

# KIC 005108514

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005108514-01	OBS	No	0.953411	132.196618	126.3	3.893	14.9	16.3	1.80	7109	2.34	15871.79
005108514-02	OBS	No	0.953392	131.566934	89.4	3.177	10.4	11.8	1.80	7109	1.96	15872.21
005108514-03	OBS	No	3.118703	132.880941	218.3	9.130	9.3	9.7	1.80	7109	5.15	3268.64

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005108514-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT
005108514-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD
005108514-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_ZUMA—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT

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

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

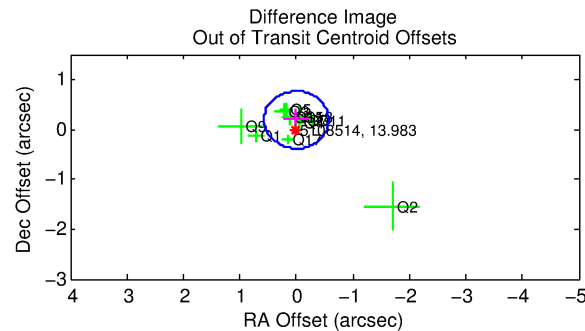
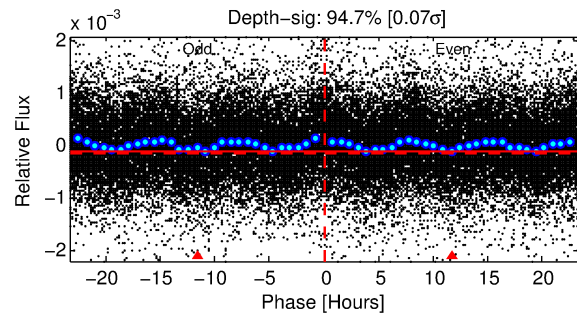
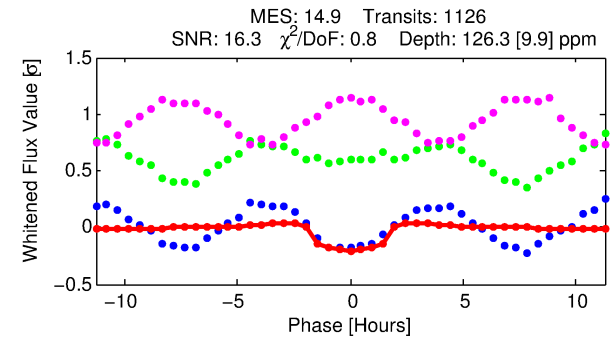
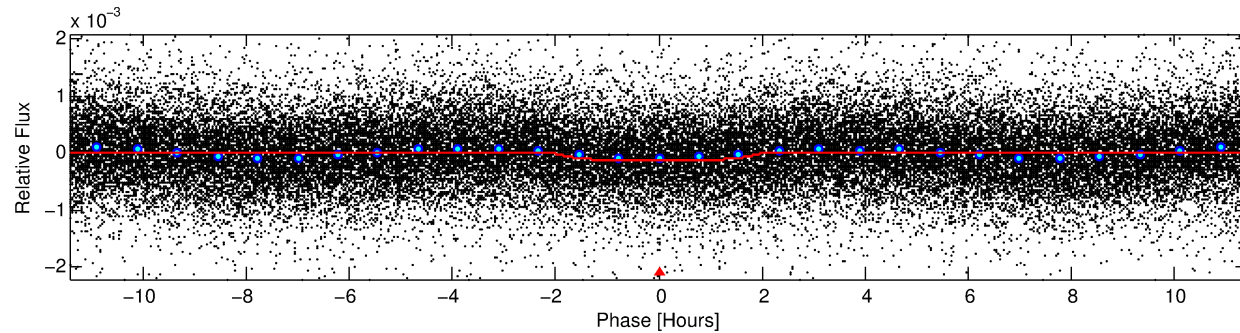
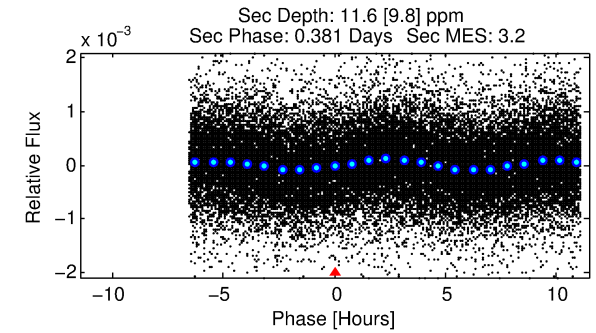
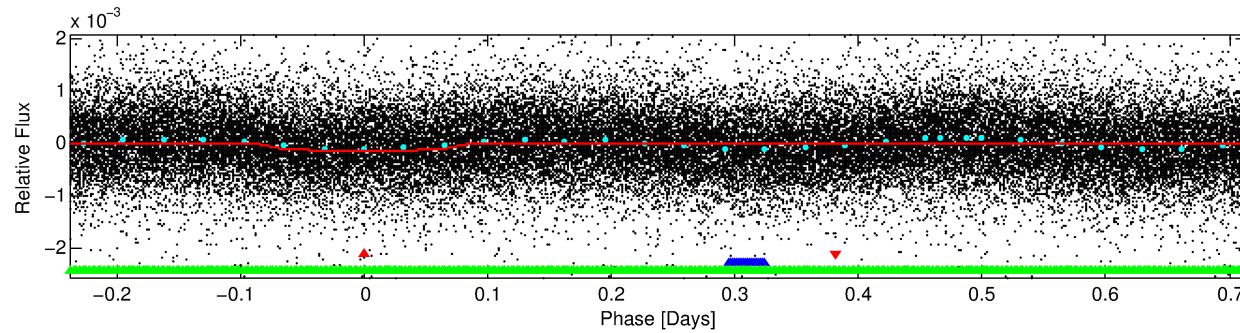
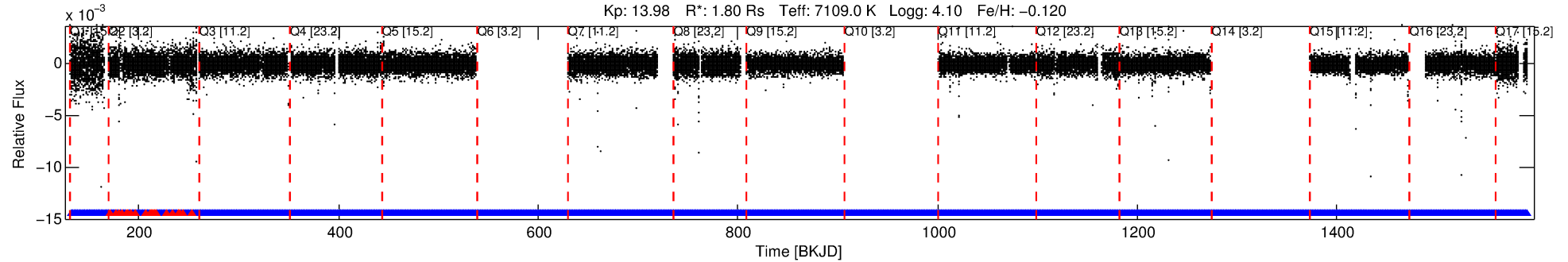
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 005108514-01

No Significant Match Found

# DV One-Page Summary

KIC: 5108514 Candidate: 1 of 3 Period: 0.953 d



## DV Fit Results:

Period = 0.95341 [0.00001] d  
Epoch = 132.1966 [0.0024] BKJD  
Rp/R\* = 0.0120 [0.0024]  
a/R\* = 1.28 [0.61]  
b = 0.90 [0.26]  
Seff = 15871.79 [6010.56]  
Teq = 2862 [271] K  
Rp = 2.34 [0.85] Re  
a = 0.0216 [0.0052] AU  
Ag = 0.54 [0.54] [-0.85σ]  
Teffp = 3795 [905] K [0.99σ]

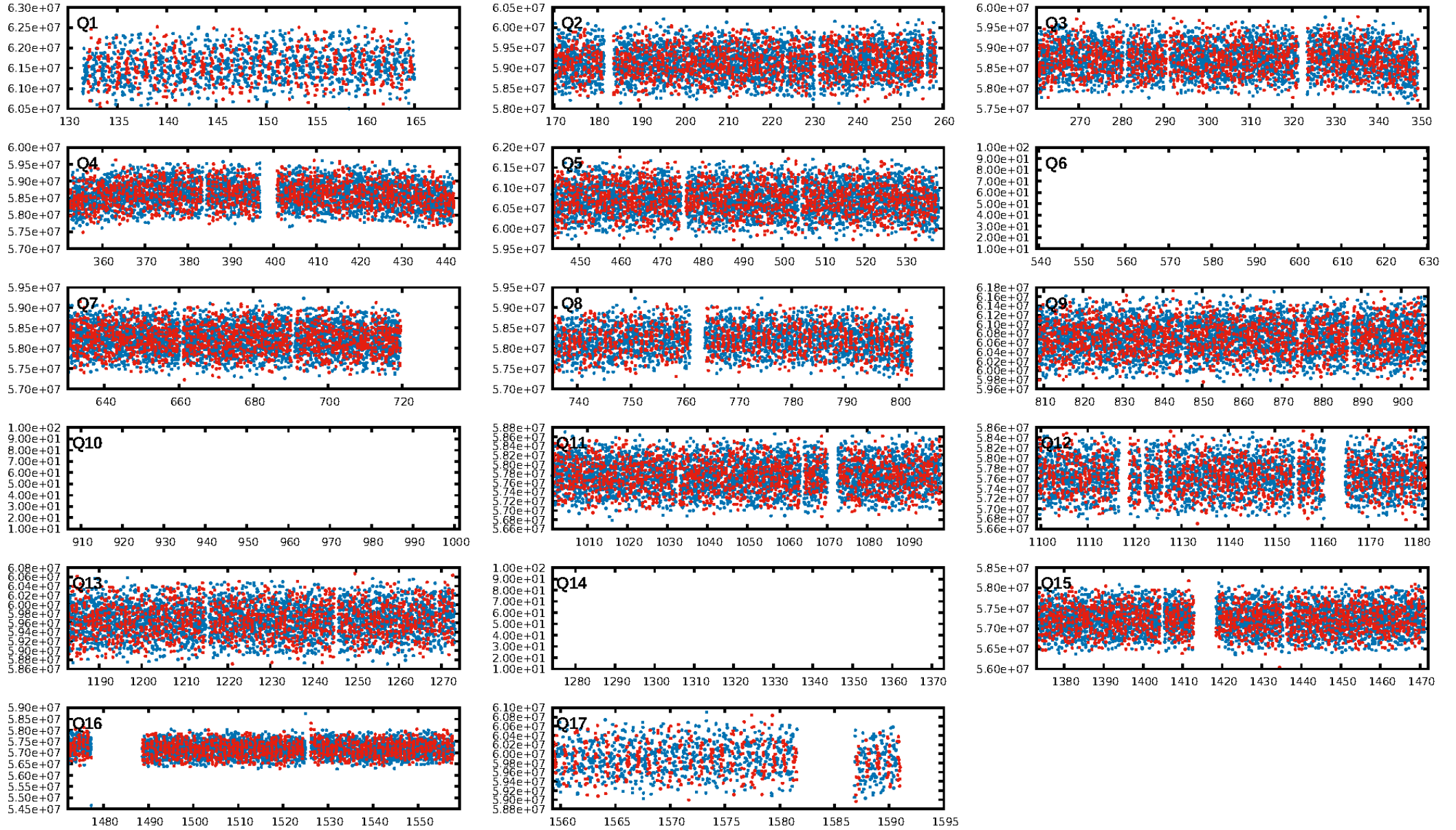
## DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]  
LongPeriod-sig: 100.0% [5.24σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 7.61e-37  
RollingBand-fgt: 0.98 [1040/1062]  
GhostDiagnostic-chr: 2.951  
Centroid-sig: 84.3%  
Centroid-so: 0.250 arcsec [0.91σ]  
OotOffset-rm: 0.189 arcsec [0.99σ]  
KicOffset-rm: 0.157 arcsec [1.00σ]  
OotOffset-st: 1/4/1/5 [11]  
KicOffset-st: 1/4/1/5 [11]  
DiffImageQuality-fgm: 0.82 [9/11]  
DiffImageOverlap-fno: 0.00 [0/14]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 02:03:55 Z

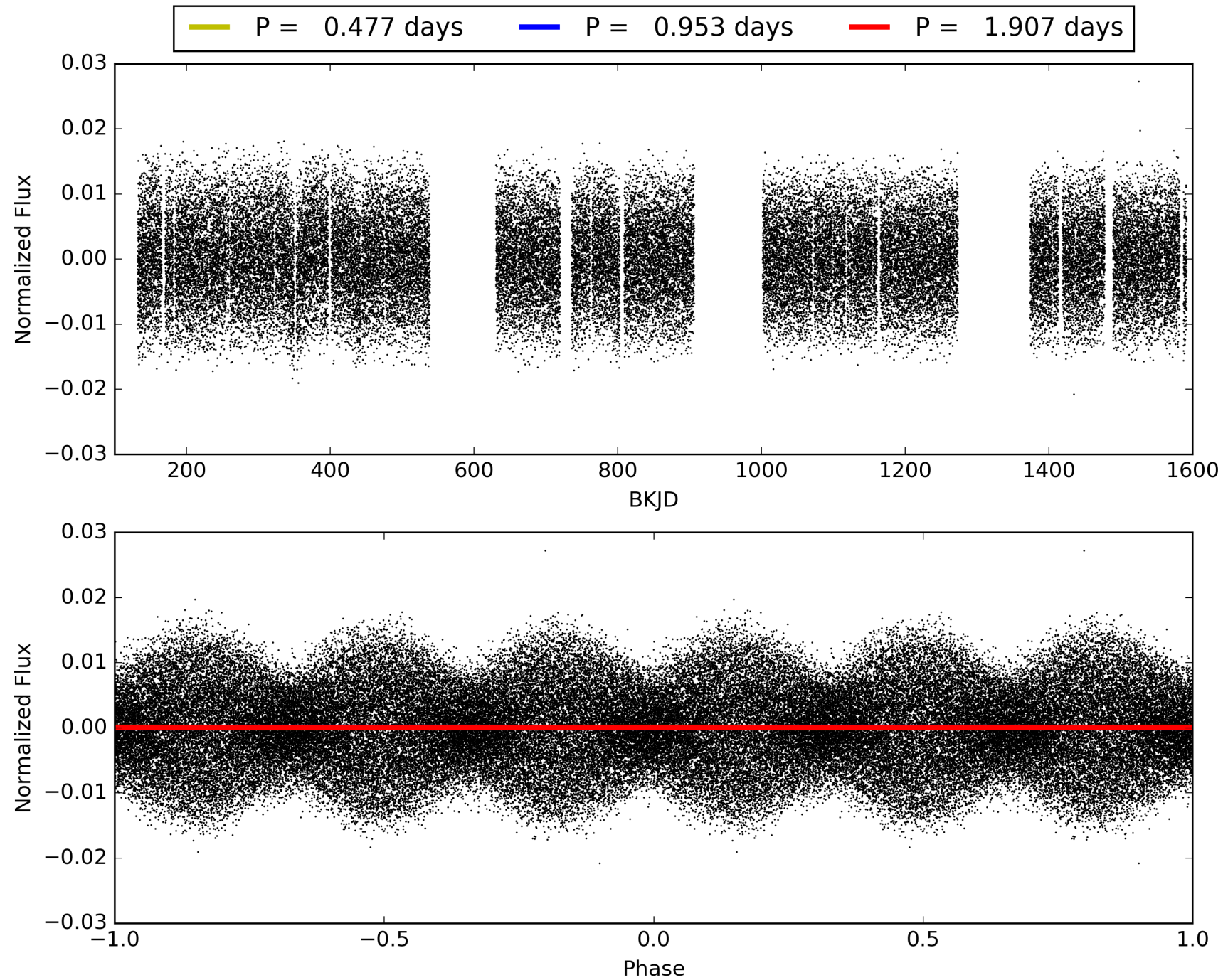
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 005108514-01, PDC Light Curves





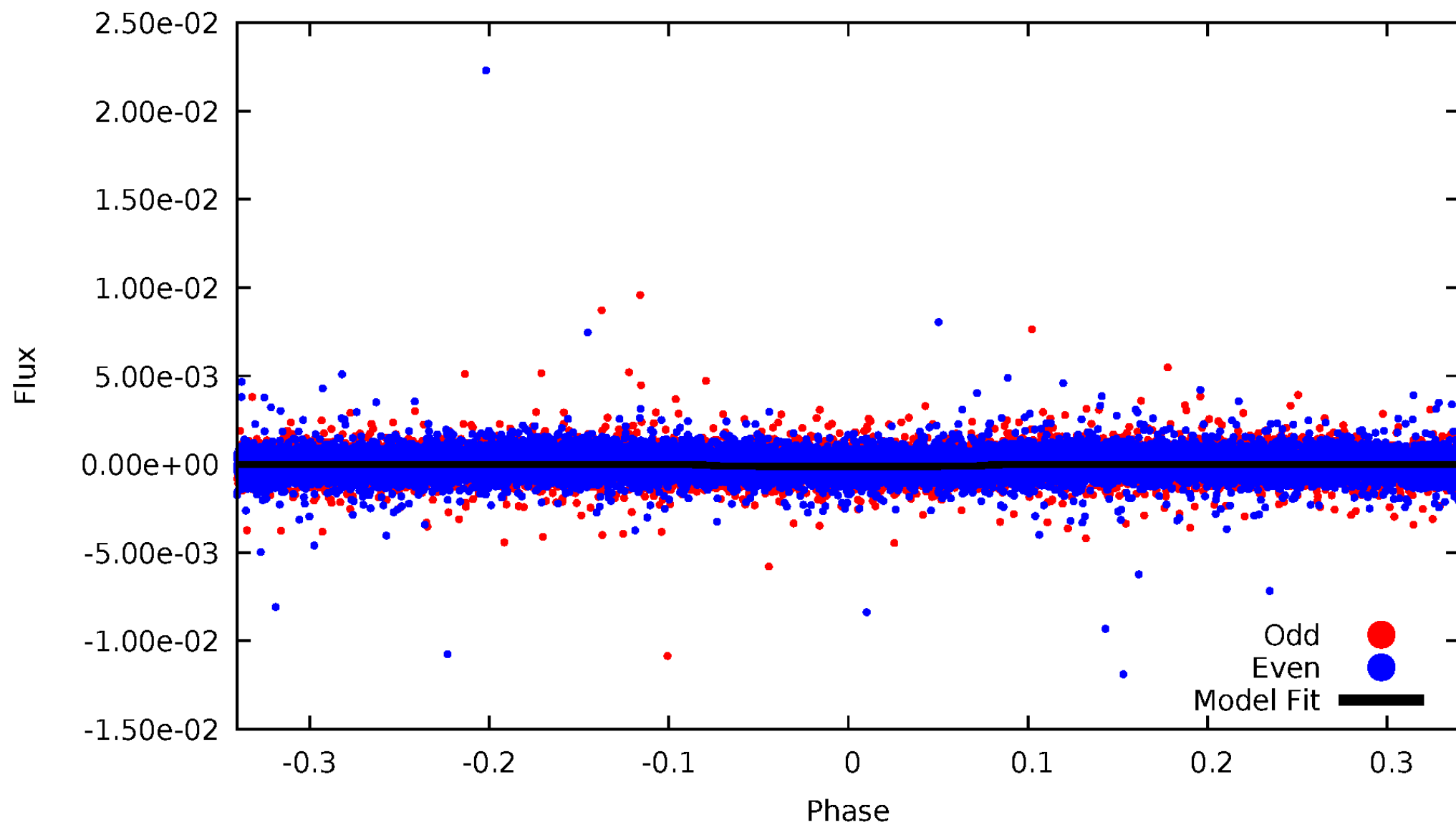
TCE 005108514-01





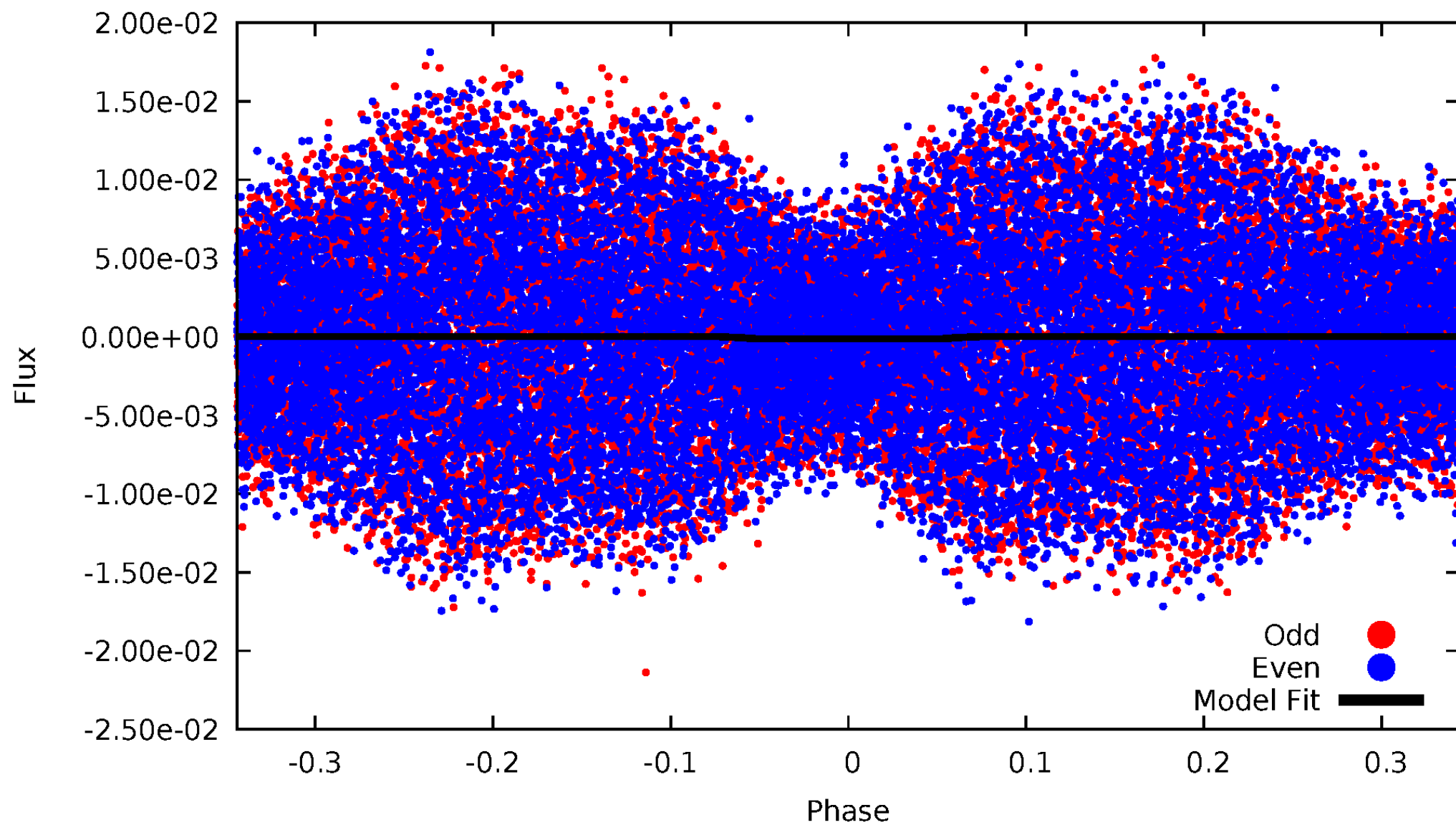
# DV Odd/Even

TCE 005108514-01



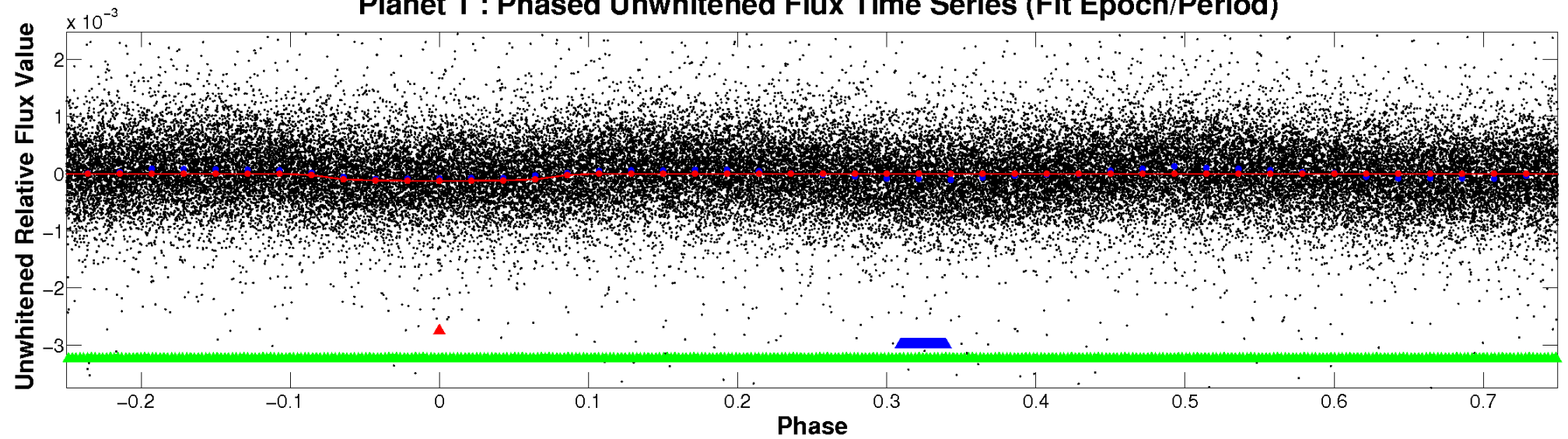
# ALT Odd/Even

TCE 005108514-01

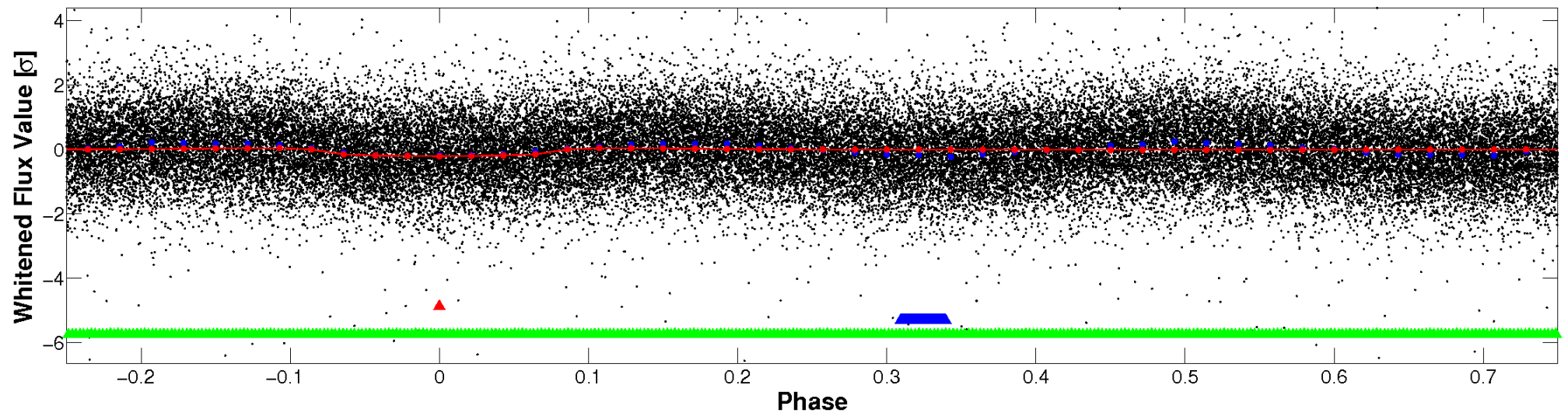


# Non-Whitened Vs. Whitened Light Curve

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



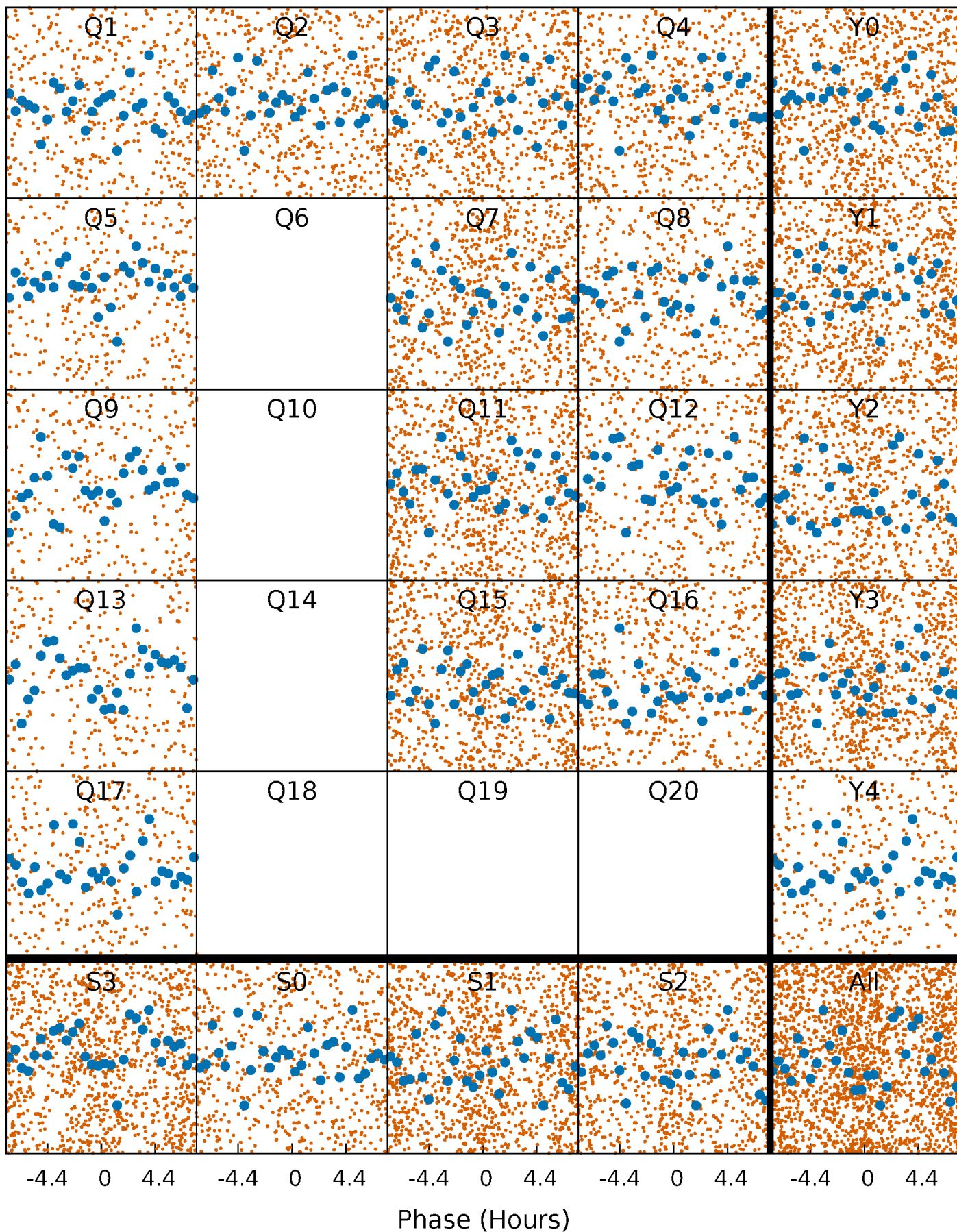
**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**





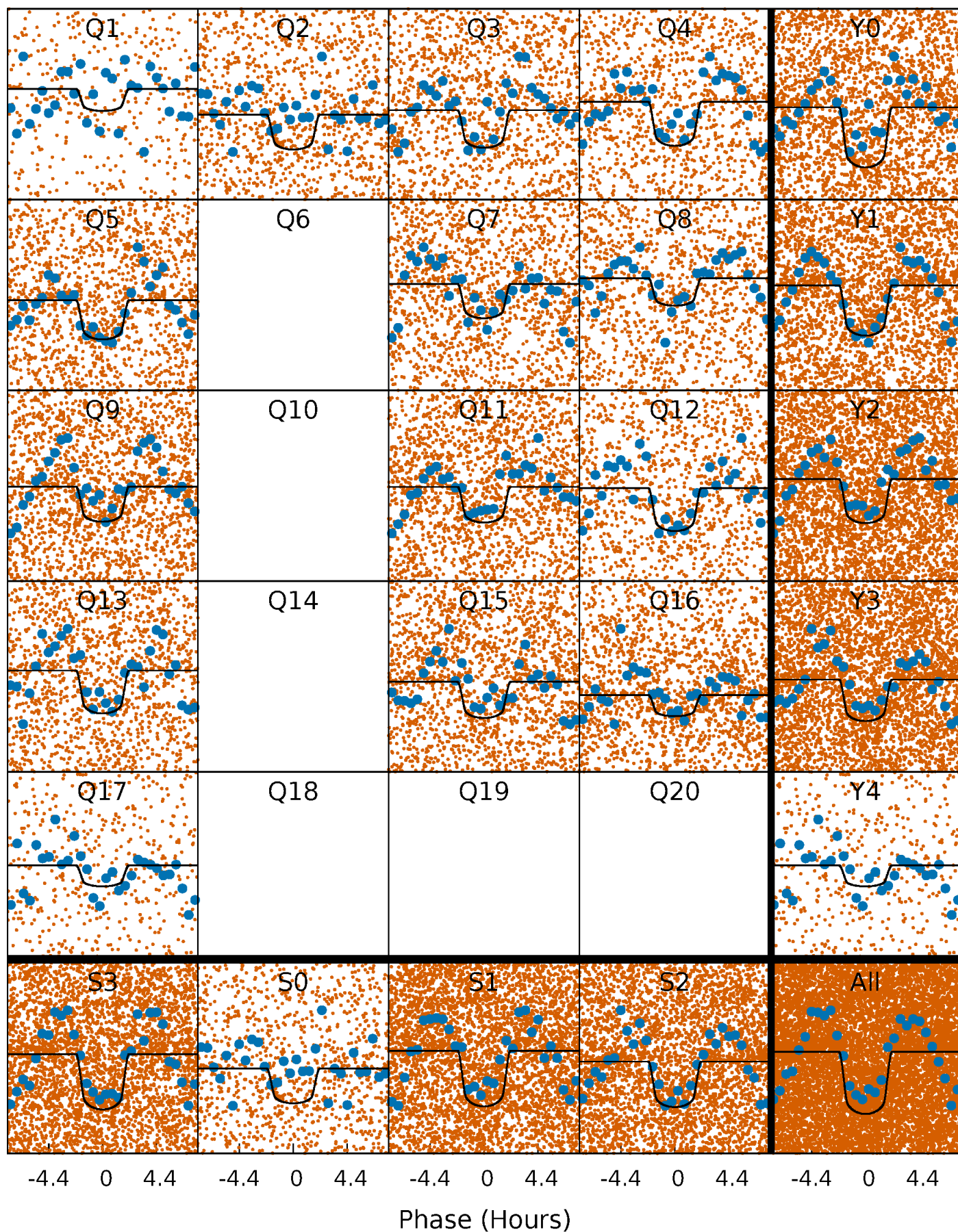
# PDC Quarter-Phased Transit Curves

TCE 005108514-01 P= 0.953411 Days  $T_0=132.196618$  (BKJD)



# DV Quarter-Phased Transit Curves

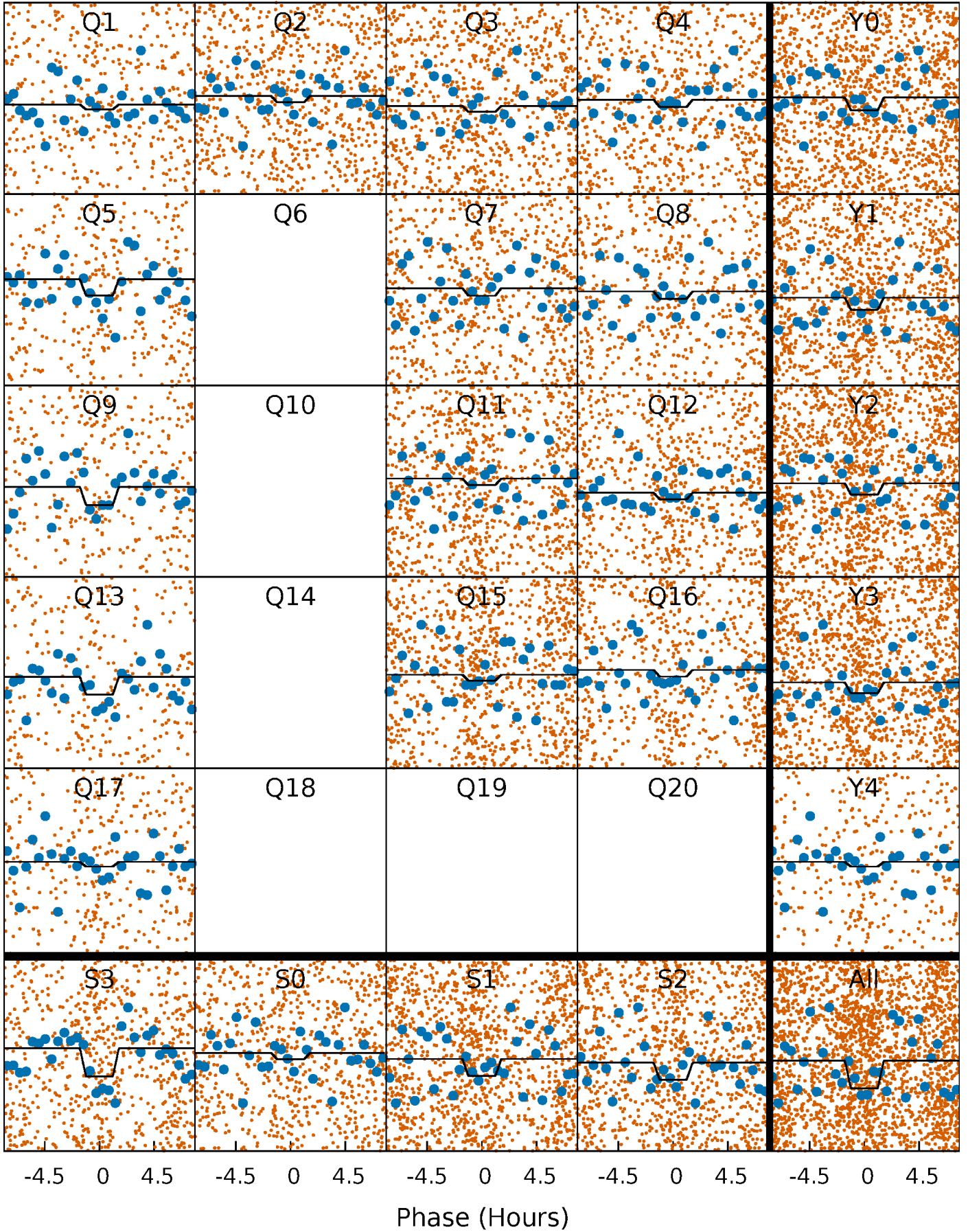
TCE 005108514-01 P= 0.953411 Days  $T_0=132.196618$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

TCE 005108514-01 P= 0.953419 Days  $T_0=132.197529$  (BKJD)

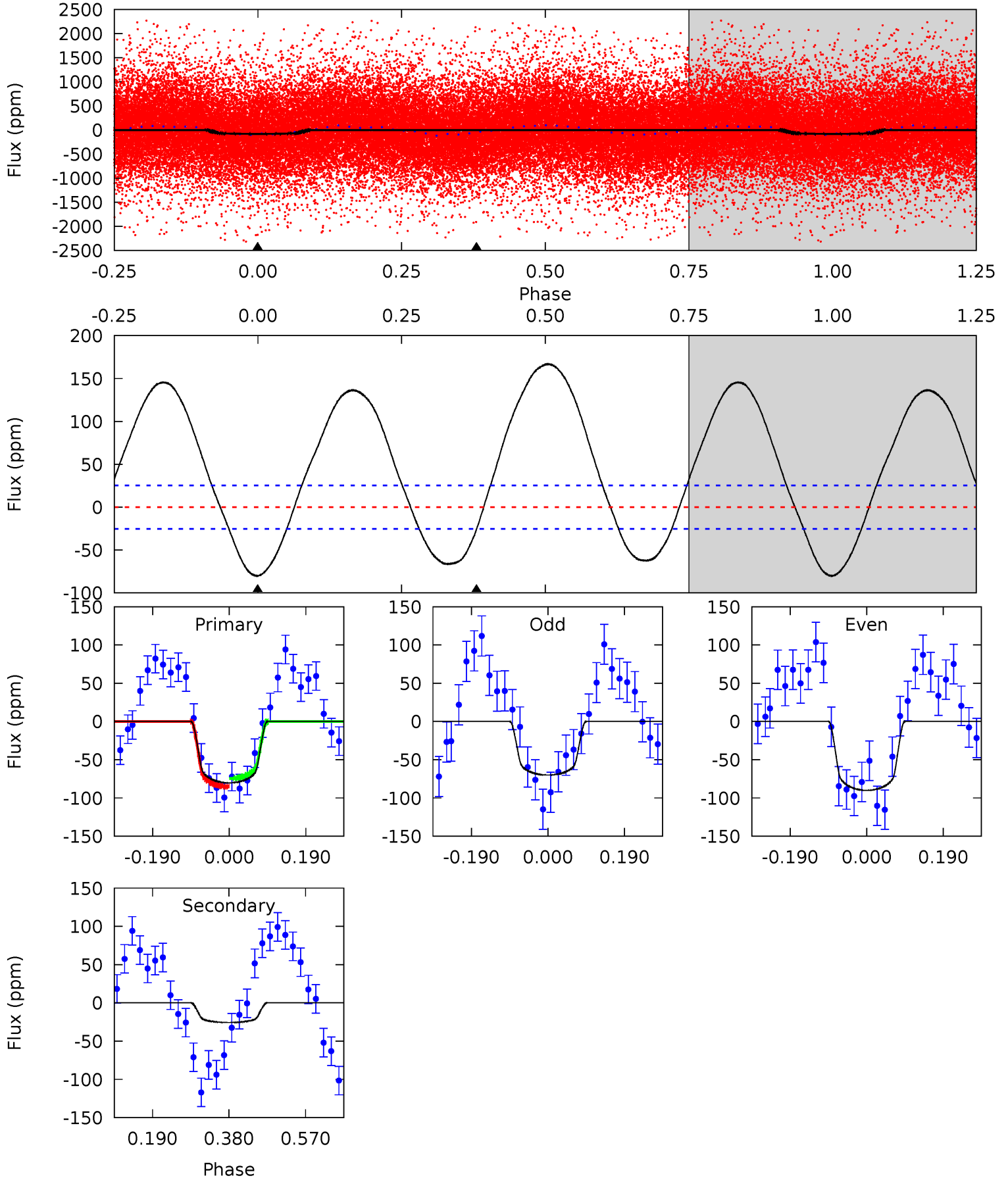




# DV Model-Shift Uniqueness Test

005108514-01, P = 0.953411 Days, E = 131.243207 Days

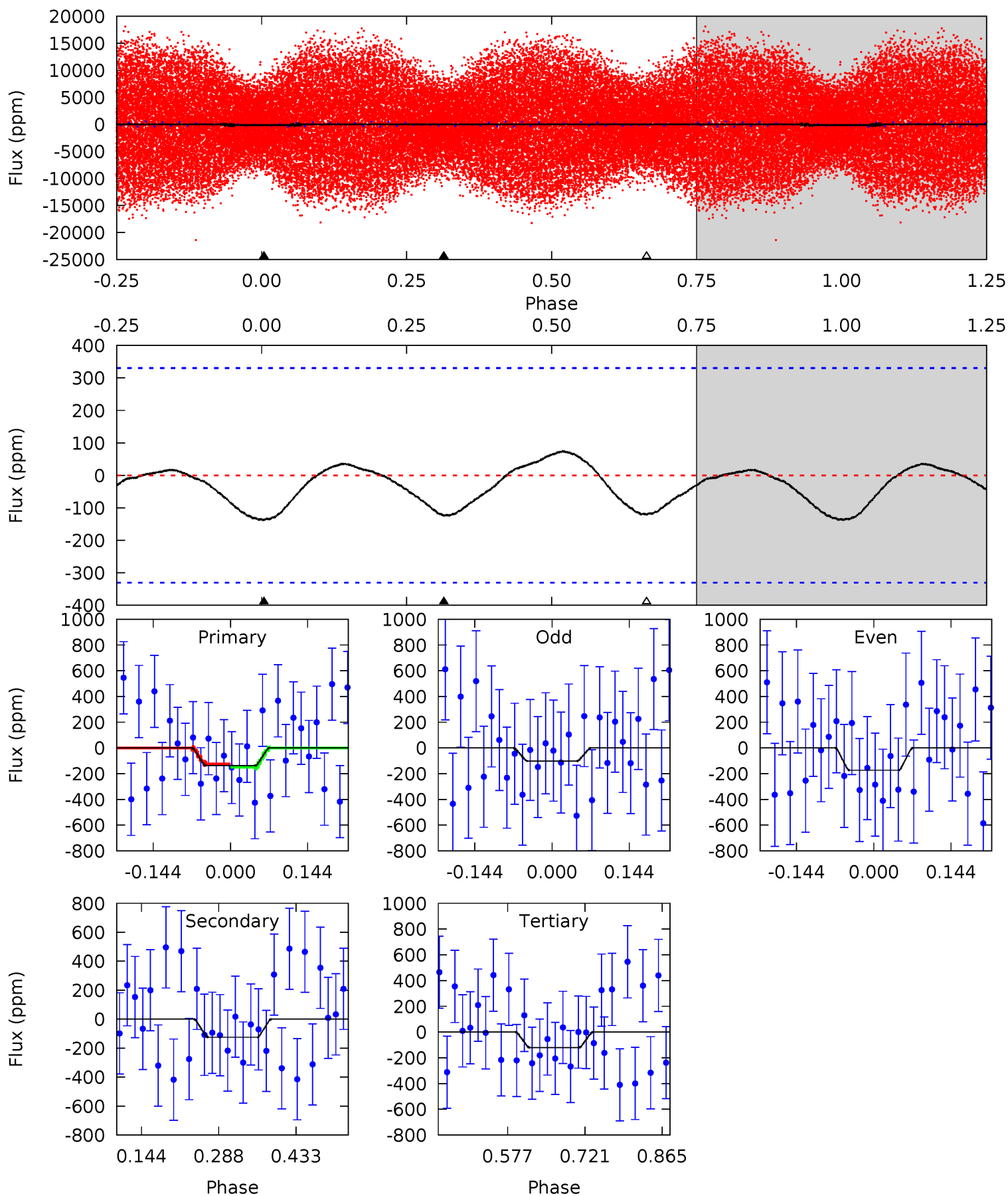
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
14.0	4.48	0	0	4.43	1.31	10.3	14.0	14.0	4.48	4.48	1.76	1.06	0.68	0.97



# Alt Model-Shift Uniqueness Test

005108514-01, P = 0.953419 Days, E = 131.244110 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
1.87	1.69	1.64	0	4.49	1.46	0.81	0.23	1.87	0.05	1.69	0.49	0.79	0.35	0.18



### Stellar Parameters For KIC 005108514

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$7109^{+200}_{-314}$	$4.097^{+0.175}_{-0.175}$	$-0.120^{+0.250}_{-0.350}$	$1.796^{+0.539}_{-0.441}$	$1.470^{+0.209}_{-0.255}$	$0.358^{+0.355}_{-0.180}$
	+3%/-4%	+4%/-4%	+208%/-292%	+30%/-25%	+14%/-17%	+99%/-50%
Source	PHO1	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 005108514-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-26 \pm 6$	$2.33^{+0.64}_{-0.50}$	$4010^{+292}_{-305}$	$4399^{+610}_{-503}$	$1.144^{+0.825}_{-0.448}$
Alt.	$-124 \pm 74$	$2.36^{+0.62}_{-0.59}$	$3975^{+308}_{-291}$	$6605^{+1499}_{-1496}$	$5.558^{+5.704}_{-3.608}$

$T_{max}$  = 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  $A_{obs} \gg 1.0$



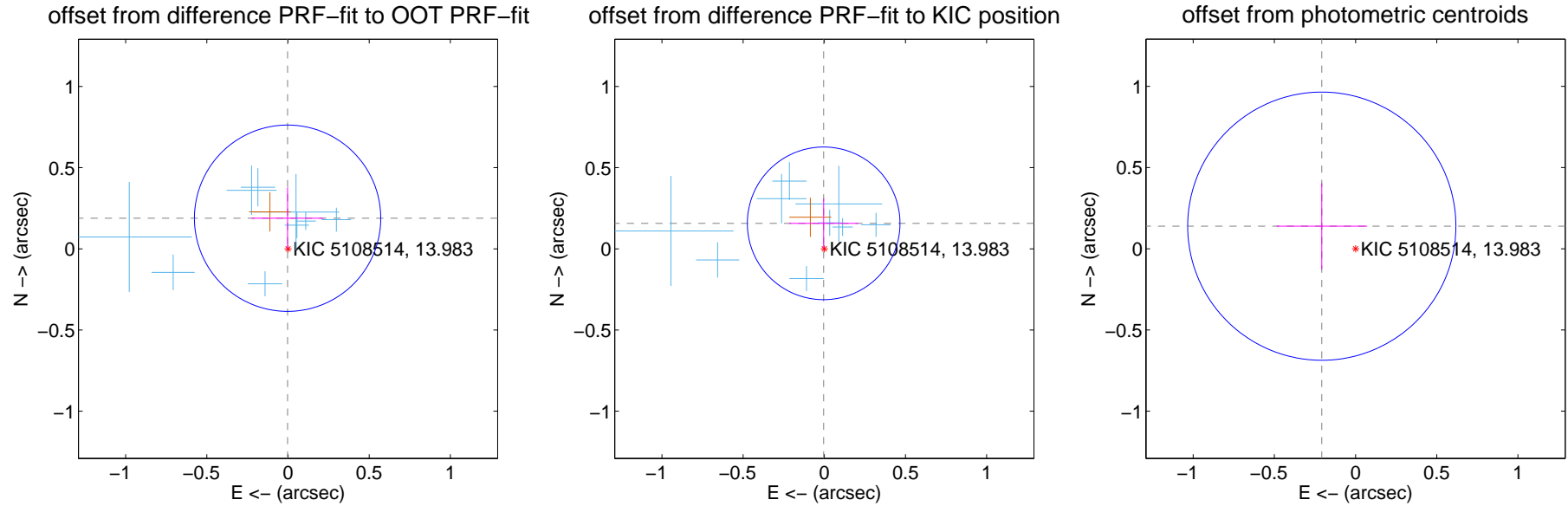
## DV Centroid Data

Supplemental centroid analysis for 005108514-01. Kepler magnitude: 13.98. Transit SNR 16.34

There are 9 quarters with good PRF difference image offsets

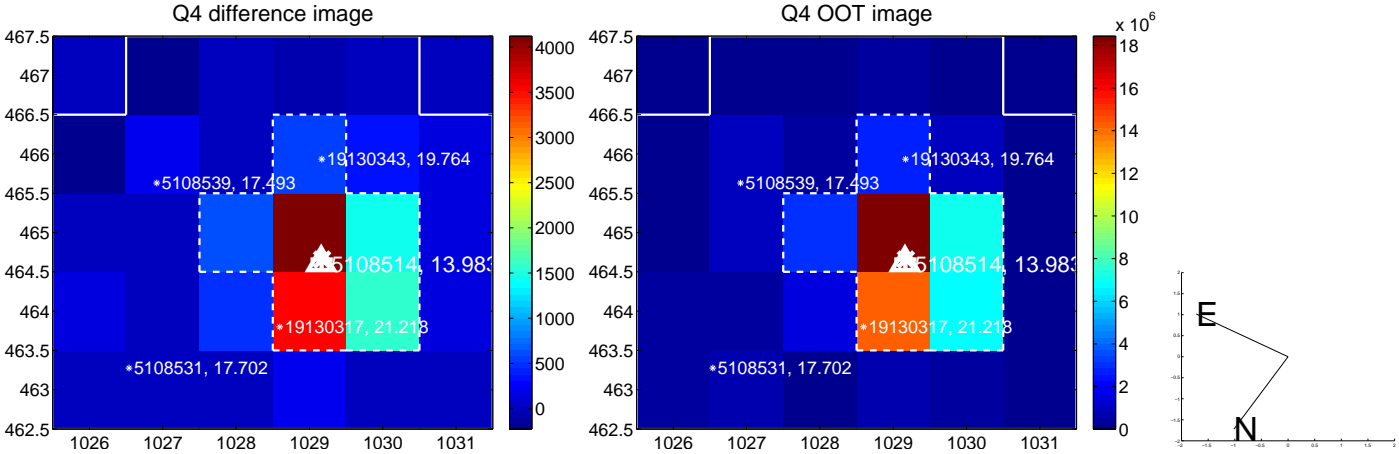
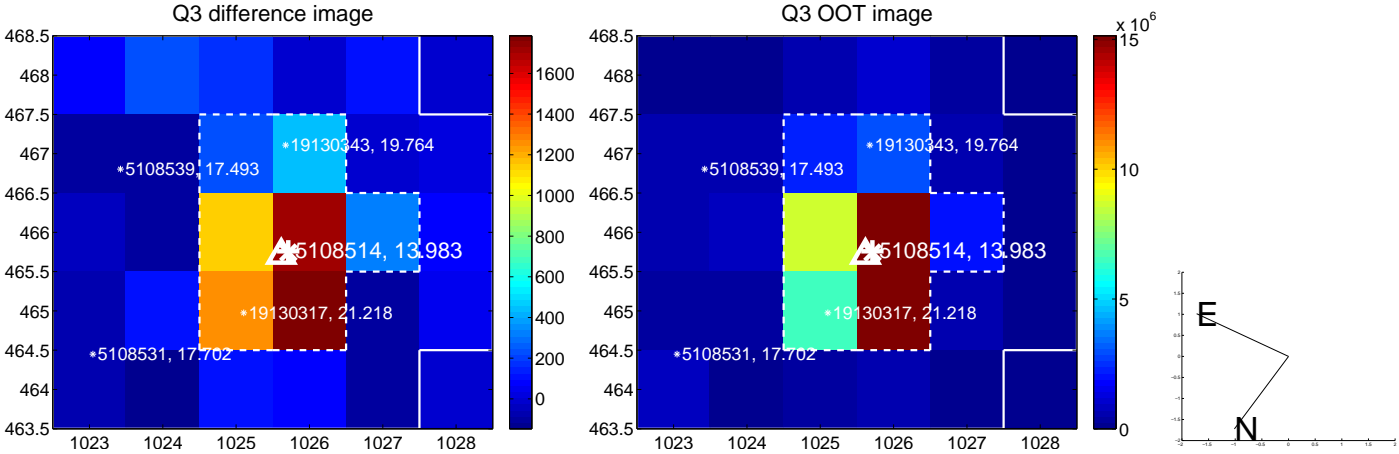
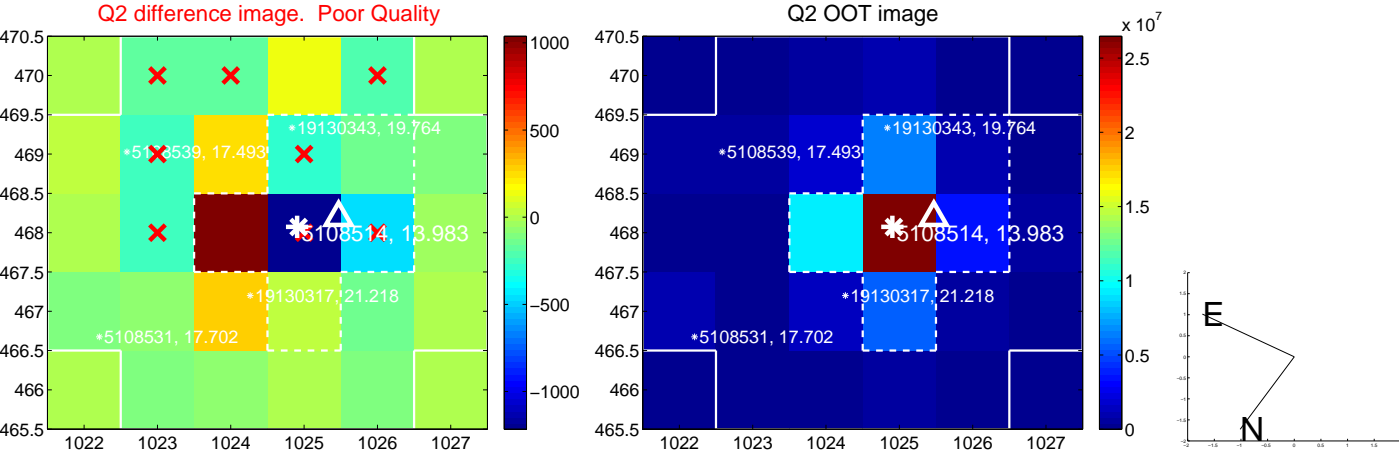
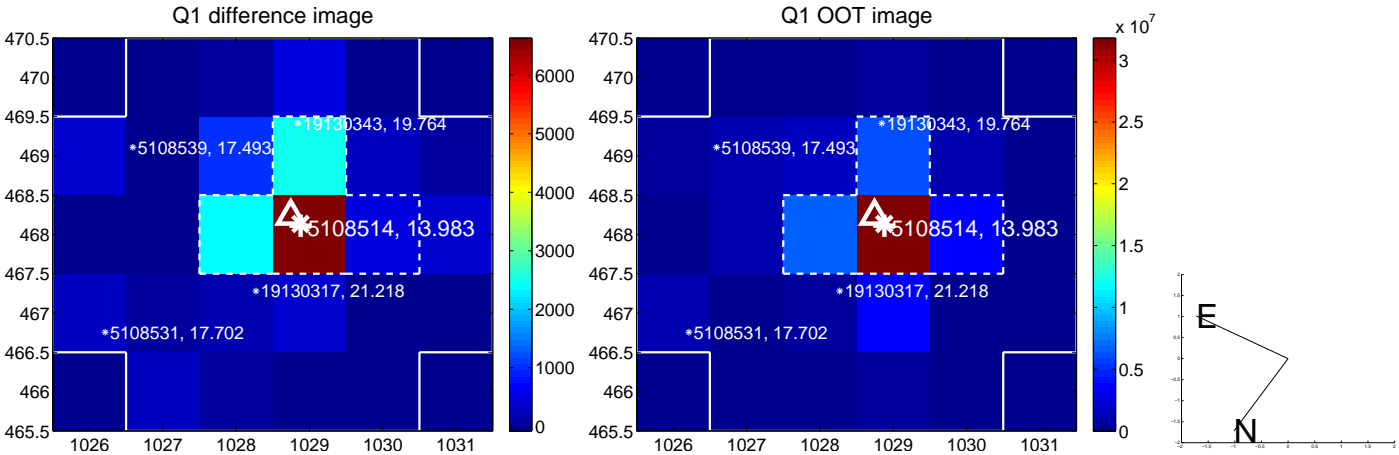
The direct PRF centroid is offset from the target star catalog position by about 0.05 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.189 \pm 0.191$	0.99	$0.003 \pm 0.222$	$0.189 \pm 0.189$
PRF-fit source offset from KIC position	$0.157 \pm 0.157$	1.00	$0.004 \pm 0.213$	$0.157 \pm 0.153$
photometric centroid source offset	$0.25 \pm 0.28$	0.91	$0.21 \pm 0.28$	$0.14 \pm 0.27$

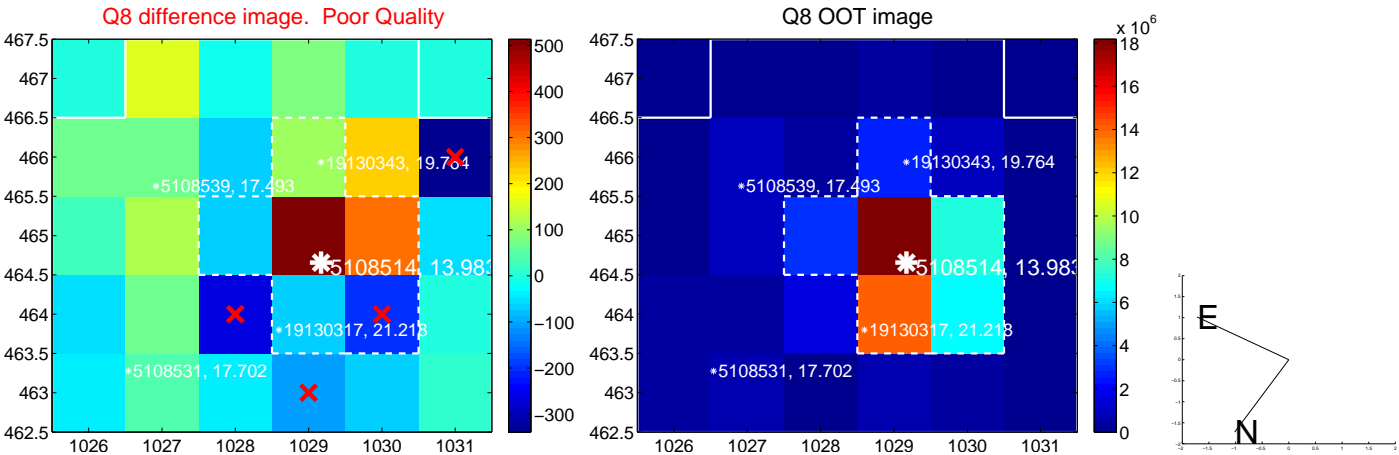
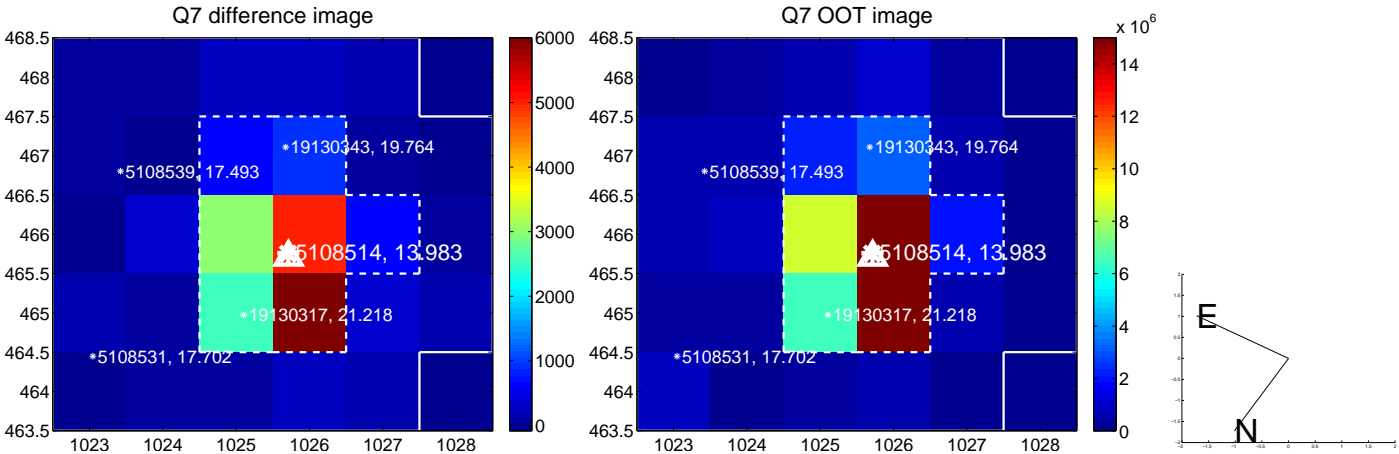
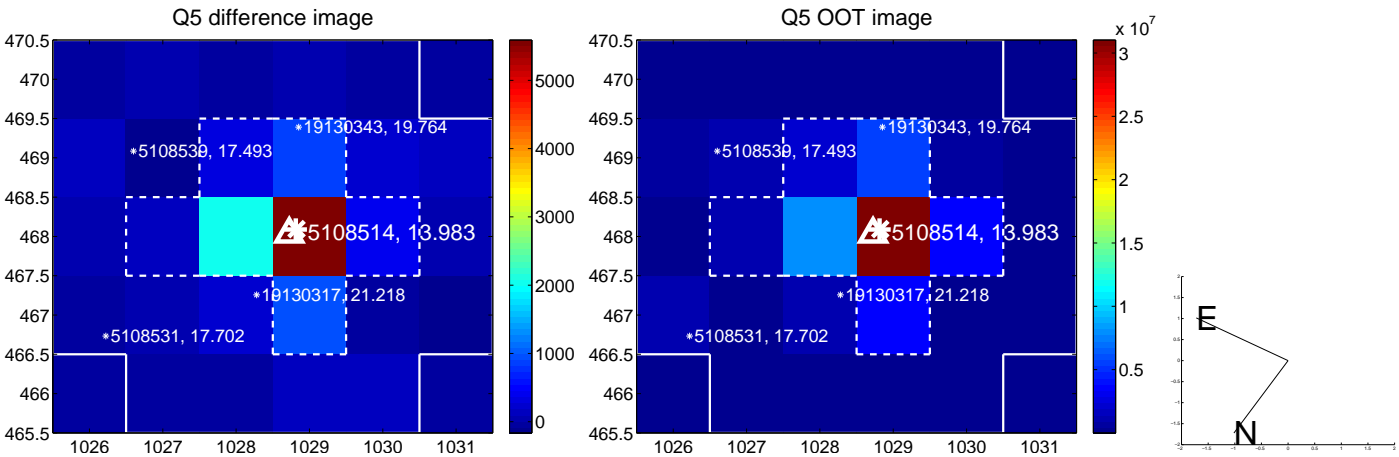


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: 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.

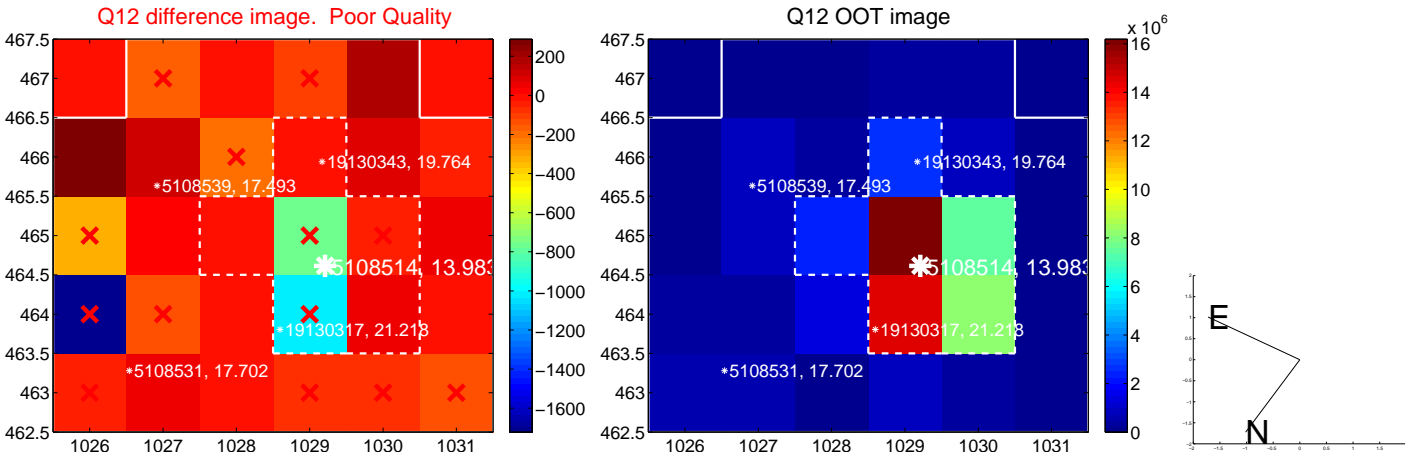
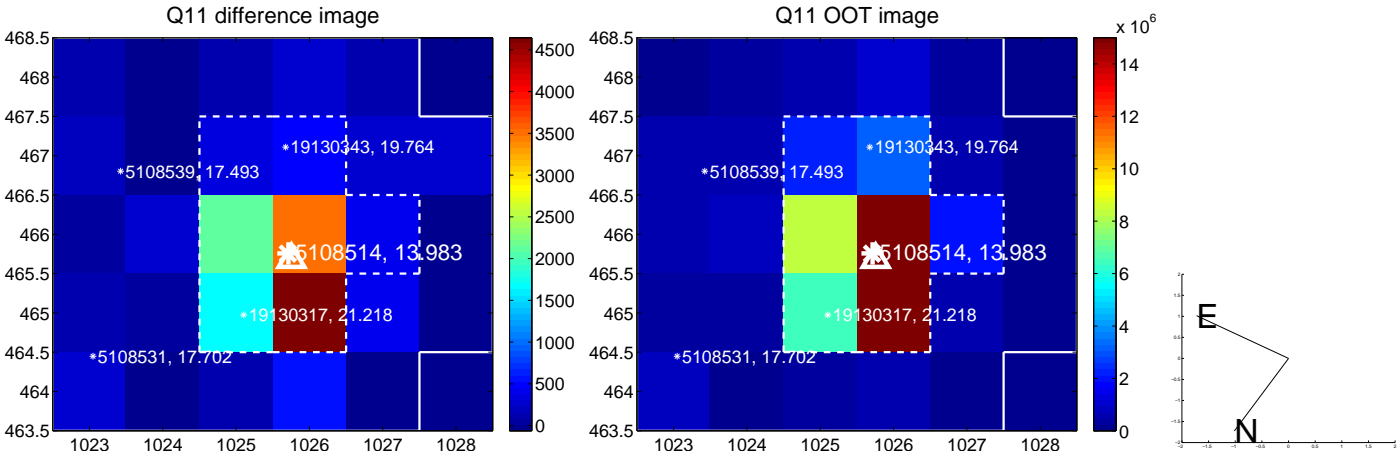
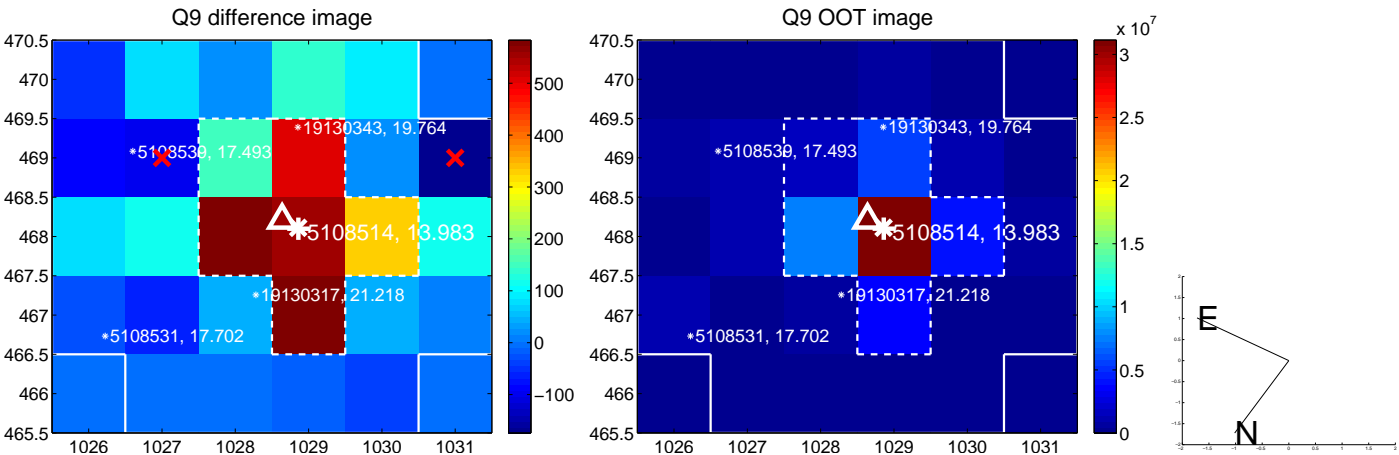


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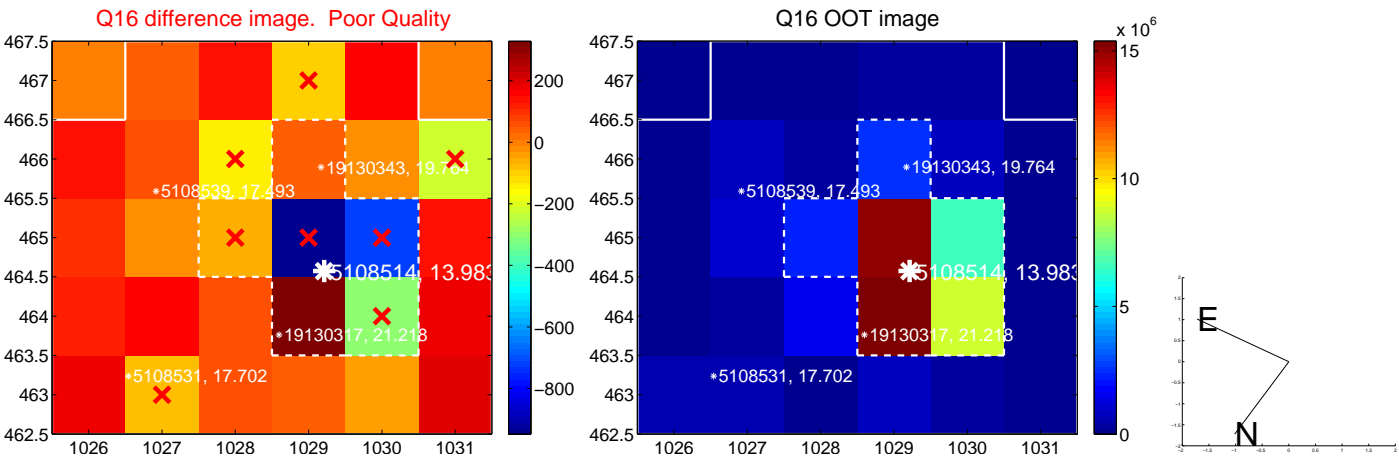
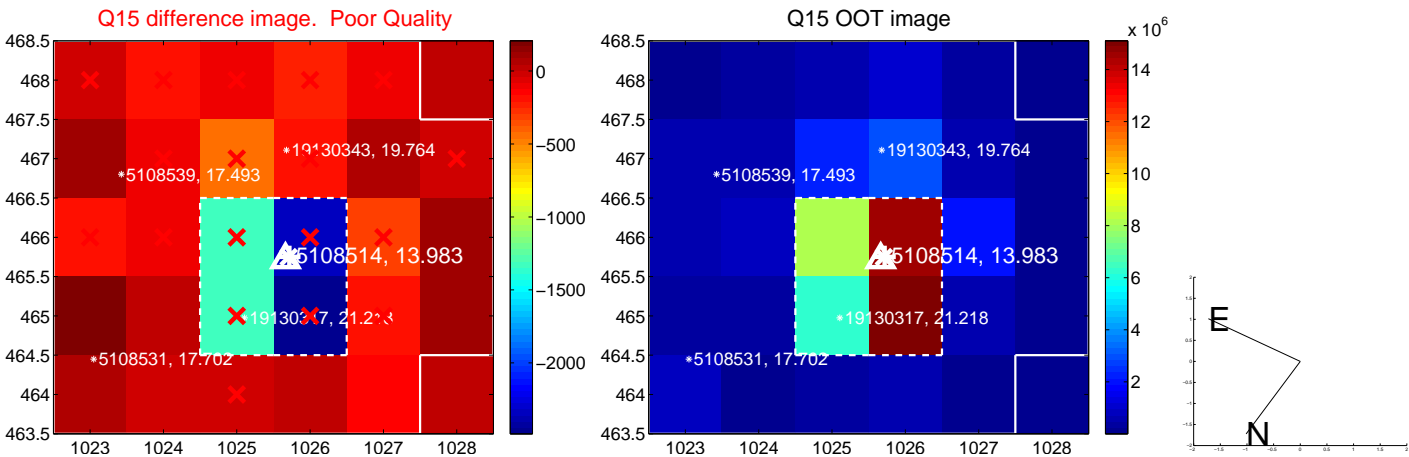
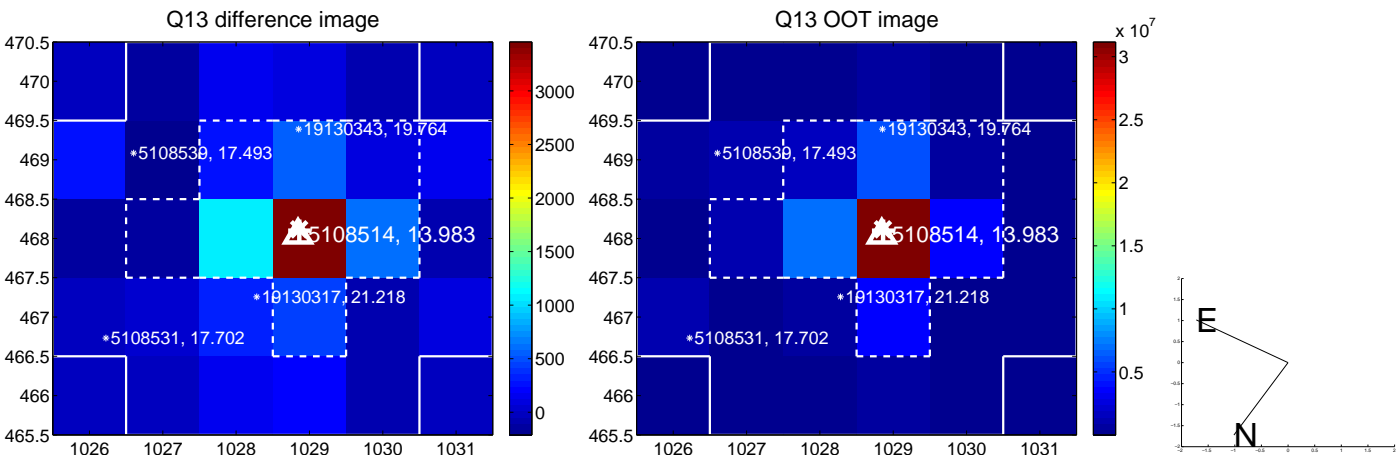




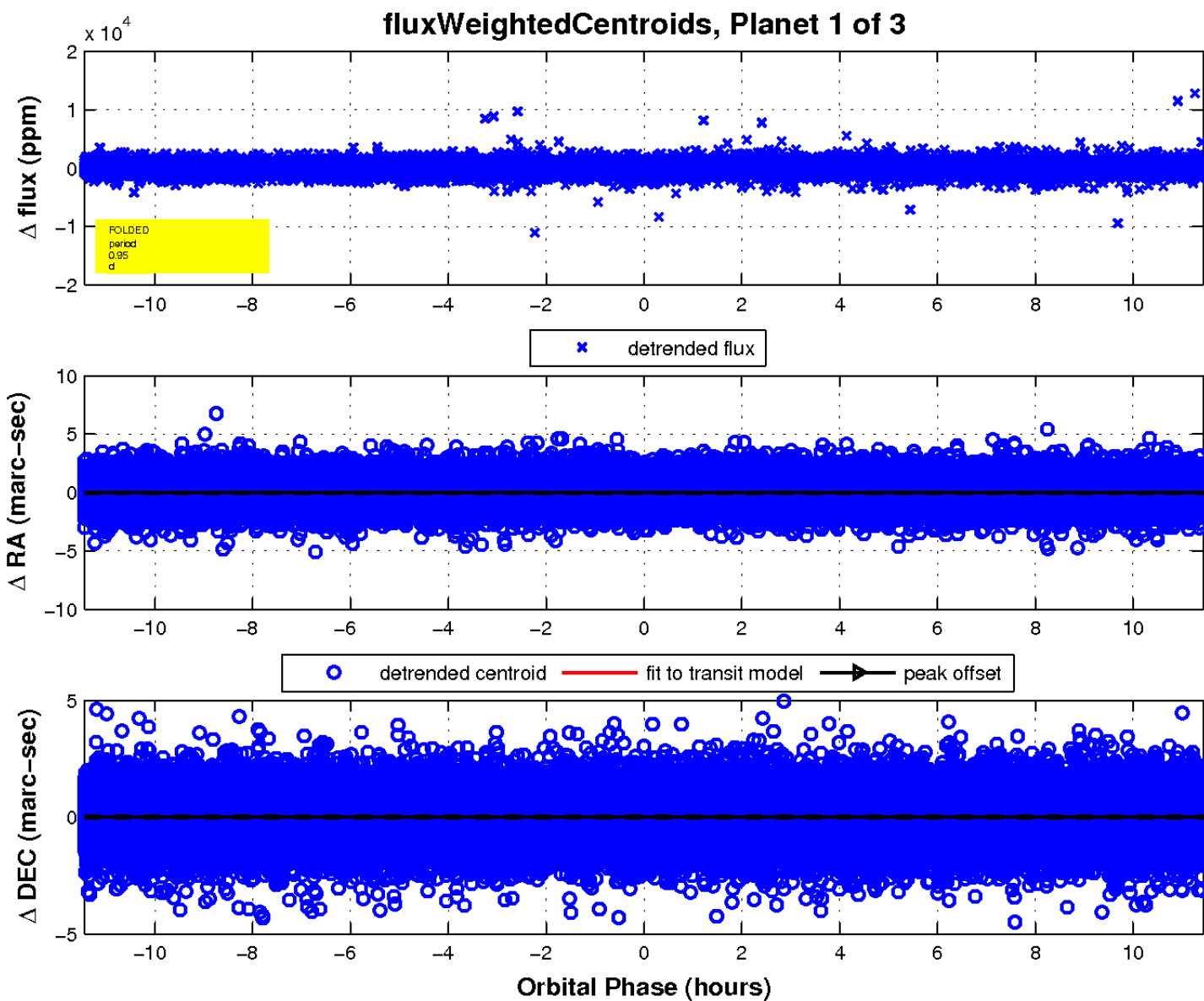
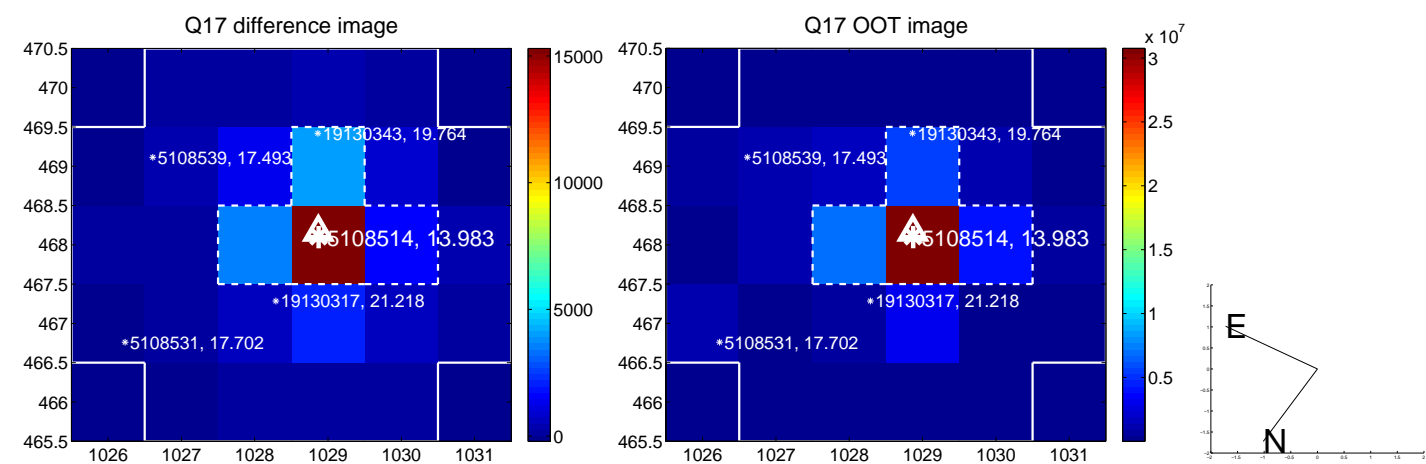
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

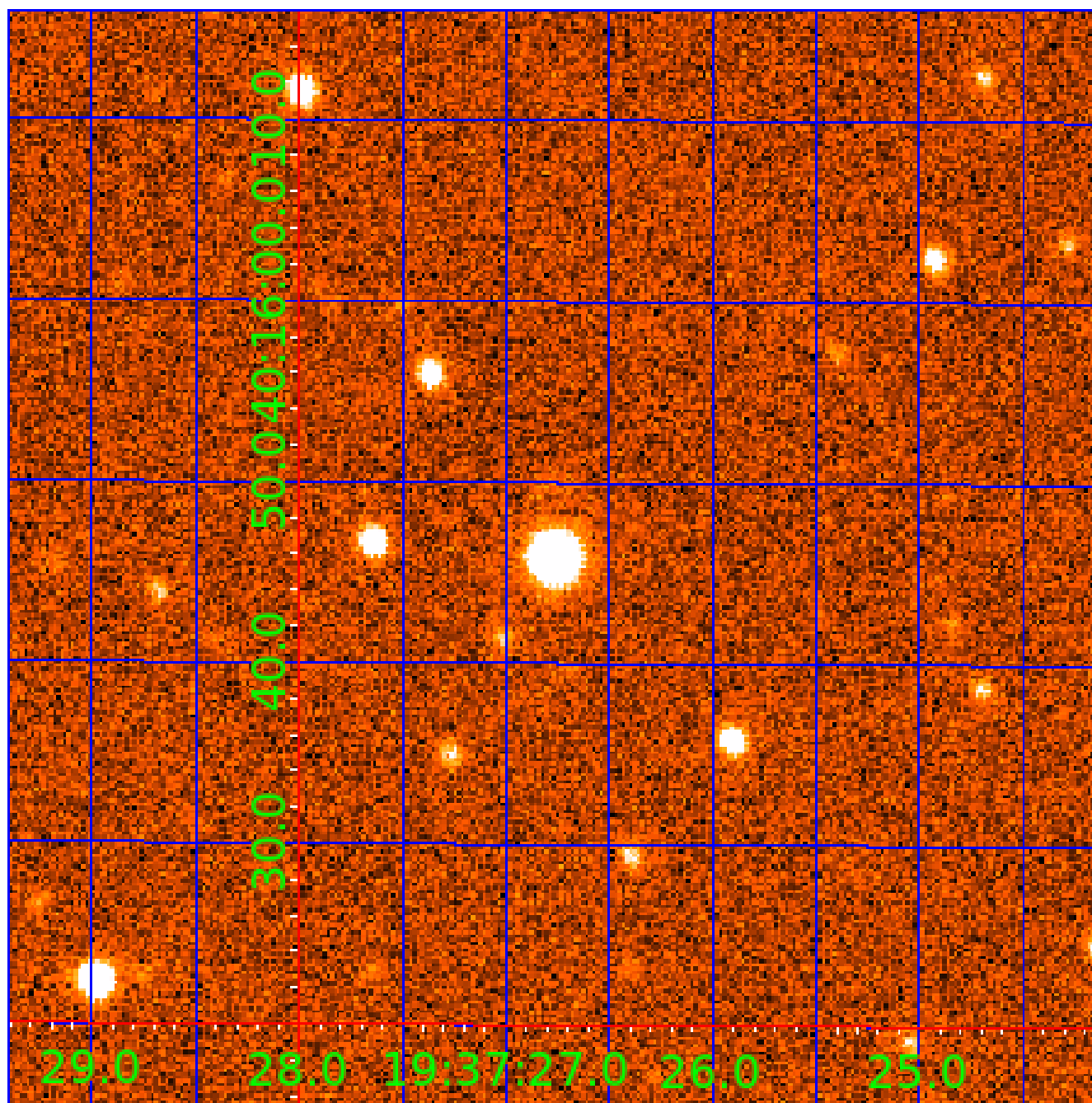


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination





# KIC 005108514

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005108514-01	OBS	No	0.953411	132.196618	126.3	3.893	14.9	16.3	1.80	7109	2.34	15871.79
005108514-02	OBS	No	0.953392	131.566934	89.4	3.177	10.4	11.8	1.80	7109	1.96	15872.21
005108514-03	OBS	No	3.118703	132.880941	218.3	9.130	9.3	9.7	1.80	7109	5.15	3268.64

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005108514-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT
005108514-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD
005108514-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_ZUMA—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT

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

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

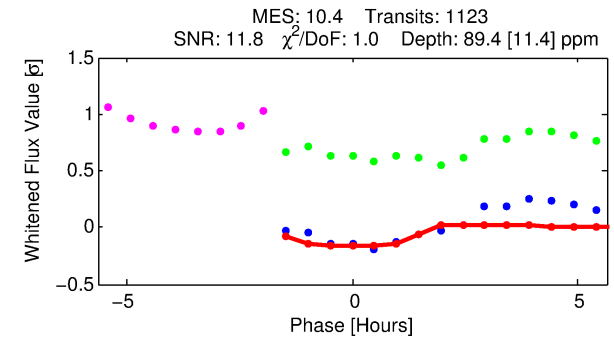
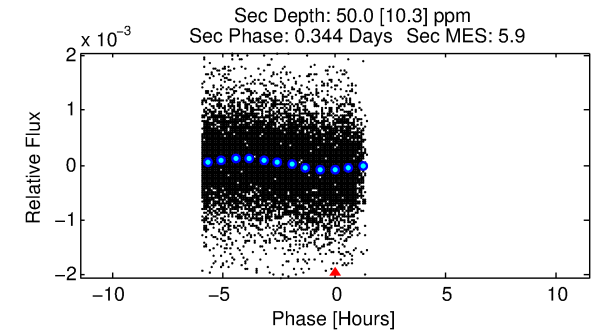
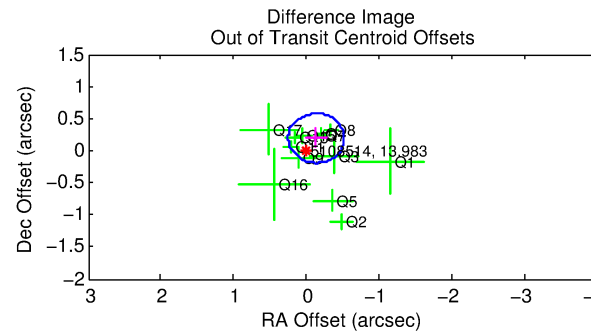
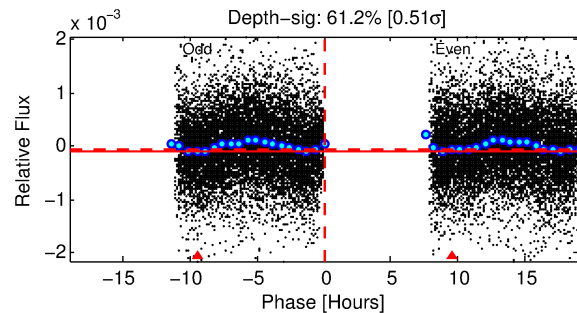
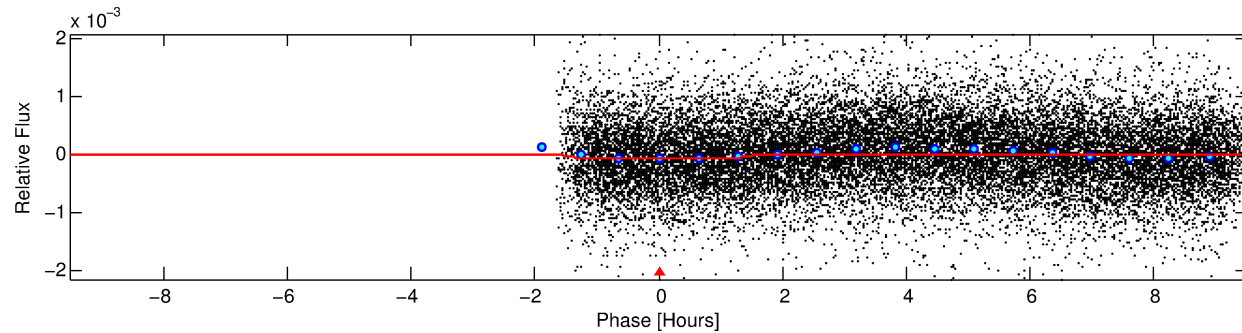
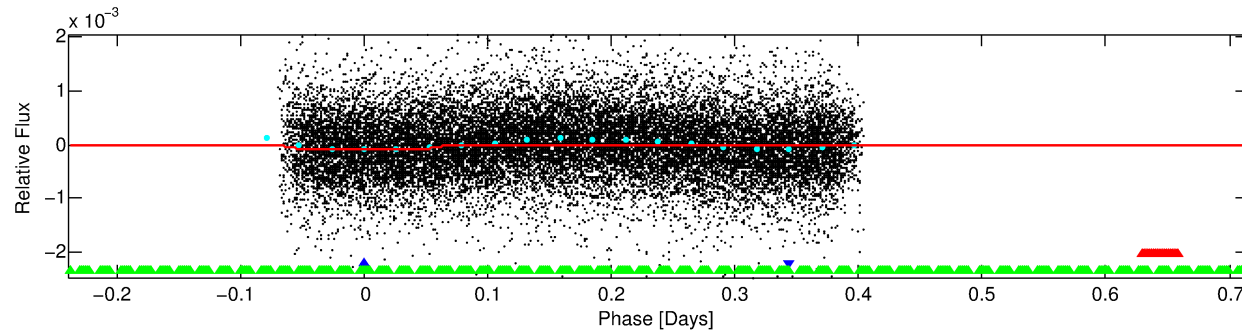
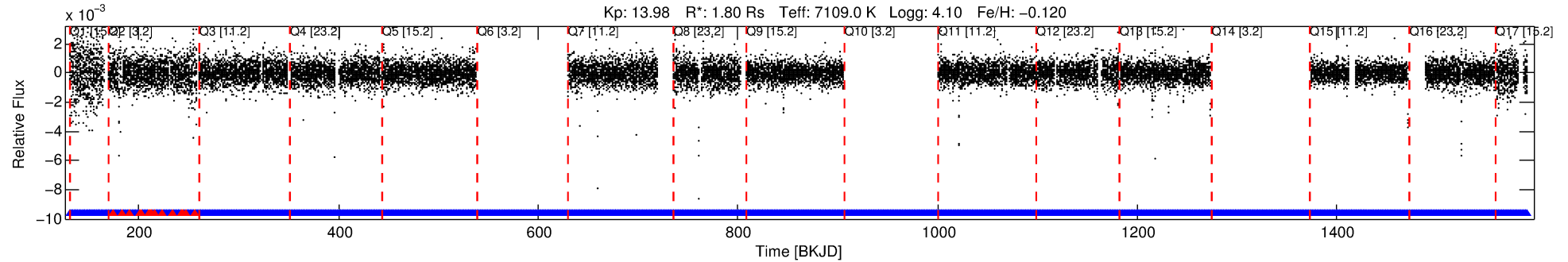
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 005108514-02

No Significant Match Found

# DV One-Page Summary

KIC: 5108514 Candidate: 2 of 3 Period: 0.953 d



## DV Fit Results:

Period = 0.95339 [0.00001] d  
Epoch = 131.5669 [0.0049] BKJD  
Rp/R\* = 0.0100 [0.0060]  
a/R\* = 1.43 [2.75]  
b = 0.89 [0.86]  
Seff = 15872.21 [6010.71]  
Teq = 2862 [271] K  
Rp = 1.96 [1.31] Re  
a = 0.0216 [0.0052] AU  
Ag = 3.33 [4.19] [0.56 $\sigma$ ]  
Teffp = 5976 [1833] K [1.68 $\sigma$ ]

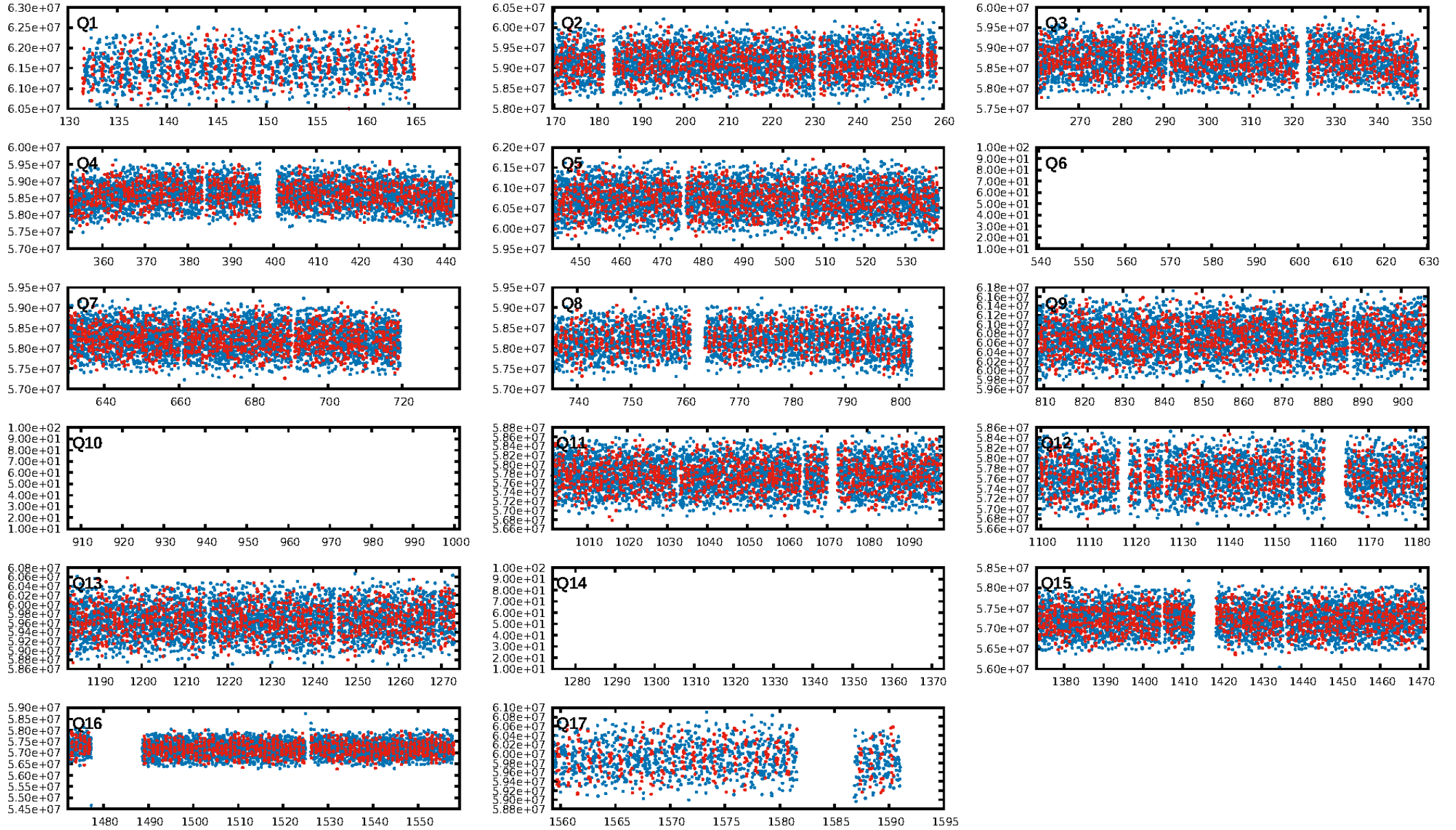
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 0.0% [0.00 $\sigma$ ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 1.04e-19  
RollingBand-fgt: 0.98 [1042/1060]  
GhostDiagnostic-chr: 1.502  
Centroid-sig: 1.3%  
Centroid-so: 0.668 arcsec [1.60 $\sigma$ ]  
OotOffset-rm: 0.235 arcsec [1.83 $\sigma$ ]  
KicOffset-rm: 0.222 arcsec [1.78 $\sigma$ ]  
OotOffset-st: 1/4/3/5 [13]  
KicOffset-st: 1/4/3/5 [13]  
DiffImageQuality-fgm: 1.00 [13/13]  
DiffImageOverlap-fno: 0.00 [0/14]

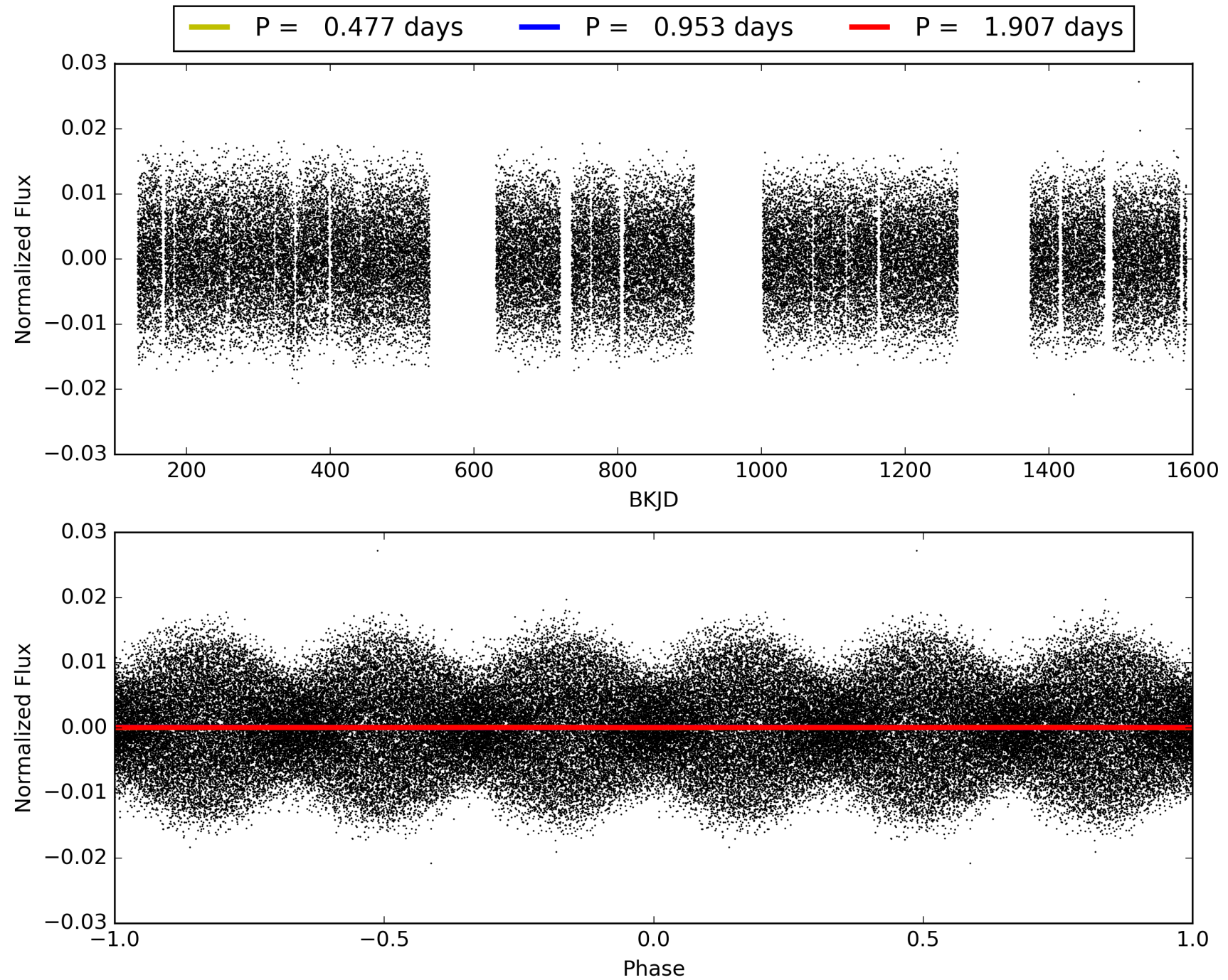
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 02:04:06 Z

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

# TCE 005108514-02, PDC Light Curves



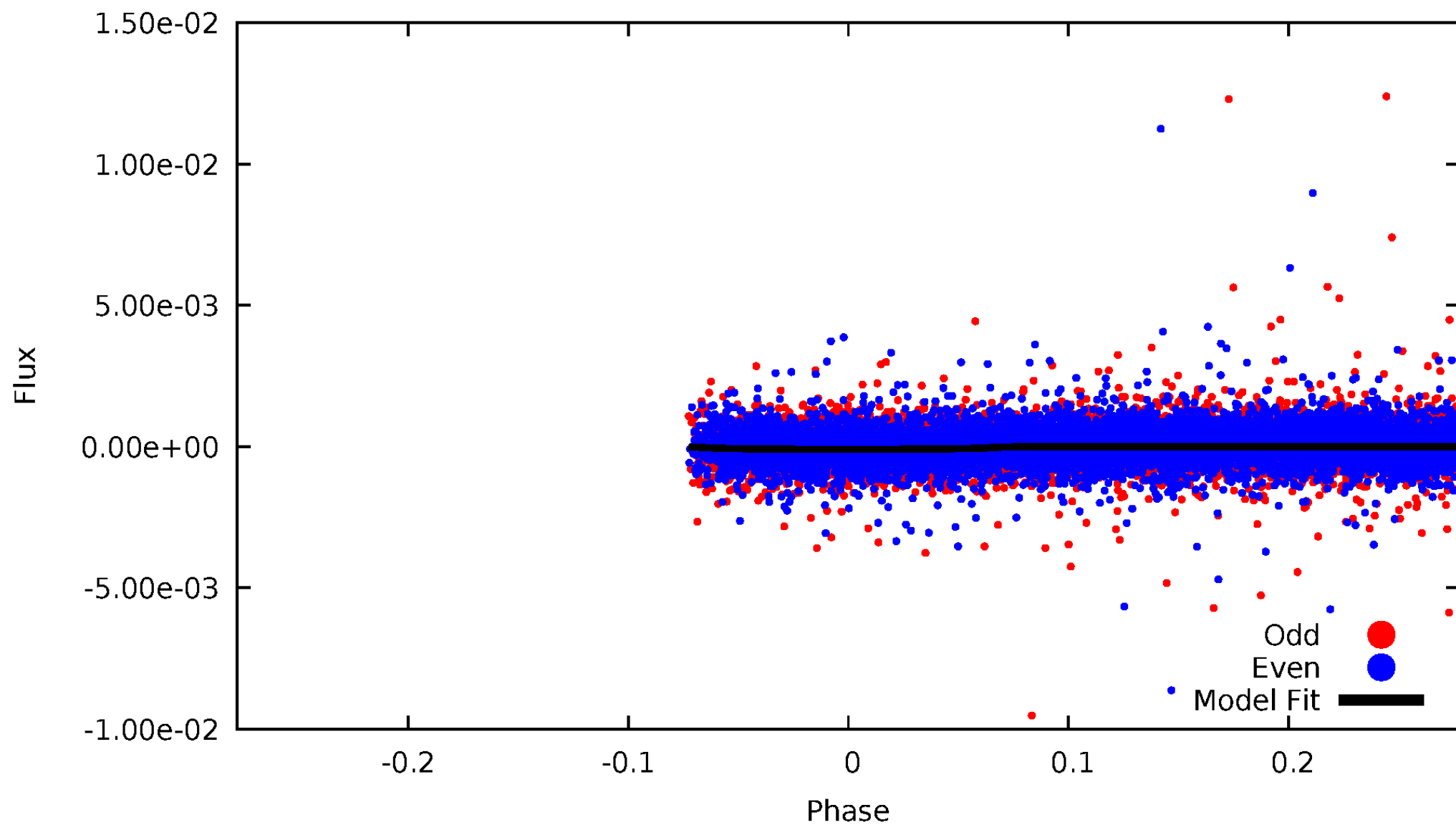
TCE 005108514-02





# DV Odd/Even

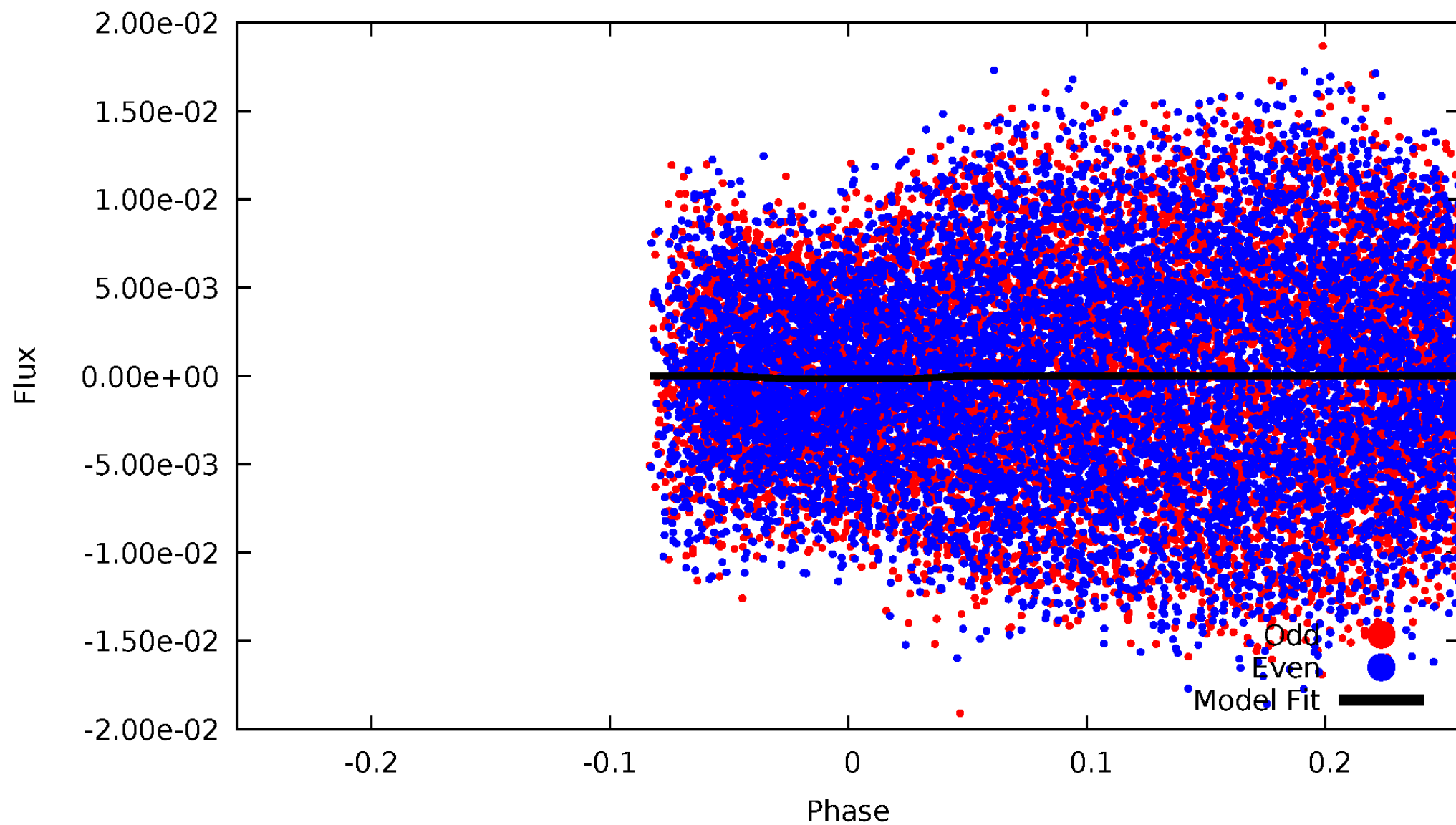
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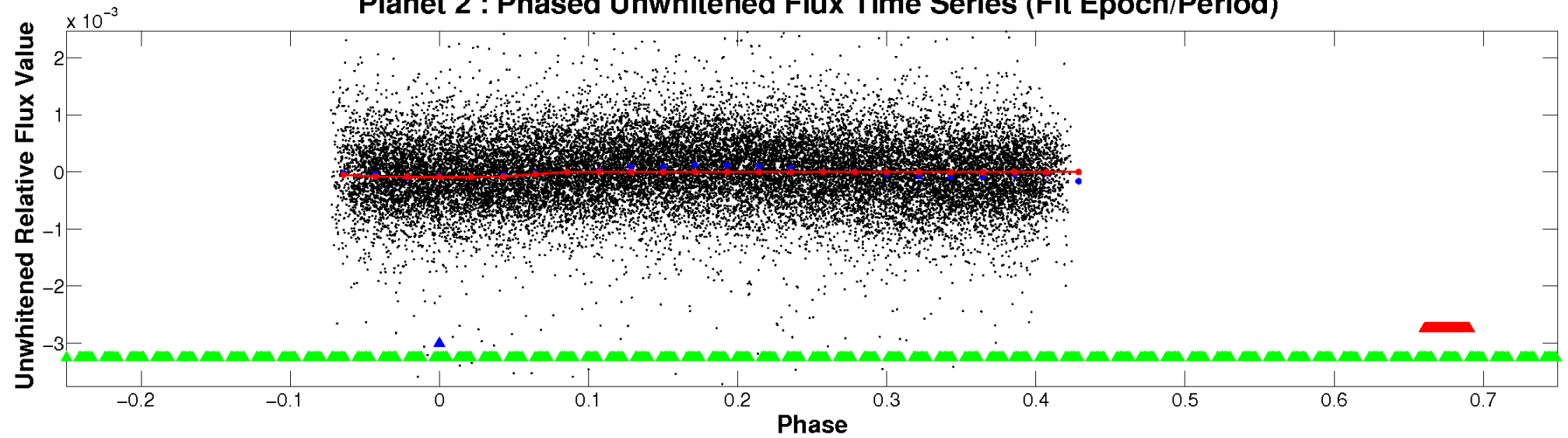
# ALT Odd/Even

TCE 005108514-02

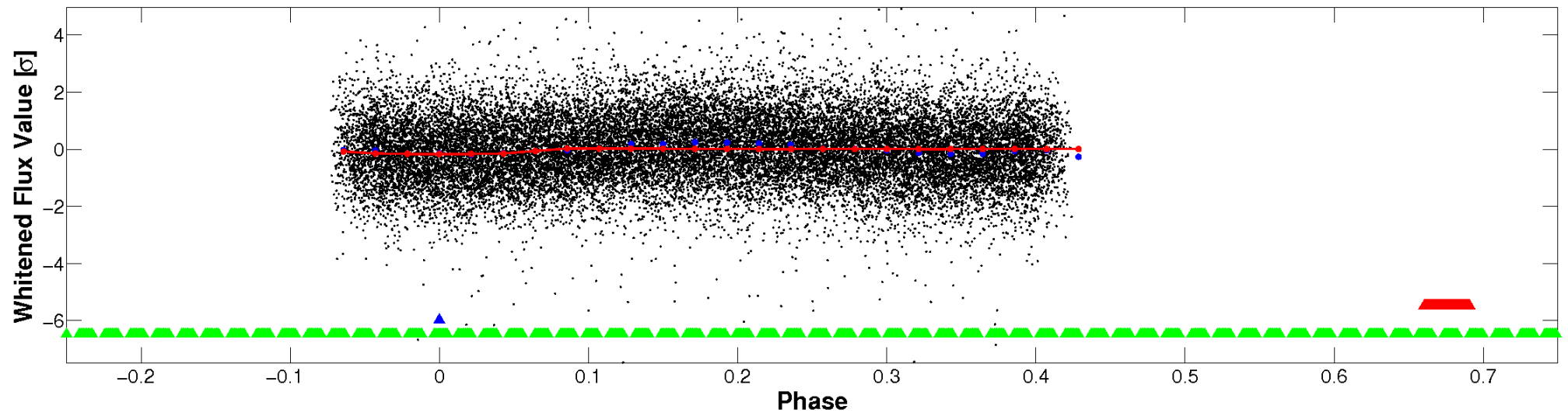


# Non-Whitened Vs. Whitened Light Curve

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

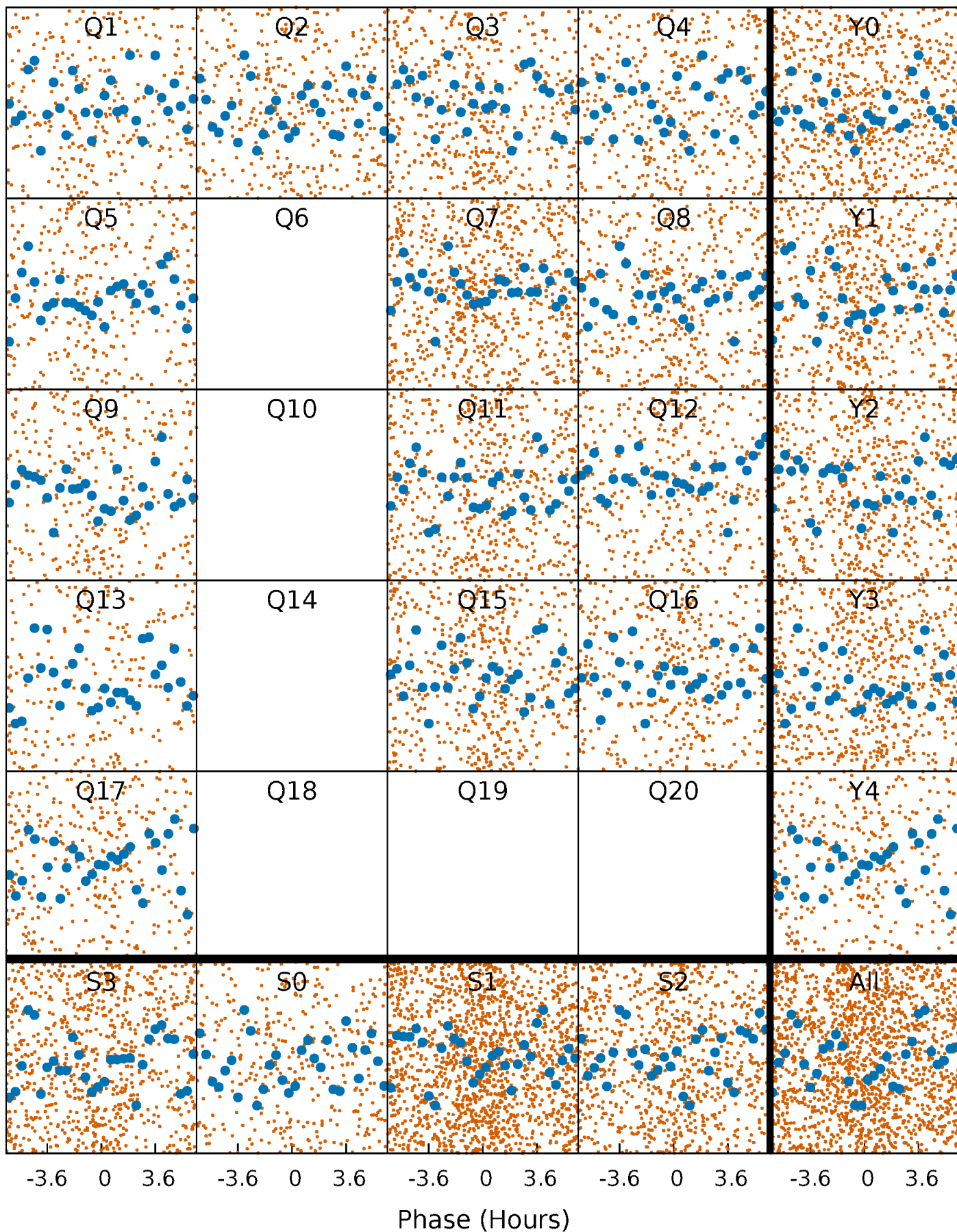


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



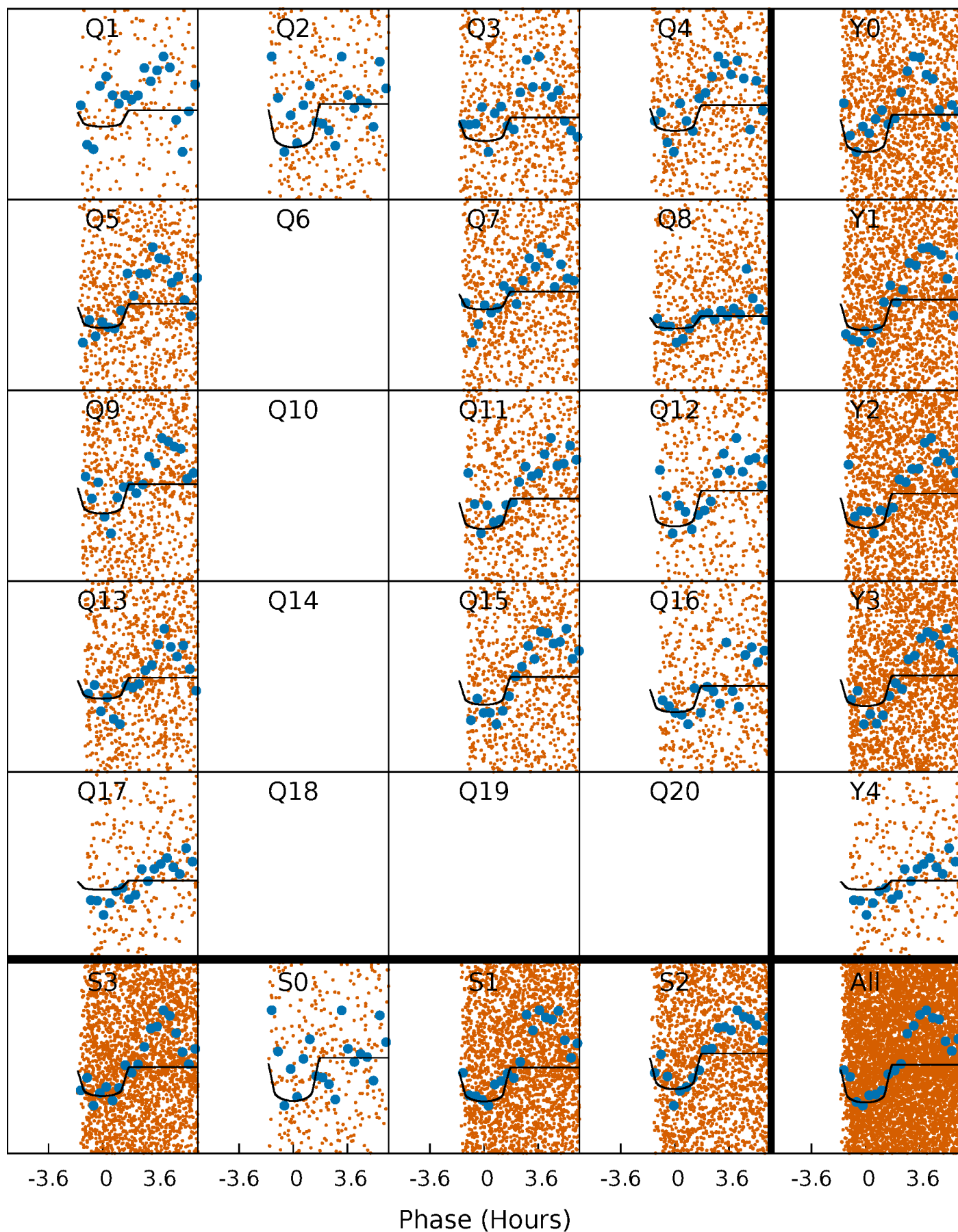
# PDC Quarter-Phased Transit Curves

TCE 005108514-02 P= 0.953392 Days  $T_0=131.566934$  (BKJD)



# DV Quarter-Phased Transit Curves

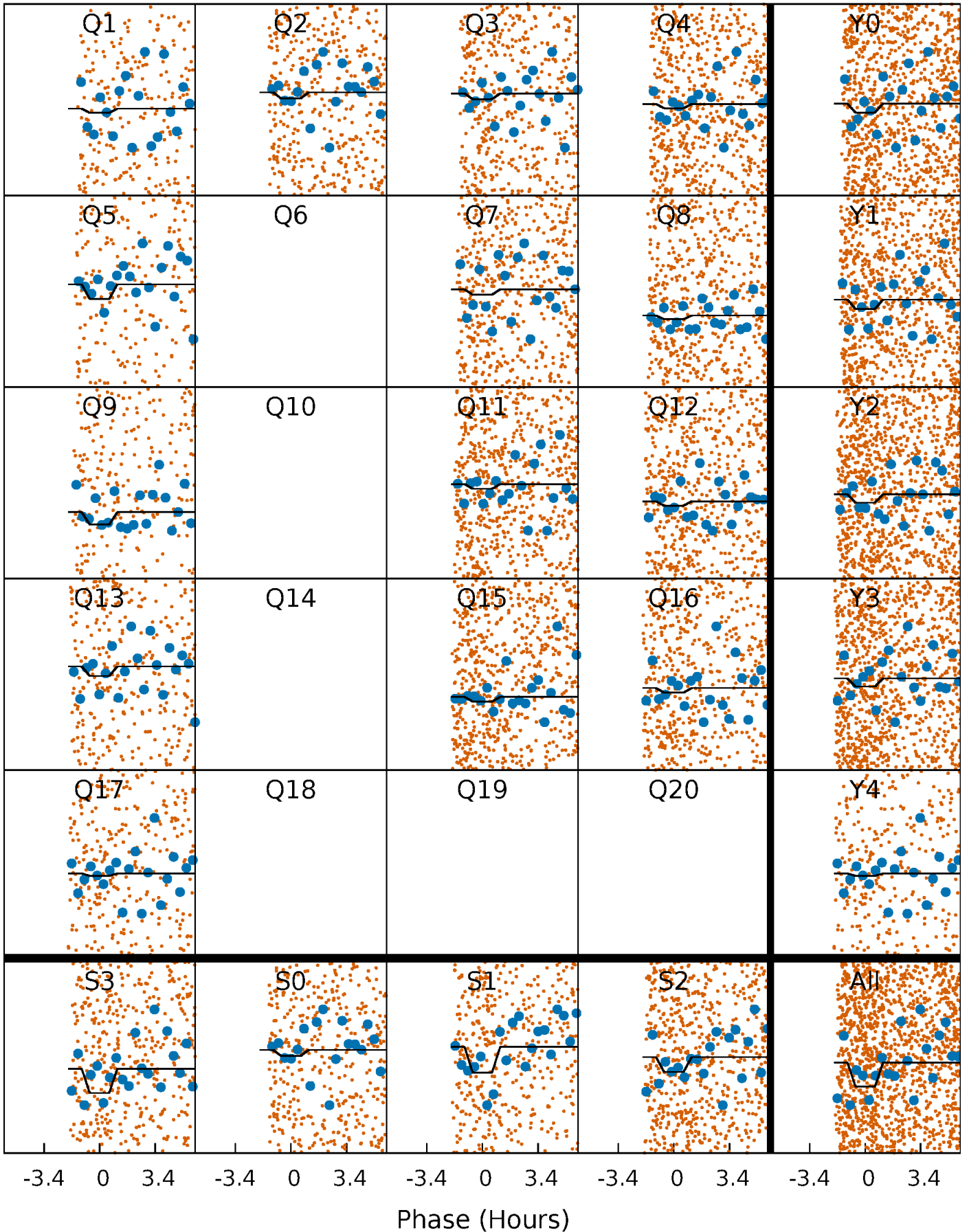
TCE 005108514-02   P= 0.953392 Days    $T_0=131.566934$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

TCE 005108514-02   P= 0.953427 Days    $T_0=131.551846$  (BKJD)

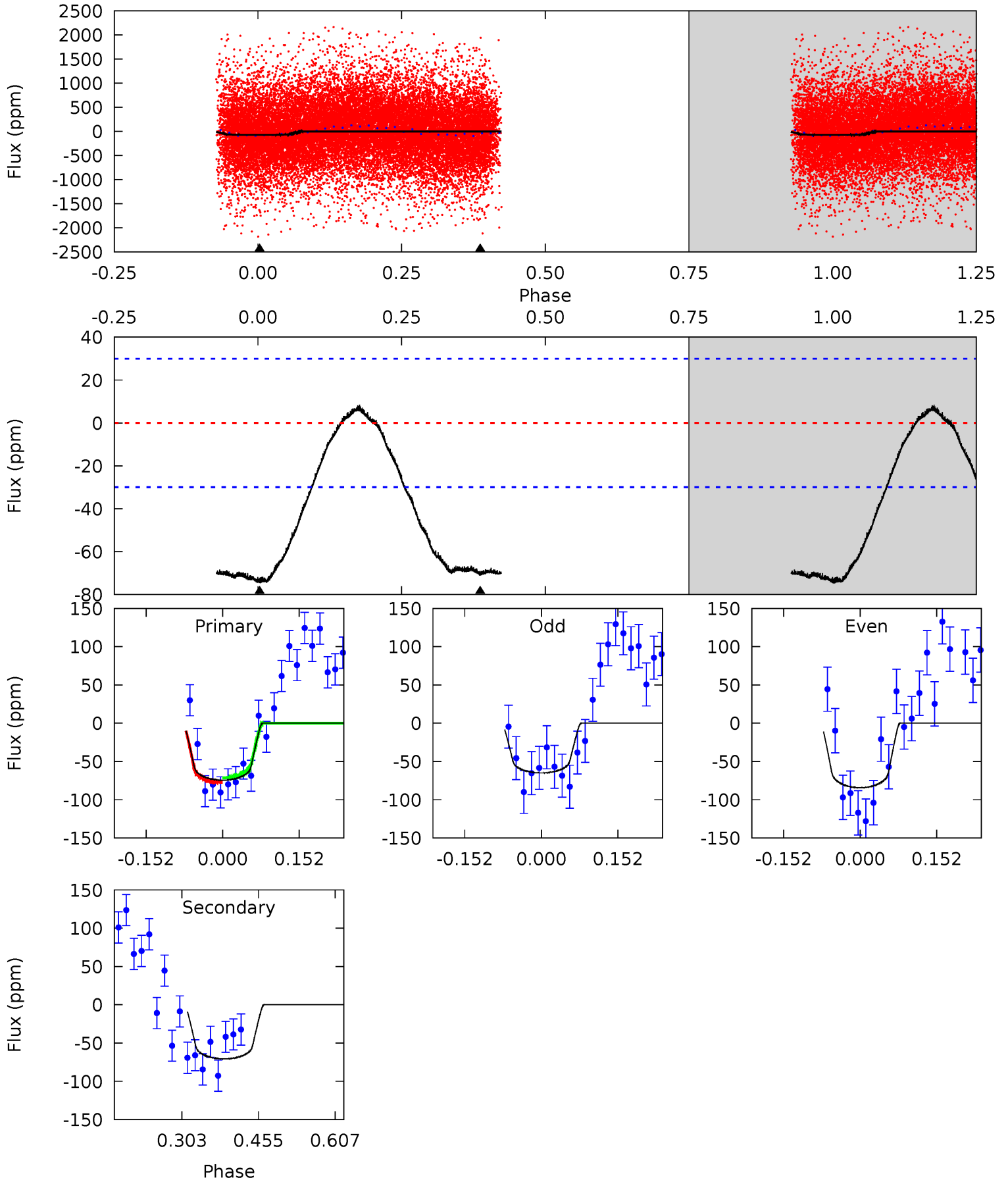




# DV Model-Shift Uniqueness Test

005108514-02, P = 0.953392 Days, E = 130.613542 Days

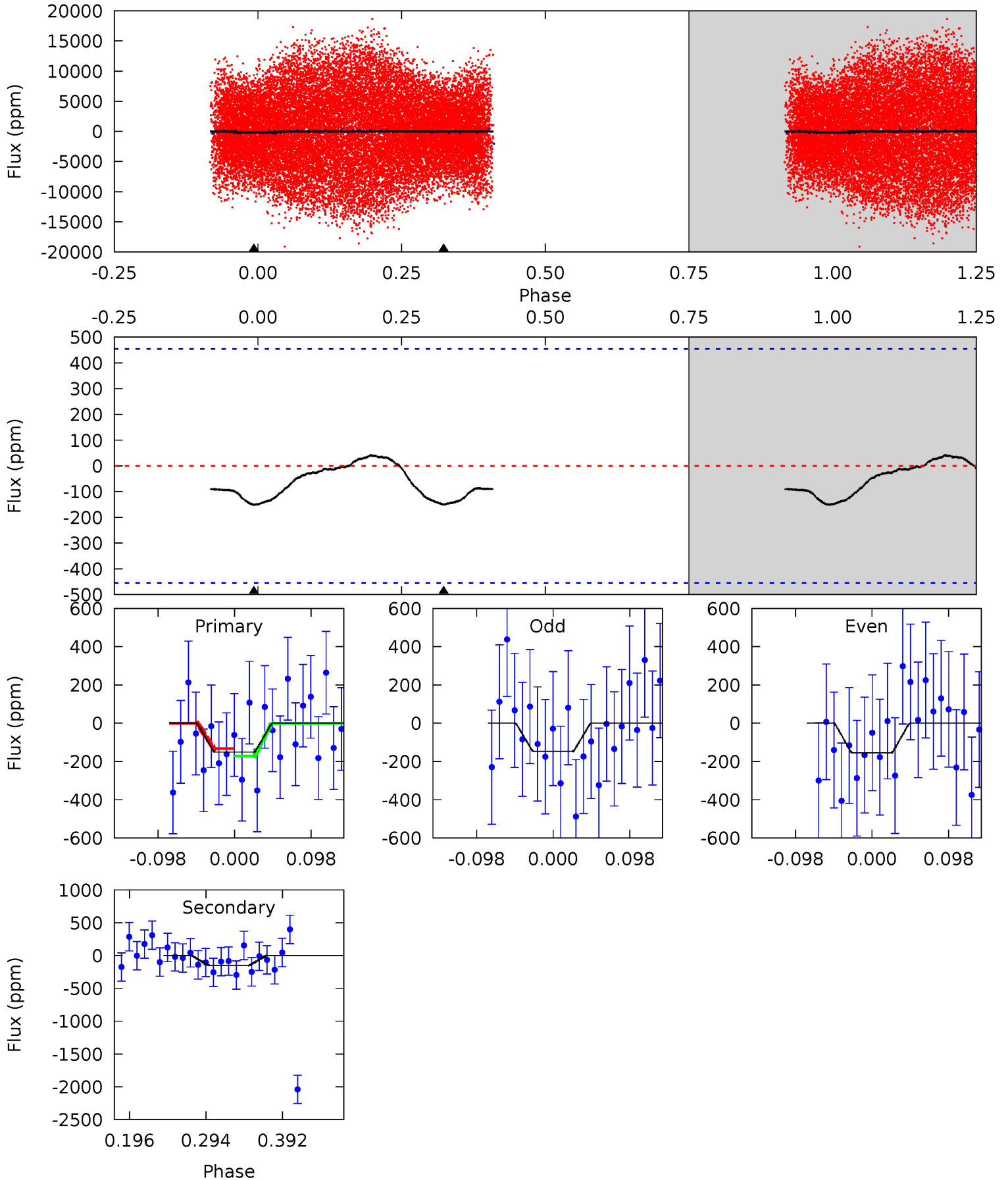
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.1	10.6	0	0	4.48	1.43	1.21	11.1	11.1	10.6	10.6	1.42	1.05	0.10	0.40



# Alt Model-Shift Uniqueness Test

005108514-02, P = 0.953427 Days, E = 130.598419 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
1.52	1.51	0	0	4.57	1.66	0.24	1.52	1.52	1.51	1.51	0.04	0.77	0.21	0.24



### Stellar Parameters For KIC 005108514

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$7109^{+200}_{-314}$	$4.097^{+0.175}_{-0.175}$	$-0.120^{+0.250}_{-0.350}$	$1.796^{+0.539}_{-0.441}$	$1.470^{+0.209}_{-0.255}$	$0.358^{+0.355}_{-0.180}$
	+3%/-4%	+4%/-4%	+208%/-292%	+30%/-25%	+14%/-17%	+99%/-50%
Source	PHO1	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 005108514-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-71 \pm 7$	$1.89^{+1.21}_{-1.02}$	$3990^{+287}_{-280}$	$6454^{+4068}_{-1508}$	$5.146^{+18.680}_{-3.361}$
Alt.	$-150 \pm 99$	$2.59^{+1.25}_{-1.15}$	$3978^{+305}_{-277}$	$6427^{+3383}_{-1726}$	$5.158^{+13.791}_{-3.618}$

$T_{\text{max}}$  = 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  $A_{\text{obs}} \gg 1.0$

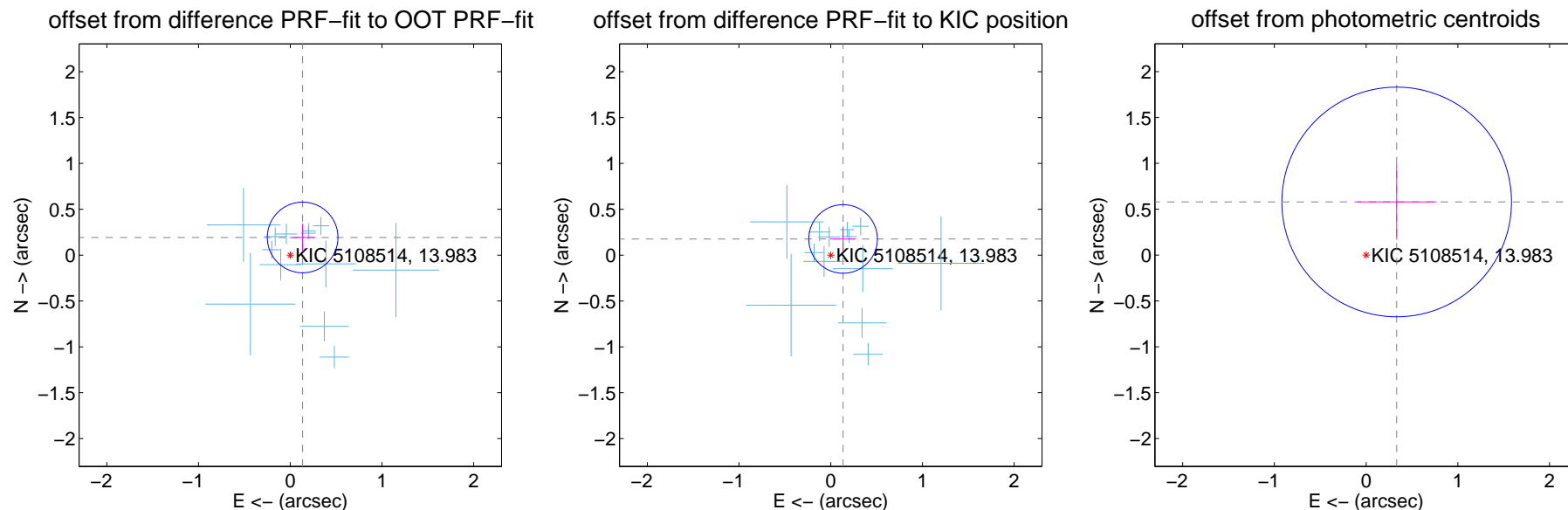
## DV Centroid Data

Supplemental centroid analysis for 005108514-02. Kepler magnitude: 13.98. Transit SNR 11.78

There are 13 quarters with good PRF difference image offsets

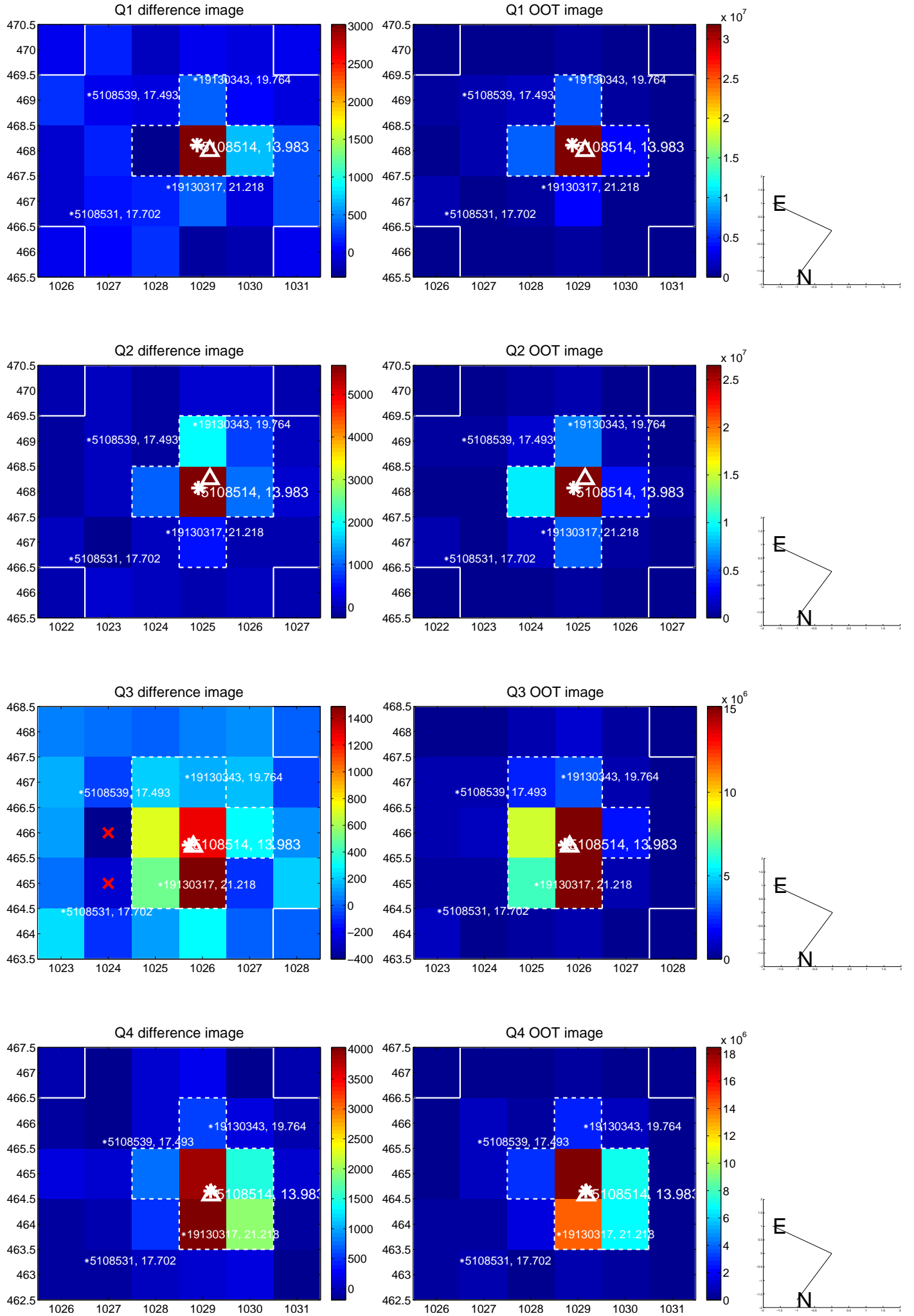
The direct PRF centroid is offset from the target star catalog position by about 0.04 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.235 \pm 0.128$	1.83	$-0.135 \pm 0.137$	$0.193 \pm 0.148$
PRF-fit source offset from KIC position	$0.222 \pm 0.125$	1.78	$-0.135 \pm 0.142$	$0.177 \pm 0.136$
photometric centroid source offset	$0.67 \pm 0.42$	1.60	$-0.33 \pm 0.43$	$0.58 \pm 0.41$



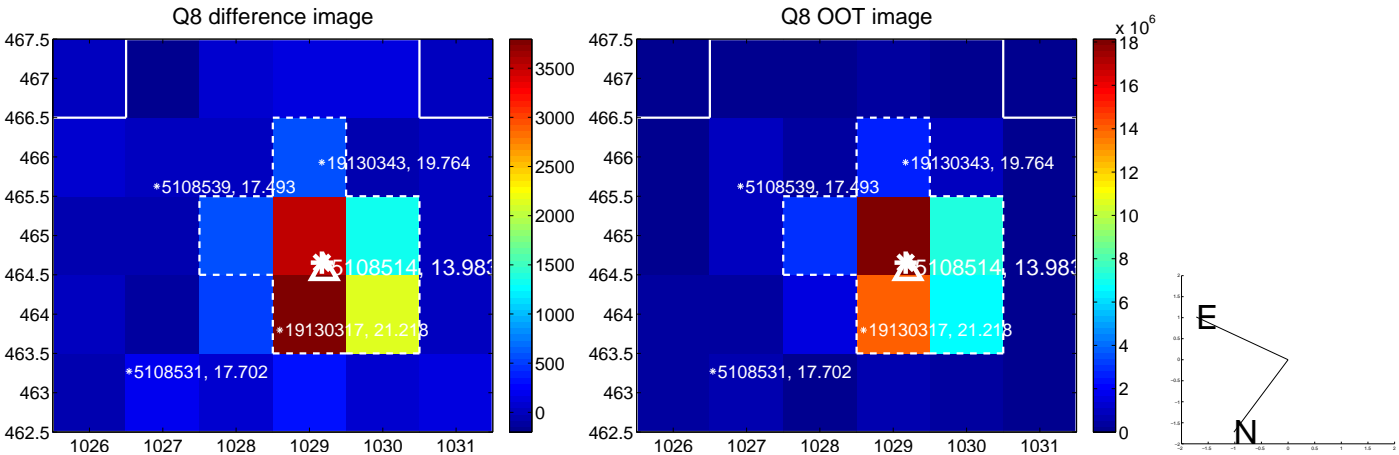
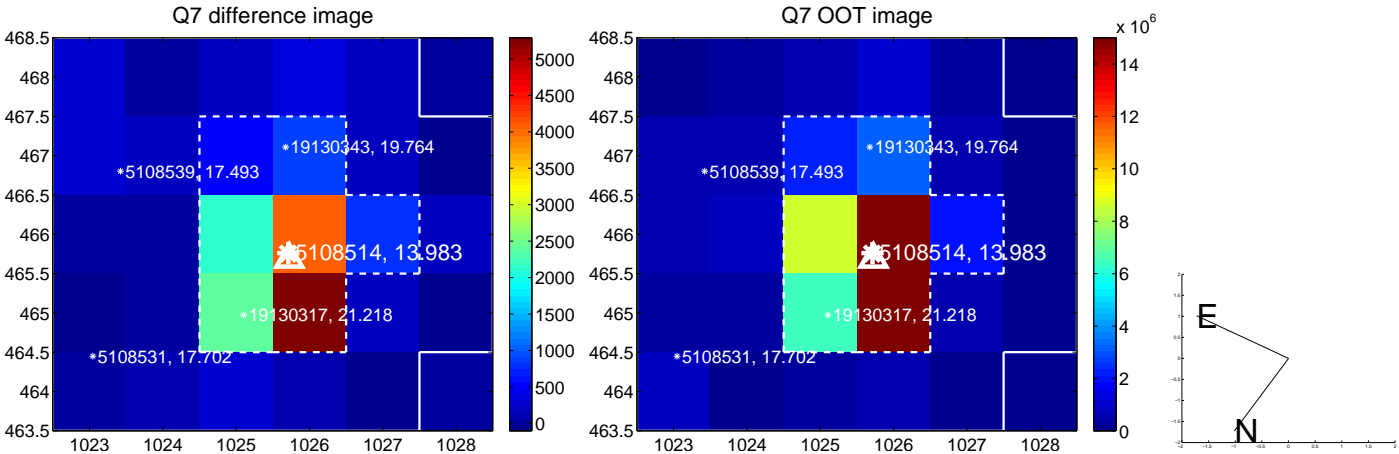
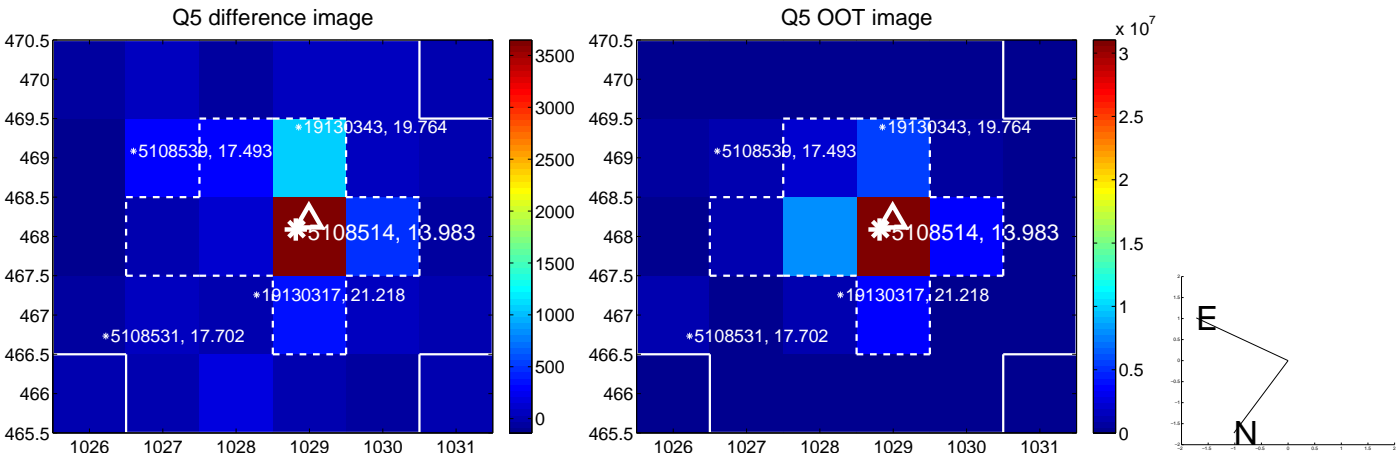
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: 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.

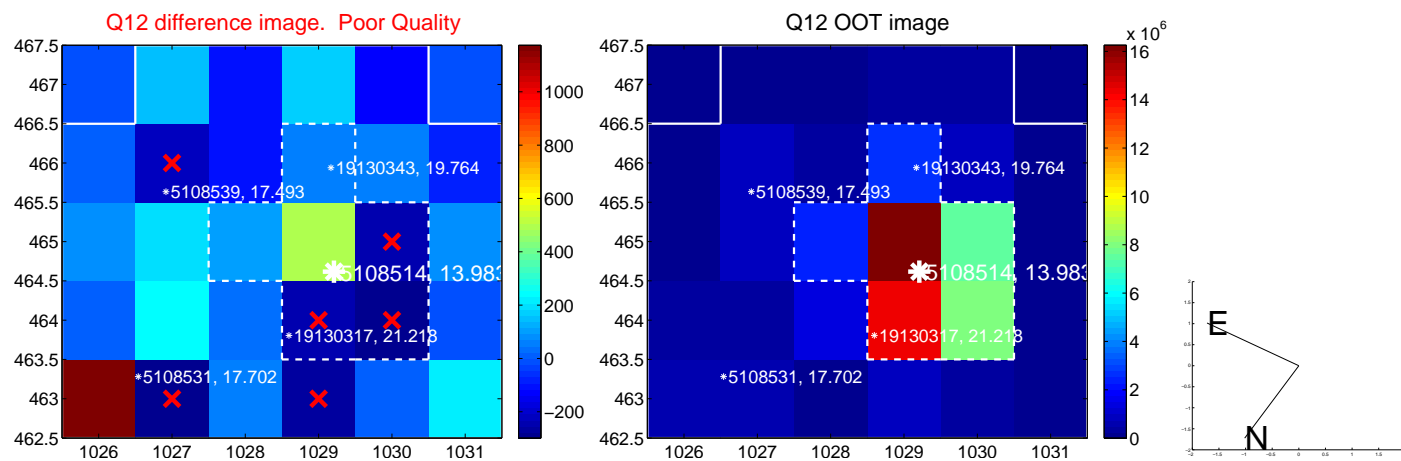
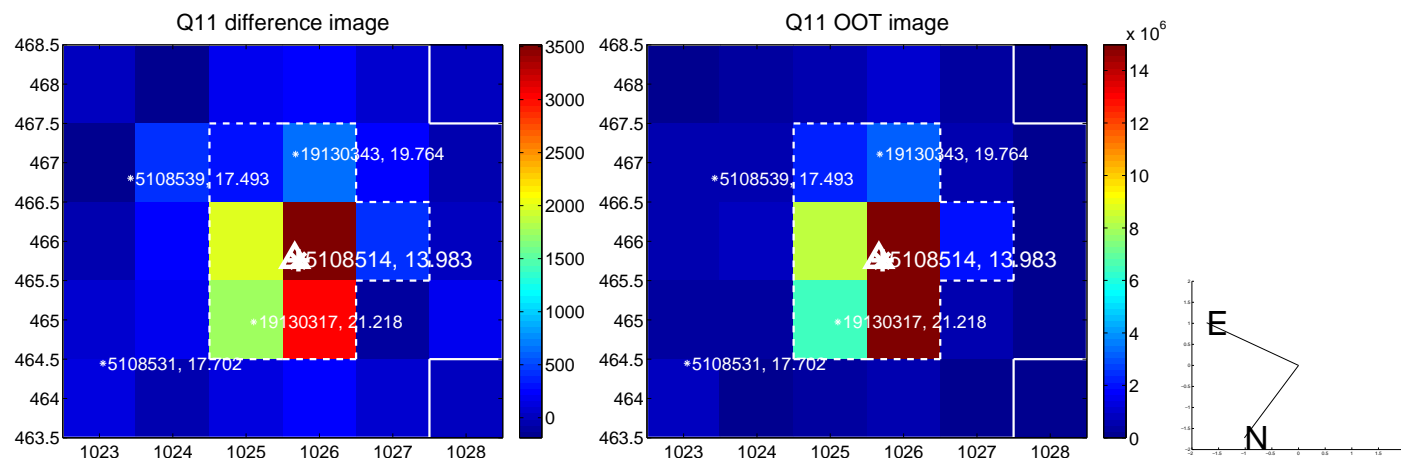
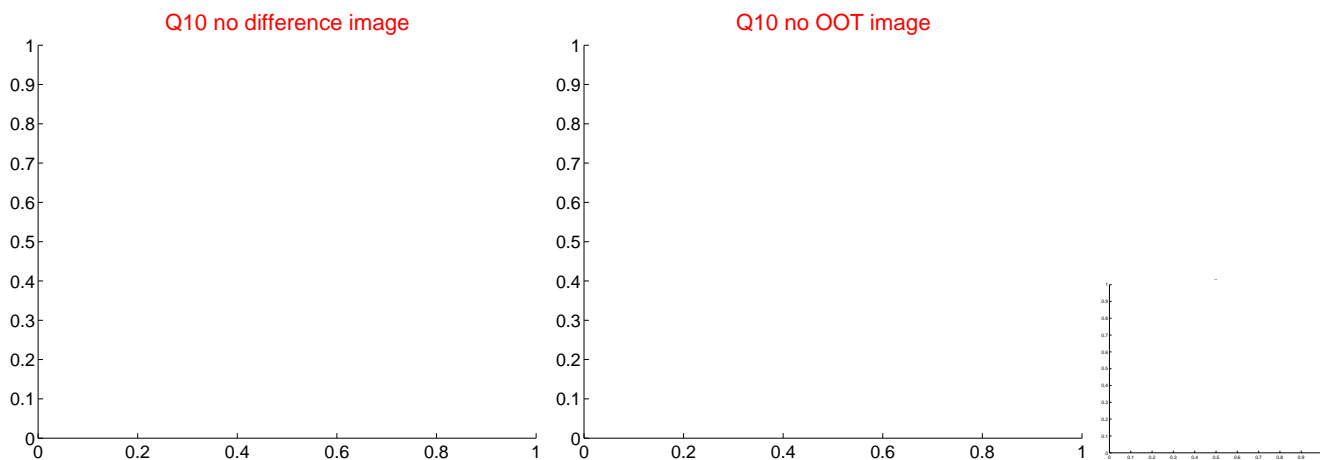
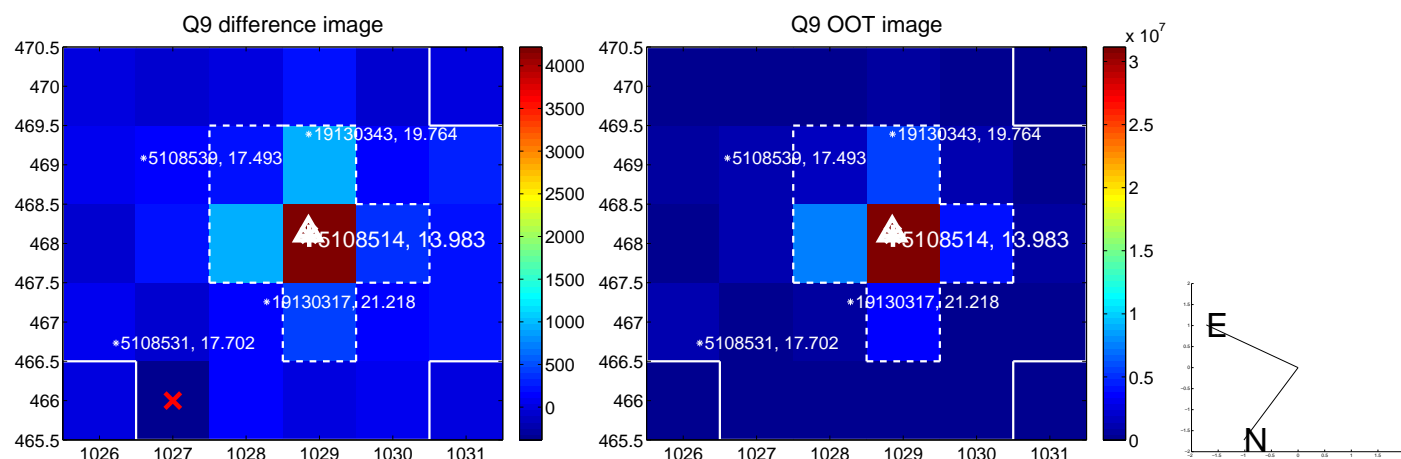




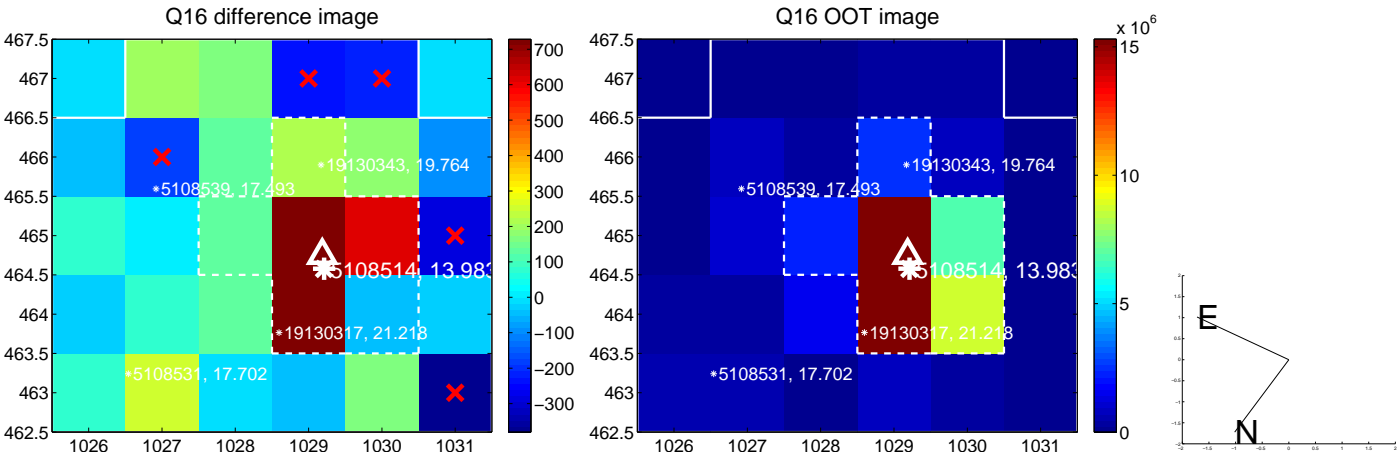
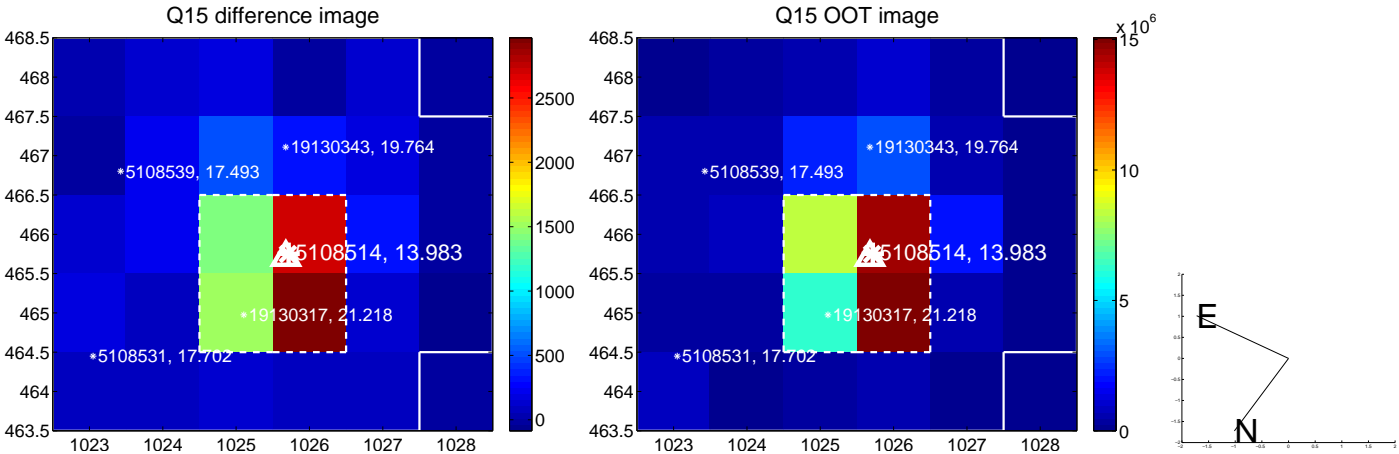
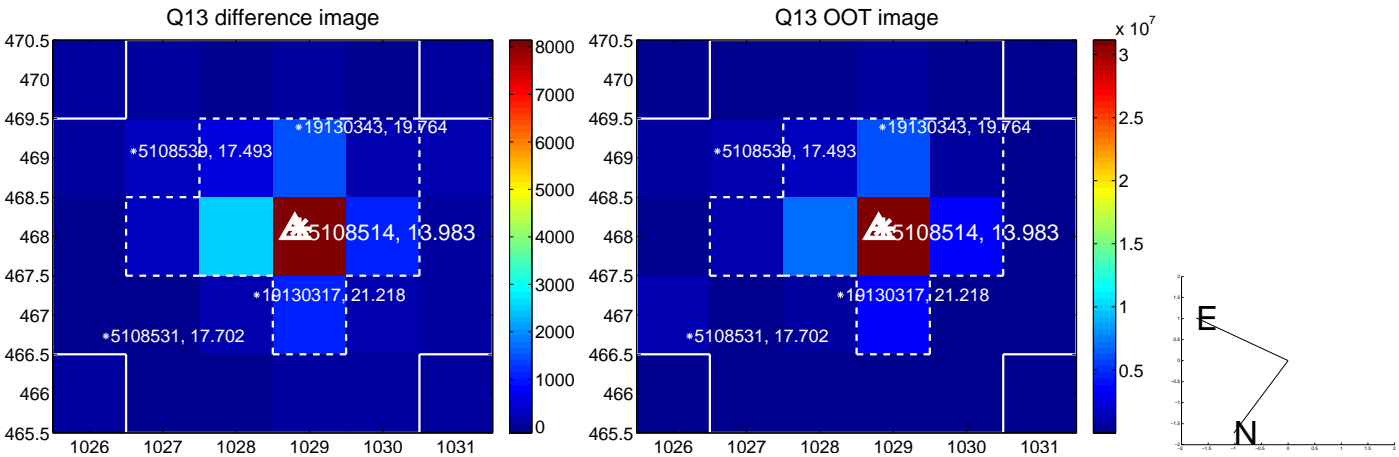
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



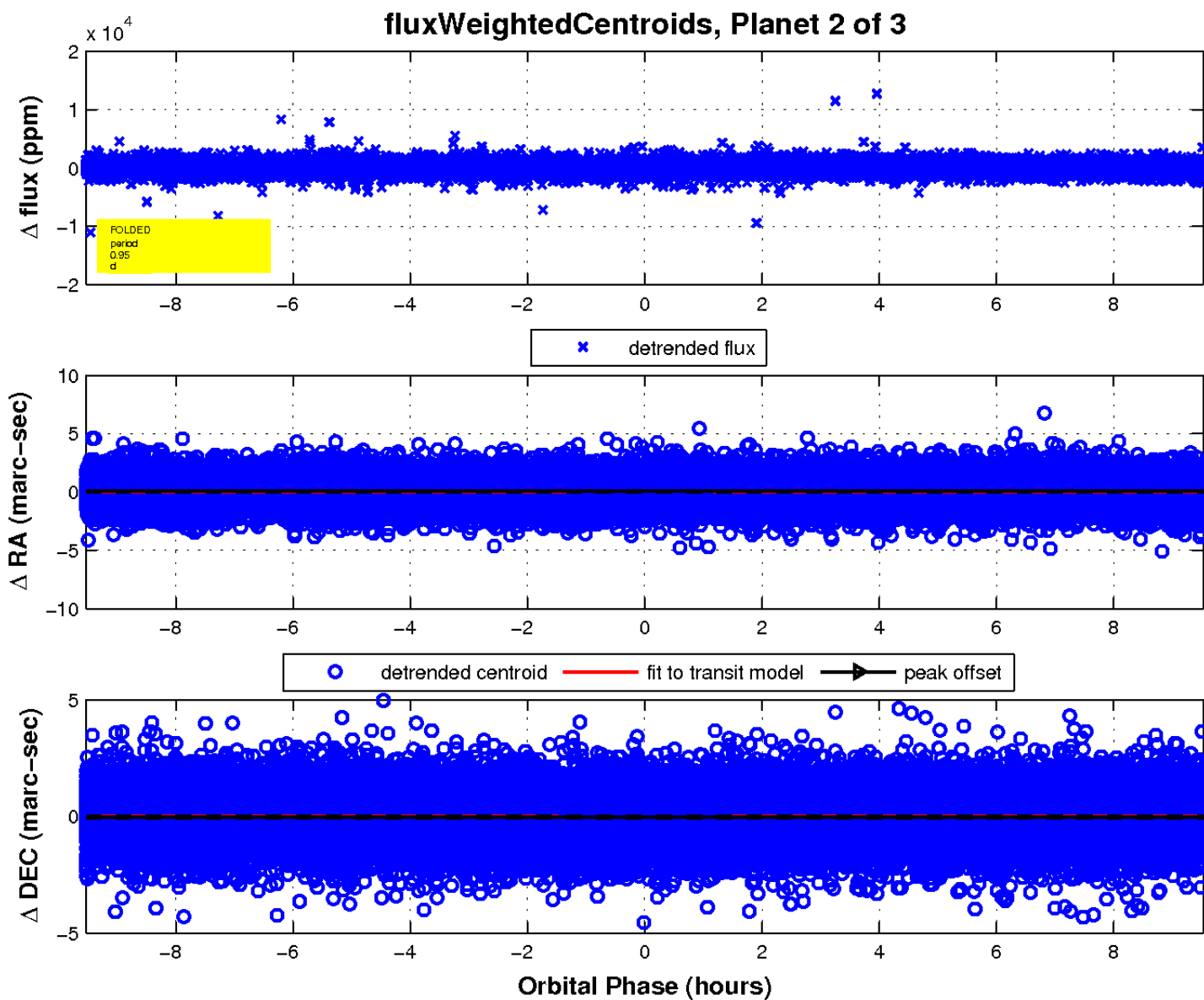
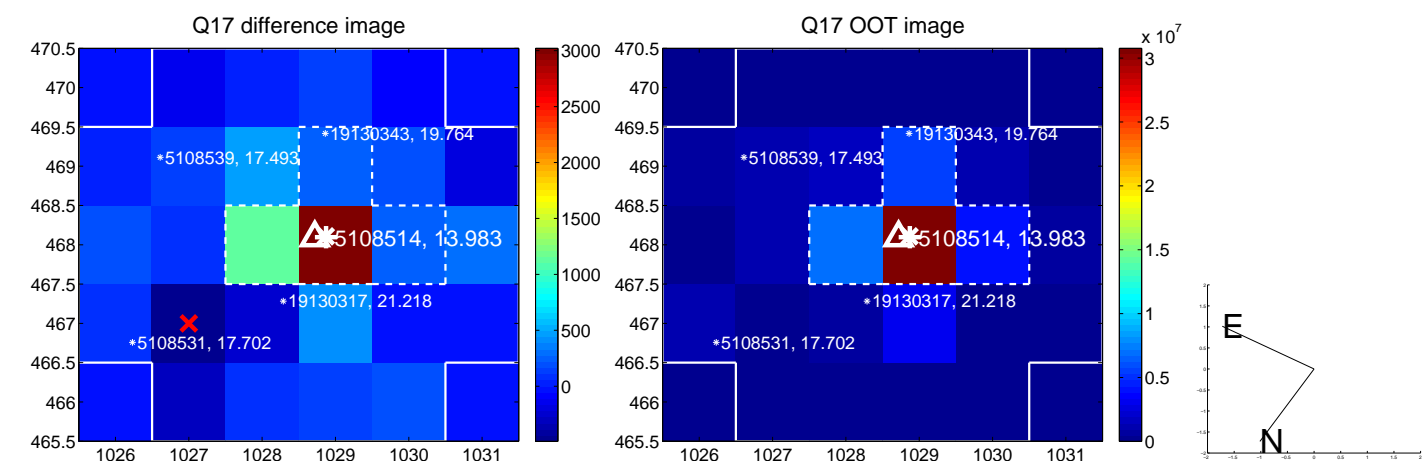
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

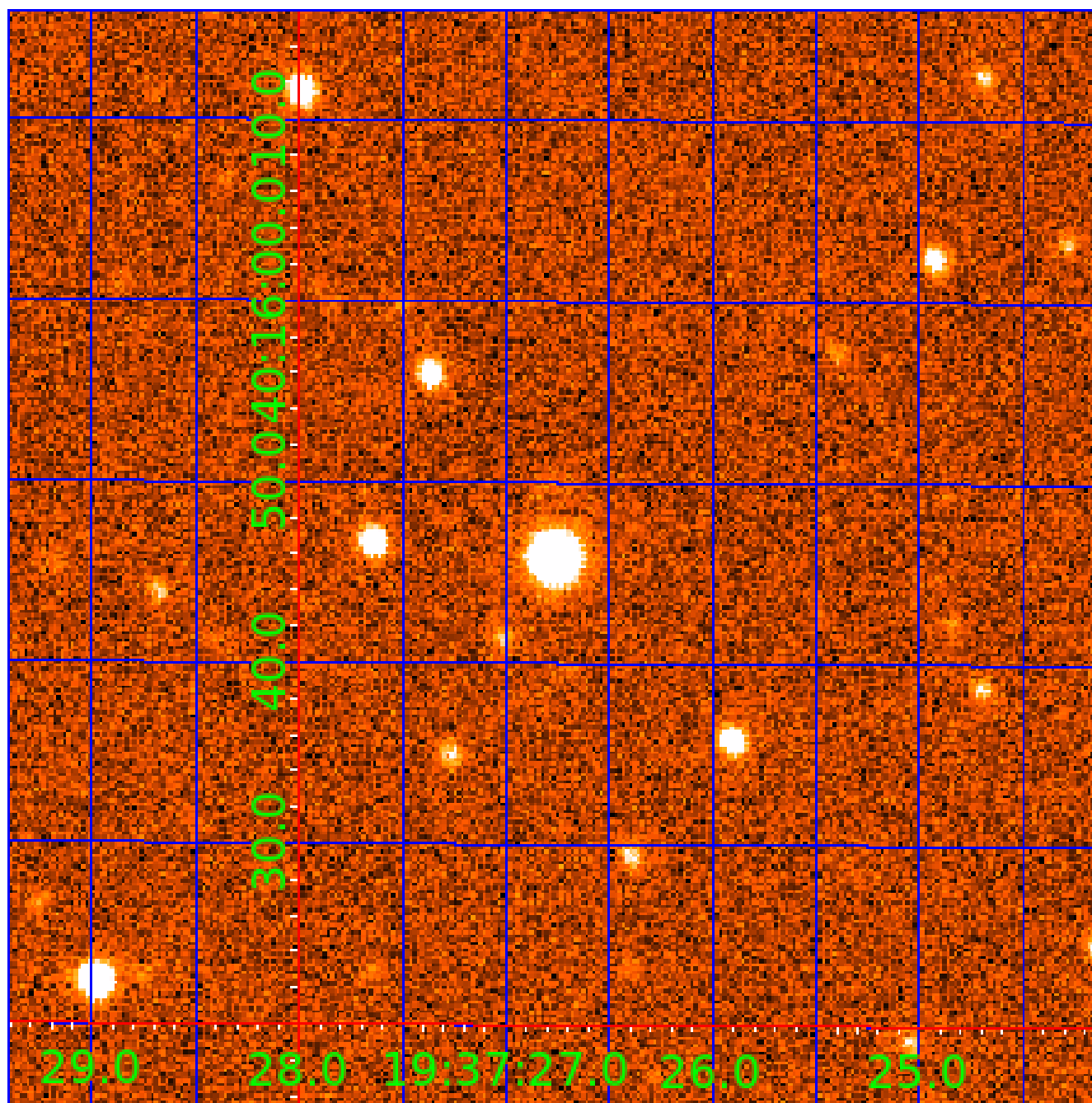


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination





# KIC 005108514

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005108514-01	OBS	No	0.953411	132.196618	126.3	3.893	14.9	16.3	1.80	7109	2.34	15871.79
005108514-02	OBS	No	0.953392	131.566934	89.4	3.177	10.4	11.8	1.80	7109	1.96	15872.21
005108514-03	OBS	No	3.118703	132.880941	218.3	9.130	9.3	9.7	1.80	7109	5.15	3268.64

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005108514-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT
005108514-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD
005108514-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_ZUMA—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT

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

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

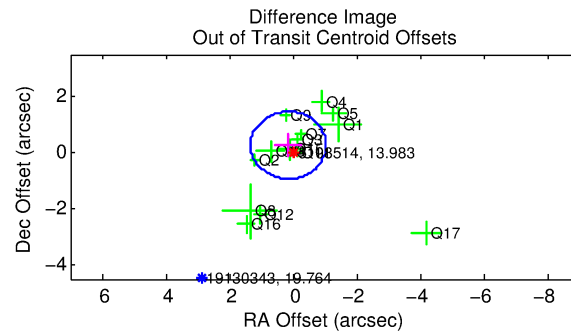
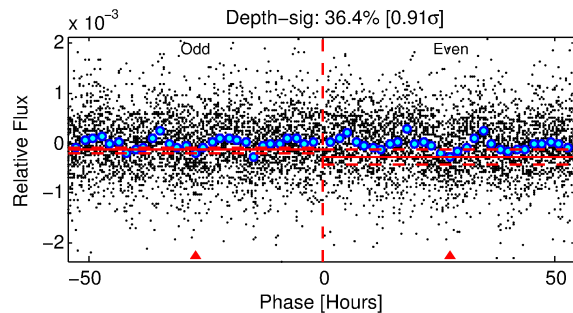
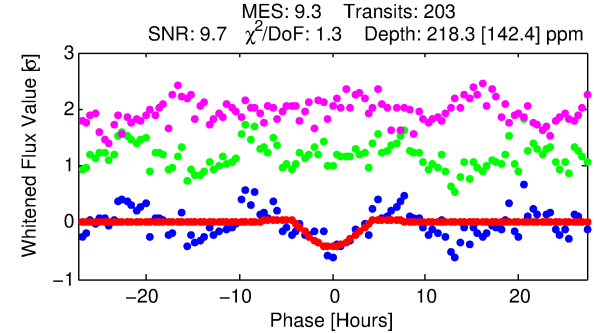
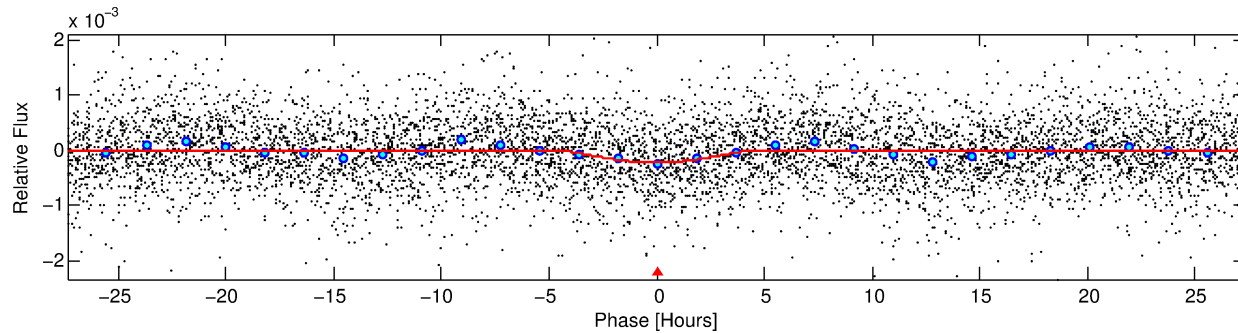
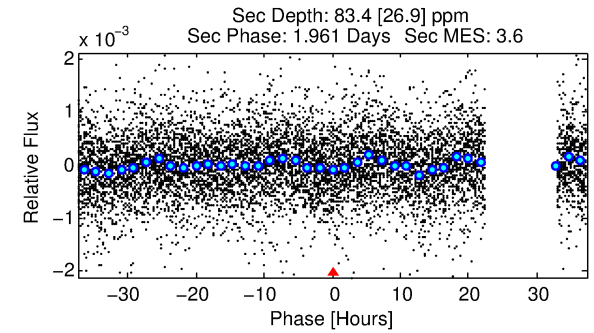
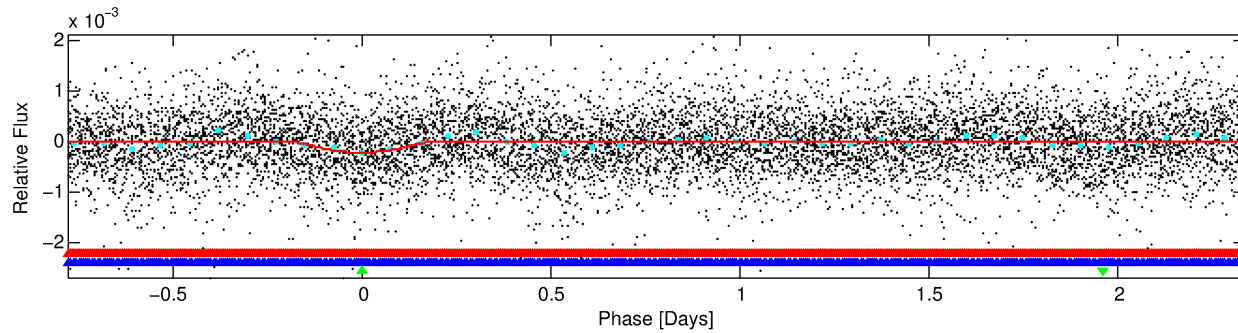
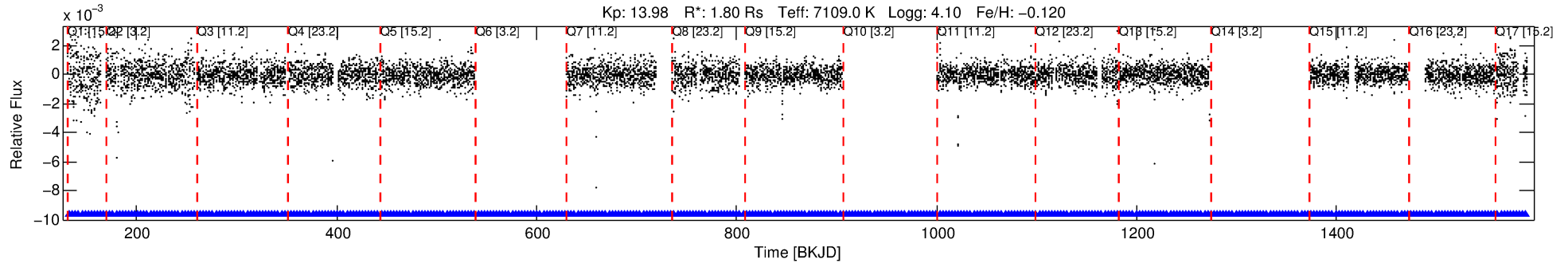
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 005108514-03

No Significant Match Found

# DV One-Page Summary

KIC: 5108514 Candidate: 3 of 3 Period: 3.119 d



## DV Fit Results:

Period = 3.11870 [0.00010] d  
Epoch = 132.8809 [0.0269] BKJD  
Rp/R\* = 0.0263 [0.1098]  
a/R\* = 1.18 [0.23]  
b = 1.00 [0.15]  
Seff = 3268.64 [1237.82]  
Teq = 1928 [183] K  
Rp = 5.15 [21.57] Re  
a = 0.0475 [0.0115] AU  
Ag = 3.91 [32.73] [0.09σ]  
Teffp = 4192 [8768] K [0.26σ]

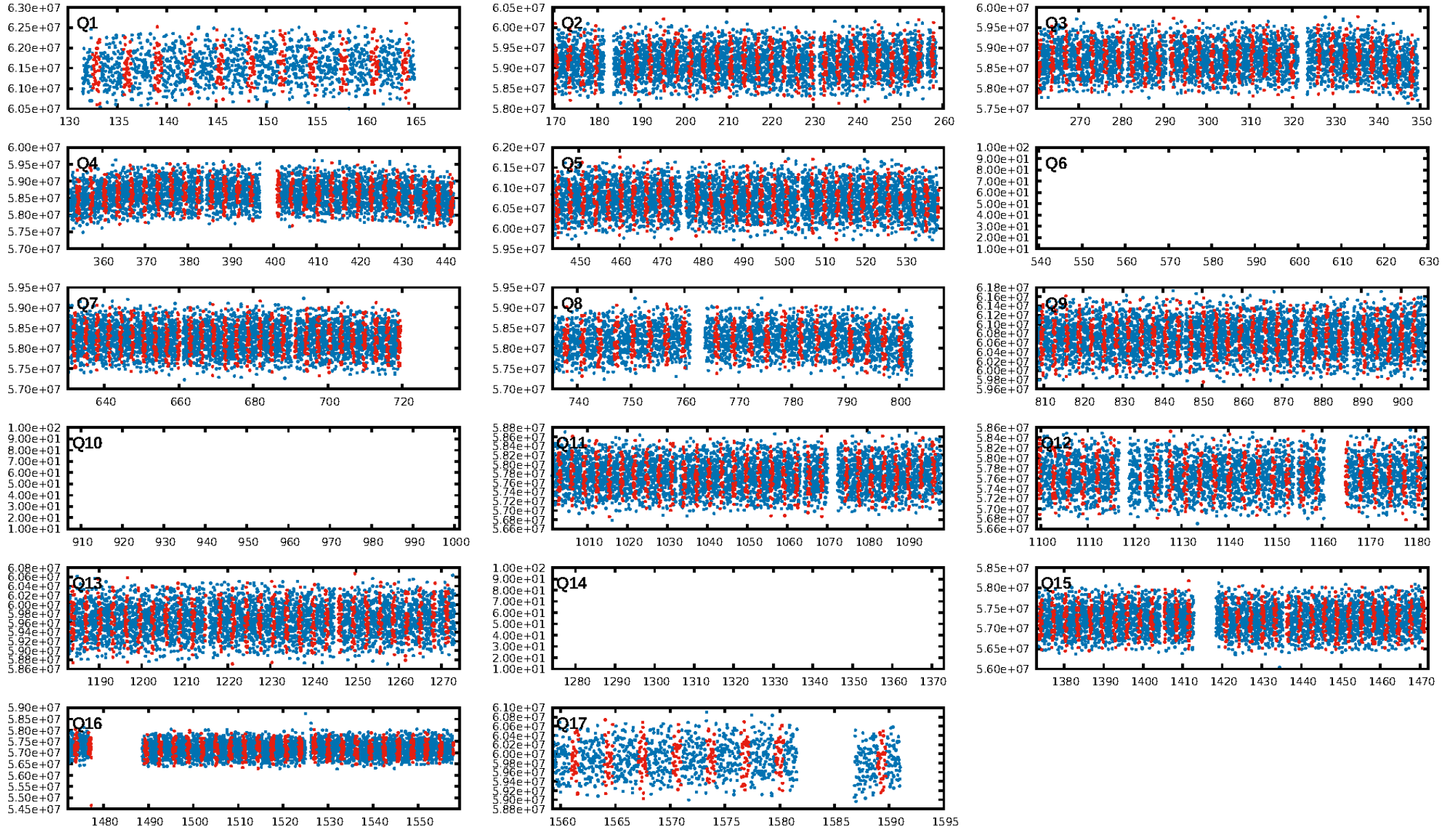
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [5.24σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 5.26e-21  
RollingBand-fgt: 1.00 [193/193]  
**GhostDiagnostic-chr: 0.7561**  
Centroid-sig: 71.0%  
Centroid-so: 0.097 arcsec [0.40σ]  
OotOffset-rm: 0.299 arcsec [0.75σ]  
KicOffset-rm: 0.292 arcsec [0.74σ]  
OotOffset-st: 1/4/4/5 [14]  
KicOffset-st: 1/4/4/5 [14]  
DiffImageQuality-fgm: 0.43 [6/14]  
DiffImageOverlap-fno: 0.00 [0/14]

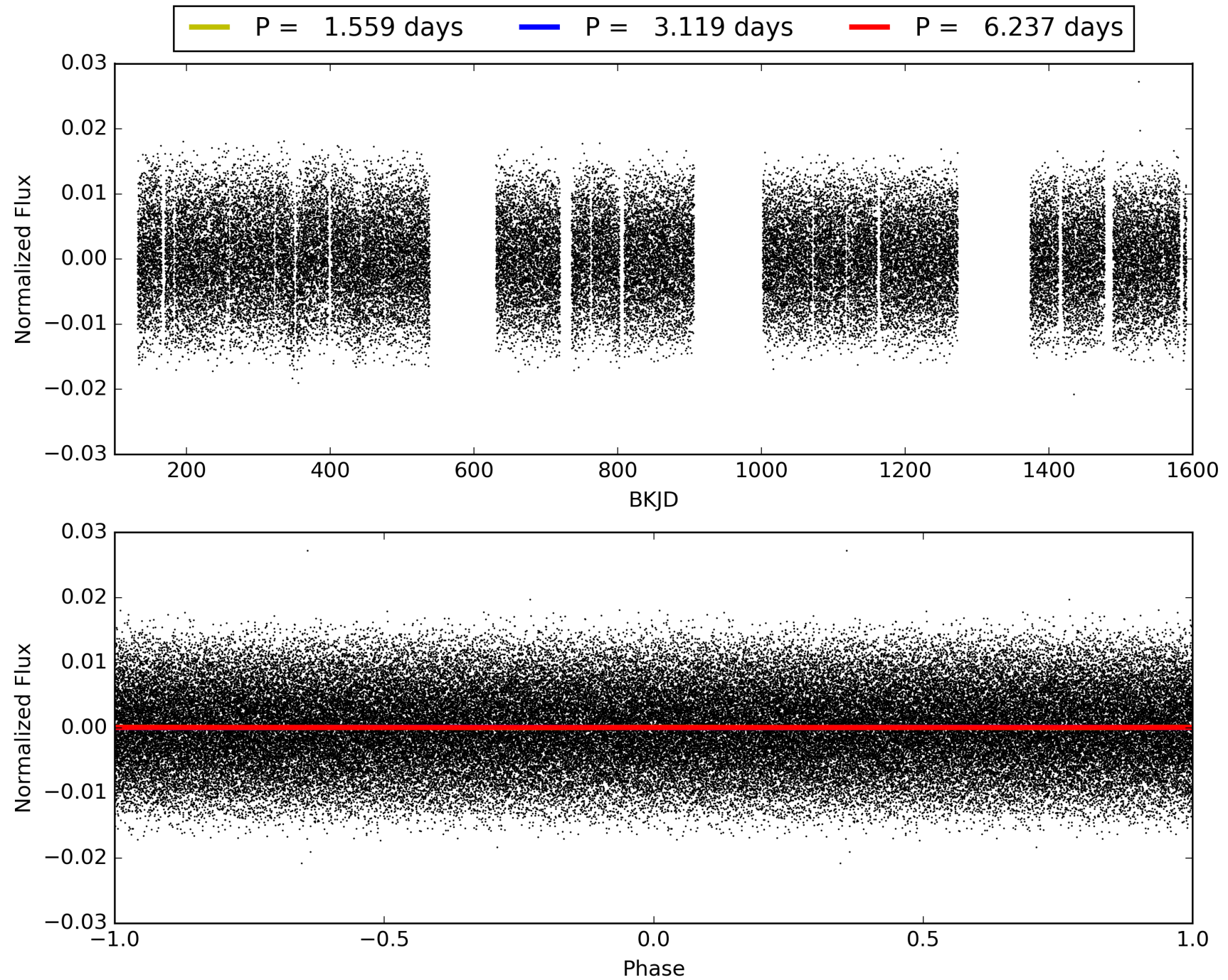
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 02:04:14 Z

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

# TCE 005108514-03, PDC Light Curves



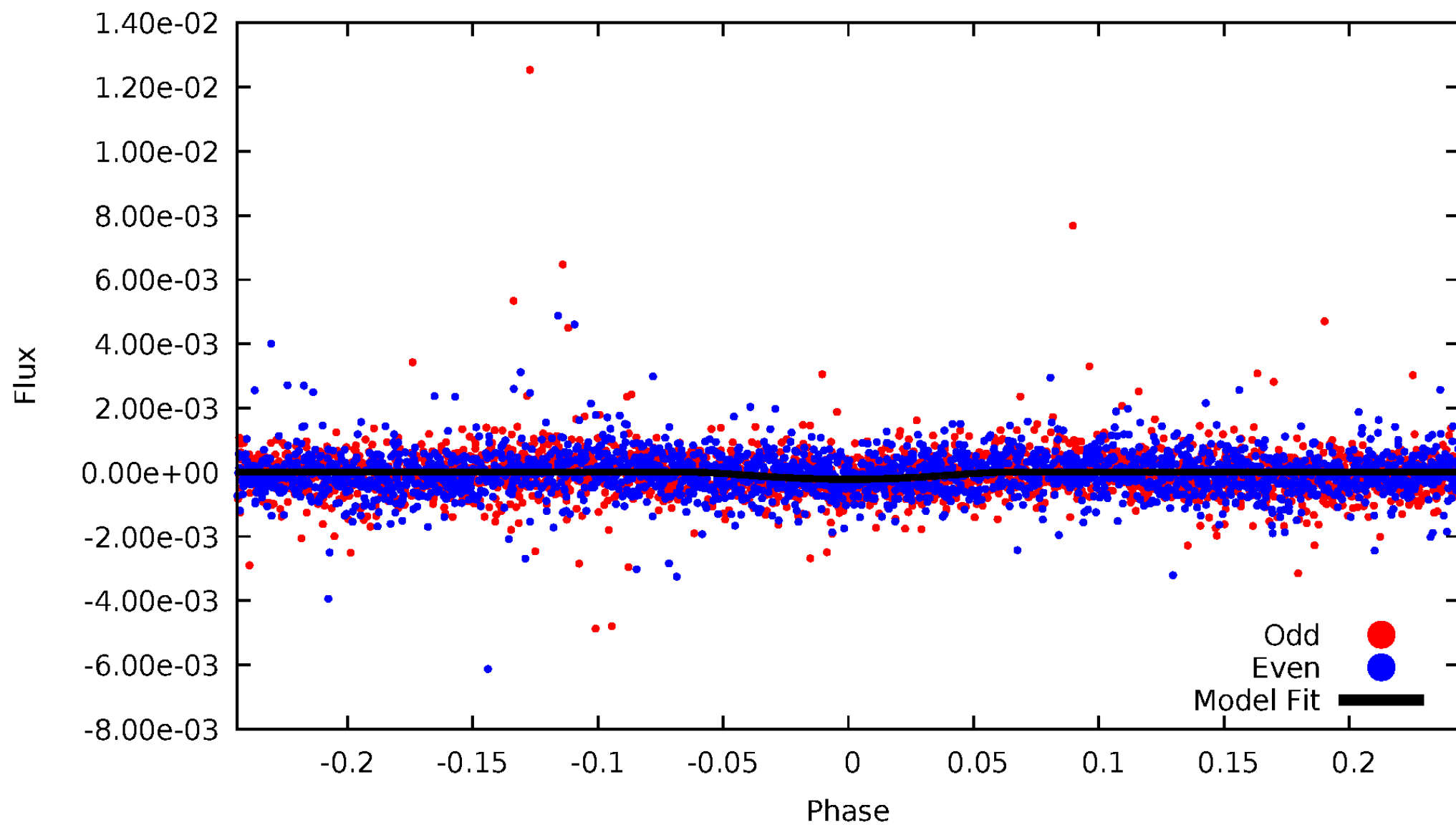
TCE 005108514-03





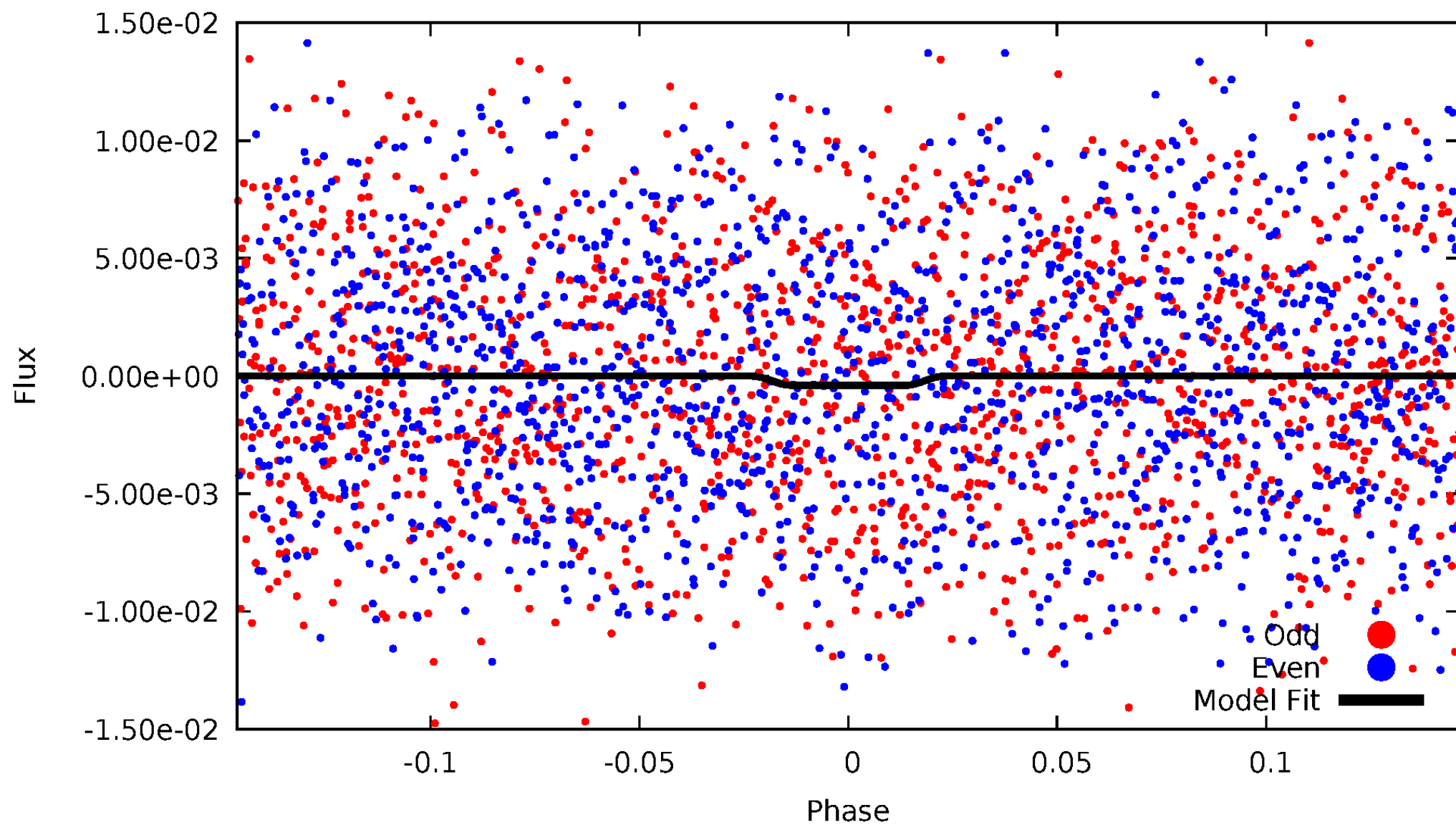
# DV Odd/Even

TCE 005108514-03



# ALT Odd/Even

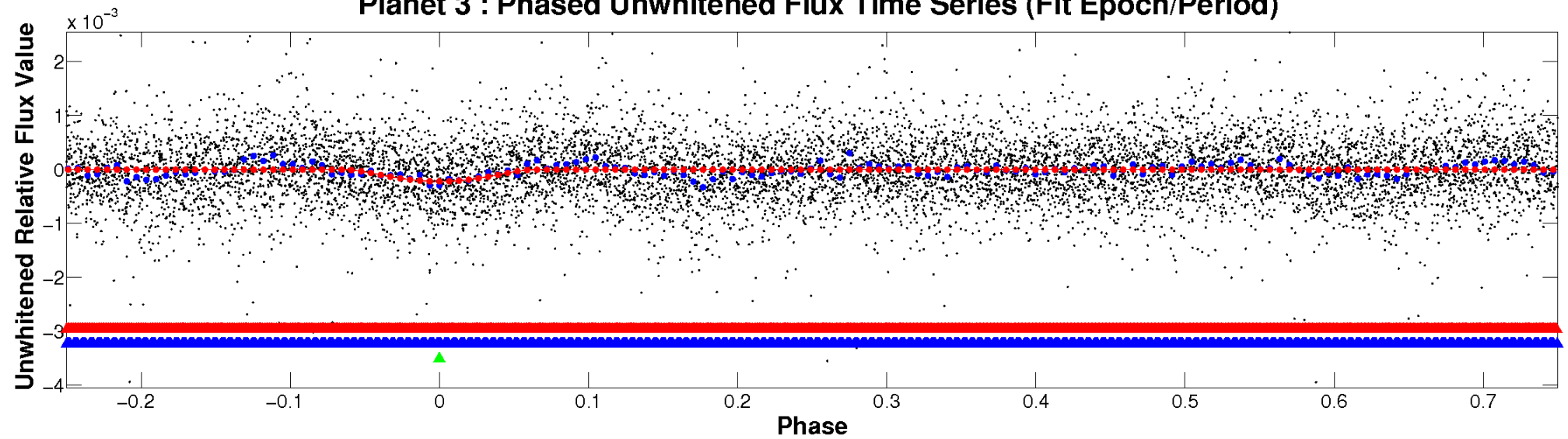
TCE 005108514-03



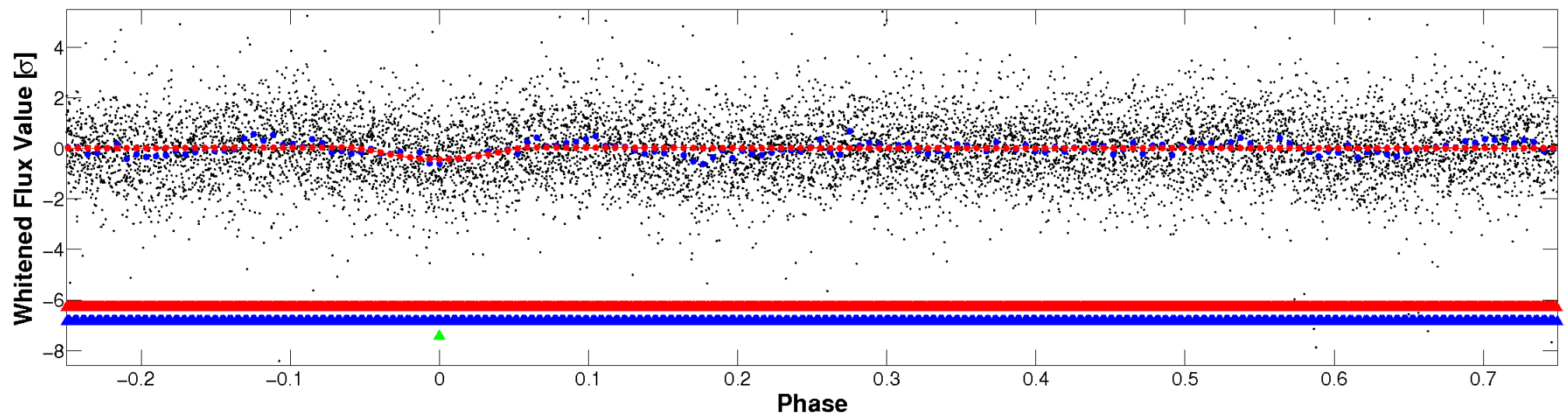


# Non-Whitened Vs. Whitened Light Curve

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

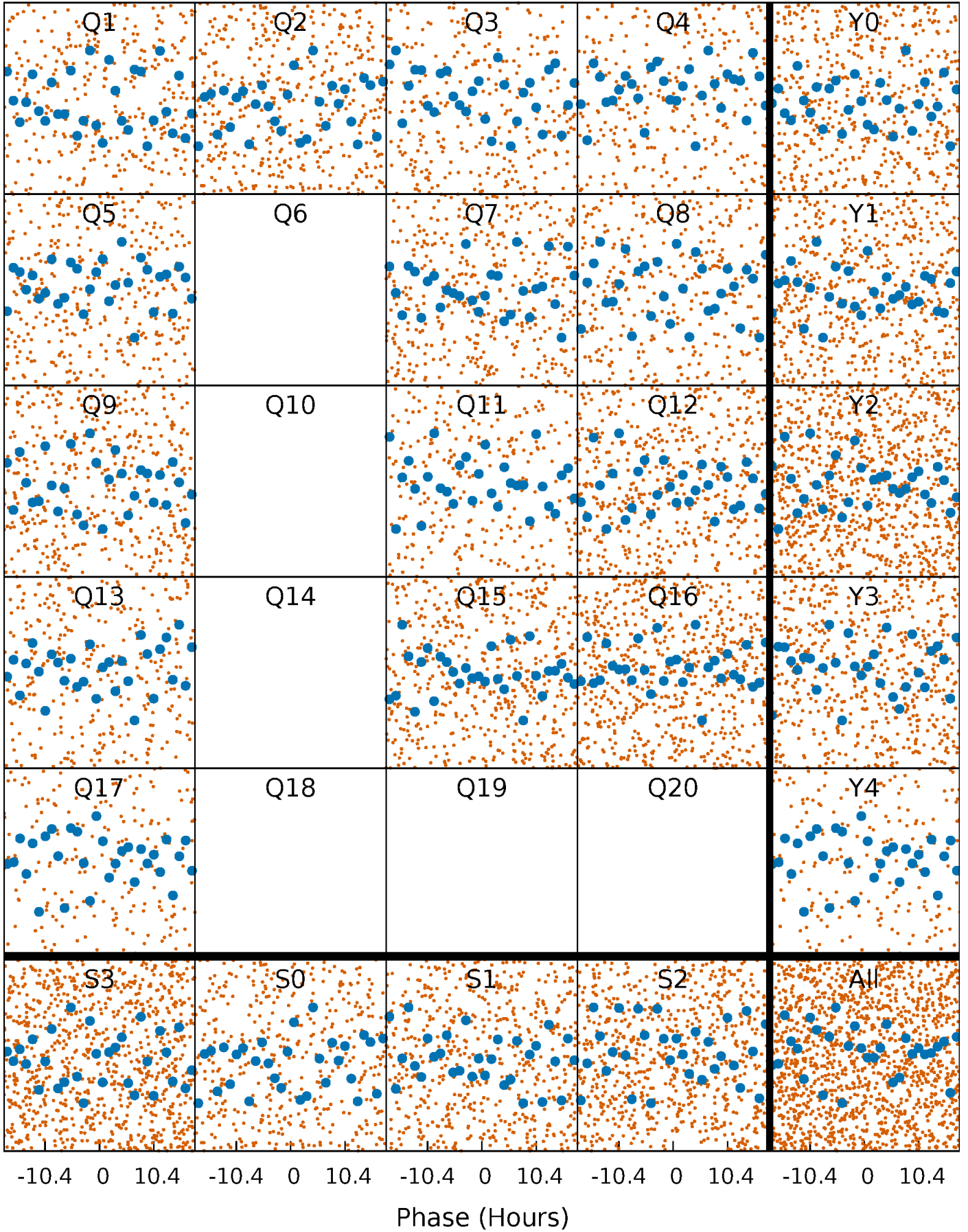


**Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



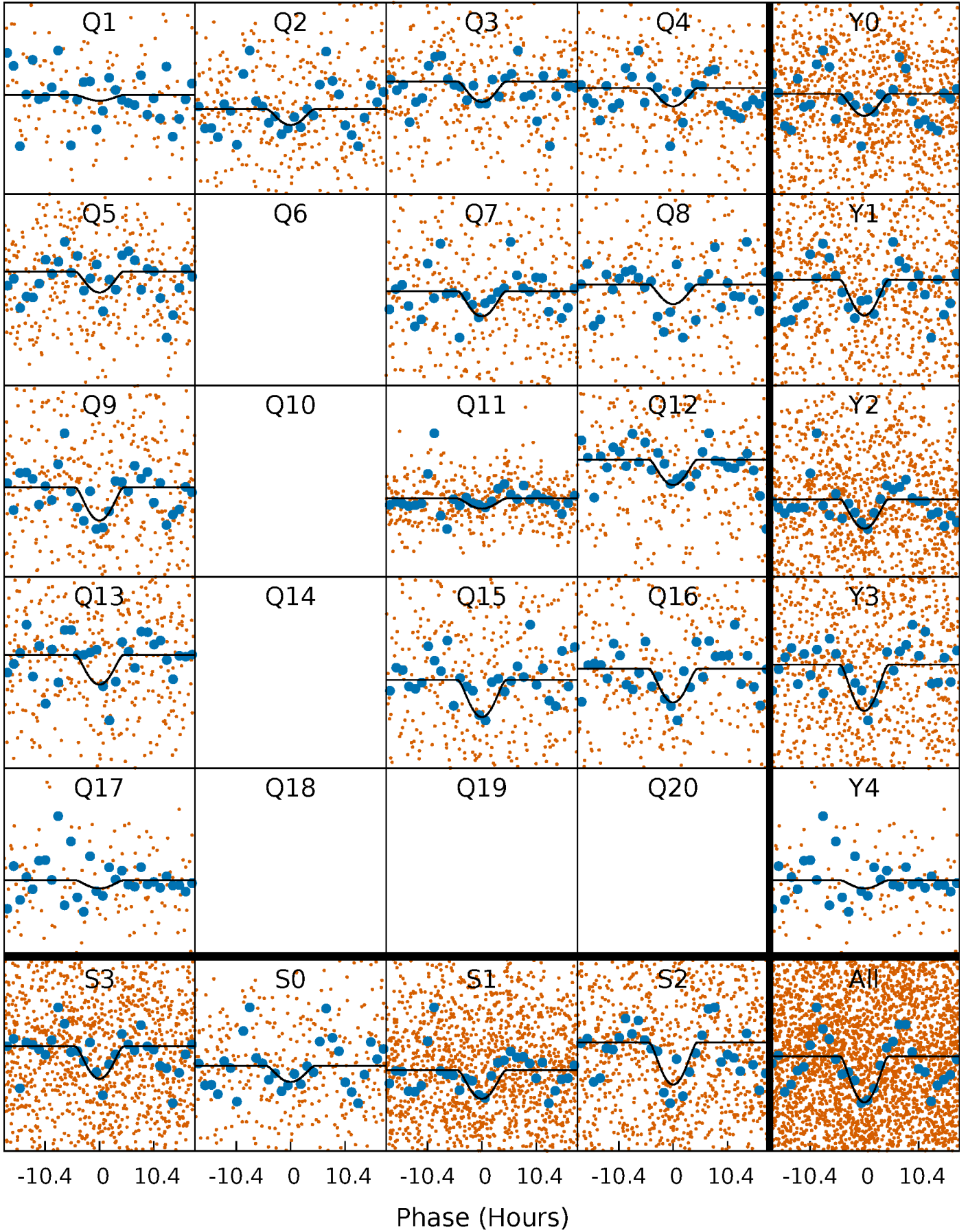
# PDC Quarter-Phased Transit Curves

TCE 005108514-03   P= 3.118703 Days    $T_0=132.880941$  (BKJD)



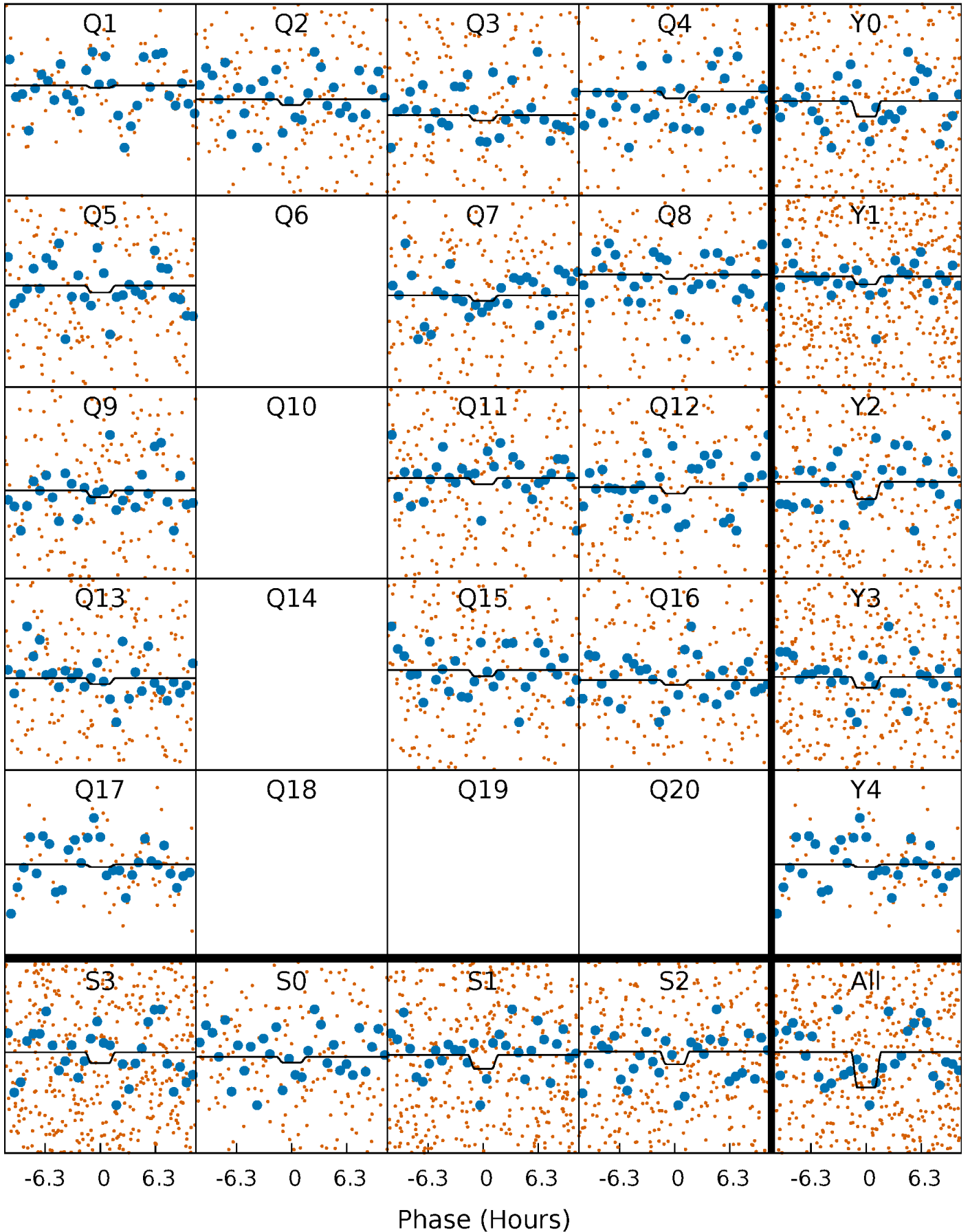
# DV Quarter-Phased Transit Curves

TCE 005108514-03   P= 3.118703 Days    $T_0=132.880941$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 005108514-03   P= 3.118830 Days    $T_0=132.927385$  (BKJD)

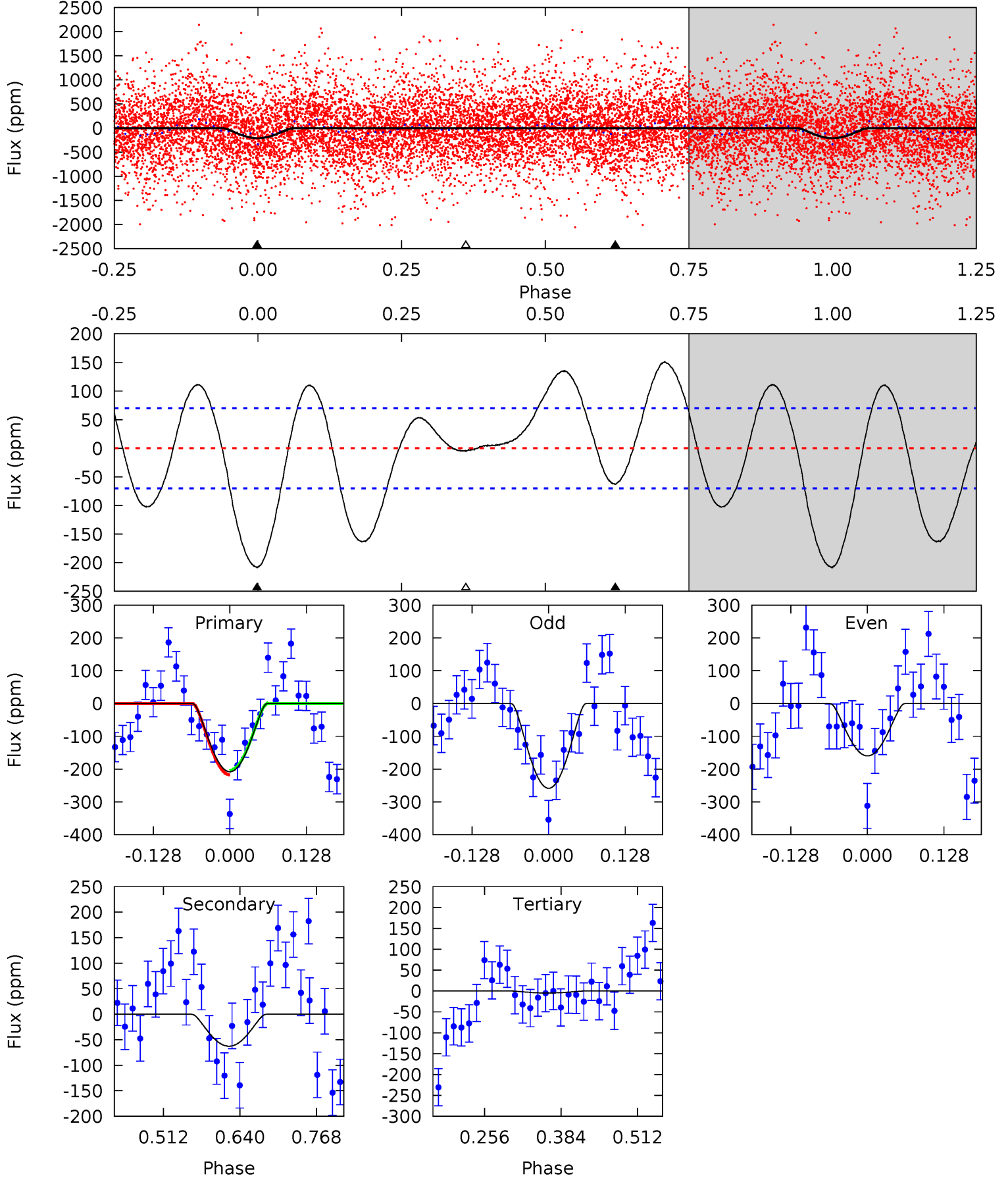




# DV Model-Shift Uniqueness Test

005108514-03, P = 3.118703 Days, E = 129.762238 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
13.4	4.04	0.31	0	4.51	1.52	4.12	13.1	13.4	3.73	4.04	3.19	0.63	0.42	0.44

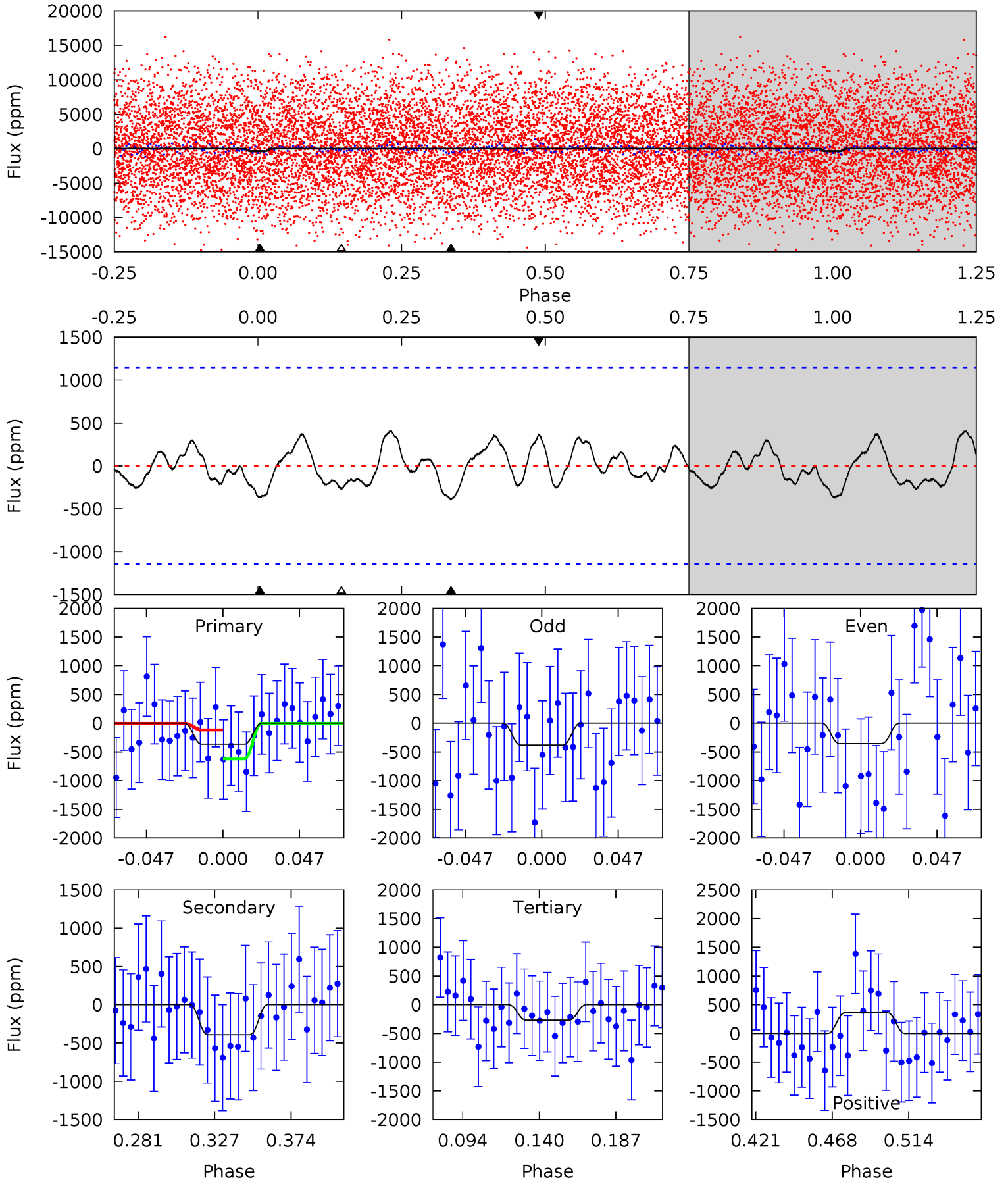




# Alt Model-Shift Uniqueness Test

005108514-03, P = 3.118830 Days, E = 129.808555 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
1.52	1.60	1.11	1.48	4.72	1.99	0.75	0.41	0.03	0.49	0.12	0.05	0.53	0.51	1.04



### Stellar Parameters For KIC 005108514

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$7109^{+200}_{-314}$	$4.097^{+0.175}_{-0.175}$	$-0.120^{+0.250}_{-0.350}$	$1.796^{+0.539}_{-0.441}$	$1.470^{+0.209}_{-0.255}$	$0.358^{+0.355}_{-0.180}$
	+3%/-4%	+4%/-4%	+208%/-292%	+30%/-25%	+14%/-17%	+99%/-50%
Source	PHO1	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 005108514-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-63 \pm 16$	$16.54^{+16.70}_{-11.93}$	$2676^{+214}_{-186}$	$-2110^{+6329}_{-692}$	$0.275^{+3.324}_{-0.207}$
Alt.	$-390 \pm 243$	$16.07^{+17.09}_{-11.04}$	$2683^{+215}_{-203}$	$3591^{+2452}_{-5722}$	$1.653^{+16.114}_{-1.378}$

$T_{max}$  = 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  $A_{obs} \gg 1.0$

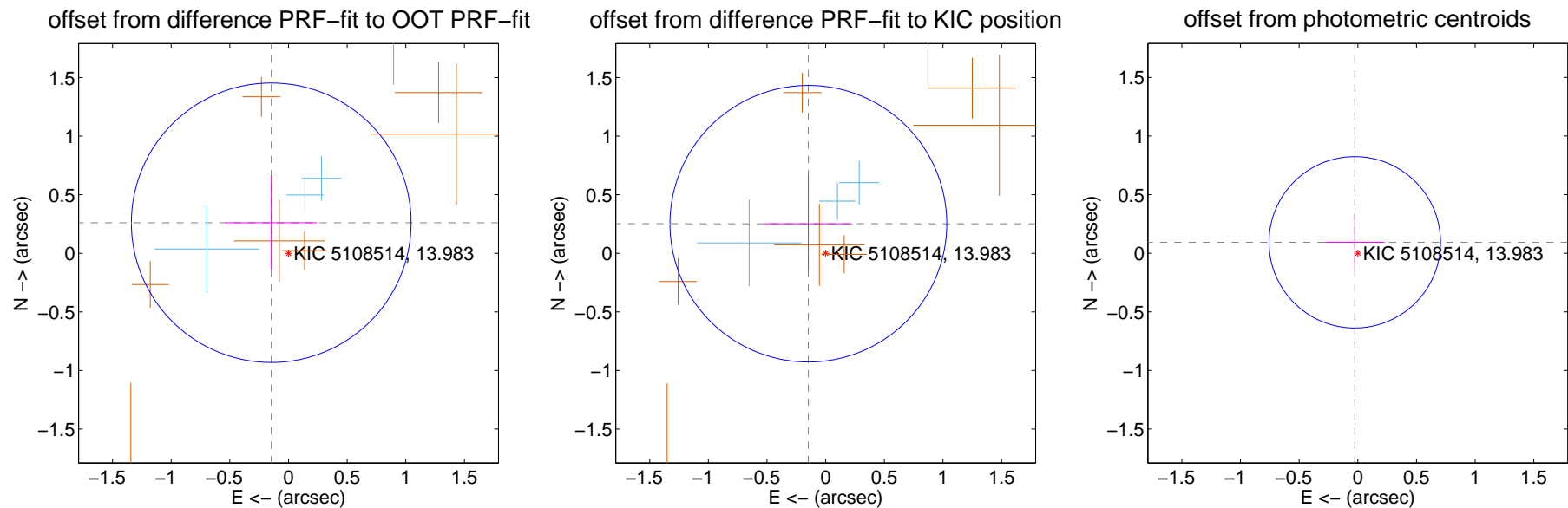
## DV Centroid Data

Supplemental centroid analysis for 005108514-03. Kepler magnitude: 13.98. Transit SNR 9.71

There are 6 quarters with good PRF difference image offsets

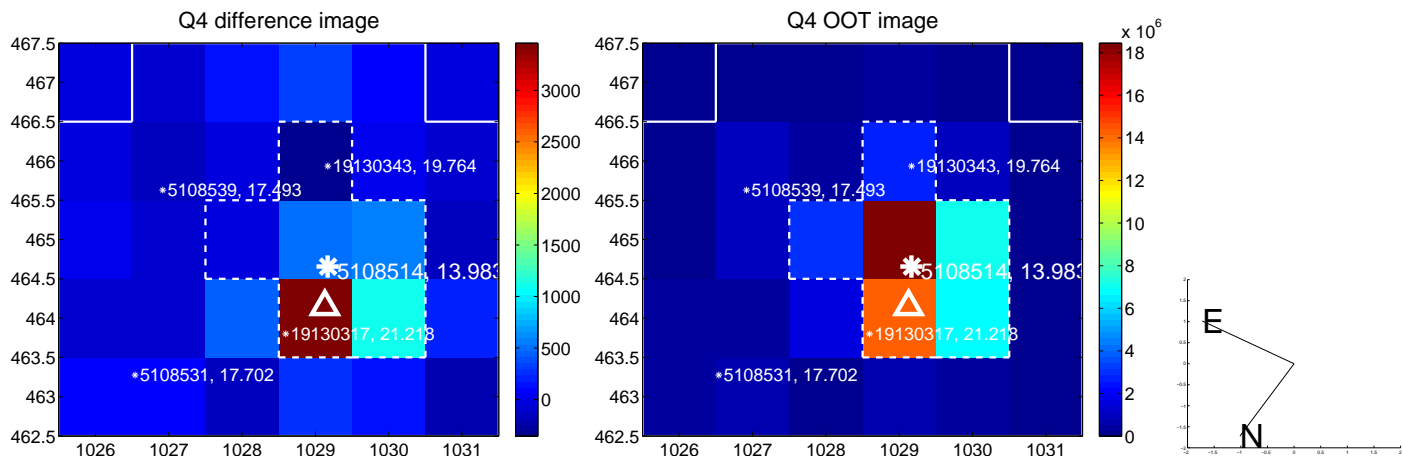
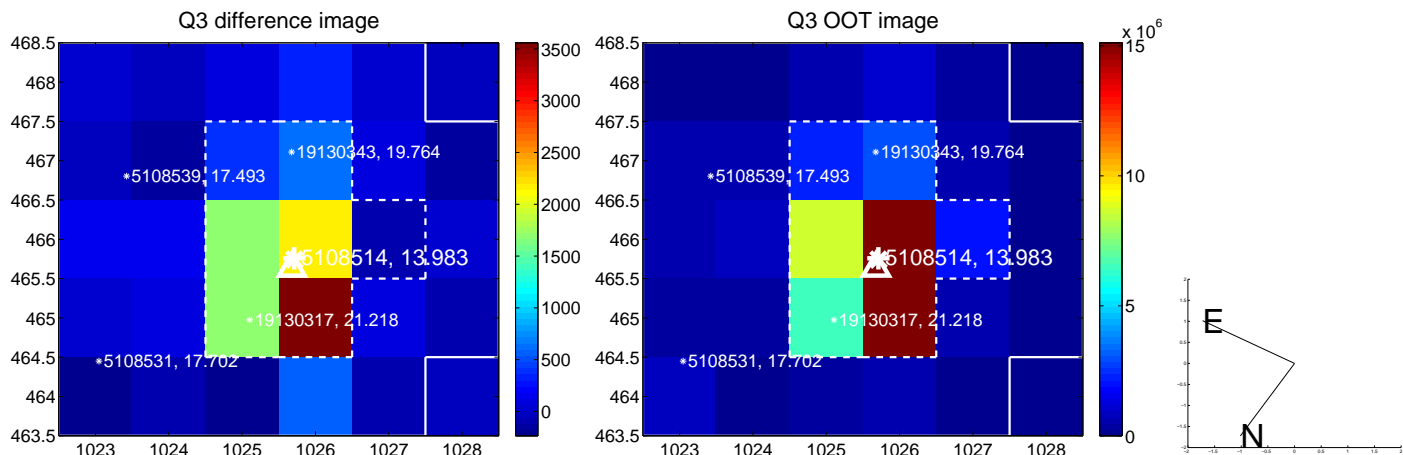
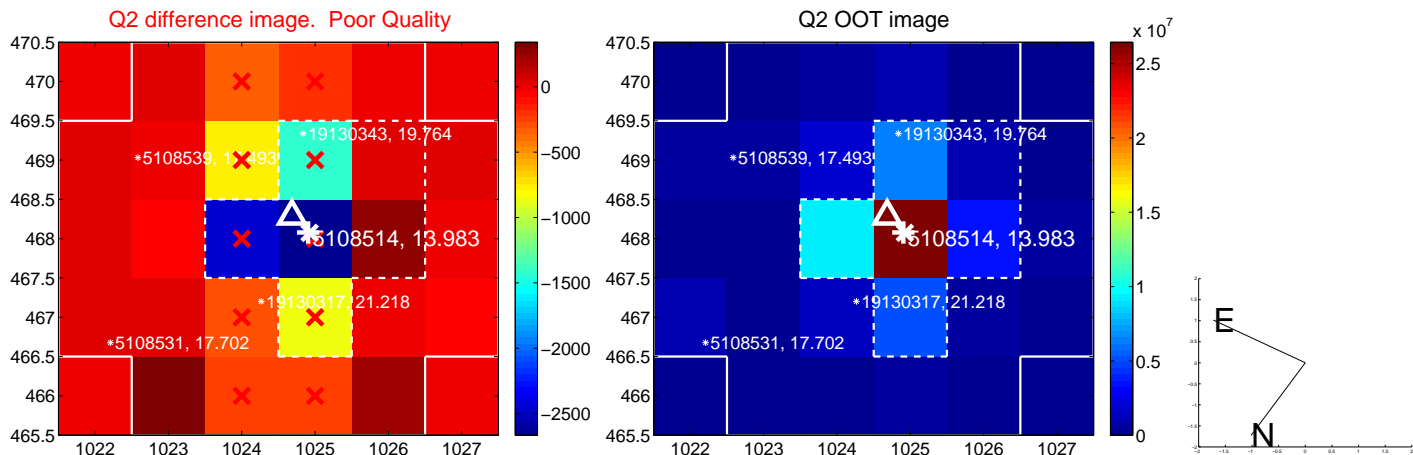
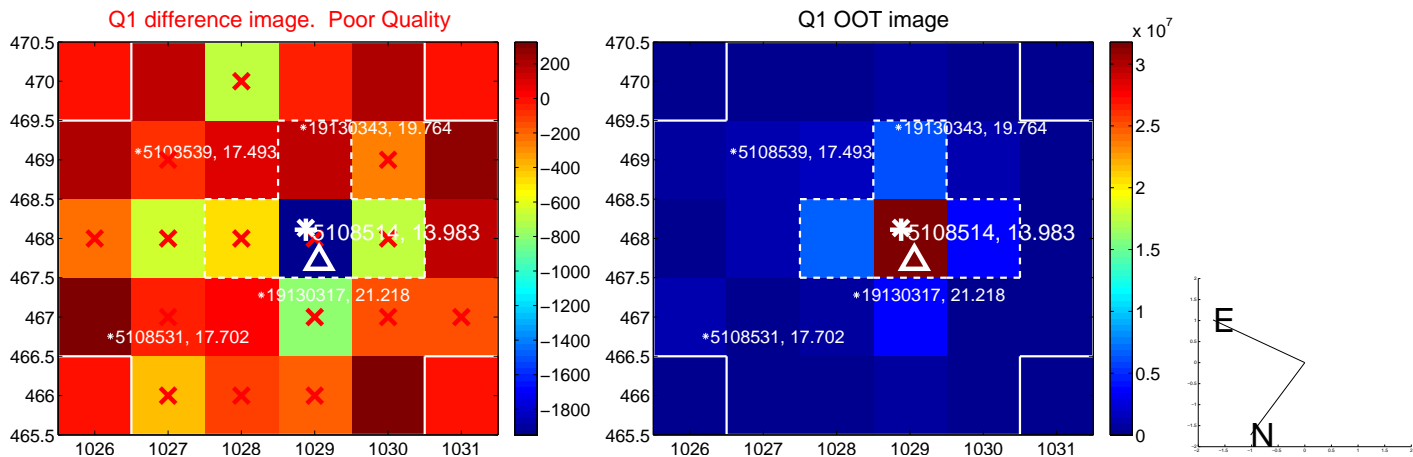
The direct PRF centroid is offset from the target star catalog position by about 0.04 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.299 \pm 0.397$	0.75	$0.147 \pm 0.389$	$0.261 \pm 0.402$
PRF-fit source offset from KIC position	$0.292 \pm 0.393$	0.74	$0.147 \pm 0.374$	$0.252 \pm 0.408$
photometric centroid source offset	$0.10 \pm 0.24$	0.40	$0.03 \pm 0.25$	$0.09 \pm 0.24$

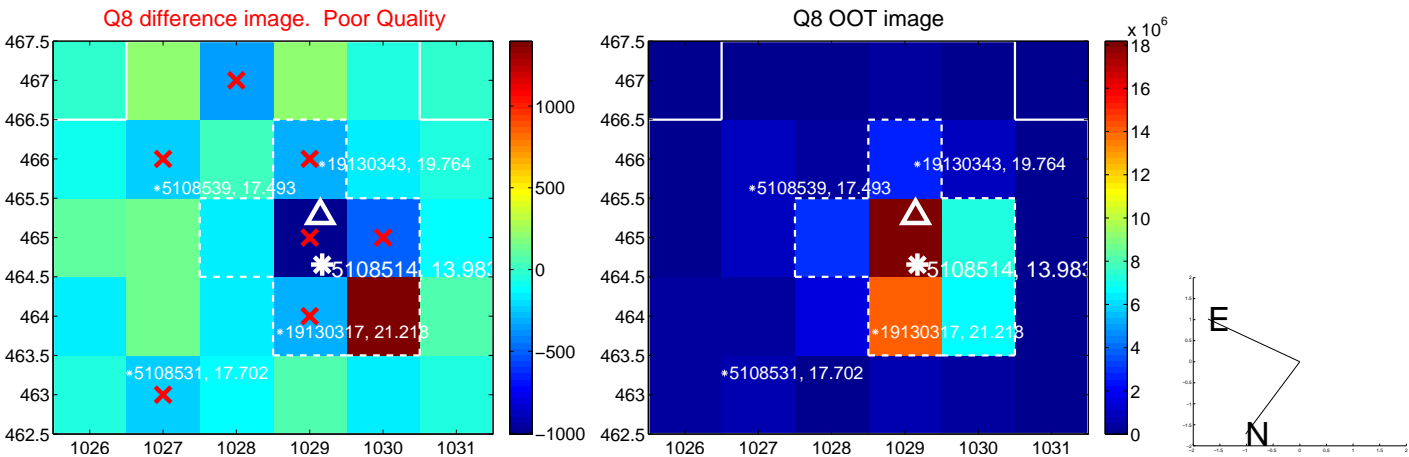
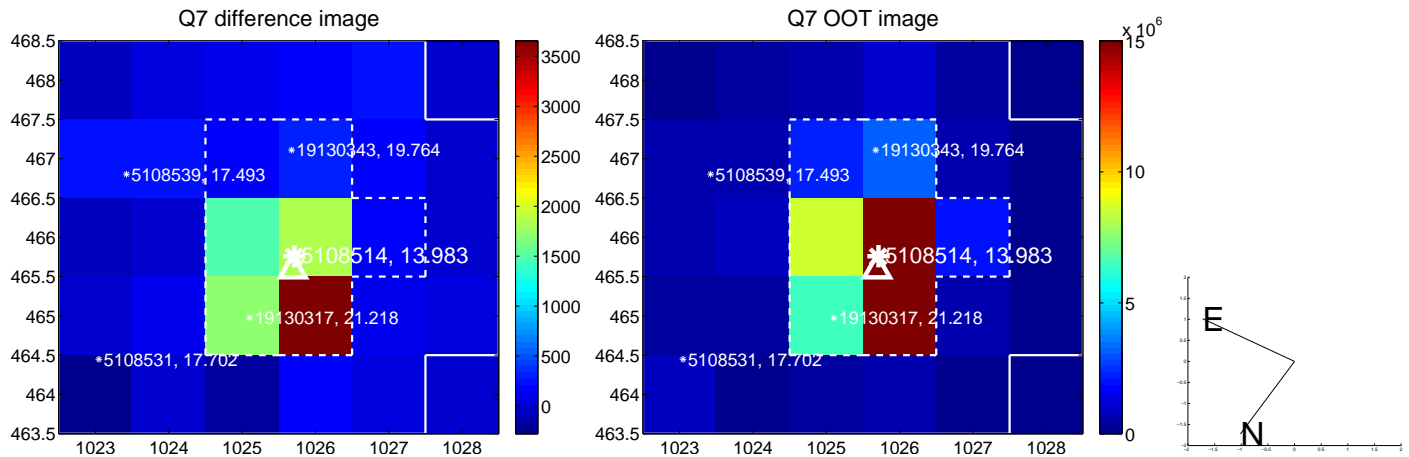
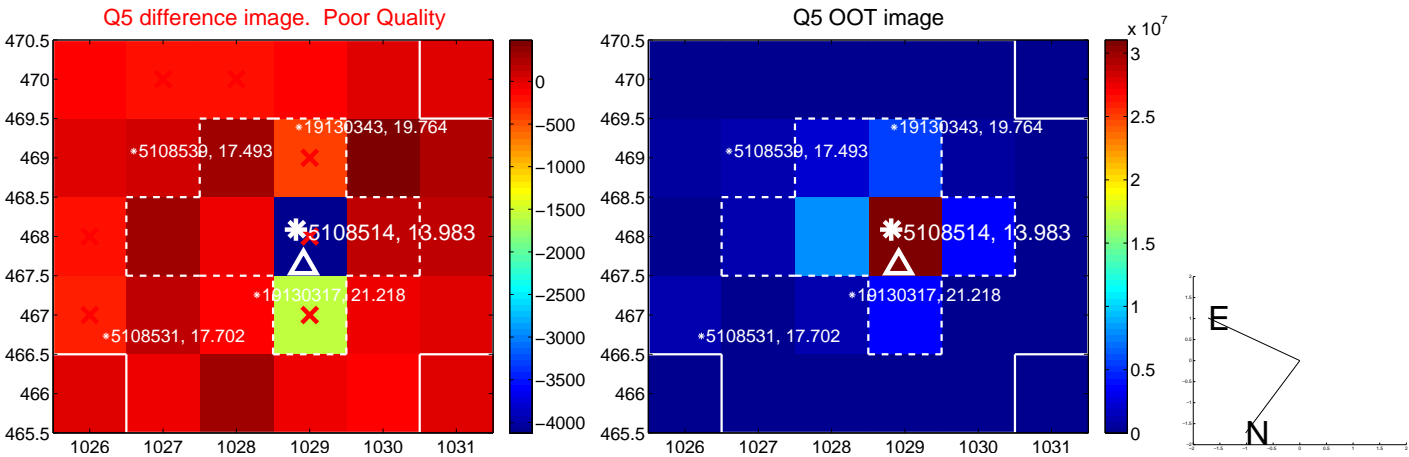


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: 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.

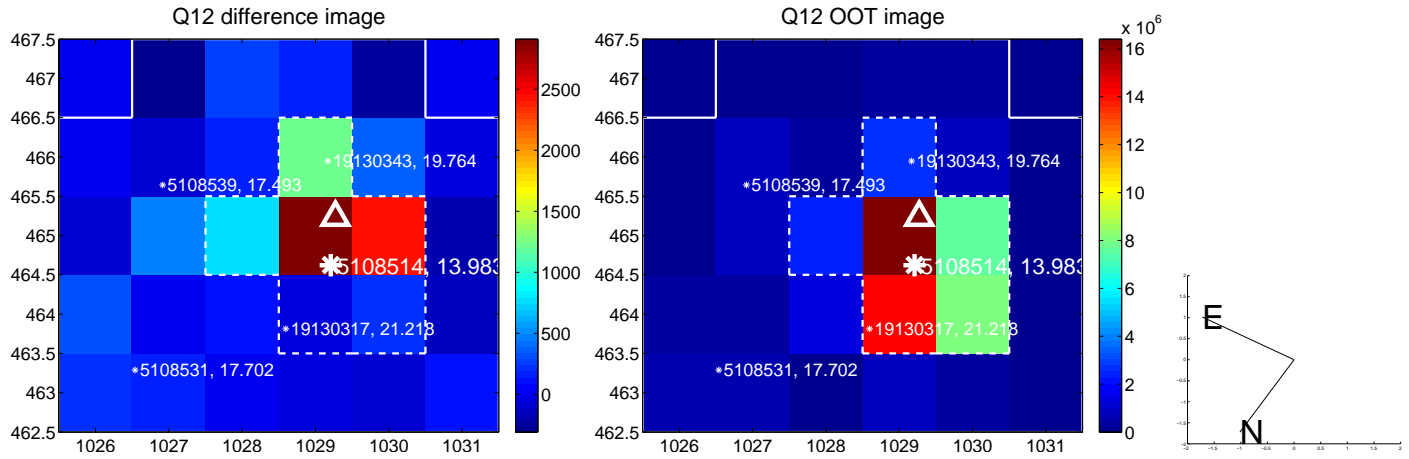
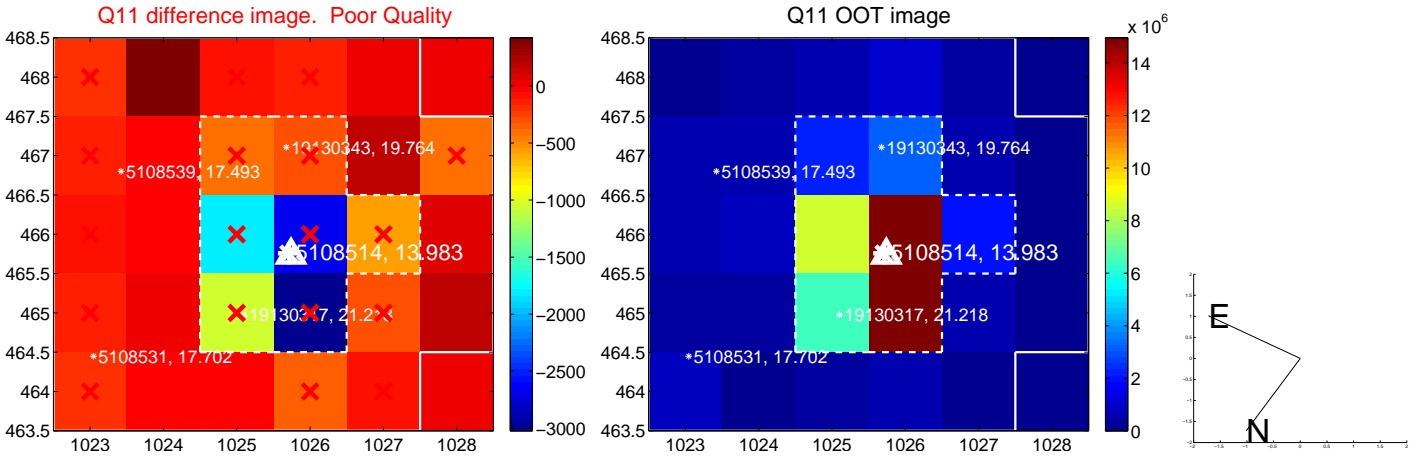
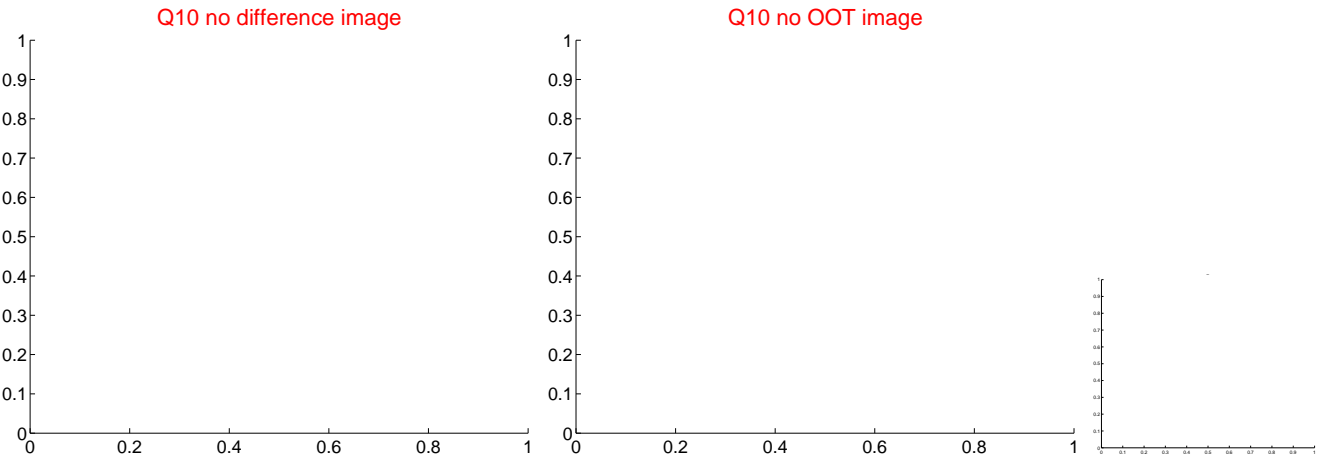
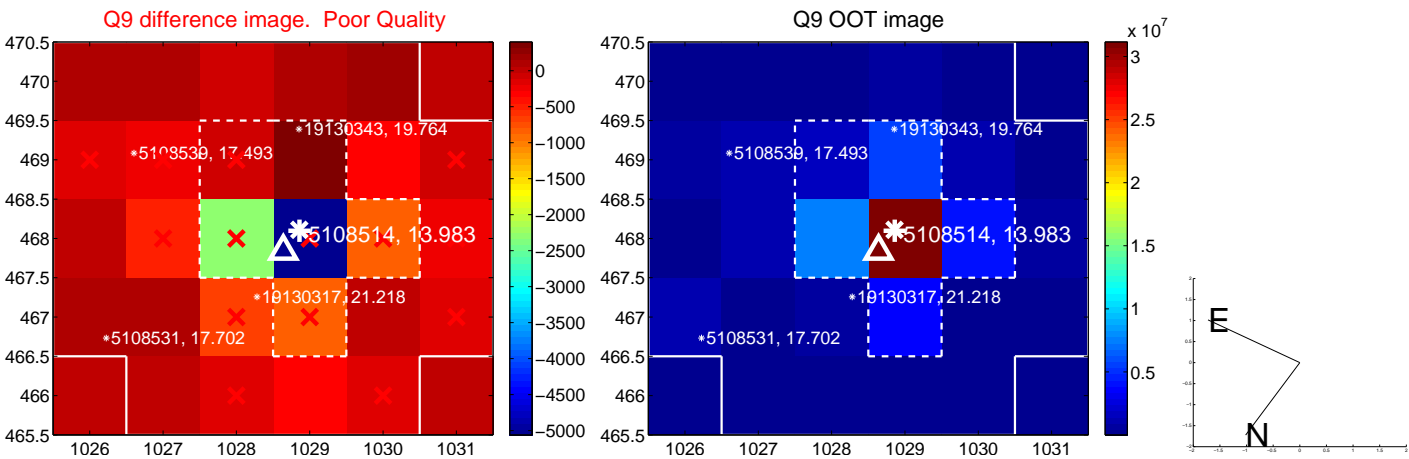
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

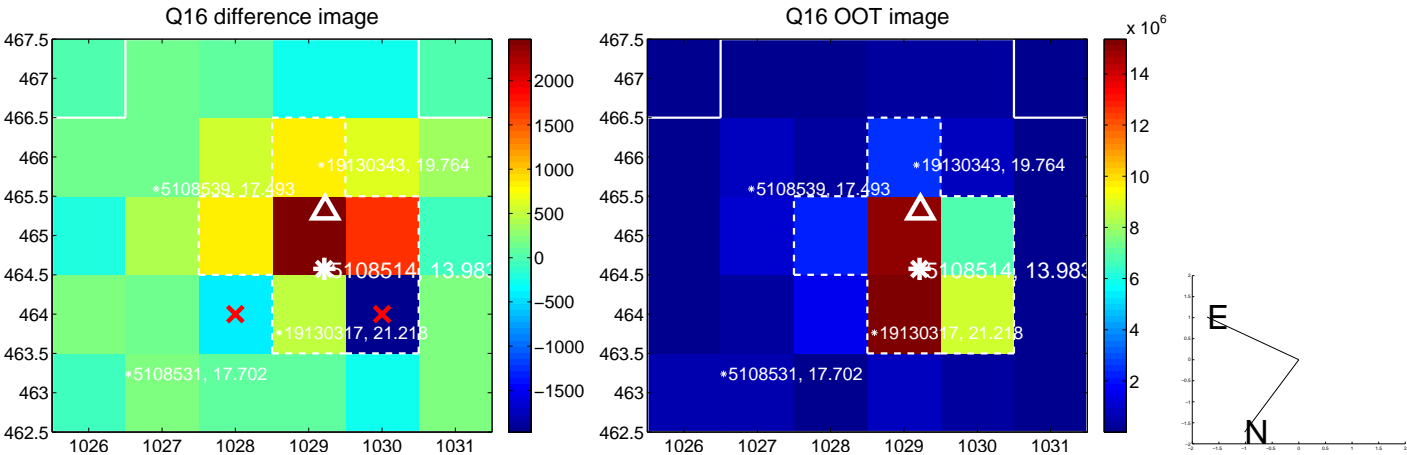
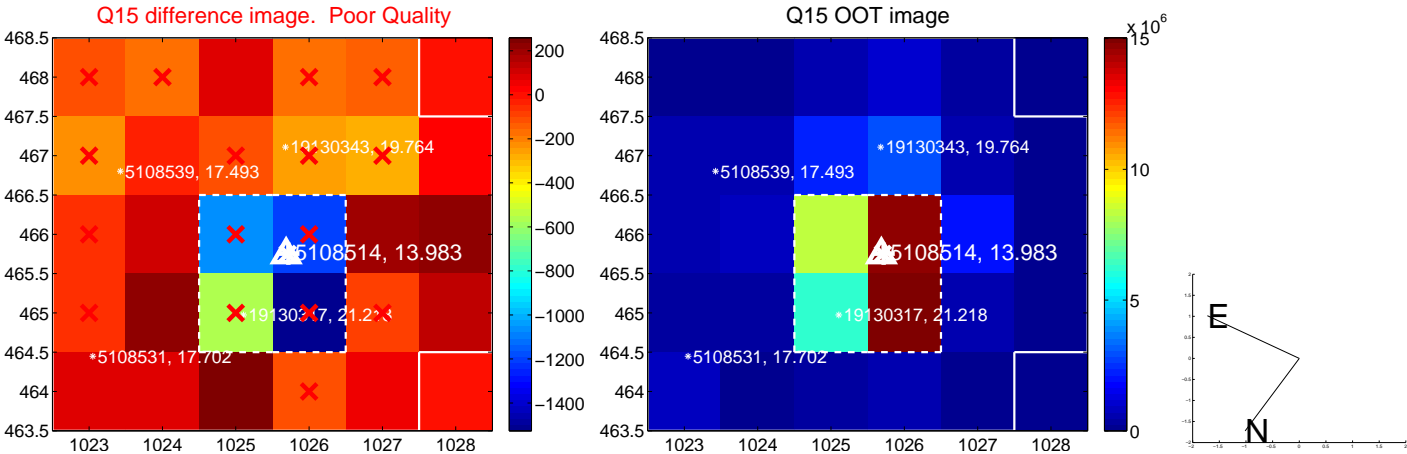
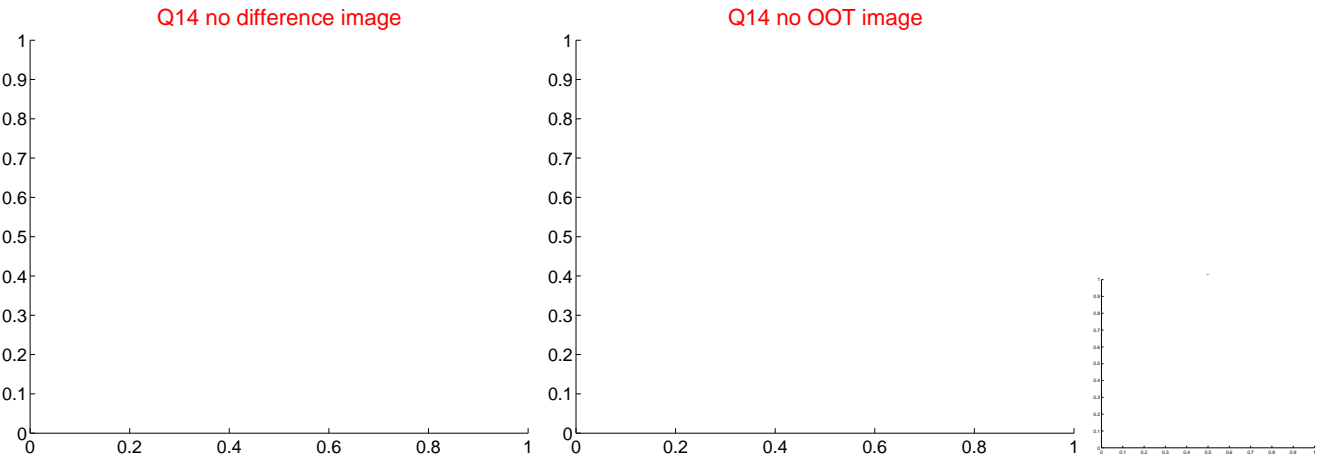
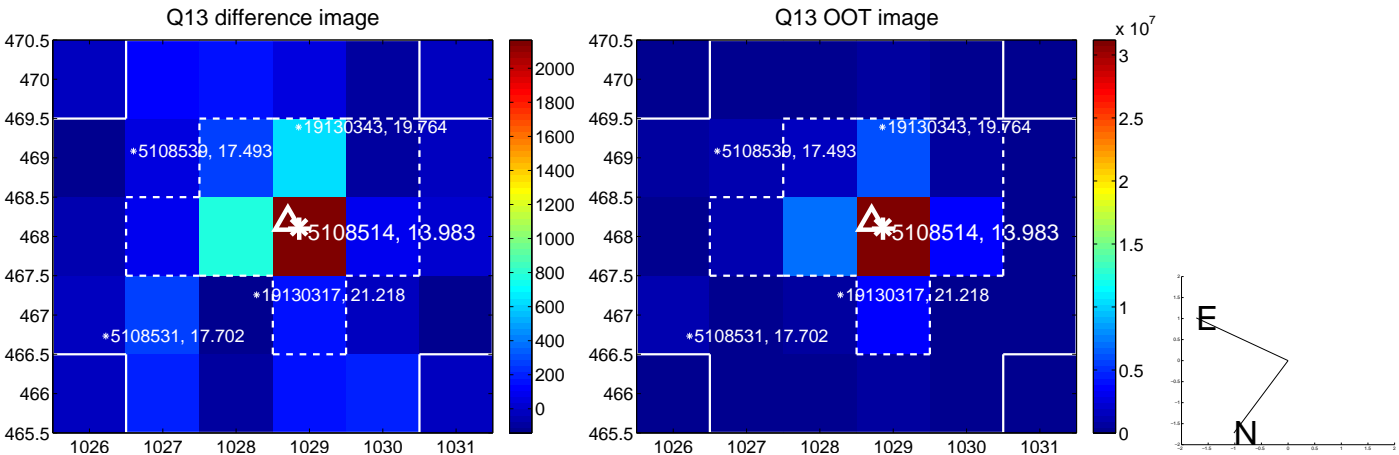


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

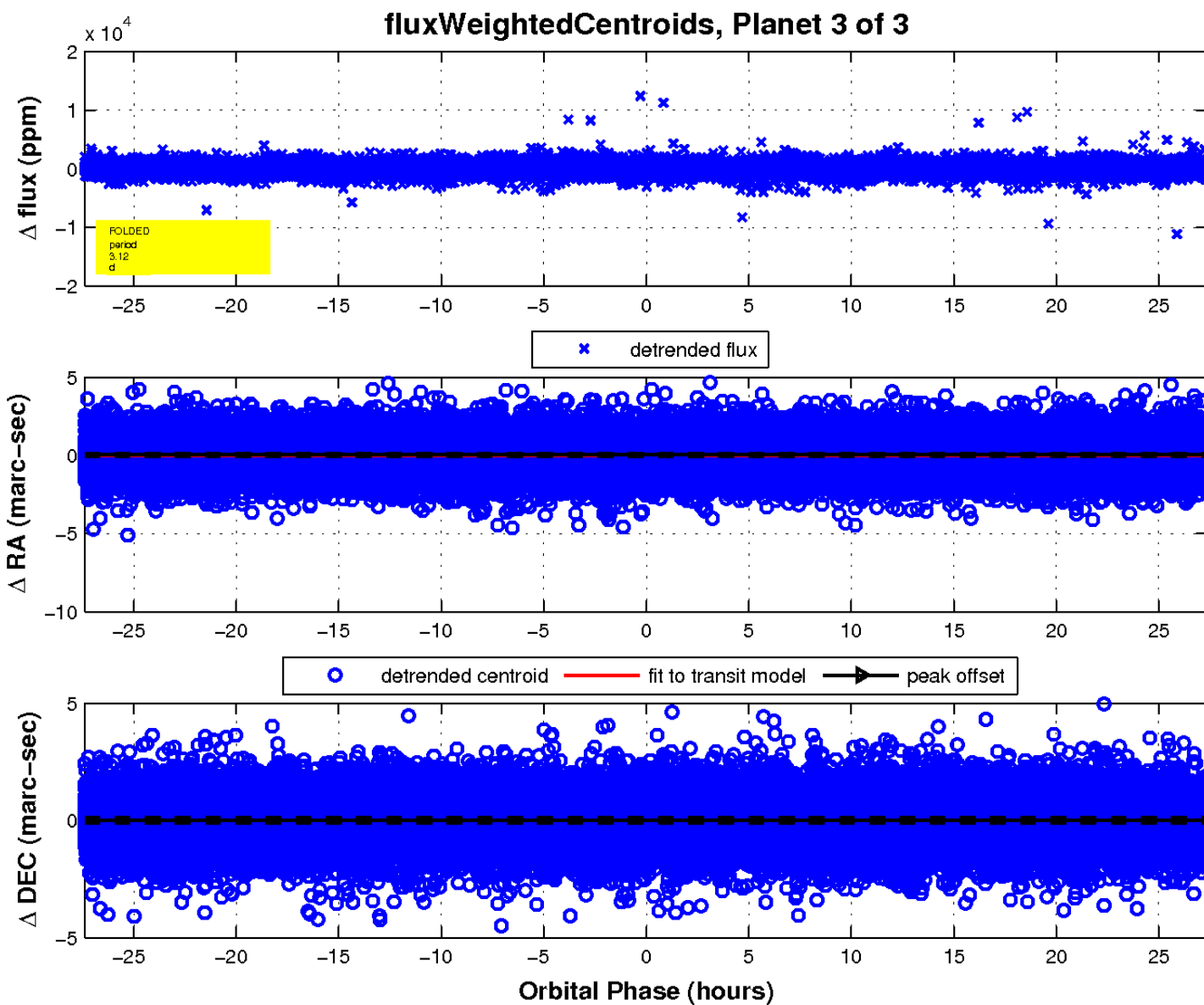
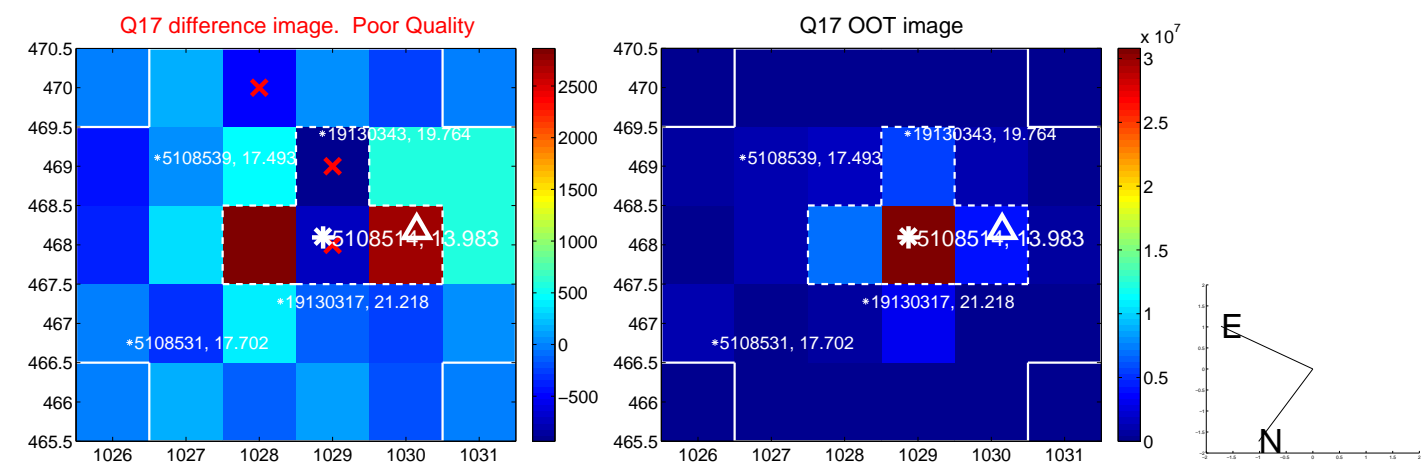




white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



UKIRT Image

Declination

