

# KIC 007199087

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007199087-01	OBS	No	0.566789	131.670402	8.5	3.882	14.8	2.7	1.95	5161	0.56	15121.24
007199087-02	OBS	No	30.372888	155.472228	559.9	2.126	11.0	13.0	1.95	5161	9.51	74.85
007199087-03	OBS	No	22.645018	135.806898	358.7	5.851	12.1	11.4	1.95	5161	7.65	110.71
007199087-04	OBS	No	30.066788	151.392002	551.6	1.456	11.8	13.4	1.95	5161	4.56	75.86
007199087-05	OBS	No	69.496219	195.078789	535.3	3.211	10.0	10.7	1.95	5161	5.21	24.82
007199087-06	OBS	No	17.433948	136.980650	435.8	0.982	10.6	9.8	1.95	5161	4.96	156.90
007199087-07	OBS	No	12.928268	142.702231	321.2	1.694	9.9	10.2	1.95	5161	3.77	233.76
007199087-08	OBS	No	28.669881	148.165240	606.7	0.987	9.2	8.4	1.95	5161	5.76	80.83
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007199087-10	OBS	No	11.882767	139.895565	291.3	4.500	8.6	-1.0	1.95	5161	3.26	261.57

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
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**Notes:** OBS = Observed. INJ = Injected. INV = Inverted. SCR = Scrambled.

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

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

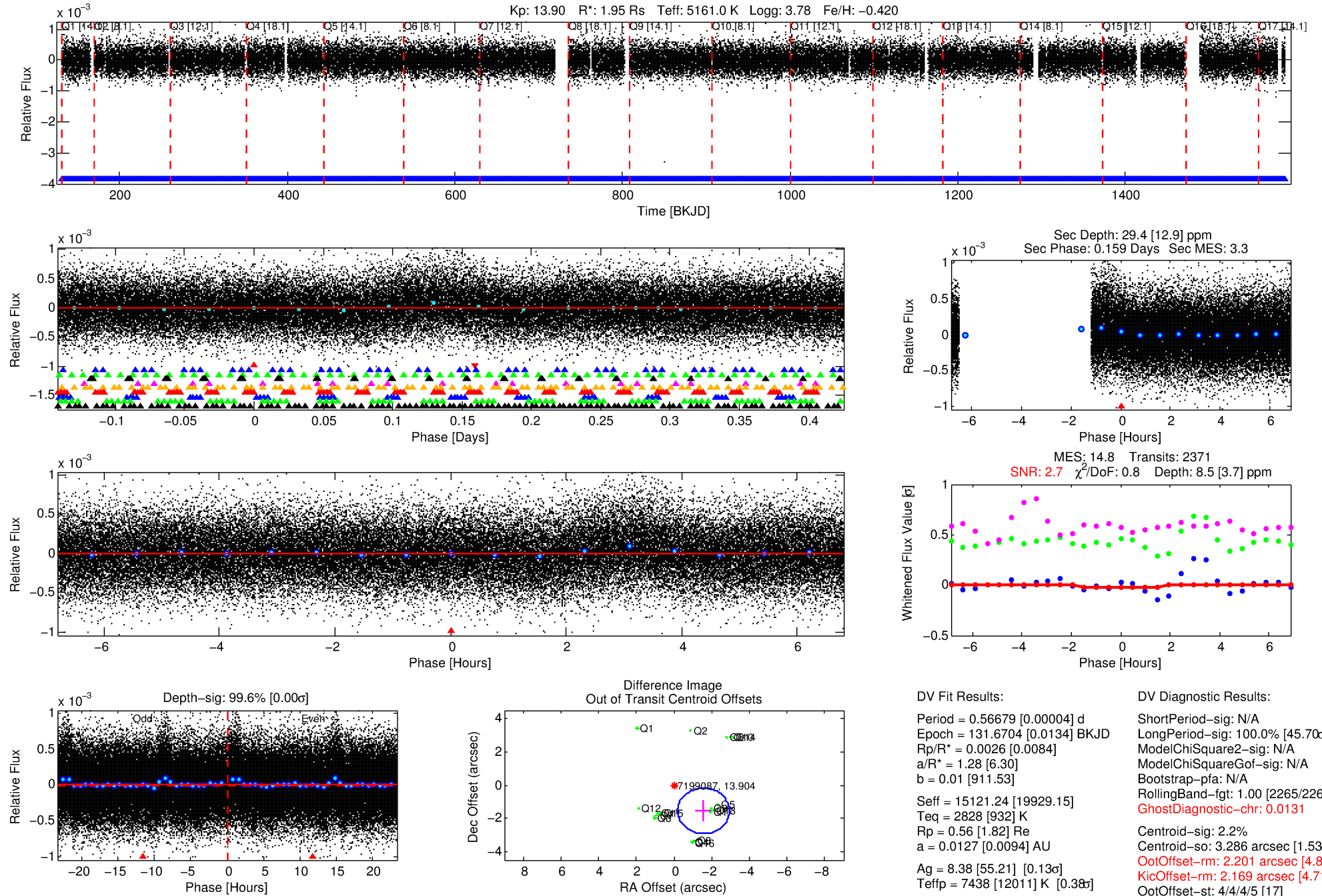
### Ephemeris Match Information For 007199087-01

TCE (1)	KIC	Parent (2)	Parent KIC	P <sub>1</sub> :P <sub>2</sub>	Dist ( $''$ )	$\Delta$ Row	$\Delta$ Col	m <sub>2</sub>	m <sub>1</sub>	D <sub>2</sub> /D <sub>1</sub>	Mechanism	Flag	$\sigma_P$	$\sigma_T$
007199087-01	7199087	RR-Lyr-pri	7198959	1:1	207.7	51	-12	7.86	13.90	77912.00	Direct-PRF	0	1.72	17.88

**Notes:** P<sub>1</sub>:P<sub>2</sub> is the period ratio. Dist is the distance in arcseconds.  $\Delta$ Row and  $\Delta$ Col are the number of pixels apart in row and column. m<sub>2</sub> and m<sub>1</sub> are the magnitudes of the parent and child. D<sub>2</sub>/D<sub>1</sub> is the parent's transit depth divided by the child's.  $\sigma_P$  and  $\sigma_T$  are the significance of the match in period and epoch. For a match to be considered significant  $\sigma_P < 5.0$  and  $\sigma_T < 5.0$ . Matches which have  $\sigma_P$  and  $\sigma_T$  very close to this cutoff should receive extra scrutiny, especially if the period ratio is very large.

# DV One-Page Summary

KIC: 7199087 Candidate: 1 of 10 Period: 0.567 d



## DV Fit Results:

Period = 0.56679 [0.00004] d  
Epoch = 131.6704 [0.0134] BKJD  
Rp/R\* = 0.0026 [0.0084]  
a/R\* = 1.28 [6.30]  
b = 0.01 [911.53]  
Seff = 15121.24 [19929.15]  
Teff = 2828 [932] K  
Rp = 0.56 [1.82] Re  
a = 0.0127 [0.0094] AU  
Ag = 8.38 [55.21] [0.13 $\sigma$ ]  
Teffp = 7438 [12011] K [0.38 $\sigma$ ]

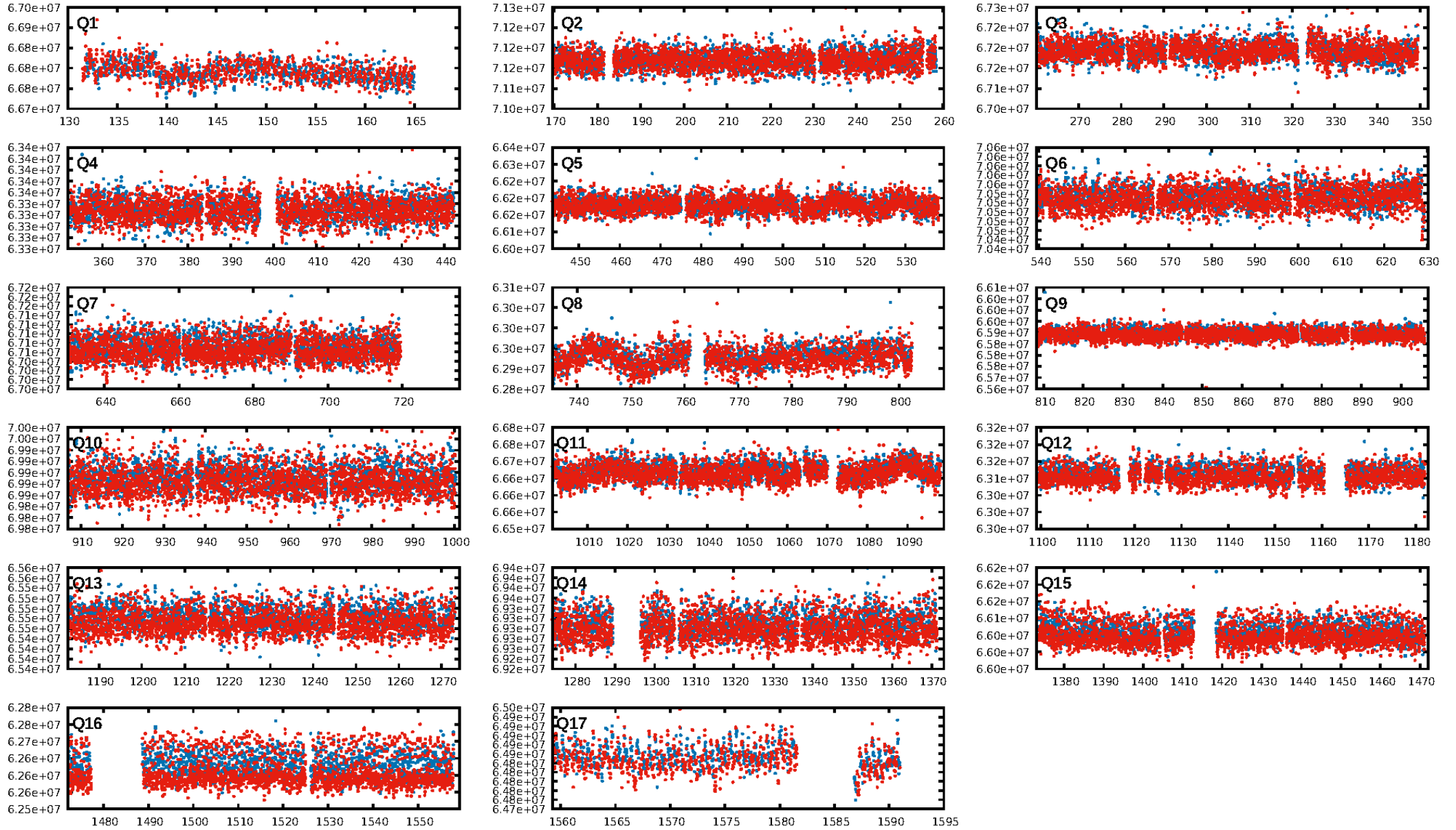
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [45.70 $\sigma$ ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [2265/2265]  
GhostDiagnostic-chr: 0.0131  
Centroid-sig: 2.2%  
Centroid-so: 3.286 arcsec [1.53 $\sigma$ ]  
OotOffset-rm: 2.201 arcsec [4.82 $\sigma$ ]  
KicOffset-rm: 2.169 arcsec [4.71 $\sigma$ ]  
OotOffset-st: 4/4/4/5 [17]  
KicOffset-st: 4/4/4/5 [17]  
DiffImageQuality-fgm: 0.35 [6/17]  
DiffImageOverlap-fno: 1.00 [17/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 15:41:17 Z

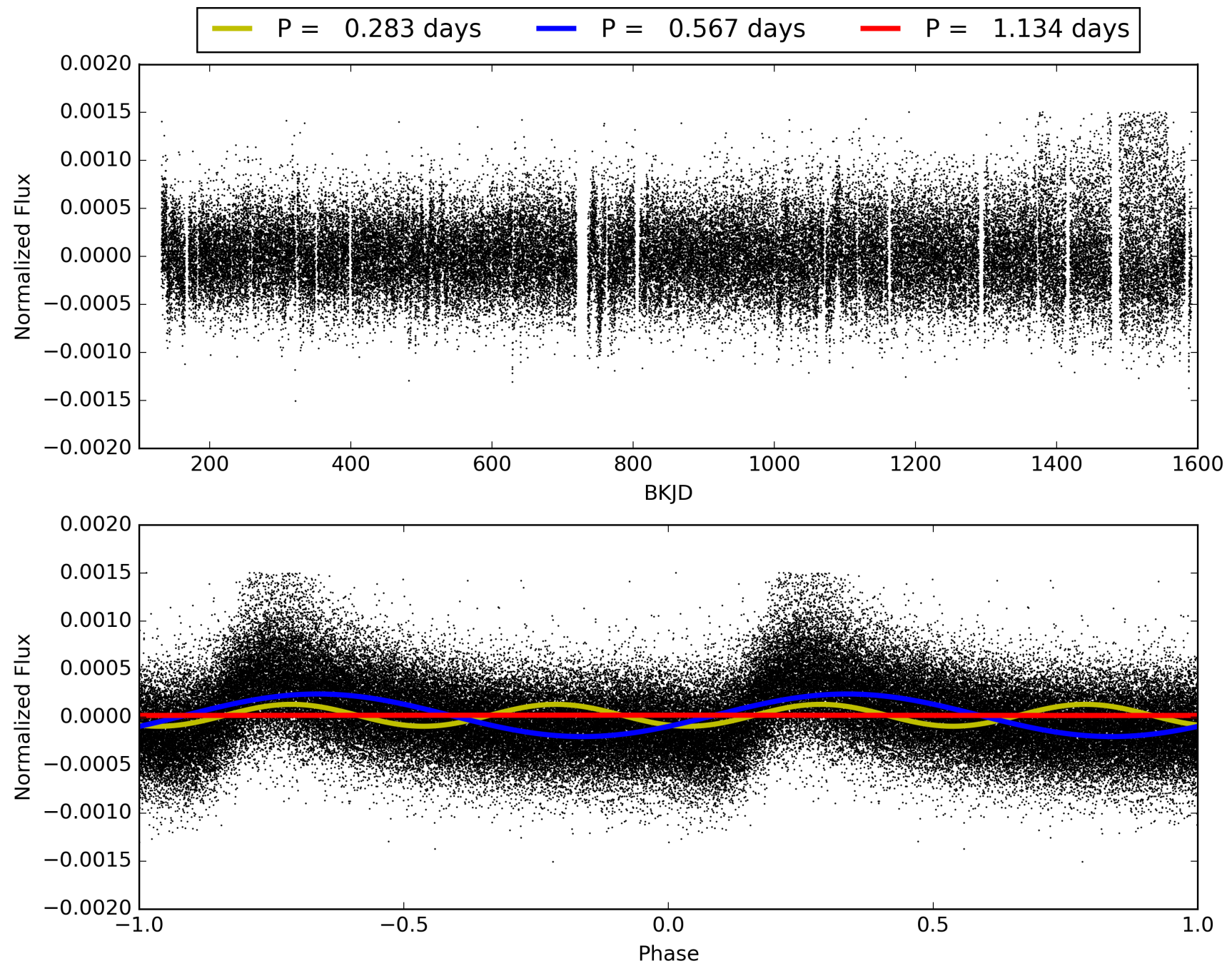
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 007199087-01, PDC Light Curves



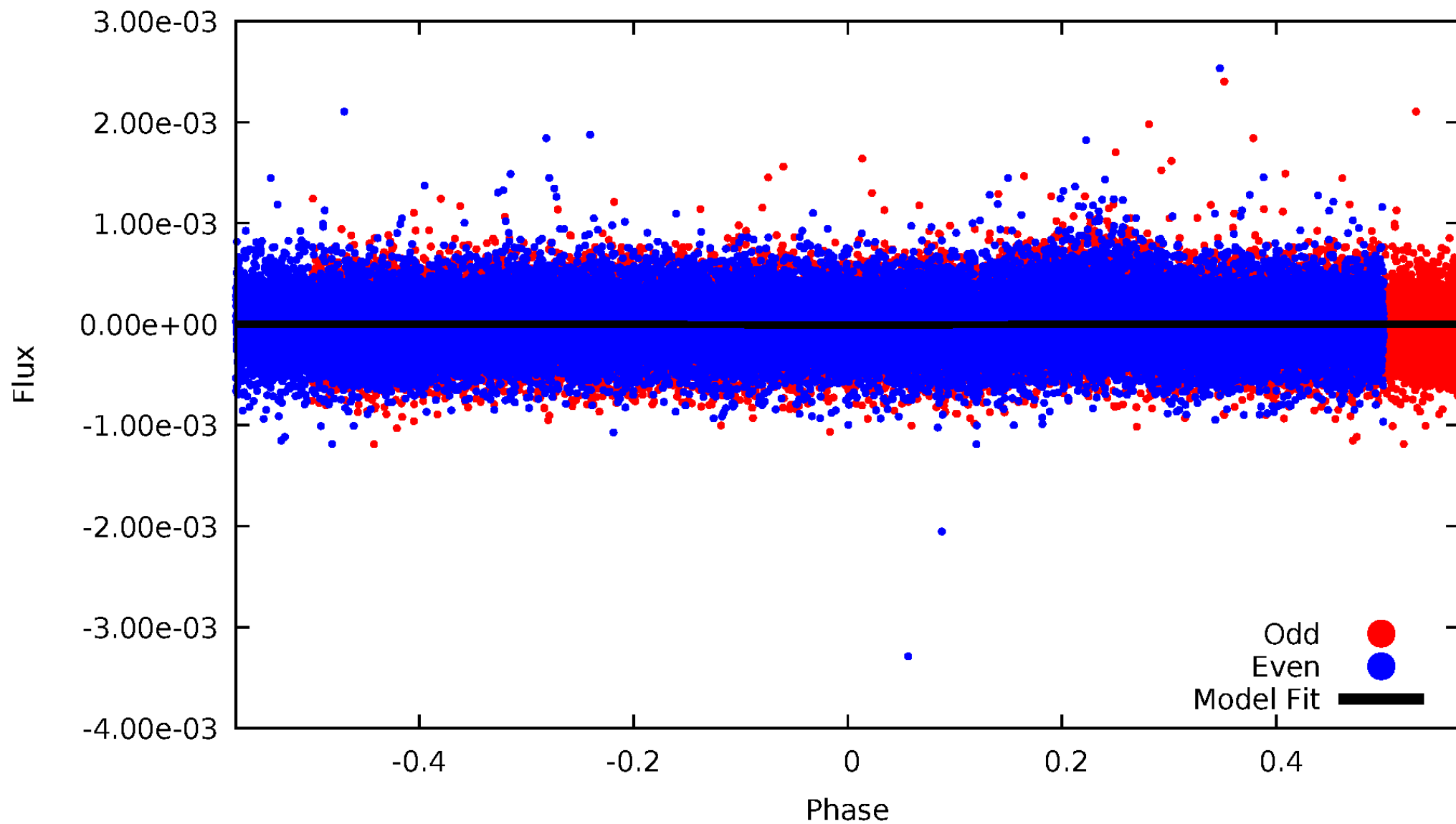


TCE 007199087-01



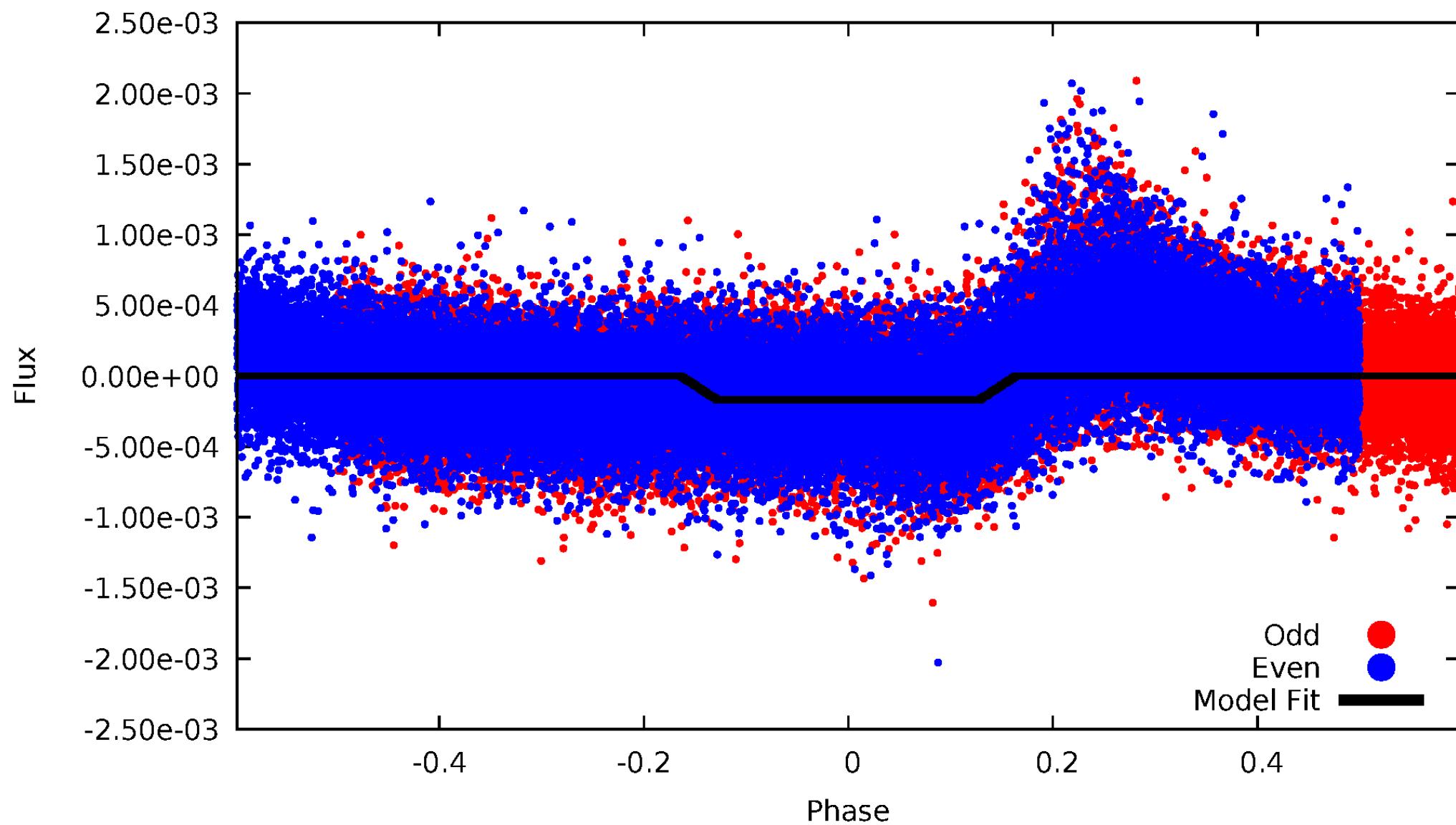
# DV Odd/Even

TCE 007199087-01



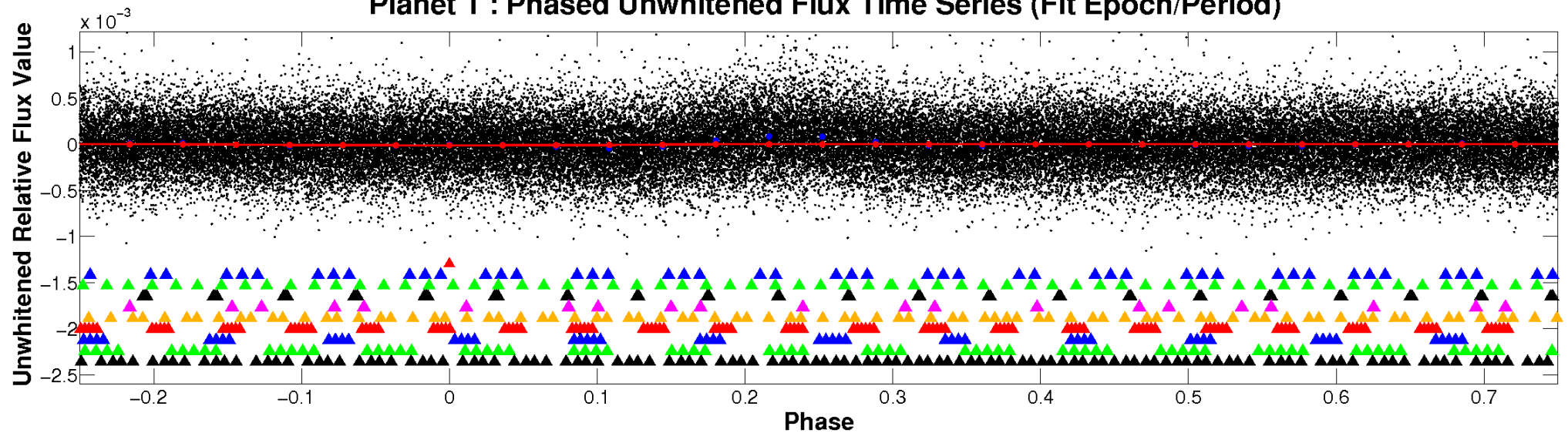
# ALT Odd/Even

TCE 007199087-01

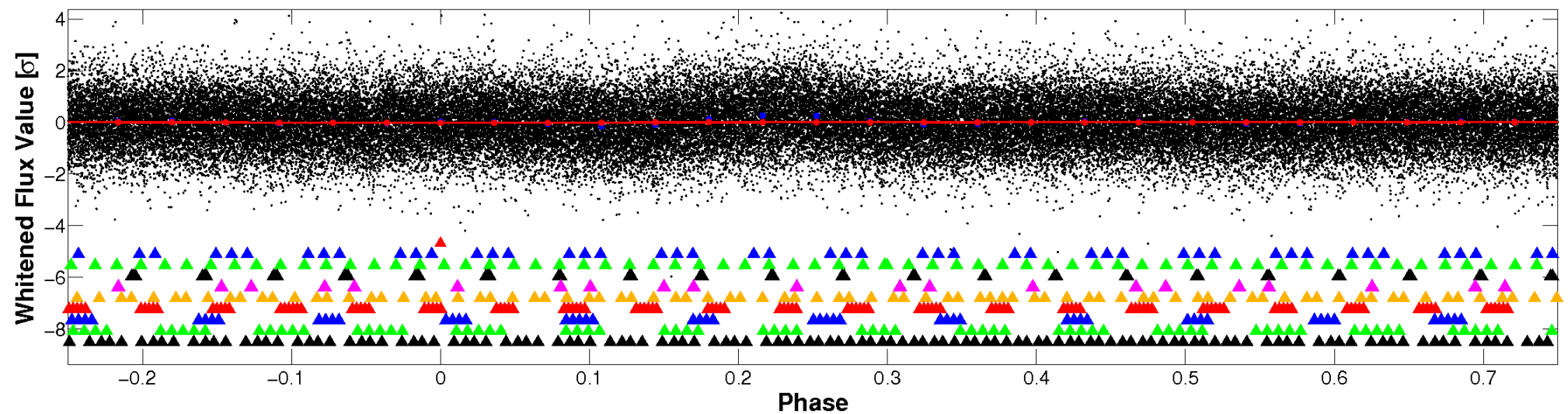


# Non-Whitened Vs. Whitened Light Curve

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



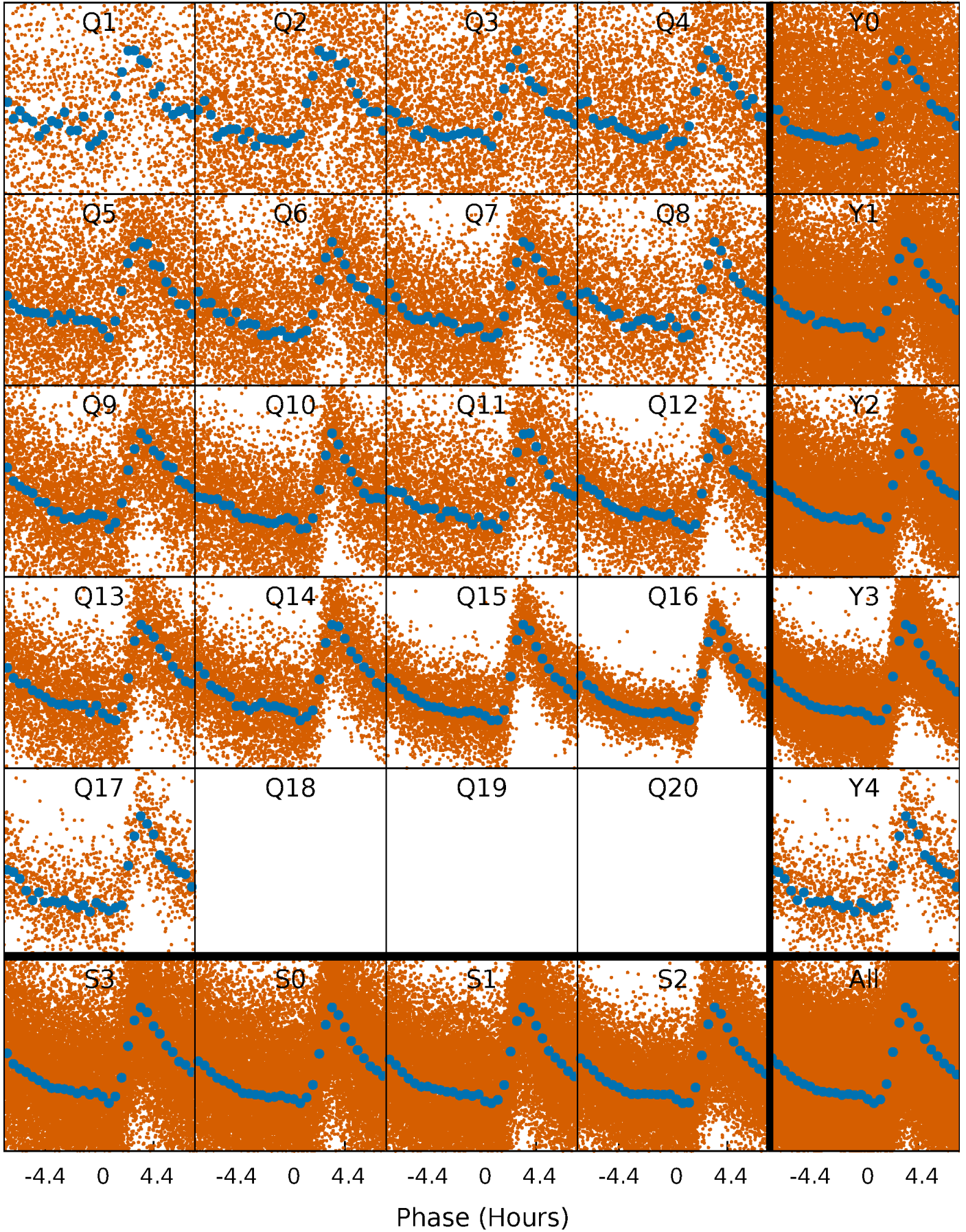
Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)





# PDC Quarter-Phased Transit Curves

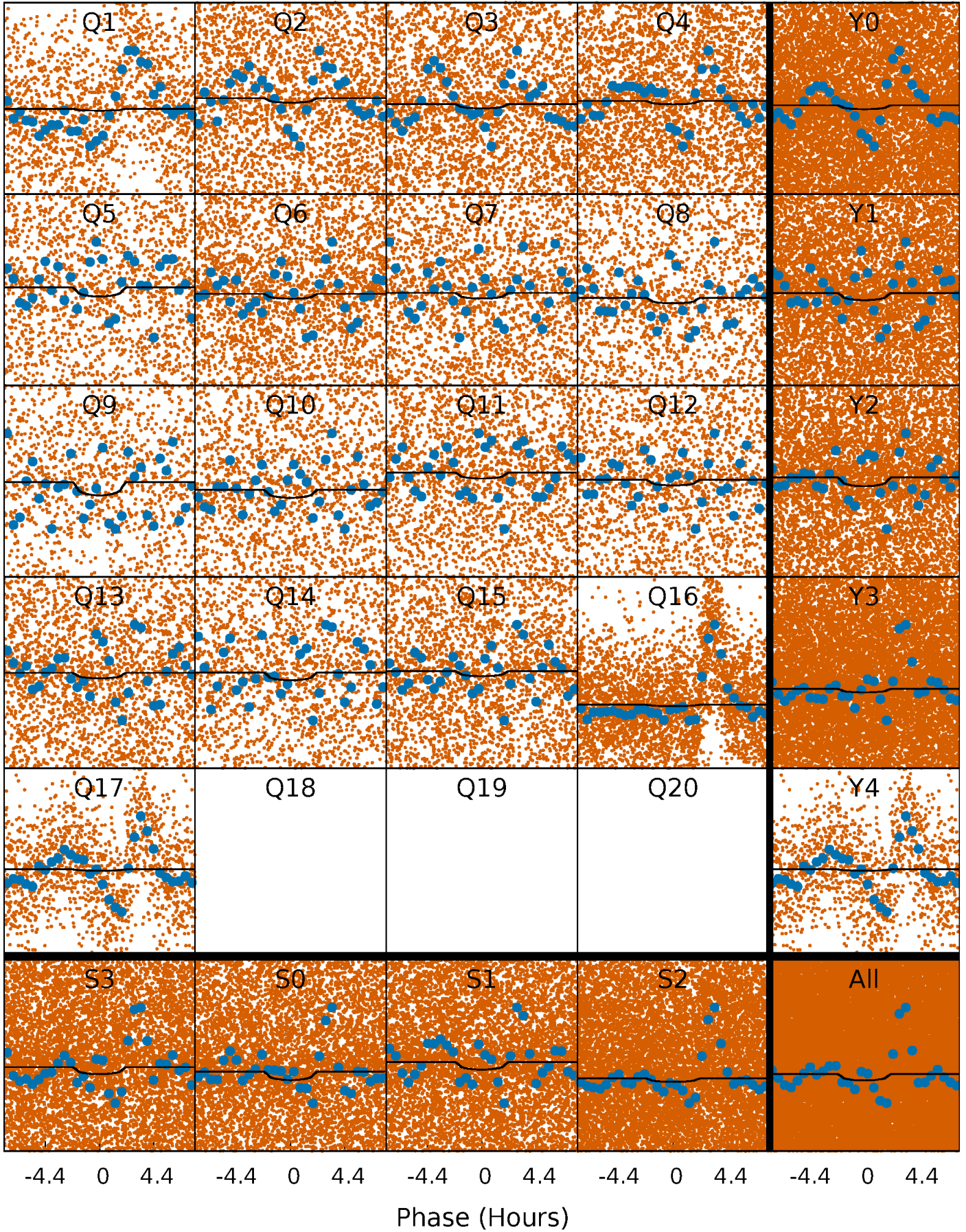
TCE 007199087-01   P= 0.566789 Days    $T_0=131.670402$  (BKJD)





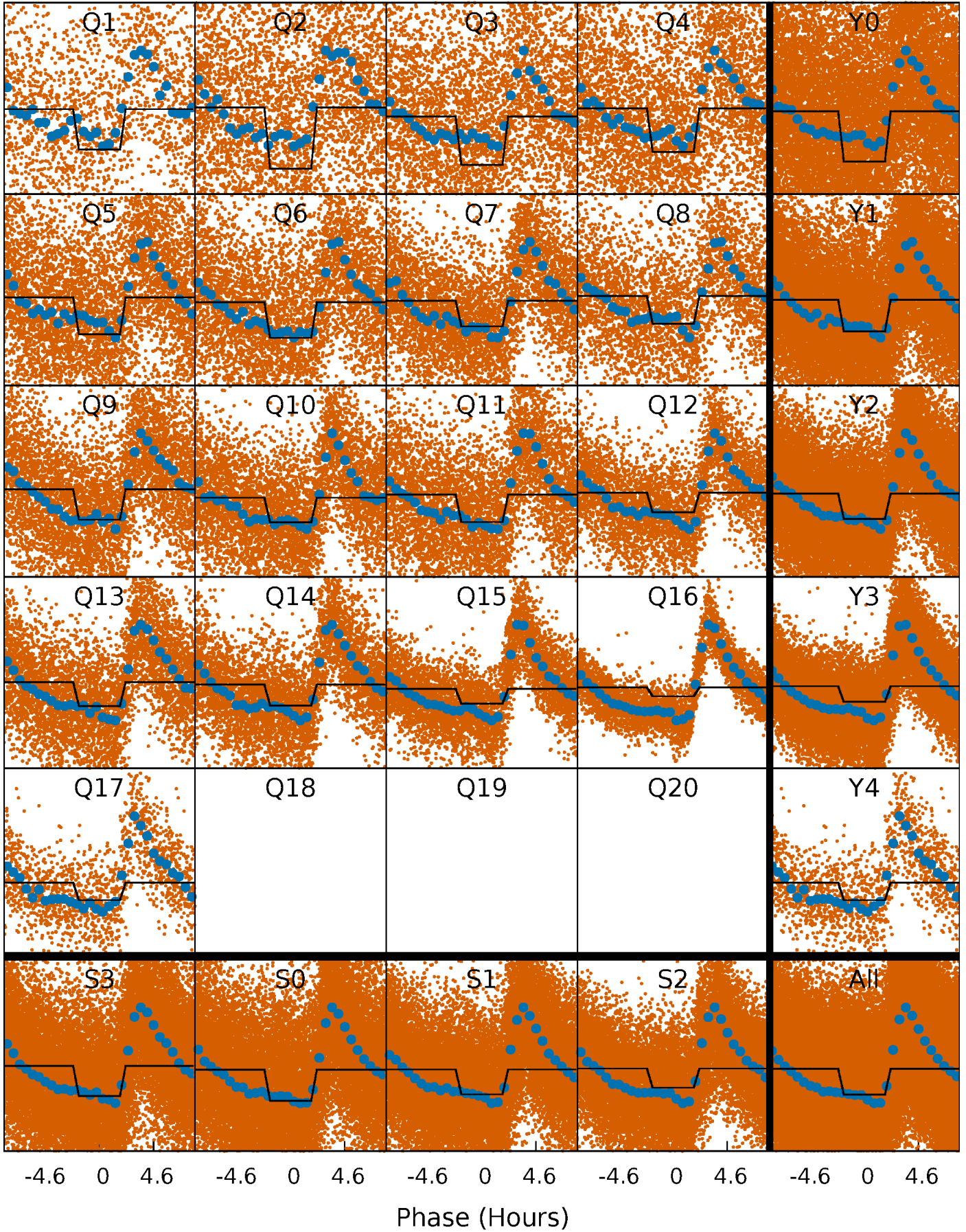
# DV Quarter-Phased Transit Curves

TCE 007199087-01 P= 0.566789 Days  $T_0=131.670402$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 007199087-01 P= 0.566808 Days  $T_0=131.635465$  (BKJD)

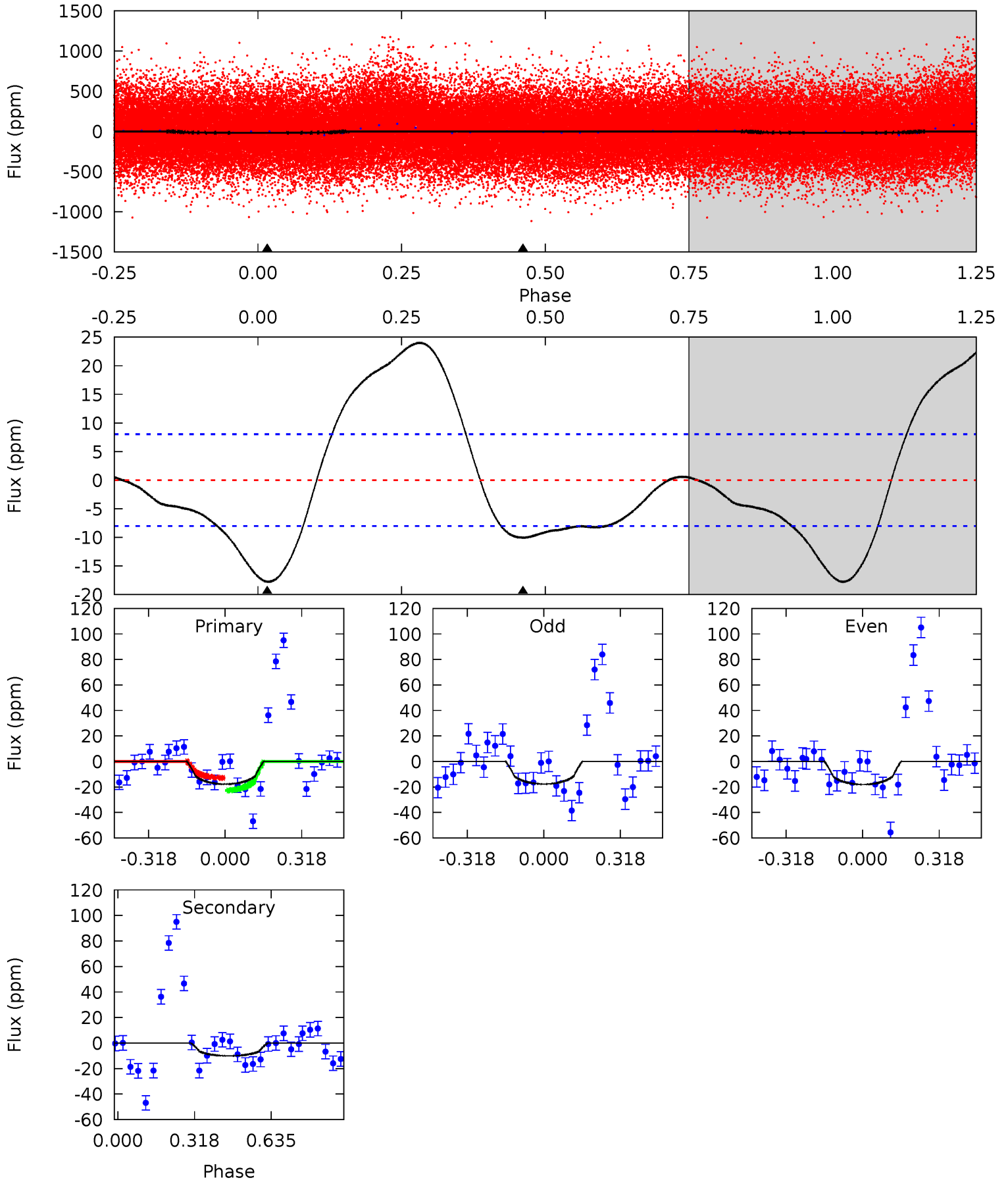




# DV Model-Shift Uniqueness Test

007199087-01, P = 0.566789 Days, E = 131.103613 Days

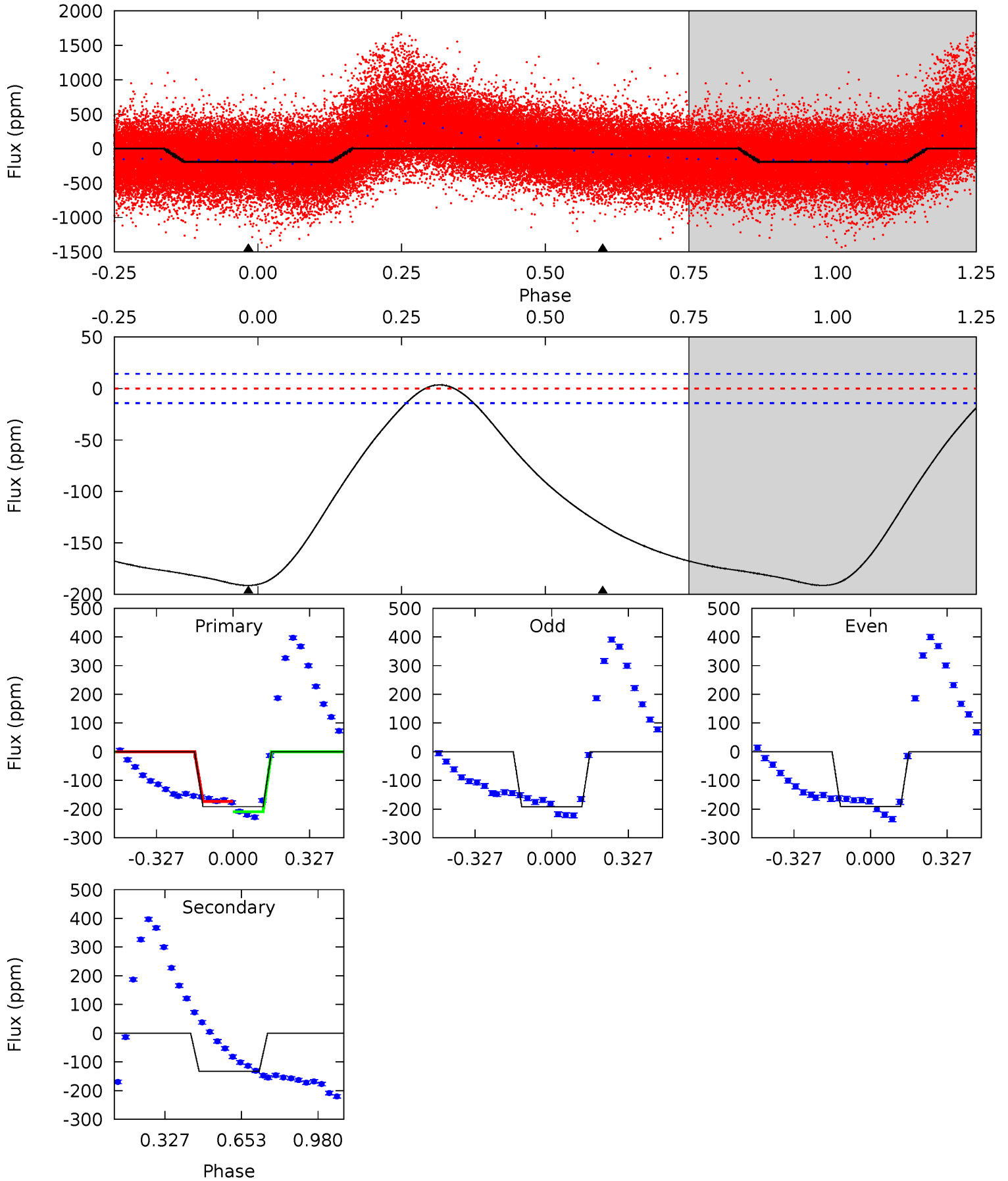
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.58	5.42	0	0	4.32	1.00	0.35	9.58	9.58	5.42	5.42	0.10	0.81	0.57	2.50



# Alt Model-Shift Uniqueness Test

007199087-01, P = 0.566808 Days, E = 131.068657 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
57.8	40.1	0	0	4.31	0.98	2.46	57.8	57.8	40.1	40.1	0.15	1.05	0.02	8.41



### Stellar Parameters For KIC 007199087

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5161^{+139}_{-154}$	$3.782^{+0.812}_{-0.348}$	$-0.420^{+0.300}_{-0.300}$	$1.952^{+1.204}_{-1.204}$	$0.842^{+0.178}_{-0.145}$	$0.160^{+3.448}_{-0.111}$
	+3%/-3%	+21%/-9%	+71%/-71%	+62%/-62%	+21%/-17%	+2162%/-70%
Source	PHO1	KIC0	KIC0	DSEP		

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

### Secondary Eclipse Parameters for KIC 007199087-01 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-10 \pm 2$	$1.30^{+1.62}_{-0.95}$	$3857^{+636}_{-737}$	$3230^{+3157}_{-6728}$	$0.515^{+6.426}_{-0.416}$
Alt.	$-133 \pm 3$	$2.63^{+2.29}_{-1.63}$	$3926^{+623}_{-715}$	$4644^{+2564}_{-1227}$	$1.706^{+10.289}_{-1.220}$

$T_{\text{max}}$  = 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

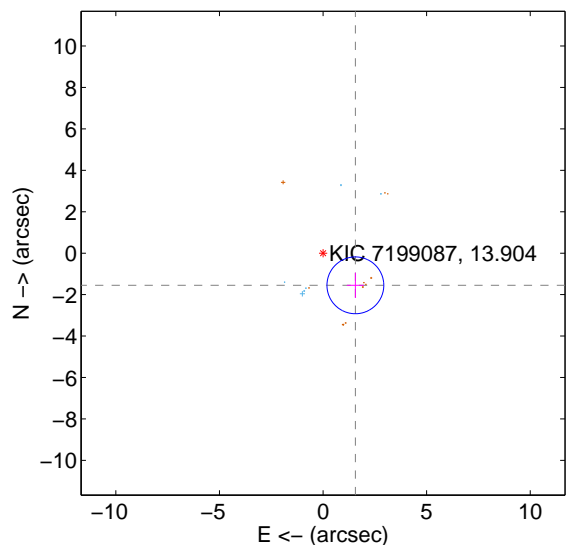
Supplemental centroid analysis for 007199087-01. Kepler magnitude: 13.90. Transit SNR 2.69

There are 6 quarters with good PRF difference image offsets

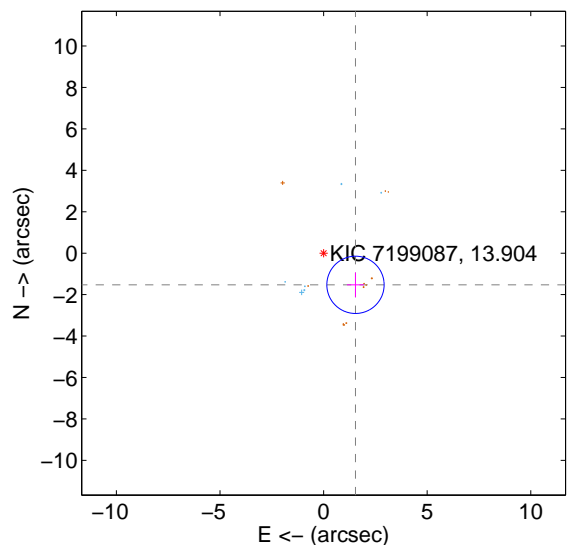
The direct PRF centroid is offset from the target star catalog position by about 0.01 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$2.201 \pm 0.457$	4.82	$-1.561 \pm 0.409$	$-1.552 \pm 0.611$
PRF-fit source offset from KIC position	$2.169 \pm 0.461$	4.71	$-1.540 \pm 0.411$	$-1.528 \pm 0.597$
photometric centroid source offset	$3.29 \pm 2.15$	1.53	$-0.94 \pm 2.20$	$-3.15 \pm 2.14$

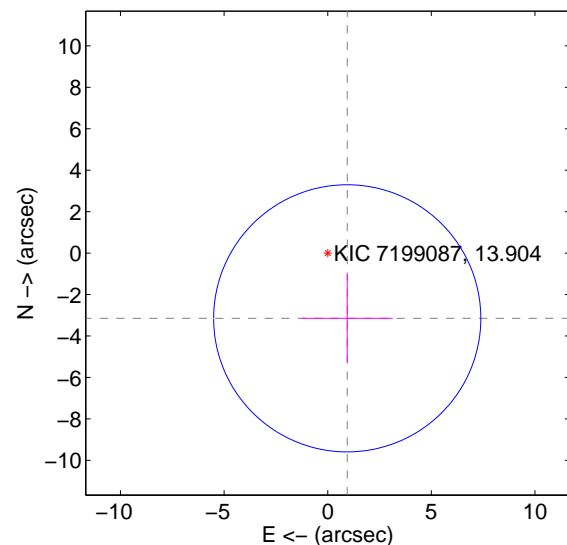
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

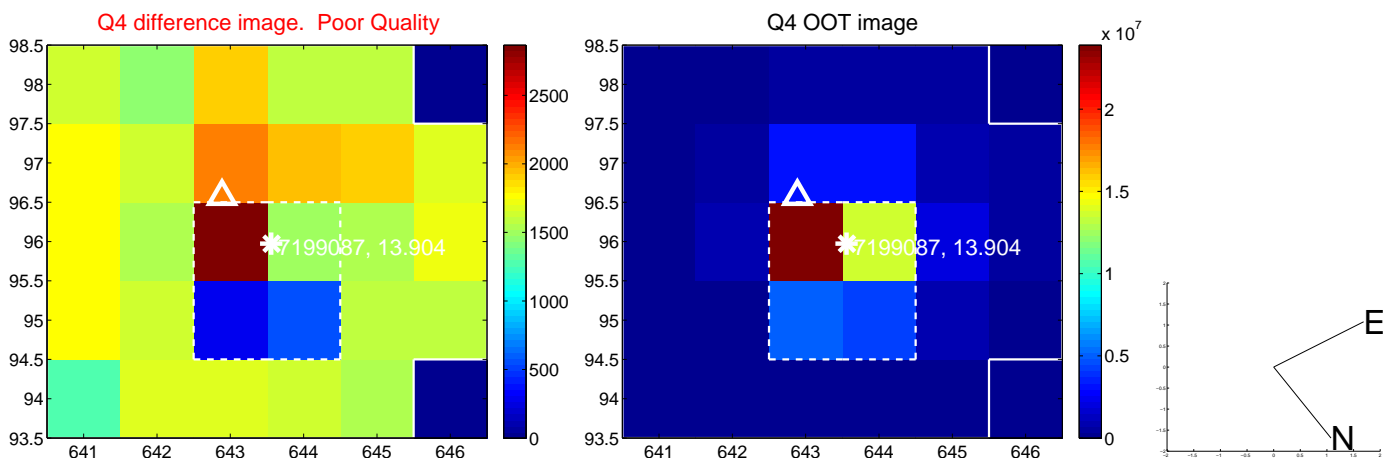
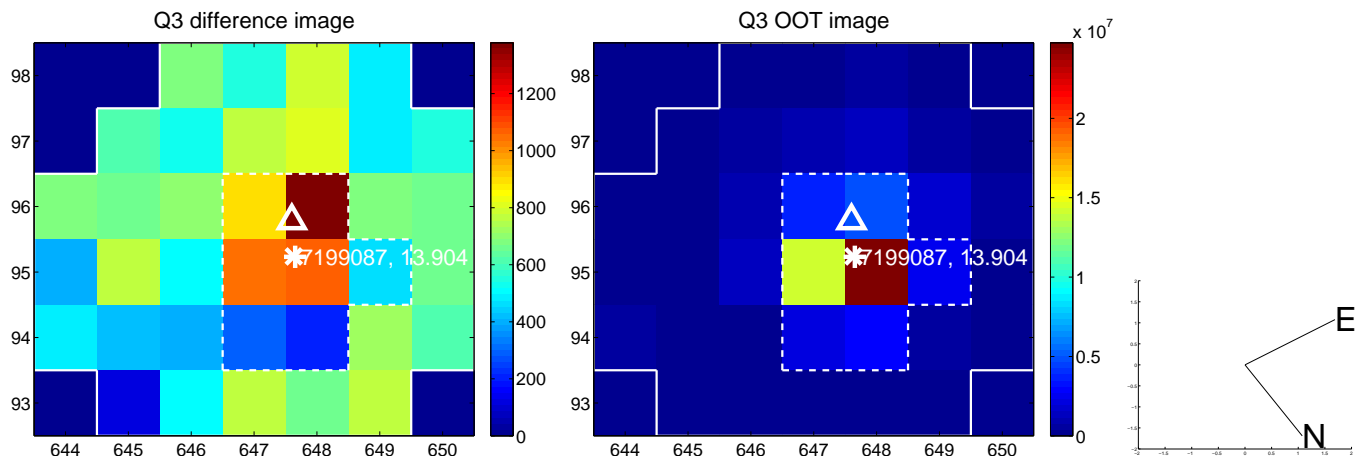
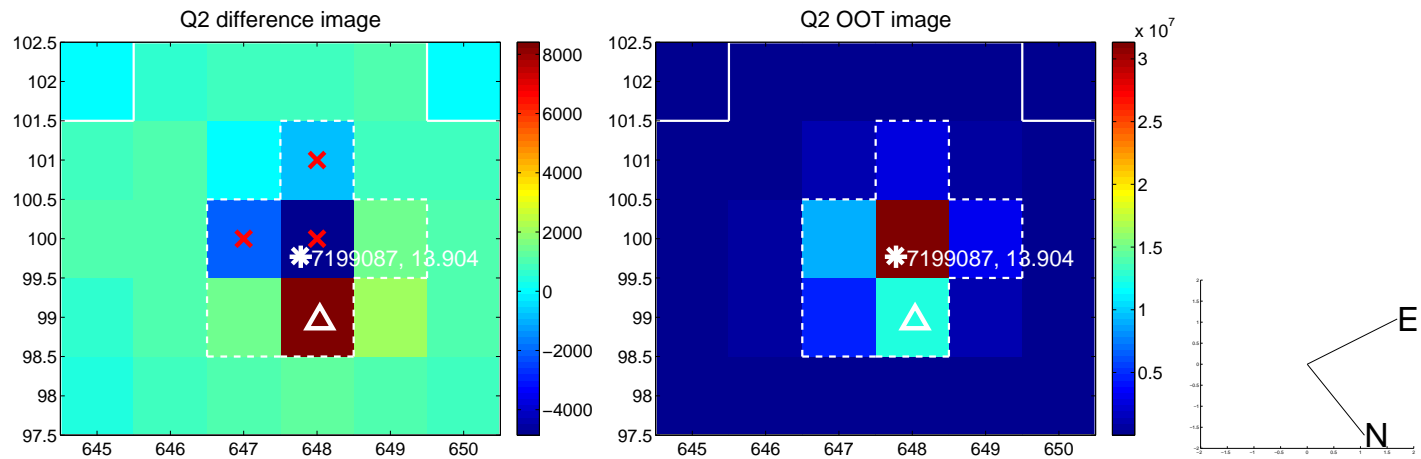
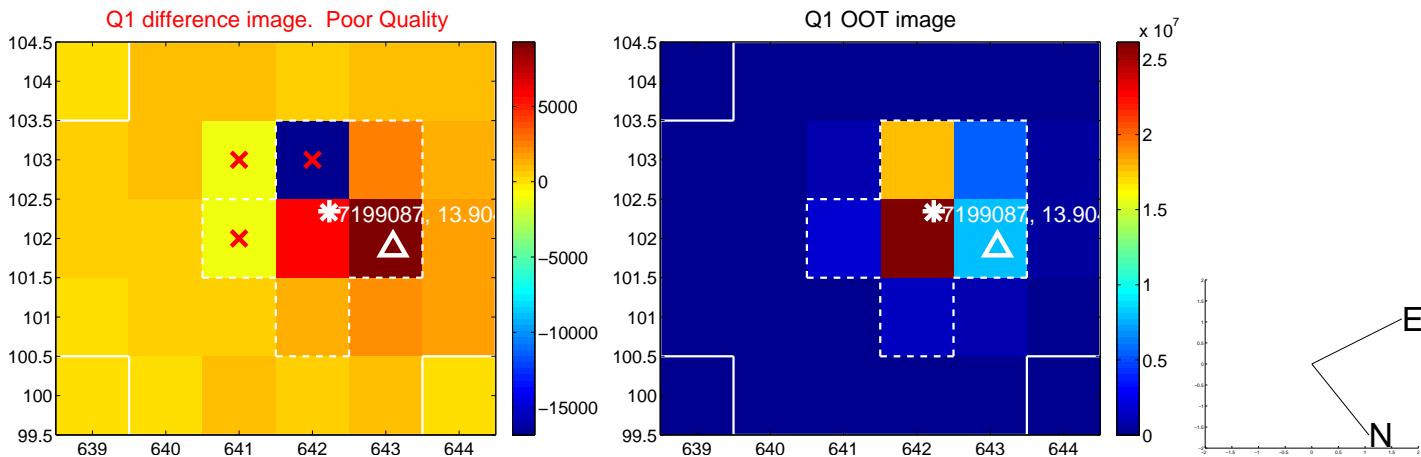


offset from photometric centroids

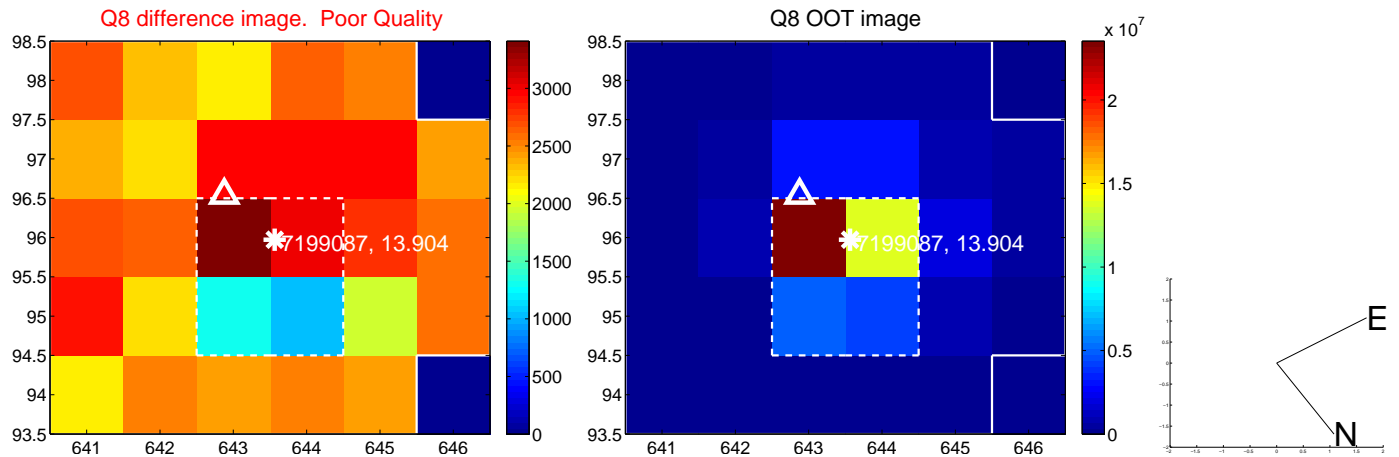
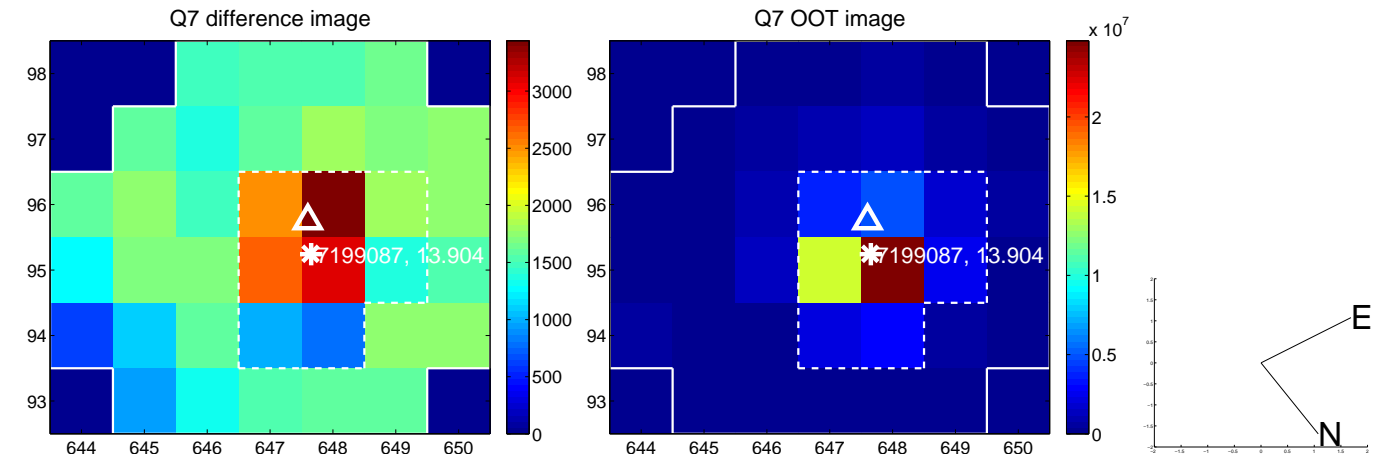
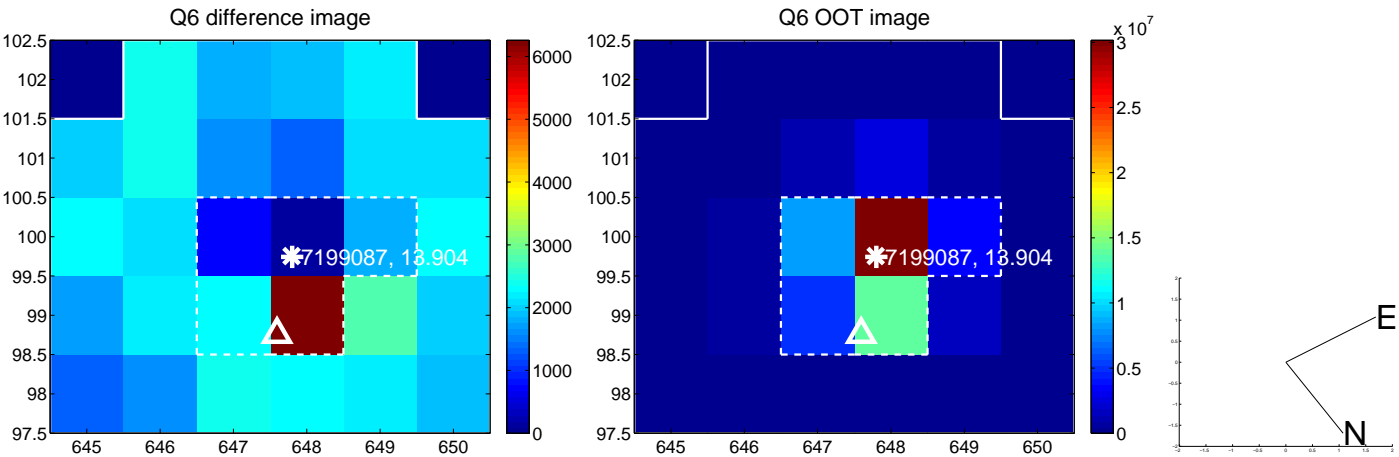
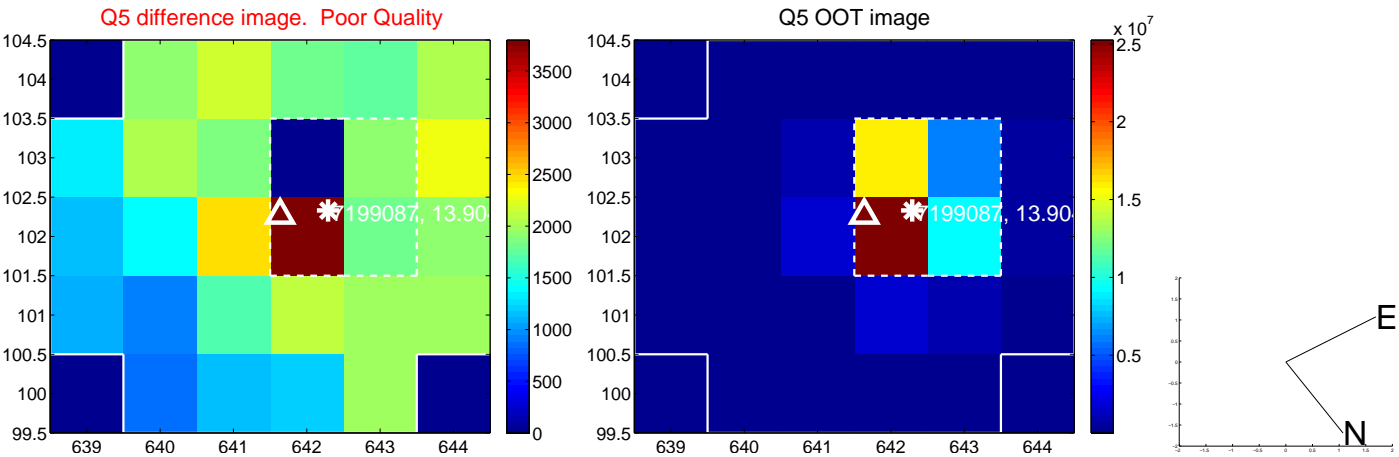


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

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

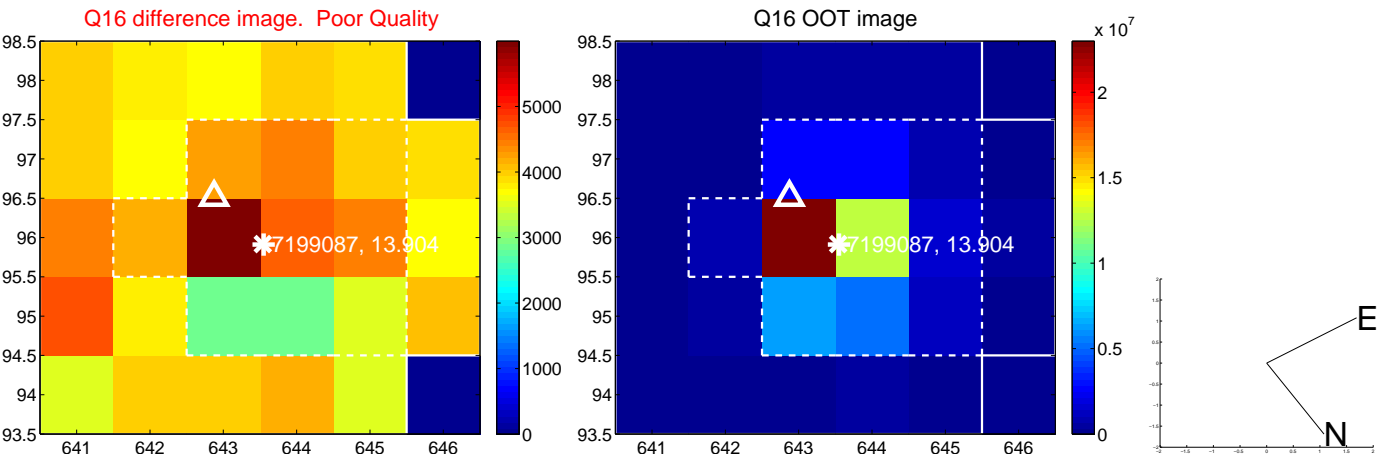
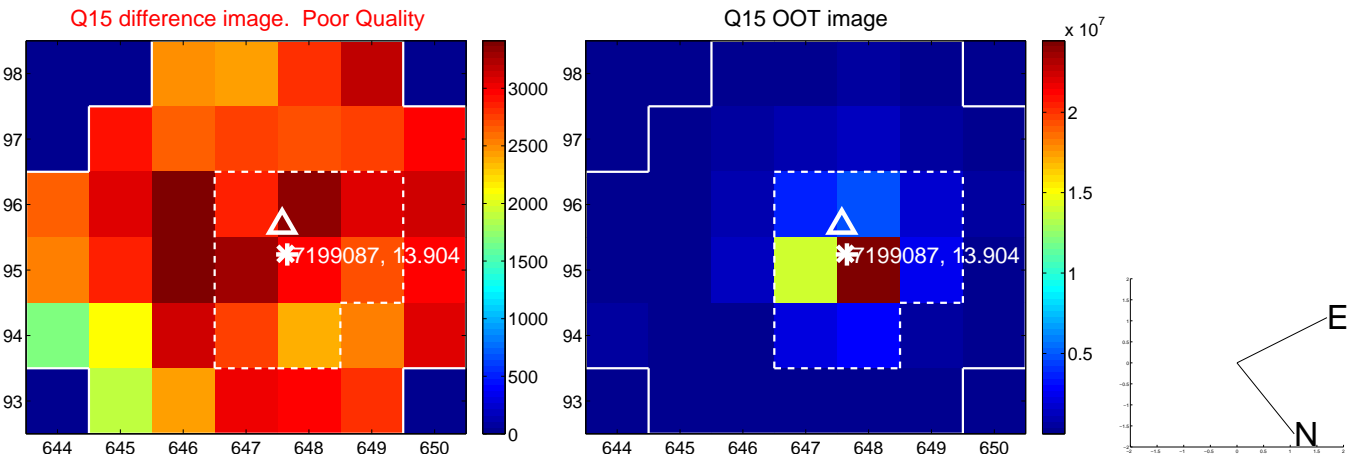
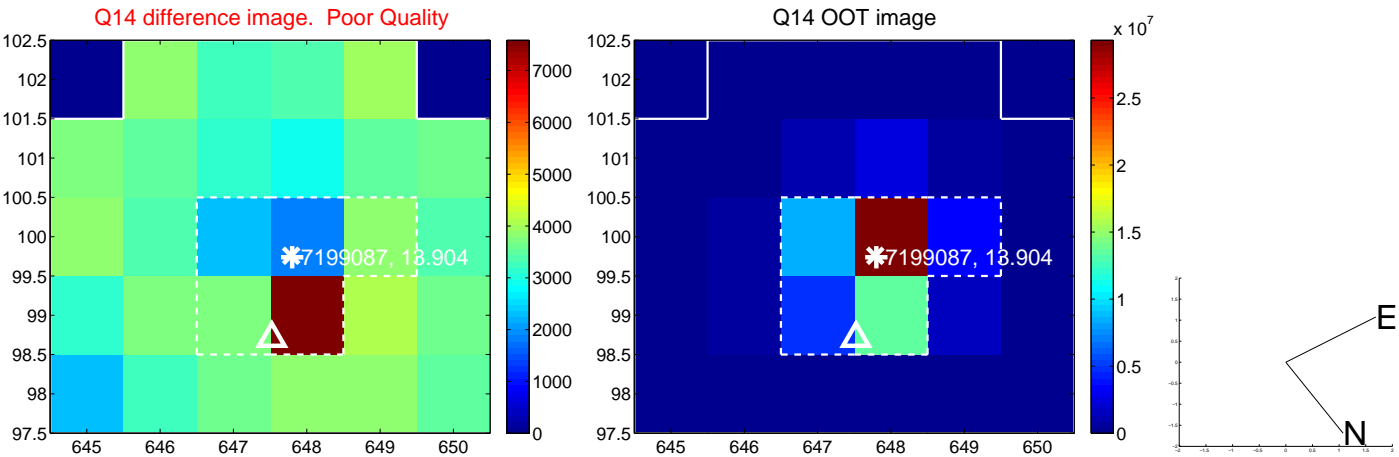
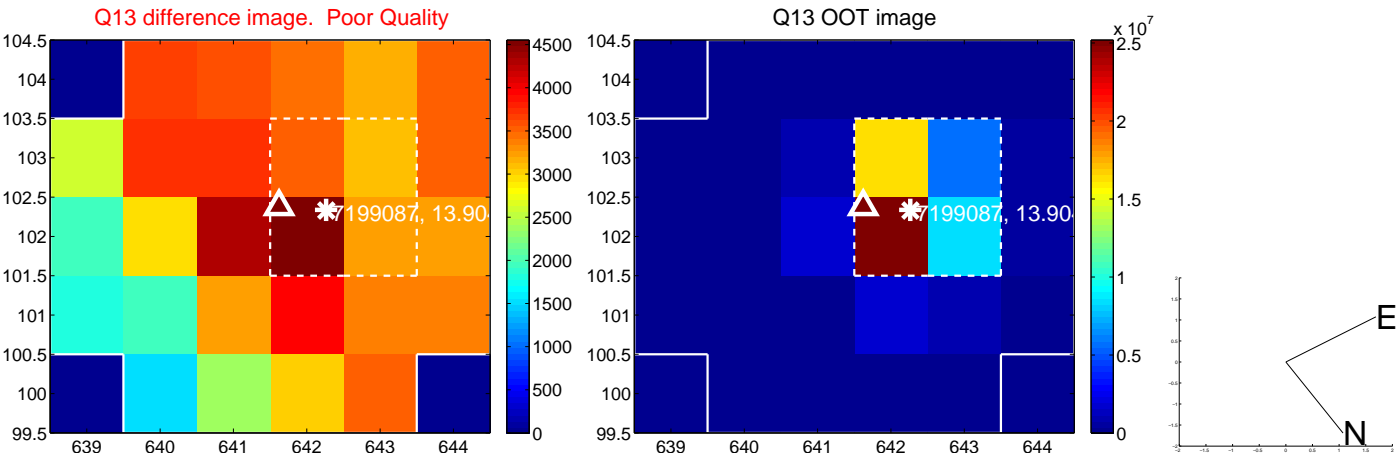


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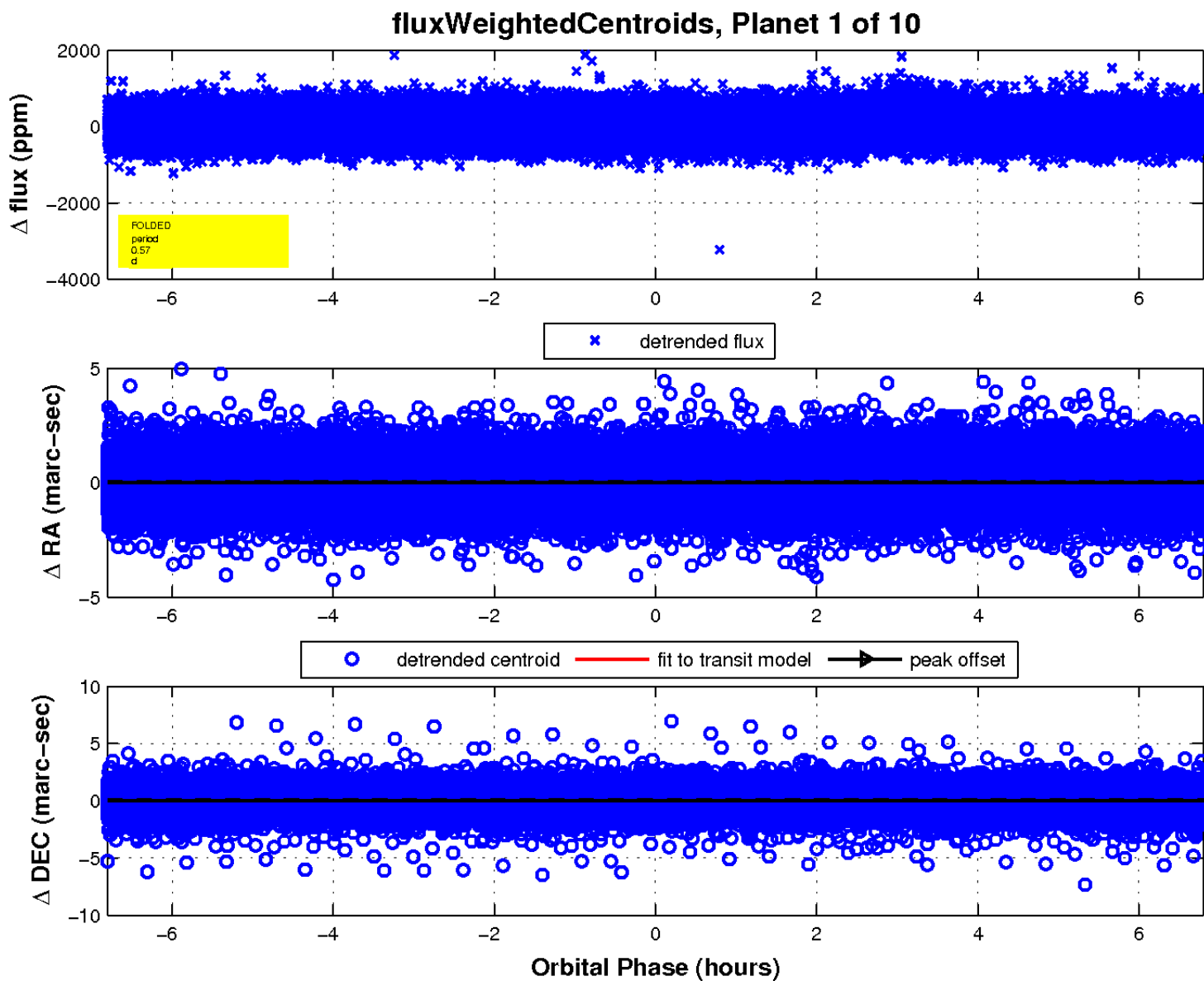
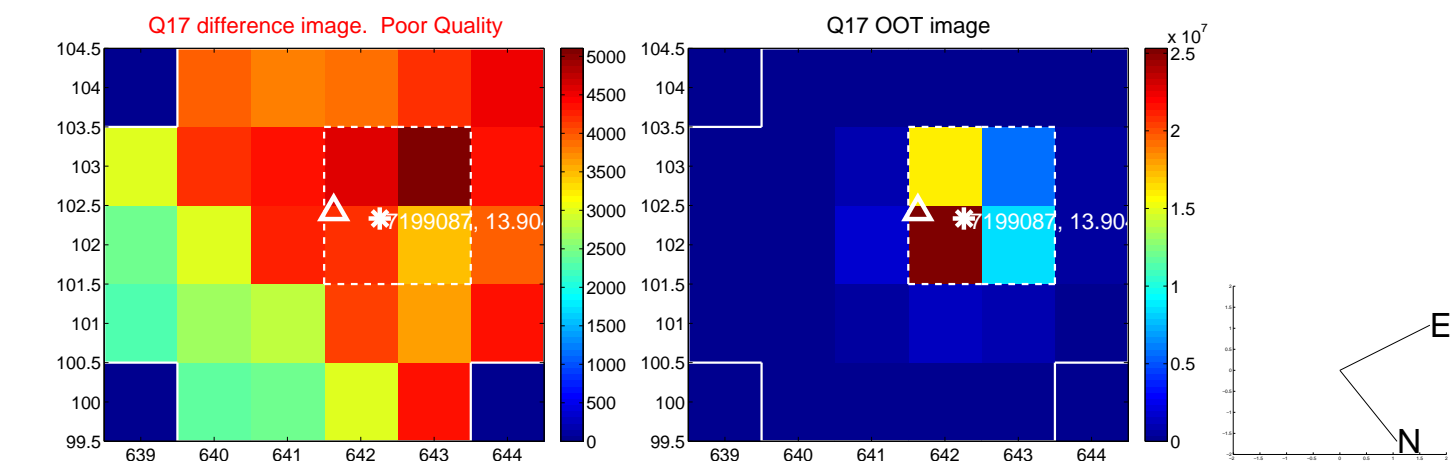


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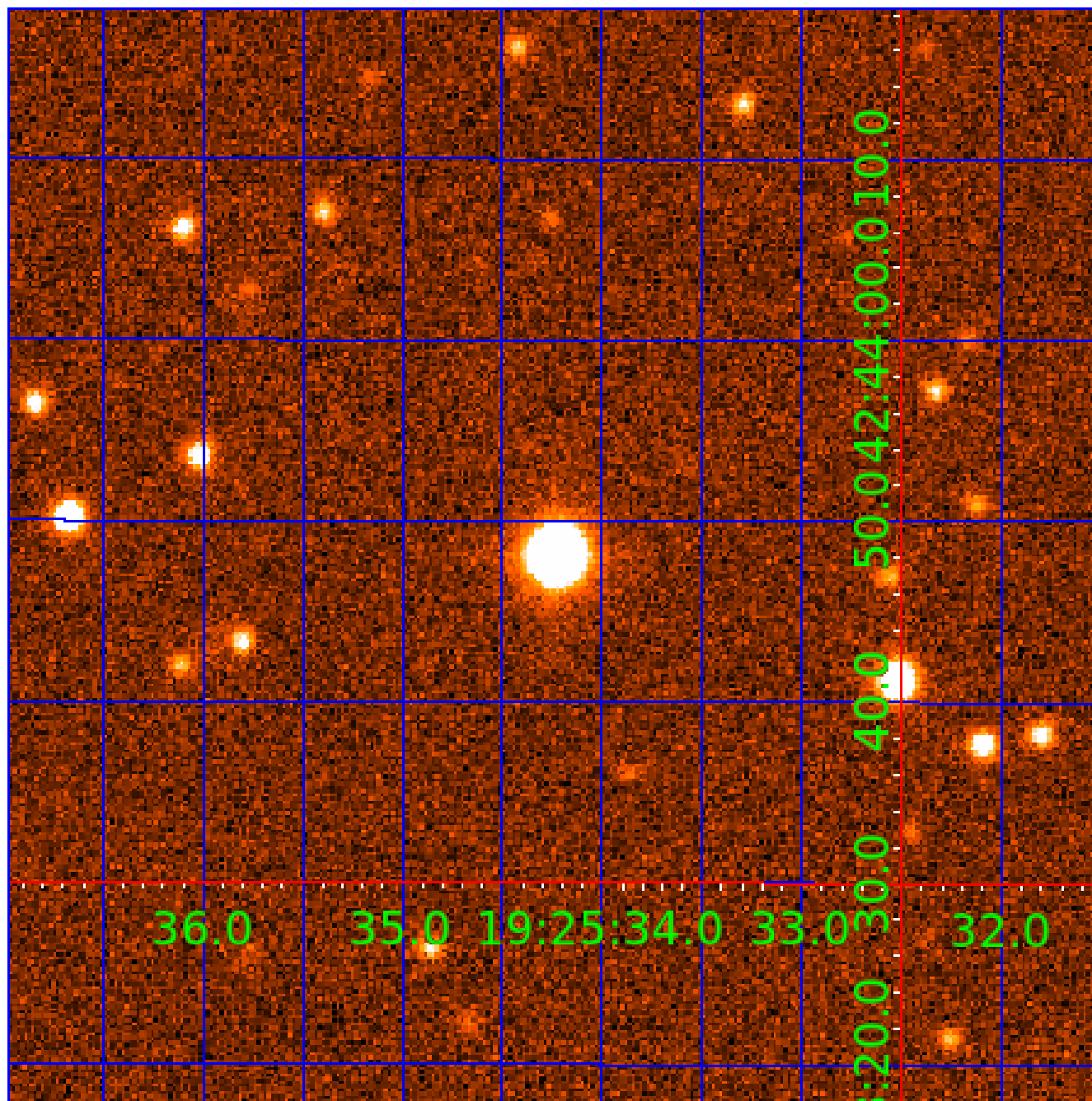


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UKIRT Image

Declination



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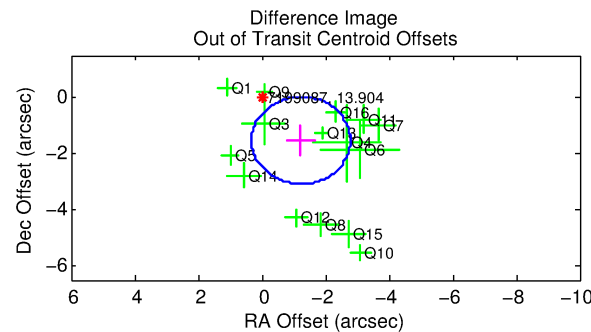
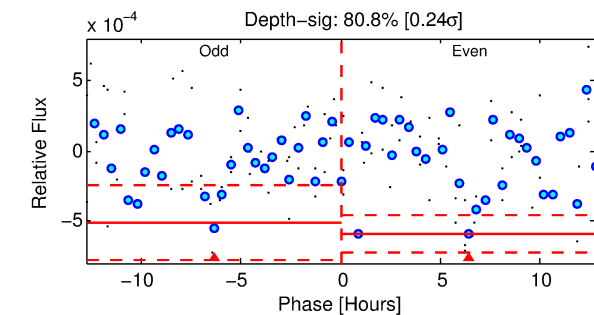
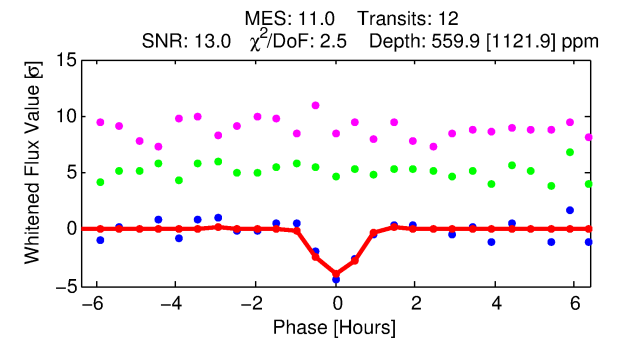
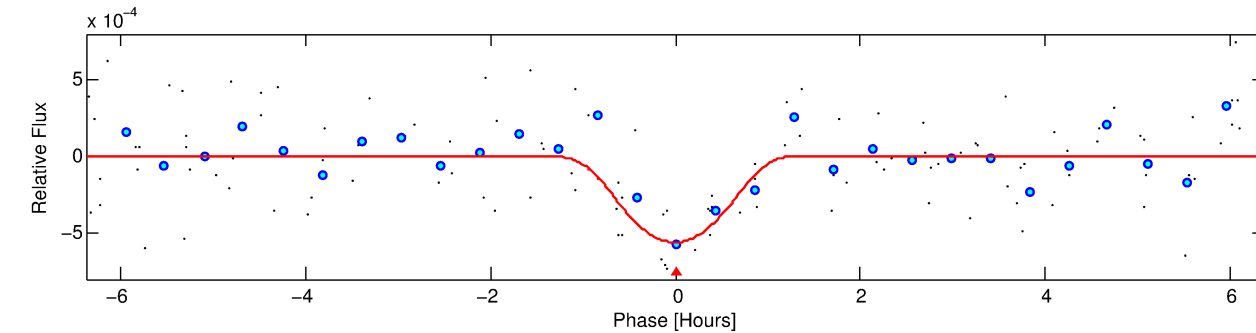
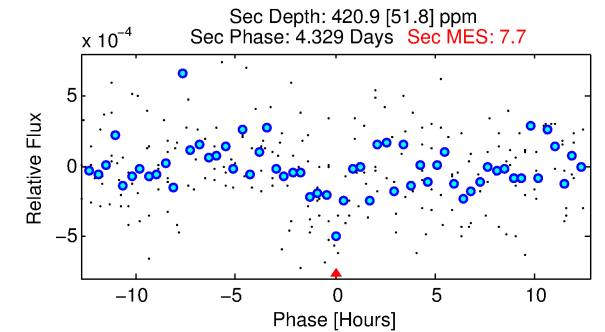
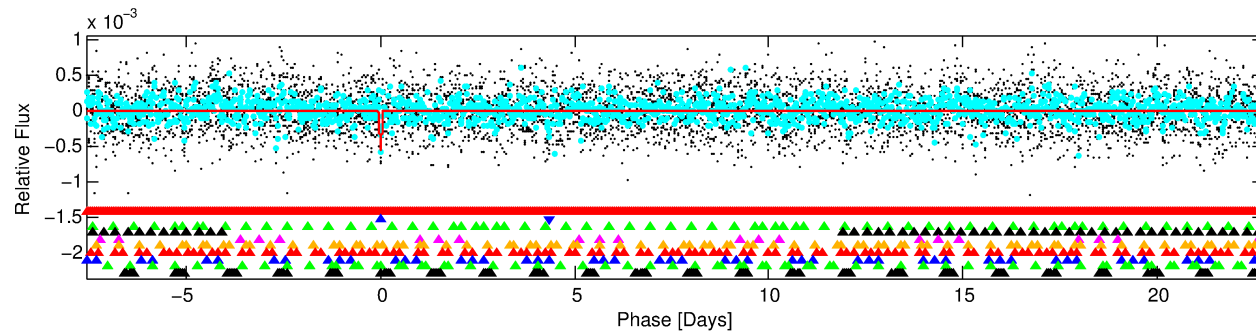
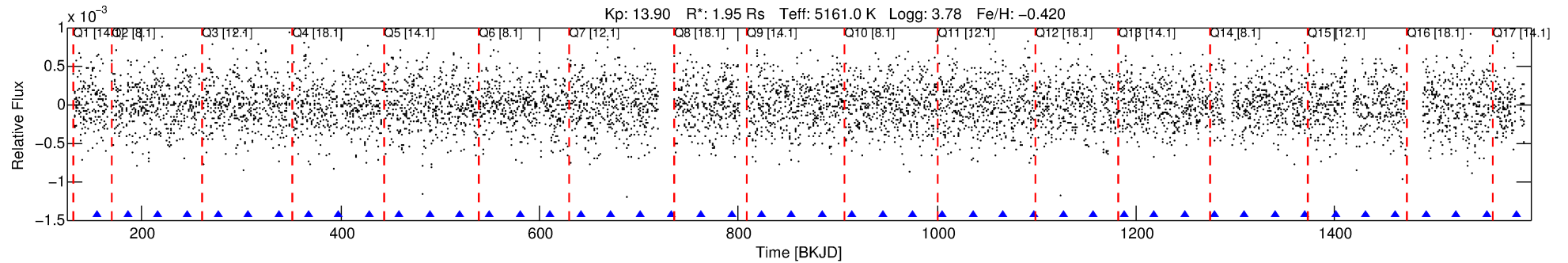
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 007199087-02

No Significant Match Found

# DV One-Page Summary

KIC: 7199087 Candidate: 2 of 10 Period: 30.373 d



## DV Fit Results:

Period = 30.37289 [0.00027] d  
Epoch = 155.4722 [0.0067] BKJD  
Rp/R\* = 0.0446 [0.3944]  
a/R\* = 33.00 [73.64]  
b = 1.00 [0.62]  
Seff = 74.85 [98.64]  
Teff = 750 [247] K  
Rp = 9.51 [84.22] Re  
a = 0.1799 [0.1343] AU  
Ag = 82.89 [1468.95] [0.06 $\sigma$ ]  
Teffp = 3499 [15460] K [0.18 $\sigma$ ]

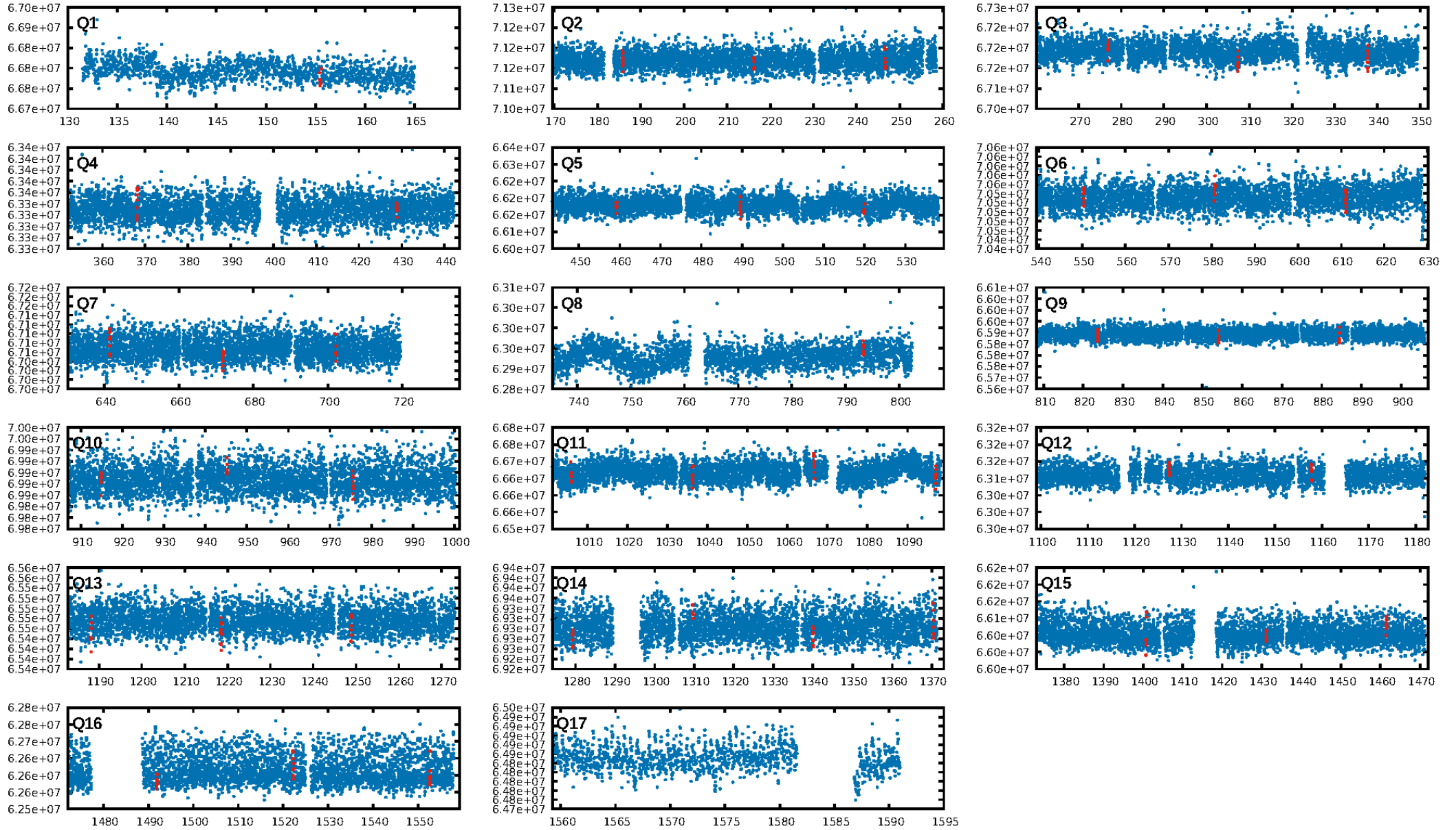
## DV Diagnostic Results:

ShortPeriod-sig: 99.6% [2.85 $\sigma$ ]  
LongPeriod-sig: 100.0% [243.81 $\sigma$ ]  
ModelChiSquare2-sig: 0.0%  
ModelChiSquareGof-sig: 87.7%  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [12/12]  
GhostDiagnostic-chr: 3.027  
Centroid-sig: 0.3%  
Centroid-so: 0.837 arcsec [2.09 $\sigma$ ]  
OotOffset-rm: 1.965 arcsec [3.80 $\sigma$ ]  
KicOffset-rm: 1.933 arcsec [3.70 $\sigma$ ]  
OotOffset-st: 3/4/4/4 [15]  
KicOffset-st: 3/4/4/4 [15]  
DiffImageQuality-fgm: 0.40 [6/15]  
DiffImageOverlap-fno: 0.00 [0/16]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 15:41:28 Z

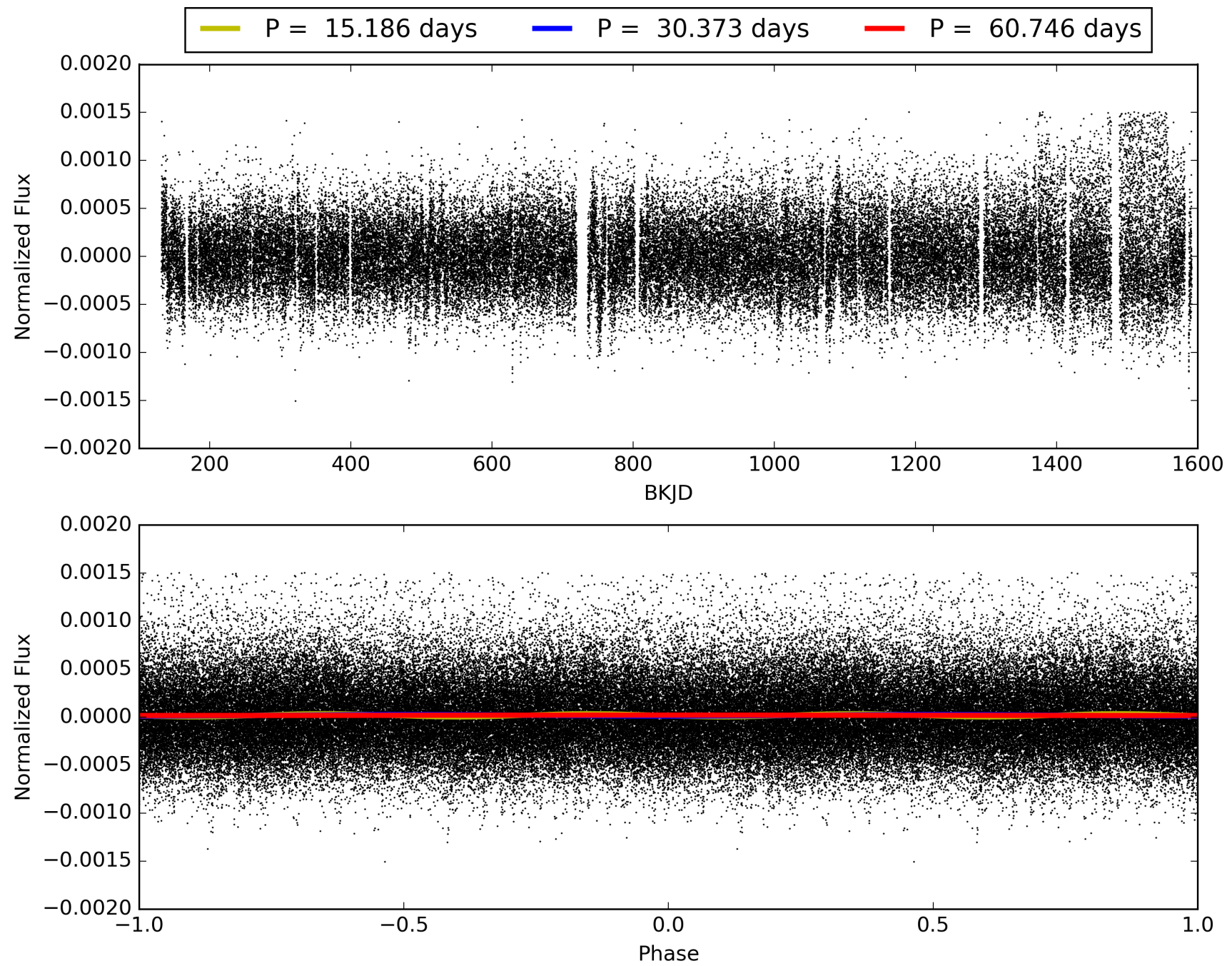
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 007199087-02, PDC Light Curves



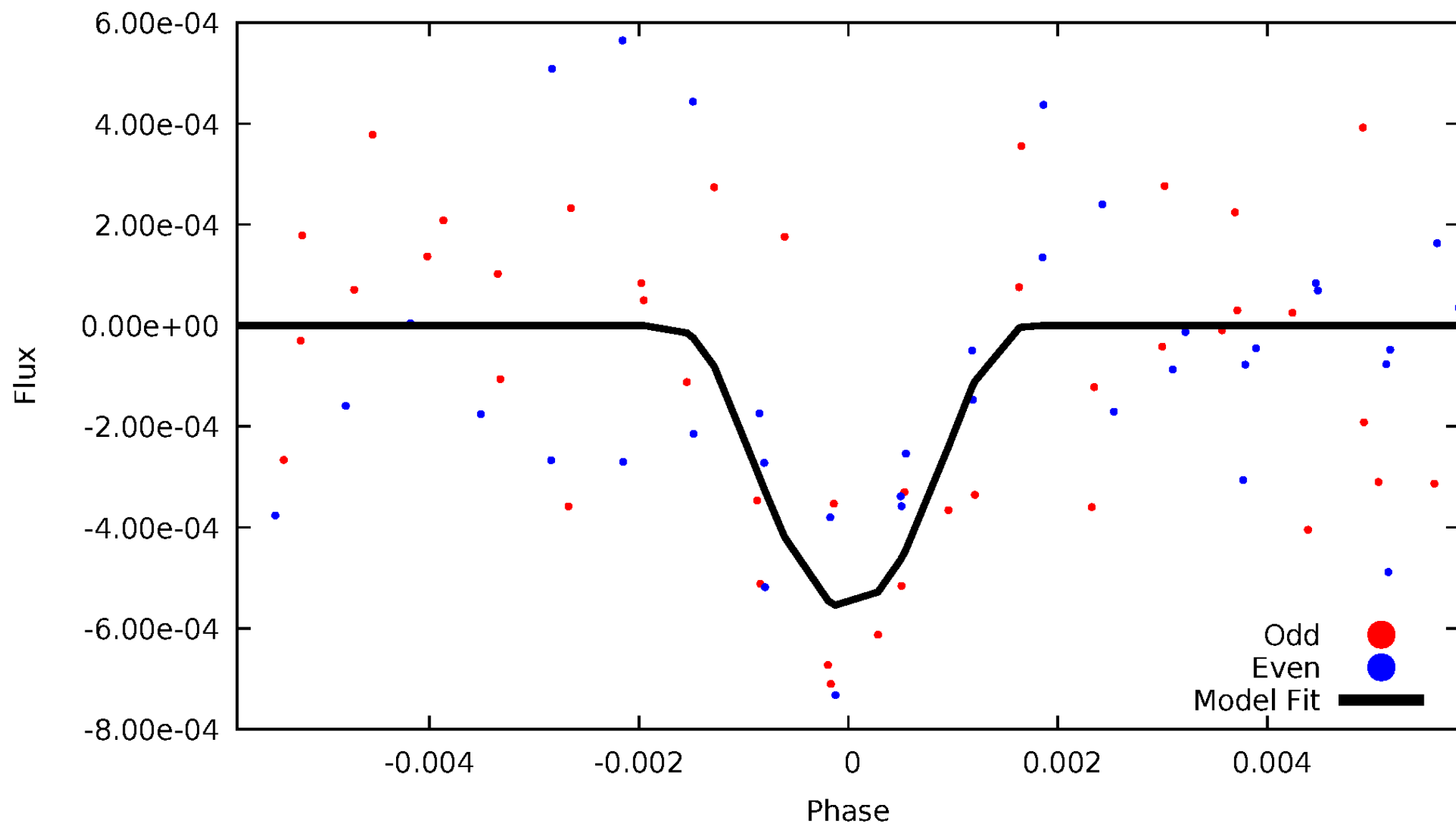


# TCE 007199087-02



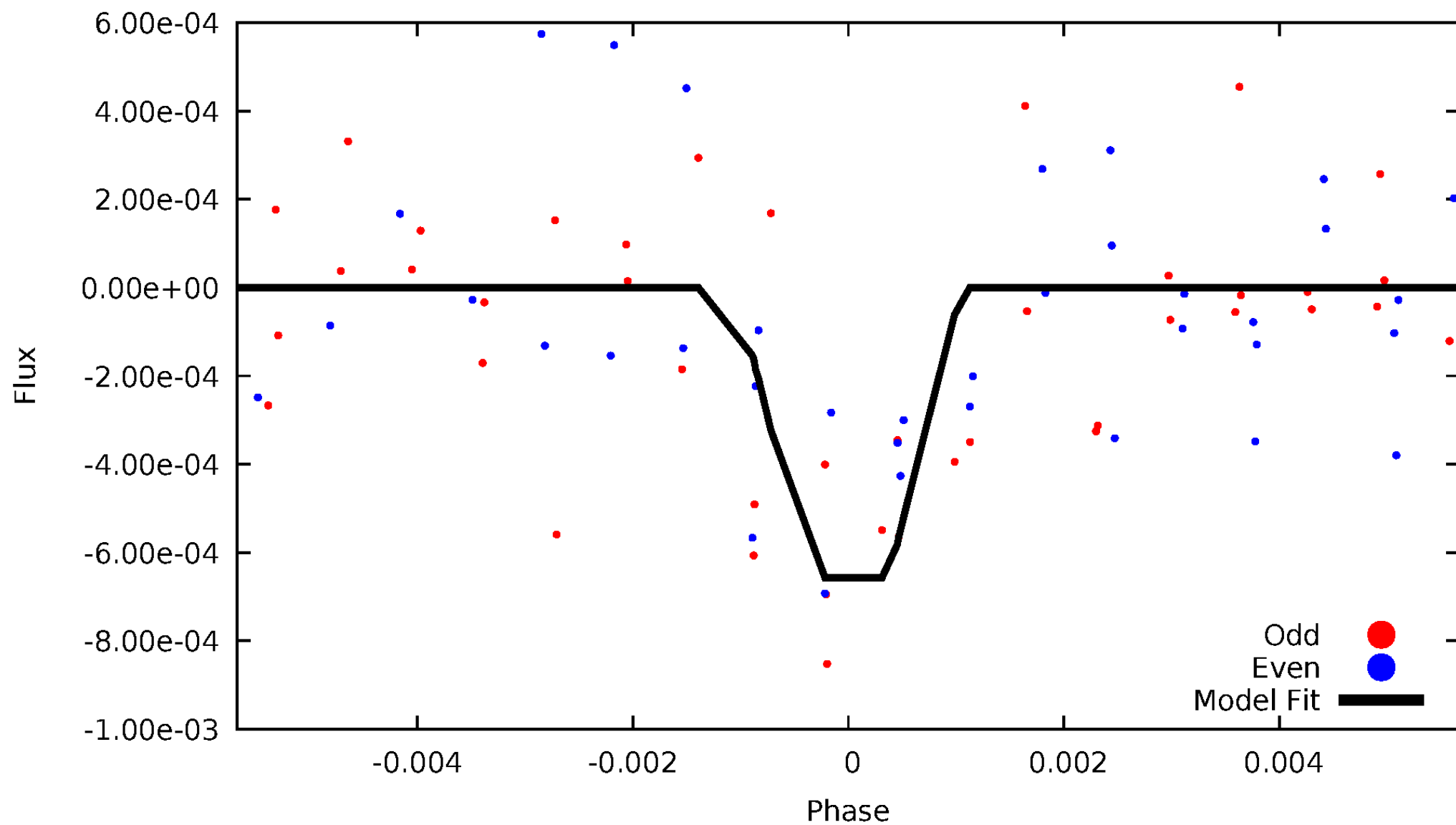
# DV Odd/Even

TCE 007199087-02



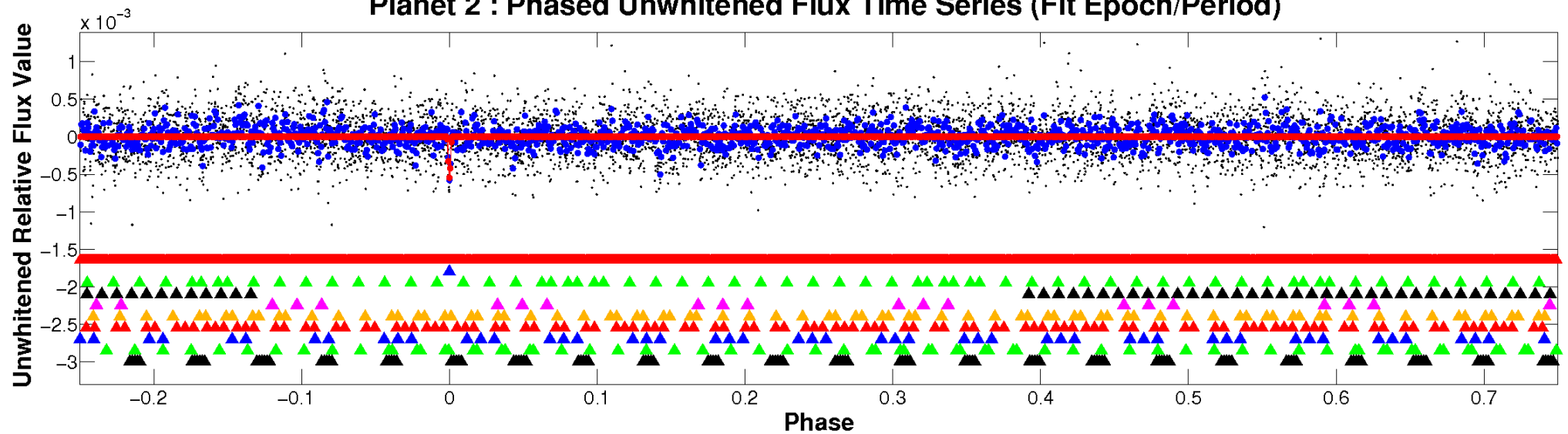
# ALT Odd/Even

TCE 007199087-02

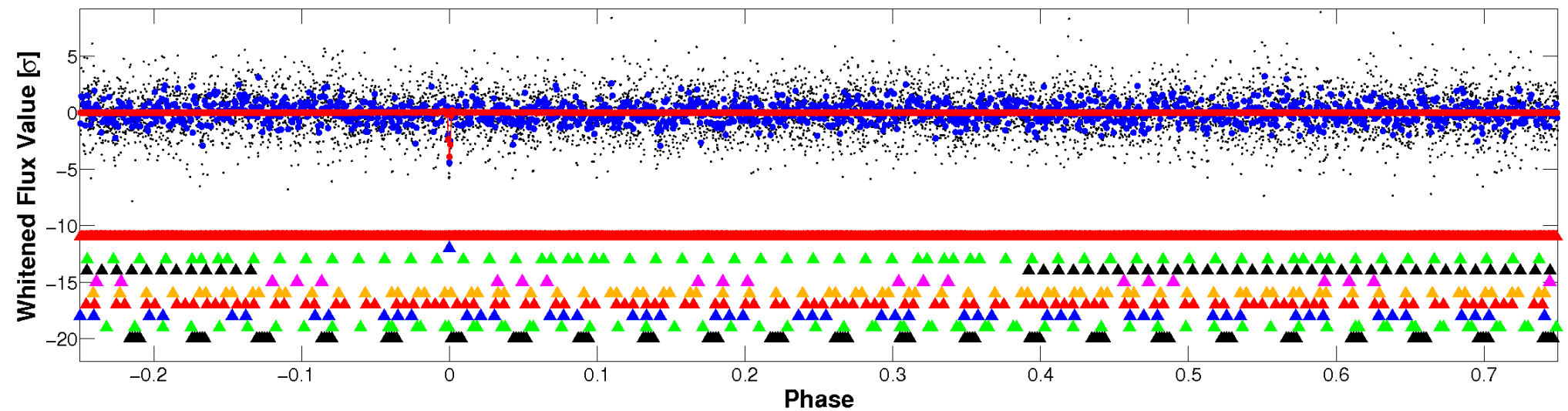


# Non-Whitened Vs. Whitened Light Curve

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

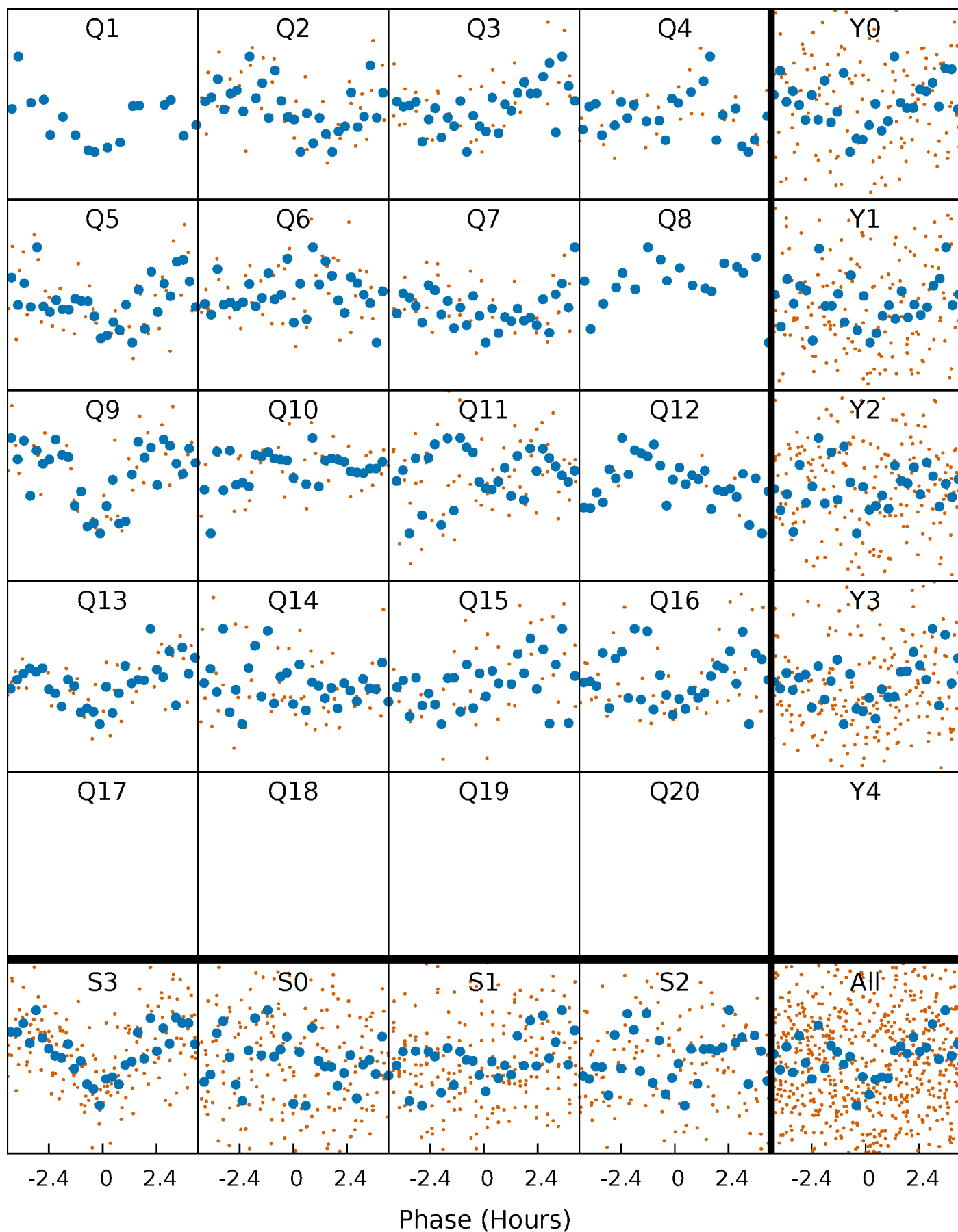


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



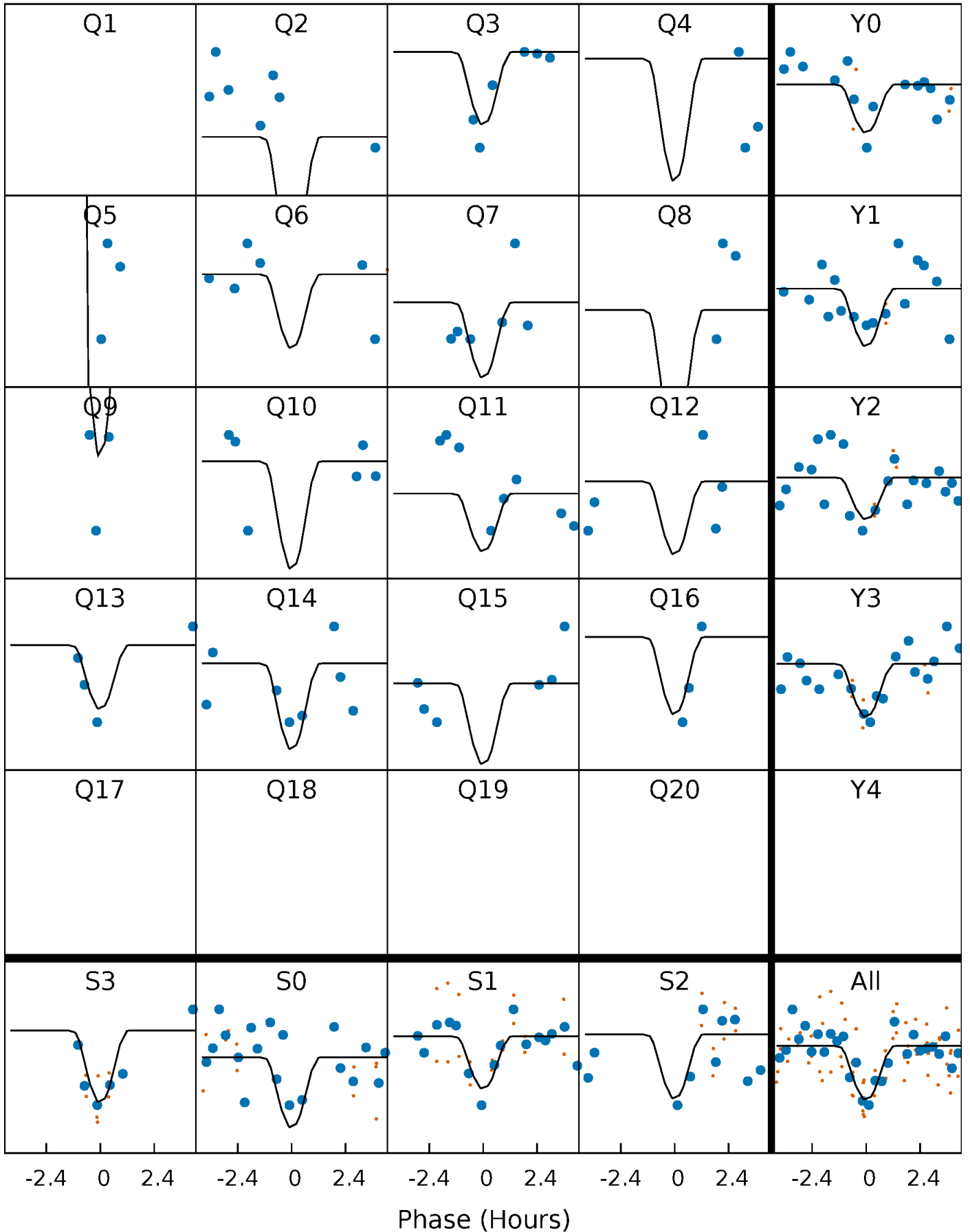
# PDC Quarter-Phased Transit Curves

TCE 007199087-02   P= 30.372888 Days    $T_0=155.472228$  (BKJD)



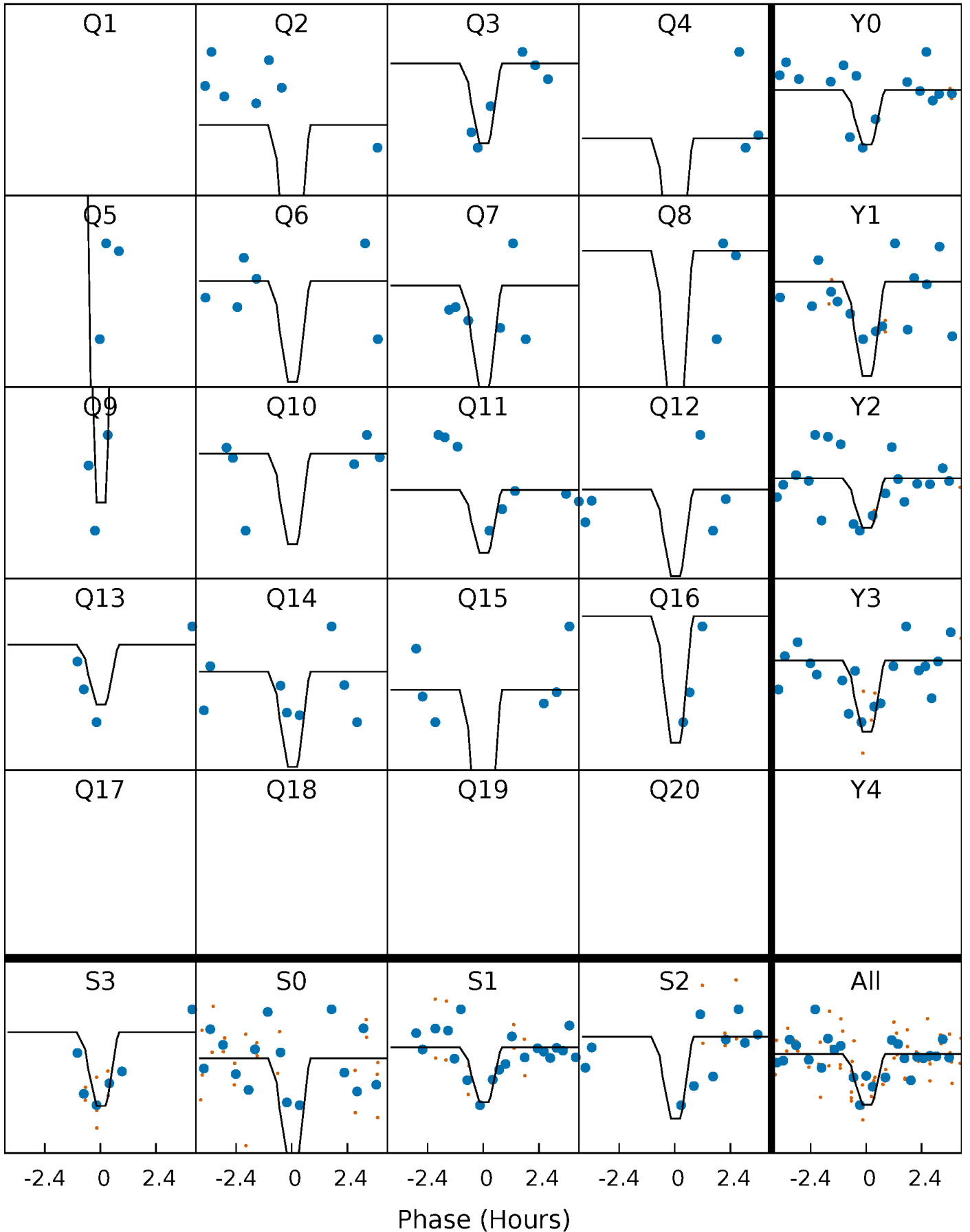
# DV Quarter-Phased Transit Curves

TCE 007199087-02   P= 30.372888 Days    $T_0=155.472228$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

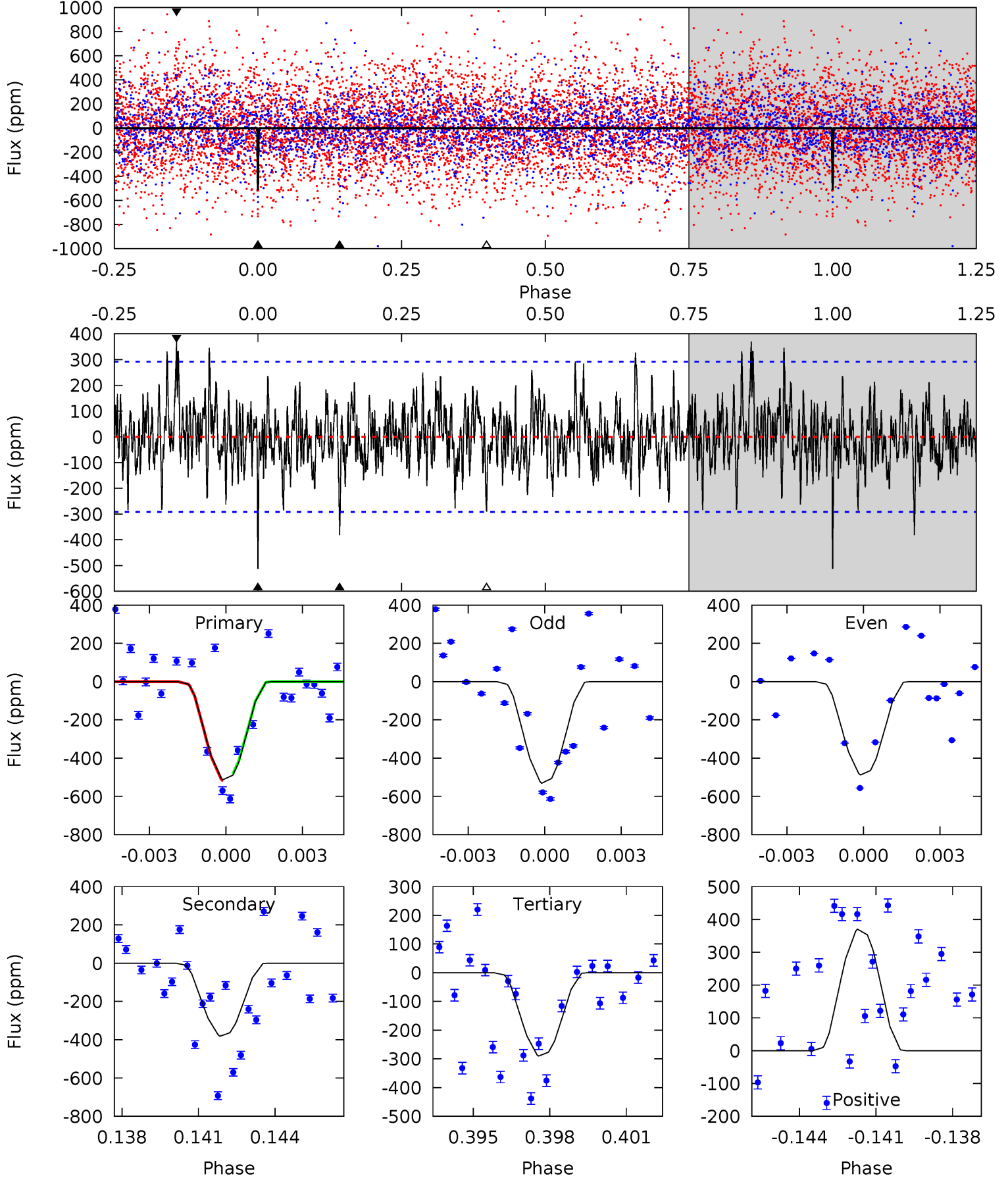
TCE 007199087-02 P= 30.372792 Days  $T_0=155.475662$  (BKJD)



# DV Model-Shift Uniqueness Test

007199087-02,  $P = 30.372888$  Days,  $E = 125.099340$  Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.22	6.86	5.21	6.66	5.24	2.95	1.76	4.01	2.56	1.64	0.20	0.38	0.93	0.42	0.33

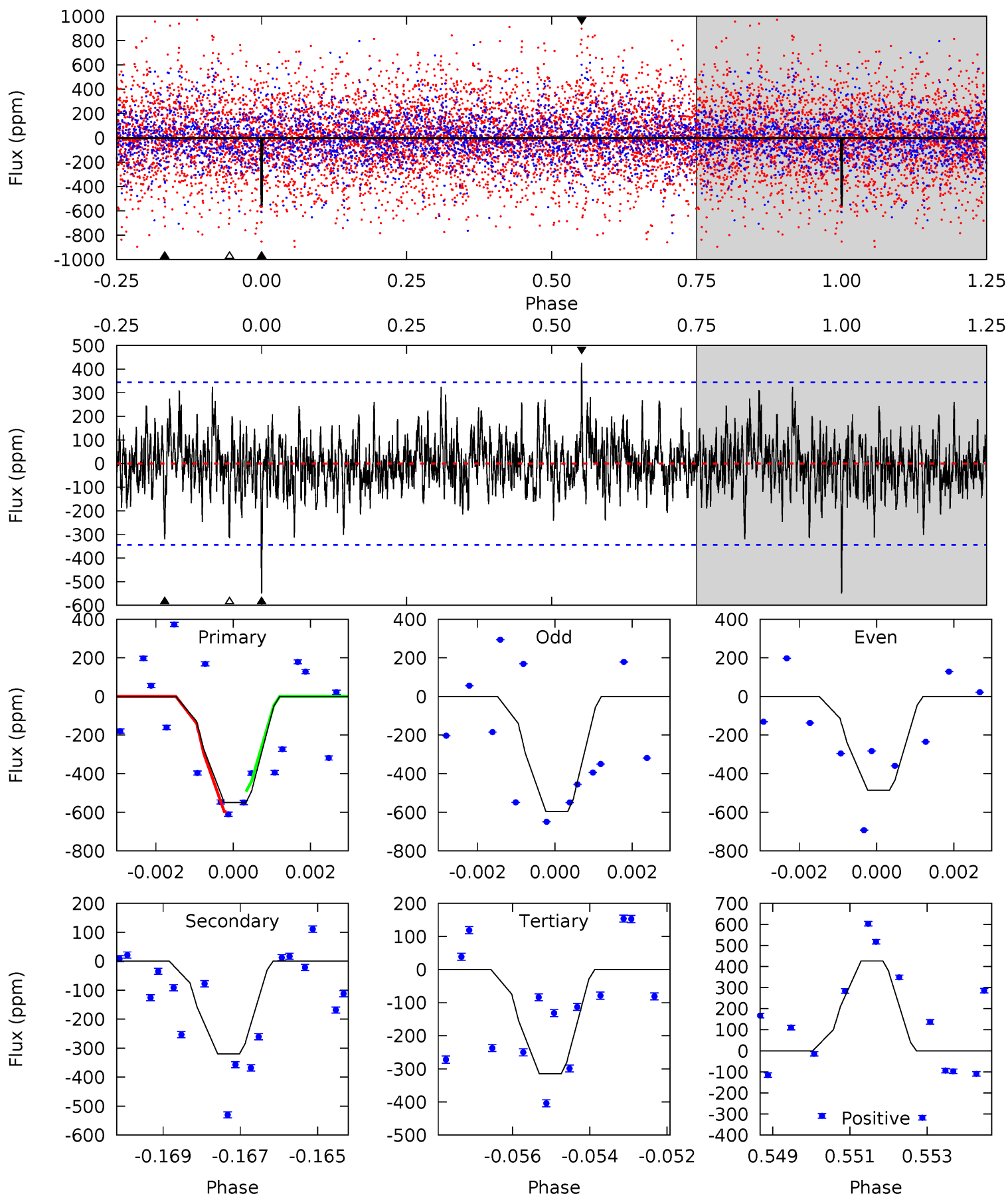




# Alt Model-Shift Uniqueness Test

007199087-02, P = 30.372792 Days, E = 125.102870 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	4.97	4.89	6.62	5.34	3.11	1.45	3.64	1.91	0.07	-1.65	0.86	0.99	0.44	0.79



### Stellar Parameters For KIC 007199087

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5161^{+139}_{-154}$	$3.782^{+0.812}_{-0.348}$	$-0.420^{+0.300}_{-0.300}$	$1.952^{+1.204}_{-1.204}$	$0.842^{+0.178}_{-0.145}$	$0.160^{+3.448}_{-0.111}$
	+3%/-3%	+21%/-9%	+71%/-71%	+62%/-62%	+21%/-17%	+2162%/-70%
Source	PHO1	KIC0	KIC0	DSEP		

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

### Secondary Eclipse Parameters for KIC 007199087-02 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-381 \pm 56$	$53.94^{+70.15}_{-37.68}$	$1030^{+165}_{-187}$	$2233^{+817}_{-505}$	$2.448^{+25.130}_{-2.002}$
Alt.	$-320 \pm 64$	$52.14^{+64.08}_{-36.23}$	$1023^{+160}_{-188}$	$2207^{+756}_{-505}$	$2.064^{+22.758}_{-1.655}$

$T_{max}$  = 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

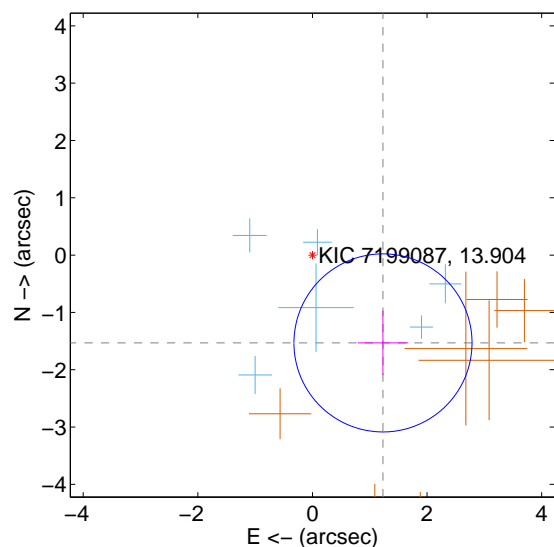
Supplemental centroid analysis for 007199087-02. Kepler magnitude: 13.90. Transit SNR 12.95

There are 6 quarters with good PRF difference image offsets

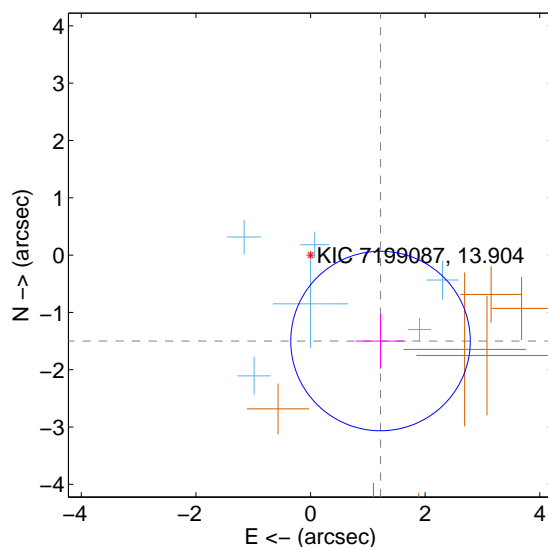
The direct PRF centroid is offset from the target star catalog position by about 0.07 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.965 \pm 0.518$	3.80	$-1.231 \pm 0.438$	$-1.532 \pm 0.563$
PRF-fit source offset from KIC position	$1.933 \pm 0.522$	3.70	$-1.221 \pm 0.432$	$-1.499 \pm 0.481$
photometric centroid source offset	$0.84 \pm 0.40$	2.09	$-0.42 \pm 0.41$	$0.72 \pm 0.39$

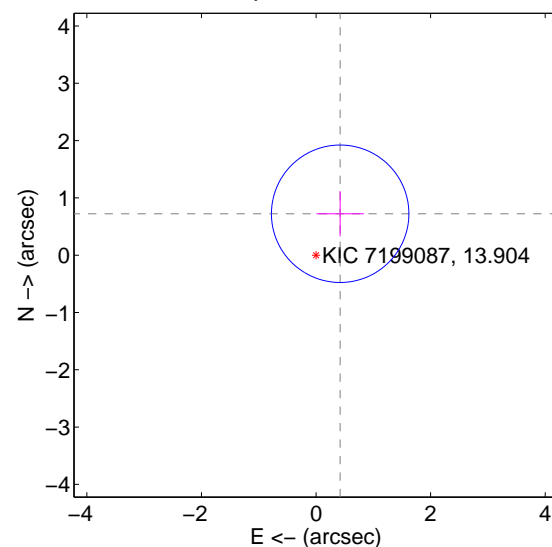
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

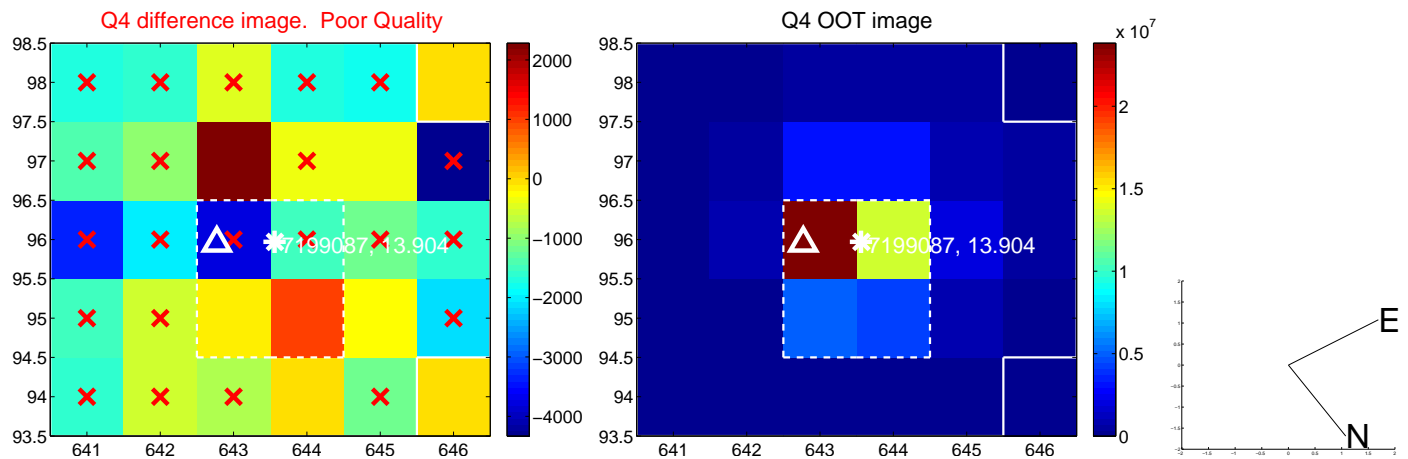
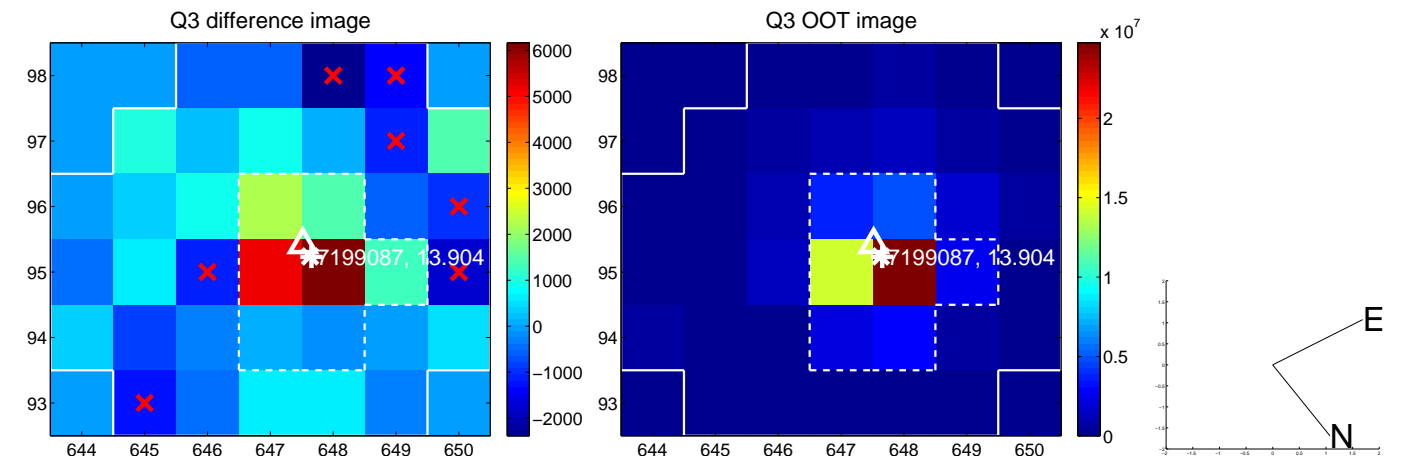
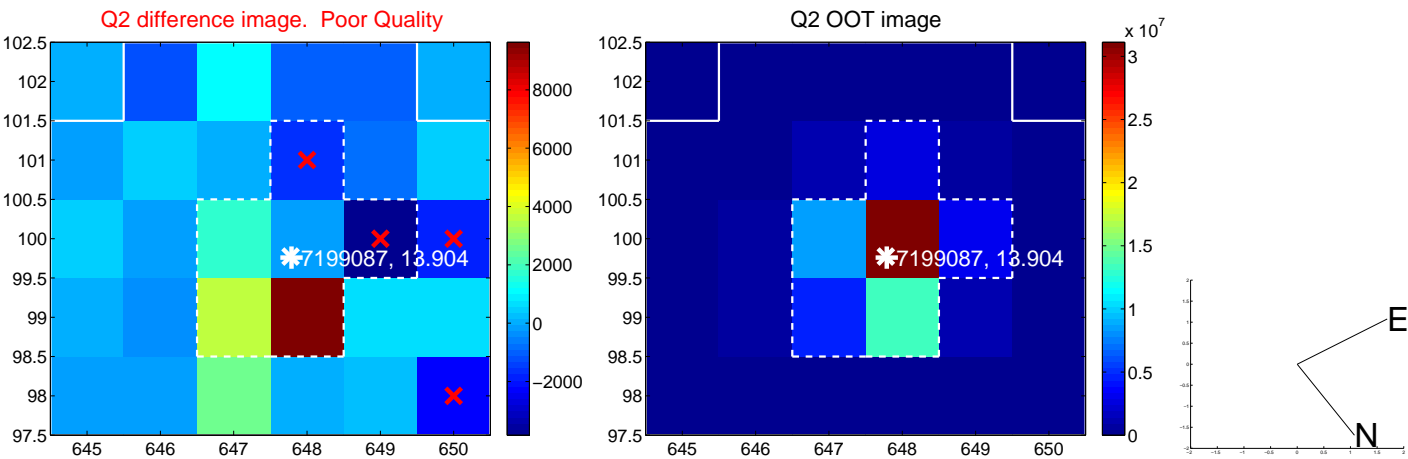
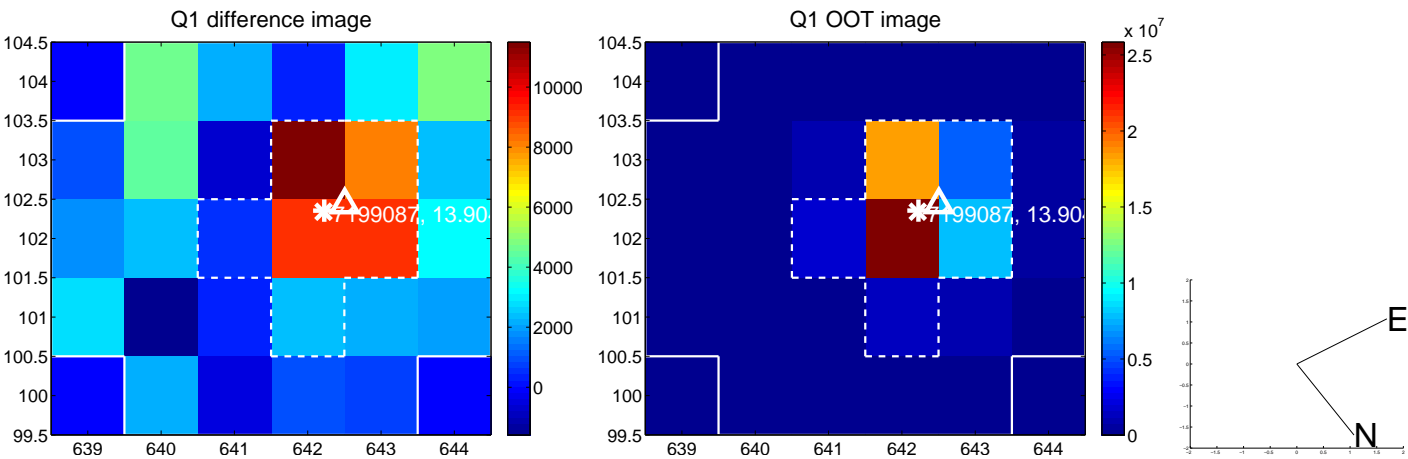


offset from photometric centroids

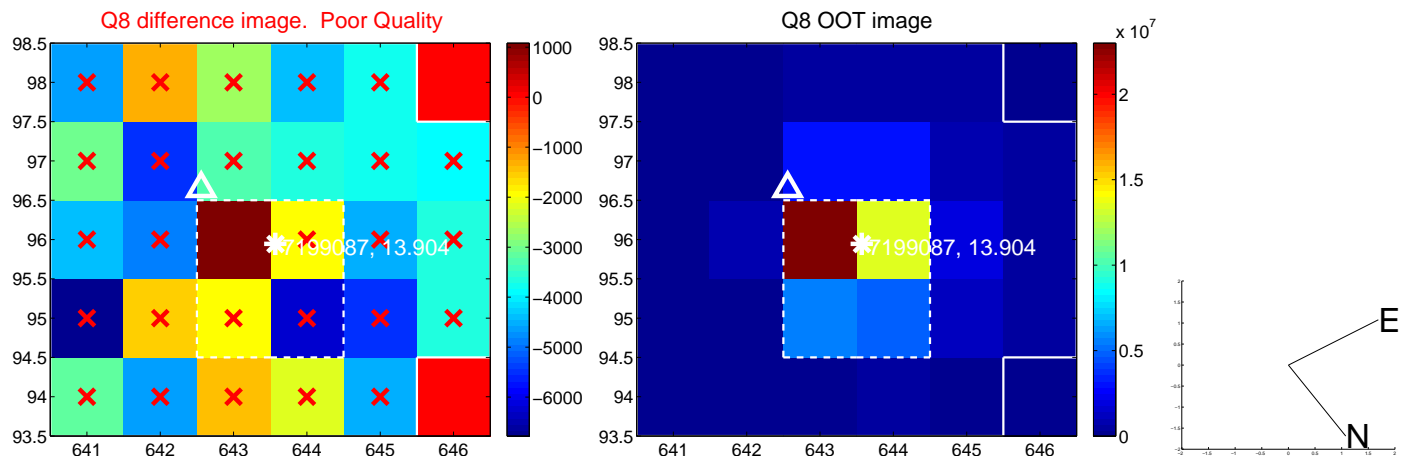
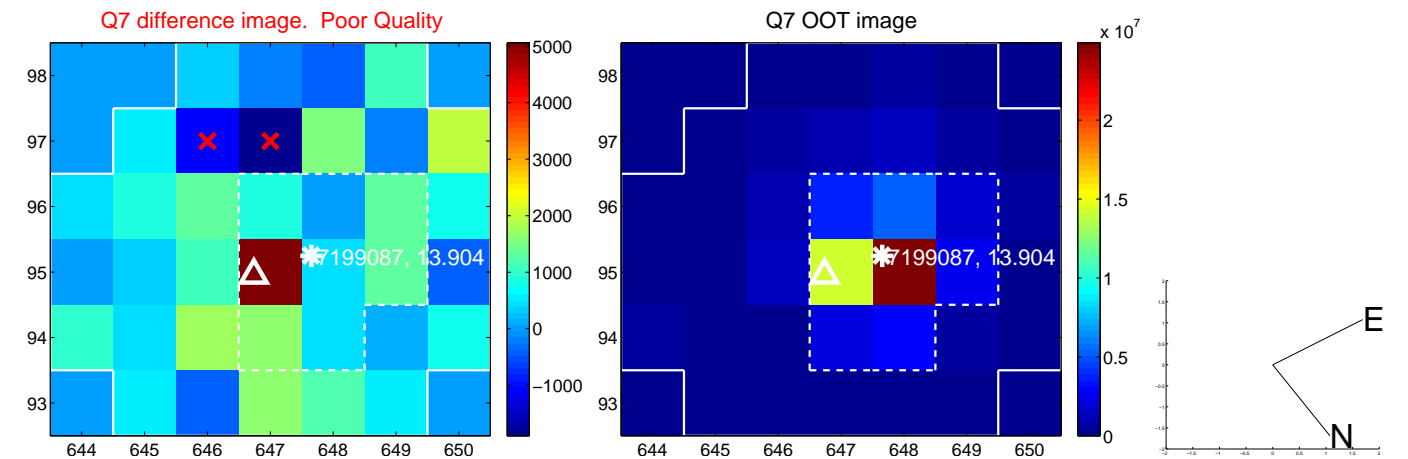
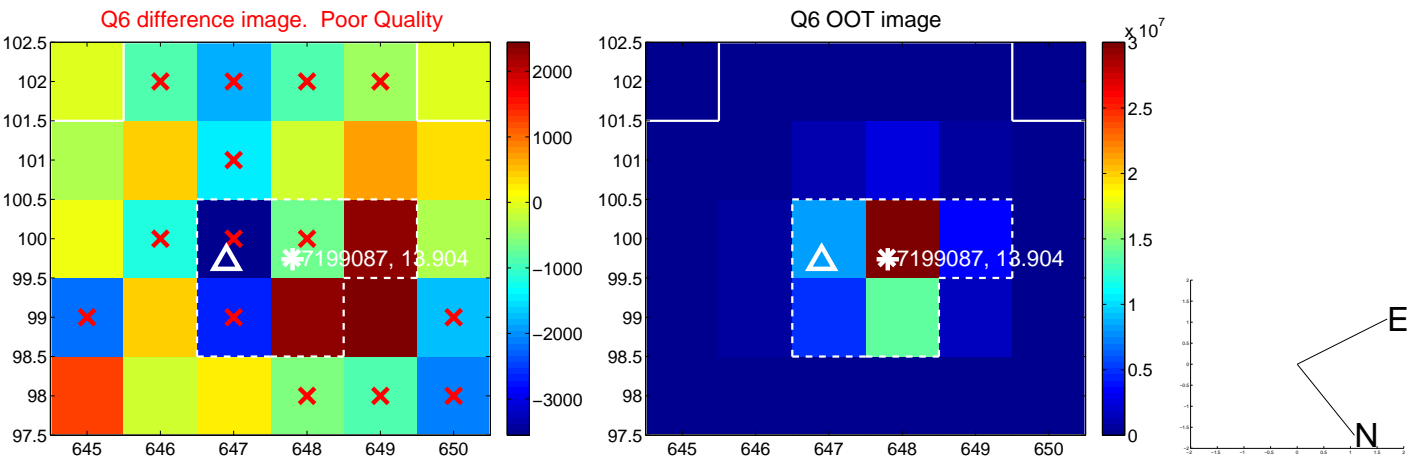
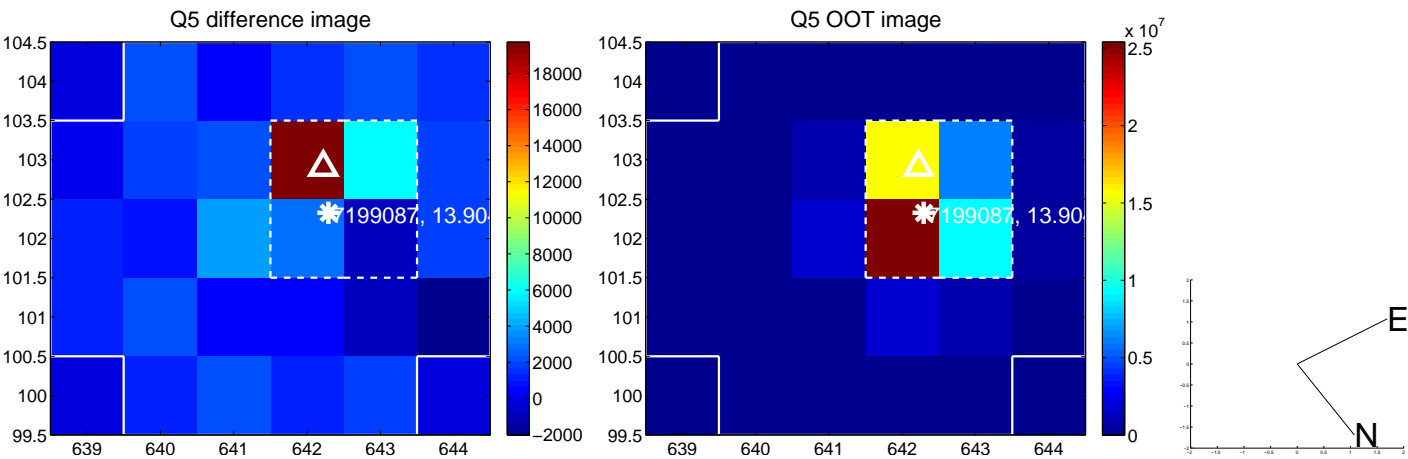


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

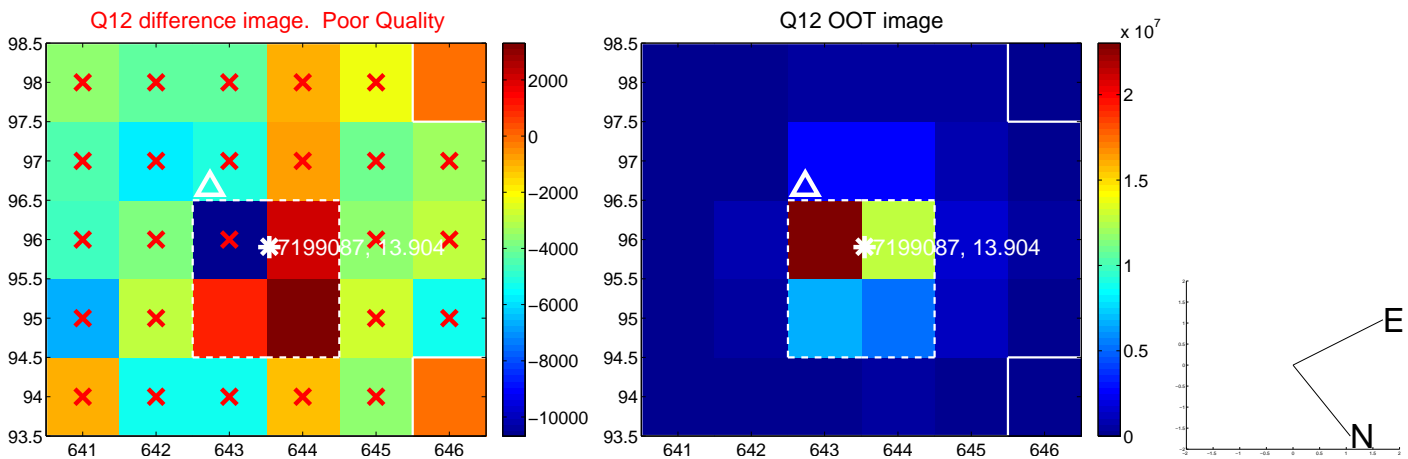
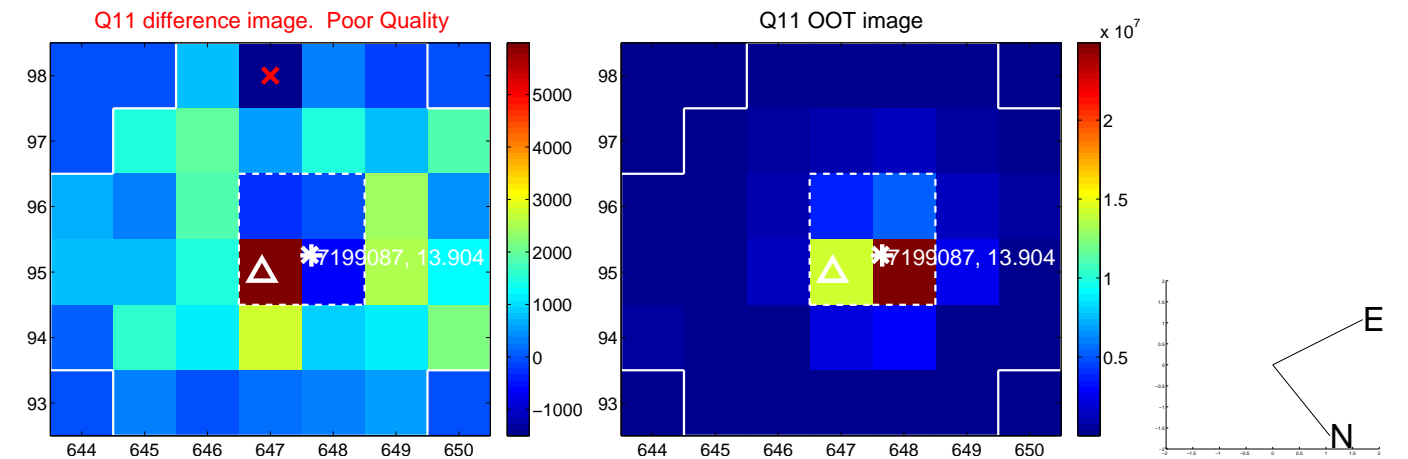
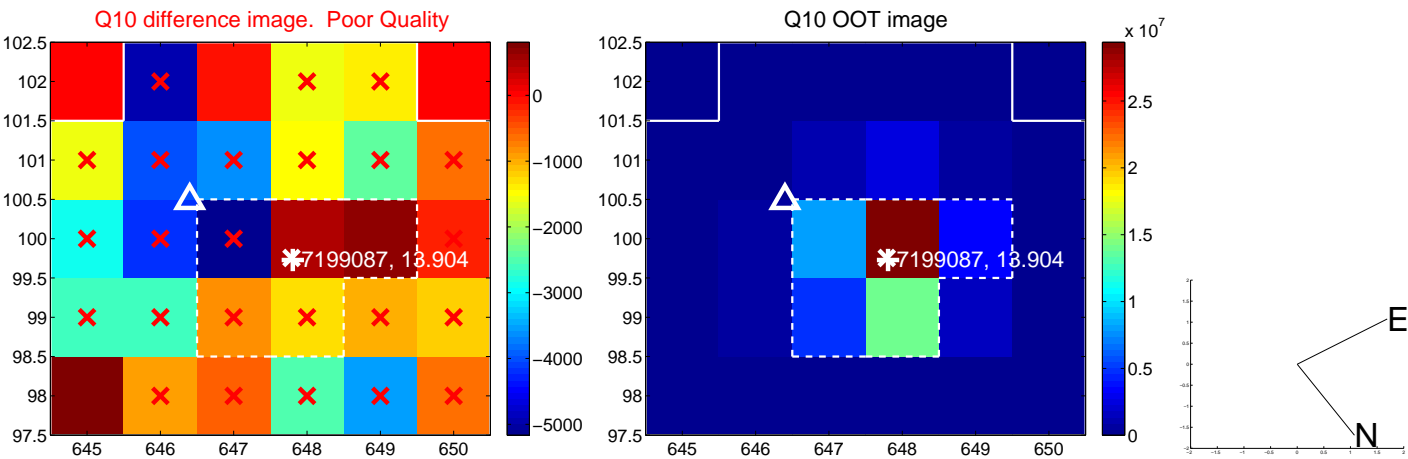
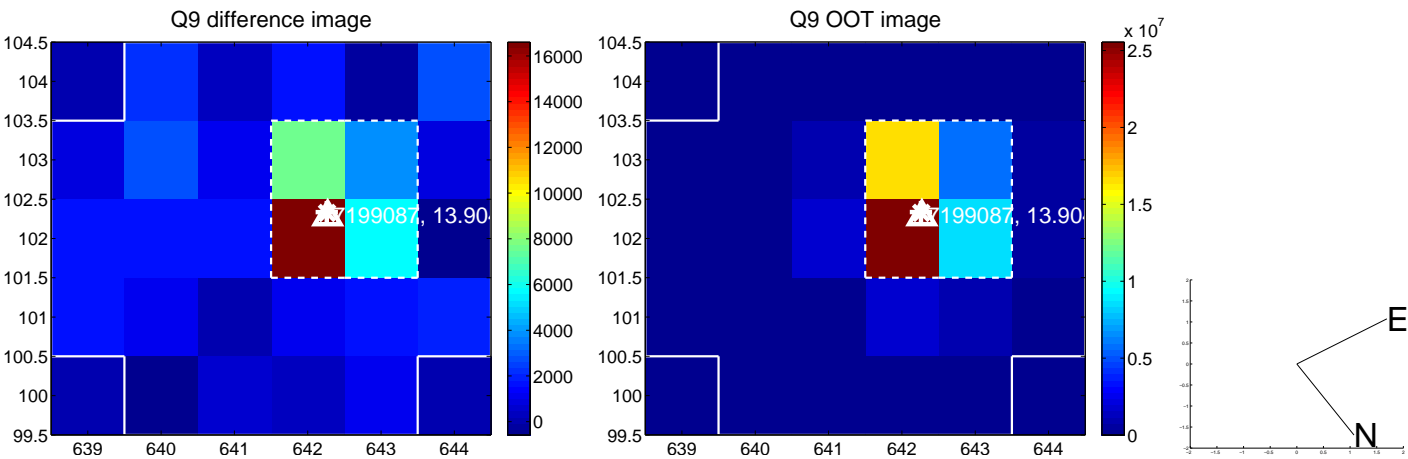
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

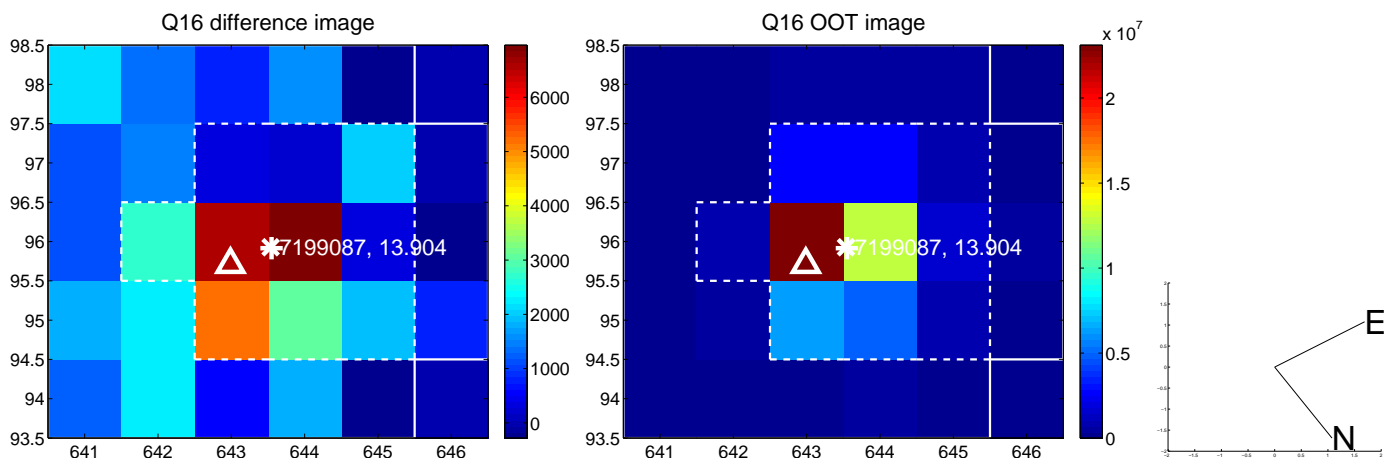
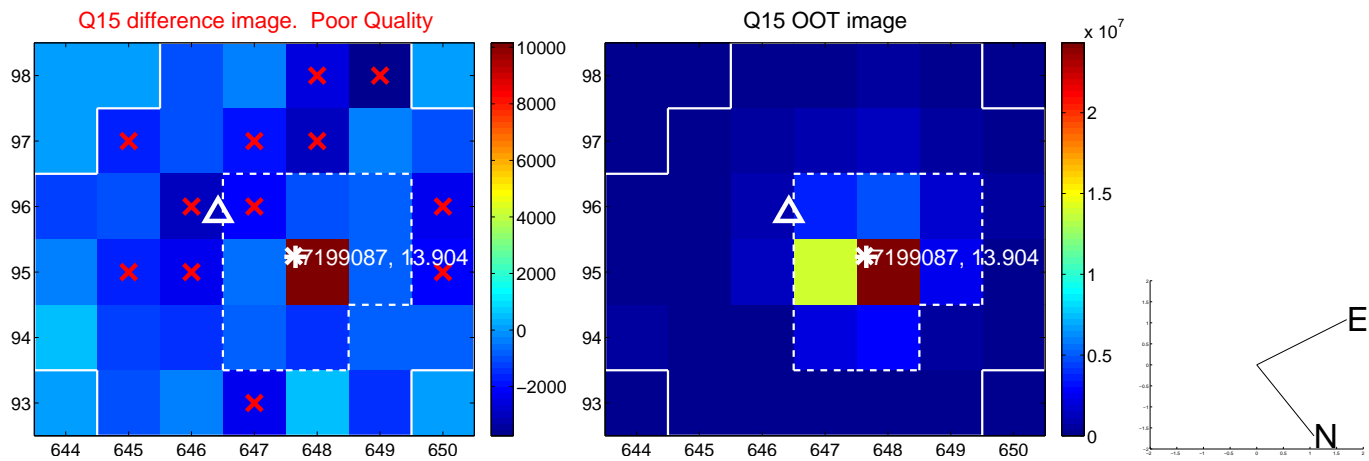
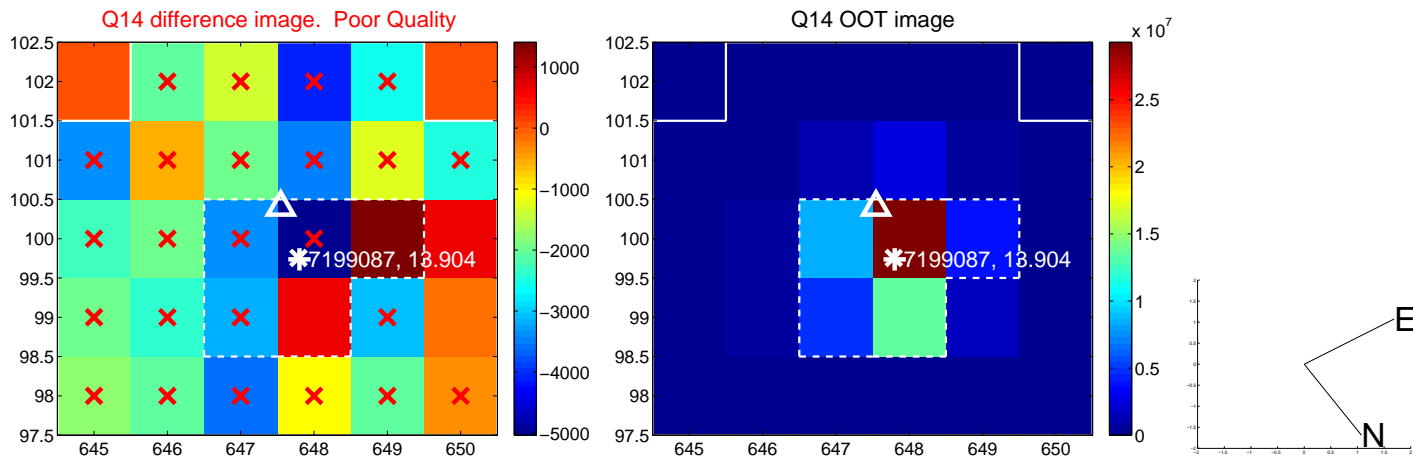
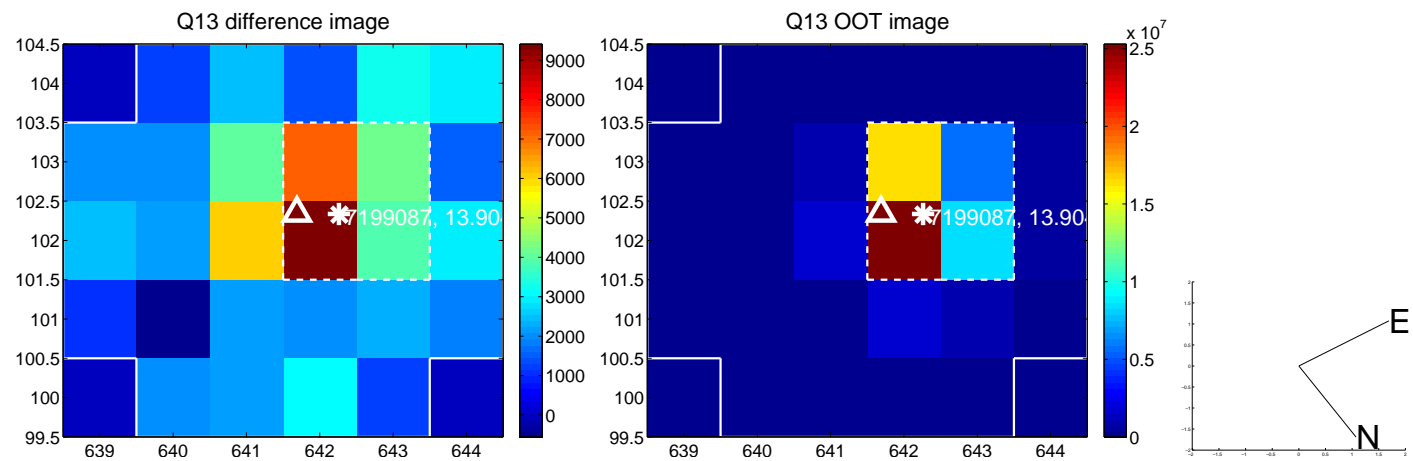


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

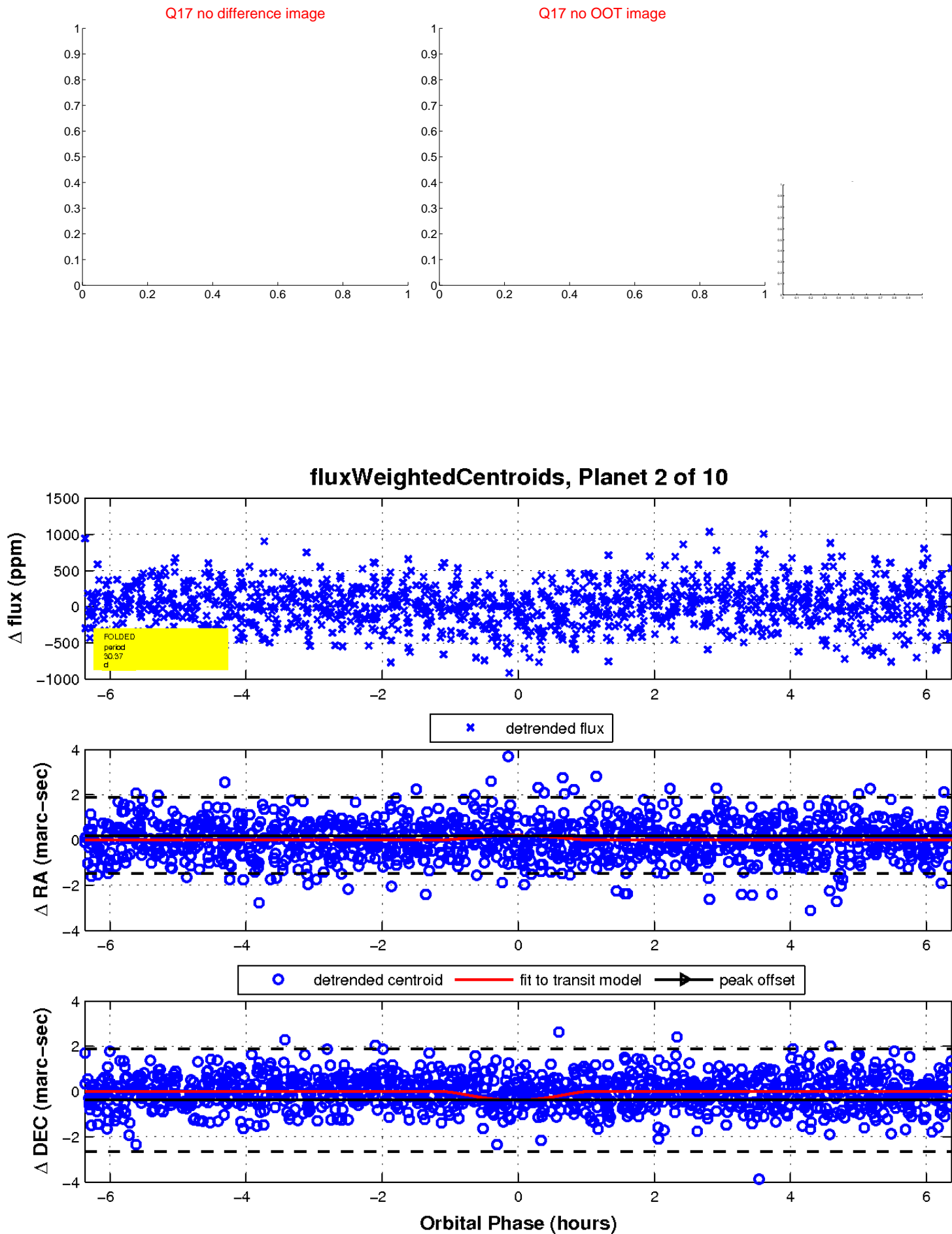




white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

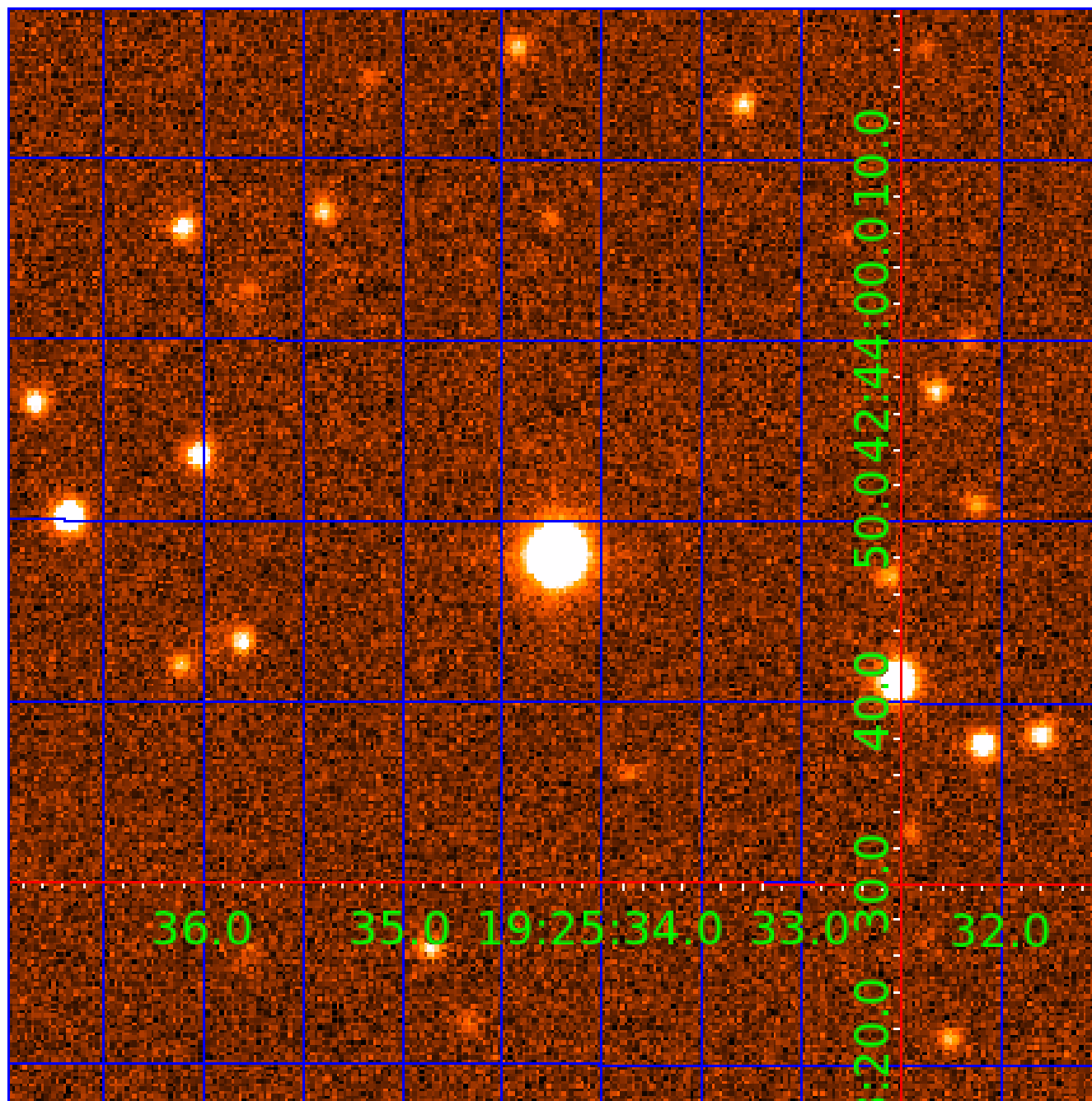


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



# UKIRT Image

Declination



## KIC 007199087

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007199087-01	OBS	No	0.566789	131.670402	8.5	3.882	14.8	2.7	1.95	5161	0.56	15121.24
007199087-02	OBS	No	30.372888	155.472228	559.9	2.126	11.0	13.0	1.95	5161	9.51	74.85
007199087-03	OBS	No	22.645018	135.806898	358.7	5.851	12.1	11.4	1.95	5161	7.65	110.71
007199087-04	OBS	No	30.066788	151.392002	551.6	1.456	11.8	13.4	1.95	5161	4.56	75.86
007199087-05	OBS	No	69.496219	195.078789	535.3	3.211	10.0	10.7	1.95	5161	5.21	24.82
007199087-06	OBS	No	17.433948	136.980650	435.8	0.982	10.6	9.8	1.95	5161	4.96	156.90
007199087-07	OBS	No	12.928268	142.702231	321.2	1.694	9.9	10.2	1.95	5161	3.77	233.76
007199087-08	OBS	No	28.669881	148.165240	606.7	0.987	9.2	8.4	1.95	5161	5.76	80.83
007199087-09	OBS	No	20.441918	143.787734	418.3	1.326	10.7	9.8	1.95	5161	4.12	126.90
007199087-10	OBS	No	11.882767	139.895565	291.3	4.500	8.6	-1.0	1.95	5161	3.26	261.57

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007199087-01	OBS	FP	0.00	1	0	1	1	SWEET_NTL—LPP_DV—LPP_ALT—HALO_GHOST—EPHEM_MATCH
007199087-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT
007199087-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
007199087-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
007199087-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
007199087-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
007199087-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
007199087-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV
007199087-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT
007199087-10	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT—CENT_NOFITS

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

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

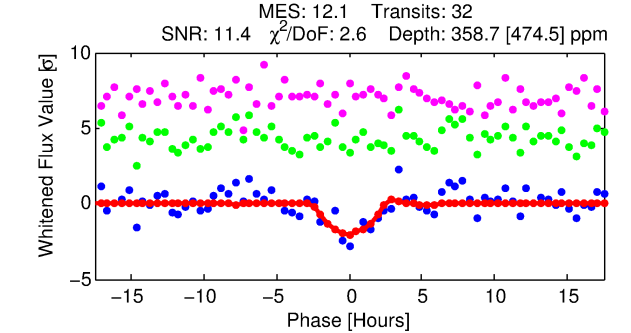
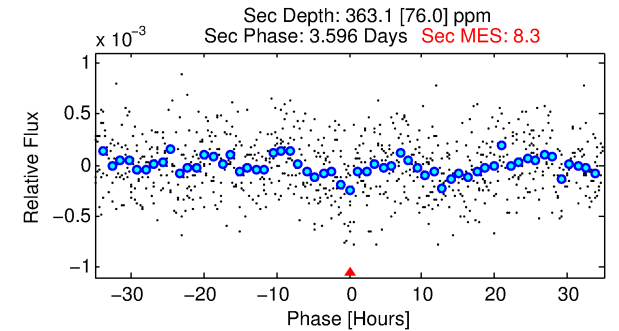
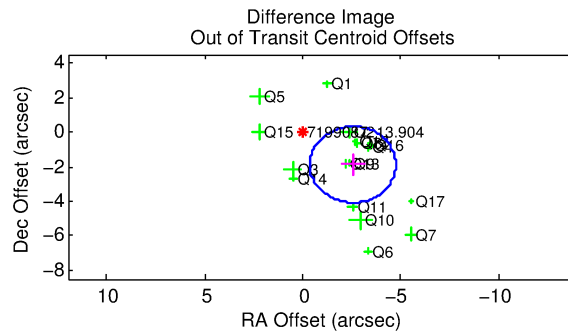
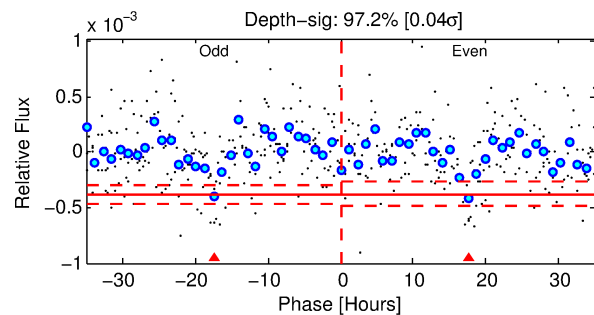
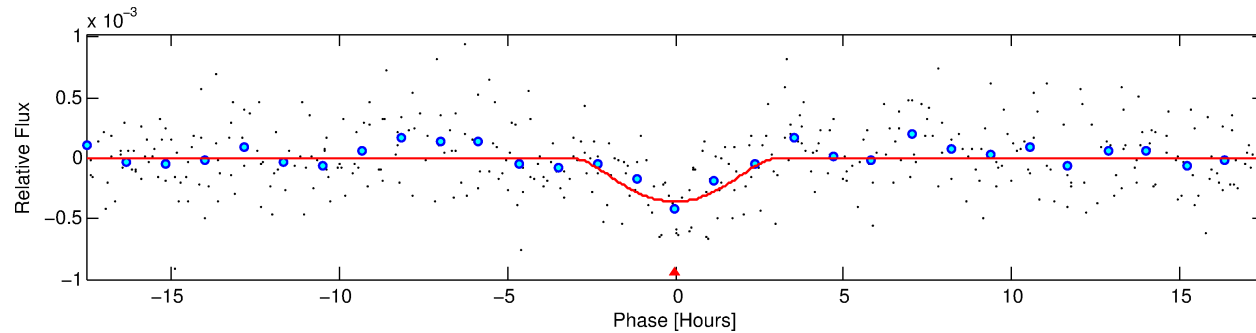
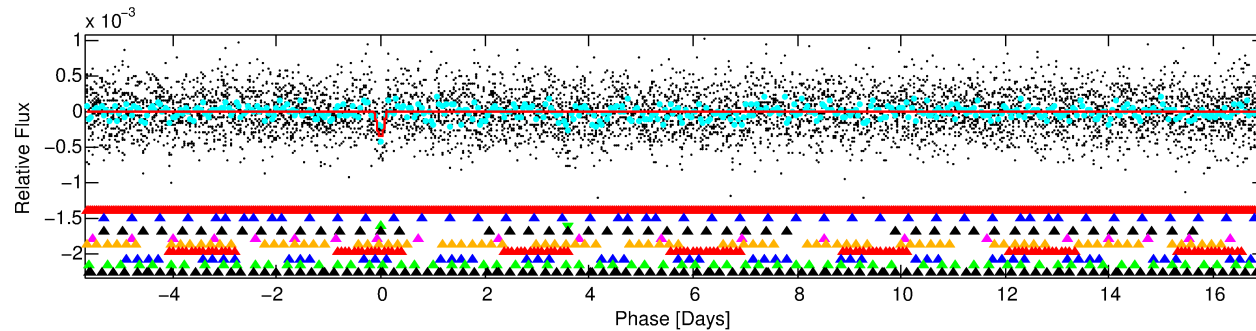
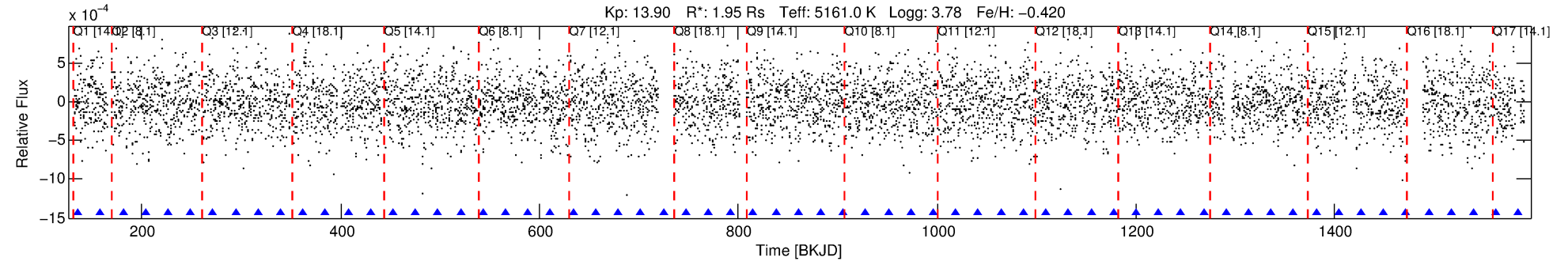
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 007199087-03

No Significant Match Found

# DV One-Page Summary

KIC: 7199087 Candidate: 3 of 10 Period: 22.645 d



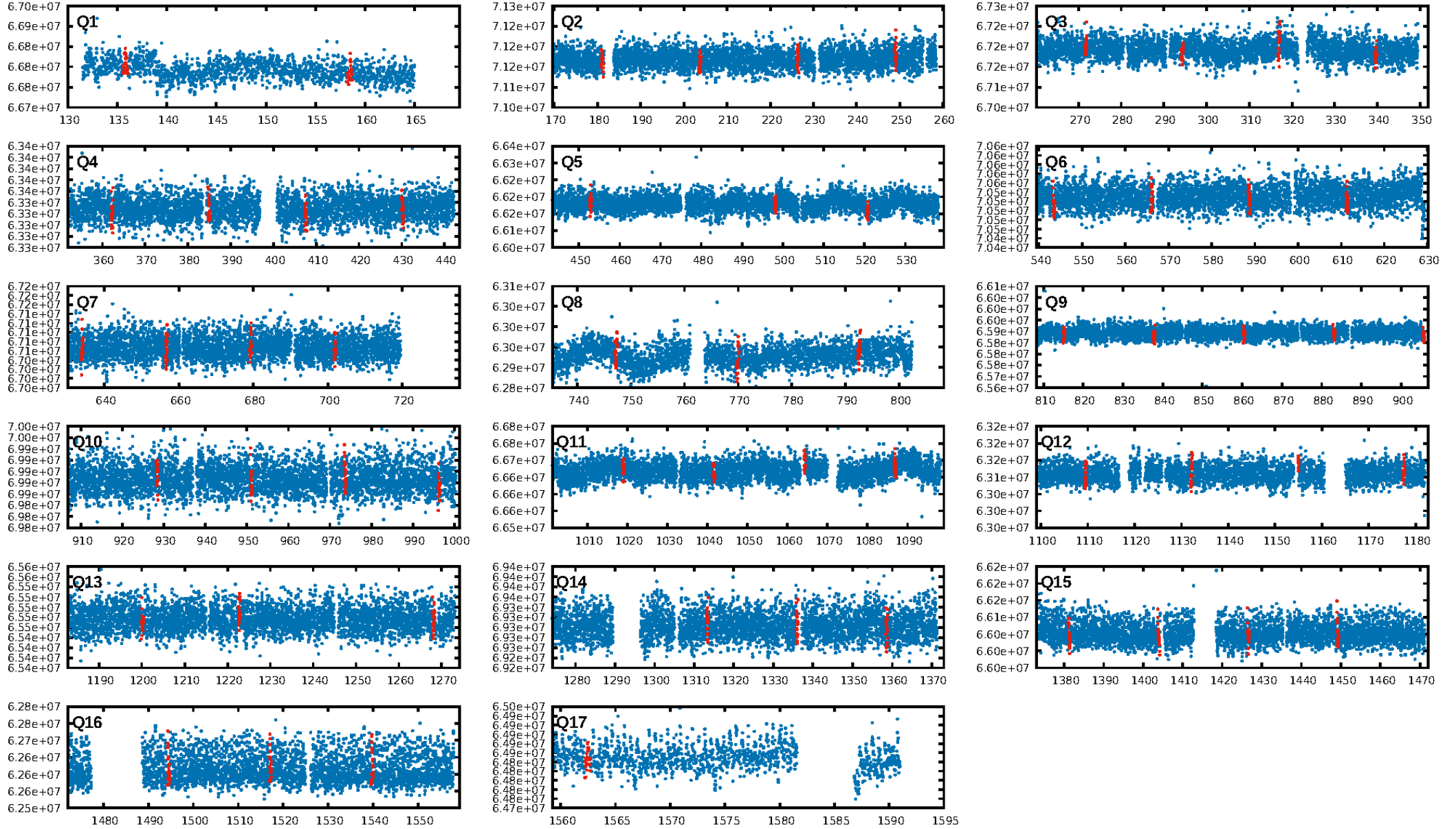
## DV Fit Results:

Period = 22.64502 [0.00058] d  
Epoch = 135.8069 [0.0213] BKJD  
Rp/R\* = 0.0359 [0.1859]  
a/R\* = 8.06 [10.29]  
b = 1.00 [0.23]  
Seff = 110.71 [145.91]  
Teff = 827 [273] K  
Rp = 7.65 [39.88] Re  
a = 0.1479 [0.1104] AU  
Ag = 74.69 [779.73] [0.09 $\sigma$ ]  
Teffp = 3759 [9735] K [0.30 $\sigma$ ]

## DV Diagnostic Results:

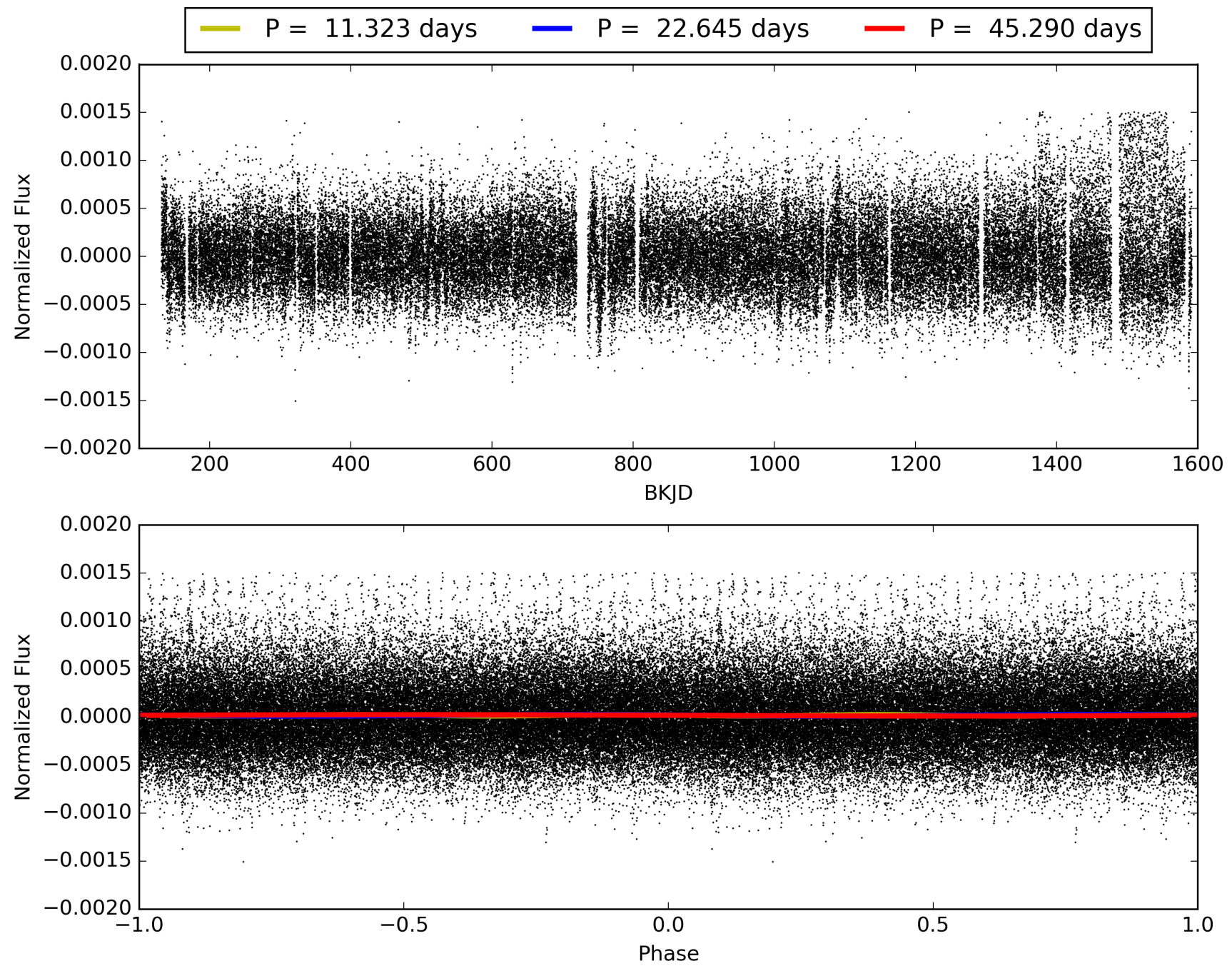
ShortPeriod-sig: 100.0% [8.81 $\sigma$ ]  
LongPeriod-sig: 100.0% [24.37 $\sigma$ ]  
**ModelChiSquare2-sig: 0.3%**  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [29/29]  
**GhostDiagnostic-chr: -1.101**  
Centroid-sig: 96.6%  
Centroid-so: 0.097 arcsec [0.29 $\sigma$ ]  
**OotOffset-rm: 3.168 arcsec [4.31 $\sigma$ ]**  
**KicOffset-rm: 3.149 arcsec [4.24 $\sigma$ ]**  
OotOffset-st: 4/4/4/5 [17]  
KicOffset-st: 4/4/4/5 [17]  
DiffImageQuality-fgm: 0.12 [2/17]  
DiffImageOverlap-fno: 0.00 [0/17]

# TCE 007199087-03, PDC Light Curves



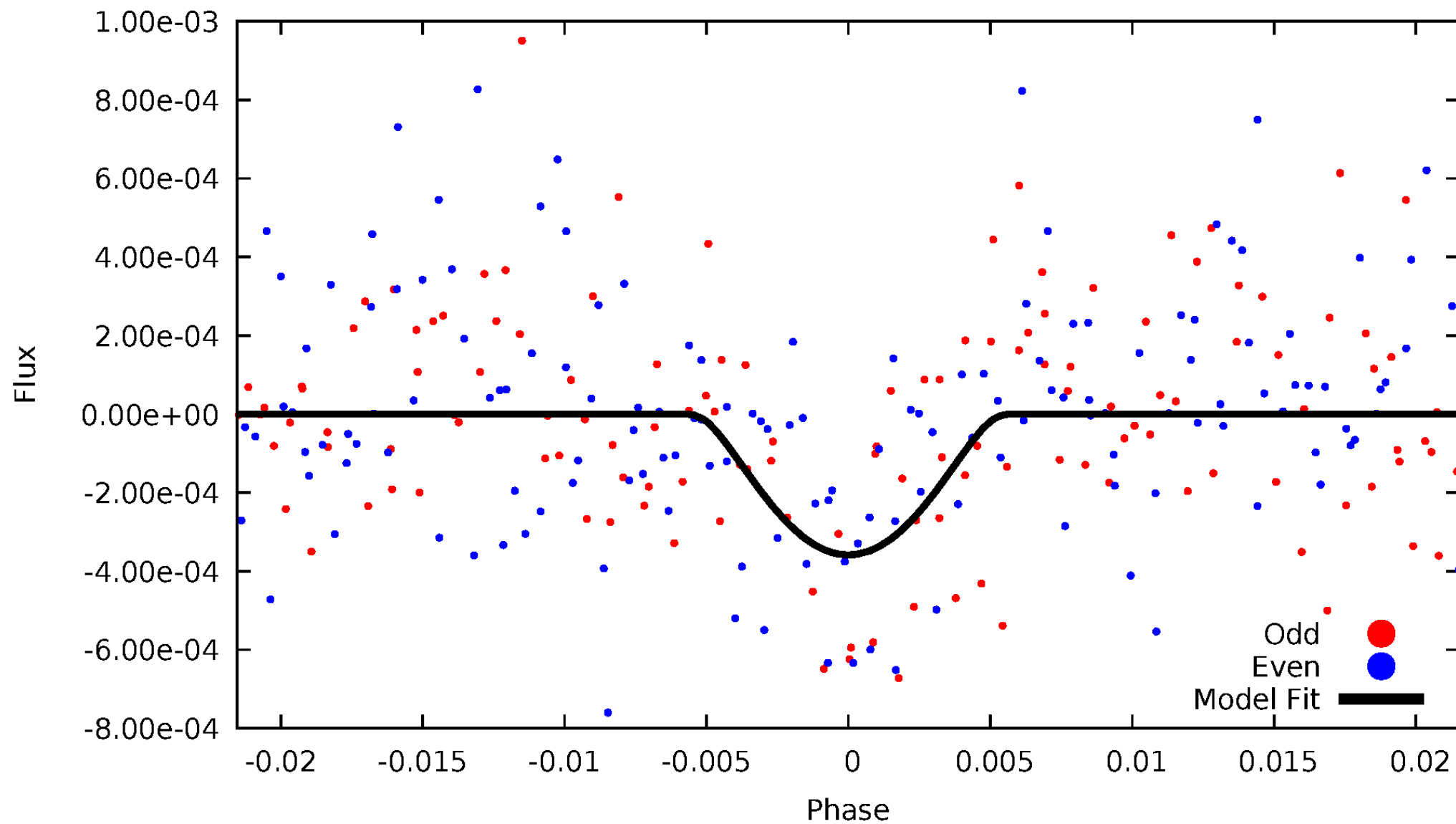


TCE 007199087-03



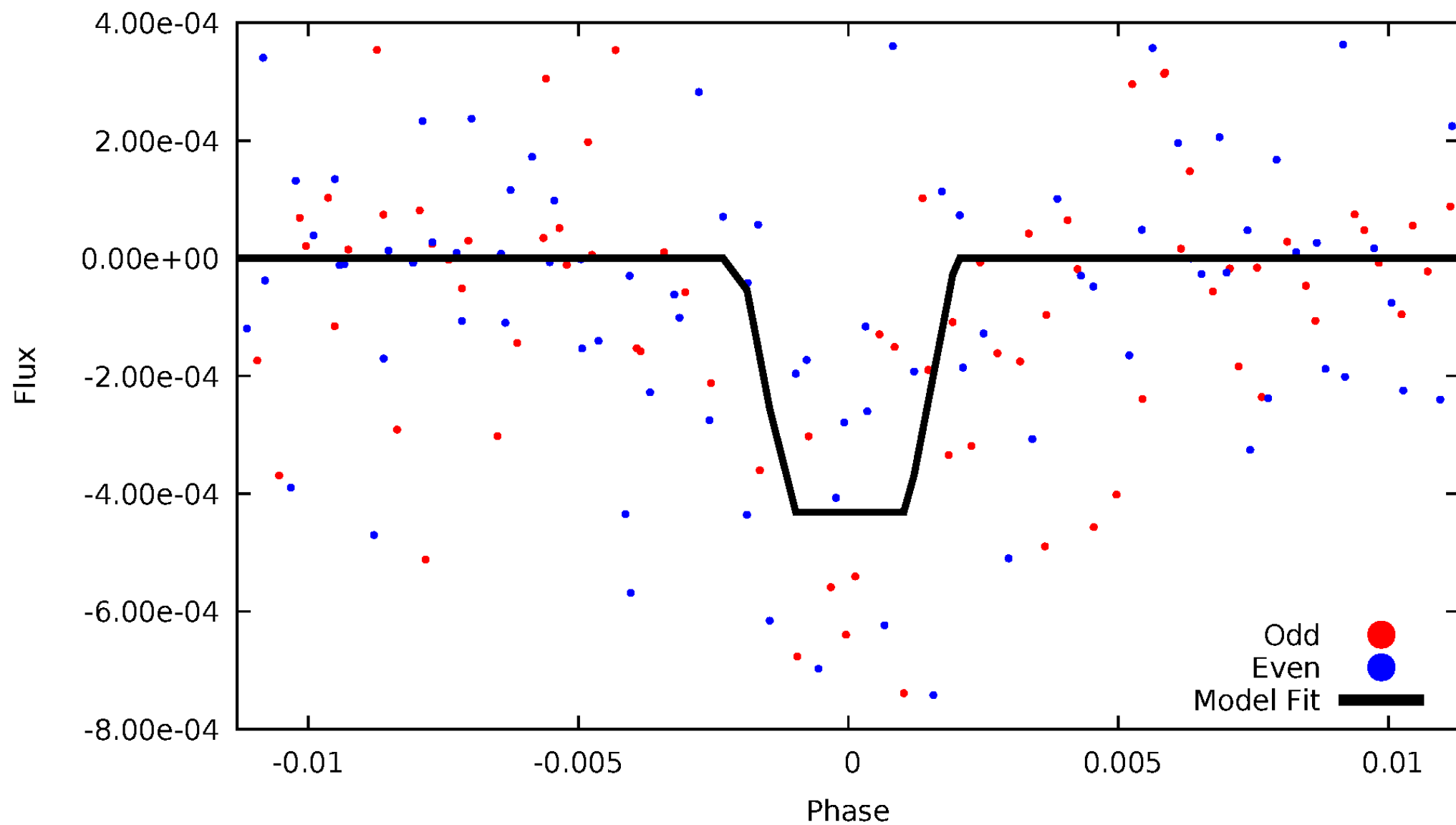
# DV Odd/Even

TCE 007199087-03



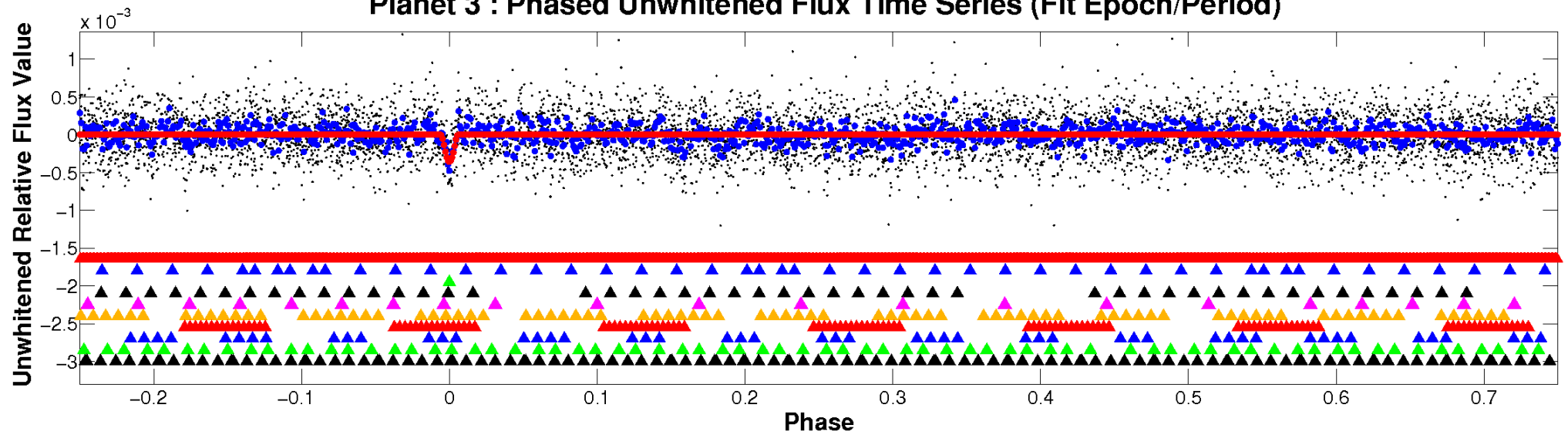
# ALT Odd/Even

TCE 007199087-03

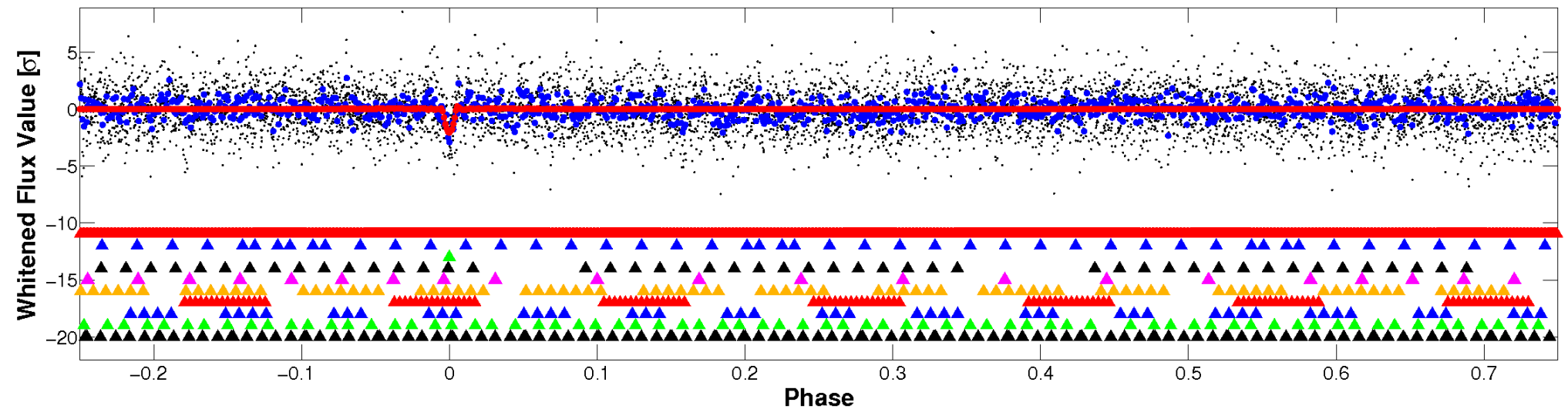


# Non-Whitened Vs. Whitened Light Curve

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

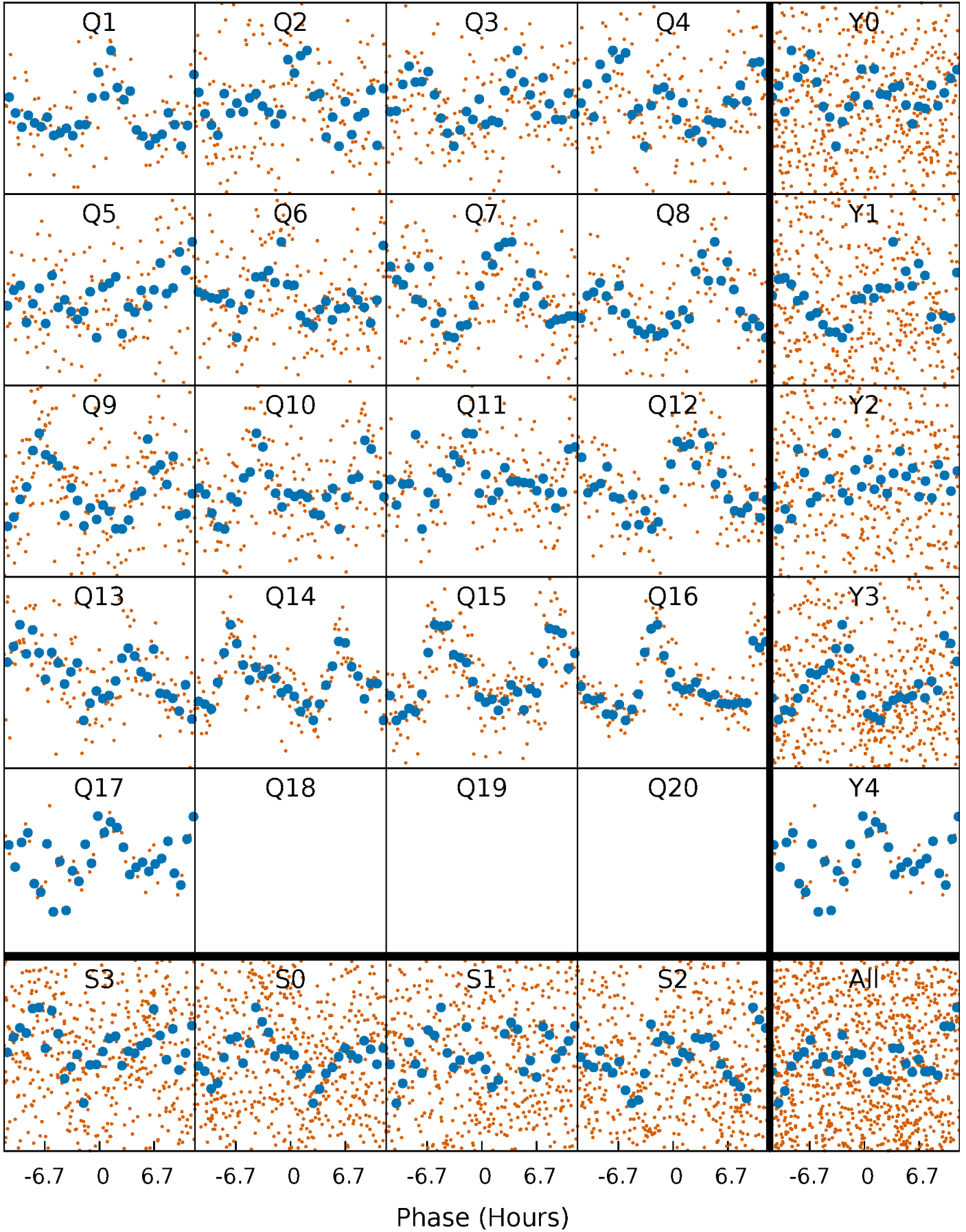


## Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



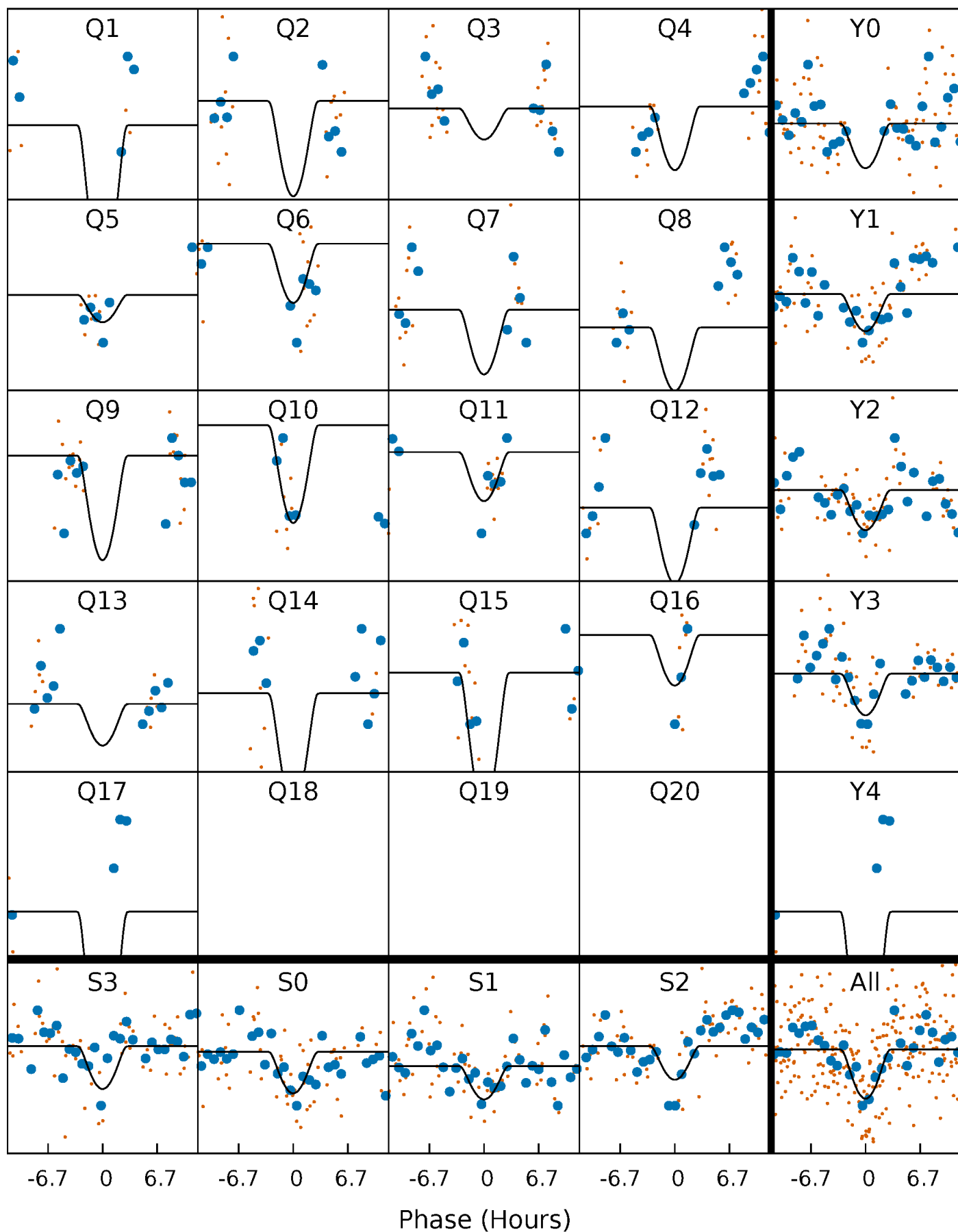
# PDC Quarter-Phased Transit Curves

TCE 007199087-03   P= 22.645018 Days    $T_0=135.806898$  (BKJD)



# DV Quarter-Phased Transit Curves

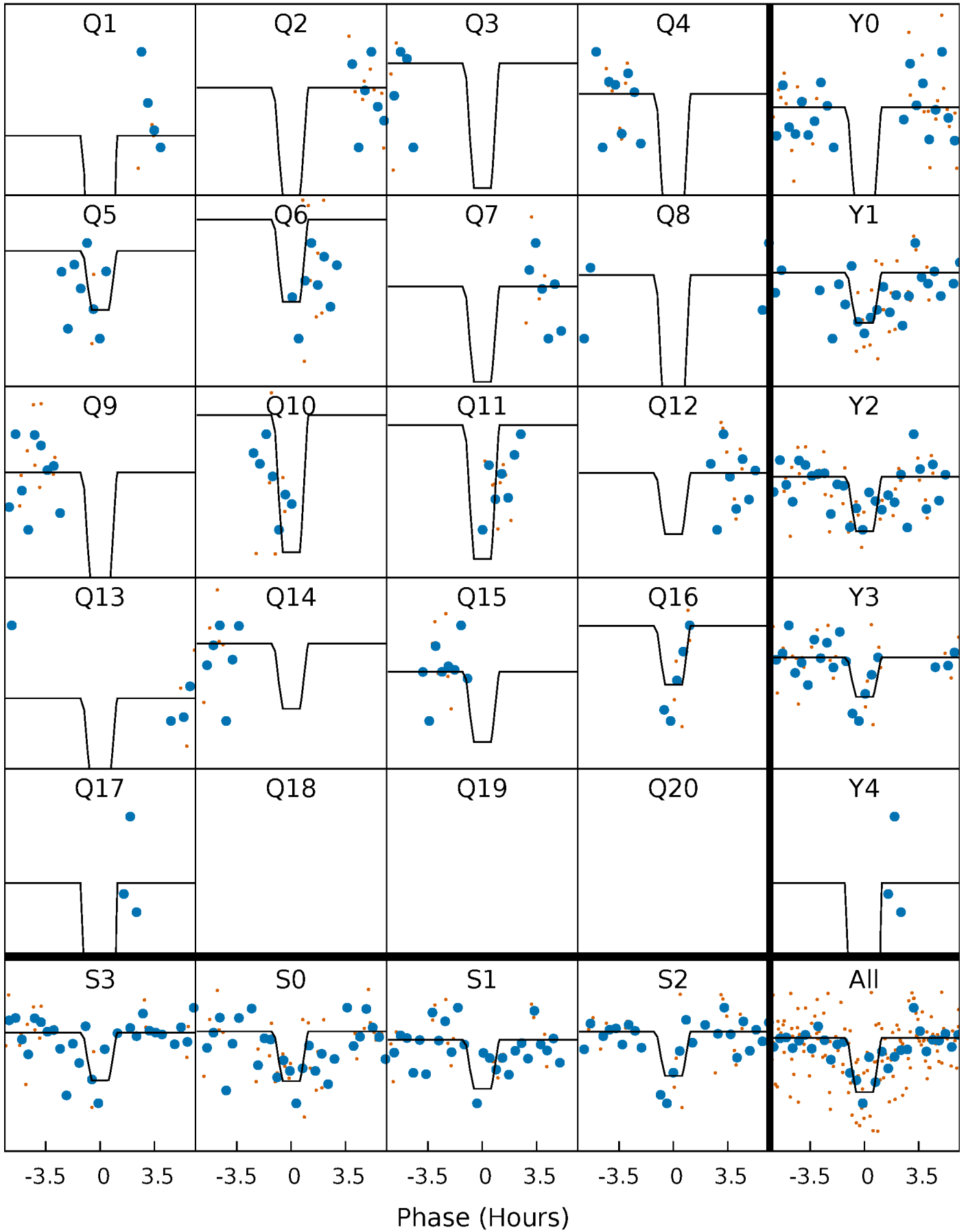
TCE 007199087-03   P= 22.645018 Days    $T_0=135.806898$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

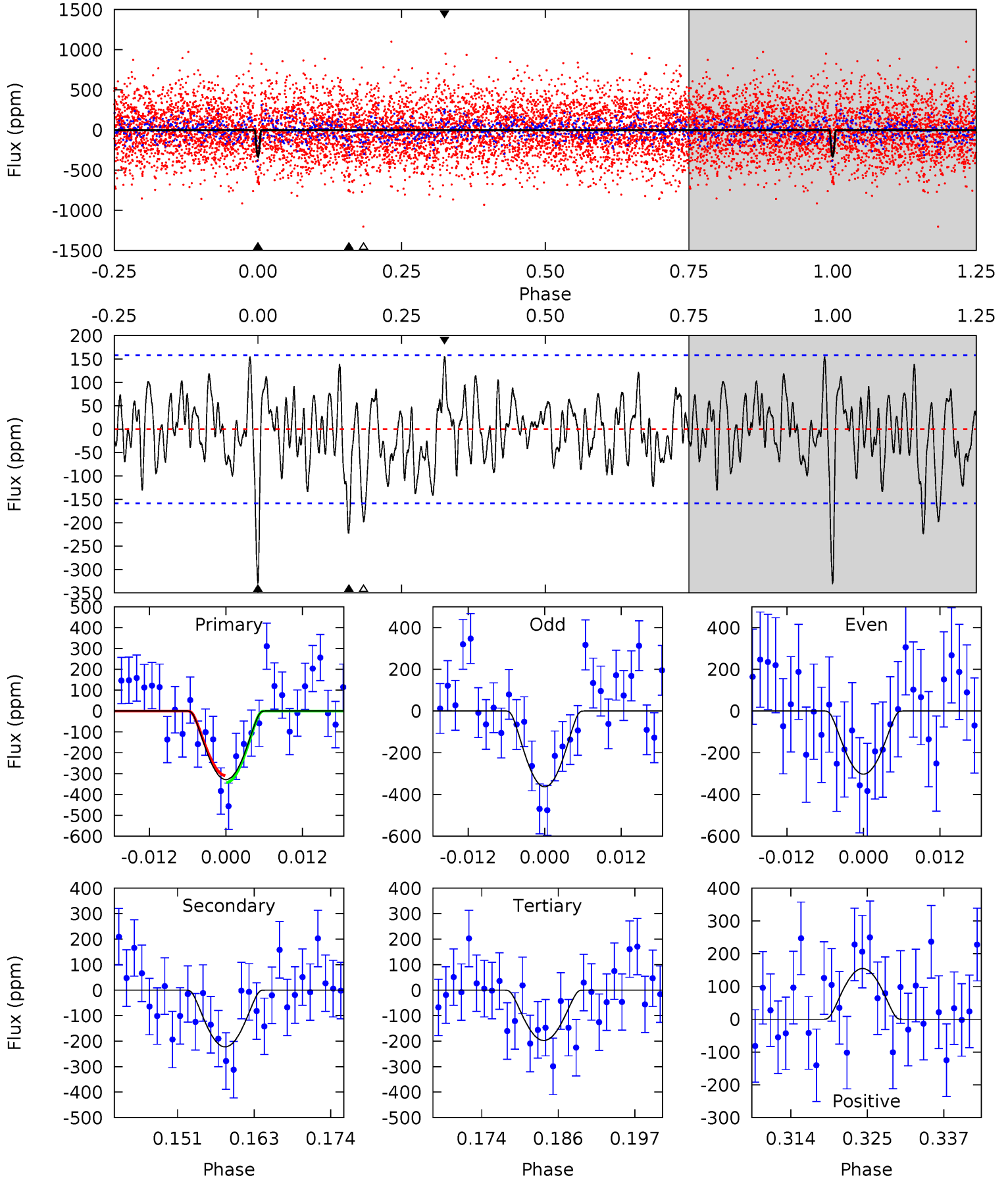
TCE 007199087-03 P= 22.645357 Days  $T_0=135.803137$  (BKJD)



# DV Model-Shift Uniqueness Test

007199087-03, P = 22.645018 Days, E = 113.161880 Days

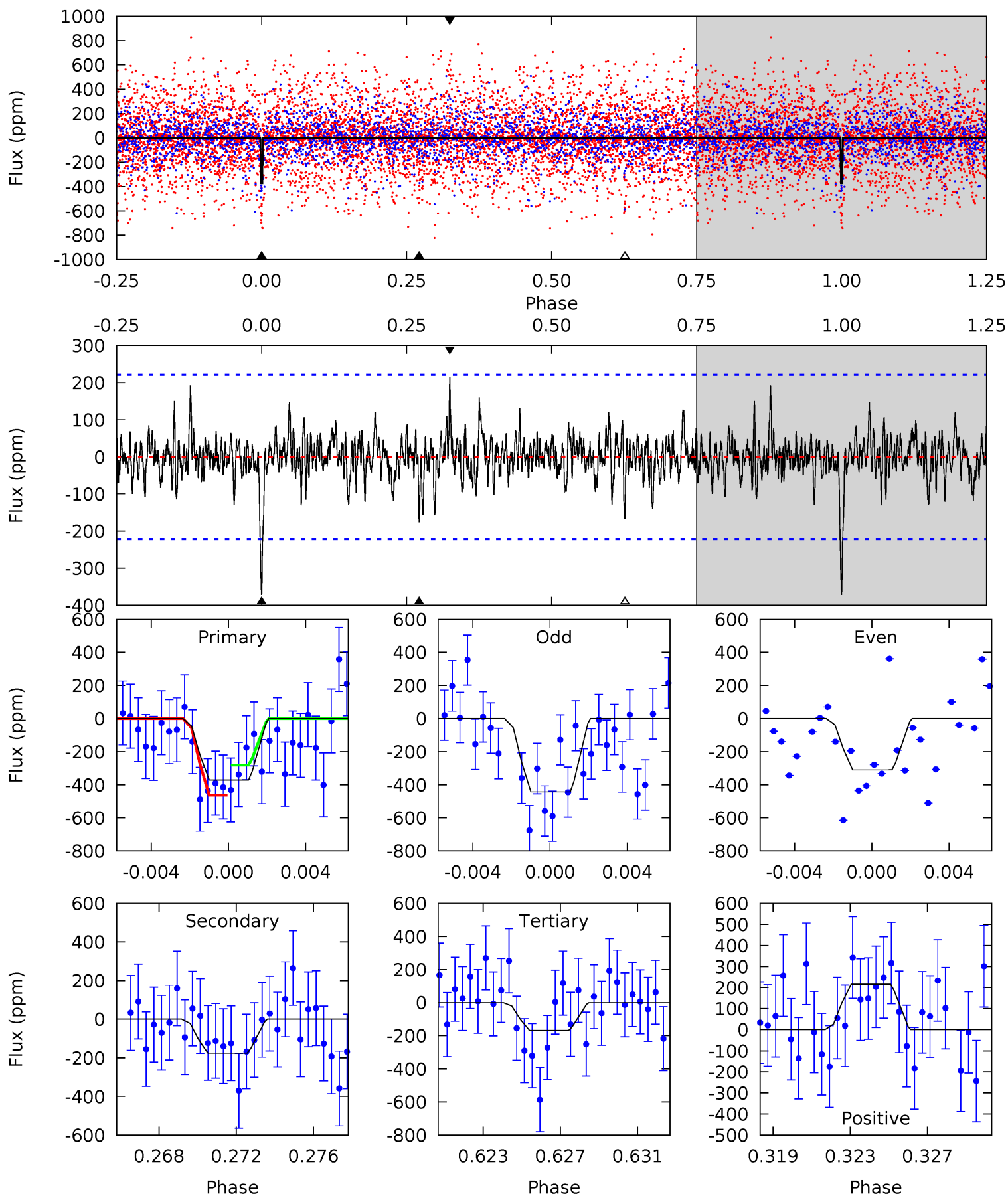
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.4	7.03	6.24	4.89	5.00	2.52	1.83	4.14	5.49	0.79	2.14	0.96	1.09	0.32	0.53



# Alt Model-Shift Uniqueness Test

007199087-03, P = 22.645357 Days, E = 113.157780 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
8.73	4.14	3.95	5.08	5.20	2.88	1.10	4.79	3.65	0.19	-0.94	1.56	0.89	0.37	2.15



### Stellar Parameters For KIC 007199087

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5161^{+139}_{-154}$	$3.782^{+0.812}_{-0.348}$	$-0.420^{+0.300}_{-0.300}$	$1.952^{+1.204}_{-1.204}$	$0.842^{+0.178}_{-0.145}$	$0.160^{+3.448}_{-0.111}$
	+3%/-3%	+21%/-9%	+71%/-71%	+62%/-62%	+21%/-17%	+2162%/-70%
Source	PHO1	KIC0	KIC0	DSEP		

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

### Secondary Eclipse Parameters for KIC 007199087-03 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-223 \pm 32$	$27.08^{+37.21}_{-19.04}$	$1137^{+204}_{-206}$	$2471^{+961}_{-476}$	$3.749^{+36.426}_{-3.069}$
Alt.	$-176 \pm 43$	$25.22^{+33.49}_{-17.94}$	$1130^{+170}_{-203}$	$2418^{+966}_{-515}$	$3.381^{+32.647}_{-2.815}$

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

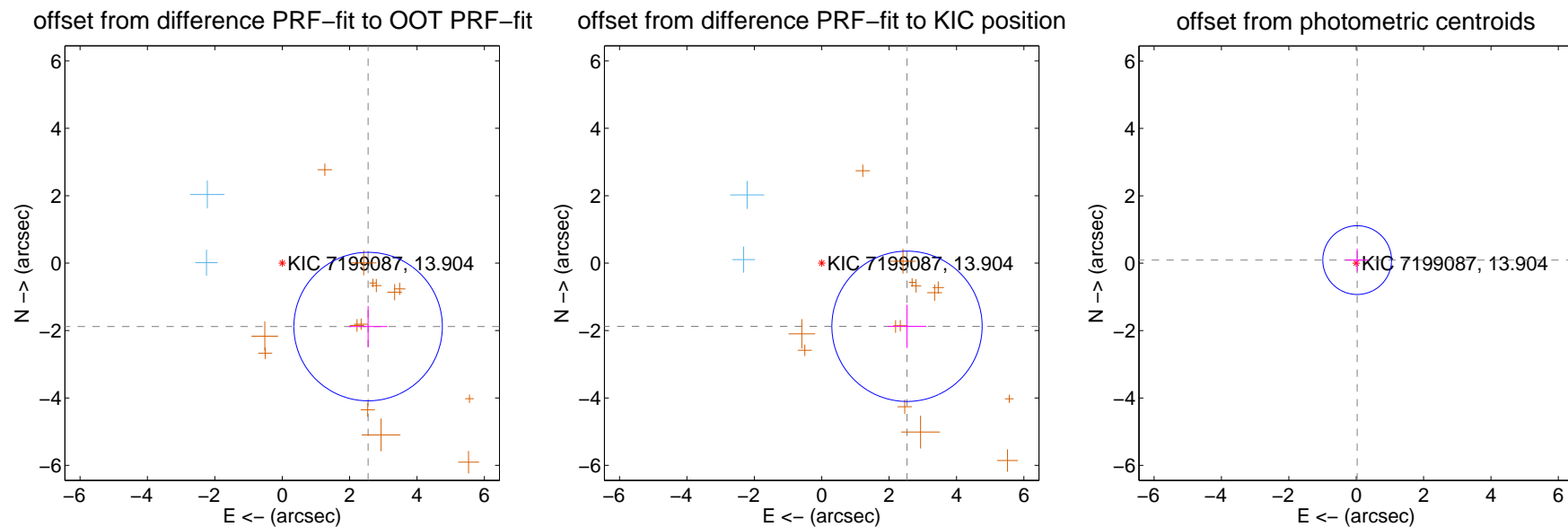
## DV Centroid Data

Supplemental centroid analysis for 007199087-03. Kepler magnitude: 13.90. Transit SNR 11.43

There are 2 quarters with good PRF difference image offsets

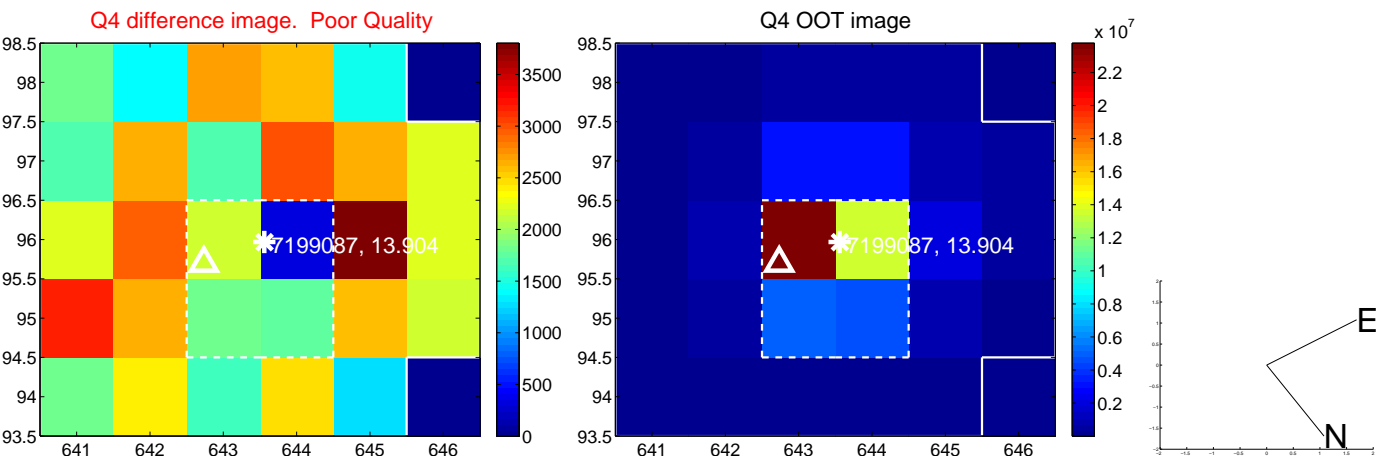
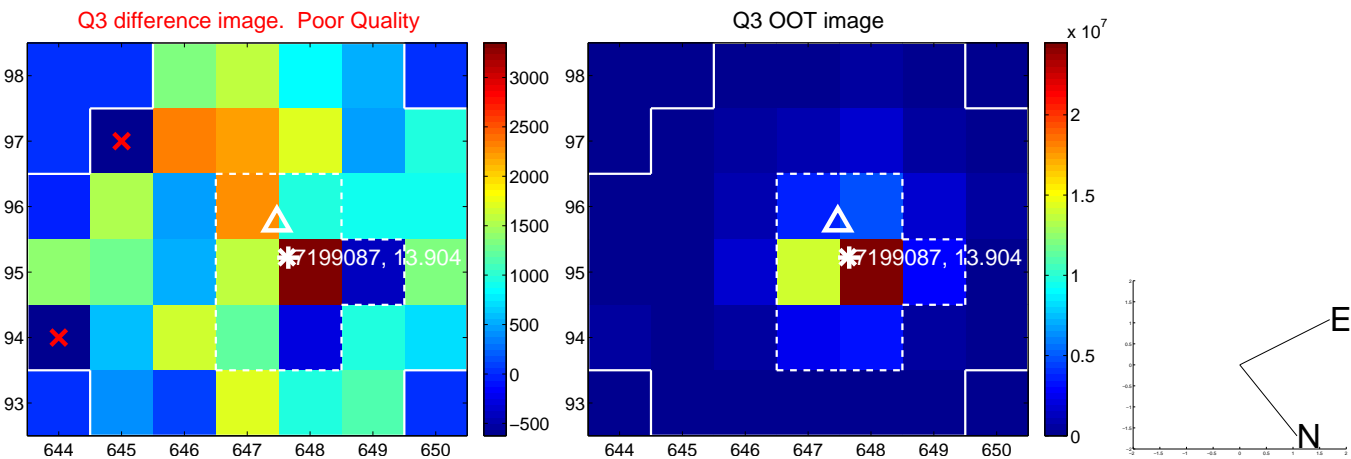
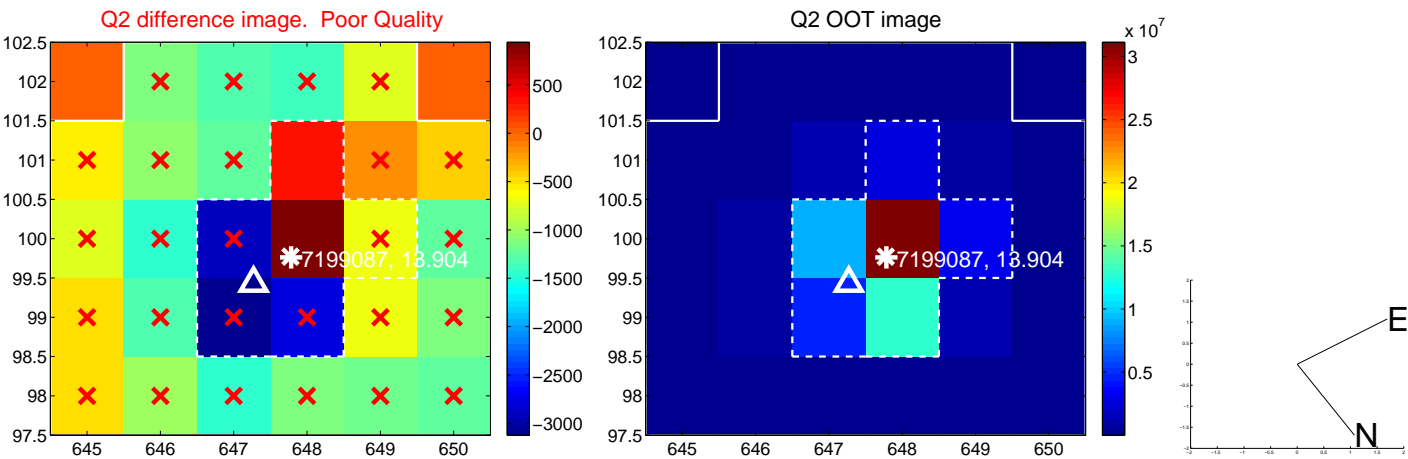
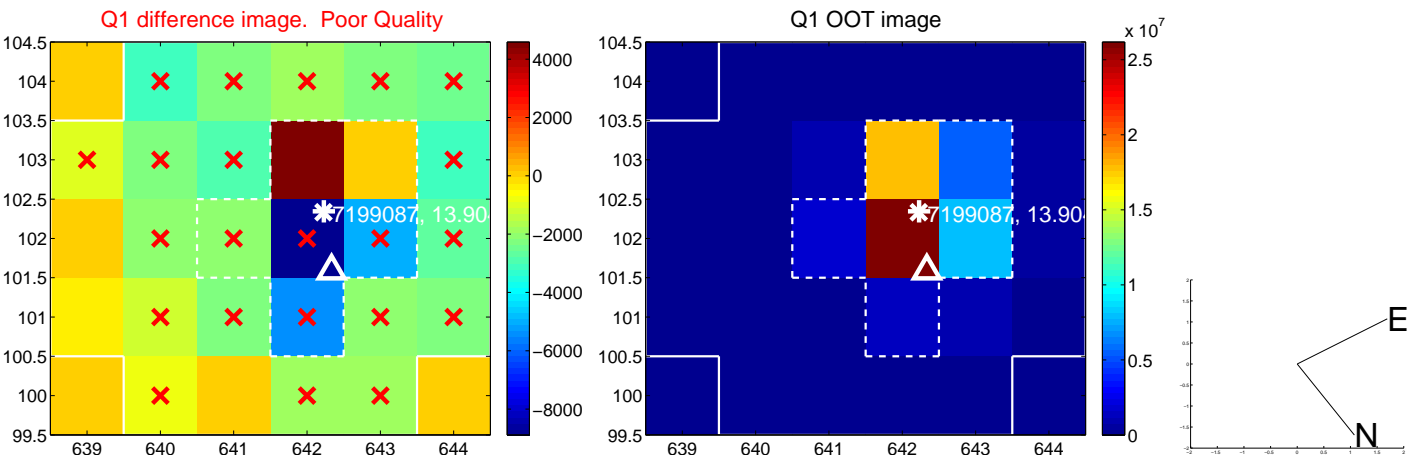
The direct PRF centroid is offset from the target star catalog position by about 0.01 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$3.168 \pm 0.734$	4.31	$-2.549 \pm 0.572$	$-1.882 \pm 0.609$
PRF-fit source offset from KIC position	$3.149 \pm 0.743$	4.24	$-2.531 \pm 0.570$	$-1.874 \pm 0.641$
photometric centroid source offset	$0.10 \pm 0.34$	0.29	$-0.03 \pm 0.35$	$0.09 \pm 0.34$



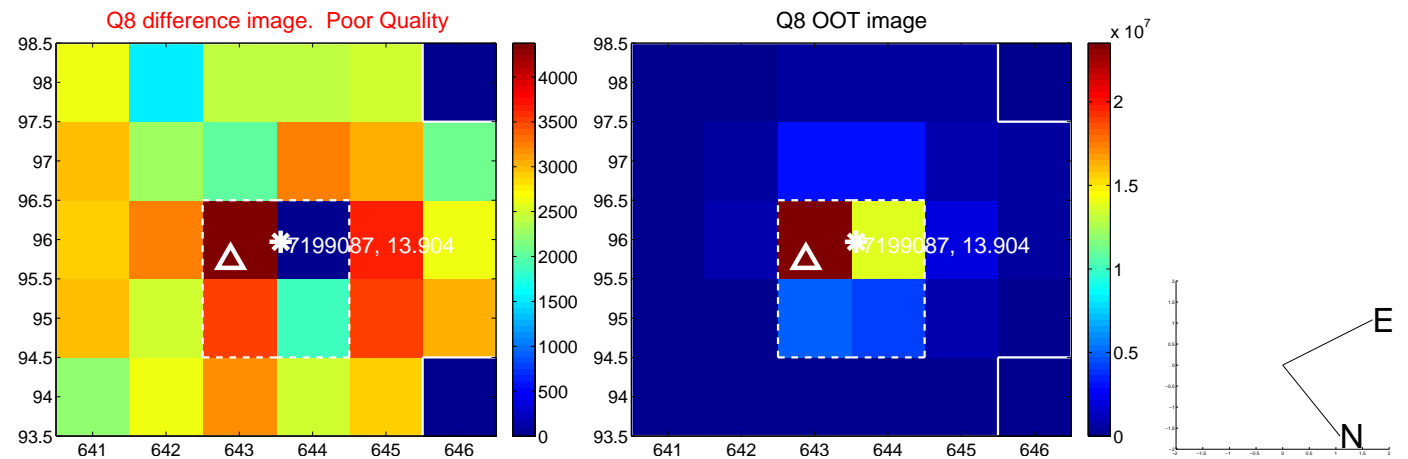
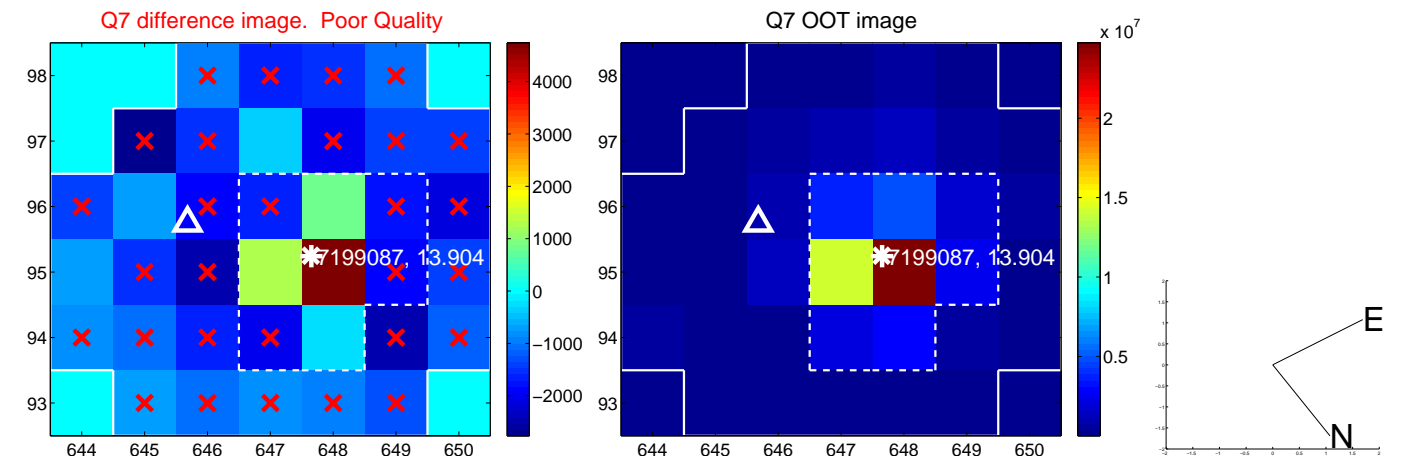
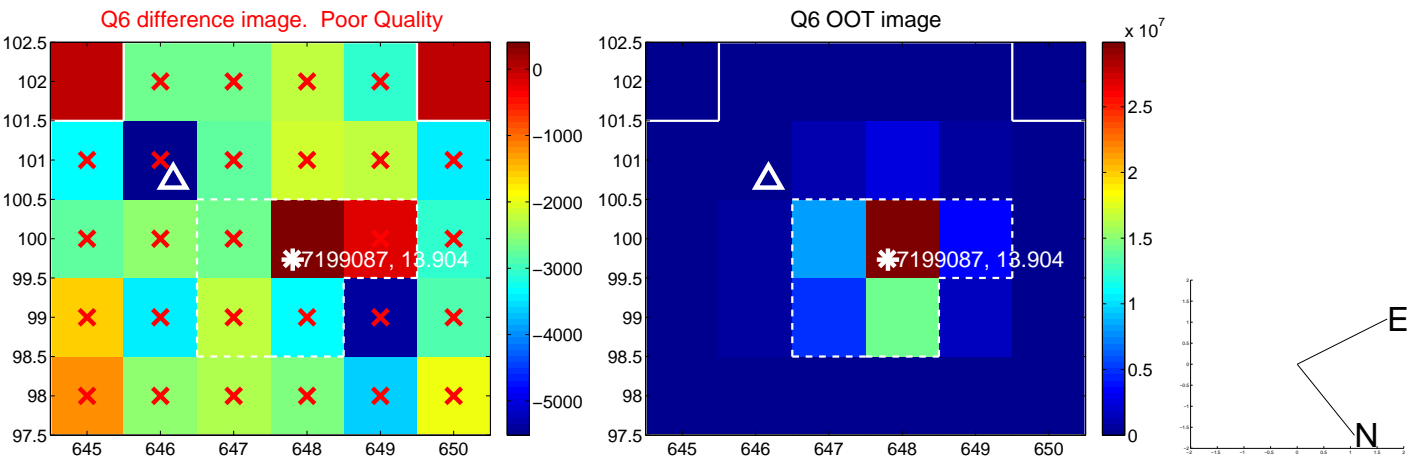
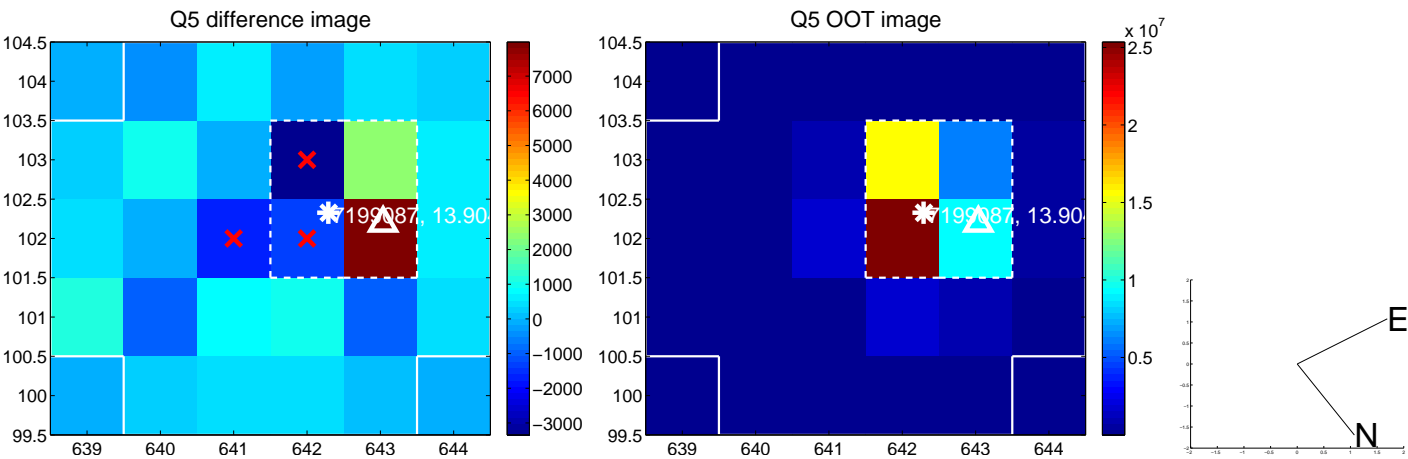
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

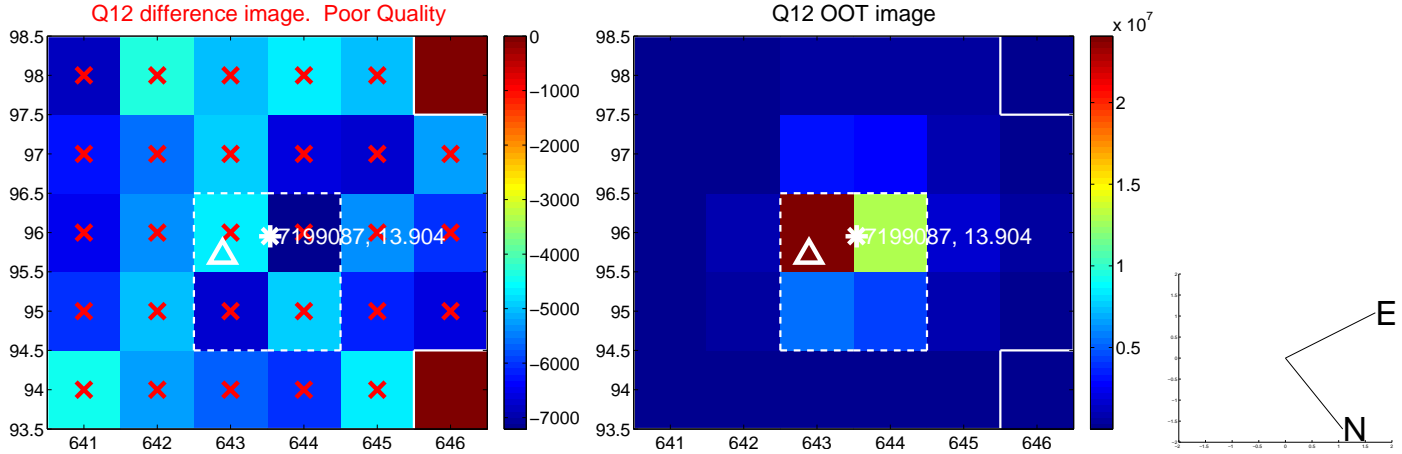
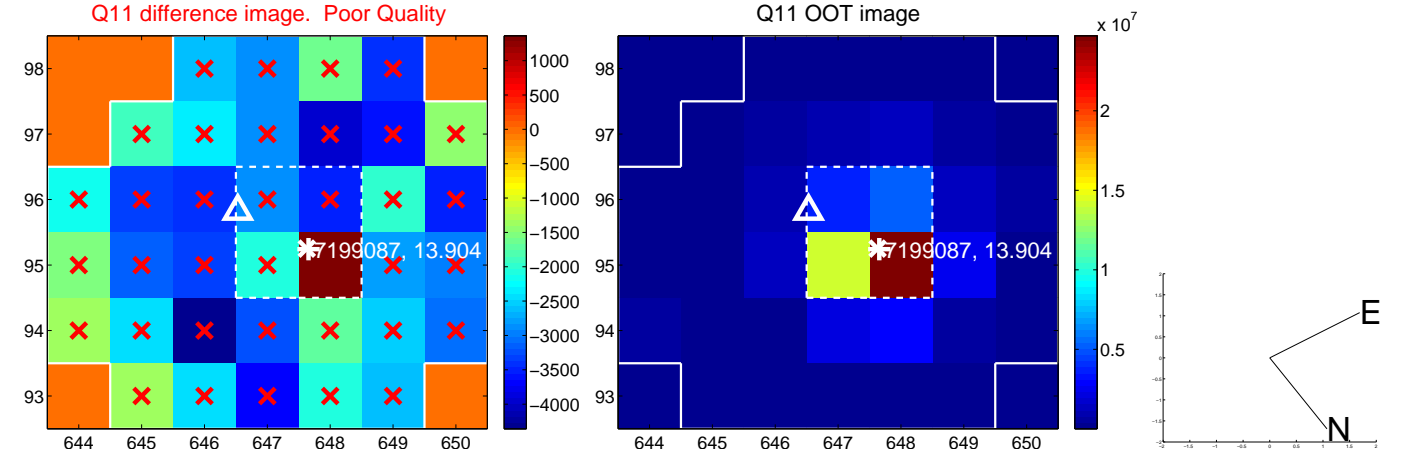
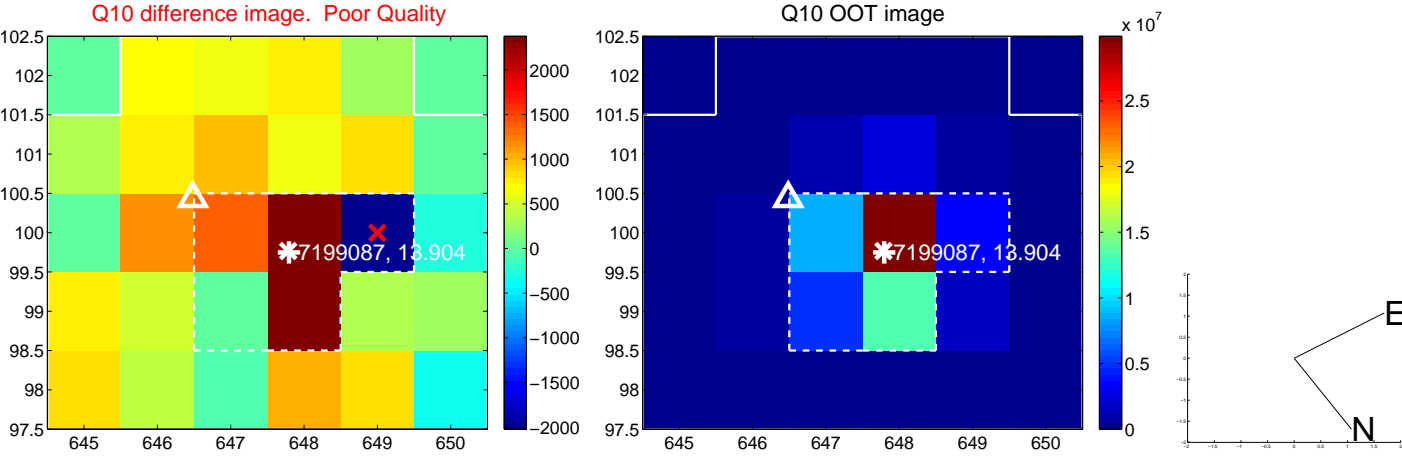
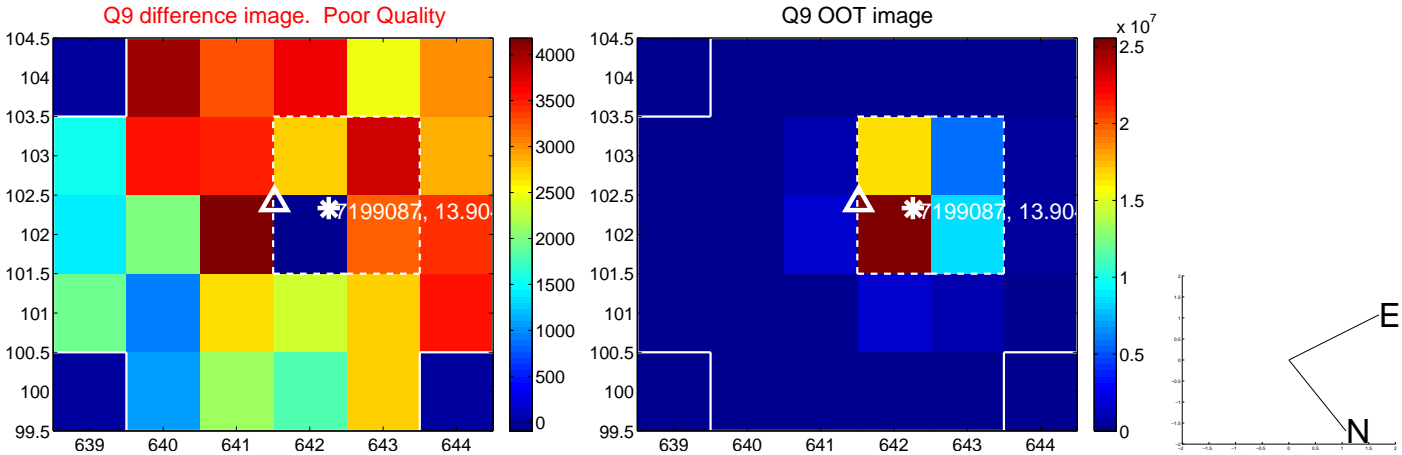




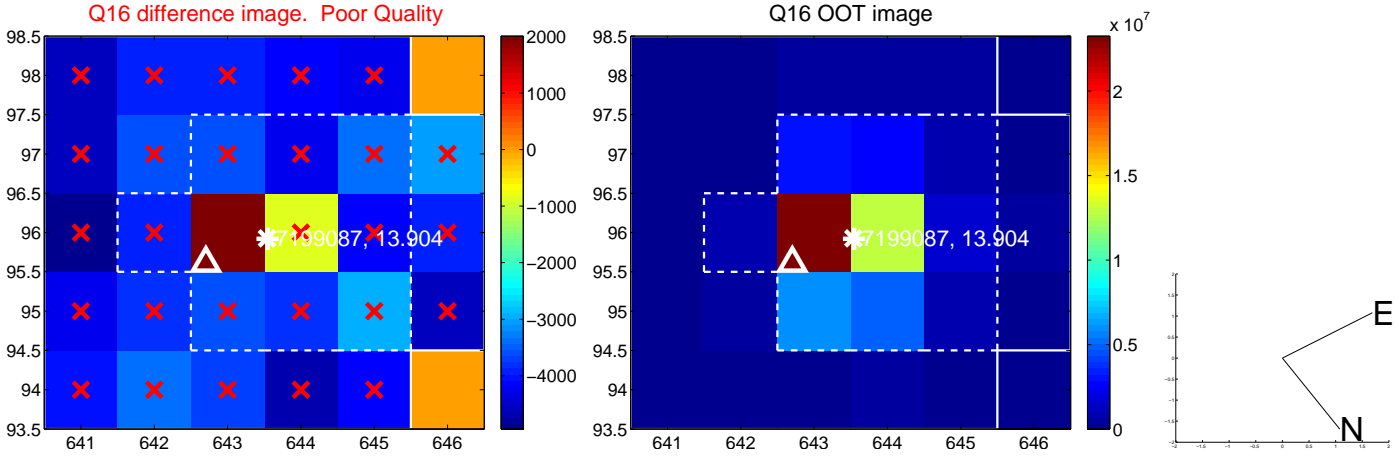
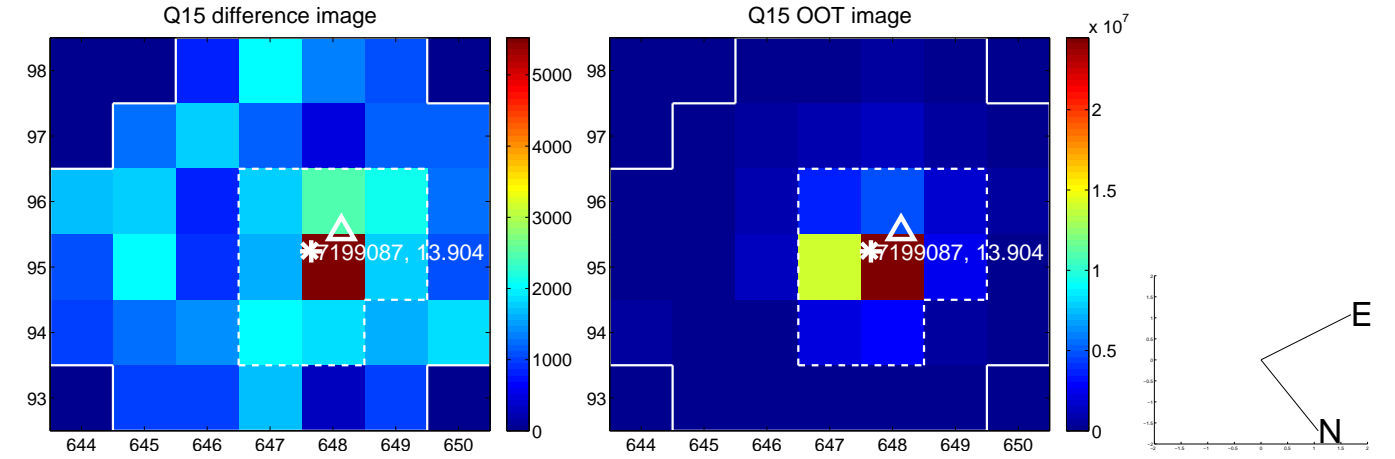
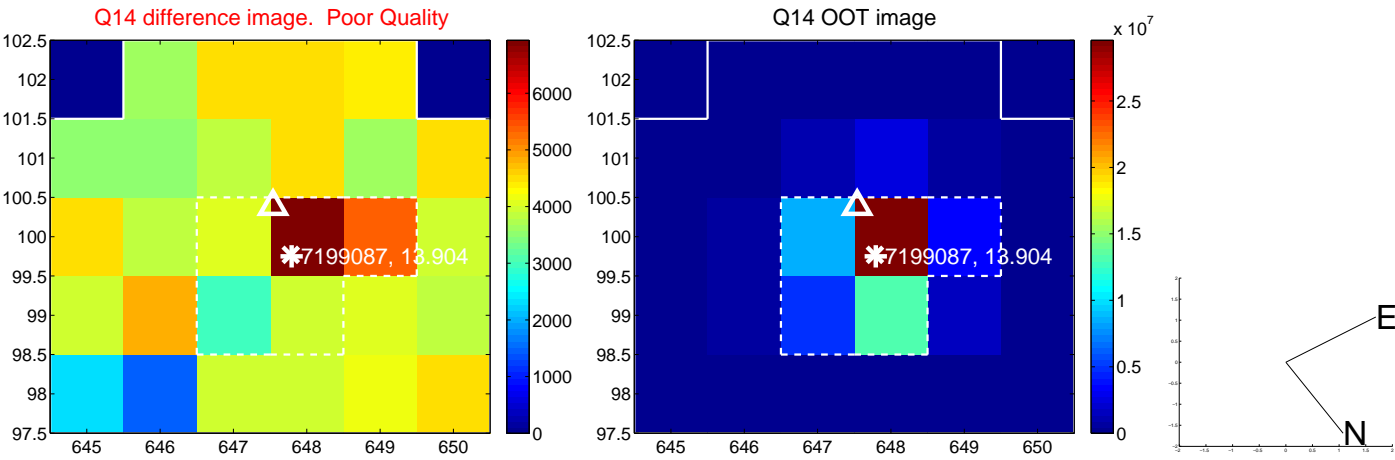
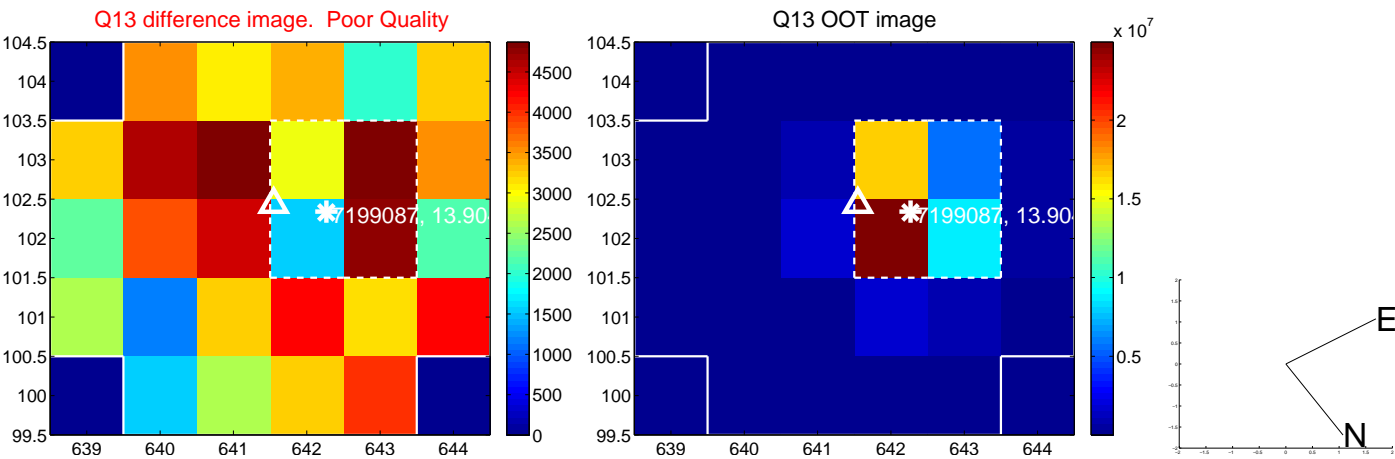
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



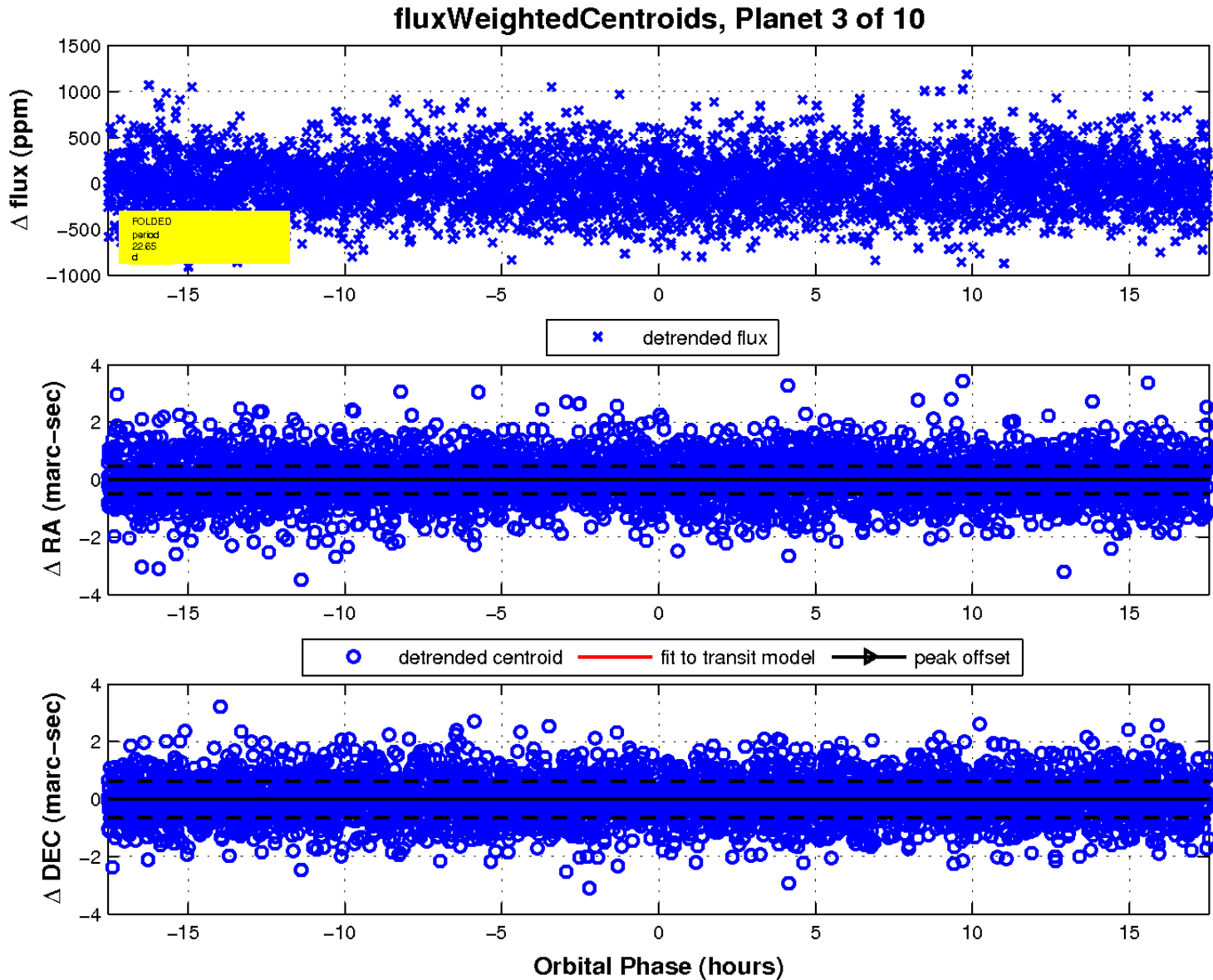
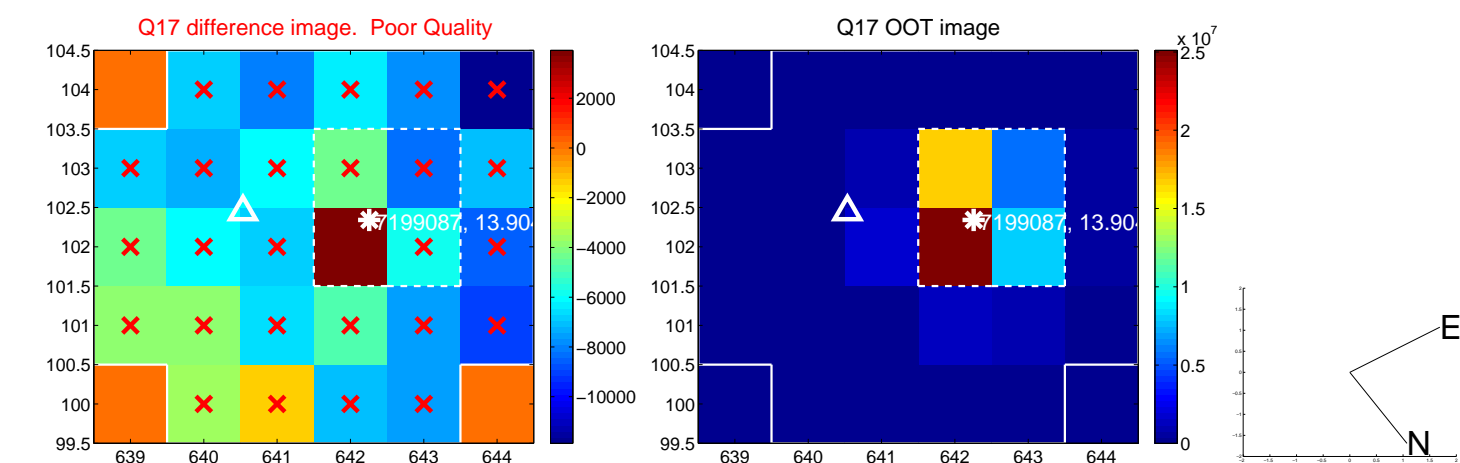
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

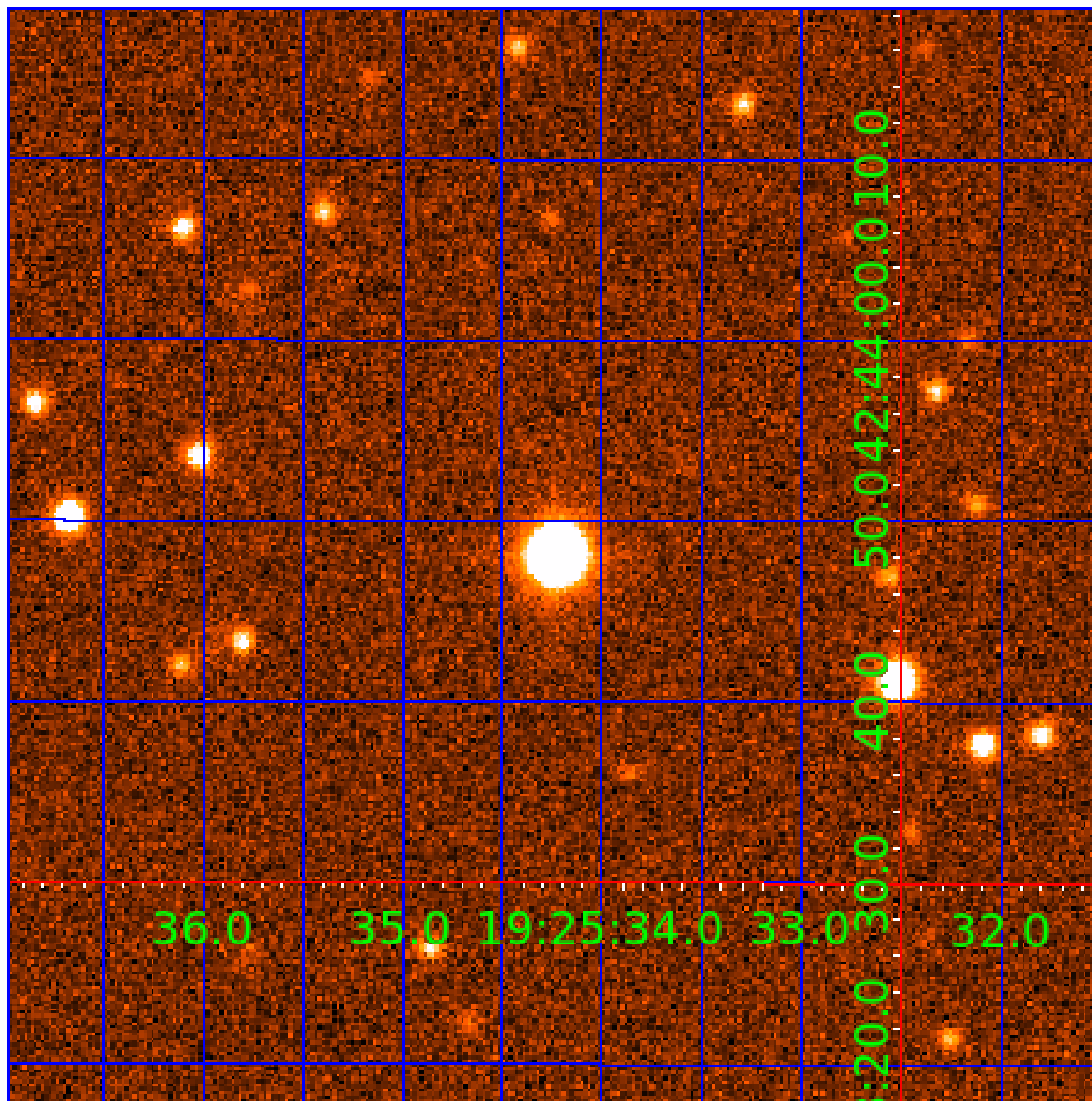


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



# UKIRT Image

Declination



## KIC 007199087

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007199087-01	OBS	No	0.566789	131.670402	8.5	3.882	14.8	2.7	1.95	5161	0.56	15121.24
007199087-02	OBS	No	30.372888	155.472228	559.9	2.126	11.0	13.0	1.95	5161	9.51	74.85
007199087-03	OBS	No	22.645018	135.806898	358.7	5.851	12.1	11.4	1.95	5161	7.65	110.71
007199087-04	OBS	No	30.066788	151.392002	551.6	1.456	11.8	13.4	1.95	5161	4.56	75.86
007199087-05	OBS	No	69.496219	195.078789	535.3	3.211	10.0	10.7	1.95	5161	5.21	24.82
007199087-06	OBS	No	17.433948	136.980650	435.8	0.982	10.6	9.8	1.95	5161	4.96	156.90
007199087-07	OBS	No	12.928268	142.702231	321.2	1.694	9.9	10.2	1.95	5161	3.77	233.76
007199087-08	OBS	No	28.669881	148.165240	606.7	0.987	9.2	8.4	1.95	5161	5.76	80.83
007199087-09	OBS	No	20.441918	143.787734	418.3	1.326	10.7	9.8	1.95	5161	4.12	126.90
007199087-10	OBS	No	11.882767	139.895565	291.3	4.500	8.6	-1.0	1.95	5161	3.26	261.57

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007199087-01	OBS	FP	0.00	1	0	1	1	SWEET_NTL—LPP_DV—LPP_ALT—HALO_GHOST—EPHEM_MATCH
007199087-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT
007199087-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
007199087-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
007199087-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
007199087-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
007199087-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
007199087-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV
007199087-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT
007199087-10	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT—CENT_NOFITS

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

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

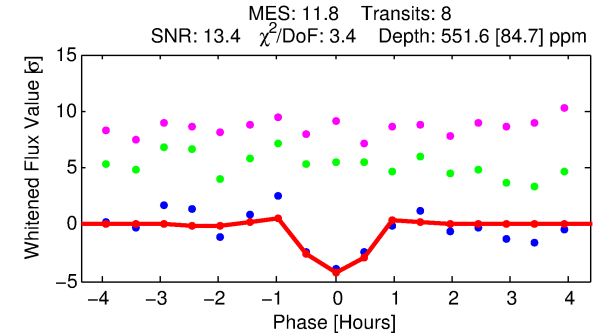
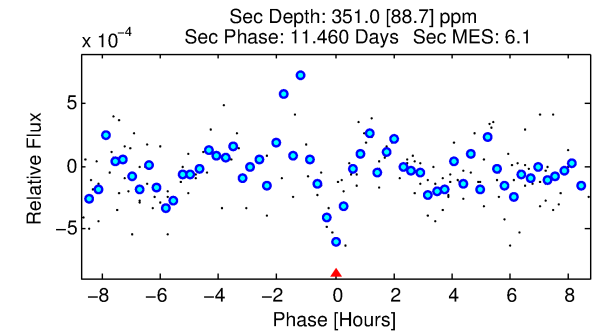
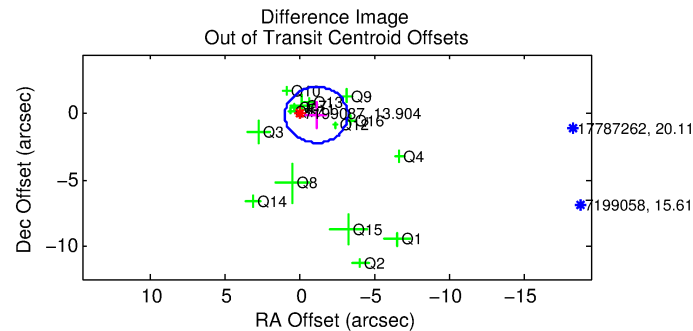
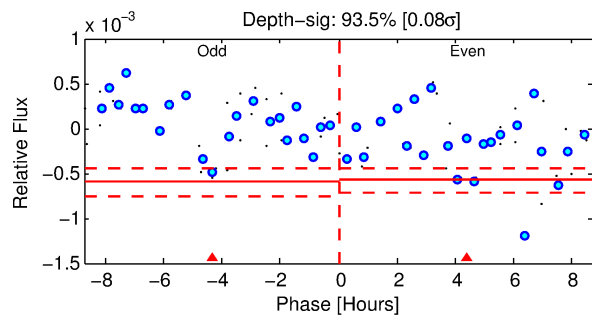
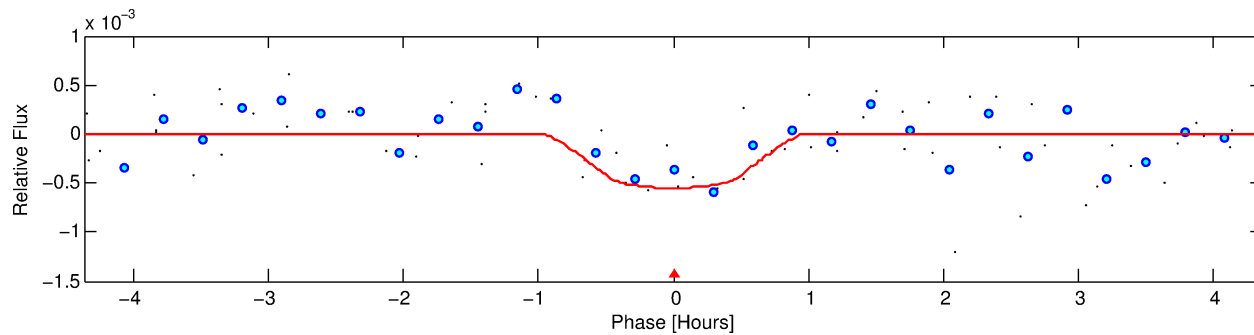
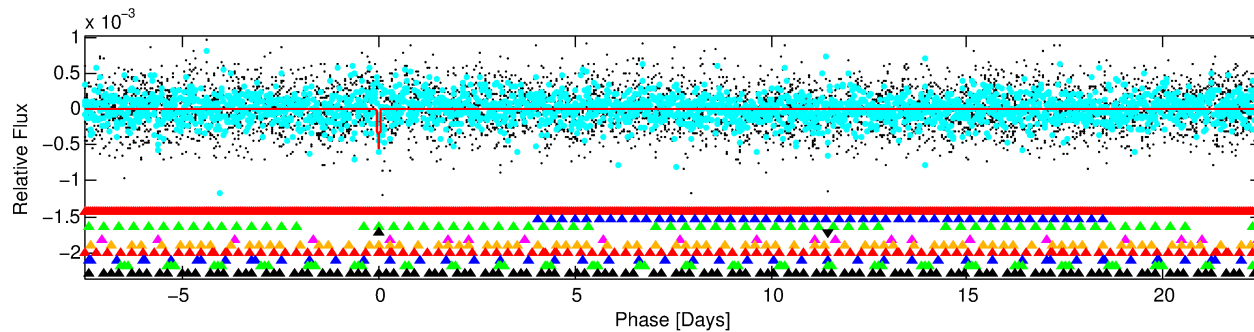
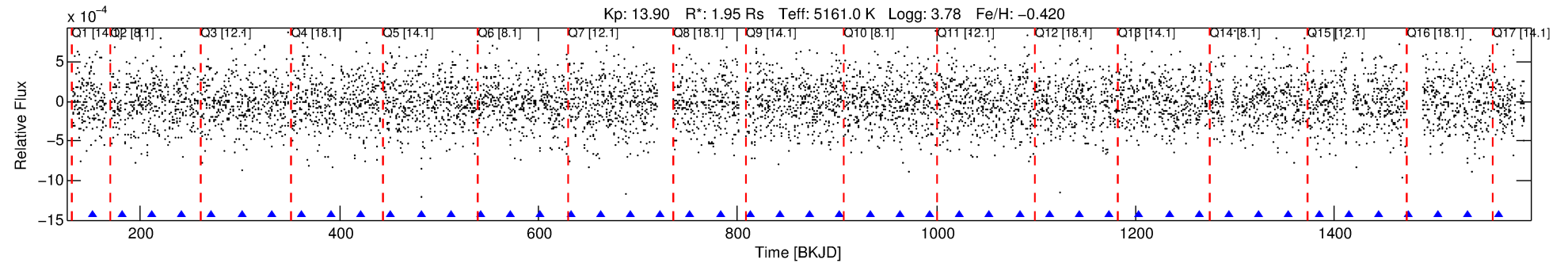
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 007199087-04

No Significant Match Found

# DV One-Page Summary

KIC: 7199087 Candidate: 4 of 10 Period: 30.067 d



## DV Fit Results:

Period = 30.06679 [0.00034] d  
Epoch = 151.3920 [0.0100] BKJD  
Rp/R\* = 0.0214 [0.0485]  
a/R\* = 153.87 [1336.01]  
b = 0.30 [26.12]  
Seff = 75.86 [99.99]  
Teff = 753 [248] K  
Rp = 4.56 [10.70] Re  
a = 0.1787 [0.1334] AU  
Ag = 296.18 [1398.03] [0.21 $\sigma$ ]  
Teffp = 4827 [5473] K [0.74 $\sigma$ ]

## DV Diagnostic Results:

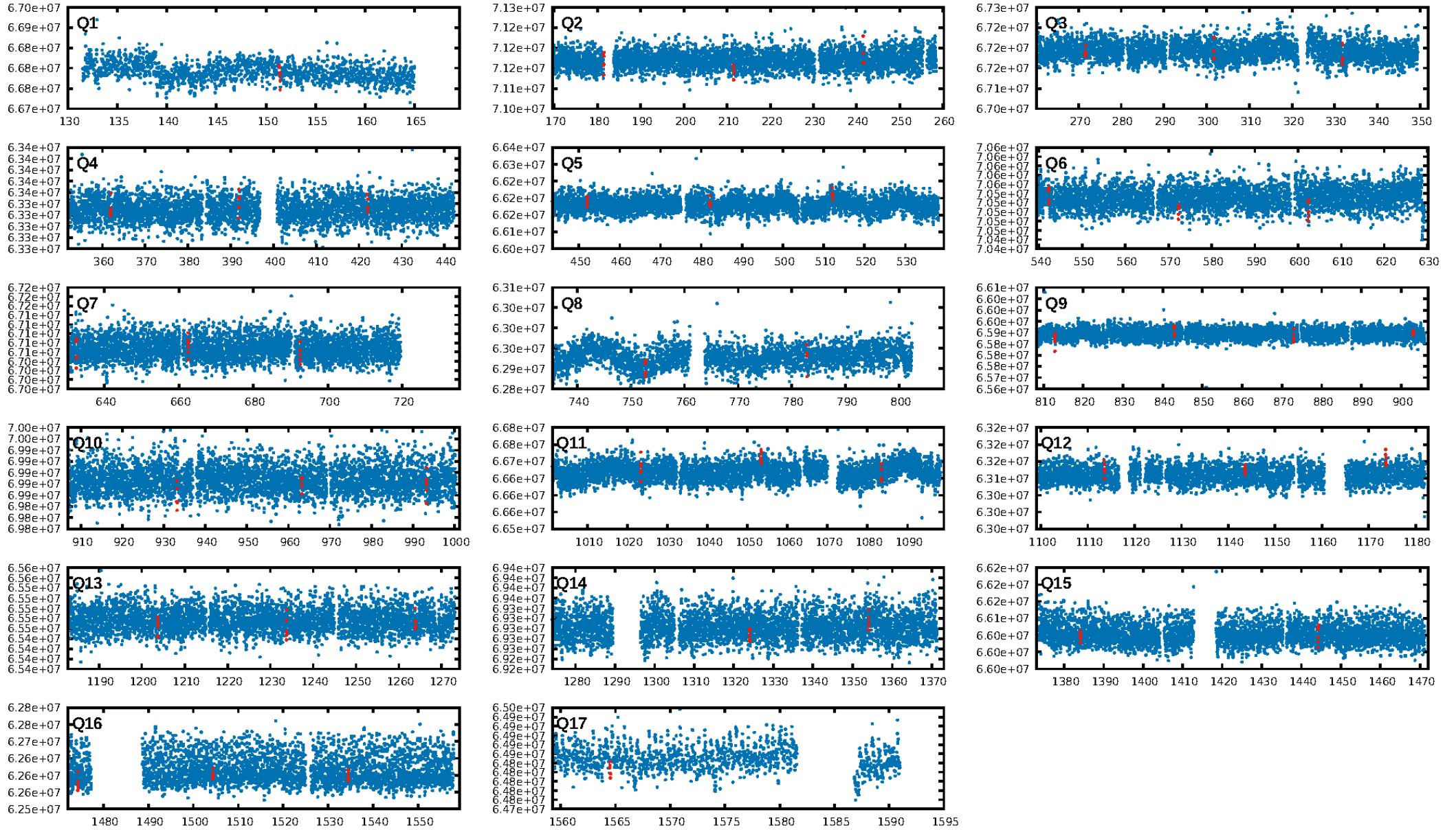
ShortPeriod-sig: 100.0% [19.07 $\sigma$ ]  
LongPeriod-sig: 99.6% [2.85 $\sigma$ ]  
ModelChiSquare2-sig: 0.8%  
ModelChiSquareGof-sig: 92.4%  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [8/8]  
GhostDiagnostic-chr: -1.719  
Centroid-sig: 3.8%  
Centroid-so: 0.719 arcsec [1.82 $\sigma$ ]  
OotOffset-rm: 1.160 arcsec [1.65 $\sigma$ ]  
KicOffset-rm: 1.137 arcsec [1.54 $\sigma$ ]  
OotOffset-st: 4/4/4/4 [16]  
KicOffset-st: 4/4/4/4 [16]  
DiffImageQuality-fgm: 0.25 [4/16]  
DiffImageOverlap-fno: 0.00 [0/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 15:41:35 Z

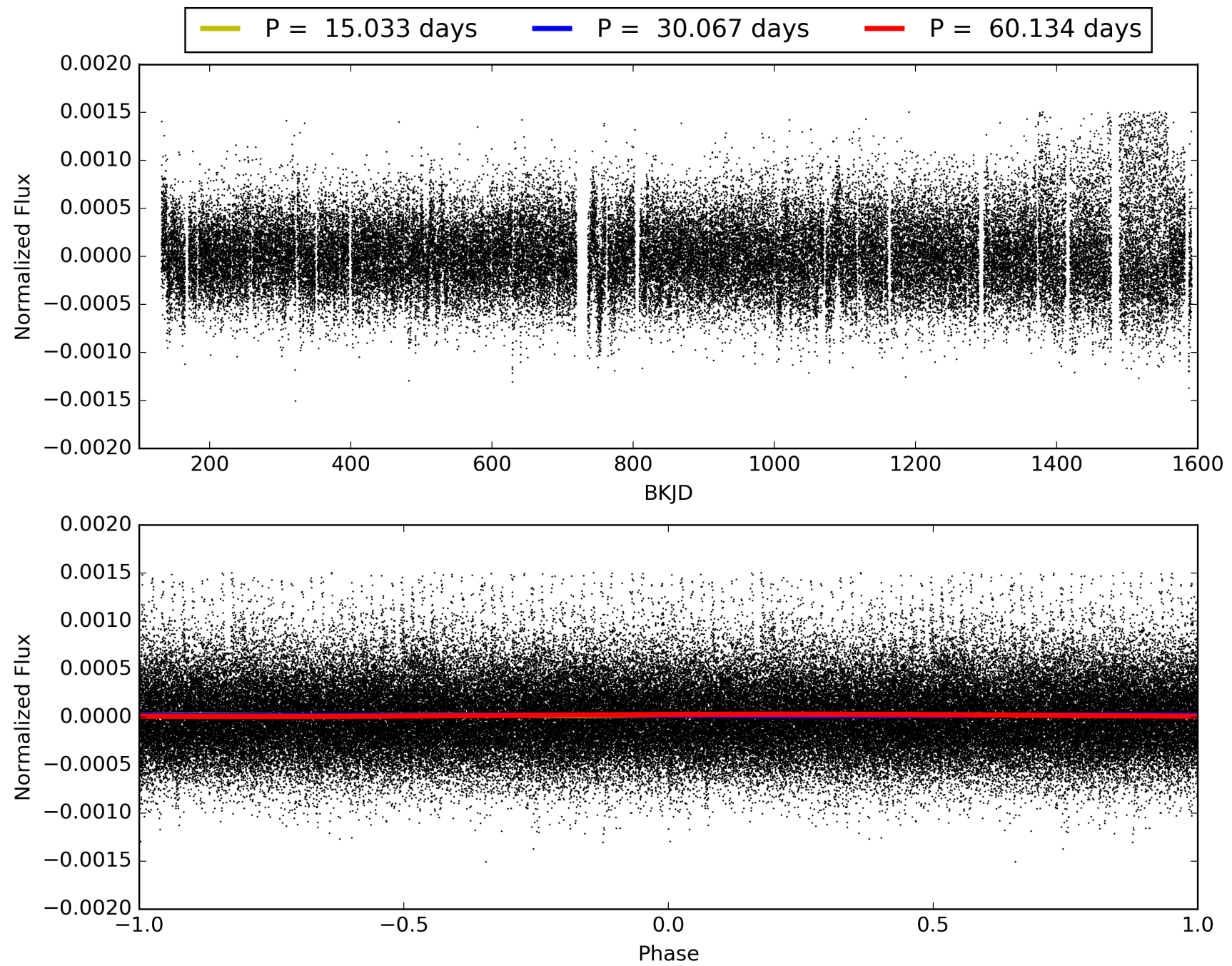
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center



# TCE 007199087-04, PDC Light Curves

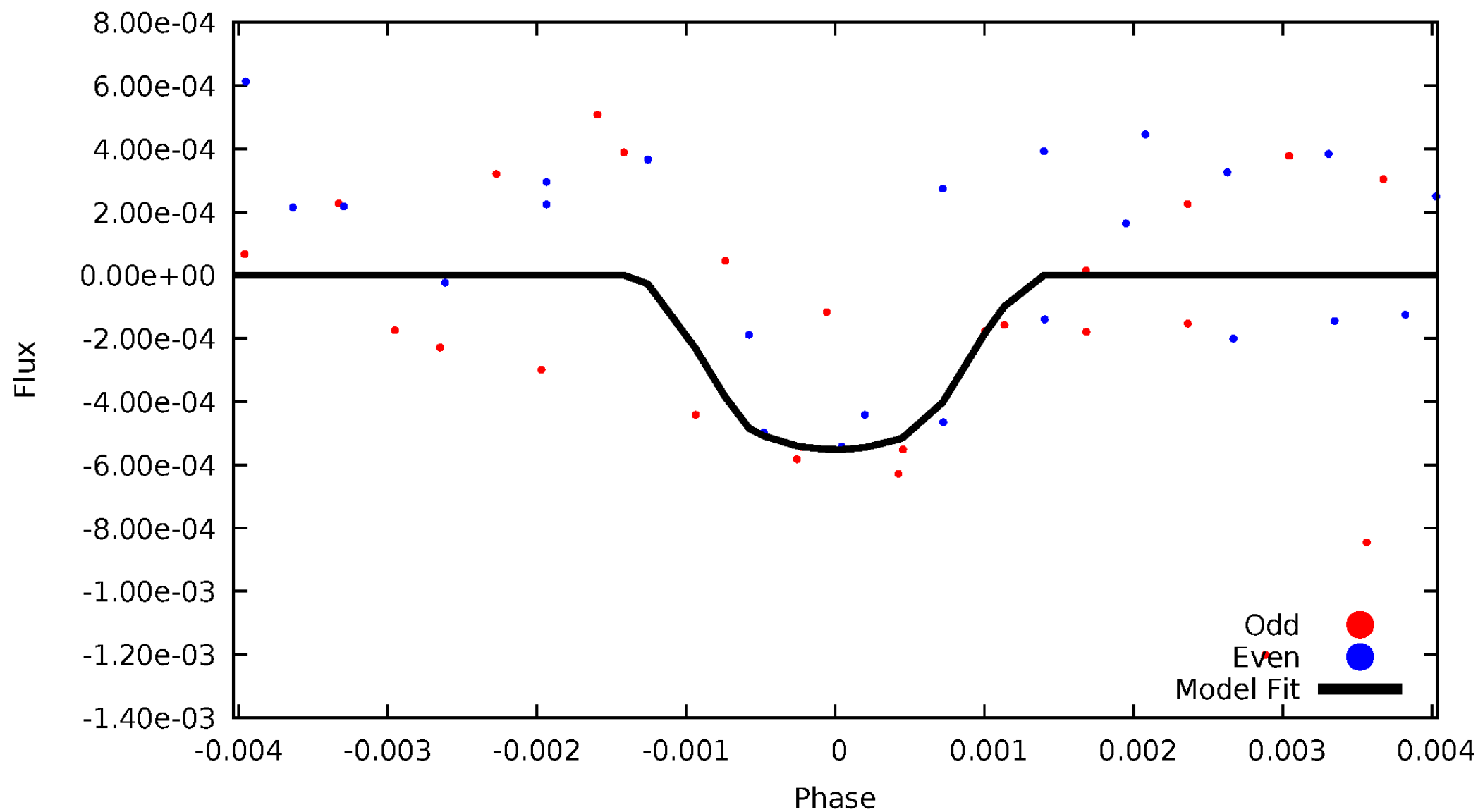


# TCE 007199087-04



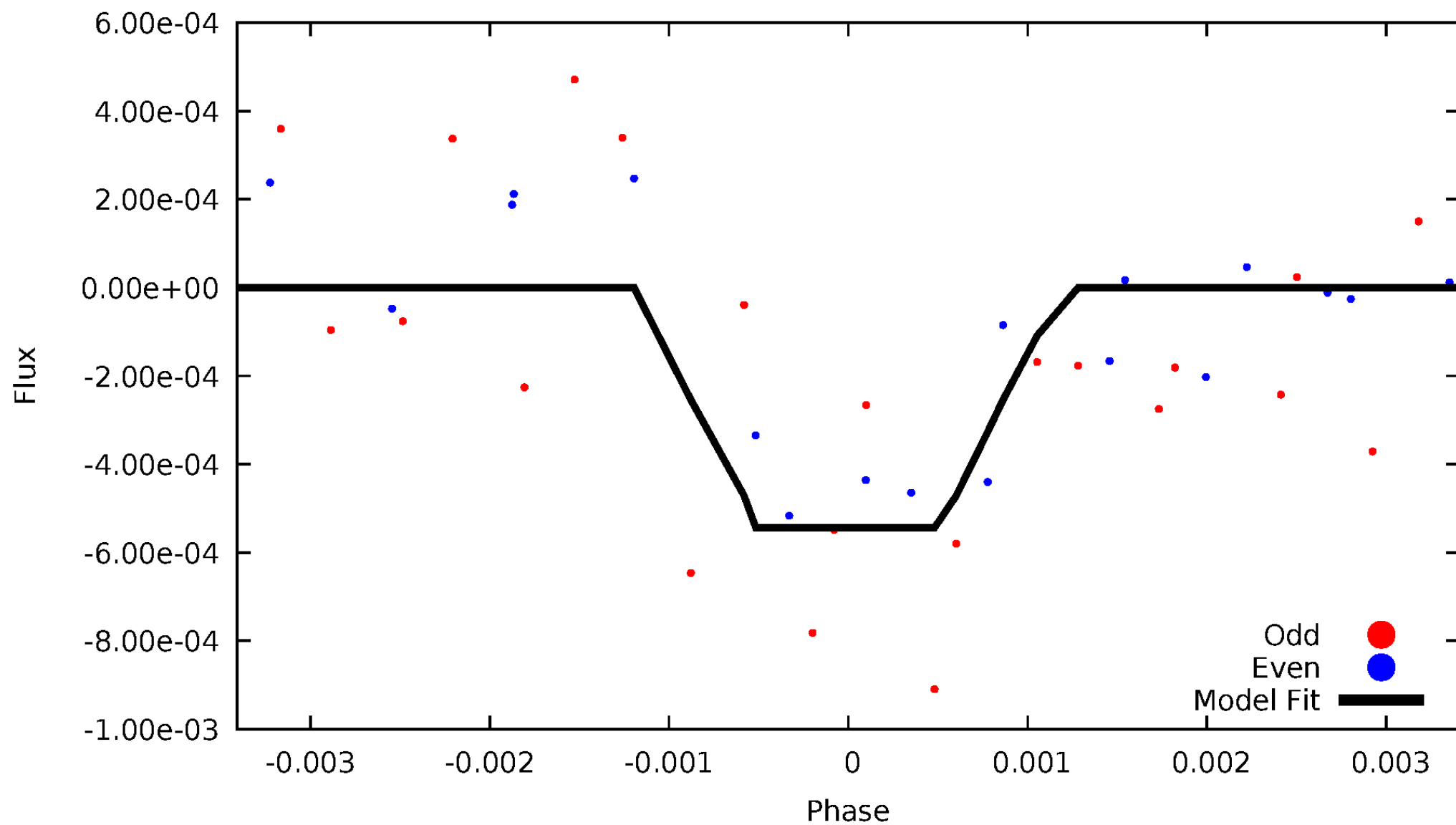
# DV Odd/Even

TCE 007199087-04



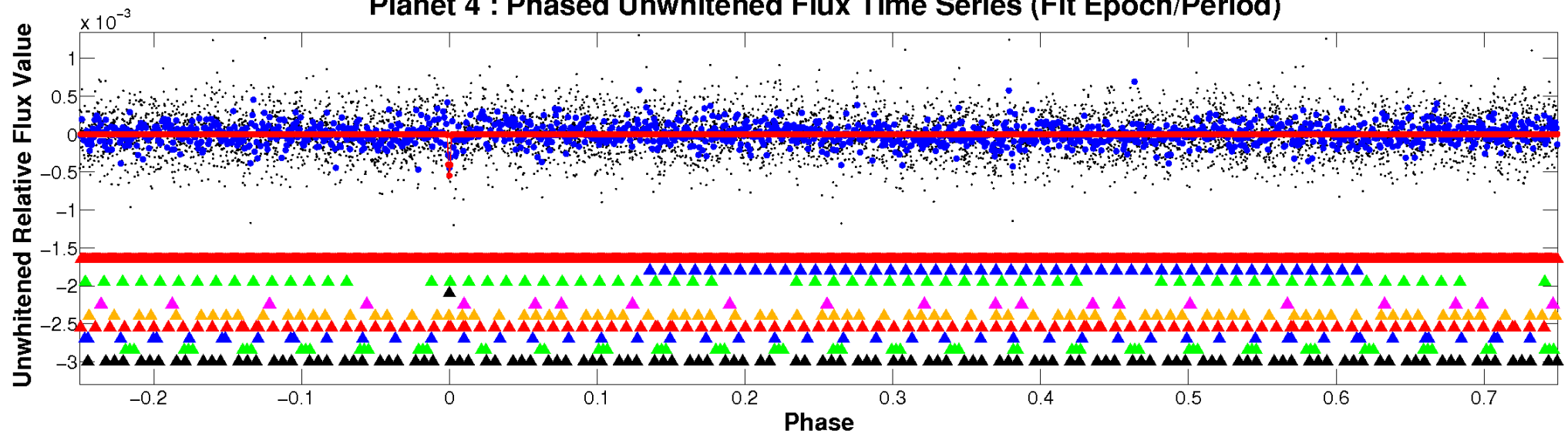
# ALT Odd/Even

TCE 007199087-04

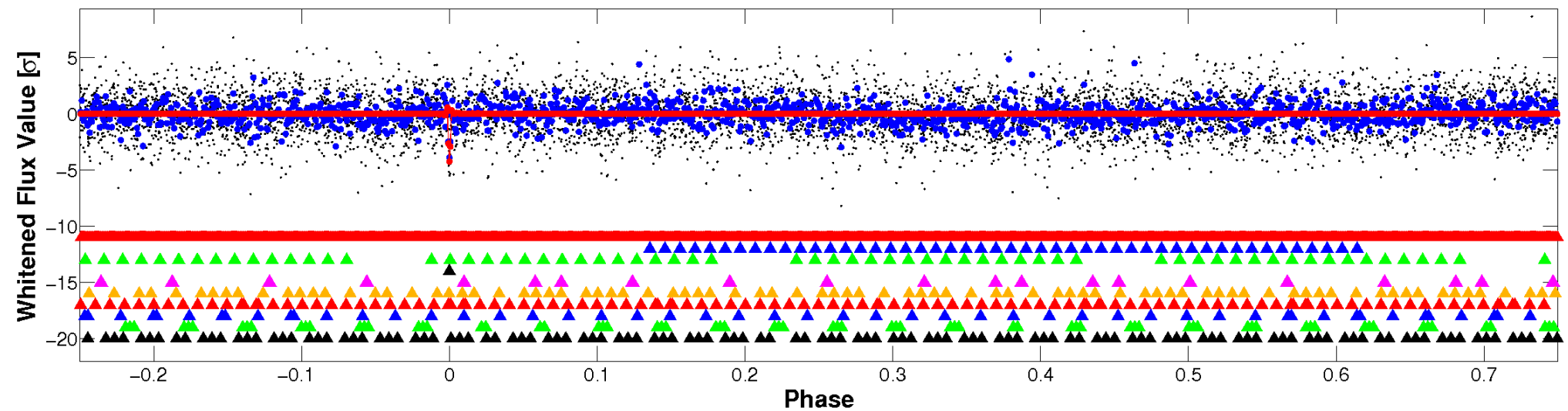


# Non-Whitened Vs. Whitened Light Curve

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

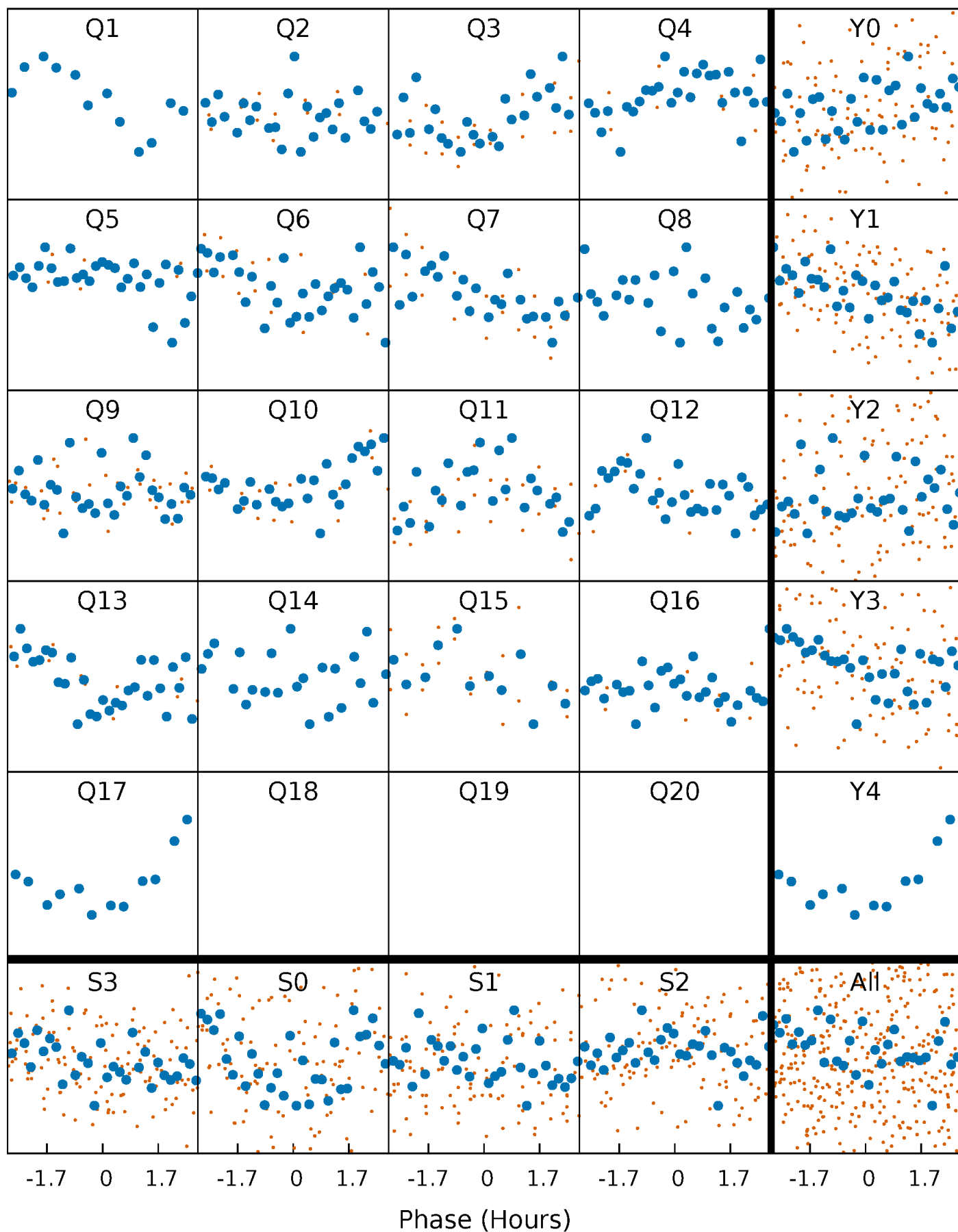


## Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



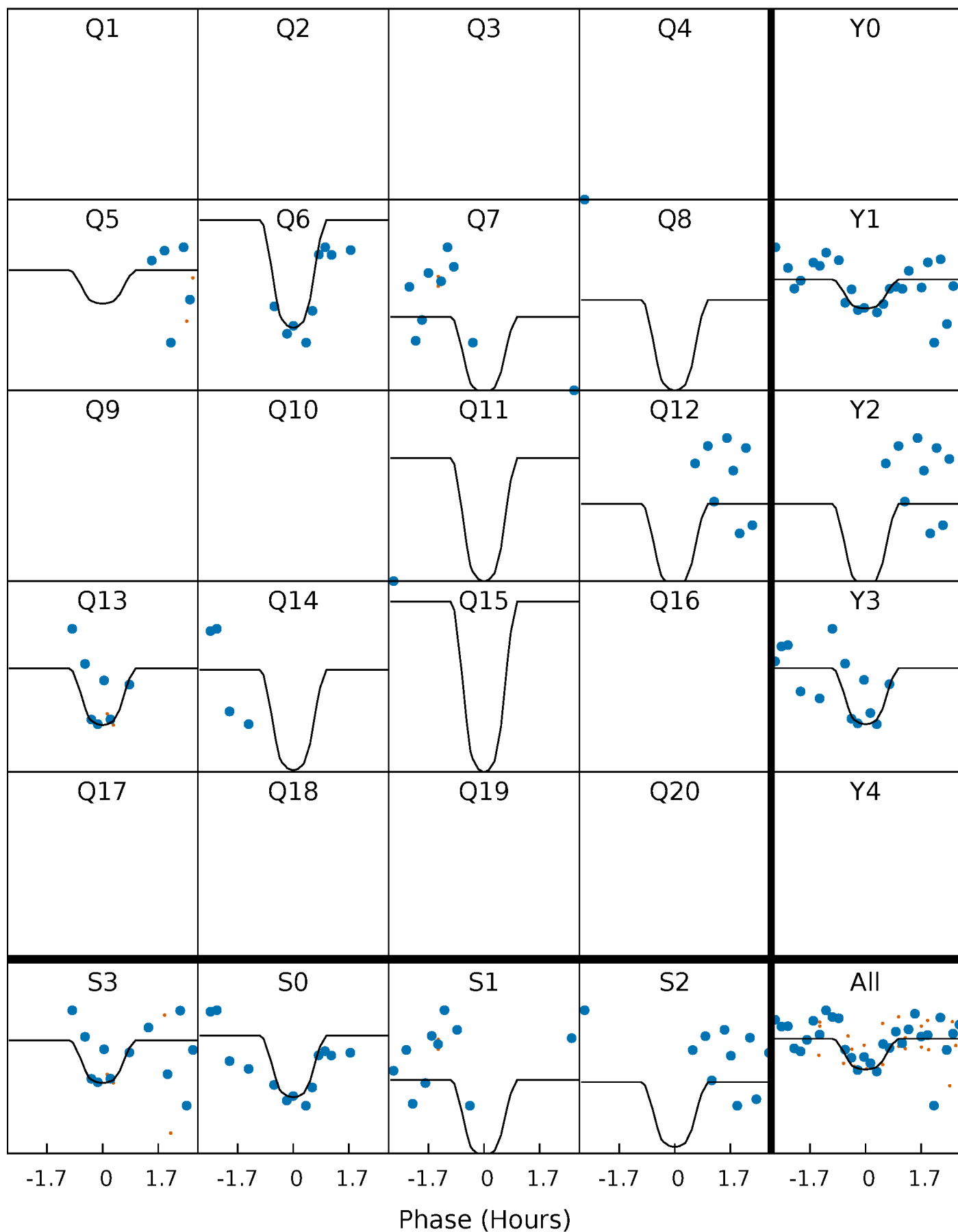
# PDC Quarter-Phased Transit Curves

TCE 007199087-04 P= 30.066788 Days  $T_0=151.392002$  (BKJD)



# DV Quarter-Phased Transit Curves

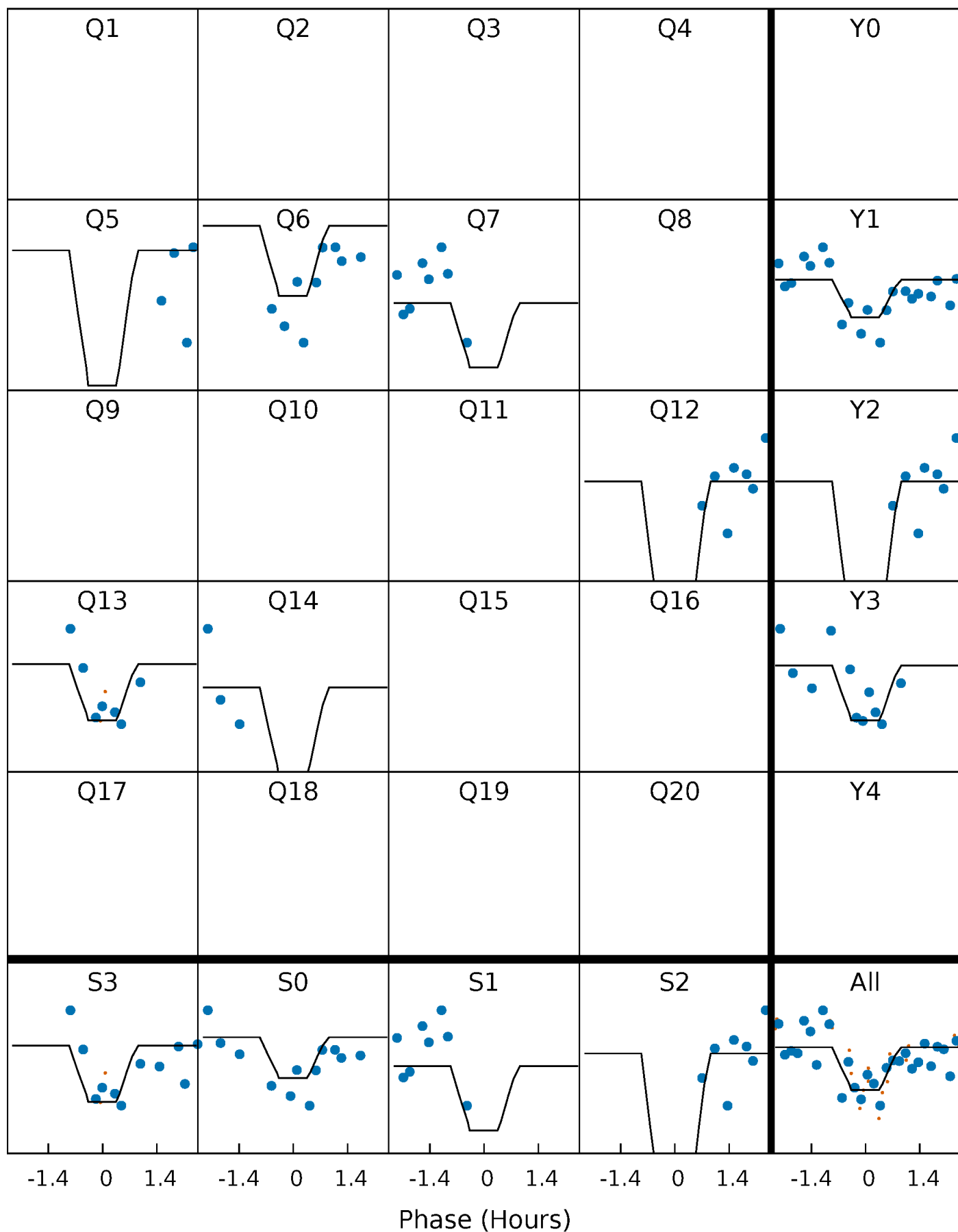
TCE 007199087-04     $P = 30.066788$  Days     $T_0 = 151.392002$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

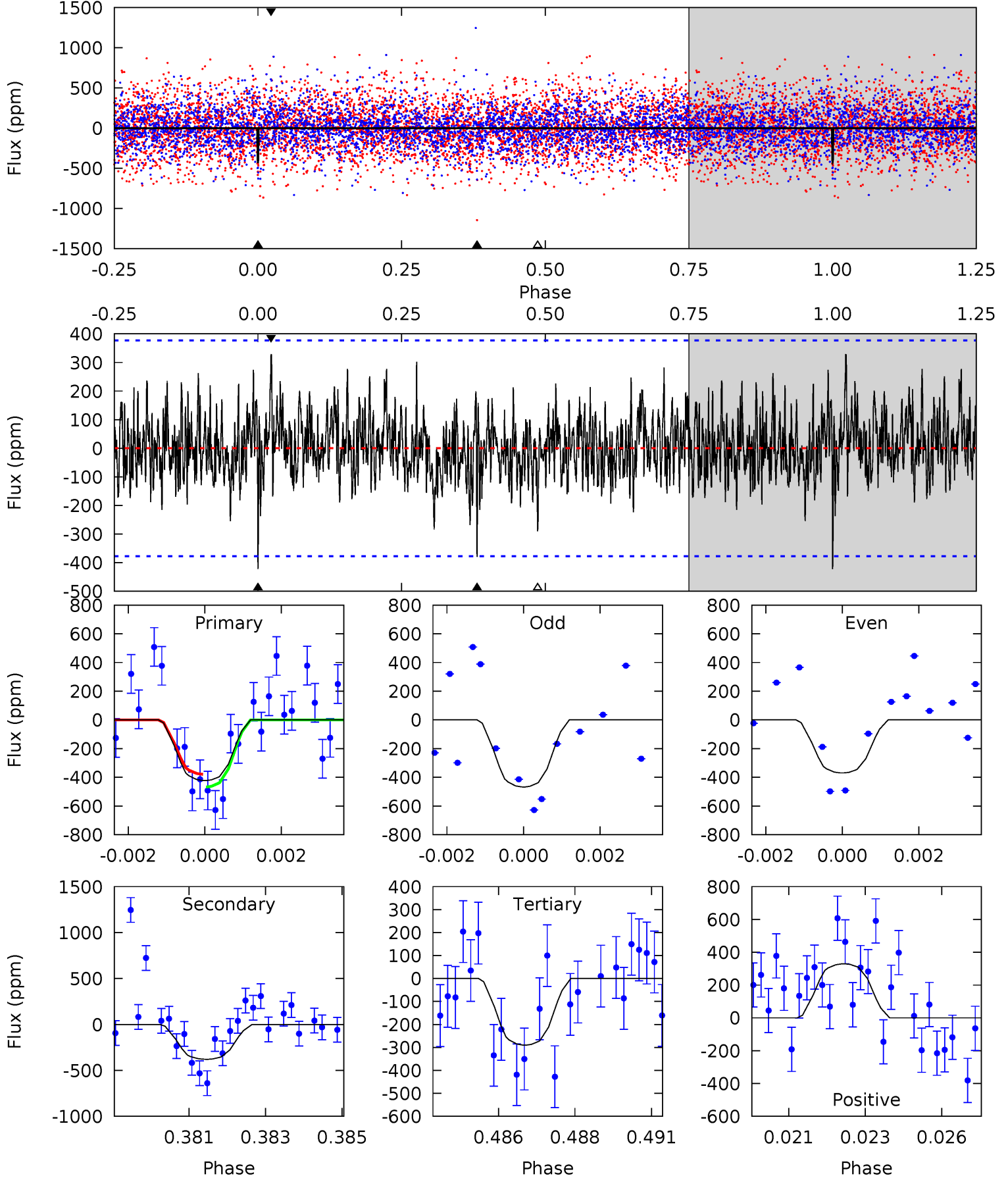
TCE 007199087-04 P= 30.066653 Days  $T_0=151.392305$  (BKJD)



# DV Model-Shift Uniqueness Test

007199087-04,  $P = 30.066788$  Days,  $E = 121.325214$  Days

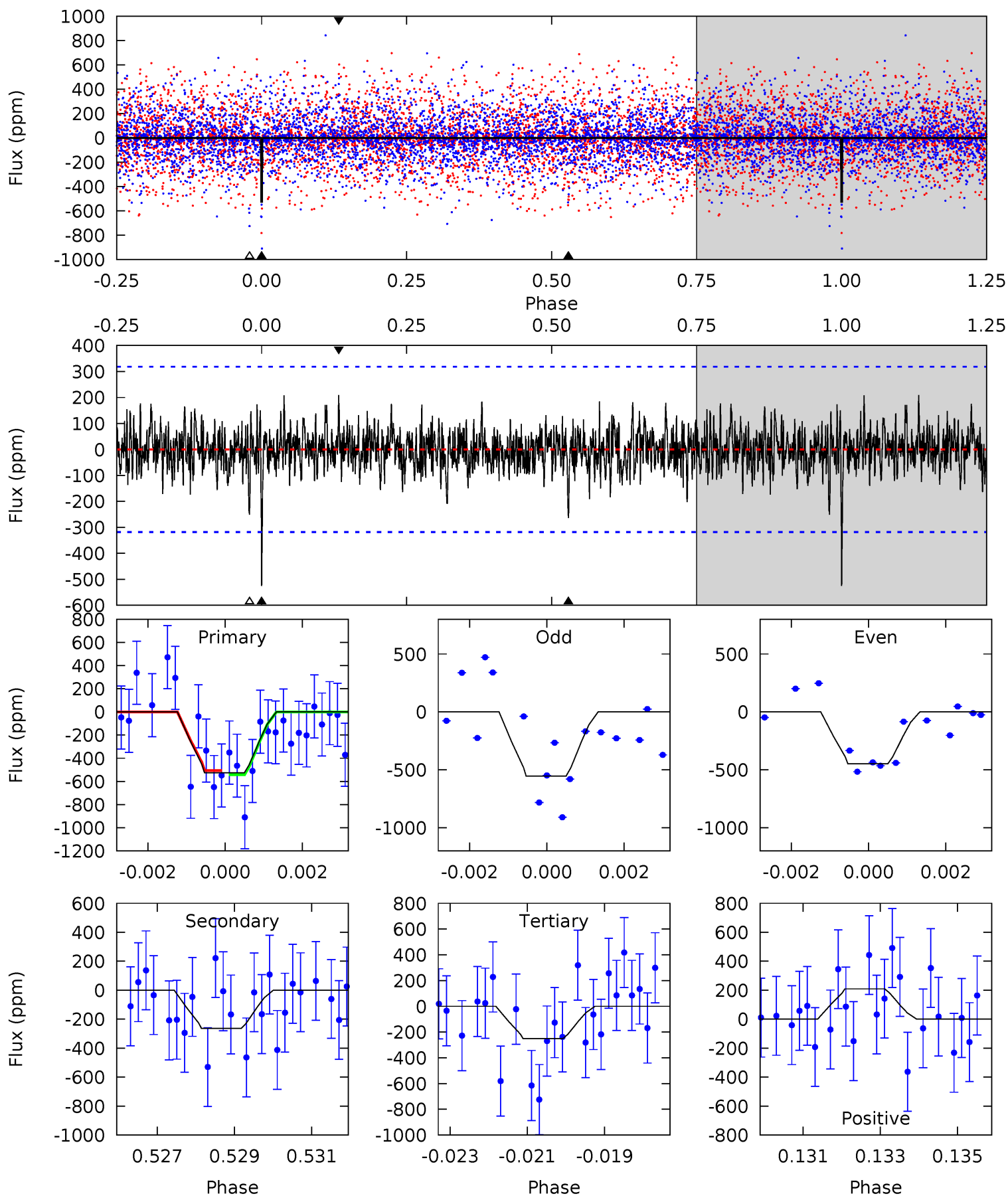
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.94	5.33	4.08	4.63	5.30	3.04	1.29	1.86	1.31	1.25	0.71	0.68	0.80	0.44	0.62



# Alt Model-Shift Uniqueness Test

007199087-04, P = 30.066653 Days, E = 121.325652 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
8.80	4.41	4.20	3.50	5.33	3.10	1.02	4.60	5.30	0.21	0.91	0.89	1.04	0.28	0.31



### Stellar Parameters For KIC 007199087

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5161^{+139}_{-154}$	$3.782^{+0.812}_{-0.348}$	$-0.420^{+0.300}_{-0.300}$	$1.952^{+1.204}_{-1.204}$	$0.842^{+0.178}_{-0.145}$	$0.160^{+3.448}_{-0.111}$
	+3%/-3%	+21%/-9%	+71%/-71%	+62%/-62%	+21%/-17%	+2162%/-70%
Source	PHO1	KIC0	KIC0	DSEP		

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

### Secondary Eclipse Parameters for KIC 007199087-04 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-380 \pm 71$	$8.21^{+8.91}_{-5.76}$	$1035^{+172}_{-191}$	$3835^{+2088}_{-722}$	$99^{+1016}_{-76}$
Alt.	$-264 \pm 60$	$8.10^{+9.23}_{-5.51}$	$1036^{+167}_{-197}$	$3592^{+1954}_{-669}$	$69^{+669}_{-54}$

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

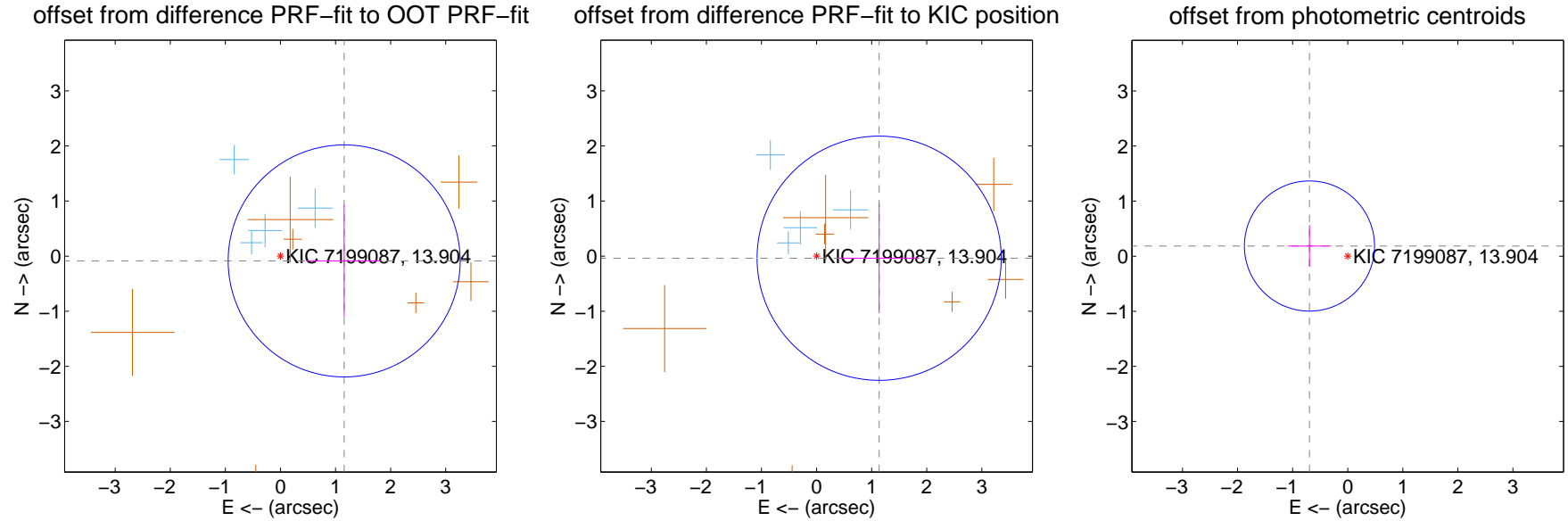
## DV Centroid Data

Supplemental centroid analysis for 007199087-04. Kepler magnitude: 13.90. Transit SNR 13.40

There are 4 quarters with good PRF difference image offsets

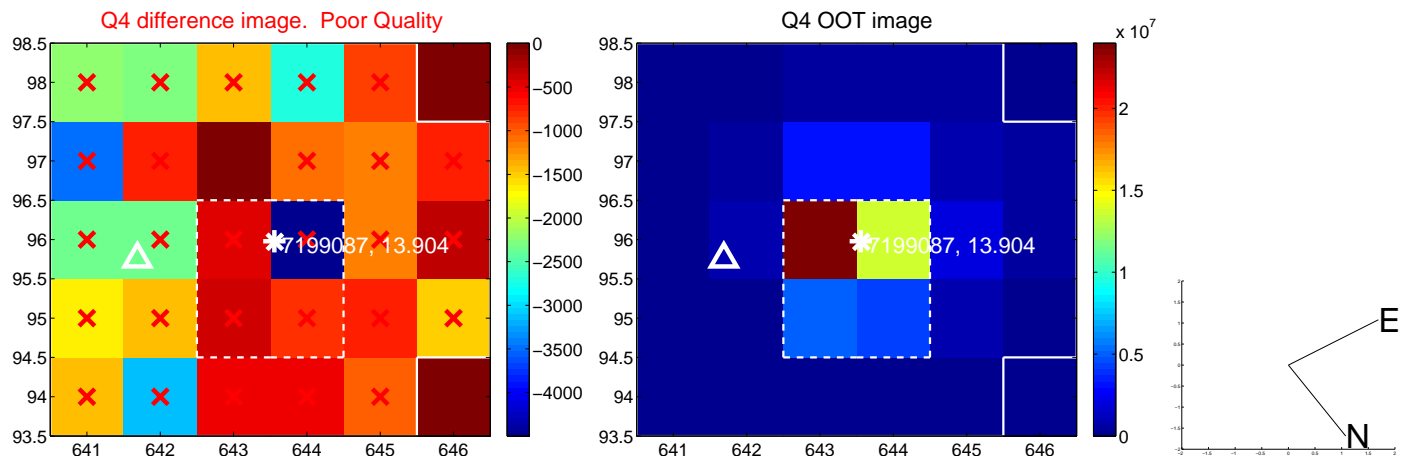
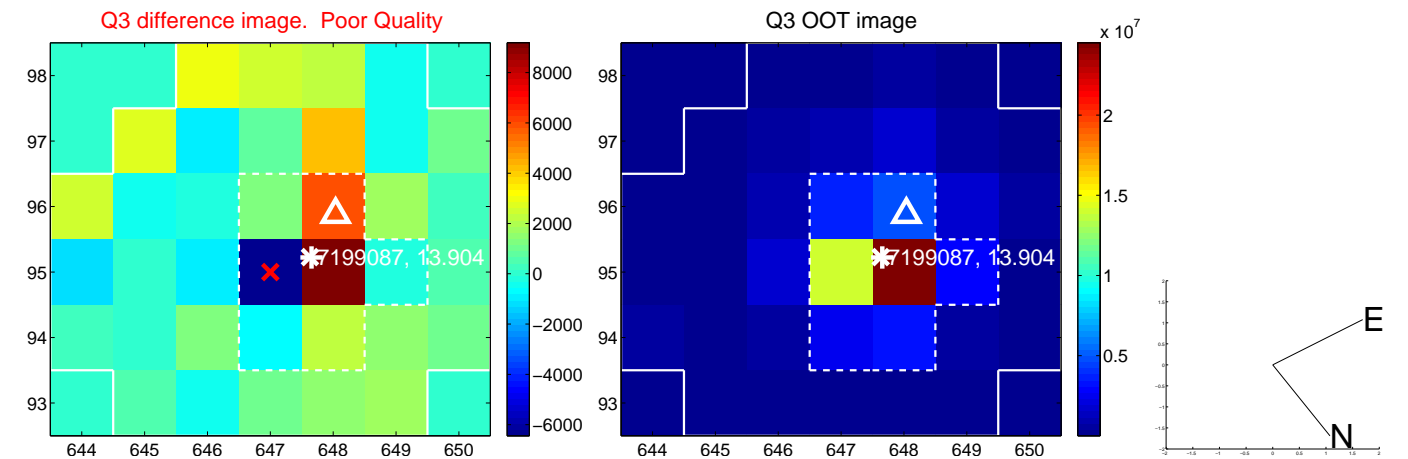
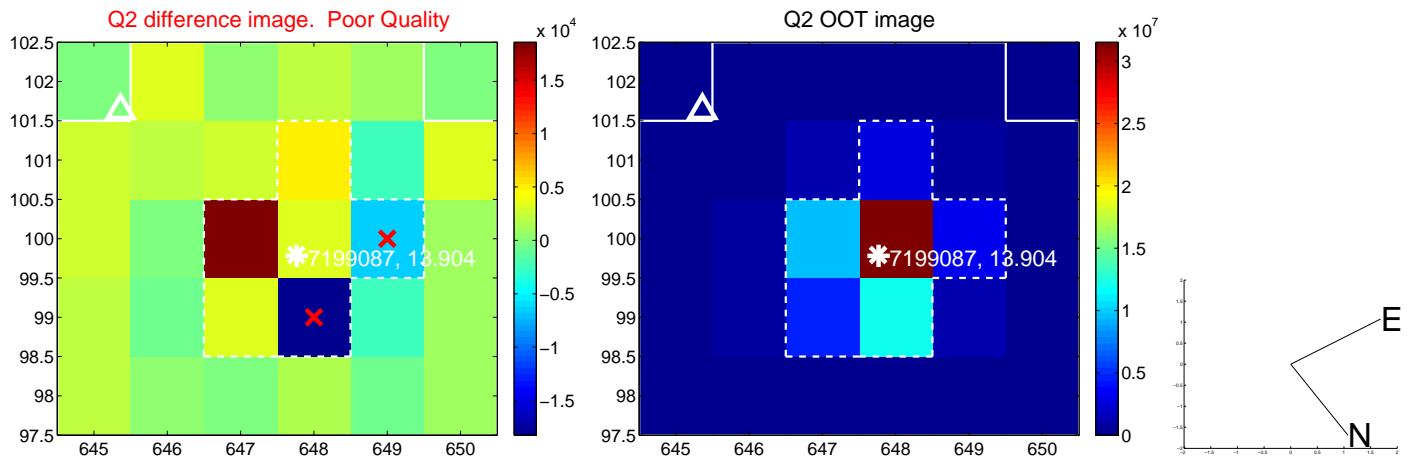
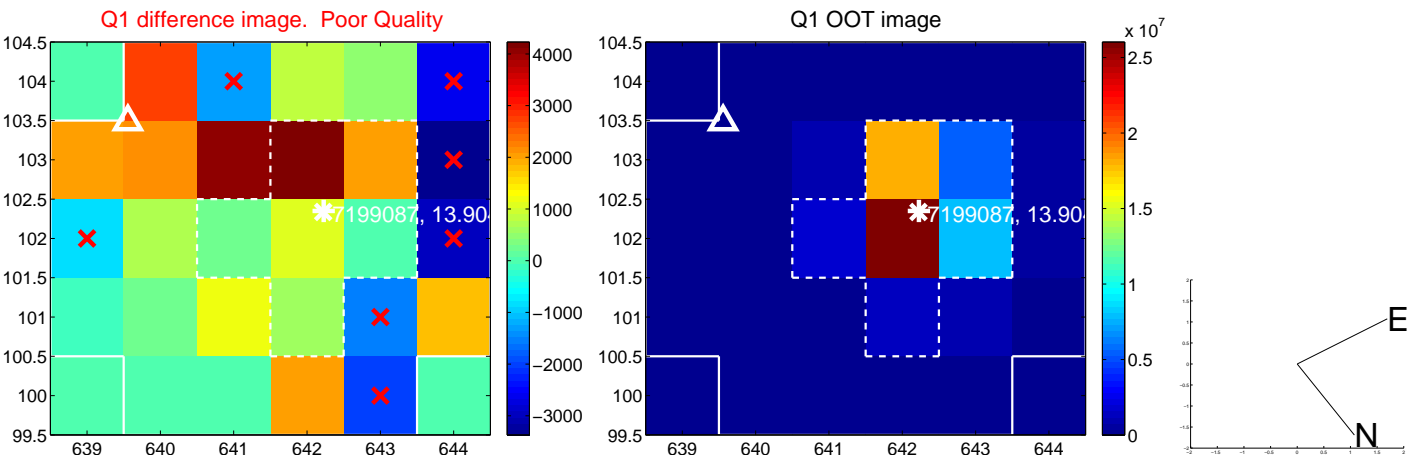
The direct PRF centroid is offset from the target star catalog position by about 0.01 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.160 \pm 0.702$	1.65	$-1.157 \pm 0.677$	$-0.087 \pm 1.020$
PRF-fit source offset from KIC position	$1.137 \pm 0.739$	1.54	$-1.136 \pm 0.729$	$-0.038 \pm 0.995$
photometric centroid source offset	$0.72 \pm 0.39$	1.82	$0.69 \pm 0.40$	$0.18 \pm 0.38$

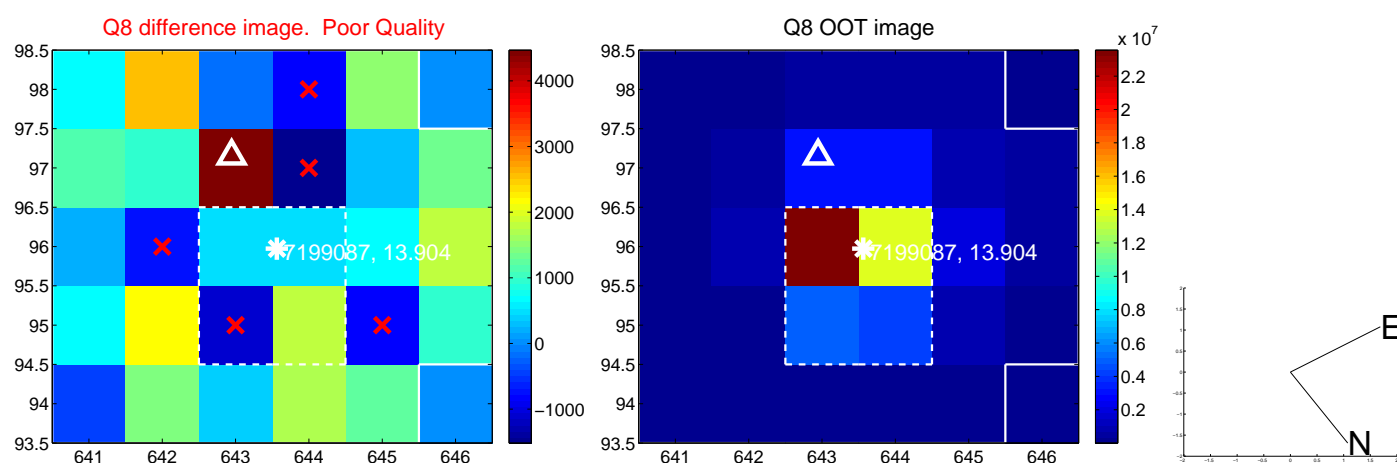
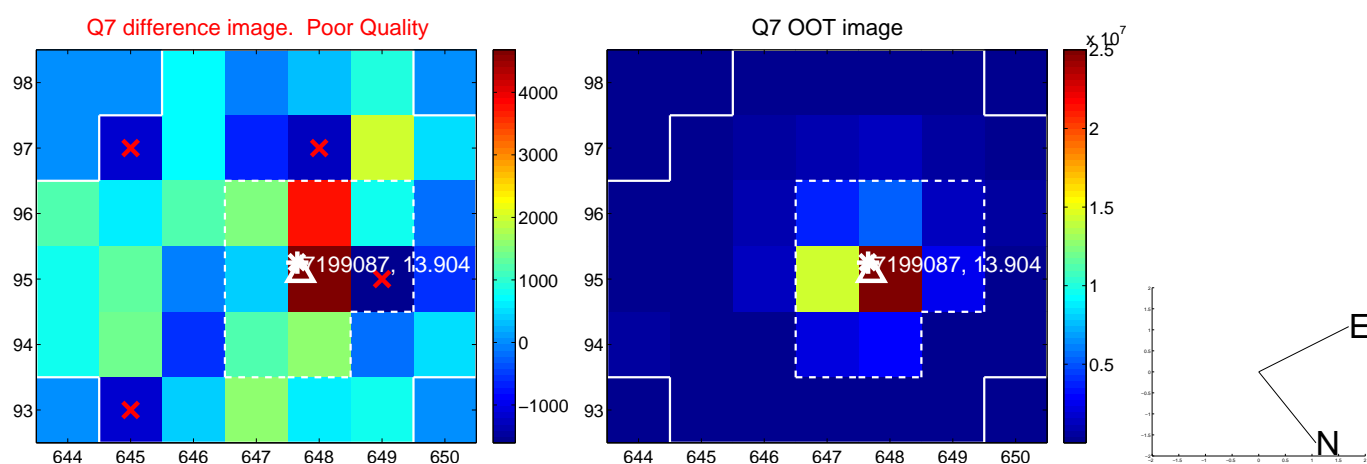
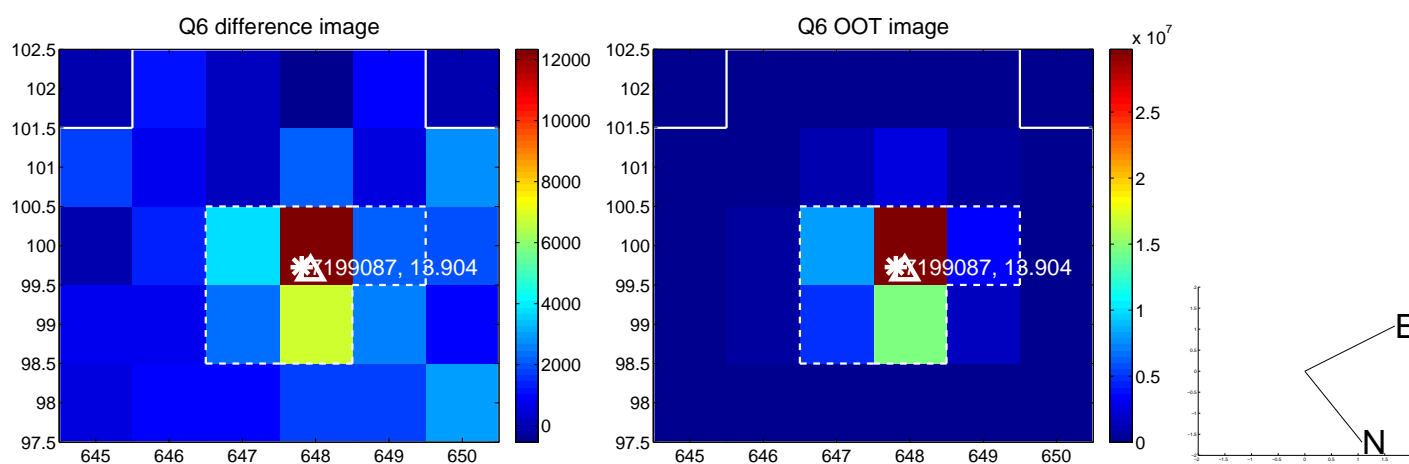
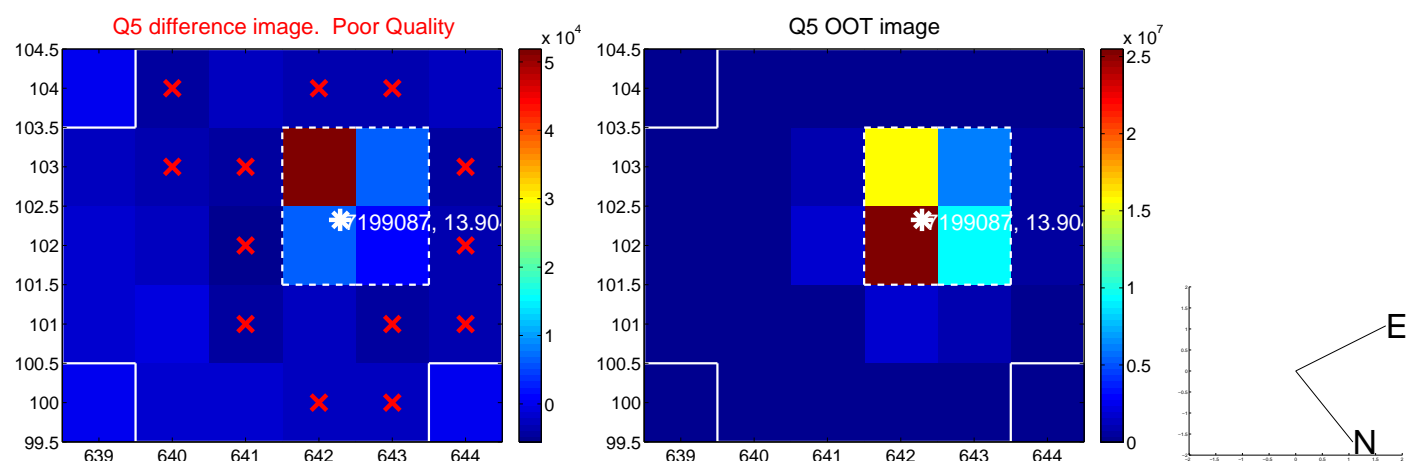


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

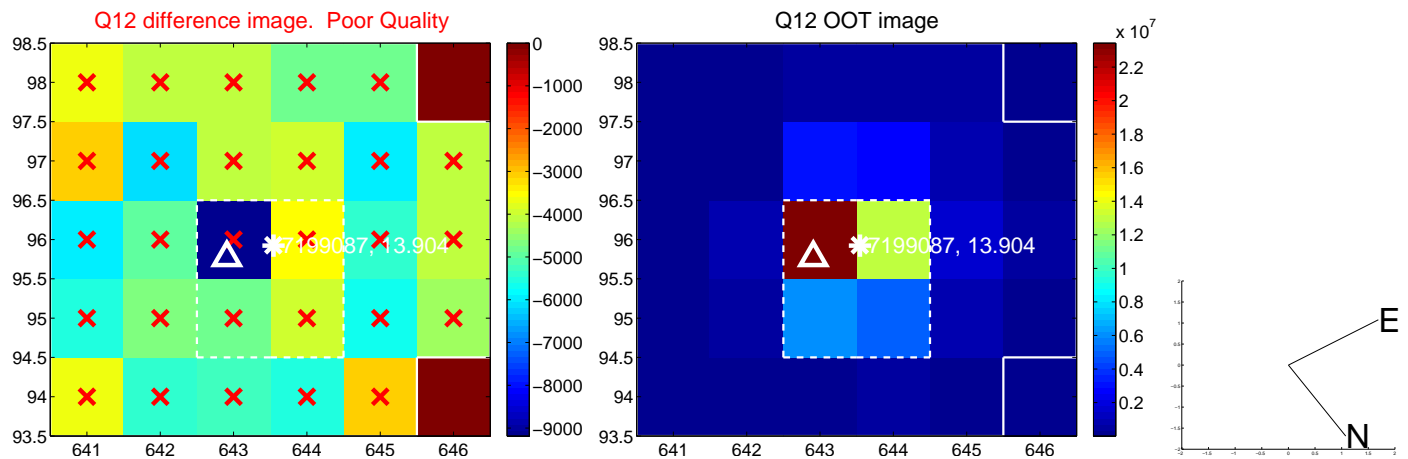
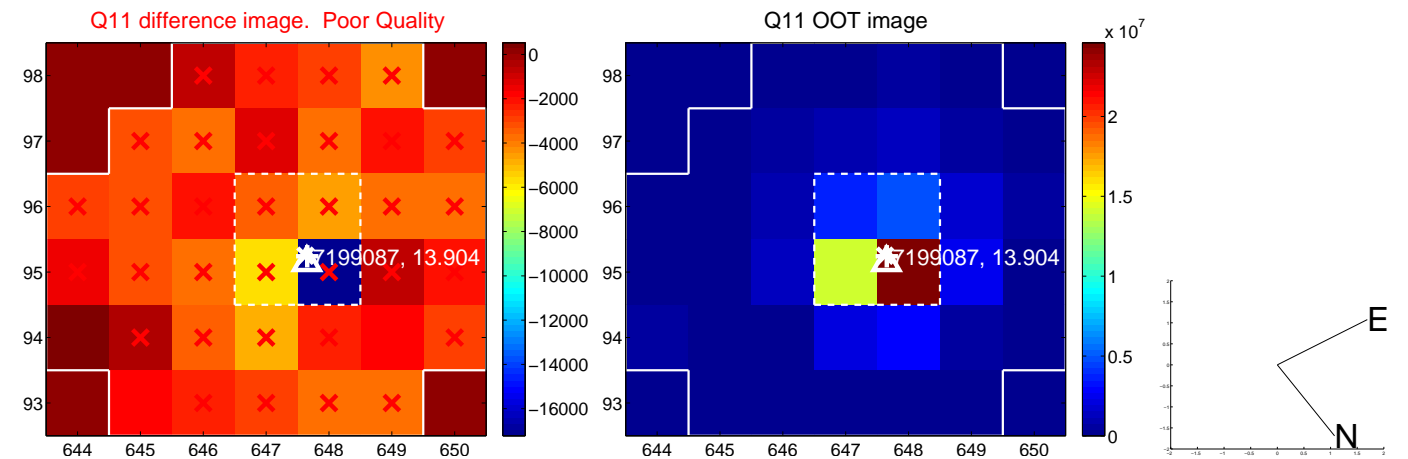
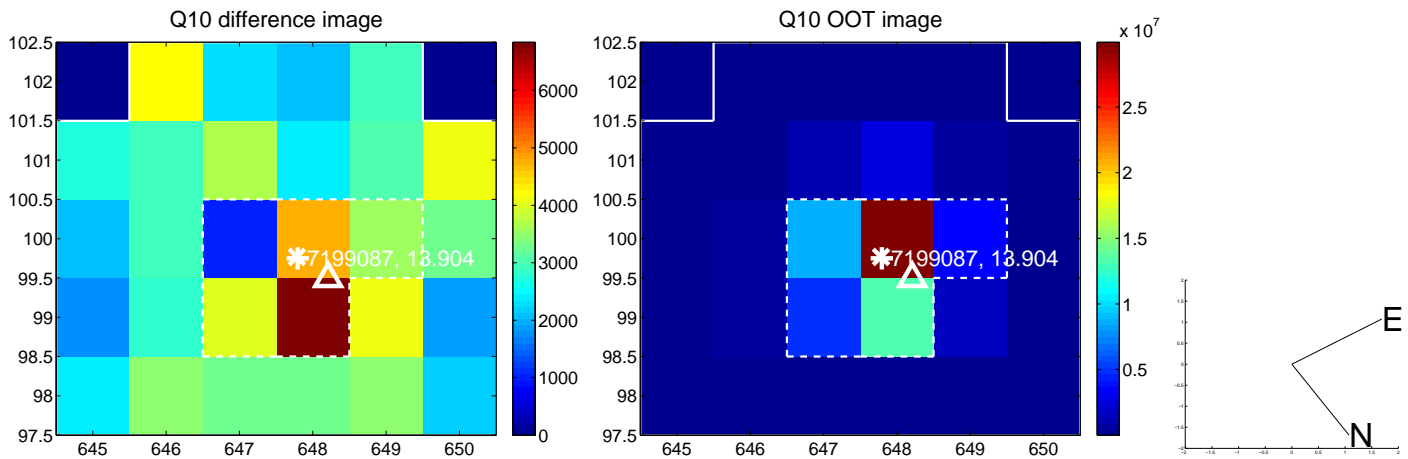
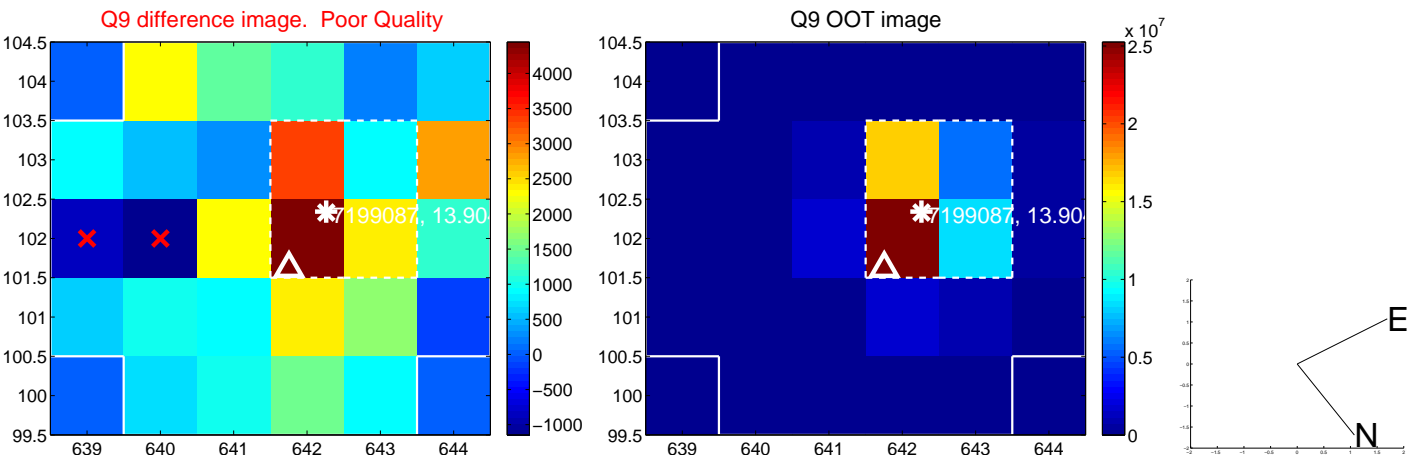


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

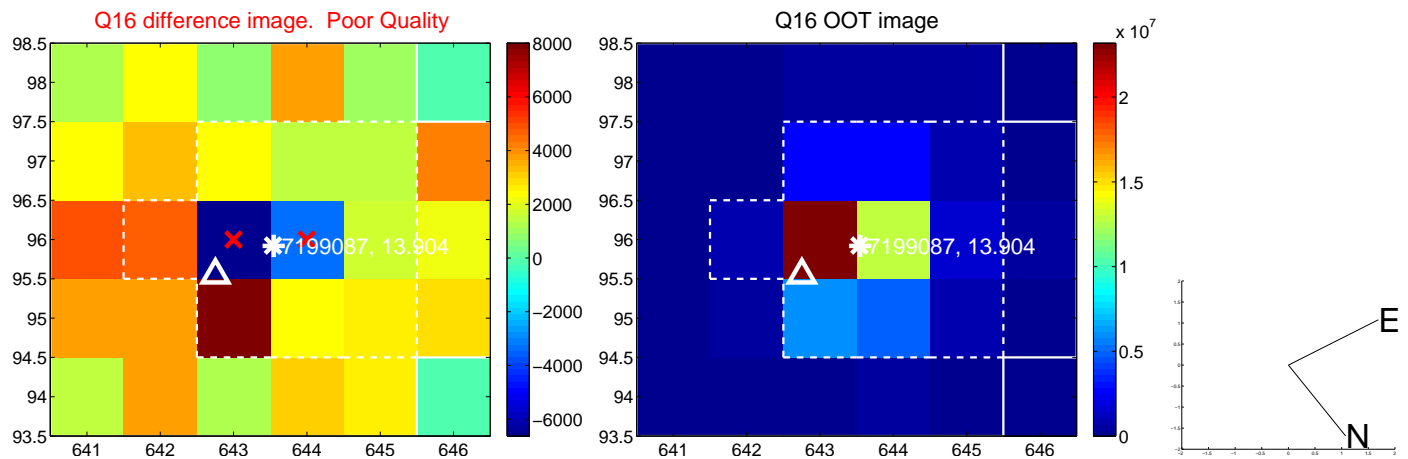
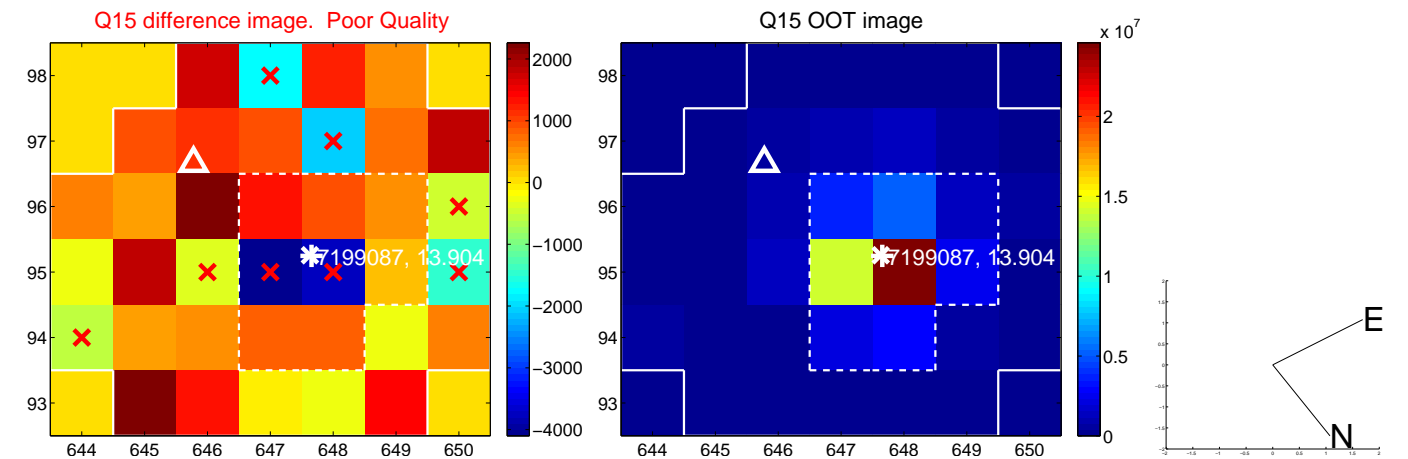
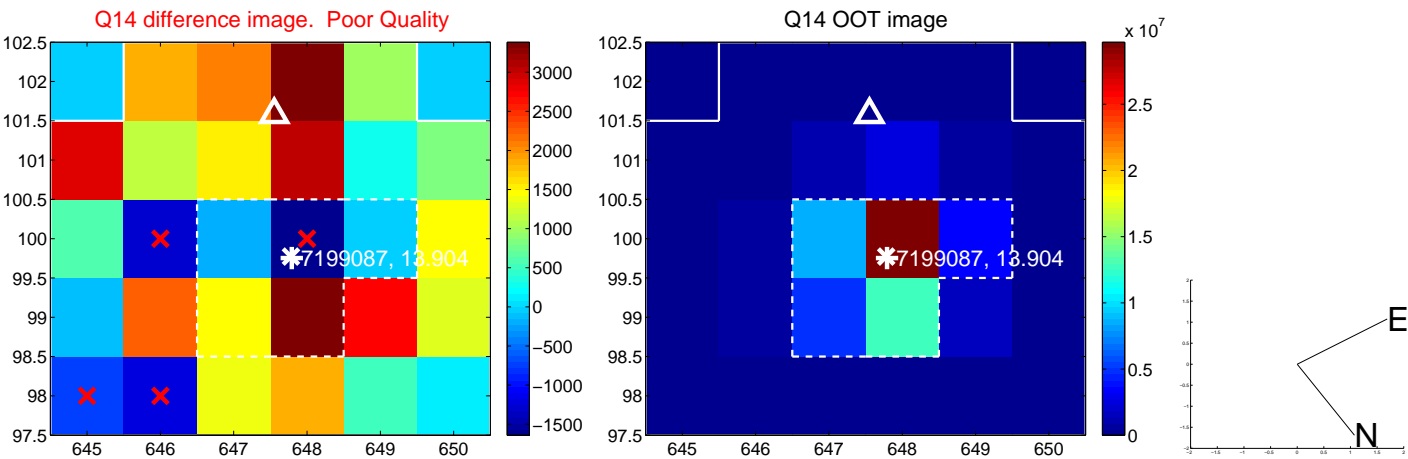
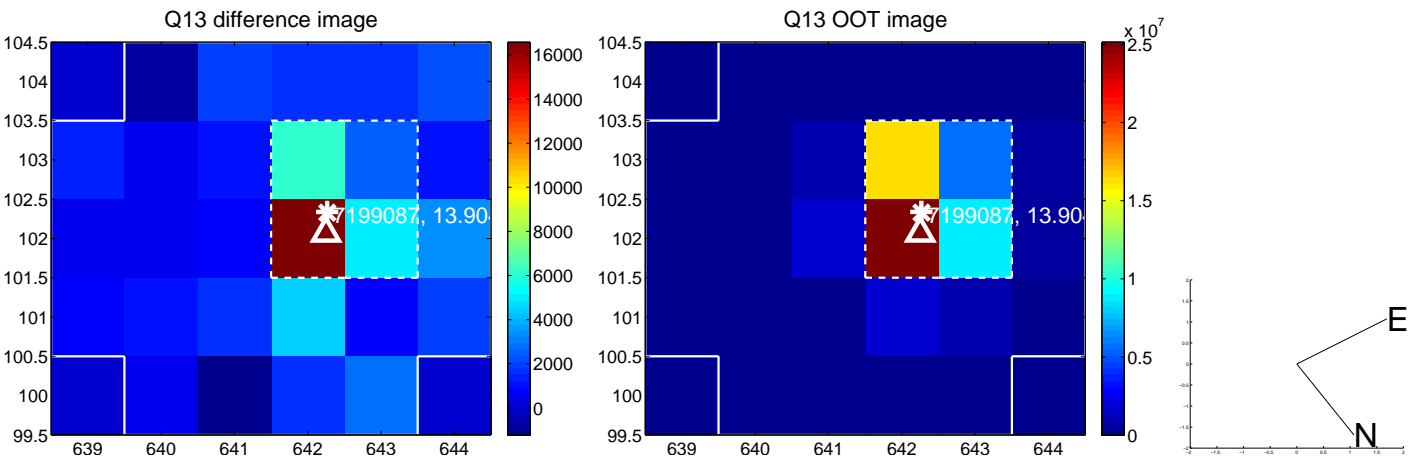




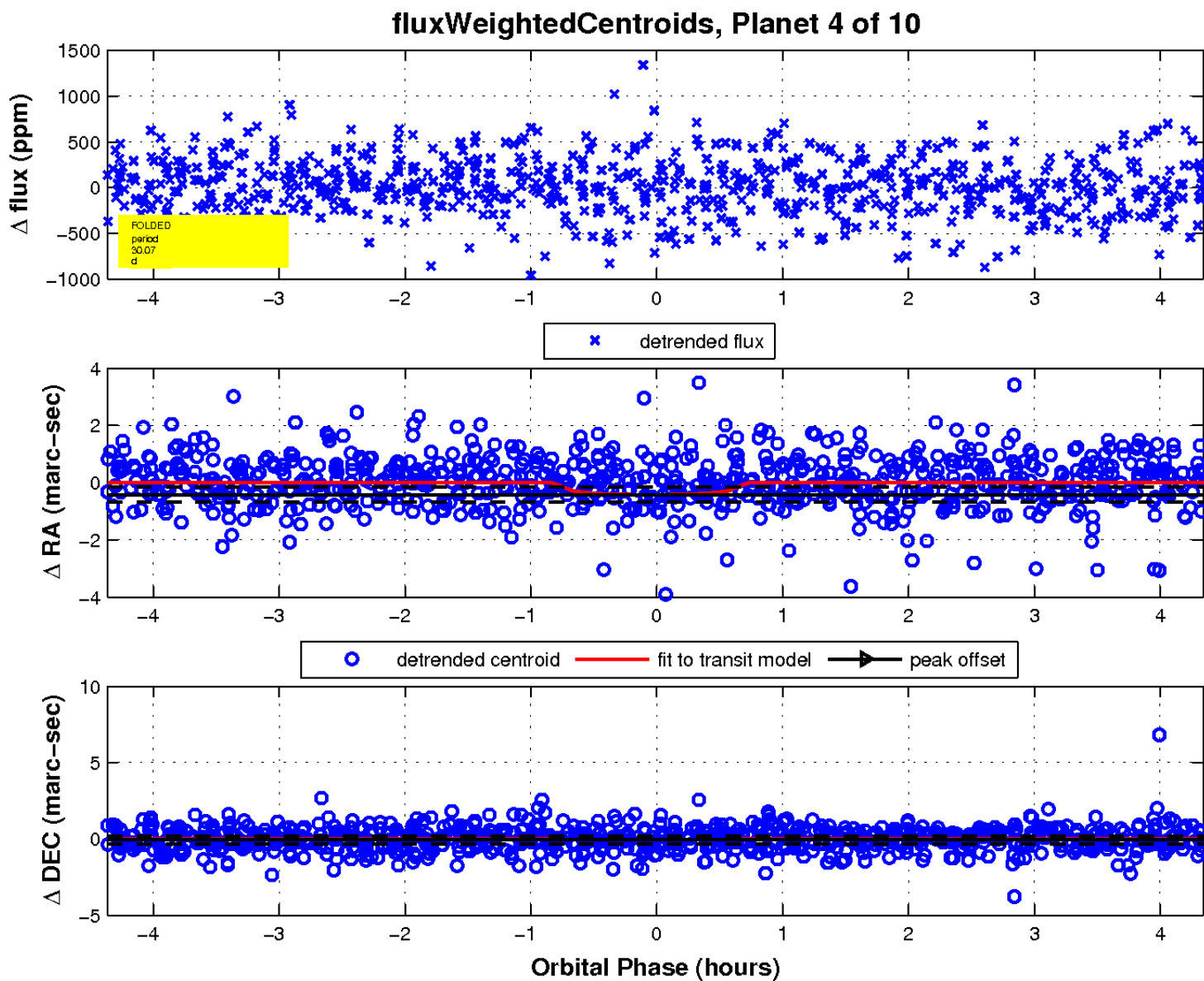
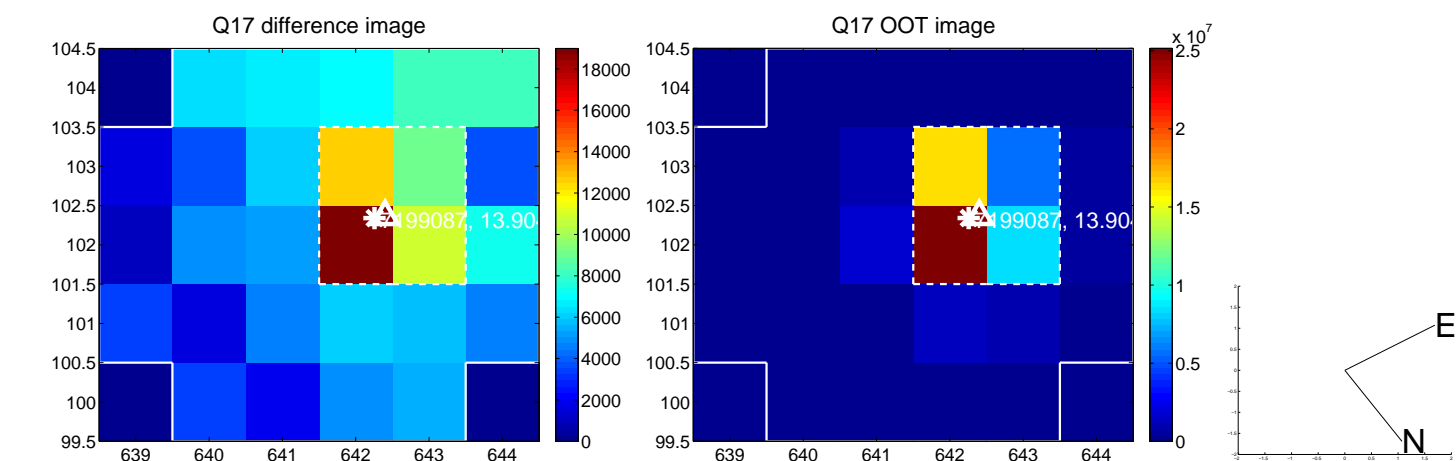
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

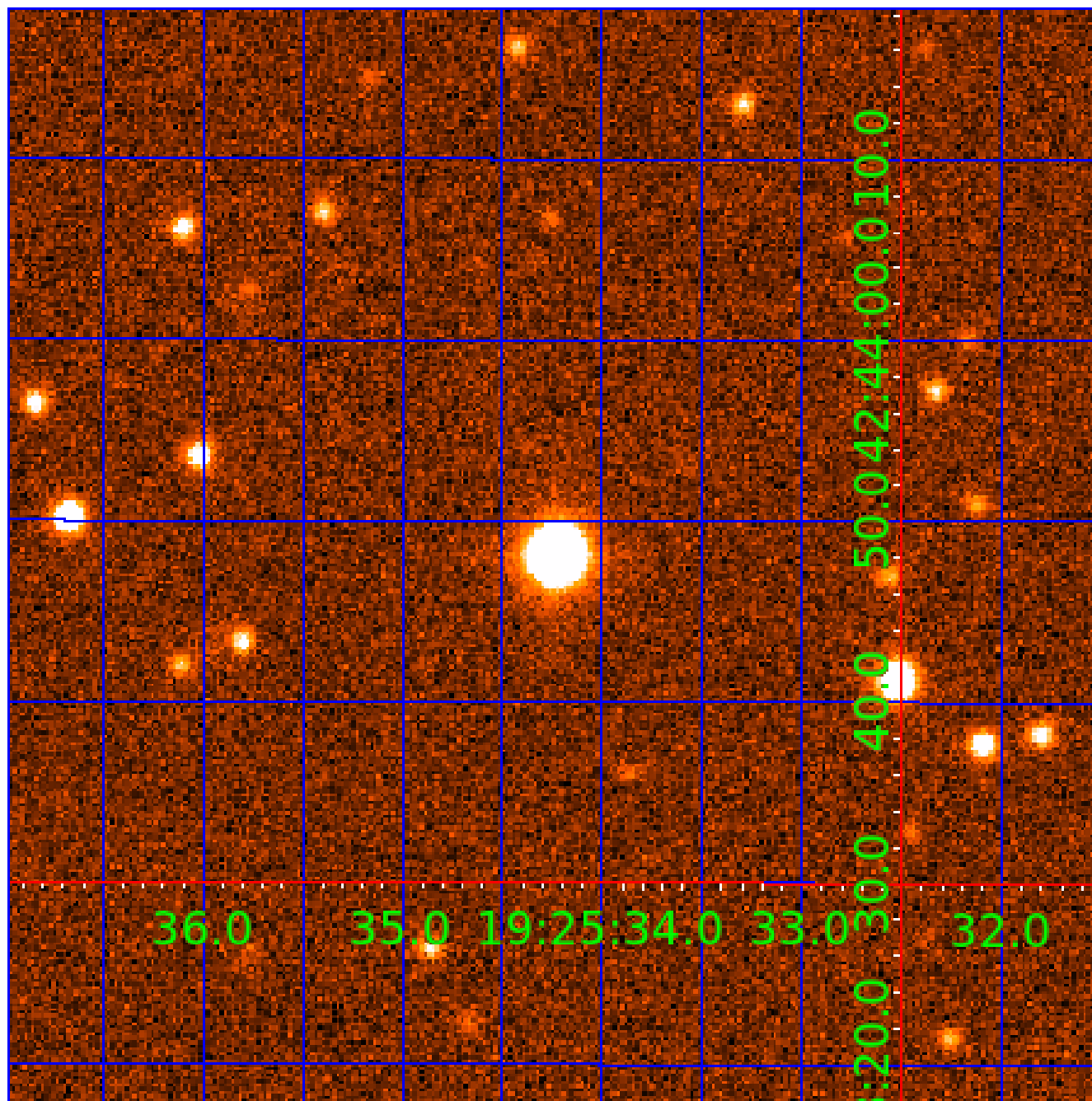


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



## KIC 007199087

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007199087-01	OBS	No	0.566789	131.670402	8.5	3.882	14.8	2.7	1.95	5161	0.56	15121.24
007199087-02	OBS	No	30.372888	155.472228	559.9	2.126	11.0	13.0	1.95	5161	9.51	74.85
007199087-03	OBS	No	22.645018	135.806898	358.7	5.851	12.1	11.4	1.95	5161	7.65	110.71
007199087-04	OBS	No	30.066788	151.392002	551.6	1.456	11.8	13.4	1.95	5161	4.56	75.86
007199087-05	OBS	No	69.496219	195.078789	535.3	3.211	10.0	10.7	1.95	5161	5.21	24.82
007199087-06	OBS	No	17.433948	136.980650	435.8	0.982	10.6	9.8	1.95	5161	4.96	156.90
007199087-07	OBS	No	12.928268	142.702231	321.2	1.694	9.9	10.2	1.95	5161	3.77	233.76
007199087-08	OBS	No	28.669881	148.165240	606.7	0.987	9.2	8.4	1.95	5161	5.76	80.83
007199087-09	OBS	No	20.441918	143.787734	418.3	1.326	10.7	9.8	1.95	5161	4.12	126.90
007199087-10	OBS	No	11.882767	139.895565	291.3	4.500	8.6	-1.0	1.95	5161	3.26	261.57

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007199087-01	OBS	FP	0.00	1	0	1	1	SWEET_NTL—LPP_DV—LPP_ALT—HALO_GHOST—EPHEM_MATCH
007199087-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT
007199087-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
007199087-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
007199087-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
007199087-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
007199087-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
007199087-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV
007199087-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT
007199087-10	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT—CENT_NOFITS

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

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

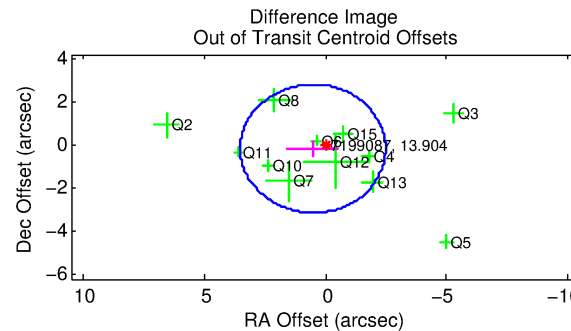
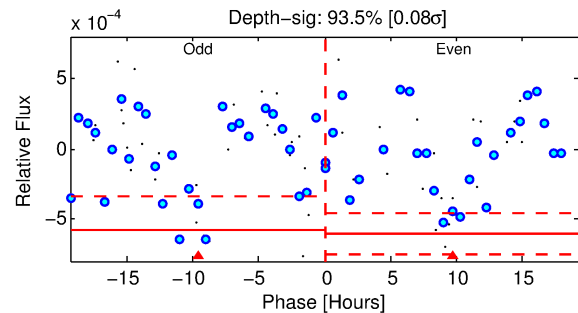
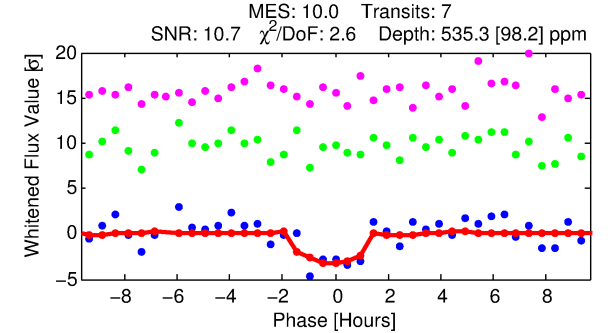
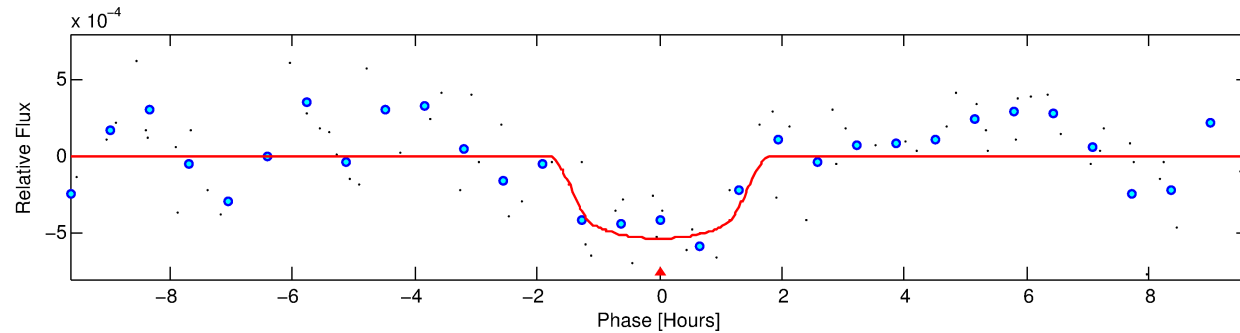
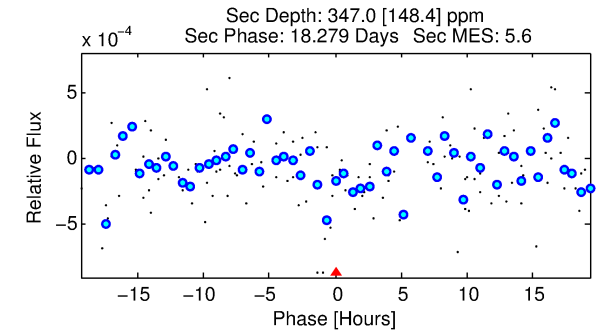
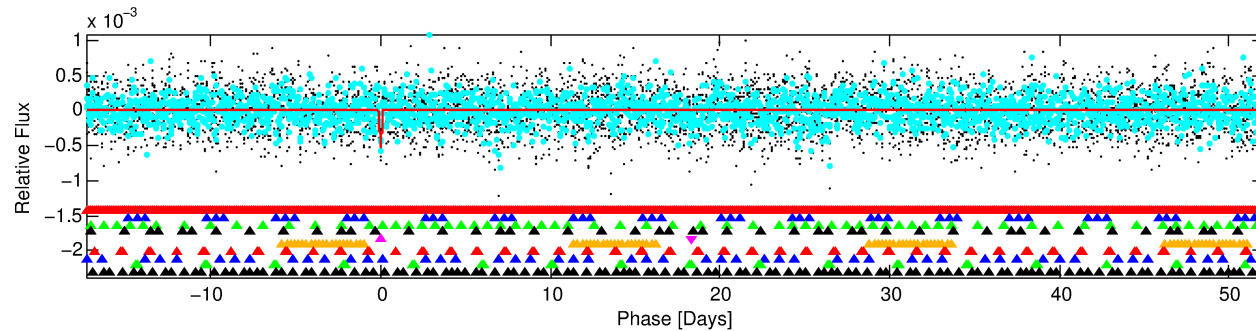
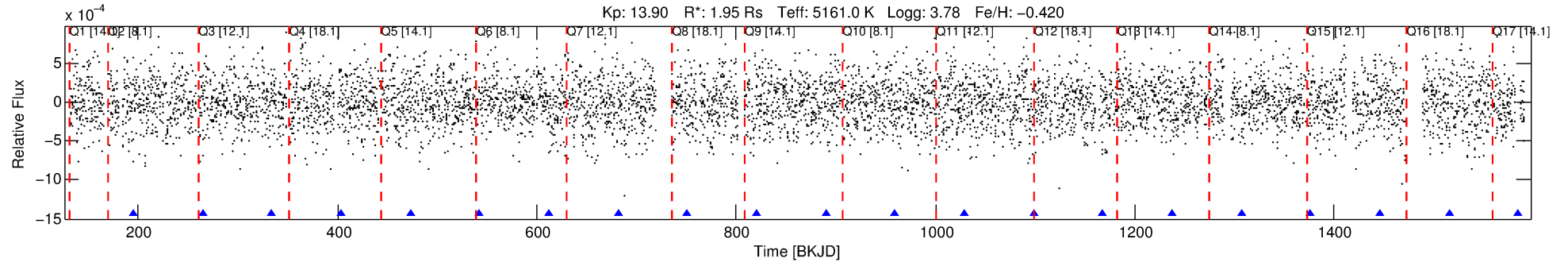
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 007199087-05

No Significant Match Found

# DV One-Page Summary

KIC: 7199087 Candidate: 5 of 10 Period: 69.496 d



## DV Fit Results:

Period = 69.49622 [0.00217] d  
Epoch = 195.0788 [0.0219] BKJD  
Rp/R\* = 0.0244 [0.0300]  
a/R\* = 94.17 [466.43]  
b = 0.85 [1.64]  
Seff = 24.82 [32.72]  
Teff = 569 [188] K  
Rp = 5.21 [7.15] Re  
a = 0.3124 [0.2332] AU  
Ag = 686.99 [1933.04] [0.35 $\sigma$ ]  
Teffp = 4505 [2807] K [1.40 $\sigma$ ]

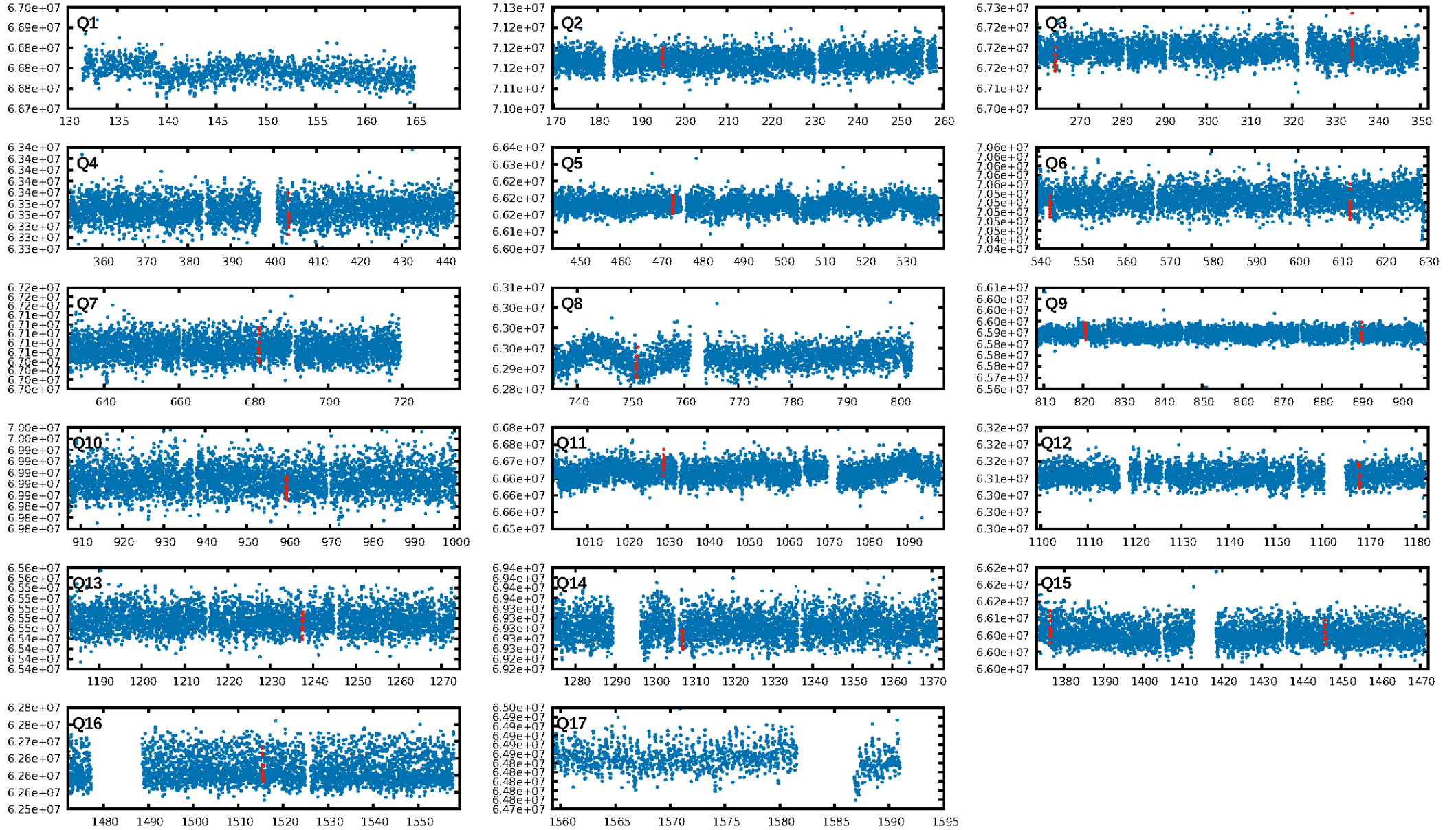
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [243.81 $\sigma$ ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 41.5%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [7/7]  
GhostDiagnostic-chr: 3.577  
Centroid-sig: 64.1%  
Centroid-so: 0.168 arcsec [0.40 $\sigma$ ]  
OotOffset-rm: 0.544 arcsec [0.54 $\sigma$ ]  
KicOffset-rm: 0.545 arcsec [0.53 $\sigma$ ]  
OotOffset-st: 3/4/3/2 [12]  
KicOffset-st: 3/4/3/2 [12]  
DiffImageQuality-fgm: 0.33 [4/12]  
DiffImageOverlap-fno: 0.00 [0/14]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 15:41:38 Z

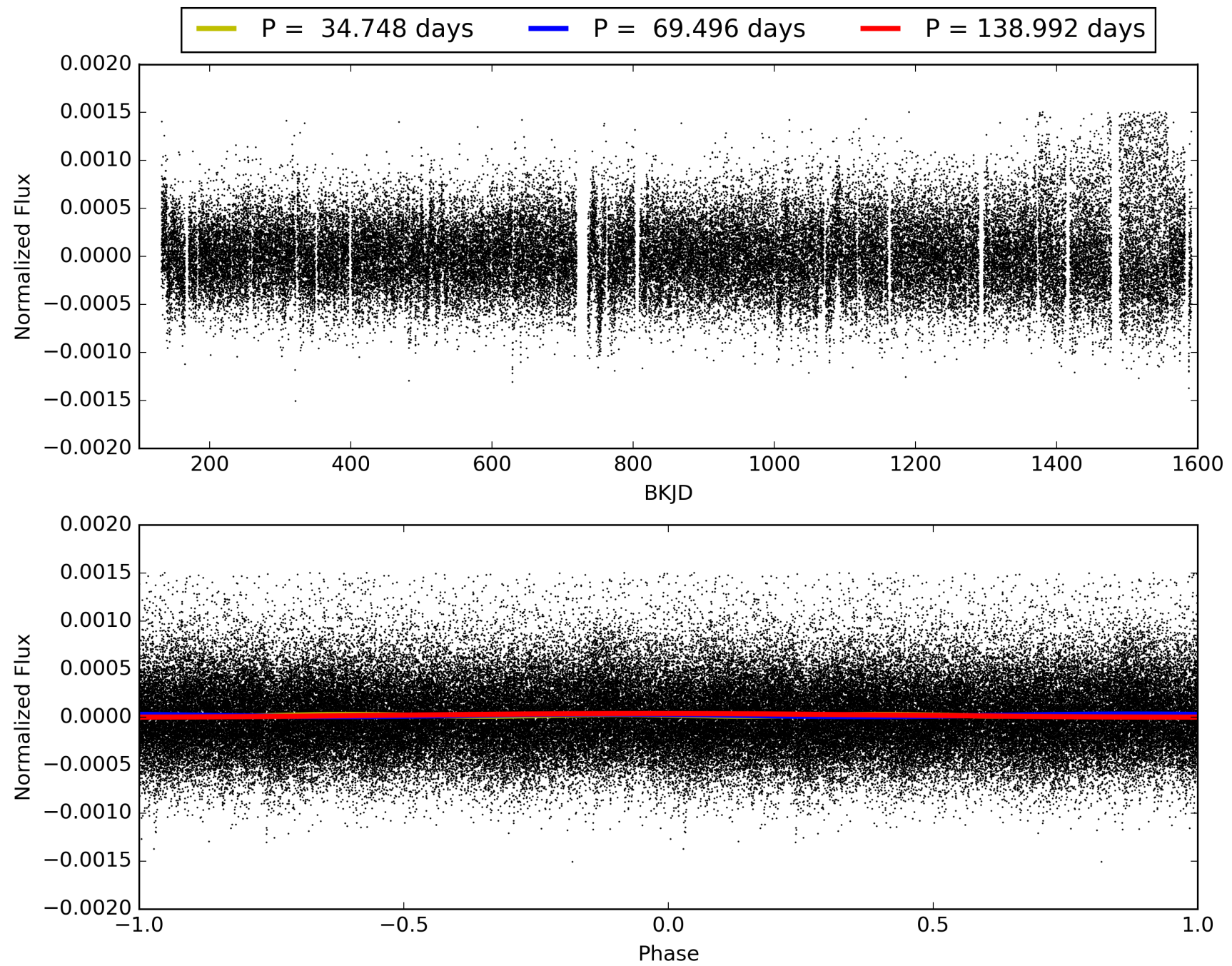
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 007199087-05, PDC Light Curves



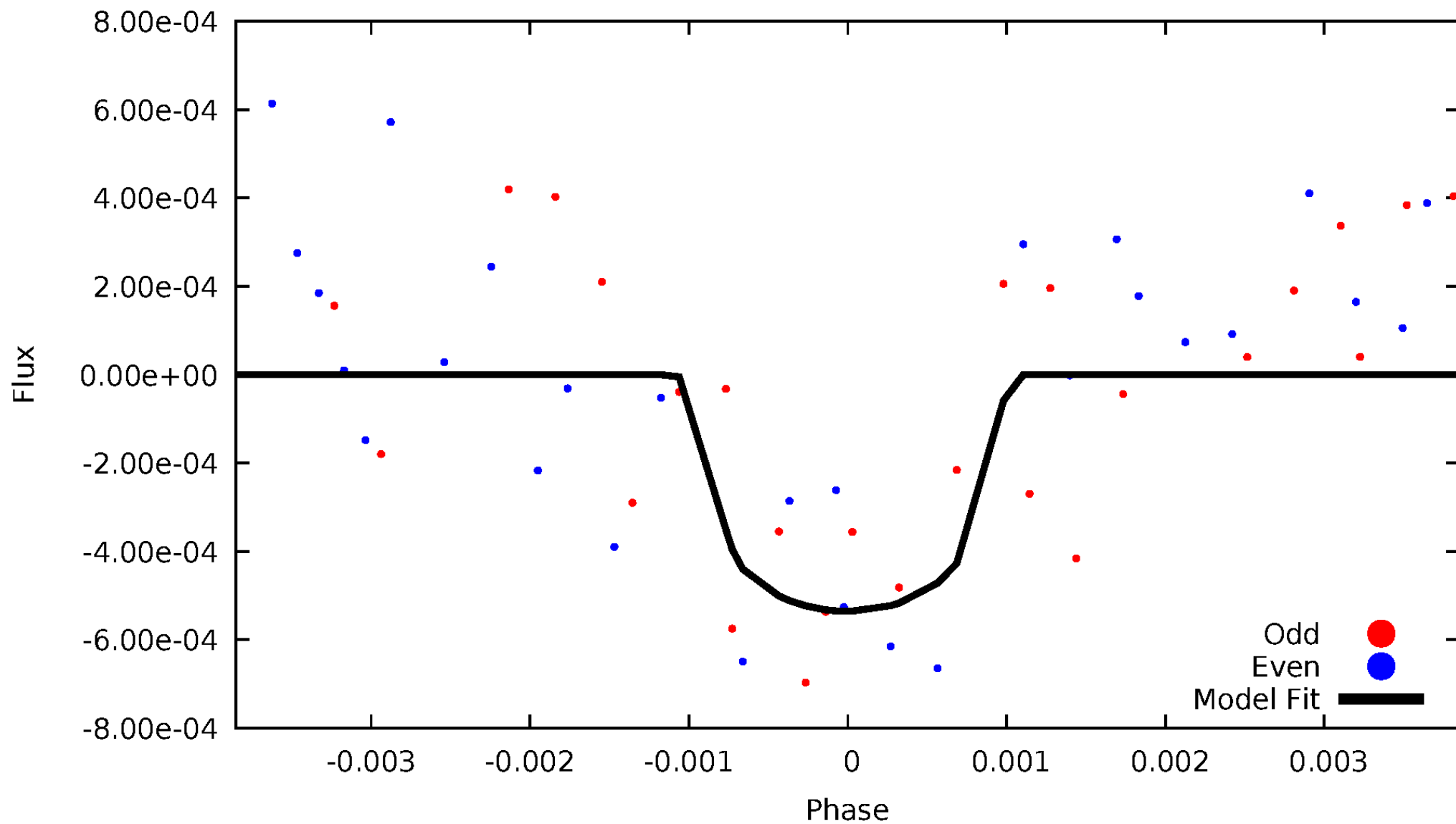


TCE 007199087-05



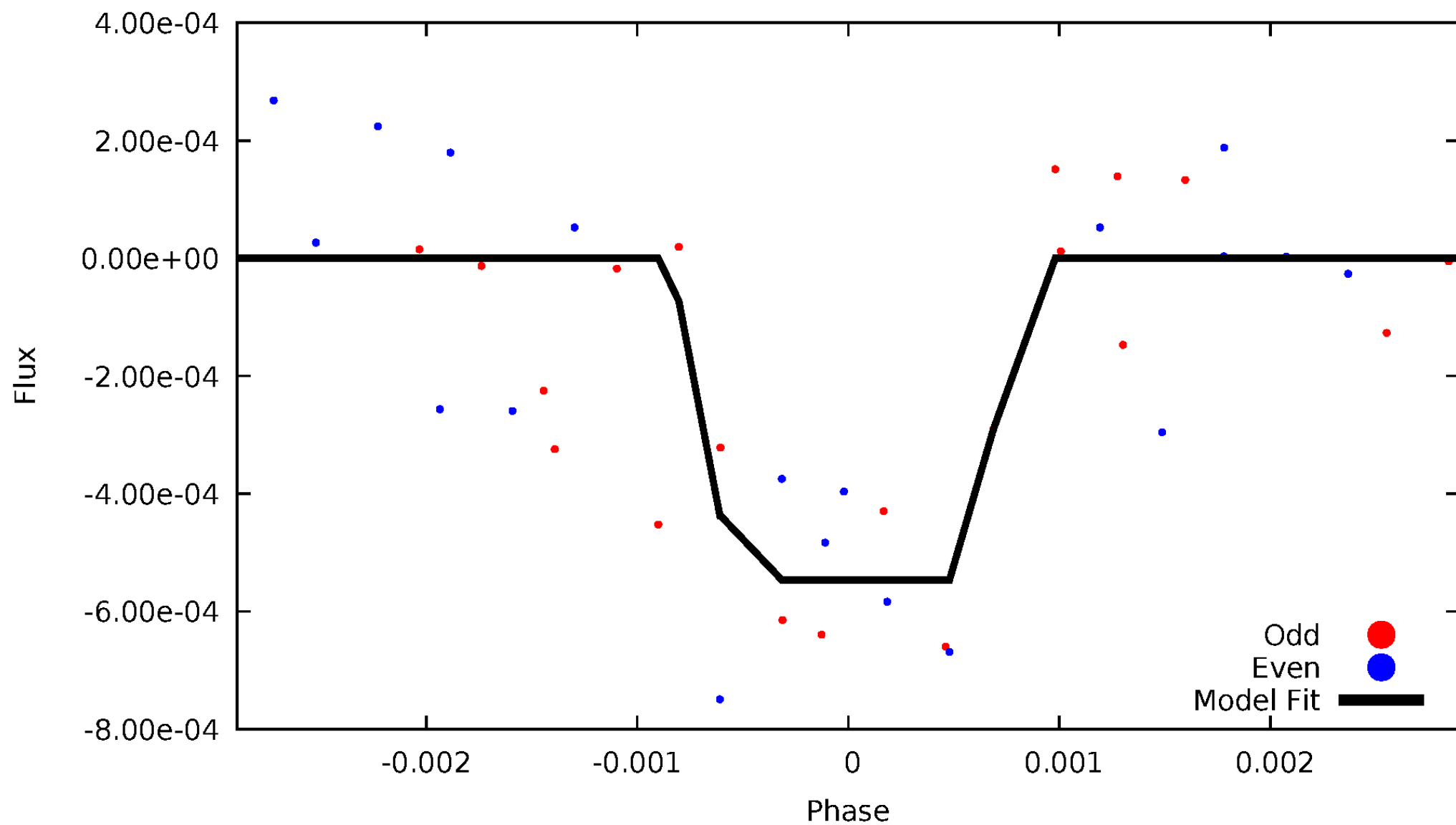
# DV Odd/Even

TCE 007199087-05



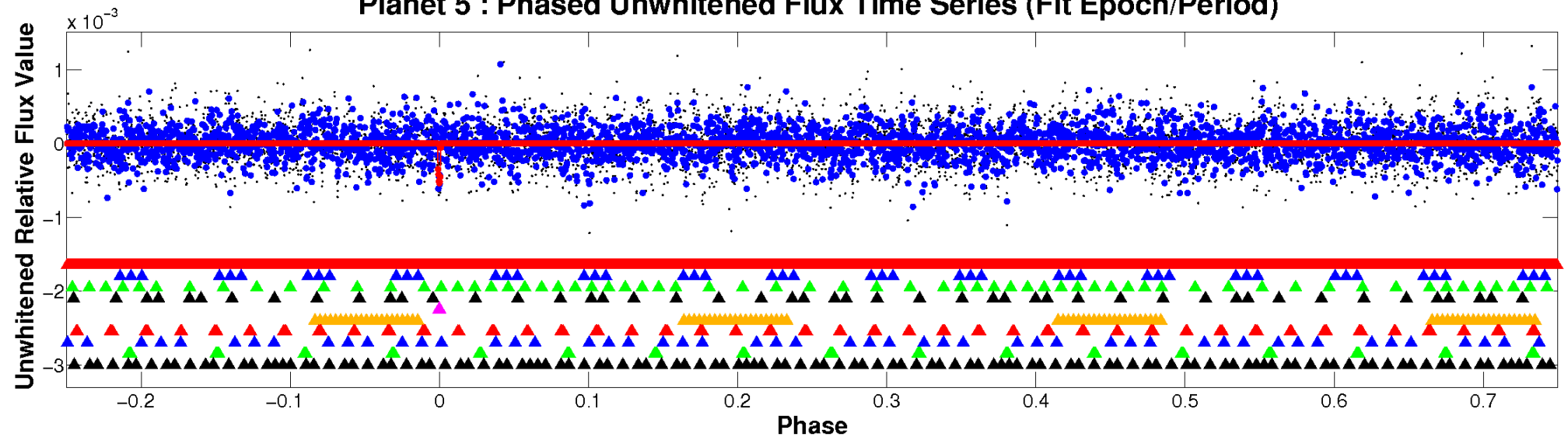
# ALT Odd/Even

TCE 007199087-05

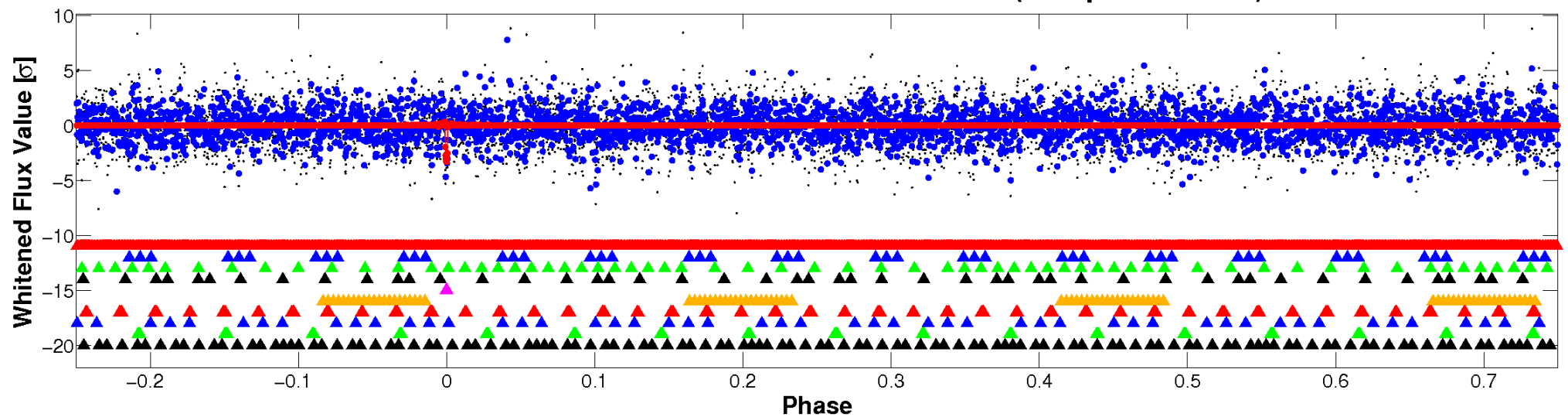


# Non-Whitened Vs. Whitened Light Curve

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

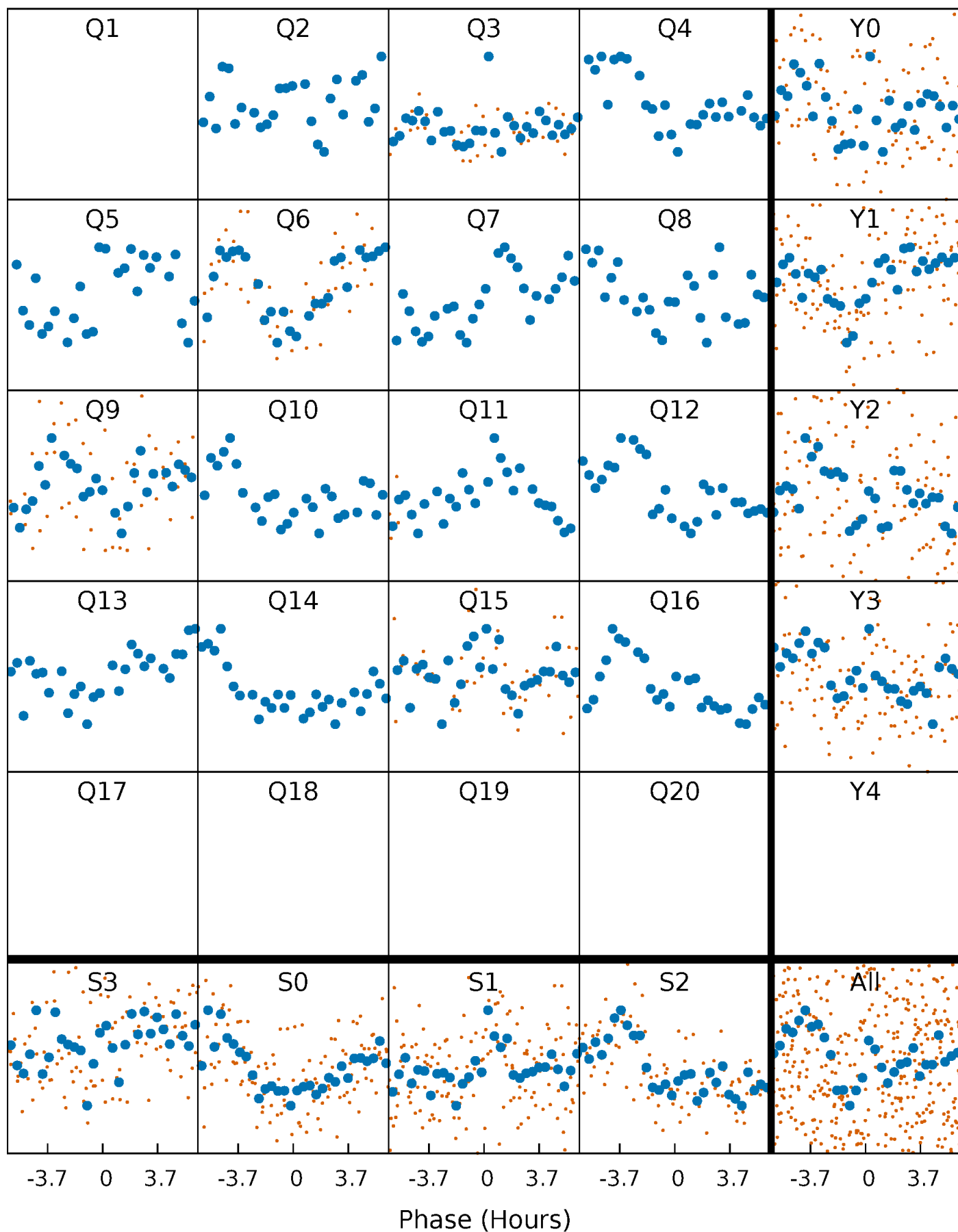


## Planet 5 : Phased Whitened Flux Time Series (Fit Epoch/Period)



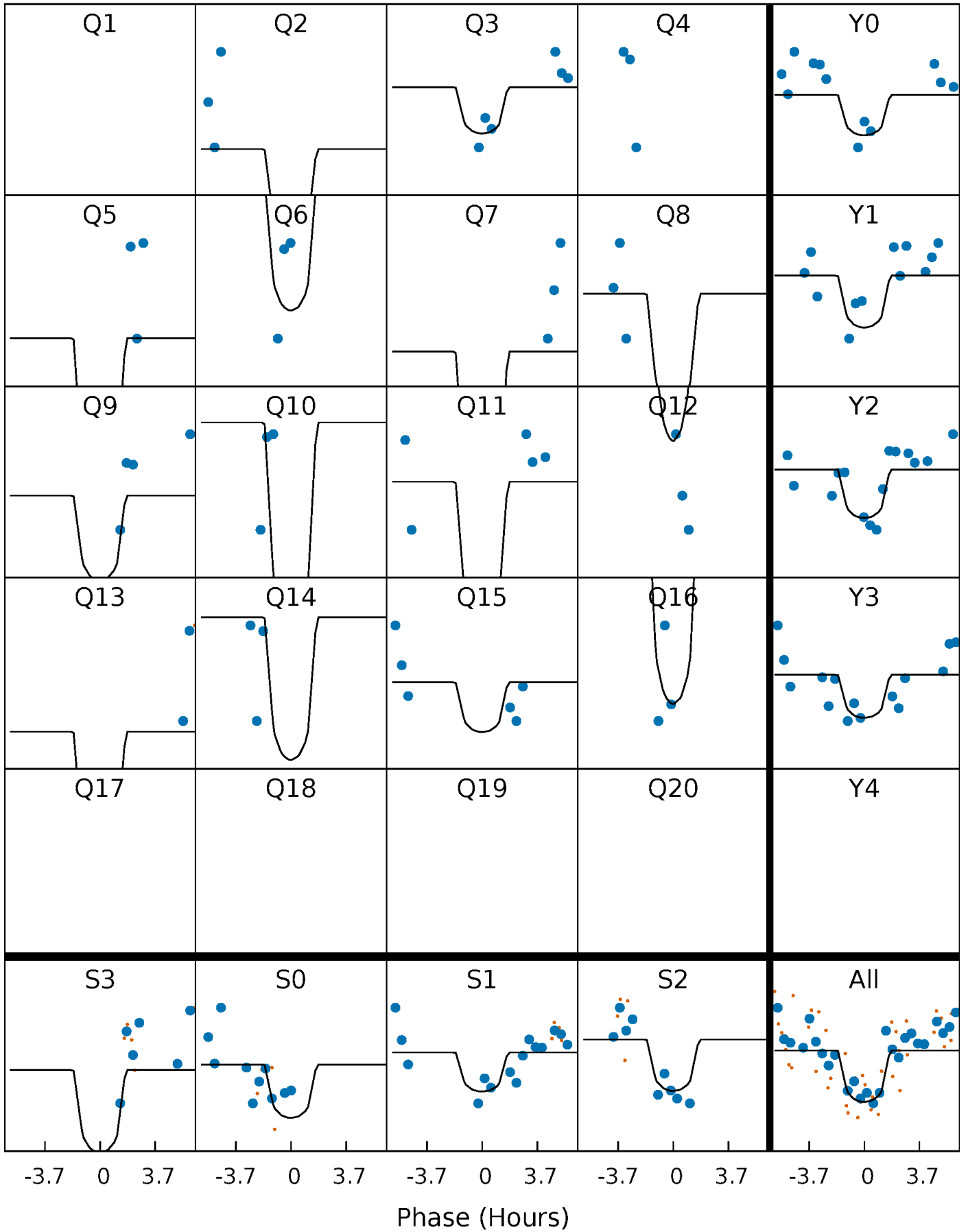
# PDC Quarter-Phased Transit Curves

TCE 007199087-05     $P = 69.496219$  Days     $T_0 = 195.078789$  (BKJD)



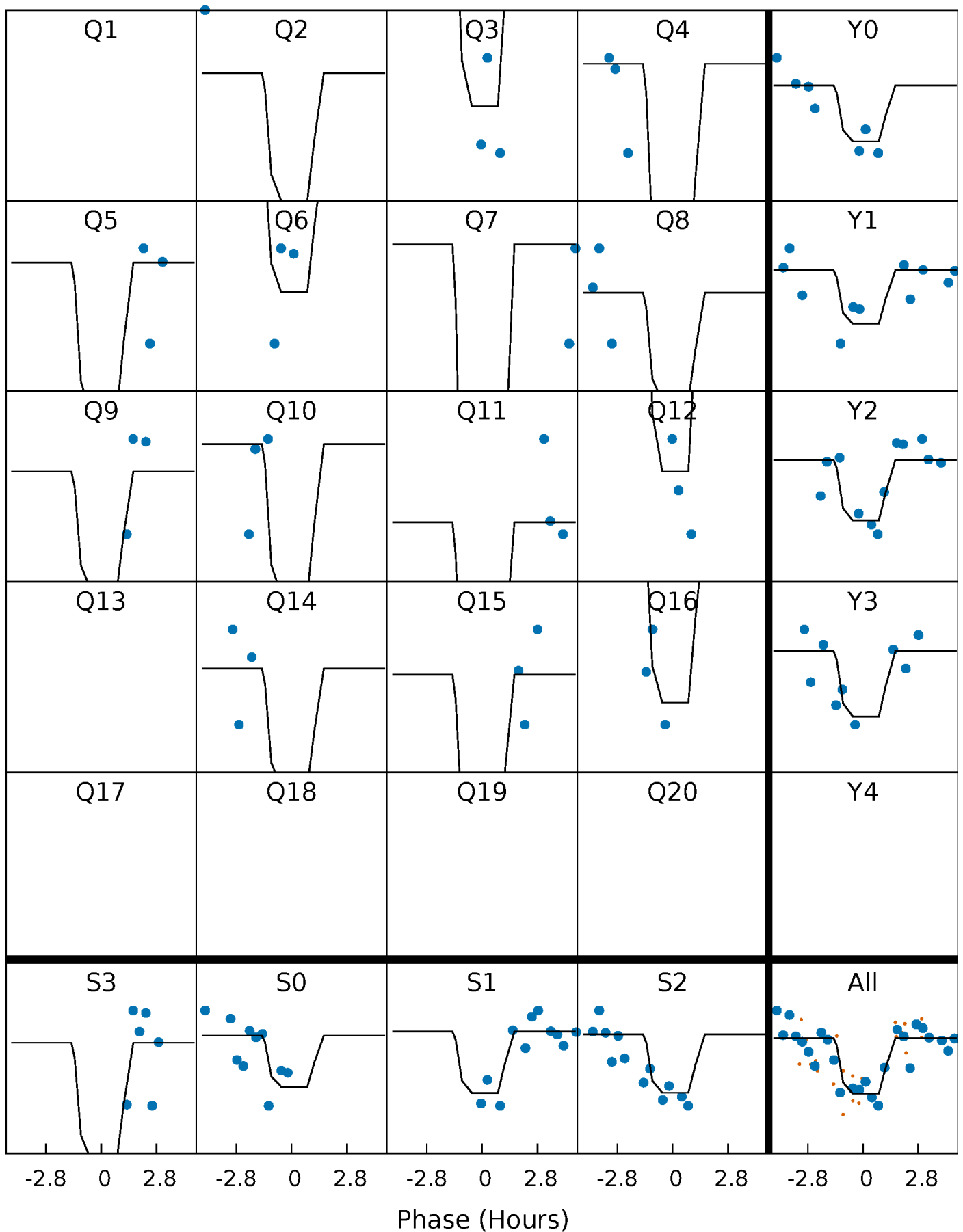
# DV Quarter-Phased Transit Curves

TCE 007199087-05   P= 69.496219 Days    $T_0=195.078789$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 007199087-05     $P = 69.497415$  Days     $T_0 = 195.068020$  (BKJD)

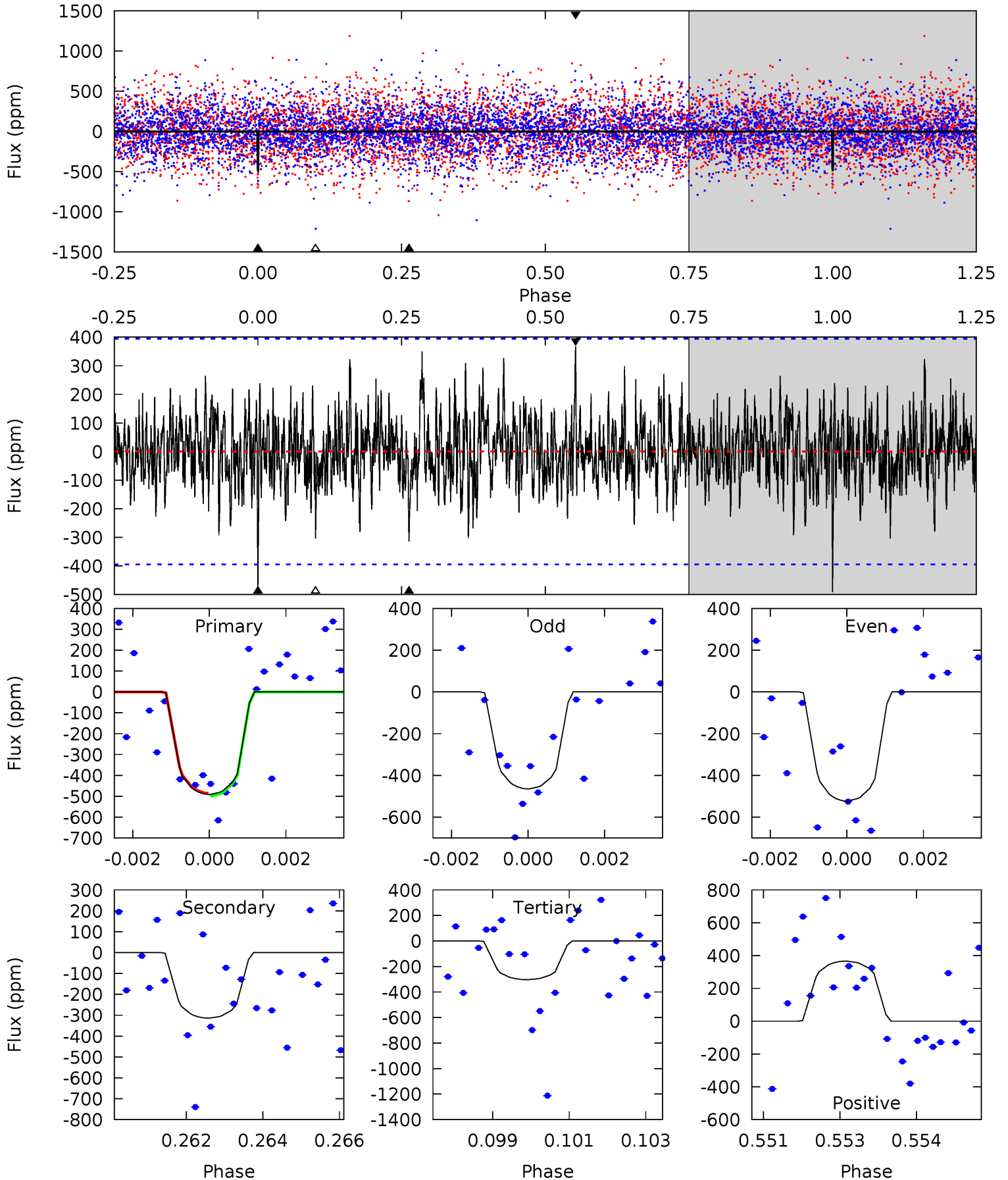




# DV Model-Shift Uniqueness Test

007199087-05, P = 69.496219 Days, E = 125.582570 Days

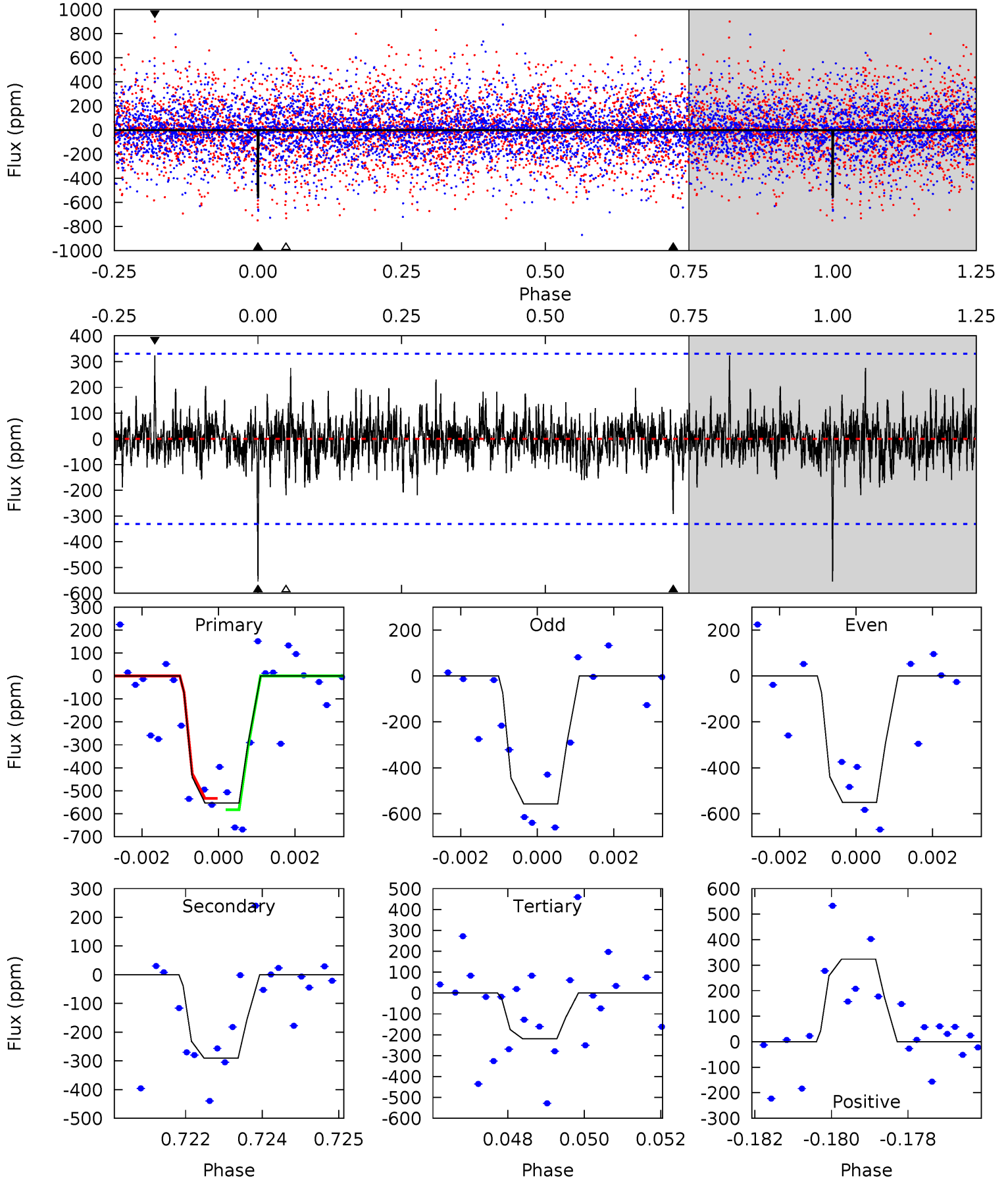
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.64	4.25	4.10	4.95	5.34	3.11	1.34	2.54	1.69	0.14	-0.71	0.39	0.85	0.43	0.10



# Alt Model-Shift Uniqueness Test

007199087-05, P = 69.497415 Days, E = 125.570605 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
8.95	4.69	3.55	5.23	5.35	3.12	1.01	5.41	3.72	1.15	-0.54	0.05	1.00	0.37	0.39



### Stellar Parameters For KIC 007199087

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5161^{+139}_{-154}$	$3.782^{+0.812}_{-0.348}$	$-0.420^{+0.300}_{-0.300}$	$1.952^{+1.204}_{-1.204}$	$0.842^{+0.178}_{-0.145}$	$0.160^{+3.448}_{-0.111}$
	+3%/-3%	+21%/-9%	+71%/-71%	+62%/-62%	+21%/-17%	+2162%/-70%
Source	PHO1	KIC0	KIC0	DSEP		

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

### Secondary Eclipse Parameters for KIC 007199087-05 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-314 \pm 74$	$6.12^{+6.66}_{-4.12}$	$770^{+133}_{-148}$	$4004^{+2423}_{-749}$	$447^{+3851}_{-345}$
Alt.	$-290 \pm 62$	$6.09^{+6.62}_{-4.22}$	$778^{+135}_{-143}$	$4009^{+2505}_{-758}$	$410^{+4084}_{-313}$

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

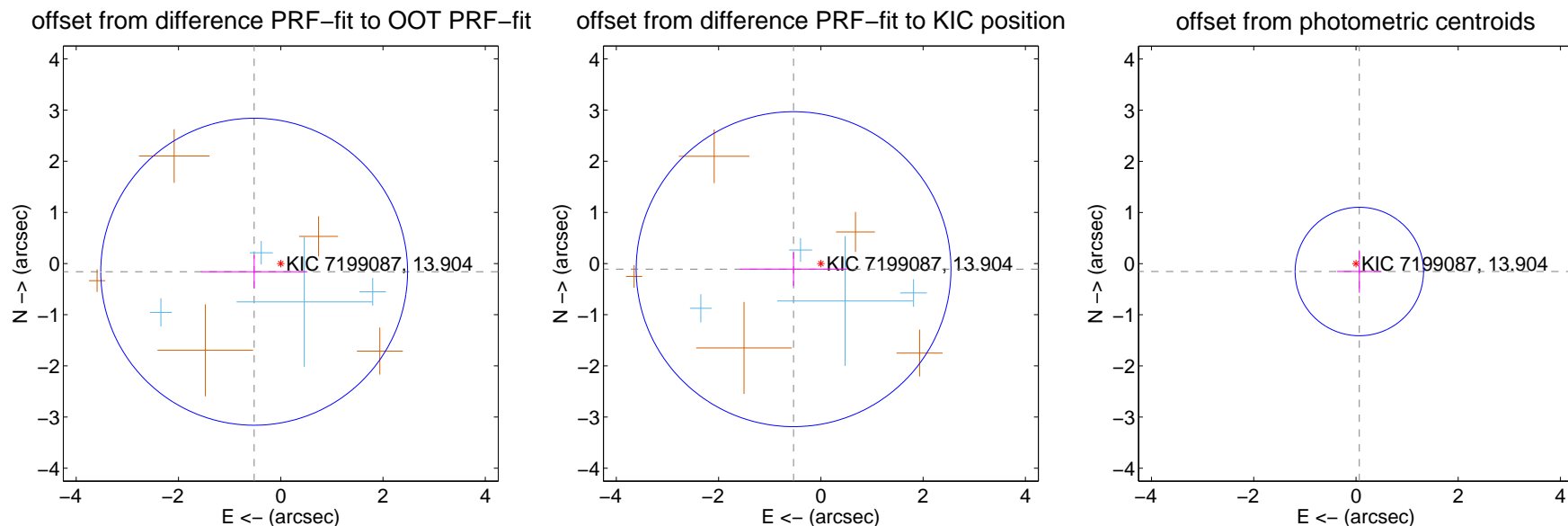
## DV Centroid Data

Supplemental centroid analysis for 007199087-05. Kepler magnitude: 13.90. Transit SNR 10.72

There are 4 quarters with good PRF difference image offsets

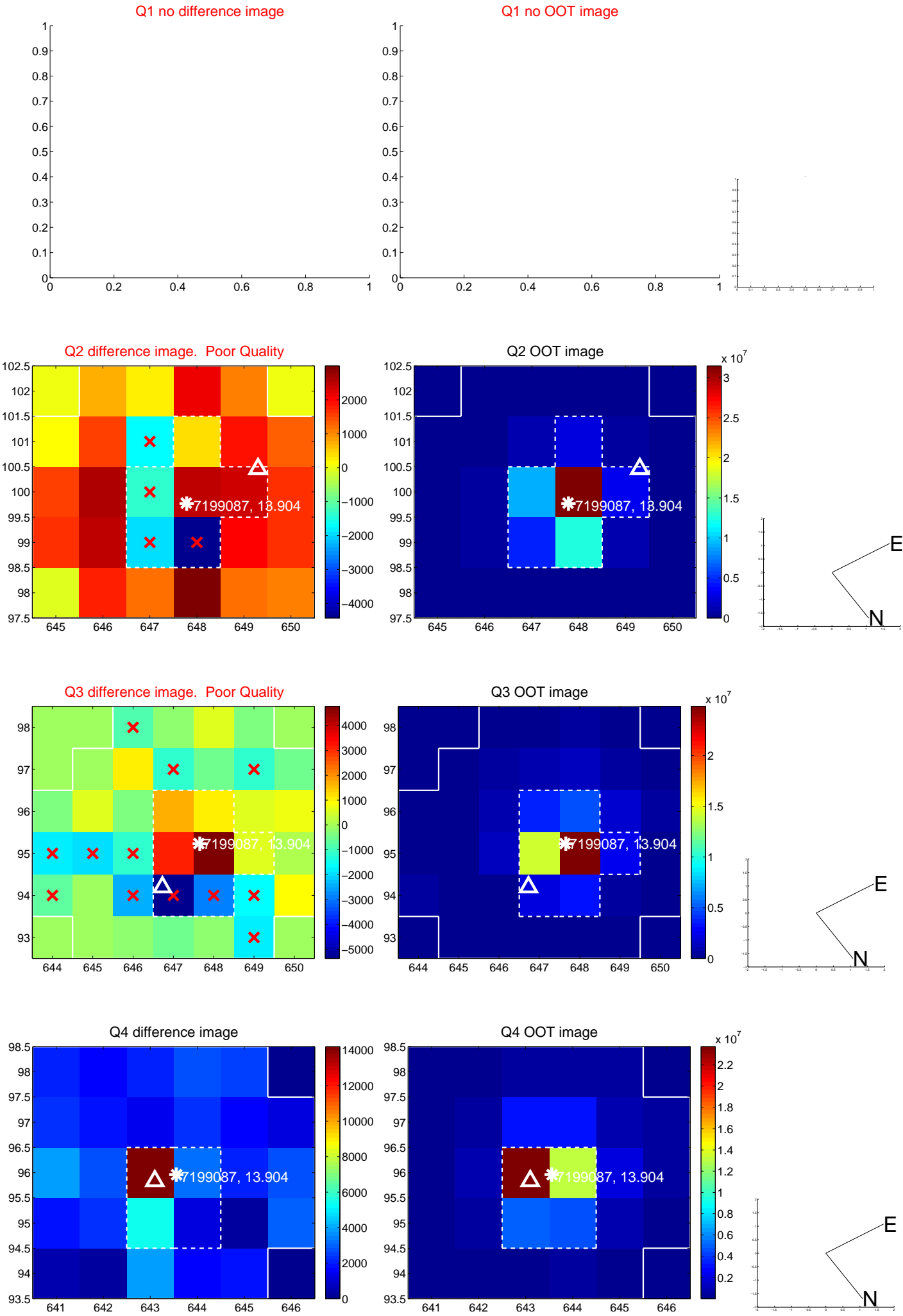
The direct PRF centroid is offset from the target star catalog position by about 0.11 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.544 \pm 1.000$	0.54	$0.520 \pm 1.042$	$-0.160 \pm 0.327$
PRF-fit source offset from KIC position	$0.545 \pm 1.026$	0.53	$0.534 \pm 1.045$	$-0.110 \pm 0.329$
photometric centroid source offset	$0.17 \pm 0.42$	0.40	$-0.07 \pm 0.43$	$-0.15 \pm 0.42$

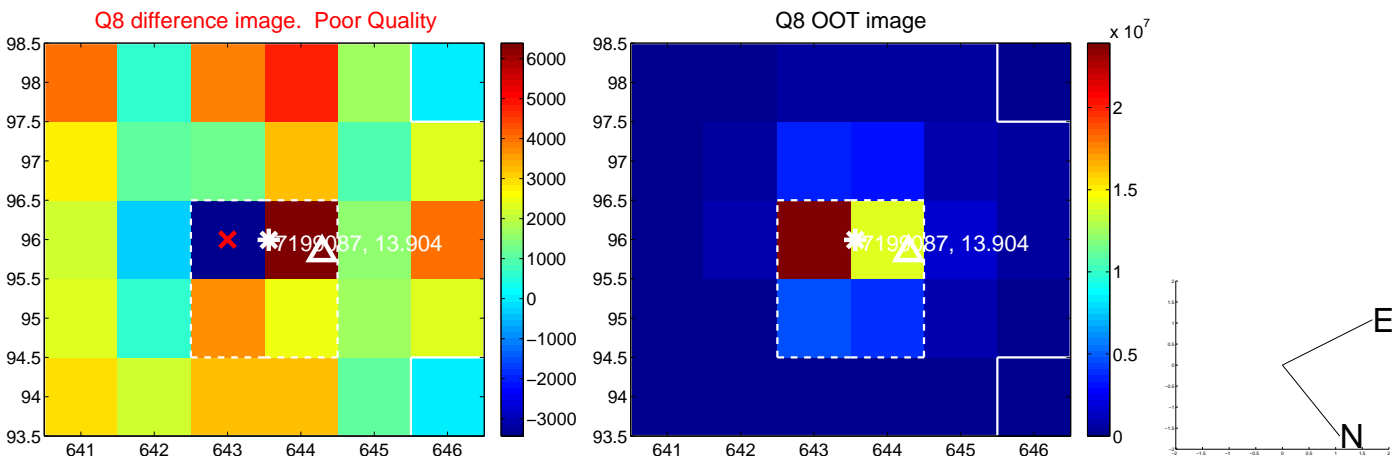
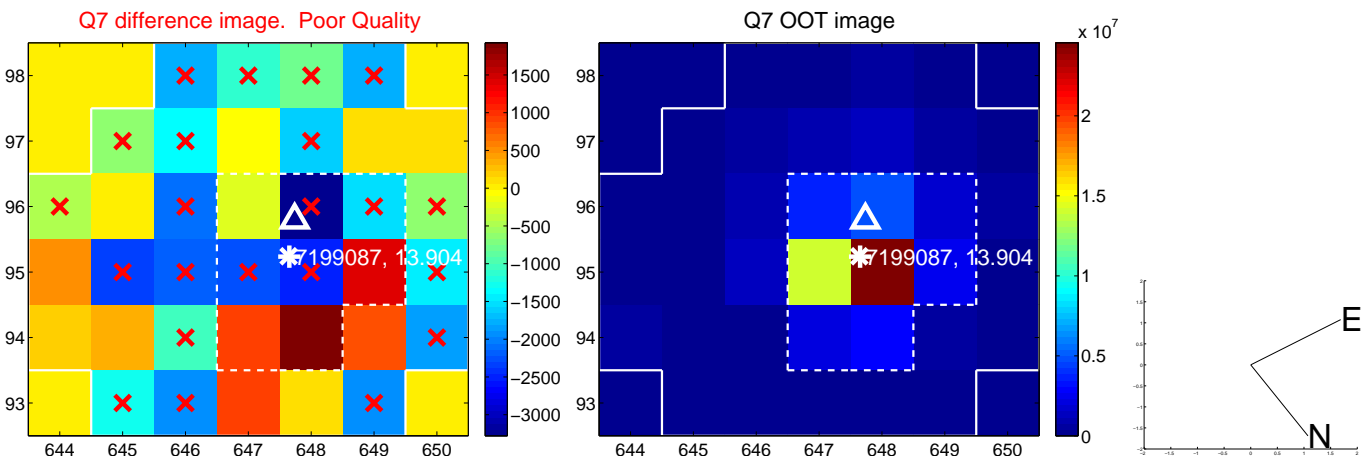
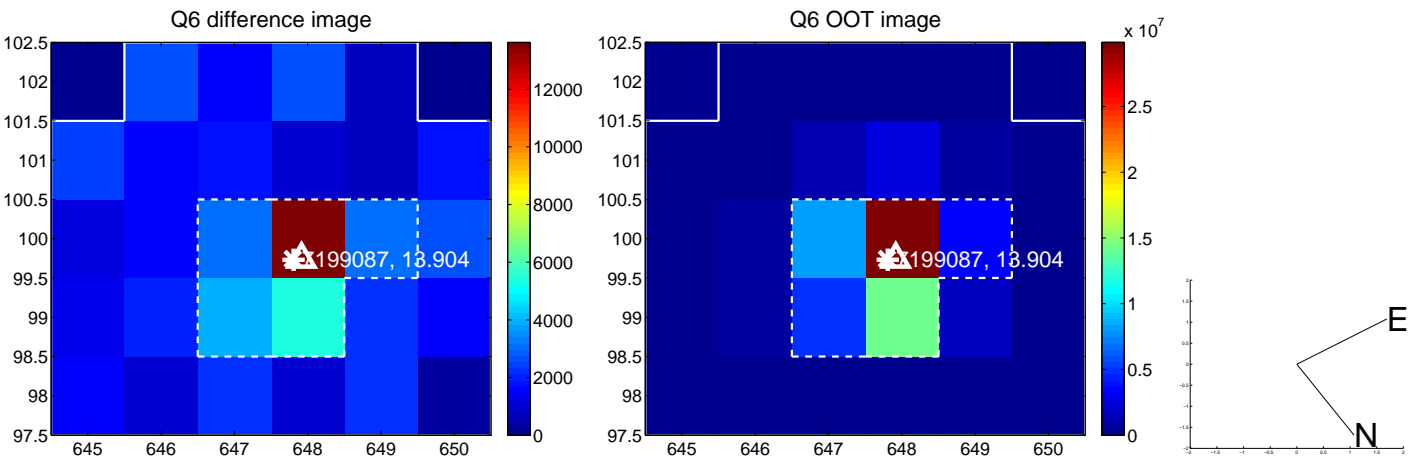
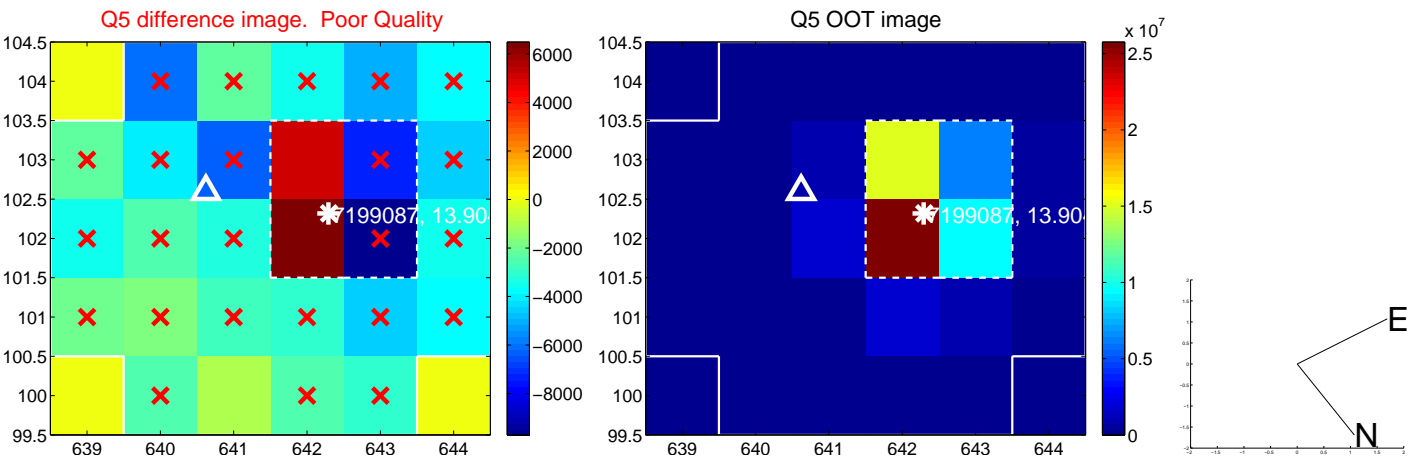


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

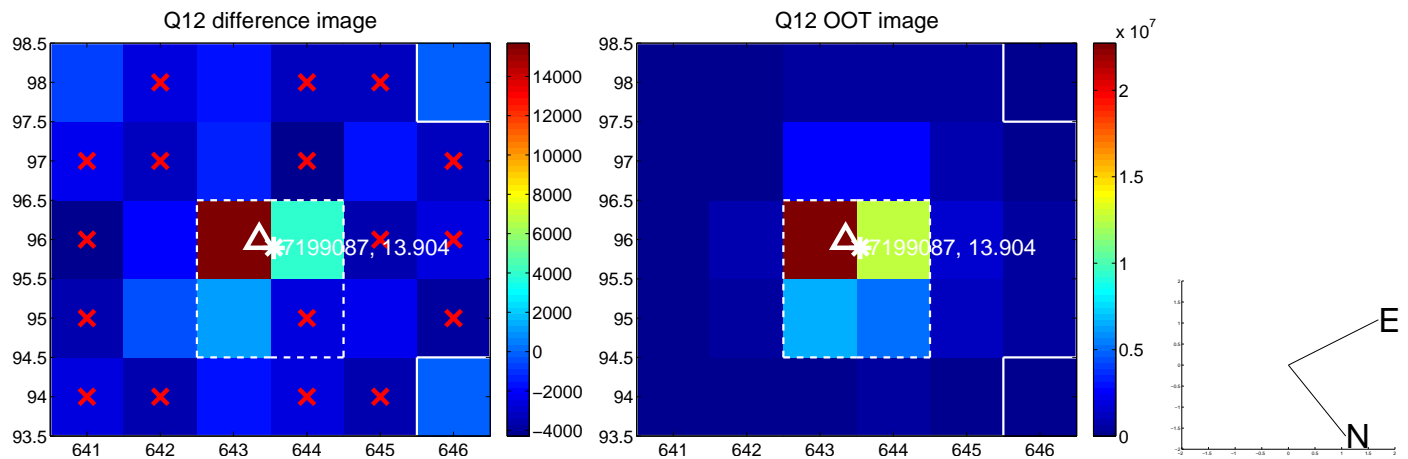
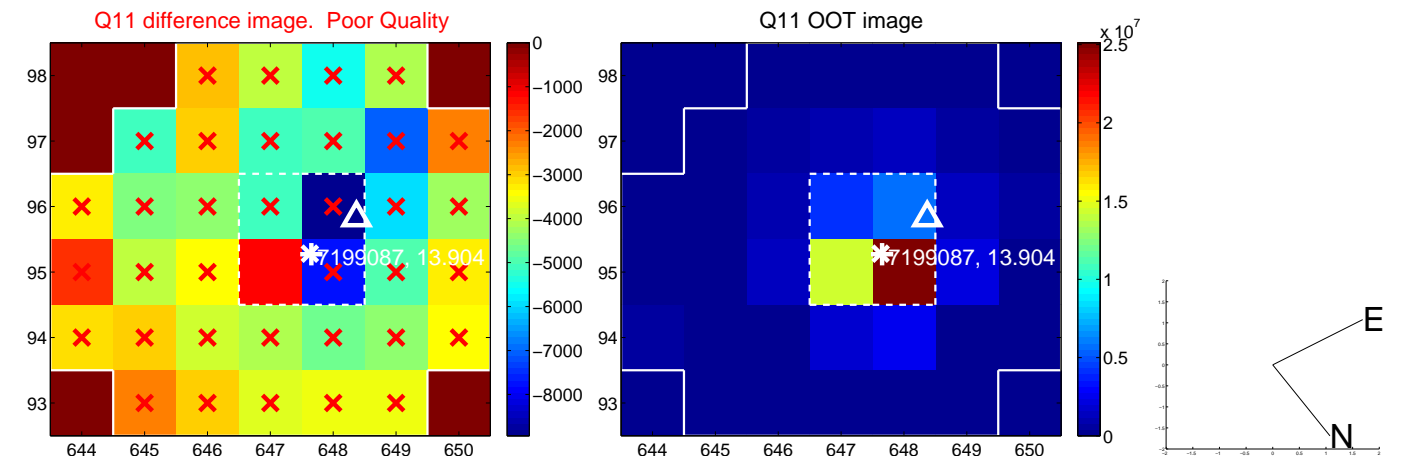
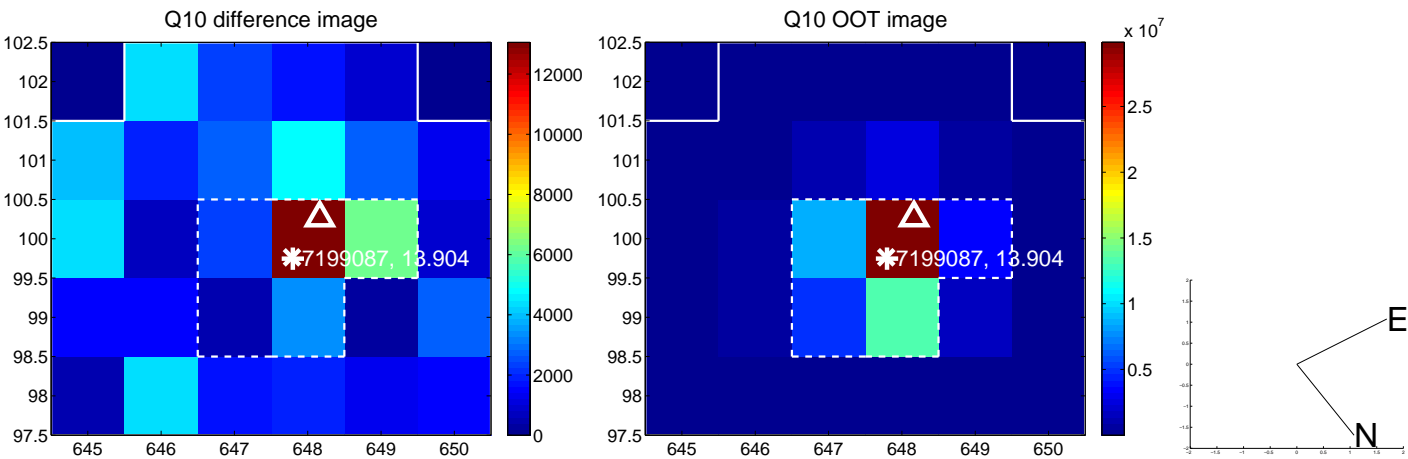
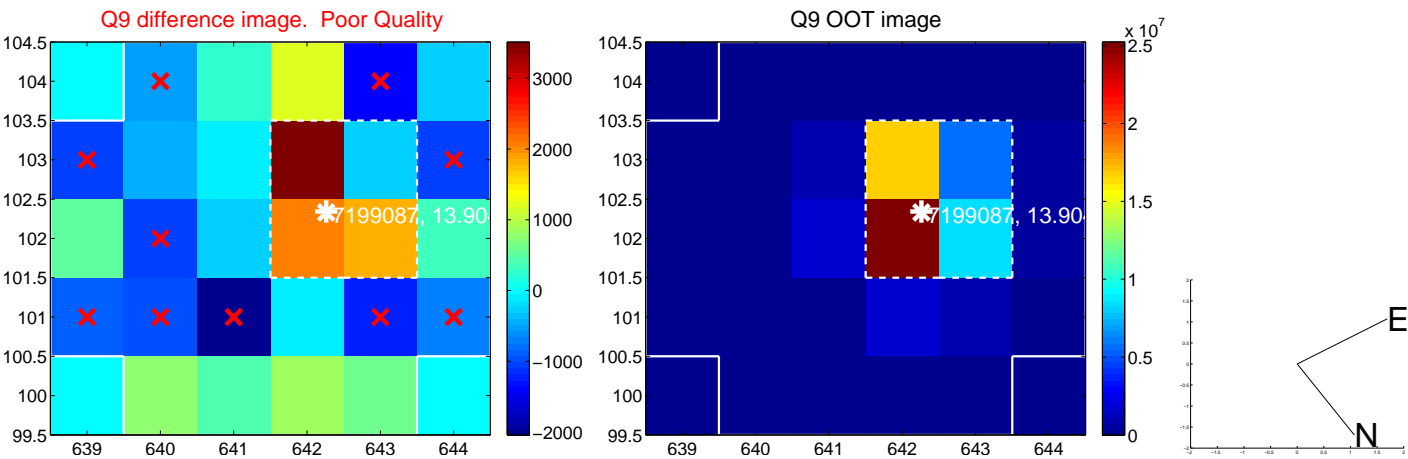
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

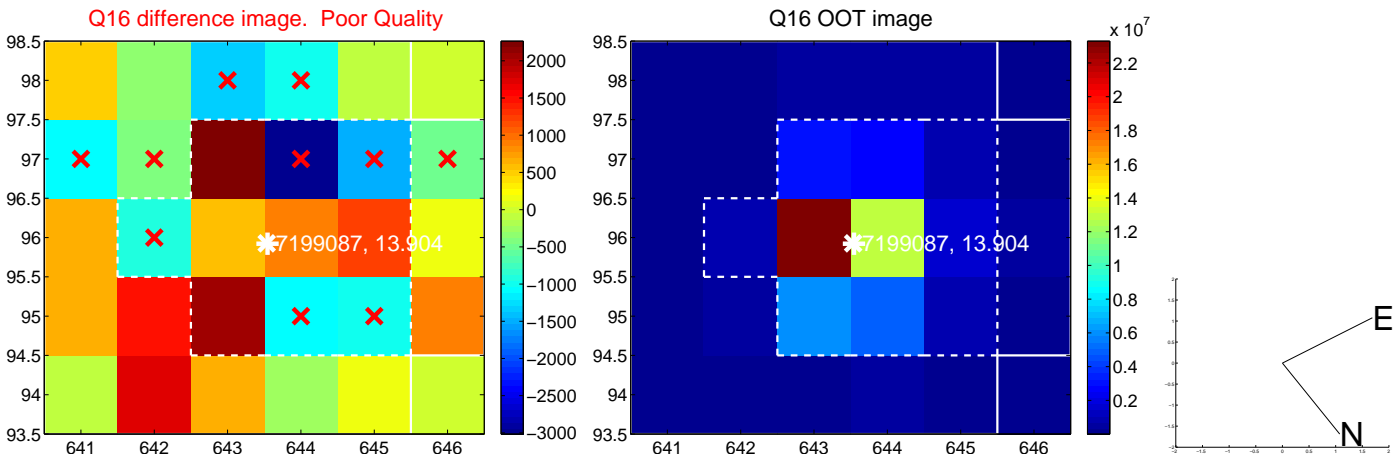
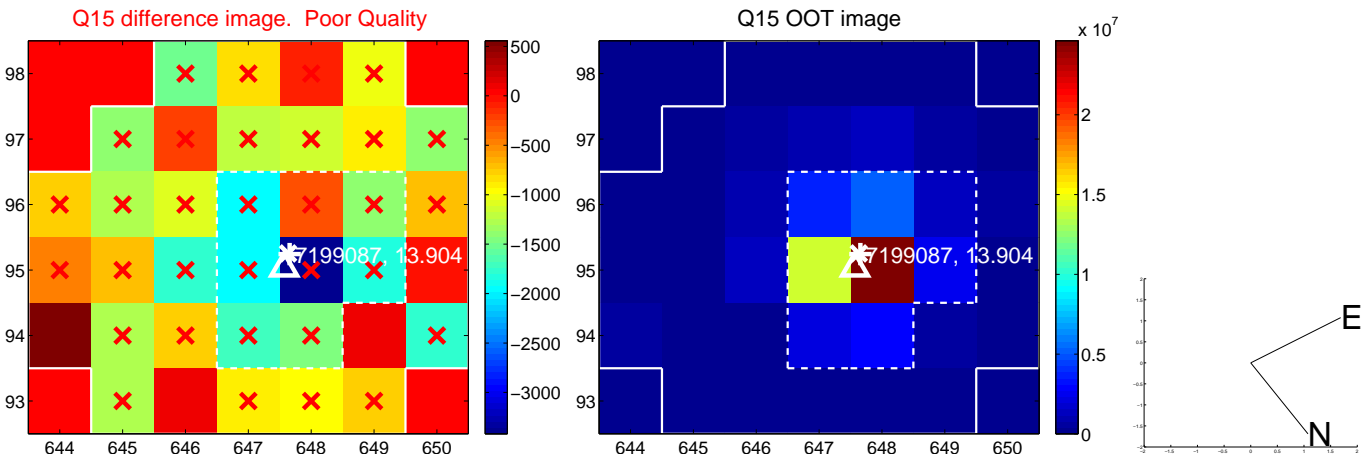
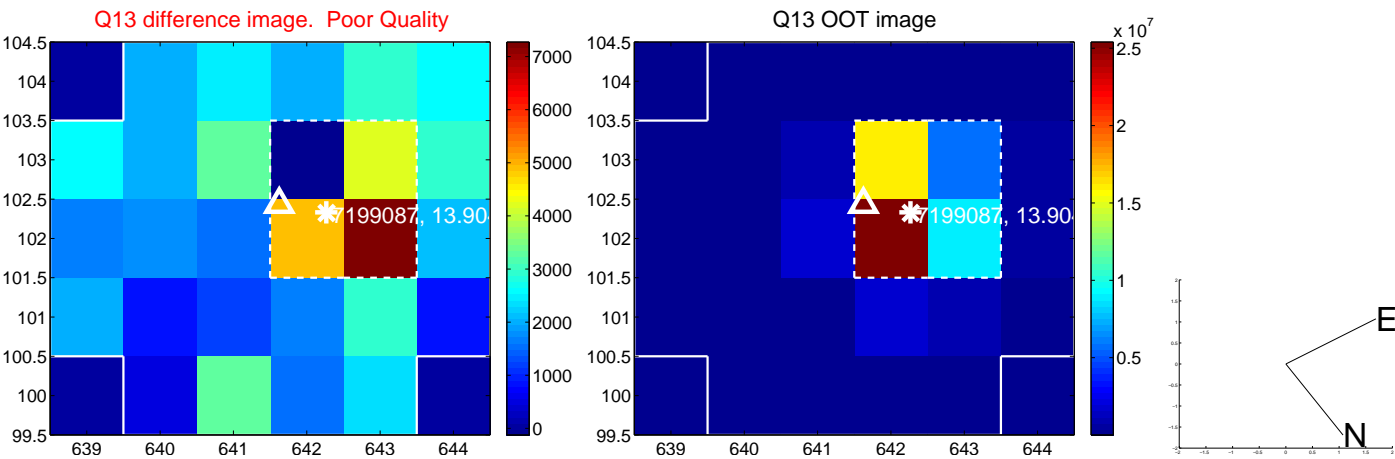


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

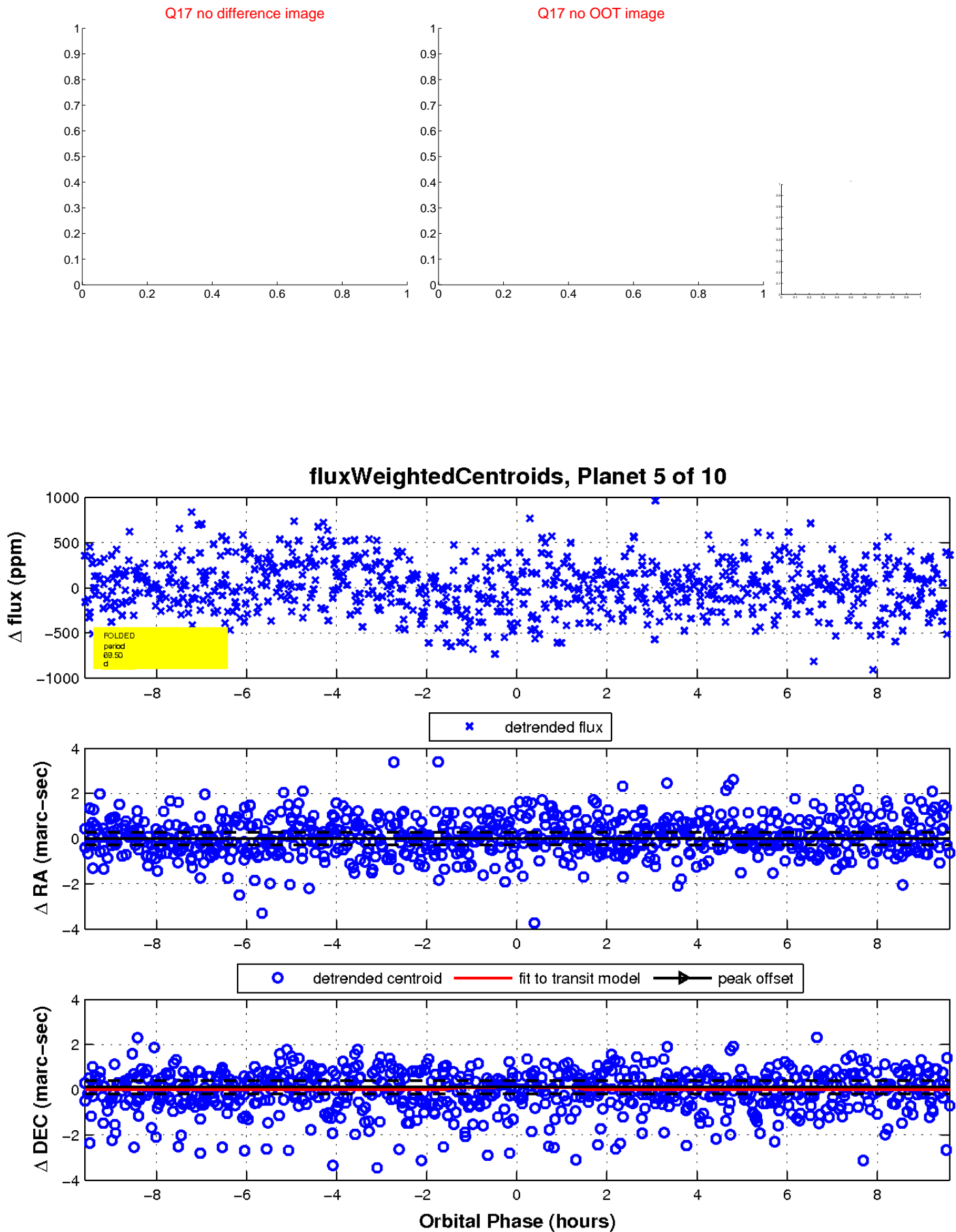




white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

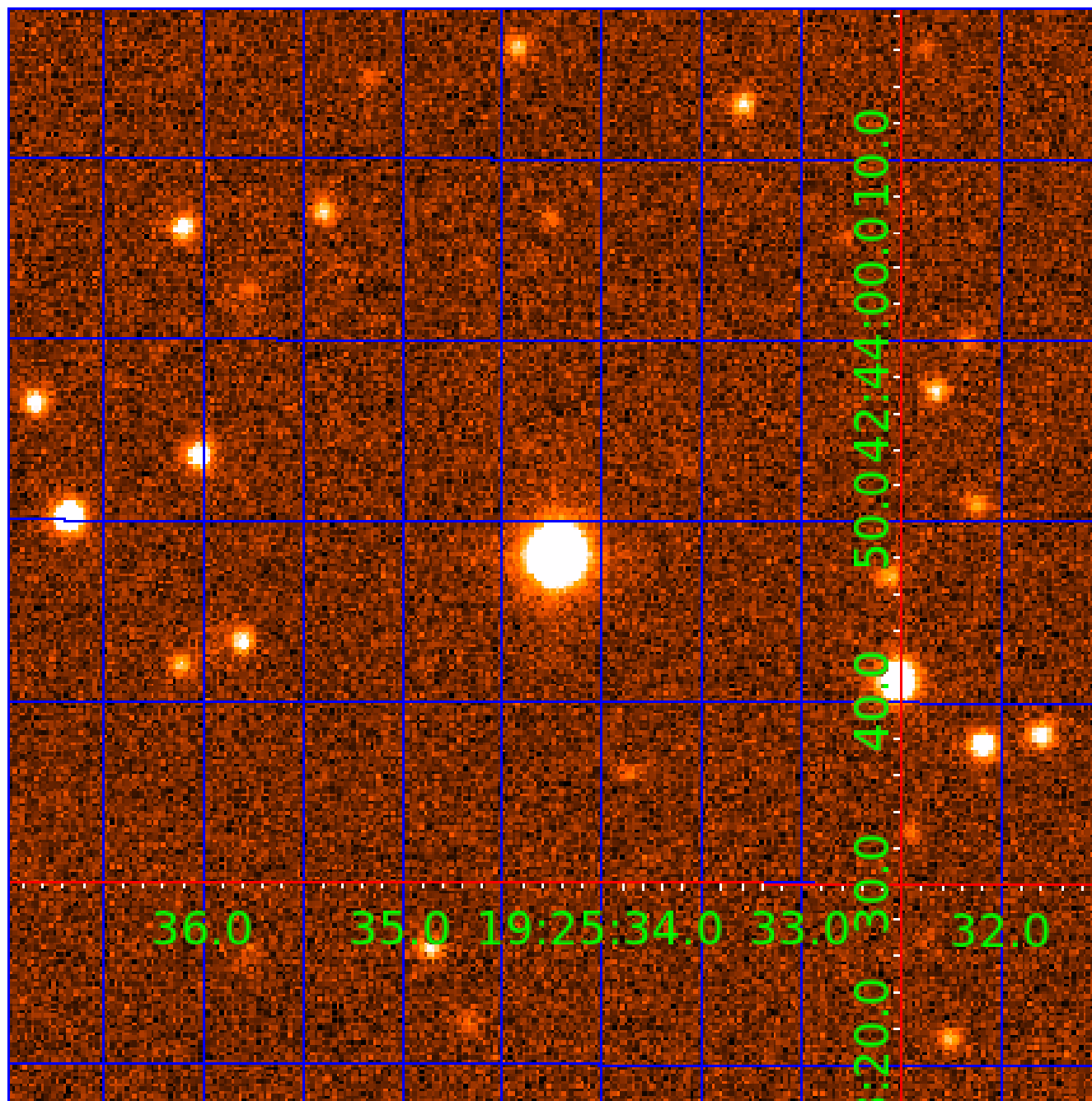


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



## KIC 007199087

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007199087-01	OBS	No	0.566789	131.670402	8.5	3.882	14.8	2.7	1.95	5161	0.56	15121.24
007199087-02	OBS	No	30.372888	155.472228	559.9	2.126	11.0	13.0	1.95	5161	9.51	74.85
007199087-03	OBS	No	22.645018	135.806898	358.7	5.851	12.1	11.4	1.95	5161	7.65	110.71
007199087-04	OBS	No	30.066788	151.392002	551.6	1.456	11.8	13.4	1.95	5161	4.56	75.86
007199087-05	OBS	No	69.496219	195.078789	535.3	3.211	10.0	10.7	1.95	5161	5.21	24.82
007199087-06	OBS	No	17.433948	136.980650	435.8	0.982	10.6	9.8	1.95	5161	4.96	156.90
007199087-07	OBS	No	12.928268	142.702231	321.2	1.694	9.9	10.2	1.95	5161	3.77	233.76
007199087-08	OBS	No	28.669881	148.165240	606.7	0.987	9.2	8.4	1.95	5161	5.76	80.83
007199087-09	OBS	No	20.441918	143.787734	418.3	1.326	10.7	9.8	1.95	5161	4.12	126.90
007199087-10	OBS	No	11.882767	139.895565	291.3	4.500	8.6	-1.0	1.95	5161	3.26	261.57

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007199087-01	OBS	FP	0.00	1	0	1	1	SWEET_NTL—LPP_DV—LPP_ALT—HALO_GHOST—EPHEM_MATCH
007199087-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT
007199087-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
007199087-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
007199087-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
007199087-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
007199087-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
007199087-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV
007199087-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT
007199087-10	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT—CENT_NOFITS

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

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

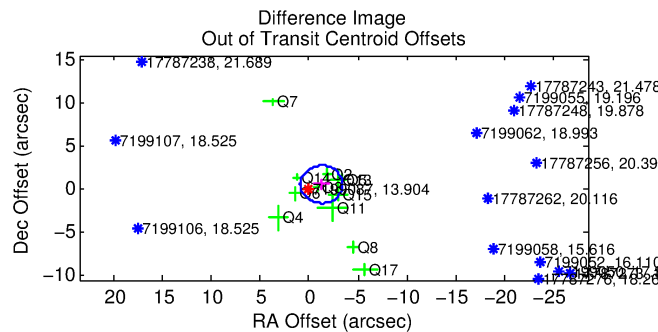
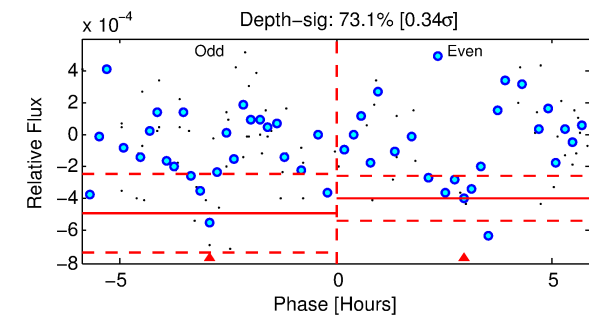
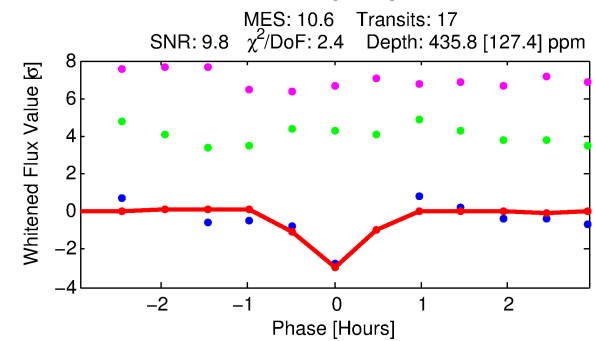
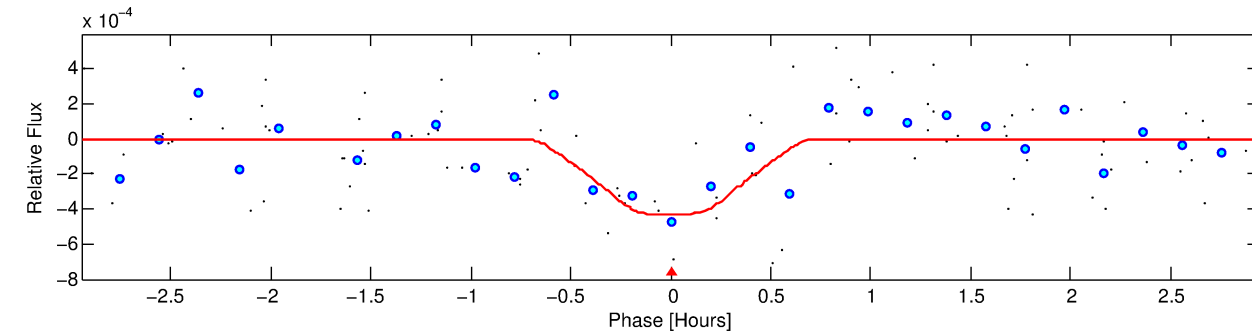
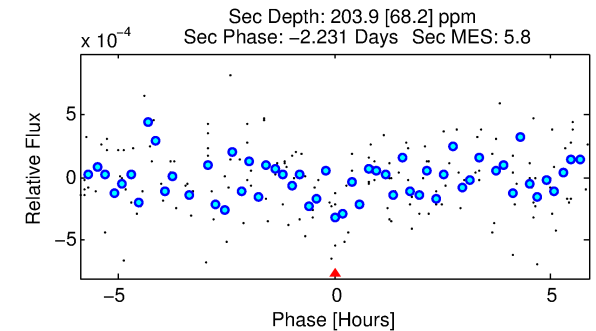
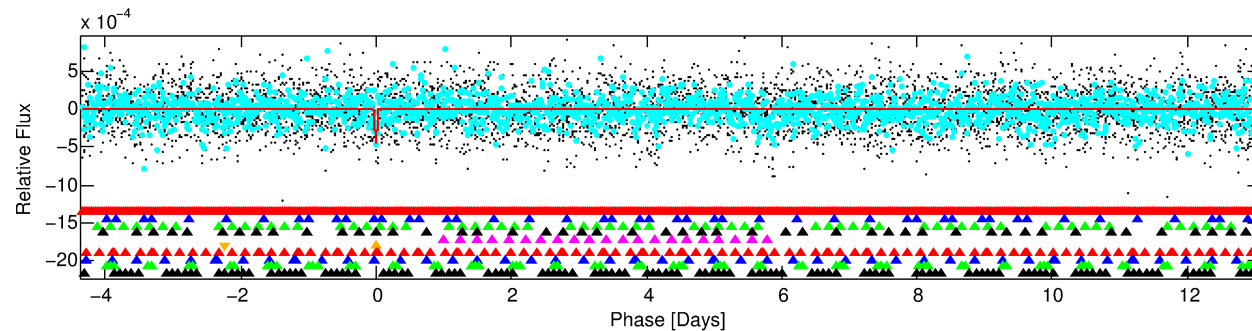
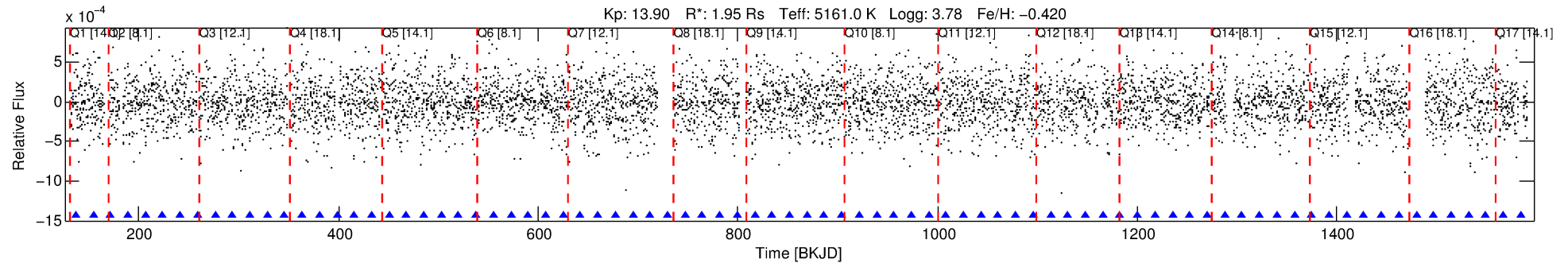
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 007199087-06

No Significant Match Found

# DV One-Page Summary

KIC: 7199087 Candidate: 6 of 10 Period: 17.434 d



## DV Fit Results:

Period = 17.43395 [0.00014] d  
Epoch = 136.9807 [0.0063] BKJD  
Rp/R\* = 0.0233 [0.0510]  
a/R\* = 66.10 [606.19]  
b = 0.90 [2.01]  
Seff = 156.90 [206.79]  
Teq = 902 [297] K  
Rp = 4.96 [11.28] Re  
a = 0.1242 [0.0928] AU  
Ag = 70.26 [321.77] [0.22σ]  
Teffp = 4040 [4432] K [0.71σ]

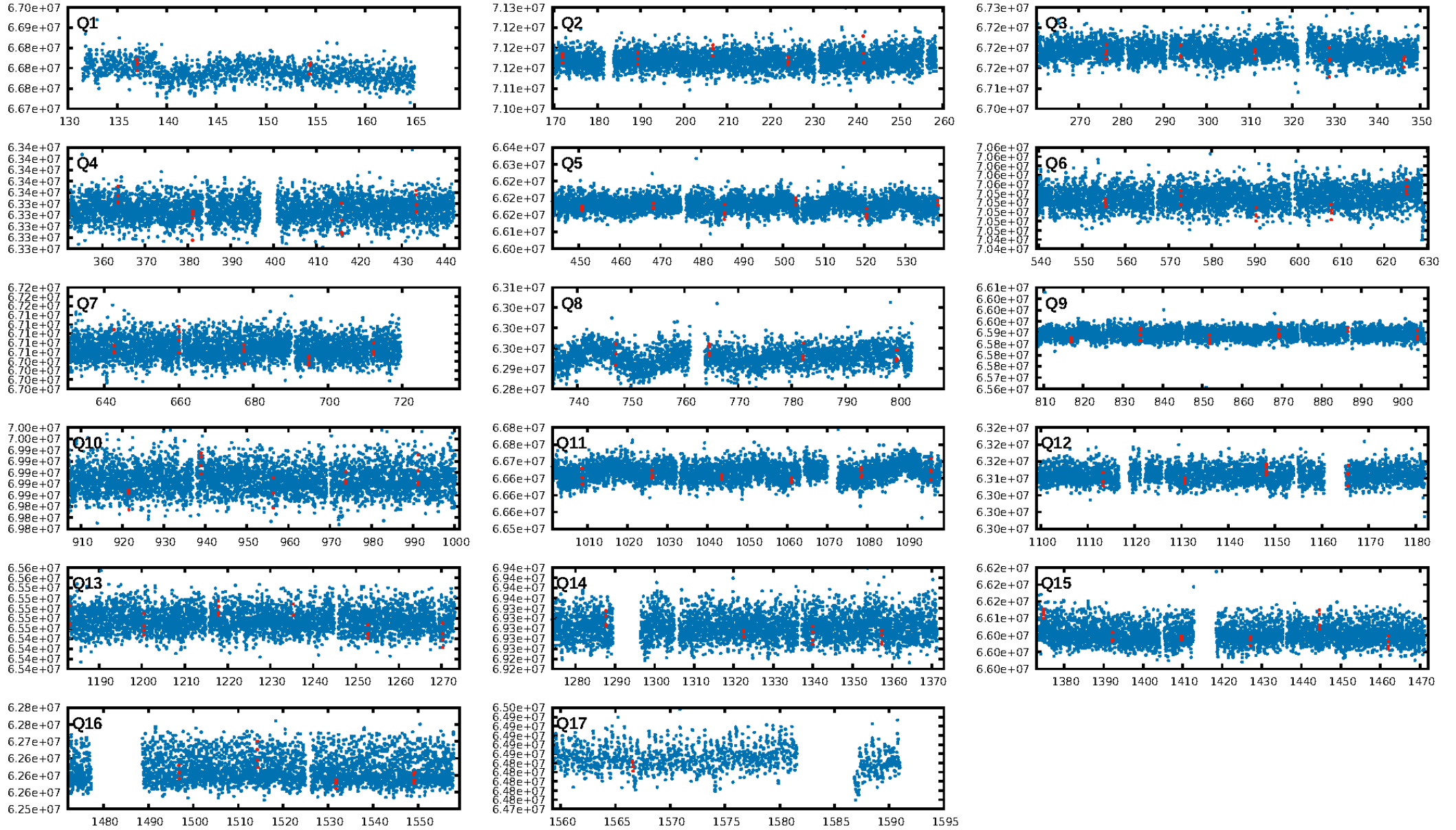
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [55.23σ]  
LongPeriod-sig: 100.0% [43.76σ]  
ModelChiSquare2-sig: 0.6%  
ModelChiSquareGof-sig: 47.8%  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [17/17]  
GhostDiagnostic-chr: -13.45  
Centroid-sig: 13.5%  
Centroid-so: 0.520 arcsec [1.13σ]  
OotOffset-rm: 1.370 arcsec [1.88σ]  
OotOffset-st: 3/4/2/3 [12]  
KicOffset-rm: 1.384 arcsec [1.91σ]  
KicOffset-st: 3/4/2/3 [12]  
DiffImageQuality-fgm: 0.17 [2/12]  
DiffImageOverlap-fno: 0.00 [0/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 15:41:42 Z

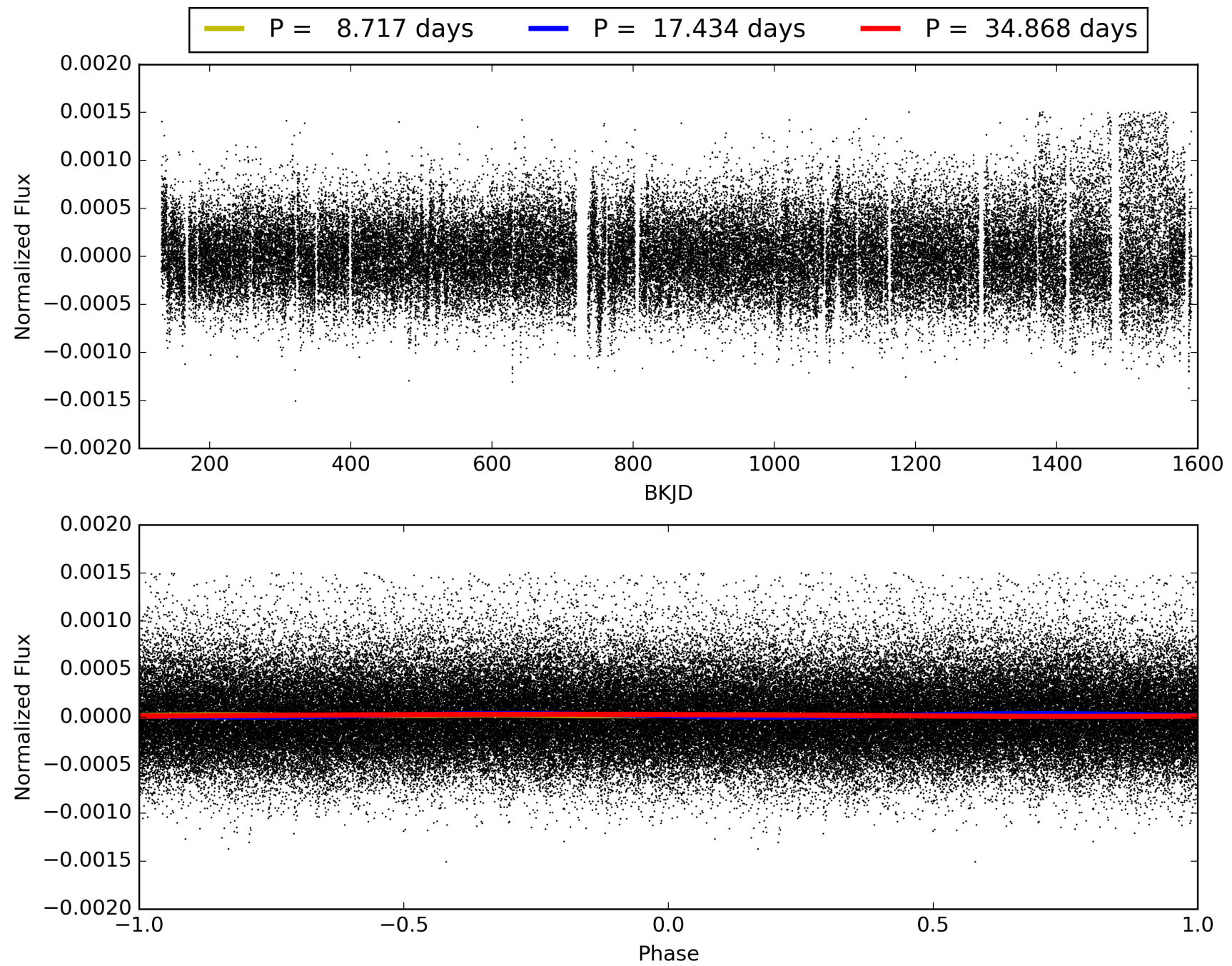
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 007199087-06, PDC Light Curves





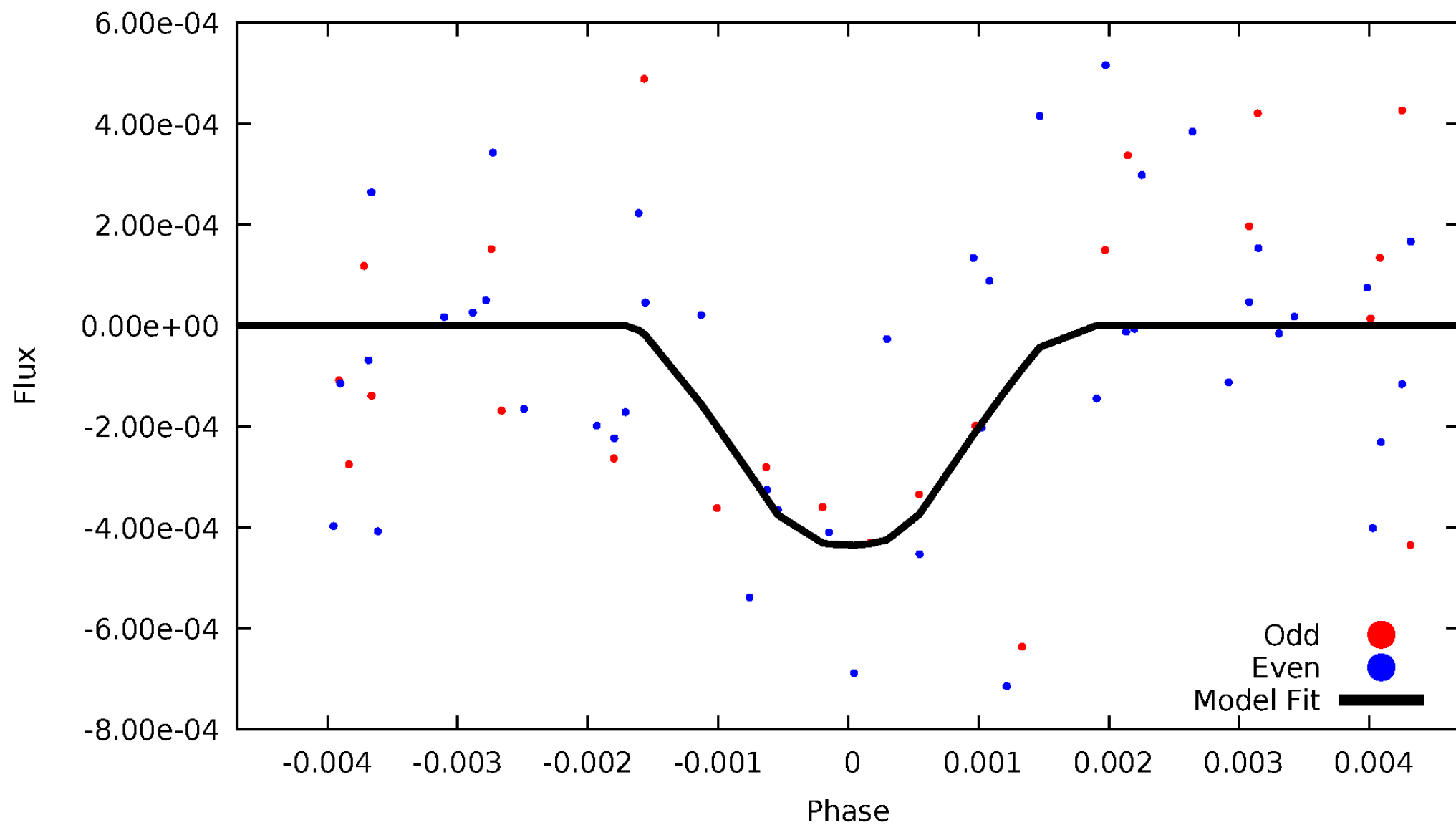
TCE 007199087-06





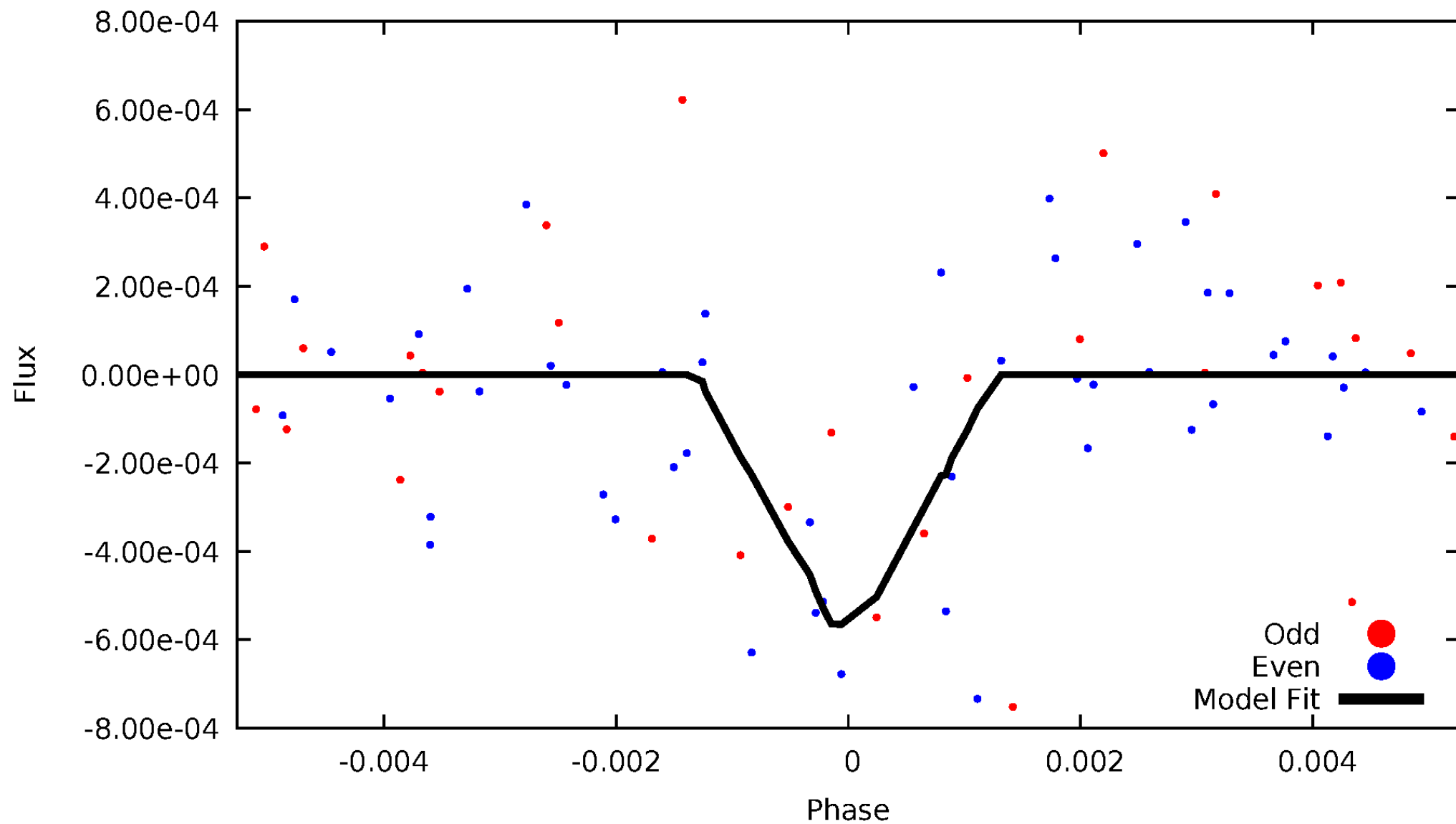
# DV Odd/Even

TCE 007199087-06



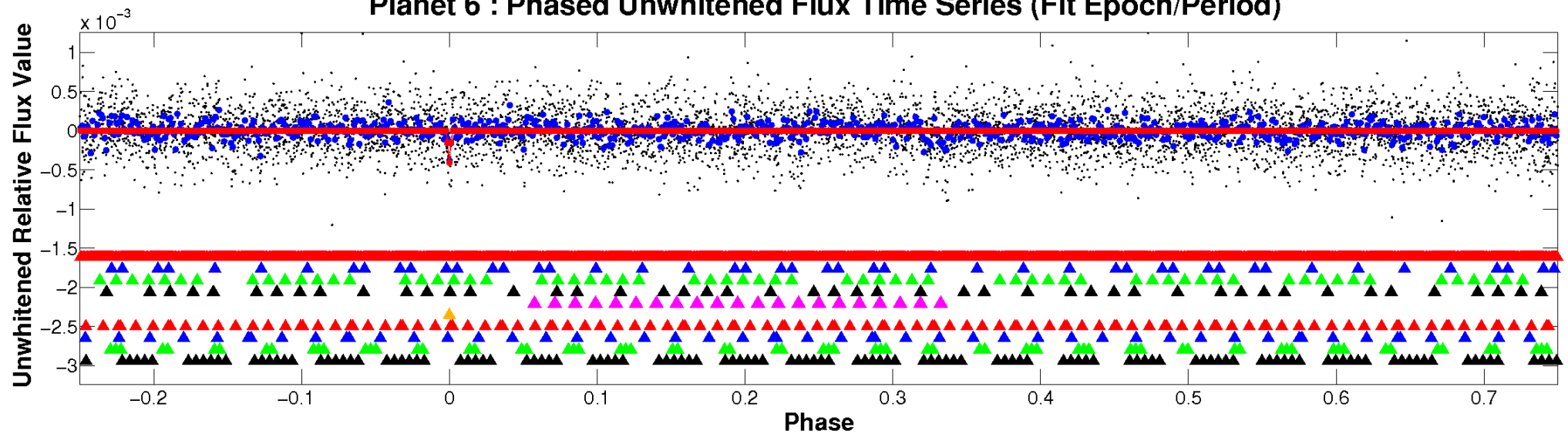
# ALT Odd/Even

TCE 007199087-06

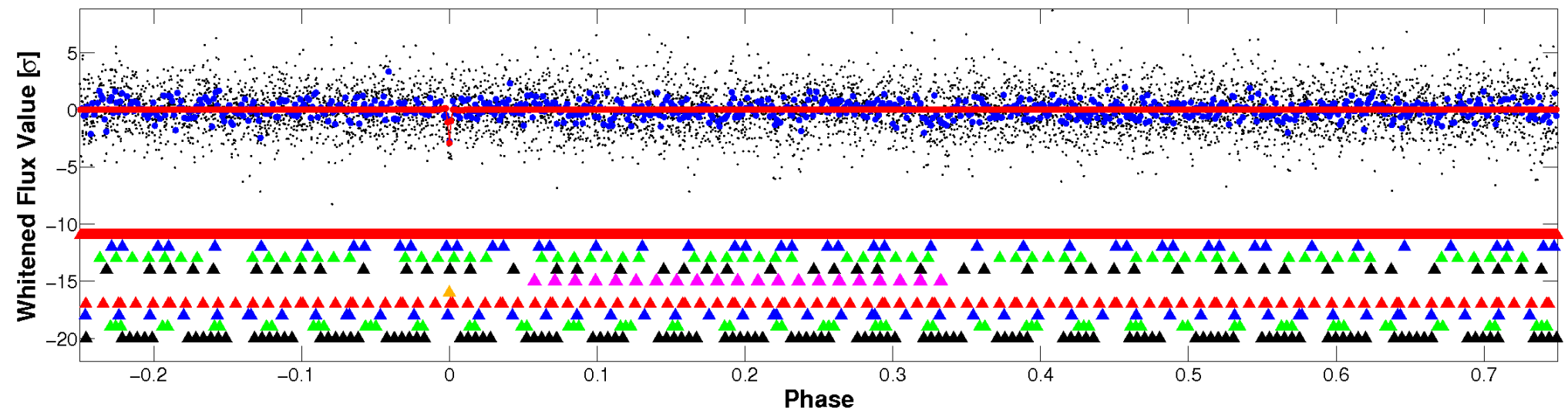


# Non-Whitened Vs. Whitened Light Curve

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

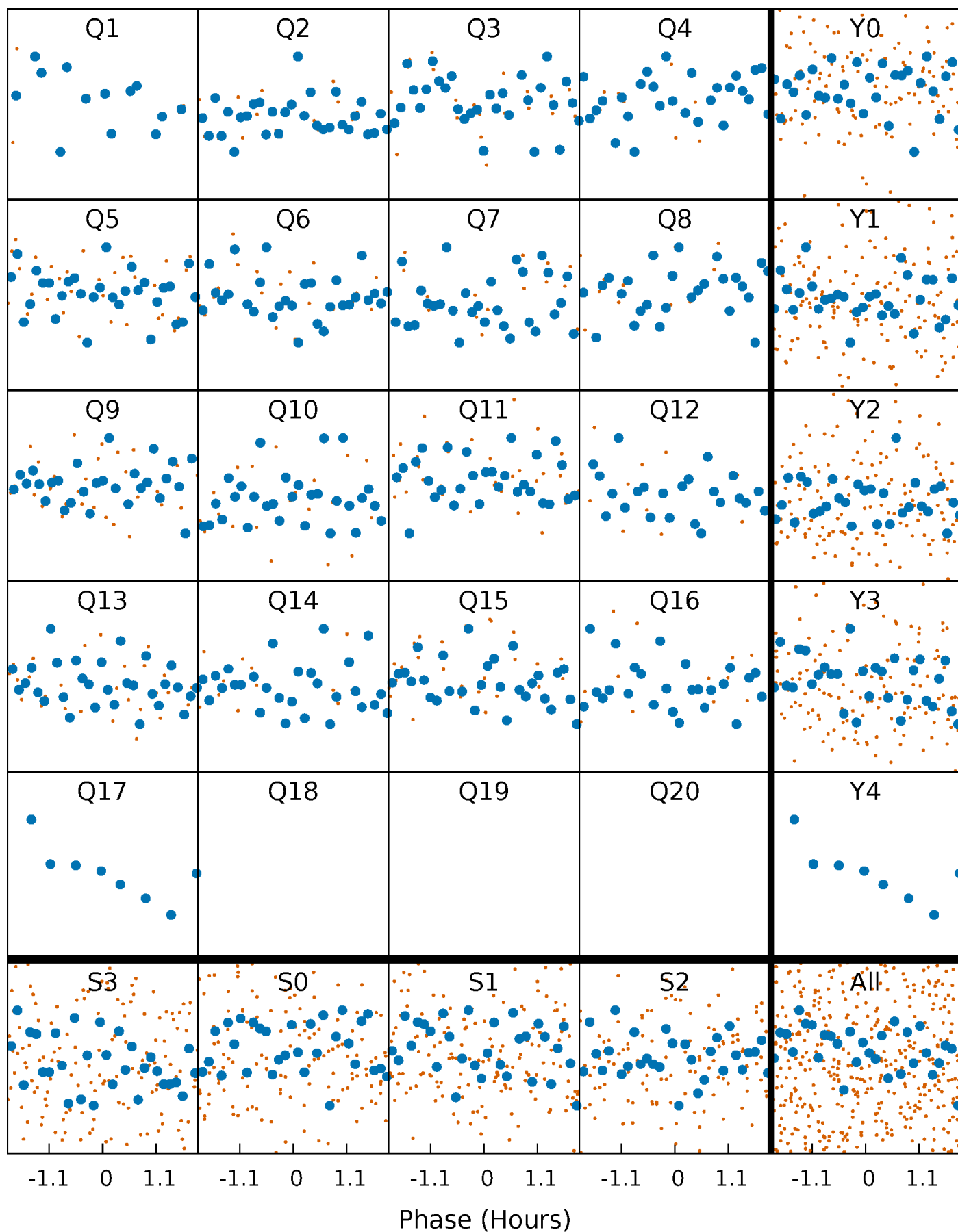


## Planet 6 : Phased Whitened Flux Time Series (Fit Epoch/Period)



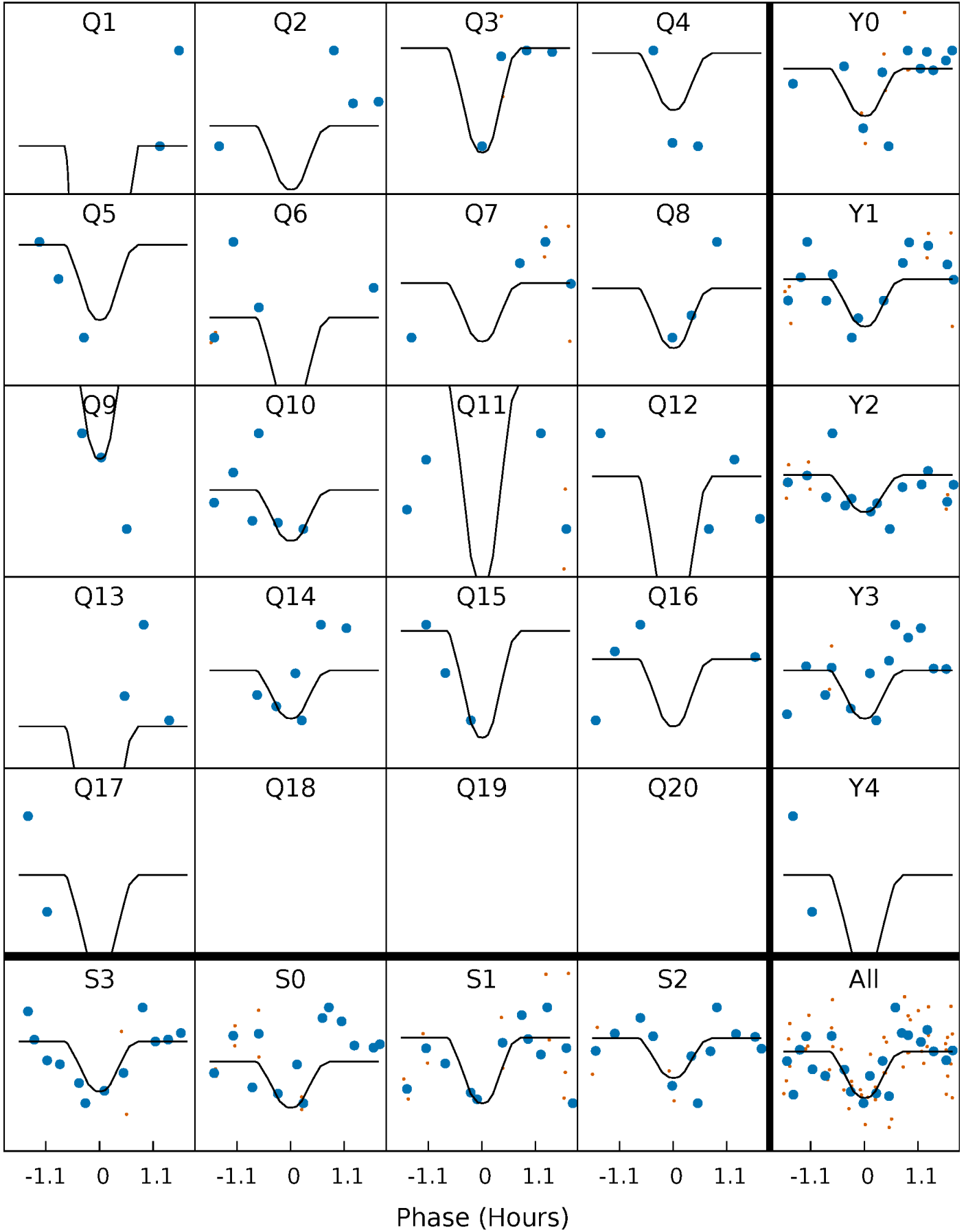
# PDC Quarter-Phased Transit Curves

TCE 007199087-06 P= 17.433948 Days  $T_0=136.980650$  (BKJD)



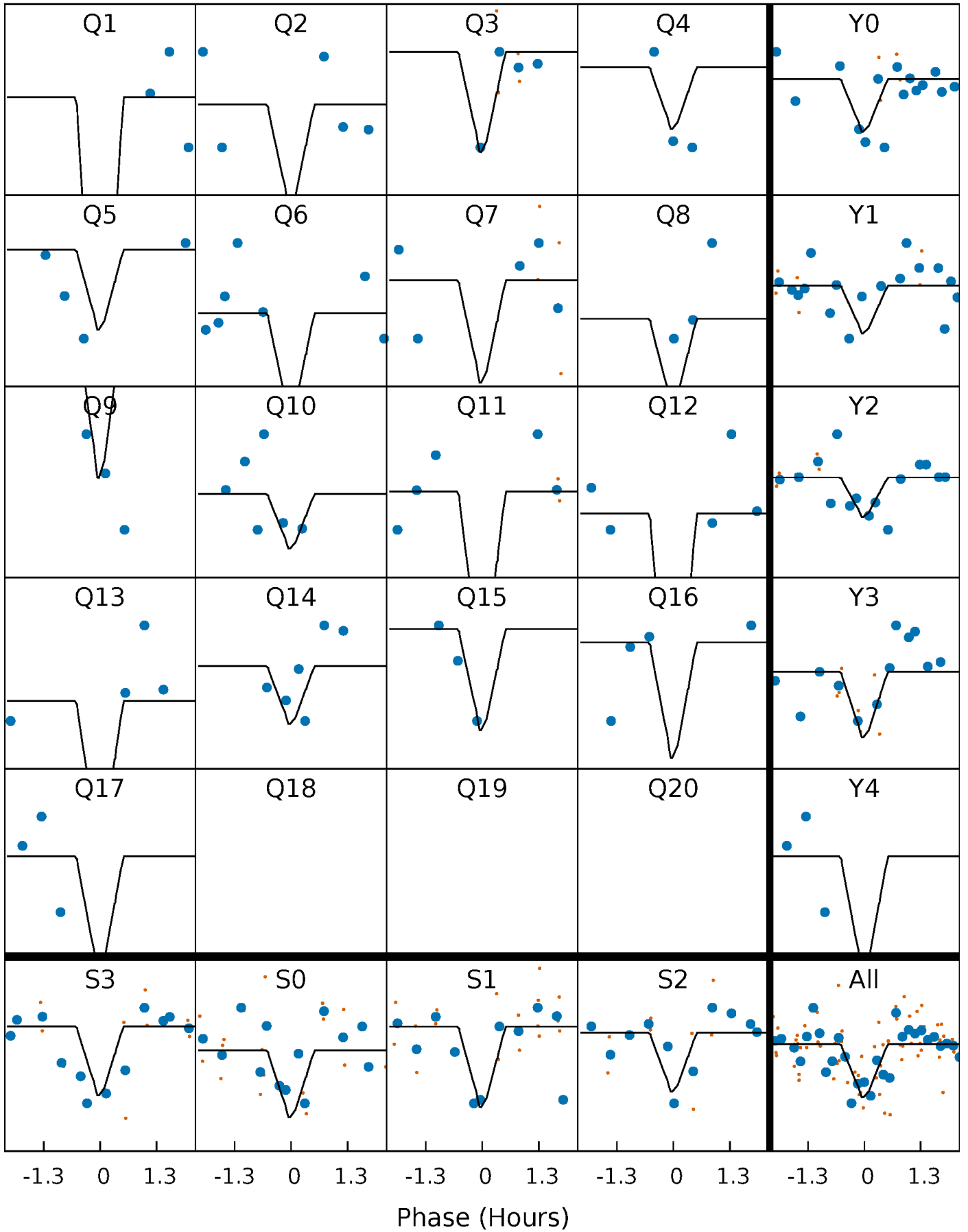
# DV Quarter-Phased Transit Curves

TCE 007199087-06 P= 17.433948 Days  $T_0=136.980650$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

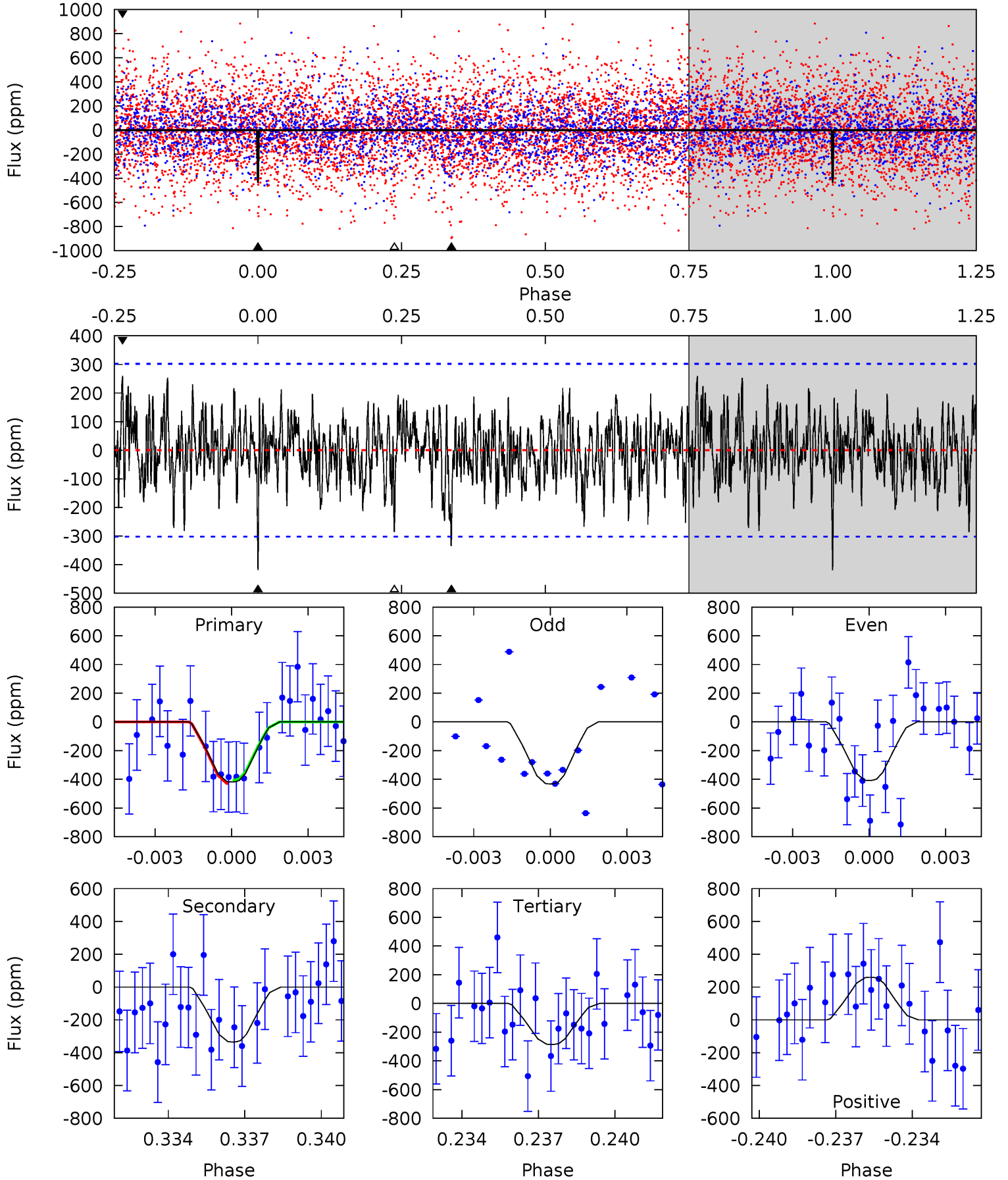
TCE 007199087-06 P= 17.433820 Days  $T_0=136.984500$  (BKJD)



# DV Model-Shift Uniqueness Test

007199087-06, P = 17.433948 Days, E = 119.546702 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
7.30	5.84	4.98	4.53	5.25	2.96	1.56	2.32	2.77	0.85	1.31	0.20	1.00	0.38	0.19

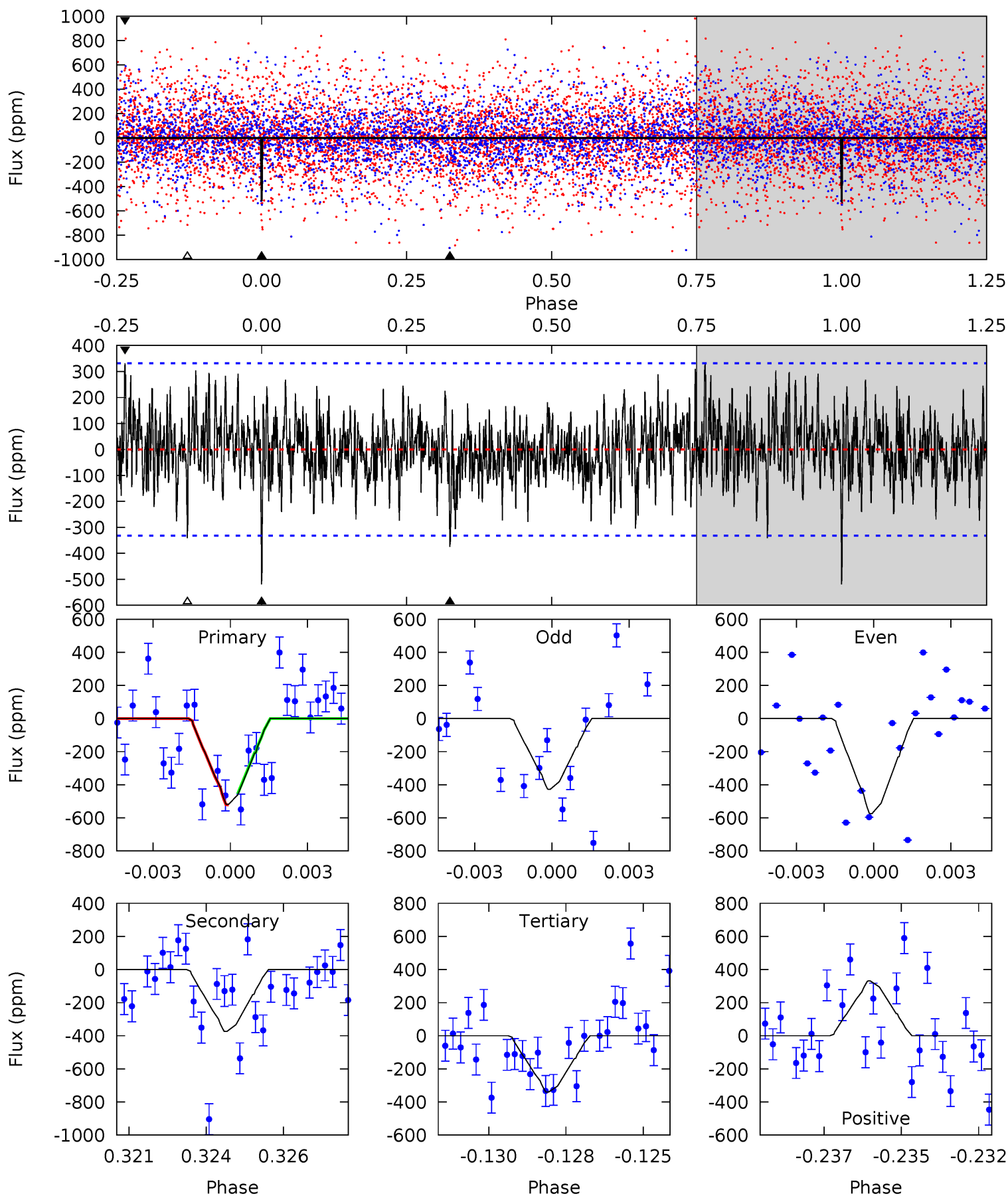




# Alt Model-Shift Uniqueness Test

007199087-06, P = 17.433820 Days, E = 119.550680 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
8.26	5.96	5.43	5.27	5.28	3.02	1.60	2.83	2.98	0.53	0.69	1.13	0.90	0.39	0.54



### Stellar Parameters For KIC 007199087

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5161^{+139}_{-154}$	$3.782^{+0.812}_{-0.348}$	$-0.420^{+0.300}_{-0.300}$	$1.952^{+1.204}_{-1.204}$	$0.842^{+0.178}_{-0.145}$	$0.160^{+3.448}_{-0.111}$
	+3%/-3%	+21%/-9%	+71%/-71%	+62%/-62%	+21%/-17%	+2162%/-70%
Source	PHO1	KIC0	KIC0	DSEP		

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

### Secondary Eclipse Parameters for KIC 007199087-06 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-335 \pm 57$	$8.65^{+10.14}_{-6.00}$	$1251^{+196}_{-224}$	$3688^{+1845}_{-719}$	$39^{+379}_{-31}$
Alt.	$-374 \pm 63$	$8.72^{+10.22}_{-6.15}$	$1233^{+201}_{-216}$	$3709^{+2177}_{-687}$	$41^{+424}_{-32}$

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

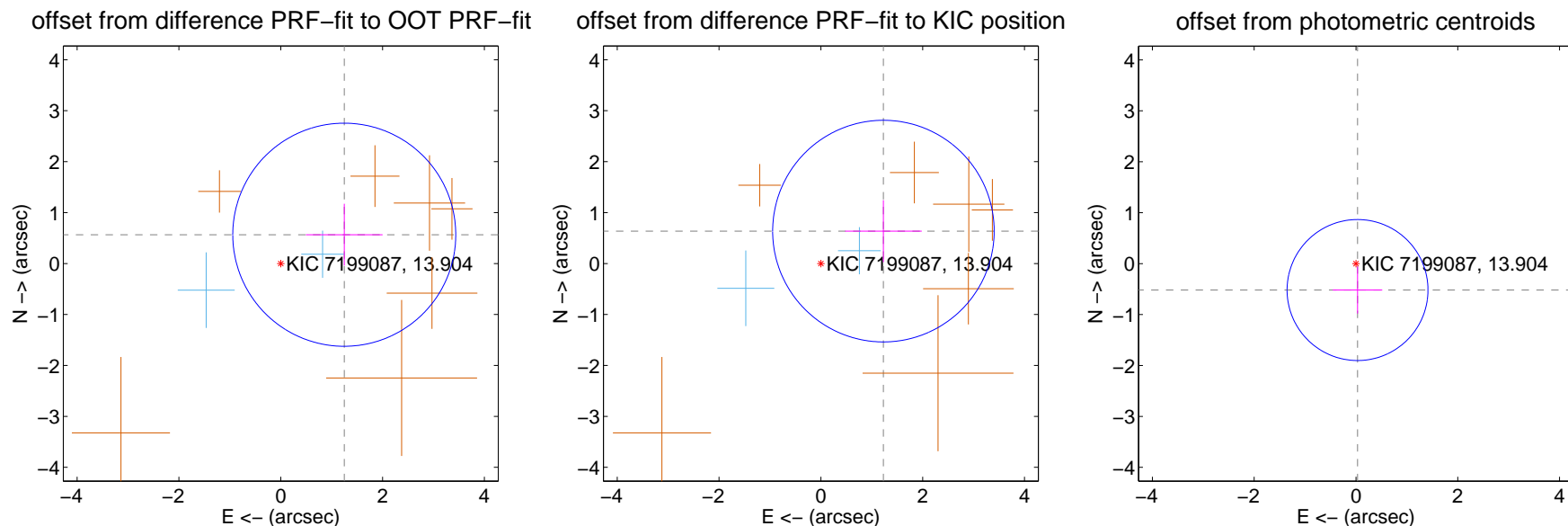
## DV Centroid Data

Supplemental centroid analysis for 007199087-06. Kepler magnitude: 13.90. Transit SNR 9.82

There are 2 quarters with good PRF difference image offsets

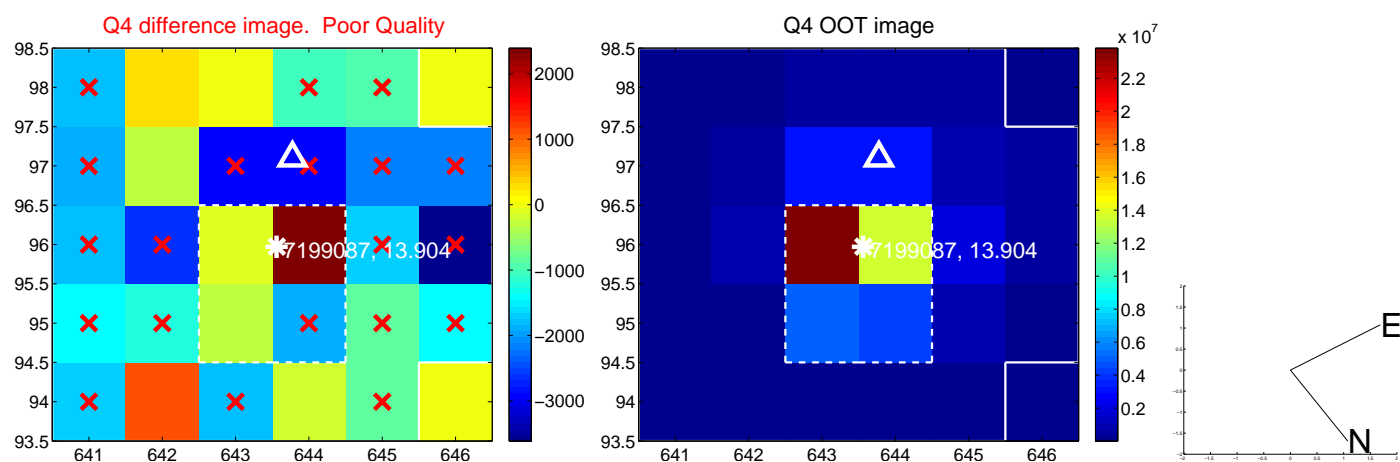
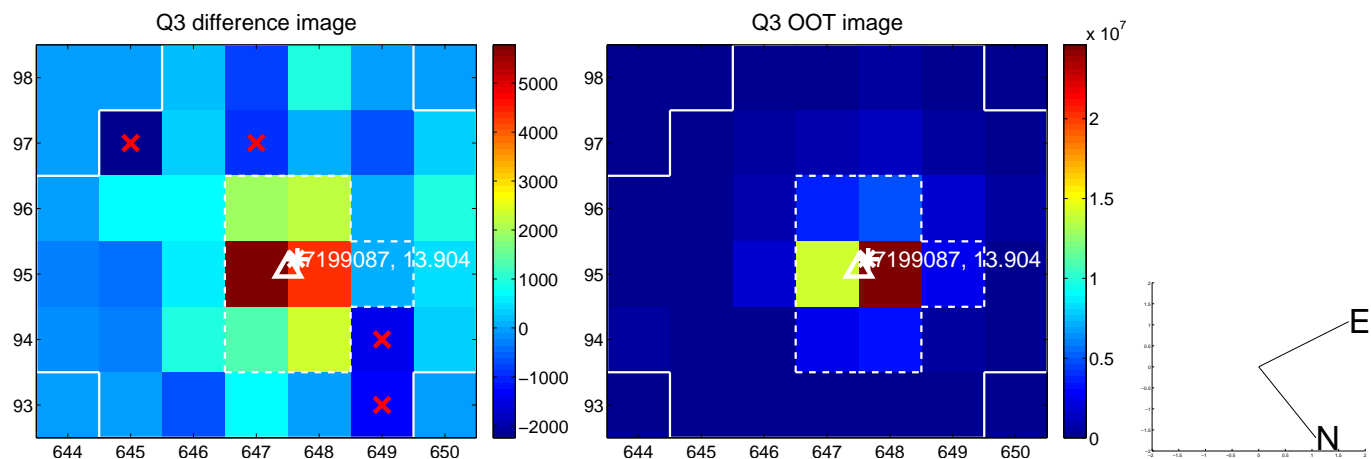
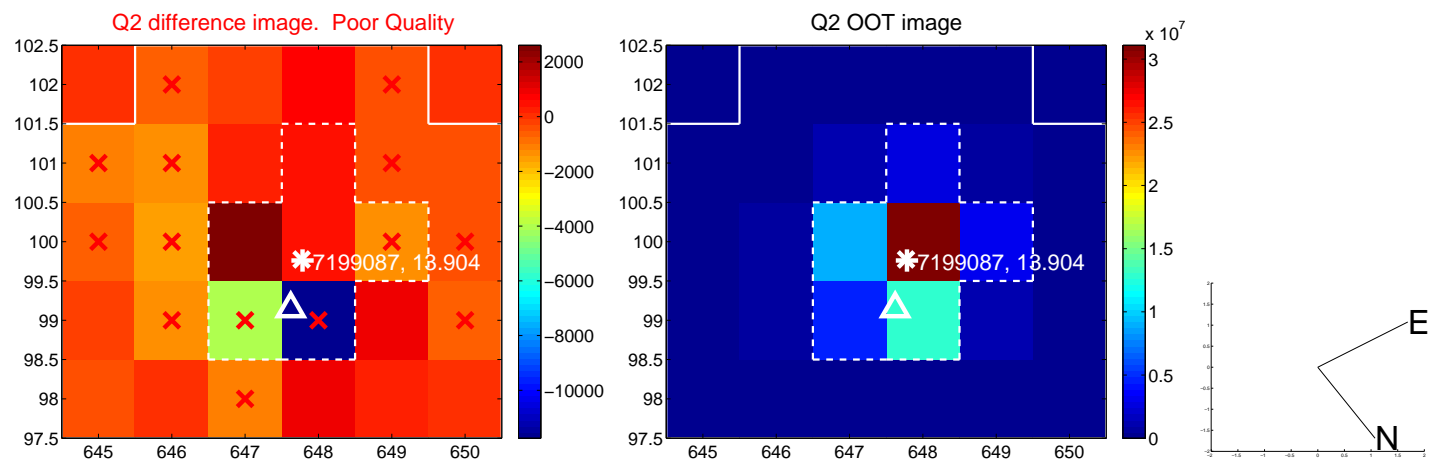
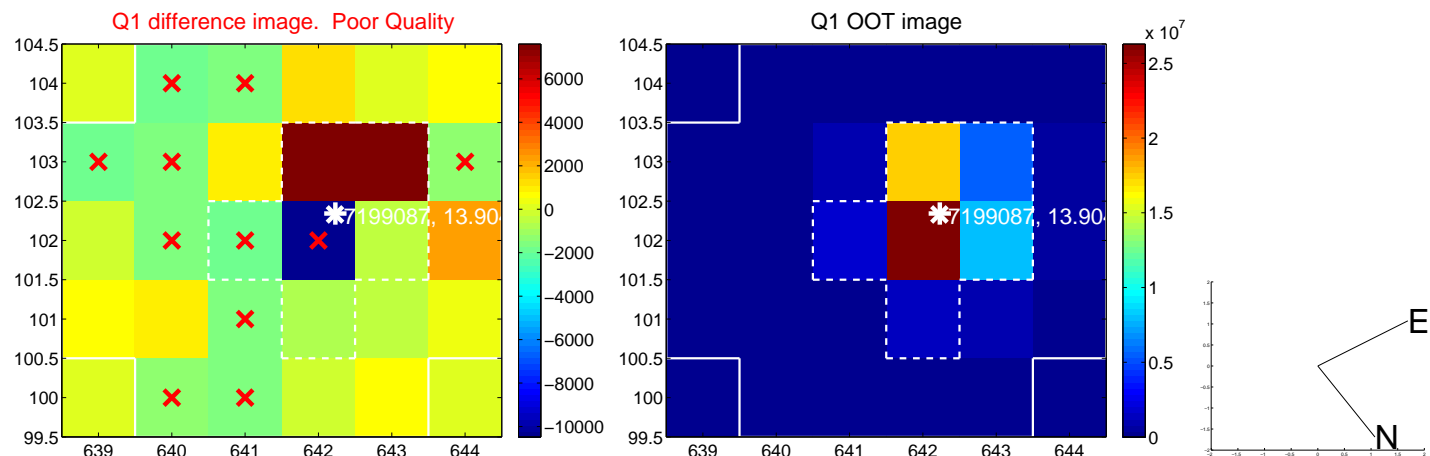
The direct PRF centroid is offset from the target star catalog position by about 0.01 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.370 \pm 0.730$	1.88	$-1.247 \pm 0.753$	$0.565 \pm 0.608$
PRF-fit source offset from KIC position	$1.384 \pm 0.725$	1.91	$-1.229 \pm 0.753$	$0.637 \pm 0.608$
photometric centroid source offset	$0.52 \pm 0.46$	1.13	$-0.03 \pm 0.49$	$-0.52 \pm 0.46$



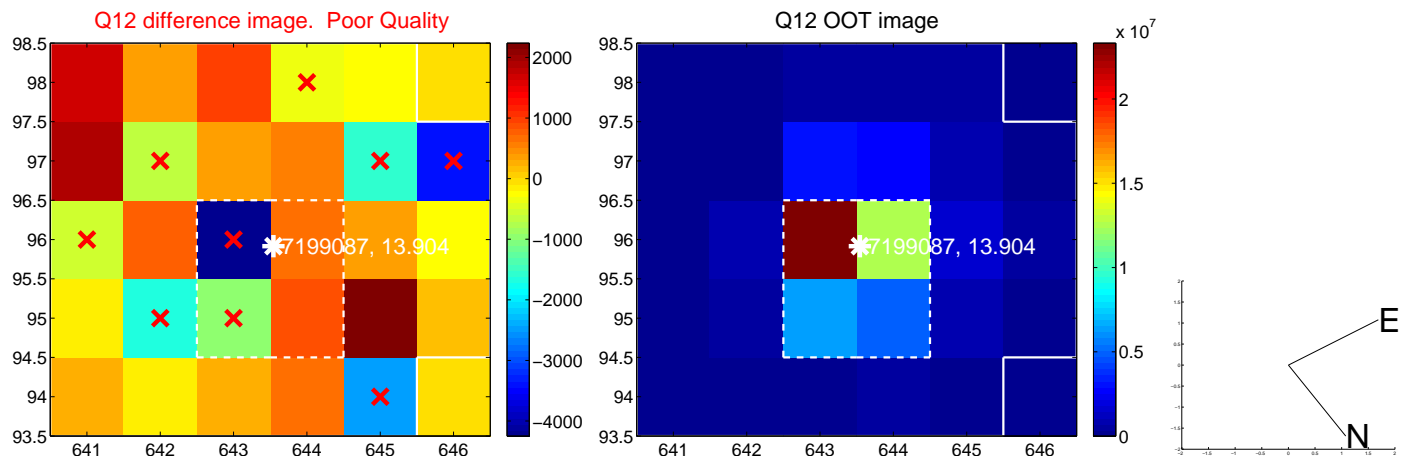
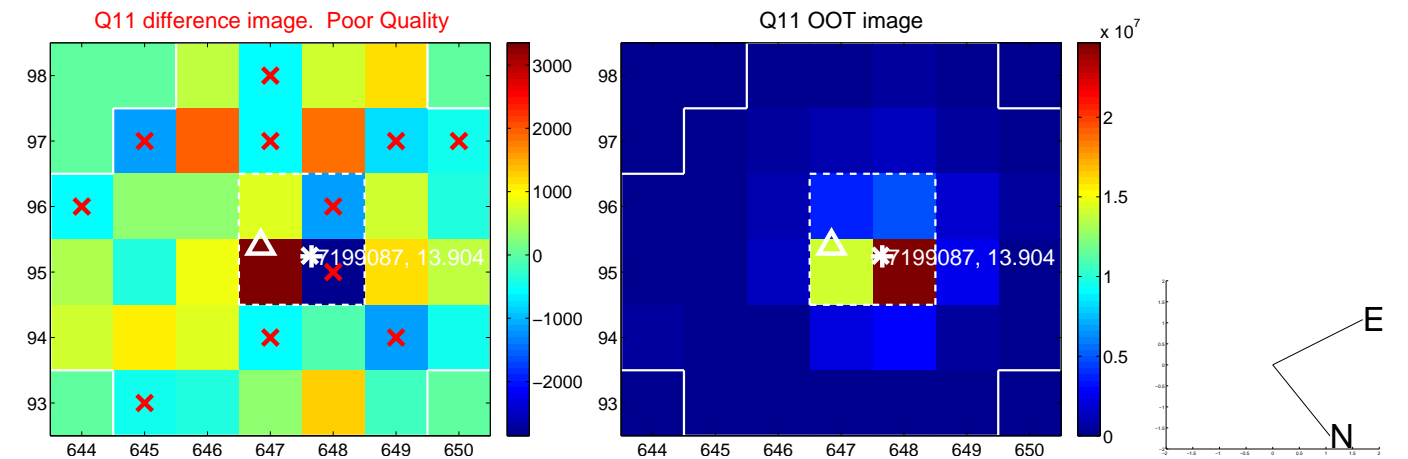
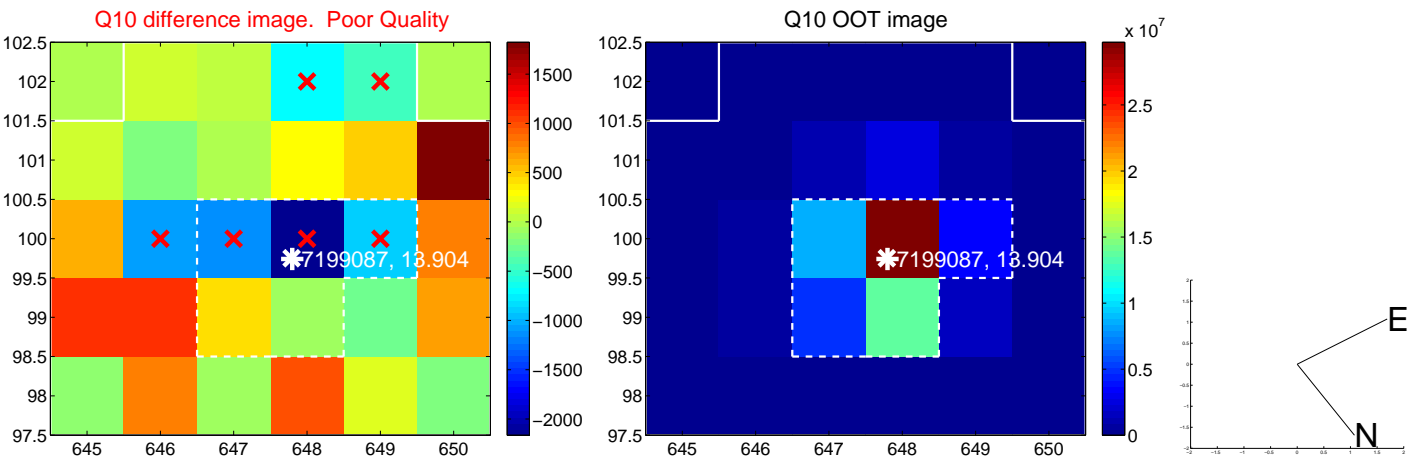
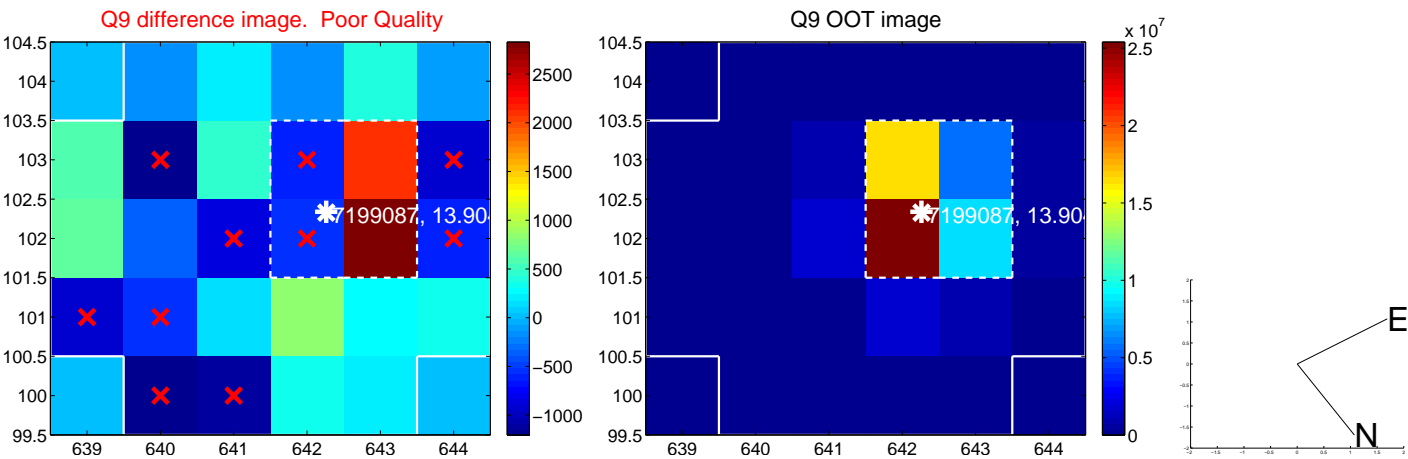
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

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

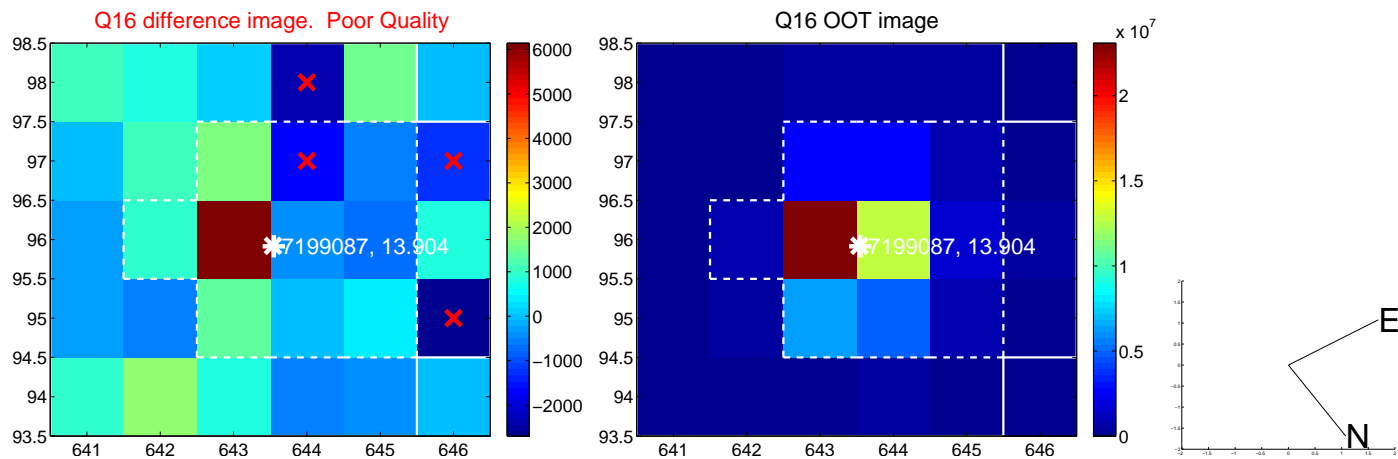
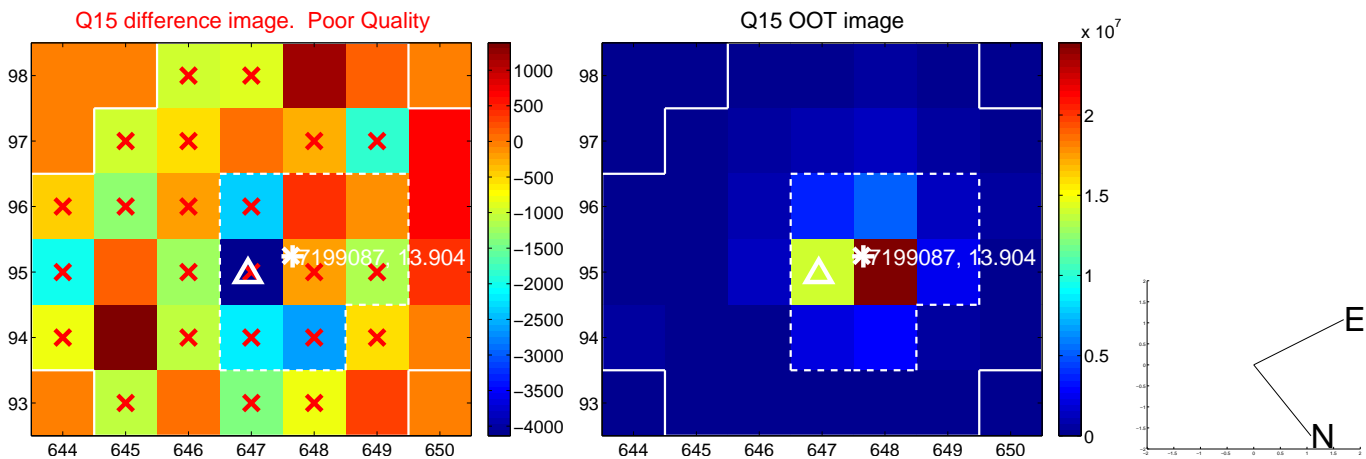
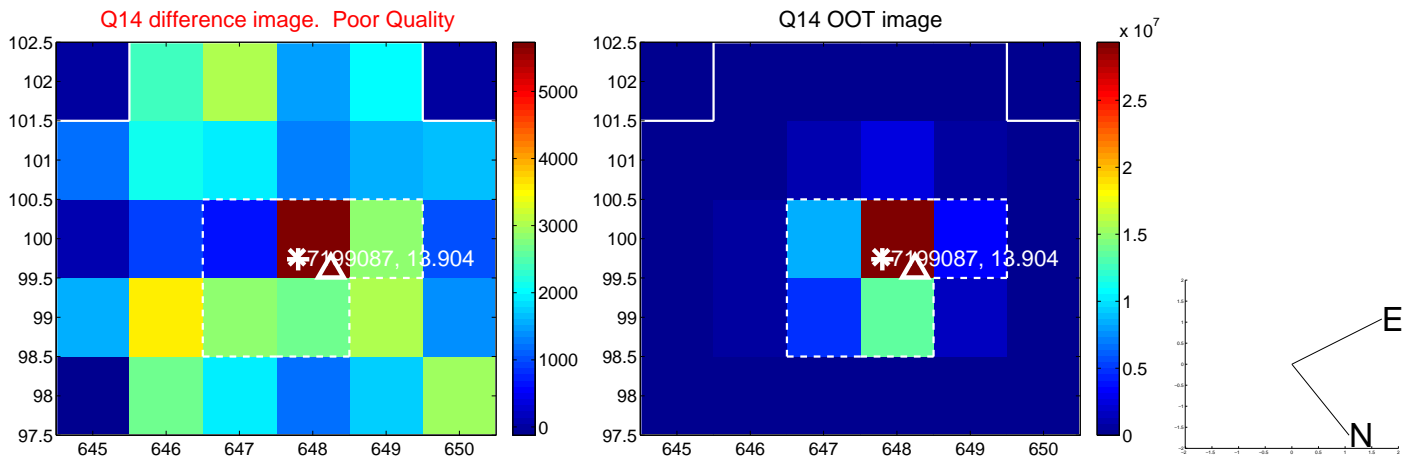
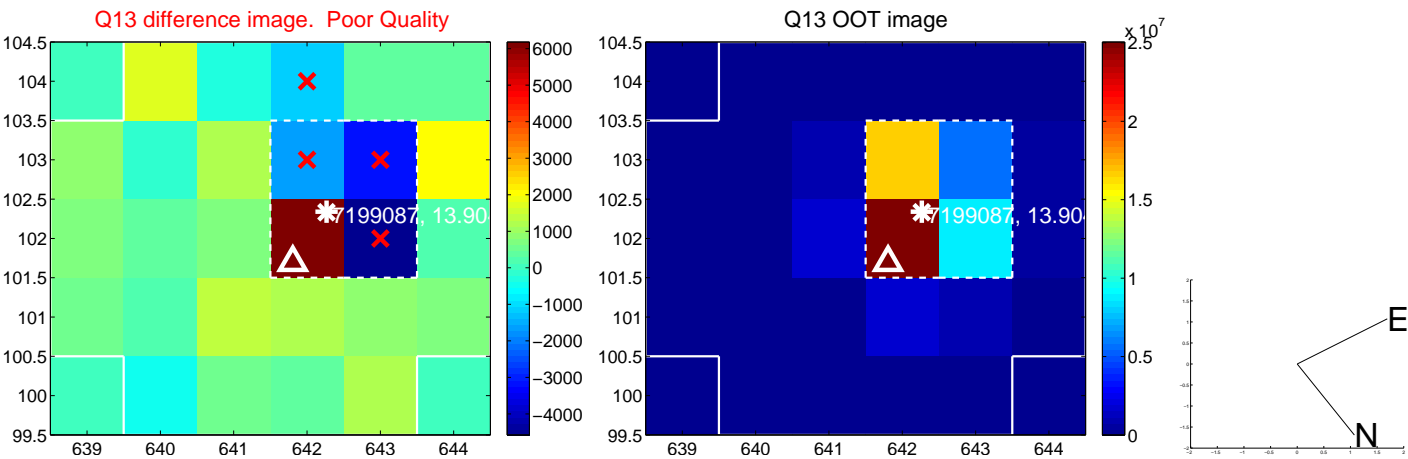




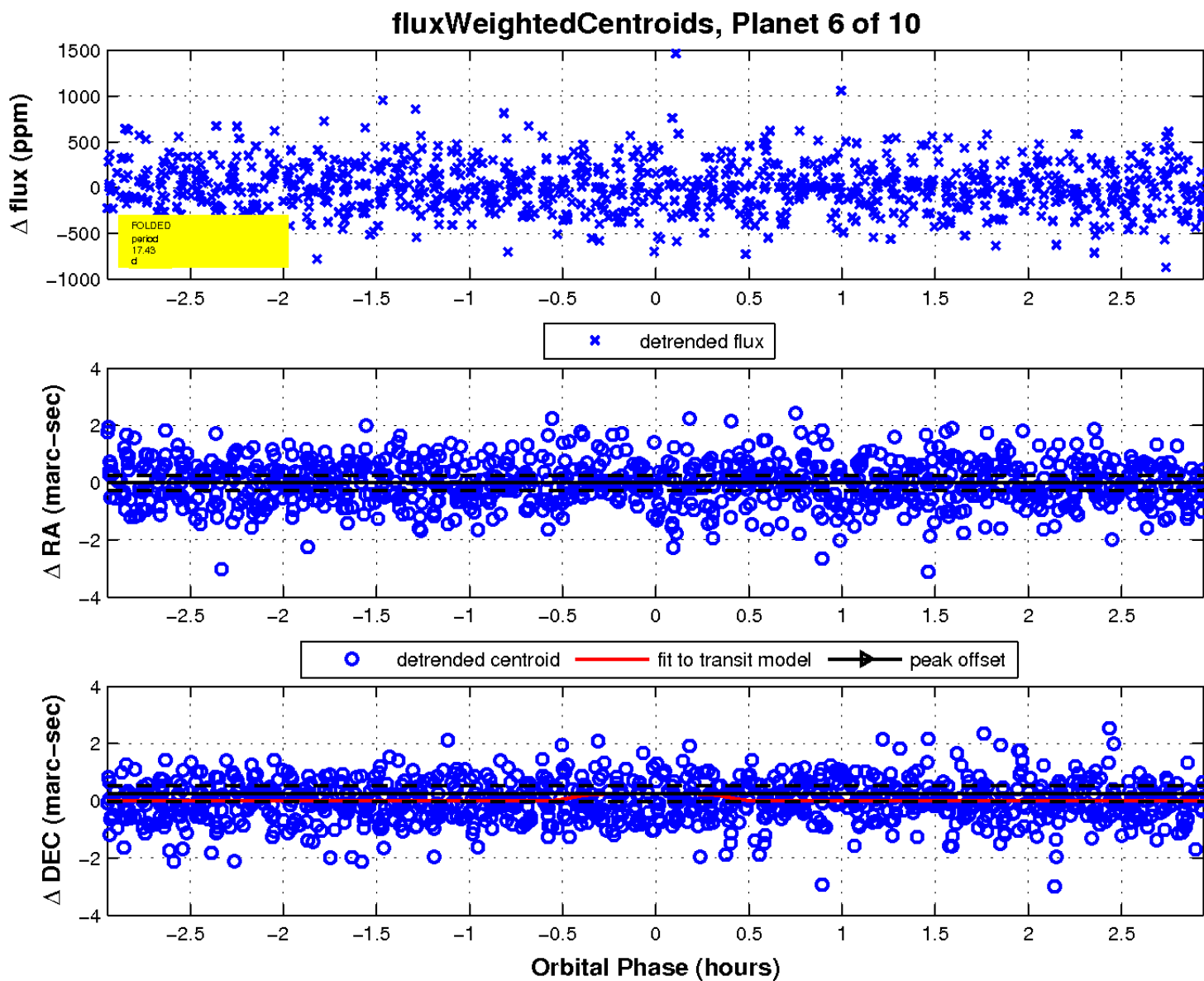
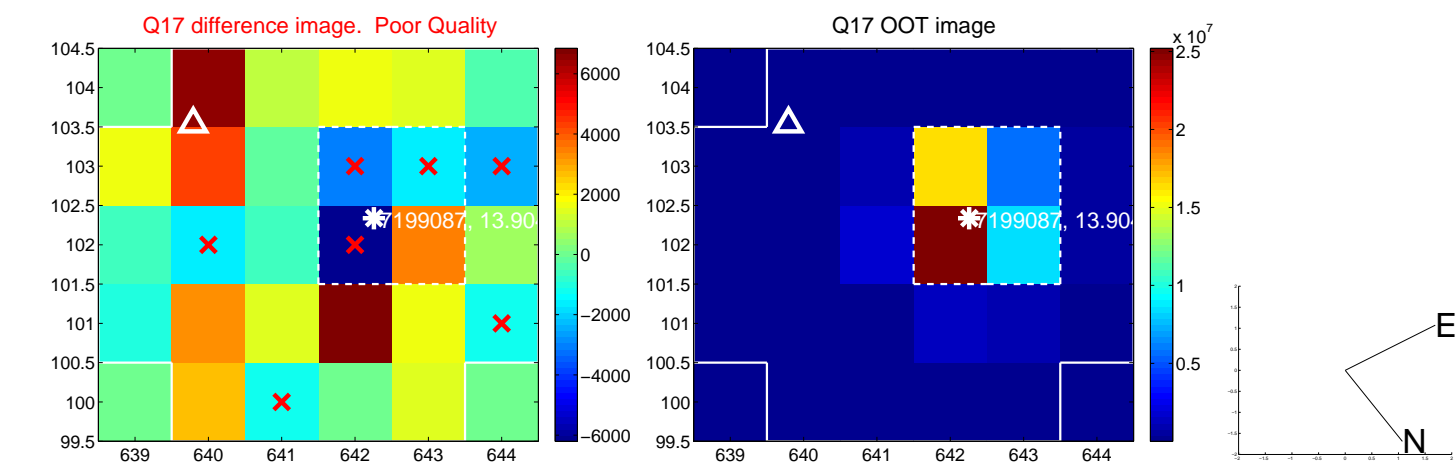
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



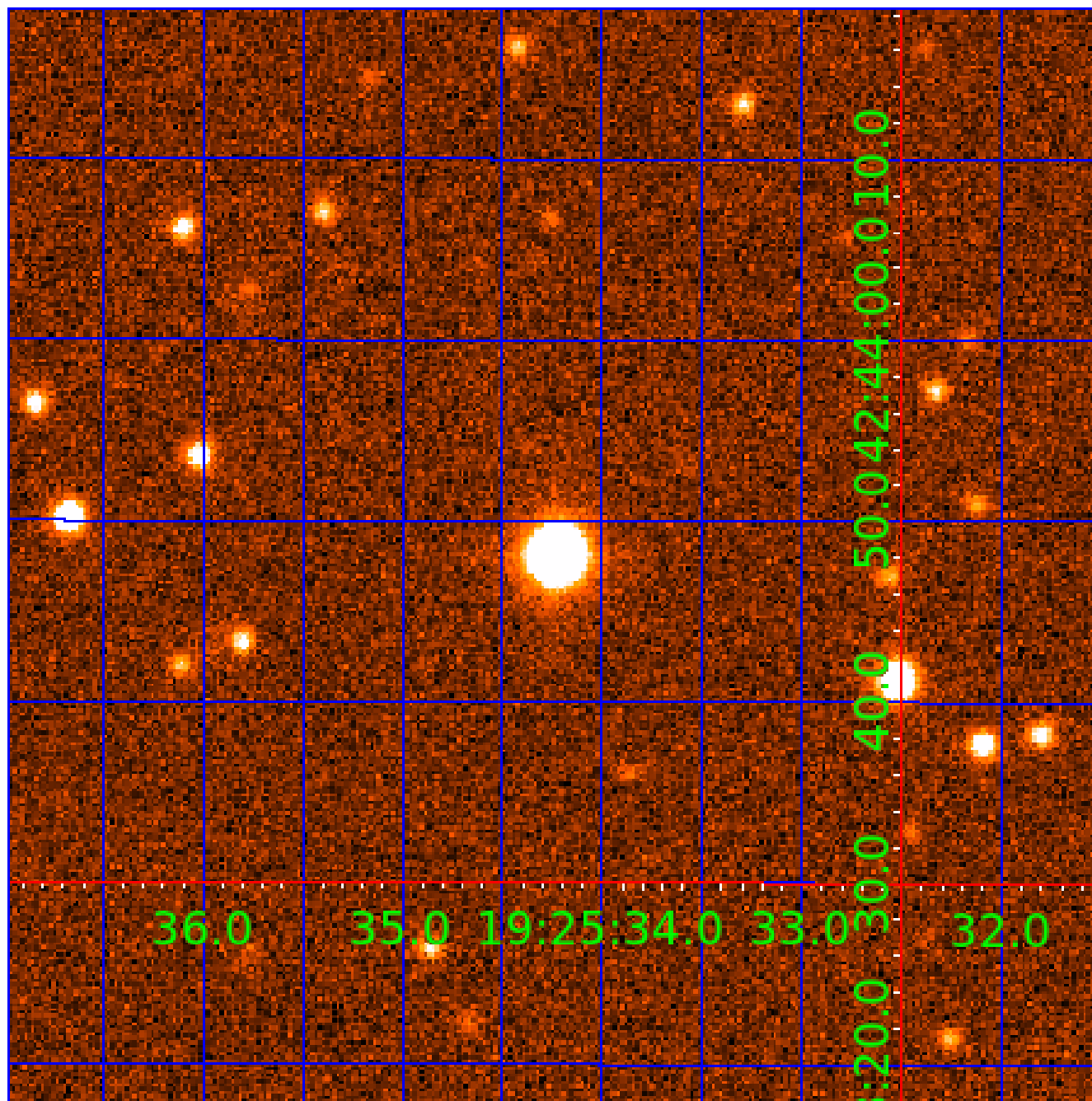
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.





# UKIRT Image

Declination



## KIC 007199087

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007199087-01	OBS	No	0.566789	131.670402	8.5	3.882	14.8	2.7	1.95	5161	0.56	15121.24
007199087-02	OBS	No	30.372888	155.472228	559.9	2.126	11.0	13.0	1.95	5161	9.51	74.85
007199087-03	OBS	No	22.645018	135.806898	358.7	5.851	12.1	11.4	1.95	5161	7.65	110.71
007199087-04	OBS	No	30.066788	151.392002	551.6	1.456	11.8	13.4	1.95	5161	4.56	75.86
007199087-05	OBS	No	69.496219	195.078789	535.3	3.211	10.0	10.7	1.95	5161	5.21	24.82
007199087-06	OBS	No	17.433948	136.980650	435.8	0.982	10.6	9.8	1.95	5161	4.96	156.90
007199087-07	OBS	No	12.928268	142.702231	321.2	1.694	9.9	10.2	1.95	5161	3.77	233.76
007199087-08	OBS	No	28.669881	148.165240	606.7	0.987	9.2	8.4	1.95	5161	5.76	80.83
007199087-09	OBS	No	20.441918	143.787734	418.3	1.326	10.7	9.8	1.95	5161	4.12	126.90
007199087-10	OBS	No	11.882767	139.895565	291.3	4.500	8.6	-1.0	1.95	5161	3.26	261.57

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007199087-01	OBS	FP	0.00	1	0	1	1	SWEET_NTL—LPP_DV—LPP_ALT—HALO_GHOST—EPHEM_MATCH
007199087-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT
007199087-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
007199087-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
007199087-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
007199087-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
007199087-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
007199087-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV
007199087-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT
007199087-10	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT—CENT_NOFITS

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

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

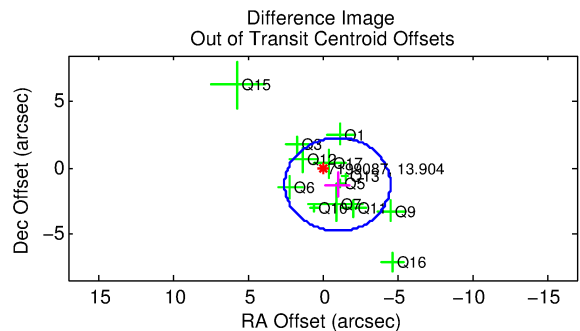
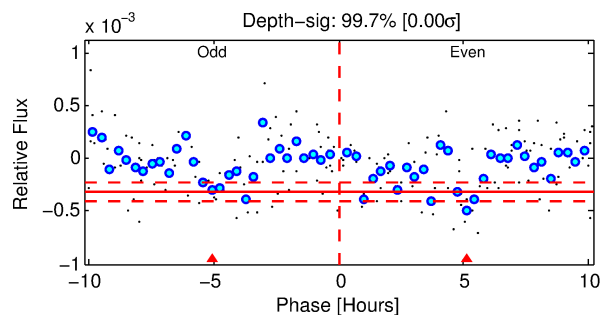
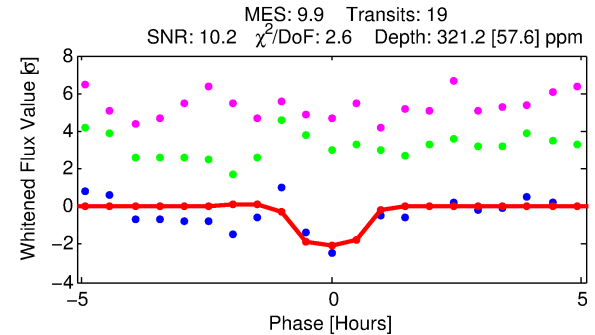
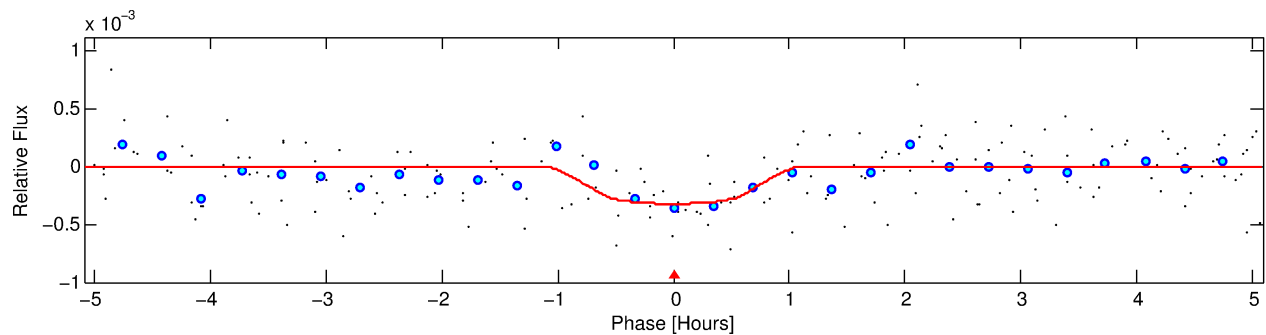
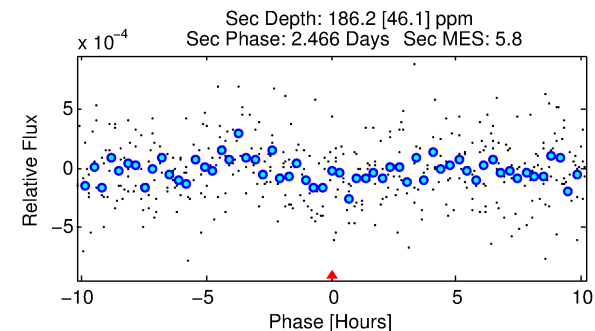
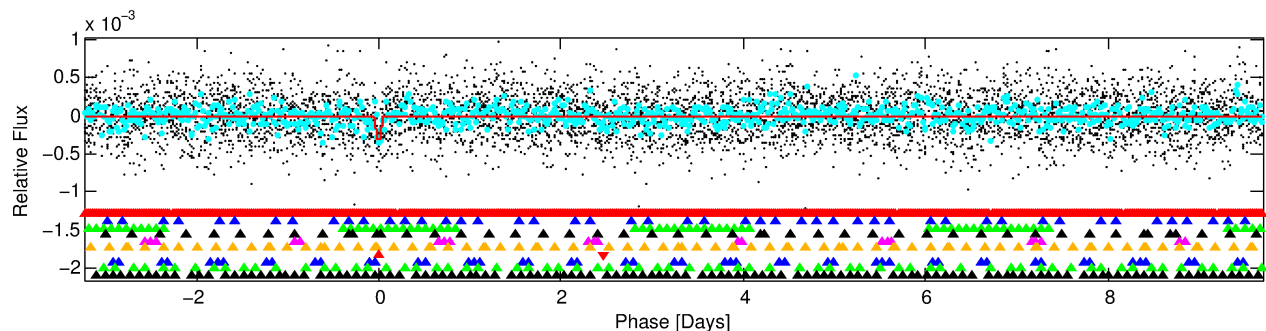
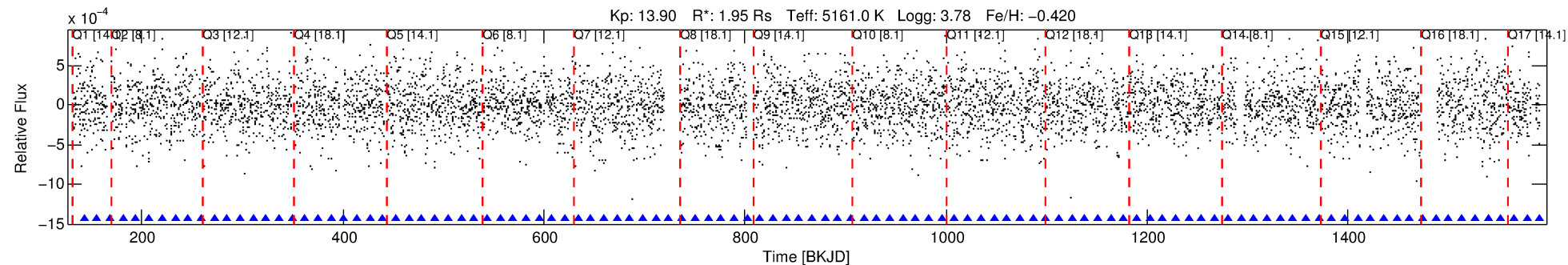
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 007199087-07

No Significant Match Found

# DV One-Page Summary

KIC: 7199087 Candidate: 7 of 10 Period: 12.928 d



## DV Fit Results:

Period = 12.92827 [0.00015] d  
Epoch = 142.7022 [0.0091] BKJD  
Rp/R\* = 0.0177 [0.0357]  
a/R\* = 42.14 [328.54]  
b = 0.72 [5.44]  
Seff = 233.76 [308.08]  
Teff = 997 [329] K  
Rp = 3.77 [7.96] Re  
a = 0.1018 [0.0760] AU  
Ag = 74.78 [318.21] [0.23σ]  
Teffp = 4533 [4589] K [0.77σ]

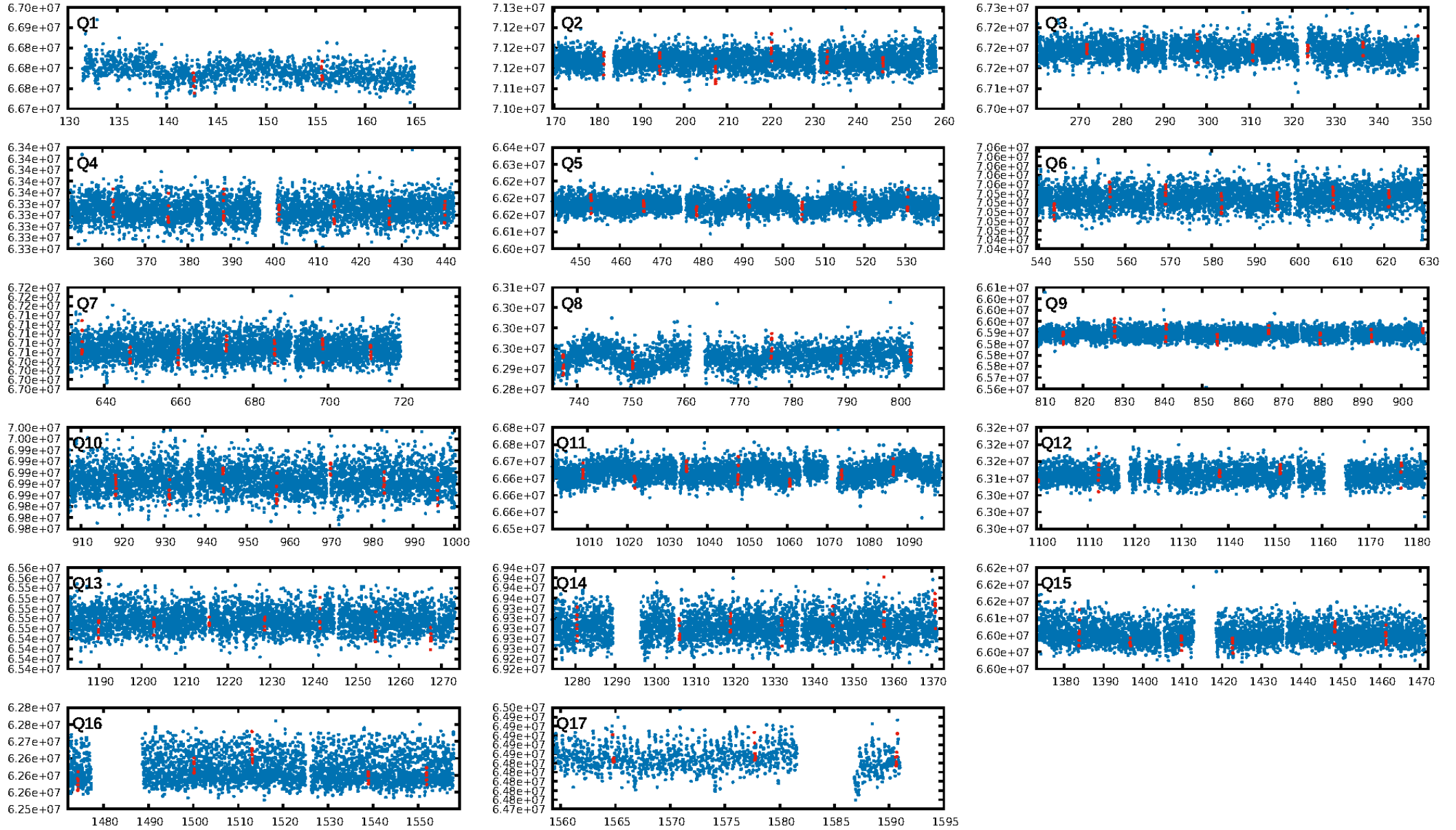
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [5.22σ]  
LongPeriod-sig: 100.0% [55.23σ]  
ModelChiSquare2-sig: 0.7%  
ModelChiSquareGof-sig: 93.3%  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [17/17]  
GhostDiagnostic-chr: 0.5775  
Centroid-sig: 9.9%  
Centroid-so: 0.545 arcsec [1.32σ]  
OotOffset-rm: 1.626 arcsec [1.38σ]  
OotOffset-st: 2/4/2/5 [13]  
KicOffset-rm: 1.619 arcsec [1.54σ]  
KicOffset-st: 2/4/2/5 [13]  
DiffImageQuality-fgm: 0.23 [3/13]  
DiffImageOverlap-fno: 0.00 [0/17]

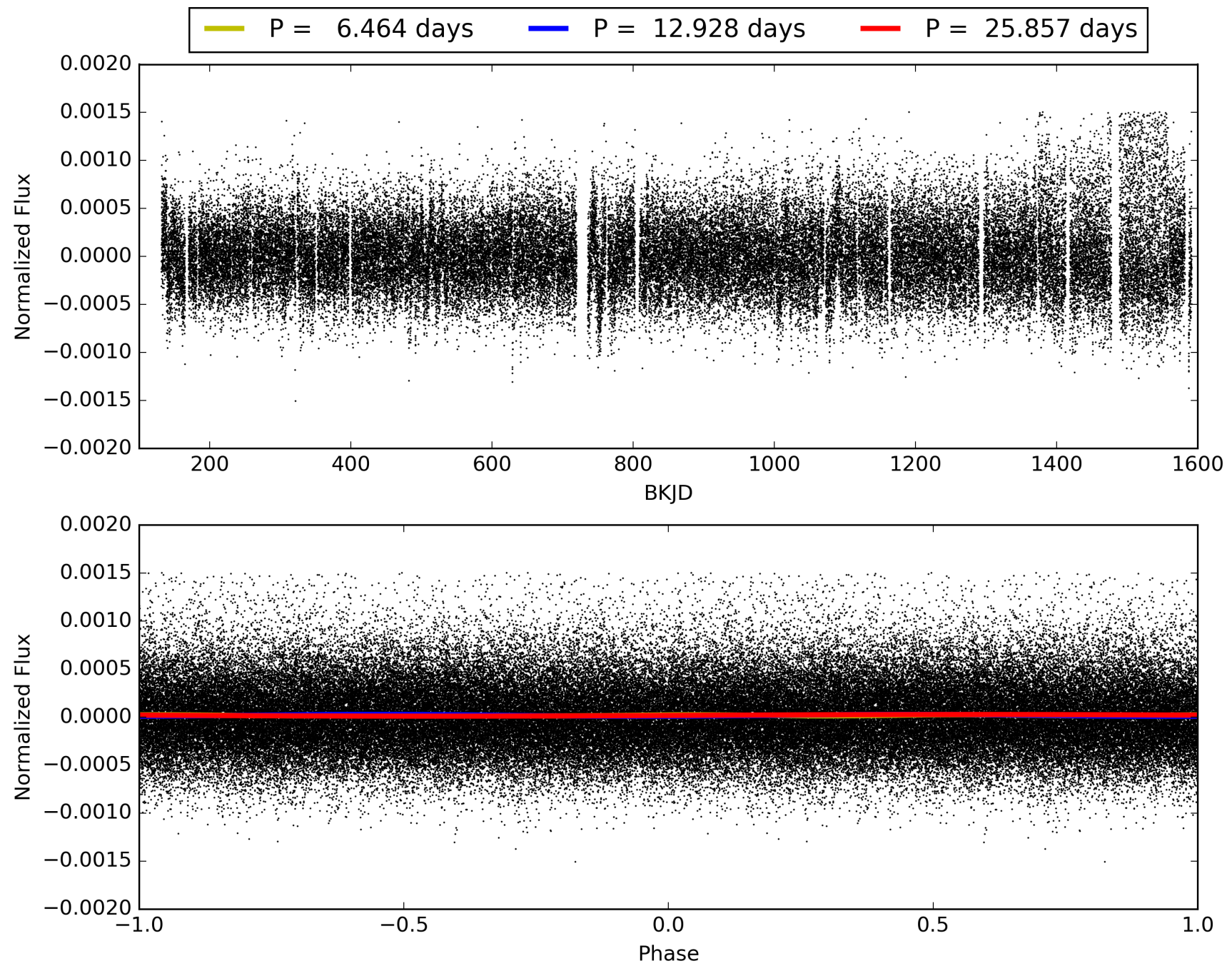
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 15:41:46 Z

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

# TCE 007199087-07, PDC Light Curves

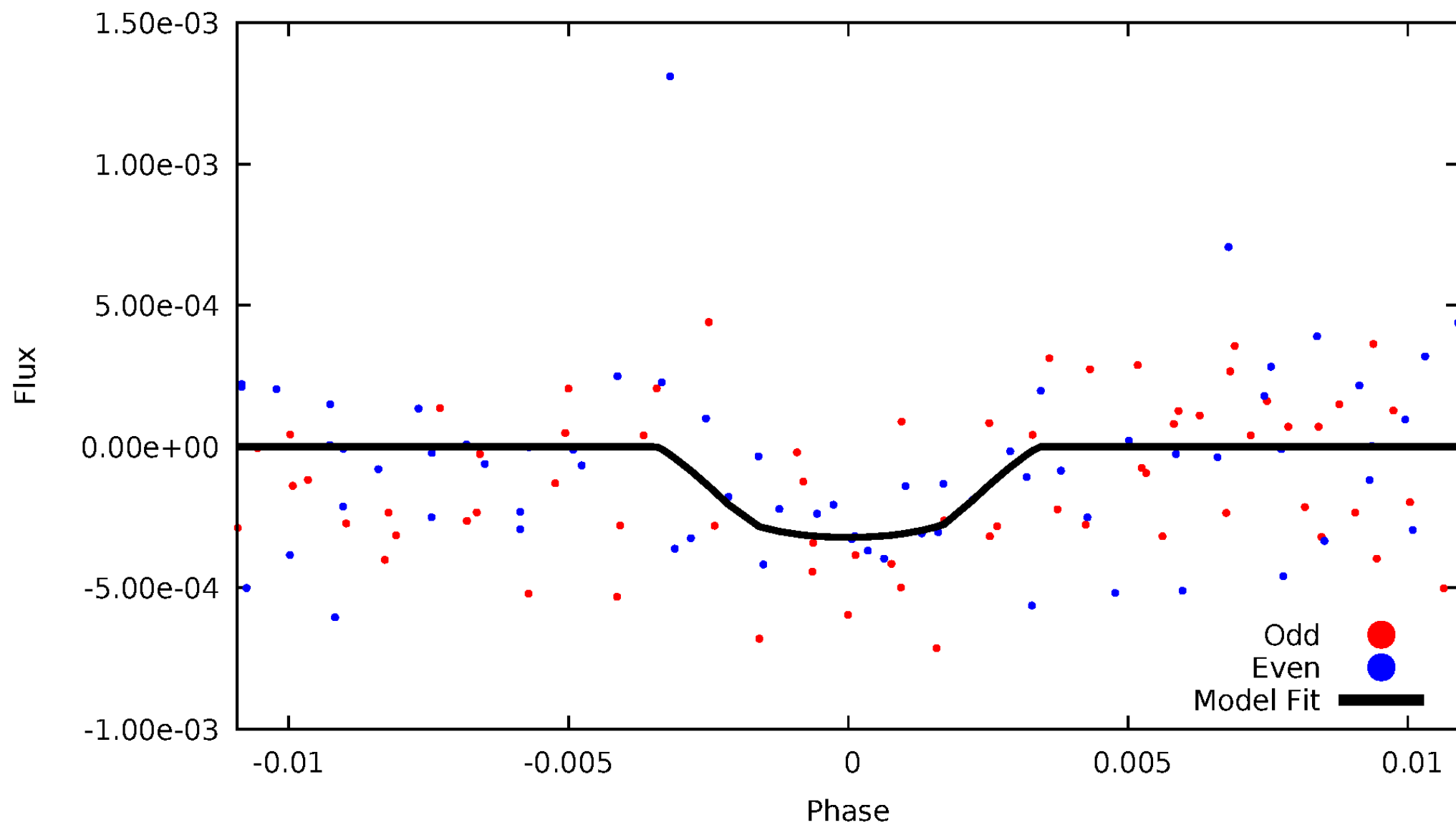


TCE 007199087-07



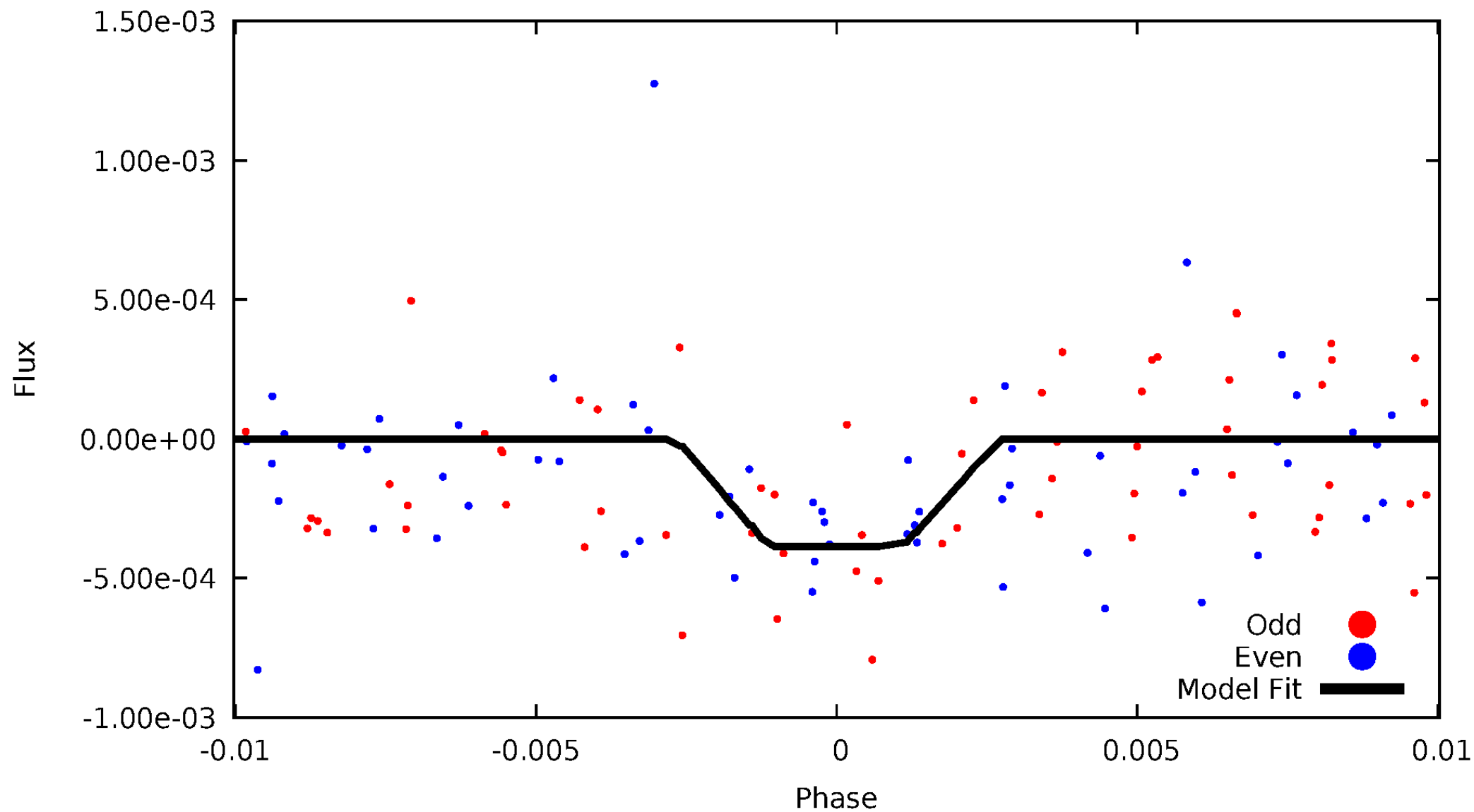
# DV Odd/Even

TCE 007199087-07



# ALT Odd/Even

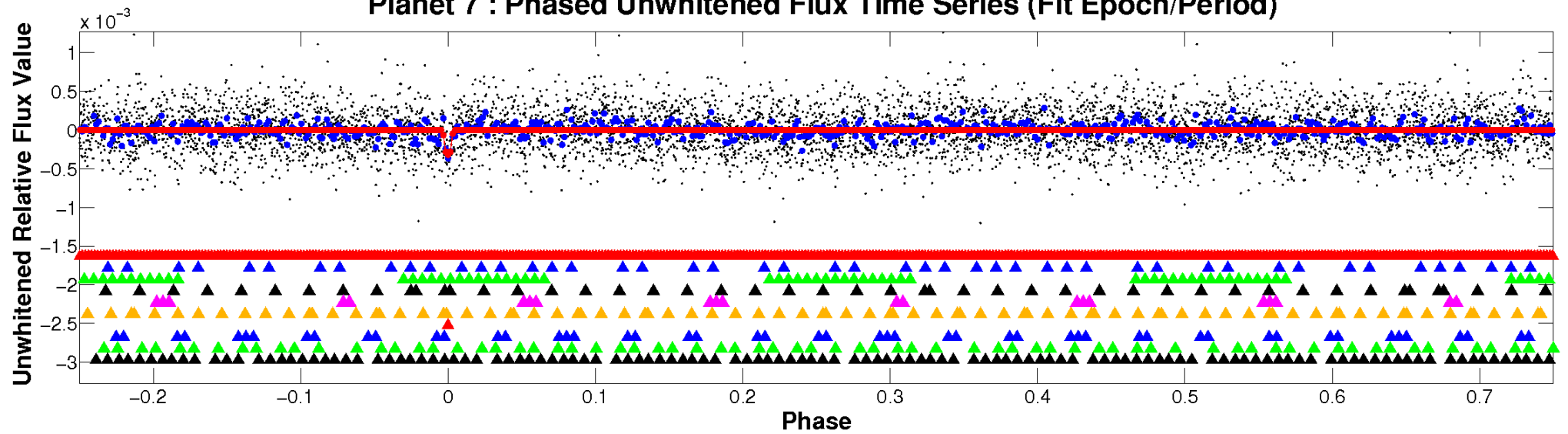
TCE 007199087-07



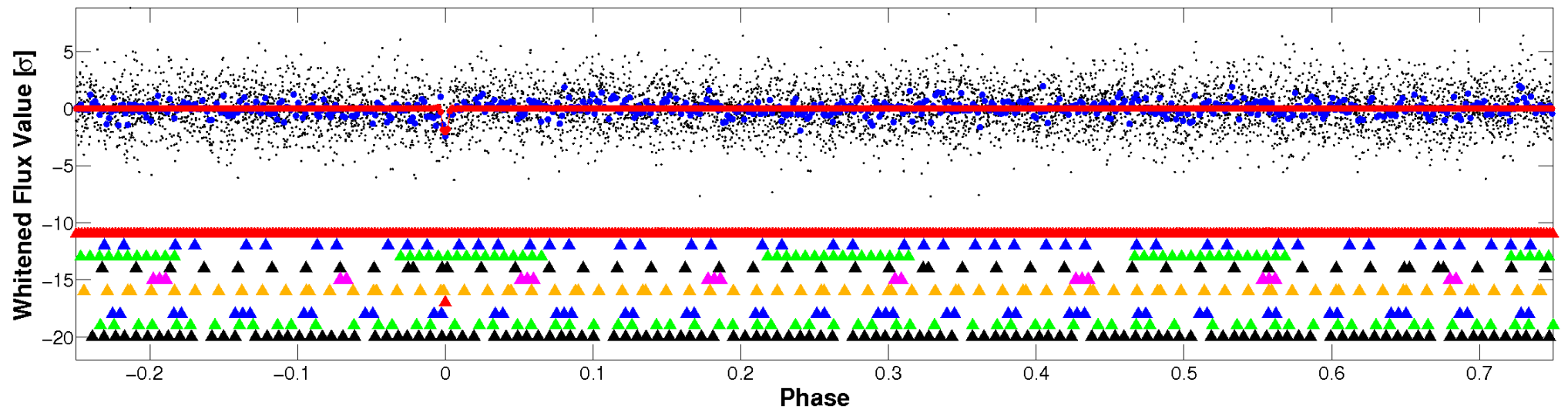


# Non-Whitened Vs. Whitened Light Curve

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



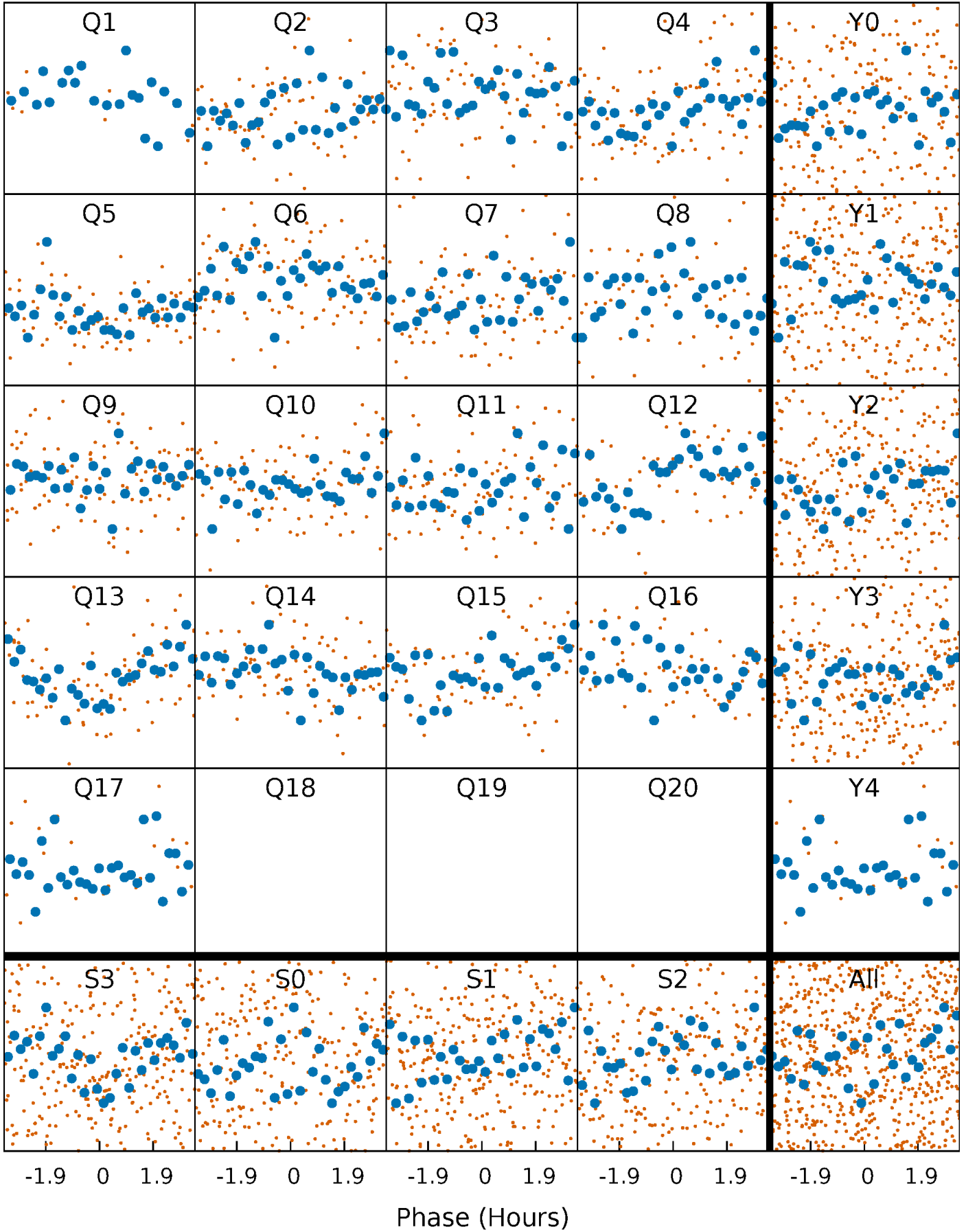
## Planet 7 : Phased Whitened Flux Time Series (Fit Epoch/Period)





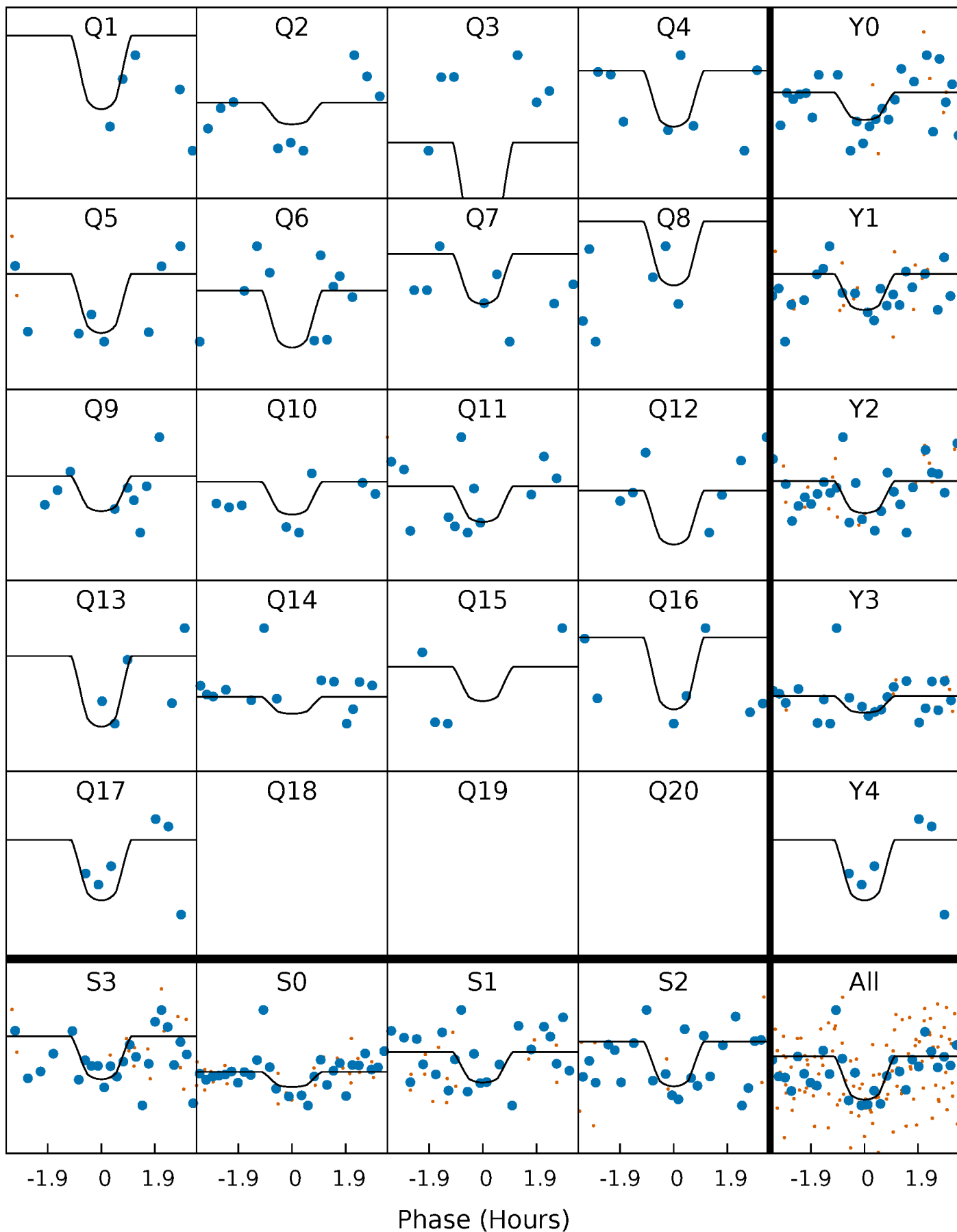
# PDC Quarter-Phased Transit Curves

TCE 007199087-07     $P = 12.928268$  Days     $T_0 = 142.702231$  (BKJD)



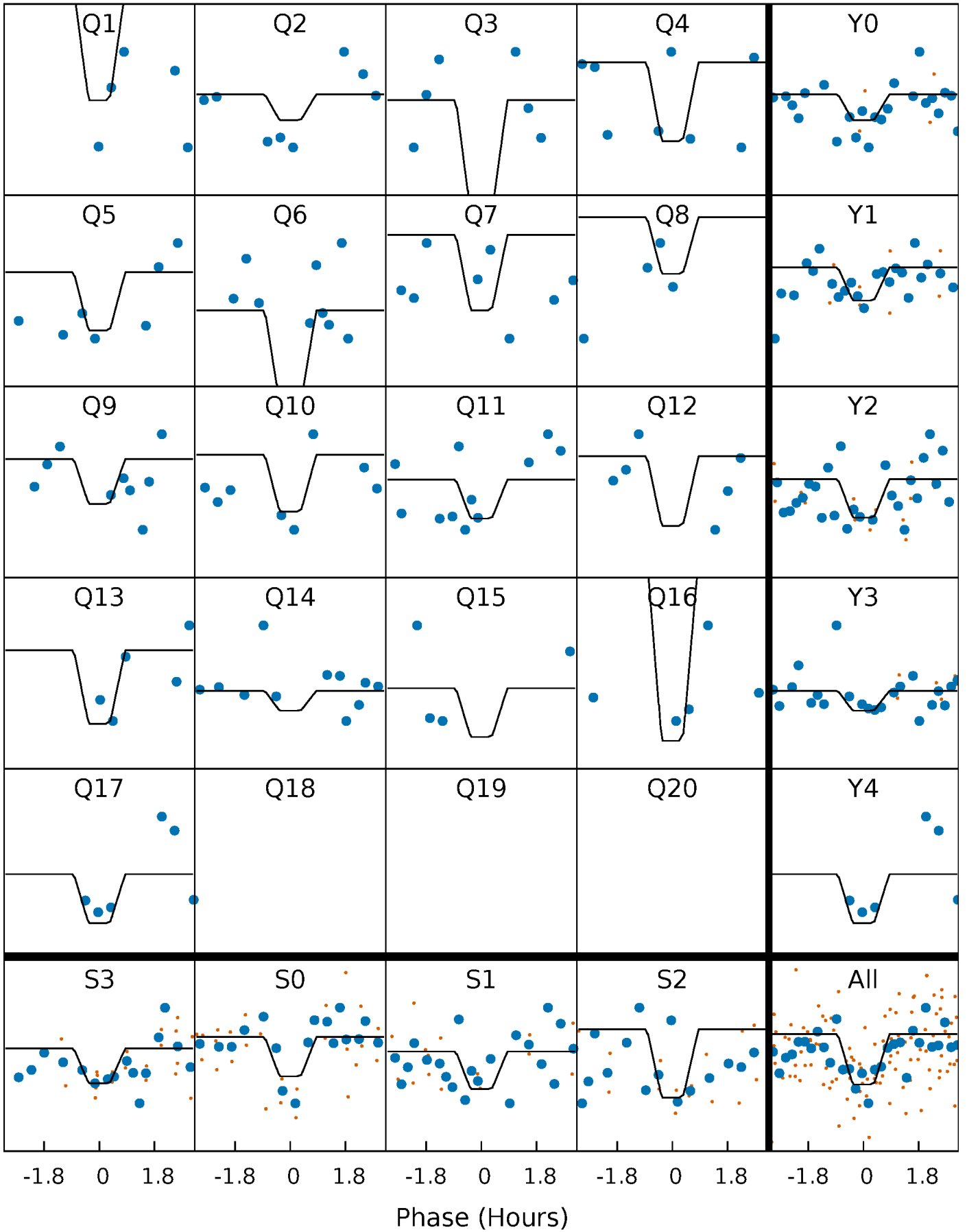
# DV Quarter-Phased Transit Curves

TCE 007199087-07     $P = 12.928268$  Days     $T_0 = 142.702231$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

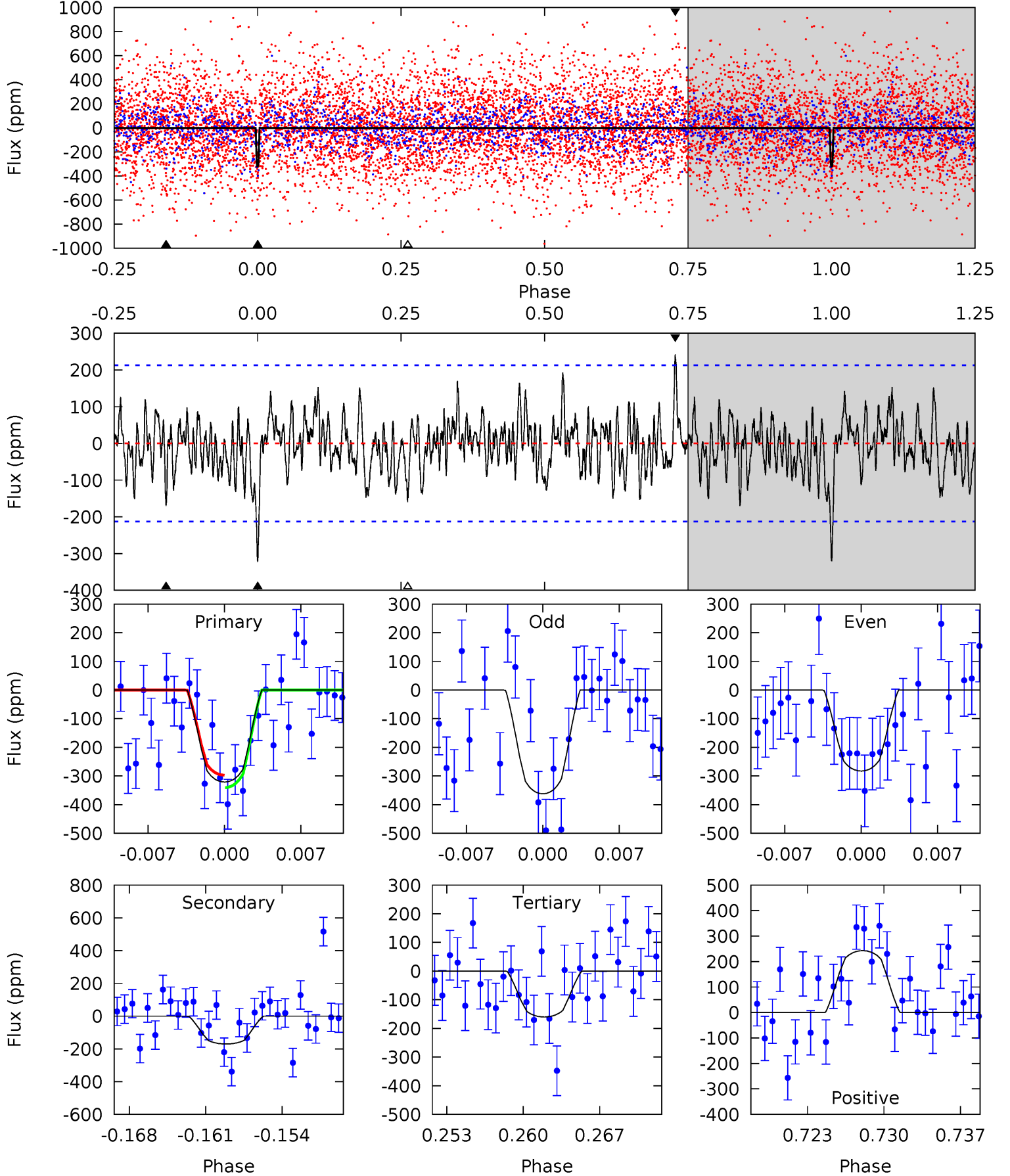
TCE 007199087-07     $P = 12.928104$  Days     $T_0 = 142.715712$  (BKJD)



# DV Model-Shift Uniqueness Test

007199087-07, P = 12.928268 Days, E = 129.773963 Days

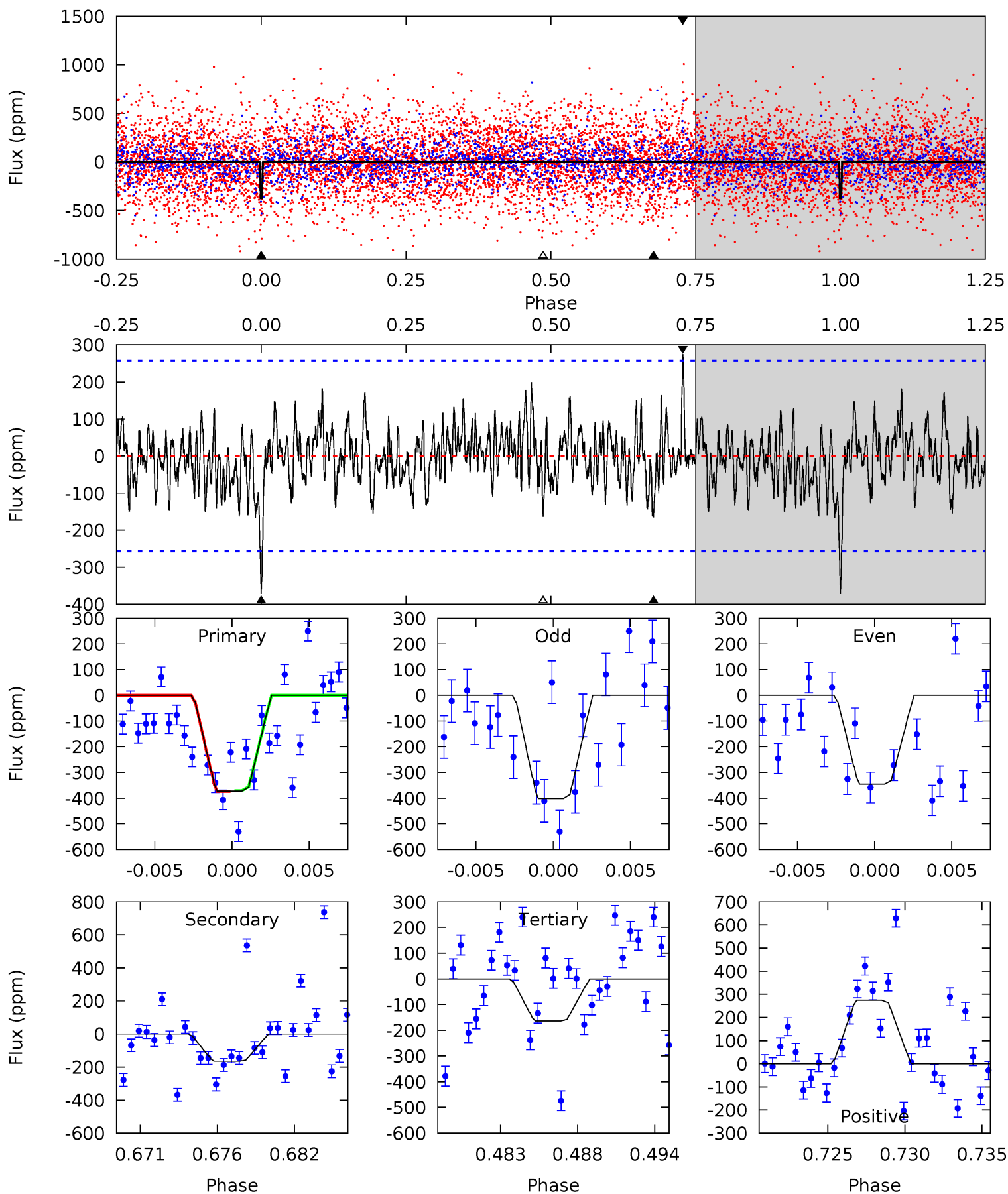
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.69	4.08	3.83	5.81	5.09	2.70	1.48	3.85	1.88	0.24	-1.73	0.95	0.86	0.43	0.52



# Alt Model-Shift Uniqueness Test

007199087-07, P = 12.928104 Days, E = 129.787608 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.46	3.31	3.28	5.50	5.14	2.78	1.30	4.17	1.96	0.03	-2.19	0.56	1.01	0.42	0.03



### Stellar Parameters For KIC 007199087

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5161^{+139}_{-154}$	$3.782^{+0.812}_{-0.348}$	$-0.420^{+0.300}_{-0.300}$	$1.952^{+1.204}_{-1.204}$	$0.842^{+0.178}_{-0.145}$	$0.160^{+3.448}_{-0.111}$
	+3%/-3%	+21%/-9%	+71%/-71%	+62%/-62%	+21%/-17%	+2162%/-70%
Source	PHO1	KIC0	KIC0	DSEP		

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

### Secondary Eclipse Parameters for KIC 007199087-07 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-170 \pm 42$	$6.26^{+7.16}_{-4.42}$	$1367^{+241}_{-267}$	$3621^{+1947}_{-660}$	$24^{+273}_{-19}$
Alt.	$-165 \pm 50$	$6.16^{+6.73}_{-4.26}$	$1355^{+246}_{-243}$	$3623^{+2084}_{-661}$	$23^{+241}_{-18}$

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

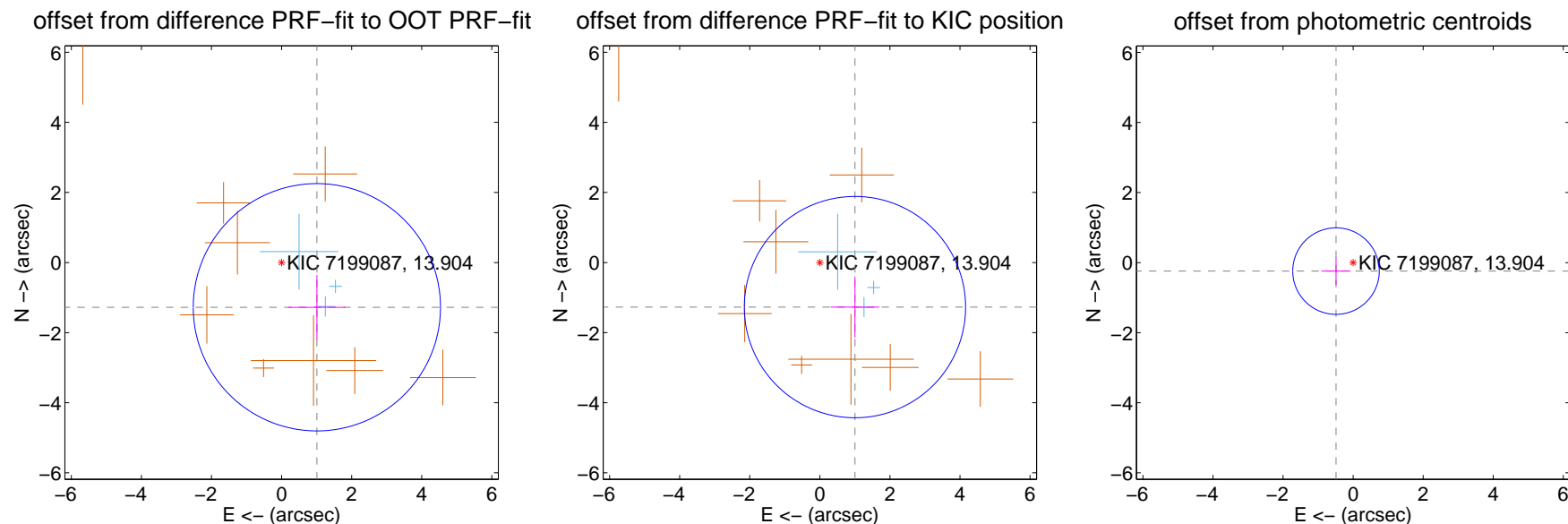
## DV Centroid Data

Supplemental centroid analysis for 007199087-07. Kepler magnitude: 13.90. Transit SNR 10.21

There are 3 quarters with good PRF difference image offsets

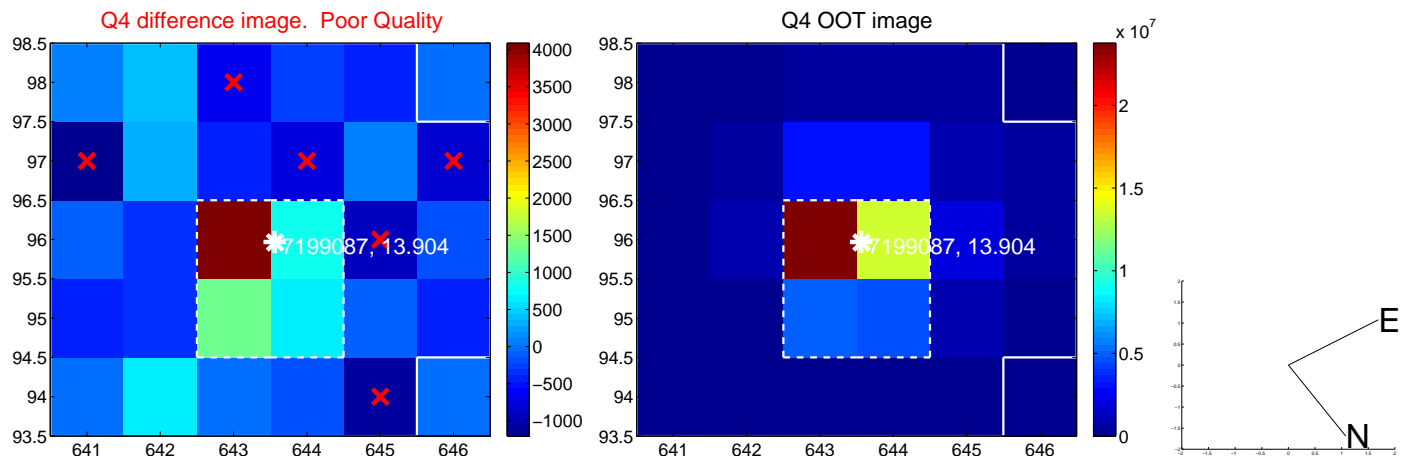
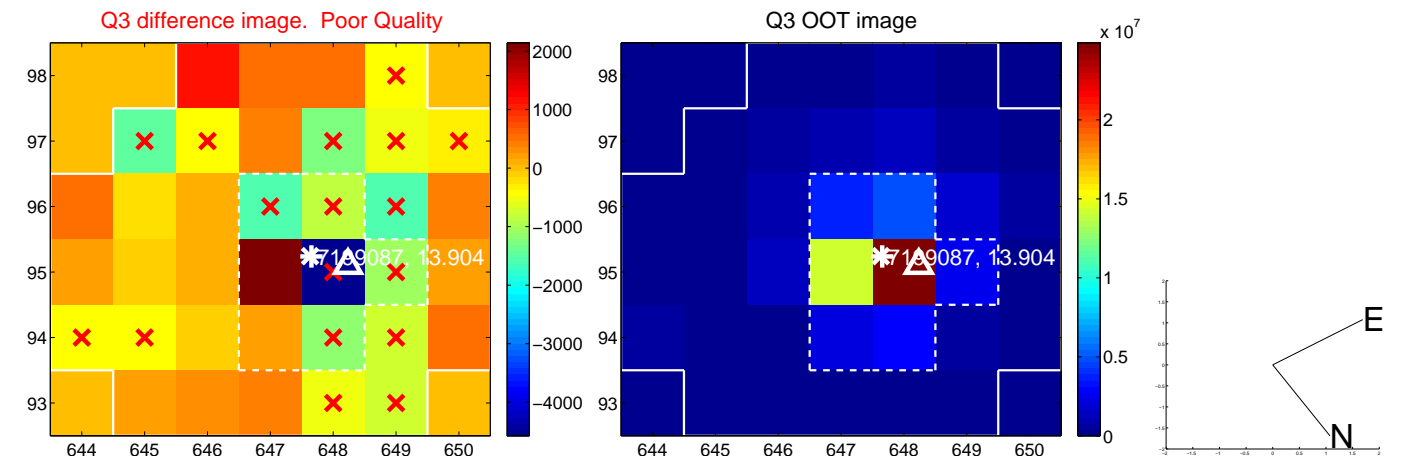
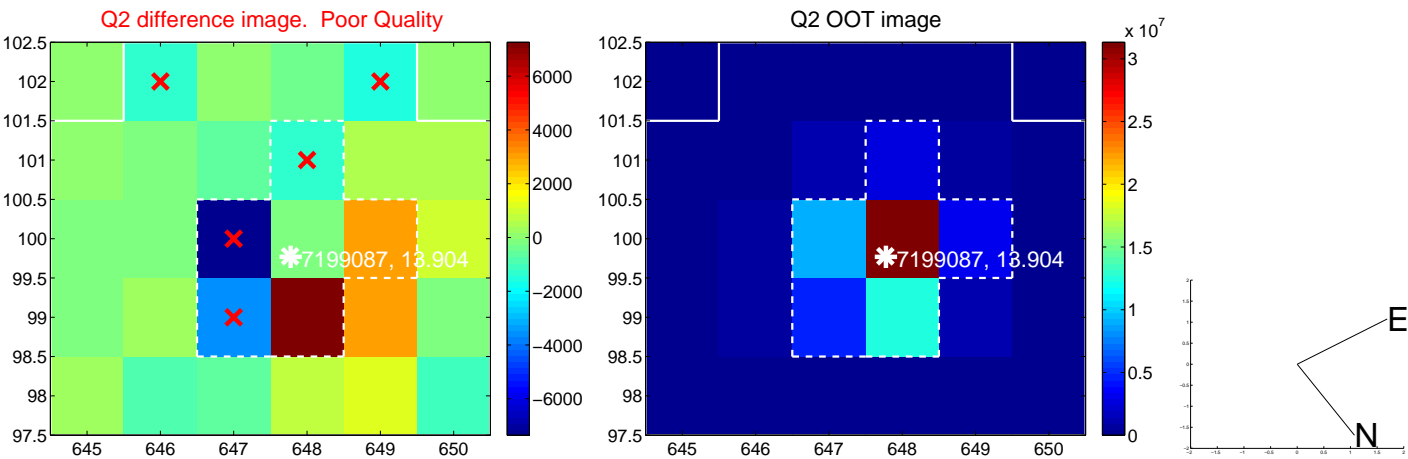
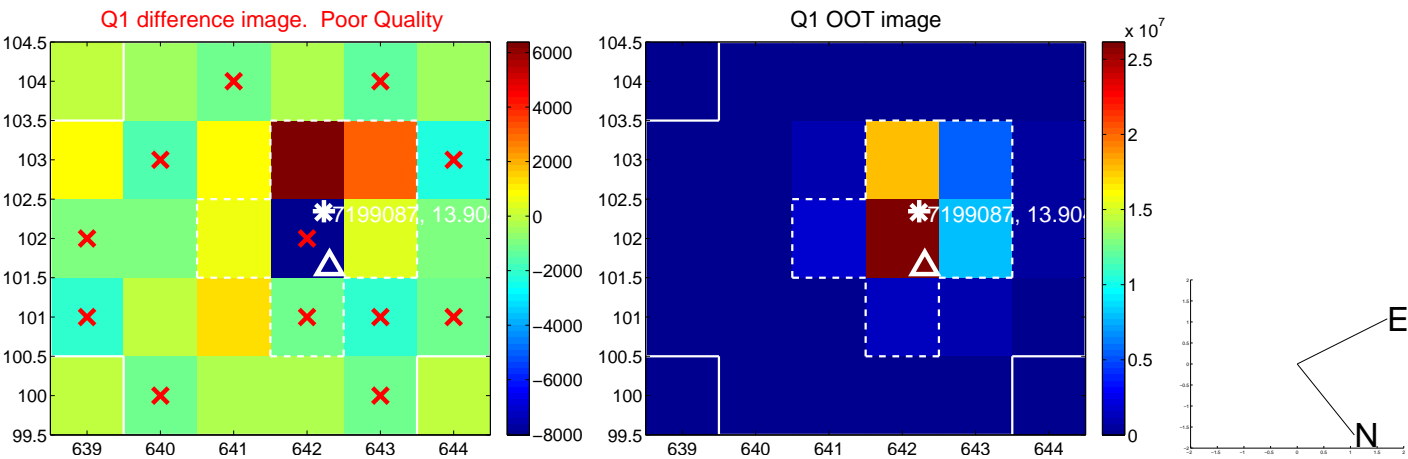
The direct PRF centroid is offset from the target star catalog position by about 0.01 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.626 \pm 1.176$	1.38	$-1.008 \pm 0.816$	$-1.277 \pm 0.924$
PRF-fit source offset from KIC position	$1.619 \pm 1.053$	1.54	$-1.002 \pm 0.693$	$-1.272 \pm 0.871$
photometric centroid source offset	$0.55 \pm 0.41$	1.32	$0.49 \pm 0.42$	$-0.24 \pm 0.39$



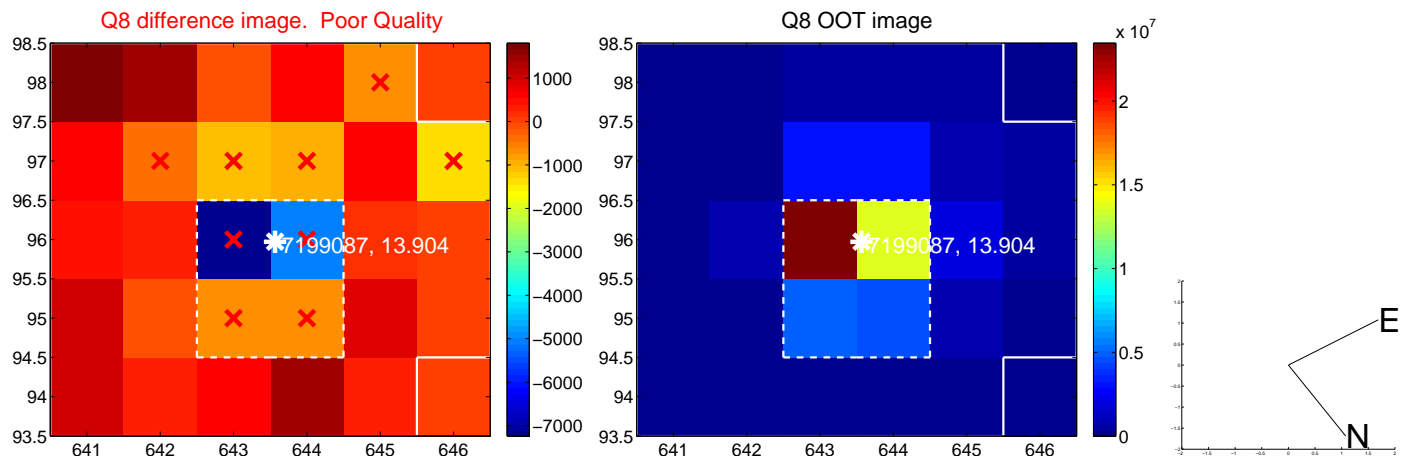
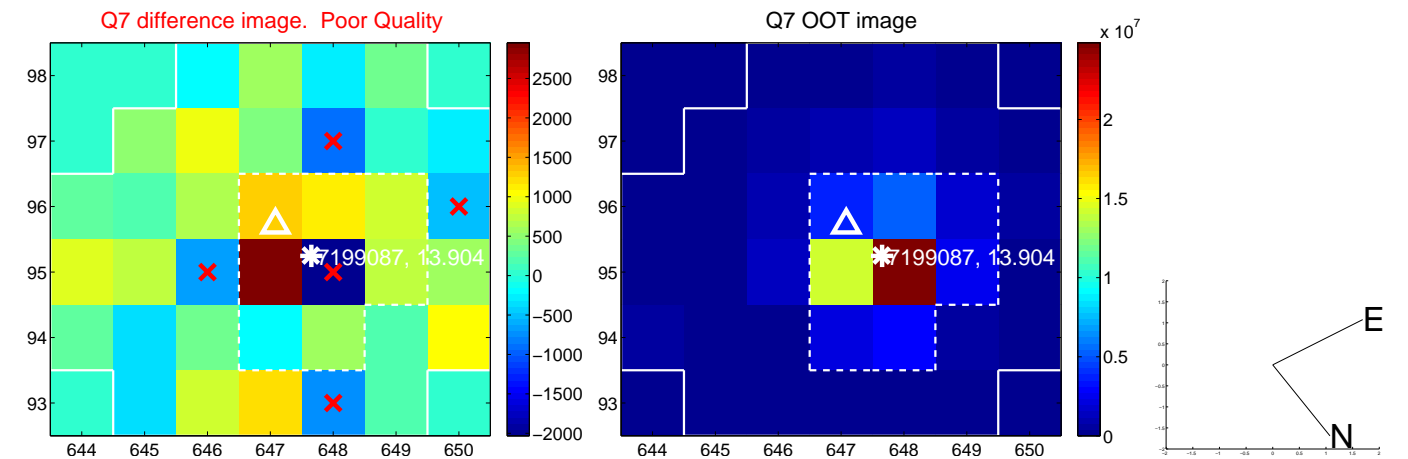
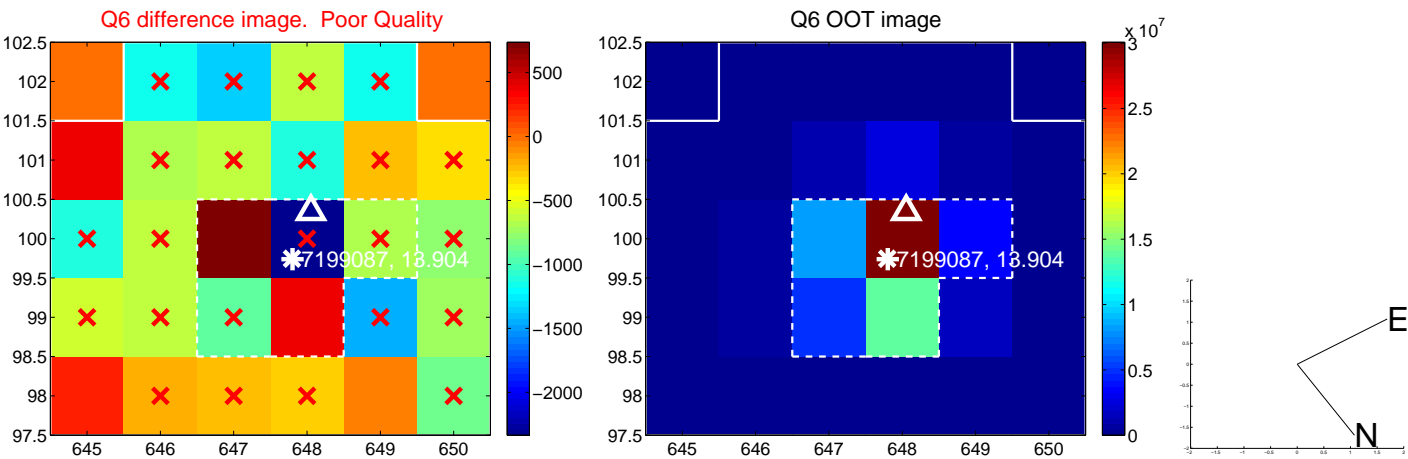
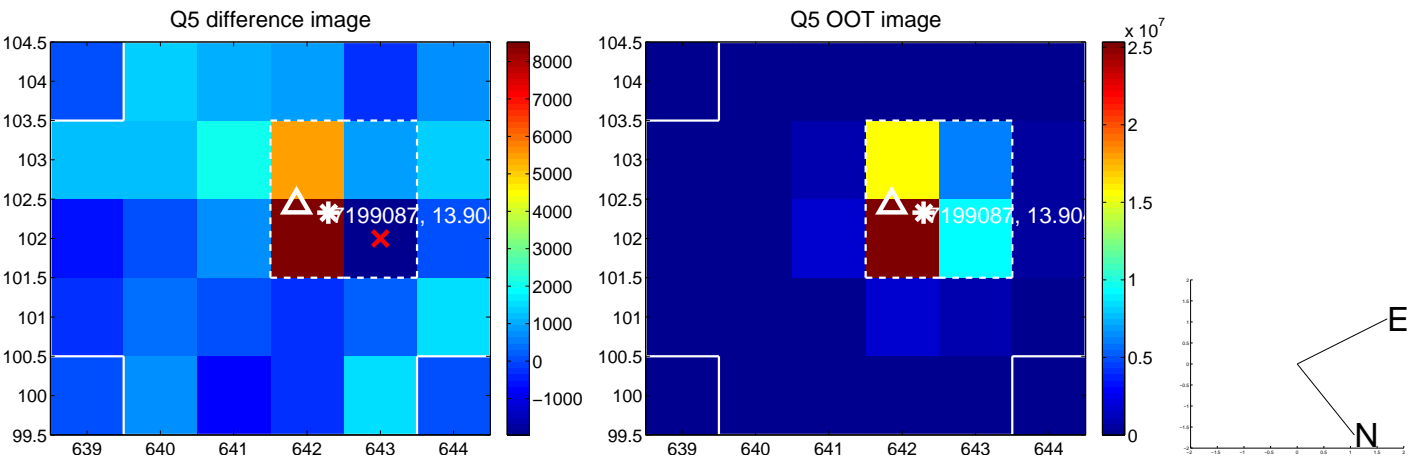
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

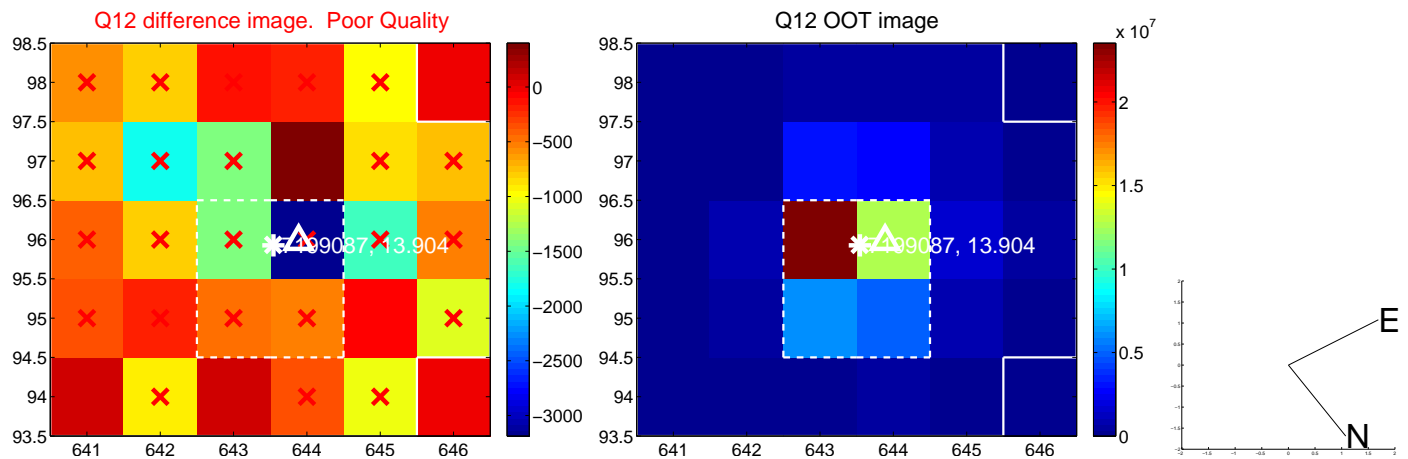
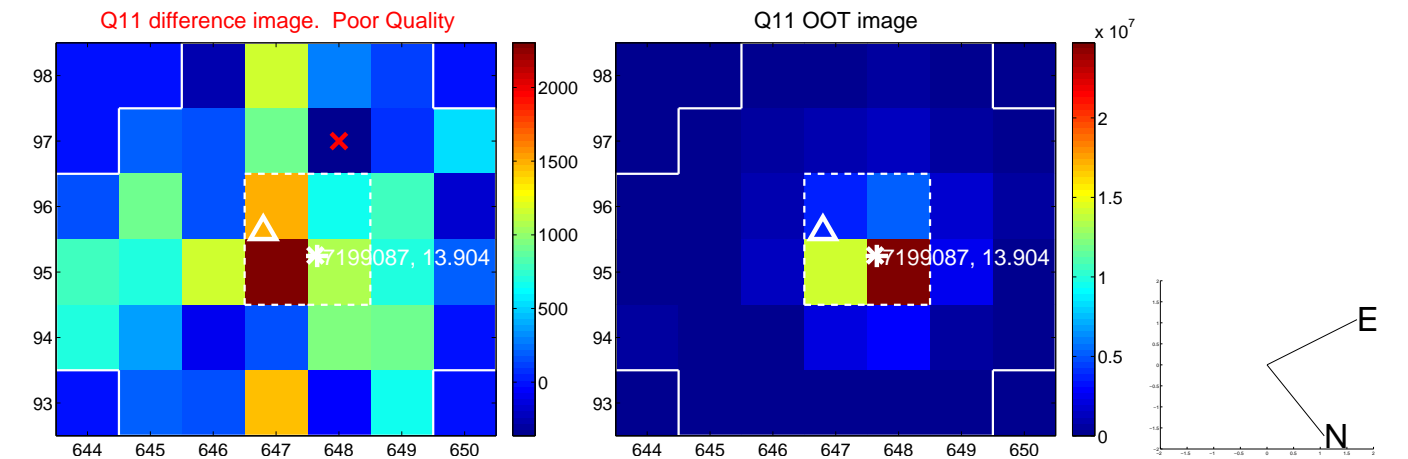
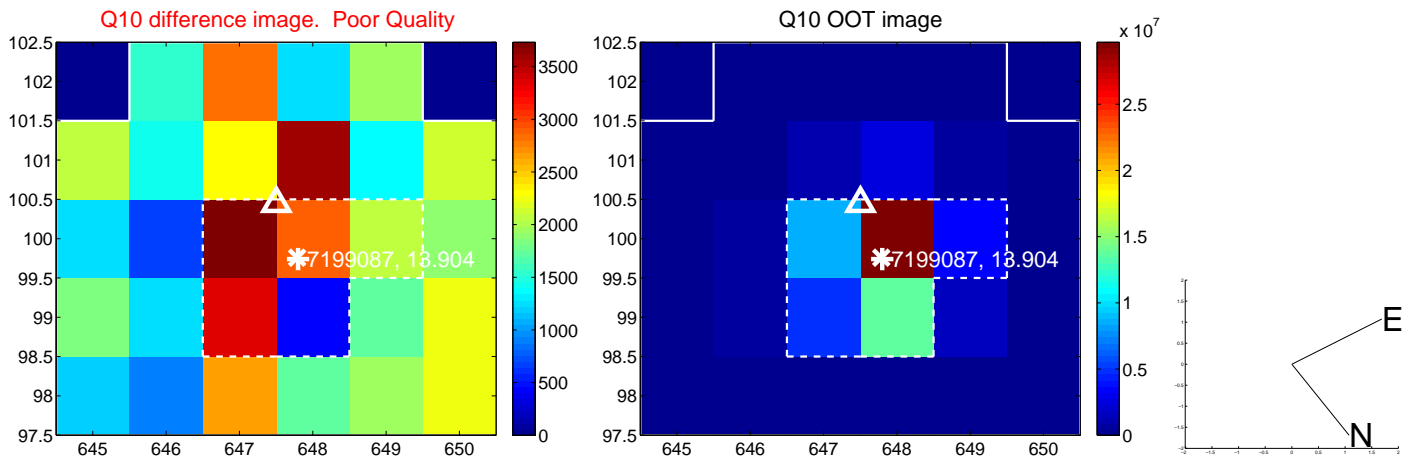
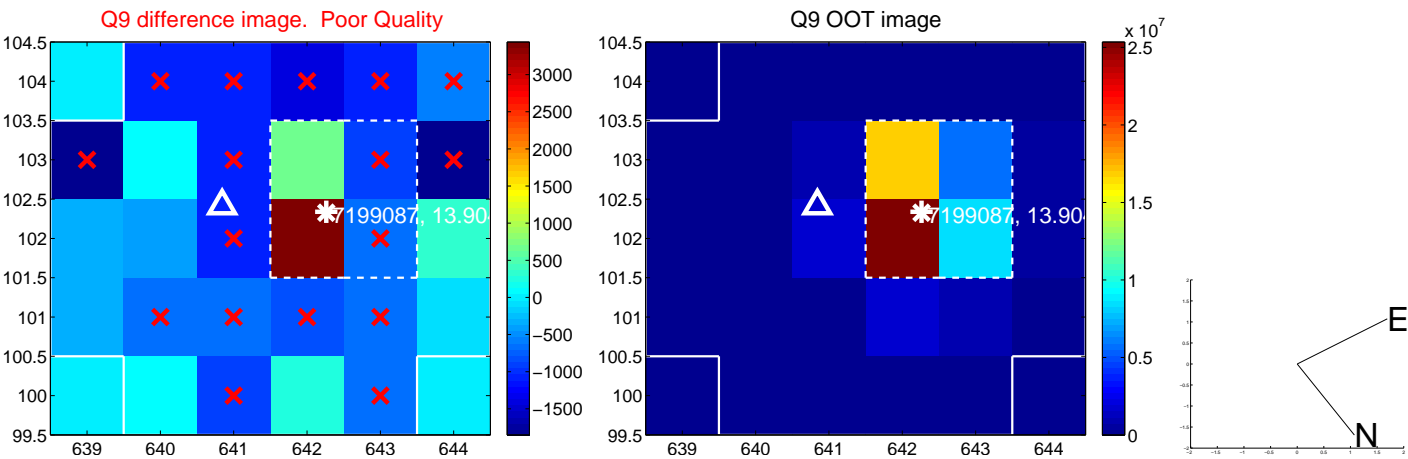




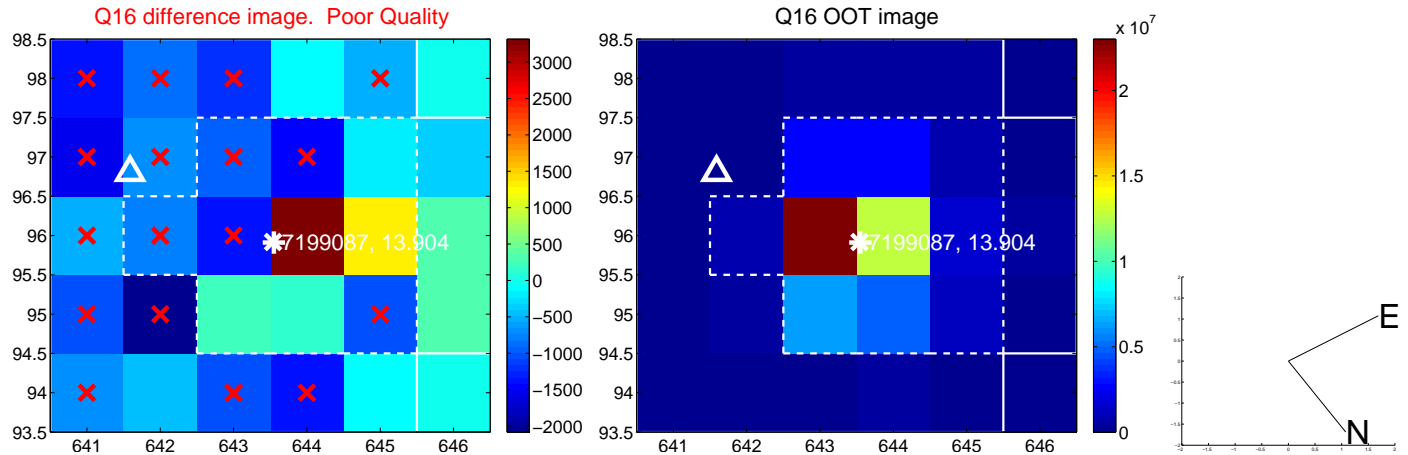
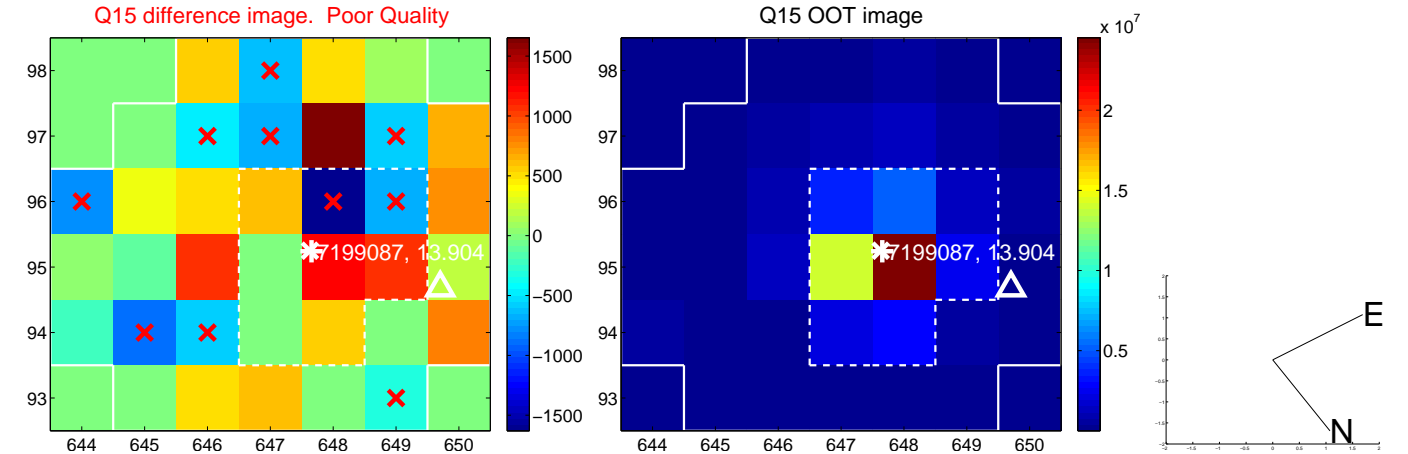
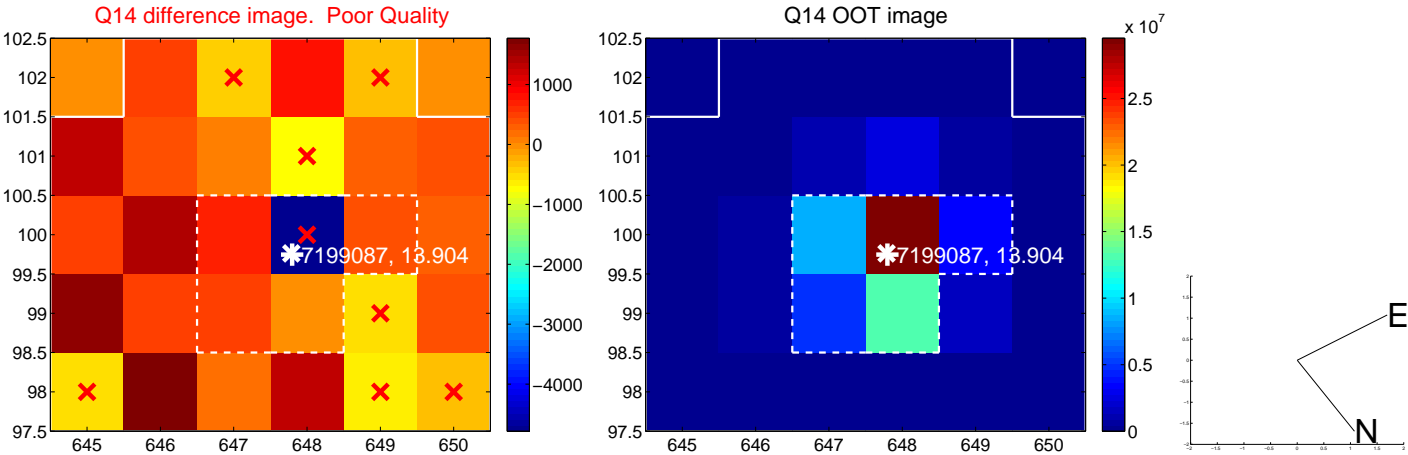
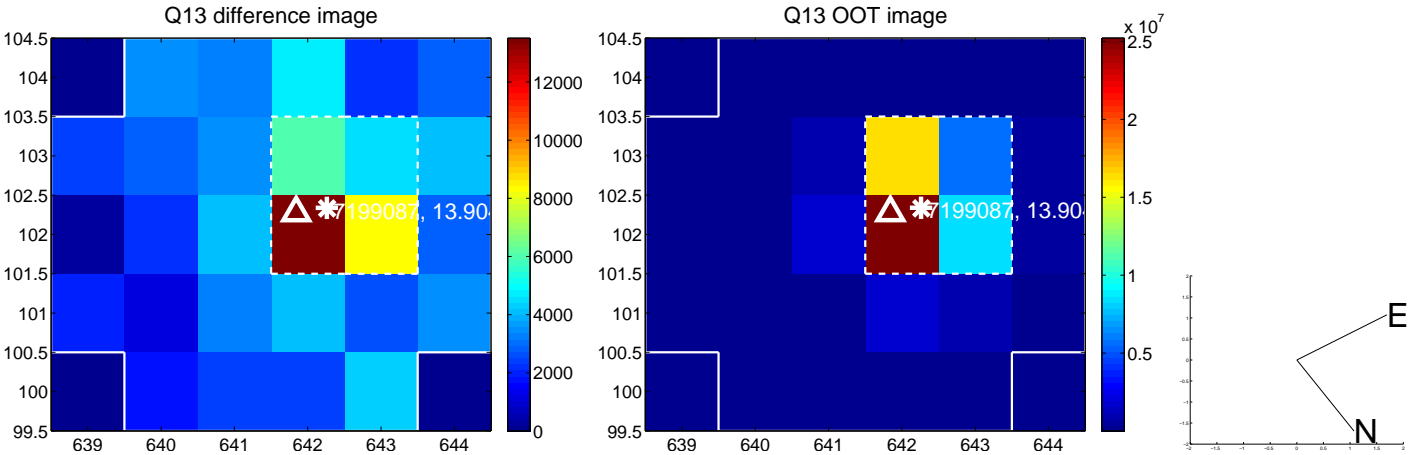
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



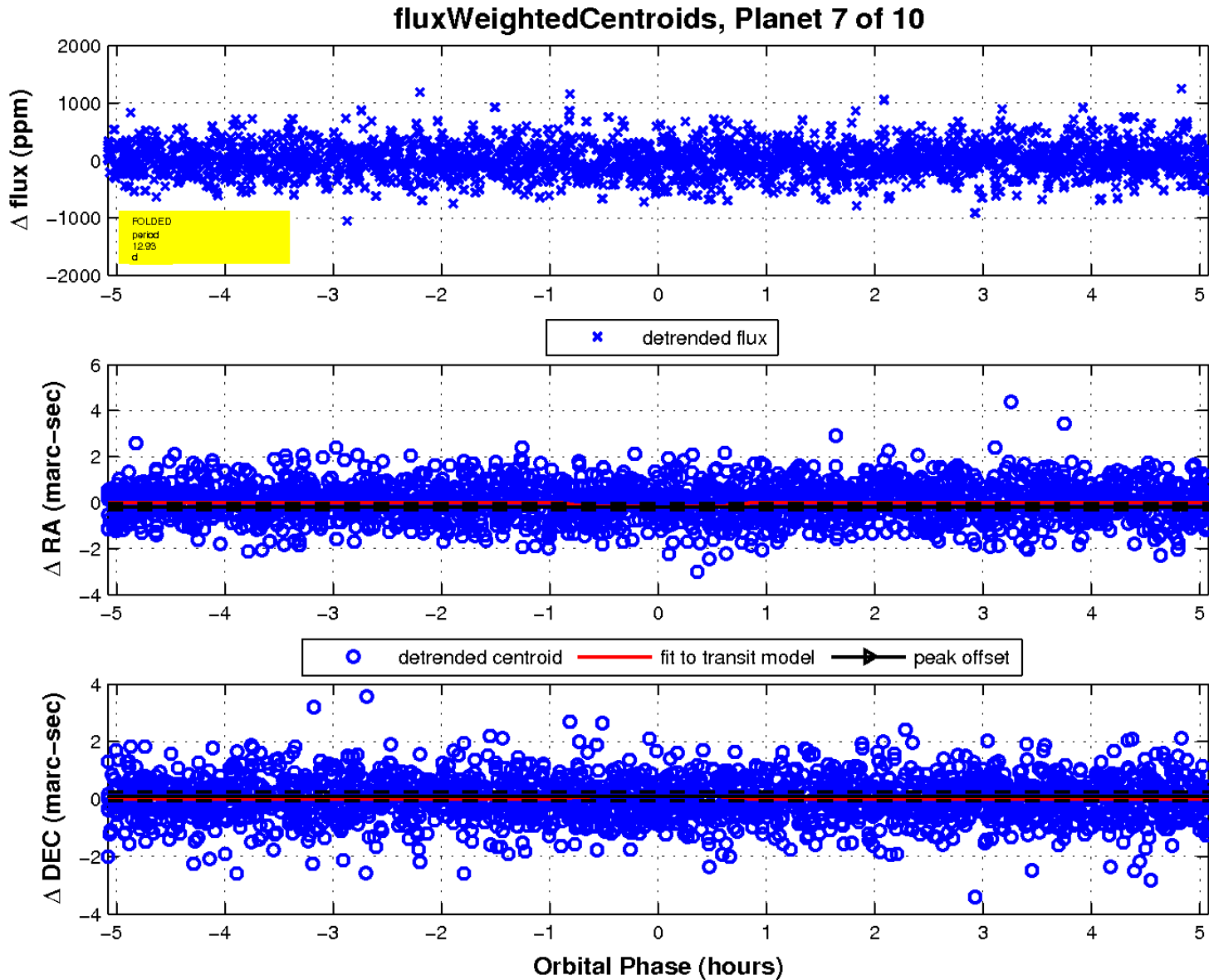
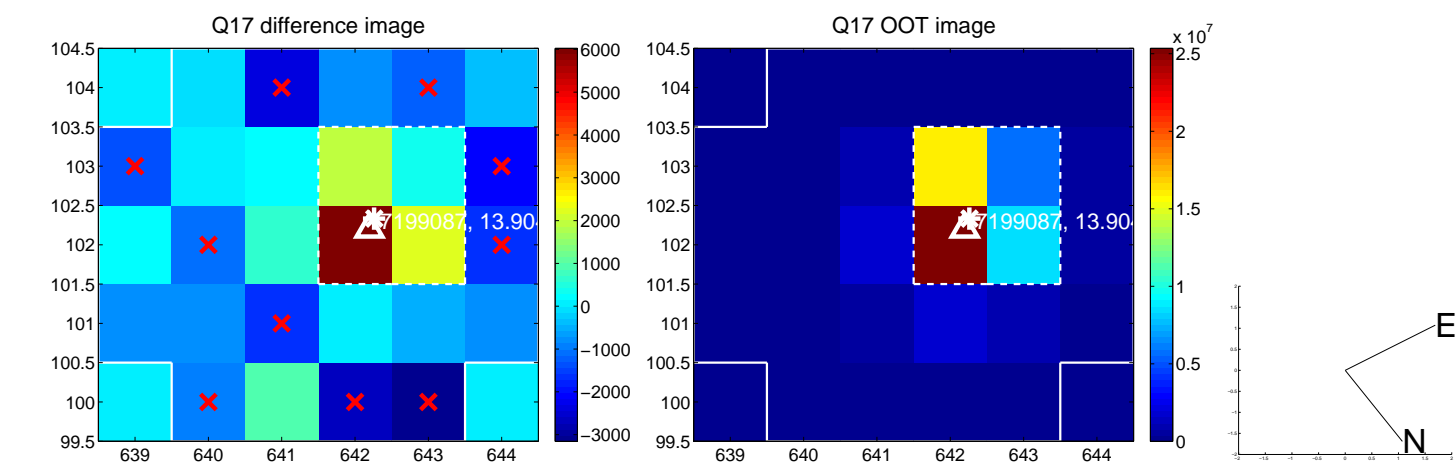
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

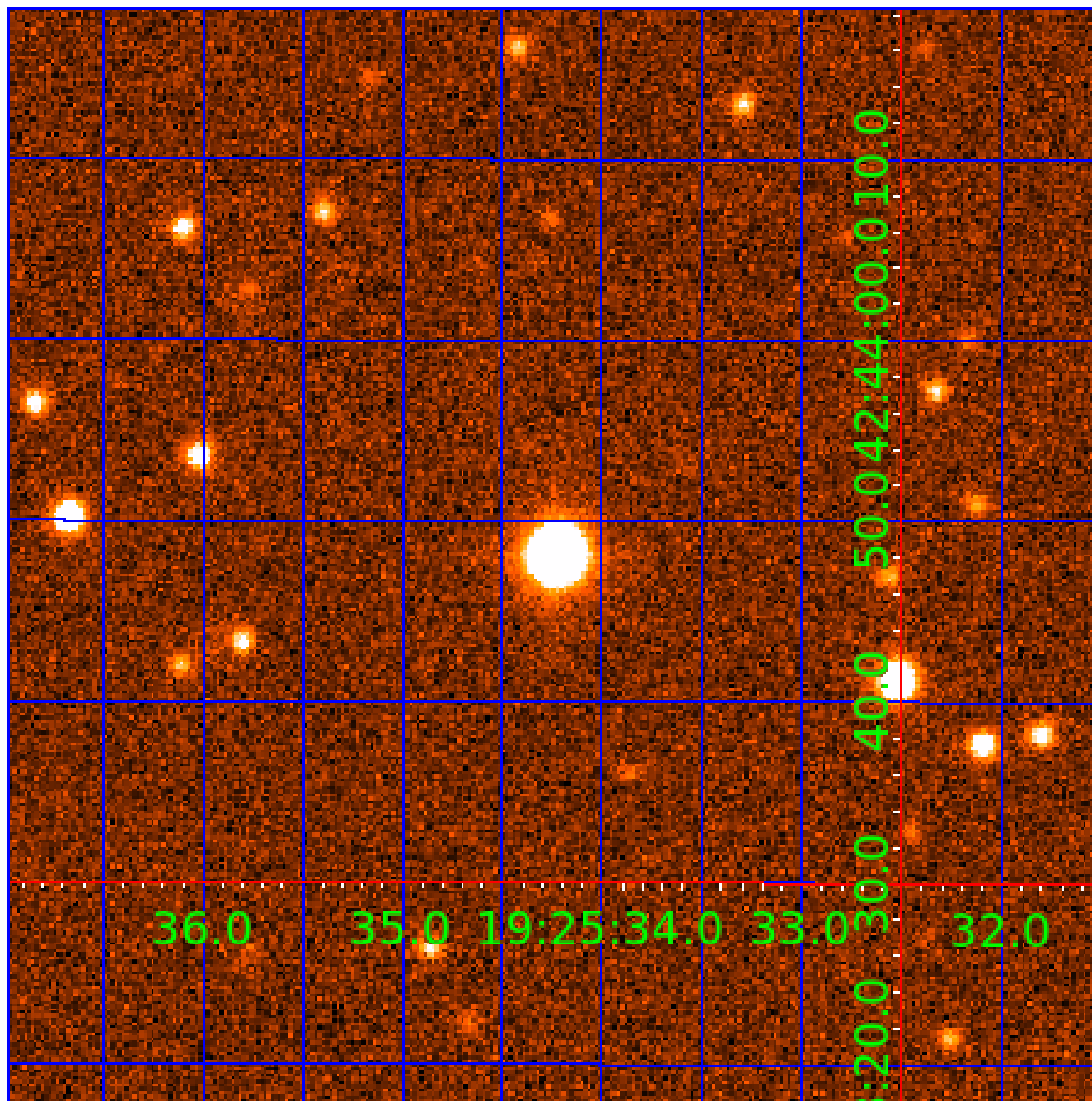


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



## KIC 007199087

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007199087-01	OBS	No	0.566789	131.670402	8.5	3.882	14.8	2.7	1.95	5161	0.56	15121.24
007199087-02	OBS	No	30.372888	155.472228	559.9	2.126	11.0	13.0	1.95	5161	9.51	74.85
007199087-03	OBS	No	22.645018	135.806898	358.7	5.851	12.1	11.4	1.95	5161	7.65	110.71
007199087-04	OBS	No	30.066788	151.392002	551.6	1.456	11.8	13.4	1.95	5161	4.56	75.86
007199087-05	OBS	No	69.496219	195.078789	535.3	3.211	10.0	10.7	1.95	5161	5.21	24.82
007199087-06	OBS	No	17.433948	136.980650	435.8	0.982	10.6	9.8	1.95	5161	4.96	156.90
007199087-07	OBS	No	12.928268	142.702231	321.2	1.694	9.9	10.2	1.95	5161	3.77	233.76
007199087-08	OBS	No	28.669881	148.165240	606.7	0.987	9.2	8.4	1.95	5161	5.76	80.83
007199087-09	OBS	No	20.441918	143.787734	418.3	1.326	10.7	9.8	1.95	5161	4.12	126.90
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## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007199087-01	OBS	FP	0.00	1	0	1	1	SWEET_NTL—LPP_DV—LPP_ALT—HALO_GHOST—EPHEM_MATCH
007199087-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT
007199087-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
007199087-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
007199087-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
007199087-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
007199087-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
007199087-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV
007199087-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT
007199087-10	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT—CENT_NOFITS

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

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

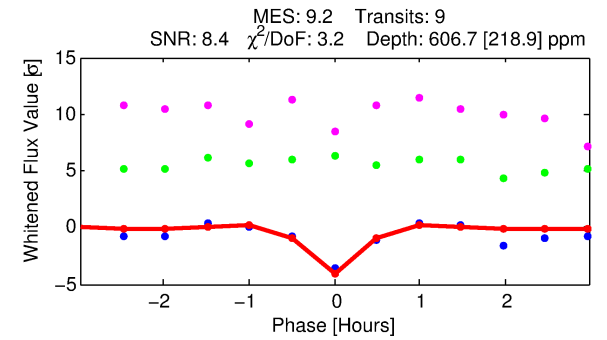
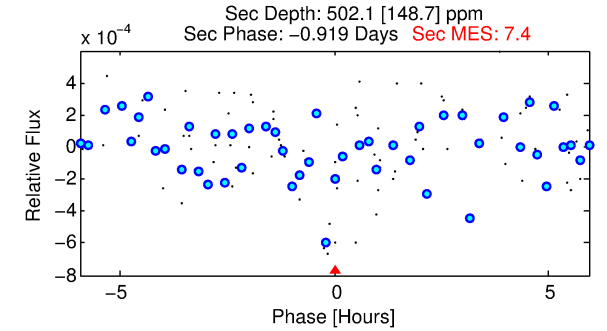
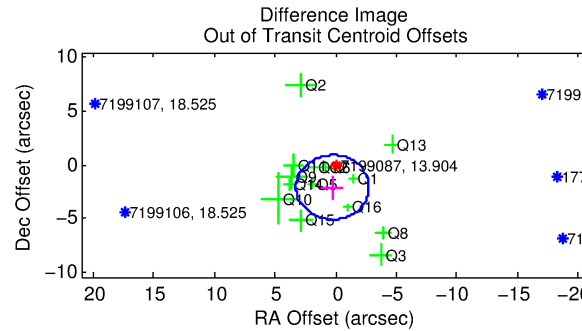
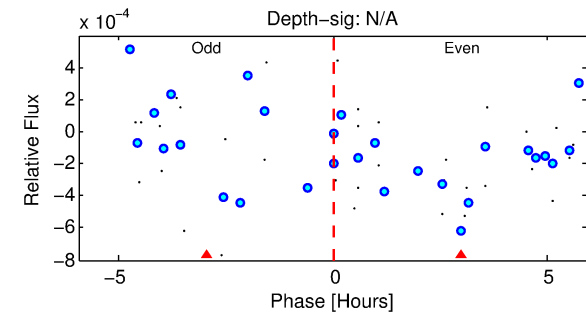
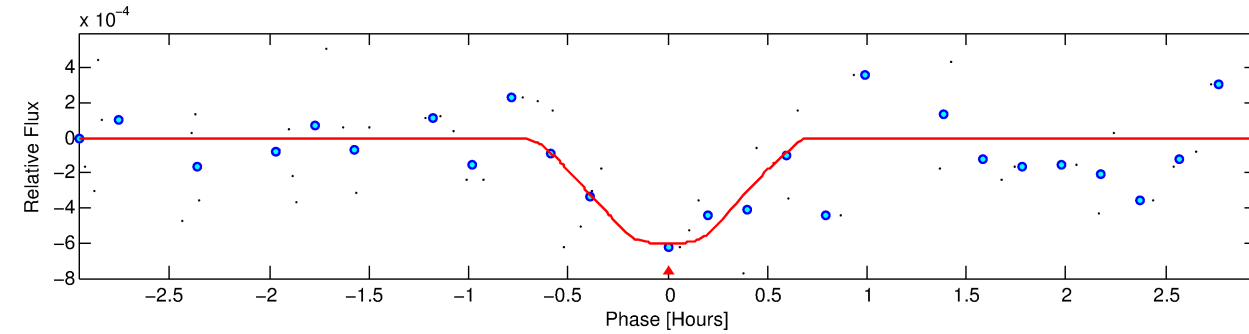
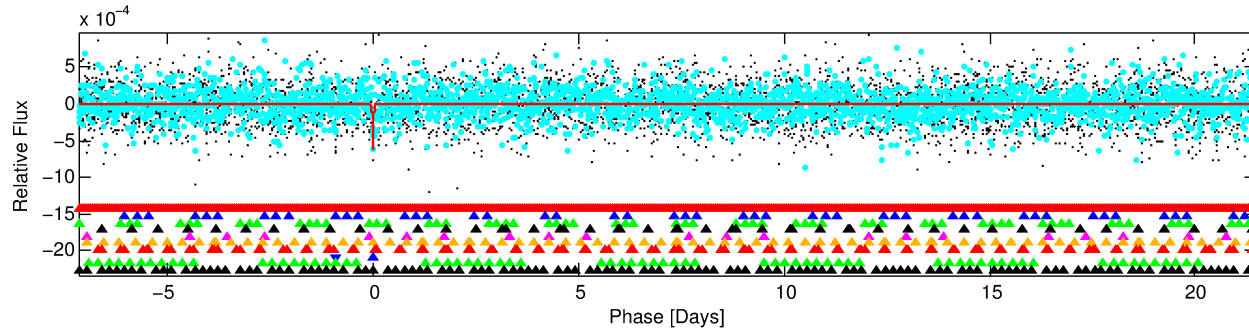
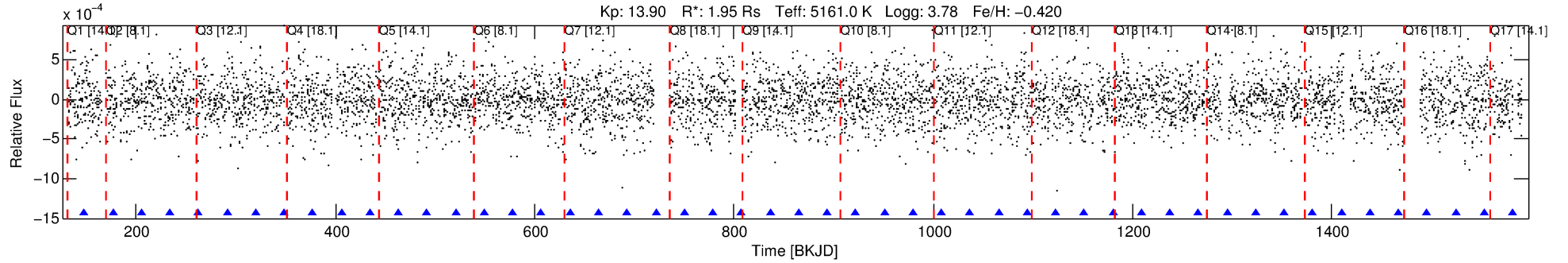
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 007199087-08

No Significant Match Found

# DV One-Page Summary

KIC: 7199087 Candidate: 8 of 10 Period: 28.670 d



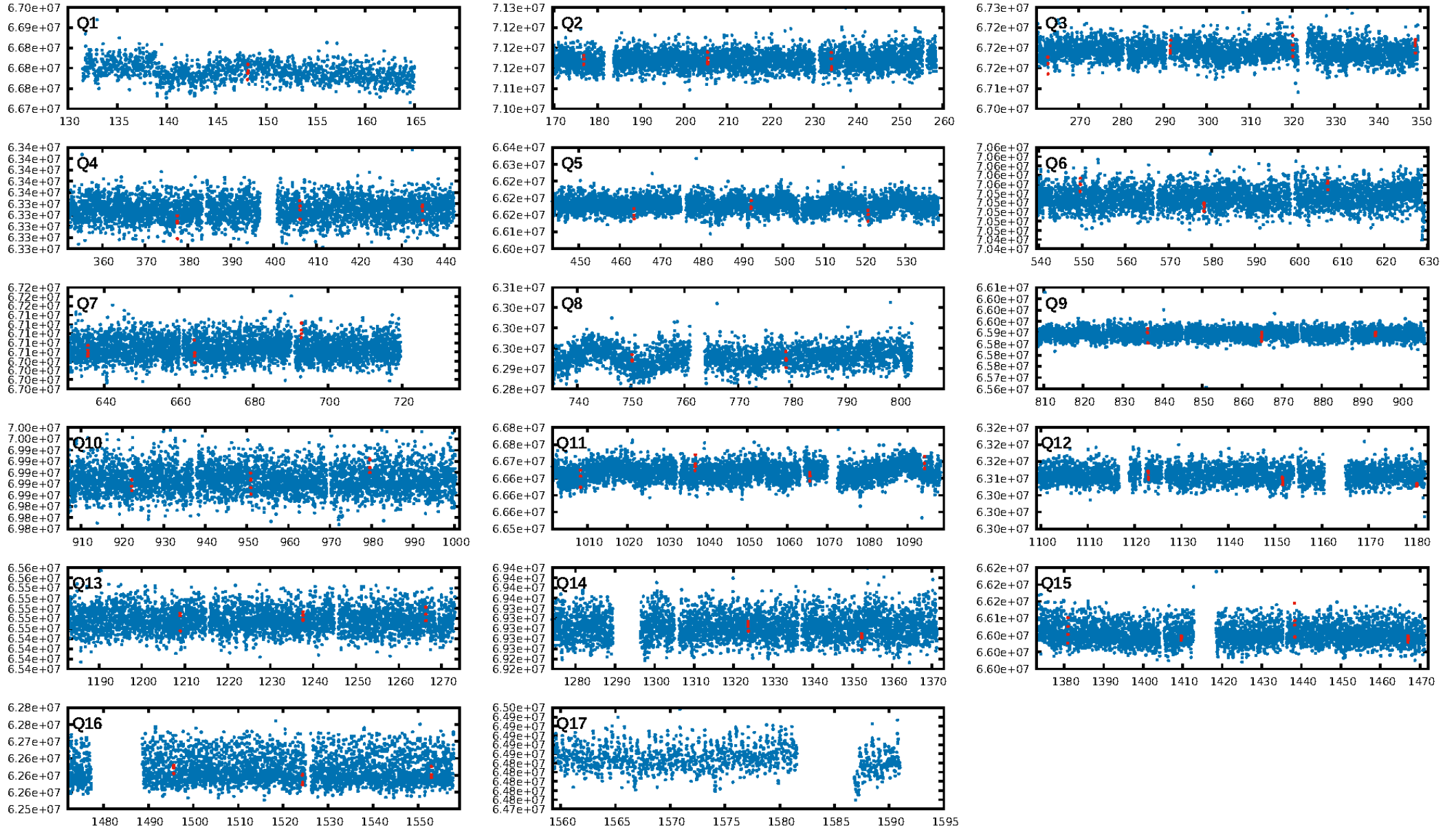
## DV Fit Results:

Period = 28.66988 [0.00023] d  
Epoch = 148.1652 [0.0074] BKJD  
Rp/R\* = 0.0270 [0.0854]  
a/R\* = 116.54 [1482.36]  
b = 0.88 [3.34]  
Seff = 80.83 [106.53]  
Teq = 765 [252] K  
Rp = 5.76 [18.54] Re  
a = 0.1731 [0.1292] AU  
Ag = 249.60 [1613.07] [0.15σ]  
Teffp = 4699 [7435] K [0.53σ]

## DV Diagnostic Results:

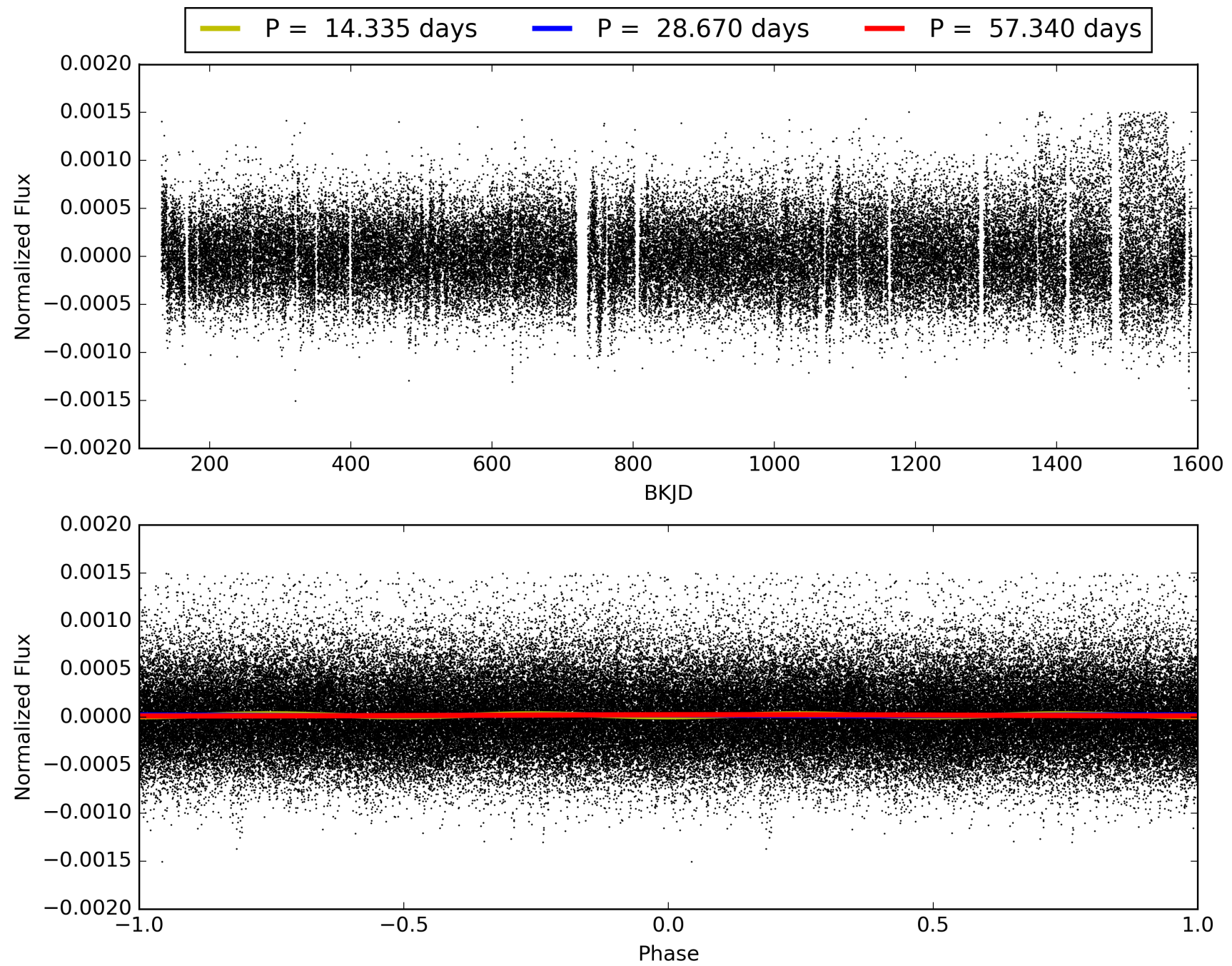
ShortPeriod-sig: 100.0% [24.37σ]  
LongPeriod-sig: 100.0% [19.07σ]  
ModelChiSquare2-sig: 0.2%  
ModelChiSquareGof-sig: 34.8%  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [9/9]  
GhostDiagnostic-chr: -1.241  
Centroid-sig: 91.7%  
Centroid-so: 0.211 arcsec [0.47σ]  
OotOffset-rm: 2.134 arcsec [2.13σ]  
KicOffset-rm: 2.117 arcsec [2.41σ]  
OotOffset-st: 4/3/3/4 [14]  
KicOffset-st: 4/3/3/4 [14]  
DiffImageQuality-fgm: 0.14 [2/14]  
DiffImageOverlap-fno: 0.00 [0/16]

# TCE 007199087-08, PDC Light Curves



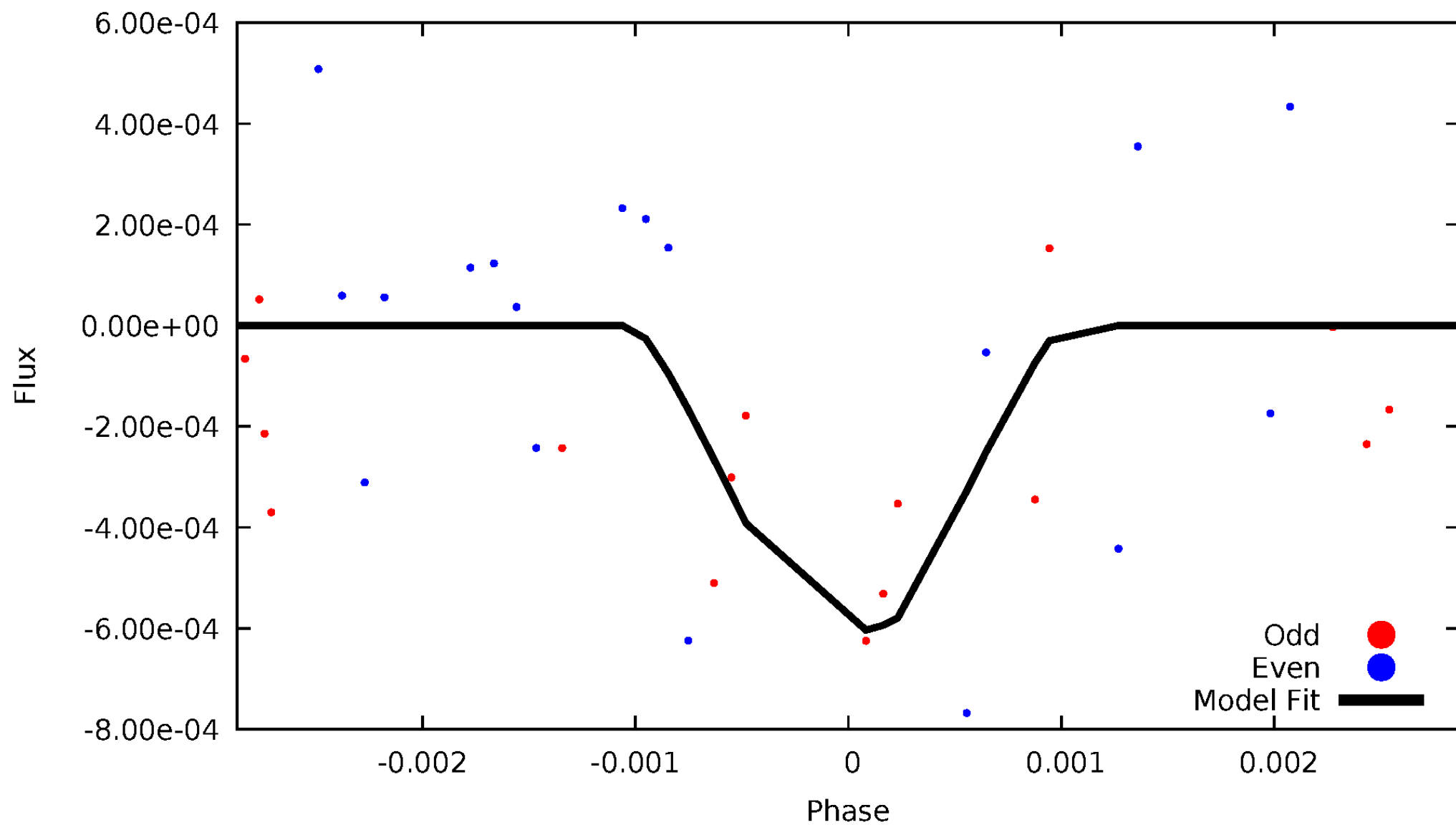


# TCE 007199087-08



# DV Odd/Even

TCE 007199087-08



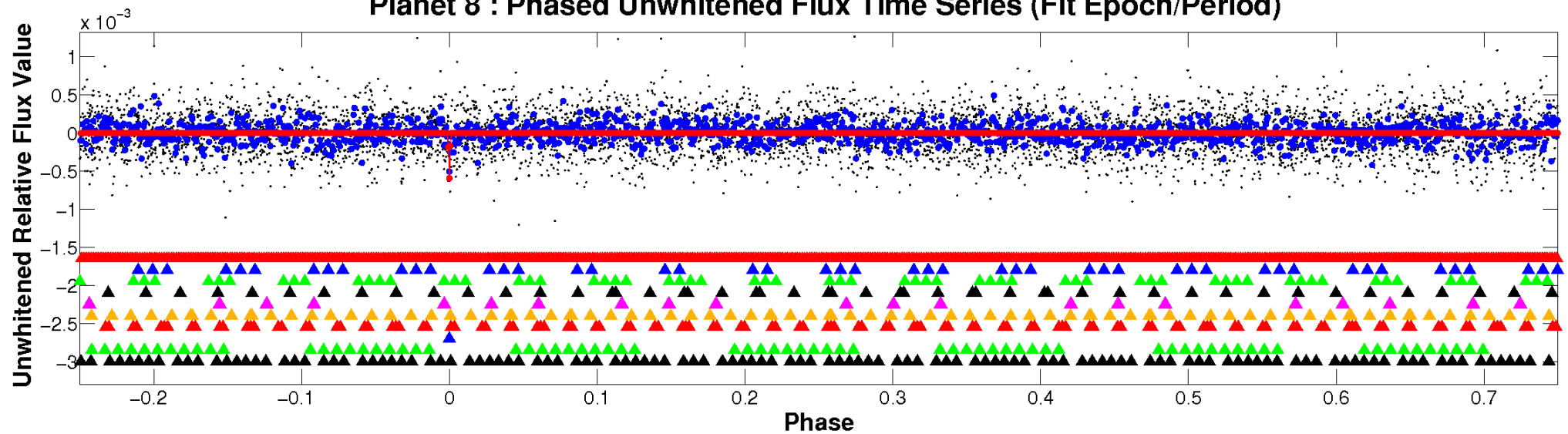


ALT Odd/Even

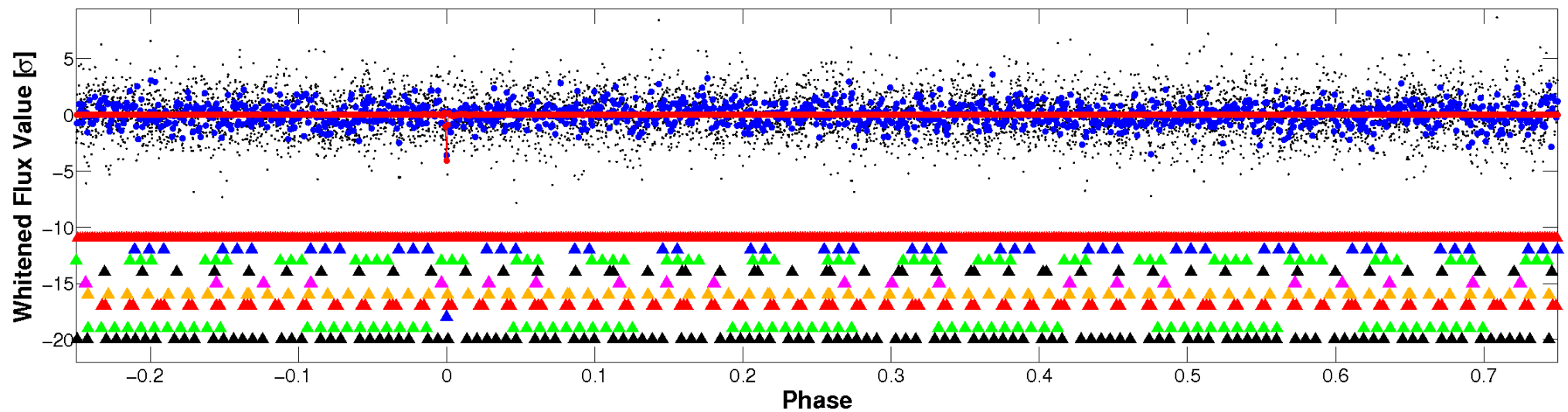
This plot does not exist for this TCE.

# Non-Whitened Vs. Whitened Light Curve

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

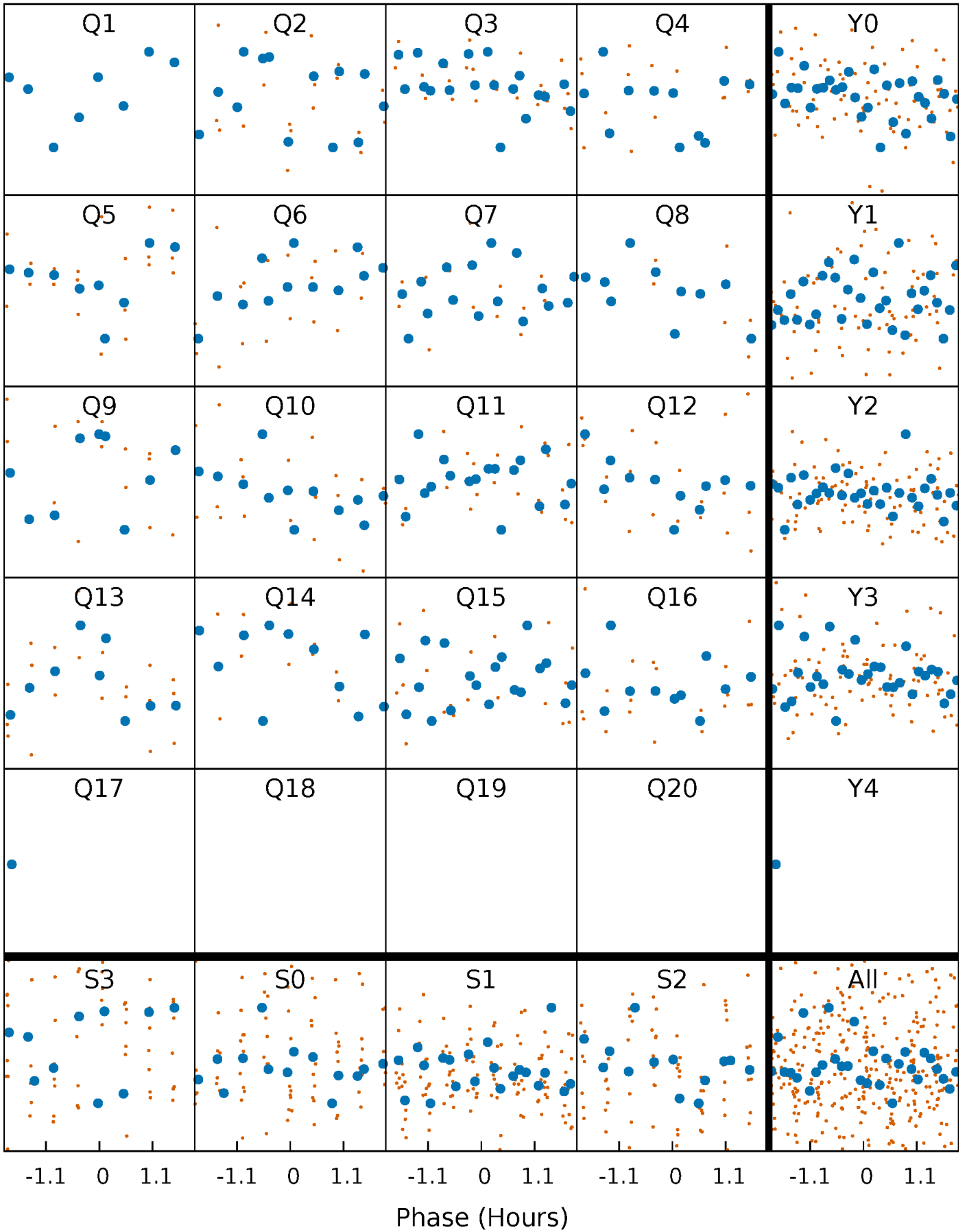


## Planet 8 : Phased Whitened Flux Time Series (Fit Epoch/Period)



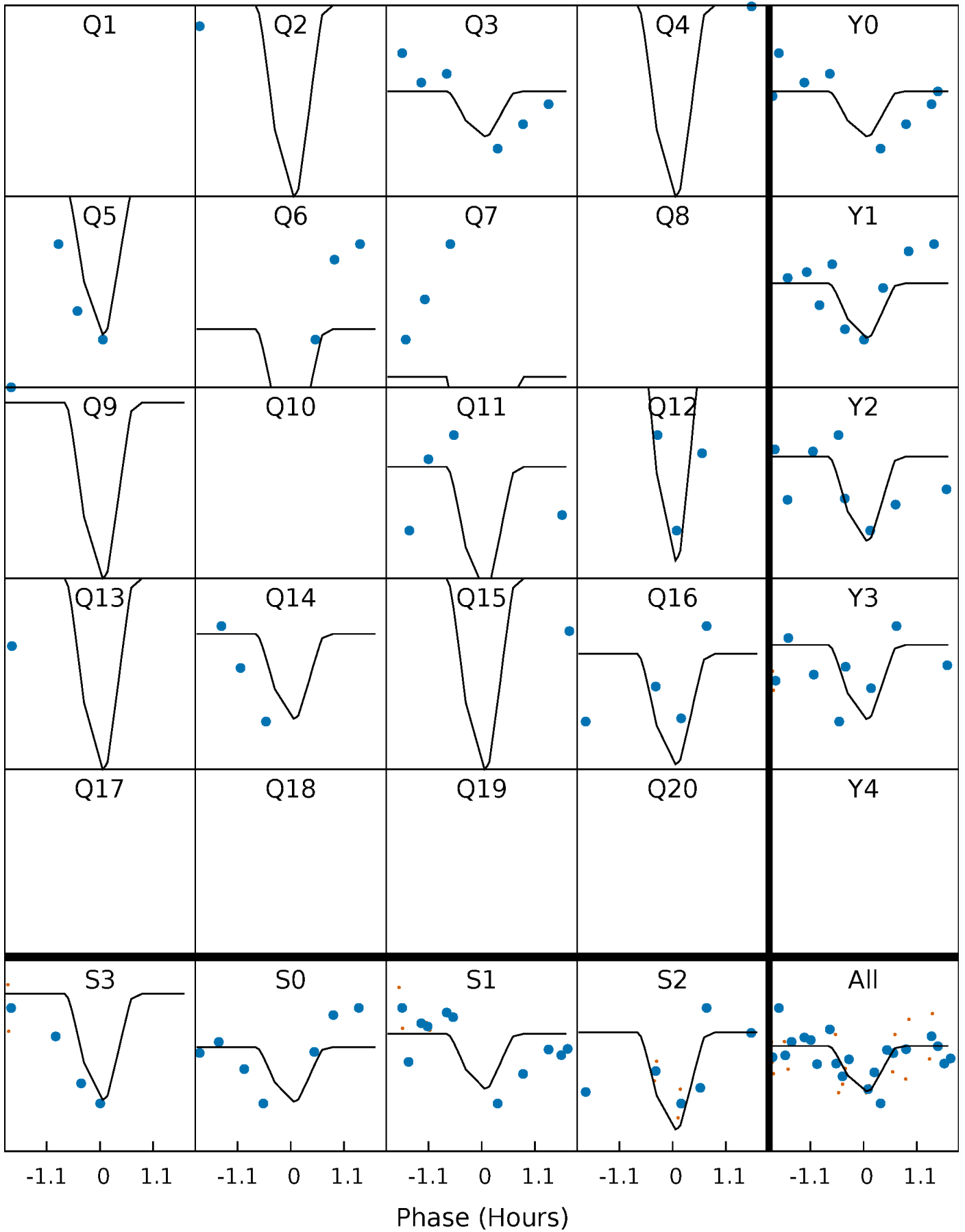
# PDC Quarter-Phased Transit Curves

TCE 007199087-08   P= 28.669881 Days    $T_0=148.165240$  (BKJD)



# DV Quarter-Phased Transit Curves

TCE 007199087-08 P= 28.669881 Days  $T_0=148.165240$  (BKJD)



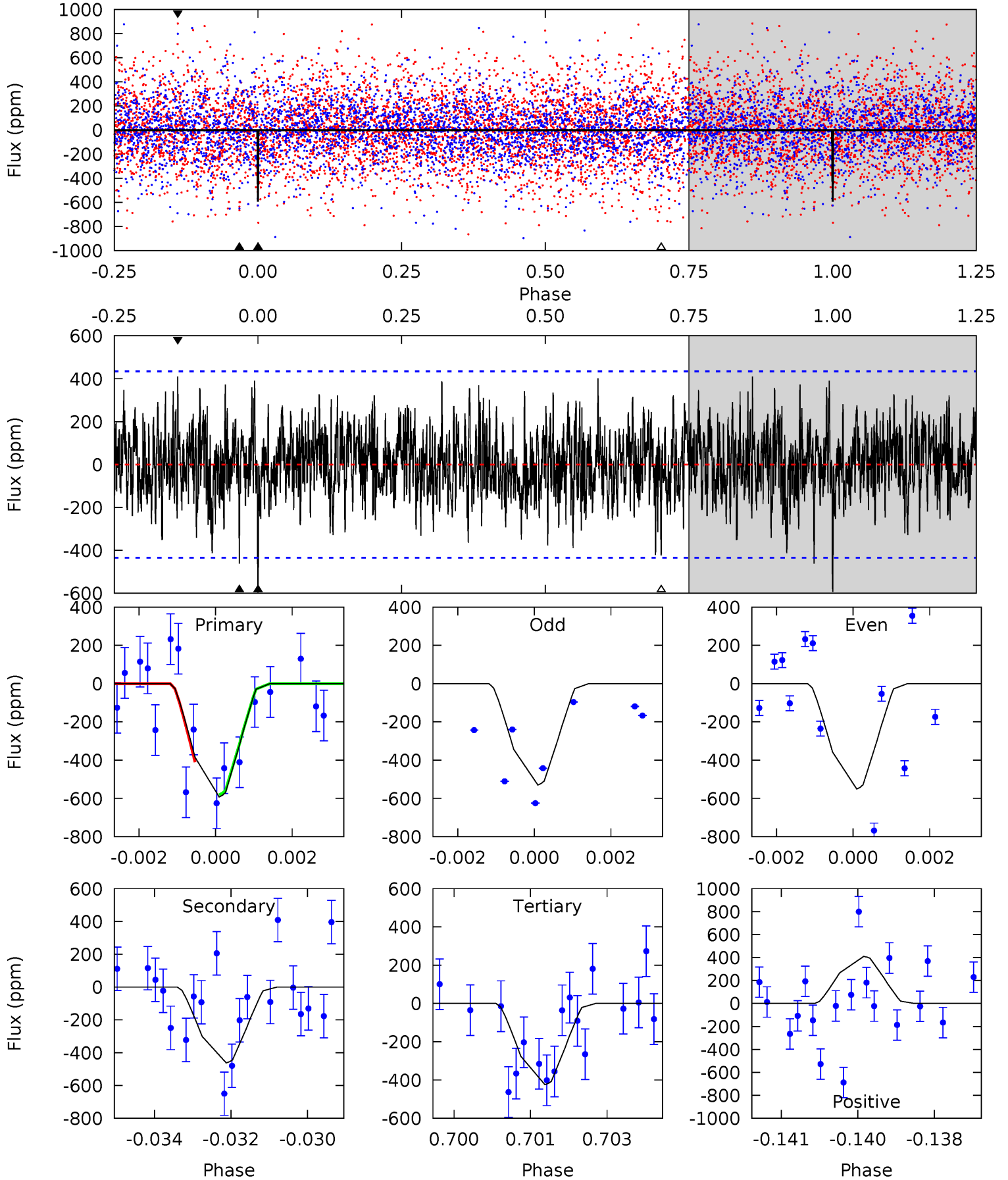
This plot does not exist for this TCE.



# DV Model-Shift Uniqueness Test

007199087-08, P = 28.669881 Days, E = 119.495359 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
7.29	5.69	5.22	5.04	5.35	3.12	1.60	2.07	2.25	0.47	0.65	0.12	0.95	0.41	1.03



## Alt Model-Shift Uniqueness Test

This plot does not exist for this TCE.

### Stellar Parameters For KIC 007199087

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5161^{+139}_{-154}$	$3.782^{+0.812}_{-0.348}$	$-0.420^{+0.300}_{-0.300}$	$1.952^{+1.204}_{-1.204}$	$0.842^{+0.178}_{-0.145}$	$0.160^{+3.448}_{-0.111}$
	+3%/-3%	+21%/-9%	+71%/-71%	+62%/-62%	+21%/-17%	+2162%/-70%
Source	PHO1	KIC0	KIC0	DSEP		

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

### Secondary Eclipse Parameters for KIC 007199087-08 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-462 \pm 81$	$12.39^{+16.65}_{-9.02}$	$1040^{+165}_{-201}$	$3381^{+1953}_{-639}$	$48^{+648}_{-40}$
Alt.	N/A	N/A	N/A	N/A	N/A

$T_{\text{max}}$  = 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

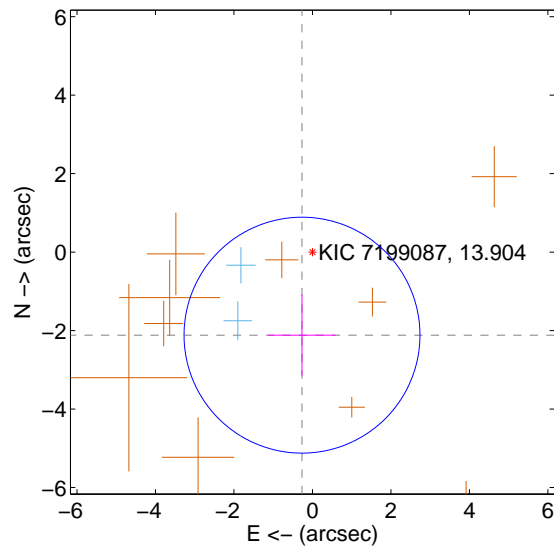
Supplemental centroid analysis for 007199087-08. Kepler magnitude: 13.90. Transit SNR 8.44

There are 2 quarters with good PRF difference image offsets

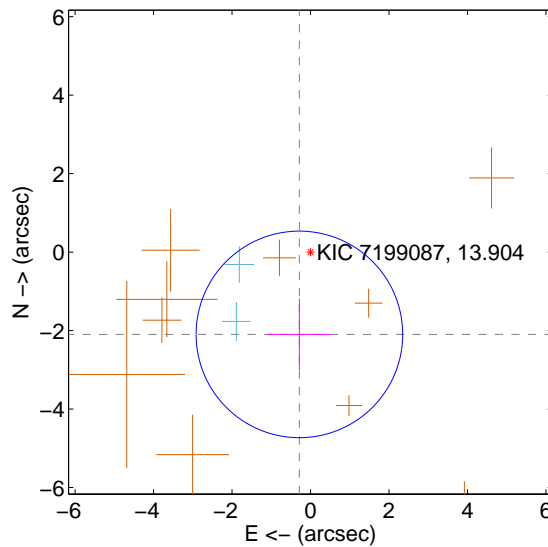
The direct PRF centroid is offset from the target star catalog position by about 0.05 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$2.134 \pm 1.002$	2.13	$0.266 \pm 0.862$	$-2.117 \pm 1.033$
PRF-fit source offset from KIC position	$2.117 \pm 0.877$	2.41	$0.284 \pm 0.801$	$-2.097 \pm 0.911$
photometric centroid source offset	$0.21 \pm 0.45$	0.47	$-0.18 \pm 0.45$	$0.10 \pm 0.44$

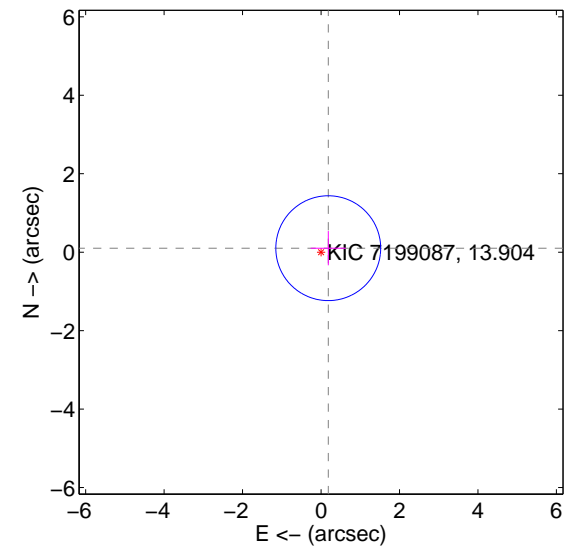
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

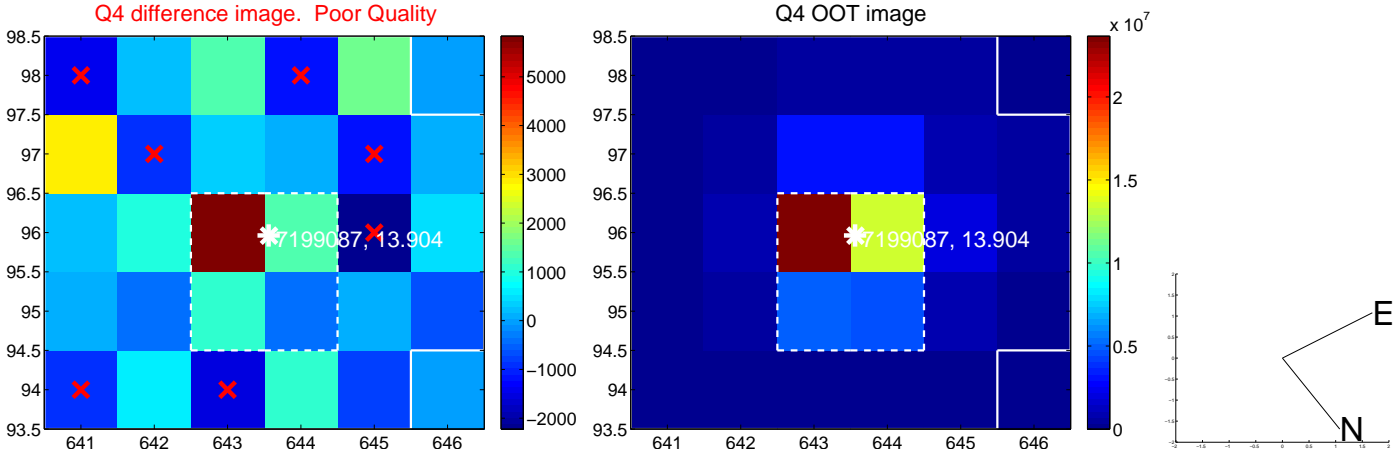
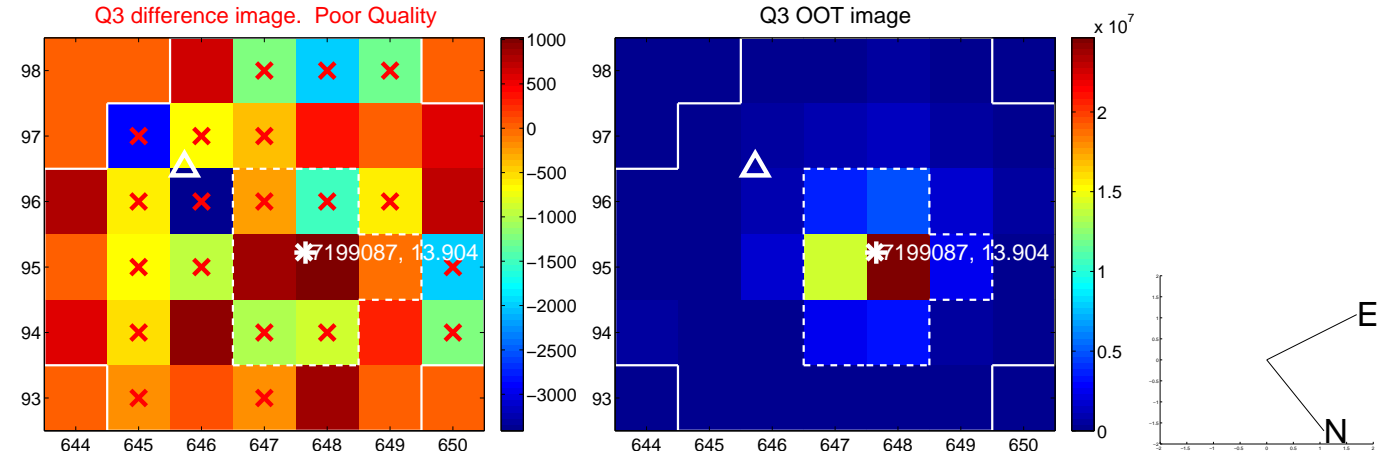
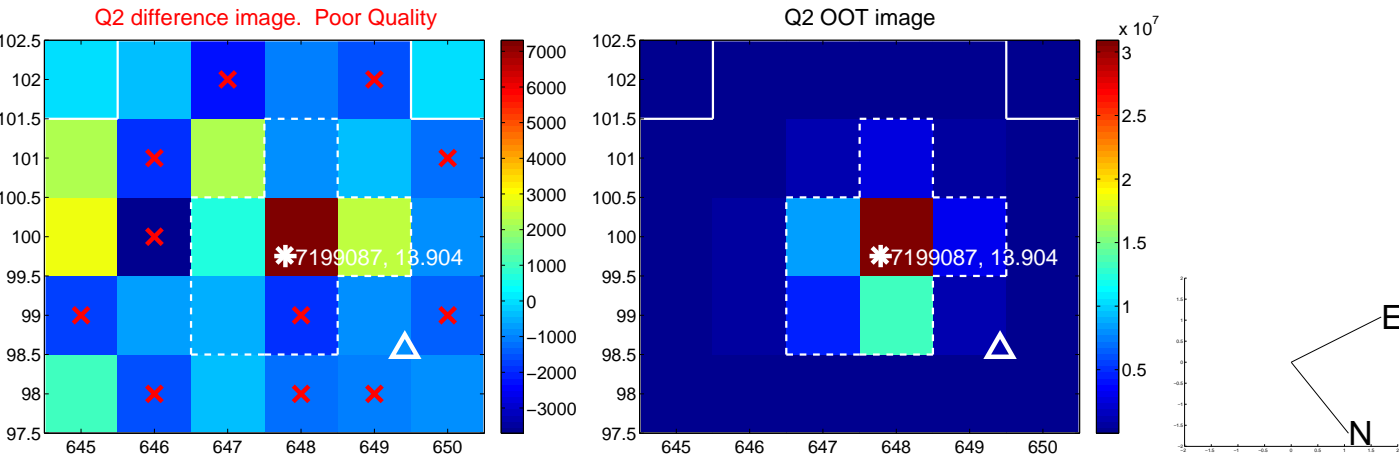
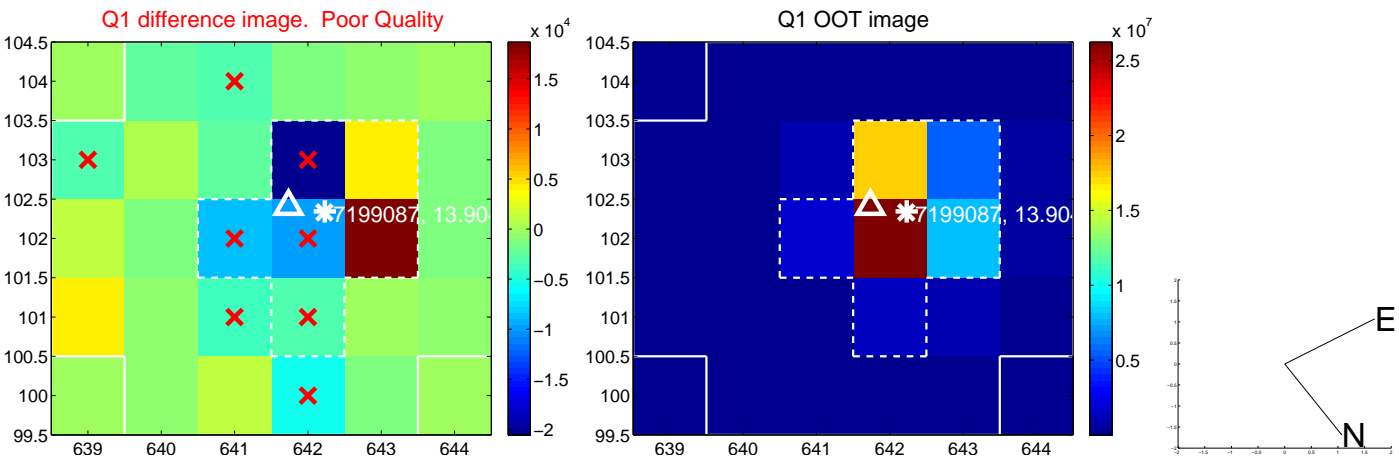


offset from photometric centroids

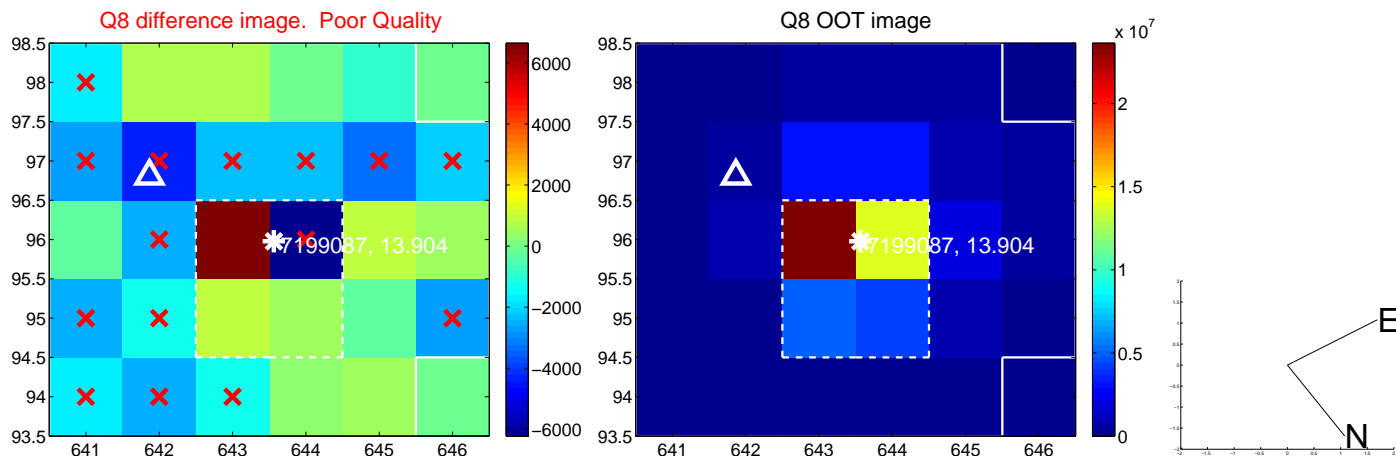
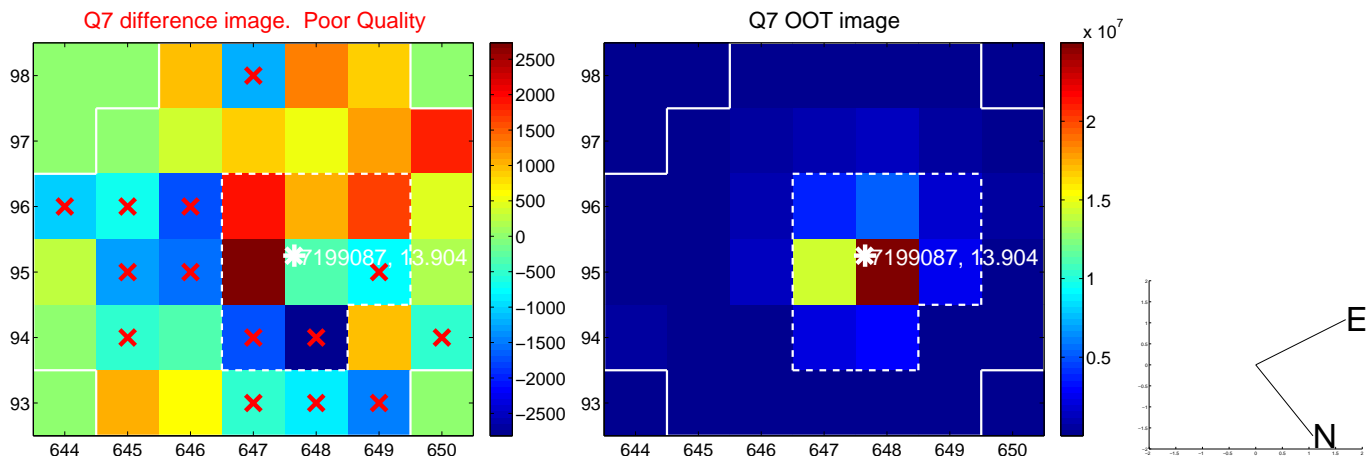
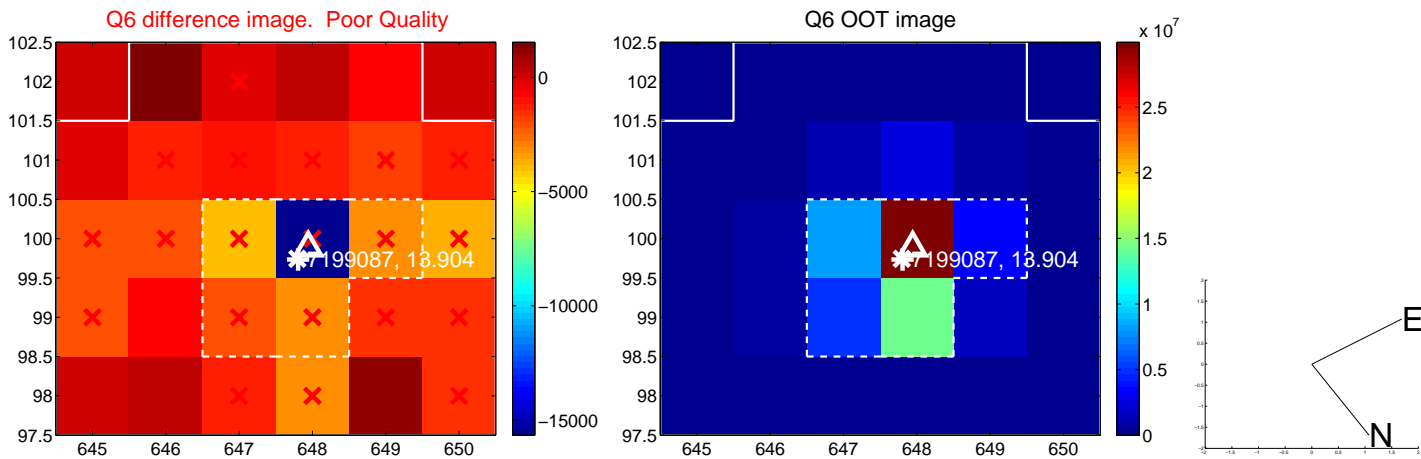
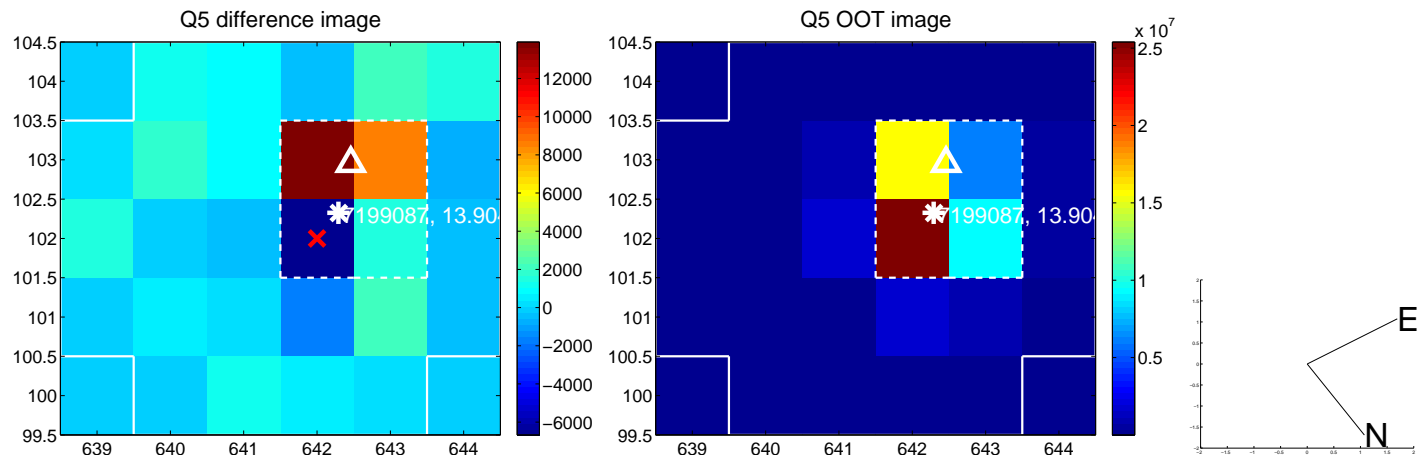


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

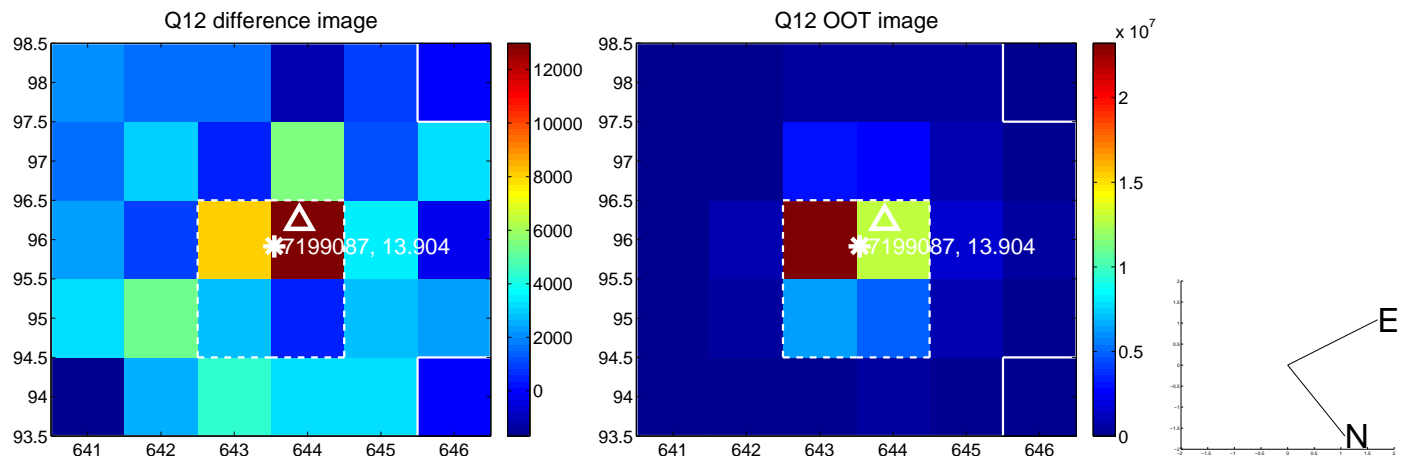
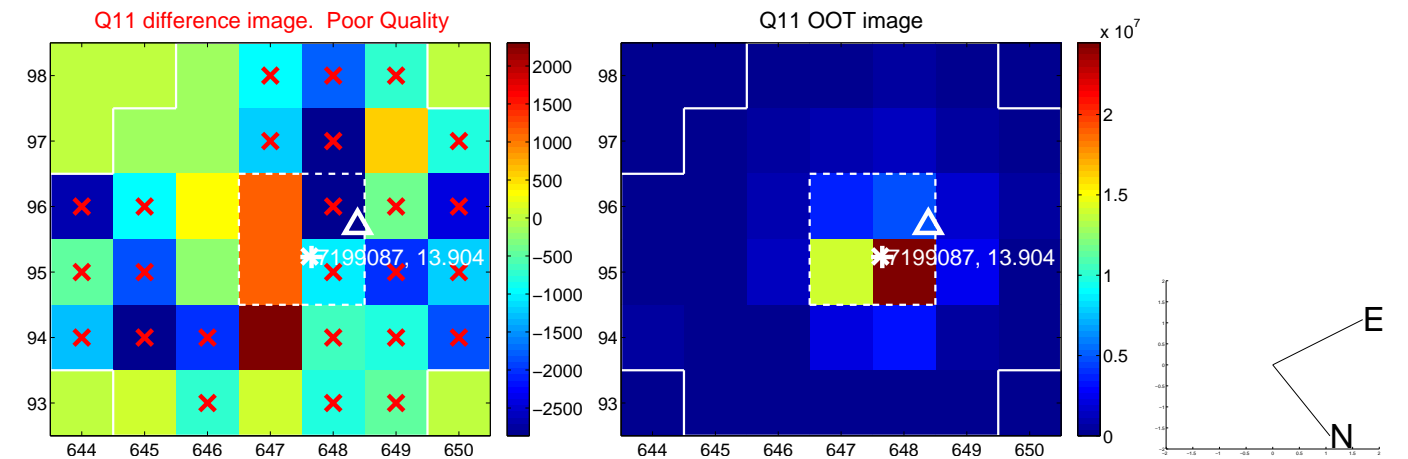
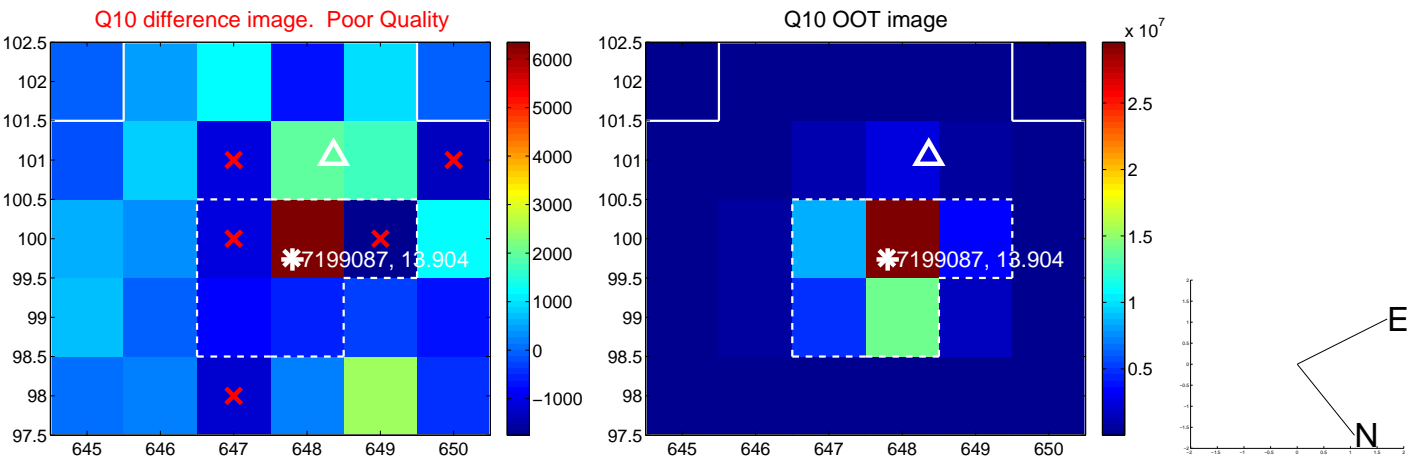
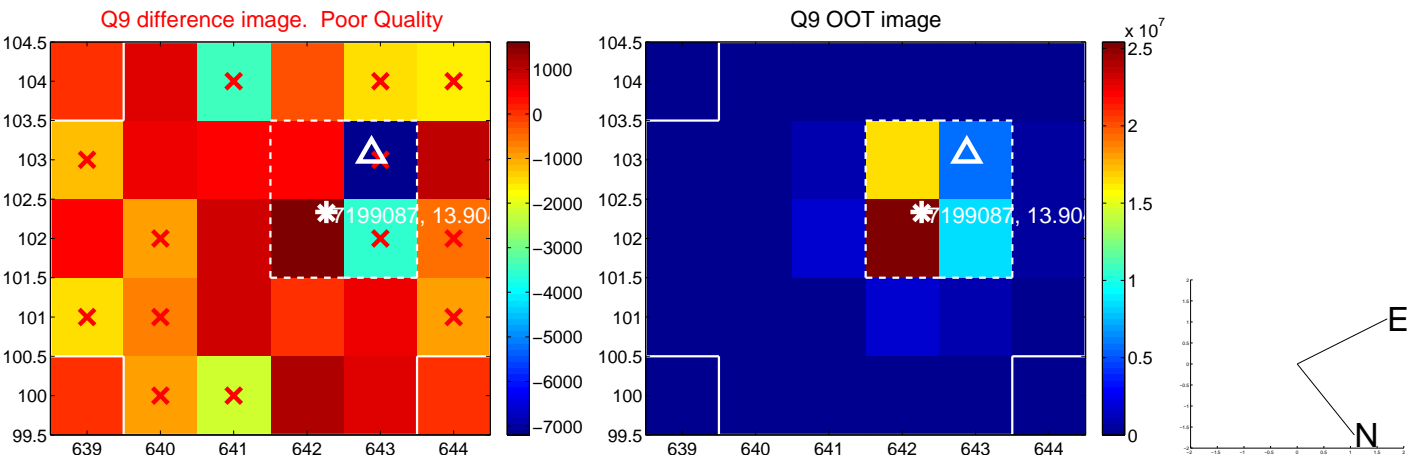
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



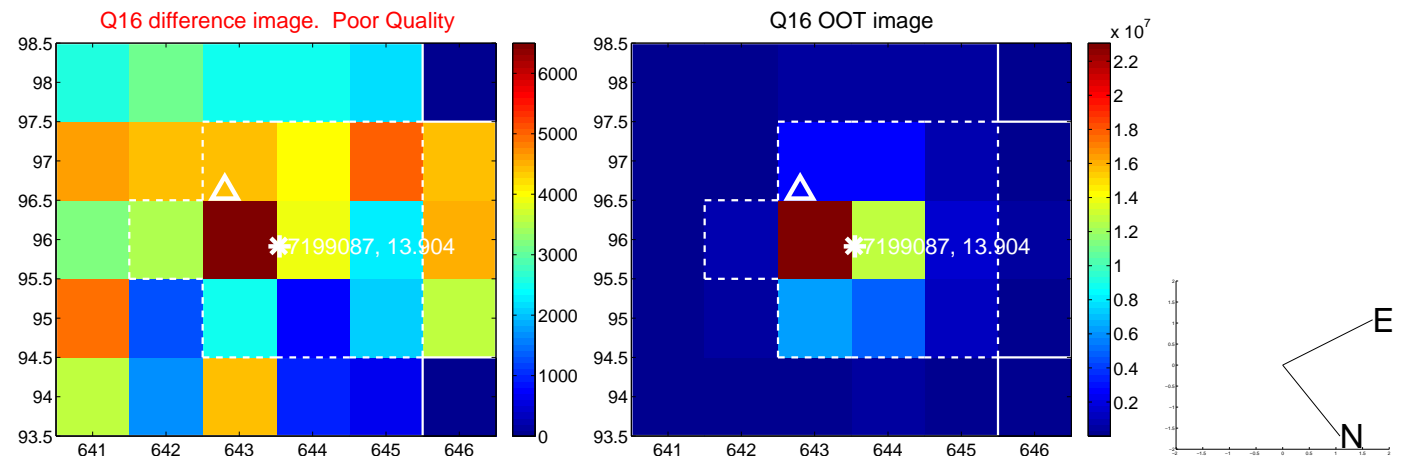
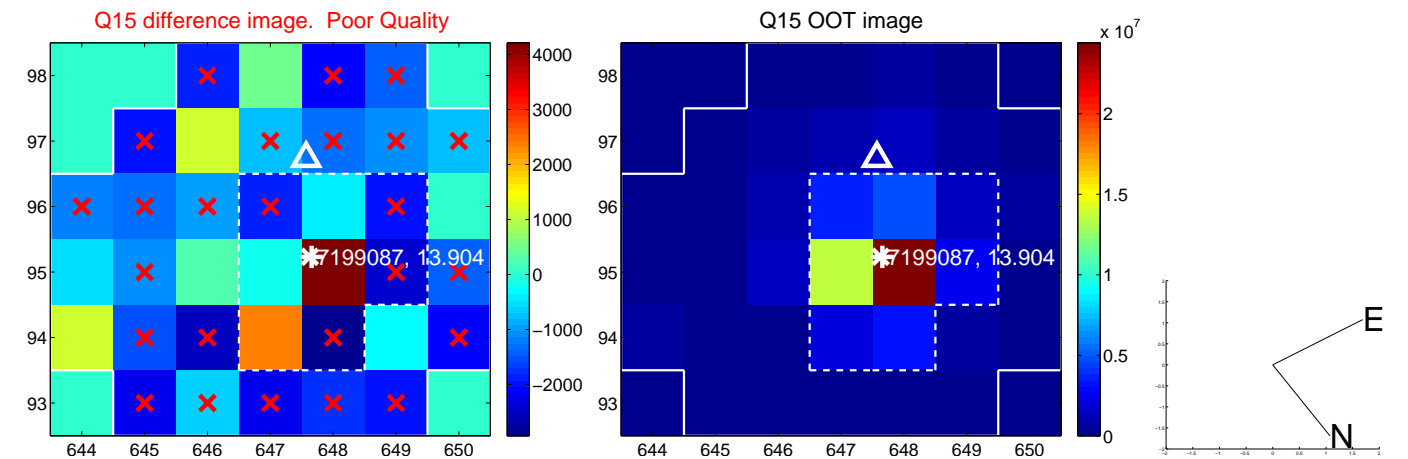
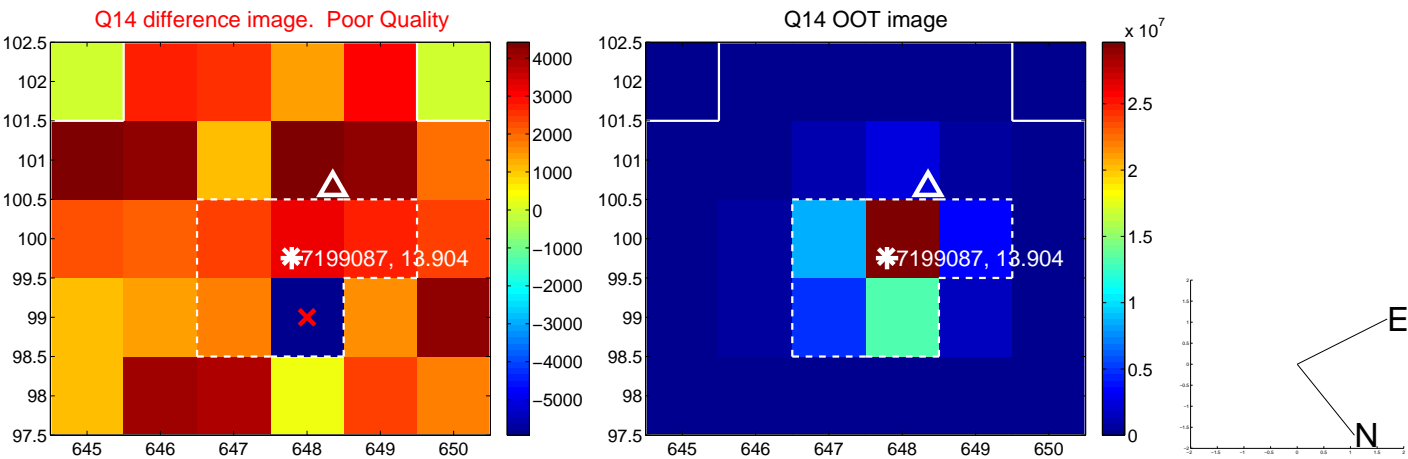
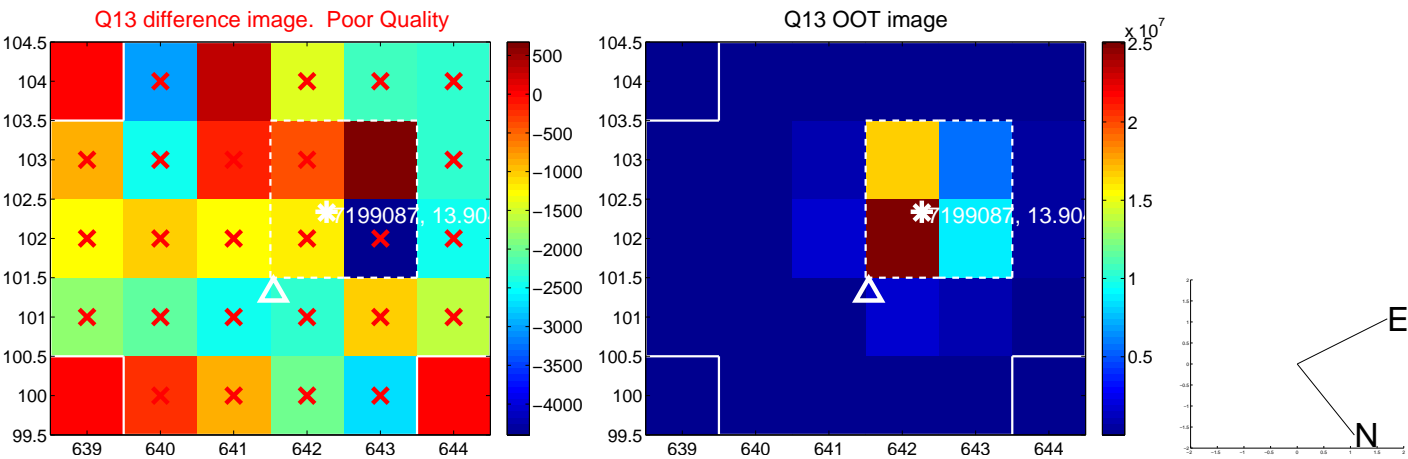
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

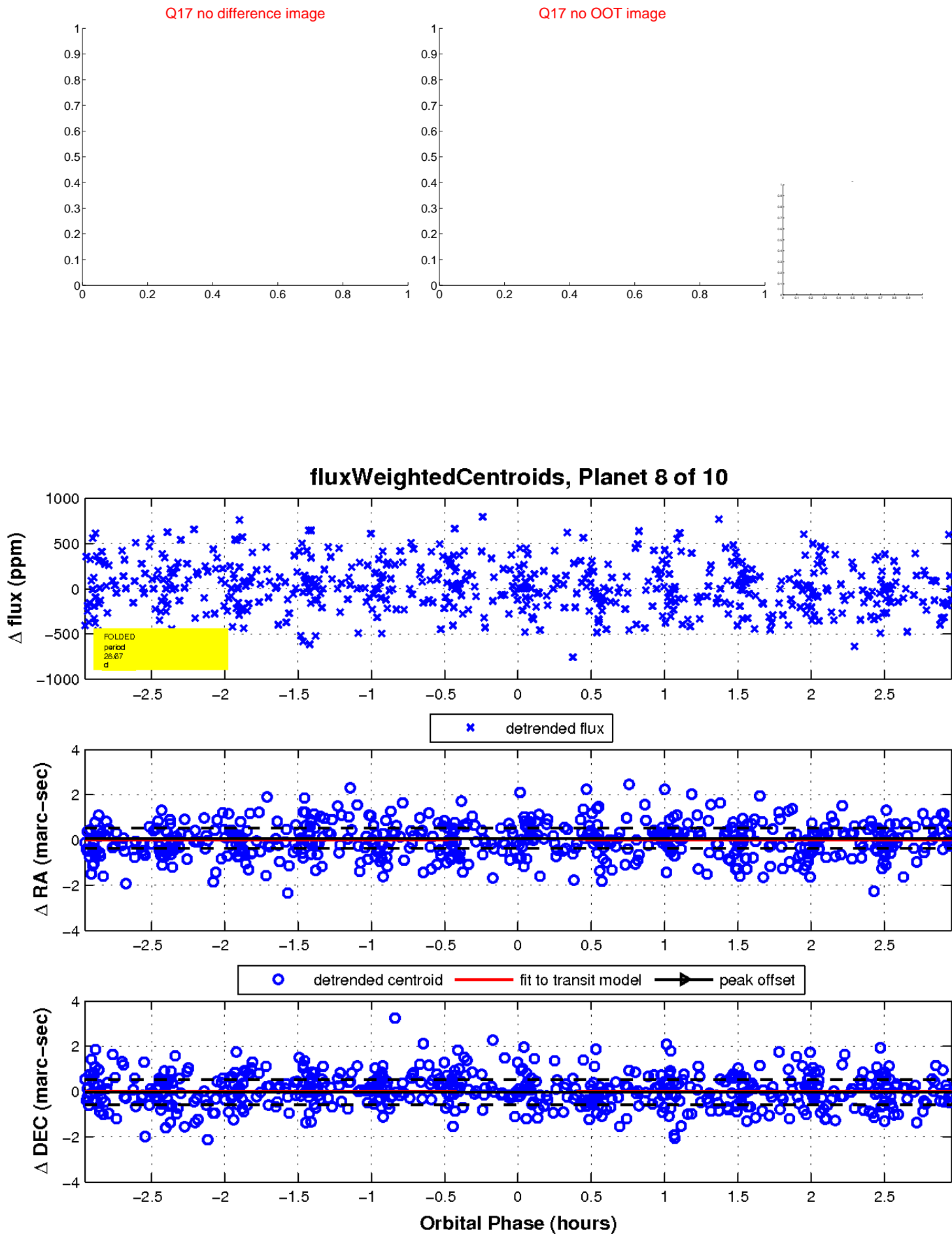


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



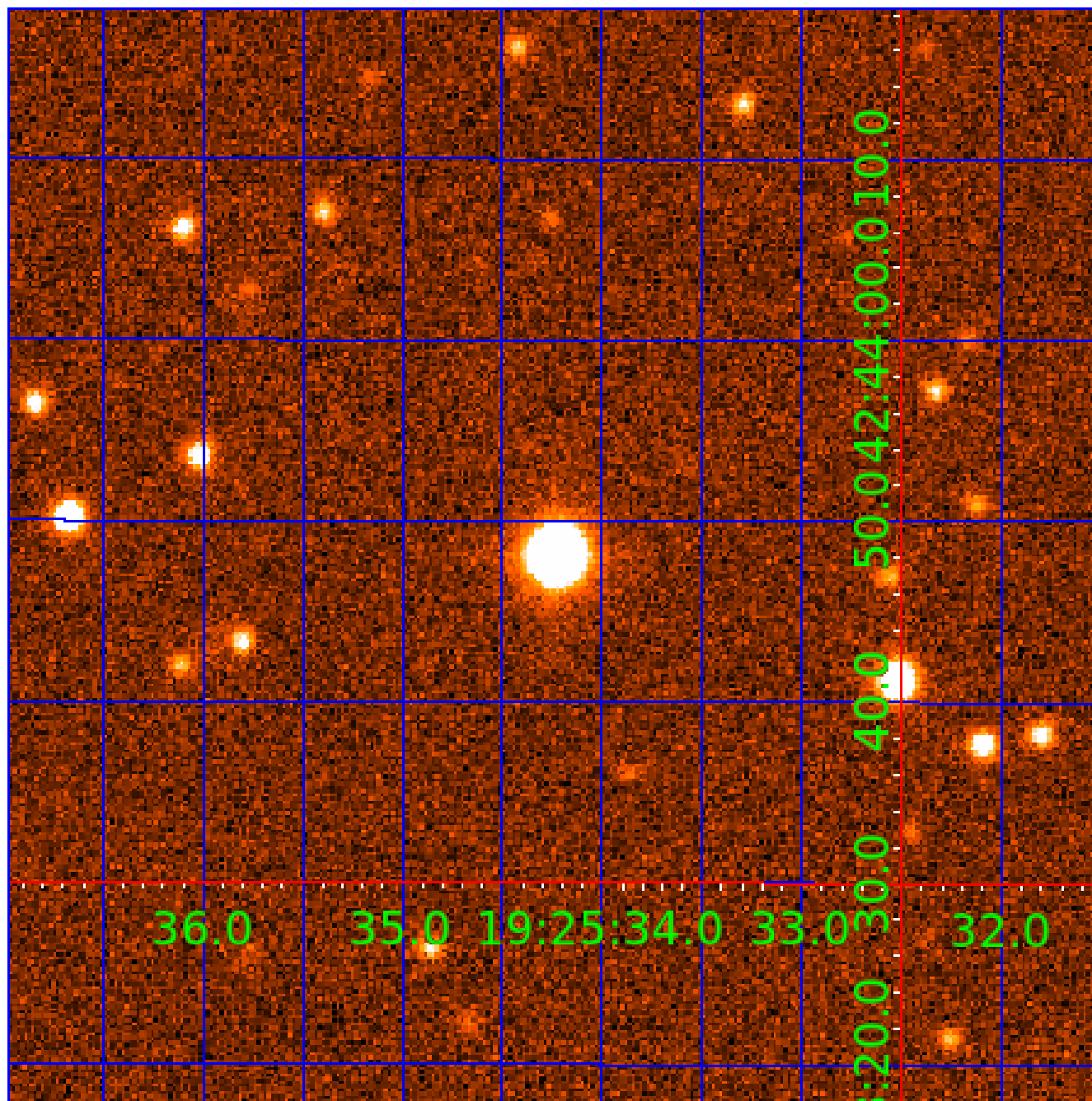


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



## KIC 007199087

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007199087-01	OBS	No	0.566789	131.670402	8.5	3.882	14.8	2.7	1.95	5161	0.56	15121.24
007199087-02	OBS	No	30.372888	155.472228	559.9	2.126	11.0	13.0	1.95	5161	9.51	74.85
007199087-03	OBS	No	22.645018	135.806898	358.7	5.851	12.1	11.4	1.95	5161	7.65	110.71
007199087-04	OBS	No	30.066788	151.392002	551.6	1.456	11.8	13.4	1.95	5161	4.56	75.86
007199087-05	OBS	No	69.496219	195.078789	535.3	3.211	10.0	10.7	1.95	5161	5.21	24.82
007199087-06	OBS	No	17.433948	136.980650	435.8	0.982	10.6	9.8	1.95	5161	4.96	156.90
007199087-07	OBS	No	12.928268	142.702231	321.2	1.694	9.9	10.2	1.95	5161	3.77	233.76
007199087-08	OBS	No	28.669881	148.165240	606.7	0.987	9.2	8.4	1.95	5161	5.76	80.83
007199087-09	OBS	No	20.441918	143.787734	418.3	1.326	10.7	9.8	1.95	5161	4.12	126.90
007199087-10	OBS	No	11.882767	139.895565	291.3	4.500	8.6	-1.0	1.95	5161	3.26	261.57

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007199087-01	OBS	FP	0.00	1	0	1	1	SWEET_NTL—LPP_DV—LPP_ALT—HALO_GHOST—EPHEM_MATCH
007199087-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT
007199087-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
007199087-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
007199087-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
007199087-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
007199087-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
007199087-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV
007199087-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT
007199087-10	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT—CENT_NOFITS

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

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

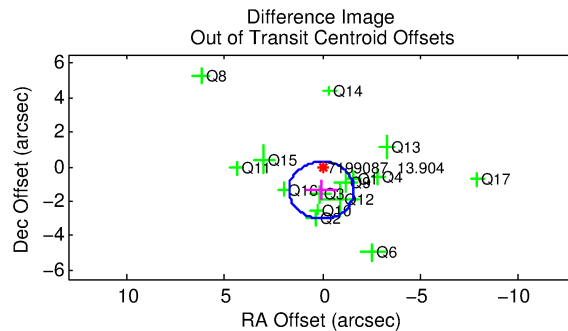
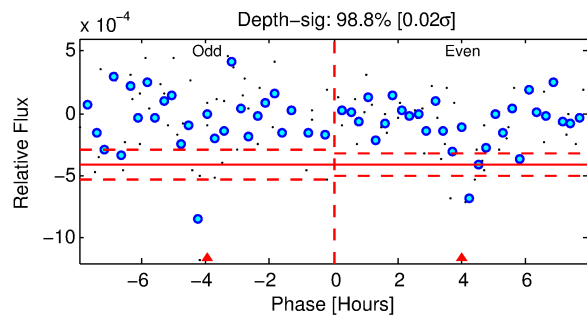
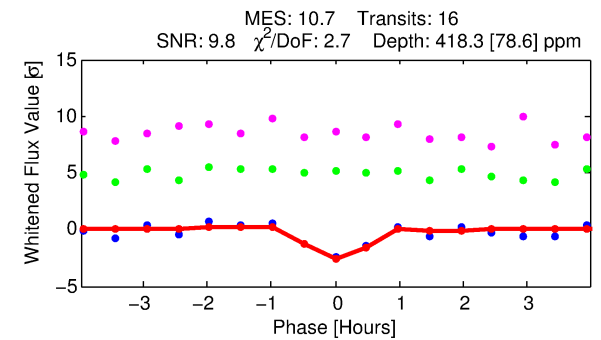
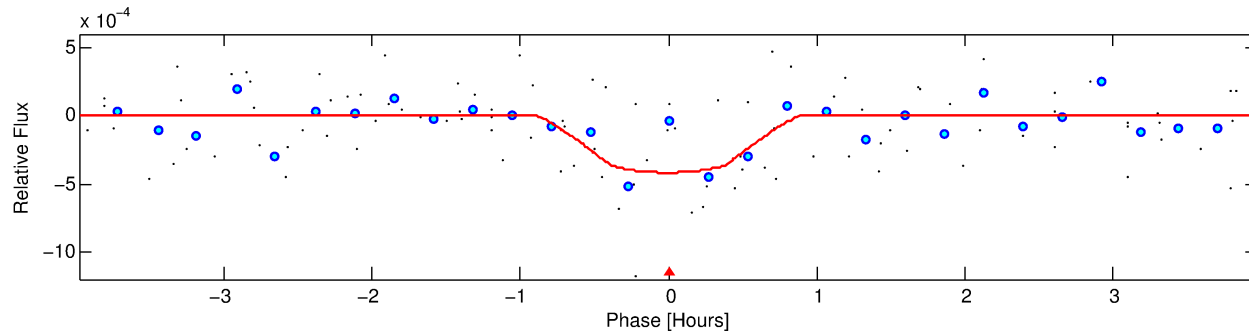
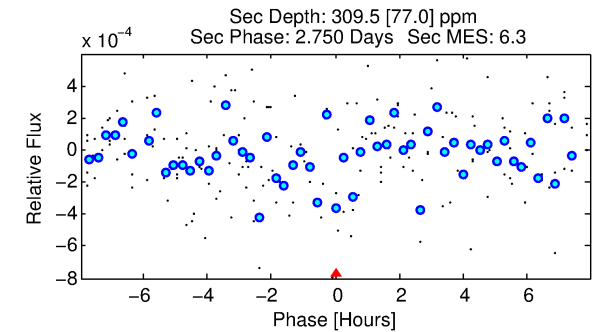
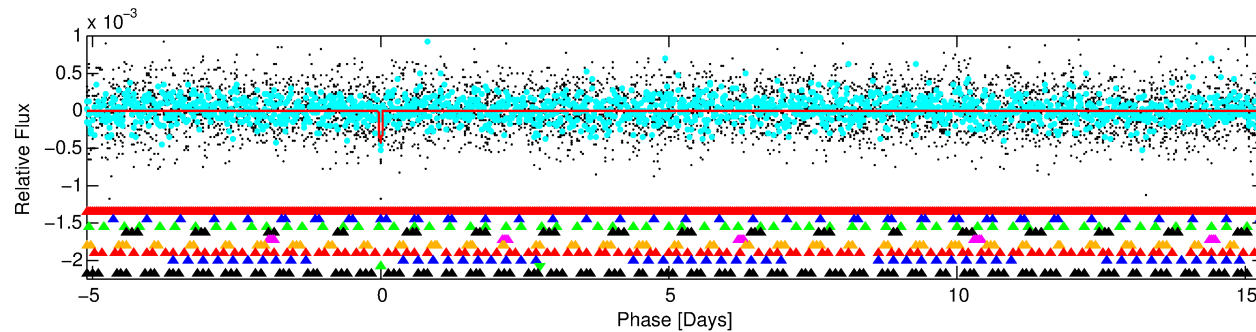
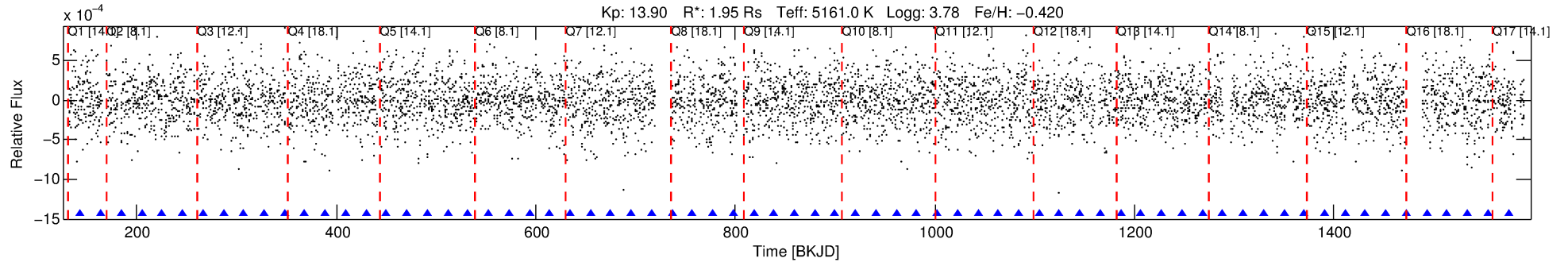
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 007199087-09

No Significant Match Found

# DV One-Page Summary

KIC: 7199087 Candidate: 9 of 10 Period: 20.442 d



## DV Fit Results:

Period = 20.44192 [0.00019] d  
Epoch = 143.7877 [0.0067] BKJD  
Rp/R\* = 0.0193 [0.0339]  
a/R\* = 100.86 [686.56]  
b = 0.55 [8.64]  
Seff = 126.90 [167.25]  
Teff = 856 [282] K  
Rp = 4.12 [7.66] Re  
a = 0.1382 [0.1032] AU  
Ag = 191.69 [720.25] [0.26 $\sigma$ ]  
Teffp = 4924 [4336] K [0.94 $\sigma$ ]

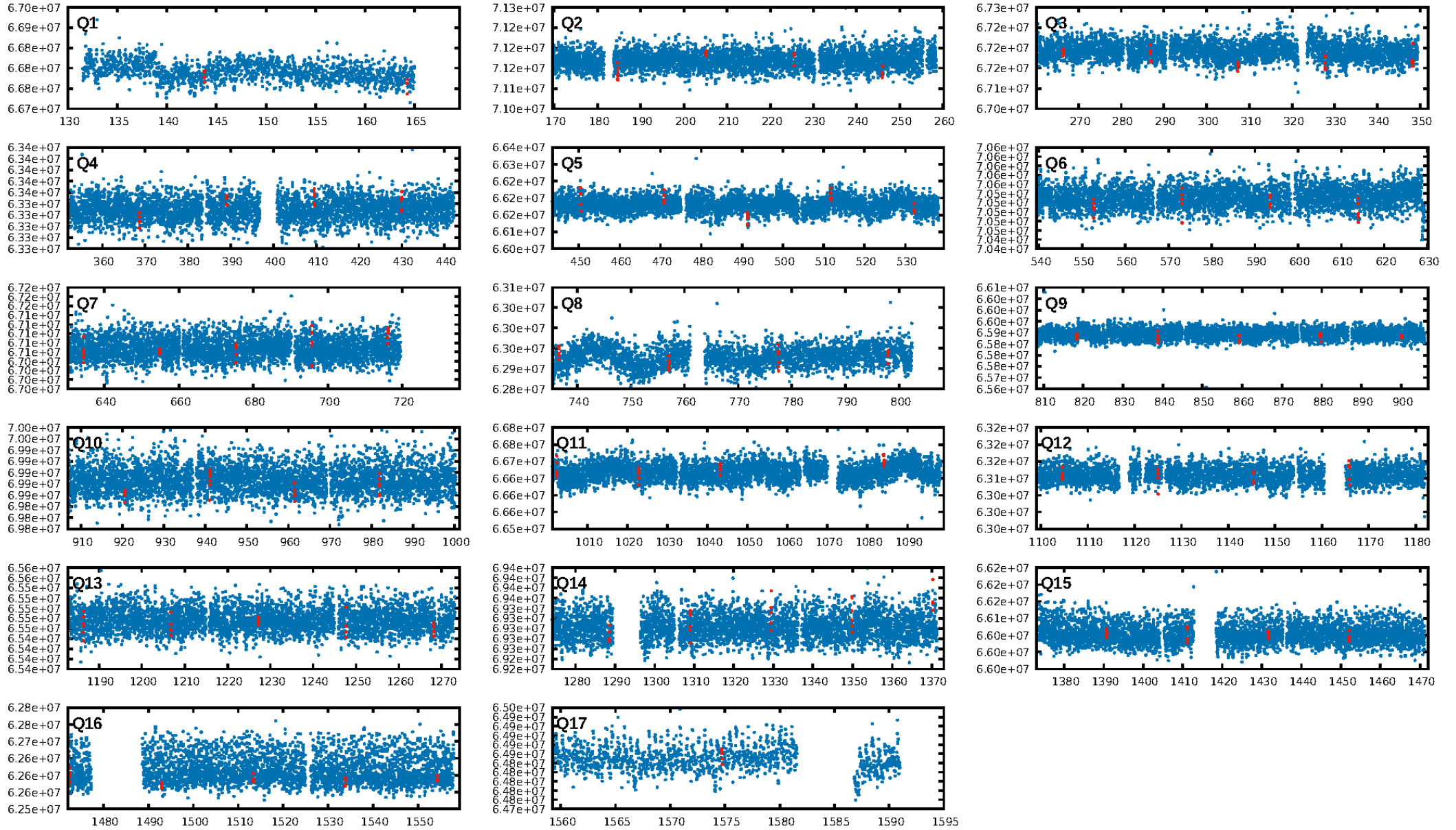
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [43.76 $\sigma$ ]  
LongPeriod-sig: 100.0% [8.81 $\sigma$ ]  
**ModelChiSquare2-sig: 0.0%**  
ModelChiSquareGof-sig: 1.0%  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [15/15]  
GhostDiagnostic-chr: 0.7407  
Centroid-sig: 3.1%  
Centroid-so: 0.935 arcsec [2.15 $\sigma$ ]  
OotOffset-rm: 1.368 arcsec [2.46 $\sigma$ ]  
KicOffset-rm: 1.350 arcsec [2.19 $\sigma$ ]  
OotOffset-st: 4/3/4/4 [15]  
KicOffset-st: 4/3/4/4 [15]  
DiffImageQuality-fgm: 0.20 [3/15]  
DiffImageOverlap-fno: 0.00 [0/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 15:41:53 Z

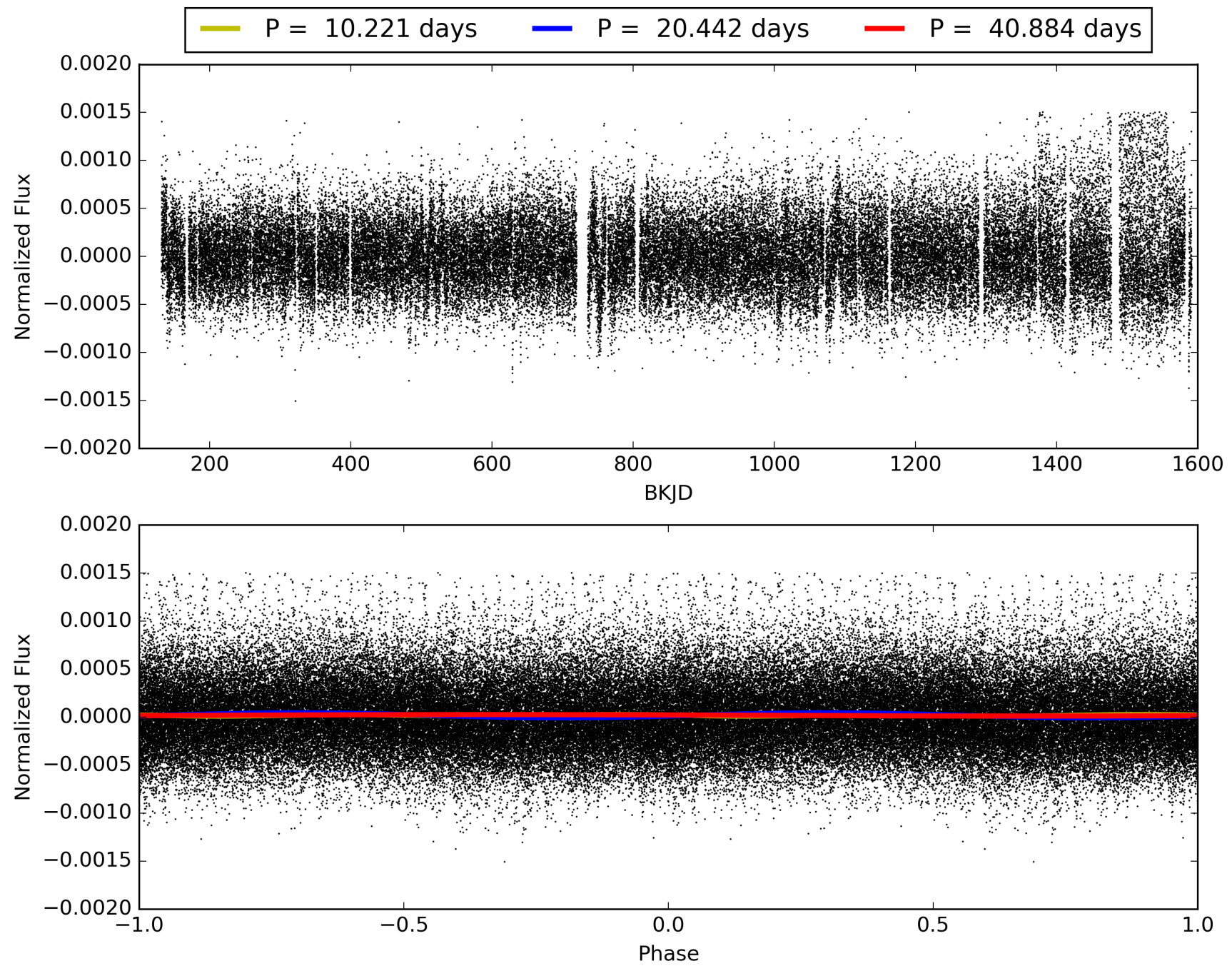
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 007199087-09, PDC Light Curves



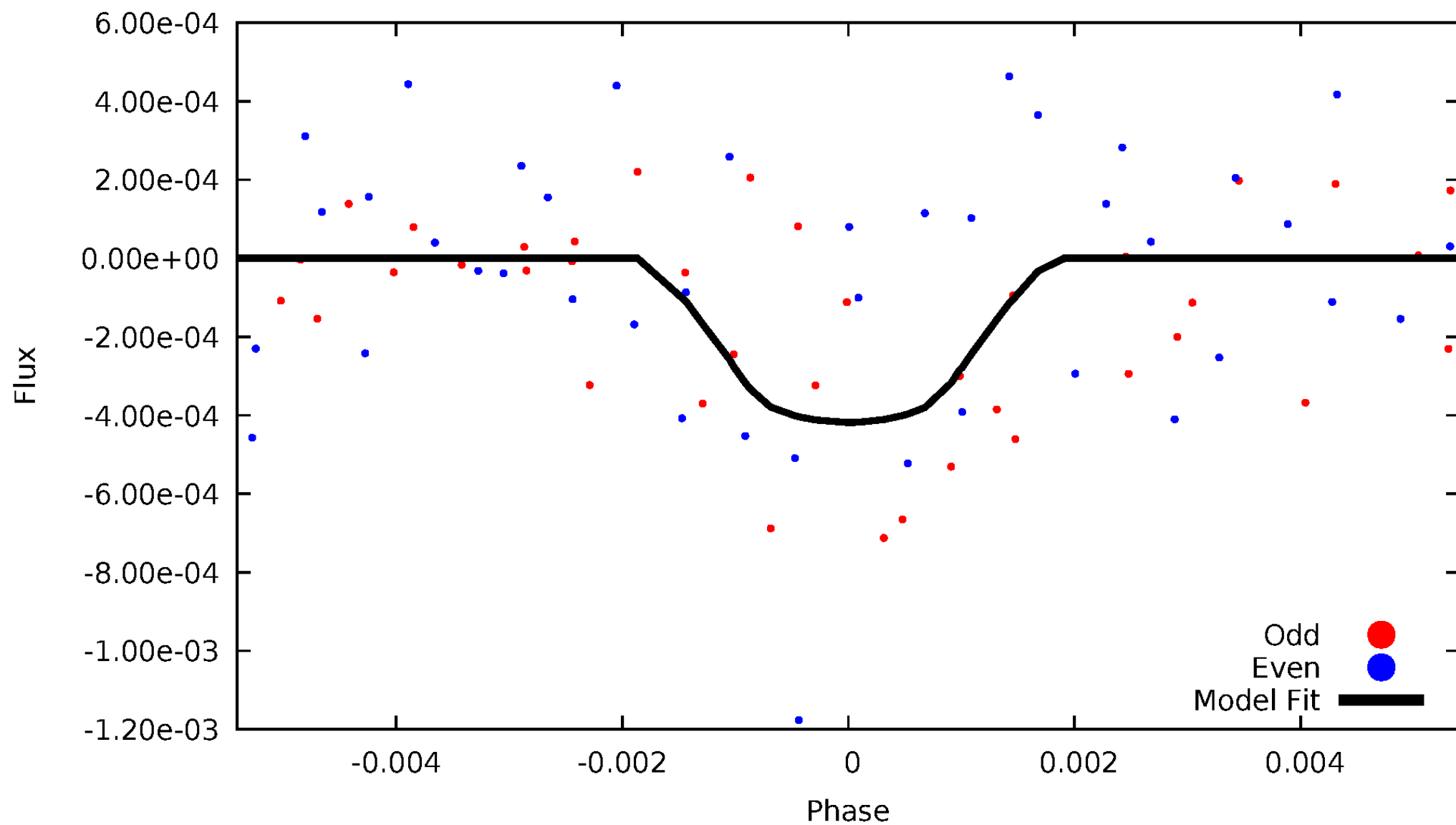


TCE 007199087-09



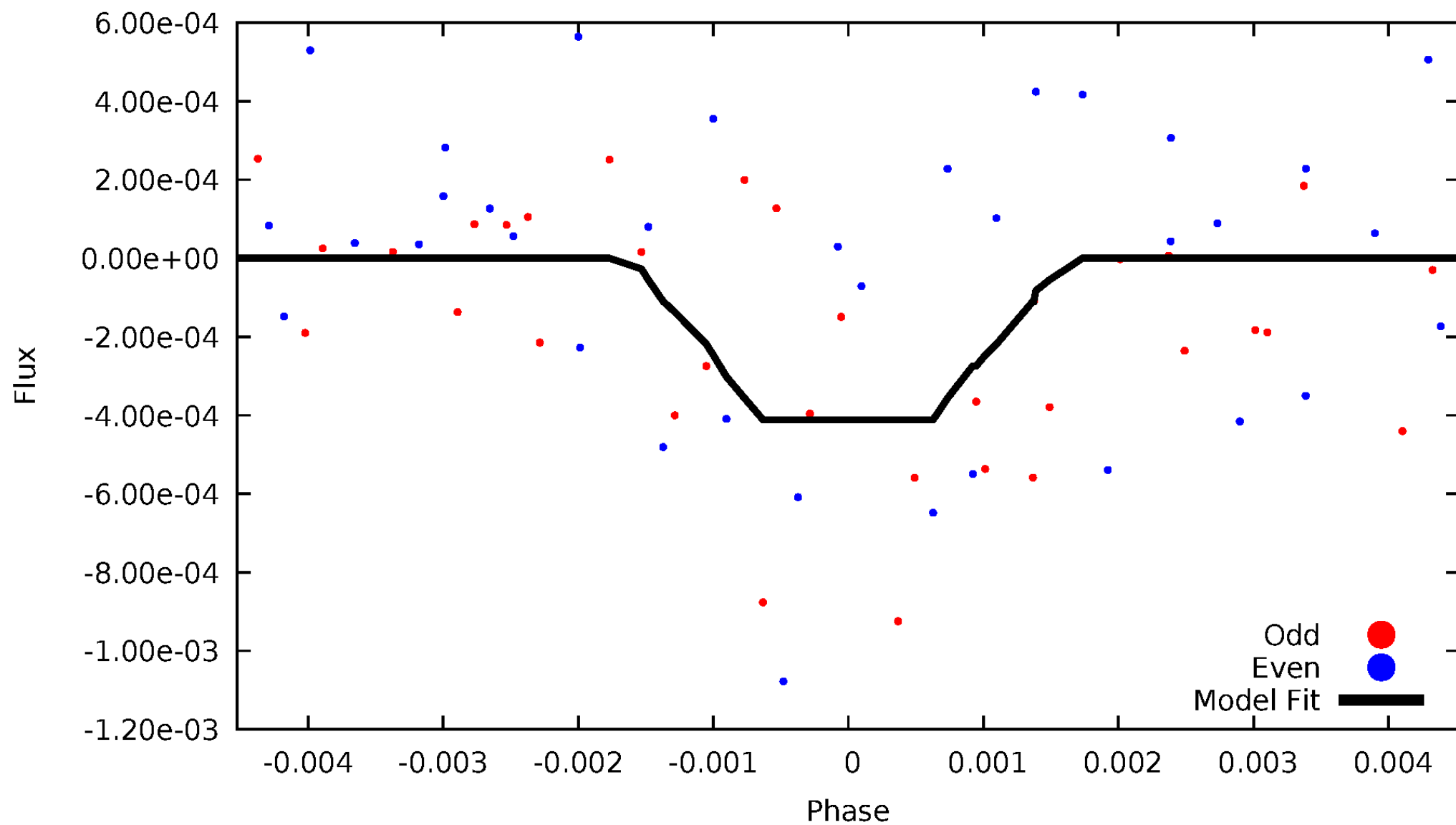
# DV Odd/Even

TCE 007199087-09



# ALT Odd/Even

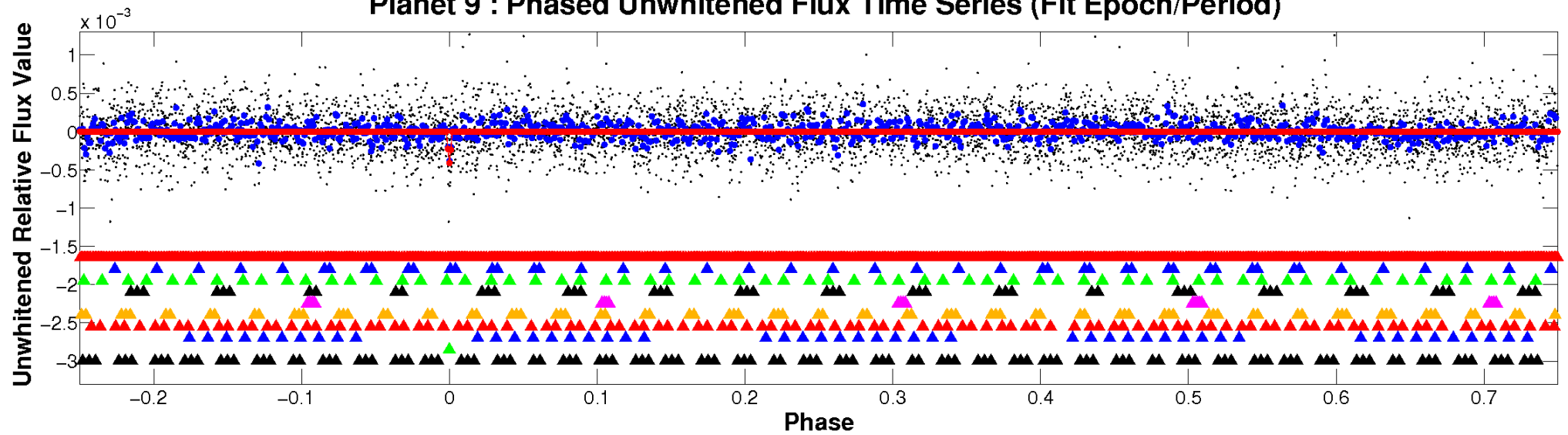
TCE 007199087-09



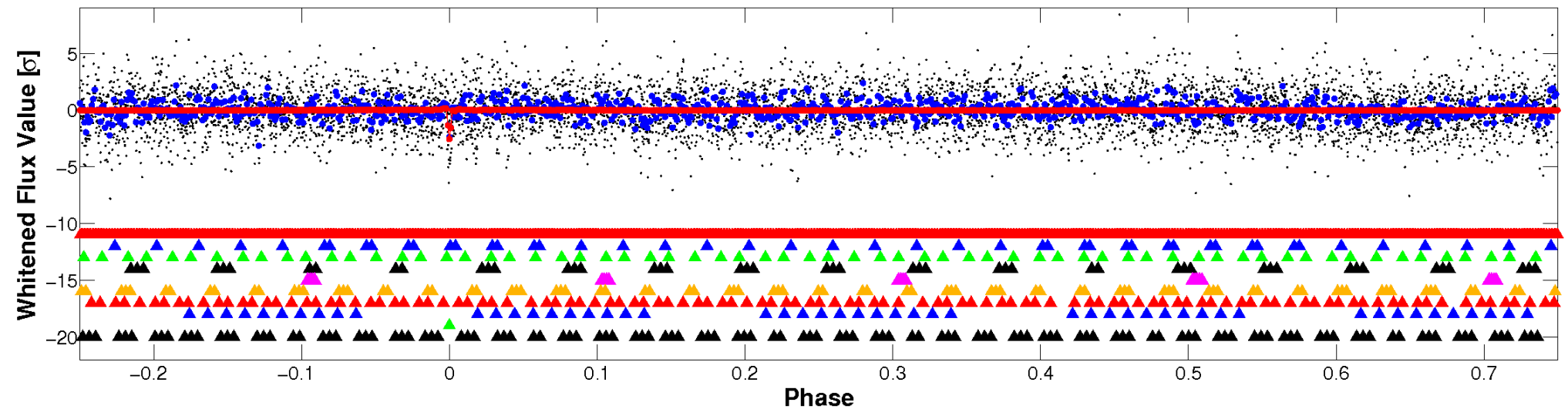


# Non-Whitened Vs. Whitened Light Curve

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

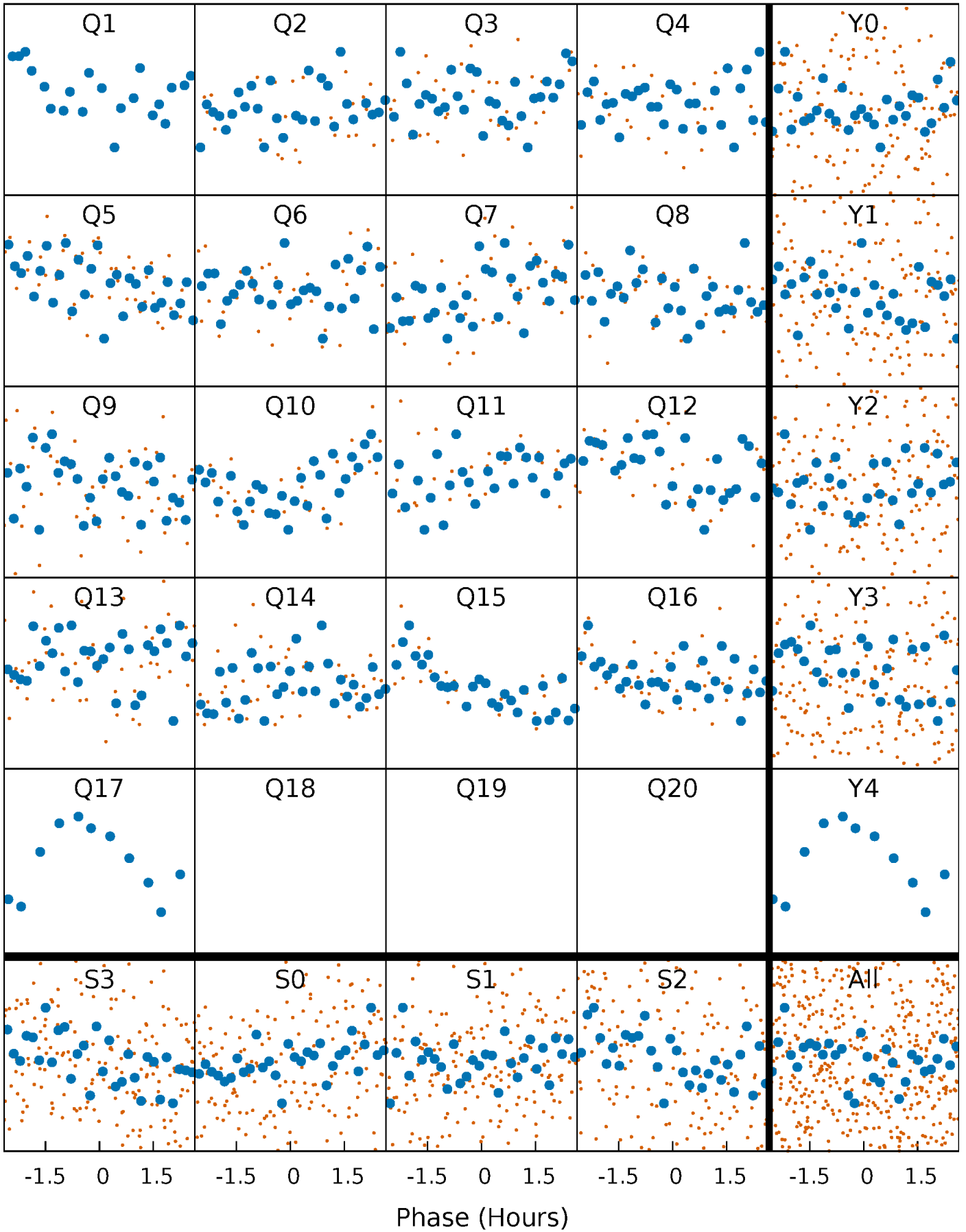


## Planet 9 : Phased Whitened Flux Time Series (Fit Epoch/Period)



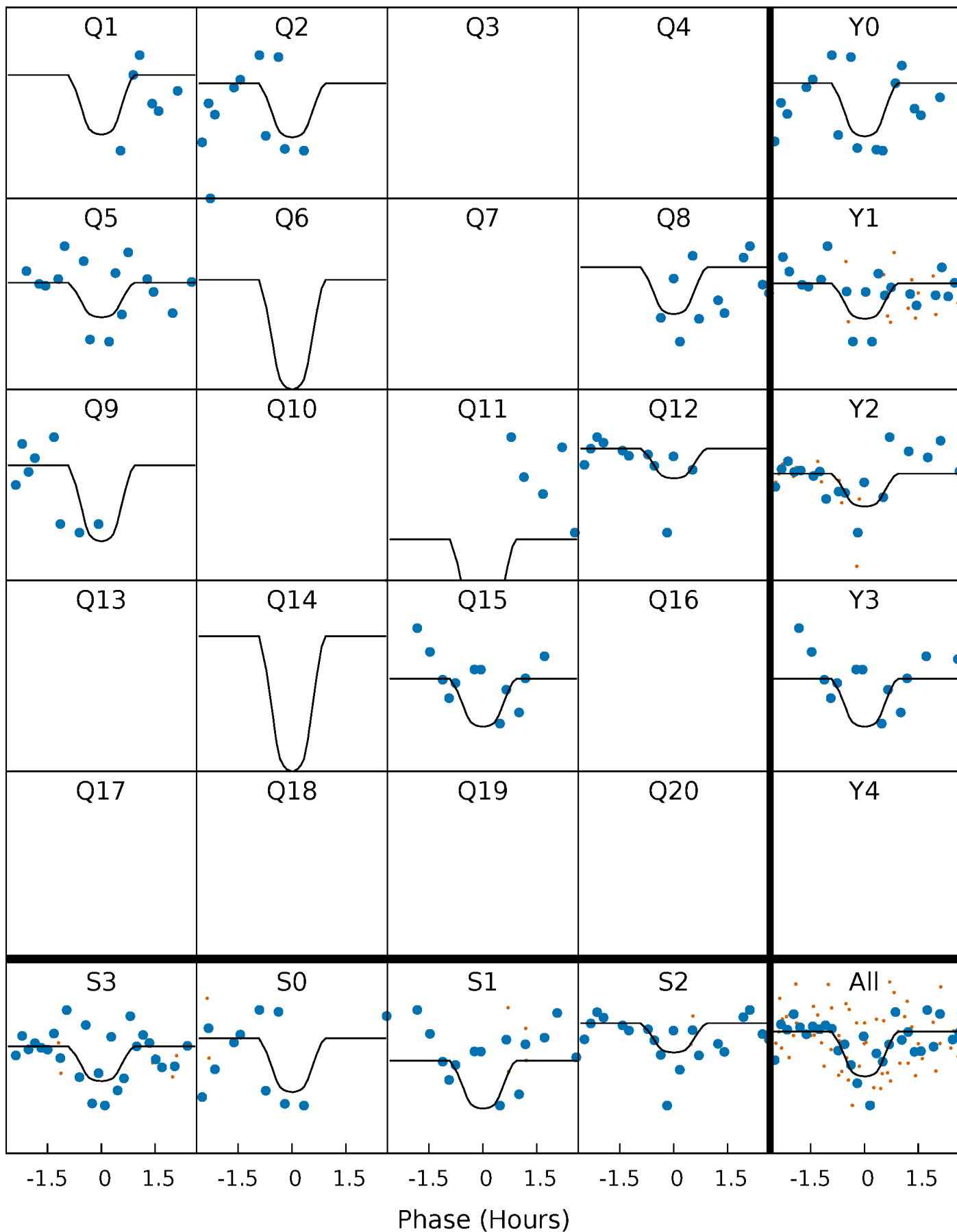
# PDC Quarter-Phased Transit Curves

TCE 007199087-09   P= 20.441918 Days    $T_0=143.787734$  (BKJD)



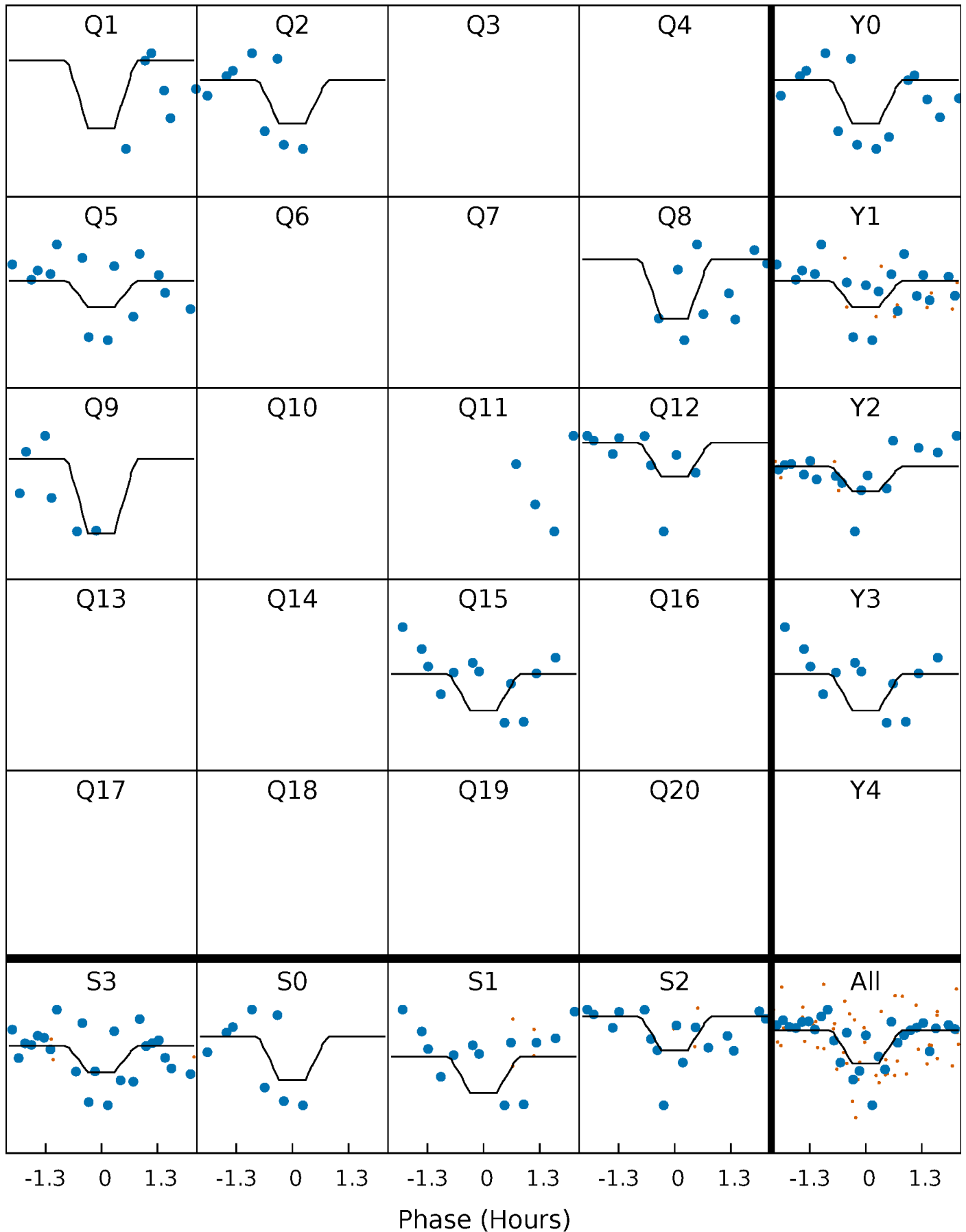
# DV Quarter-Phased Transit Curves

TCE 007199087-09     $P = 20.441918$  Days     $T_0 = 143.787734$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

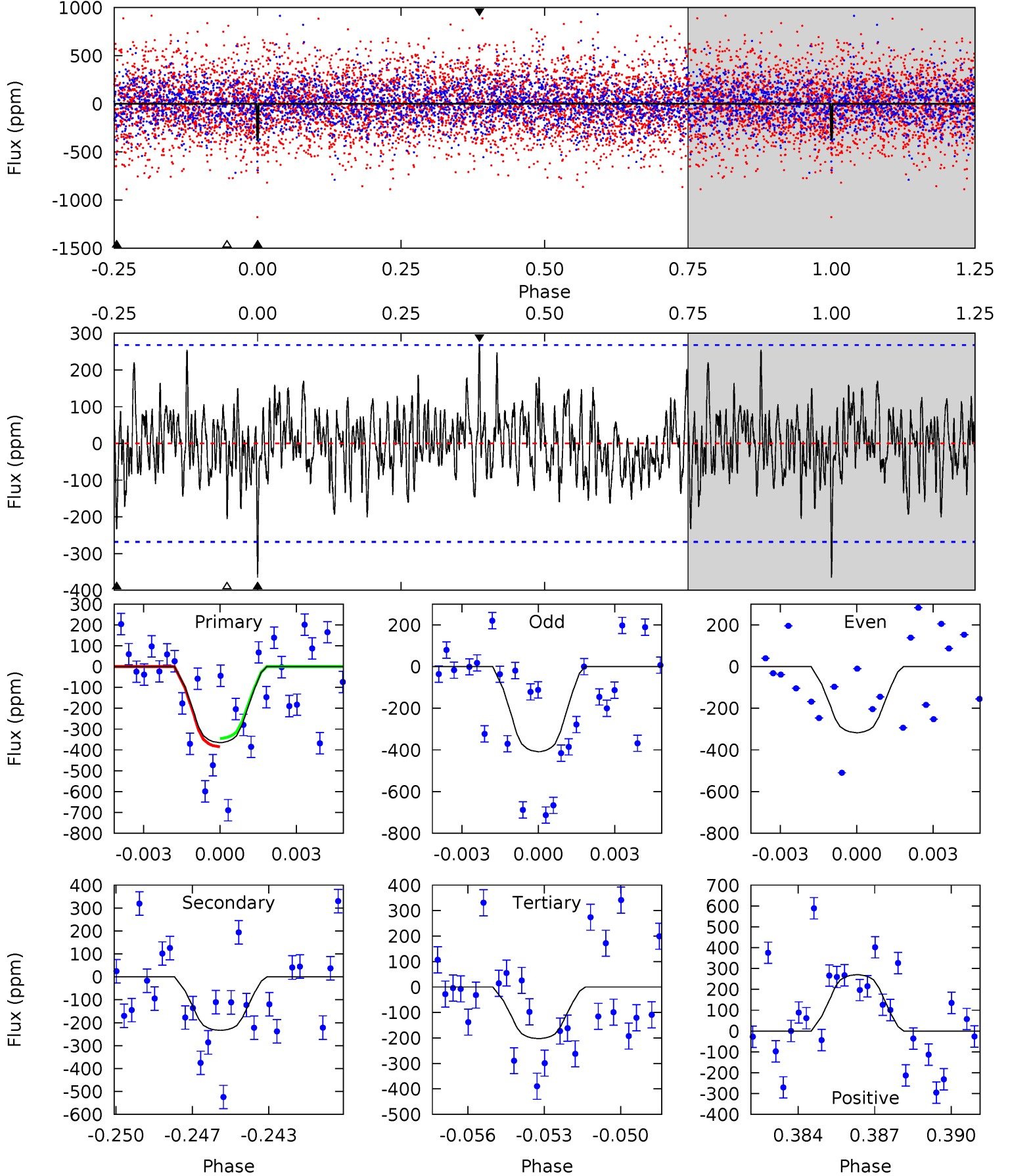
TCE 007199087-09     $P = 20.441981$  Days     $T_0 = 143.785554$  (BKJD)



# DV Model-Shift Uniqueness Test

007199087-09, P = 20.441918 Days, E = 123.345816 Days

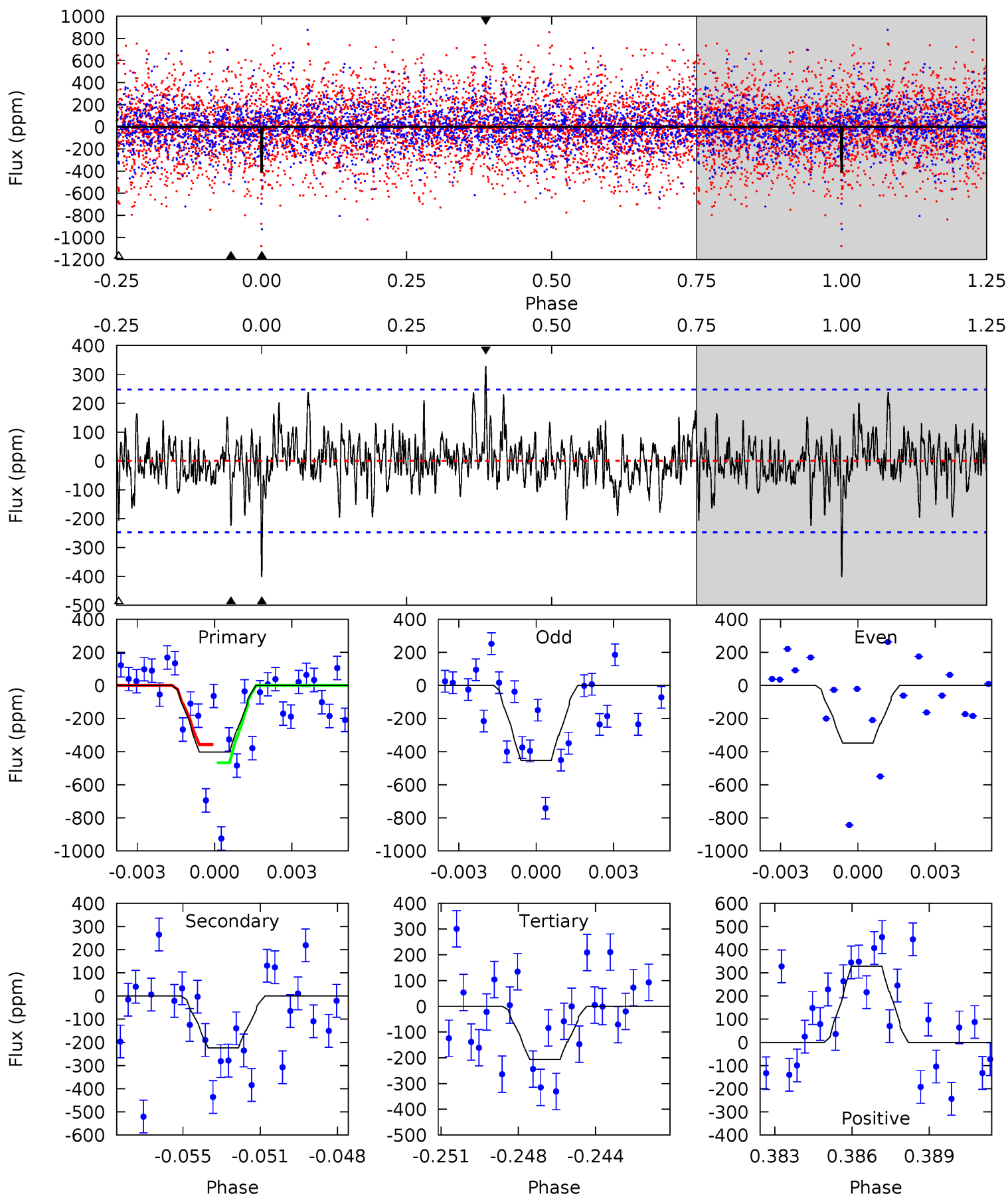
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.15	4.57	3.96	5.29	5.25	2.96	1.44	3.18	1.86	0.61	-0.72	0.89	1.21	0.43	0.39



# Alt Model-Shift Uniqueness Test

007199087-09, P = 20.441981 Days, E = 123.343573 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	4.74	4.38	6.97	5.24	2.95	1.45	4.16	1.56	0.37	-2.22	1.12	1.01	0.45	1.17



### Stellar Parameters For KIC 007199087

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5161^{+139}_{-154}$	$3.782^{+0.812}_{-0.348}$	$-0.420^{+0.300}_{-0.300}$	$1.952^{+1.204}_{-1.204}$	$0.842^{+0.178}_{-0.145}$	$0.160^{+3.448}_{-0.111}$
	+3%/-3%	+21%/-9%	+71%/-71%	+62%/-62%	+21%/-17%	+2162%/-70%
Source	PHO1	KIC0	KIC0	DSEP		

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

### Secondary Eclipse Parameters for KIC 007199087-09 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-234 \pm 51$	$5.78^{+6.42}_{-3.80}$	$1160^{+204}_{-200}$	$3927^{+2119}_{-766}$	$72^{+566}_{-56}$
Alt.	$-224 \pm 47$	$6.37^{+7.35}_{-4.30}$	$1167^{+207}_{-205}$	$3754^{+2093}_{-665}$	$58^{+534}_{-46}$

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

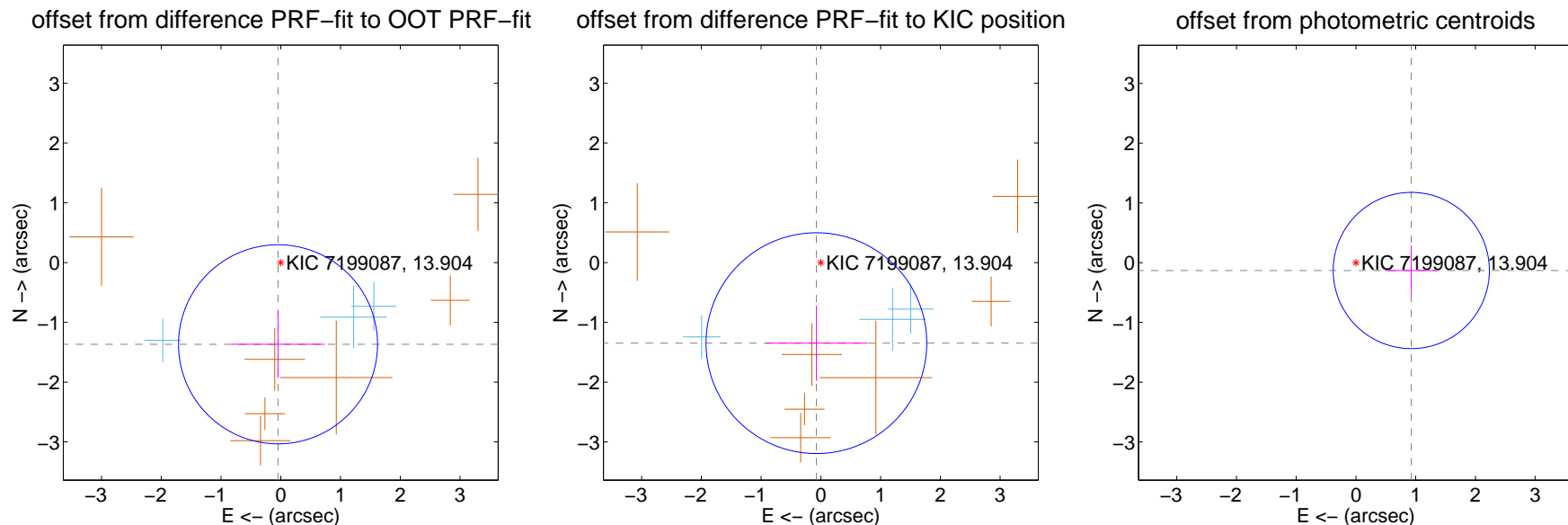
## DV Centroid Data

Supplemental centroid analysis for 007199087-09. Kepler magnitude: 13.90. Transit SNR 9.80

There are 3 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.01 arcsec

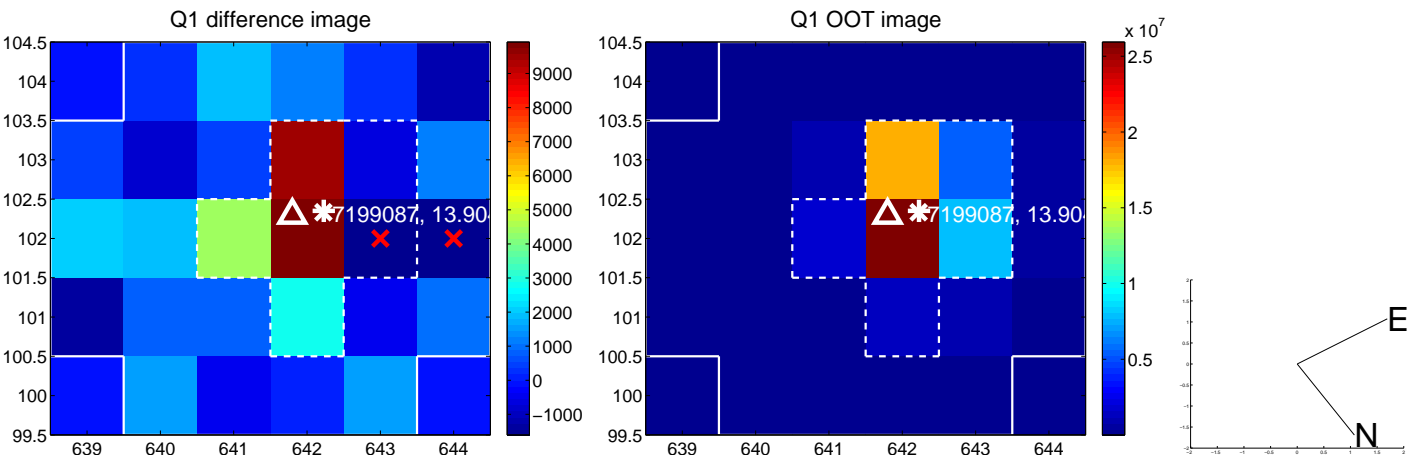
	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.368 \pm 0.555$	2.46	$0.046 \pm 0.783$	$-1.367 \pm 0.561$
PRF-fit source offset from KIC position	$1.350 \pm 0.616$	2.19	$0.075 \pm 0.850$	$-1.348 \pm 0.628$
photometric centroid source offset	$0.94 \pm 0.44$	2.15	$-0.93 \pm 0.44$	$-0.13 \pm 0.42$



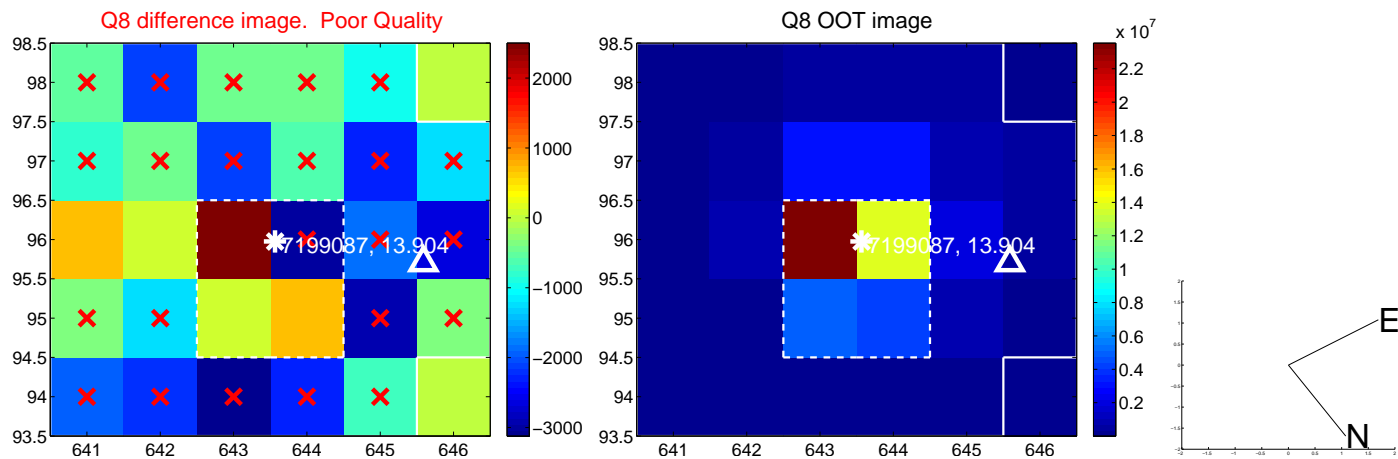
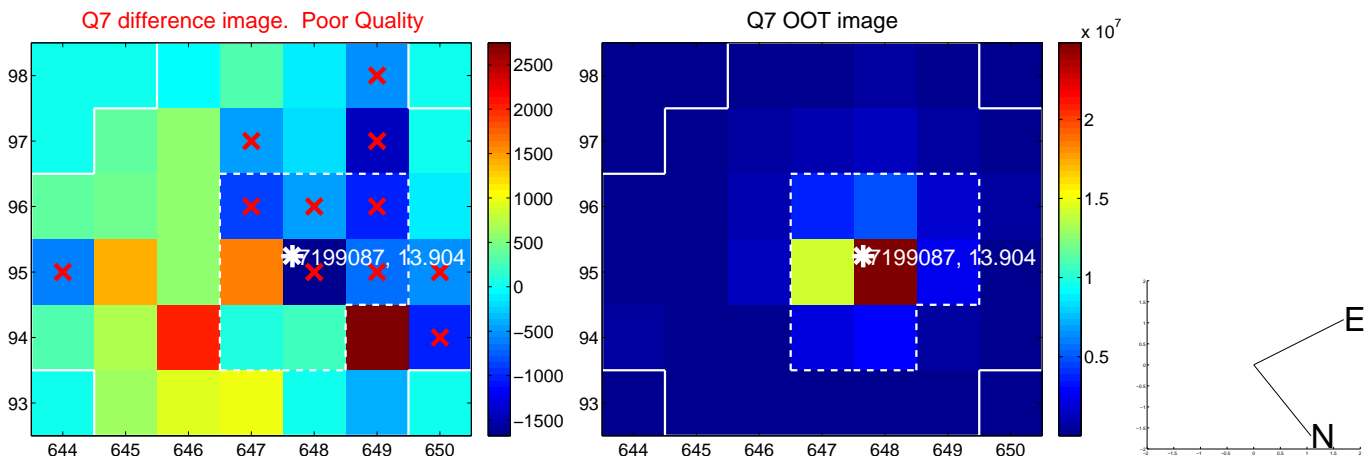
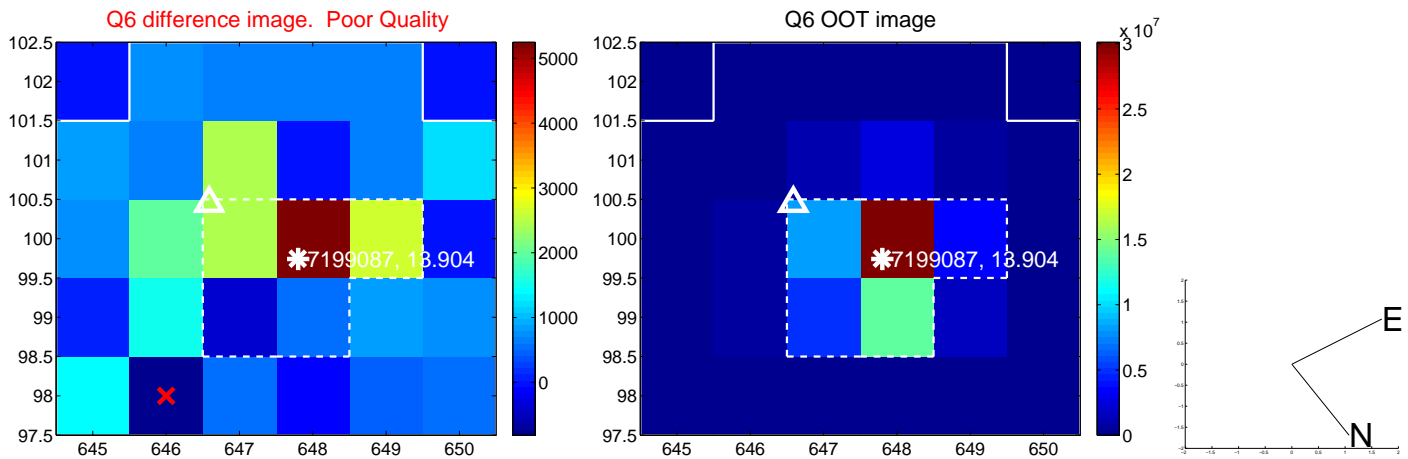
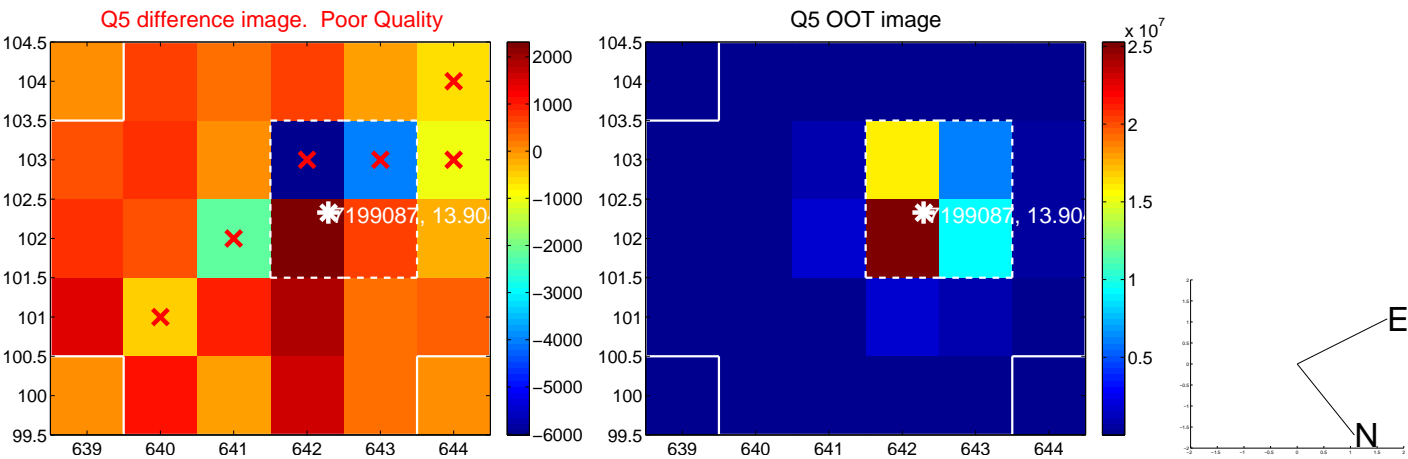
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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



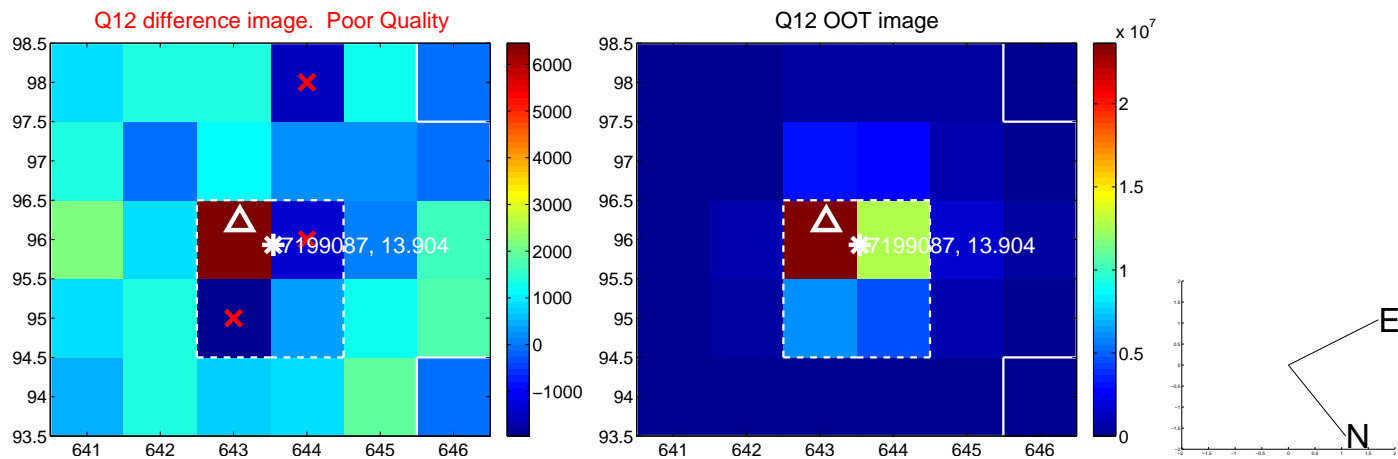
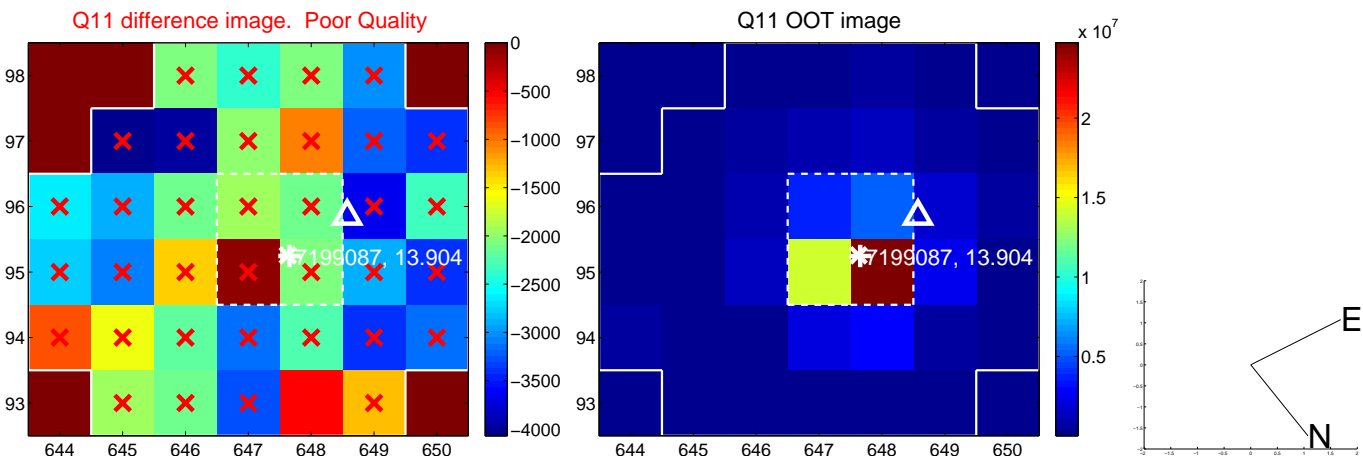
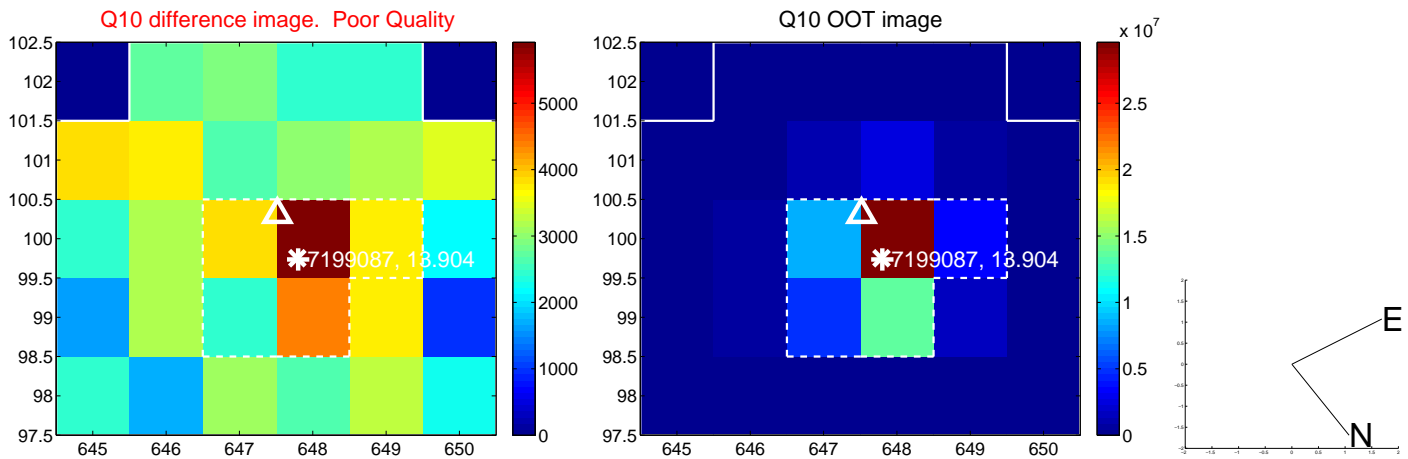
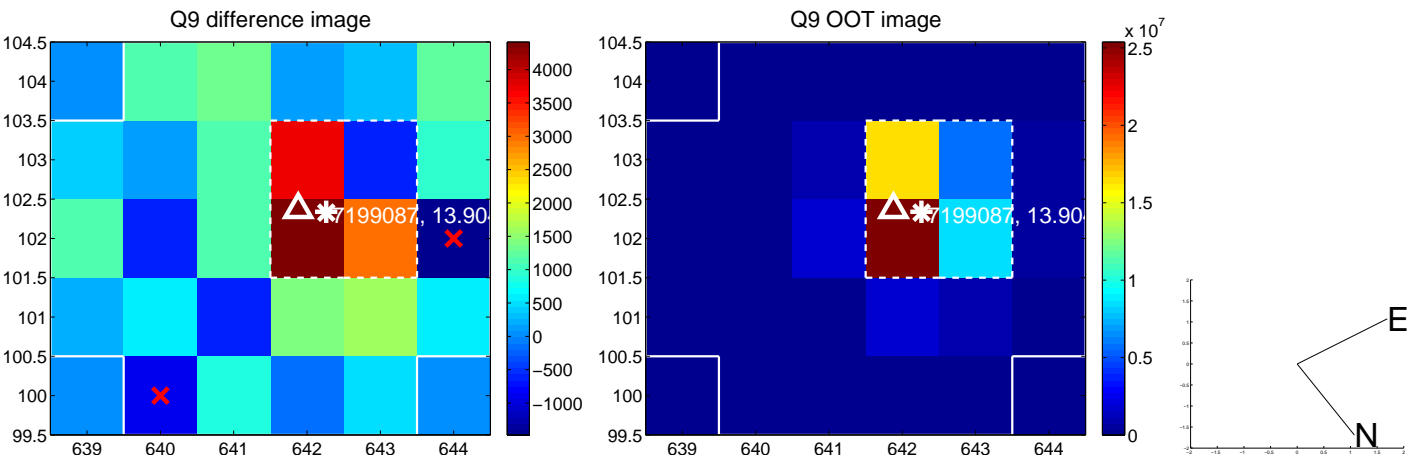
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



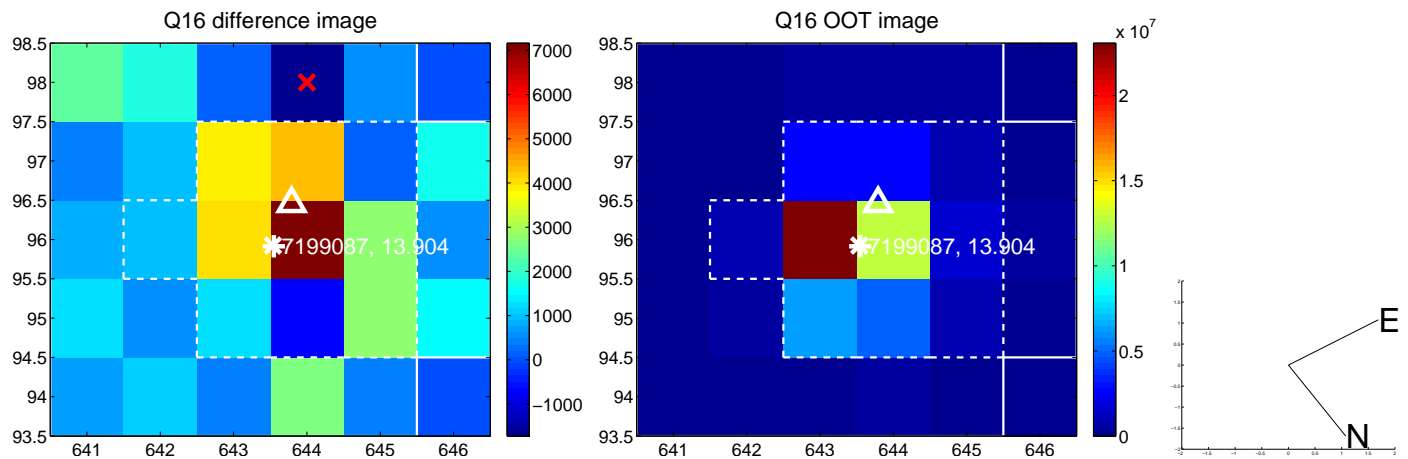
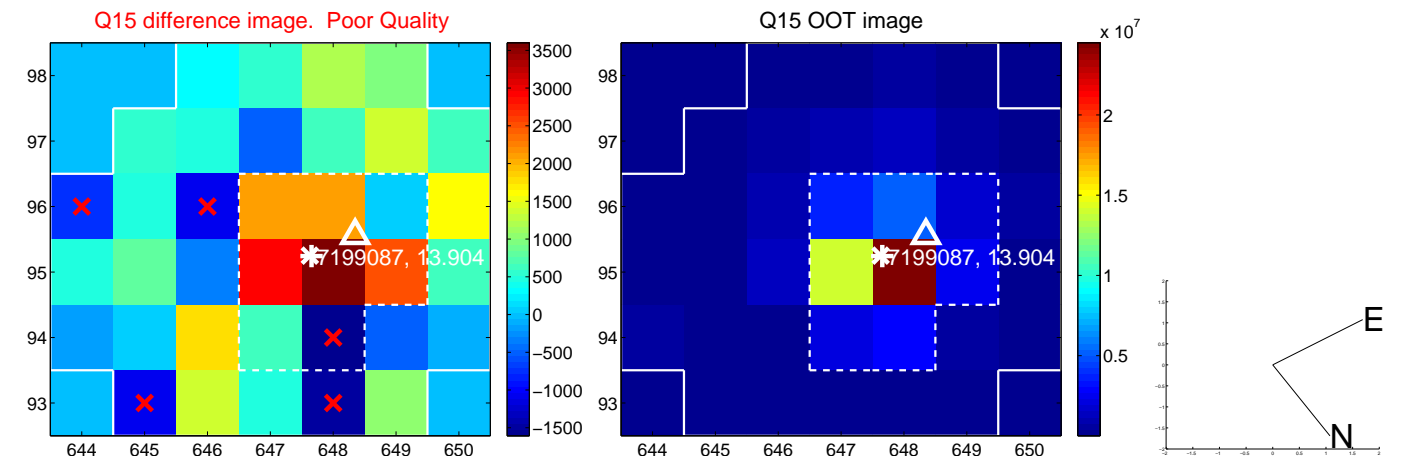
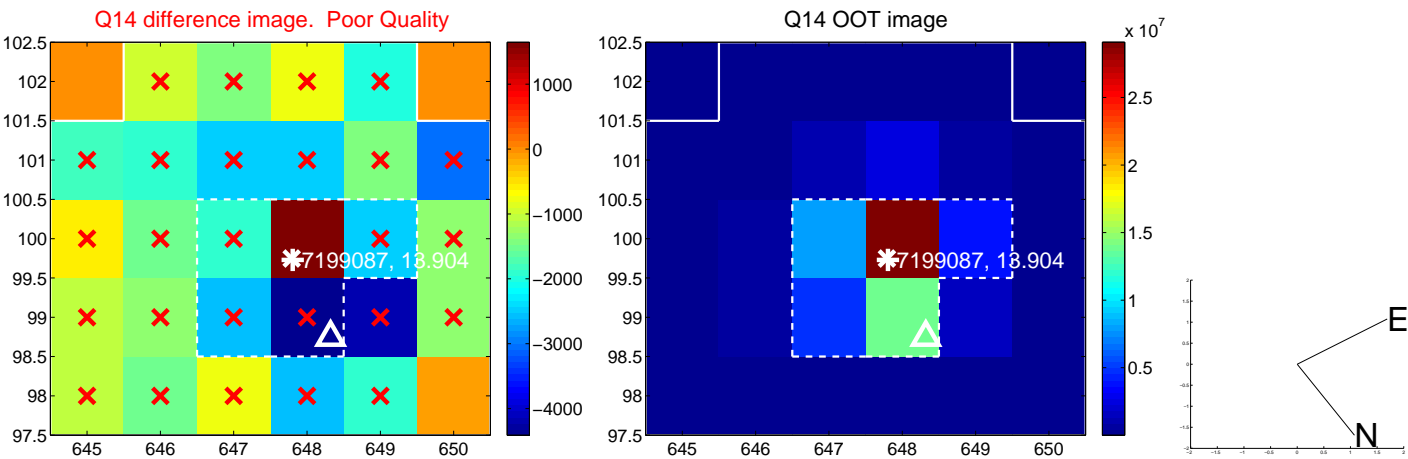
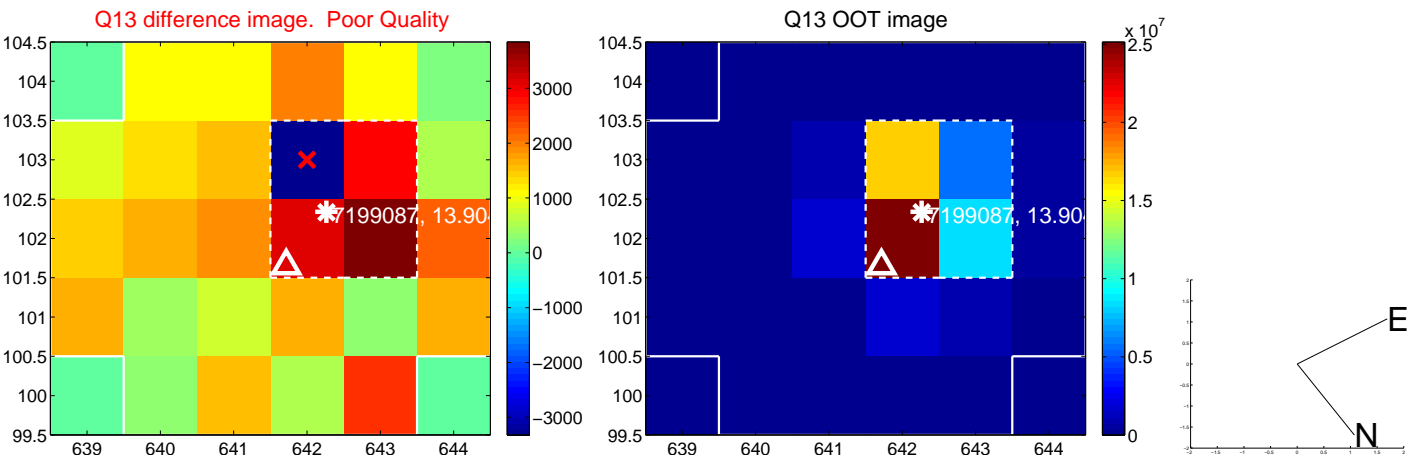
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



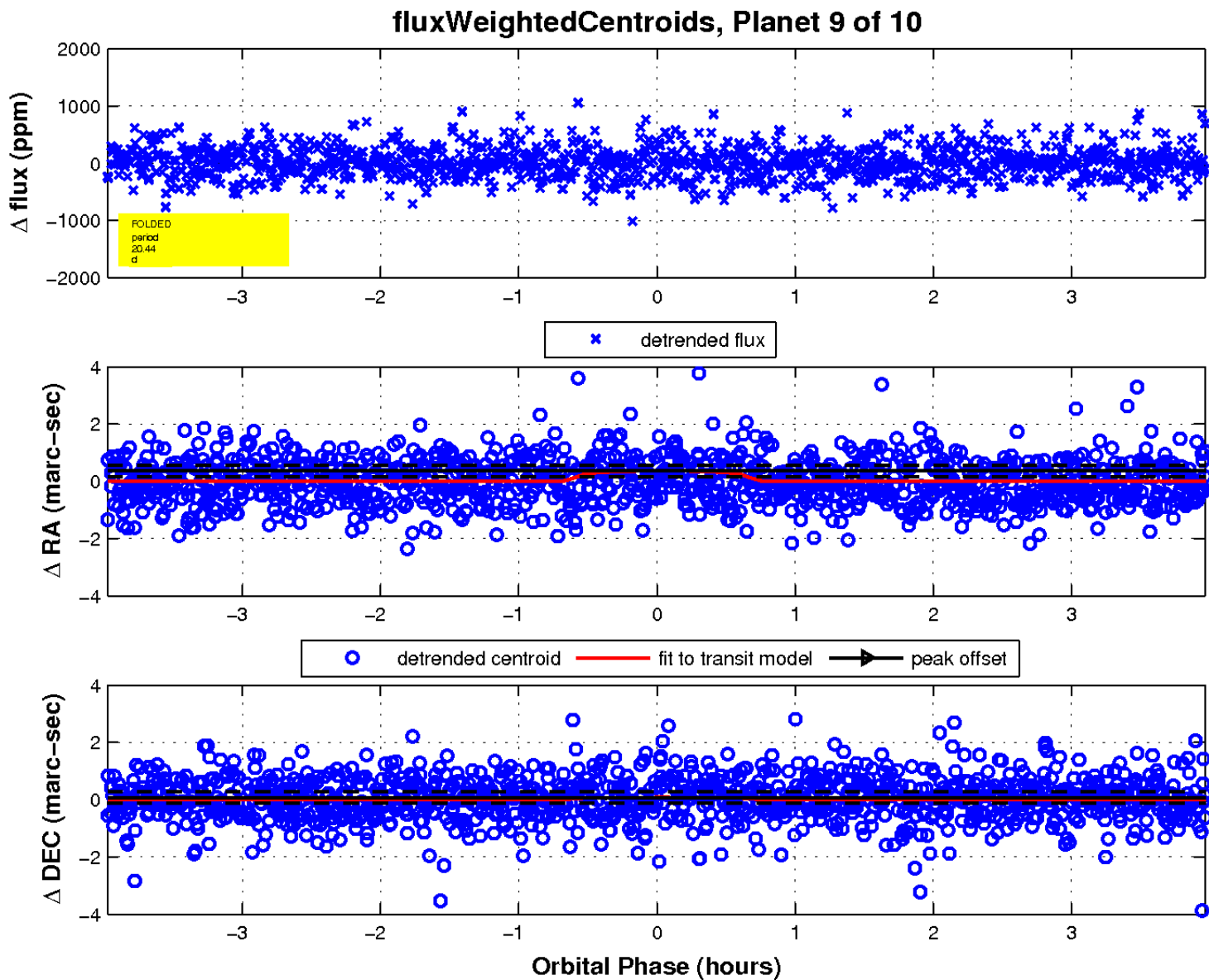
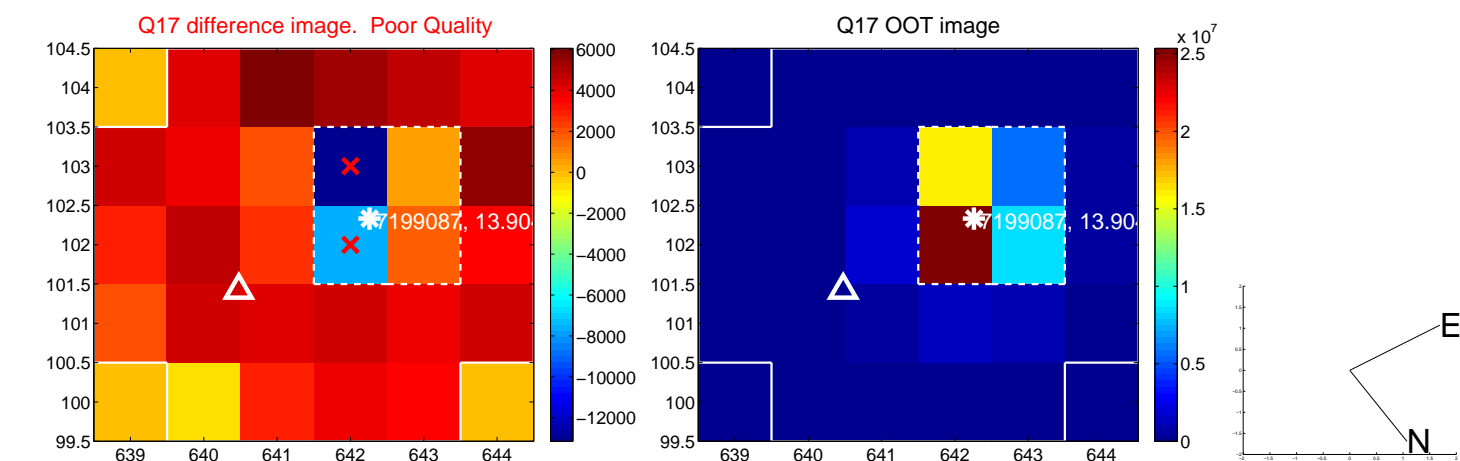
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

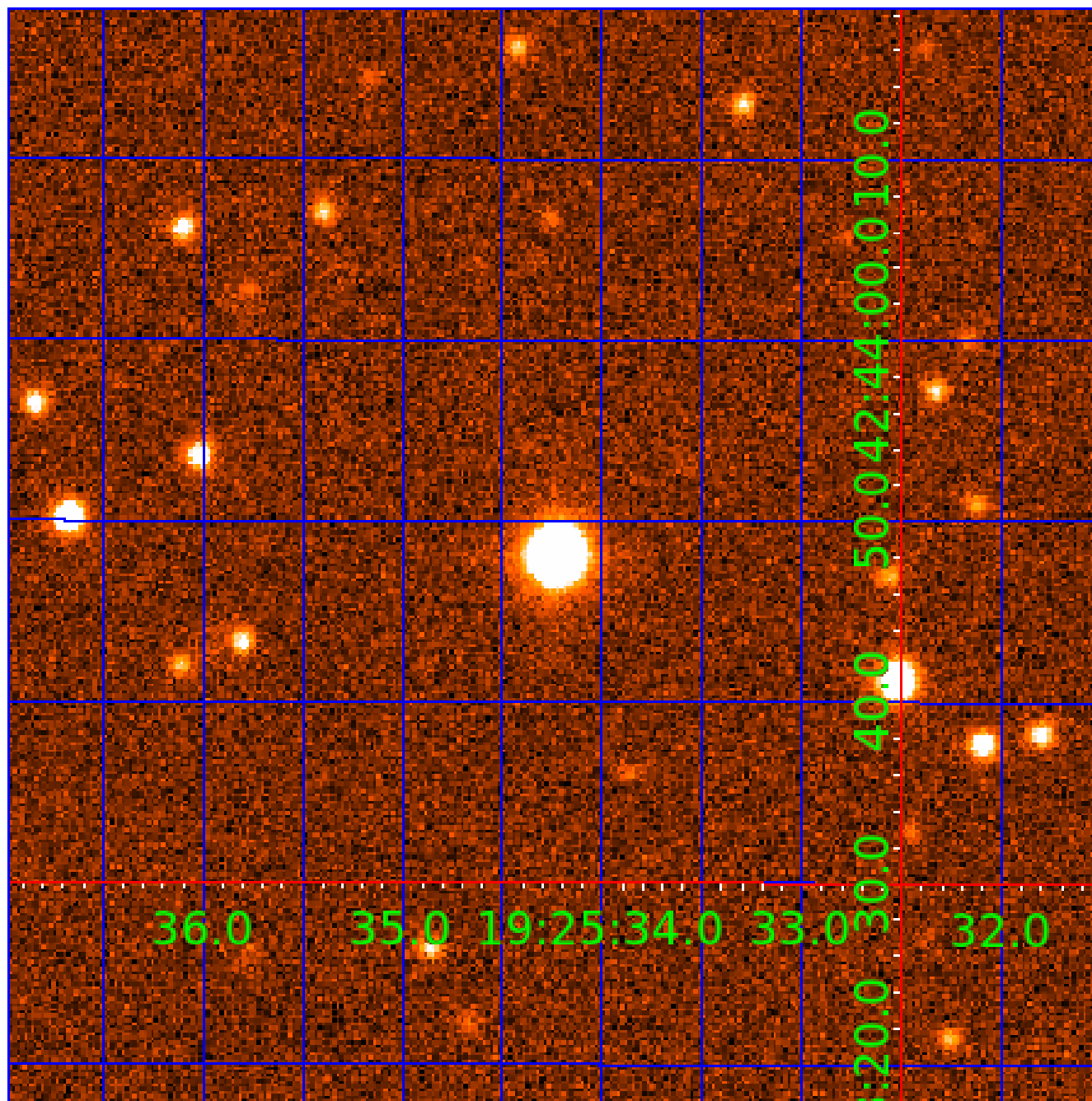


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



## KIC 007199087

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007199087-01	OBS	No	0.566789	131.670402	8.5	3.882	14.8	2.7	1.95	5161	0.56	15121.24
007199087-02	OBS	No	30.372888	155.472228	559.9	2.126	11.0	13.0	1.95	5161	9.51	74.85
007199087-03	OBS	No	22.645018	135.806898	358.7	5.851	12.1	11.4	1.95	5161	7.65	110.71
007199087-04	OBS	No	30.066788	151.392002	551.6	1.456	11.8	13.4	1.95	5161	4.56	75.86
007199087-05	OBS	No	69.496219	195.078789	535.3	3.211	10.0	10.7	1.95	5161	5.21	24.82
007199087-06	OBS	No	17.433948	136.980650	435.8	0.982	10.6	9.8	1.95	5161	4.96	156.90
007199087-07	OBS	No	12.928268	142.702231	321.2	1.694	9.9	10.2	1.95	5161	3.77	233.76
007199087-08	OBS	No	28.669881	148.165240	606.7	0.987	9.2	8.4	1.95	5161	5.76	80.83
007199087-09	OBS	No	20.441918	143.787734	418.3	1.326	10.7	9.8	1.95	5161	4.12	126.90
007199087-10	OBS	No	11.882767	139.895565	291.3	4.500	8.6	-1.0	1.95	5161	3.26	261.57

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007199087-01	OBS	FP	0.00	1	0	1	1	SWEET_NTL—LPP_DV—LPP_ALT—HALO_GHOST—EPHEM_MATCH
007199087-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT
007199087-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
007199087-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
007199087-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
007199087-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
007199087-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
007199087-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV
007199087-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT
007199087-10	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT—CENT_NOFITS

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

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

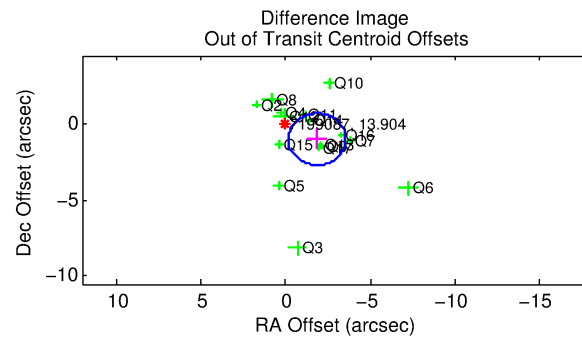
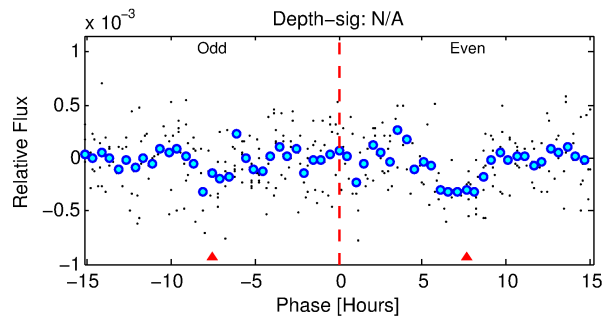
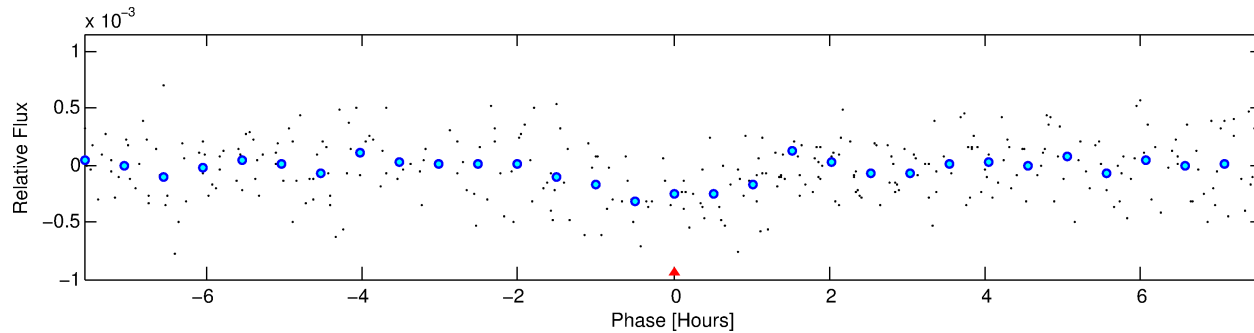
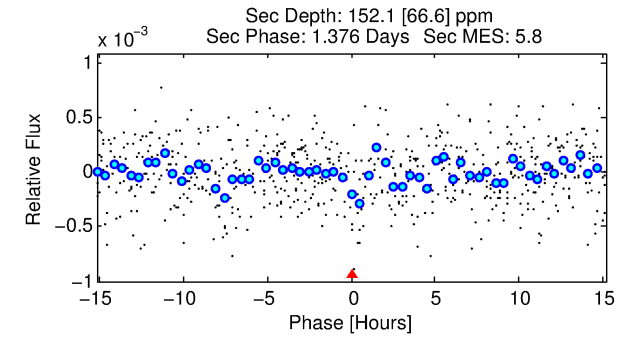
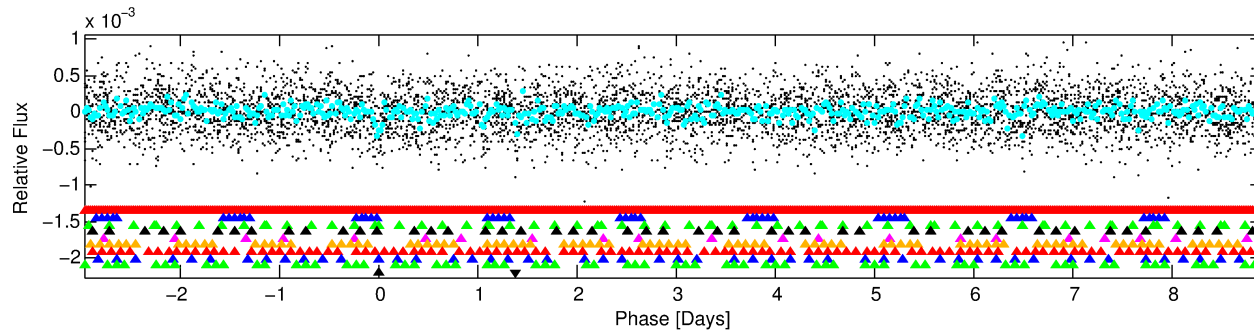
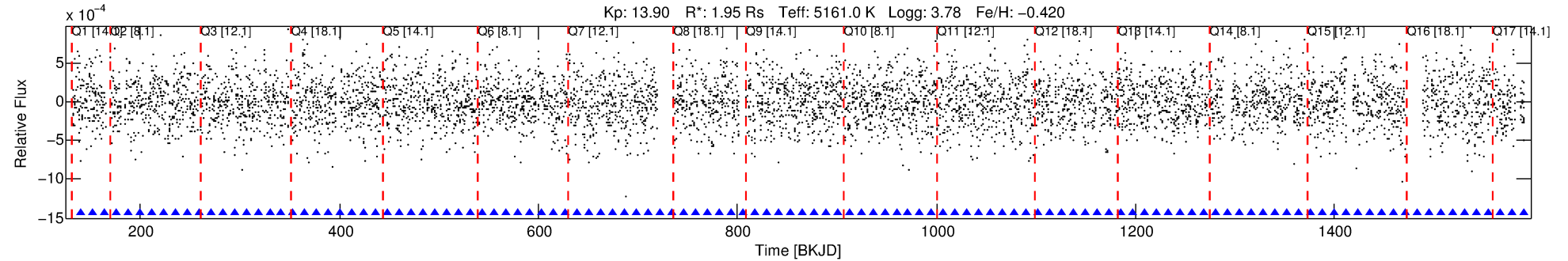
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 007199087-10

No Significant Match Found

# DV One-Page Summary

KIC: 7199087 Candidate: 10 of 10 Period: 11.883 d



## TPS TCE Results:

Period = 11.88277 d  
Epoch = 139.8956 BKJD

DV fit results are unavailable

## DV Diagnostic Results:

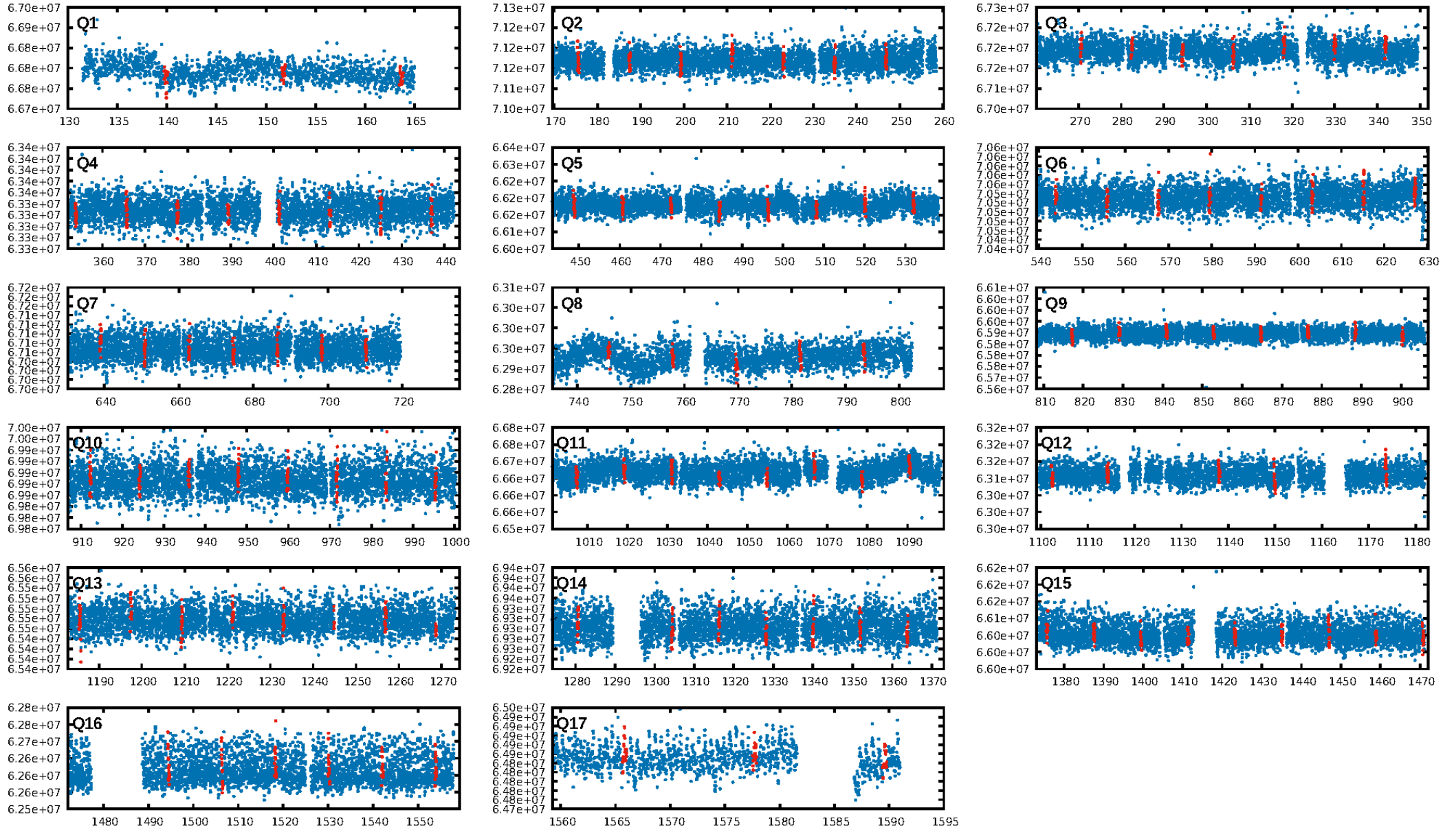
ShortPeriod-sig: 100.0% [45.70σ]  
LongPeriod-sig: 100.0% [5.22σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [27/27]  
GhostDiagnostic-chr: 3.842  
Centroid-sig: 4.4%  
Centroid-so: 0.339 arcsec [1.18σ]  
OotOffset-rm: 2.099 arcsec [3.71σ]  
KicOffset-rm: 2.088 arcsec [3.19σ]  
OotOffset-st: 4/4/4/4 [16]  
KicOffset-st: 4/4/4/4 [16]  
DiffImageQuality-fgm: 0.19 [3/16]  
DiffImageOverlap-fno: 0.00 [0/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 15:41:56 Z

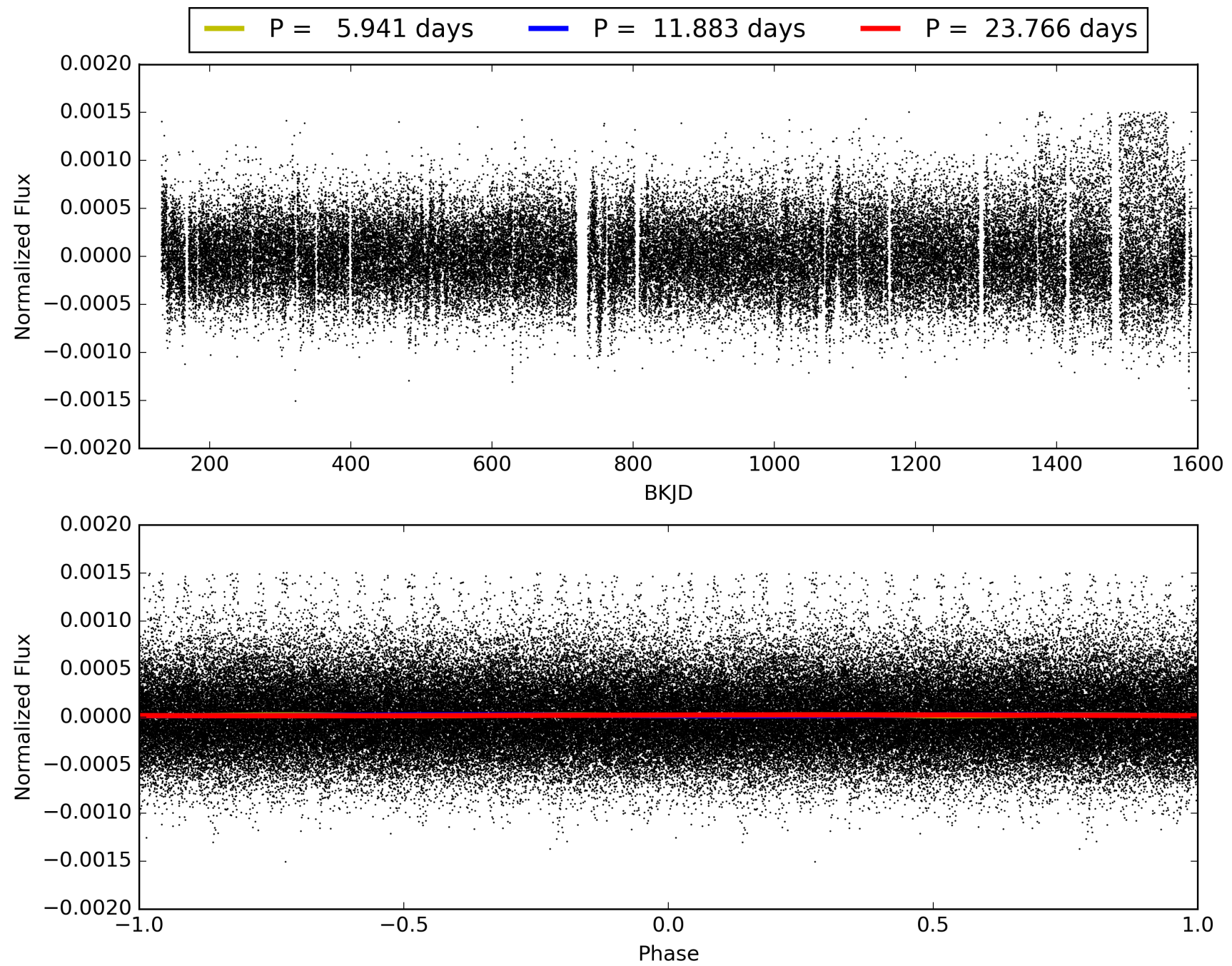
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center



# TCE 007199087-10, PDC Light Curves

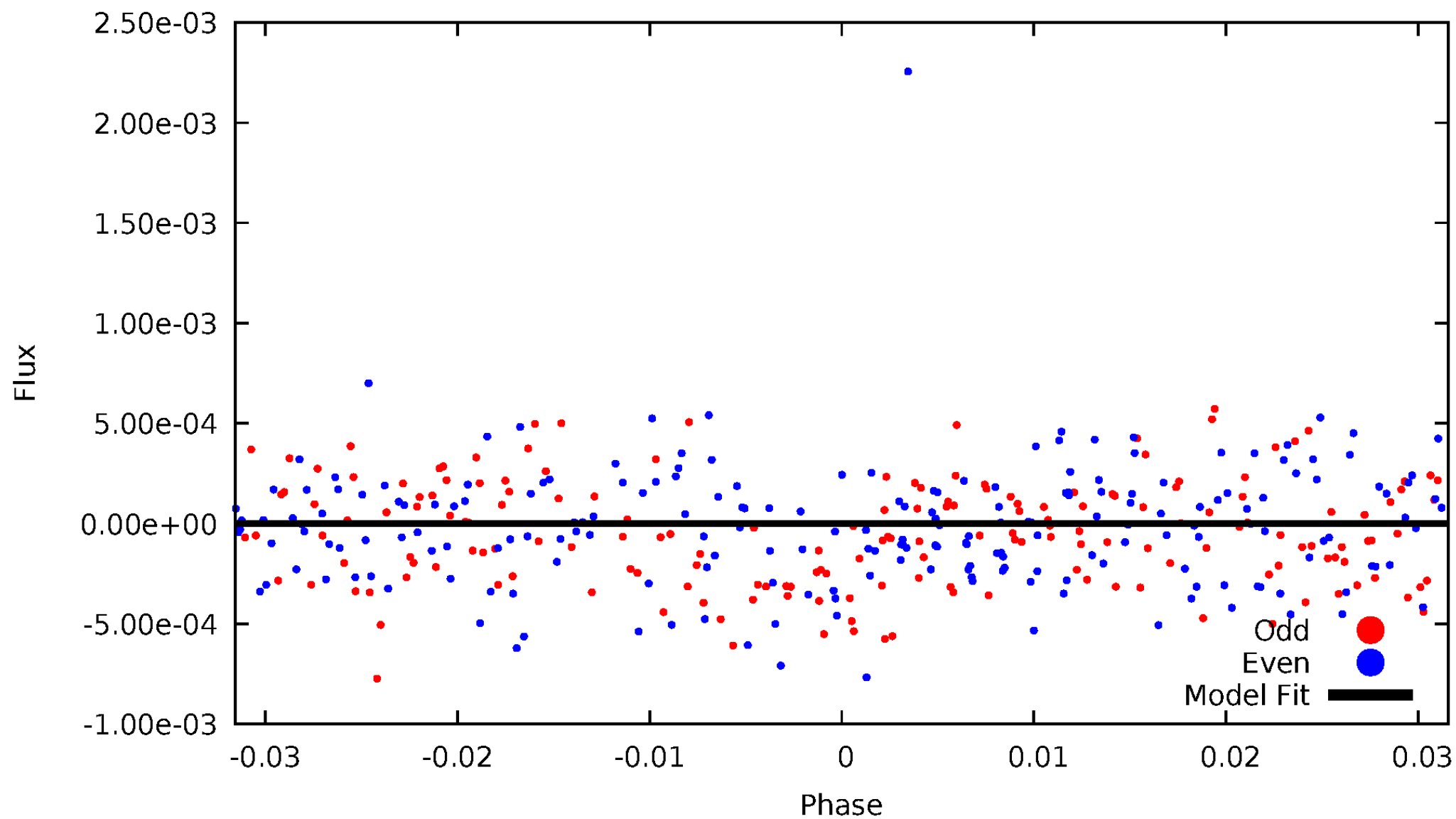


TCE 007199087-10



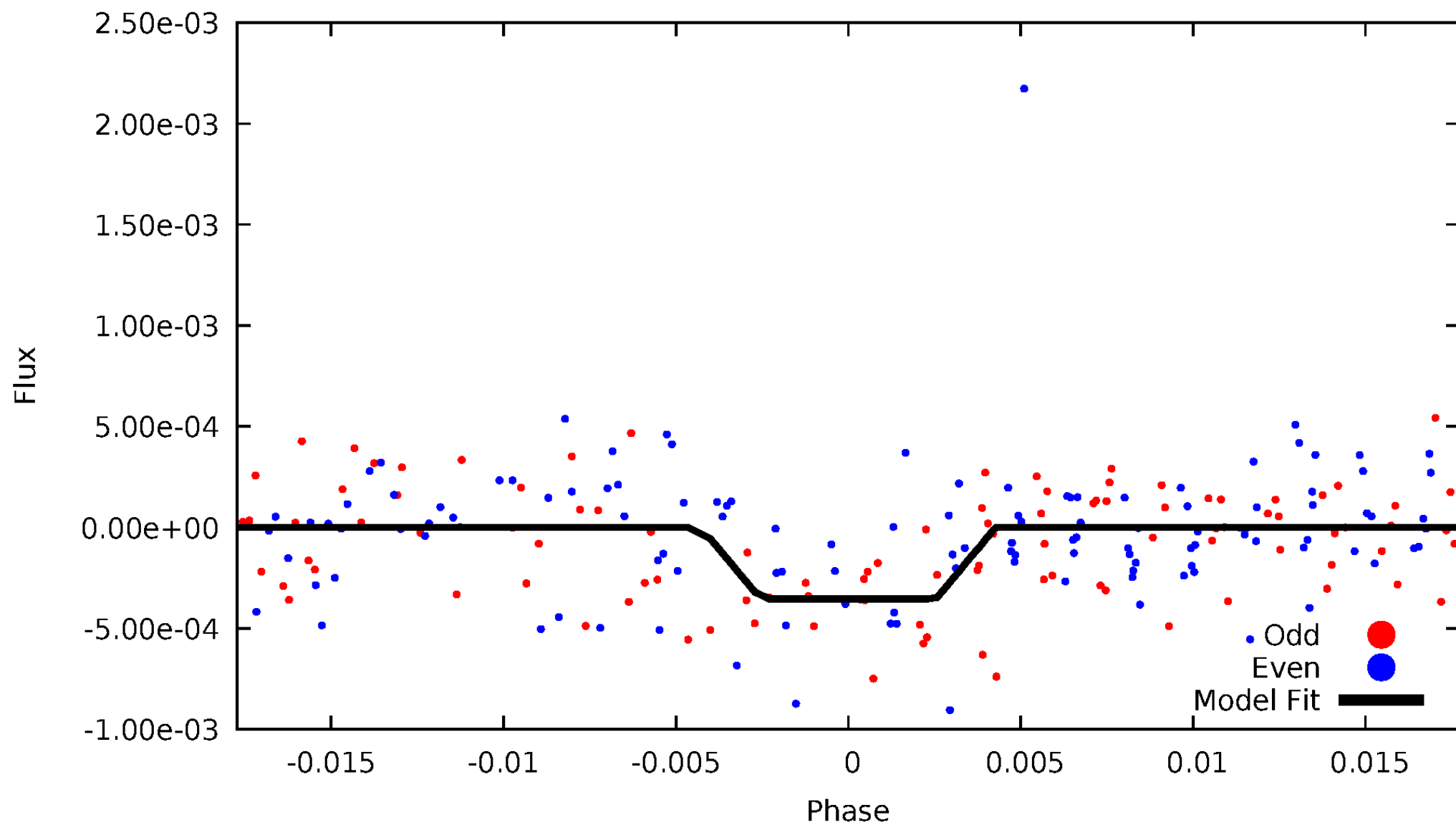
# DV Odd/Even

TCE 007199087-10



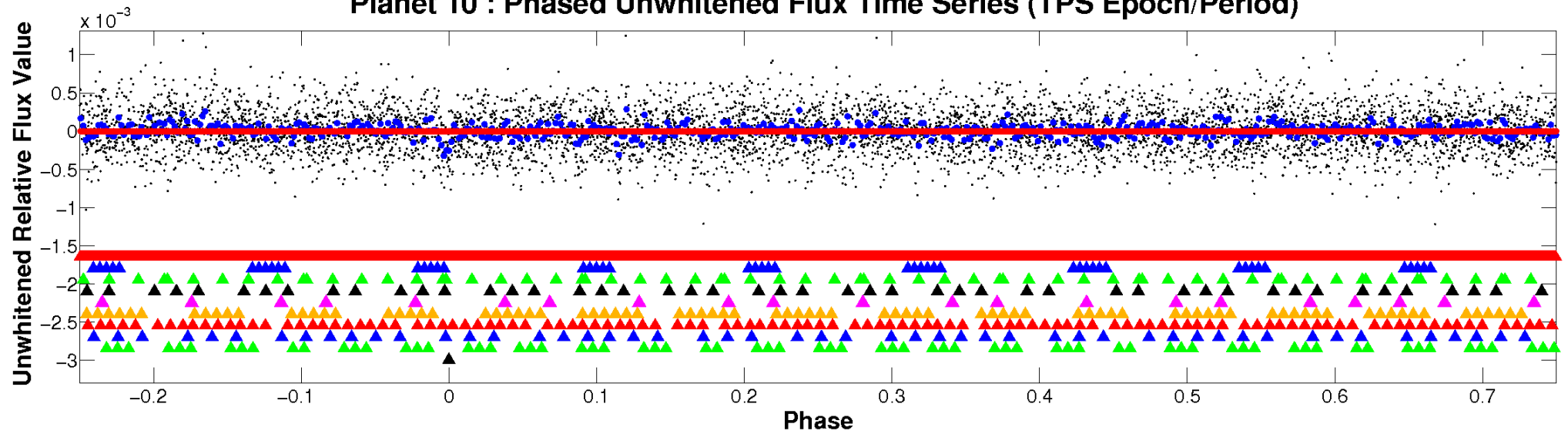
# ALT Odd/Even

TCE 007199087-10

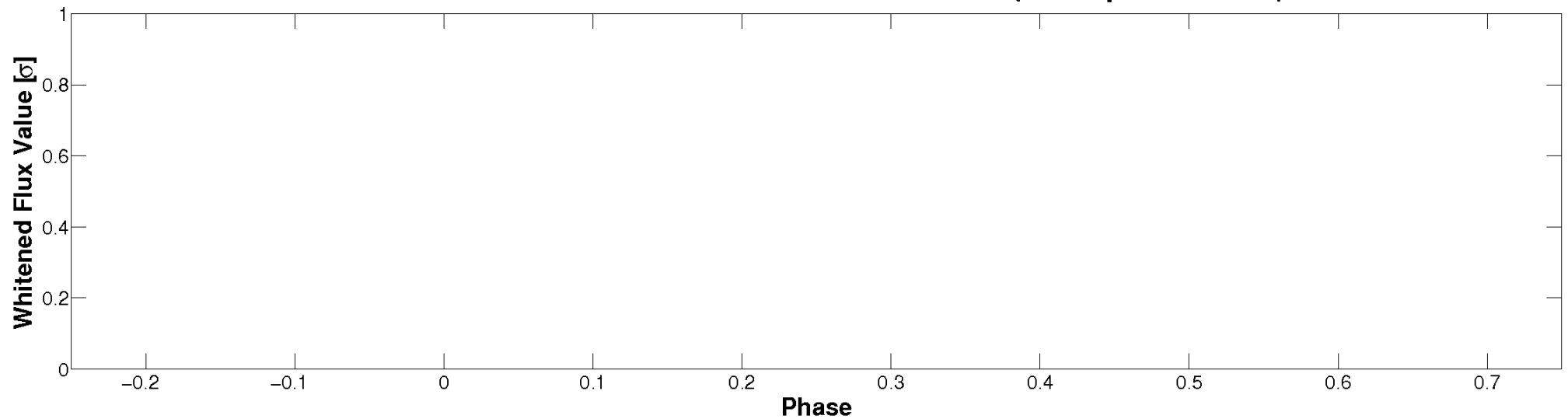


# Non-Whitened Vs. Whitened Light Curve

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

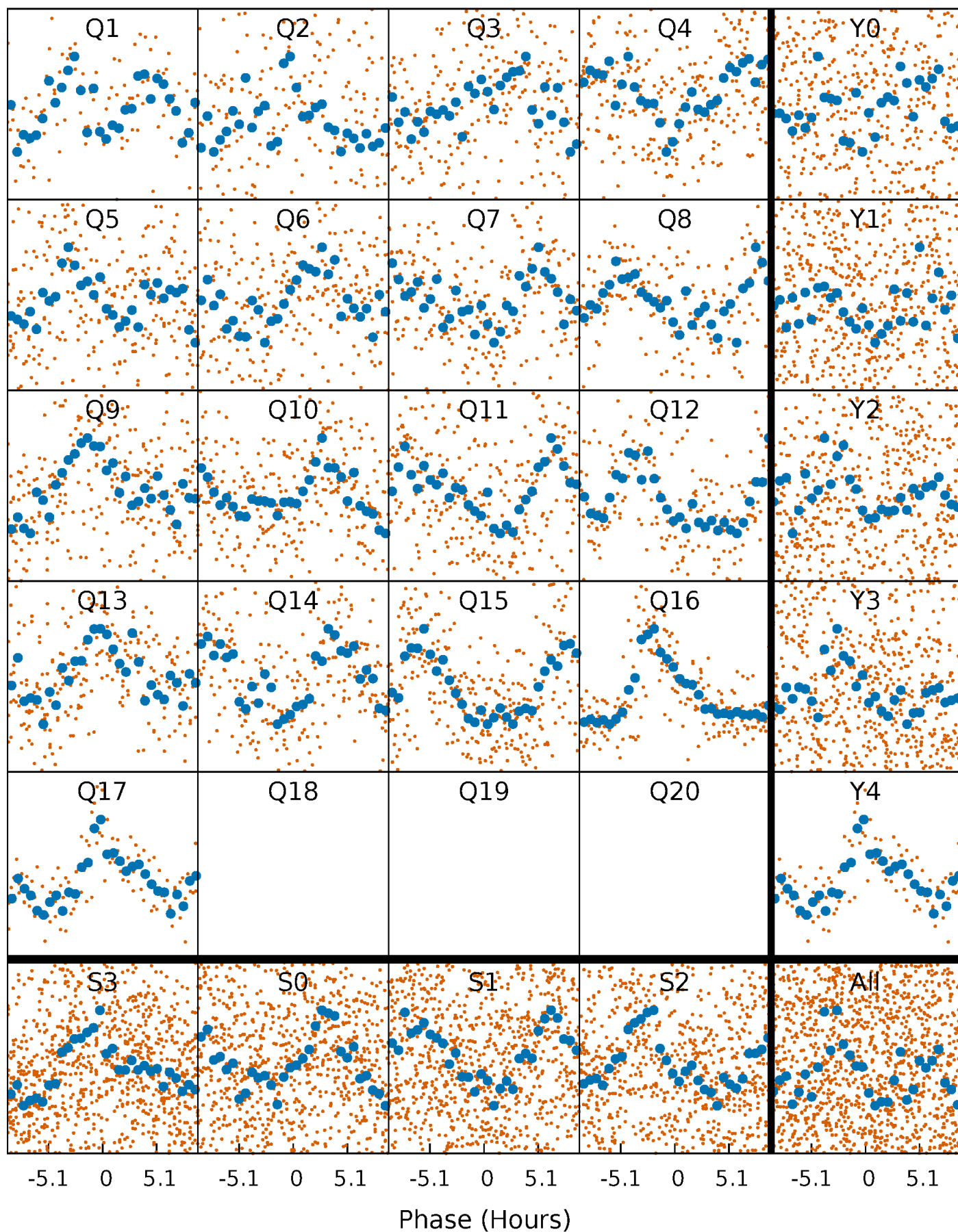


Planet 10 : Phased Whitened Flux Time Series (TPS Epoch/Period)



# PDC Quarter-Phased Transit Curves

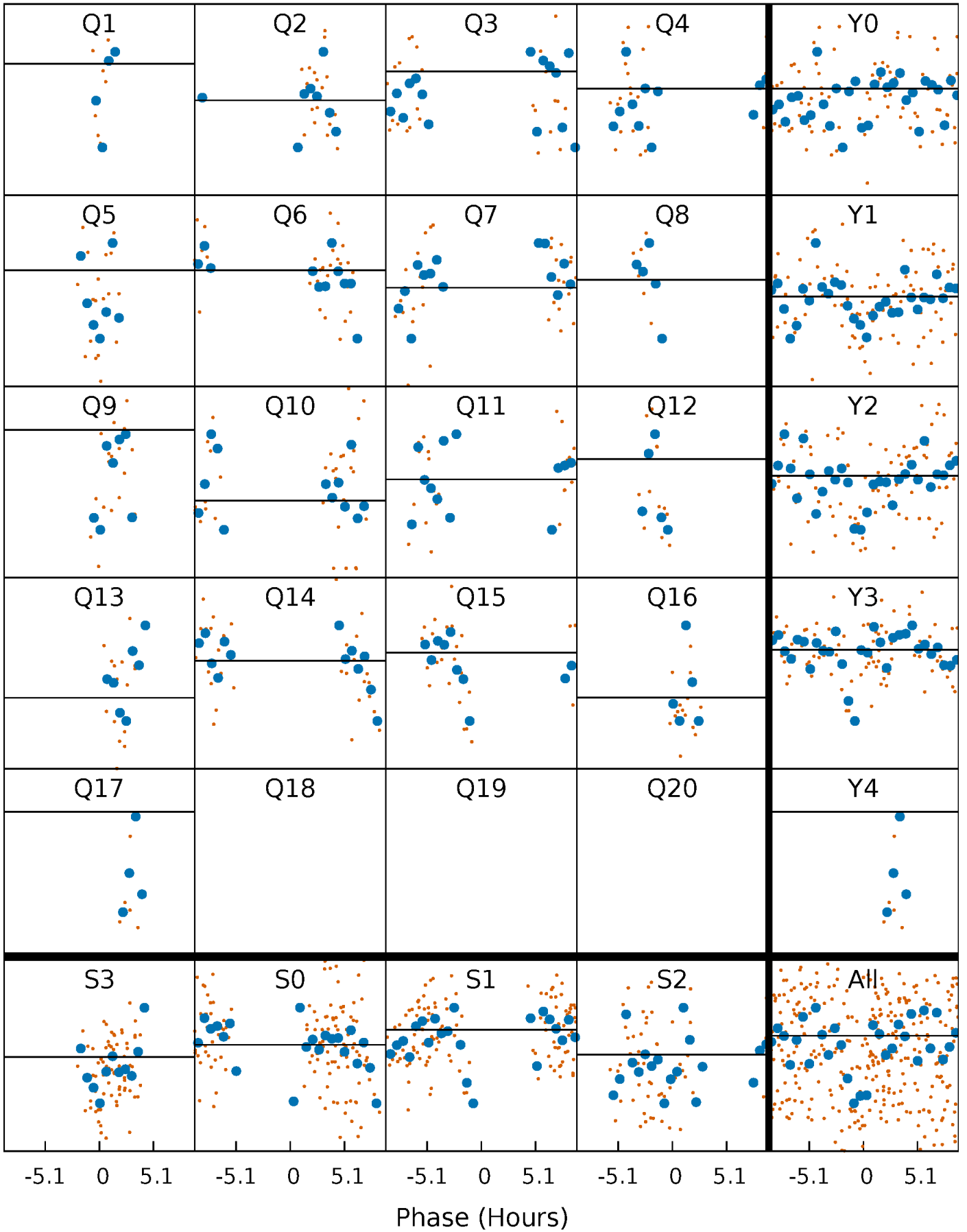
TCE 007199087-10 P= 11.882767 Days  $T_0=139.895565$  (BKJD)





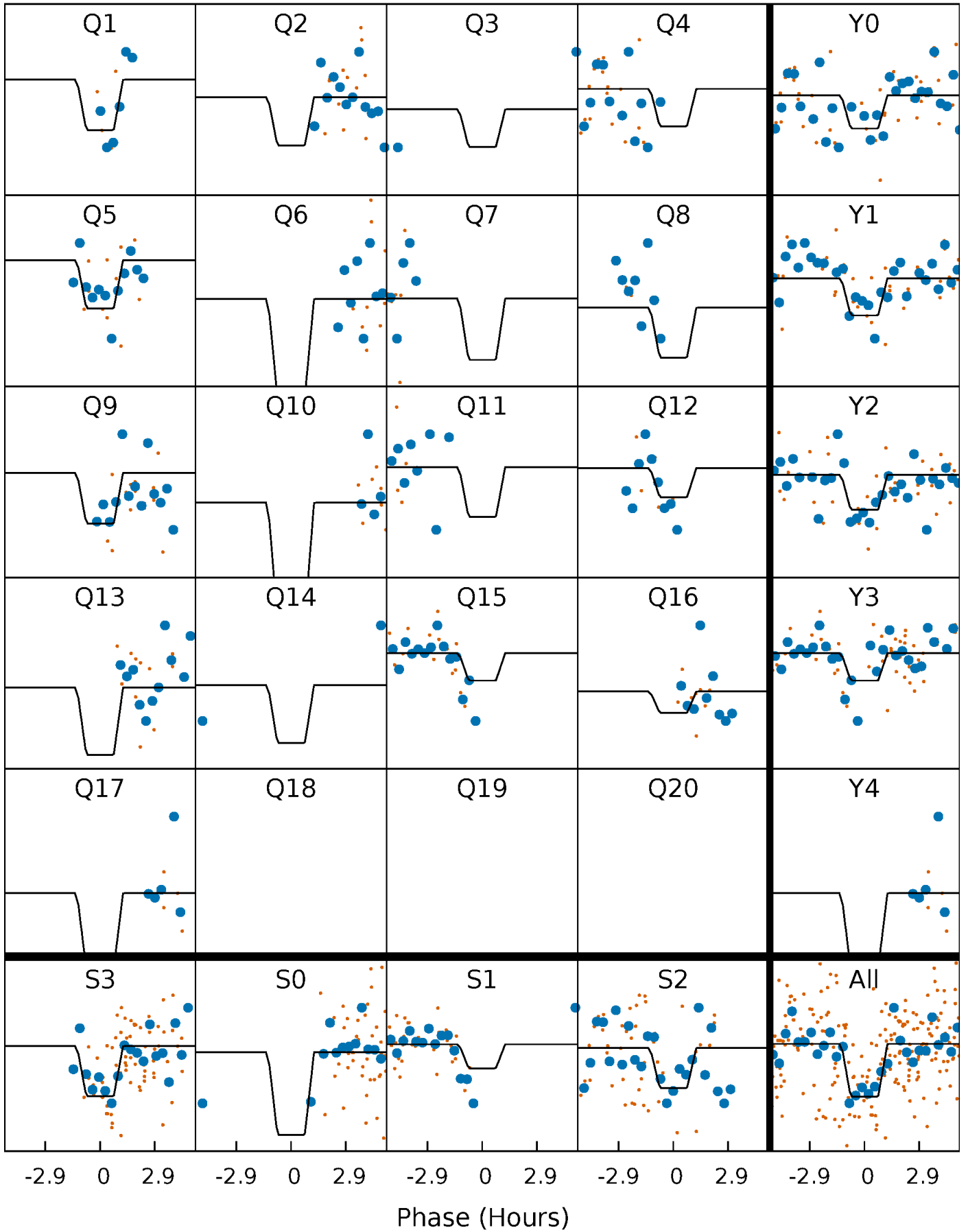
# DV Quarter-Phased Transit Curves

TCE 007199087-10 P= 11.882767 Days  $T_0=139.895565$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 007199087-10 P= 11.882767 Days  $T_0=139.875952$  (BKJD)

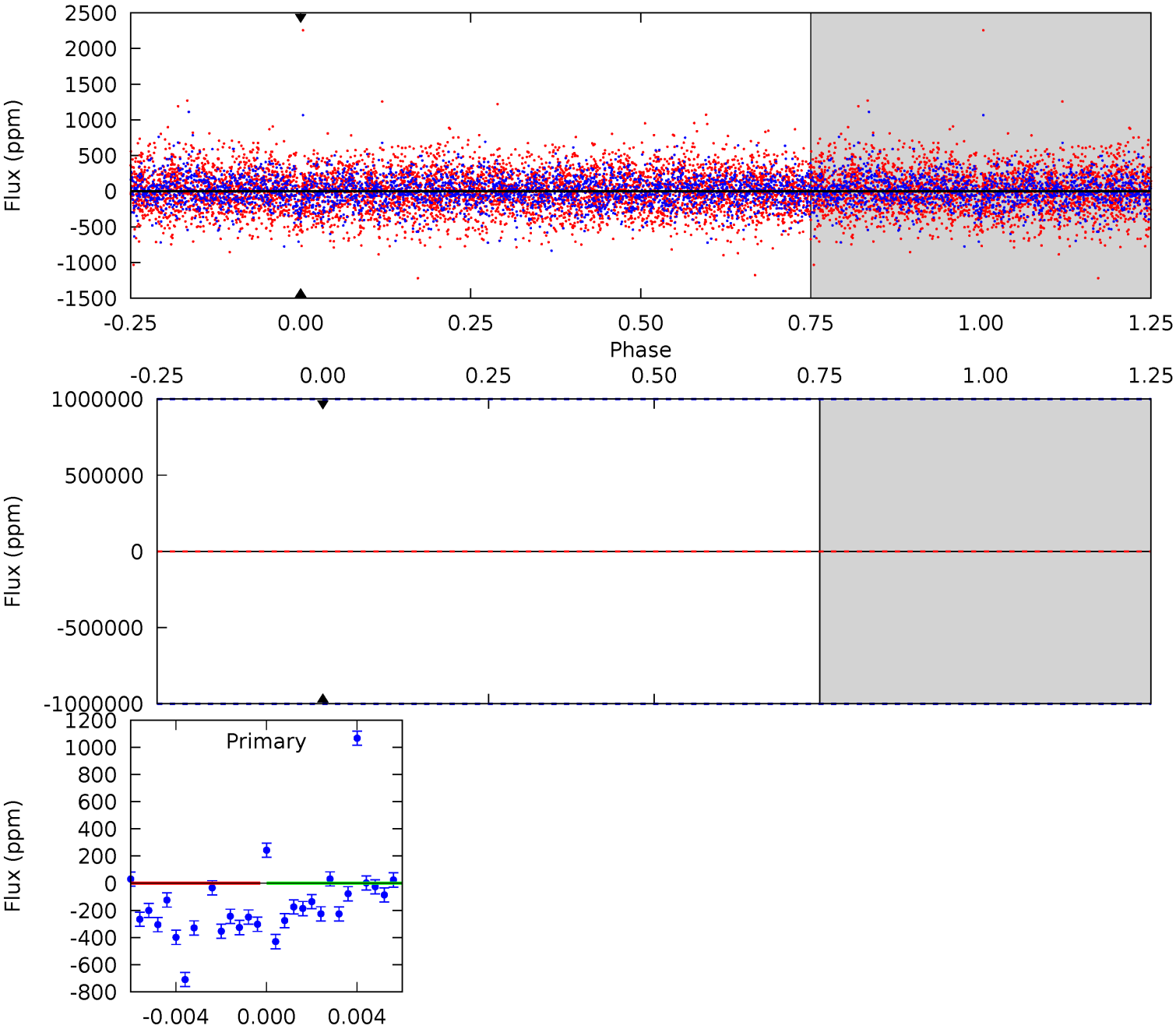




# DV Model-Shift Uniqueness Test

007199087-10, P = 11.882767 Days, E = 128.012798 Days

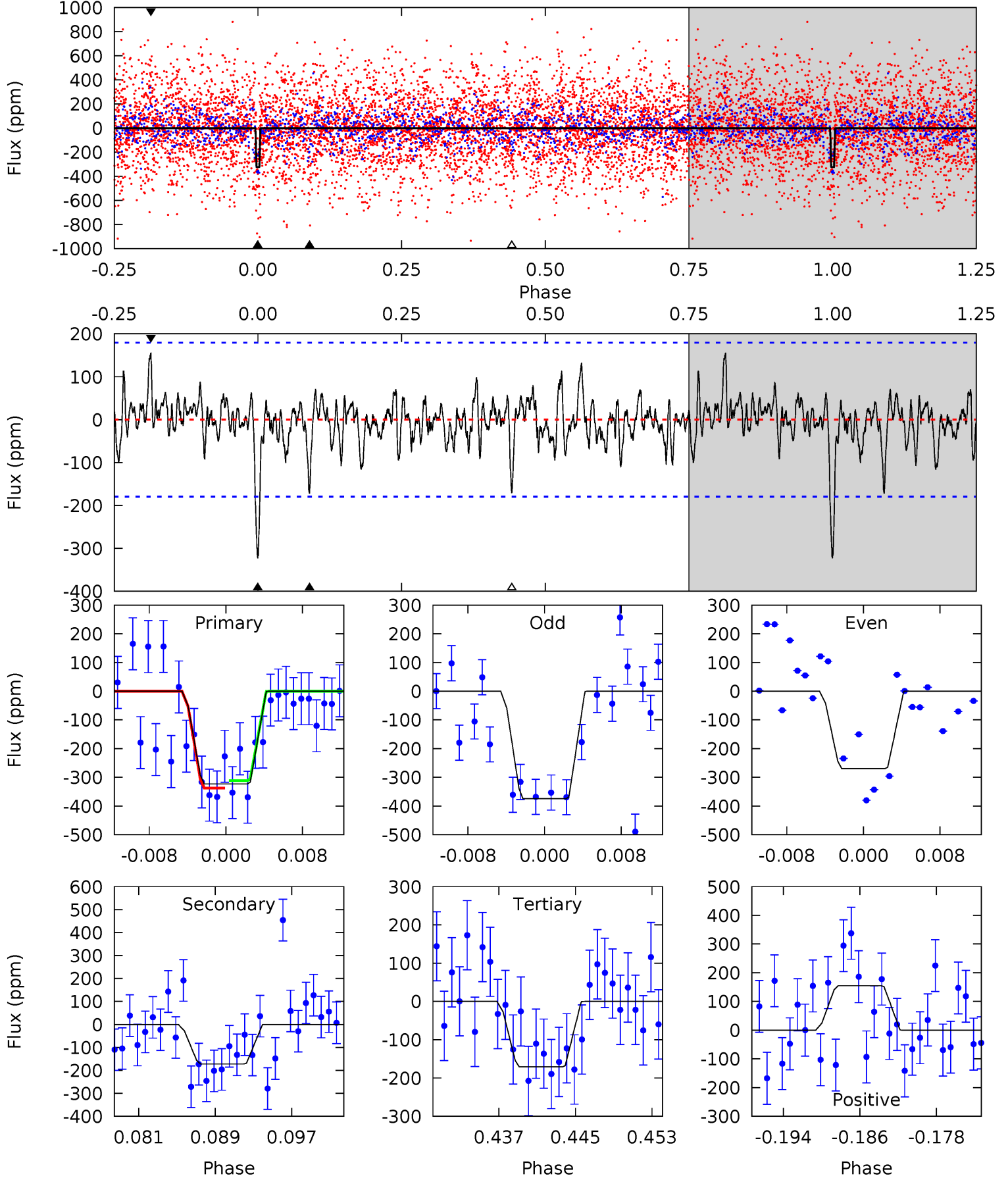
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



# Alt Model-Shift Uniqueness Test

007199087-10, P = 11.882767 Days, E = 127.993185 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.11	4.85	4.82	4.36	5.07	2.65	1.19	4.29	4.75	0.03	0.49	1.48	0.86	0.32	0.35



### Stellar Parameters For KIC 007199087

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5161^{+139}_{-154}$	$3.782^{+0.812}_{-0.348}$	$-0.420^{+0.300}_{-0.300}$	$1.952^{+1.204}_{-1.204}$	$0.842^{+0.178}_{-0.145}$	$0.160^{+3.448}_{-0.111}$
	+3%/-3%	+21%/-9%	+71%/-71%	+62%/-62%	+21%/-17%	+2162%/-70%
Source	PHO1	KIC0	KIC0	DSEP		

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

### Secondary Eclipse Parameters for KIC 007199087-10 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$0 \pm 1000000$	$13.98^{+18.51}_{-9.42}$	$1401^{+236}_{-279}$	$4166^{+12711}_{-18980}$	$36^{+5698}_{-4224}$
Alt.	$-172 \pm 35$	$13.98^{+18.40}_{-10.63}$	$1412^{+225}_{-280}$	$2858^{+1456}_{-603}$	$4.581^{+70.274}_{-3.774}$

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

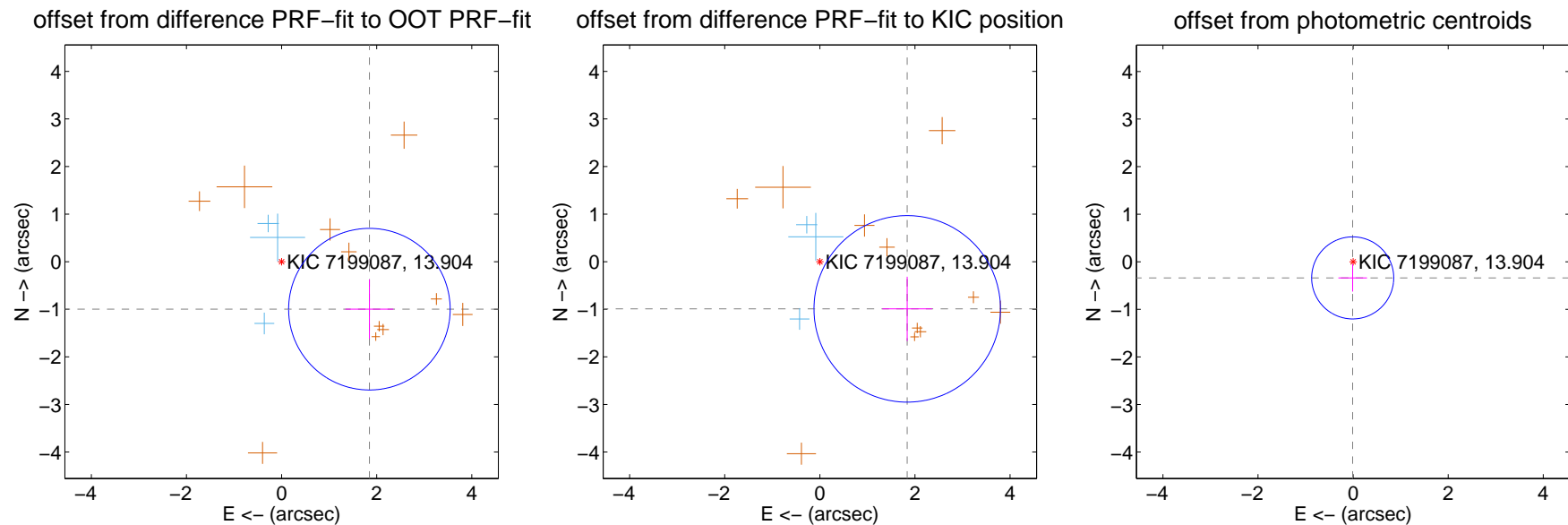
## DV Centroid Data

Supplemental centroid analysis for 007199087-10. Kepler magnitude: 13.90. Transit SNR -1.00

There are 3 quarters with good PRF difference image offsets

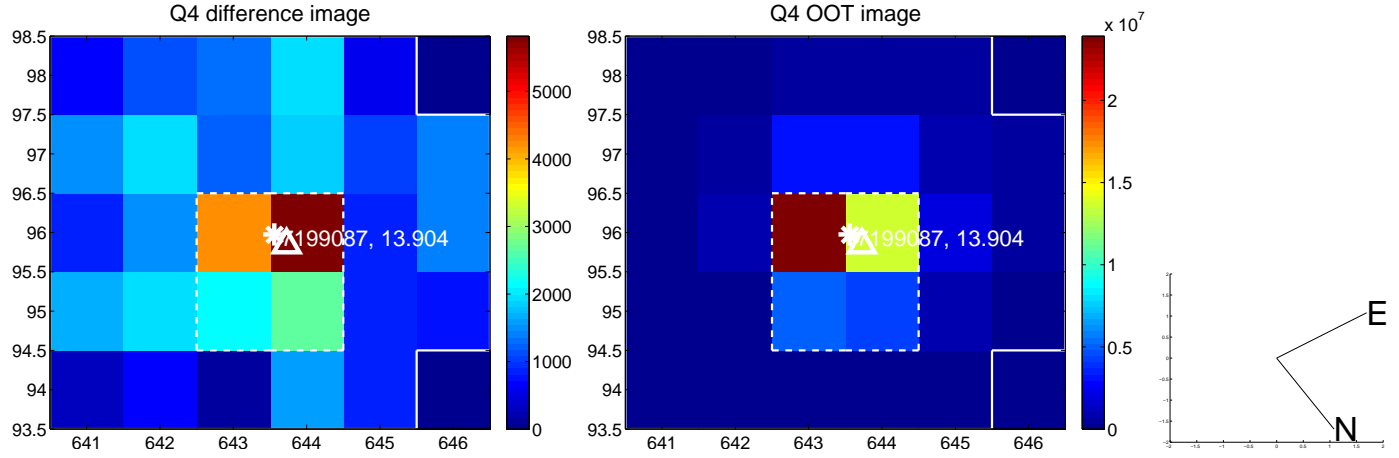
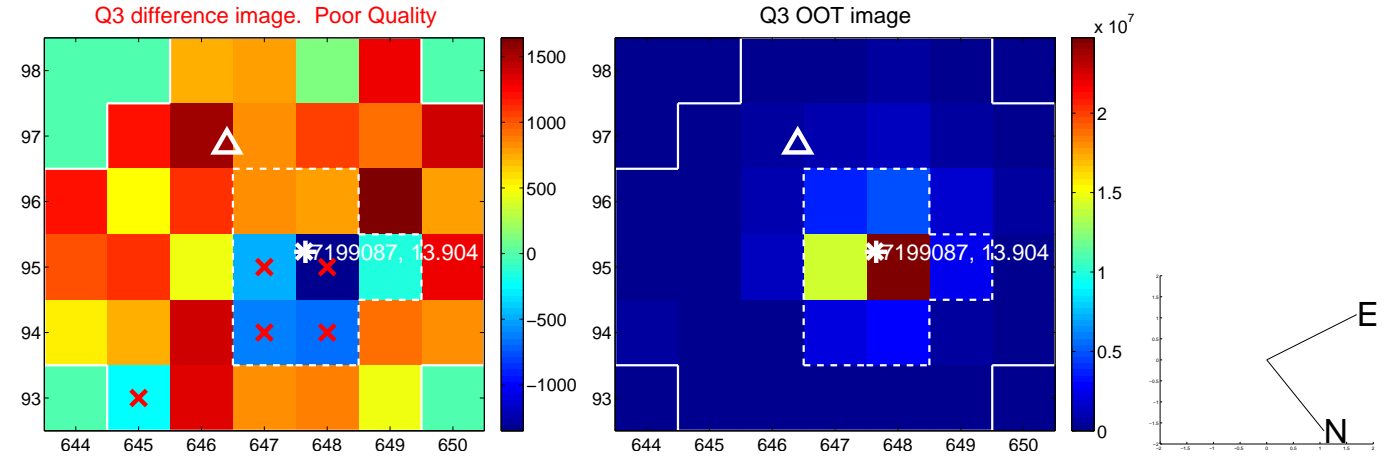
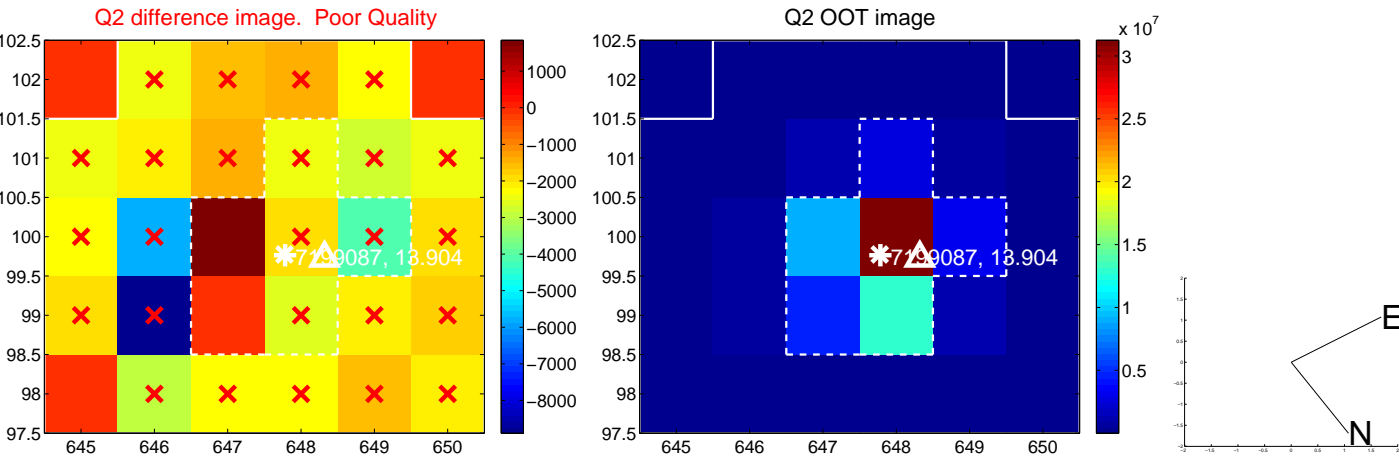
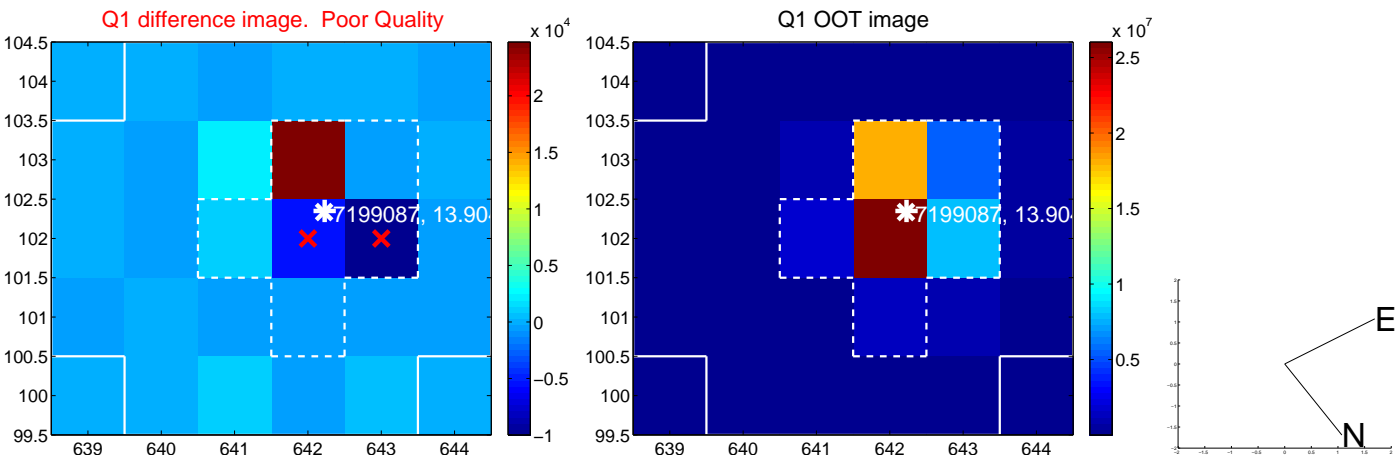
The direct PRF centroid is offset from the target star catalog position by about 0.01 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$2.099 \pm 0.566$	3.71	$-1.847 \pm 0.504$	$-0.998 \pm 0.624$
PRF-fit source offset from KIC position	$2.088 \pm 0.653$	3.19	$-1.837 \pm 0.523$	$-0.991 \pm 0.675$
photometric centroid source offset	$0.34 \pm 0.29$	1.18	$0.01 \pm 0.30$	$-0.34 \pm 0.29$

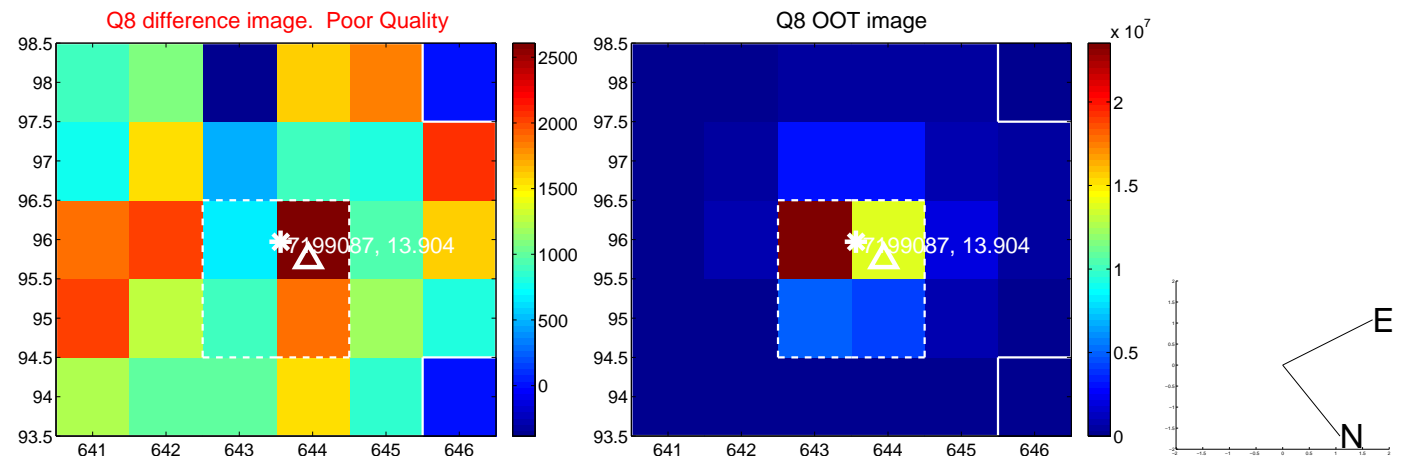
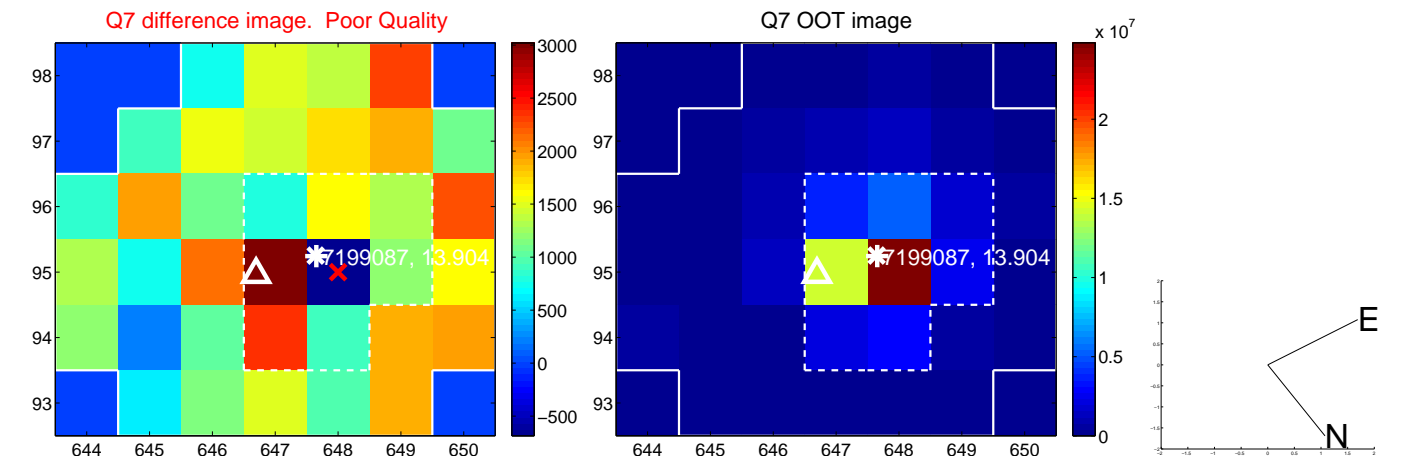
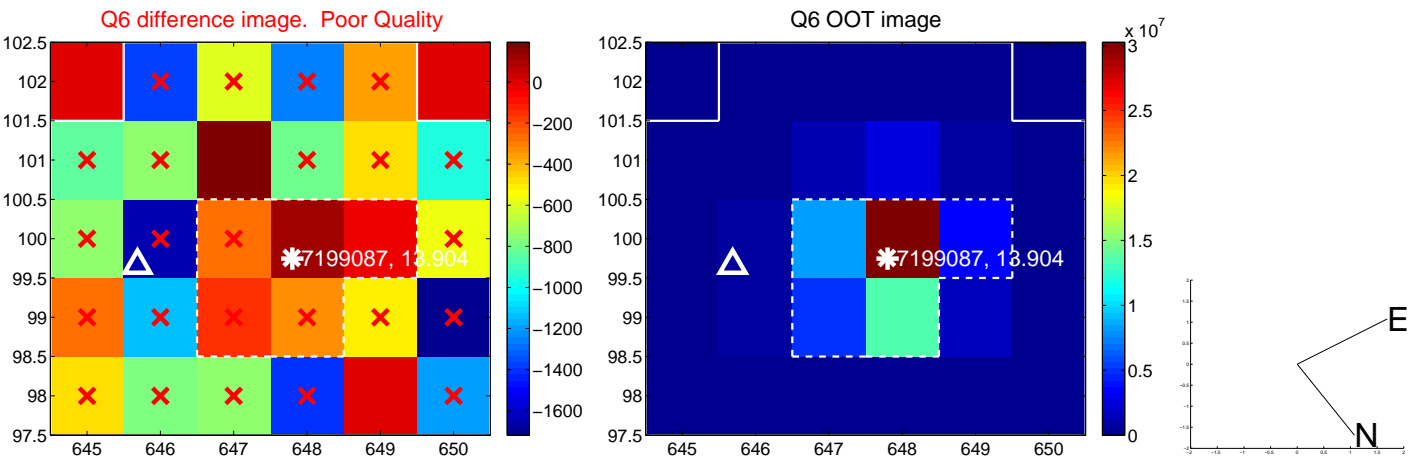
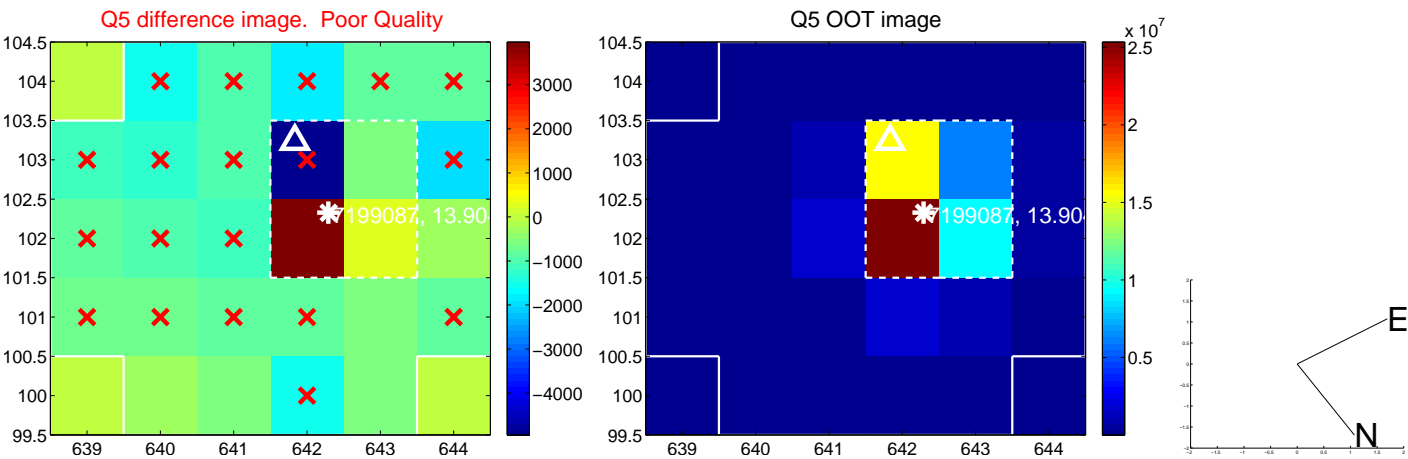


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

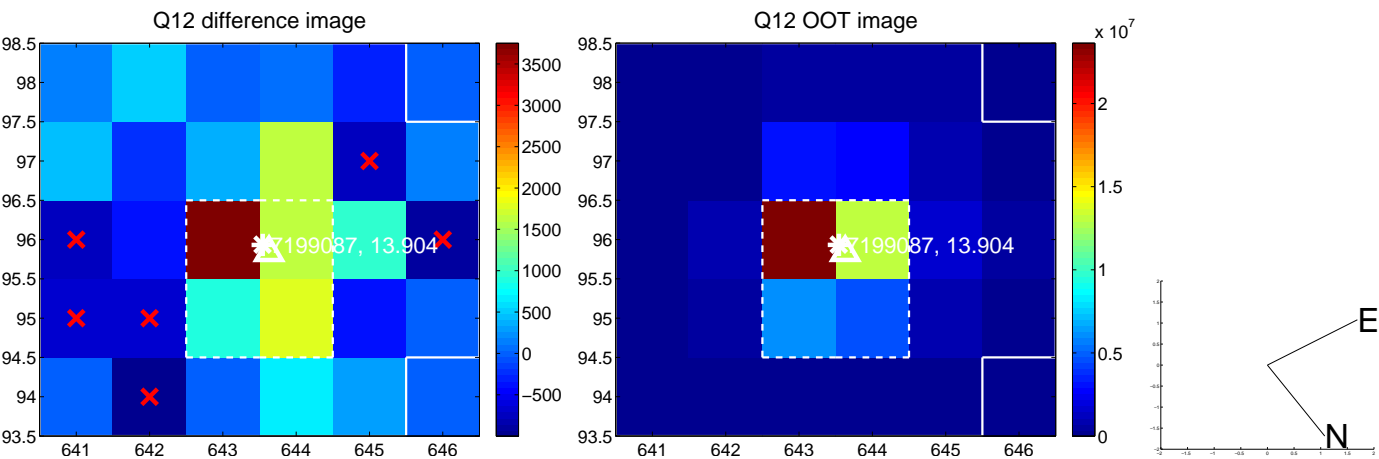
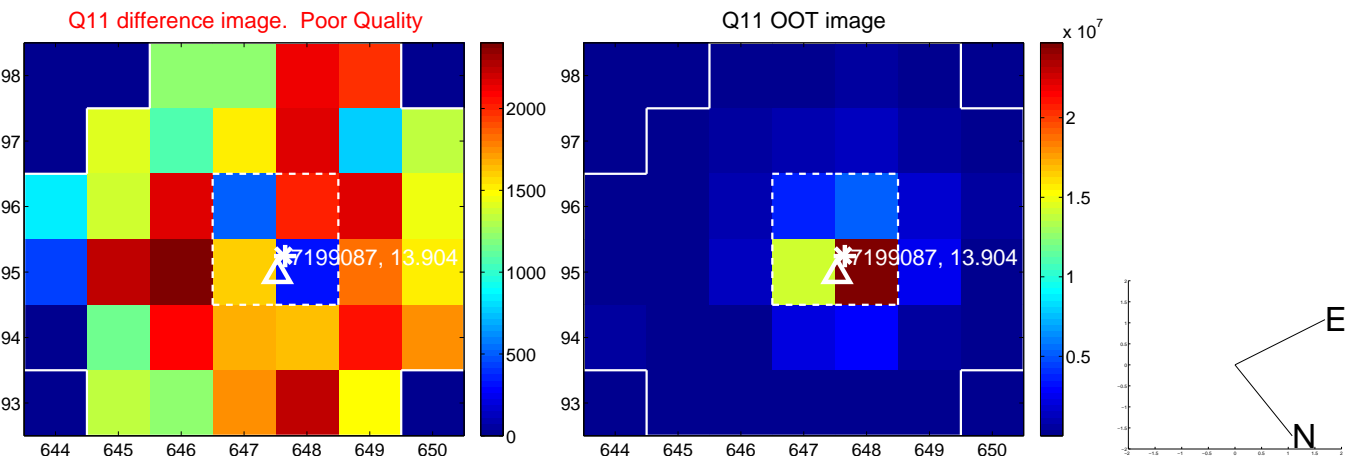
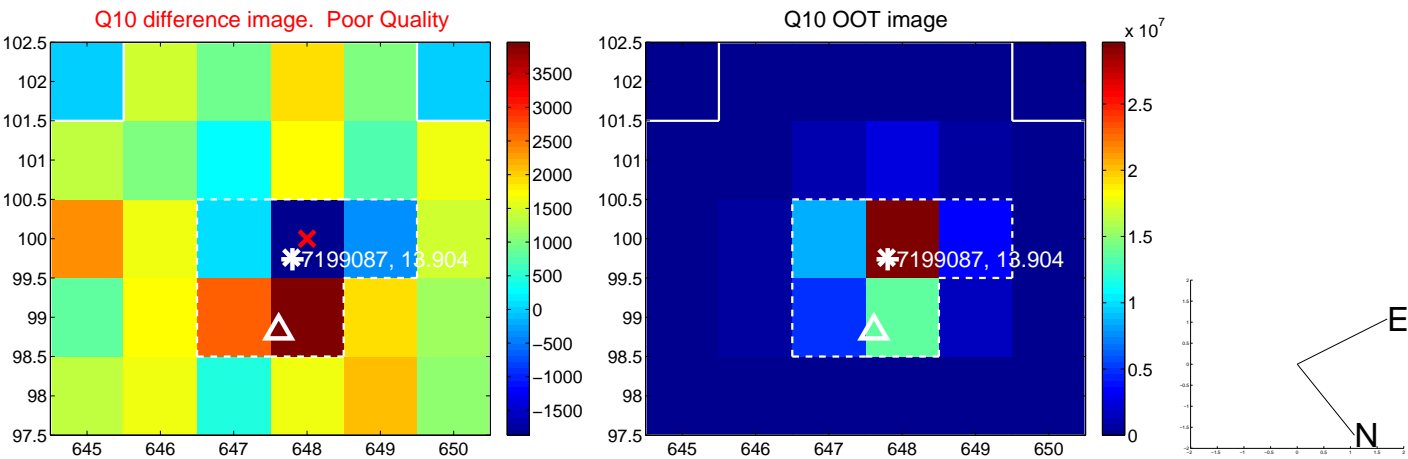
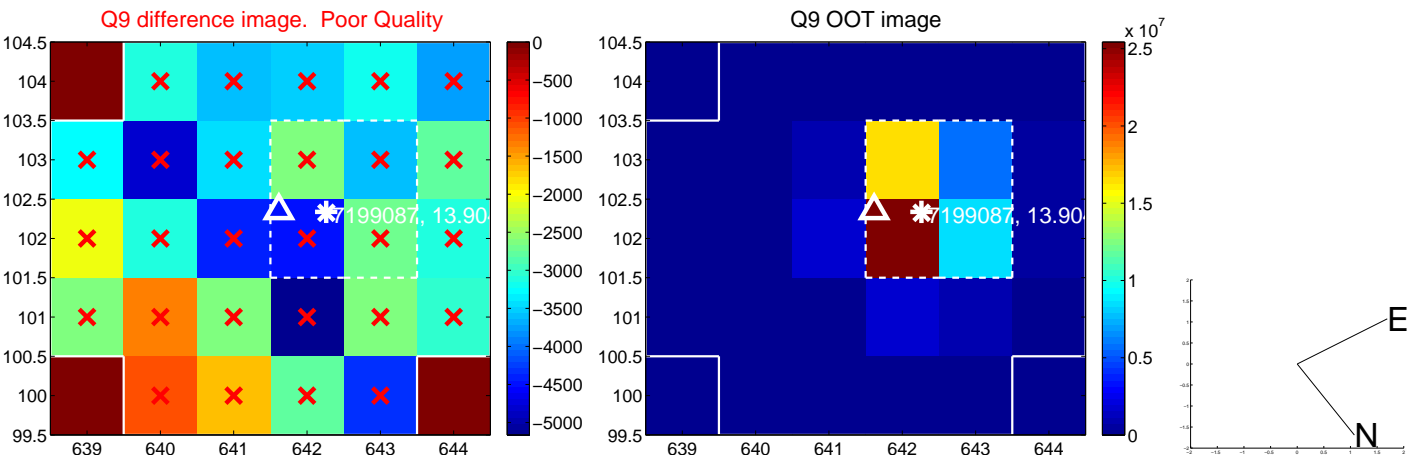
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



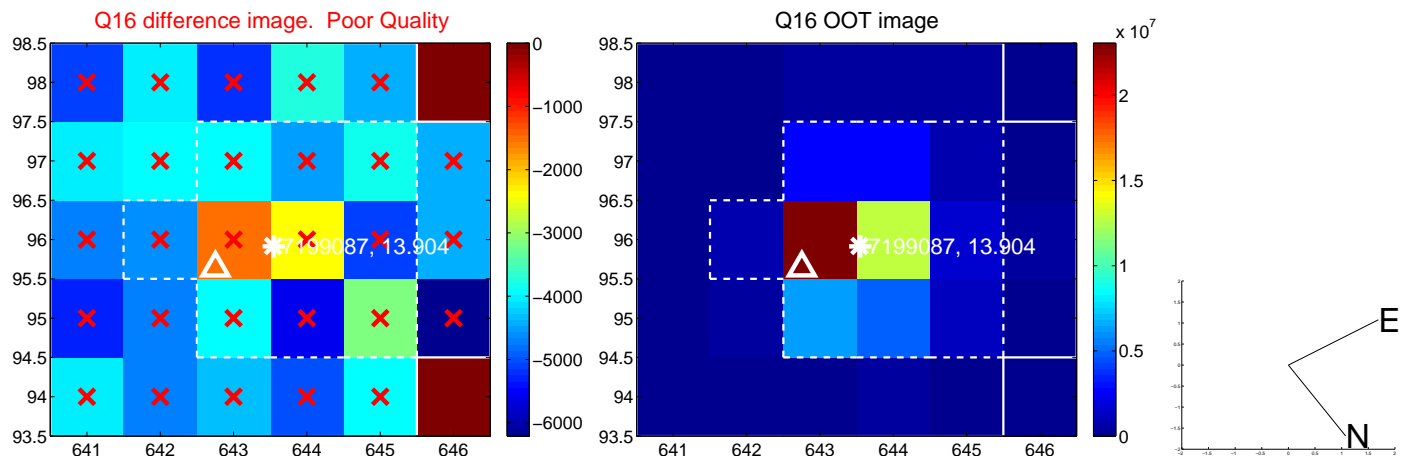
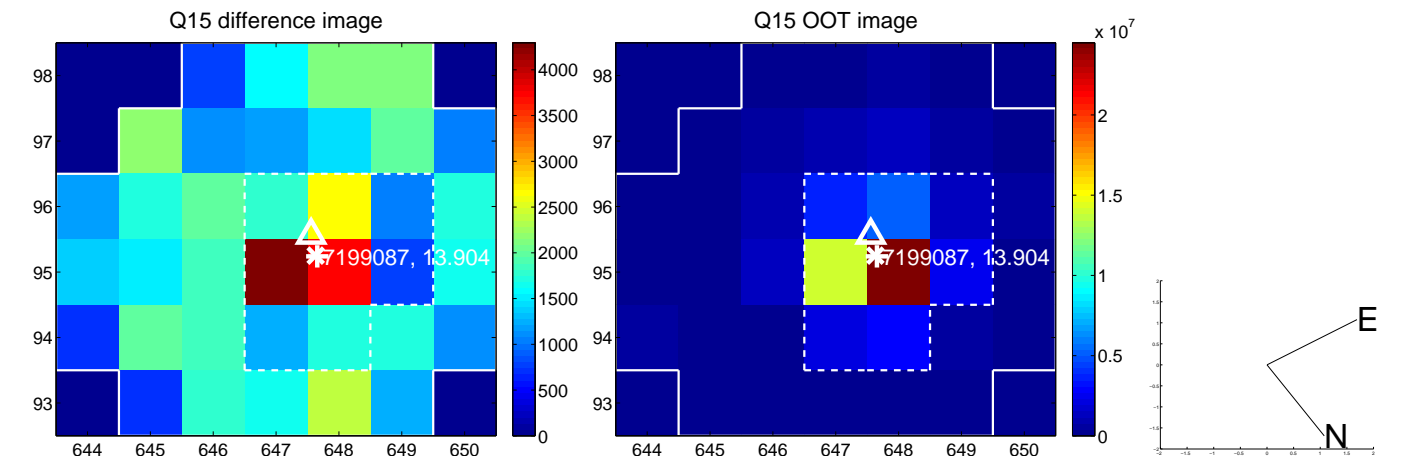
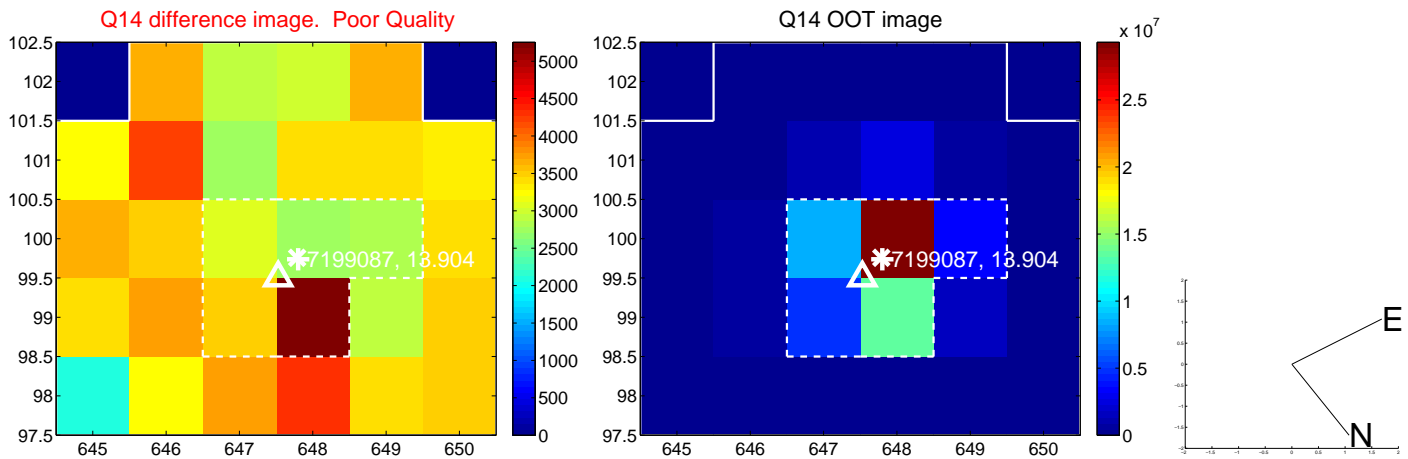
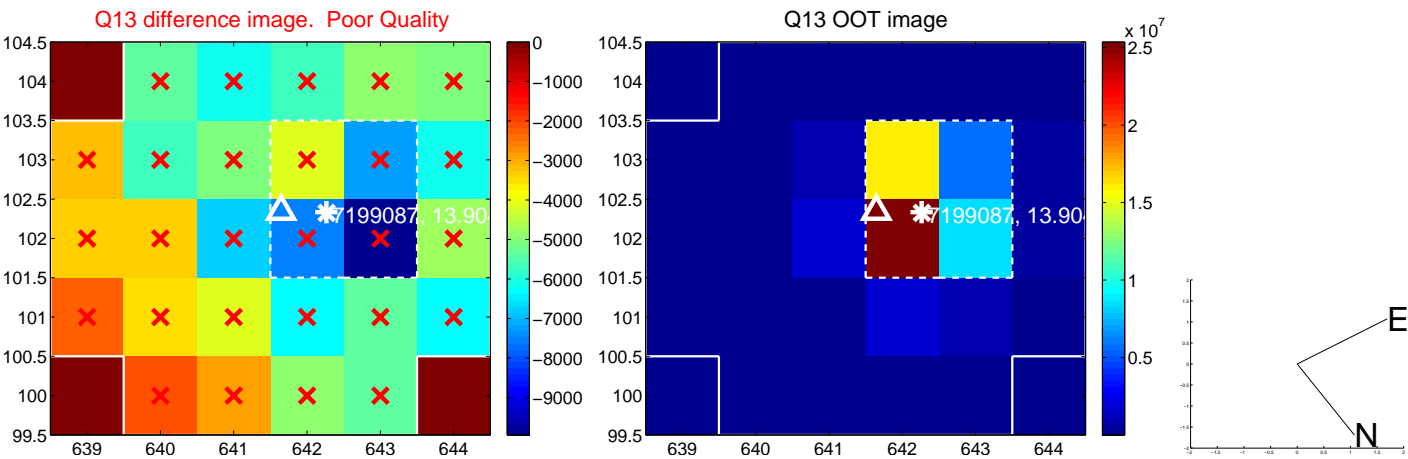
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

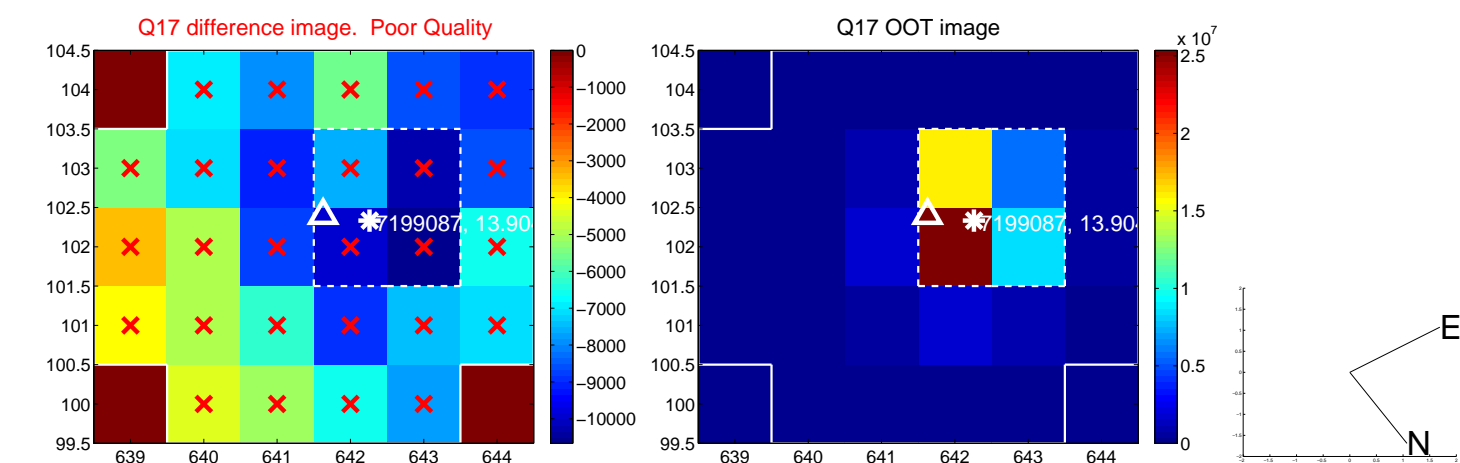


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

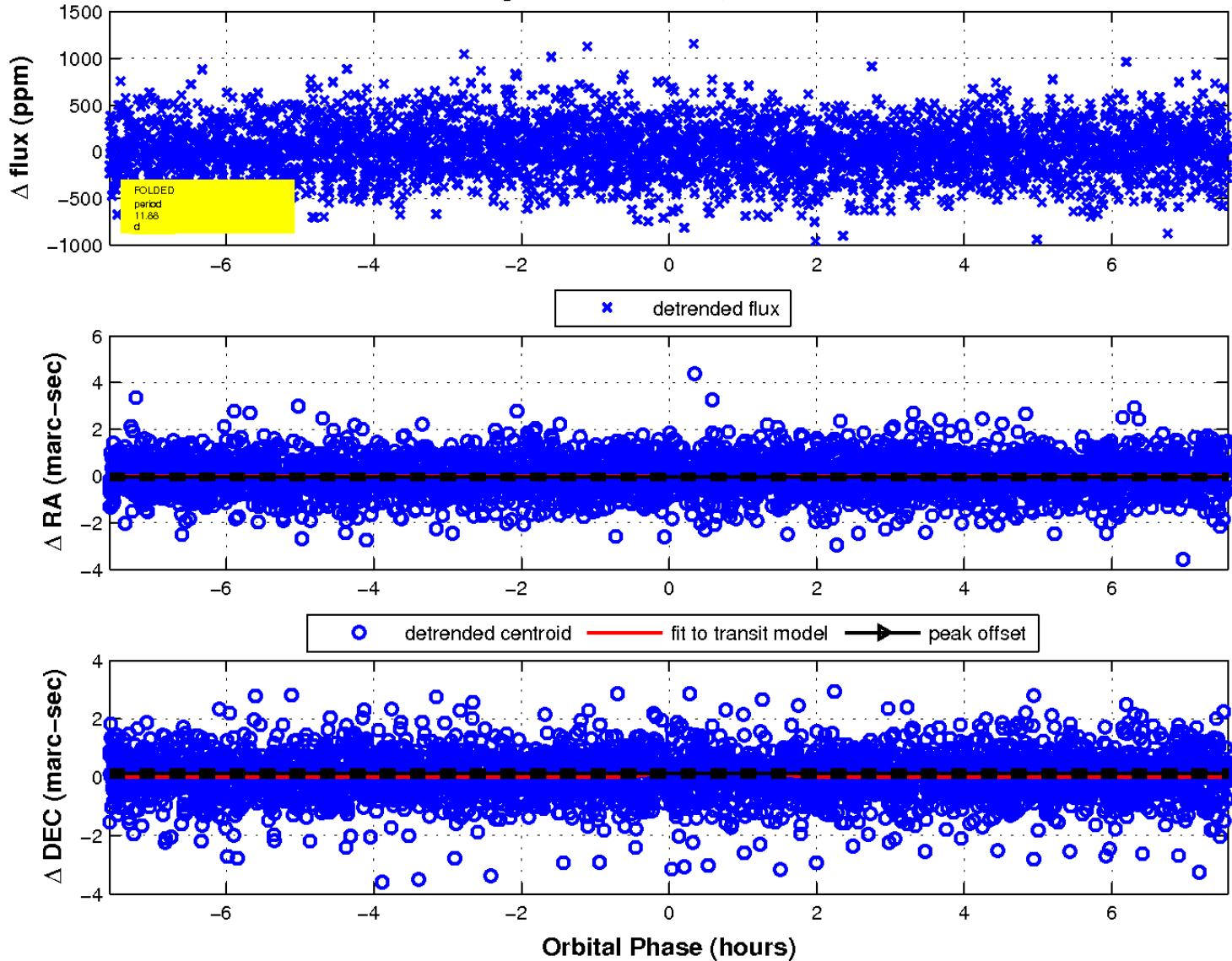




white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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UKIRT Image

Declination

