

# KIC 001433399

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
001433399-01	OBS	No	2.126459	133.577945	29.6	13.071	9.0	4.8	1.81	6865	1.06	4926.05
001433399-02	OBS	No	563.383562	449.988290	5120.2	33.523	14.8	13.5	1.81	6865	22.15	2.90
001433399-03	OBS	No	253.125555	332.458888	822.9	12.997	12.7	12.3	1.81	6865	5.84	8.41
001433399-04	OBS	No	540.097860	154.355847	2113.4	27.354	12.6	9.5	1.81	6865	9.71	3.06
001433399-05	OBS	No	225.494771	274.756528	907.6	12.881	12.4	12.4	1.81	6865	8.42	9.81
001433399-06	OBS	No	57.115815	158.078027	241.4	9.000	11.2	-1.0	1.81	6865	2.85	61.24

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
001433399-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV
001433399-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES—MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
001433399-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
001433399-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
001433399-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
001433399-06	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_NOFITS

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

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

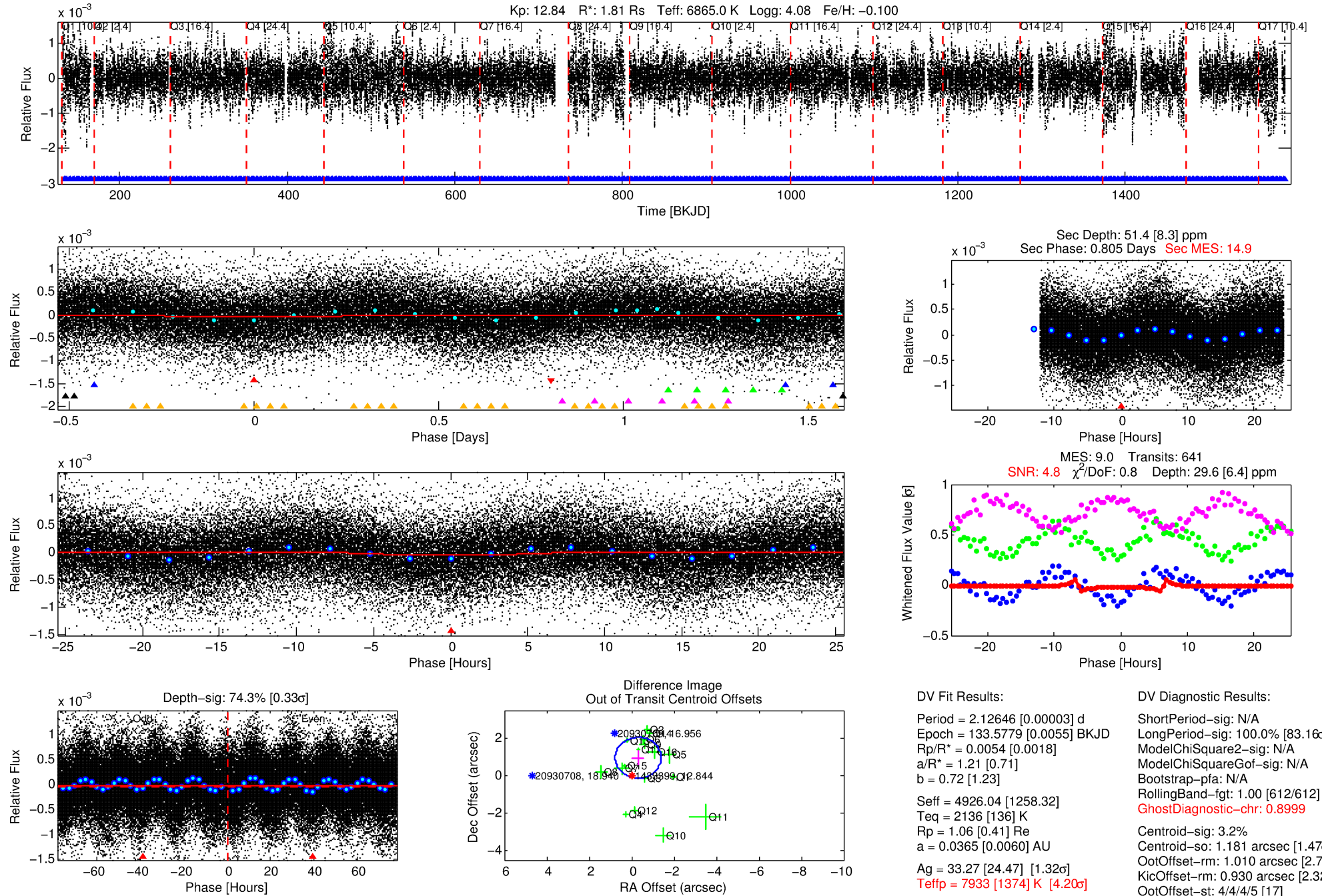
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 001433399-01

No Significant Match Found

# DV One-Page Summary

KIC: 1433399 Candidate: 1 of 6 Period: 2.126 d



## DV Fit Results:

Period = 2.12646 [0.00003] d  
Epoch = 133.5779 [0.0055] BKJD  
Rp/R\* = 0.0054 [0.0018]  
a/R\* = 1.21 [0.71]  
b = 0.72 [1.23]  
Seff = 4926.04 [1258.32]  
Teq = 2136 [136] K  
Rp = 1.06 [0.41] Re  
a = 0.0365 [0.0060] AU  
Ag = 33.27 [24.47] [1.32σ]  
Teffp = 7933 [1374] K [4.20σ]

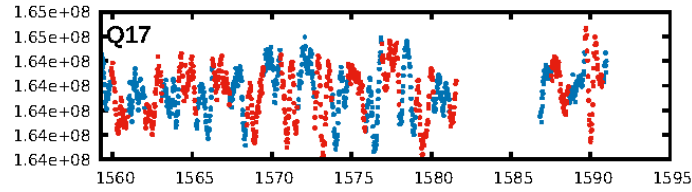
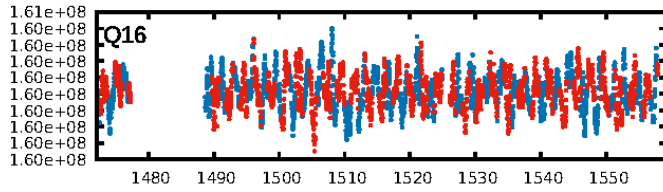
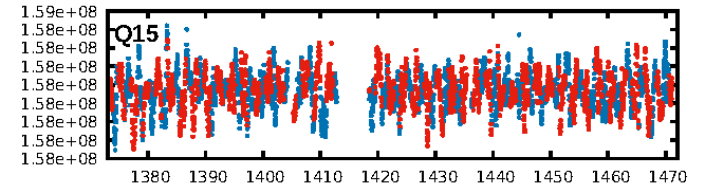
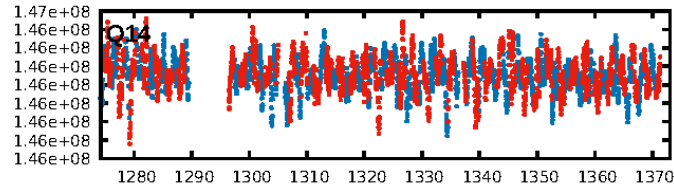
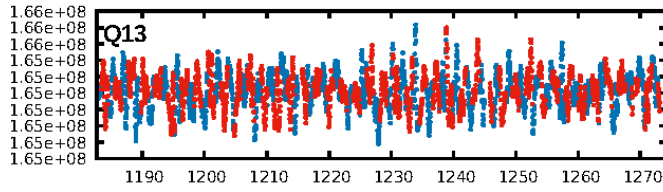
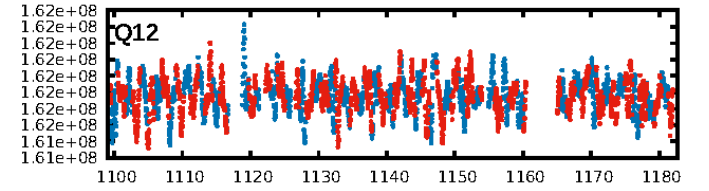
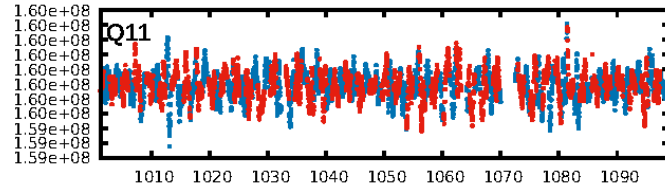
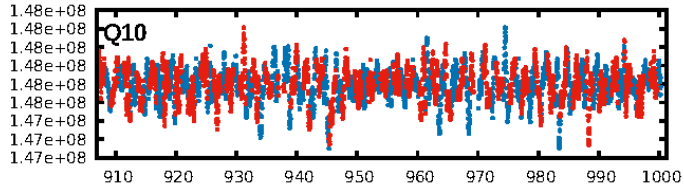
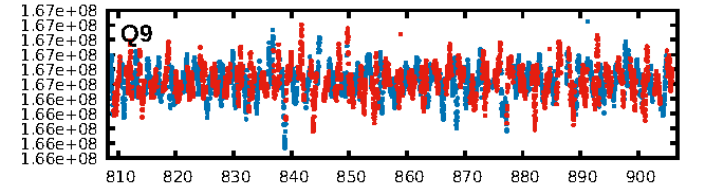
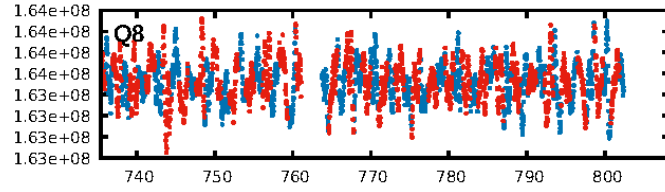
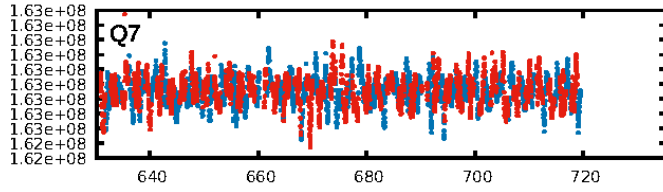
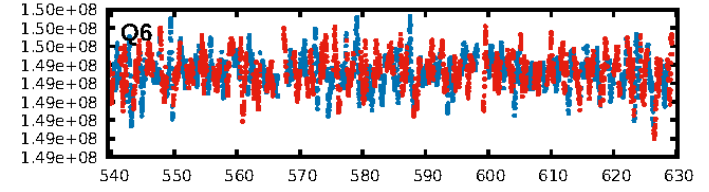
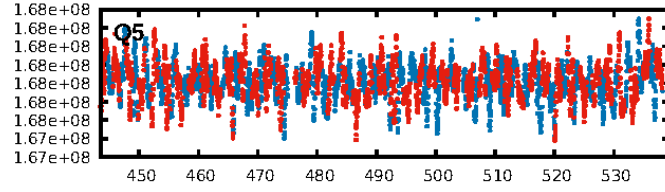
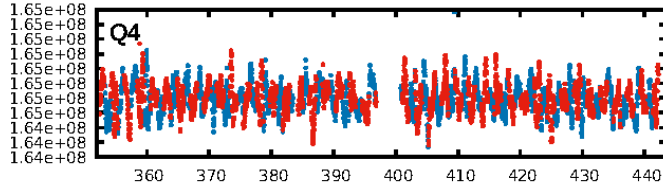
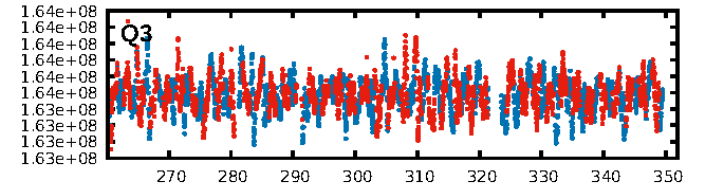
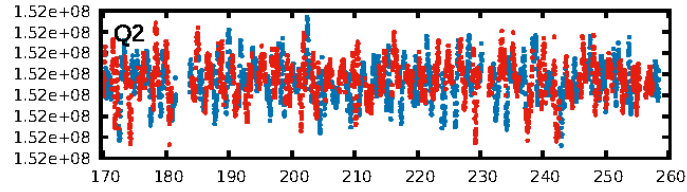
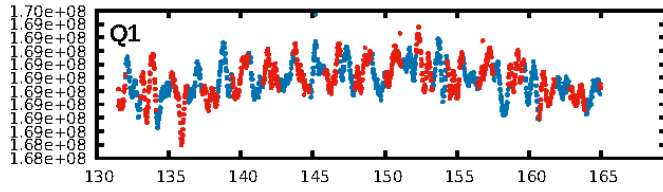
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [83.16σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [612/612]  
GhostDiagnostic-chr: 0.8999  
Centroid-sig: 3.2%  
Centroid-so: 1.181 arcsec [1.47σ]  
OotOffset-rm: 1.010 arcsec [2.79σ]  
KicOffset-rm: 0.930 arcsec [2.32σ]  
OotOffset-st: 4/4/4/5 [17]  
KicOffset-st: 4/4/4/5 [17]  
DiffImageQuality-fgm: 0.71 [12/17]  
DiffImageOverlap-fno: 1.00 [17/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 00:52:37 Z

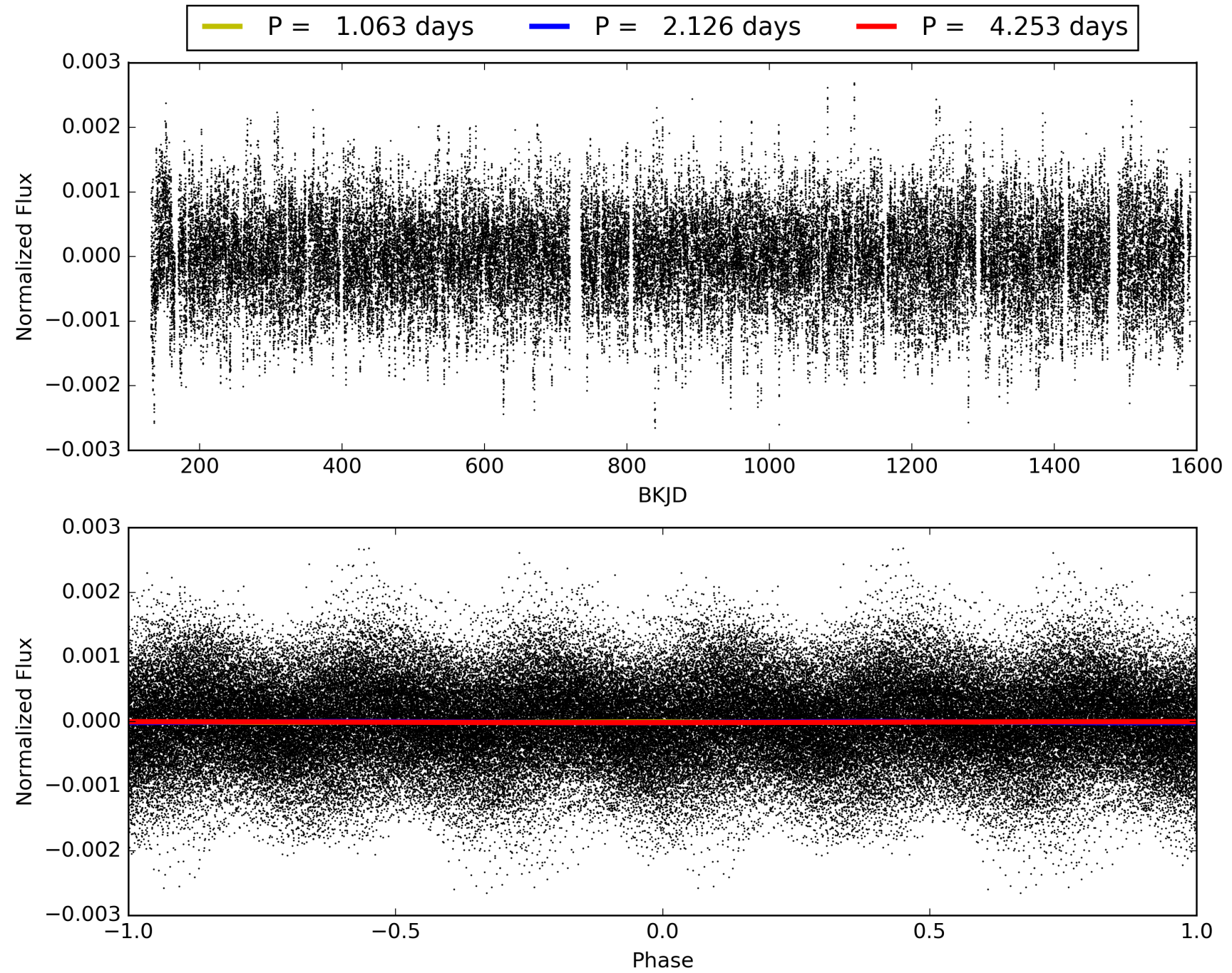
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 001433399-01, PDC Light Curves





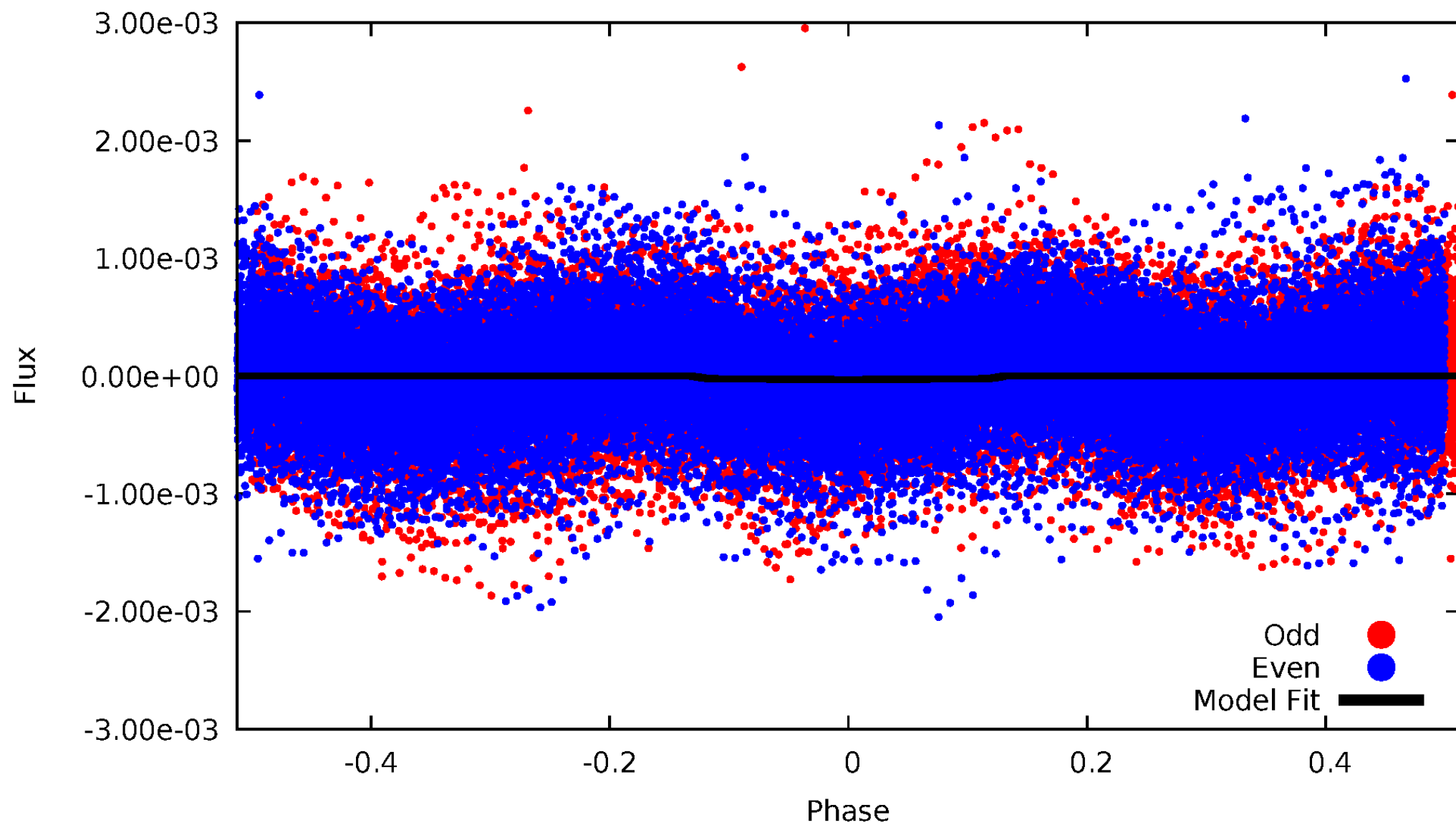
TCE 001433399-01





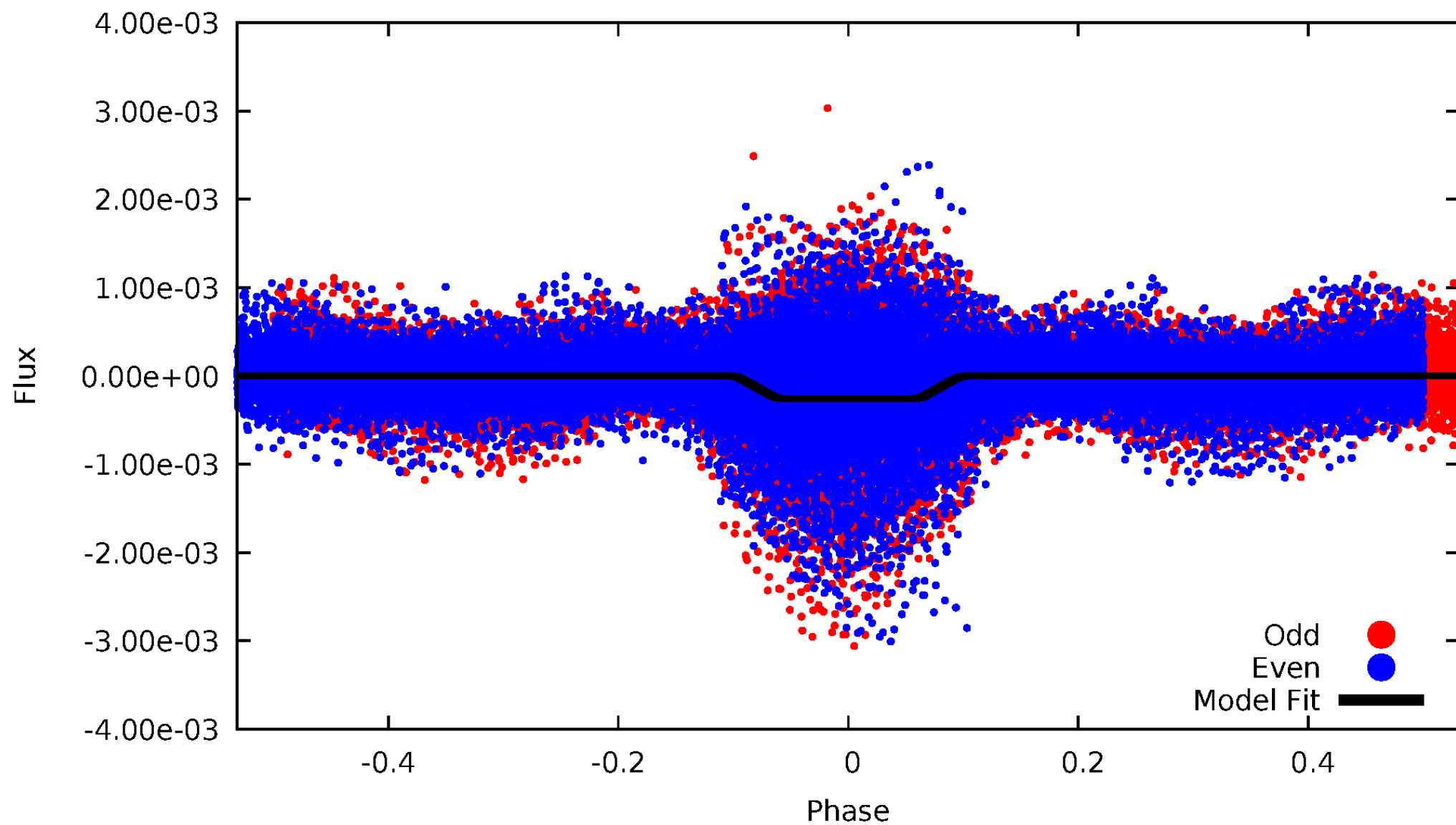
# DV Odd/Even

TCE 001433399-01

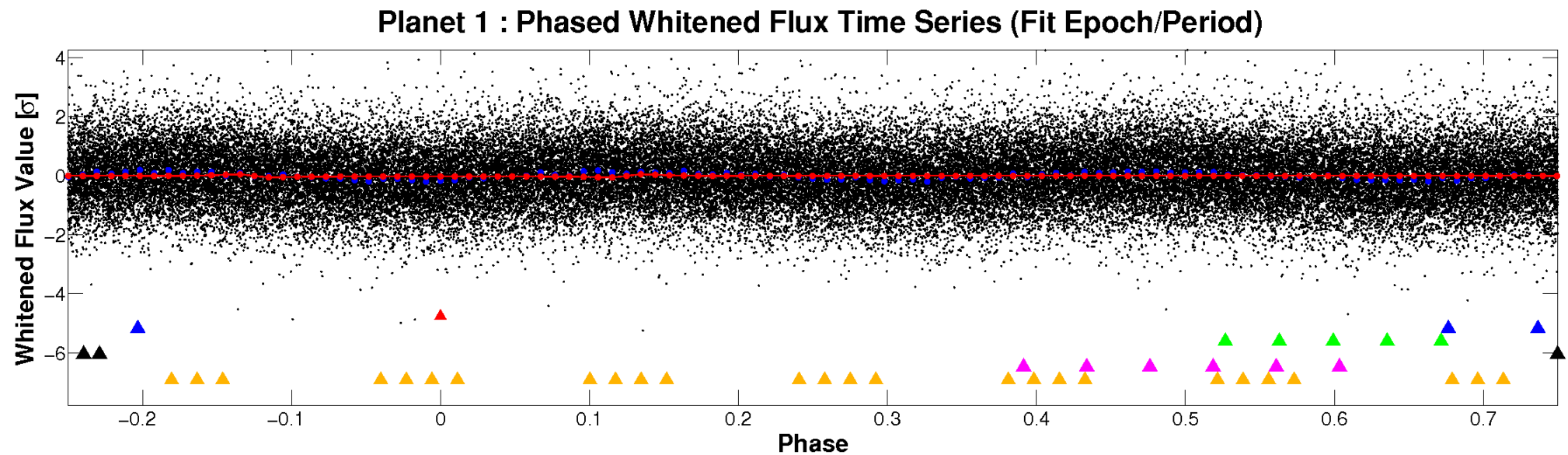
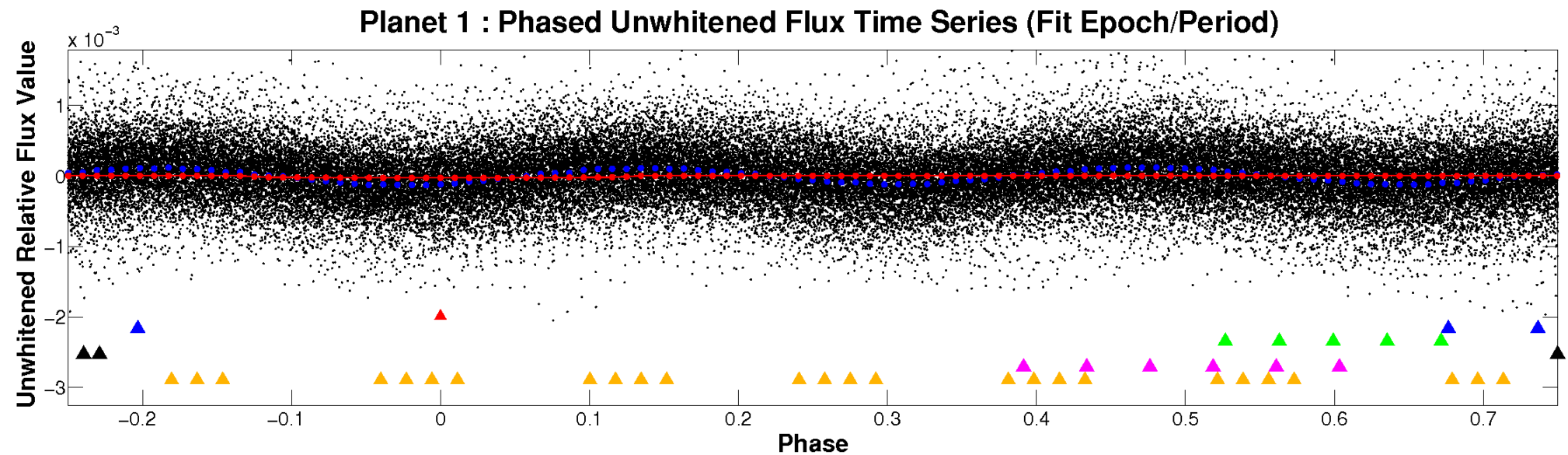


# ALT Odd/Even

TCE 001433399-01



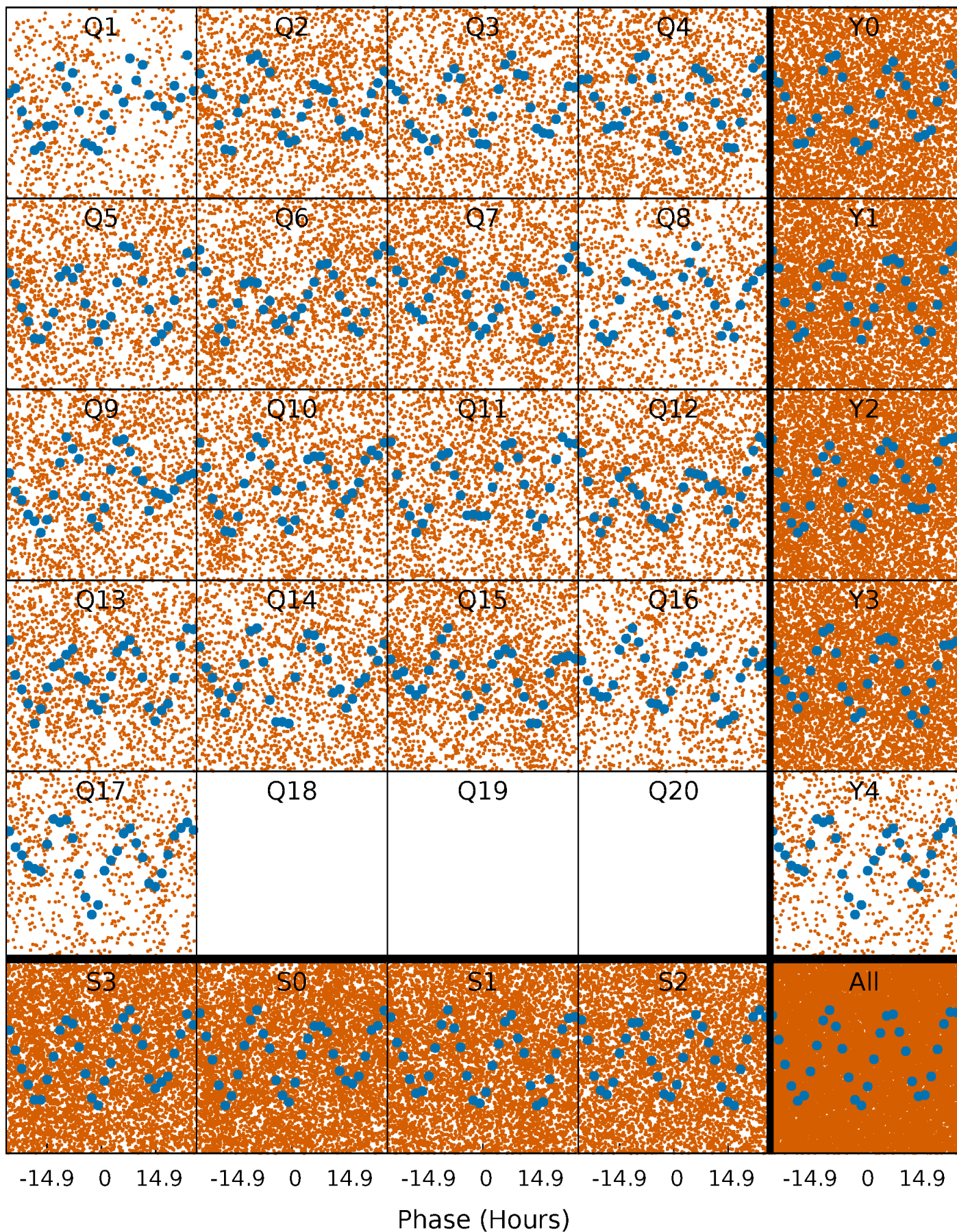
# Non-Whitened Vs. Whitened Light Curve





# PDC Quarter-Phased Transit Curves

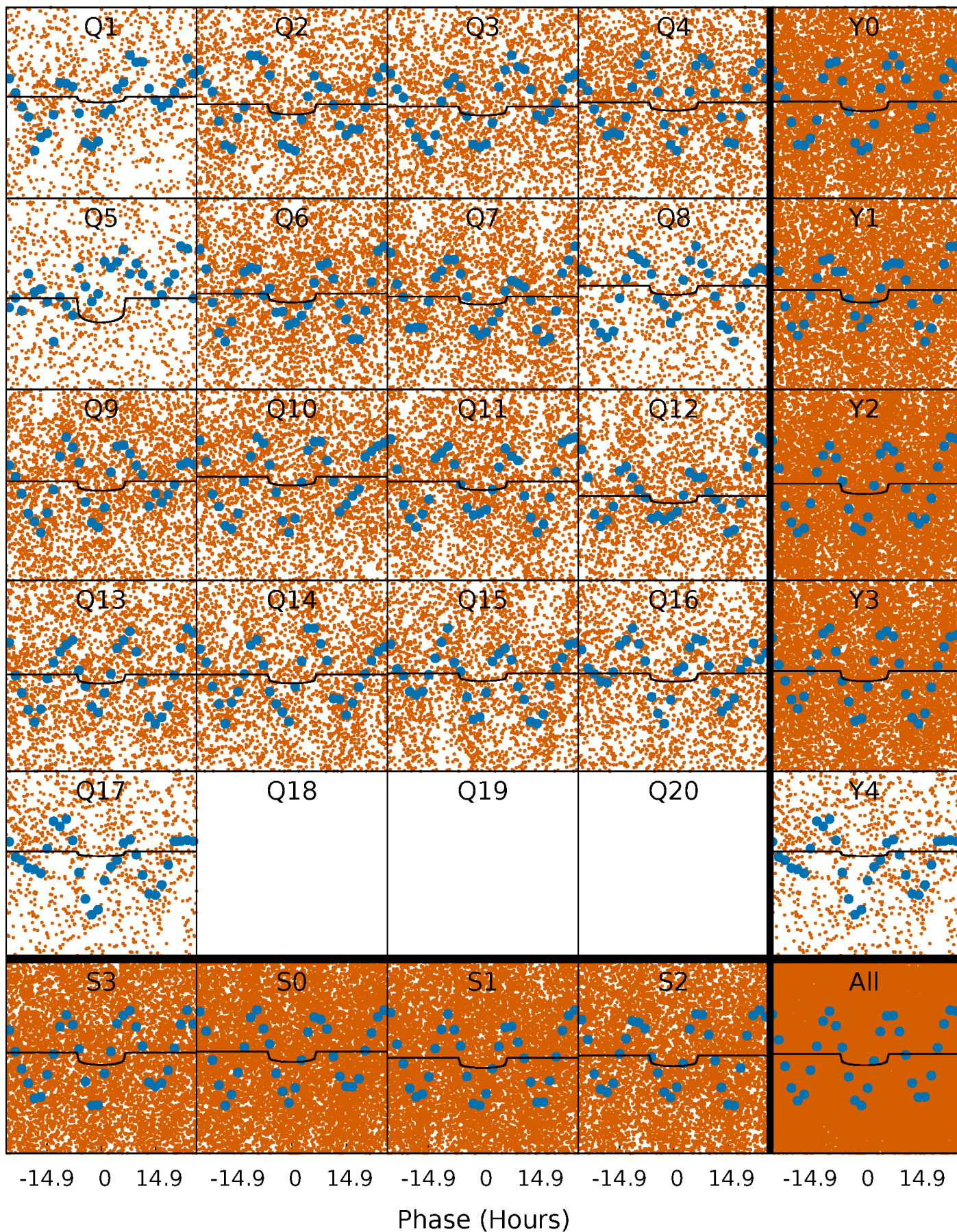
TCE 001433399-01 P= 2.126459 Days  $T_0=133.577945$  (BKJD)





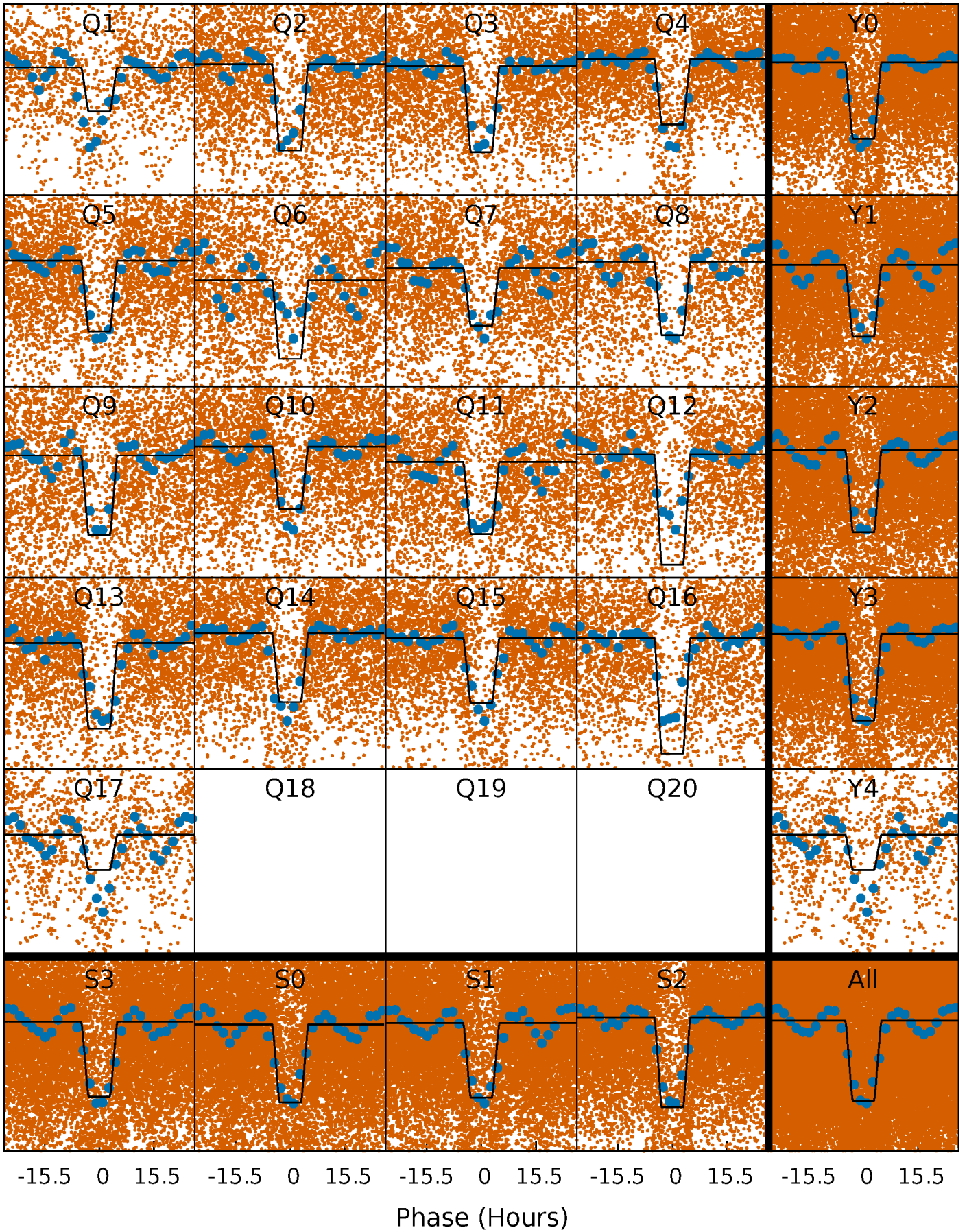
# DV Quarter-Phased Transit Curves

TCE 001433399-01 P= 2.126459 Days  $T_0=133.577945$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 001433399-01 P= 2.126277 Days  $T_0=133.582290$  (BKJD)

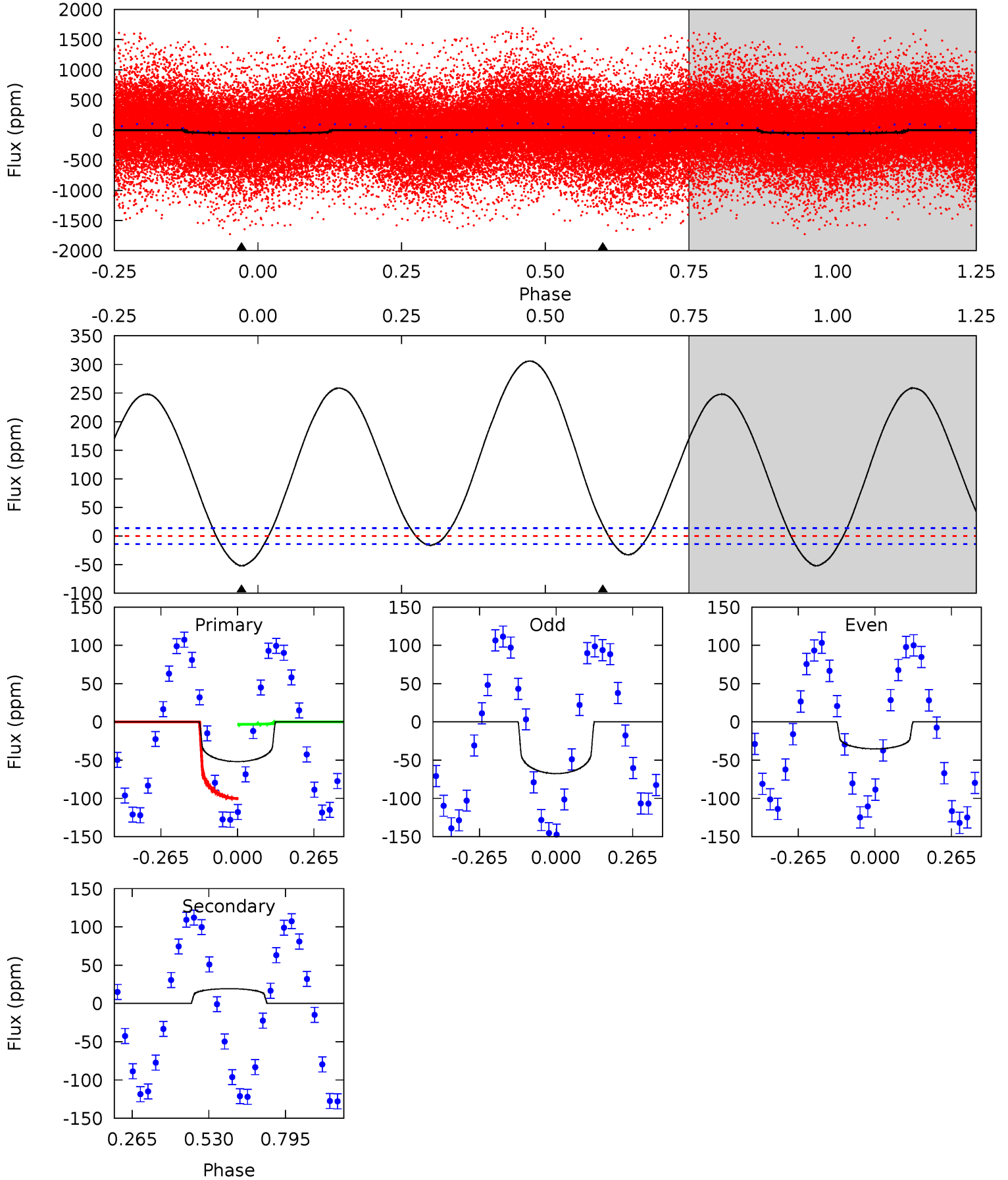




# DV Model-Shift Uniqueness Test

001433399-01, P = 2.126459 Days, E = 131.451486 Days

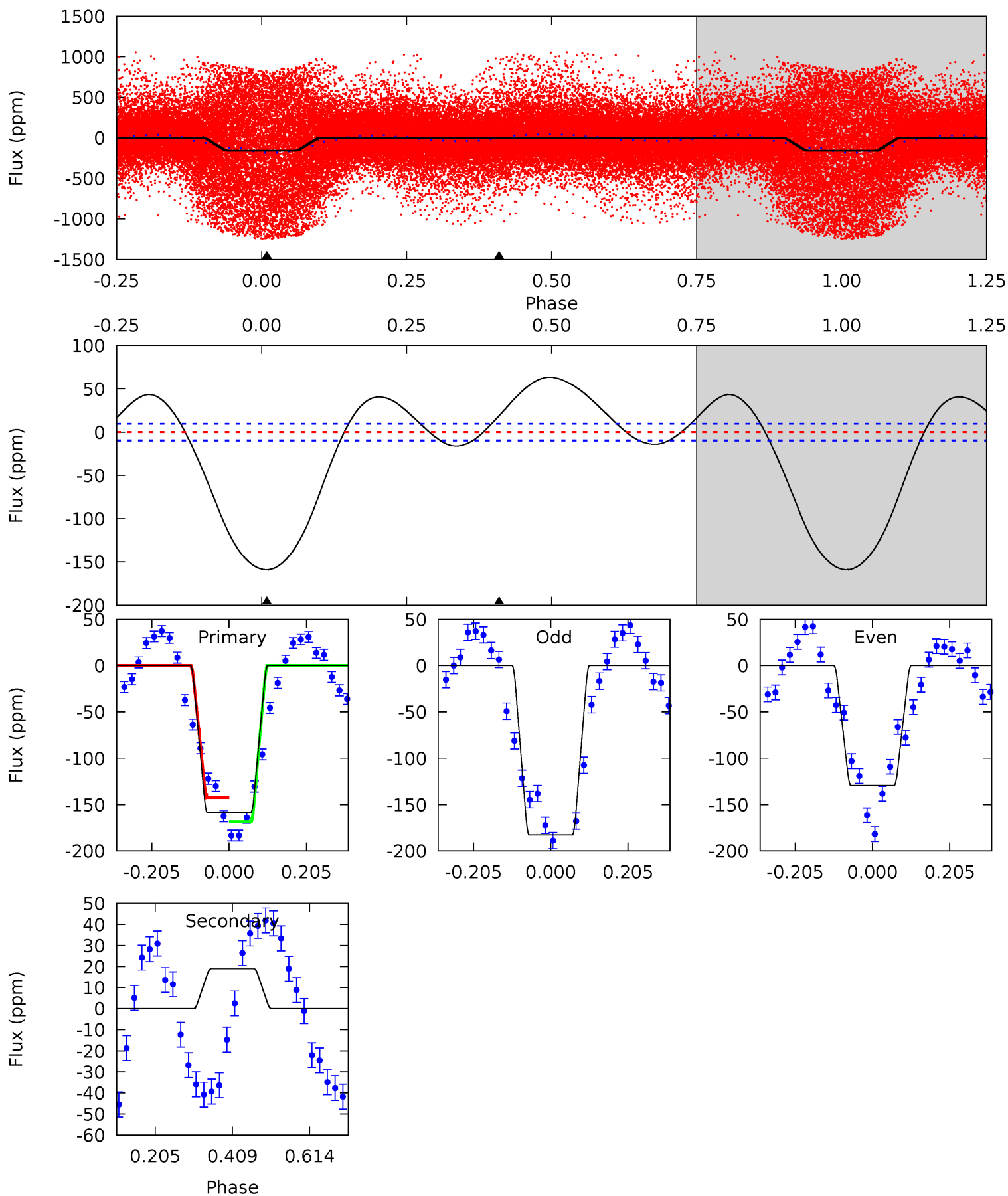
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
16.3	-6.06	0	0	4.36	1.12	8.24	16.3	16.3	-6.06	-6.06	5.22	1.24	0.85	15.7



# Alt Model-Shift Uniqueness Test

001433399-01, P = 2.126277 Days, E = 131.456013 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
72.6	-8.64	0	0	4.41	1.27	8.58	72.6	72.6	-8.64	-8.64	12.2	1.27	0.29	5.91



### Stellar Parameters For KIC 001433399

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6865^{+82}_{-82}$	$4.076^{+0.143}_{-0.117}$	$-0.100^{+0.150}_{-0.150}$	$1.815^{+0.331}_{-0.331}$	$1.435^{+0.113}_{-0.124}$	$0.338^{+0.242}_{-0.122}$
	+1%/-1%	+4%/-3%	+150%/-150%	+18%/-18%	+8%/-9%	+72%/-36%
Source	SPE68	SPE68	SPE68	DSEP		

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

### Secondary Eclipse Parameters for KIC 001433399-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$19 \pm 3$	$1.06^{+0.37}_{-0.39}$	$2989^{+142}_{-138}$	$-6201^{+802}_{-1782}$	$-12.658^{+6.031}_{-20.711}$
Alt.	$19 \pm 2$	$3.14^{+0.50}_{-0.44}$	$2991^{+150}_{-144}$	$-4061^{+154}_{-170}$	$-1.389^{+0.369}_{-0.520}$

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



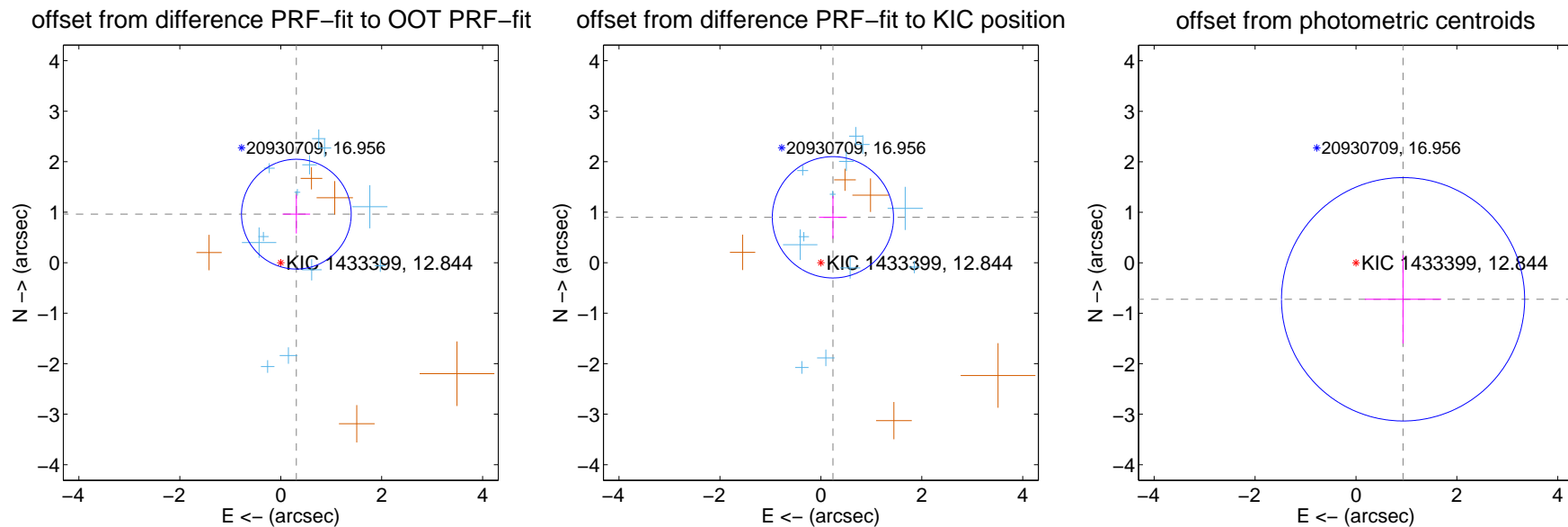
## DV Centroid Data

Supplemental centroid analysis for 001433399-01. Kepler magnitude: 12.84. Transit SNR 4.84

There are 12 quarters with good PRF difference image offsets

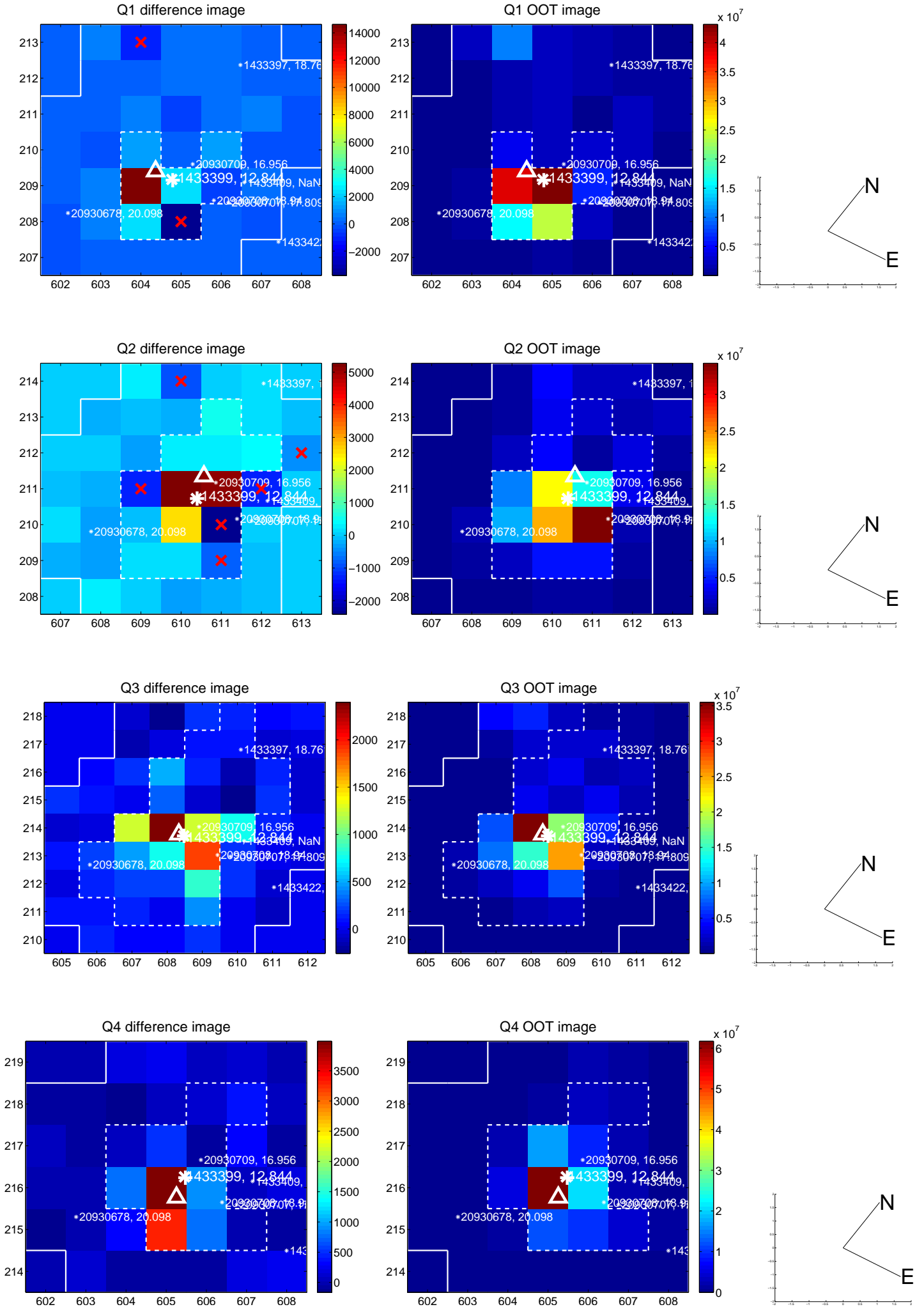
The direct PRF centroid is offset from the target star catalog position by about 0.10 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.010 \pm 0.362$	2.79	$-0.309 \pm 0.274$	$0.961 \pm 0.383$
PRF-fit source offset from KIC position	$0.930 \pm 0.400$	2.32	$-0.239 \pm 0.276$	$0.899 \pm 0.423$
photometric centroid source offset	$1.18 \pm 0.80$	1.47	$-0.93 \pm 0.76$	$-0.72 \pm 0.88$

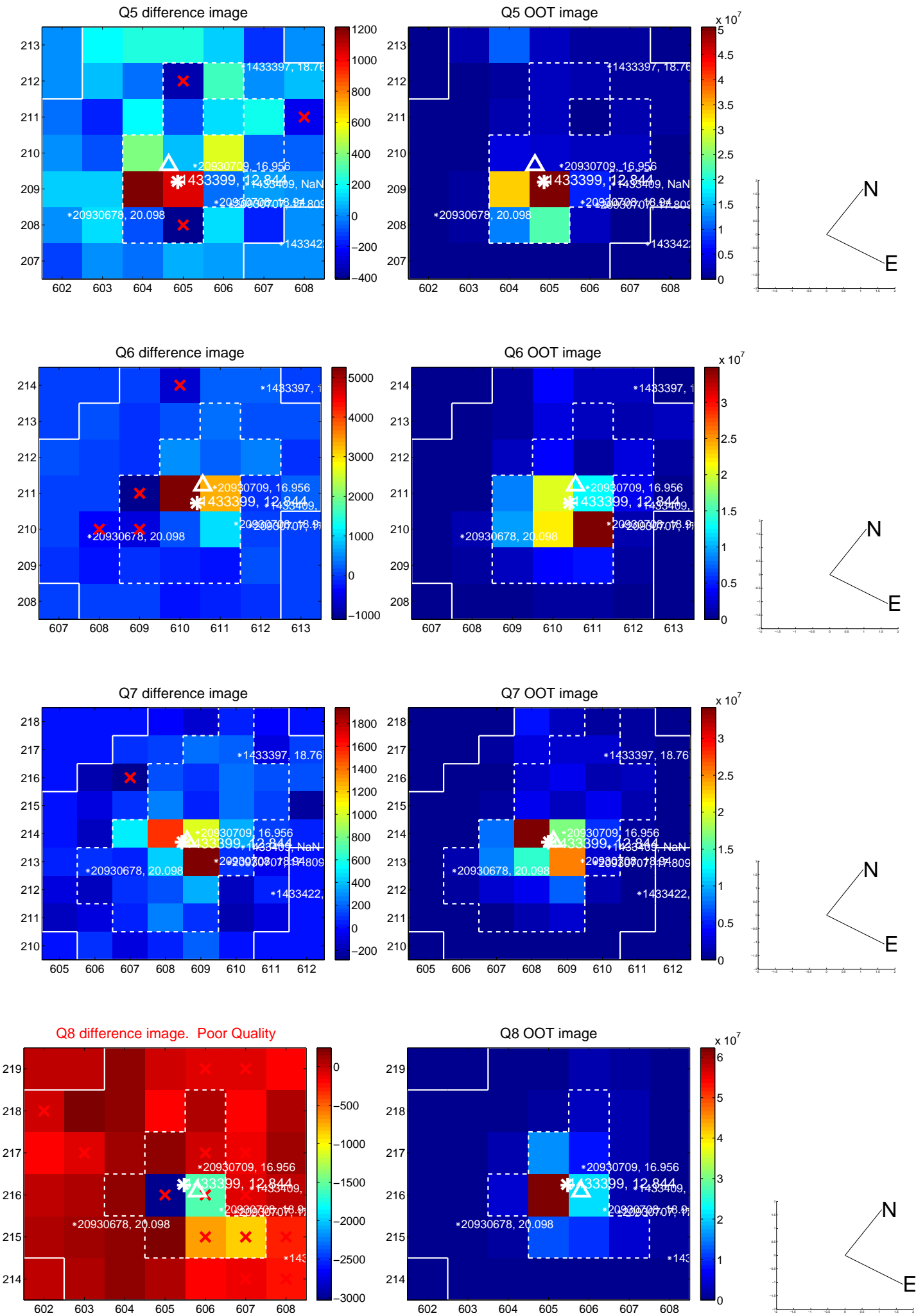


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

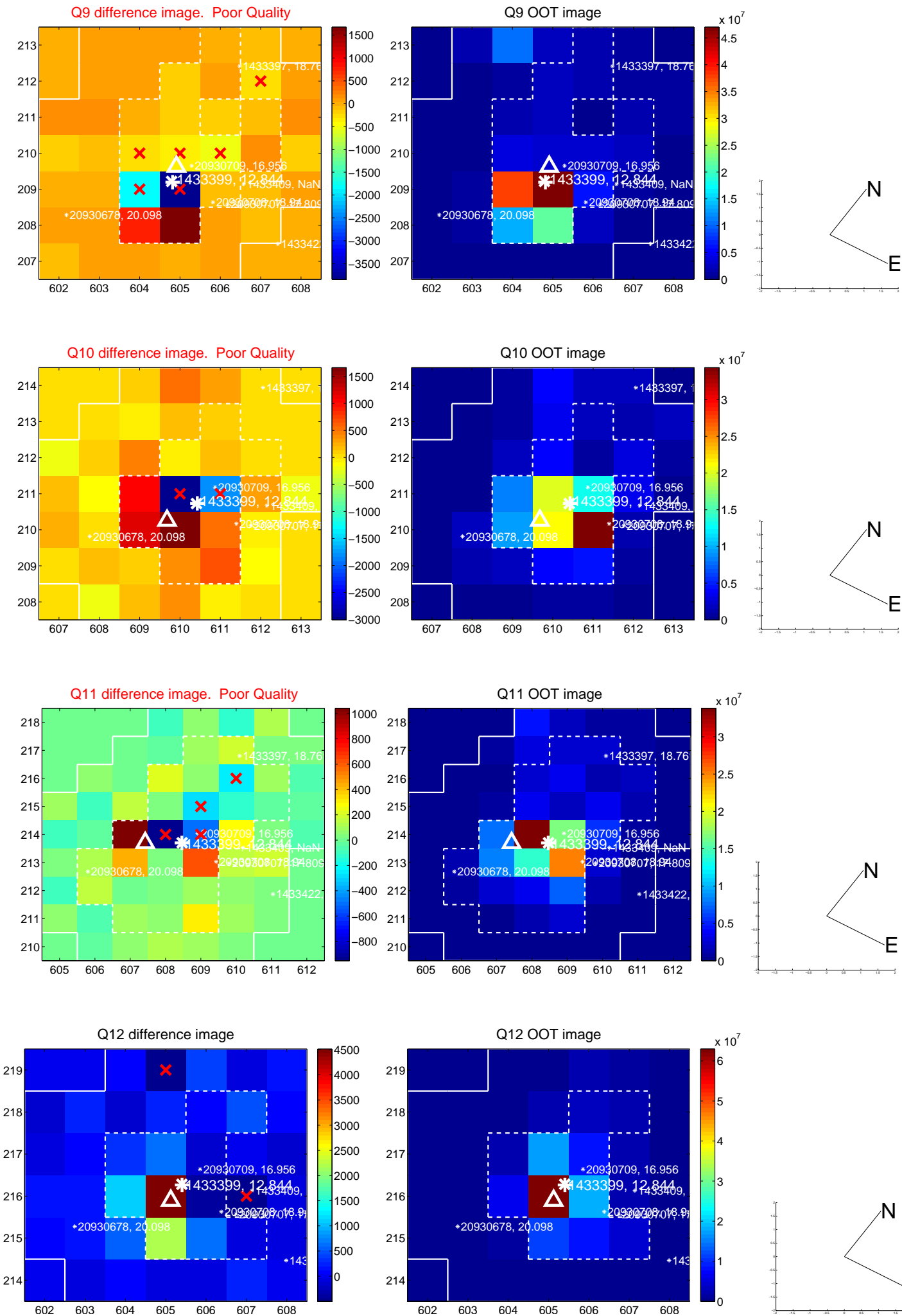


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

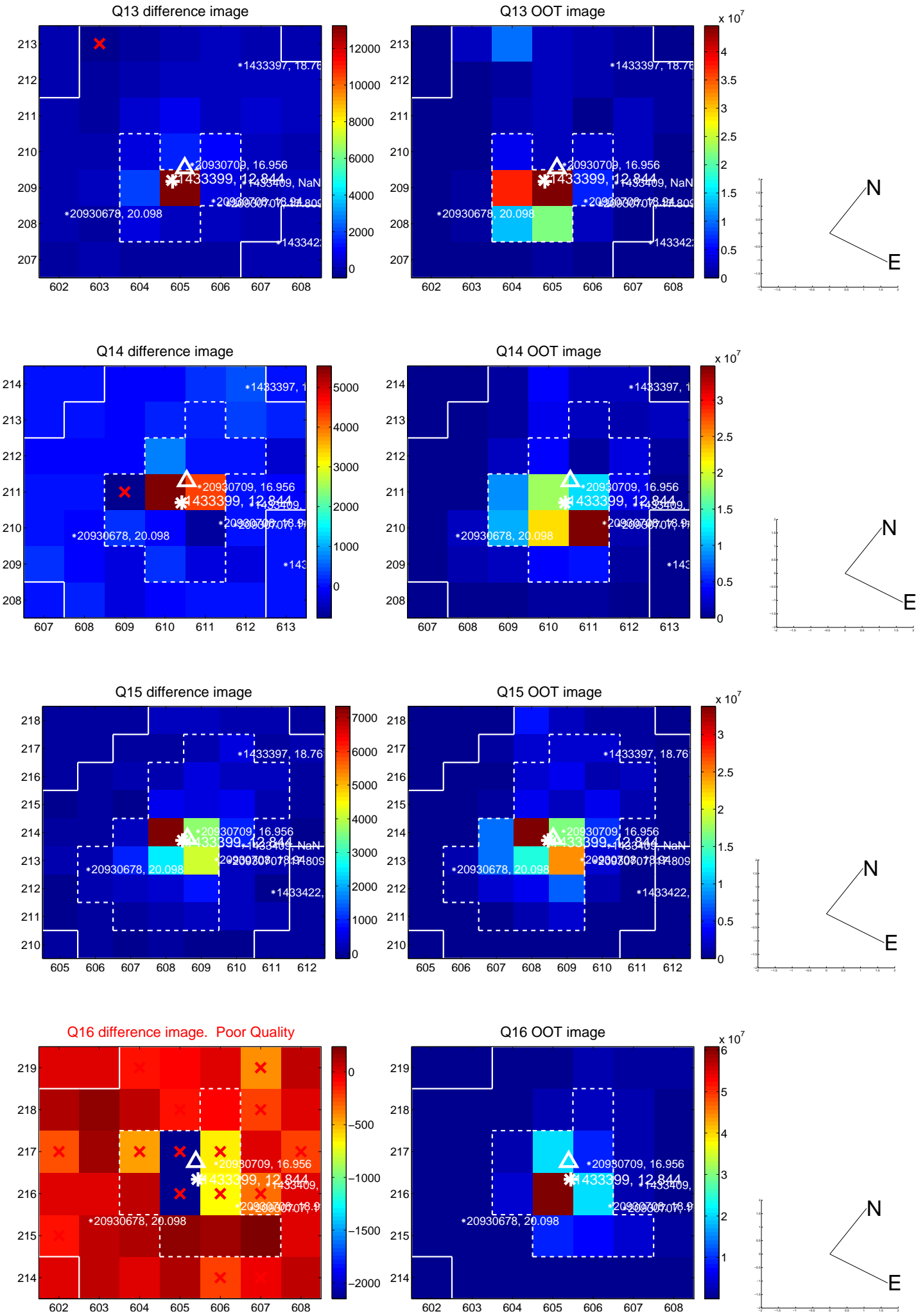




white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

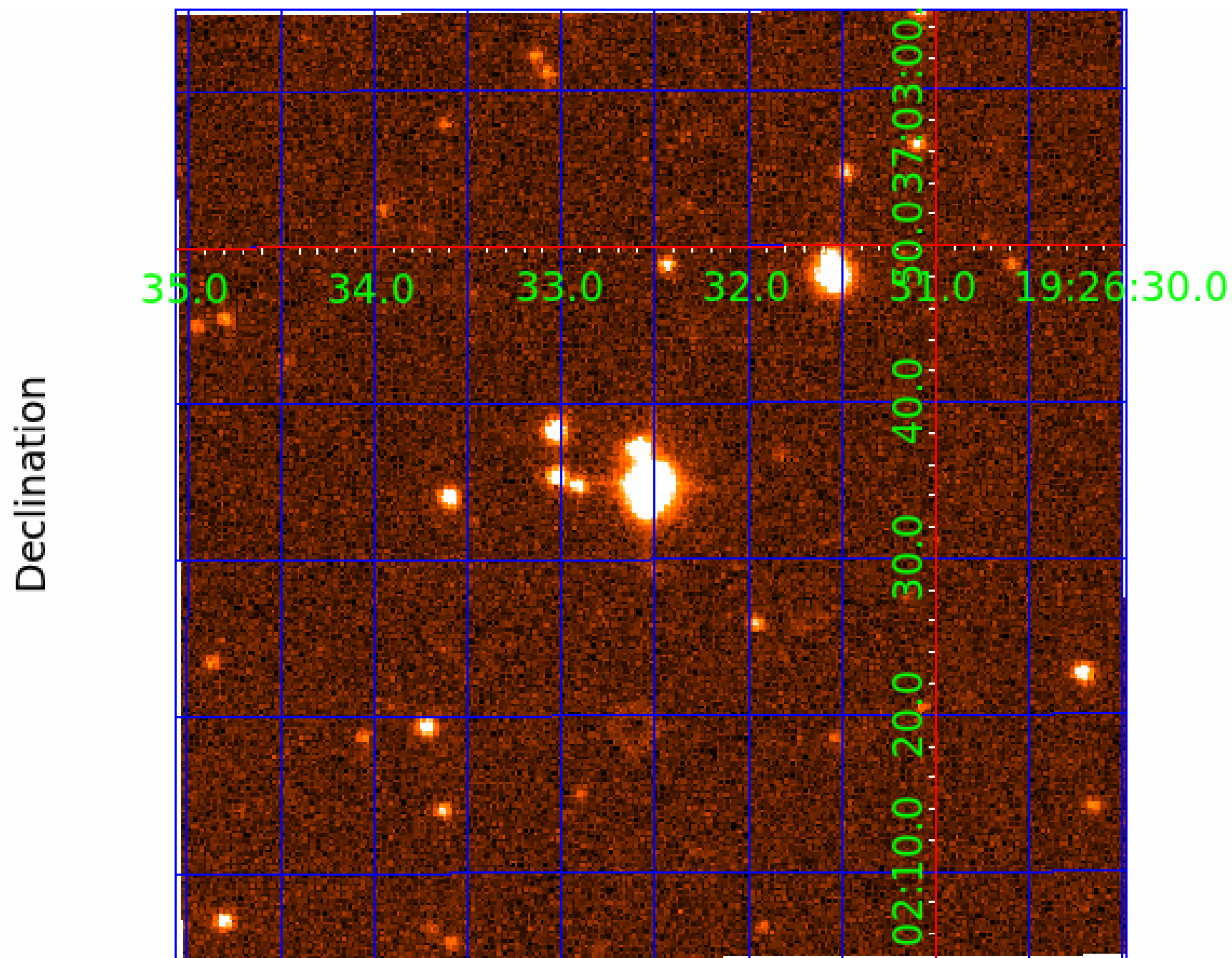


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.





UKIRT Image





# KIC 001433399

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
001433399-01	OBS	No	2.126459	133.577945	29.6	13.071	9.0	4.8	1.81	6865	1.06	4926.05
001433399-02	OBS	No	563.383562	449.988290	5120.2	33.523	14.8	13.5	1.81	6865	22.15	2.90
001433399-03	OBS	No	253.125555	332.458888	822.9	12.997	12.7	12.3	1.81	6865	5.84	8.41
001433399-04	OBS	No	540.097860	154.355847	2113.4	27.354	12.6	9.5	1.81	6865	9.71	3.06
001433399-05	OBS	No	225.494771	274.756528	907.6	12.881	12.4	12.4	1.81	6865	8.42	9.81
001433399-06	OBS	No	57.115815	158.078027	241.4	9.000	11.2	-1.0	1.81	6865	2.85	61.24

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
001433399-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV
001433399-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES—MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
001433399-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
001433399-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
001433399-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
001433399-06	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_NOFITS

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

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

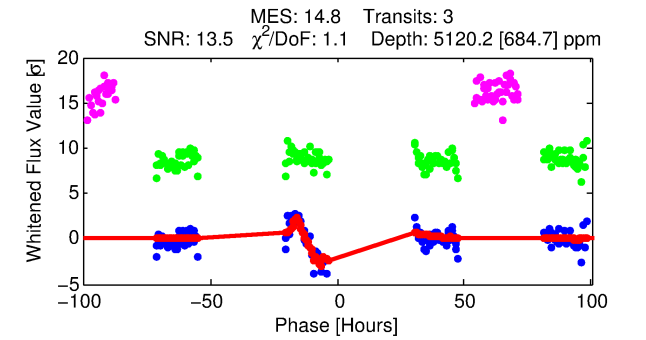
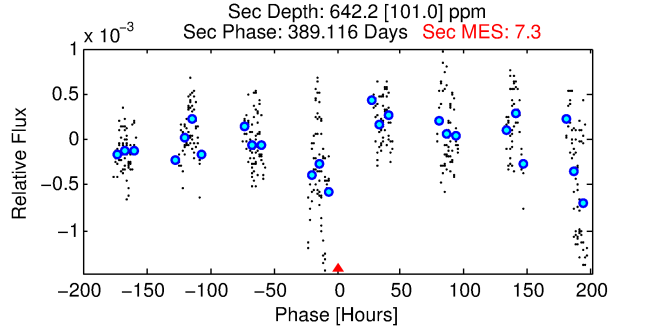
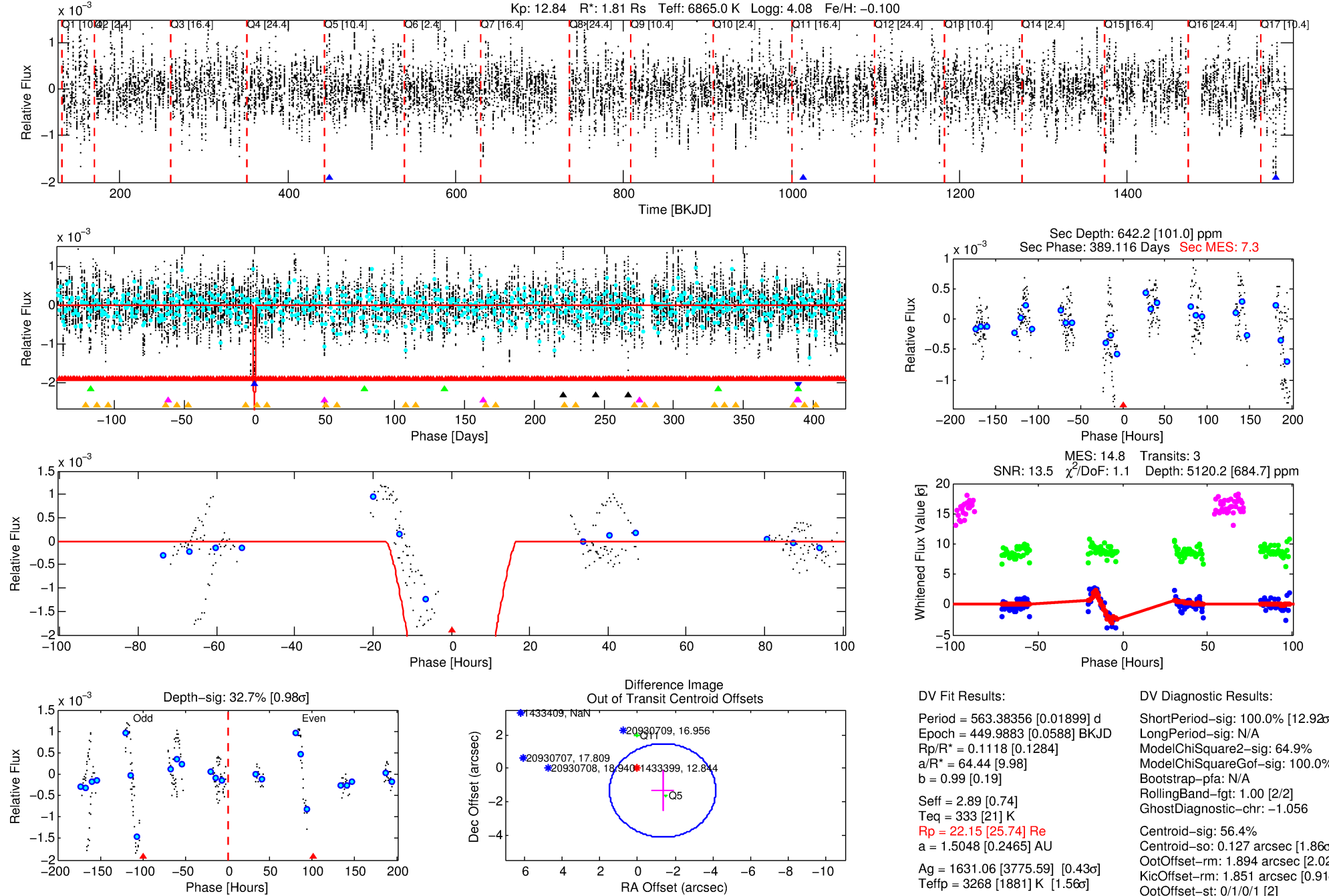
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 001433399-02

No Significant Match Found

# DV One-Page Summary

KIC: 1433399 Candidate: 2 of 6 Period: 563.384 d



## DV Fit Results:

Period = 563.38356 [0.01899] d  
Epoch = 449.9883 [0.0588] BKJD  
Rp/R\* = 0.1118 [0.1284]  
a/R\* = 64.44 [9.98]  
b = 0.99 [0.19]  
Seff = 2.89 [0.74]  
Teff = 333 [21] K  
Rp = 22.15 [25.74] Re  
a = 1.5048 [0.2465] AU  
Ag = 1631.06 [3775.59] [0.43σ]  
Teffp = 3268 [1881] K [1.56σ]

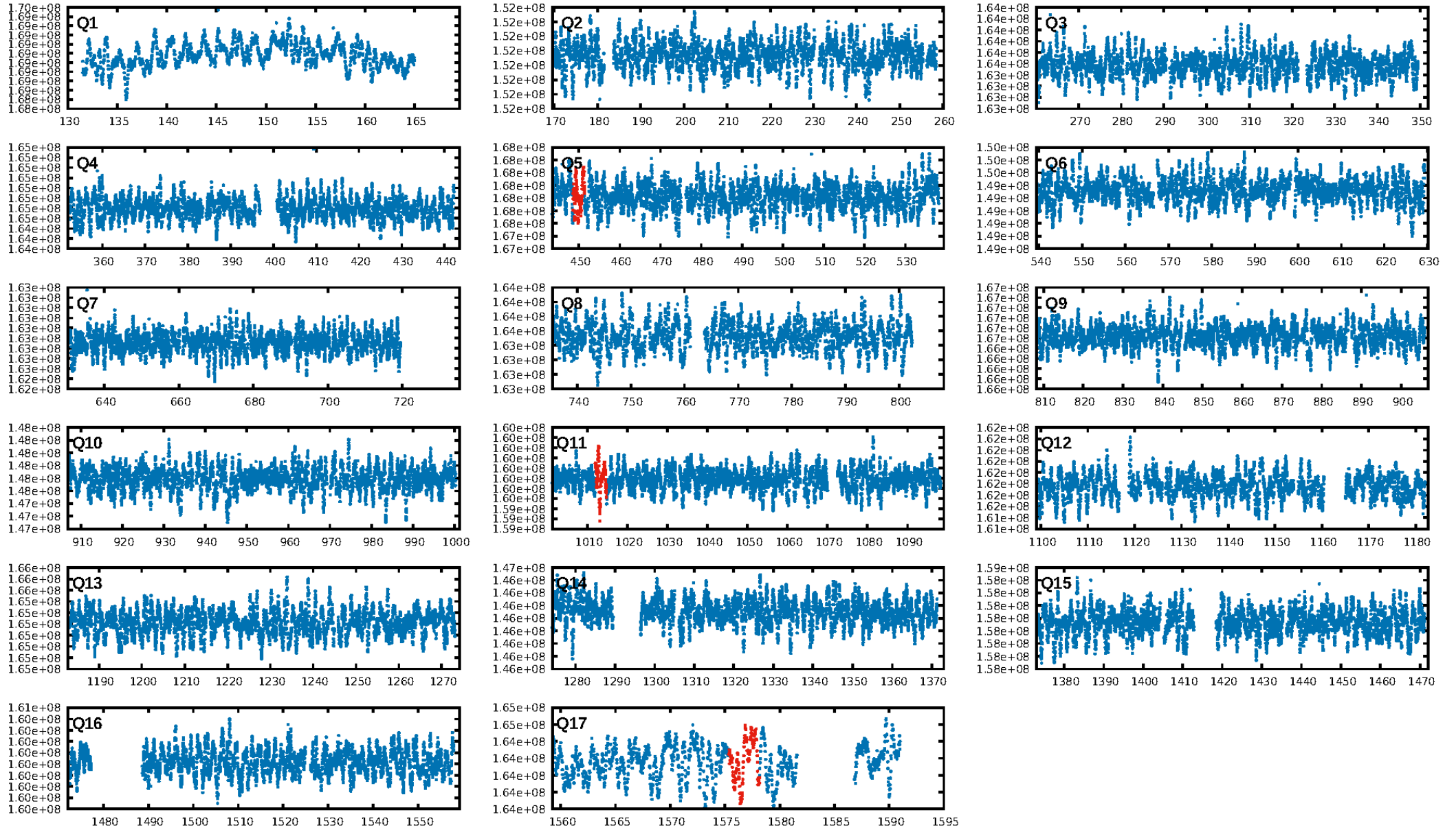
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [12.92σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 64.9%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [2/2]  
GhostDiagnostic-chr: -1.056  
Centroid-sig: 56.4%  
Centroid-so: 0.127 arcsec [1.86σ]  
OotOffset-rm: 1.894 arcsec [2.02σ]  
KicOffset-rm: 1.851 arcsec [0.91σ]  
OotOffset-st: 0/1/0/1 [2]  
KicOffset-st: 0/1/0/1 [2]  
DiffImageQuality-fgm: 0.50 [1/2]  
DiffImageOverlap-fno: 0.00 [0/3]

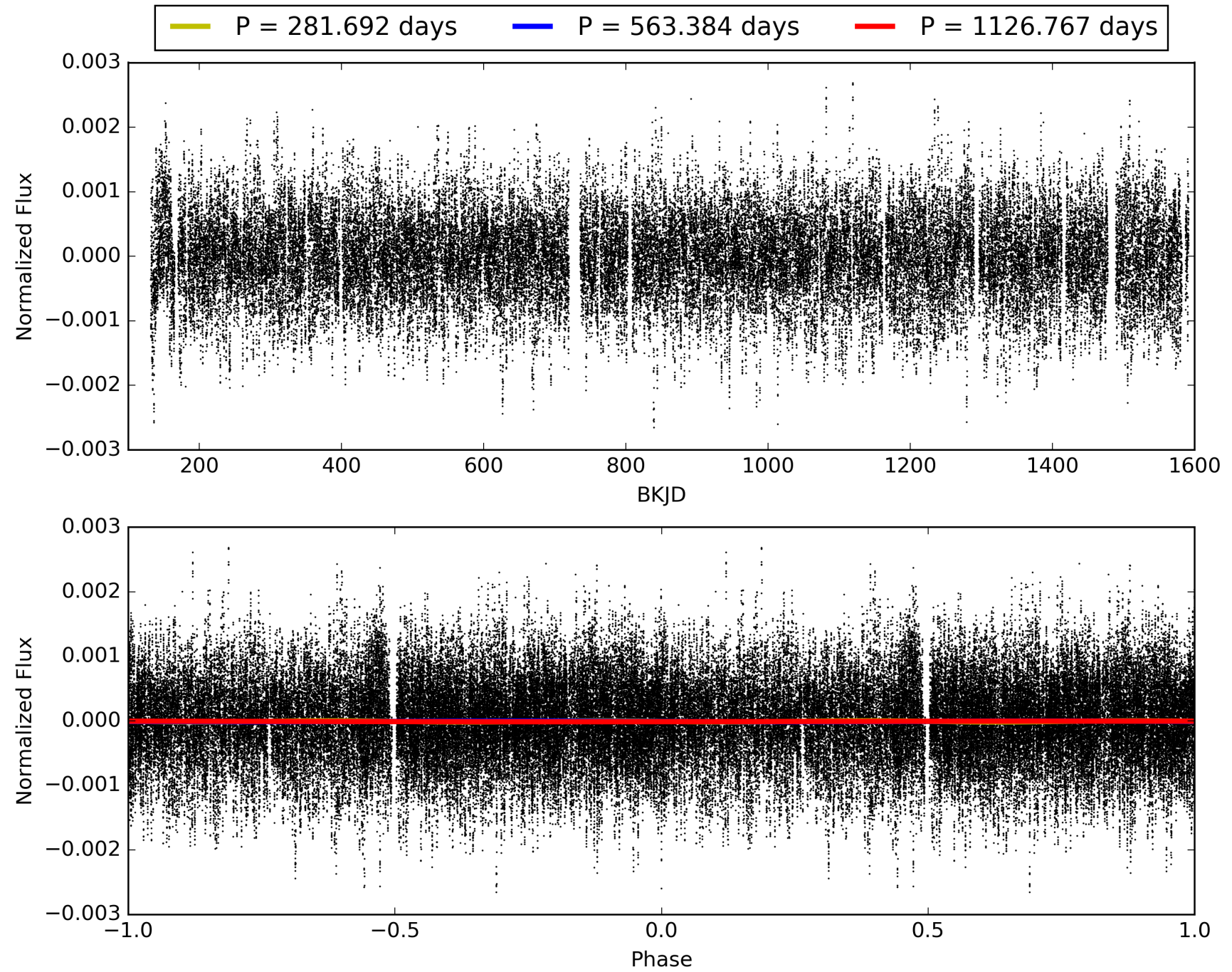
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 00:52:49 Z

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

# TCE 001433399-02, PDC Light Curves



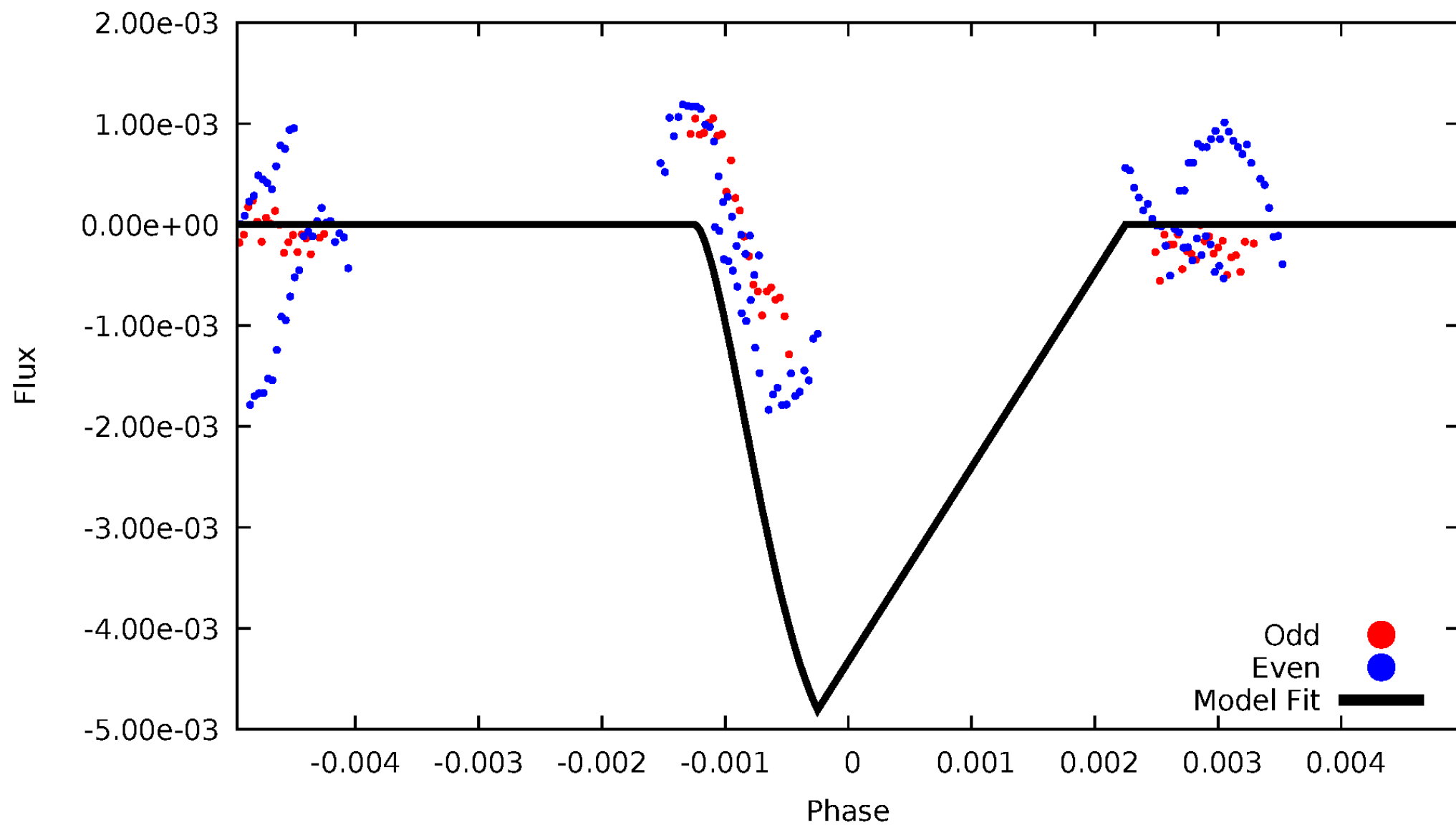
# TCE 001433399-02





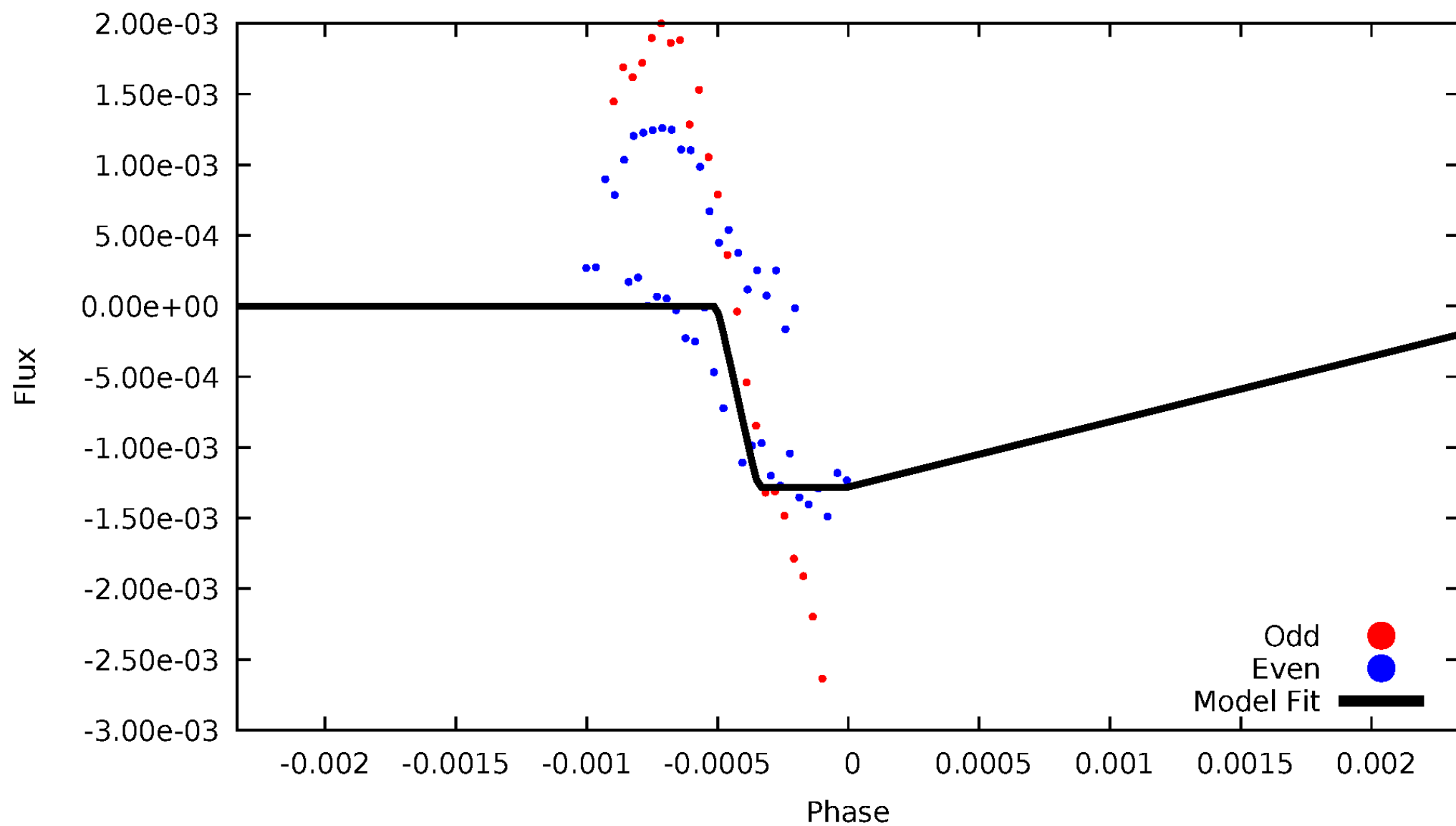
DV Odd/Even

TCE 001433399-02



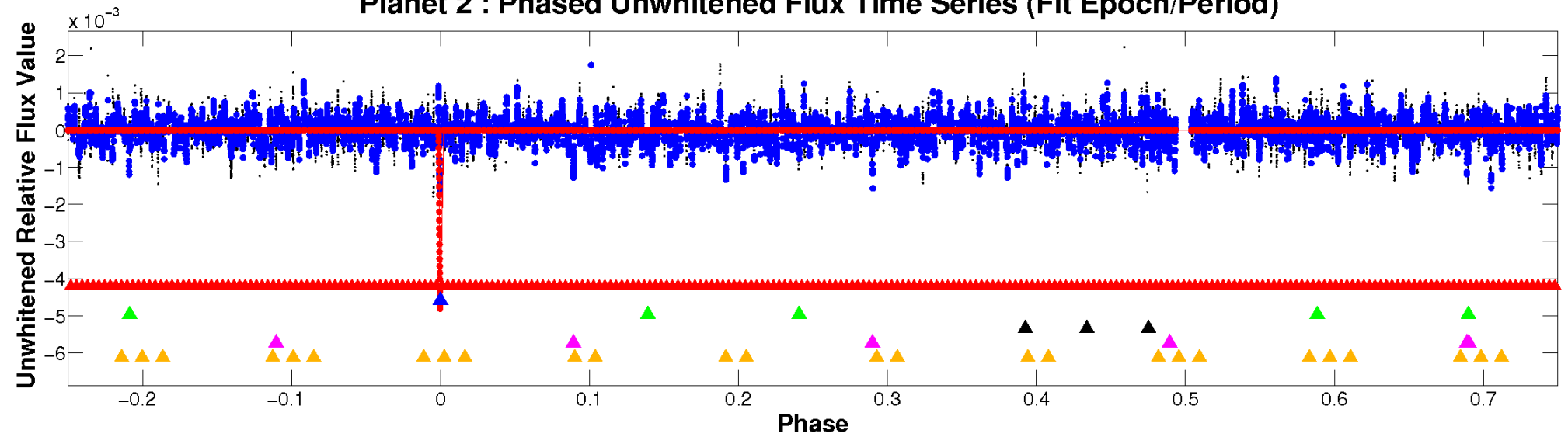
# ALT Odd/Even

TCE 001433399-02

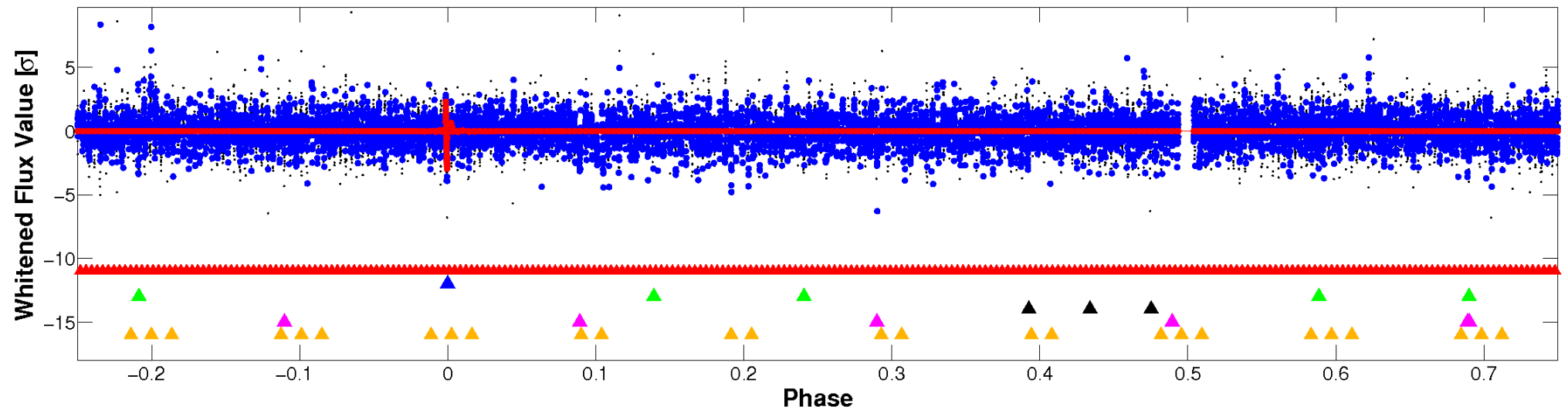


# Non-Whitened Vs. Whitened Light Curve

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

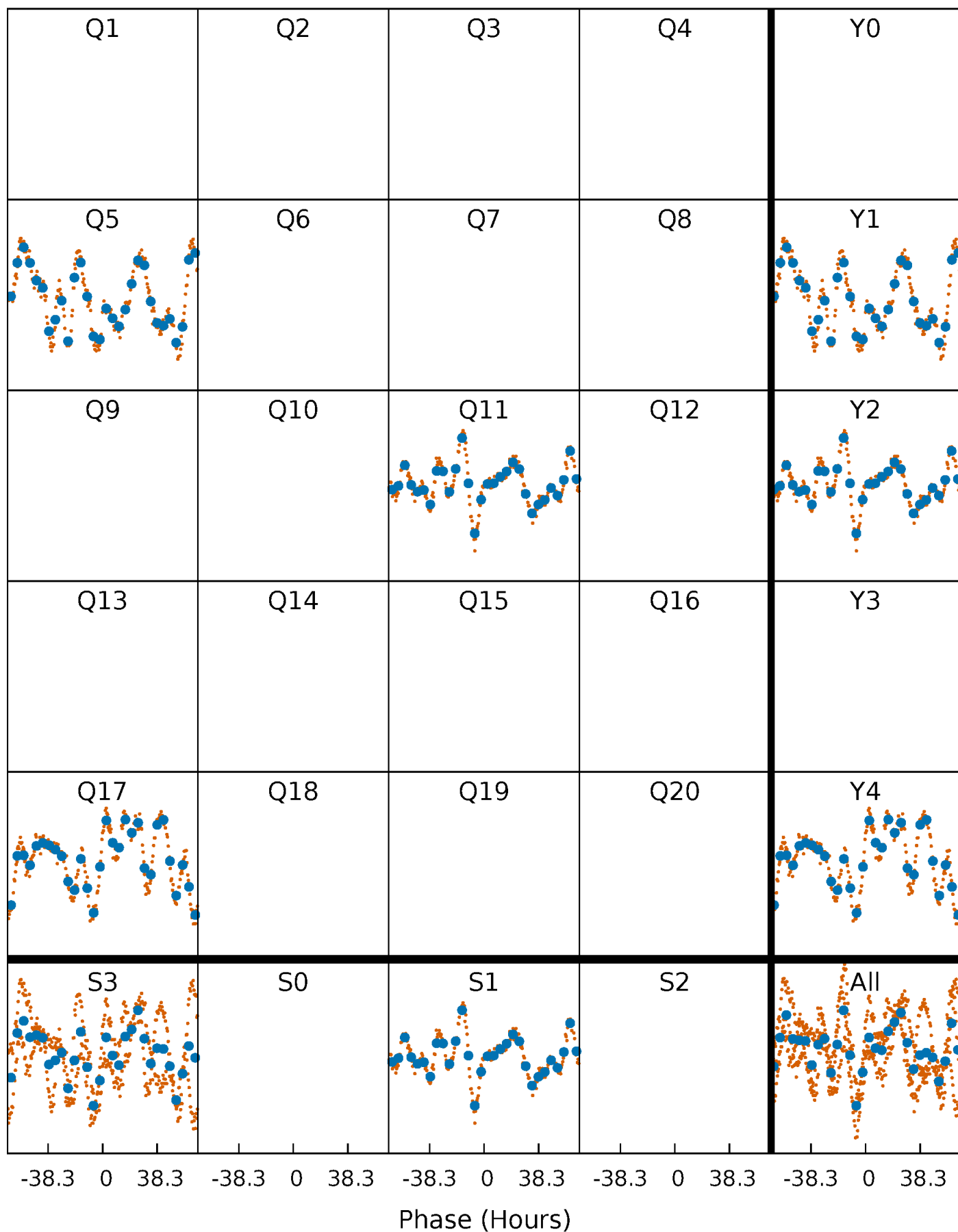


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

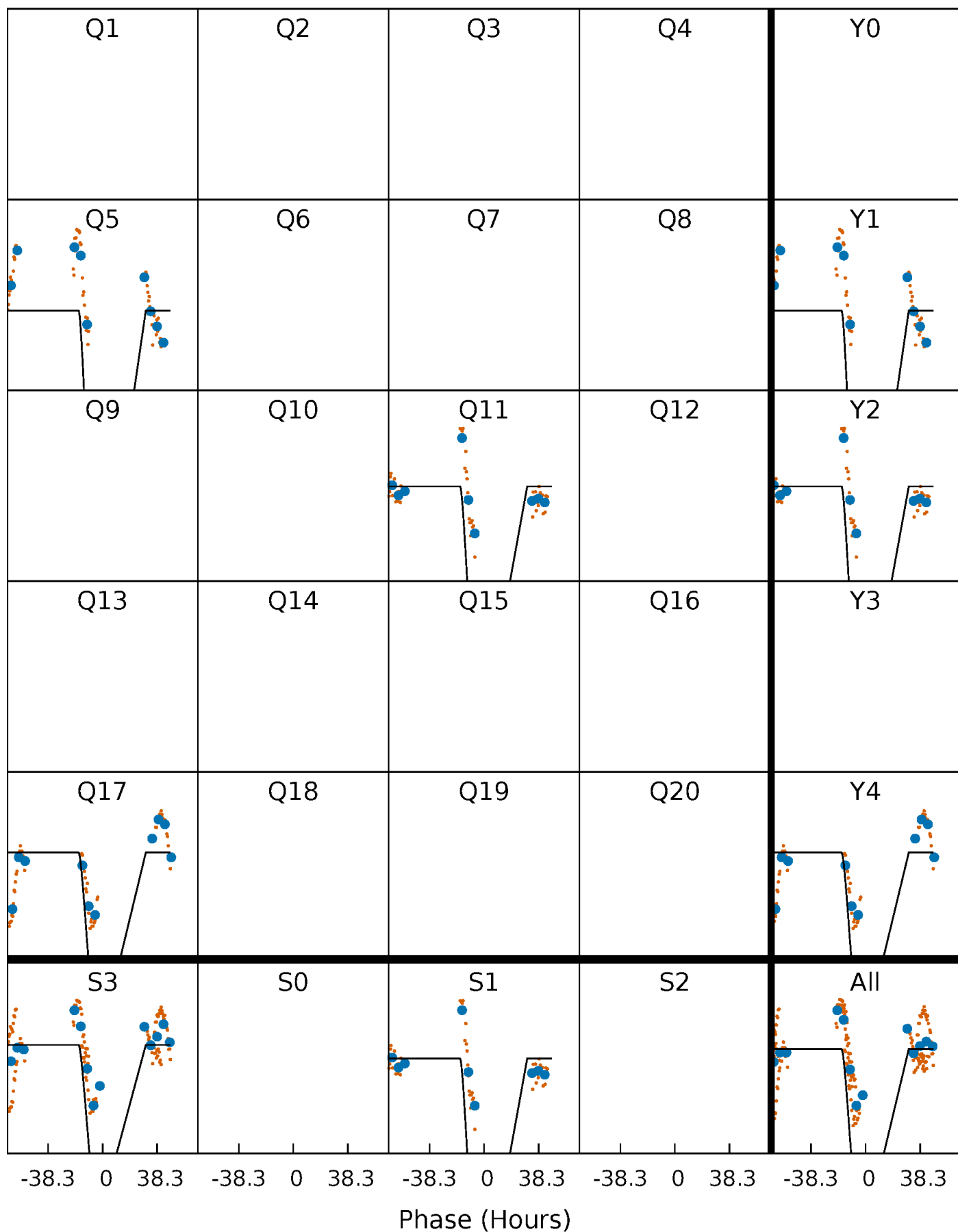
TCE 001433399-02     $P=563.383562$  Days     $T_0=449.988290$  (BKJD)





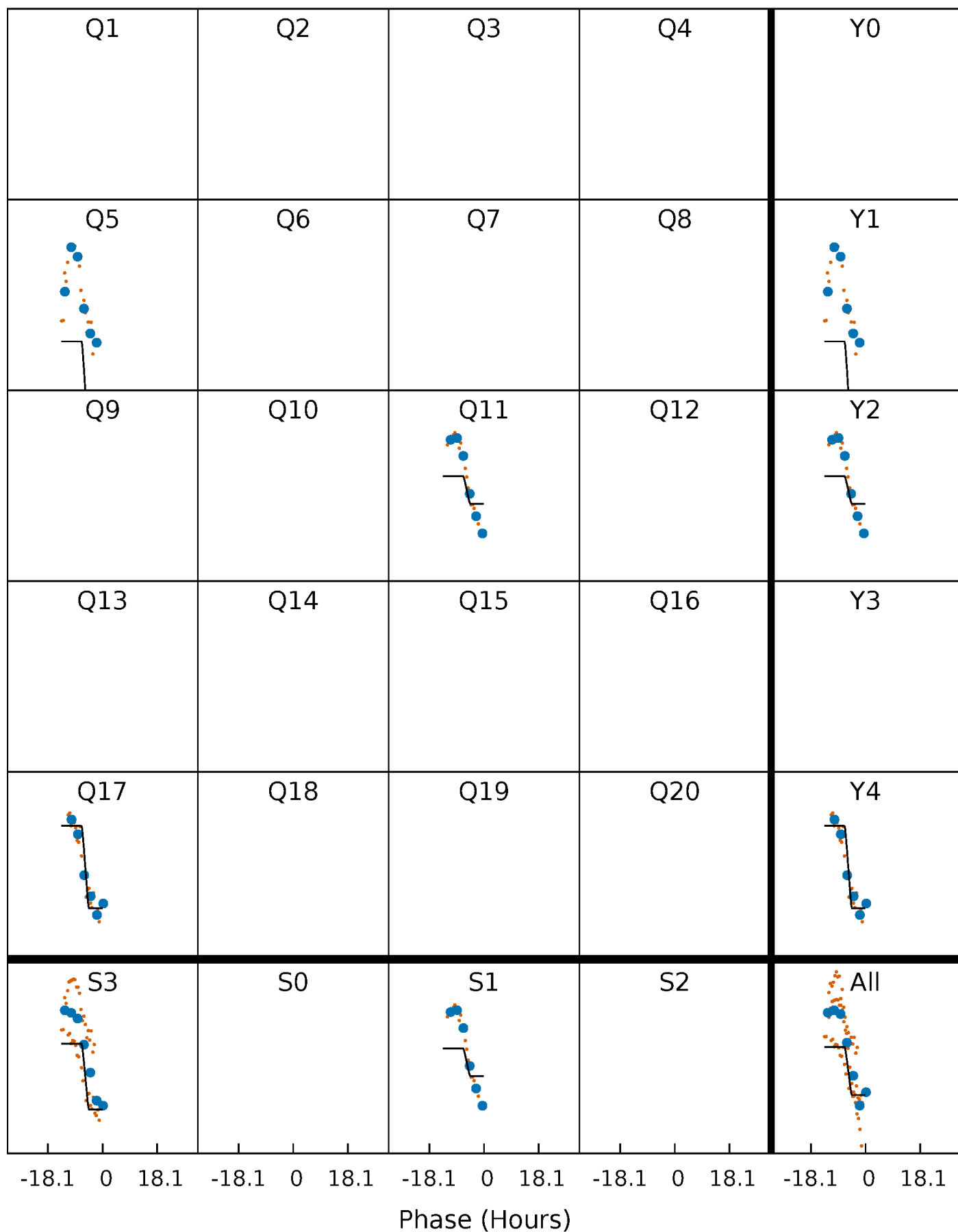
# DV Quarter-Phased Transit Curves

TCE 001433399-02     $P=563.383562$  Days     $T_0=449.988290$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

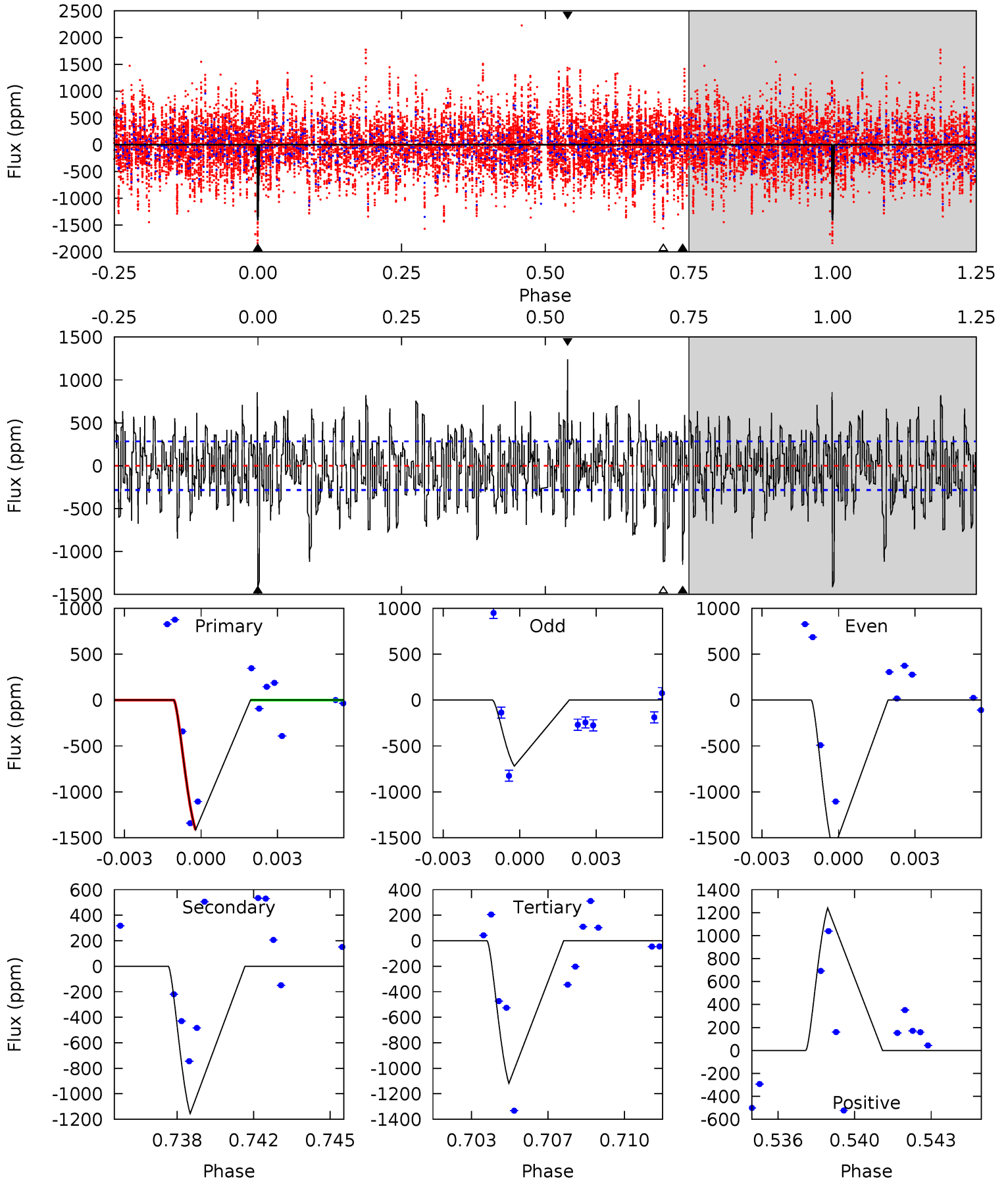
TCE 001433399-02 P=563.462228 Days  $T_0=449.694387$  (BKJD)



# DV Model-Shift Uniqueness Test

001433399-02, P = 563.383562 Days, E = 449.988290 Days

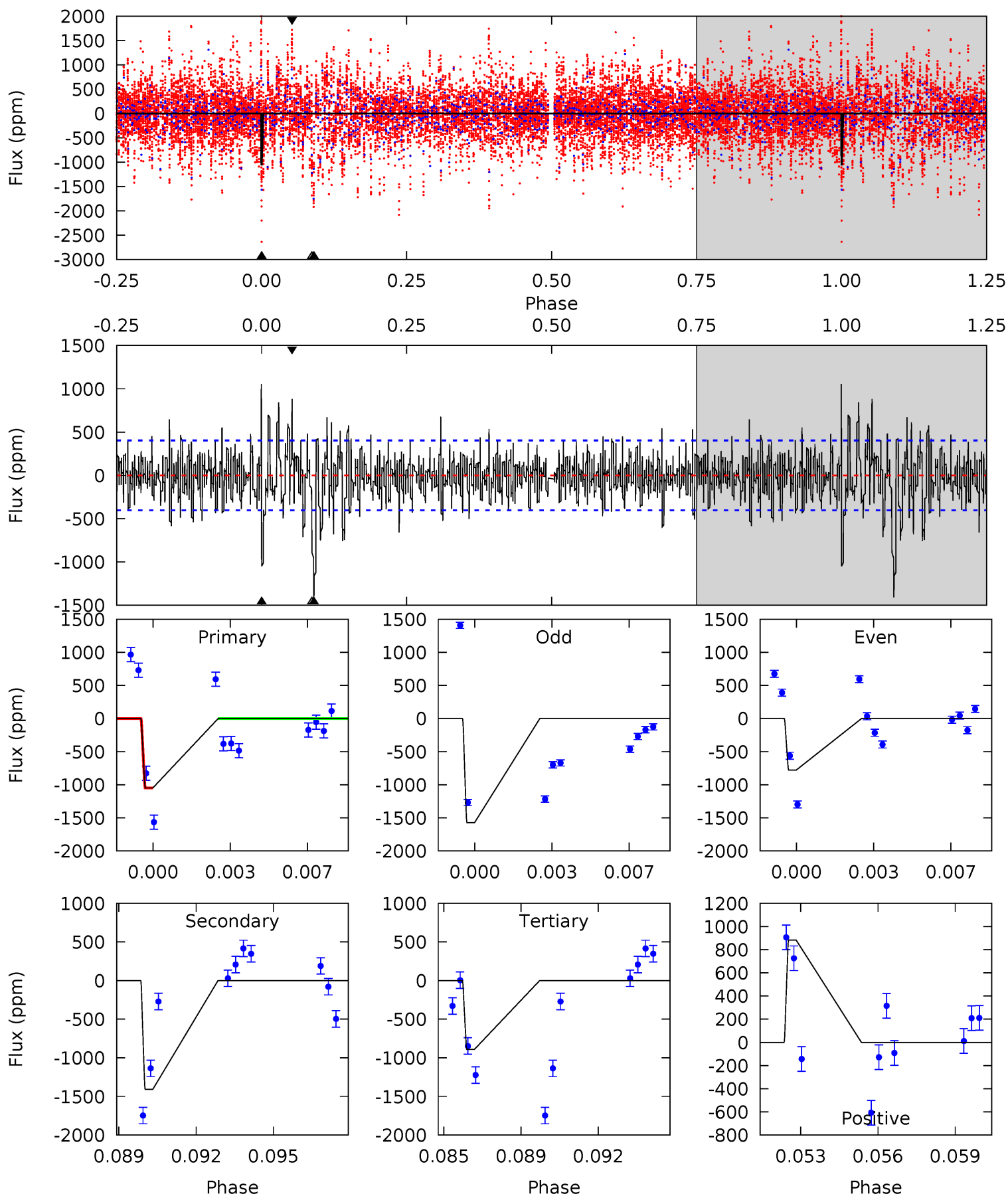
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
26.0	21.3	20.6	22.9	5.23	2.92	5.57	5.44	3.18	0.69	-1.57	8.10	0	0.47	0



# Alt Model-Shift Uniqueness Test

001433399-02, P = 563.462228 Days, E = 449.694387 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
13.6	18.3	11.6	11.5	5.24	2.94	2.72	2.05	2.16	6.71	6.82	4.85	0	0.43	0





### Stellar Parameters For KIC 001433399

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6865^{+82}_{-82}$	$4.076^{+0.143}_{-0.117}$	$-0.100^{+0.150}_{-0.150}$	$1.815^{+0.331}_{-0.331}$	$1.435^{+0.113}_{-0.124}$	$0.338^{+0.242}_{-0.122}$
	+1%/-1%	+4%/-3%	+150%/-150%	+18%/-18%	+8%/-9%	+72%/-36%
Source	SPE68	SPE68	SPE68	DSEP		

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

### Secondary Eclipse Parameters for KIC 001433399-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-1155 \pm 54$	$27.39^{+23.65}_{-17.46}$	$466^{+21}_{-23}$	$3765^{+1930}_{-653}$	$1908^{+13001}_{-1353}$
Alt.	$-1408 \pm 77$	$19.55^{+20.40}_{-12.90}$	$464^{+20}_{-22}$	$4413^{+2782}_{-970}$	$4660^{+33984}_{-3554}$

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

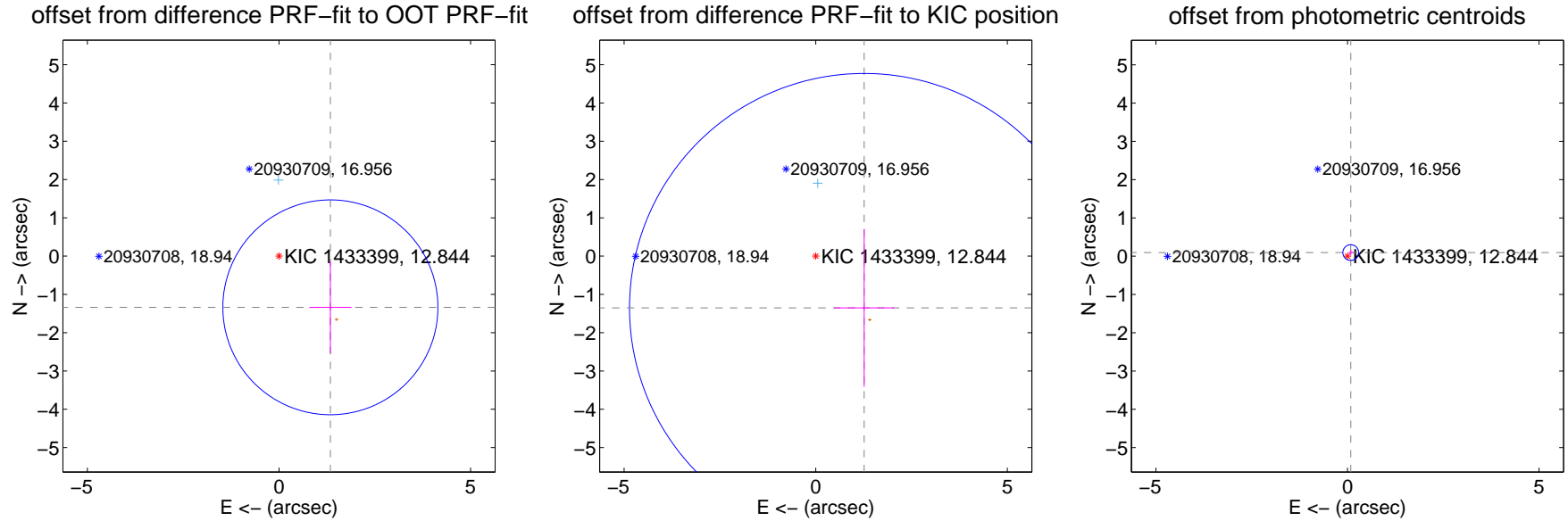
## DV Centroid Data

Supplemental centroid analysis for 001433399-02. Kepler magnitude: 12.84. Transit SNR 13.51

There are 1 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.11 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.894 \pm 0.935$	2.02	$-1.341 \pm 0.553$	$-1.337 \pm 1.203$
PRF-fit source offset from KIC position	$1.851 \pm 2.041$	0.91	$-1.265 \pm 0.788$	$-1.352 \pm 2.060$
photometric centroid source offset	$0.13 \pm 0.07$	1.86	$-0.09 \pm 0.06$	$0.09 \pm 0.07$

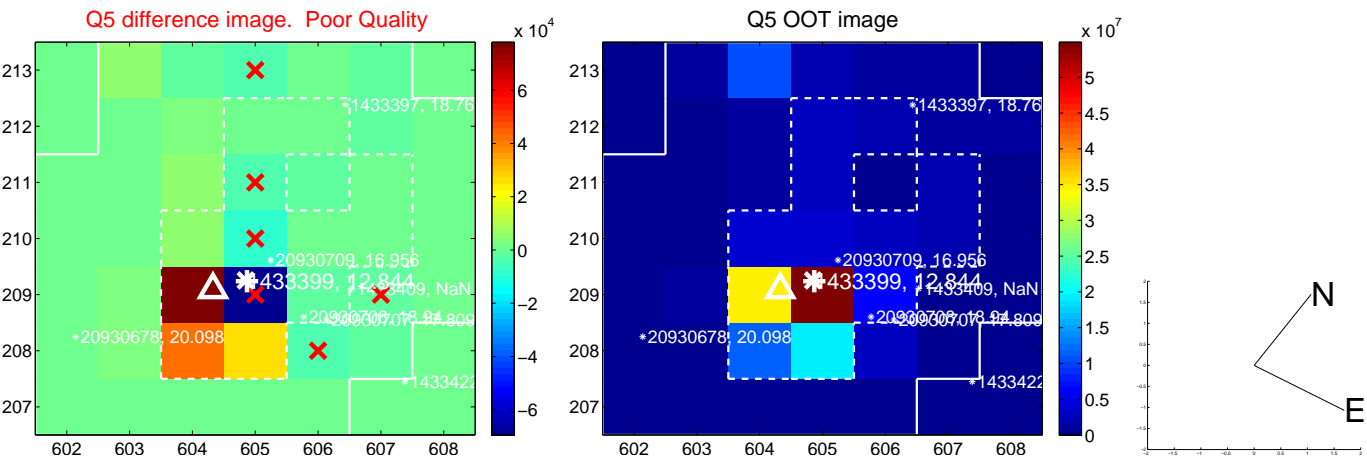


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

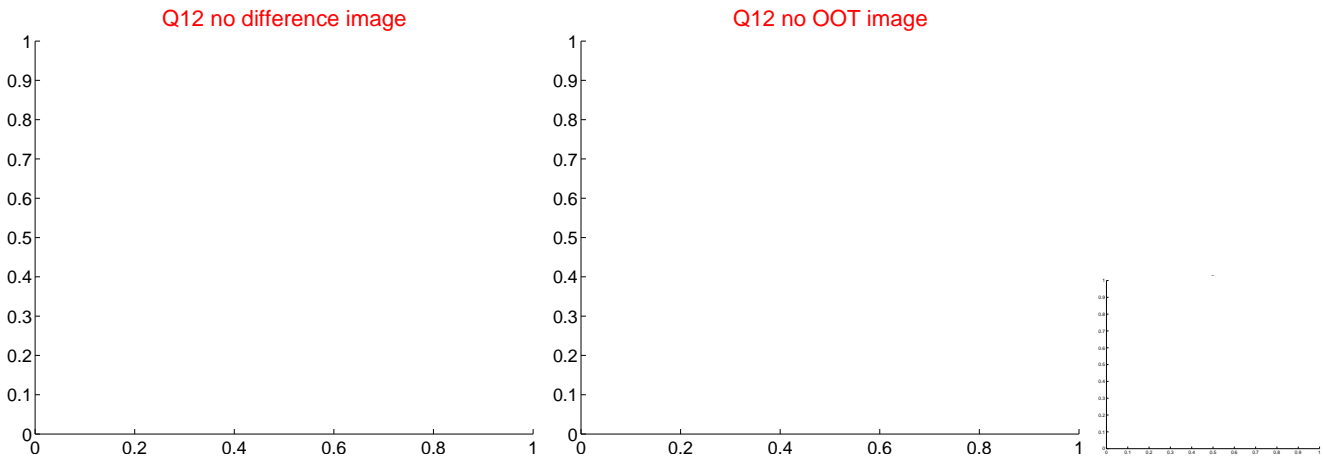
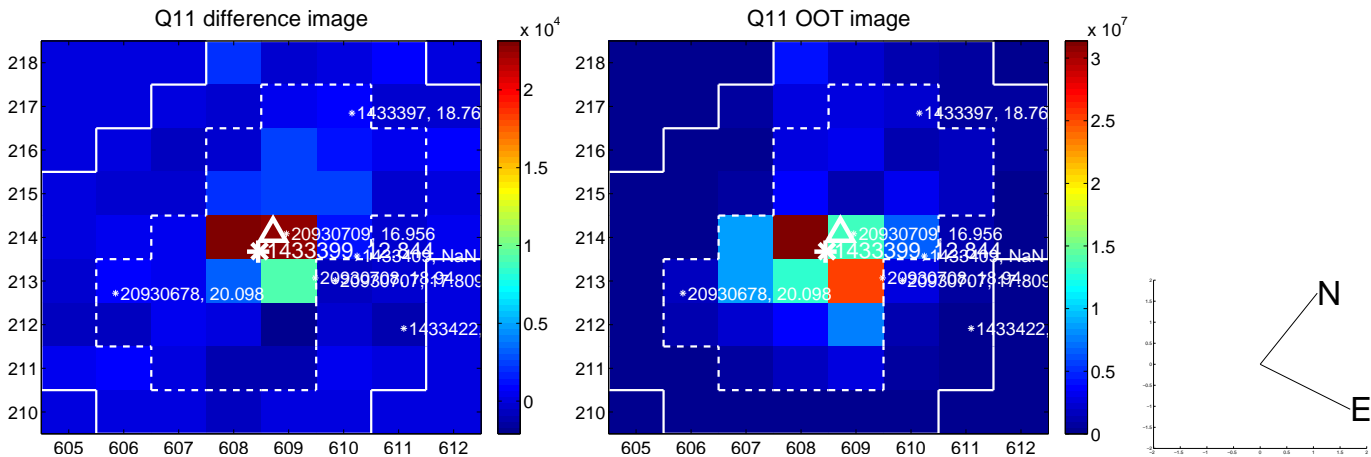
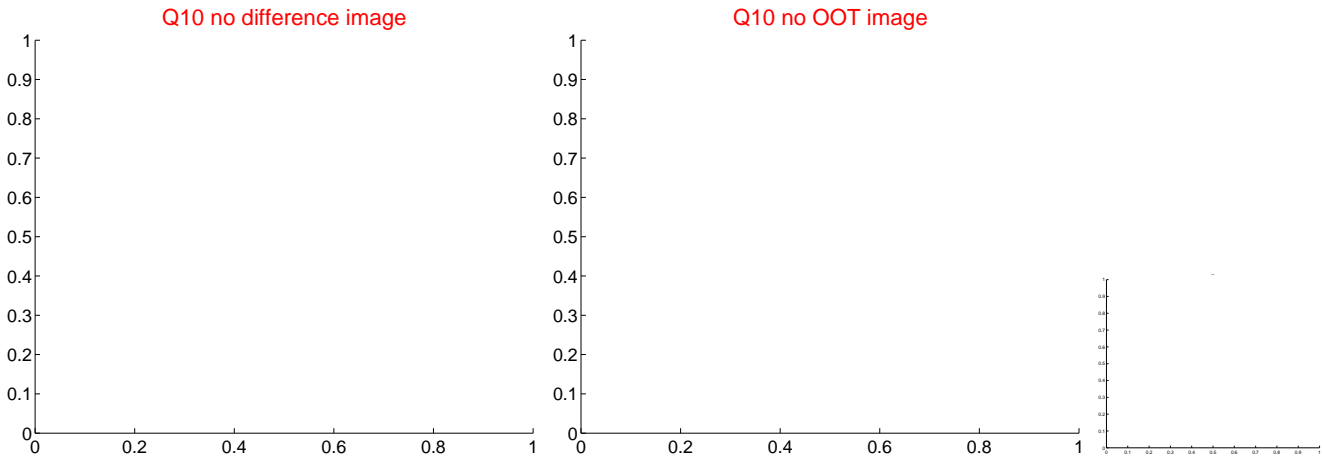
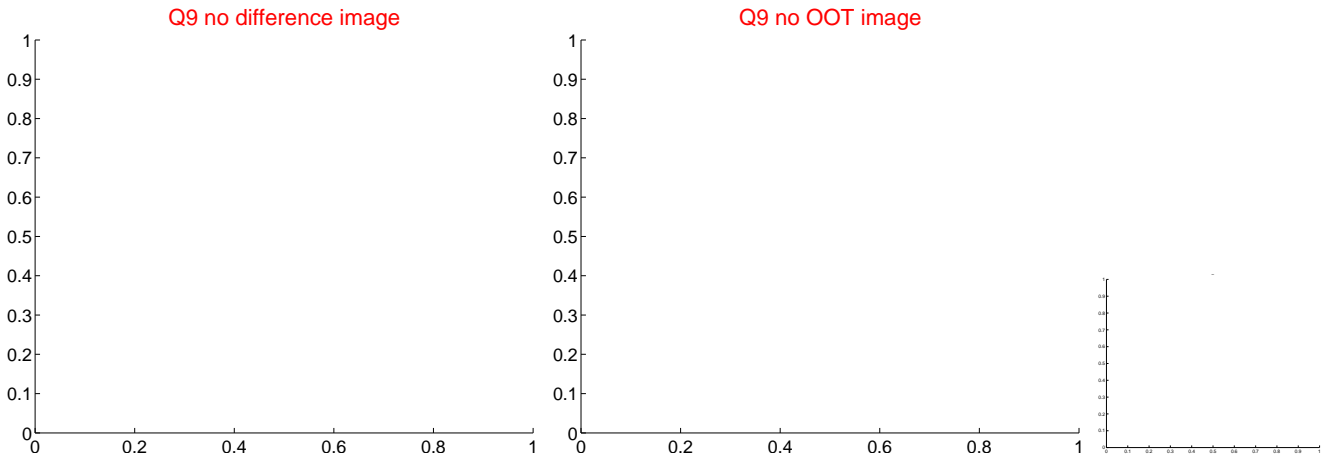
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

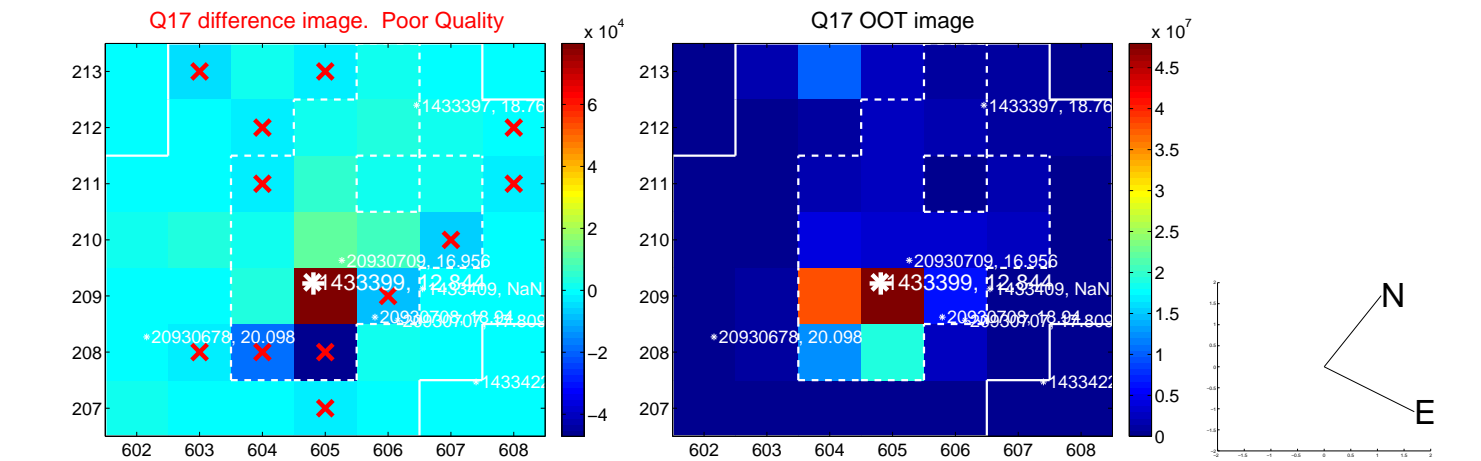




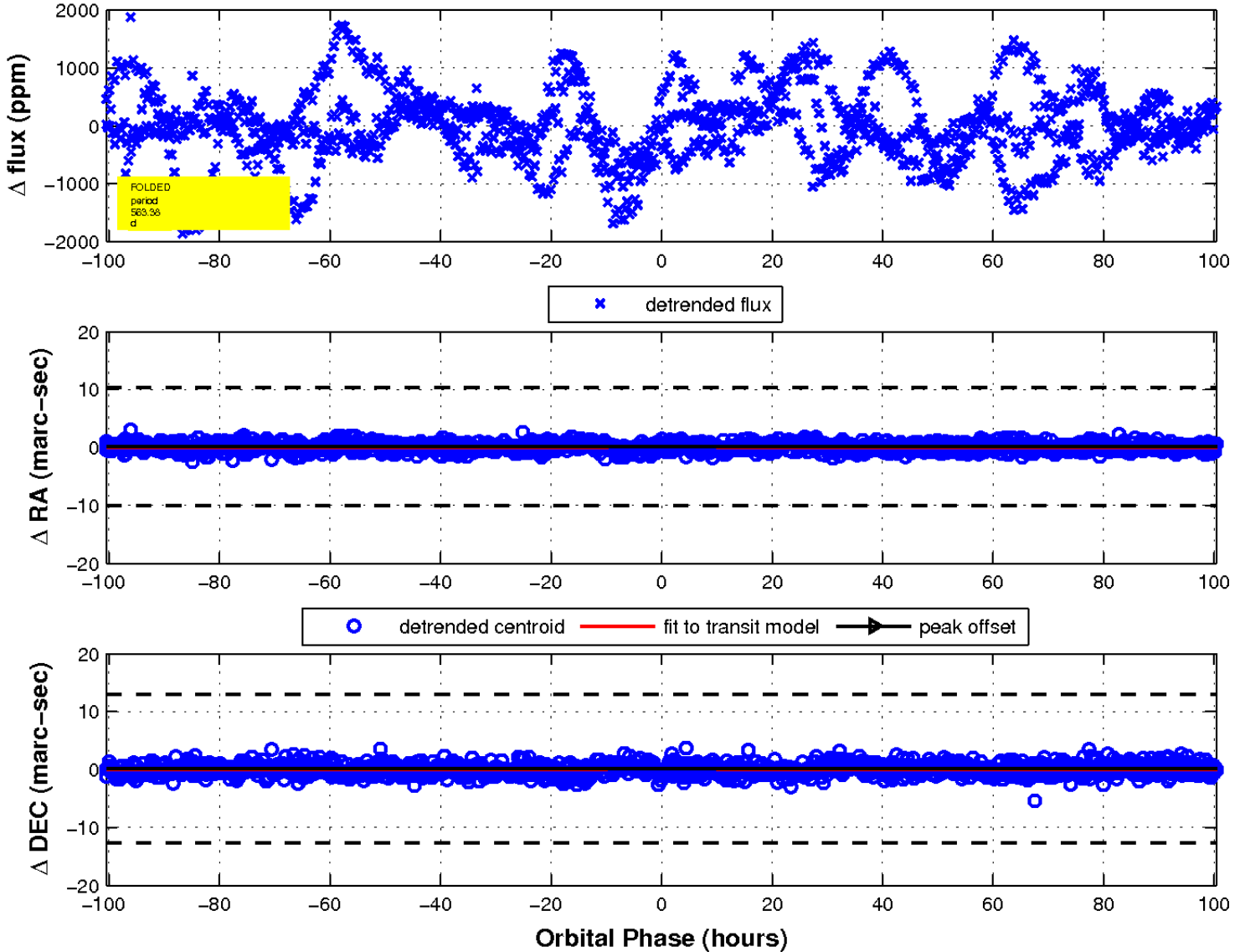
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



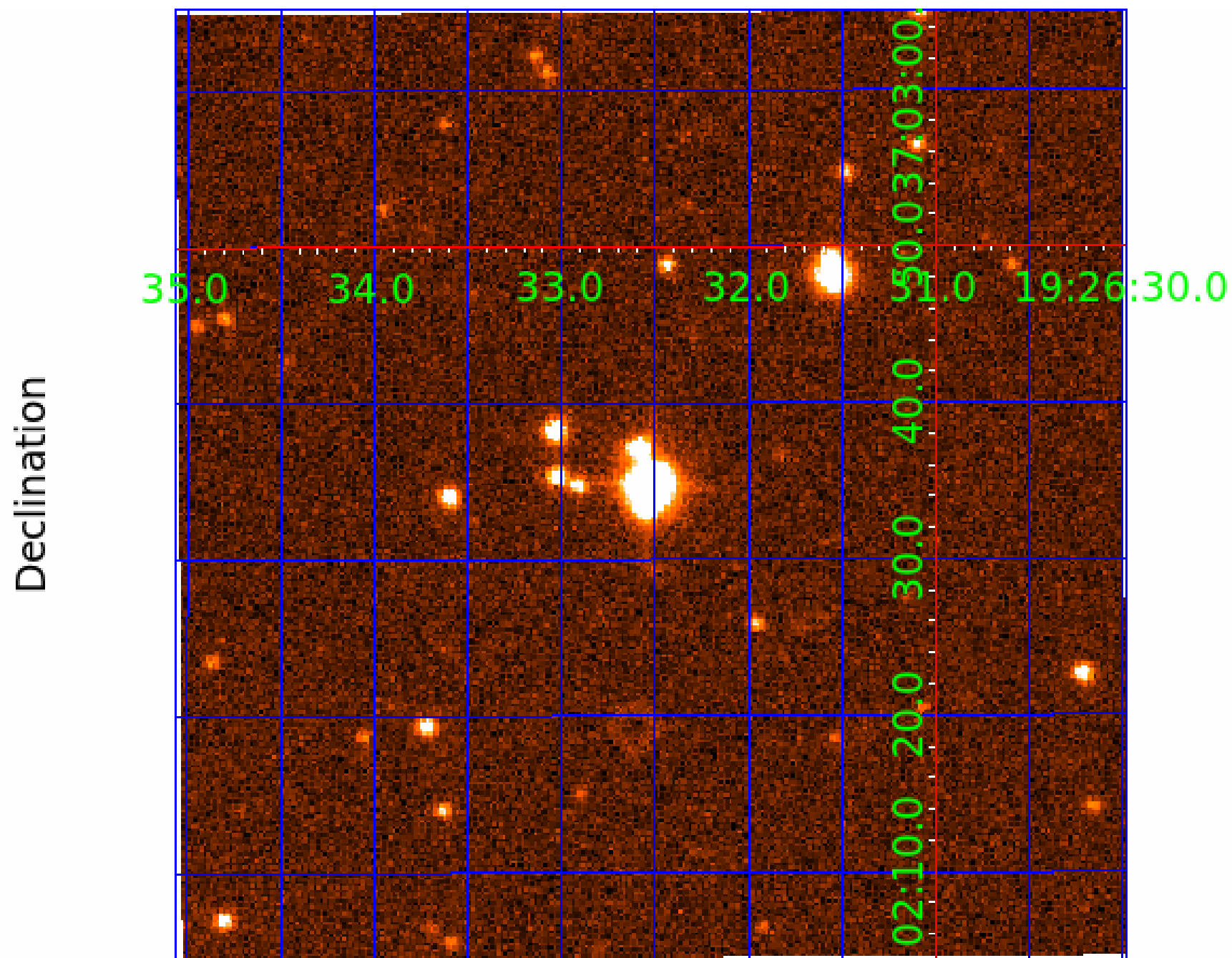
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



fluxWeightedCentroids, Planet 2 of 6



UKIRT Image



# KIC 001433399

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
001433399-01	OBS	No	2.126459	133.577945	29.6	13.071	9.0	4.8	1.81	6865	1.06	4926.05
001433399-02	OBS	No	563.383562	449.988290	5120.2	33.523	14.8	13.5	1.81	6865	22.15	2.90
001433399-03	OBS	No	253.125555	332.458888	822.9	12.997	12.7	12.3	1.81	6865	5.84	8.41
001433399-04	OBS	No	540.097860	154.355847	2113.4	27.354	12.6	9.5	1.81	6865	9.71	3.06
001433399-05	OBS	No	225.494771	274.756528	907.6	12.881	12.4	12.4	1.81	6865	8.42	9.81
001433399-06	OBS	No	57.115815	158.078027	241.4	9.000	11.2	-1.0	1.81	6865	2.85	61.24

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
001433399-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV
001433399-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES—MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
001433399-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
001433399-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
001433399-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
001433399-06	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_NOFITS

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

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

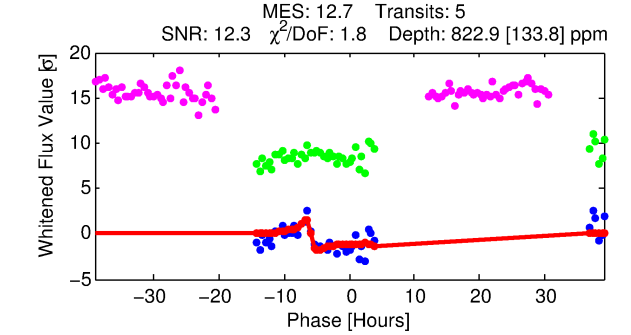
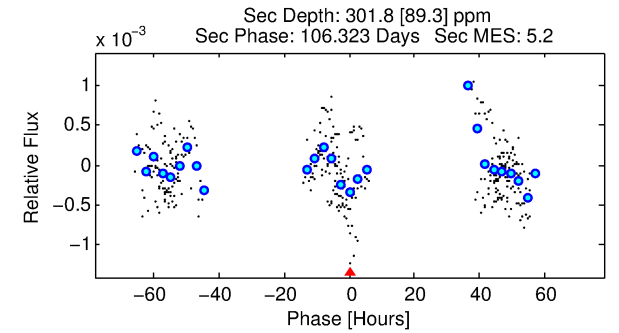
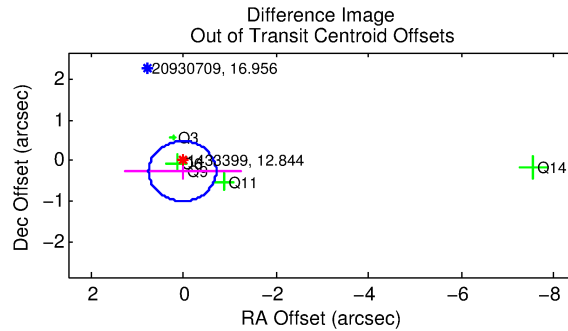
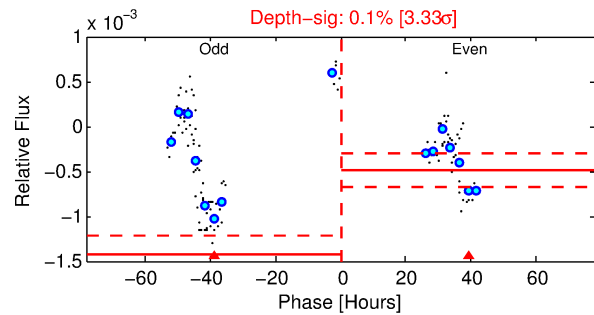
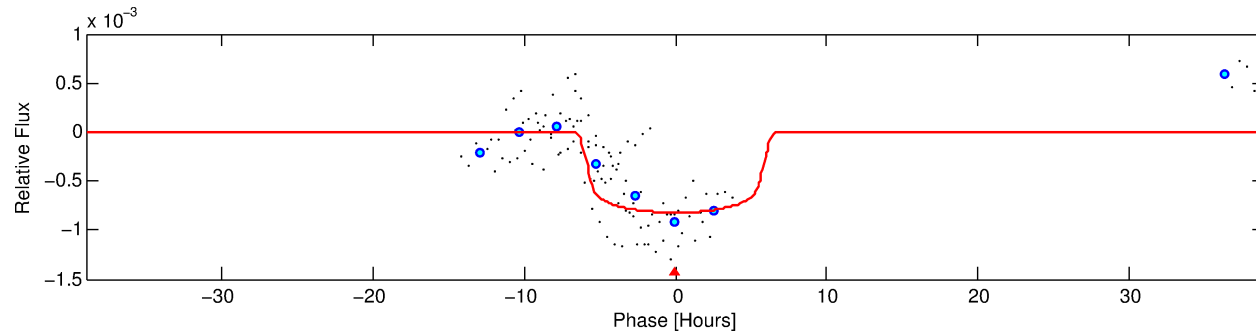
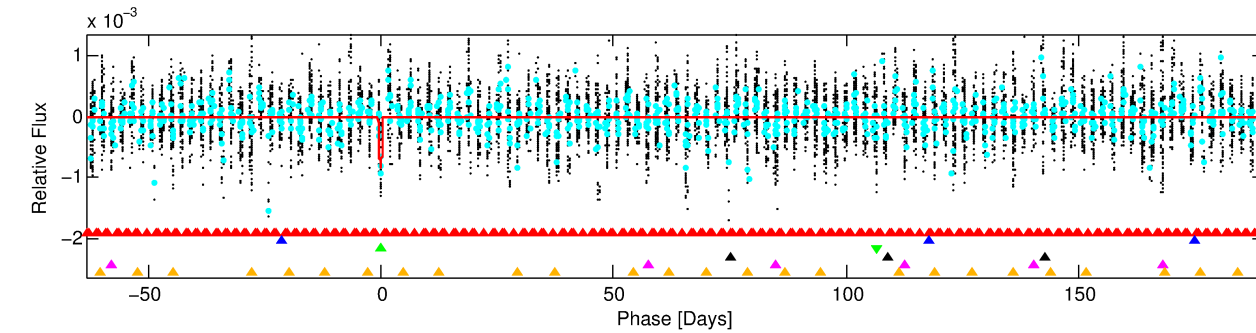
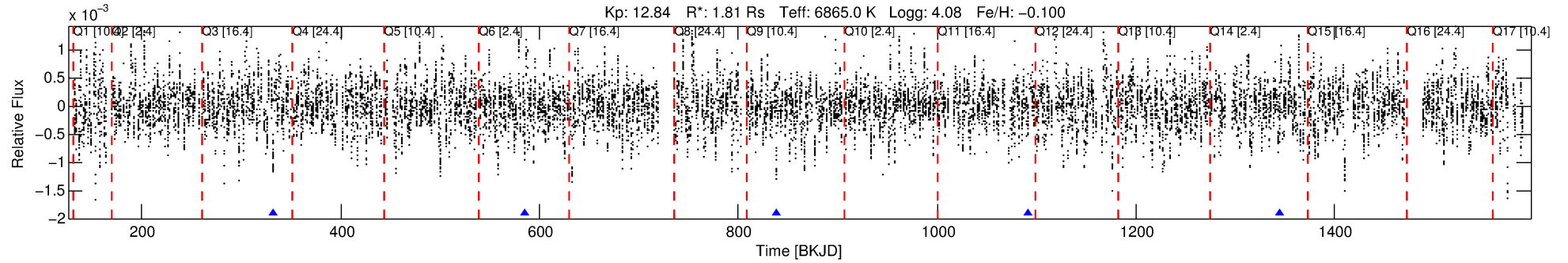
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 001433399-03

No Significant Match Found

# DV One-Page Summary

KIC: 1433399 Candidate: 3 of 6 Period: 253.126 d



## DV Fit Results:

Period = 253.12556 [0.00377] d  
Epoch = 332.4589 [0.0513] BKJD  
Rp/R\* = 0.0295 [0.0024]  
a/R\* = 88.75 [21.40]  
b = 0.84 [0.13]  
Seff = 8.41 [2.15]  
Teff = 434 [28] K  
Rp = 5.84 [1.16] Re  
a = 0.8828 [0.1446] AU  
Ag = 3793.49 [1591.45] [2.38 $\sigma$ ]  
Teffp = 5269 [447] K [10.79 $\sigma$ ]

## DV Diagnostic Results:

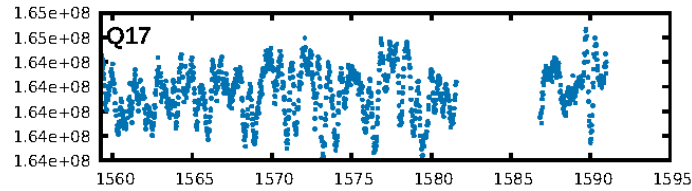
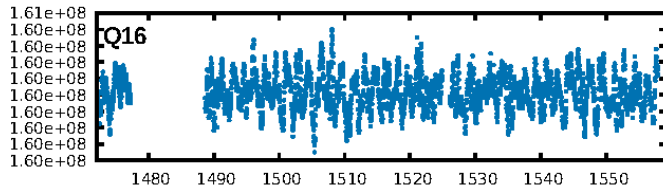
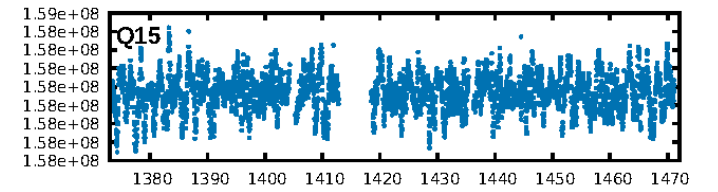
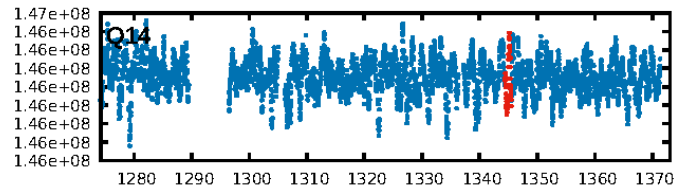
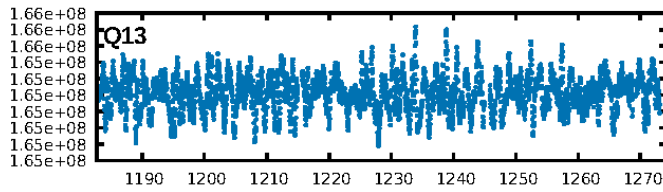
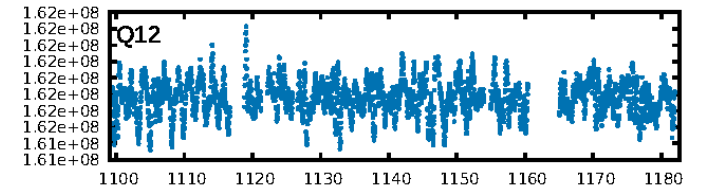
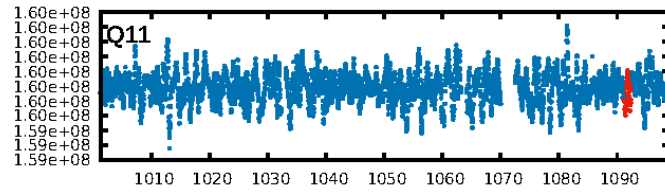
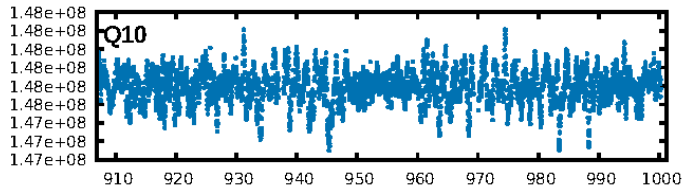
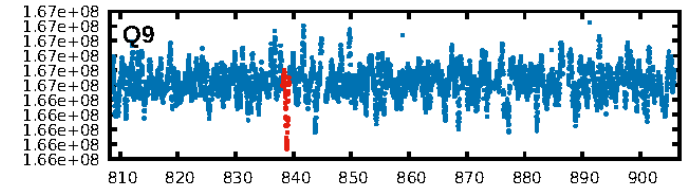
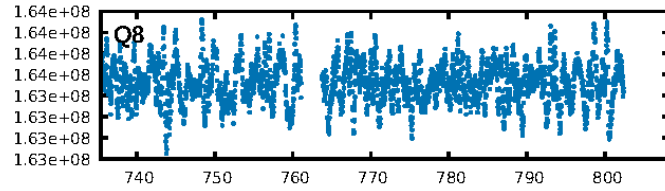
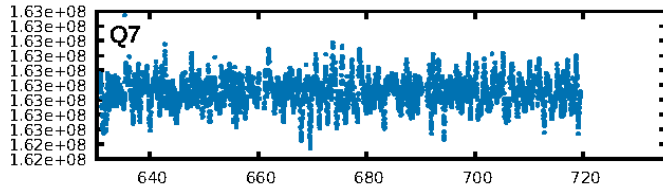
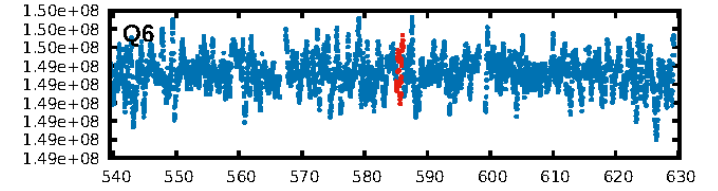
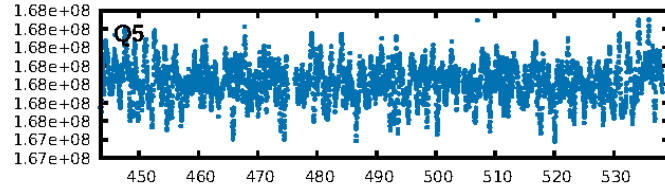
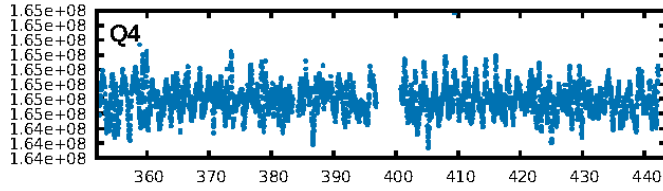
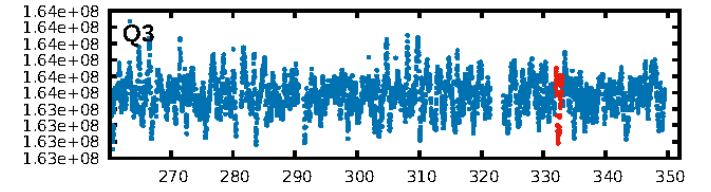
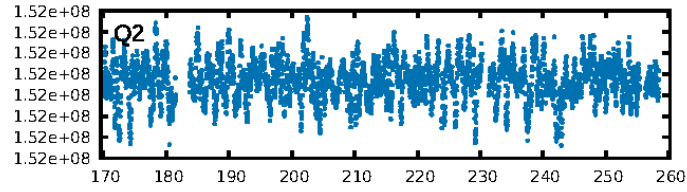
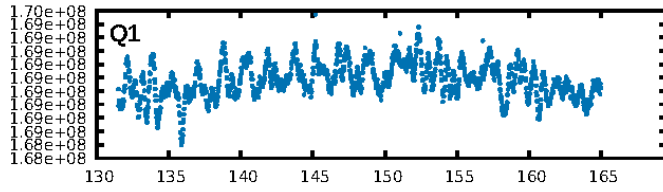
ShortPeriod-sig: 100.0% [36.24 $\sigma$ ]  
LongPeriod-sig: 100.0% [227.42 $\sigma$ ]  
ModelChiSquare2-sig: 3.6%  
ModelChiSquareGof-sig: 97.4%  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [5/5]  
GhostDiagnostic-chr: 1.259  
Centroid-sig: 3.7%  
Centroid-so: 0.624 arcsec [1.57 $\sigma$ ]  
OotOffset-rm: 0.262 arcsec [1.07 $\sigma$ ]  
KicOffset-rm: 0.303 arcsec [0.46 $\sigma$ ]  
OotOffset-st: 2/2/0/1 [5]  
KicOffset-st: 2/2/0/1 [5]  
DiffImageQuality-fgm: 0.60 [3/5]  
DiffImageOverlap-fno: 0.00 [0/5]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 00:52:53 Z

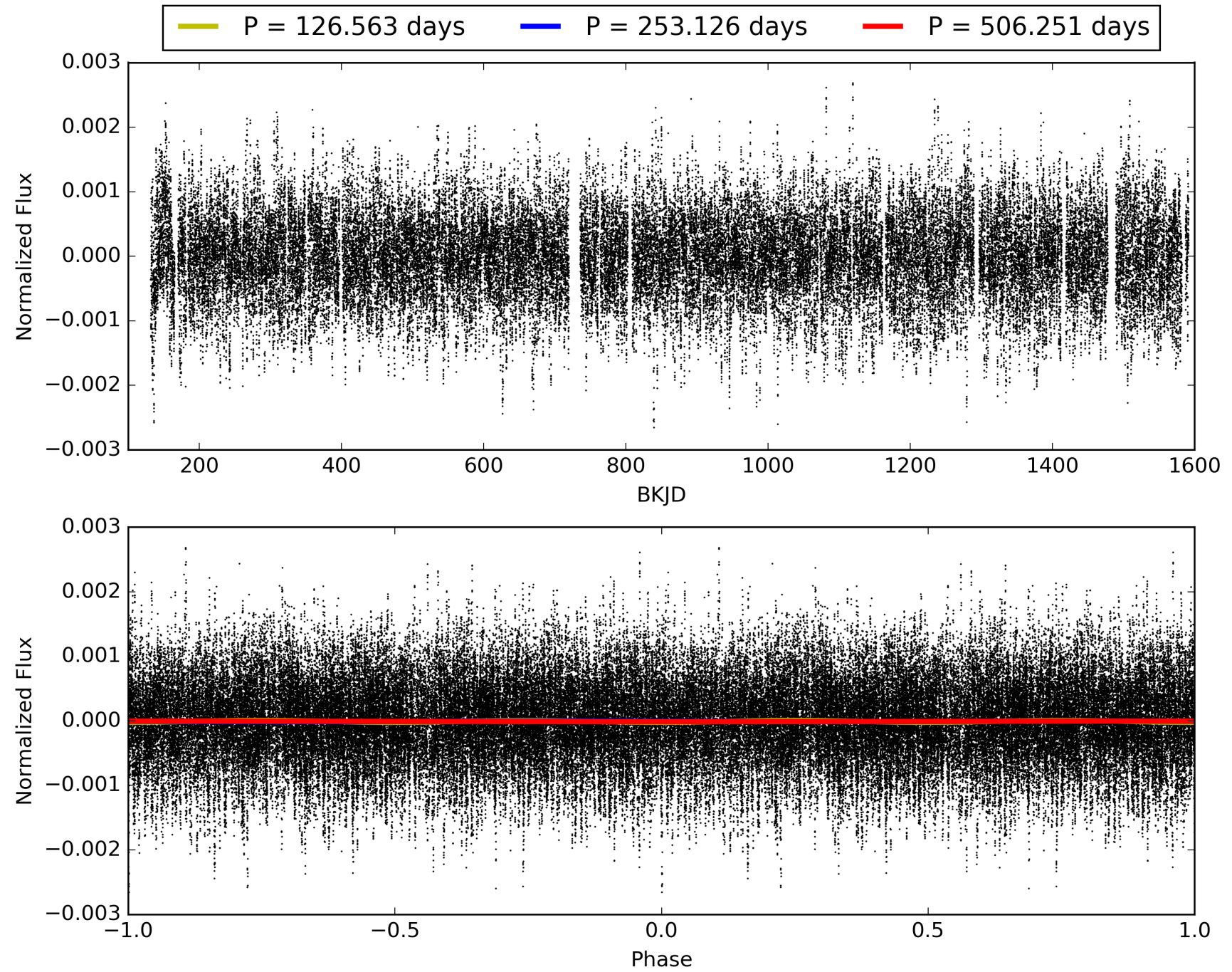
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center



# TCE 001433399-03, PDC Light Curves

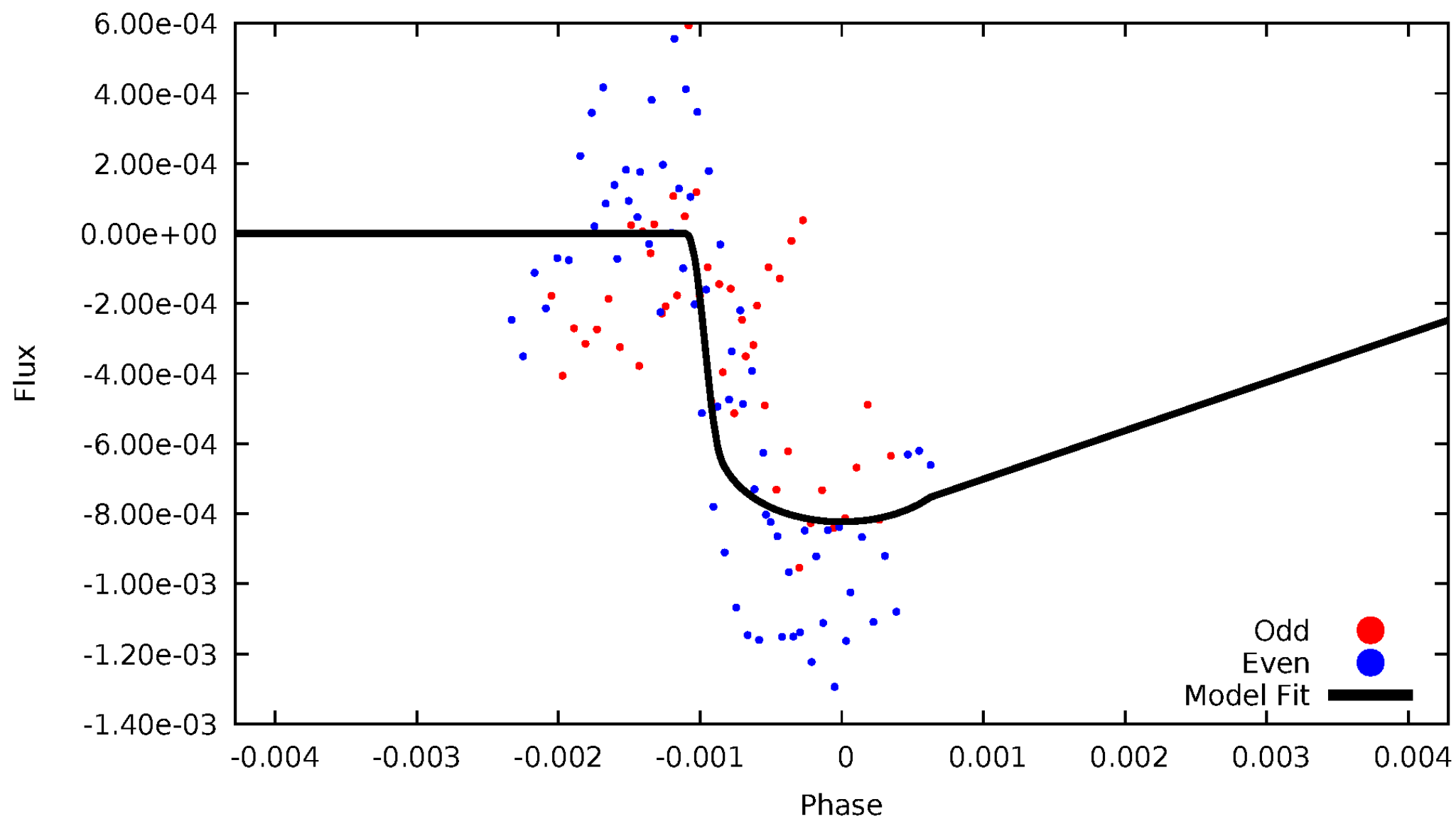


# TCE 001433399-03



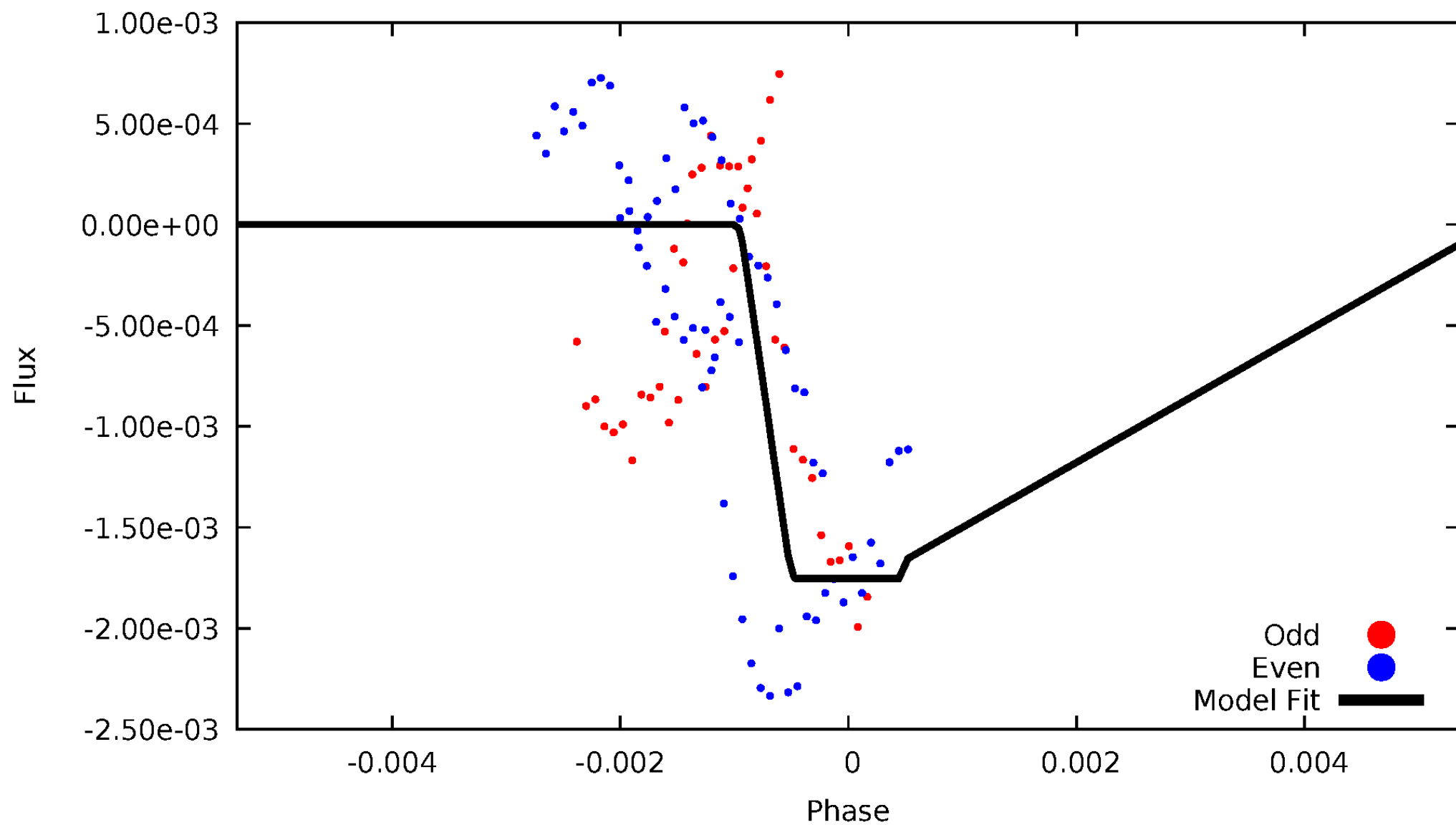
# DV Odd/Even

TCE 001433399-03



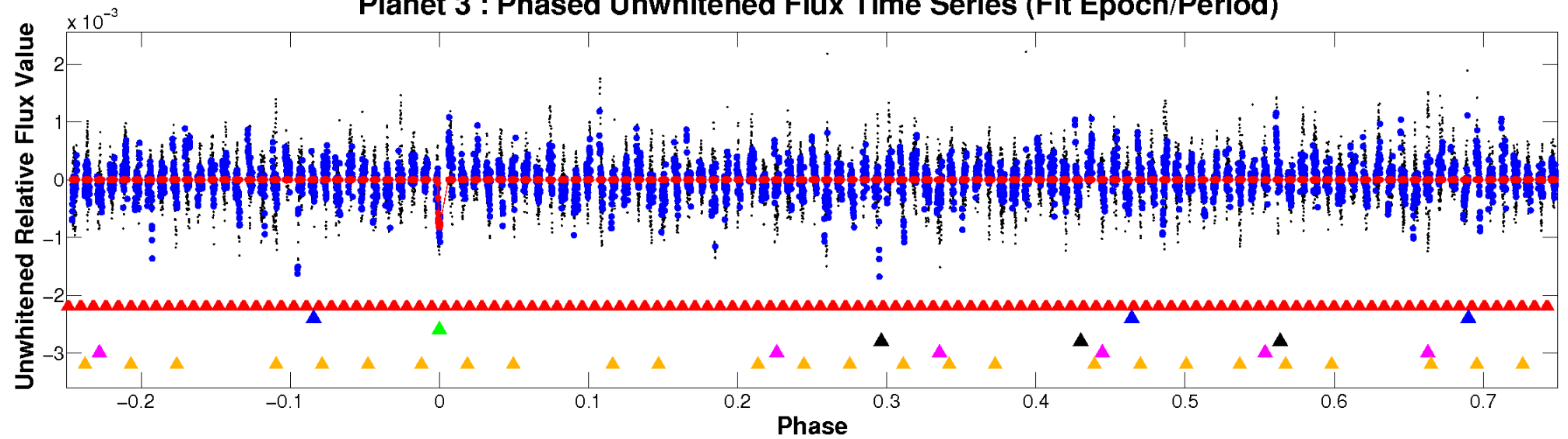
# ALT Odd/Even

TCE 001433399-03

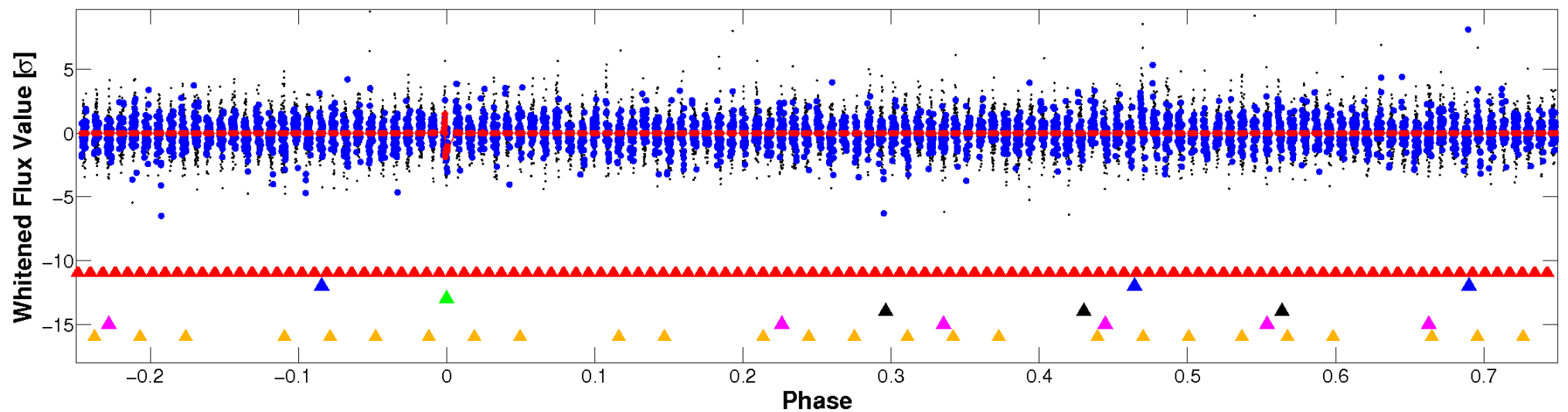


# Non-Whitened Vs. Whitened Light Curve

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



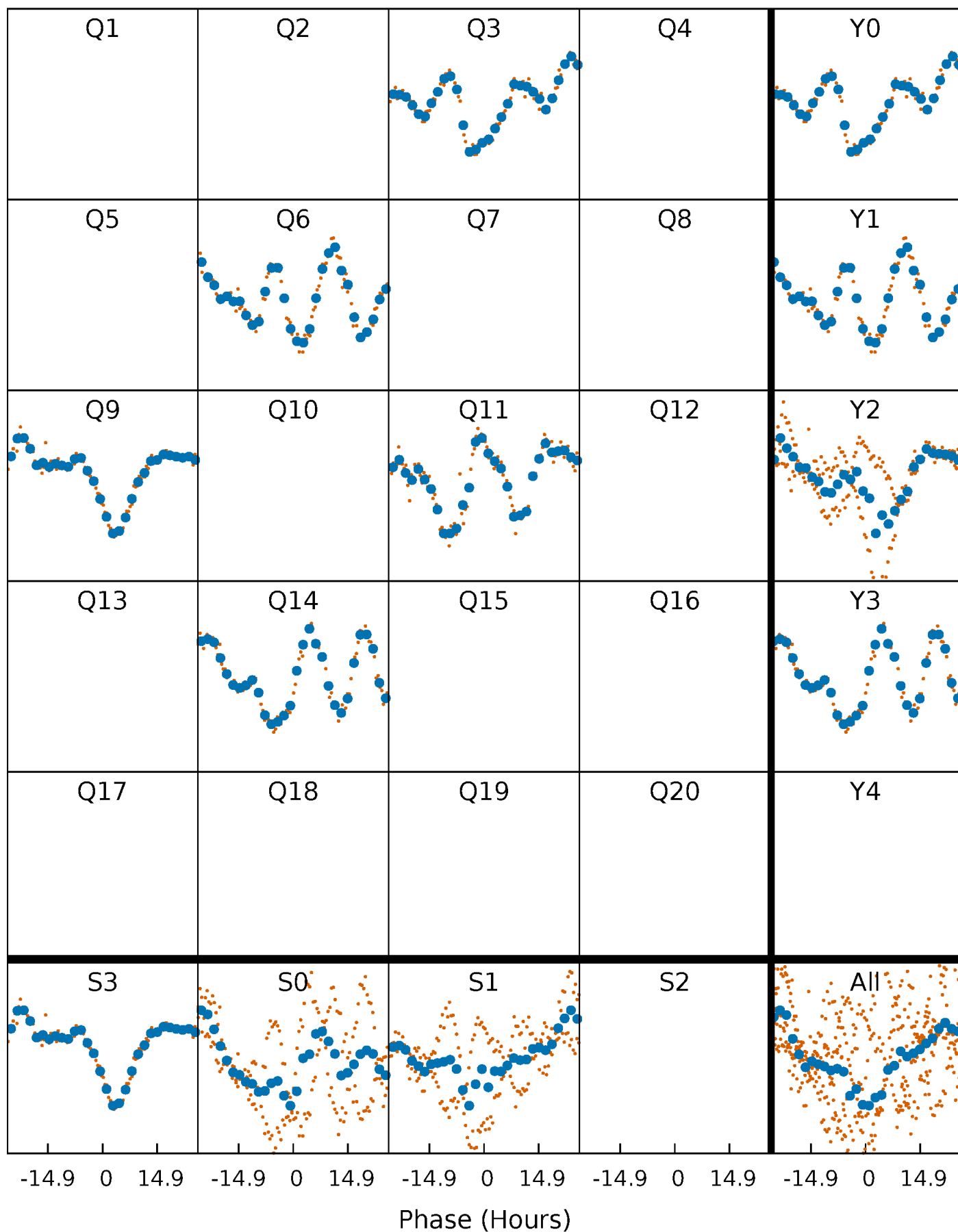
## Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)





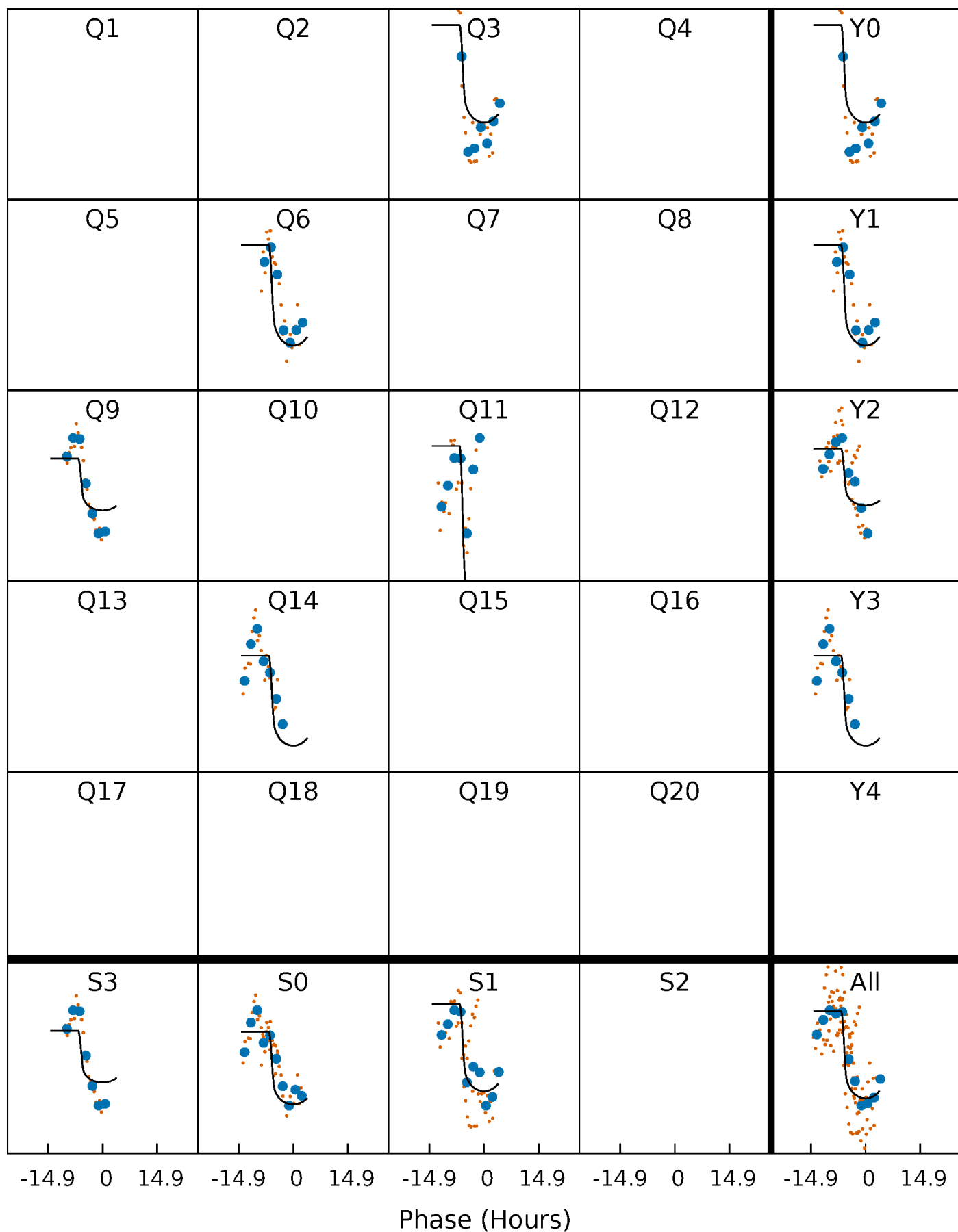
# PDC Quarter-Phased Transit Curves

TCE 001433399-03   P=253.125555 Days    $T_0=332.458888$  (BKJD)



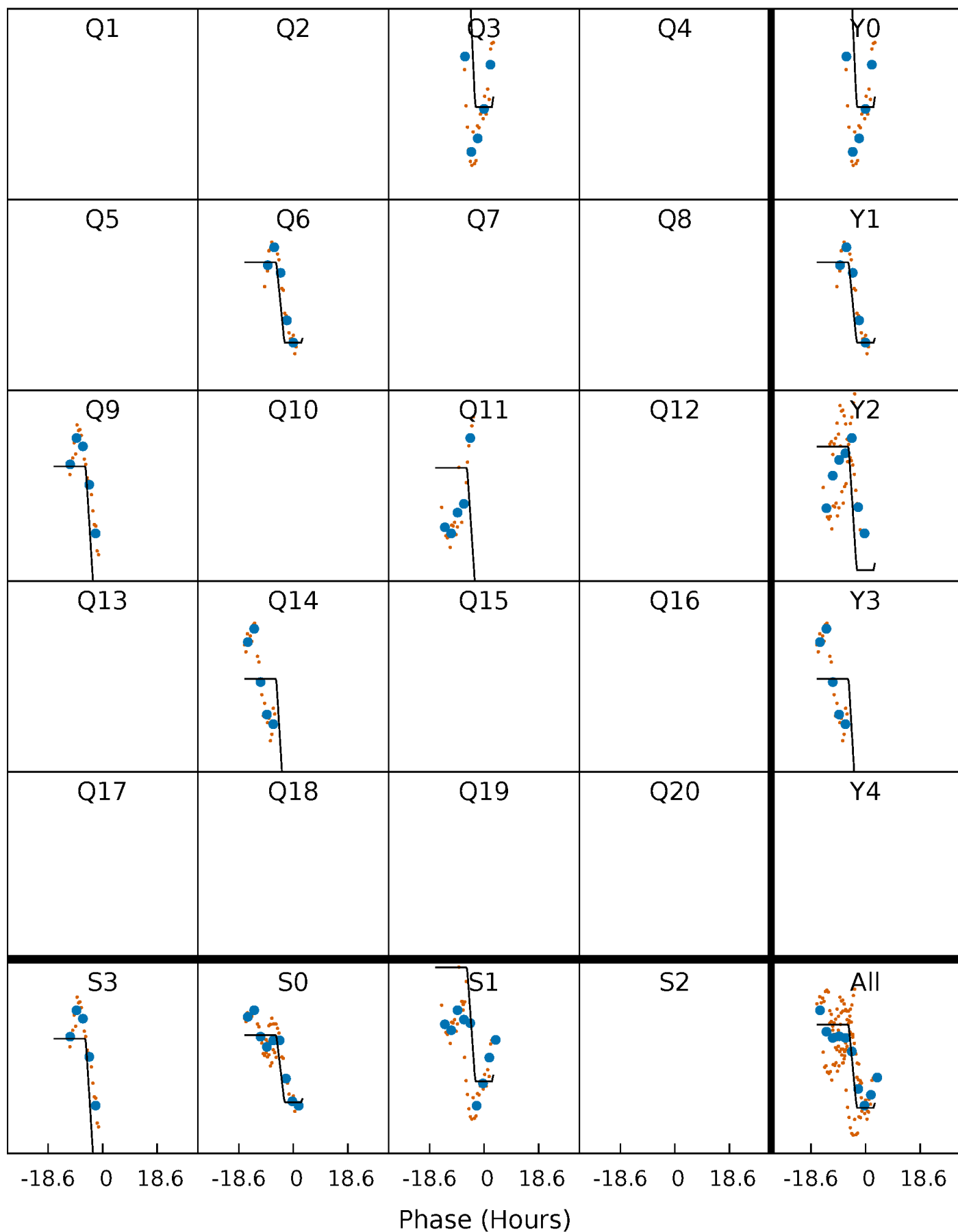
# DV Quarter-Phased Transit Curves

TCE 001433399-03     $P=253.125555$  Days     $T_0=332.458888$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

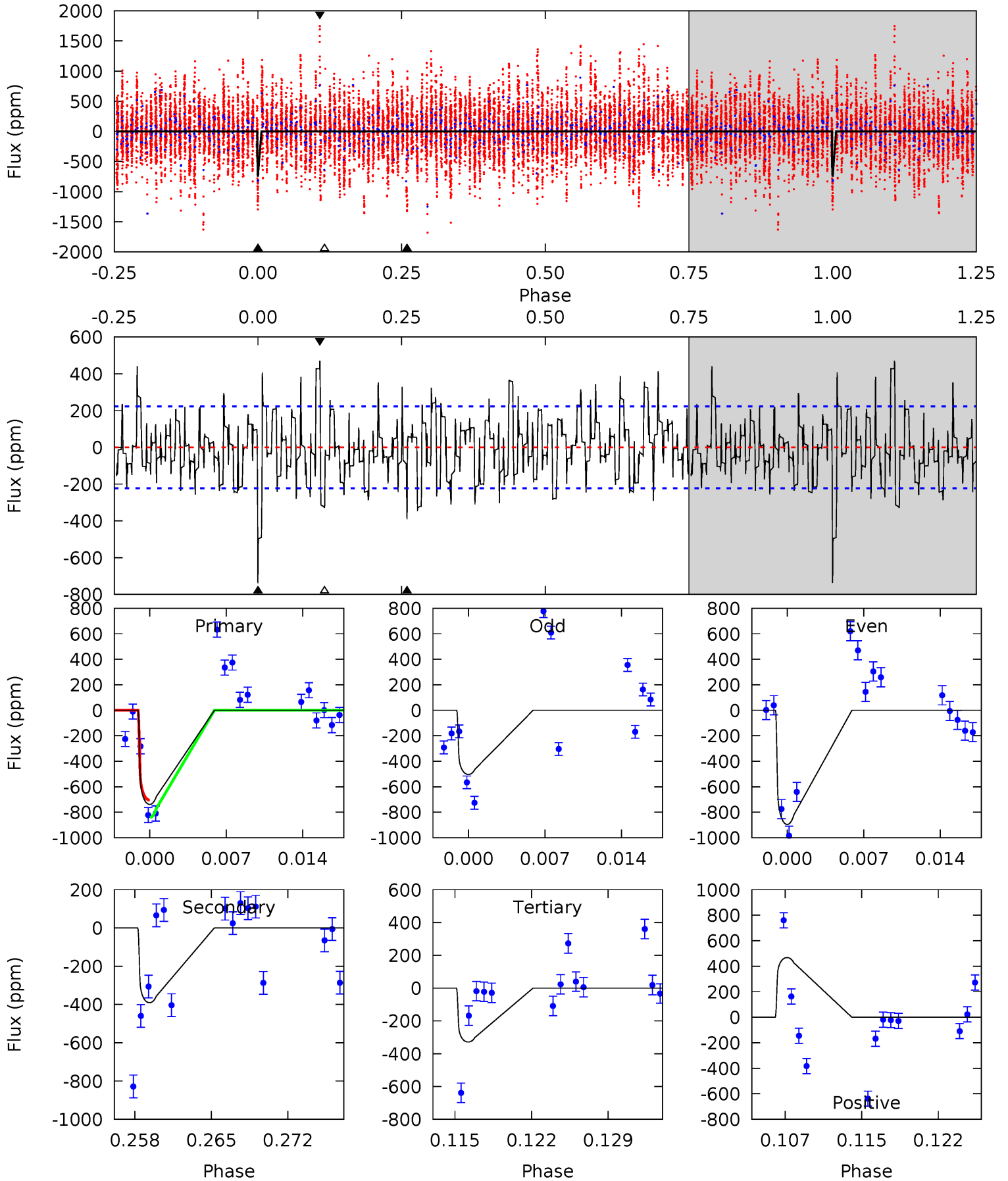
TCE 001433399-03     $P=253.144564$  Days     $T_0=332.485406$  (BKJD)



# DV Model-Shift Uniqueness Test

001433399-03, P = 253.125555 Days, E = 79.333333 Days

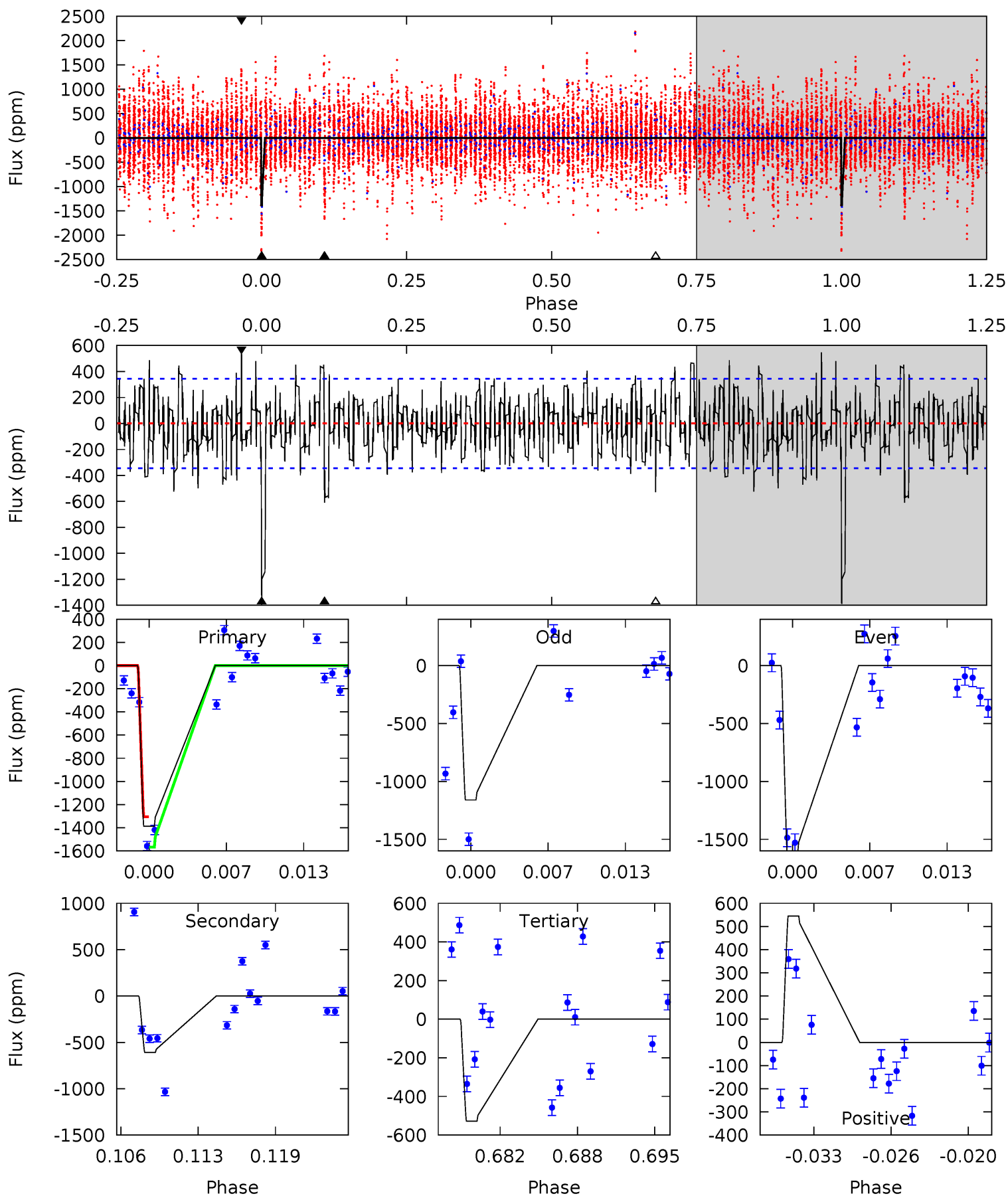
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
16.9	8.92	7.51	10.7	5.09	2.69	3.16	9.34	6.16	1.41	-1.77	4.38	1.04	0.39	1.20



# Alt Model-Shift Uniqueness Test

001433399-03, P = 253.144564 Days, E = 79.340842 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
20.6	9.02	7.82	8.08	5.10	2.72	2.30	12.7	12.5	1.20	0.94	3.48	0.69	0.28	1.66





### Stellar Parameters For KIC 001433399

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6865^{+82}_{-82}$	$4.076^{+0.143}_{-0.117}$	$-0.100^{+0.150}_{-0.150}$	$1.815^{+0.331}_{-0.331}$	$1.435^{+0.113}_{-0.124}$	$0.338^{+0.242}_{-0.122}$
	+1%/-1%	+4%/-3%	+150%/-150%	+18%/-18%	+8%/-9%	+72%/-36%
Source	SPE68	SPE68	SPE68	DSEP		

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

### Secondary Eclipse Parameters for KIC 001433399-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-391 \pm 44$	$5.79^{+0.76}_{-0.70}$	$606^{+29}_{-28}$	$5633^{+272}_{-251}$	$5023^{+1563}_{-1165}$
Alt.	$-609 \pm 68$	$8.24^{+0.96}_{-0.92}$	$605^{+29}_{-27}$	$5302^{+201}_{-179}$	$3883^{+1036}_{-830}$

$T_{max}$  = 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

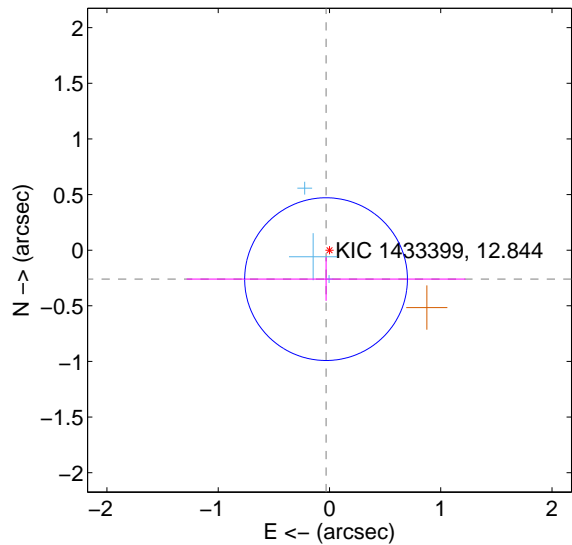
Supplemental centroid analysis for 001433399-03. Kepler magnitude: 12.84. Transit SNR 12.32

There are 3 quarters with good PRF difference image offsets

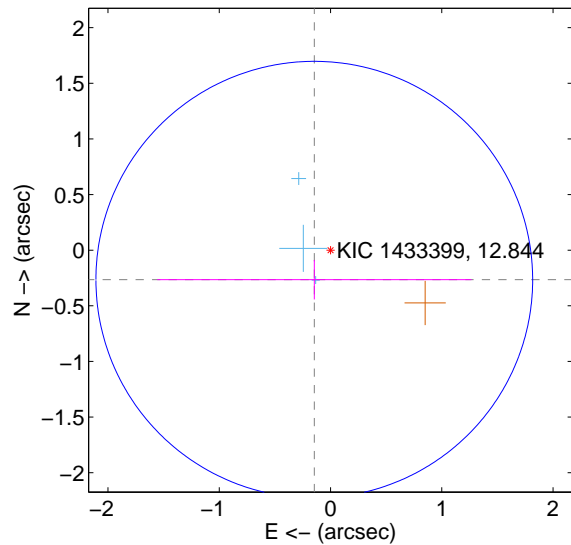
The direct PRF centroid is offset from the target star catalog position by about 0.07 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.262 \pm 0.244$	1.07	$0.031 \pm 1.252$	$-0.260 \pm 0.195$
PRF-fit source offset from KIC position	$0.303 \pm 0.654$	0.46	$0.146 \pm 1.412$	$-0.265 \pm 0.177$
photometric centroid source offset	$0.62 \pm 0.40$	1.57	$0.62 \pm 0.39$	$0.05 \pm 0.56$

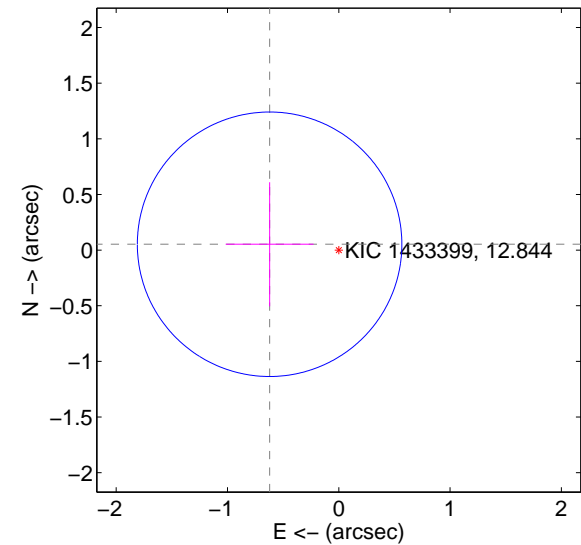
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

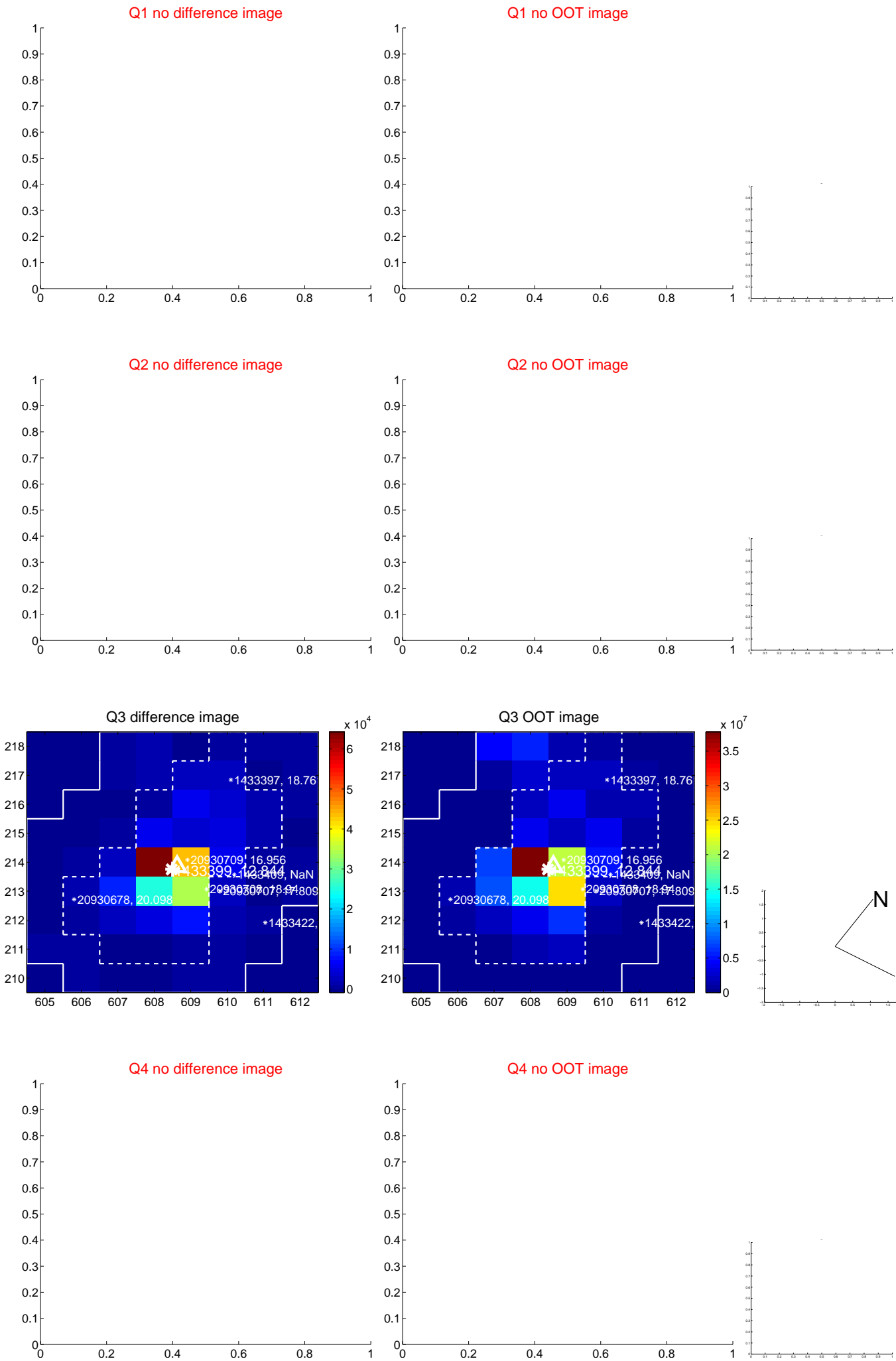


offset from photometric centroids

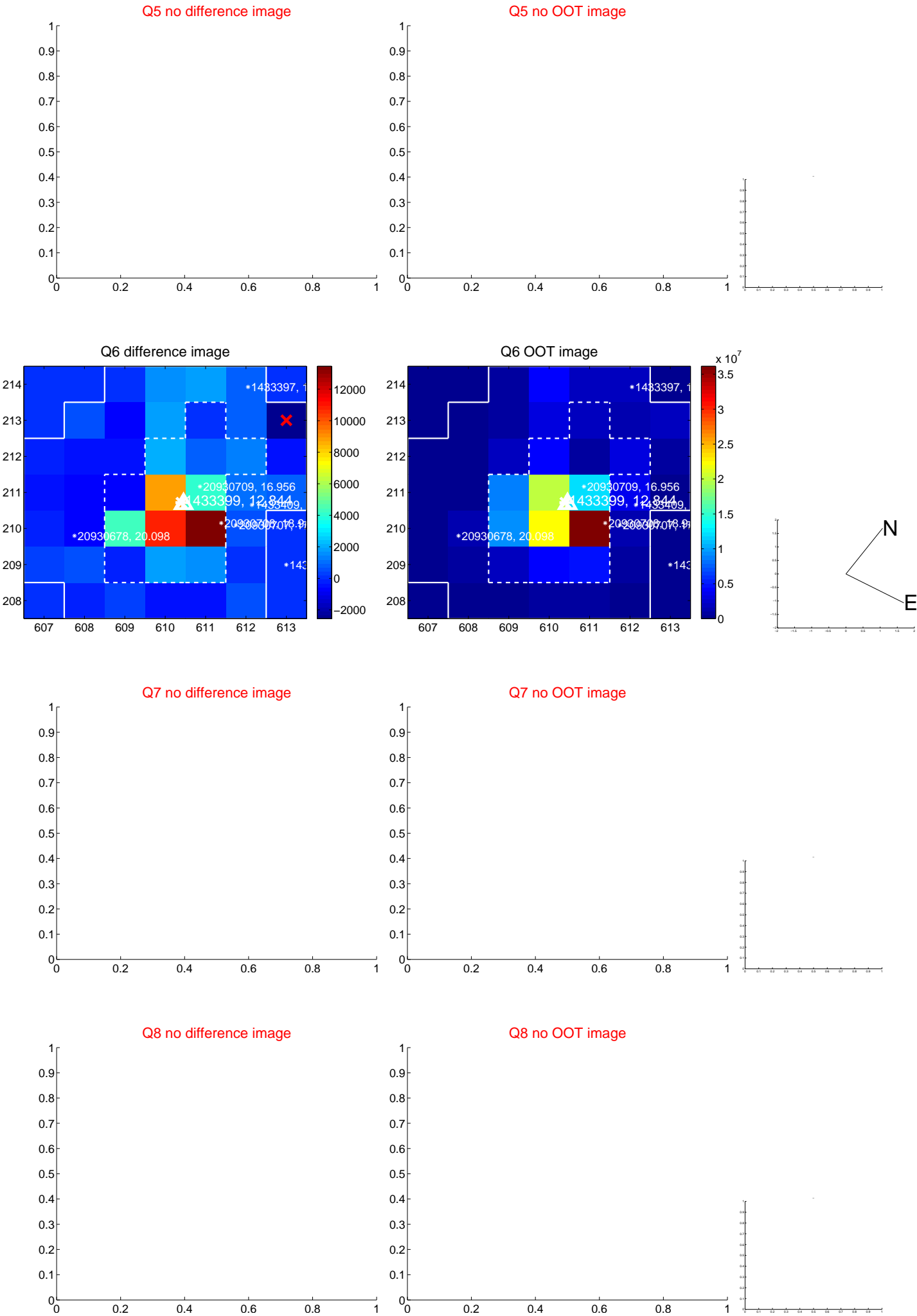


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

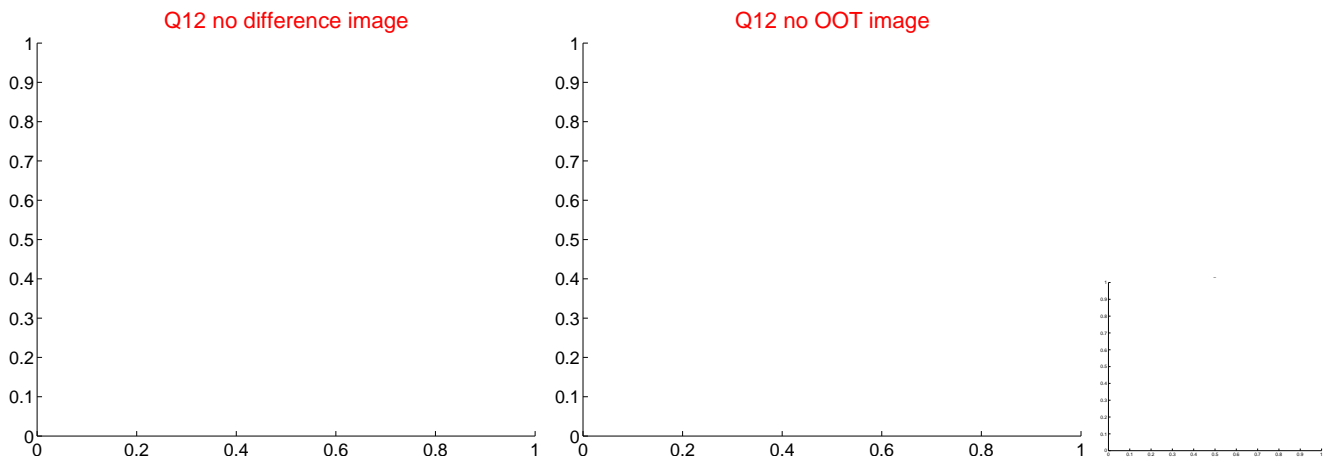
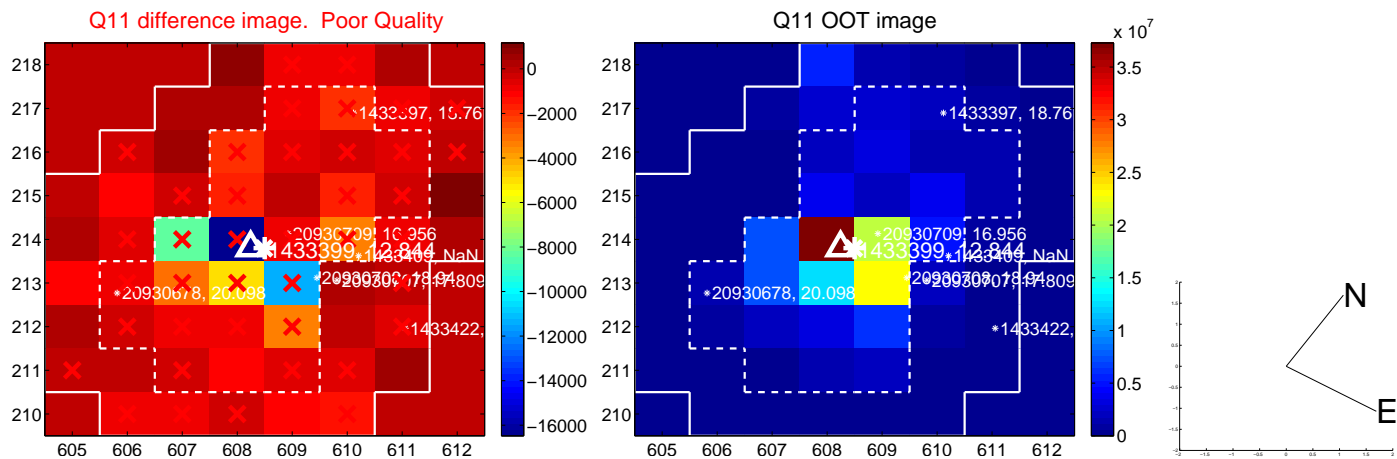
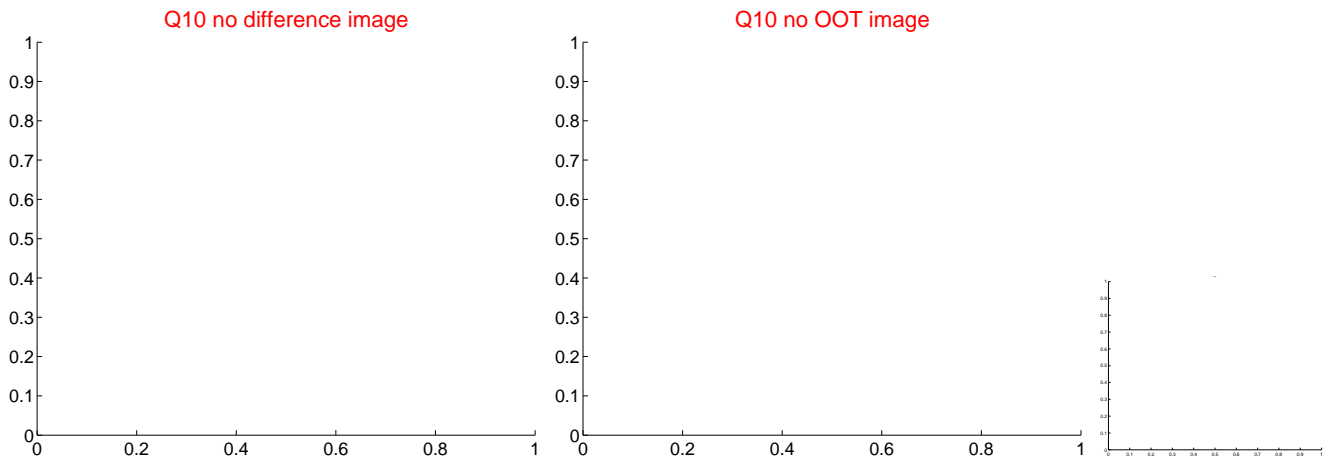
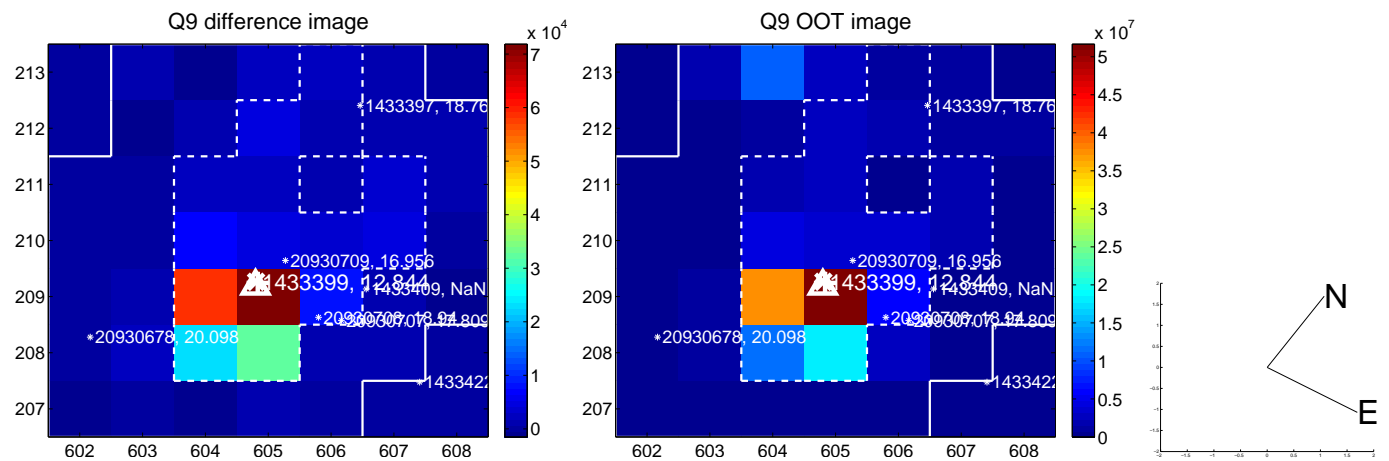
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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.

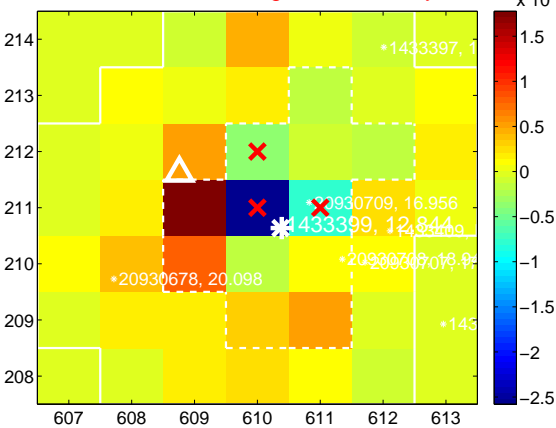
Q13 no difference image



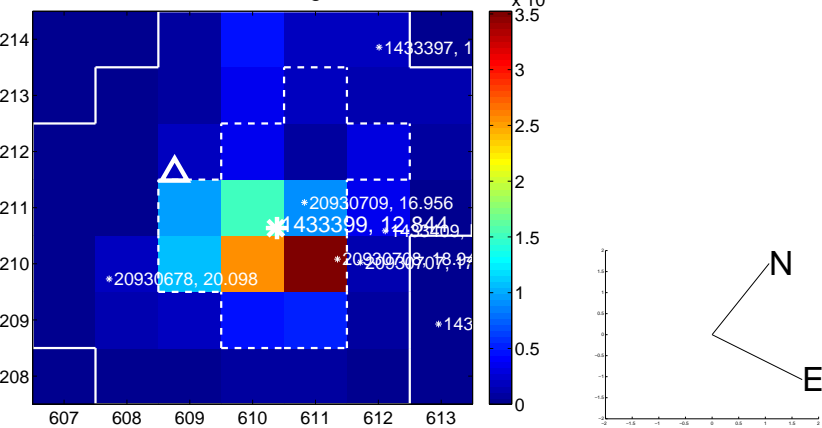
Q13 no OOT image



Q14 difference image. Poor Quality



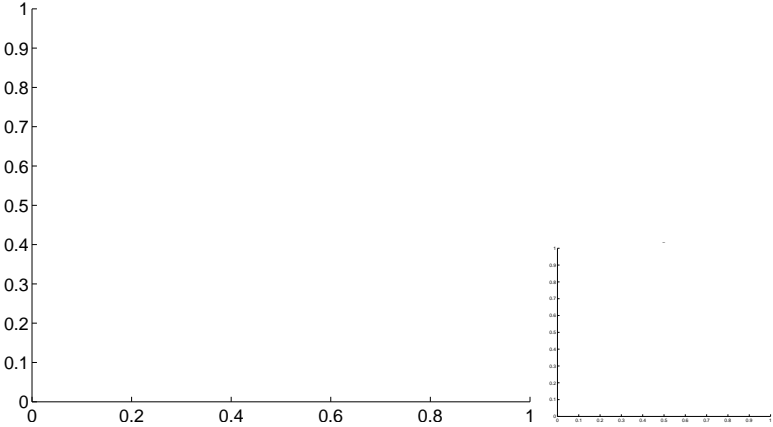
Q14 OOT image



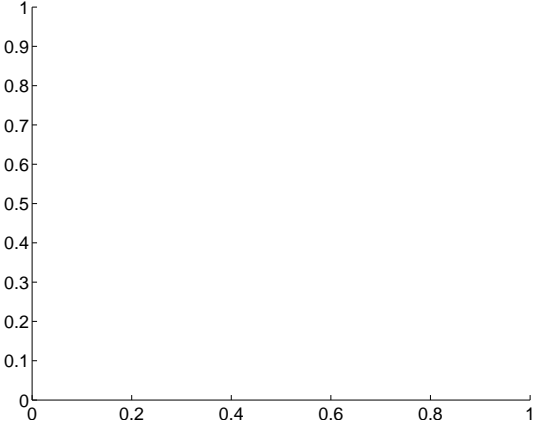
Q15 no difference image



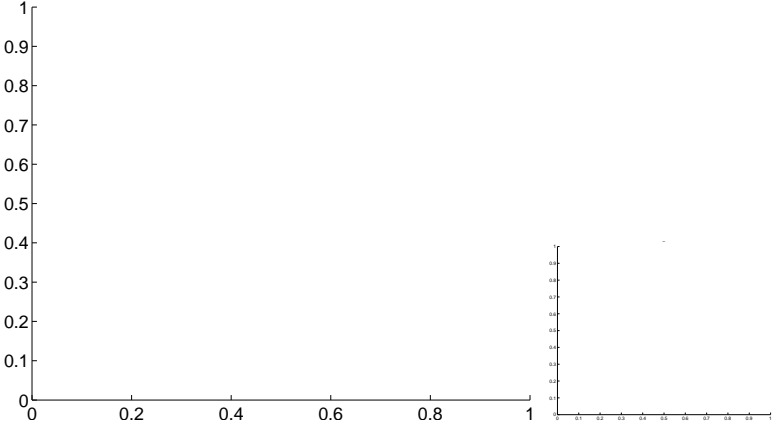
Q15 no OOT image



Q16 no difference image

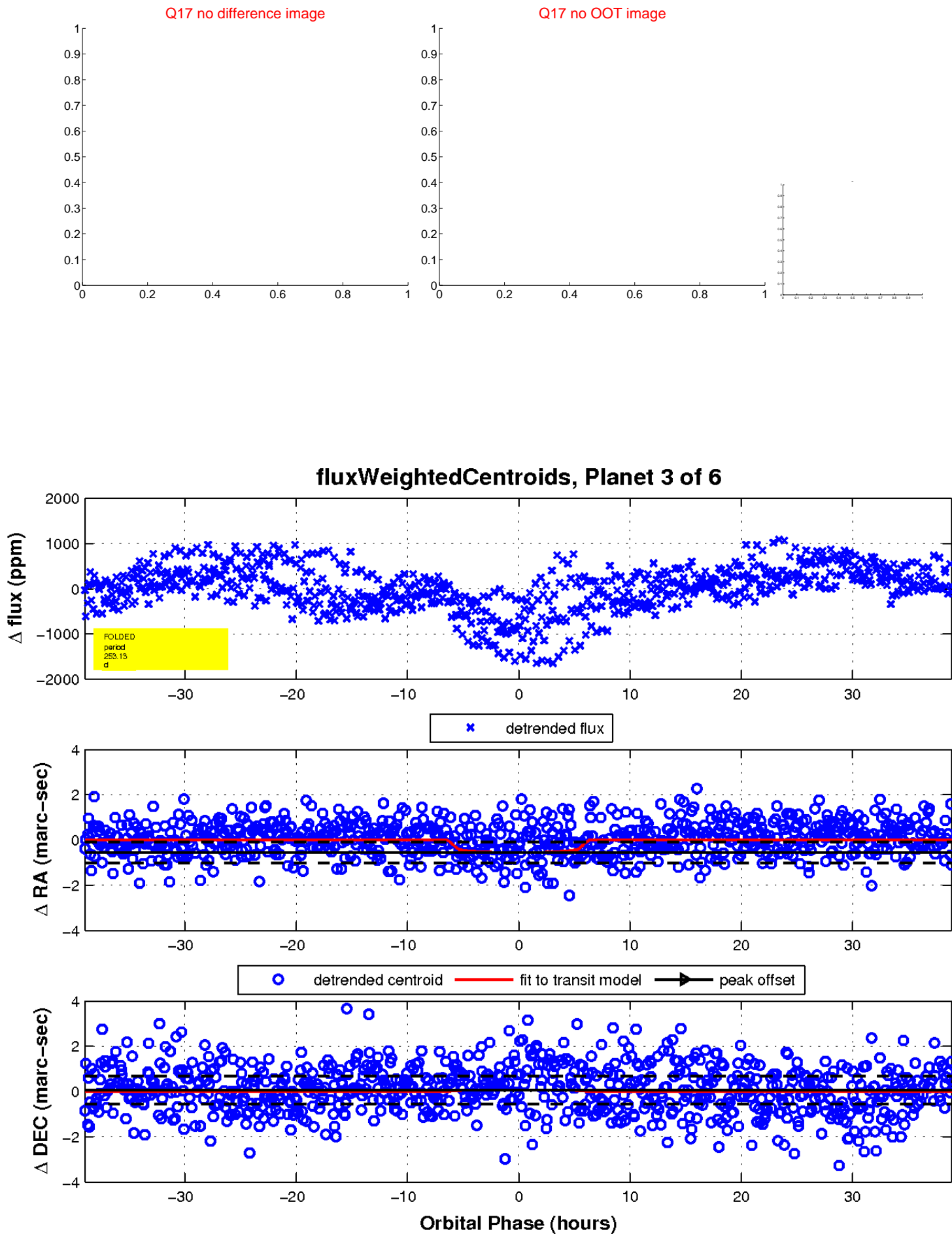


Q16 no OOT image

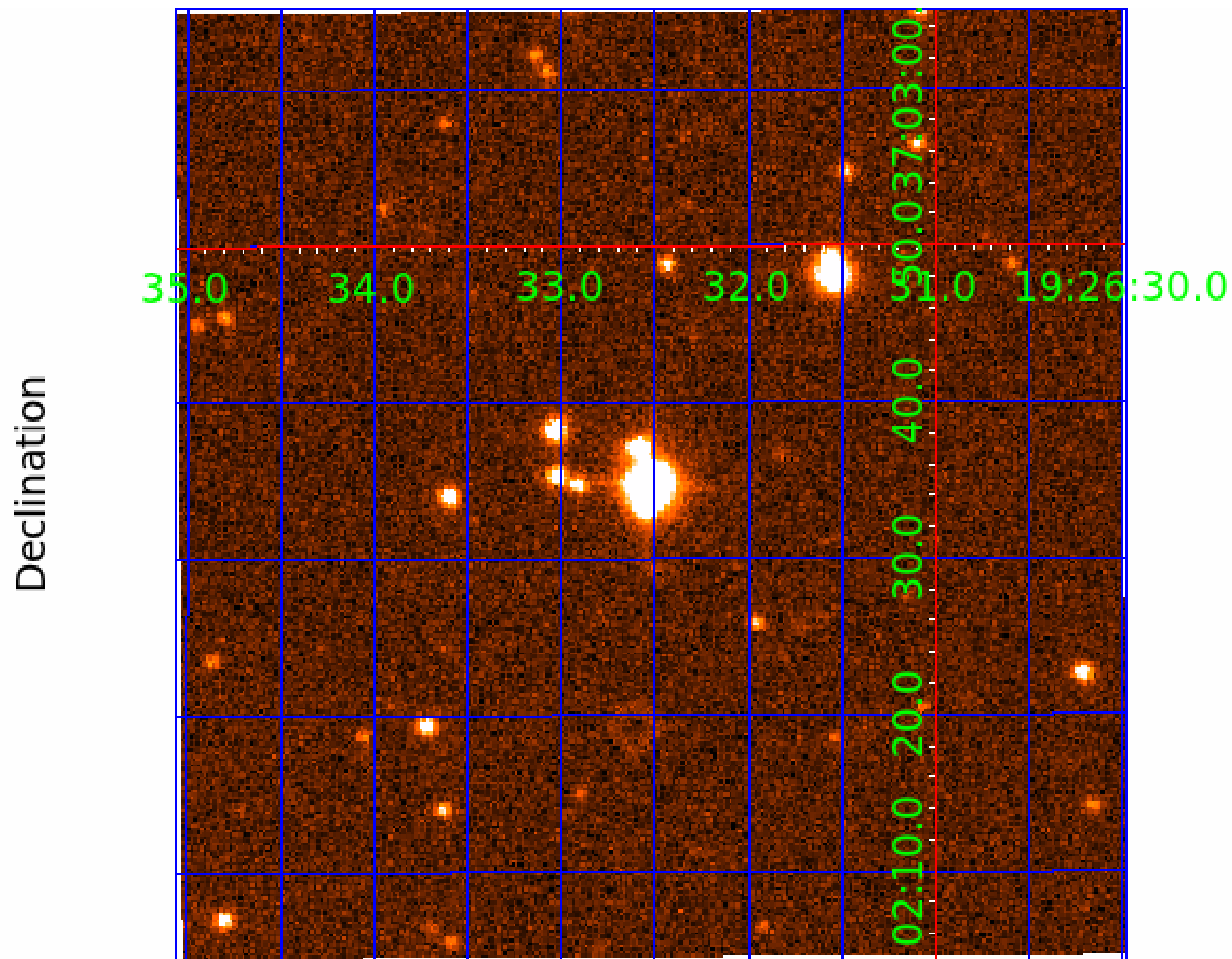




white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image



# KIC 001433399

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
001433399-01	OBS	No	2.126459	133.577945	29.6	13.071	9.0	4.8	1.81	6865	1.06	4926.05
001433399-02	OBS	No	563.383562	449.988290	5120.2	33.523	14.8	13.5	1.81	6865	22.15	2.90
001433399-03	OBS	No	253.125555	332.458888	822.9	12.997	12.7	12.3	1.81	6865	5.84	8.41
001433399-04	OBS	No	540.097860	154.355847	2113.4	27.354	12.6	9.5	1.81	6865	9.71	3.06
001433399-05	OBS	No	225.494771	274.756528	907.6	12.881	12.4	12.4	1.81	6865	8.42	9.81
001433399-06	OBS	No	57.115815	158.078027	241.4	9.000	11.2	-1.0	1.81	6865	2.85	61.24

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
001433399-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV
001433399-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES—MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
001433399-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
001433399-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
001433399-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
001433399-06	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_NOFITS

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

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

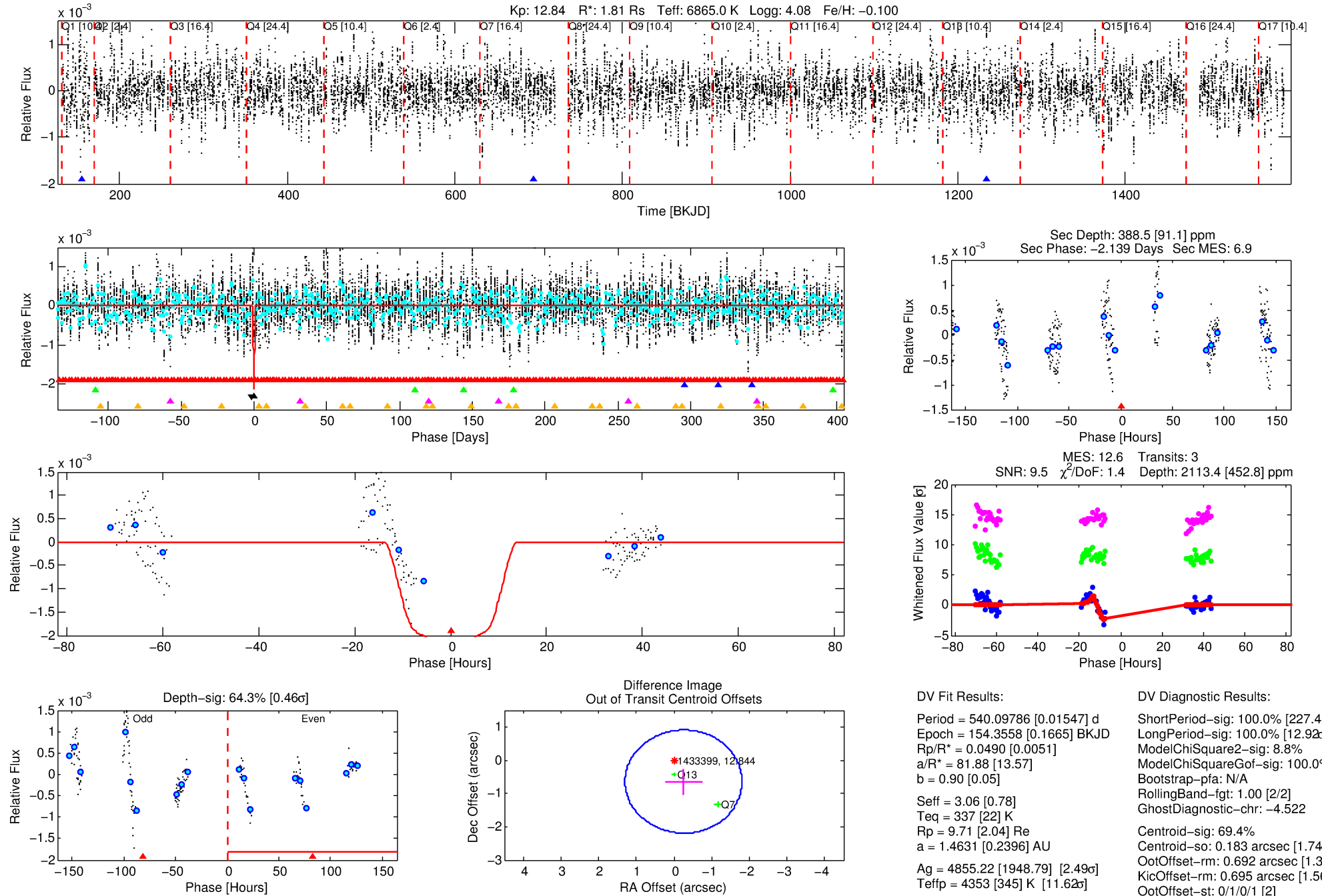
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 001433399-04

No Significant Match Found

# DV One-Page Summary

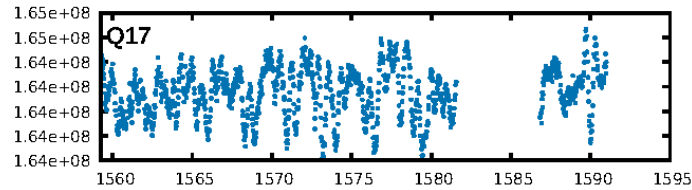
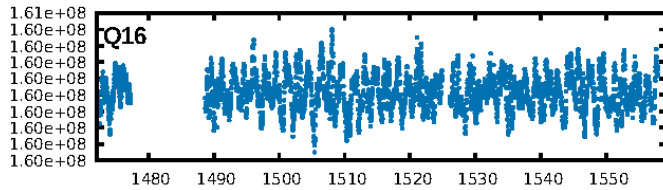
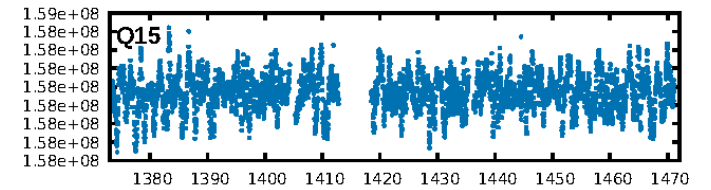
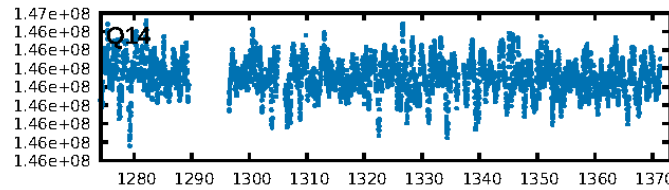
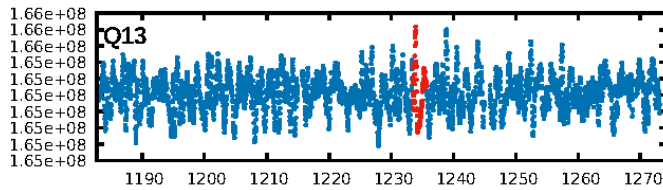
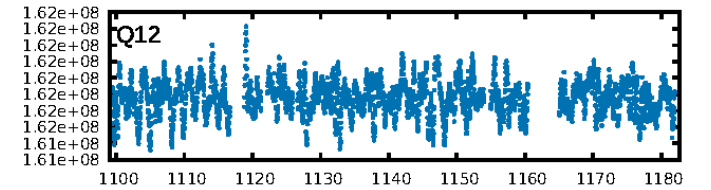
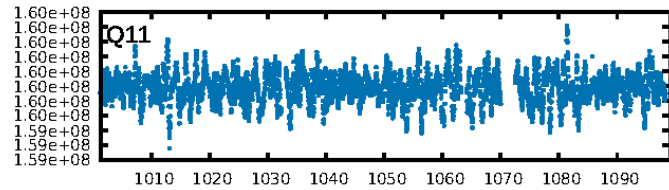
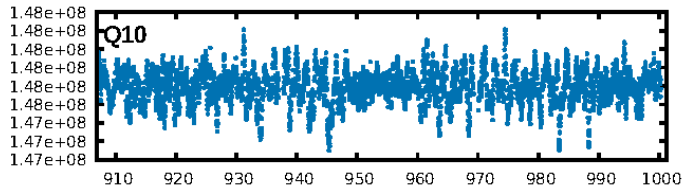
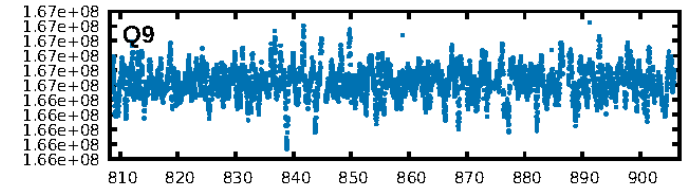
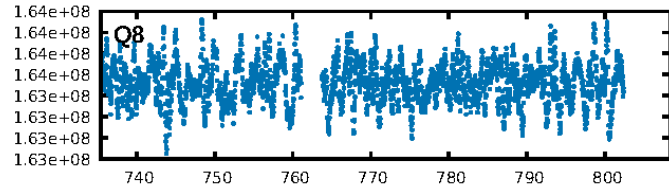
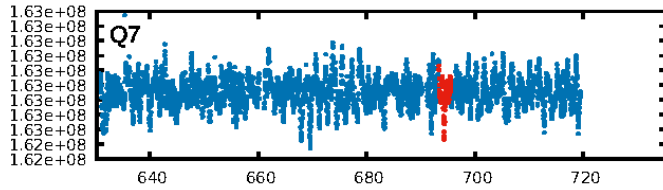
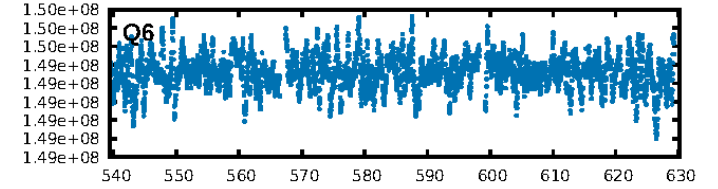
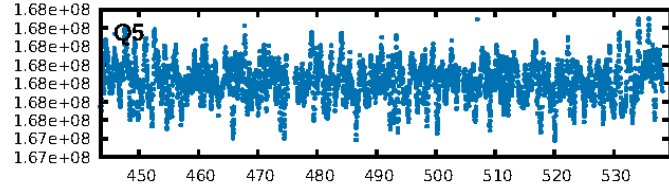
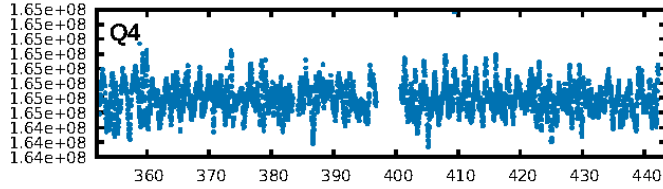
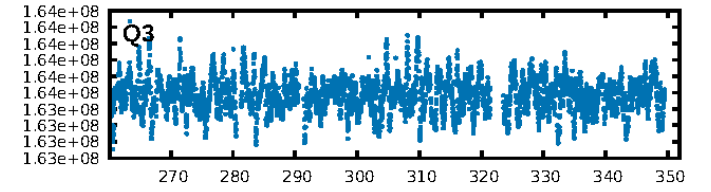
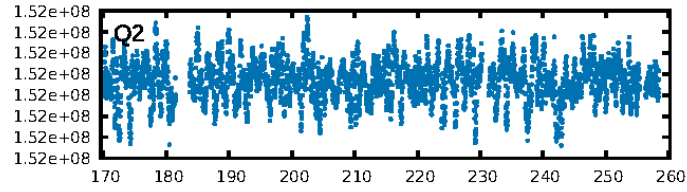
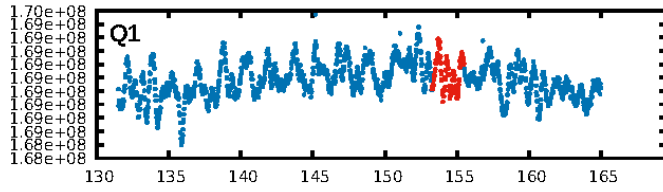
KIC: 1433399 Candidate: 4 of 6 Period: 540.098 d



Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 00:52:58 Z

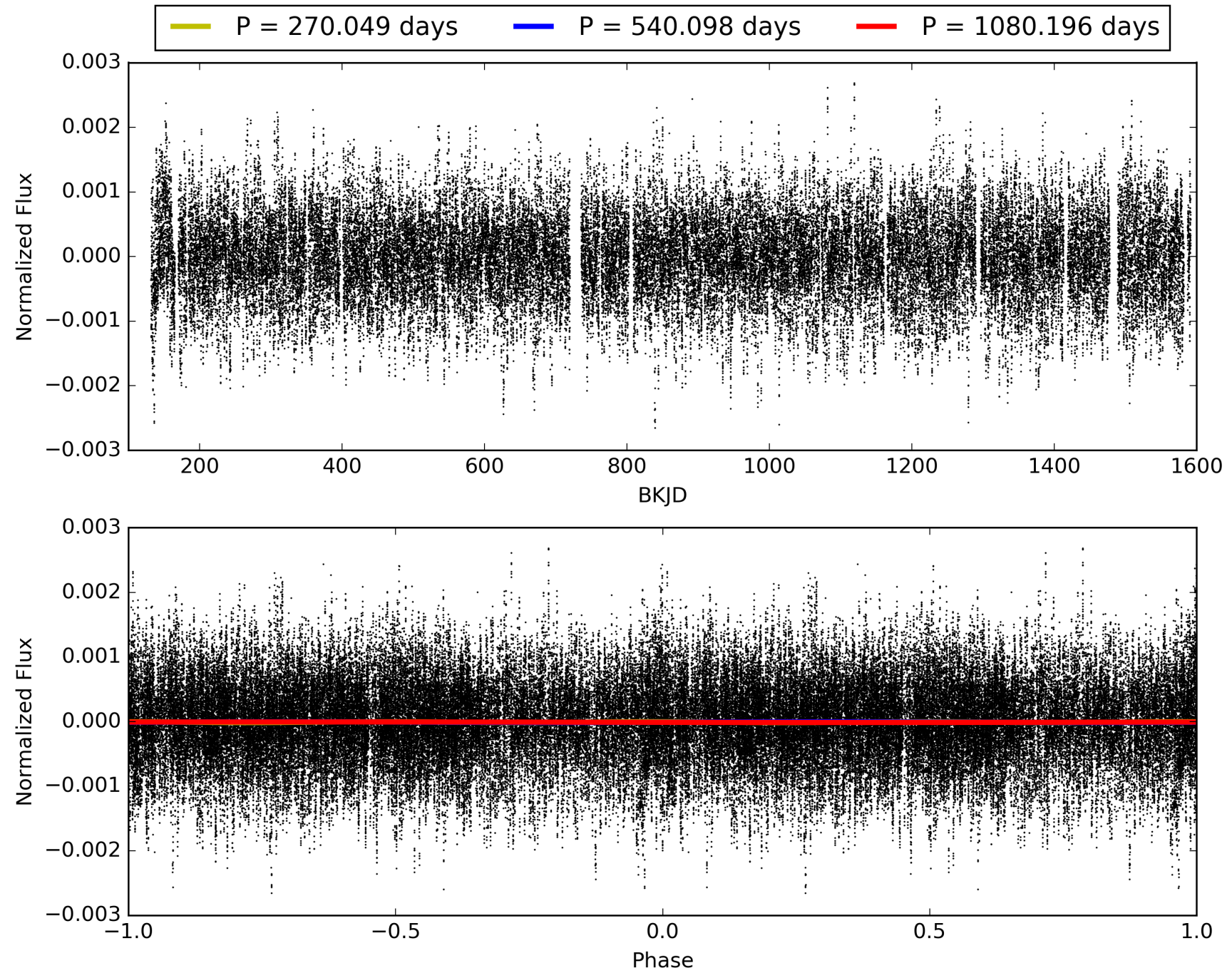
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 001433399-04, PDC Light Curves





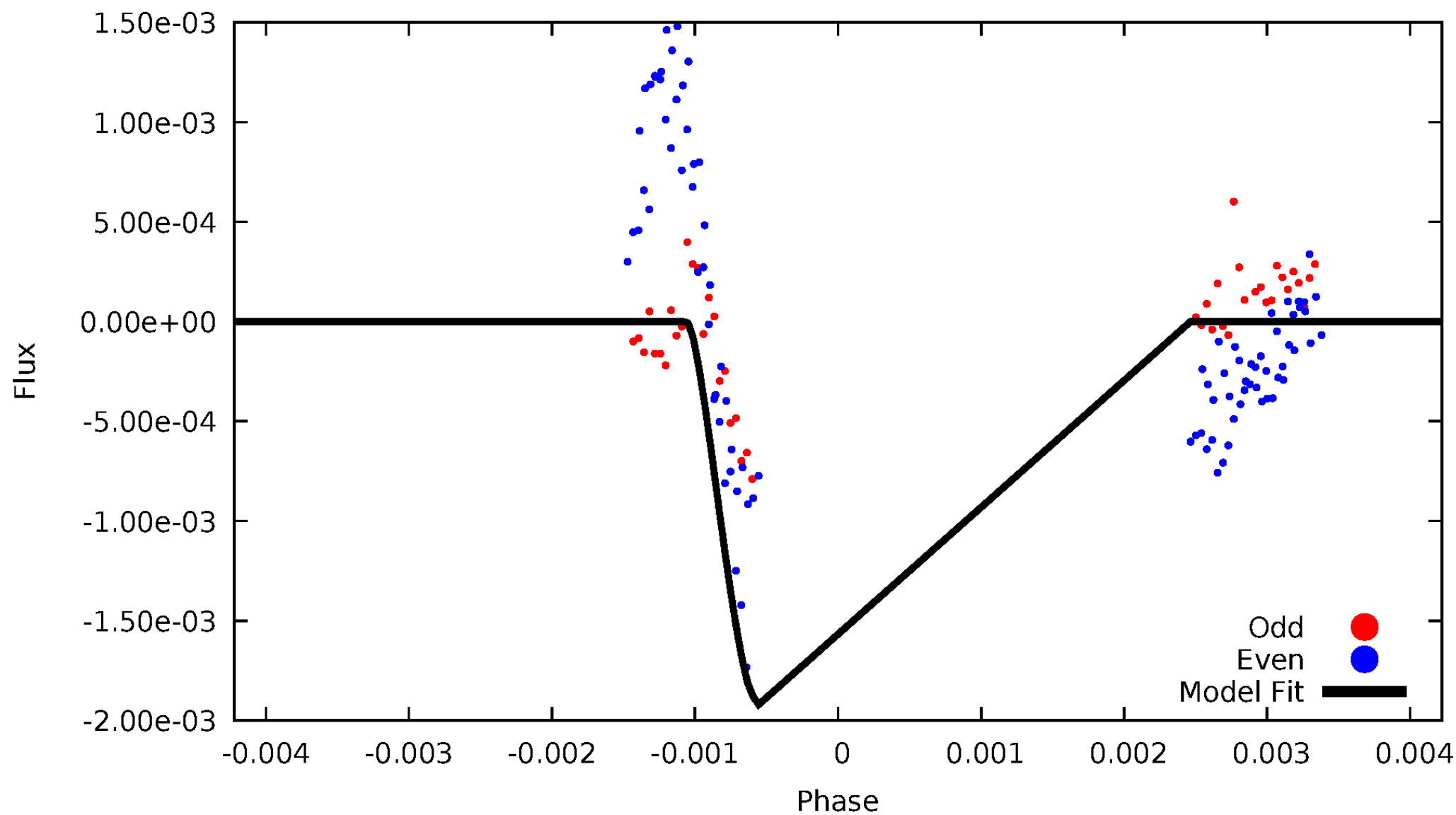
TCE 001433399-04





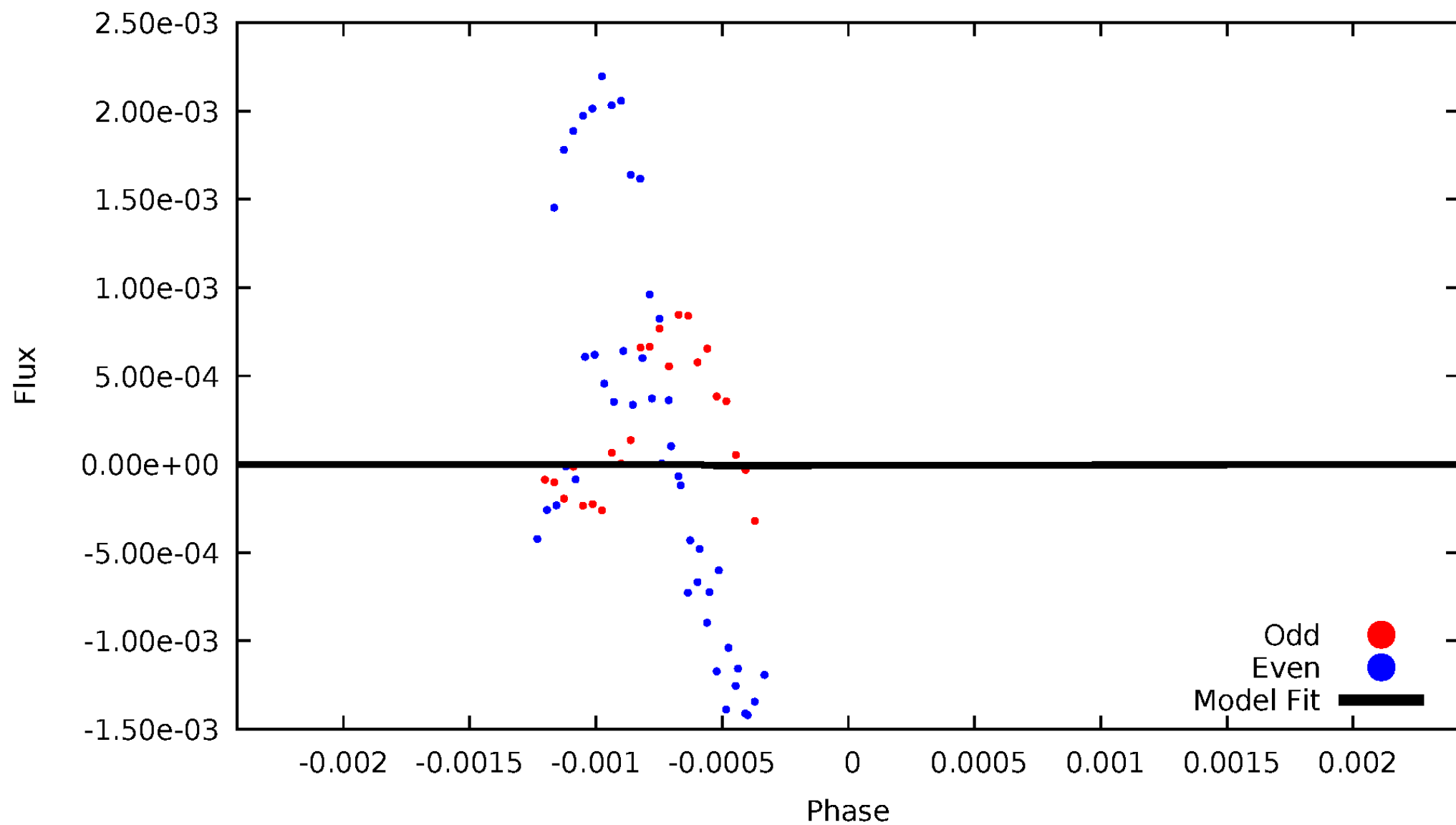
# DV Odd/Even

TCE 001433399-04



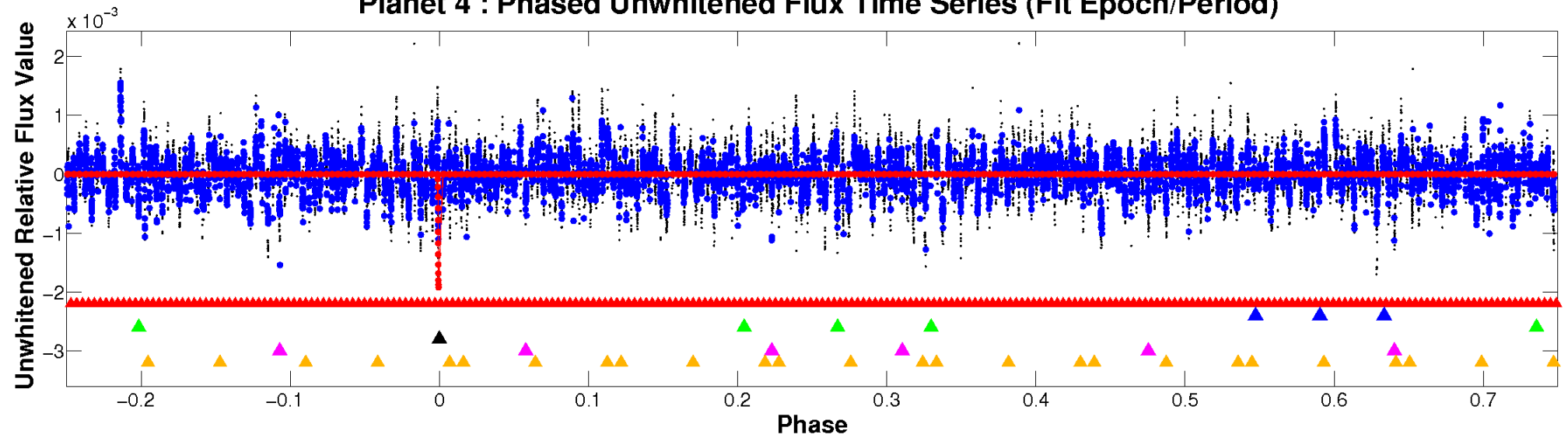
ALT Odd/Even

TCE 001433399-04

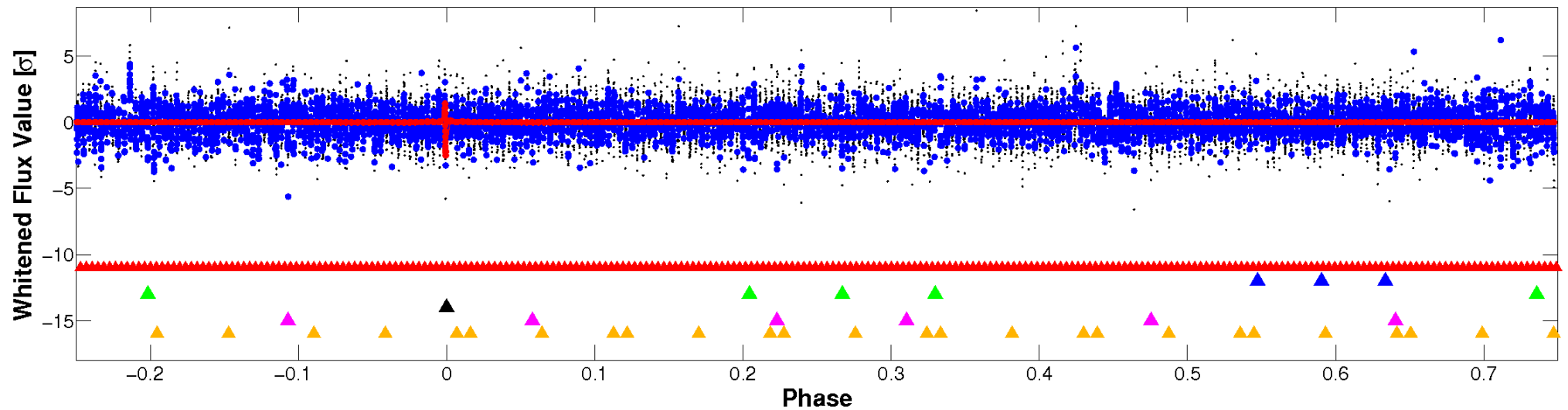


# Non-Whitened Vs. Whitened Light Curve

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

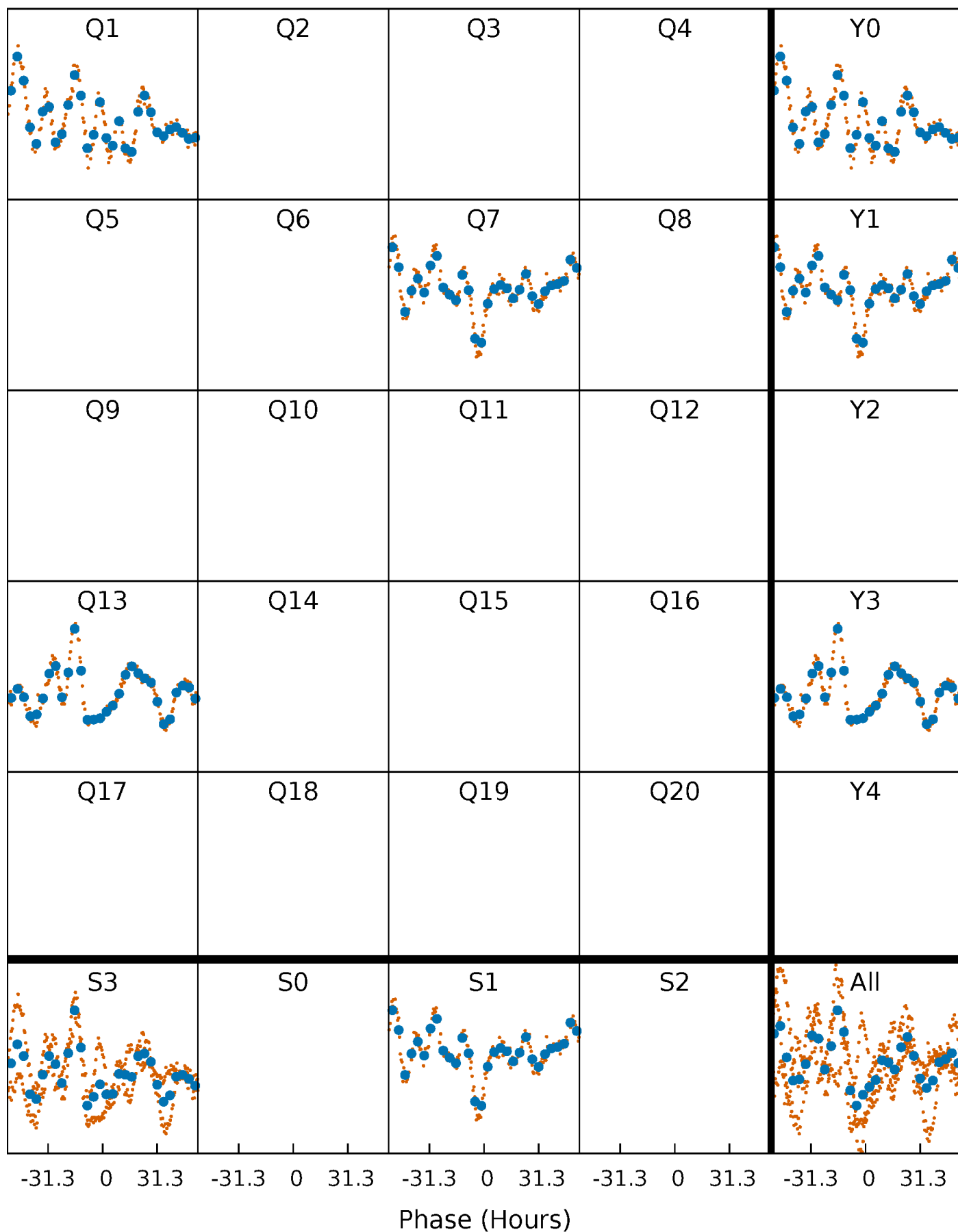


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



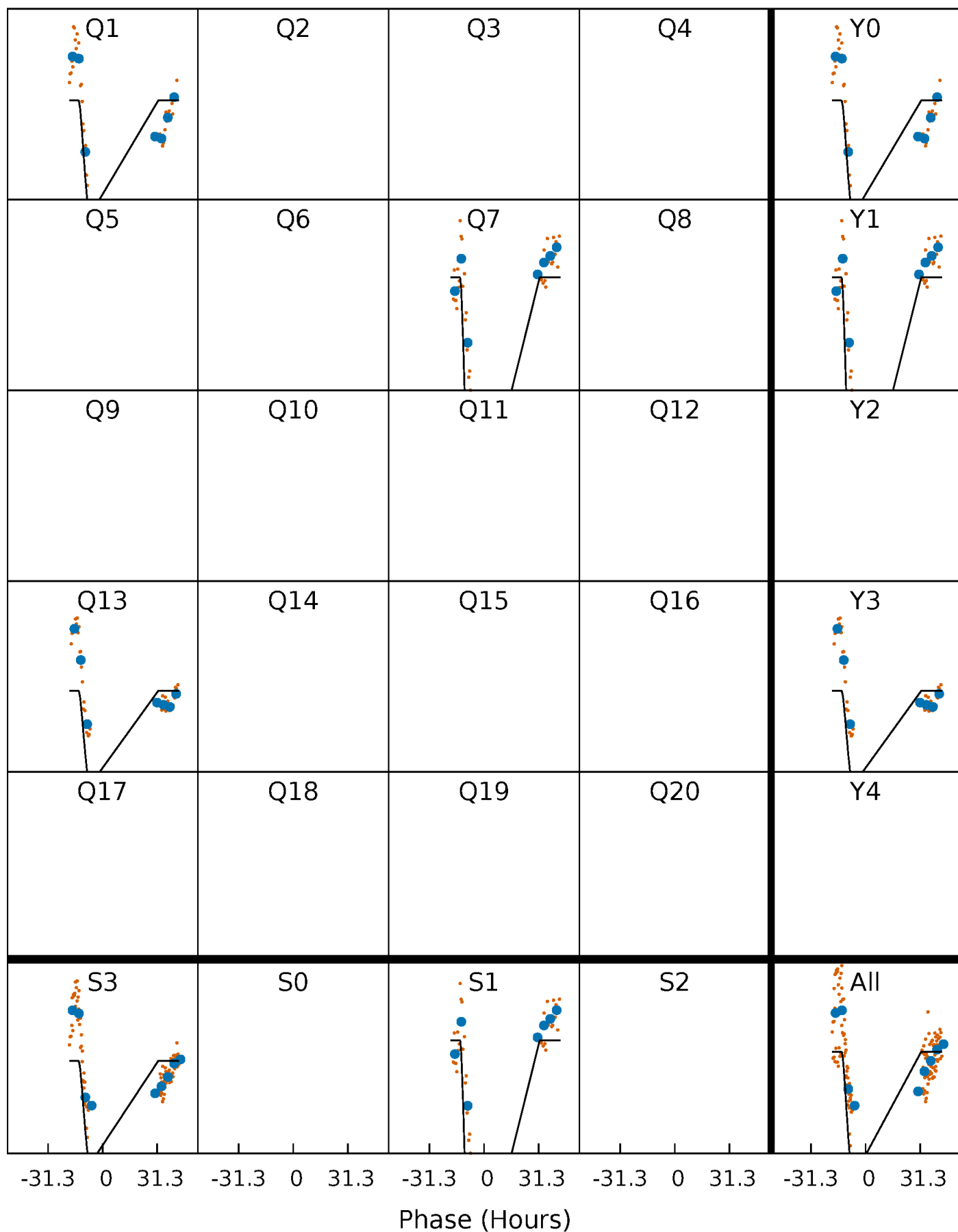
# PDC Quarter-Phased Transit Curves

TCE 001433399-04     $P=540.097860$  Days     $T_0=154.355847$  (BKJD)



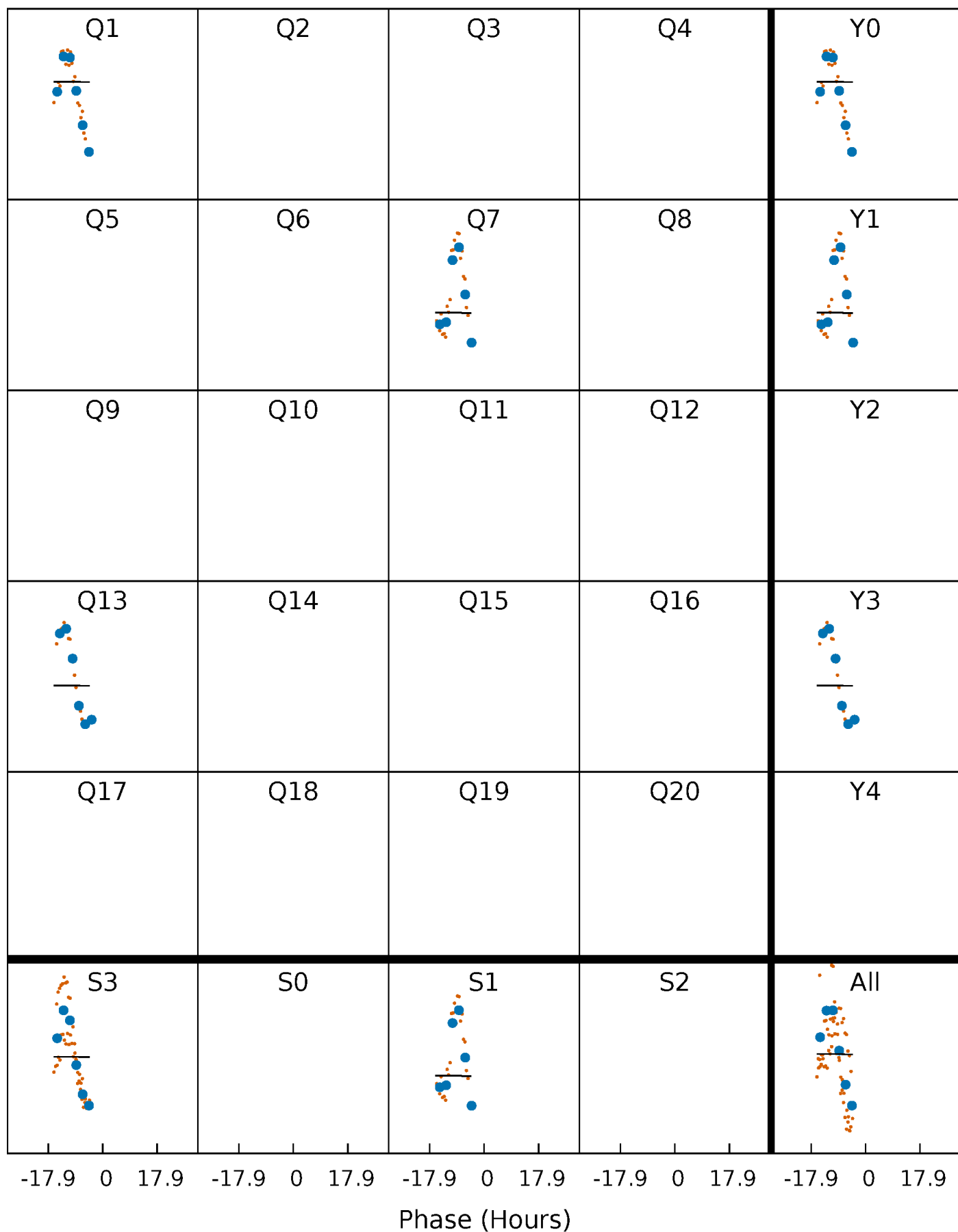
# DV Quarter-Phased Transit Curves

TCE 001433399-04     $P=540.097860$  Days     $T_0=154.355847$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

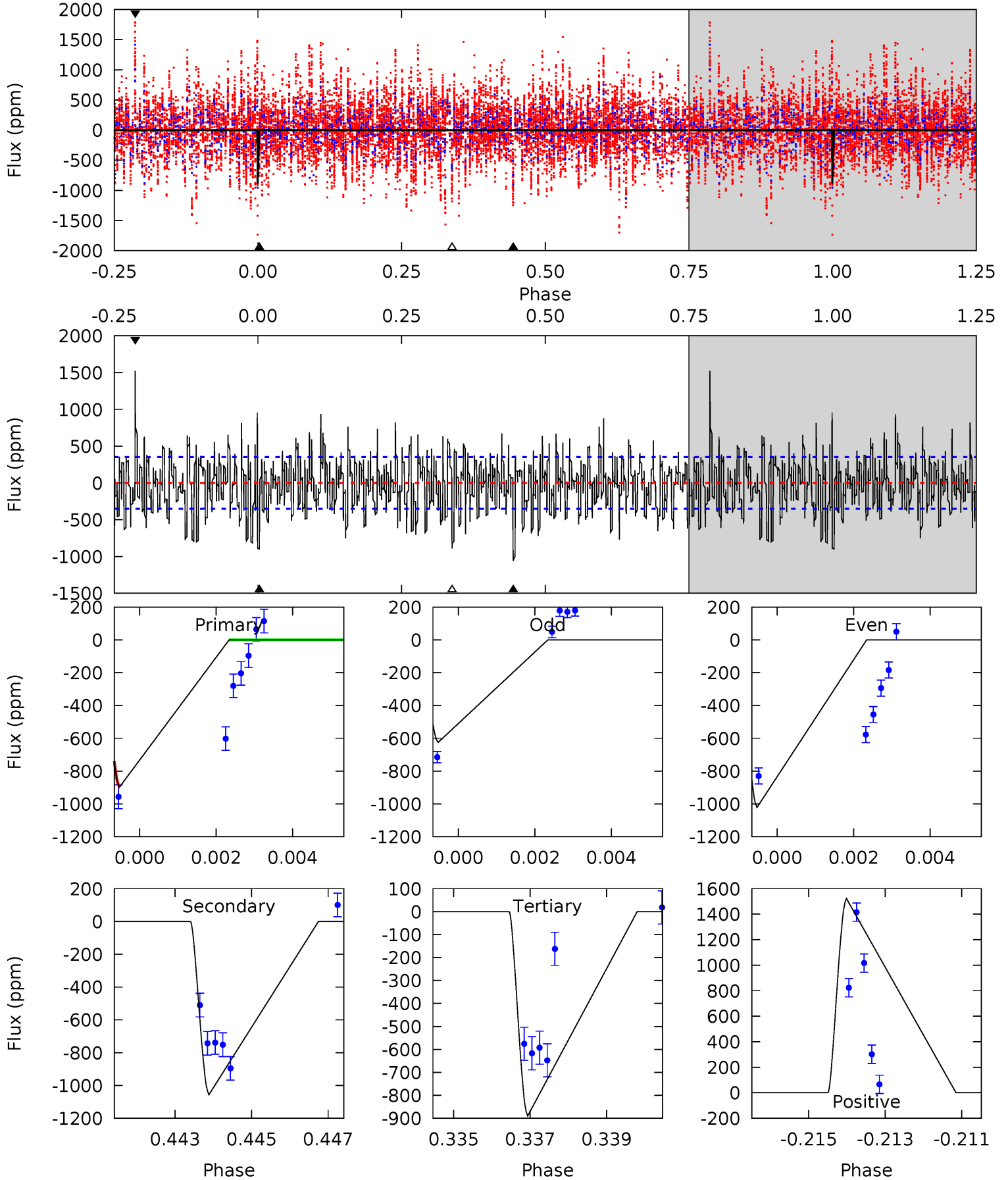
TCE 001433399-04 P=540.102472 Days  $T_0=154.226726$  (BKJD)



# DV Model-Shift Uniqueness Test

001433399-04, P = 540.097860 Days, E = 154.355847 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
13.5	15.9	13.4	23.0	5.32	3.07	4.62	0.11	-9.43	2.51	-7.04	2.79	0	0.59	0

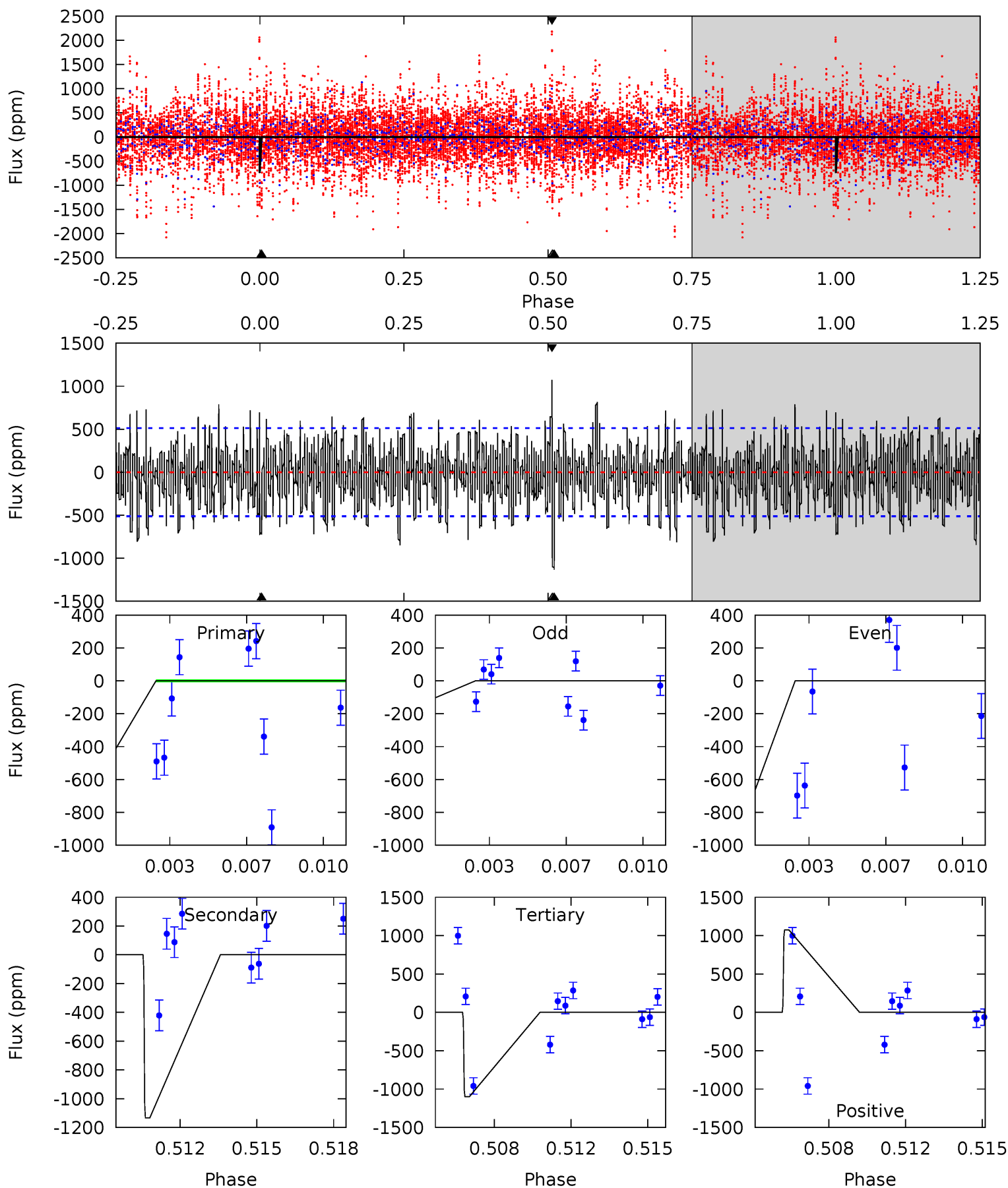




# Alt Model-Shift Uniqueness Test

001433399-04, P = 540.102472 Days, E = 154.226726 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.42	11.6	11.2	11.0	5.23	2.94	2.70	-3.82	-3.56	0.36	0.62	5.02	0	0.49	0



### Stellar Parameters For KIC 001433399

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6865^{+82}_{-82}$	$4.076^{+0.143}_{-0.117}$	$-0.100^{+0.150}_{-0.150}$	$1.815^{+0.331}_{-0.331}$	$1.435^{+0.113}_{-0.124}$	$0.338^{+0.242}_{-0.122}$
	+1%/-1%	+4%/-3%	+150%/-150%	+18%/-18%	+8%/-9%	+72%/-36%
Source	SPE68	SPE68	SPE68	DSEP		

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

### Secondary Eclipse Parameters for KIC 001433399-04 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-1056 \pm 66$	$9.70^{+1.46}_{-1.36}$	$471^{+24}_{-24}$	$5585^{+301}_{-271}$	$13307^{+4440}_{-3321}$
Alt.	$-1134 \pm 98$	$0.92^{+0.79}_{-0.59}$	$470^{+24}_{-22}$	$45311^{+221026}_{-25353}$	$1607716^{+10210627}_{-1155107}$

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

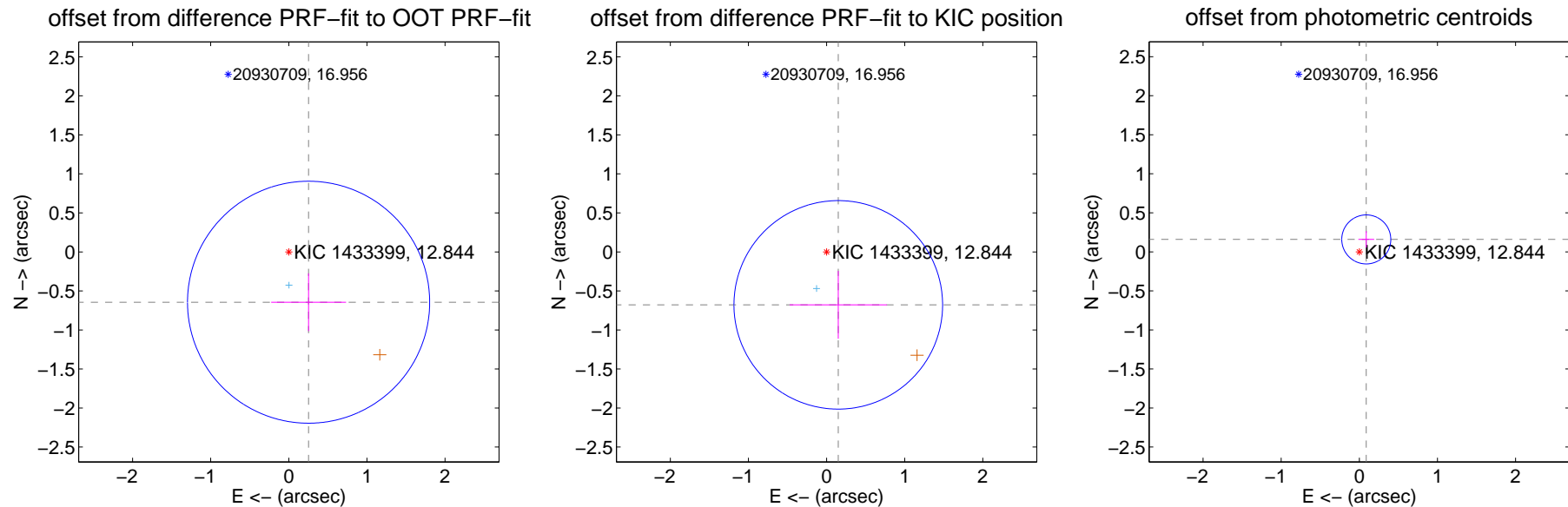
## DV Centroid Data

Supplemental centroid analysis for 001433399-04. Kepler magnitude: 12.84. Transit SNR 9.54

There are 1 quarters with good PRF difference image offsets

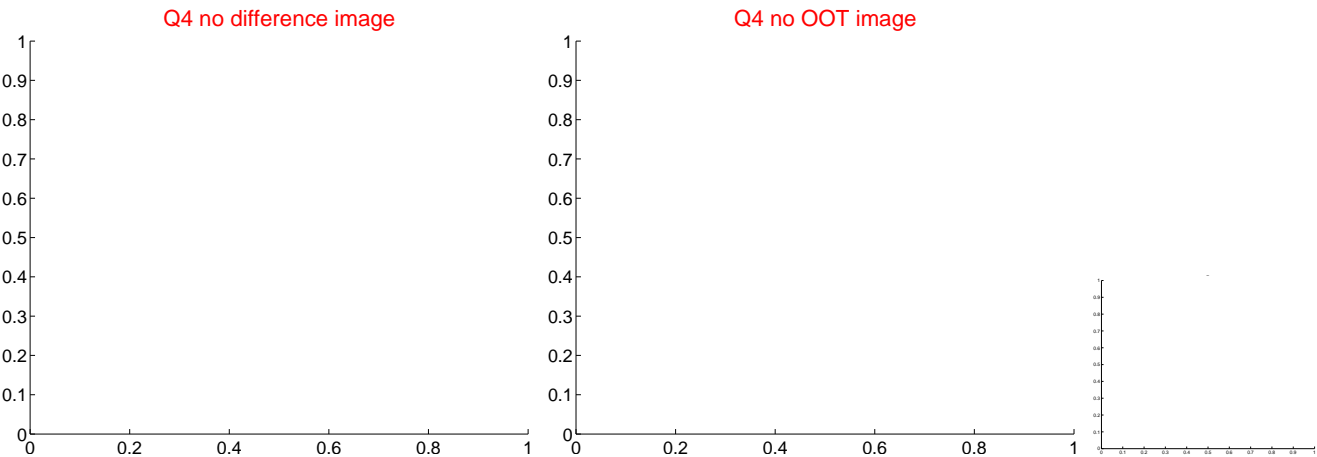
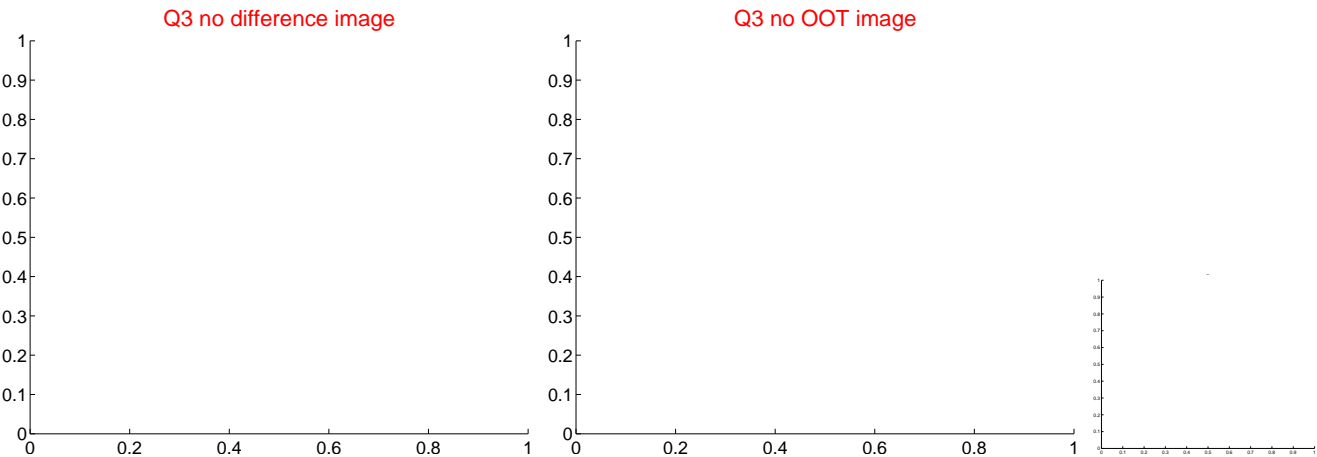
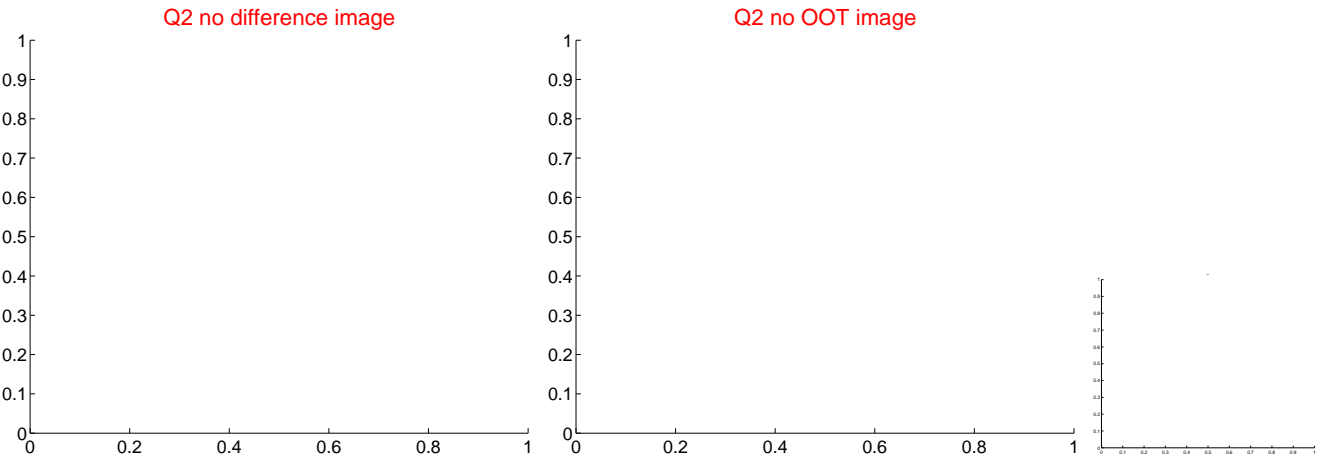
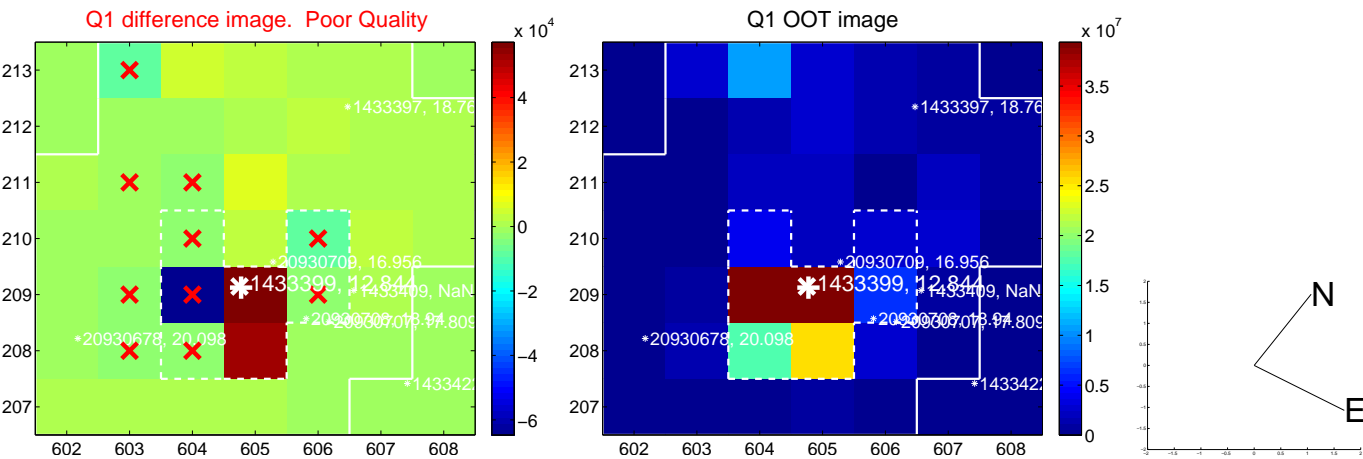
The direct PRF centroid is offset from the target star catalog position by about 0.14 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.692 \pm 0.517$	1.34	$-0.253 \pm 0.479$	$-0.645 \pm 0.370$
PRF-fit source offset from KIC position	$0.695 \pm 0.445$	1.56	$-0.150 \pm 0.623$	$-0.678 \pm 0.435$
photometric centroid source offset	$0.18 \pm 0.10$	1.74	$-0.09 \pm 0.10$	$0.16 \pm 0.11$

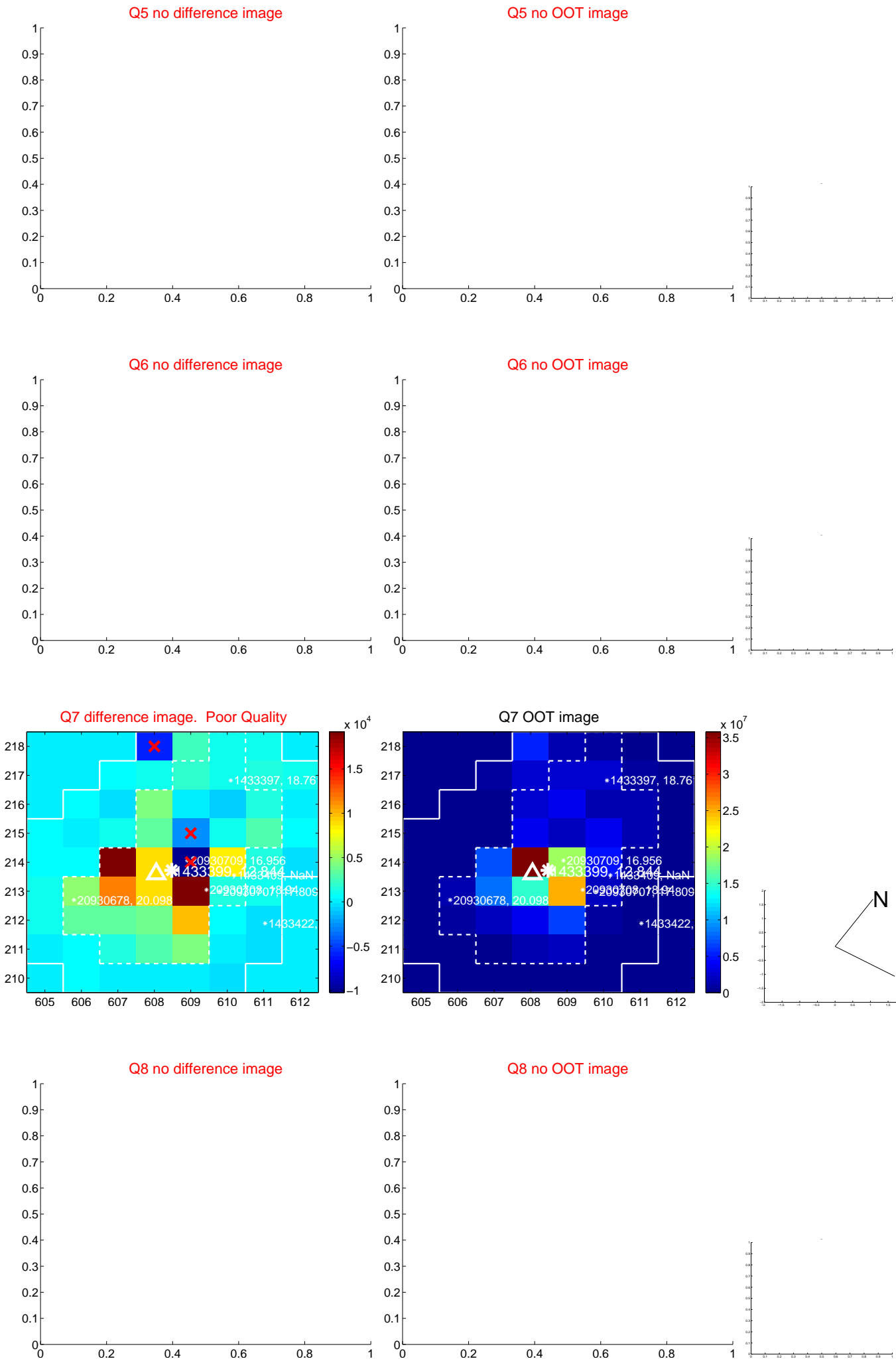


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

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



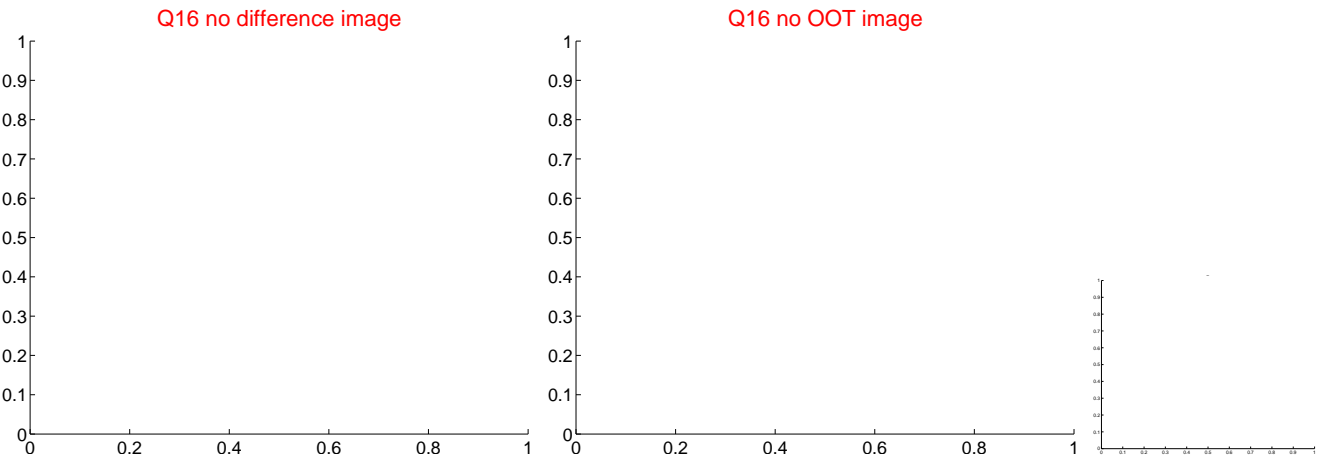
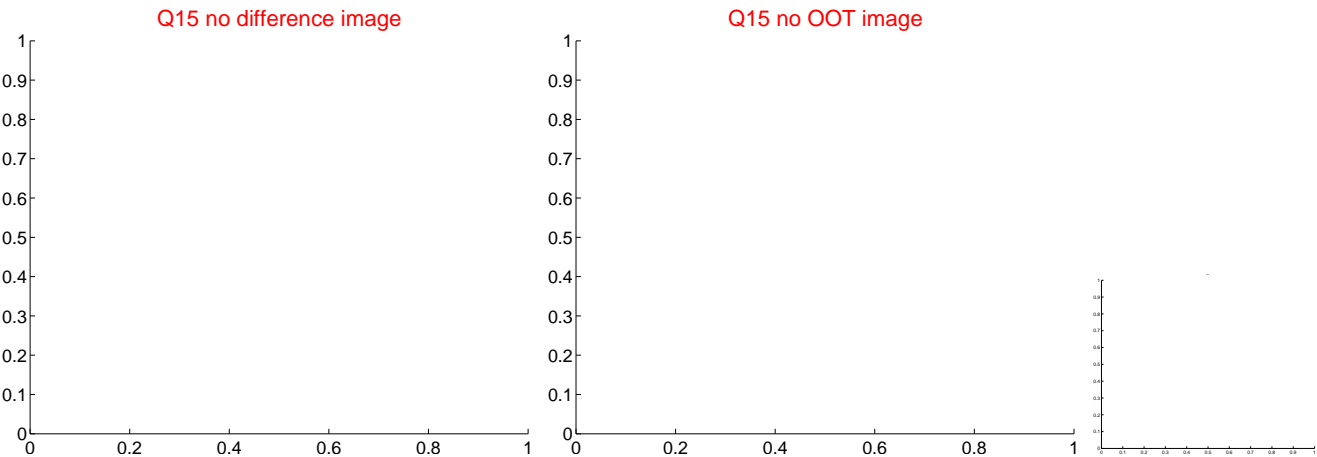
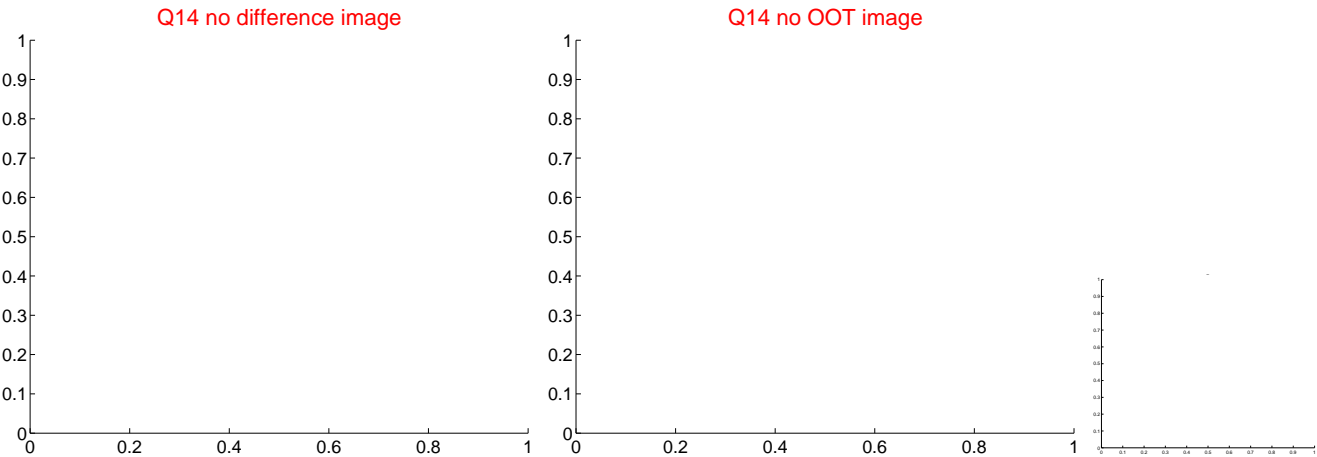
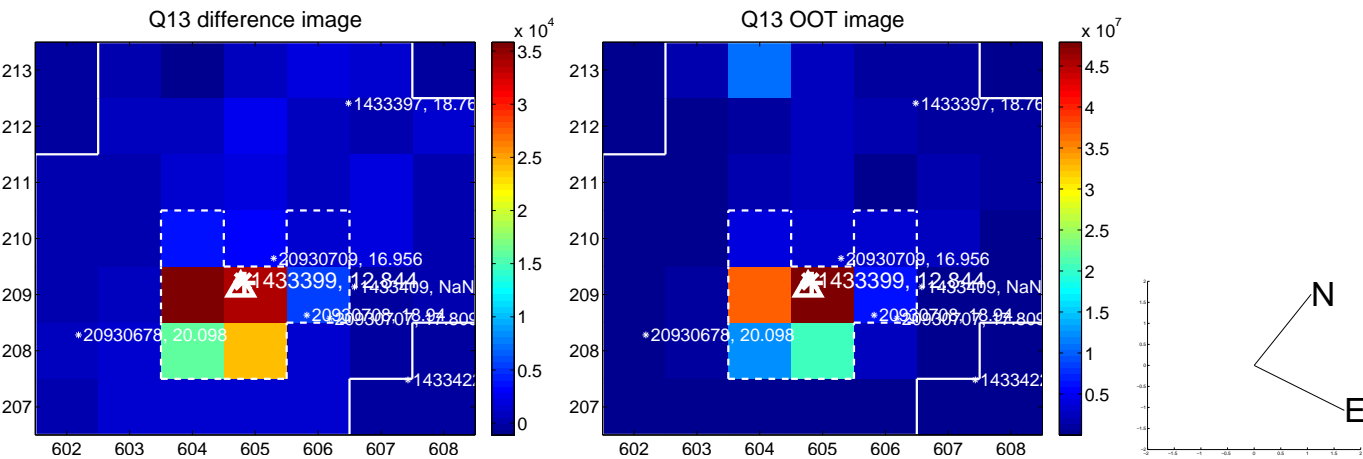
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

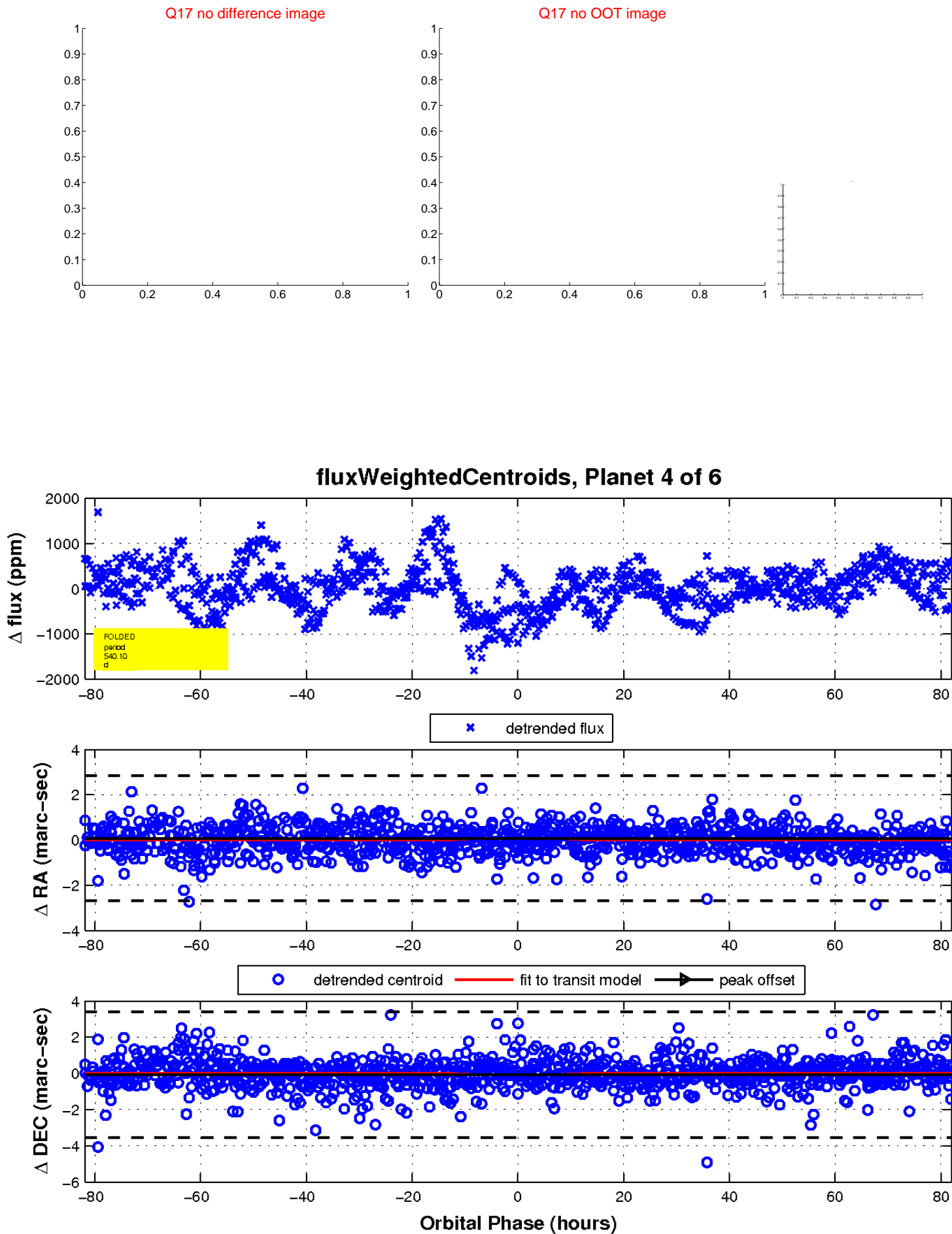


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

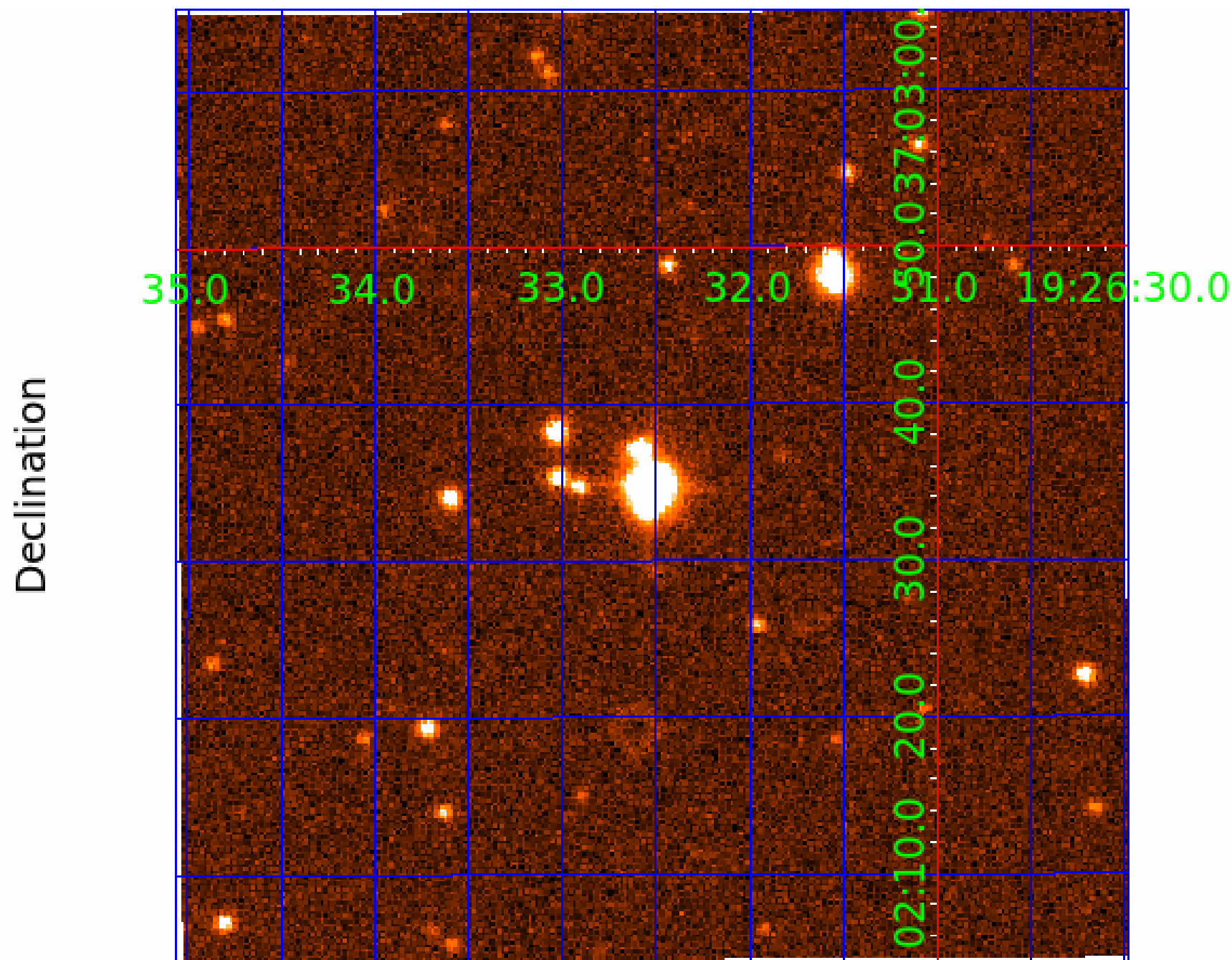




white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image



# KIC 001433399

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
001433399-01	OBS	No	2.126459	133.577945	29.6	13.071	9.0	4.8	1.81	6865	1.06	4926.05
001433399-02	OBS	No	563.383562	449.988290	5120.2	33.523	14.8	13.5	1.81	6865	22.15	2.90
001433399-03	OBS	No	253.125555	332.458888	822.9	12.997	12.7	12.3	1.81	6865	5.84	8.41
001433399-04	OBS	No	540.097860	154.355847	2113.4	27.354	12.6	9.5	1.81	6865	9.71	3.06
001433399-05	OBS	No	225.494771	274.756528	907.6	12.881	12.4	12.4	1.81	6865	8.42	9.81
001433399-06	OBS	No	57.115815	158.078027	241.4	9.000	11.2	-1.0	1.81	6865	2.85	61.24

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
001433399-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV
001433399-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES—MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
001433399-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
001433399-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
001433399-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
001433399-06	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_NOFITS

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

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

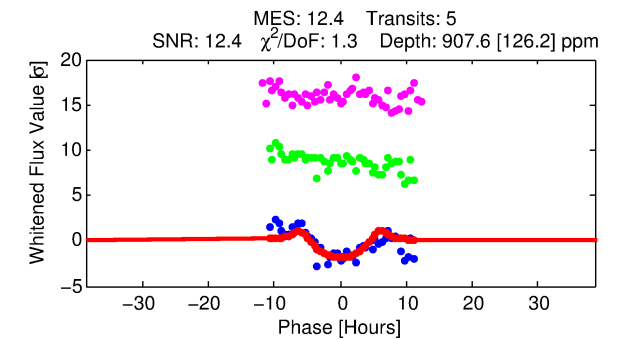
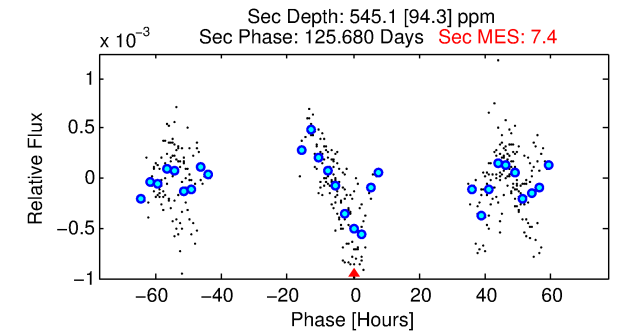
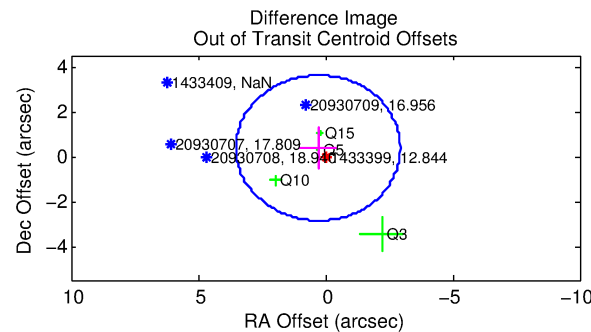
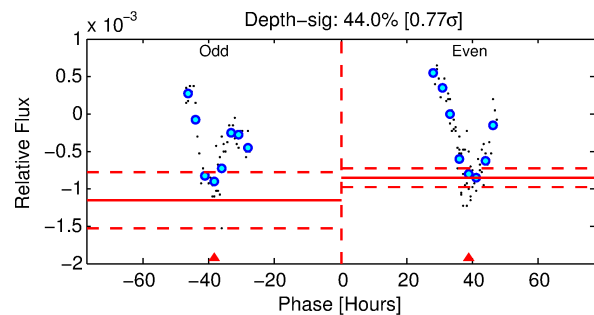
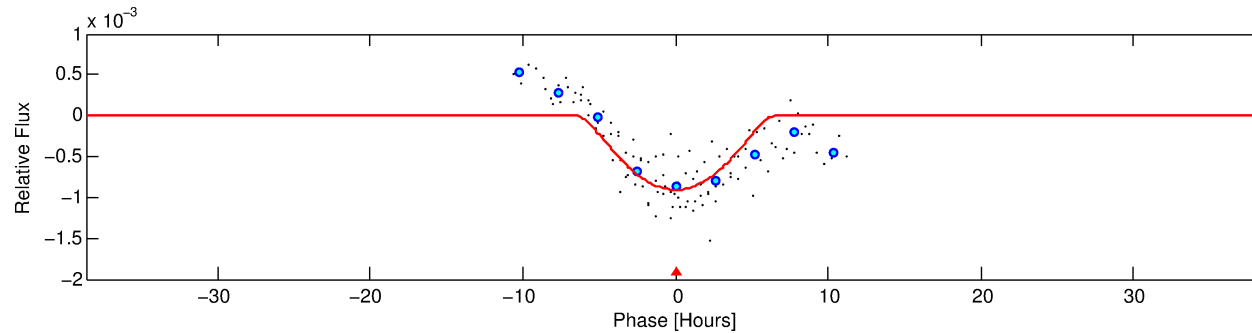
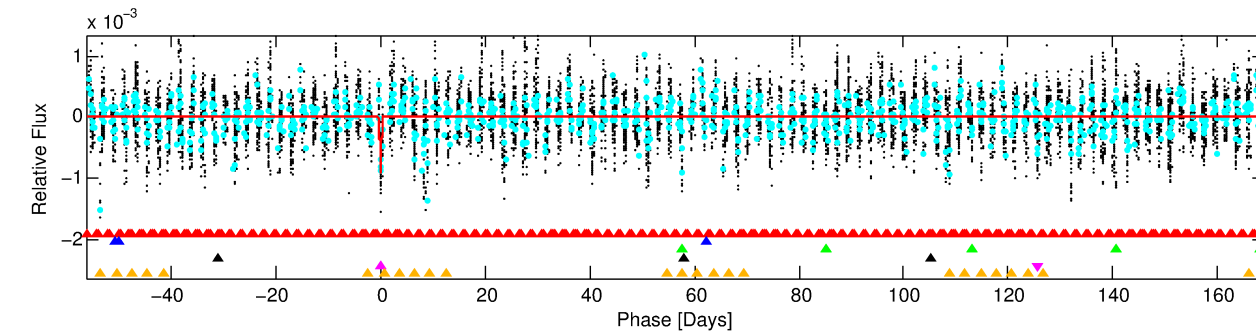
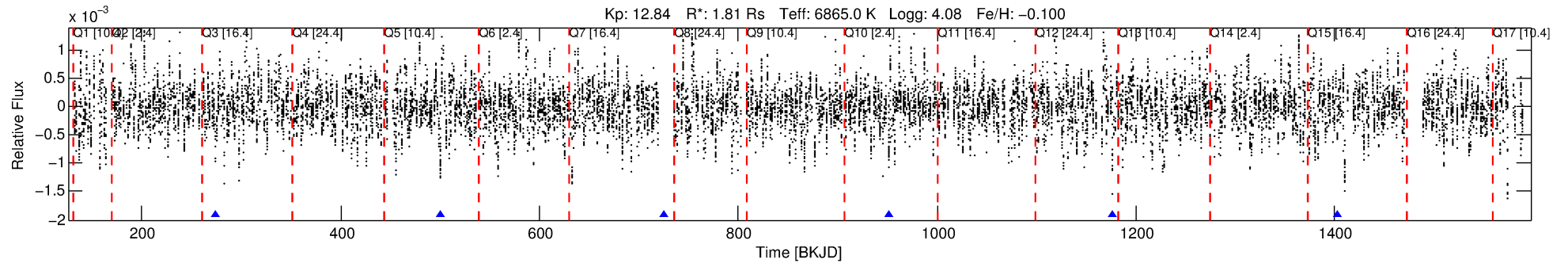
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 001433399-05

No Significant Match Found

# DV One-Page Summary

KIC: 1433399 Candidate: 5 of 6 Period: 225.495 d



## DV Fit Results:

Period = 225.49477 [0.01064] d  
Epoch = 274.7565 [0.0290] BKJD  
Rp/R\* = 0.0425 [0.0251]  
a/R\* = 45.77 [10.34]  
b = 0.98 [0.05]  
Seff = 9.81 [2.51]  
Teff = 451 [29] K  
Rp = 8.42 [5.21] Re  
a = 0.8173 [0.1339] AU  
Ag = 2823.95 [3445.19] [0.82 $\sigma$ ]  
Teffp = 5087 [1520] K [3.05 $\sigma$ ]

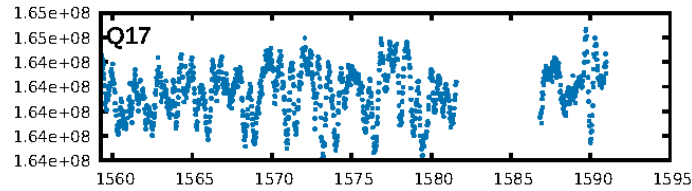
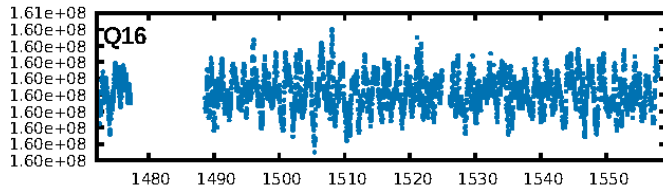
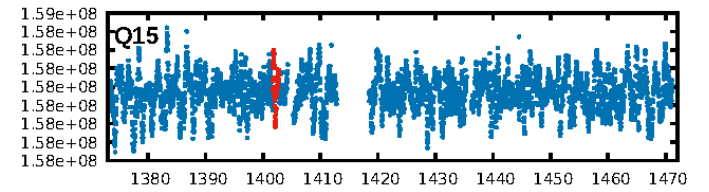
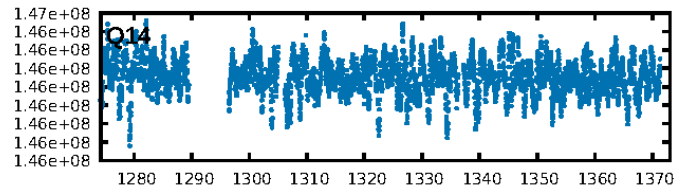
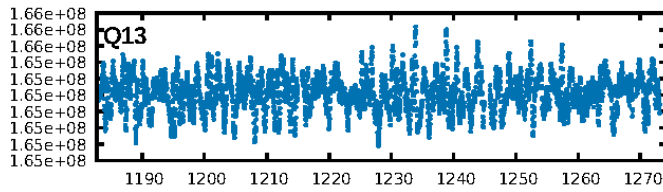
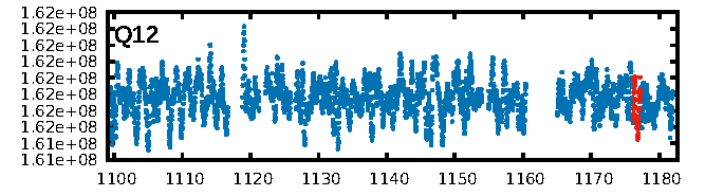
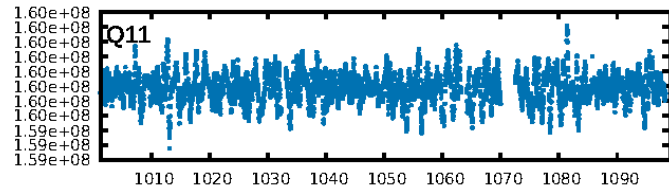
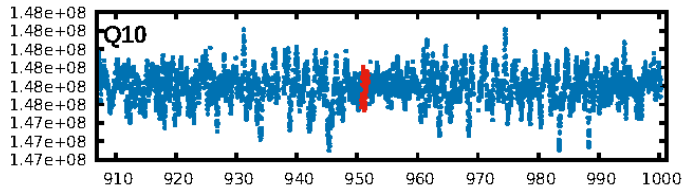
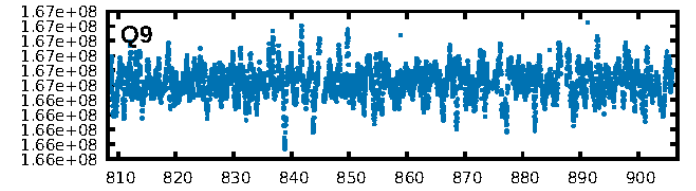
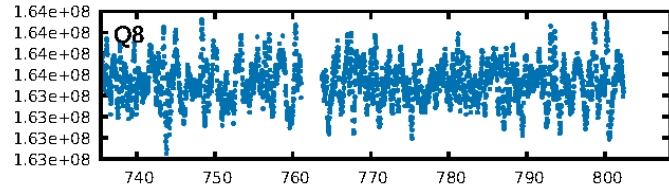
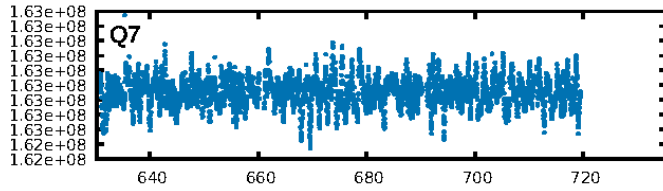
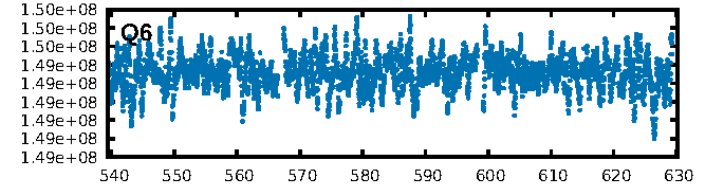
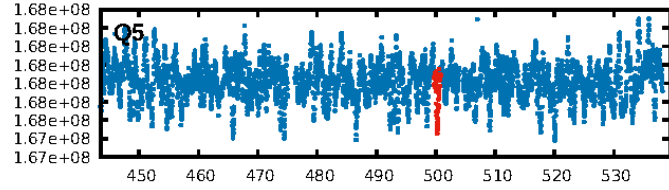
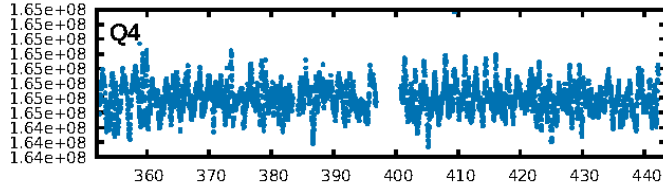
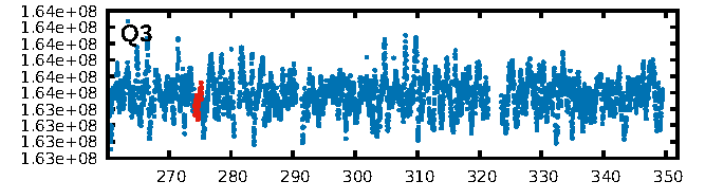
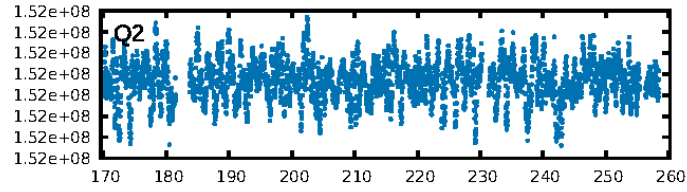
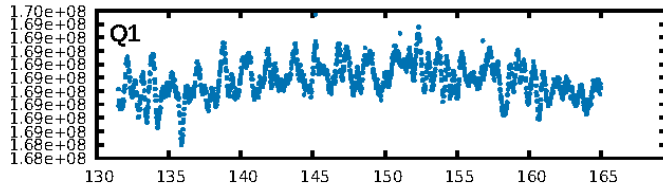
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [257.17 $\sigma$ ]  
LongPeriod-sig: 100.0% [36.24 $\sigma$ ]  
ModelChiSquare2-sig: 44.5%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [5/5]  
GhostDiagnostic-chr: 1.837  
Centroid-sig: 53.2%  
Centroid-so: 0.324 arcsec [0.66 $\sigma$ ]  
OotOffset-rm: 0.474 arcsec [0.44 $\sigma$ ]  
KicOffset-rm: 0.506 arcsec [0.44 $\sigma$ ]  
OotOffset-st: 1/2/0/1 [4]  
KicOffset-st: 1/2/0/1 [4]  
DiffImageQuality-fgm: 0.75 [3/4]  
DiffImageOverlap-fno: 0.00 [0/4]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 00:53:02 Z

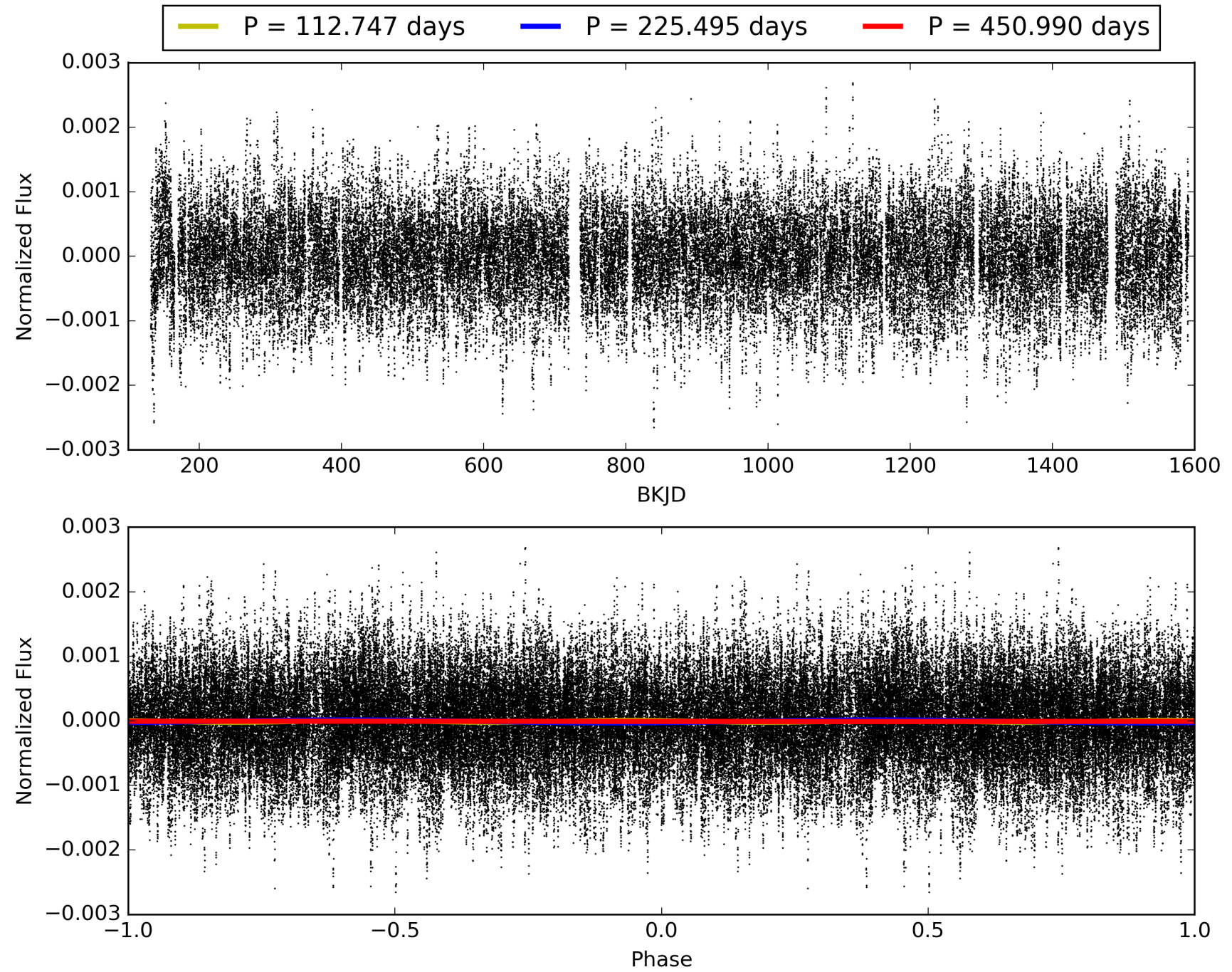
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 001433399-05, PDC Light Curves



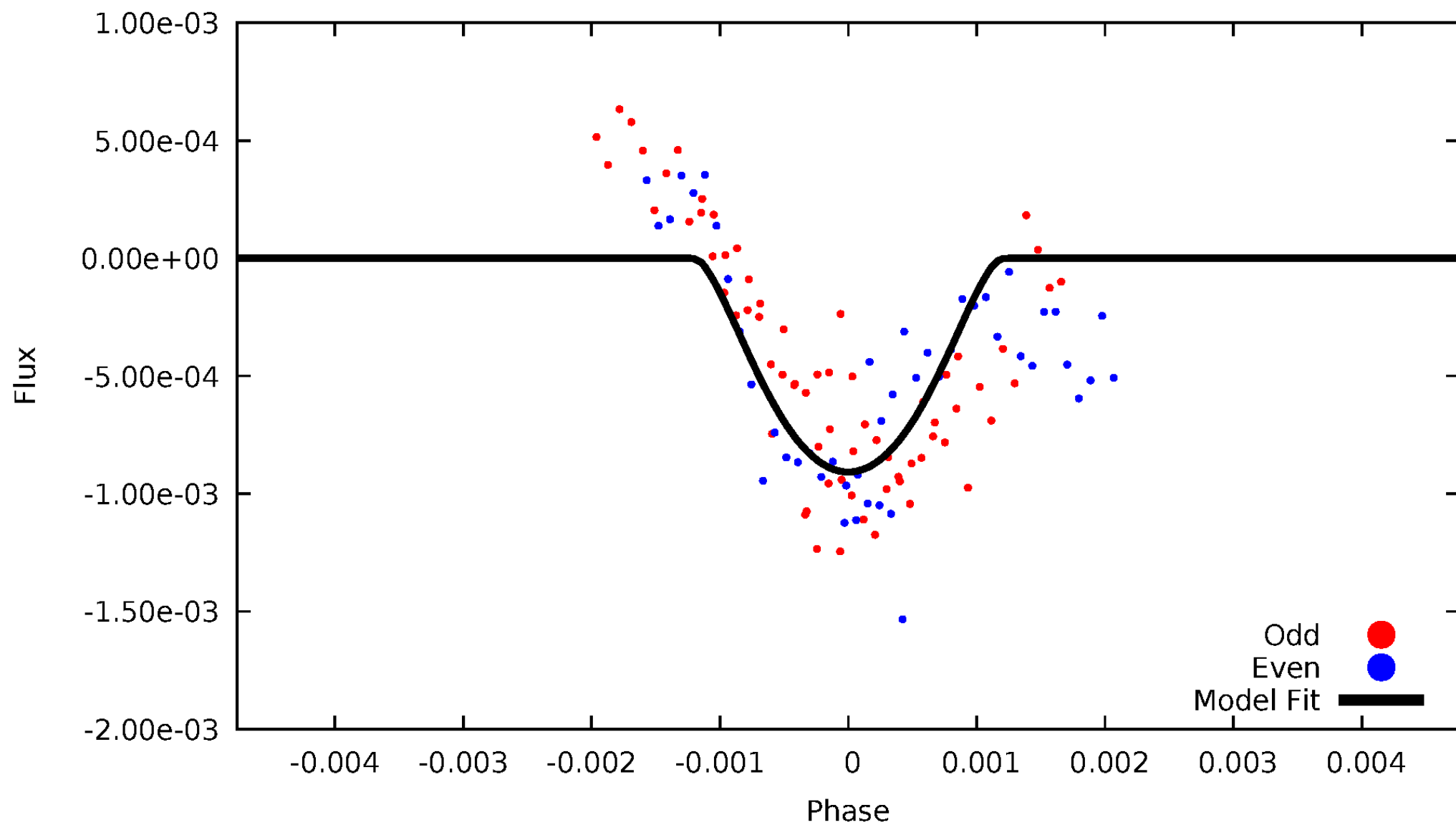


# TCE 001433399-05



# DV Odd/Even

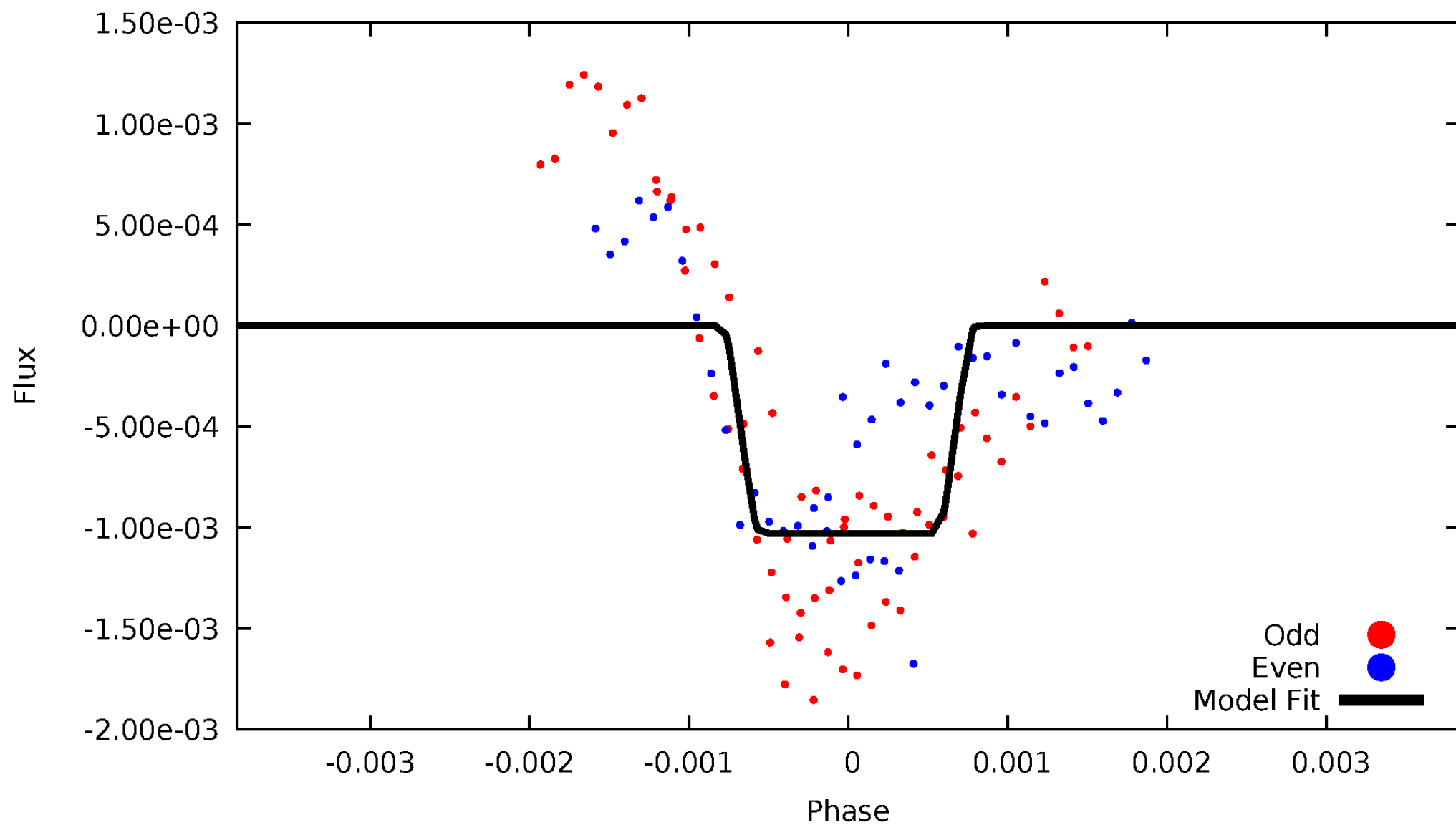
TCE 001433399-05





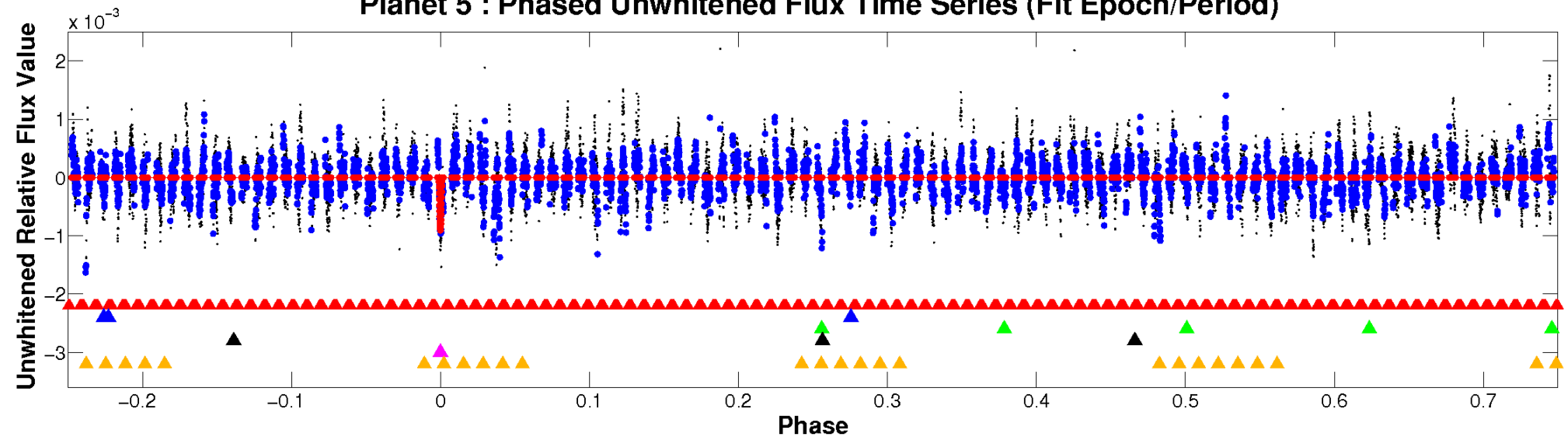
# ALT Odd/Even

TCE 001433399-05

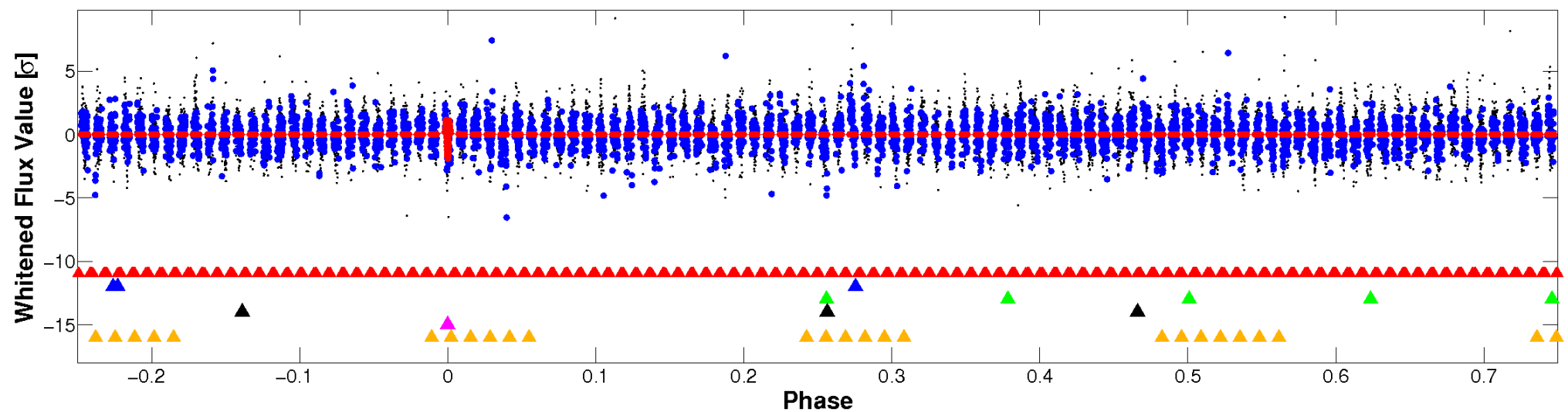


# Non-Whitened Vs. Whitened Light Curve

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

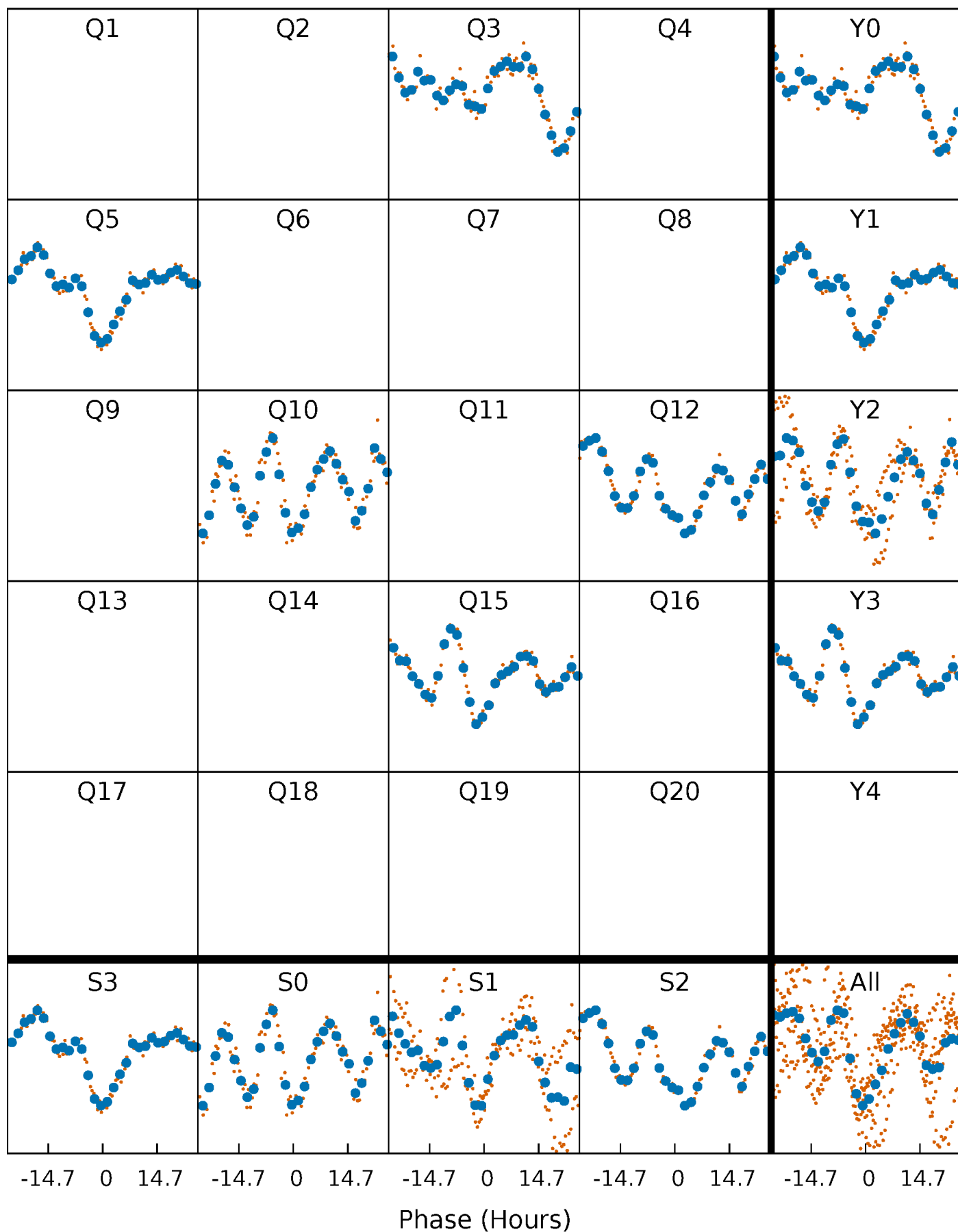


## Planet 5 : Phased Whitened Flux Time Series (Fit Epoch/Period)



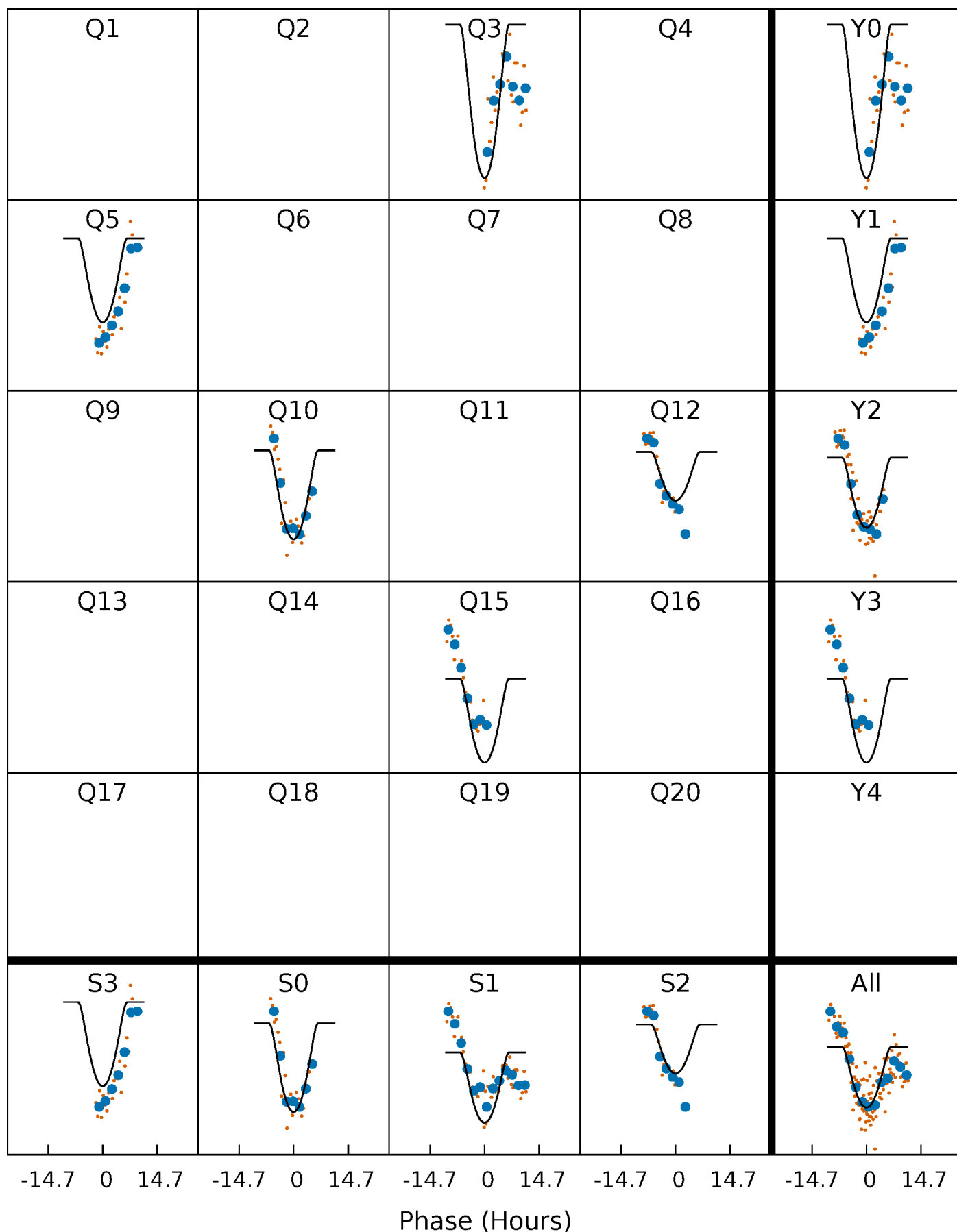
# PDC Quarter-Phased Transit Curves

TCE 001433399-05     $P=225.494771$  Days     $T_0=274.756528$  (BKJD)



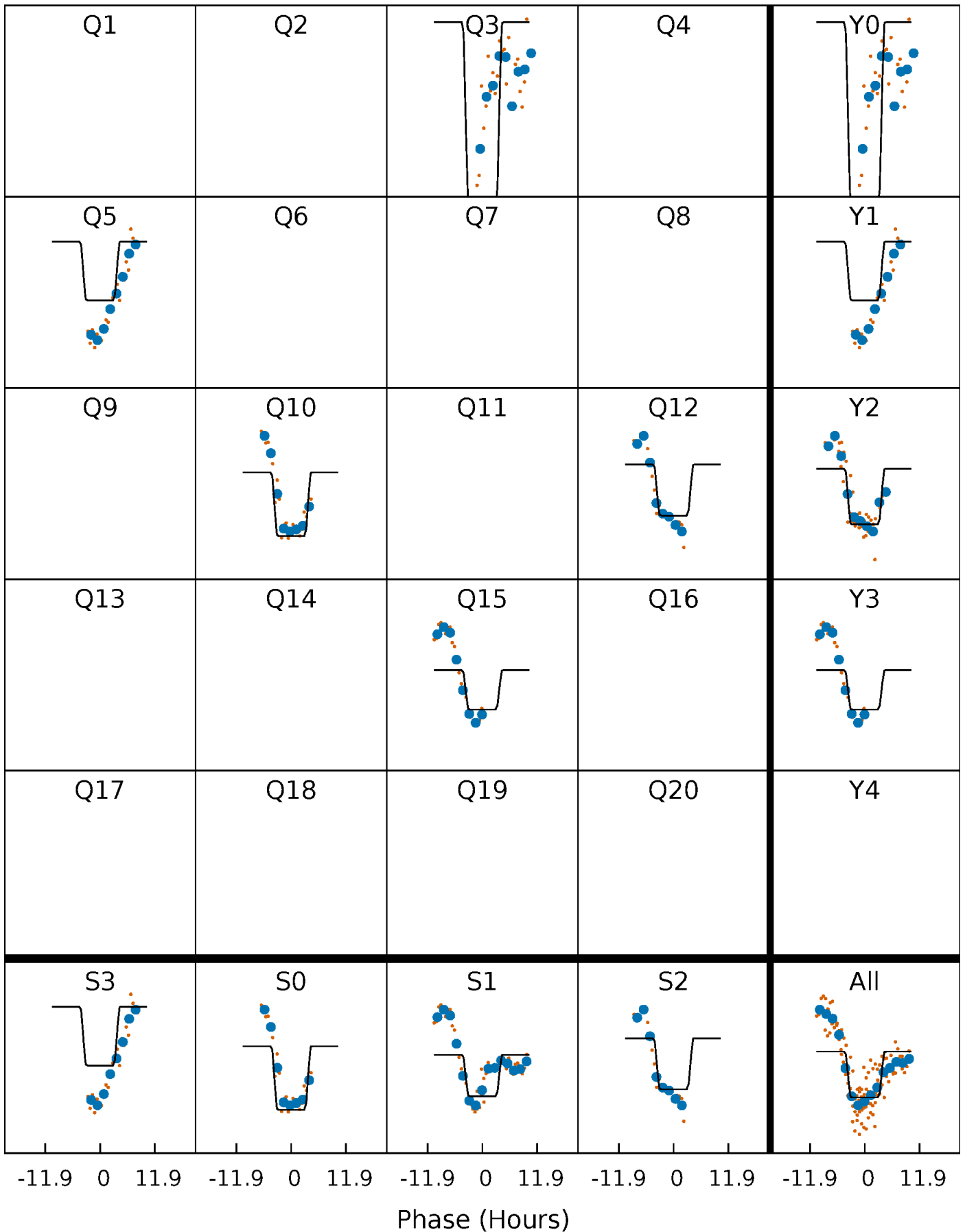
# DV Quarter-Phased Transit Curves

TCE 001433399-05     $P=225.494771$  Days     $T_0=274.756528$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

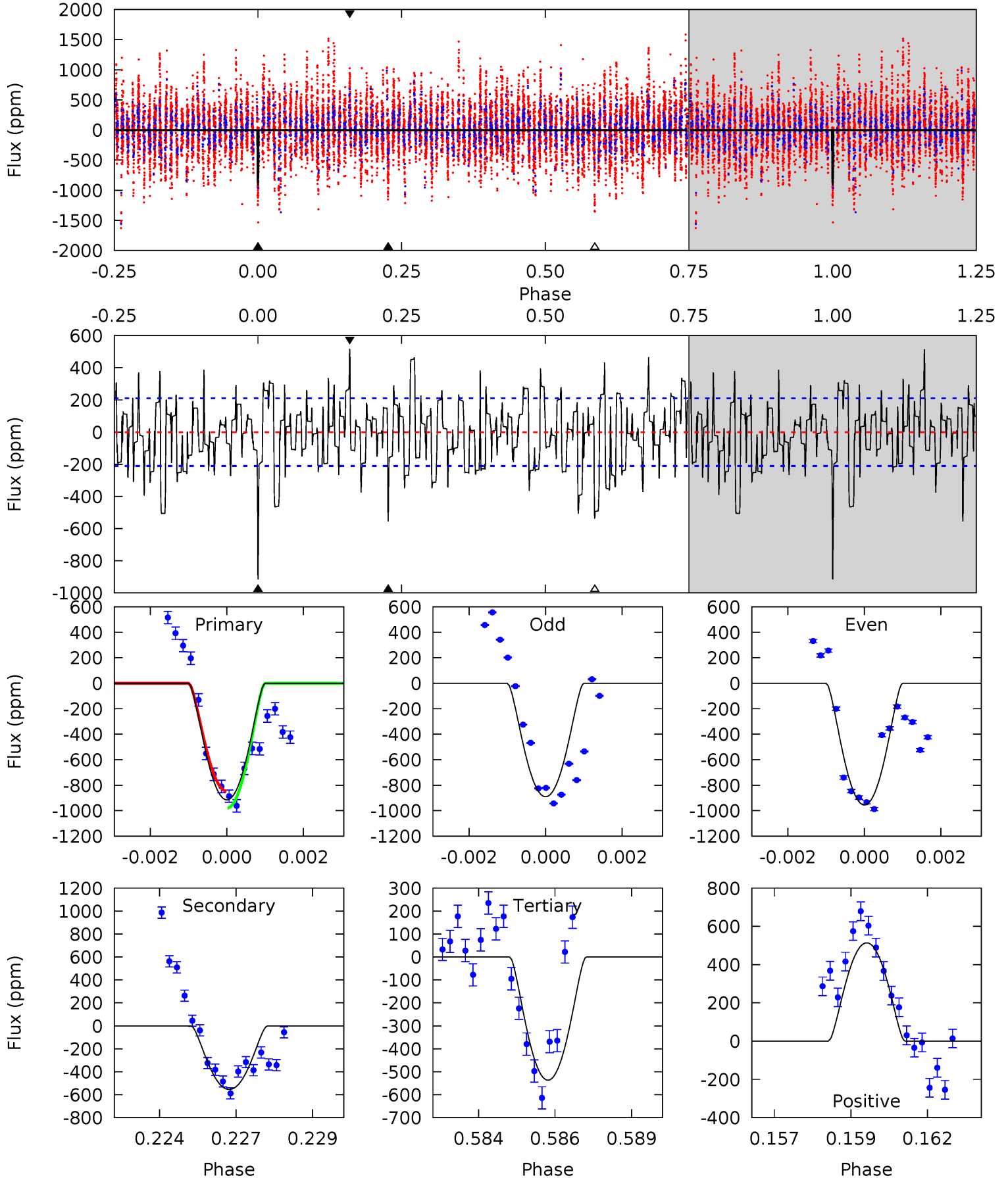
TCE 001433399-05     $P=225.484335$  Days     $T_0=274.801566$  (BKJD)



# DV Model-Shift Uniqueness Test

001433399-05,  $P = 225.494771$  Days,  $E = 49.261757$  Days

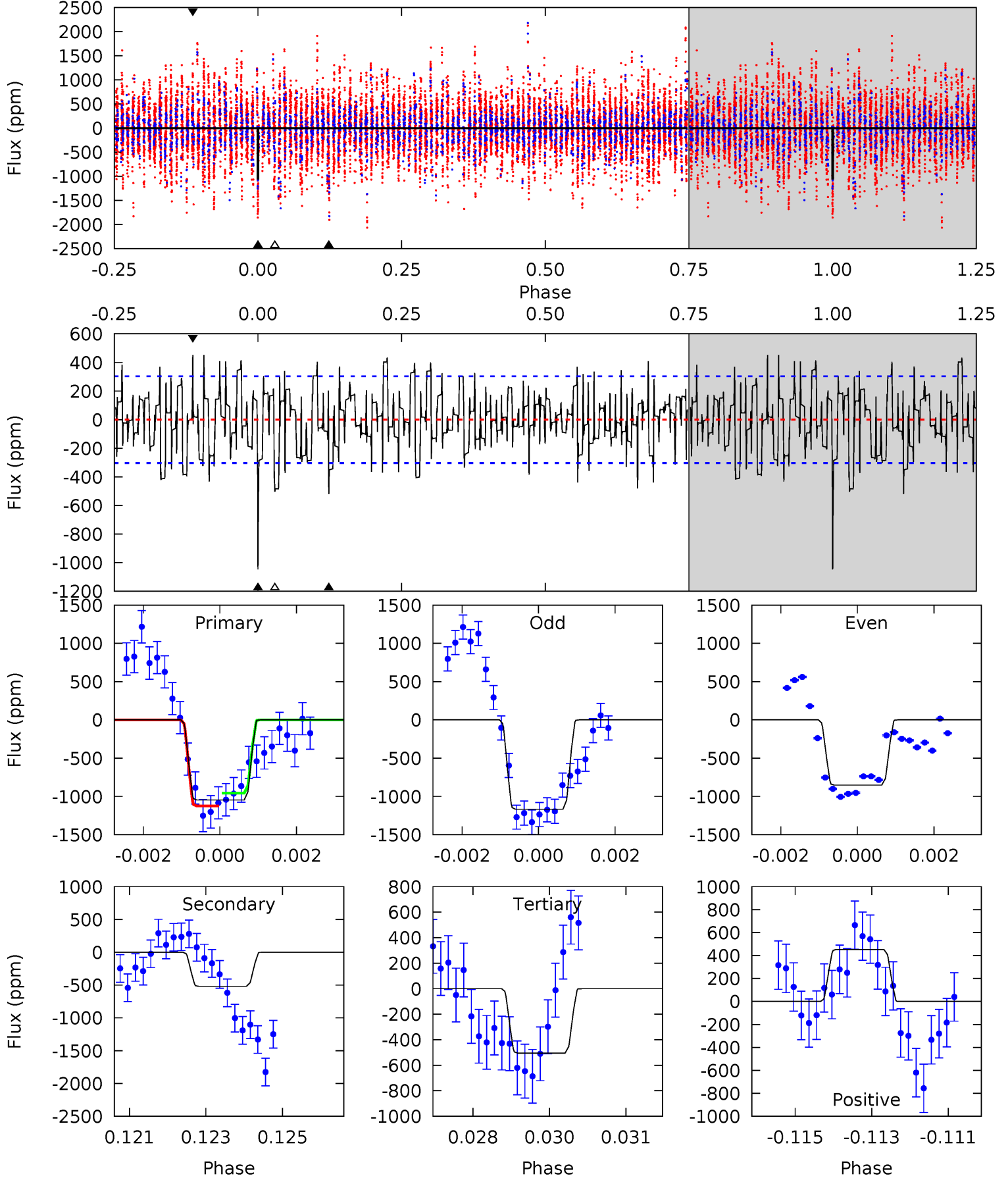
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
23.1	14.0	13.5	12.9	5.29	3.03	4.50	9.53	10.1	0.45	1.03	0.79	1.04	0.36	1.65



# Alt Model-Shift Uniqueness Test

001433399-05, P = 225.484335 Days, E = 49.317231 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
18.5	9.21	8.93	8.02	5.36	3.15	2.98	9.60	10.5	0.28	1.19	2.73	0.89	0.30	1.48





### Stellar Parameters For KIC 001433399

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6865^{+82}_{-82}$	$4.076^{+0.143}_{-0.117}$	$-0.100^{+0.150}_{-0.150}$	$1.815^{+0.331}_{-0.331}$	$1.435^{+0.113}_{-0.124}$	$0.338^{+0.242}_{-0.122}$
	+1%/-1%	+4%/-3%	+150%/-150%	+18%/-18%	+8%/-9%	+72%/-36%
Source	SPE68	SPE68	SPE68	DSEP		

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

### Secondary Eclipse Parameters for KIC 001433399-05 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-554 \pm 40$	$8.80^{+4.70}_{-4.73}$	$630^{+29}_{-28}$	$5044^{+2377}_{-812}$	$2657^{+9467}_{-1568}$
Alt.	$-520 \pm 56$	$7.16^{+4.37}_{-4.30}$	$629^{+33}_{-30}$	$5478^{+3737}_{-1024}$	$3694^{+20949}_{-2274}$

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

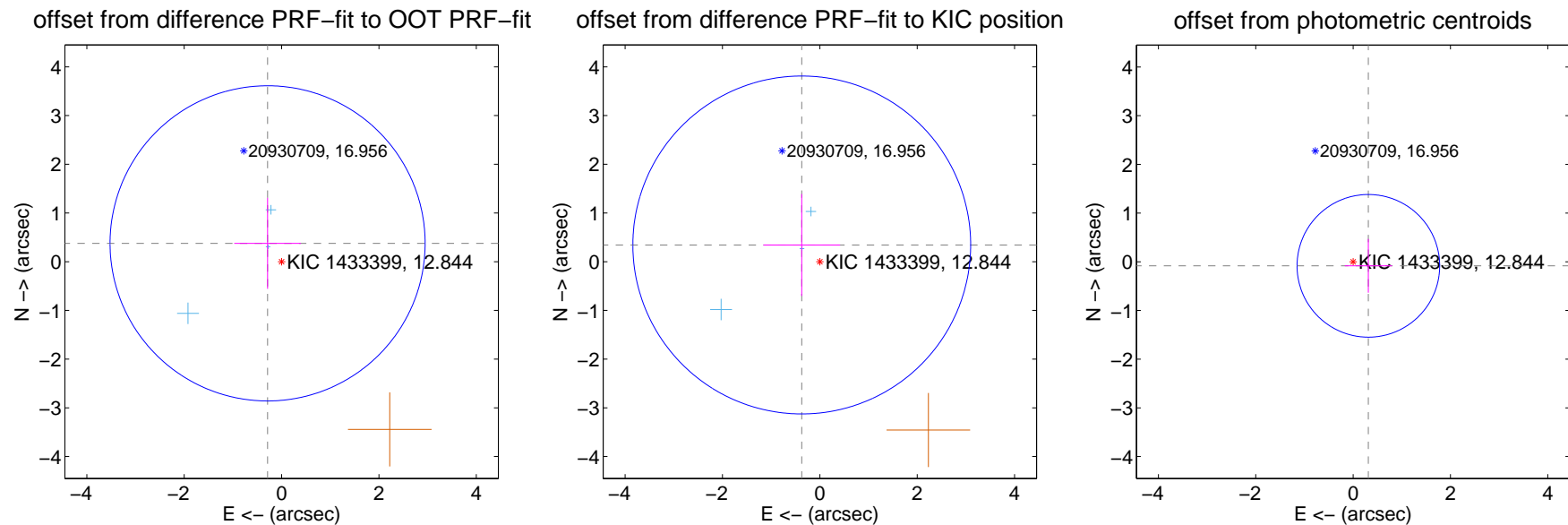
## DV Centroid Data

Supplemental centroid analysis for 001433399-05. Kepler magnitude: 12.84. Transit SNR 12.36

There are 3 quarters with good PRF difference image offsets

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

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.474 \pm 1.079$	0.44	$0.287 \pm 0.684$	$0.377 \pm 0.934$
PRF-fit source offset from KIC position	$0.506 \pm 1.156$	0.44	$0.371 \pm 0.788$	$0.343 \pm 1.046$
photometric centroid source offset	$0.32 \pm 0.49$	0.66	$-0.31 \pm 0.48$	$-0.08 \pm 0.55$



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



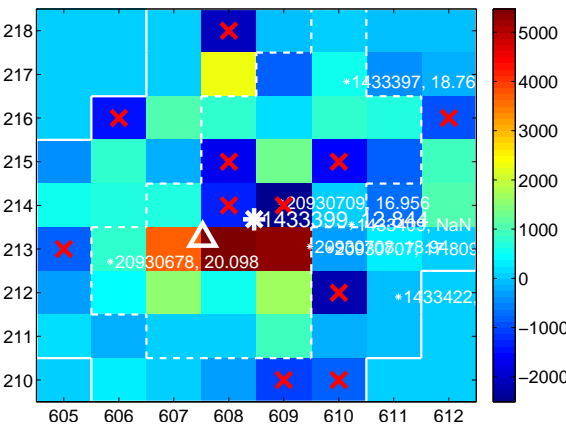
Q2 no difference image



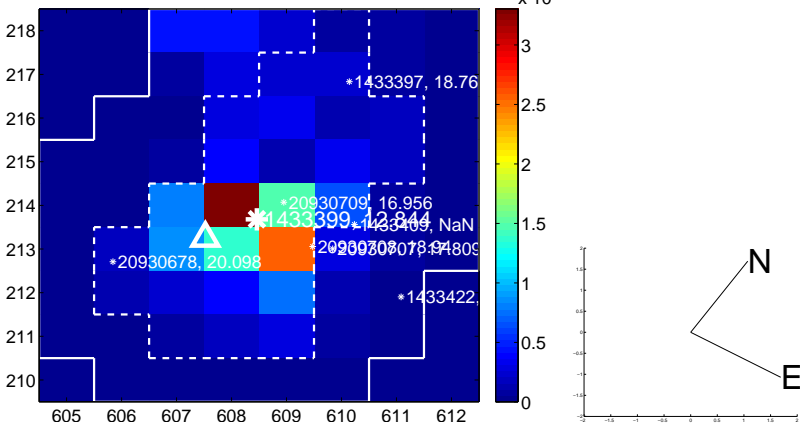
Q2 no OOT image



Q3 difference image. Poor Quality



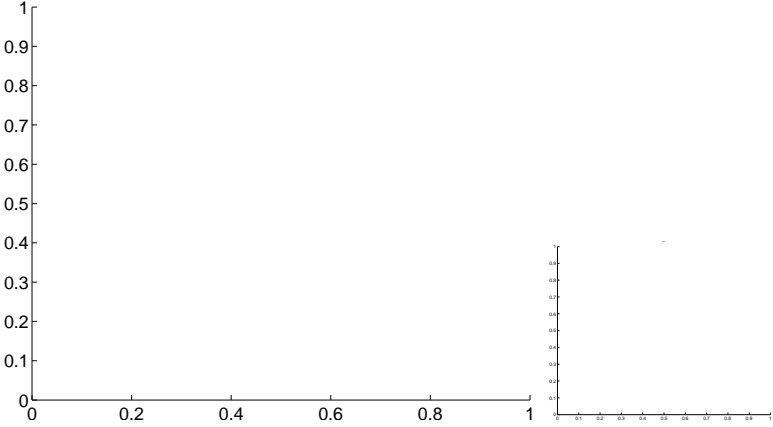
Q3 OOT image



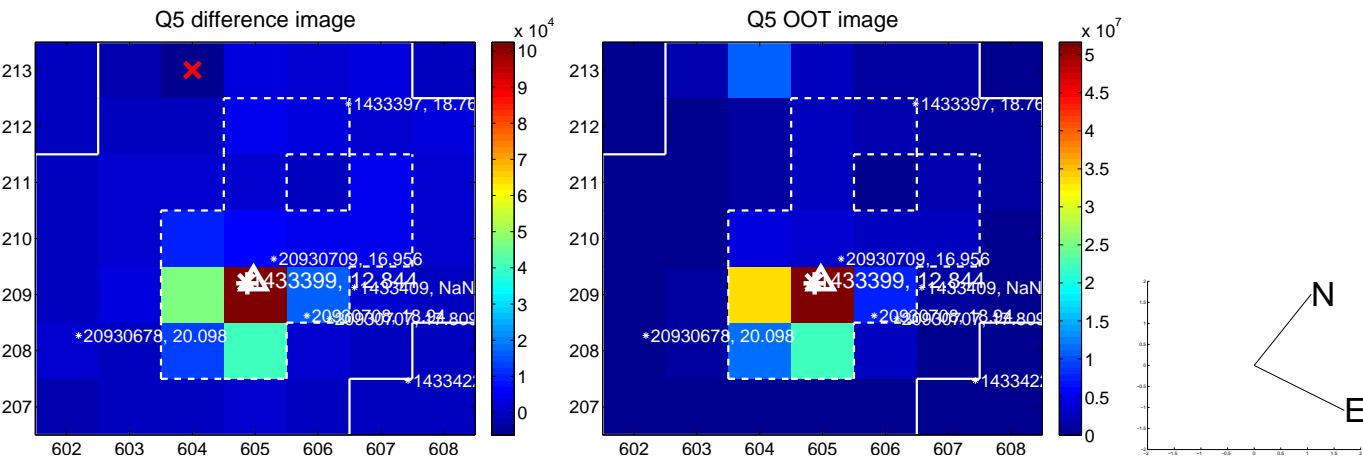
Q4 no difference image



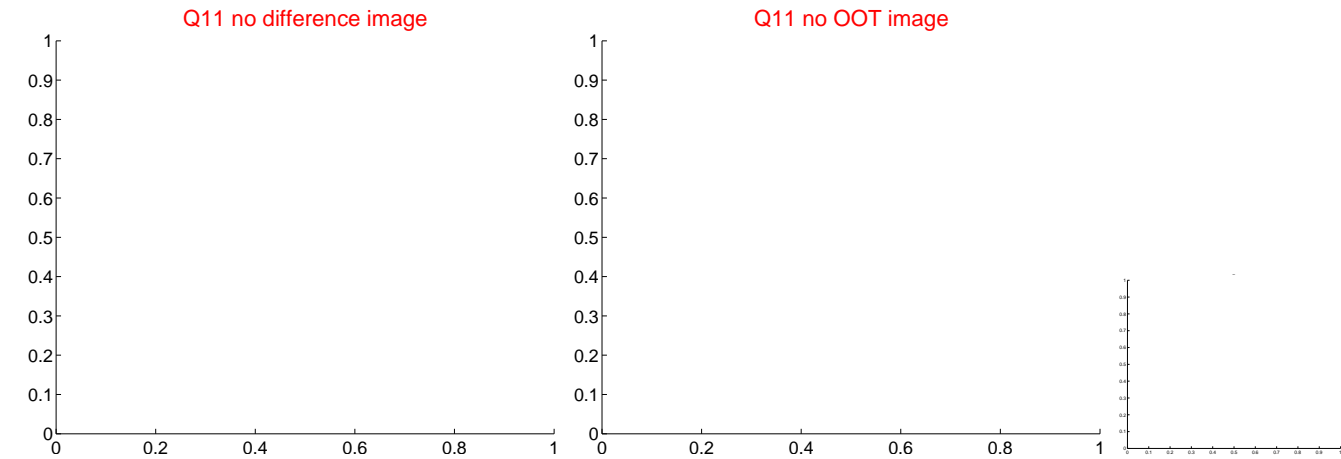
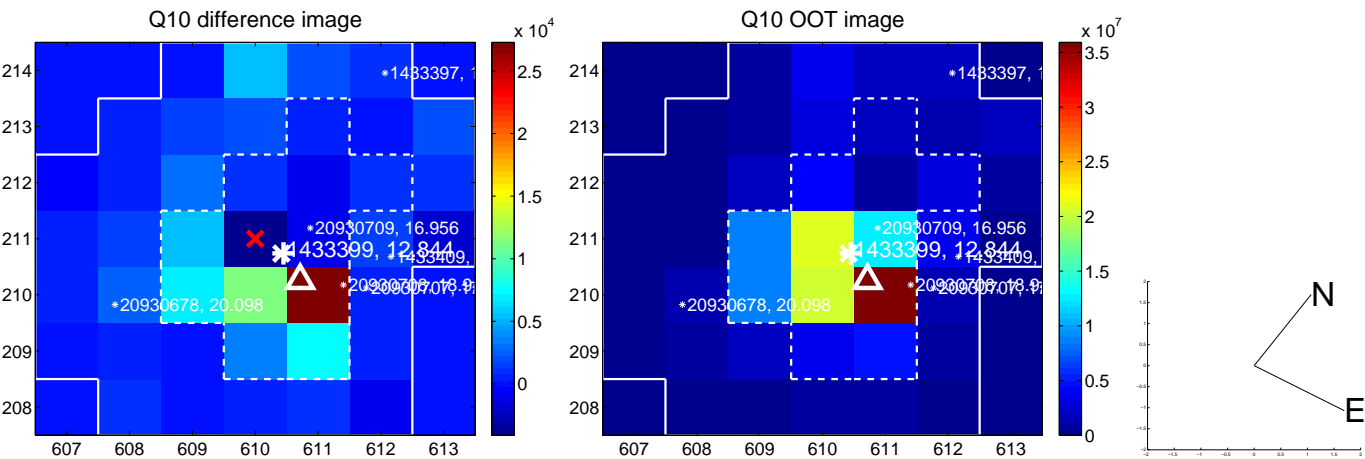
Q4 no OOT image



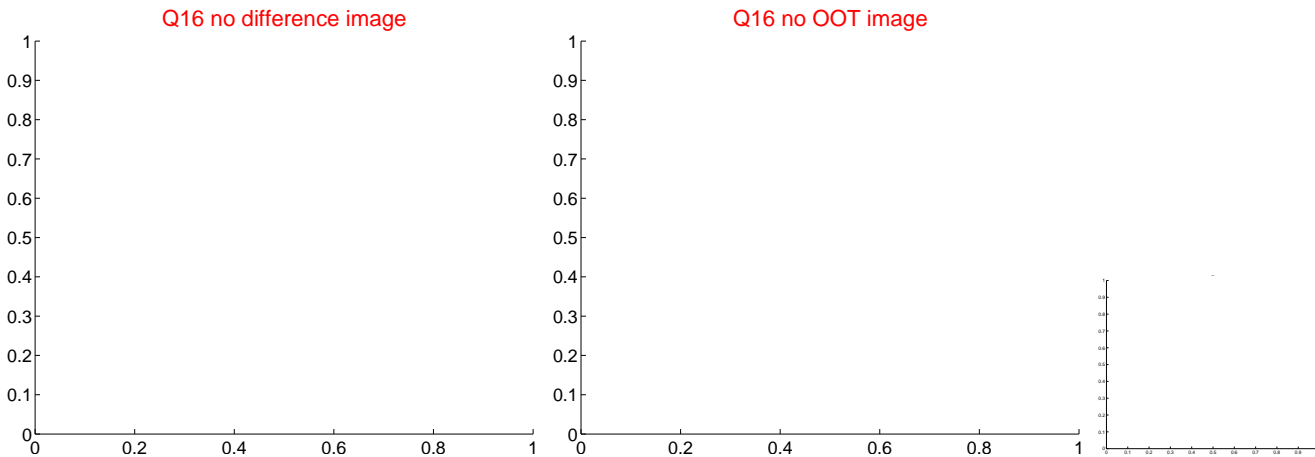
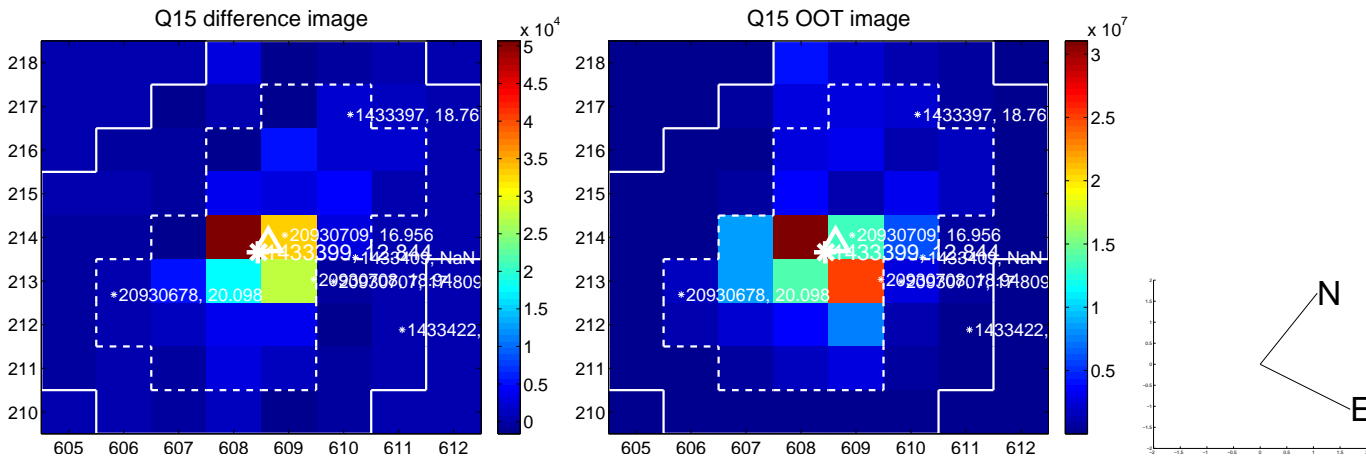
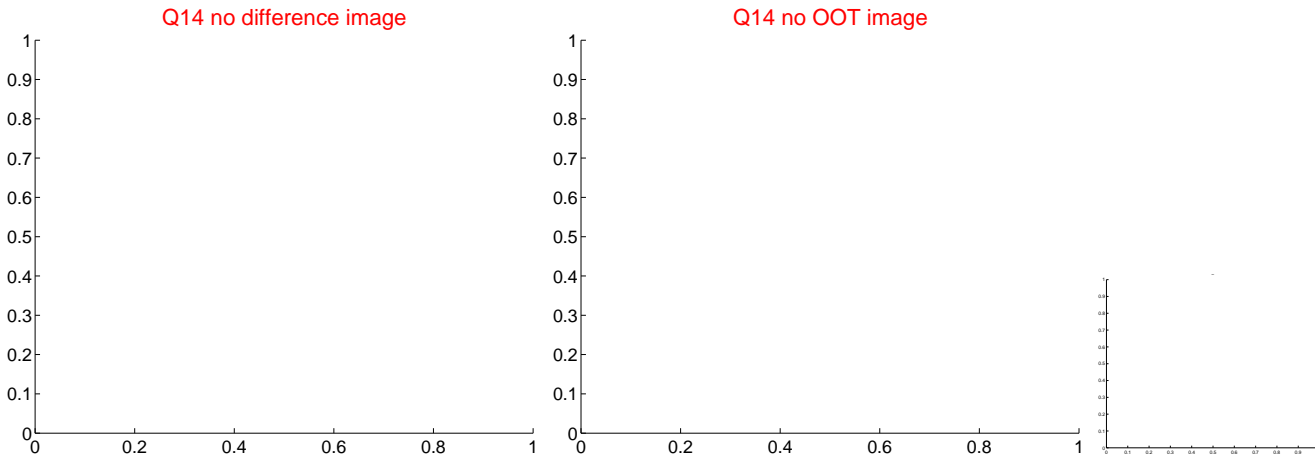
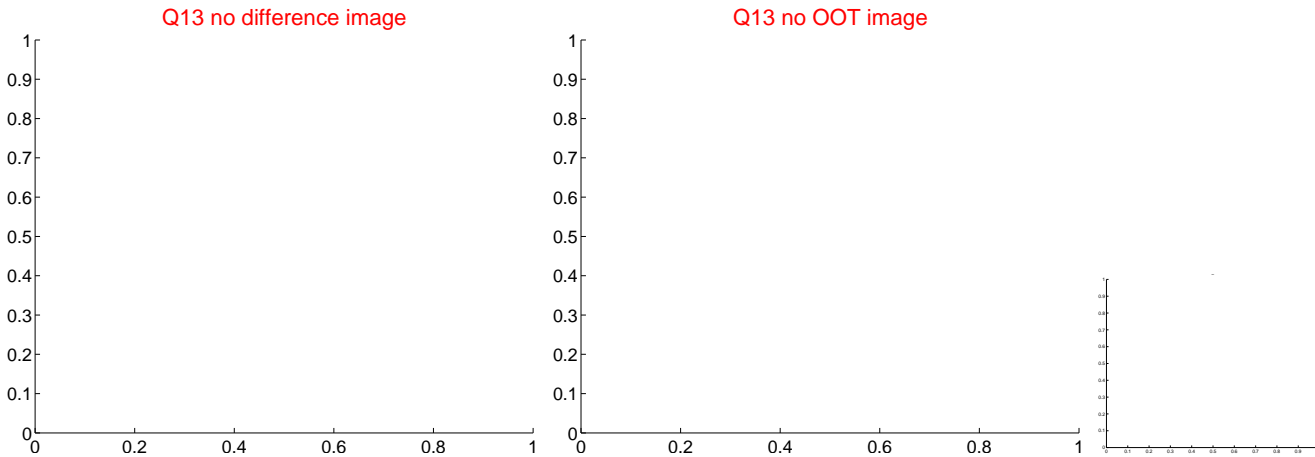
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



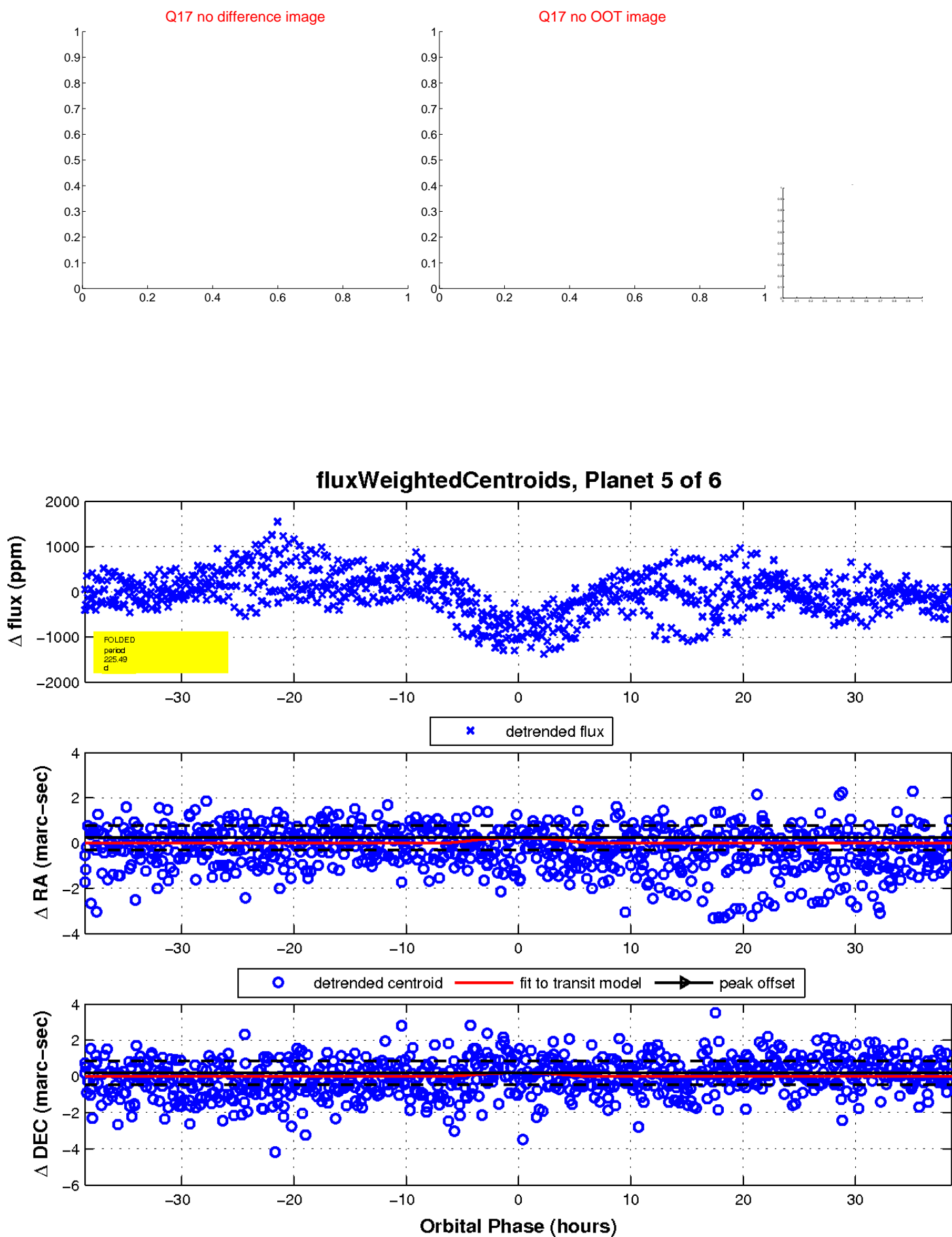
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

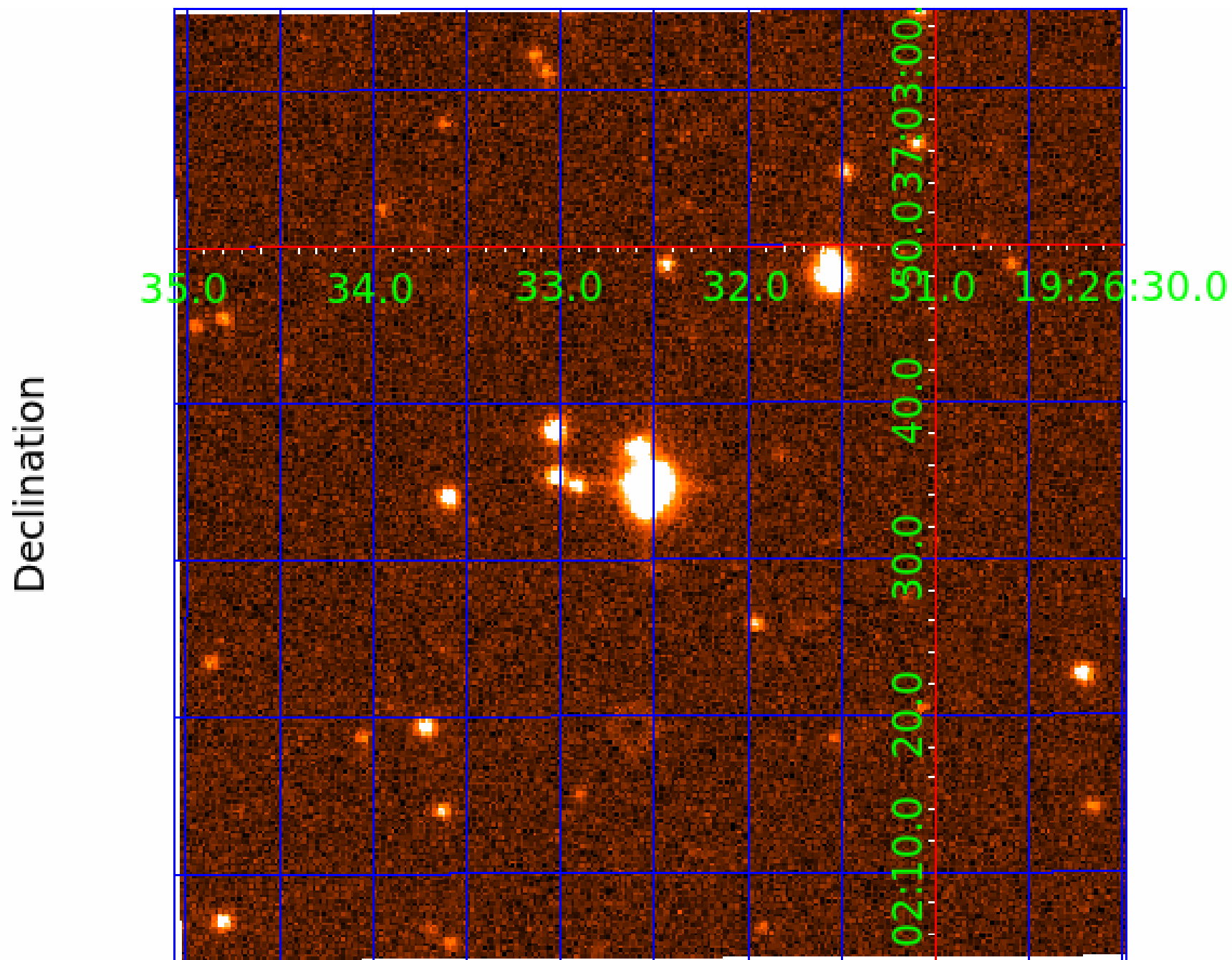


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.





UKIRT Image



# KIC 001433399

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
001433399-01	OBS	No	2.126459	133.577945	29.6	13.071	9.0	4.8	1.81	6865	1.06	4926.05
001433399-02	OBS	No	563.383562	449.988290	5120.2	33.523	14.8	13.5	1.81	6865	22.15	2.90
001433399-03	OBS	No	253.125555	332.458888	822.9	12.997	12.7	12.3	1.81	6865	5.84	8.41
001433399-04	OBS	No	540.097860	154.355847	2113.4	27.354	12.6	9.5	1.81	6865	9.71	3.06
001433399-05	OBS	No	225.494771	274.756528	907.6	12.881	12.4	12.4	1.81	6865	8.42	9.81
001433399-06	OBS	No	57.115815	158.078027	241.4	9.000	11.2	-1.0	1.81	6865	2.85	61.24

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
001433399-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV
001433399-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES—MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
001433399-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
001433399-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
001433399-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
001433399-06	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_NOFITS

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

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

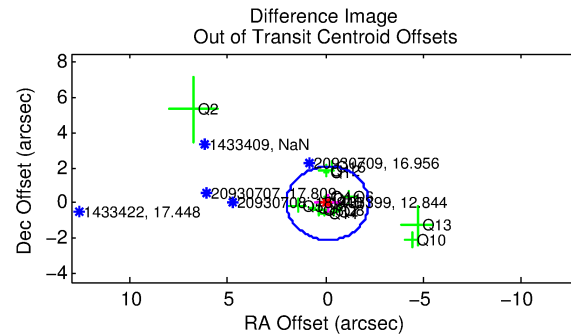
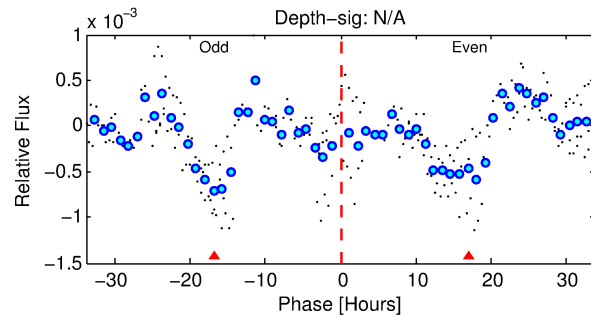
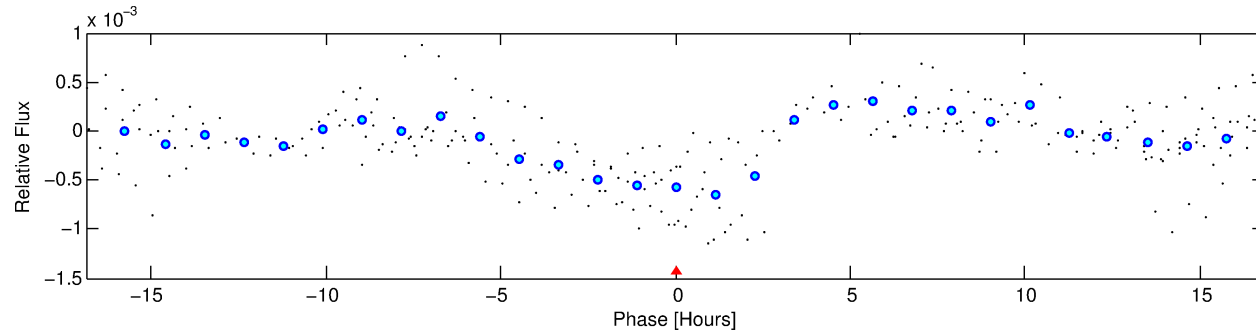
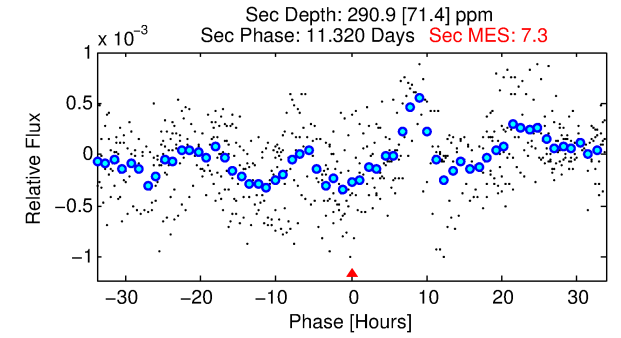
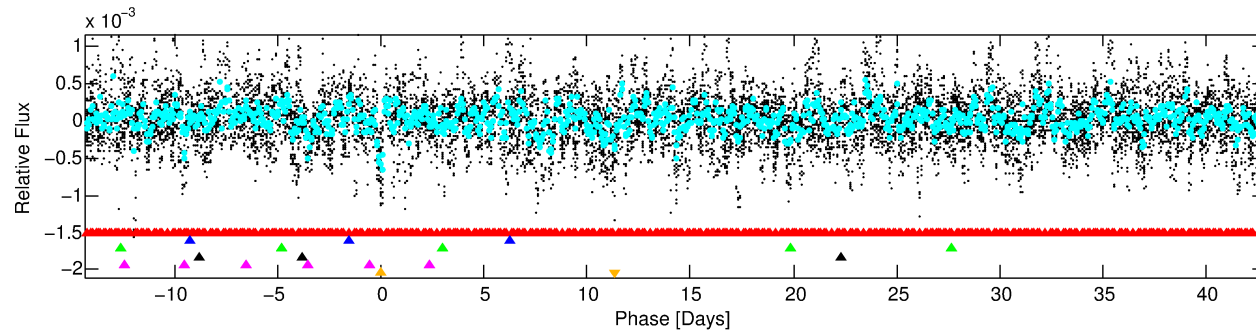
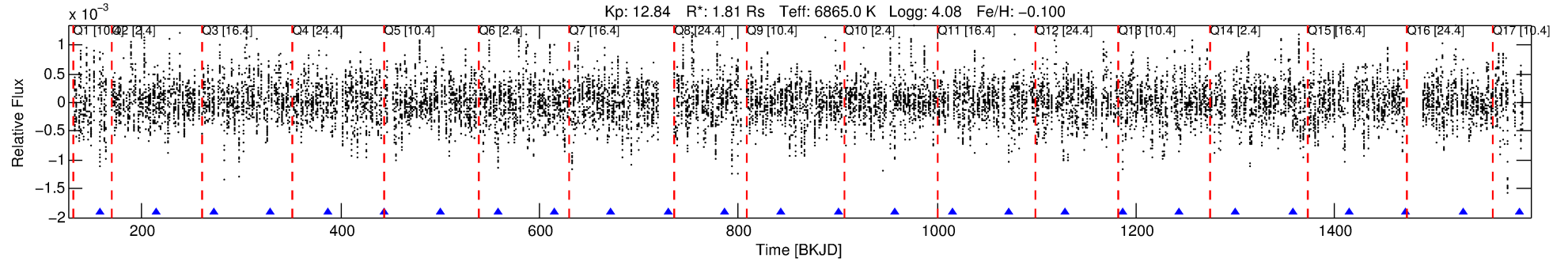
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 001433399-06

No Significant Match Found

# DV One-Page Summary

KIC: 1433399 Candidate: 6 of 6 Period: 57.116 d



## TPS TCE Results:

Period = 57.11581 d  
Epoch = 158.0780 BKJD

**DV fit results are unavailable**

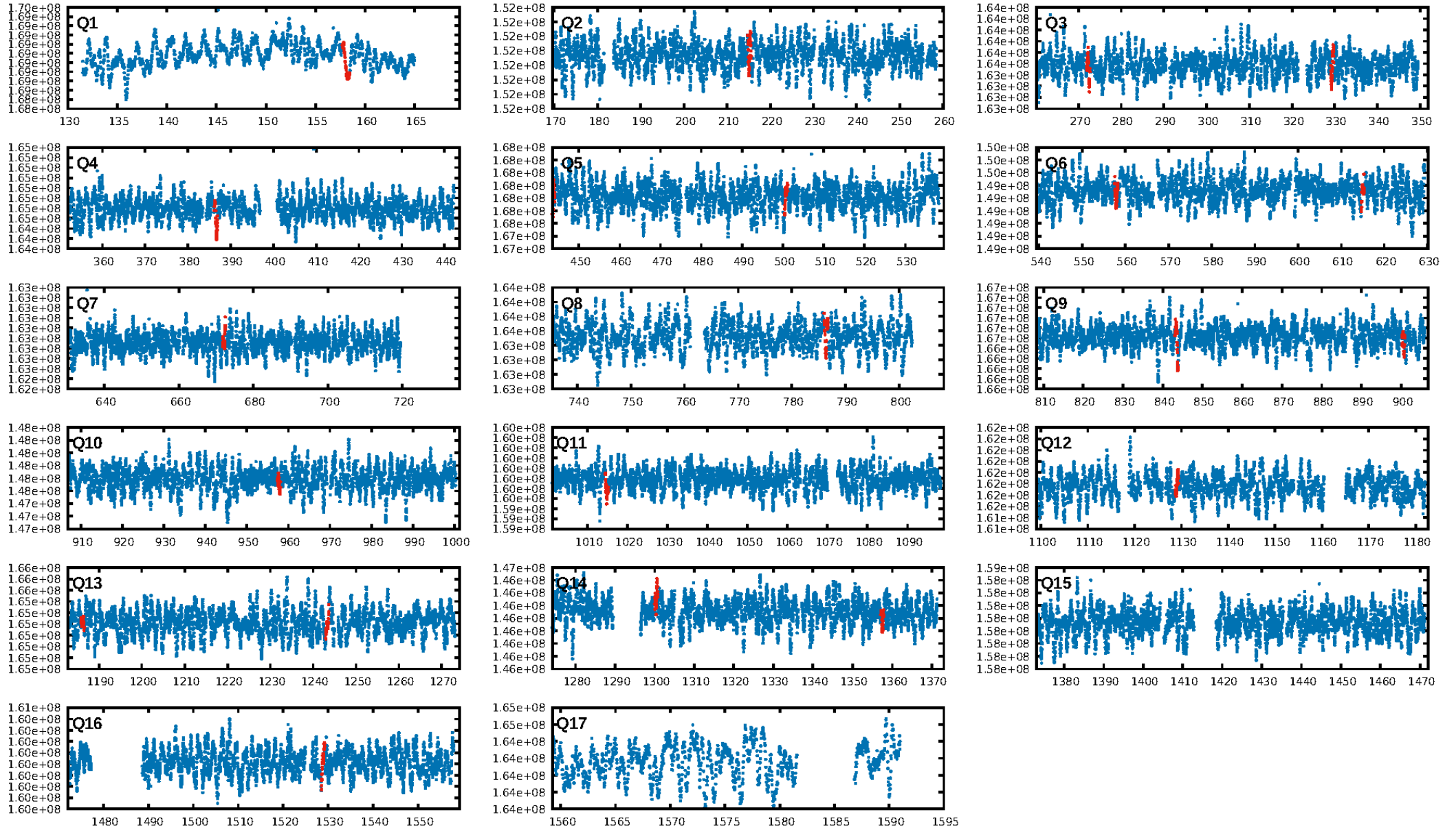
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [83.16 $\sigma$ ]  
LongPeriod-sig: 100.0% [257.17 $\sigma$ ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [5/5]  
**GhostDiagnostic-chr: 0.7377**  
Centroid-sig: 14.8%  
Centroid-so: 0.452 arcsec [1.14 $\sigma$ ]  
OotOffset-rm: 0.113 arcsec [0.16 $\sigma$ ]  
KicOffset-rm: 0.058 arcsec [0.08 $\sigma$ ]  
OotOffset-st: 4/3/4/4 [15]  
KicOffset-st: 4/3/4/4 [15]  
DiffImageQuality-fgm: 0.47 [7/15]  
DiffImageOverlap-fno: 0.40 [6/15]

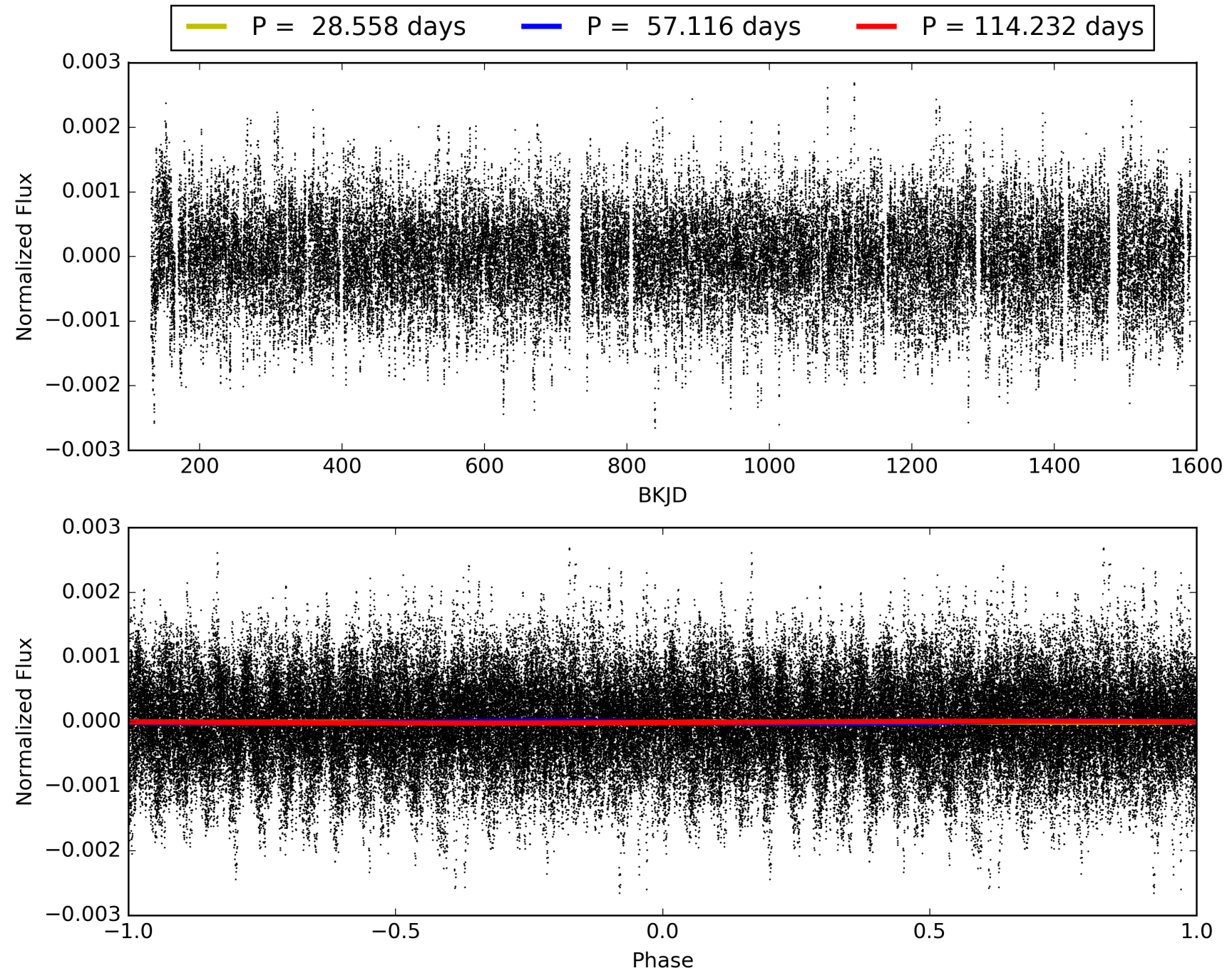
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 00:53:05 Z

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

# TCE 001433399-06, PDC Light Curves

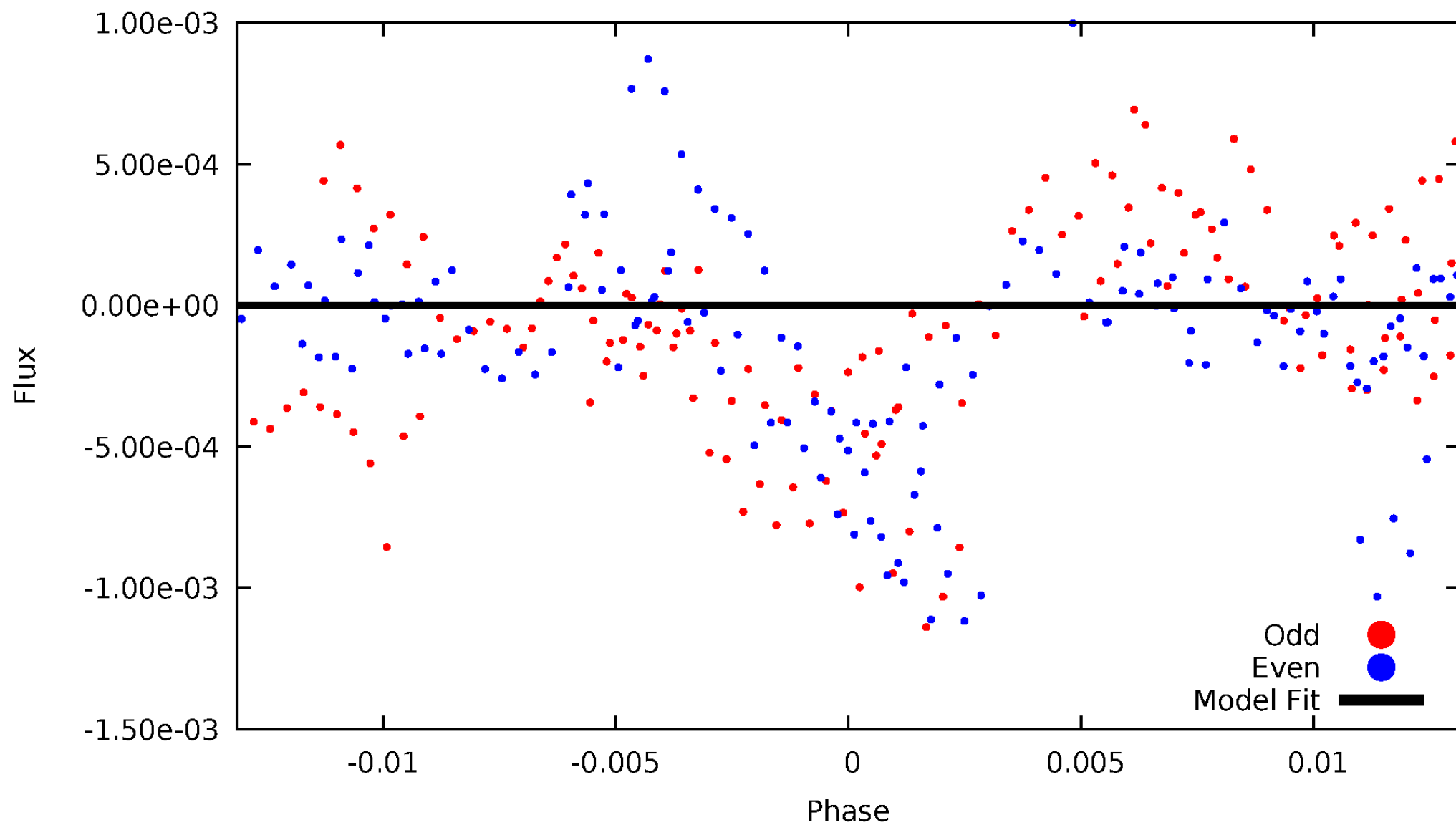


TCE 001433399-06



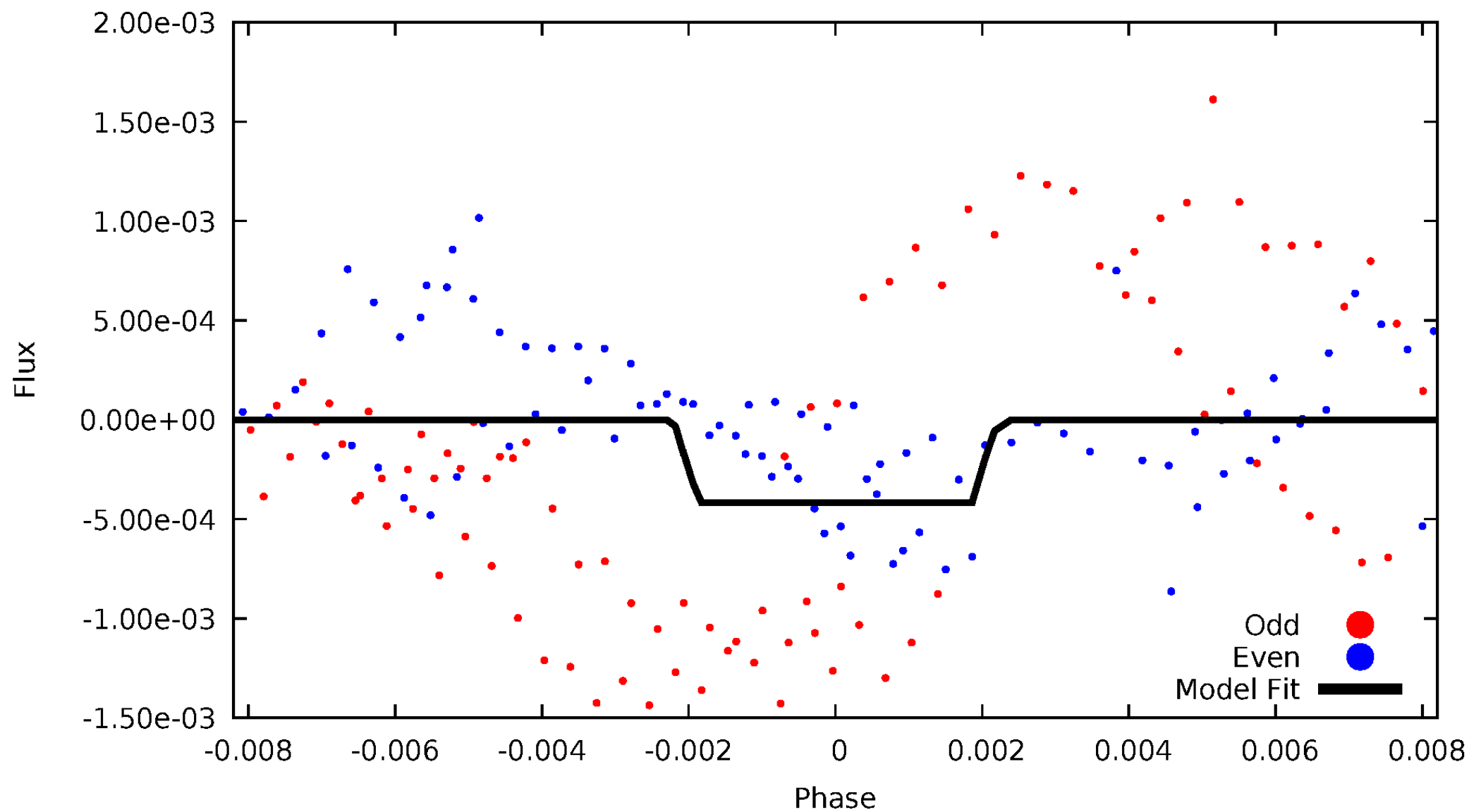
# DV Odd/Even

TCE 001433399-06



# ALT Odd/Even

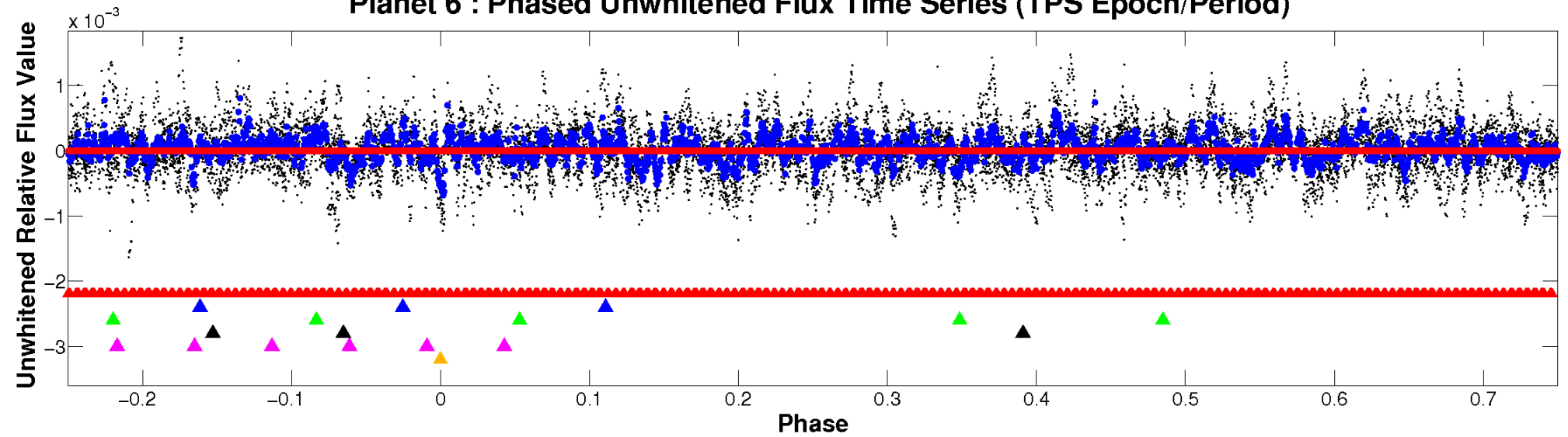
TCE 001433399-06



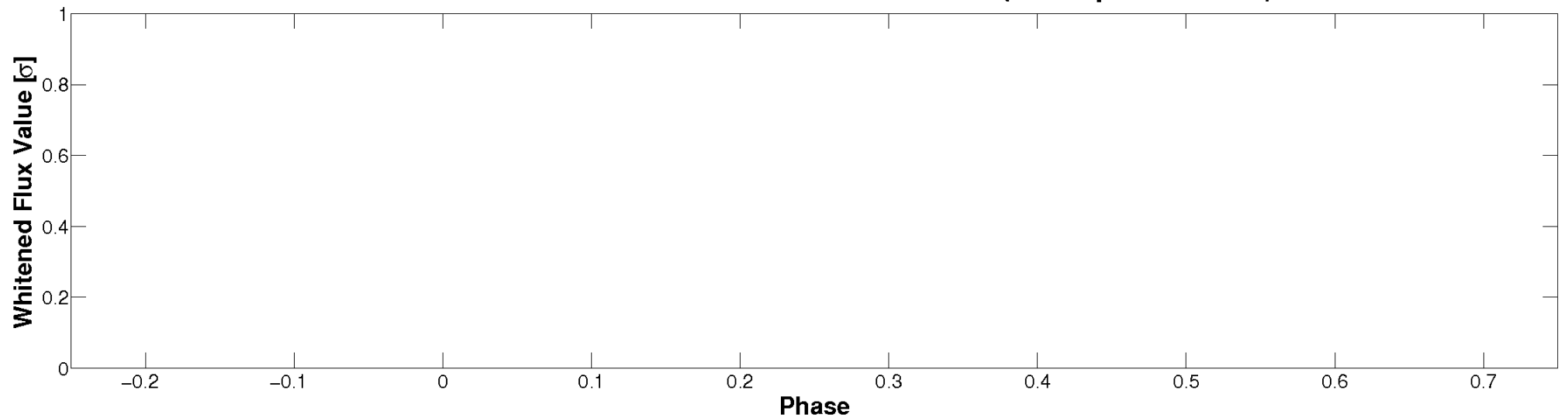


# Non-Whitened Vs. Whitened Light Curve

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



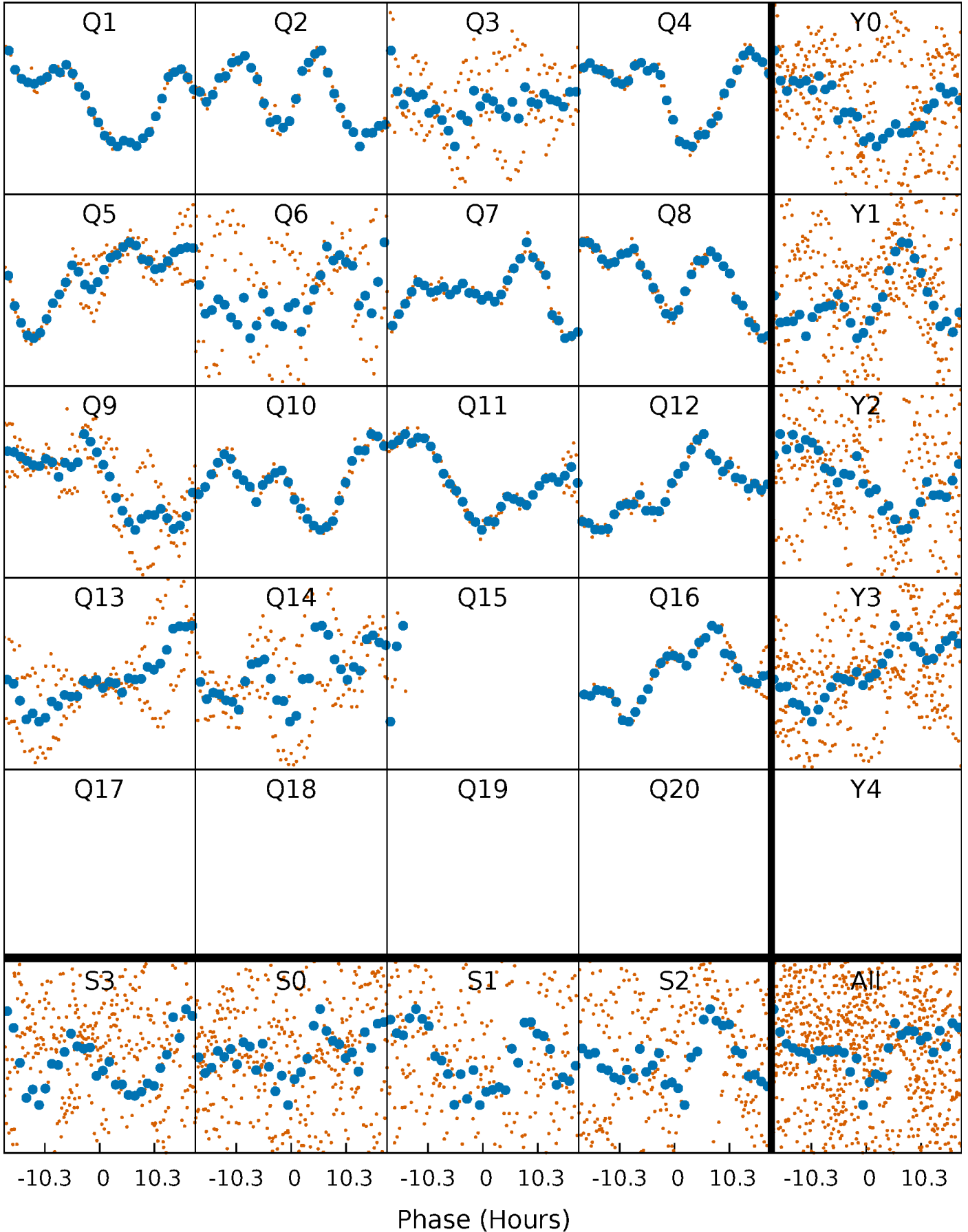
Planet 6 : Phased Whitened Flux Time Series (TPS Epoch/Period)





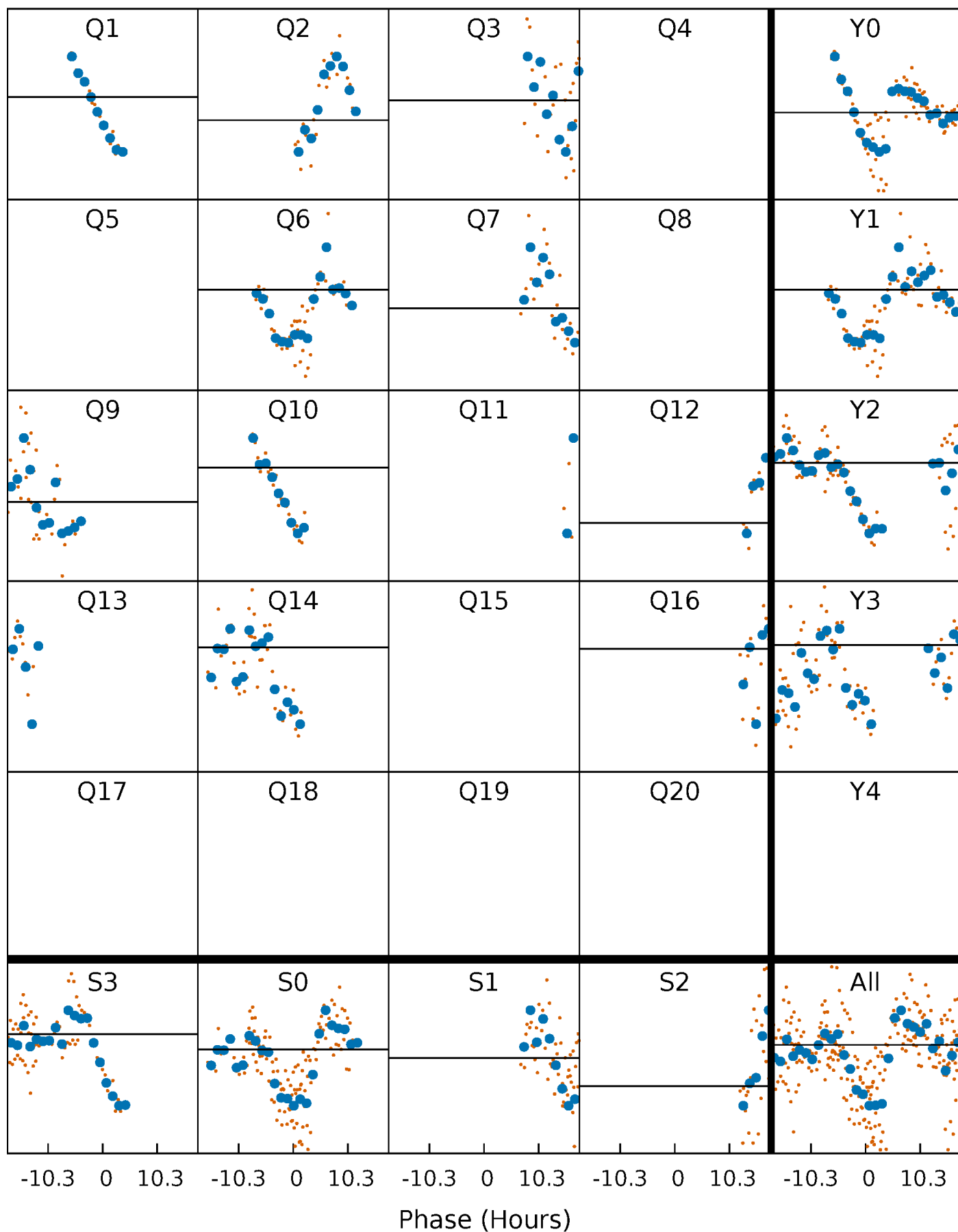
# PDC Quarter-Phased Transit Curves

TCE 001433399-06 P= 57.115815 Days  $T_0=158.078027$  (BKJD)



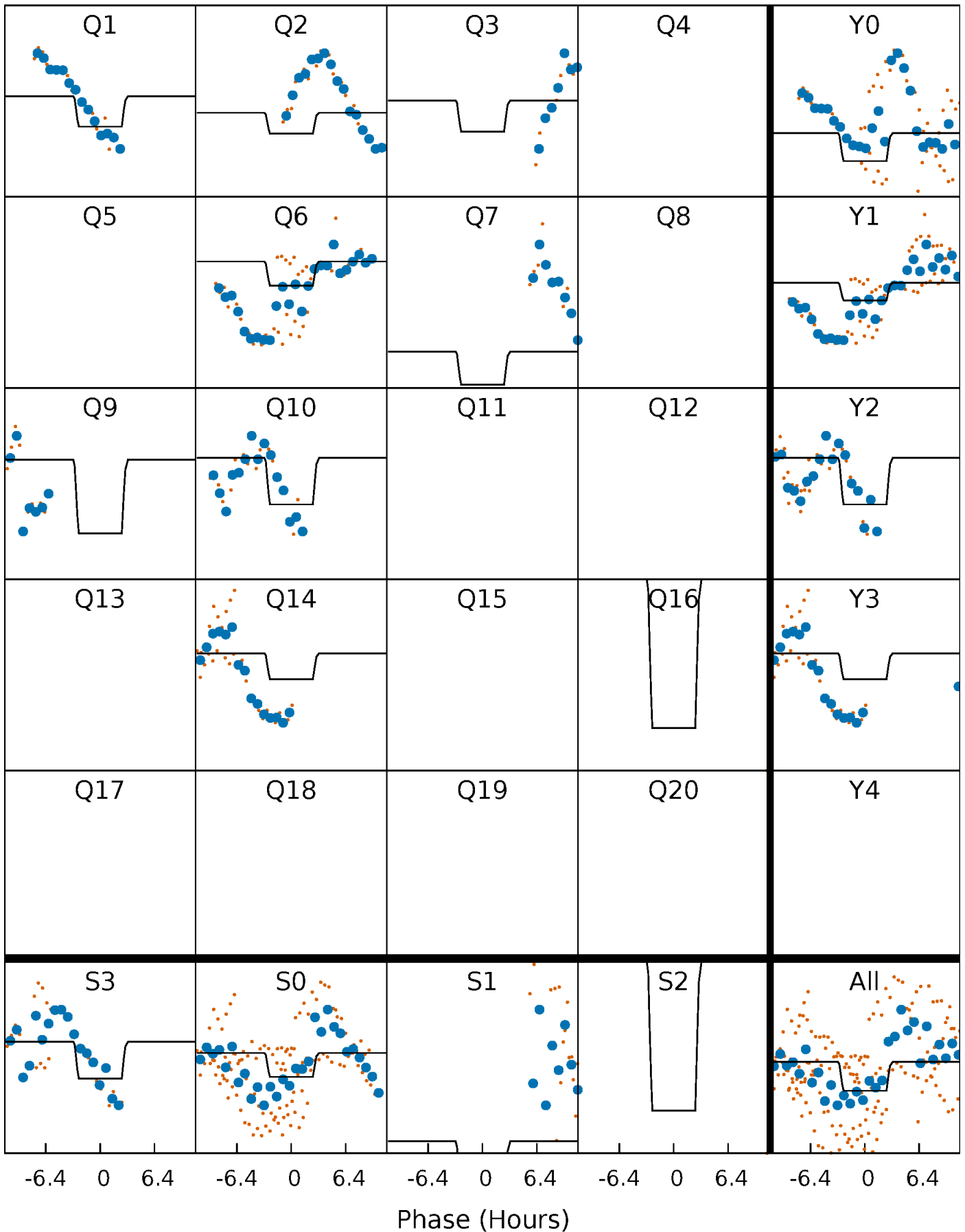
# DV Quarter-Phased Transit Curves

TCE 001433399-06 P= 57.115815 Days  $T_0=158.078027$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

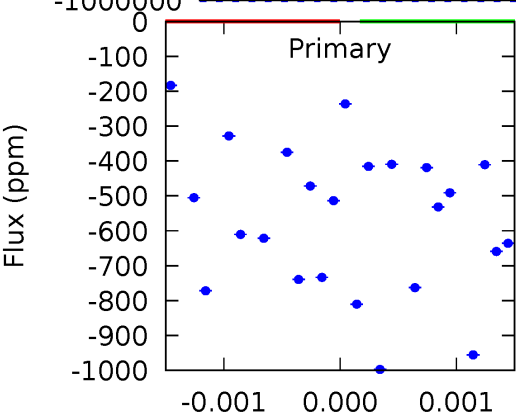
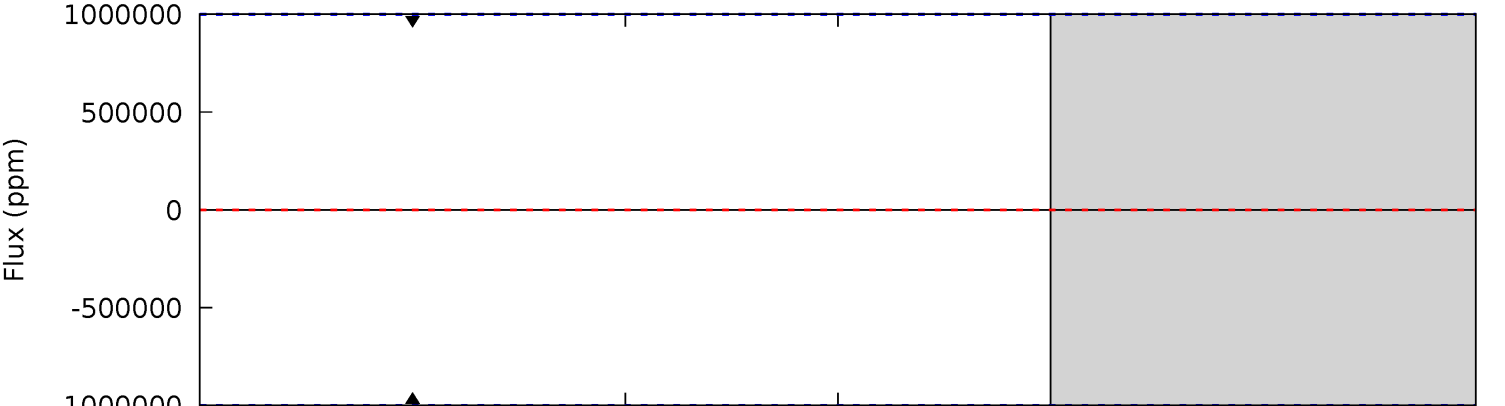
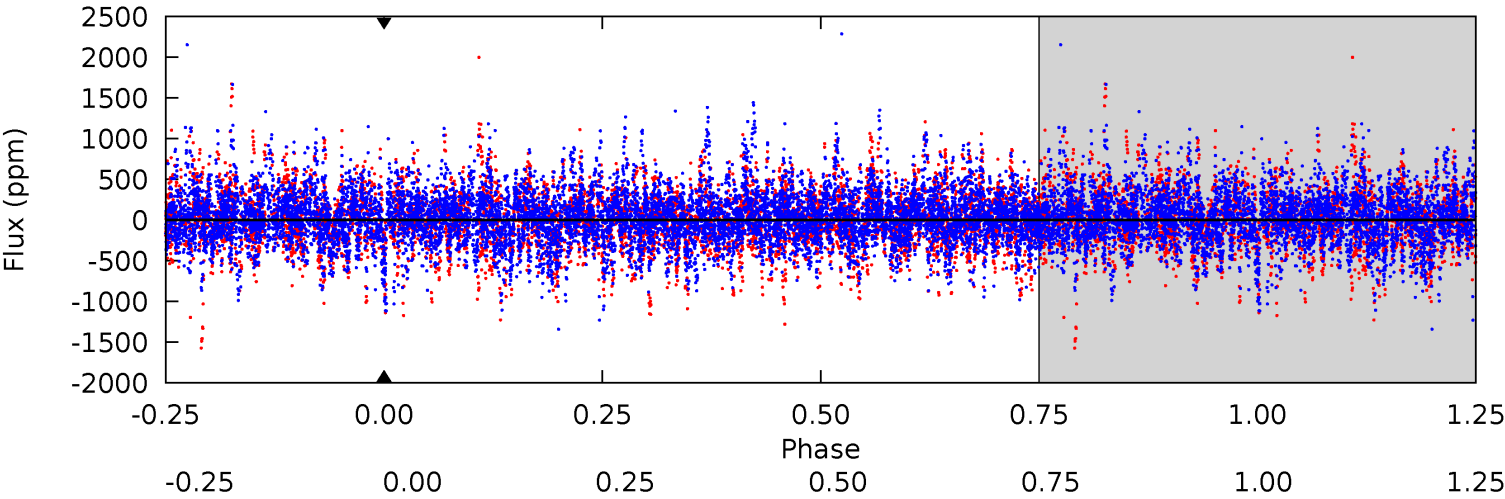
TCE 001433399-06 P= 57.115815 Days  $T_0=158.134680$  (BKJD)



# DV Model-Shift Uniqueness Test

001433399-06, P = 57.115815 Days, E = 100.962212 Days

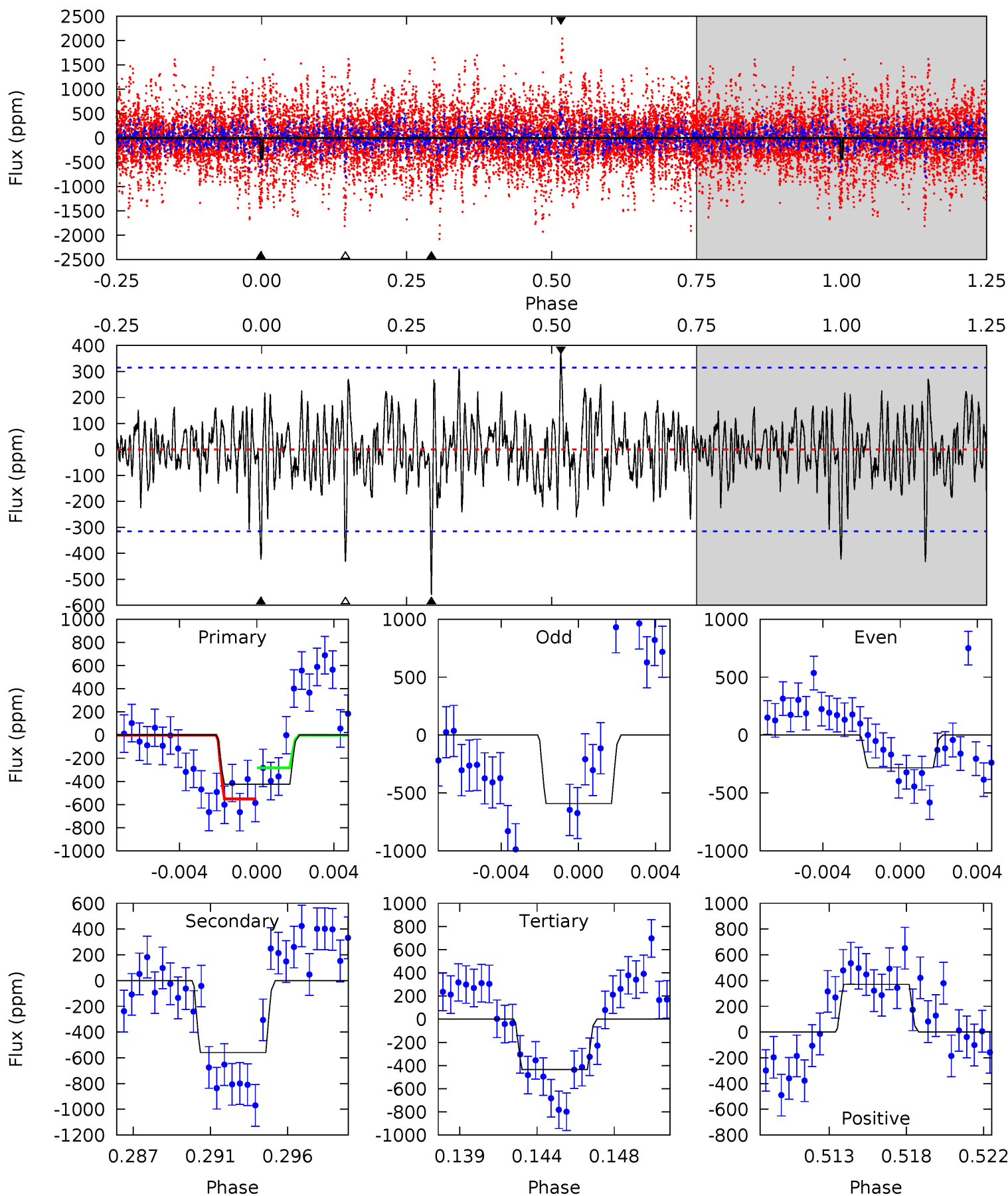
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



# Alt Model-Shift Uniqueness Test

001433399-06, P = 57.115815 Days, E = 101.018865 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.96	9.20	7.13	6.10	5.18	2.85	1.65	-0.16	0.87	2.07	3.11	2.51	1.13	0.40	2.22



### Stellar Parameters For KIC 001433399

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6865^{+82}_{-82}$	$4.076^{+0.143}_{-0.117}$	$-0.100^{+0.150}_{-0.150}$	$1.815^{+0.331}_{-0.331}$	$1.435^{+0.113}_{-0.124}$	$0.338^{+0.242}_{-0.122}$
	+1%/-1%	+4%/-3%	+150%/-150%	+18%/-18%	+8%/-9%	+72%/-36%
Source	SPE68	SPE68	SPE68	DSEP		

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

### Secondary Eclipse Parameters for KIC 001433399-06 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$0 \pm 1000000$	$14.78^{+15.29}_{-9.85}$	$998^{+49}_{-49}$	$-5680^{+38841}_{-23219}$	$-626.103^{+52926.579}_{-42993.122}$
Alt.	$-559 \pm 61$	$15.34^{+14.84}_{-10.36}$	$997^{+46}_{-47}$	$4057^{+2549}_{-805}$	$143^{+1213}_{-106}$

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

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

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

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

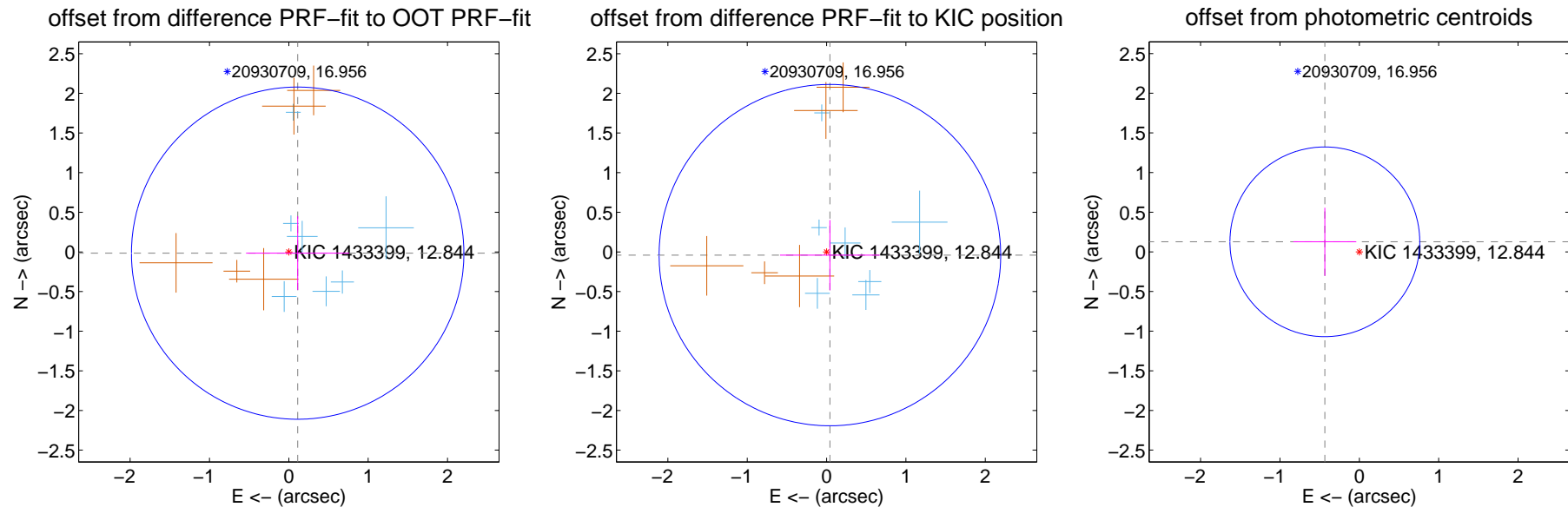
## DV Centroid Data

Supplemental centroid analysis for 001433399-06. Kepler magnitude: 12.84. Transit SNR -1.00

There are 7 quarters with good PRF difference image offsets

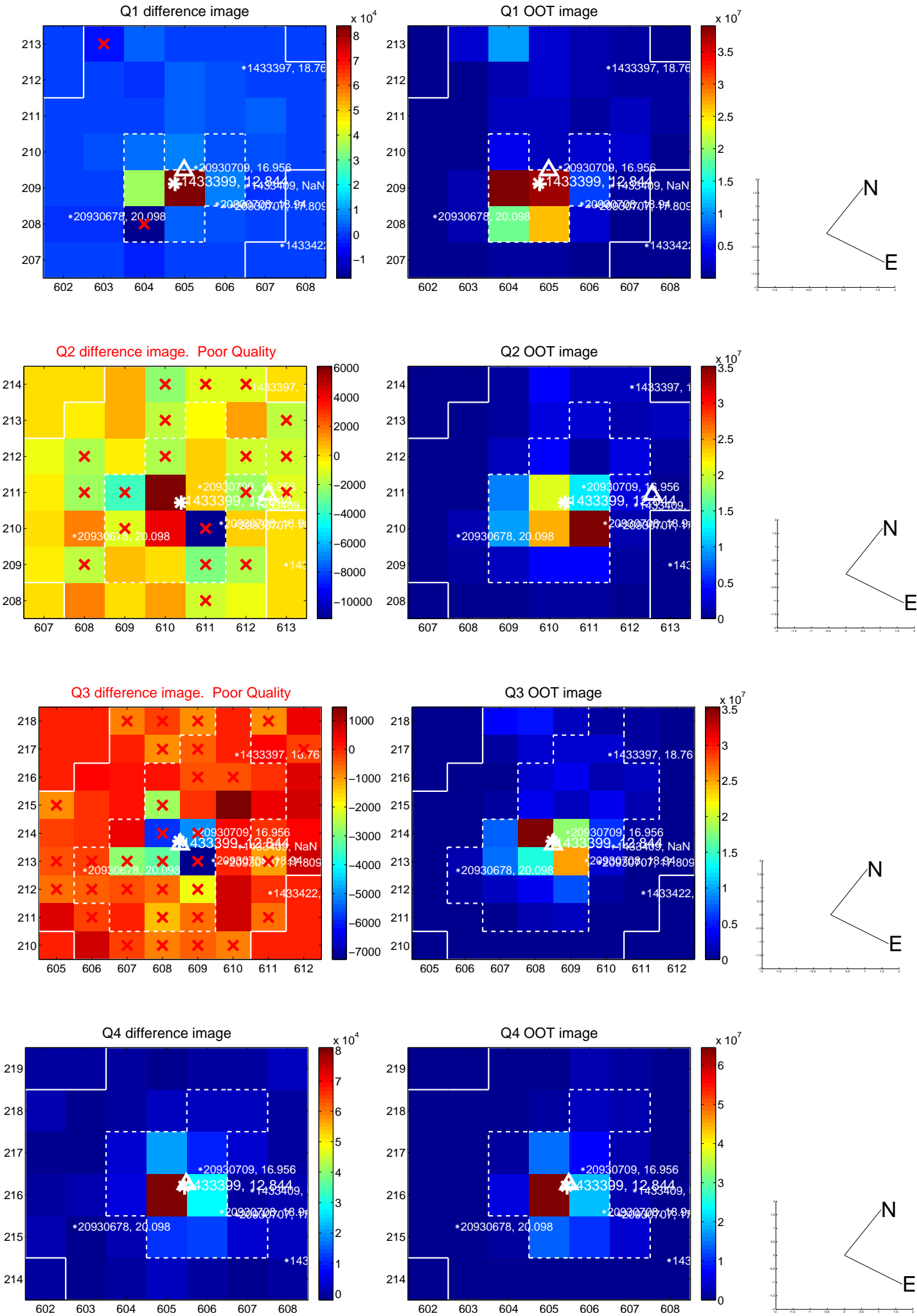
The direct PRF centroid is offset from the target star catalog position by about 0.11 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.113 \pm 0.698$	0.16	$-0.112 \pm 0.650$	$-0.015 \pm 0.465$
PRF-fit source offset from KIC position	$0.058 \pm 0.718$	0.08	$-0.042 \pm 0.628$	$-0.040 \pm 0.442$
photometric centroid source offset	$0.45 \pm 0.40$	1.14	$0.43 \pm 0.40$	$0.13 \pm 0.43$



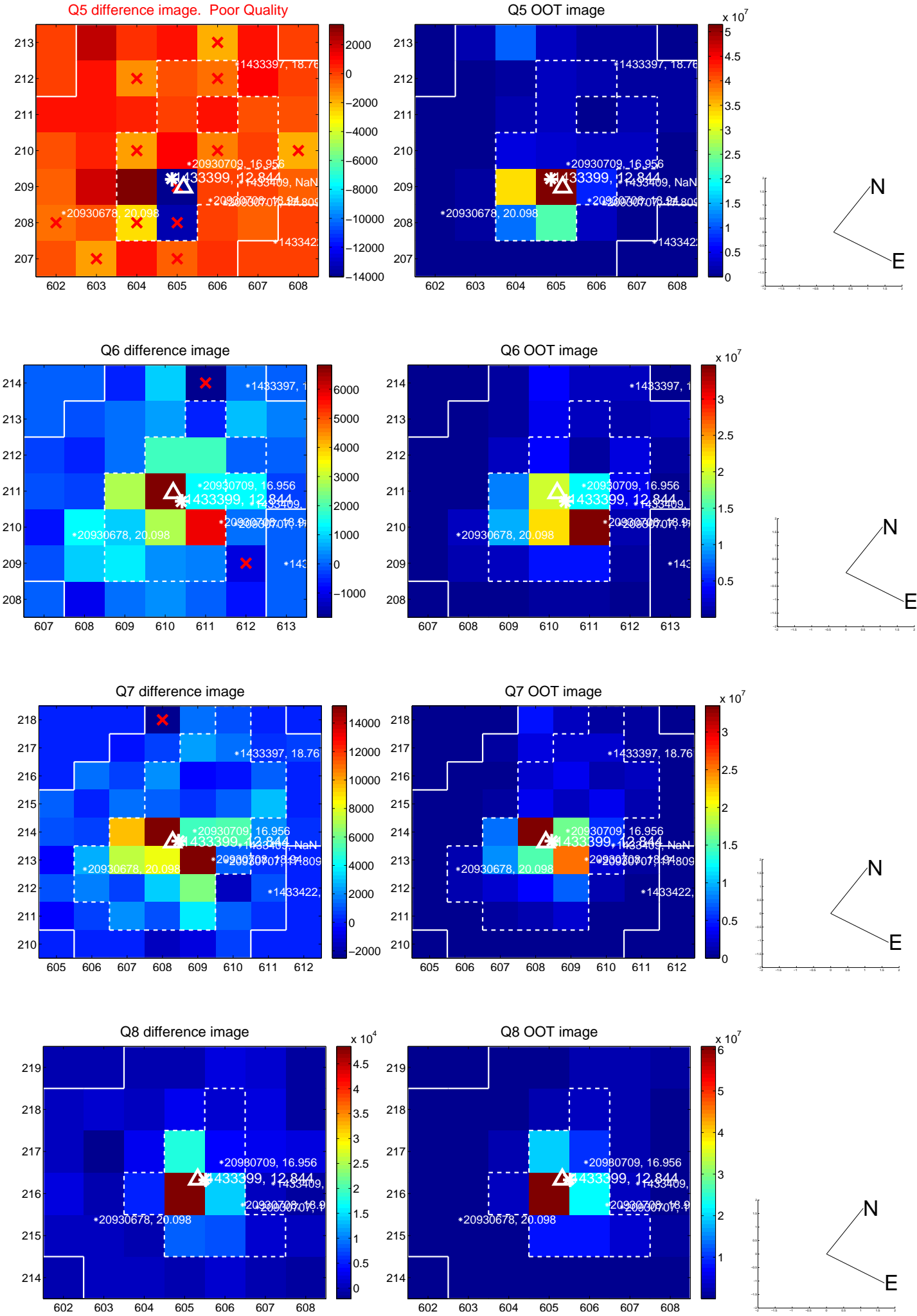
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

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

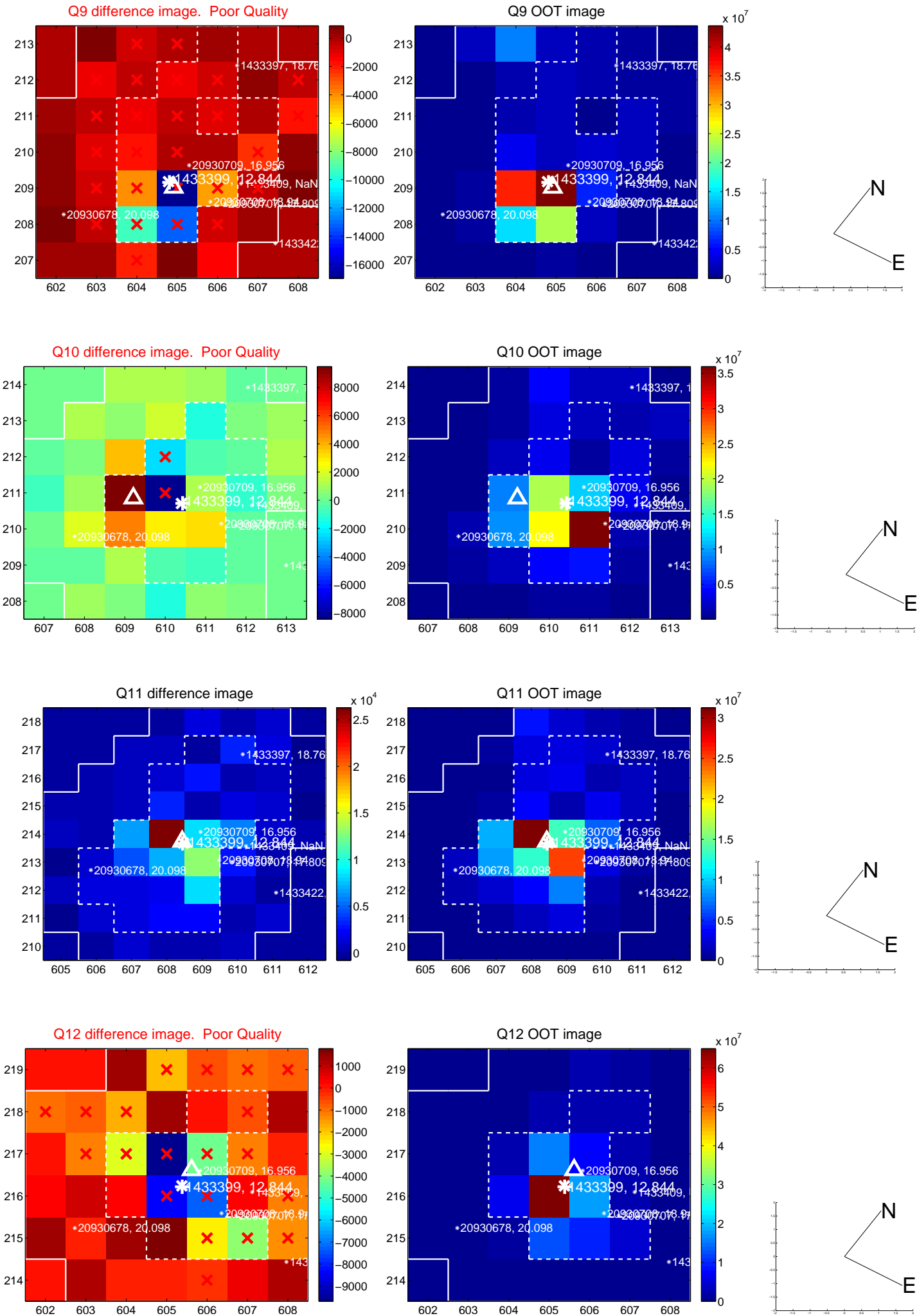




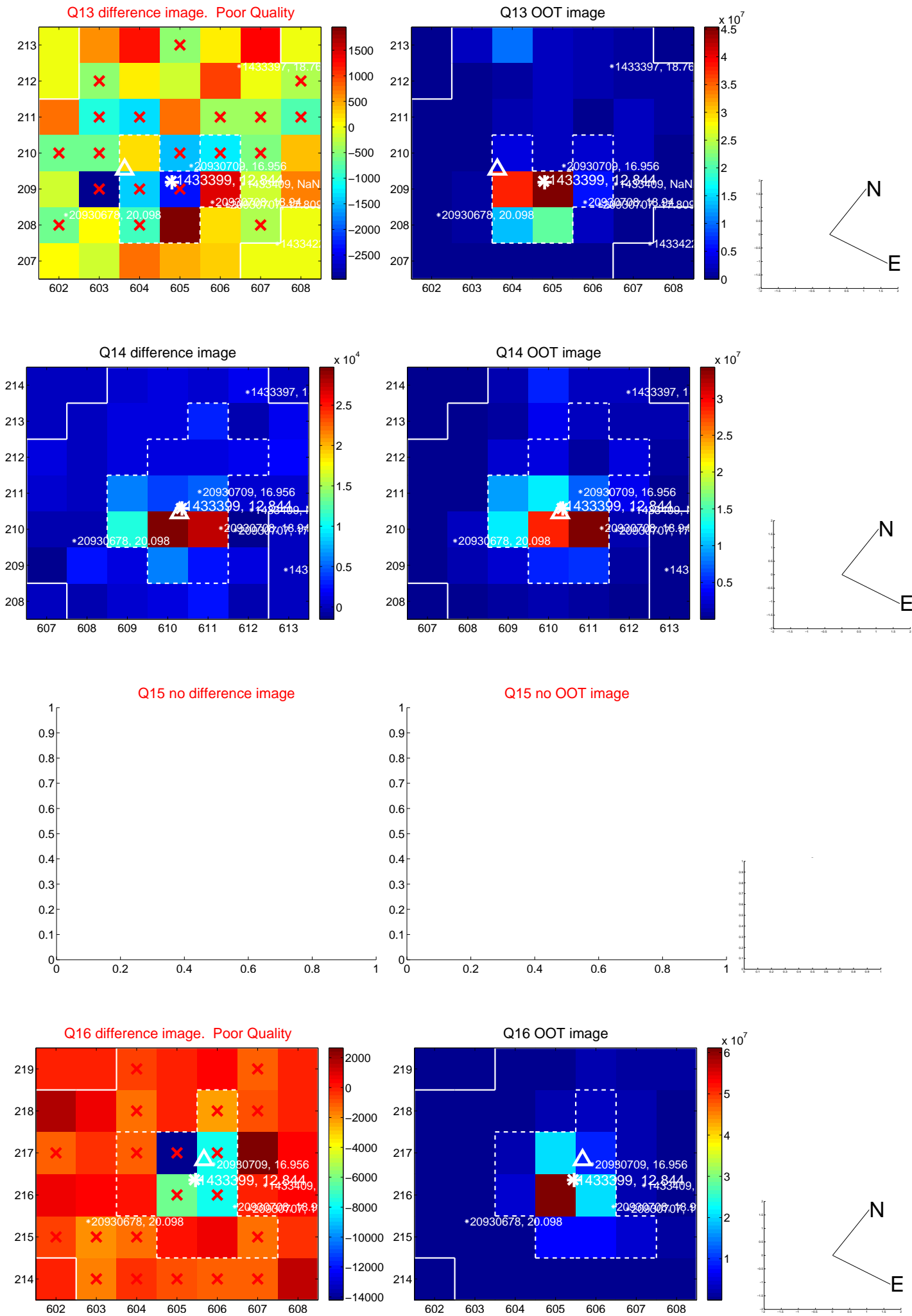
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



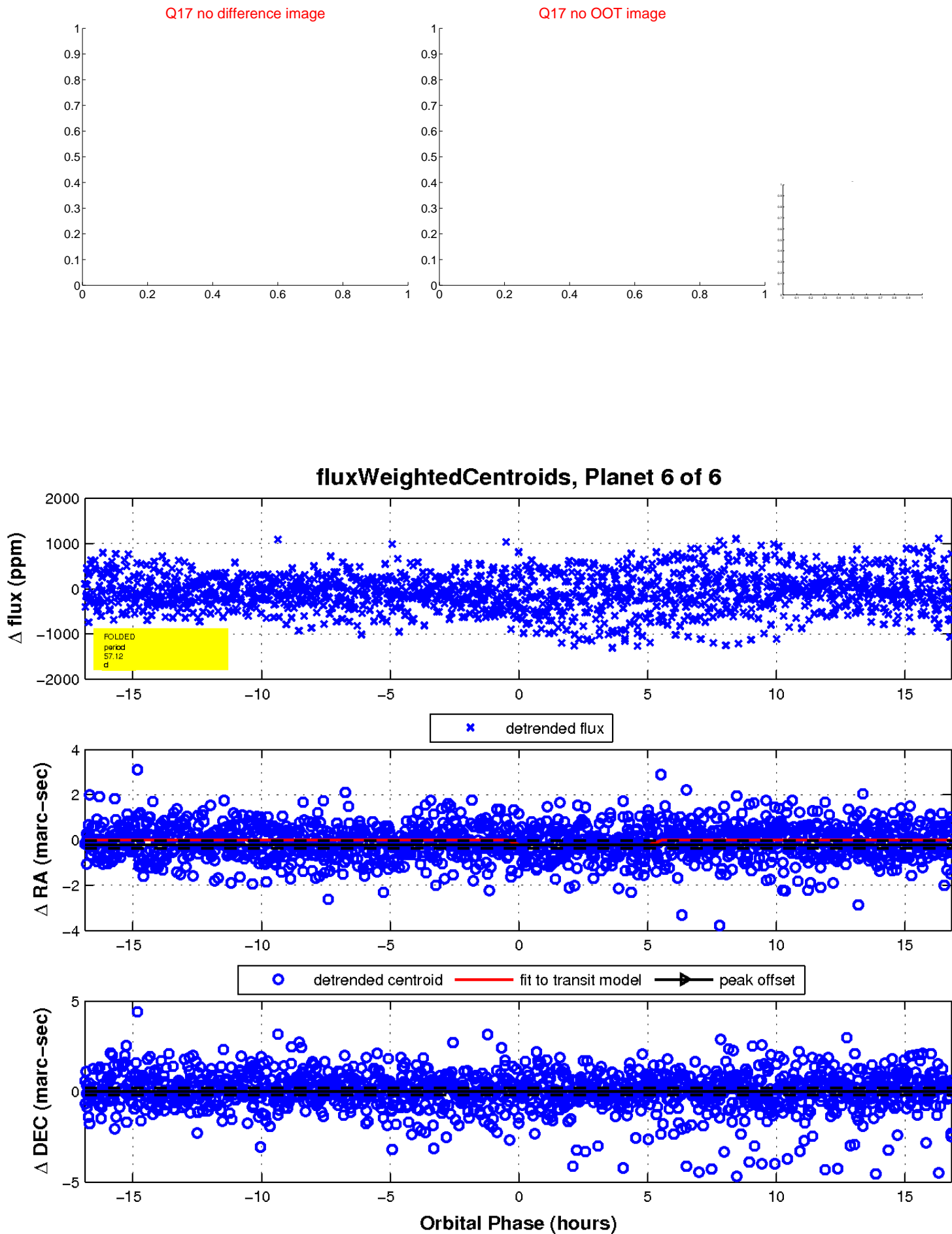
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



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



UKIRT Image

