

# KIC 010341787

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
010341787-01	OBS	7313.01	0.933702	132.493752	134.3	5.393	11.6	14.7	0.85	5390	1.05	1825.01
010341787-02	OBS	No	68.110371	134.857375	1334.2	8.034	14.5	7.3	0.85	5390	3.57	5.99
010341787-03	OBS	No	126.582042	181.331214	1534.4	9.100	11.4	6.6	0.85	5390	3.45	2.62
010341787-04	OBS	No	64.524387	142.983279	1038.3	9.783	11.2	6.4	0.85	5390	3.23	6.43
010341787-05	OBS	No	50.152671	150.808918	1104.9	14.225	10.7	7.3	0.85	5390	3.40	9.01
010341787-06	OBS	No	137.876543	231.306680	2010.6	6.336	10.3	8.9	0.85	5390	4.13	2.34
010341787-07	OBS	No	85.064483	174.685007	1329.9	9.343	10.6	7.7	0.85	5390	3.75	4.45

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010341787-01	OBS	FP	0.00	0	0	1	1	CENT_RESOLVED_OFFSET—HALO_GHOST—EPHEM_MATCH
010341787-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
010341787-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
010341787-04	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_FEW_DIFFS—HALO_GHOST
010341787-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
010341787-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
010341787-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS

**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.

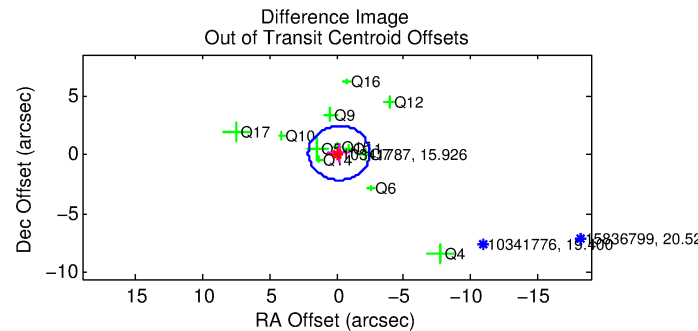
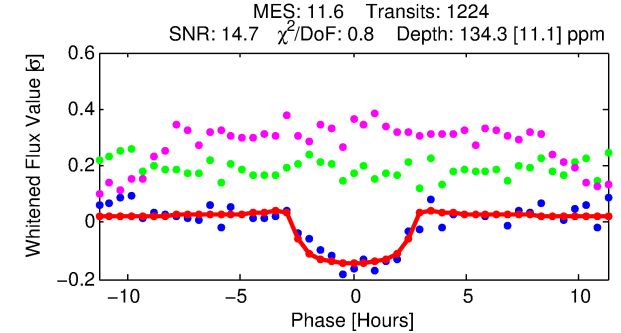
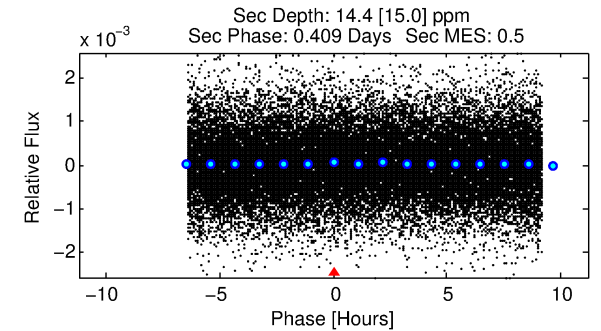
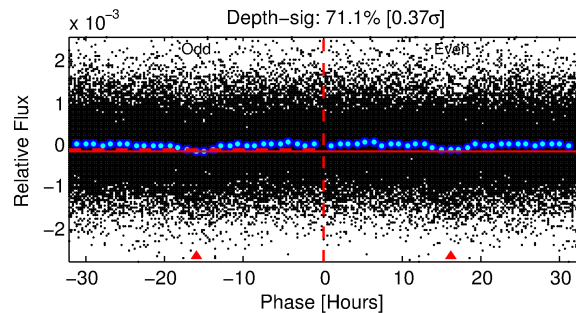
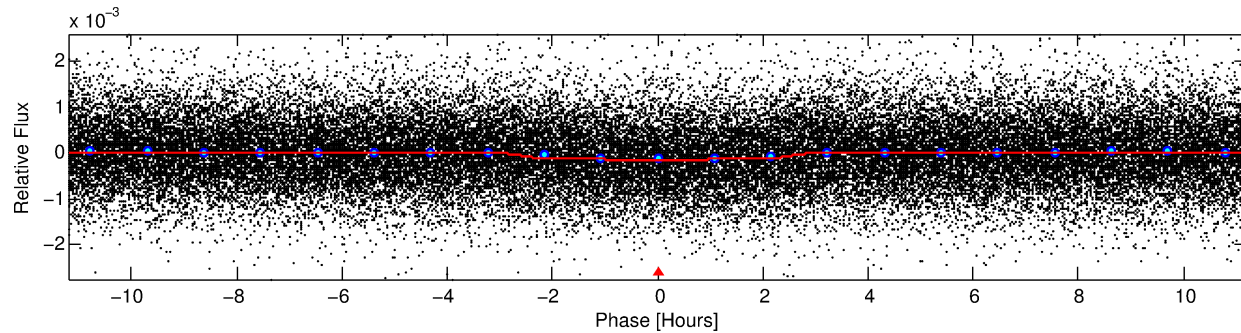
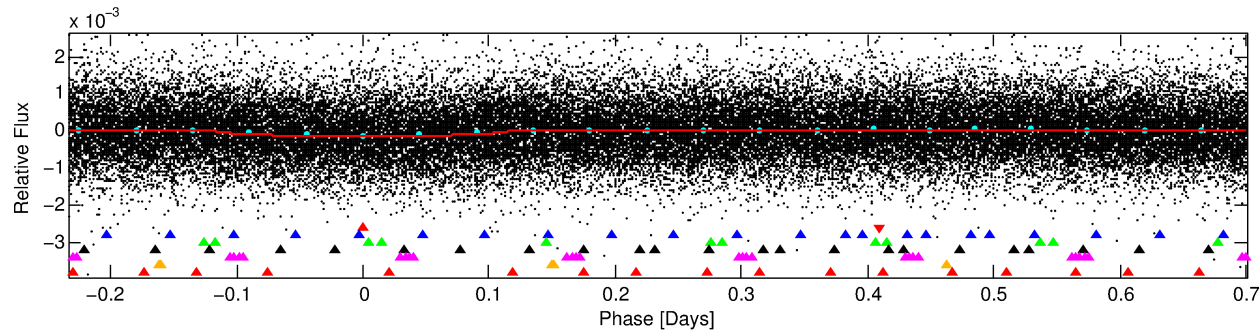
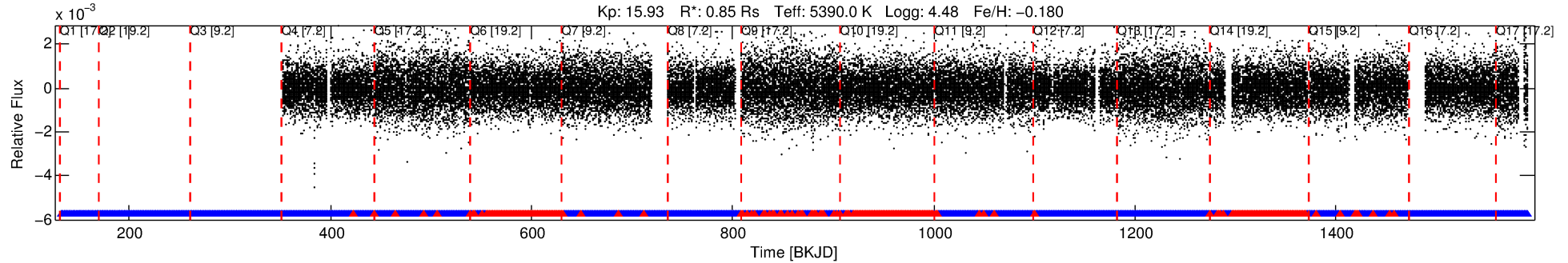
## Ephemeris Match Information For 010341787-01

TCE (1)	KIC	Parent (2)	Parent KIC	$P_1:P_2$	Dist ( $''$ )	$\Delta$ Row	$\Delta$ Col	$m_2$	$m_1$	$D_2/D_1$	Mechanism	Flag	$\sigma_P$	$\sigma_T$
010341787-01	10341787	010407271-01	10407271	1:1	547.6	-48	2	14.98	15.92	0.17	Col-Anomaly	1	0.21	1.15

**Notes:**  $P_1:P_2$  is the period ratio. Dist is the distance in arcseconds.  $\Delta$ Row and  $\Delta$ Col are the number of pixels apart in row and column.  $m_2$  and  $m_1$  are the magnitudes of the parent and child.  $D_2/D_1$  is the parent's transit depth divided by the child's.  $\sigma_P$  and  $\sigma_T$  are the significance of the match in period and epoch. For a match to be considered significant  $\sigma_P < 5.0$  and  $\sigma_T < 5.0$ . Matches which have  $\sigma_P$  and  $\sigma_T$  very close to this cutoff should receive extra scrutiny, especially if the period ratio is very large.

# DV One-Page Summary

KIC: 10341787 Candidate: 1 of 7 Period: 0.934 d  
KOI: K07313.01 Corr: 0.874



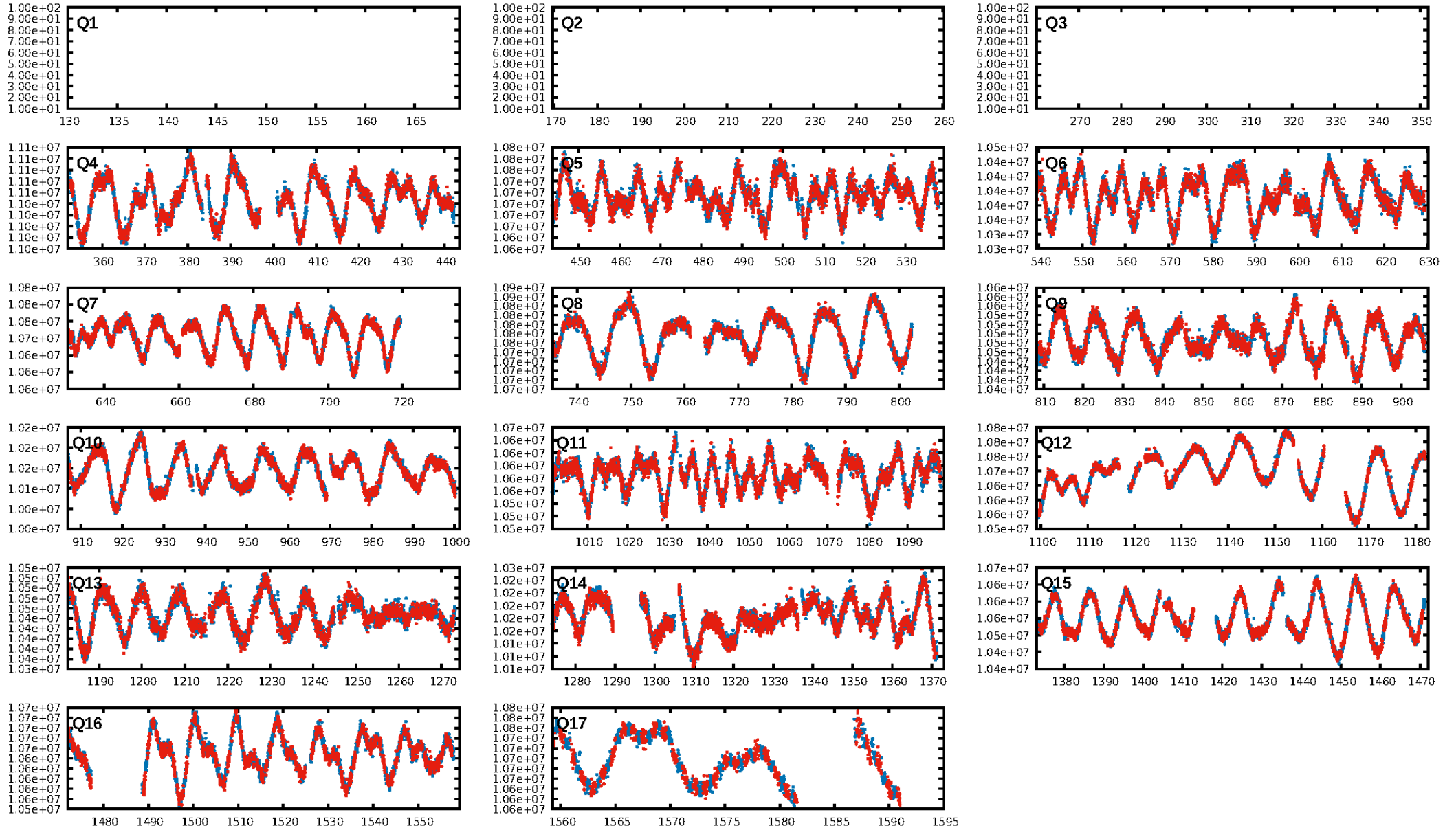
## DV Fit Results:

Period = 0.93370 [0.00001] d  
Epoch = 132.4938 [0.0035] BKJD  
Rp/R\* = 0.0113 [0.0070]  
a/R\* = 1.27 [1.21]  
b = 0.70 [1.84]  
Seff = 1825.01 [515.06]  
Teq = 1667 [118] K  
Rp = 1.05 [0.68] Re  
a = 0.0173 [0.0028] AU  
Ag = 2.15 [3.51] [0.33 $\sigma$ ]  
Teffp = 3121 [1266] K [1.14 $\sigma$ ]

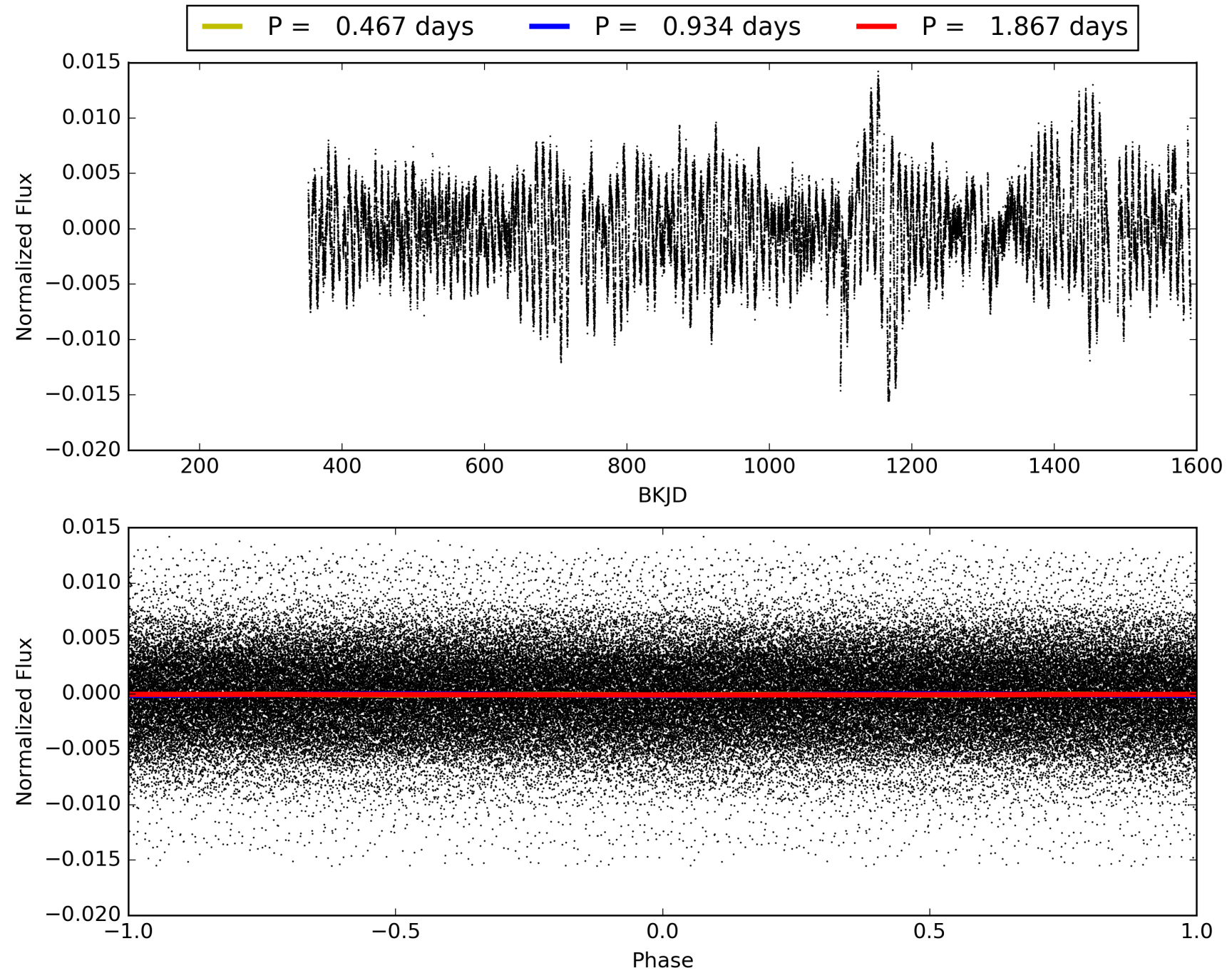
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [77.65 $\sigma$ ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 3.38e-25  
RollingBand-fgt: 0.75 [895/1194]  
GhostDiagnostic-chr: 0.2341  
Centroid-sig: 0.0%  
Centroid-so: 2.813 arcsec [3.08 $\sigma$ ]  
OotOffset-rm: 0.237 arcsec [0.31 $\sigma$ ]  
KicOffset-rm: 0.424 arcsec [0.52 $\sigma$ ]  
OotOffset-st: 3/3/3/3 [12]  
KicOffset-st: 3/3/3/3 [12]  
DiffImageQuality-fgm: 0.00 [0/12]  
DiffImageOverlap-fno: 1.00 [14/14]

# TCE 010341787-01, PDC Light Curves



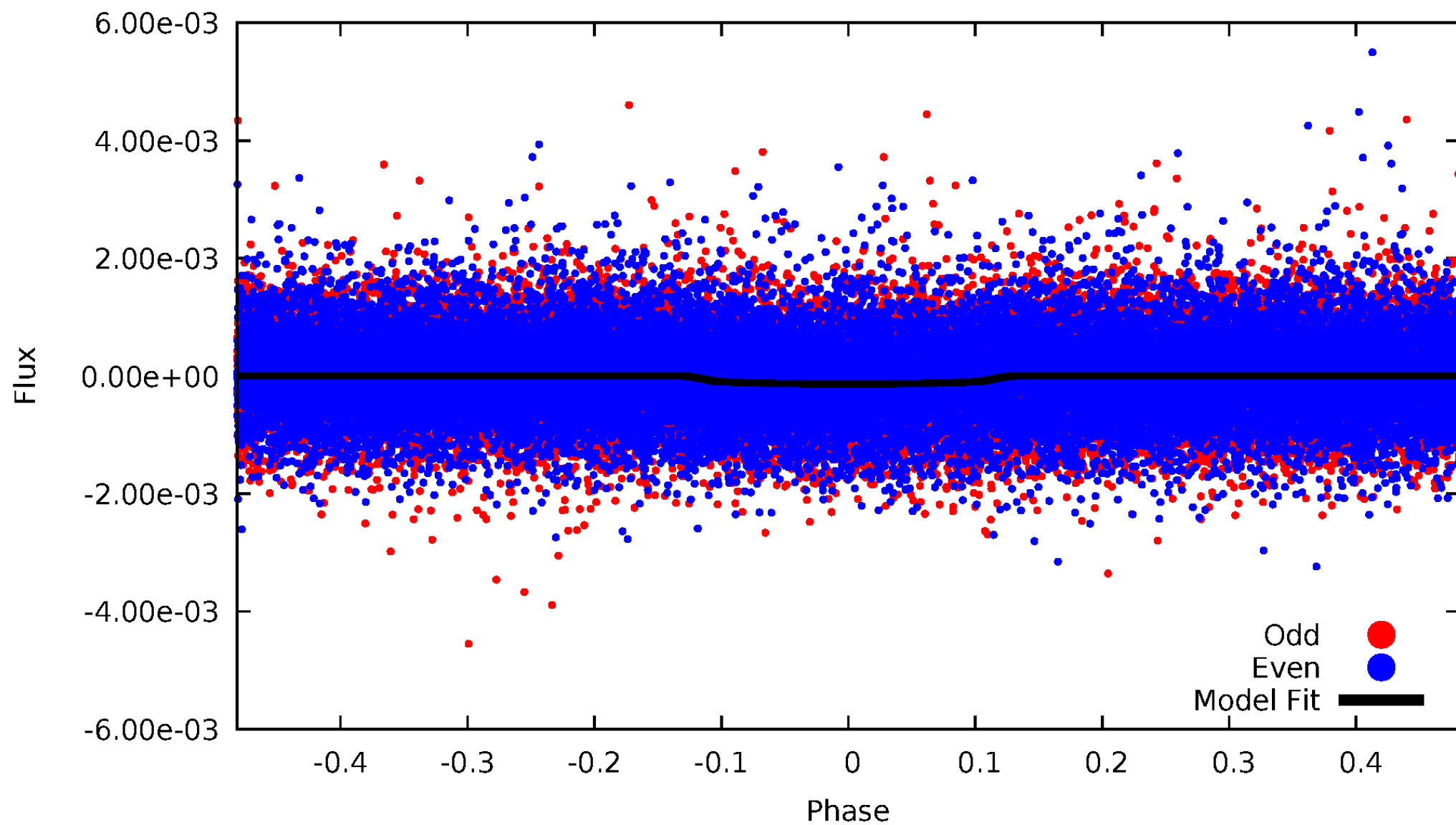
TCE 010341787-01





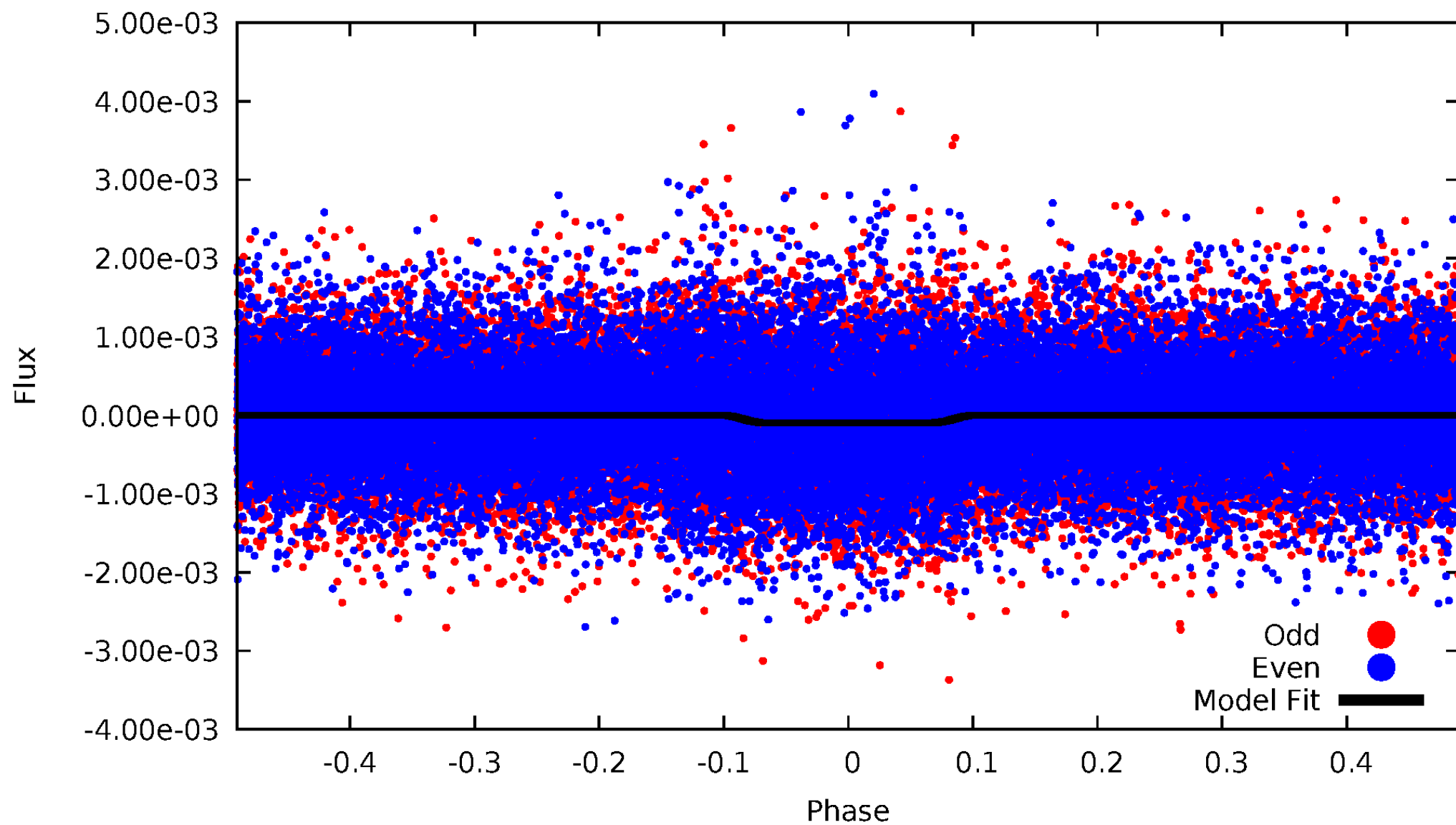
# DV Odd/Even

TCE 010341787-01



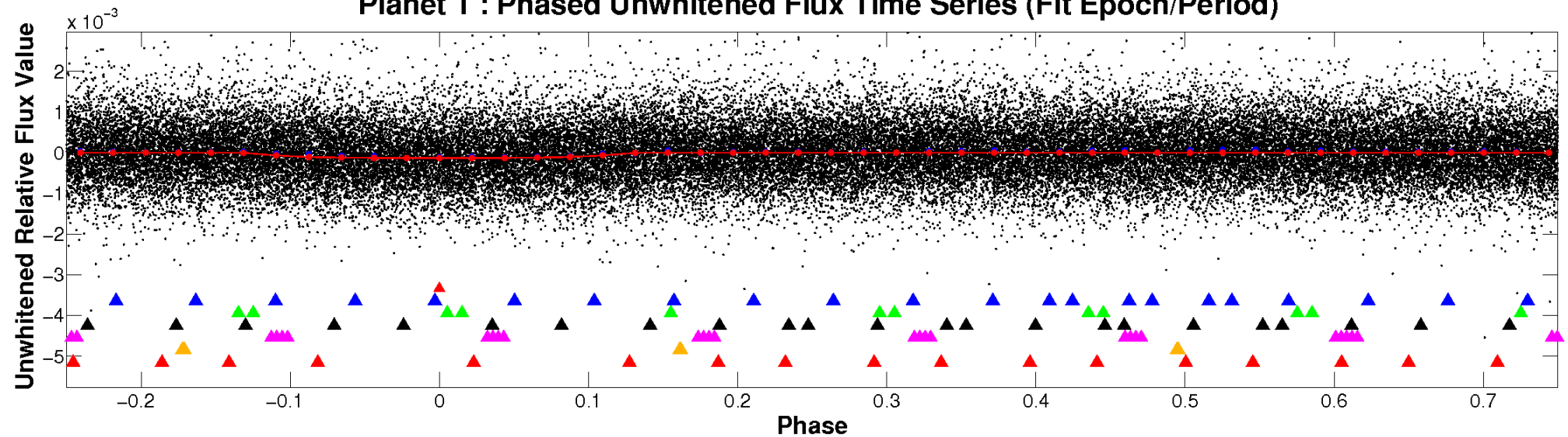
# ALT Odd/Even

TCE 010341787-01

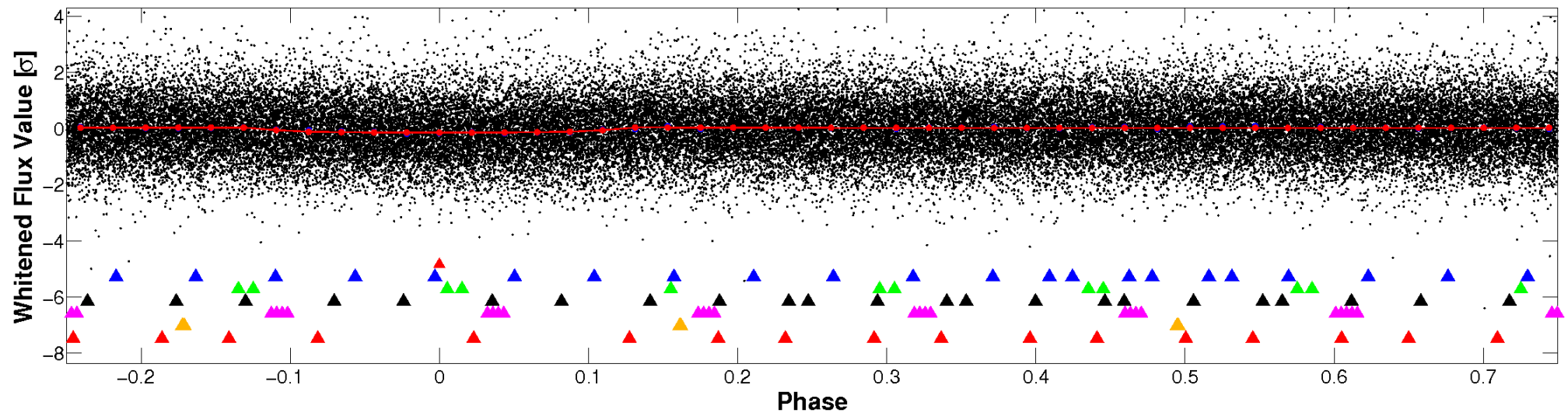


# Non-Whitened Vs. Whitened Light Curve

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

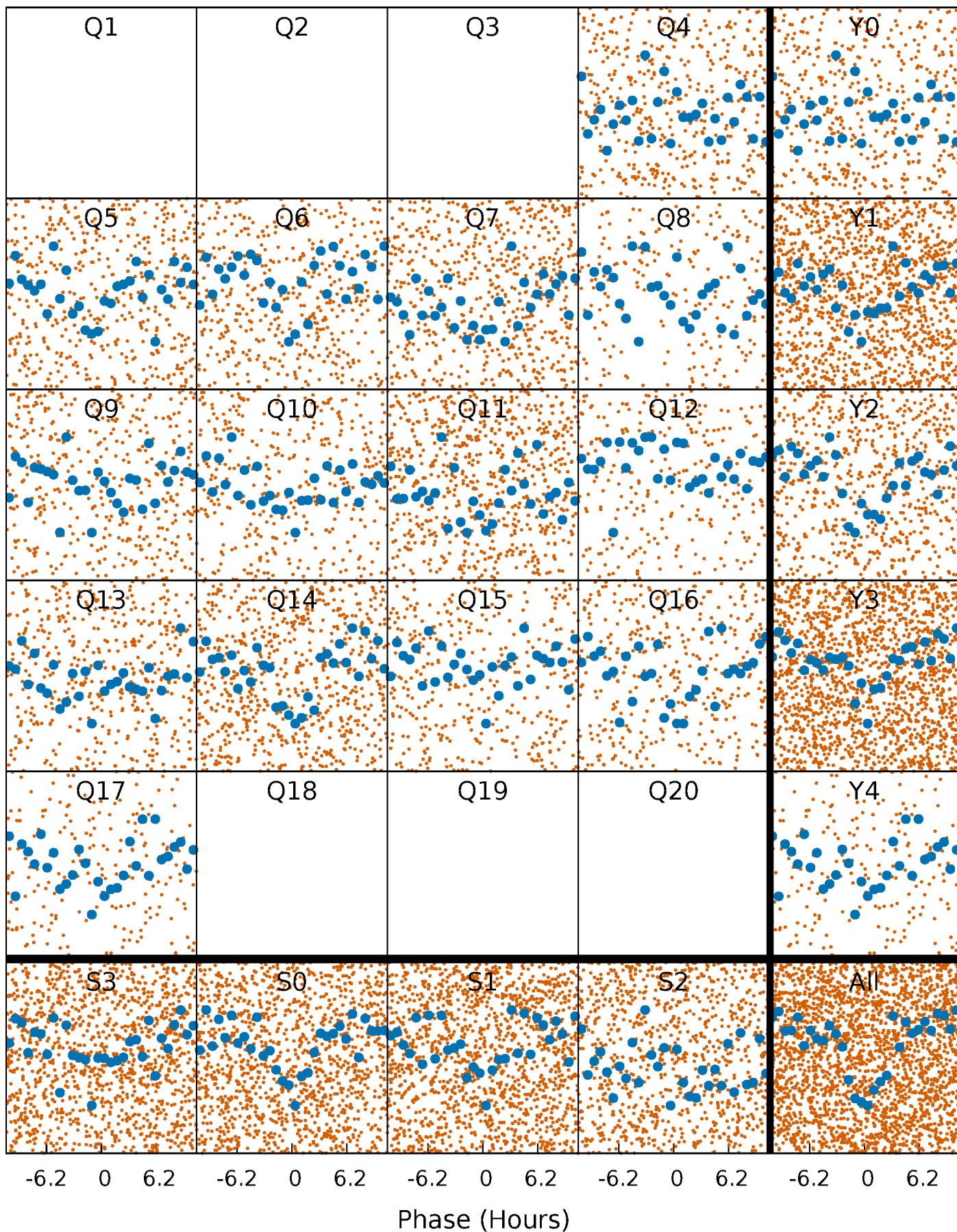


## Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

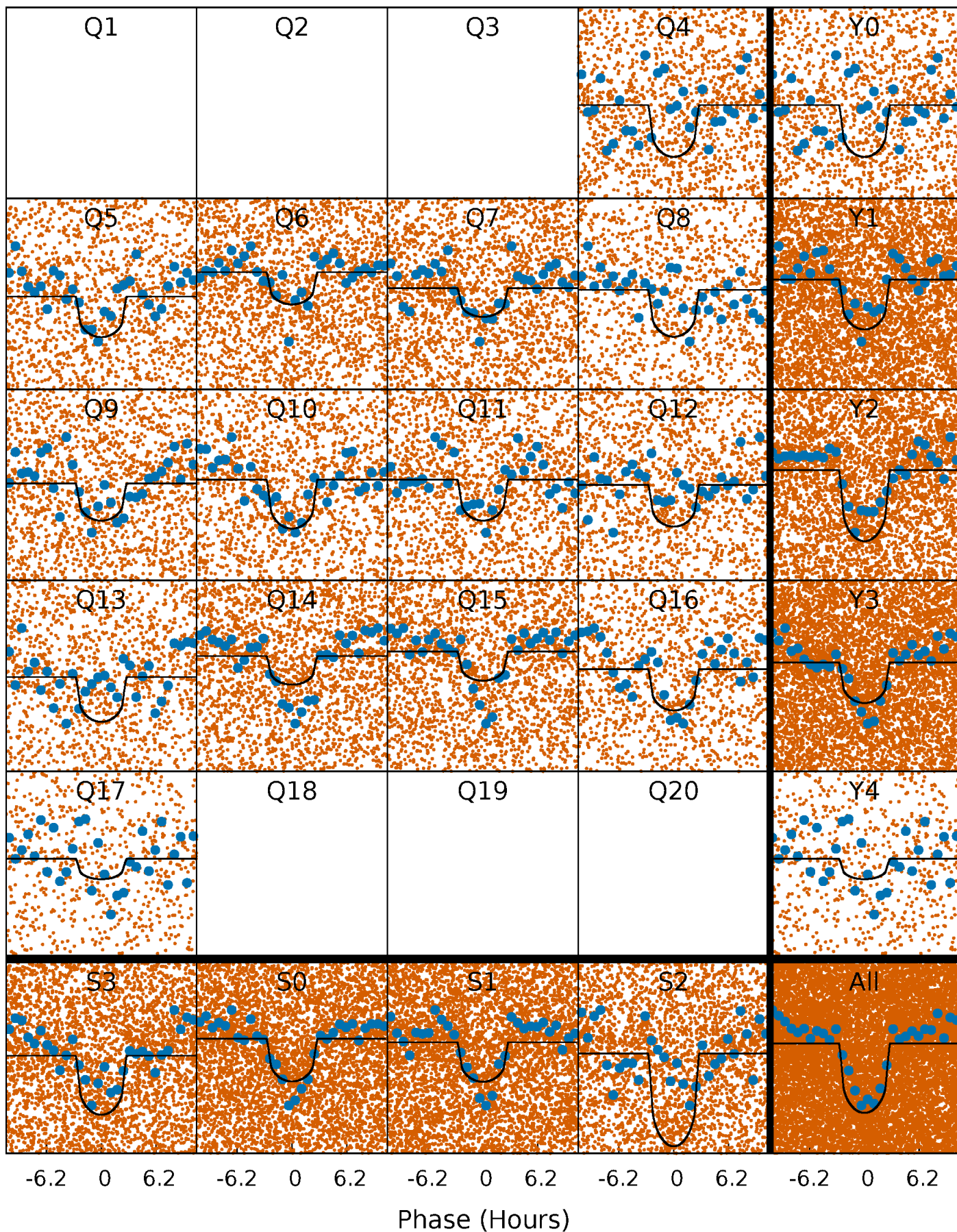
TCE 010341787-01 P= 0.933702 Days  $T_0=132.493752$  (BKJD)





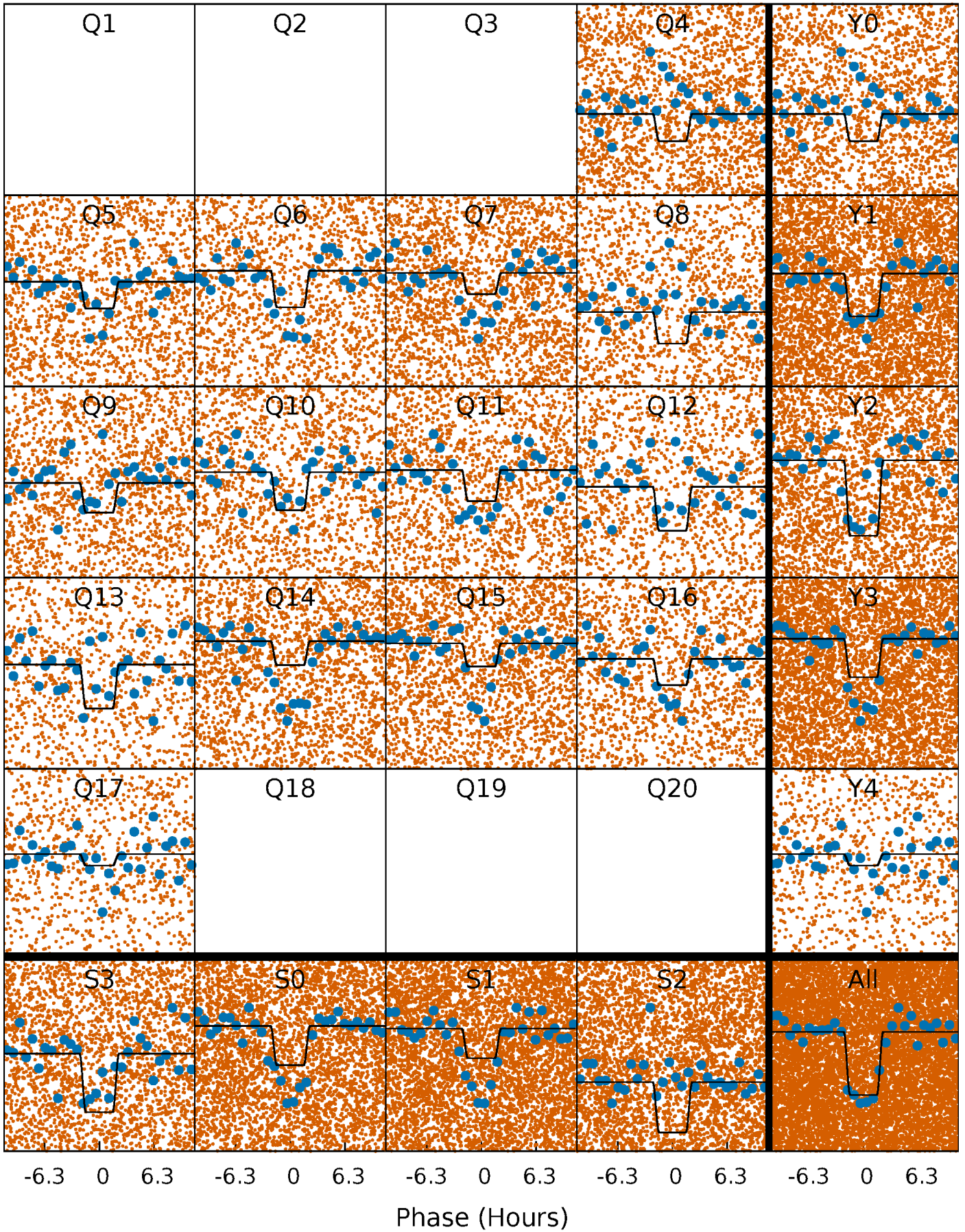
# DV Quarter-Phased Transit Curves

TCE 010341787-01   P= 0.933702 Days    $T_0=132.493752$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 010341787-01 P= 0.933740 Days  $T_0=132.459421$  (BKJD)

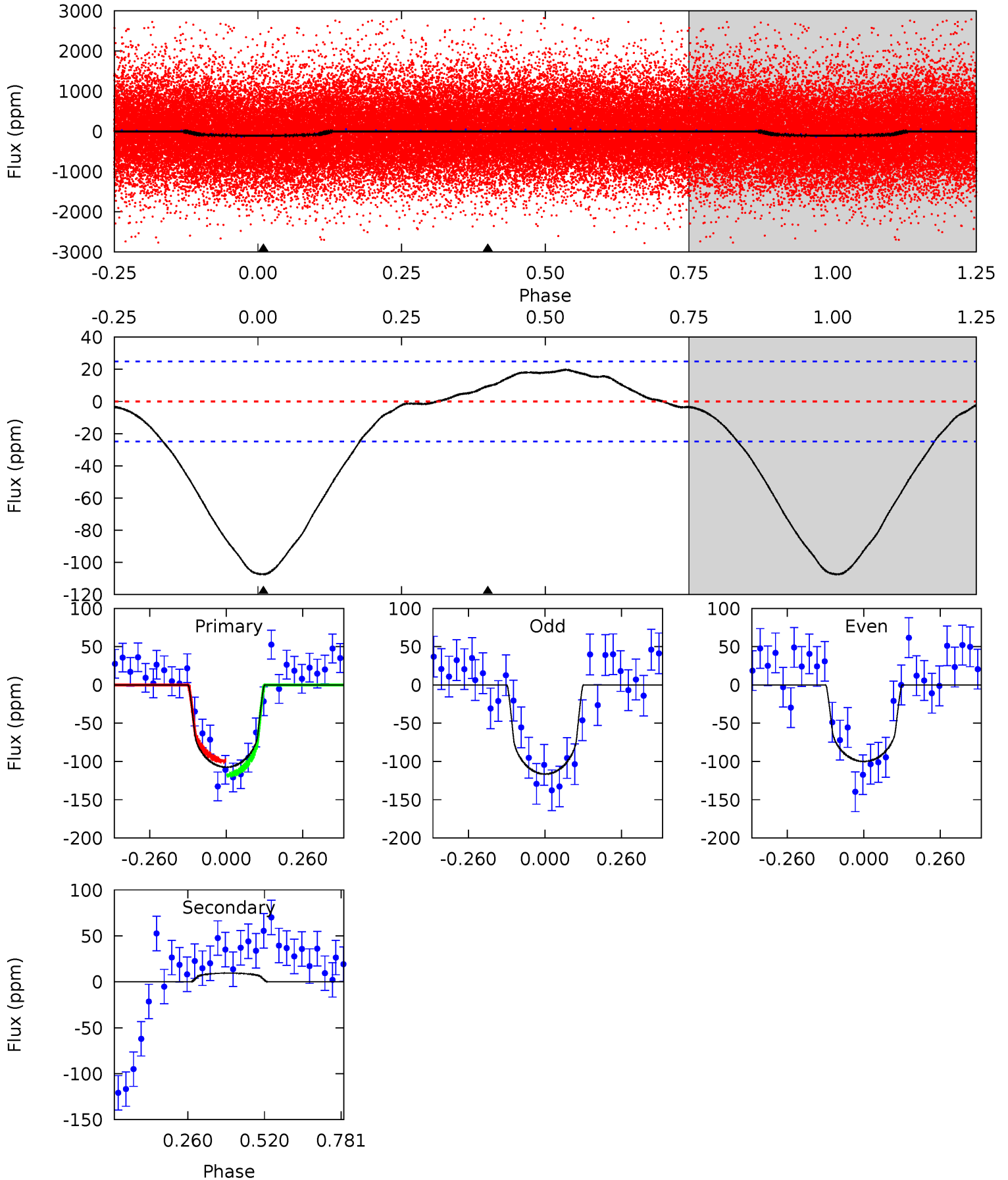




# DV Model-Shift Uniqueness Test

010341787-01, P = 0.933702 Days, E = 132.493752 Days

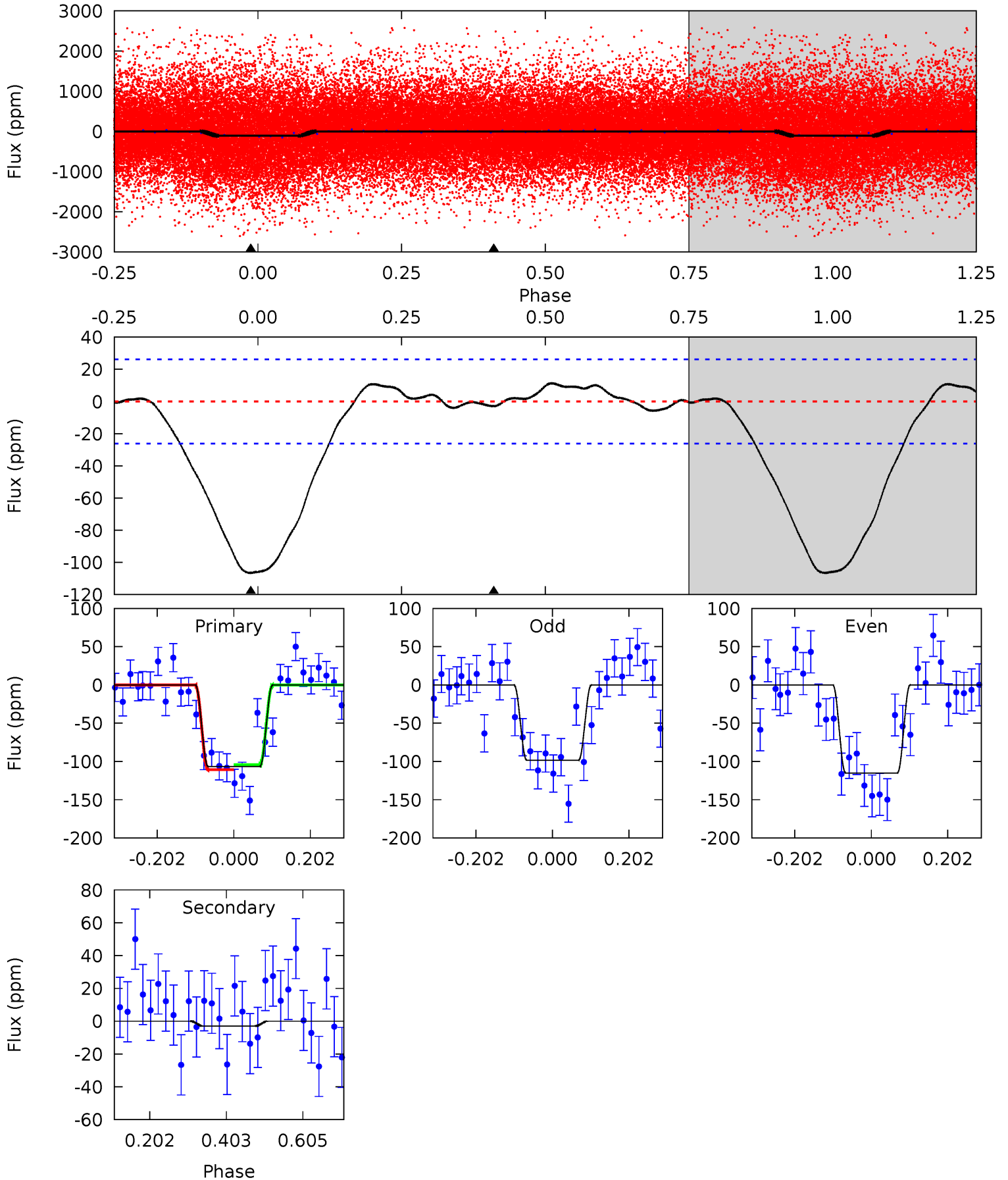
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
18.8	-1.66	0	0	4.36	1.13	0.53	18.8	18.8	-1.66	-1.66	1.43	0.97	0.16	1.55



# Alt Model-Shift Uniqueness Test

010341787-01, P = 0.933740 Days, E = 132.459421 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
18.0	0.50	0	0	4.42	1.28	0.73	18.0	18.0	0.50	0.50	1.40	0.89	0.10	0.53





### Stellar Parameters For KIC 010341787

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5390^{+204}_{-185}$	$4.479^{+0.096}_{-0.132}$	$-0.180^{+0.300}_{-0.300}$	$0.852^{+0.160}_{-0.107}$	$0.798^{+0.113}_{-0.061}$	$1.819^{+0.720}_{-0.717}$
	+4%/-3%	+2%/-3%	+167%/-167%	+19%/-13%	+14%/-8%	+40%/-39%
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 010341787-01 / KOI 7313.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$9 \pm 6$	$1.12^{+0.67}_{-0.59}$	$2348^{+139}_{-121}$	$-3377^{+435}_{-811}$	$-1.185^{+0.887}_{-4.357}$
Alt.	$-3 \pm 6$	$0.97^{+0.63}_{-0.54}$	$2348^{+128}_{-128}$	$2327^{+1394}_{-5437}$	$0.395^{+2.713}_{-0.914}$

$T_{max}$  = 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

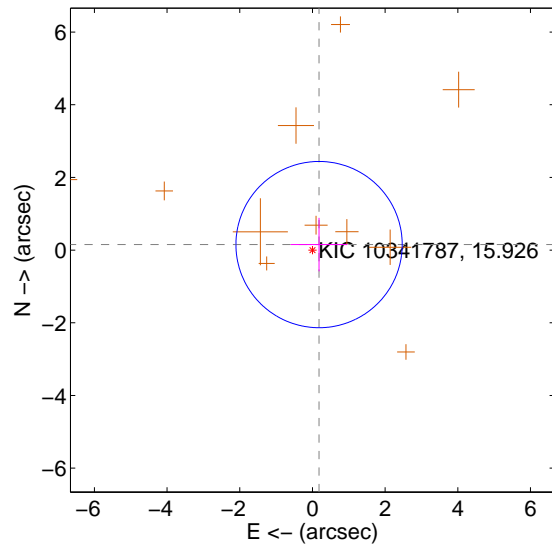
Supplemental centroid analysis for 010341787-01. Kepler magnitude: 15.93. Transit SNR 14.65

There are 0 quarters with good PRF difference image offsets

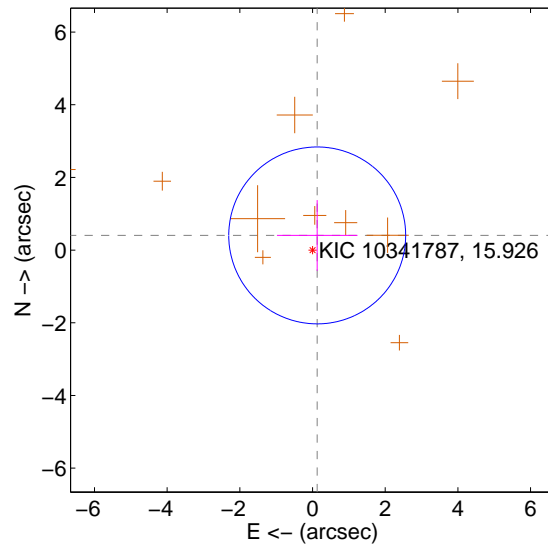
The direct PRF centroid is offset from the target star catalog position by about 0.28 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.237 \pm 0.763$	0.31	$-0.182 \pm 0.781$	$0.152 \pm 0.736$
PRF-fit source offset from KIC position	$0.424 \pm 0.811$	0.52	$-0.129 \pm 1.108$	$0.404 \pm 0.973$
photometric centroid source offset	$2.81 \pm 0.91$	3.08	$2.79 \pm 0.91$	$-0.39 \pm 0.88$

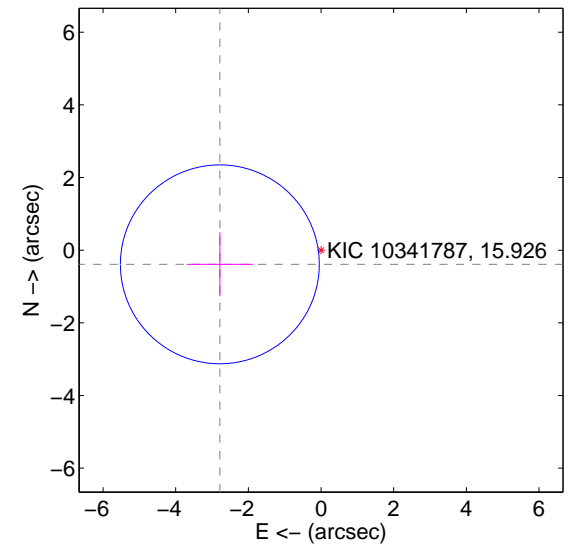
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

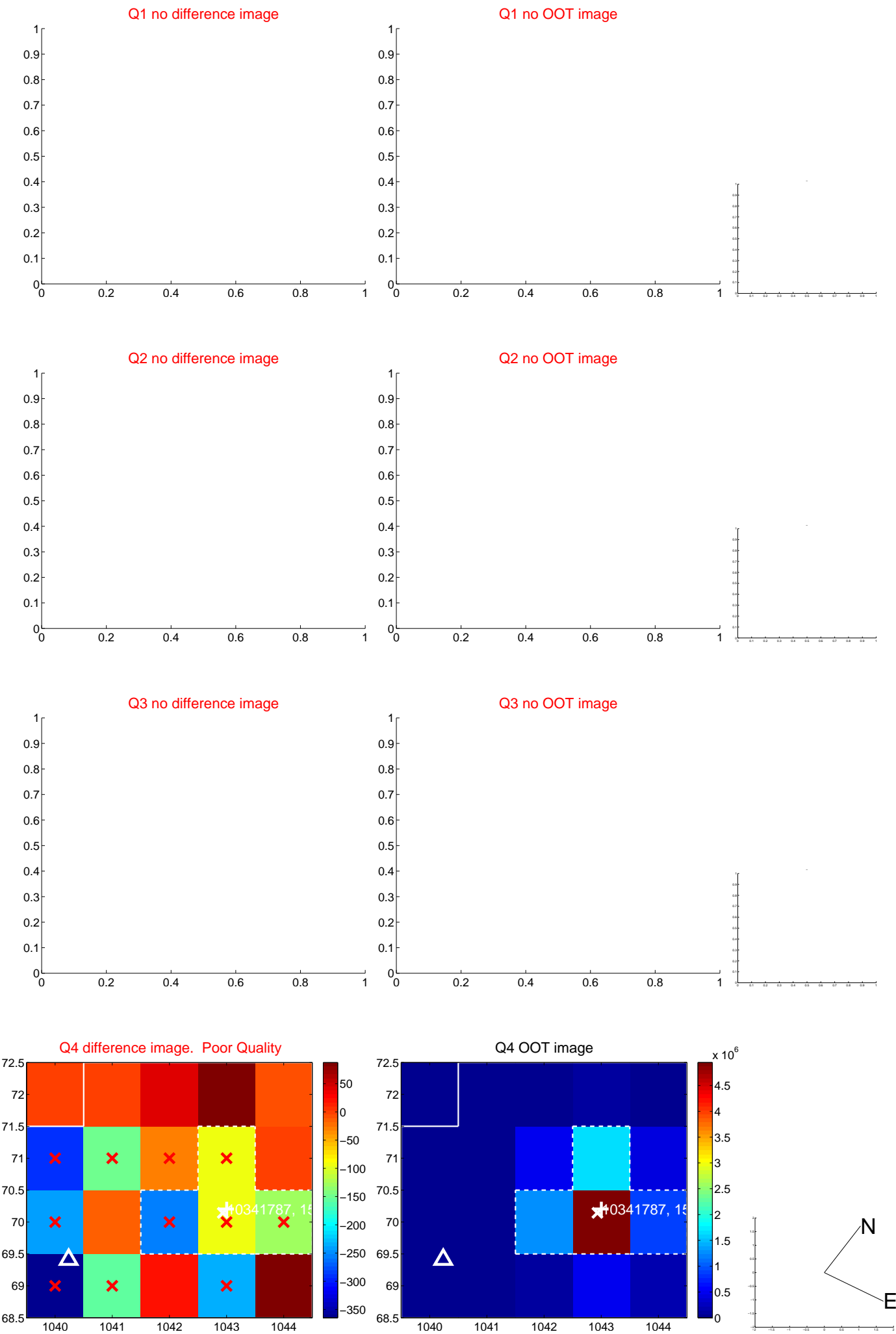


offset from photometric centroids

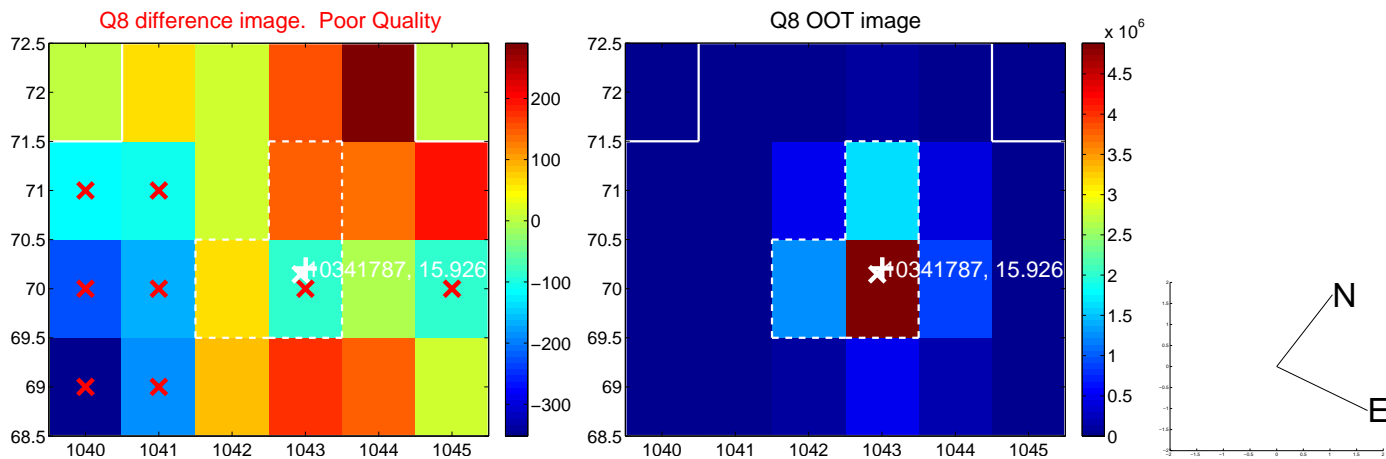
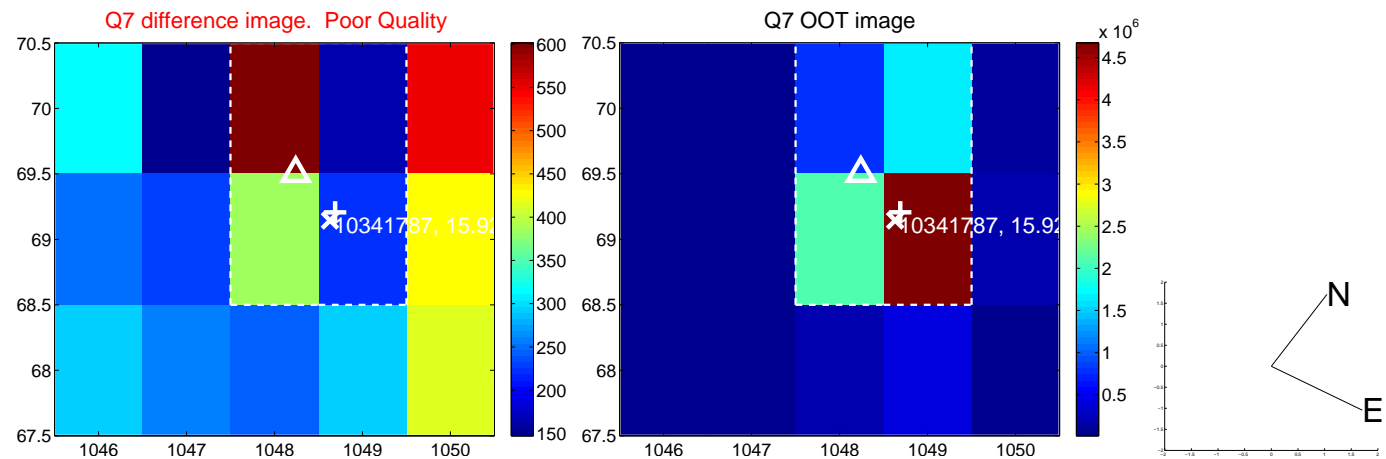
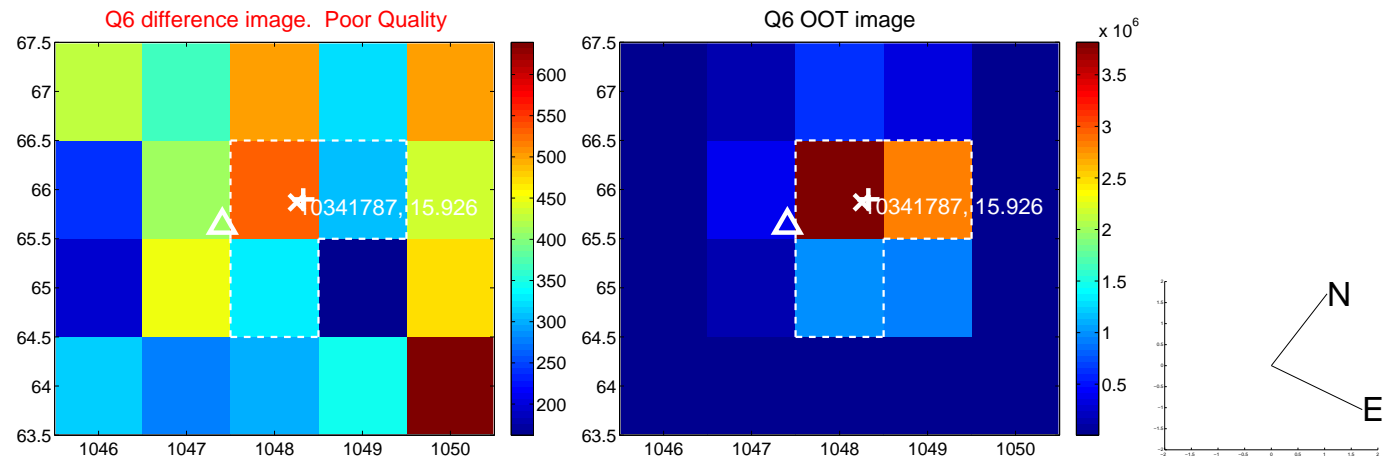
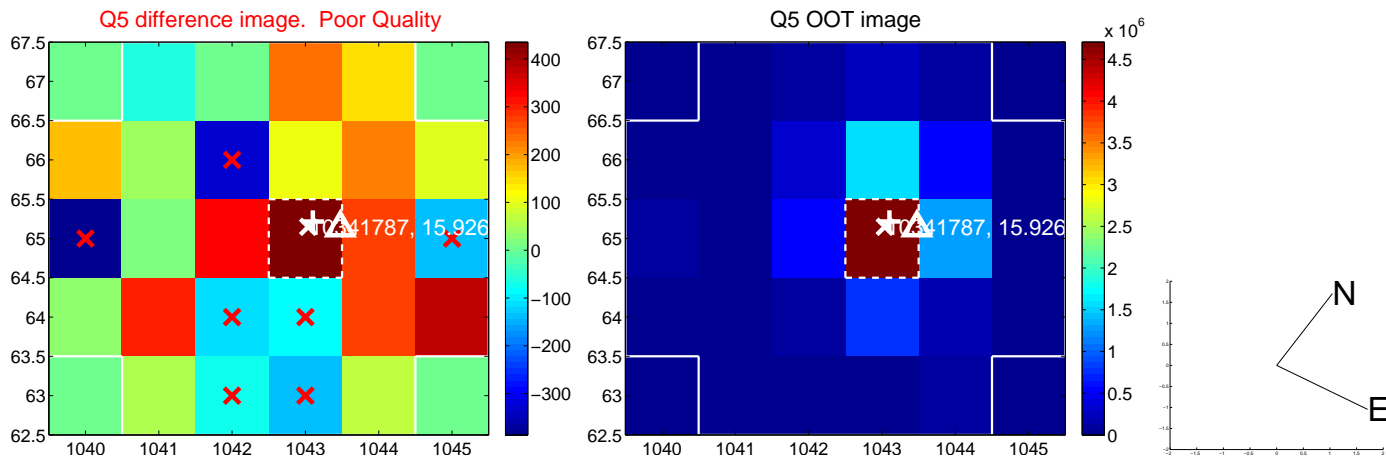


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

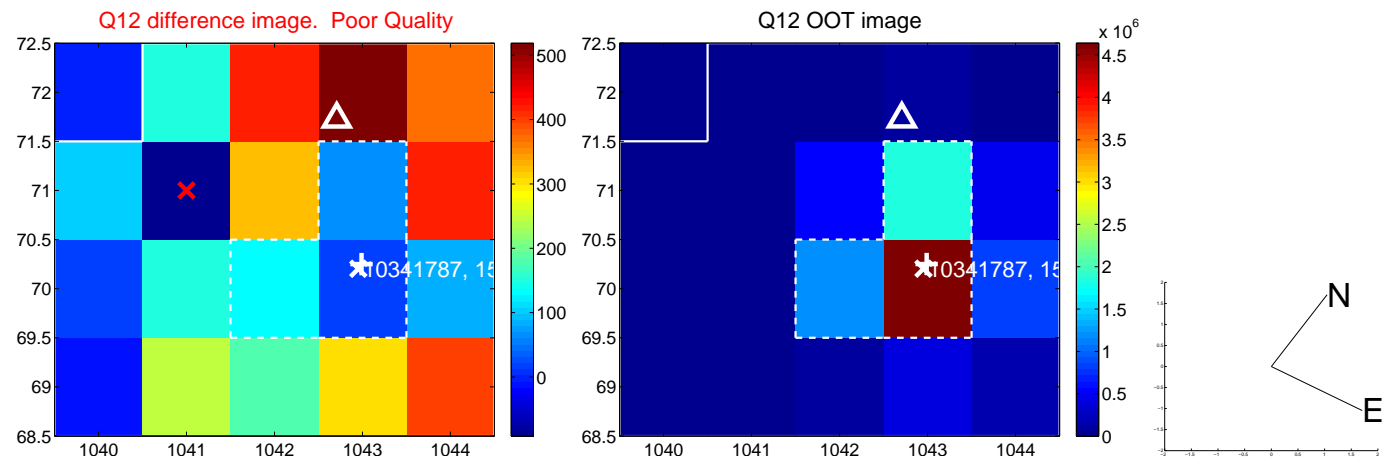
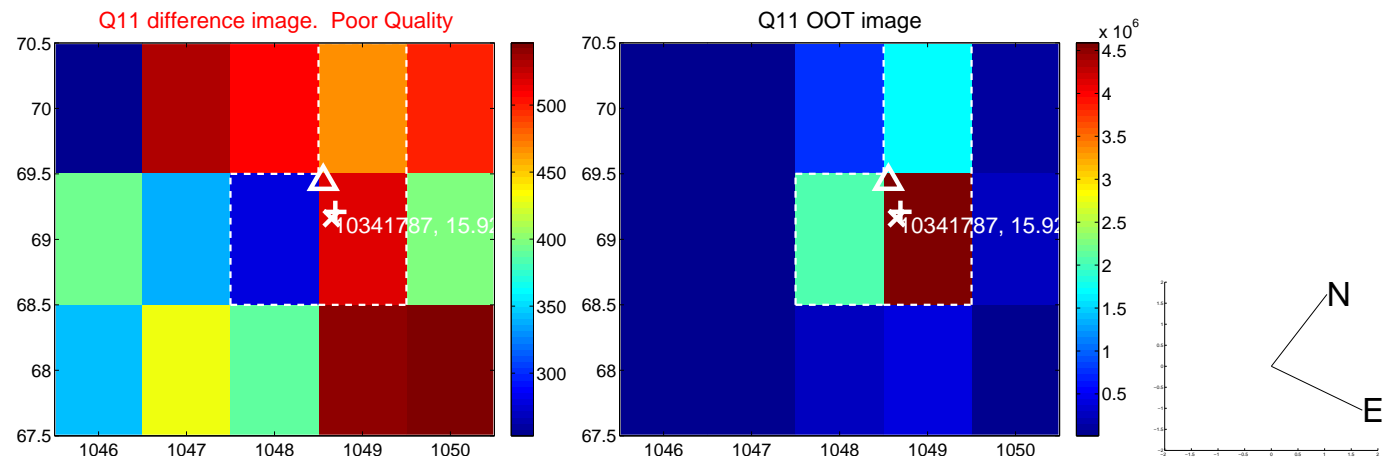
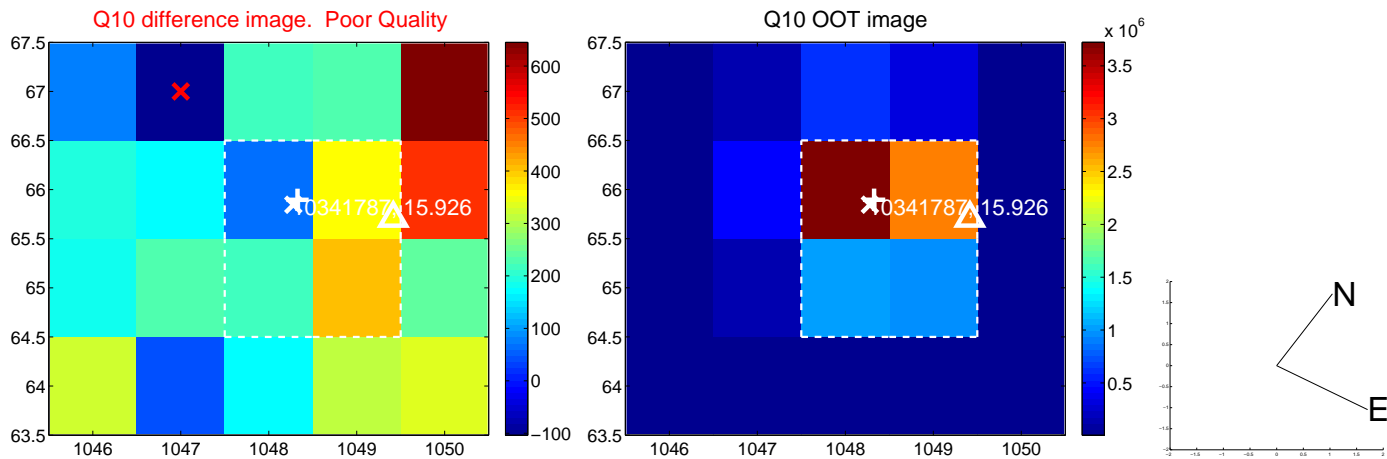
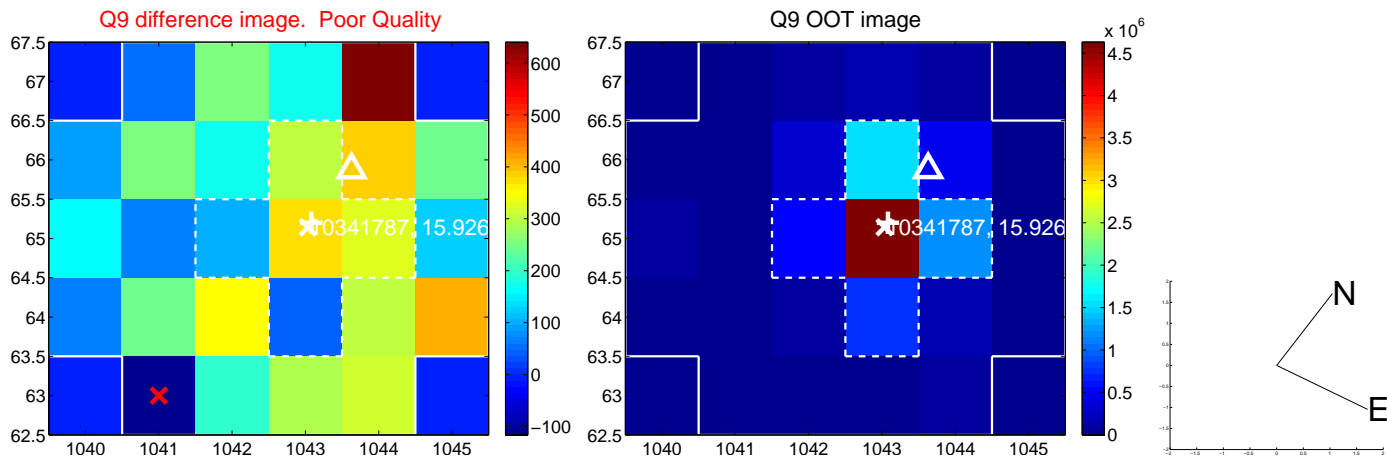


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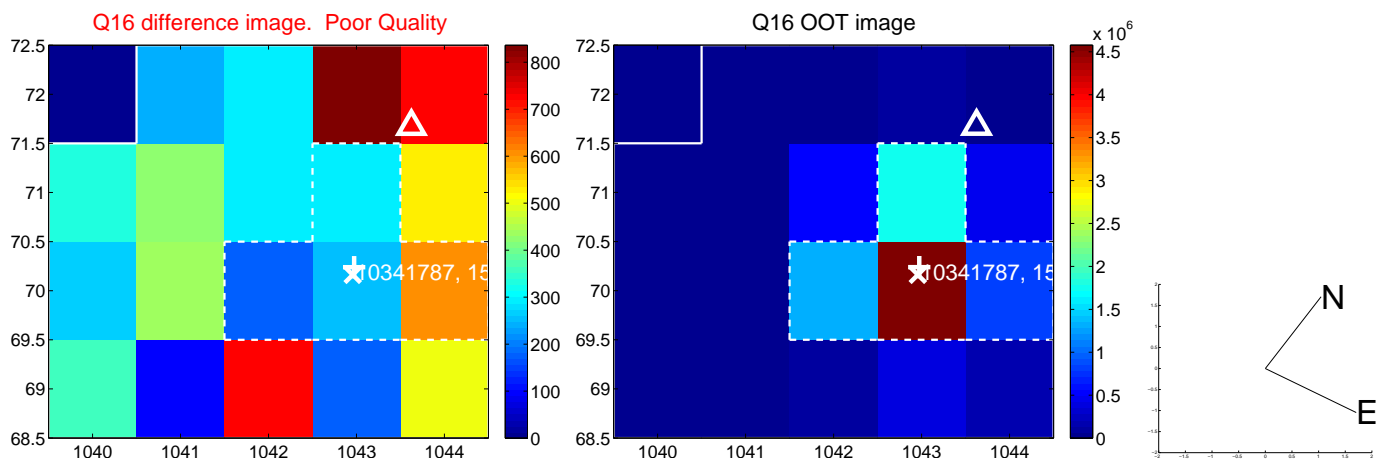
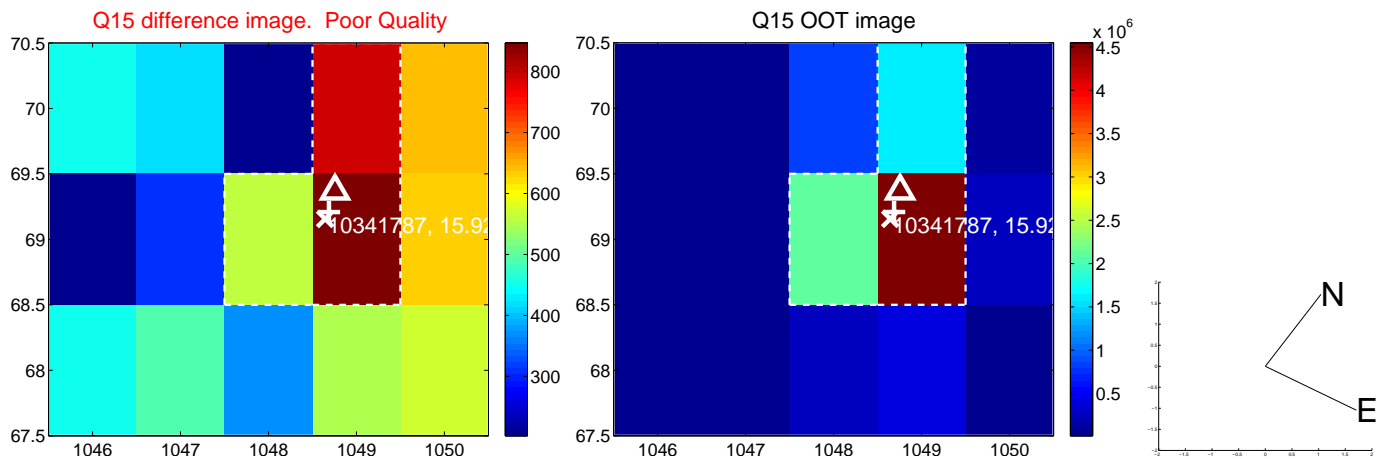
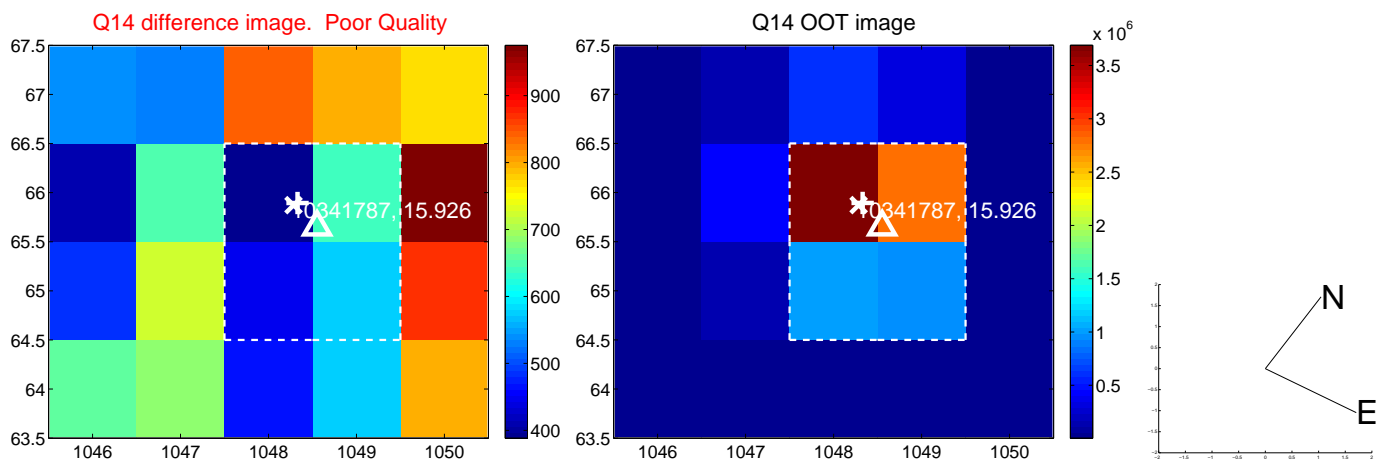
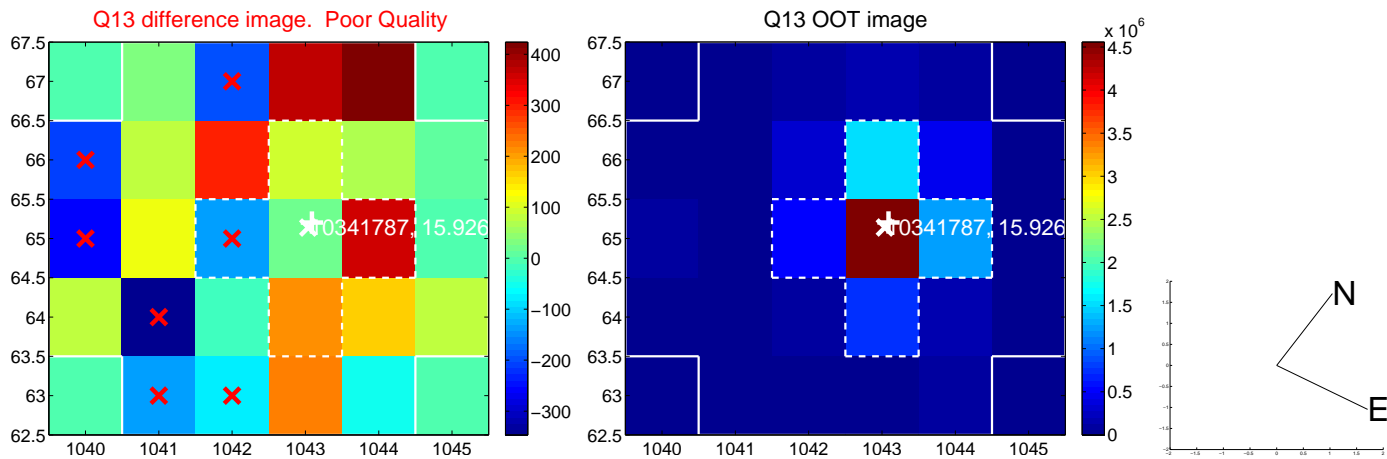




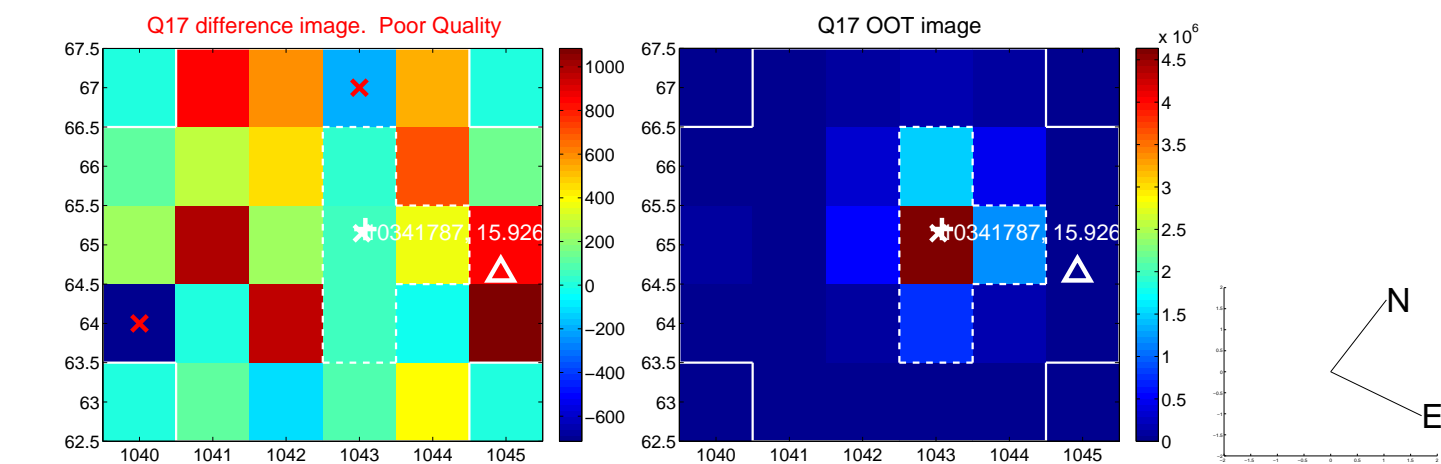
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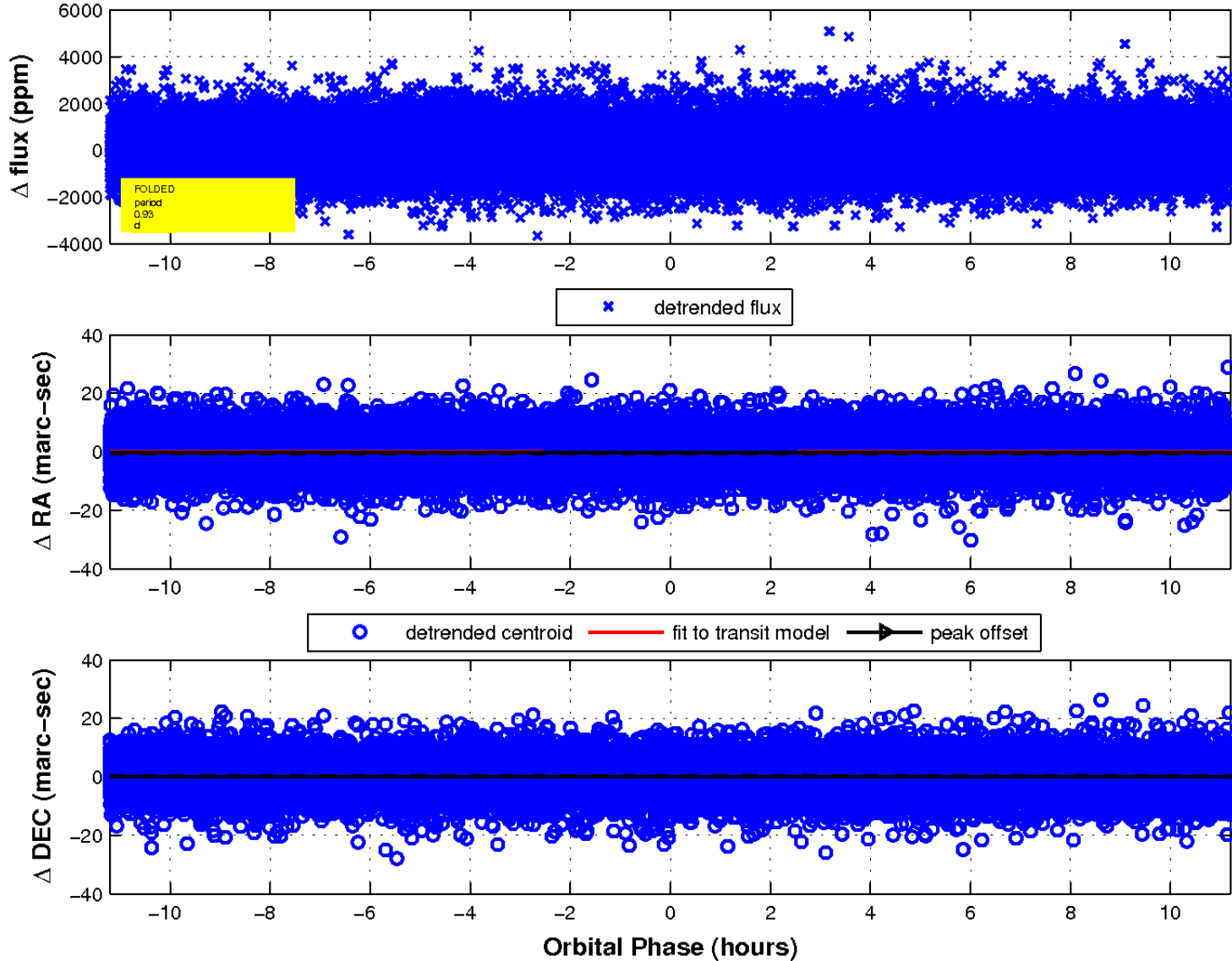
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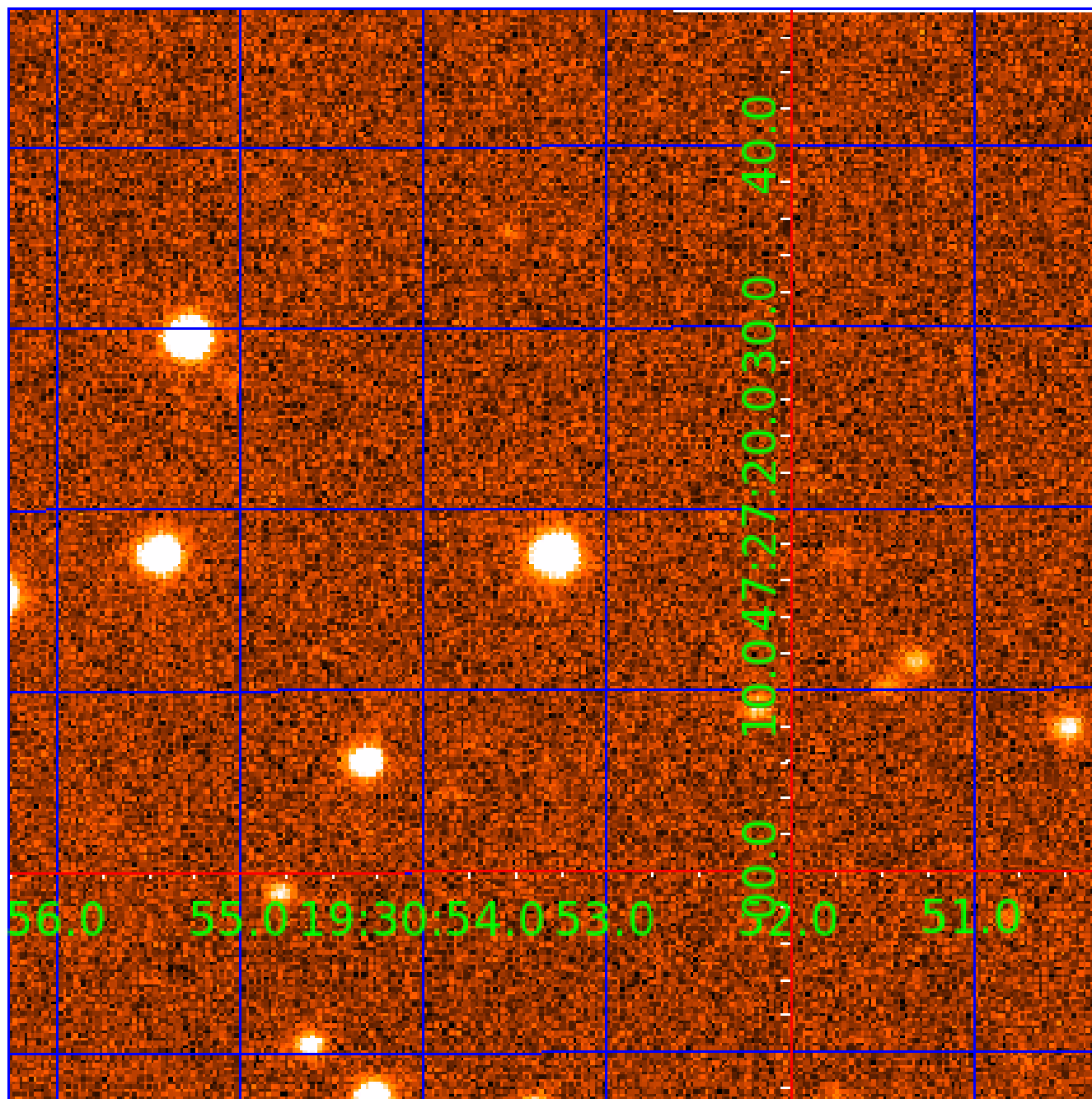


fluxWeightedCentroids, Planet 1 of 7



# UKIRT Image

Declination





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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.

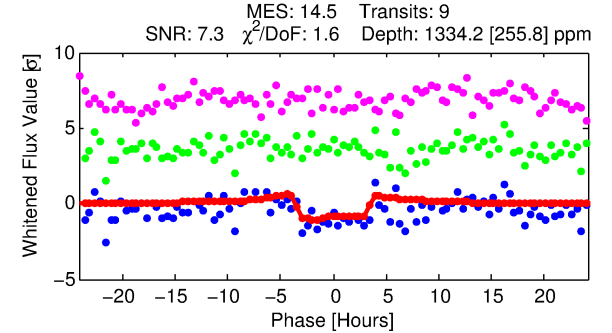
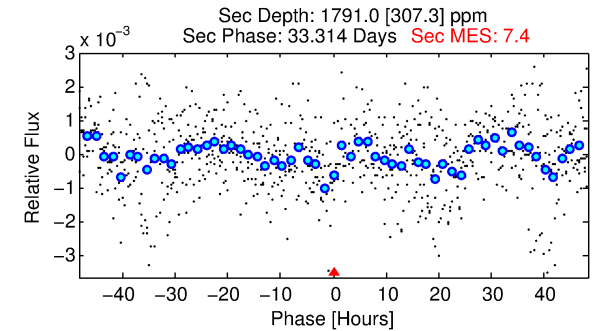
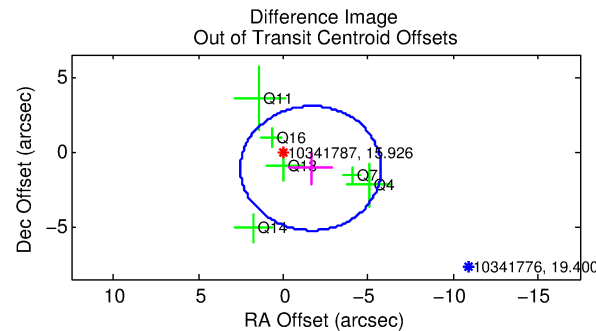
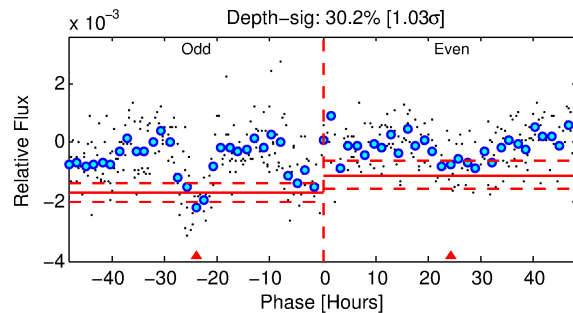
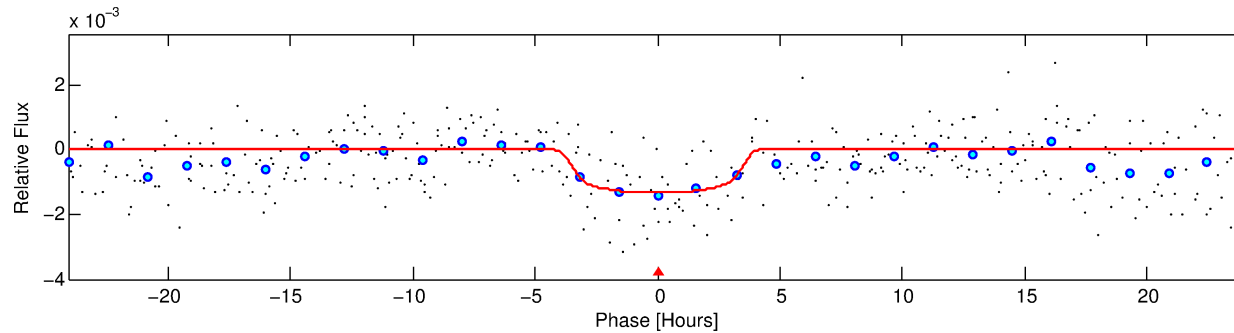
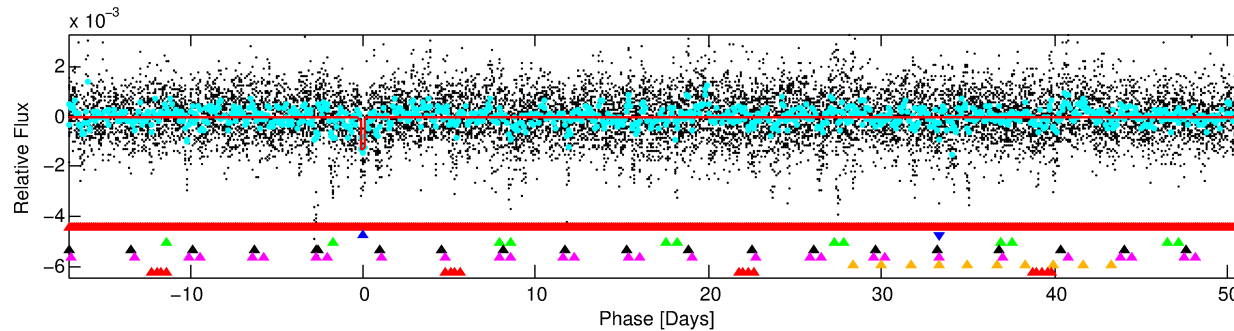
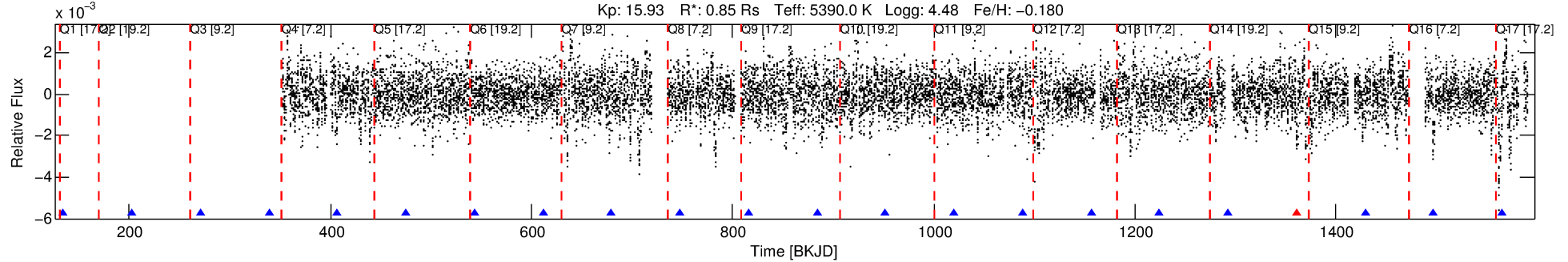
Ephemeris Match Information For 010341787-02

No Significant Match Found

# DV One-Page Summary

KIC: 10341787 Candidate: 2 of 7 Period: 68.110 d  
KOI: K07313 Corr: No Ephemeris Match

Kp: 15.93 R\*: 0.85 Rs Teff: 5390.0 K Logg: 4.48 Fe/H: -0.180



## DV Fit Results:

Period = 68.11037 [0.00187] d  
Epoch = 134.8574 [0.0294] BKJD  
Rp/R\* = 0.0384 [0.0083]  
a/R\* = 38.86 [28.54]  
b = 0.85 [0.25]  
Seff = 5.99 [1.69]  
Teq = 399 [28] K  
Rp = 3.57 [1.02] Re  
a = 0.3028 [0.0488] AU  
Ag = 7087.71 [3701.49] [1.91σ]  
Teffp = 5659 [691] K [7.60σ]

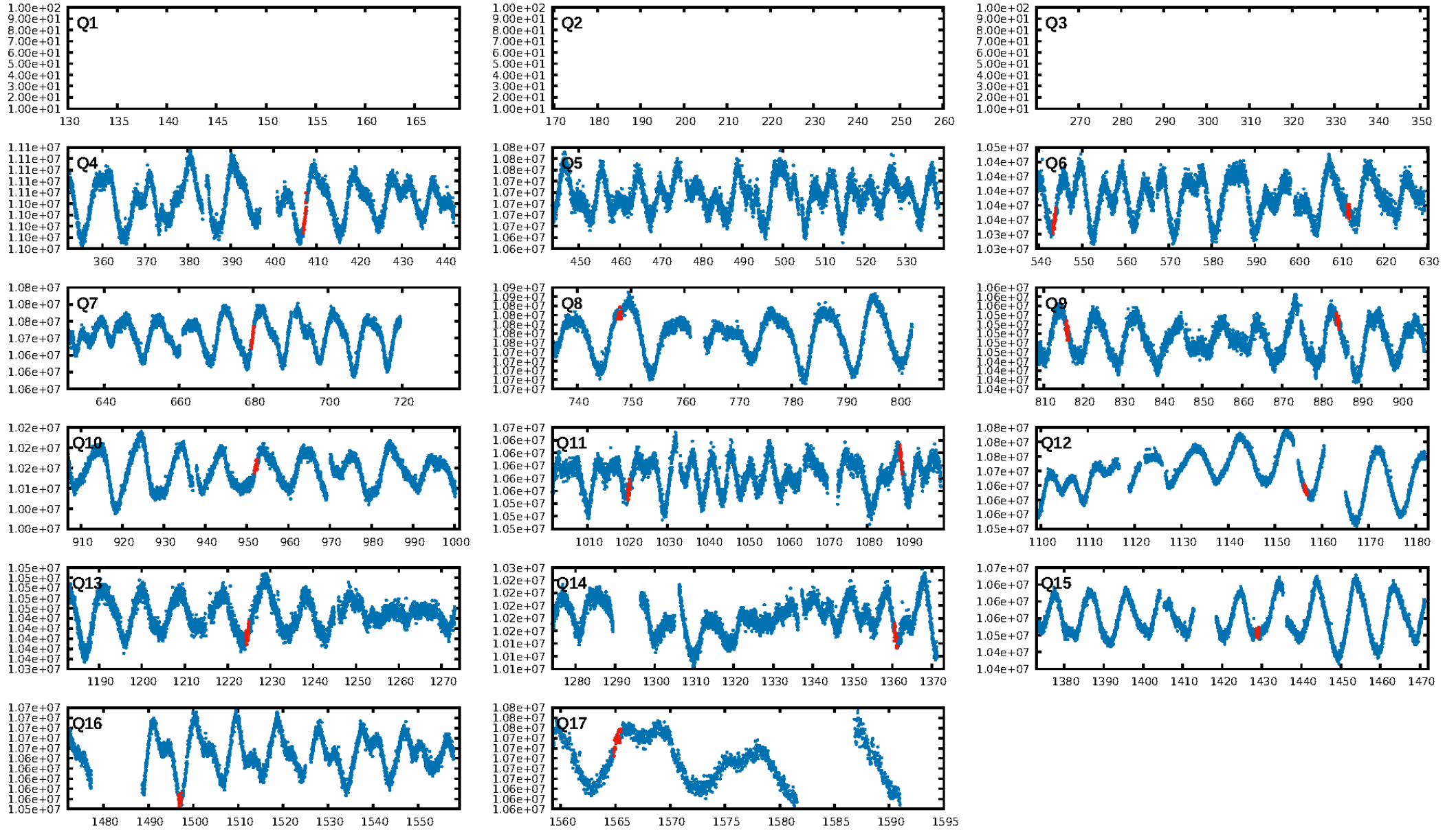
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [6.80σ]  
LongPeriod-sig: 100.0% [33.02σ]  
ModelChiSquare2-sig: 0.3%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 3.61e-24  
RollingBand-fgt: 0.88 [7/8]  
GhostDiagnostic-chr: 0.4253  
Centroid-sig: 1.3%  
Centroid-so: 1.293 arcsec [1.84σ]  
OotOffset-rm: 1.977 arcsec [1.43σ]  
OotOffset-st: 1/2/2/1 [6]  
KicOffset-rm: 1.800 arcsec [1.39σ]  
KicOffset-st: 1/2/2/1 [6]  
DiffImageQuality-fgm: 0.17 [1/6]  
DiffImageOverlap-fno: 0.00 [0/13]

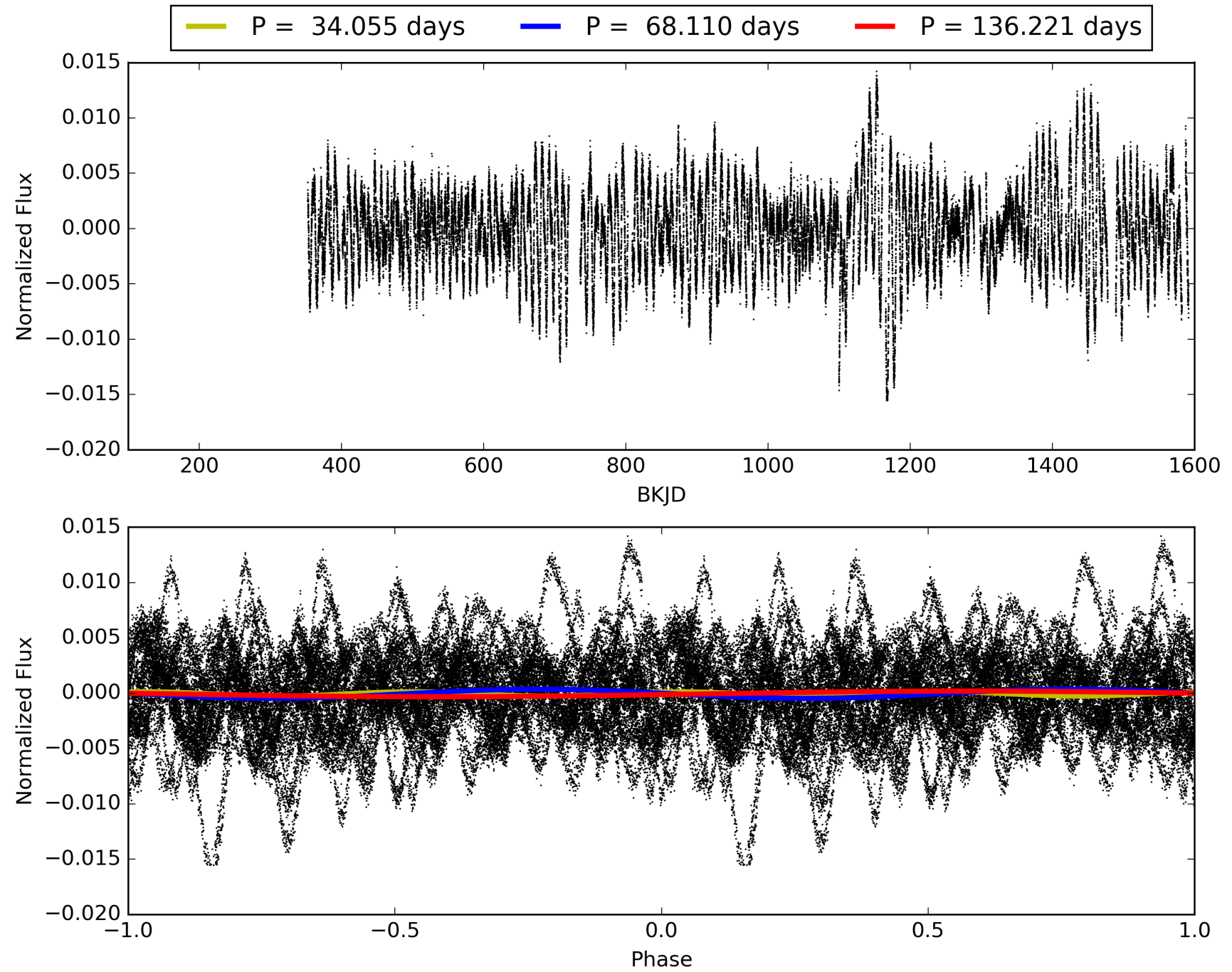
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 00:56:47 Z

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

# TCE 010341787-02, PDC Light Curves

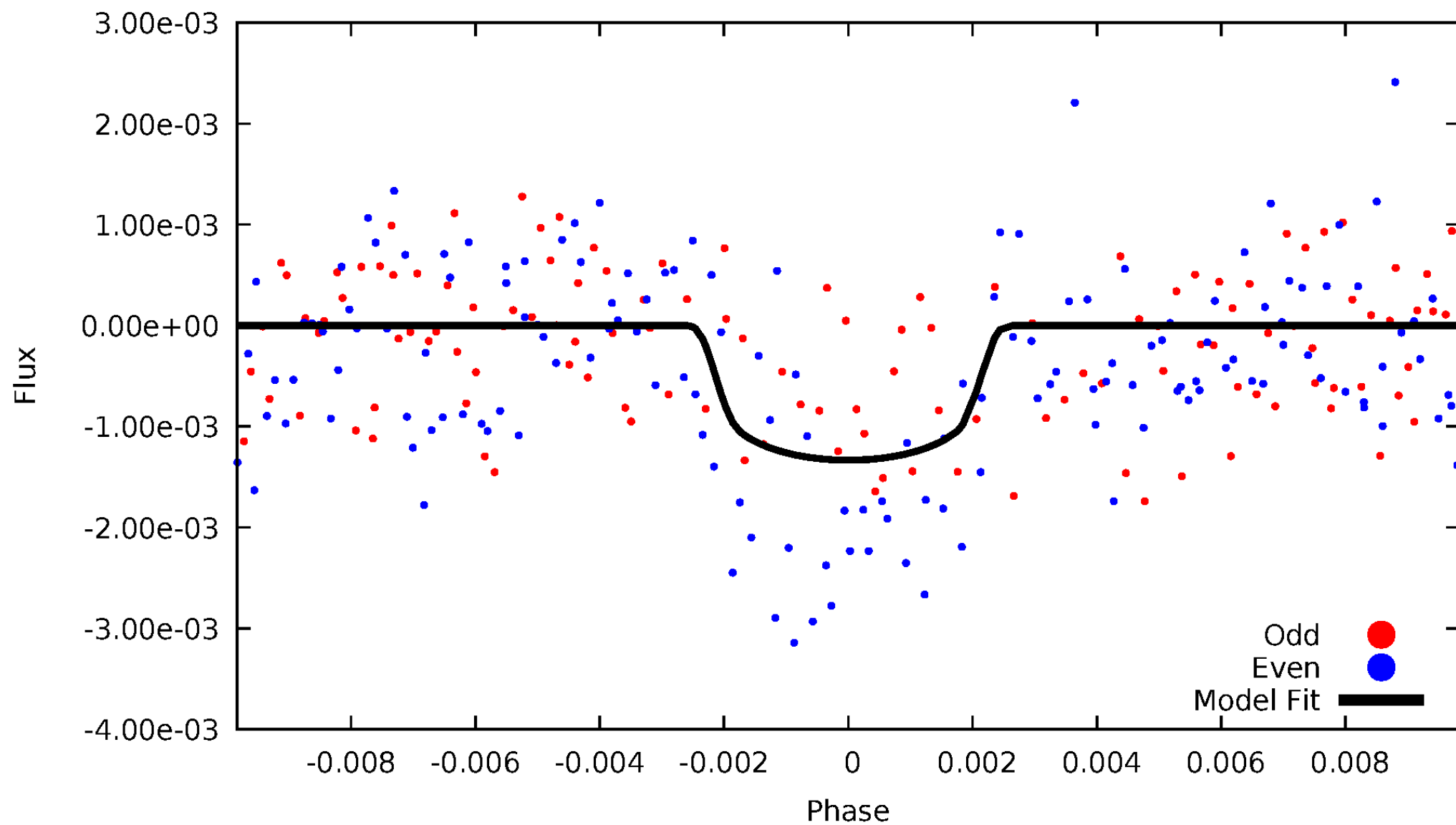


# TCE 010341787-02



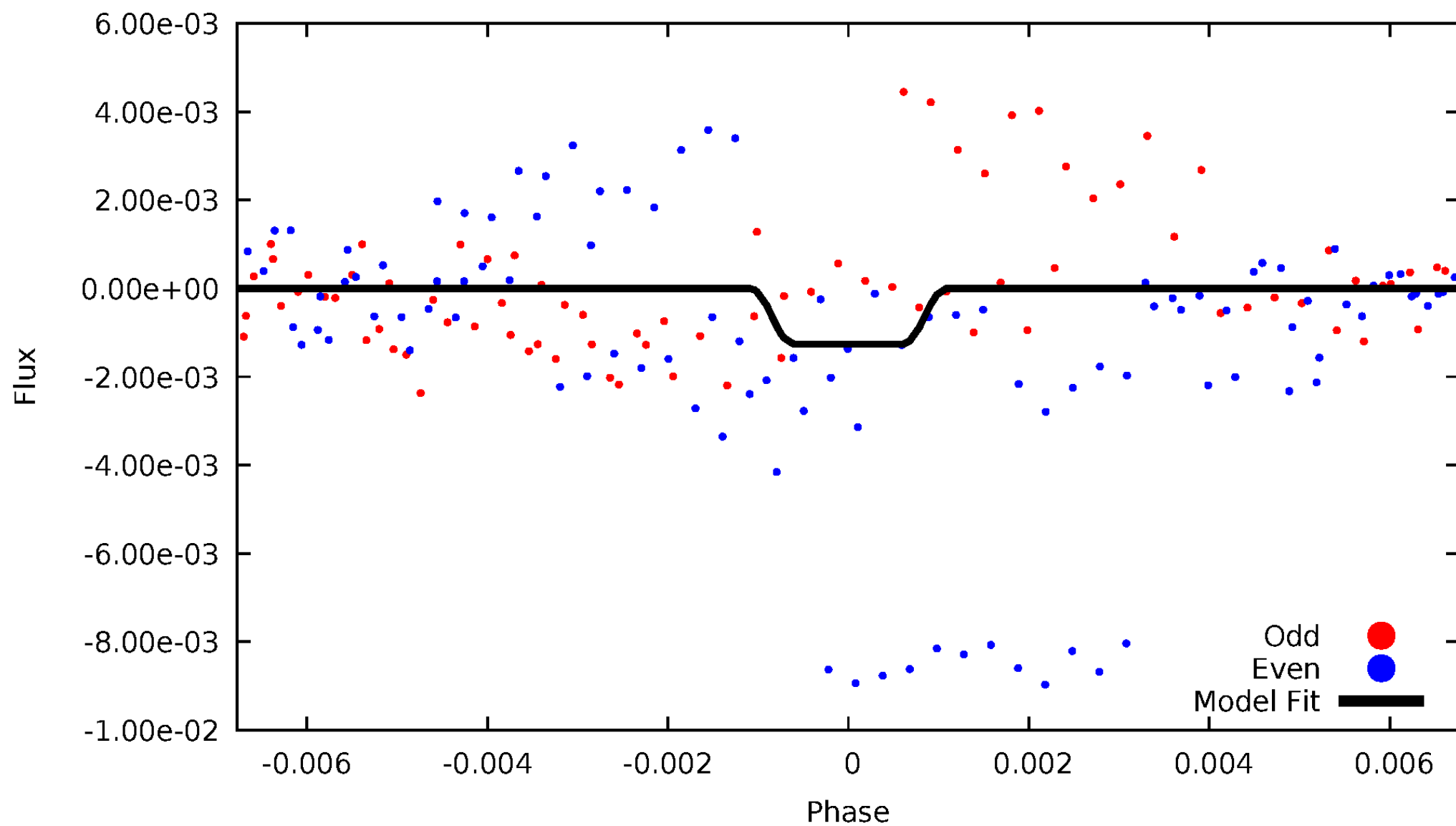
# DV Odd/Even

TCE 010341787-02



# ALT Odd/Even

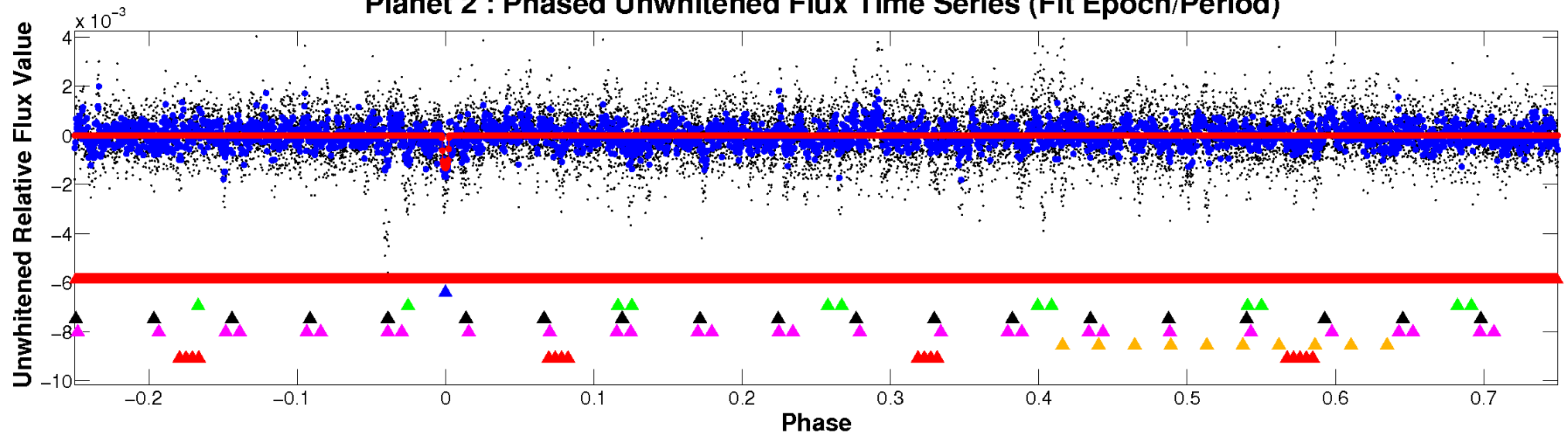
TCE 010341787-02



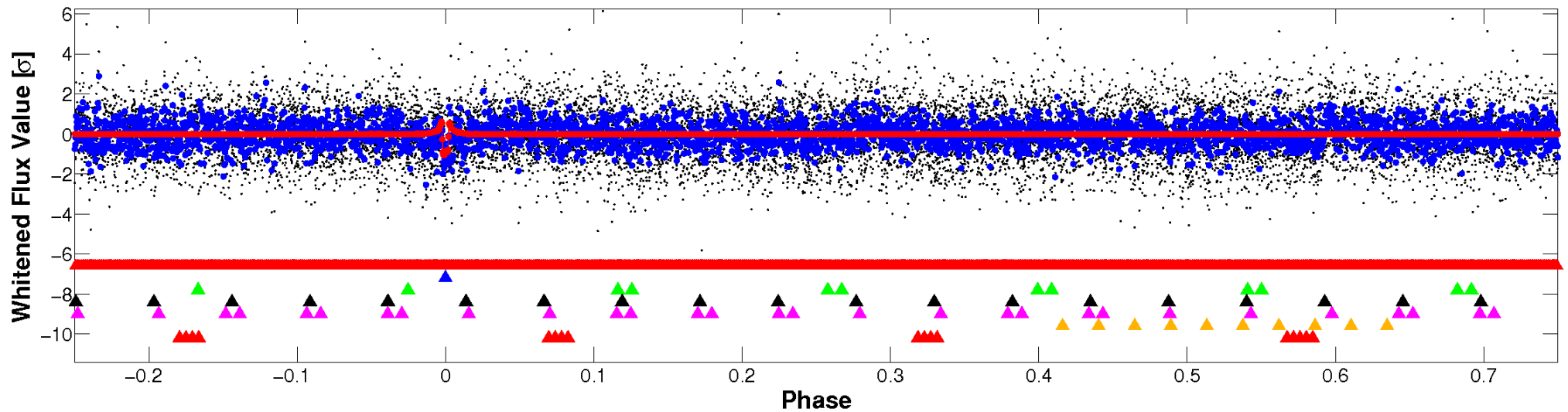


# Non-Whitened Vs. Whitened Light Curve

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

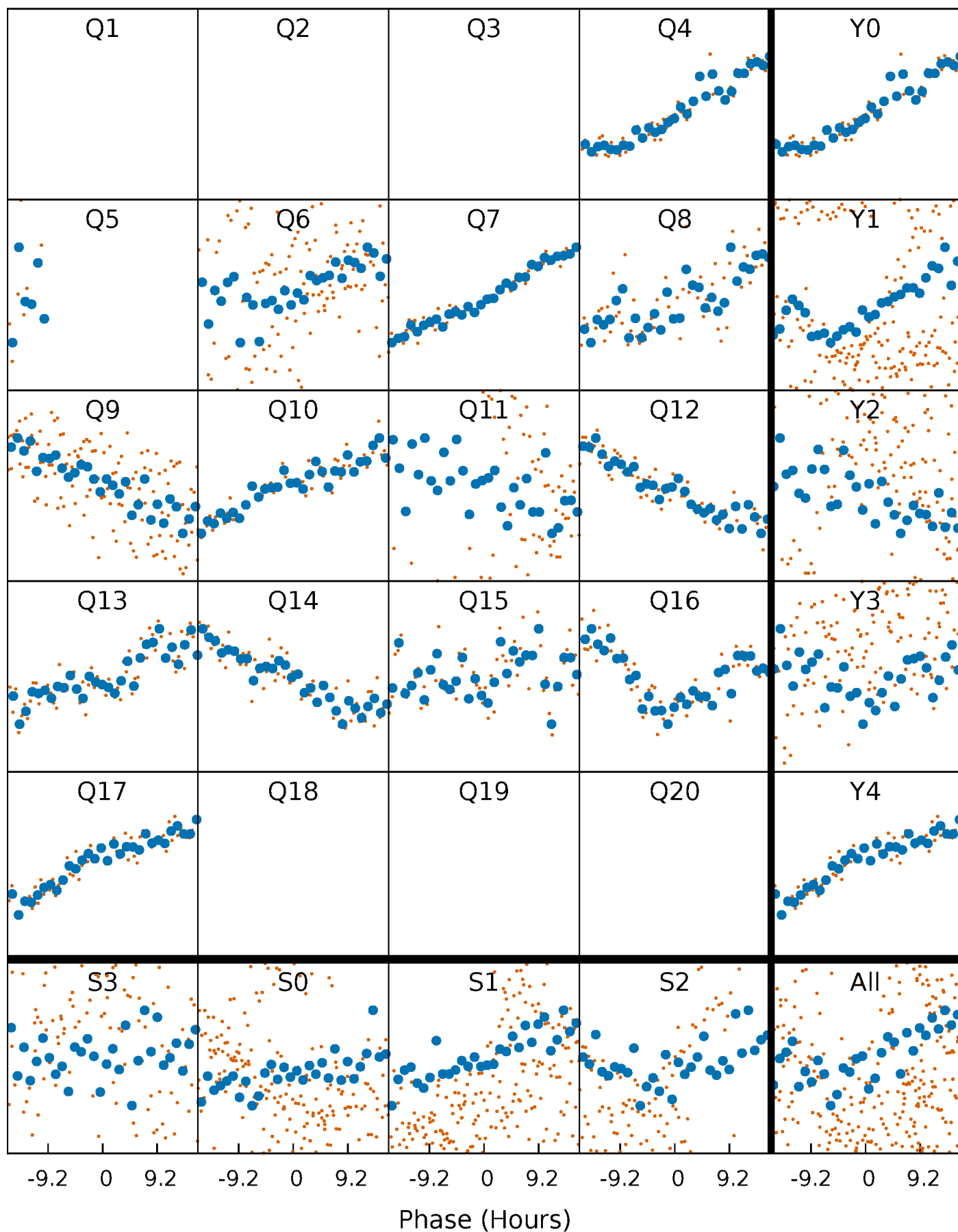


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



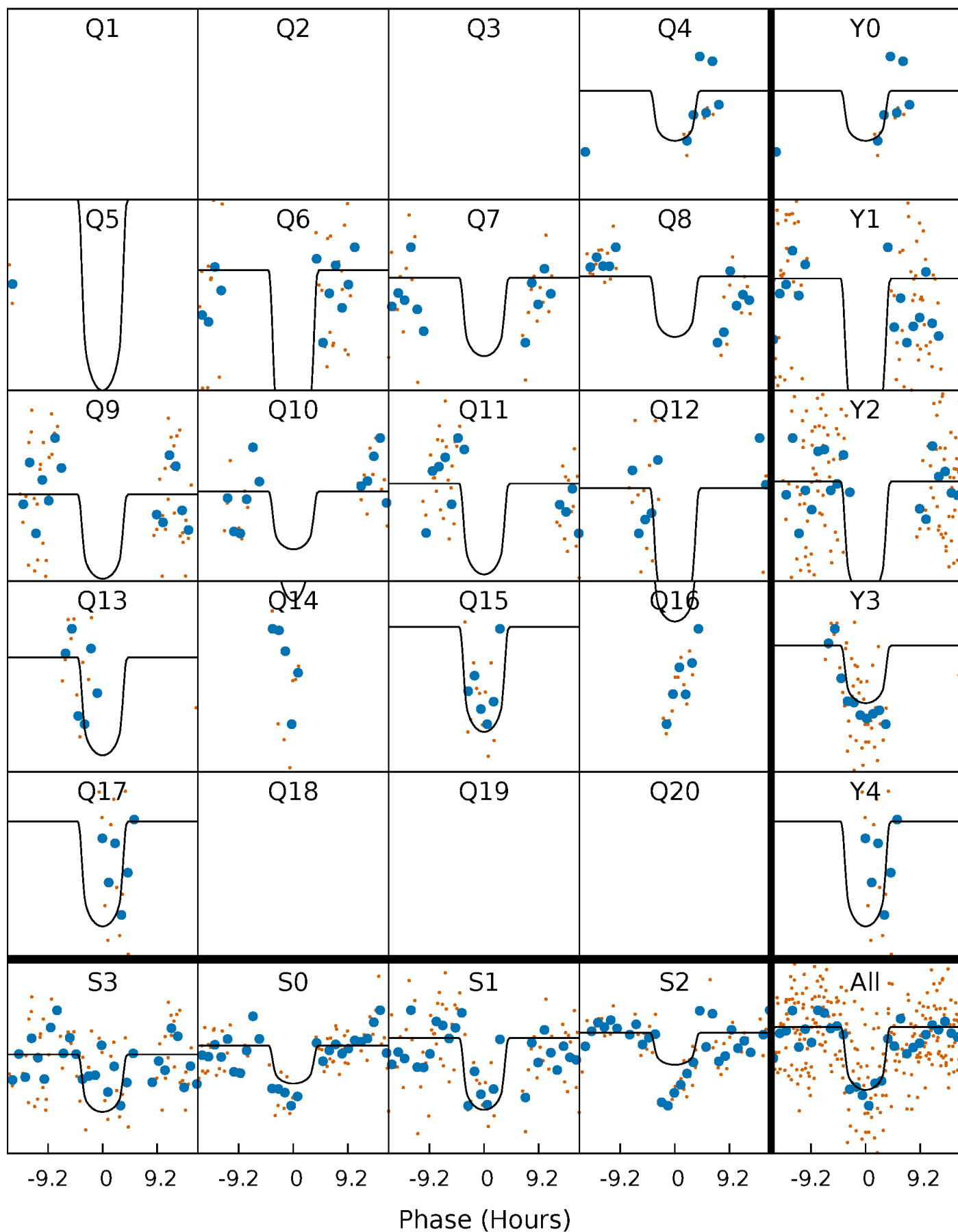
# PDC Quarter-Phased Transit Curves

TCE 010341787-02   P= 68.110371 Days    $T_0=134.857375$  (BKJD)



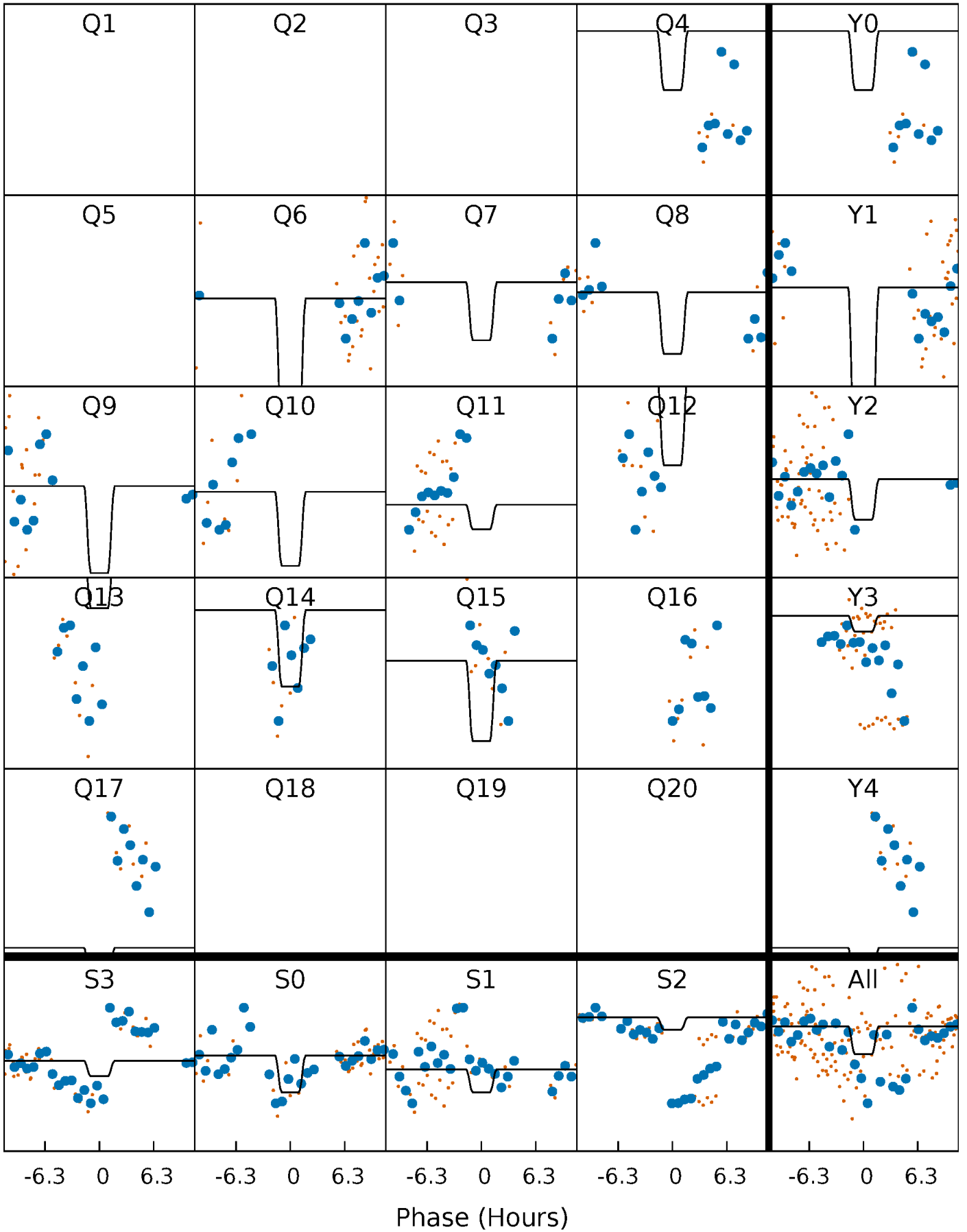
# DV Quarter-Phased Transit Curves

TCE 010341787-02   P= 68.110371 Days    $T_0=134.857375$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

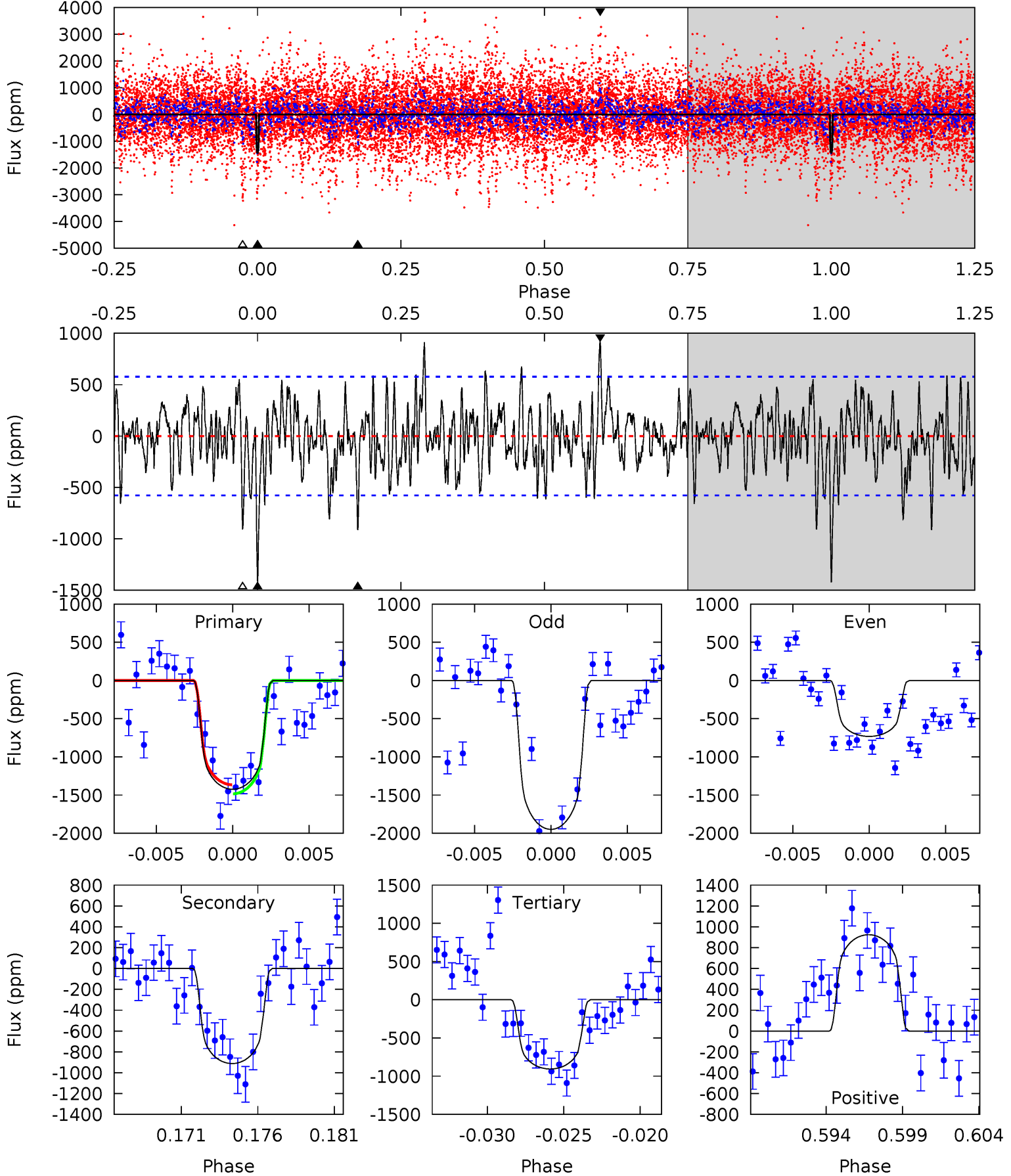
TCE 010341787-02     $P = 68.110329$  Days     $T_0 = 134.793262$  (BKJD)



# DV Model-Shift Uniqueness Test

010341787-02, P = 68.110371 Days, E = 134.857375 Days

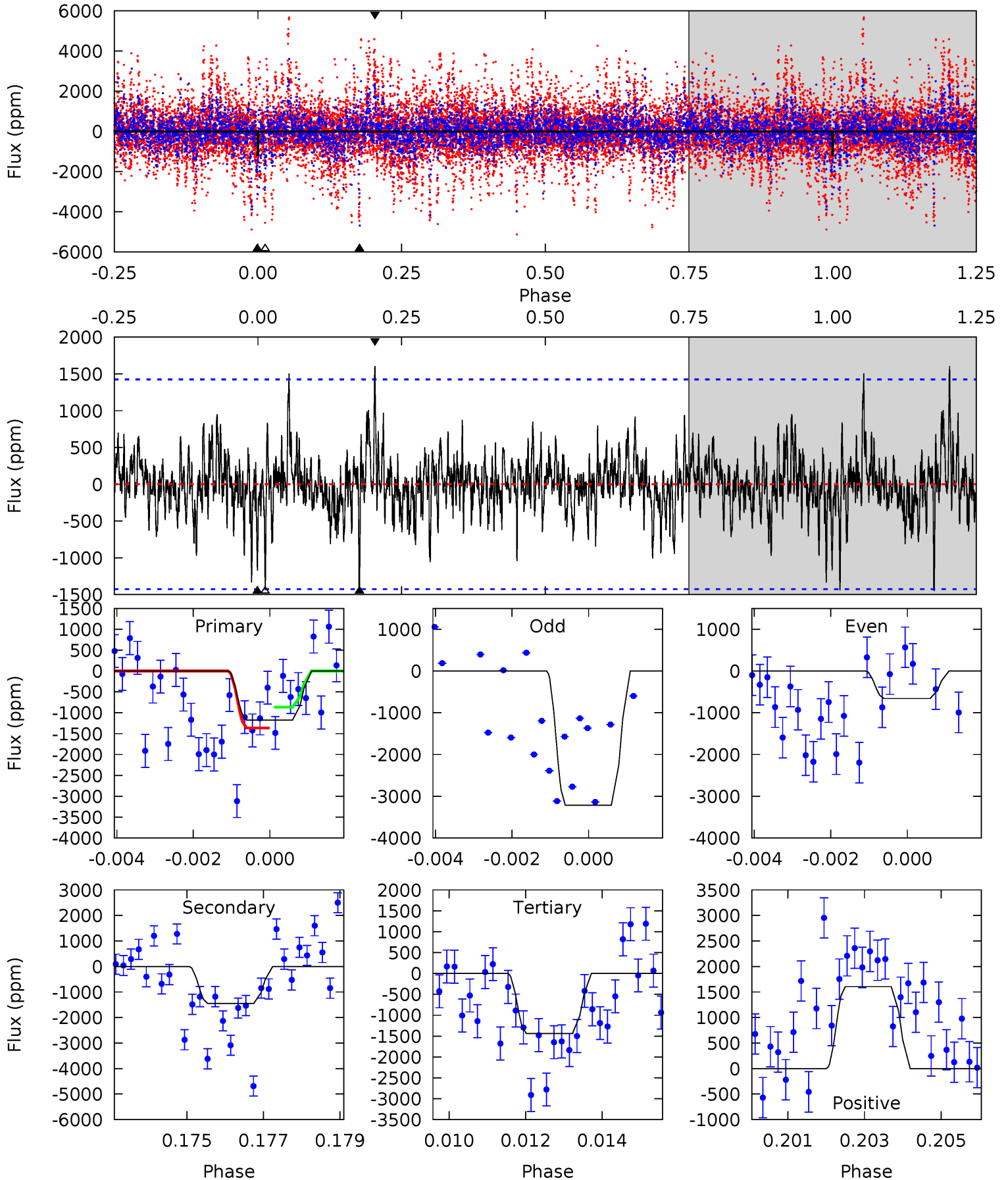
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.7	8.14	8.09	8.25	5.16	2.80	2.30	4.62	4.46	0.06	-0.11	5.32	0.97	0.39	0.52



# Alt Model-Shift Uniqueness Test

010341787-02,  $P = 68.110329$  Days,  $E = 134.793262$  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
4.38	5.42	5.38	6.00	5.33	3.09	1.23	-1.00	-1.61	0.04	-0.57	4.93	1.11	0.53	0.91



### Stellar Parameters For KIC 010341787

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5390^{+204}_{-185}$	$4.479^{+0.096}_{-0.132}$	$-0.180^{+0.300}_{-0.300}$	$0.852^{+0.160}_{-0.107}$	$0.798^{+0.113}_{-0.061}$	$1.819^{+0.720}_{-0.717}$
	+4%/-3%	+2%/-3%	+167%/-167%	+19%/-13%	+14%/-8%	+40%/-39%
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 010341787-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-912 \pm 112$	$3.59^{+0.90}_{-0.82}$	$560^{+37}_{-30}$	$4878^{+564}_{-411}$	$3555^{+2424}_{-1285}$
Alt.	$-1452 \pm 268$	$3.39^{+0.86}_{-0.93}$	$560^{+34}_{-28}$	$5564^{+917}_{-579}$	$6440^{+5800}_{-2576}$

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



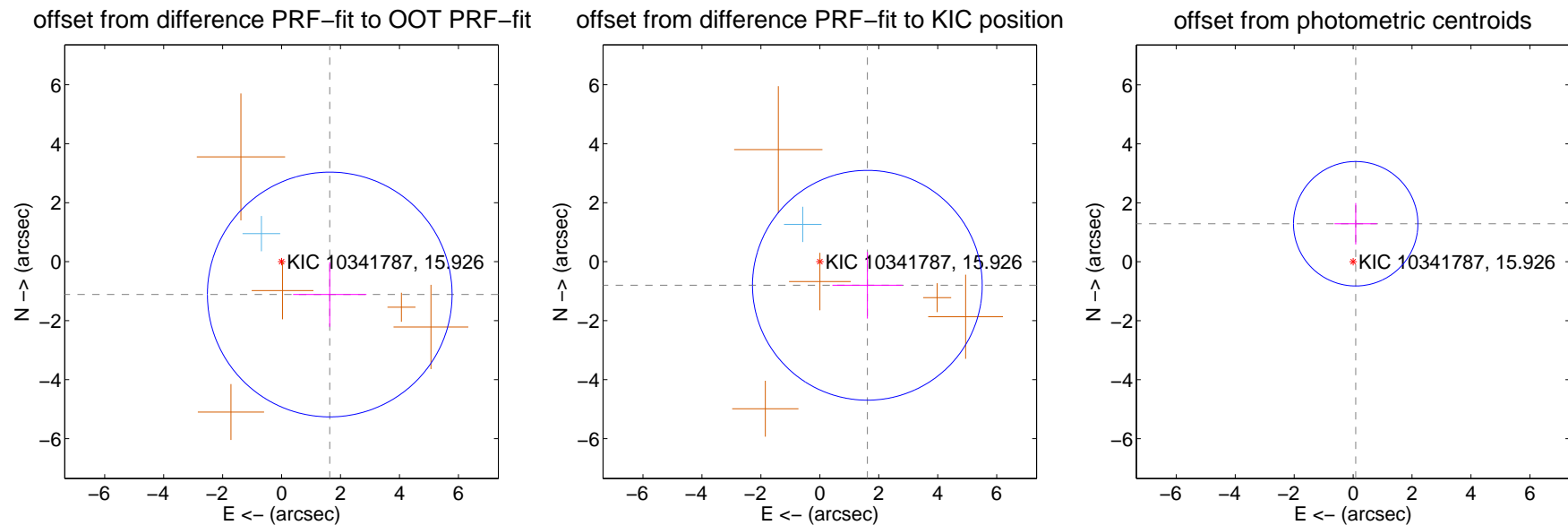
## DV Centroid Data

Supplemental centroid analysis for 010341787-02. Kepler magnitude: 15.93. Transit SNR 7.28

There are 1 quarters with good PRF difference image offsets

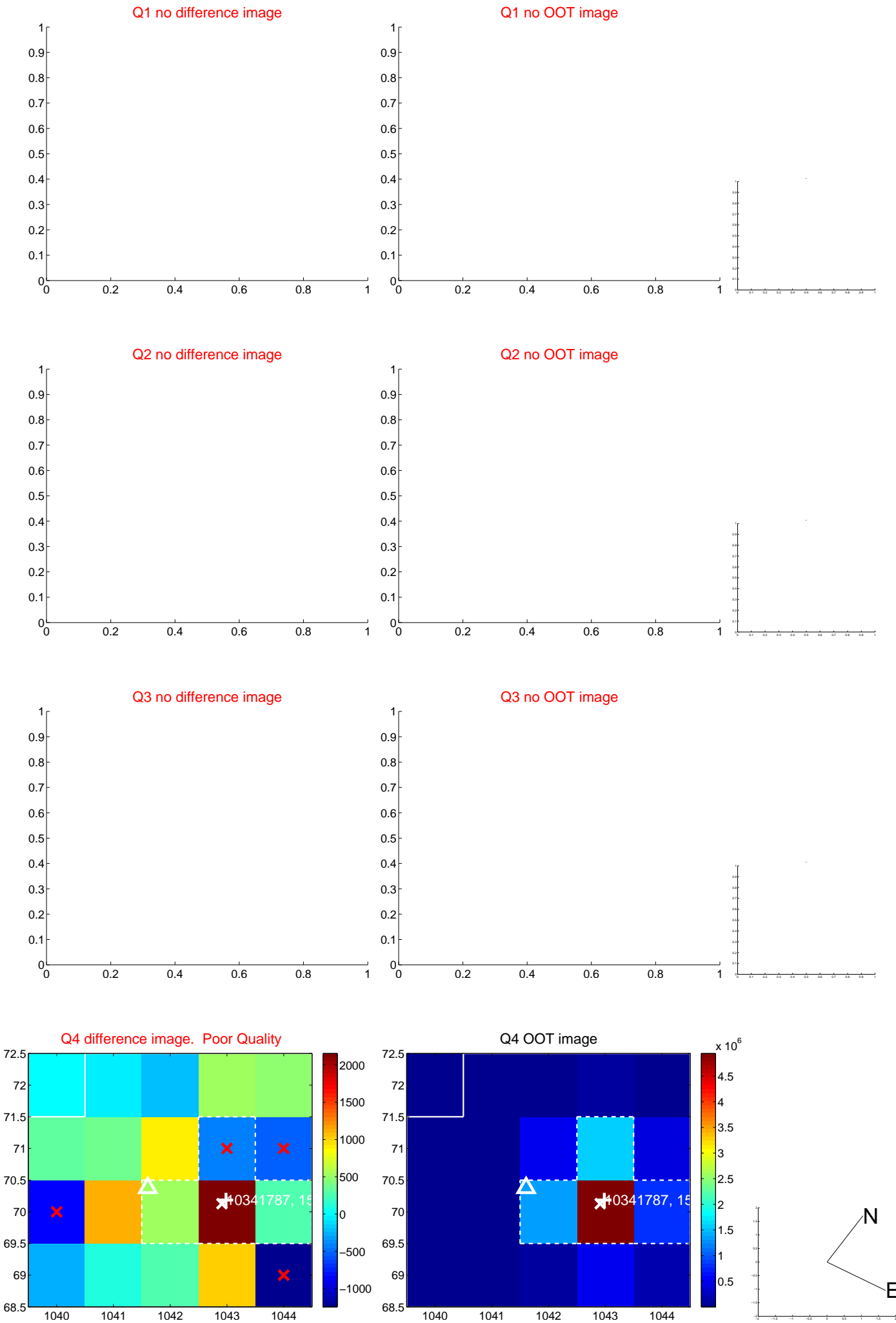
The direct PRF centroid is offset from the target star catalog position by about 0.33 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.977 \pm 1.383$	1.43	$-1.634 \pm 1.244$	$-1.113 \pm 1.094$
PRF-fit source offset from KIC position	$1.800 \pm 1.299$	1.39	$-1.612 \pm 1.187$	$-0.800 \pm 1.128$
photometric centroid source offset	$1.29 \pm 0.70$	1.84	$-0.09 \pm 0.72$	$1.29 \pm 0.70$

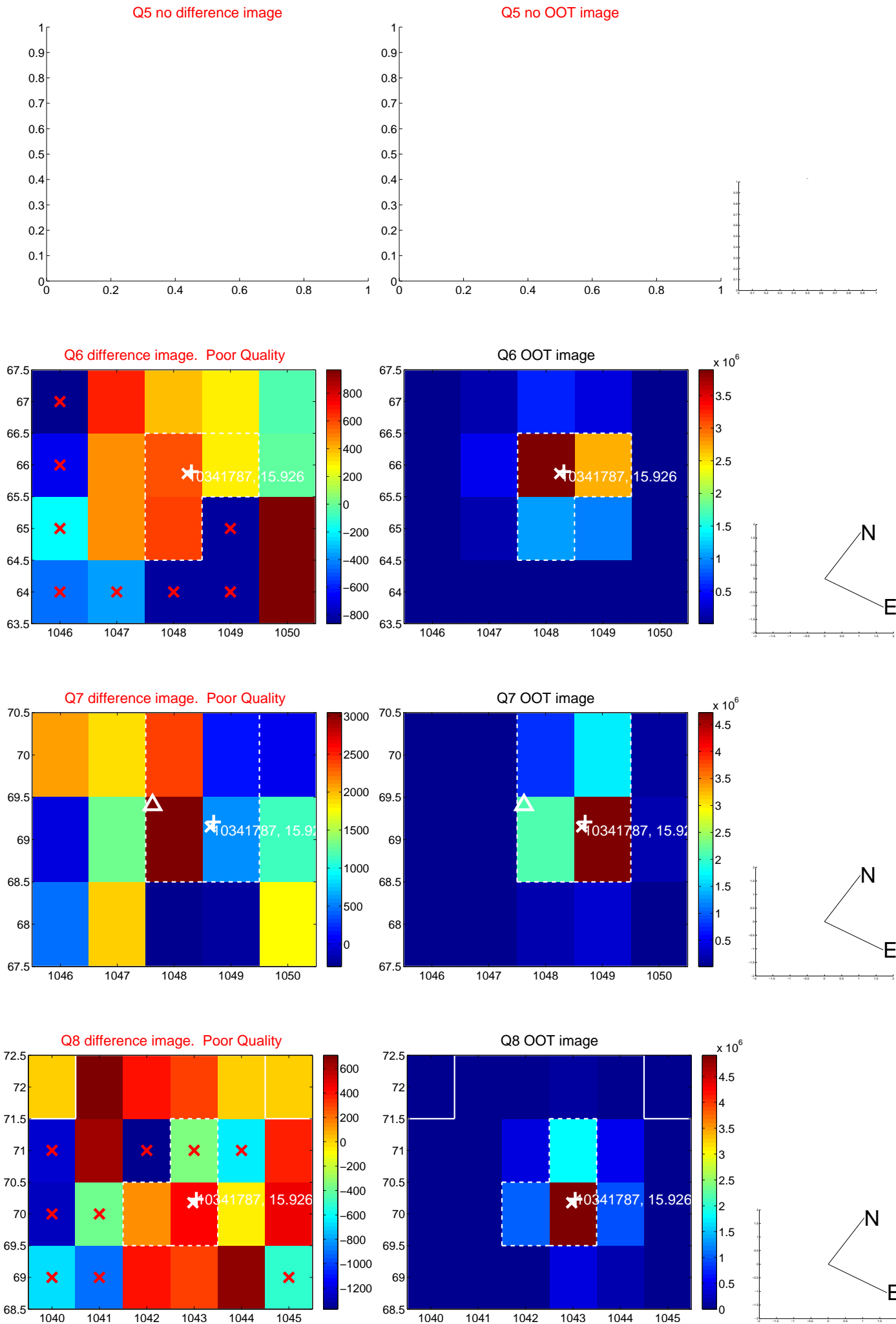


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

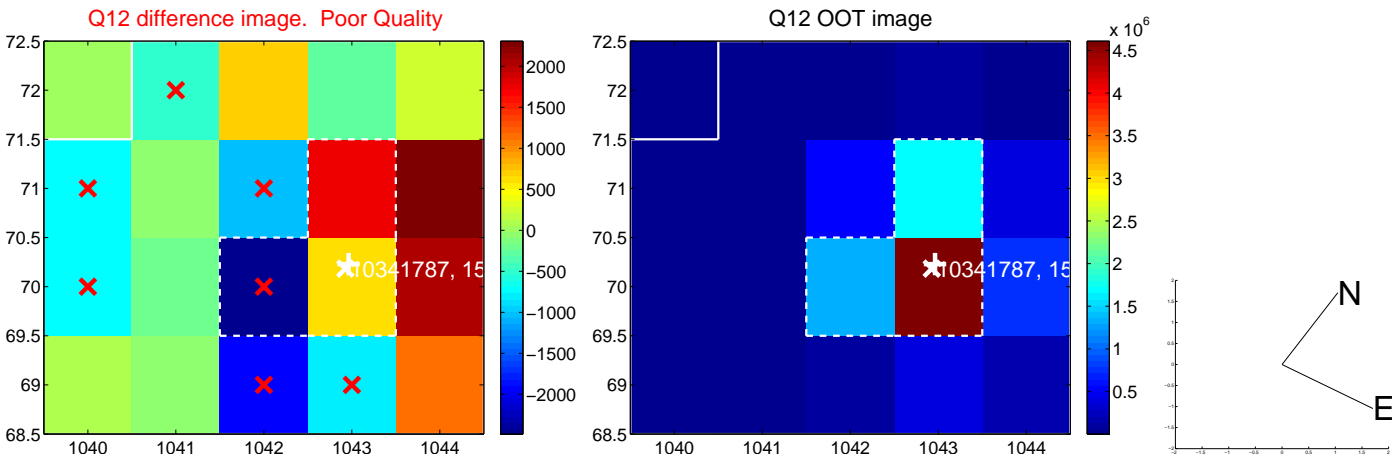
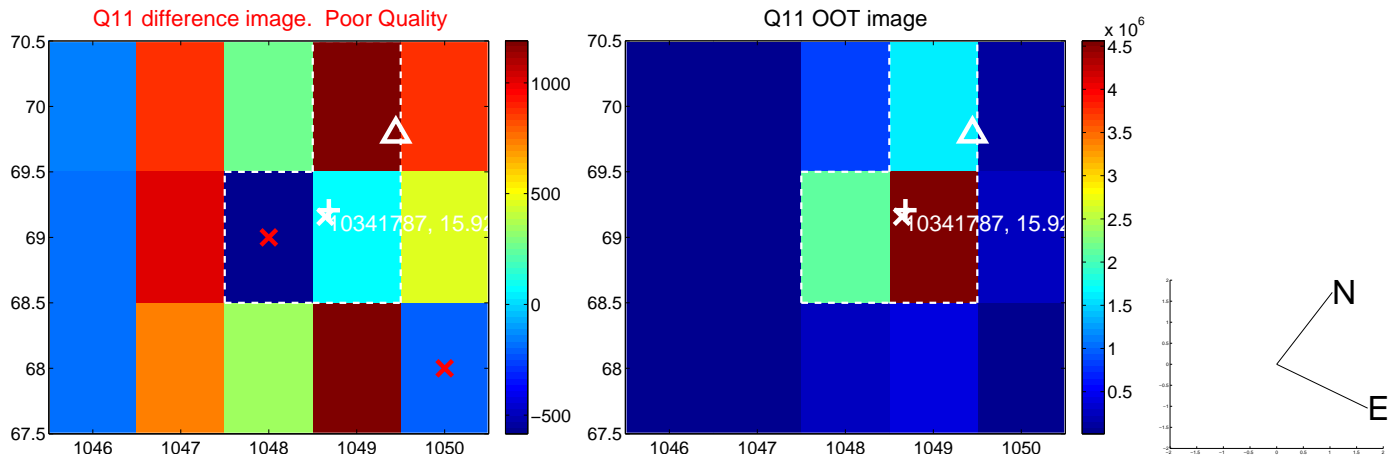
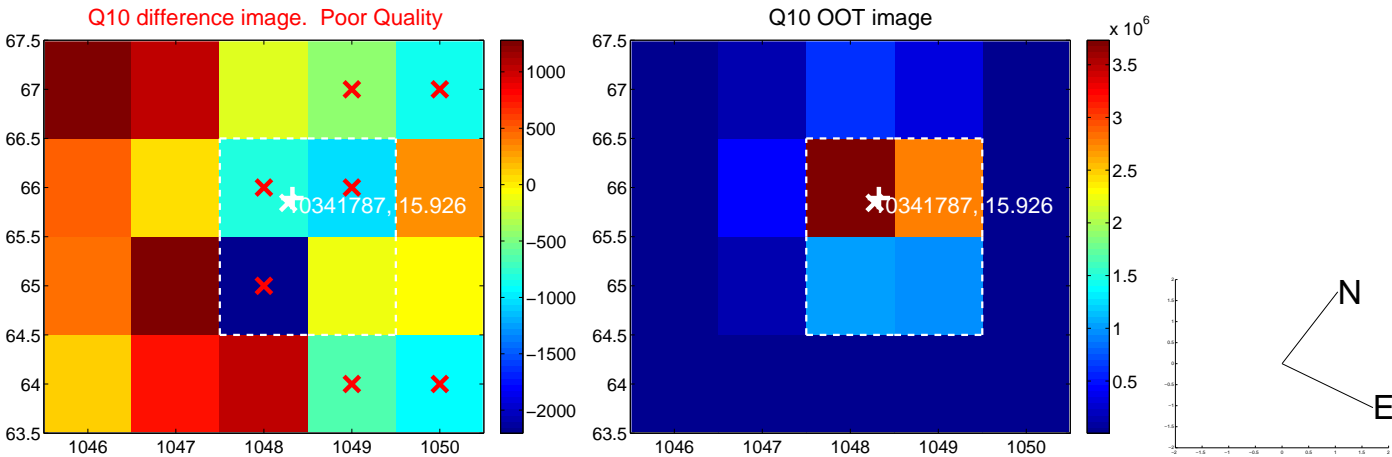
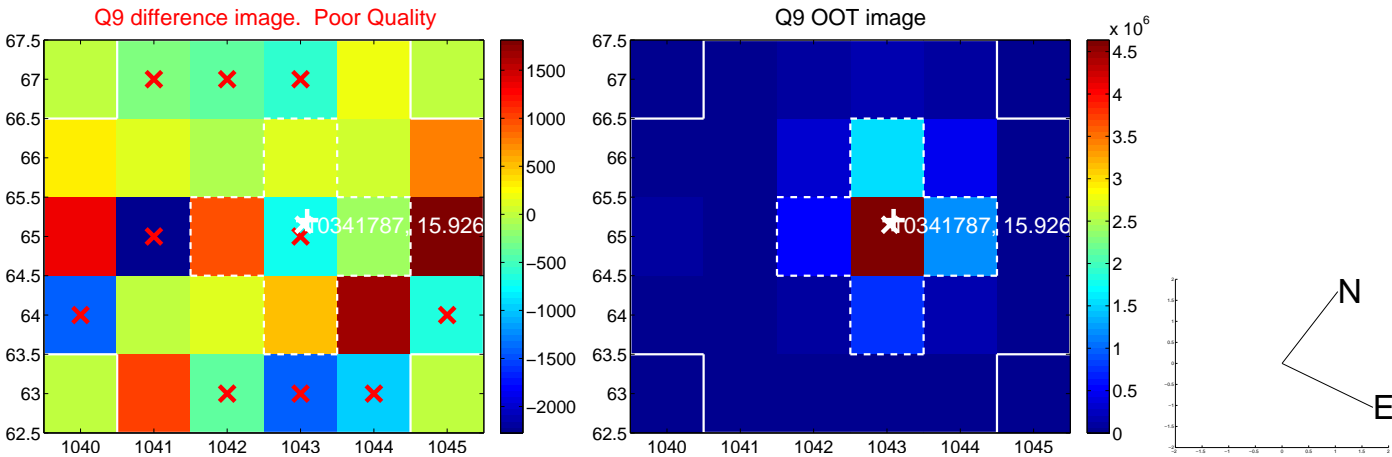
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



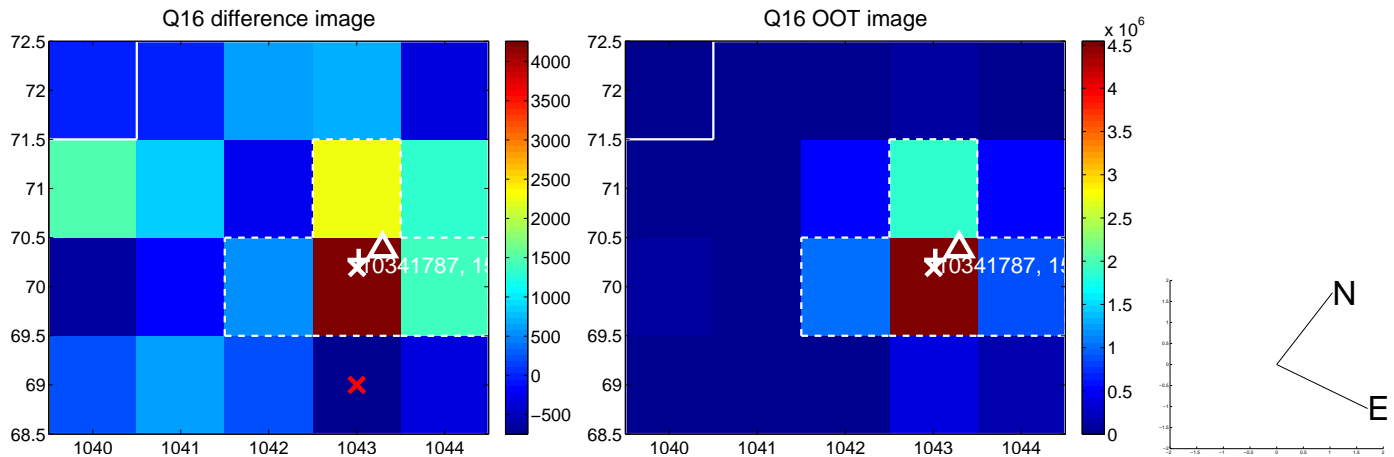
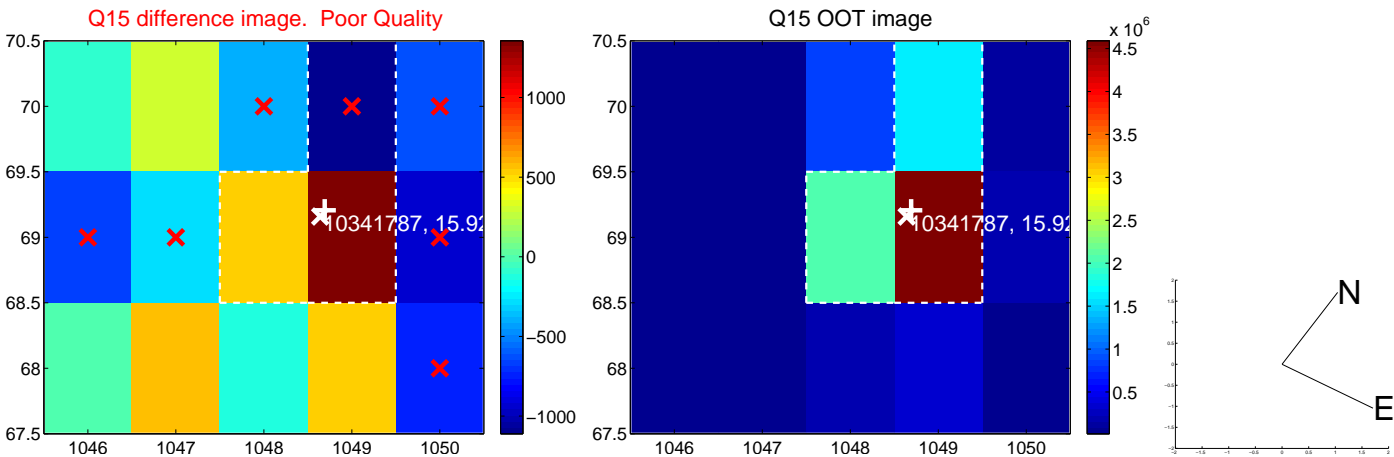
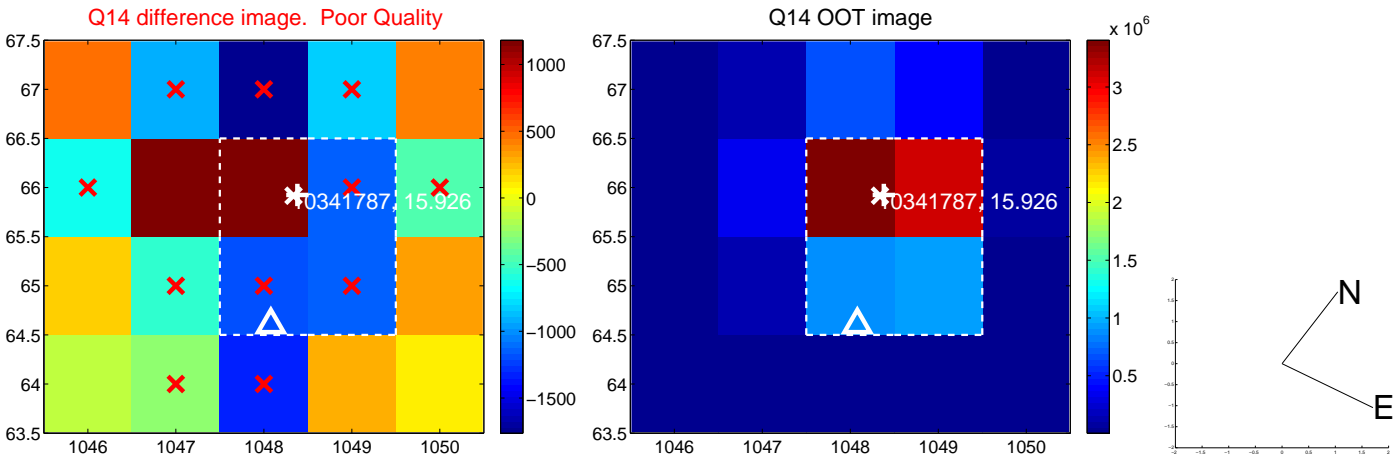
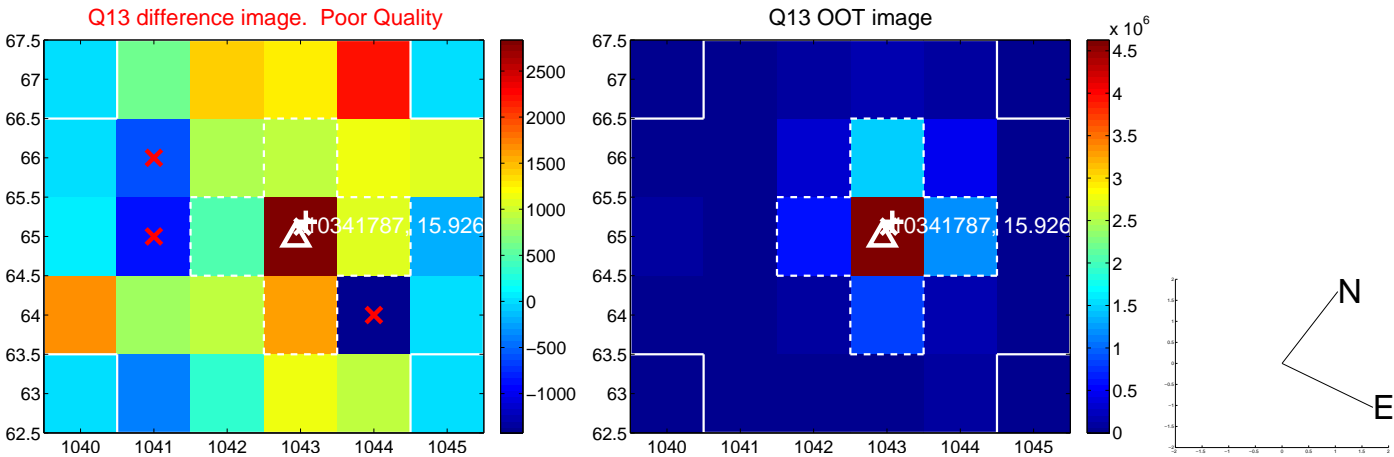
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



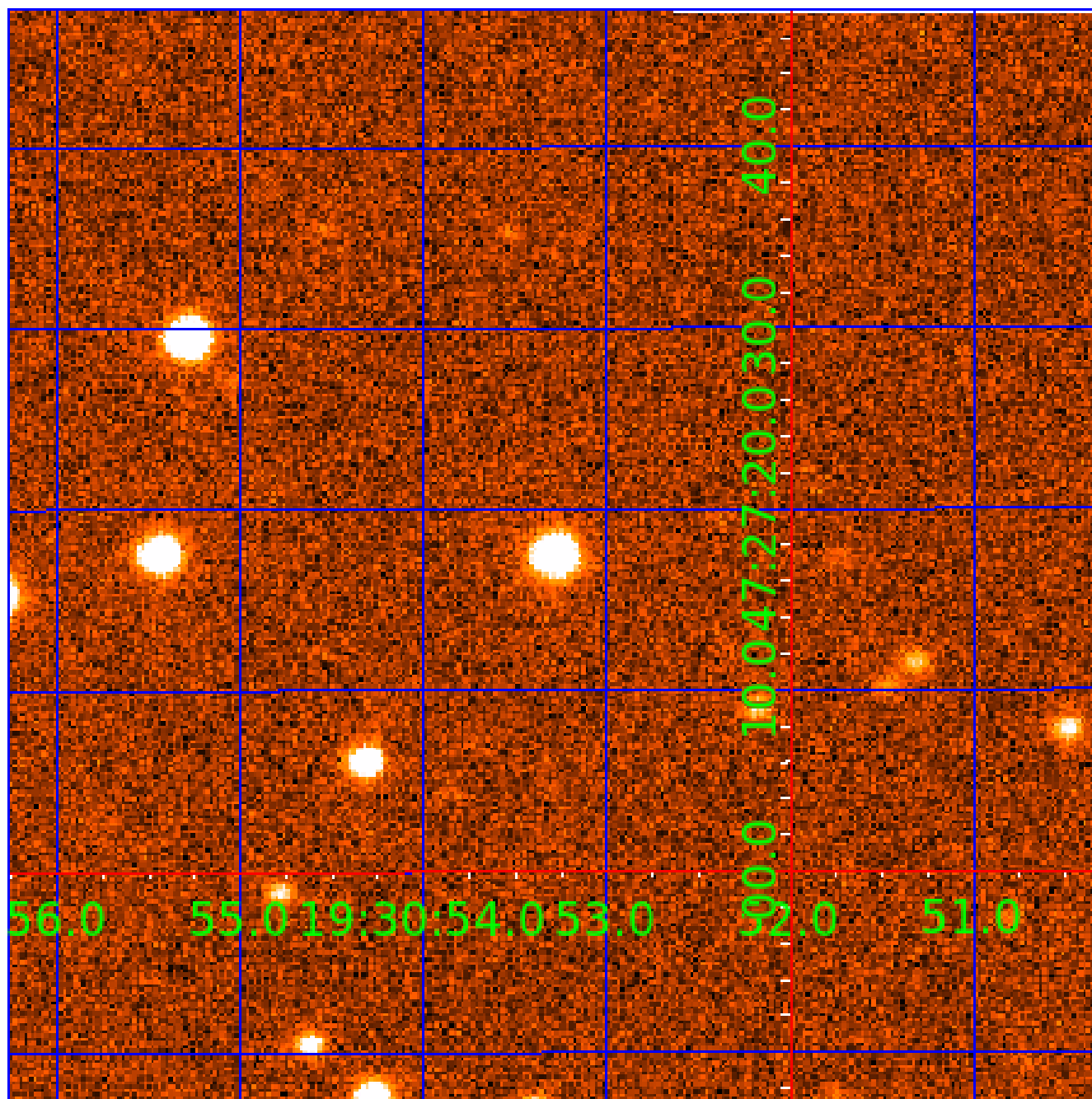
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.





UKIRT Image

Declination





# KIC 010341787

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
010341787-01	OBS	7313.01	0.933702	132.493752	134.3	5.393	11.6	14.7	0.85	5390	1.05	1825.01
010341787-02	OBS	No	68.110371	134.857375	1334.2	8.034	14.5	7.3	0.85	5390	3.57	5.99
010341787-03	OBS	No	126.582042	181.331214	1534.4	9.100	11.4	6.6	0.85	5390	3.45	2.62
010341787-04	OBS	No	64.524387	142.983279	1038.3	9.783	11.2	6.4	0.85	5390	3.23	6.43
010341787-05	OBS	No	50.152671	150.808918	1104.9	14.225	10.7	7.3	0.85	5390	3.40	9.01
010341787-06	OBS	No	137.876543	231.306680	2010.6	6.336	10.3	8.9	0.85	5390	4.13	2.34
010341787-07	OBS	No	85.064483	174.685007	1329.9	9.343	10.6	7.7	0.85	5390	3.75	4.45

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010341787-01	OBS	FP	0.00	0	0	1	1	CENT_RESOLVED_OFFSET—HALO_GHOST—EPHEM_MATCH
010341787-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
010341787-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
010341787-04	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_FEW_DIFFS—HALO_GHOST
010341787-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
010341787-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
010341787-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS

**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.

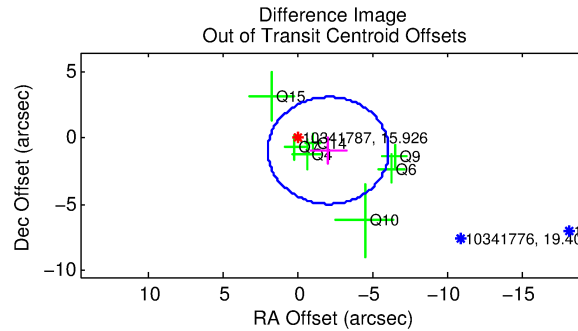
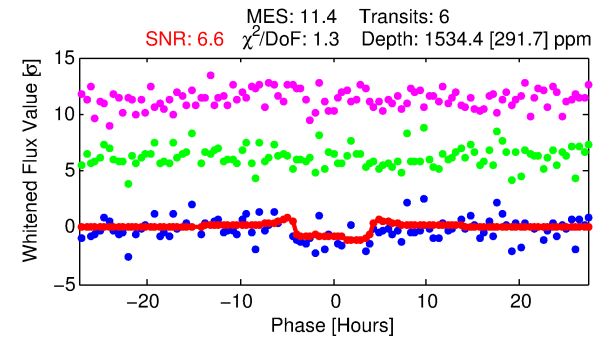
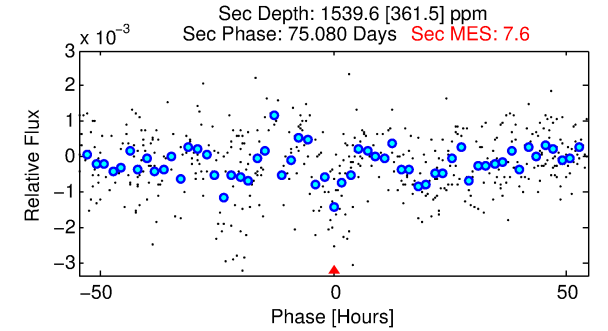
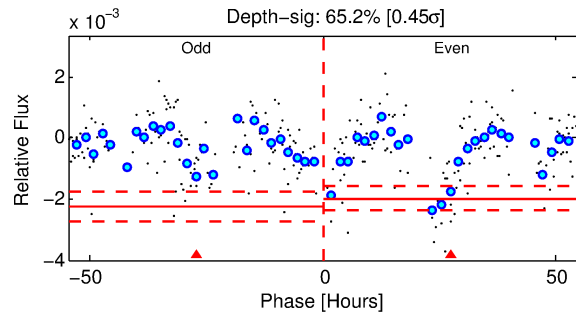
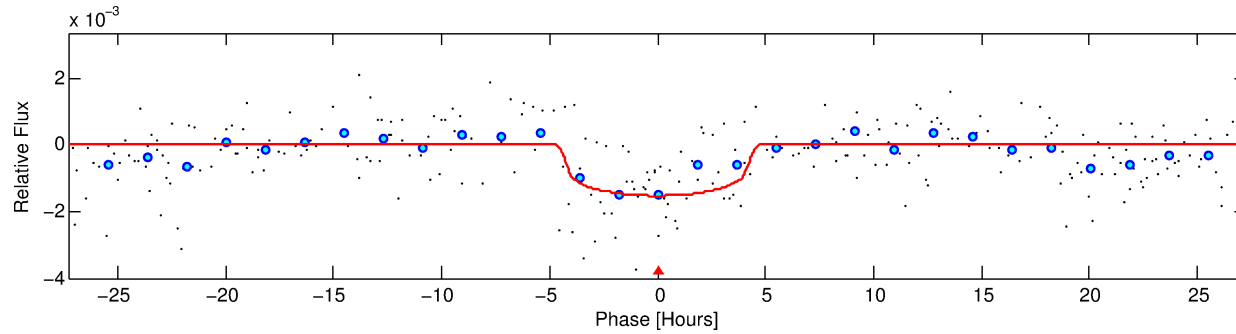
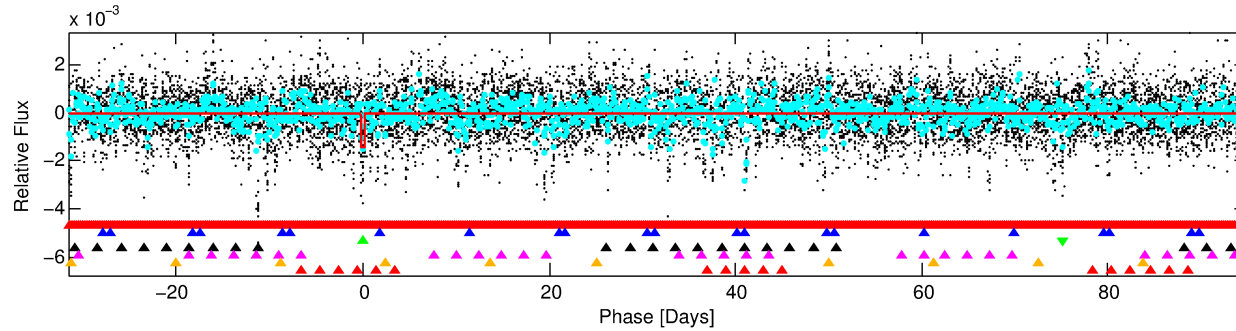
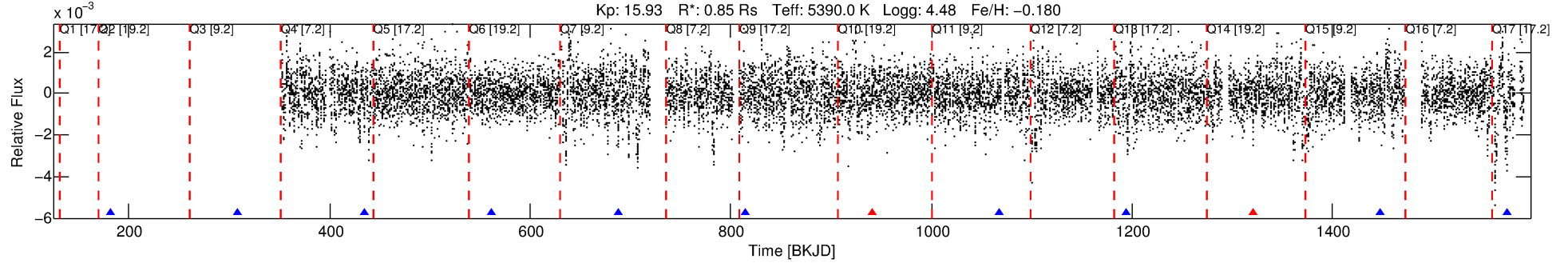
Ephemeris Match Information For 010341787-03

No Significant Match Found

# DV One-Page Summary

KIC: 10341787 Candidate: 3 of 7 Period: 126.582 d  
KOI: K07313 Corr: No Ephemeris Match

Kp: 15.93 R\*: 0.85 Rs Teff: 5390.0 K Logg: 4.48 Fe/H: -0.180



## DV Fit Results:

Period = 126.58204 [0.00332] d  
Epoch = 181.3312 [0.0251] BKJD  
Rp/R\* = 0.0371 [0.0174]  
a/R\* = 91.02 [161.16]  
b = 0.58 [2.01]  
Seff = 2.62 [0.74]  
Teq = 324 [23] K  
Rp = 3.45 [1.74] Re  
a = 0.4577 [0.0737] AU  
Ag = 14920.15 [14878.28] [1.00σ]  
Teffp = 5544 [1358] K [3.84σ]

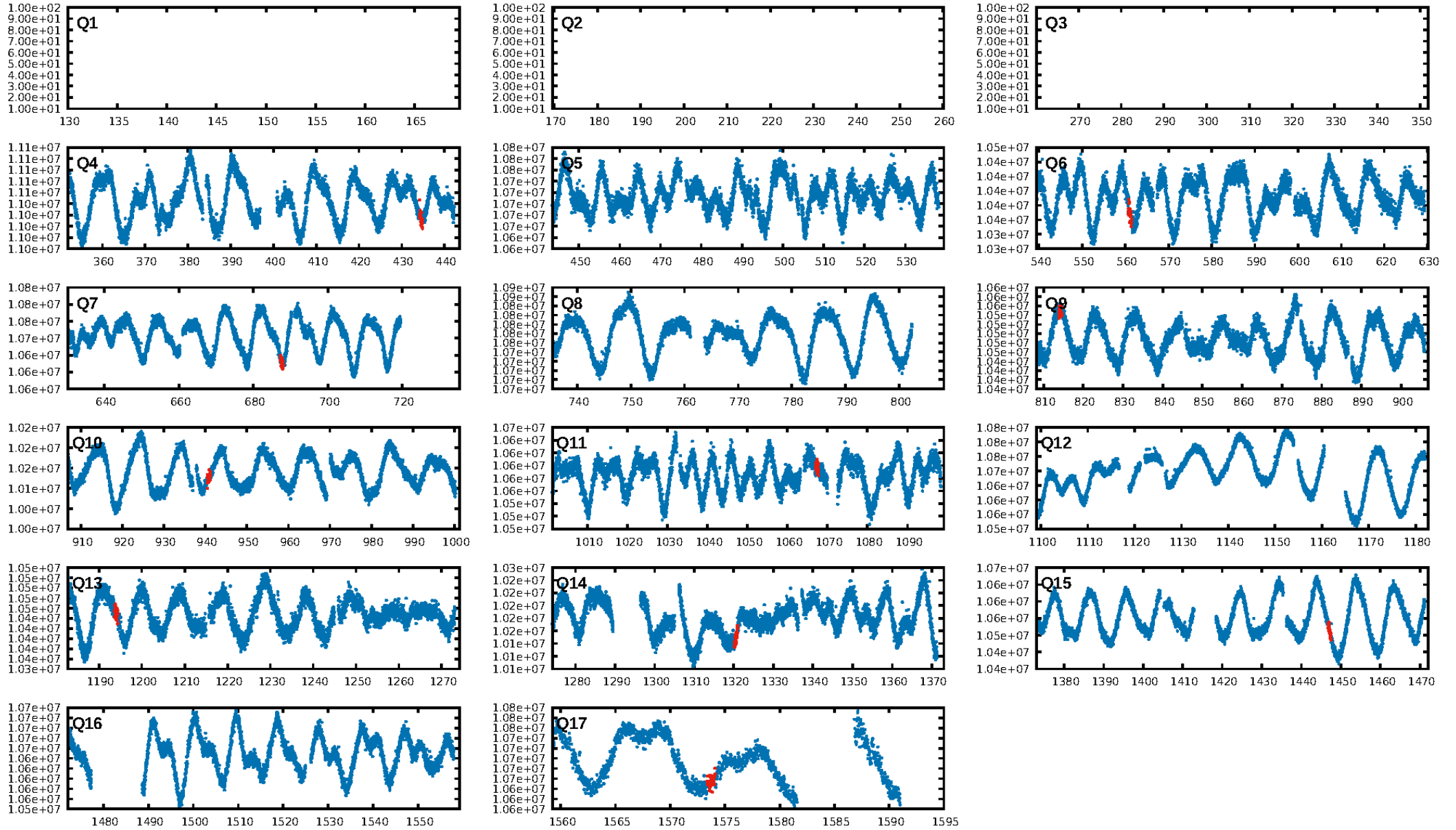
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [76.40σ]  
LongPeriod-sig: 100.0% [24.45σ]  
ModelChiSquare2-sig: 1.4%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 3.76e-14  
RollingBand-fgt: 0.60 [3/5]  
GhostDiagnostic-chr: 0.3719  
Centroid-sig: 4.4%  
Centroid-so: 0.960 arcsec [1.24σ]  
OotOffset-rm: 2.277 arcsec [1.69σ]  
OotOffset-st: 3/2/1/1 [7]  
KicOffset-rm: 2.086 arcsec [1.60σ]  
KicOffset-st: 3/2/1/1 [7]  
DiffImageQuality-fgm: 0.43 [3/7]  
DiffImageOverlap-fno: 0.00 [0/9]

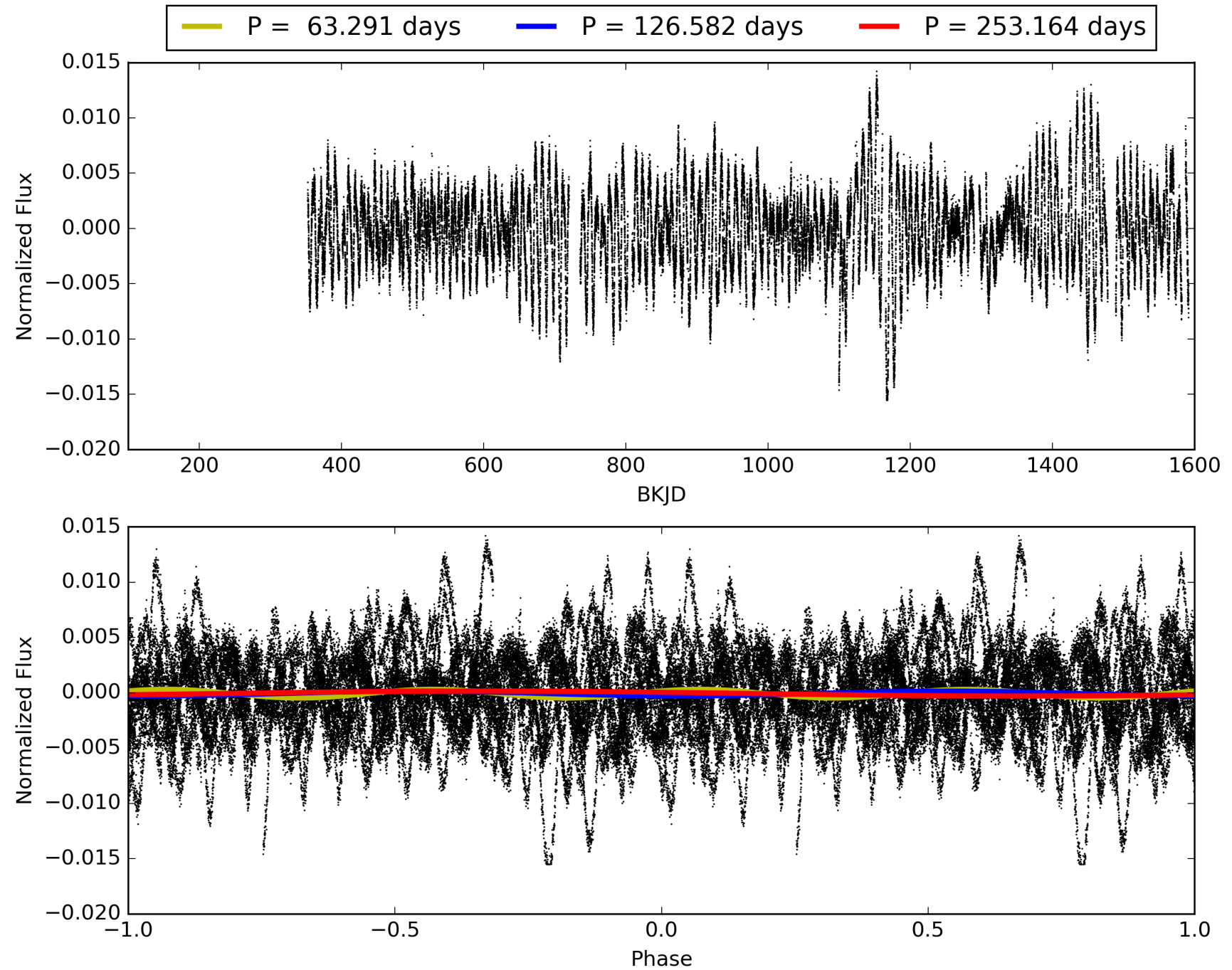
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 00:56:51 Z

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

# TCE 010341787-03, PDC Light Curves

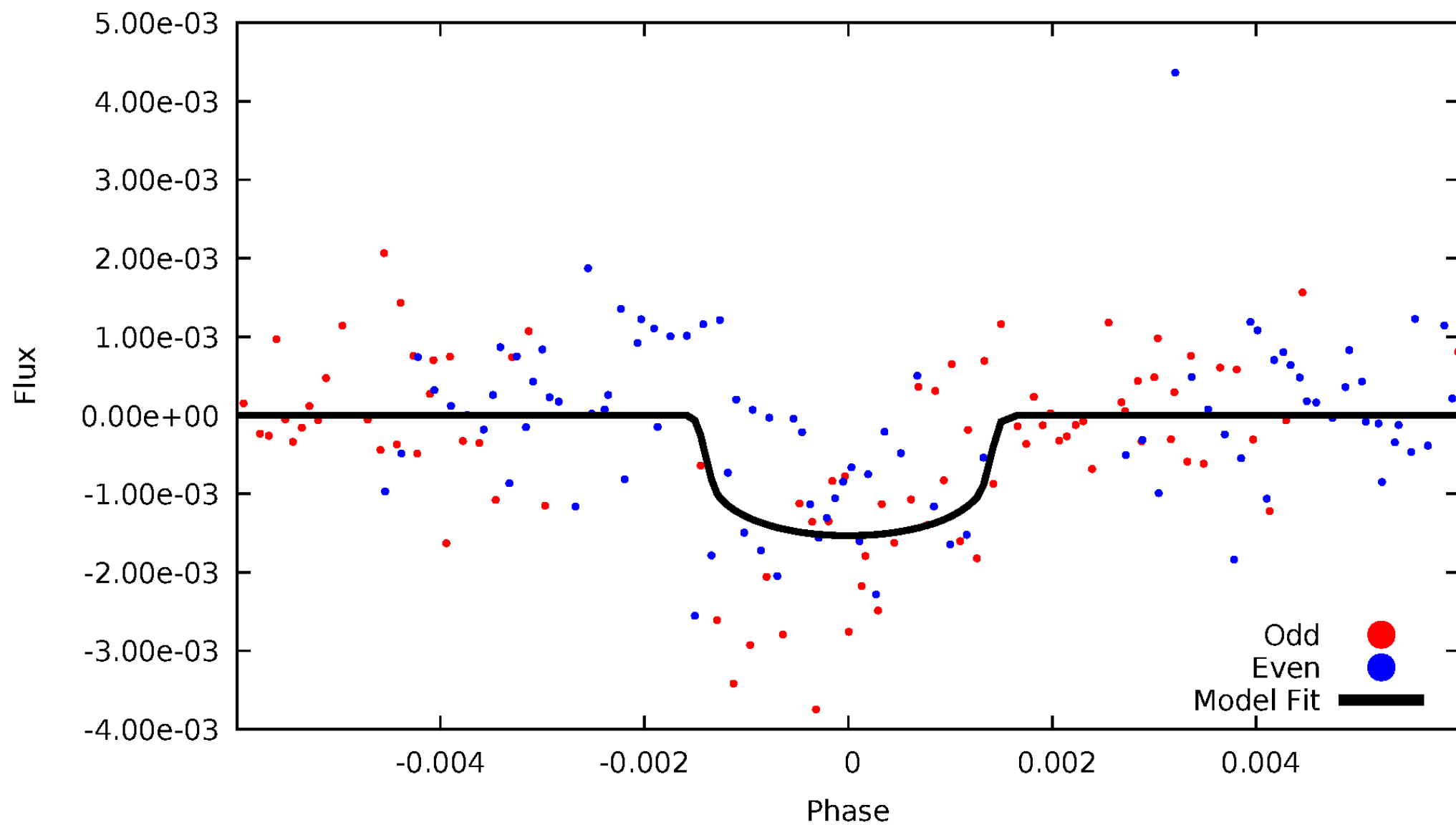


# TCE 010341787-03



# DV Odd/Even

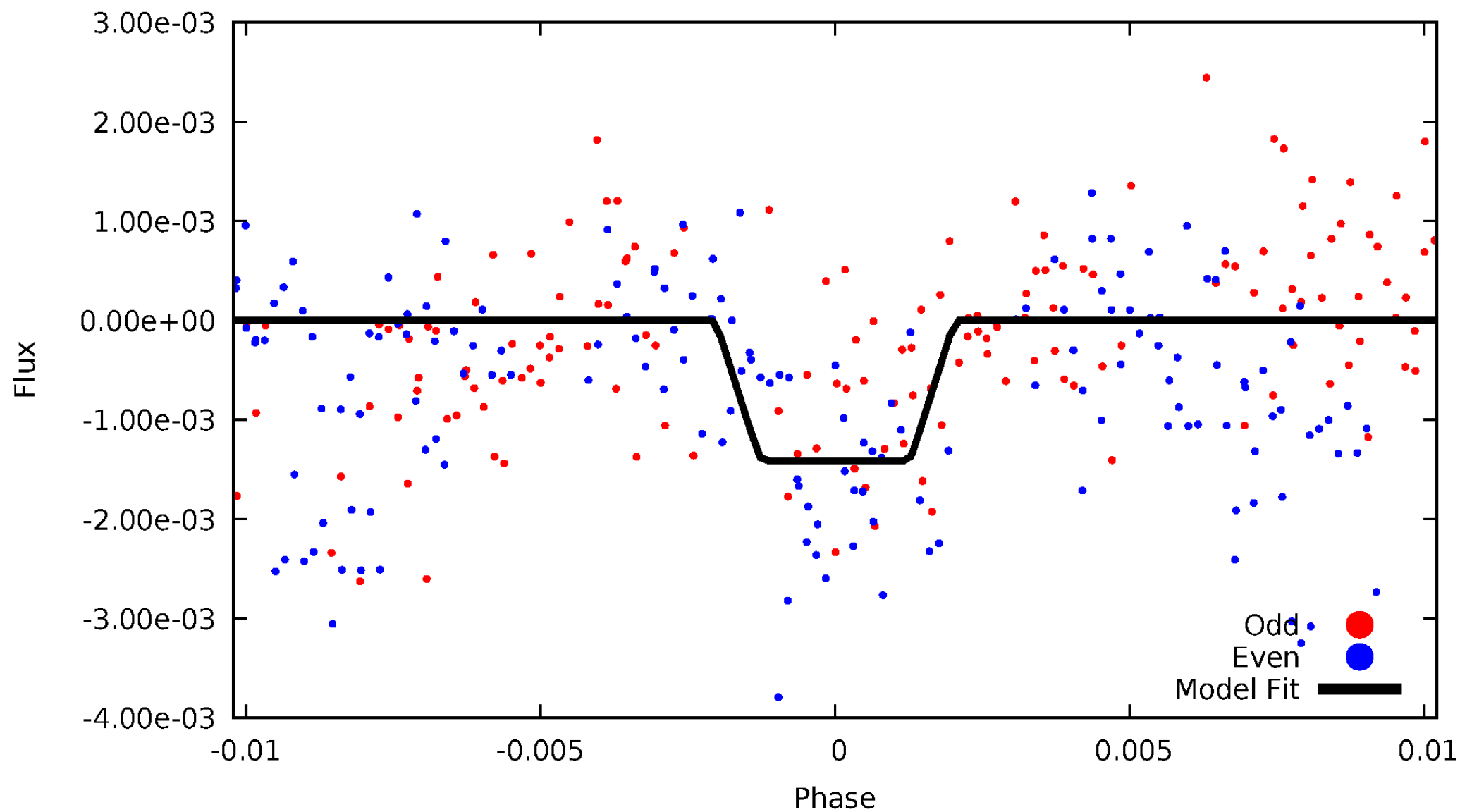
TCE 010341787-03





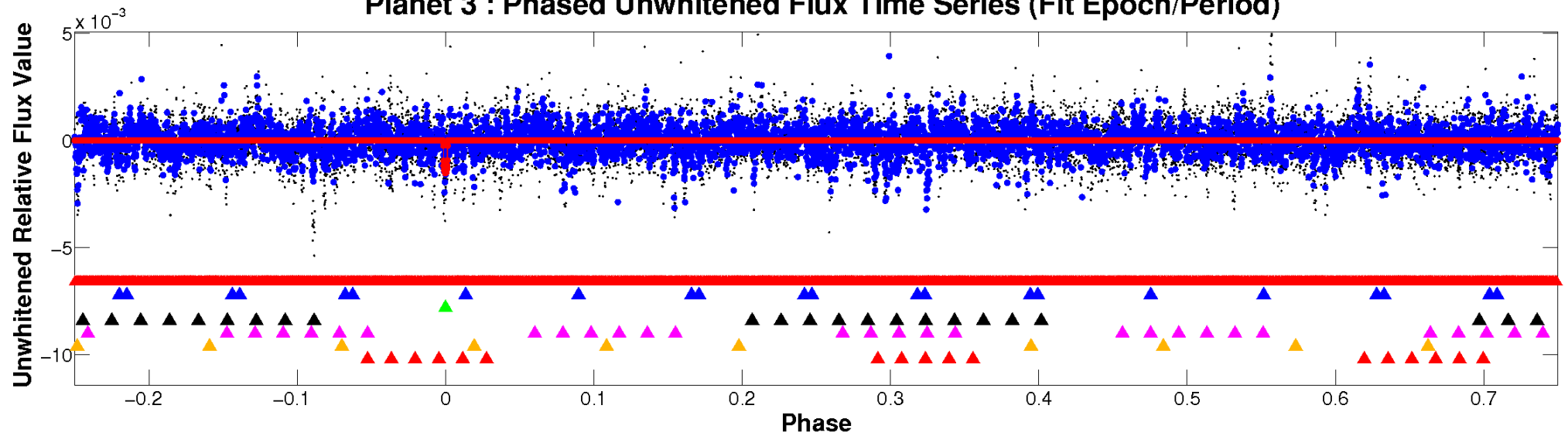
# ALT Odd/Even

TCE 010341787-03

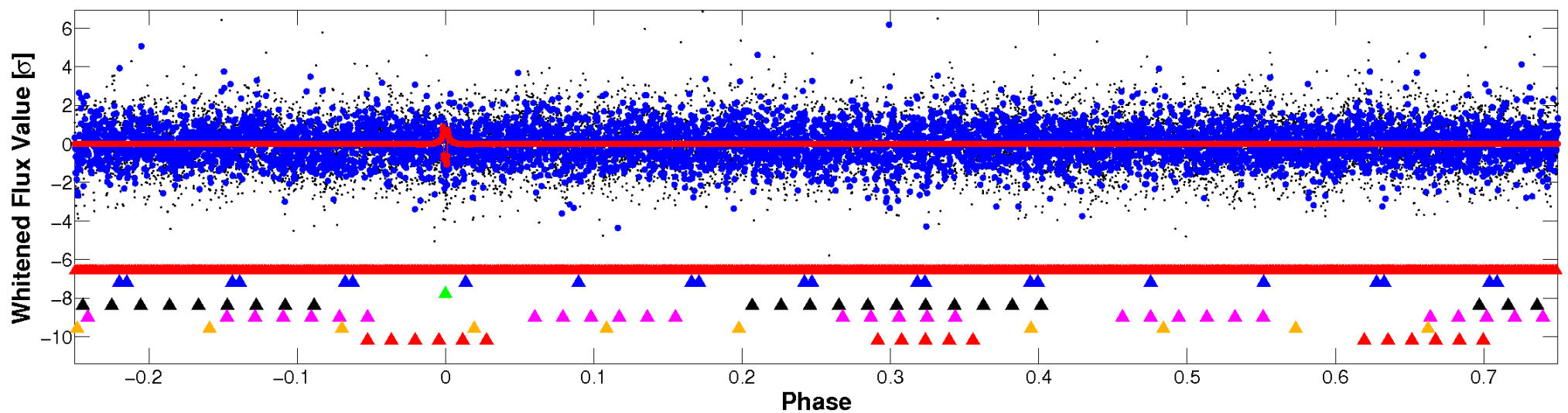


# Non-Whitened Vs. Whitened Light Curve

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

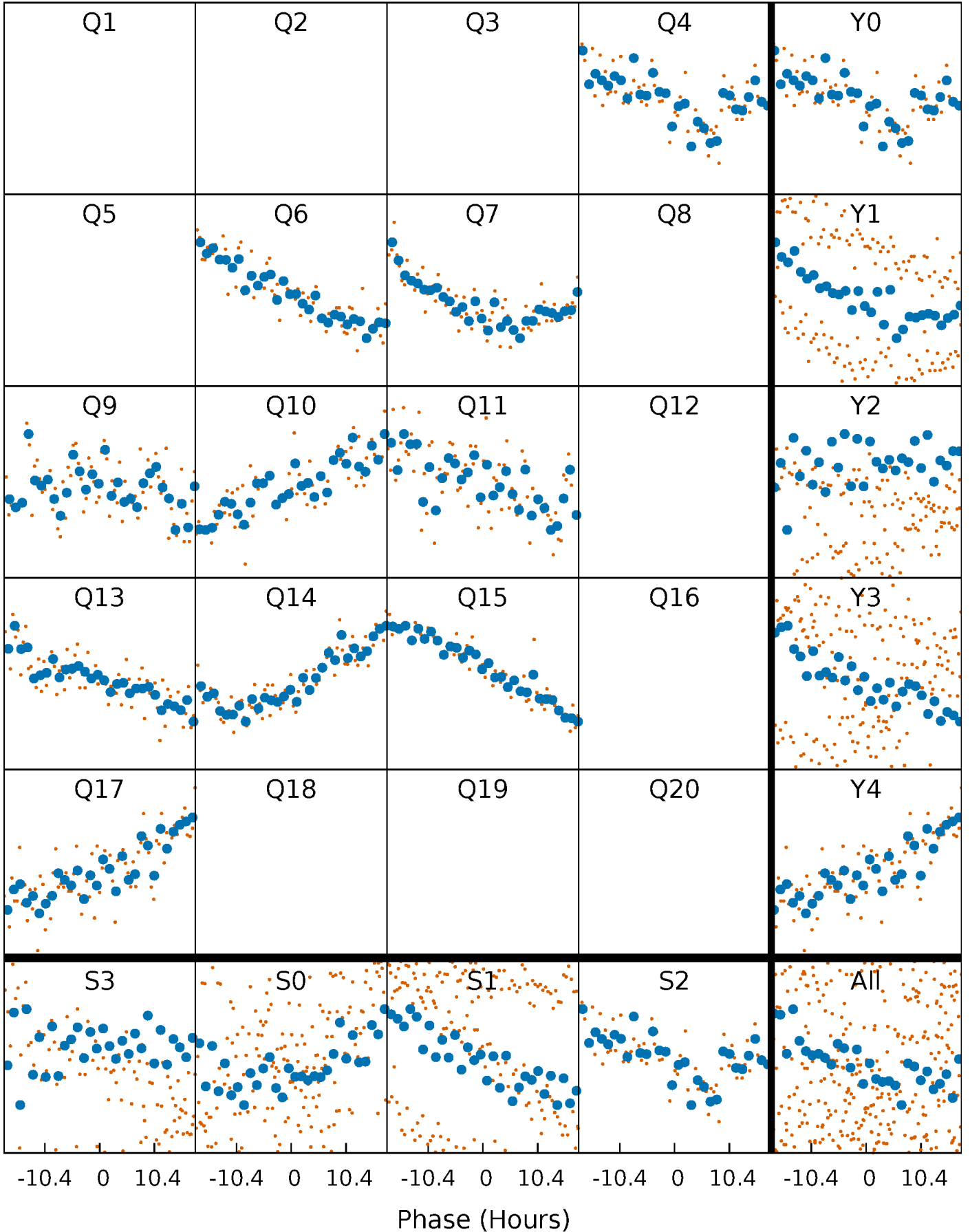


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



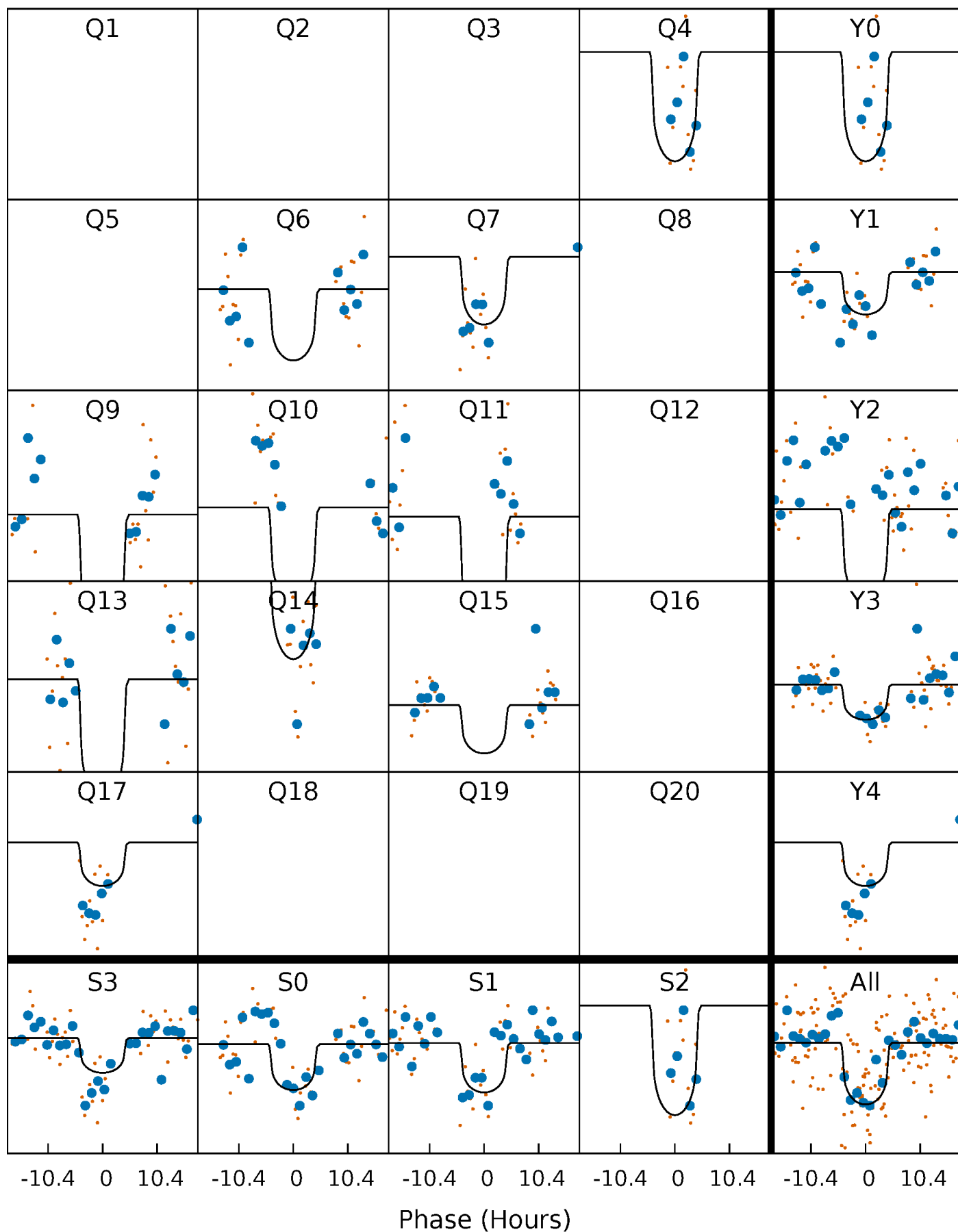
# PDC Quarter-Phased Transit Curves

TCE 010341787-03 P=126.582042 Days  $T_0=181.331214$  (BKJD)



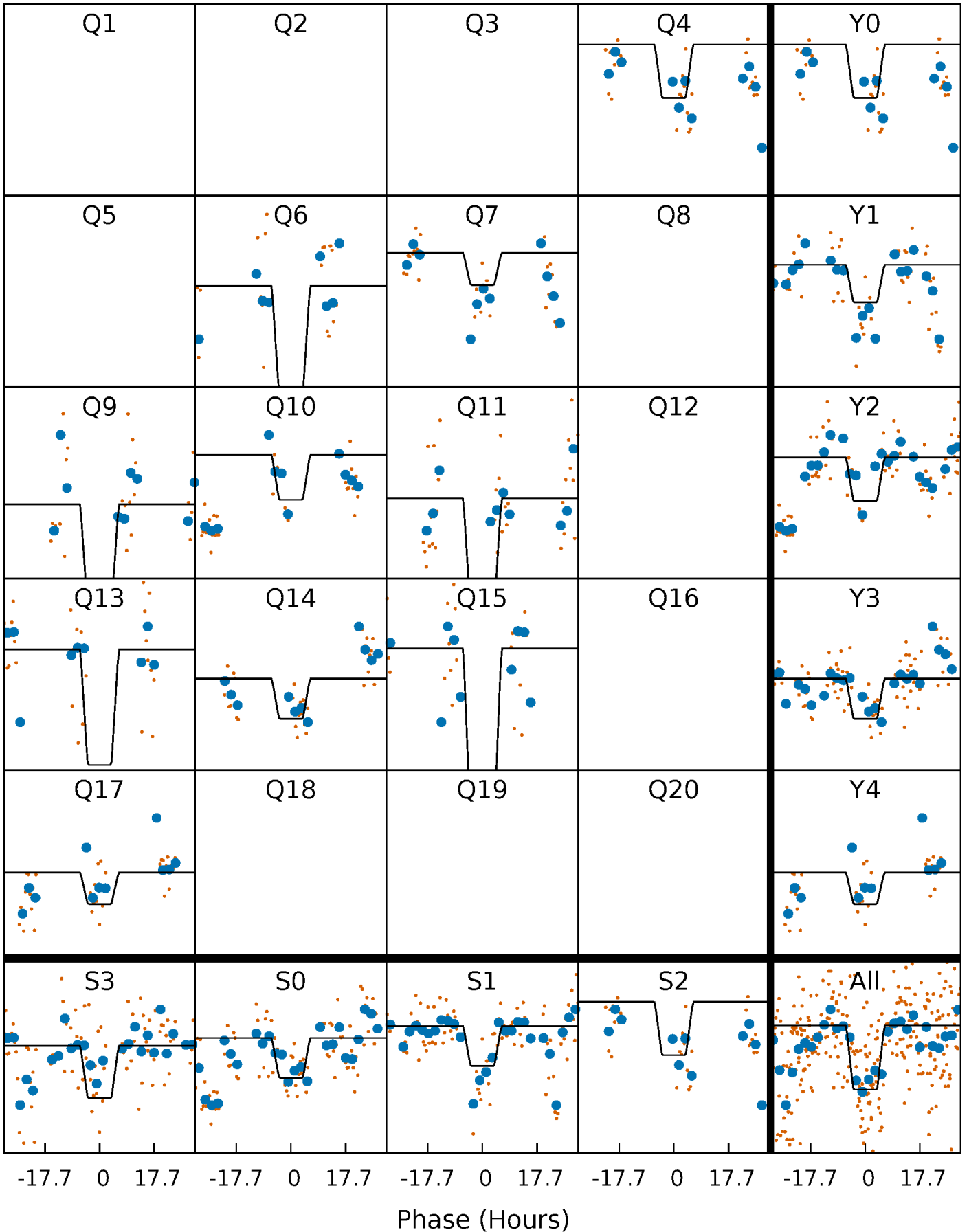
# DV Quarter-Phased Transit Curves

TCE 010341787-03     $P=126.582042$  Days     $T_0=181.331214$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

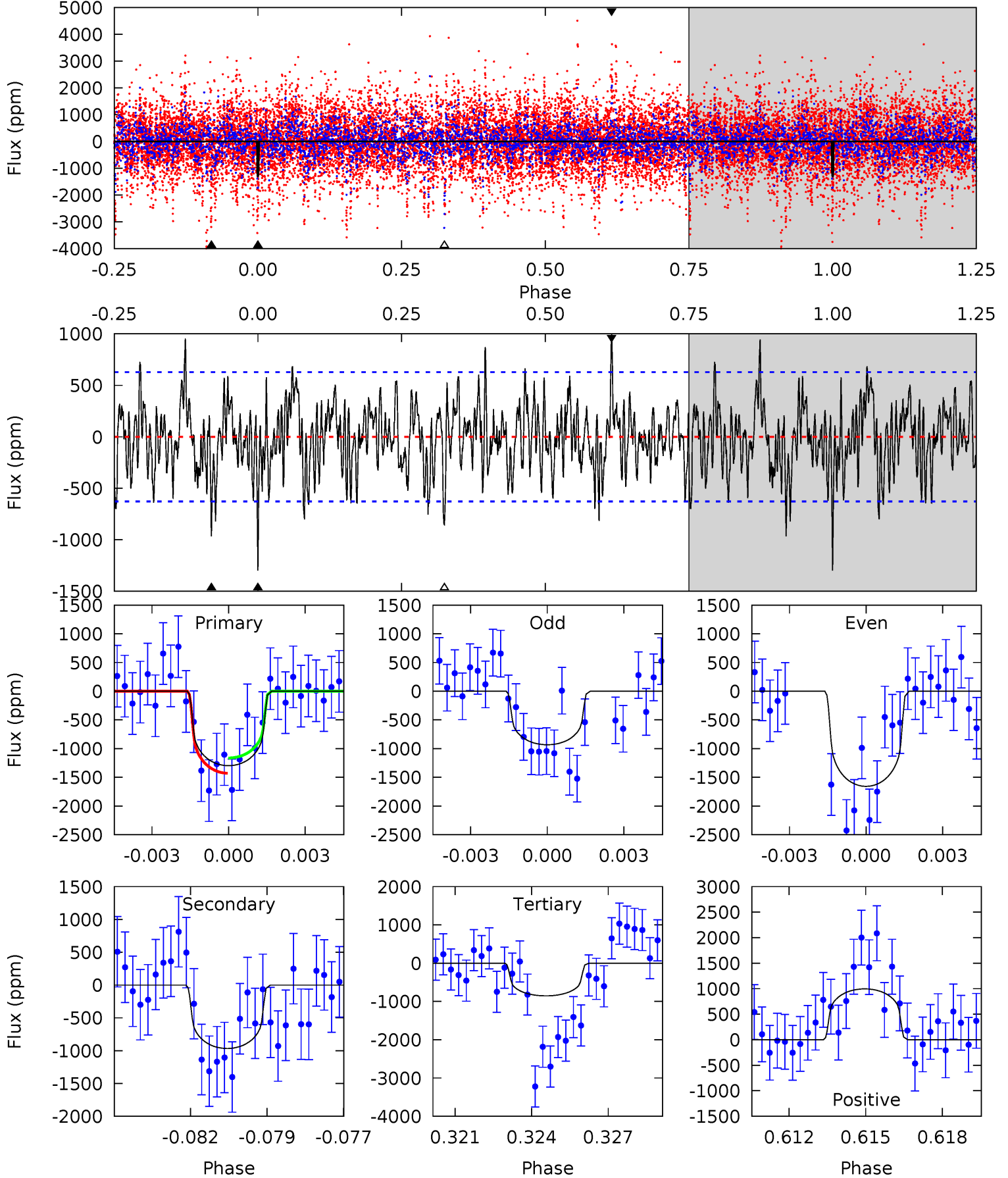
TCE 010341787-03     $P=126.585904$  Days     $T_0=181.247404$  (BKJD)



# DV Model-Shift Uniqueness Test

010341787-03, P = 126.582042 Days, E = 181.331214 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
10.9	8.10	7.16	8.35	5.26	2.97	2.38	3.72	2.52	0.94	-0.25	3.03	0.78	0.43	1.12

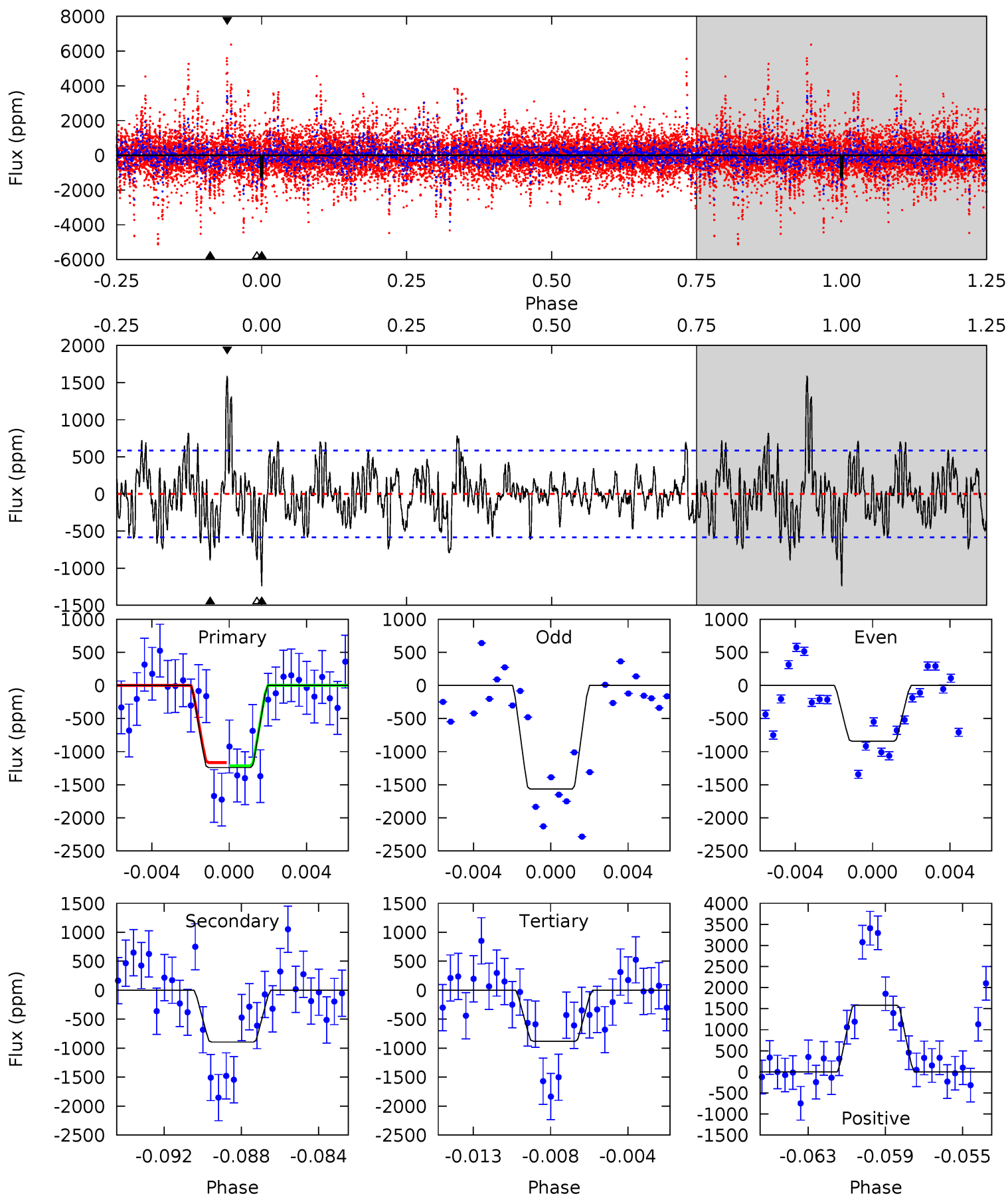




# Alt Model-Shift Uniqueness Test

010341787-03, P = 126.585904 Days, E = 181.247404 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
11.0	7.92	7.80	14.0	5.19	2.86	2.58	3.20	-3.02	0.13	-6.09	3.21	0.89	0.56	0.20



### Stellar Parameters For KIC 010341787

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5390^{+204}_{-185}$	$4.479^{+0.096}_{-0.132}$	$-0.180^{+0.300}_{-0.300}$	$0.852^{+0.160}_{-0.107}$	$0.798^{+0.113}_{-0.061}$	$1.819^{+0.720}_{-0.717}$
	+4%/-3%	+2%/-3%	+167%/-167%	+19%/-13%	+14%/-8%	+40%/-39%
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 010341787-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-966 \pm 119$	$3.60^{+1.63}_{-1.61}$	$456^{+26}_{-24}$	$4961^{+1546}_{-704}$	$8964^{+18606}_{-4977}$
Alt.	$-894 \pm 113$	$3.63^{+1.66}_{-1.63}$	$456^{+26}_{-24}$	$4868^{+1527}_{-710}$	$7907^{+17685}_{-4158}$

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

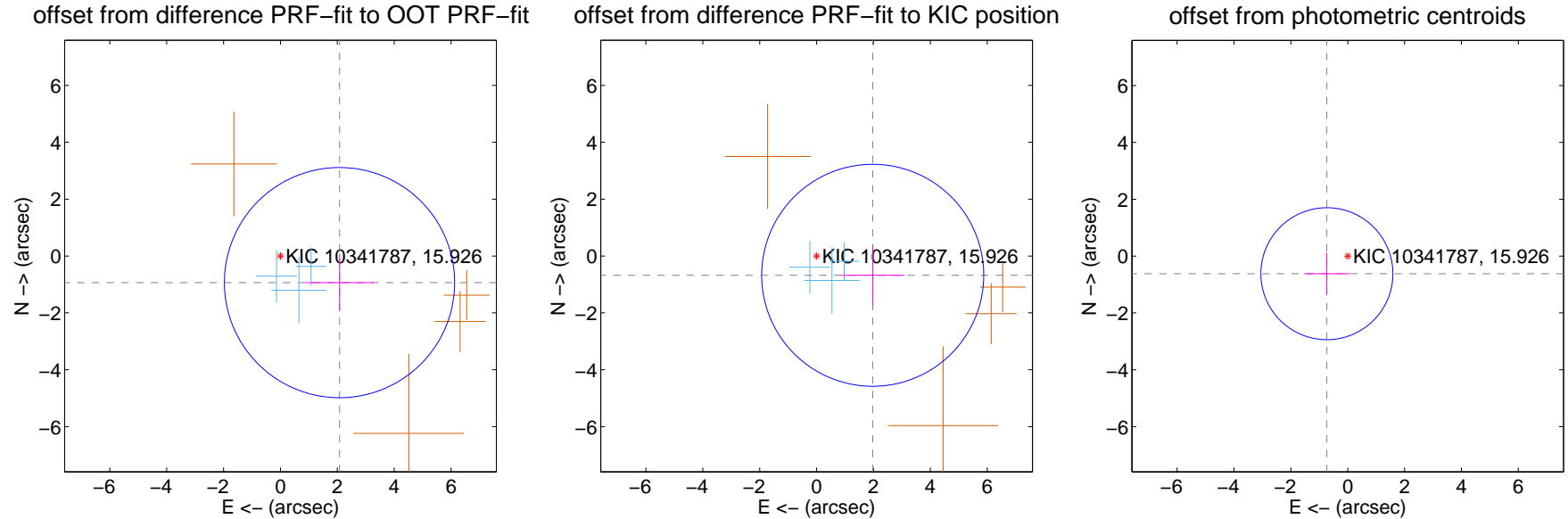
## DV Centroid Data

Supplemental centroid analysis for 010341787-03. Kepler magnitude: 15.93. Transit SNR 6.64

There are 3 quarters with good PRF difference image offsets

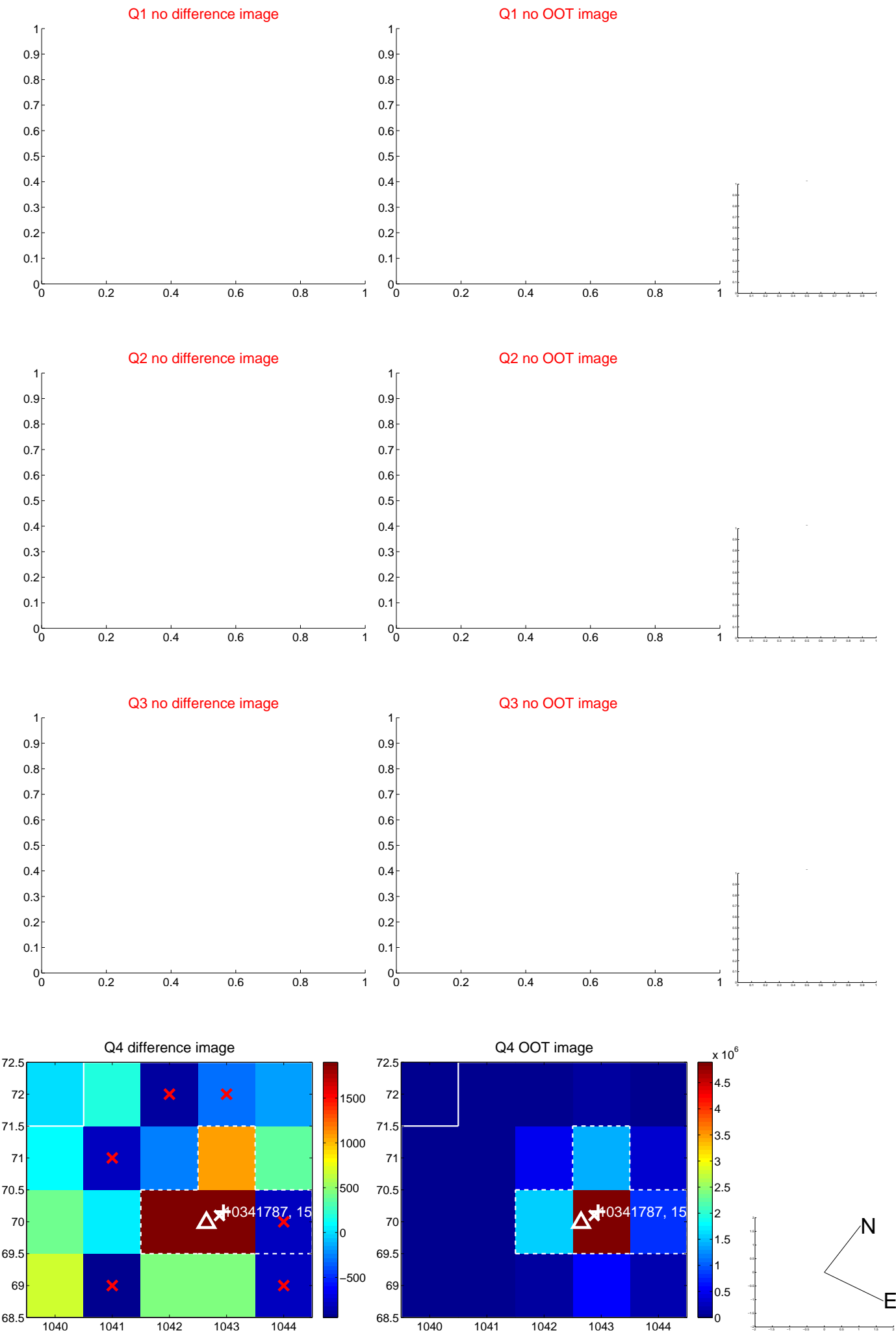
The direct PRF centroid is offset from the target star catalog position by about 0.28 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$2.277 \pm 1.349$	1.69	$-2.076 \pm 1.198$	$-0.935 \pm 1.005$
PRF-fit source offset from KIC position	$2.086 \pm 1.301$	1.60	$-1.973 \pm 1.117$	$-0.678 \pm 1.056$
photometric centroid source offset	$0.96 \pm 0.77$	1.24	$0.73 \pm 0.79$	$-0.62 \pm 0.74$



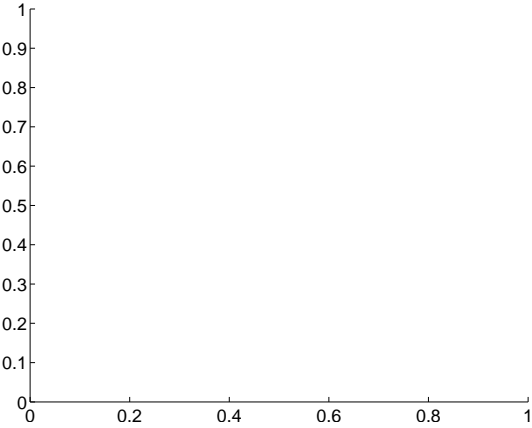
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

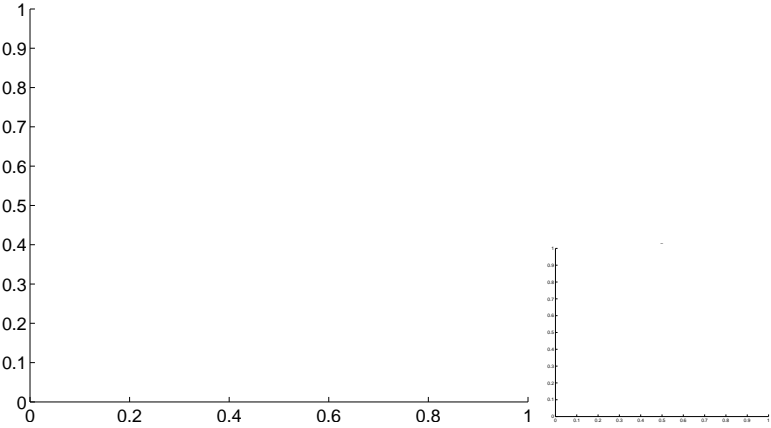


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

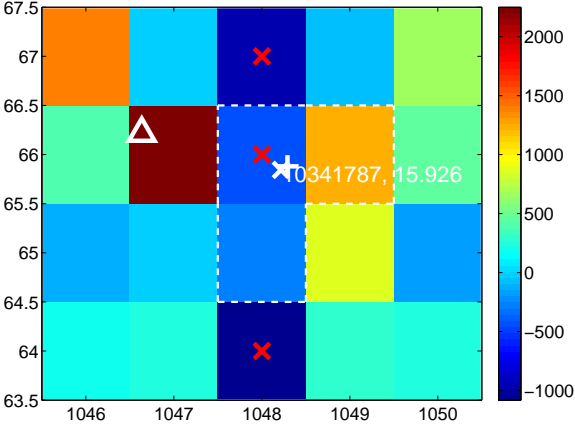
Q5 no difference image



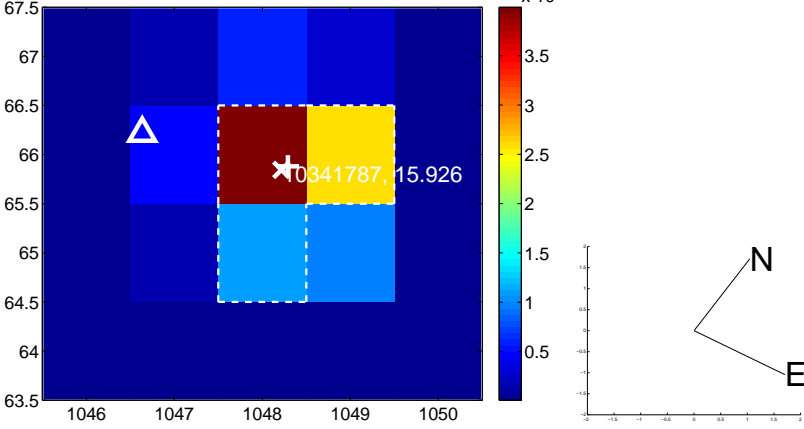
Q5 no OOT image



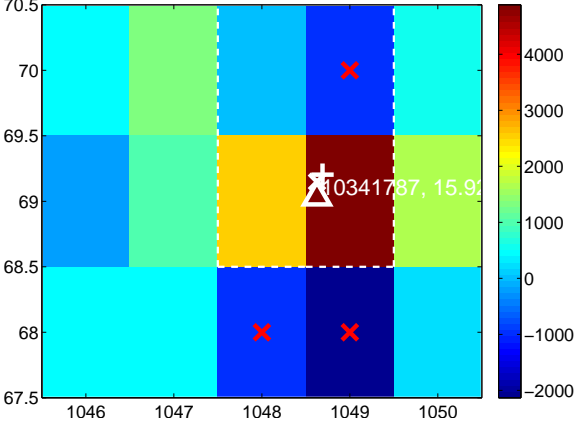
Q6 difference image. Poor Quality



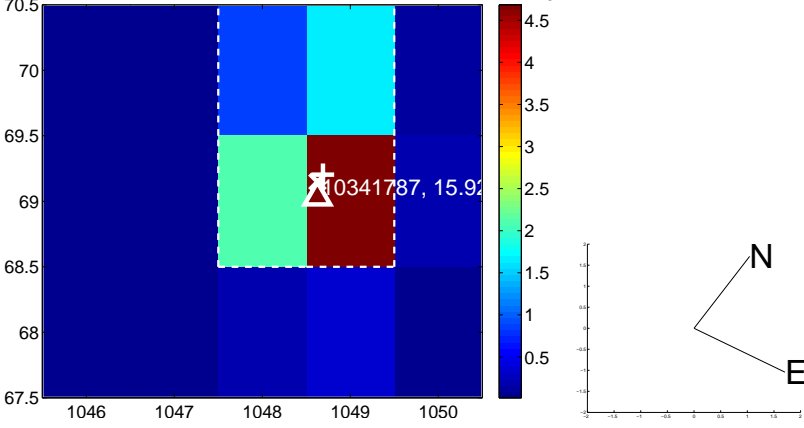
Q6 OOT image



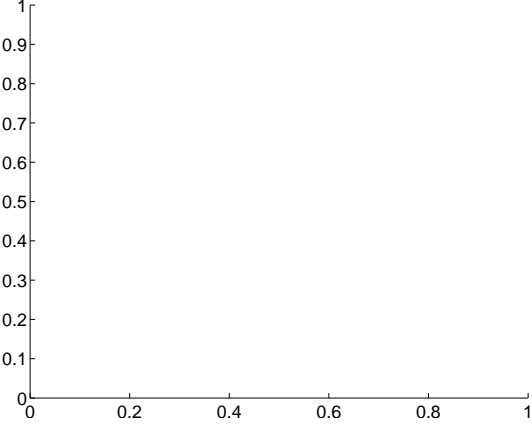
Q7 difference image



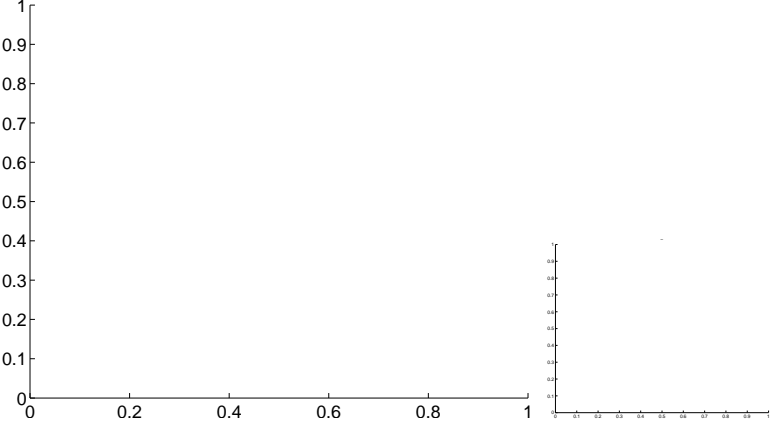
Q7 OOT image



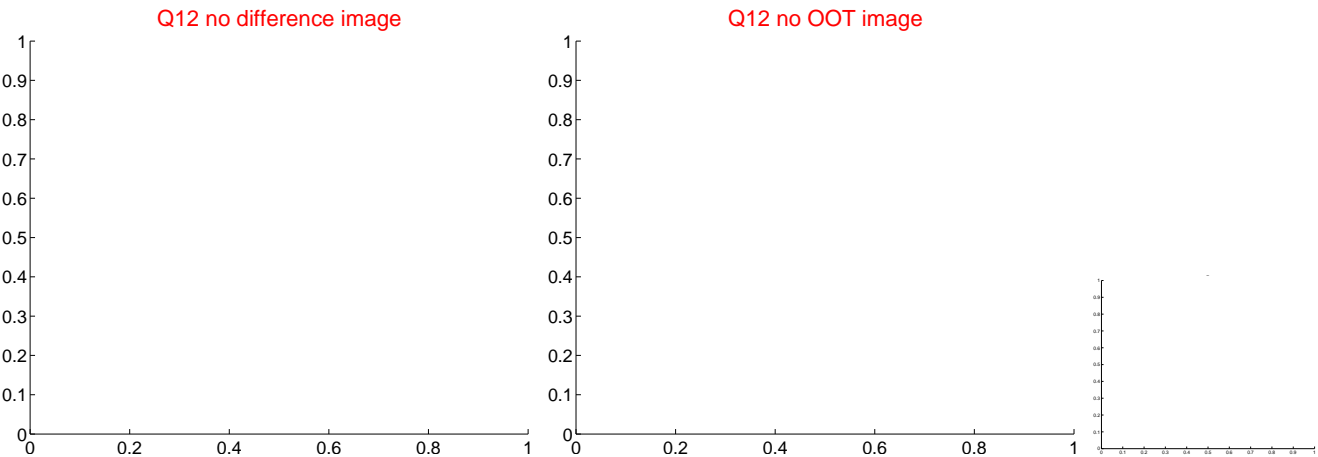
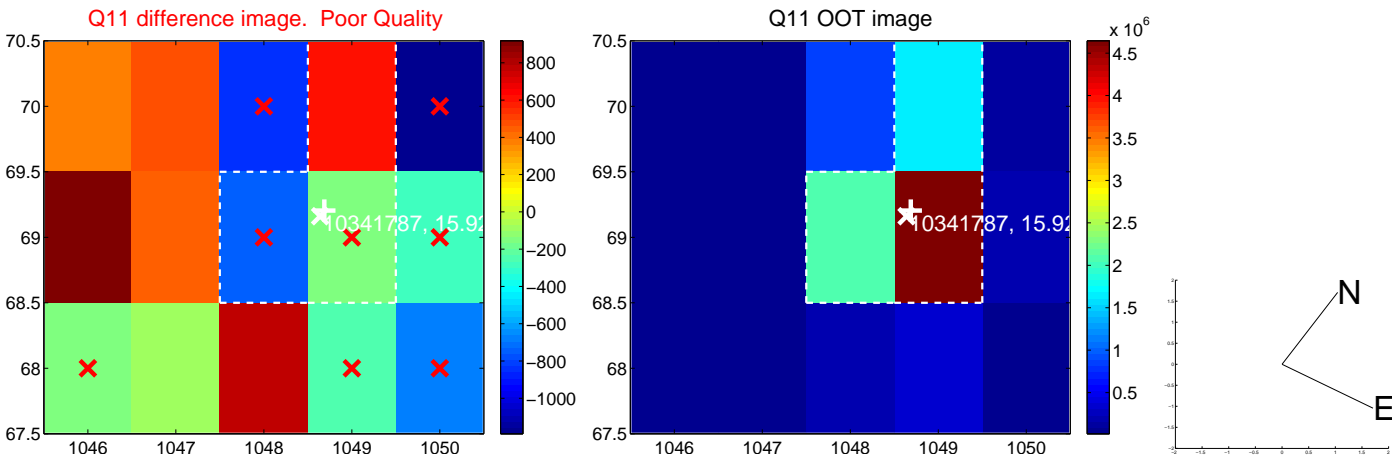
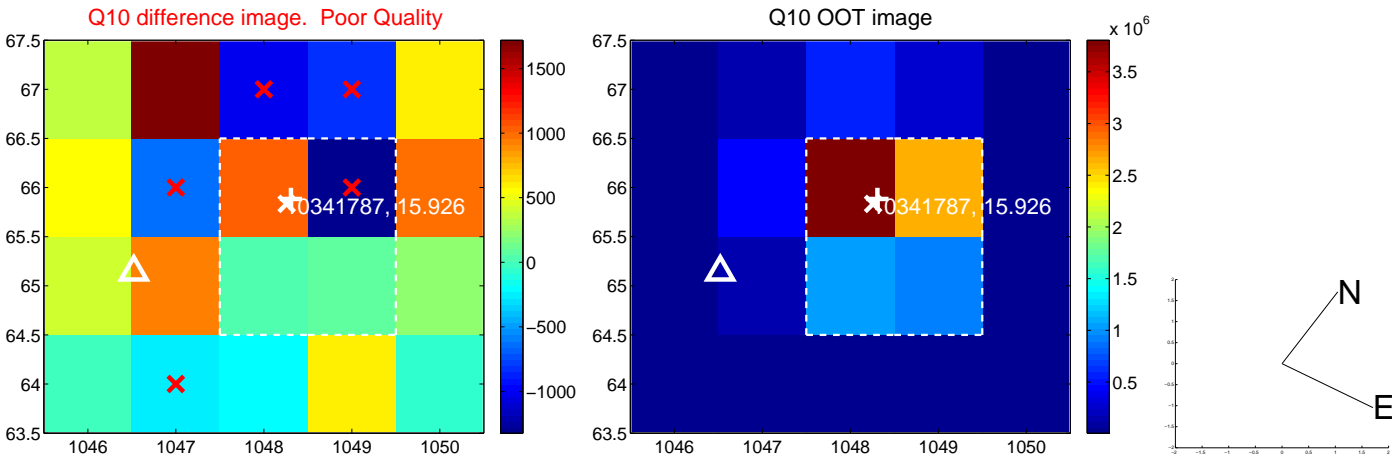
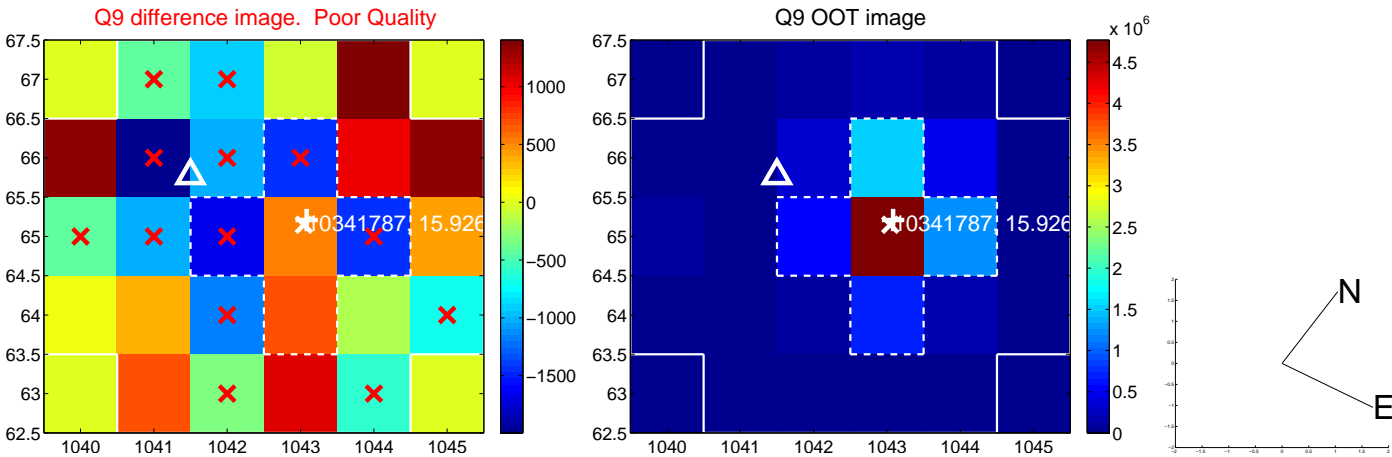
Q8 no difference image



Q8 no OOT image



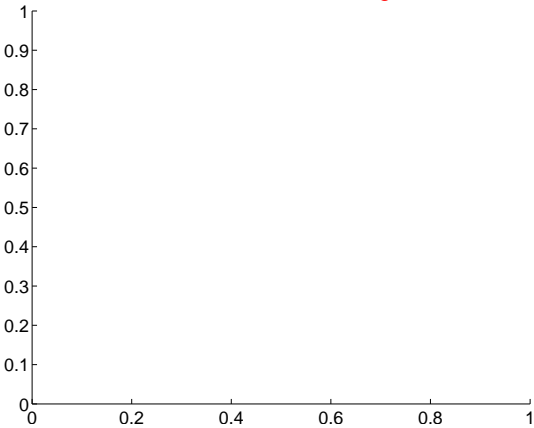
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



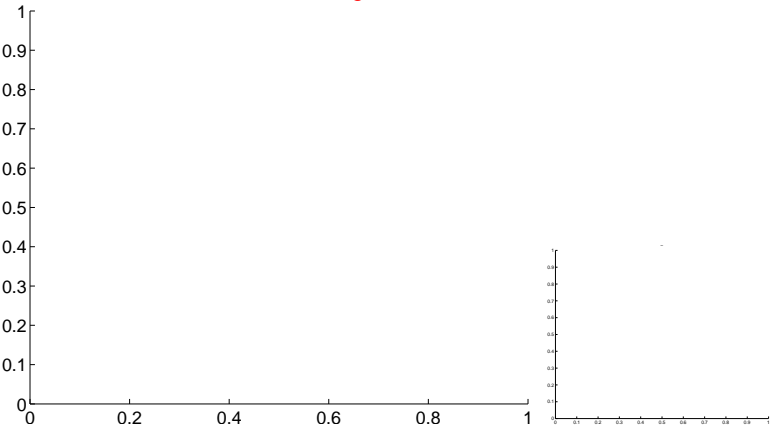


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

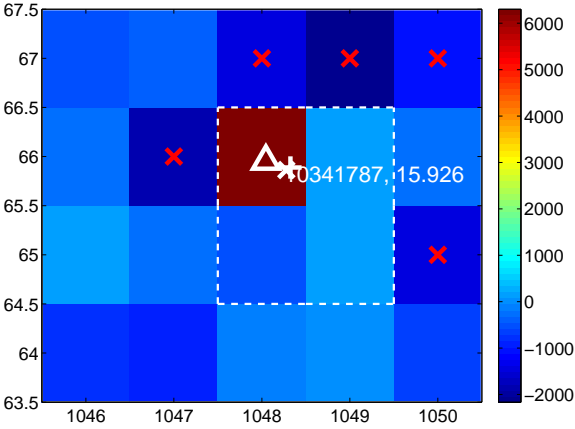
Q13 no difference image



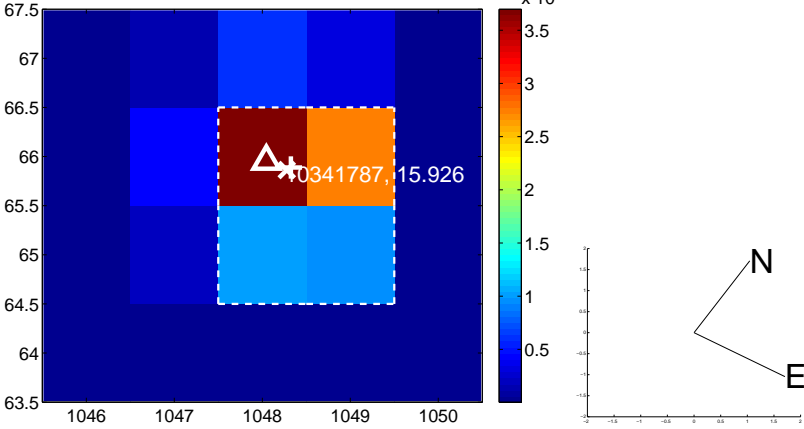
Q13 no OOT image



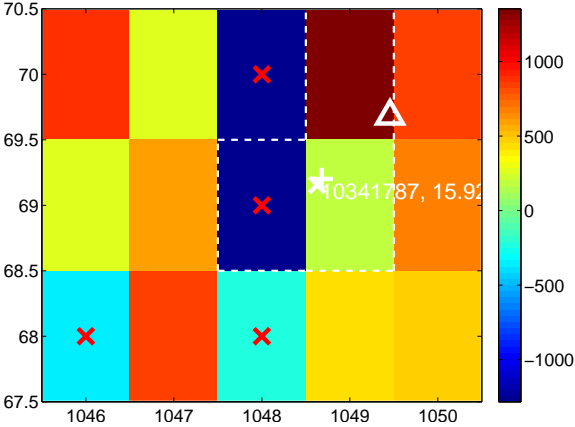
Q14 difference image



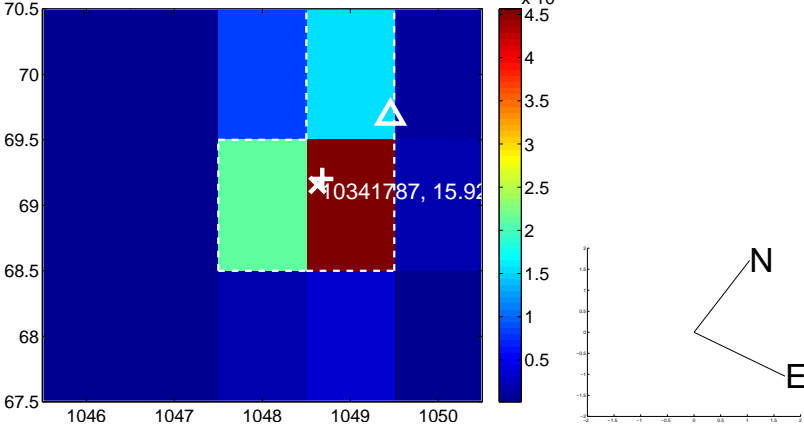
Q14 OOT image



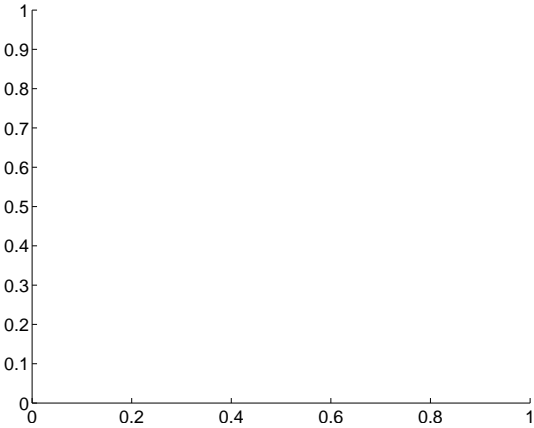
Q15 difference image. Poor Quality



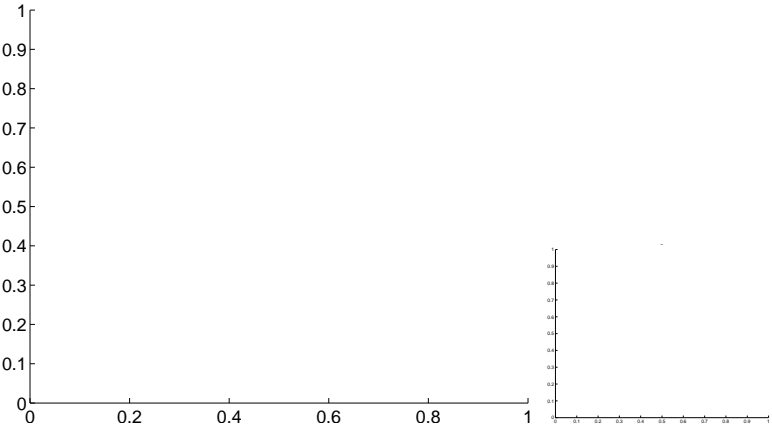
Q15 OOT image



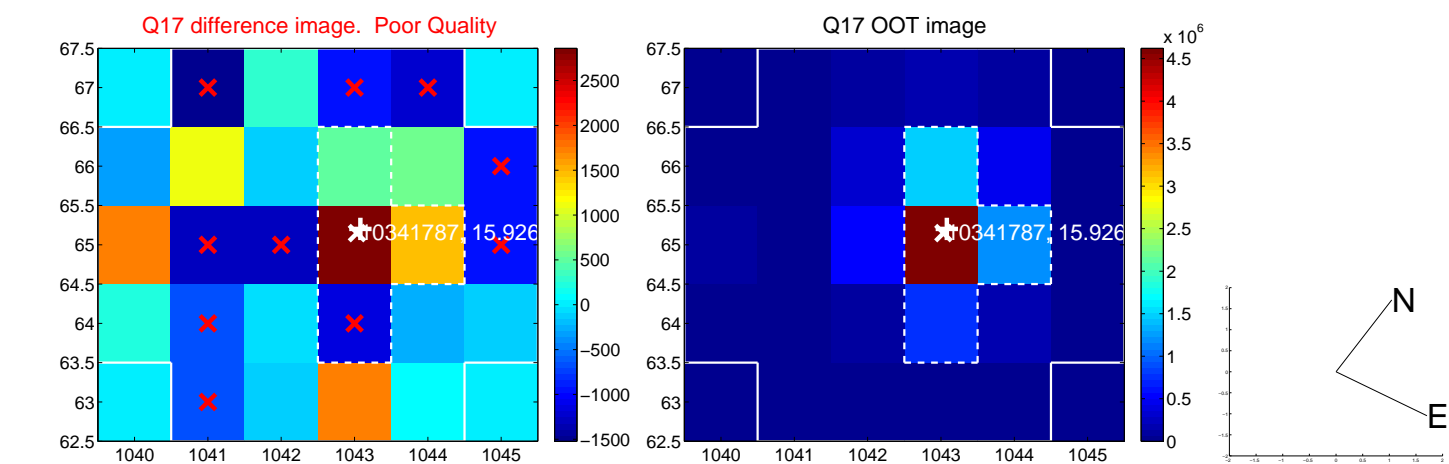
Q16 no difference image



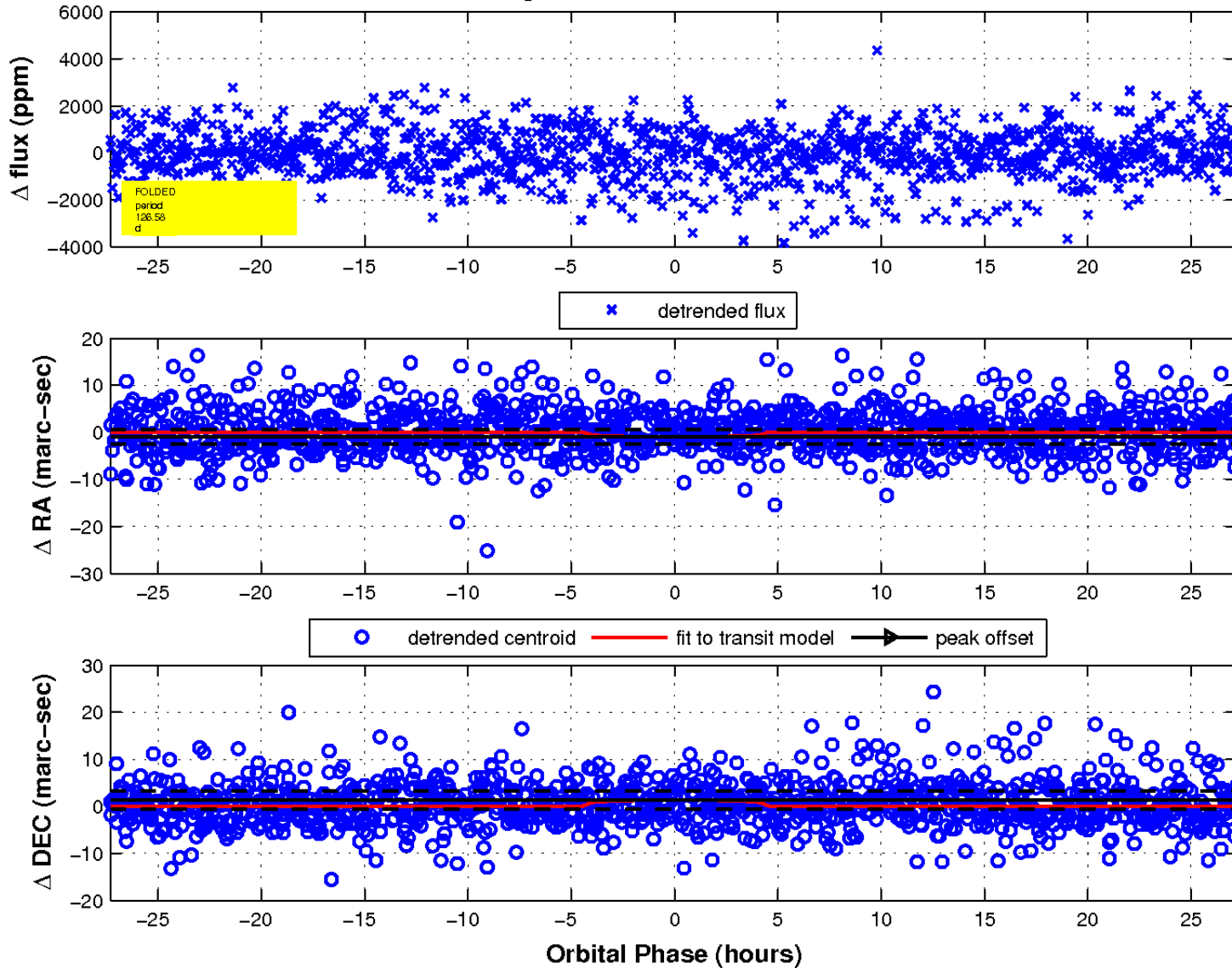
Q16 no OOT image



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

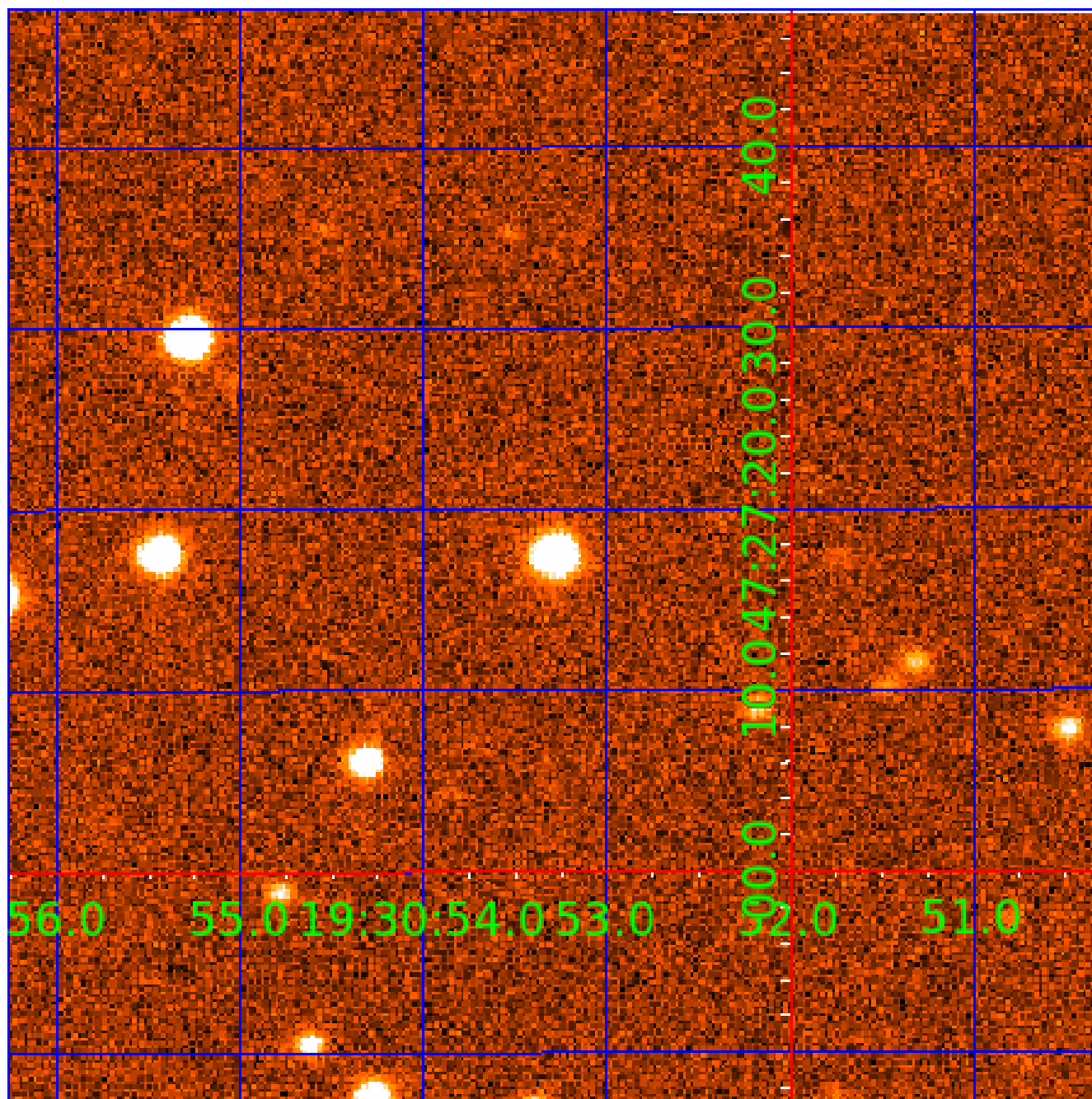


fluxWeightedCentroids, Planet 3 of 7



UKIRT Image

Declination



# KIC 010341787

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
010341787-01	OBS	7313.01	0.933702	132.493752	134.3	5.393	11.6	14.7	0.85	5390	1.05	1825.01
010341787-02	OBS	No	68.110371	134.857375	1334.2	8.034	14.5	7.3	0.85	5390	3.57	5.99
010341787-03	OBS	No	126.582042	181.331214	1534.4	9.100	11.4	6.6	0.85	5390	3.45	2.62
010341787-04	OBS	No	64.524387	142.983279	1038.3	9.783	11.2	6.4	0.85	5390	3.23	6.43
010341787-05	OBS	No	50.152671	150.808918	1104.9	14.225	10.7	7.3	0.85	5390	3.40	9.01
010341787-06	OBS	No	137.876543	231.306680	2010.6	6.336	10.3	8.9	0.85	5390	4.13	2.34
010341787-07	OBS	No	85.064483	174.685007	1329.9	9.343	10.6	7.7	0.85	5390	3.75	4.45

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010341787-01	OBS	FP	0.00	0	0	1	1	CENT_RESOLVED_OFFSET—HALO_GHOST—EPHEM_MATCH
010341787-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
010341787-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
010341787-04	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_FEW_DIFFS—HALO_GHOST
010341787-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
010341787-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
010341787-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS

**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.

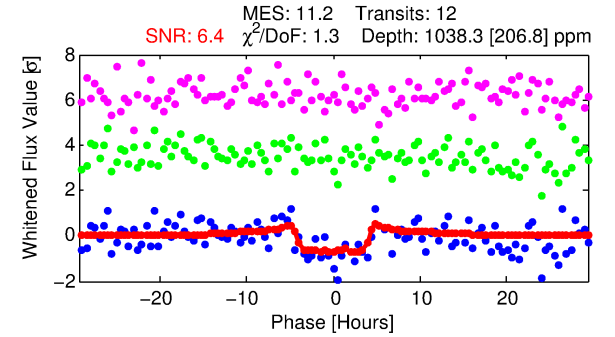
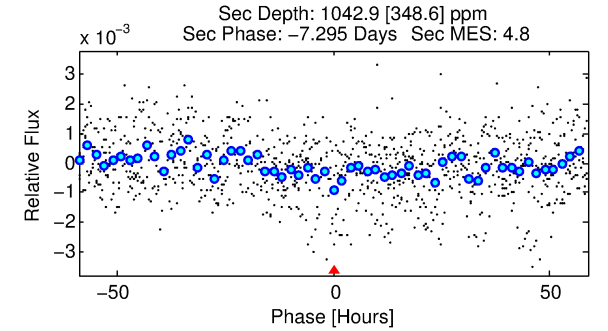
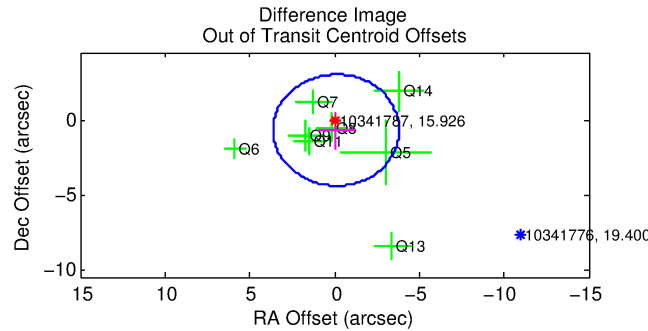
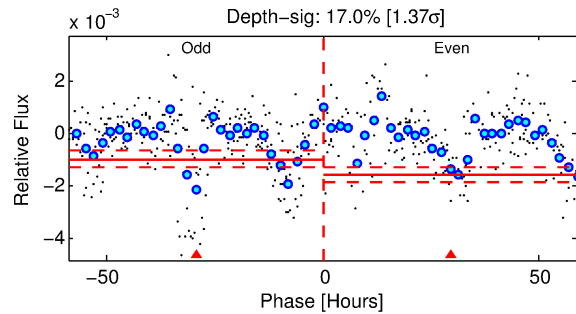
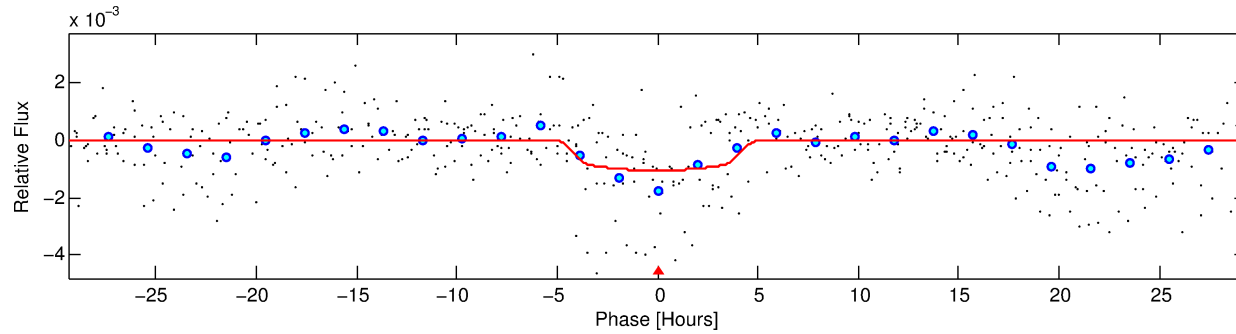
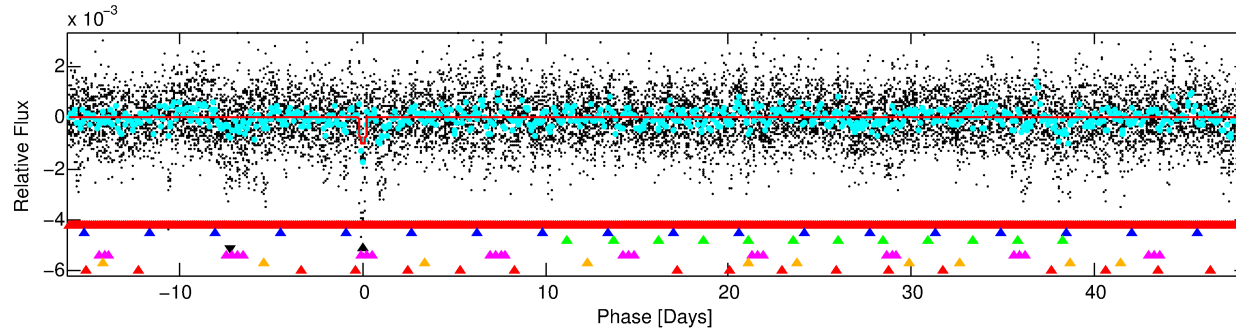
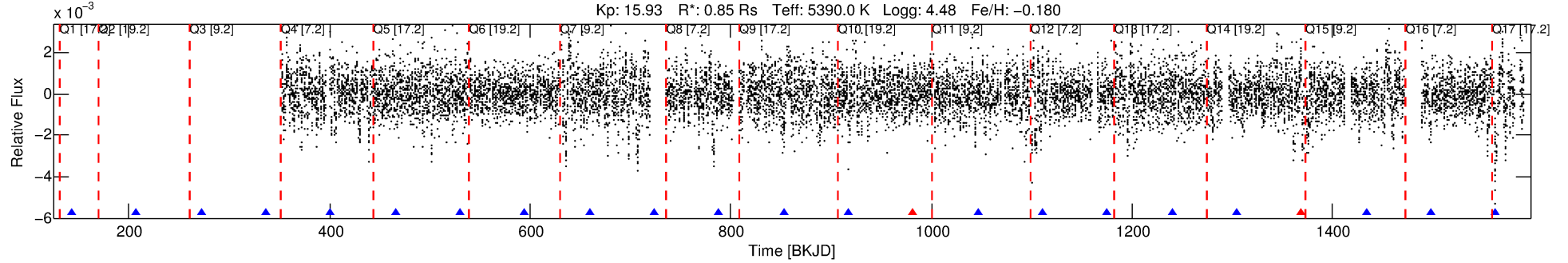
Ephemeris Match Information For 010341787-04

No Significant Match Found

# DV One-Page Summary

KIC: 10341787 Candidate: 4 of 7 Period: 64.524 d  
KOI: K07313 Corr: No Ephemeris Match

Kp: 15.93 R\*: 0.85 Rs Teff: 5390.0 K Logg: 4.48 Fe/H: -0.180



## DV Fit Results:

Period = 64.52439 [0.00232] d  
Epoch = 142.9833 [0.0322] BKJD  
Rp/R\* = 0.0347 [0.0060]  
a/R\* = 27.61 [14.58]  
b = 0.88 [0.14]  
Seff = 6.44 [1.82]  
Teq = 406 [29] K  
Rp = 3.23 [0.82] Re  
a = 0.2921 [0.0470] AU  
Ag = 4704.32 [2519.69] [1.87σ]  
Teffp = 5200 [654] K [7.32σ]

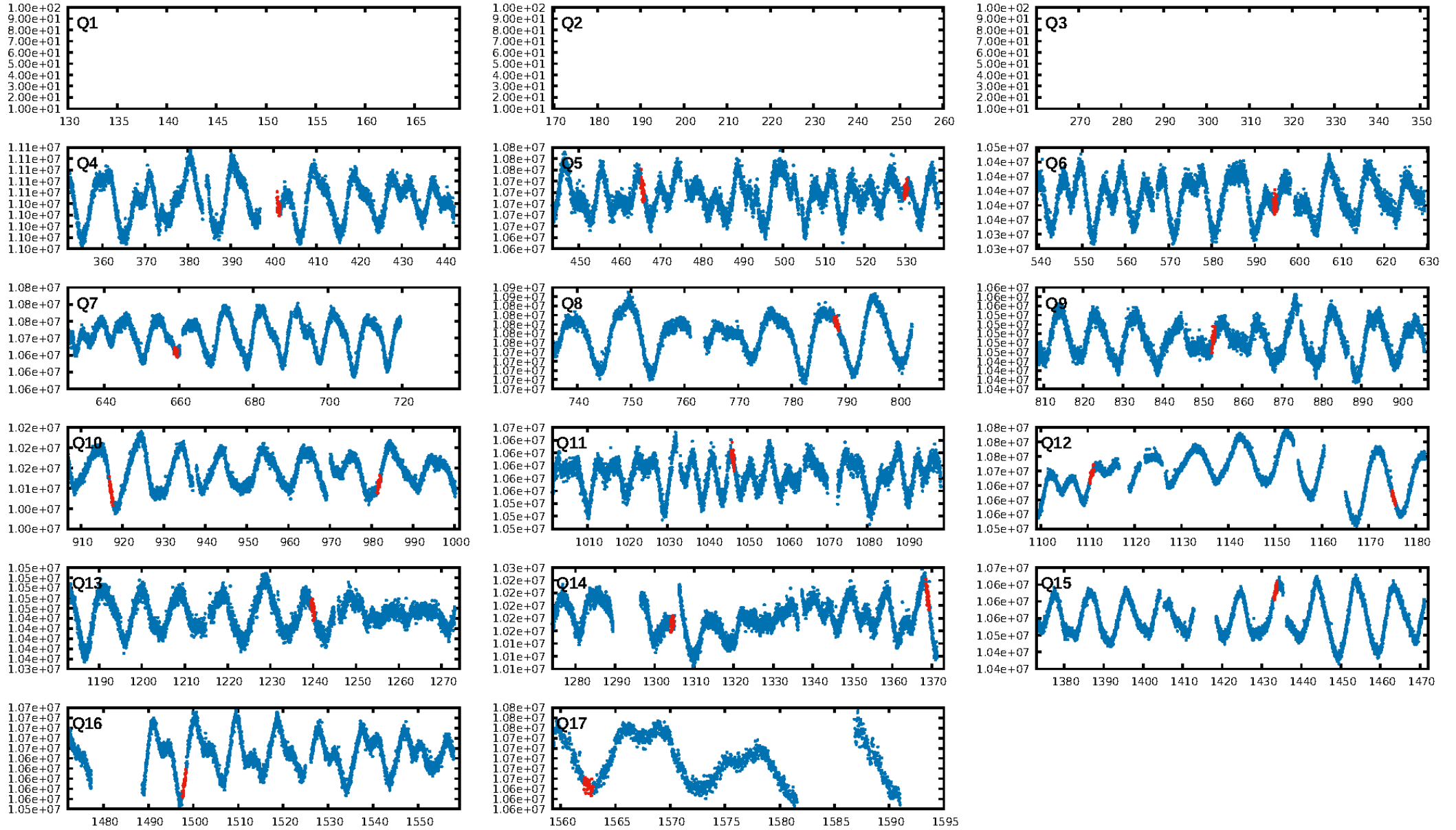
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [19.98σ]  
LongPeriod-sig: 100.0% [6.80σ]  
**ModelChiSquare2-sig: 0.0%**  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 2.31e-15  
RollingBand-fgt: 0.82 [9/11]  
GhostDiagnostic-chr: 0.1382  
Centroid-sig: 48.5%  
Centroid-so: 0.786 arcsec [0.99σ]  
OotOffset-rm: 0.704 arcsec [0.57σ]  
OotOffset-st: 2/2/1/3 [8]  
KicOffset-rm: 0.409 arcsec [0.37σ]  
KicOffset-st: 2/2/1/3 [8]  
DiffImageQuality-fgm: 0.12 [1/8]  
DiffImageOverlap-fno: 0.00 [0/12]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 00:56:55 Z

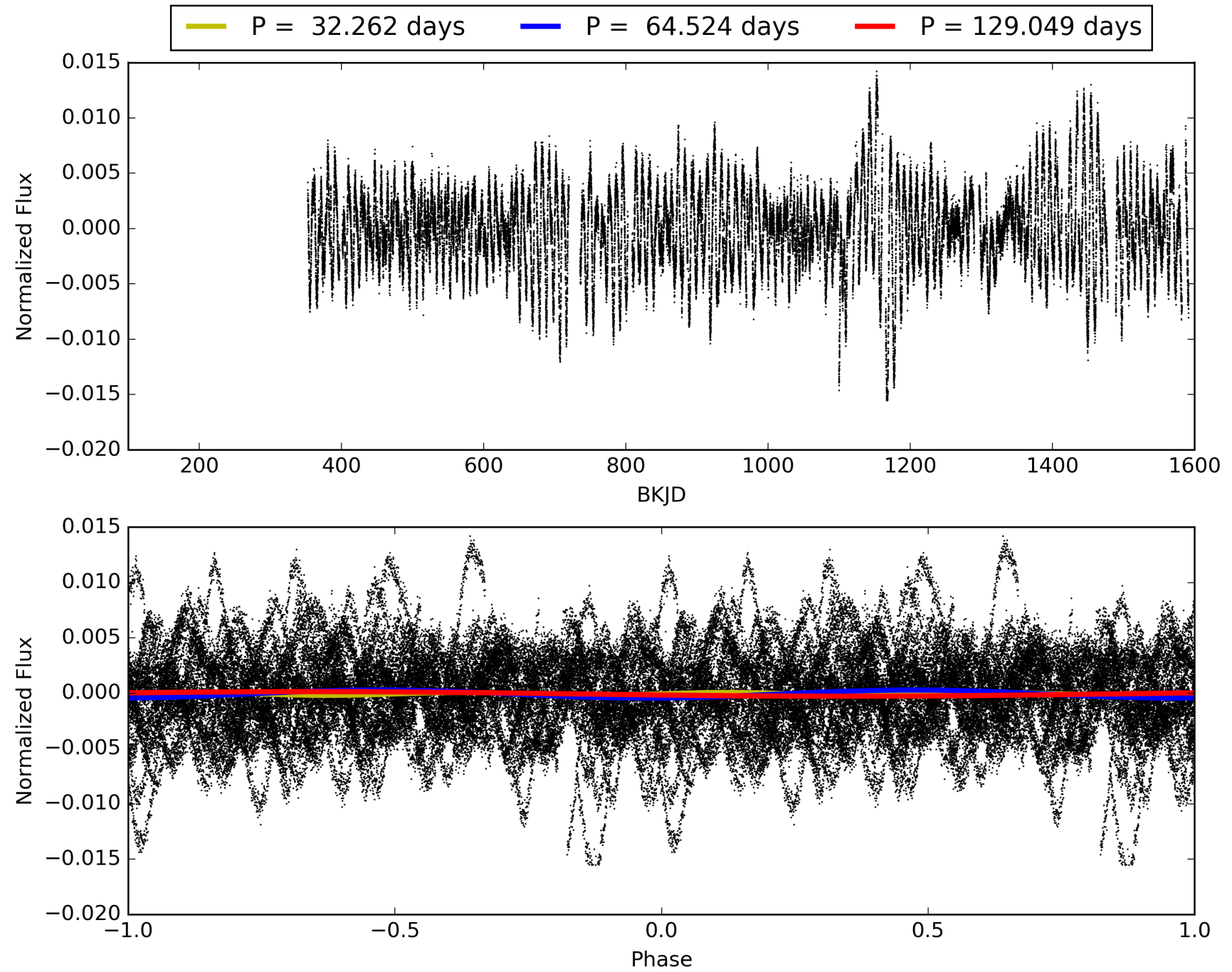
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 010341787-04, PDC Light Curves





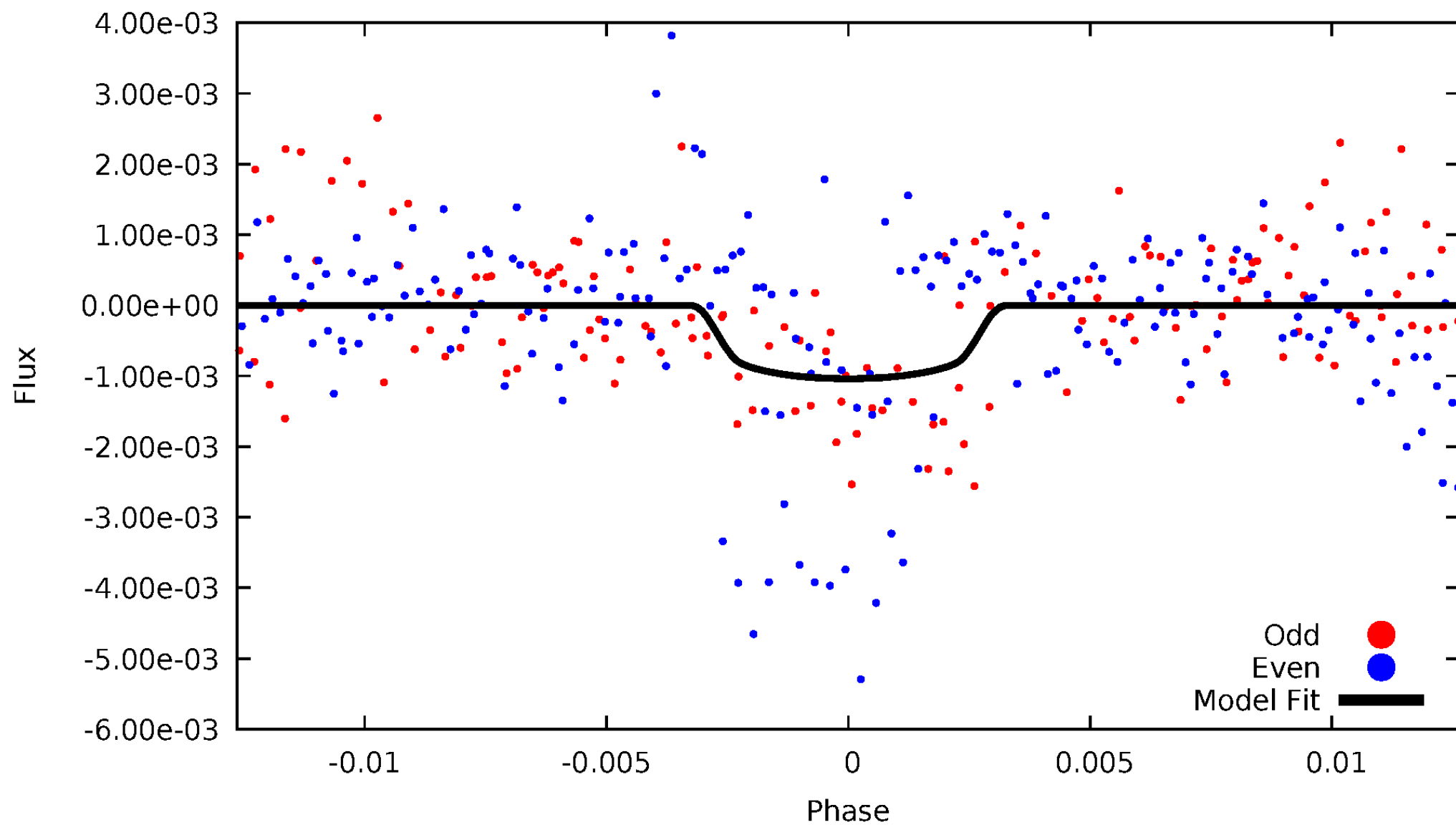
# TCE 010341787-04





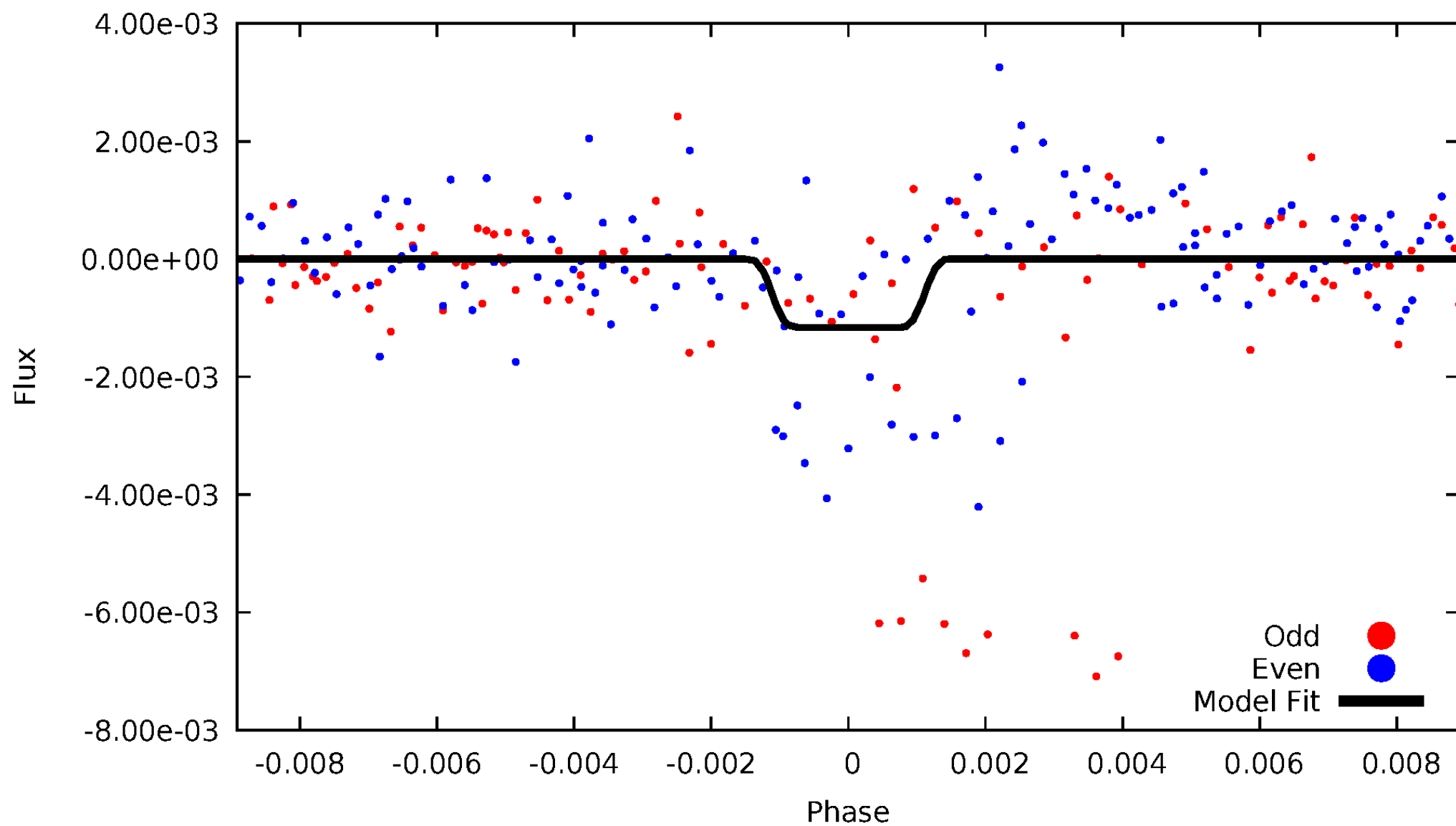
# DV Odd/Even

TCE 010341787-04



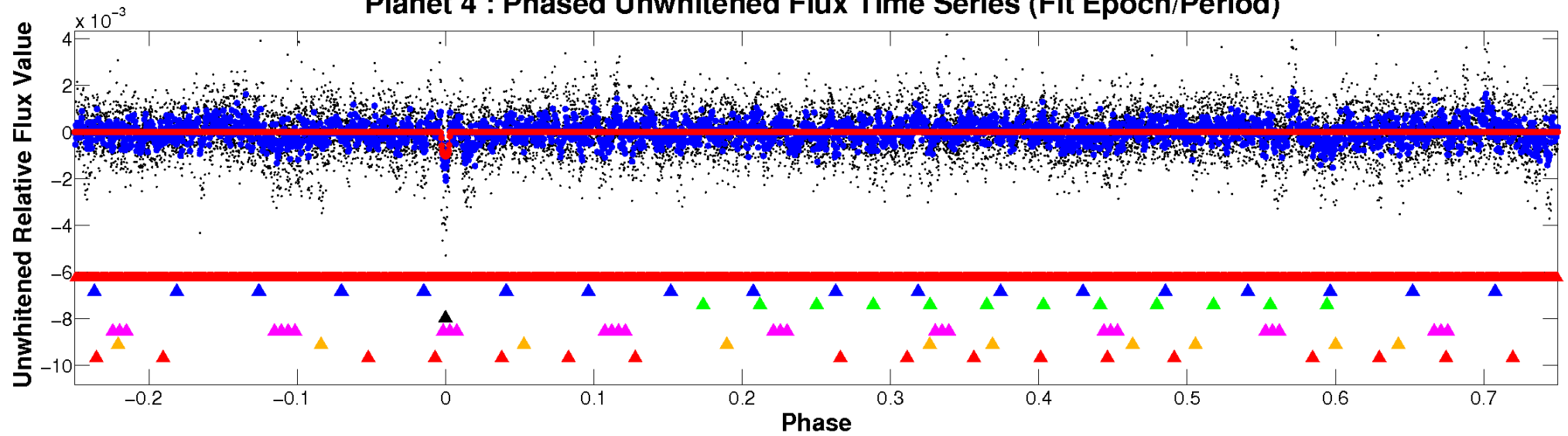
# ALT Odd/Even

TCE 010341787-04

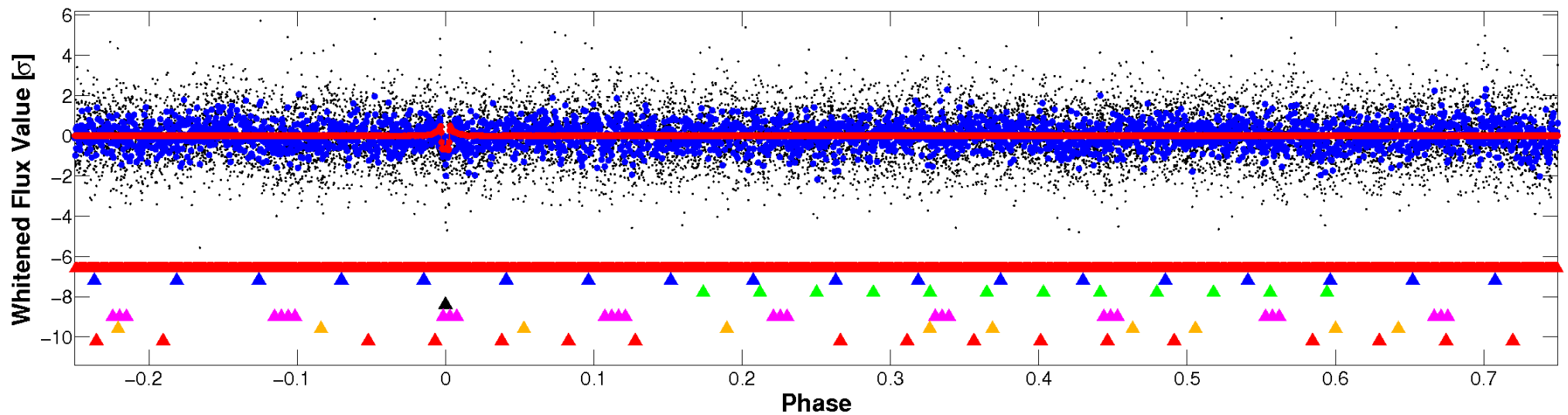


# Non-Whitened Vs. Whitened Light Curve

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

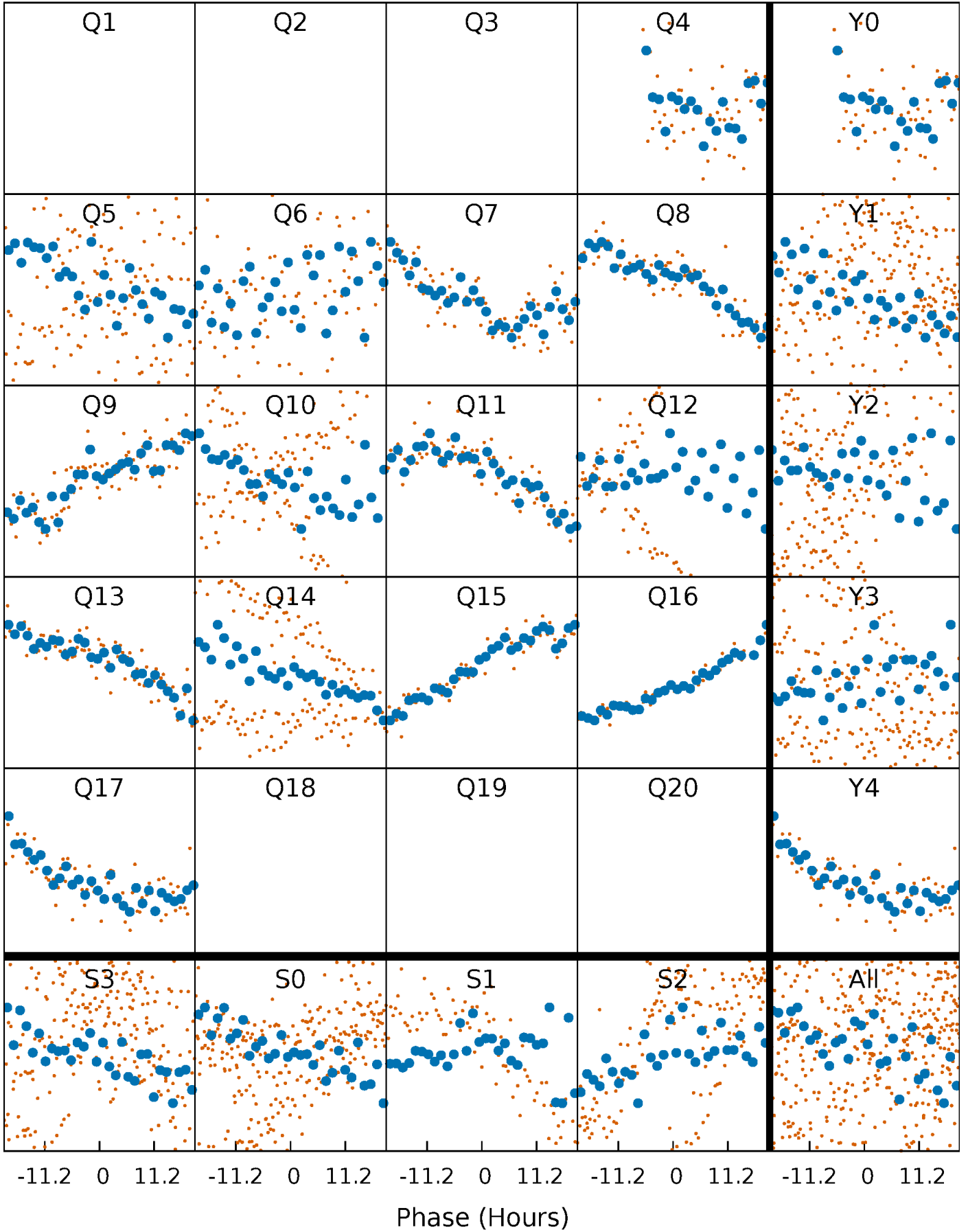


## Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



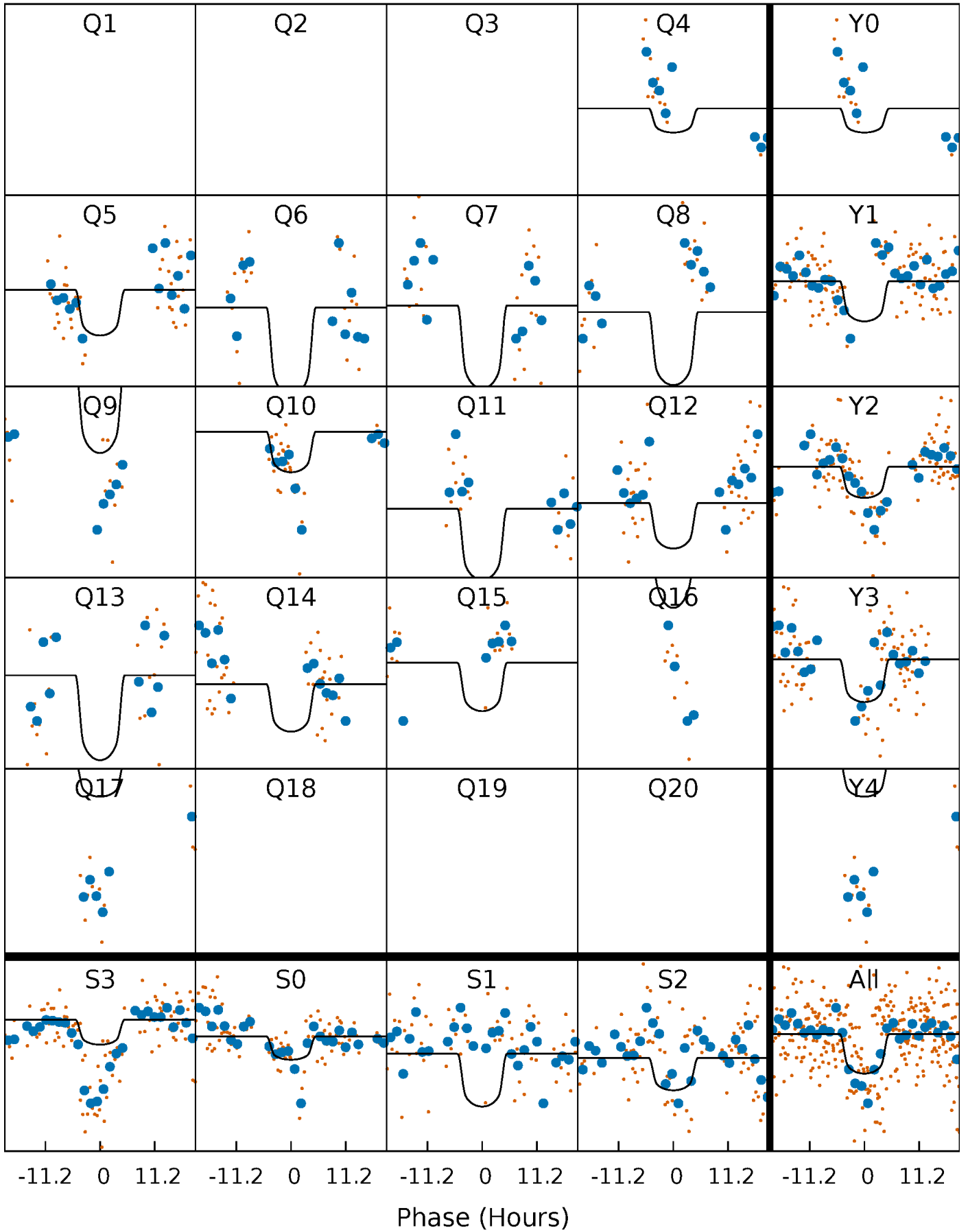
# PDC Quarter-Phased Transit Curves

TCE 010341787-04     $P = 64.524387$  Days     $T_0 = 142.983279$  (BKJD)



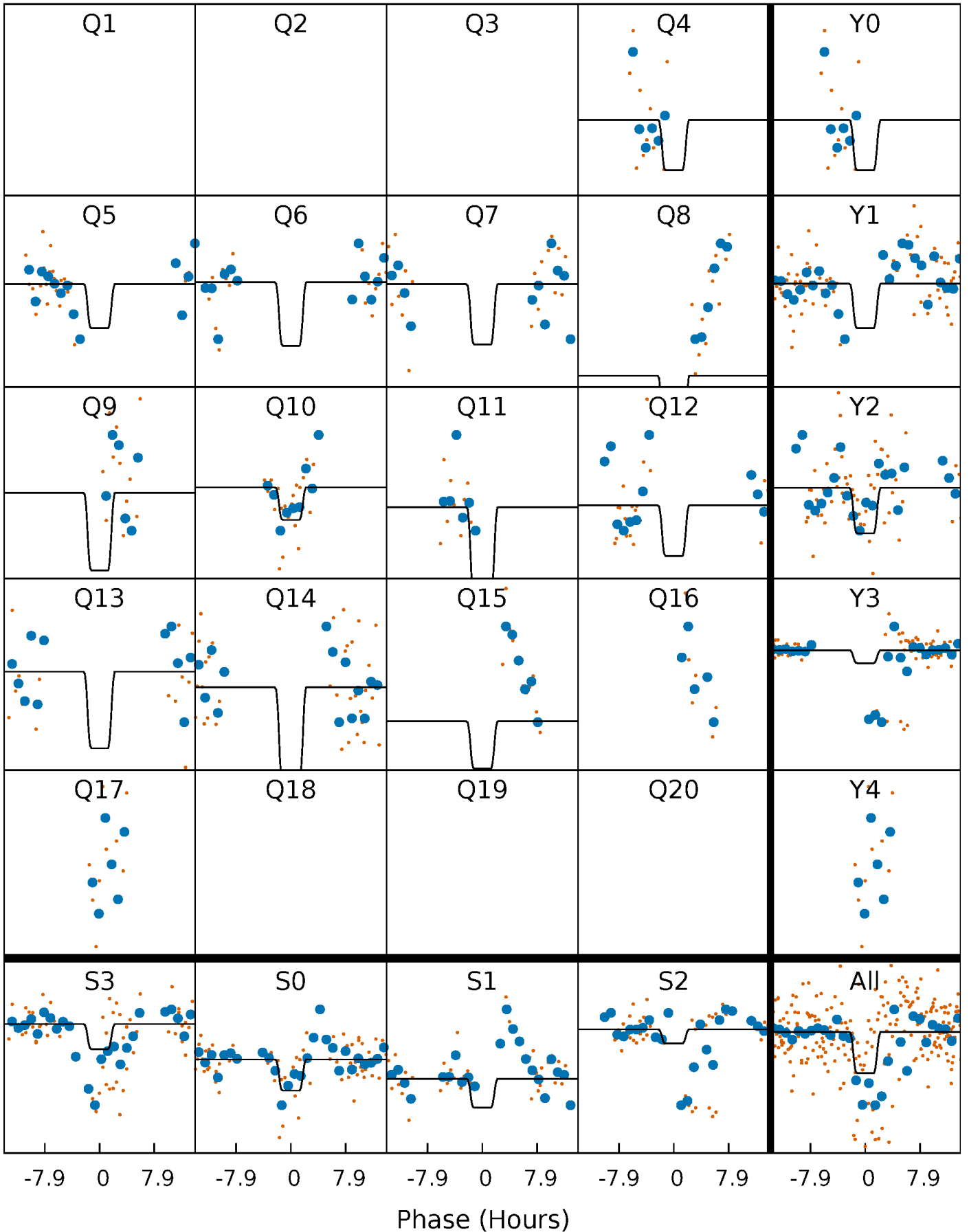
# DV Quarter-Phased Transit Curves

TCE 010341787-04     $P = 64.524387$  Days     $T_0 = 142.983279$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

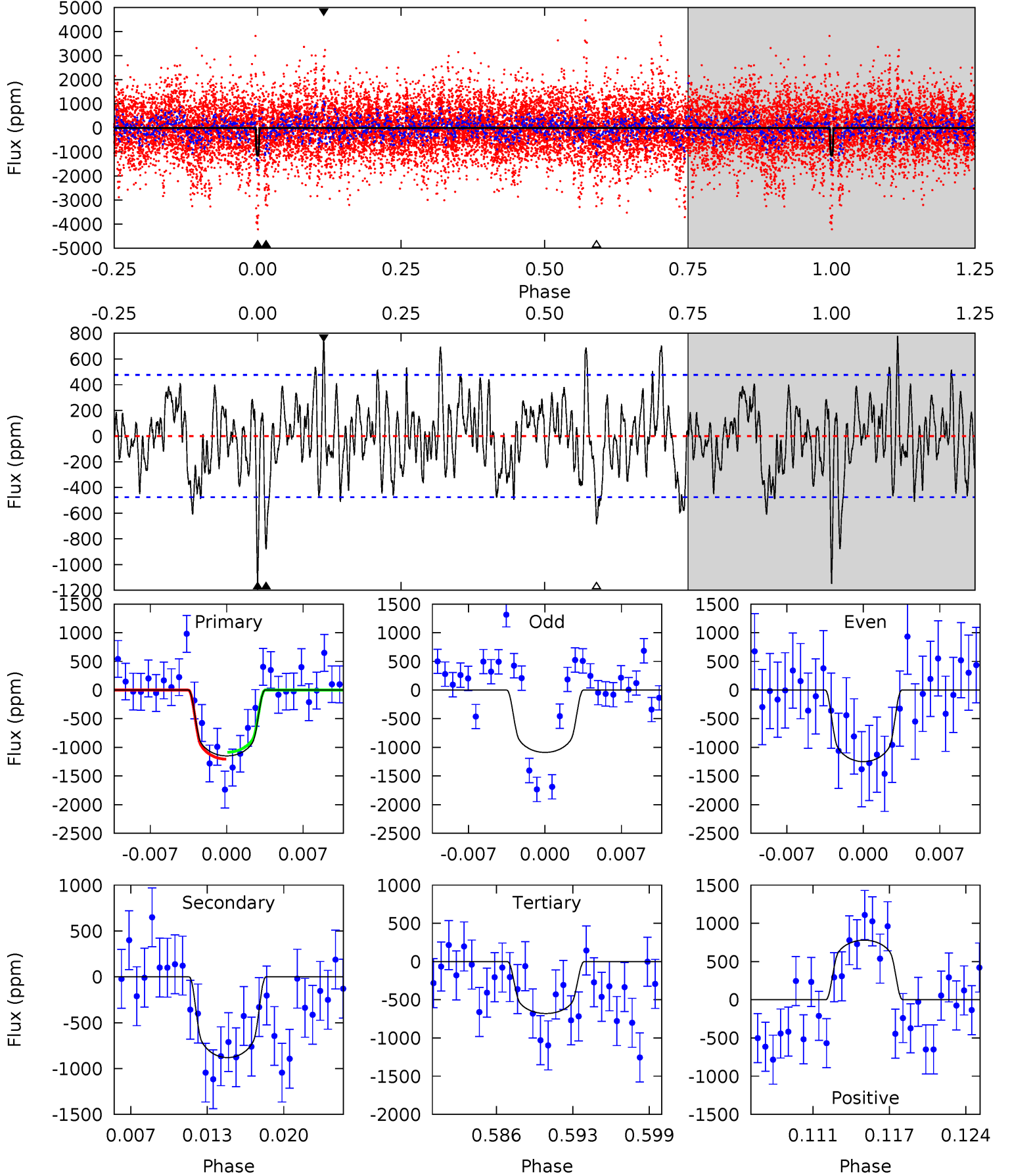
TCE 010341787-04     $P = 64.518061$  Days     $T_0 = 143.016400$  (BKJD)



# DV Model-Shift Uniqueness Test

010341787-04, P = 64.524387 Days, E = 142.983279 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
12.4	9.45	7.30	8.37	5.11	2.72	2.60	5.05	3.98	2.15	1.08	0.85	1.51	0.40	0.65

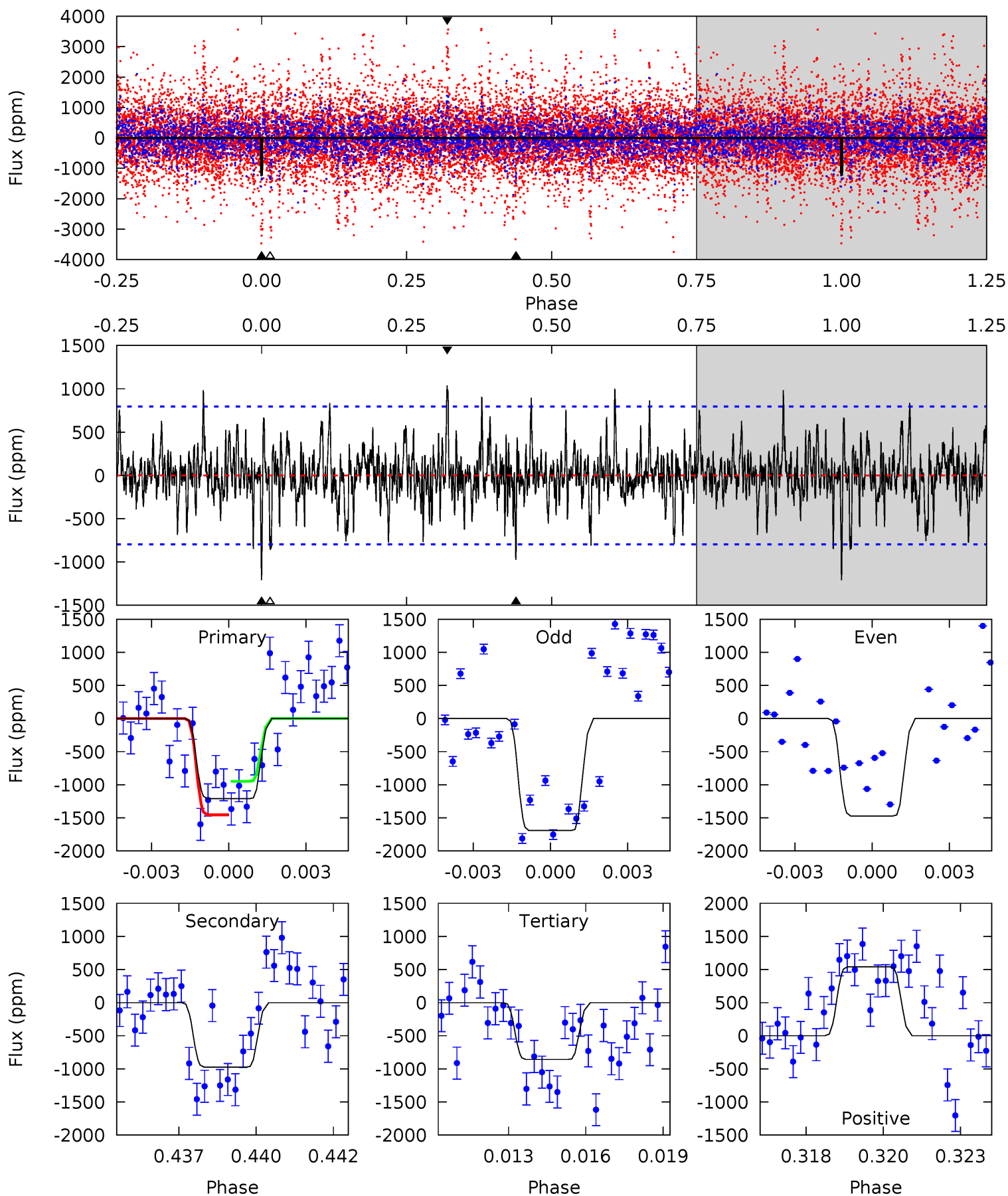




# Alt Model-Shift Uniqueness Test

010341787-04, P = 64.518061 Days, E = 143.016400 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
8.02	6.45	5.69	6.89	5.28	3.01	1.68	2.33	1.13	0.76	-0.44	0.73	1.73	0.46	1.69



### Stellar Parameters For KIC 010341787

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5390^{+204}_{-185}$	$4.479^{+0.096}_{-0.132}$	$-0.180^{+0.300}_{-0.300}$	$0.852^{+0.160}_{-0.107}$	$0.798^{+0.113}_{-0.061}$	$1.819^{+0.720}_{-0.717}$
	+4%/-3%	+2%/-3%	+167%/-167%	+19%/-13%	+14%/-8%	+40%/-39%
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 010341787-04 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-880 \pm 93$	$3.30^{+0.66}_{-0.65}$	$575^{+32}_{-32}$	$5031^{+520}_{-360}$	$3798^{+2124}_{-1174}$
Alt.	$-973 \pm 151$	$3.26^{+0.65}_{-0.65}$	$571^{+33}_{-30}$	$5145^{+548}_{-384}$	$4296^{+2524}_{-1359}$

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

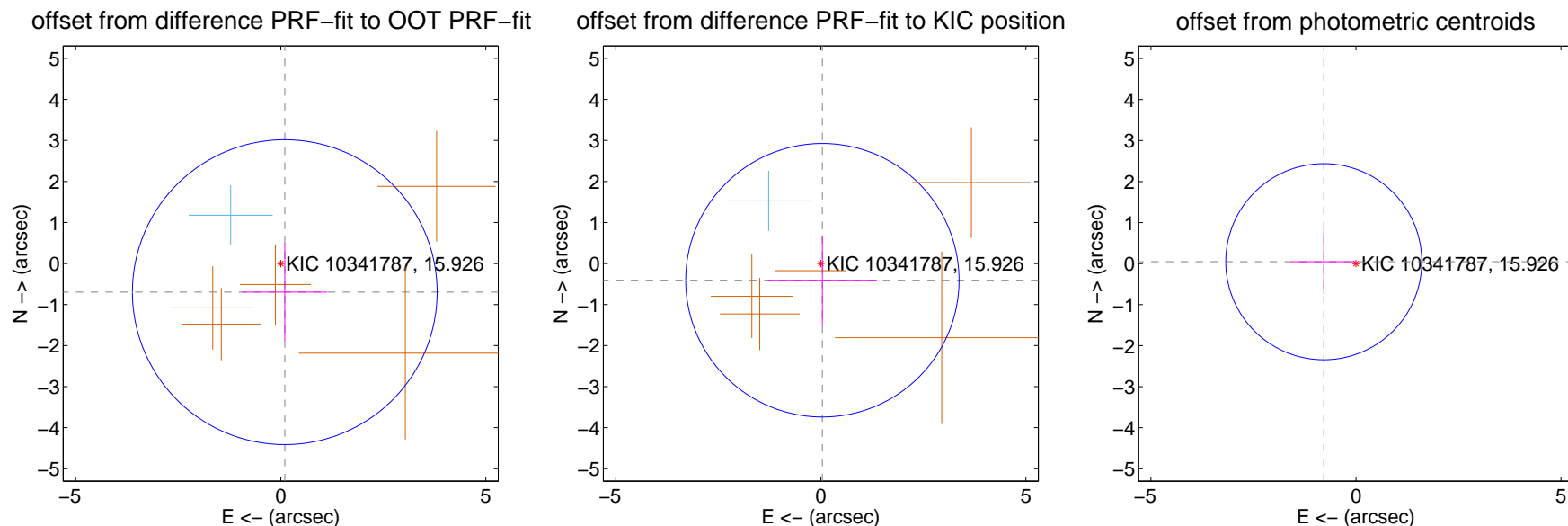
## DV Centroid Data

Supplemental centroid analysis for 010341787-04. Kepler magnitude: 15.93. Transit SNR 6.38

There are 1 quarters with good PRF difference image offsets

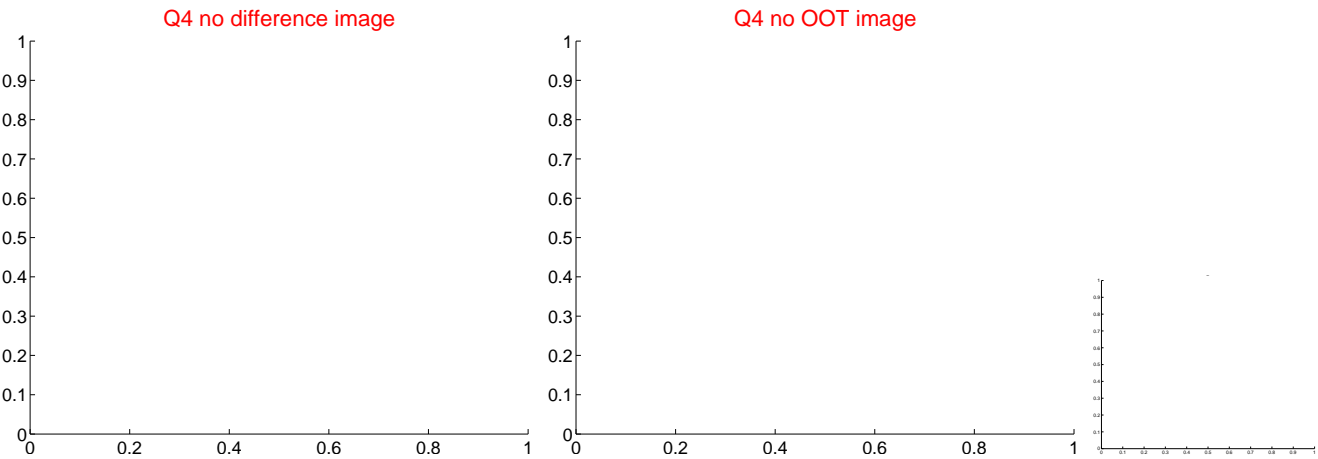
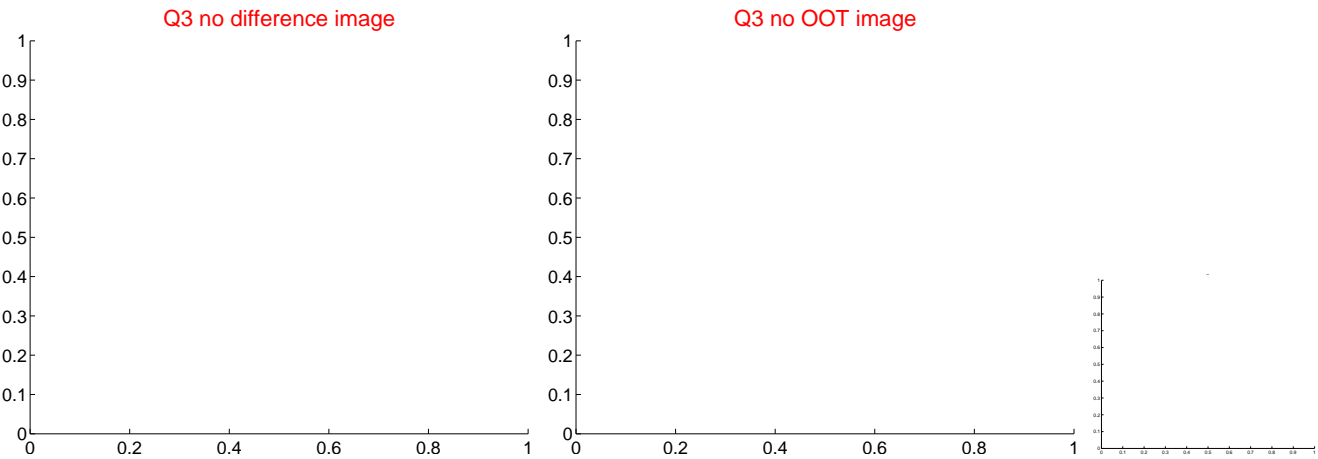
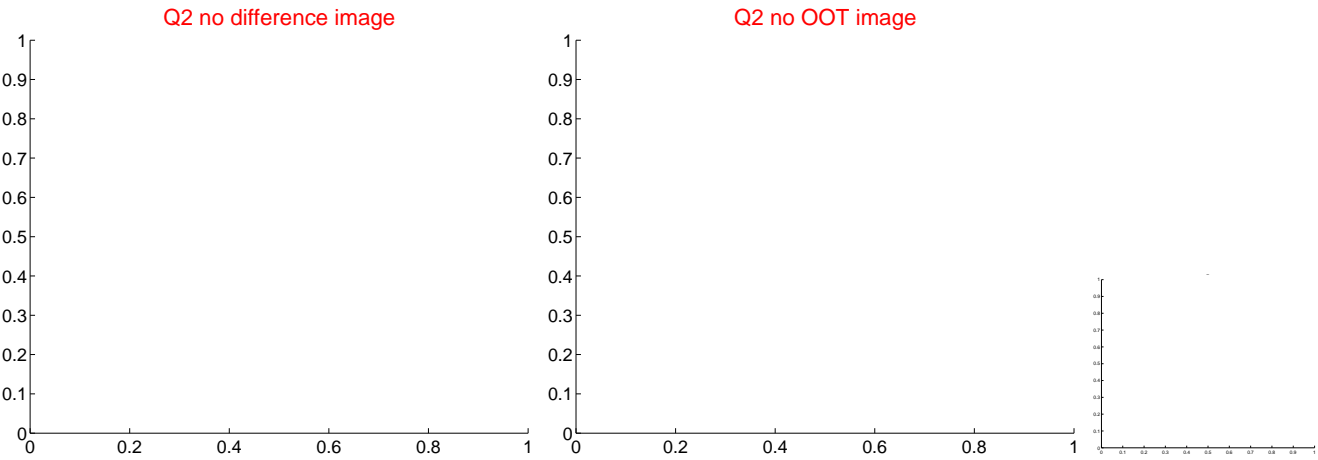
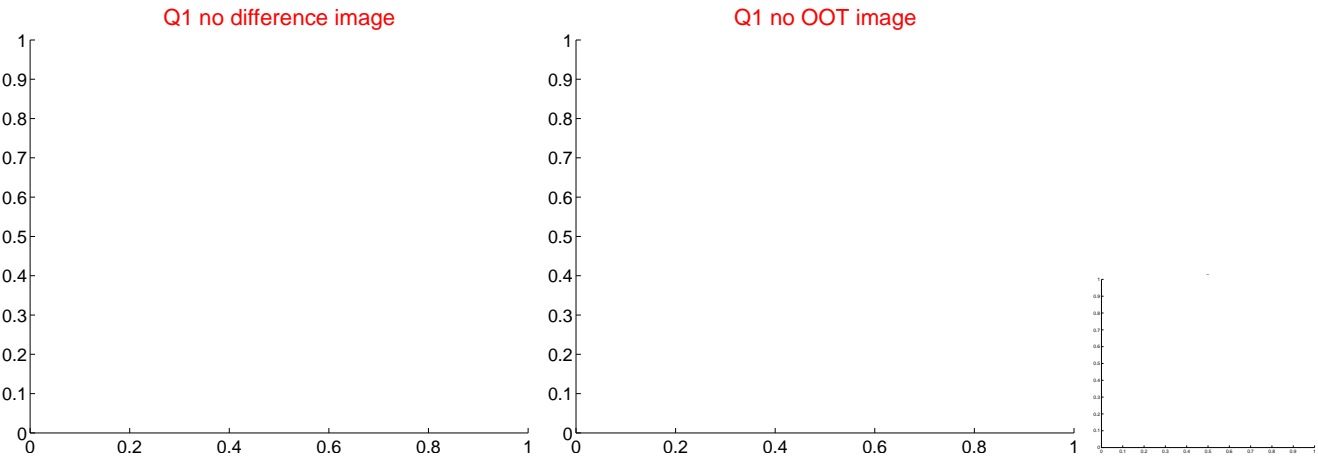
The direct PRF centroid is offset from the target star catalog position by about 0.16 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.704 \pm 1.238$	0.57	$-0.098 \pm 1.038$	$-0.697 \pm 1.190$
PRF-fit source offset from KIC position	$0.409 \pm 1.111$	0.37	$-0.037 \pm 1.329$	$-0.407 \pm 1.091$
photometric centroid source offset	$0.79 \pm 0.80$	0.99	$0.79 \pm 0.80$	$0.05 \pm 0.78$

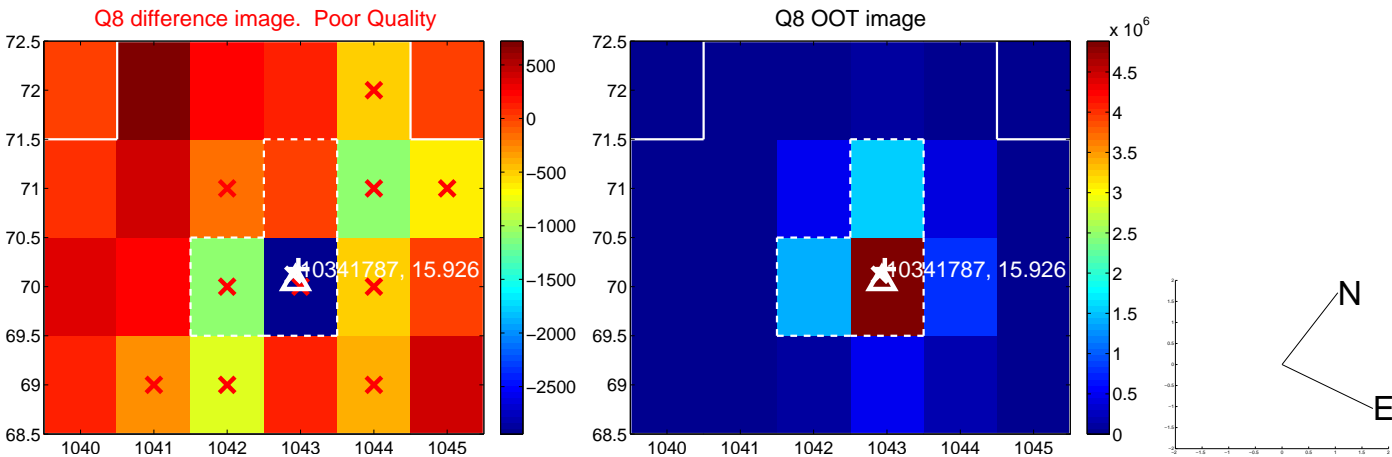
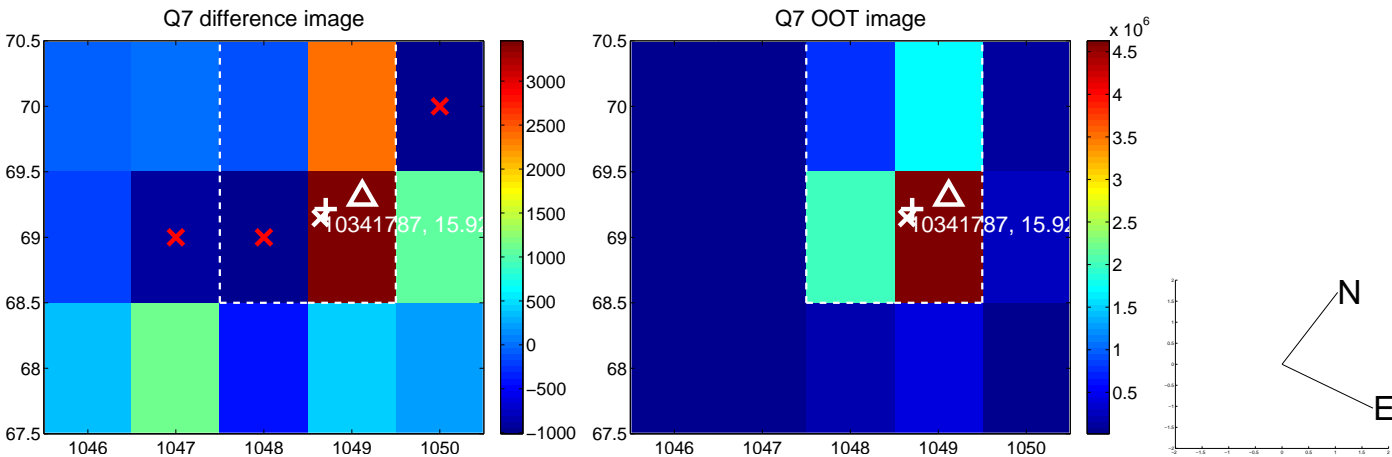
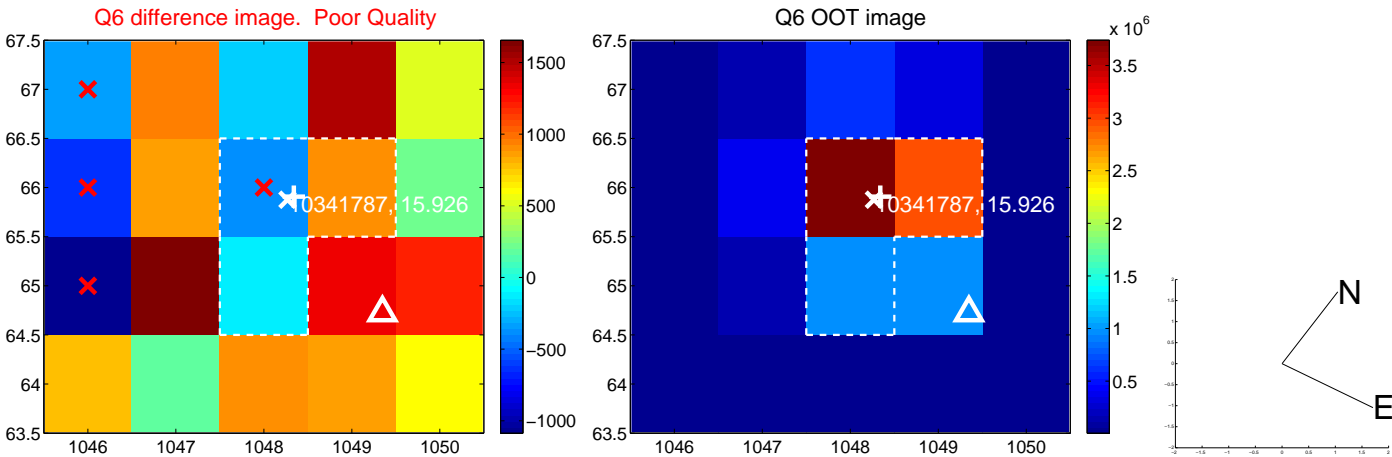
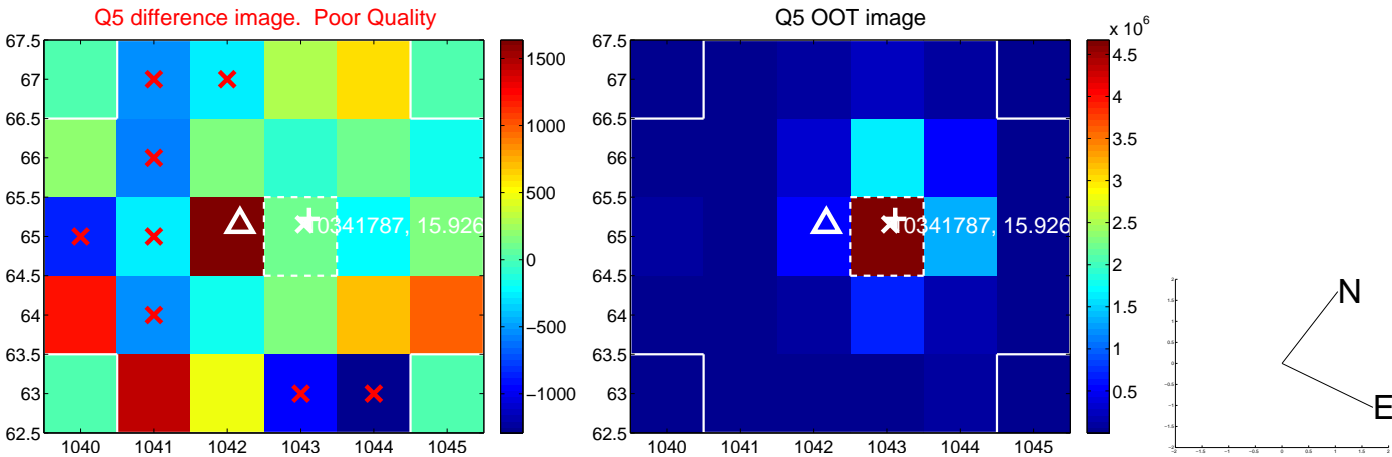


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

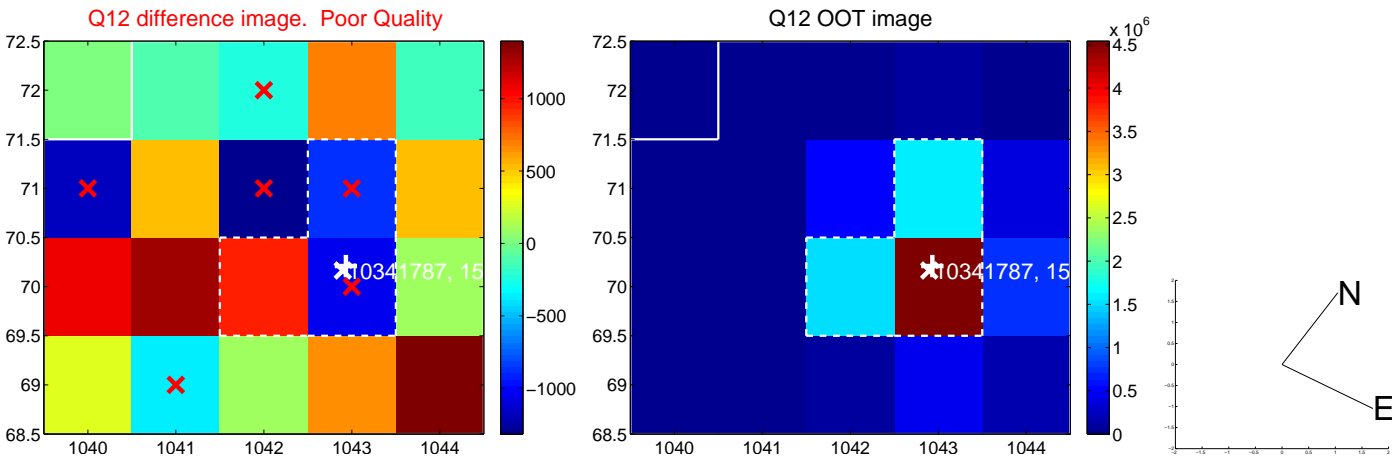
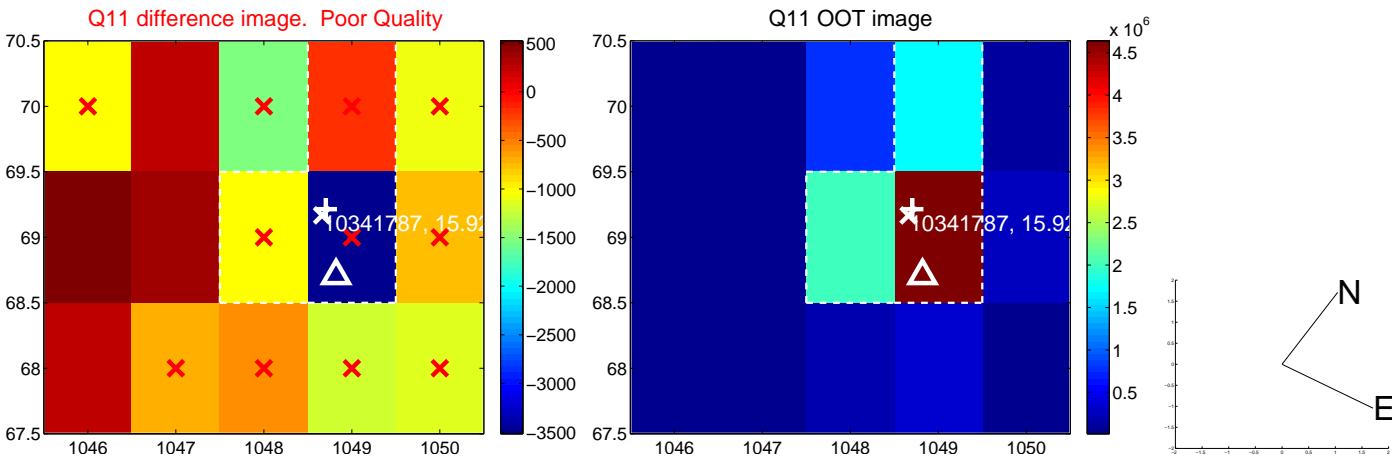
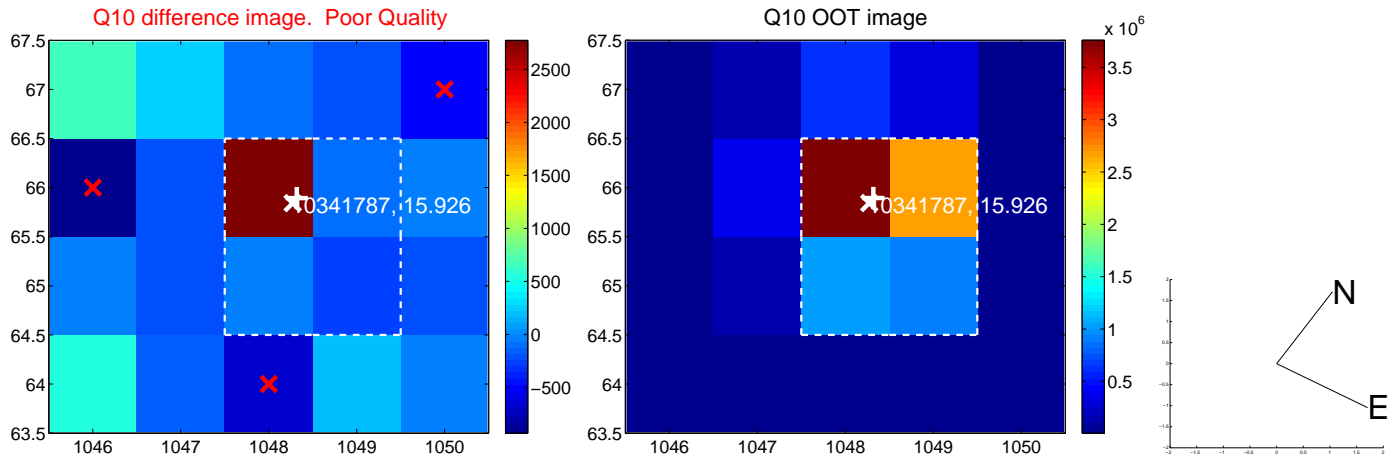
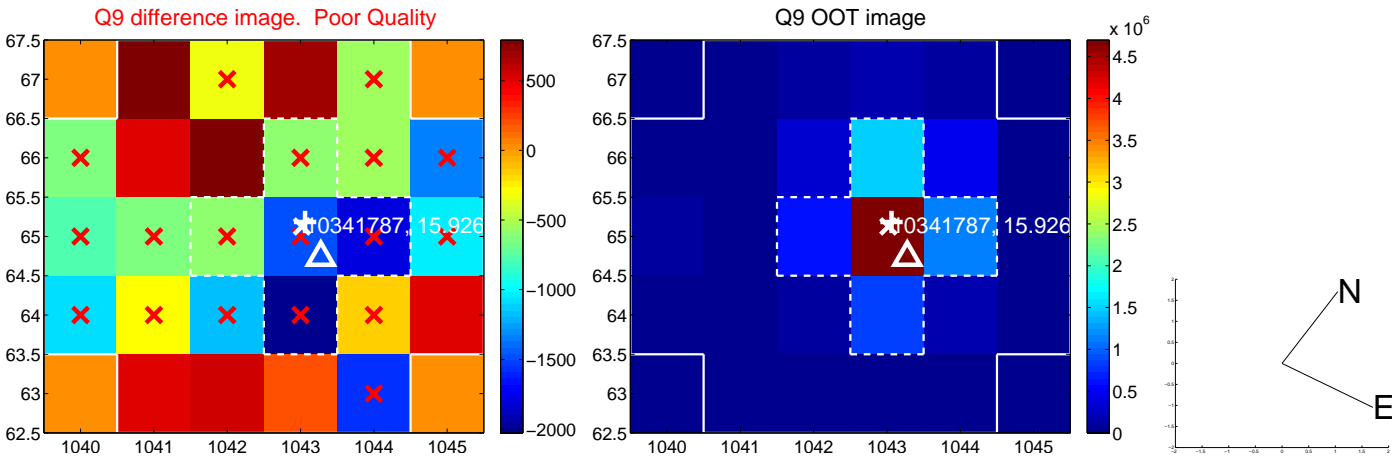
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



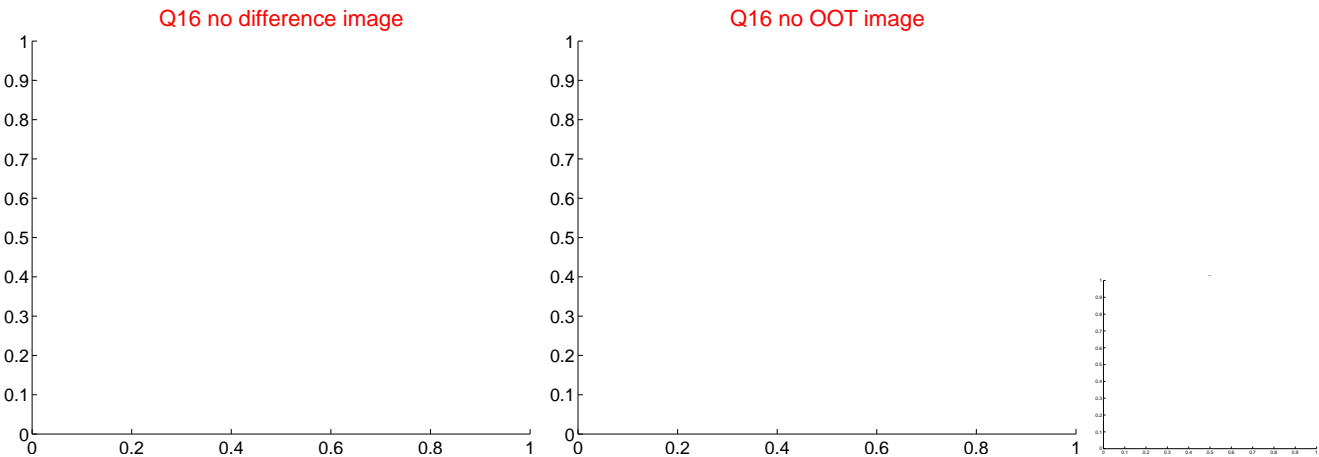
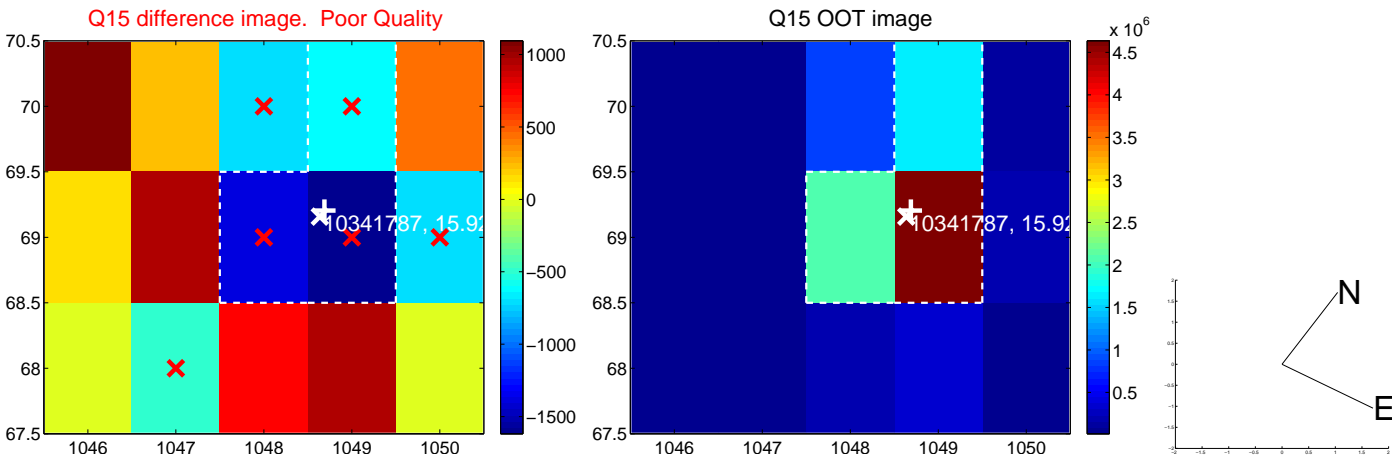
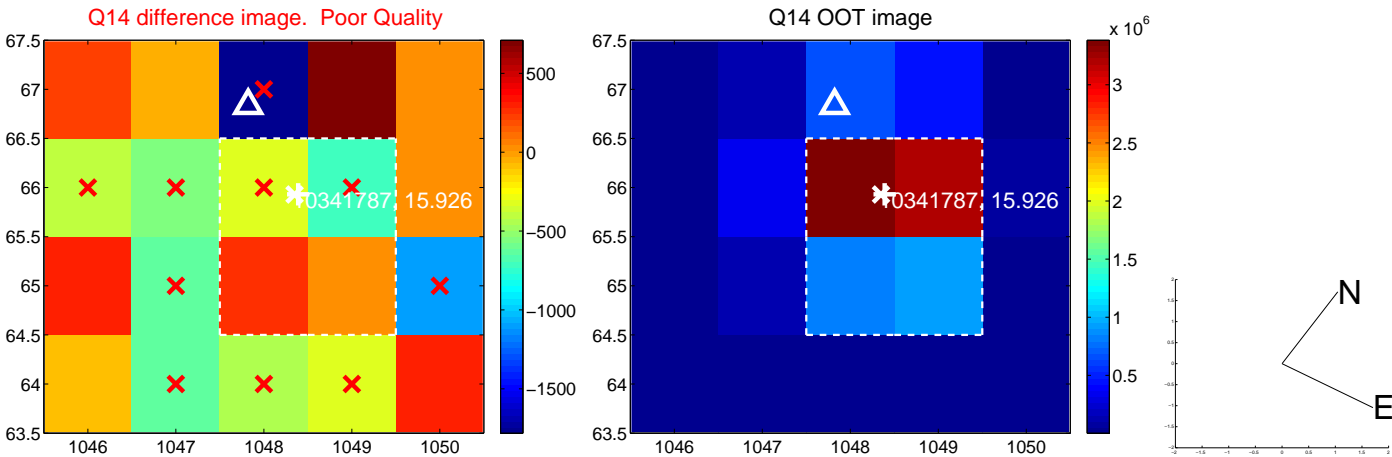
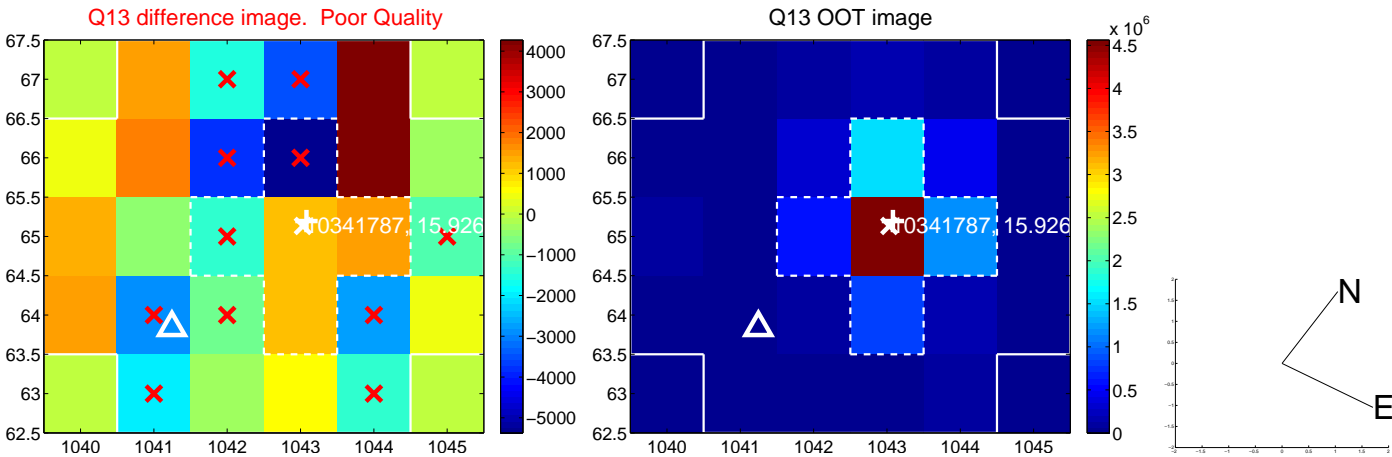
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

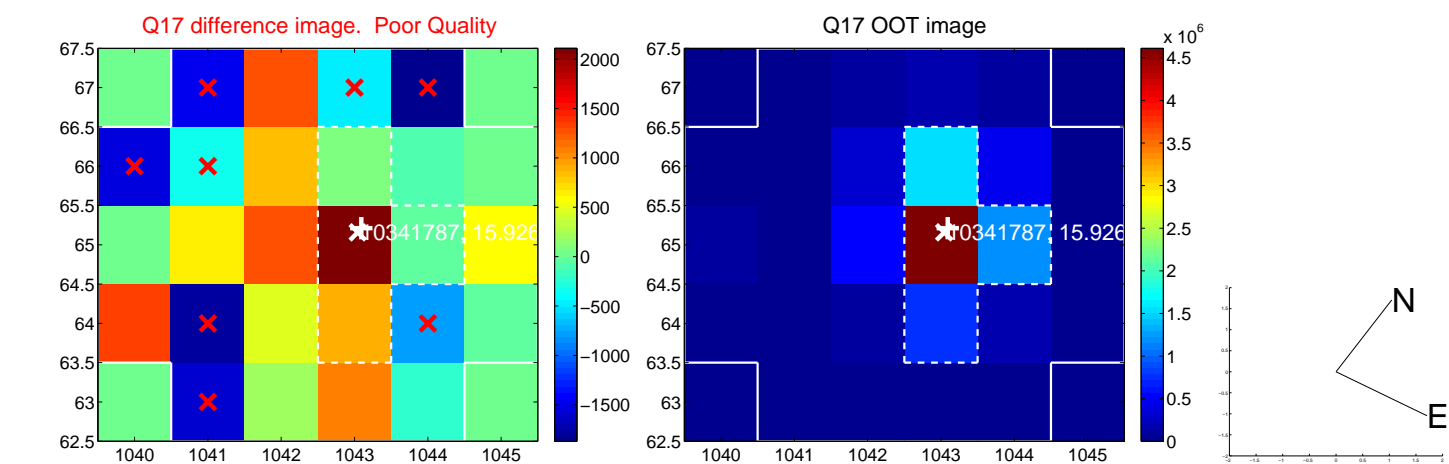


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

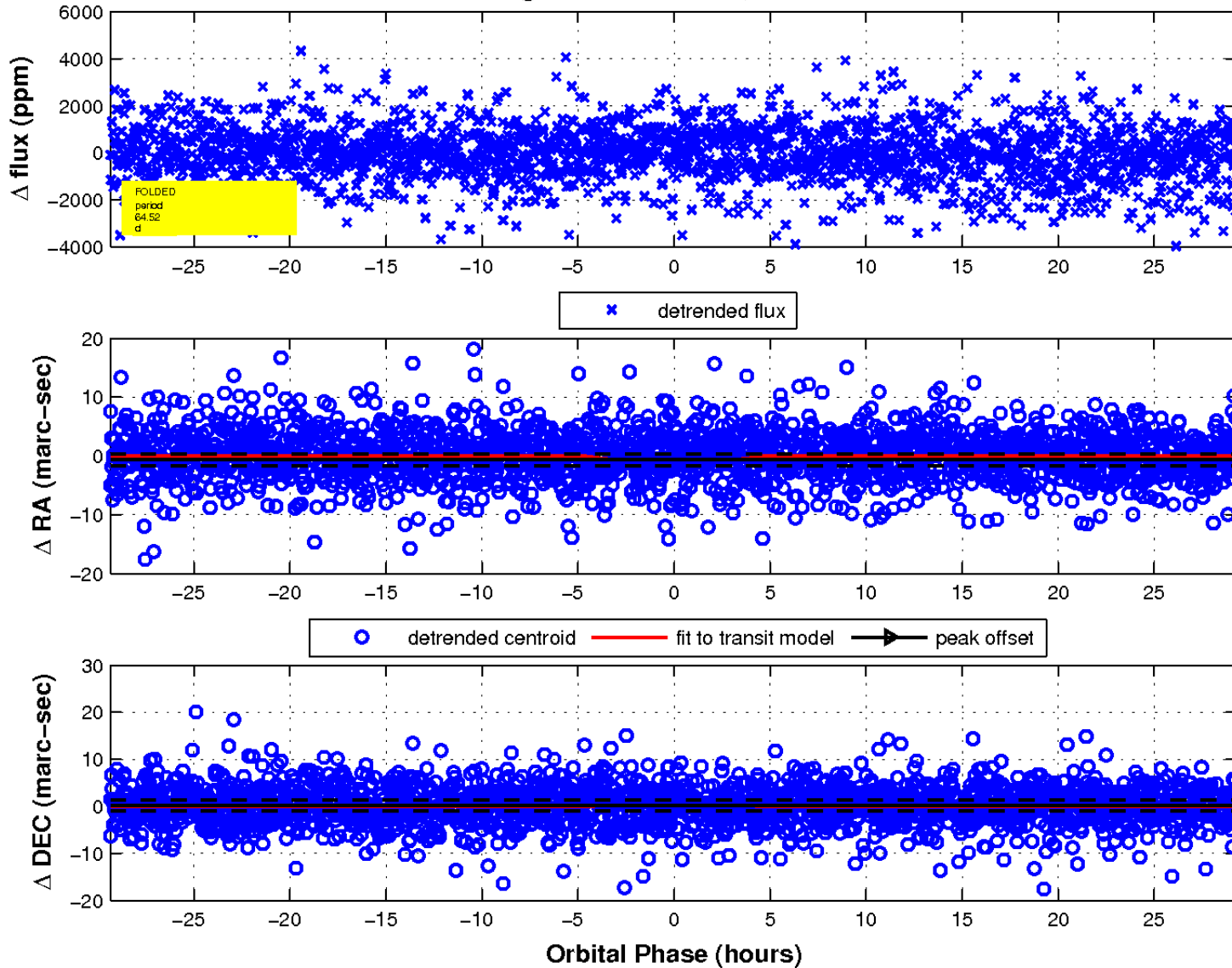




white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

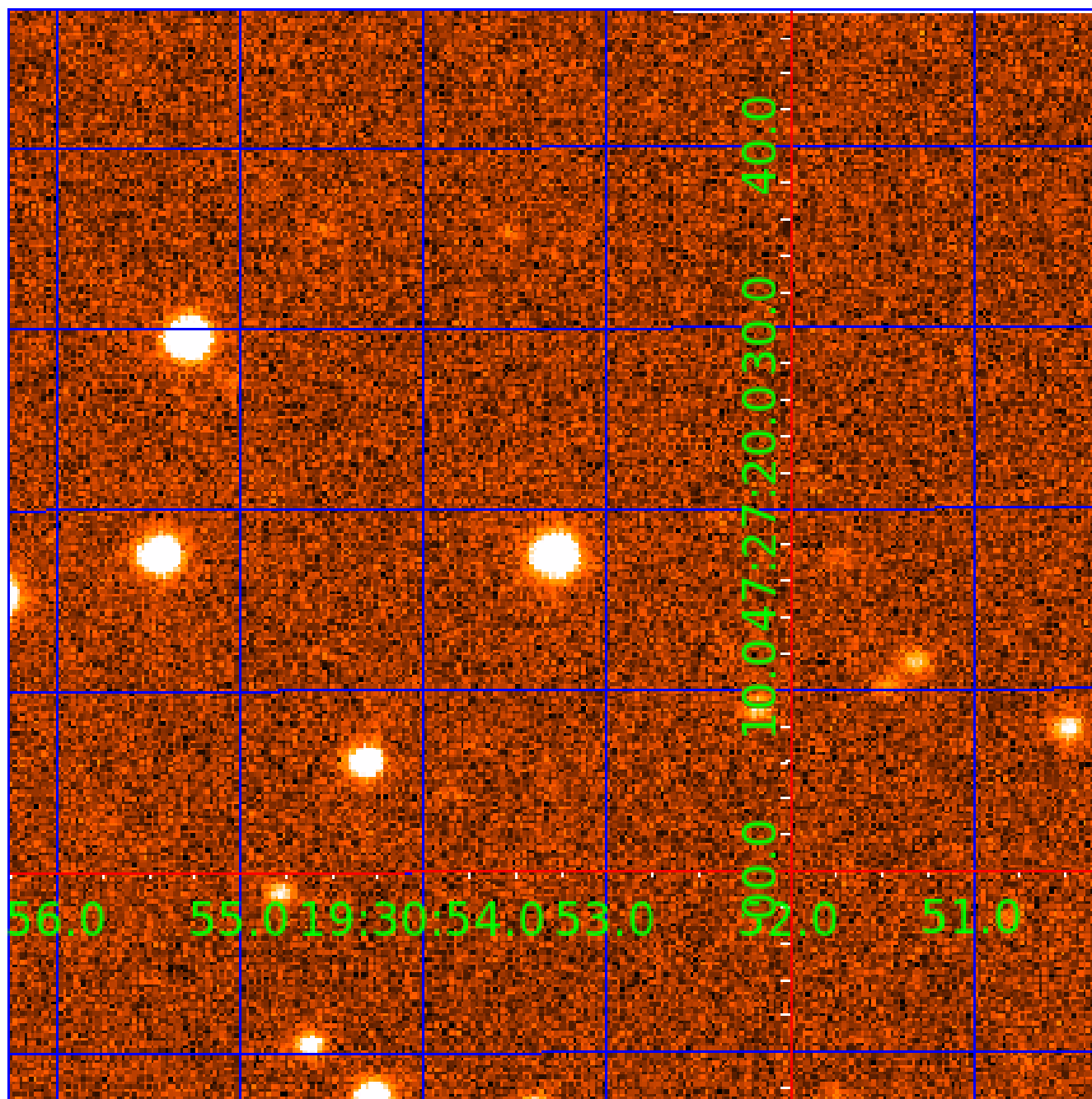


fluxWeightedCentroids, Planet 4 of 7



# UKIRT Image

Declination



# KIC 010341787

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
010341787-01	OBS	7313.01	0.933702	132.493752	134.3	5.393	11.6	14.7	0.85	5390	1.05	1825.01
010341787-02	OBS	No	68.110371	134.857375	1334.2	8.034	14.5	7.3	0.85	5390	3.57	5.99
010341787-03	OBS	No	126.582042	181.331214	1534.4	9.100	11.4	6.6	0.85	5390	3.45	2.62
010341787-04	OBS	No	64.524387	142.983279	1038.3	9.783	11.2	6.4	0.85	5390	3.23	6.43
010341787-05	OBS	No	50.152671	150.808918	1104.9	14.225	10.7	7.3	0.85	5390	3.40	9.01
010341787-06	OBS	No	137.876543	231.306680	2010.6	6.336	10.3	8.9	0.85	5390	4.13	2.34
010341787-07	OBS	No	85.064483	174.685007	1329.9	9.343	10.6	7.7	0.85	5390	3.75	4.45

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010341787-01	OBS	FP	0.00	0	0	1	1	CENT_RESOLVED_OFFSET—HALO_GHOST—EPHEM_MATCH
010341787-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
010341787-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
010341787-04	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_FEW_DIFFS—HALO_GHOST
010341787-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
010341787-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
010341787-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS

**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.

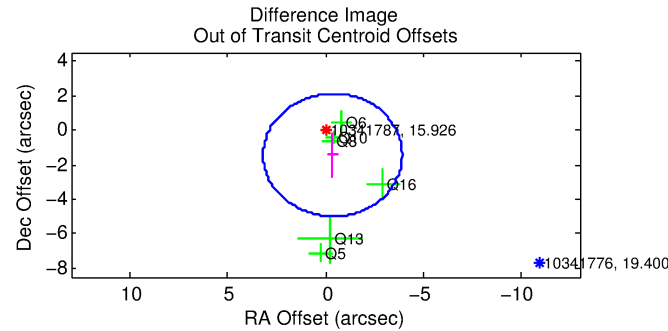
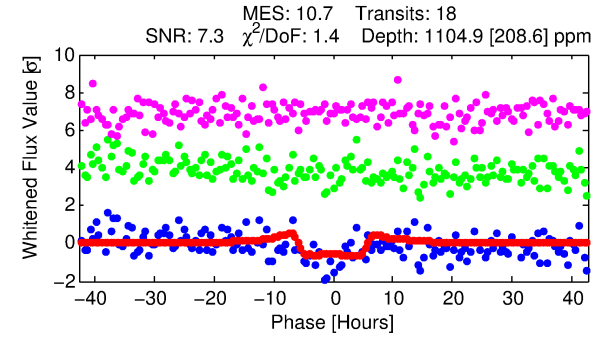
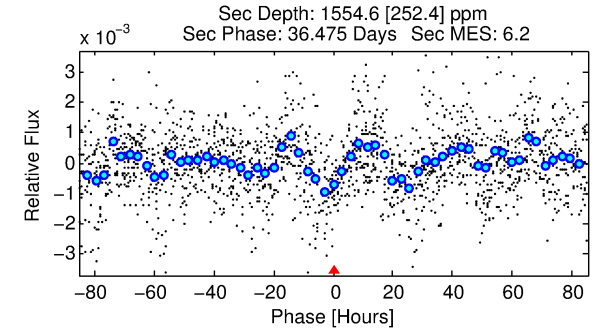
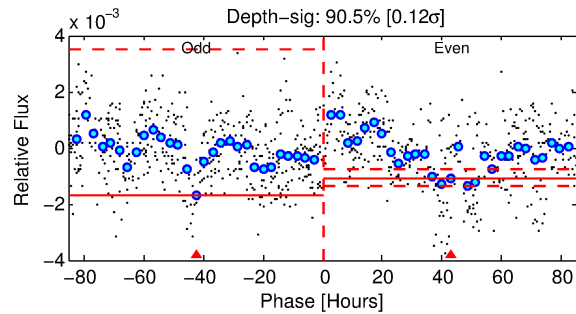
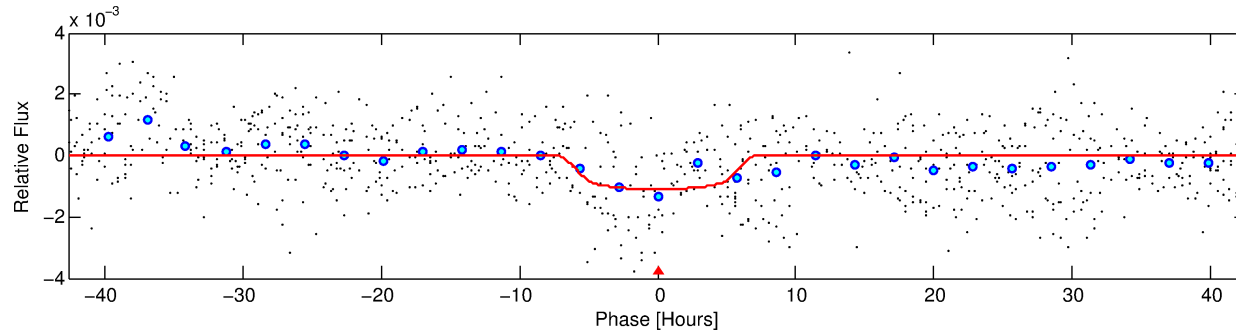
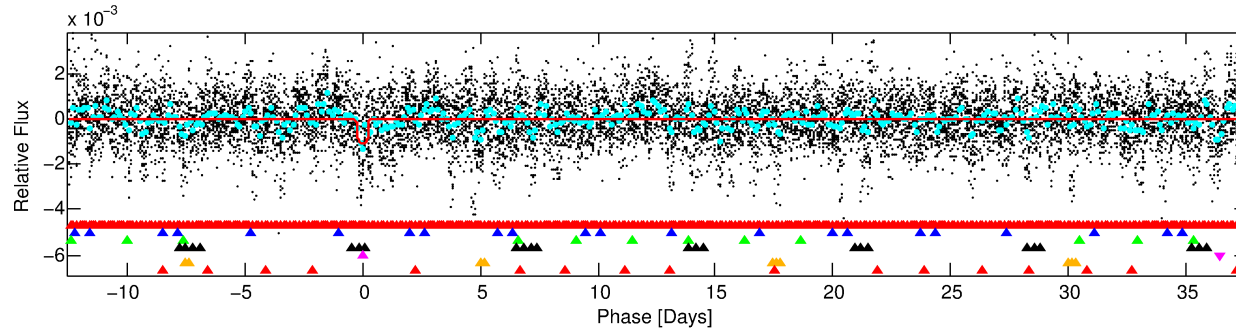
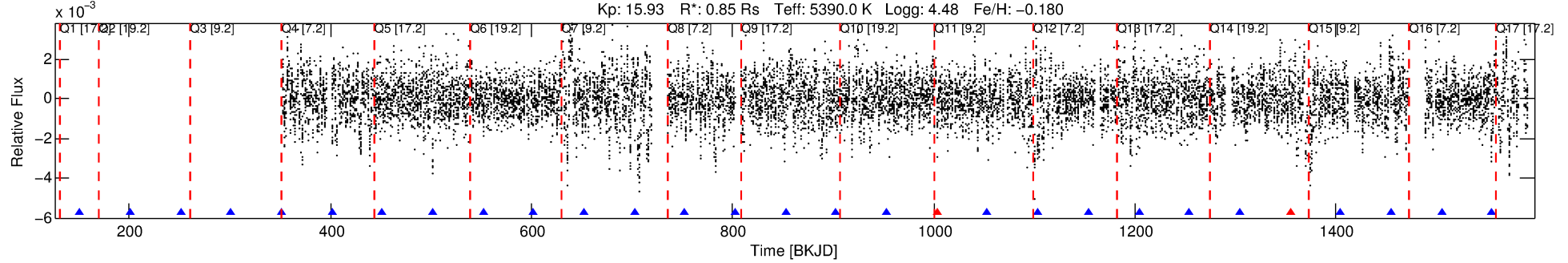
Ephemeris Match Information For 010341787-05

No Significant Match Found

# DV One-Page Summary

KIC: 10341787 Candidate: 5 of 7 Period: 50.153 d  
KOI: K07313 Corr: No Ephemeris Match

Kp: 15.93 R\*: 0.85 Rs Teff: 5390.0 K Logg: 4.48 Fe/H: -0.180



## DV Fit Results:

Period = 50.15267 [0.00215] d  
Epoch = 150.8089 [0.0378] BKJD  
Rp/R\* = 0.0366 [0.0047]  
a/R\* = 13.87 [3.97]  
b = 0.90 [0.06]  
Seff = 9.01 [2.54]  
Teq = 442 [31] K  
Rp = 3.40 [0.77] Re  
a = 0.2469 [0.0398] AU  
Ag = 4507.68 [1733.07] [2.60σ]  
Teffp = 5596 [472] K [10.89σ]

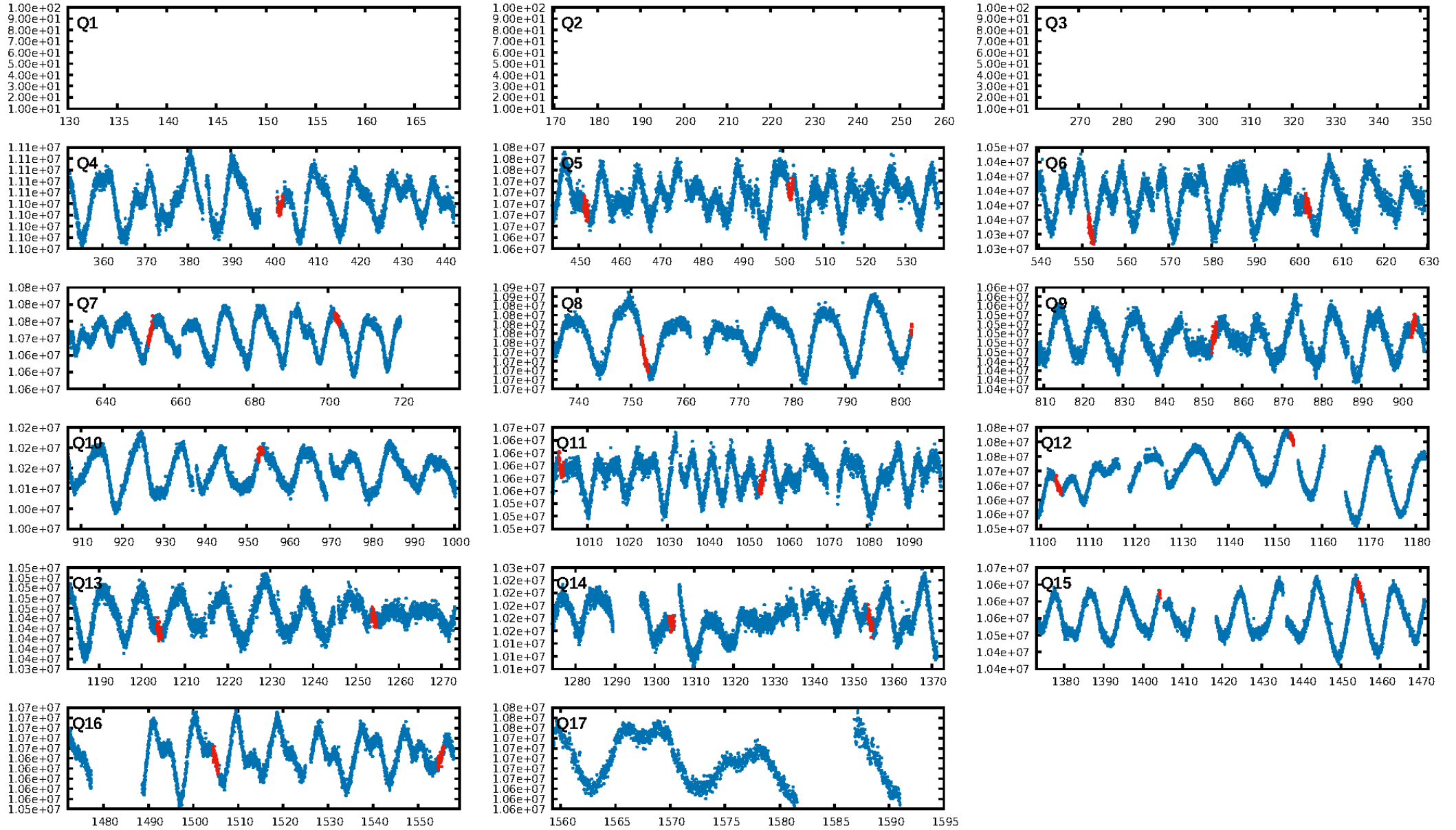
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [77.65σ]  
LongPeriod-sig: 100.0% [19.98σ]  
**ModelChiSquare2-sig: 0.0%**  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 8.41e-16  
RollingBand-fgt: 0.89 [16/18]  
GhostDiagnostic-chr: -1.263  
Centroid-sig: 16.5%  
Centroid-so: 0.777 arcsec [1.31σ]  
OotOffset-rm: 1.490 arcsec [1.26σ]  
KicOffset-rm: 1.173 arcsec [0.99σ]  
OotOffset-st: 2/0/2/2 [6]  
KicOffset-st: 2/0/2/2 [6]  
DiffImageQuality-fgm: 0.50 [3/6]  
DiffImageOverlap-fno: 0.00 [0/11]

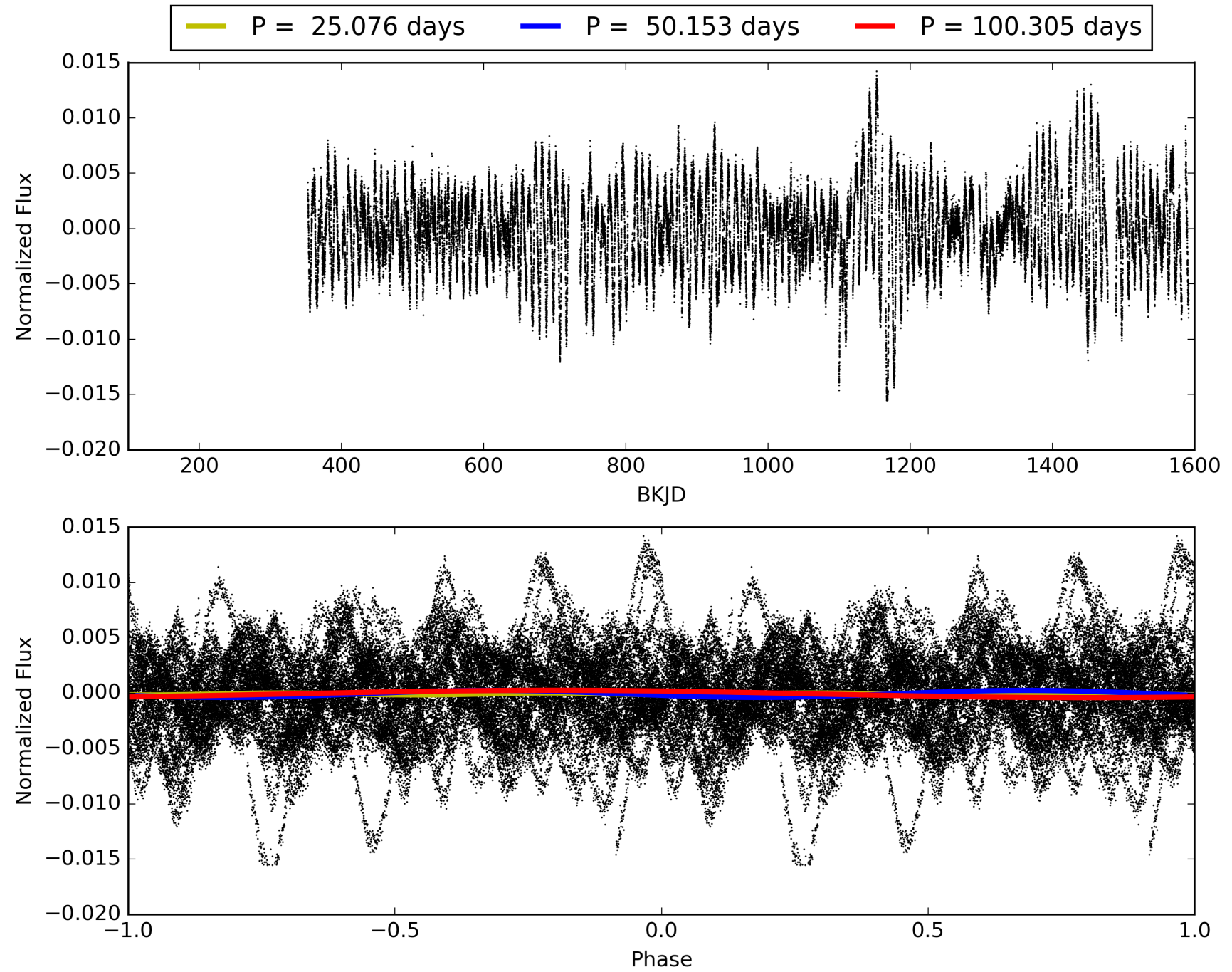
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 00:56:59 Z

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

# TCE 010341787-05, PDC Light Curves



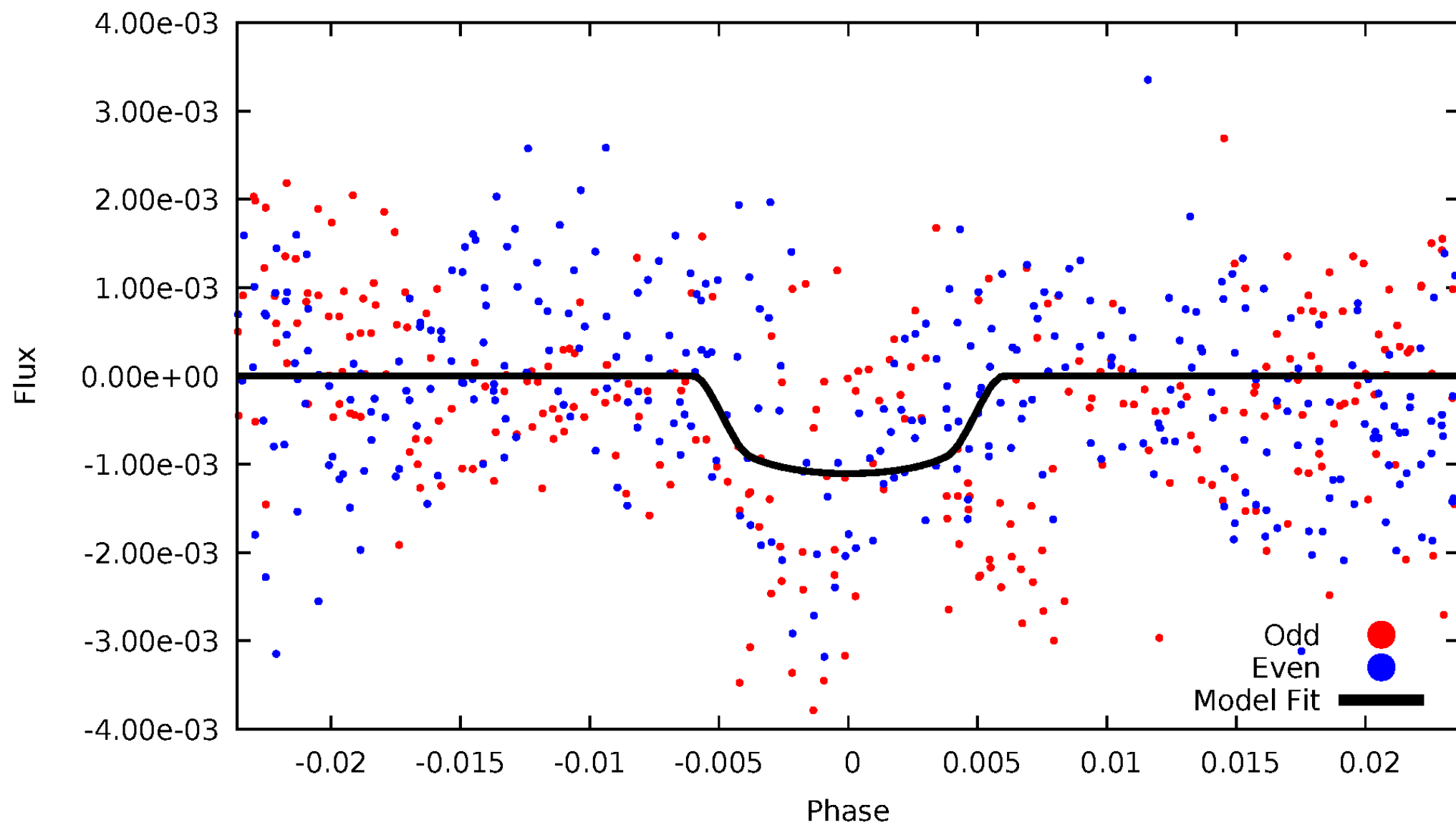
# TCE 010341787-05





# DV Odd/Even

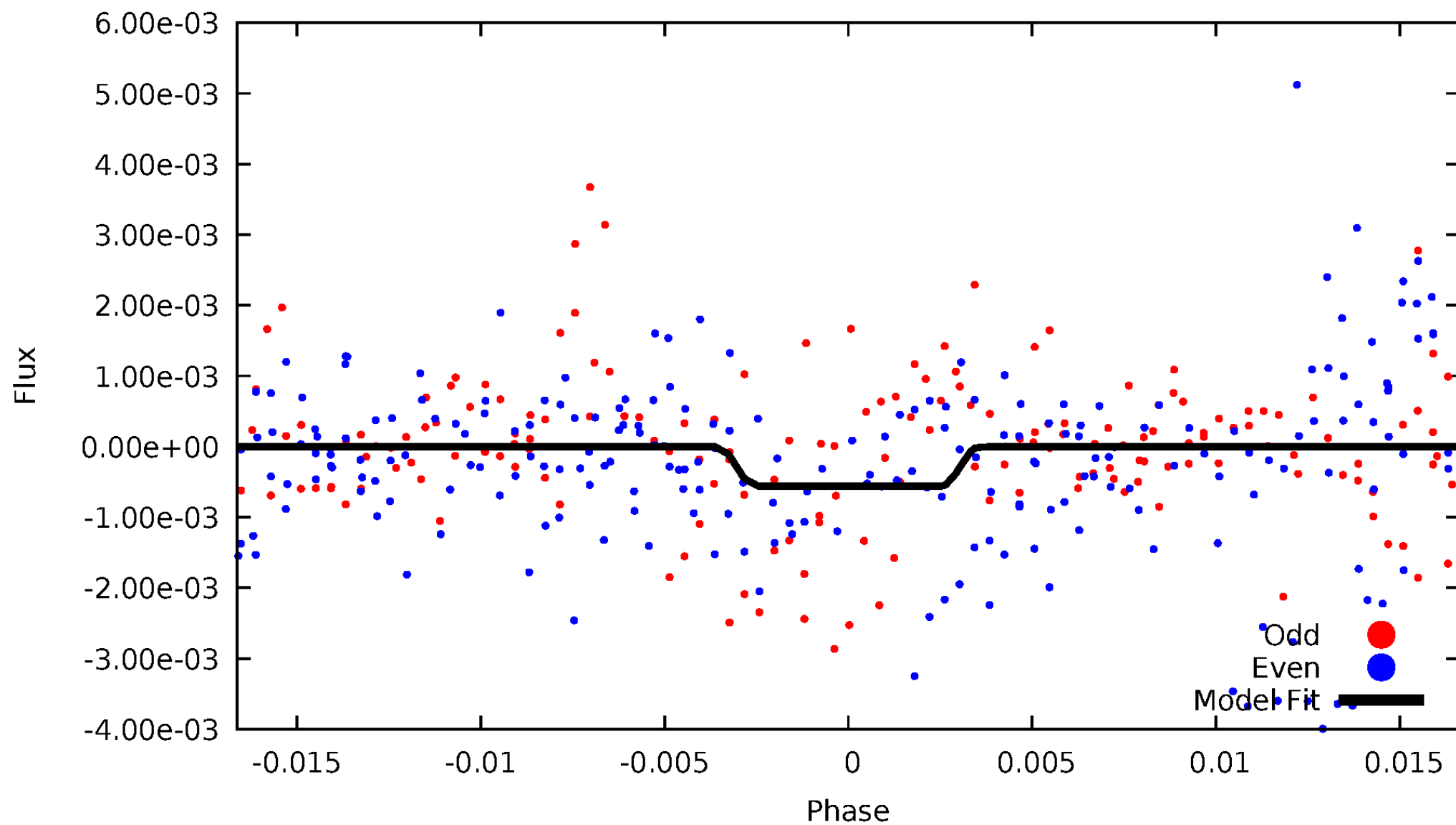
TCE 010341787-05





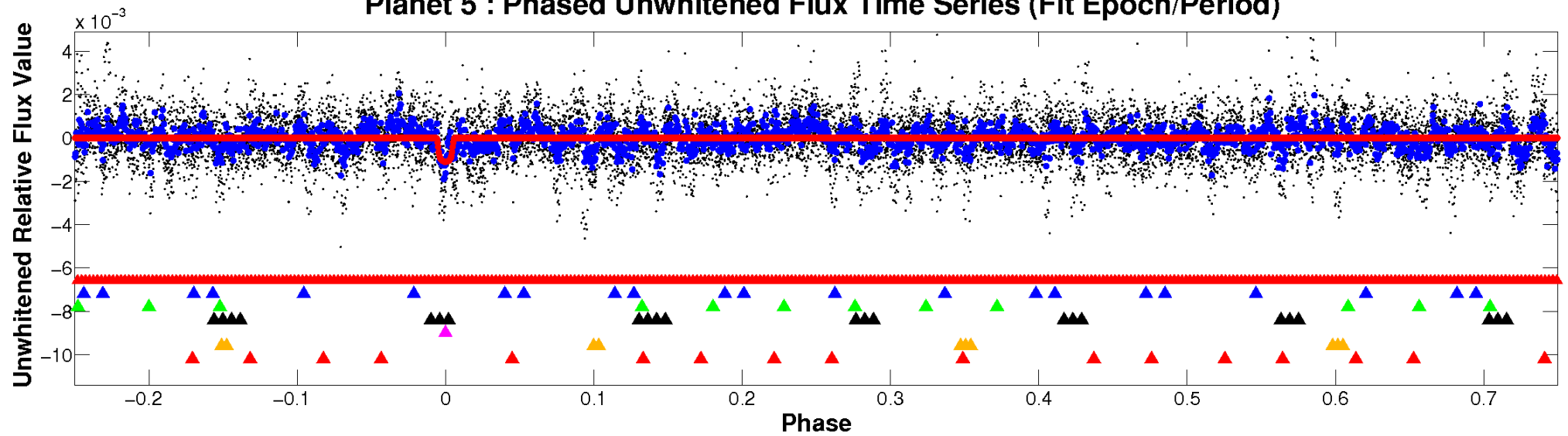
# ALT Odd/Even

TCE 010341787-05

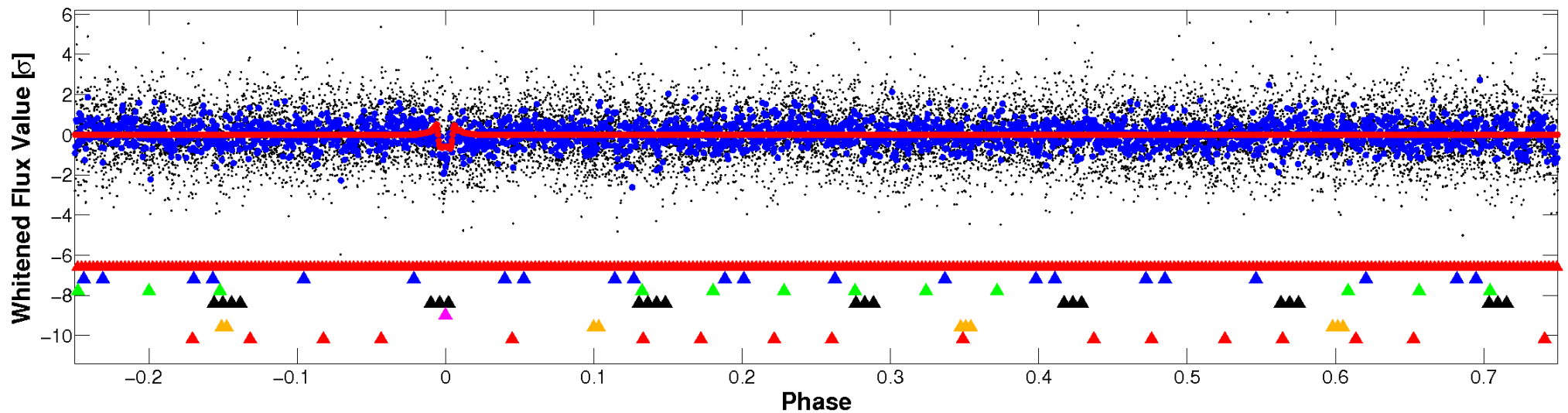


# Non-Whitened Vs. Whitened Light Curve

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

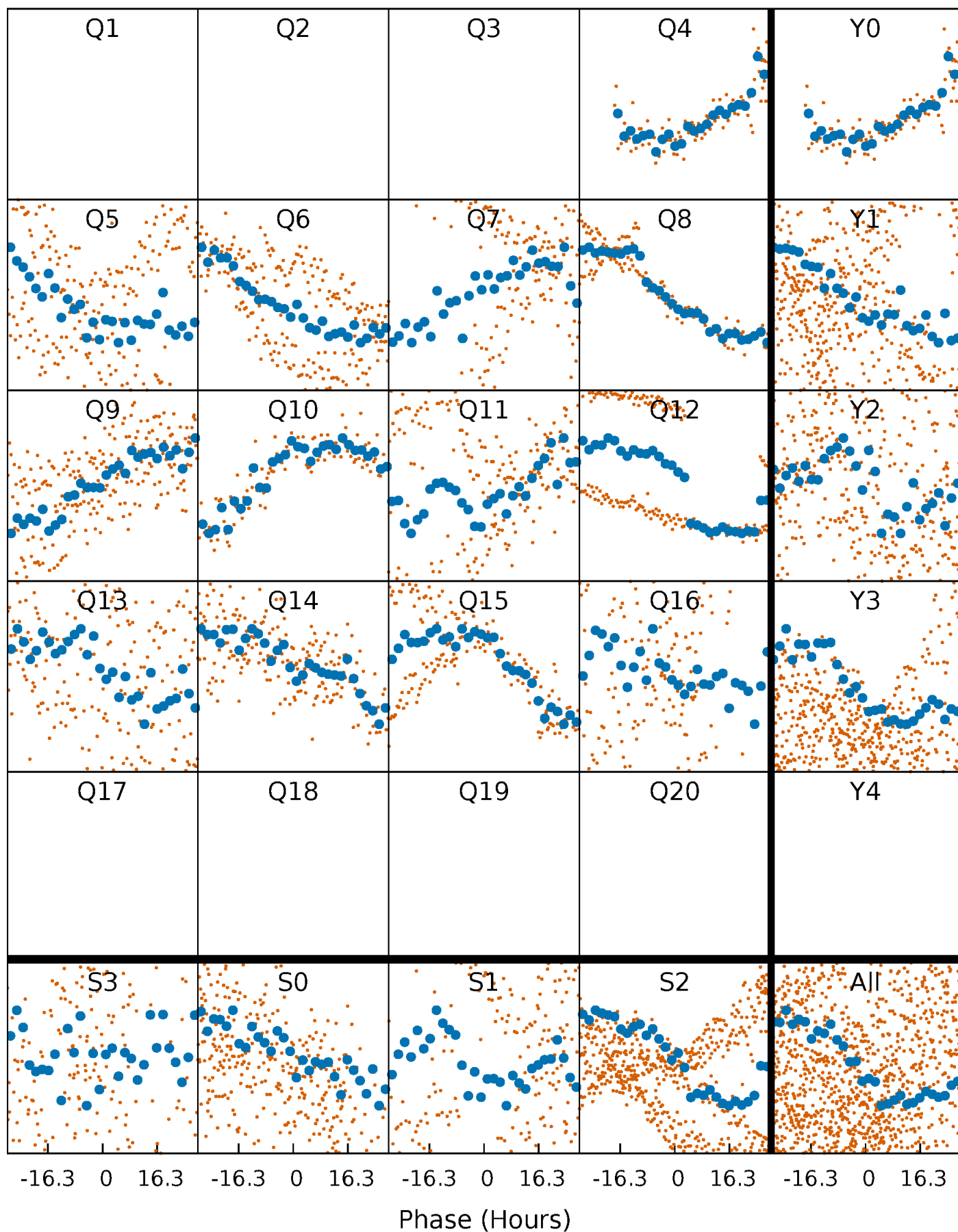


Planet 5 : Phased Whitened Flux Time Series (Fit Epoch/Period)



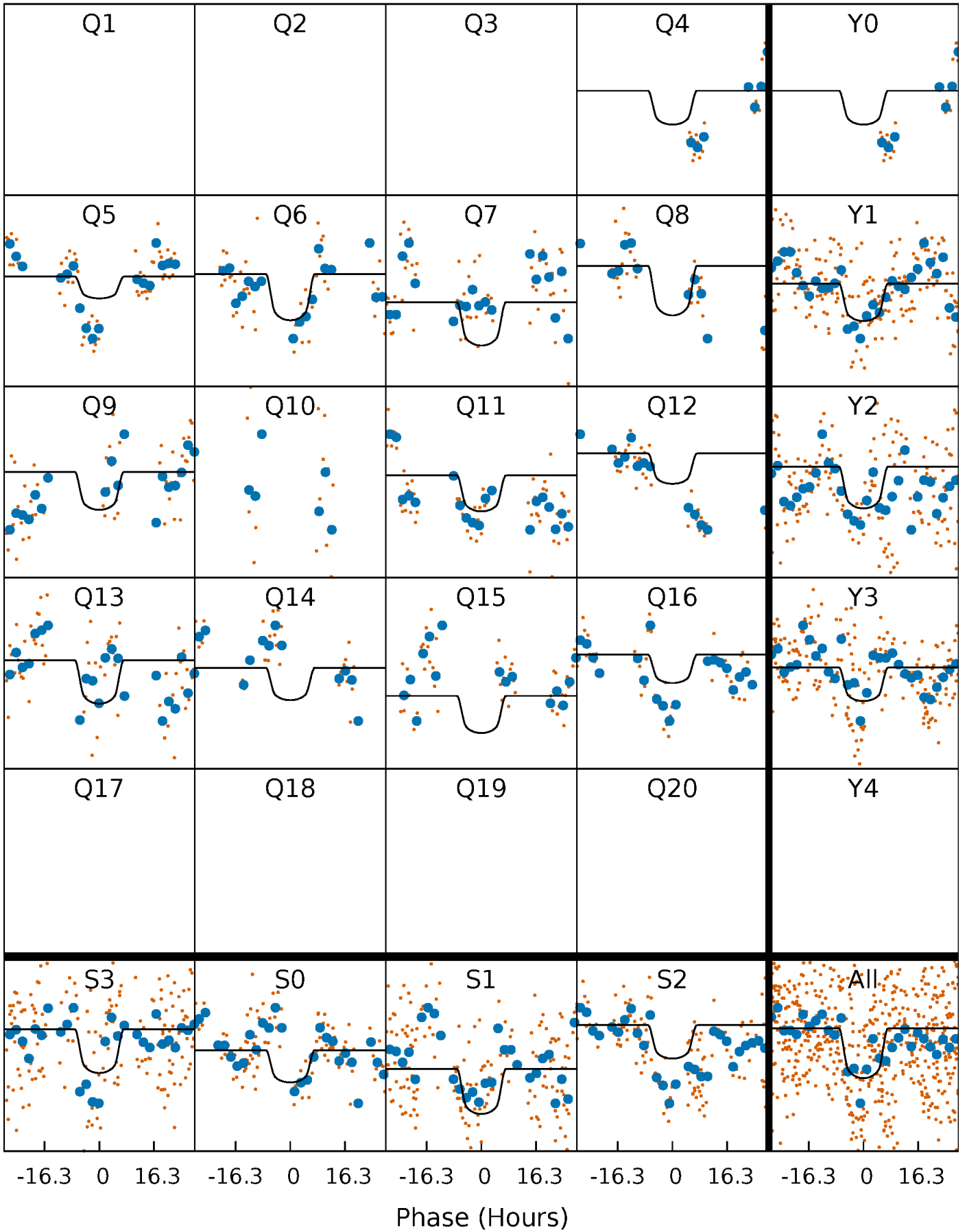
# PDC Quarter-Phased Transit Curves

TCE 010341787-05   P= 50.152671 Days    $T_0=150.808918$  (BKJD)



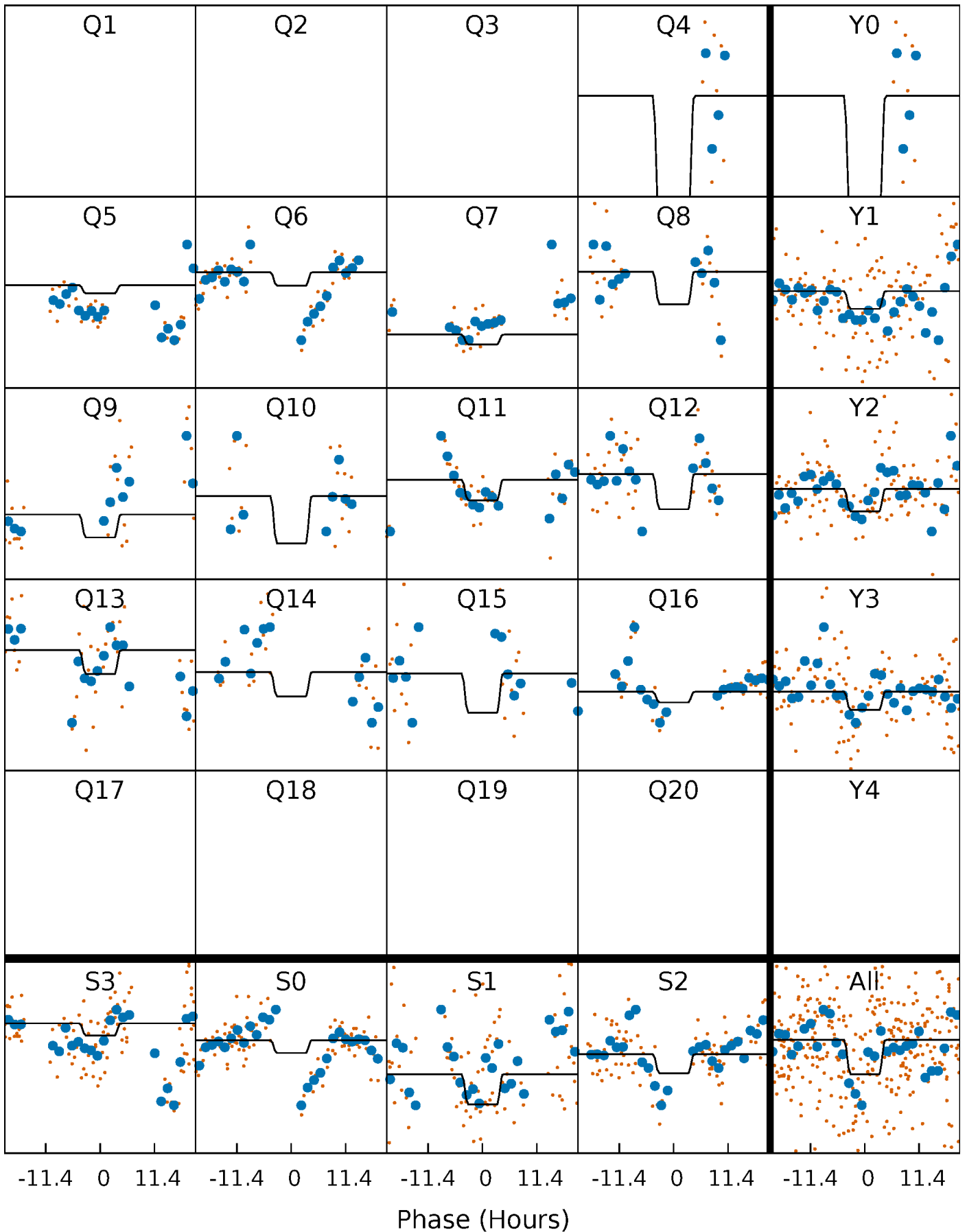
# DV Quarter-Phased Transit Curves

TCE 010341787-05   P= 50.152671 Days    $T_0=150.808918$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

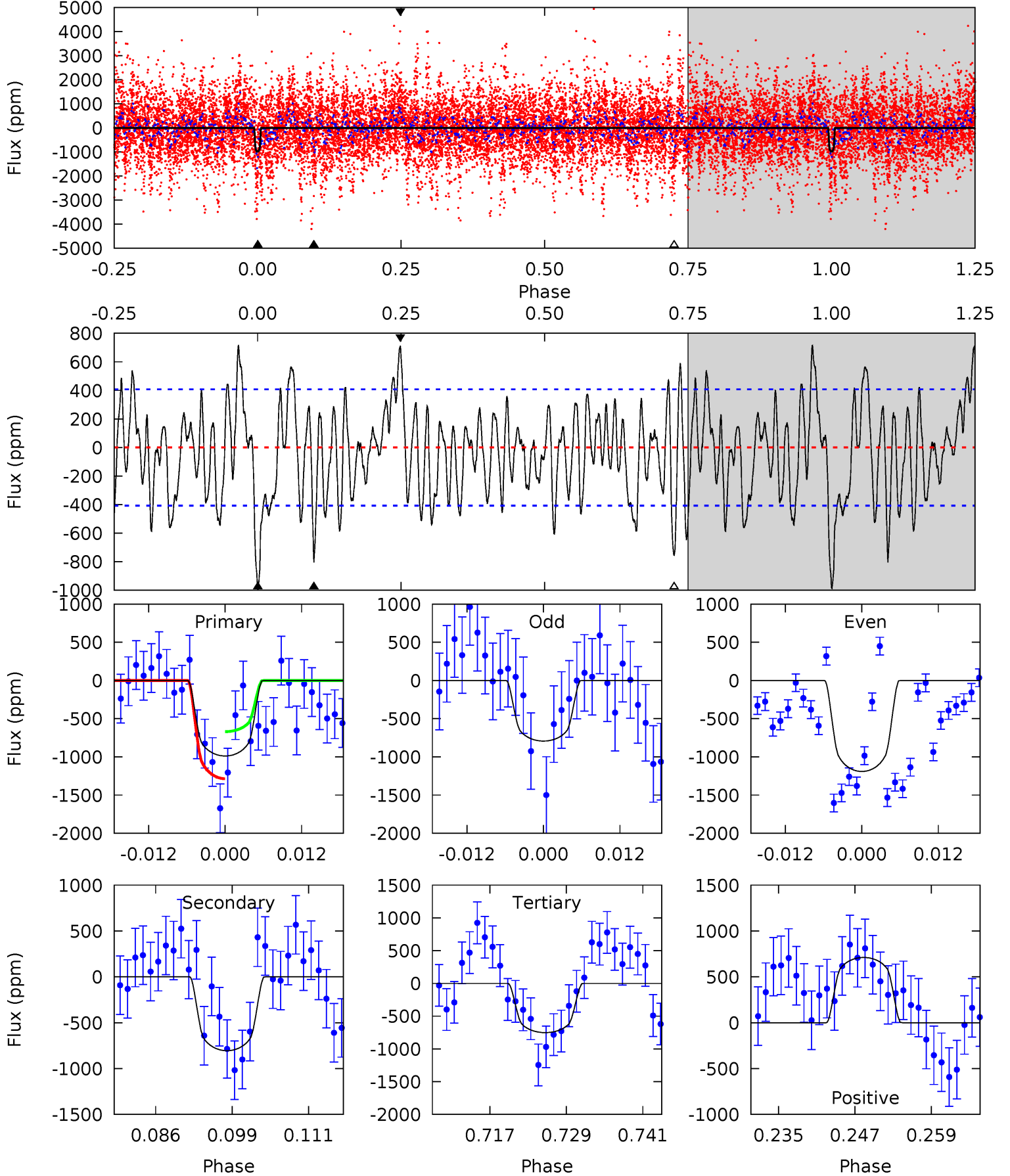
TCE 010341787-05     $P = 50.158542$  Days     $T_0 = 150.719120$  (BKJD)



# DV Model-Shift Uniqueness Test

010341787-05,  $P = 50.152671$  Days,  $E = 150.808918$  Days

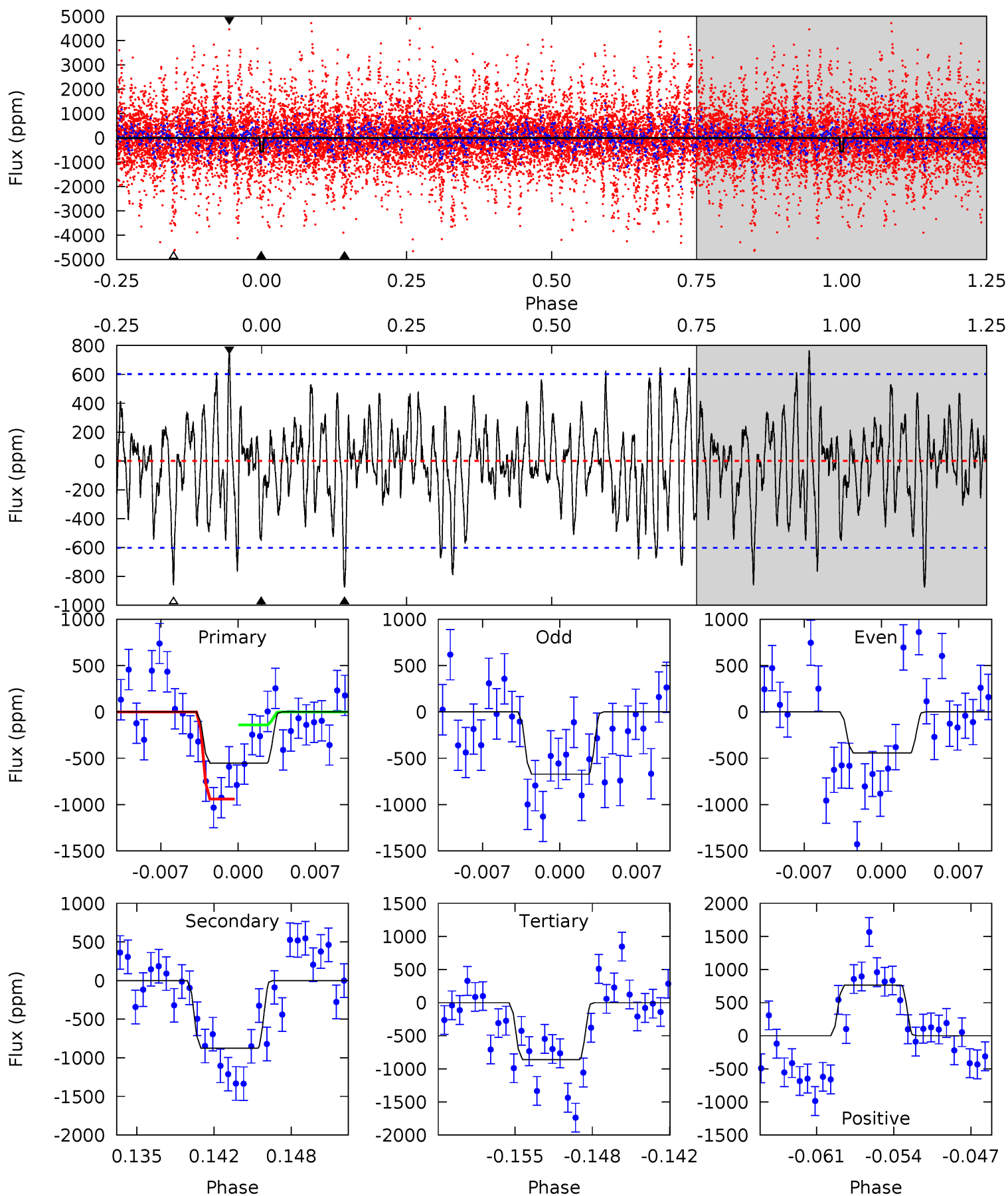
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.1	9.85	9.19	8.70	4.99	2.50	3.41	2.90	3.39	0.66	1.15	2.42	0.80	0.42	3.77



# Alt Model-Shift Uniqueness Test

010341787-05, P = 50.158542 Days, E = 150.719120 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
4.69	7.42	7.31	6.48	5.10	2.71	2.20	-2.62	-1.79	0.11	0.94	0.94	1.01	0.47	3.39





### Stellar Parameters For KIC 010341787

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5390^{+204}_{-185}$	$4.479^{+0.096}_{-0.132}$	$-0.180^{+0.300}_{-0.300}$	$0.852^{+0.160}_{-0.107}$	$0.798^{+0.113}_{-0.061}$	$1.819^{+0.720}_{-0.717}$
	+4%/-3%	+2%/-3%	+167%/-167%	+19%/-13%	+14%/-8%	+40%/-39%
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 010341787-05 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-805 \pm 82$	$3.46^{+0.55}_{-0.55}$	$622^{+40}_{-33}$	$4830^{+369}_{-294}$	$2238^{+917}_{-591}$
Alt.	$-875 \pm 118$	$2.24^{+0.50}_{-0.46}$	$621^{+39}_{-31}$	$5945^{+830}_{-518}$	$5706^{+3624}_{-1870}$

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

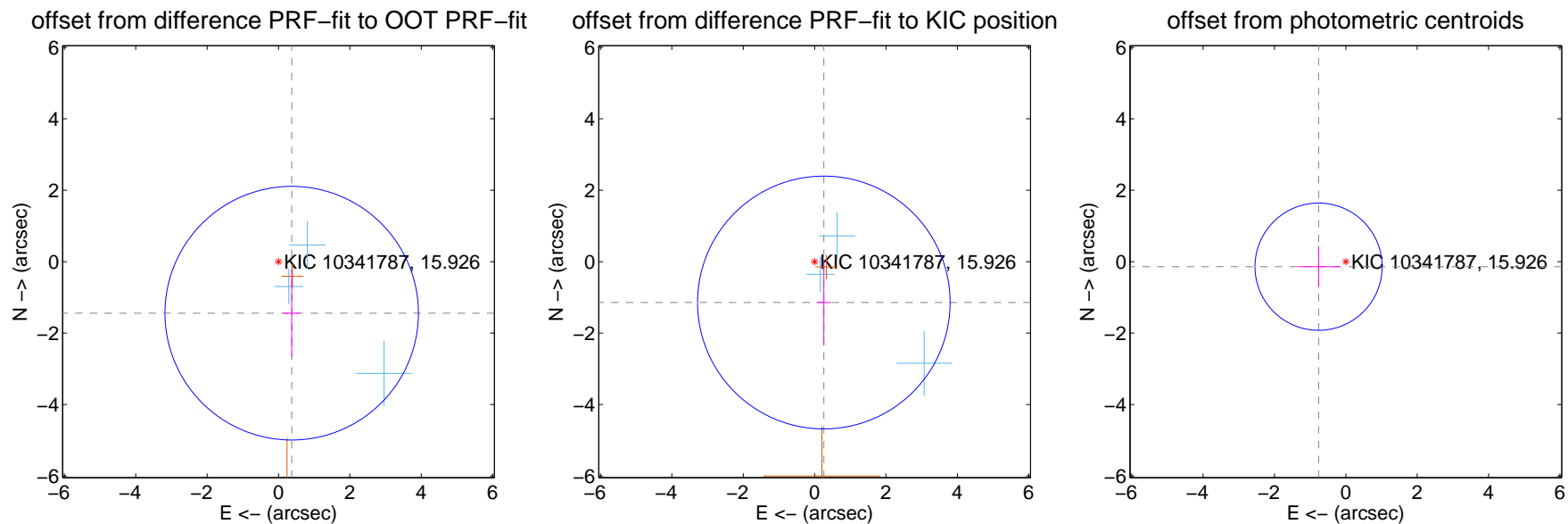
## DV Centroid Data

Supplemental centroid analysis for 010341787-05. Kepler magnitude: 15.93. Transit SNR 7.26

There are 3 quarters with good PRF difference image offsets

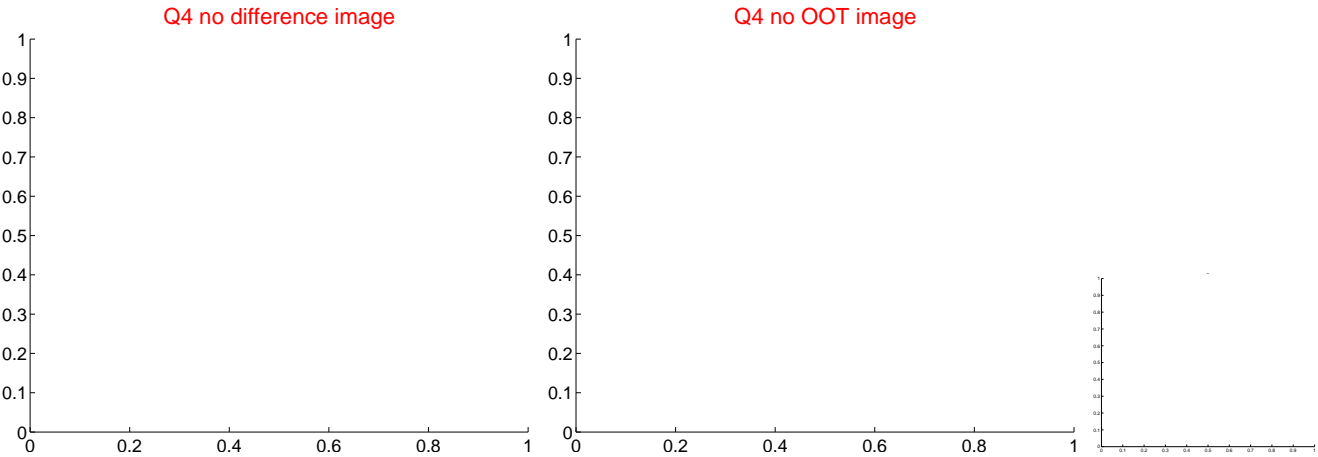
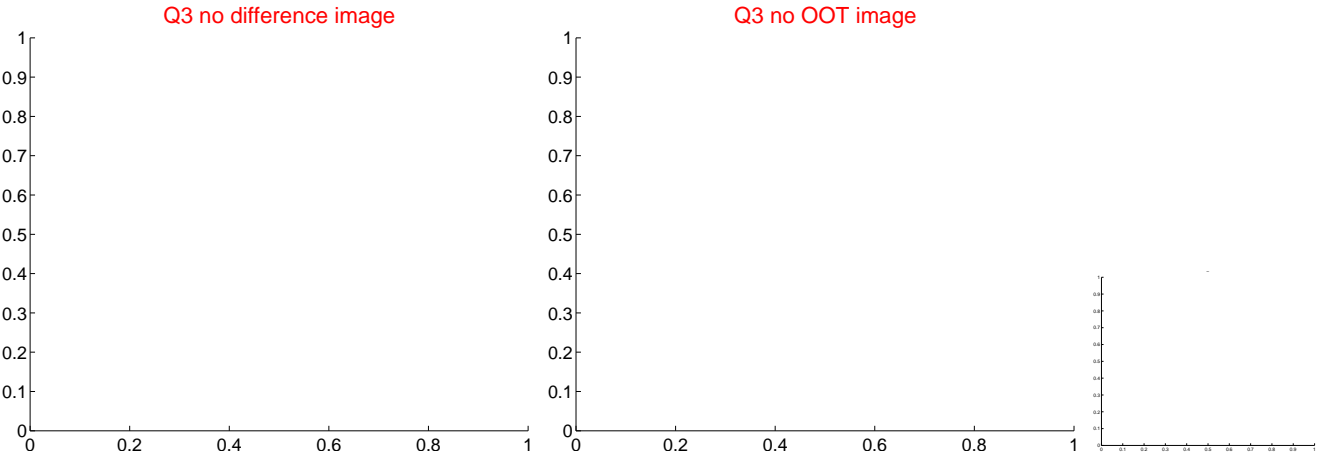
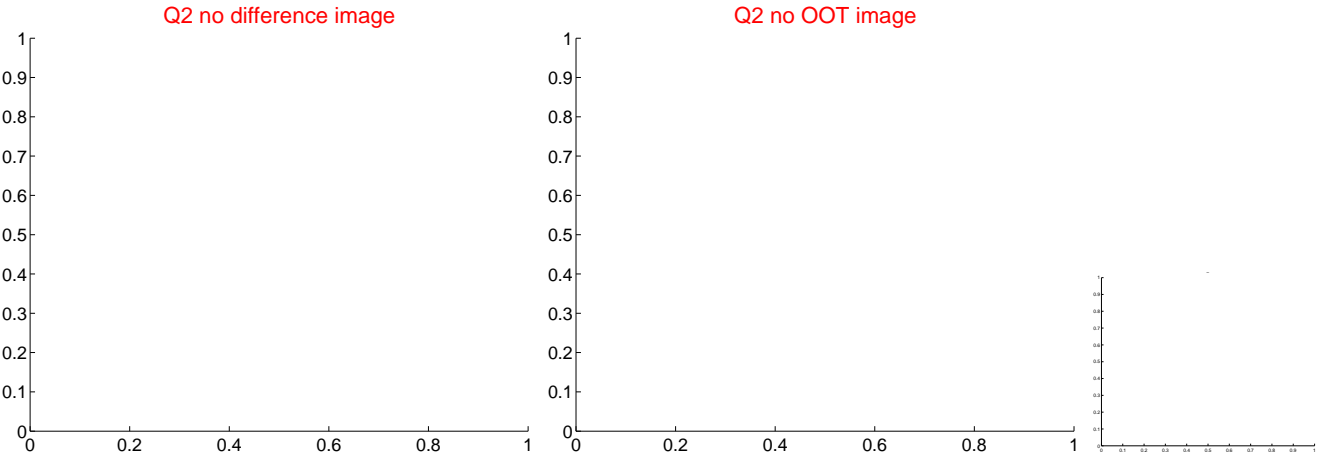
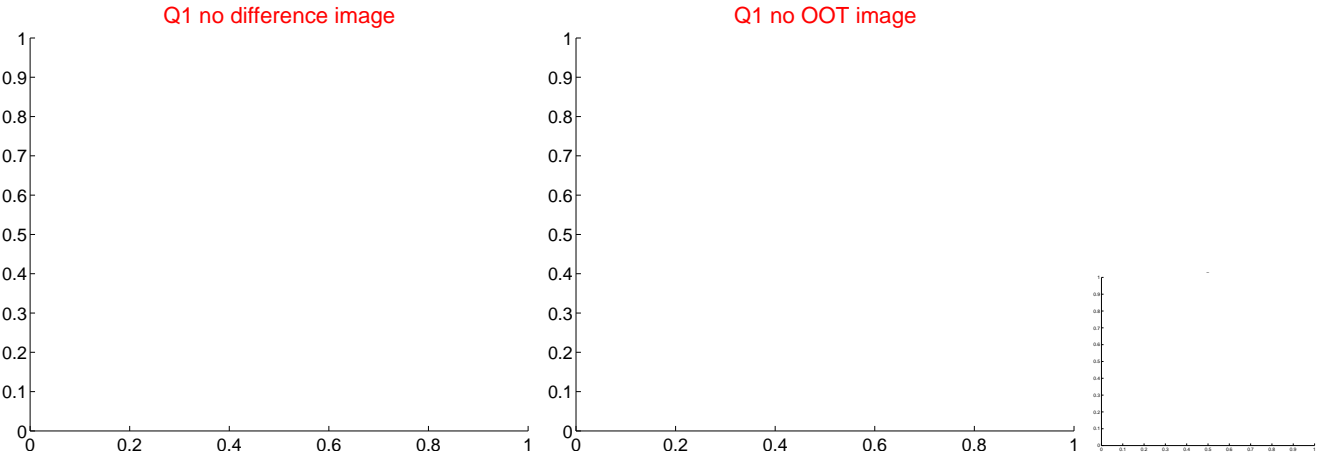
The direct PRF centroid is offset from the target star catalog position by about 0.31 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.490 \pm 1.184$	1.26	$-0.370 \pm 0.237$	$-1.443 \pm 1.221$
PRF-fit source offset from KIC position	$1.173 \pm 1.180$	0.99	$-0.259 \pm 0.201$	$-1.144 \pm 1.209$
photometric centroid source offset	$0.78 \pm 0.59$	1.31	$0.76 \pm 0.59$	$-0.14 \pm 0.58$

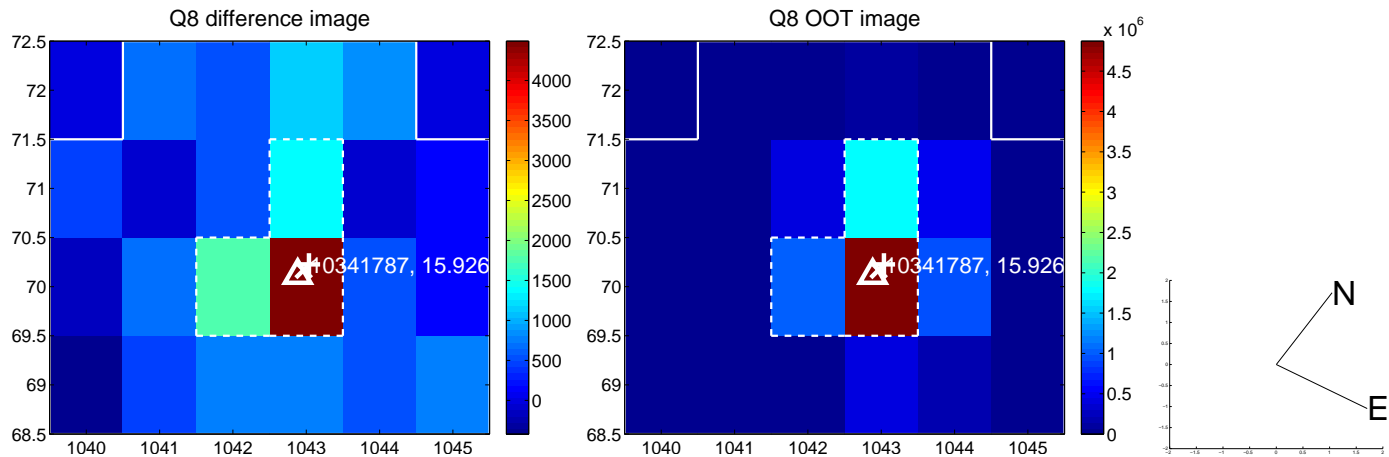
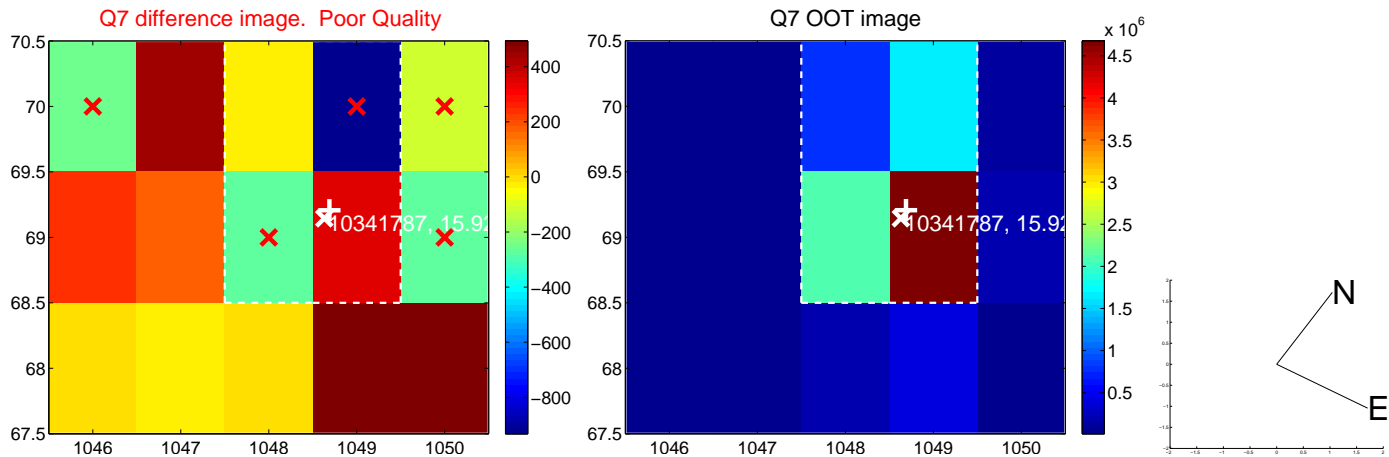
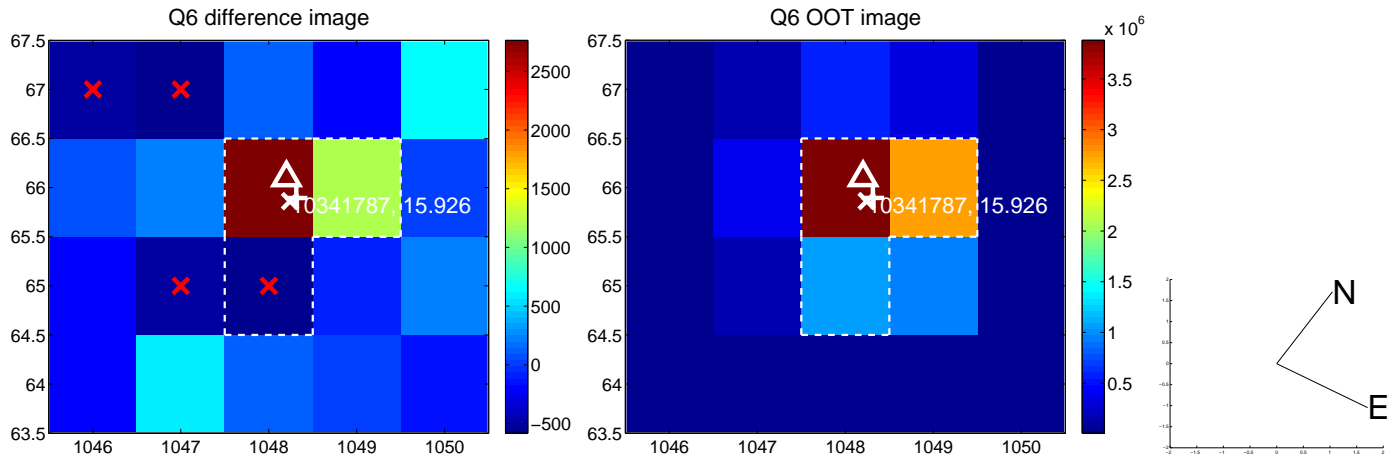
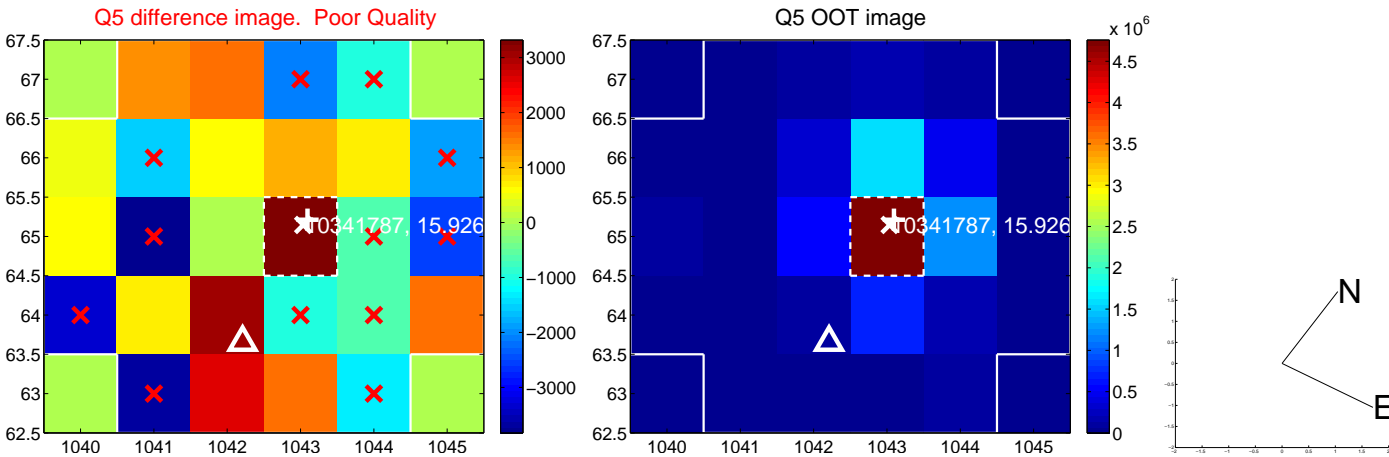


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

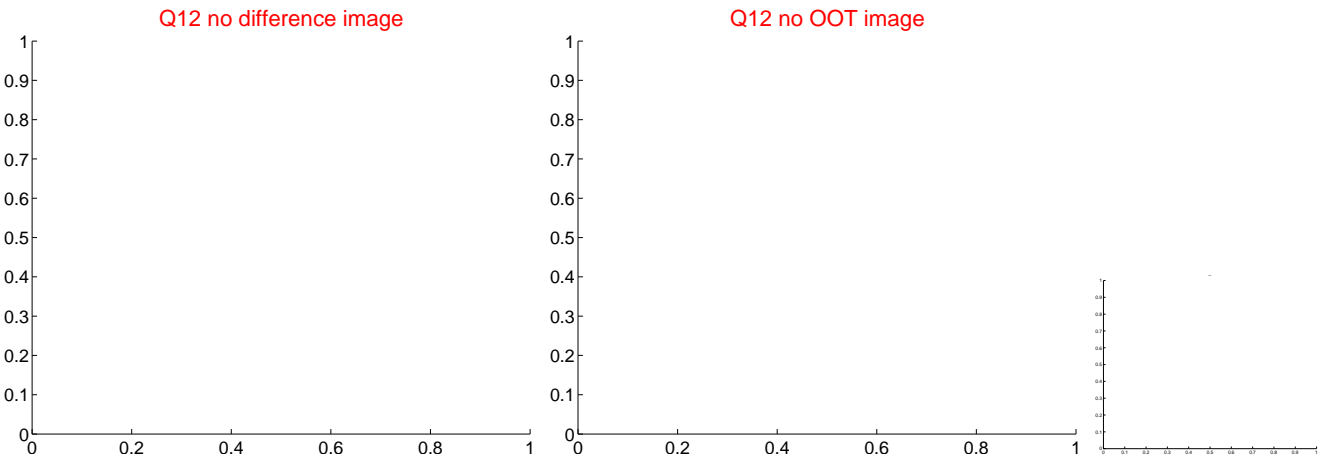
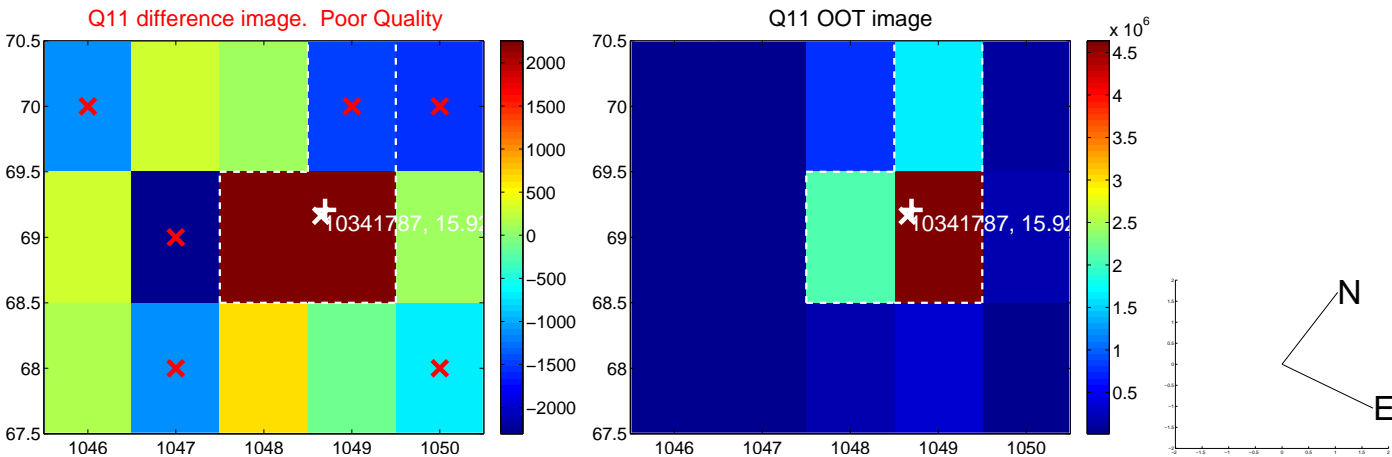
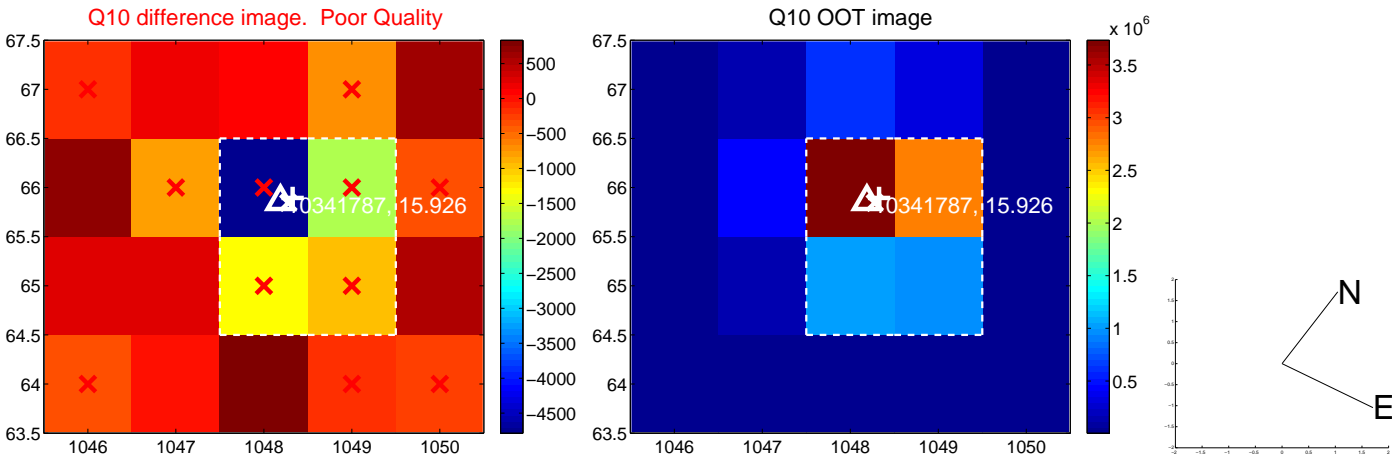
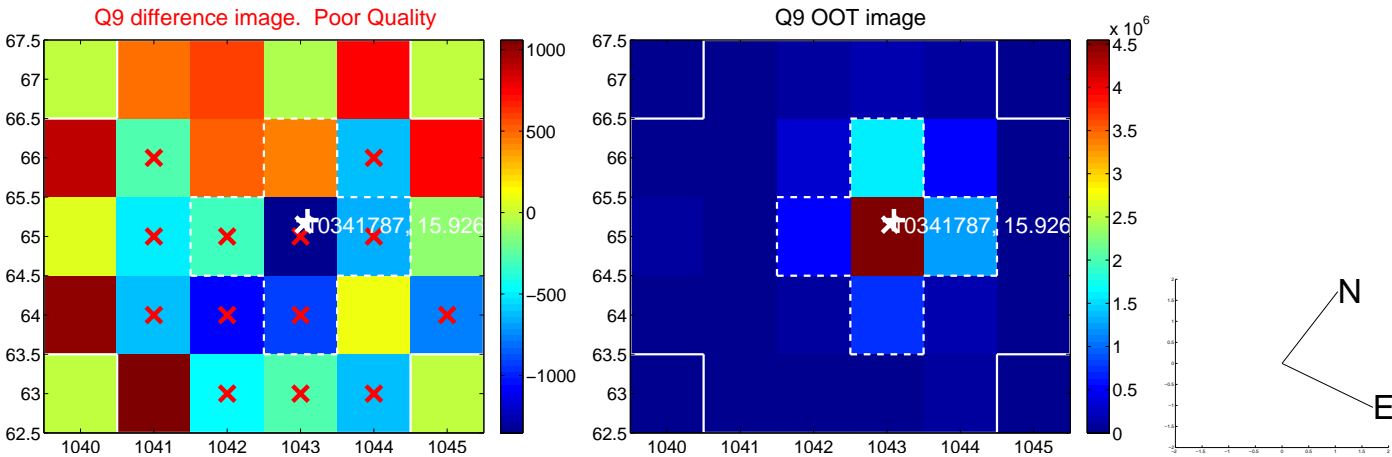
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



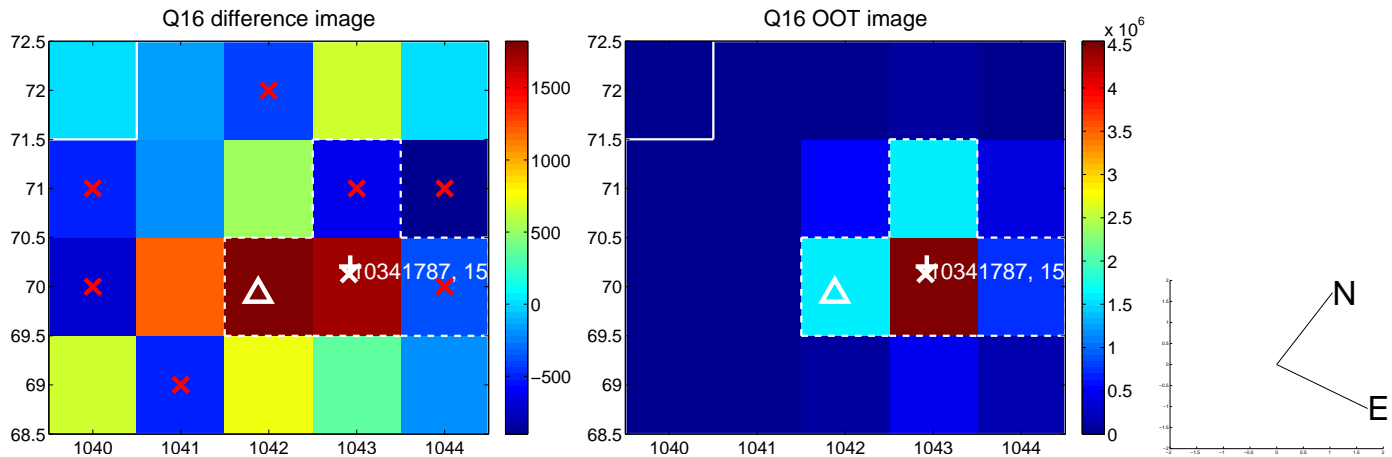
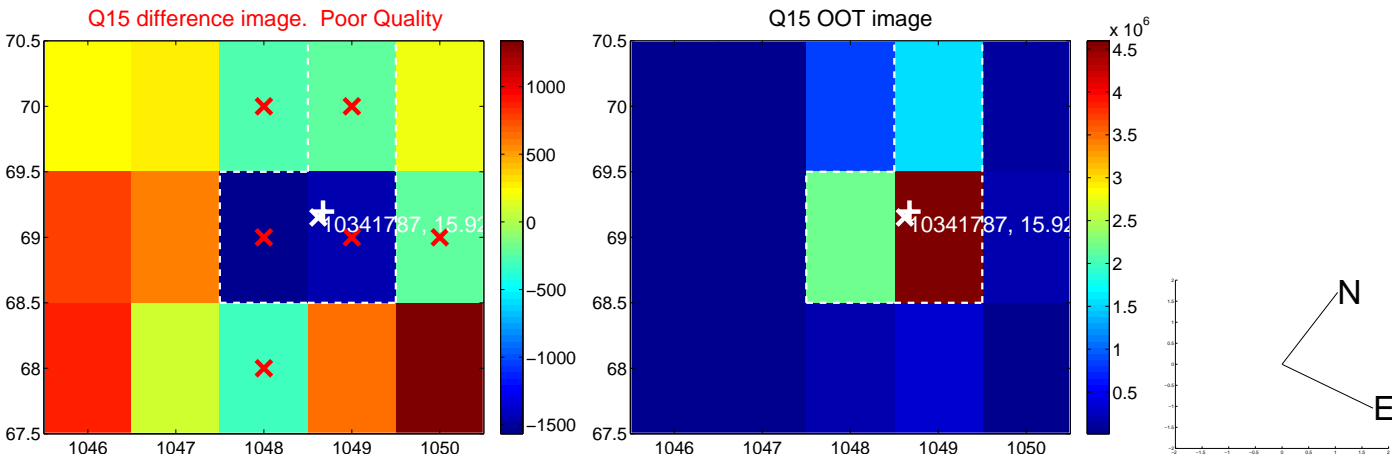
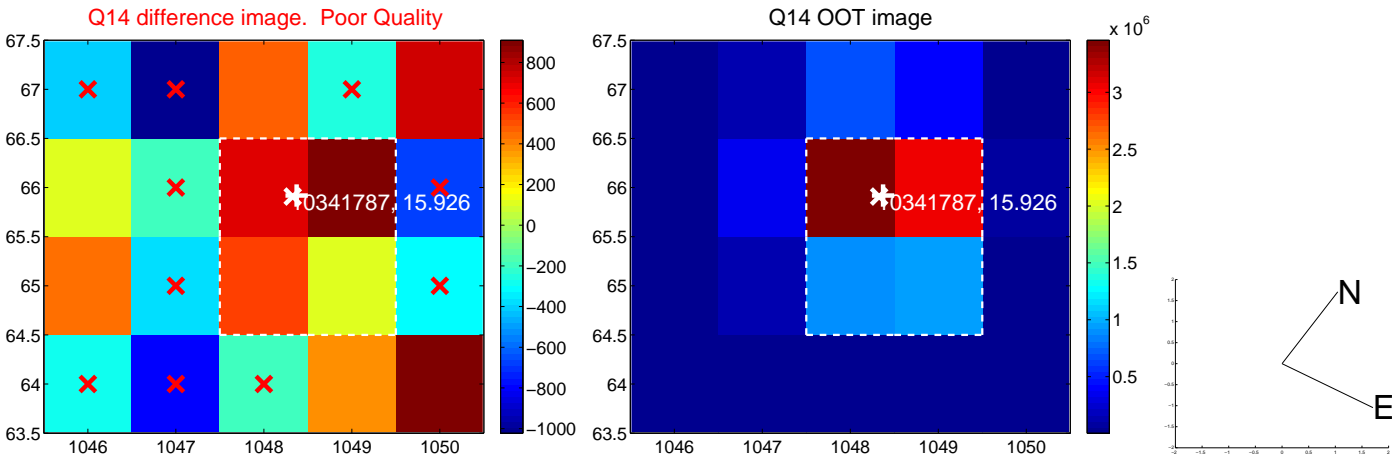
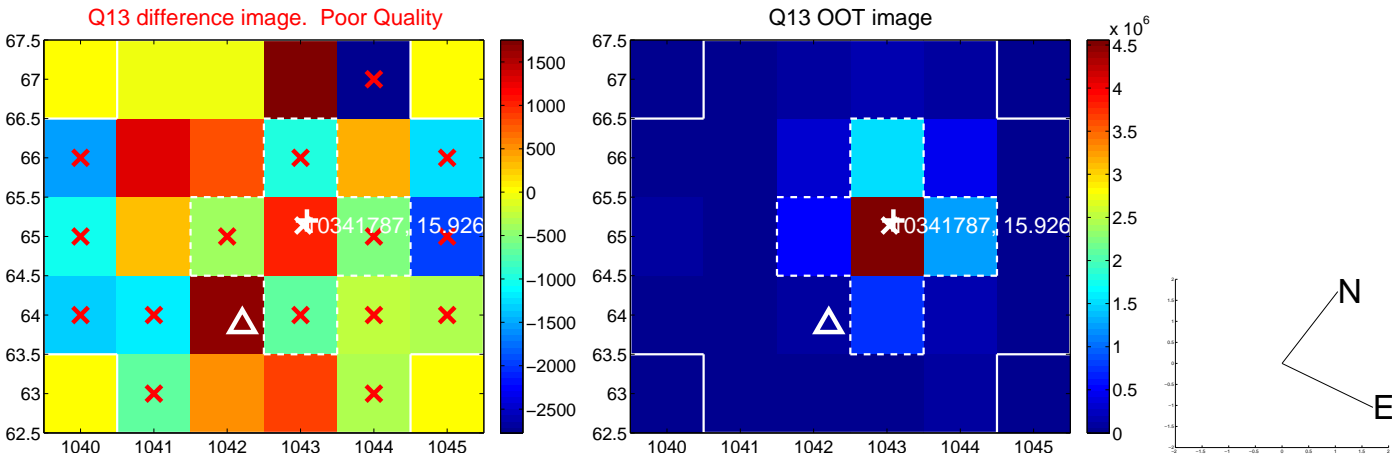
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



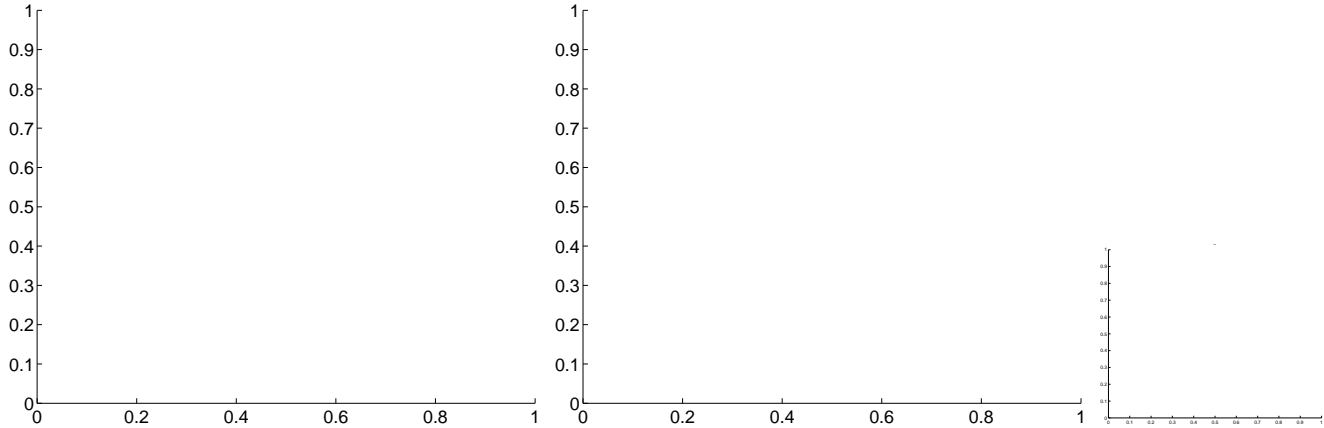
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



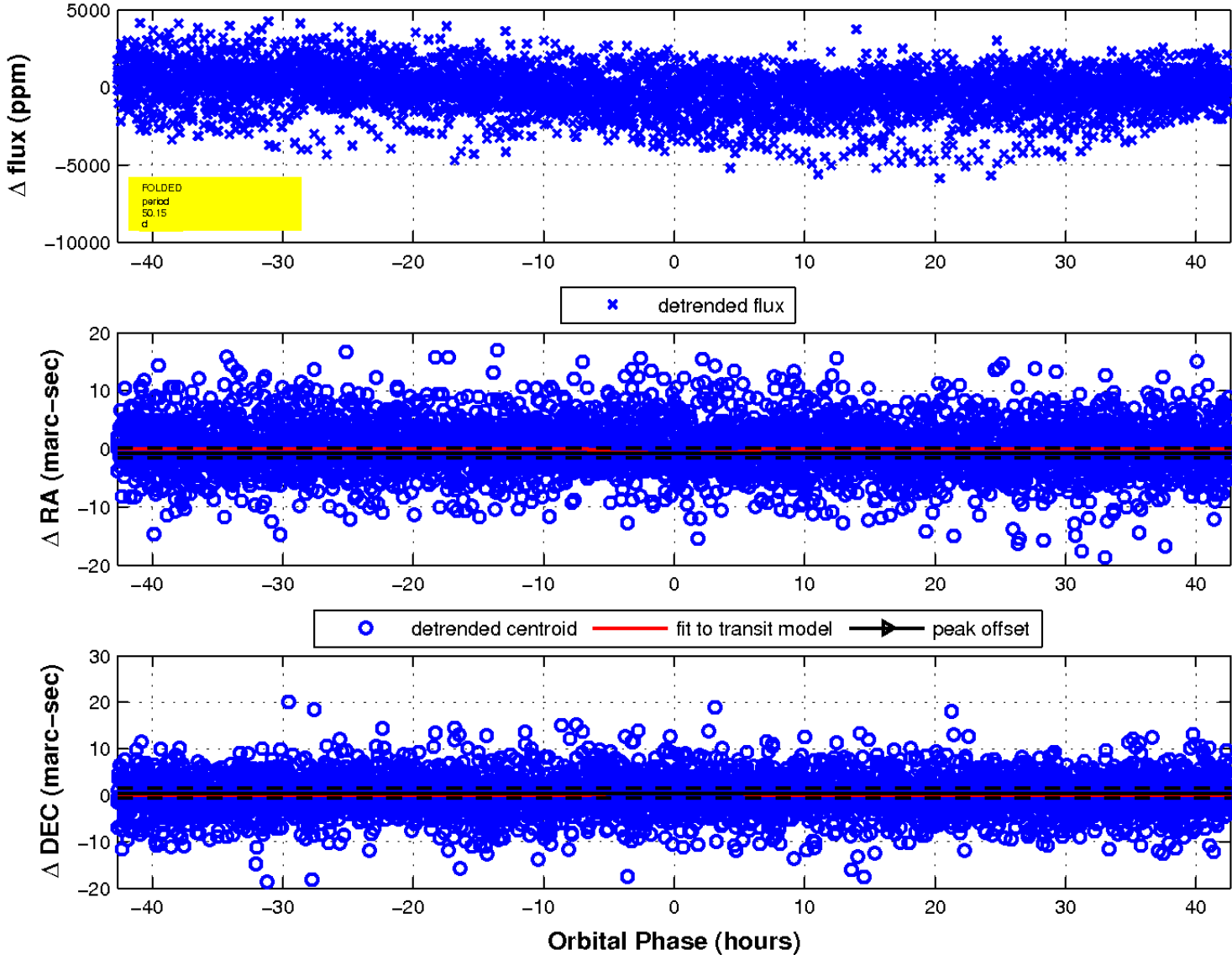
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

Q17 no difference image

Q17 no OOT image

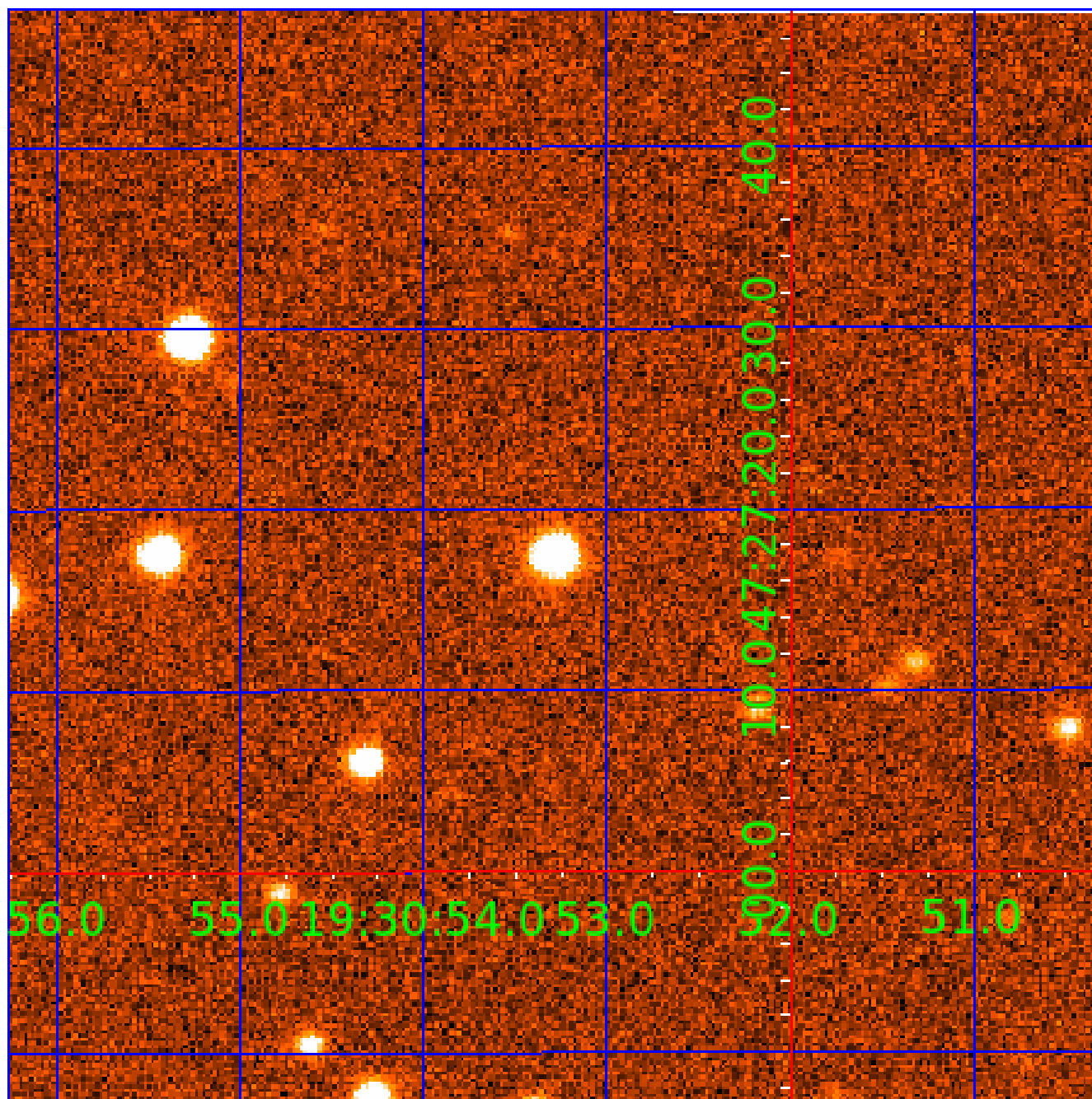


fluxWeightedCentroids, Planet 5 of 7



UKIRT Image

Declination





# KIC 010341787

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
010341787-01	OBS	7313.01	0.933702	132.493752	134.3	5.393	11.6	14.7	0.85	5390	1.05	1825.01
010341787-02	OBS	No	68.110371	134.857375	1334.2	8.034	14.5	7.3	0.85	5390	3.57	5.99
010341787-03	OBS	No	126.582042	181.331214	1534.4	9.100	11.4	6.6	0.85	5390	3.45	2.62
010341787-04	OBS	No	64.524387	142.983279	1038.3	9.783	11.2	6.4	0.85	5390	3.23	6.43
010341787-05	OBS	No	50.152671	150.808918	1104.9	14.225	10.7	7.3	0.85	5390	3.40	9.01
010341787-06	OBS	No	137.876543	231.306680	2010.6	6.336	10.3	8.9	0.85	5390	4.13	2.34
010341787-07	OBS	No	85.064483	174.685007	1329.9	9.343	10.6	7.7	0.85	5390	3.75	4.45

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010341787-01	OBS	FP	0.00	0	0	1	1	CENT_RESOLVED_OFFSET—HALO_GHOST—EPHEM_MATCH
010341787-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
010341787-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
010341787-04	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_FEW_DIFFS—HALO_GHOST
010341787-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
010341787-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
010341787-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS

**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.

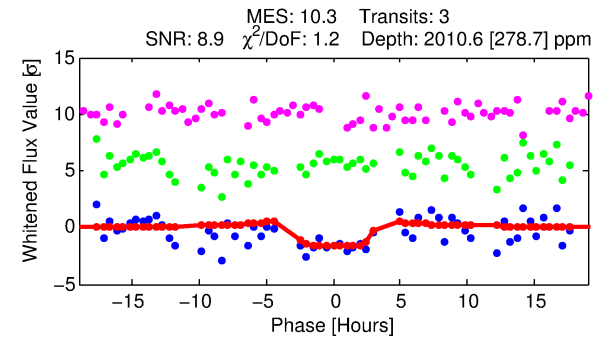
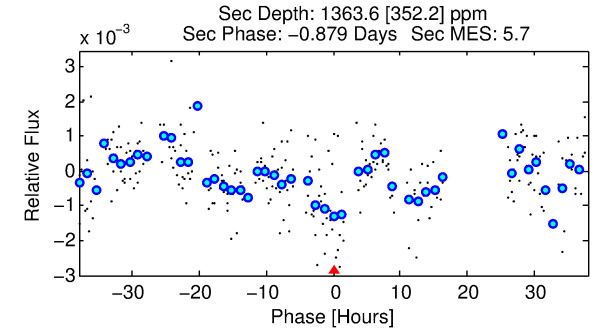
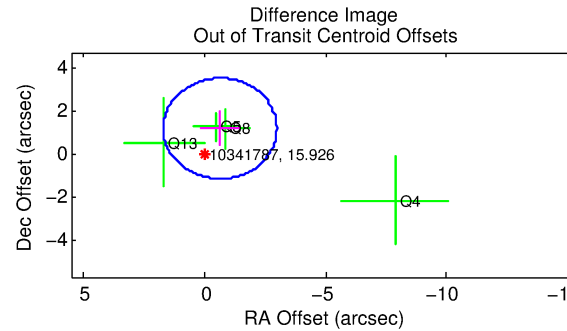
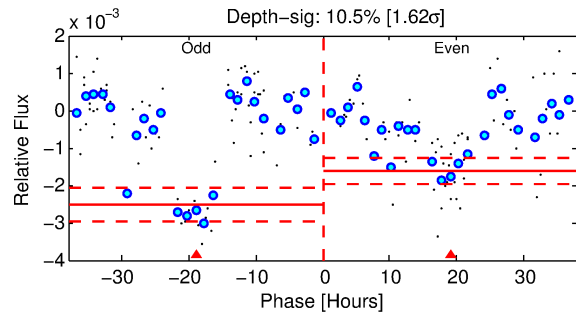
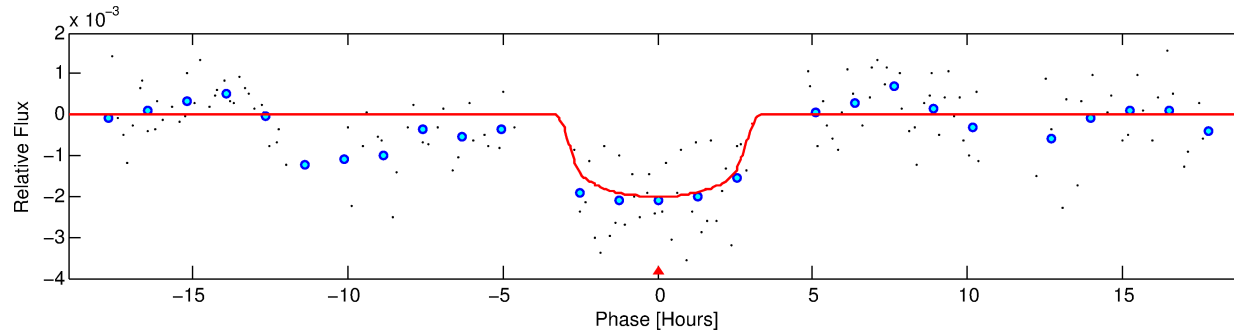
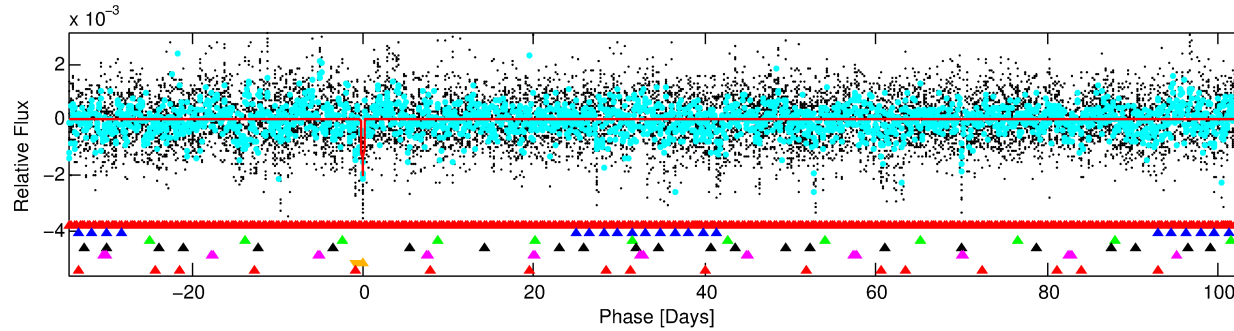
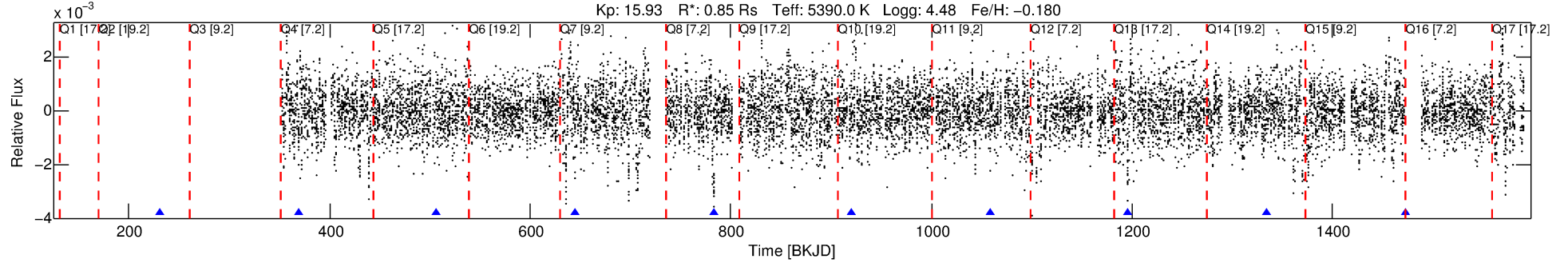
Ephemeris Match Information For 010341787-06

No Significant Match Found

# DV One-Page Summary

KIC: 10341787 Candidate: 6 of 7 Period: 137.877 d  
KOI: K07313 Corr: No Ephemeris Match

Kp: 15.93 R\*: 0.85 Rs Teff: 5390.0 K Logg: 4.48 Fe/H: -0.180



## DV Fit Results:

Period = 137.87654 [0.00381] d  
Epoch = 231.3067 [0.0130] BKJD  
Rp/R\* = 0.0444 [0.0216]  
a/R\* = 123.08 [238.30]  
b = 0.74 [1.18]  
Seff = 2.34 [0.66]  
Teq = 315 [22] K  
Rp = 4.13 [2.15] Re  
a = 0.4845 [0.0780] AU  
Ag = 10312.51 [10661.41] [0.97σ]  
Teffp = 4913 [1250] K [3.68σ]

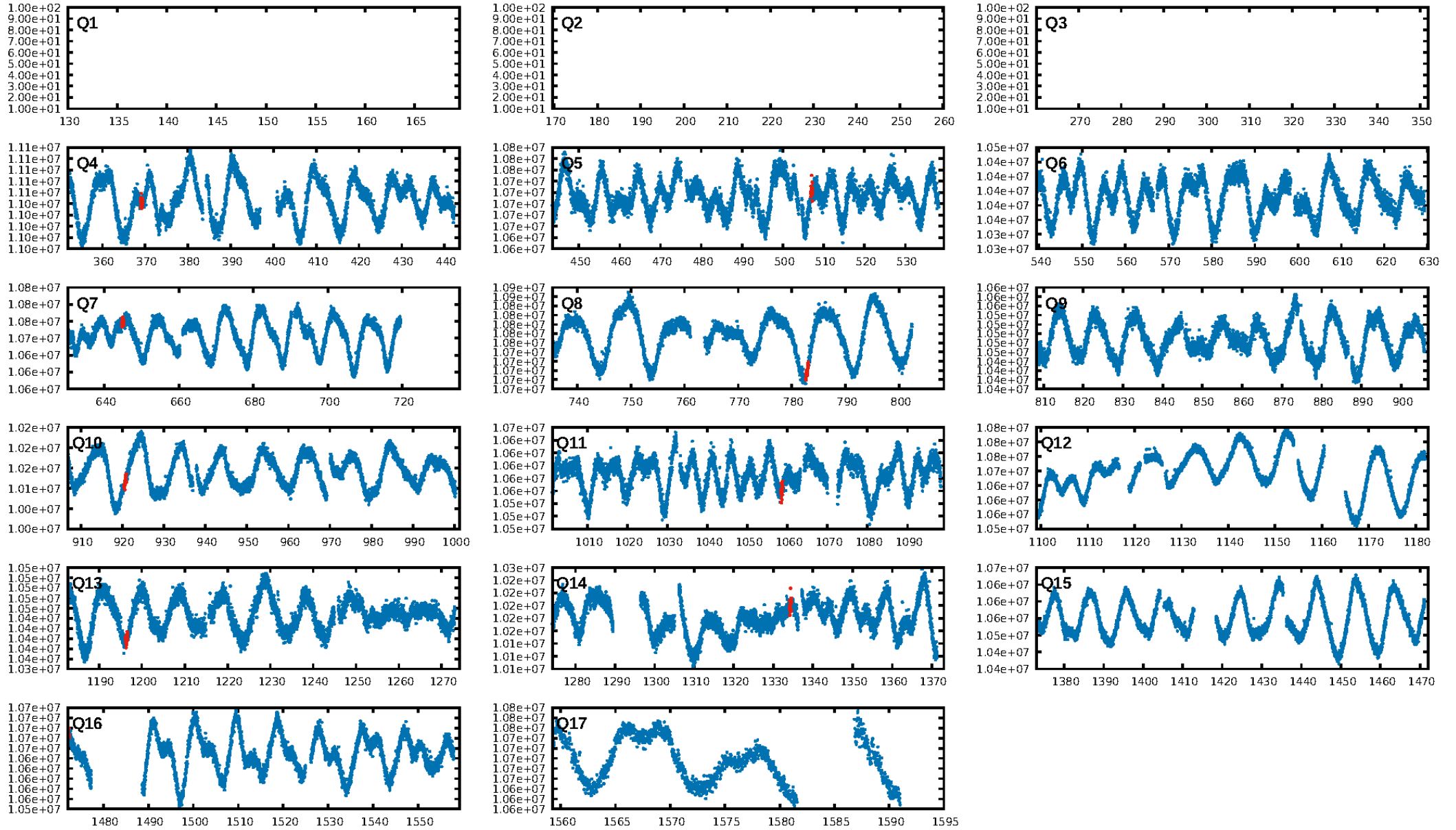
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [24.45σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 0.4%  
ModelChiSquareGof-sig: 96.5%  
**Bootstrap-pfa: 3.64e-12**  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: -0.4671  
Centroid-sig: 1.8%  
Centroid-so: 0.760 arcsec [1.10σ]  
OotOffset-rm: 1.353 arcsec [1.73σ]  
OotOffset-st: 0/0/2/2 [4]  
KicOffset-rm: 1.602 arcsec [2.04σ]  
KicOffset-st: 0/0/2/2 [4]  
DiffImageQuality-fgm: 0.00 [0/4]  
DiffImageOverlap-fno: 0.00 [0/8]

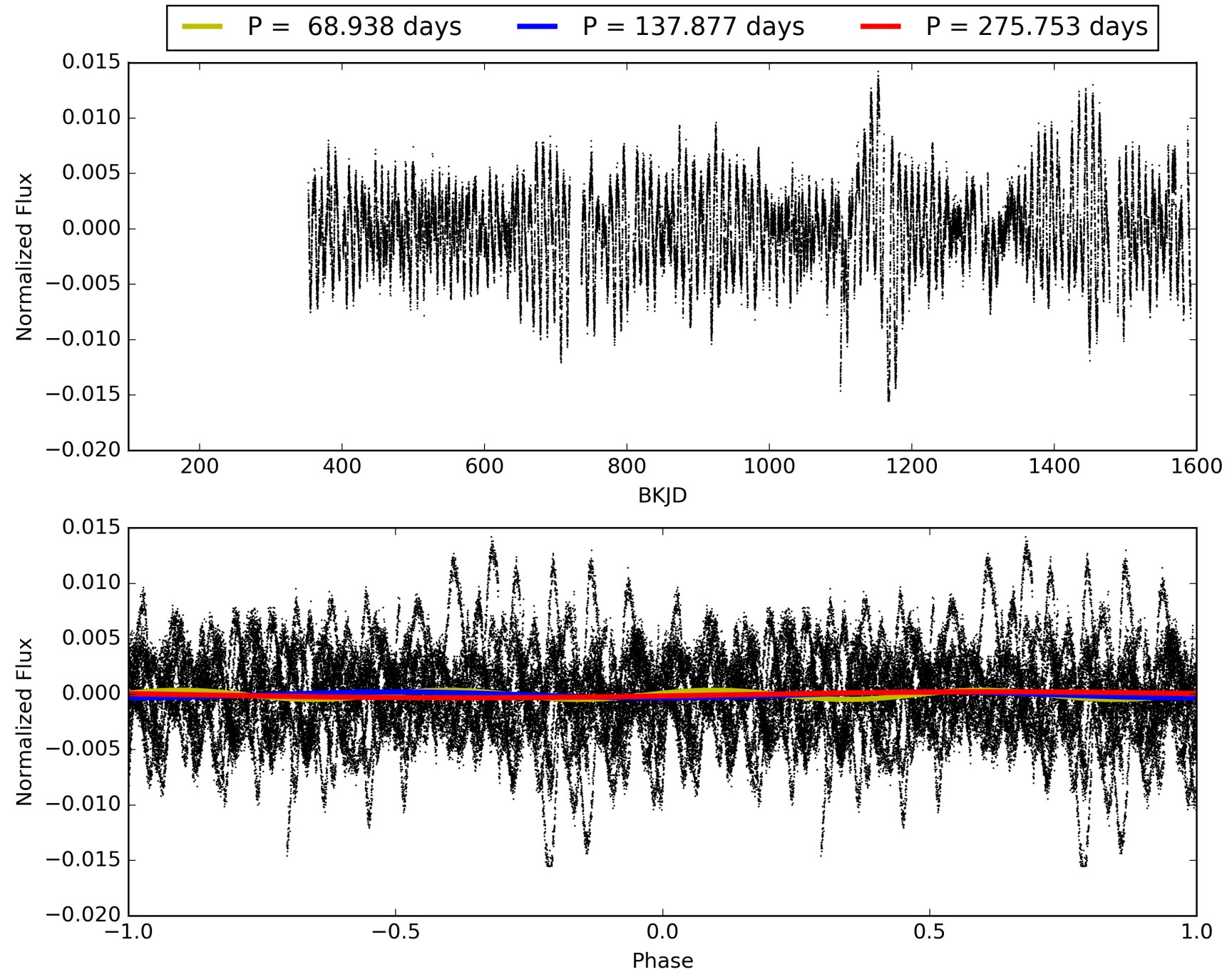
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 00:57:03 Z

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

# TCE 010341787-06, PDC Light Curves

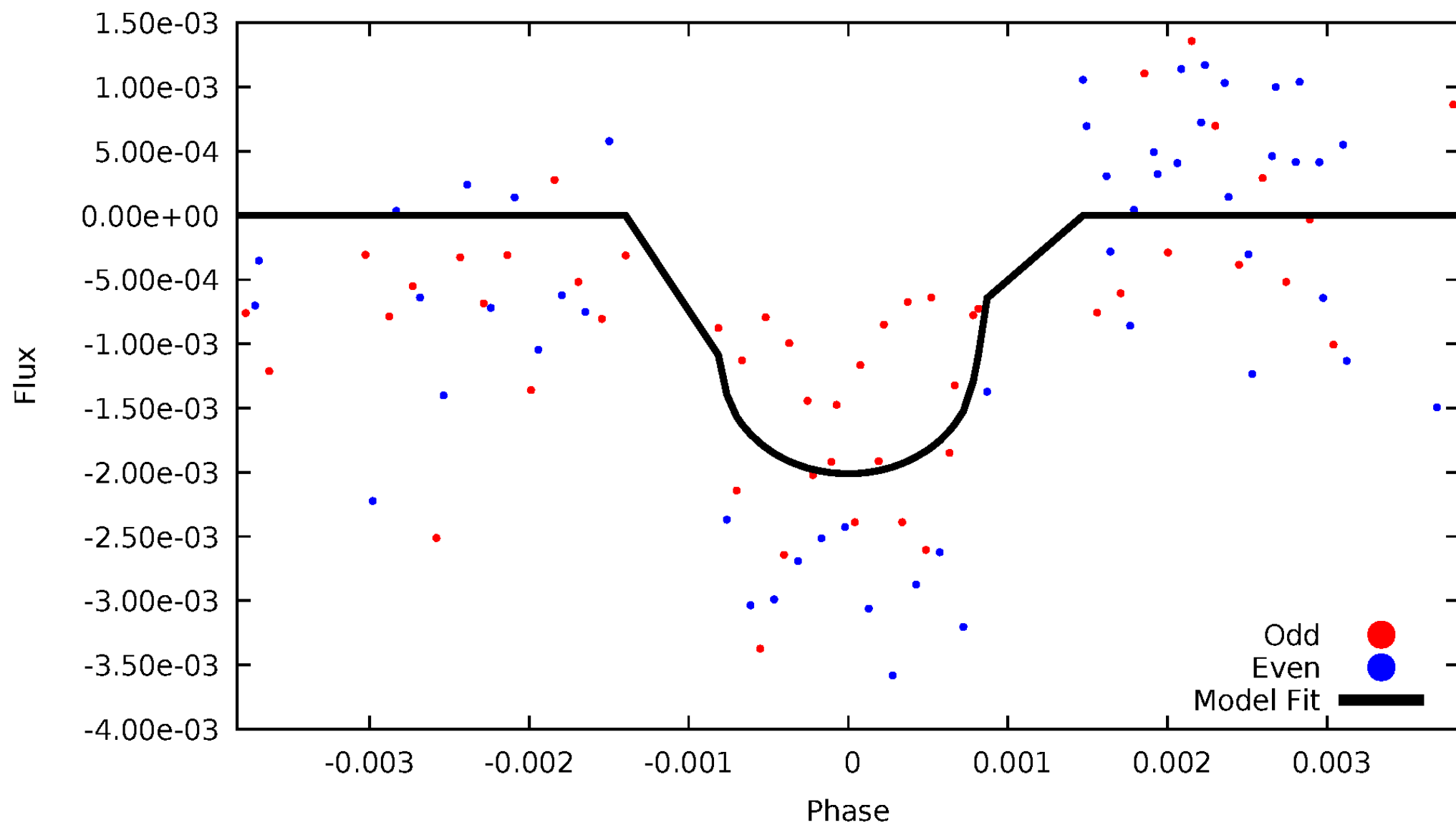


# TCE 010341787-06



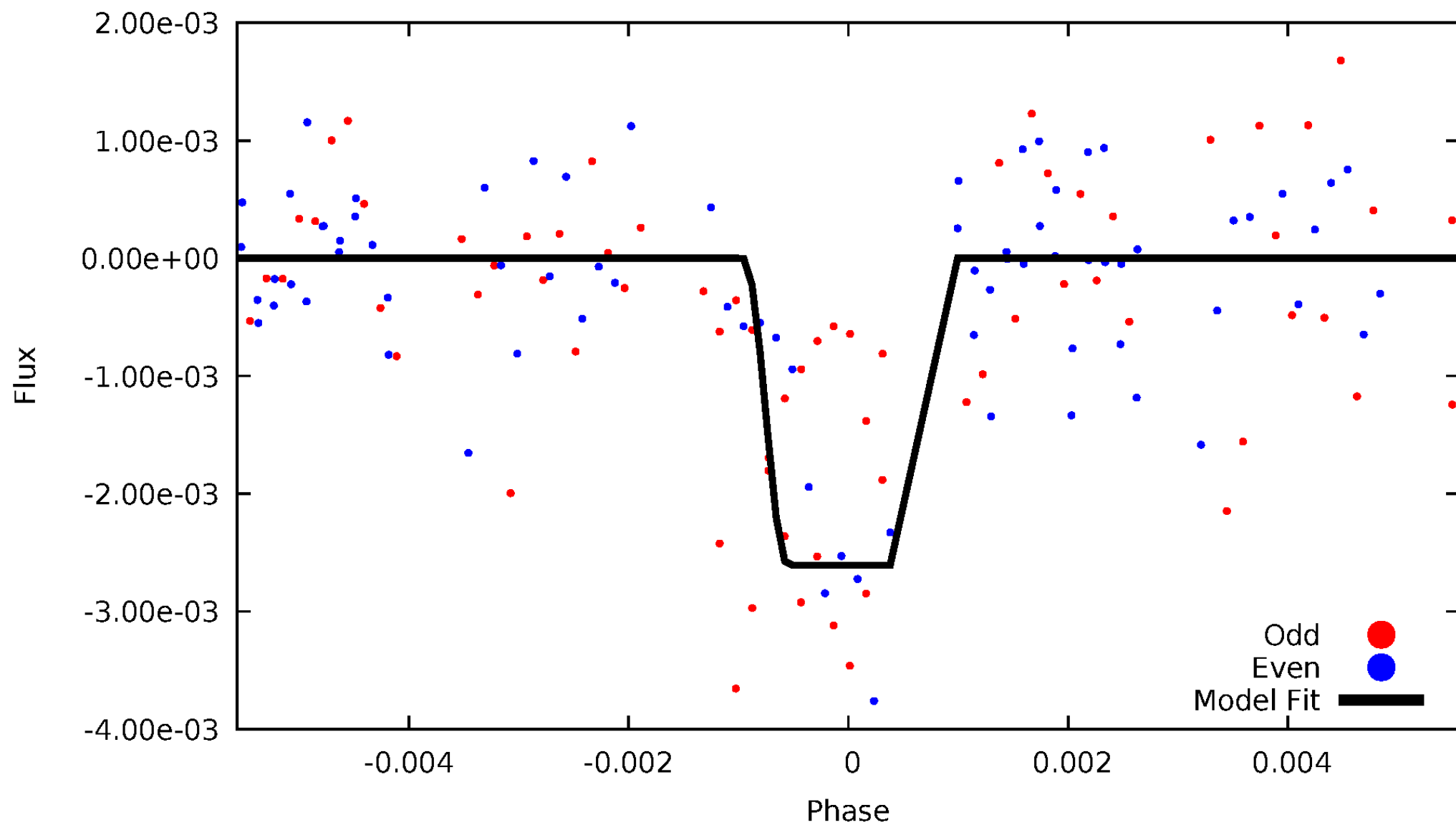
# DV Odd/Even

TCE 010341787-06



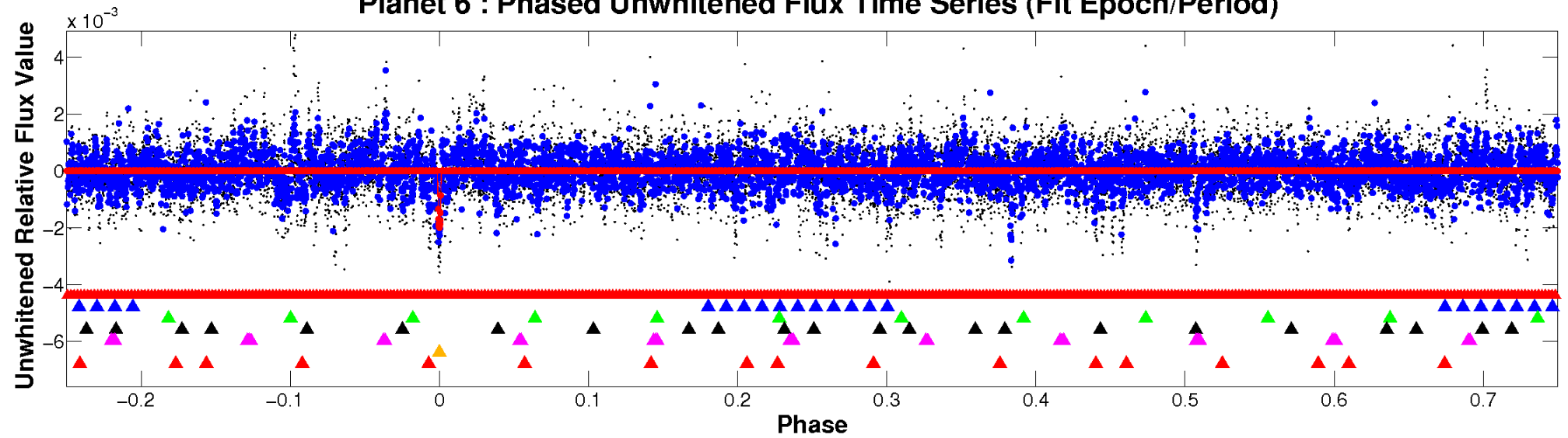
# ALT Odd/Even

TCE 010341787-06

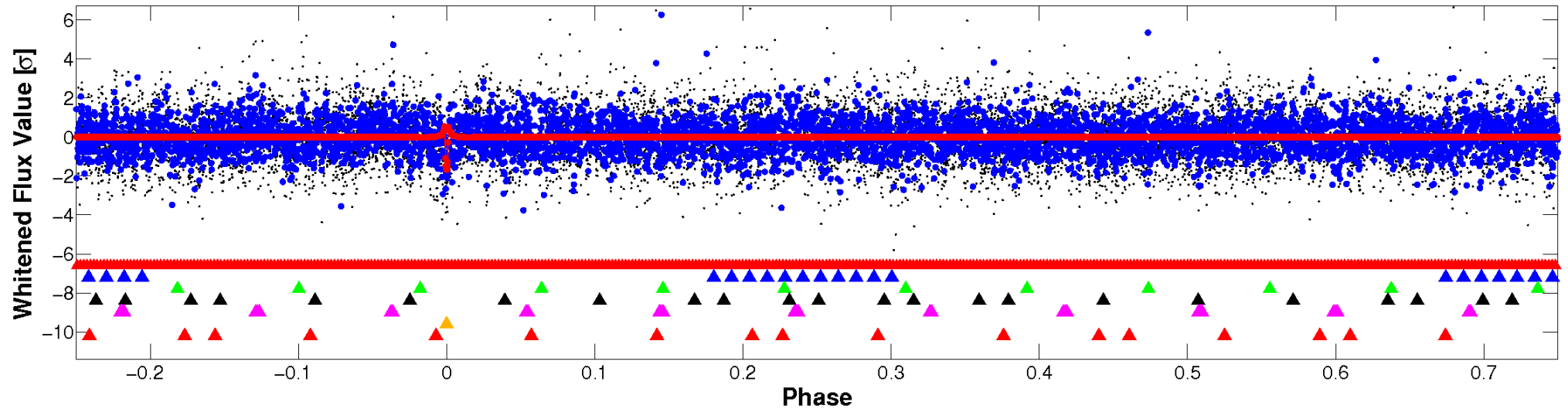


# Non-Whitened Vs. Whitened Light Curve

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

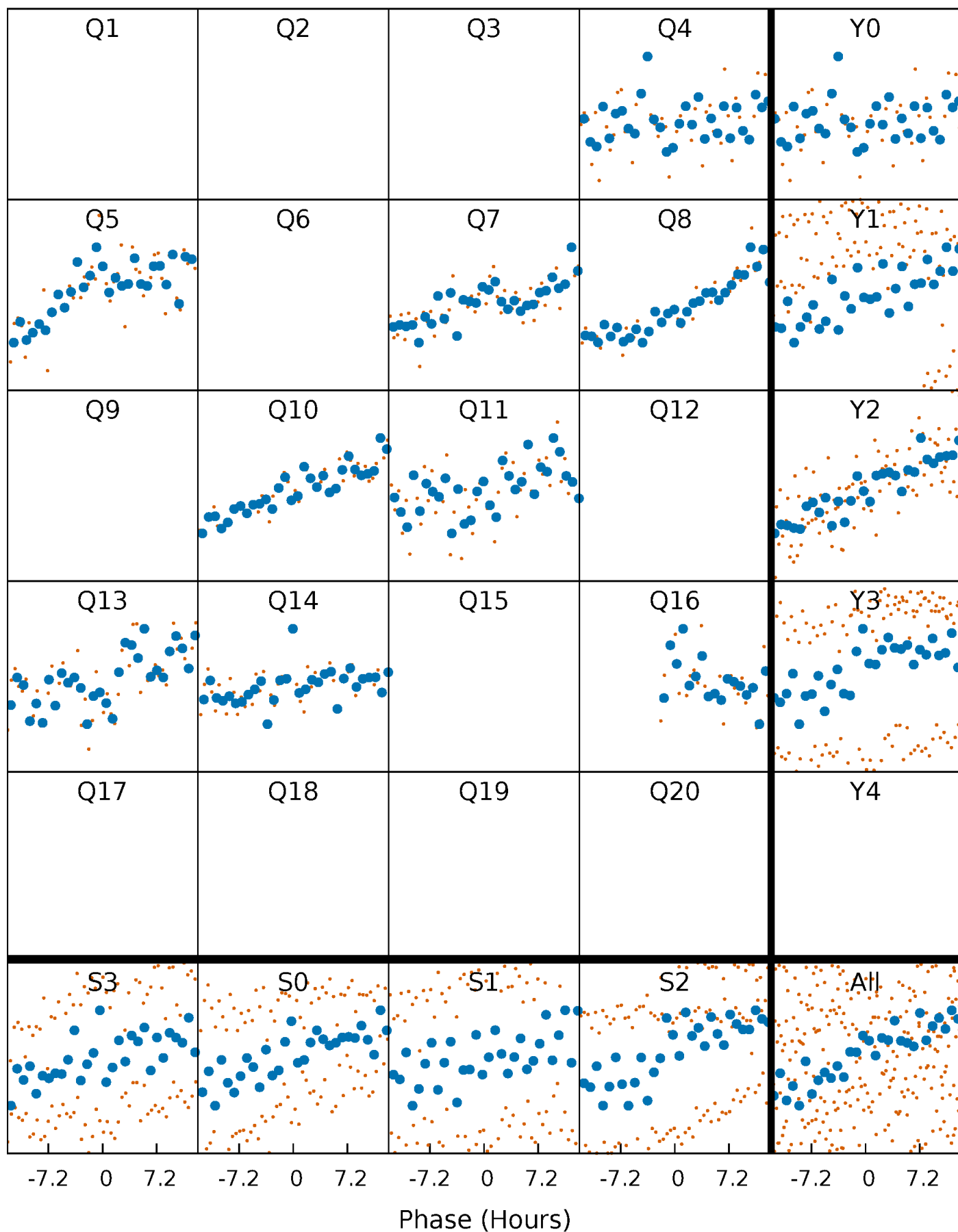


## Planet 6 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

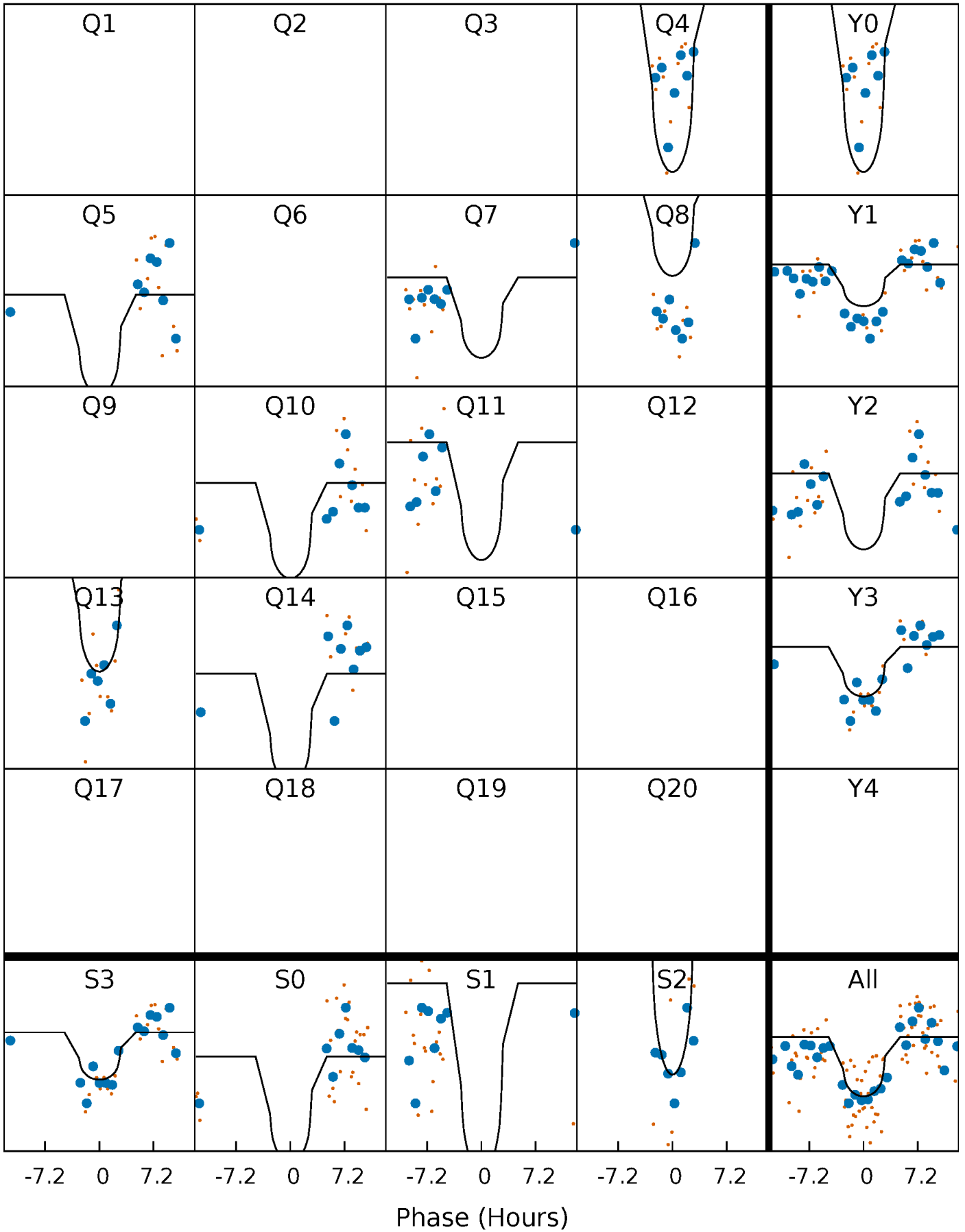
TCE 010341787-06 P=137.876543 Days  $T_0=231.306680$  (BKJD)





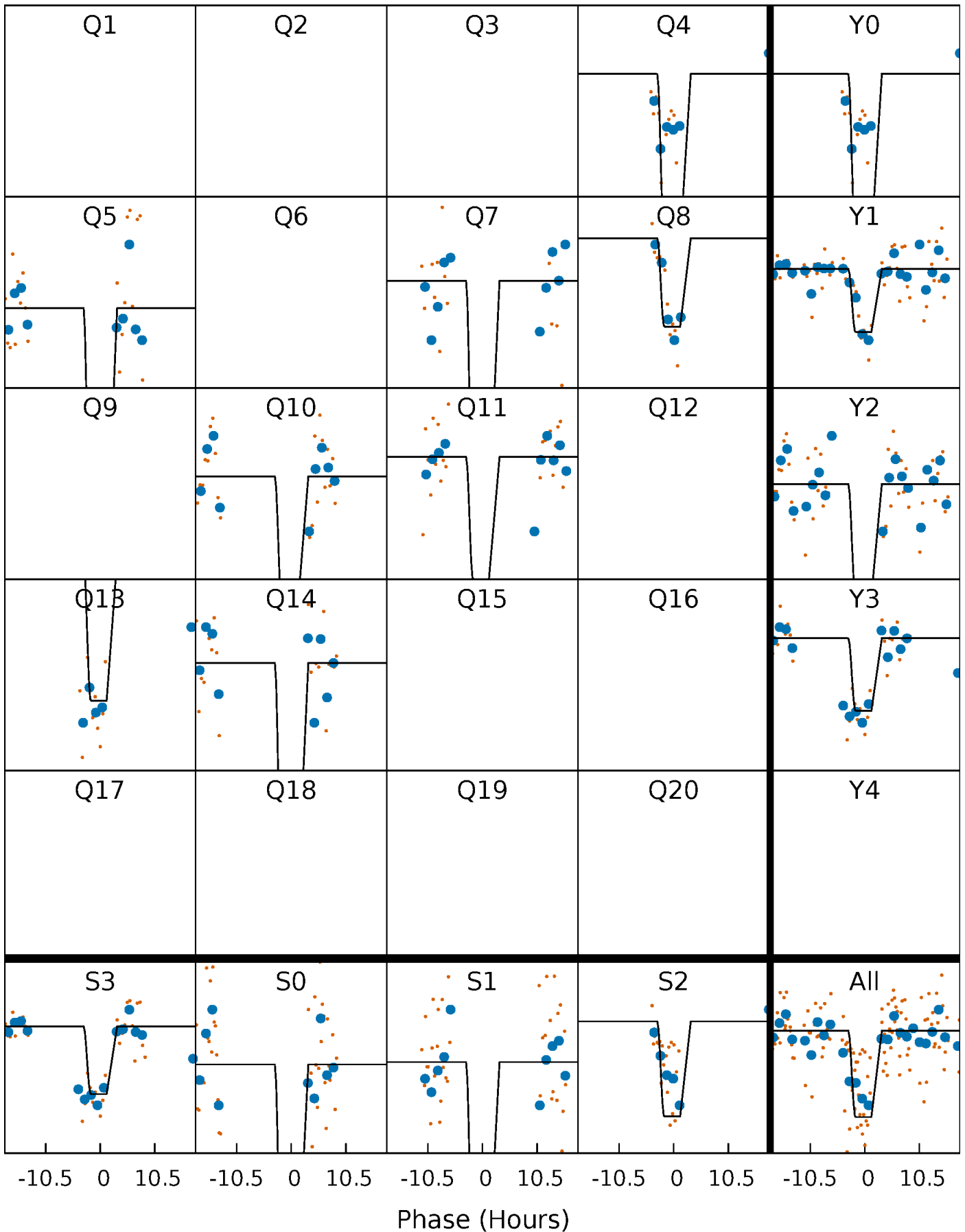
# DV Quarter-Phased Transit Curves

TCE 010341787-06 P=137.876543 Days  $T_0=231.306680$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

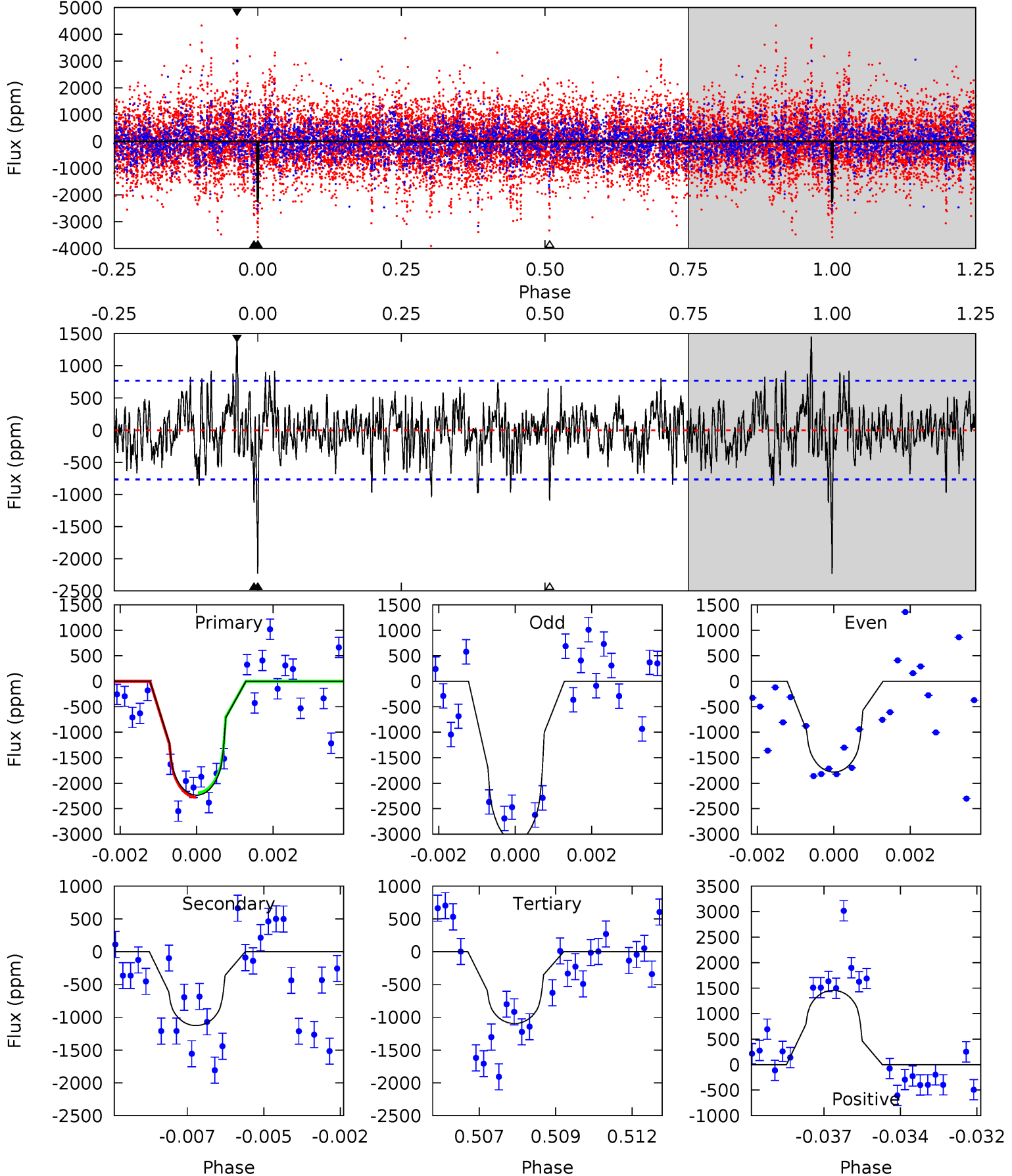
TCE 010341787-06 P=137.875811 Days  $T_0=231.376933$  (BKJD)



# DV Model-Shift Uniqueness Test

010341787-06, P = 137.876543 Days, E = 231.306680 Days

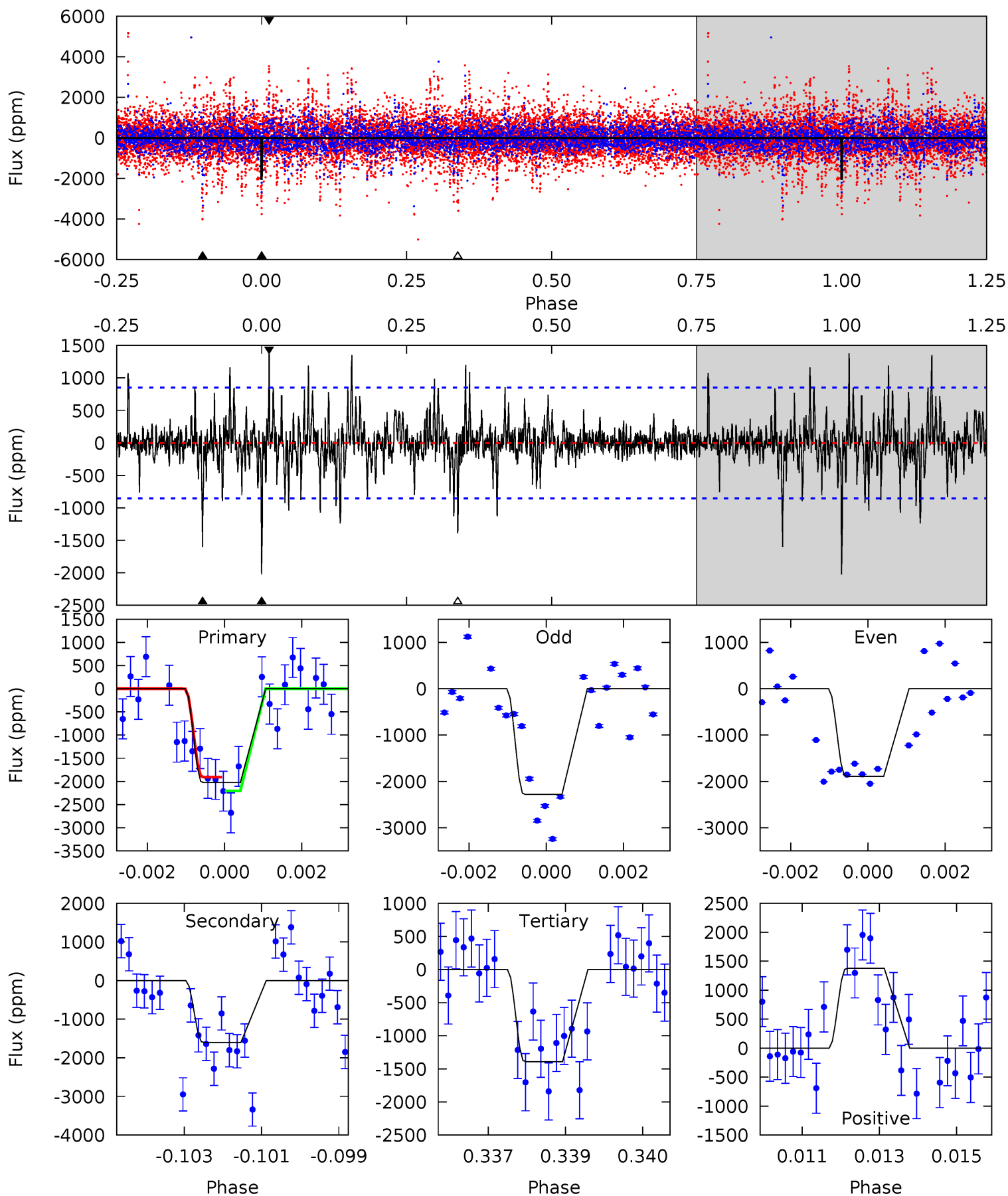
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
15.5	7.80	7.58	10.1	5.30	3.05	2.11	7.88	5.39	0.21	-2.27	4.47	0.95	0.39	0.30



# Alt Model-Shift Uniqueness Test

010341787-06, P = 137.875811 Days, E = 231.376933 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
12.7	10.0	8.71	8.61	5.34	3.11	1.74	3.97	4.06	1.33	1.42	1.19	0.89	0.40	0.87



### Stellar Parameters For KIC 010341787

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5390^{+204}_{-185}$	$4.479^{+0.096}_{-0.132}$	$-0.180^{+0.300}_{-0.300}$	$0.852^{+0.160}_{-0.107}$	$0.798^{+0.113}_{-0.061}$	$1.819^{+0.720}_{-0.717}$
	+4%/-3%	+2%/-3%	+167%/-167%	+19%/-13%	+14%/-8%	+40%/-39%
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 010341787-06 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-1127 \pm 145$	$4.30^{+2.17}_{-2.05}$	$442^{+27}_{-21}$	$4740^{+1609}_{-680}$	$8156^{+20850}_{-4679}$
Alt.	$-1604 \pm 160$	$4.77^{+1.93}_{-1.92}$	$443^{+26}_{-21}$	$4901^{+1307}_{-657}$	$9253^{+17274}_{-4635}$

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

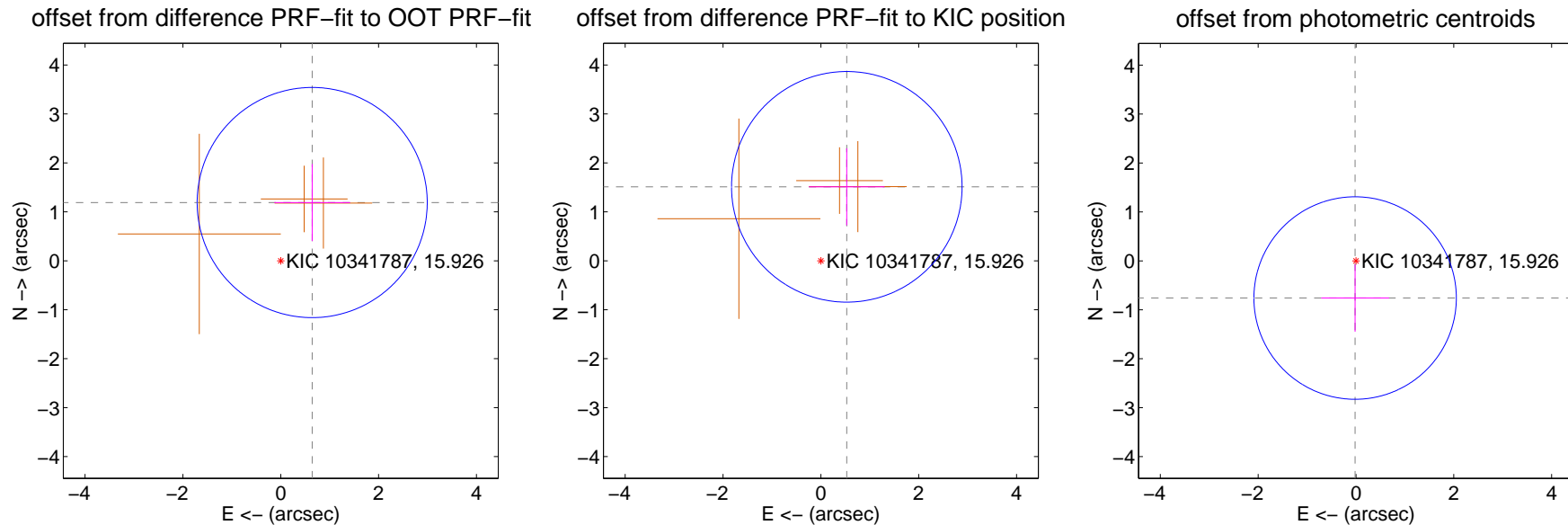
## DV Centroid Data

Supplemental centroid analysis for 010341787-06. Kepler magnitude: 15.93. Transit SNR 8.88

There are 0 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.31 arcsec

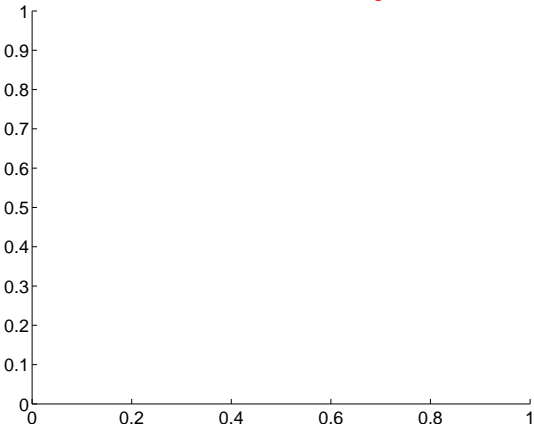
	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.353 \pm 0.784$	1.73	$-0.643 \pm 0.774$	$1.190 \pm 0.787$
PRF-fit source offset from KIC position	$1.602 \pm 0.785$	2.04	$-0.530 \pm 0.774$	$1.511 \pm 0.787$
photometric centroid source offset	$0.76 \pm 0.69$	1.10	$0.02 \pm 0.69$	$-0.76 \pm 0.69$



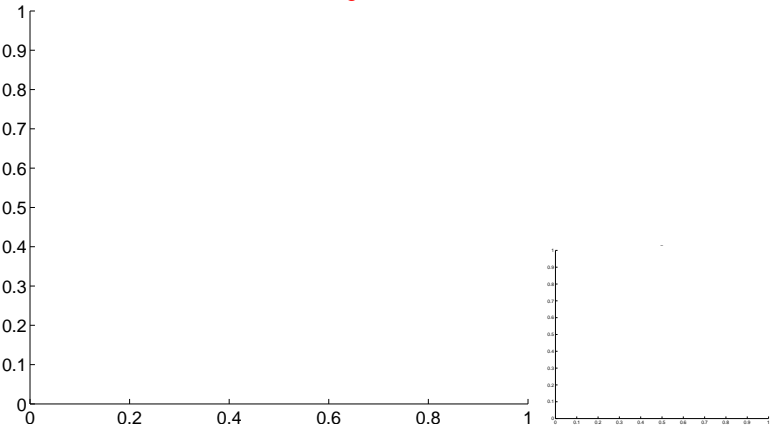
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

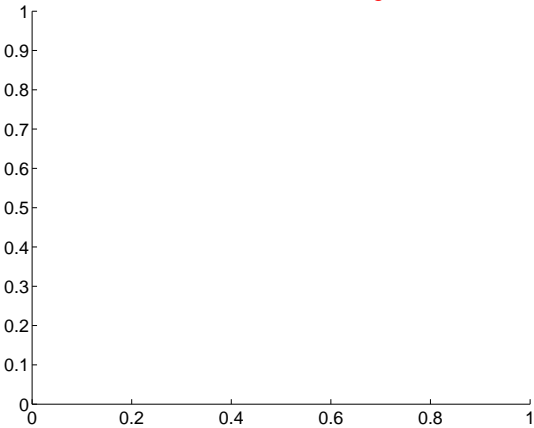
Q1 no difference image



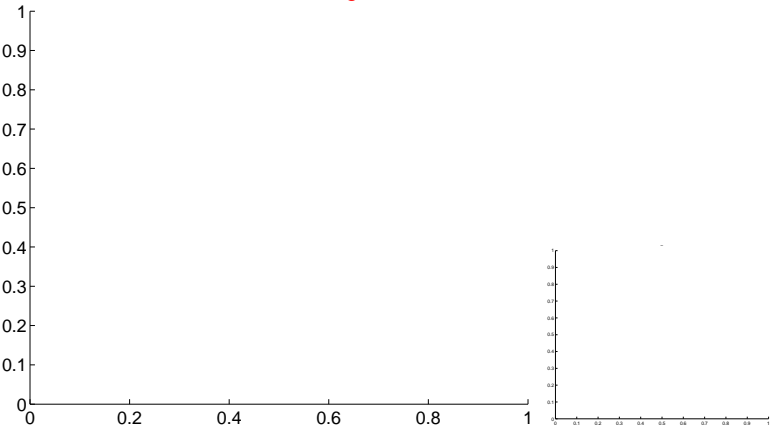
Q1 no OOT image



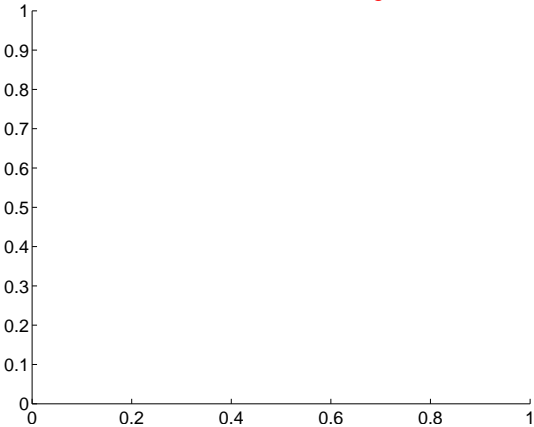
Q2 no difference image



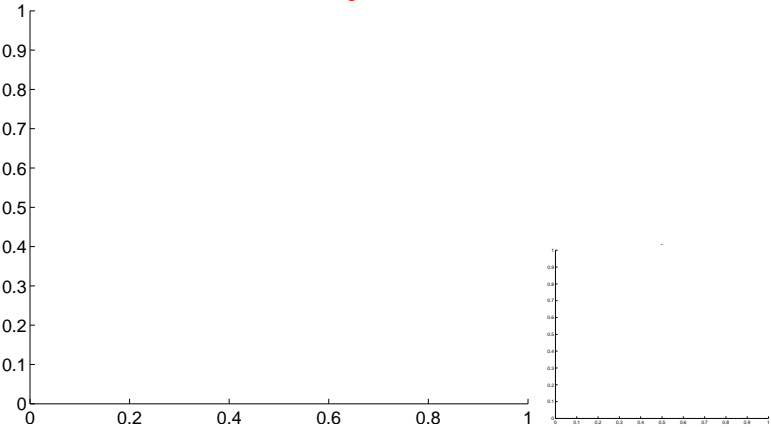
Q2 no OOT image



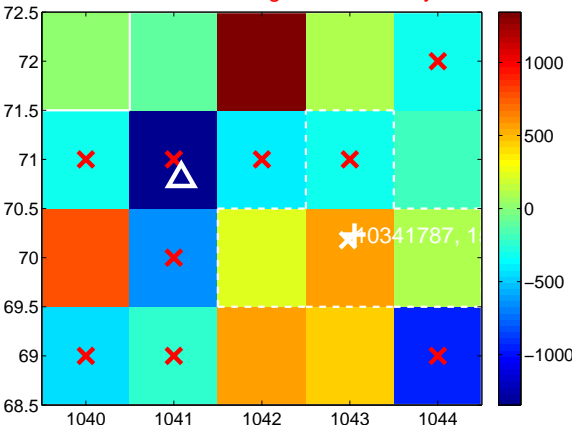
Q3 no difference image



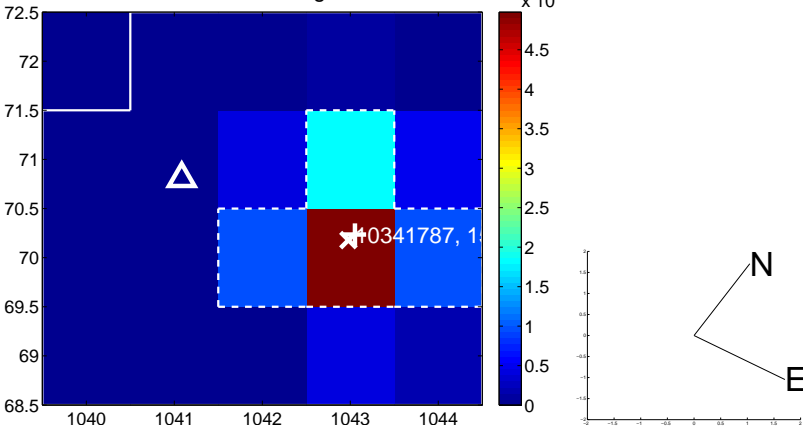
Q3 no OOT image



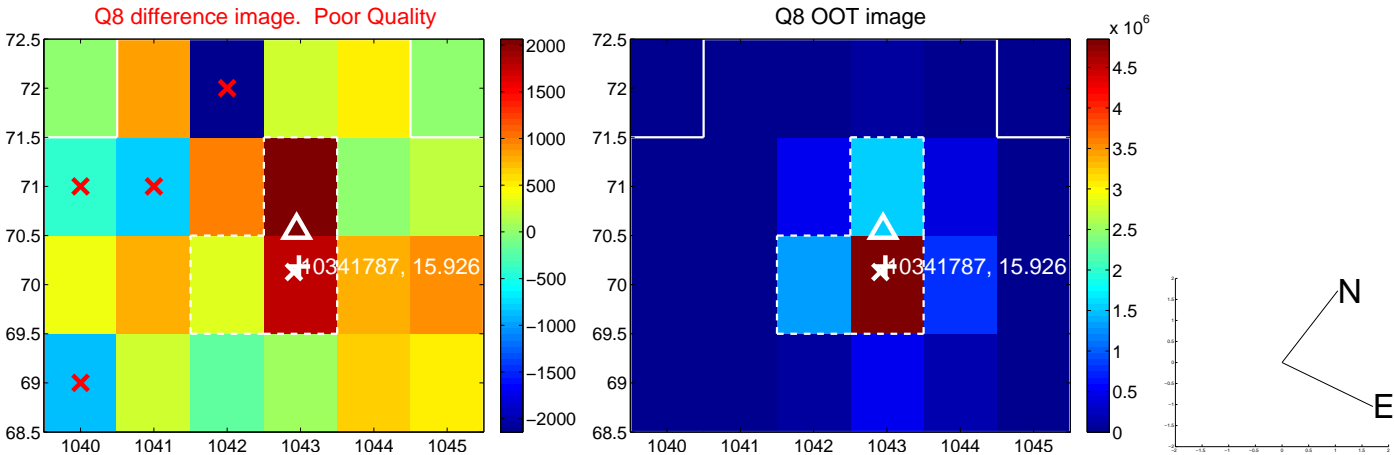
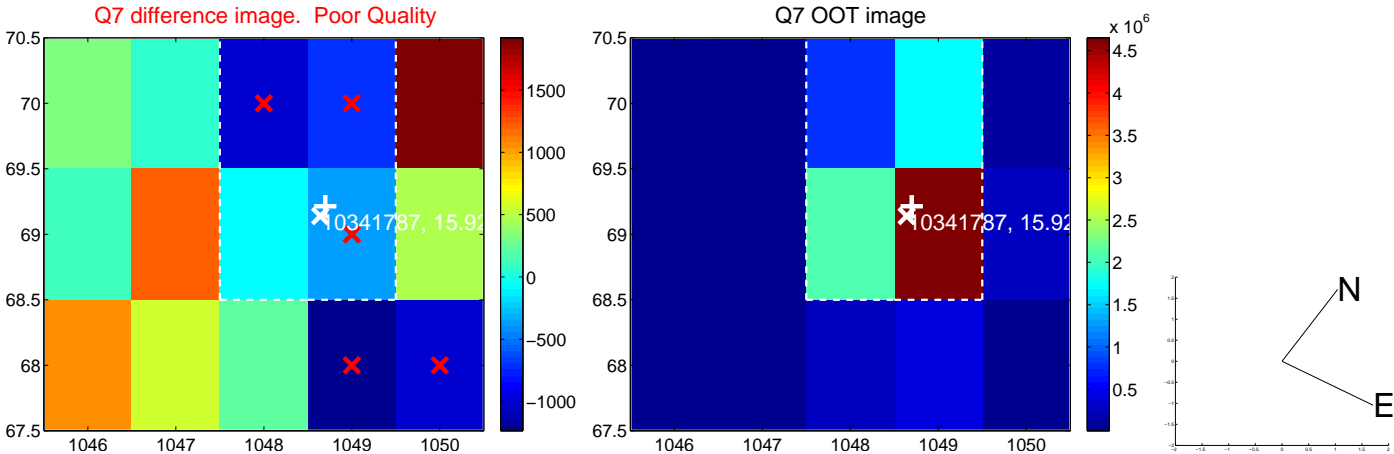
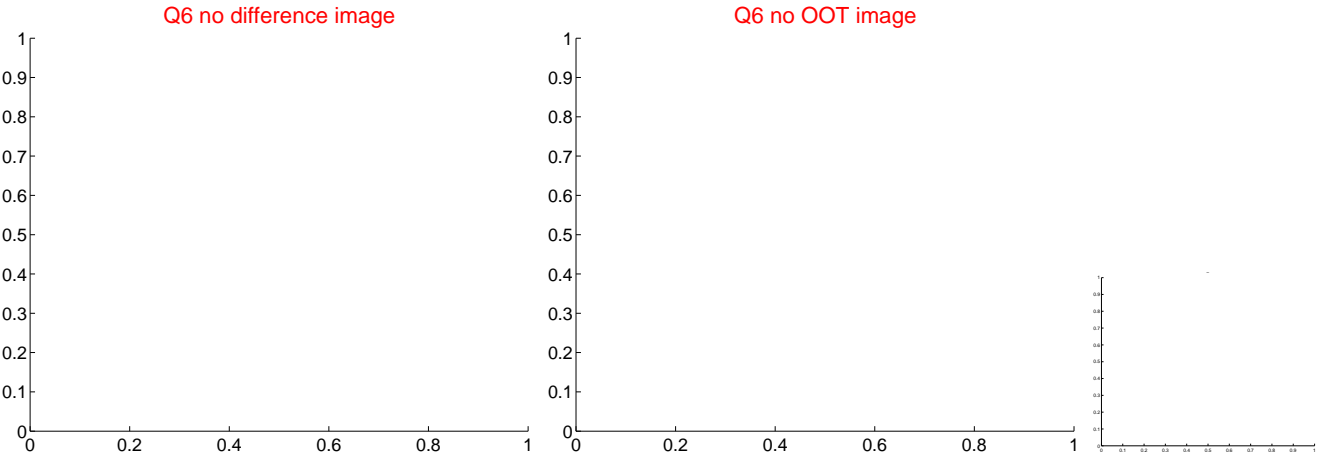
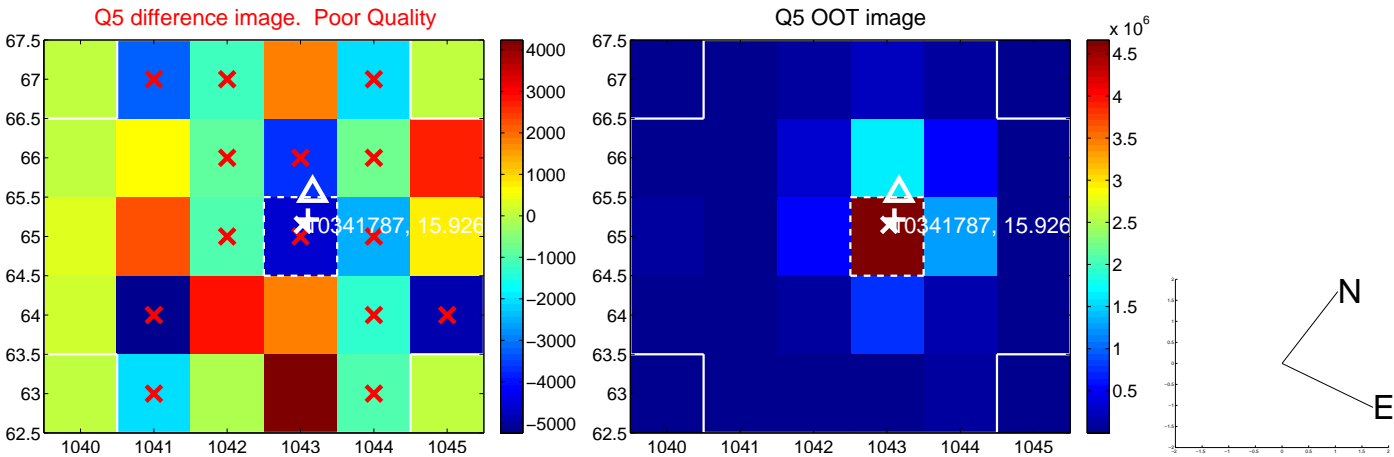
Q4 difference image. Poor Quality



Q4 OOT image

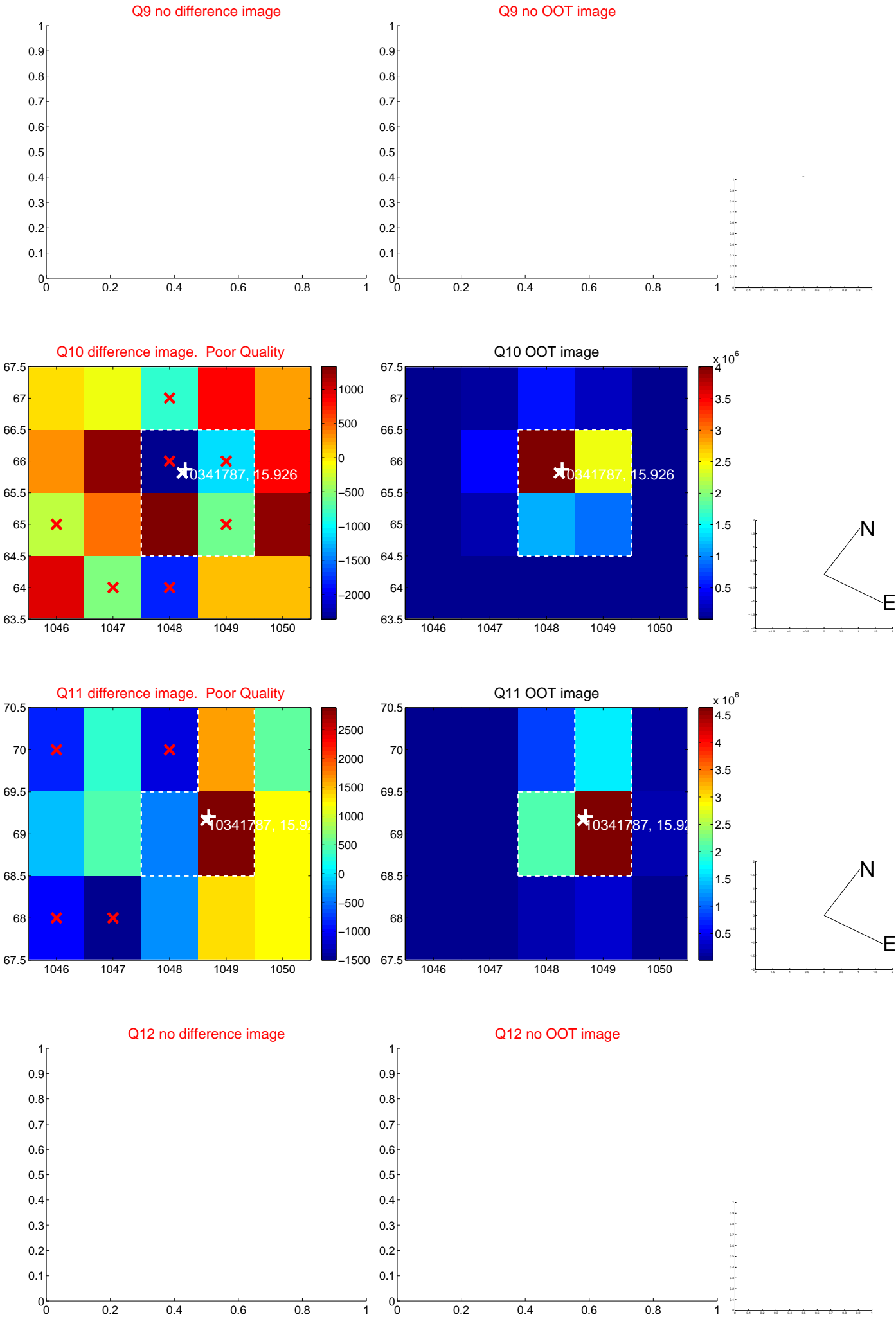


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

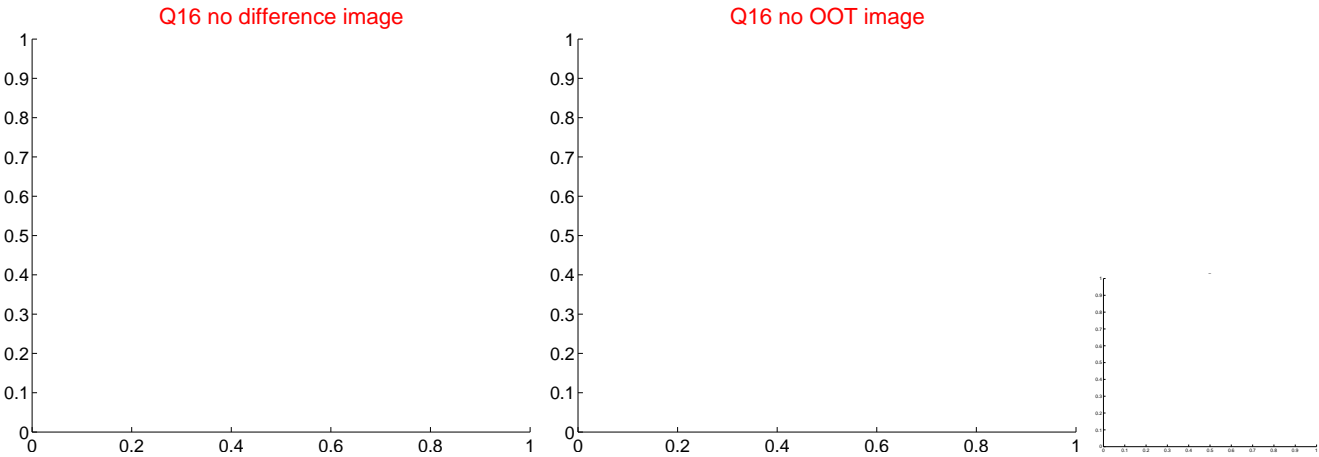
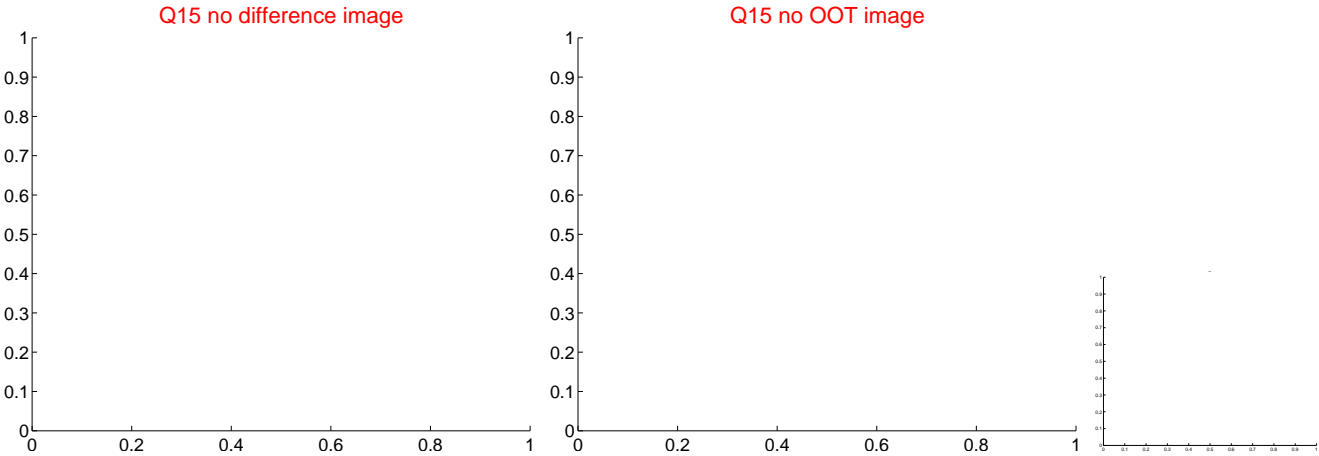
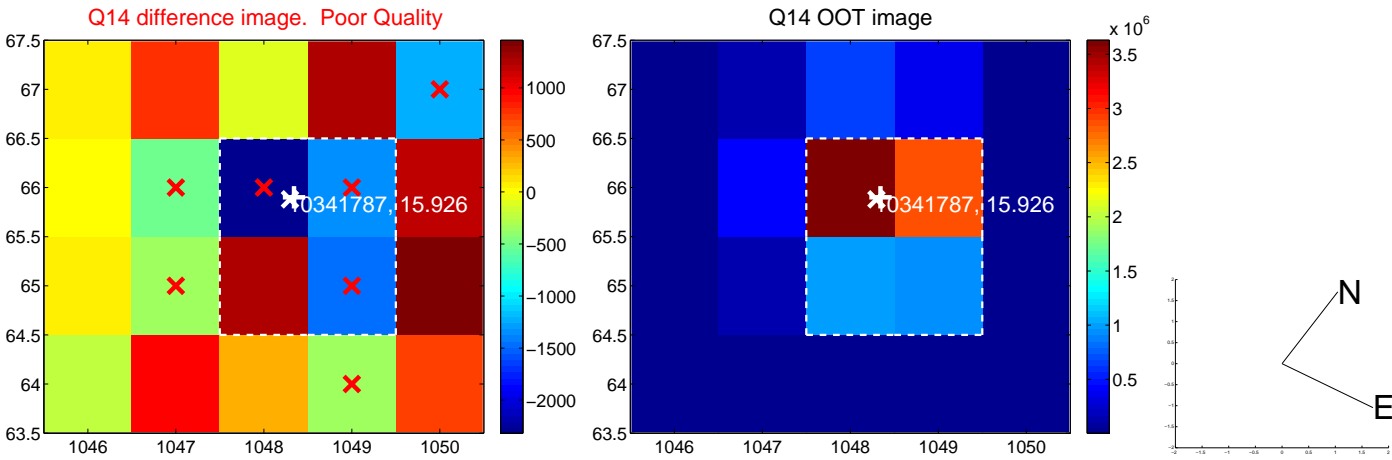
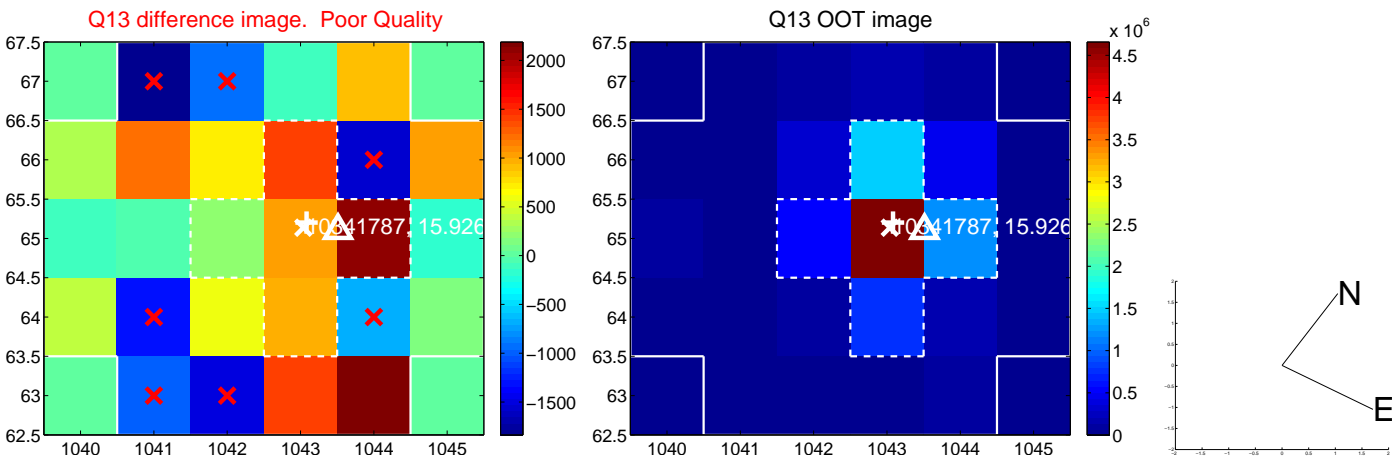




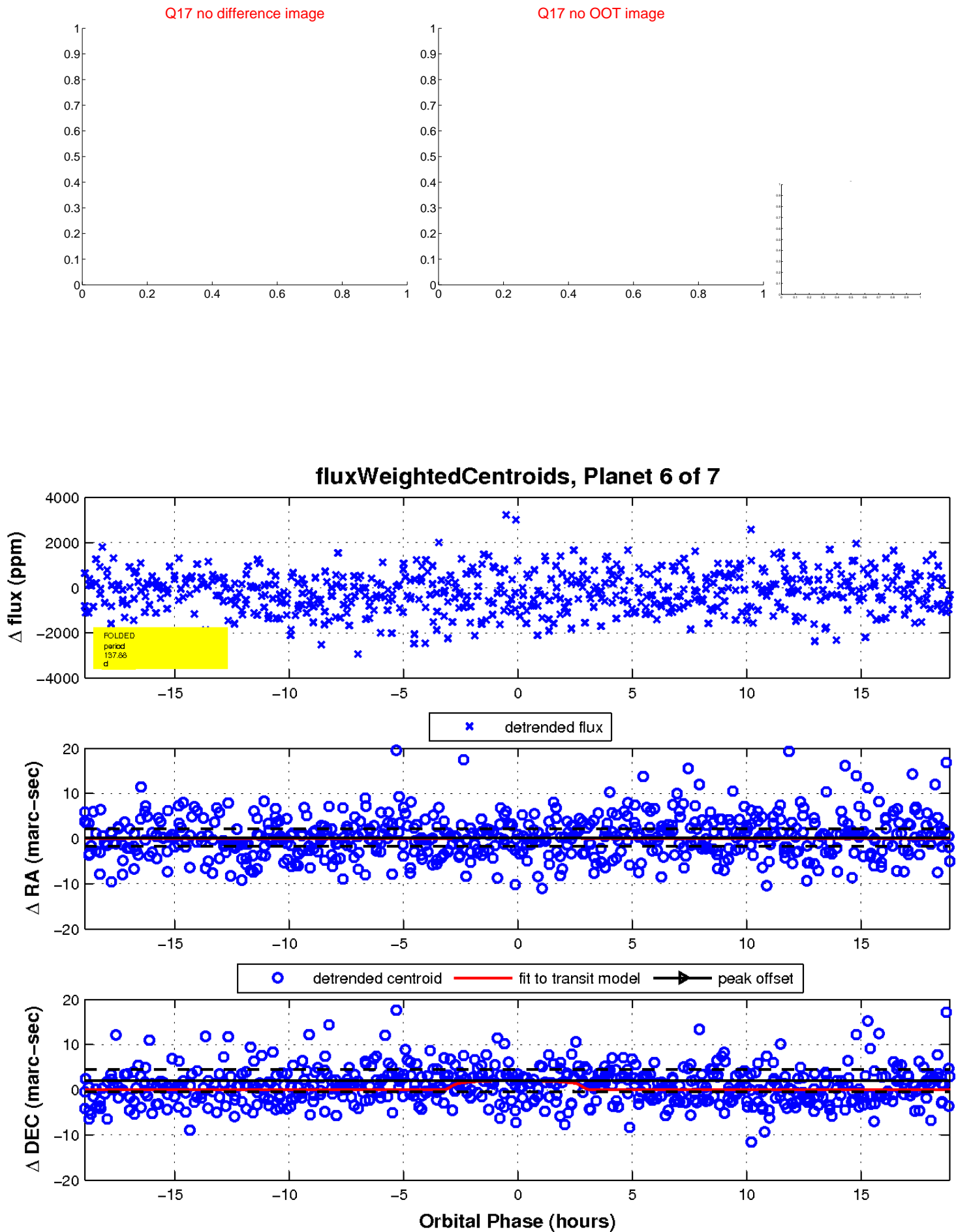
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

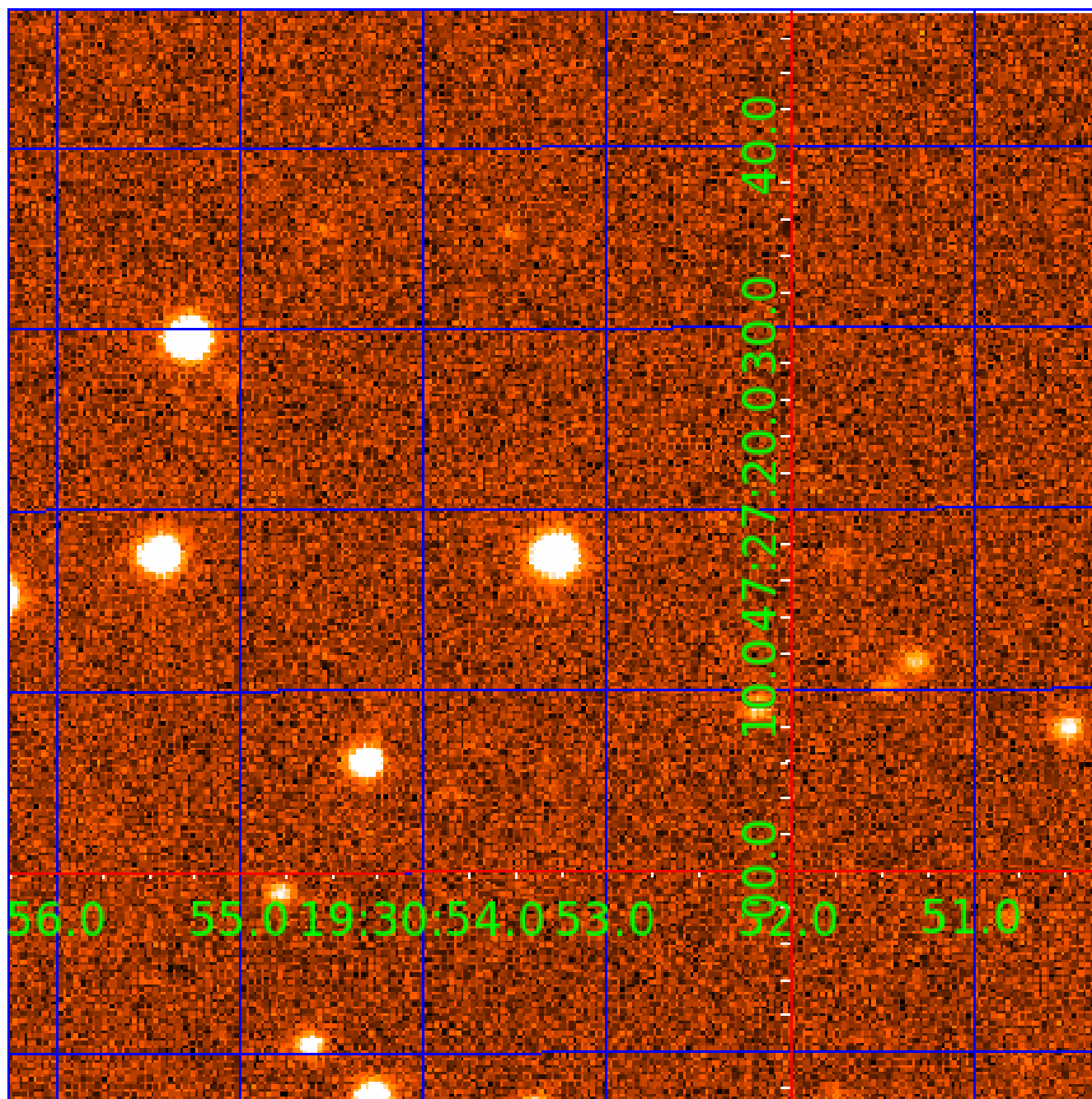


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 010341787

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
010341787-01	OBS	7313.01	0.933702	132.493752	134.3	5.393	11.6	14.7	0.85	5390	1.05	1825.01
010341787-02	OBS	No	68.110371	134.857375	1334.2	8.034	14.5	7.3	0.85	5390	3.57	5.99
010341787-03	OBS	No	126.582042	181.331214	1534.4	9.100	11.4	6.6	0.85	5390	3.45	2.62
010341787-04	OBS	No	64.524387	142.983279	1038.3	9.783	11.2	6.4	0.85	5390	3.23	6.43
010341787-05	OBS	No	50.152671	150.808918	1104.9	14.225	10.7	7.3	0.85	5390	3.40	9.01
010341787-06	OBS	No	137.876543	231.306680	2010.6	6.336	10.3	8.9	0.85	5390	4.13	2.34
010341787-07	OBS	No	85.064483	174.685007	1329.9	9.343	10.6	7.7	0.85	5390	3.75	4.45

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010341787-01	OBS	FP	0.00	0	0	1	1	CENT_RESOLVED_OFFSET—HALO_GHOST—EPHEM_MATCH
010341787-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
010341787-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
010341787-04	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_FEW_DIFFS—HALO_GHOST
010341787-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
010341787-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
010341787-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS

**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 010341787-07

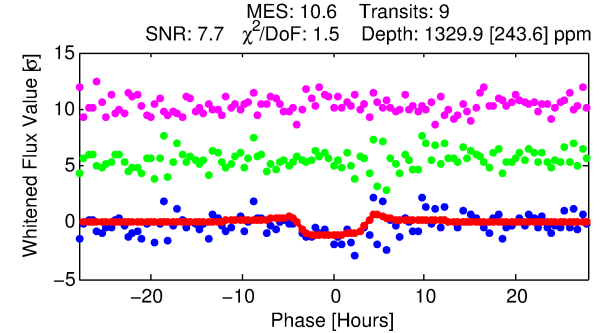
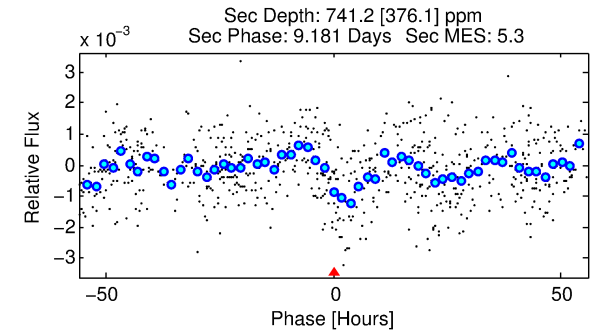
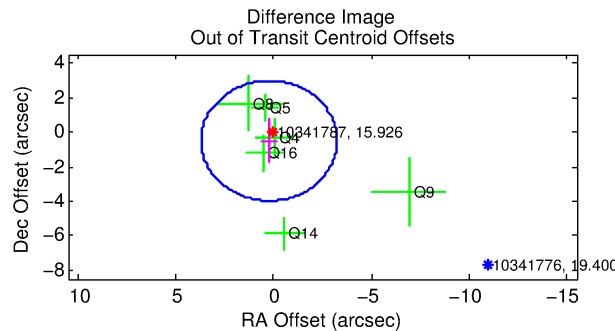
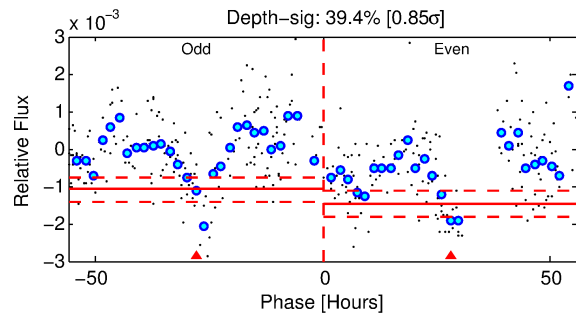
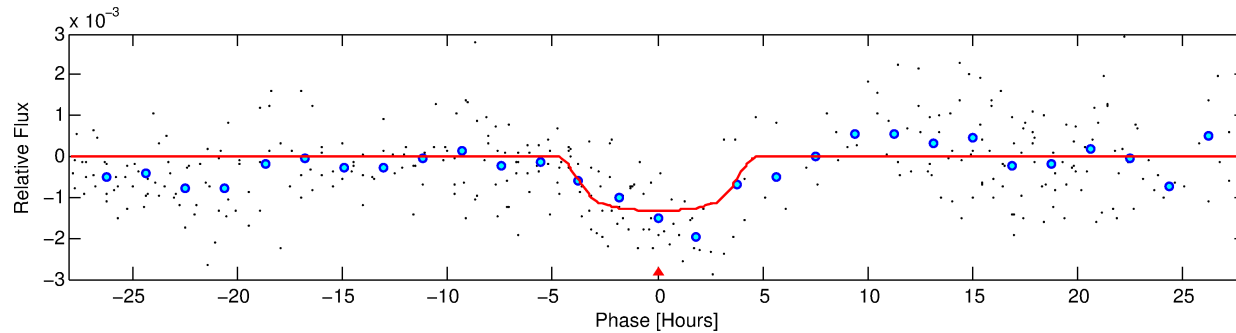
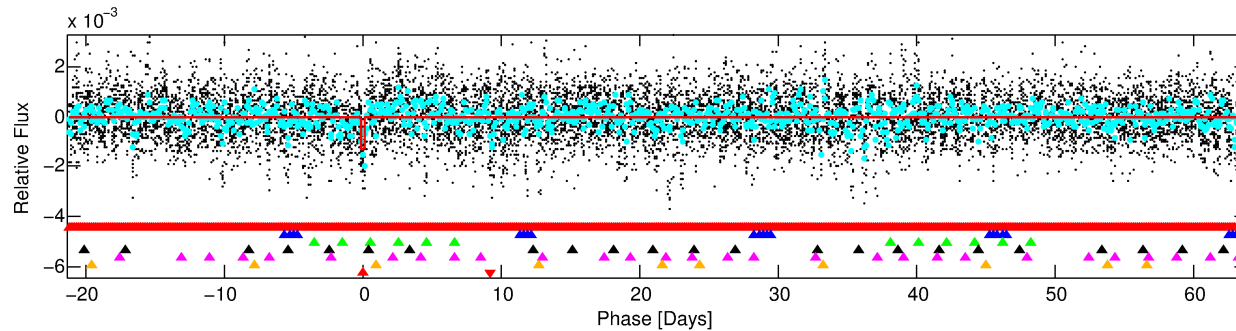
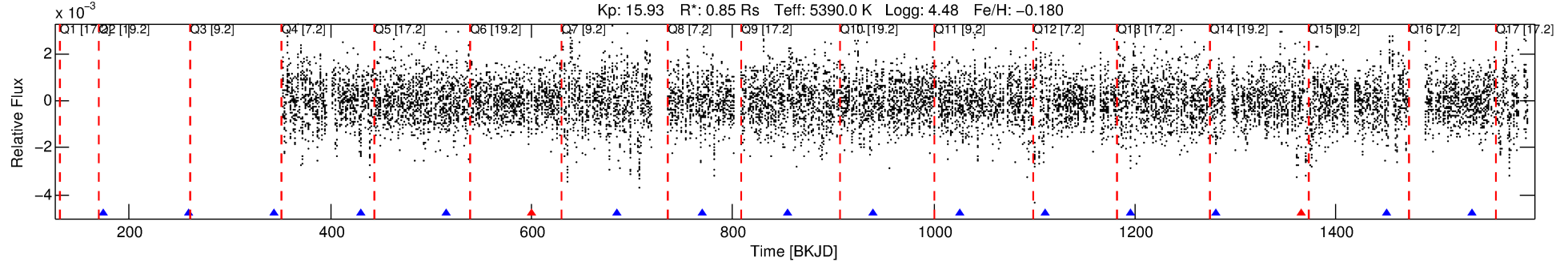
No Significant Match Found

# DV One-Page Summary

KIC: 10341787 Candidate: 7 of 7 Period: 85.064 d

KOI: K07313 Corr: No Ephemeris Match

Kp: 15.93 R\*: 0.85 Rs Teff: 5390.0 K Logg: 4.48 Fe/H: -0.180



## DV Fit Results:

Period = 85.06448 [0.00322] d  
Epoch = 174.6850 [0.0343] BKJD  
Rp/R\* = 0.0403 [0.0057]  
a/R\* = 35.79 [13.84]  
b = 0.90 [0.08]  
Seff = 4.45 [1.26]  
Teq = 370 [26] K  
Rp = 3.75 [0.88] Re  
a = 0.3511 [0.0566] AU  
Ag = 3575.96 [2241.87] [1.59σ]  
Teffp = 4428 [664] K [6.11σ]

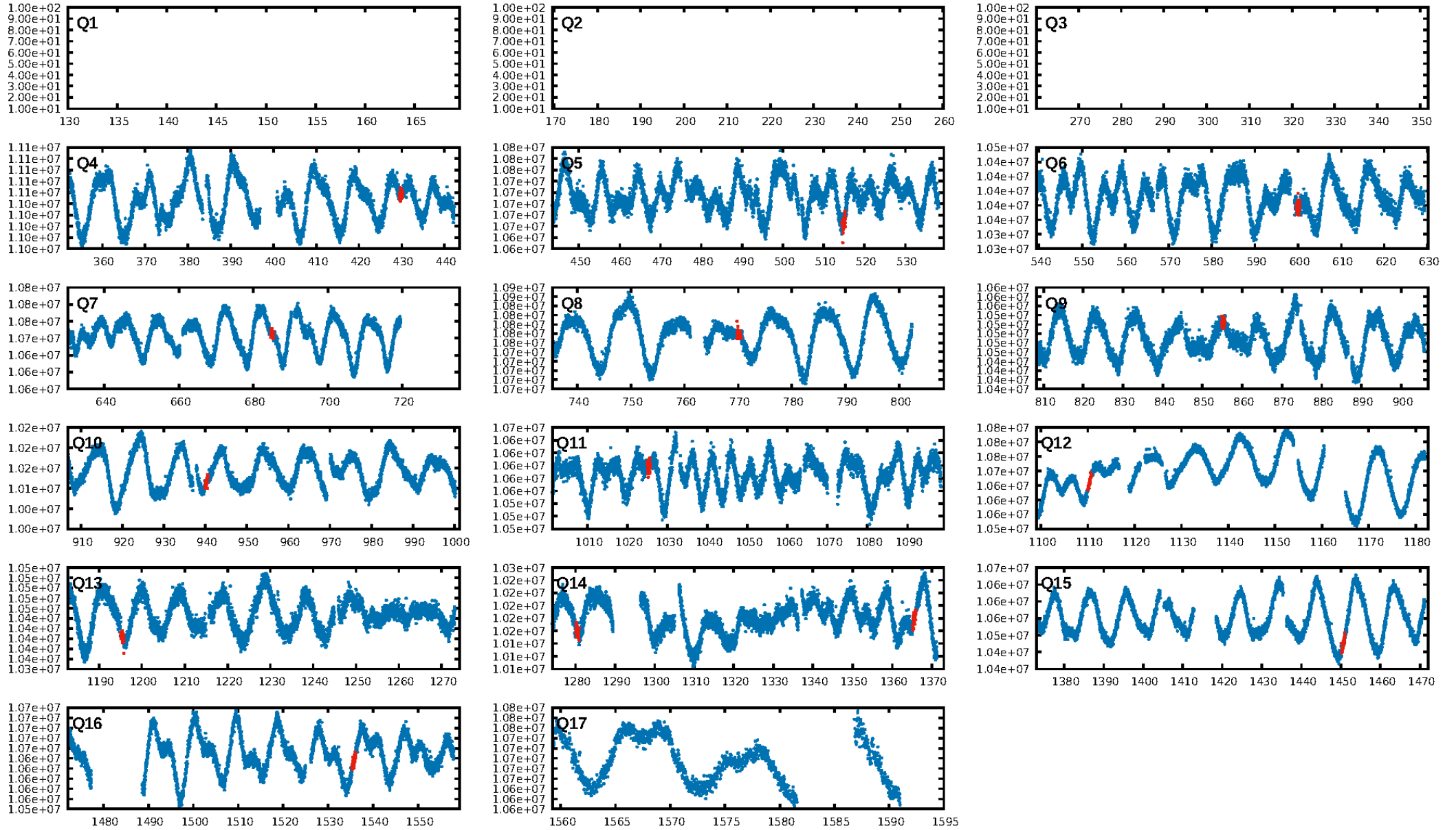
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [33.02σ]  
LongPeriod-sig: 100.0% [76.40σ]  
ModelChiSquare2-sig: 4.6%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 1.10e-13  
RollingBand-fgt: 0.78 [7/9]  
GhostDiagnostic-chr: 3.682  
Centroid-sig: 5.0%  
Centroid-so: 1.154 arcsec [1.61σ]  
OotOffset-rm: 0.555 arcsec [0.48σ]  
OotOffset-st: 1/0/3/2 [6]  
KicOffset-rm: 0.324 arcsec [0.30σ]  
KicOffset-st: 1/0/3/2 [6]  
DiffImageQuality-fgm: 0.33 [2/6]  
DiffImageOverlap-fno: 0.00 [0/10]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 00:57:08 Z

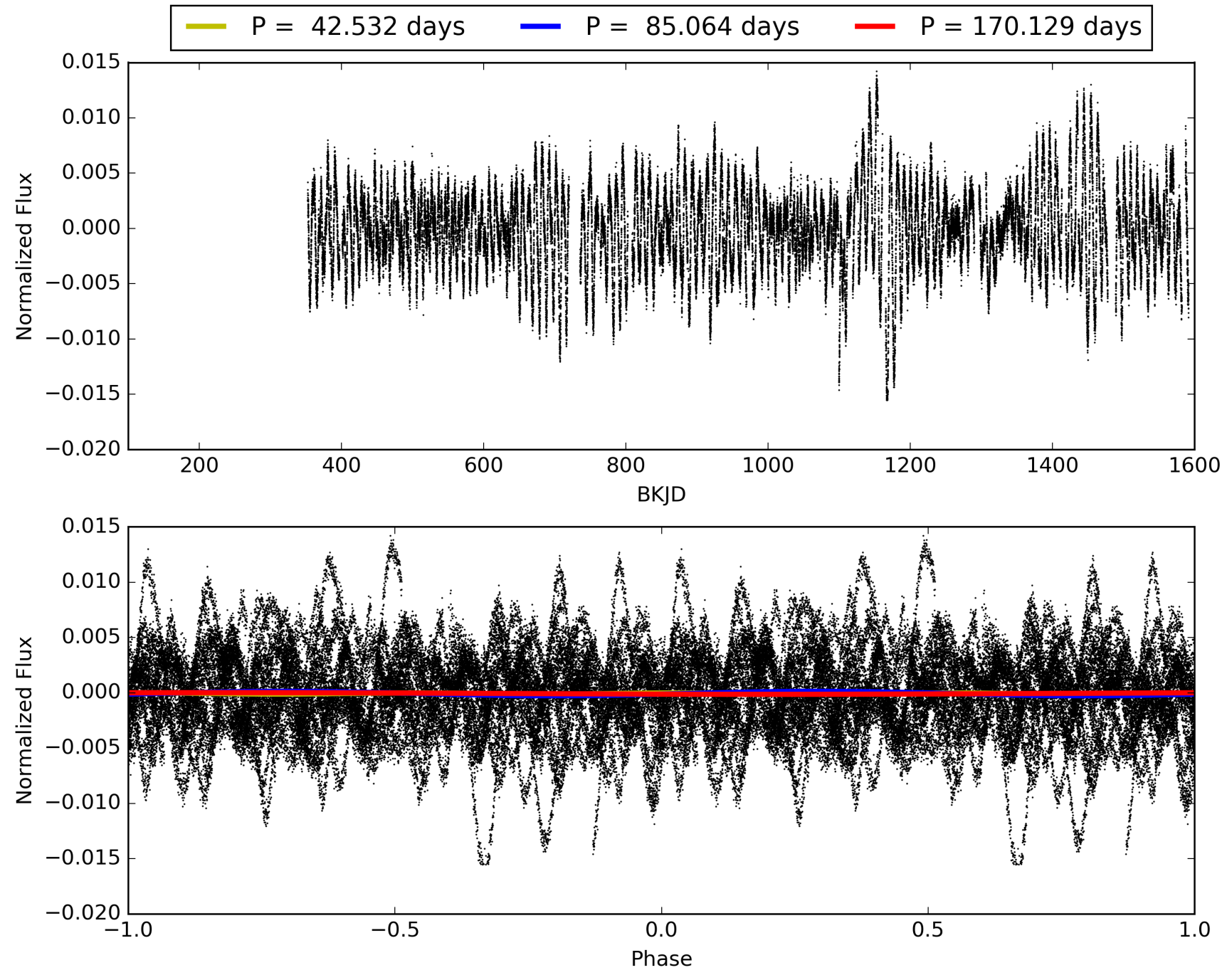
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 010341787-07, PDC Light Curves





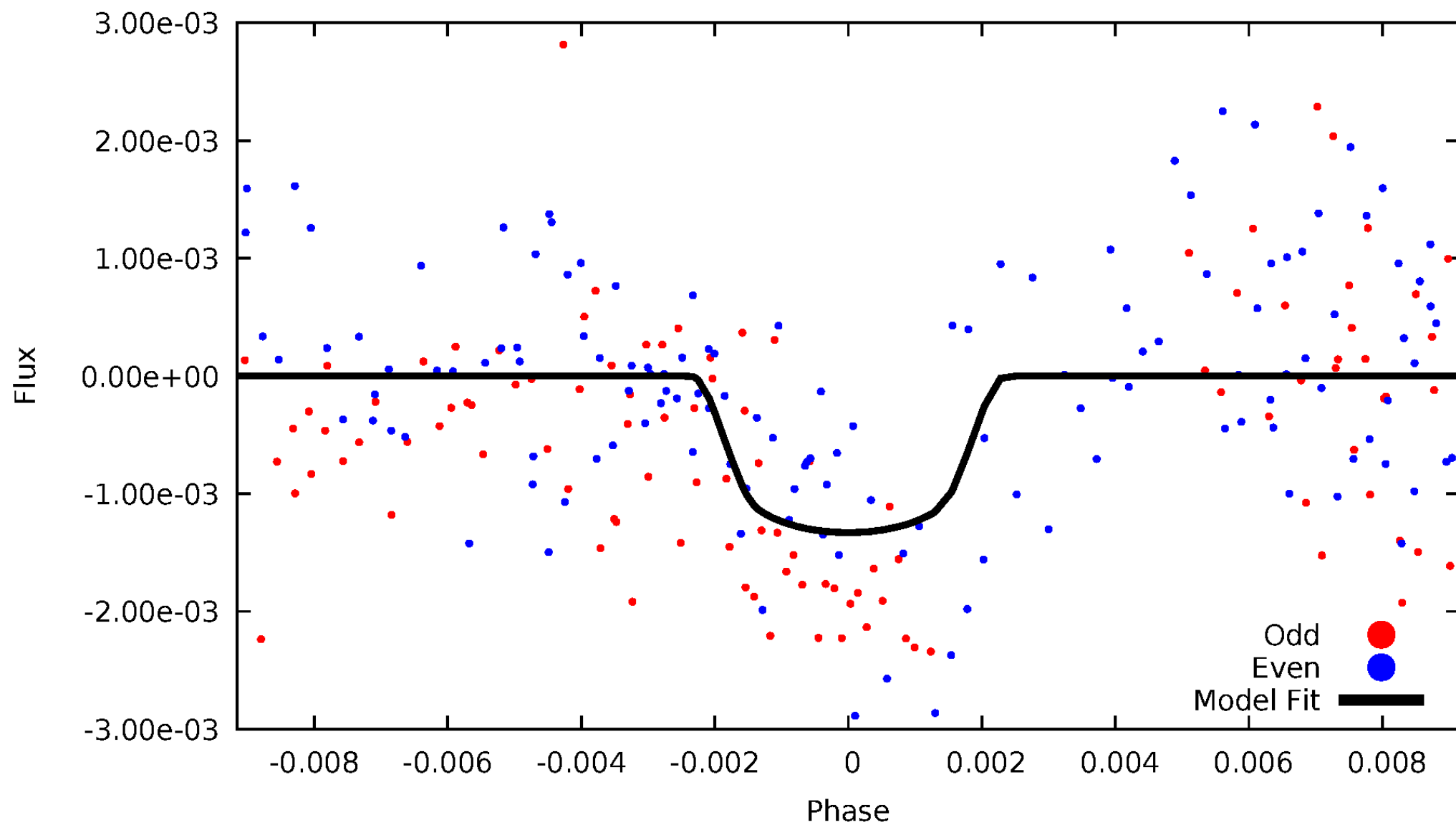
# TCE 010341787-07





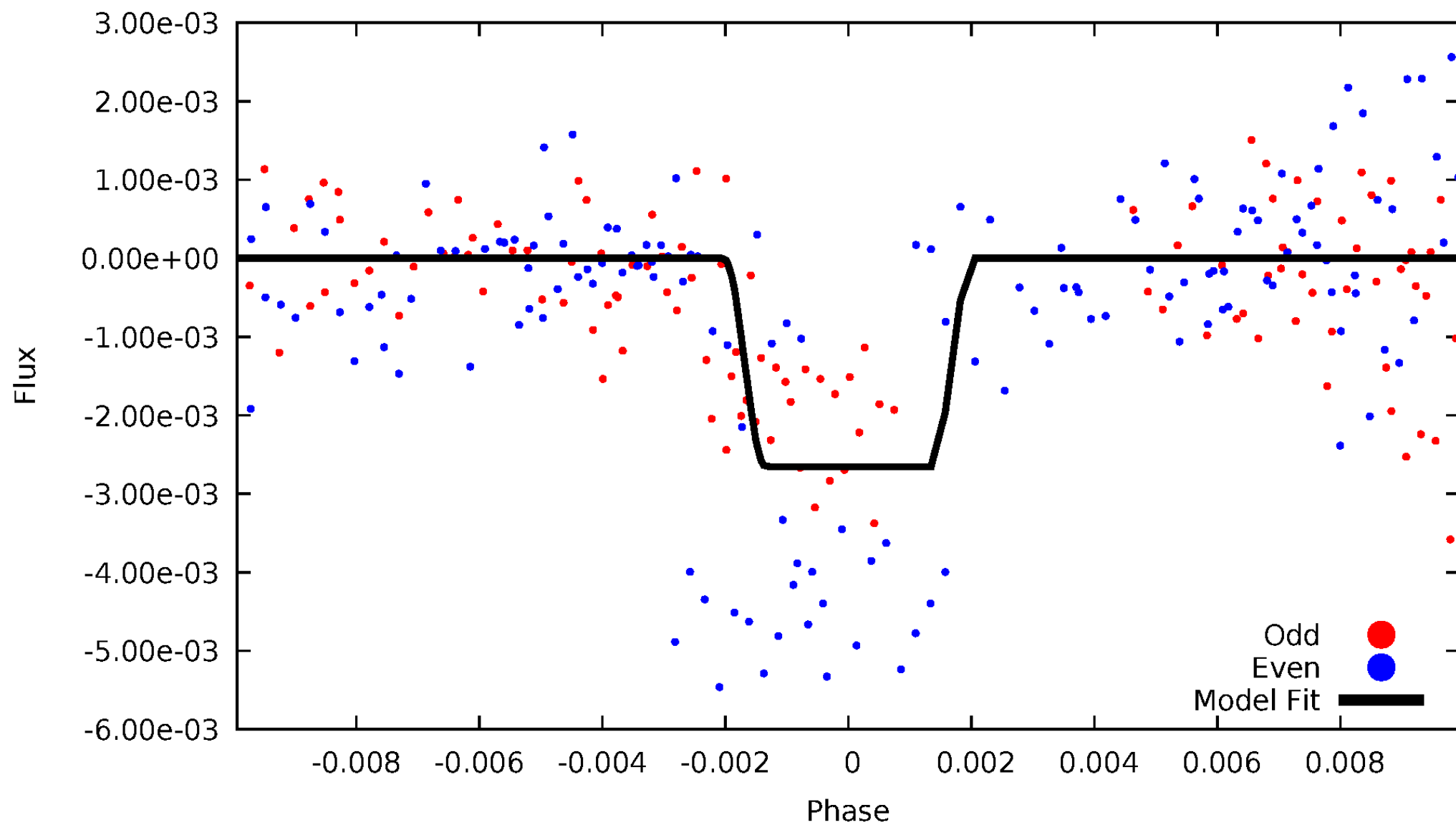
# DV Odd/Even

TCE 010341787-07



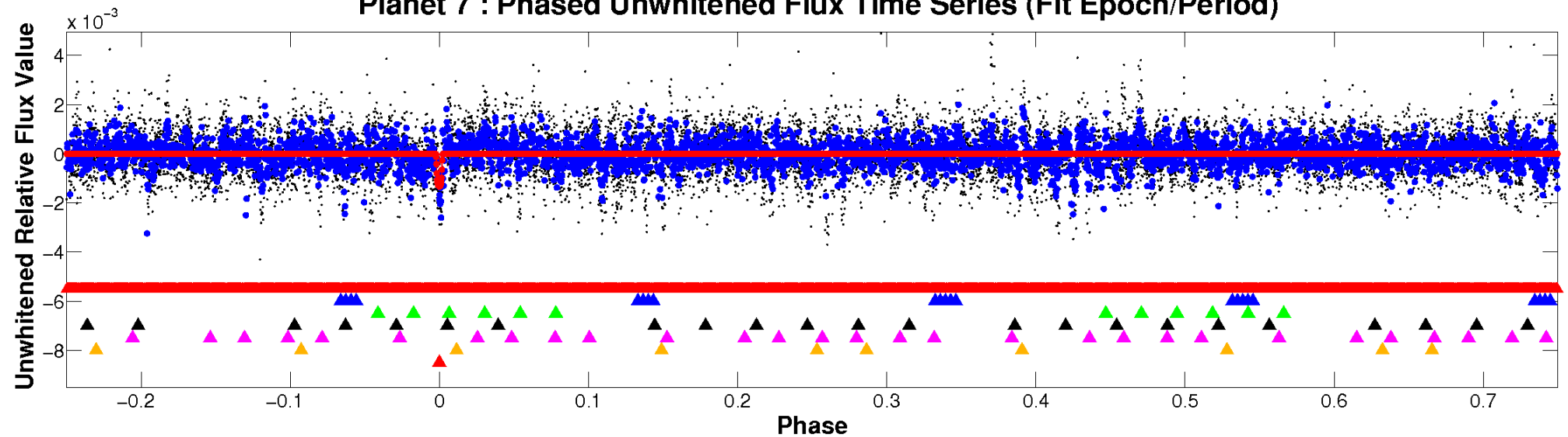
# ALT Odd/Even

TCE 010341787-07

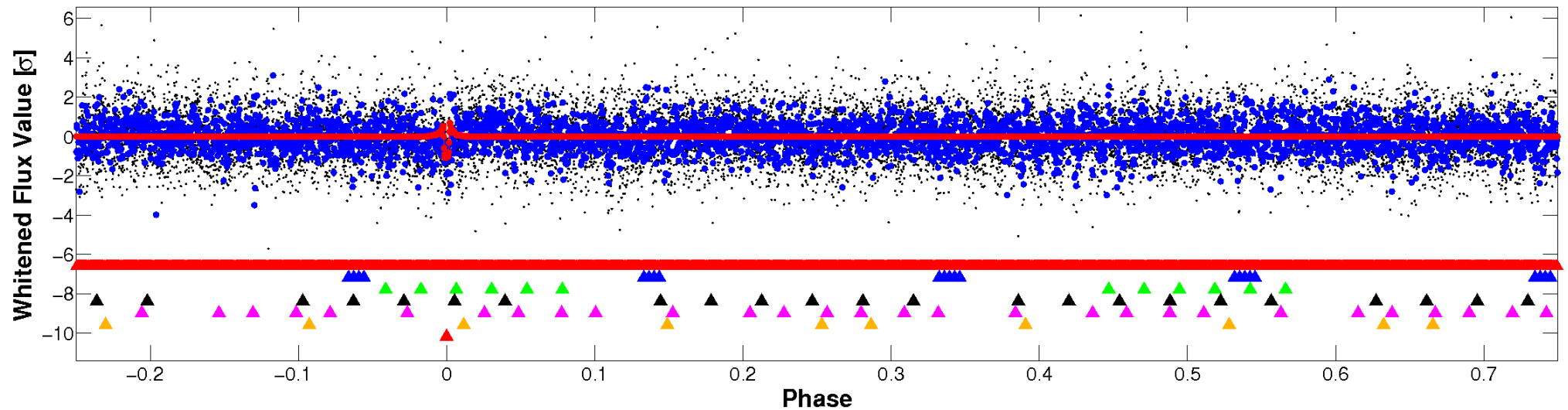


# Non-Whitened Vs. Whitened Light Curve

## Planet 7 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

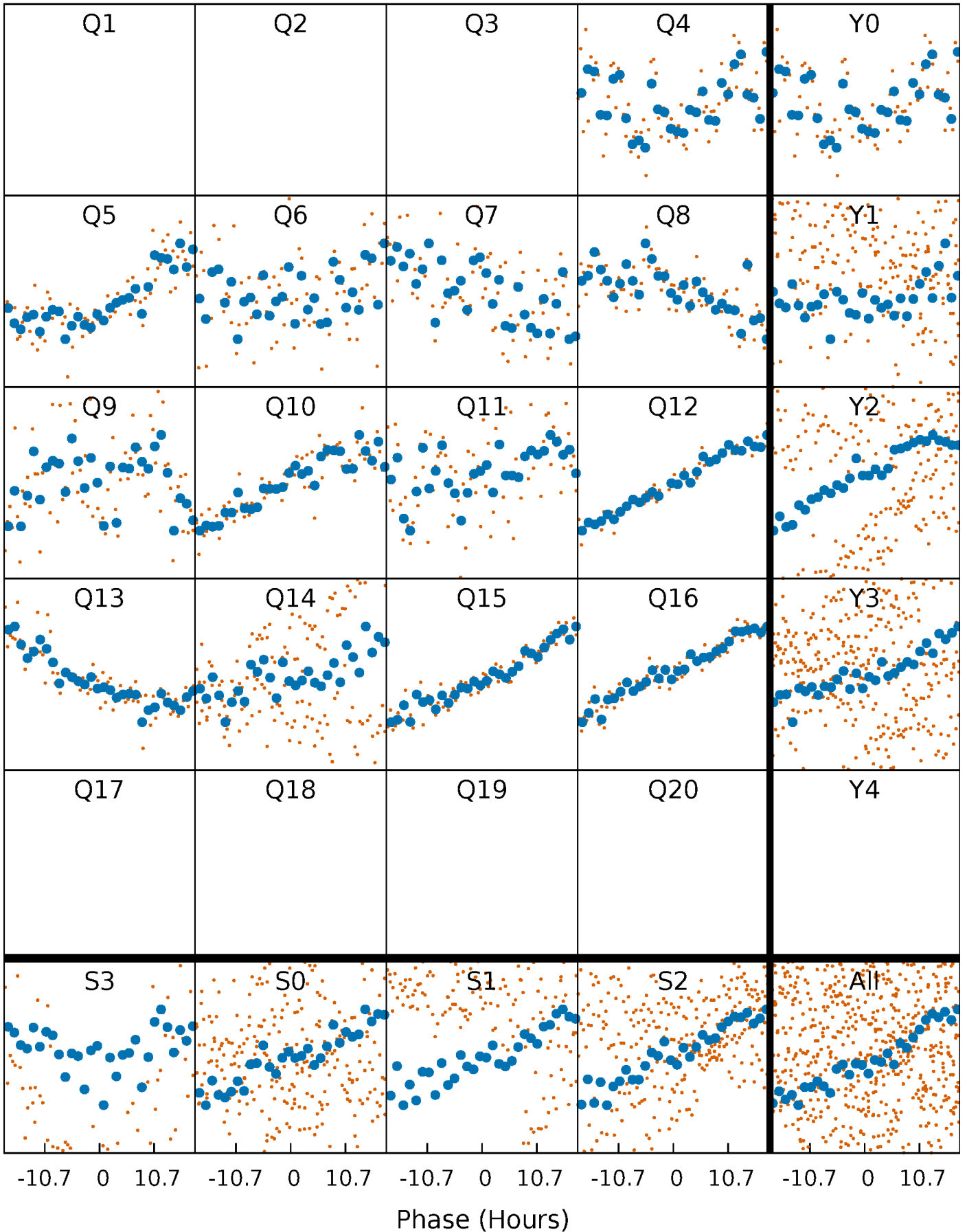


## Planet 7 : Phased Whitened Flux Time Series (Fit Epoch/Period)



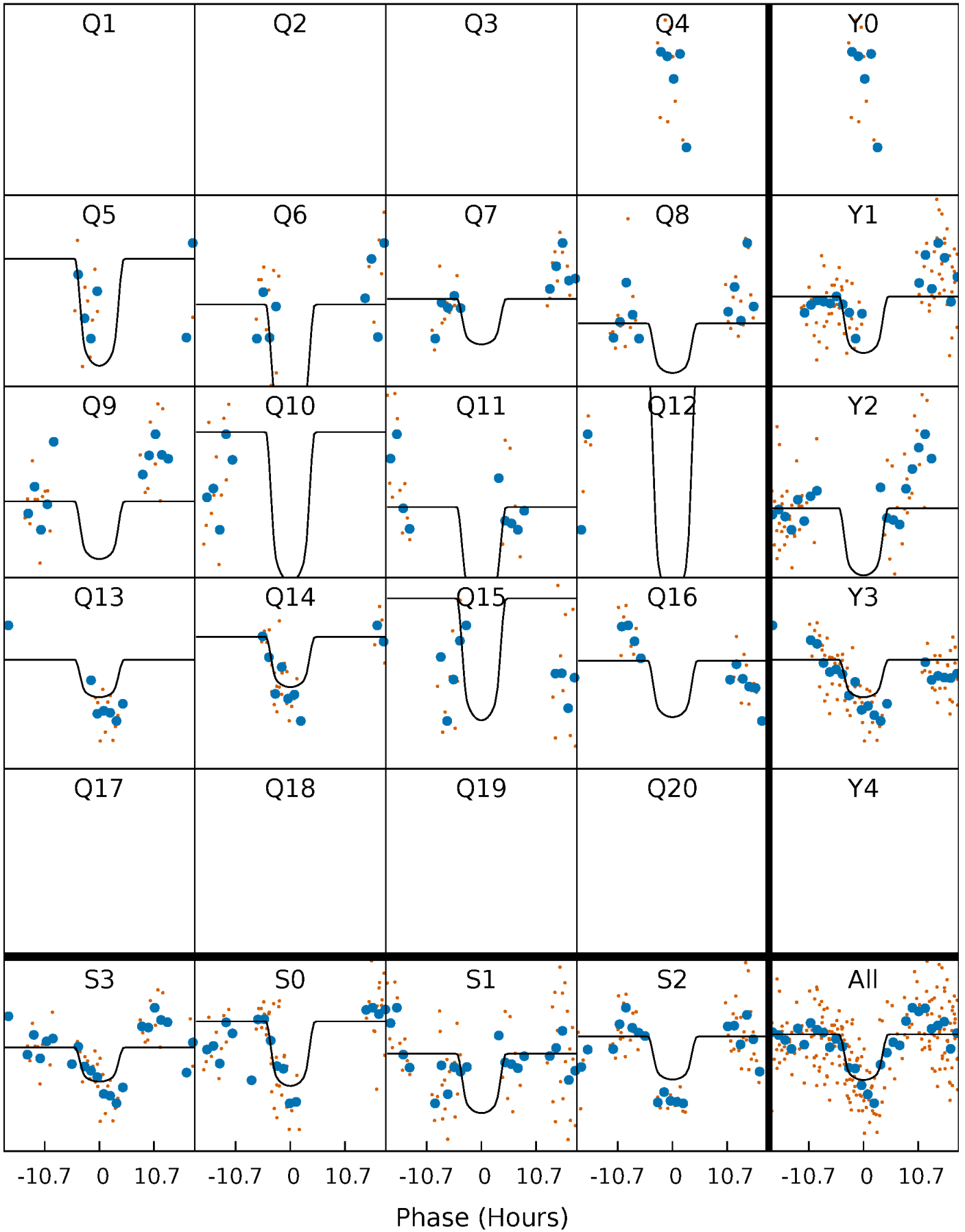
# PDC Quarter-Phased Transit Curves

TCE 010341787-07   P= 85.064483 Days    $T_0=174.685007$  (BKJD)



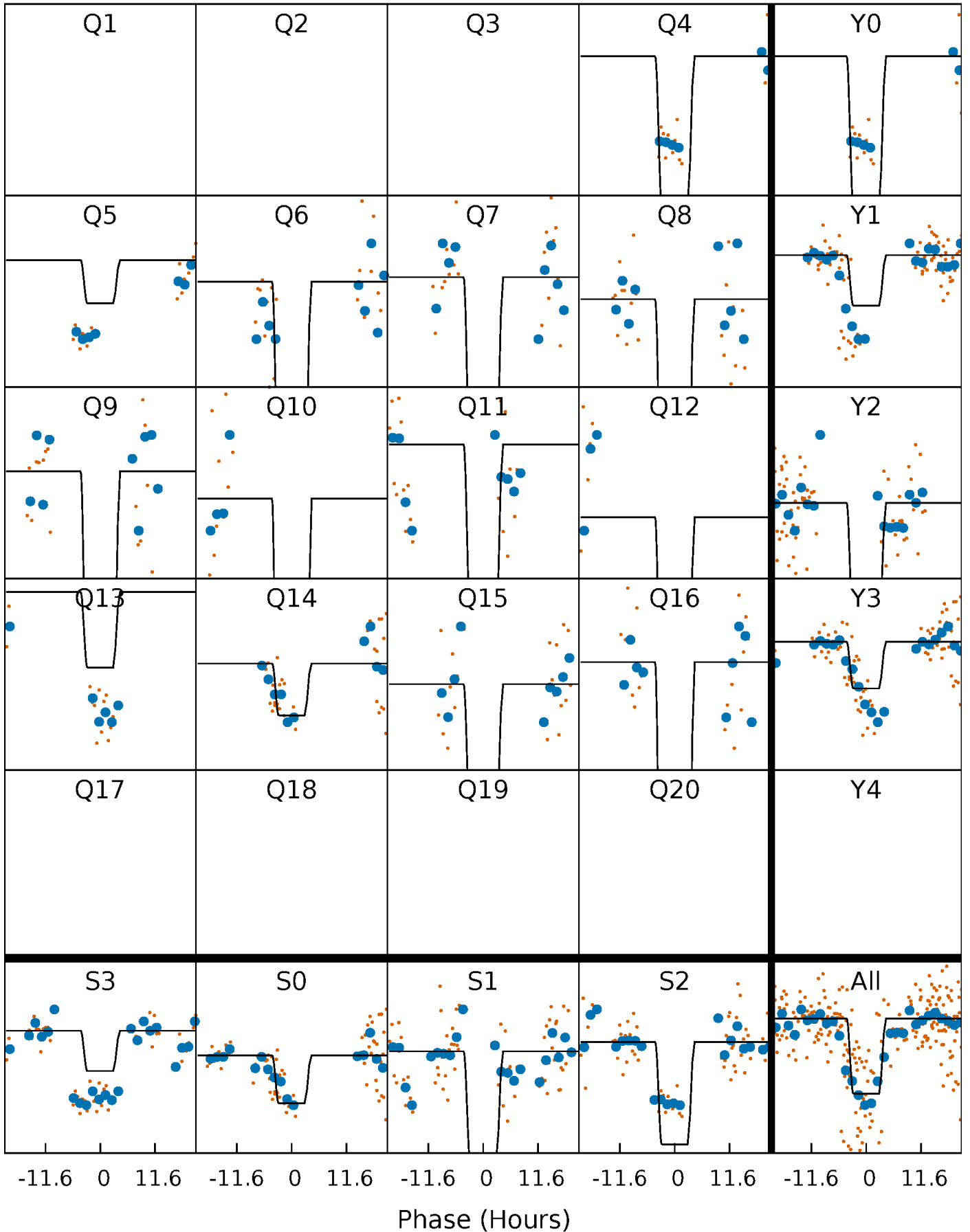
# DV Quarter-Phased Transit Curves

TCE 010341787-07     $P = 85.064483$  Days     $T_0 = 174.685007$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

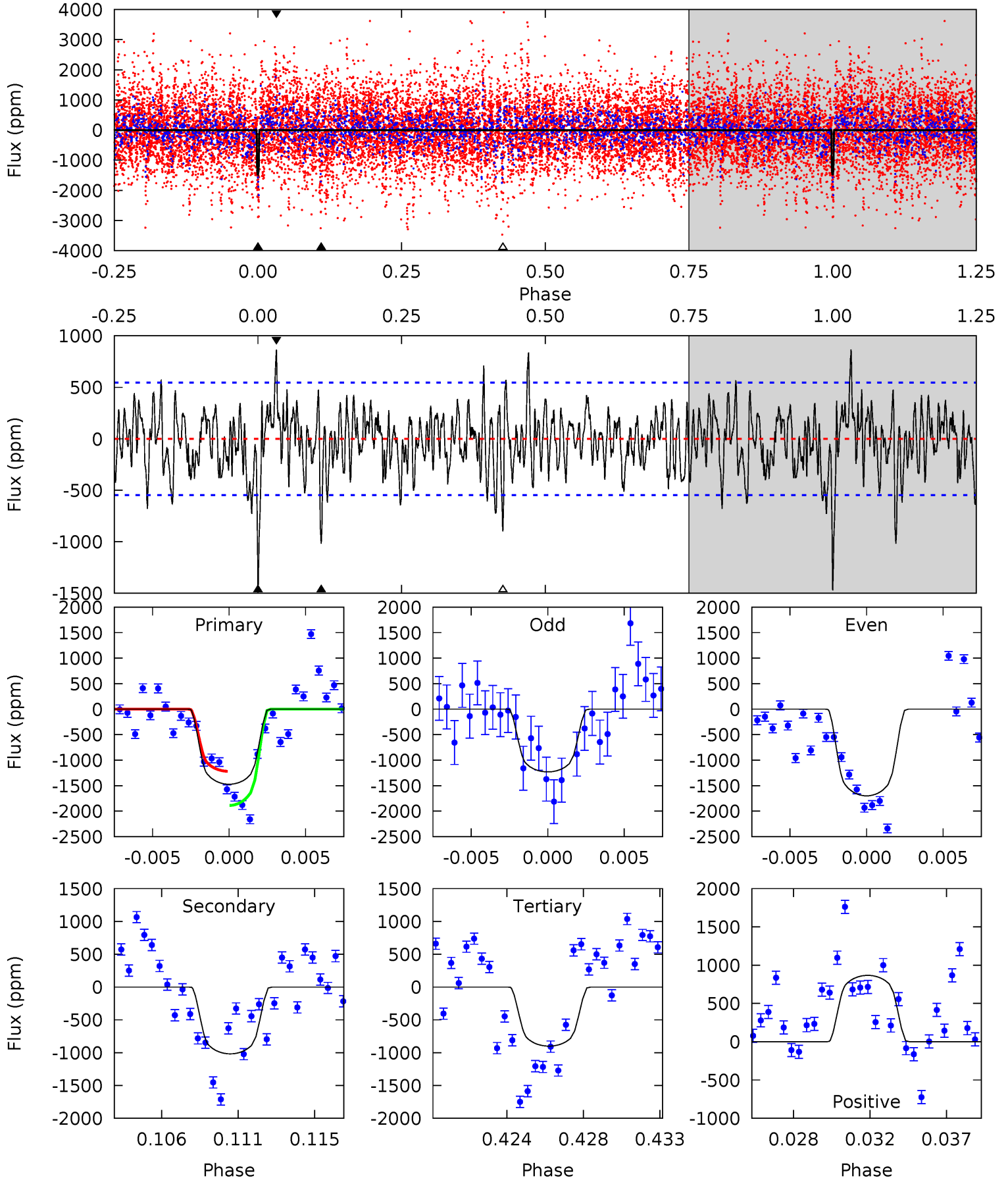
TCE 010341787-07     $P = 85.064096$  Days     $T_0 = 174.727706$  (BKJD)



# DV Model-Shift Uniqueness Test

010341787-07, P = 85.064483 Days, E = 174.685007 Days

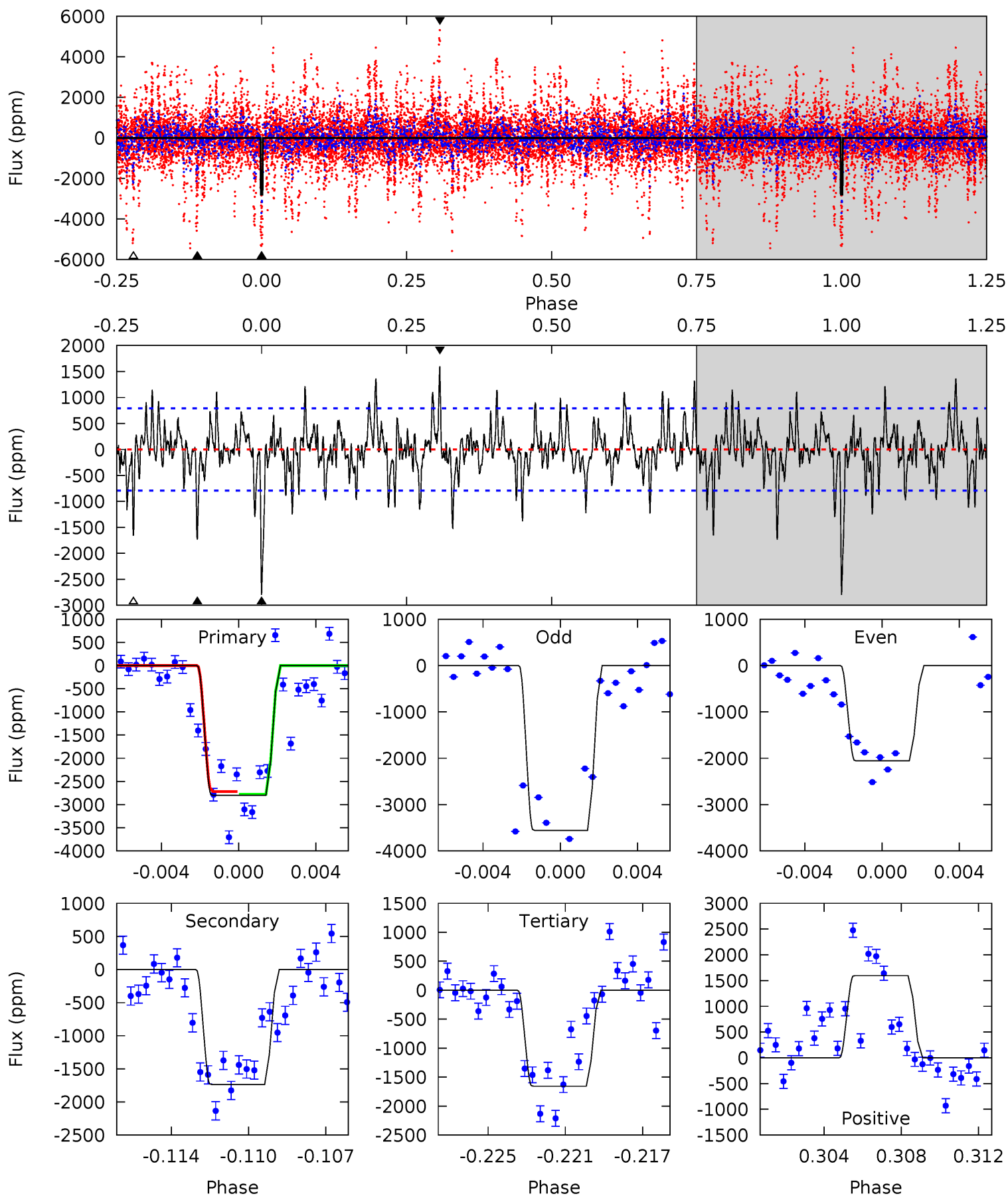
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.9	9.64	8.53	8.21	5.17	2.83	2.31	5.42	5.74	1.12	1.43	2.20	1.11	0.37	2.95



# Alt Model-Shift Uniqueness Test

010341787-07, P = 85.064096 Days, E = 174.727706 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
18.4	11.4	10.9	10.5	5.21	2.89	2.90	7.52	7.92	0.52	0.92	4.58	1.33	0.36	0.18





### Stellar Parameters For KIC 010341787

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5390^{+204}_{-185}$	$4.479^{+0.096}_{-0.132}$	$-0.180^{+0.300}_{-0.300}$	$0.852^{+0.160}_{-0.107}$	$0.798^{+0.113}_{-0.061}$	$1.819^{+0.720}_{-0.717}$
	+4%/-3%	+2%/-3%	+167%/-167%	+19%/-13%	+14%/-8%	+40%/-39%
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 010341787-07 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-1018 \pm 106$	$3.76^{+0.73}_{-0.57}$	$519^{+32}_{-28}$	$4879^{+394}_{-297}$	$4917^{+1991}_{-1421}$
Alt.	$-1736 \pm 152$	$4.87^{+0.77}_{-0.67}$	$520^{+32}_{-25}$	$4921^{+307}_{-261}$	$5034^{+1597}_{-1260}$

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

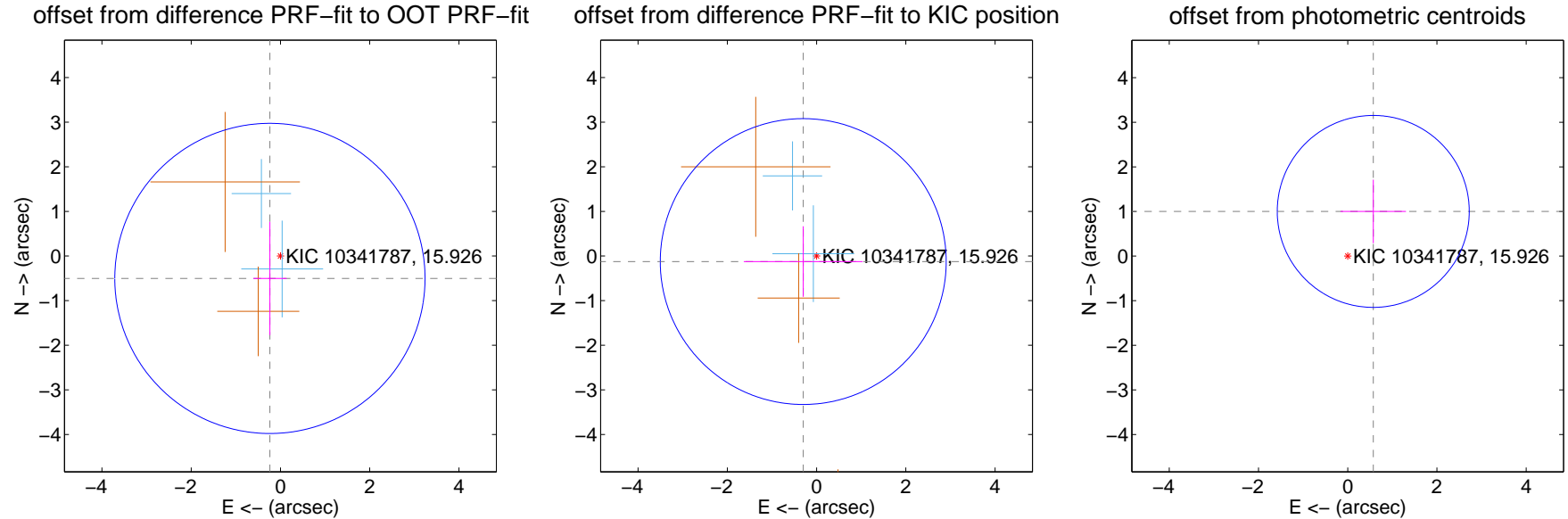
## DV Centroid Data

Supplemental centroid analysis for 010341787-07. Kepler magnitude: 15.93. Transit SNR 7.73

There are 2 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.31 arcsec

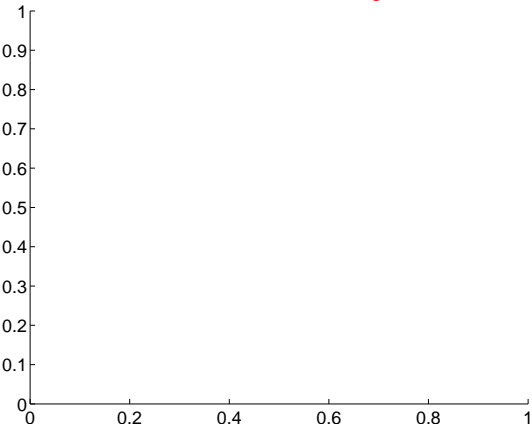
	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.555 \pm 1.158$	0.48	$0.236 \pm 0.375$	$-0.502 \pm 1.268$
PRF-fit source offset from KIC position	$0.324 \pm 1.068$	0.30	$0.299 \pm 1.332$	$-0.124 \pm 0.791$
photometric centroid source offset	$1.15 \pm 0.72$	1.61	$-0.57 \pm 0.73$	$1.00 \pm 0.71$



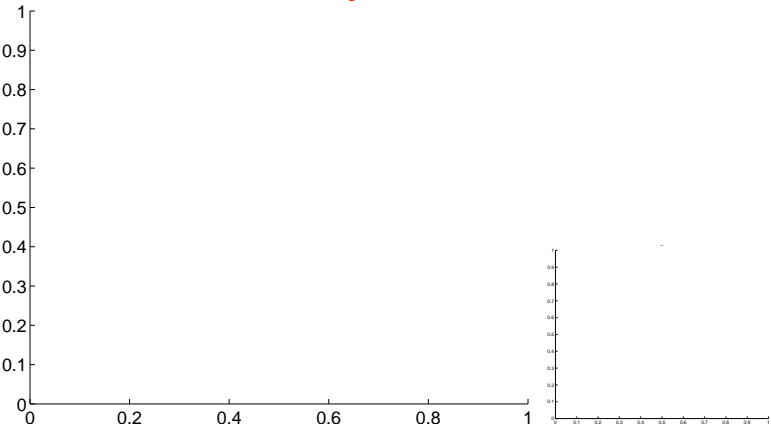
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

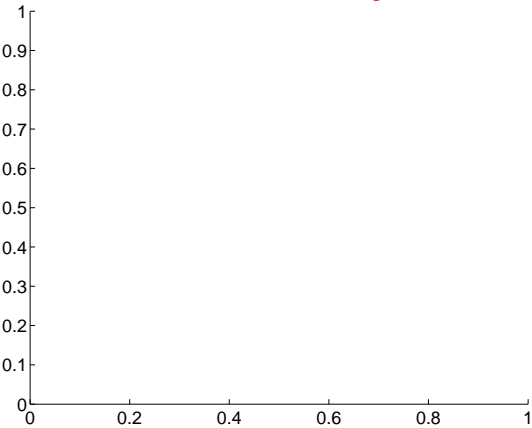
Q1 no difference image



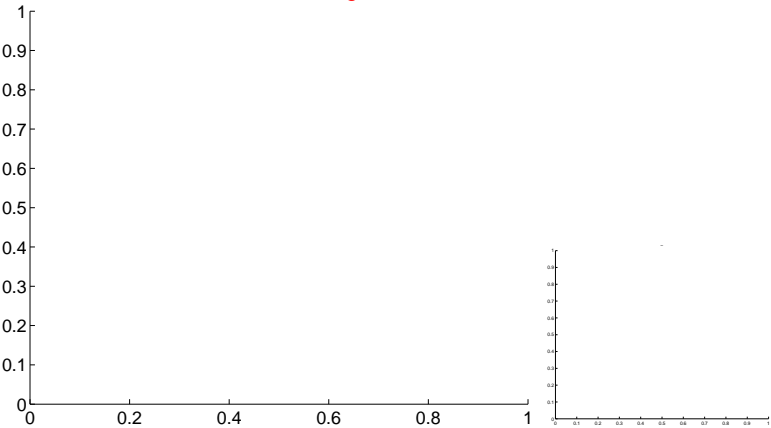
Q1 no OOT image



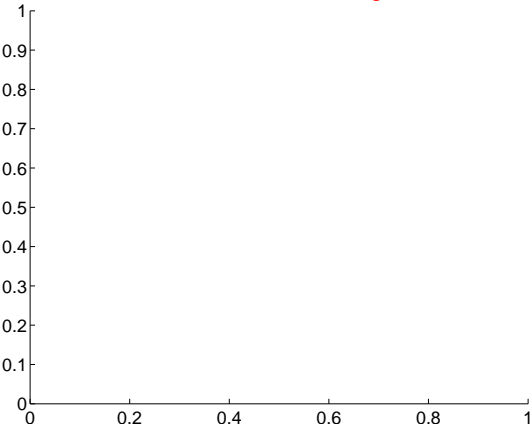
Q2 no difference image



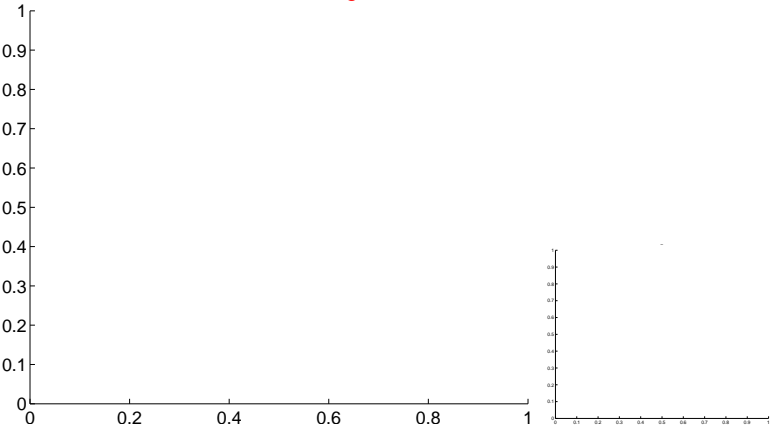
Q2 no OOT image



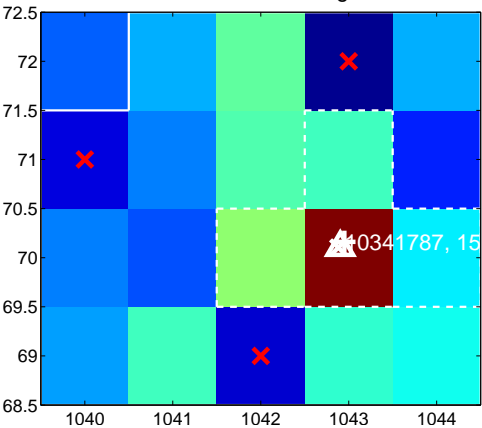
Q3 no difference image



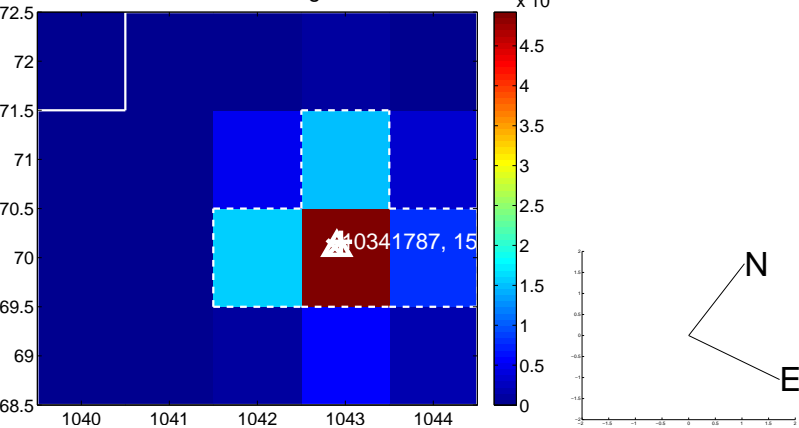
Q3 no OOT image



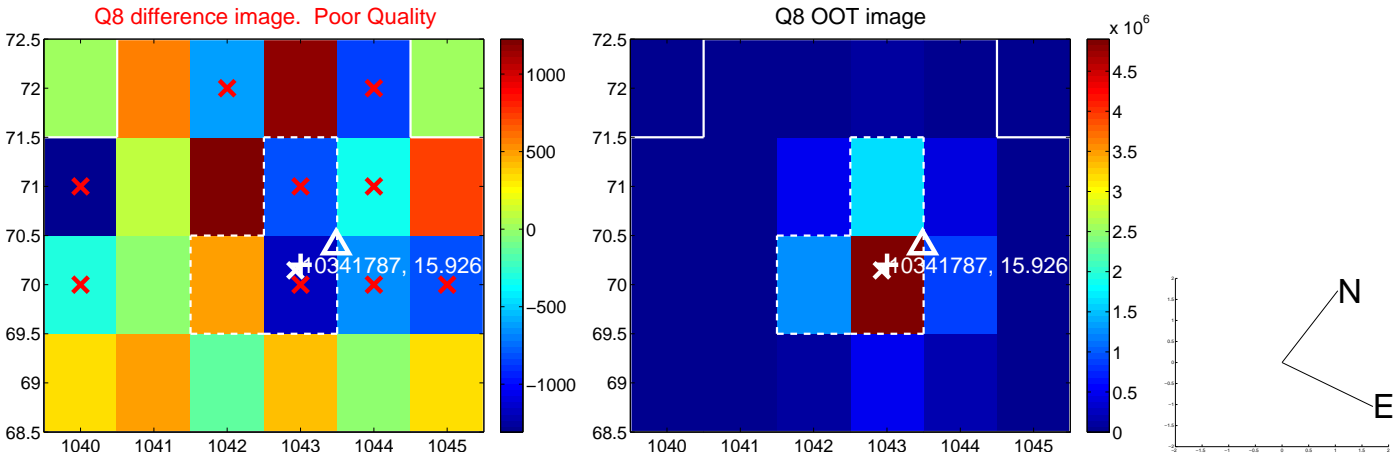
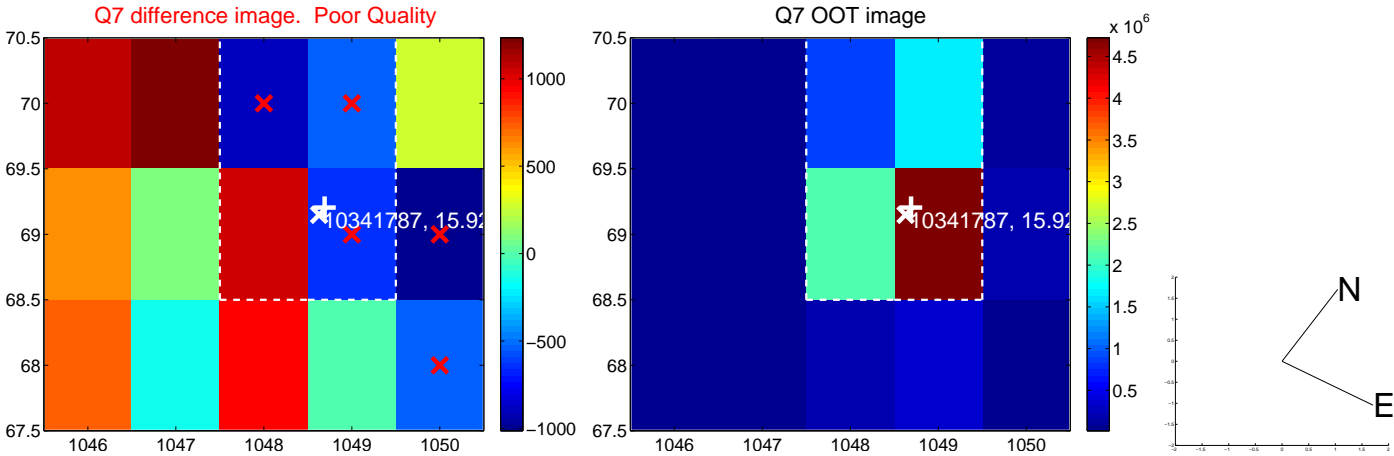
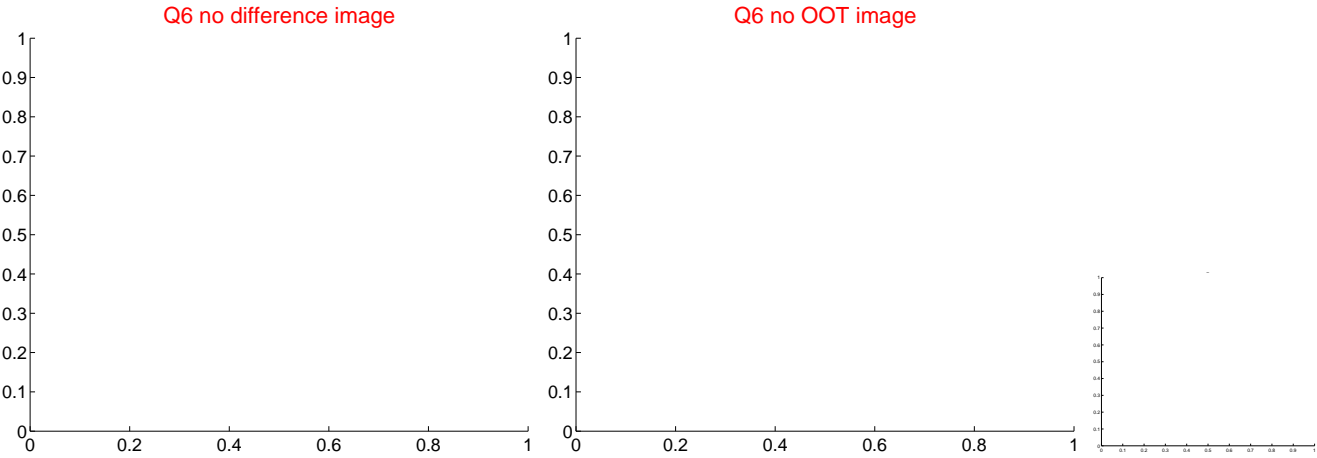
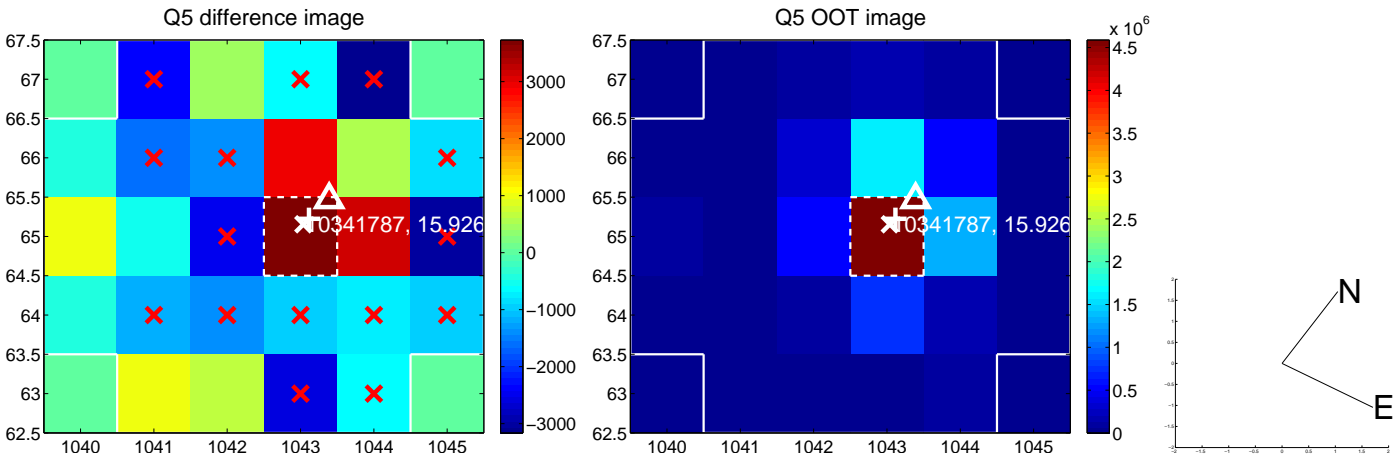
Q4 difference image



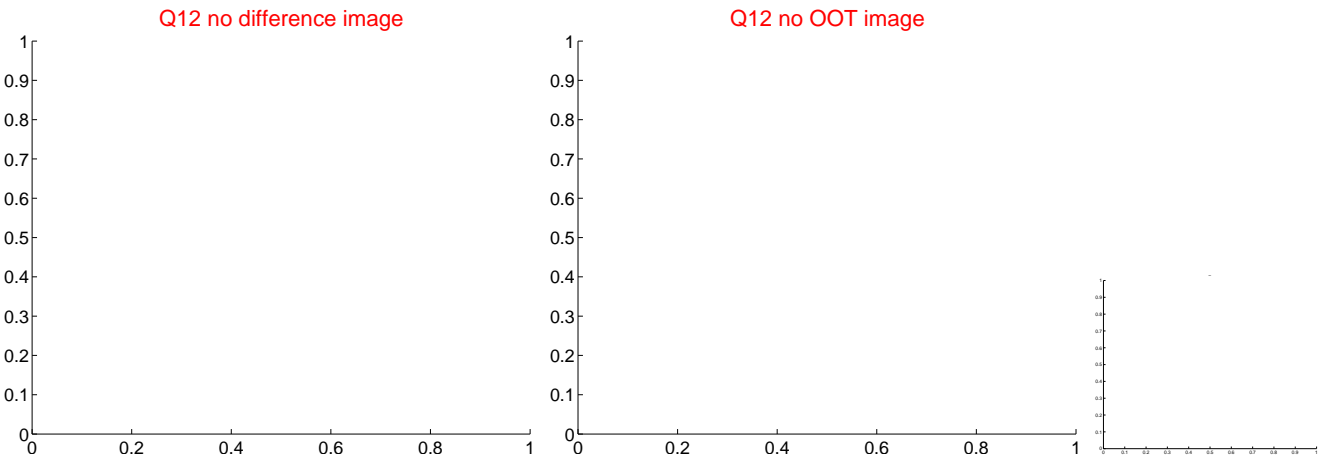
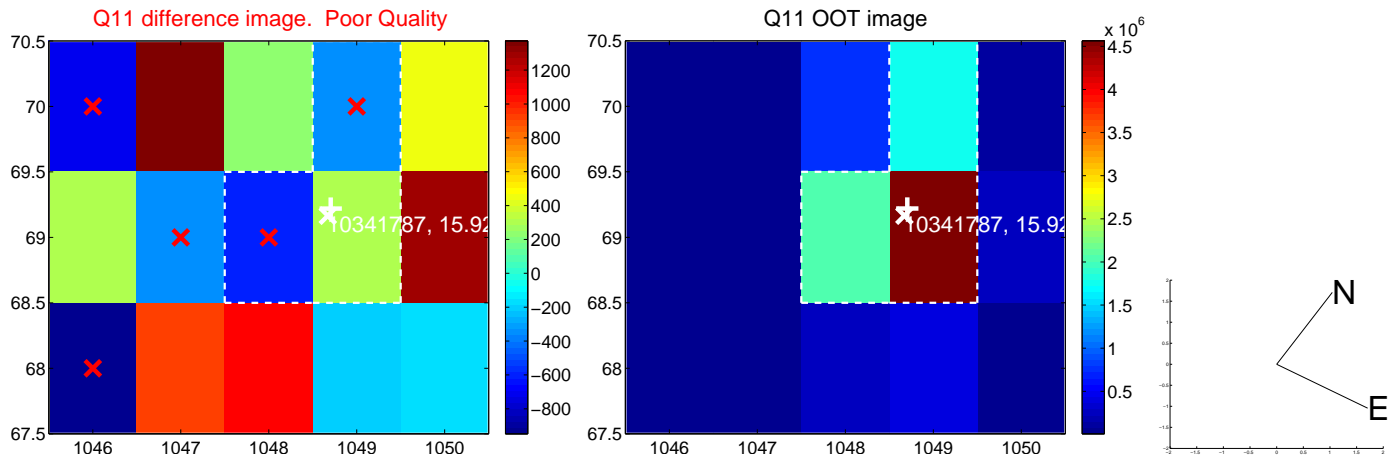
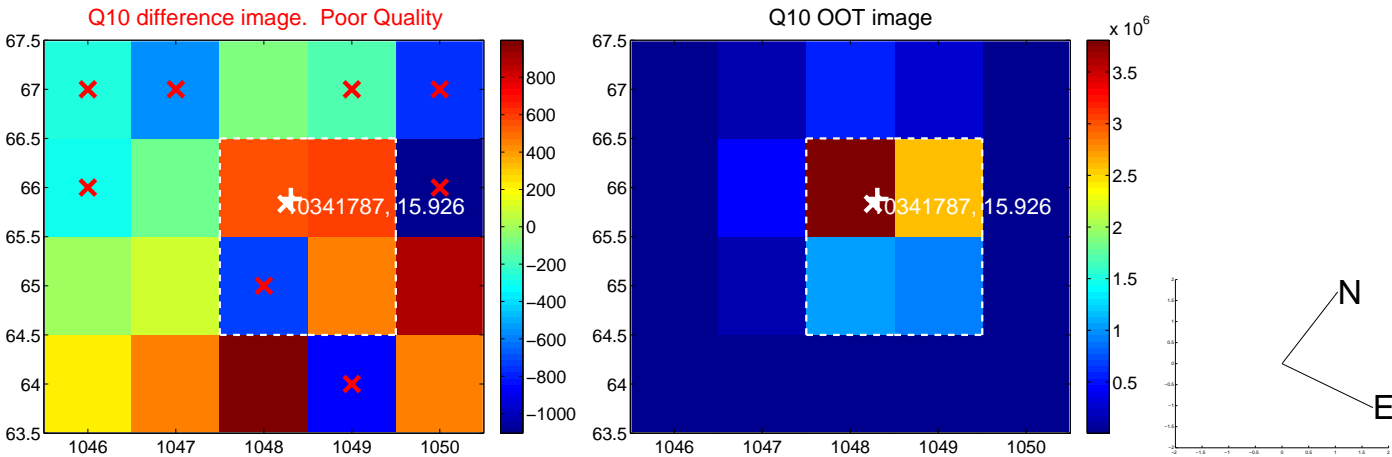
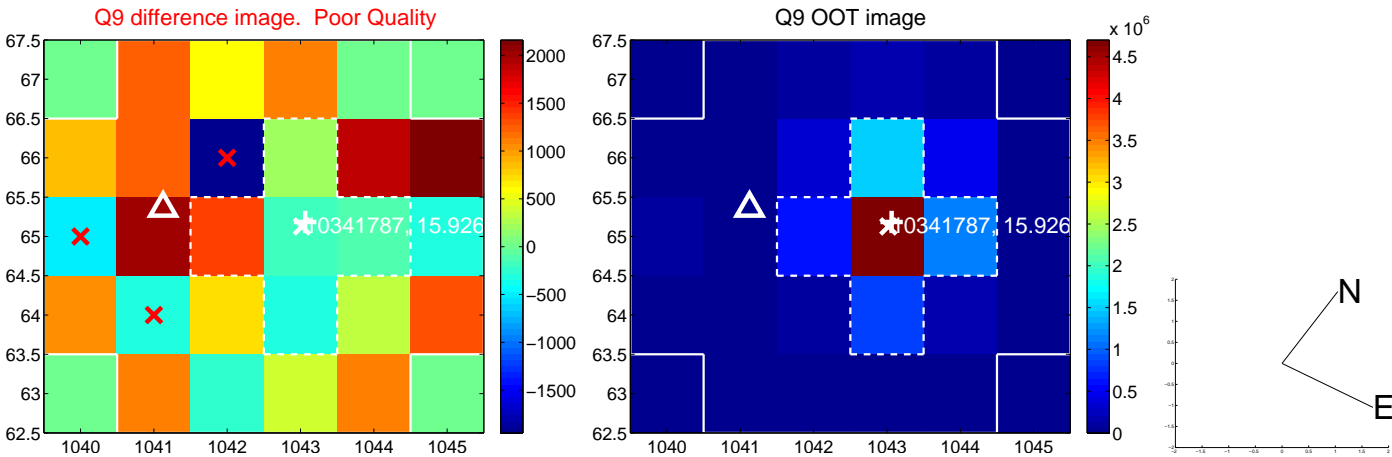
Q4 OOT image



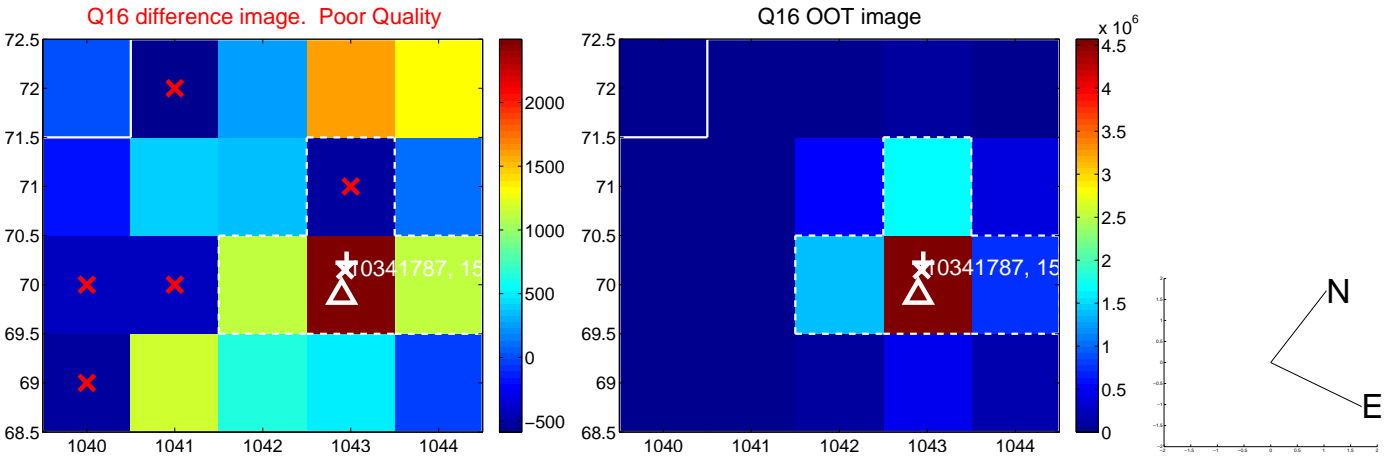
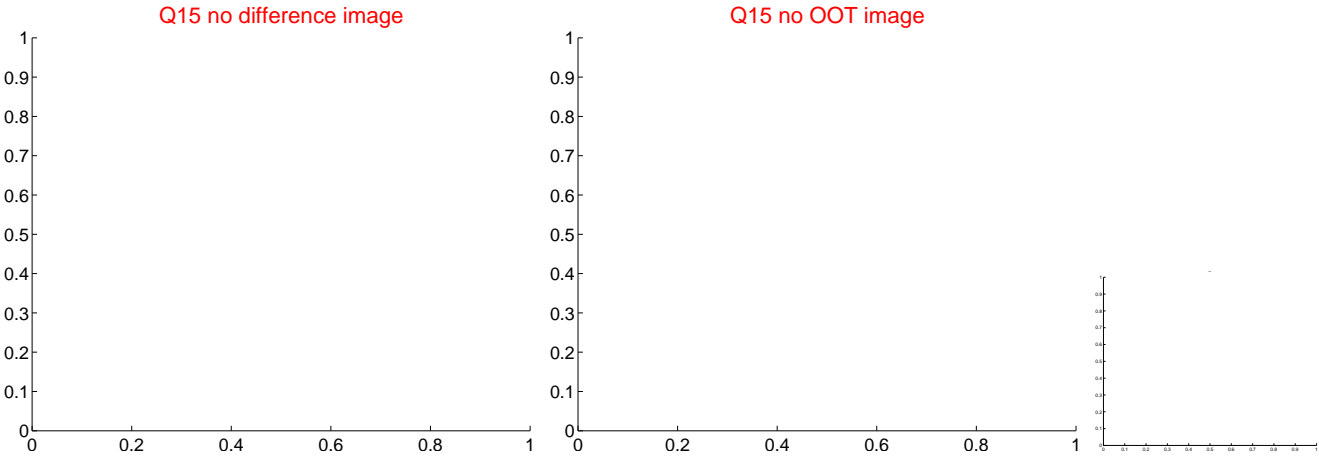
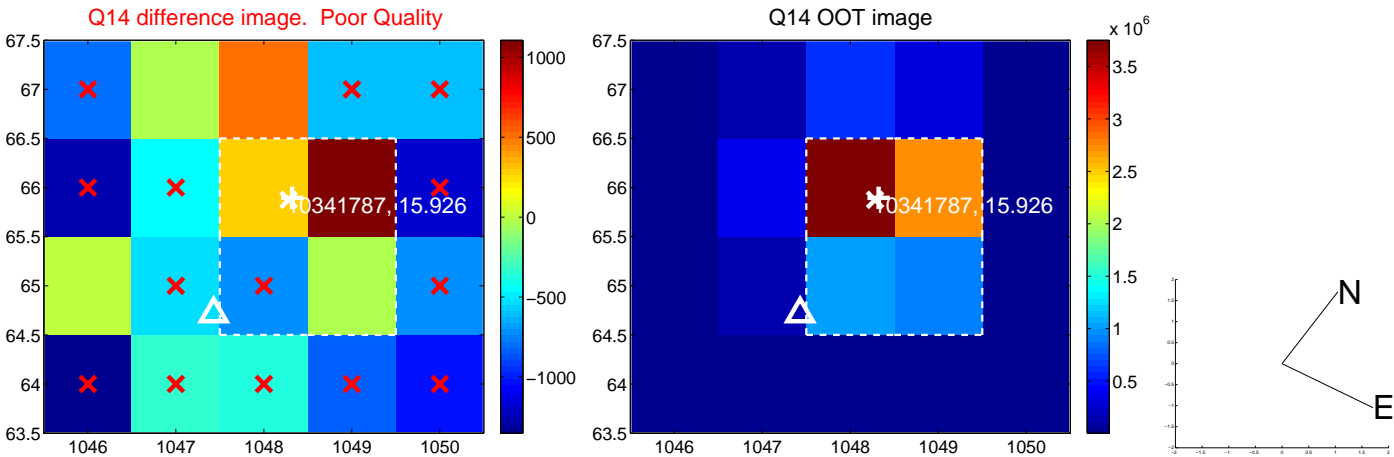
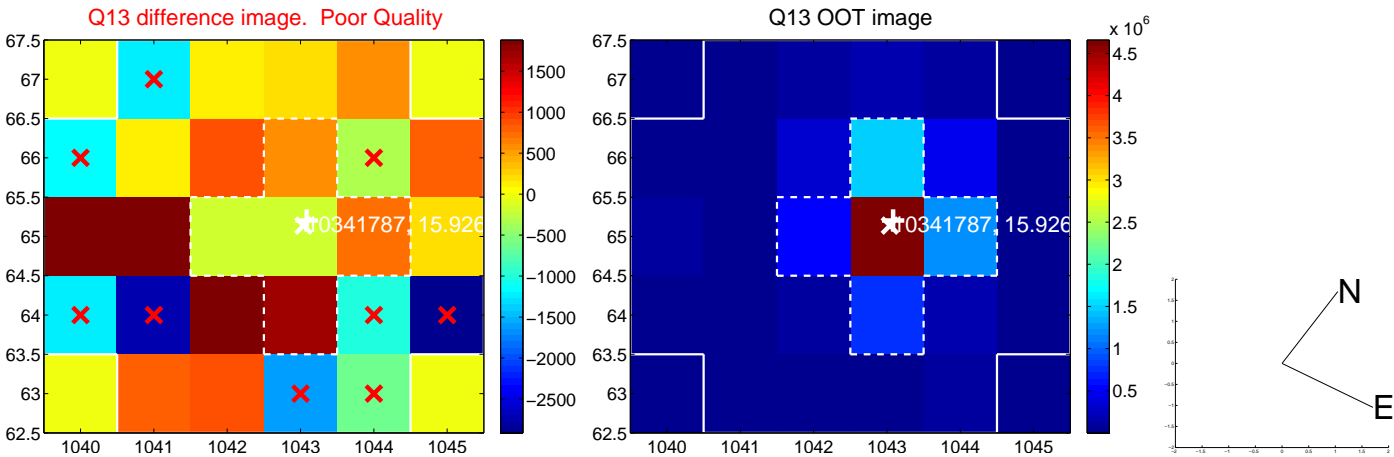
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



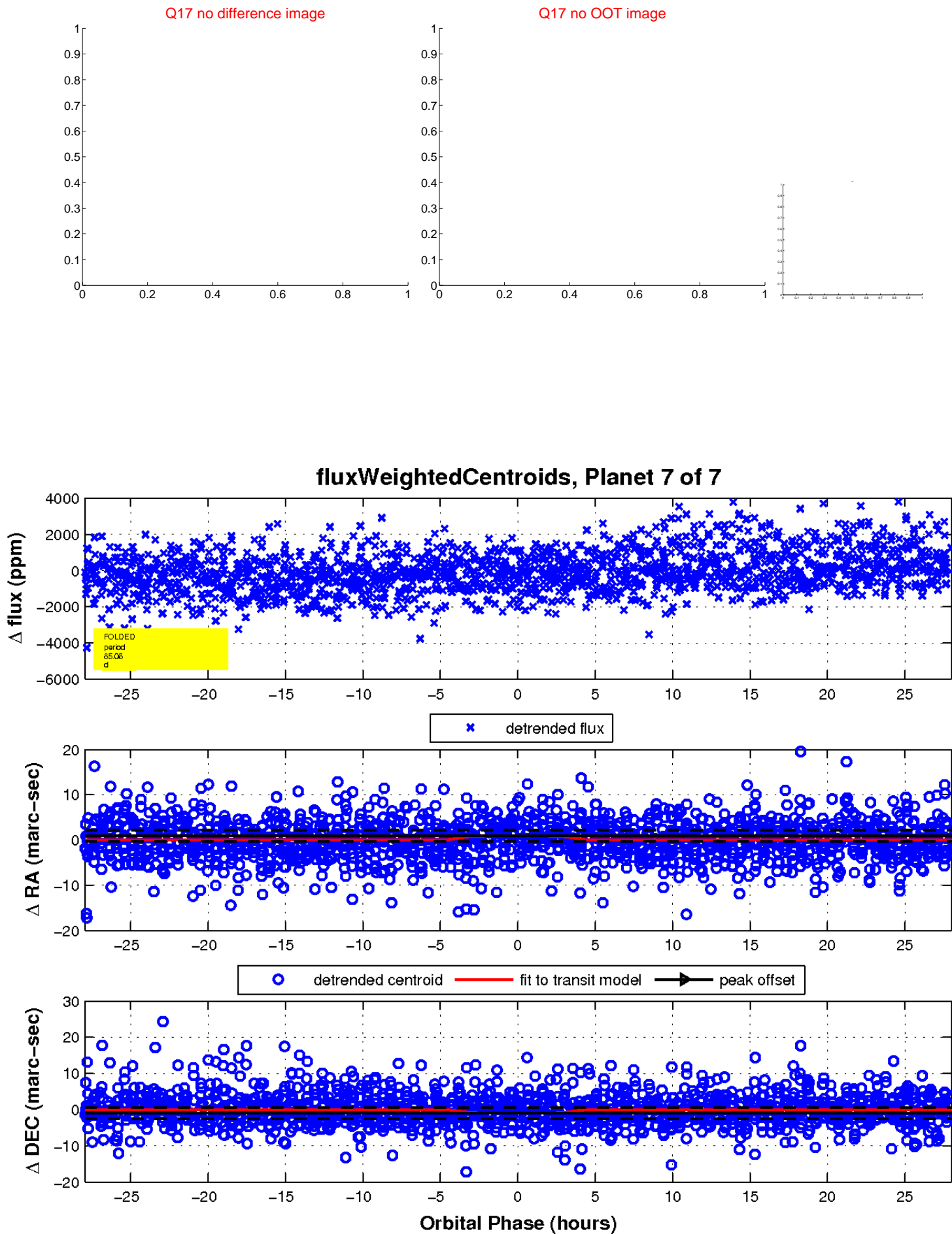
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

