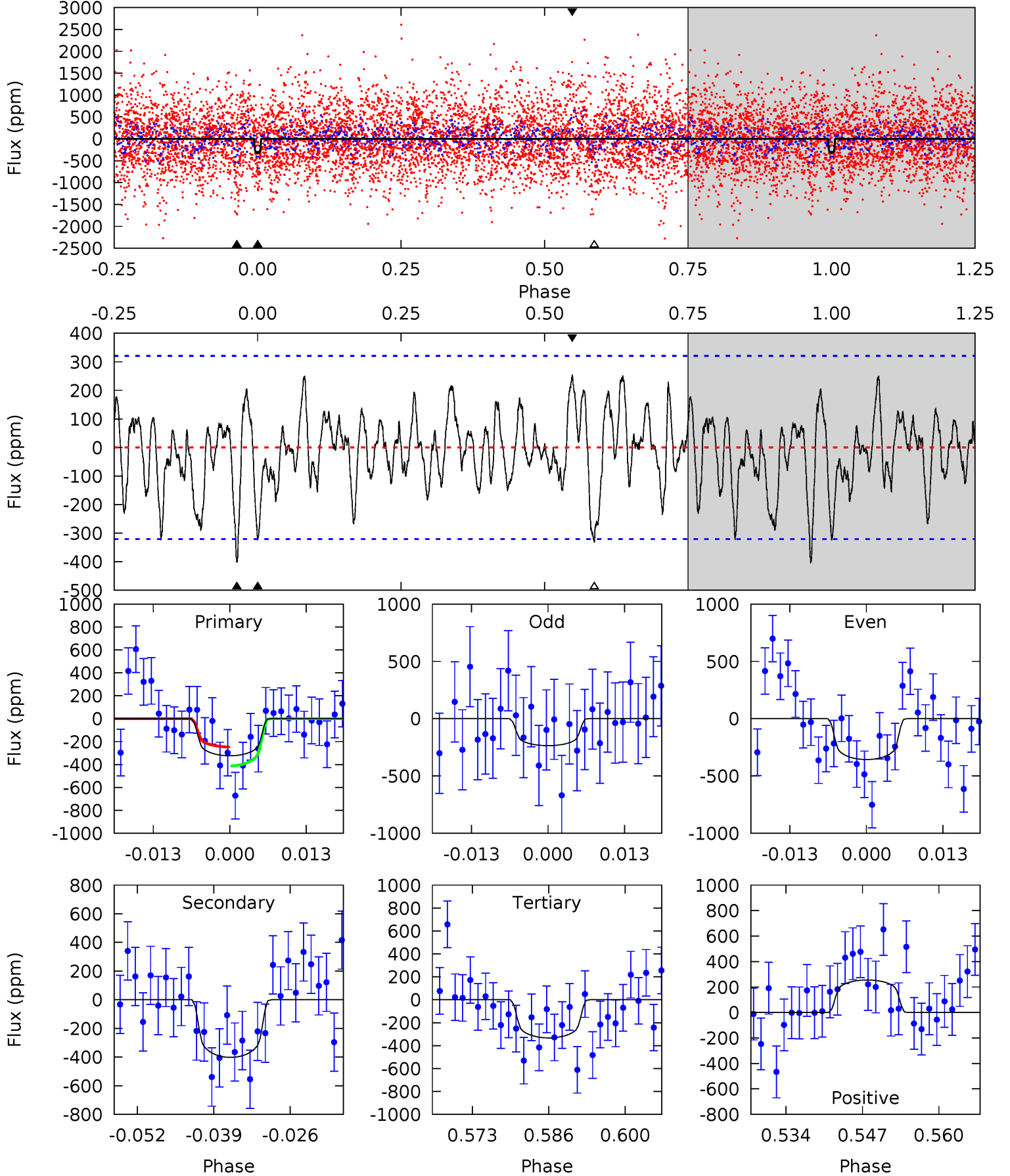
TCE 003117514-09 P= 17.554518 Days  $T_0=145.738240$  (BKJD)



# DV Model-Shift Uniqueness Test

003117514-09, P = 17.554198 Days, E = 145.730643 Days

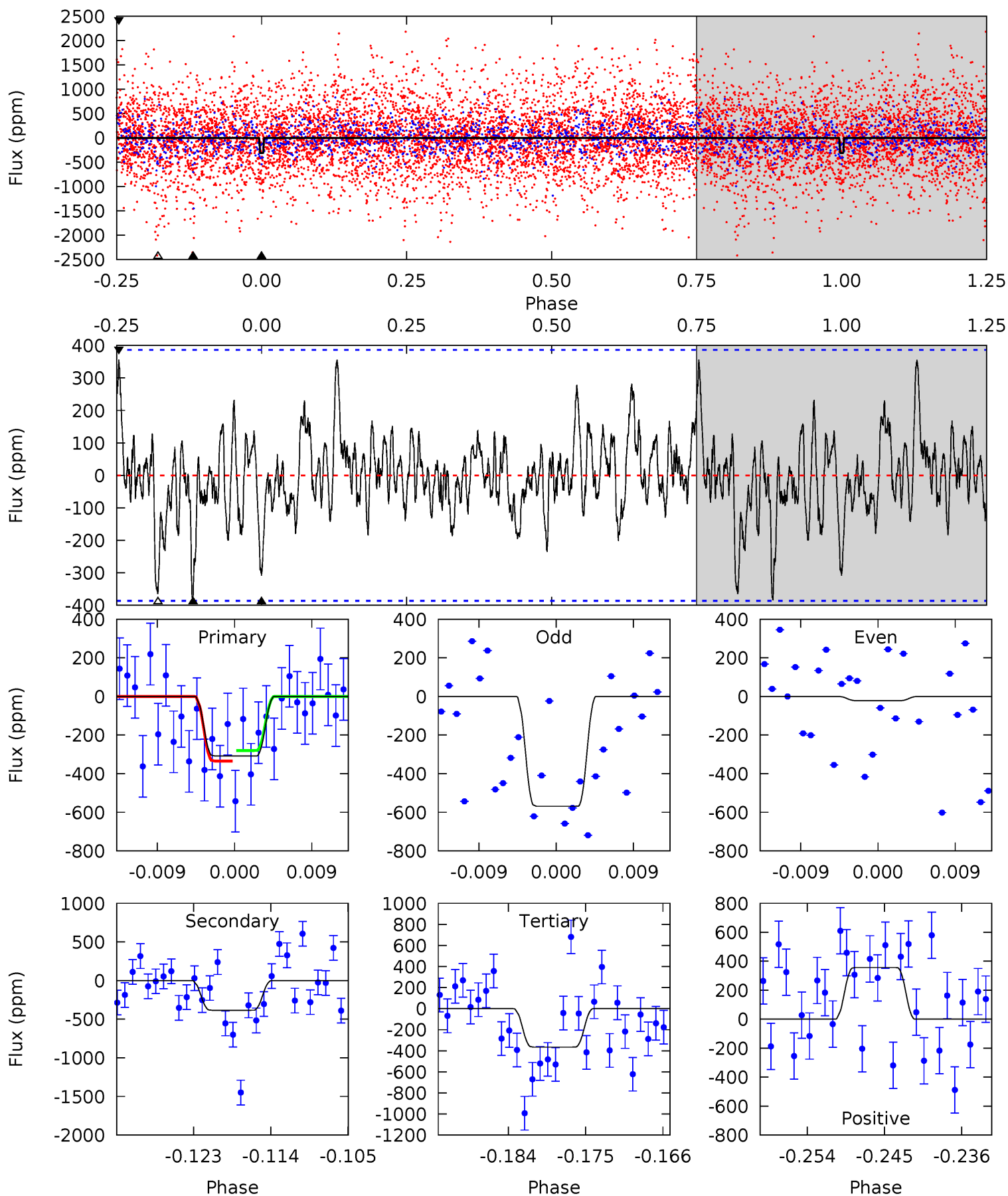
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.02	6.24	5.16	3.96	4.98	2.48	1.74	-0.14	1.06	1.08	2.28	0.95	0.82	0.39	1.29



# Alt Model-Shift Uniqueness Test

003117514-09, P = 17.554518 Days, E = 145.738240 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4.03	5.03	4.77	4.66	5.05	2.62	1.30	-0.74	-0.63	0.25	0.36	3.57	0.97	0.48	0.36



### Stellar Parameters For KIC 003117514

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5469^{+196}_{-196}$	$4.637^{+0.032}_{-0.104}$	$-0.580^{+0.300}_{-0.300}$	$0.695^{+0.117}_{-0.050}$	$0.778^{+0.073}_{-0.081}$	$3.264^{+0.482}_{-1.044}$
	+4%/-4%	+1%/-2%	+52%/-52%	+17%/-7%	+9%/-10%	+15%/-32%
Source	KIC0	KIC0	KIC0	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology  
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

### Secondary Eclipse Parameters for KIC 003117514-09 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-402 \pm 64$	$1.71^{+0.99}_{-0.92}$	$818^{+39}_{-36}$	$5236^{+2694}_{-944}$	$1078^{+3924}_{-656}$
Alt.	$-384 \pm 76$	$1.91^{+1.03}_{-0.98}$	$821^{+44}_{-36}$	$4946^{+2154}_{-781}$	$852^{+2670}_{-501}$

$T_{max}$  = Theoretical Maximum Planetary Temperature

$T_{obs}$  = Observed Planetary Temperature (Assuming  $A=0.3$ )

$A_{obs}$  = Observed Albedo (Assuming  $T=0$ )

If a secondary eclipse is present, the system is likely an EB if  $T_{obs} \gg T_{max}$  AND  $A_{obs} \gg 1.0$

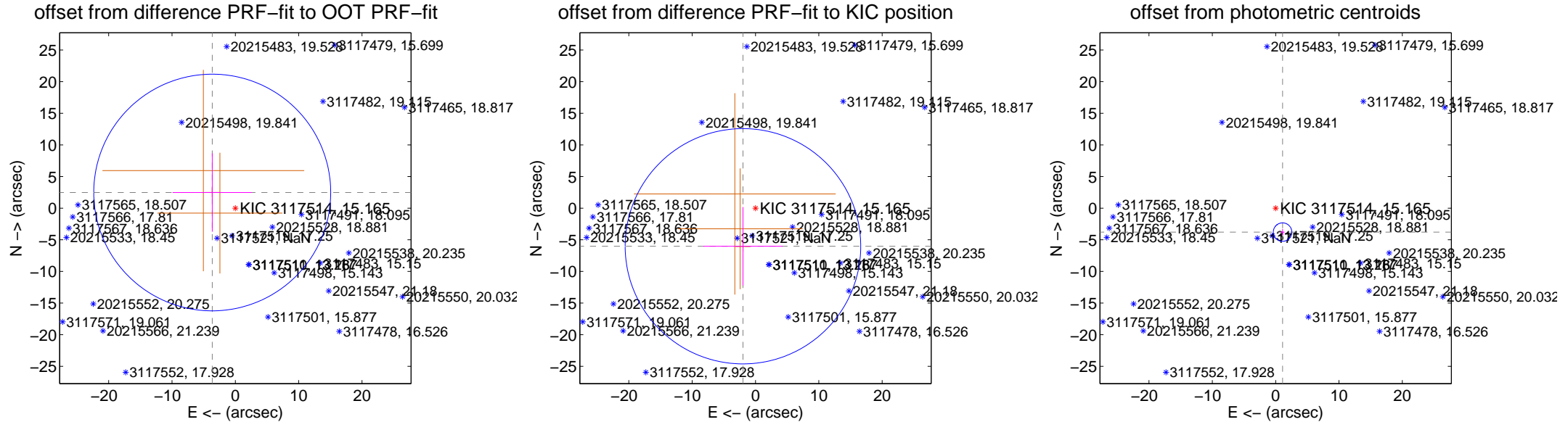
## DV Centroid Data

Supplemental centroid analysis for 003117514-09. Kepler magnitude: 15.16. Transit SNR 8.04

There are 0 quarters with good PRF difference image offsets

The OOT PRF centroid is offset from the target star catalog position by about 8.71 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$4.409 \pm 6.235$	0.71	$3.648 \pm 6.255$	$2.476 \pm 6.193$
PRF-fit source offset from KIC position	$6.338 \pm 6.199$	1.02	$1.981 \pm 6.255$	$-6.021 \pm 6.193$
photometric centroid source offset	$3.94 \pm 0.49$	8.10	$-1.09 \pm 0.31$	$-3.78 \pm 0.50$



Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three- $\sigma$ . Red \*: target star. Blue \*: Other stars. Text next to a star gives its KIC ID and kepmag. KIC IDs > 15,000,000 are from the UKIRT catalog.



white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

Q1 no difference image



Q1 no OOT image



Q2 no difference image



Q2 no OOT image



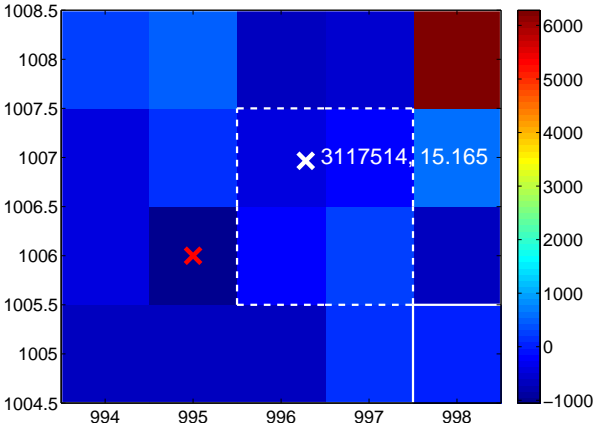
Q3 no difference image



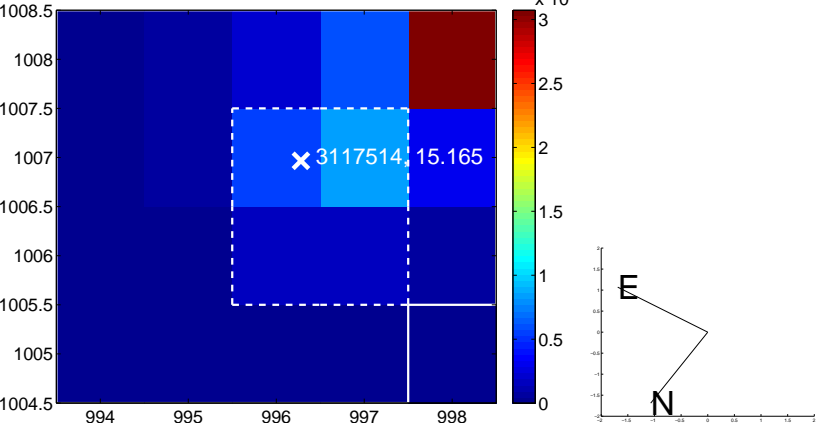
Q3 no OOT image



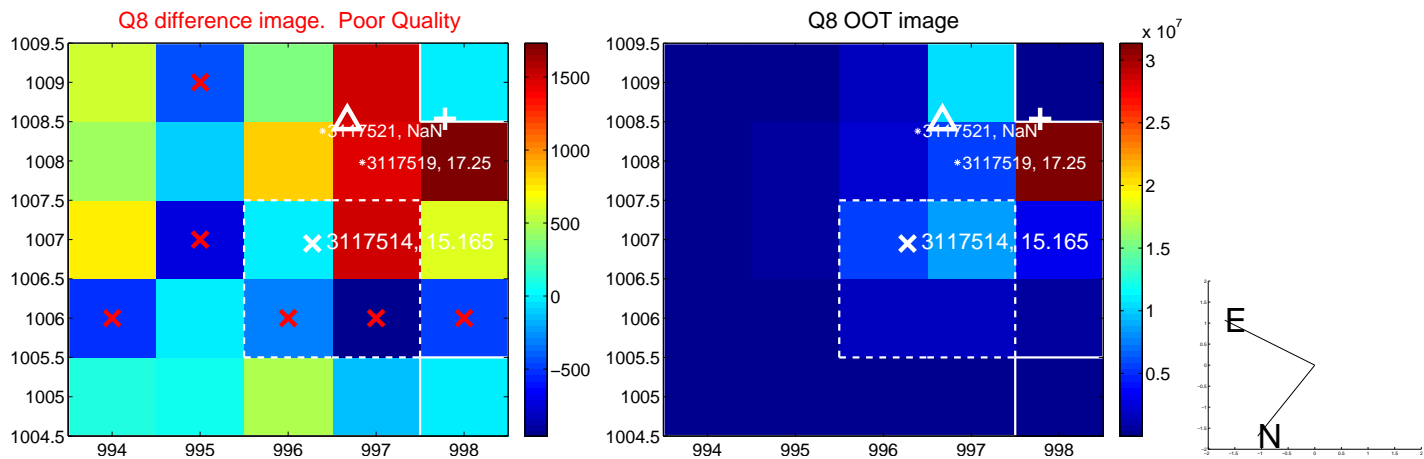
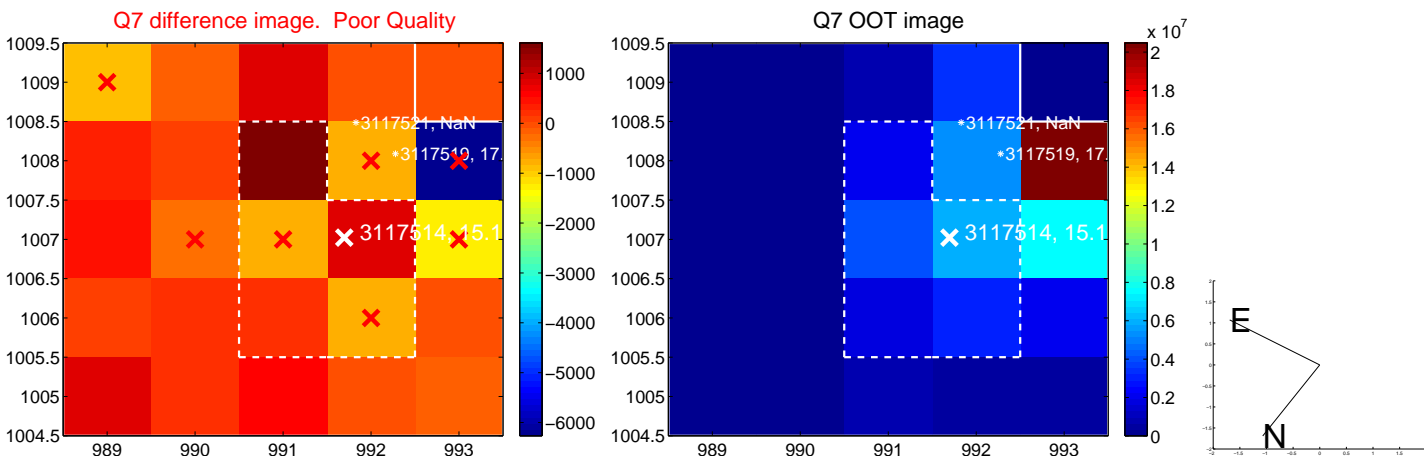
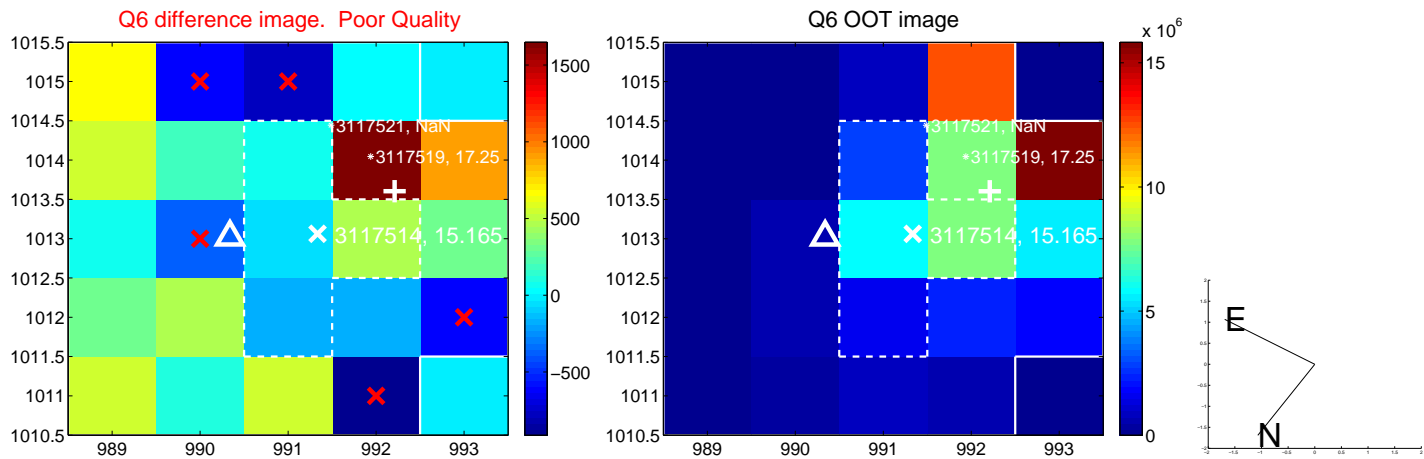
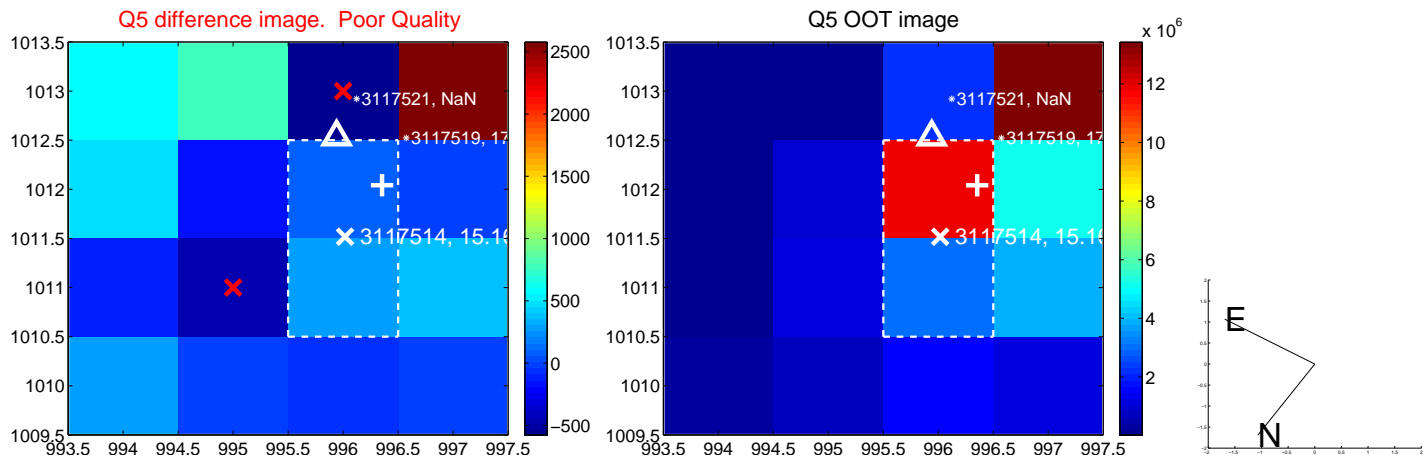
Q4 difference image. Poor Quality



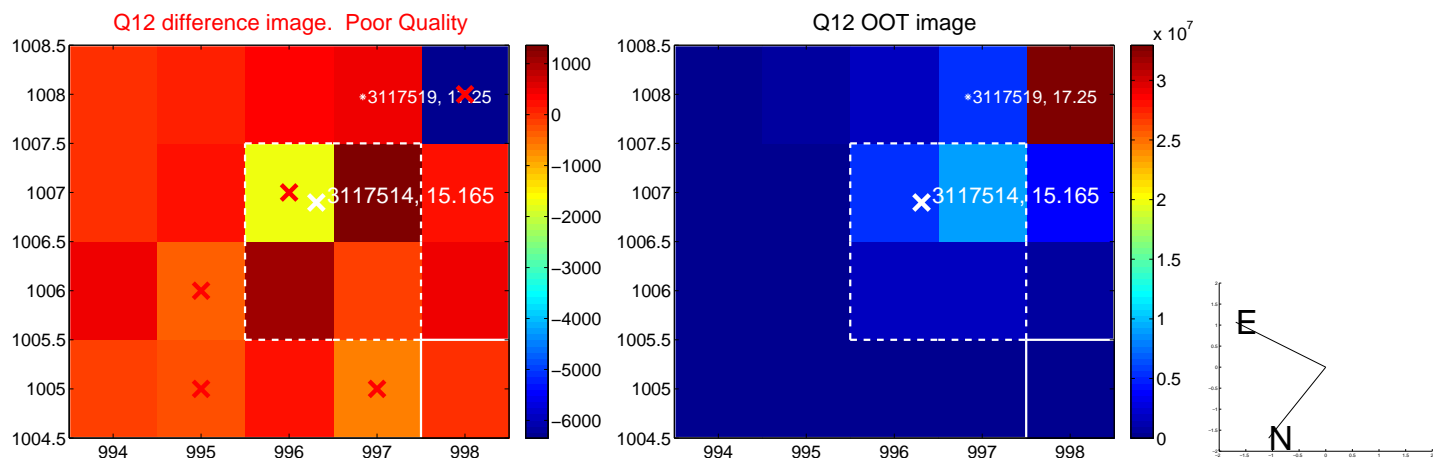
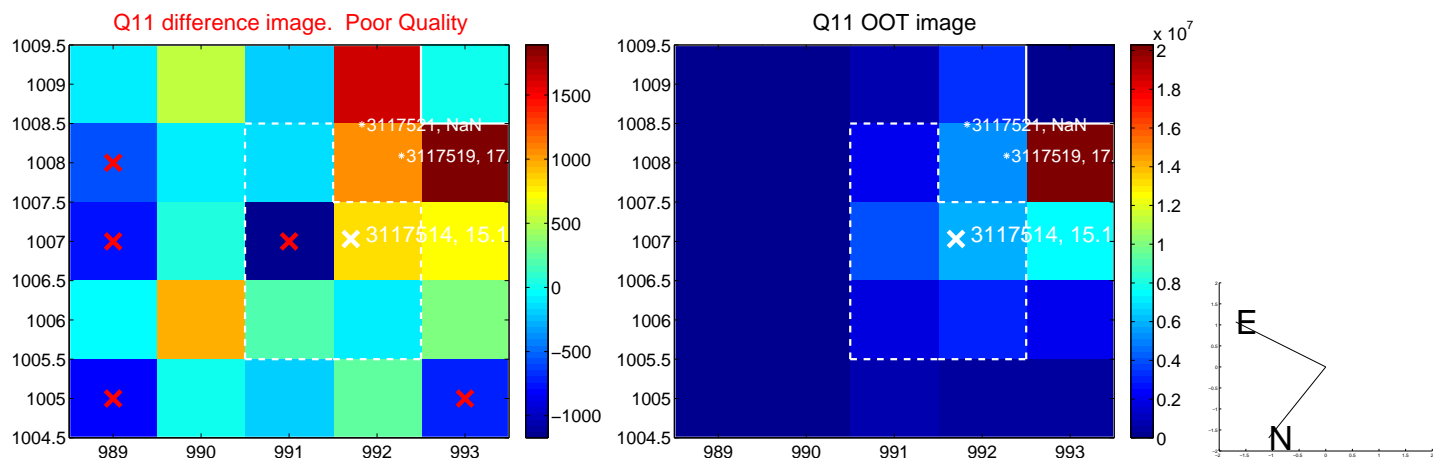
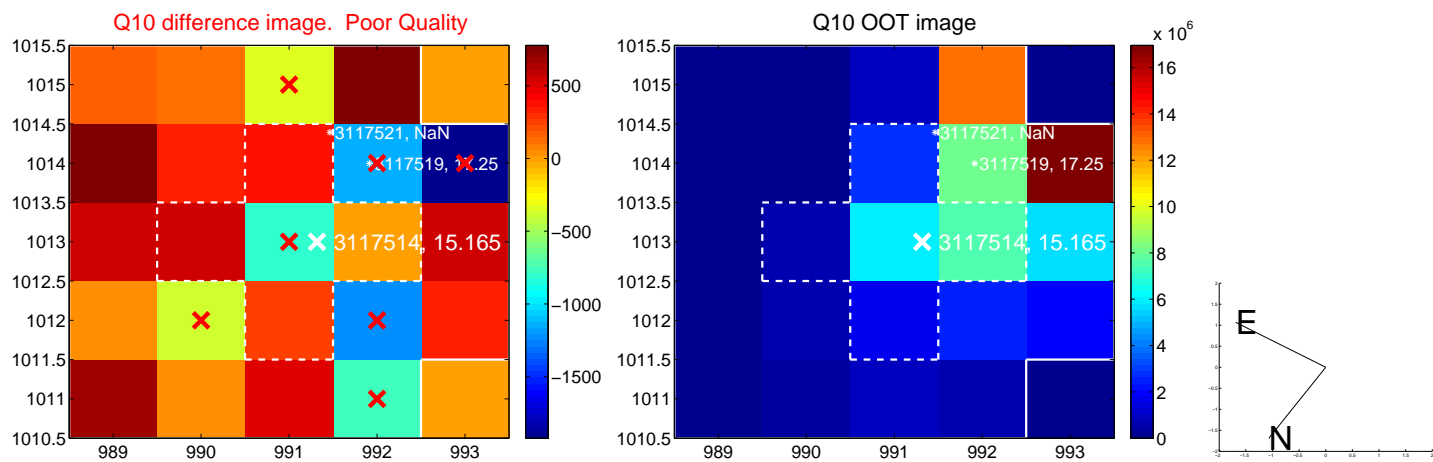
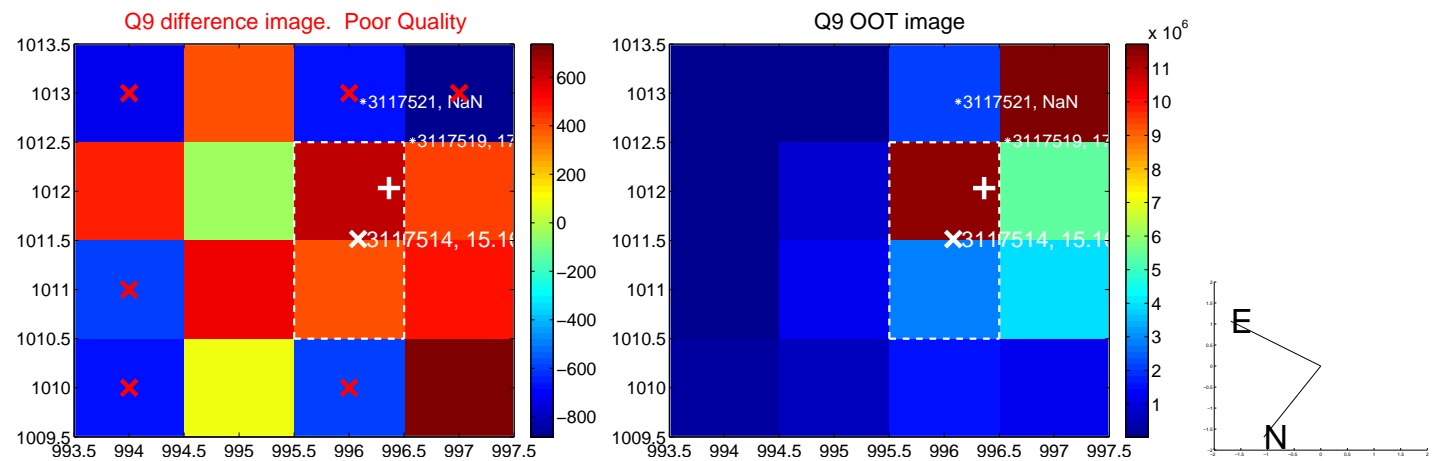
Q4 OOT image



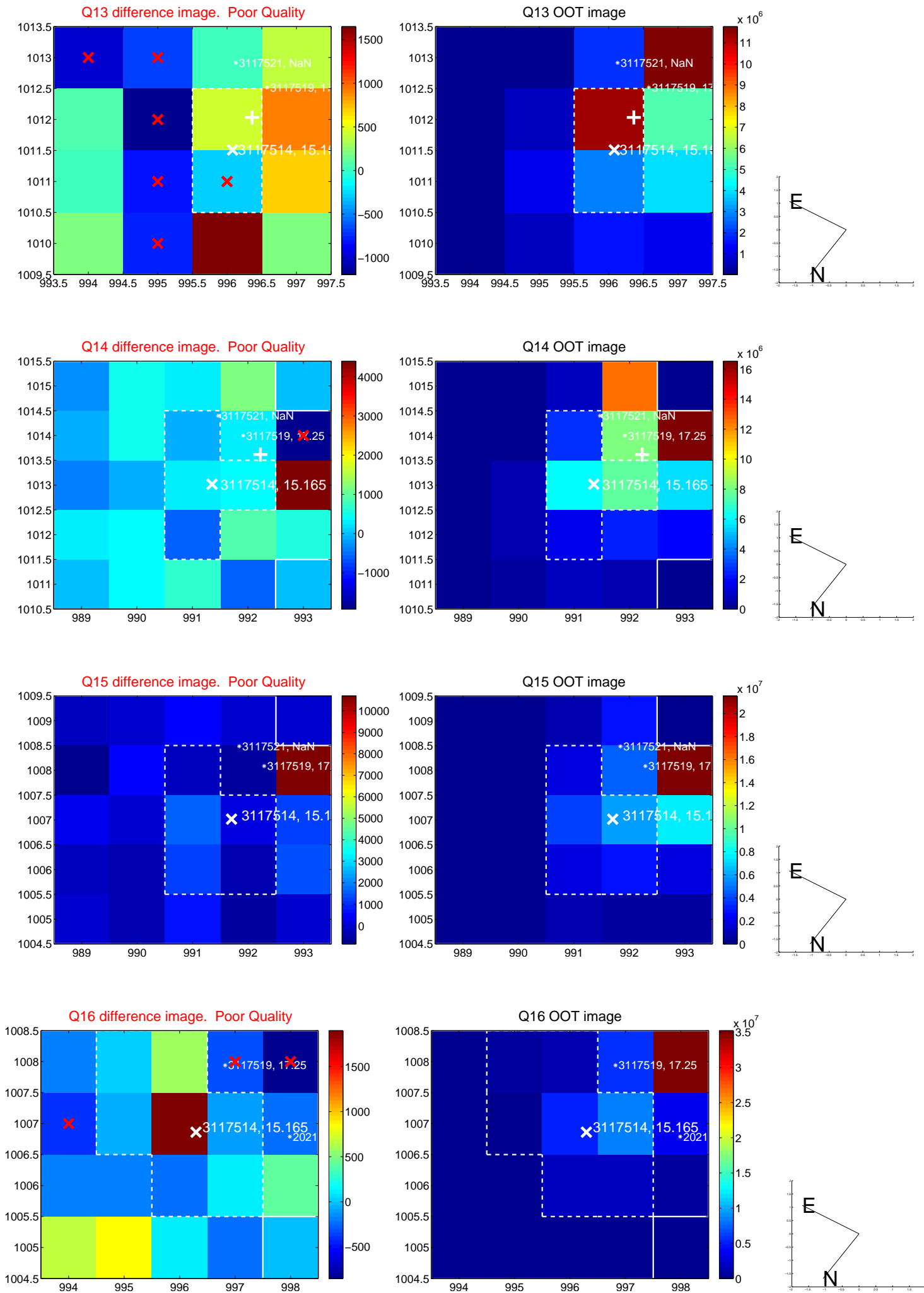
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



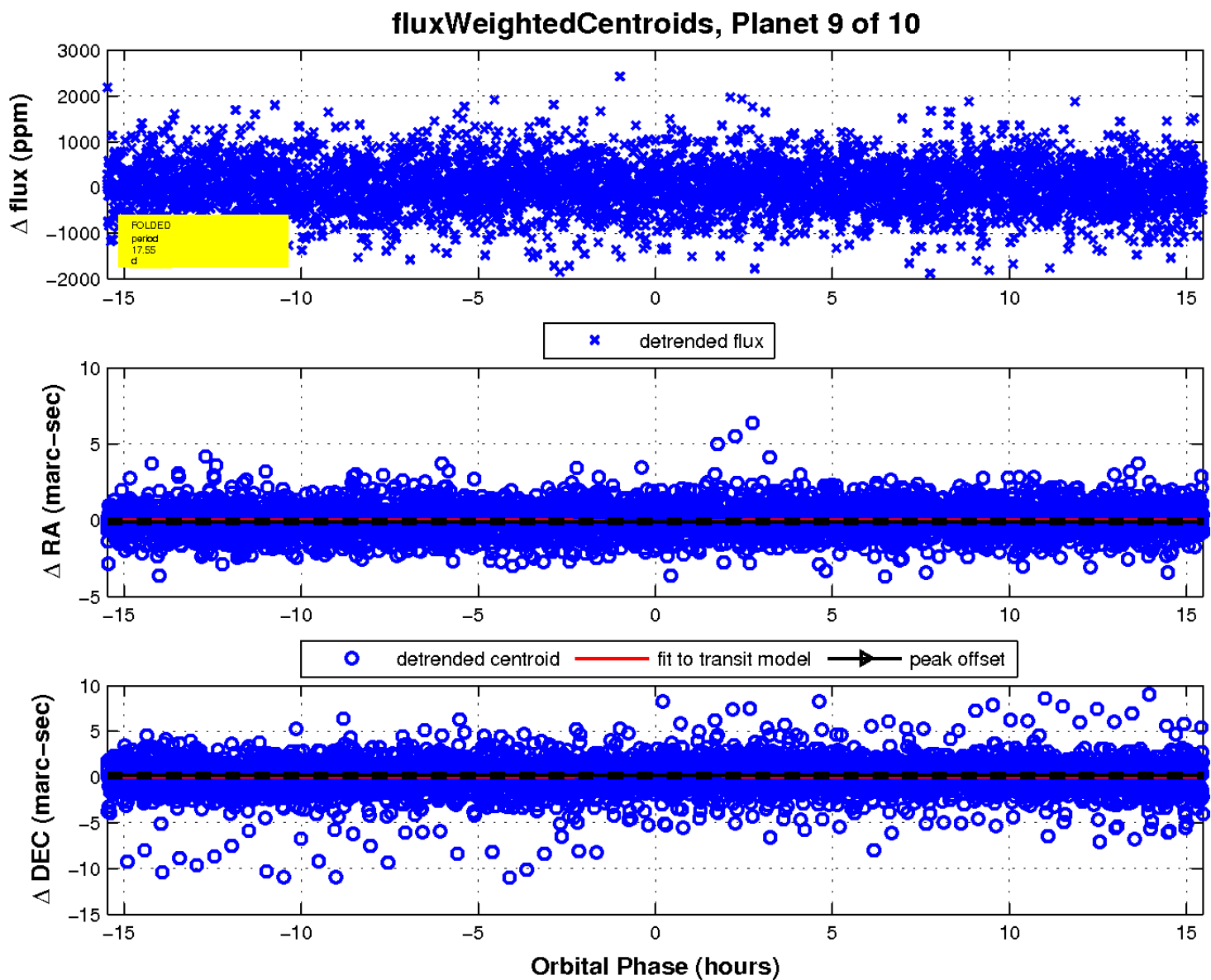
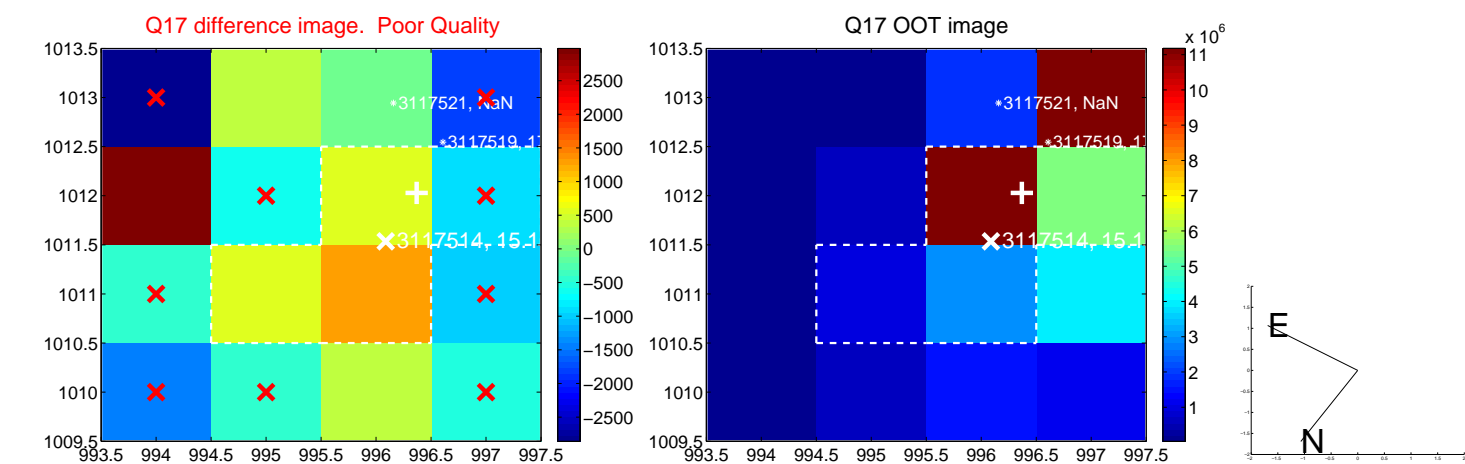
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

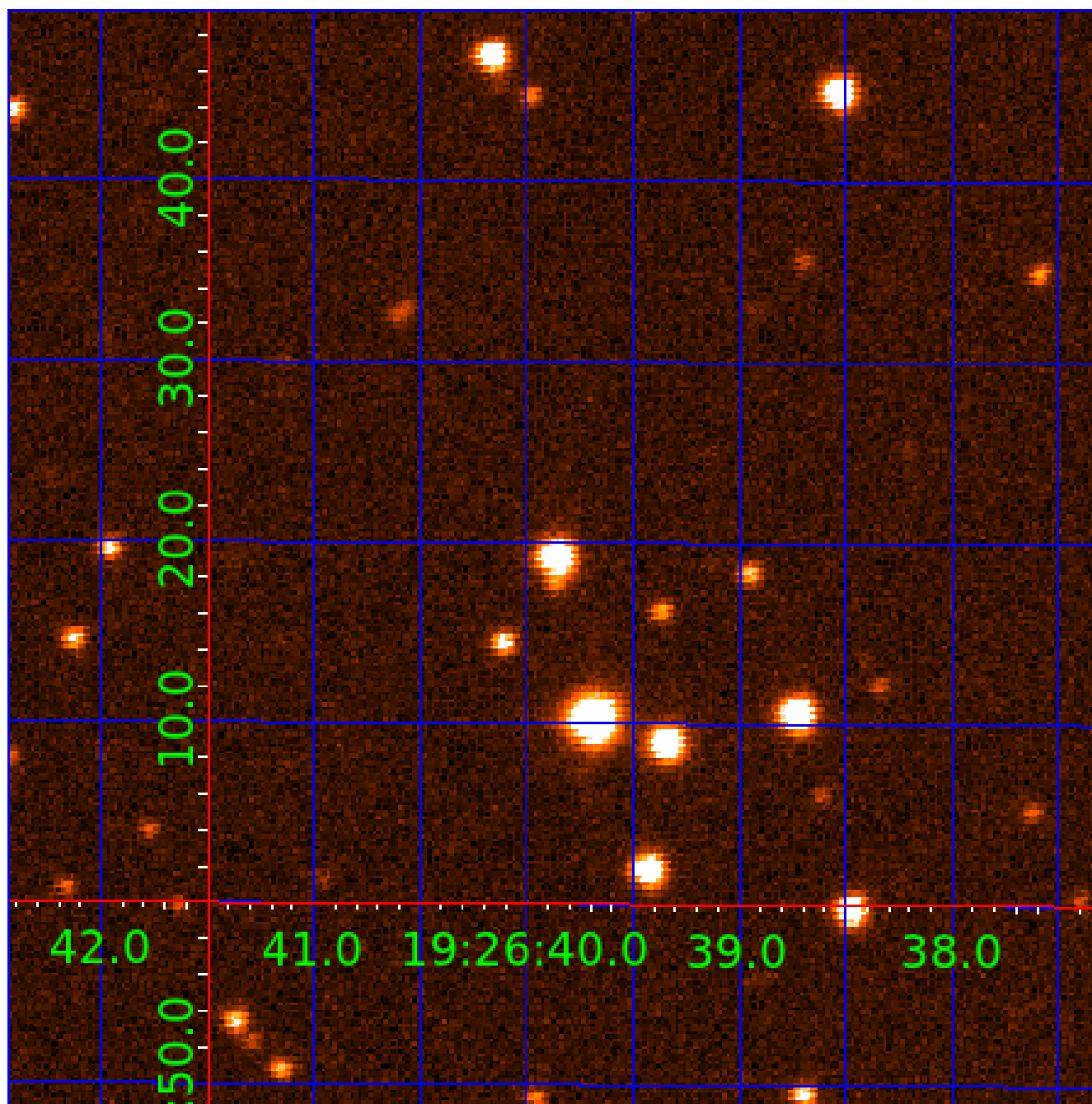


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



## Q1-17 DR25 TCE Parameters

TCE	Run Type	KOI?	Period (Days)	Epoch (BKJD)	Depth (ppm)	Duration (Hours)	MES	SNR	$R_{\star}$ ( $R_{\odot}$ )	$T_{\star}$ (K)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
003117514-01	OBS	No	1.091938	131.641378	53.4	7.431	8.5	8.6	0.69	5469	0.58	1075.44
003117514-02	OBS	No	33.369509	157.503651	669.9	2.906	10.4	7.1	0.69	5469	1.99	11.26
003117514-03	OBS	No	24.379621	144.629800	722.9	3.062	8.6	9.5	0.69	5469	2.03	17.11
003117514-04	OBS	No	30.423736	143.081360	695.1	1.951	9.0	7.8	0.69	5469	2.08	12.73
003117514-05	OBS	No	57.642773	136.377881	920.7	2.879	8.3	8.8	0.69	5469	2.33	5.43
003117514-06	OBS	No	37.233493	132.857621	1420.0	1.430	8.7	9.1	0.69	5469	2.63	9.73
003117514-07	OBS	No	41.695704	159.649434	657.5	3.150	8.3	7.7	0.69	5469	2.12	8.36
003117514-08	OBS	No	62.634001	187.247617	761.8	3.290	8.2	7.4	0.69	5469	2.25	4.86
003117514-09	OBS	No	17.554198	145.730643	403.9	5.160	8.6	8.0	0.69	5469	1.62	26.51
003117514-10	OBS	No	47.900949	141.379946	1639.1	2.000	8.1	-1.0	0.69	5469	2.79	6.95

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003117514-01	OBS	FP	0.00	1	0	1	0	LPP_DV—LPP_ALT—CENT_RESOLVED_OFFSET—HALO_GHOST
003117514-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
003117514-03	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_RESOLVED_OFFSET—HALO_GHOST
003117514-04	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_RESOLVED_OFFSET
003117514-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
003117514-06	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_DV—CENT_FEW_DIFFS
003117514-07	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_RESOLVED_OFFSET
003117514-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
003117514-09	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_RESOLVED_OFFSET
003117514-10	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_NOFITS

**Notes:** OBS = Observed. INJ = Injected. INV = Inverted. SCR = Scrambled.

N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

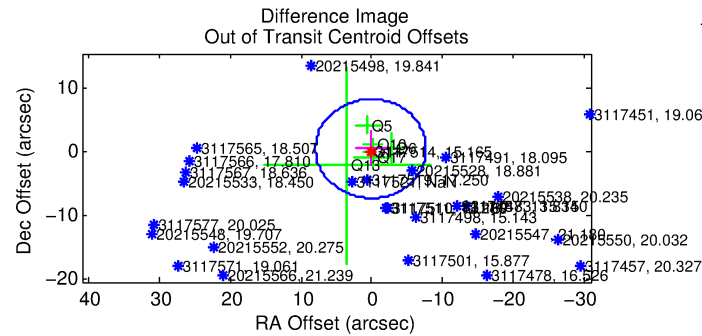
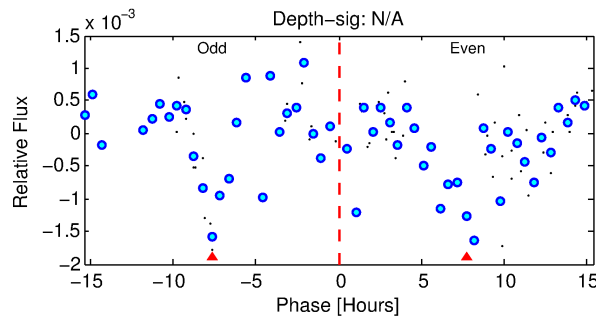
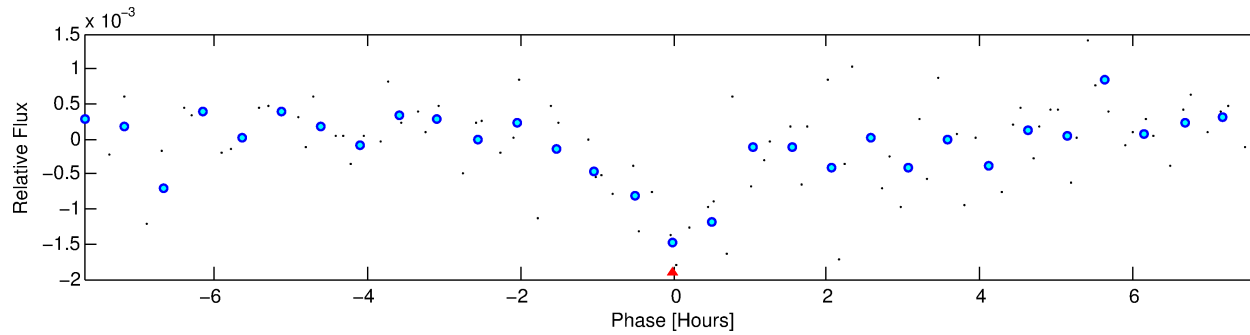
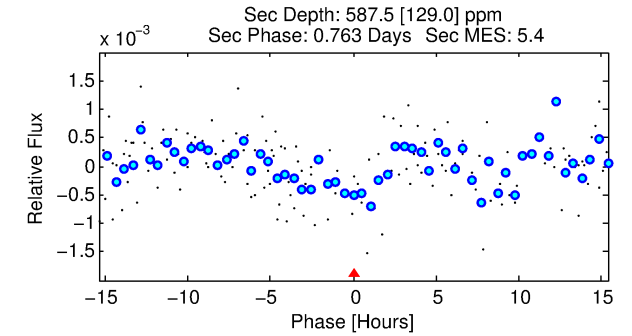
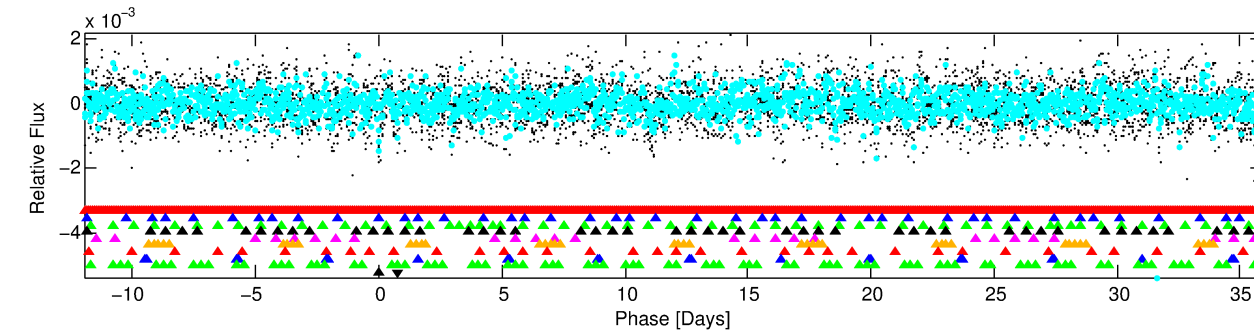
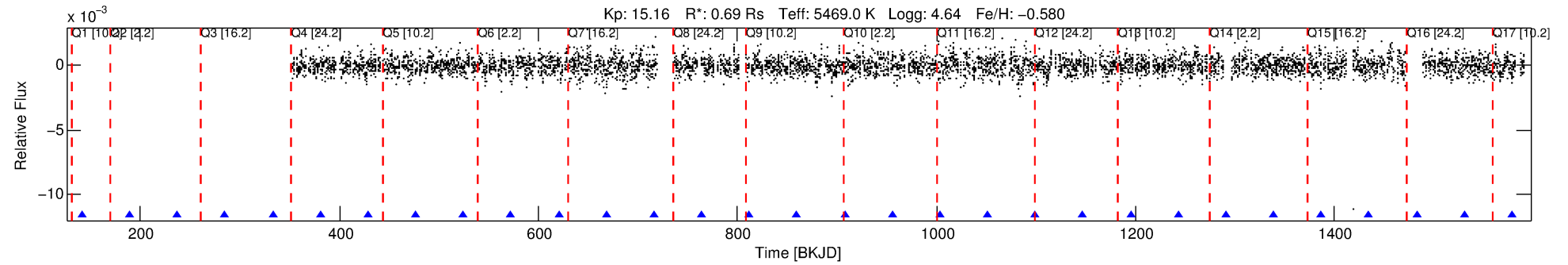
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 003117514-10

No Significant Match Found

# DV One-Page Summary

KIC: 3117514 Candidate: 10 of 10 Period: 47.901 d



## TPS TCE Results:

Period = 47.90095 d  
Epoch = 141.3799 BKJD

DV fit results are unavailable

## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [39.91σ]  
LongPeriod-sig: 100.0% [66.69σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [5/5]  
GhostDiagnostic-chr: 1.965

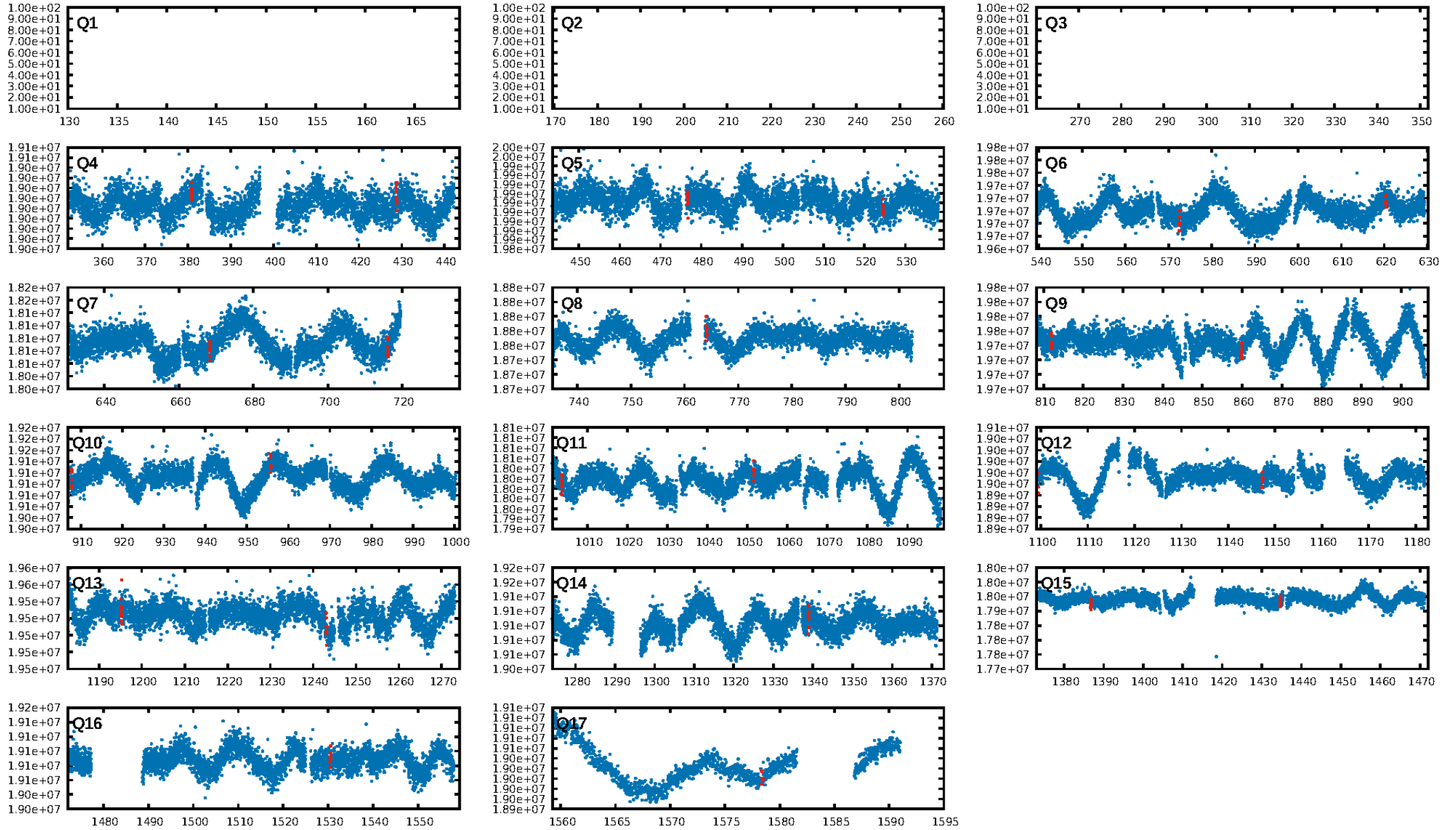
Centroid-sig: 0.1%  
Centroid-so: 2.817 arcsec [7.55σ]  
OotOffset-rm: 0.527 arcsec [0.20σ]  
KicOffset-rm: 1.859 arcsec [1.22σ]  
OotOffset-st: 3/0/0/3 [6]  
KicOffset-st: 3/3/1/3 [10]  
DiffImageQuality-fgm: 0.10 [1/10]  
DiffImageOverlap-fno: 0.23 [3/13]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 06:34:33 Z

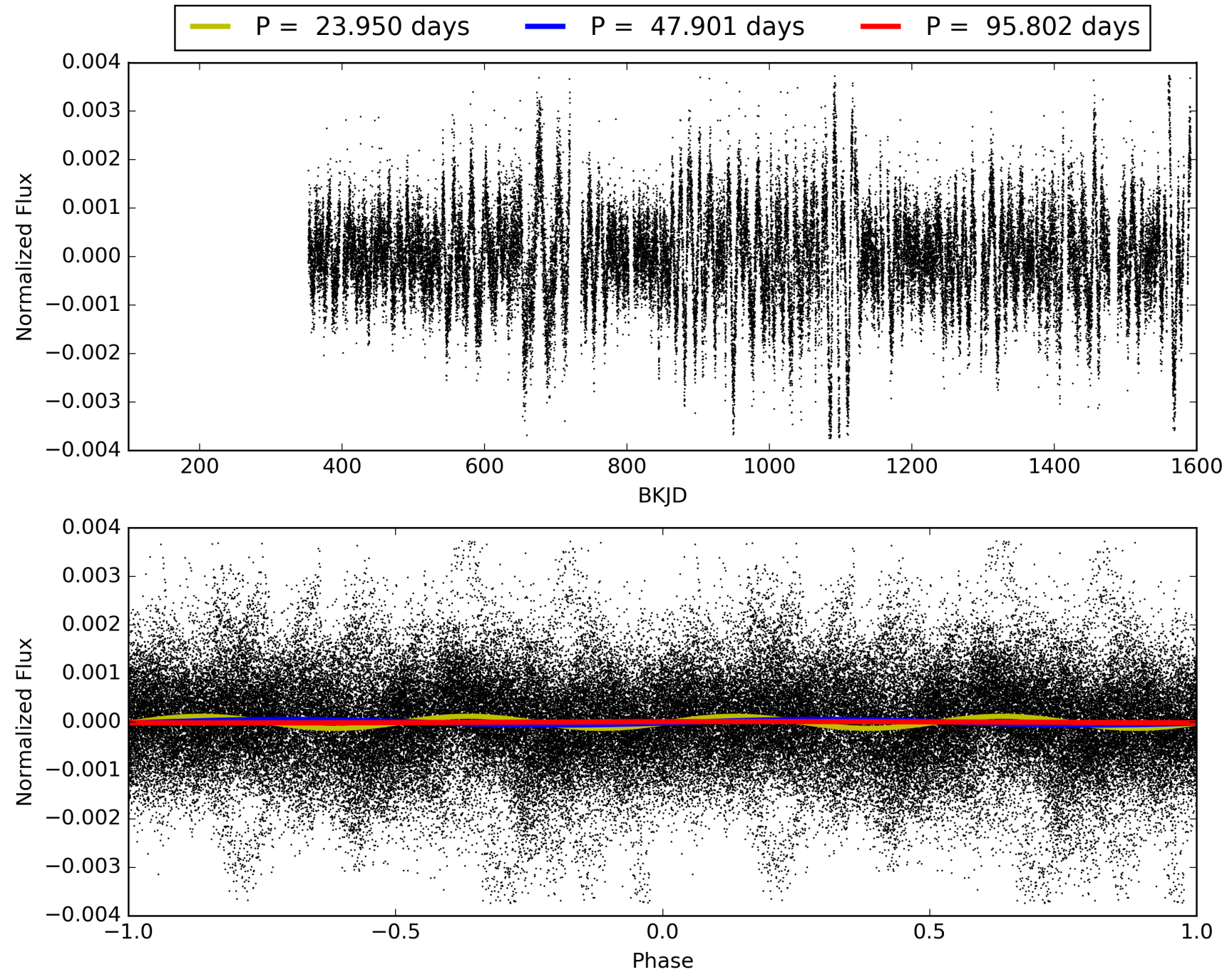
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center



# TCE 003117514-10, PDC Light Curves

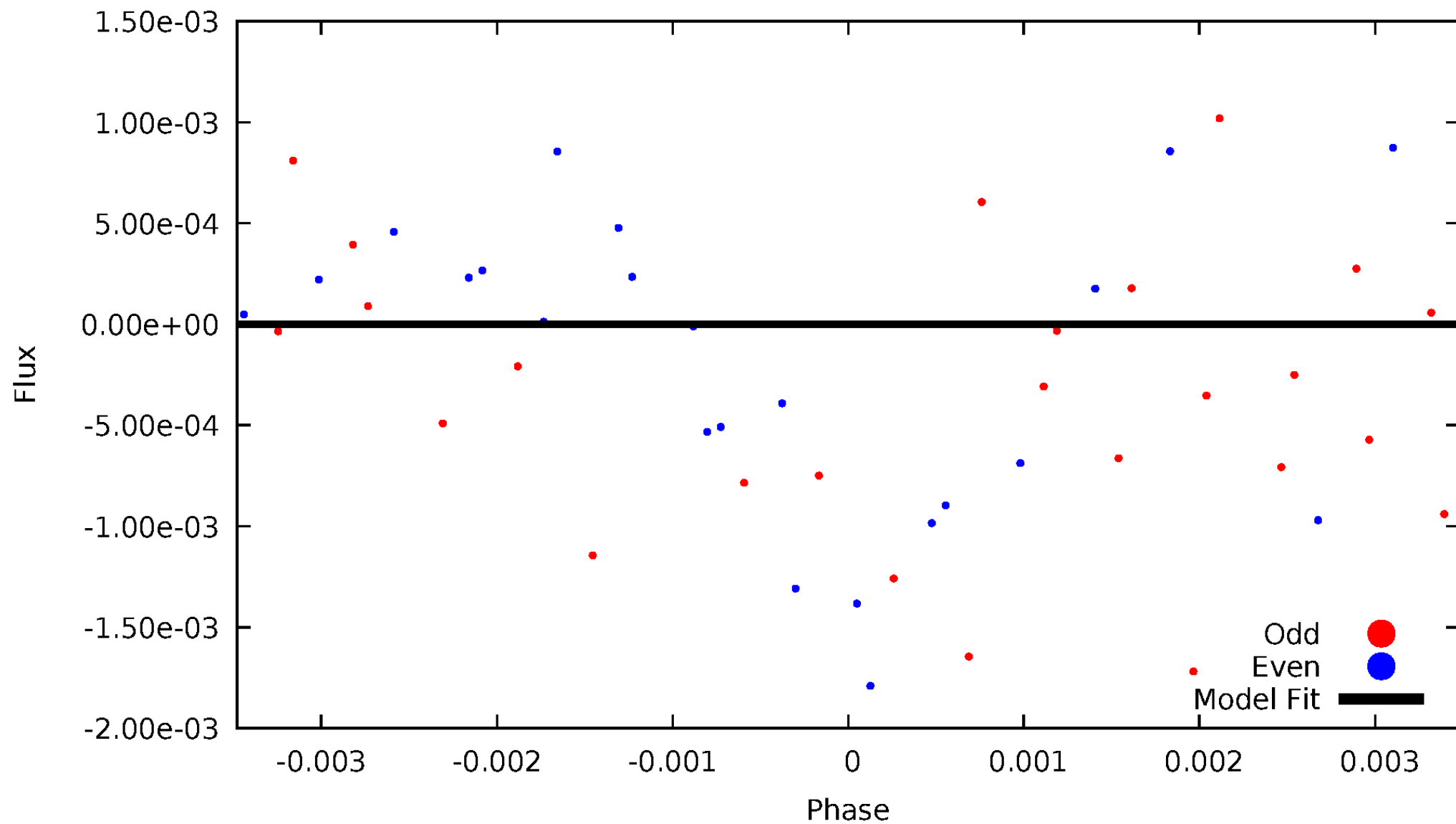


# TCE 003117514-10



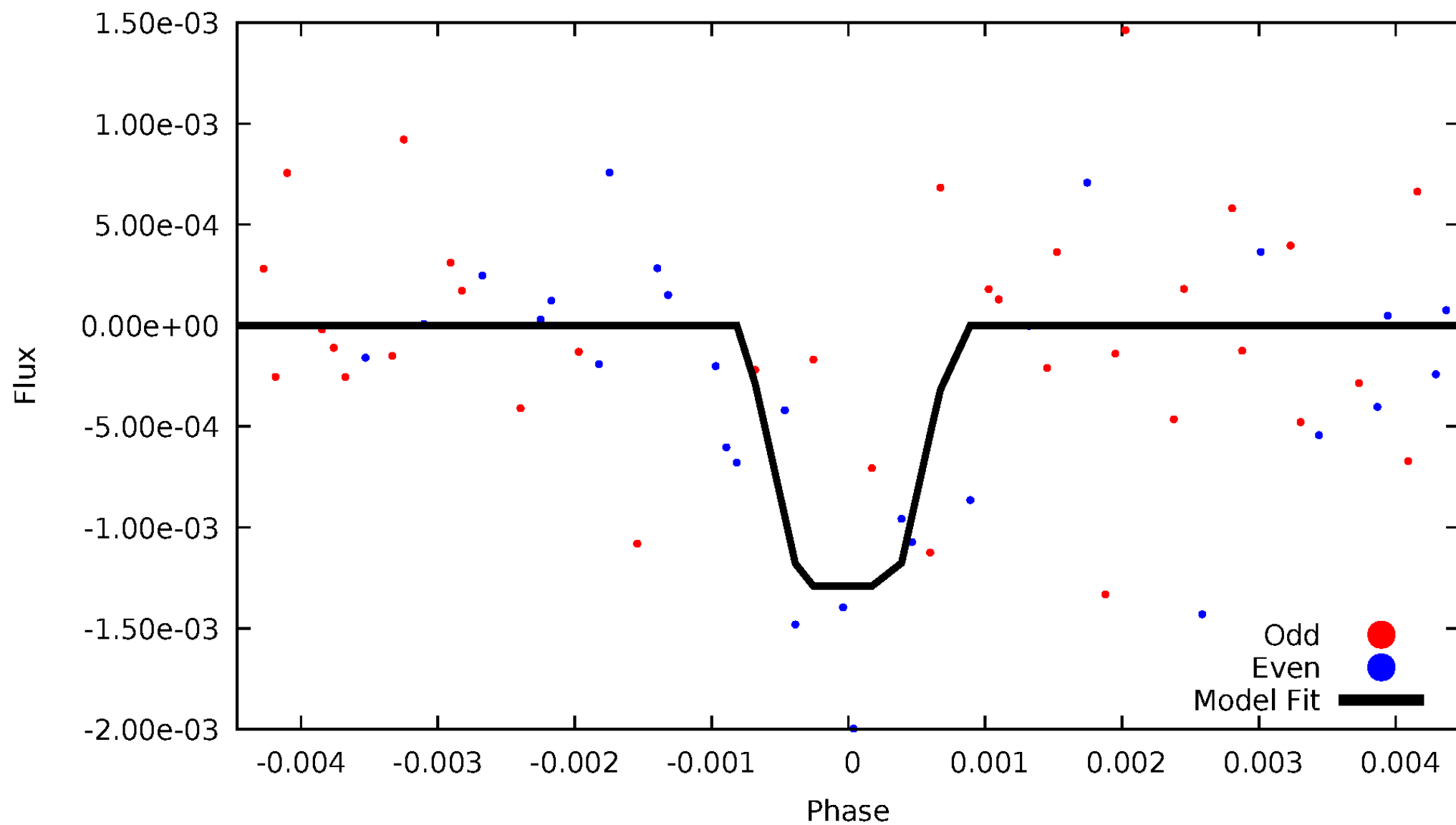
# DV Odd/Even

TCE 003117514-10



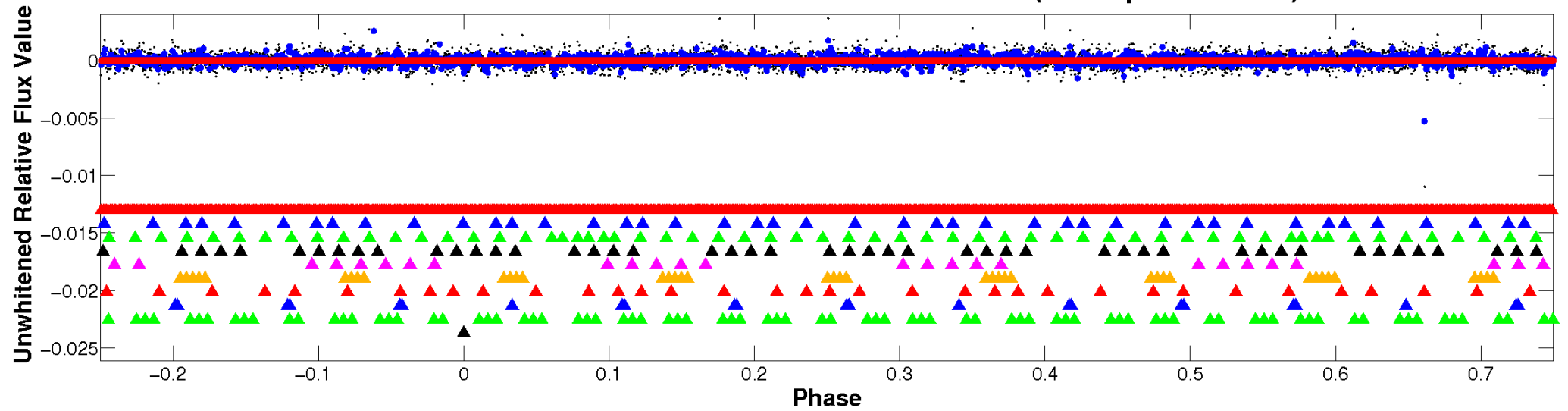
# ALT Odd/Even

TCE 003117514-10

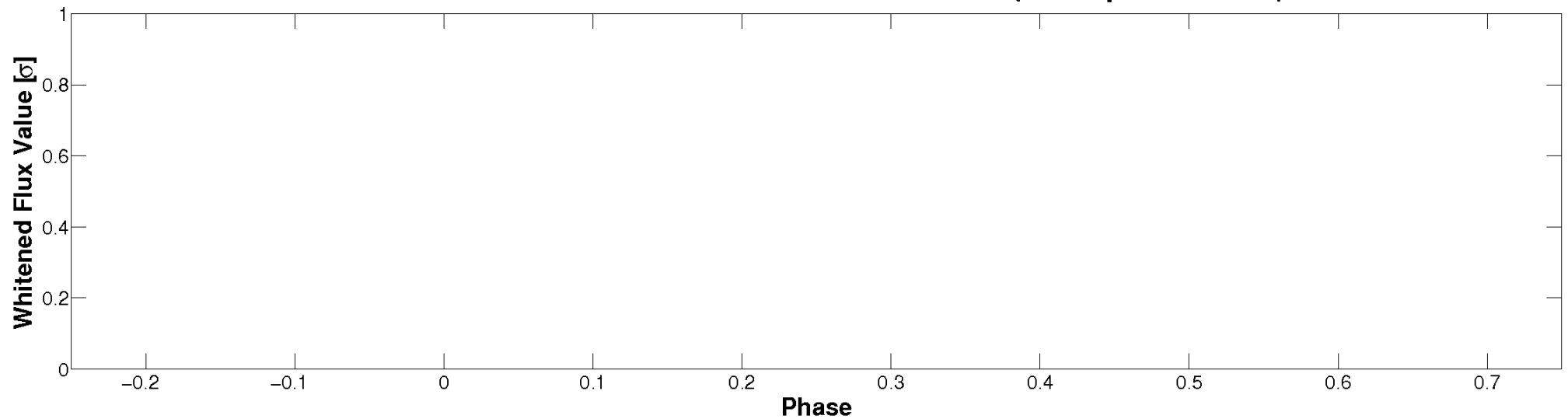


# Non-Whitened Vs. Whitened Light Curve

Planet 10 : Phased Unwhitened Flux Time Series (TPS Epoch/Period)

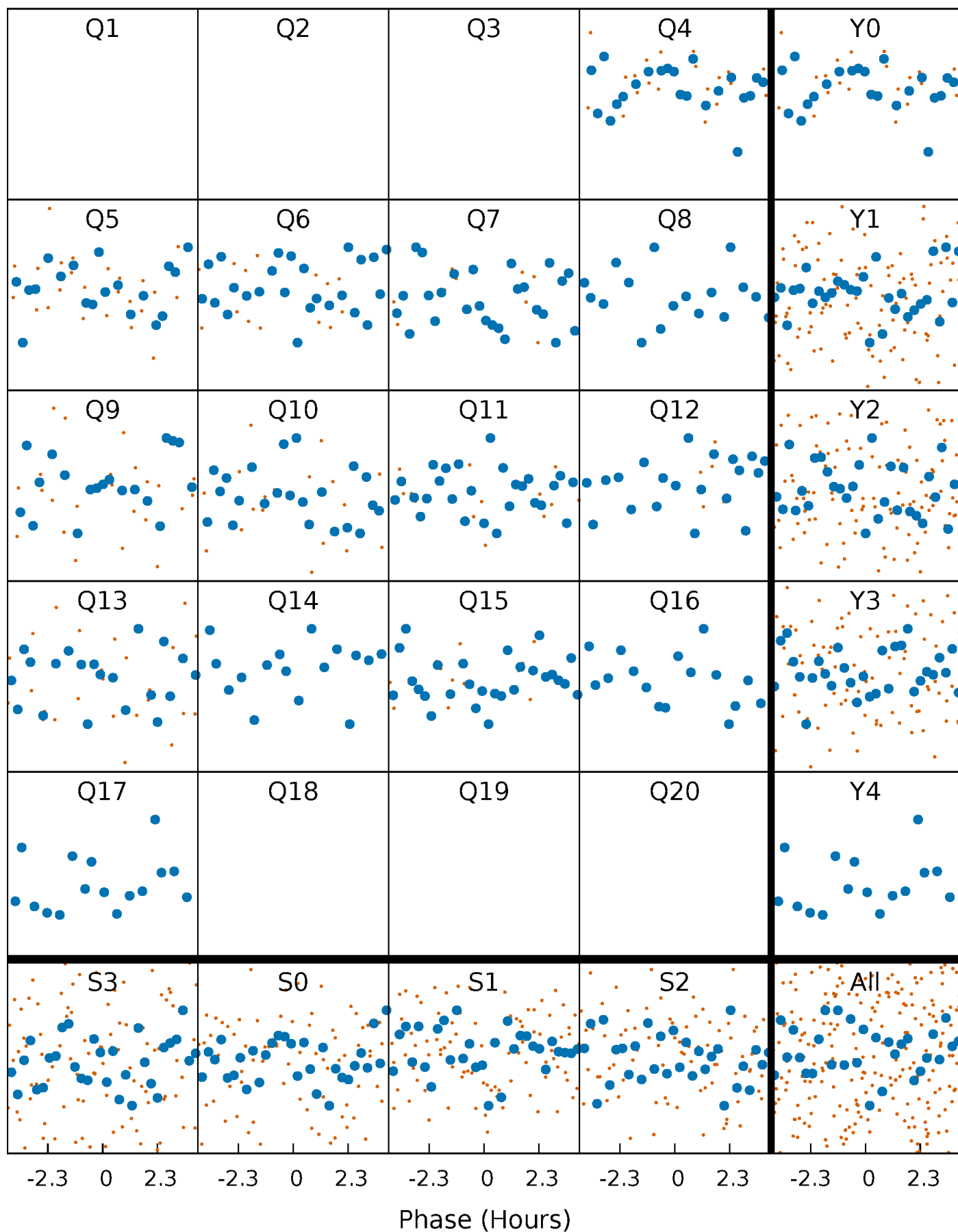


Planet 10 : Phased Whitened Flux Time Series (TPS Epoch/Period)



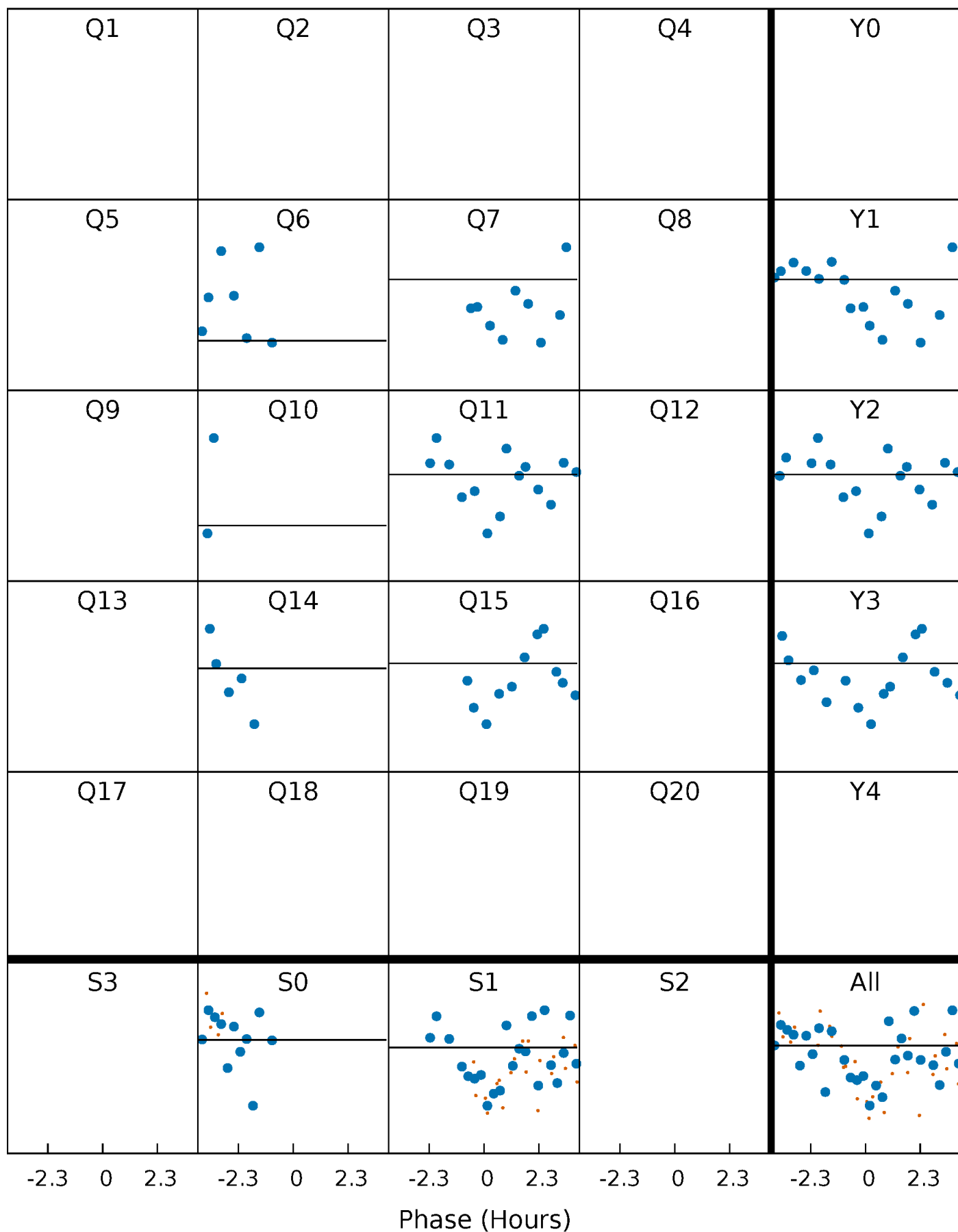
# PDC Quarter-Phased Transit Curves

TCE 003117514-10 P= 47.900949 Days  $T_0=141.379946$  (BKJD)



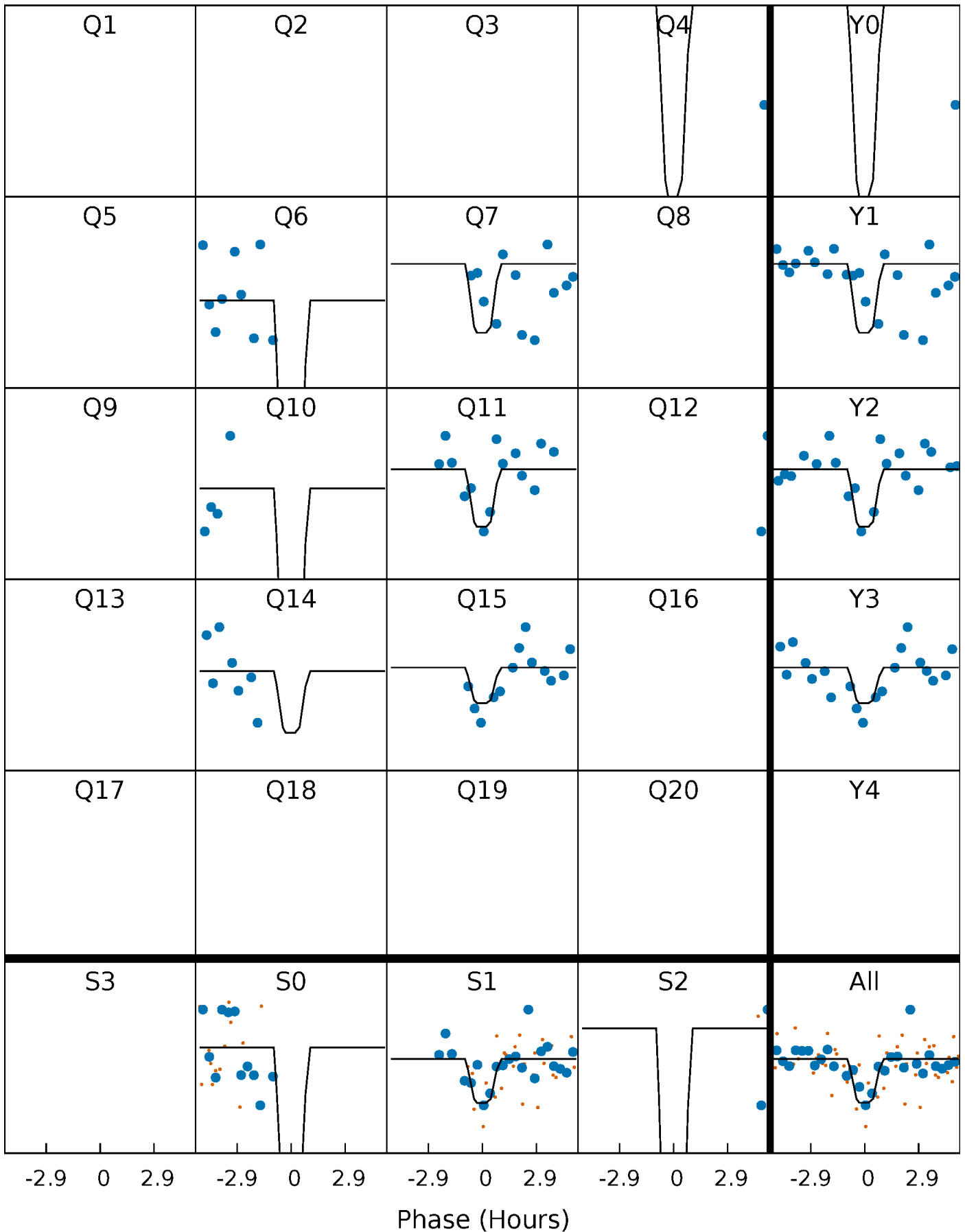
# DV Quarter-Phased Transit Curves

TCE 003117514-10 P= 47.900949 Days  $T_0=141.379946$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 003117514-10   P= 47.900949 Days    $T_0=141.384121$  (BKJD)

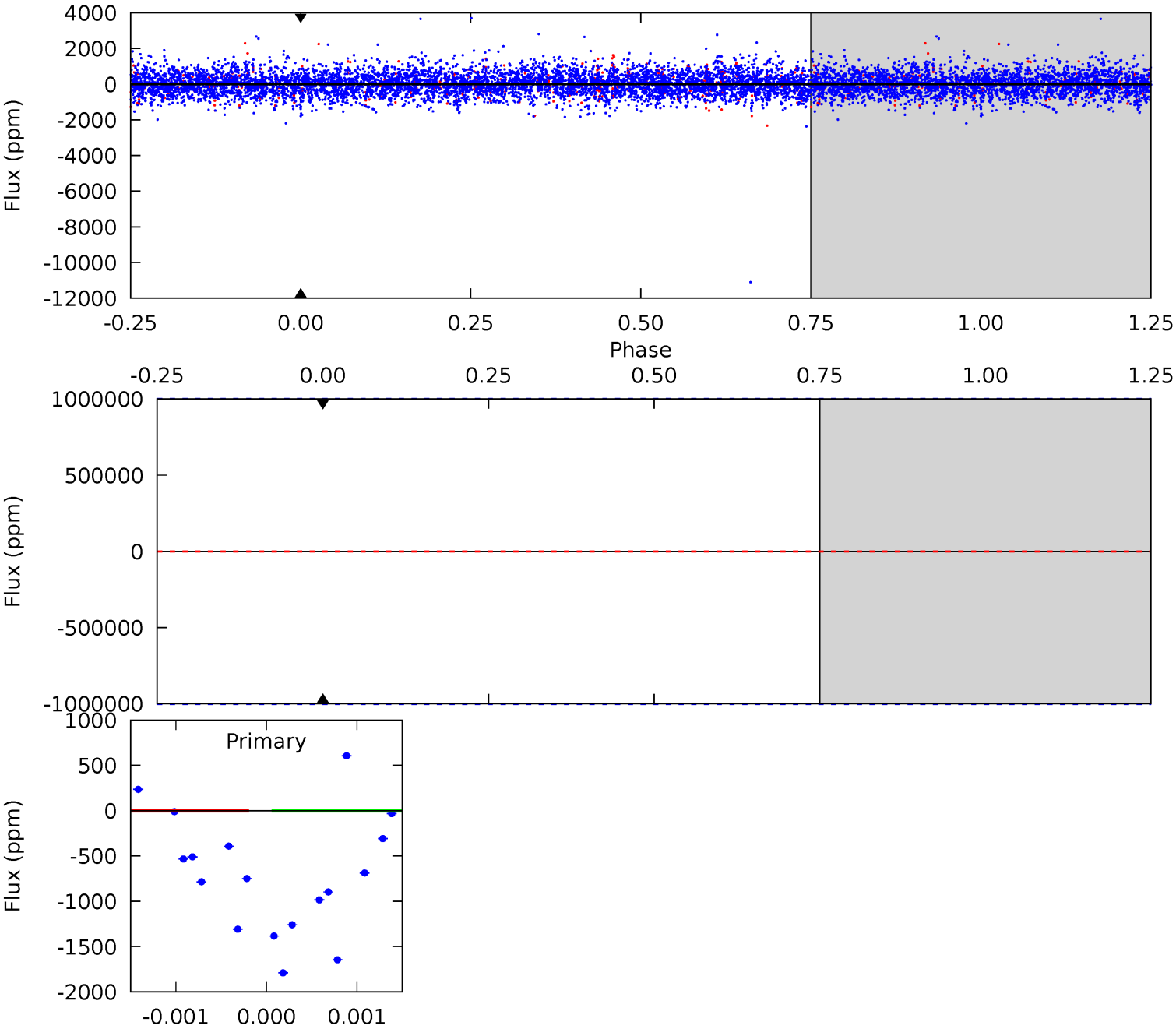




# DV Model-Shift Uniqueness Test

003117514-10, P = 47.900949 Days, E = 141.379946 Days

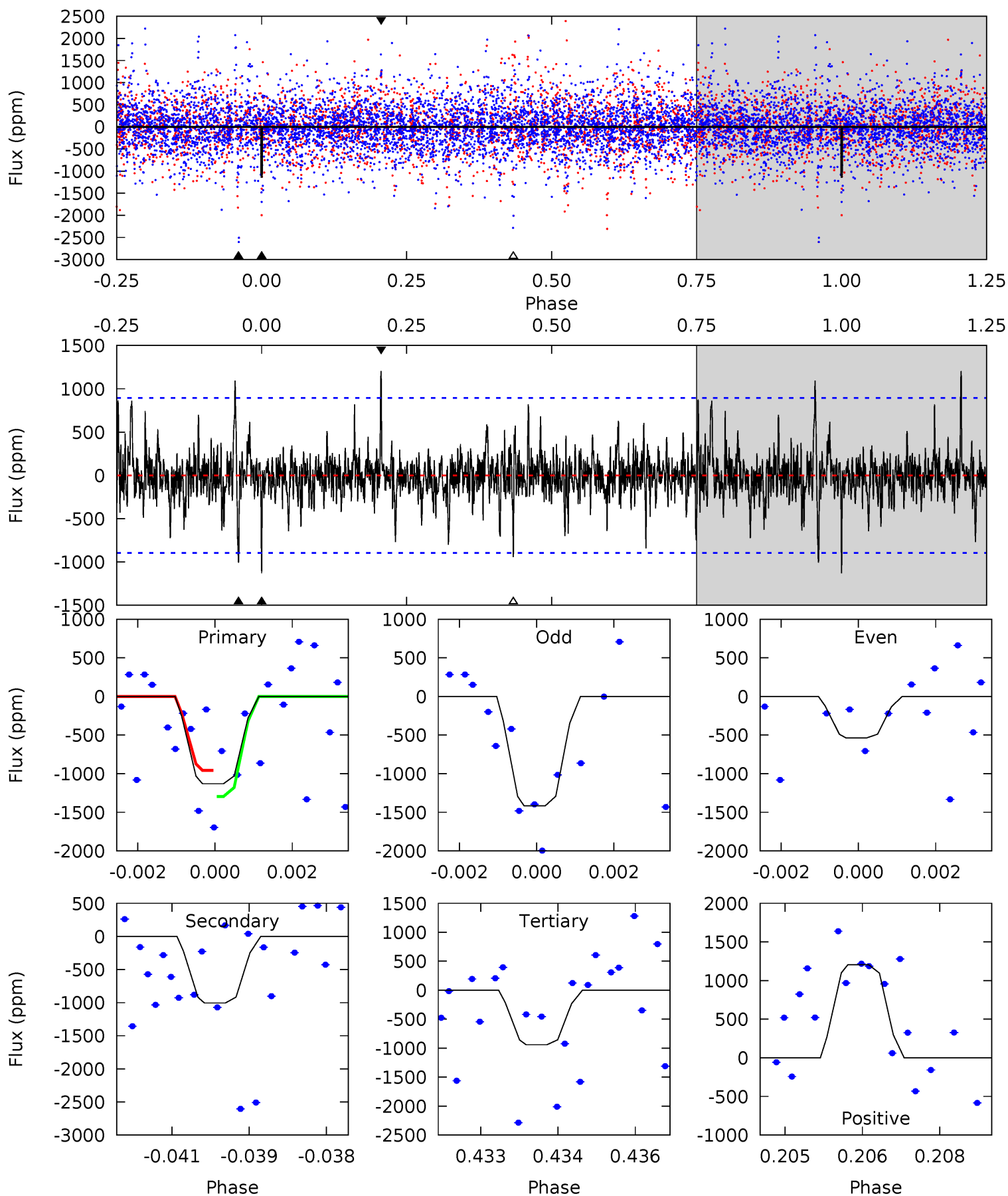
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



# Alt Model-Shift Uniqueness Test

003117514-10, P = 47.900949 Days, E = 141.384121 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.78	6.03	5.64	7.22	5.37	3.16	1.29	1.14	-0.44	0.39	-1.19	2.73	1.06	0.52	1.00



### Stellar Parameters For KIC 003117514

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5469^{+196}_{-196}$	$4.637^{+0.032}_{-0.104}$	$-0.580^{+0.300}_{-0.300}$	$0.695^{+0.117}_{-0.050}$	$0.778^{+0.073}_{-0.081}$	$3.264^{+0.482}_{-1.044}$
	+4%/-4%	+1%/-2%	+52%/-52%	+17%/-7%	+9%/-10%	+15%/-32%
Source	KIC0	KIC0	KIC0	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology  
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

### Secondary Eclipse Parameters for KIC 003117514-10 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$0 \pm 1000000$	$6.15^{+6.24}_{-4.01}$	$588^{+29}_{-27}$	$4054^{+14577}_{-18258}$	$991^{+162843}_{-100541}$
Alt.	$-1006 \pm 167$	$6.32^{+6.70}_{-4.25}$	$588^{+28}_{-25}$	$3757^{+2224}_{-731}$	$740^{+6269}_{-564}$

$T_{max}$  = Theoretical Maximum Planetary Temperature

$T_{obs}$  = Observed Planetary Temperature (Assuming  $A=0.3$ )

$A_{obs}$  = Observed Albedo (Assuming  $T=0$ )

If a secondary eclipse is present, the system is likely an EB if  $T_{obs} \gg T_{max}$  AND  $A_{obs} \gg 1.0$

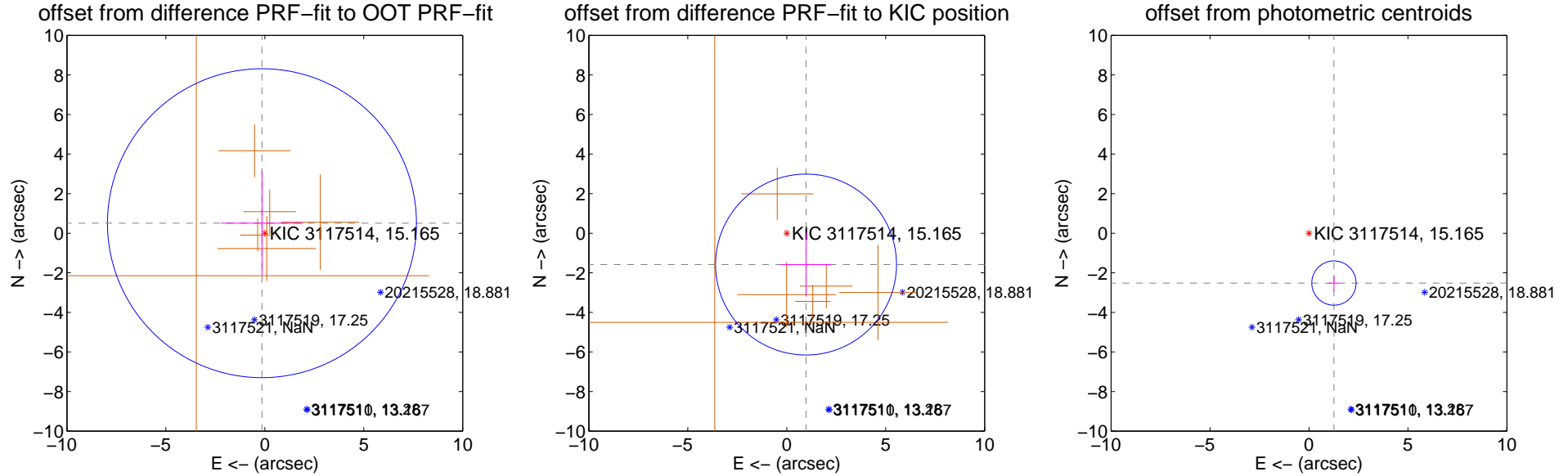
## DV Centroid Data

Supplemental centroid analysis for 003117514-10. Kepler magnitude: 15.16. Transit SNR -1.00

There are 1 quarters with good PRF difference image offsets

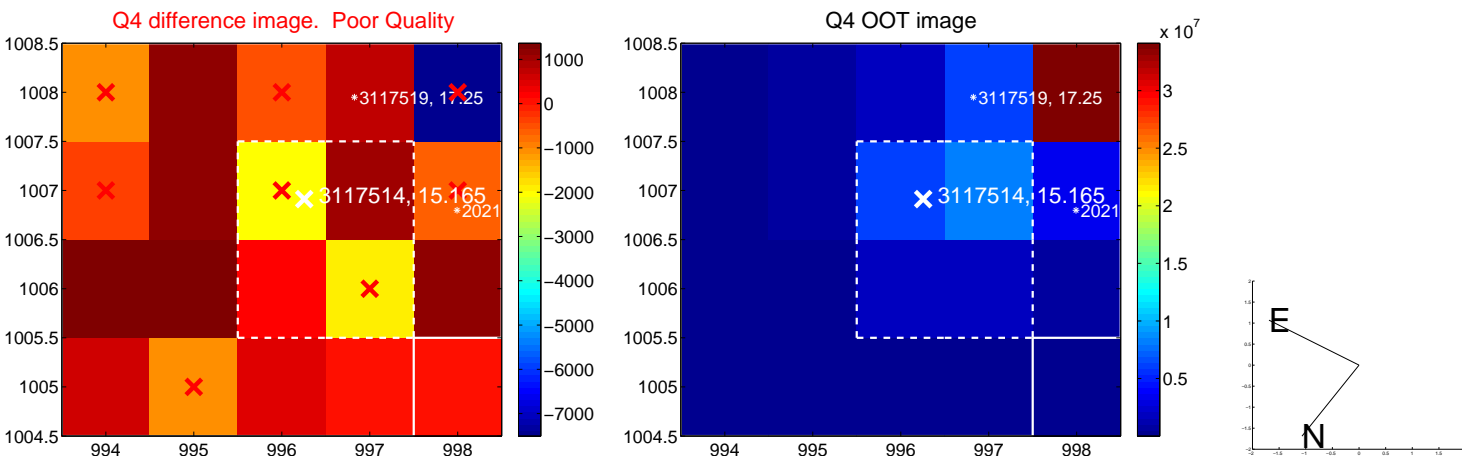
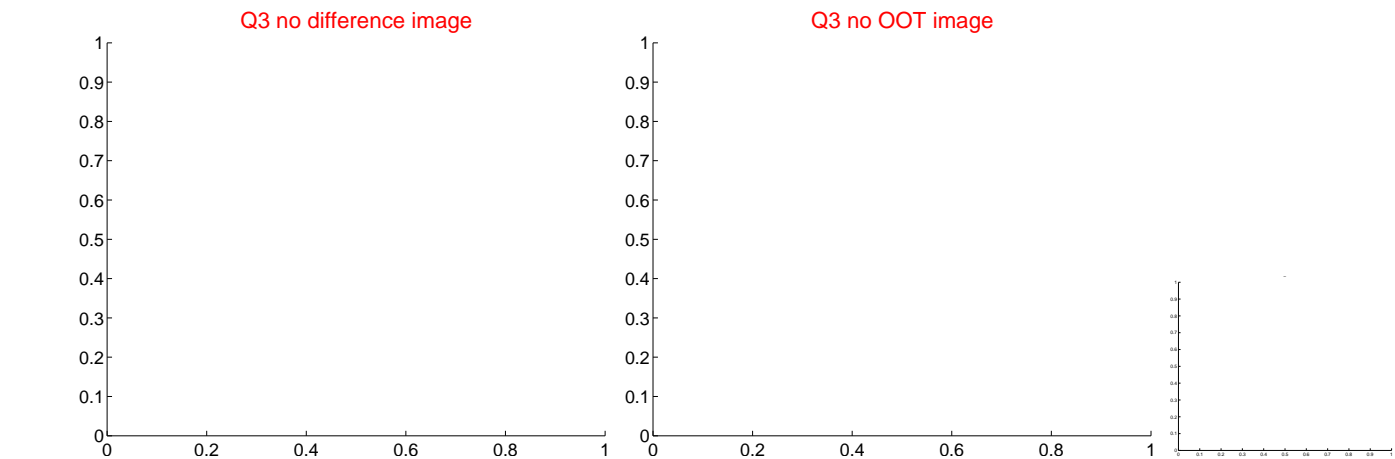
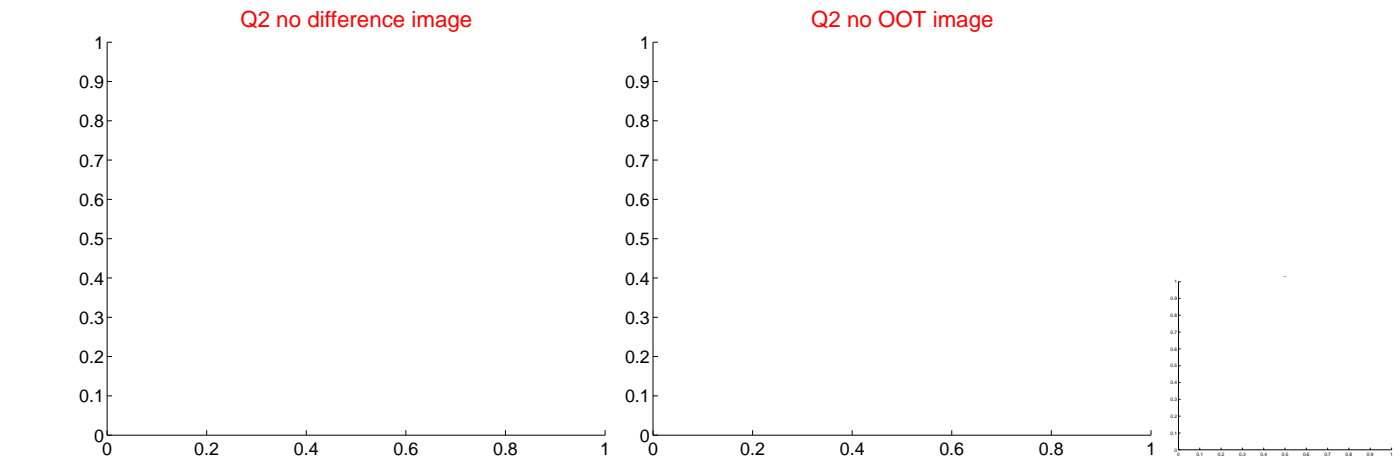
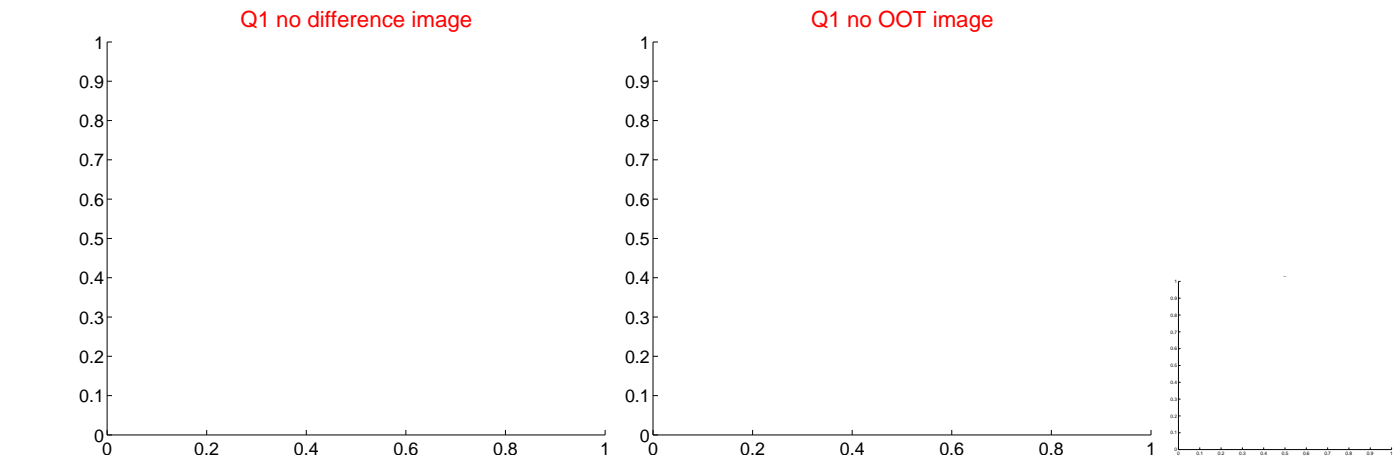
The OOT PRF centroid is offset from the target star catalog position by about 2.33 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.527 \pm 2.603$	0.20	$0.144 \pm 2.073$	$0.507 \pm 2.641$
PRF-fit source offset from KIC position	$1.859 \pm 1.524$	1.22	$-0.974 \pm 1.275$	$-1.583 \pm 1.608$
photometric centroid source offset	$2.82 \pm 0.37$	7.55	$-1.26 \pm 0.27$	$-2.52 \pm 0.40$

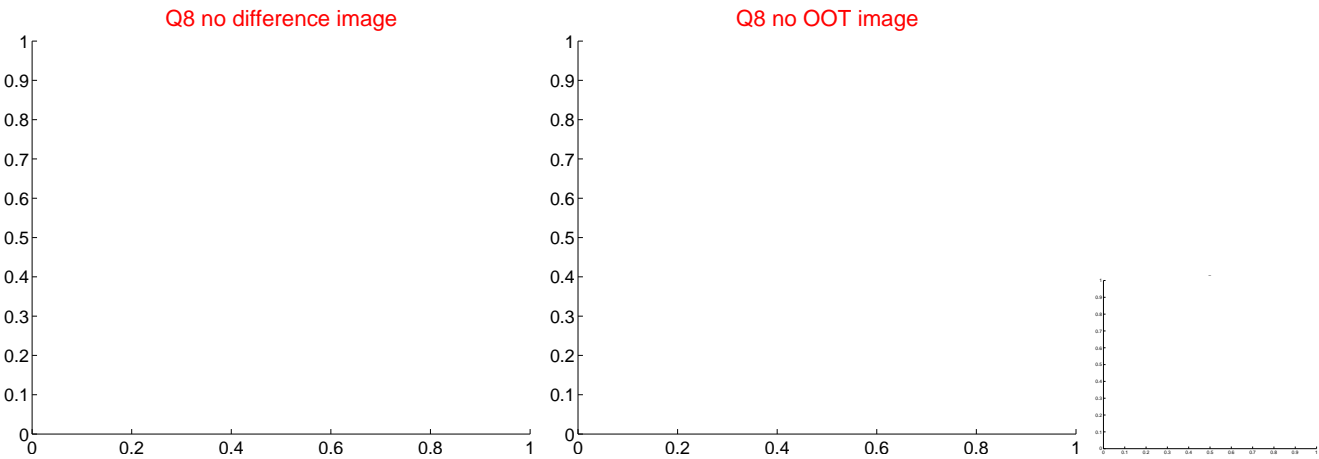
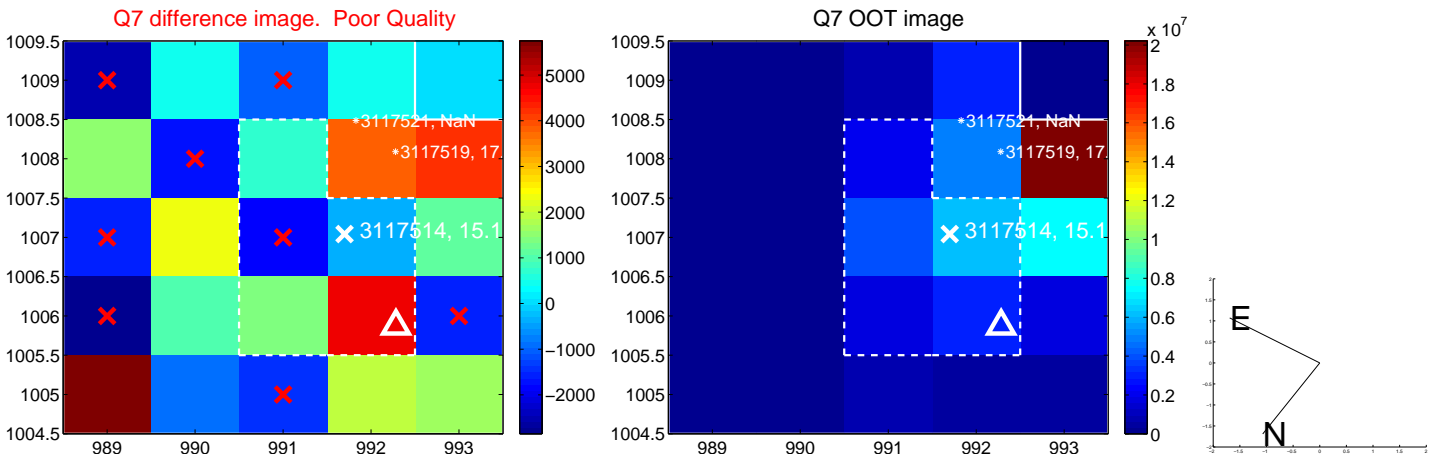
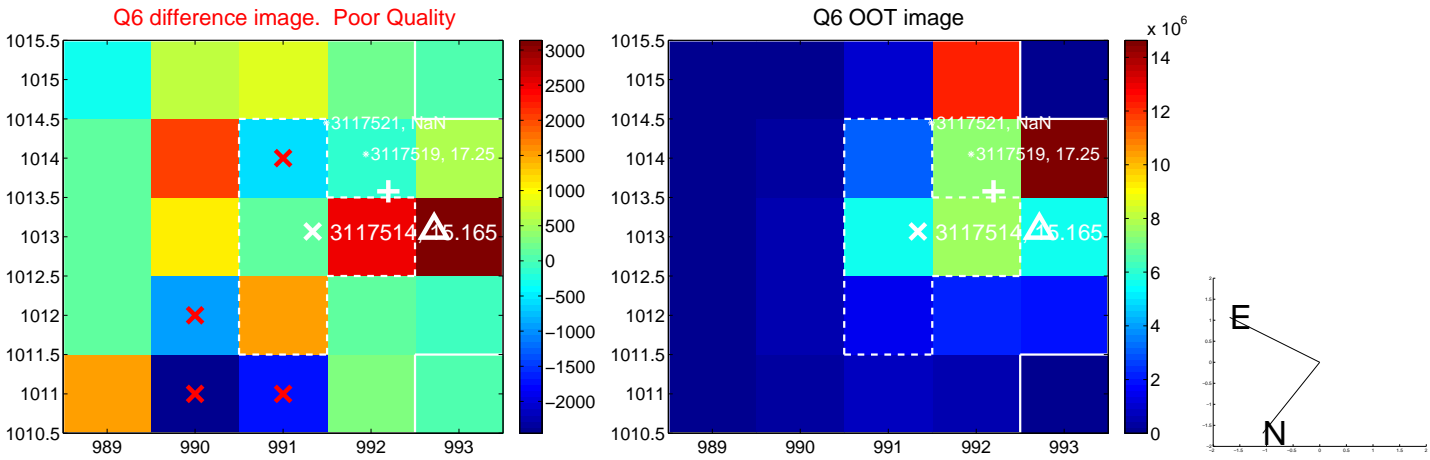
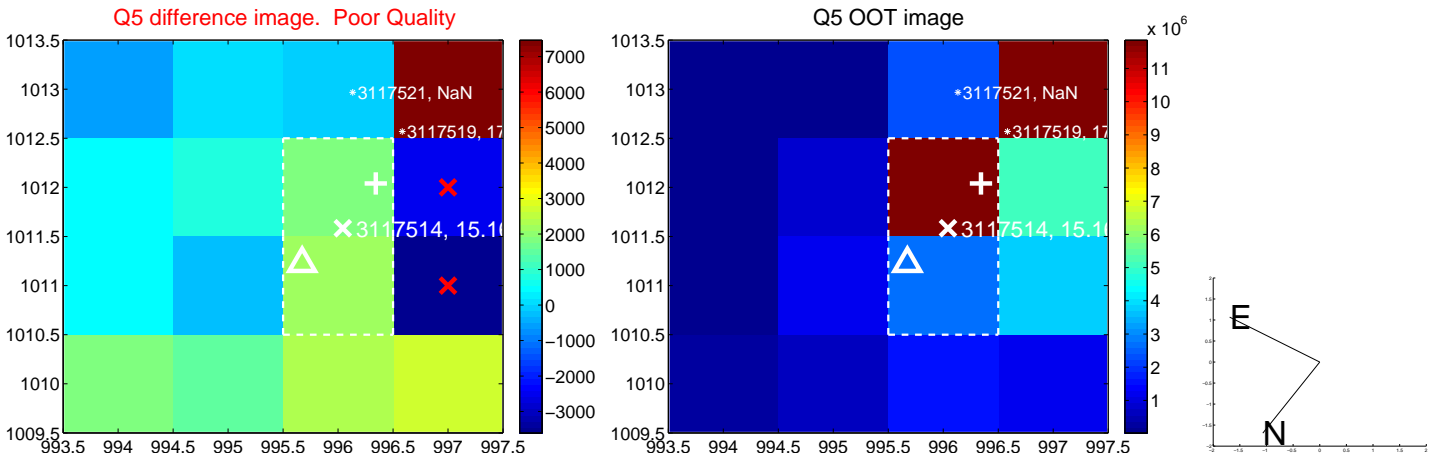


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three- $\sigma$ . Red \*: target star. Blue \*: Other stars. Text next to a star gives its KIC ID and kepmag. KIC IDs > 15,000,000 are from the UKIRT catalog.

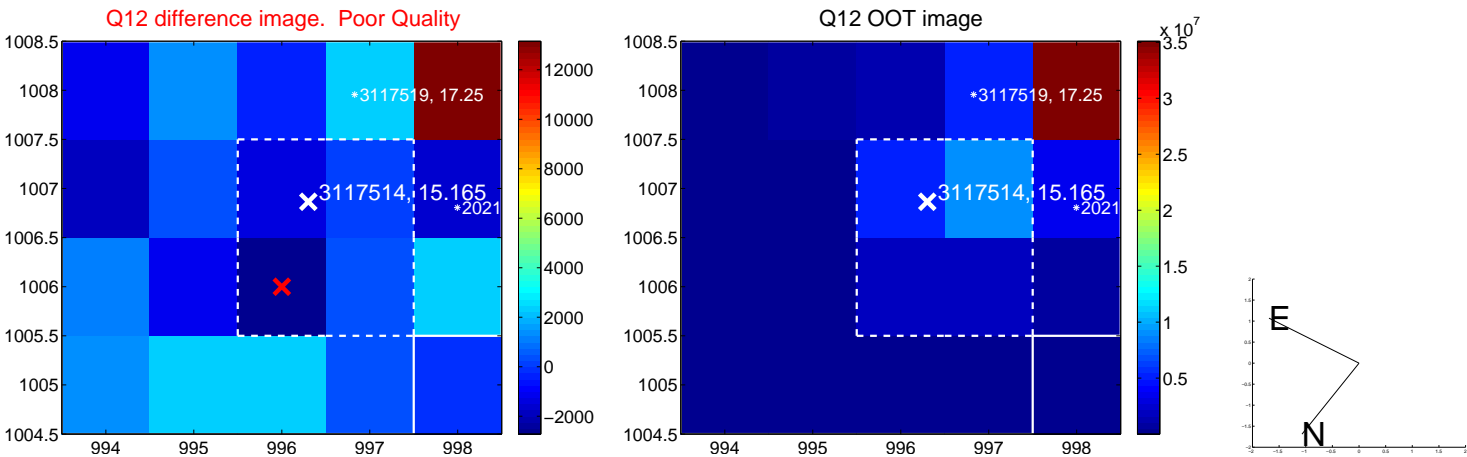
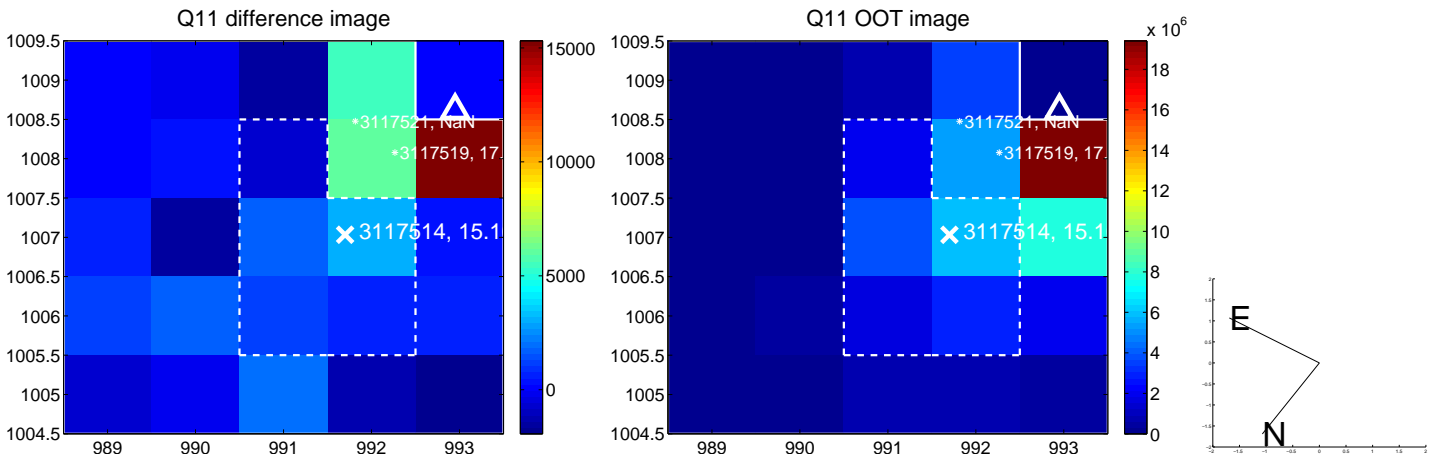
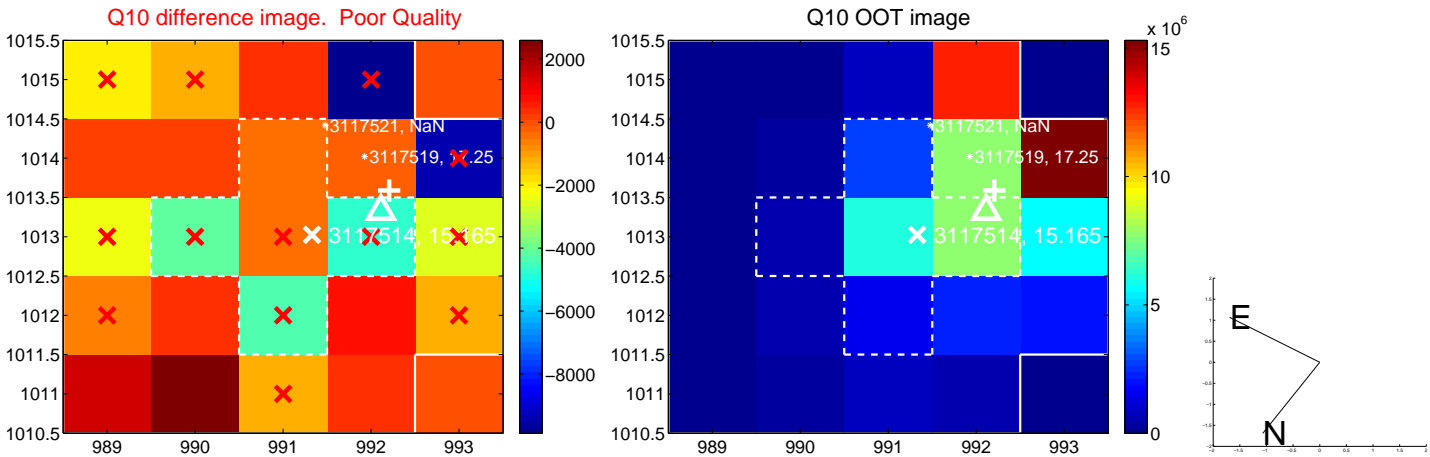
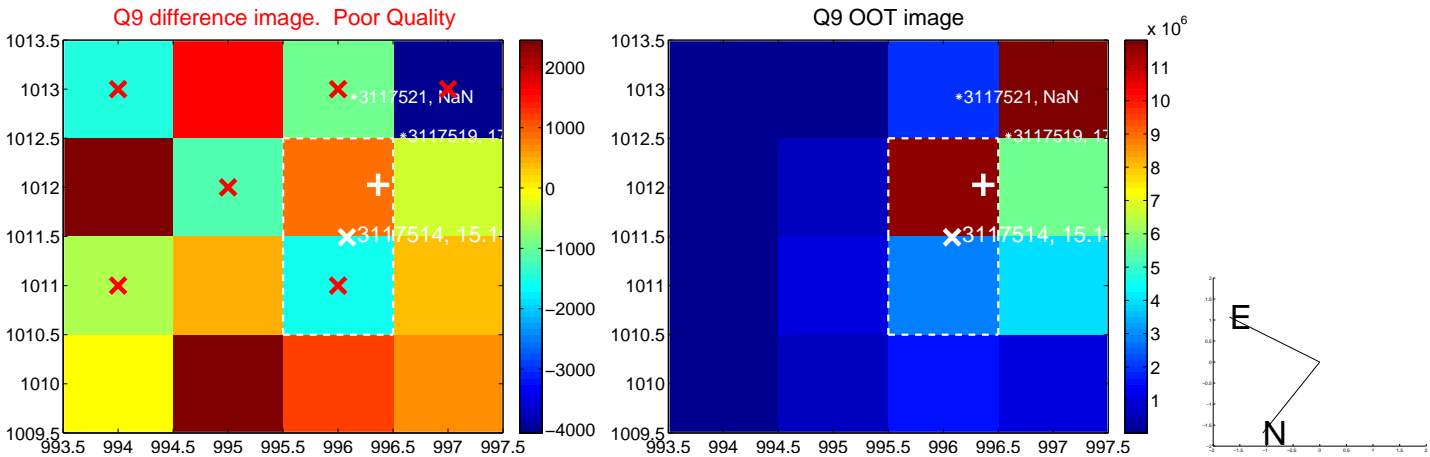
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



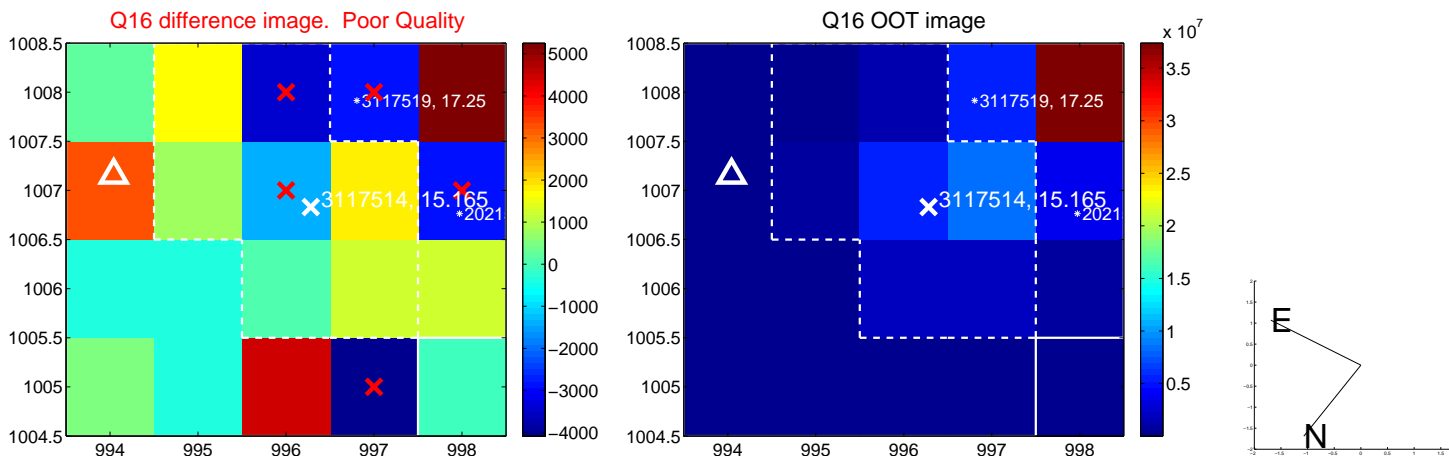
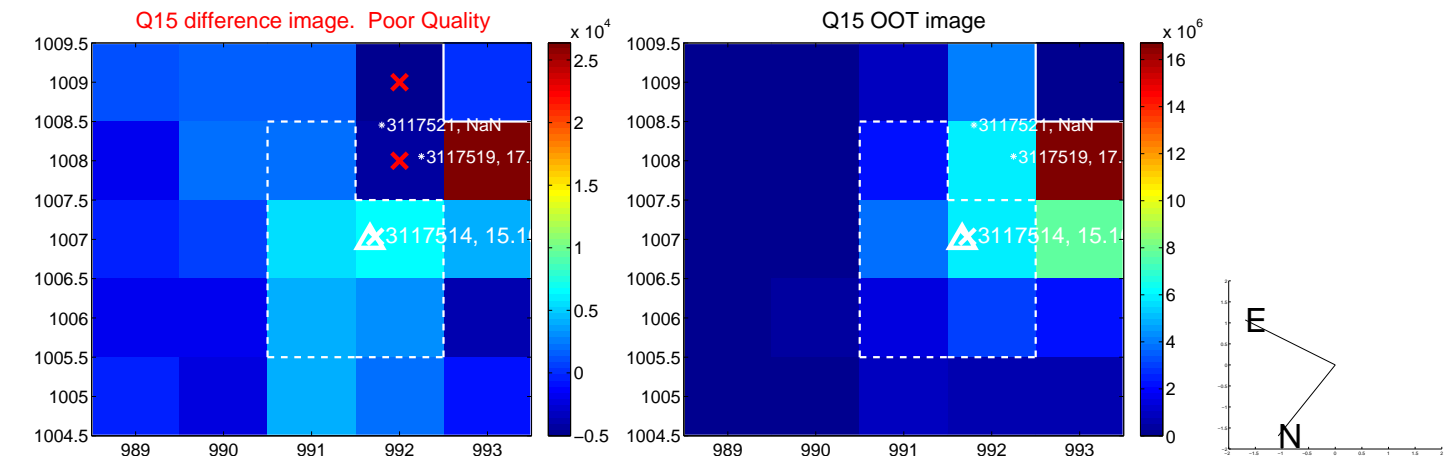
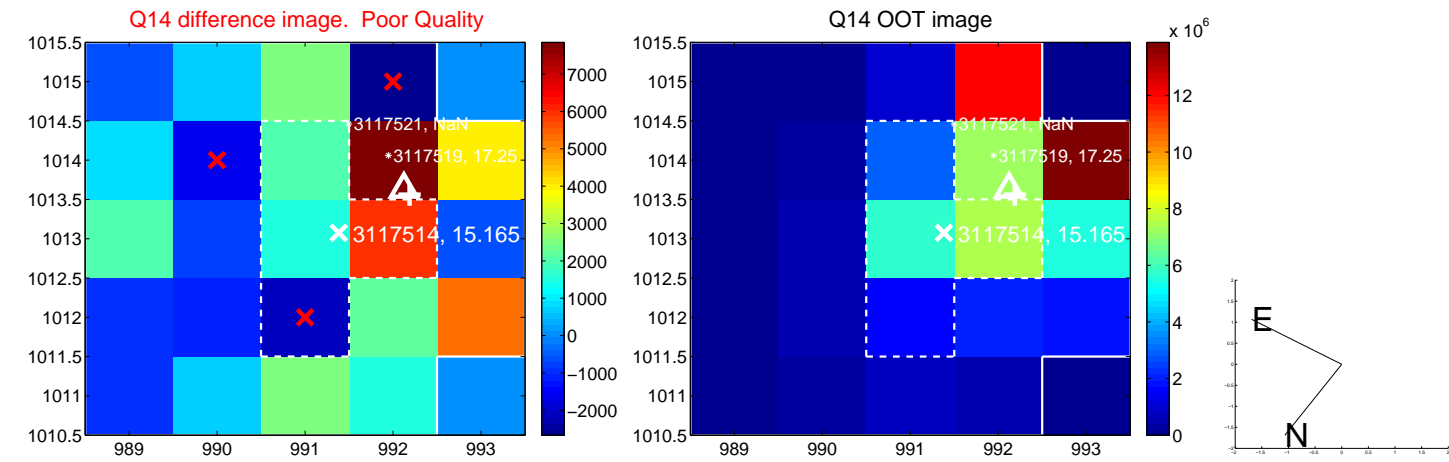
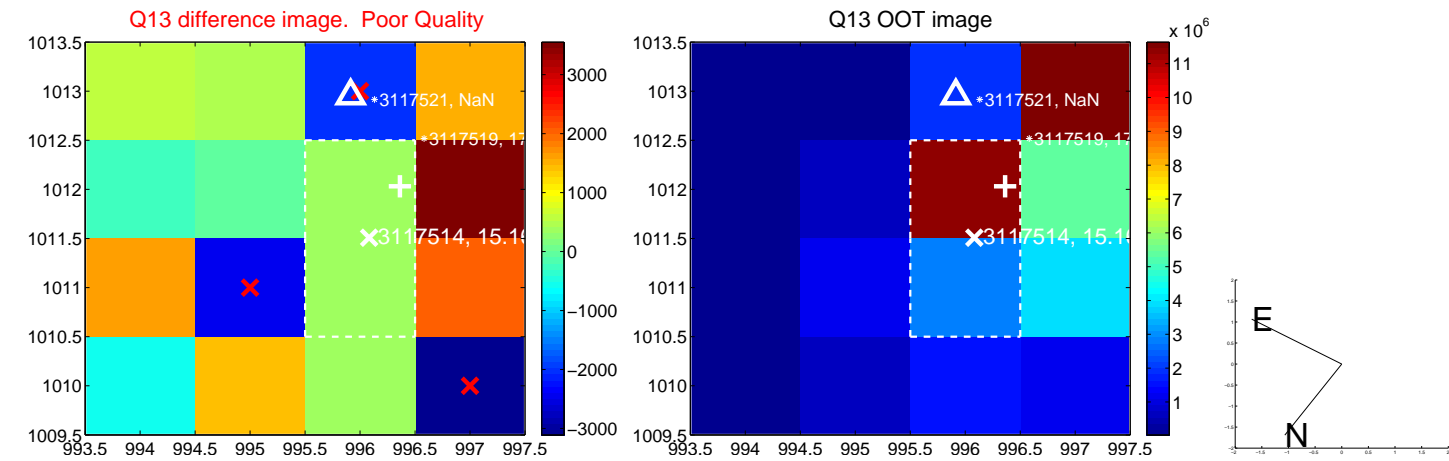
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

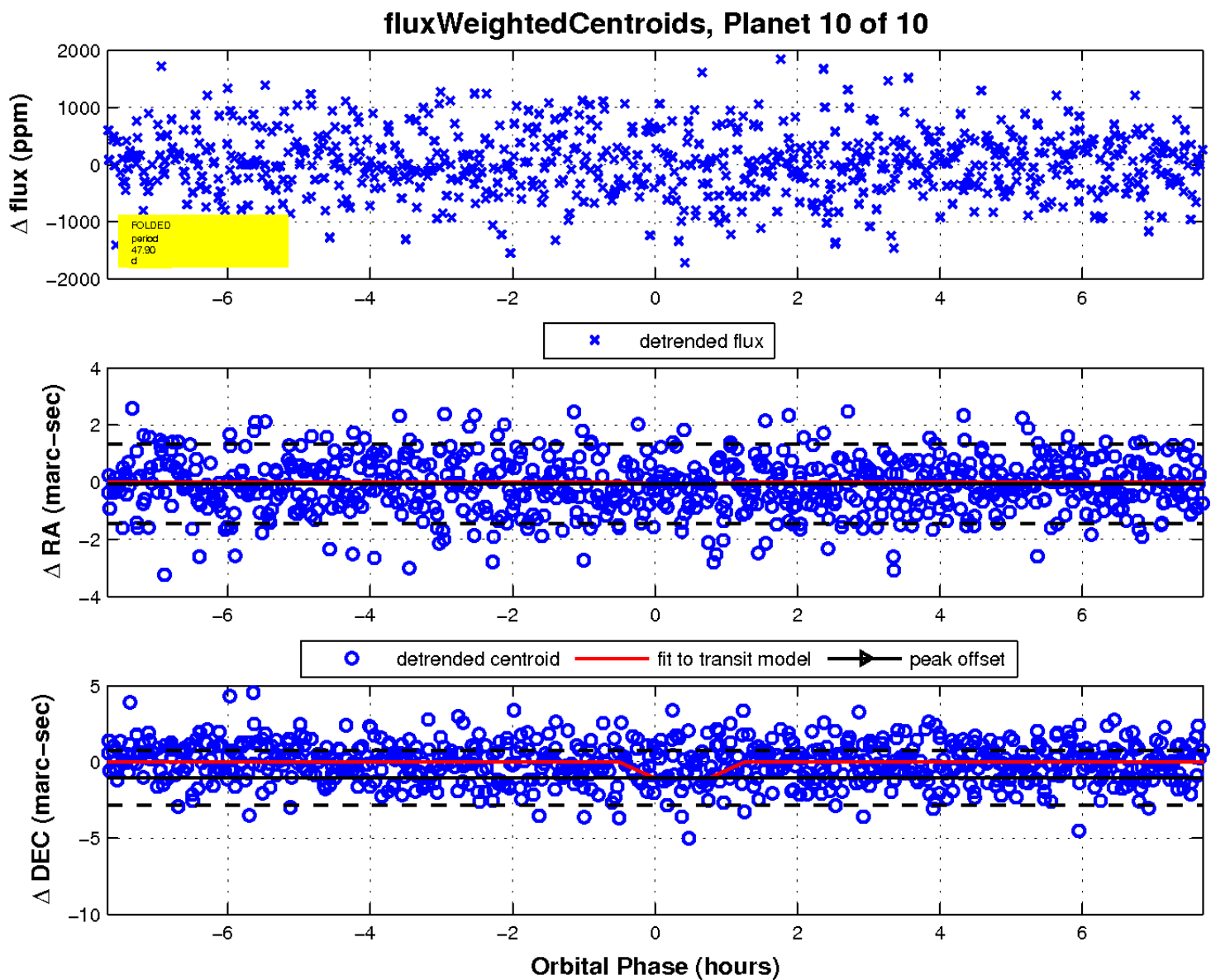
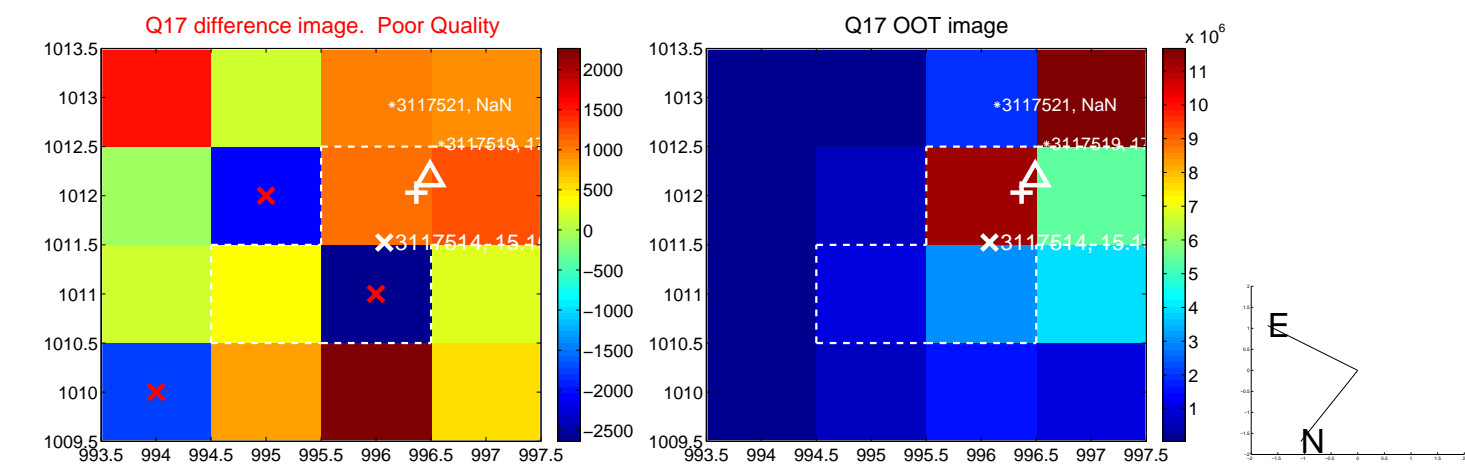


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.





white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

