

# KIC 005198315

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005198315-01	OBS	No	1.821235	133.319401	142.6	11.552	8.7	12.0	3.12	8306	6.97	30678.67
005198315-02	OBS	No	74.166477	146.638639	674.2	12.500	19.4	-1.0	3.12	8306	8.20	218.97
005198315-03	OBS	No	73.398148	134.198409	915.1	12.184	13.6	11.0	3.12	8306	11.77	222.03
005198315-04	OBS	No	41.326624	159.088305	277.6	6.792	11.6	5.0	3.12	8306	6.78	477.55
005198315-05	OBS	No	192.913240	238.705450	372.9	10.500	11.6	-1.0	3.12	8306	6.10	61.21
005198315-06	OBS	No	39.374162	156.712384	345.6	7.500	10.4	-1.0	3.12	8306	5.87	509.38
005198315-07	OBS	No	132.319467	172.155165	1157.7	9.781	9.6	9.9	3.12	8306	15.73	101.19
005198315-09	OBS	No	39.508476	166.624208	322.1	11.722	8.5	6.4	3.12	8306	6.01	507.07
005198315-10	OBS	No	55.763625	156.268411	1097.2	3.217	8.4	12.1	3.12	8306	19.19	320.27

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005198315-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—MOD_NONUNIQ_DV
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005198315-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
005198315-04	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—HALO_GHOST
005198315-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_NOFITS
005198315-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_NOFITS
005198315-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT
005198315-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
005198315-10	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT

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

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

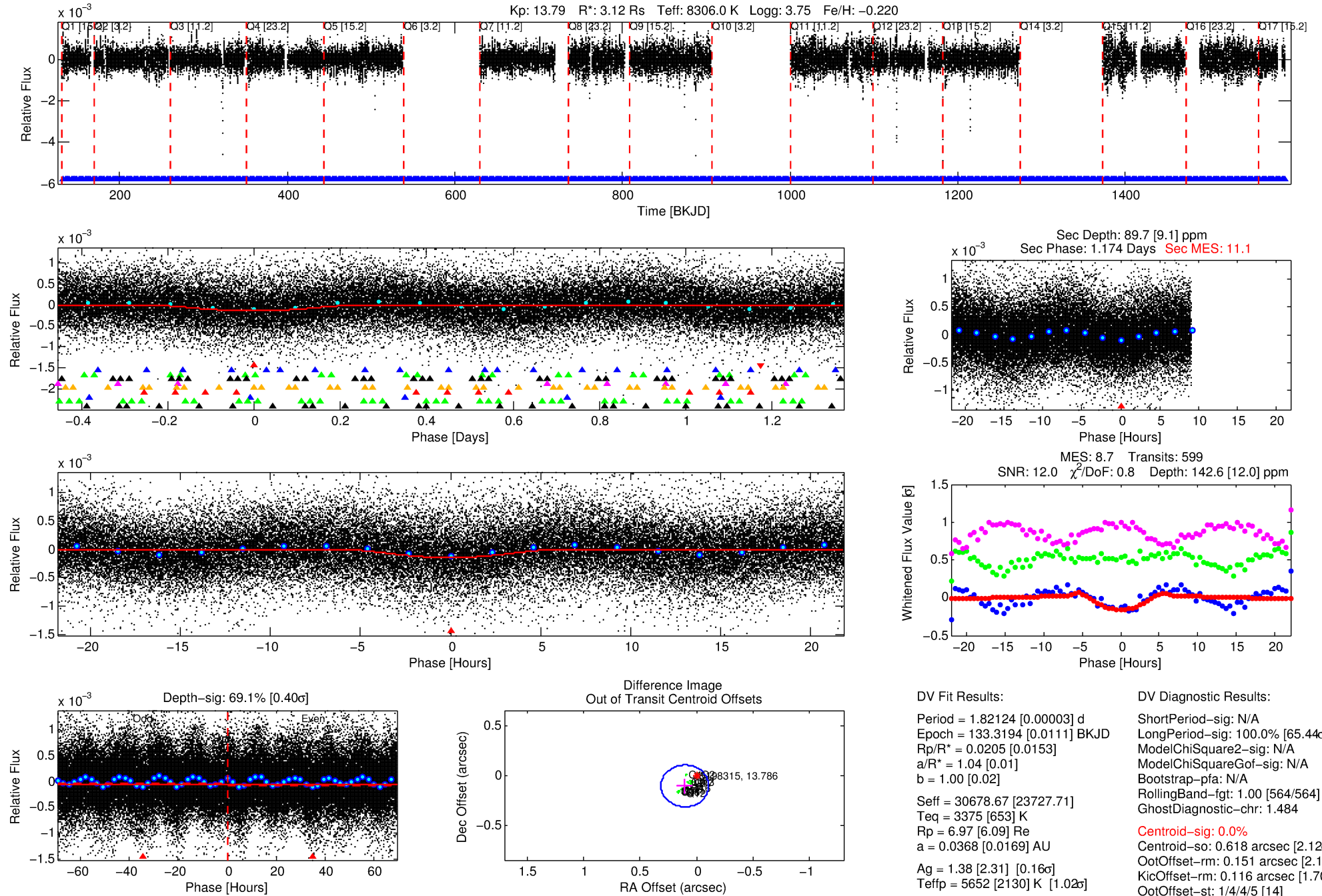
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 005198315-01

No Significant Match Found

# DV One-Page Summary

KIC: 5198315 Candidate: 1 of 10 Period: 1.821 d



## DV Fit Results:

Period = 1.82124 [0.00003] d  
Epoch = 133.3194 [0.0111] BKJD  
Rp/R\* = 0.0205 [0.0153]  
a/R\* = 1.04 [0.01]  
b = 1.00 [0.02]  
Seff = 30678.67 [23727.71]  
Teff = 3375 [653] K  
Rp = 6.97 [6.09] Re  
a = 0.0368 [0.0169] AU  
Ag = 1.38 [2.31] [0.16 $\sigma$ ]  
Teffp = 5652 [2130] K [1.02 $\sigma$ ]

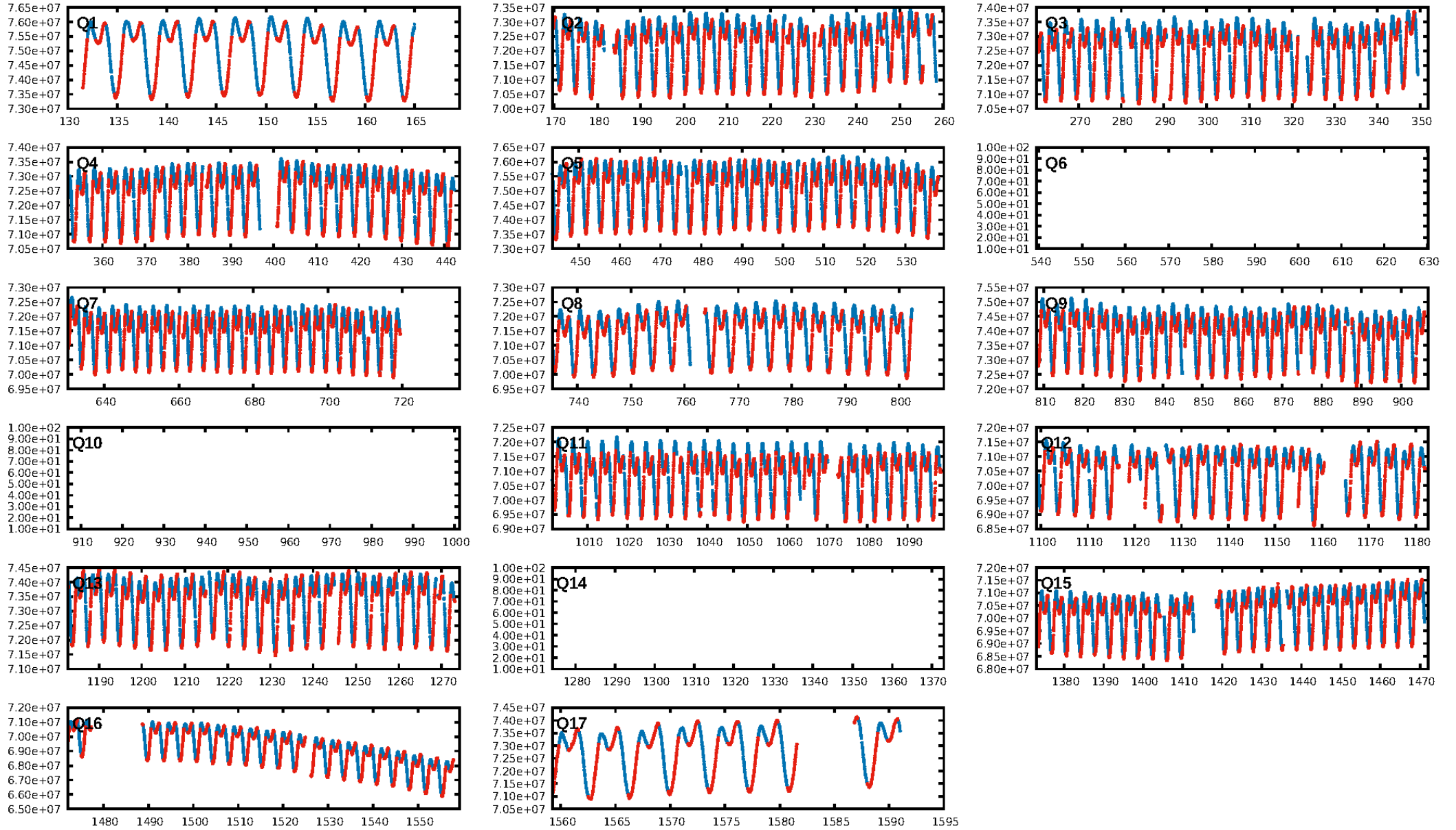
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [65.44 $\sigma$ ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [564/564]  
GhostDiagnostic-chr: 1.484  
Centroid-sig: 0.0%  
Centroid-so: 0.618 arcsec [2.12 $\sigma$ ]  
OotOffset-rm: 0.151 arcsec [2.16 $\sigma$ ]  
KicOffset-rm: 0.116 arcsec [1.70 $\sigma$ ]  
OotOffset-st: 1/4/4/5 [14]  
KicOffset-st: 1/4/4/5 [14]  
DiffImageQuality-fgm: 1.00 [14/14]  
DiffImageOverlap-fno: 1.00 [14/14]

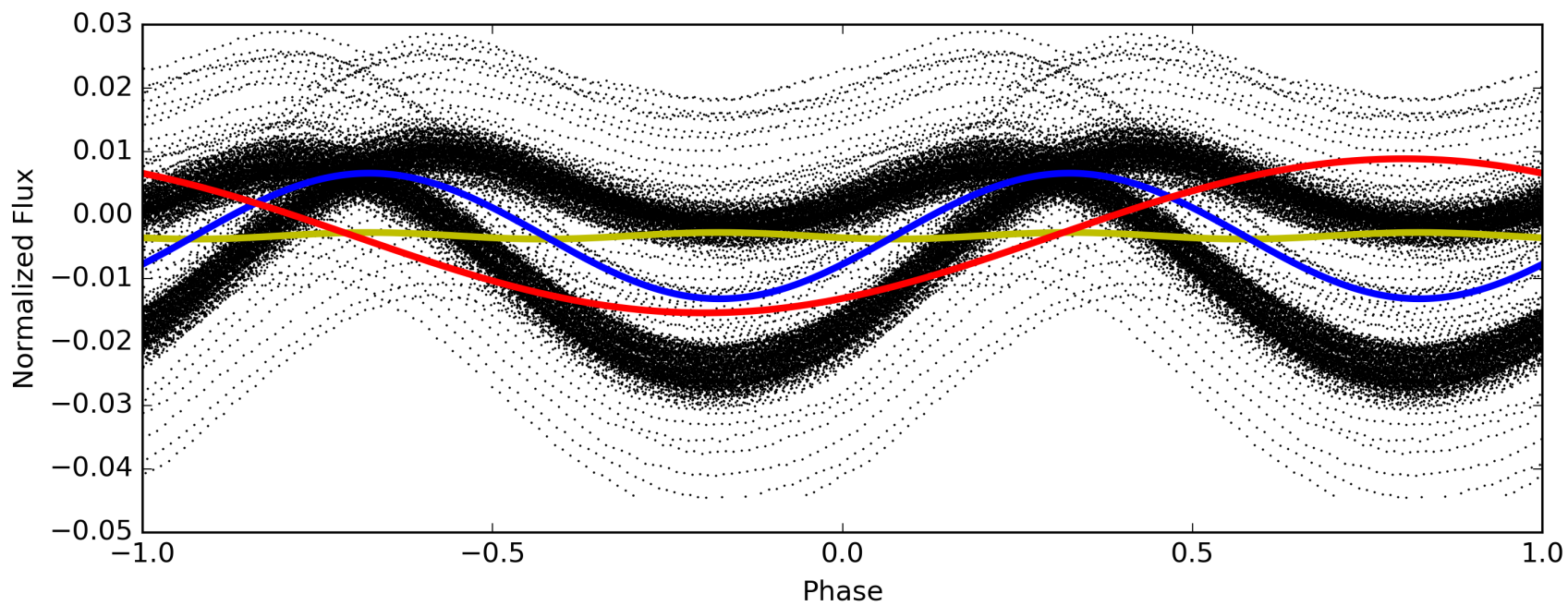
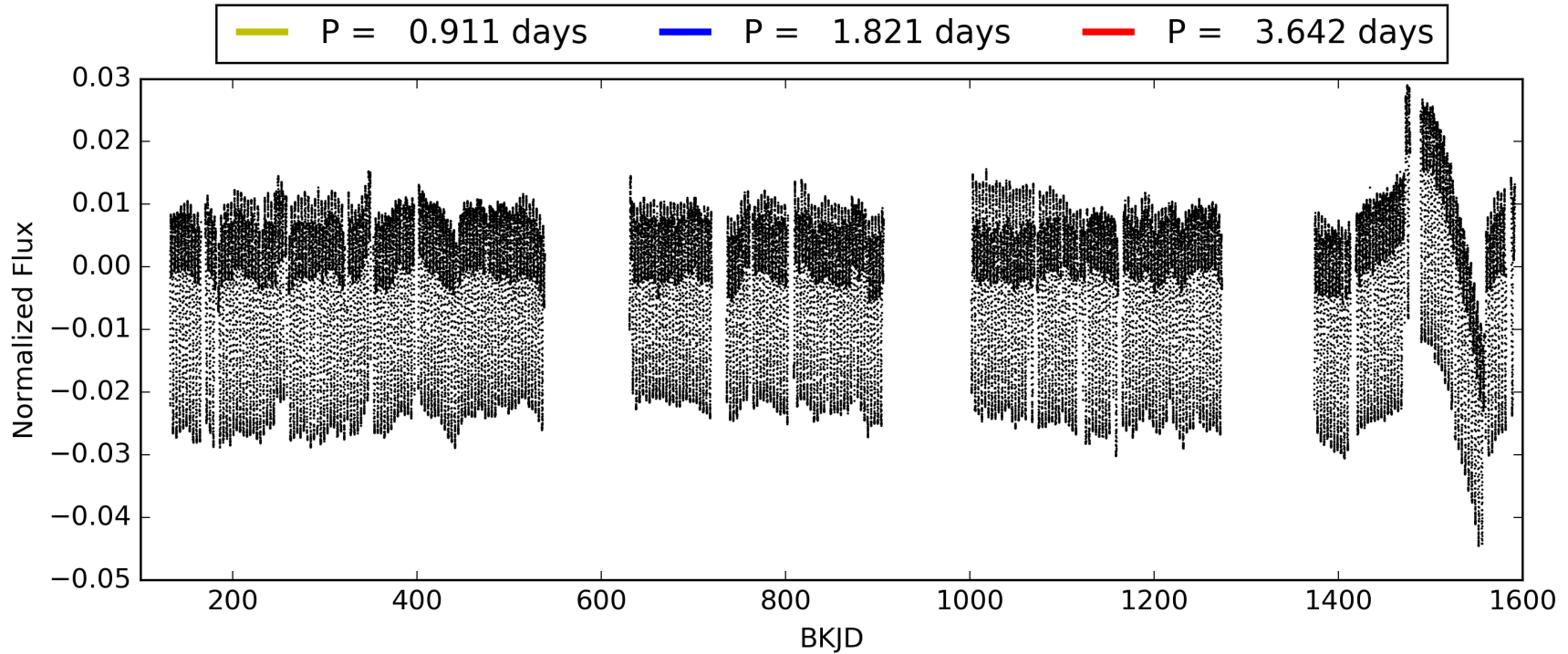
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 005198315-01, PDC Light Curves



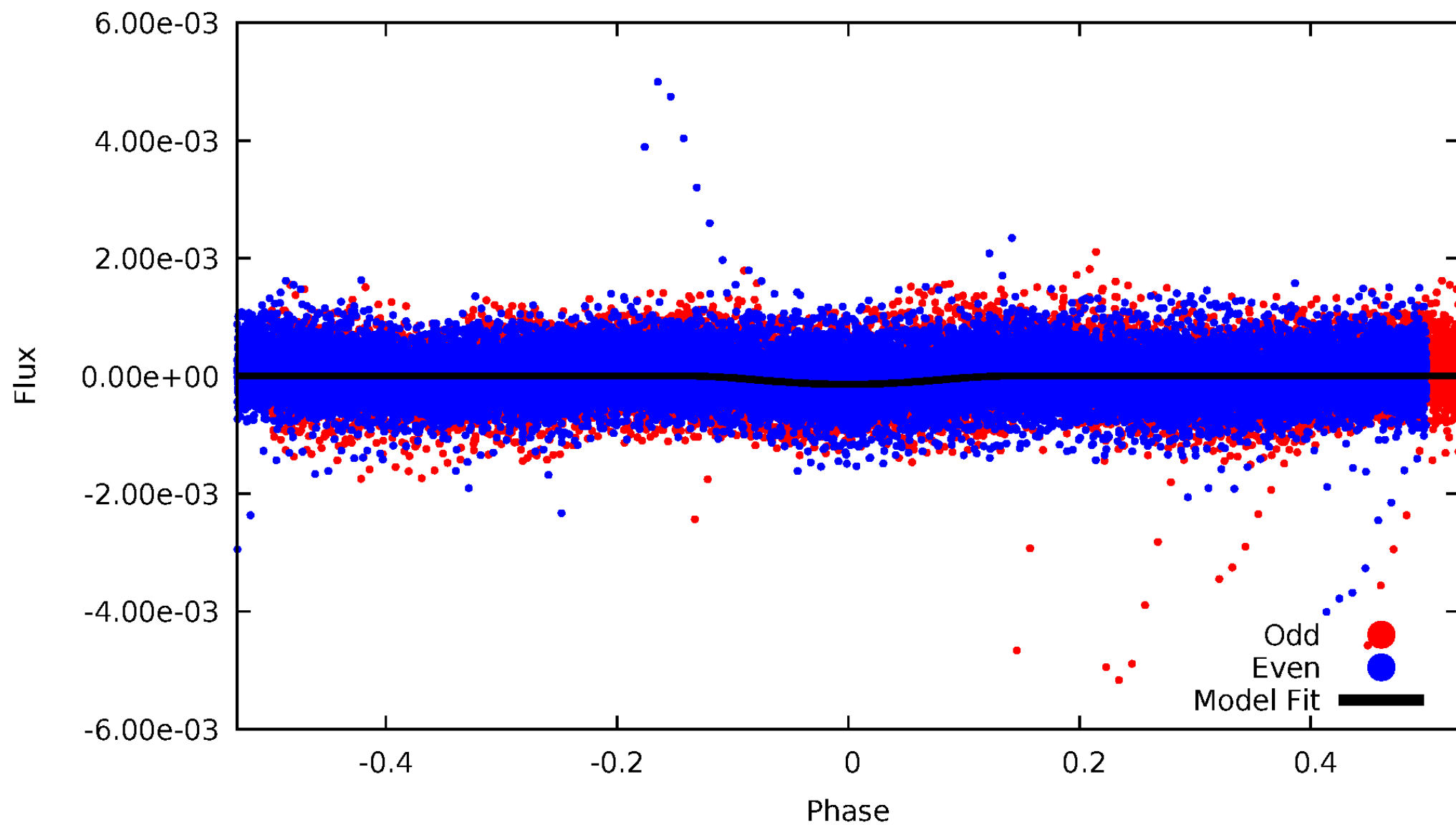
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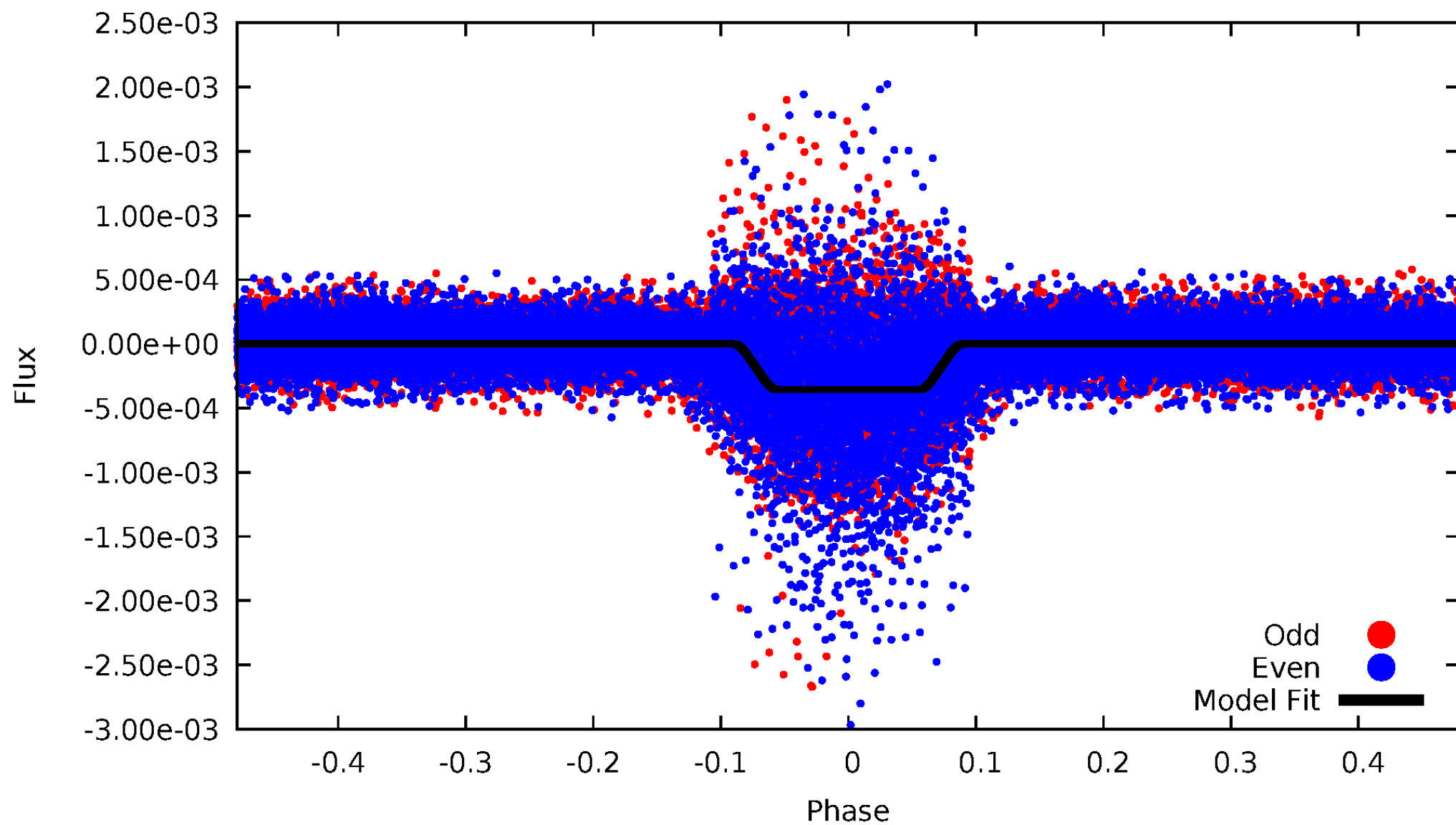
# DV Odd/Even

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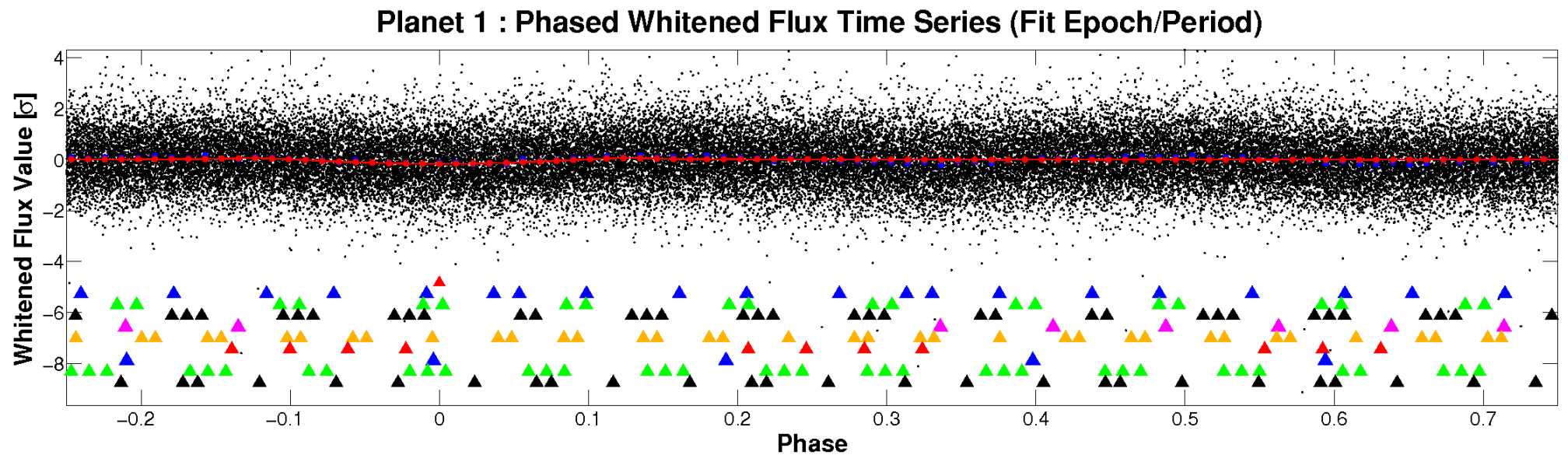
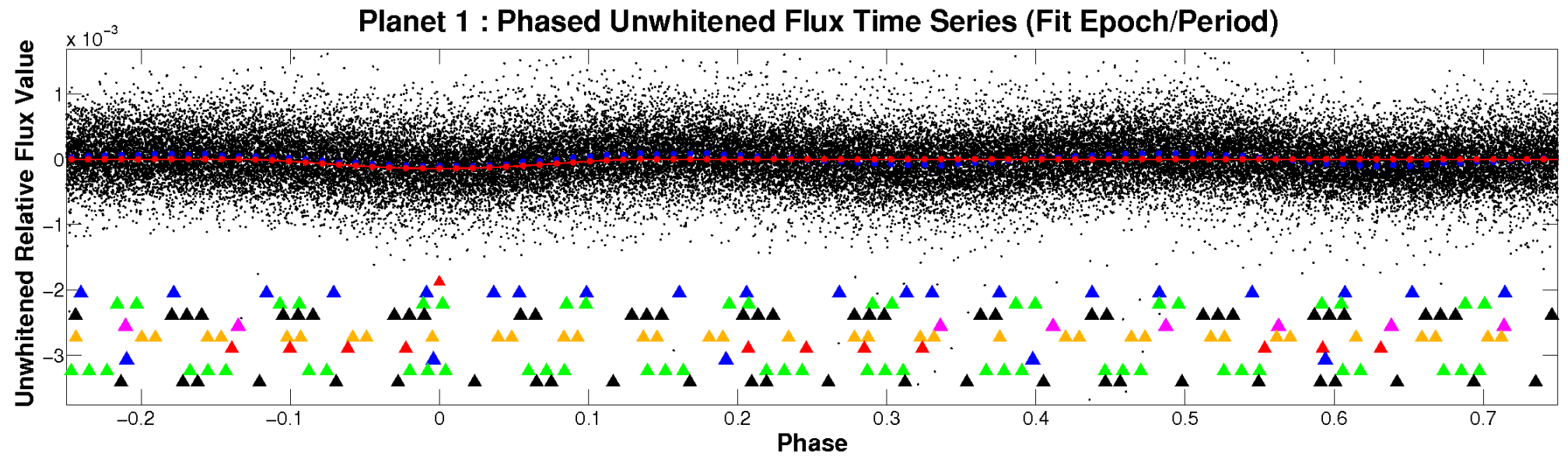


# ALT Odd/Even

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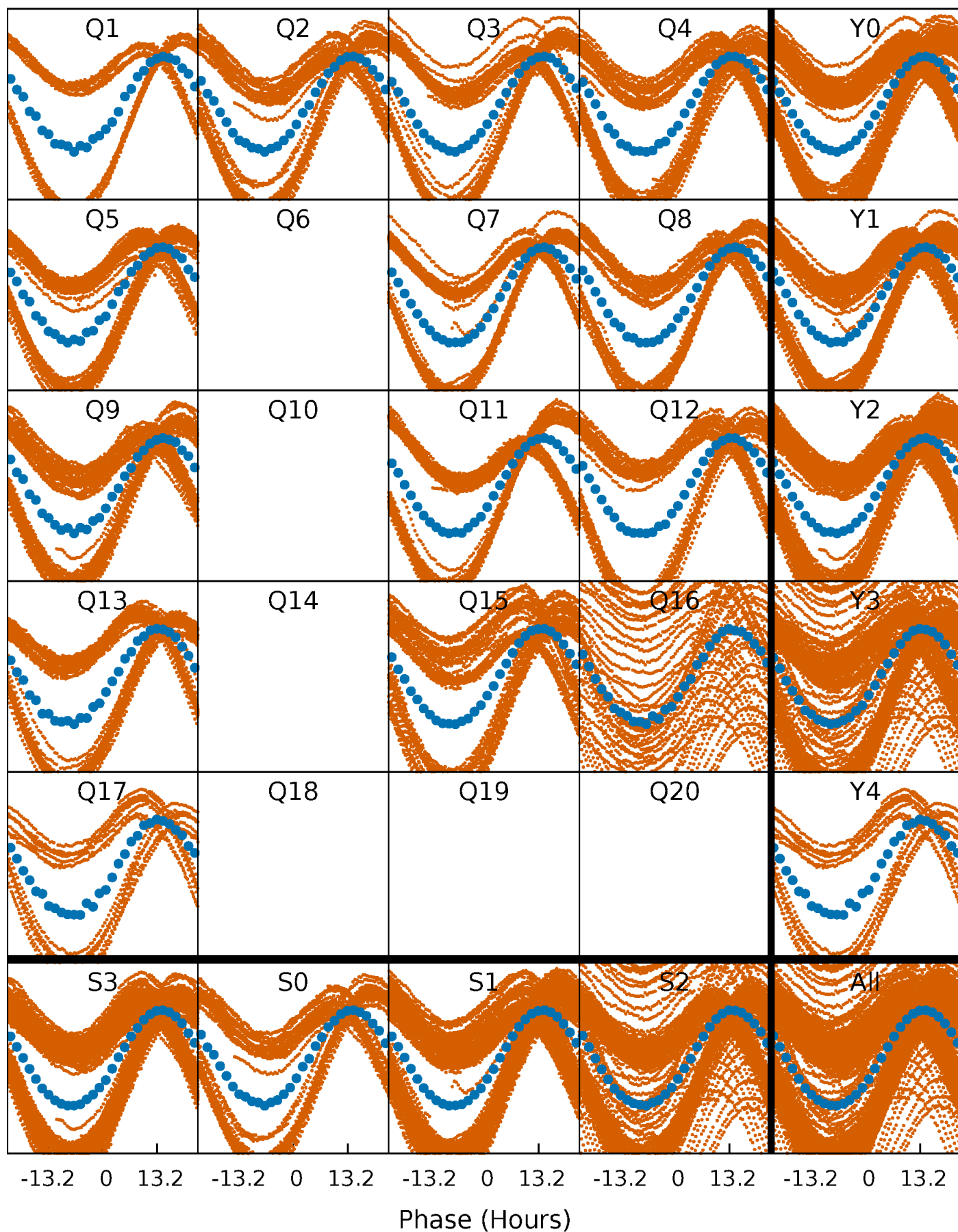


# Non-Whitened Vs. Whitened Light Curve



# PDC Quarter-Phased Transit Curves

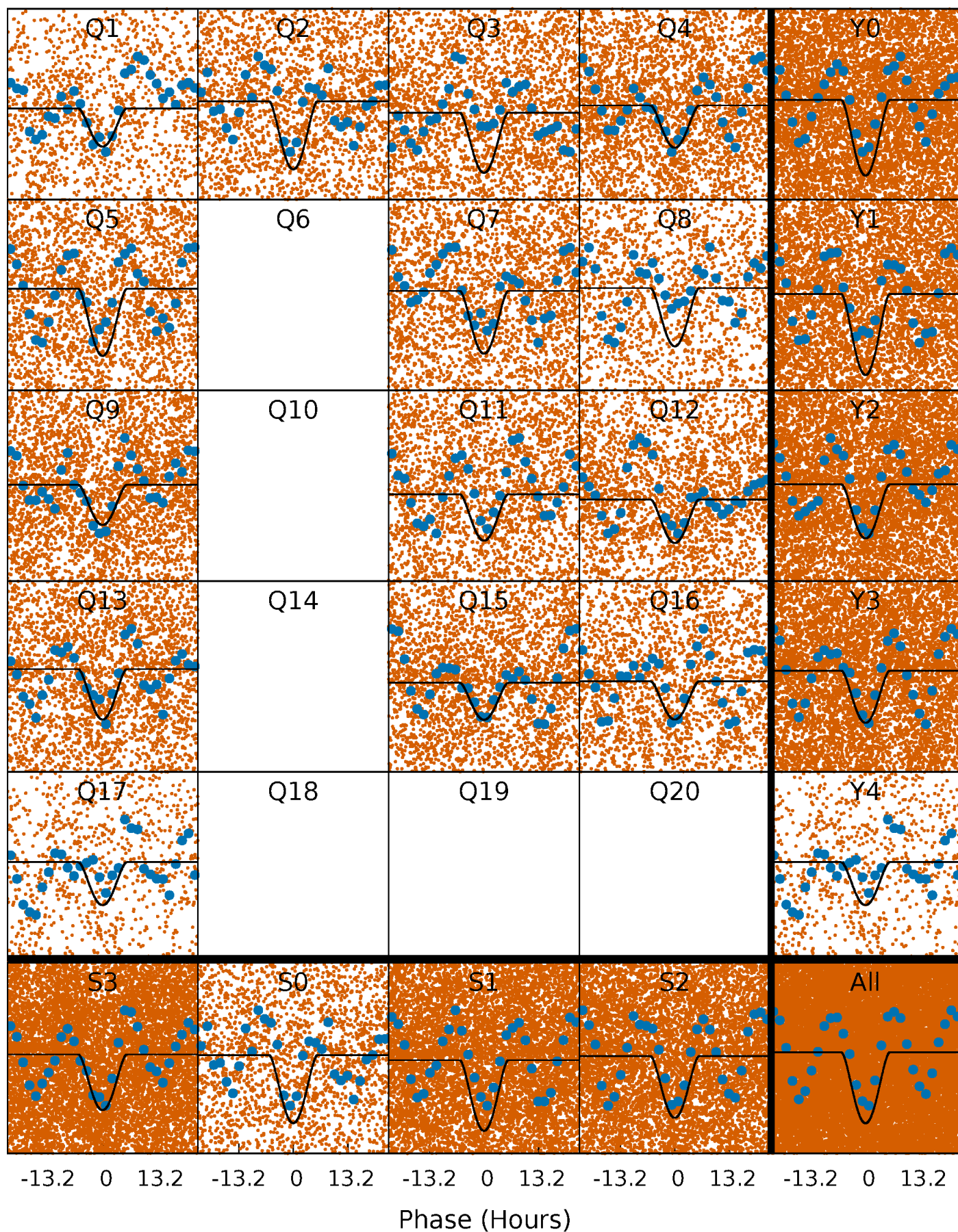
TCE 005198315-01 P= 1.821235 Days  $T_0=133.319401$  (BKJD)





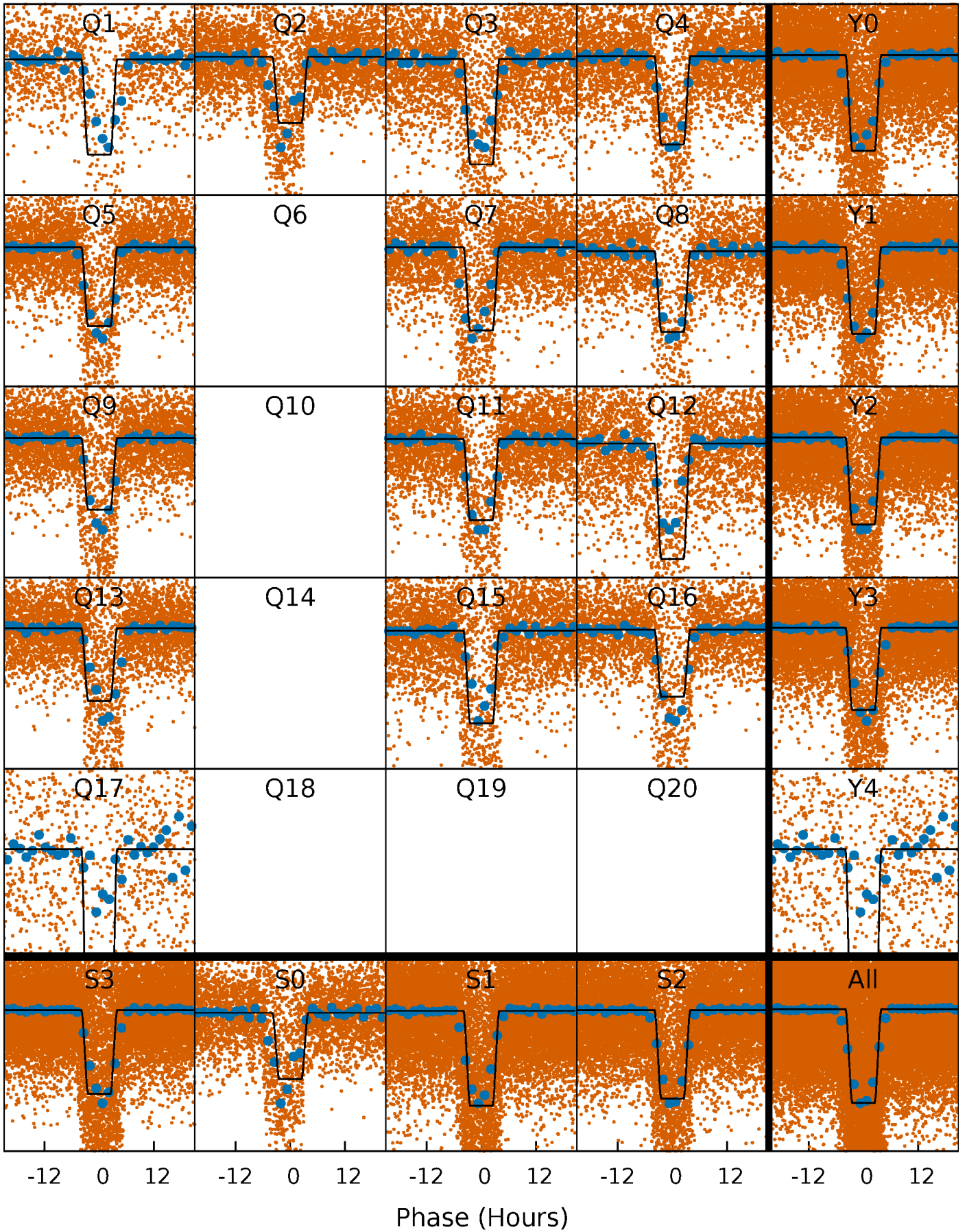
# DV Quarter-Phased Transit Curves

TCE 005198315-01 P= 1.821235 Days  $T_0=133.319401$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

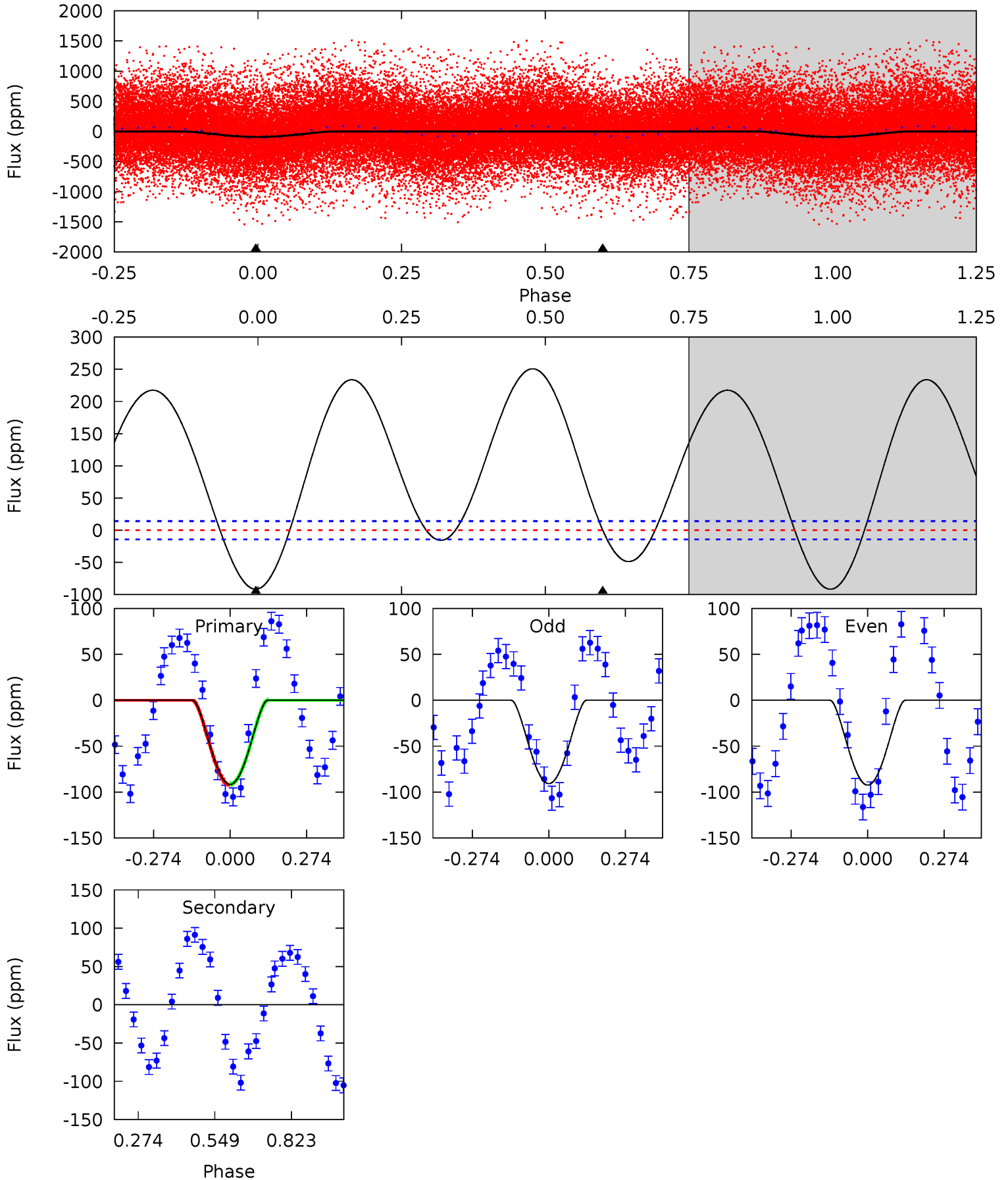
TCE 005198315-01 P= 1.821272 Days  $T_0=133.280953$  (BKJD)



# DV Model-Shift Uniqueness Test

005198315-01, P = 1.821235 Days, E = 131.498166 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
28.2	-0.03	0	0	4.35	1.09	9.38	28.2	28.2	-0.03	-0.03	0.25	0.01	0.73	0.15

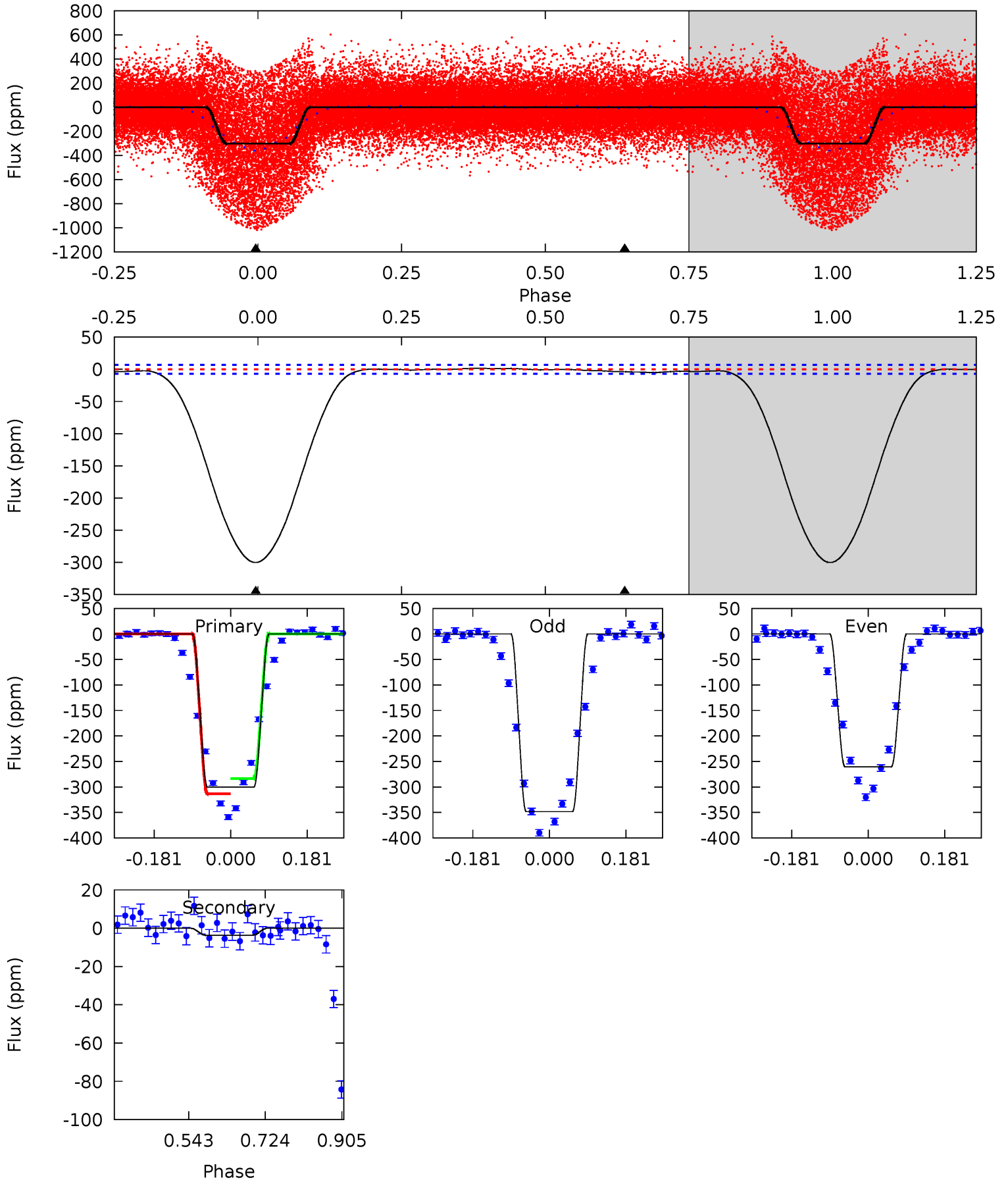




# Alt Model-Shift Uniqueness Test

005198315-01, P = 1.821272 Days, E = 131.459681 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
190.6	2.35	0	0	4.44	1.34	0.55	190.6	190.6	2.35	2.35	27.7	1.00	0.01	9.68





### Stellar Parameters For KIC 005198315

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$\rho_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$8306^{+202}_{-347}$	$3.751^{+0.451}_{-0.106}$	$-0.220^{+0.250}_{-0.350}$	$3.121^{+0.652}_{-1.412}$	$2.001^{+0.343}_{-0.471}$	$0.093^{+0.378}_{-0.031}$
	+2%/-4%	+12%/-3%	+114%/-159%	+21%/-45%	+17%/-24%	+408%/-33%
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 005198315-01 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$0 \pm 3$	$6.85^{+5.02}_{-3.99}$	$4579^{+331}_{-562}$	$-3962^{+469}_{-295}$	$-0.002^{+0.077}_{-0.083}$
Alt.	$-4 \pm 2$	$6.64^{+5.07}_{-4.03}$	$4540^{+352}_{-504}$	$-3705^{+6823}_{-334}$	$0.057^{+0.338}_{-0.040}$

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

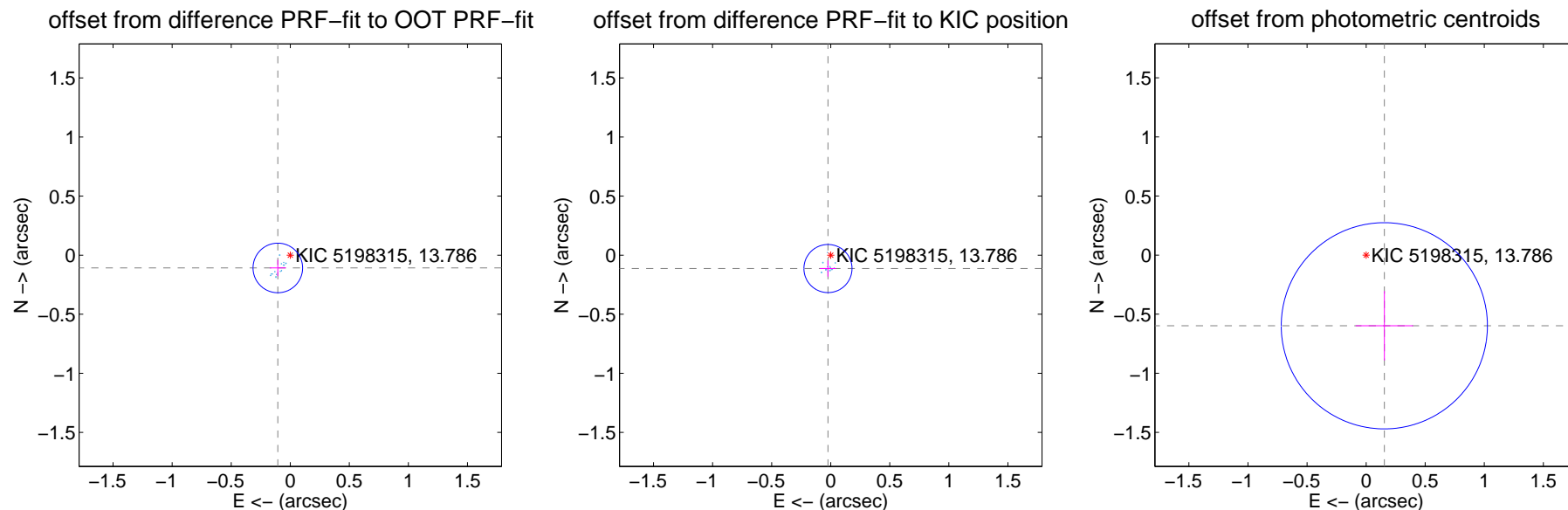
## DV Centroid Data

Supplemental centroid analysis for 005198315-01. Kepler magnitude: 13.79. Transit SNR 12.05

There are 14 quarters with good PRF difference image offsets

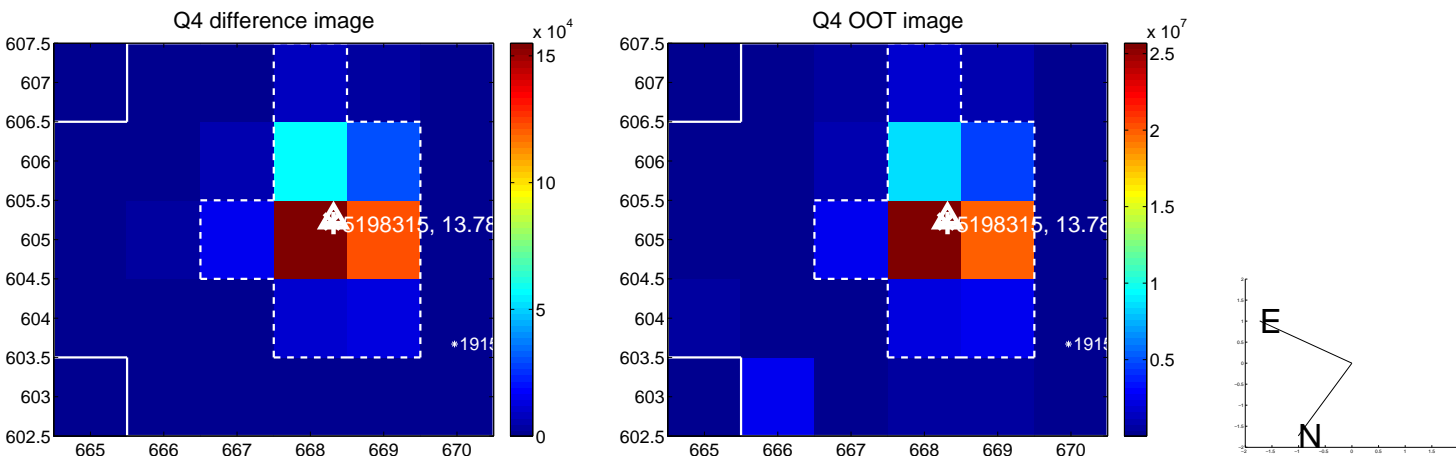
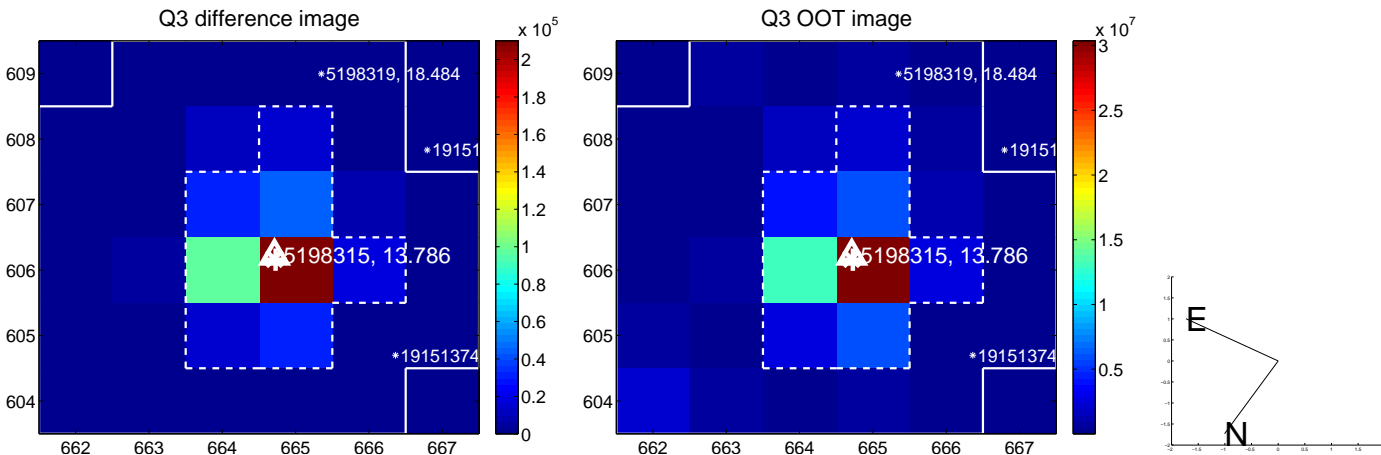
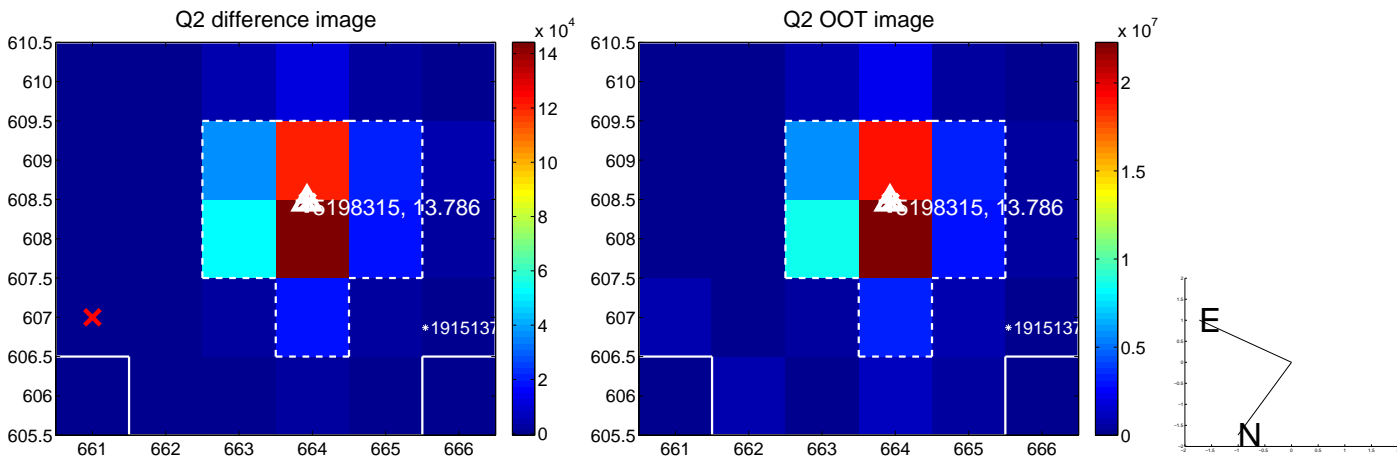
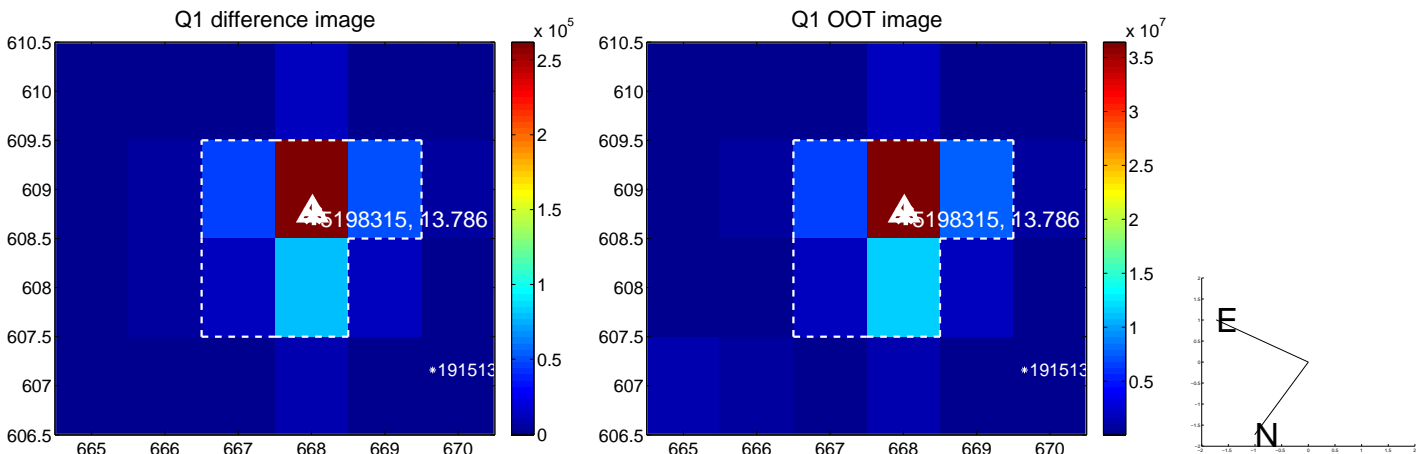
The direct PRF centroid is offset from the target star catalog position by about 0.07 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.151 \pm 0.070$	2.16	$0.105 \pm 0.068$	$-0.108 \pm 0.069$
PRF-fit source offset from KIC position	$0.116 \pm 0.068$	1.70	$0.023 \pm 0.067$	$-0.113 \pm 0.068$
photometric centroid source offset	$0.62 \pm 0.29$	2.12	$-0.15 \pm 0.24$	$-0.60 \pm 0.29$

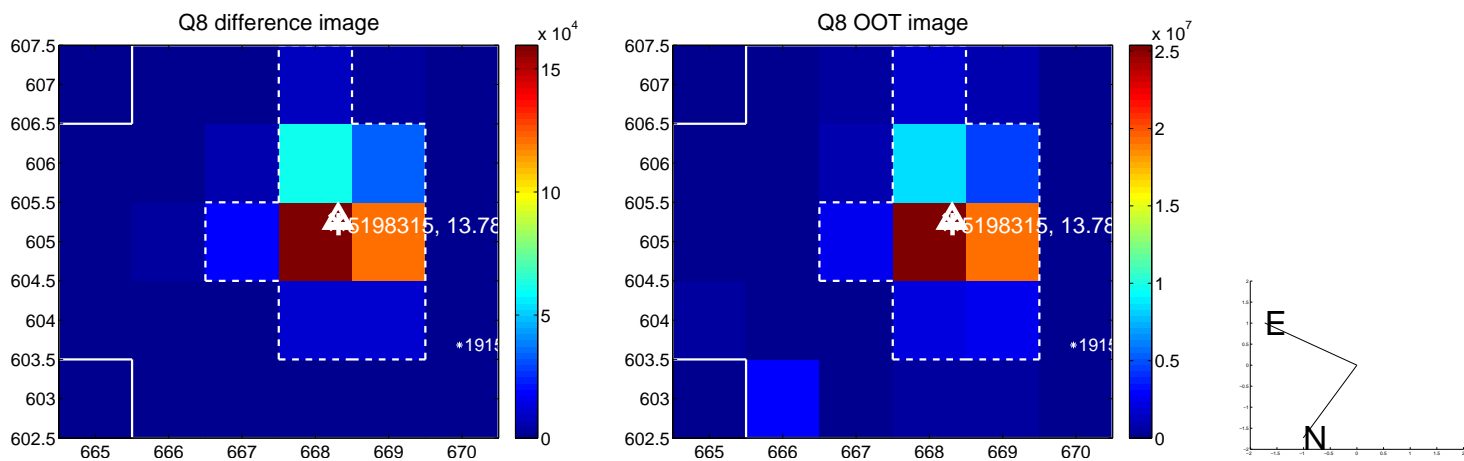
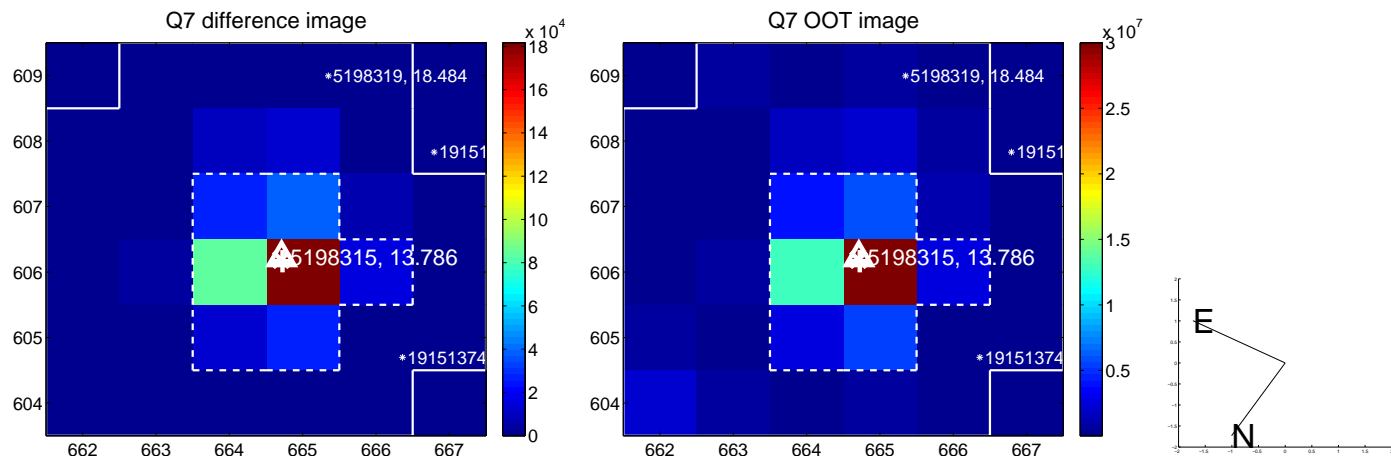
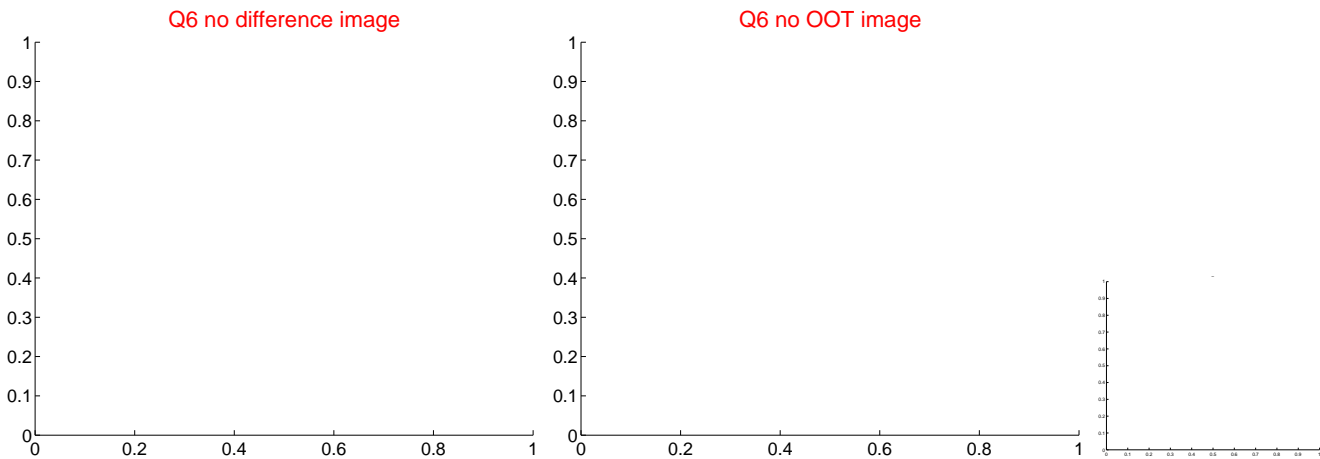
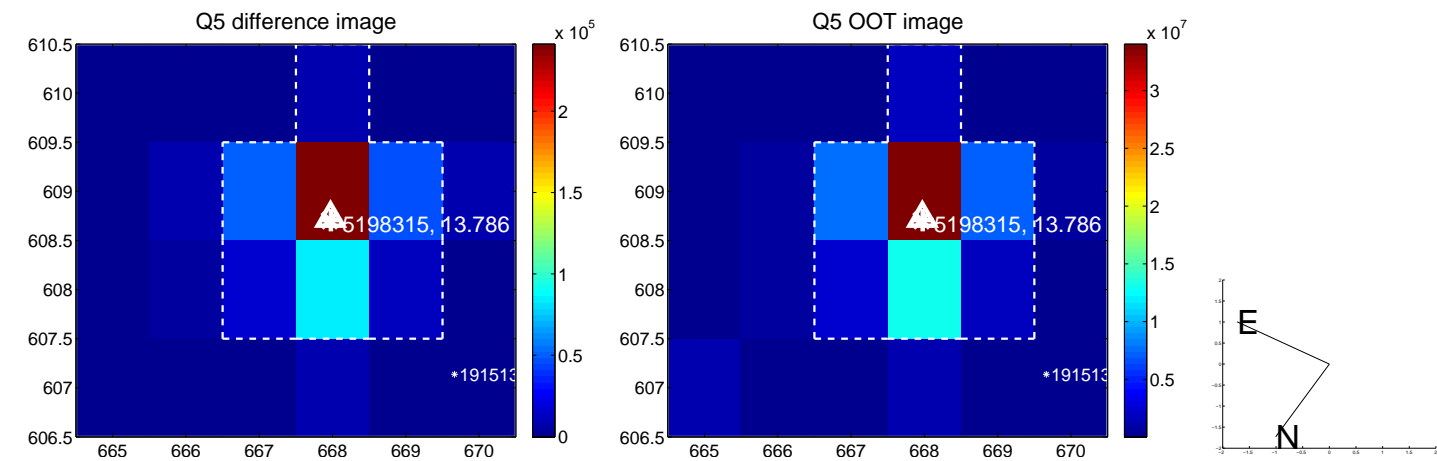


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

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

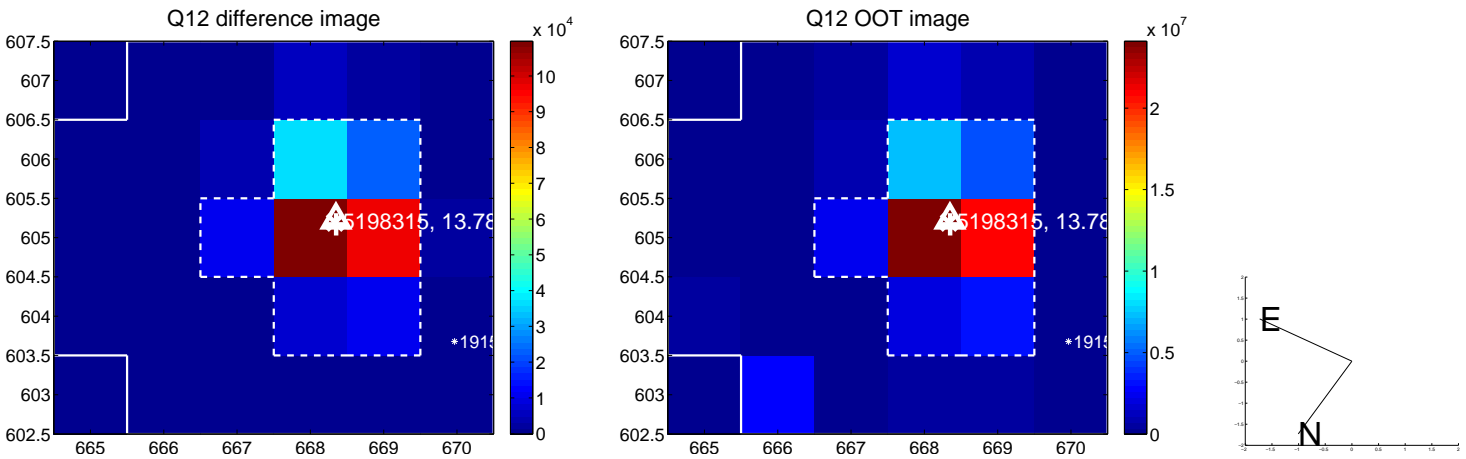
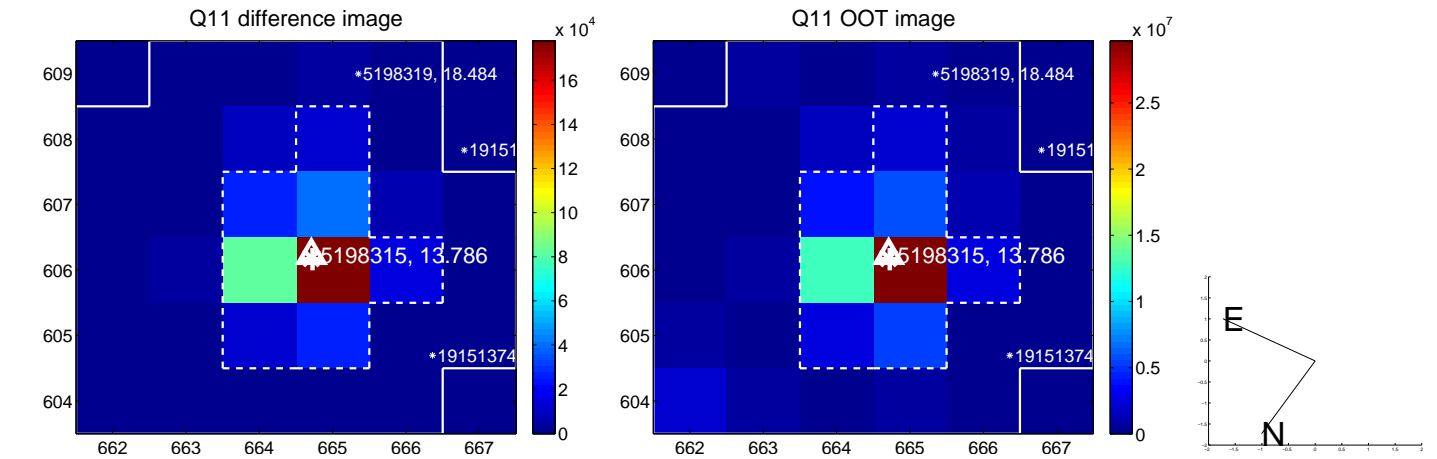
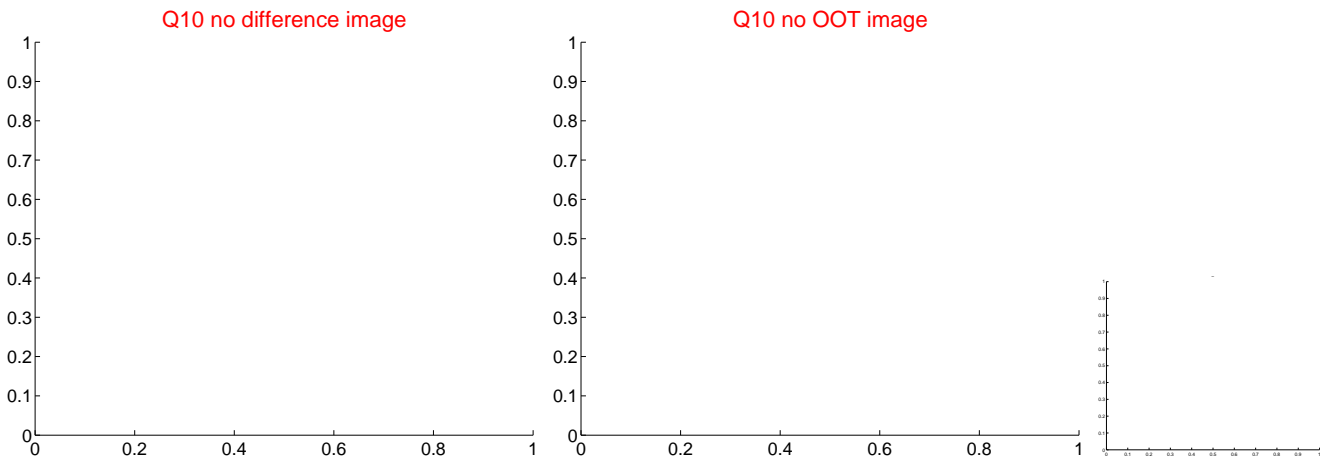
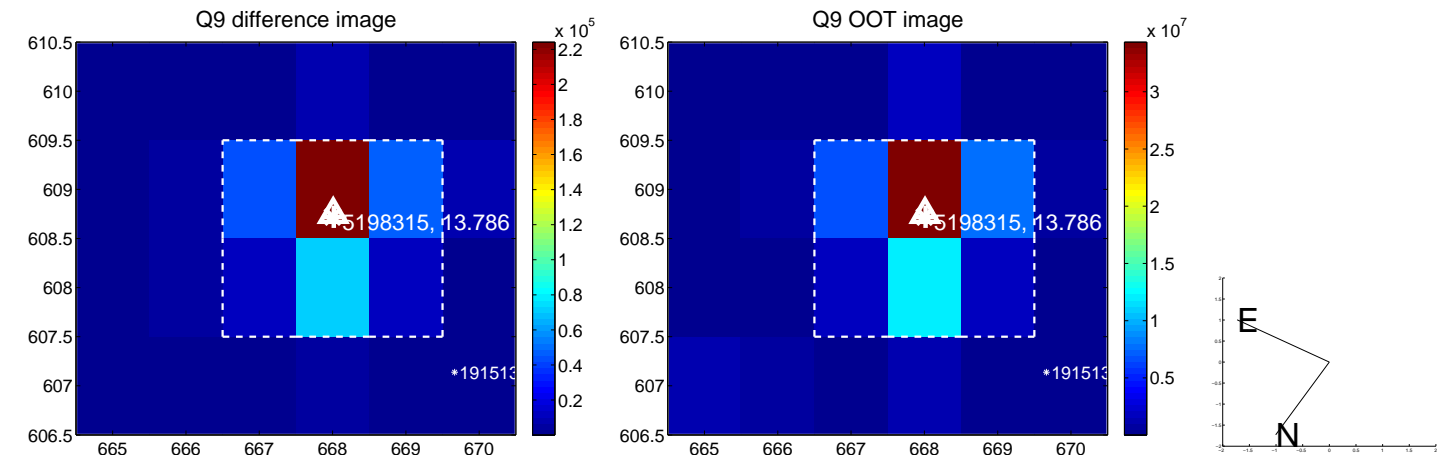


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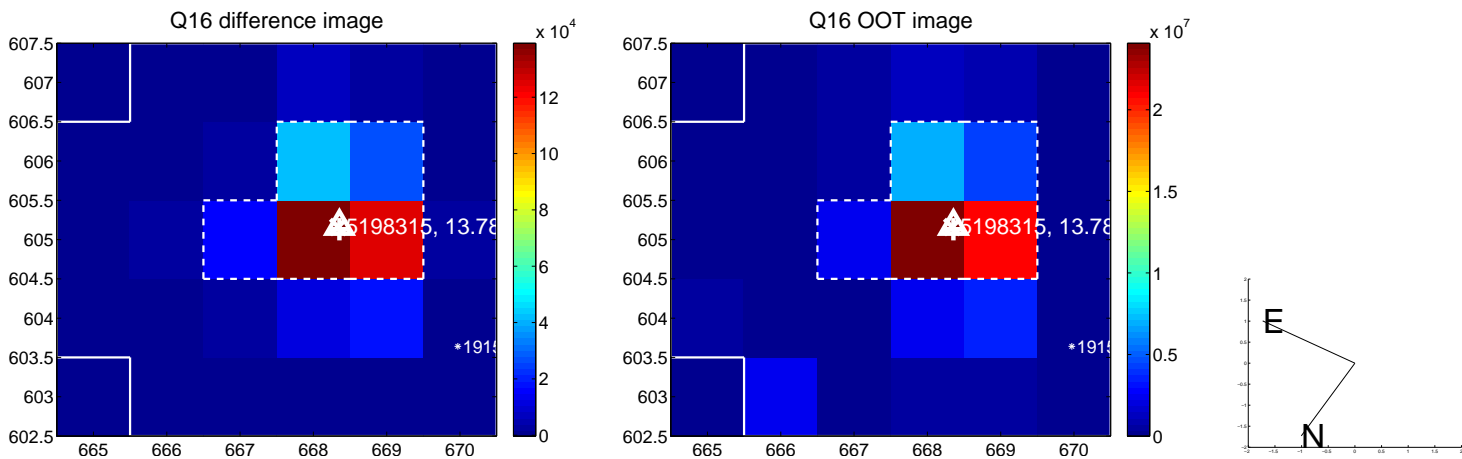
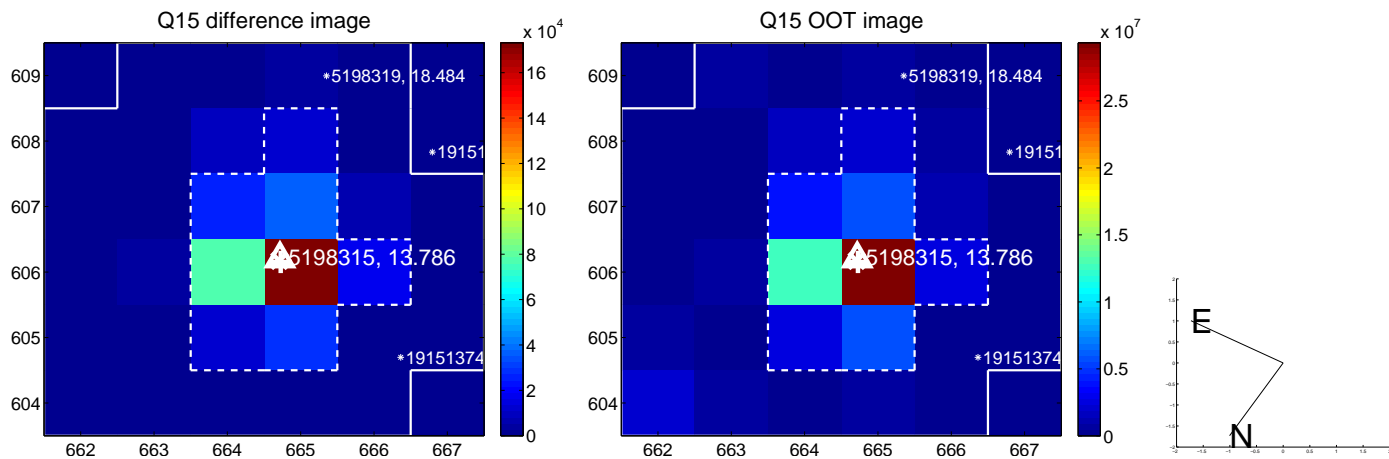
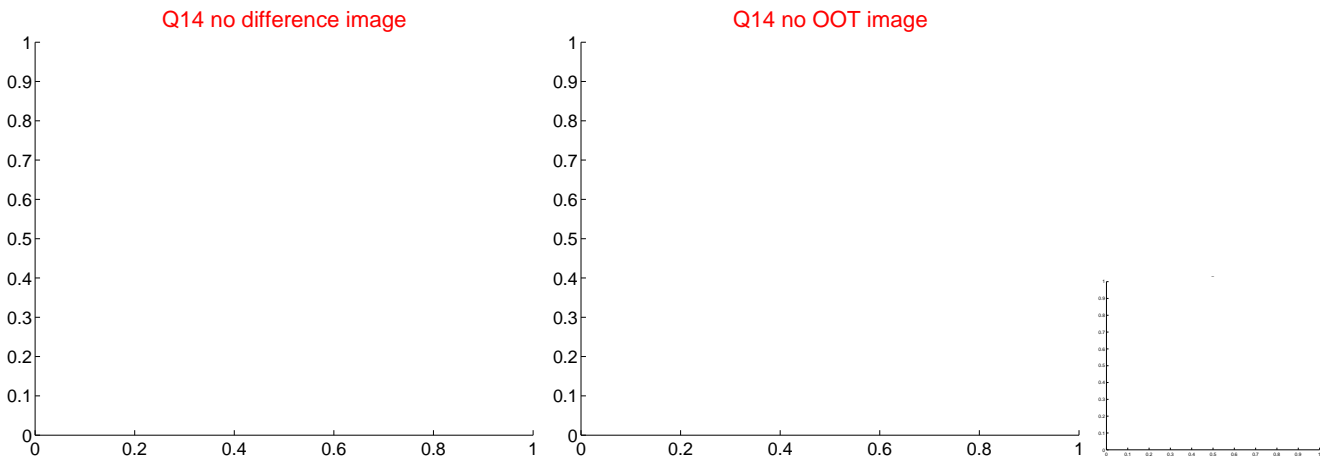
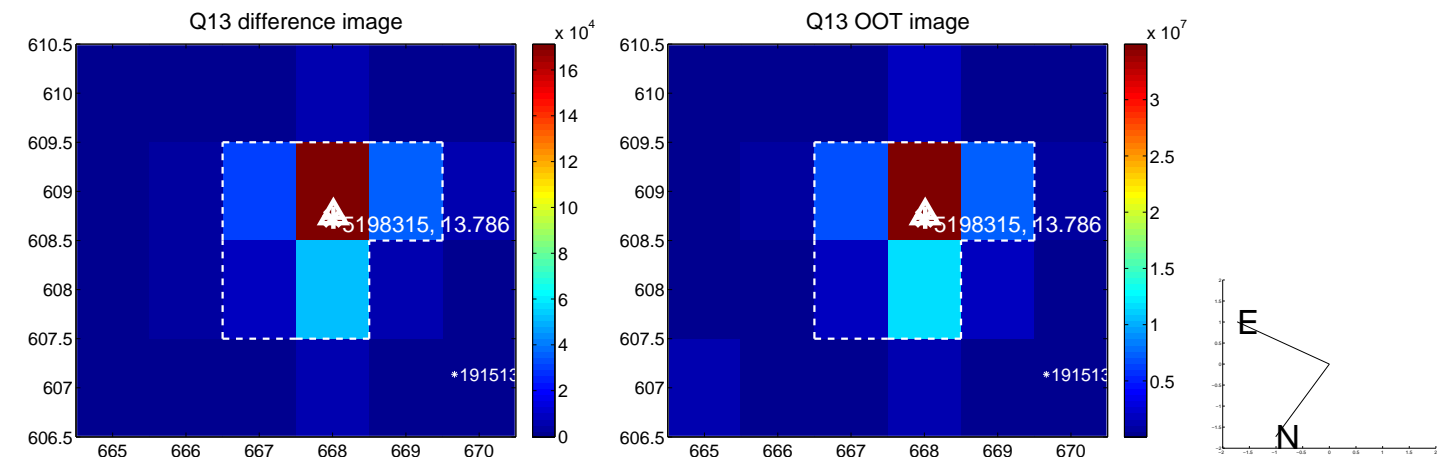




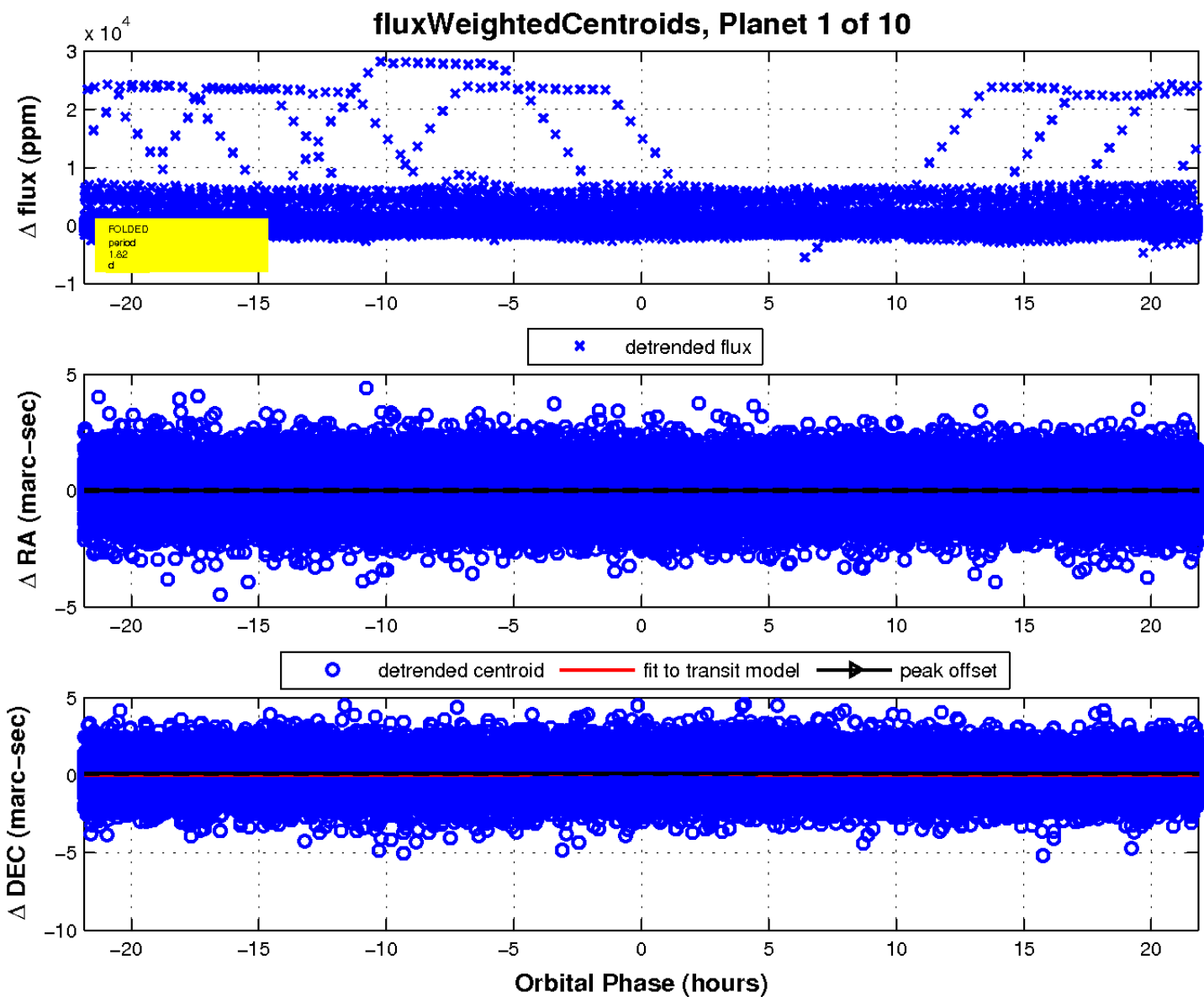
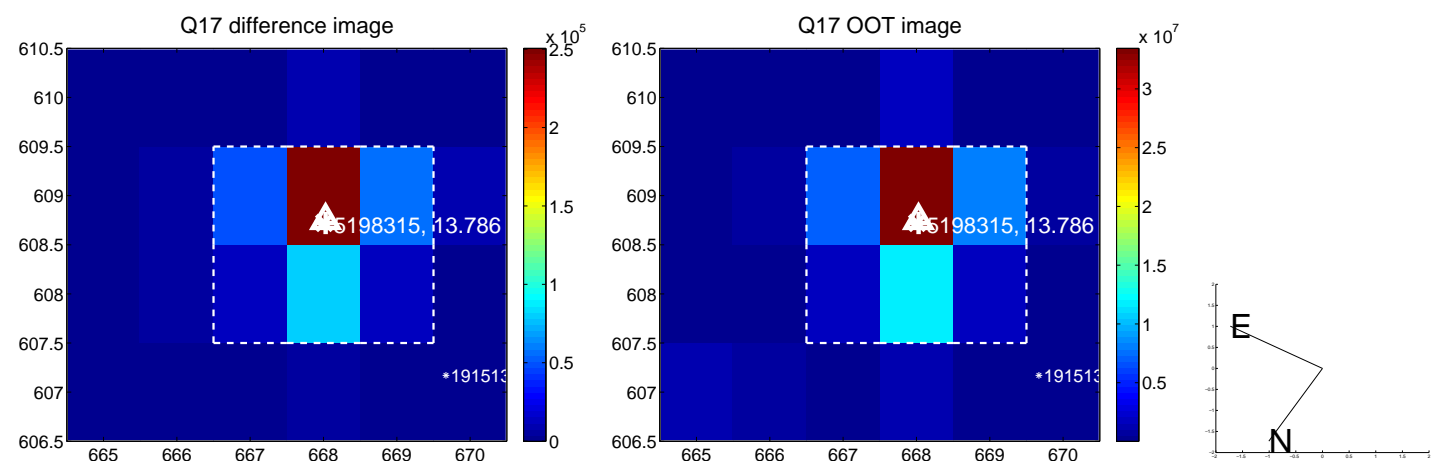
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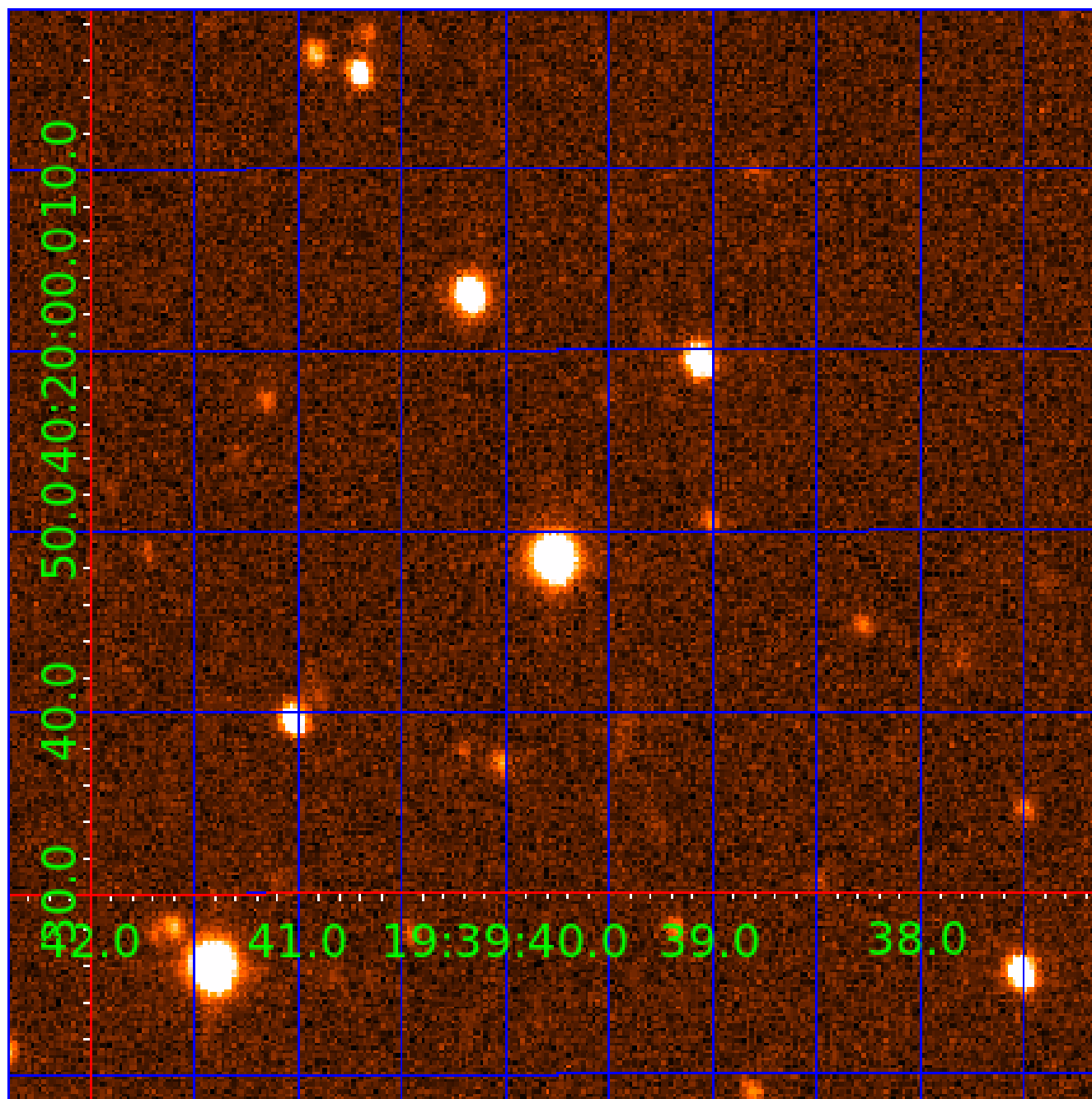


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UKIRT Image

Declination





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005198315-04	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—HALO_GHOST
005198315-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_NOFITS
005198315-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_NOFITS
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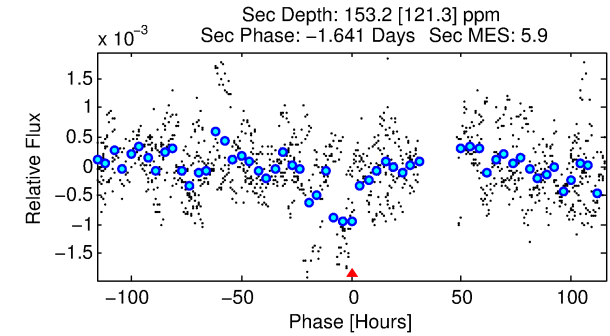
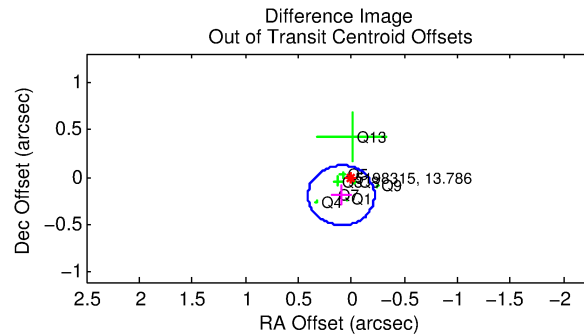
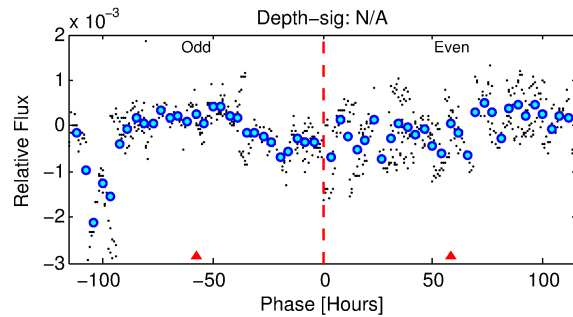
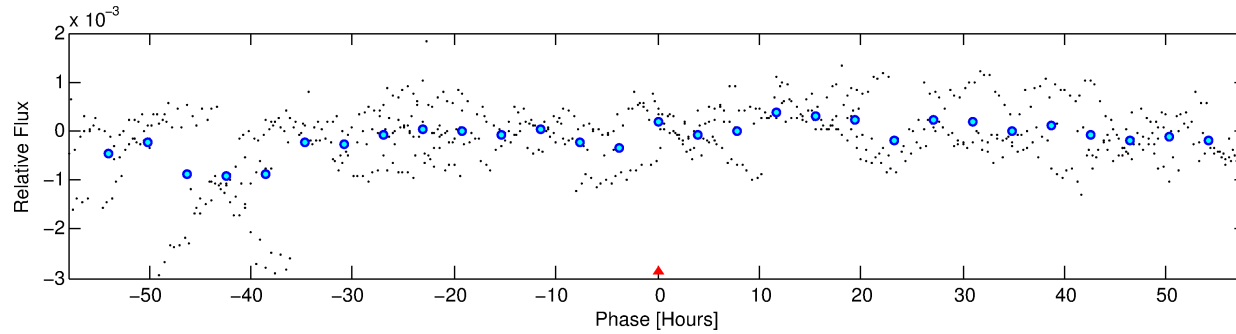
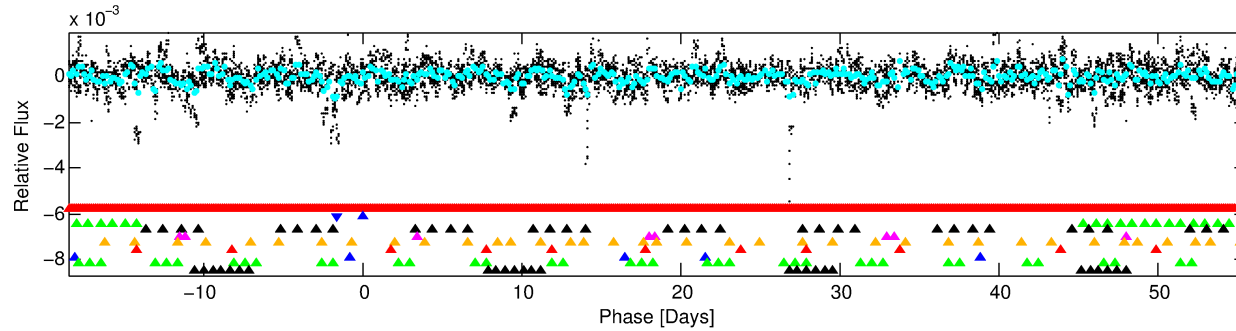
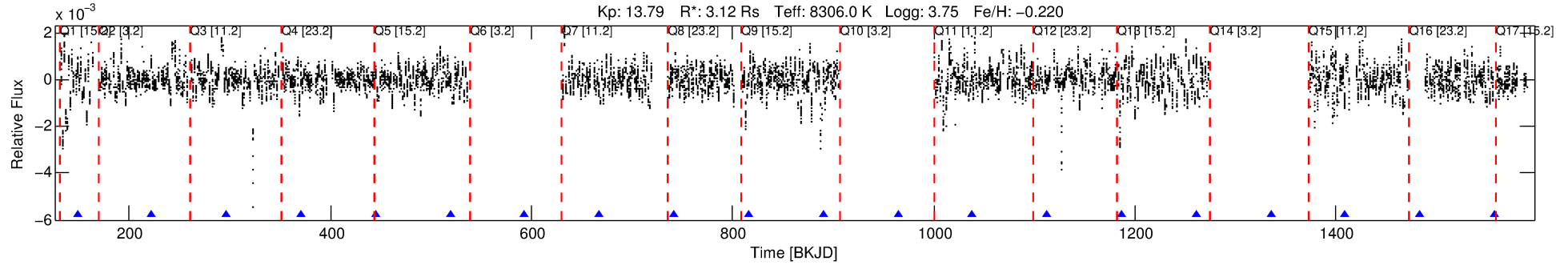
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 005198315-02

No Significant Match Found

# DV One-Page Summary

KIC: 5198315 Candidate: 2 of 10 Period: 74.166 d



## TPS TCE Results:

Period = 74.16648 d  
Epoch = 146.6386 BKJD

DV fit results are unavailable

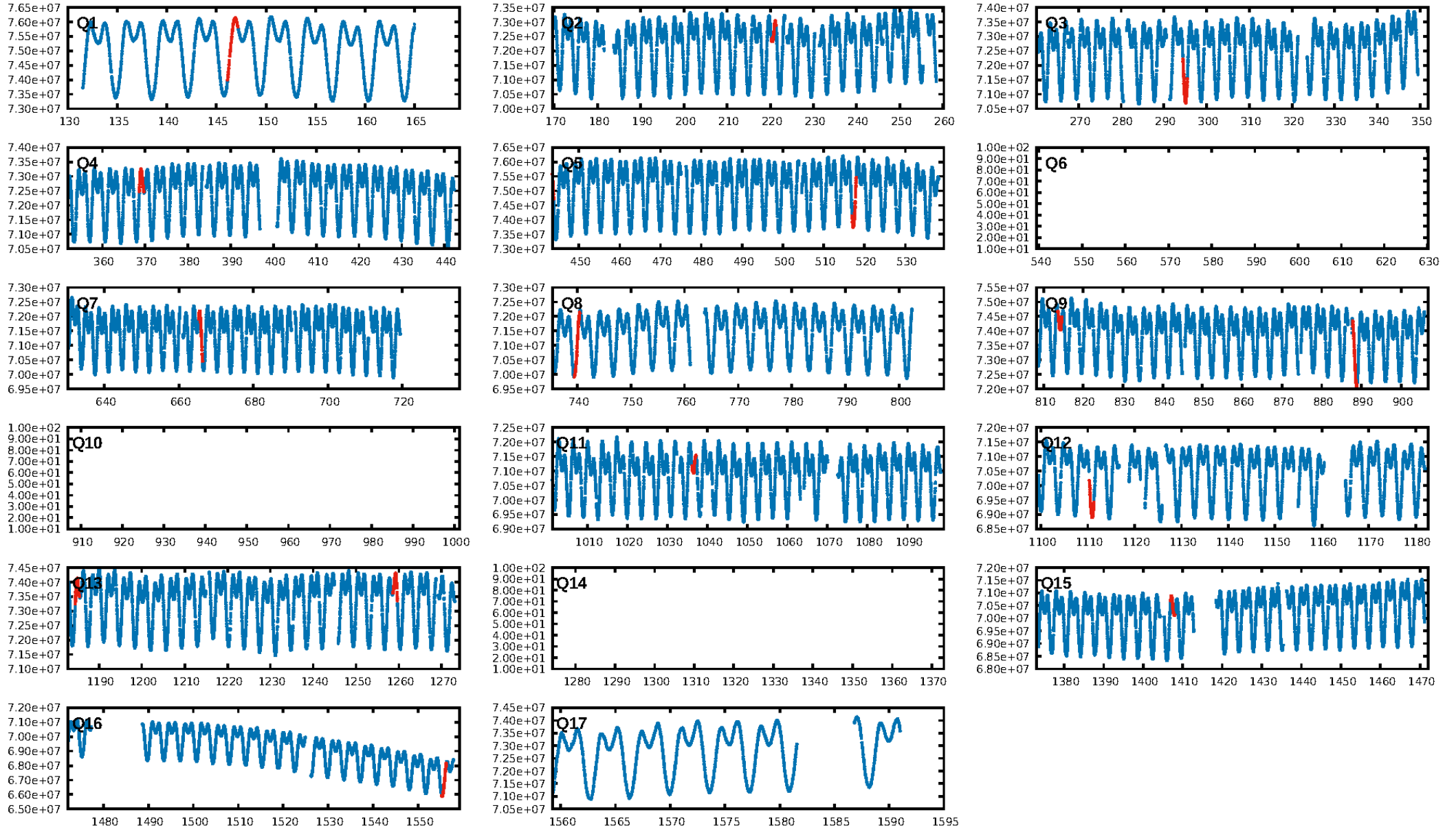
## DV Diagnostic Results:

ShortPeriod-sig: 70.9% [1.06 $\sigma$ ]  
LongPeriod-sig: 100.0% [87.93 $\sigma$ ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [9/9]  
GhostDiagnostic-chr: -0.5051  
Centroid-sig: 1.7%  
Centroid-so: 0.132 arcsec [4.94 $\sigma$ ]  
OotOffset-rm: 0.212 arcsec [2.02 $\sigma$ ]  
KicOffset-rm: 0.148 arcsec [1.51 $\sigma$ ]  
OotOffset-st: 0/2/2/4 [8]  
KicOffset-st: 0/2/2/4 [8]  
DiffImageQuality-fgm: 0.38 [3/8]  
DiffImageOverlap-fno: 0.00 [0/8]

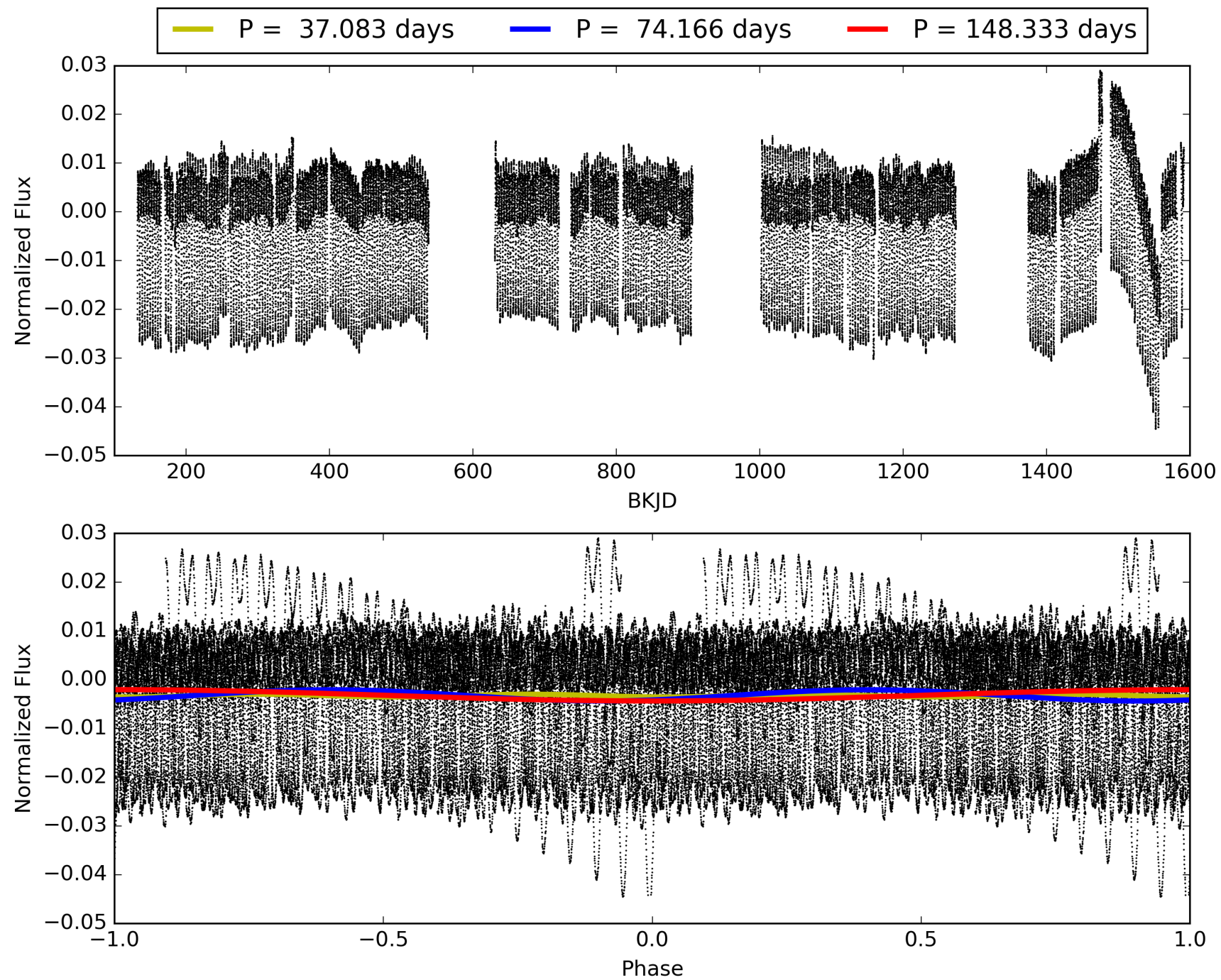
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 01:20:49 Z

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

# TCE 005198315-02, PDC Light Curves

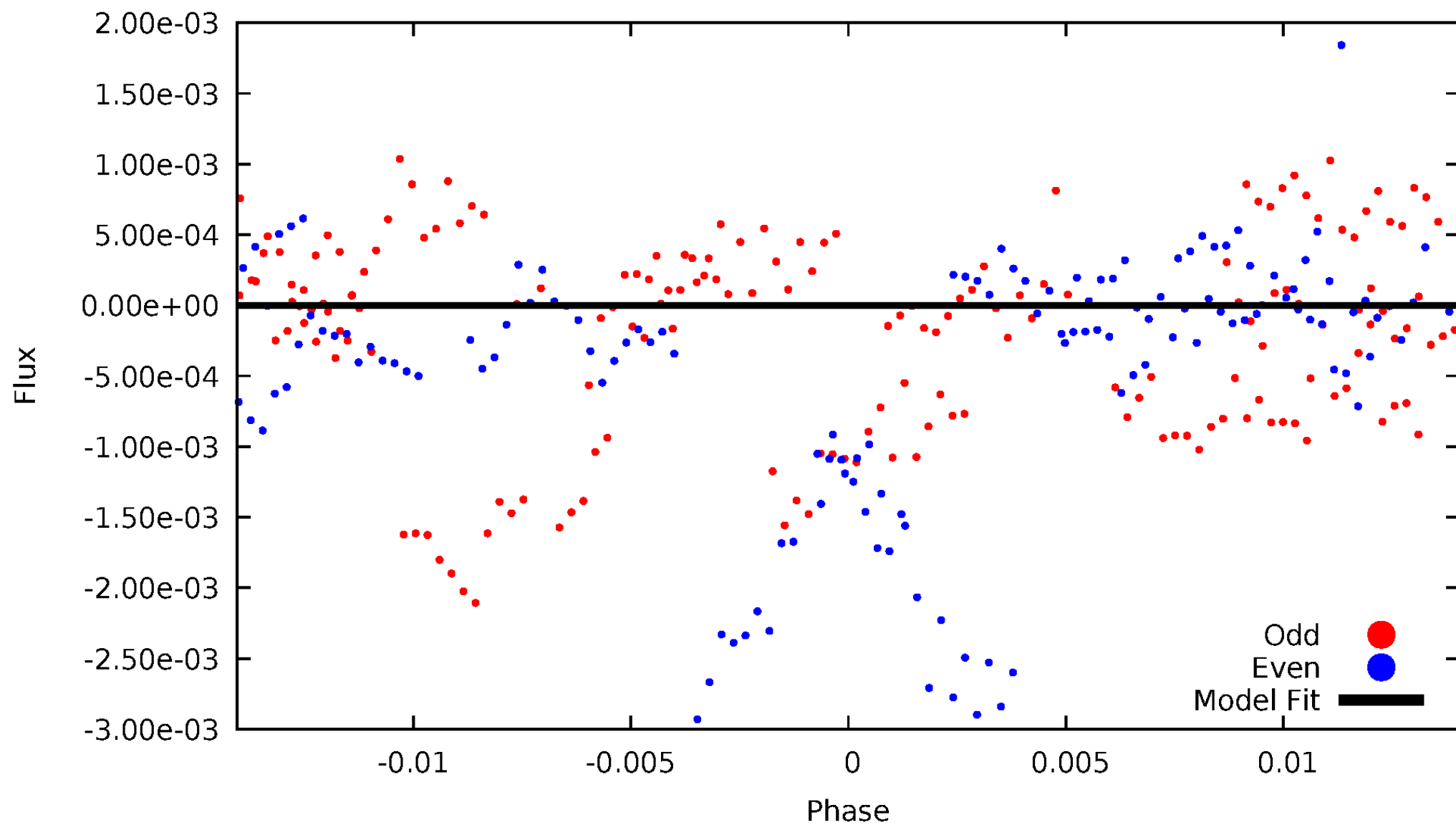


# TCE 005198315-02



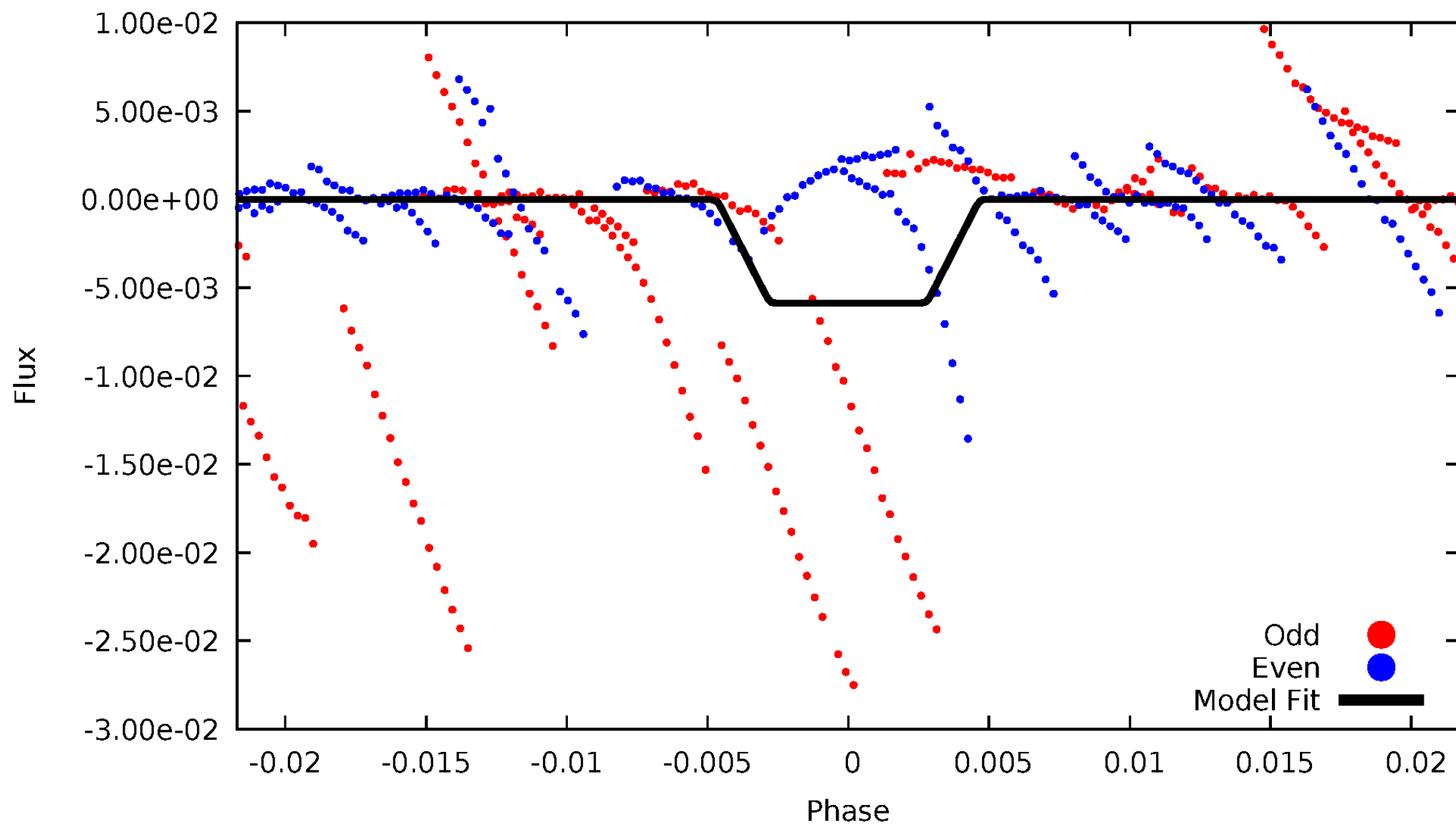
# DV Odd/Even

TCE 005198315-02



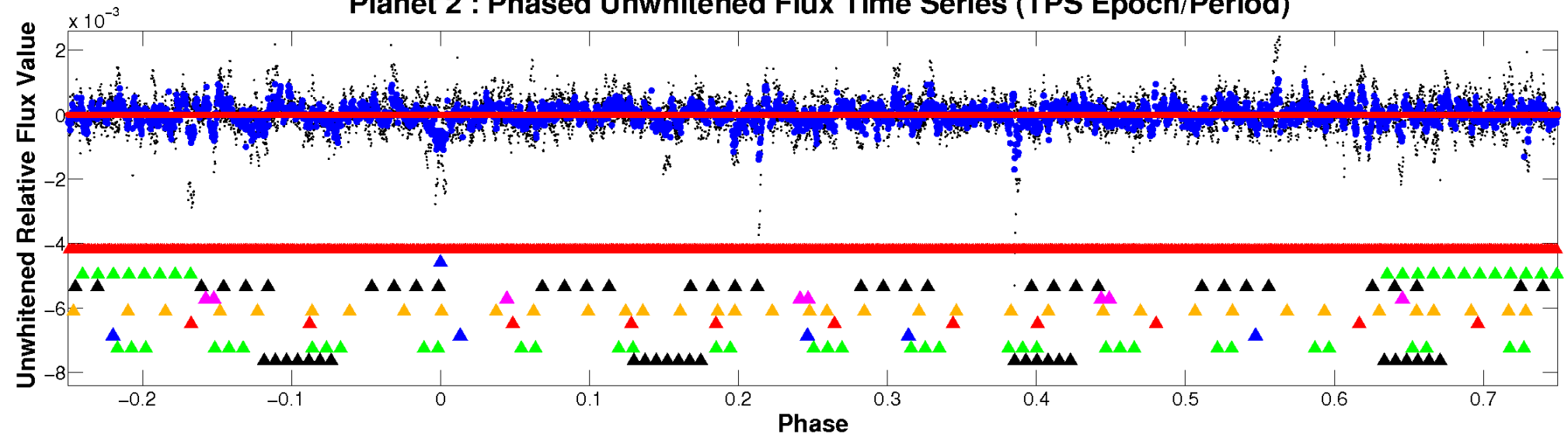
# ALT Odd/Even

TCE 005198315-02

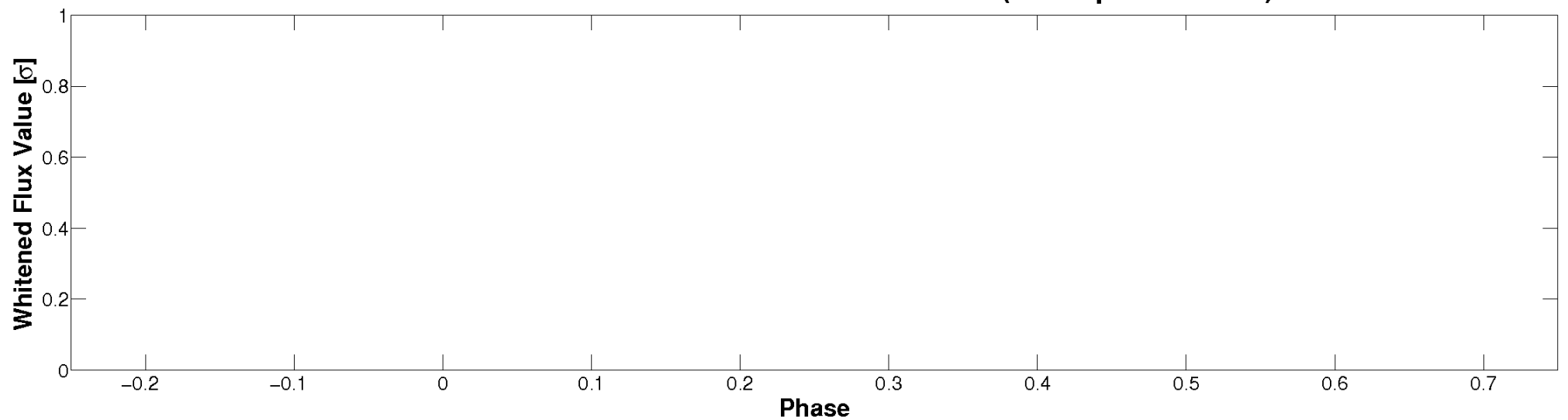


# Non-Whitened Vs. Whitened Light Curve

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



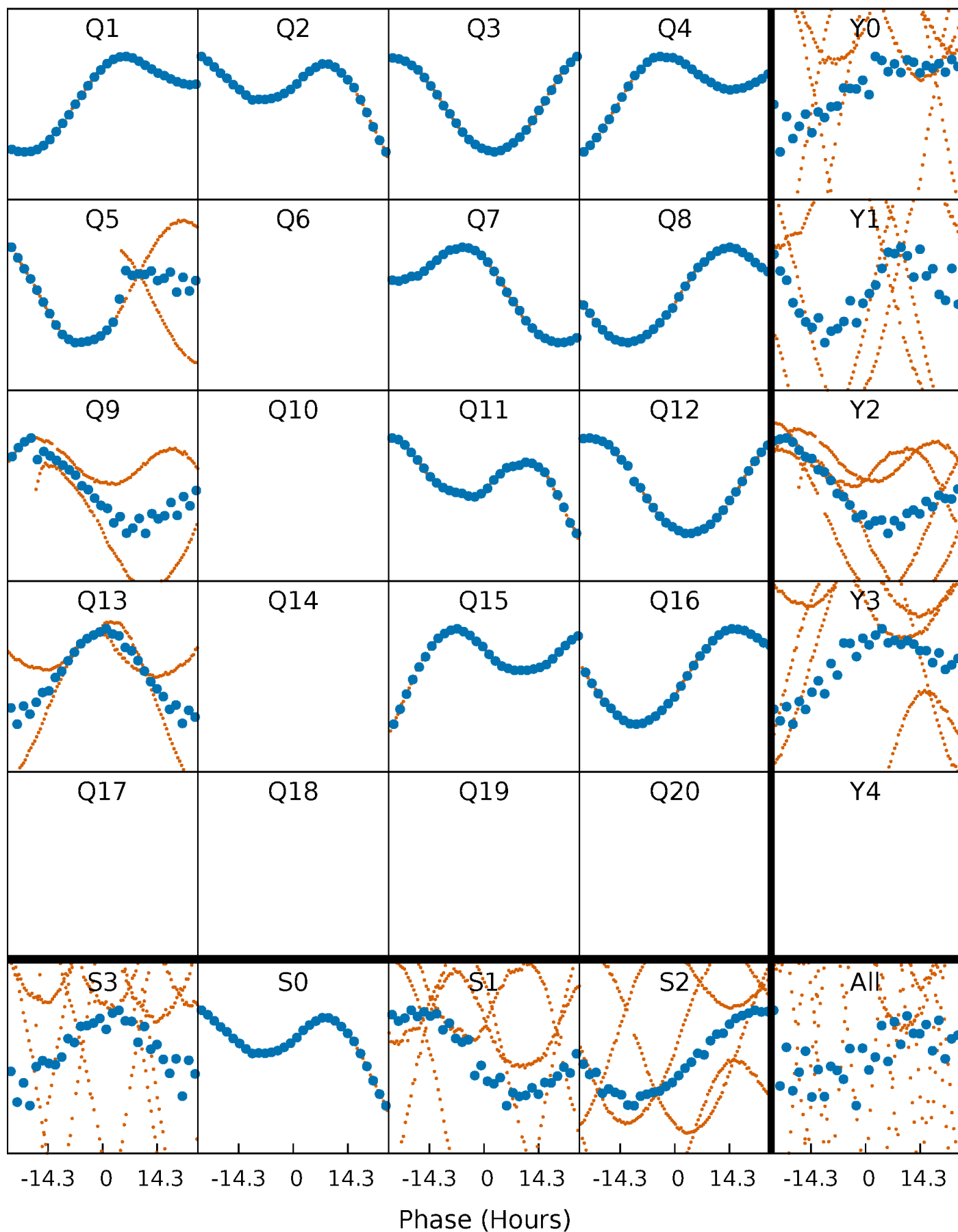
Planet 2 : Phased Whitened Flux Time Series (TPS Epoch/Period)





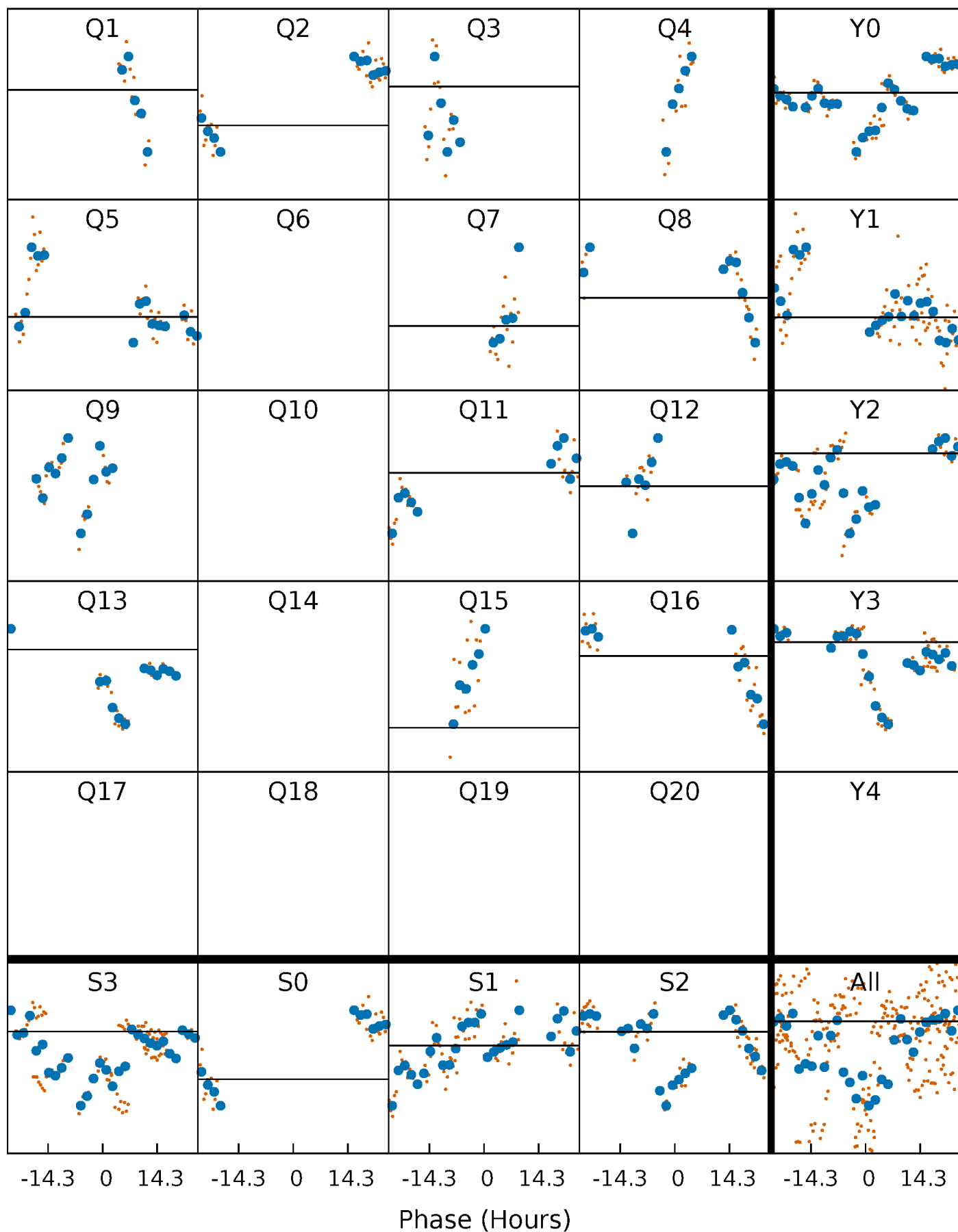
# PDC Quarter-Phased Transit Curves

TCE 005198315-02   P= 74.166477 Days    $T_0=146.638639$  (BKJD)



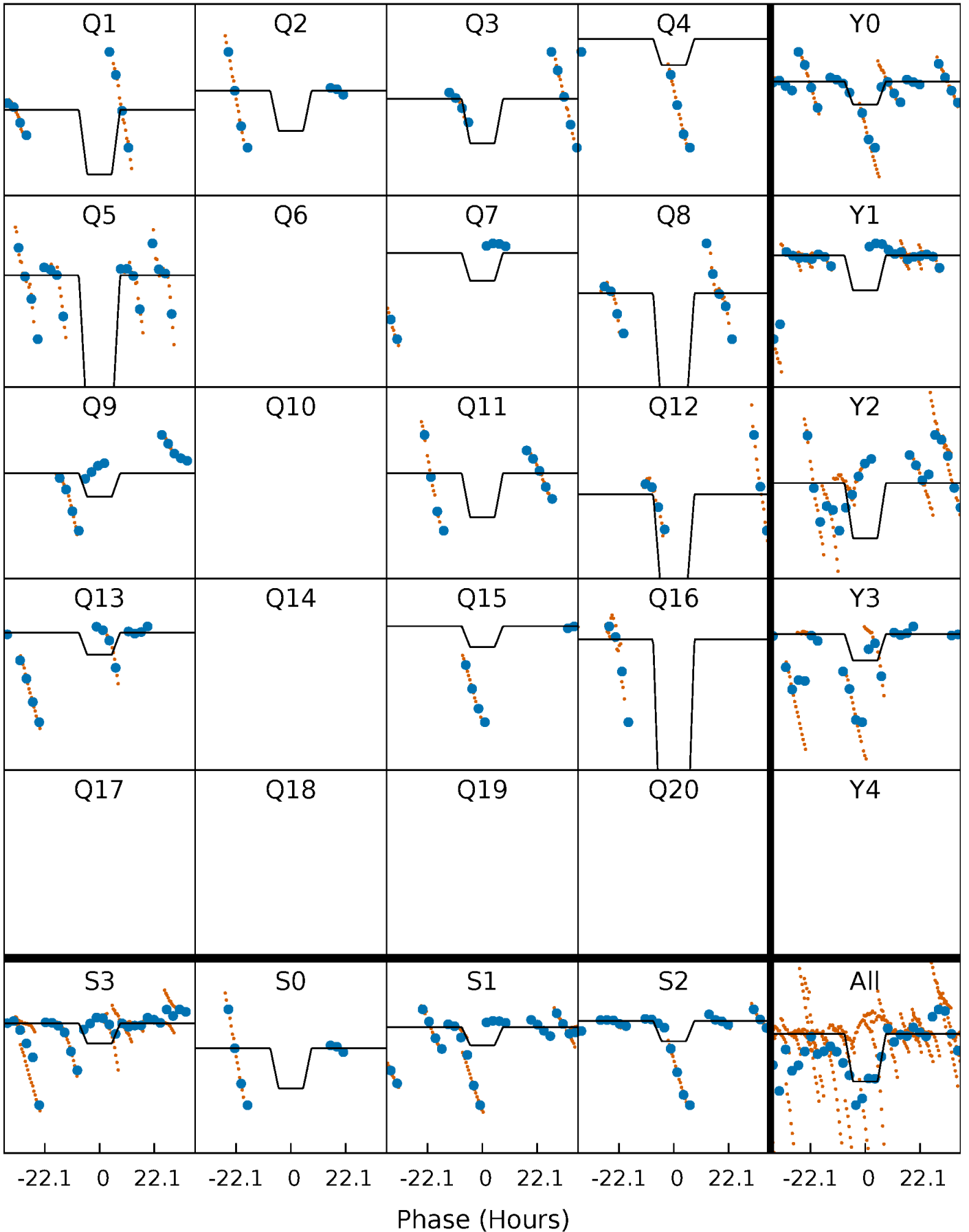
# DV Quarter-Phased Transit Curves

TCE 005198315-02 P= 74.166477 Days  $T_0=146.638639$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

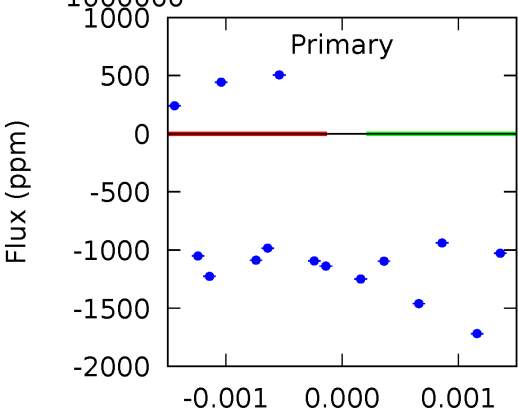
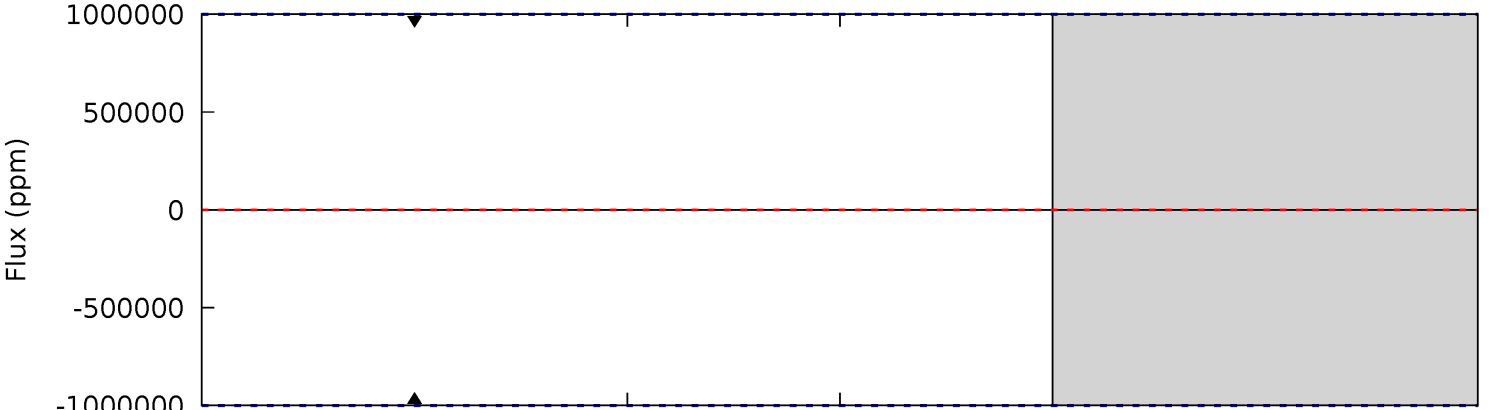
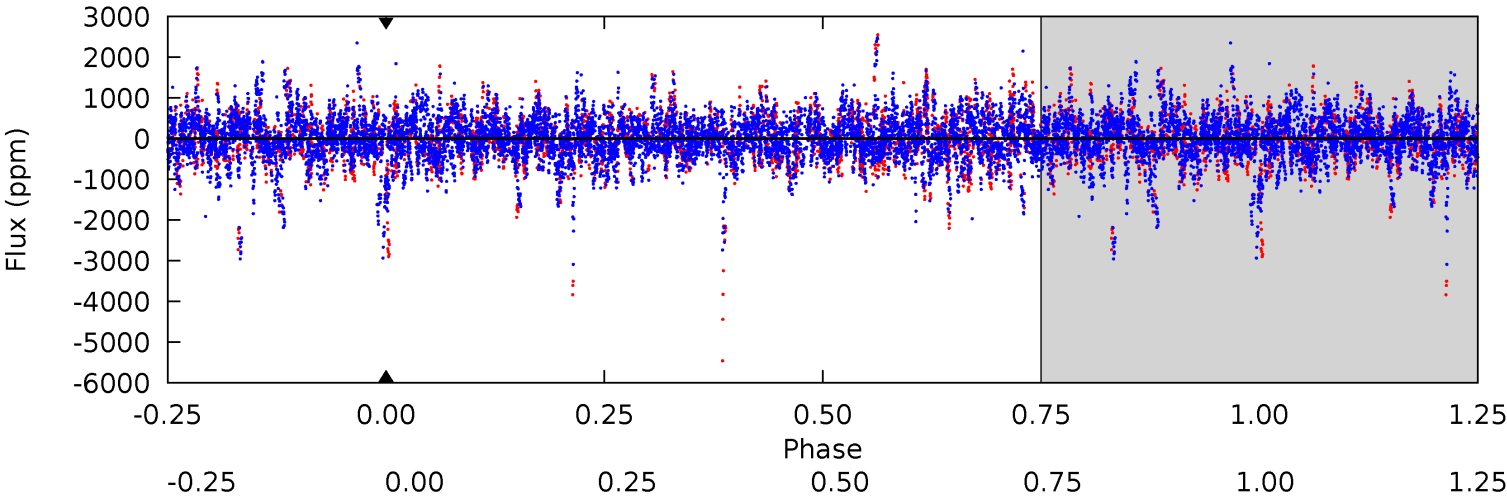
TCE 005198315-02   P= 74.166477 Days    $T_0=148.422670$  (BKJD)



# DV Model-Shift Uniqueness Test

005198315-02, P = 74.166477 Days, E = 72.472162 Days

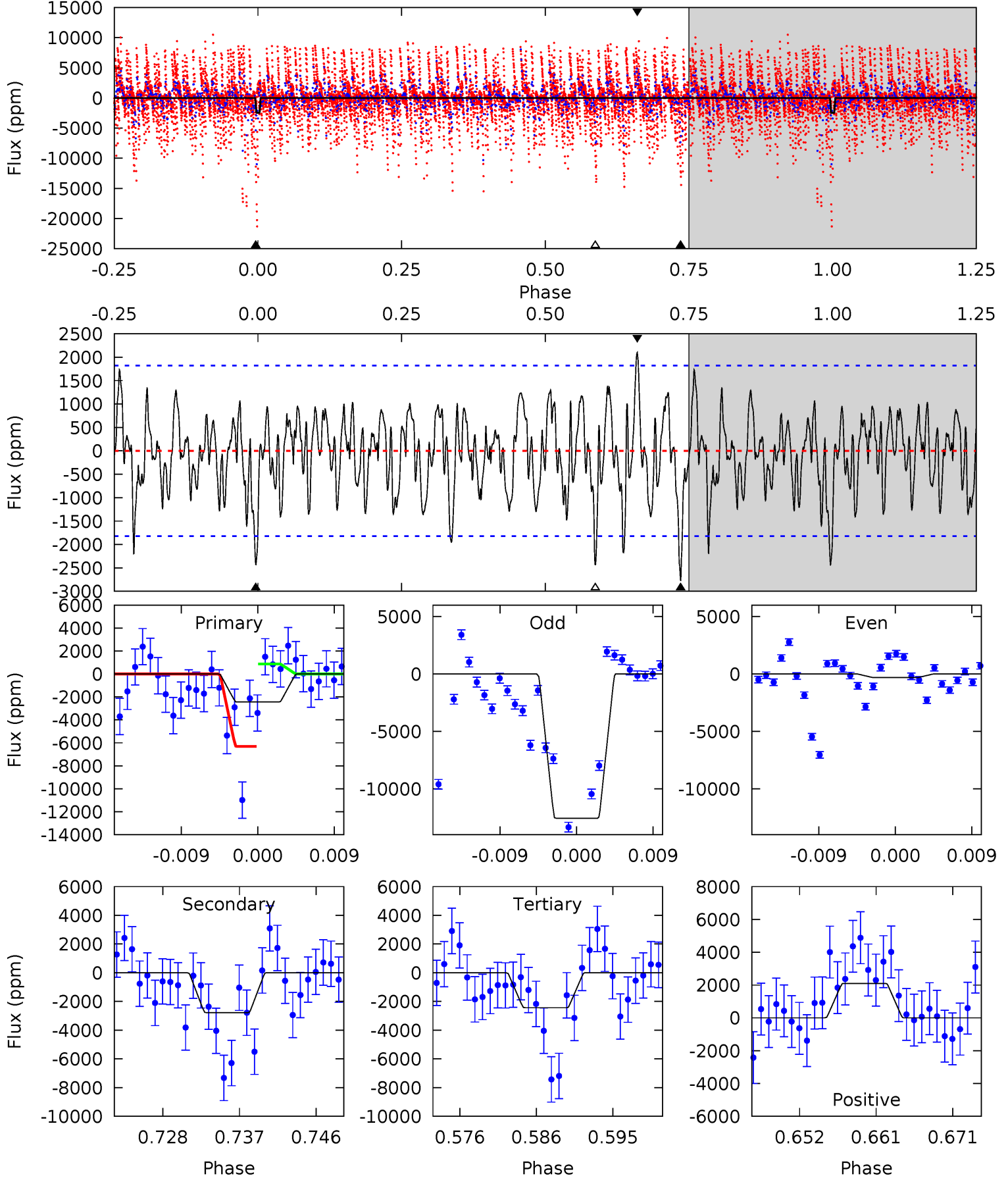
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



# Alt Model-Shift Uniqueness Test

005198315-02, P = 74.166477 Days, E = 74.256193 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
6.74	7.69	6.74	5.81	5.04	2.60	1.96	-0.01	0.93	0.94	1.88	15.4	2.66	0.43	0



### Stellar Parameters For KIC 005198315

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$8306^{+202}_{-347}$	$3.751^{+0.451}_{-0.106}$	$-0.220^{+0.250}_{-0.350}$	$3.121^{+0.652}_{-1.412}$	$2.001^{+0.343}_{-0.471}$	$0.093^{+0.378}_{-0.031}$
	+2%/-4%	+12%/-3%	+114%/-159%	+21%/-45%	+17%/-24%	+408%/-33%
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 005198315-02 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$0 \pm 1000000$	$23.06^{+26.73}_{-15.96}$	$1326^{+100}_{-159}$	$5429^{+48720}_{-44359}$	$180^{+39253}_{-27827}$
Alt.	$-2779 \pm 362$	$33.61^{+31.56}_{-21.76}$	$1325^{+94}_{-158}$	$5519^{+4153}_{-1227}$	$251^{+1778}_{-179}$

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

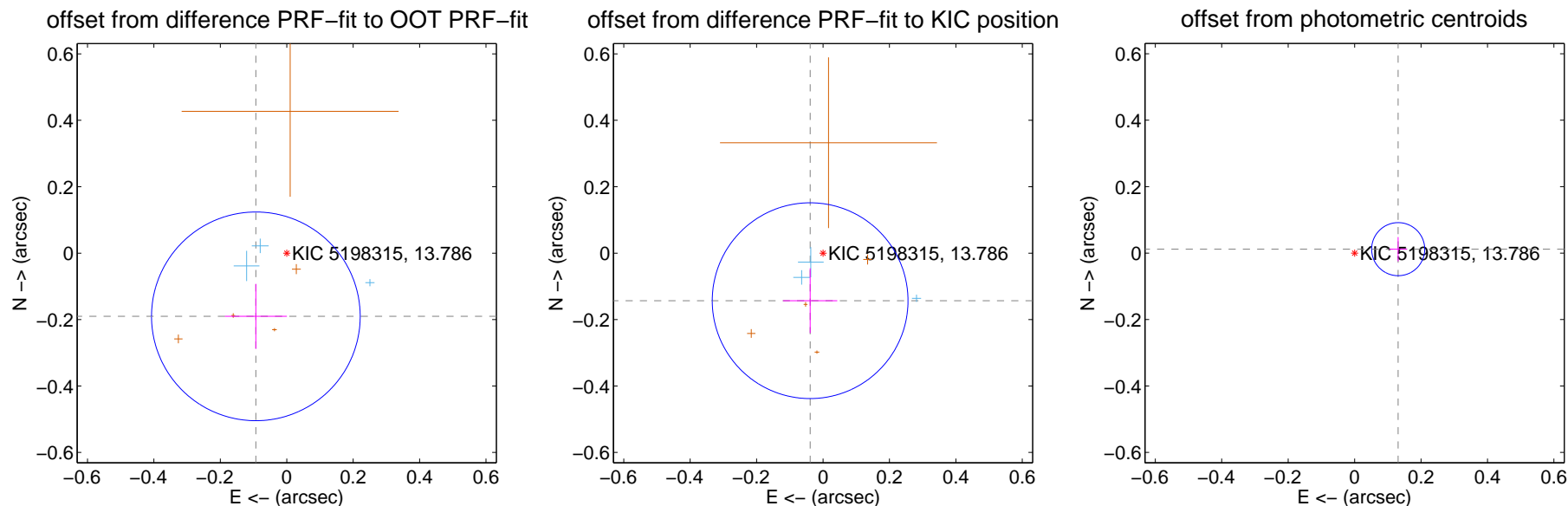
## DV Centroid Data

Supplemental centroid analysis for 005198315-02. Kepler magnitude: 13.79. Transit SNR -1.00

There are 3 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.09 arcsec

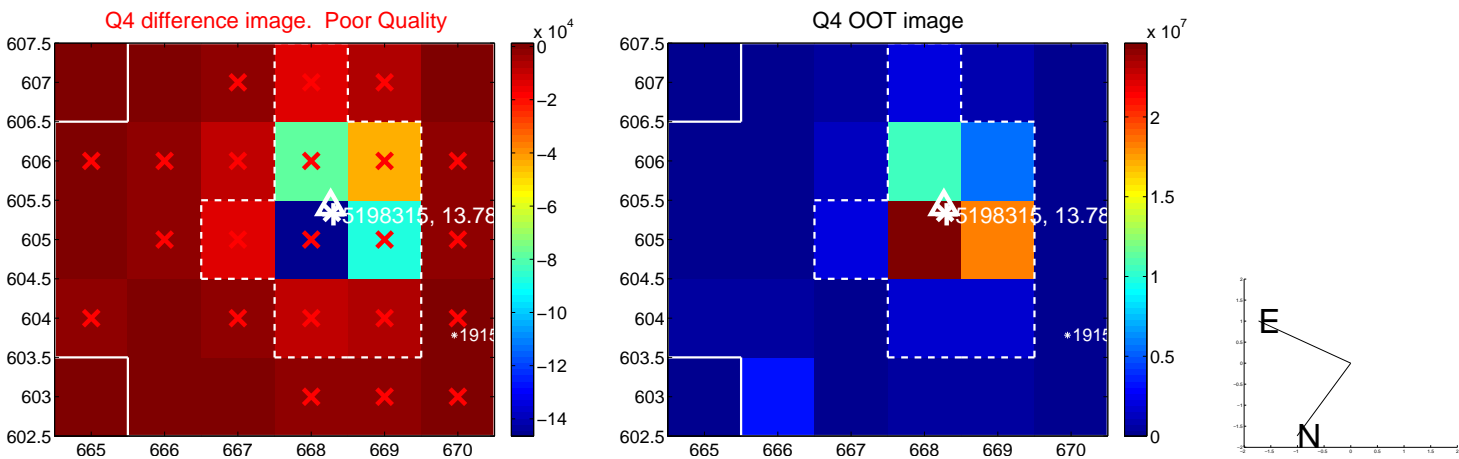
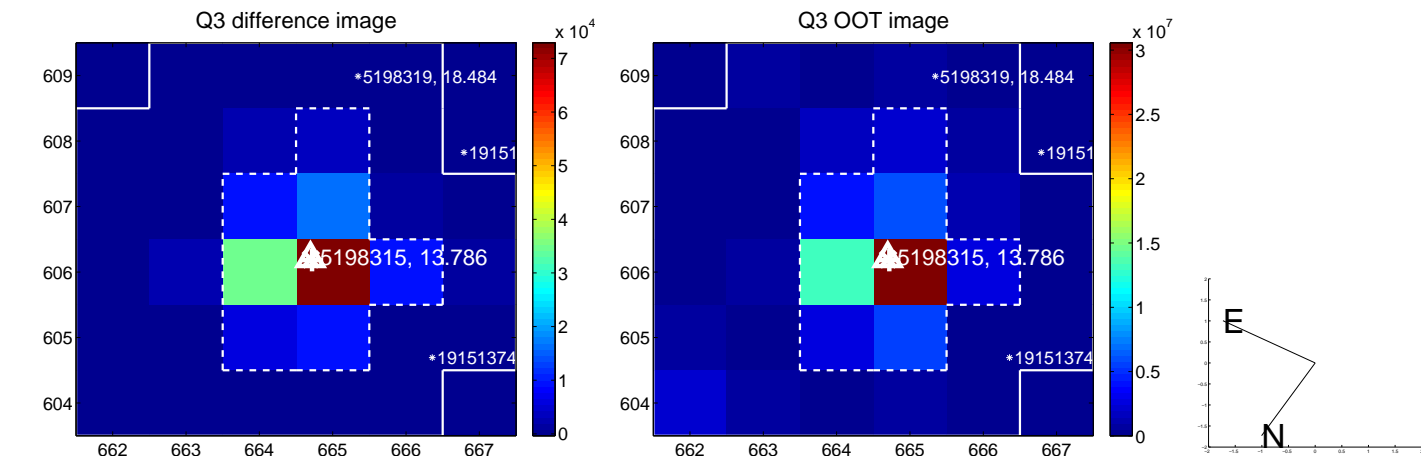
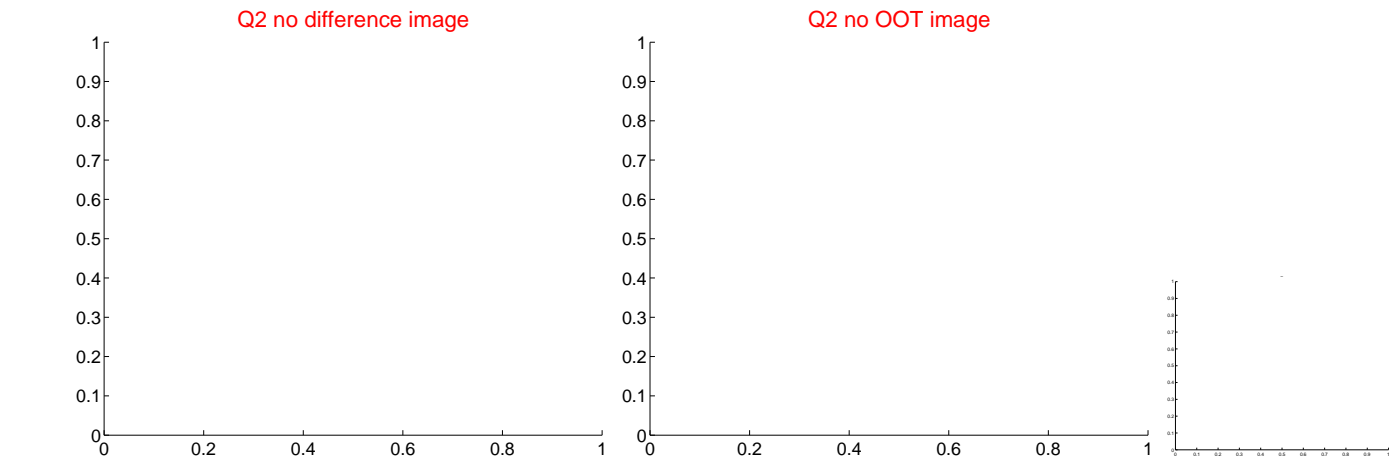
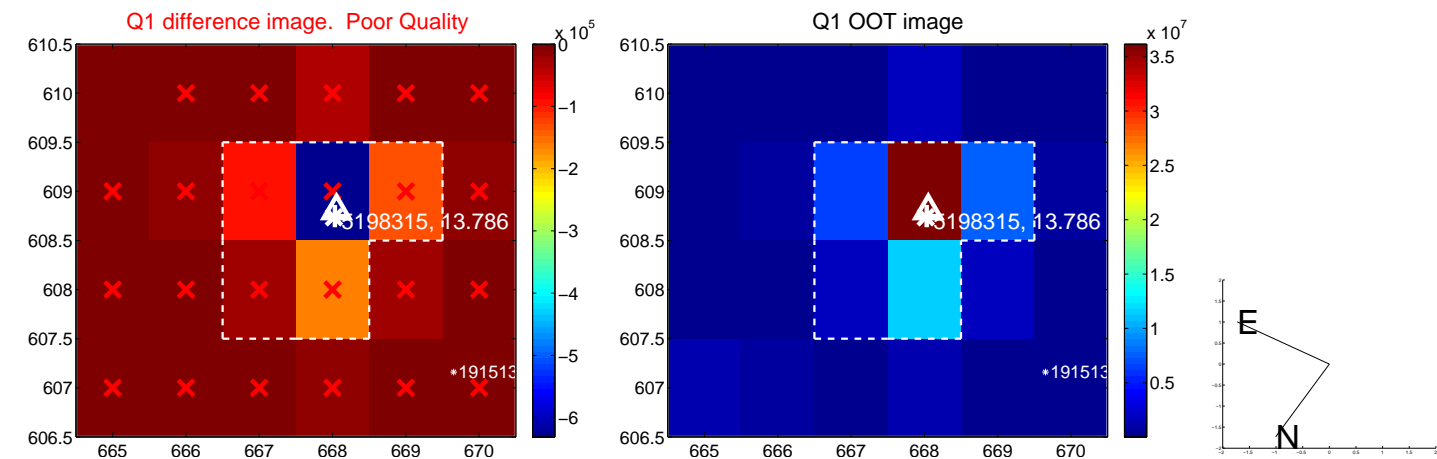
	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.212 \pm 0.105$	2.02	$0.093 \pm 0.093$	$-0.190 \pm 0.098$
PRF-fit source offset from KIC position	$0.148 \pm 0.098$	1.51	$0.039 \pm 0.082$	$-0.143 \pm 0.098$
photometric centroid source offset	$0.13 \pm 0.03$	4.94	$-0.13 \pm 0.03$	$0.01 \pm 0.04$



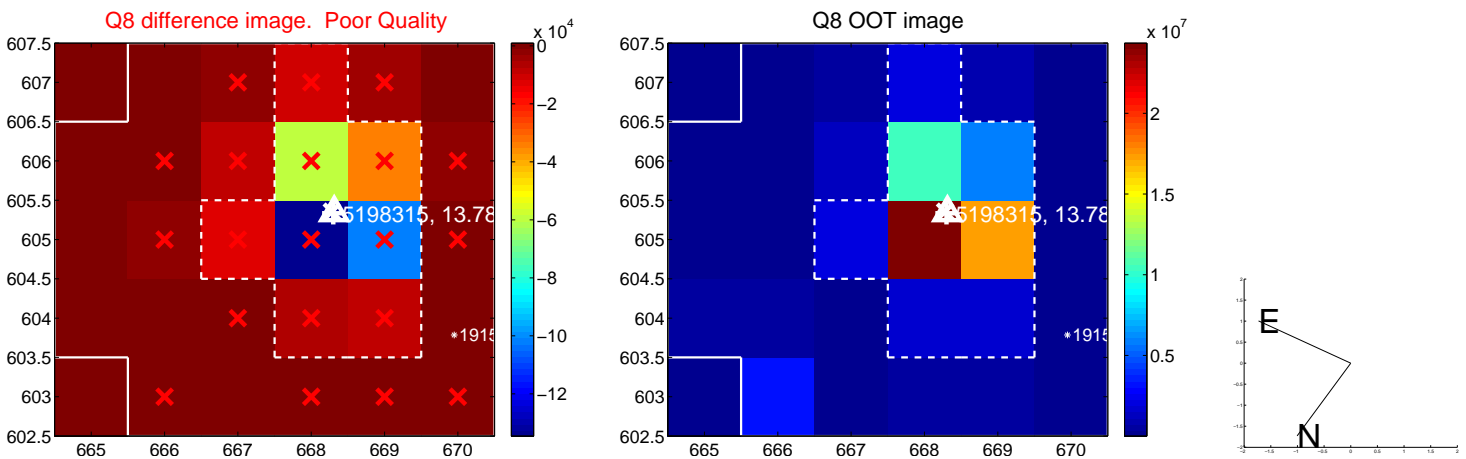
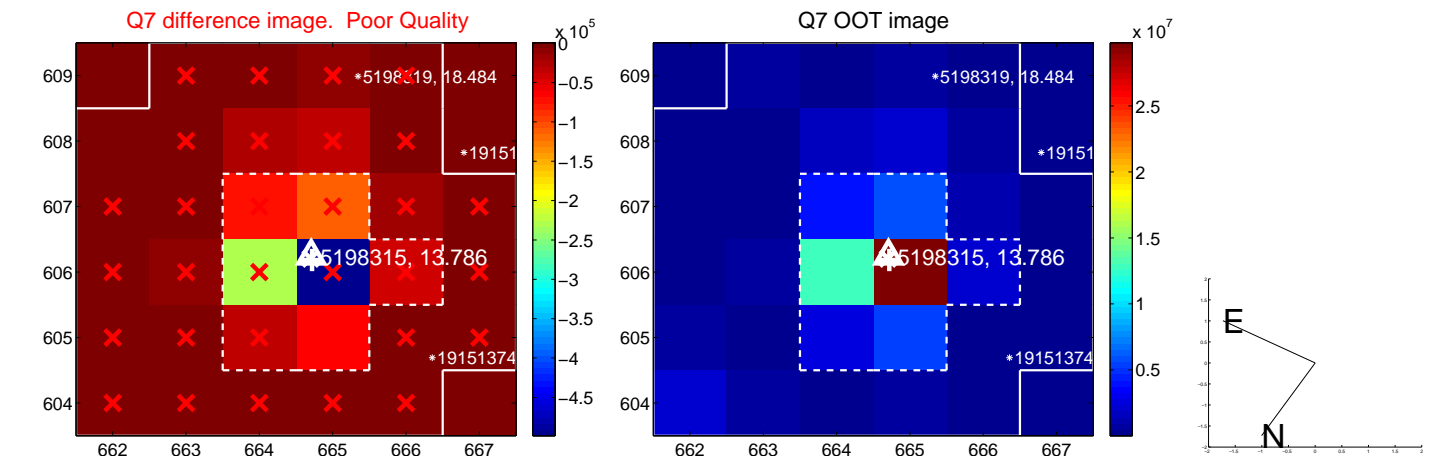
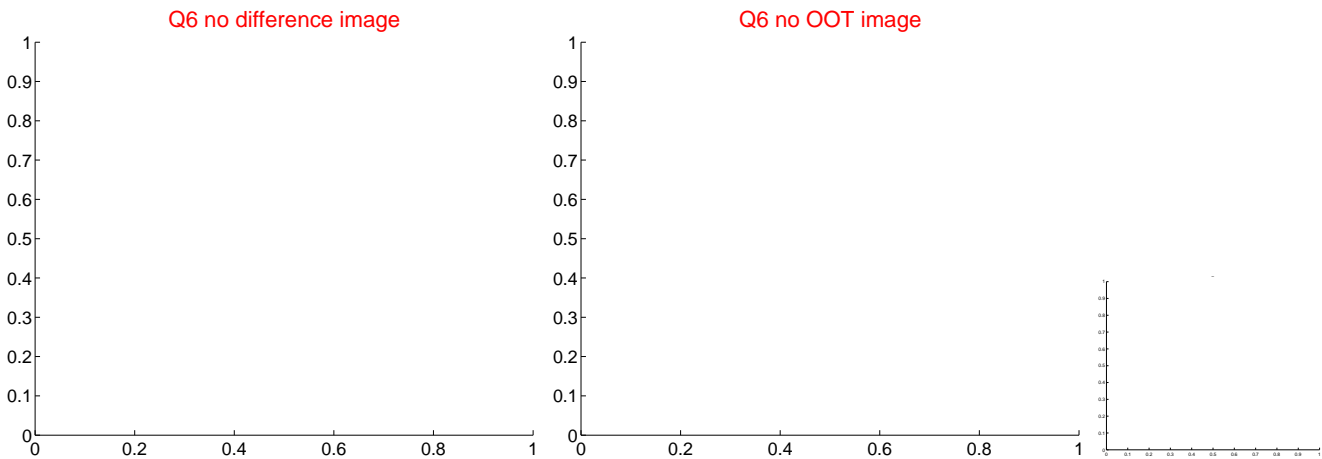
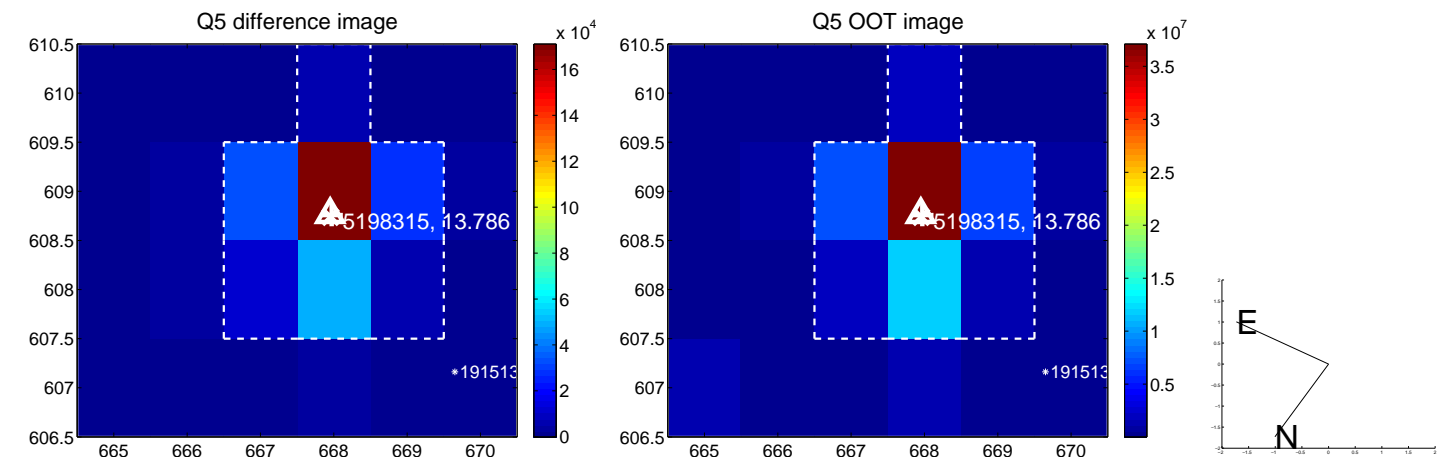
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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



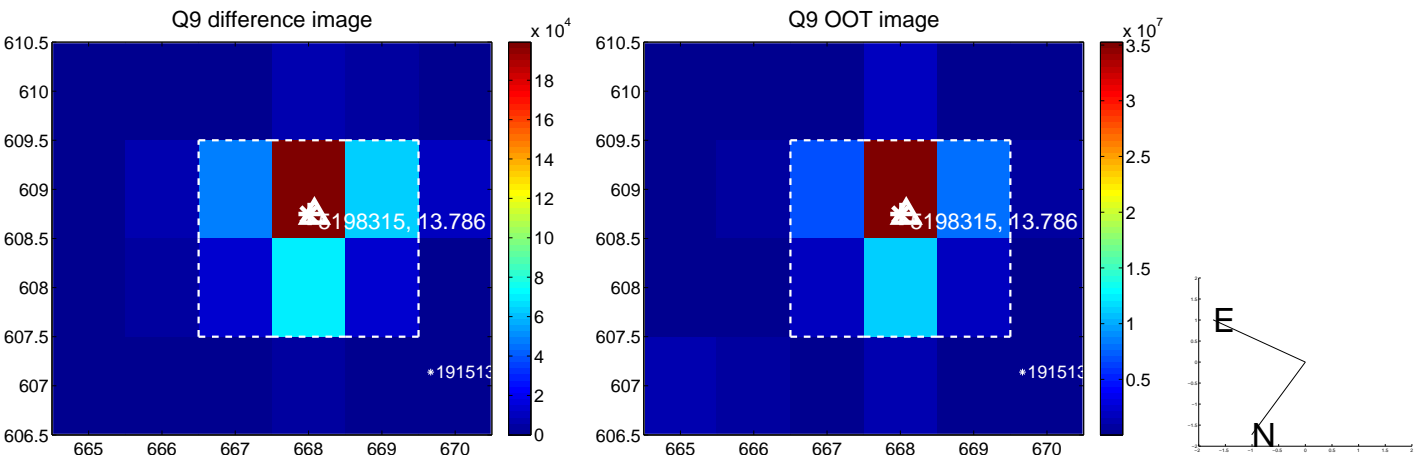
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



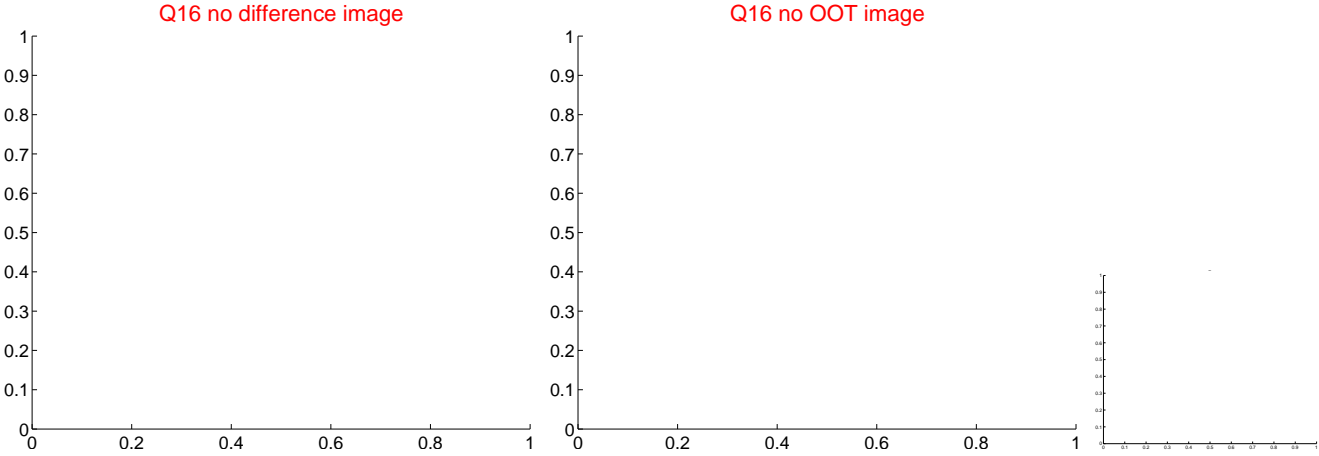
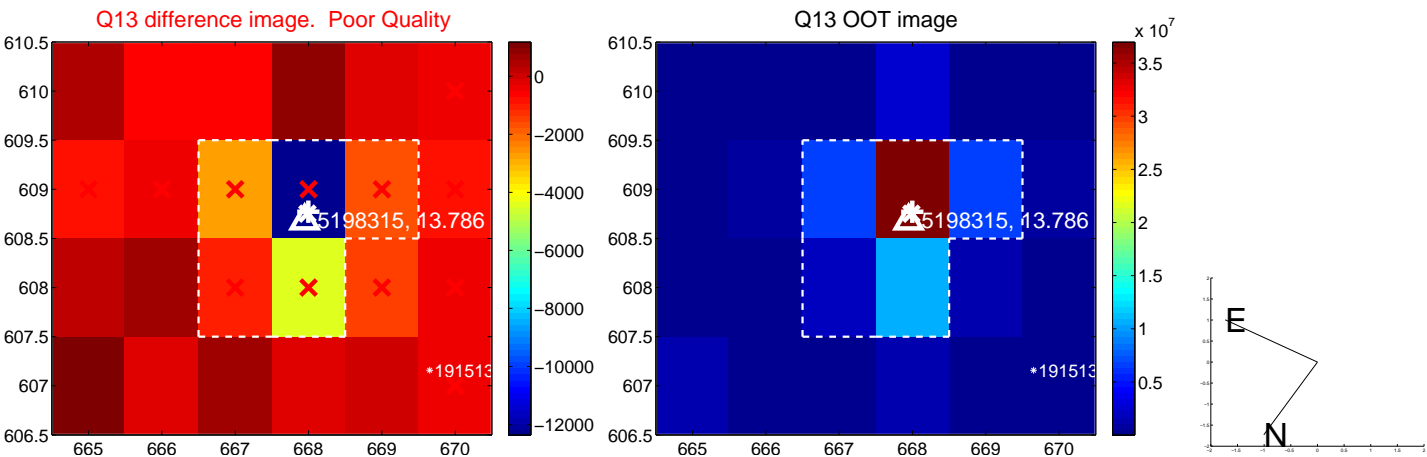
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



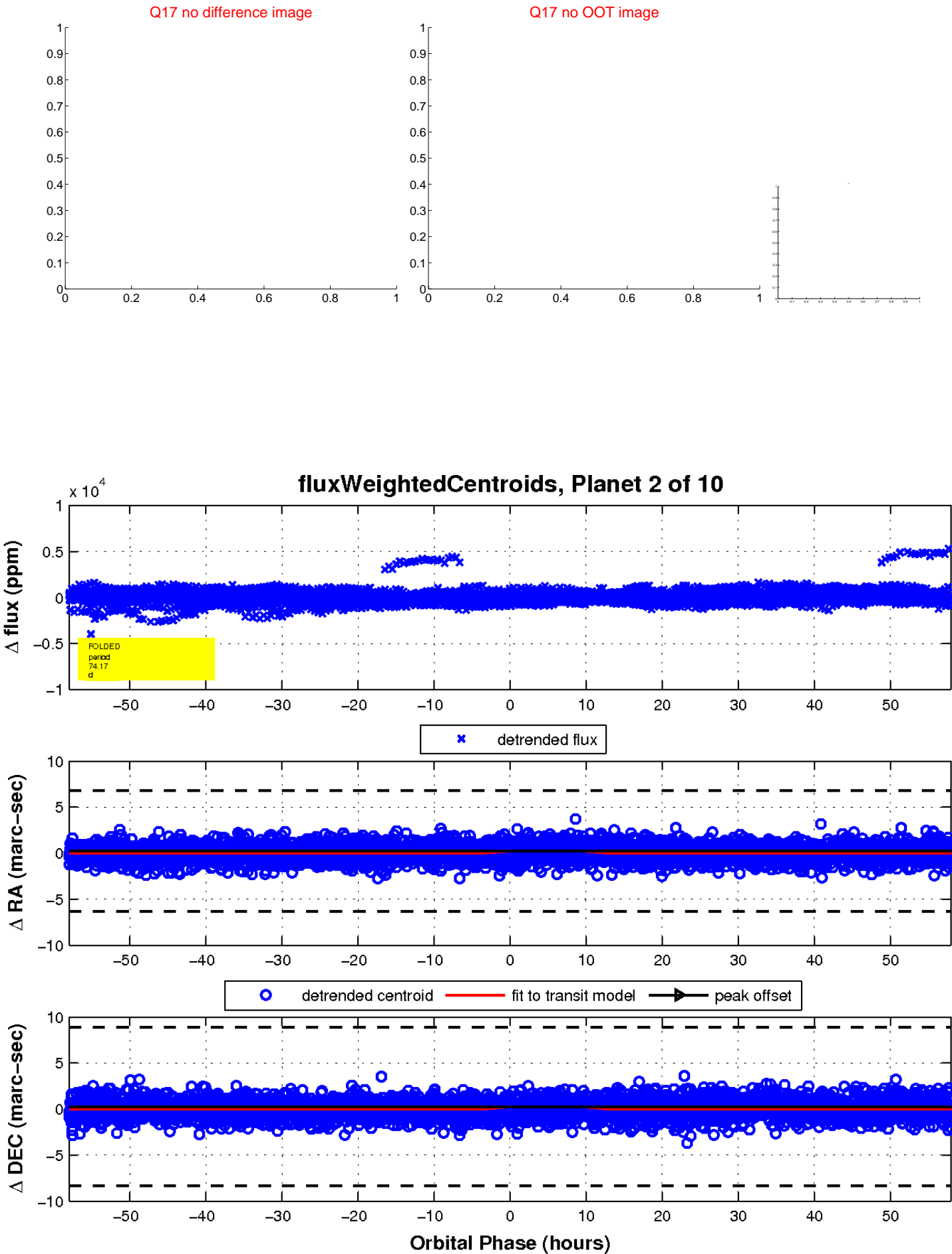
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

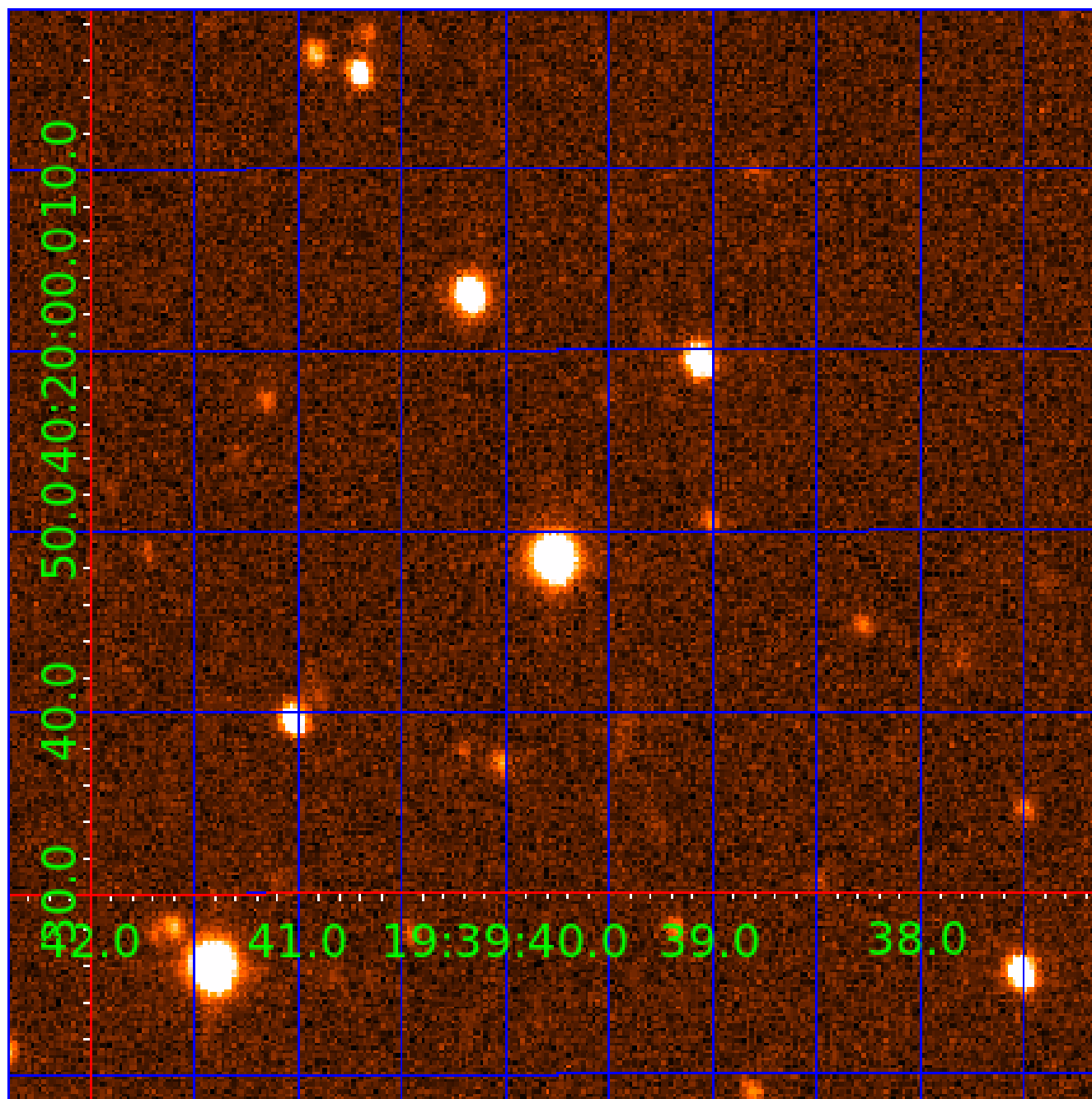


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination





# KIC 005198315

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005198315-01	OBS	No	1.821235	133.319401	142.6	11.552	8.7	12.0	3.12	8306	6.97	30678.67
005198315-02	OBS	No	74.166477	146.638639	674.2	12.500	19.4	-1.0	3.12	8306	8.20	218.97
005198315-03	OBS	No	73.398148	134.198409	915.1	12.184	13.6	11.0	3.12	8306	11.77	222.03
005198315-04	OBS	No	41.326624	159.088305	277.6	6.792	11.6	5.0	3.12	8306	6.78	477.55
005198315-05	OBS	No	192.913240	238.705450	372.9	10.500	11.6	-1.0	3.12	8306	6.10	61.21
005198315-06	OBS	No	39.374162	156.712384	345.6	7.500	10.4	-1.0	3.12	8306	5.87	509.38
005198315-07	OBS	No	132.319467	172.155165	1157.7	9.781	9.6	9.9	3.12	8306	15.73	101.19
005198315-09	OBS	No	39.508476	166.624208	322.1	11.722	8.5	6.4	3.12	8306	6.01	507.07
005198315-10	OBS	No	55.763625	156.268411	1097.2	3.217	8.4	12.1	3.12	8306	19.19	320.27

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005198315-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—MOD_NONUNIQ_DV
005198315-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_NOFITS
005198315-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
005198315-04	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—HALO_GHOST
005198315-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_NOFITS
005198315-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_NOFITS
005198315-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT
005198315-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
005198315-10	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT

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

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

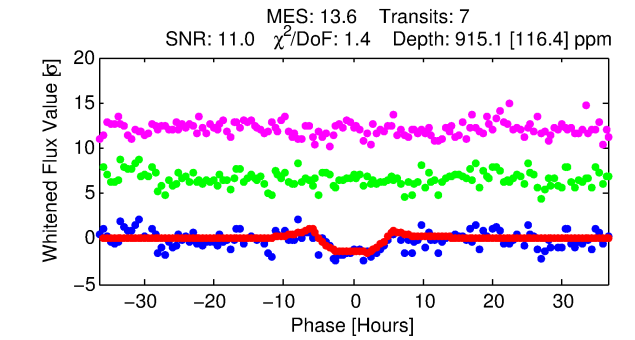
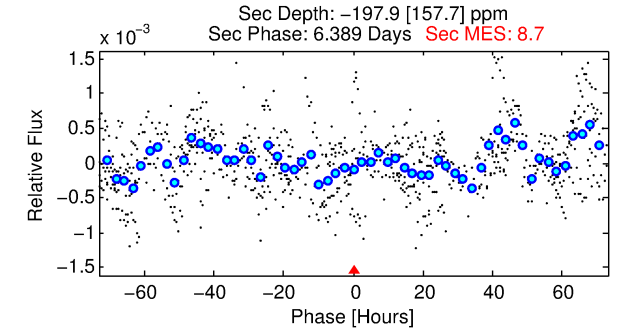
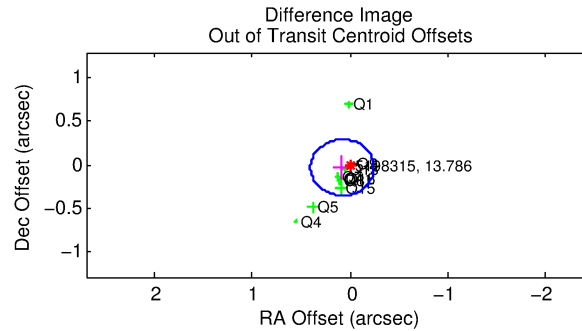
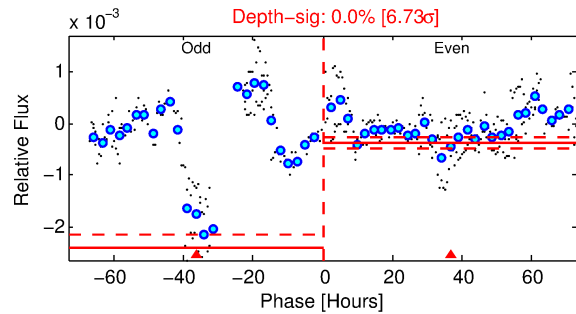
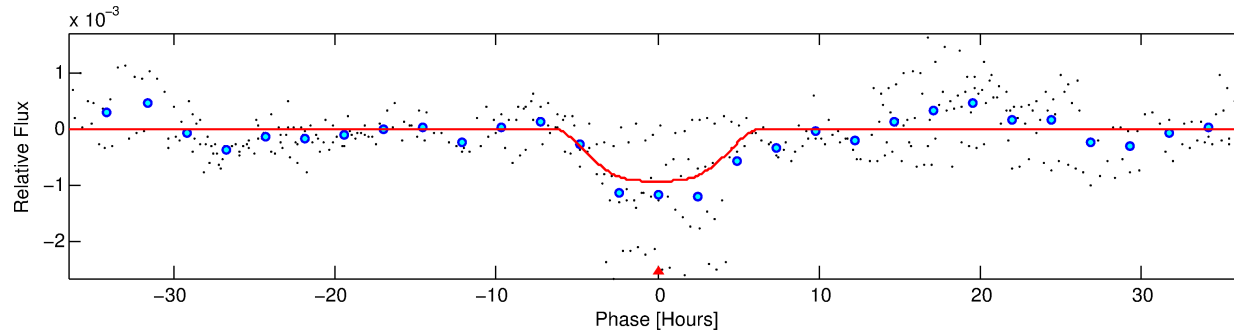
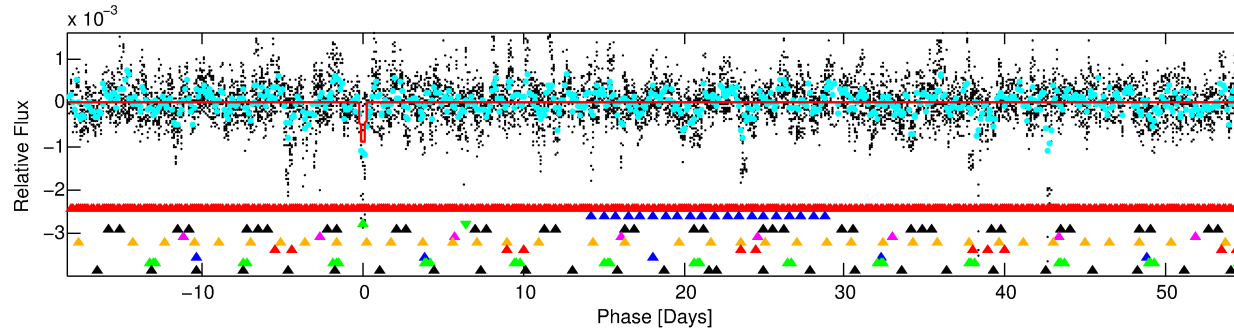
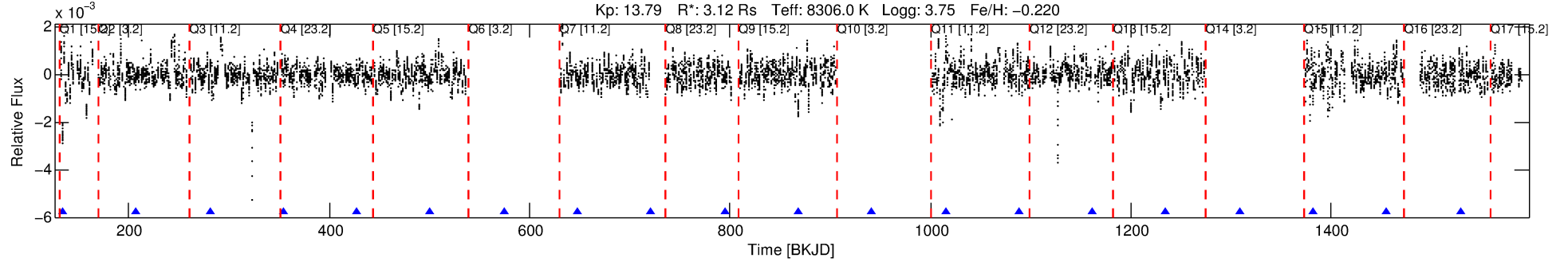
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 005198315-03

No Significant Match Found

# DV One-Page Summary

KIC: 5198315 Candidate: 3 of 10 Period: 73.398 d



## DV Fit Results:

Period = 73.39815 [0.00209] d  
Epoch = 134.1984 [0.0192] BKJD  
Rp/R\* = 0.0345 [0.0024]  
a/R\* = 17.80 [1.79]  
b = 0.96 [0.01]  
Seff = 222.03 [171.72]  
Teff = 984 [190] K  
Rp = 11.77 [5.39] Re  
a = 0.4325 [0.1986] AU  
Ag = N/A  
Teffp = N/A

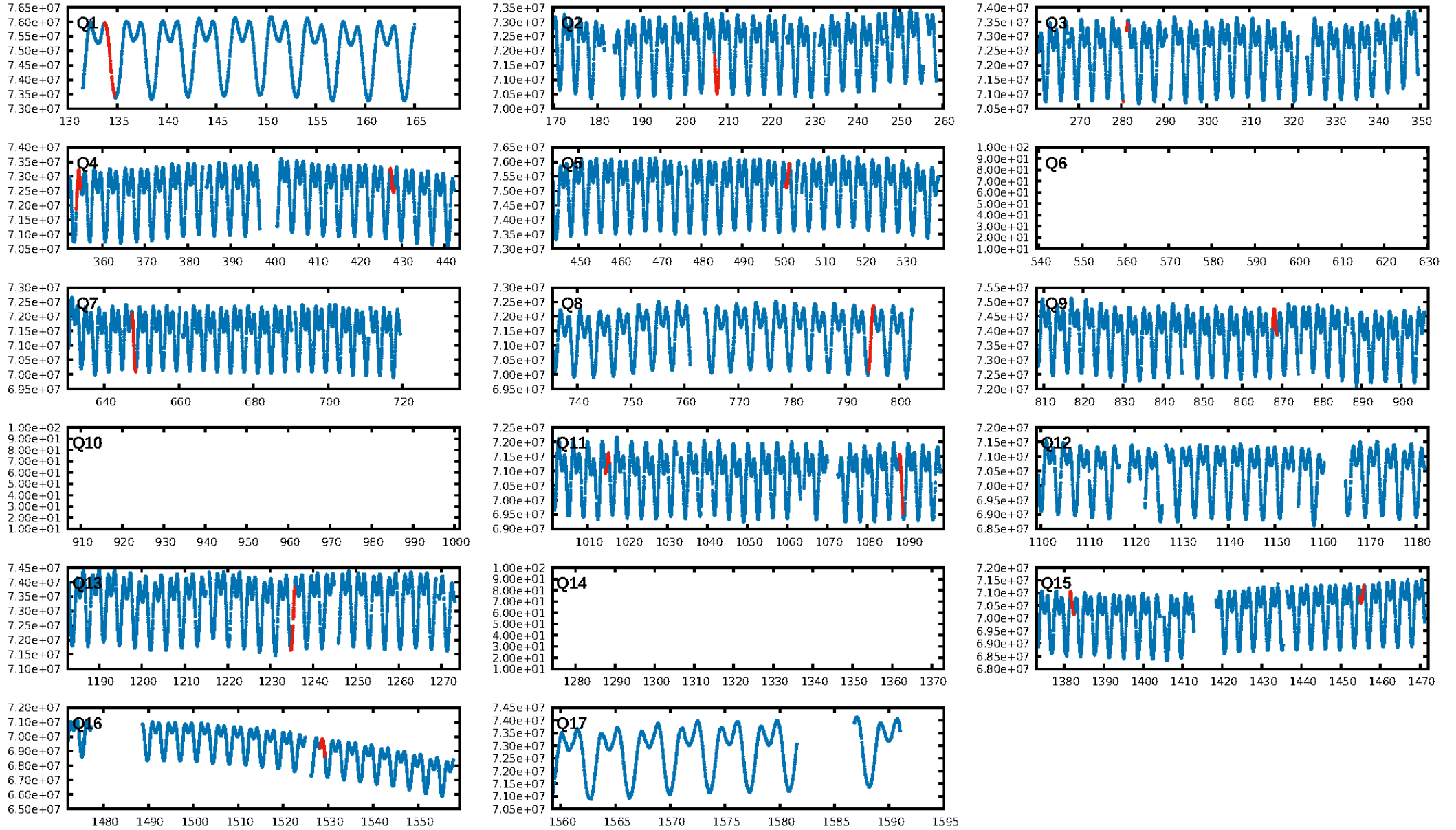
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [33.58 $\sigma$ ]  
LongPeriod-sig: 70.9% [1.06 $\sigma$ ]  
ModelChiSquare2-sig: 0.0%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [6/6]  
GhostDiagnostic-chr: 9.116  
Centroid-sig: 6.8%  
Centroid-so: 0.277 arcsec [1.20 $\sigma$ ]  
OotOffset-rm: 0.090 arcsec [0.83 $\sigma$ ]  
KicOffset-rm: 0.094 arcsec [0.76 $\sigma$ ]  
OotOffset-st: 1/3/3/4 [11]  
KicOffset-st: 1/3/3/4 [11]  
DiffImageQuality-fgm: 0.45 [5/11]  
DiffImageOverlap-fno: 0.00 [0/11]

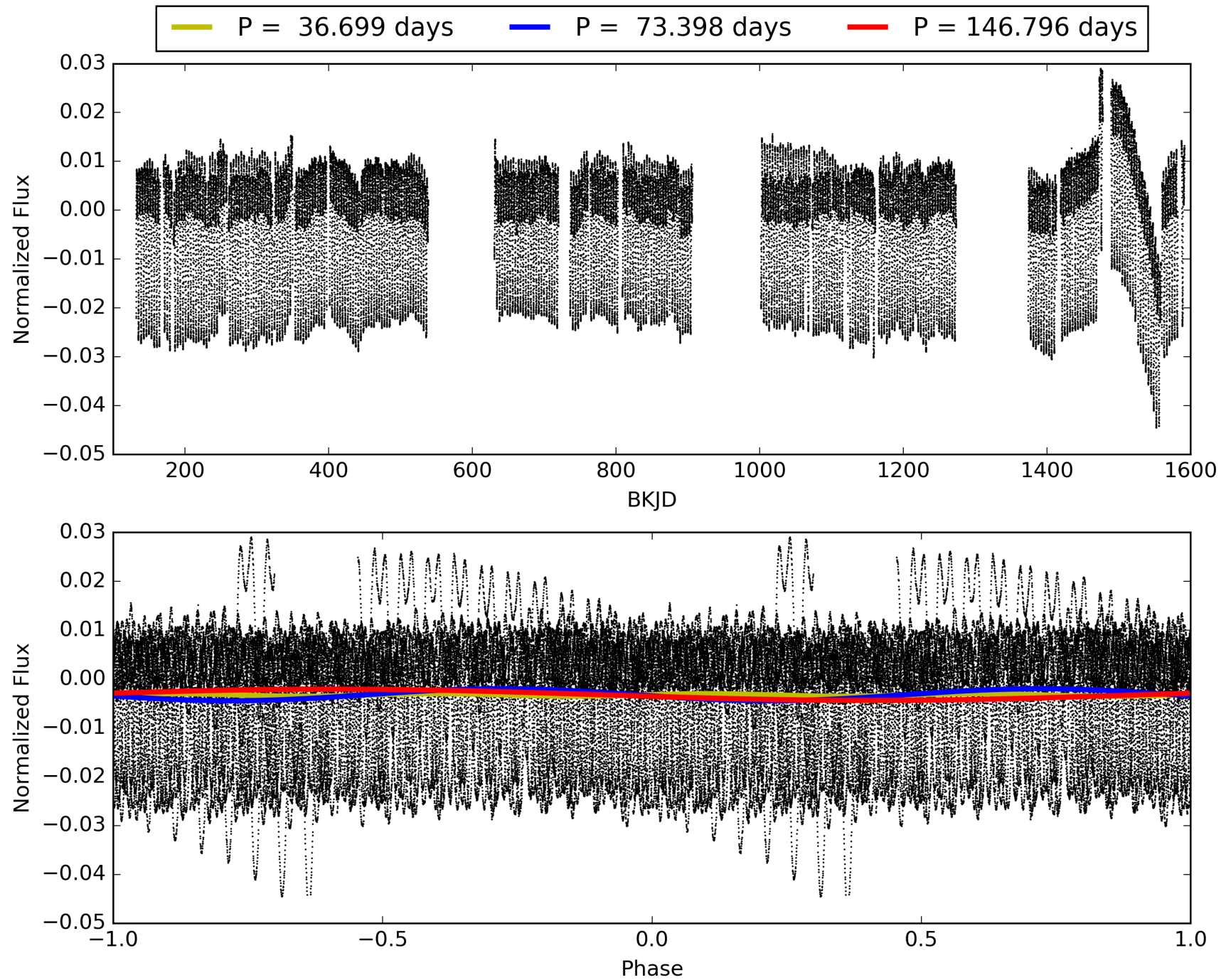
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 01:20:52 Z

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

# TCE 005198315-03, PDC Light Curves

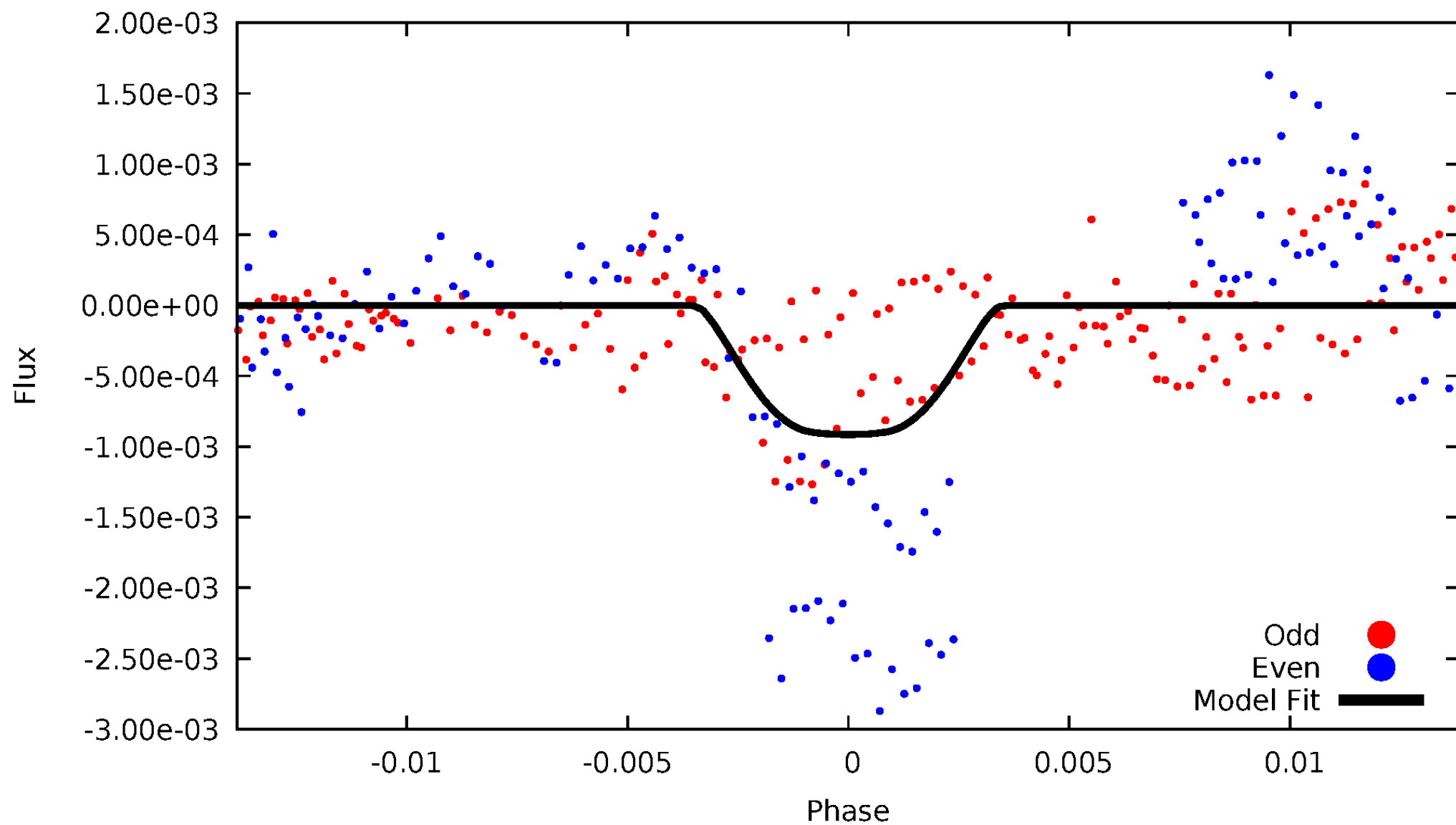


# TCE 005198315-03



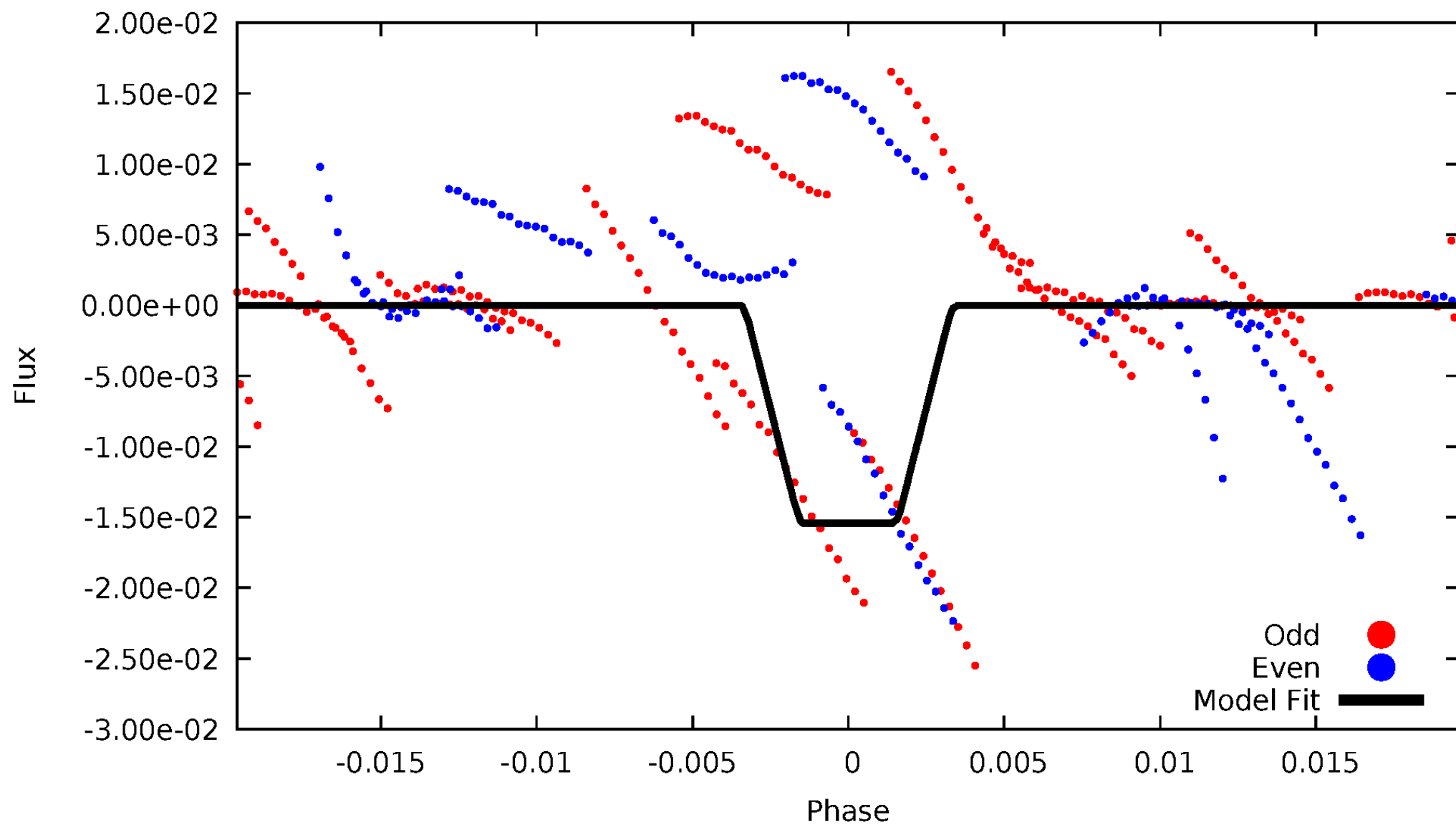
# DV Odd/Even

TCE 005198315-03



# ALT Odd/Even

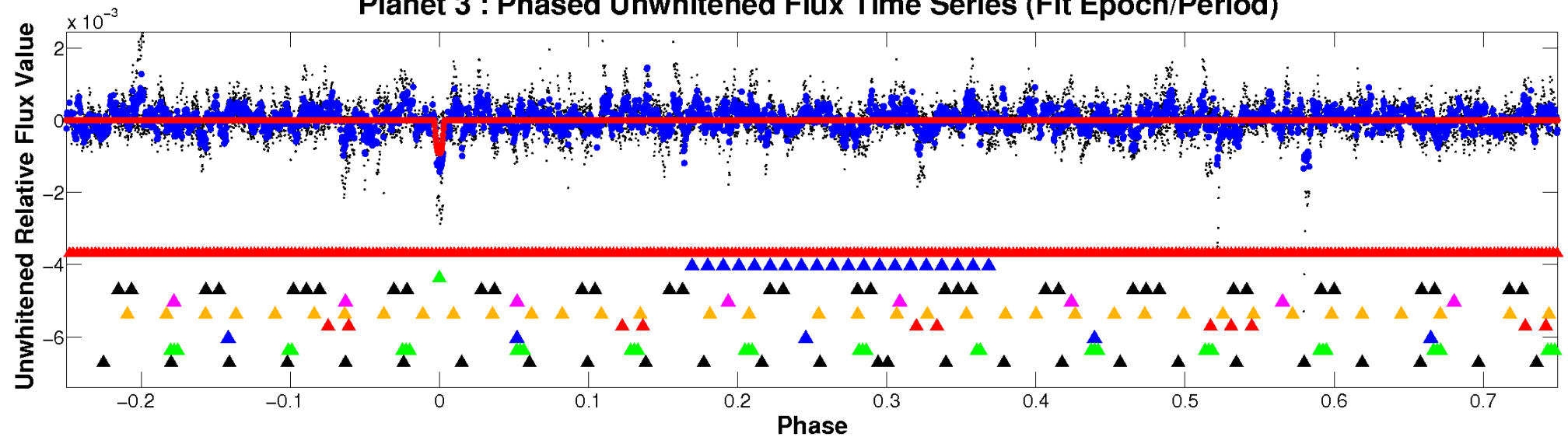
TCE 005198315-03



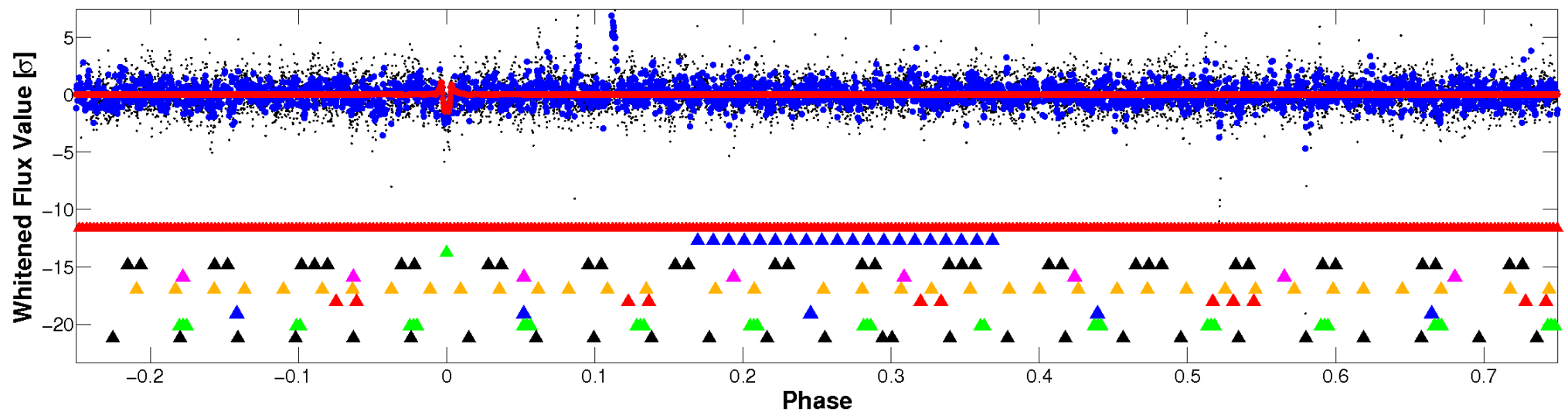


# Non-Whitened Vs. Whitened Light Curve

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

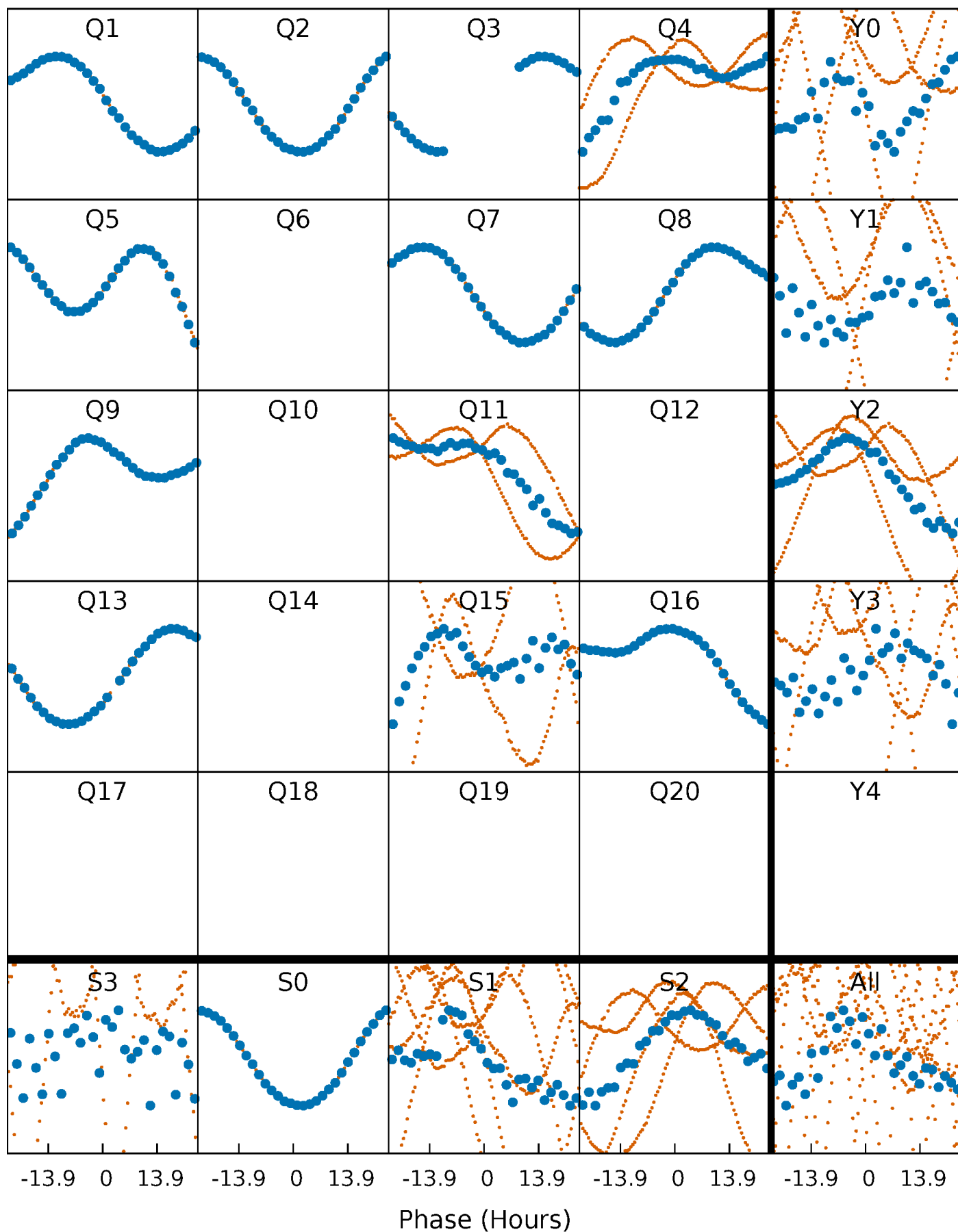


## Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



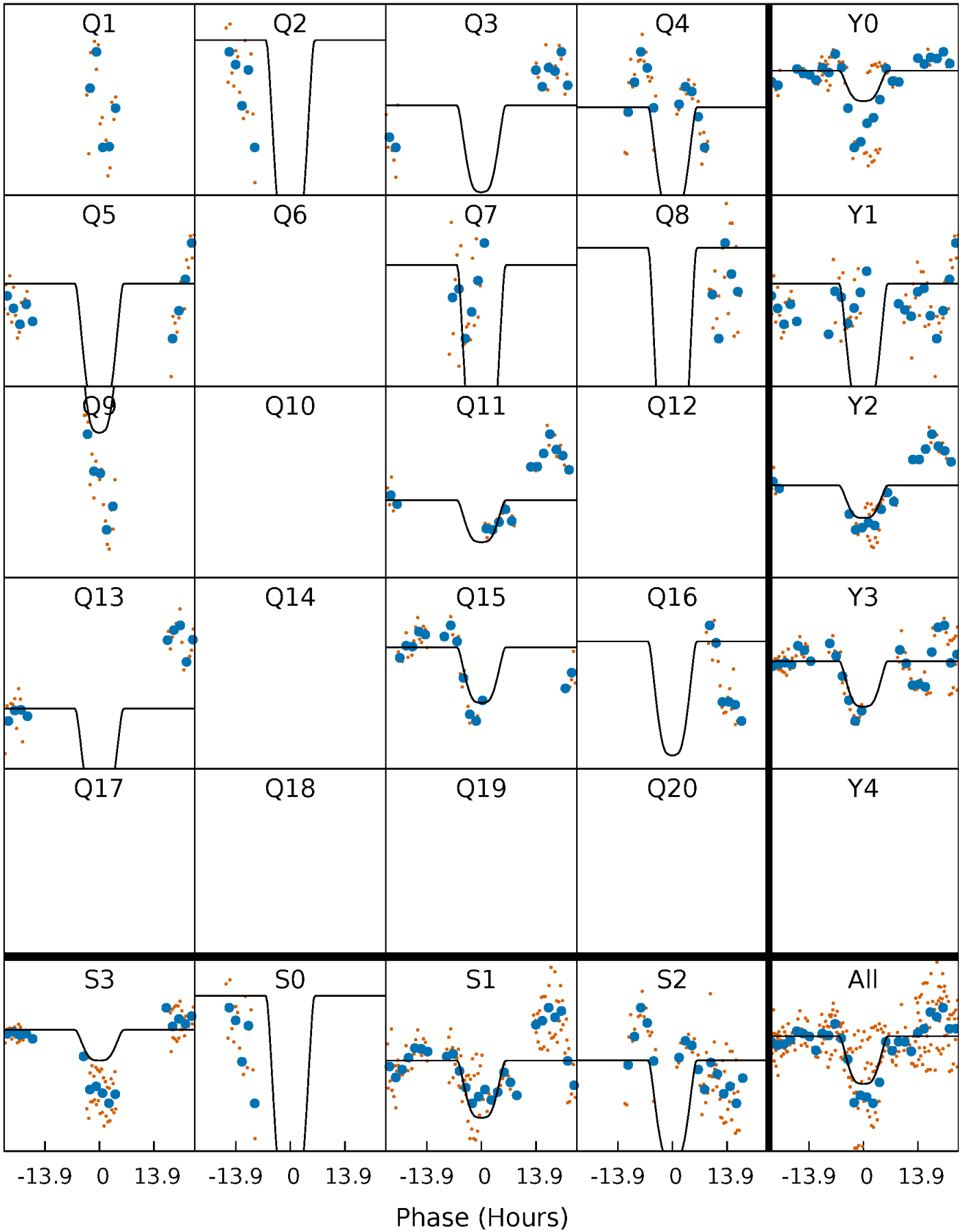
# PDC Quarter-Phased Transit Curves

TCE 005198315-03 P= 73.398148 Days  $T_0=134.198409$  (BKJD)



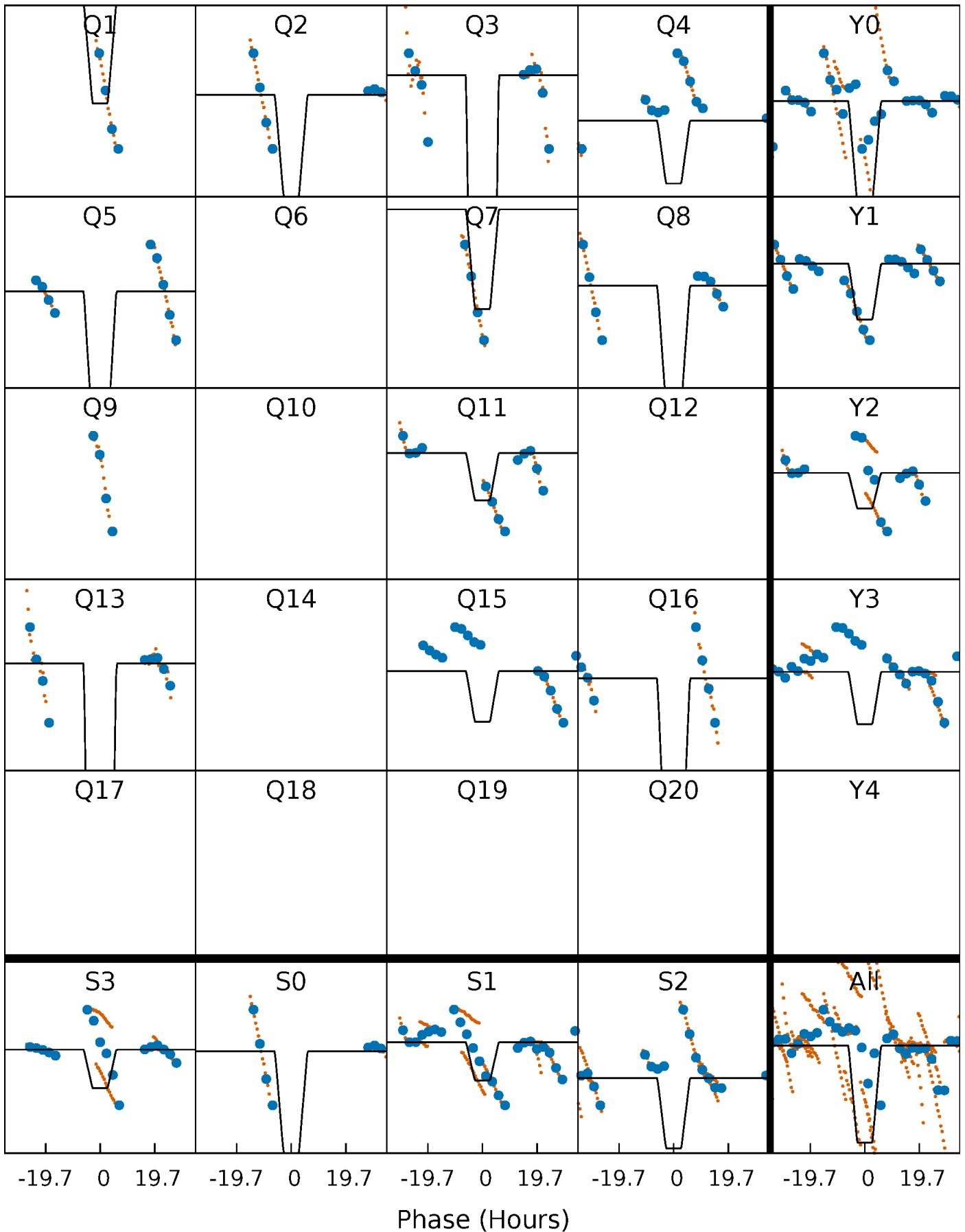
# DV Quarter-Phased Transit Curves

TCE 005198315-03   P= 73.398148 Days    $T_0=134.198409$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

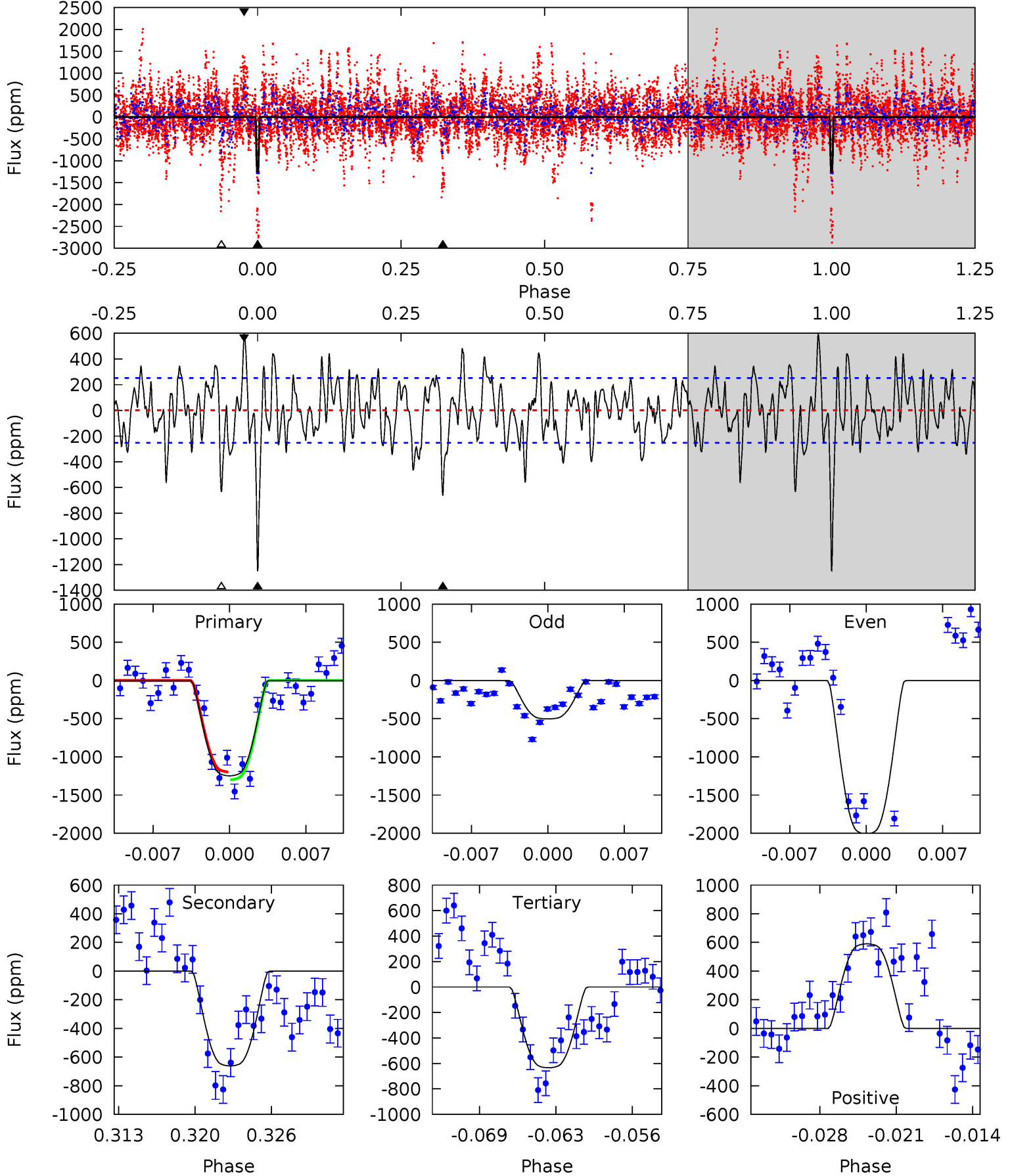
TCE 005198315-03   P= 73.404251 Days    $T_0=134.126725$  (BKJD)



# DV Model-Shift Uniqueness Test

005198315-03, P = 73.398148 Days, E = 60.800261 Days

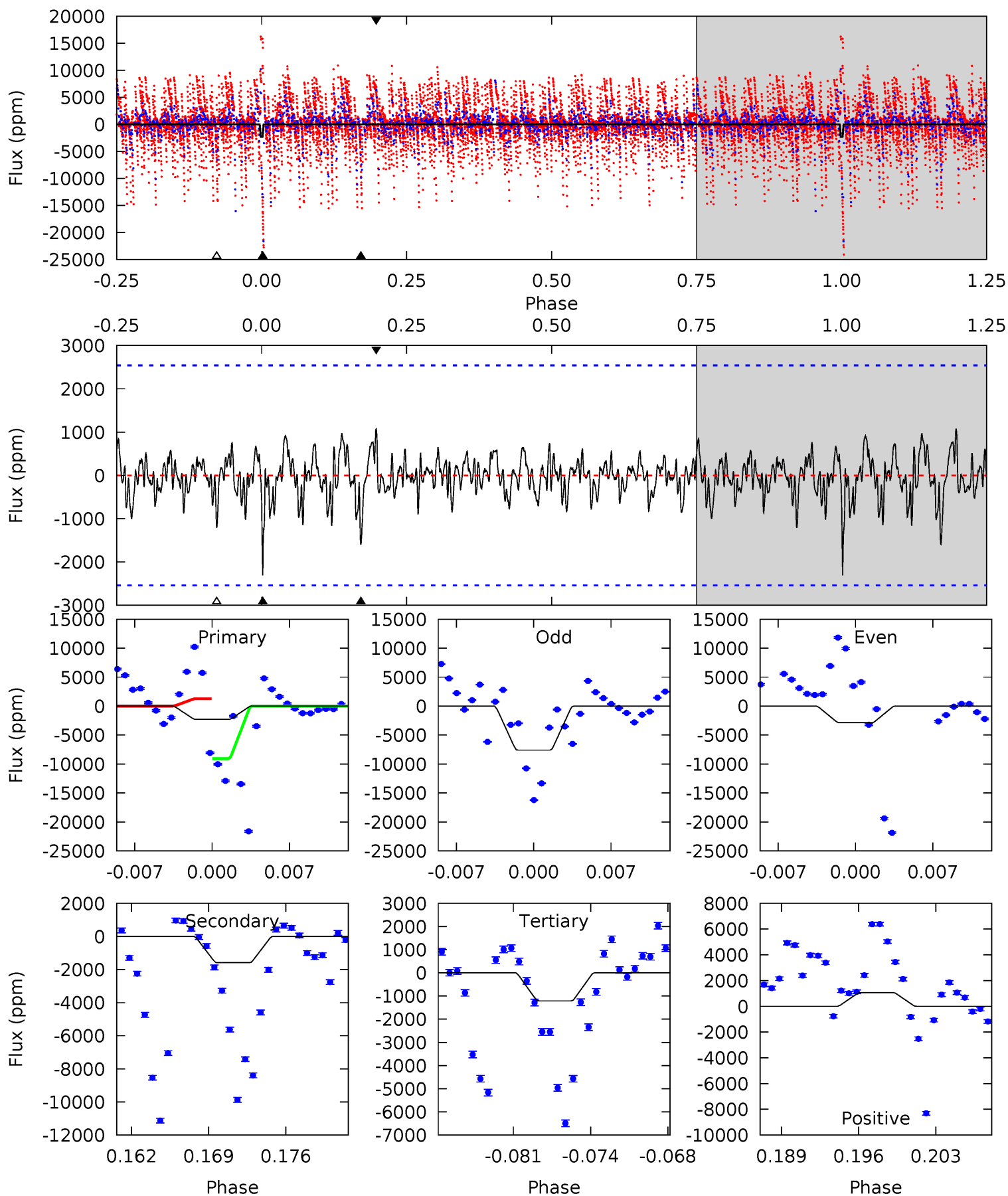
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
25.2	13.4	12.8	11.9	5.10	2.70	4.00	12.4	13.3	0.56	1.44	14.9	1.20	0.32	1.03



# Alt Model-Shift Uniqueness Test

005198315-03, P = 73.404251 Days, E = 60.722474 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
4.63	3.19	2.43	2.14	5.10	2.71	0.73	2.20	2.49	0.76	1.05	5.08	0.11	0.32	7.42



### Stellar Parameters For KIC 005198315

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$8306^{+202}_{-347}$	$3.751^{+0.451}_{-0.106}$	$-0.220^{+0.250}_{-0.350}$	$3.121^{+0.652}_{-1.412}$	$2.001^{+0.343}_{-0.471}$	$0.093^{+0.378}_{-0.031}$
	+2%/-4%	+12%/-3%	+114%/-159%	+21%/-45%	+17%/-24%	+408%/-33%
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 005198315-03 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-662 \pm 49$	$11.20^{+1.96}_{-2.74}$	$1333^{+99}_{-162}$	$6950^{+382}_{-388}$	$557^{+360}_{-155}$
Alt.	$-1588 \pm 498$	$39.87^{+6.48}_{-9.63}$	$1320^{+107}_{-161}$	$4643^{+315}_{-338}$	$102^{+77}_{-36}$

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

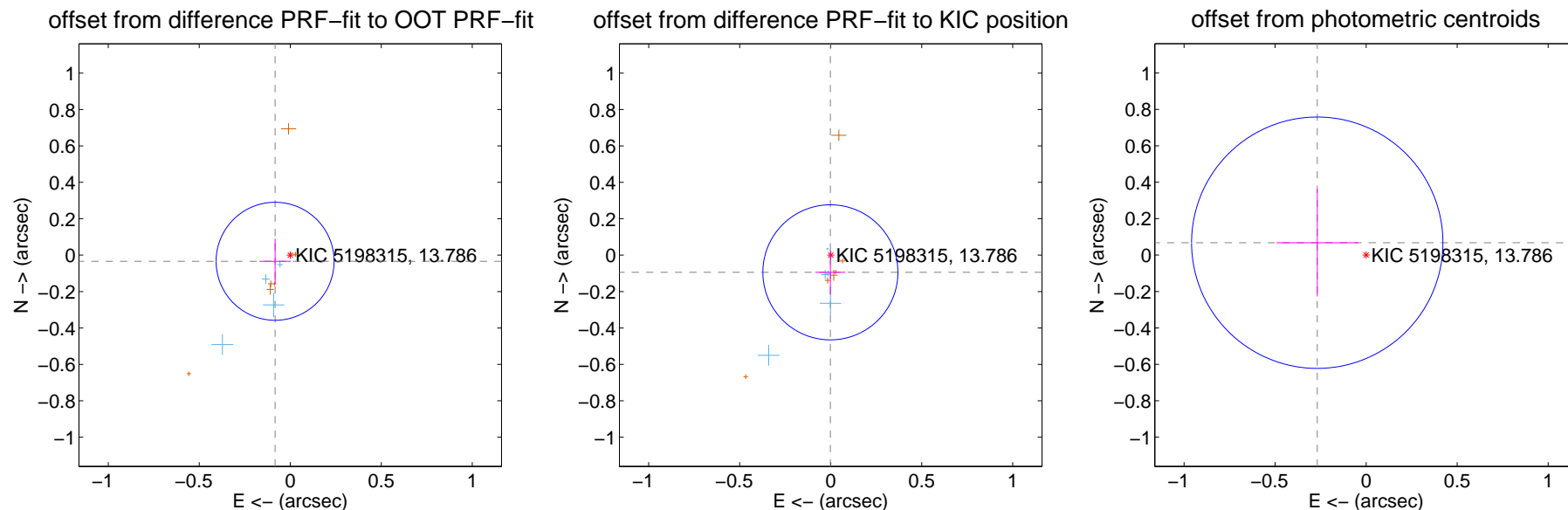
## DV Centroid Data

Supplemental centroid analysis for 005198315-03. Kepler magnitude: 13.79. Transit SNR 10.95

There are 5 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.13 arcsec

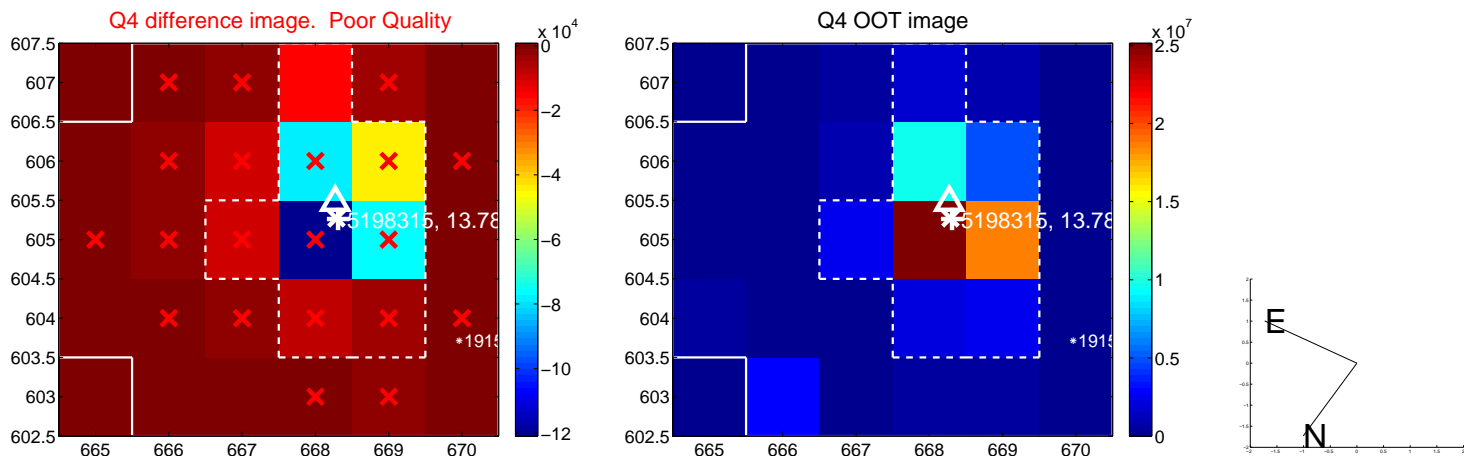
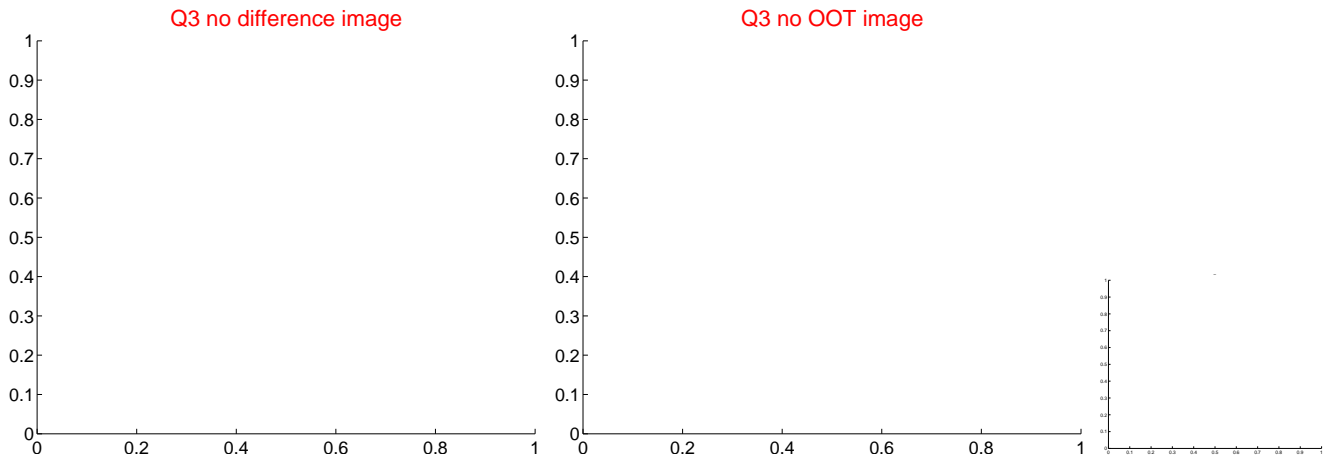
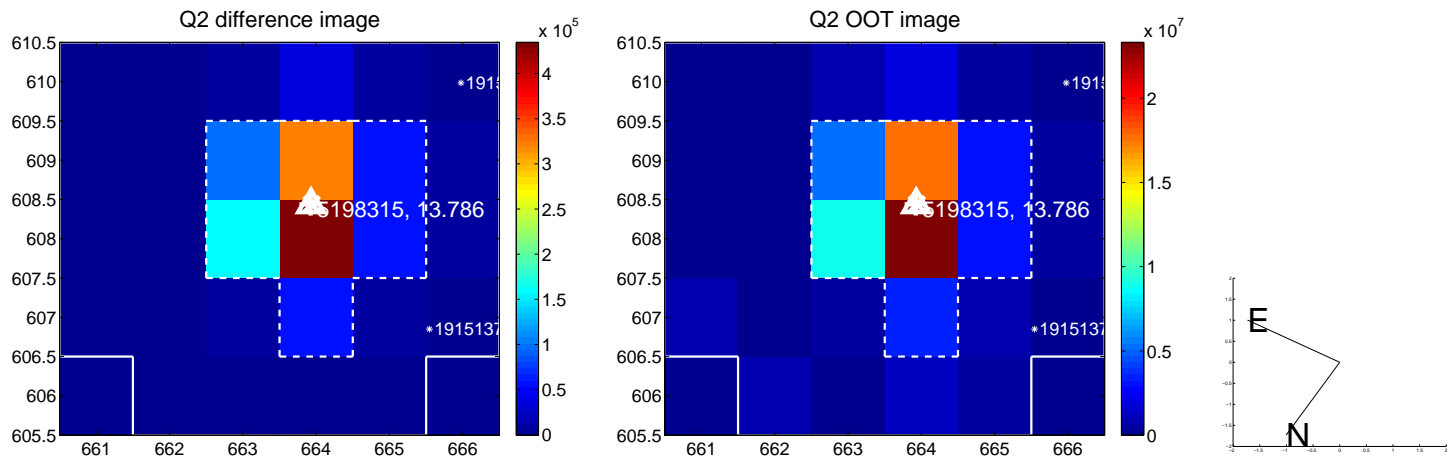
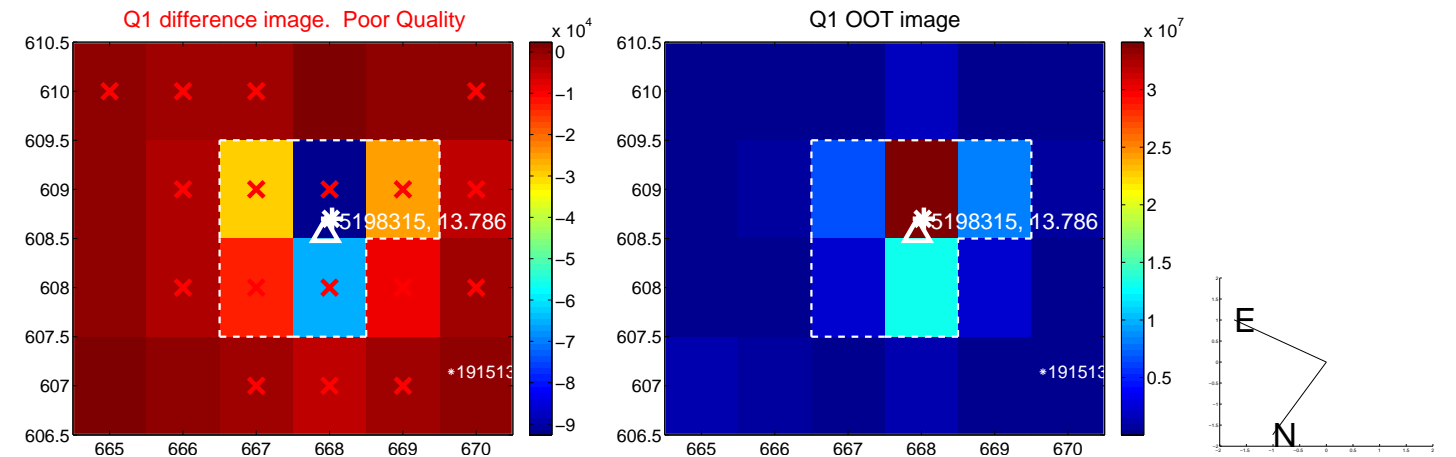
	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.090 \pm 0.108$	0.83	$0.083 \pm 0.086$	$-0.034 \pm 0.125$
PRF-fit source offset from KIC position	$0.094 \pm 0.124$	0.76	$0.002 \pm 0.083$	$-0.094 \pm 0.123$
photometric centroid source offset	$0.28 \pm 0.23$	1.20	$0.27 \pm 0.23$	$0.07 \pm 0.30$



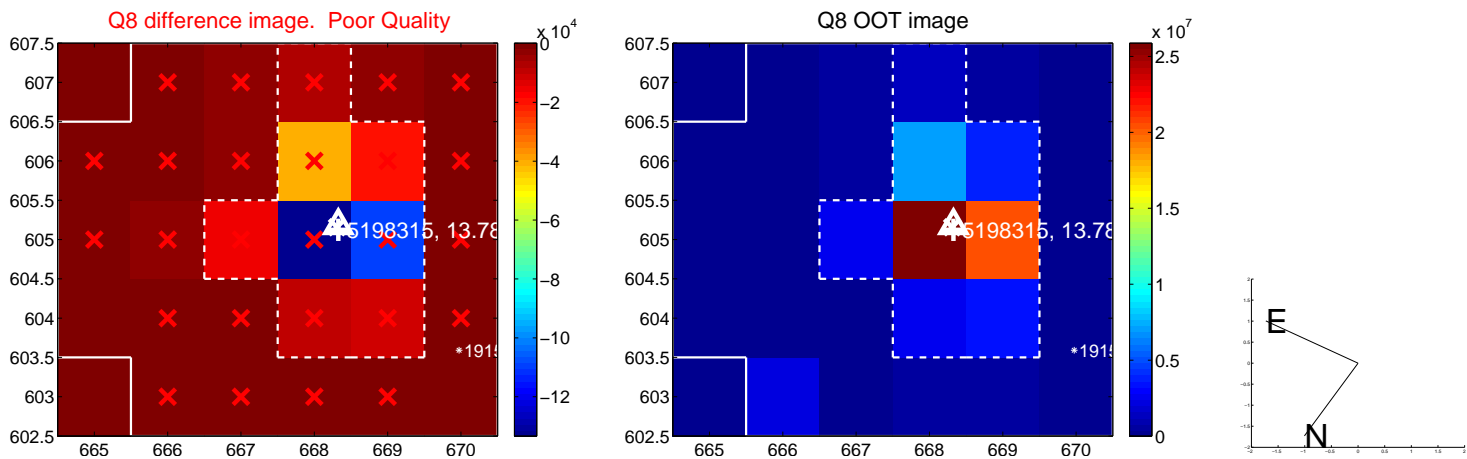
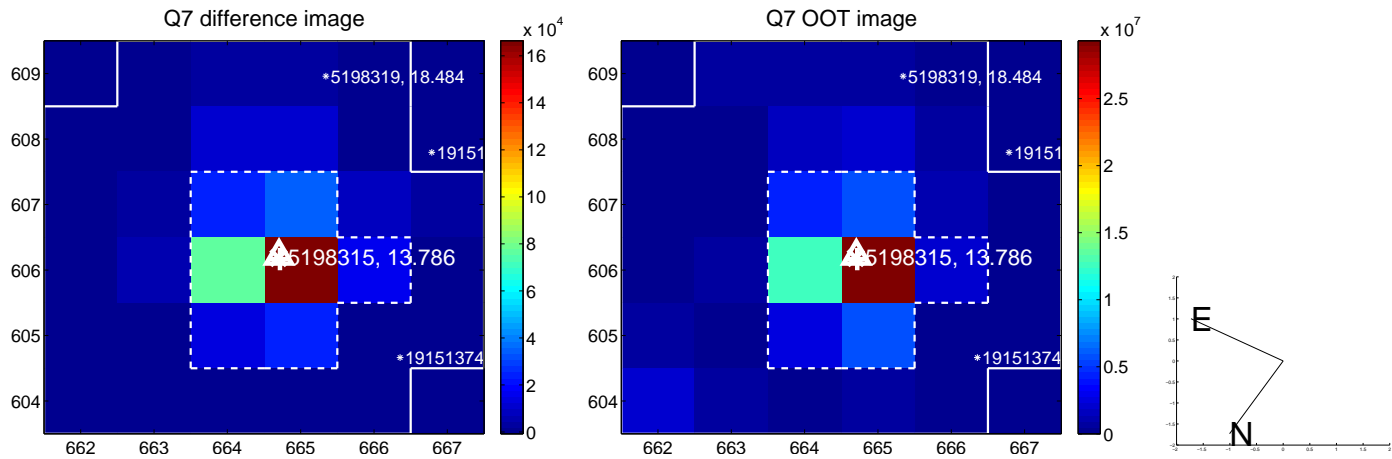
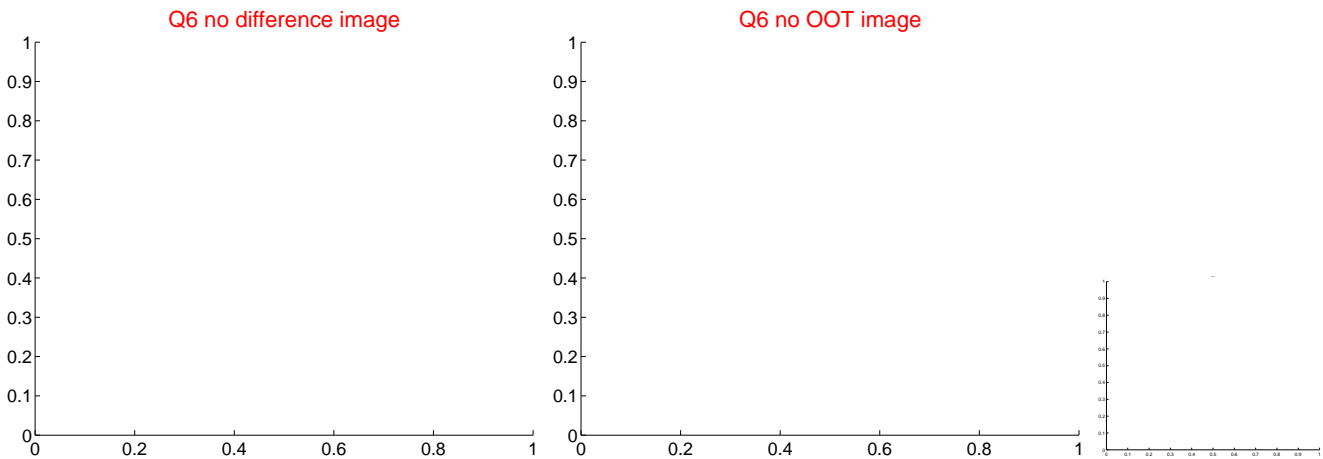
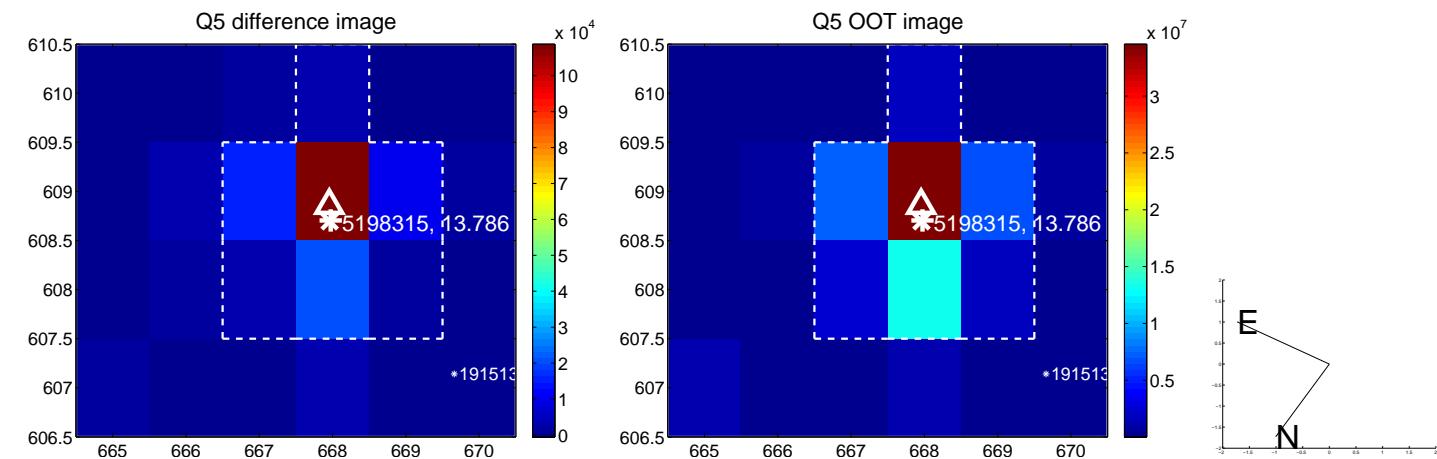
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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



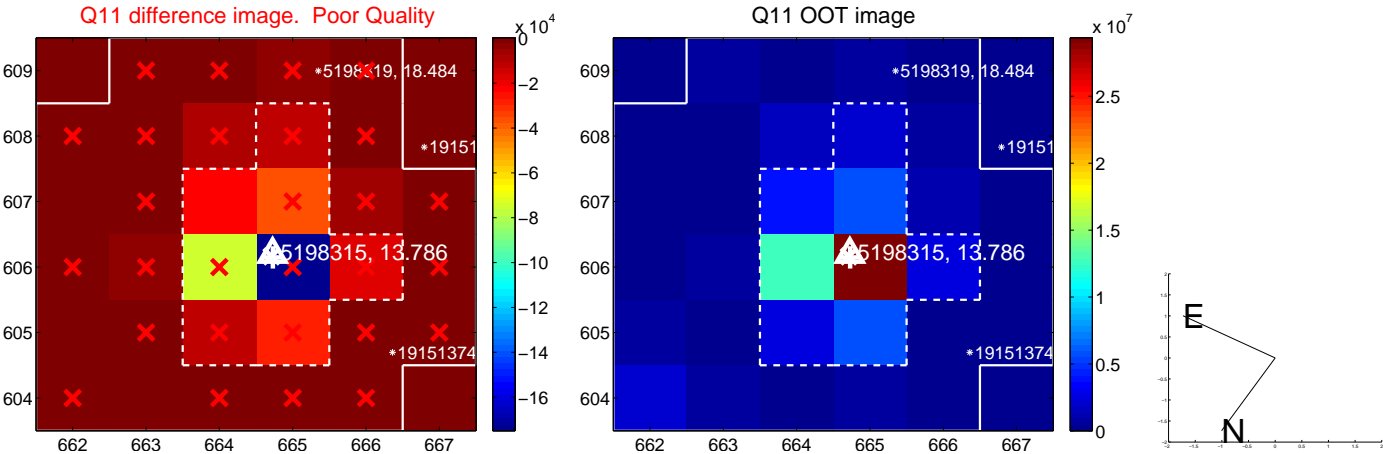
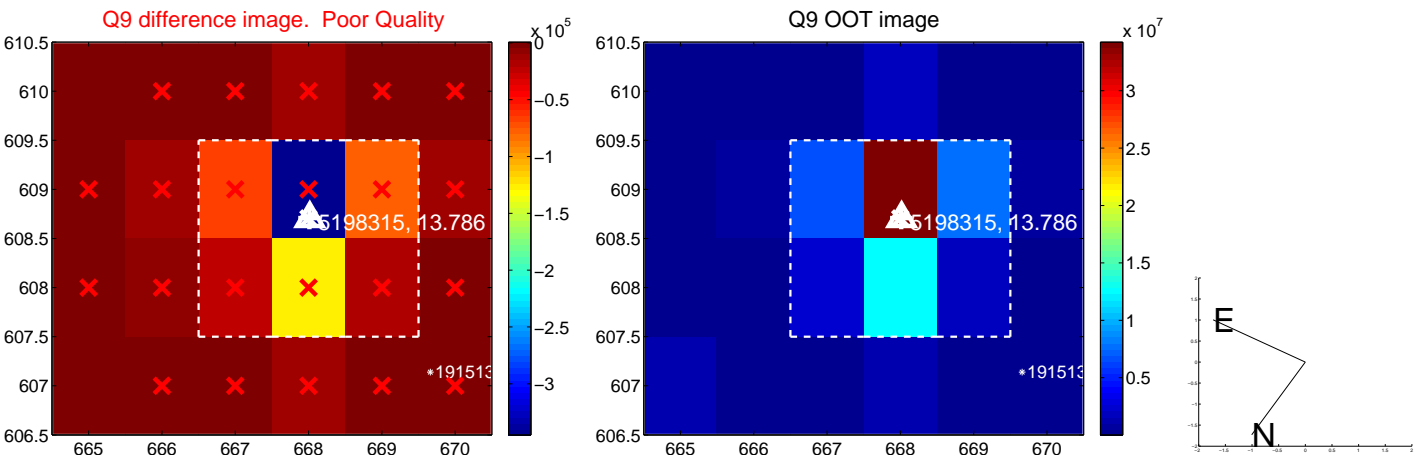
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



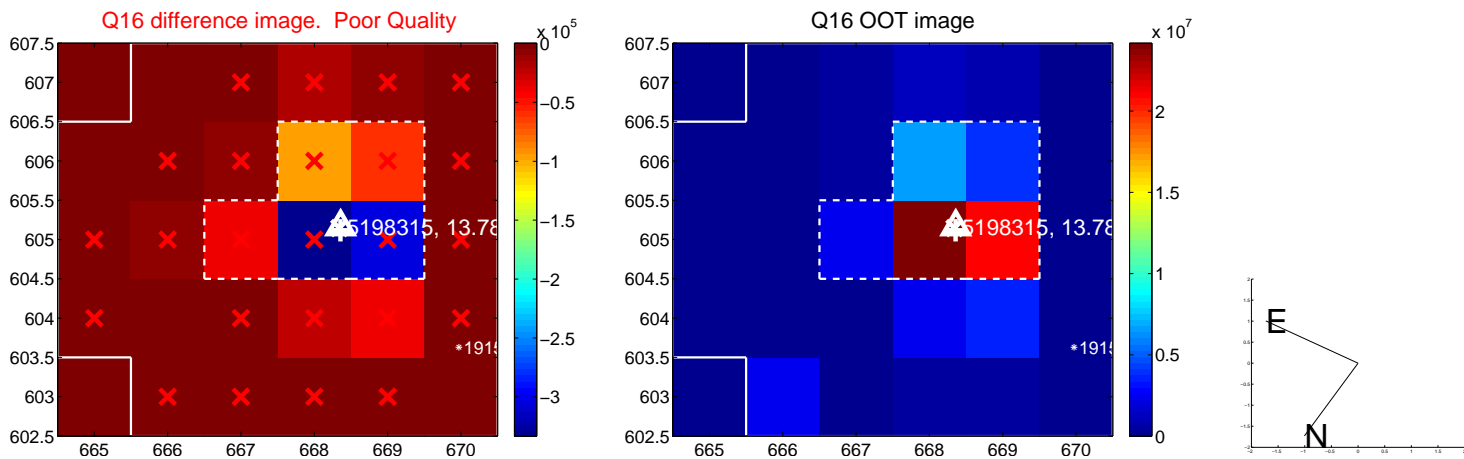
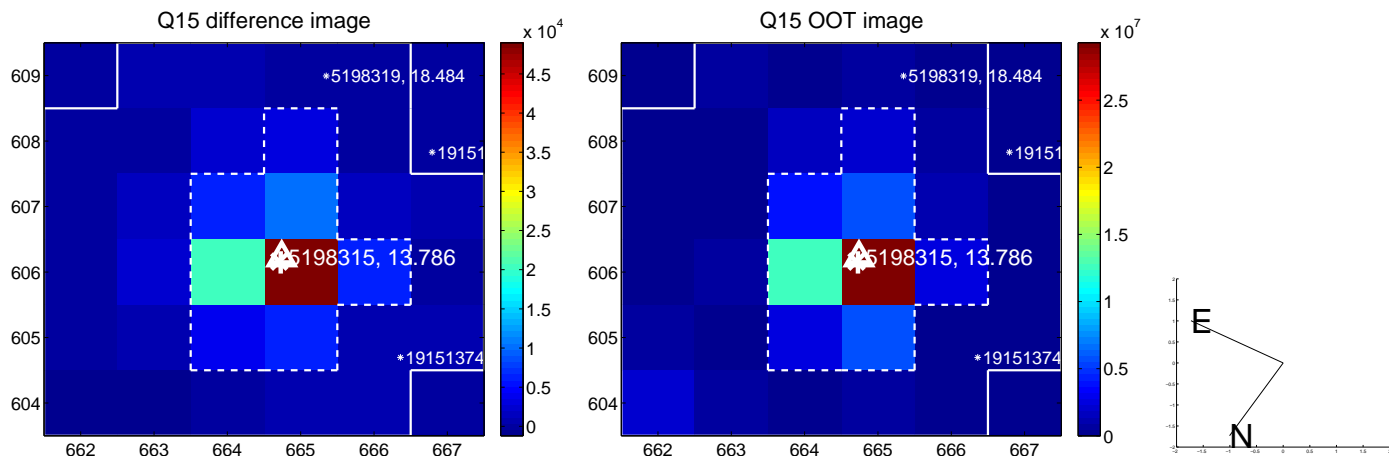
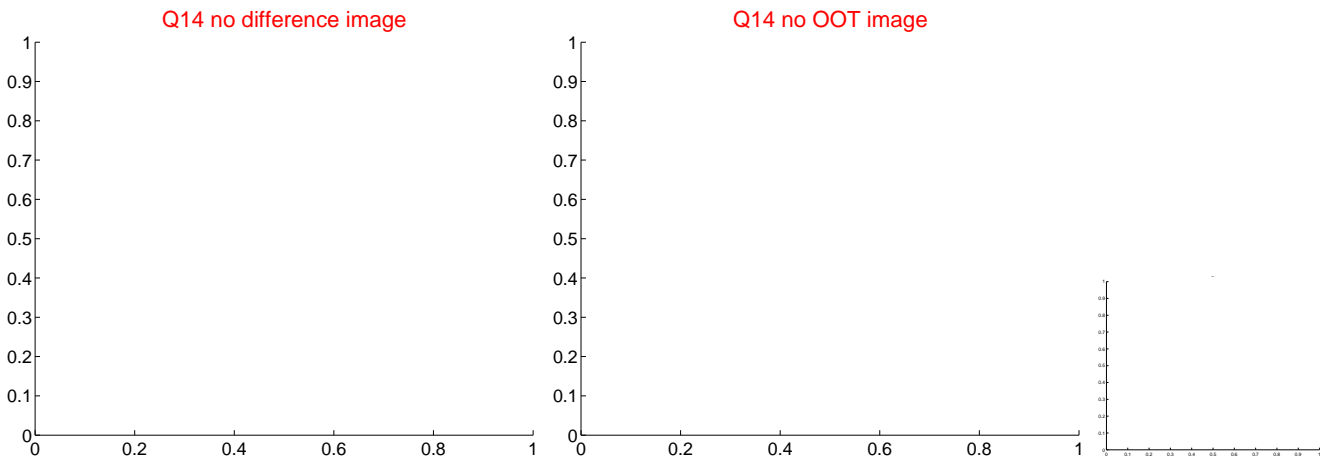
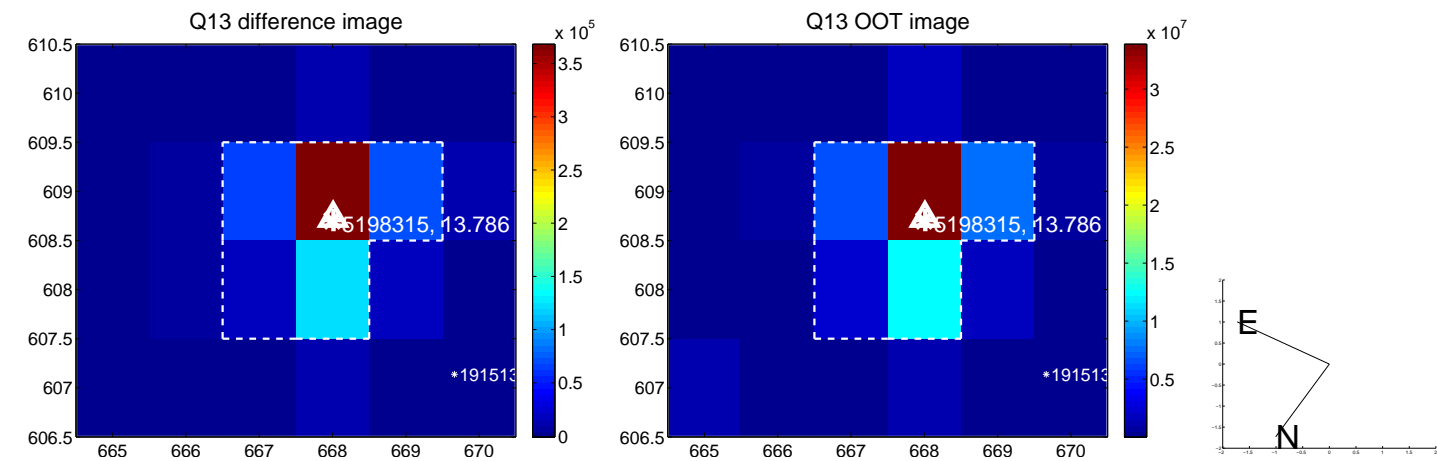
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



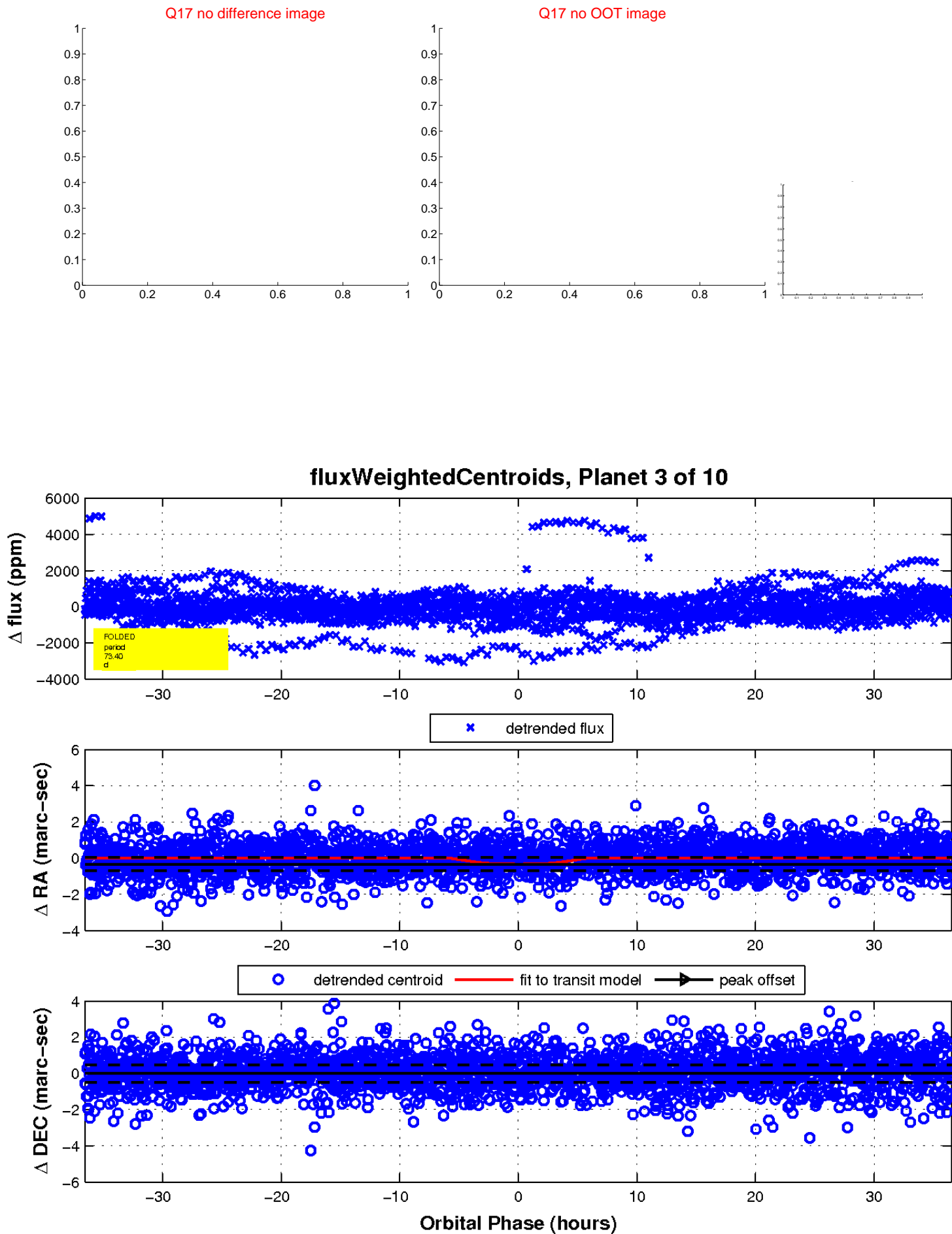
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

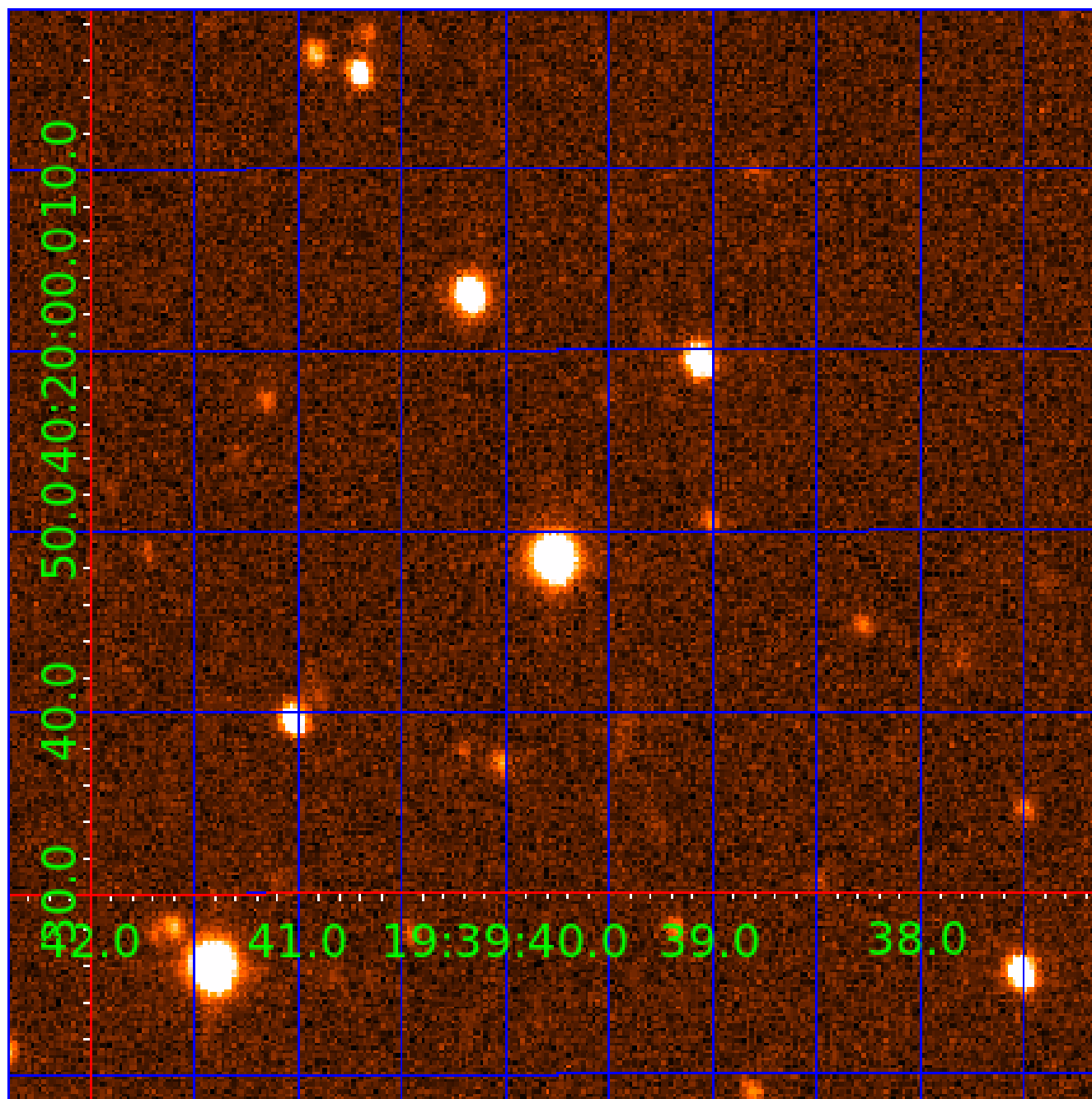


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 005198315

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005198315-01	OBS	No	1.821235	133.319401	142.6	11.552	8.7	12.0	3.12	8306	6.97	30678.67
005198315-02	OBS	No	74.166477	146.638639	674.2	12.500	19.4	-1.0	3.12	8306	8.20	218.97
005198315-03	OBS	No	73.398148	134.198409	915.1	12.184	13.6	11.0	3.12	8306	11.77	222.03
005198315-04	OBS	No	41.326624	159.088305	277.6	6.792	11.6	5.0	3.12	8306	6.78	477.55
005198315-05	OBS	No	192.913240	238.705450	372.9	10.500	11.6	-1.0	3.12	8306	6.10	61.21
005198315-06	OBS	No	39.374162	156.712384	345.6	7.500	10.4	-1.0	3.12	8306	5.87	509.38
005198315-07	OBS	No	132.319467	172.155165	1157.7	9.781	9.6	9.9	3.12	8306	15.73	101.19
005198315-09	OBS	No	39.508476	166.624208	322.1	11.722	8.5	6.4	3.12	8306	6.01	507.07
005198315-10	OBS	No	55.763625	156.268411	1097.2	3.217	8.4	12.1	3.12	8306	19.19	320.27

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005198315-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—MOD_NONUNIQ_DV
005198315-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_NOFITS
005198315-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
005198315-04	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—HALO_GHOST
005198315-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_NOFITS
005198315-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_NOFITS
005198315-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT
005198315-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
005198315-10	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT

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

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

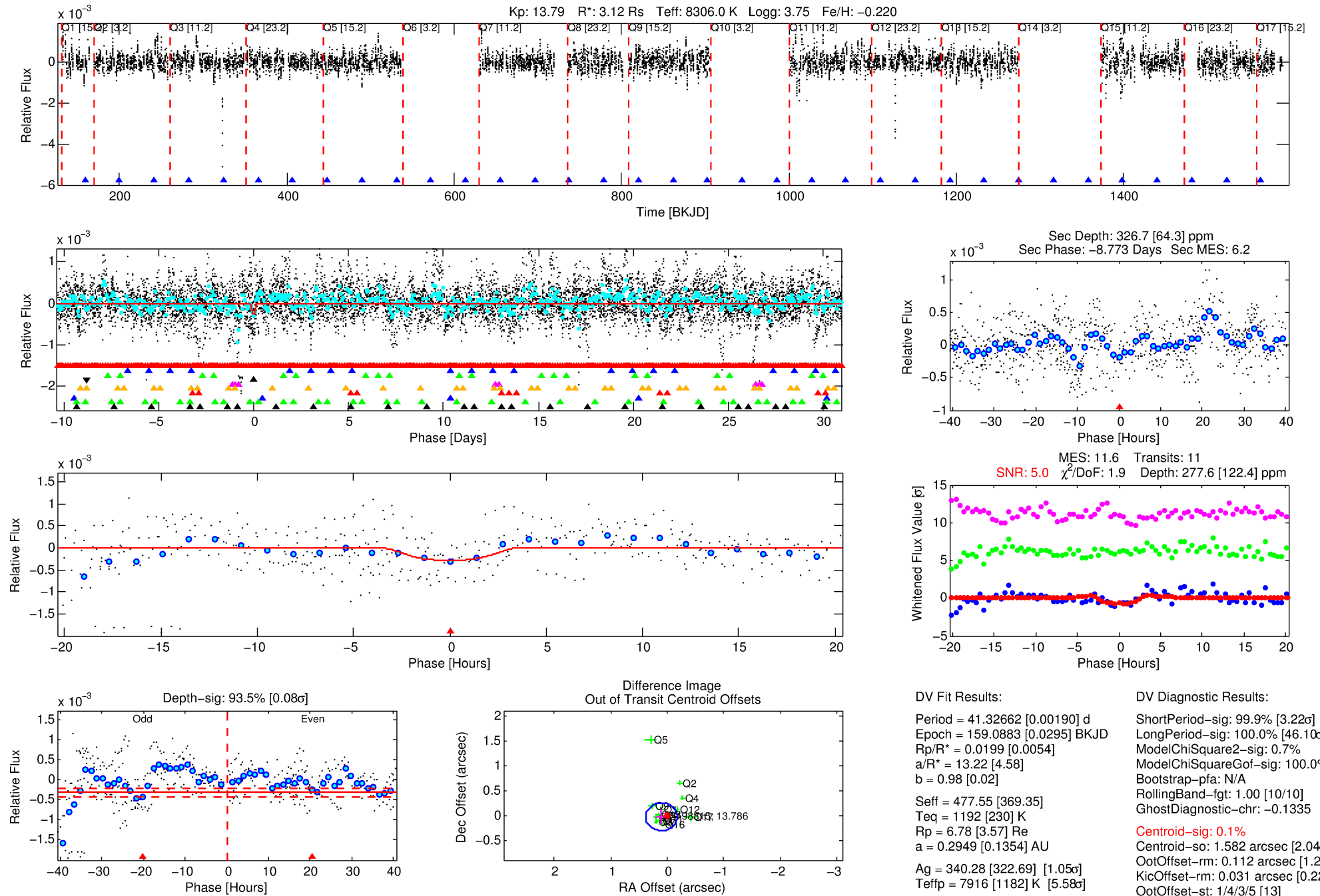
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 005198315-04

No Significant Match Found

# DV One-Page Summary

KIC: 5198315 Candidate: 4 of 10 Period: 41.327 d

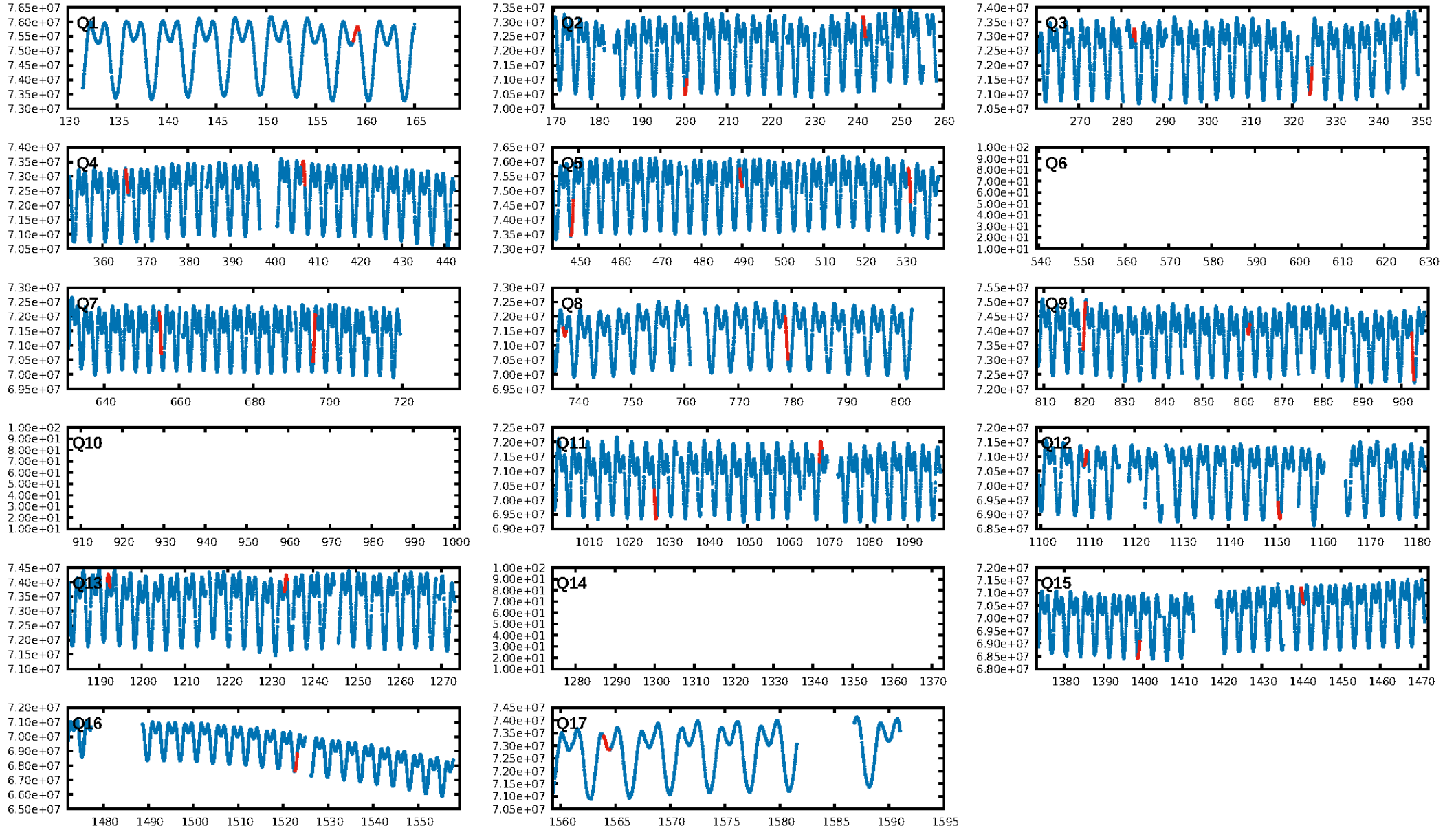


Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 01:20:56 Z

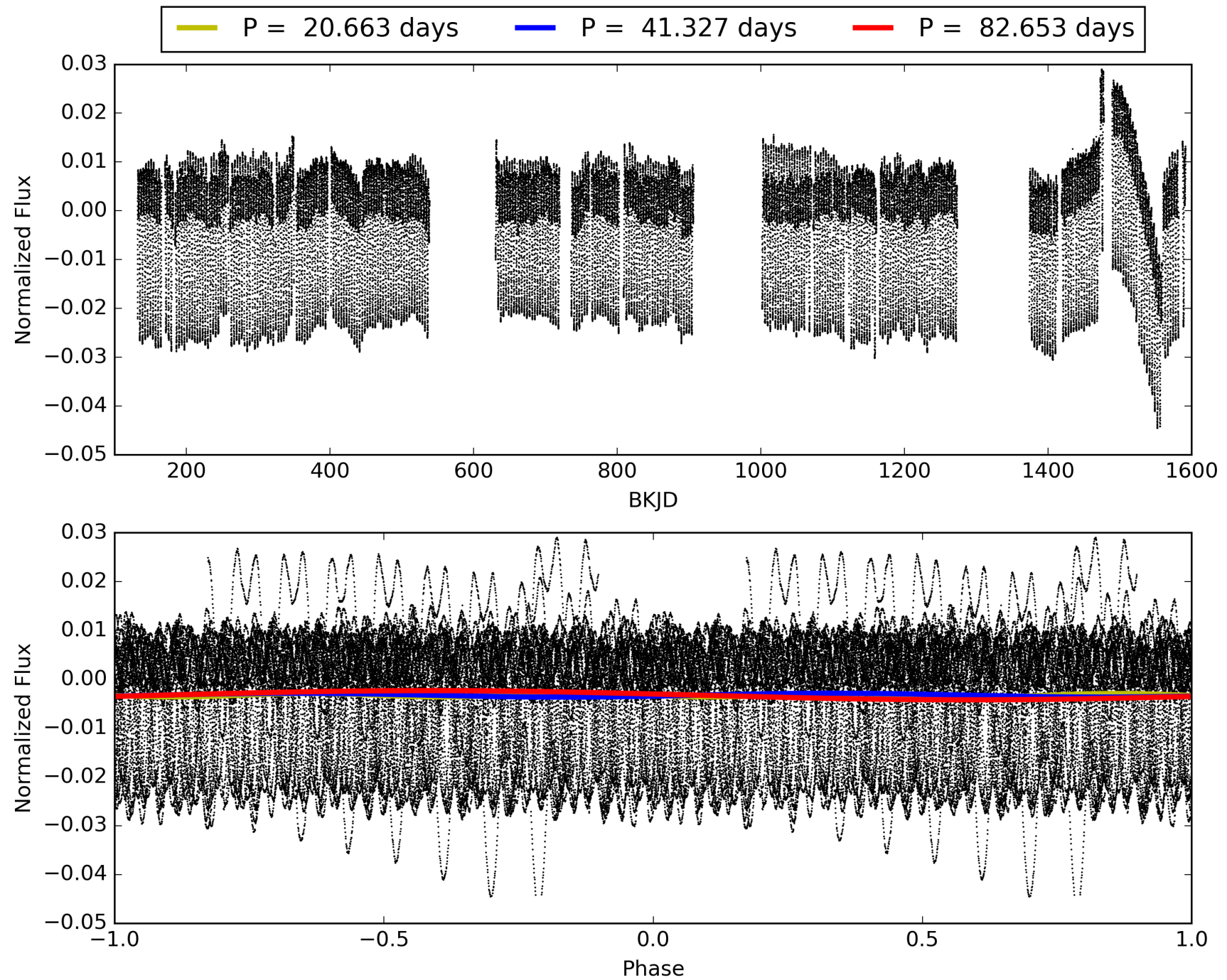
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center



# TCE 005198315-04, PDC Light Curves

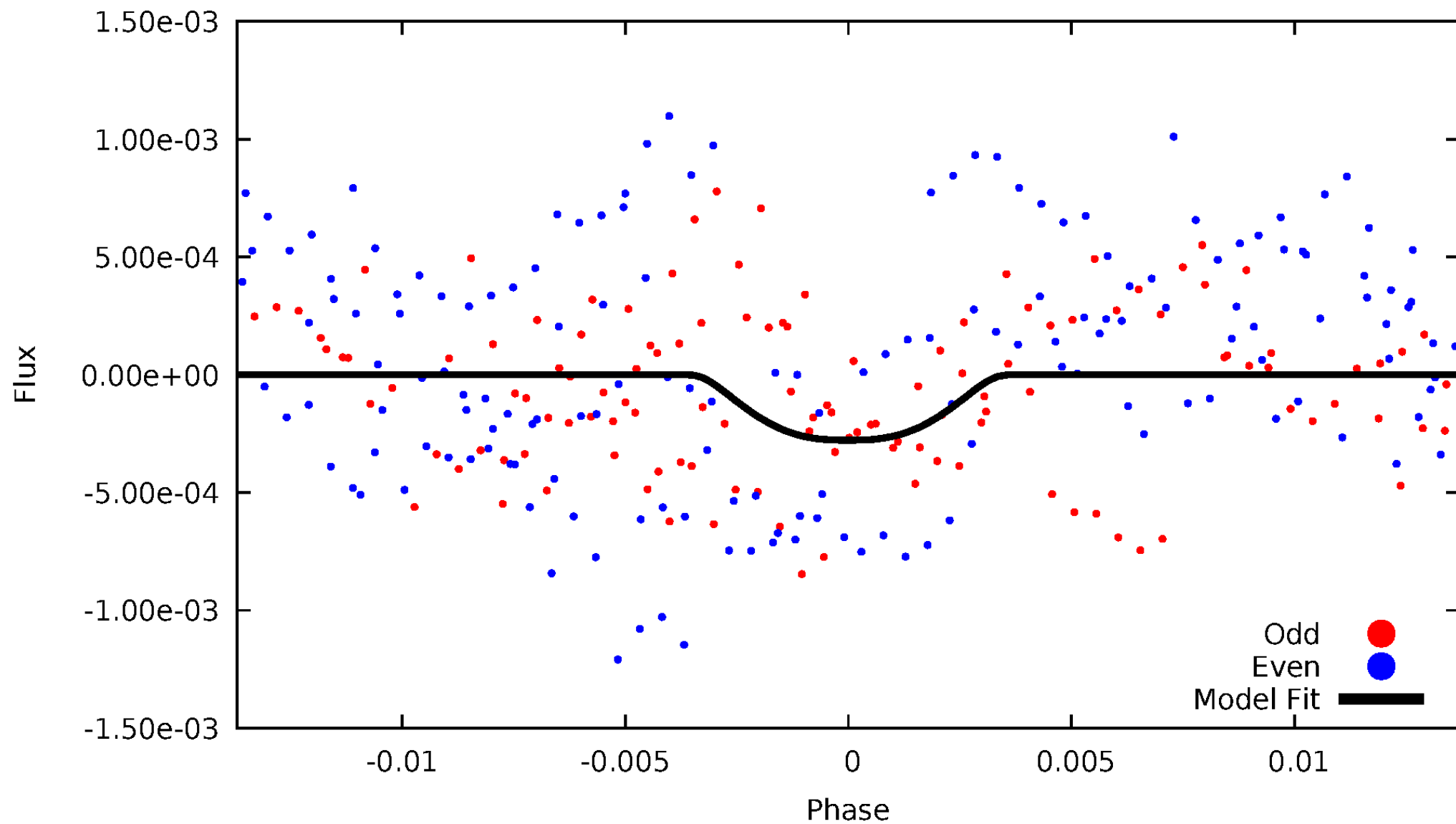


# TCE 005198315-04



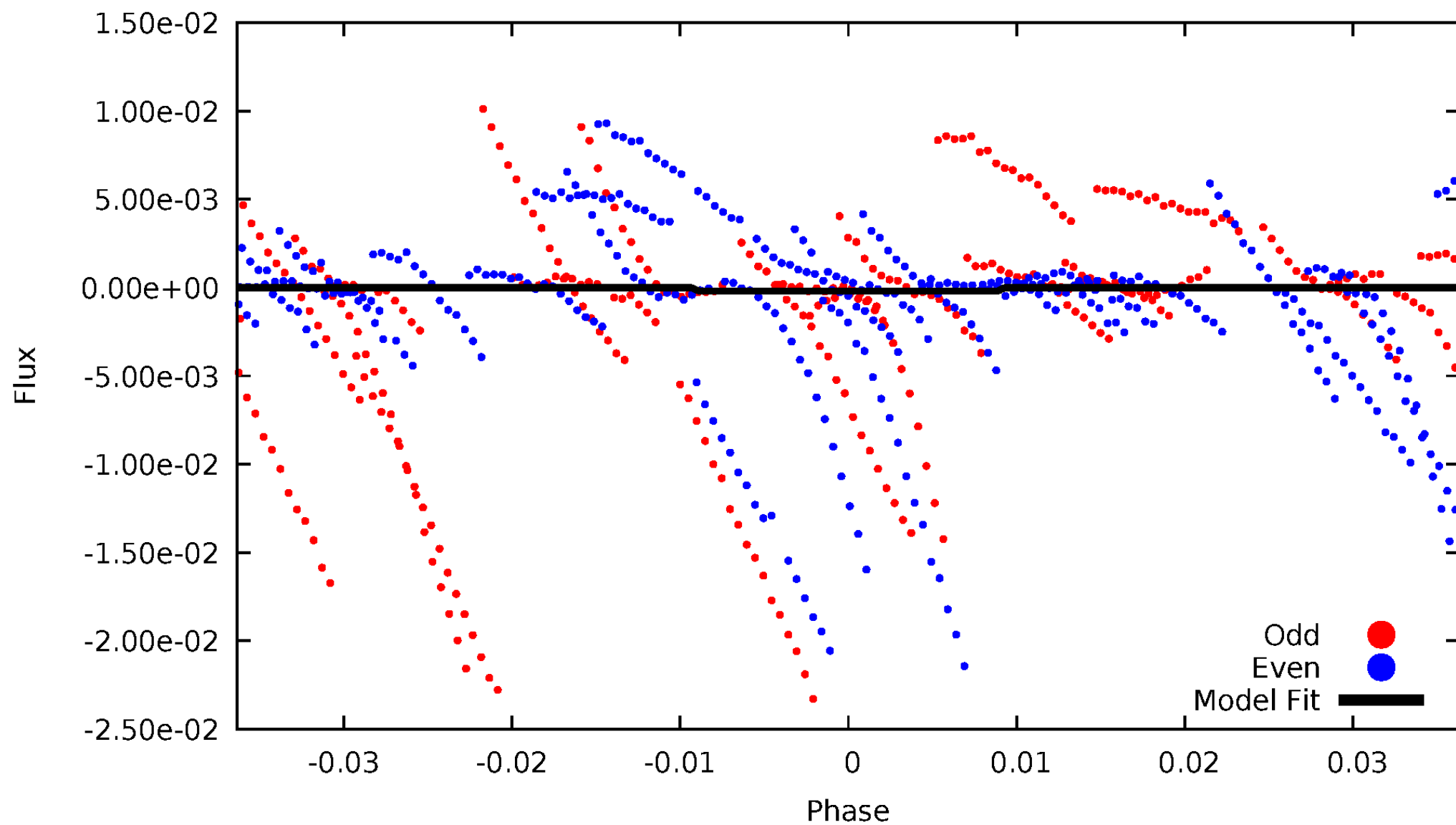
# DV Odd/Even

TCE 005198315-04



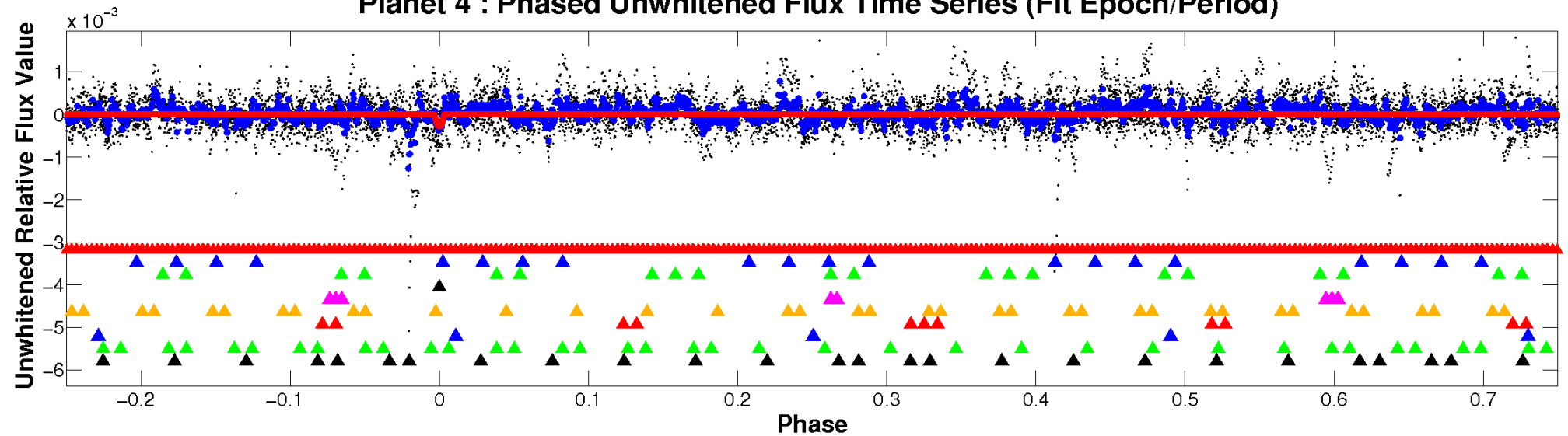
# ALT Odd/Even

TCE 005198315-04

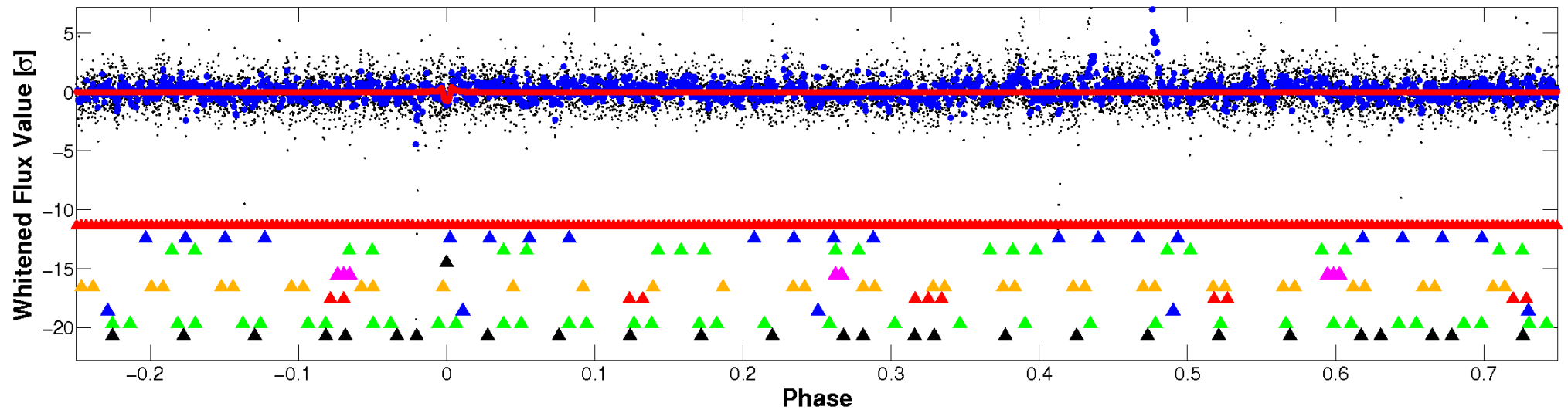


# Non-Whitened Vs. Whitened Light Curve

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

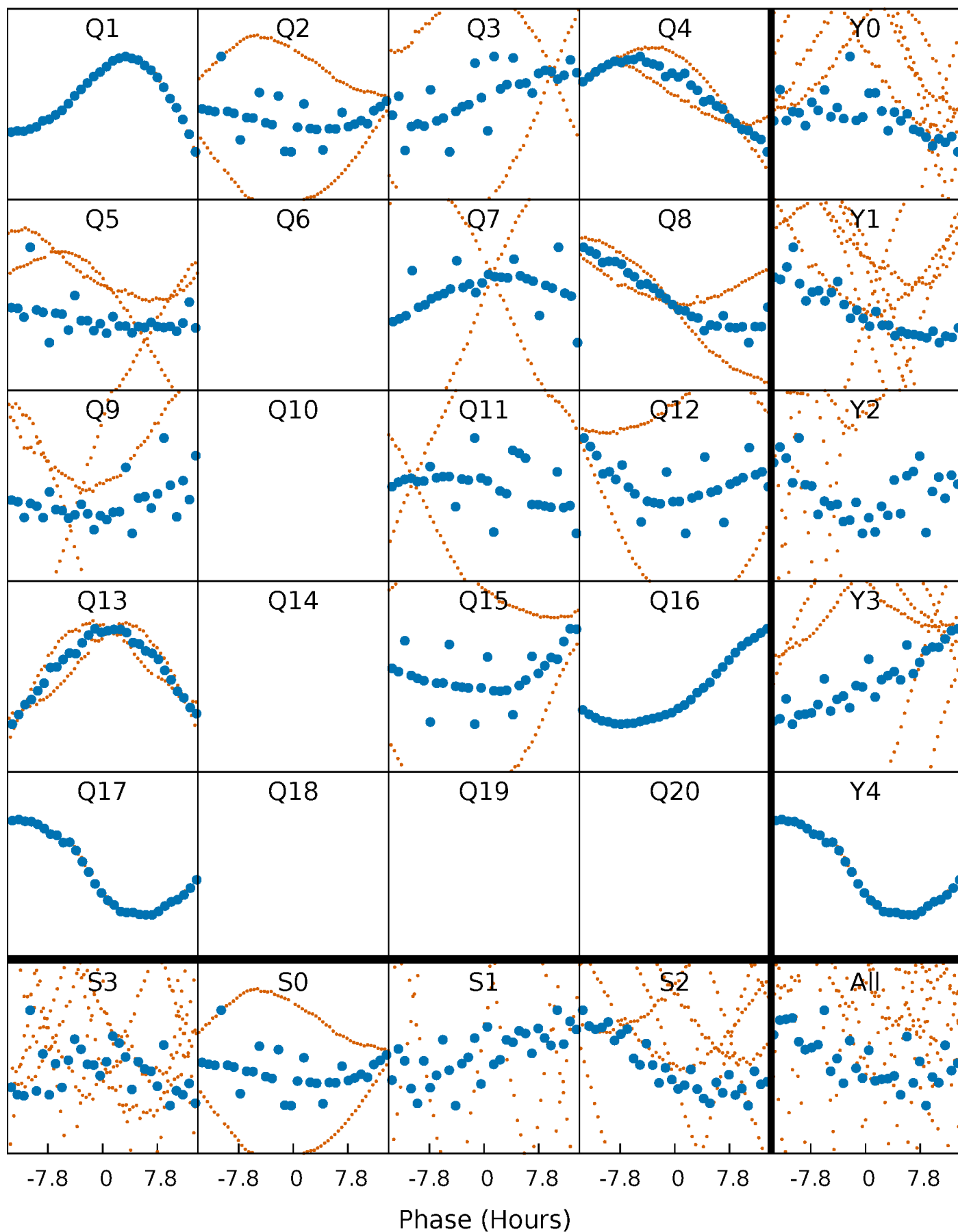


## Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



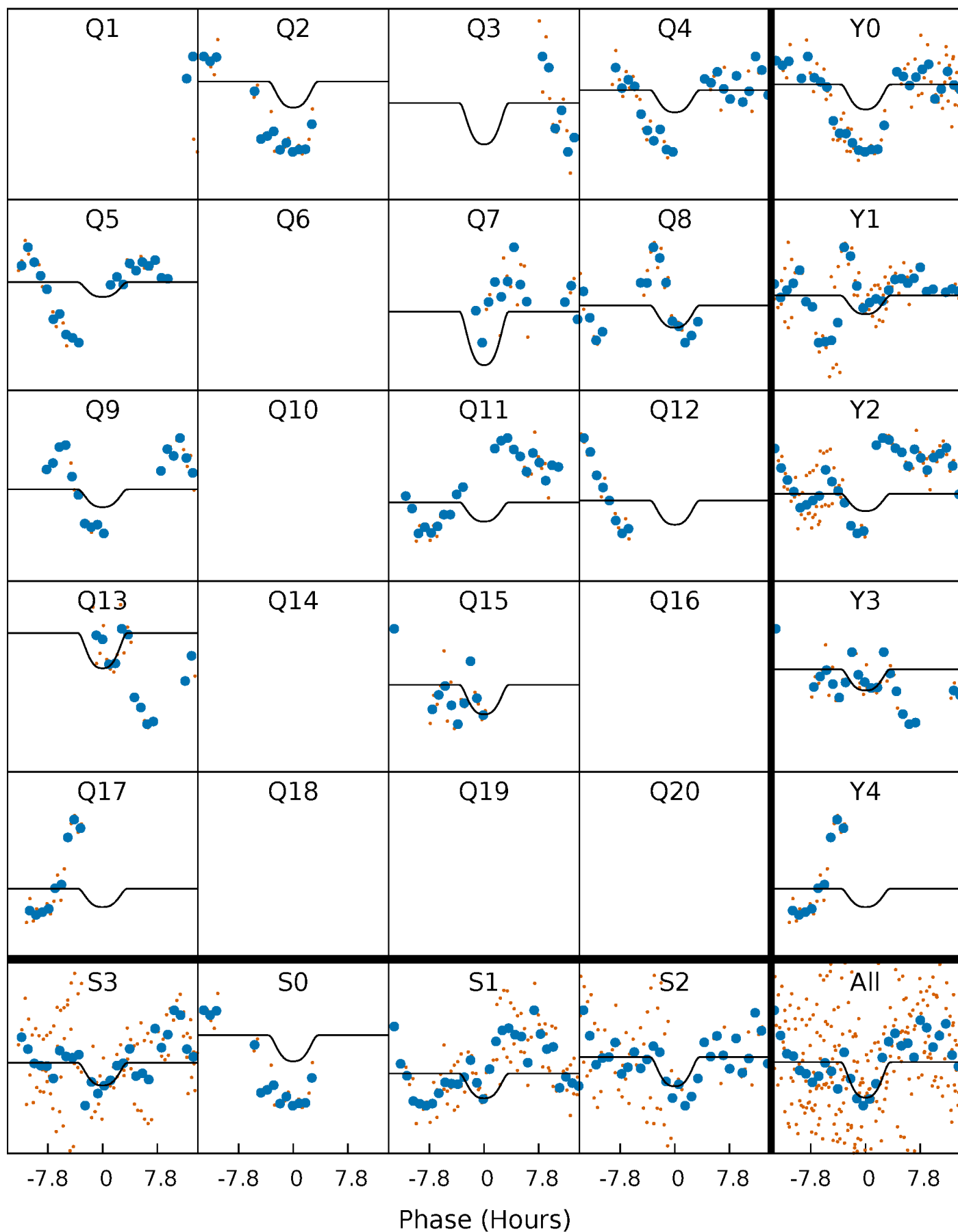
# PDC Quarter-Phased Transit Curves

TCE 005198315-04 P= 41.326624 Days  $T_0=159.088305$  (BKJD)



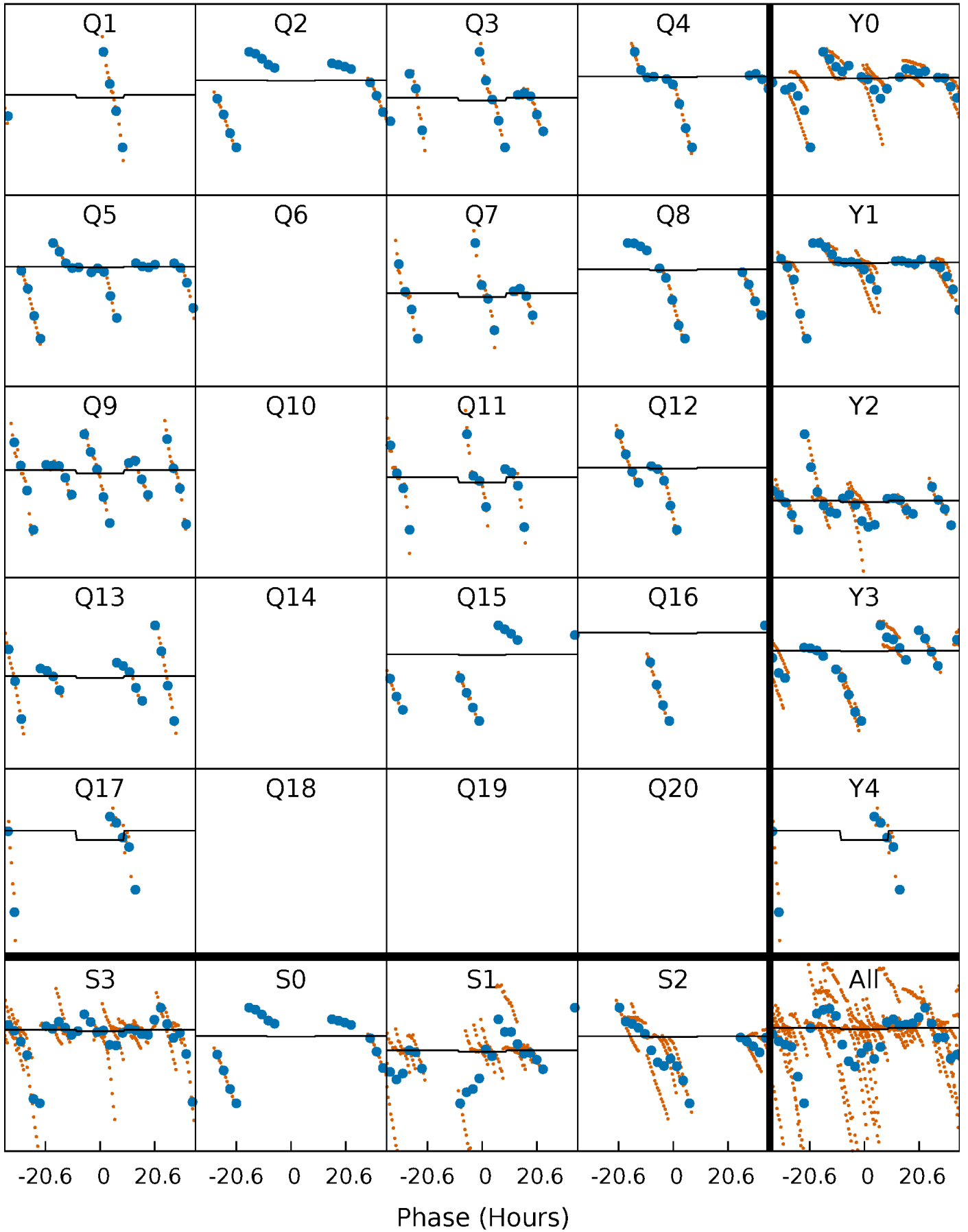
# DV Quarter-Phased Transit Curves

TCE 005198315-04   P= 41.326624 Days    $T_0=159.088305$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 005198315-04   P= 41.294911 Days    $T_0=159.532733$  (BKJD)

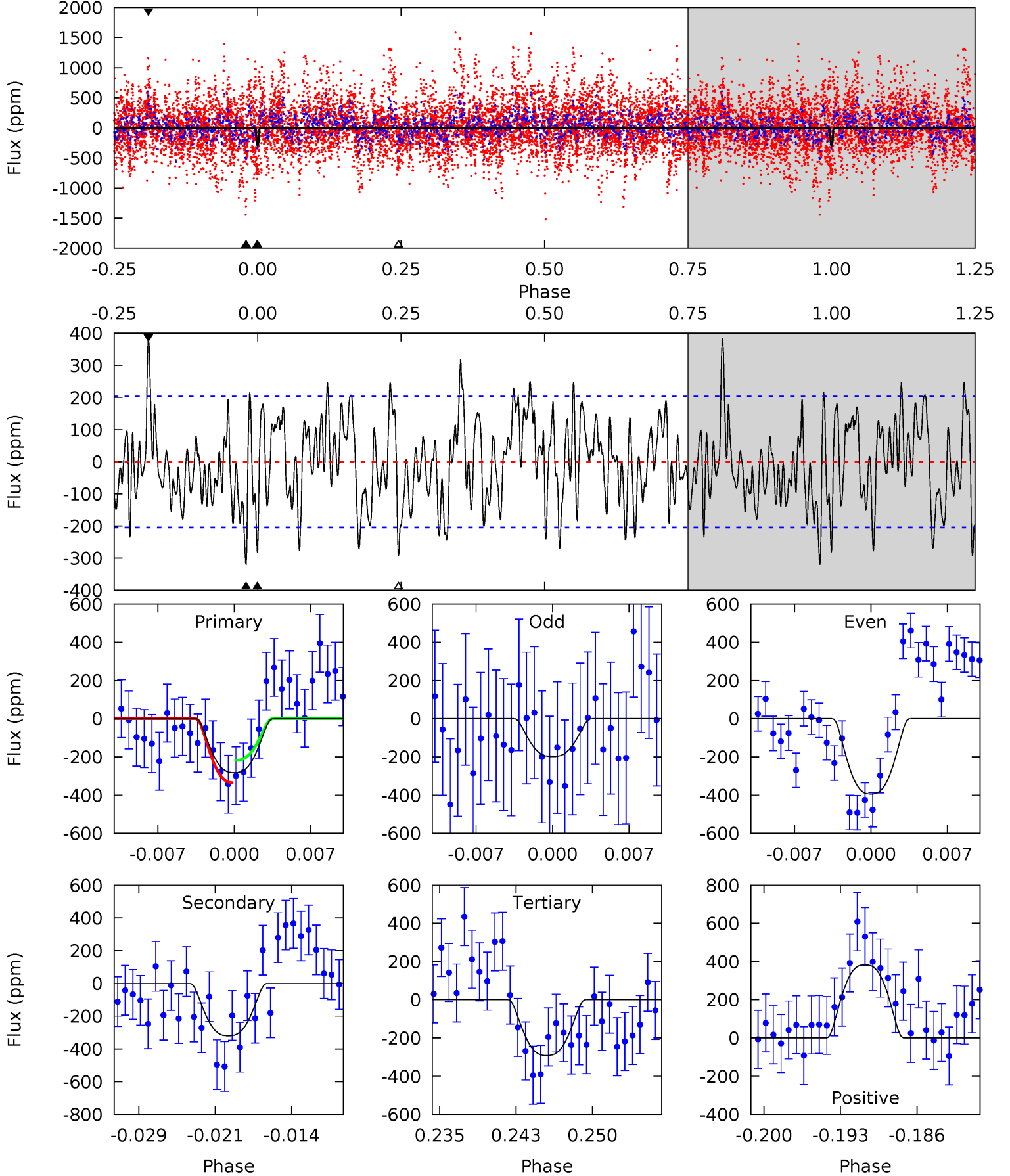




# DV Model-Shift Uniqueness Test

005198315-04, P = 41.326624 Days, E = 117.761681 Days

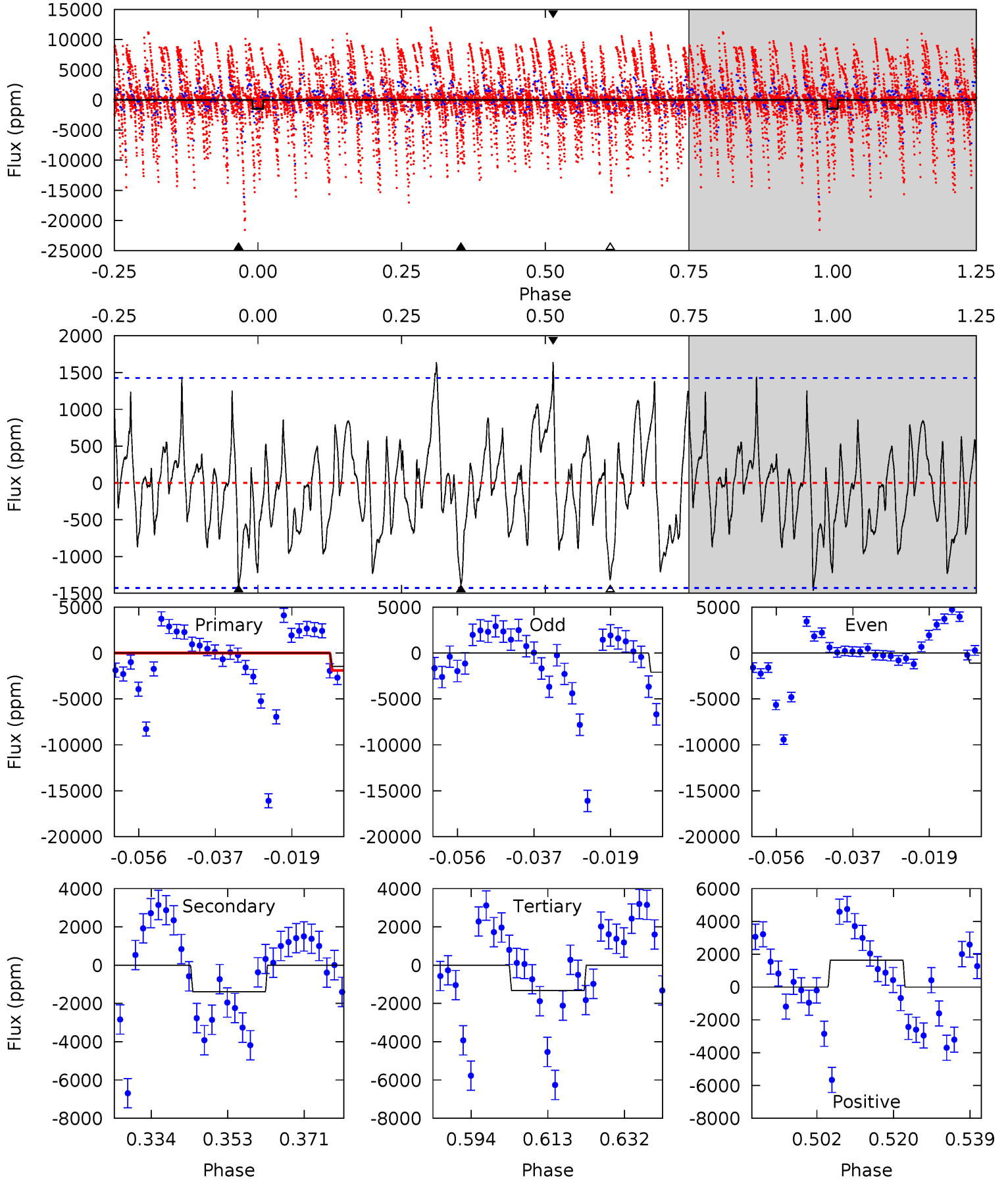
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.02	7.97	7.25	9.52	5.09	2.69	2.87	-0.23	-2.50	0.72	-1.55	2.40	-6.63	0.54	1.47



# Alt Model-Shift Uniqueness Test

005198315-04, P = 41.294911 Days, E = 118.237822 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.03	4.75	4.54	5.64	4.91	2.35	1.96	0.49	-0.61	0.21	-0.89	1.60	38.1	0.53	1.31



### Stellar Parameters For KIC 005198315

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$\rho_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$8306^{+202}_{-347}$	$3.751^{+0.451}_{-0.106}$	$-0.220^{+0.250}_{-0.350}$	$3.121^{+0.652}_{-1.412}$	$2.001^{+0.343}_{-0.471}$	$0.093^{+0.378}_{-0.031}$
	+2%/-4%	+12%/-3%	+114%/-159%	+21%/-45%	+17%/-24%	+408%/-33%
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 005198315-04 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-320 \pm 40$	$6.21^{+2.19}_{-1.97}$	$1606^{+120}_{-185}$	$7613^{+1748}_{-944}$	$397^{+446}_{-180}$
Alt.	$-1381 \pm 291$	$4.41^{+2.02}_{-1.90}$	$1604^{+118}_{-200}$	$18034^{+14009}_{-4809}$	$3383^{+6812}_{-1763}$

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

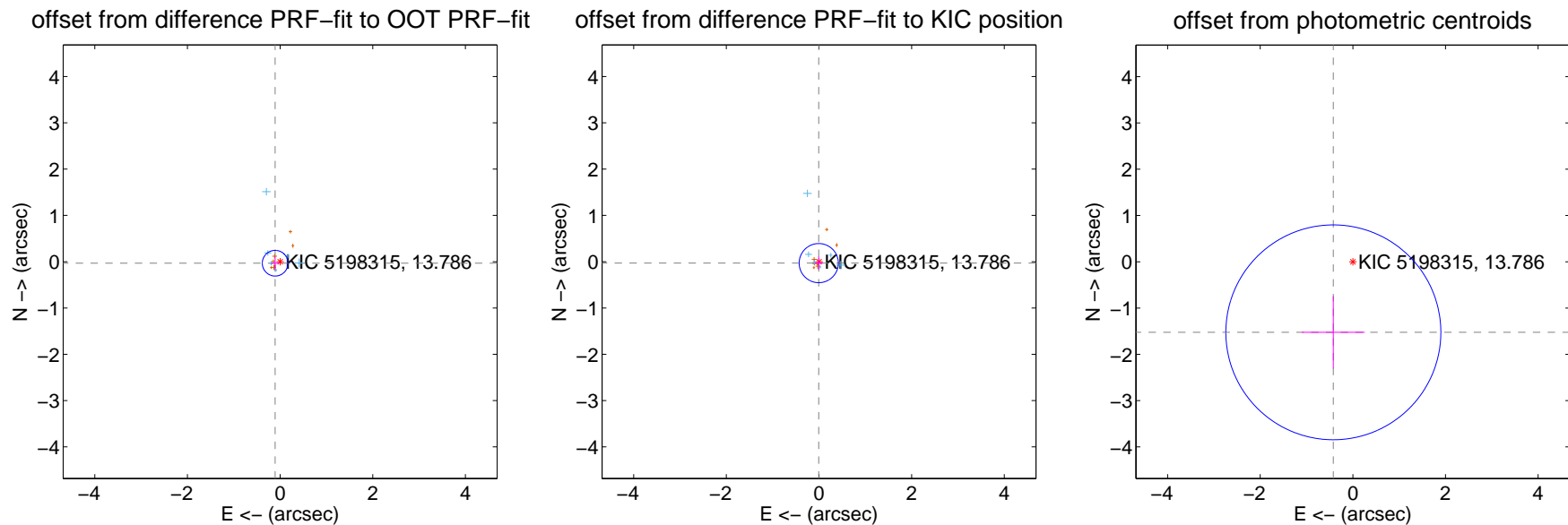
## DV Centroid Data

Supplemental centroid analysis for 005198315-04. Kepler magnitude: 13.79. Transit SNR 4.96

There are 6 quarters with good PRF difference image offsets

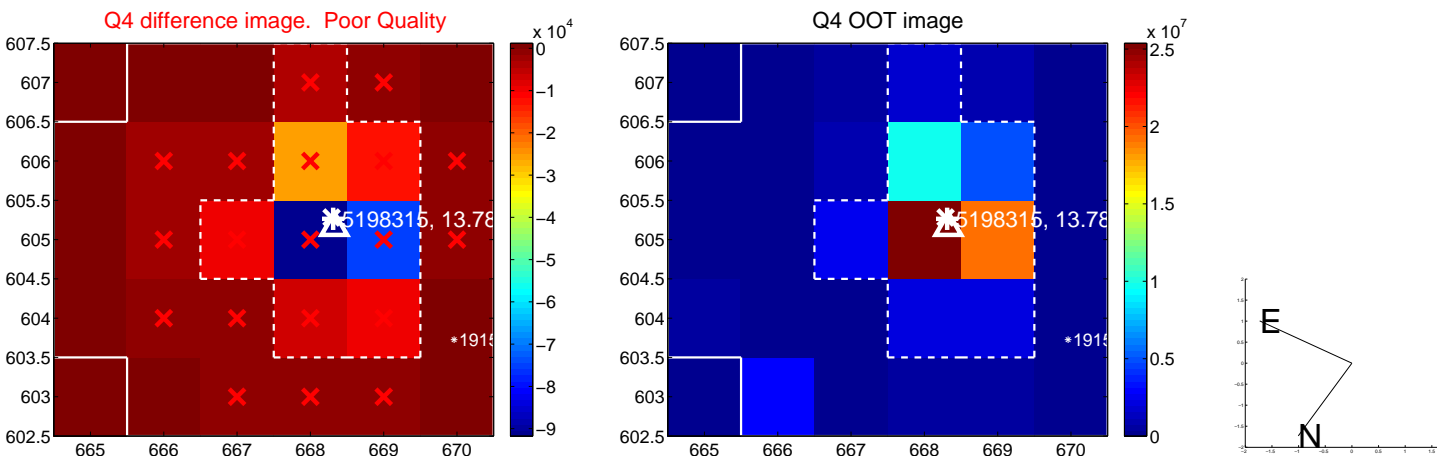
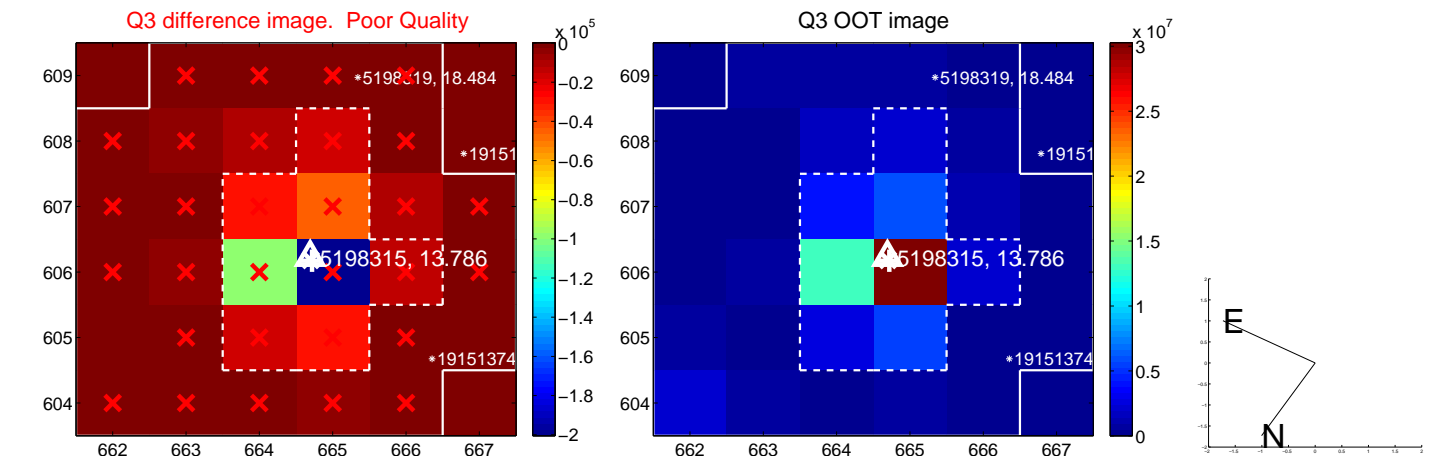
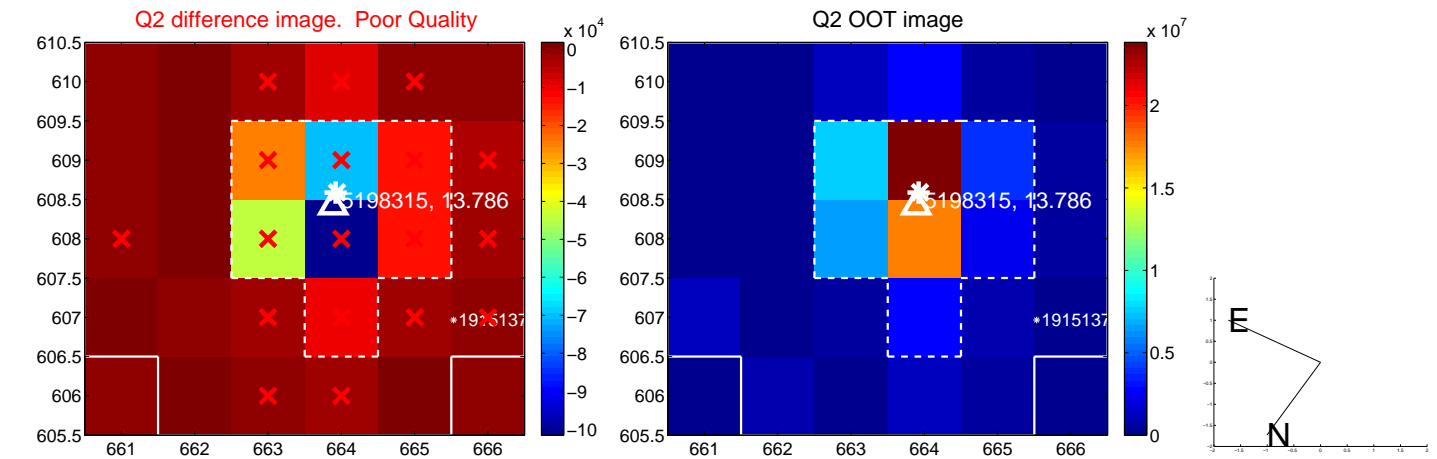
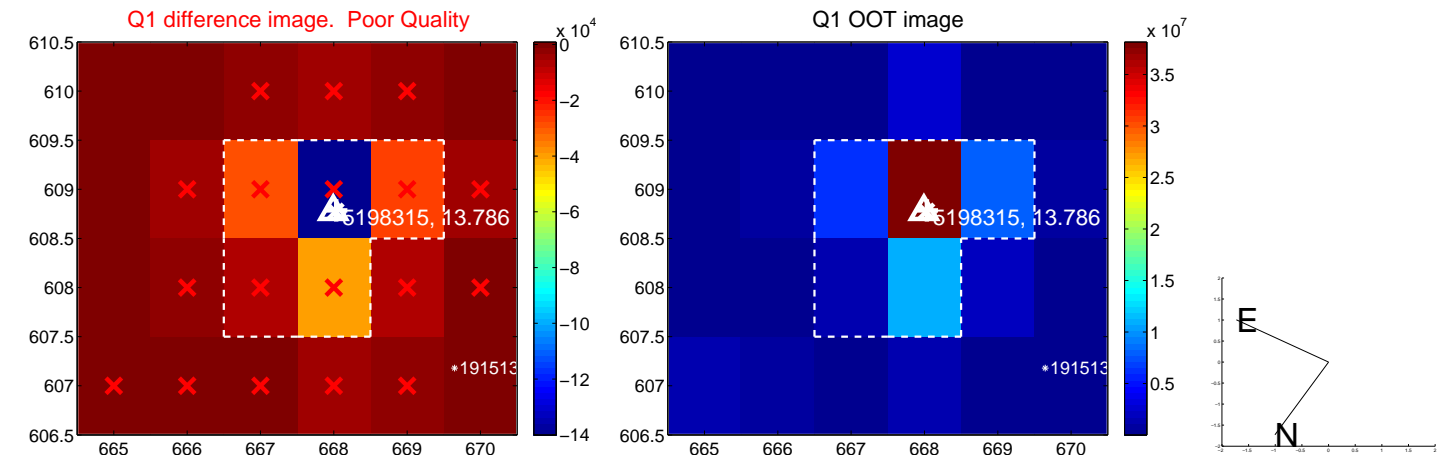
The direct PRF centroid is offset from the target star catalog position by about 0.08 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.112 \pm 0.092$	1.21	$0.107 \pm 0.088$	$-0.033 \pm 0.143$
PRF-fit source offset from KIC position	$0.031 \pm 0.141$	0.22	$0.005 \pm 0.087$	$-0.031 \pm 0.142$
photometric centroid source offset	$1.58 \pm 0.77$	2.04	$0.42 \pm 0.68$	$-1.52 \pm 0.78$

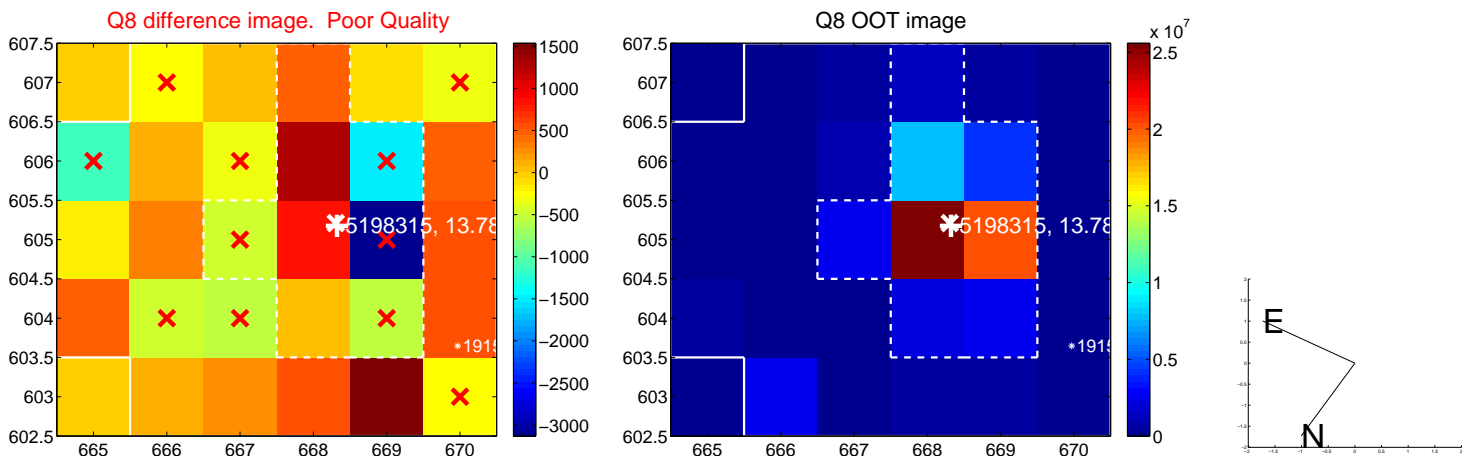
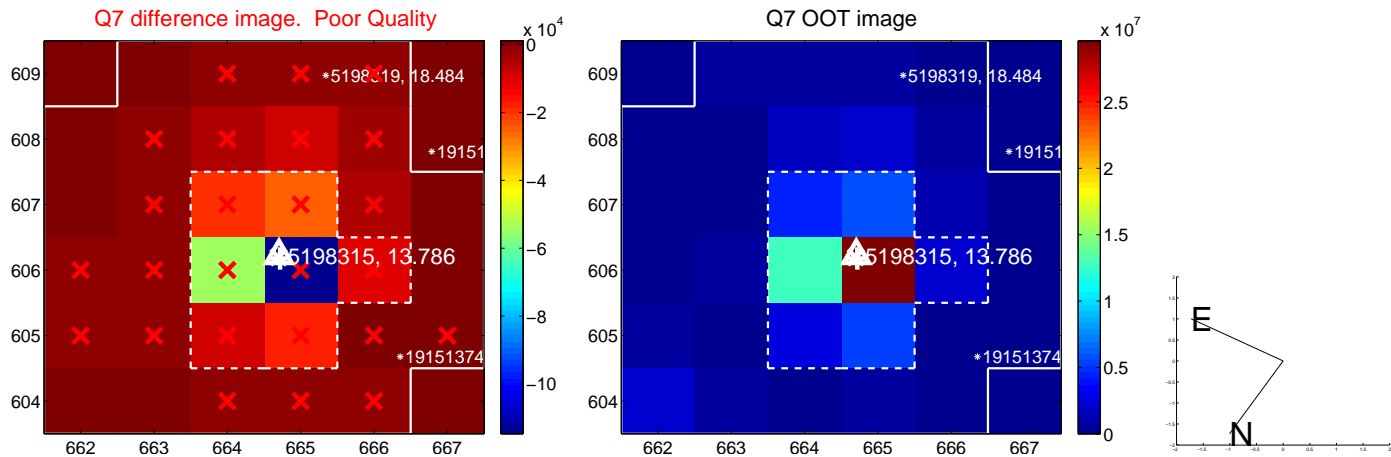
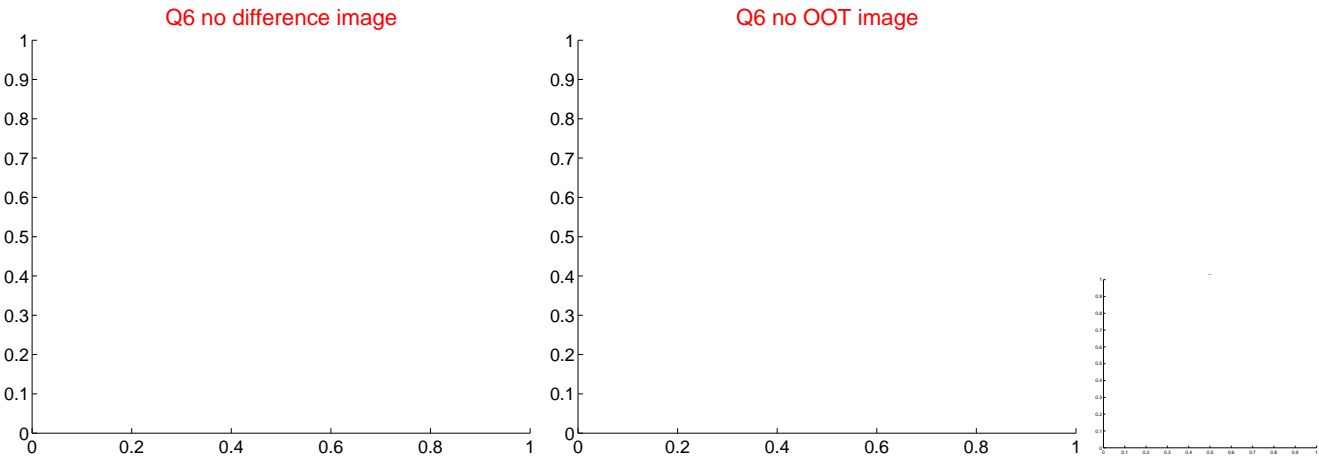
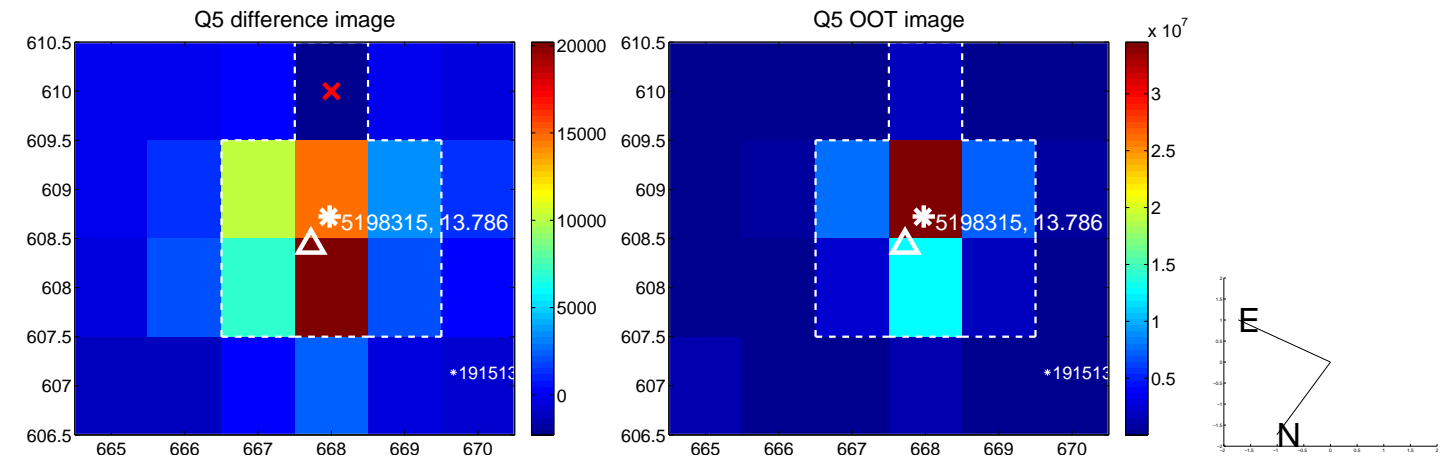


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

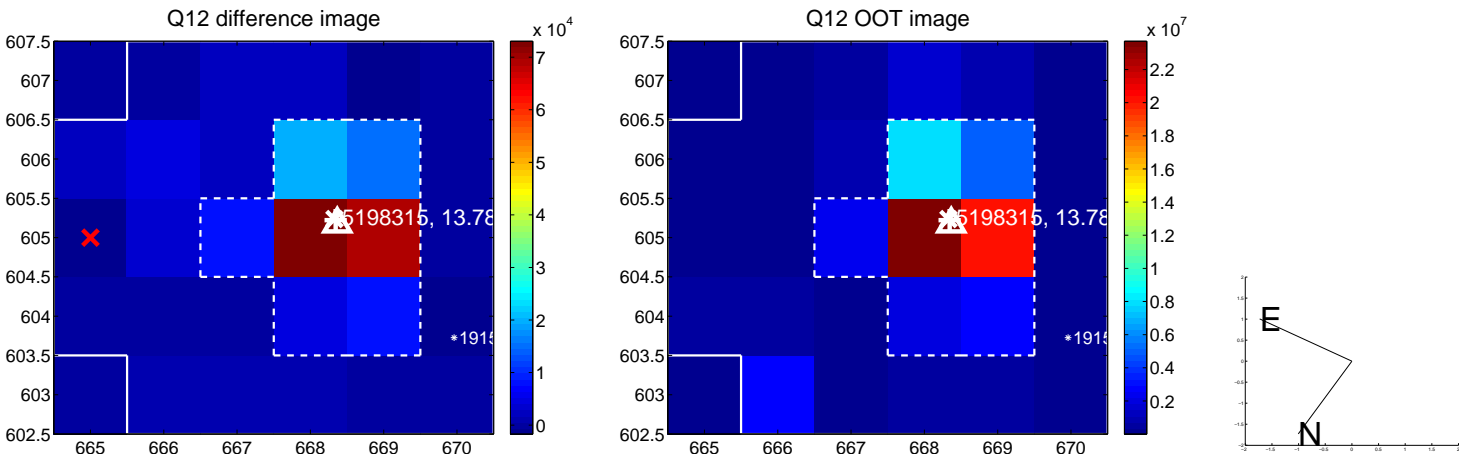
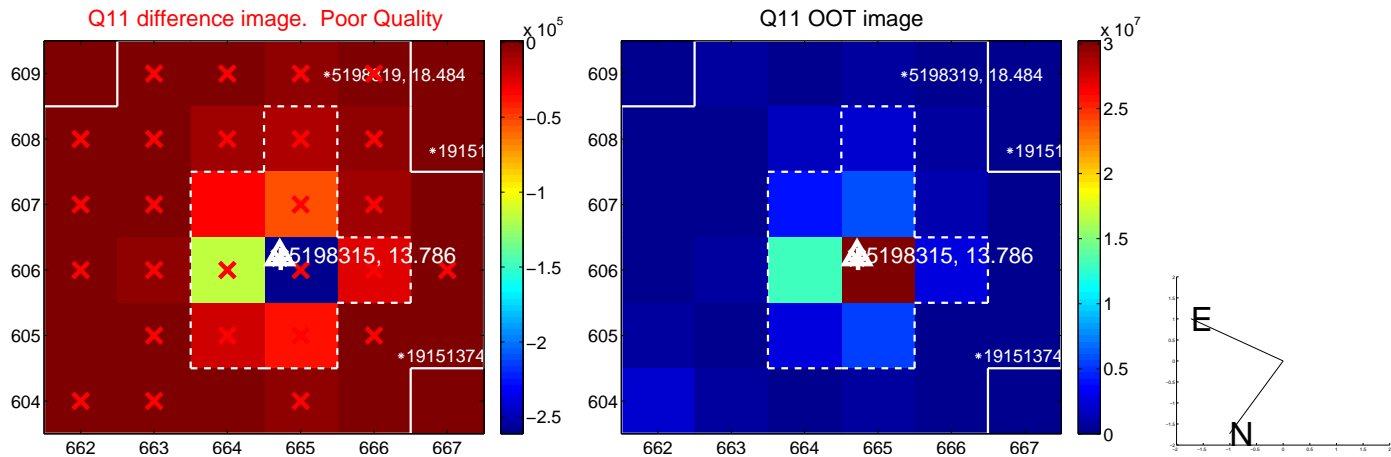
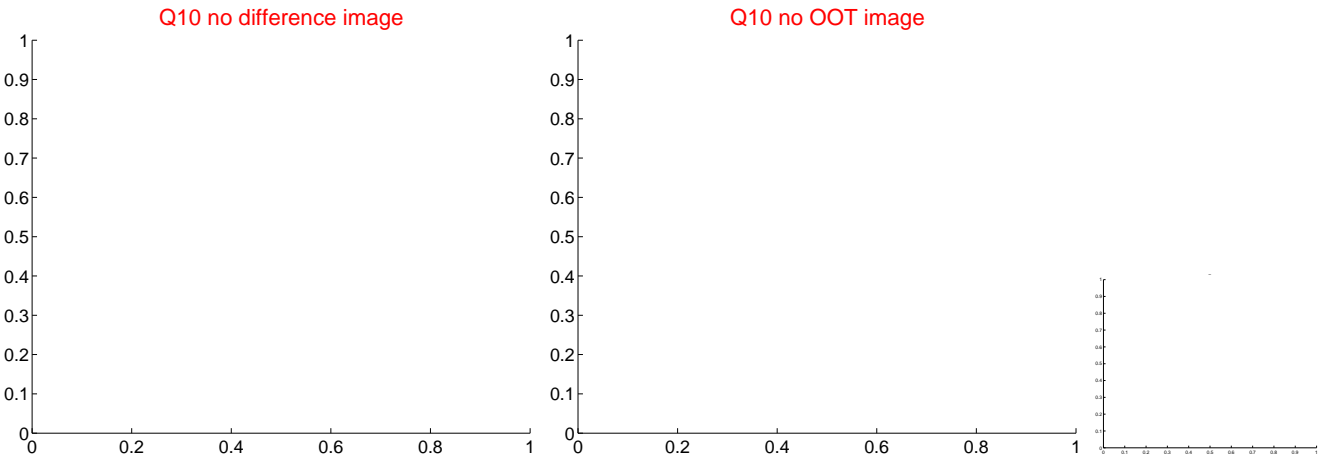
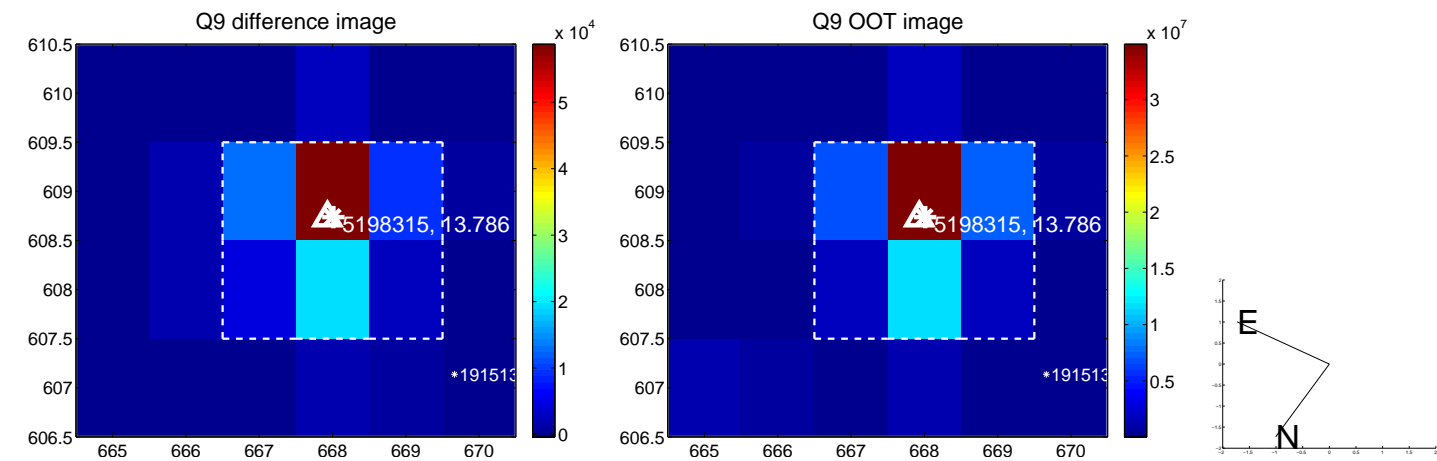
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

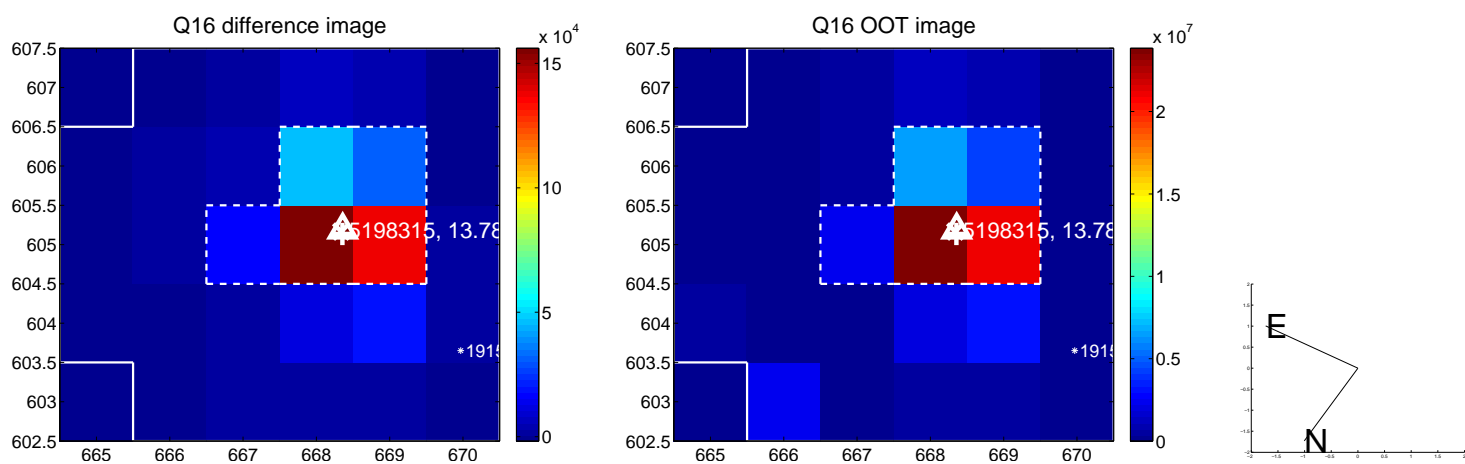
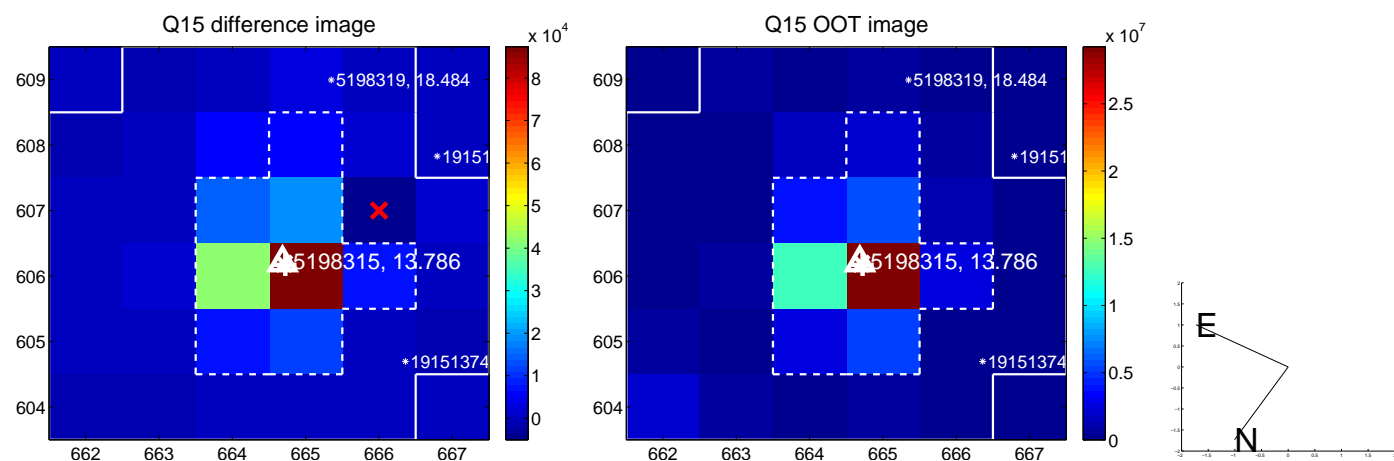
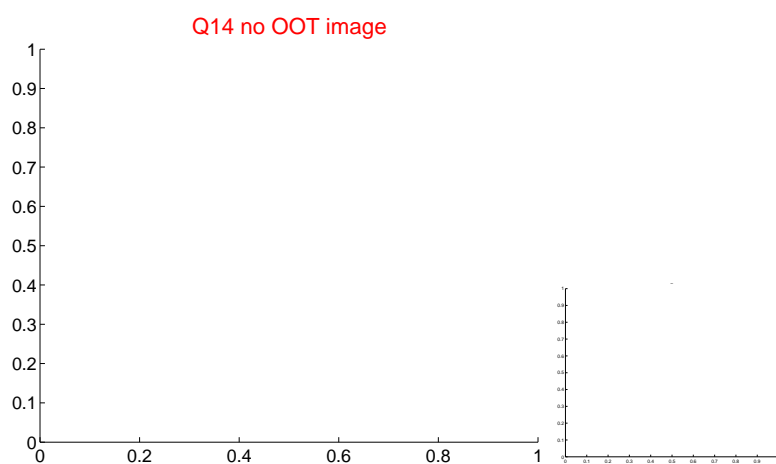
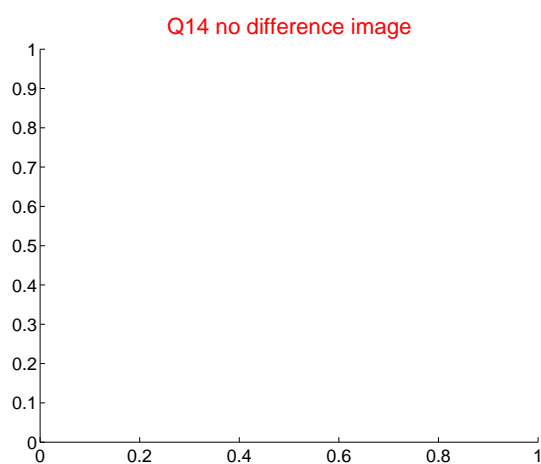
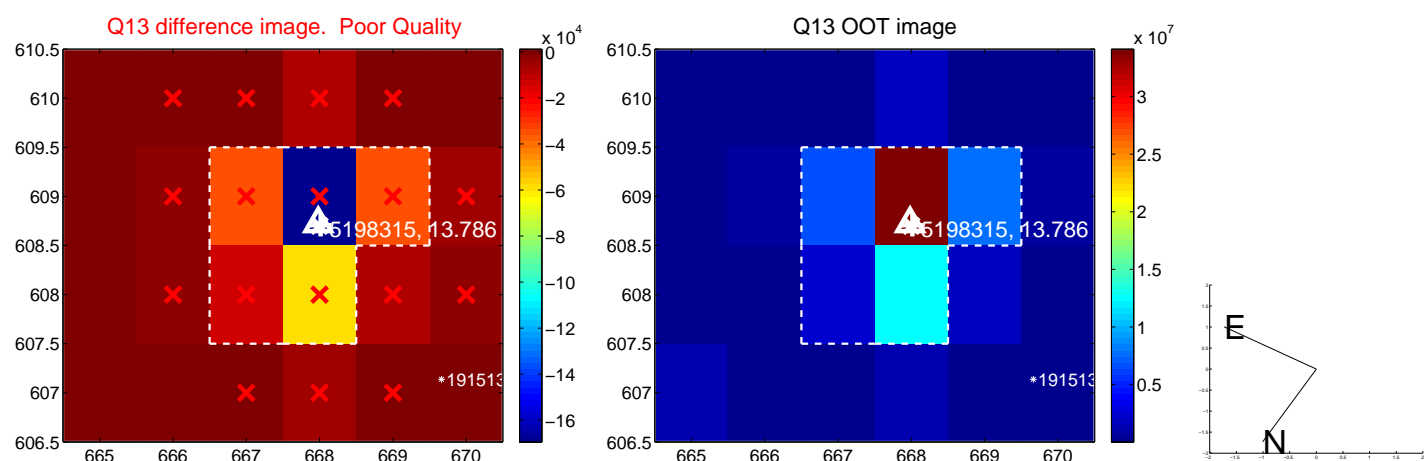


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

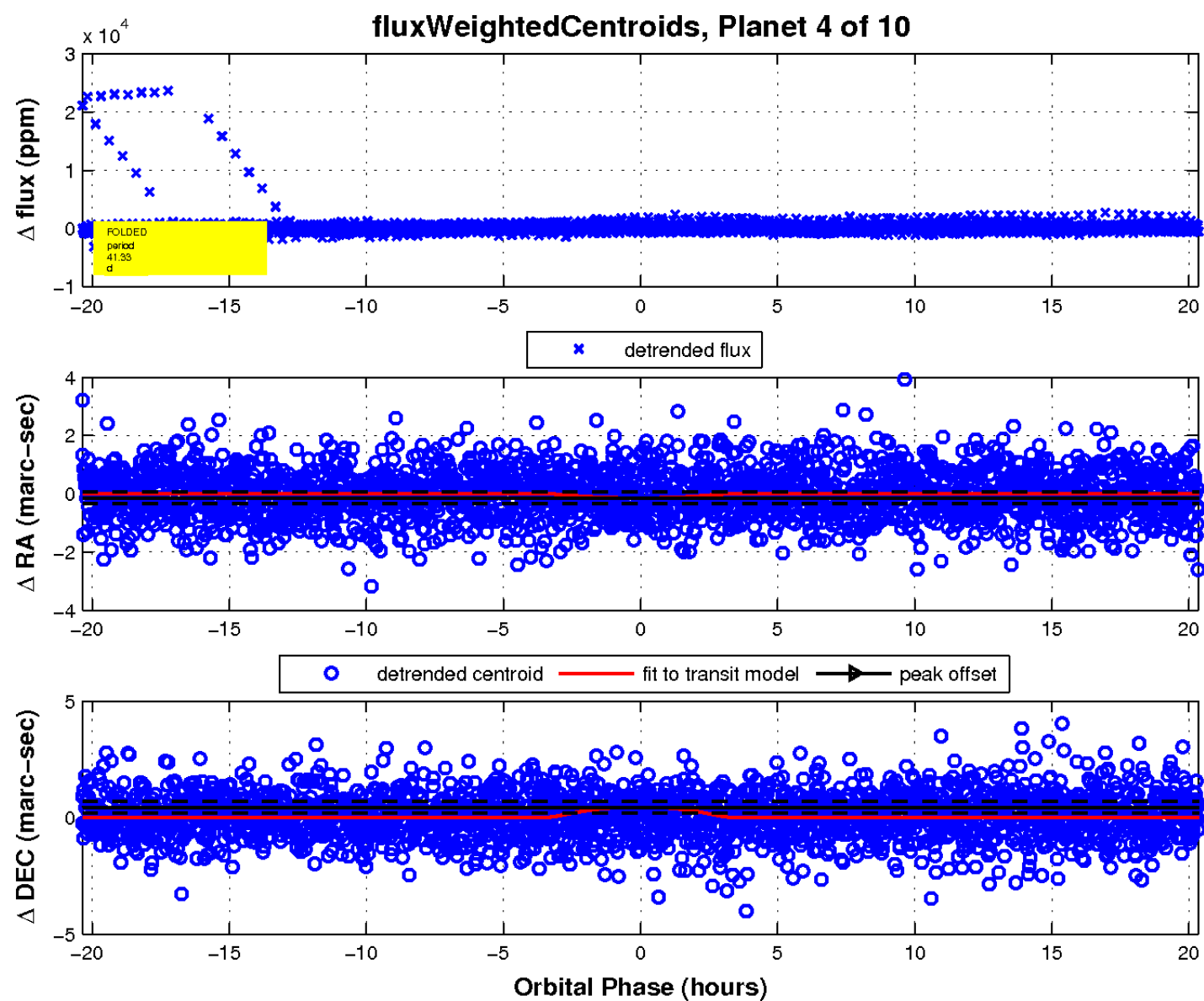
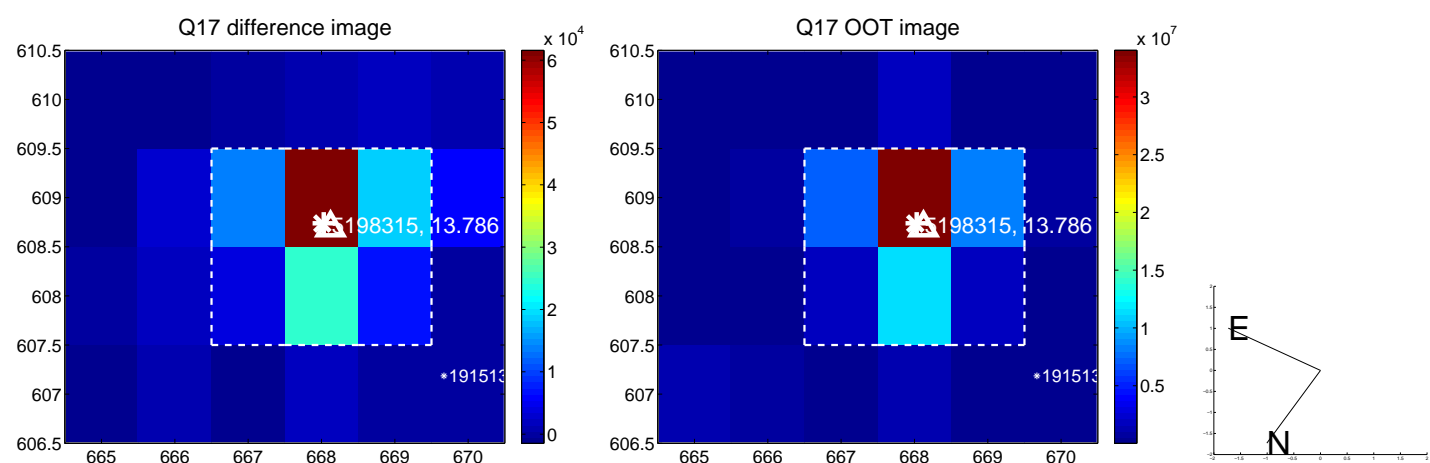




white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value

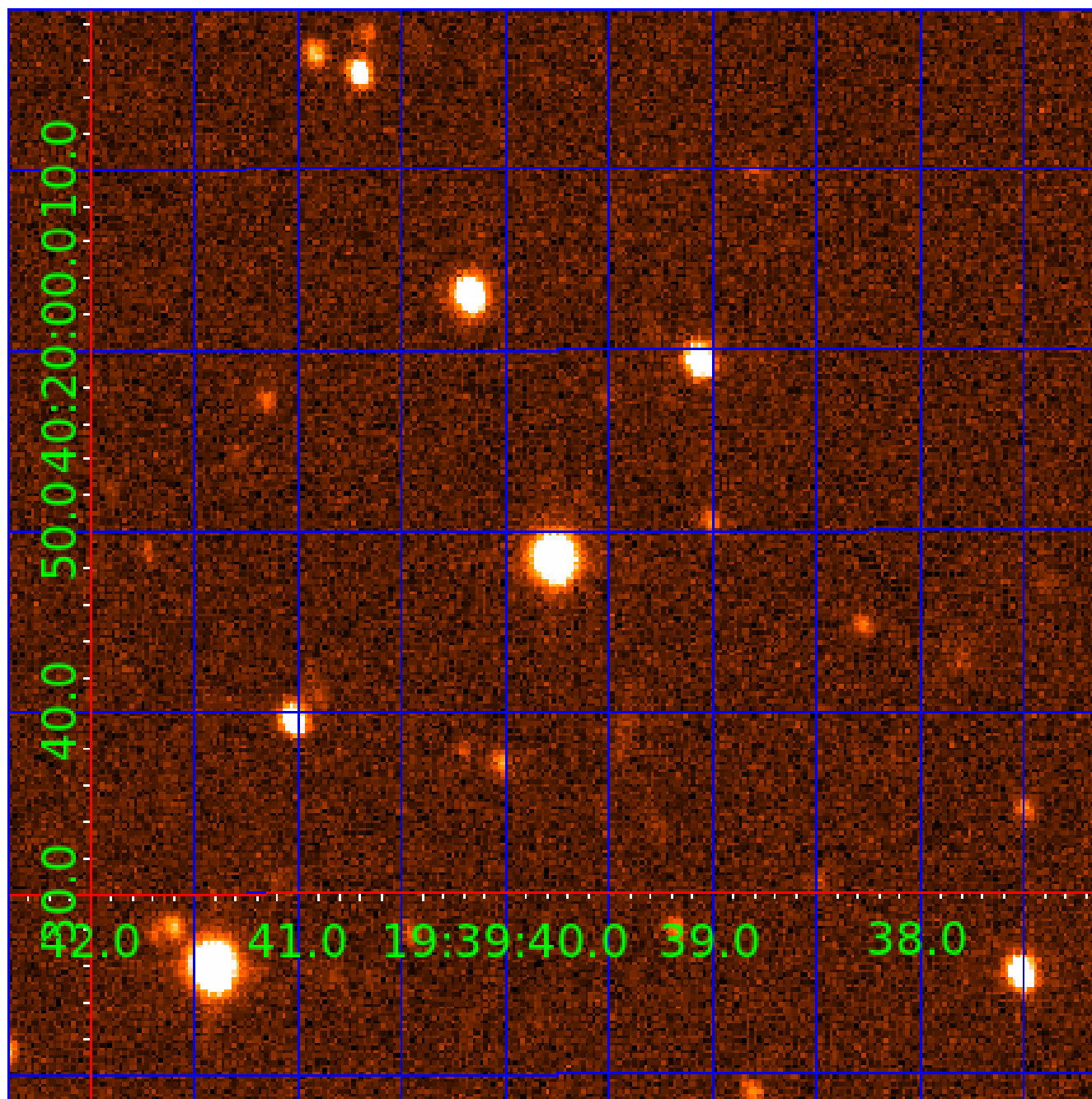


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 005198315

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005198315-01	OBS	No	1.821235	133.319401	142.6	11.552	8.7	12.0	3.12	8306	6.97	30678.67
005198315-02	OBS	No	74.166477	146.638639	674.2	12.500	19.4	-1.0	3.12	8306	8.20	218.97
005198315-03	OBS	No	73.398148	134.198409	915.1	12.184	13.6	11.0	3.12	8306	11.77	222.03
005198315-04	OBS	No	41.326624	159.088305	277.6	6.792	11.6	5.0	3.12	8306	6.78	477.55
005198315-05	OBS	No	192.913240	238.705450	372.9	10.500	11.6	-1.0	3.12	8306	6.10	61.21
005198315-06	OBS	No	39.374162	156.712384	345.6	7.500	10.4	-1.0	3.12	8306	5.87	509.38
005198315-07	OBS	No	132.319467	172.155165	1157.7	9.781	9.6	9.9	3.12	8306	15.73	101.19
005198315-09	OBS	No	39.508476	166.624208	322.1	11.722	8.5	6.4	3.12	8306	6.01	507.07
005198315-10	OBS	No	55.763625	156.268411	1097.2	3.217	8.4	12.1	3.12	8306	19.19	320.27

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005198315-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—MOD_NONUNIQ_DV
005198315-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_NOFITS
005198315-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
005198315-04	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—HALO_GHOST
005198315-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_NOFITS
005198315-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_NOFITS
005198315-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT
005198315-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
005198315-10	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT

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

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

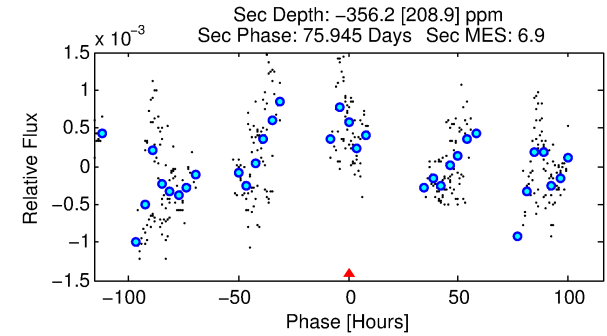
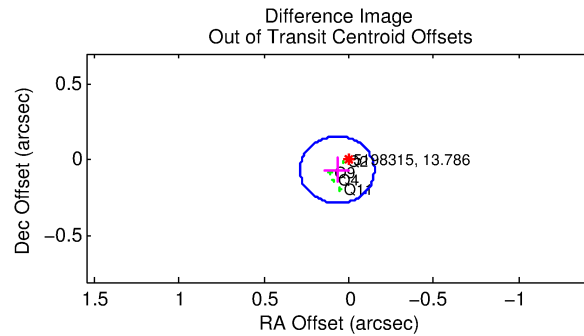
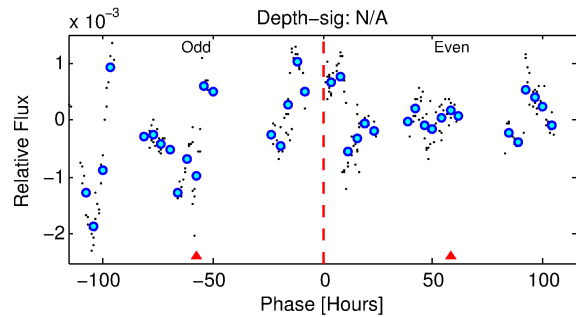
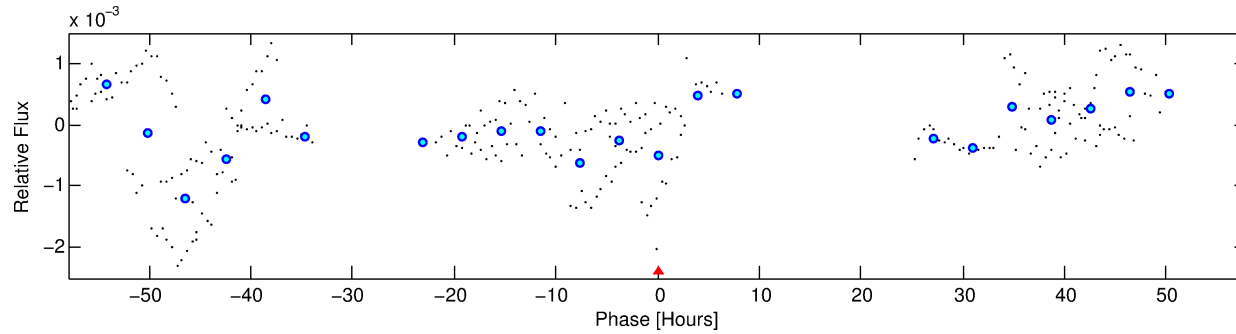
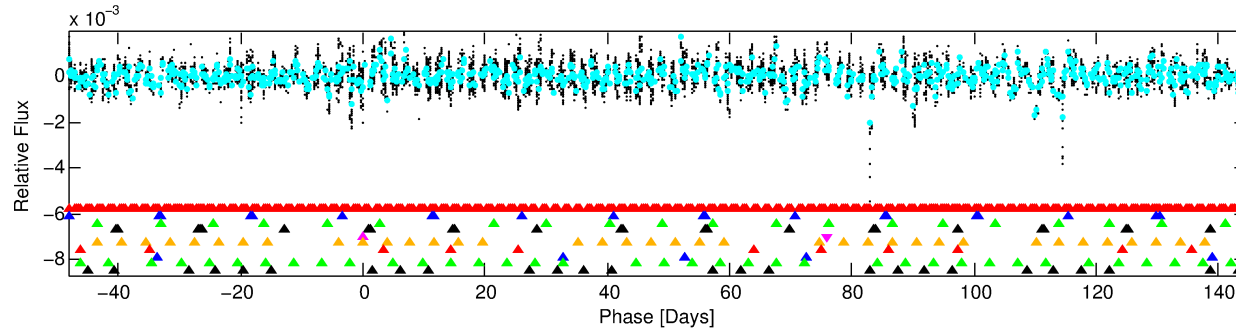
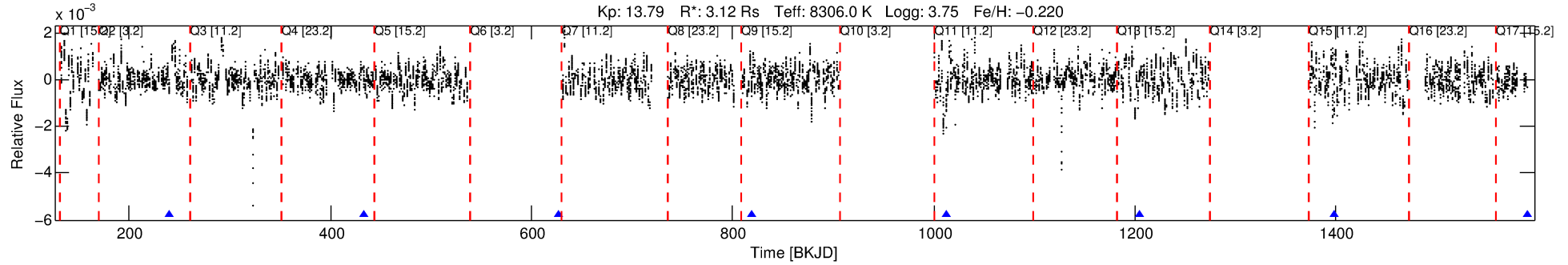
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 005198315-05

No Significant Match Found

# DV One-Page Summary

KIC: 5198315 Candidate: 5 of 10 Period: 192.913 d



## TPS TCE Results:

Period = 192.91324 d  
Epoch = 238.7054 BKJD

DV fit results are unavailable

## DV Diagnostic Results:

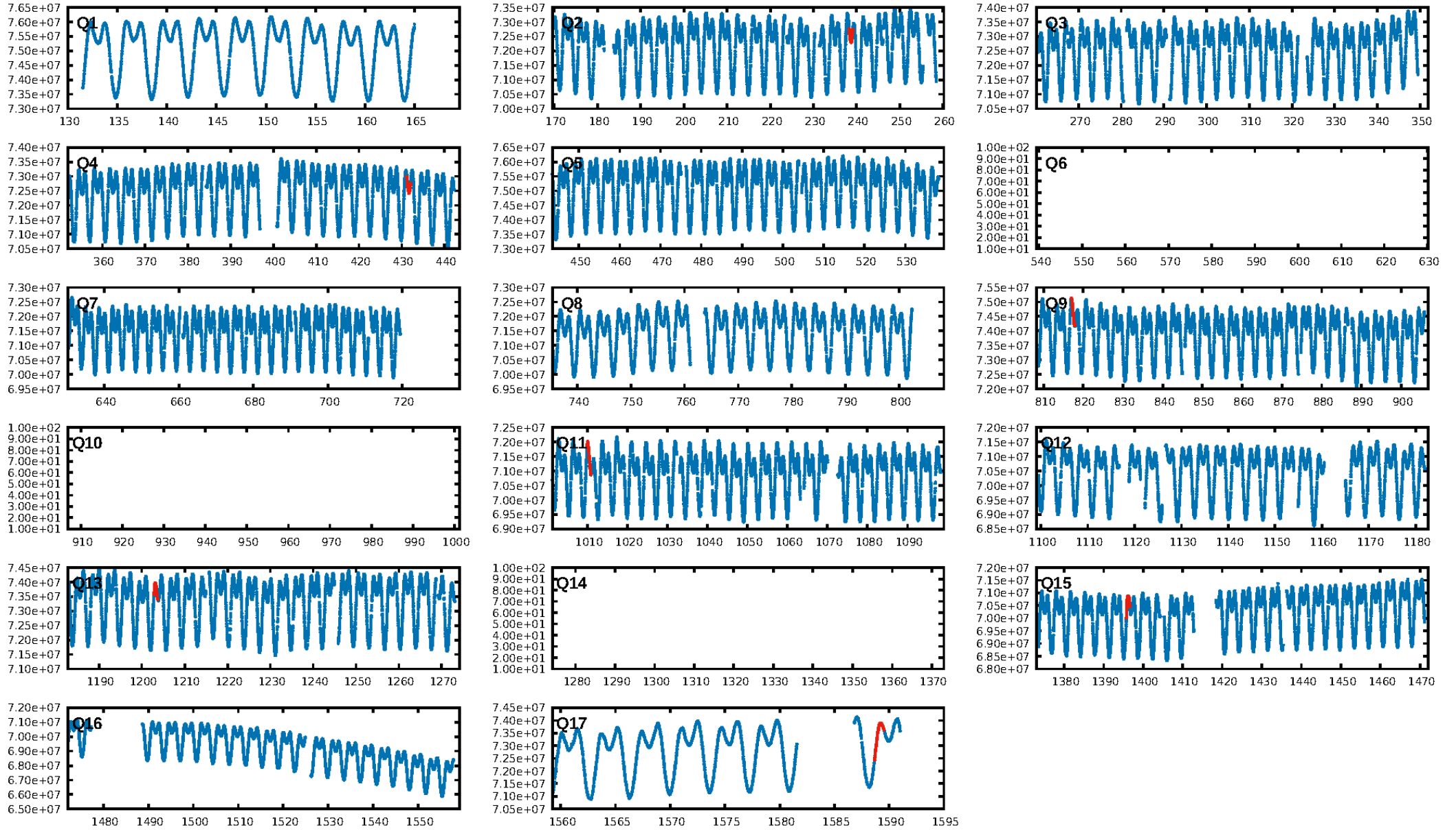
ShortPeriod-sig: 100.0% [101.34σ]  
LongPeriod-sig: 100.0% [55.90σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [4/4]  
GhostDiagnostic-chr: 0.4566

Centroid-sig: 49.0%  
Centroid-so: 0.098 arcsec [7.37σ]  
OotOffset-rm: 0.094 arcsec [1.29σ]  
KicOffset-rm: 0.036 arcsec [0.43σ]  
OotOffset-st: 1/1/1/1 [4]  
KicOffset-st: 1/1/1/1 [4]  
DiffImageQuality-fgm: 1.00 [4/4]  
DiffImageOverlap-fno: 0.00 [0/4]

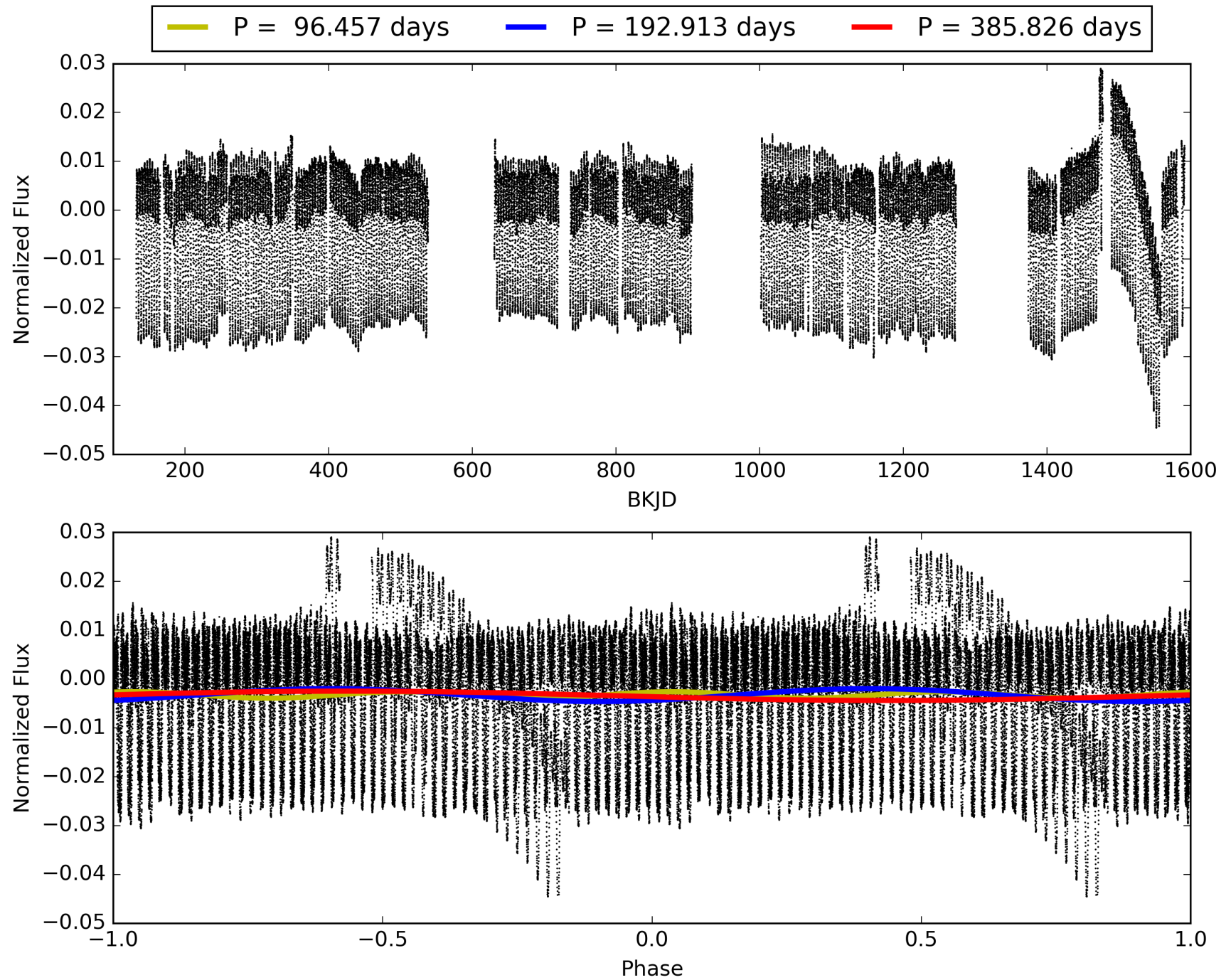
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 01:20:59 Z

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

# TCE 005198315-05, PDC Light Curves



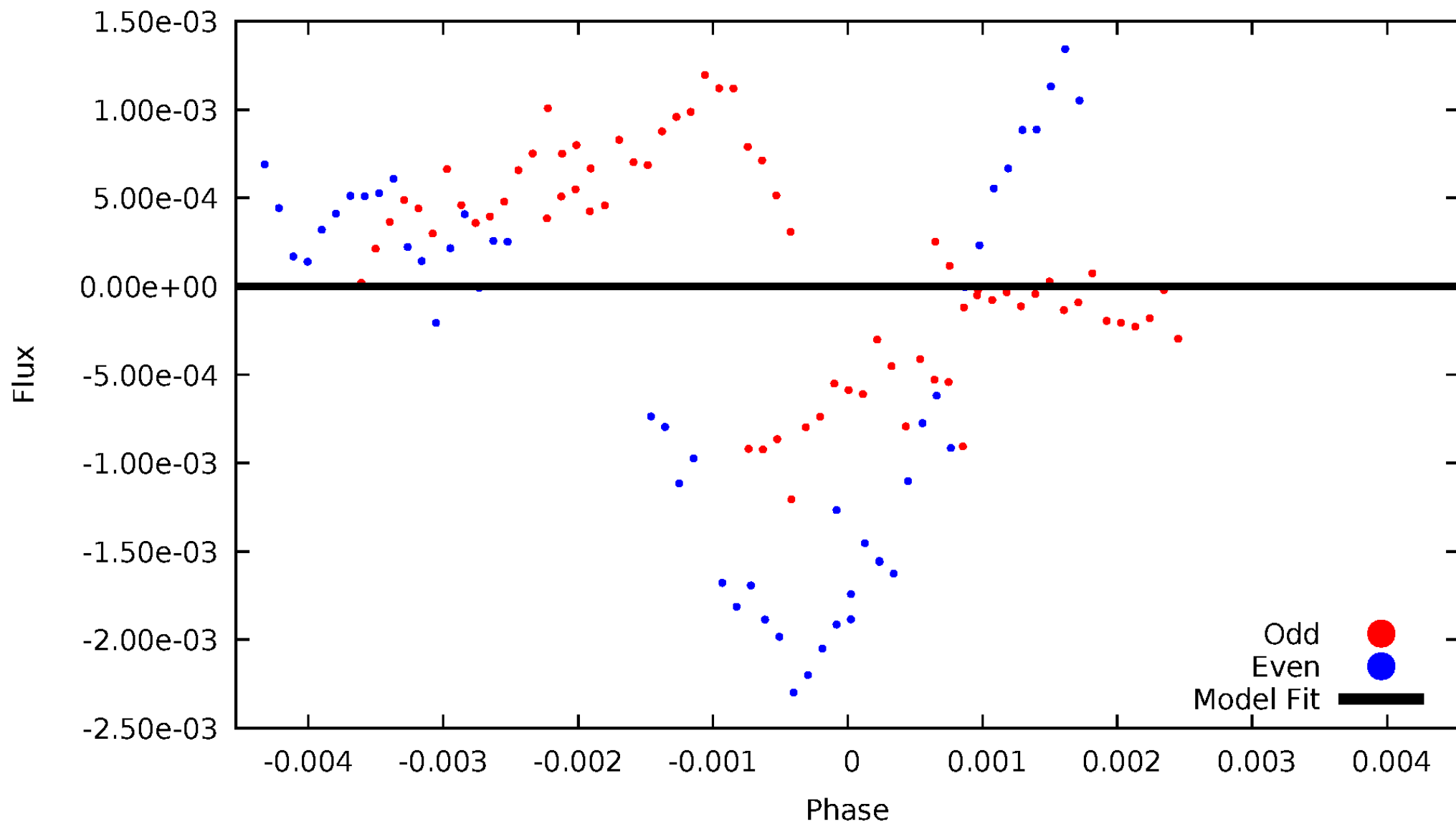
TCE 005198315-05





# DV Odd/Even

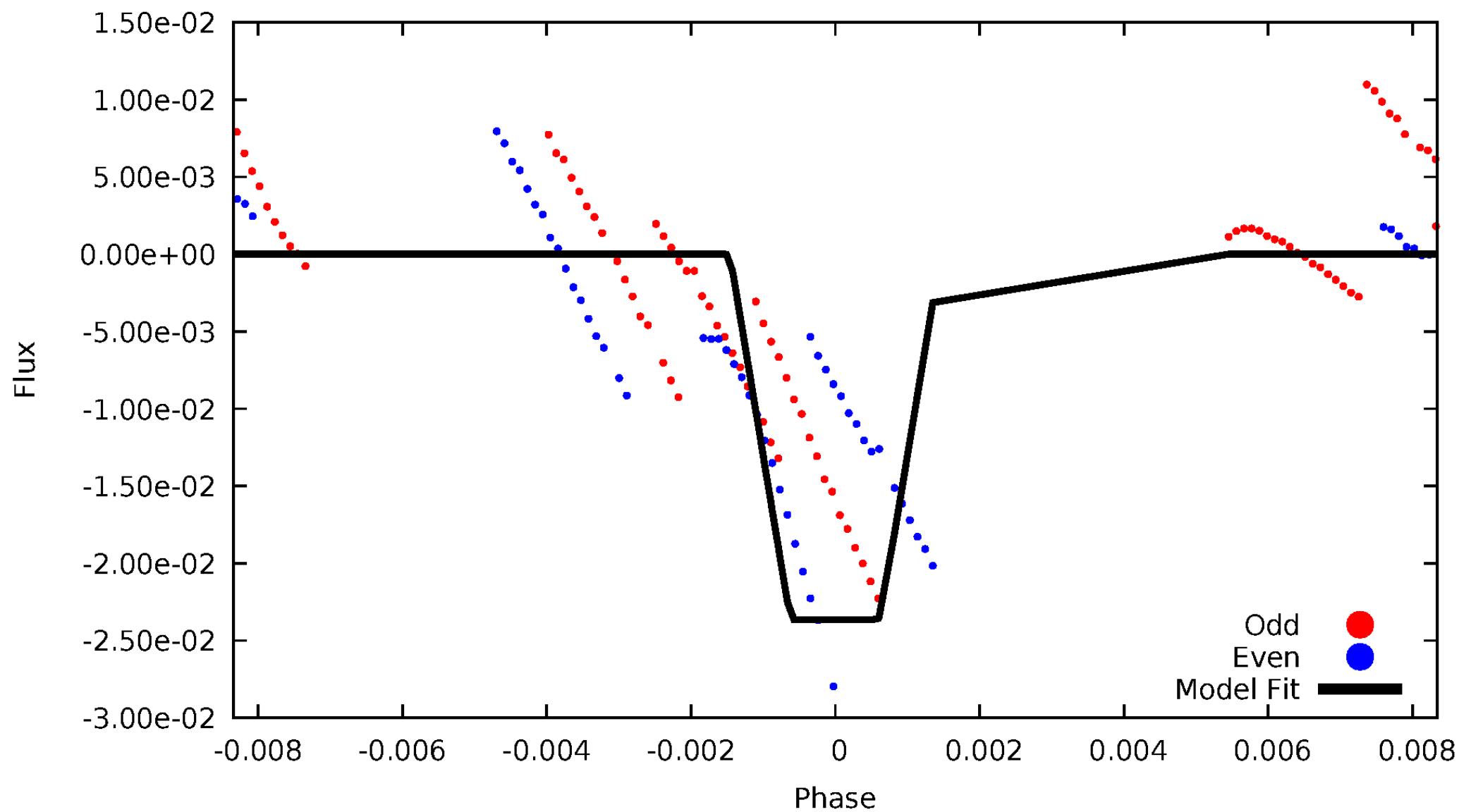
TCE 005198315-05



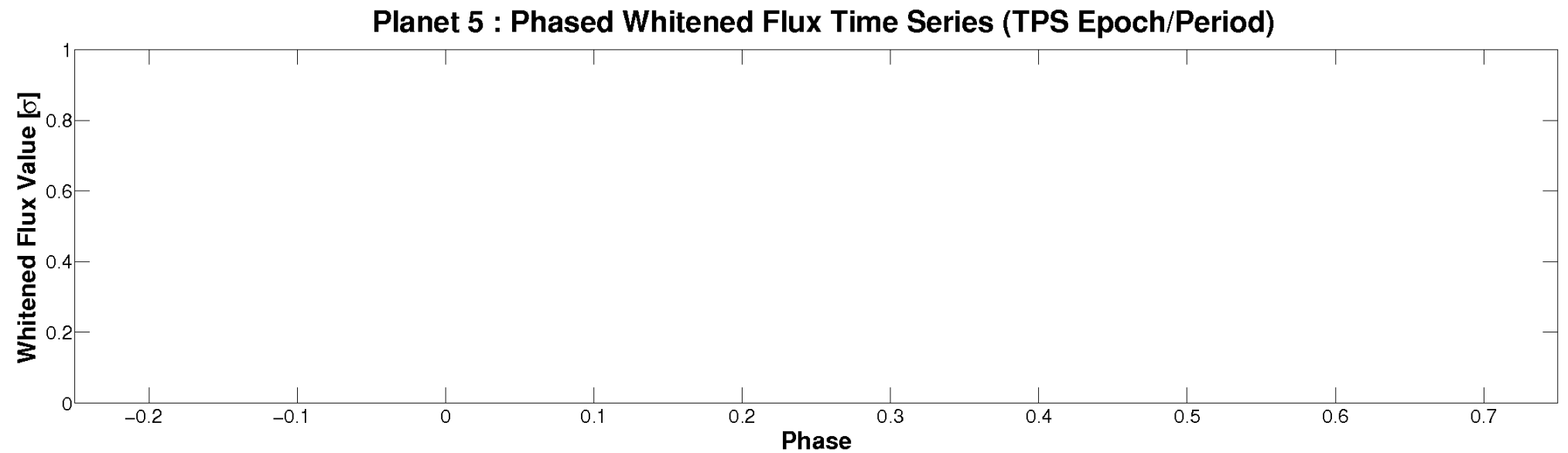
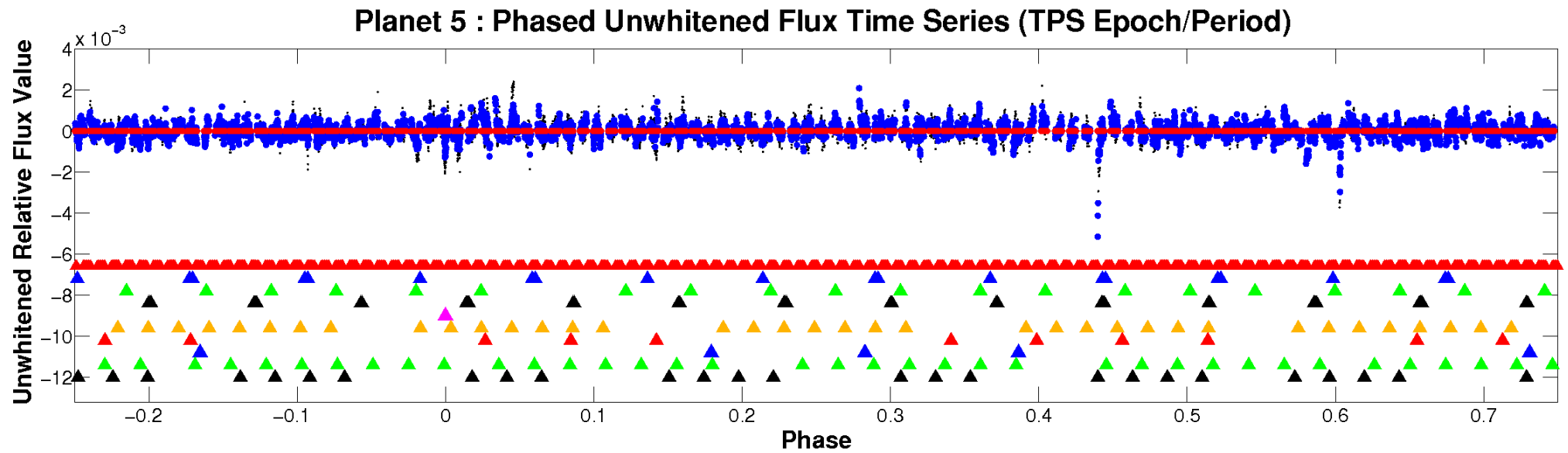


# ALT Odd/Even

TCE 005198315-05

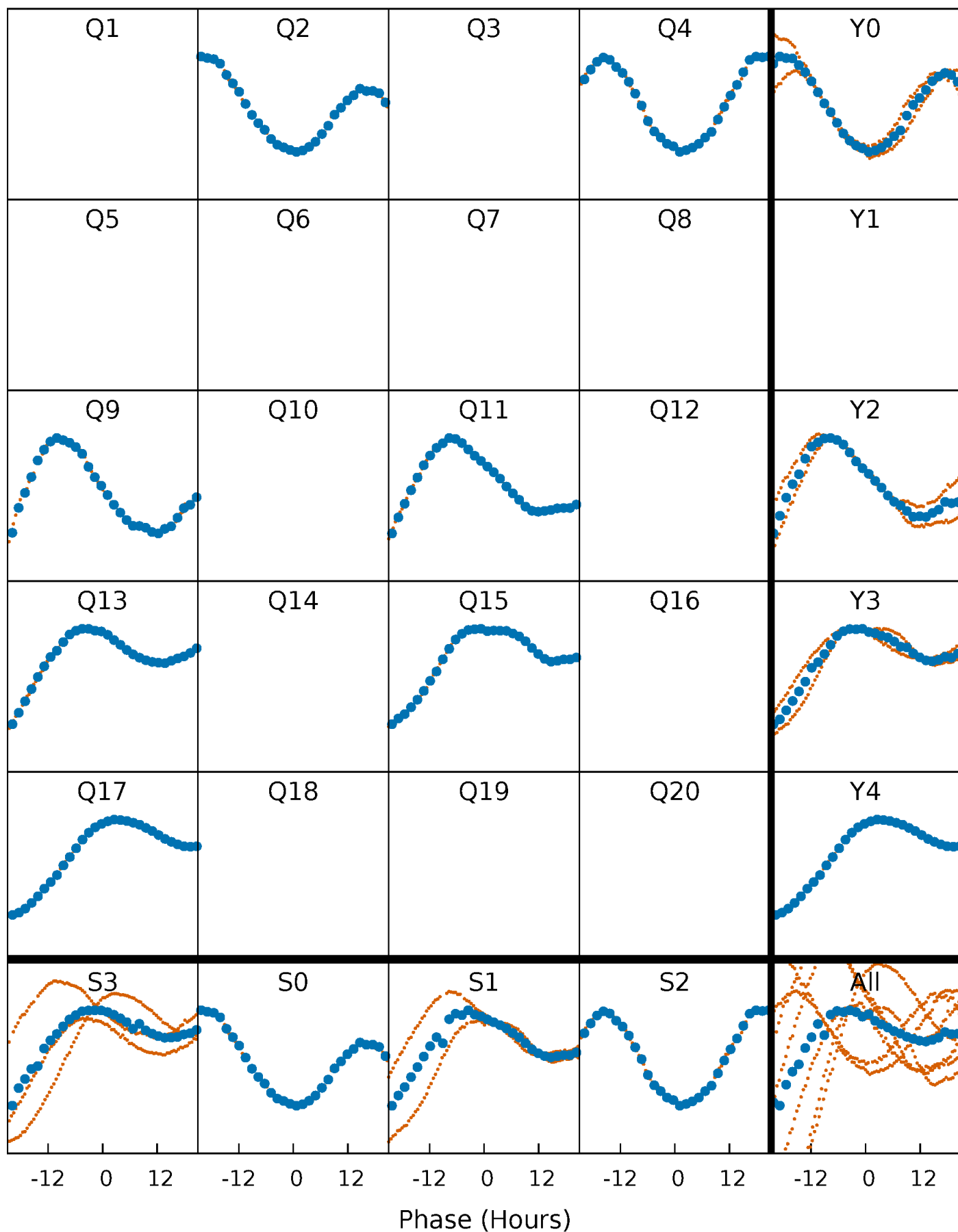


# Non-Whitened Vs. Whitened Light Curve



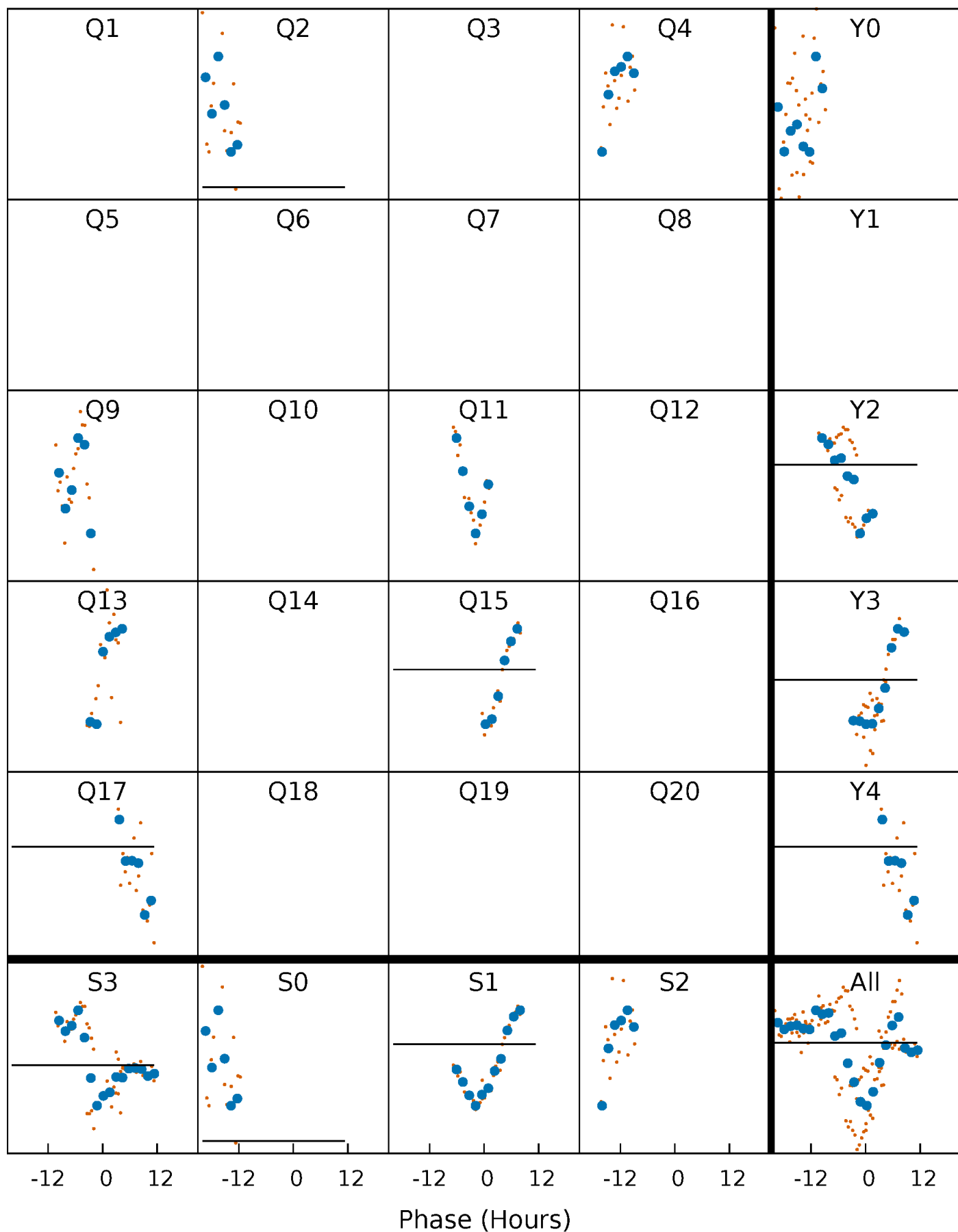
# PDC Quarter-Phased Transit Curves

TCE 005198315-05 P=192.913240 Days  $T_0=238.705450$  (BKJD)



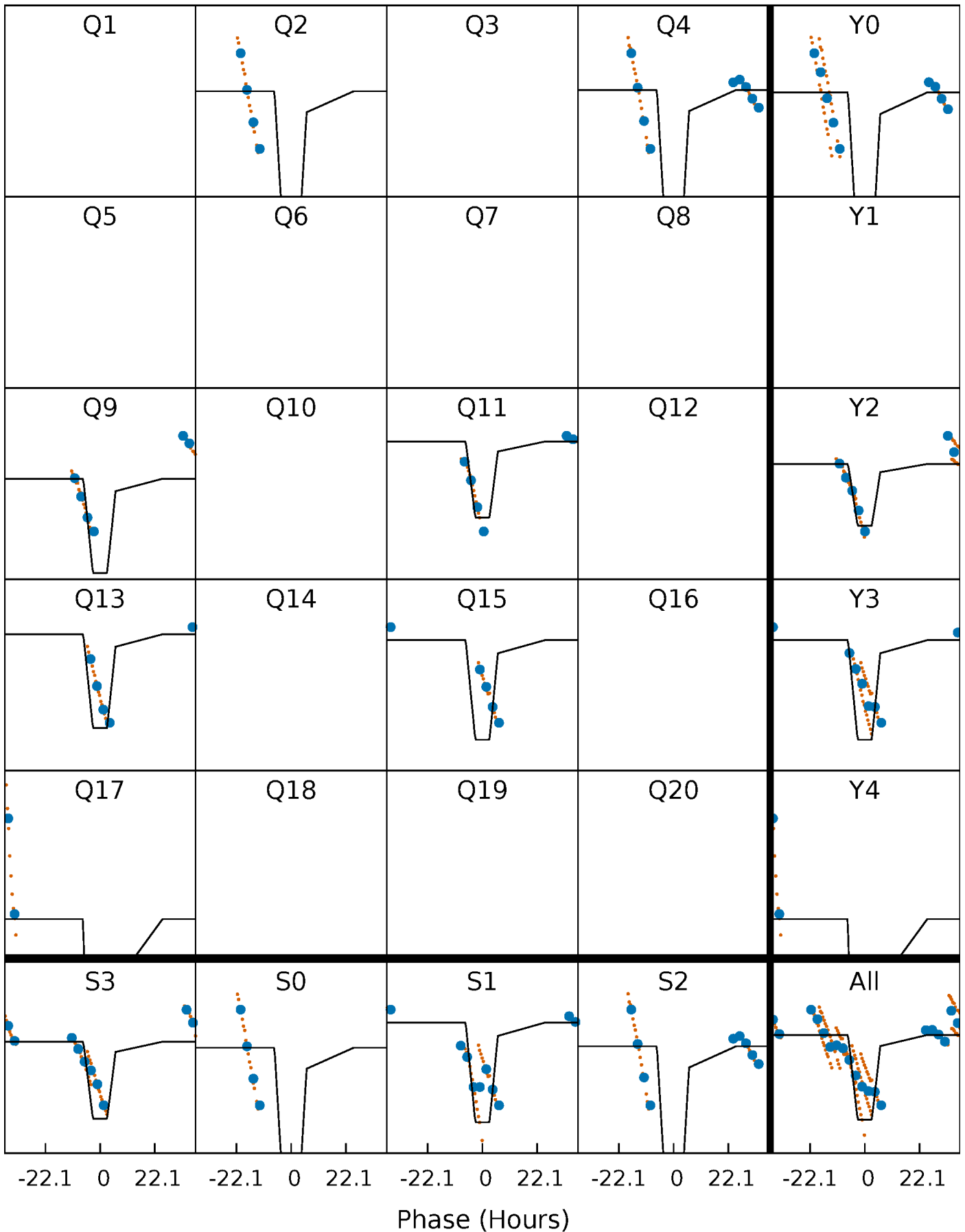
# DV Quarter-Phased Transit Curves

TCE 005198315-05     $P=192.913240$  Days     $T_0=238.705450$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

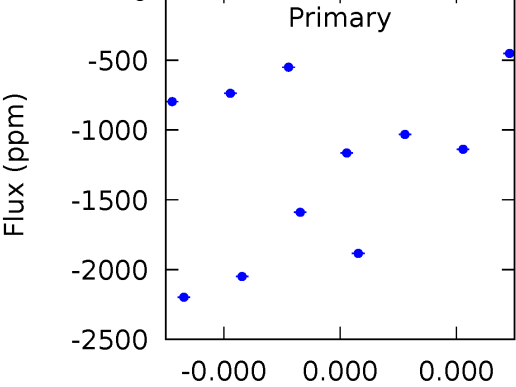
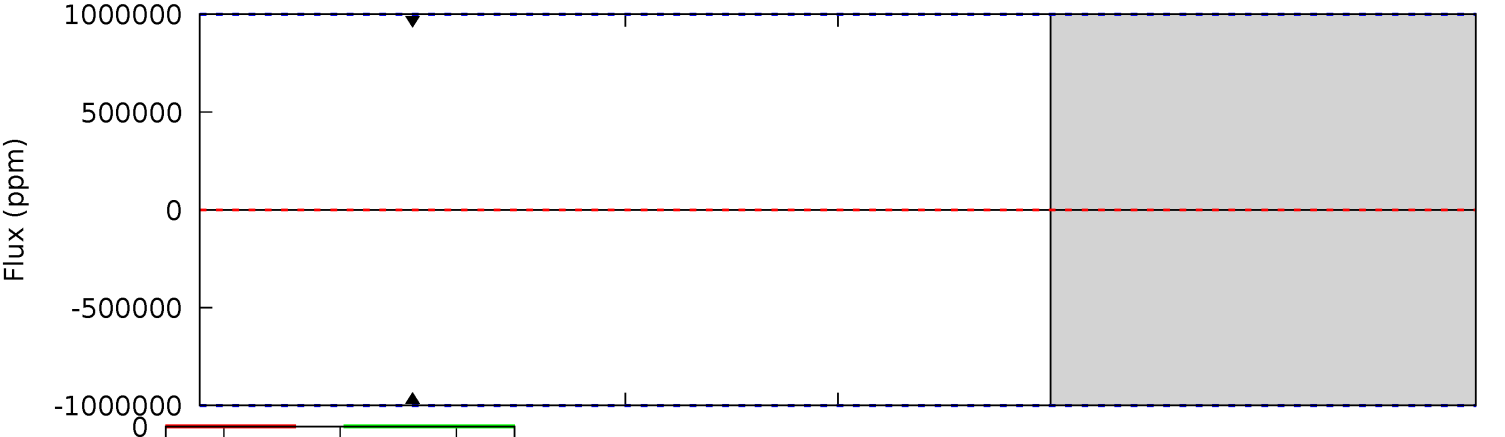
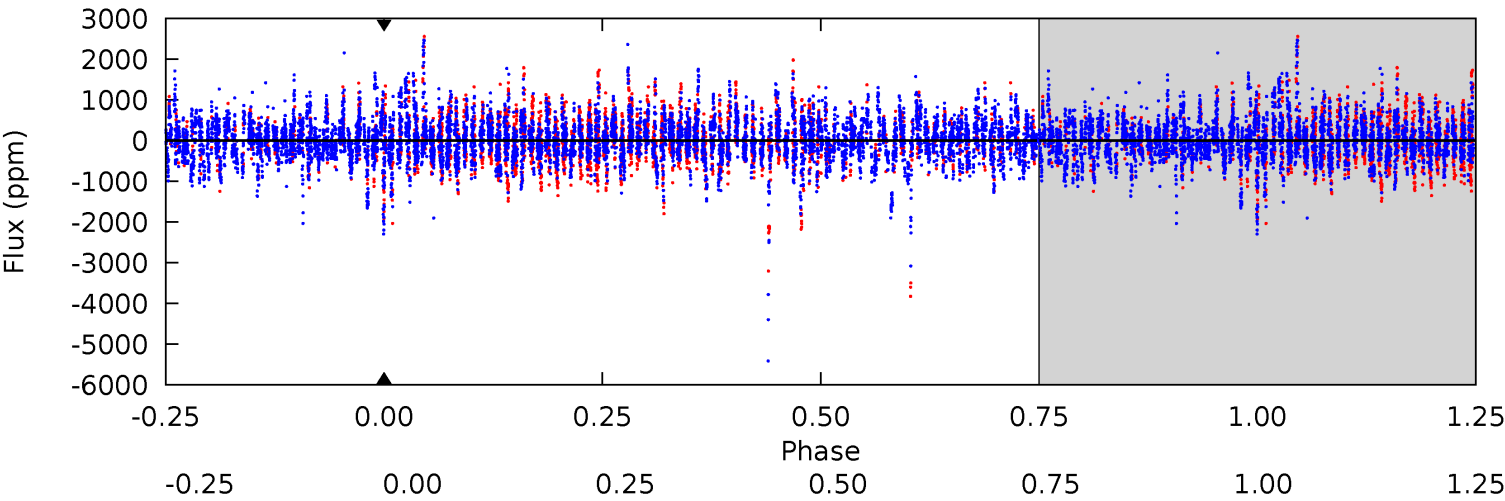
TCE 005198315-05     $P=192.913240$  Days     $T_0=240.594880$  (BKJD)



# DV Model-Shift Uniqueness Test

005198315-05, P = 192.913240 Days, E = 45.792210 Days

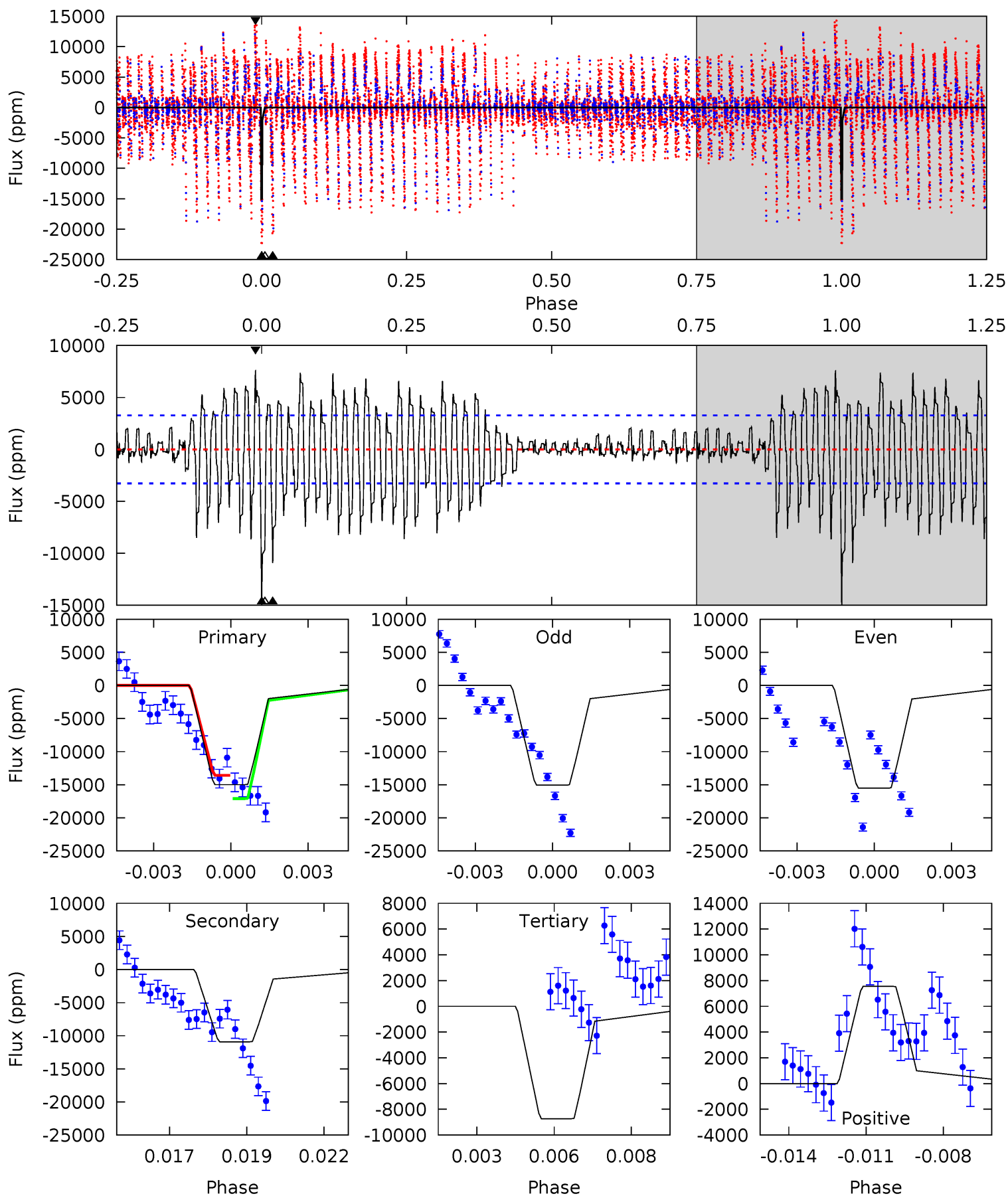
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



# Alt Model-Shift Uniqueness Test

005198315-05, P = 192.913240 Days, E = 47.681640 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
24.1	17.5	14.0	12.1	5.27	2.99	4.70	10.1	12.0	3.50	5.40	0.35	1.00	0.33	2.68



### Stellar Parameters For KIC 005198315

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$8306^{+202}_{-347}$	$3.751^{+0.451}_{-0.106}$	$-0.220^{+0.250}_{-0.350}$	$3.121^{+0.652}_{-1.412}$	$2.001^{+0.343}_{-0.471}$	$0.093^{+0.378}_{-0.031}$
	+2%/-4%	+12%/-3%	+114%/-159%	+21%/-45%	+17%/-24%	+408%/-33%
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 005198315-05 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$0 \pm 1000000$	$23.17^{+25.04}_{-16.61}$	$961^{+72}_{-121}$	$7431^{+51447}_{-45702}$	$2733^{+147287}_{-90541}$
Alt.	$-10910 \pm 623$	$48.76^{+34.67}_{-26.94}$	$961^{+69}_{-114}$	$6468^{+4035}_{-1305}$	$1692^{+6885}_{-1101}$

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



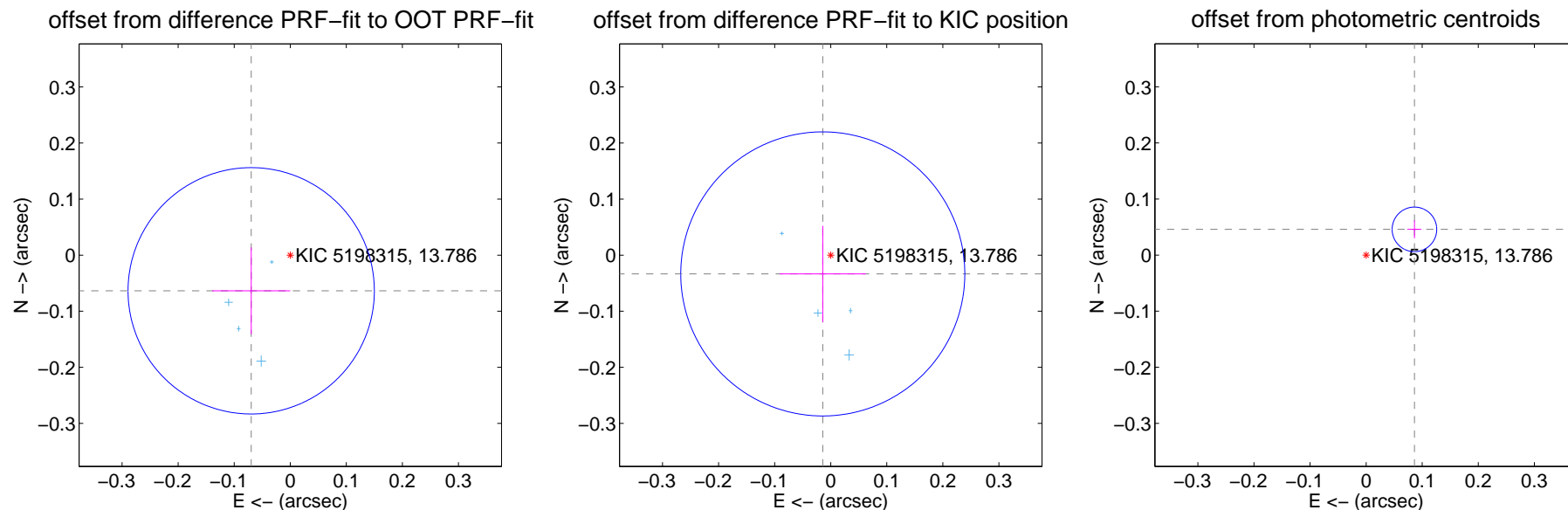
## DV Centroid Data

Supplemental centroid analysis for 005198315-05. Kepler magnitude: 13.79. Transit SNR -1.00

There are 4 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.09 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.094 \pm 0.073$	1.29	$0.070 \pm 0.070$	$-0.064 \pm 0.077$
PRF-fit source offset from KIC position	$0.036 \pm 0.084$	0.43	$0.014 \pm 0.077$	$-0.033 \pm 0.086$
photometric centroid source offset	$0.10 \pm 0.01$	7.37	$-0.09 \pm 0.01$	$0.05 \pm 0.02$



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.

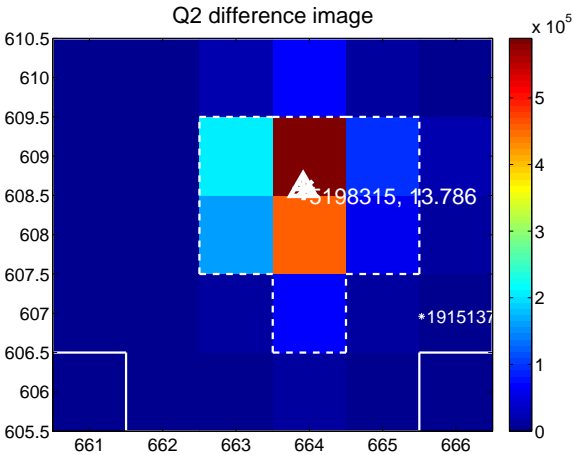
Q1 no difference image



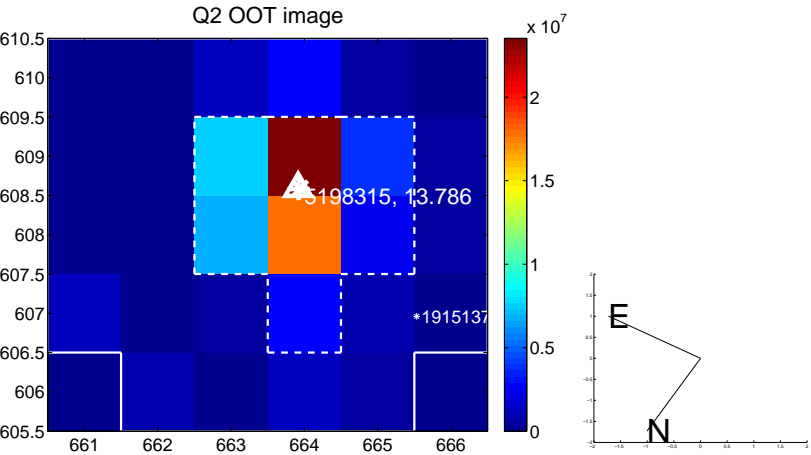
Q1 no OOT image



Q2 difference image



Q2 OOT image



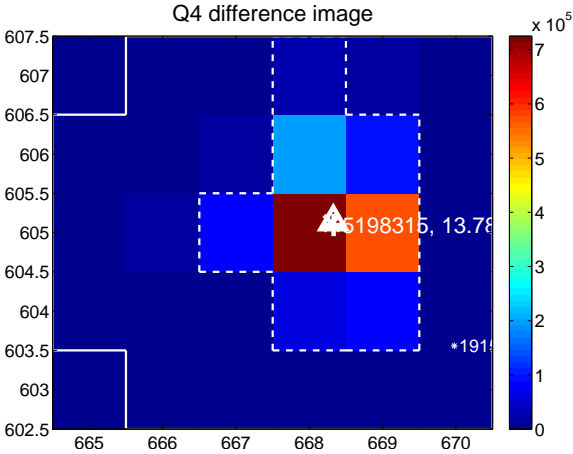
Q3 no difference image



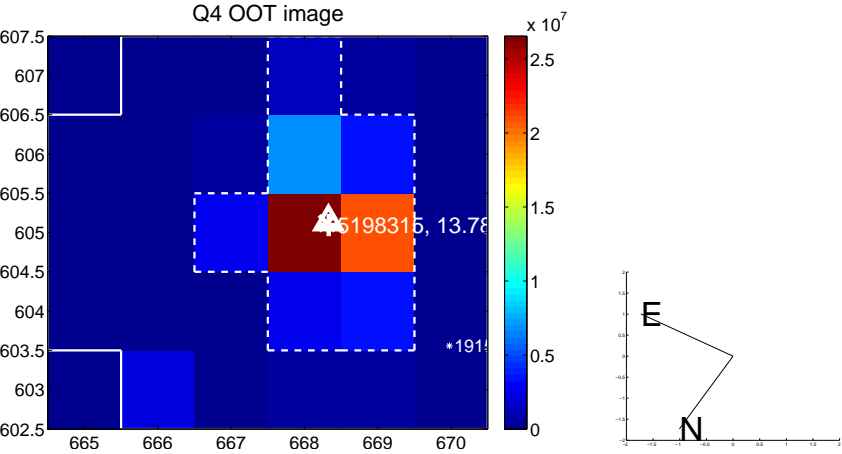
Q3 no OOT image



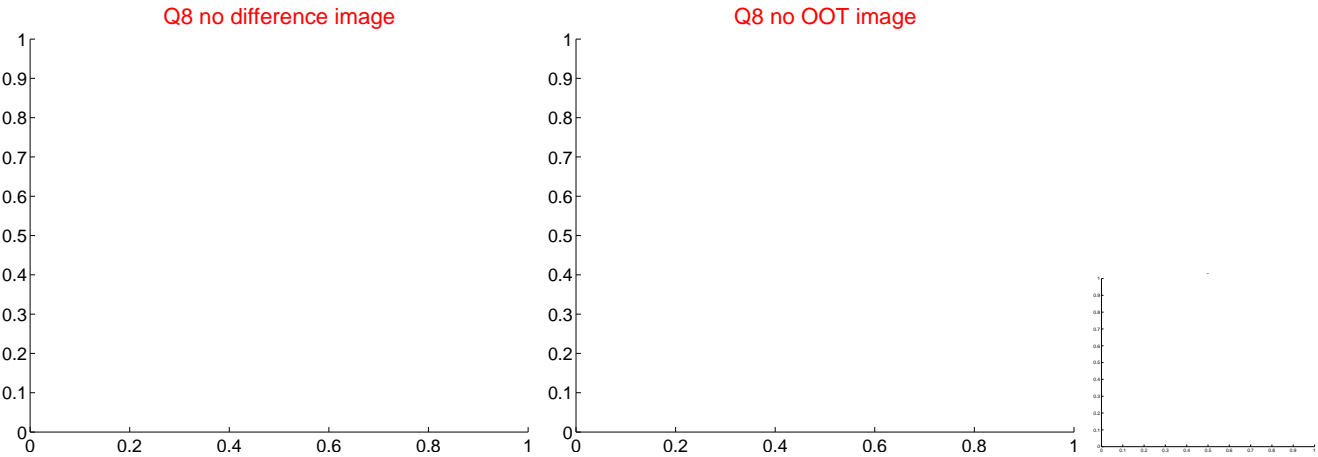
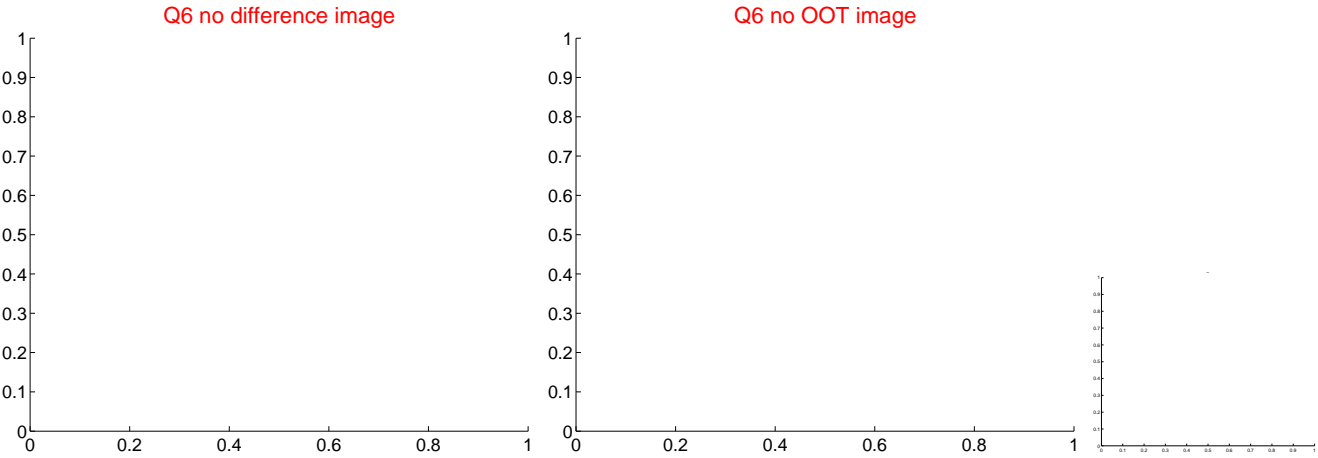
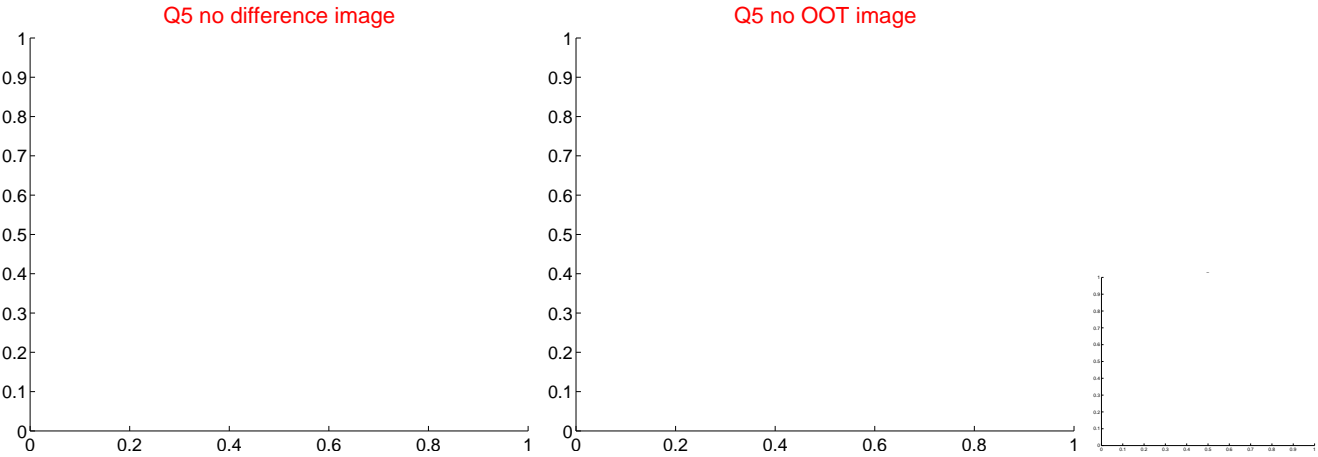
Q4 difference image



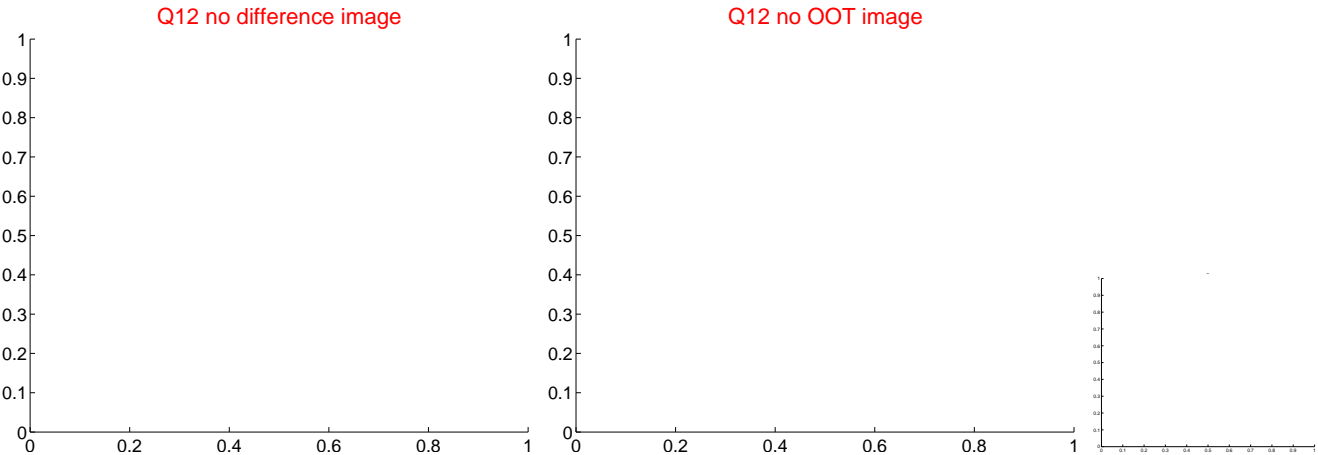
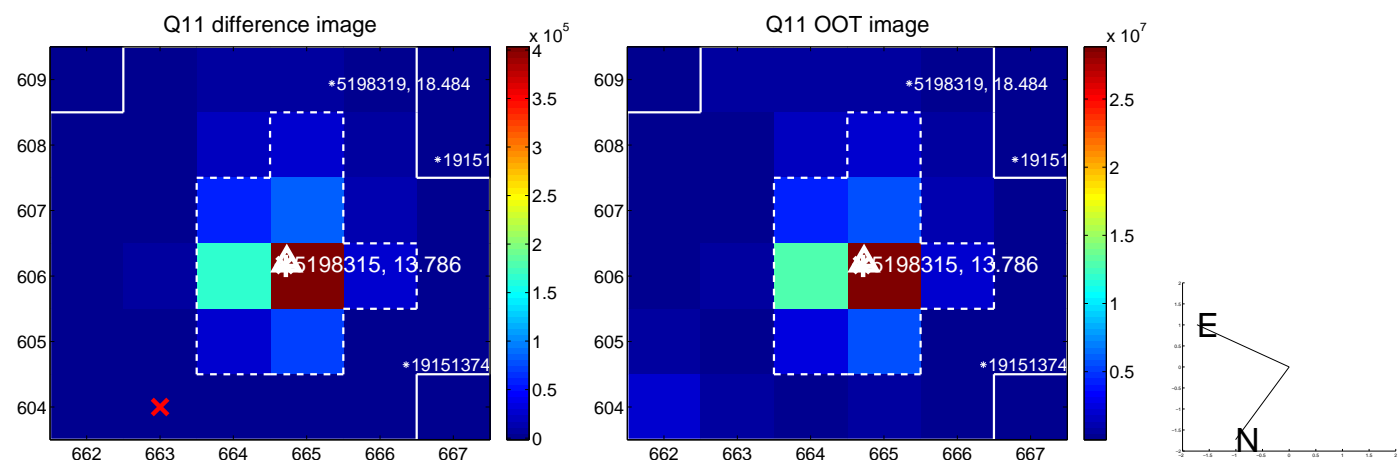
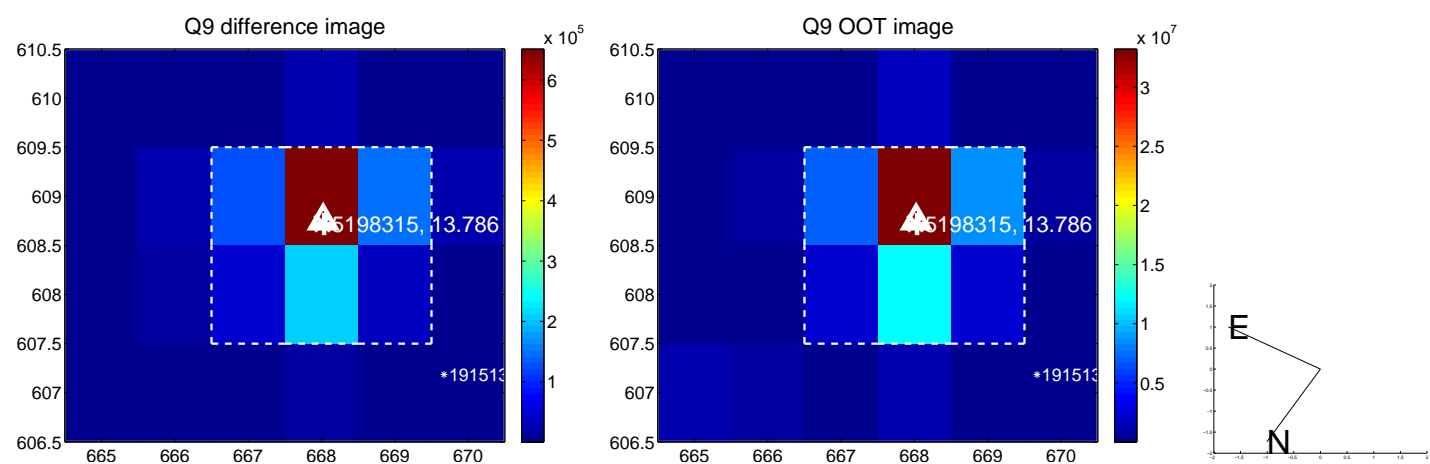
Q4 OOT image



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



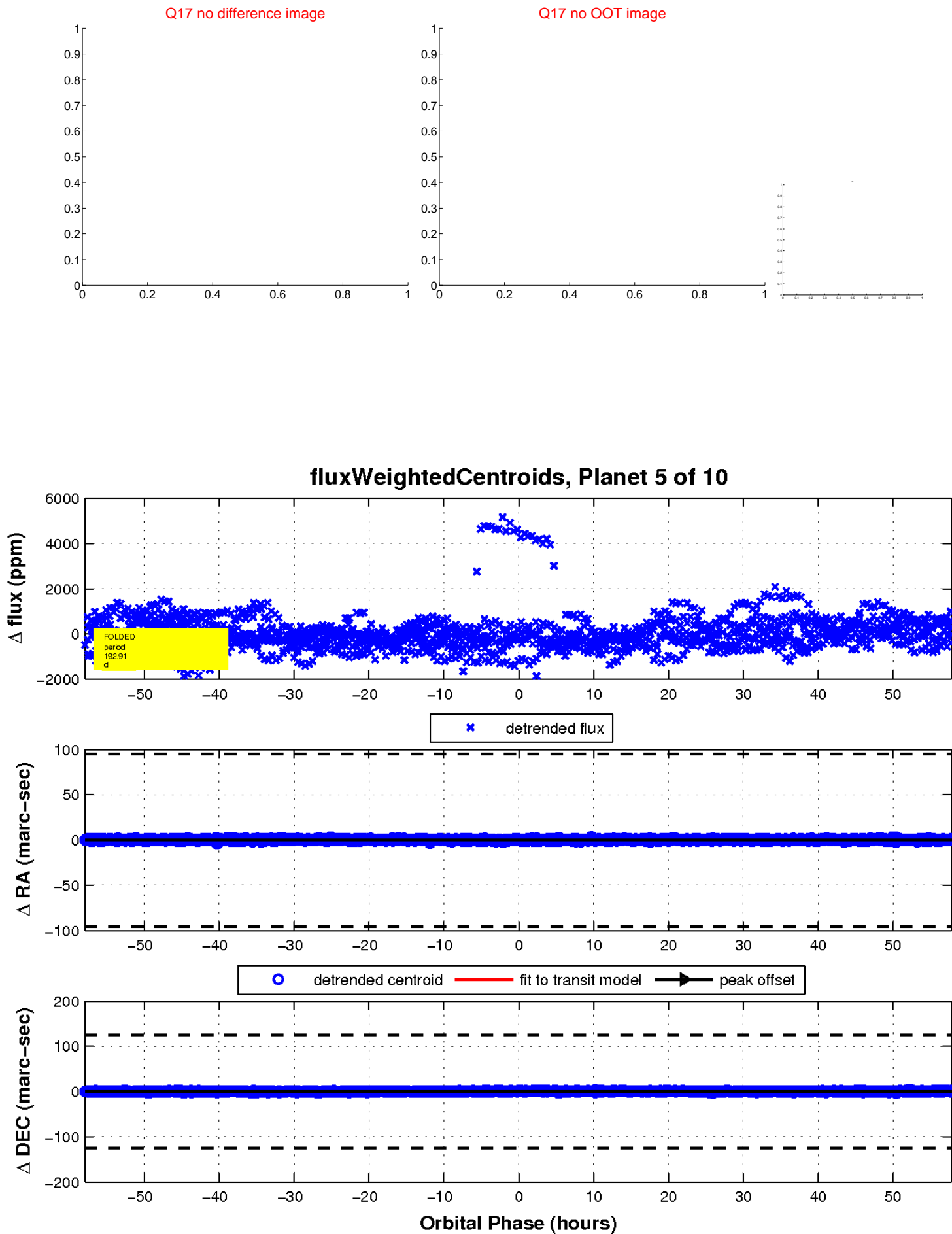
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

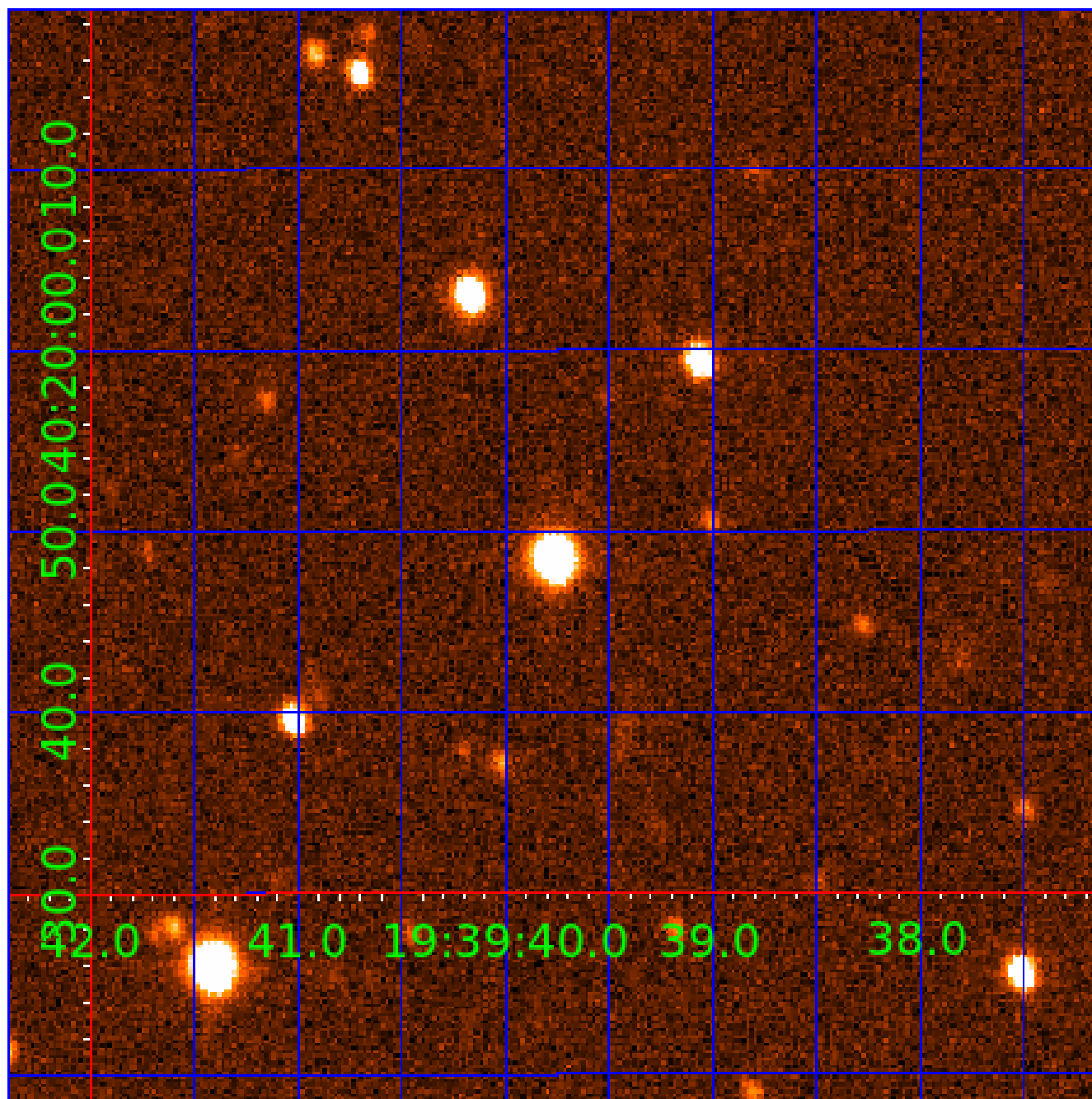


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 005198315

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005198315-01	OBS	No	1.821235	133.319401	142.6	11.552	8.7	12.0	3.12	8306	6.97	30678.67
005198315-02	OBS	No	74.166477	146.638639	674.2	12.500	19.4	-1.0	3.12	8306	8.20	218.97
005198315-03	OBS	No	73.398148	134.198409	915.1	12.184	13.6	11.0	3.12	8306	11.77	222.03
005198315-04	OBS	No	41.326624	159.088305	277.6	6.792	11.6	5.0	3.12	8306	6.78	477.55
005198315-05	OBS	No	192.913240	238.705450	372.9	10.500	11.6	-1.0	3.12	8306	6.10	61.21
005198315-06	OBS	No	39.374162	156.712384	345.6	7.500	10.4	-1.0	3.12	8306	5.87	509.38
005198315-07	OBS	No	132.319467	172.155165	1157.7	9.781	9.6	9.9	3.12	8306	15.73	101.19
005198315-09	OBS	No	39.508476	166.624208	322.1	11.722	8.5	6.4	3.12	8306	6.01	507.07
005198315-10	OBS	No	55.763625	156.268411	1097.2	3.217	8.4	12.1	3.12	8306	19.19	320.27

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005198315-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—MOD_NONUNIQ_DV
005198315-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_NOFITS
005198315-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
005198315-04	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—HALO_GHOST
005198315-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_NOFITS
005198315-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_NOFITS
005198315-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT
005198315-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
005198315-10	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT

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

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

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

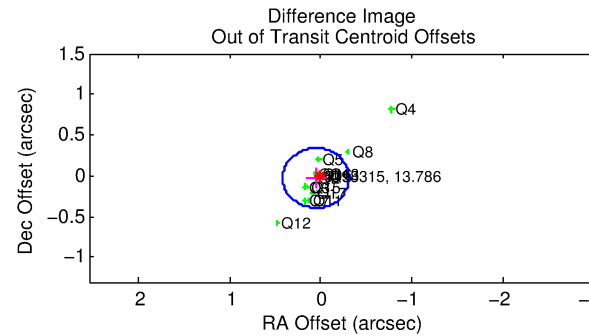
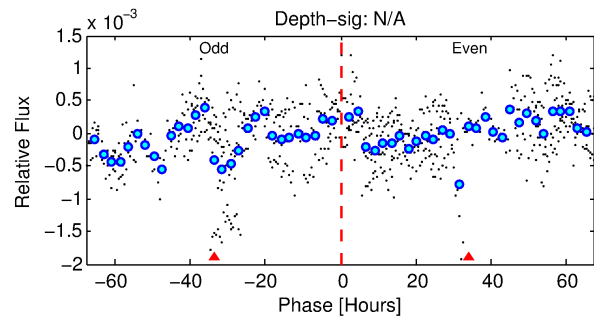
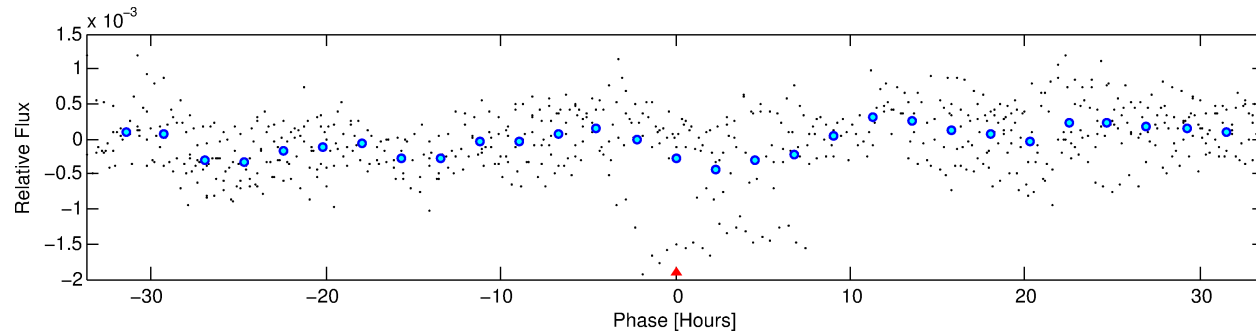
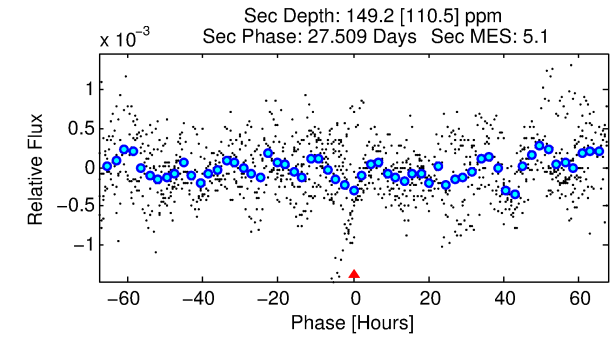
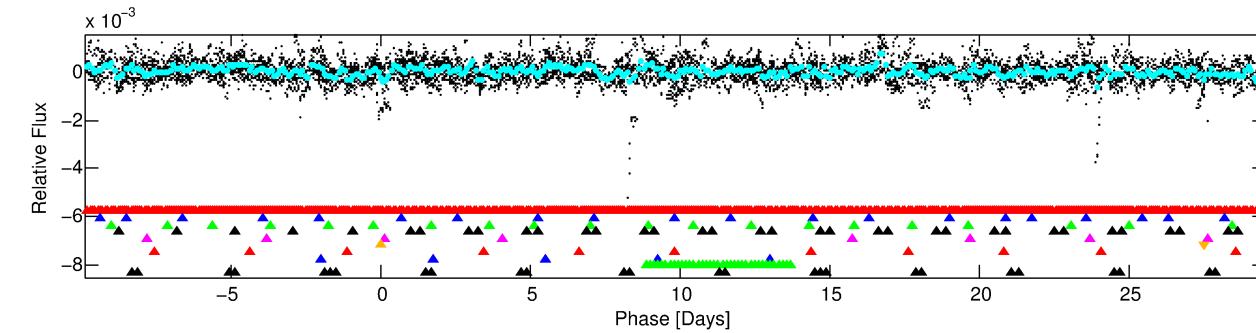
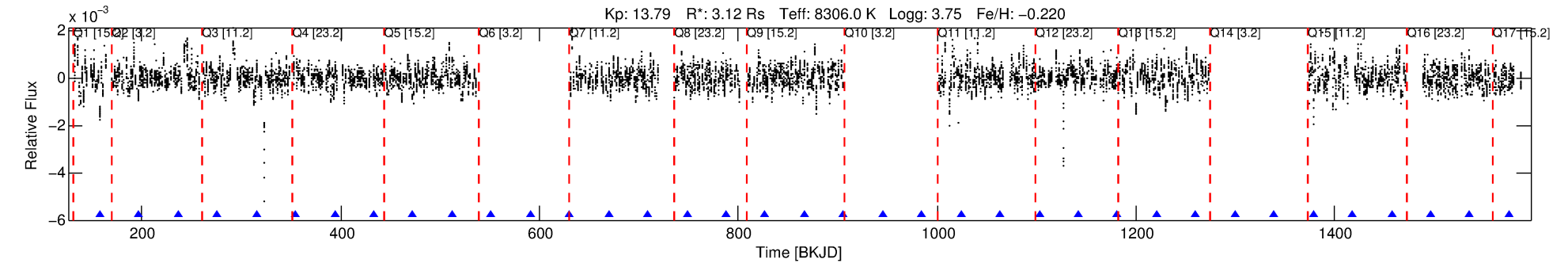
Ephemeris Match Information For 005198315-06

No Significant Match Found



# DV One-Page Summary

KIC: 5198315 Candidate: 6 of 10 Period: 39.374 d



## TPS TCE Results:

Period = 39.37416 d  
Epoch = 156.7124 BKJD

DV fit results are unavailable

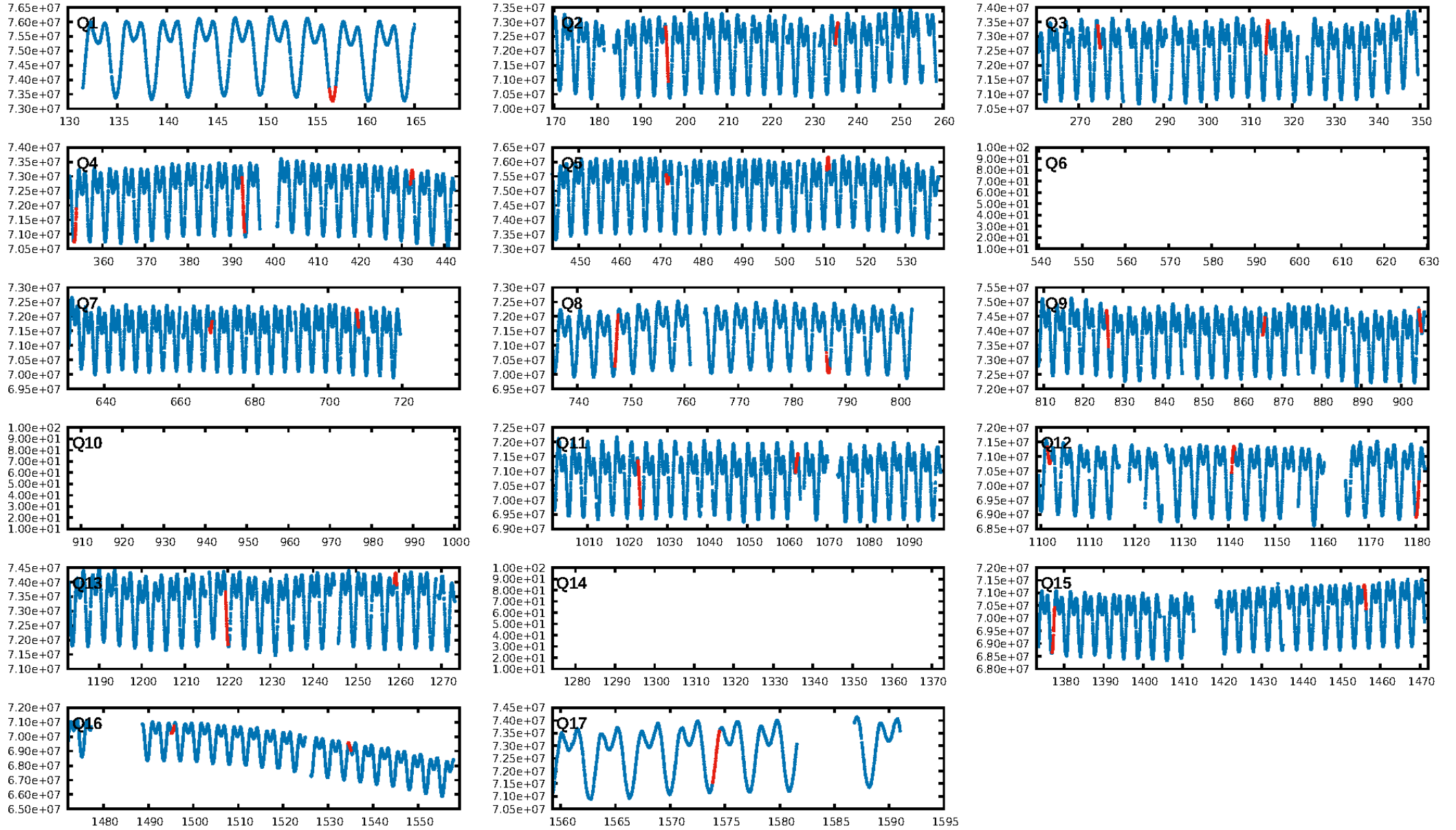
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [65.44 $\sigma$ ]  
LongPeriod-sig: 18.3% [0.23 $\sigma$ ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [12/12]  
GhostDiagnostic-chr: 160.3  
Centroid-sig: 35.6%  
Centroid-so: 0.096 arcsec [3.06 $\sigma$ ]  
OotOffset-rm: 0.059 arcsec [0.49 $\sigma$ ]  
KicOffset-rm: 0.054 arcsec [0.41 $\sigma$ ]  
OotOffset-st: 1/4/4/5 [14]  
KicOffset-st: 1/4/4/5 [14]  
DiffImageQuality-fgm: 0.50 [7/14]  
DiffImageOverlap-fno: 0.00 [0/14]

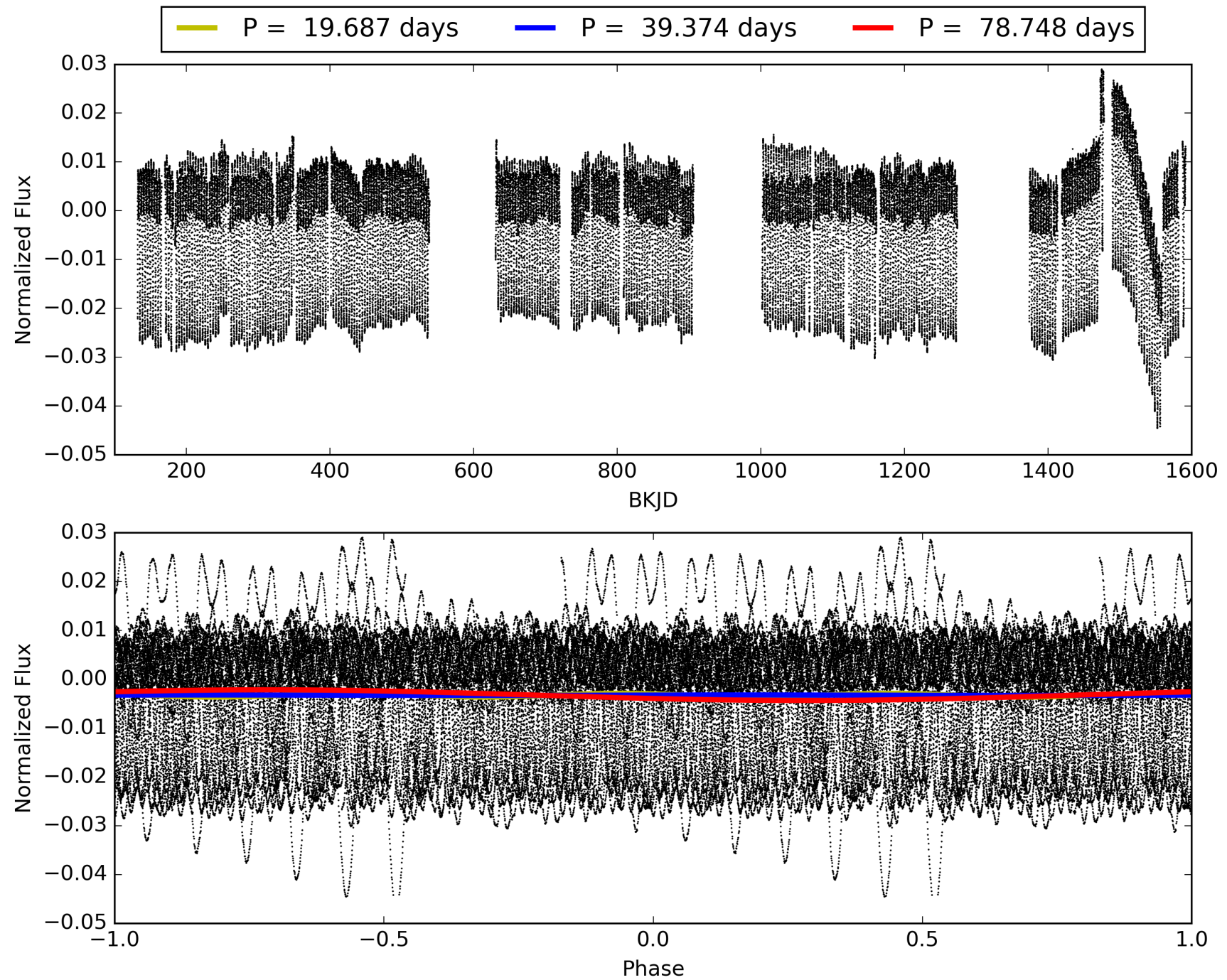
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 01:21:03 Z

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

# TCE 005198315-06, PDC Light Curves

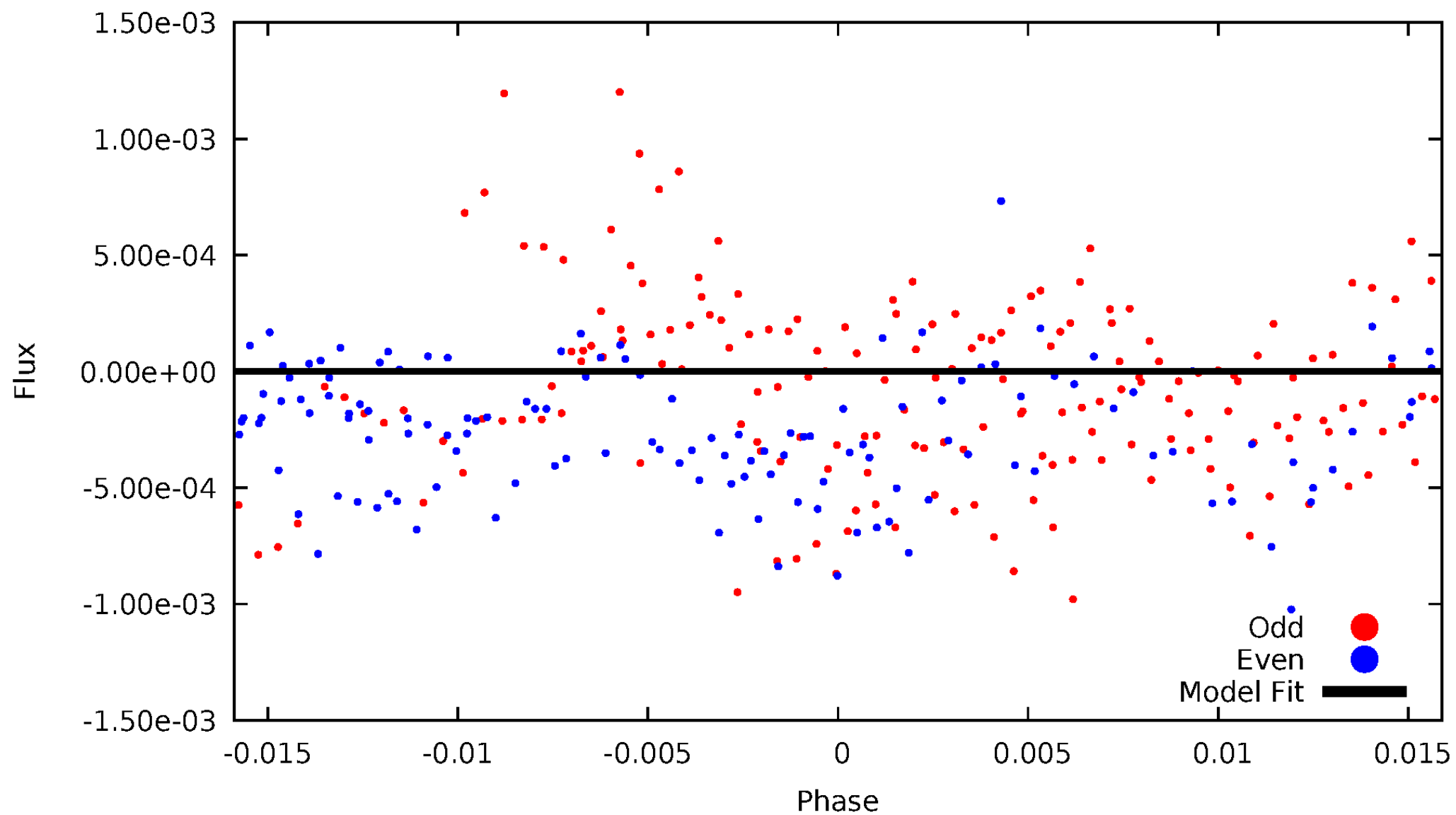


# TCE 005198315-06



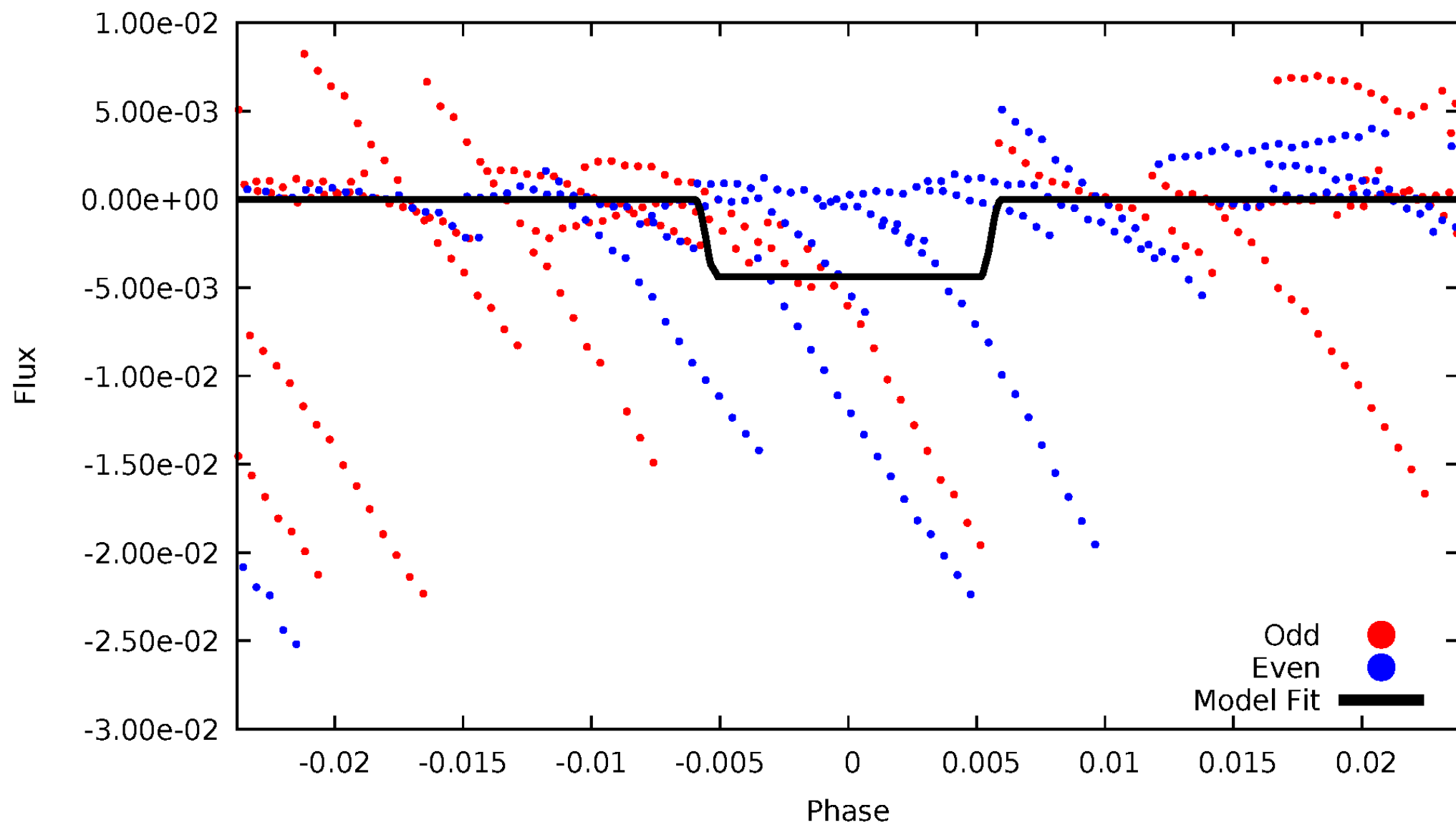
# DV Odd/Even

TCE 005198315-06



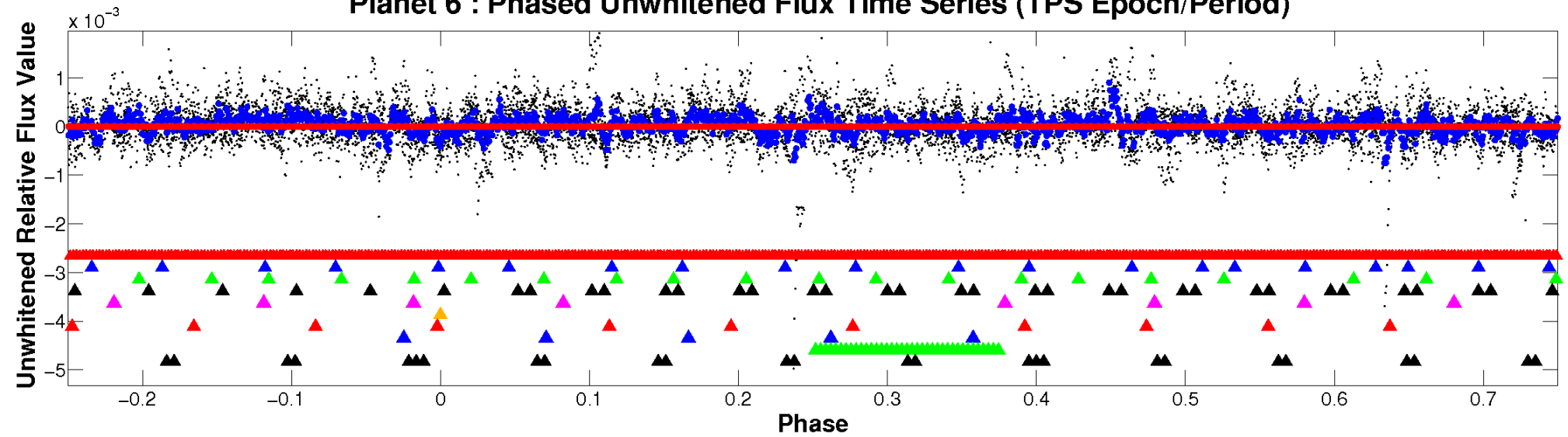
# ALT Odd/Even

TCE 005198315-06

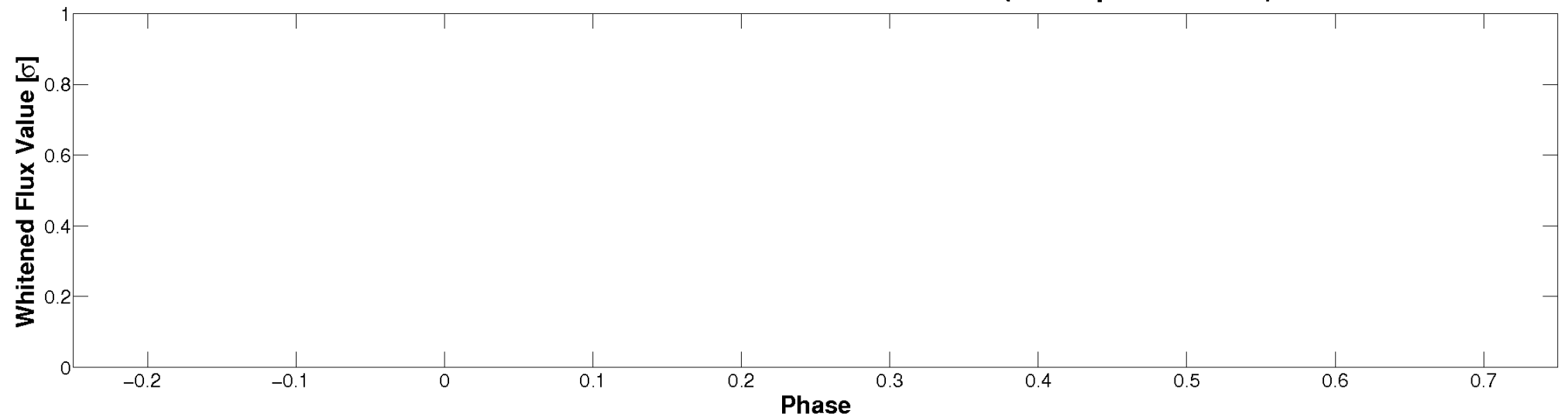


# Non-Whitened Vs. Whitened Light Curve

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

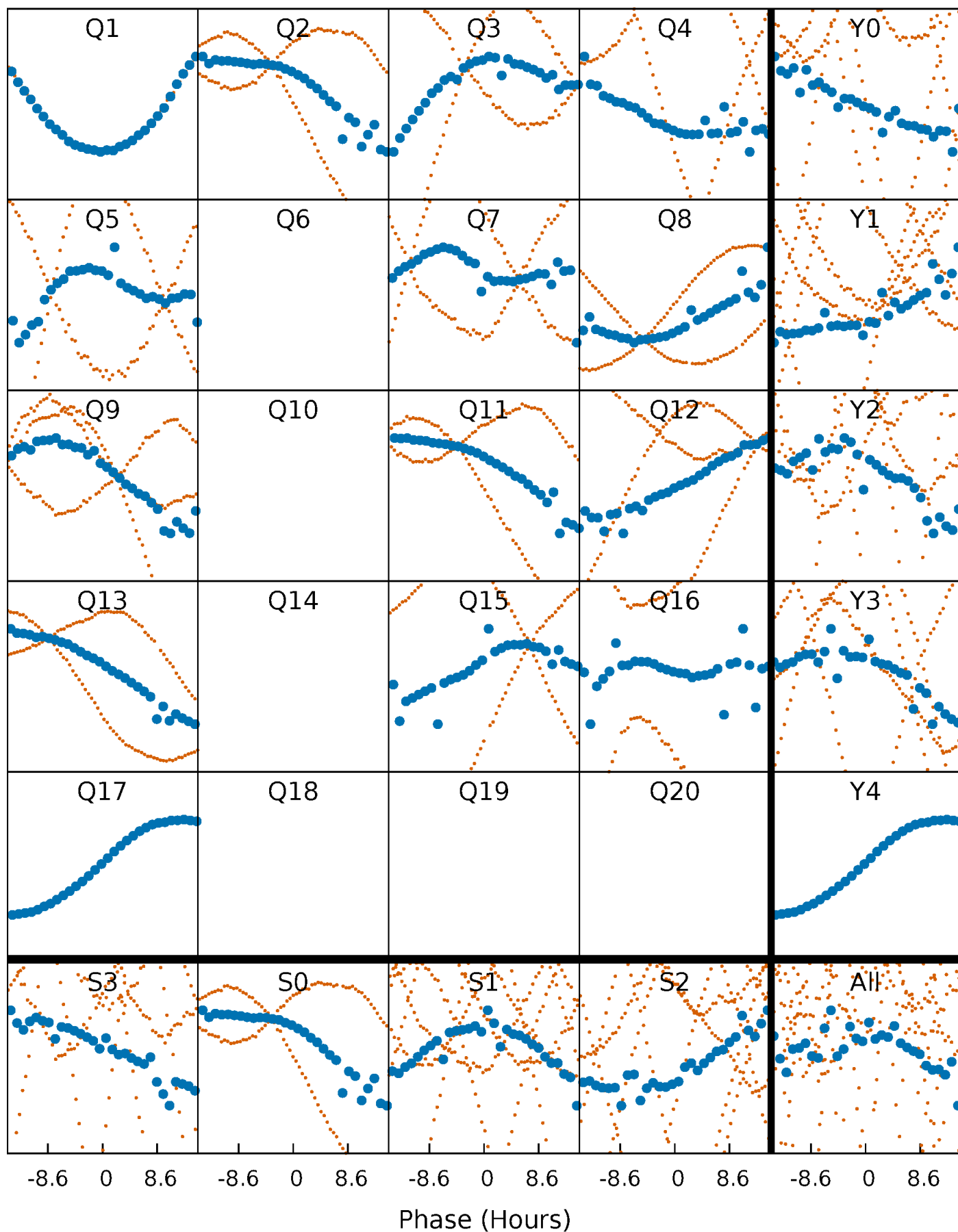


Planet 6 : Phased Whitened Flux Time Series (TPS Epoch/Period)



# PDC Quarter-Phased Transit Curves

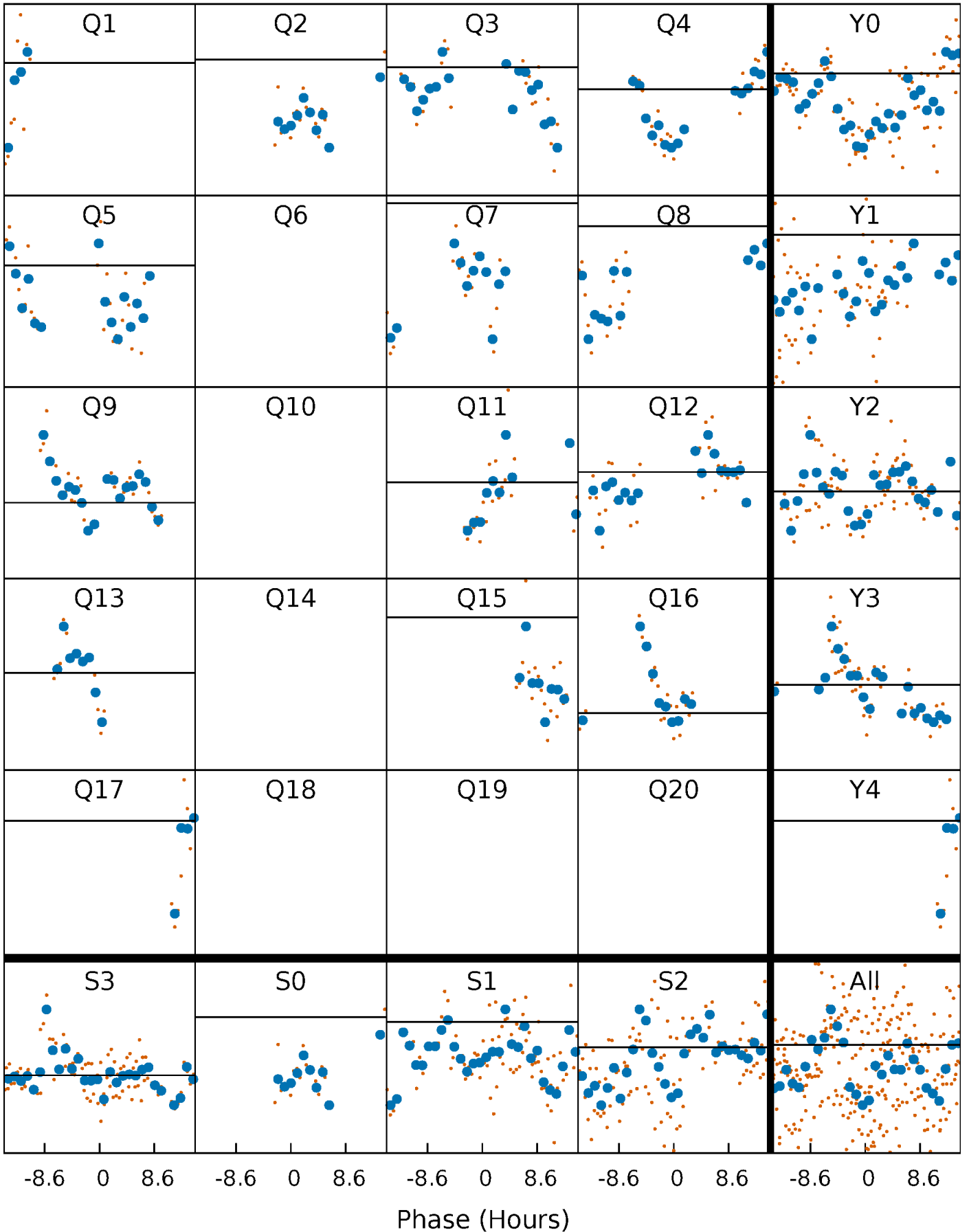
TCE 005198315-06 P= 39.374162 Days  $T_0=156.712385$  (BKJD)





# DV Quarter-Phased Transit Curves

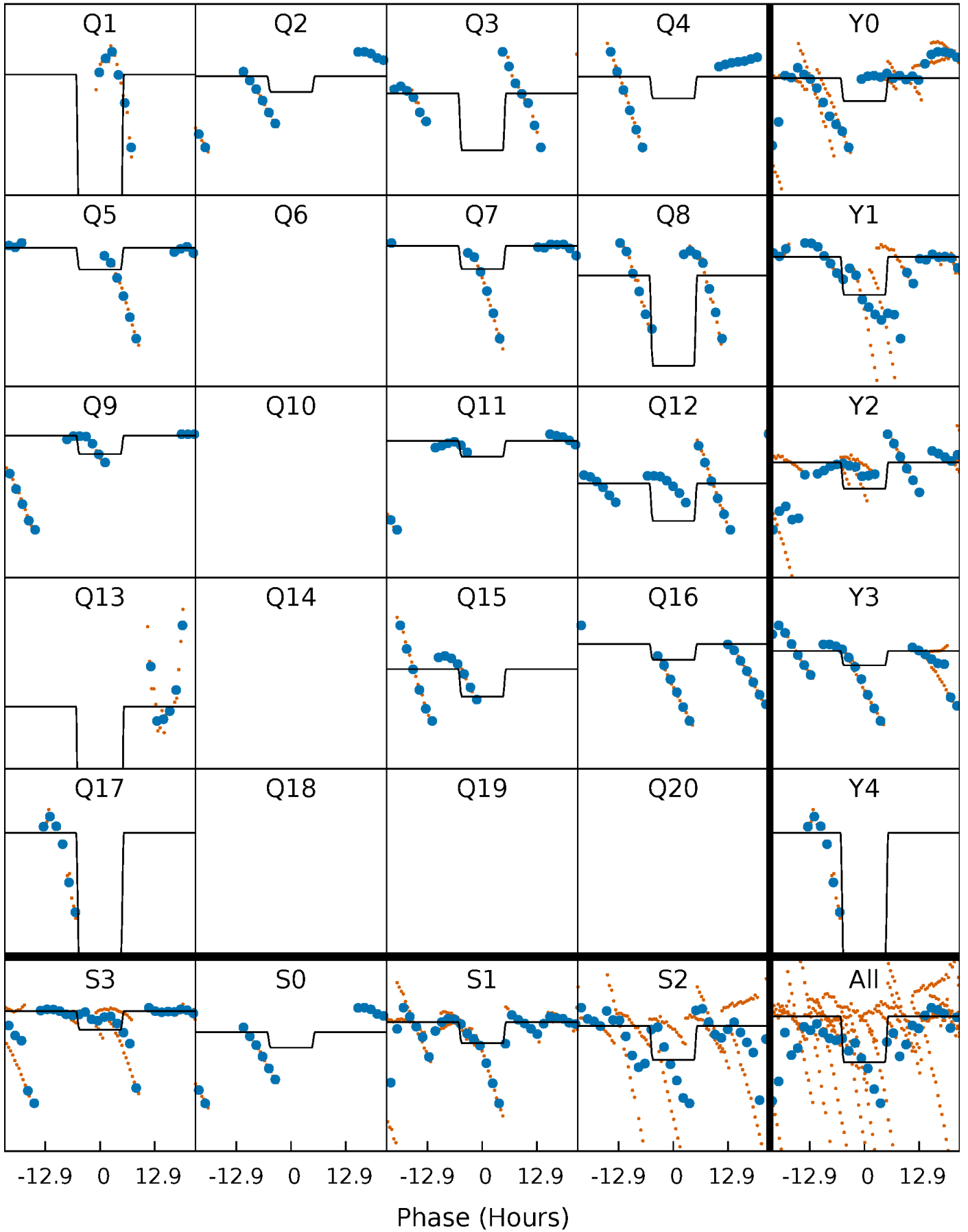
TCE 005198315-06   P= 39.374162 Days    $T_0=156.712385$  (BKJD)





## Alt. Detrend Quarter-Phased Transit Curves

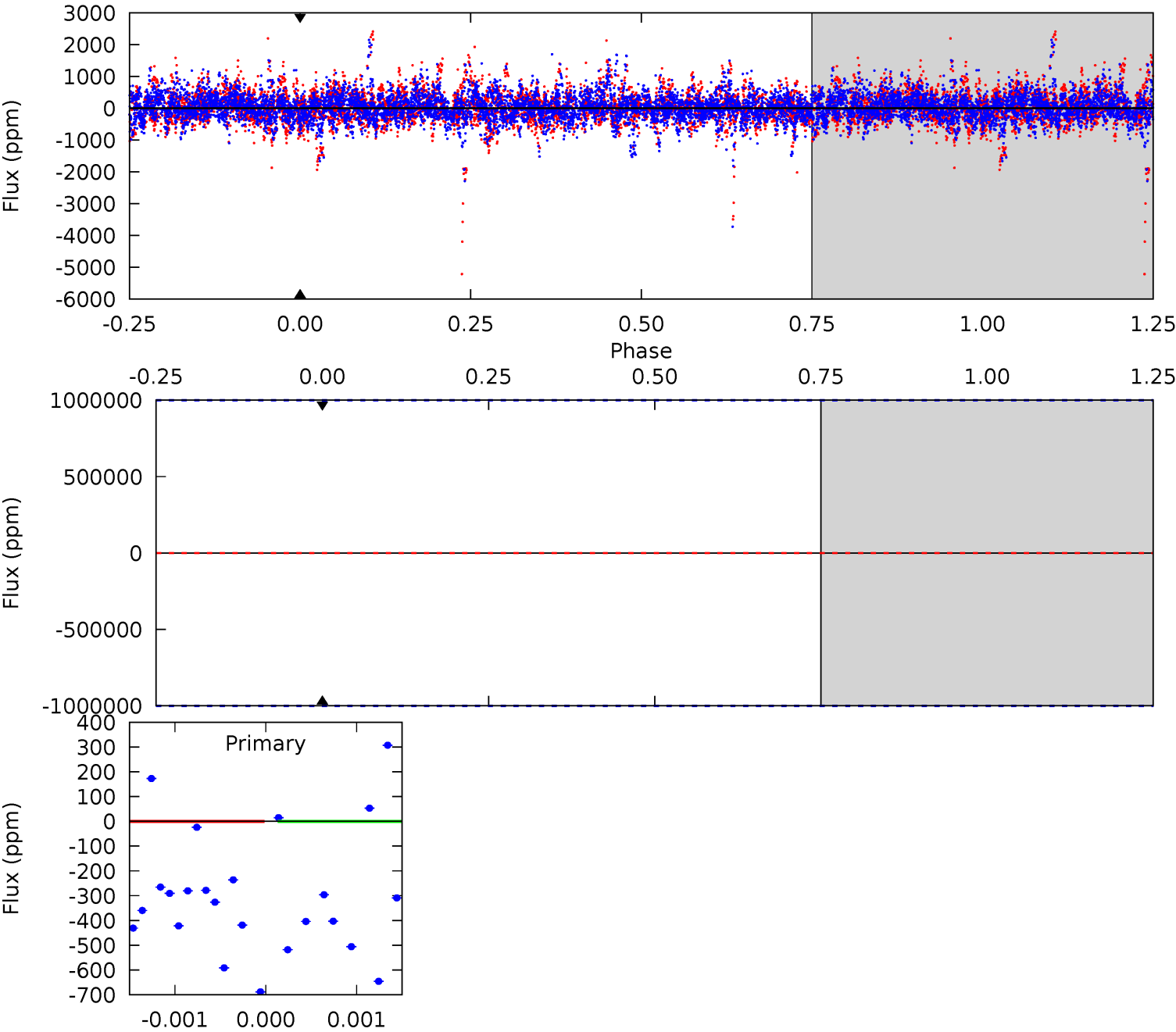
TCE 005198315-06   P= 39.374162 Days    $T_0=157.768454$  (BKJD)



# DV Model-Shift Uniqueness Test

005198315-06, P = 39.374162 Days, E = 117.338223 Days

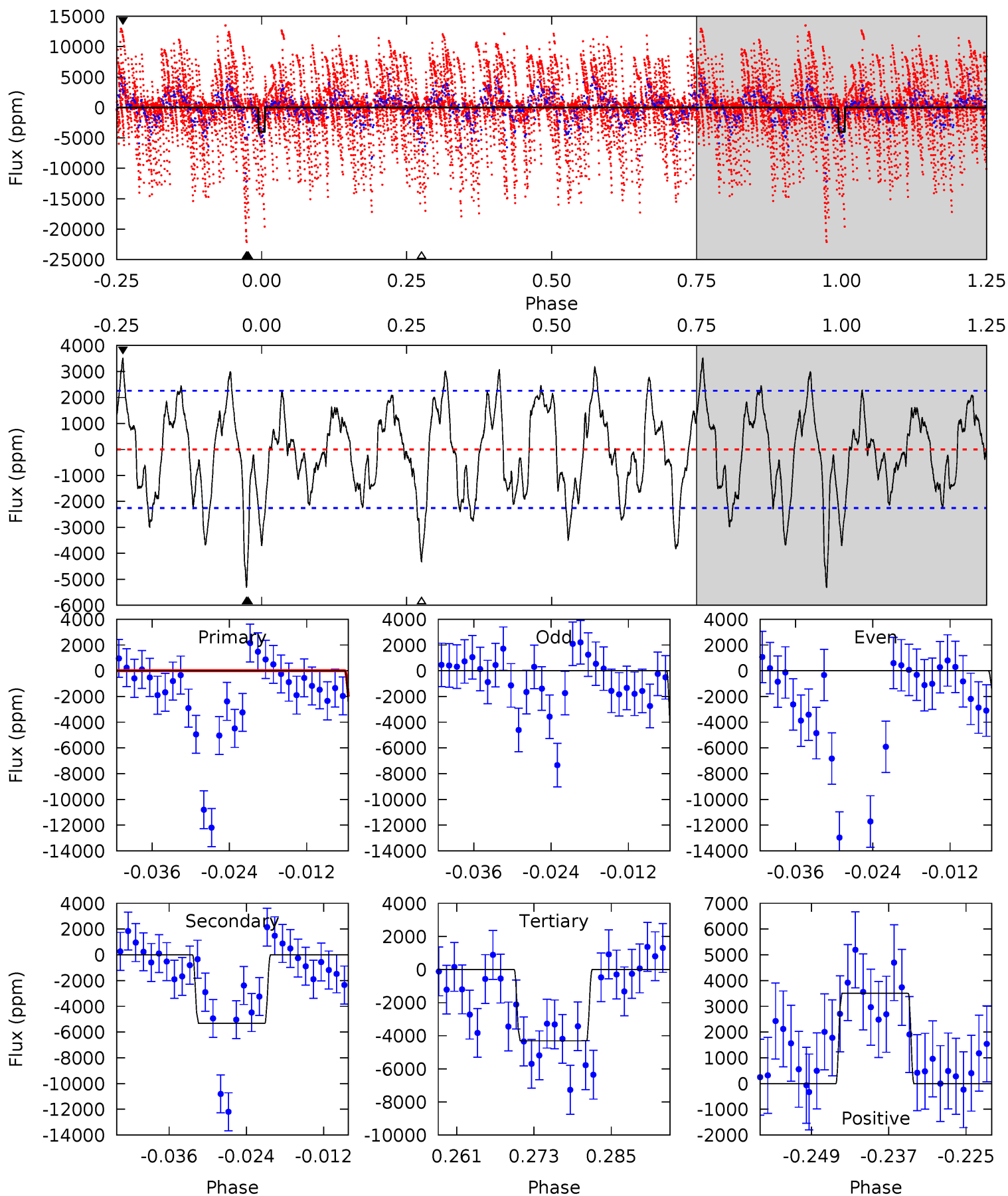
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



# Alt Model-Shift Uniqueness Test

005198315-06, P = 39.374162 Days, E = 118.394292 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
8.81	11.8	9.53	7.76	4.99	2.52	3.54	-0.73	1.05	2.24	4.01	4.30	1.83	0.40	1.73



### Stellar Parameters For KIC 005198315

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$8306^{+202}_{-347}$	$3.751^{+0.451}_{-0.106}$	$-0.220^{+0.250}_{-0.350}$	$3.121^{+0.652}_{-1.412}$	$2.001^{+0.343}_{-0.471}$	$0.093^{+0.378}_{-0.031}$
	+2%/-4%	+12%/-3%	+114%/-159%	+21%/-45%	+17%/-24%	+408%/-33%
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 005198315-06 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$0 \pm 1000000$	$22.12^{+25.16}_{-15.43}$	$1635^{+133}_{-195}$	$-4725^{+57012}_{-44000}$	$-46.279^{+18198.192}_{-14337.560}$
Alt.	$-5324 \pm 452$	$29.73^{+27.60}_{-20.44}$	$1636^{+121}_{-204}$	$6934^{+9685}_{-1837}$	$264^{+2508}_{-192}$

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

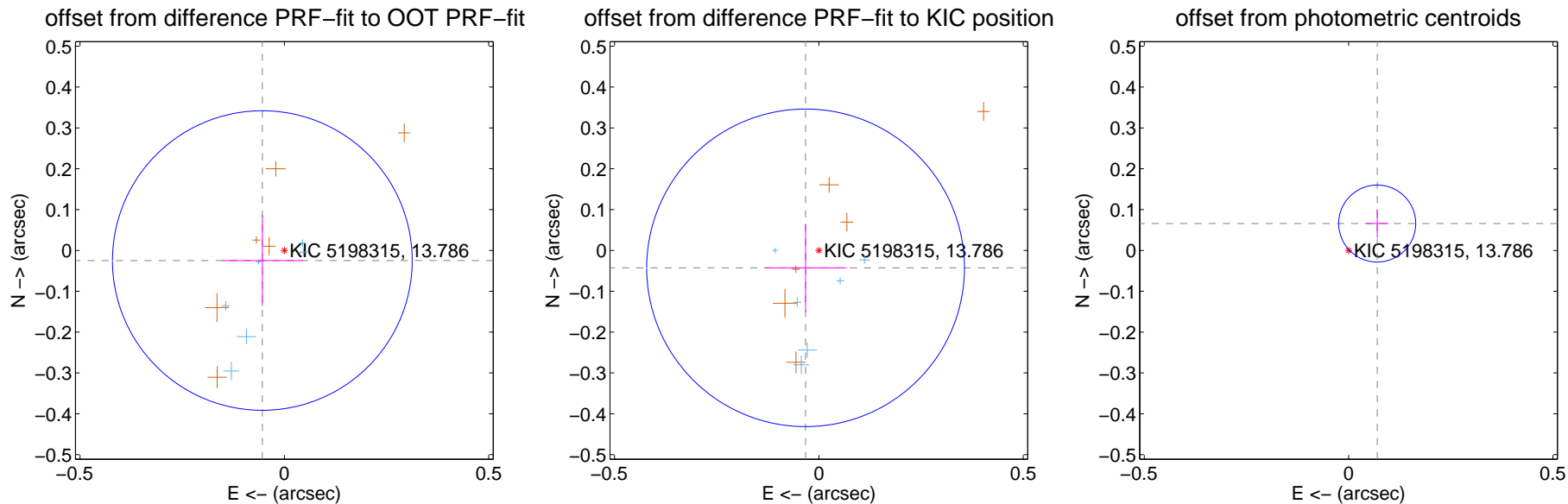
## DV Centroid Data

Supplemental centroid analysis for 005198315-06. Kepler magnitude: 13.79. Transit SNR -1.00

There are 7 quarters with good PRF difference image offsets

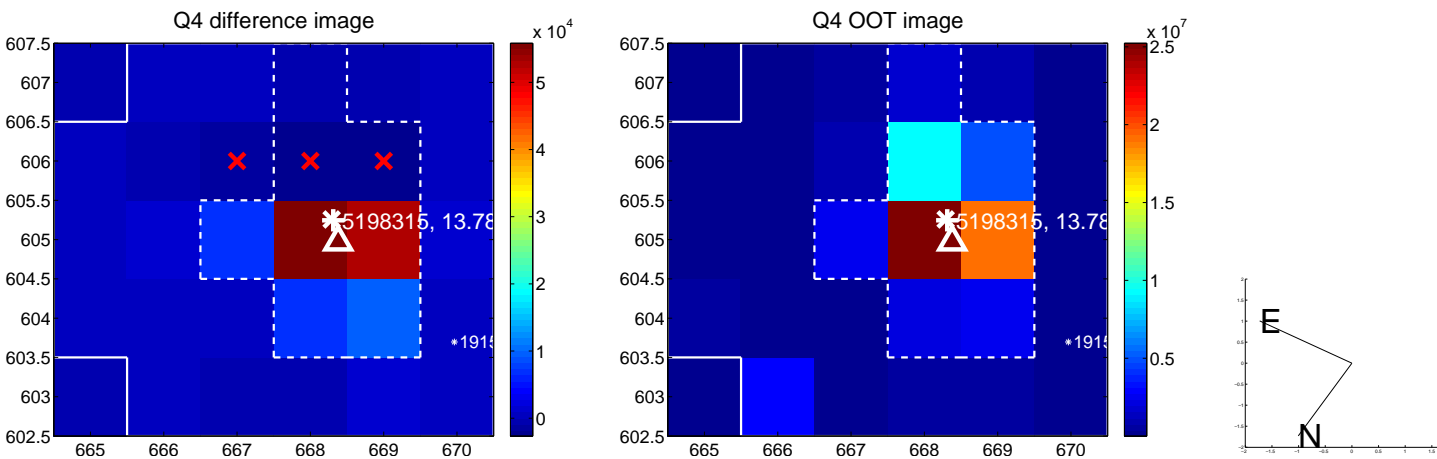
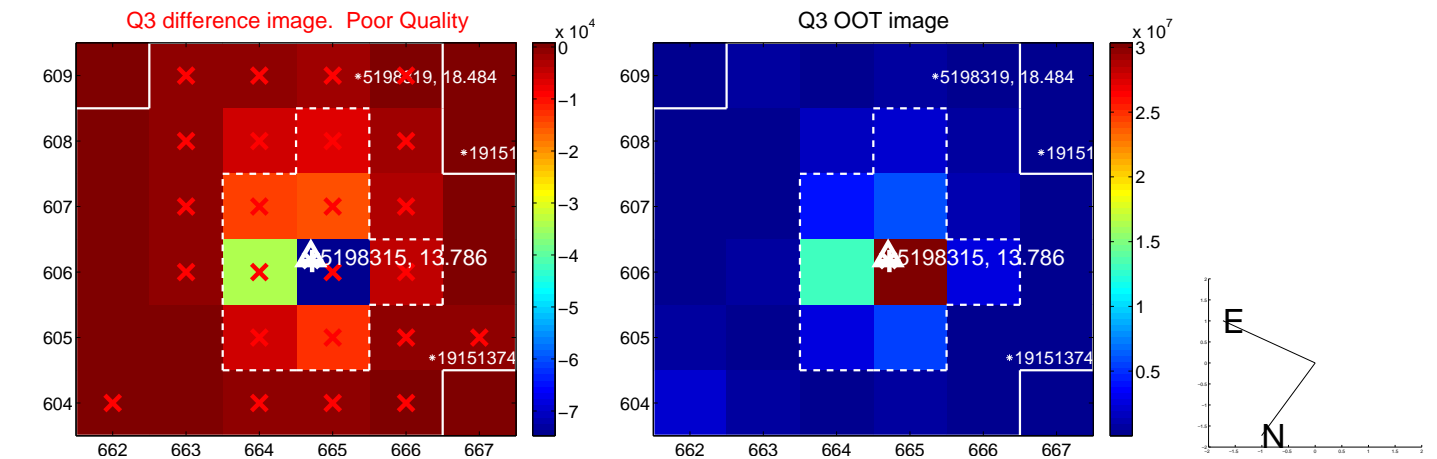
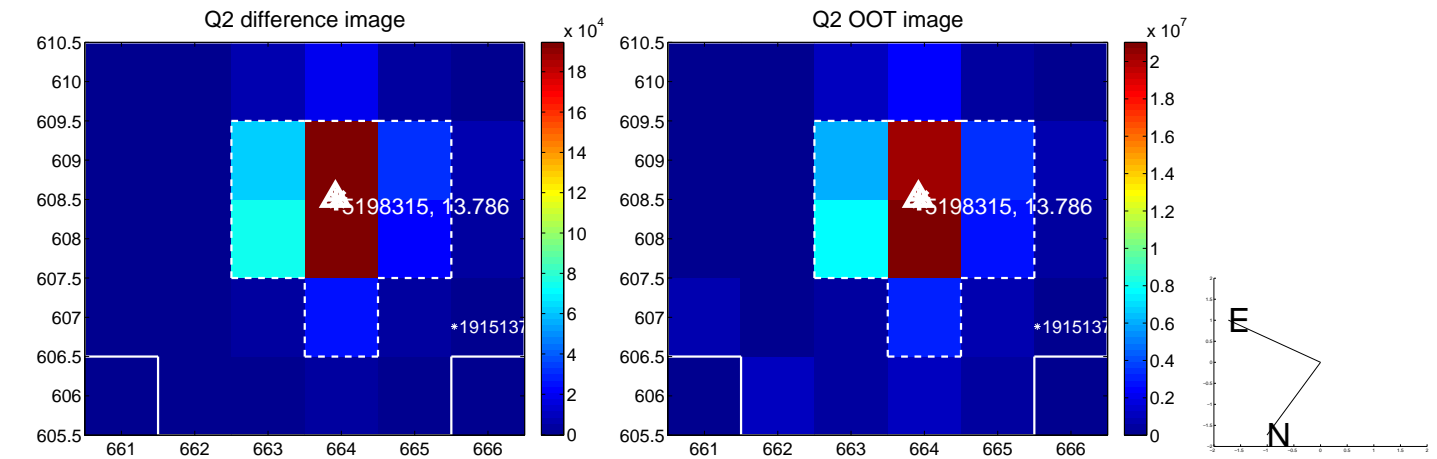
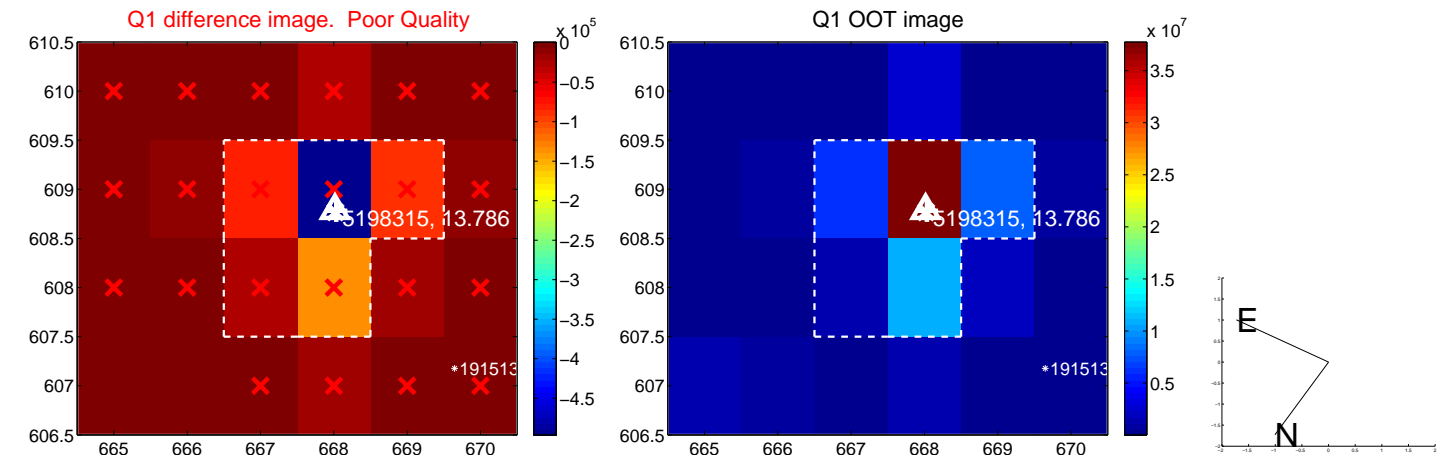
The direct PRF centroid is offset from the target star catalog position by about 0.07 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.059 \pm 0.122$	0.49	$0.054 \pm 0.099$	$-0.025 \pm 0.111$
PRF-fit source offset from KIC position	$0.054 \pm 0.130$	0.41	$0.033 \pm 0.100$	$-0.043 \pm 0.108$
photometric centroid source offset	$0.10 \pm 0.03$	3.06	$-0.07 \pm 0.03$	$0.07 \pm 0.04$

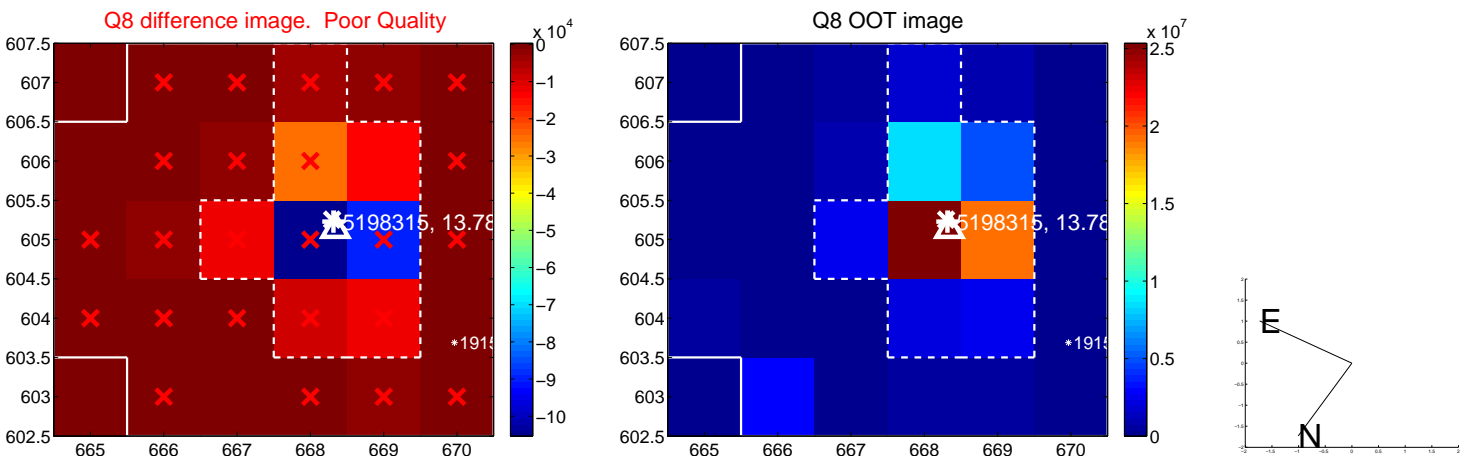
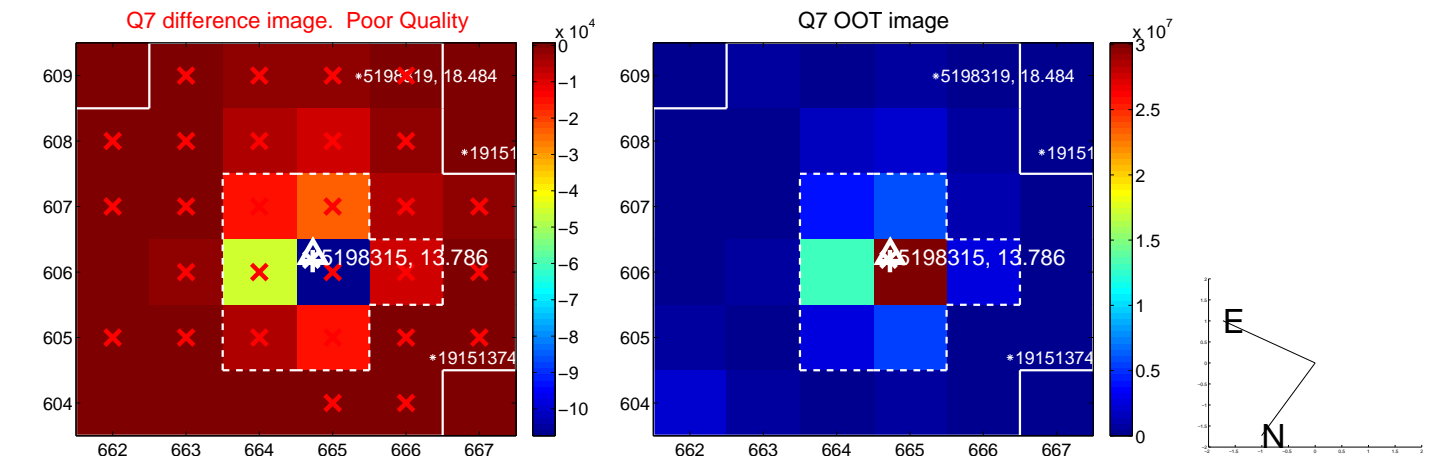
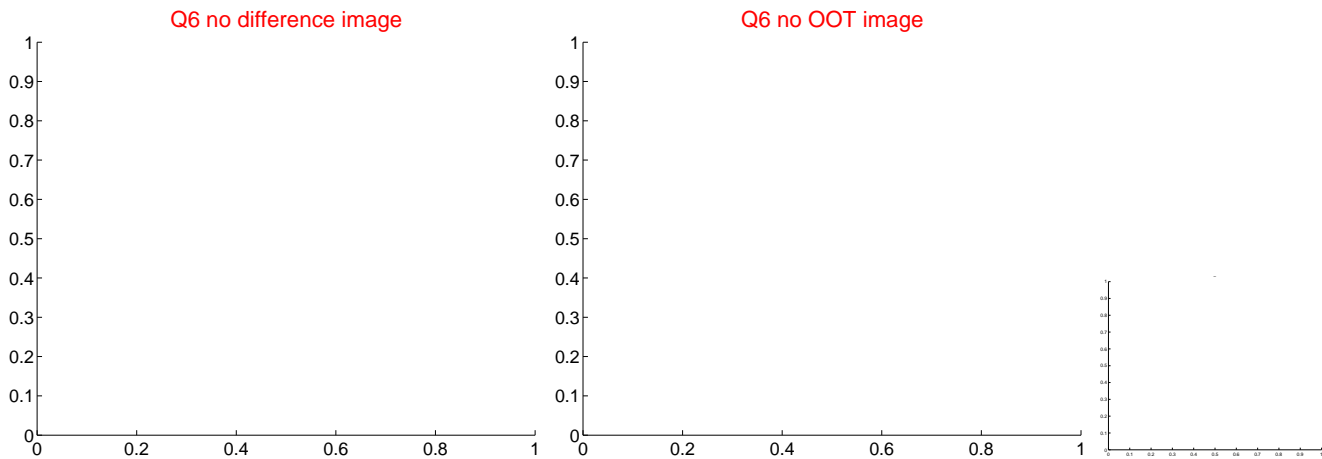
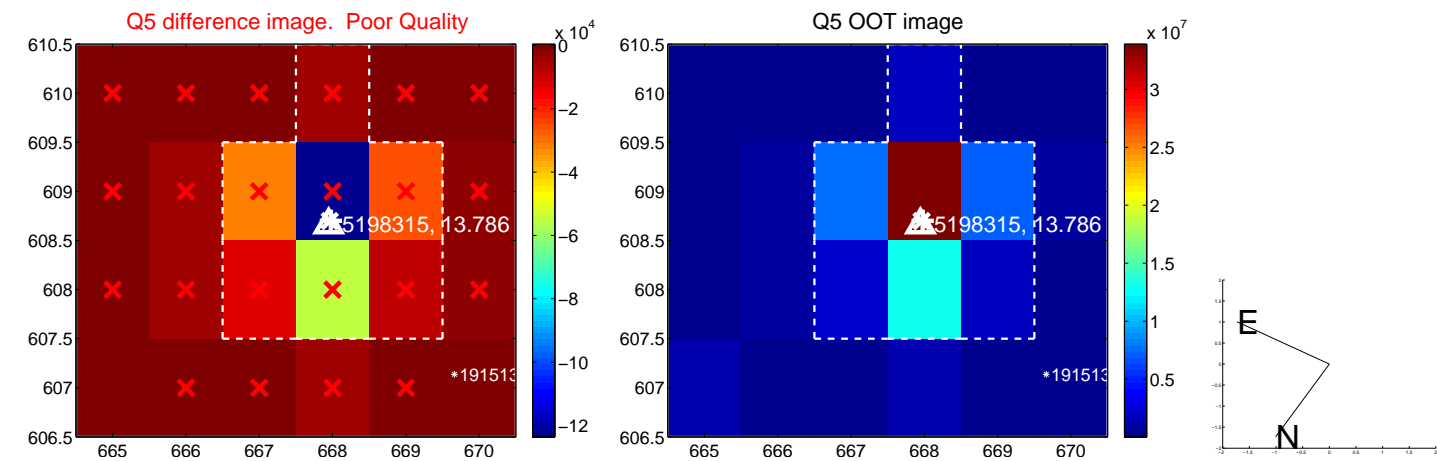


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

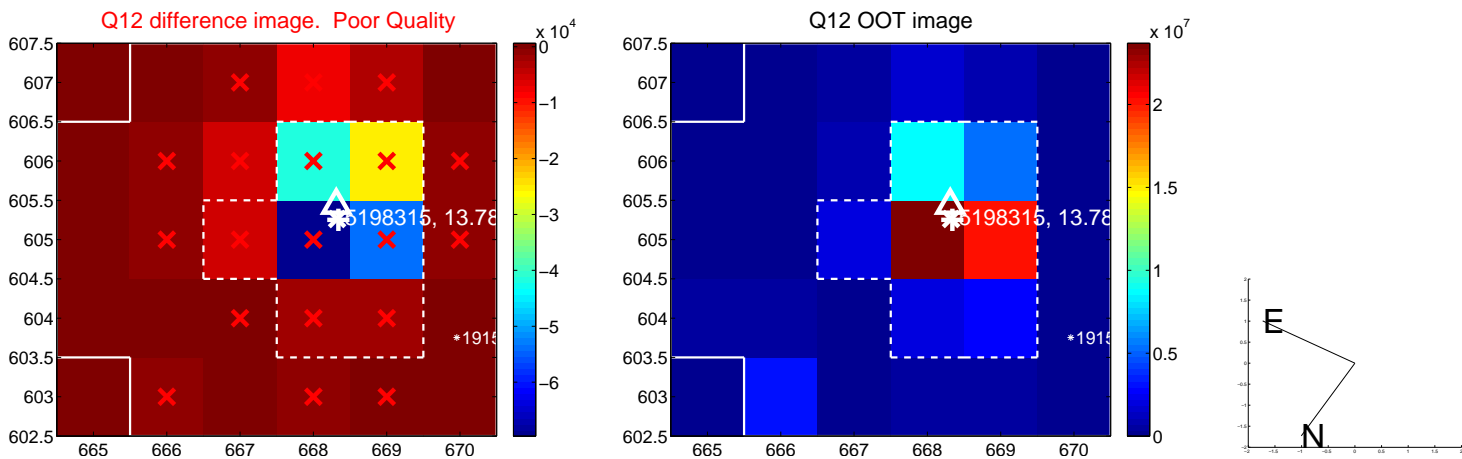
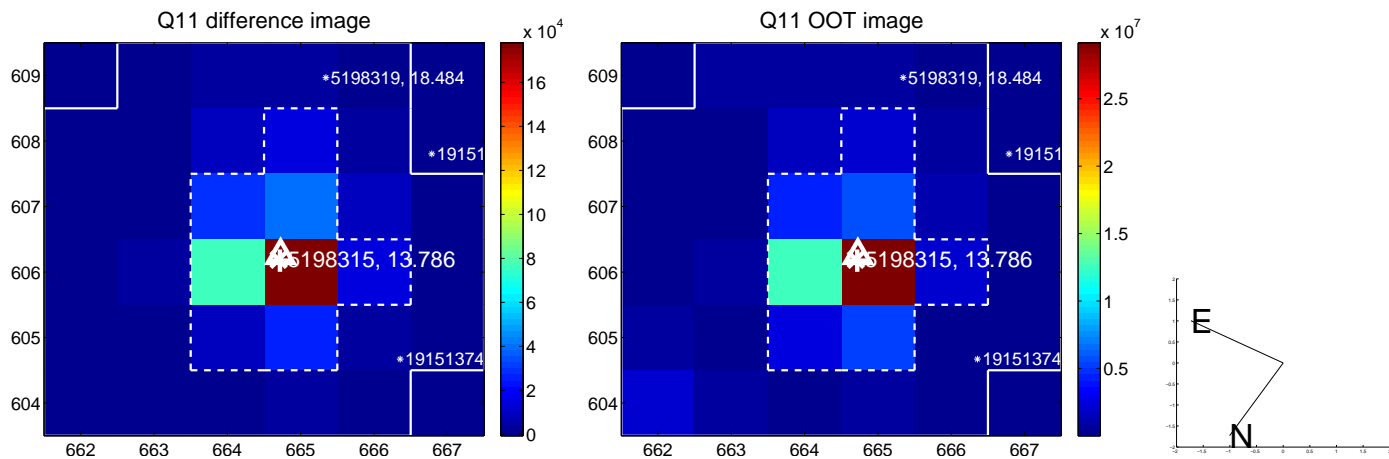
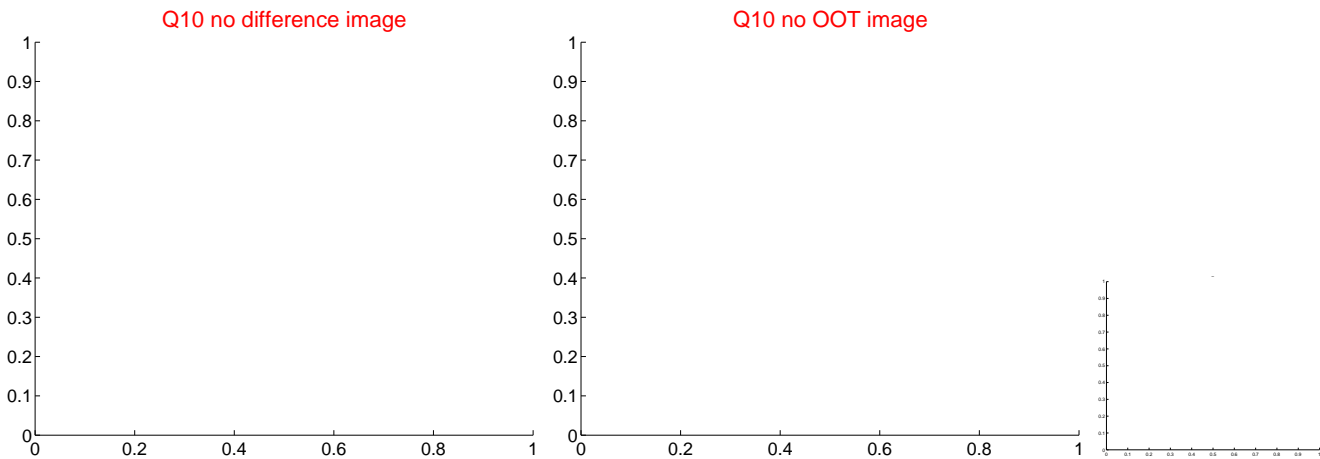
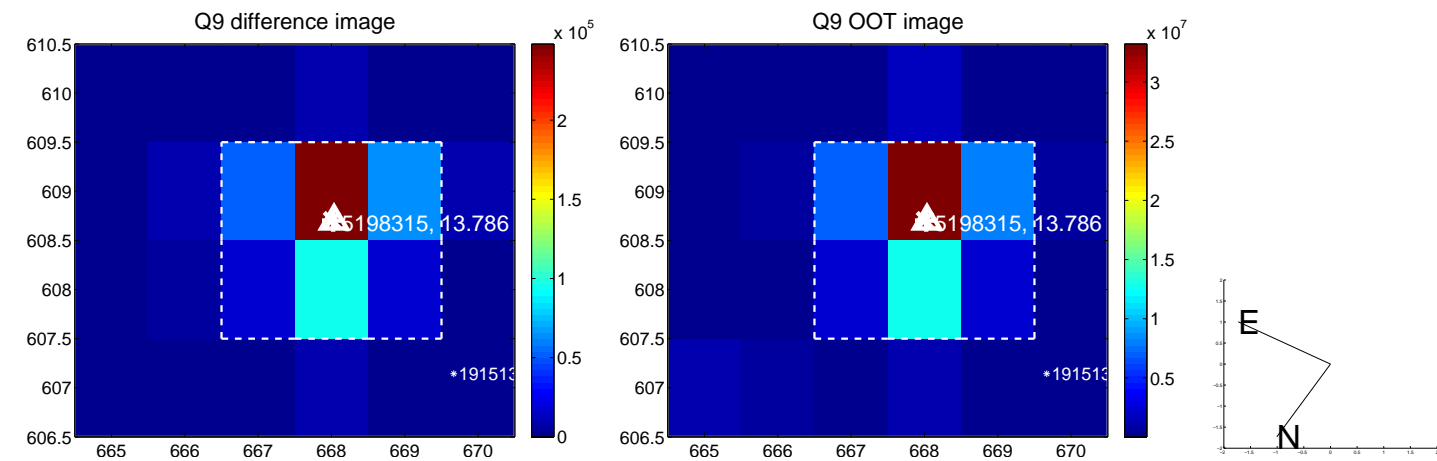
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

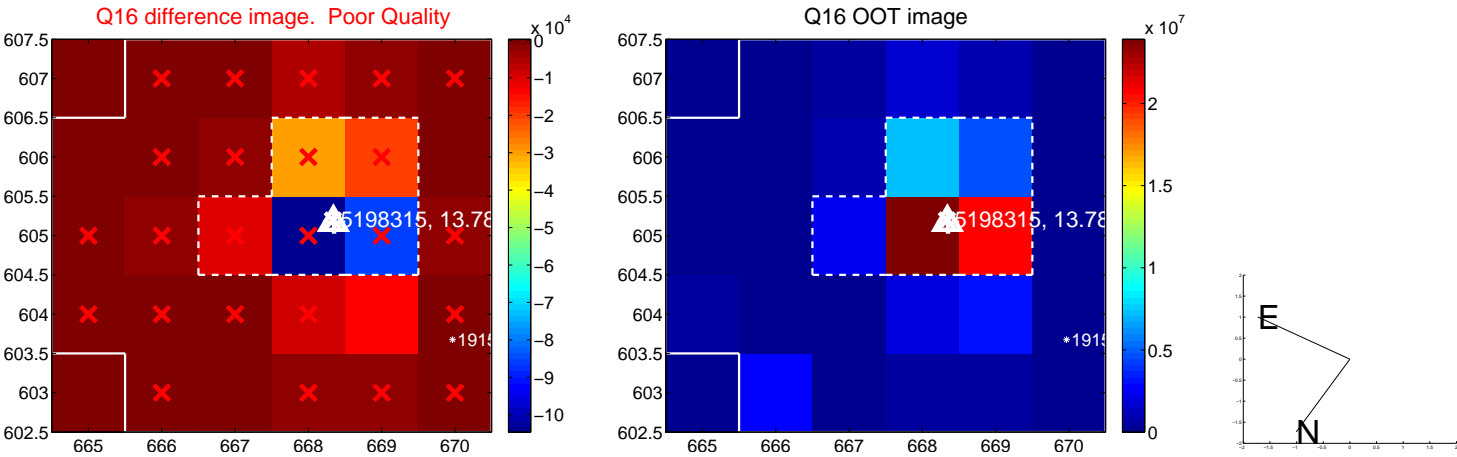
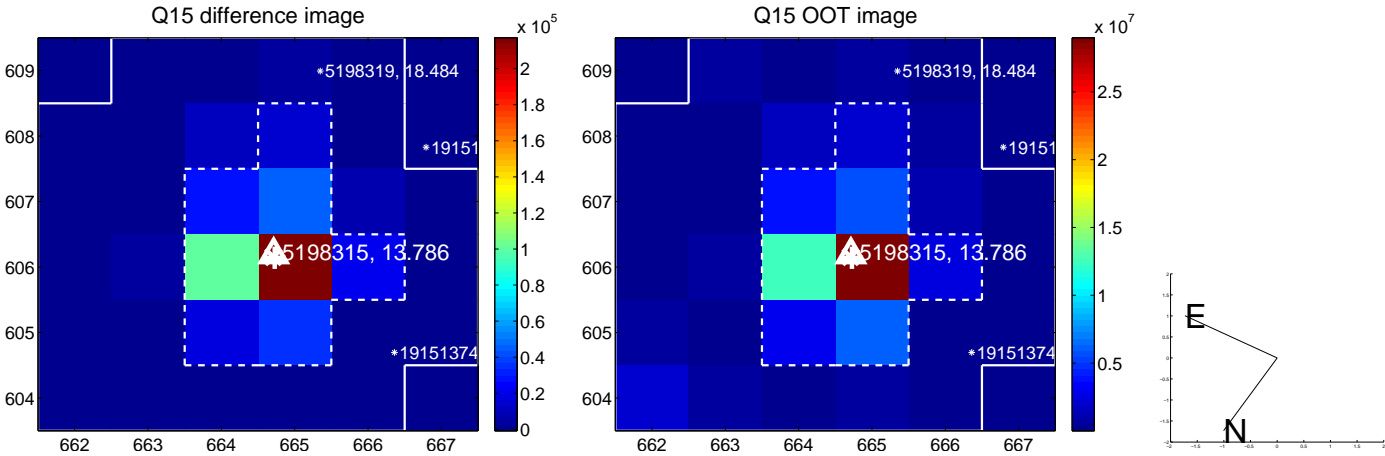
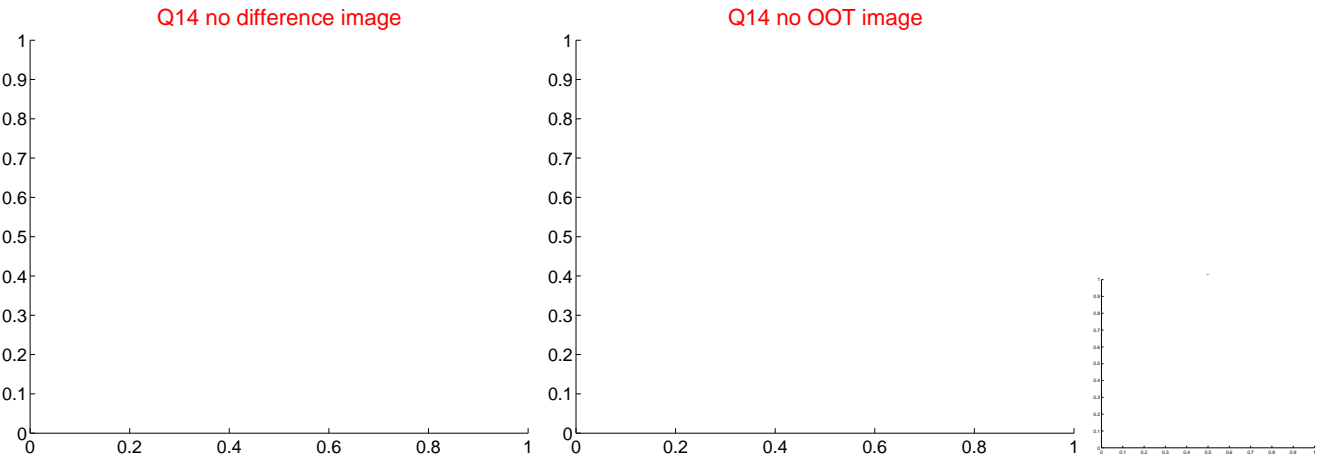
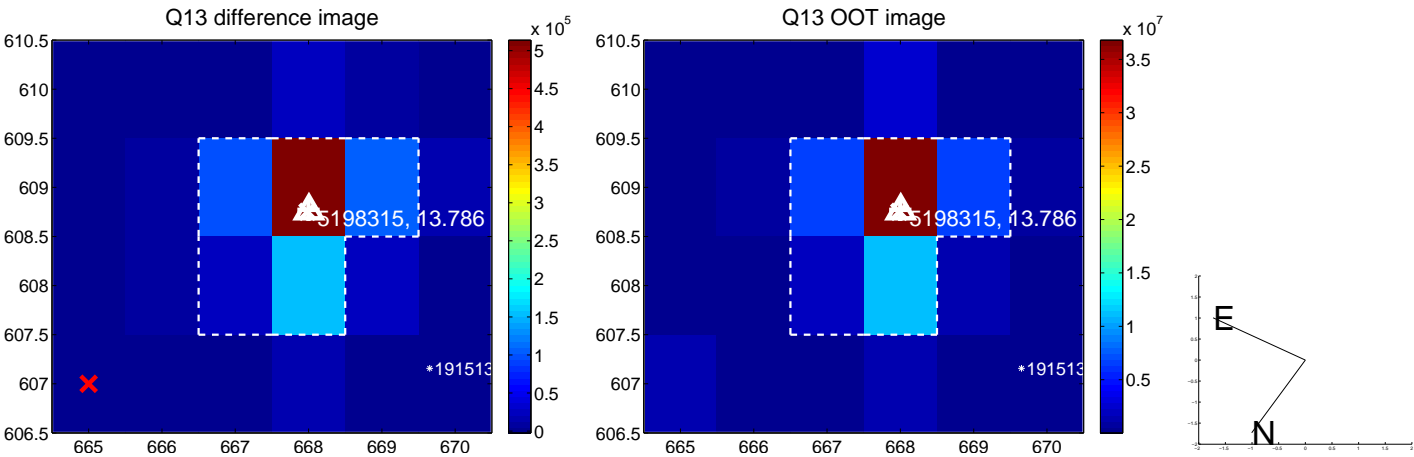


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

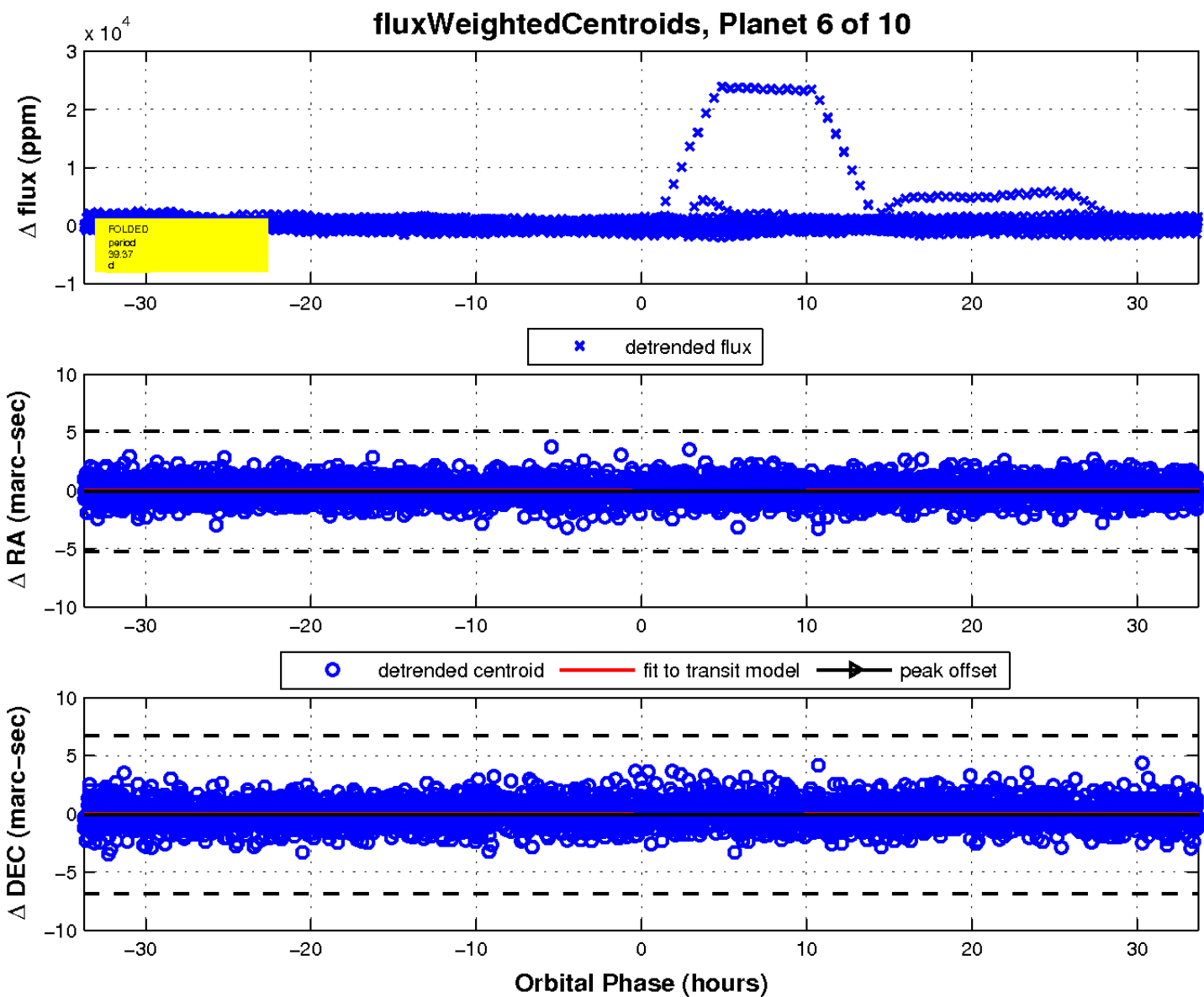
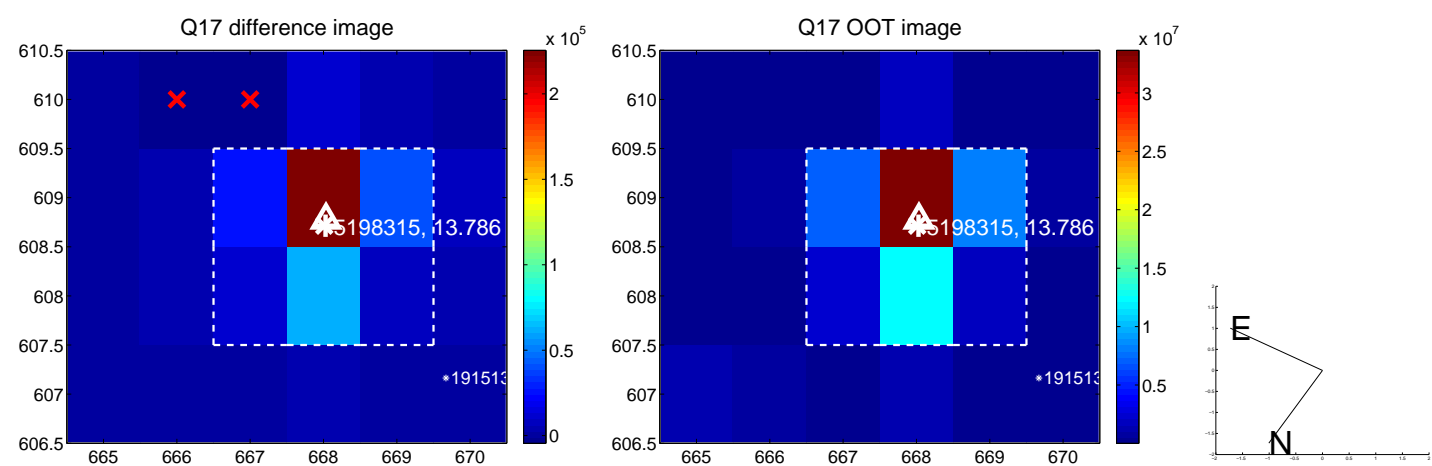




white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

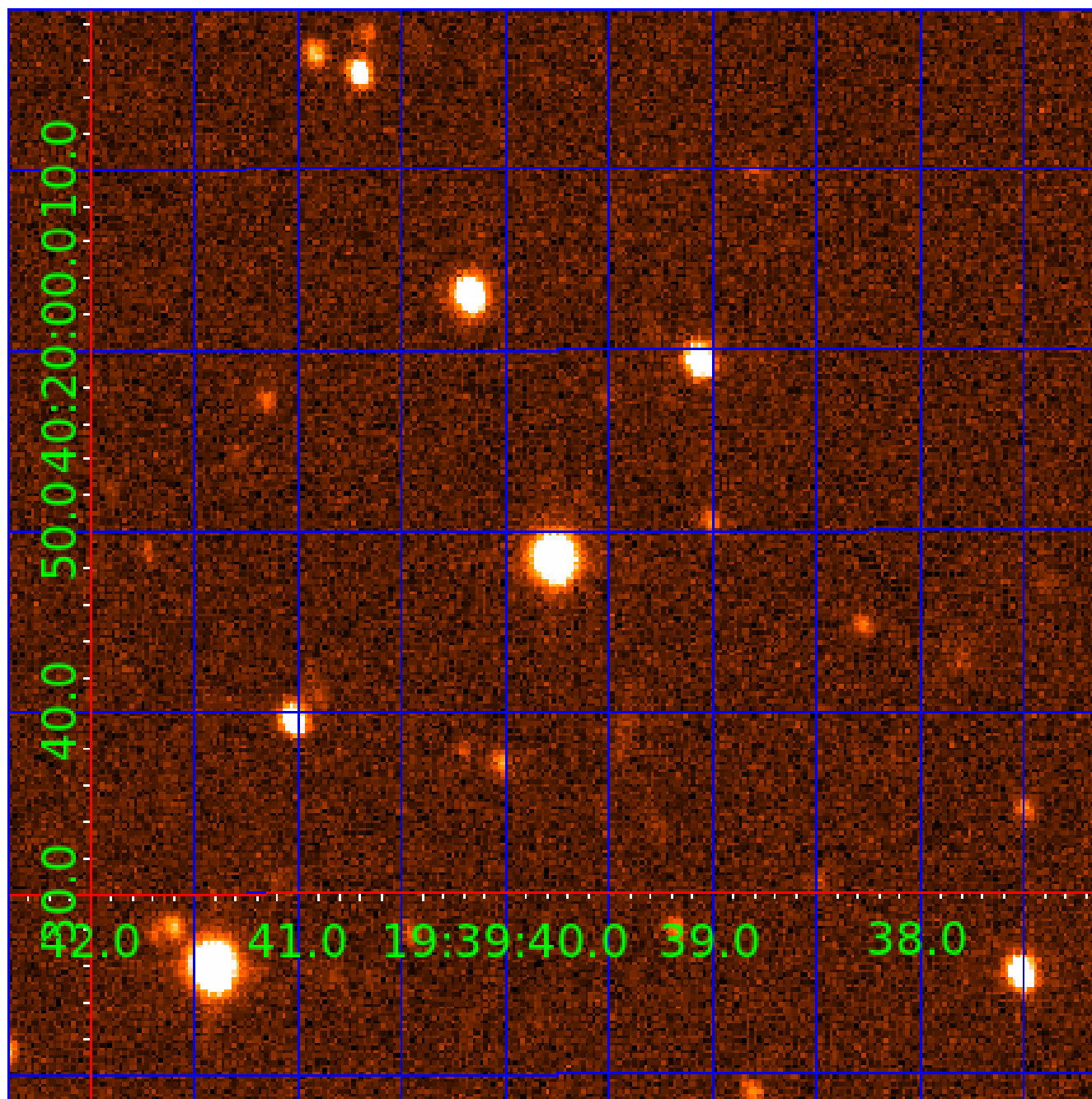


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 005198315

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005198315-01	OBS	No	1.821235	133.319401	142.6	11.552	8.7	12.0	3.12	8306	6.97	30678.67
005198315-02	OBS	No	74.166477	146.638639	674.2	12.500	19.4	-1.0	3.12	8306	8.20	218.97
005198315-03	OBS	No	73.398148	134.198409	915.1	12.184	13.6	11.0	3.12	8306	11.77	222.03
005198315-04	OBS	No	41.326624	159.088305	277.6	6.792	11.6	5.0	3.12	8306	6.78	477.55
005198315-05	OBS	No	192.913240	238.705450	372.9	10.500	11.6	-1.0	3.12	8306	6.10	61.21
005198315-06	OBS	No	39.374162	156.712384	345.6	7.500	10.4	-1.0	3.12	8306	5.87	509.38
005198315-07	OBS	No	132.319467	172.155165	1157.7	9.781	9.6	9.9	3.12	8306	15.73	101.19
005198315-09	OBS	No	39.508476	166.624208	322.1	11.722	8.5	6.4	3.12	8306	6.01	507.07
005198315-10	OBS	No	55.763625	156.268411	1097.2	3.217	8.4	12.1	3.12	8306	19.19	320.27

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005198315-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—MOD_NONUNIQ_DV
005198315-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_NOFITS
005198315-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
005198315-04	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—HALO_GHOST
005198315-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_NOFITS
005198315-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_NOFITS
005198315-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT
005198315-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
005198315-10	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT

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

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

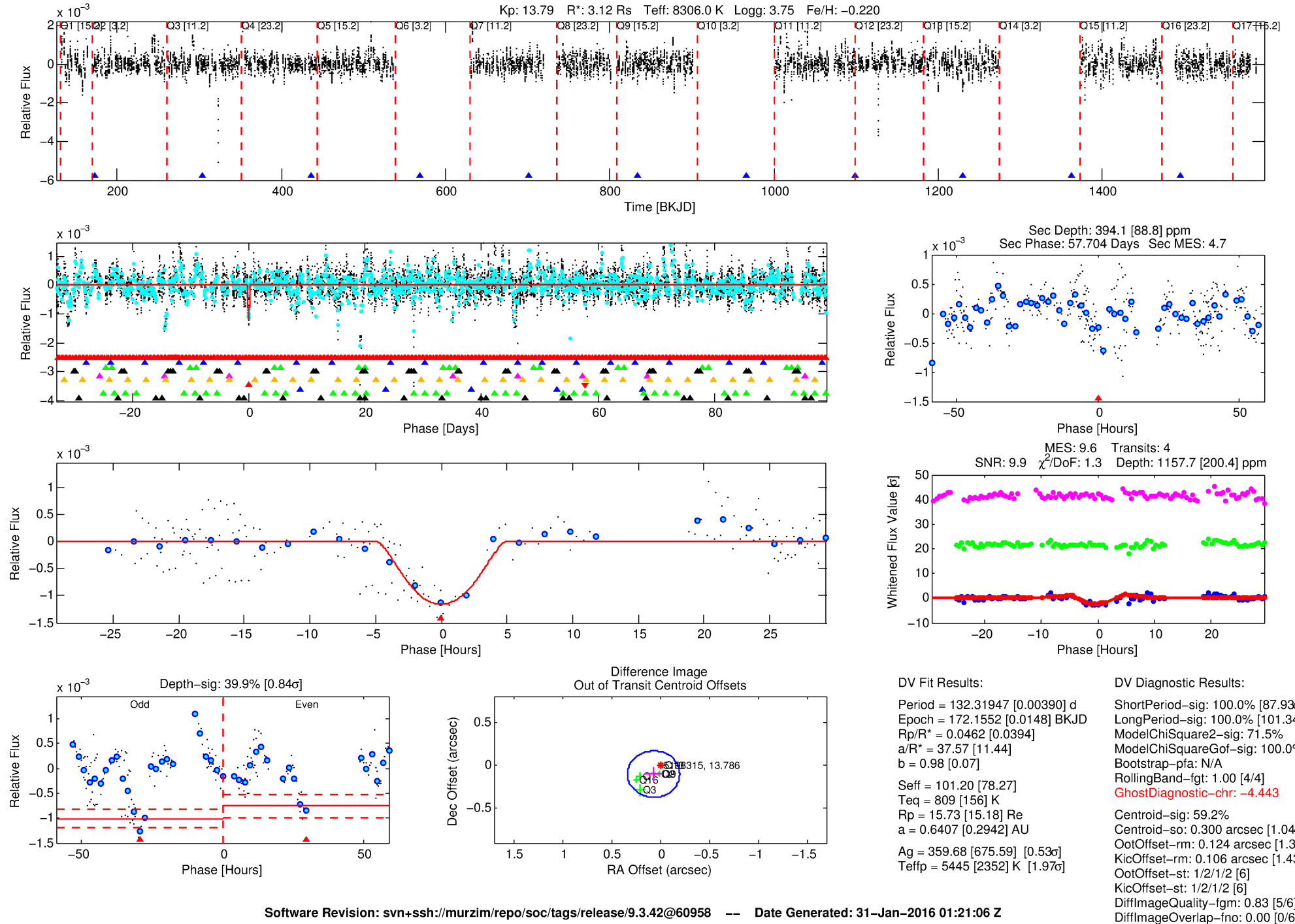
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 005198315-07

No Significant Match Found

# DV One-Page Summary

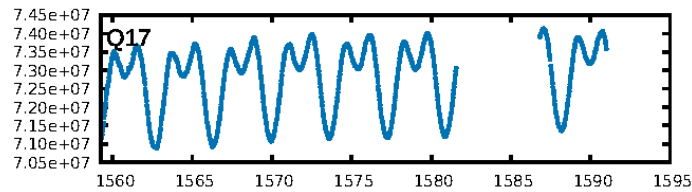
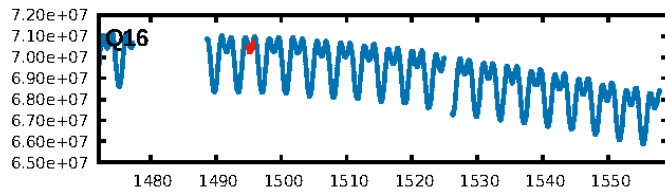
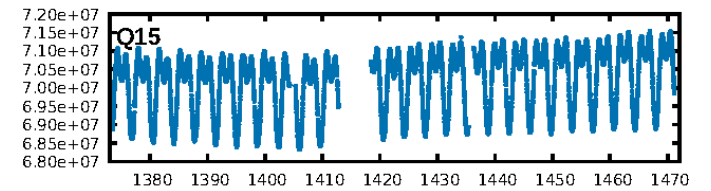
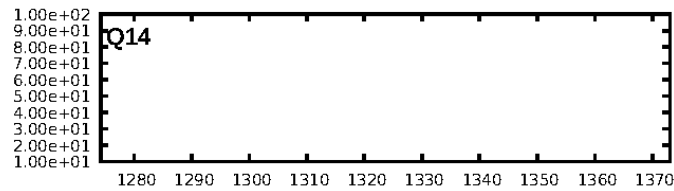
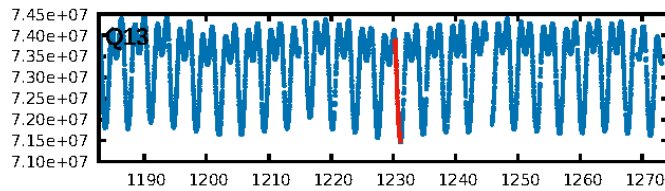
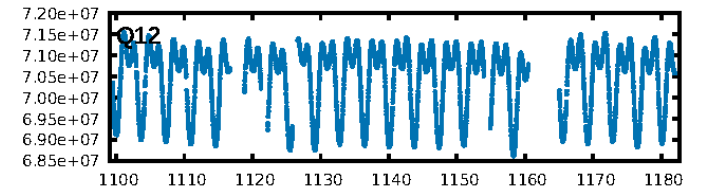
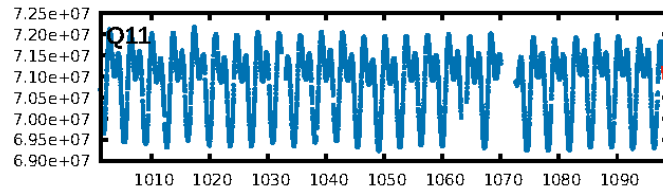
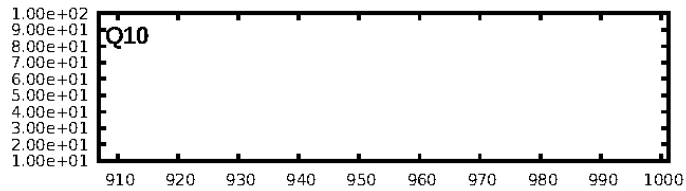
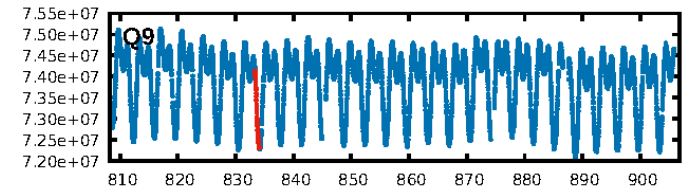
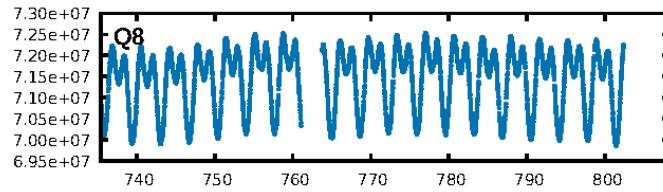
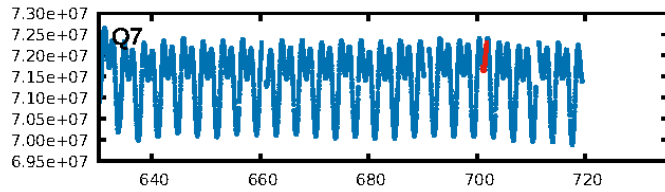
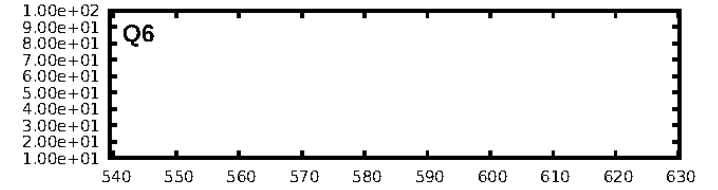
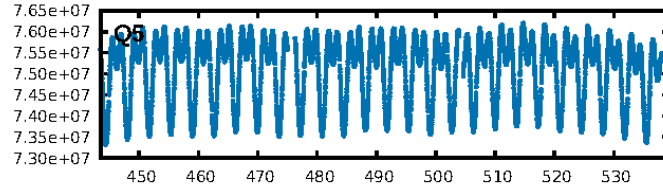
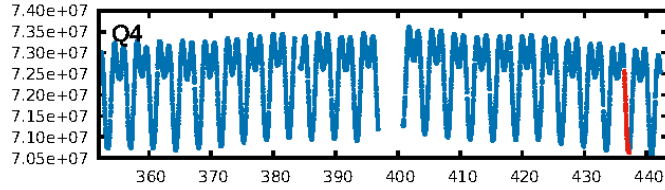
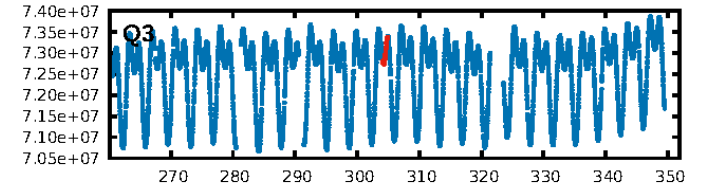
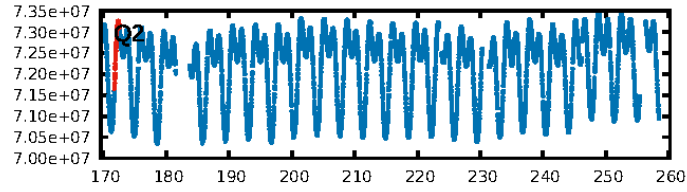
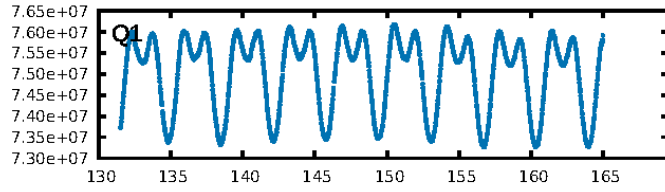
KIC: 5198315 Candidate: 7 of 10 Period: 132.319 d



Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 01:21:06 Z

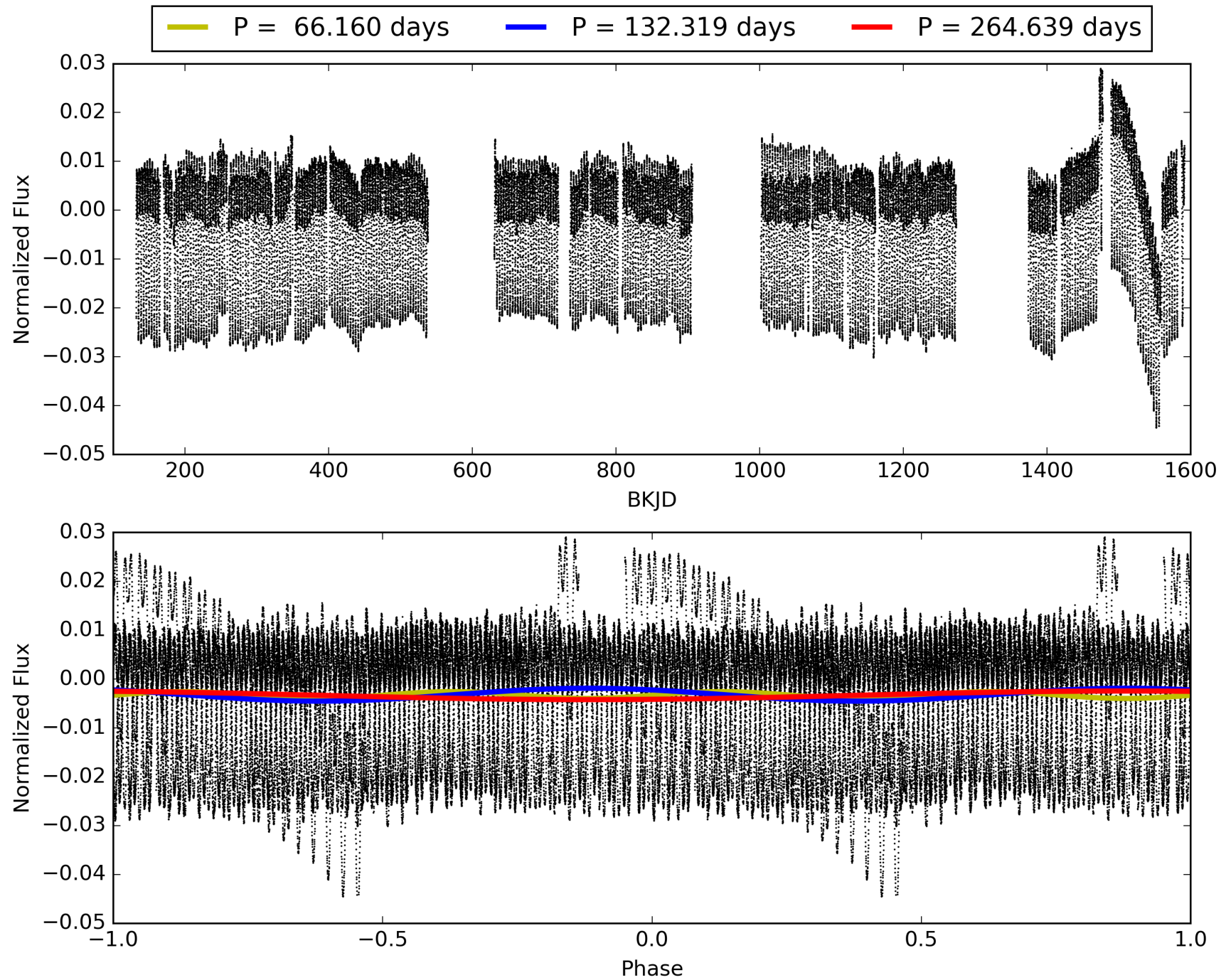
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 005198315-07, PDC Light Curves



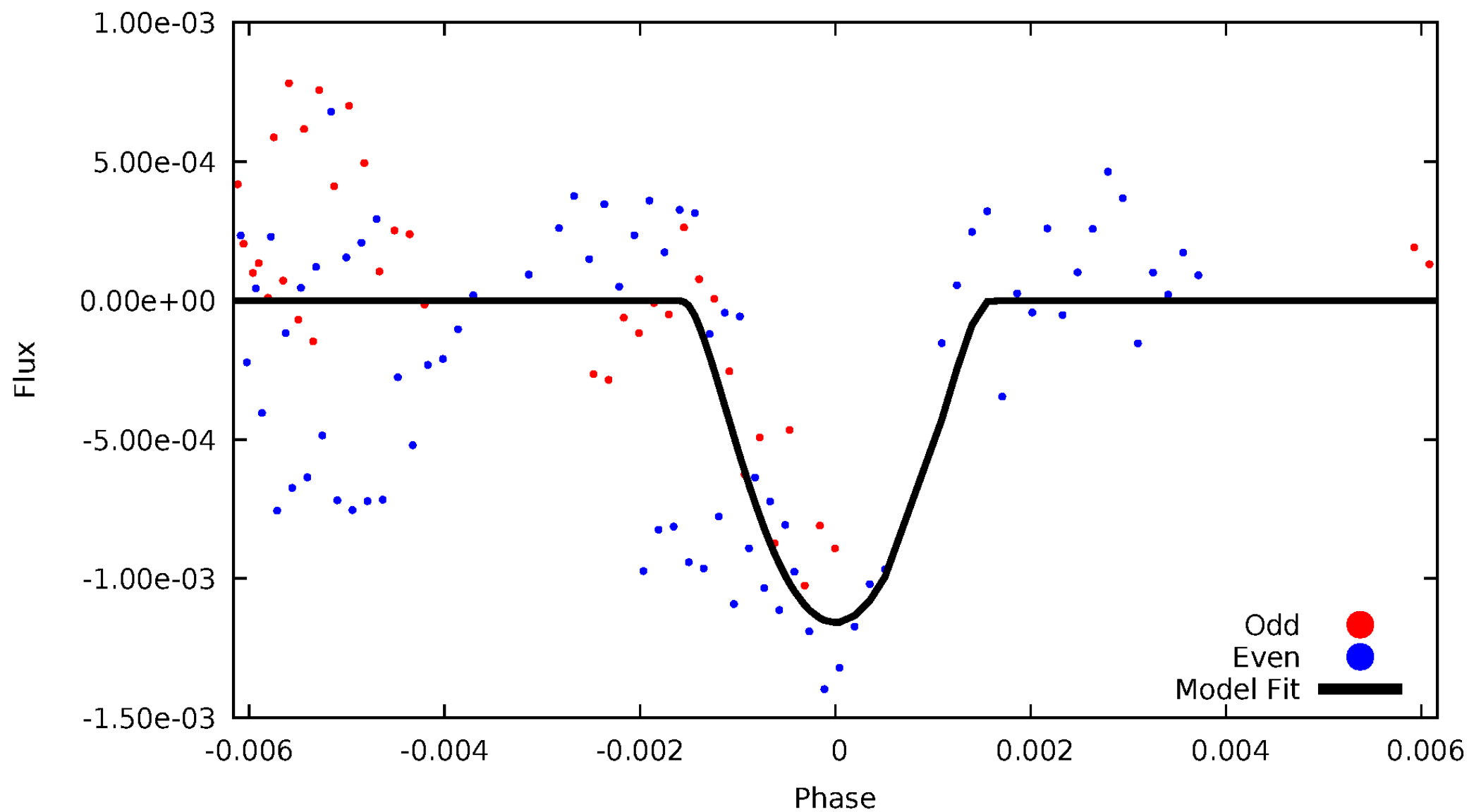


# TCE 005198315-07



# DV Odd/Even

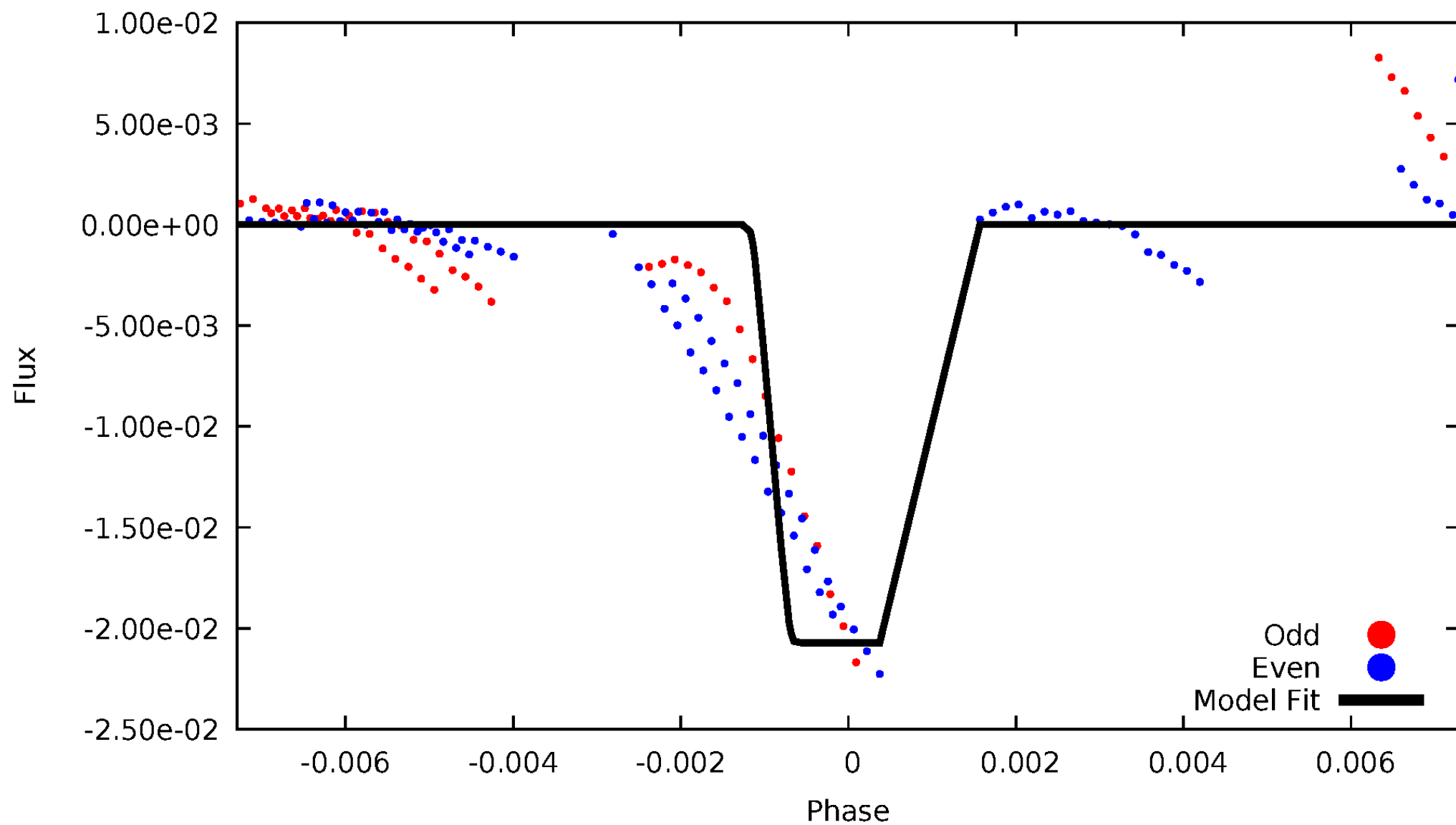
TCE 005198315-07





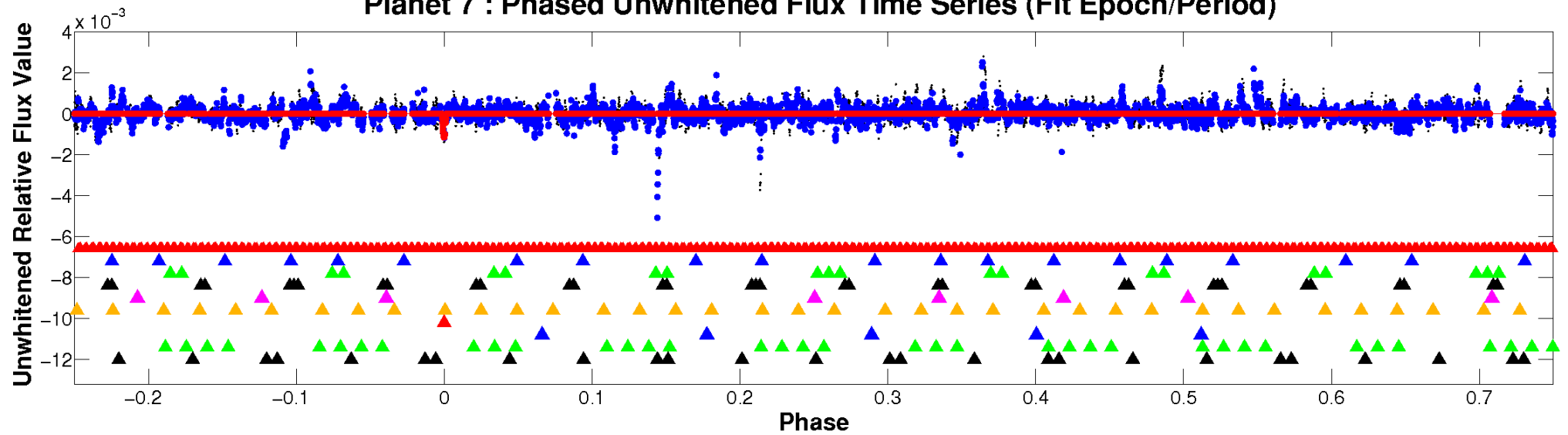
# ALT Odd/Even

TCE 005198315-07

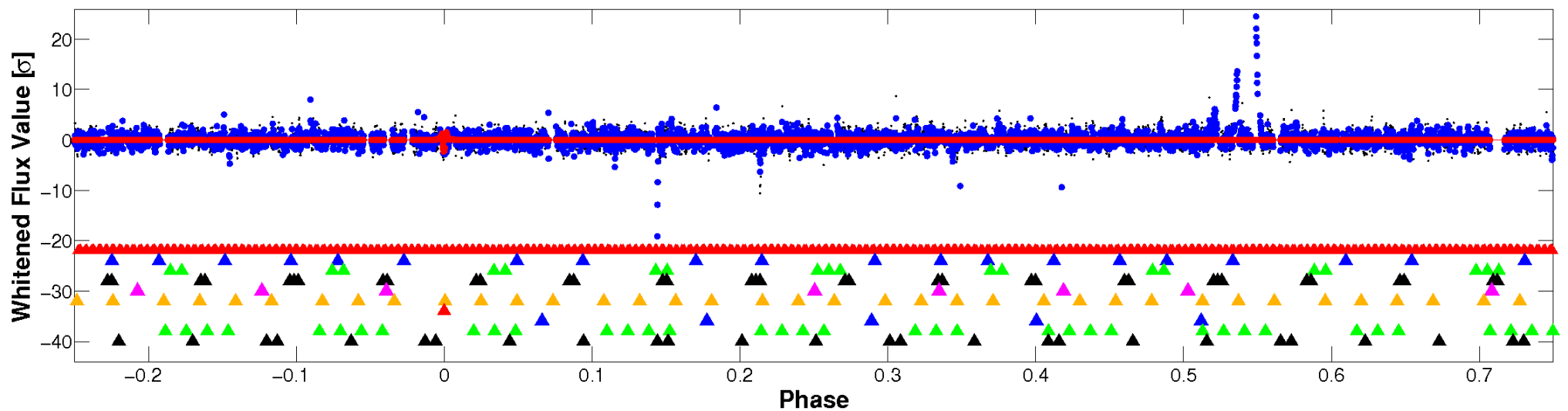


# Non-Whitened Vs. Whitened Light Curve

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

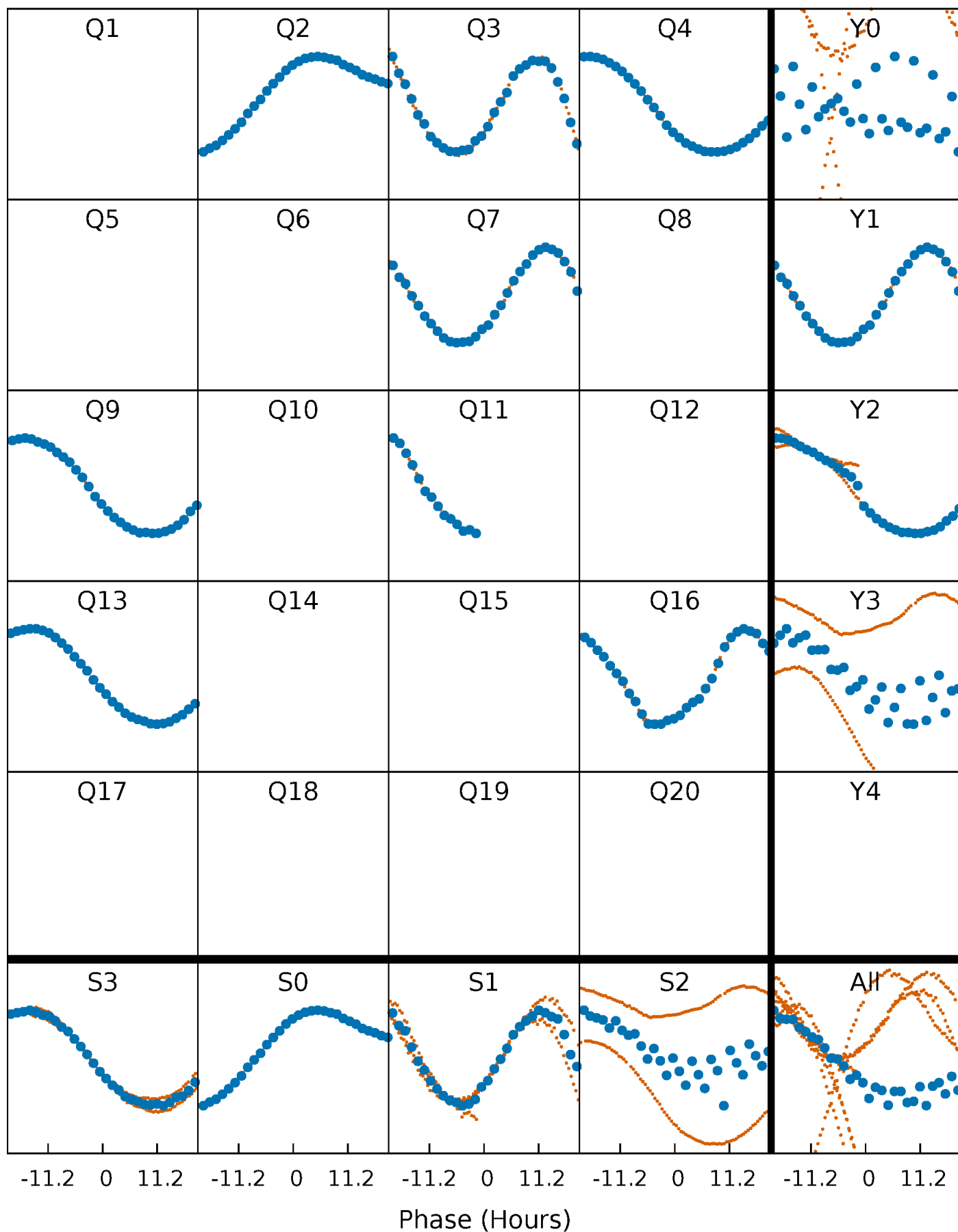


Planet 7 : Phased Whitened Flux Time Series (Fit Epoch/Period)



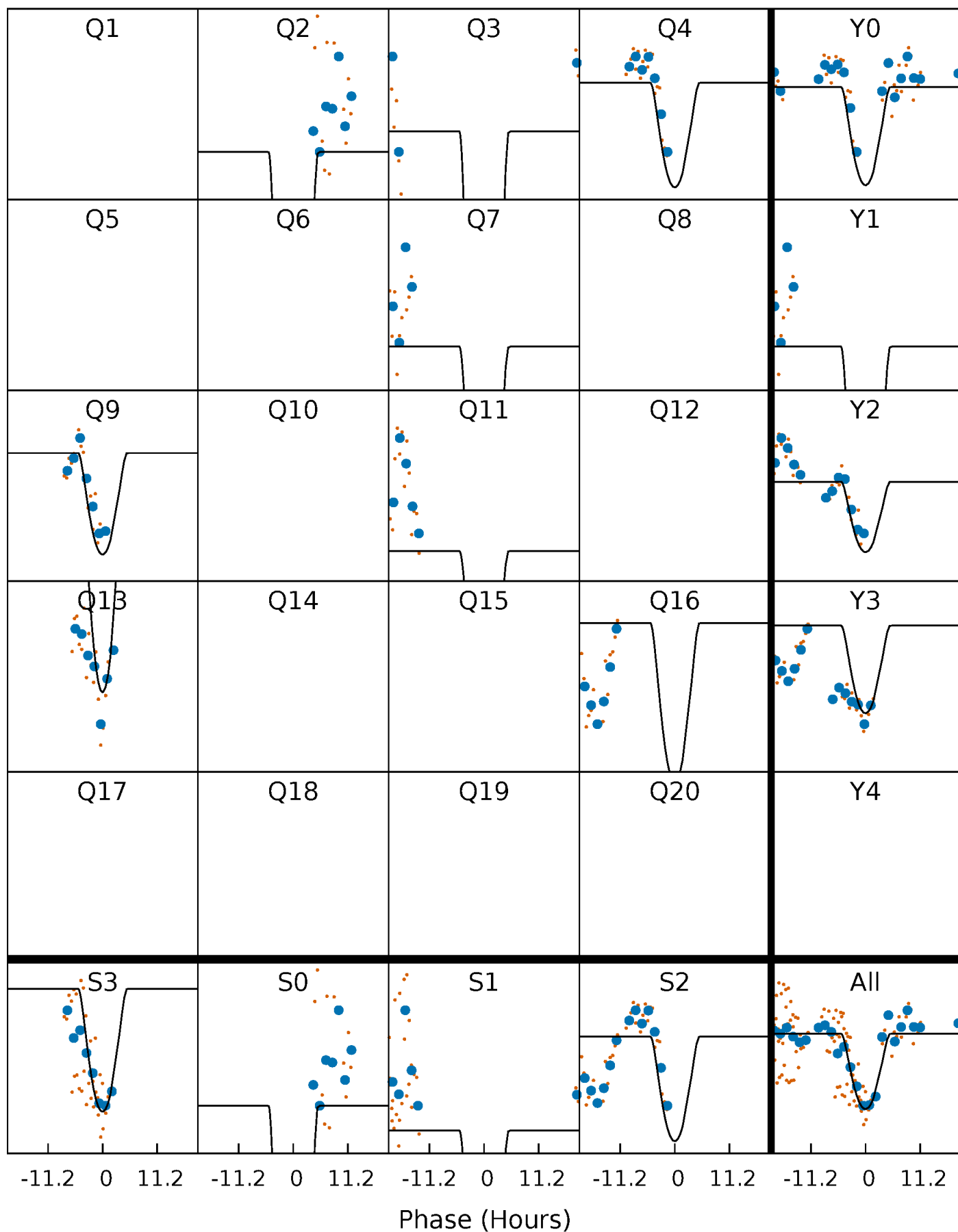
# PDC Quarter-Phased Transit Curves

TCE 005198315-07 P=132.319467 Days  $T_0=172.155165$  (BKJD)



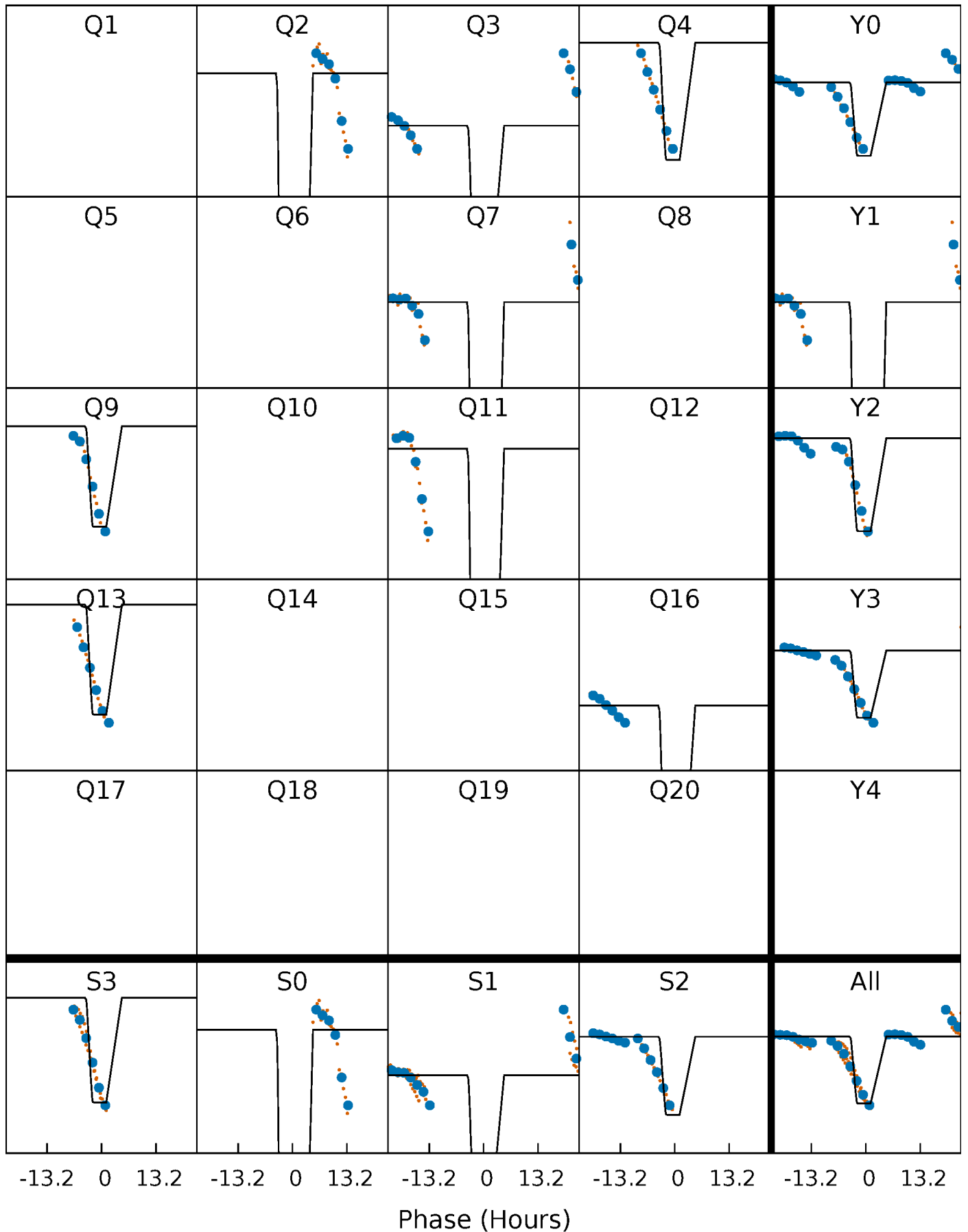
# DV Quarter-Phased Transit Curves

TCE 005198315-07 P=132.319467 Days  $T_0=172.155165$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

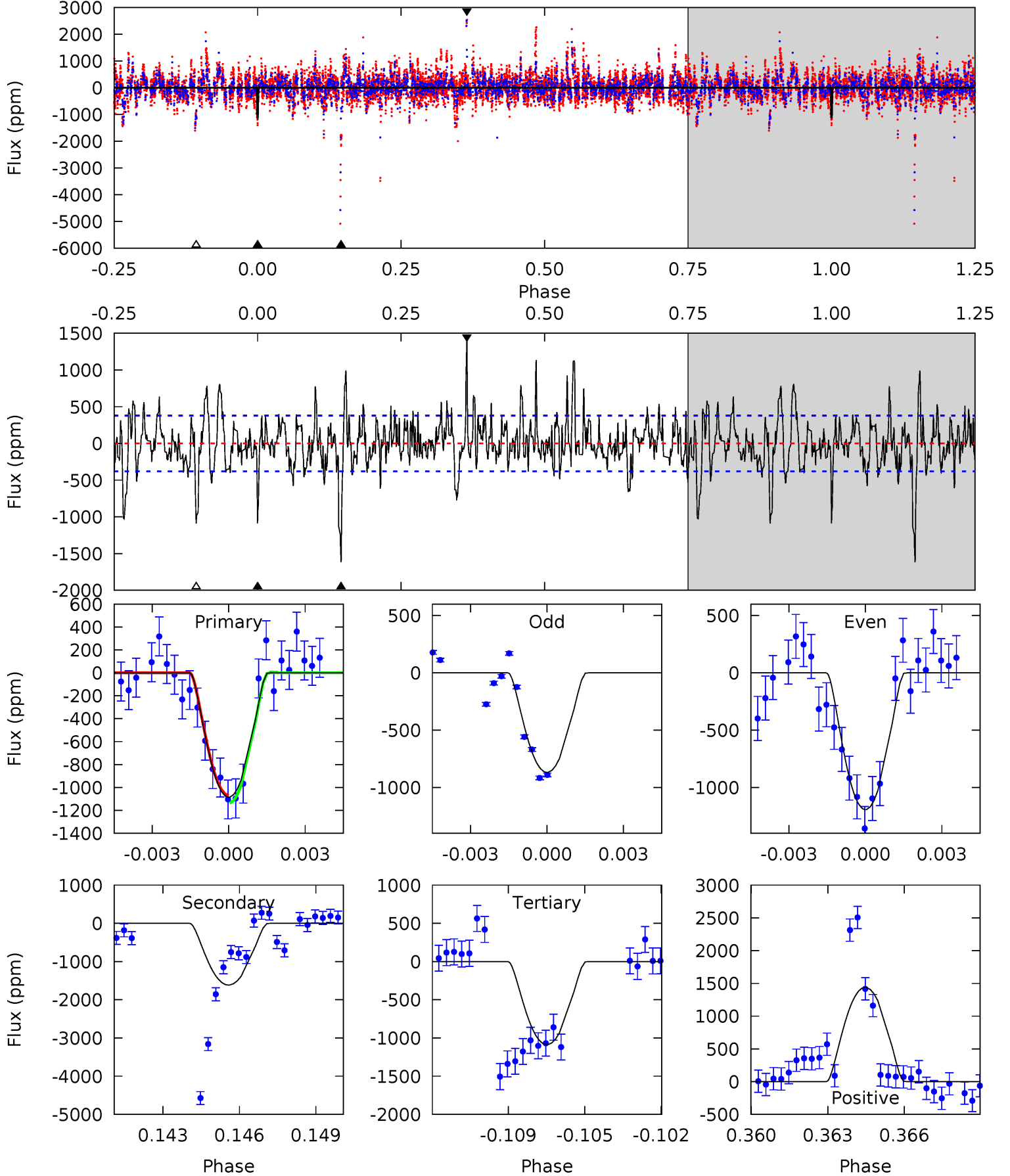
TCE 005198315-07   P=132.329591 Days    $T_0=172.091613$  (BKJD)



# DV Model-Shift Uniqueness Test

005198315-07,  $P = 132.319467$  Days,  $E = 39.835698$  Days

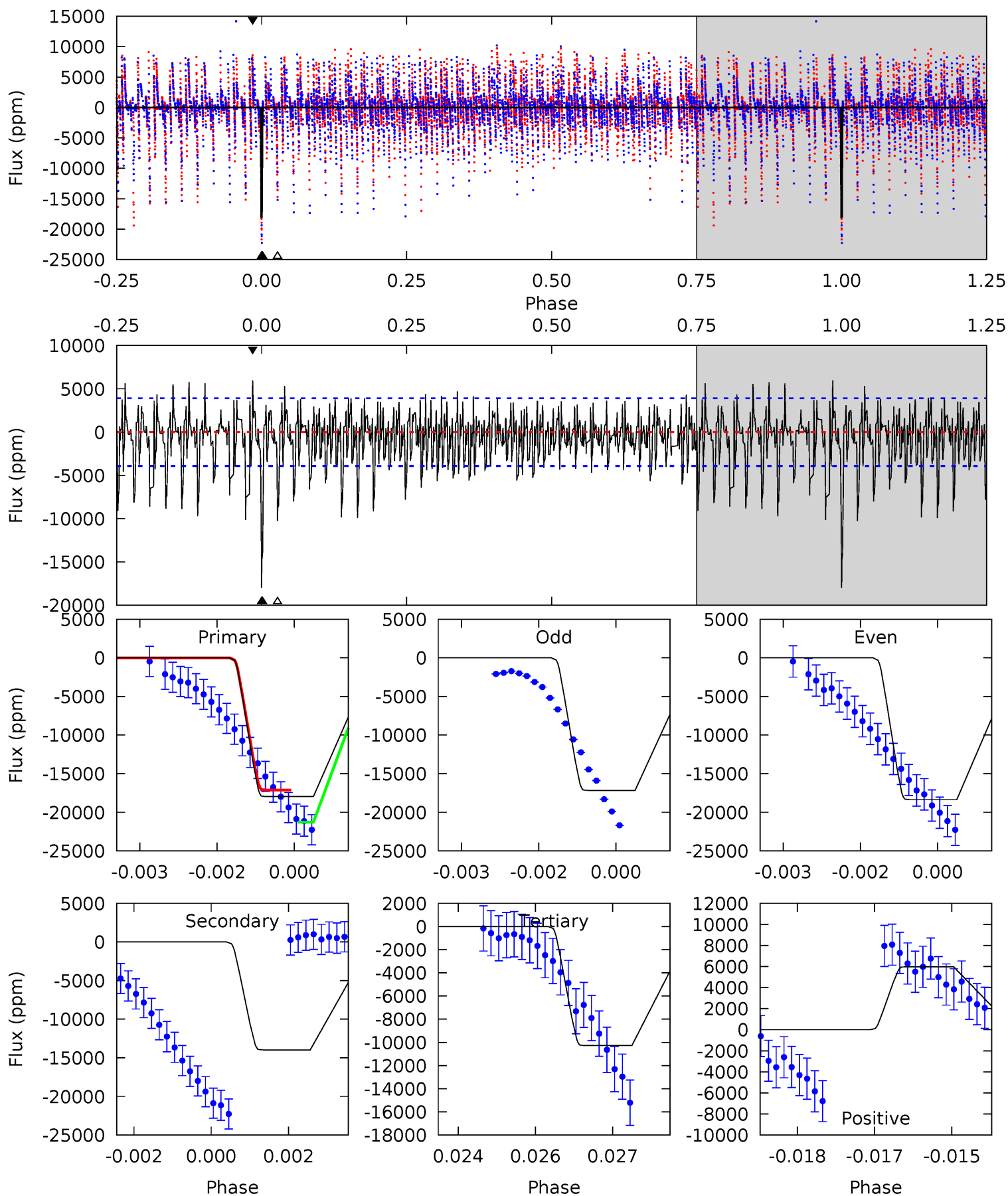
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
15.0	22.4	15.1	19.9	5.25	2.96	3.80	-0.02	-4.89	7.31	2.44	1.92	0.93	0.47	0.38



# Alt Model-Shift Uniqueness Test

005198315-07, P = 132.329591 Days, E = 39.762022 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
24.7	19.2	14.1	8.21	5.38	3.17	3.08	10.6	16.5	5.09	11.0	0.78	0.98	0.25	1.89



### Stellar Parameters For KIC 005198315

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$8306^{+202}_{-347}$	$3.751^{+0.451}_{-0.106}$	$-0.220^{+0.250}_{-0.350}$	$3.121^{+0.652}_{-1.412}$	$2.001^{+0.343}_{-0.471}$	$0.093^{+0.378}_{-0.031}$
	+2%/-4%	+12%/-3%	+114%/-159%	+21%/-45%	+17%/-24%	+408%/-33%
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 005198315-07 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-1616 \pm 72$	$15.60^{+13.04}_{-9.25}$	$1087^{+86}_{-123}$	$7086^{+5970}_{-1756}$	$1511^{+7727}_{-1063}$
Alt.	$-13978 \pm 727$	$44.64^{+17.82}_{-15.56}$	$1094^{+82}_{-136}$	$7334^{+1622}_{-910}$	$1628^{+2104}_{-783}$

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



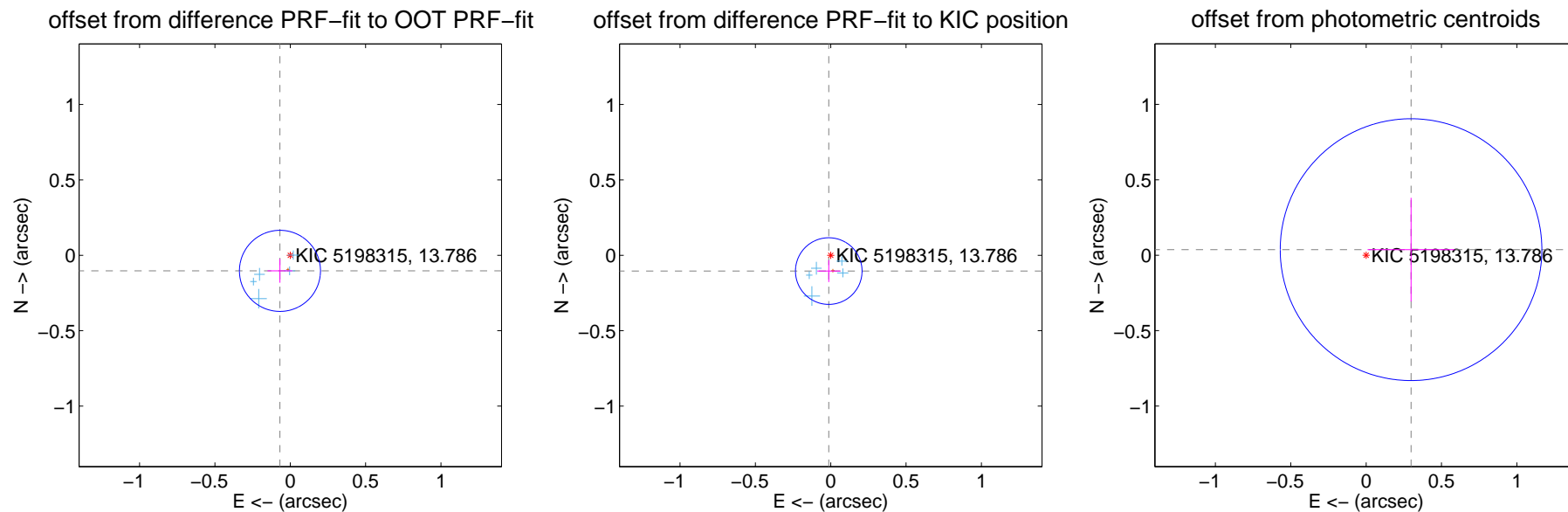
## DV Centroid Data

Supplemental centroid analysis for 005198315-07. Kepler magnitude: 13.79. Transit SNR 9.88

There are 5 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	$0.124 \pm 0.090$	1.38	$0.068 \pm 0.083$	$-0.103 \pm 0.079$
PRF-fit source offset from KIC position	$0.106 \pm 0.074$	1.43	$0.013 \pm 0.076$	$-0.105 \pm 0.072$
photometric centroid source offset	$0.30 \pm 0.29$	1.04	$-0.30 \pm 0.29$	$0.04 \pm 0.34$



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

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

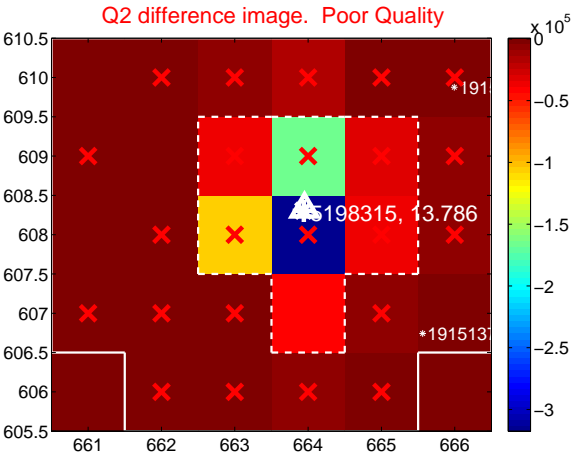
Q1 no difference image



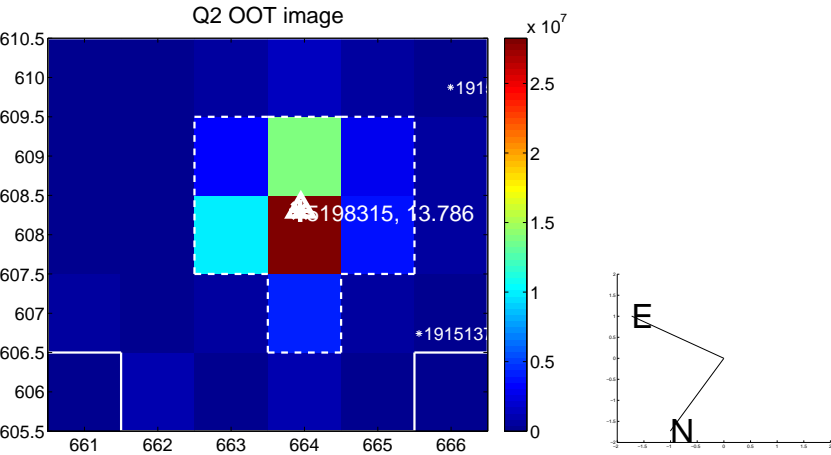
Q1 no OOT image



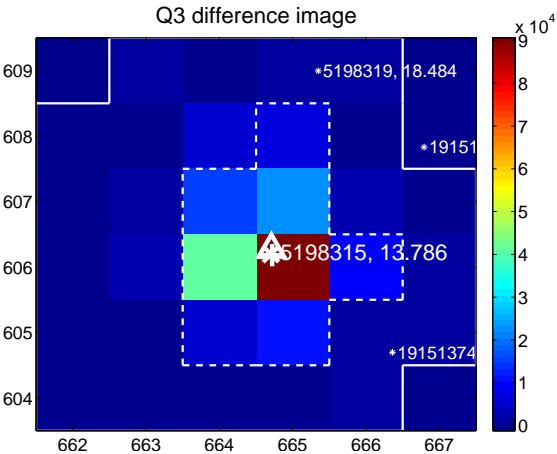
Q2 difference image. Poor Quality



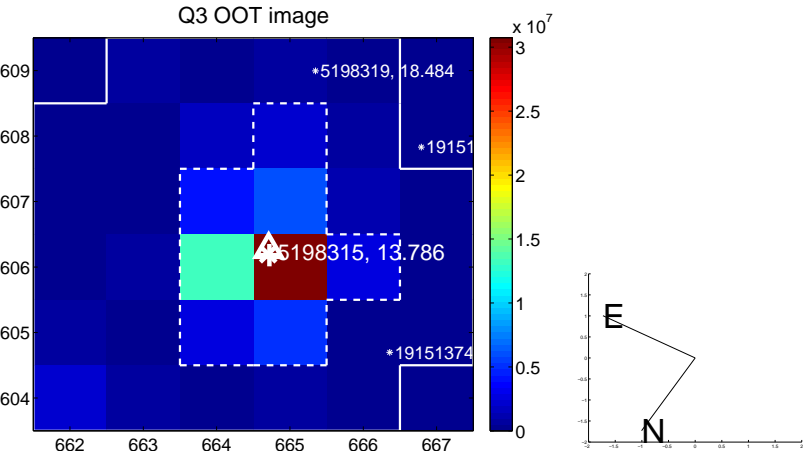
Q2 OOT image



Q3 difference image



Q3 OOT image



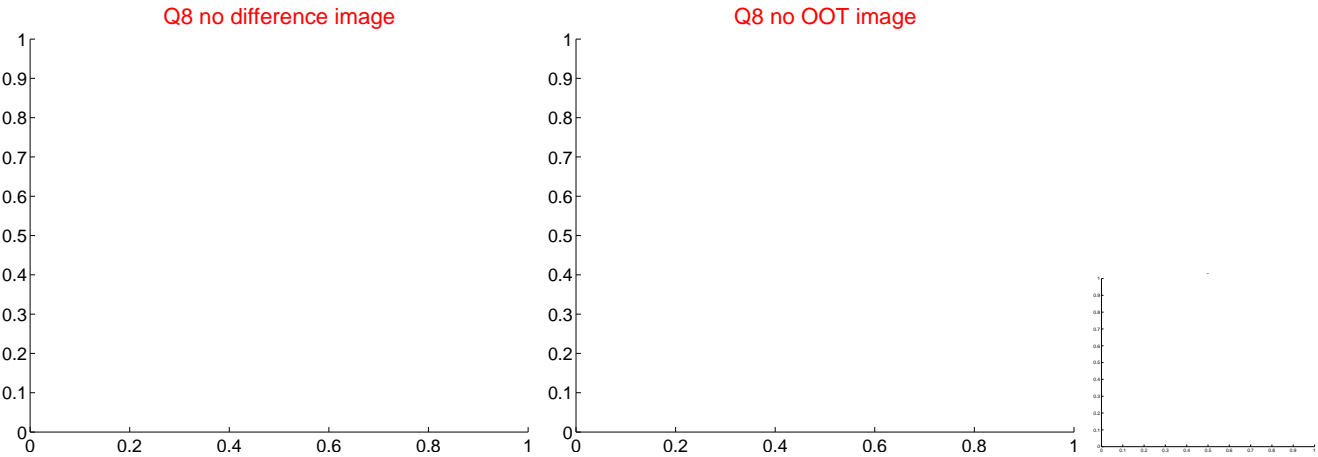
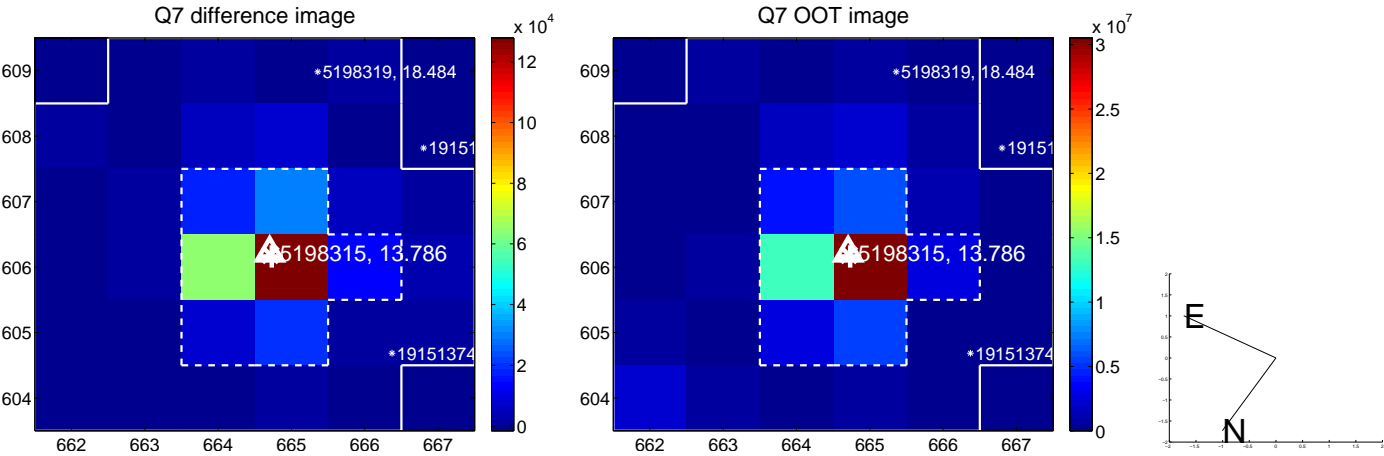
Q4 no difference image



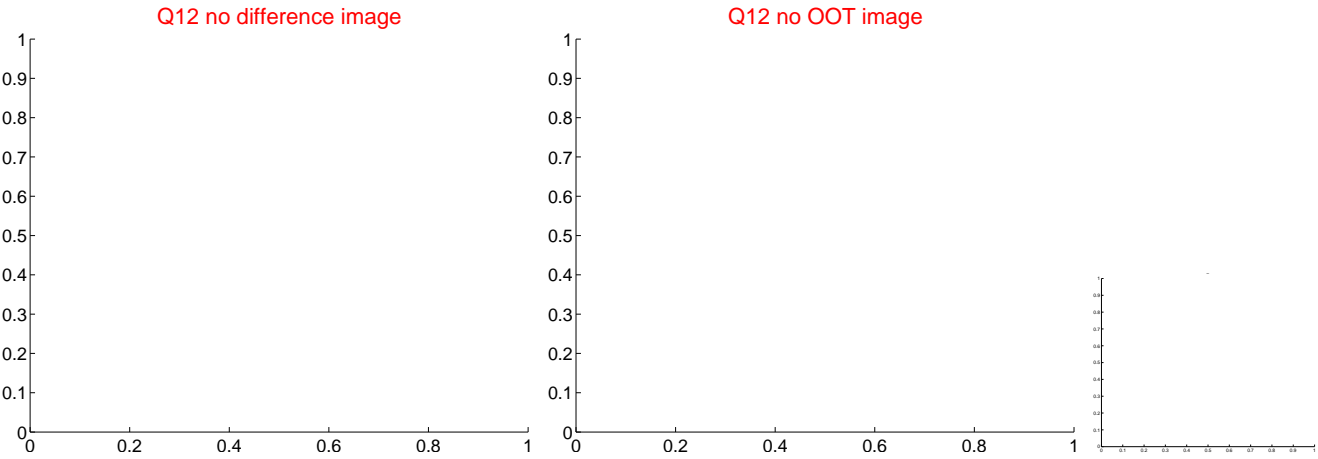
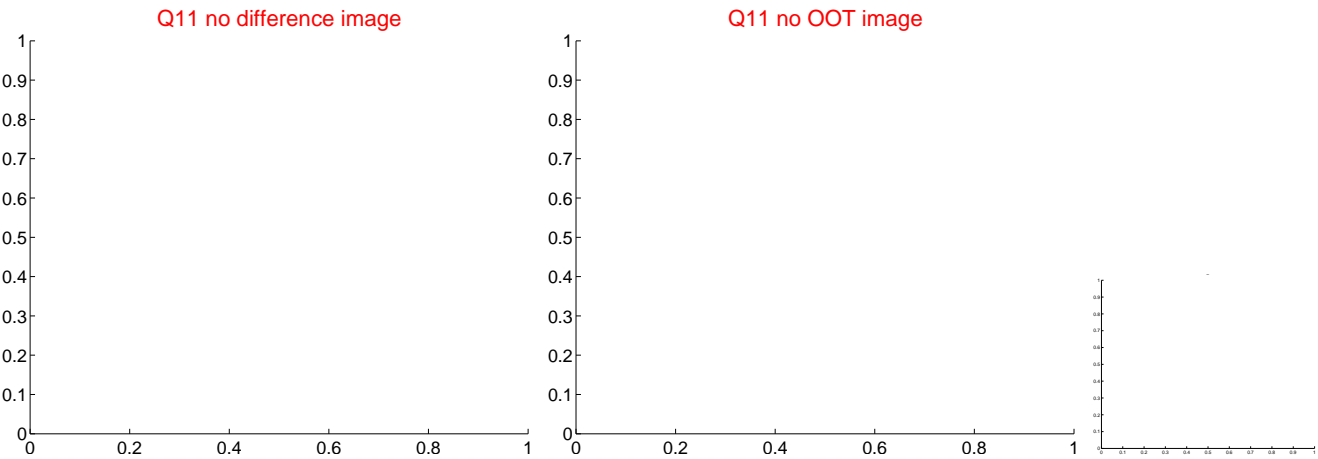
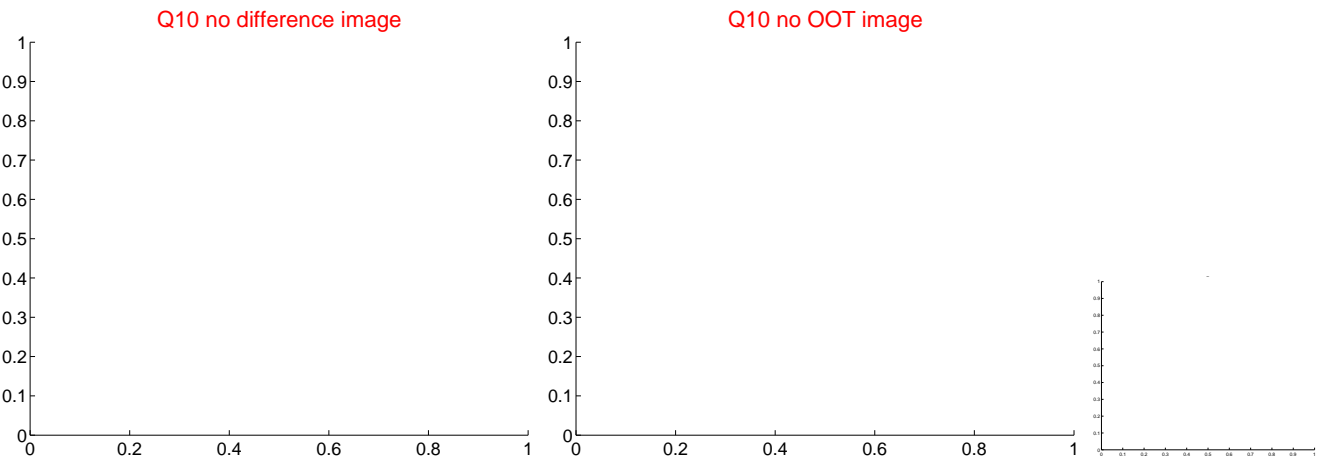
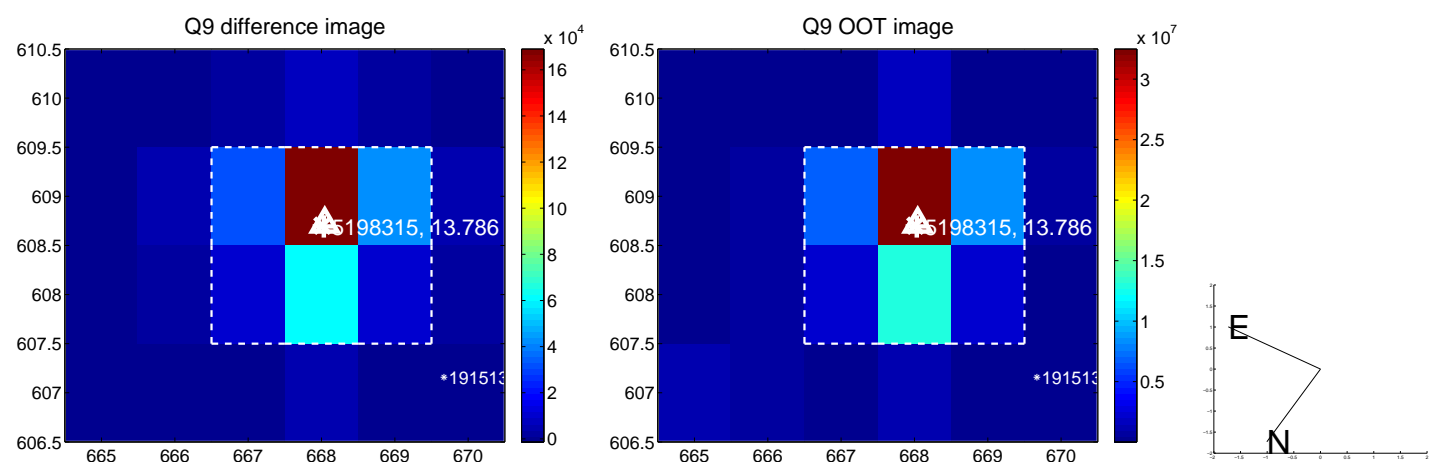
Q4 no OOT image



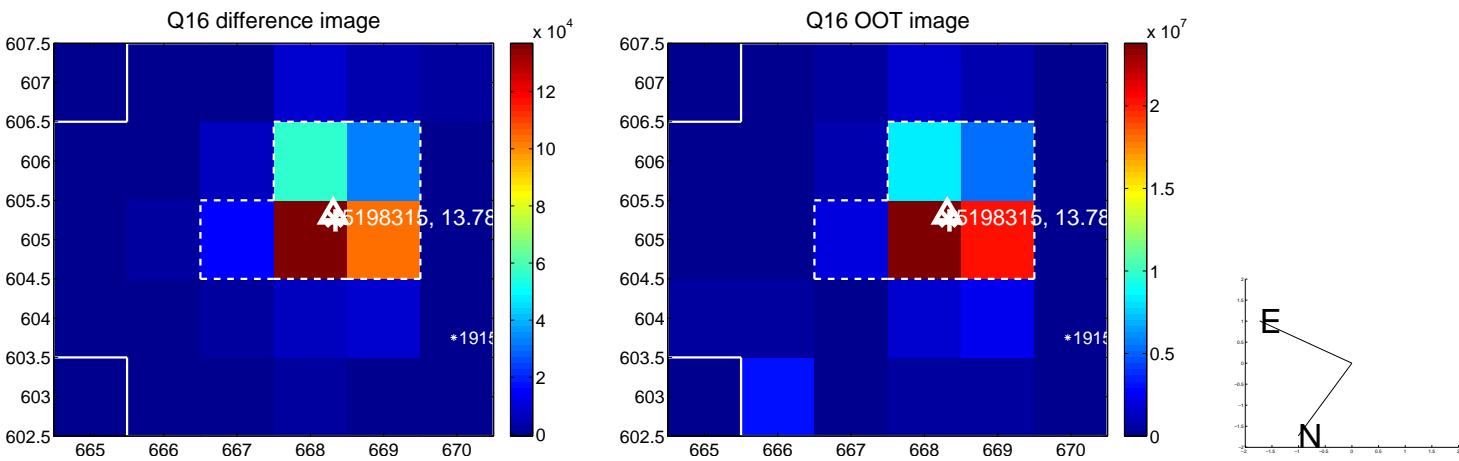
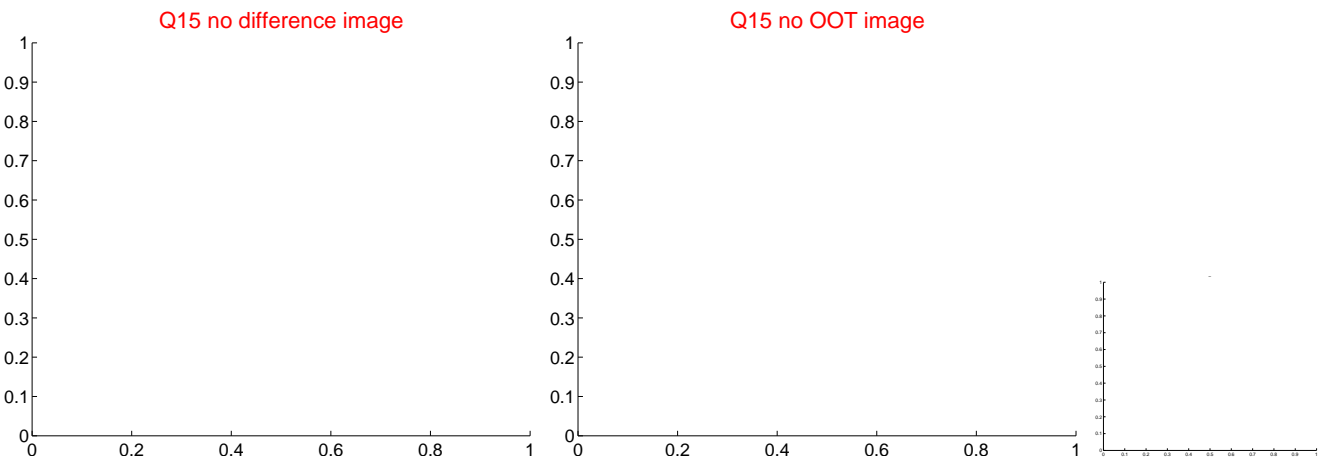
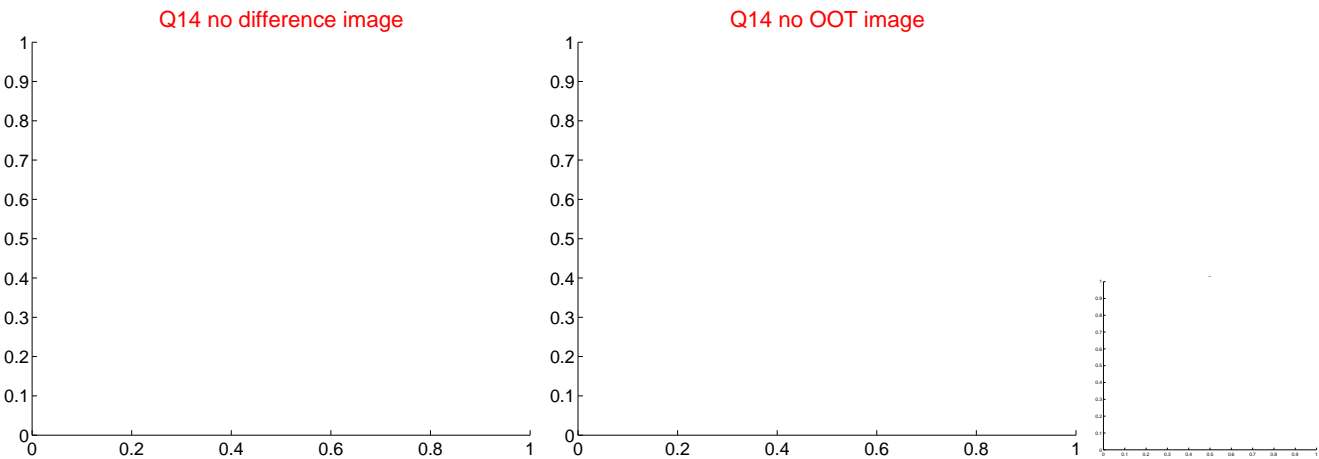
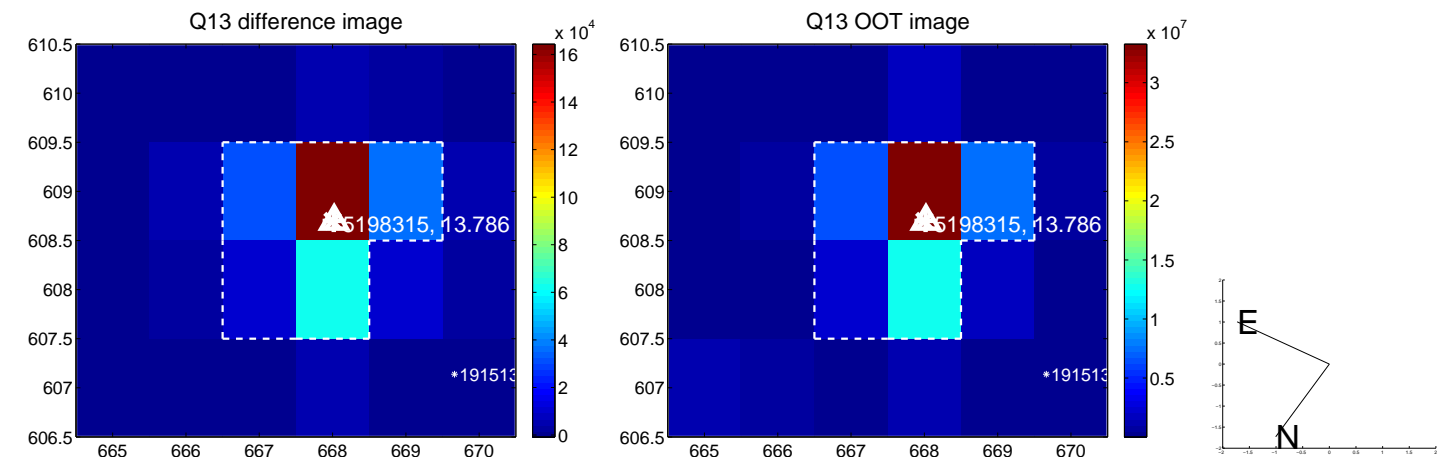
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



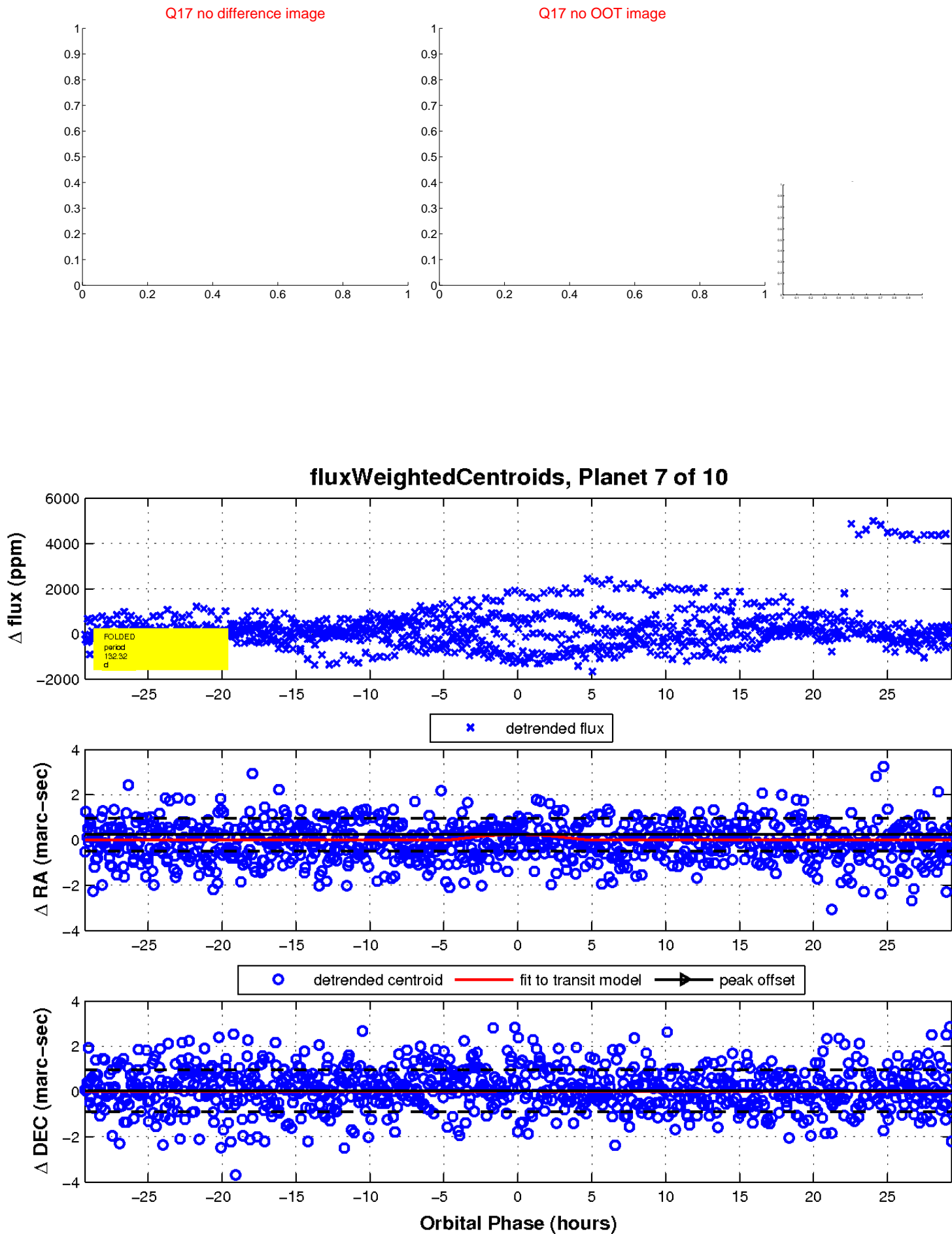
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

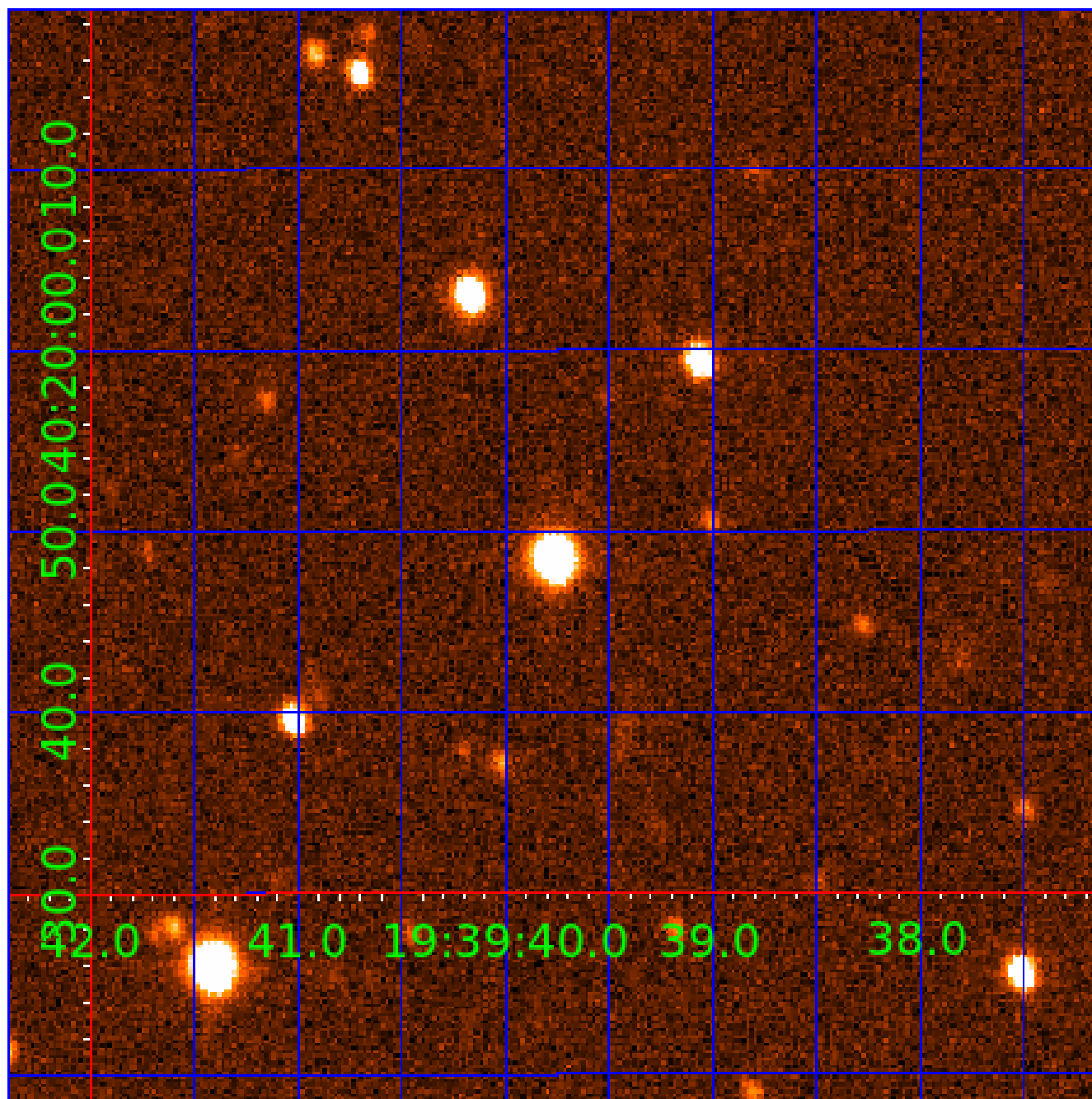


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 005198315

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005198315-01	OBS	No	1.821235	133.319401	142.6	11.552	8.7	12.0	3.12	8306	6.97	30678.67
005198315-02	OBS	No	74.166477	146.638639	674.2	12.500	19.4	-1.0	3.12	8306	8.20	218.97
005198315-03	OBS	No	73.398148	134.198409	915.1	12.184	13.6	11.0	3.12	8306	11.77	222.03
005198315-04	OBS	No	41.326624	159.088305	277.6	6.792	11.6	5.0	3.12	8306	6.78	477.55
005198315-05	OBS	No	192.913240	238.705450	372.9	10.500	11.6	-1.0	3.12	8306	6.10	61.21
005198315-06	OBS	No	39.374162	156.712384	345.6	7.500	10.4	-1.0	3.12	8306	5.87	509.38
005198315-07	OBS	No	132.319467	172.155165	1157.7	9.781	9.6	9.9	3.12	8306	15.73	101.19
005198315-09	OBS	No	39.508476	166.624208	322.1	11.722	8.5	6.4	3.12	8306	6.01	507.07
005198315-10	OBS	No	55.763625	156.268411	1097.2	3.217	8.4	12.1	3.12	8306	19.19	320.27

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005198315-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—MOD_NONUNIQ_DV
005198315-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_NOFITS
005198315-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
005198315-04	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—HALO_GHOST
005198315-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_NOFITS
005198315-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_NOFITS
005198315-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT
005198315-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
005198315-10	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT

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

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

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

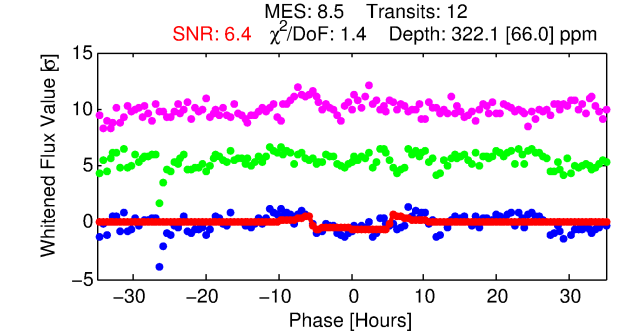
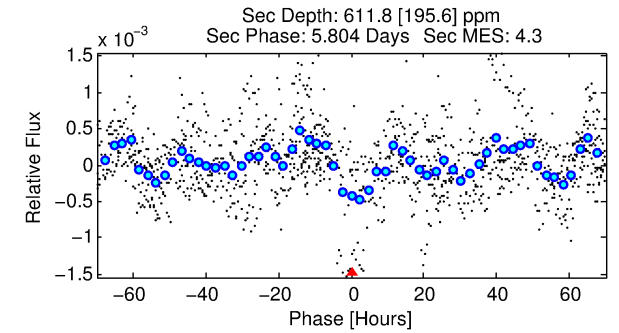
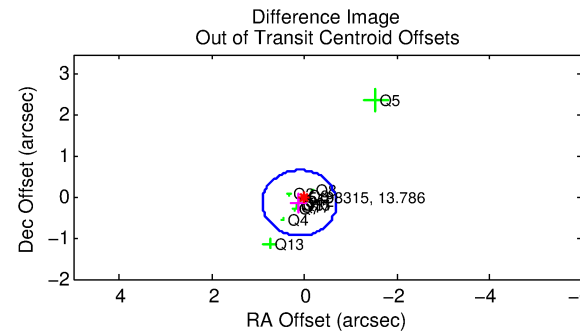
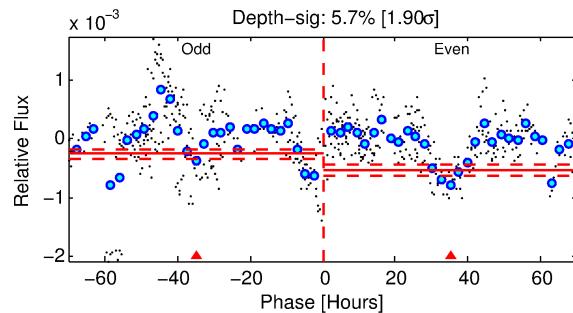
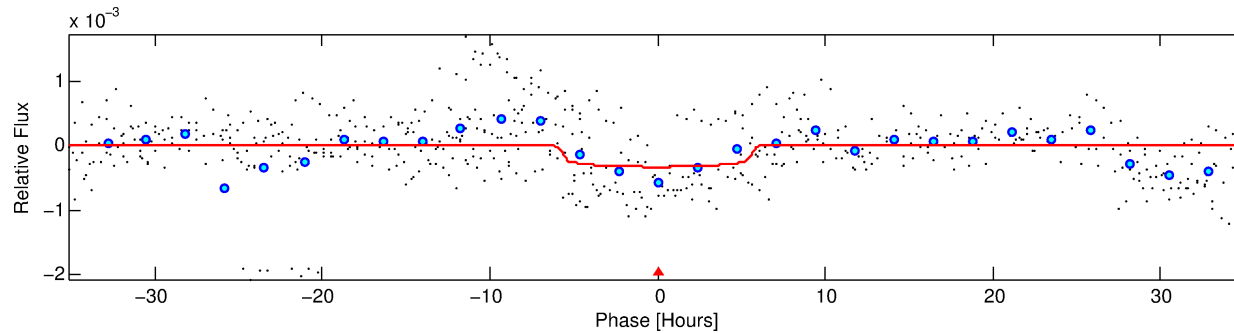
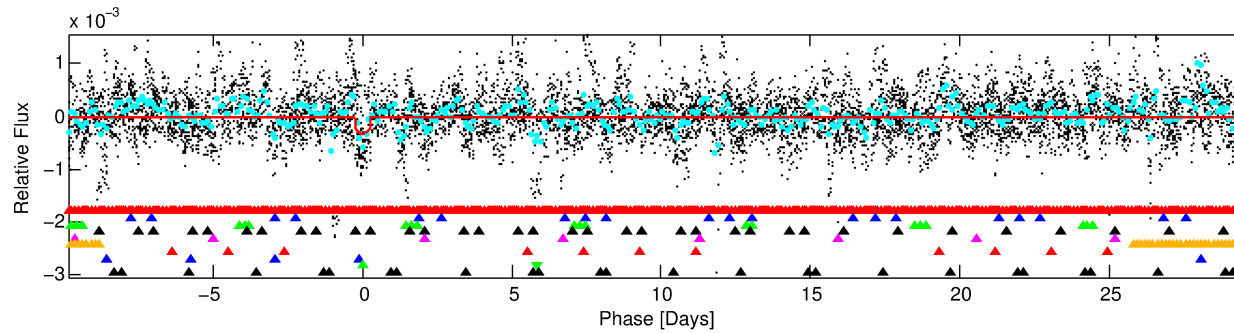
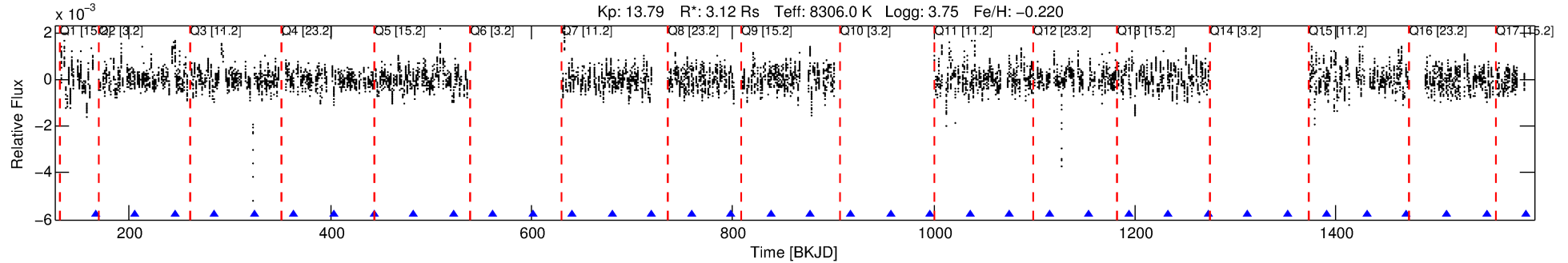
Ephemeris Match Information For 005198315-09

No Significant Match Found



# DV One-Page Summary

KIC: 5198315 Candidate: 9 of 10 Period: 39.508 d



## DV Fit Results:

Period = 39.50848 [0.00076] d  
Epoch = 166.6242 [0.0142] BKJD  
Rp/R\* = 0.0176 [0.0060]  
a/R\* = 18.98 [34.95]  
b = 0.70 [1.33]  
Seff = 507.07 [392.18]  
Teq = 1210 [234] K  
Rp = 6.01 [3.40] Re  
a = 0.2862 [0.1314] AU  
Ag = 764.21 [813.47] [0.94 $\sigma$ ]  
Teff = 9836 [1890] K [4.53 $\sigma$ ]

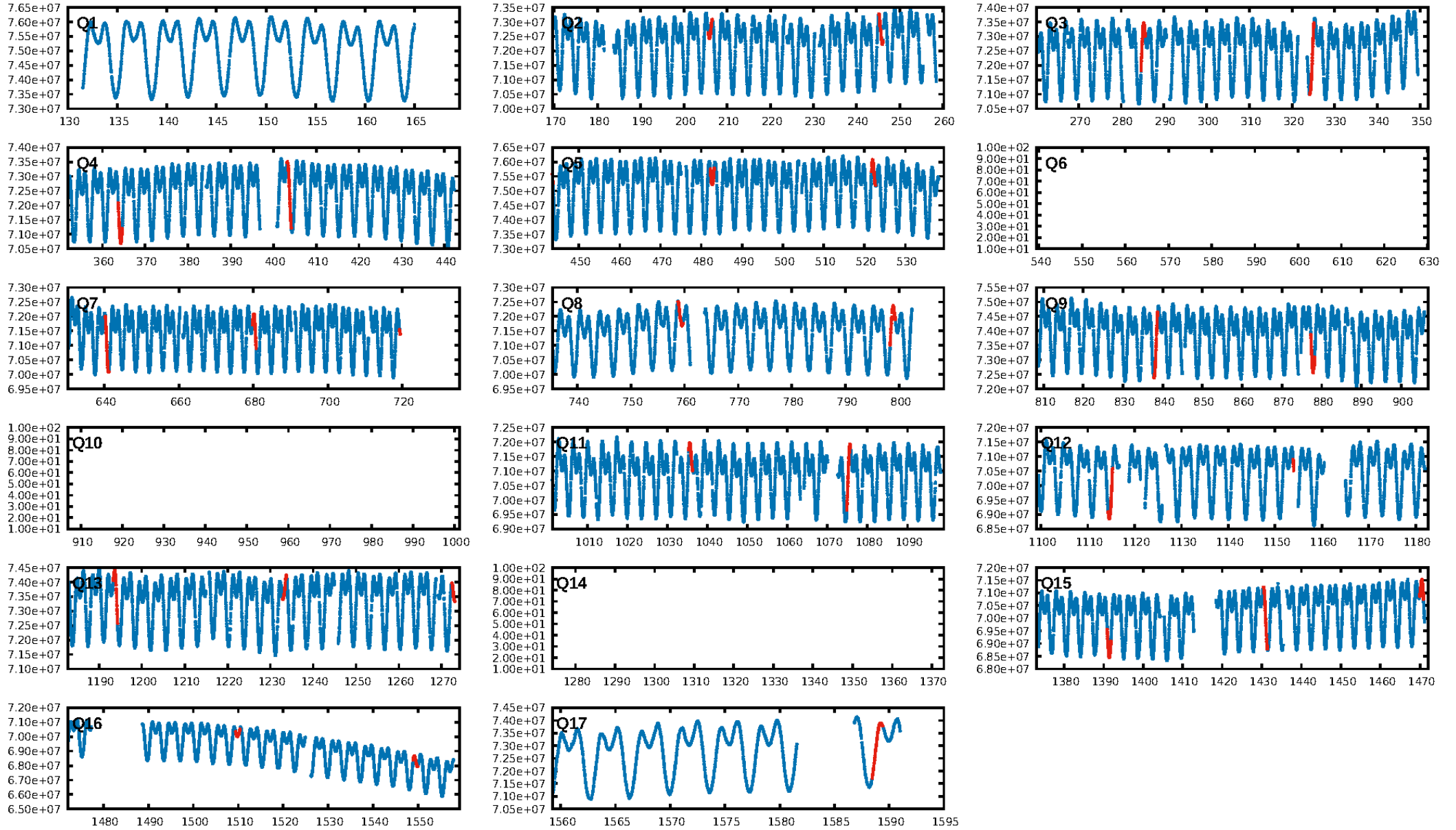
## DV Diagnostic Results:

ShortPeriod-sig: 18.3% [0.23 $\sigma$ ]  
LongPeriod-sig: 99.9% [3.22 $\sigma$ ]  
ModelChiSquare2-sig: 0.0%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [12/12]  
GhostDiagnostic-chr: 0.8008  
Centroid-sig: 32.3%  
Centroid-so: 0.468 arcsec [0.94 $\sigma$ ]  
OotOffset-rm: 0.178 arcsec [0.66 $\sigma$ ]  
KicOffset-rm: 0.134 arcsec [0.48 $\sigma$ ]  
OotOffset-st: 1/4/3/4 [12]  
KicOffset-st: 1/4/3/4 [12]  
DiffImageQuality-fgm: 0.50 [6/12]  
DiffImageOverlap-fno: 0.00 [0/12]

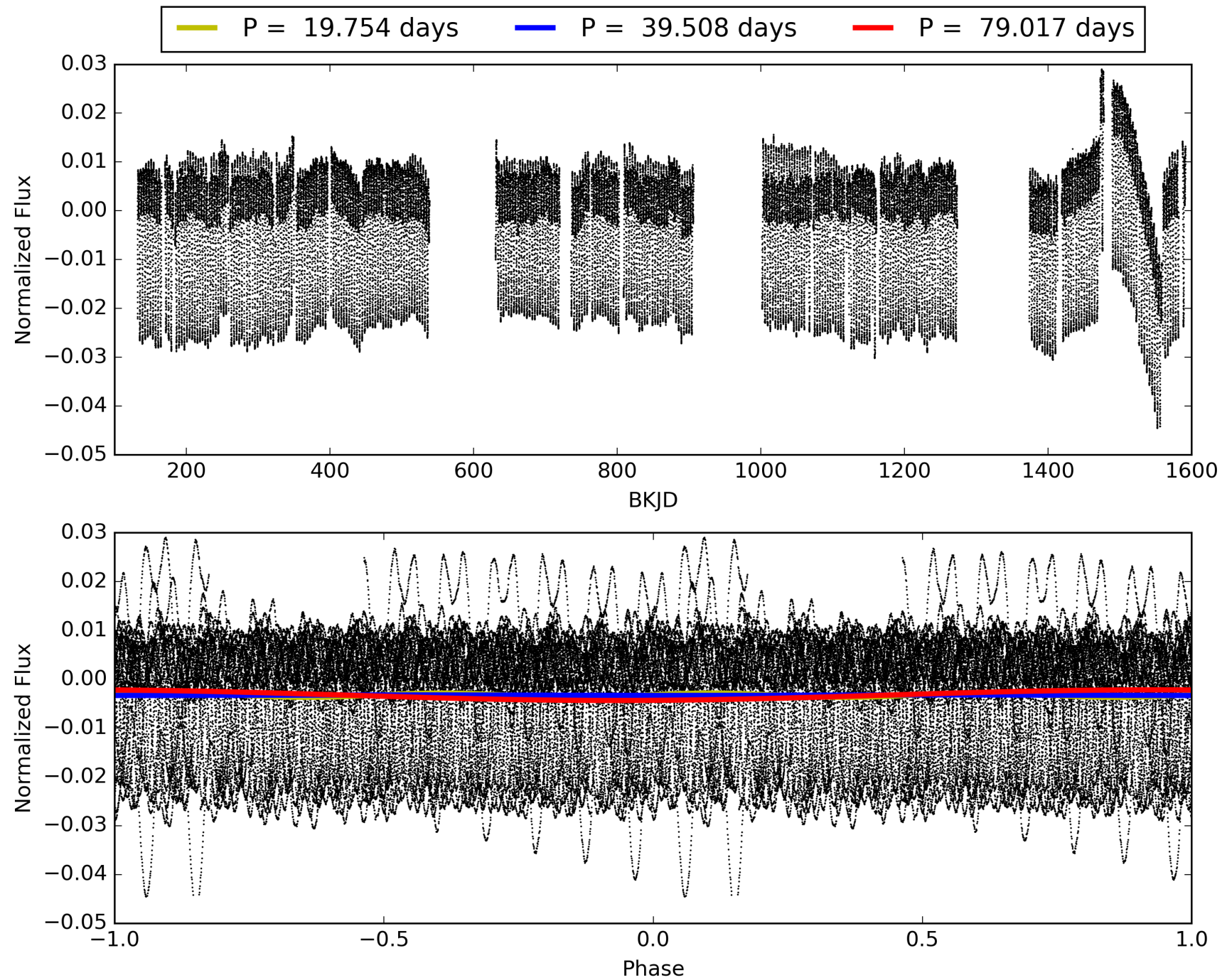
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 01:21:14 Z

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

# TCE 005198315-09, PDC Light Curves

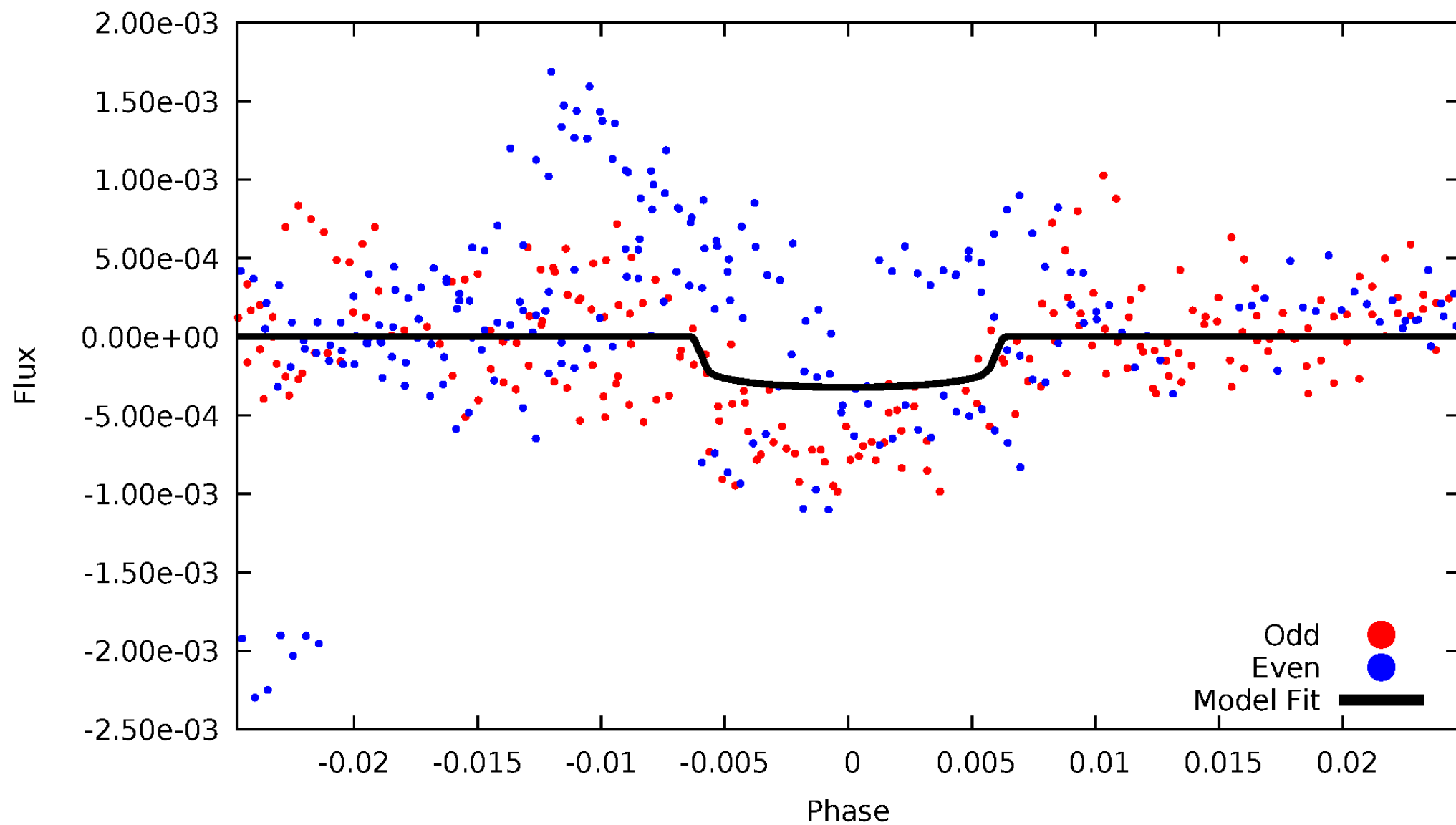


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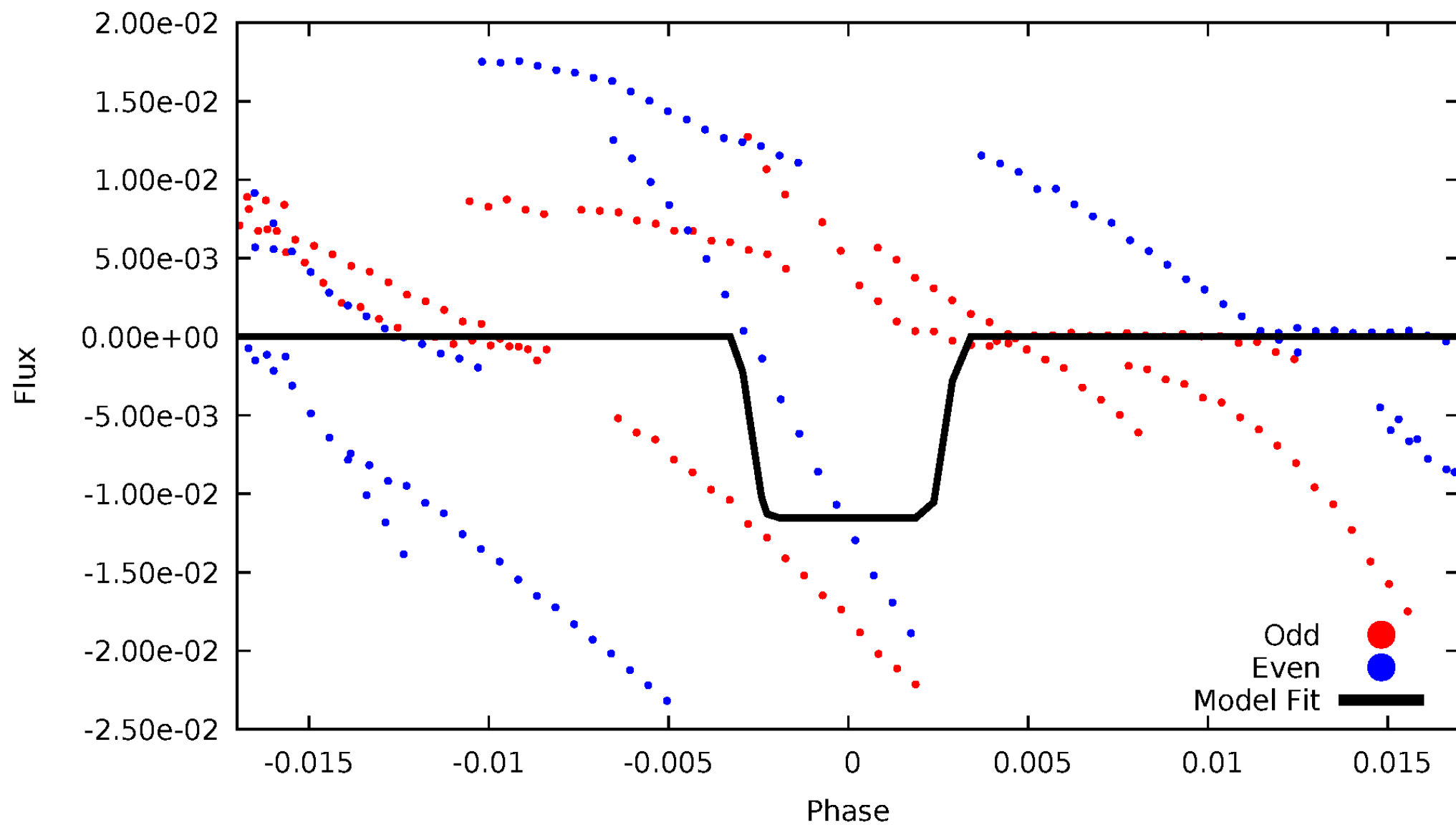
# DV Odd/Even

TCE 005198315-09



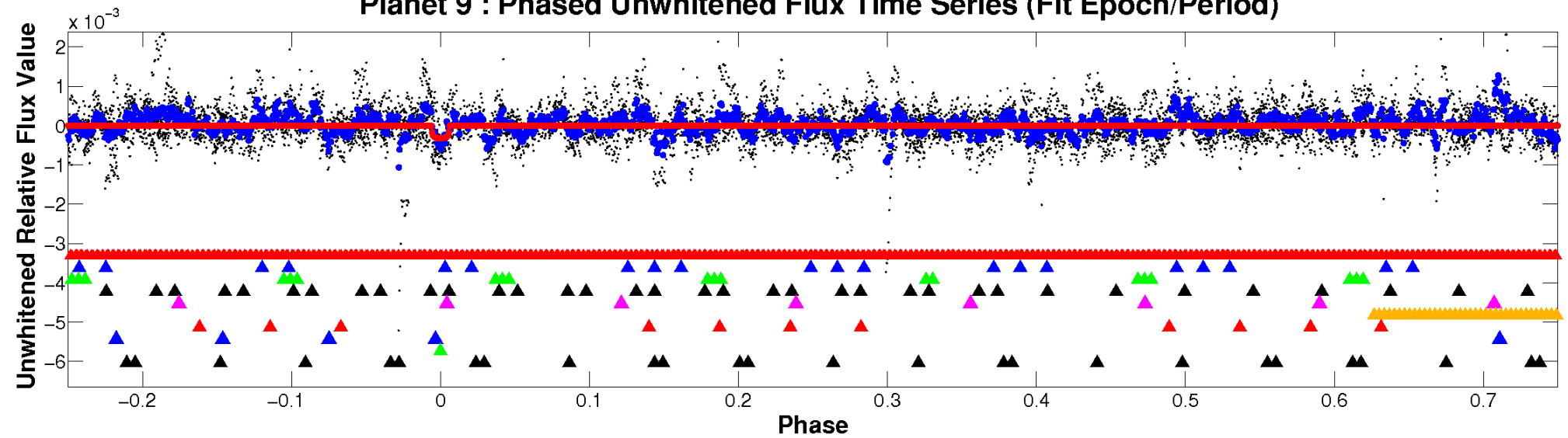
# ALT Odd/Even

TCE 005198315-09

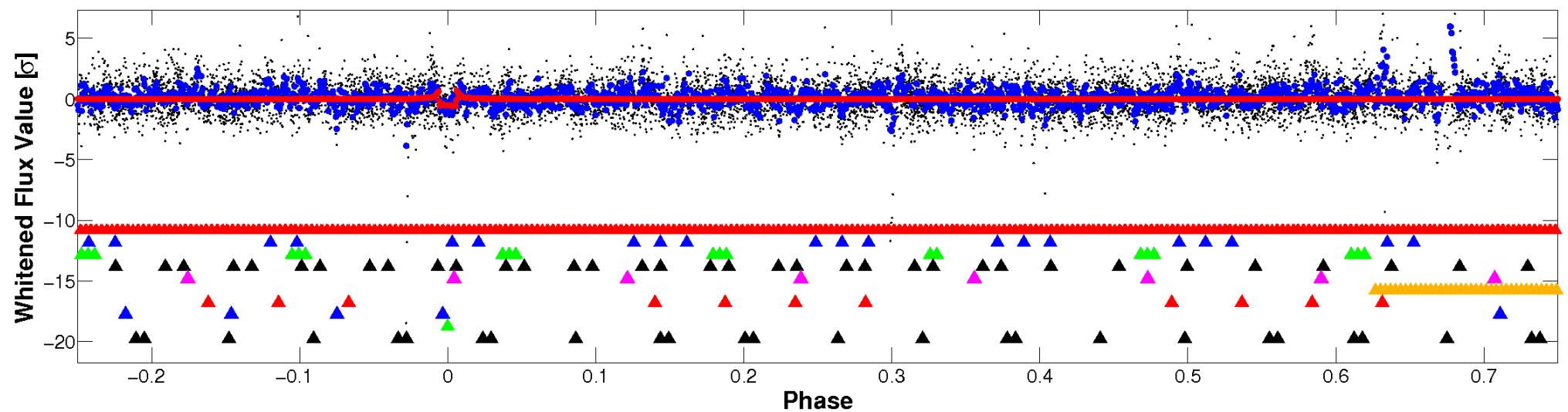


# Non-Whitened Vs. Whitened Light Curve

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



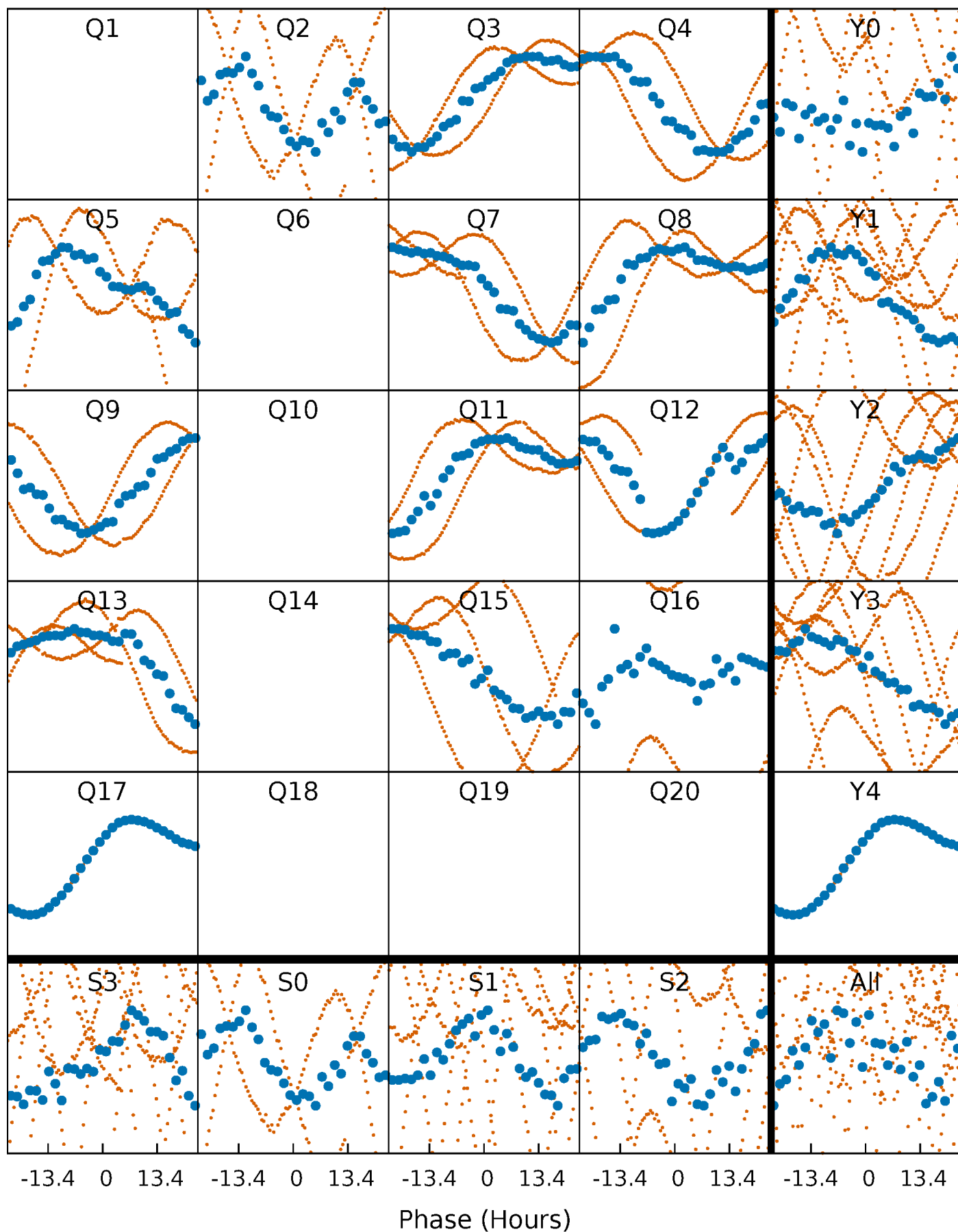
## Planet 9 : Phased Whitened Flux Time Series (Fit Epoch/Period)





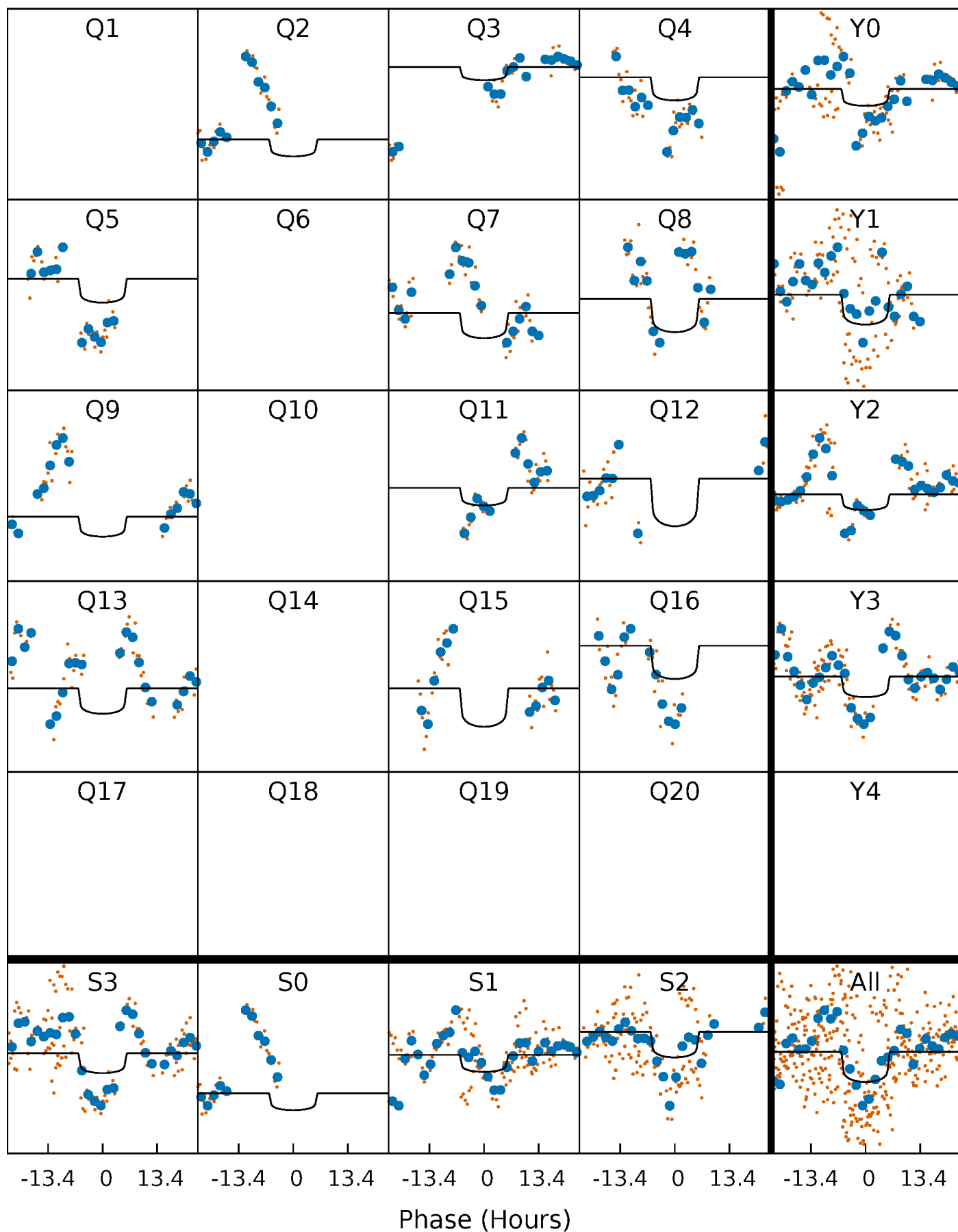
# PDC Quarter-Phased Transit Curves

TCE 005198315-09   P= 39.508476 Days    $T_0=166.624208$  (BKJD)



# DV Quarter-Phased Transit Curves

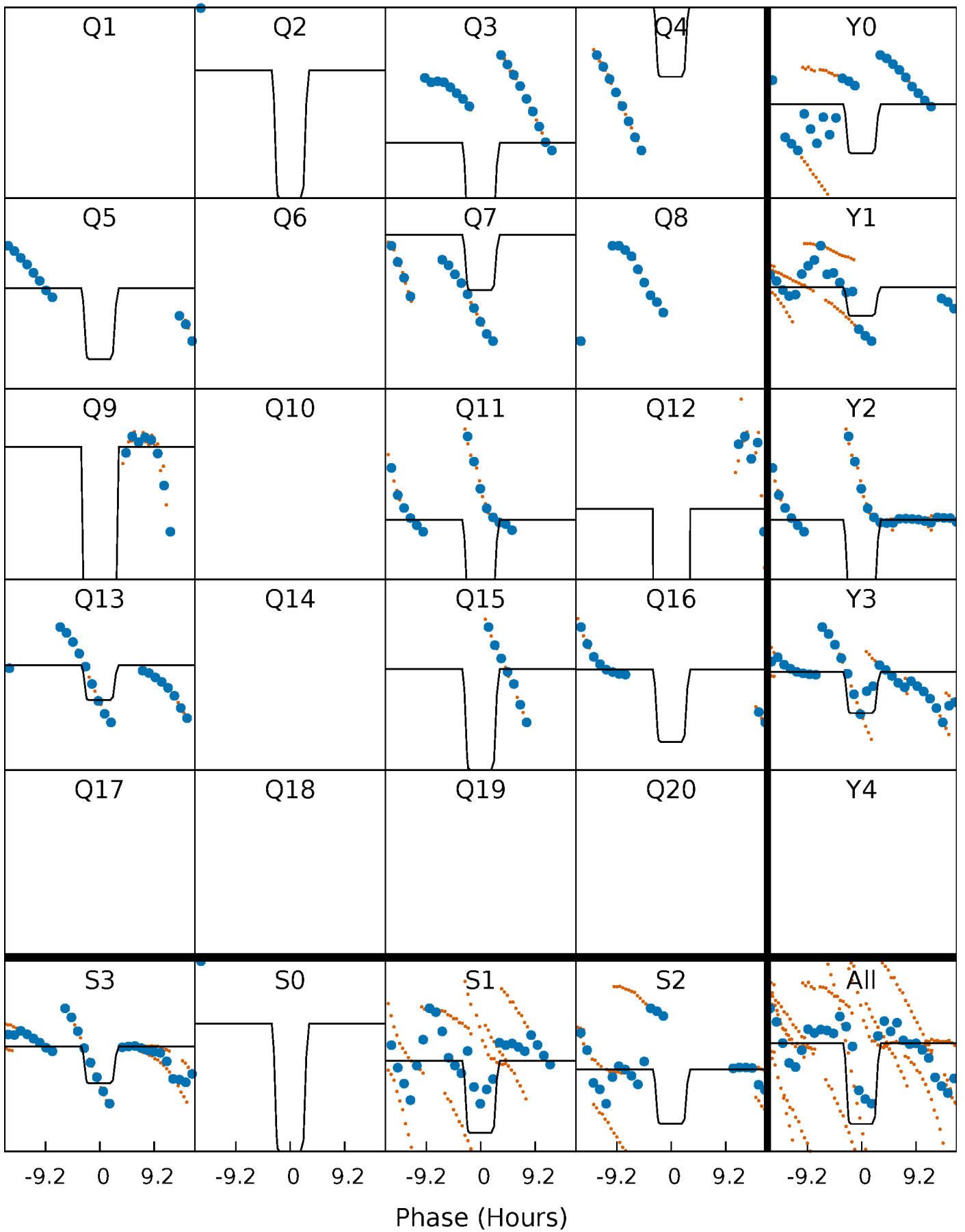
TCE 005198315-09   P= 39.508476 Days    $T_0=166.624208$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

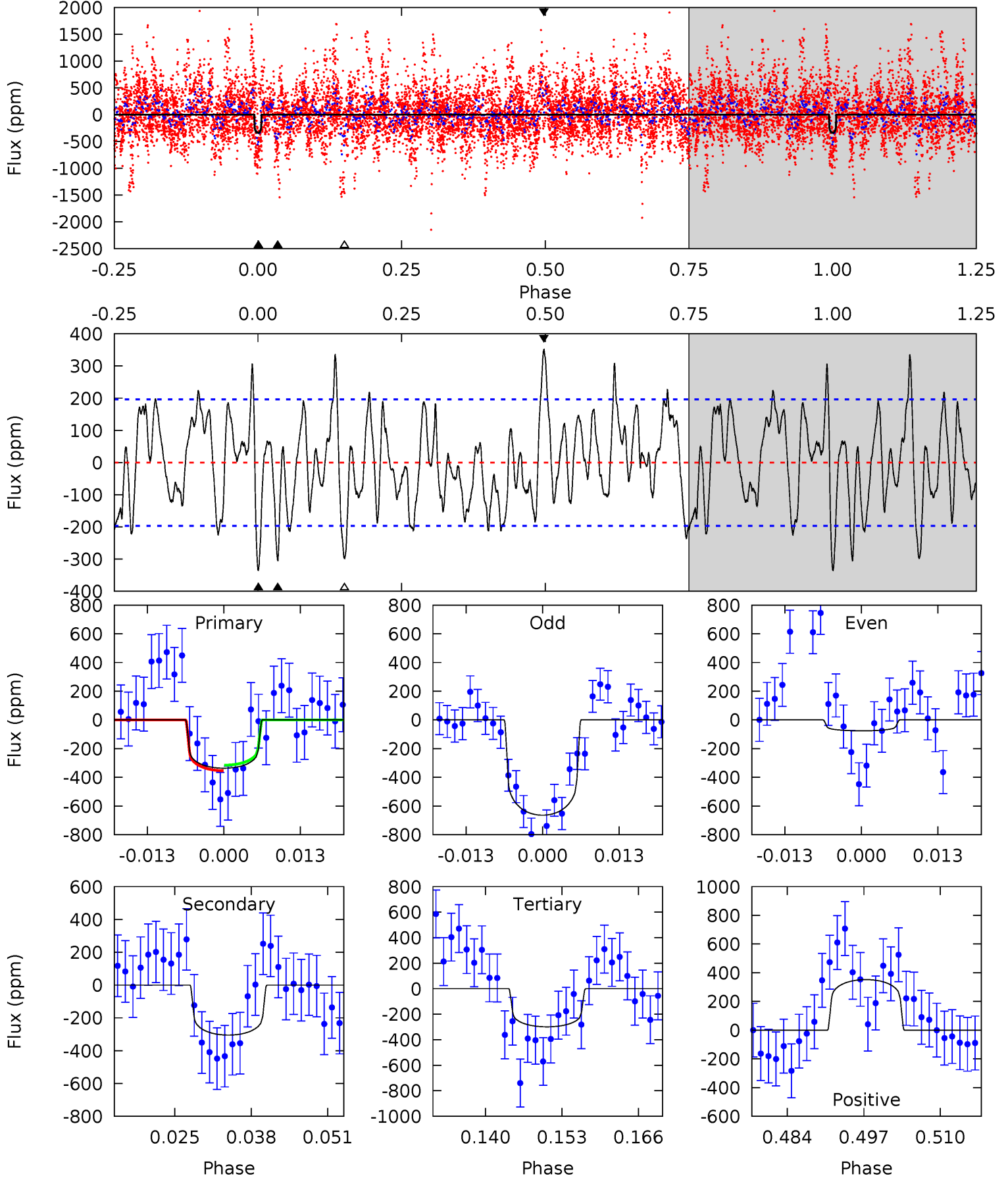
TCE 005198315-09 P= 39.506251 Days  $T_0=167.111691$  (BKJD)



# DV Model-Shift Uniqueness Test

005198315-09,  $P = 39.508476$  Days,  $E = 127.115732$  Days

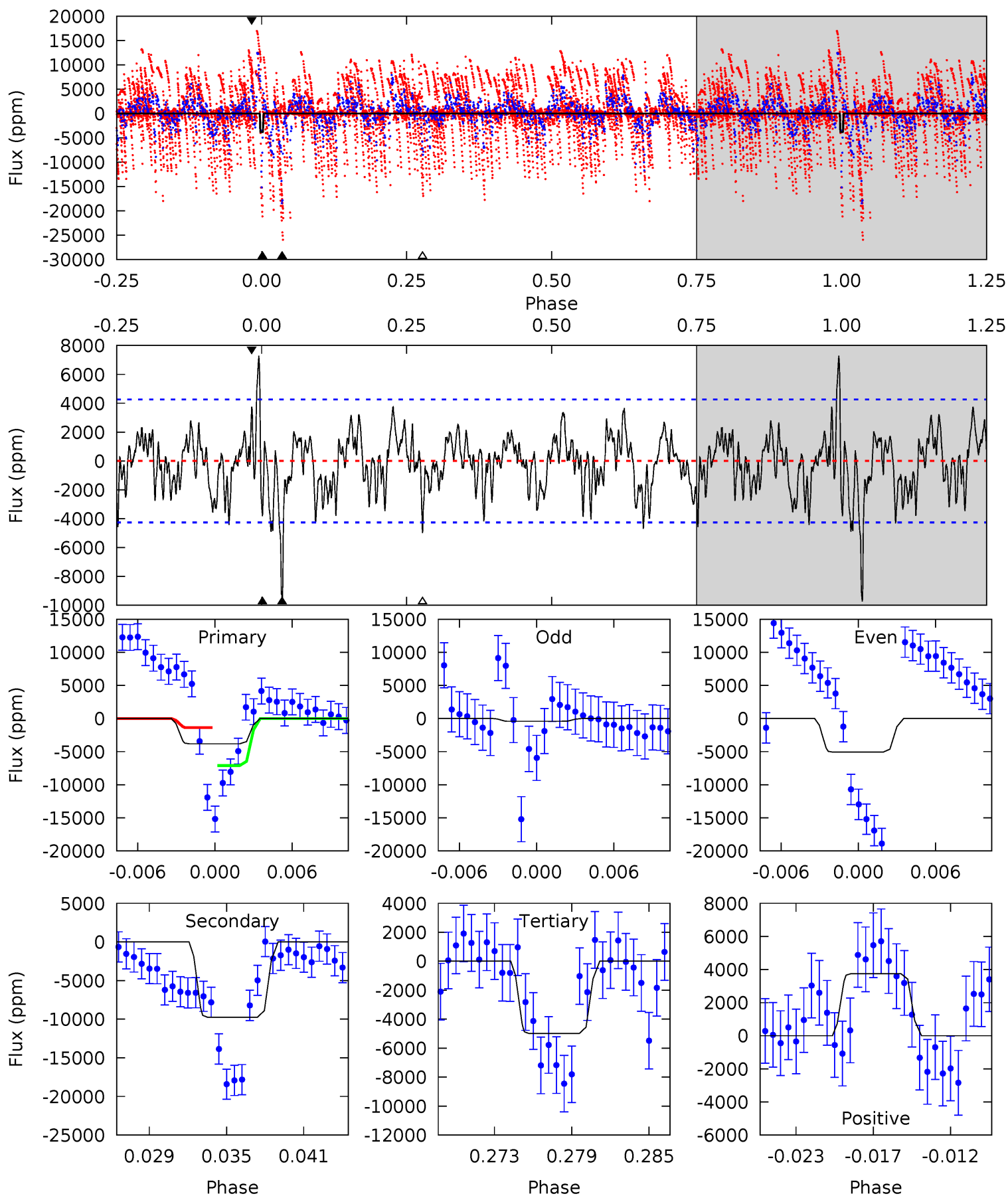
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.53	7.73	7.57	8.92	4.98	2.49	3.07	0.96	-0.39	0.16	-1.19	7.04	0.30	0.51	0.49



# Alt Model-Shift Uniqueness Test

005198315-09, P = 39.506251 Days, E = 127.605440 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
4.60	11.7	6.01	4.51	5.13	2.76	1.93	-1.41	0.09	5.71	7.21	2.58	-0.03	0.43	3.48



### Stellar Parameters For KIC 005198315

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$8306^{+202}_{-347}$	$3.751^{+0.451}_{-0.106}$	$-0.220^{+0.250}_{-0.350}$	$3.121^{+0.652}_{-1.412}$	$2.001^{+0.343}_{-0.471}$	$0.093^{+0.378}_{-0.031}$
	+2%/-4%	+12%/-3%	+114%/-159%	+21%/-45%	+17%/-24%	+408%/-33%
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 005198315-09 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-305 \pm 39$	$5.47^{+2.38}_{-2.03}$	$1630^{+121}_{-199}$	$8103^{+2653}_{-1298}$	$466^{+653}_{-241}$
Alt.	$-9736 \pm 831$	$34.66^{+6.47}_{-8.77}$	$1636^{+130}_{-191}$	$7857^{+450}_{-418}$	$369^{+248}_{-98}$

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

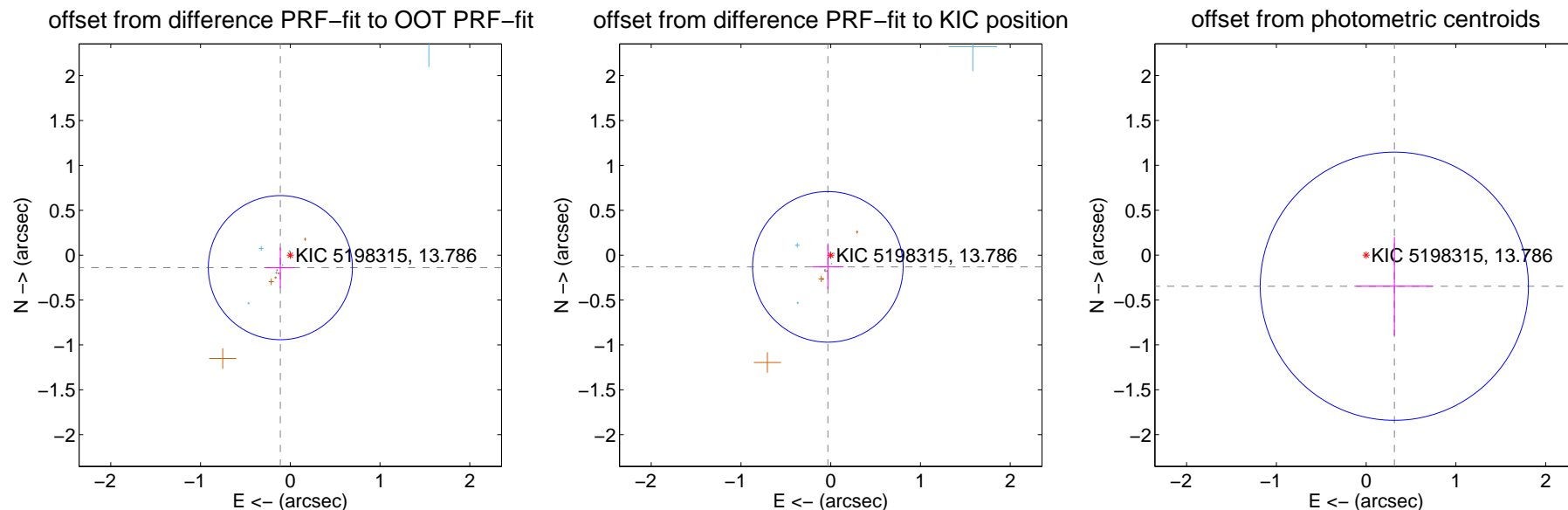
## DV Centroid Data

Supplemental centroid analysis for 005198315-09. Kepler magnitude: 13.79. Transit SNR 6.36

There are 6 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.08 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.178 \pm 0.268$	0.66	$0.110 \pm 0.162$	$-0.139 \pm 0.225$
PRF-fit source offset from KIC position	$0.134 \pm 0.280$	0.48	$0.032 \pm 0.175$	$-0.131 \pm 0.250$
photometric centroid source offset	$0.47 \pm 0.50$	0.94	$-0.31 \pm 0.43$	$-0.35 \pm 0.55$



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.

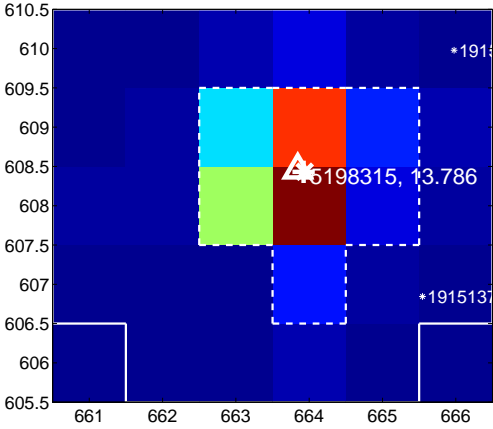
Q1 no difference image



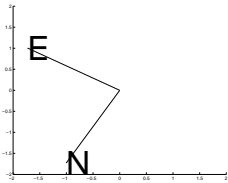
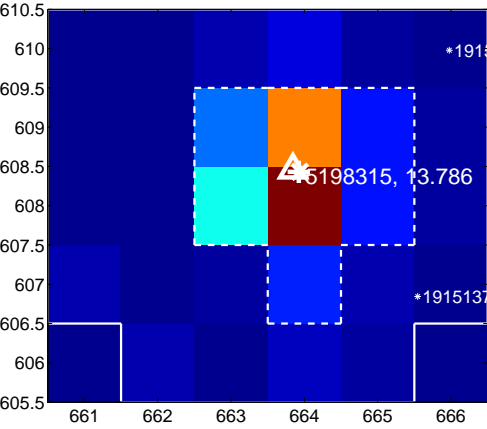
Q1 no OOT image



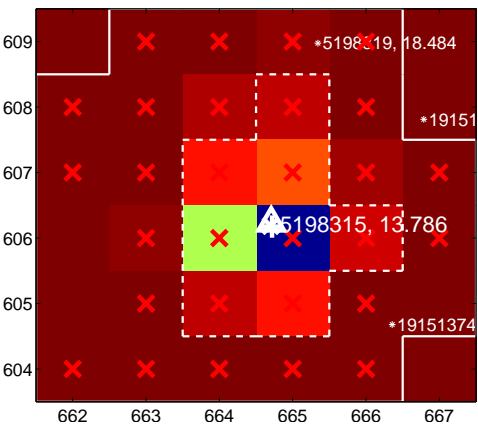
Q2 difference image



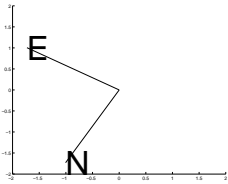
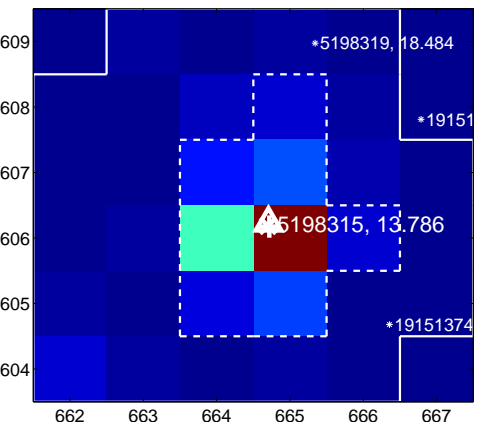
Q2 OOT image



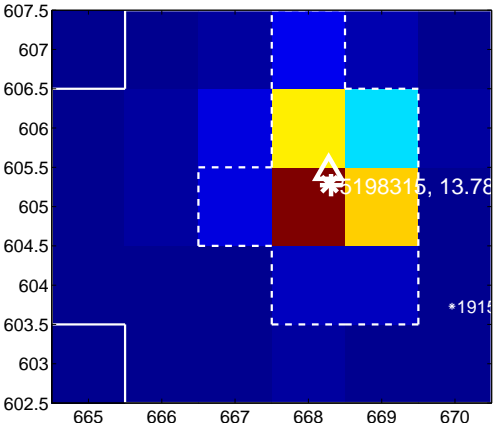
Q3 difference image. Poor Quality



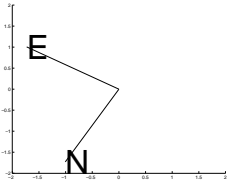
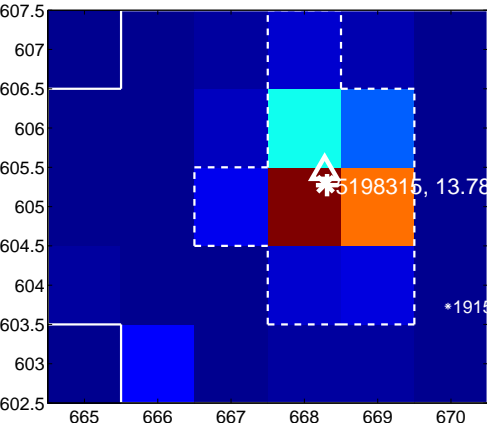
Q3 OOT image



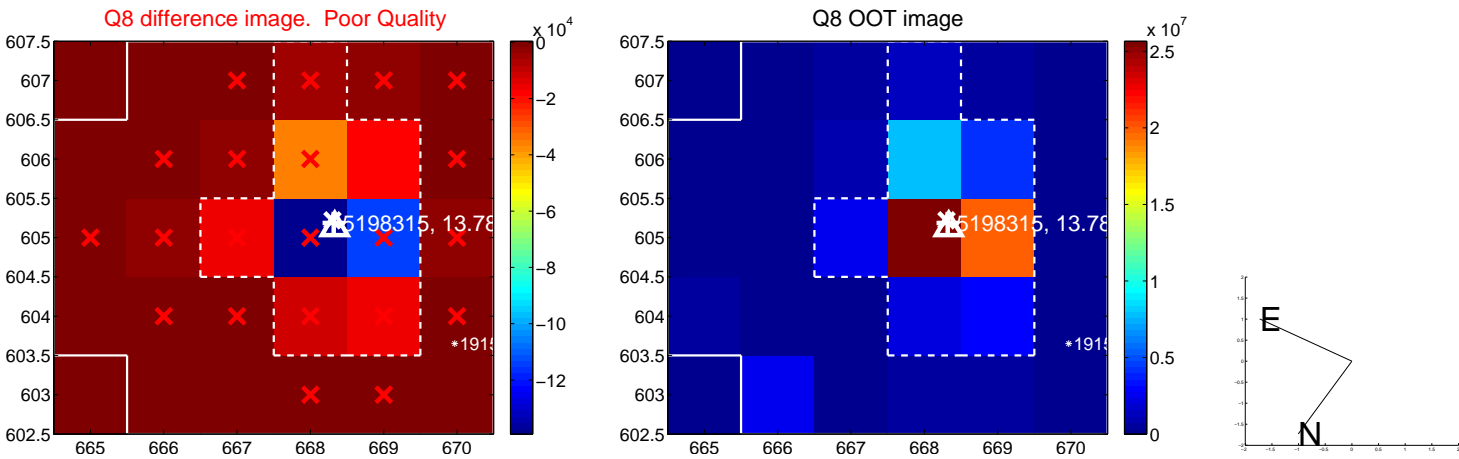
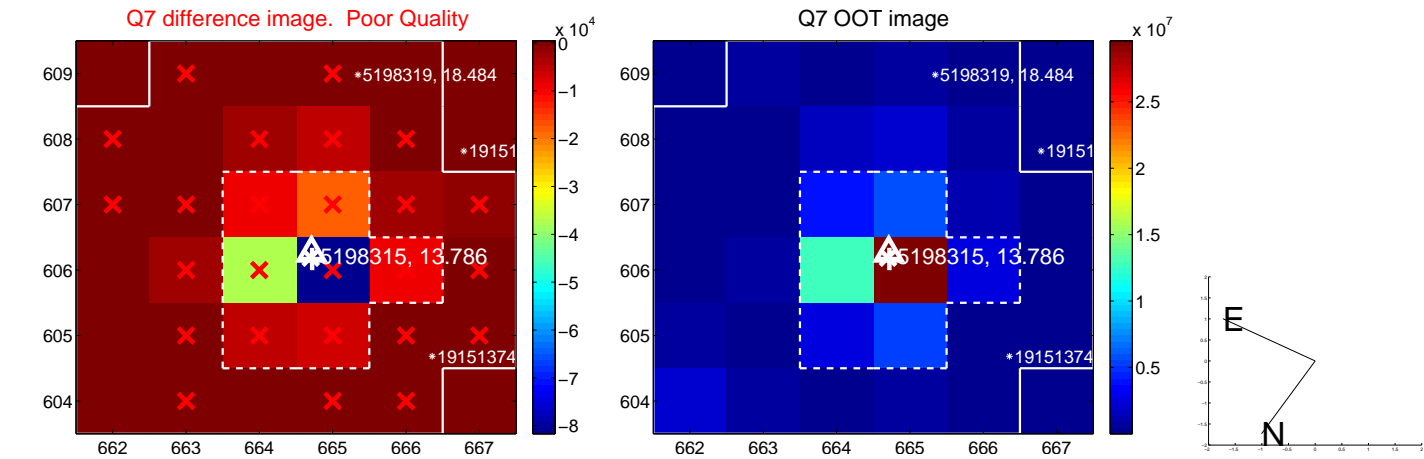
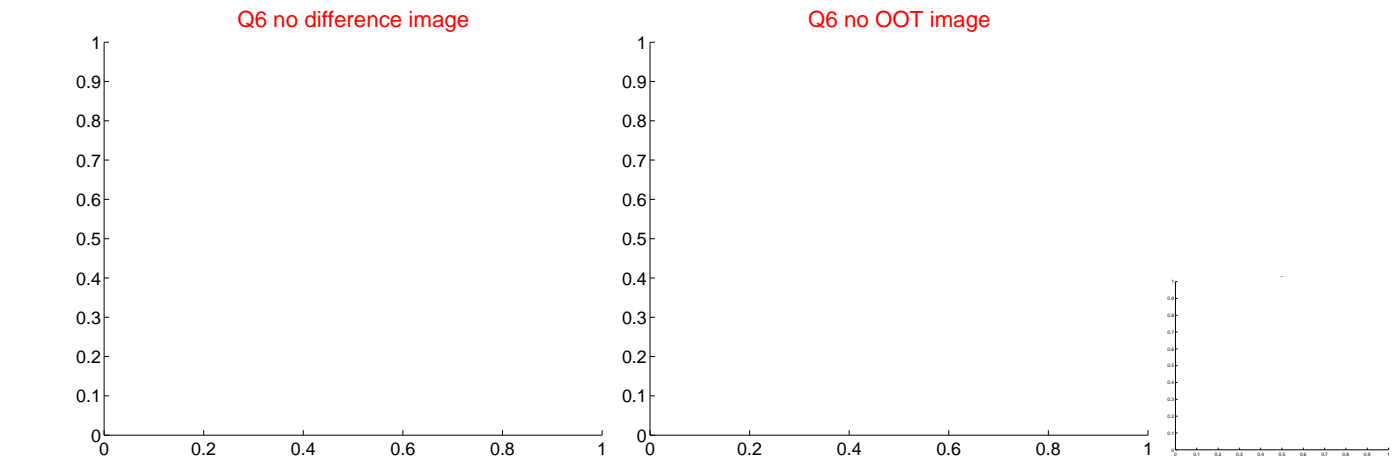
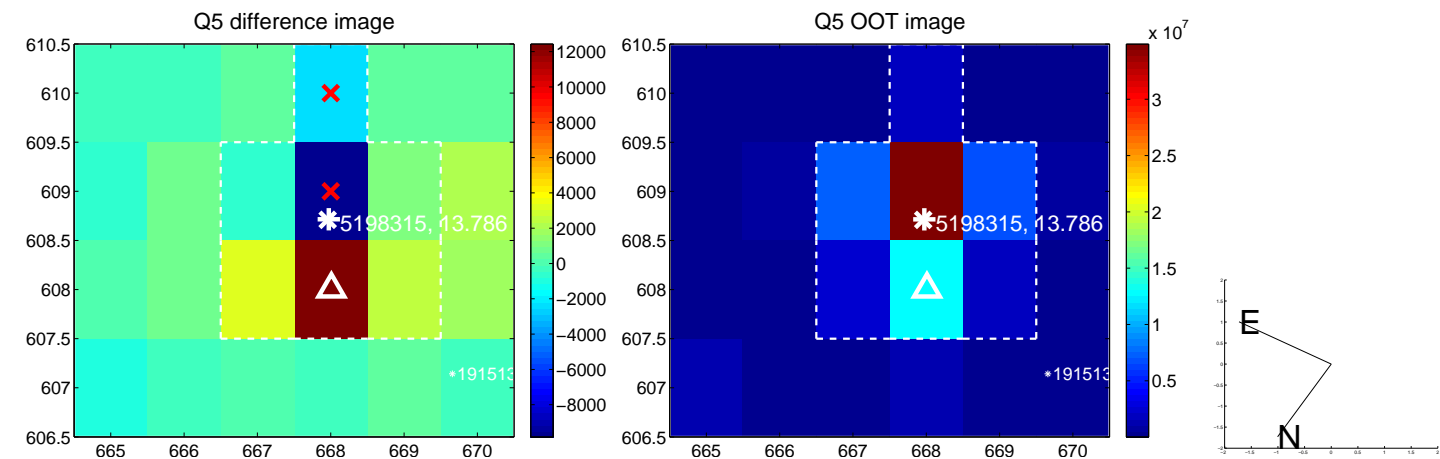
Q4 difference image



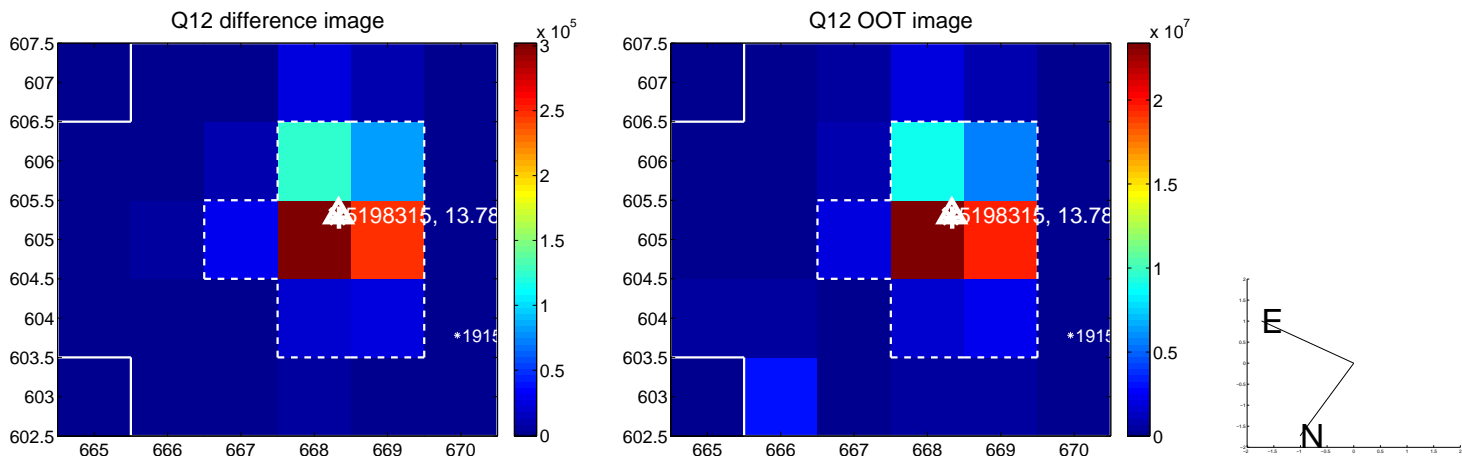
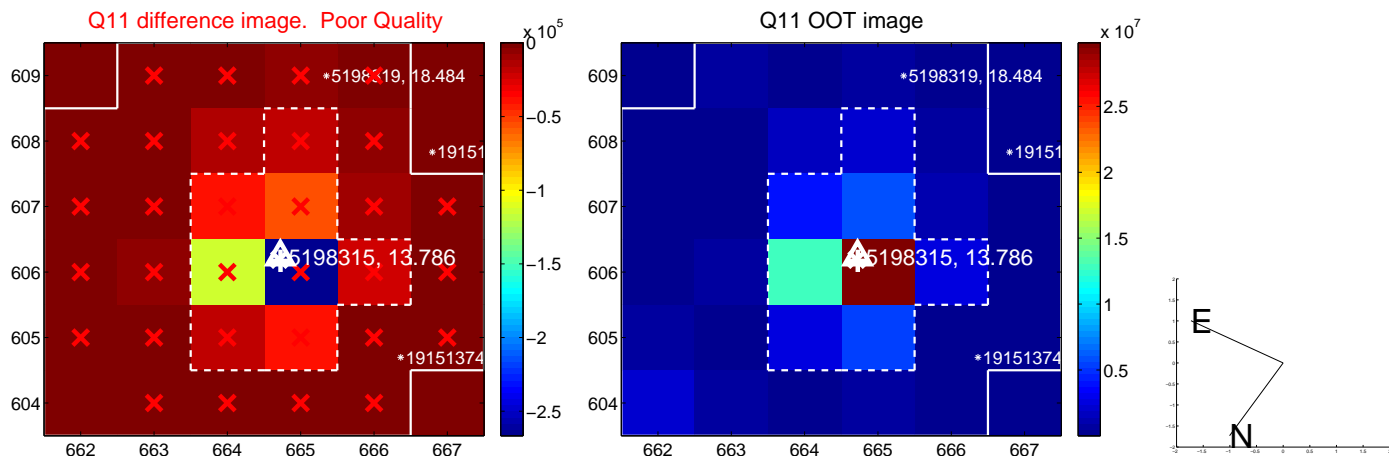
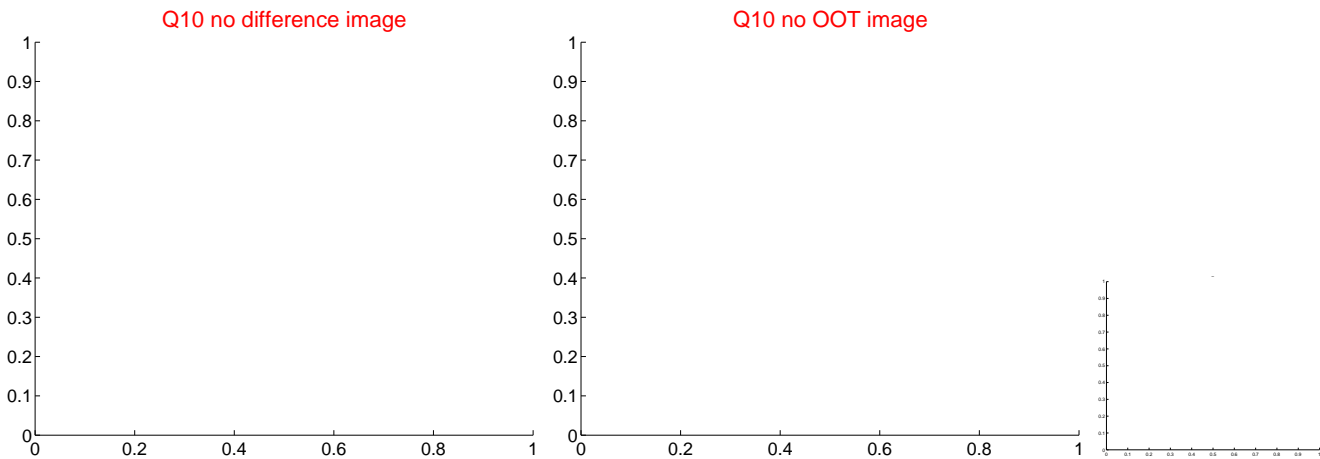
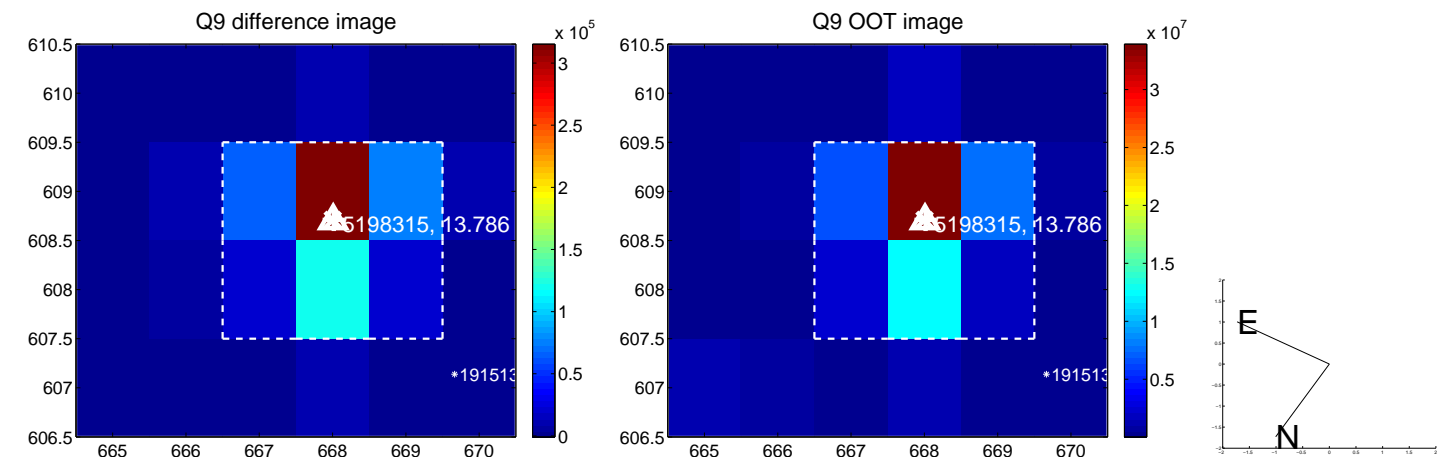
Q4 OOT image



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

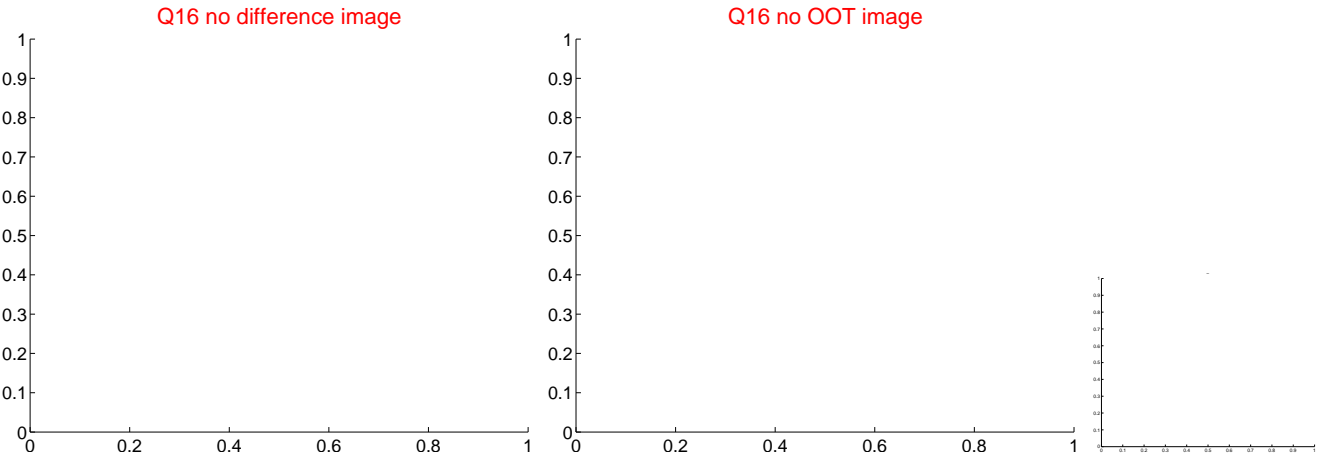
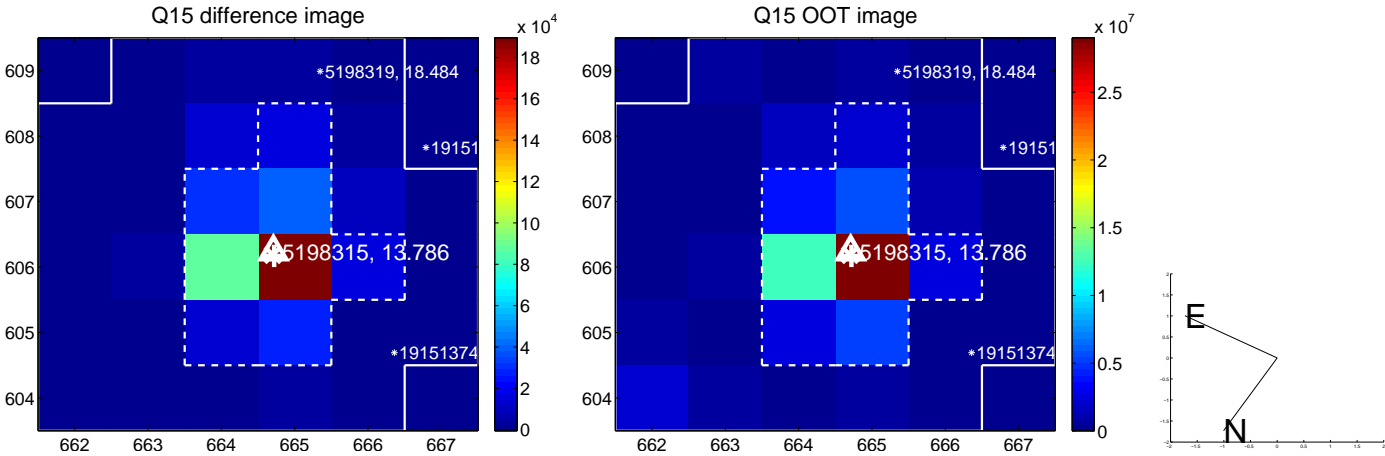
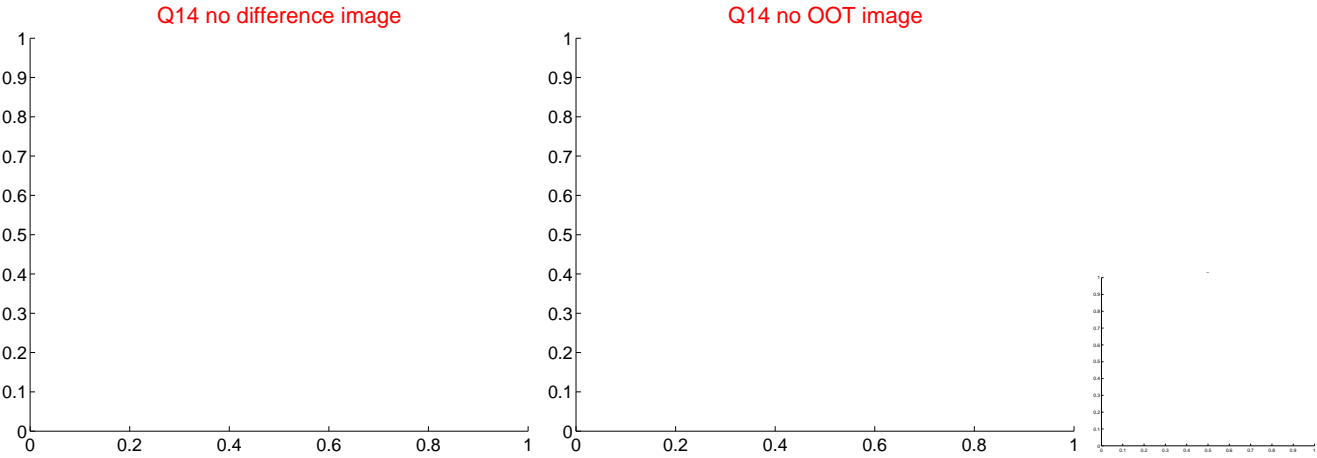
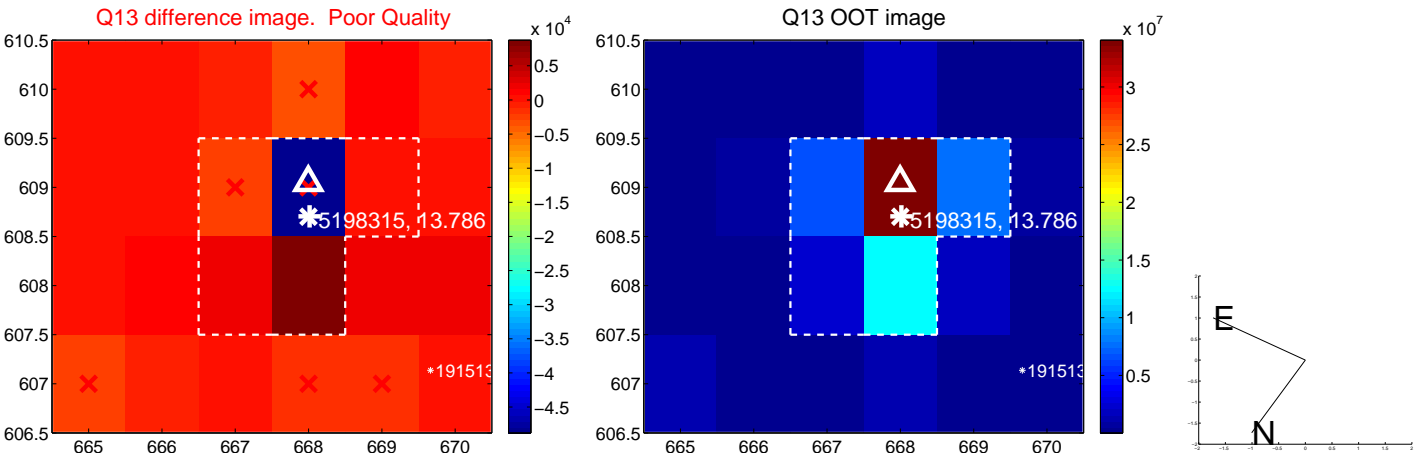


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

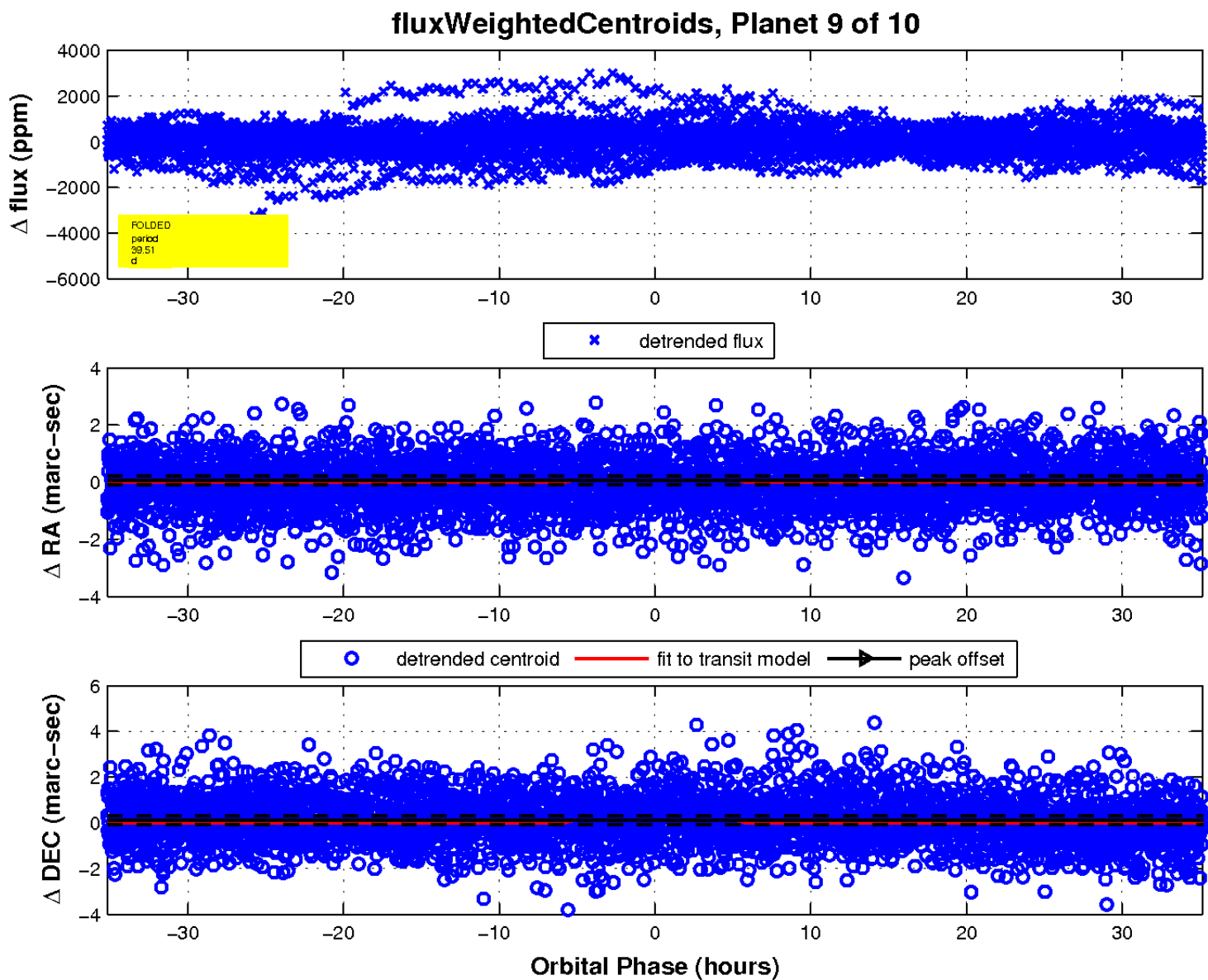
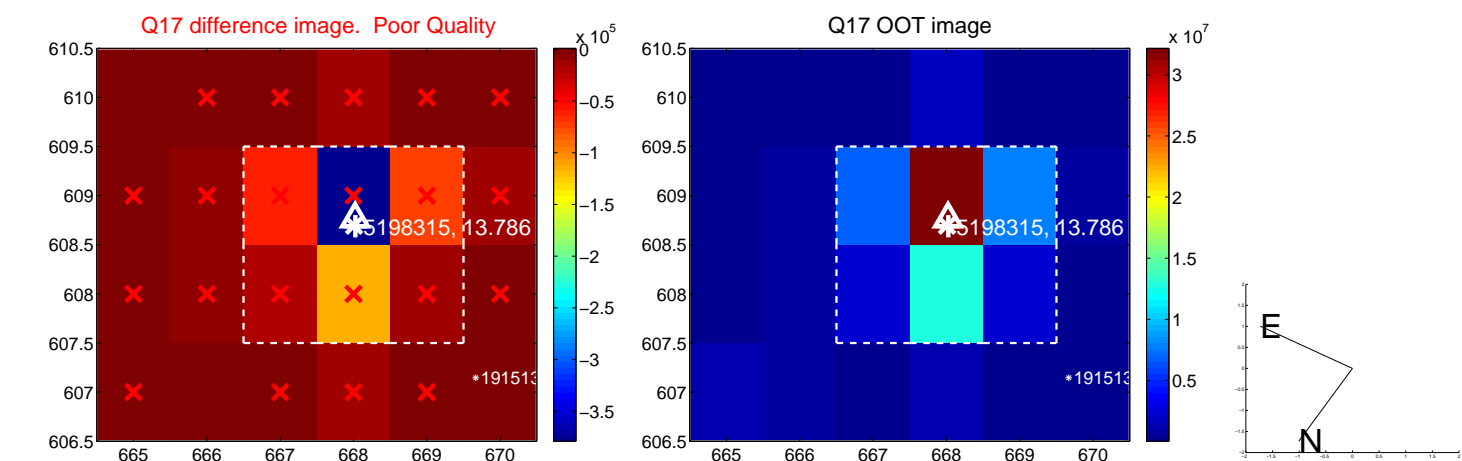




white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

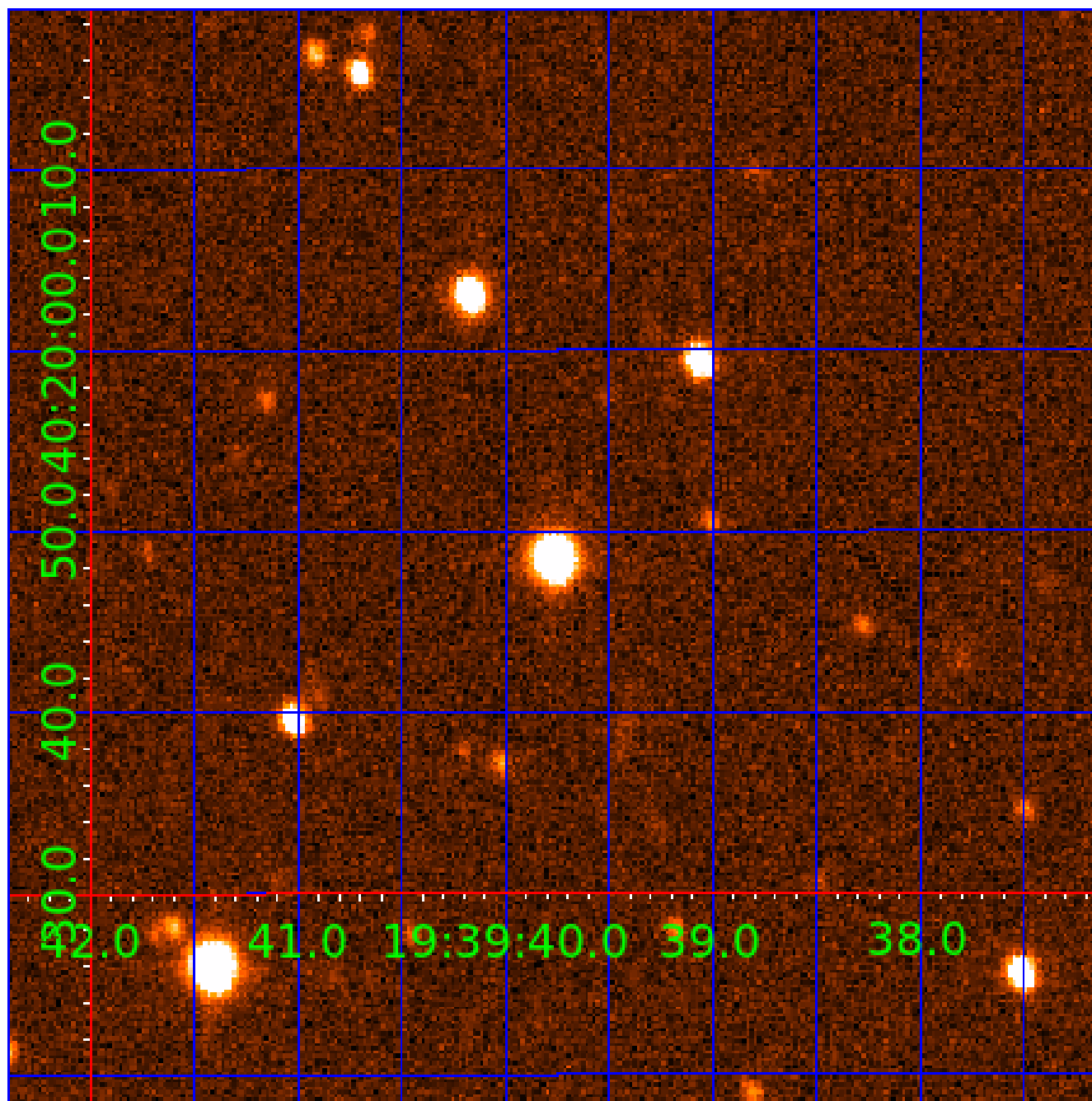


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 005198315

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005198315-01	OBS	No	1.821235	133.319401	142.6	11.552	8.7	12.0	3.12	8306	6.97	30678.67
005198315-02	OBS	No	74.166477	146.638639	674.2	12.500	19.4	-1.0	3.12	8306	8.20	218.97
005198315-03	OBS	No	73.398148	134.198409	915.1	12.184	13.6	11.0	3.12	8306	11.77	222.03
005198315-04	OBS	No	41.326624	159.088305	277.6	6.792	11.6	5.0	3.12	8306	6.78	477.55
005198315-05	OBS	No	192.913240	238.705450	372.9	10.500	11.6	-1.0	3.12	8306	6.10	61.21
005198315-06	OBS	No	39.374162	156.712384	345.6	7.500	10.4	-1.0	3.12	8306	5.87	509.38
005198315-07	OBS	No	132.319467	172.155165	1157.7	9.781	9.6	9.9	3.12	8306	15.73	101.19
005198315-09	OBS	No	39.508476	166.624208	322.1	11.722	8.5	6.4	3.12	8306	6.01	507.07
005198315-10	OBS	No	55.763625	156.268411	1097.2	3.217	8.4	12.1	3.12	8306	19.19	320.27

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005198315-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—MOD_NONUNIQ_DV
005198315-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_NOFITS
005198315-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
005198315-04	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—HALO_GHOST
005198315-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_NOFITS
005198315-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_NOFITS
005198315-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT
005198315-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
005198315-10	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT

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

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

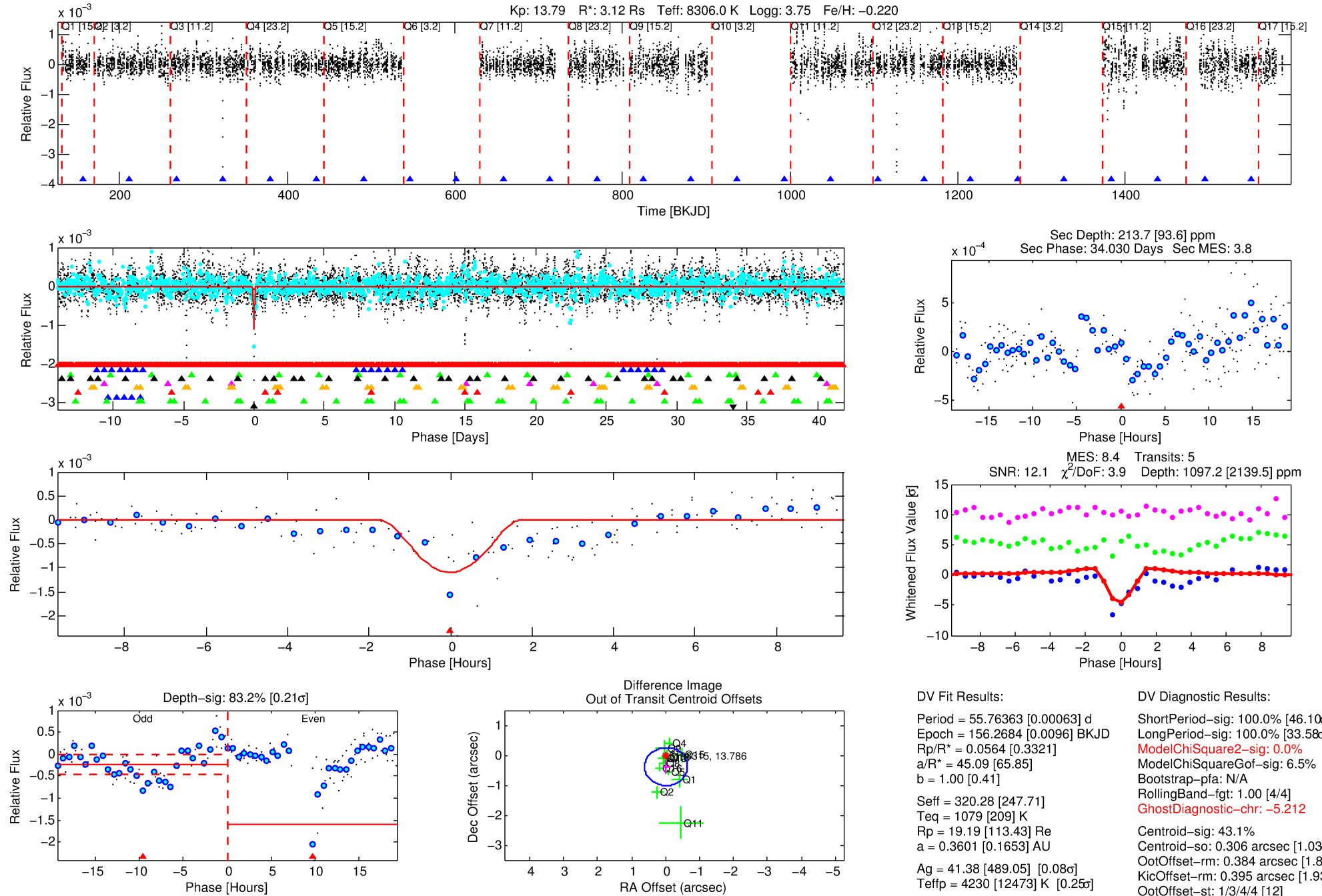
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 005198315-10

No Significant Match Found

# DV One-Page Summary

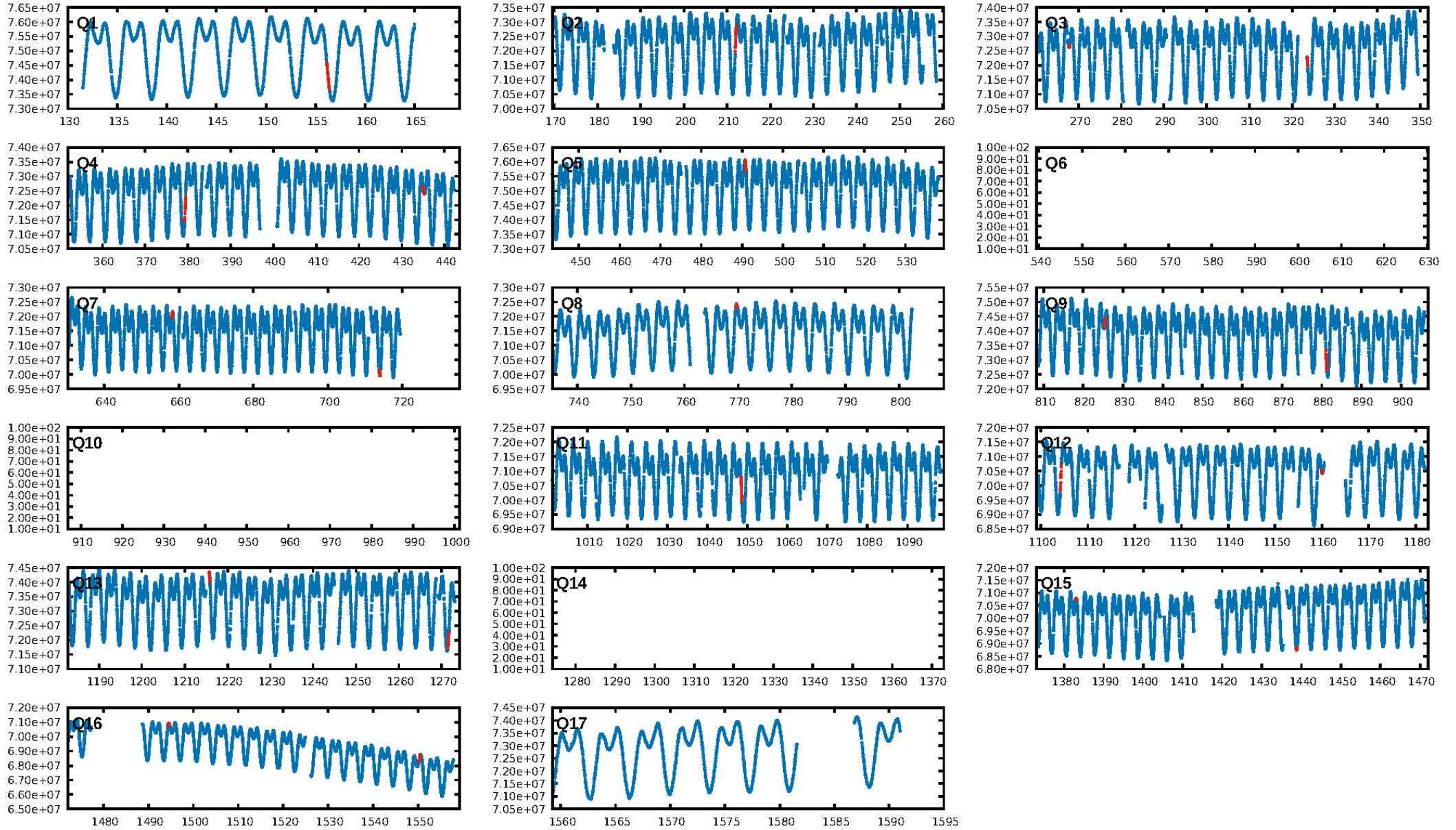
KIC: 5198315 Candidate: 10 of 10 Period: 55.764 d



Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 01:21:17 Z

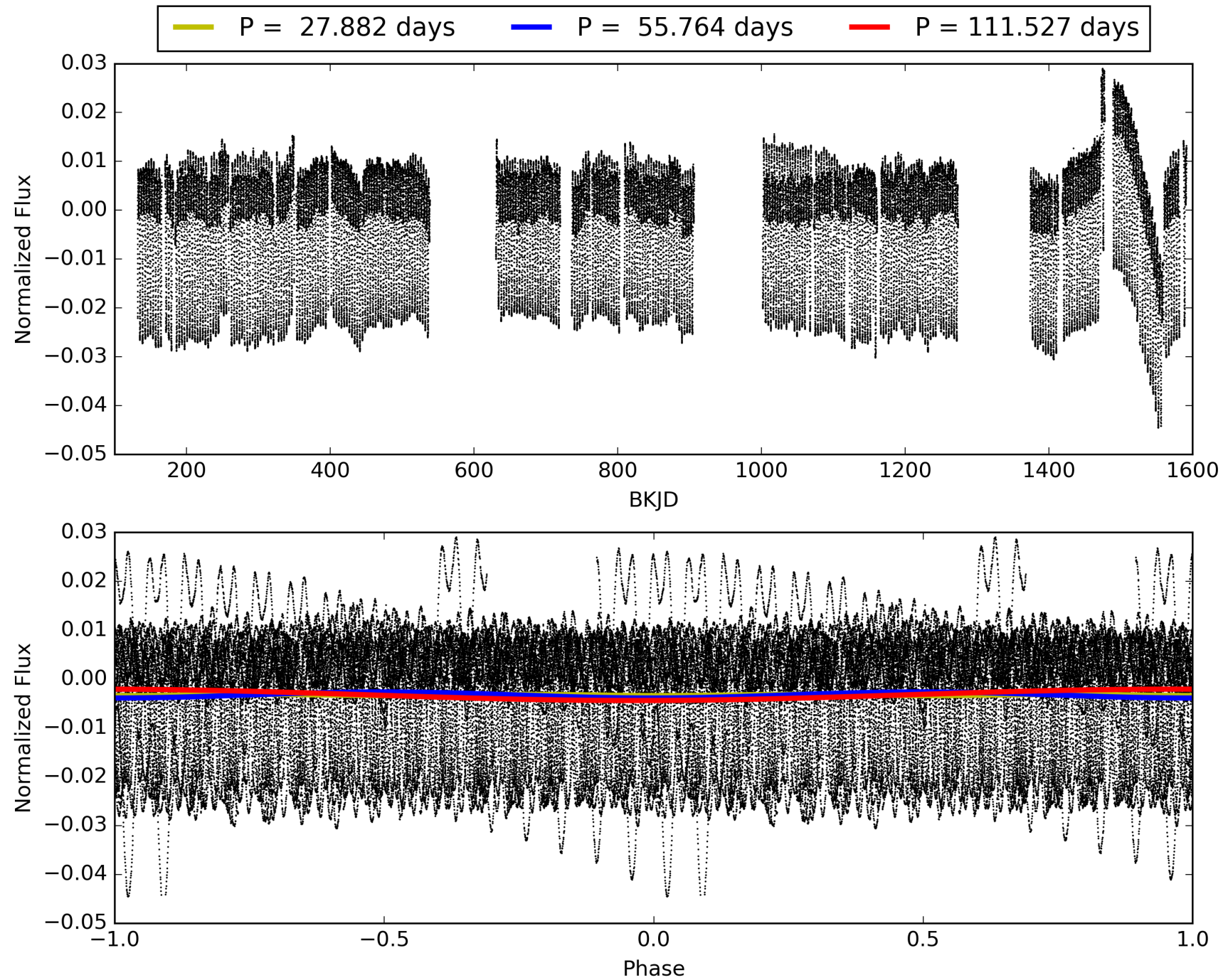
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 005198315-10, PDC Light Curves



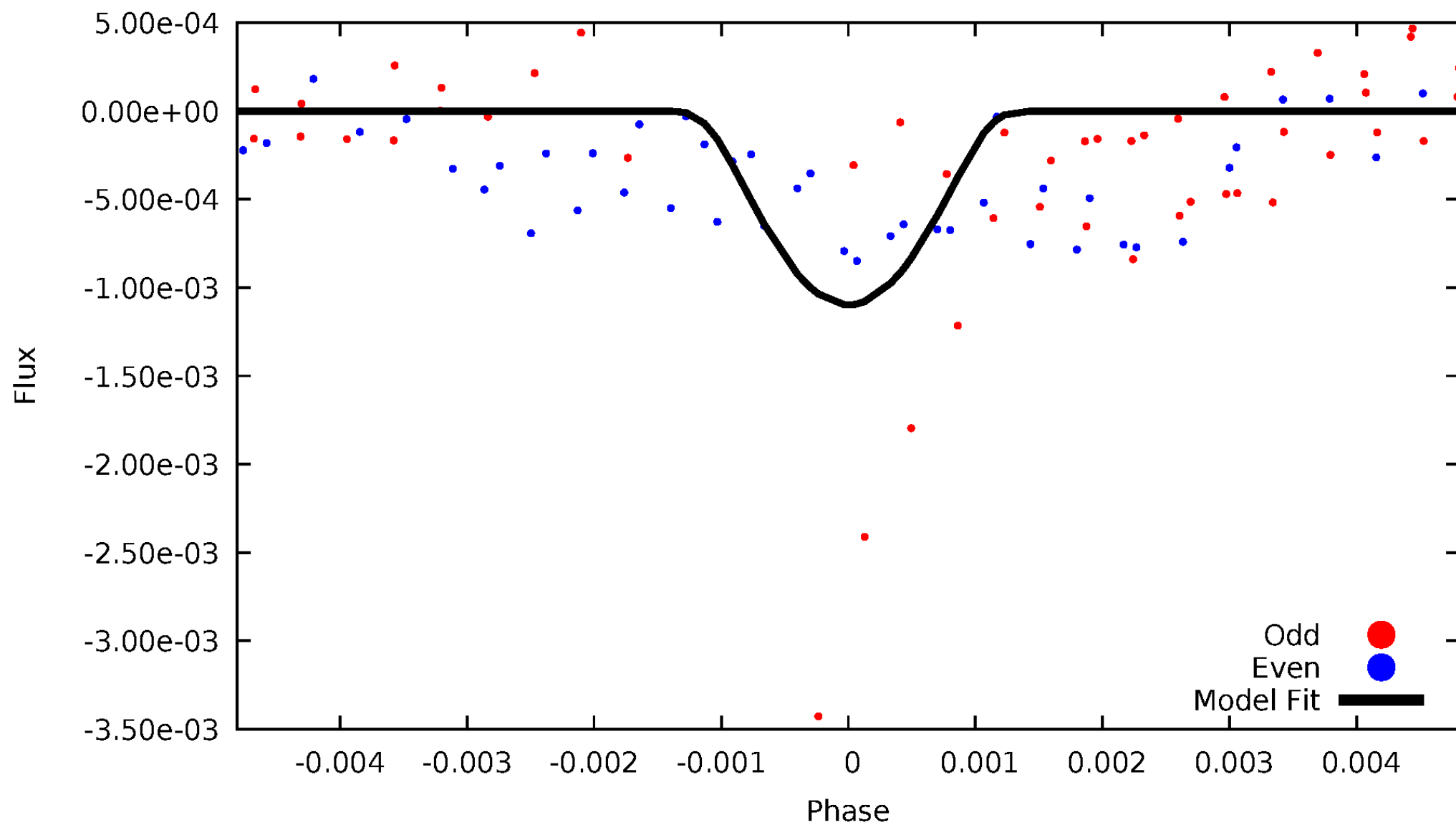


# TCE 005198315-10



# DV Odd/Even

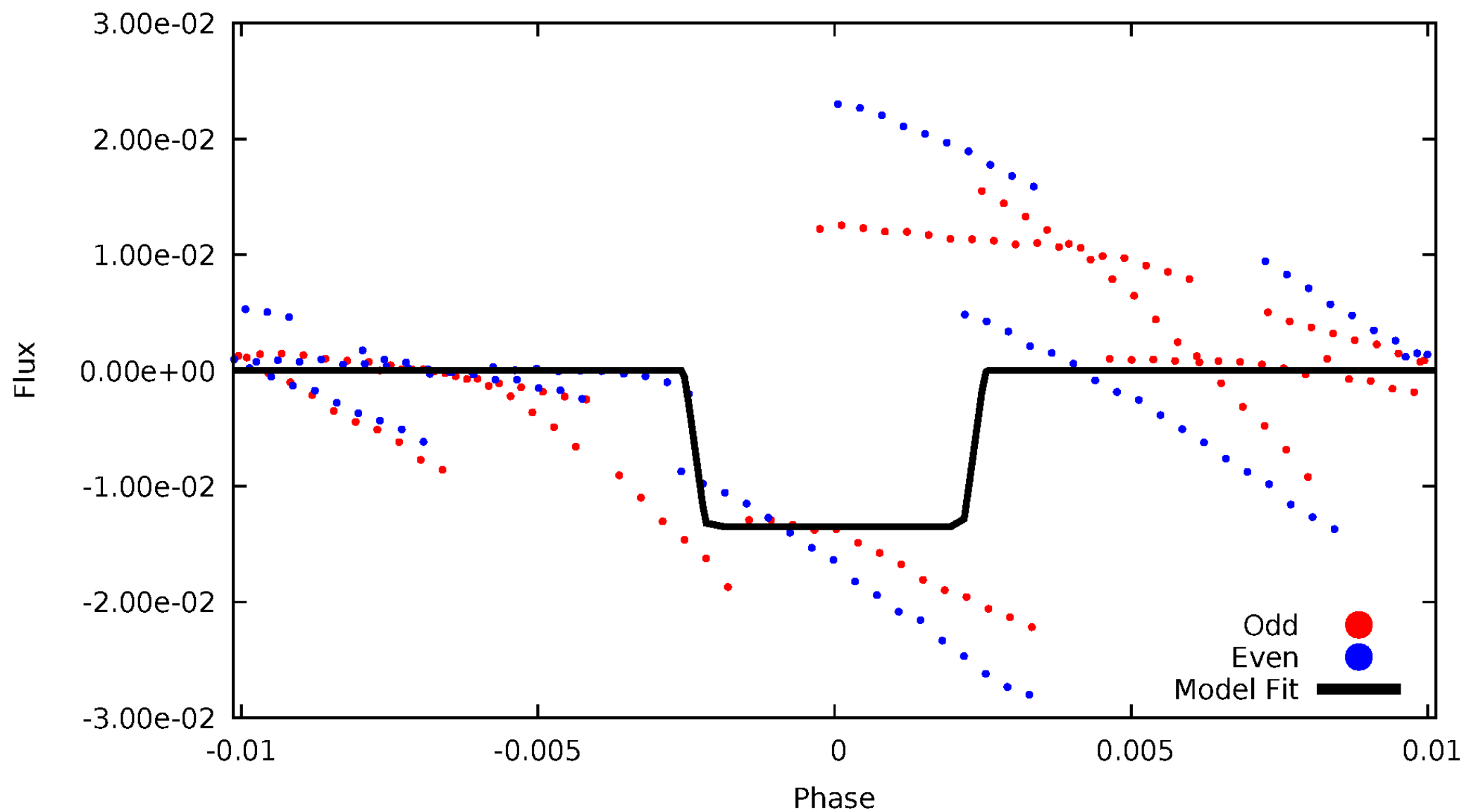
TCE 005198315-10





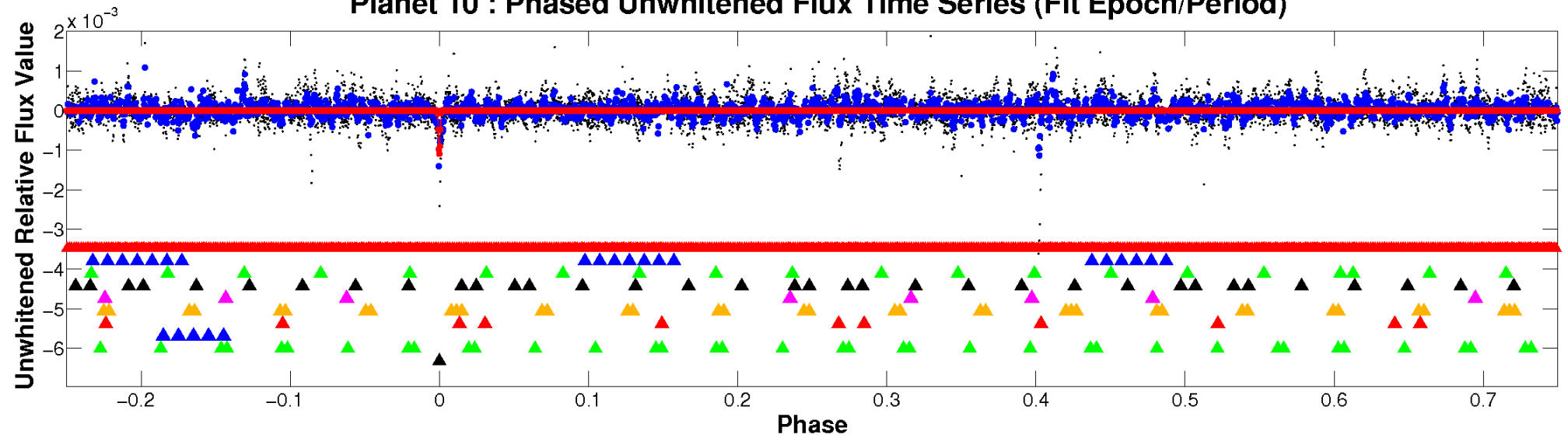
# ALT Odd/Even

TCE 005198315-10

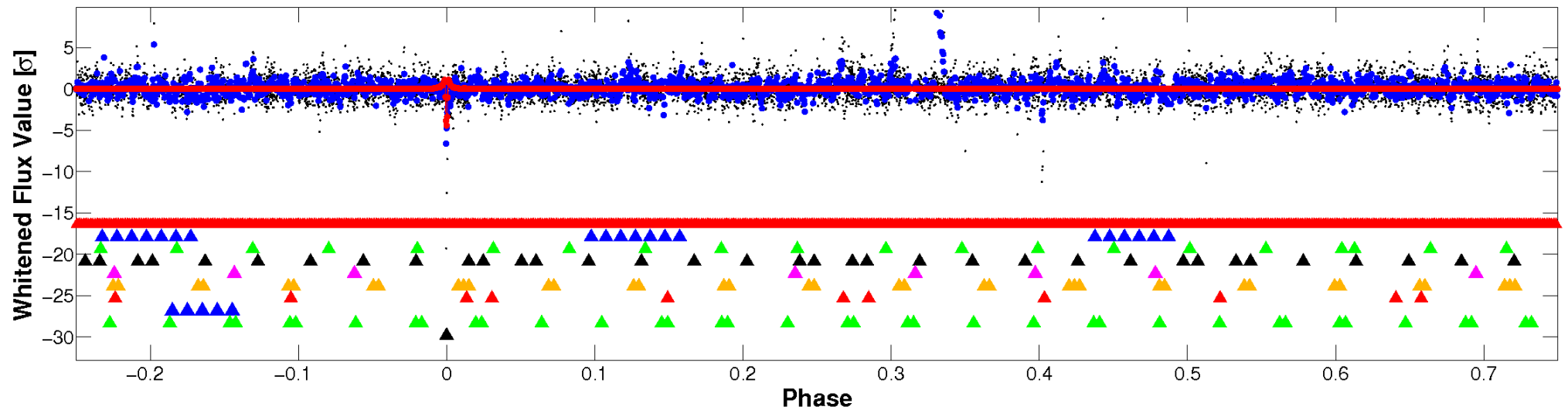


# Non-Whitened Vs. Whitened Light Curve

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

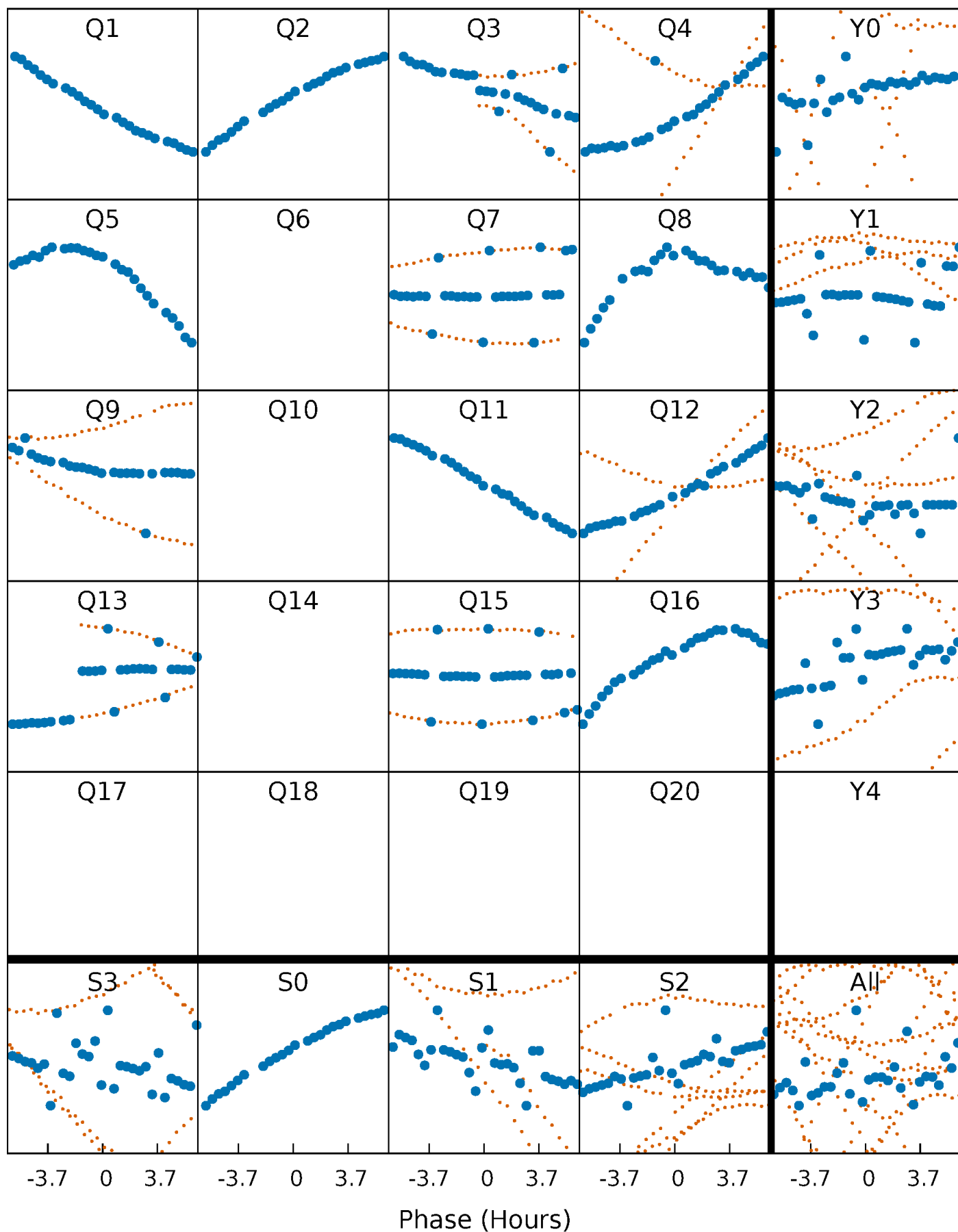


Planet 10 : Phased Whitened Flux Time Series (Fit Epoch/Period)



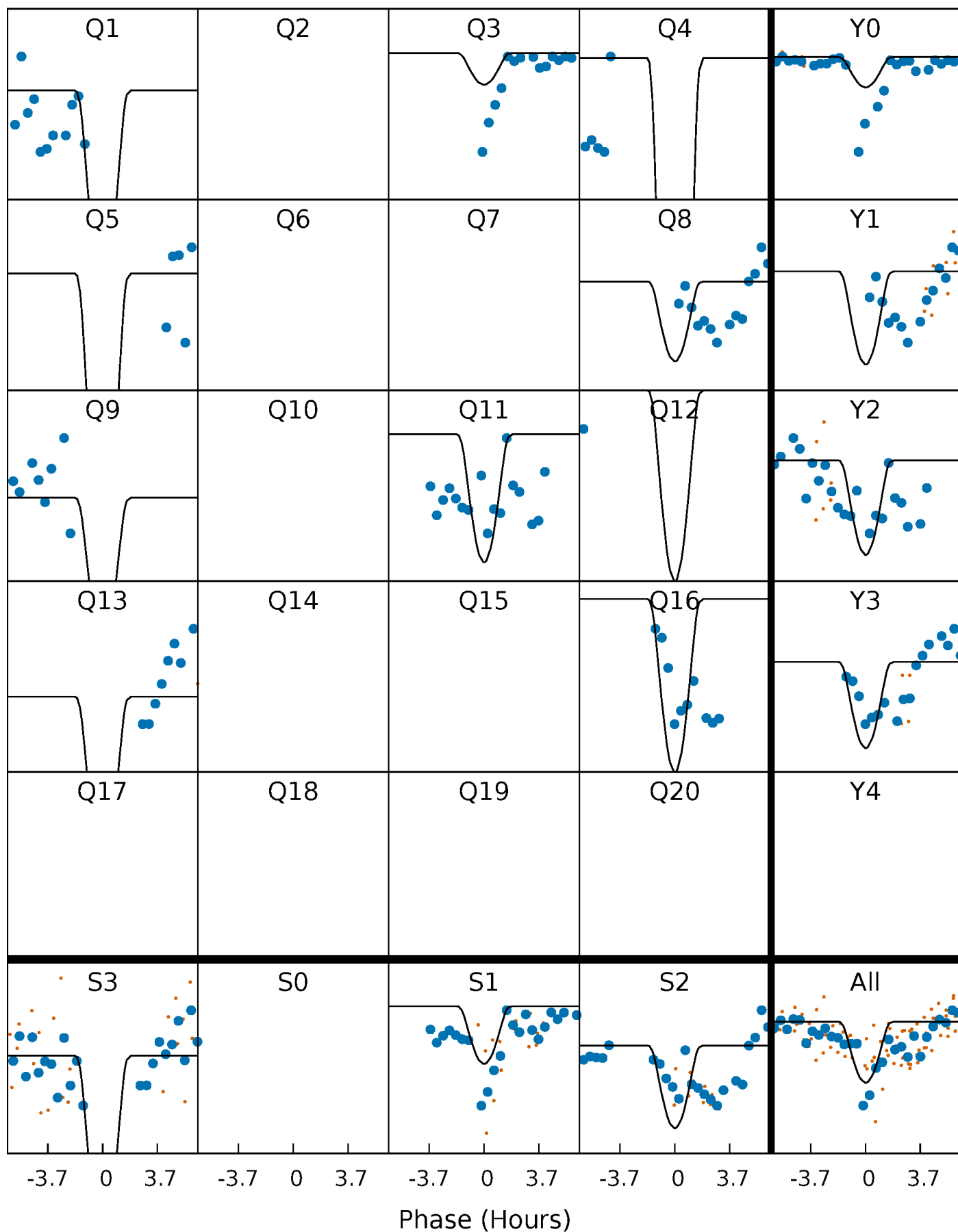
# PDC Quarter-Phased Transit Curves

TCE 005198315-10 P= 55.763625 Days  $T_0=156.268411$  (BKJD)



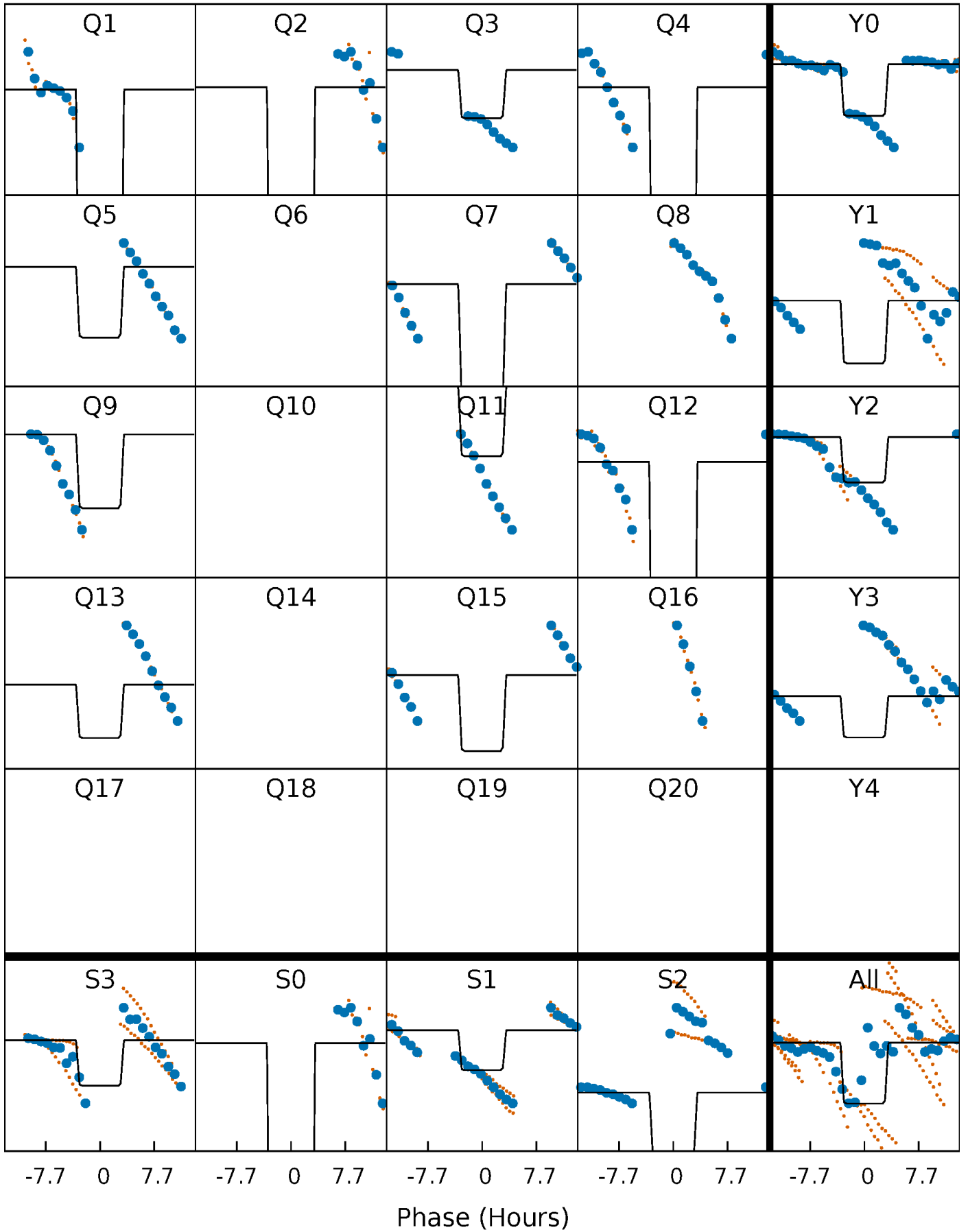
# DV Quarter-Phased Transit Curves

TCE 005198315-10 P= 55.763625 Days  $T_0=156.268411$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

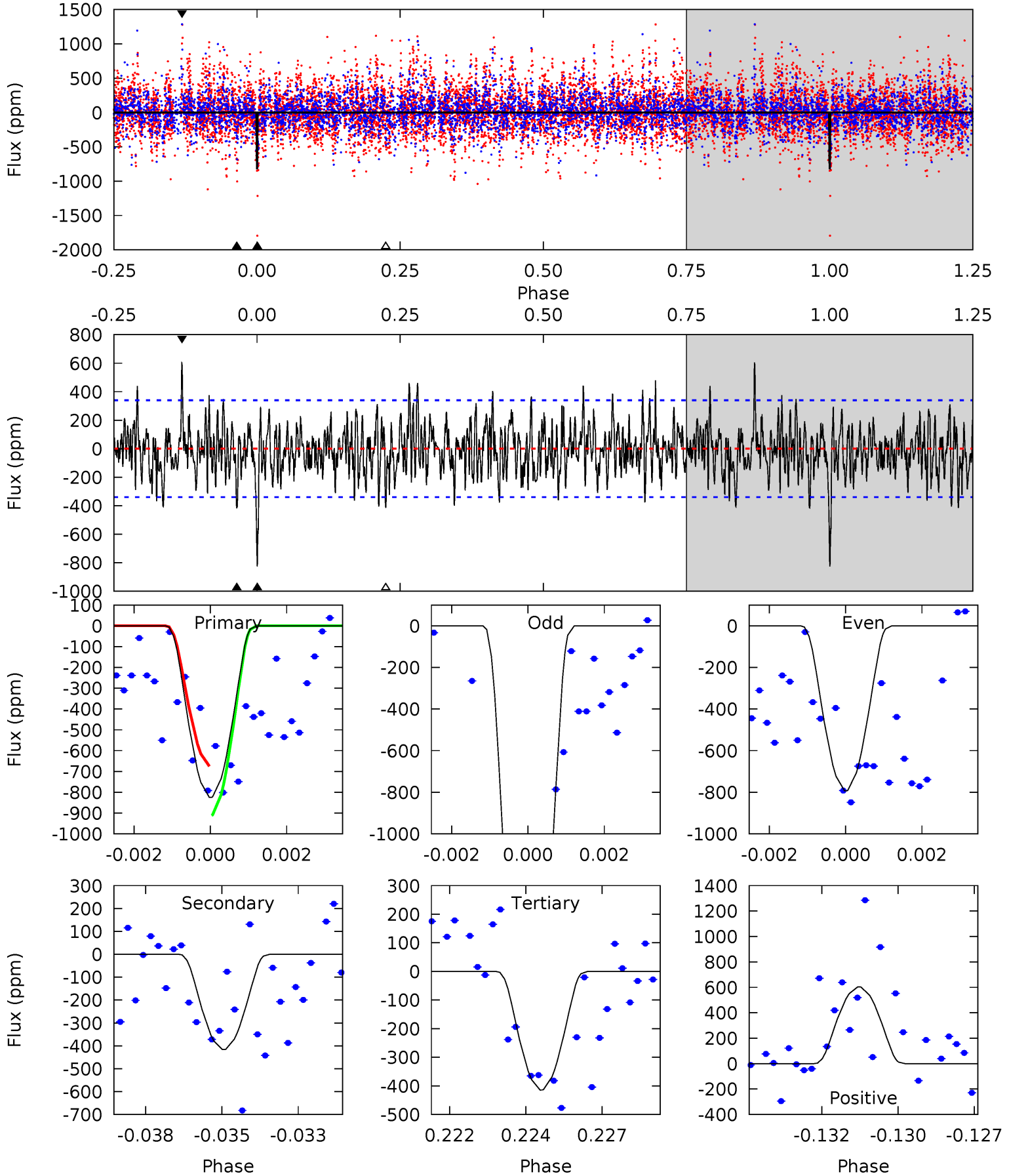
TCE 005198315-10   P= 55.757267 Days    $T_0=156.354459$  (BKJD)



# DV Model-Shift Uniqueness Test

005198315-10, P = 55.763625 Days, E = 100.504786 Days

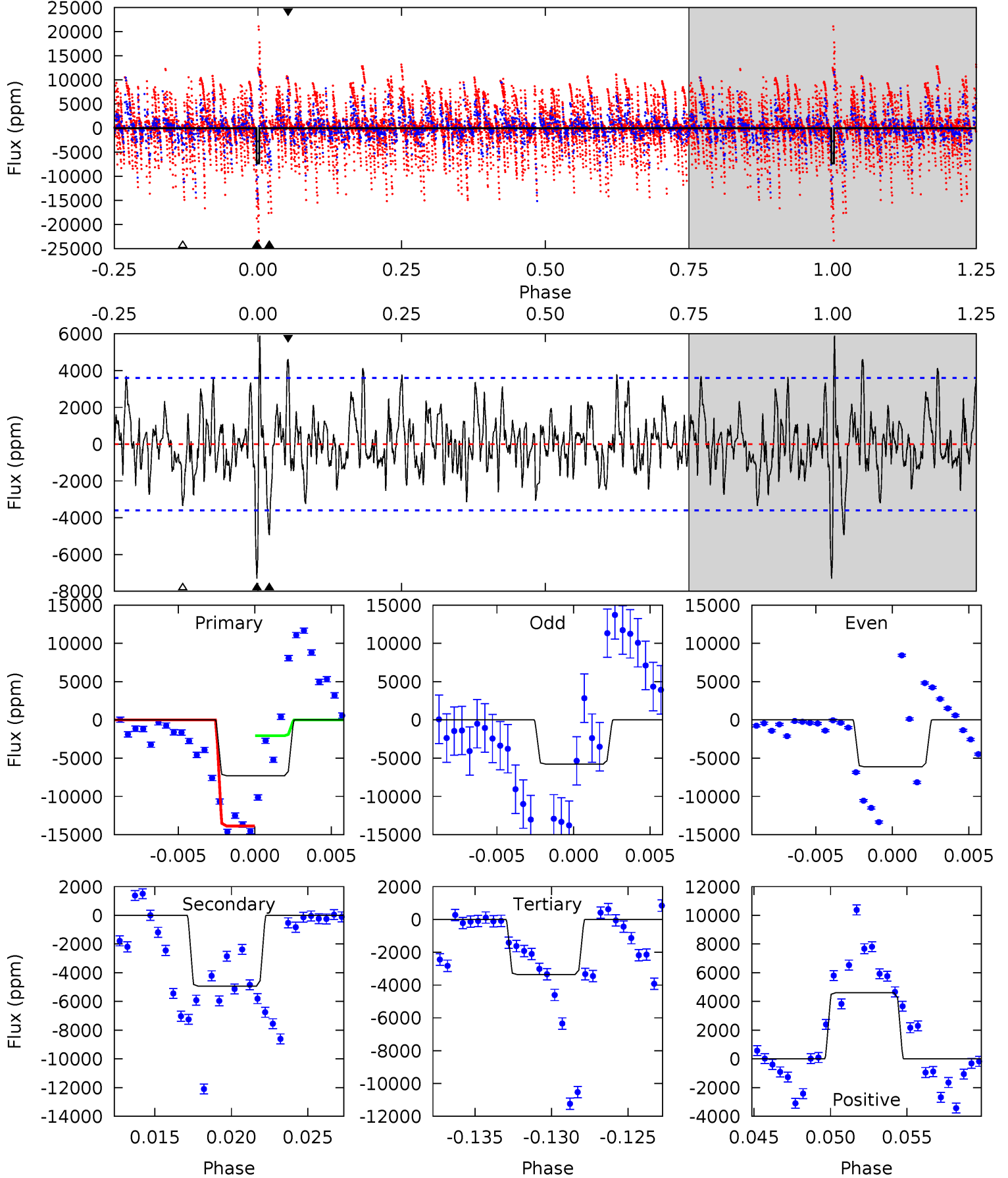
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.9	6.50	6.47	9.43	5.30	3.04	2.23	6.40	3.45	0.03	-2.93	10.0	1.43	0.42	1.77



# Alt Model-Shift Uniqueness Test

005198315-10, P = 55.757267 Days, E = 100.597192 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
10.5	7.07	4.81	6.62	5.16	2.81	1.80	5.64	3.84	2.27	0.46	0.26	0.36	0.45	8.28



### Stellar Parameters For KIC 005198315

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$8306^{+202}_{-347}$	$3.751^{+0.451}_{-0.106}$	$-0.220^{+0.250}_{-0.350}$	$3.121^{+0.652}_{-1.412}$	$2.001^{+0.343}_{-0.471}$	$0.093^{+0.378}_{-0.031}$
	+2%/-4%	+12%/-3%	+114%/-159%	+21%/-45%	+17%/-24%	+408%/-33%
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 005198315-10 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-416 \pm 64$	$76.43^{+83.95}_{-53.11}$	$1459^{+109}_{-185}$	$2952^{+1417}_{-585}$	$5.148^{+49.679}_{-4.024}$
Alt.	$-4938 \pm 698$	$80.68^{+94.66}_{-56.55}$	$1454^{+118}_{-170}$	$4366^{+3166}_{-997}$	$54^{+543}_{-42}$

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



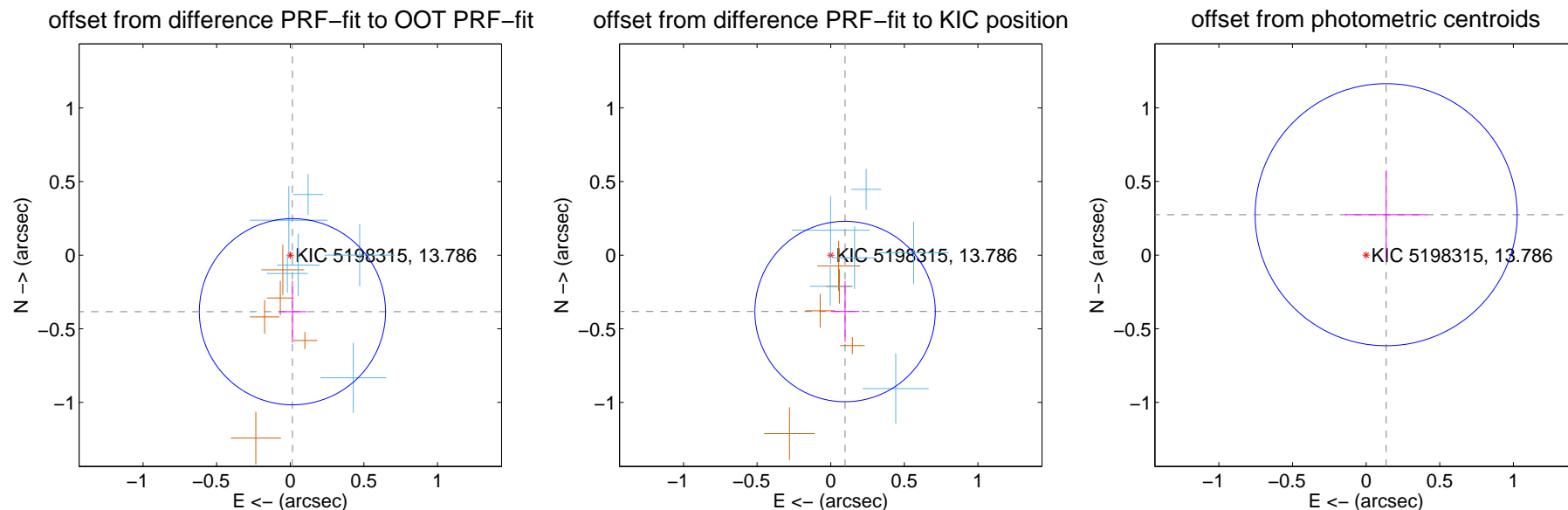
## DV Centroid Data

Supplemental centroid analysis for 005198315-10. Kepler magnitude: 13.79. Transit SNR 12.12

There are 6 quarters with good PRF difference image offsets

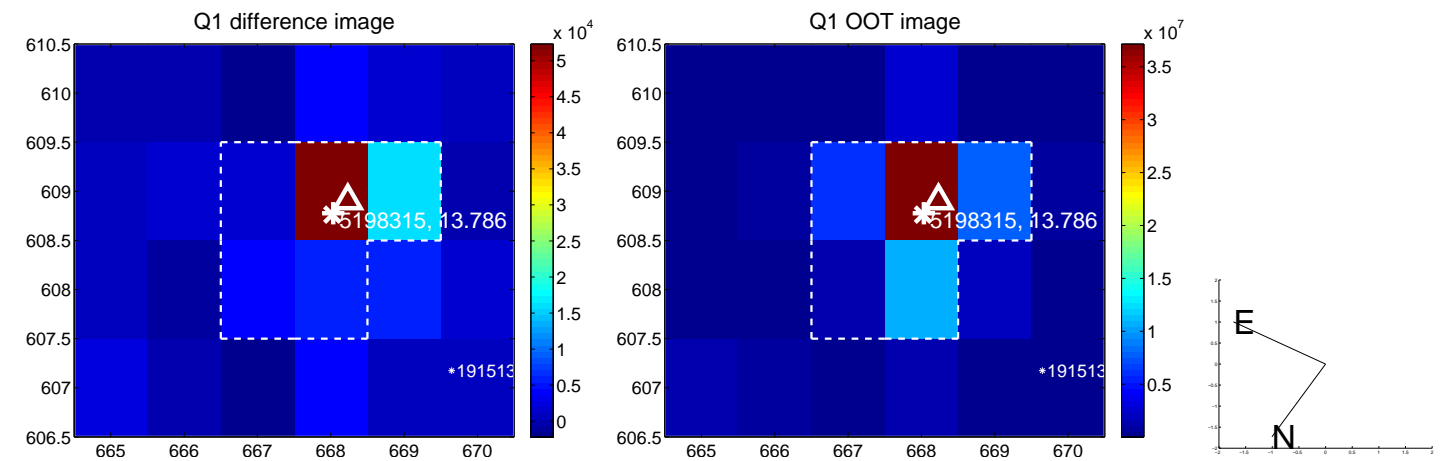
The direct PRF centroid is offset from the target star catalog position by about 0.11 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.384 \pm 0.211$	1.82	$-0.015 \pm 0.094$	$-0.384 \pm 0.210$
PRF-fit source offset from KIC position	$0.395 \pm 0.204$	1.93	$-0.098 \pm 0.097$	$-0.383 \pm 0.207$
photometric centroid source offset	$0.31 \pm 0.30$	1.03	$-0.14 \pm 0.28$	$0.27 \pm 0.30$

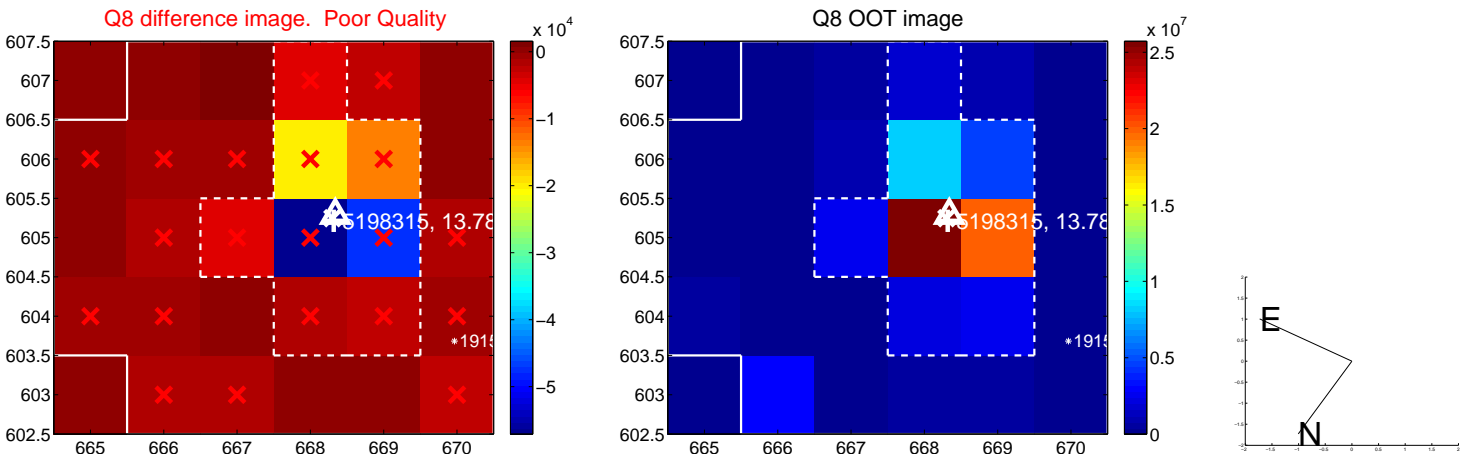
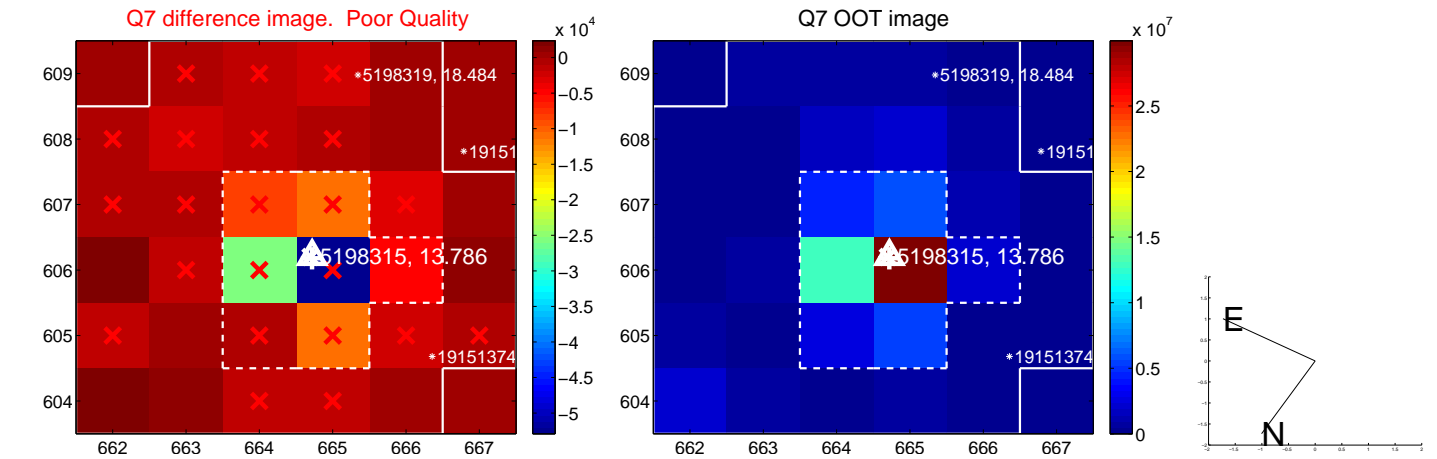
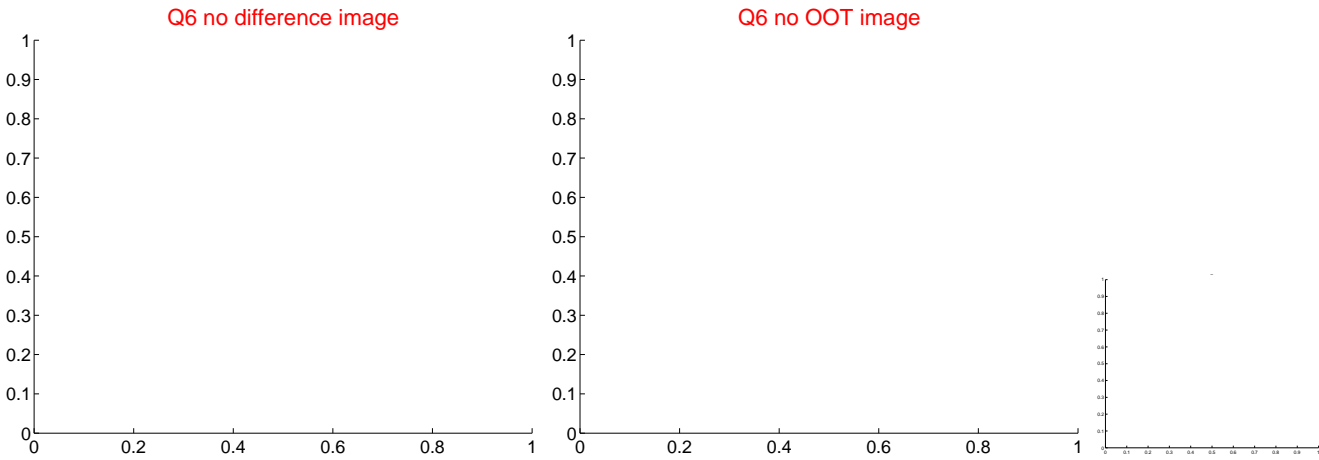
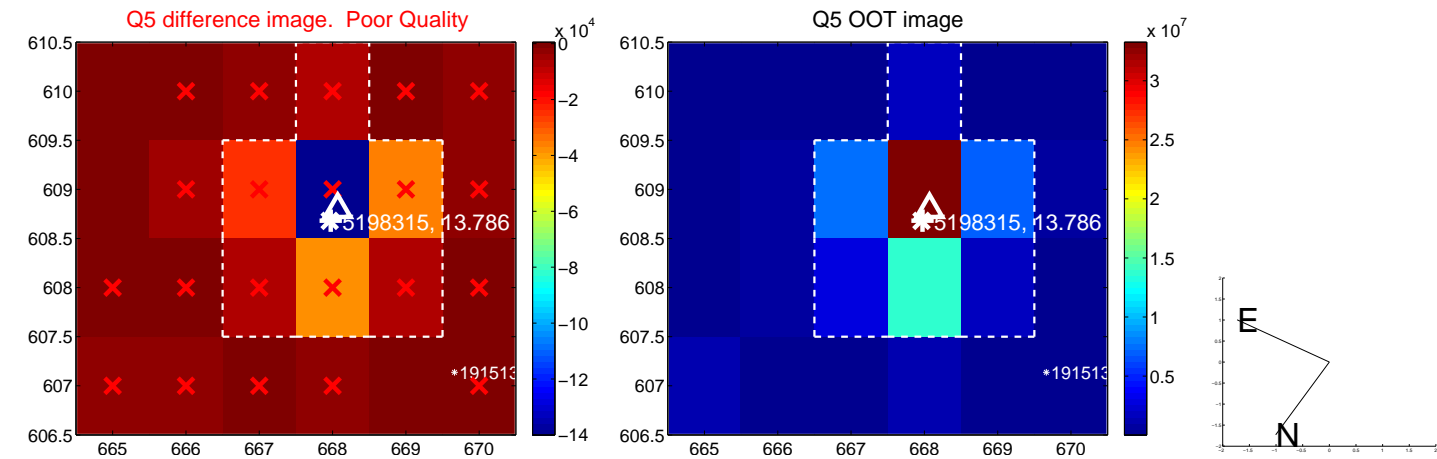


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

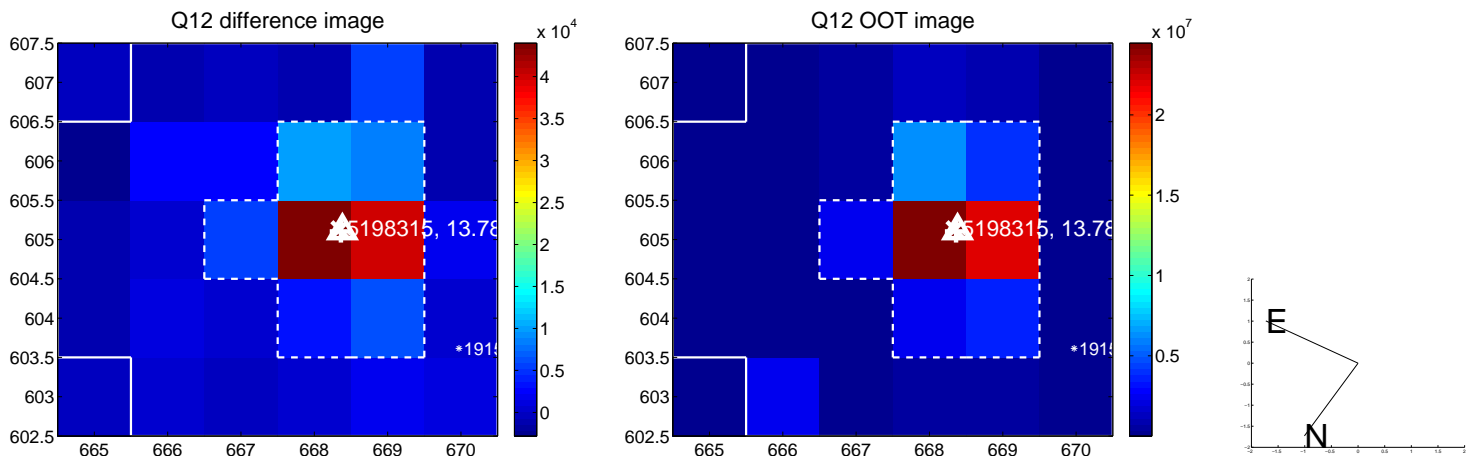
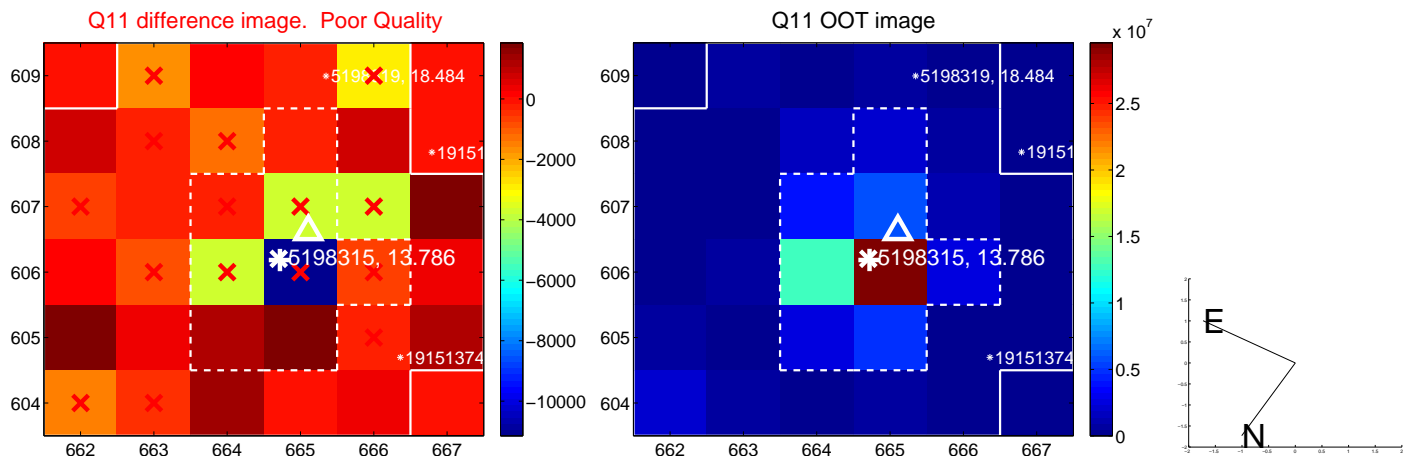
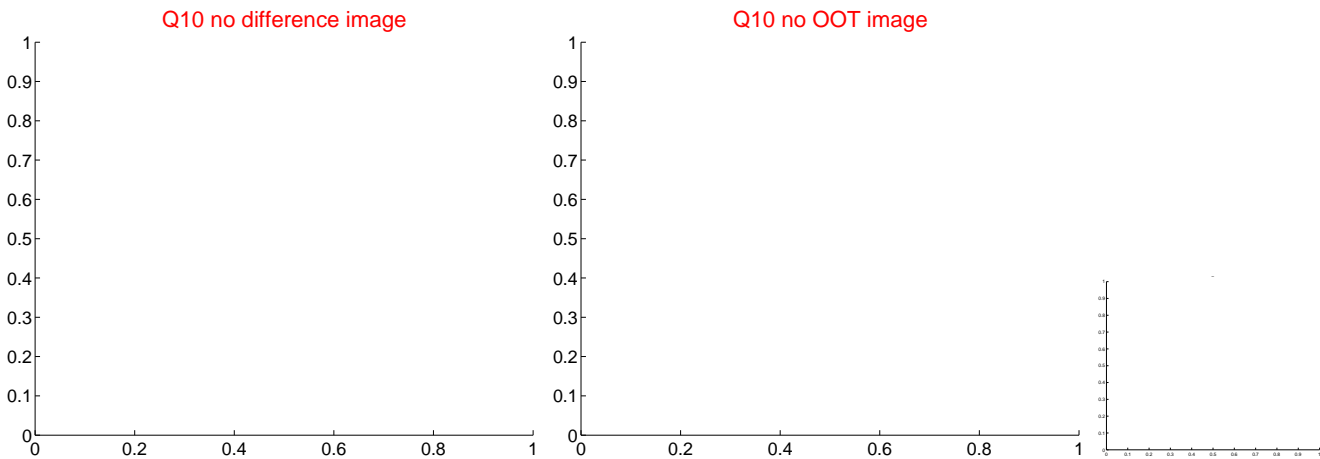
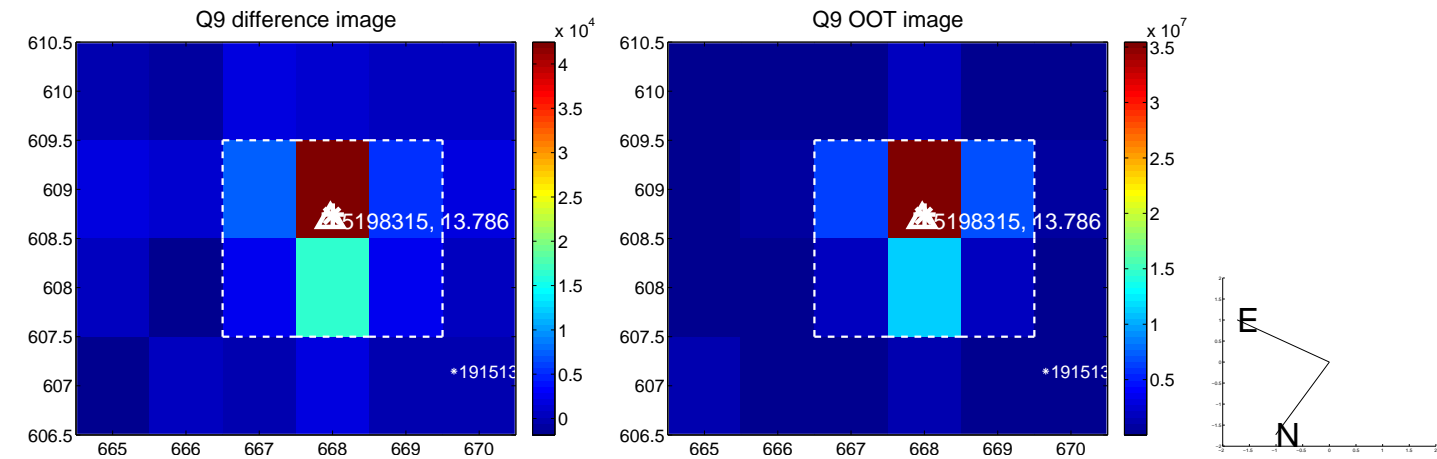
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



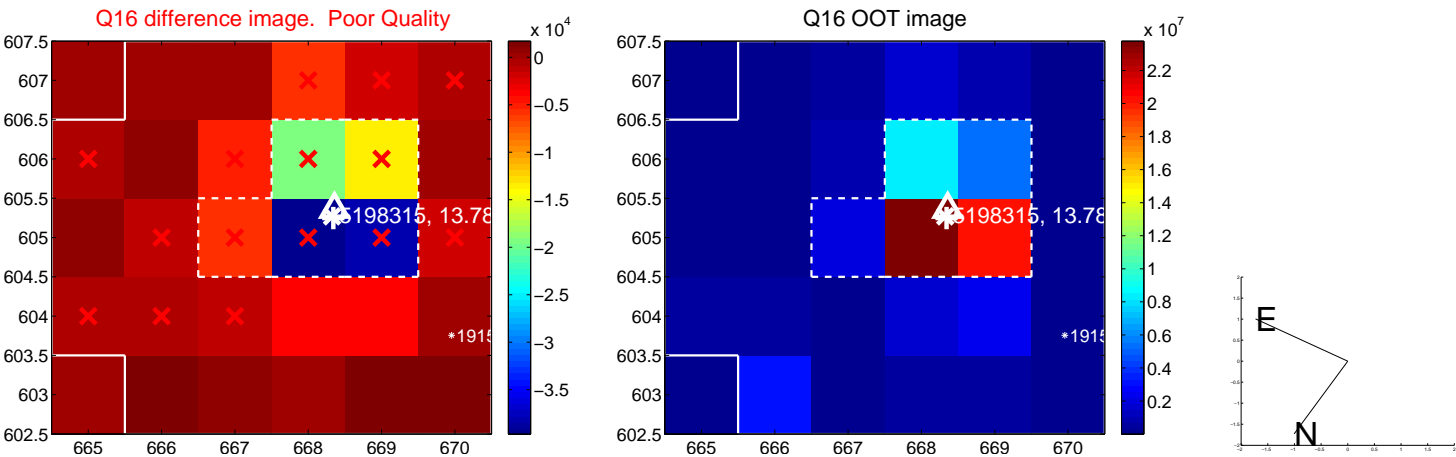
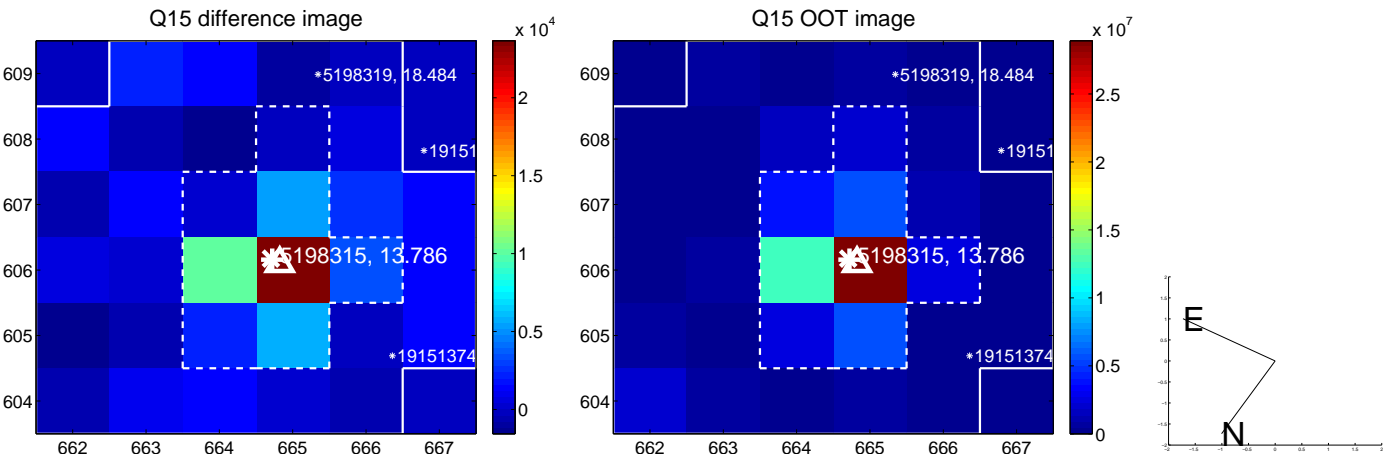
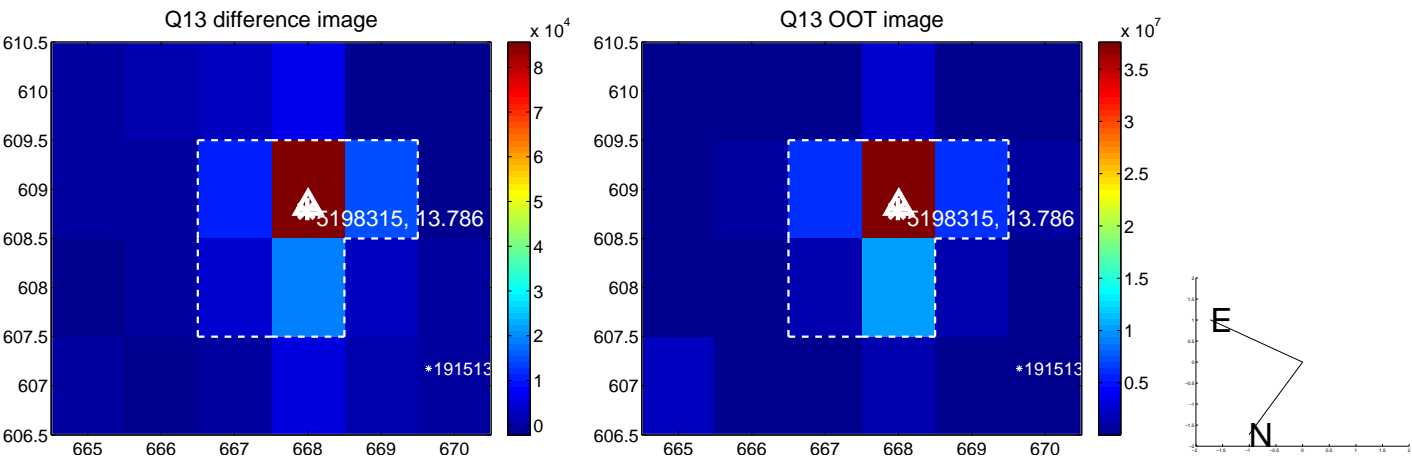
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



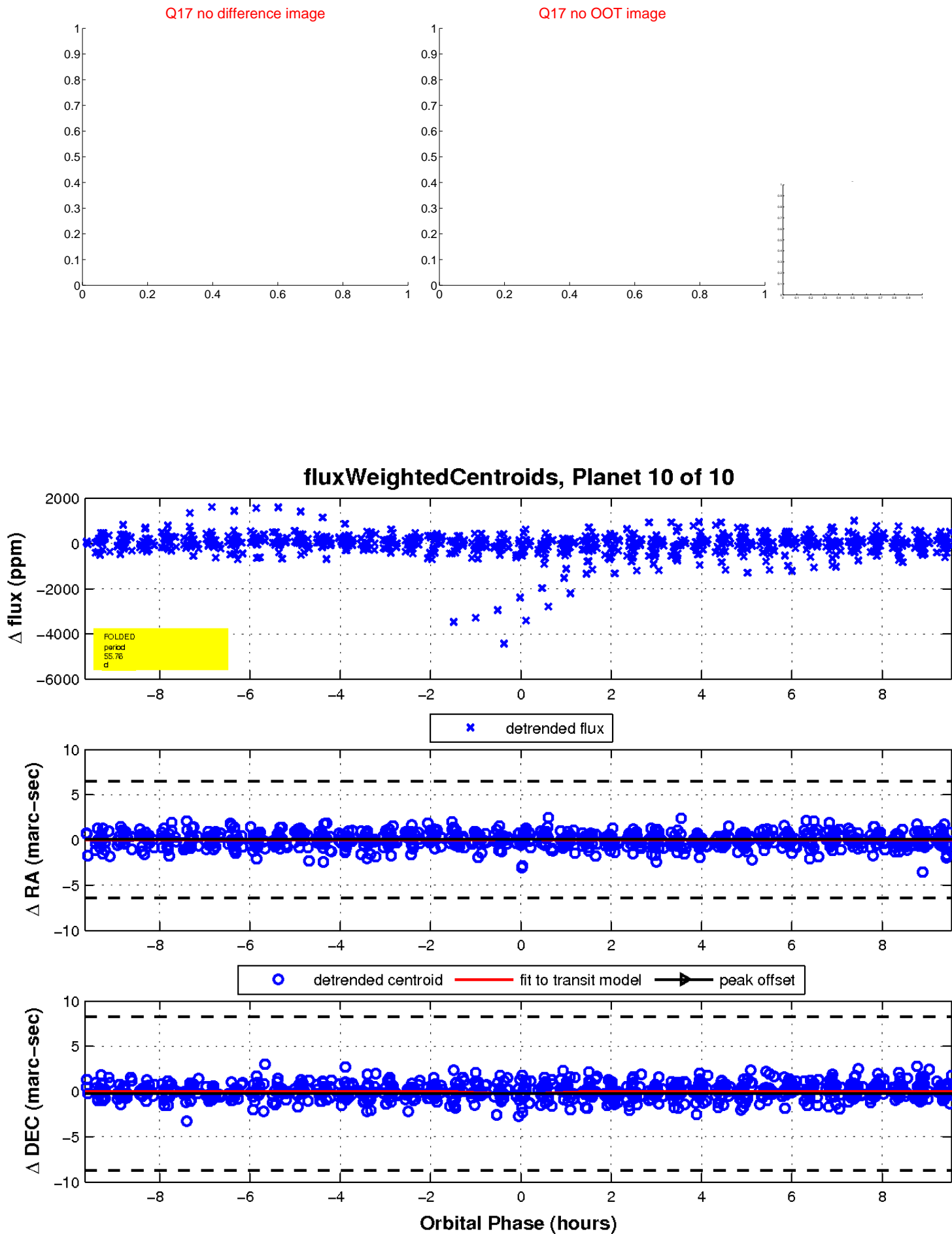
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



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



UKIRT Image

Declination

