

# KIC 010847907

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
010847907-01	OBS	7379.01	0.535526	131.720096	6.9	2.954	7.9	3.2	1.86	6328	0.57	24240.96
010847907-02	OBS	No	57.955427	185.718370	652.7	3.573	13.1	6.8	1.86	6328	5.08	47.00
010847907-03	OBS	No	96.548511	167.060852	491.8	6.802	10.1	4.6	1.86	6328	4.44	23.80
010847907-04	OBS	No	145.765628	151.183770	1096.4	5.661	9.6	6.8	1.86	6328	7.80	13.74
010847907-05	OBS	No	105.732218	190.578954	795.5	8.314	7.4	6.3	1.86	6328	10.09	21.09
010847907-06	OBS	No	81.089666	150.861185	666.3	4.471	7.2	6.4	1.86	6328	5.32	30.04
010847907-07	OBS	No	148.438162	135.699589	942.1	7.145	8.4	5.7	1.86	6328	5.80	13.41

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010847907-01	OBS	FP	0.00	1	0	0	0	LPP_DV—CENT_KIC_POS
010847907-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—ALL_TRANS_CHASES—CENT_FEW_MEAS
010847907-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT— INCONSISTENT_TRANS—CENT_KIC_POS
010847907-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_DIFFS
010847907-05	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT— MOD_POS_ALT—CENT_KIC_POS—HALO_GHOST
010847907-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—ALL_TRANS_CHASES—CENT_KIC_POS
010847907-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT— INCONSISTENT_TRANS—CENT_FEW_MEAS

**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.

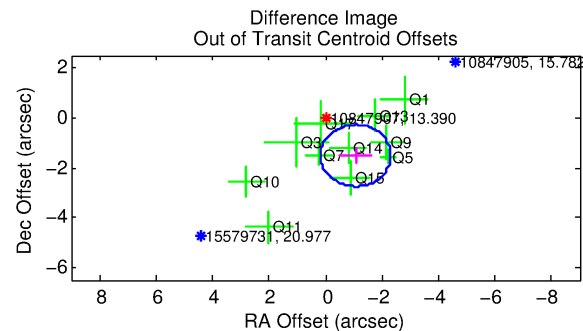
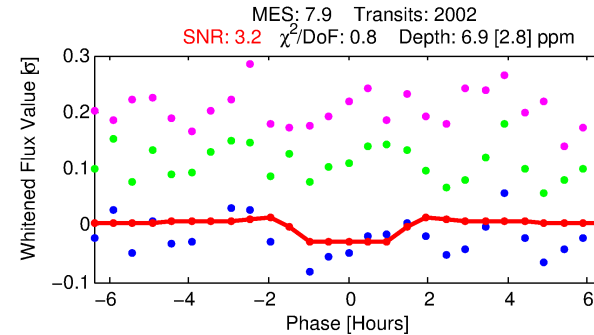
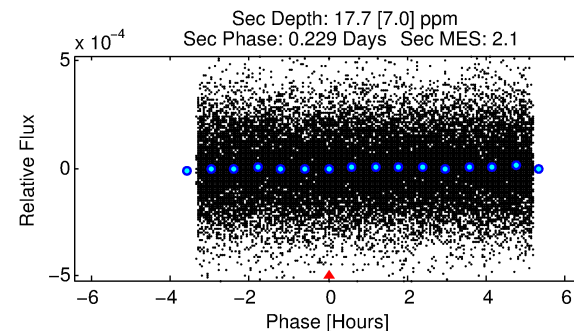
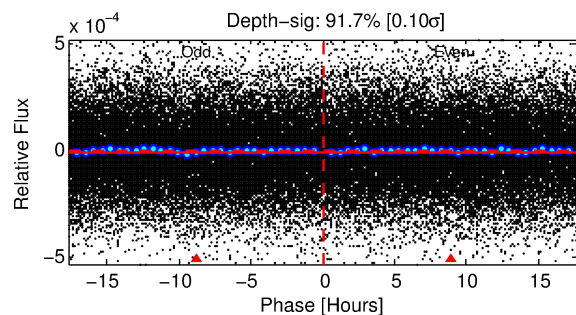
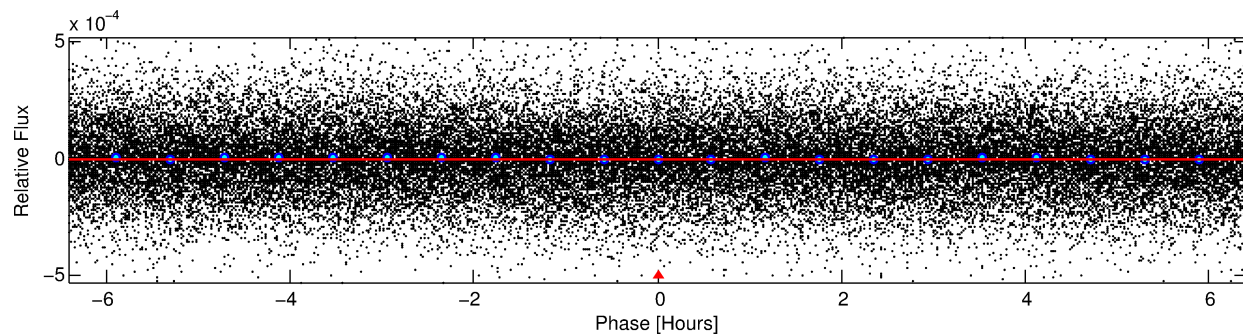
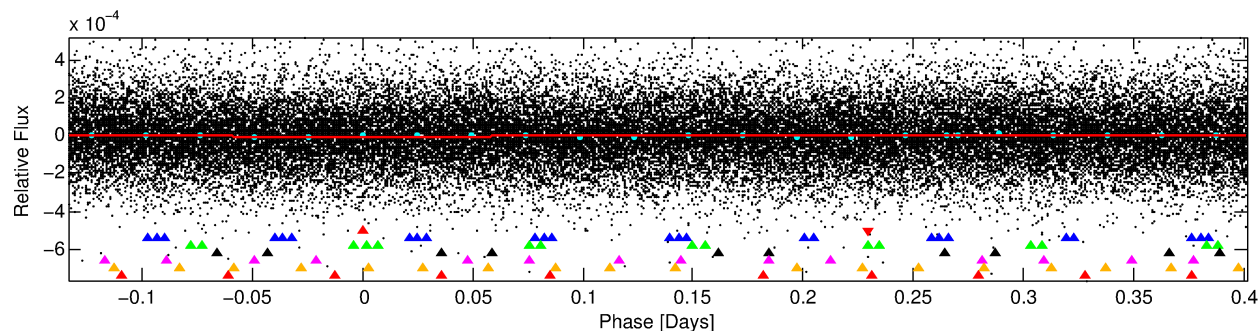
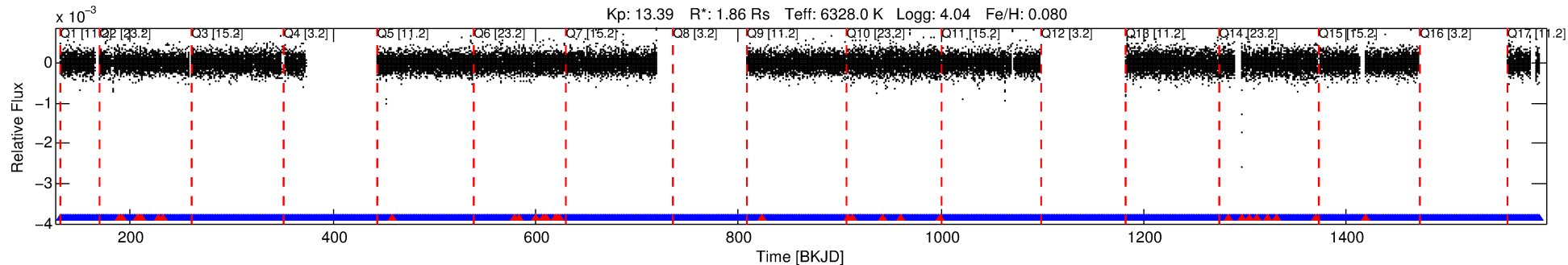
Ephemeris Match Information For 010847907-01

No Significant Match Found

# DV One-Page Summary

KIC: 10847907 Candidate: 1 of 7 Period: 0.536 d  
KOI: K07379 Corr: No Ephemeris Match

Kp: 13.39 R\*: 1.86 Rs Teff: 6328.0 K Logg: 4.04 Fe/H: 0.080



## DV Fit Results:

Period = 0.53553 [0.00003] d  
Epoch = 131.7201 [0.0084] BKJD  
Rp/R\* = 0.0028 [0.0028]  
a/R\* = 1.12 [1.25]  
b = 0.90 [1.17]  
Seff = 24240.96 [12312.26]  
Teq = 3182 [404] K  
Rp = 0.57 [0.61] Re  
a = 0.0143 [0.0045] AU  
Ag = 6.08 [12.74] [0.40σ]  
Teffp = 7724 [3949] K [1.14σ]

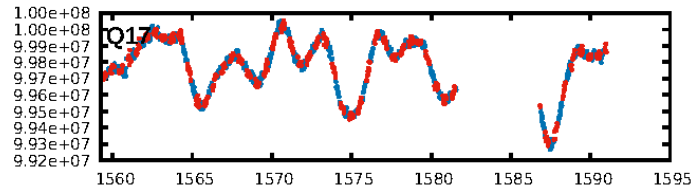
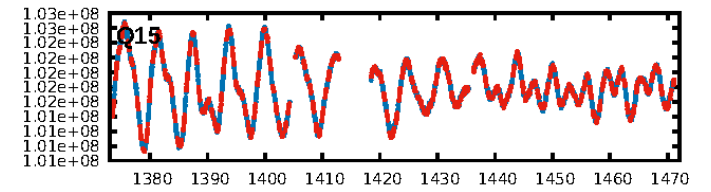
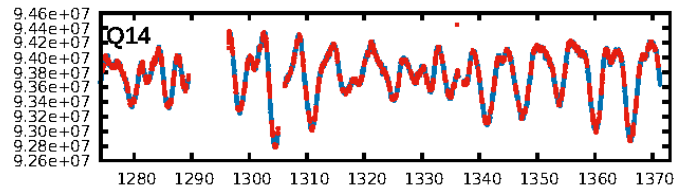
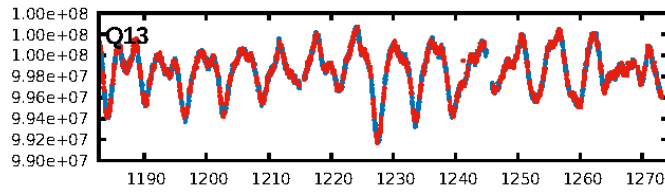
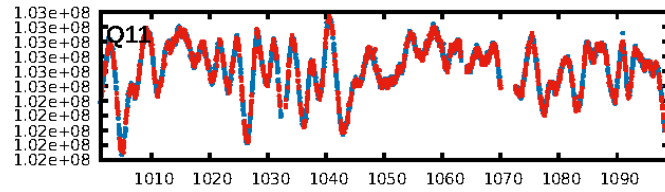
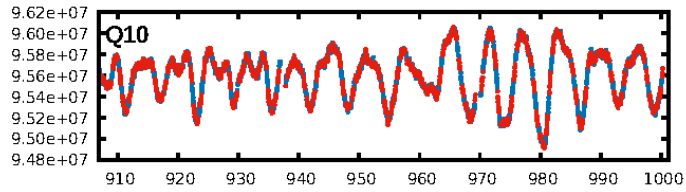
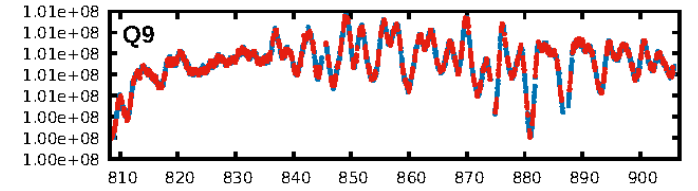
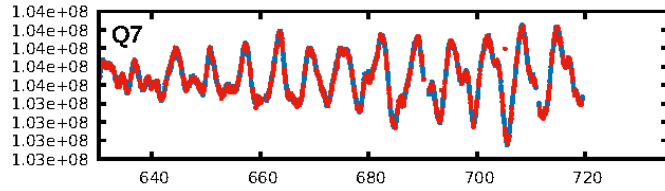
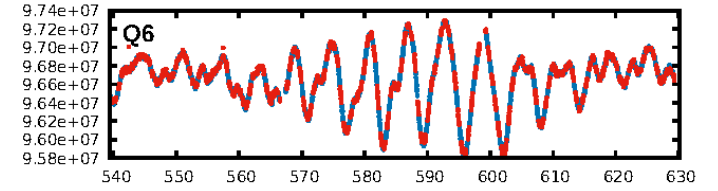
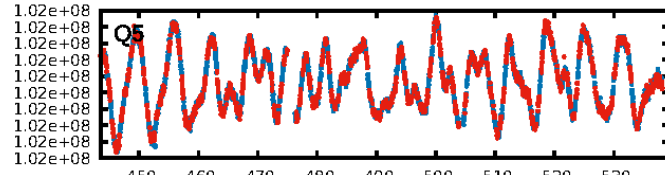
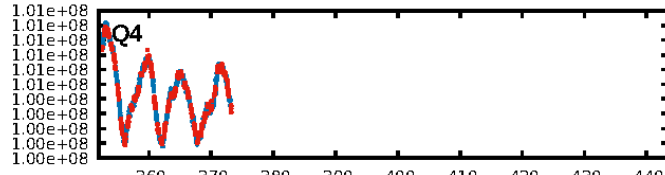
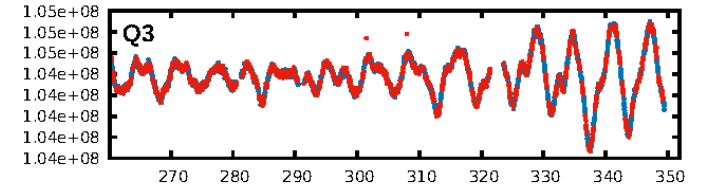
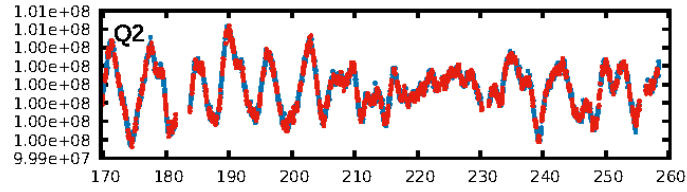
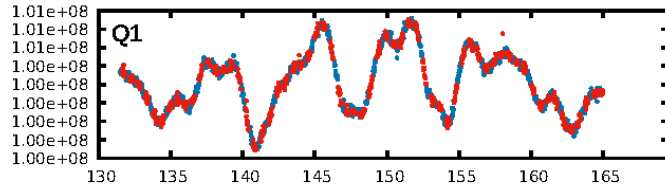
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [297.26σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 3.48e-16  
RollingBand-fgt: 0.98 [1819/1849]  
**GhostDiagnostic-chr: 0.9981**  
Centroid-sig: 97.7%  
Centroid-so: 0.665 arcsec [0.25σ]  
**OotOffset-rm: 1.849 arcsec [4.47σ]**  
**KicOffset-rm: 2.195 arcsec [6.07σ]**  
OotOffset-st: 2/4/0/5 [11]  
KicOffset-st: 2/4/0/5 [11]  
DiffImageQuality-fgm: 0.64 [7/11]  
DiffImageOverlap-fno: 1.00 [14/14]

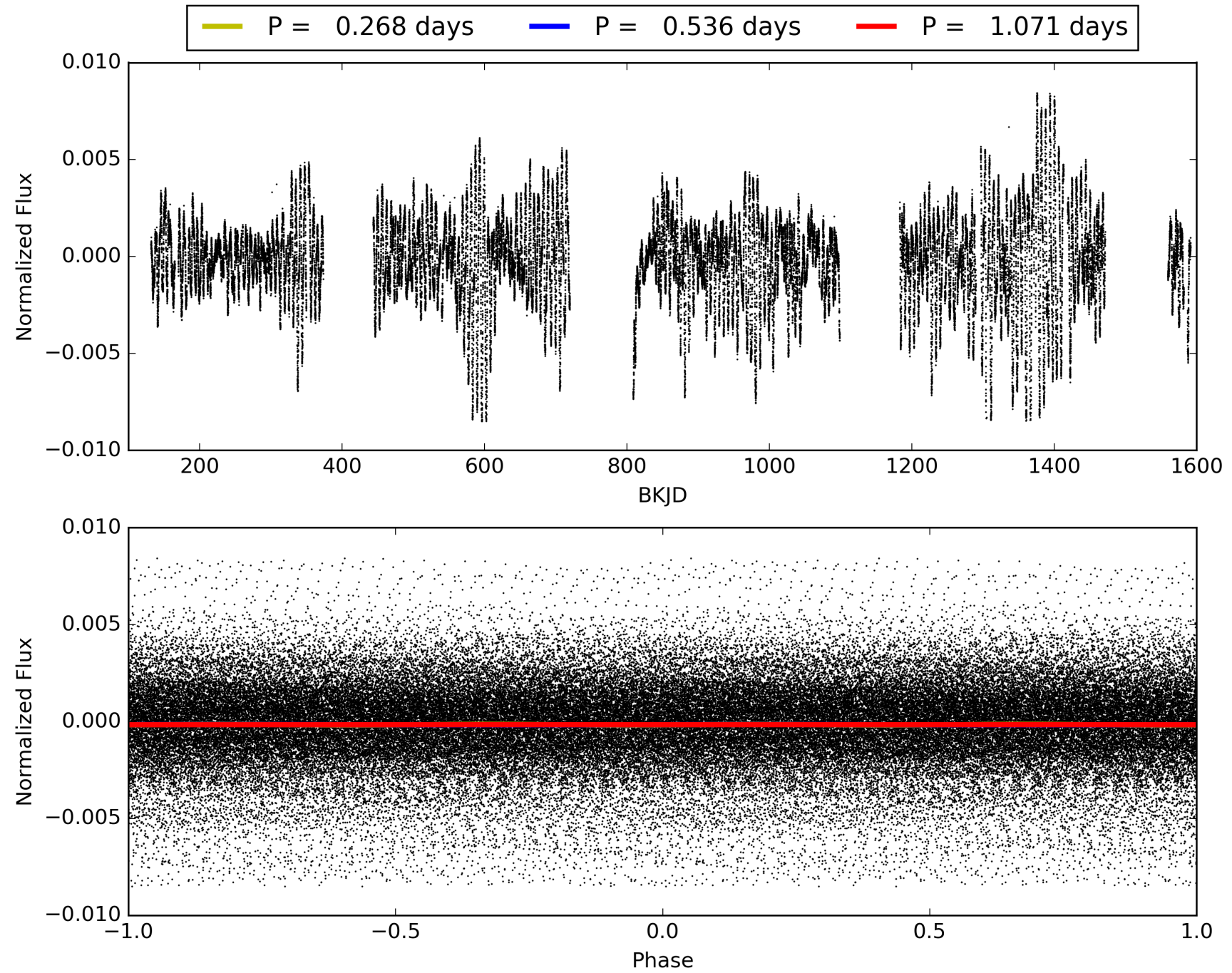
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 010847907-01, PDC Light Curves



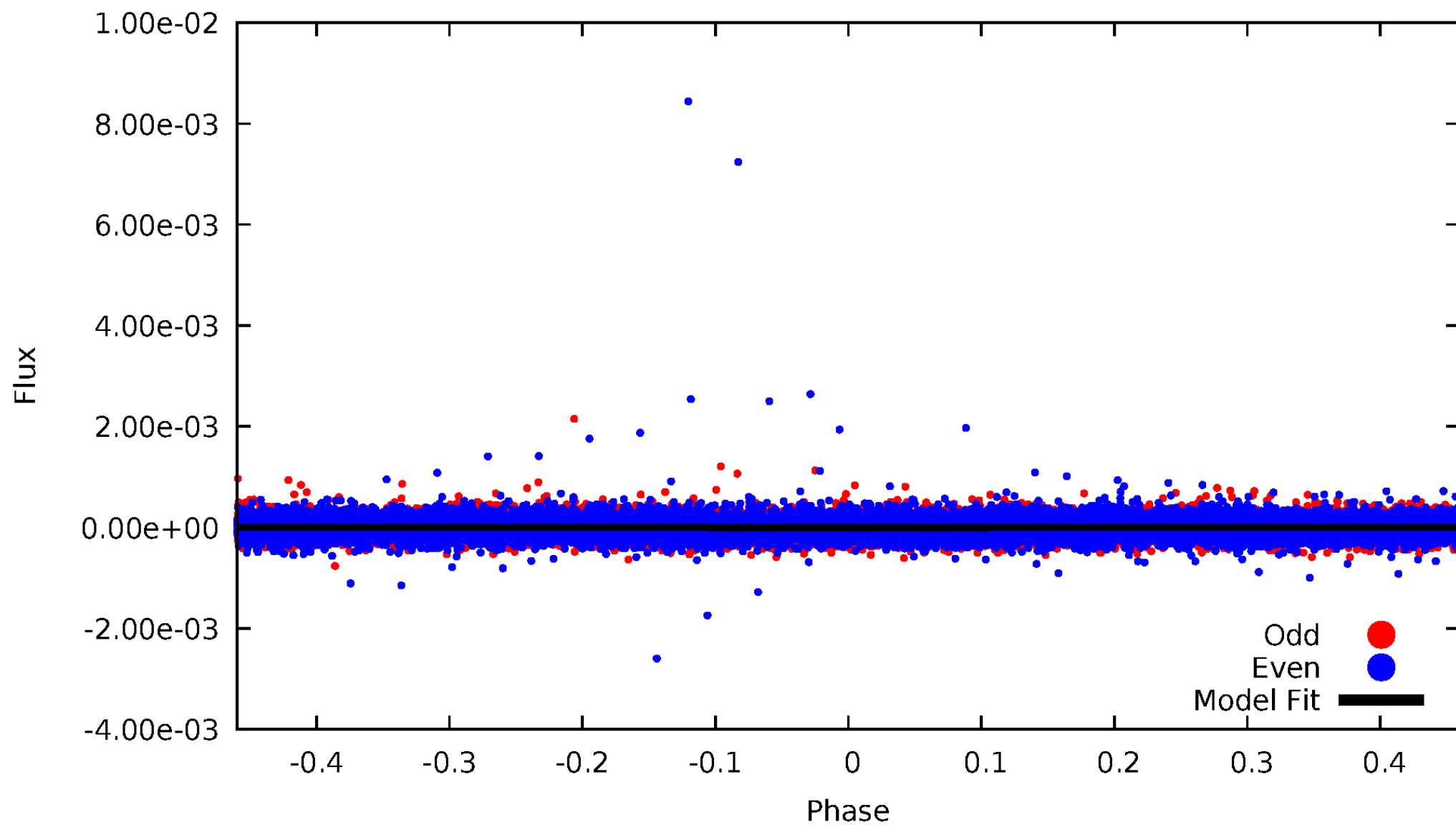
TCE 010847907-01





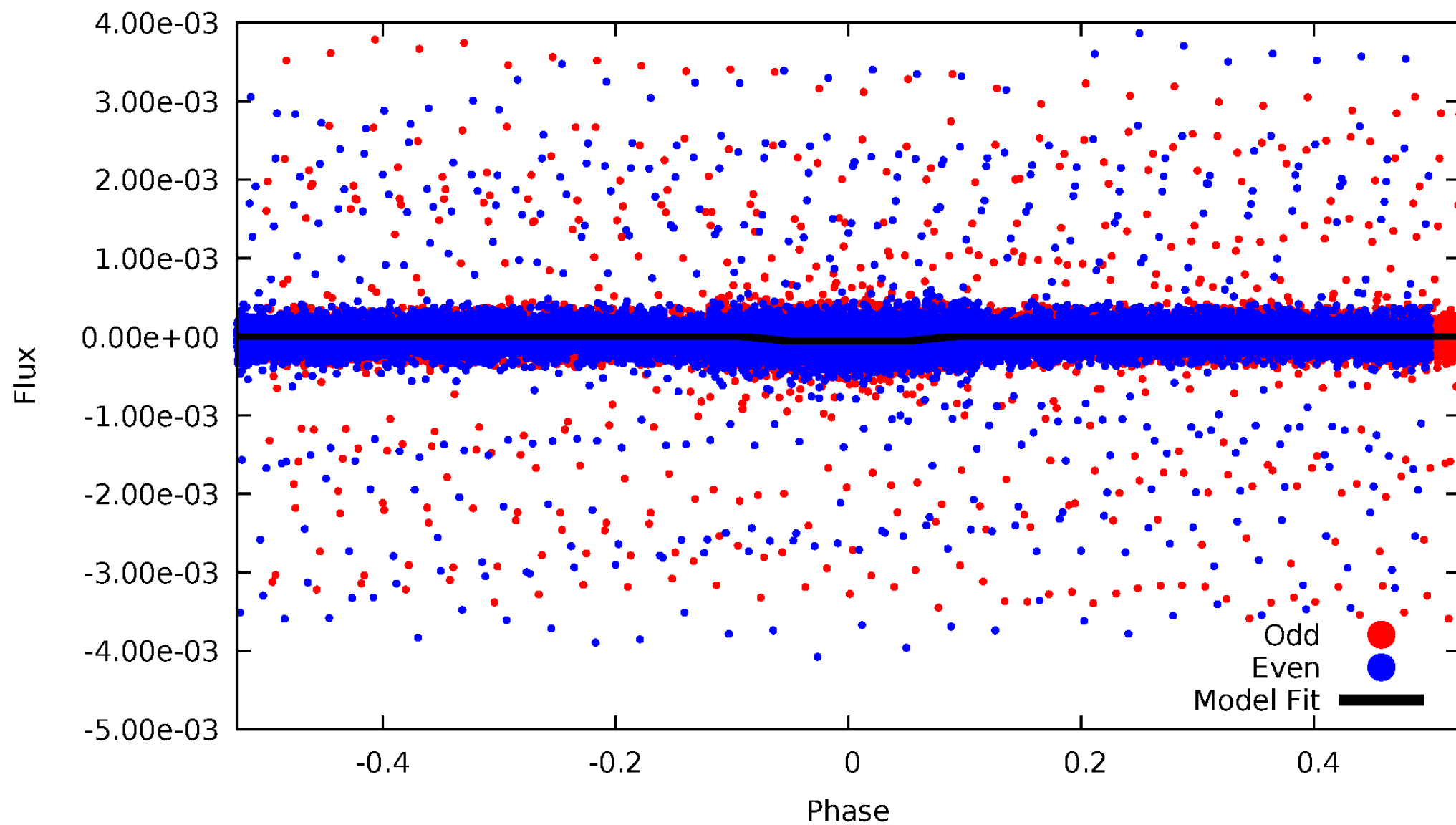
# DV Odd/Even

TCE 010847907-01

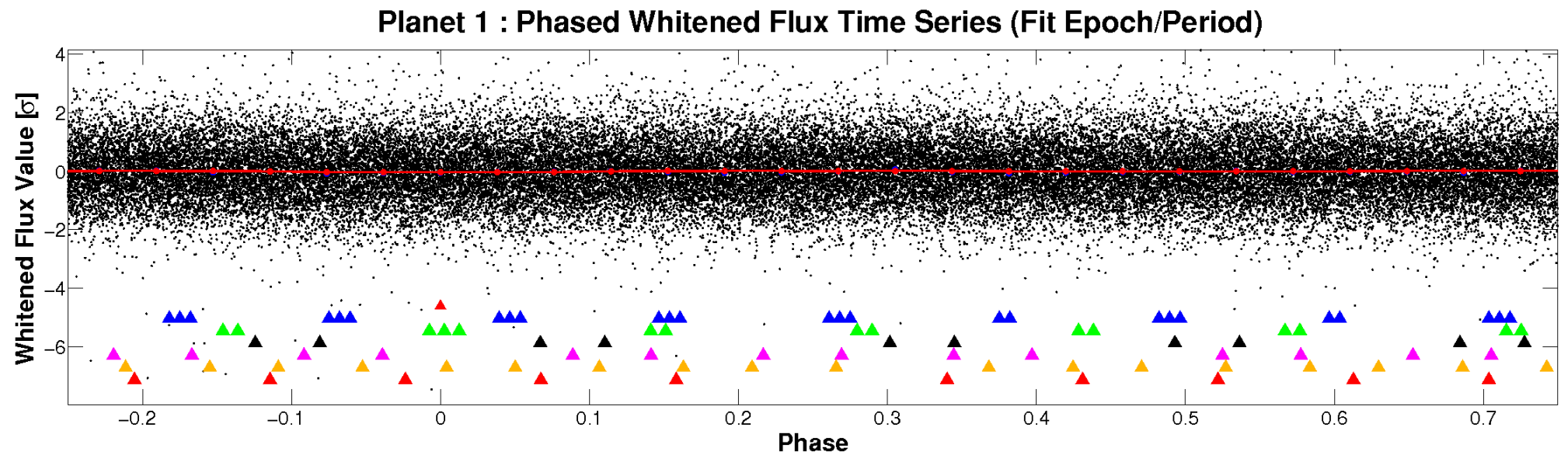
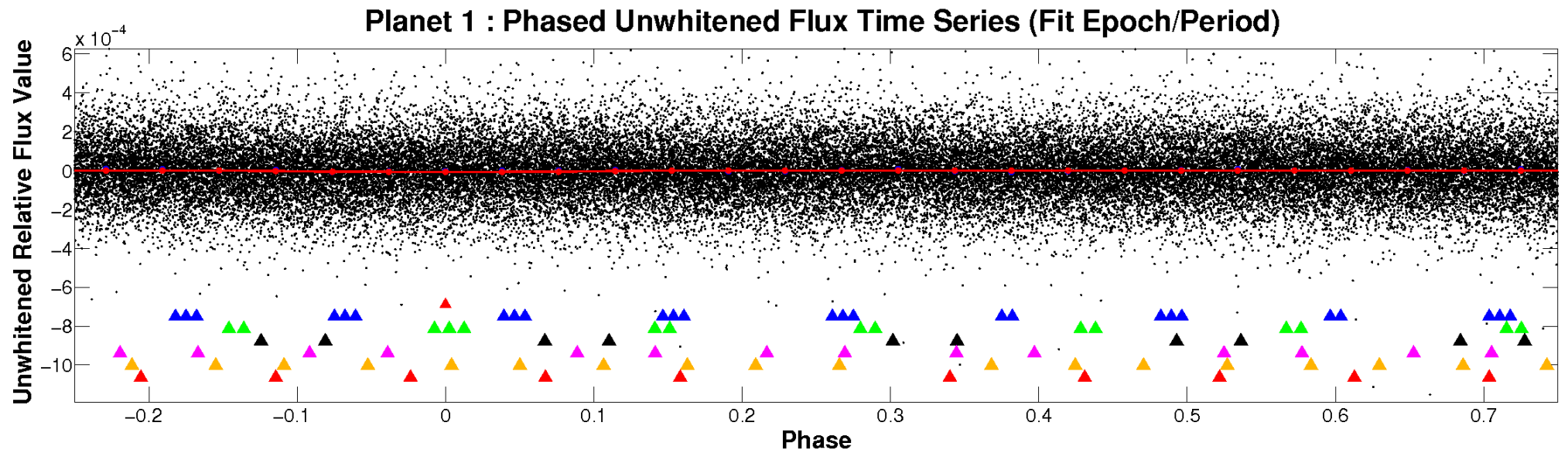


# ALT Odd/Even

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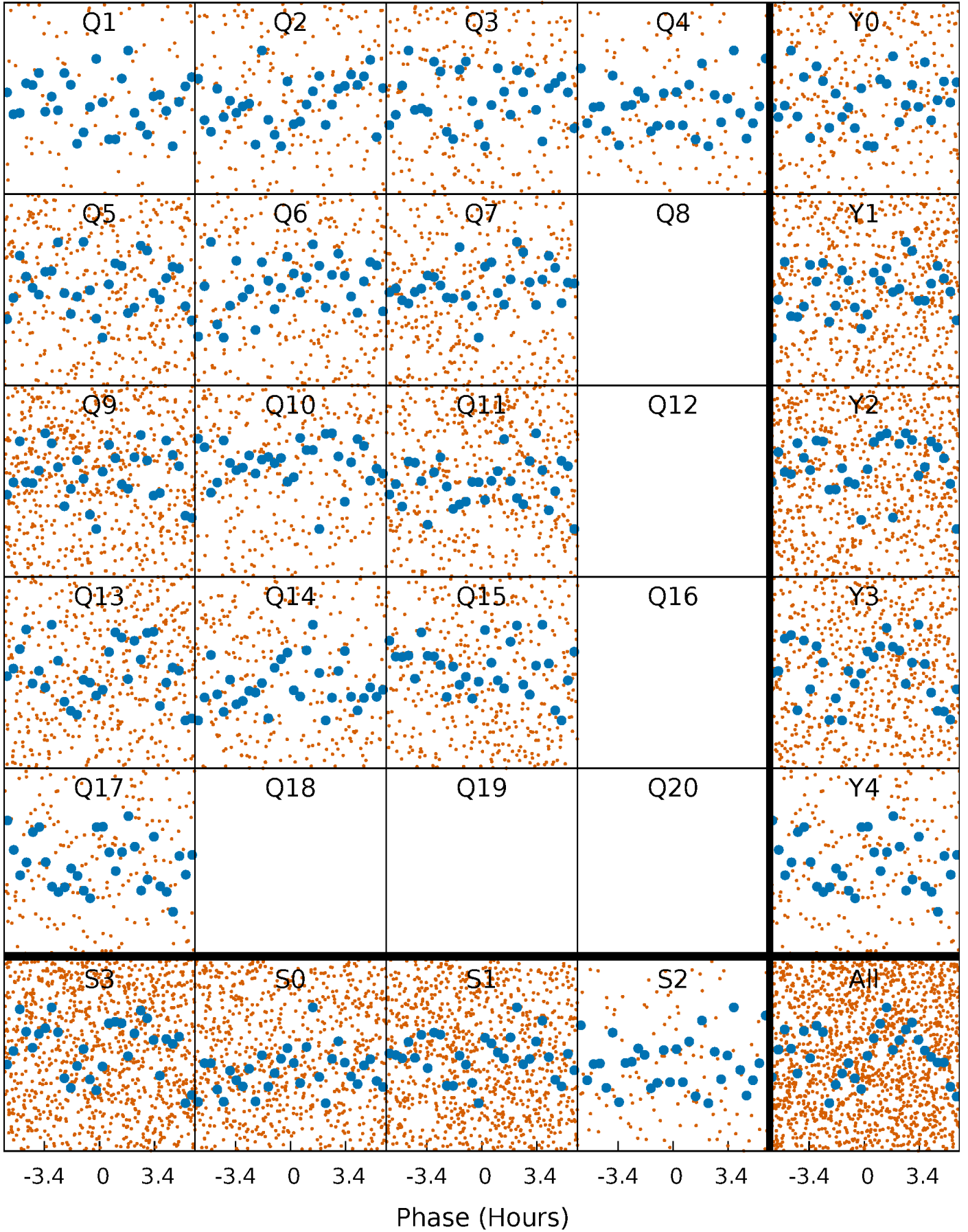


# Non-Whitened Vs. Whitened Light Curve



# PDC Quarter-Phased Transit Curves

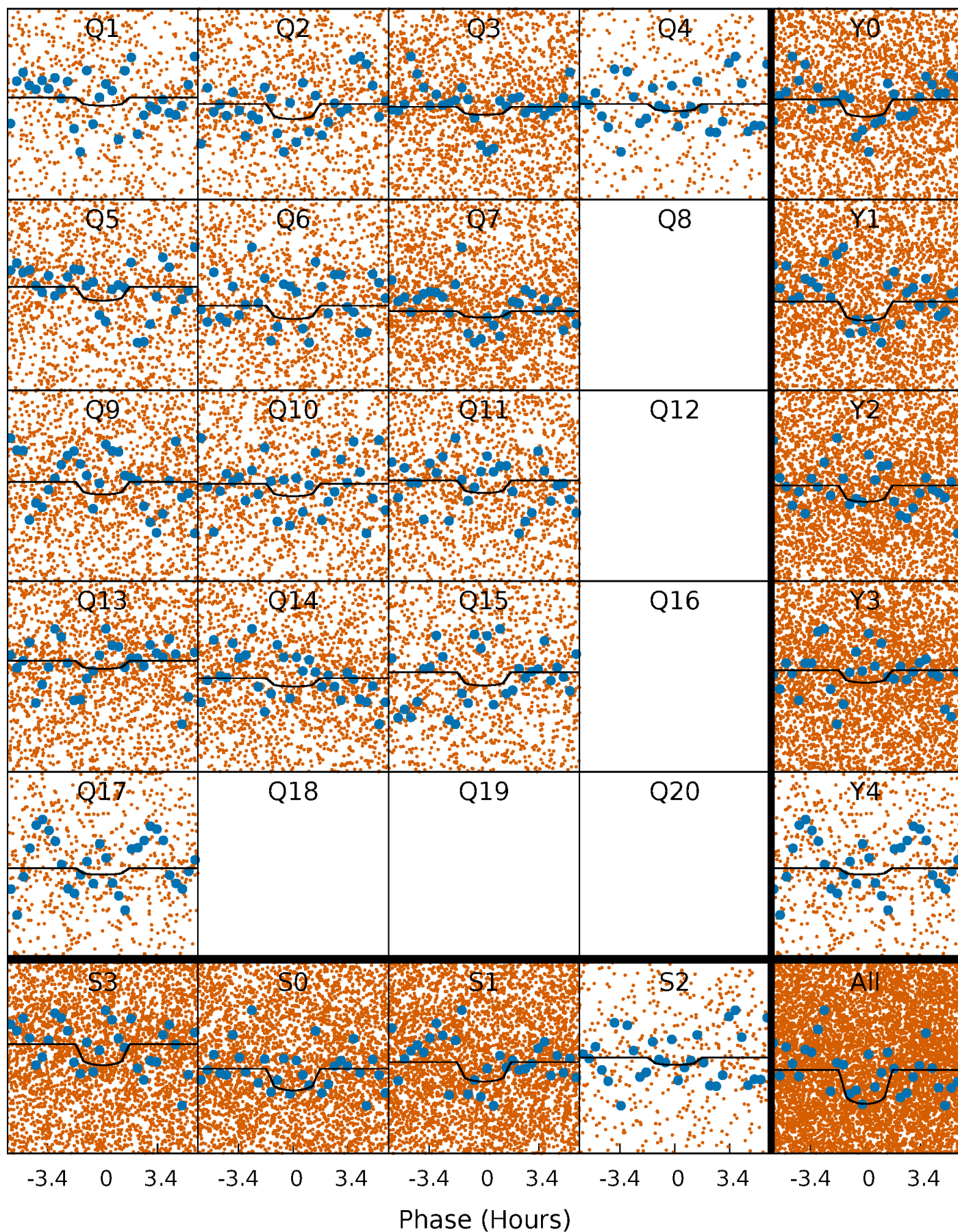
TCE 010847907-01   P= 0.535526 Days    $T_0=131.720096$  (BKJD)





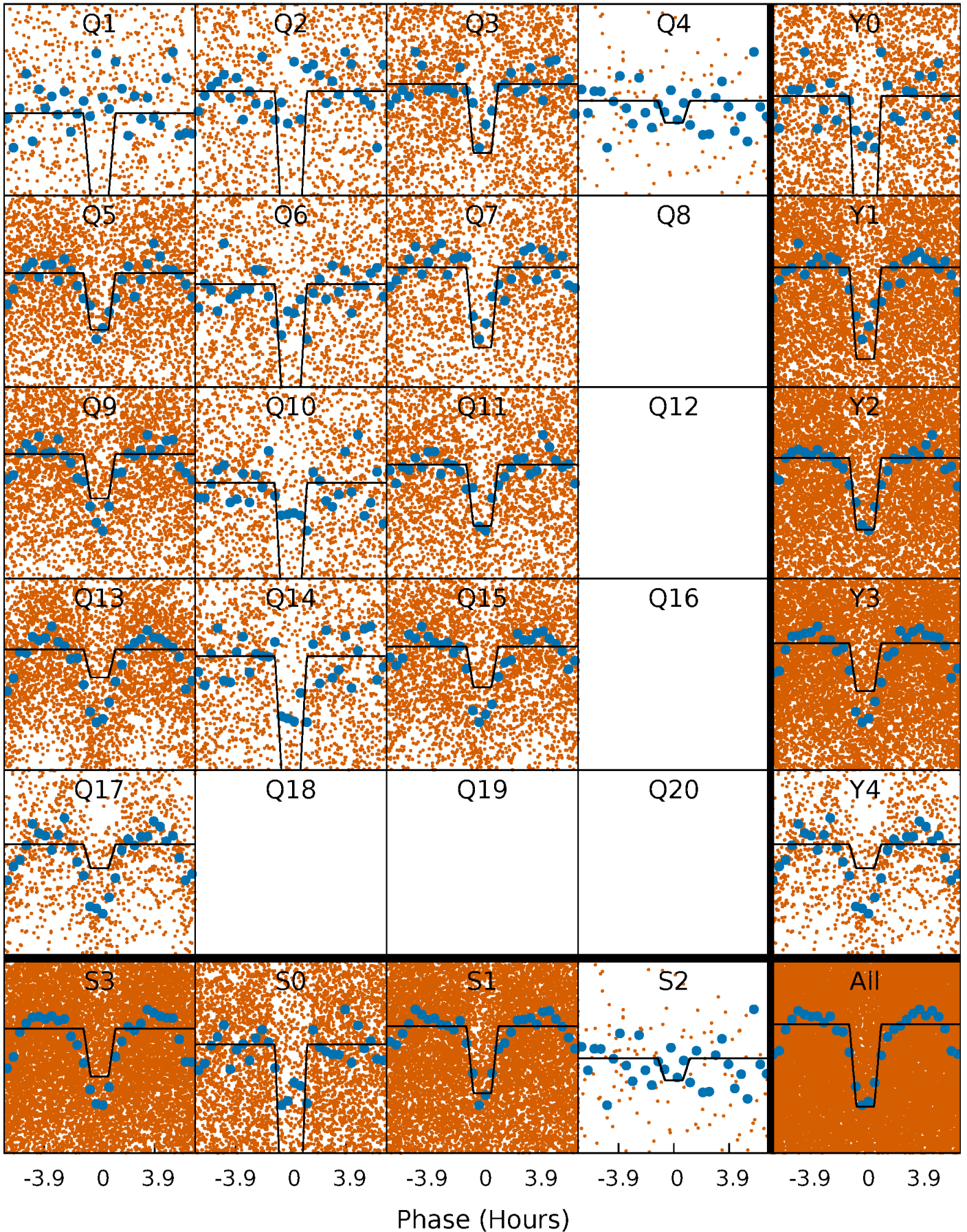
# DV Quarter-Phased Transit Curves

TCE 010847907-01 P= 0.535526 Days  $T_0=131.720096$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 010847907-01   P= 0.535492 Days    $T_0=131.738854$  (BKJD)

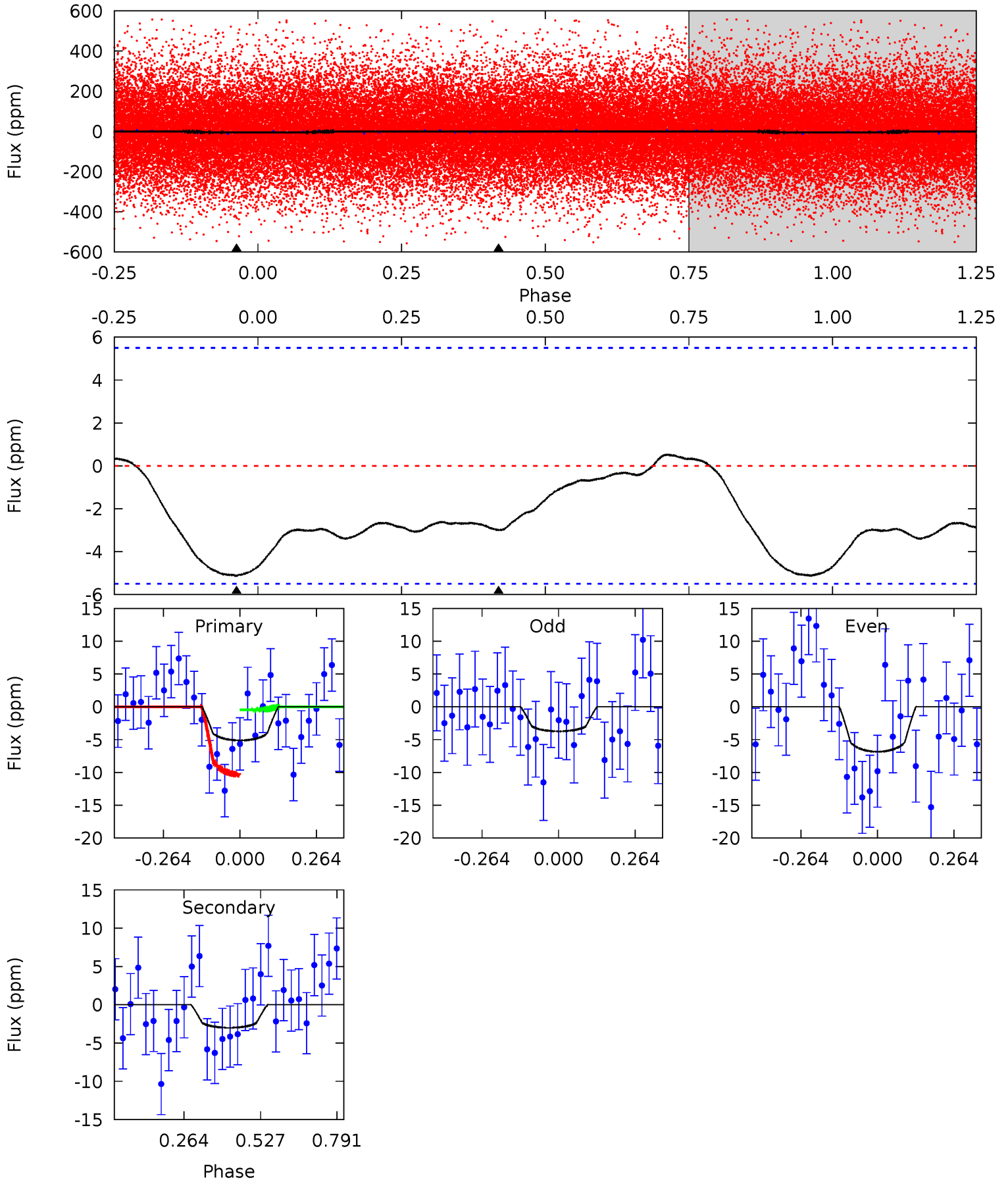




# DV Model-Shift Uniqueness Test

010847907-01, P = 0.535526 Days, E = 131.184570 Days

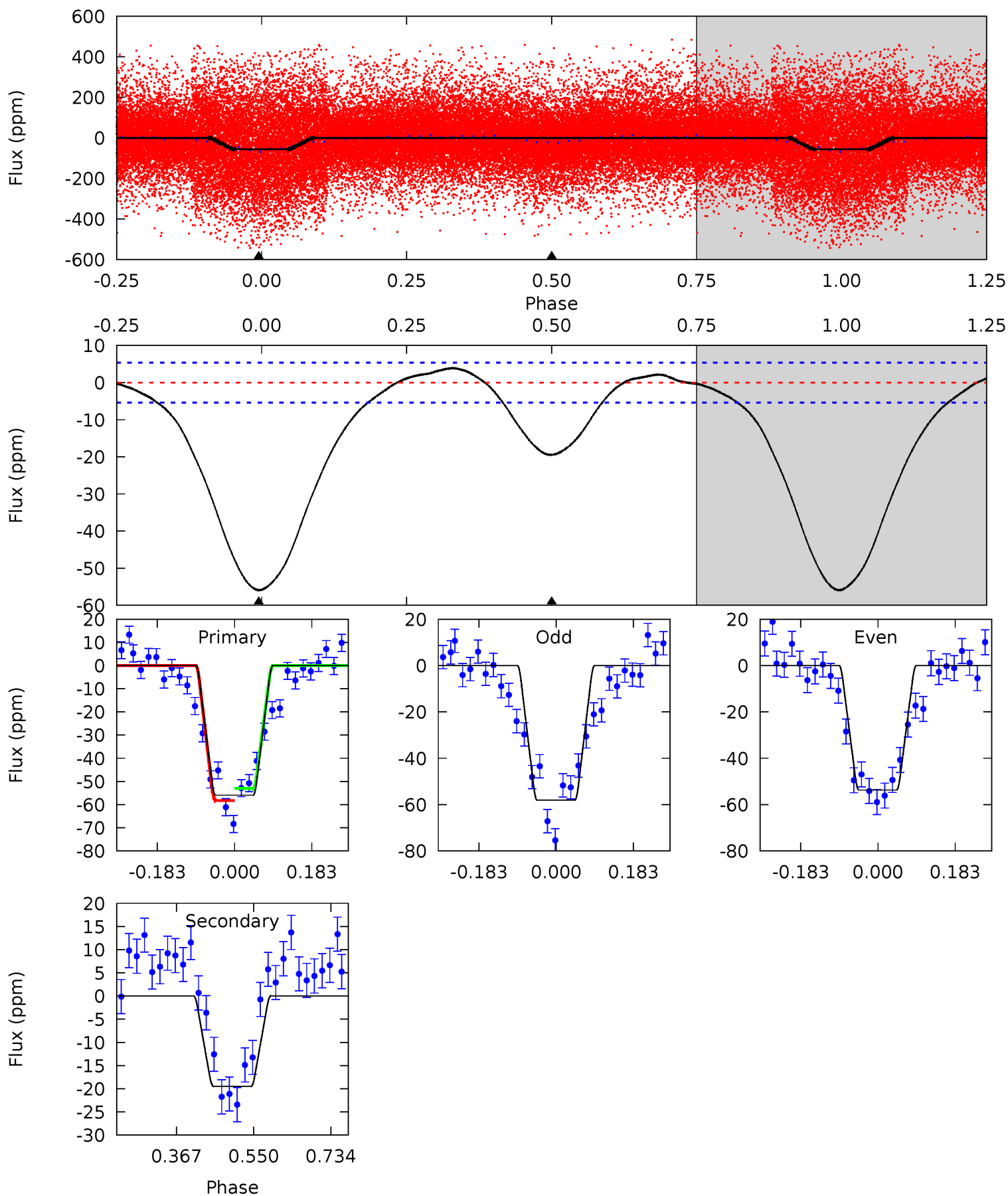
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4.06	2.38	0	0	4.36	1.12	0.68	4.06	4.06	2.38	2.38	1.25	0.56	0.09	3.89



# Alt Model-Shift Uniqueness Test

010847907-01, P = 0.535492 Days, E = 131.203362 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
46.2	16.1	0	0	4.44	1.33	1.94	46.2	46.2	16.1	16.1	1.79	0.98	0.07	2.17





### Stellar Parameters For KIC 010847907

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6328^{+177}_{-243}$	$4.035^{+0.276}_{-0.161}$	$0.080^{+0.250}_{-0.300}$	$1.864^{+0.536}_{-0.655}$	$1.374^{+0.190}_{-0.285}$	$0.299^{+0.555}_{-0.139}$
	+3%/-4%	+7%/-4%	+312%/-375%	+29%/-35%	+14%/-21%	+186%/-46%
Source	PHO54	PHO54	PHO54	DSEP		

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

### Secondary Eclipse Parameters for KIC 010847907-01 / KOI 7379.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-3 \pm 1$	$0.67^{+0.52}_{-0.43}$	$4396^{+348}_{-441}$	$4072^{+3113}_{-7384}$	$0.682^{+4.641}_{-0.487}$
Alt.	$-19 \pm 1$	$1.47^{+0.66}_{-0.60}$	$4372^{+356}_{-401}$	$4543^{+1330}_{-888}$	$0.998^{+1.713}_{-0.512}$

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

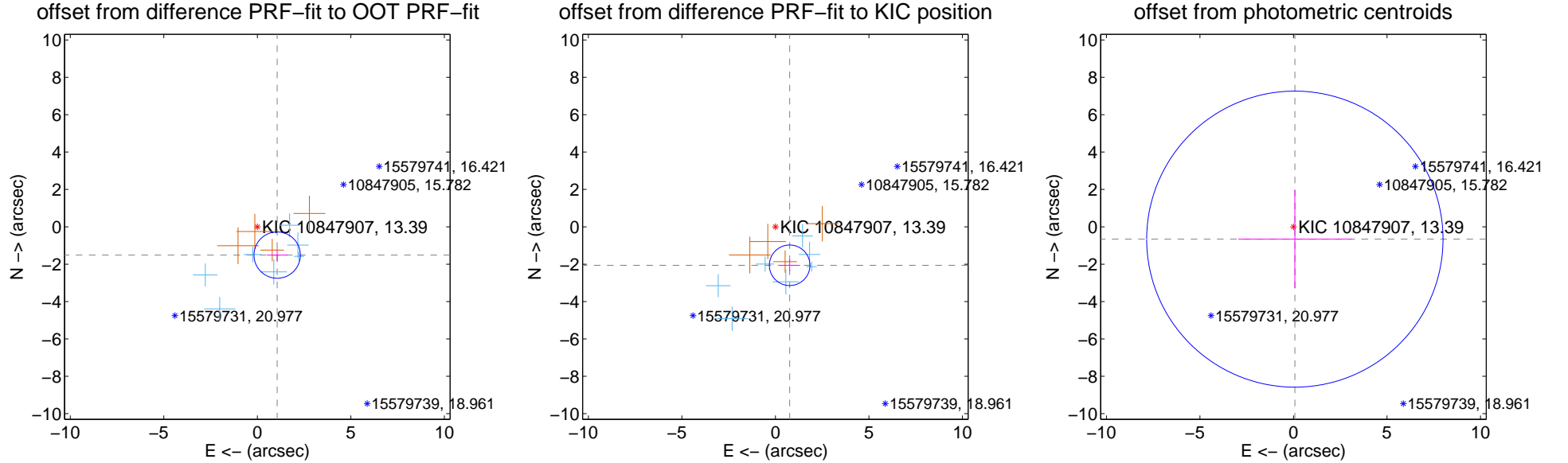
## DV Centroid Data

Supplemental centroid analysis for 010847907-01. Kepler magnitude: 13.39. Transit SNR 3.19

There are 7 quarters with good PRF difference image offsets

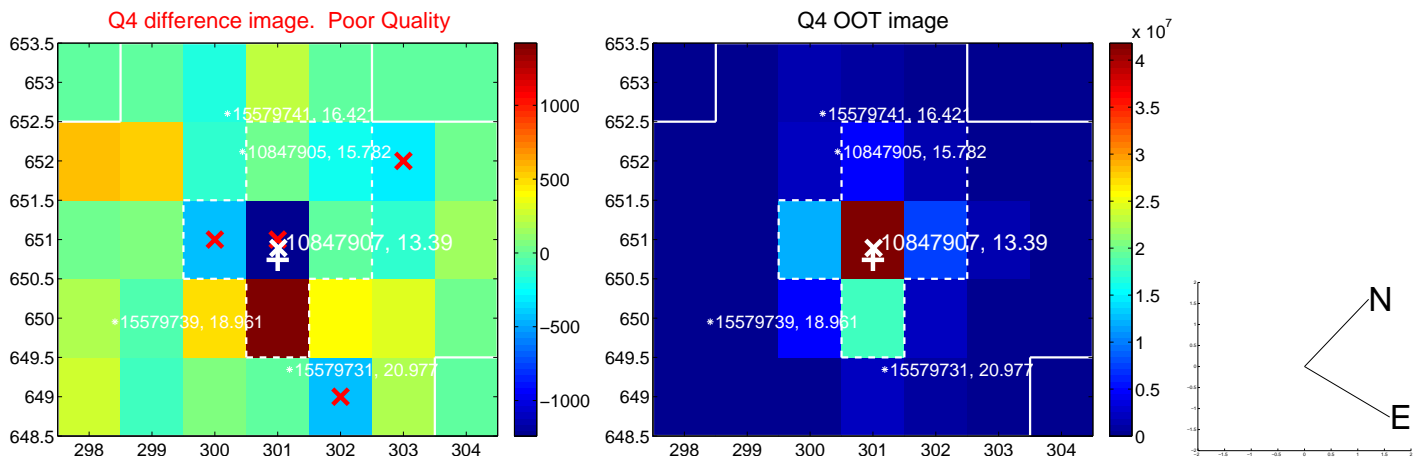
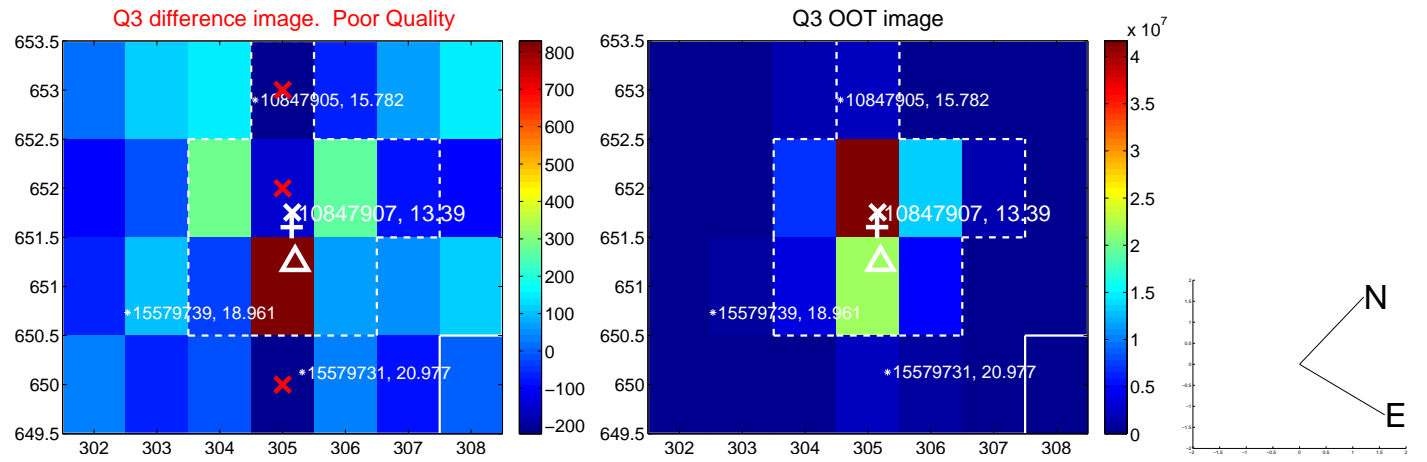
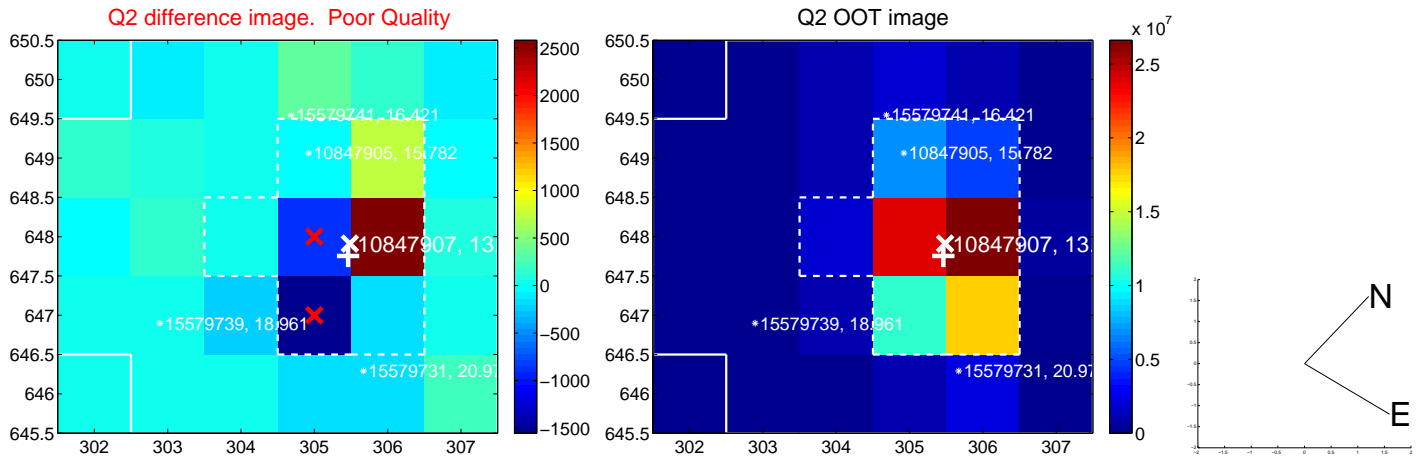
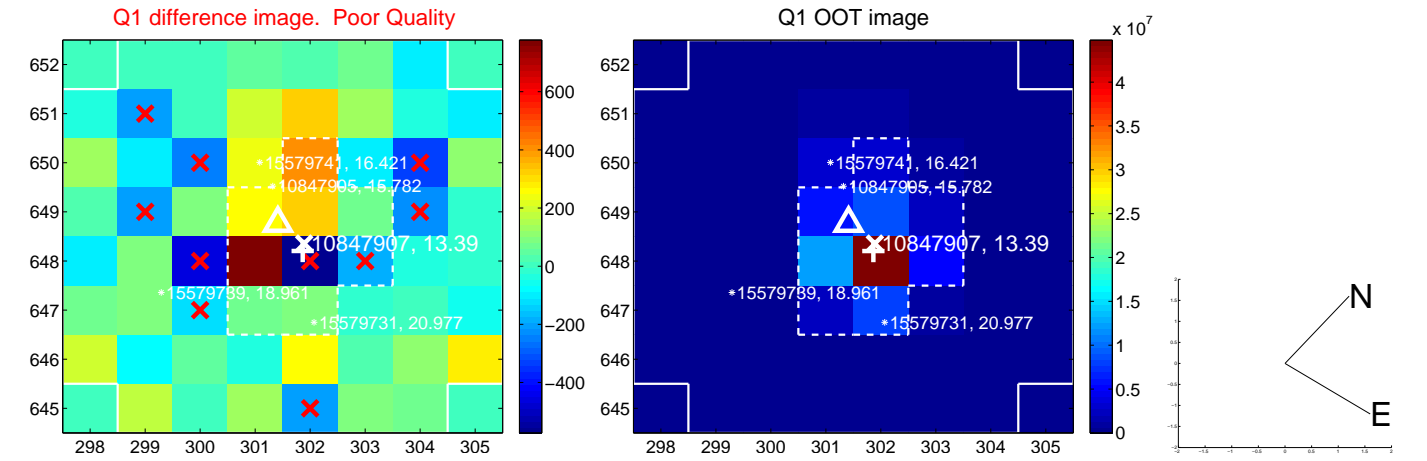
The direct PRF centroid is offset from the target star catalog position by about 0.60 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.849 \pm 0.413$	$4.47$	$-1.061 \pm 0.550$	$-1.514 \pm 0.326$
PRF-fit source offset from KIC position	$2.195 \pm 0.362$	$6.07$	$-0.762 \pm 0.554$	$-2.059 \pm 0.326$
photometric centroid source offset	$0.66 \pm 2.64$	$0.25$	$-0.07 \pm 3.03$	$-0.66 \pm 2.64$

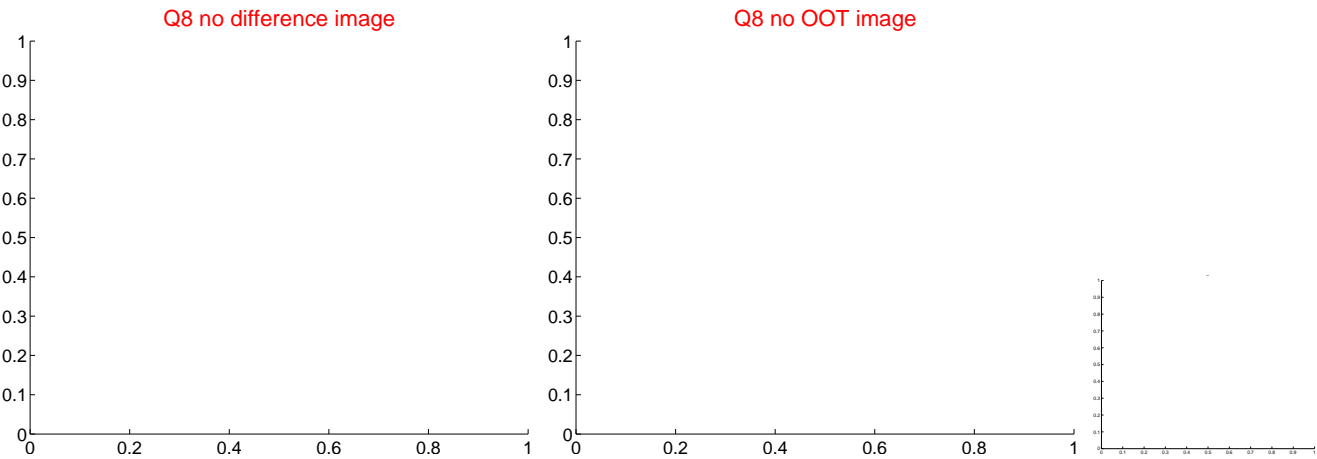
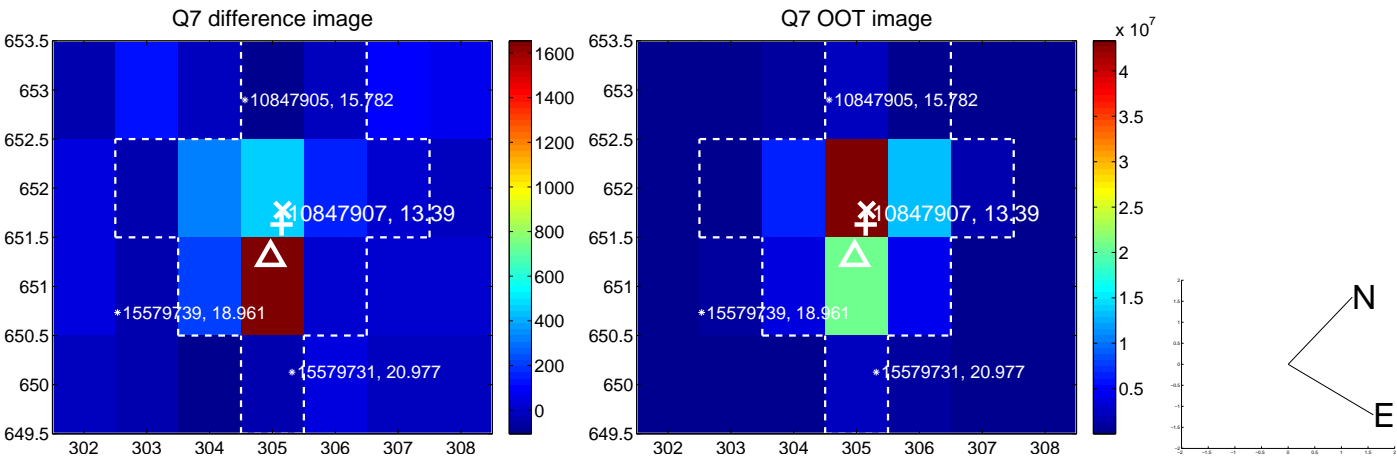
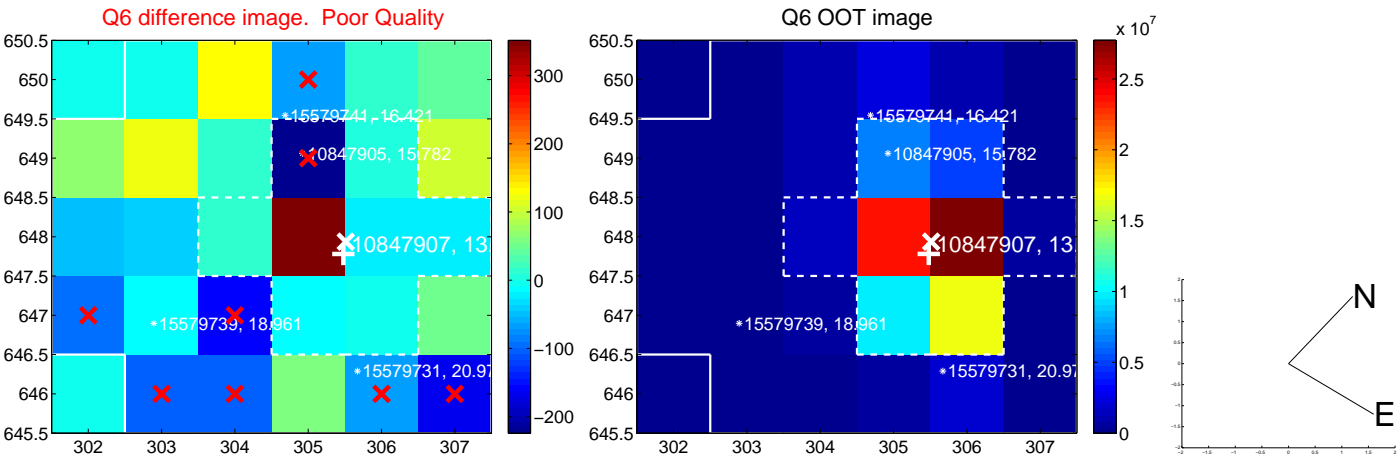
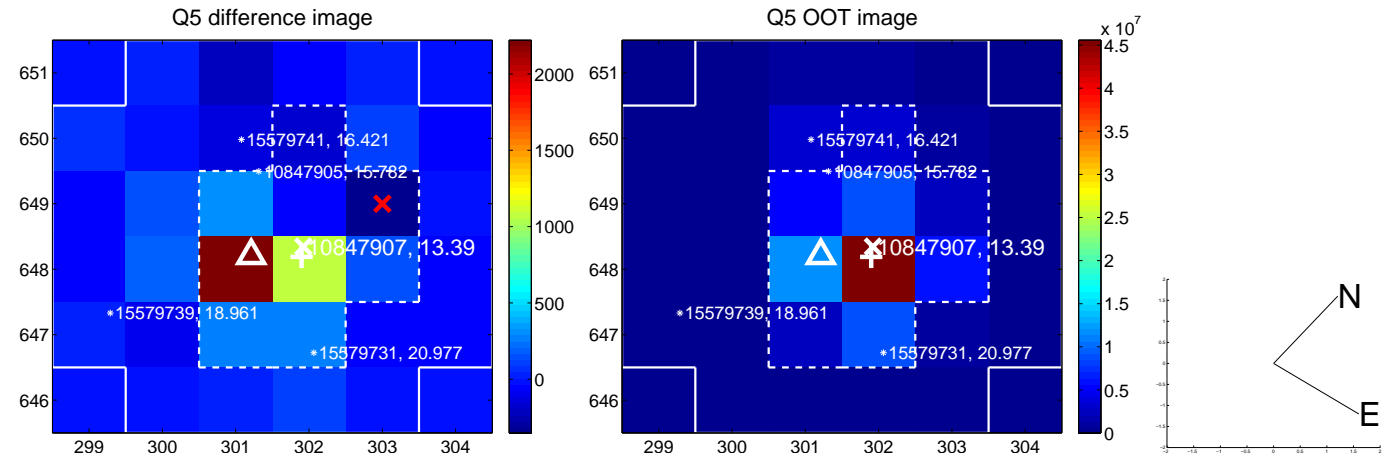


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

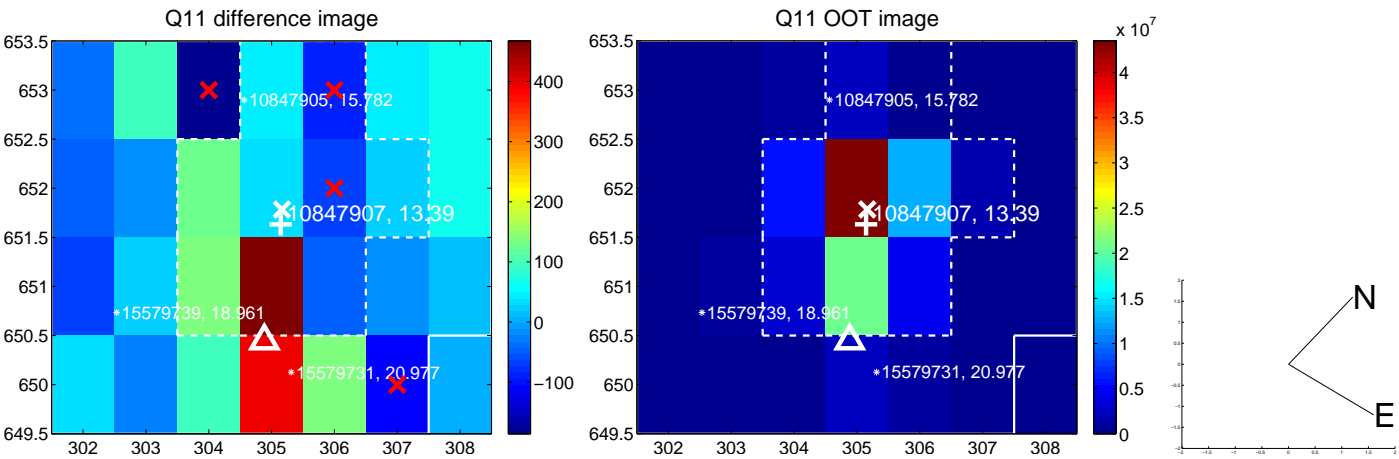
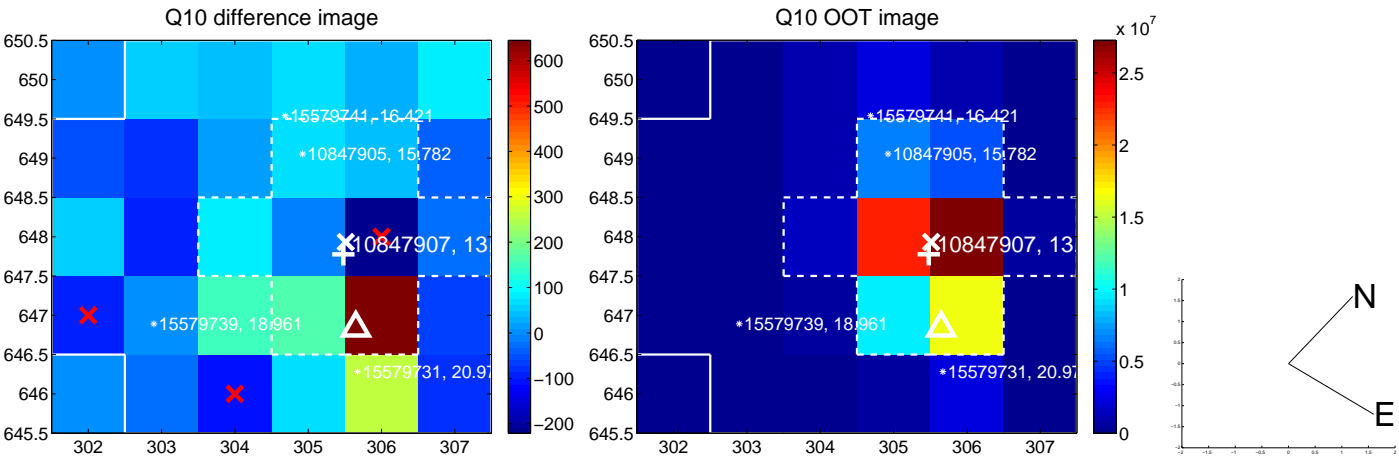
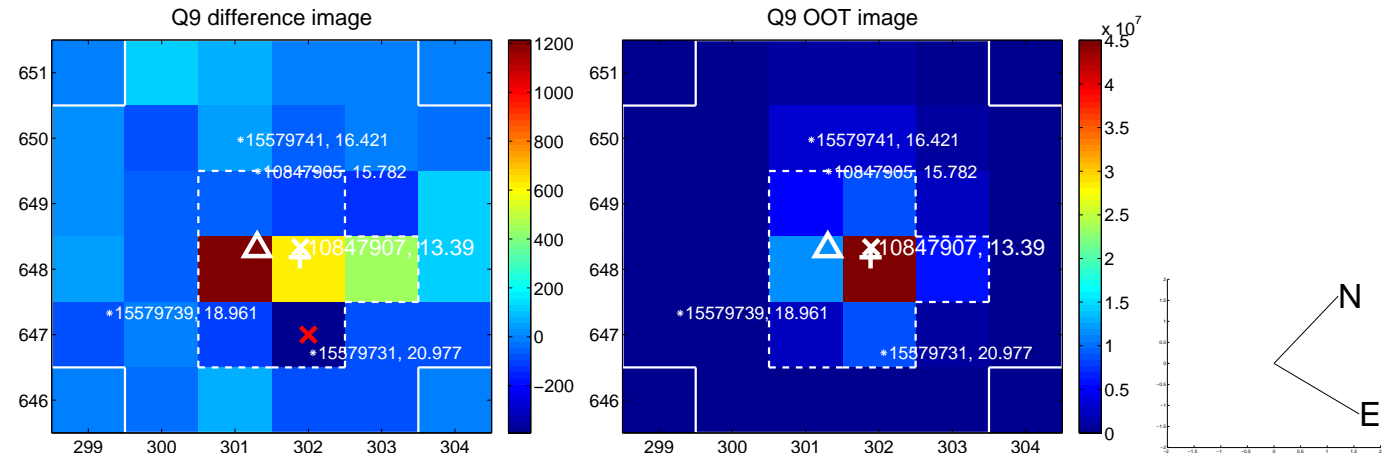


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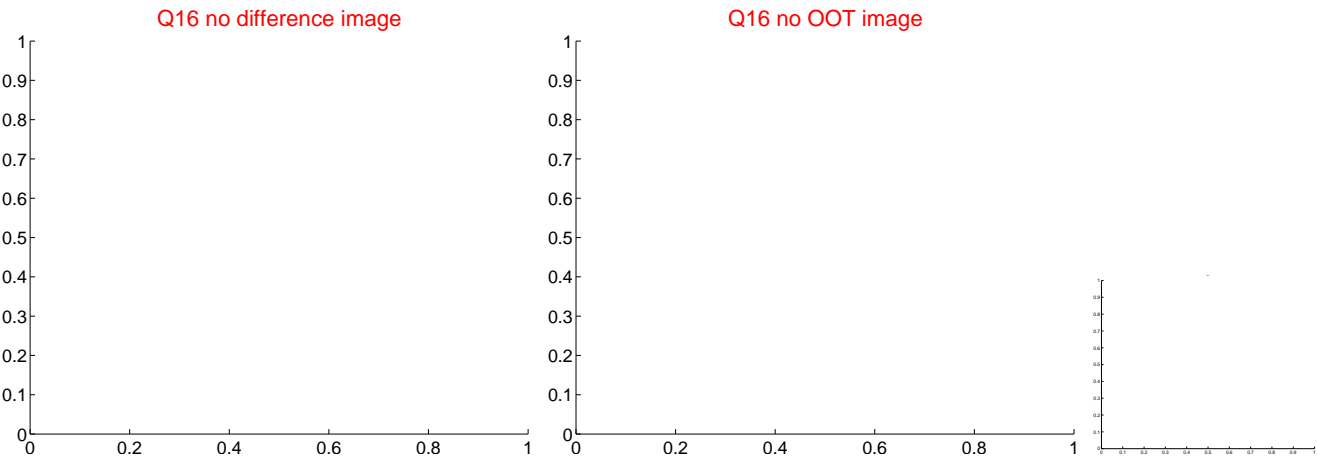
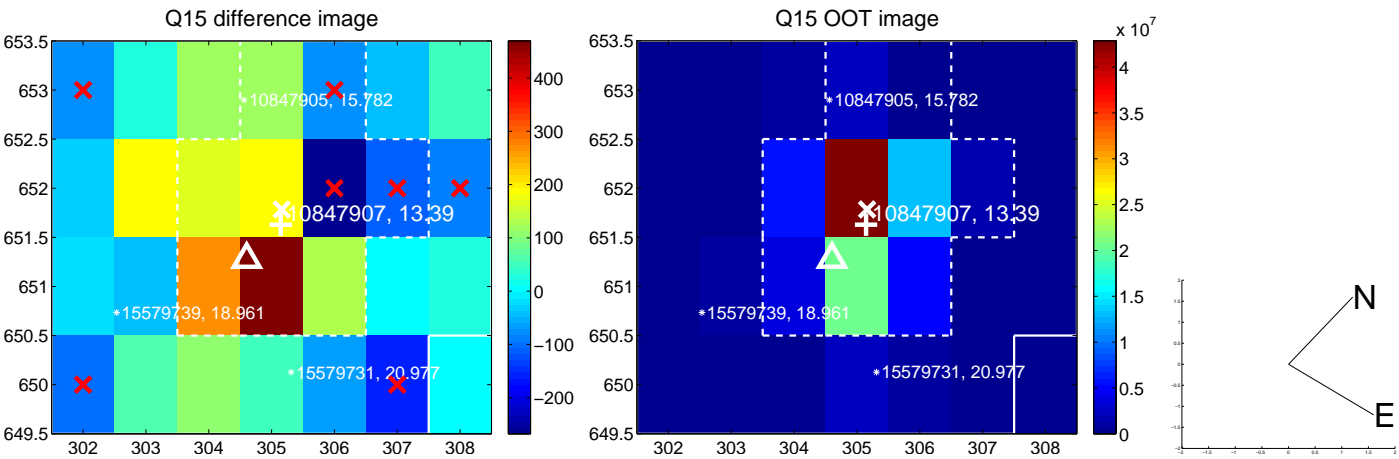
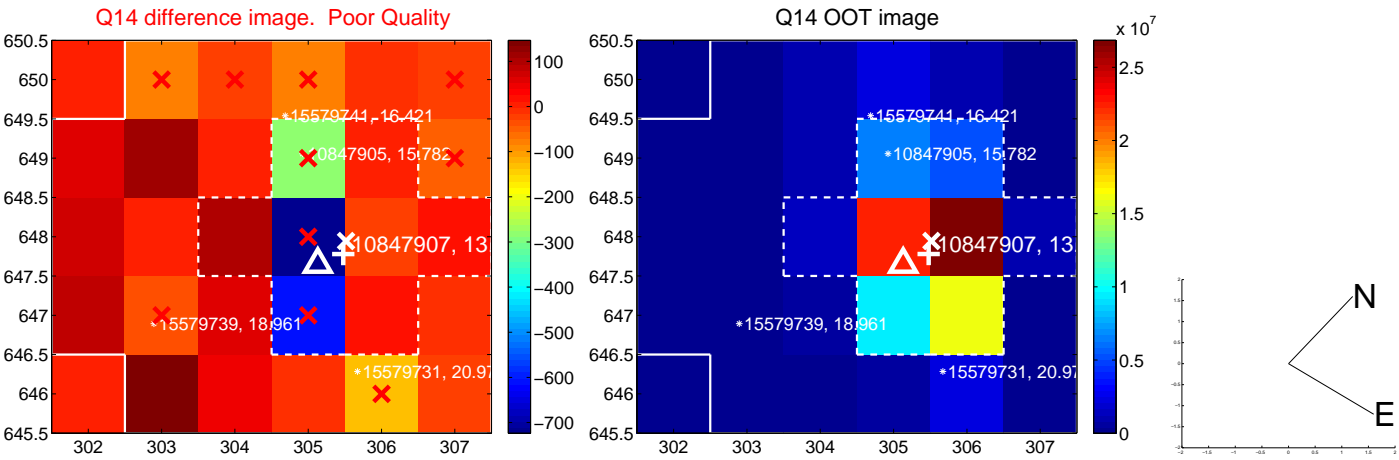
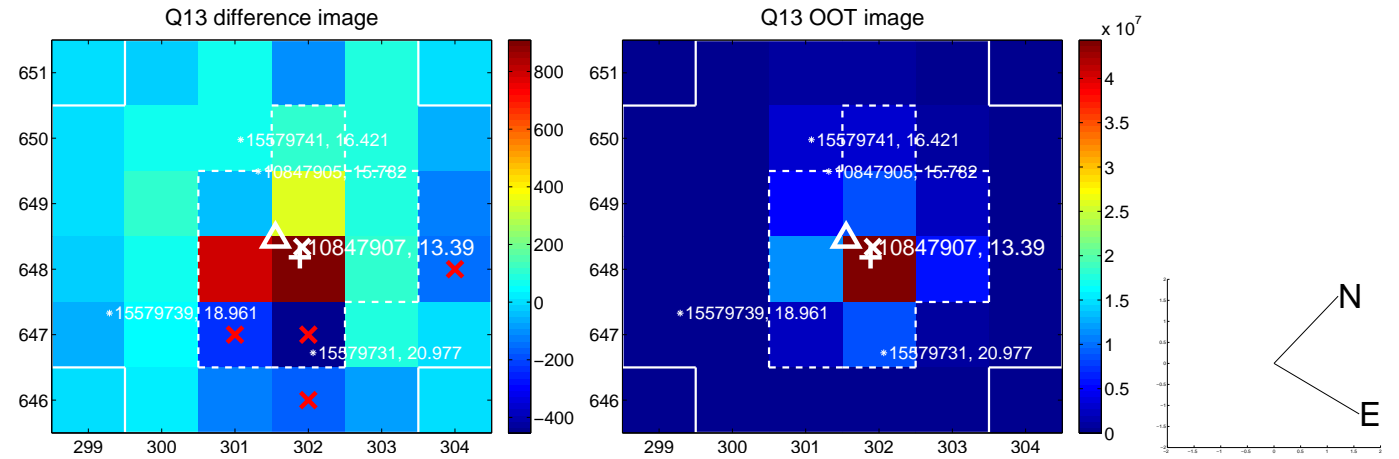




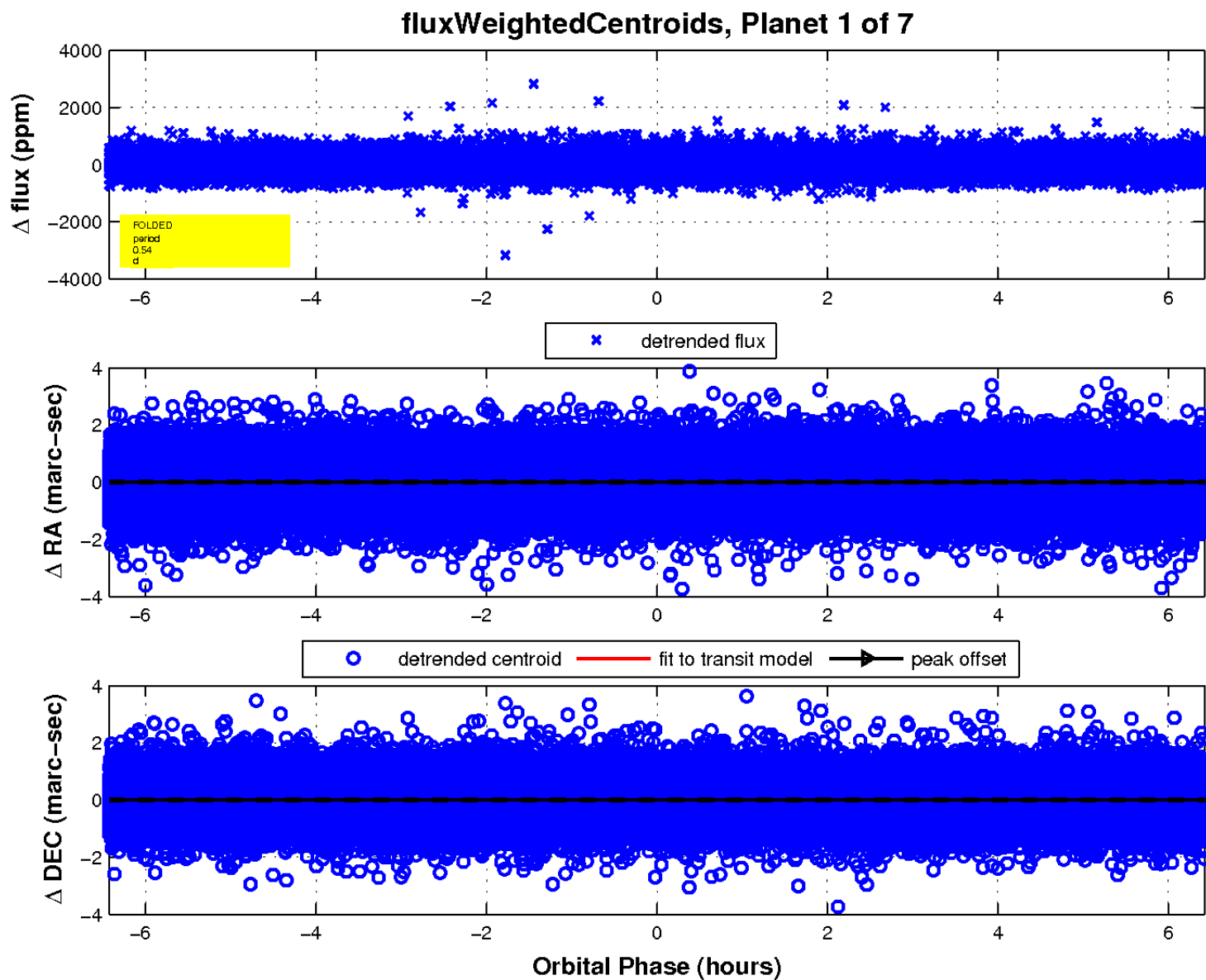
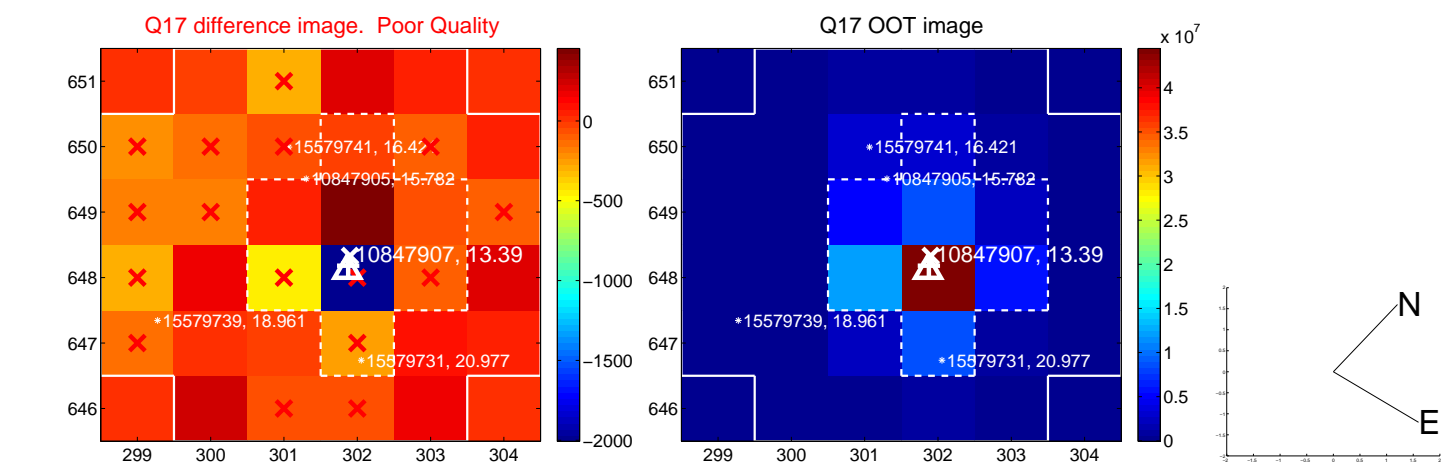
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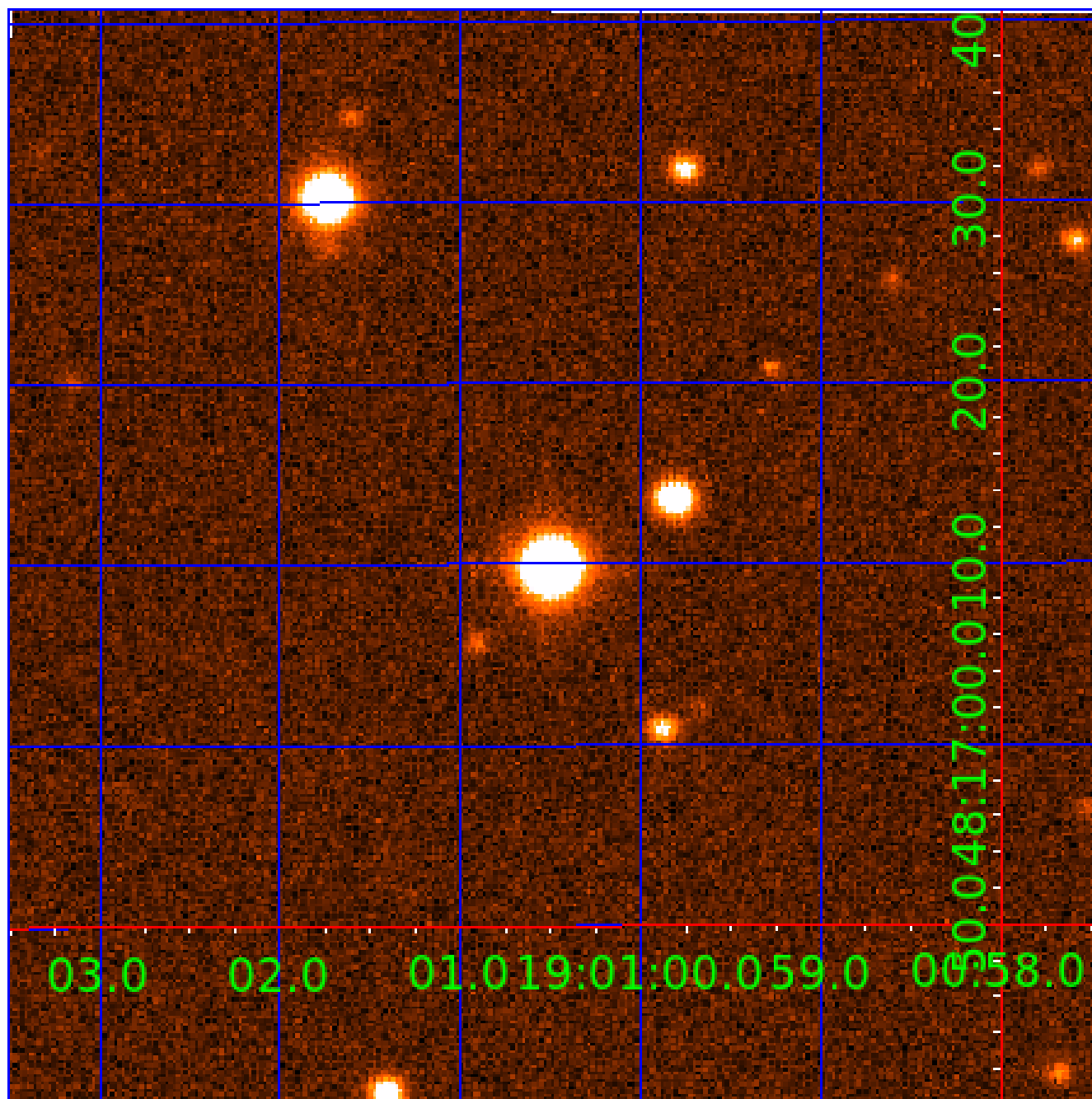


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UKIRT Image

Declination





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TCE	Run Type	Disp	Score	N	S	C	E	Comments
010847907-01	OBS	FP	0.00	1	0	0	0	LPP_DV—CENT_KIC_POS
010847907-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—ALL_TRANS_CHASES—CENT_FEW_MEAS
010847907-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT— INCONSISTENT_TRANS—CENT_KIC_POS
010847907-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_DIFFS
010847907-05	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT— MOD_POS_ALT—CENT_KIC_POS—HALO_GHOST
010847907-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—ALL_TRANS_CHASES—CENT_KIC_POS
010847907-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT— INCONSISTENT_TRANS—CENT_FEW_MEAS

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

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

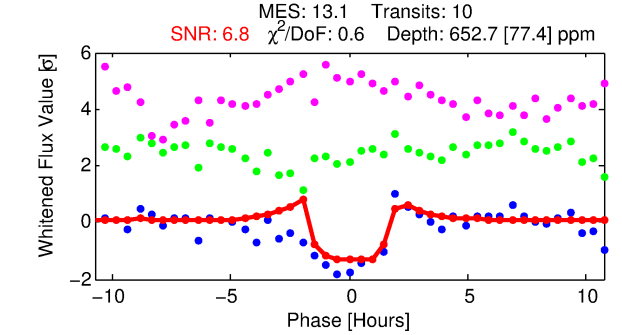
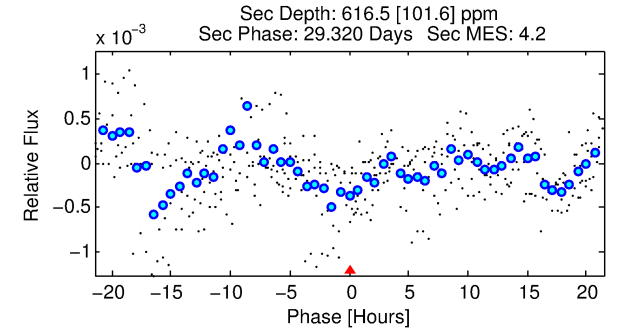
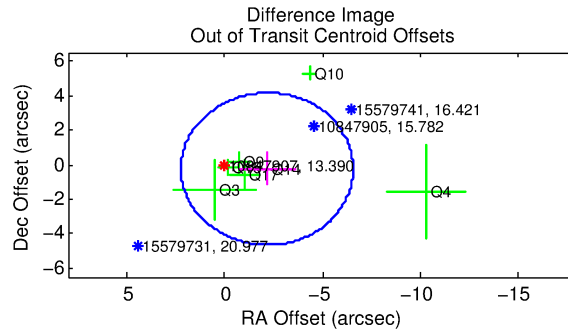
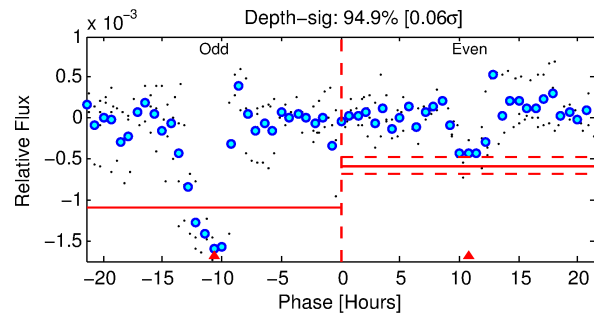
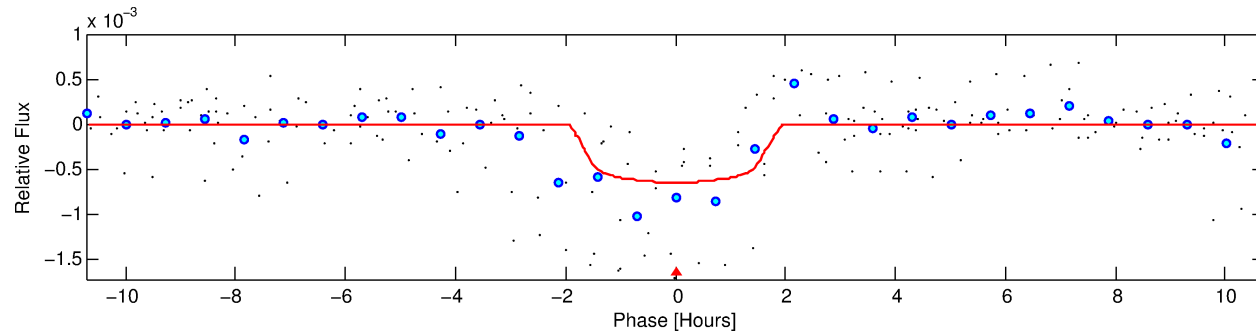
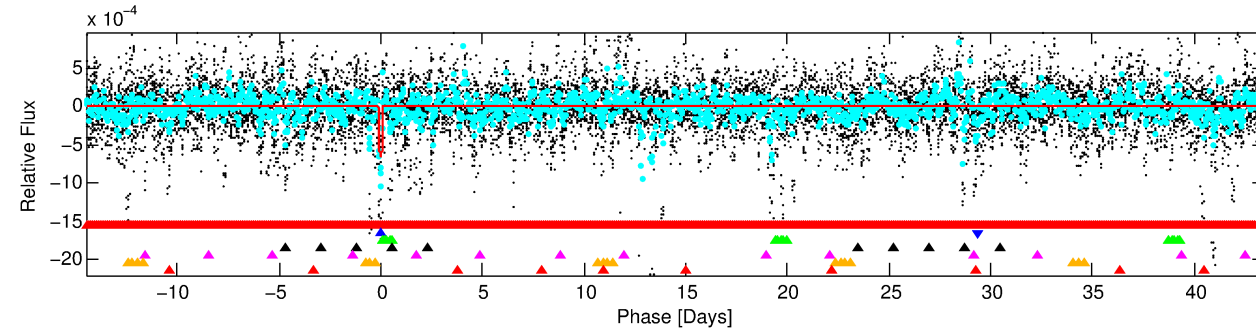
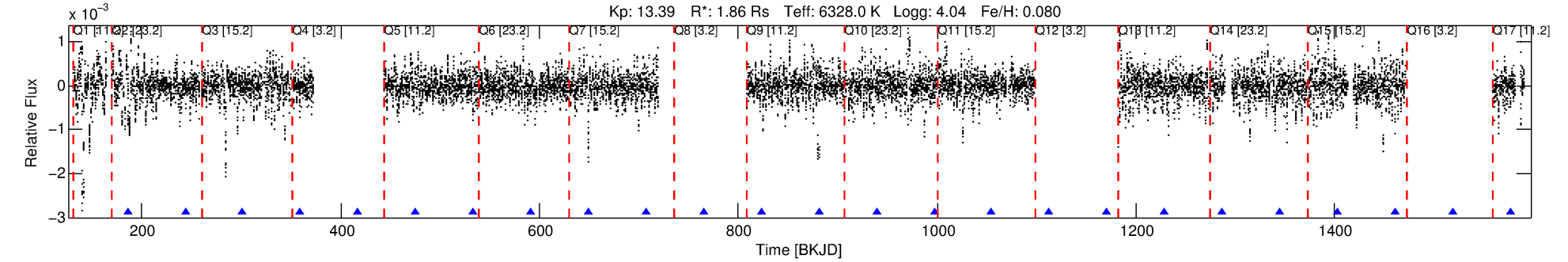
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 010847907-02

No Significant Match Found

# DV One-Page Summary

KIC: 10847907 Candidate: 2 of 7 Period: 57.955 d  
KOI: K07379 Corr: No Ephemeris Match



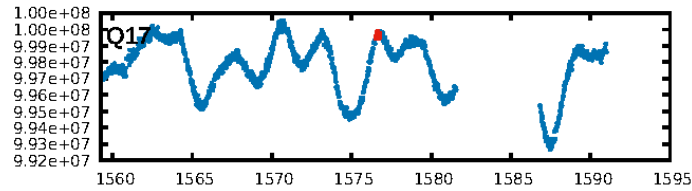
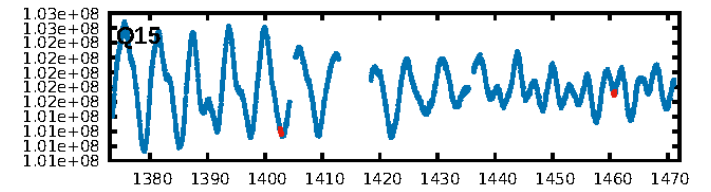
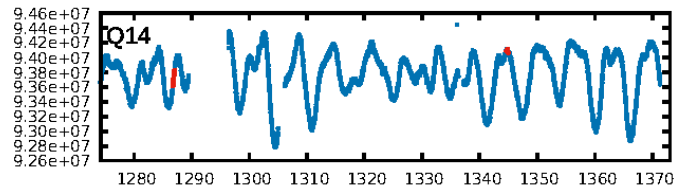
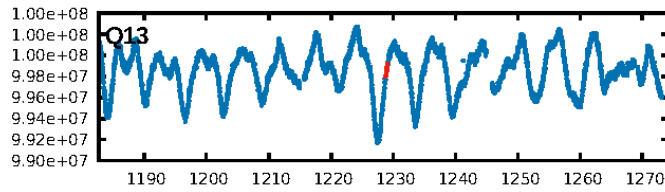
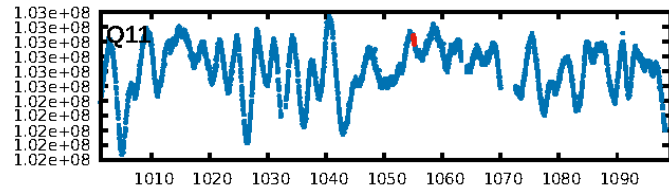
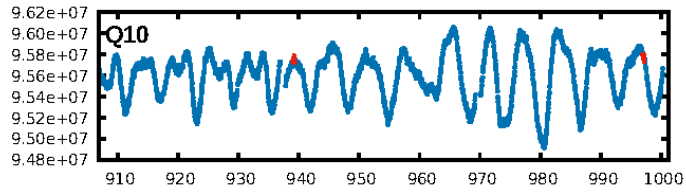
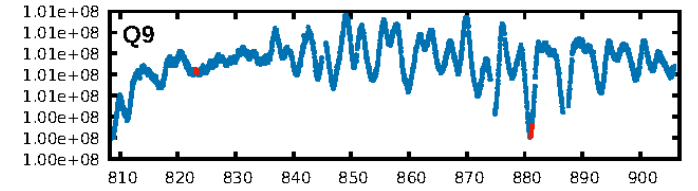
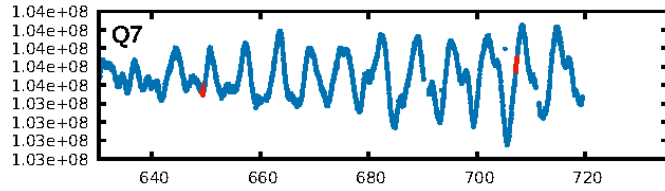
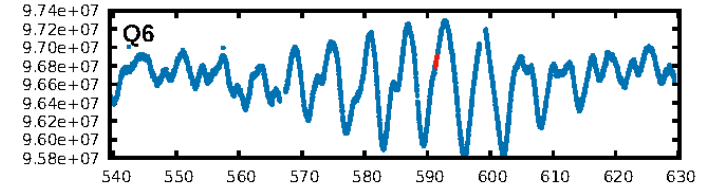
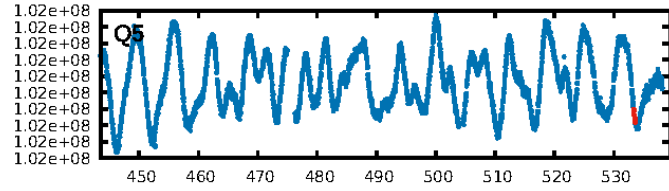
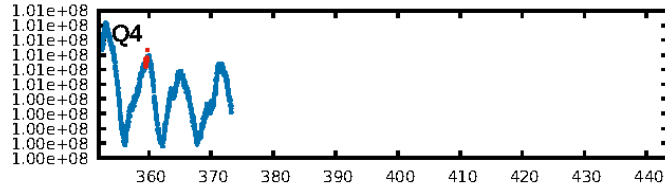
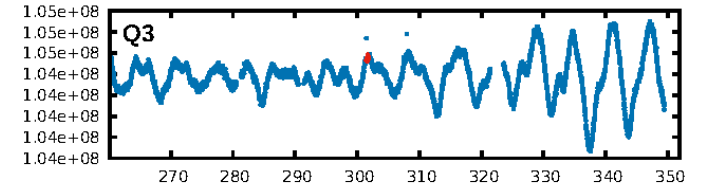
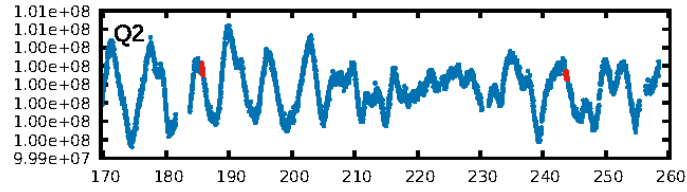
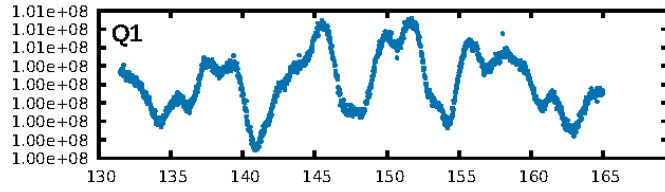
## DV Fit Results:

Period = 57.95543 [0.00044] d  
Epoch = 185.7184 [0.0057] BKJD  
Rp/R\* = 0.0250 [0.0201]  
a/R\* = 94.30 [387.89]  
b = 0.69 [3.18]  
Seff = 47.00 [23.87]  
Teq = 668 [85] K  
Rp = 5.08 [4.46] Re  
a = 0.3259 [0.1029] AU  
Ag = 1396.91 [2359.84] [0.59 $\sigma$ ]  
Teff = 6311 [2565] K [2.20 $\sigma$ ]

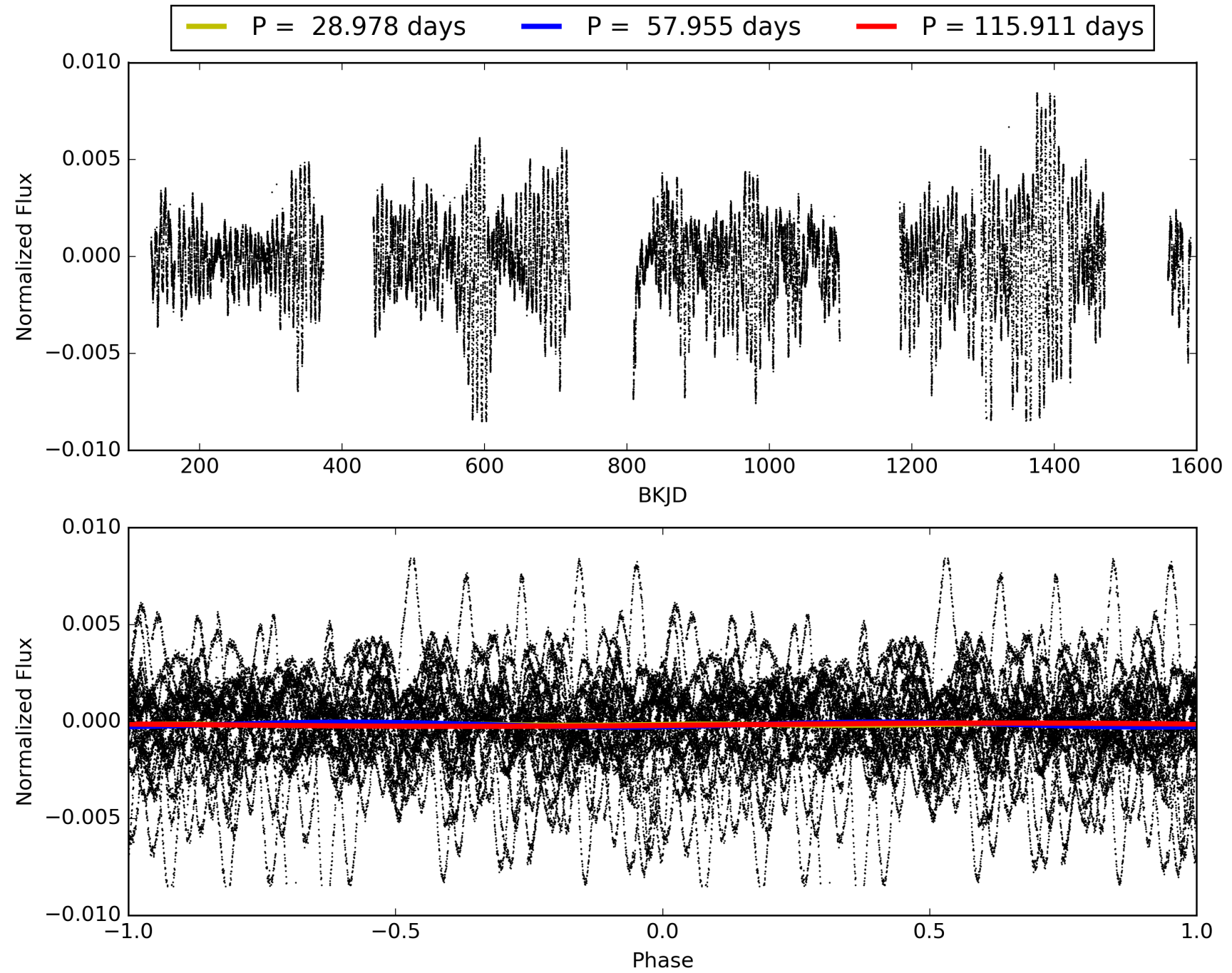
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [297.26 $\sigma$ ]  
LongPeriod-sig: 100.0% [97.01 $\sigma$ ]  
ModelChiSquare2-sig: 3.8%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 4.72e-25  
RollingBand-fgt: 1.00 [9/9]  
GhostDiagnostic-chr: 3.124  
Centroid-sig: 0.0%  
Centroid-so: 1.065 arcsec [3.52 $\sigma$ ]  
OotOffset-rm: 2.186 arcsec [1.49 $\sigma$ ]  
KicOffset-rm: 2.056 arcsec [1.53 $\sigma$ ]  
OotOffset-st: 2/2/1/2 [7]  
KicOffset-st: 2/2/1/2 [7]  
DiffImageQuality-fgm: 0.29 [2/7]  
DiffImageOverlap-fno: 0.00 [0/12]

# TCE 010847907-02, PDC Light Curves

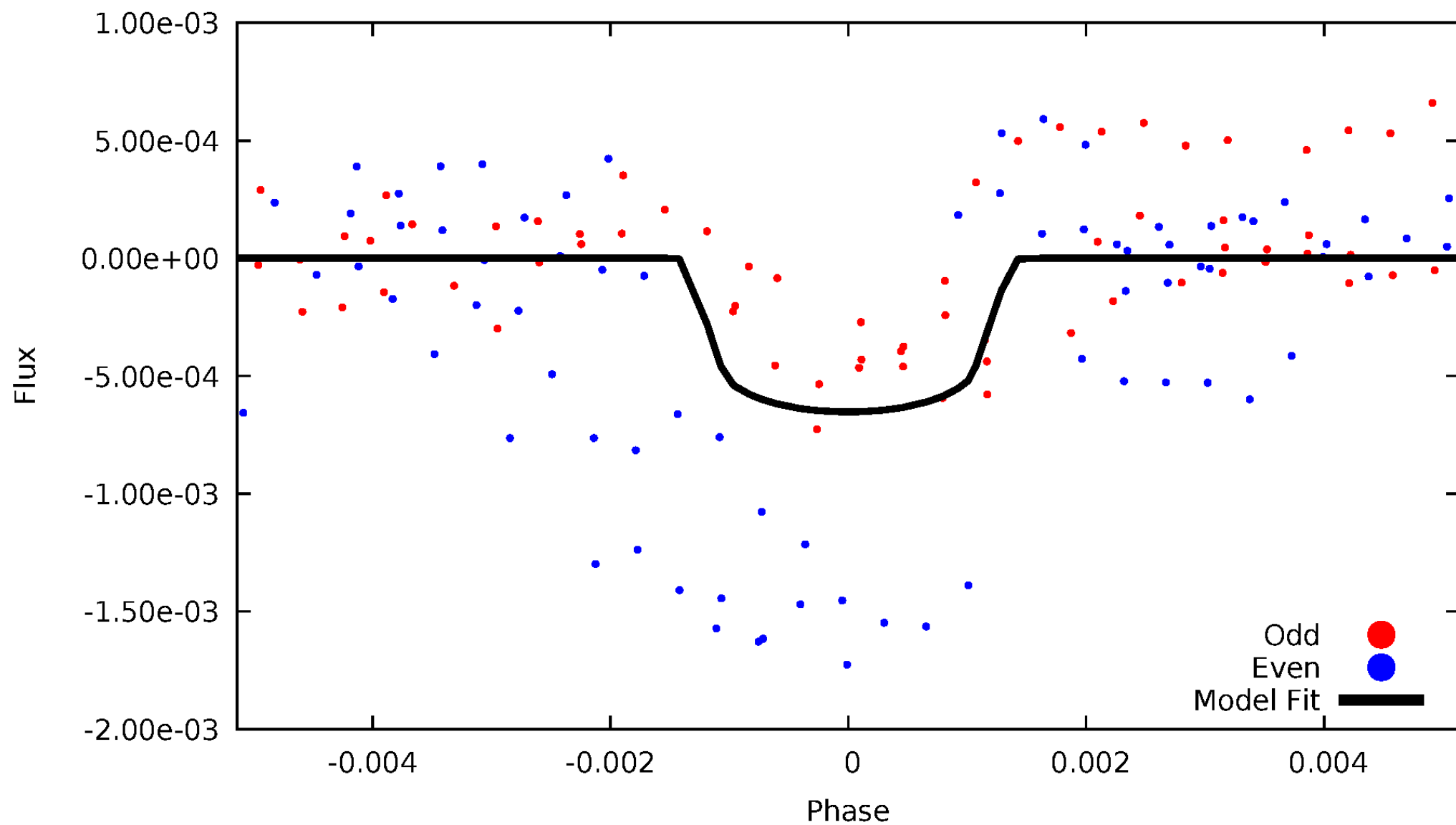


TCE 010847907-02



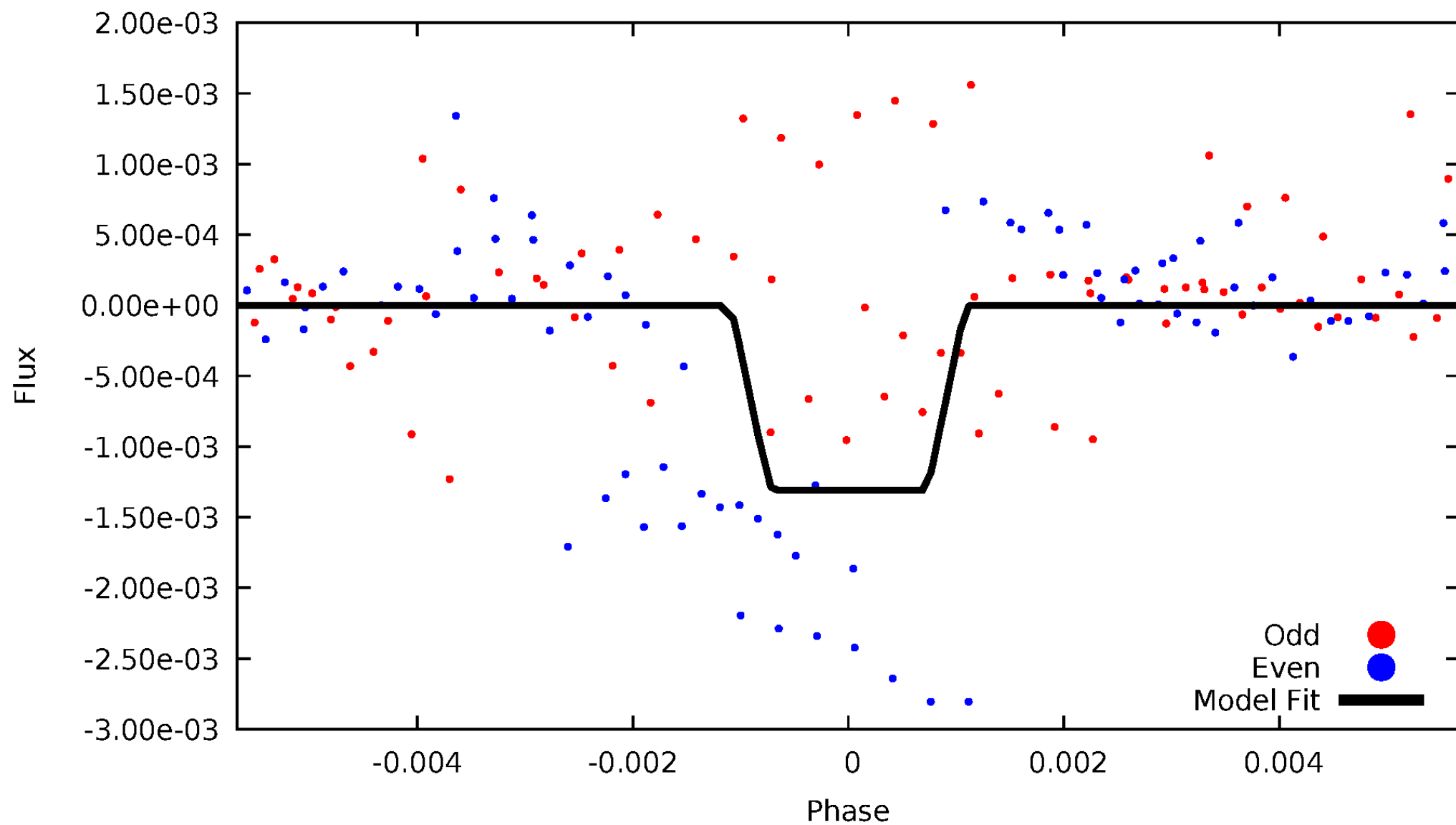
# DV Odd/Even

TCE 010847907-02



# ALT Odd/Even

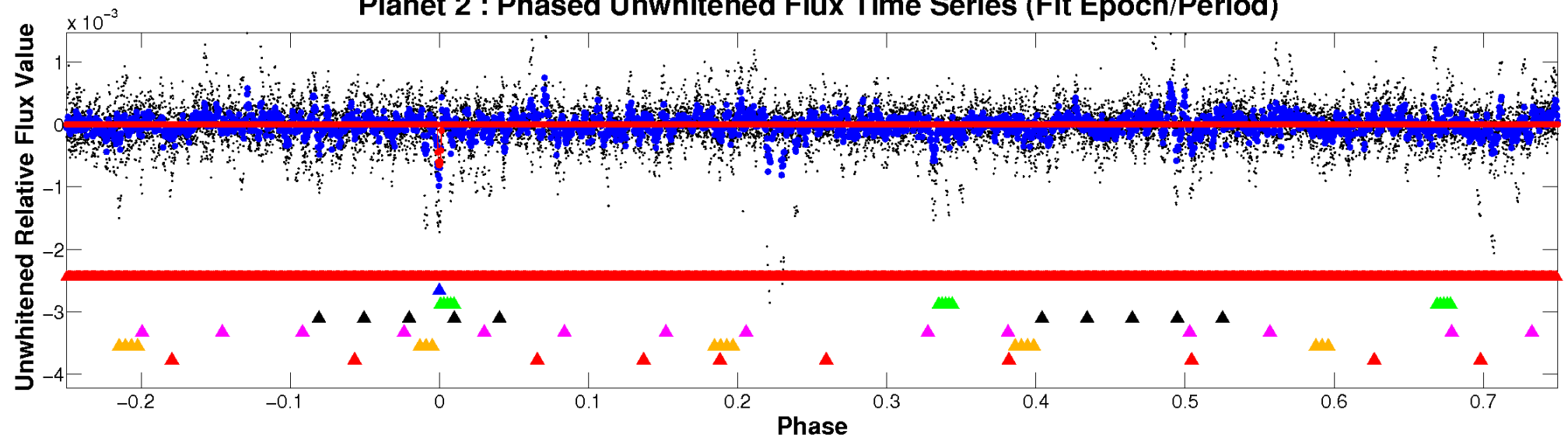
TCE 010847907-02



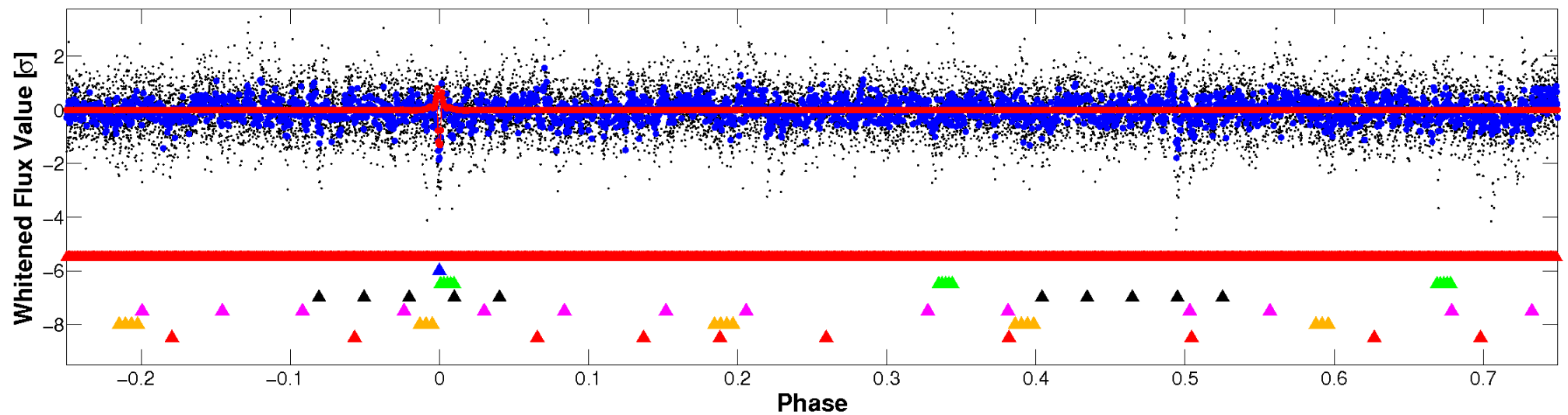


# Non-Whitened Vs. Whitened Light Curve

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

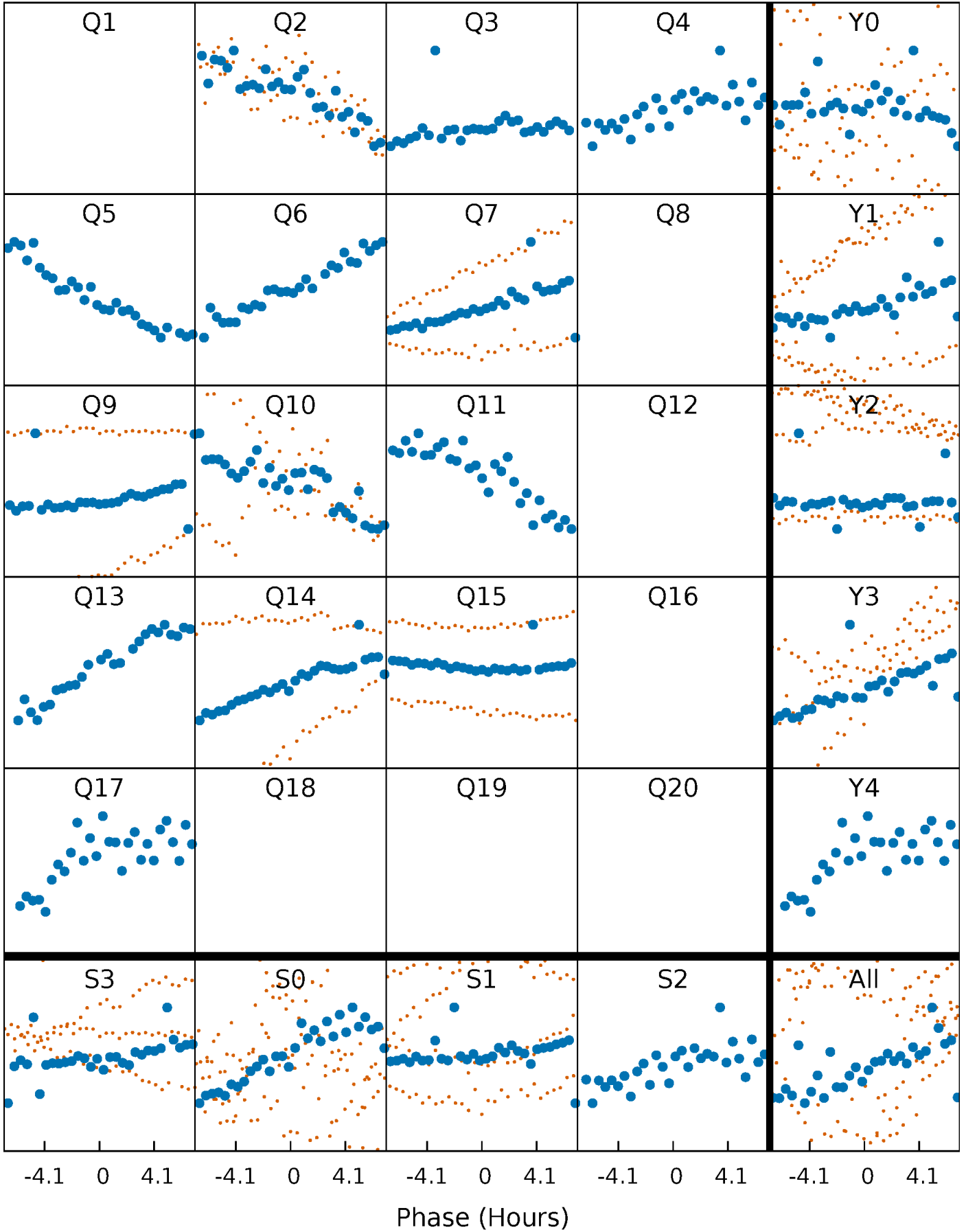


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



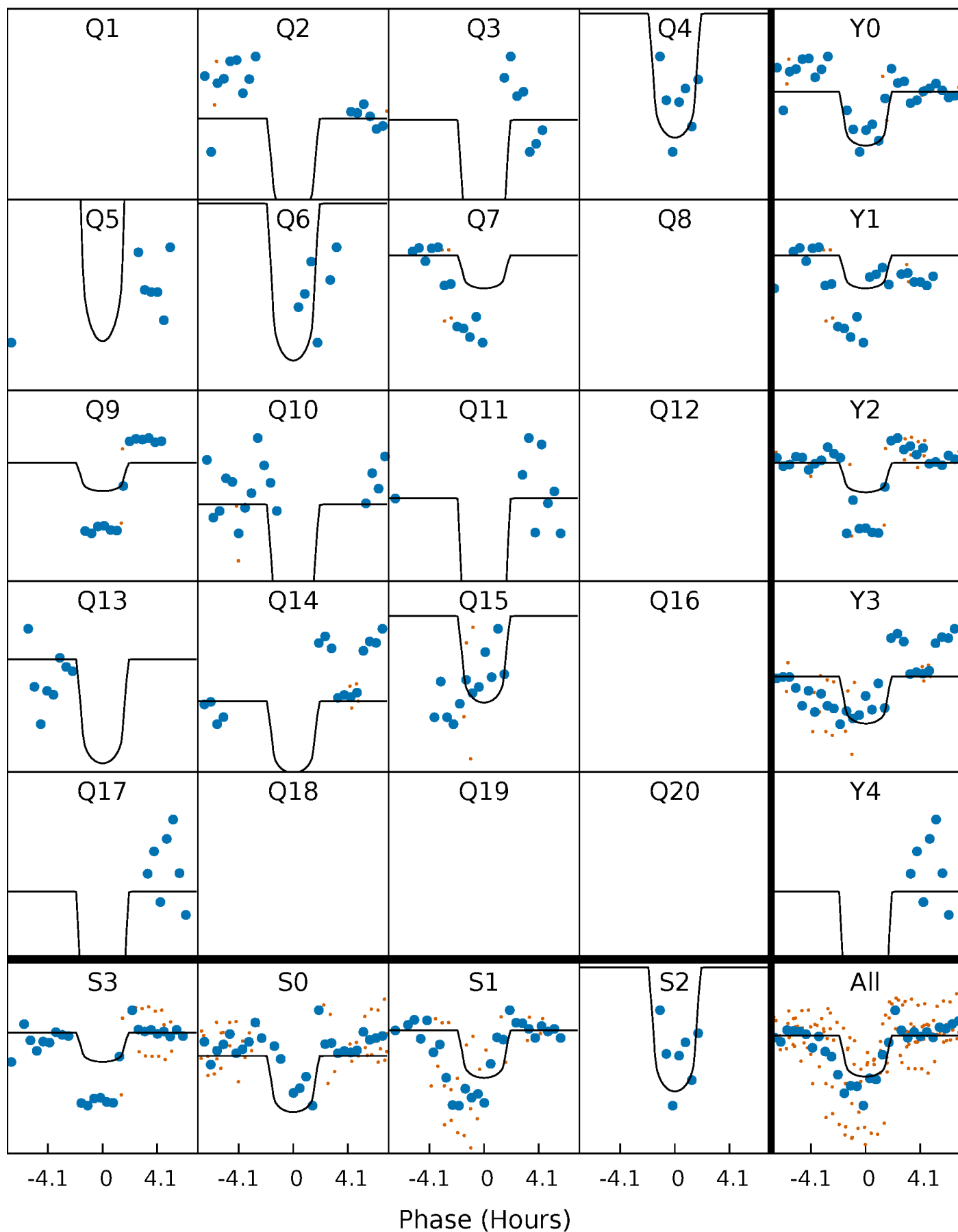
# PDC Quarter-Phased Transit Curves

TCE 010847907-02   P= 57.955427 Days    $T_0=185.718370$  (BKJD)



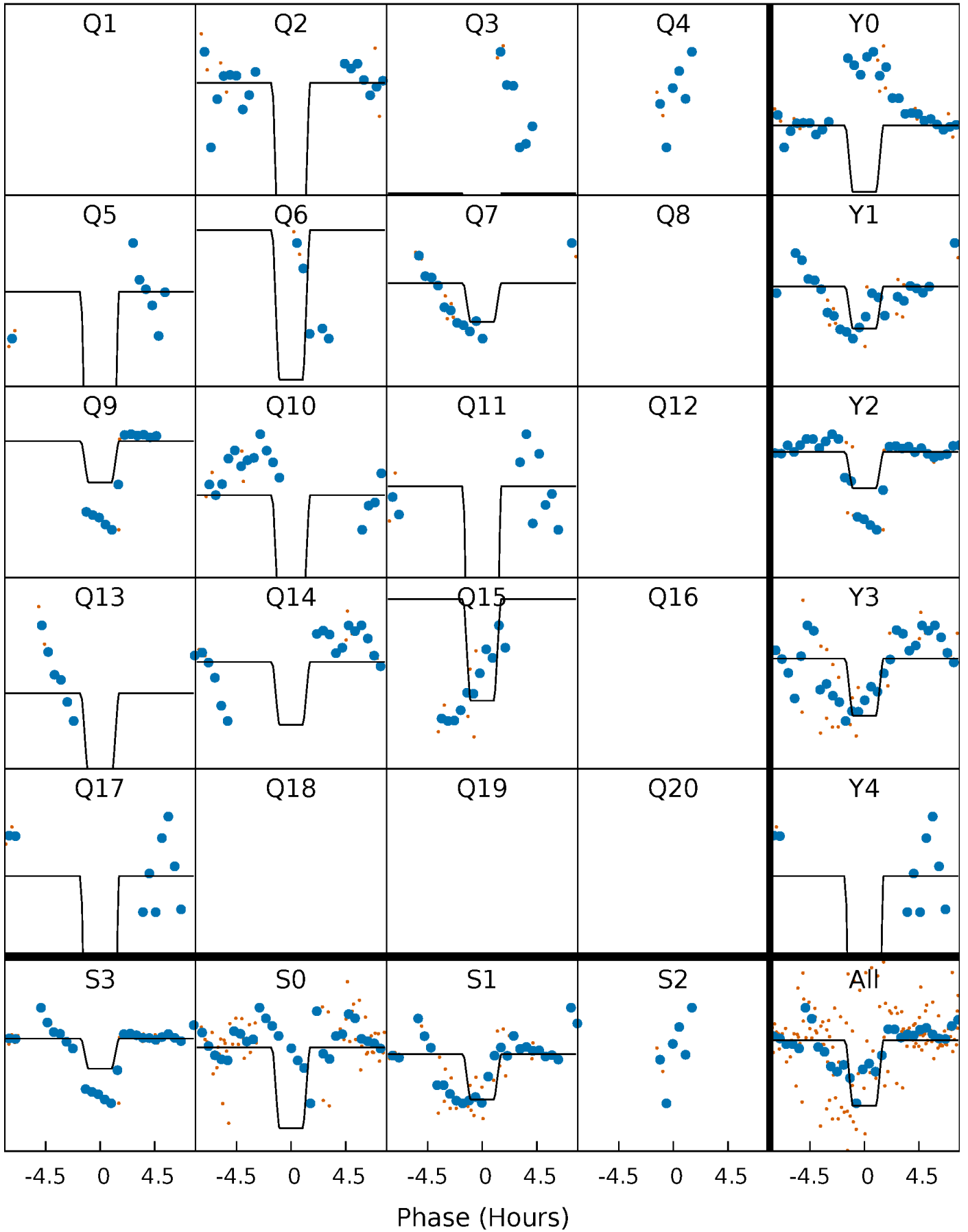
# DV Quarter-Phased Transit Curves

TCE 010847907-02     $P = 57.955427$  Days     $T_0 = 185.718370$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

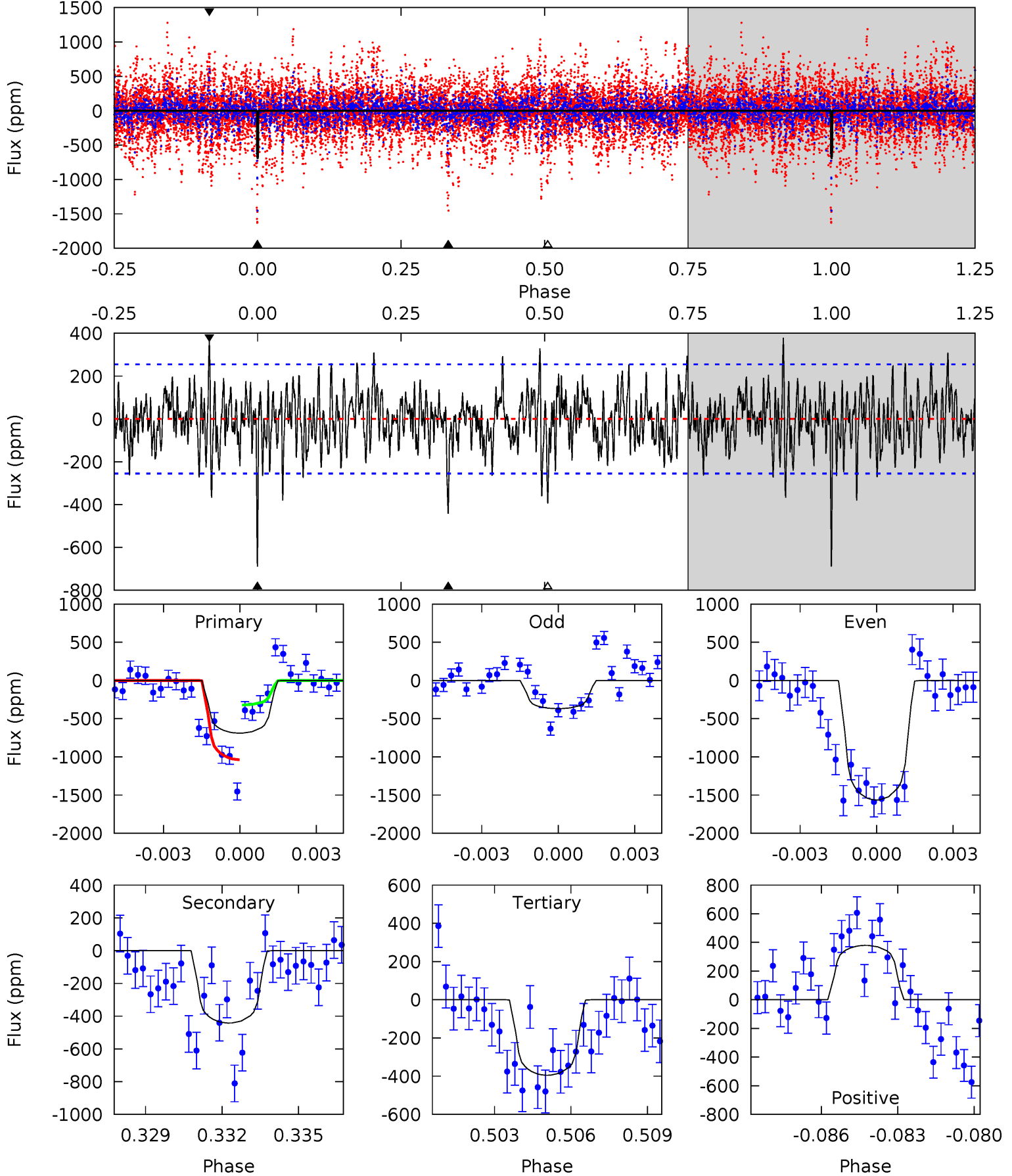
TCE 010847907-02   P= 57.954663 Days    $T_0=185.721161$  (BKJD)



# DV Model-Shift Uniqueness Test

010847907-02, P = 57.955427 Days, E = 127.762943 Days

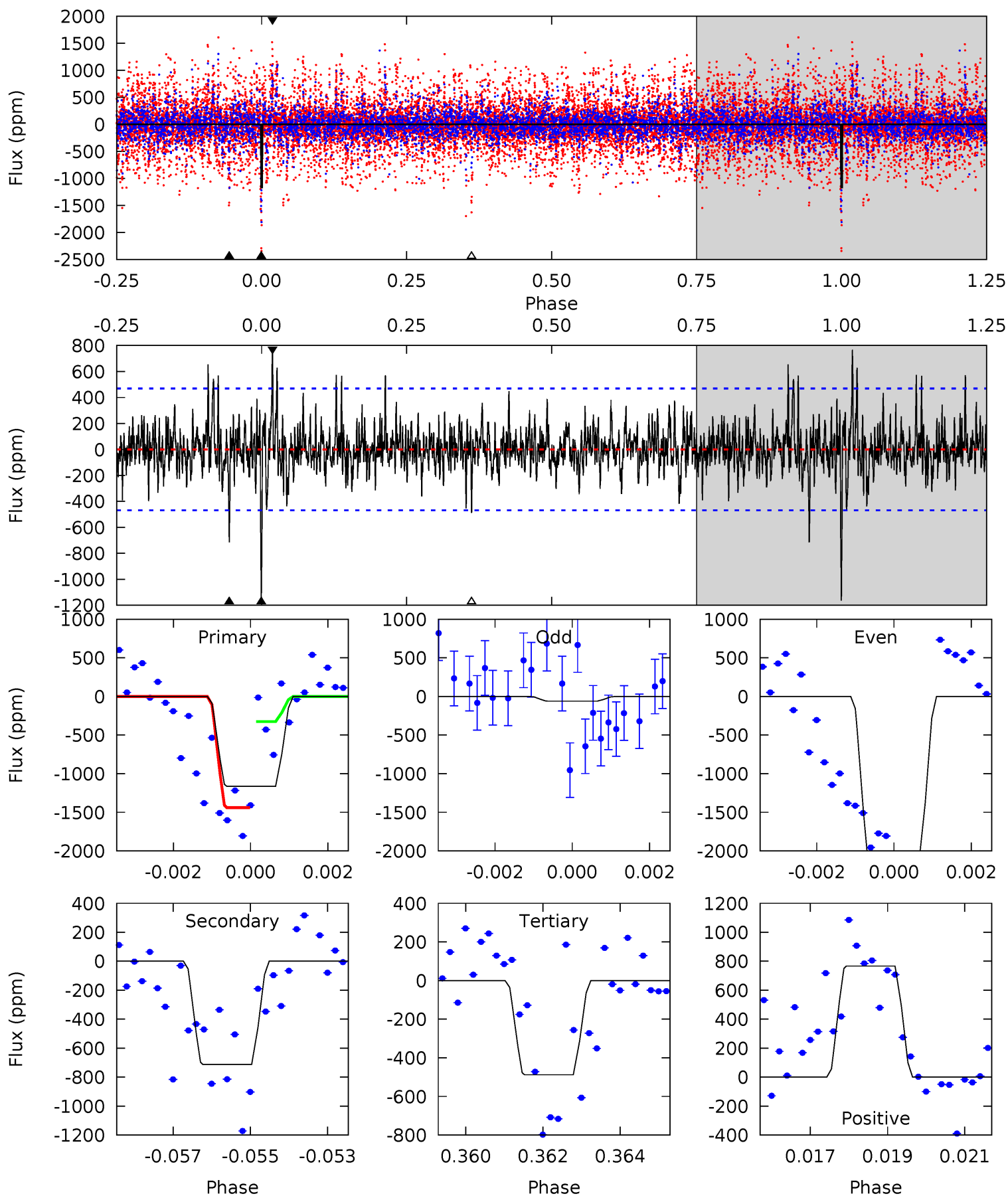
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
14.2	9.12	8.15	7.82	5.26	2.98	2.17	6.07	6.40	0.97	1.29	12.3	1.27	0.35	7.57



# Alt Model-Shift Uniqueness Test

010847907-02, P = 57.954663 Days, E = 127.766498 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.2	8.08	5.54	8.70	5.32	3.07	1.57	7.66	4.49	2.55	-0.62	12.7	1.01	0.40	6.01



### Stellar Parameters For KIC 010847907

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6328^{+177}_{-243}$	$4.035^{+0.276}_{-0.161}$	$0.080^{+0.250}_{-0.300}$	$1.864^{+0.536}_{-0.655}$	$1.374^{+0.190}_{-0.285}$	$0.299^{+0.555}_{-0.139}$
	+3%/-4%	+7%/-4%	+312%/-375%	+29%/-35%	+14%/-21%	+186%/-46%
Source	PHO54	PHO54	PHO54	DSEP		

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

### Secondary Eclipse Parameters for KIC 010847907-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-442 \pm 48$	$5.46^{+3.76}_{-3.30}$	$922^{+75}_{-87}$	$5495^{+3468}_{-1040}$	$864^{+4510}_{-559}$
Alt.	$-713 \pm 88$	$7.31^{+4.34}_{-3.59}$	$921^{+74}_{-81}$	$5338^{+2241}_{-888}$	$756^{+2050}_{-459}$

$T_{\text{max}}$  = 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

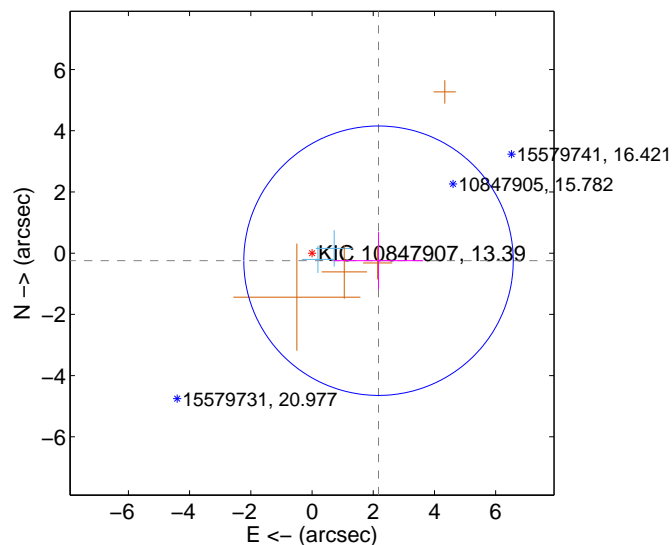
Supplemental centroid analysis for 010847907-02. Kepler magnitude: 13.39. Transit SNR 6.80

There are 2 quarters with good PRF difference image offsets

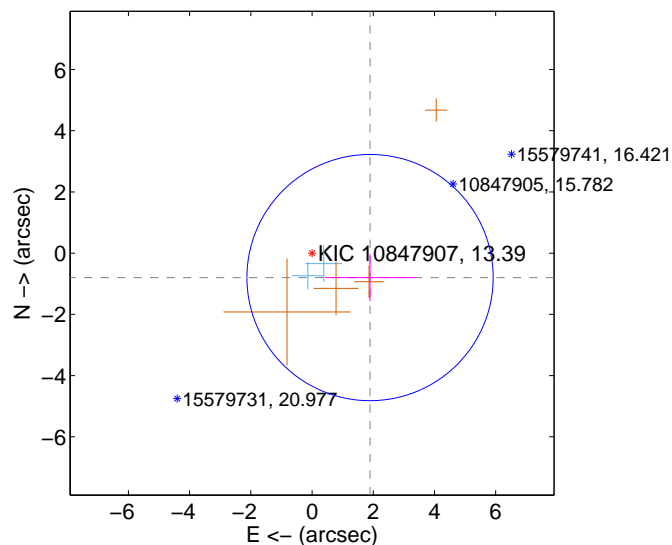
The direct PRF centroid is offset from the target star catalog position by about 0.60 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$2.186 \pm 1.467$	1.49	$-2.172 \pm 1.459$	$-0.246 \pm 0.933$
PRF-fit source offset from KIC position	$2.056 \pm 1.341$	1.53	$-1.895 \pm 1.487$	$-0.797 \pm 0.773$
photometric centroid source offset	$1.07 \pm 0.30$	3.52	$-0.87 \pm 0.32$	$-0.62 \pm 0.27$

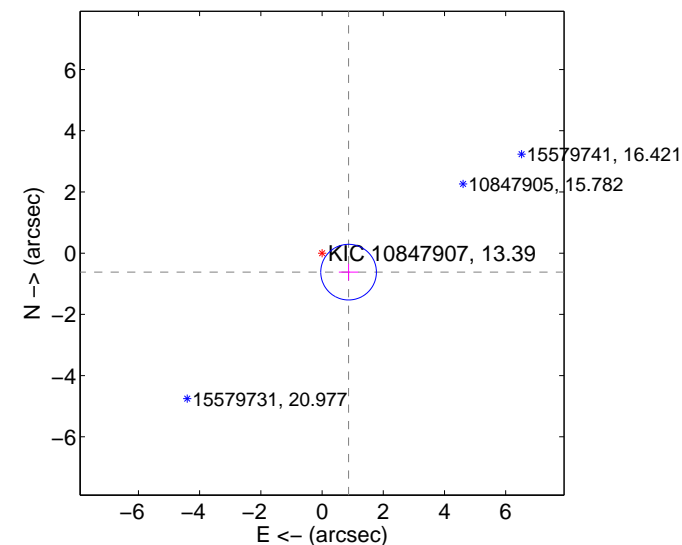
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

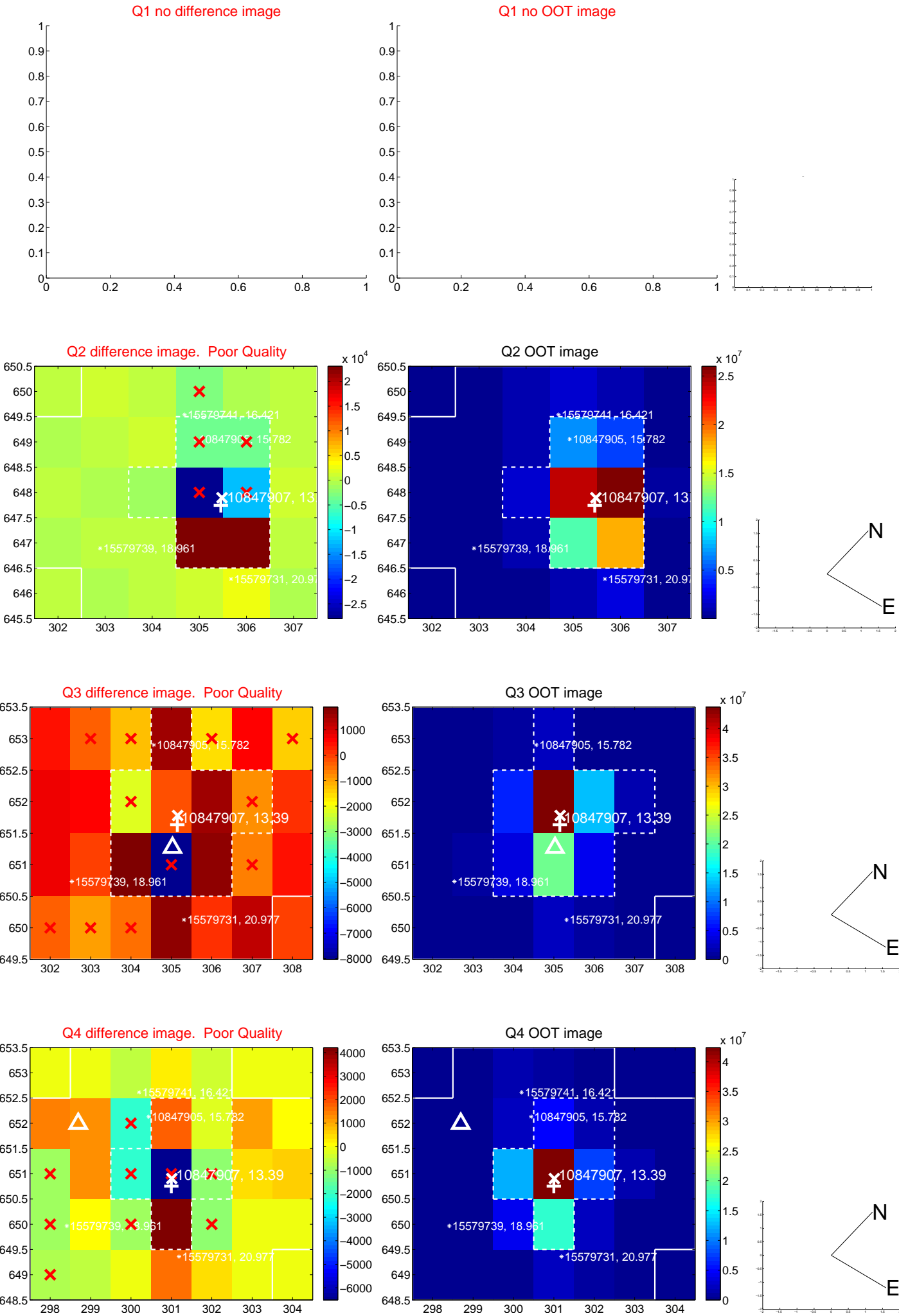


offset from photometric centroids

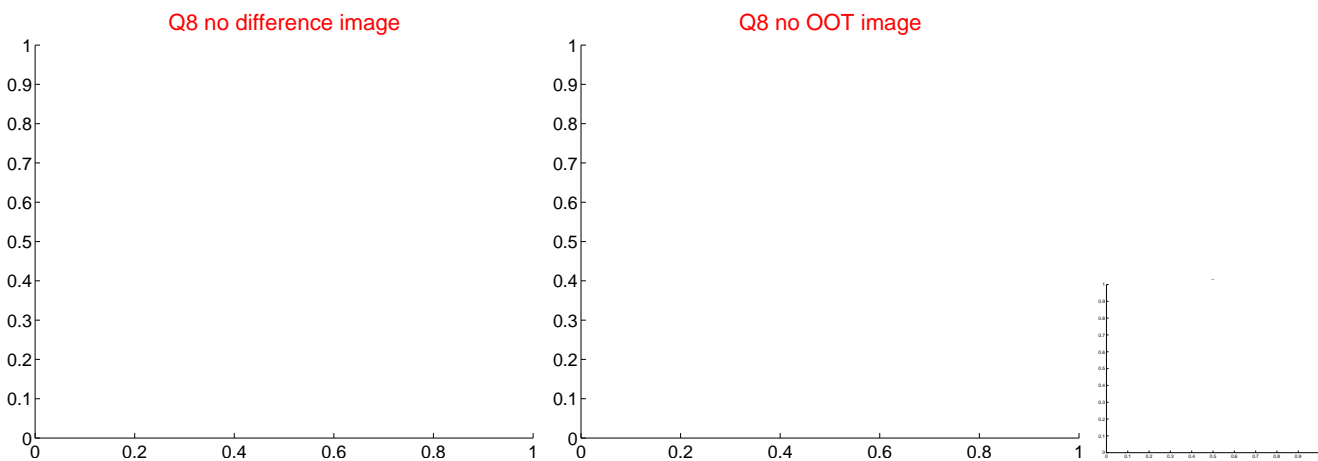
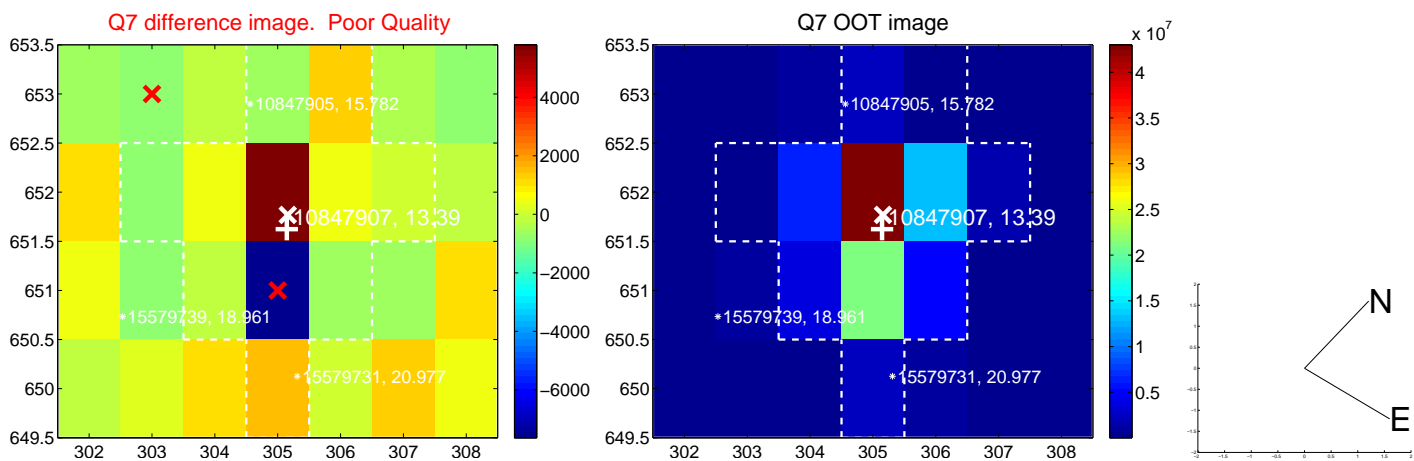
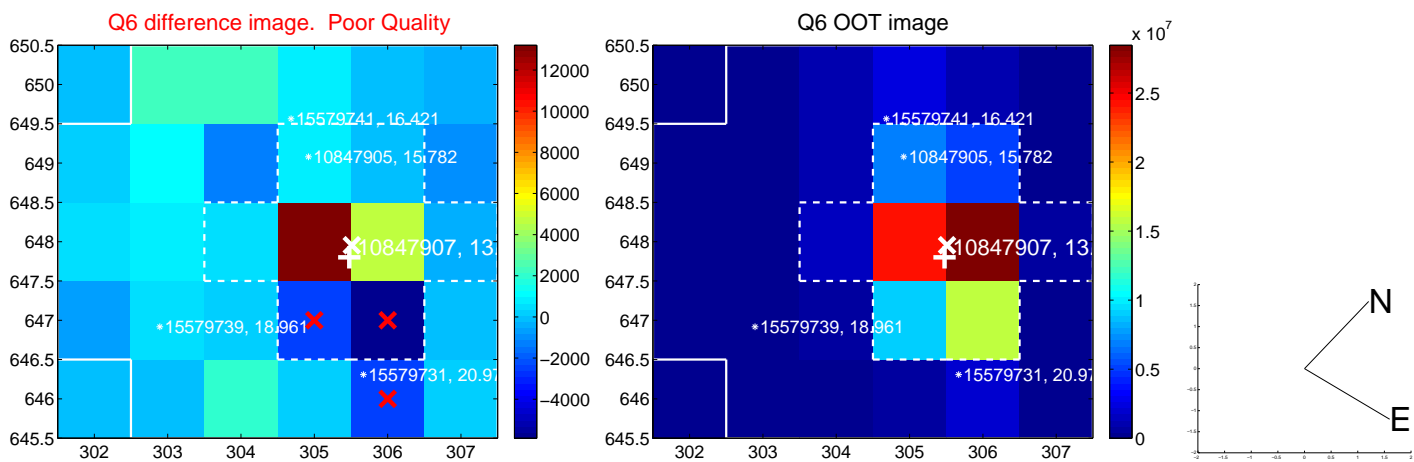
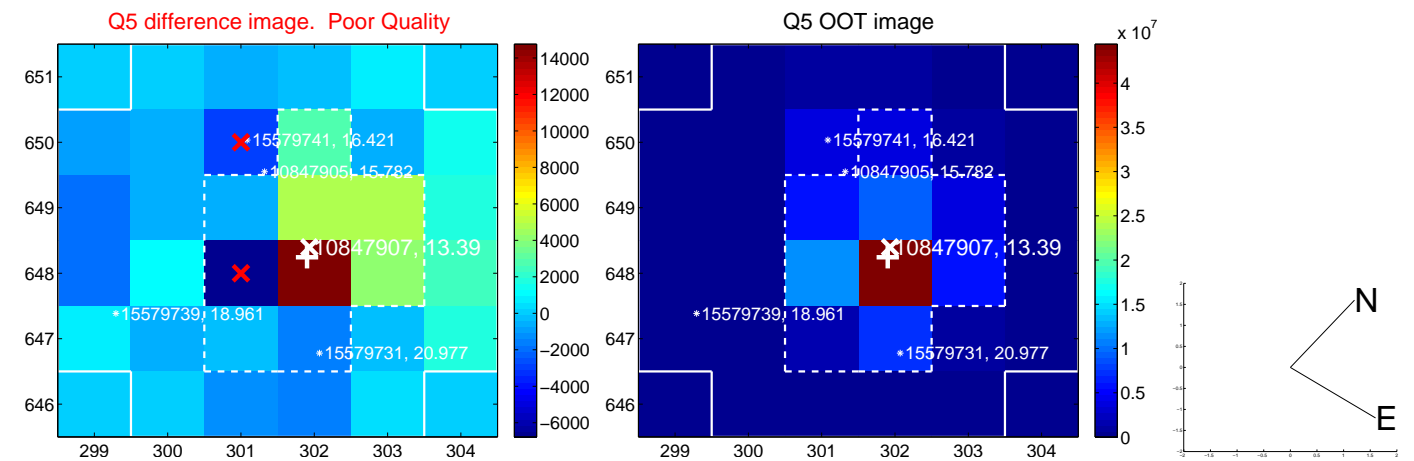


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

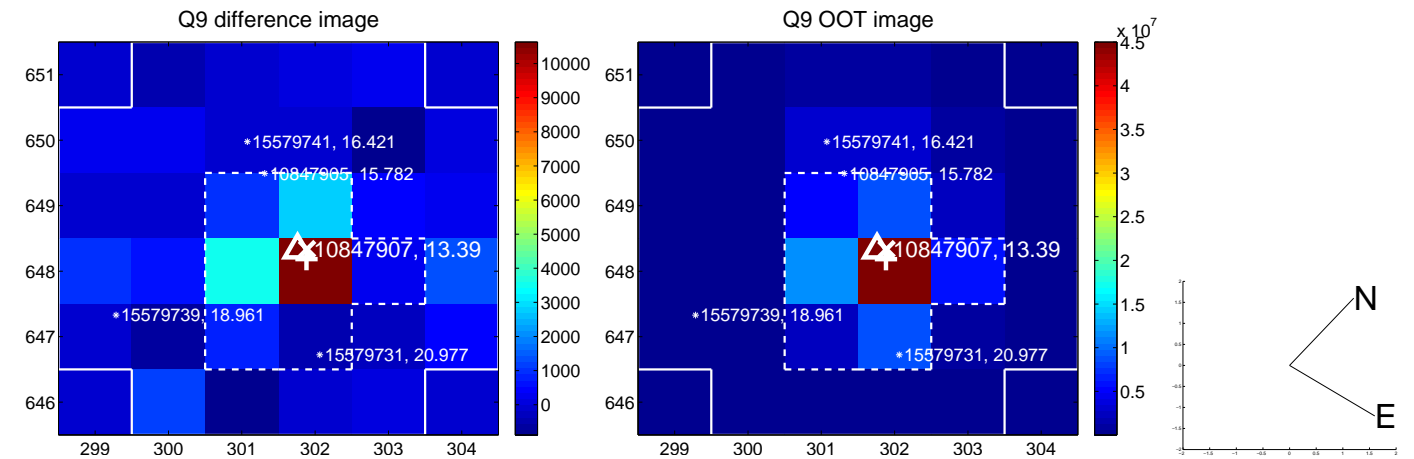
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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.

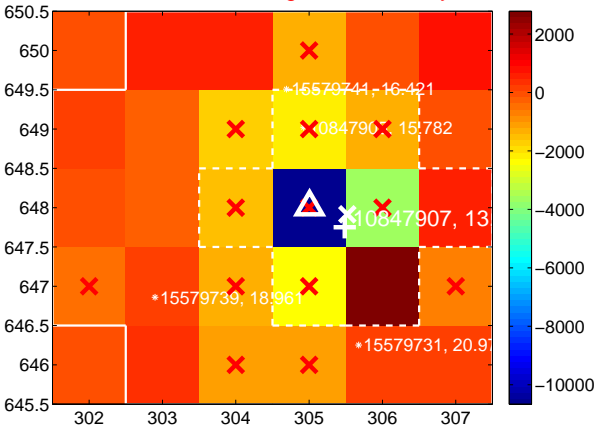
Q13 no difference image



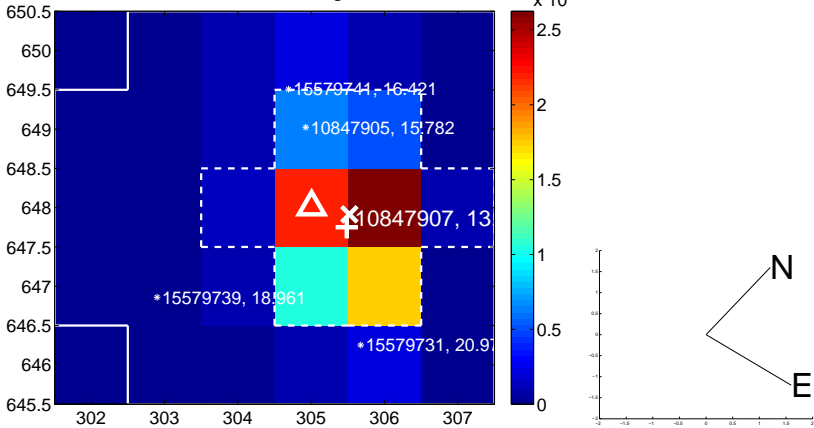
Q13 no OOT image



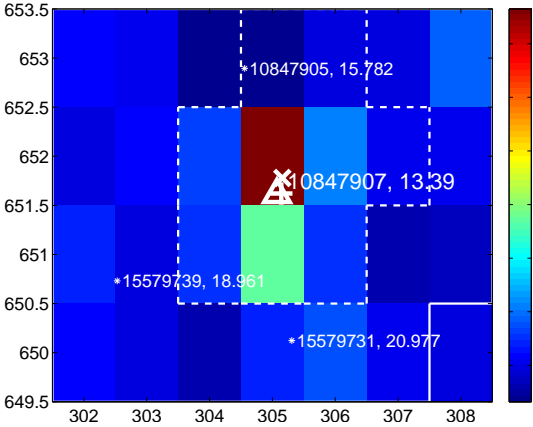
Q14 difference image. Poor Quality



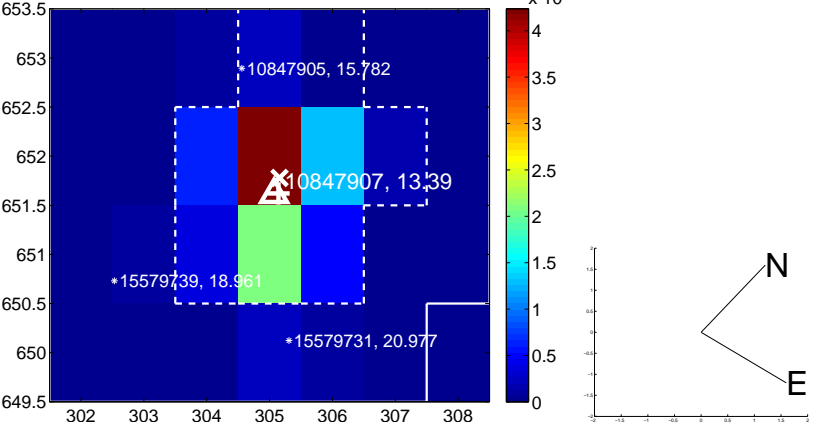
Q14 OOT image



Q15 difference image



Q15 OOT image



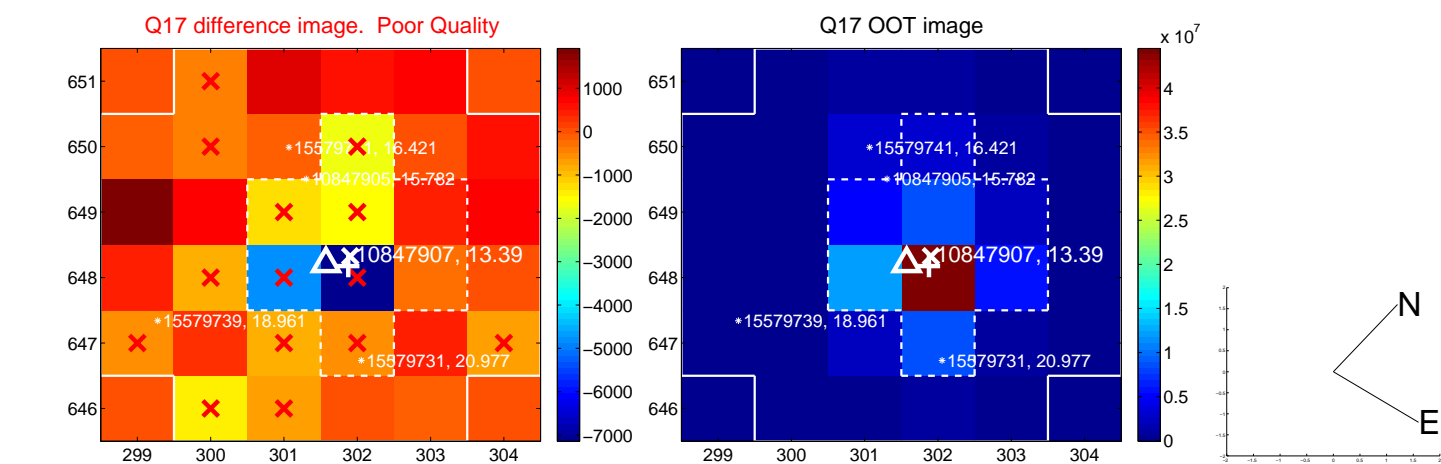
Q16 no difference image



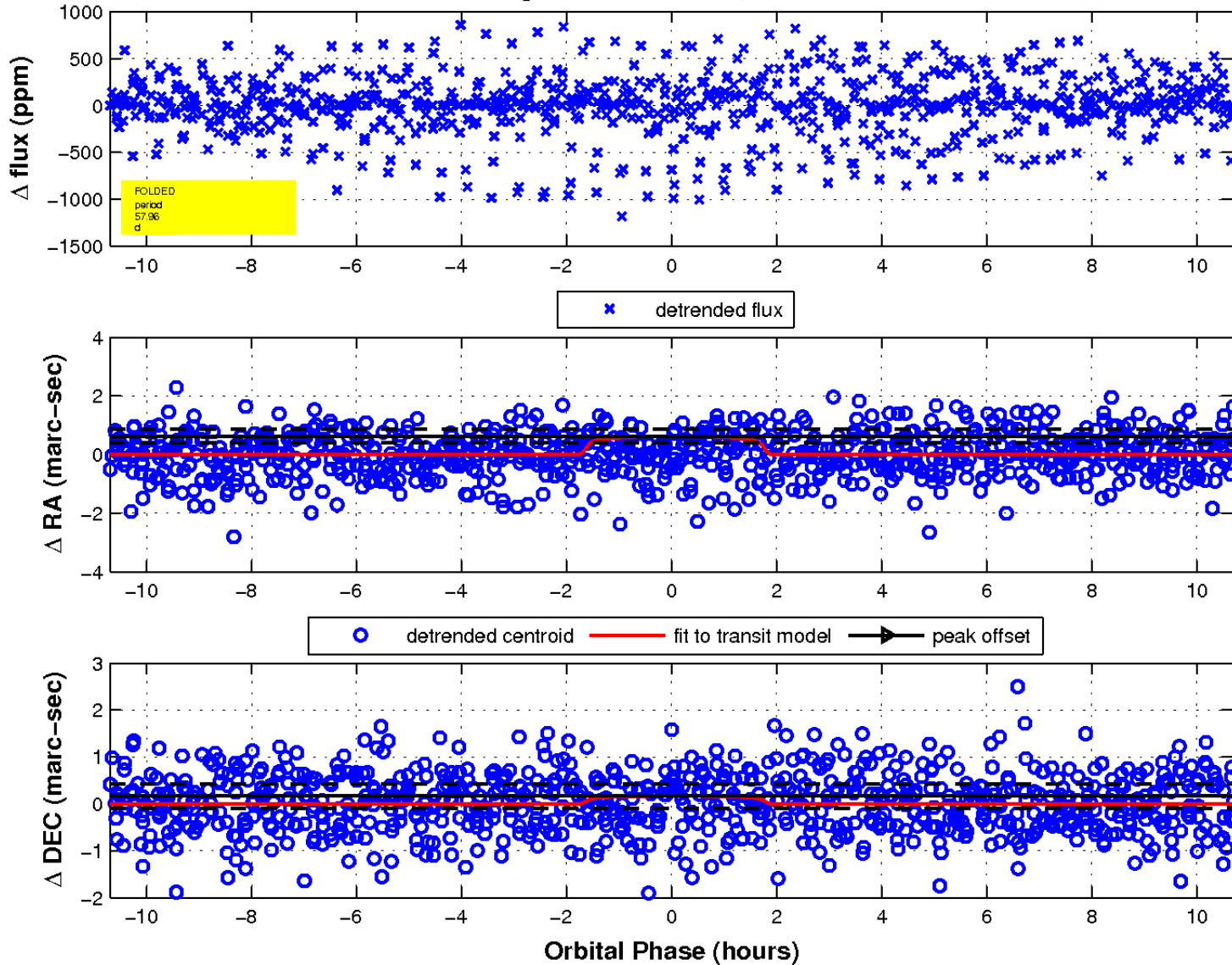
Q16 no OOT image



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

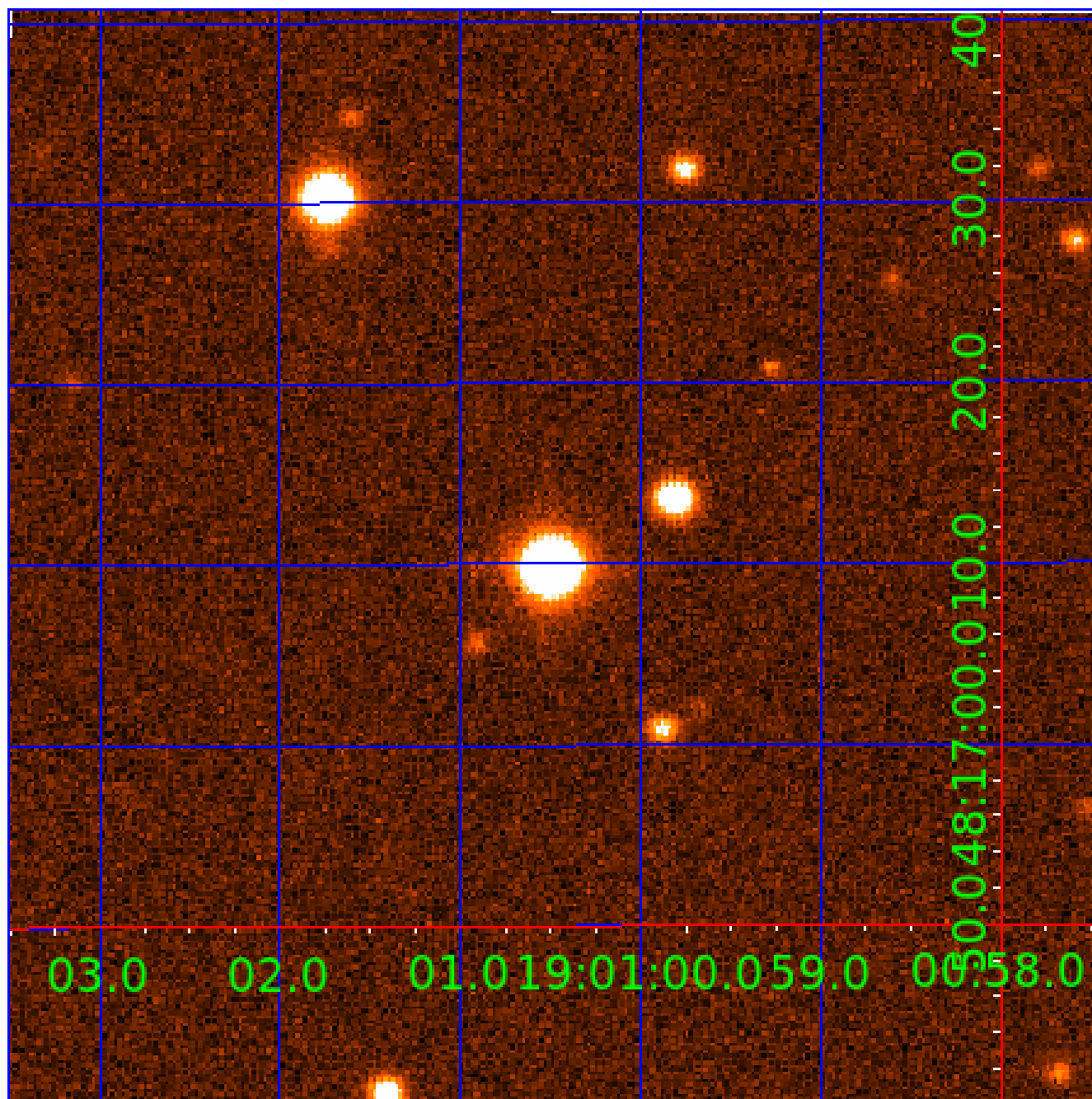


fluxWeightedCentroids, Planet 2 of 7



UKIRT Image

Declination





# KIC 010847907

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
010847907-01	OBS	7379.01	0.535526	131.720096	6.9	2.954	7.9	3.2	1.86	6328	0.57	24240.96
010847907-02	OBS	No	57.955427	185.718370	652.7	3.573	13.1	6.8	1.86	6328	5.08	47.00
010847907-03	OBS	No	96.548511	167.060852	491.8	6.802	10.1	4.6	1.86	6328	4.44	23.80
010847907-04	OBS	No	145.765628	151.183770	1096.4	5.661	9.6	6.8	1.86	6328	7.80	13.74
010847907-05	OBS	No	105.732218	190.578954	795.5	8.314	7.4	6.3	1.86	6328	10.09	21.09
010847907-06	OBS	No	81.089666	150.861185	666.3	4.471	7.2	6.4	1.86	6328	5.32	30.04
010847907-07	OBS	No	148.438162	135.699589	942.1	7.145	8.4	5.7	1.86	6328	5.80	13.41

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010847907-01	OBS	FP	0.00	1	0	0	0	LPP_DV—CENT_KIC_POS
010847907-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—ALL_TRANS_CHASES—CENT_FEW_MEAS
010847907-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT— INCONSISTENT_TRANS—CENT_KIC_POS
010847907-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_DIFFS
010847907-05	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT— MOD_POS_ALT—CENT_KIC_POS—HALO_GHOST
010847907-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—ALL_TRANS_CHASES—CENT_KIC_POS
010847907-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT— INCONSISTENT_TRANS—CENT_FEW_MEAS

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

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

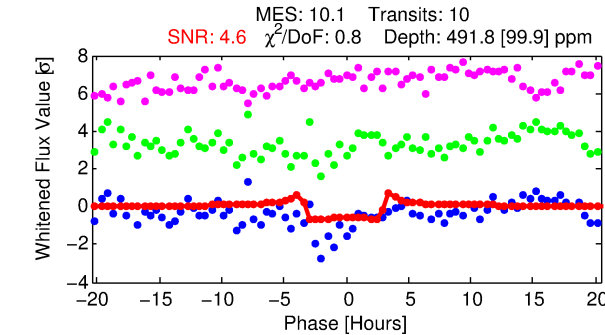
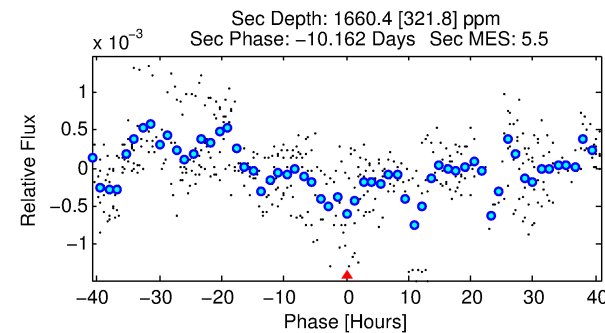
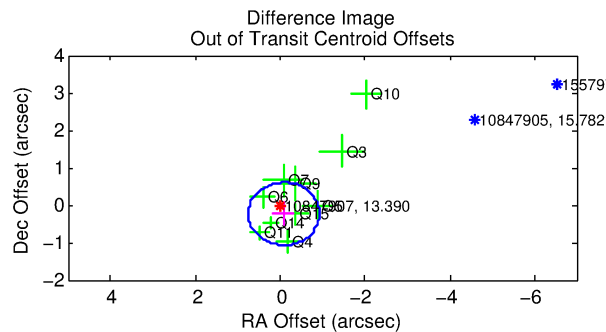
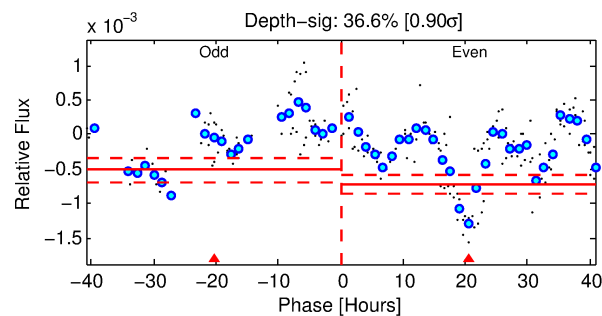
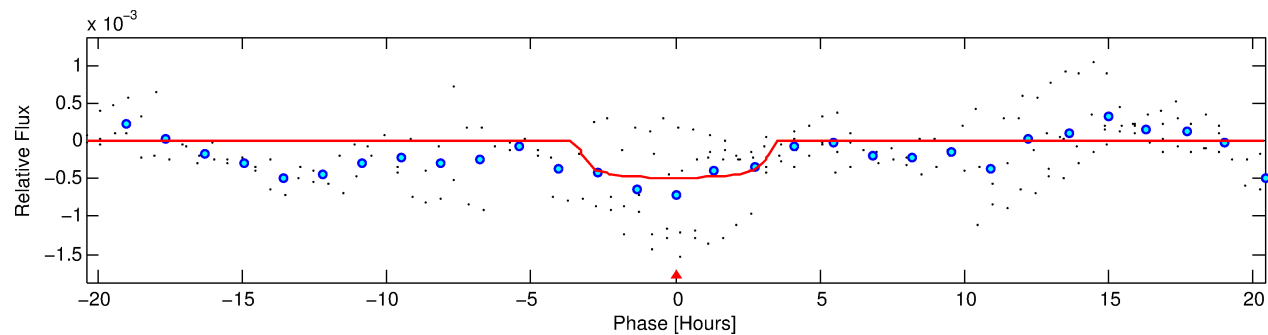
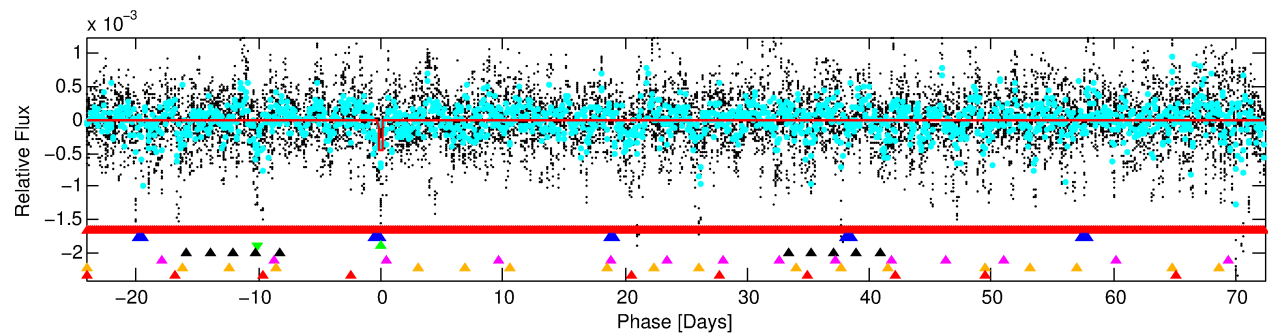
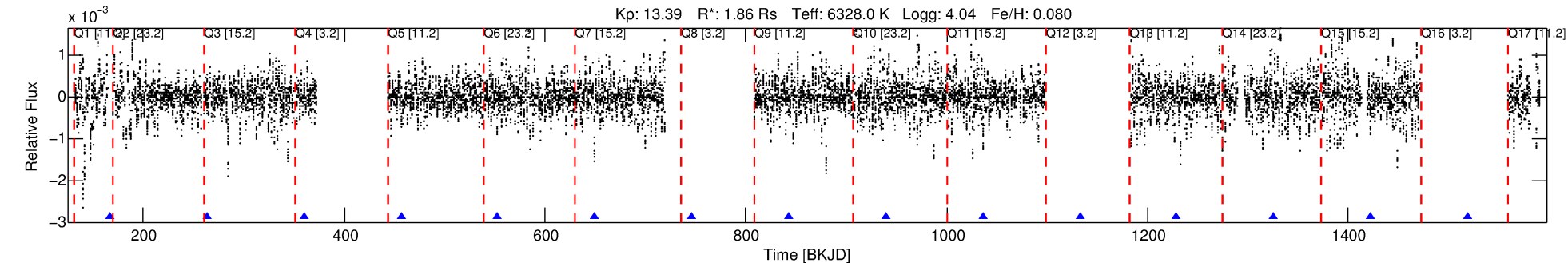
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 010847907-03

No Significant Match Found

# DV One-Page Summary

KIC: 10847907 Candidate: 3 of 7 Period: 96.549 d  
KOI: K07379 Corr: No Ephemeris Match



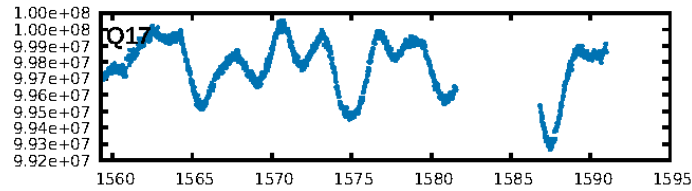
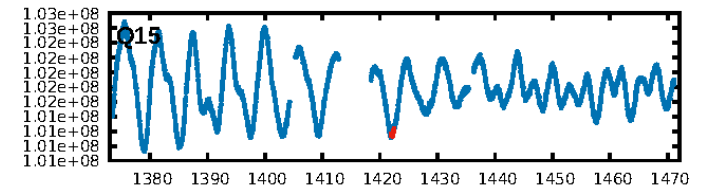
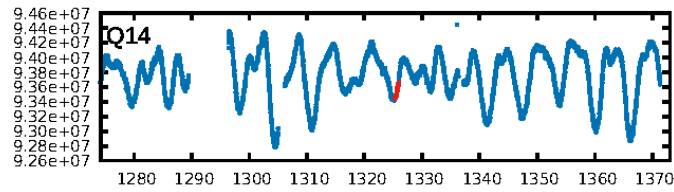
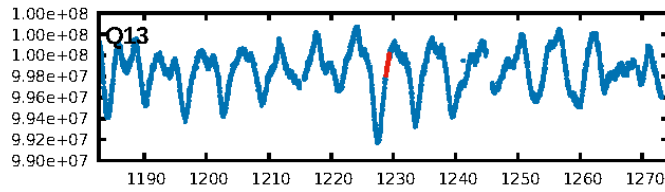
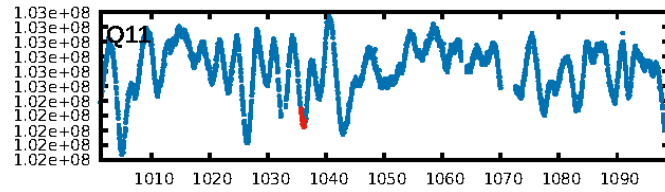
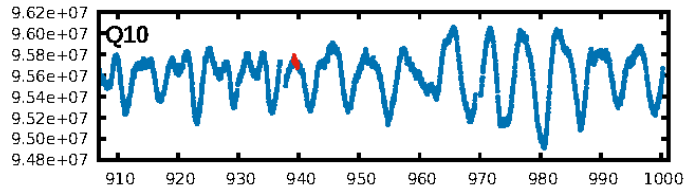
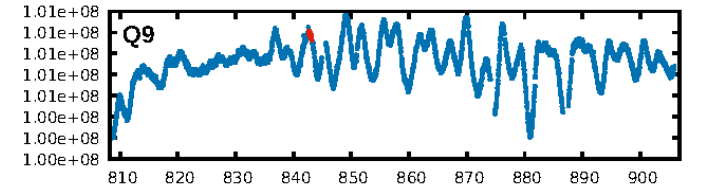
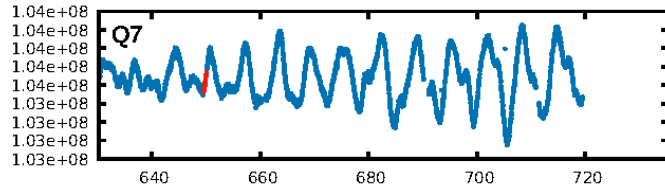
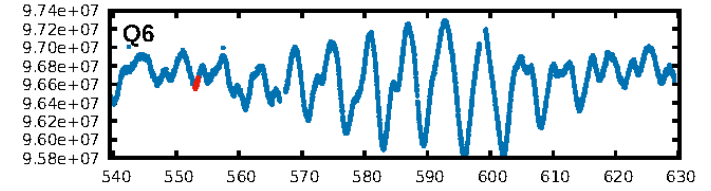
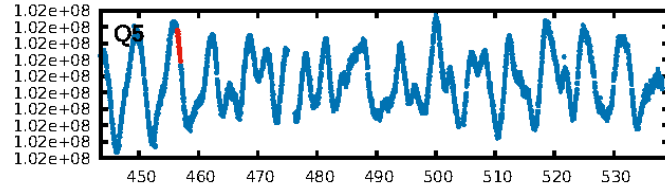
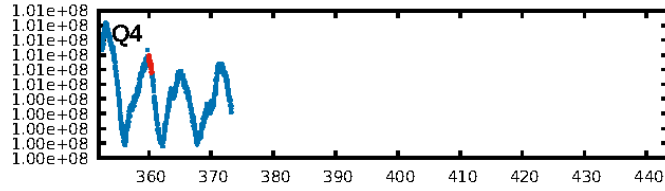
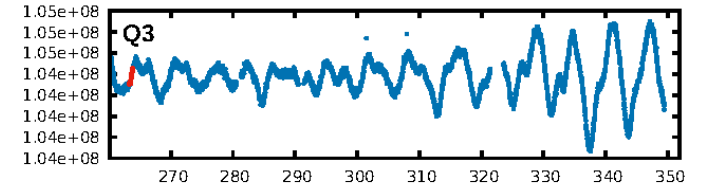
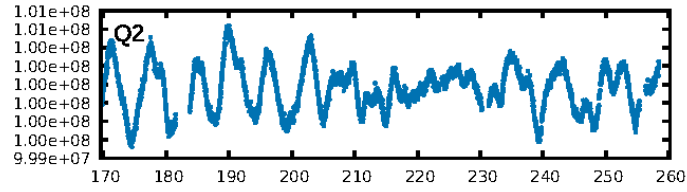
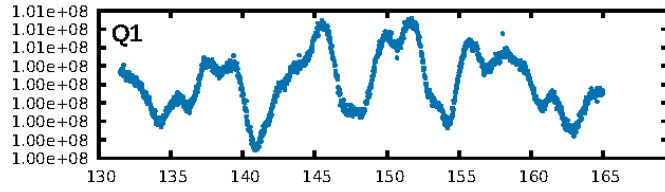
## DV Fit Results:

Period = 96.54851 [0.00147] d  
Epoch = 167.0609 [0.0119] BKJD  
Rp/R\* = 0.0218 [0.0331]  
a/R\* = 79.32 [620.55]  
b = 0.71 [5.43]  
Seff = 23.80 [12.09]  
Teq = 563 [72] K  
Rp = 4.44 [6.90] Re  
a = 0.4580 [0.1446] AU  
Ag = 9729.74 [29918.72] [0.33 $\sigma$ ]  
Teffp = 8649 [6574] K [1.23 $\sigma$ ]

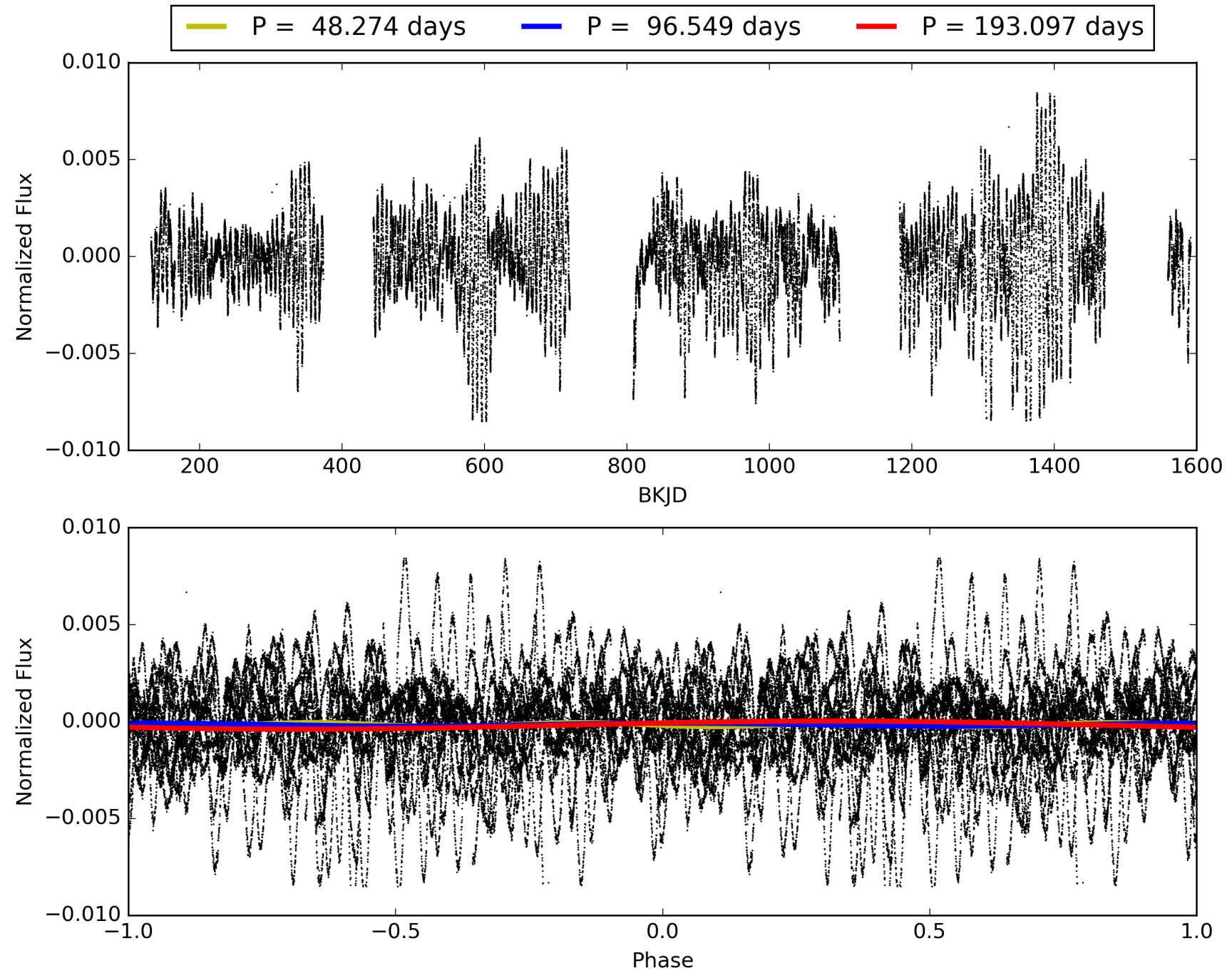
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [45.58 $\sigma$ ]  
LongPeriod-sig: 100.0% [20.52 $\sigma$ ]  
ModelChiSquare2-sig: 0.1%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 3.17e-15  
RollingBand-fgt: 1.00 [9/9]  
GhostDiagnostic-chr: -2.242  
Centroid-sig: 0.3%  
Centroid-so: 0.923 arcsec [2.21 $\sigma$ ]  
OotOffset-rm: 0.248 arcsec [0.89 $\sigma$ ]  
KicOffset-rm: 0.772 arcsec [1.98 $\sigma$ ]  
OotOffset-st: 3/4/1/2 [10]  
KicOffset-st: 3/4/1/2 [10]  
DiffImageQuality-fgm: 0.60 [6/10]  
DiffImageOverlap-fno: 0.00 [0/10]

# TCE 010847907-03, PDC Light Curves

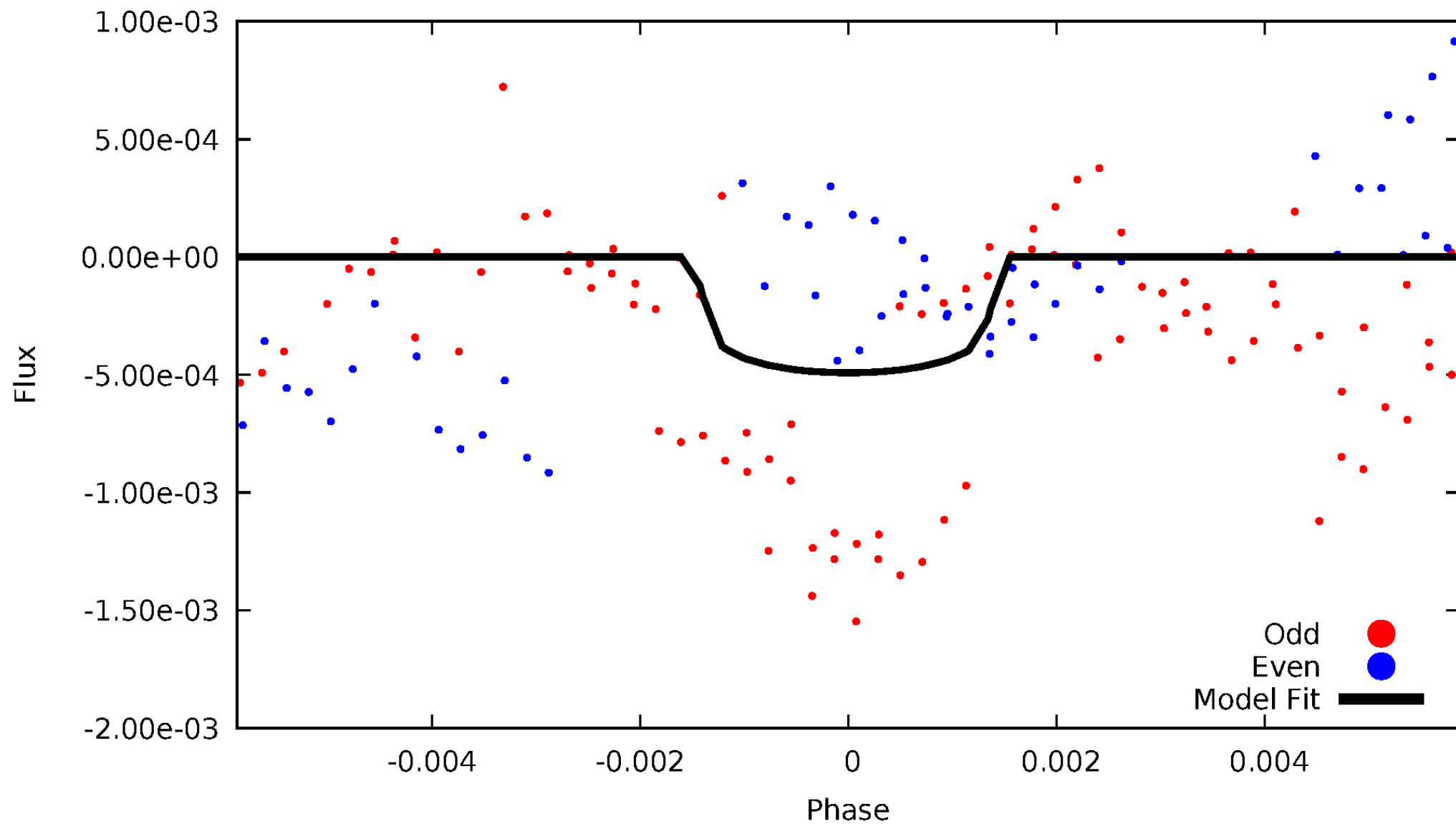


TCE 010847907-03



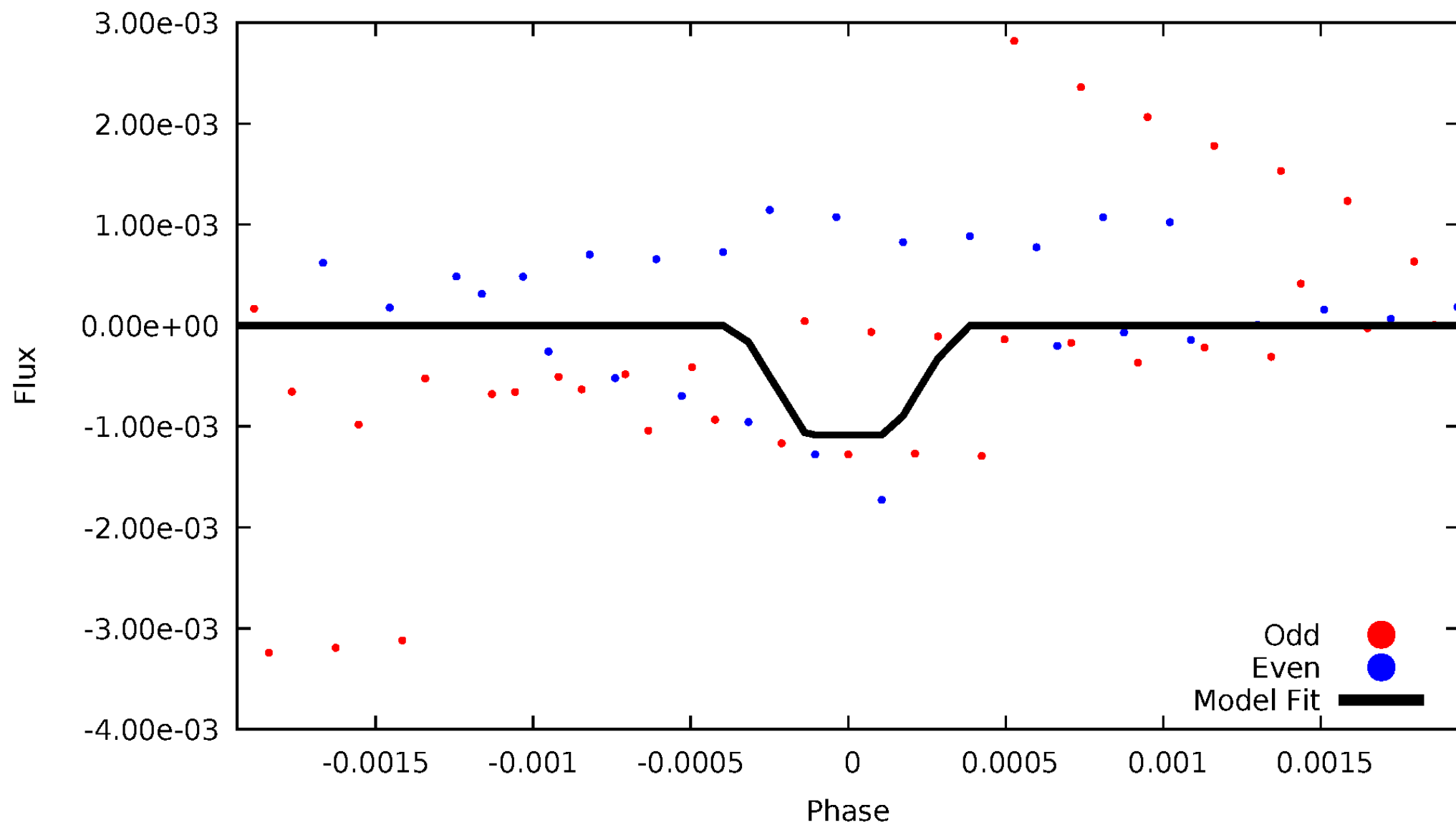
# DV Odd/Even

TCE 010847907-03



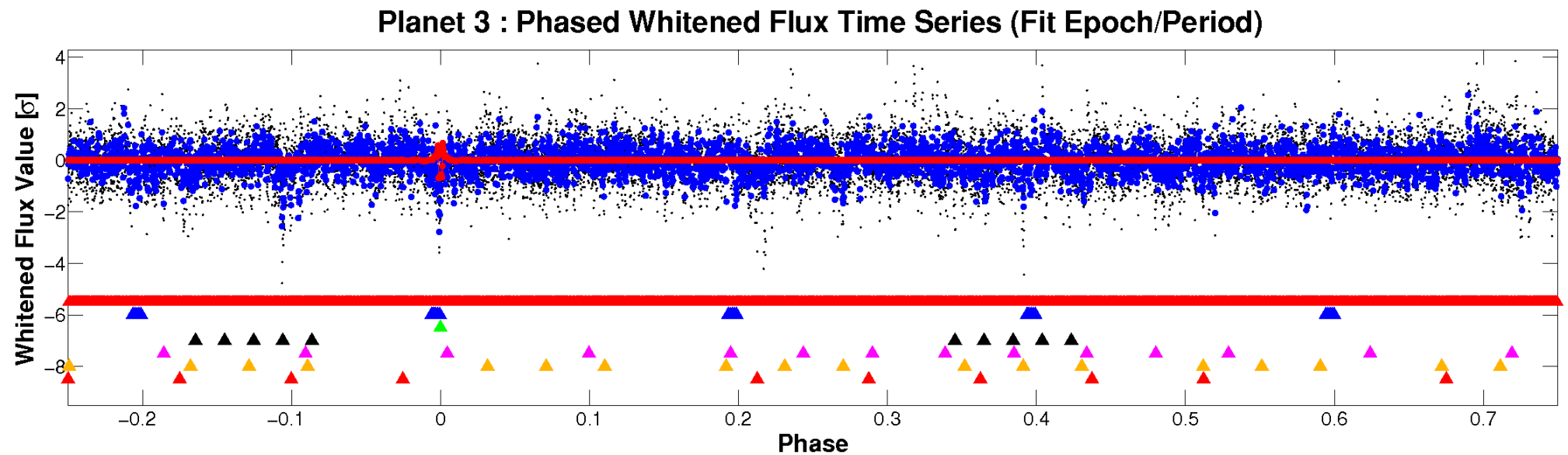
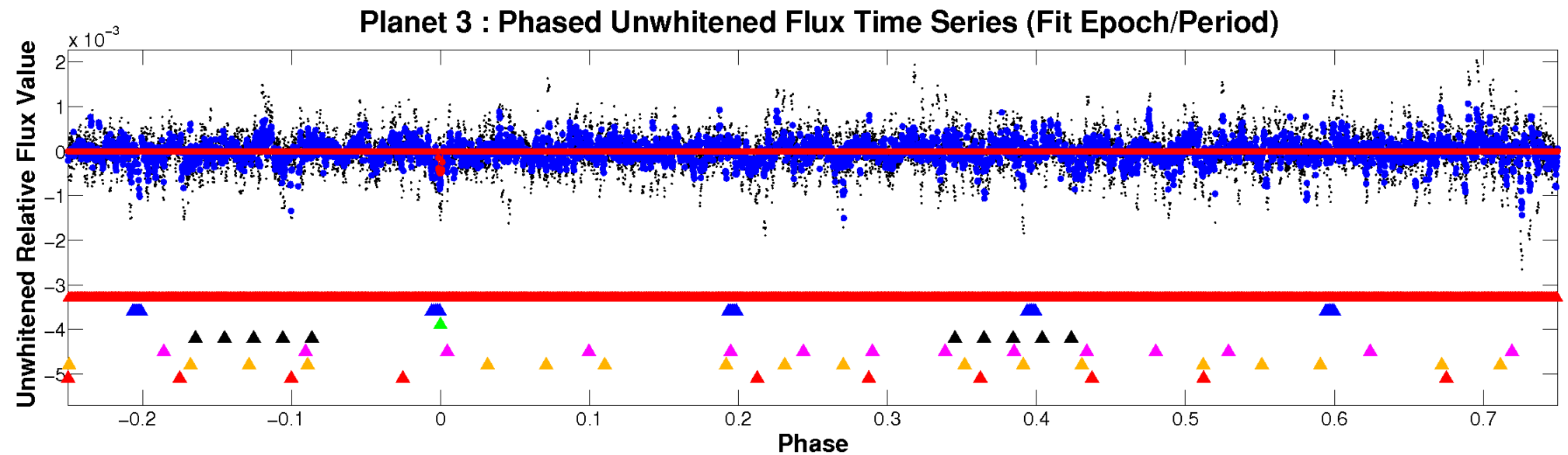
# ALT Odd/Even

TCE 010847907-03



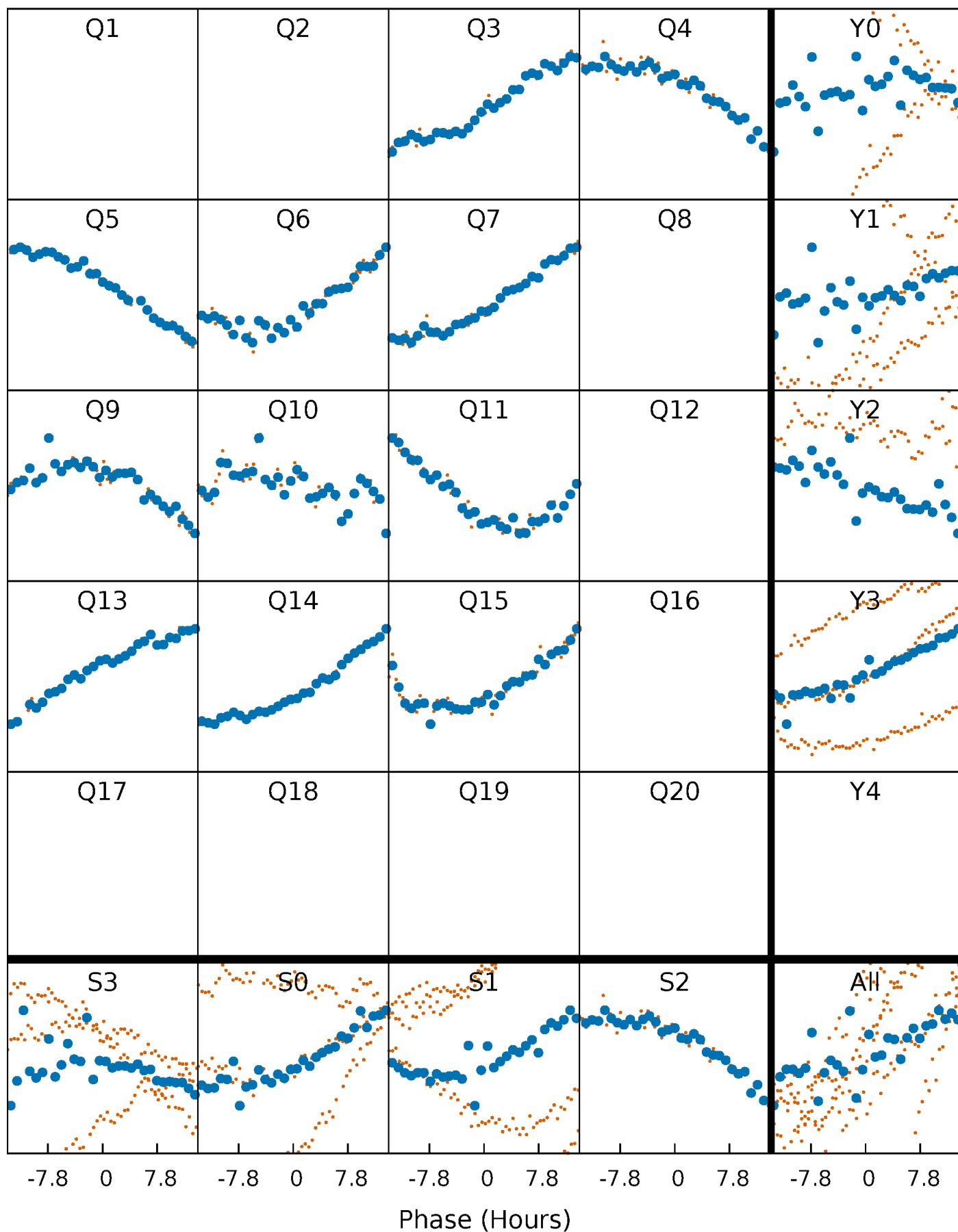


# Non-Whitened Vs. Whitened Light Curve



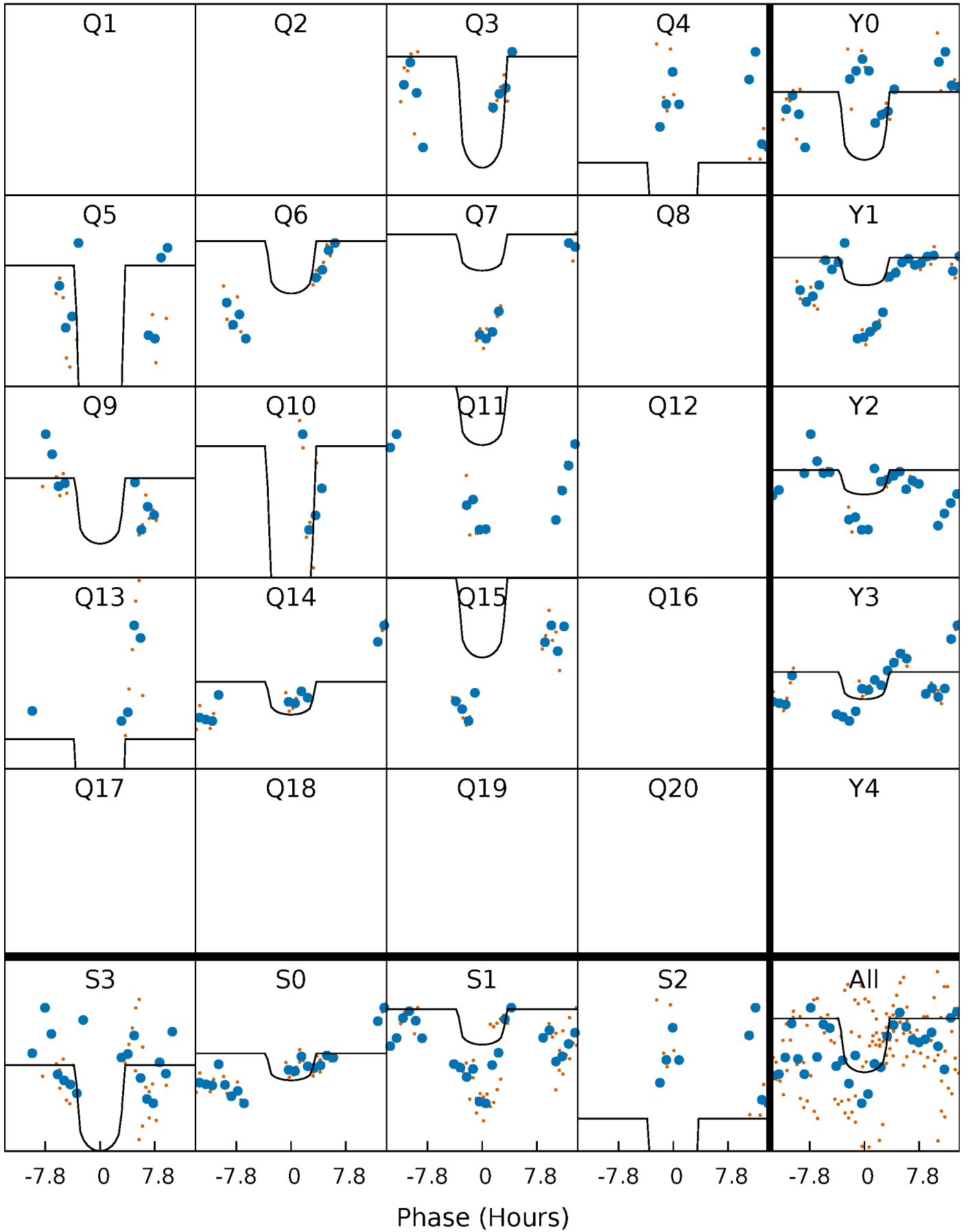
# PDC Quarter-Phased Transit Curves

TCE 010847907-03 P= 96.548511 Days  $T_0=167.060852$  (BKJD)



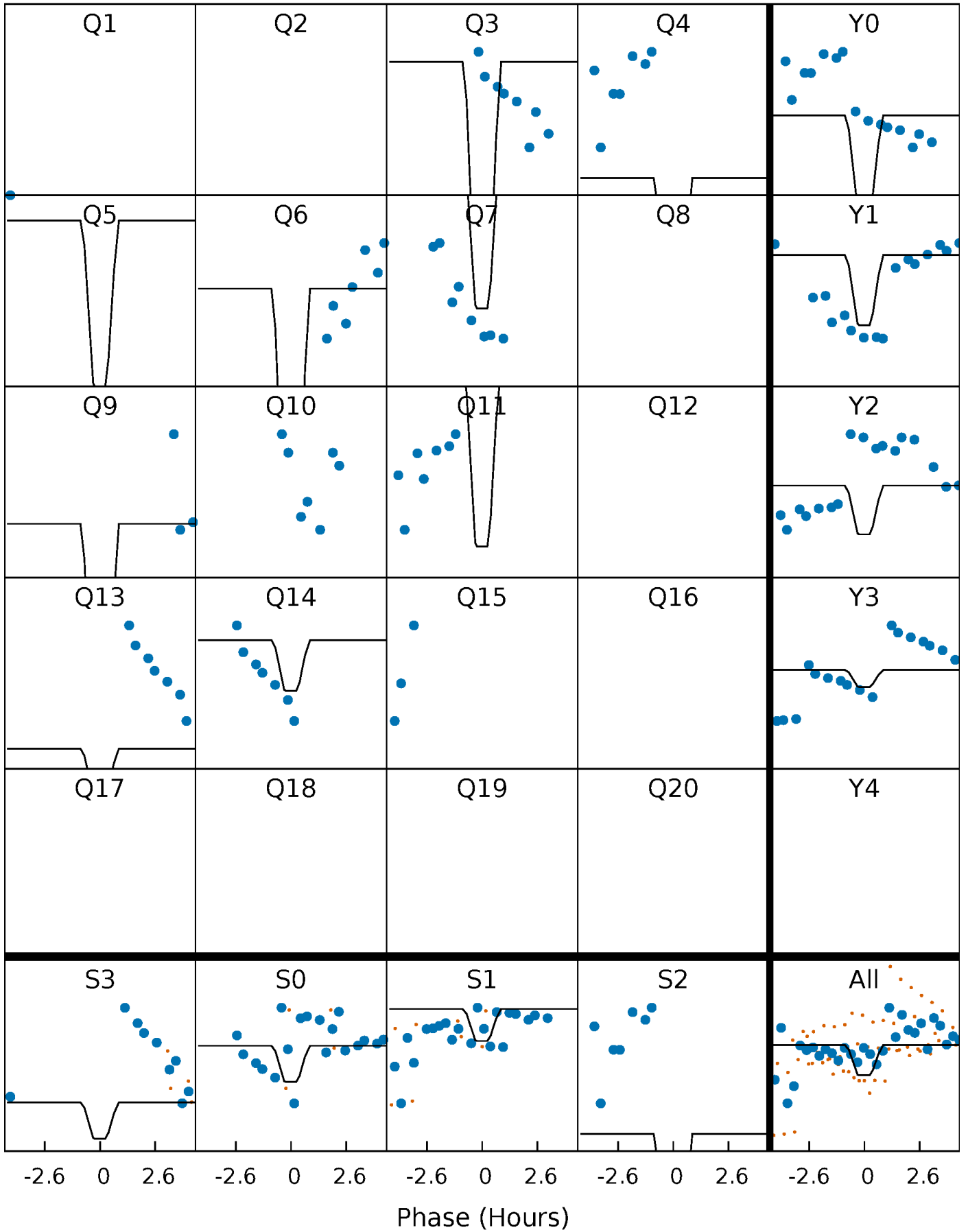
# DV Quarter-Phased Transit Curves

TCE 010847907-03   P= 96.548511 Days    $T_0=167.060852$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

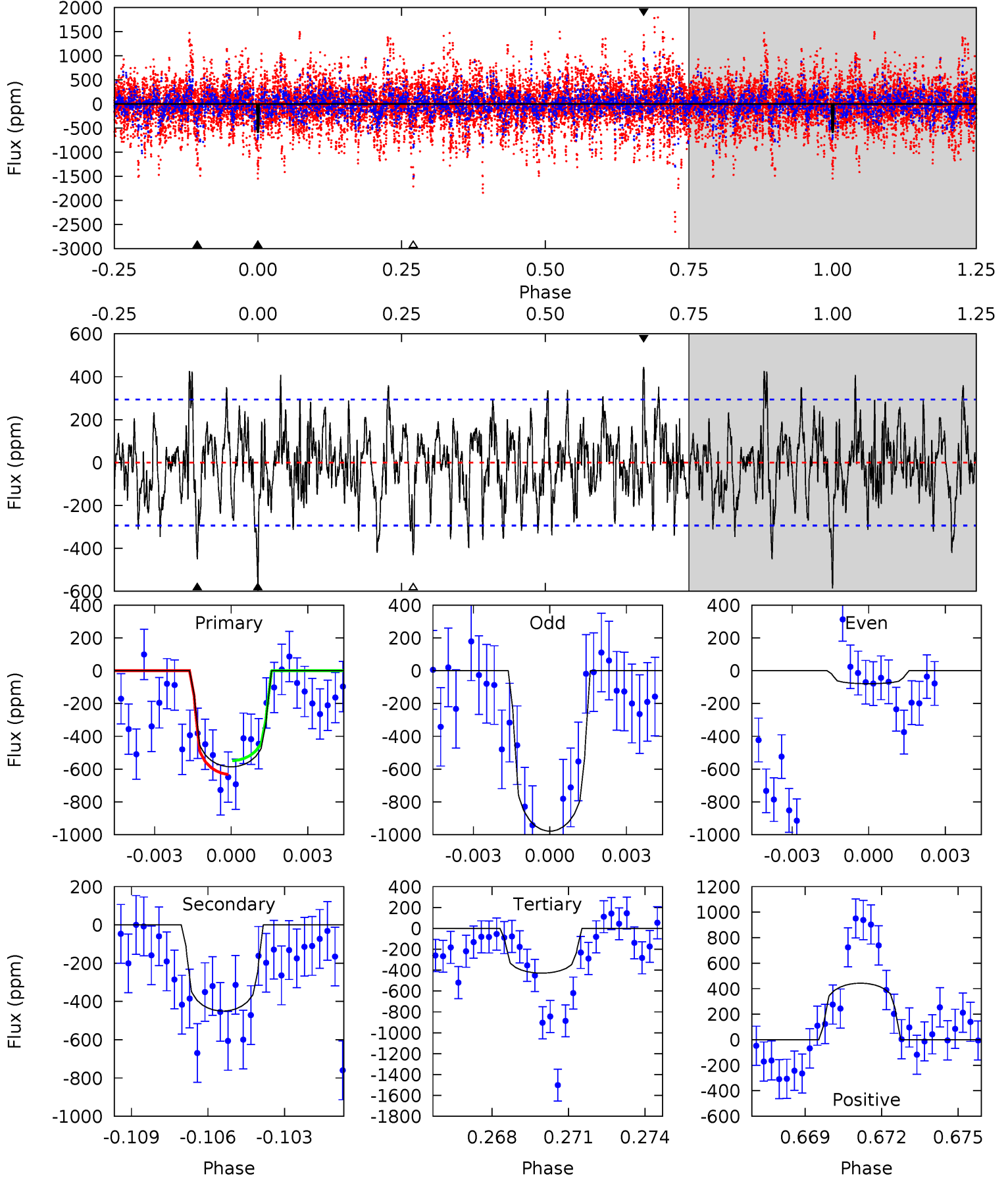
TCE 010847907-03   P= 96.550398 Days    $T_0=167.120040$  (BKJD)



# DV Model-Shift Uniqueness Test

010847907-03, P = 96.548511 Days, E = 70.512341 Days

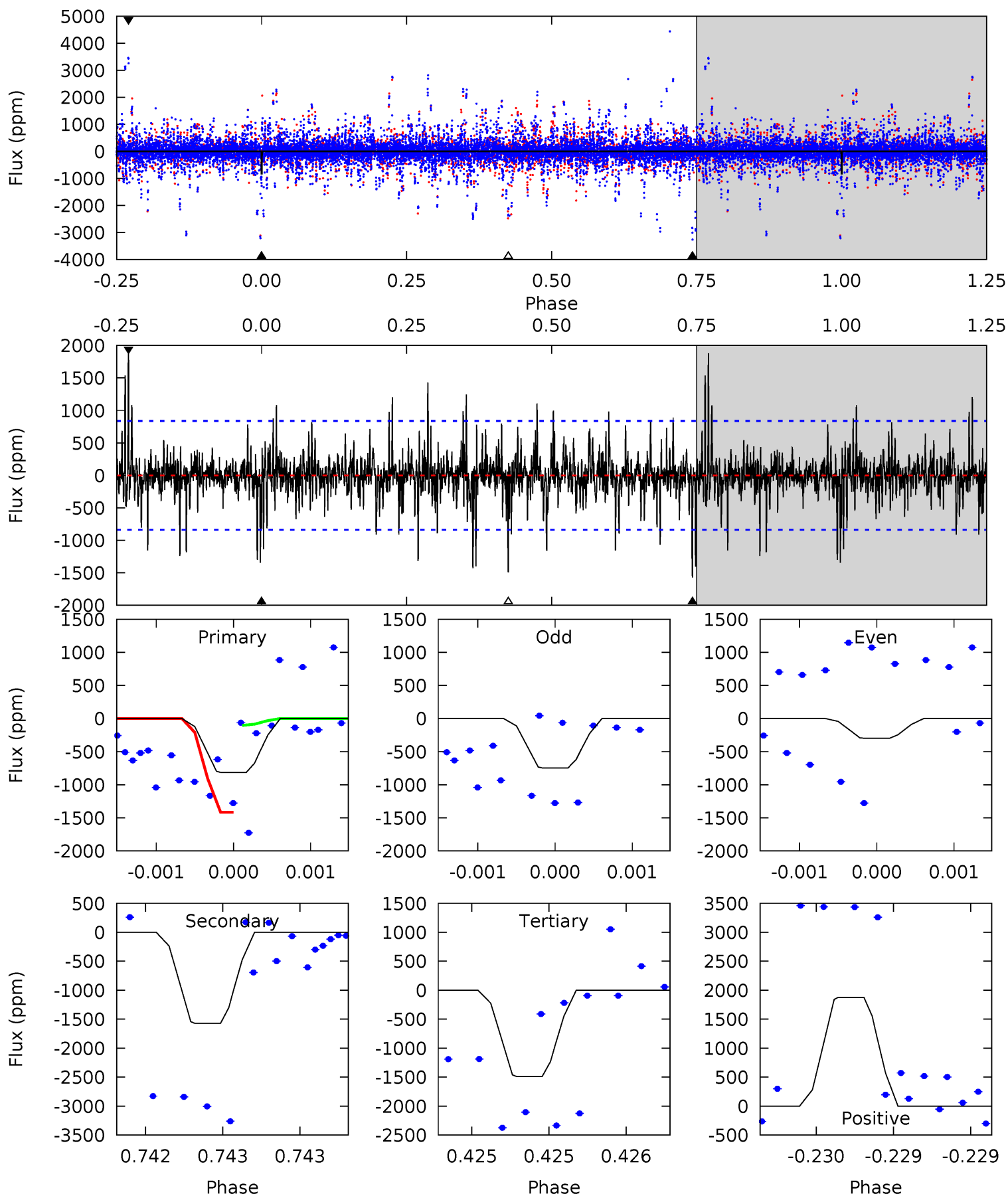
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.5	8.04	7.66	7.92	5.26	2.97	2.46	2.82	2.56	0.39	0.13	7.67	1.93	0.43	0.74



# Alt Model-Shift Uniqueness Test

010847907-03, P = 96.550398 Days, E = 70.569642 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
5.37	10.4	9.83	12.4	5.53	3.42	1.64	-4.46	-7.02	0.55	-2.01	1.09	0.61	0.54	3.85



### Stellar Parameters For KIC 010847907

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6328^{+177}_{-243}$	$4.035^{+0.276}_{-0.161}$	$0.080^{+0.250}_{-0.300}$	$1.864^{+0.536}_{-0.655}$	$1.374^{+0.190}_{-0.285}$	$0.299^{+0.555}_{-0.139}$
	+3%/-4%	+7%/-4%	+312%/-375%	+29%/-35%	+14%/-21%	+186%/-46%
Source	PHO54	PHO54	PHO54	DSEP		

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

### Secondary Eclipse Parameters for KIC 010847907-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-450 \pm 56$	$6.18^{+5.92}_{-4.27}$	$777^{+64}_{-71}$	$5174^{+4625}_{-1116}$	$1324^{+12216}_{-954}$
Alt.	$-1572 \pm 152$	$7.55^{+6.45}_{-4.47}$	$777^{+59}_{-69}$	$6425^{+4580}_{-1590}$	$3210^{+16980}_{-2280}$

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



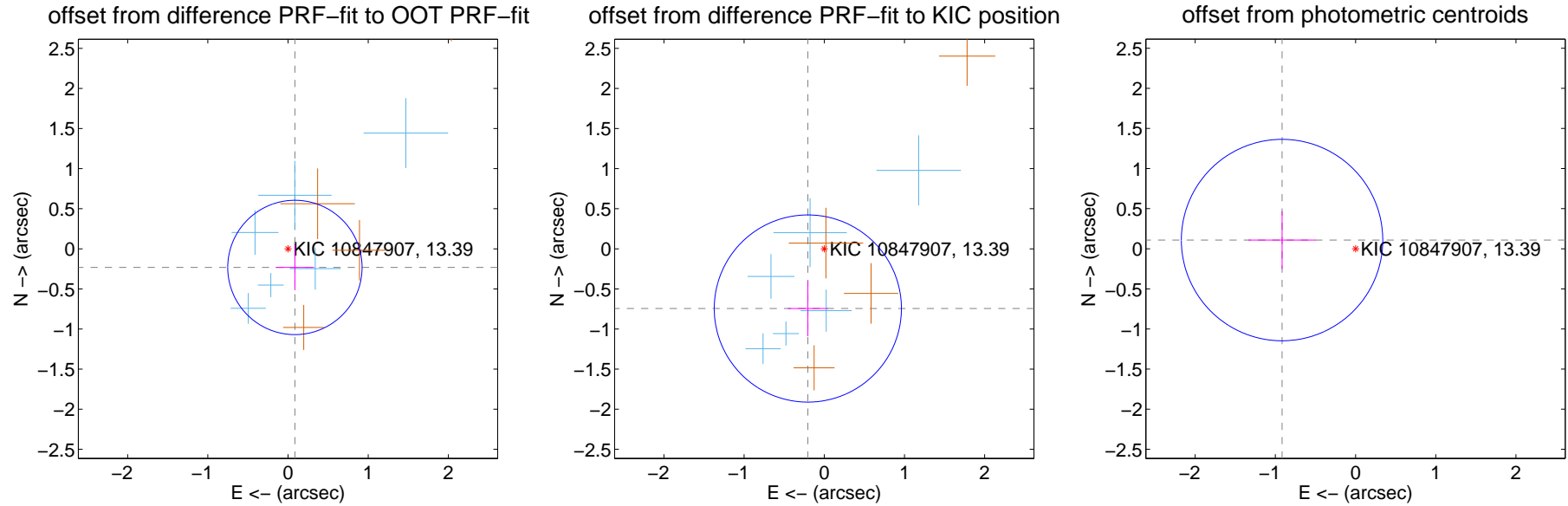
## DV Centroid Data

Supplemental centroid analysis for 010847907-03. Kepler magnitude: 13.39. Transit SNR 4.58

There are 6 quarters with good PRF difference image offsets

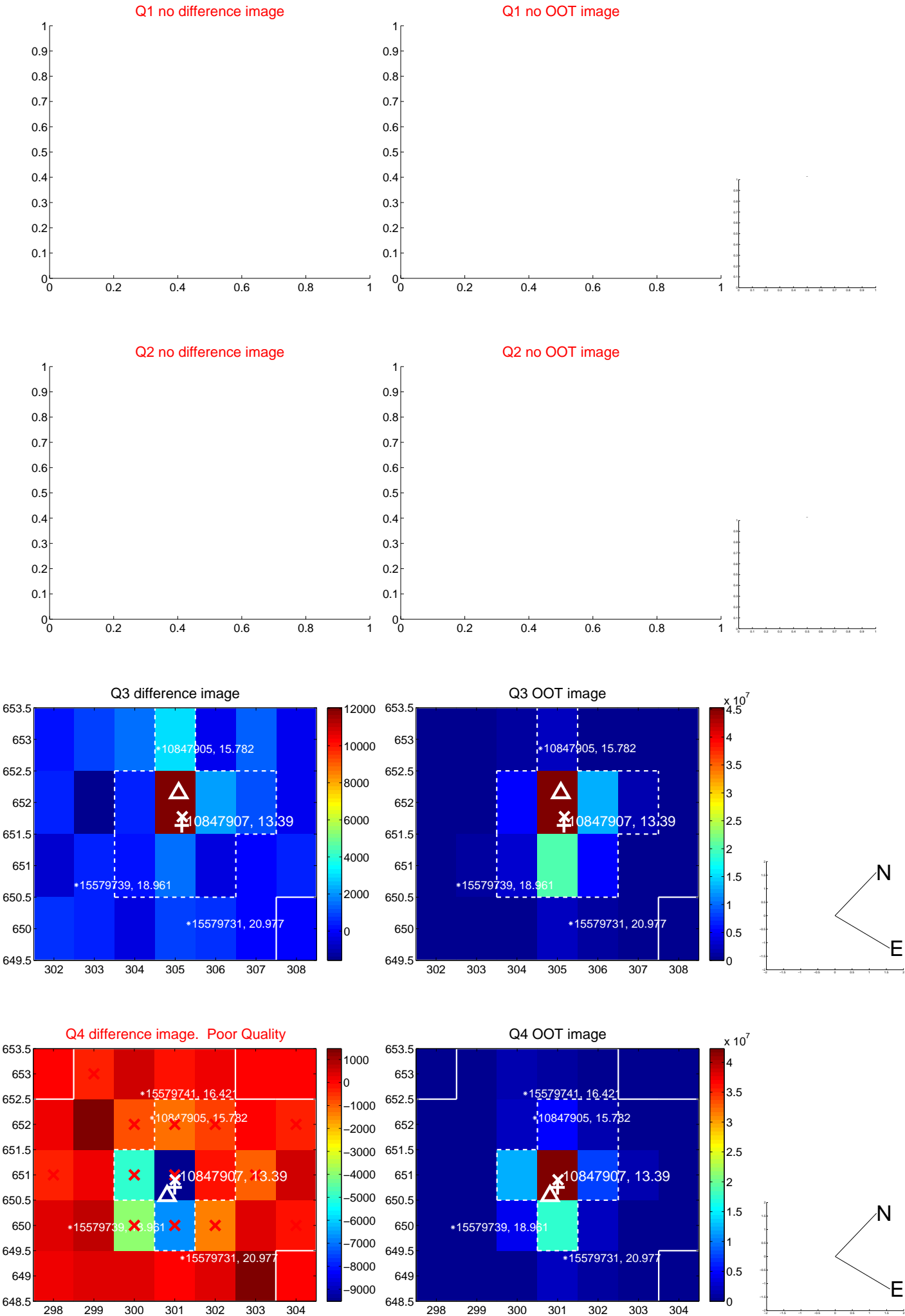
The direct PRF centroid is offset from the target star catalog position by about 0.61 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.248 \pm 0.279$	0.89	$-0.086 \pm 0.240$	$-0.232 \pm 0.284$
PRF-fit source offset from KIC position	$0.772 \pm 0.389$	1.98	$0.205 \pm 0.250$	$-0.745 \pm 0.346$
photometric centroid source offset	$0.92 \pm 0.42$	2.21	$0.92 \pm 0.42$	$0.11 \pm 0.36$

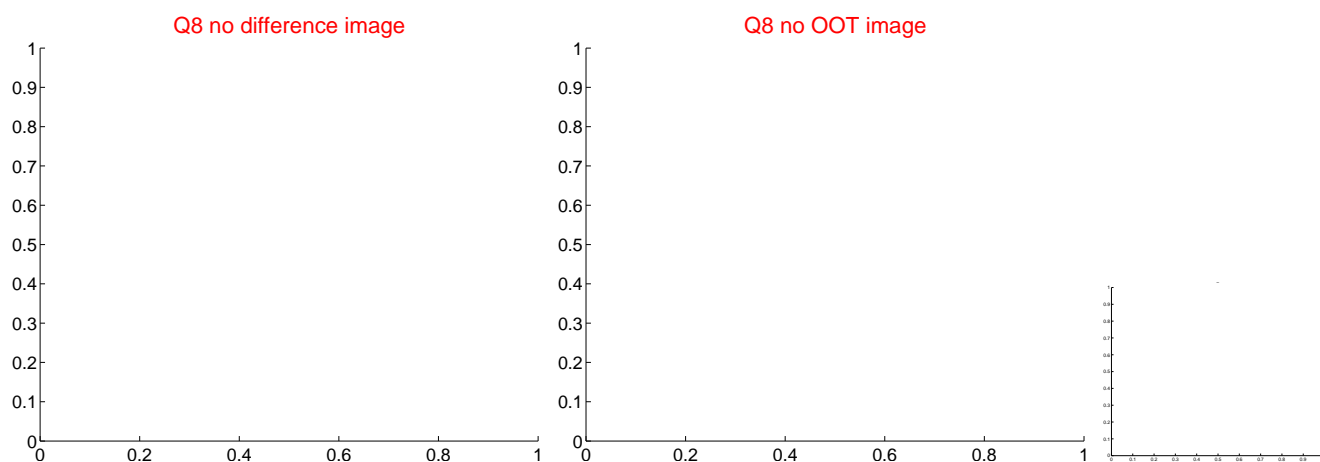
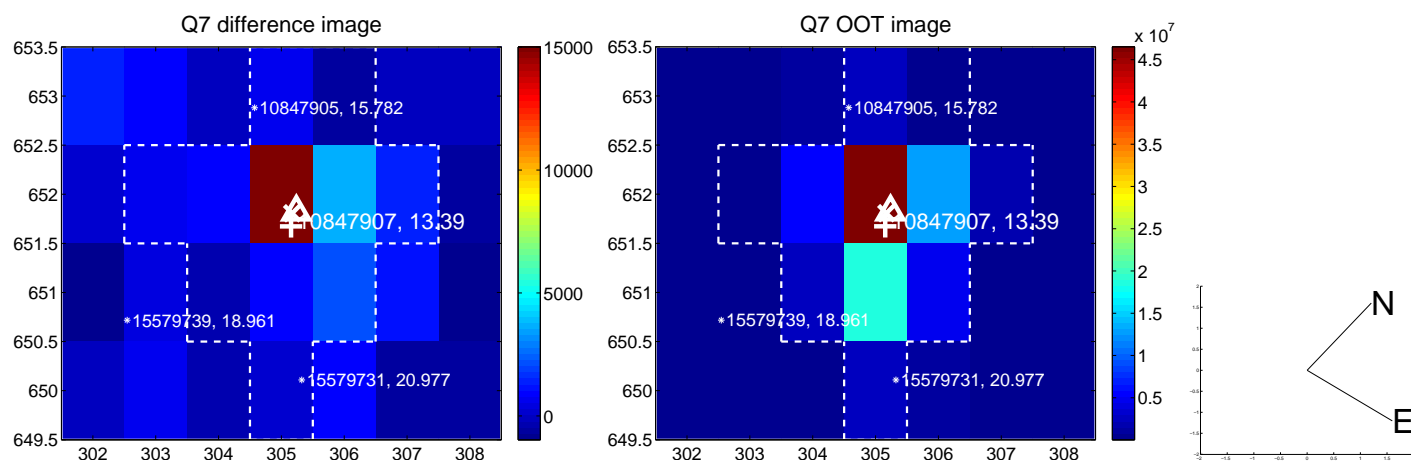
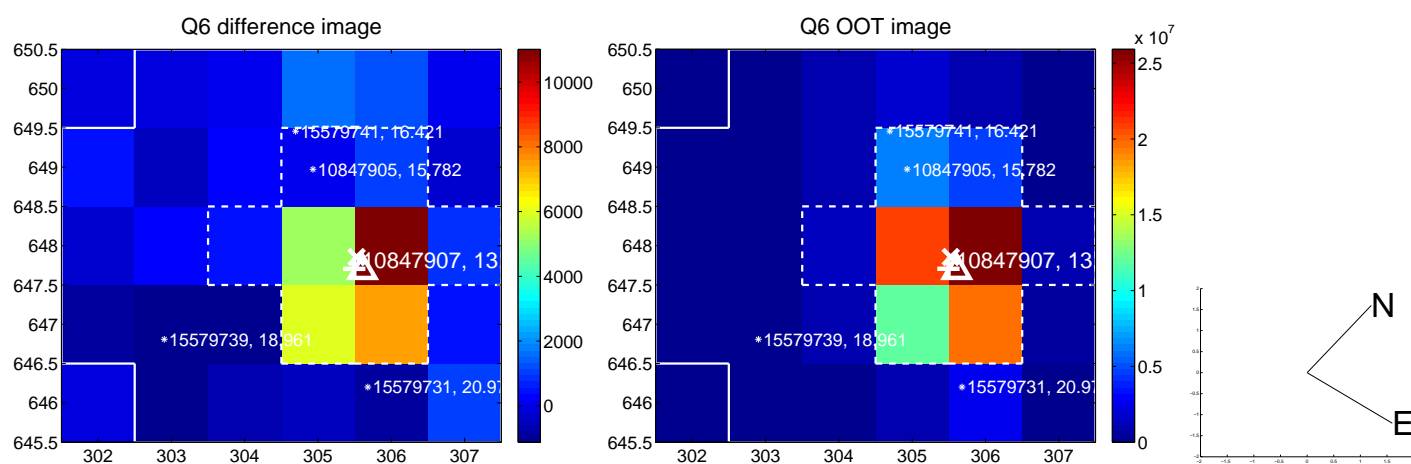
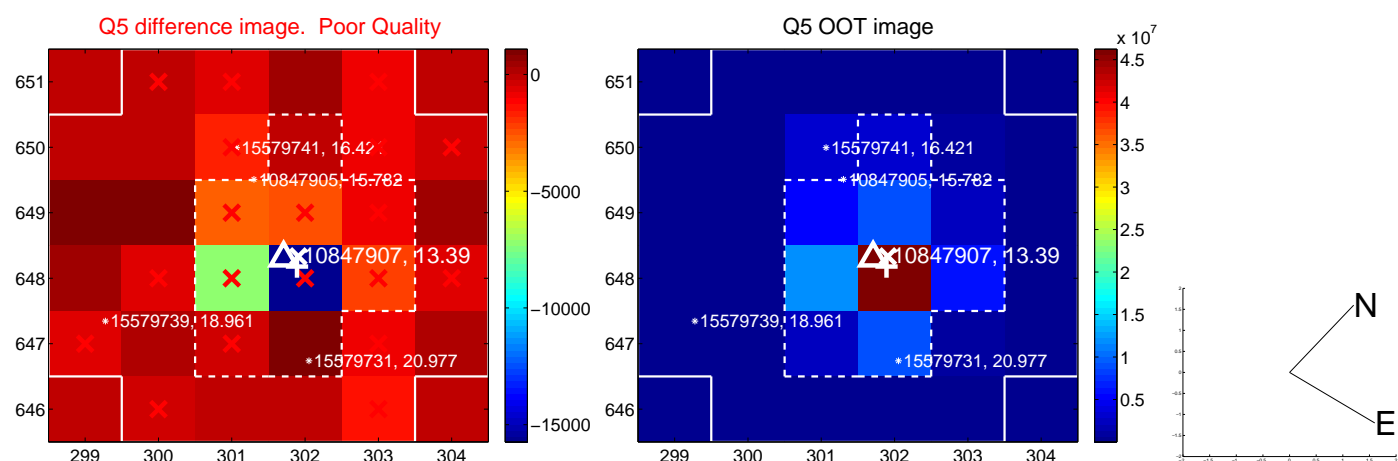


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

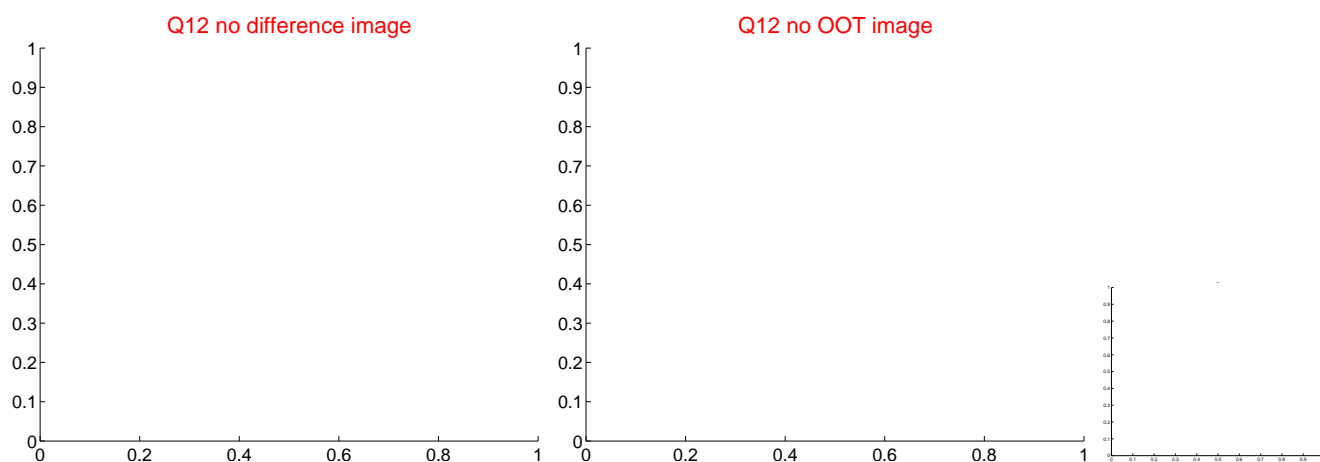
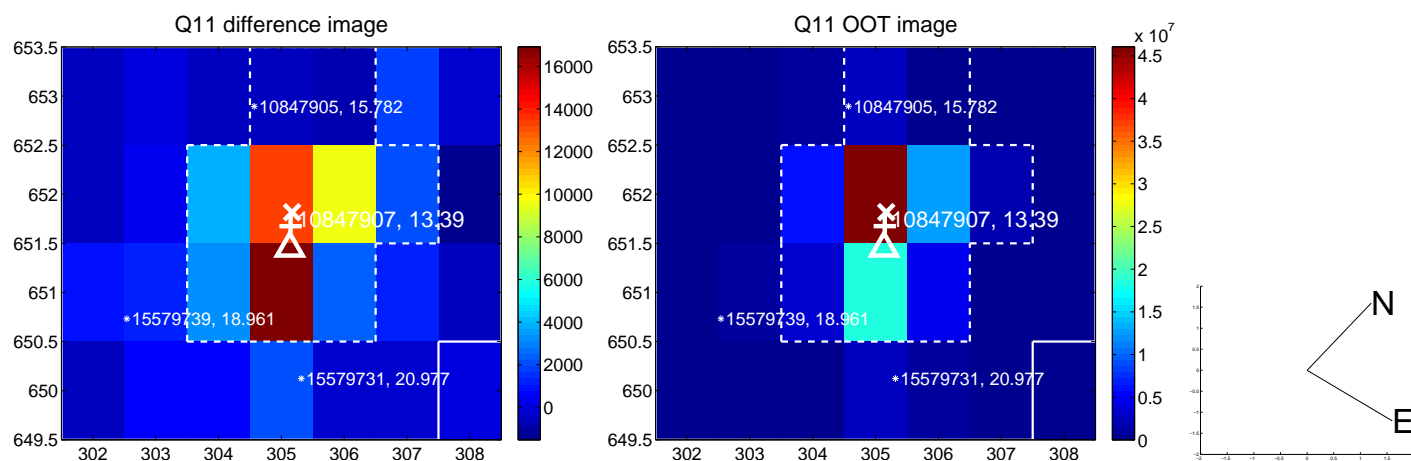
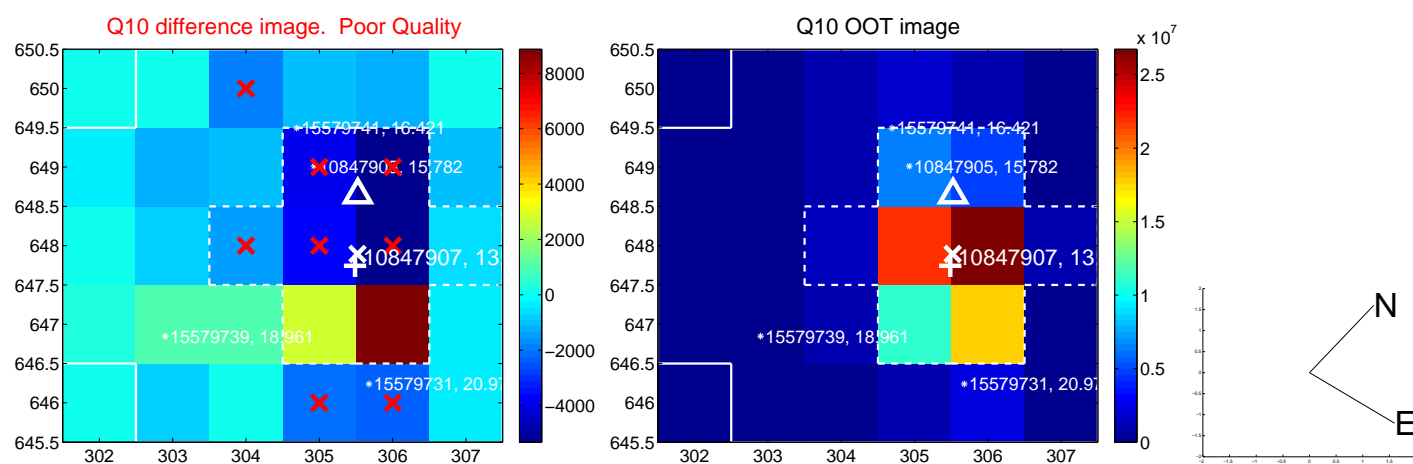
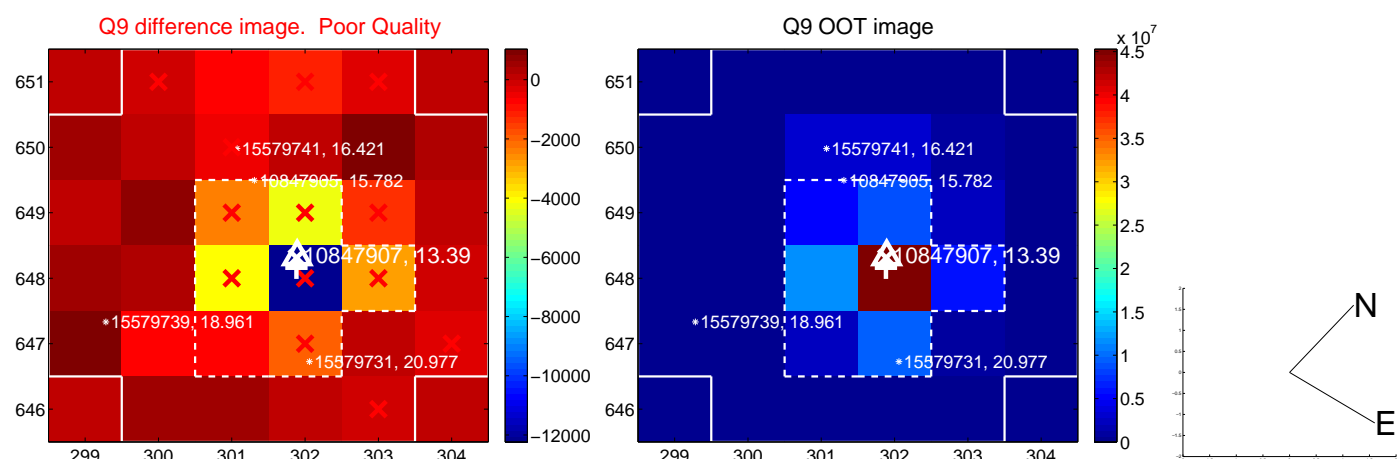
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



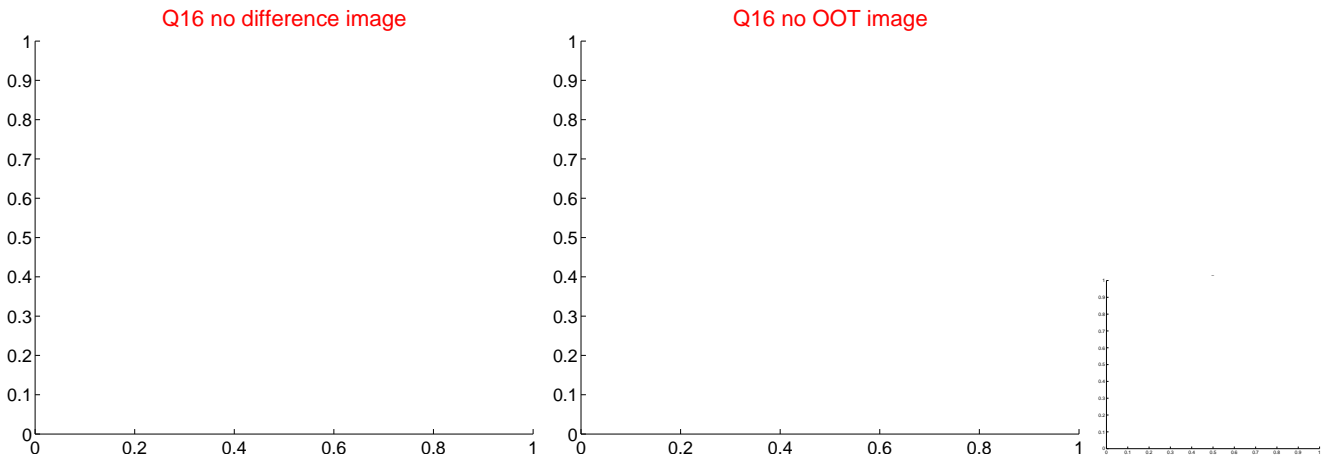
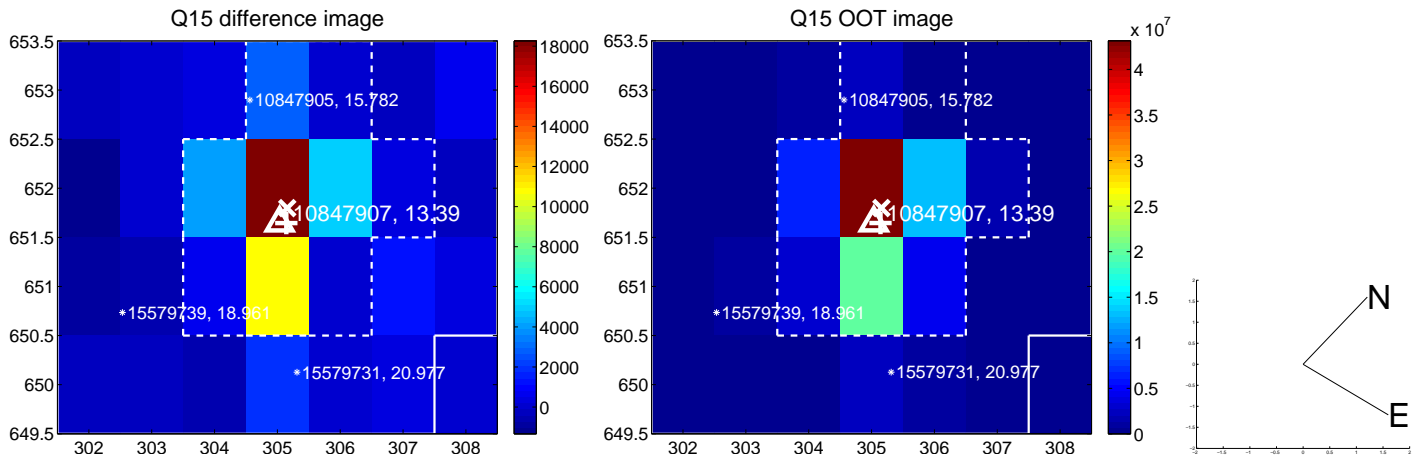
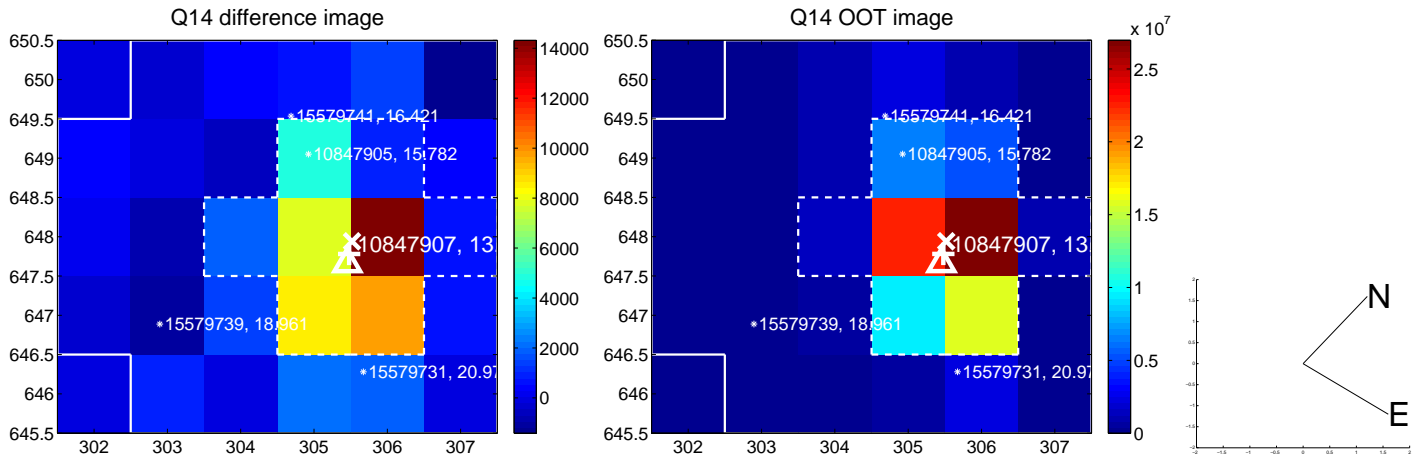
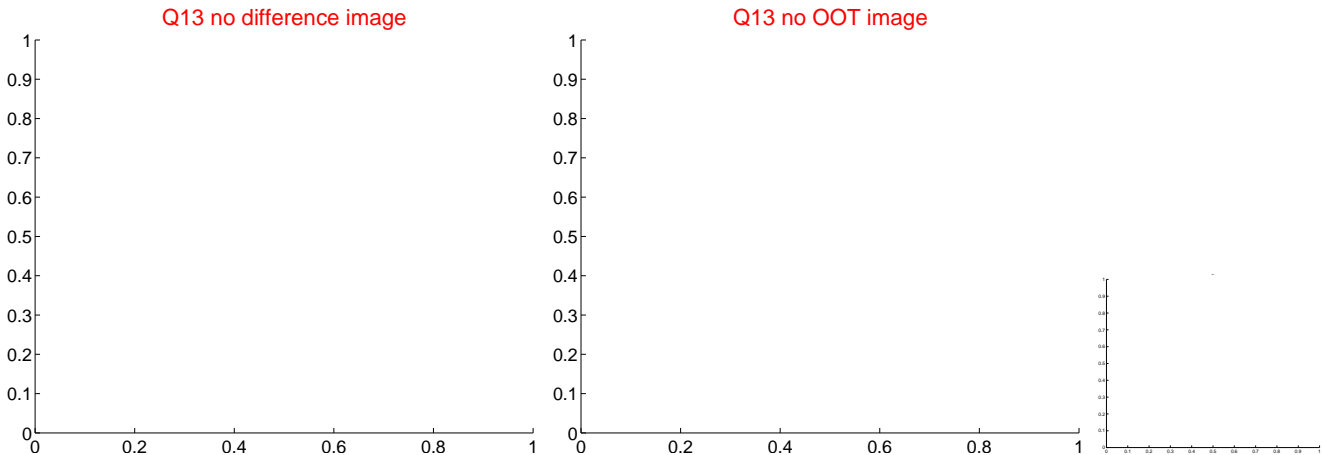
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



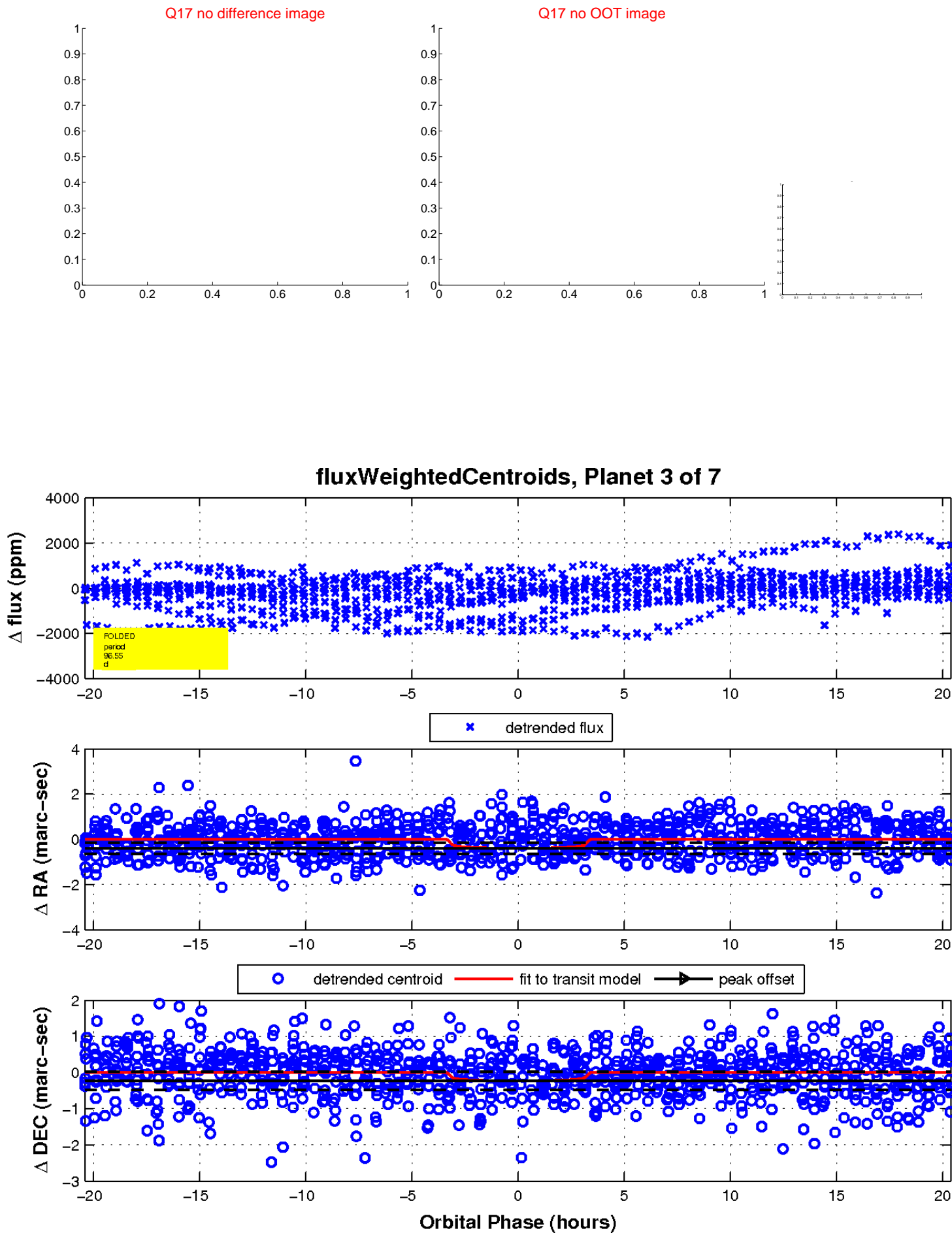
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

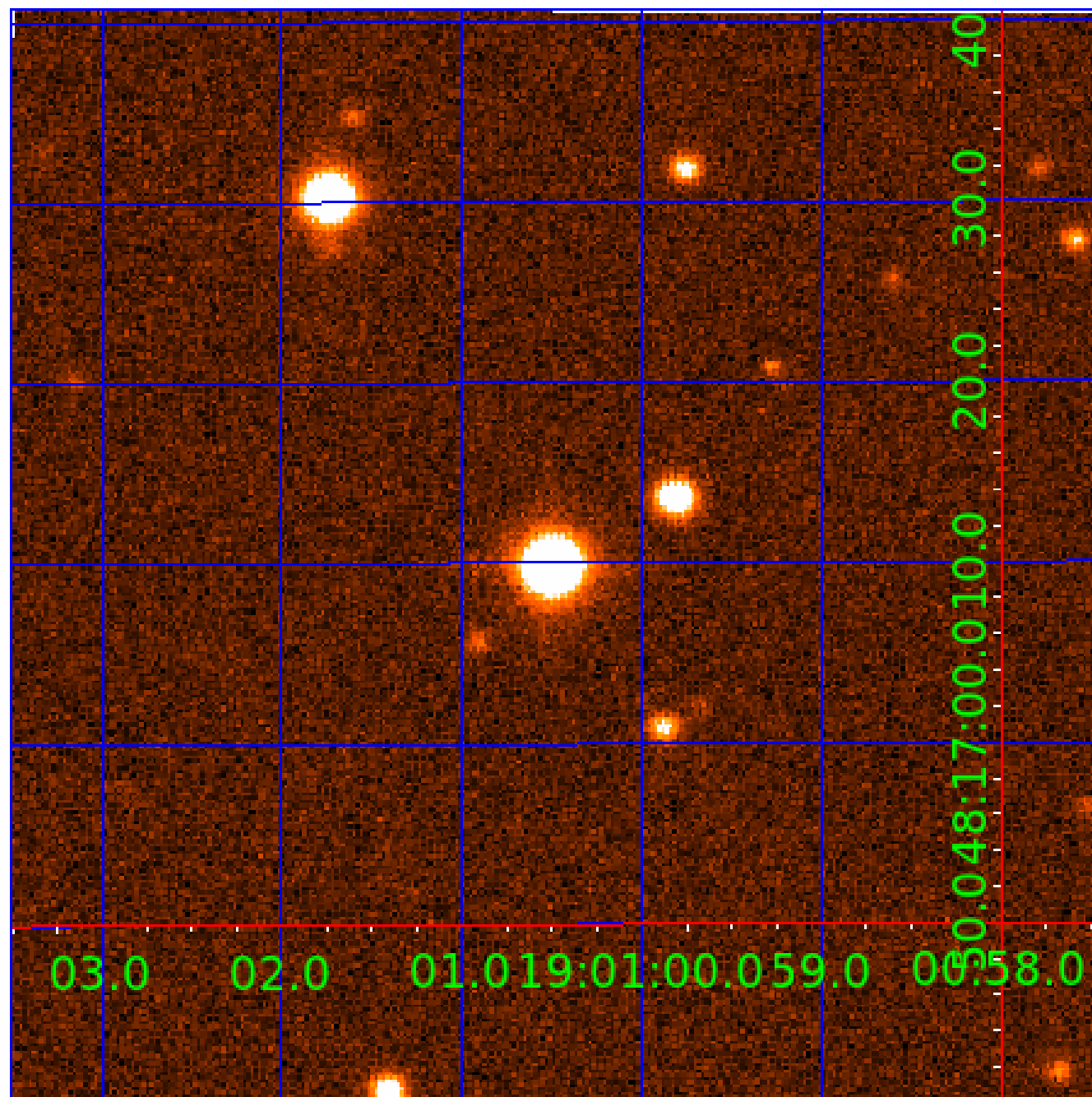


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination





# KIC 010847907

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
010847907-01	OBS	7379.01	0.535526	131.720096	6.9	2.954	7.9	3.2	1.86	6328	0.57	24240.96
010847907-02	OBS	No	57.955427	185.718370	652.7	3.573	13.1	6.8	1.86	6328	5.08	47.00
010847907-03	OBS	No	96.548511	167.060852	491.8	6.802	10.1	4.6	1.86	6328	4.44	23.80
010847907-04	OBS	No	145.765628	151.183770	1096.4	5.661	9.6	6.8	1.86	6328	7.80	13.74
010847907-05	OBS	No	105.732218	190.578954	795.5	8.314	7.4	6.3	1.86	6328	10.09	21.09
010847907-06	OBS	No	81.089666	150.861185	666.3	4.471	7.2	6.4	1.86	6328	5.32	30.04
010847907-07	OBS	No	148.438162	135.699589	942.1	7.145	8.4	5.7	1.86	6328	5.80	13.41

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010847907-01	OBS	FP	0.00	1	0	0	0	LPP_DV—CENT_KIC_POS
010847907-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—ALL_TRANS_CHASES—CENT_FEW_MEAS
010847907-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT— INCONSISTENT_TRANS—CENT_KIC_POS
010847907-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_DIFFS
010847907-05	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT— MOD_POS_ALT—CENT_KIC_POS—HALO_GHOST
010847907-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—ALL_TRANS_CHASES—CENT_KIC_POS
010847907-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT— INCONSISTENT_TRANS—CENT_FEW_MEAS

**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.

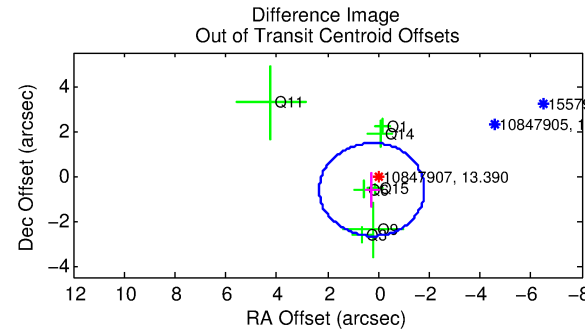
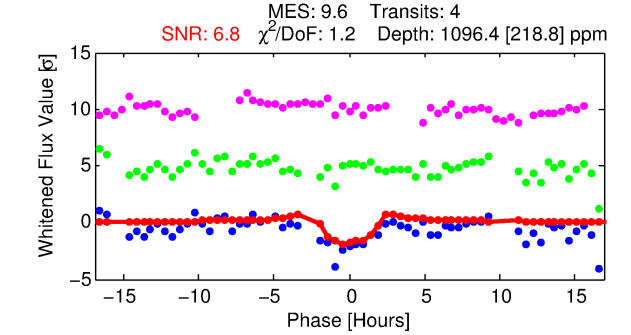
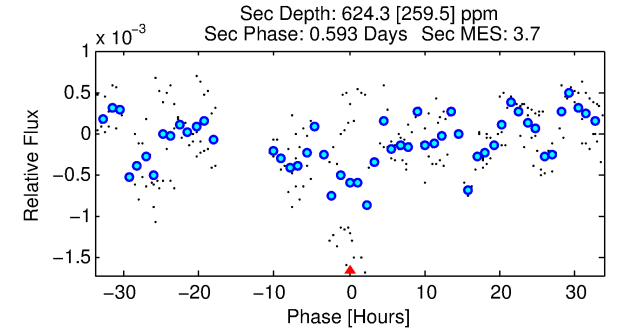
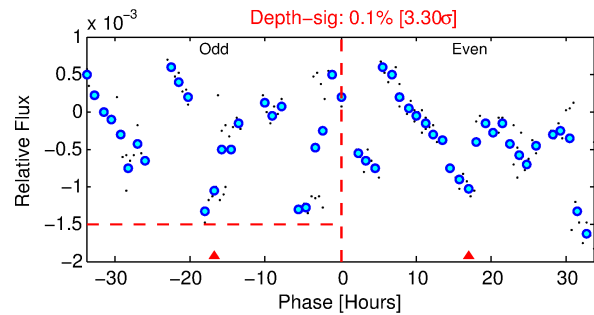
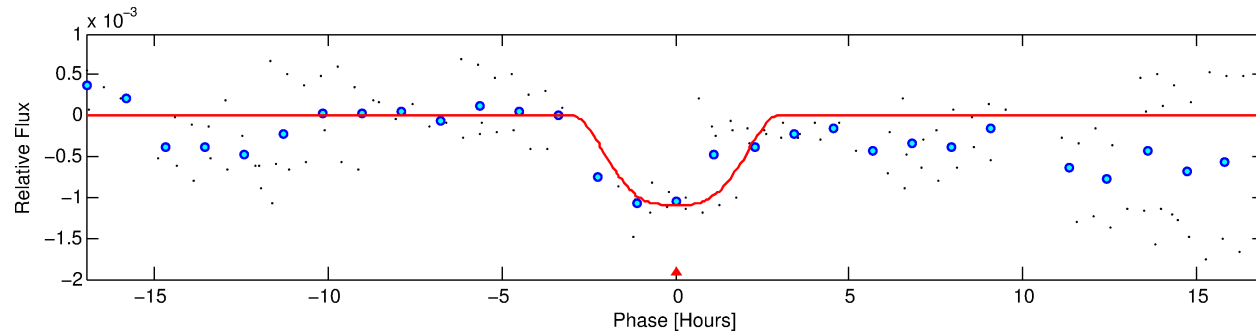
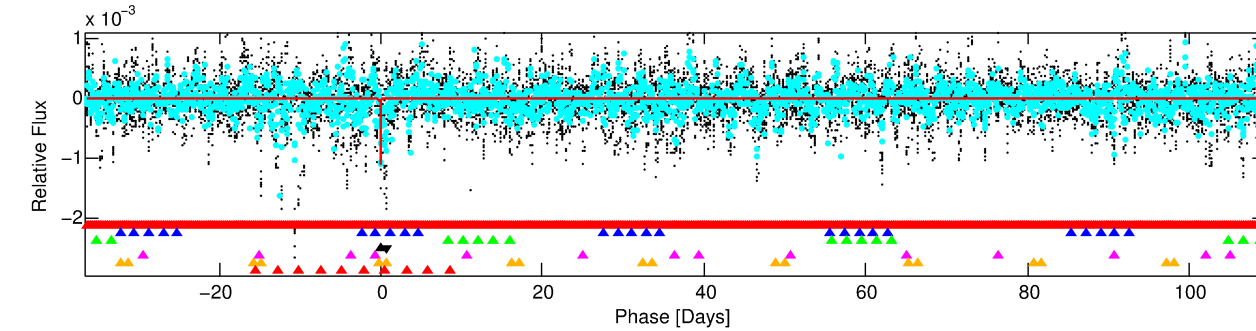
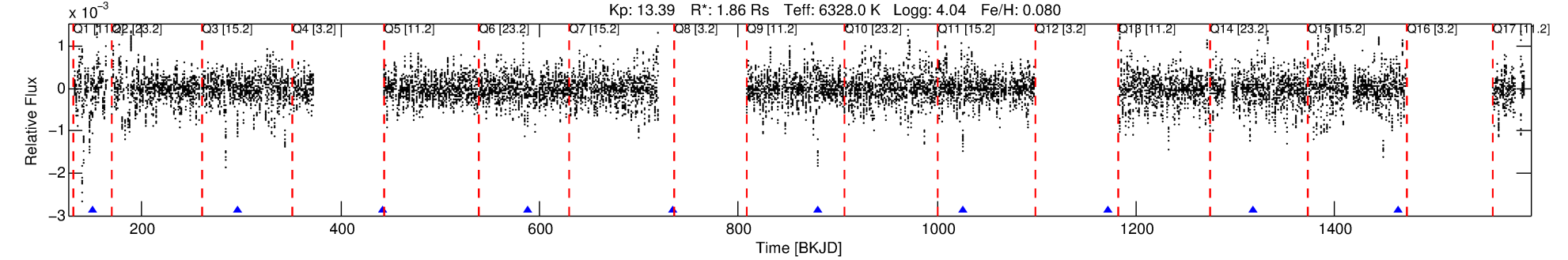
Ephemeris Match Information For 010847907-04

No Significant Match Found

# DV One-Page Summary

KIC: 10847907 Candidate: 4 of 7 Period: 145.766 d  
KOI: K07379 Corr: No Ephemeris Match

Kp: 13.39 R\*: 1.86 Rs Teff: 6328.0 K Logg: 4.04 Fe/H: 0.080



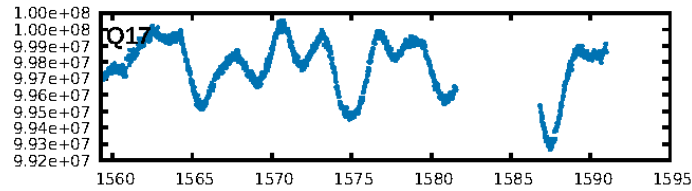
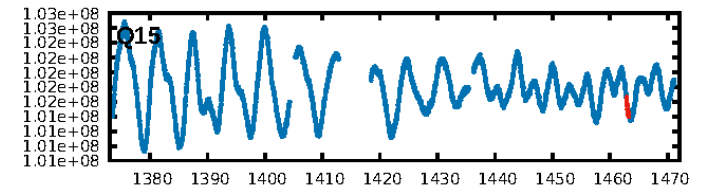
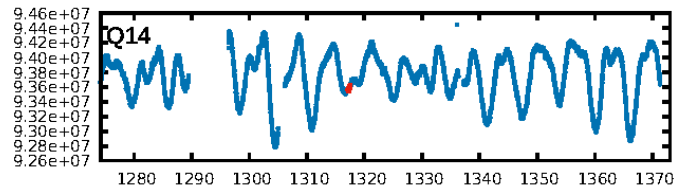
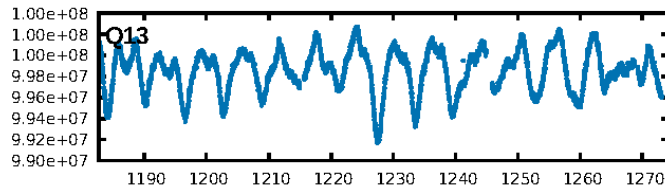
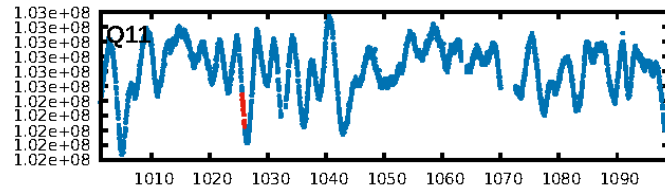
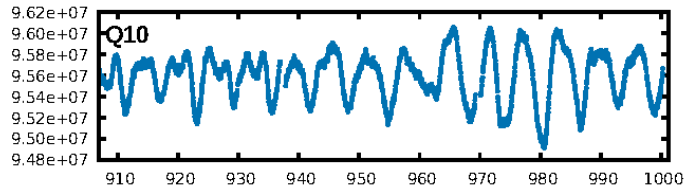
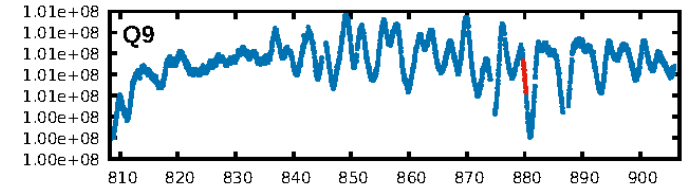
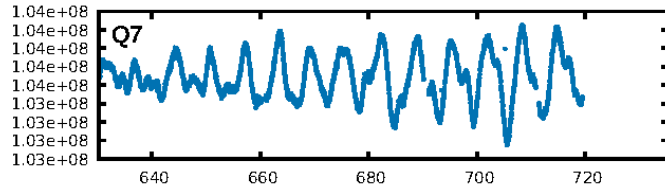
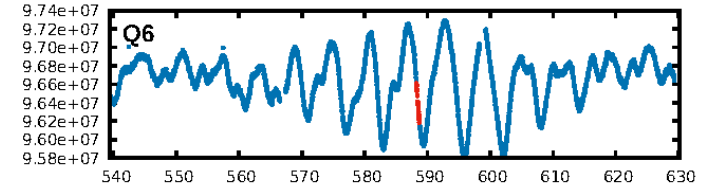
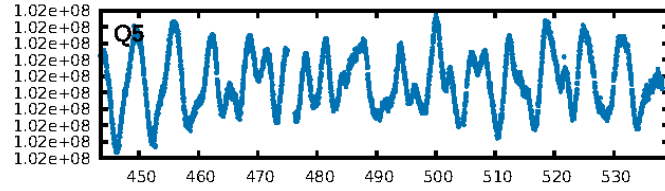
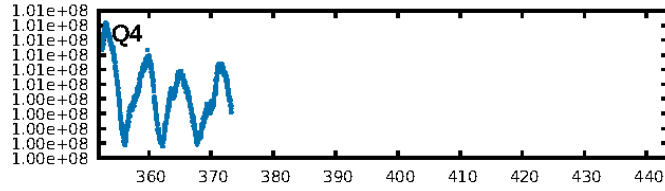
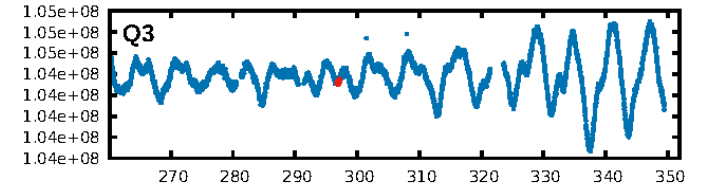
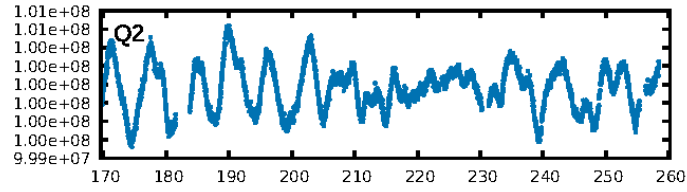
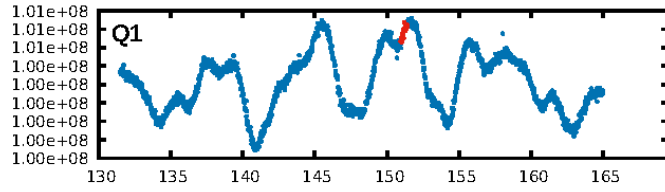
## DV Fit Results:

Period = 145.76563 [0.00391] d  
Epoch = 151.1838 [0.0134] BKJD  
Rp/R\* = 0.0383 [0.0048]  
a/R\* = 79.96 [18.57]  
b = 0.96 [0.02]  
Seff = 13.74 [6.98]  
Teff = 491 [62] K  
Rp = 7.80 [2.91] Re  
a = 0.6027 [0.1904] AU  
Ag = 2050.92 [1405.49] [1.46σ]  
Teffp = 5108 [650] K [7.07σ]

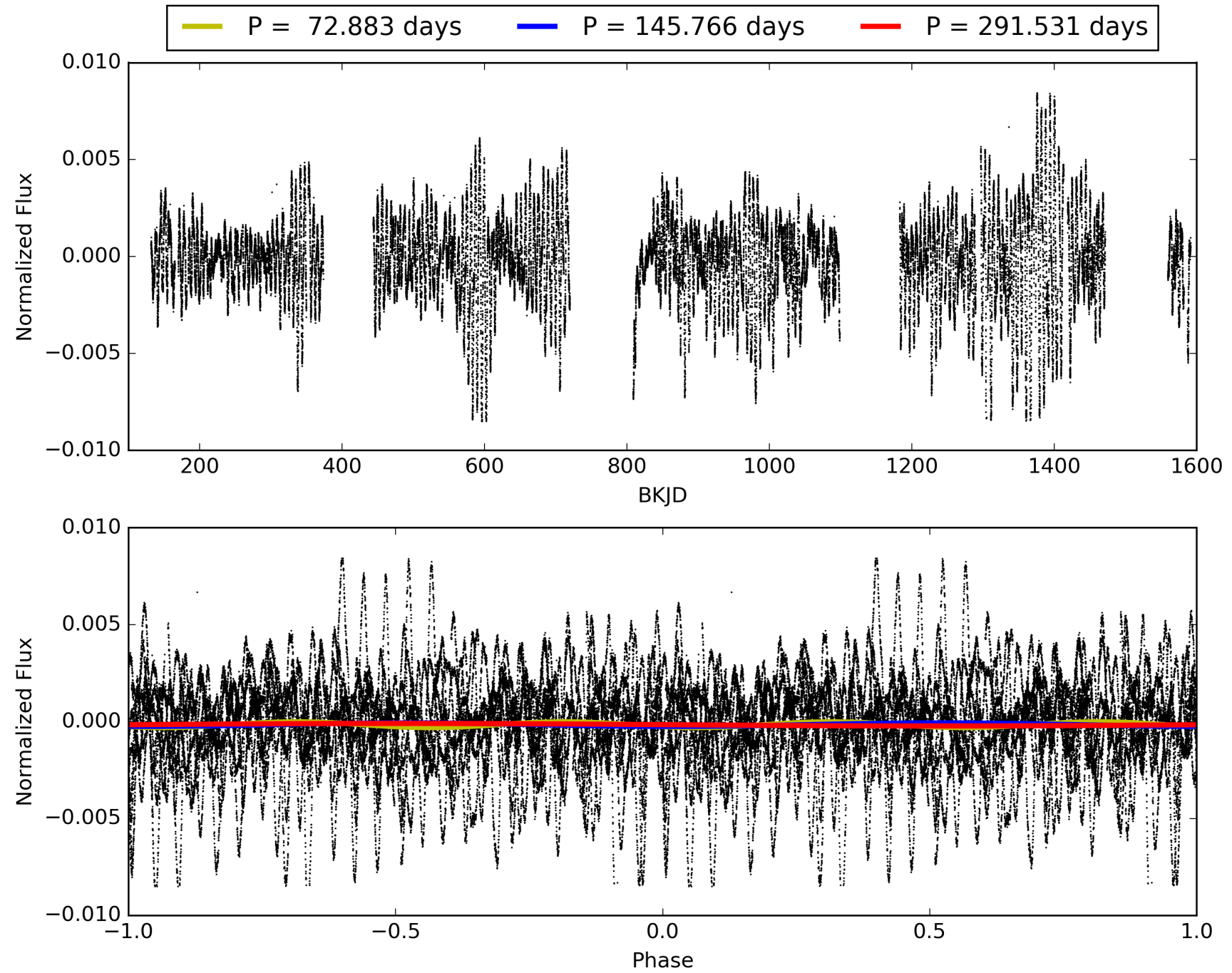
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [95.52σ]  
LongPeriod-sig: 100.0% [7.04σ]  
ModelChiSquare2-sig: 1.5%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 6.19e-17  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: 0.7539  
Centroid-sig: 30.5%  
Centroid-so: 0.188 arcsec [0.69σ]  
OotOffset-rm: 0.660 arcsec [0.96σ]  
KicOffset-rm: 1.275 arcsec [1.94σ]  
OotOffset-st: 2/3/0/2 [7]  
KicOffset-st: 2/3/0/2 [7]  
DiffImageQuality-fgm: 0.43 [3/7]  
DiffImageOverlap-fno: 0.00 [0/7]

# TCE 010847907-04, PDC Light Curves

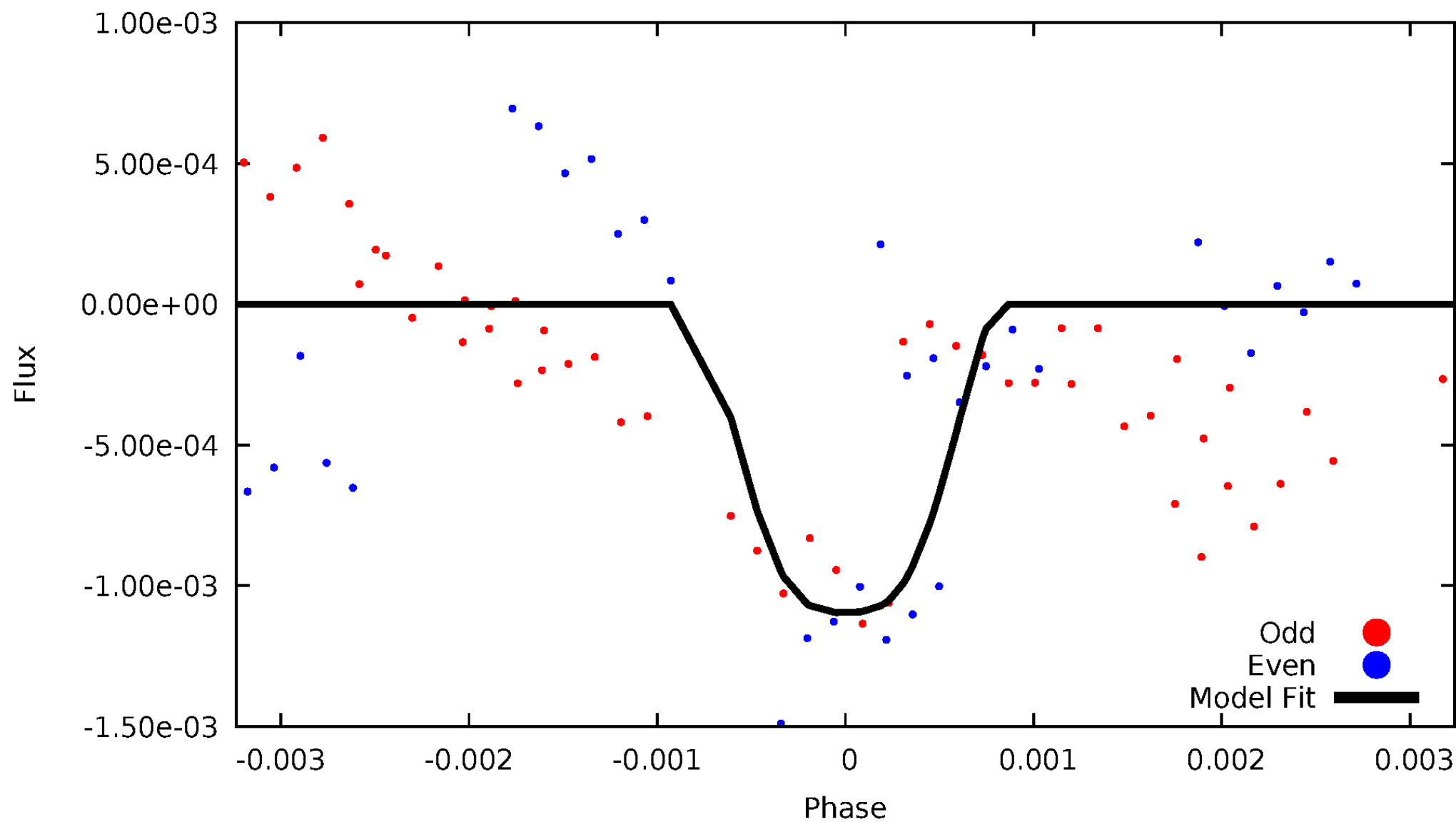


TCE 010847907-04



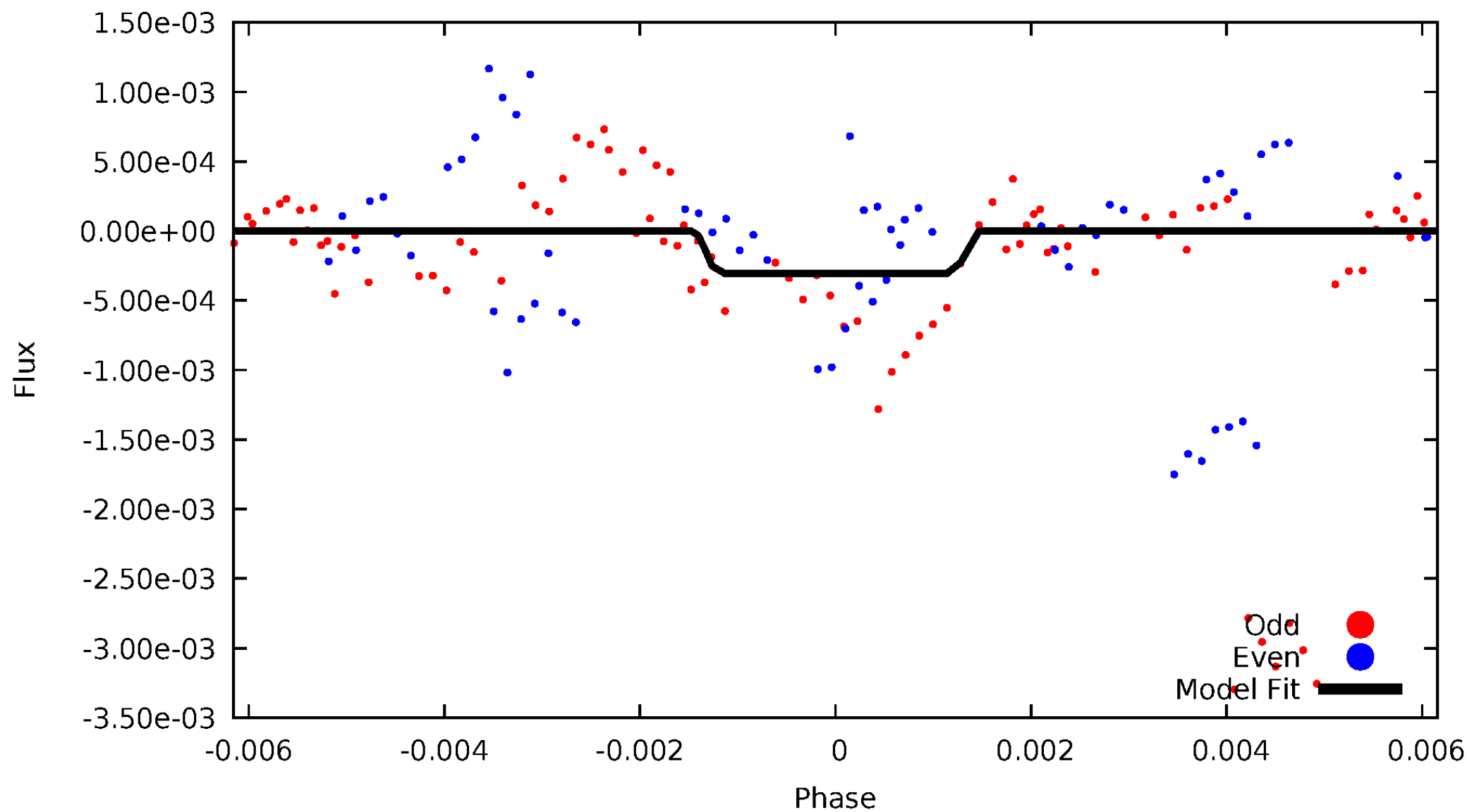
# DV Odd/Even

TCE 010847907-04



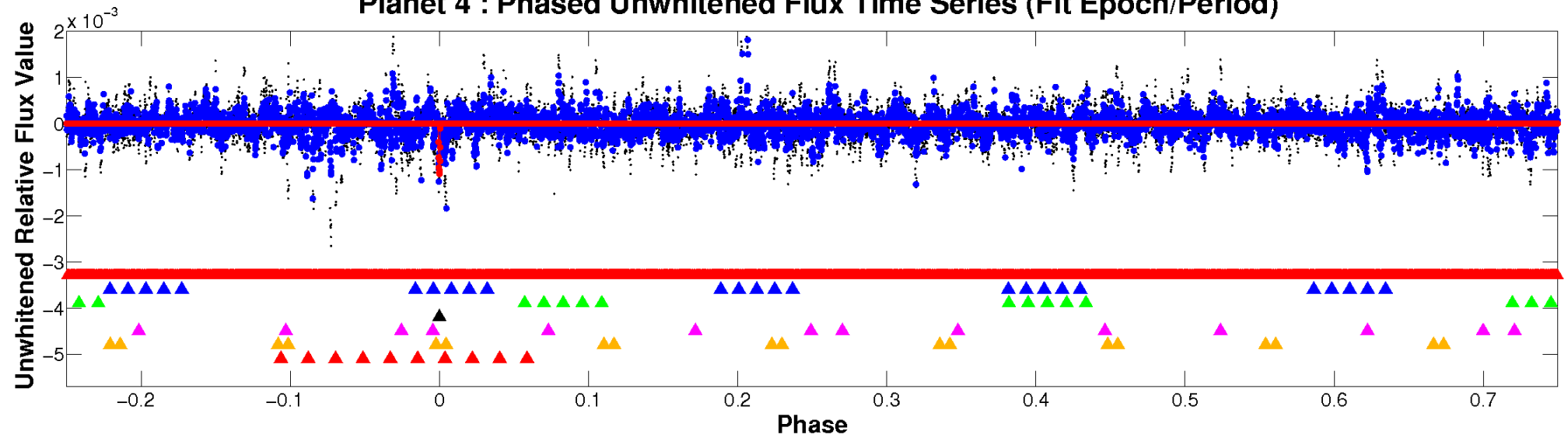
# ALT Odd/Even

TCE 010847907-04

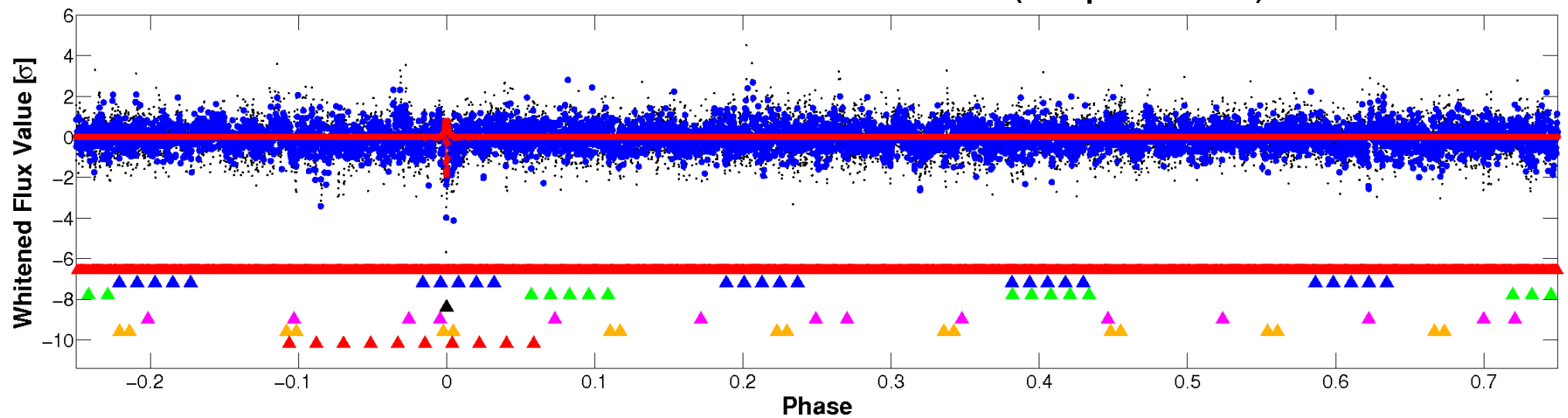


# Non-Whitened Vs. Whitened Light Curve

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



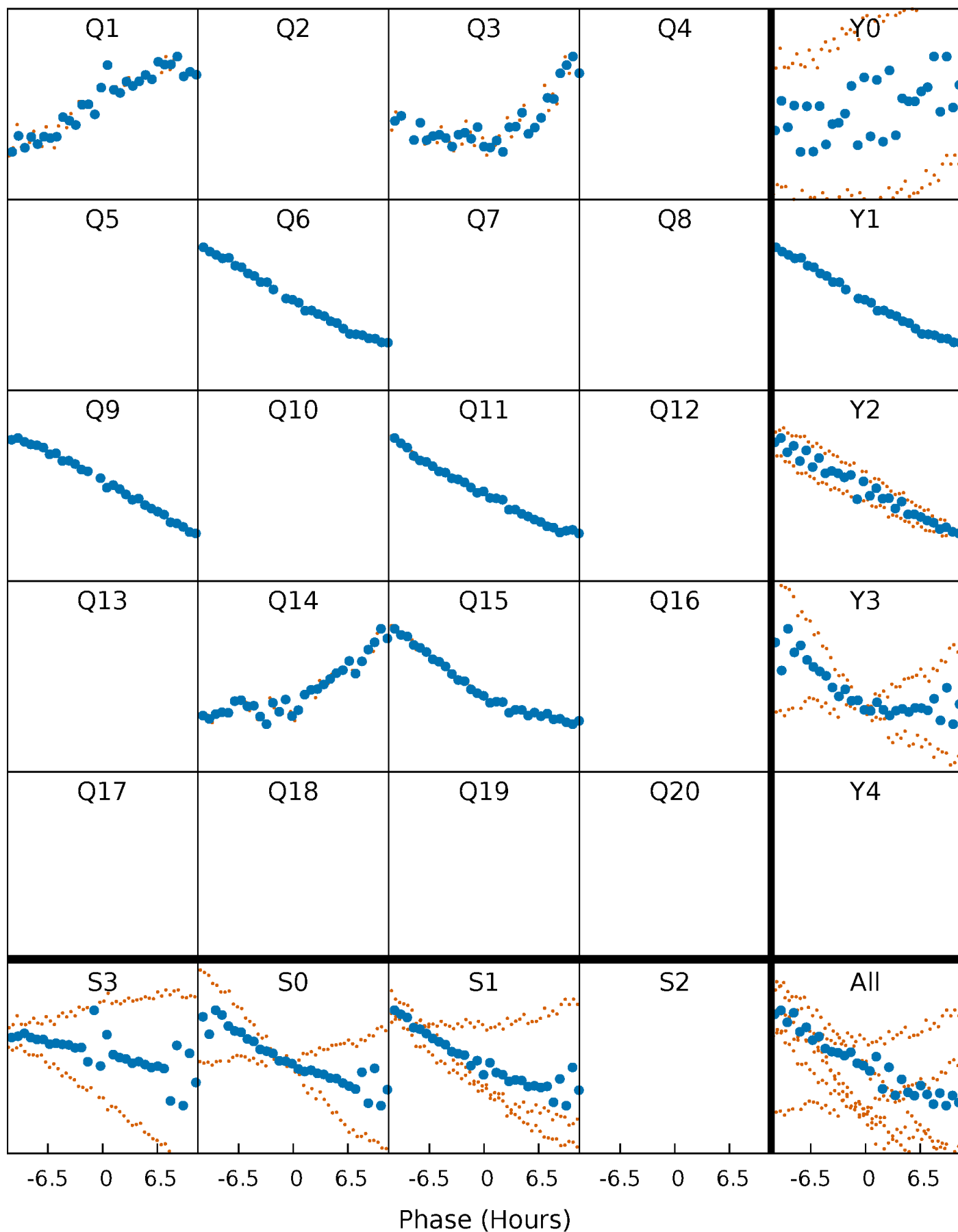
## Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)





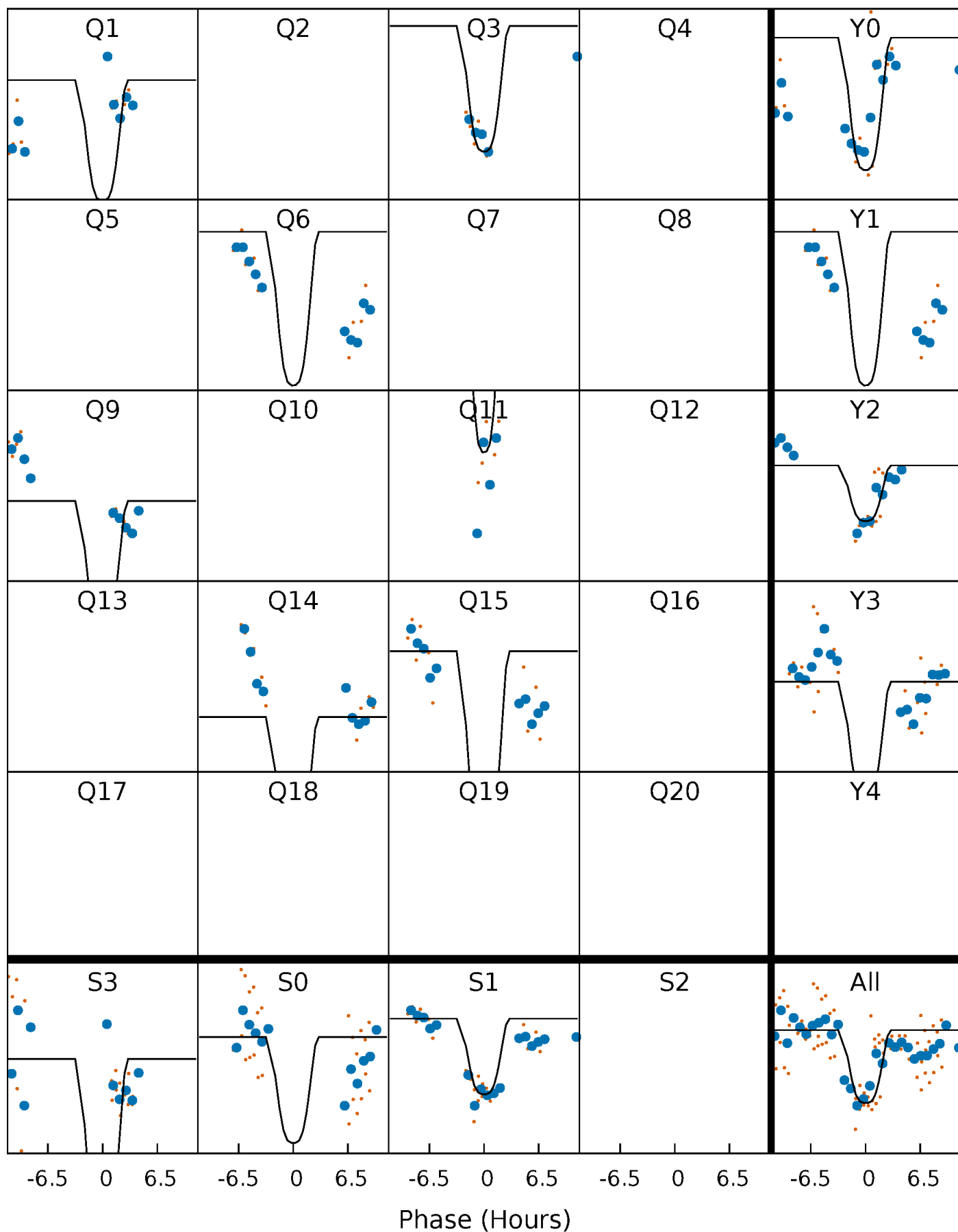
# PDC Quarter-Phased Transit Curves

TCE 010847907-04     $P=145.765628$  Days     $T_0=151.183770$  (BKJD)



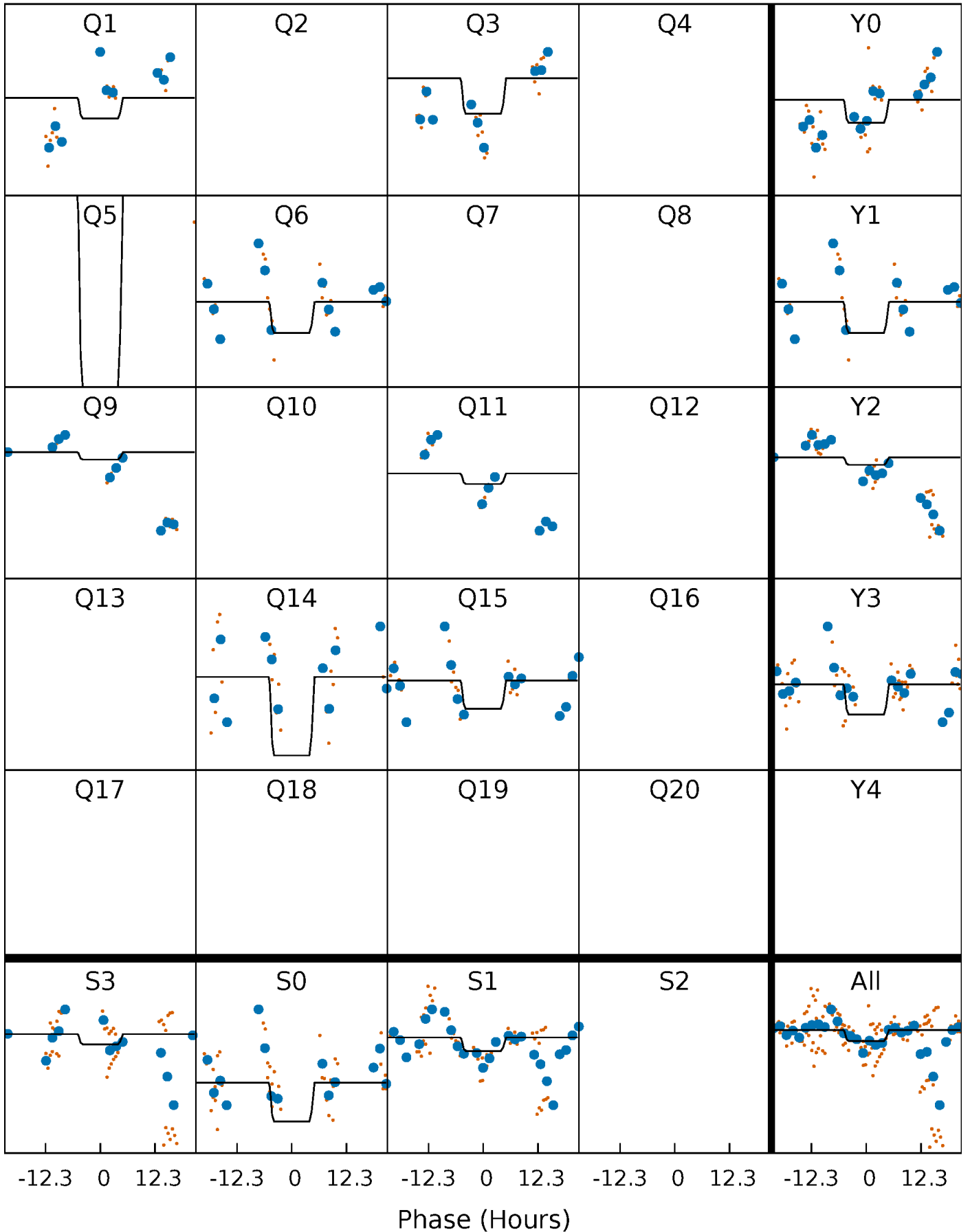
# DV Quarter-Phased Transit Curves

TCE 010847907-04 P=145.765628 Days  $T_0=151.183770$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

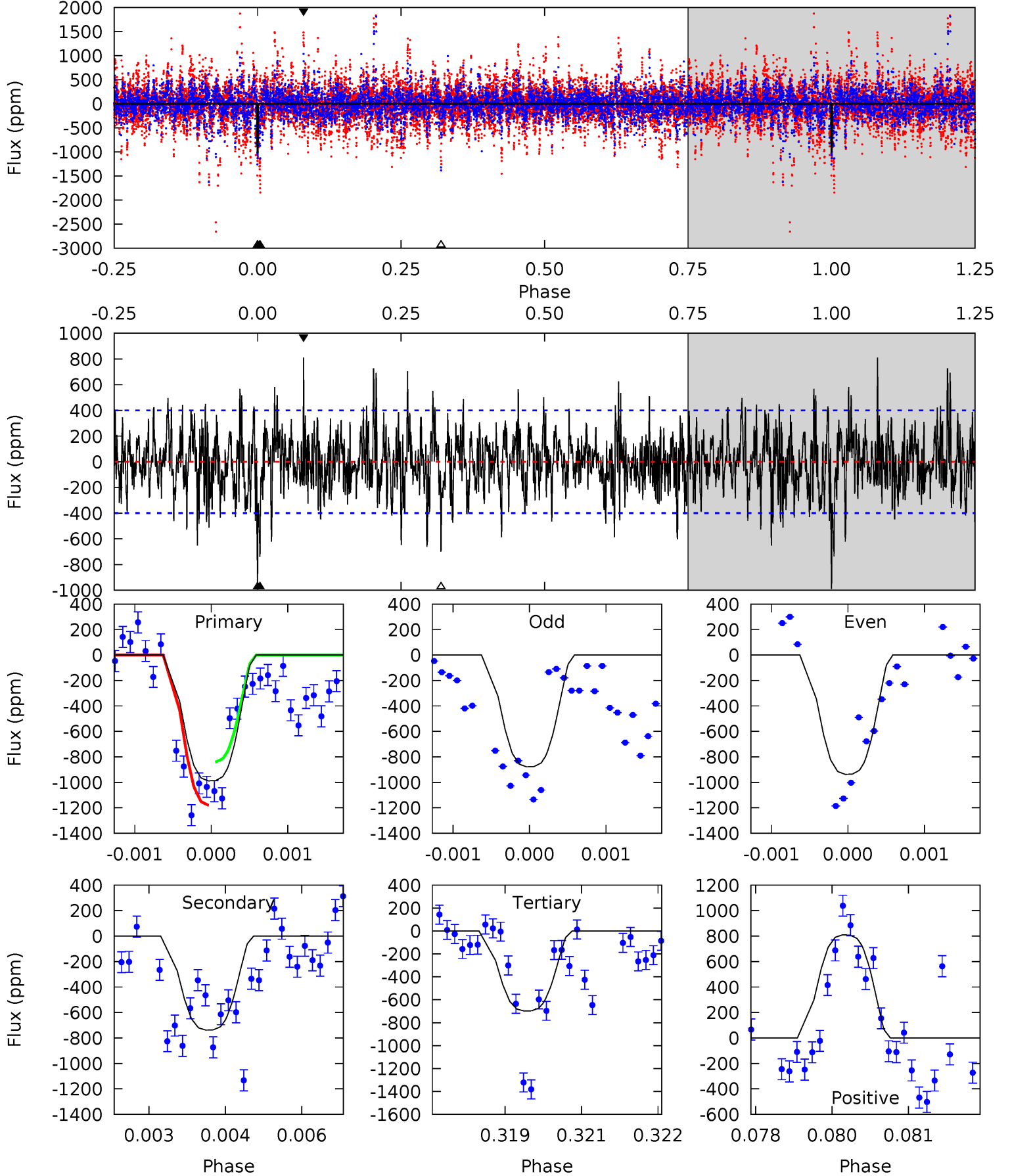
TCE 010847907-04     $P=145.760723$  Days     $T_0=151.189261$  (BKJD)



# DV Model-Shift Uniqueness Test

010847907-04, P = 145.765628 Days, E = 5.418142 Days

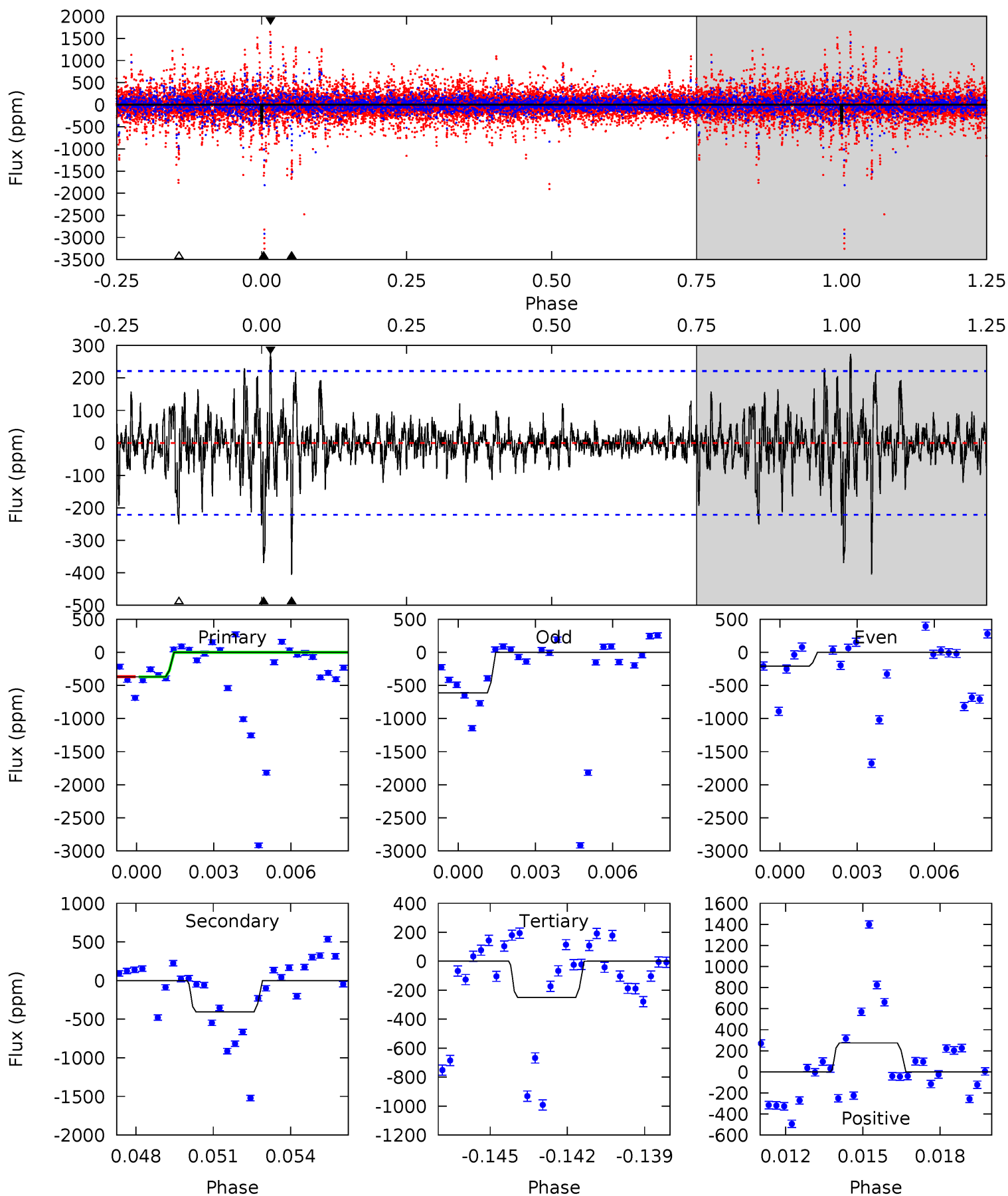
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.3	9.94	9.40	10.9	5.38	3.18	2.56	3.92	2.41	0.54	-0.96	0.40	1.06	0.45	2.15



# Alt Model-Shift Uniqueness Test

010847907-04, P = 145.760723 Days, E = 5.428538 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
8.77	9.60	5.94	6.50	5.25	2.97	1.29	2.83	2.27	3.66	3.10	4.43	0.96	0.40	0.02



### Stellar Parameters For KIC 010847907

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6328^{+177}_{-243}$	$4.035^{+0.276}_{-0.161}$	$0.080^{+0.250}_{-0.300}$	$1.864^{+0.536}_{-0.655}$	$1.374^{+0.190}_{-0.285}$	$0.299^{+0.555}_{-0.139}$
	+3%/-4%	+7%/-4%	+312%/-375%	+29%/-35%	+14%/-21%	+186%/-46%
Source	PHO54	PHO54	PHO54	DSEP		

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

### Secondary Eclipse Parameters for KIC 010847907-04 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-738 \pm 74$	$7.55^{+1.67}_{-1.53}$	$680^{+53}_{-58}$	$5340^{+402}_{-318}$	$2536^{+1317}_{-813}$
Alt.	$-405 \pm 42$	$3.39^{+1.27}_{-1.09}$	$676^{+53}_{-61}$	$6774^{+1413}_{-868}$	$6836^{+7547}_{-3261}$

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

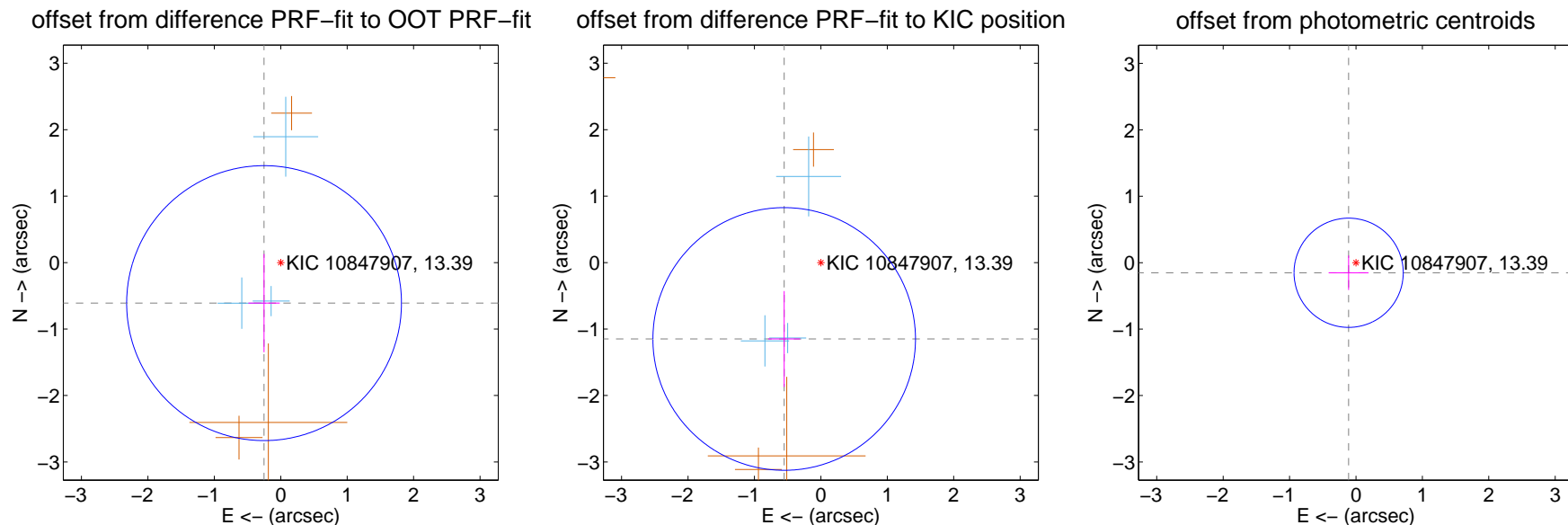
## DV Centroid Data

Supplemental centroid analysis for 010847907-04. Kepler magnitude: 13.39. Transit SNR 6.83

There are 3 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.66 arcsec

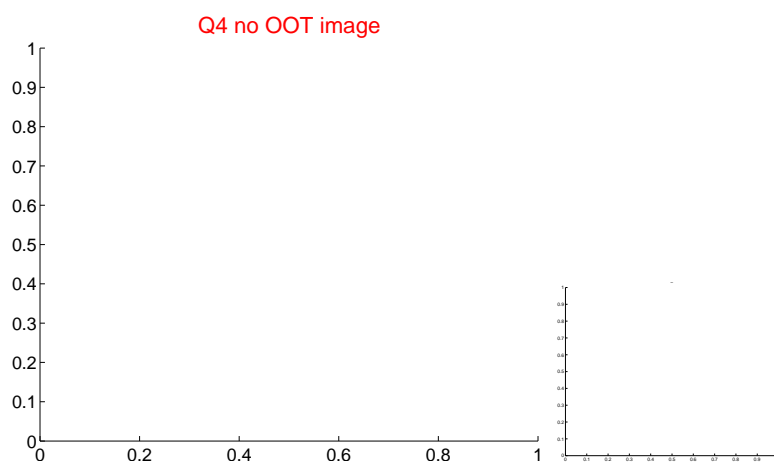
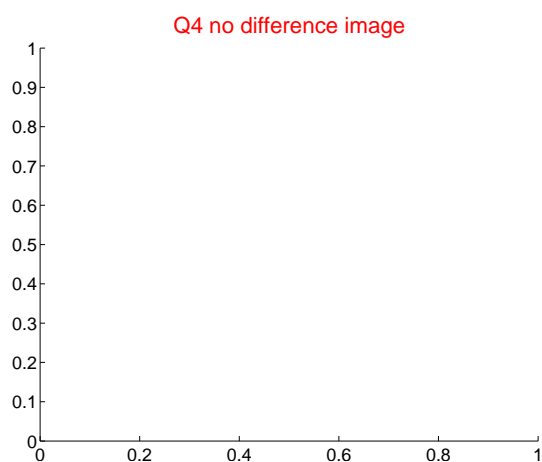
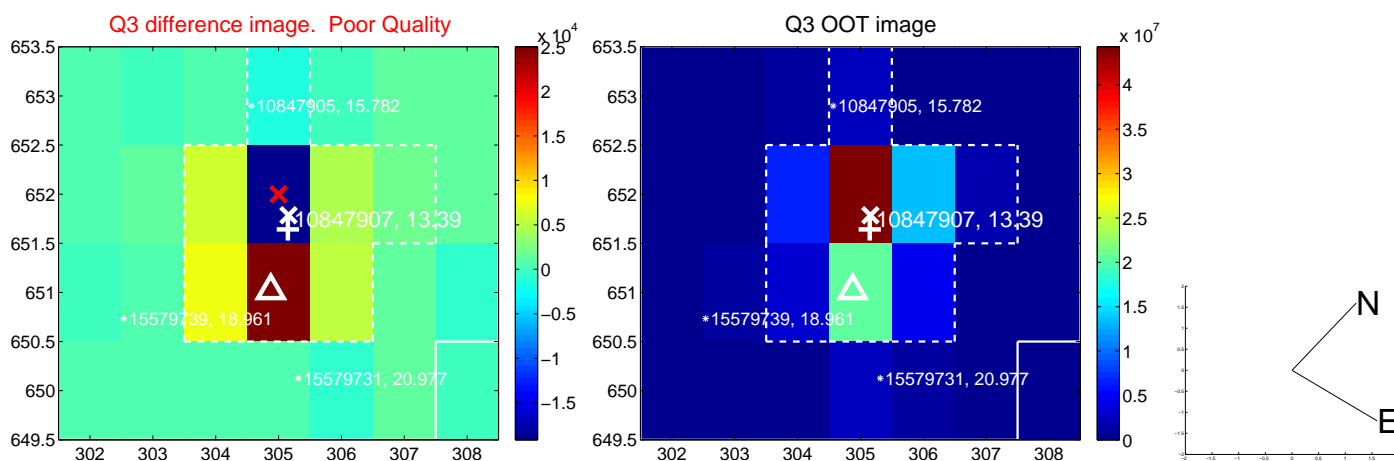
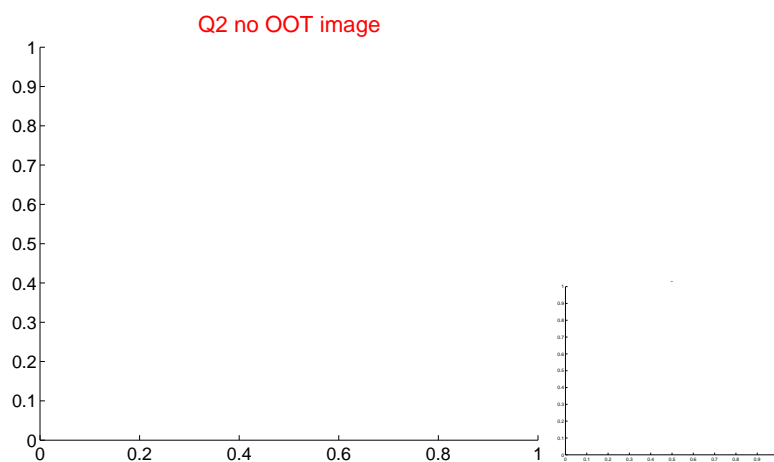
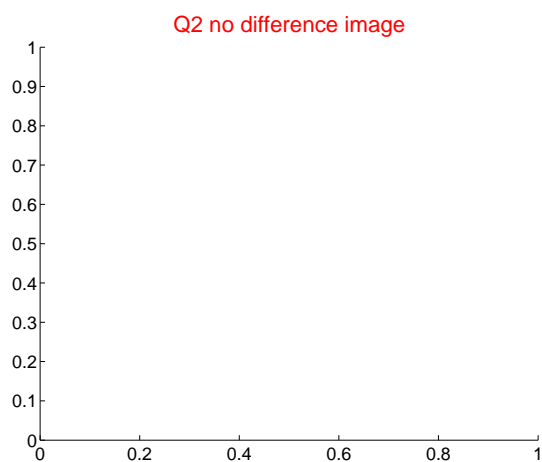
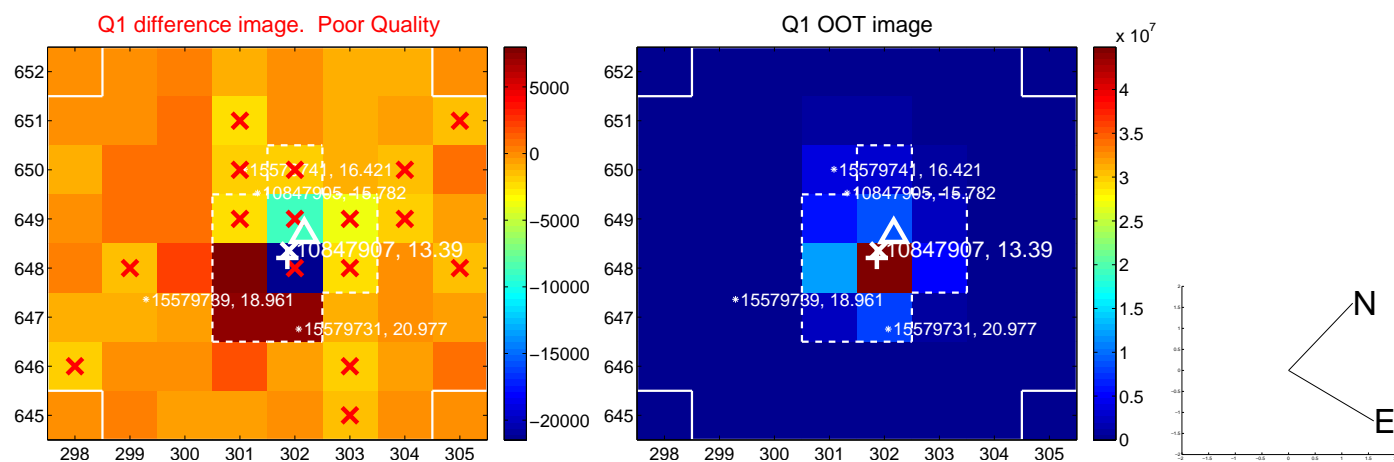
	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.660 \pm 0.690$	0.96	$0.251 \pm 0.237$	$-0.610 \pm 0.739$
PRF-fit source offset from KIC position	$1.275 \pm 0.659$	1.94	$0.552 \pm 0.241$	$-1.149 \pm 0.722$
photometric centroid source offset	$0.19 \pm 0.27$	0.69	$0.11 \pm 0.30$	$-0.15 \pm 0.26$



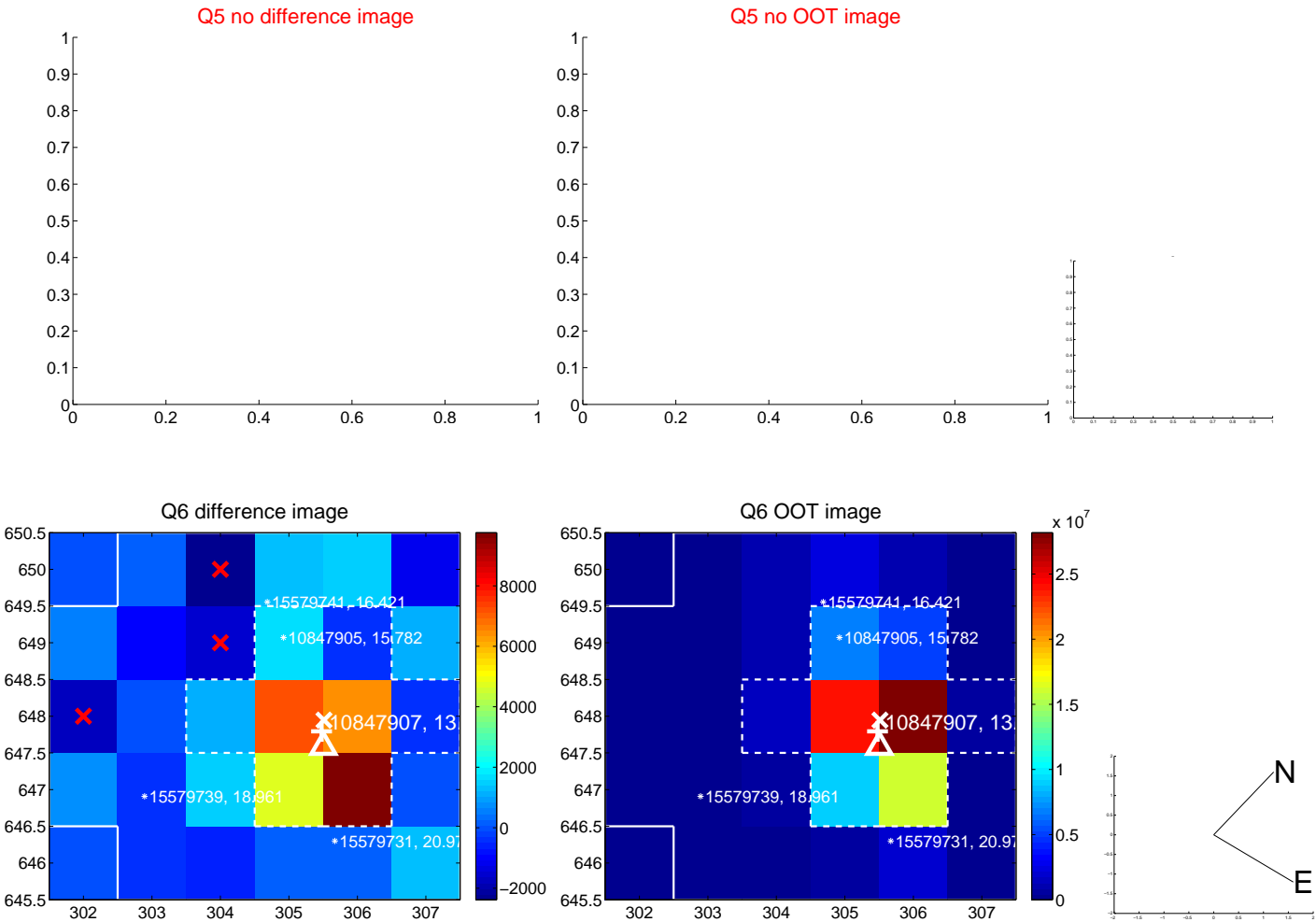
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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



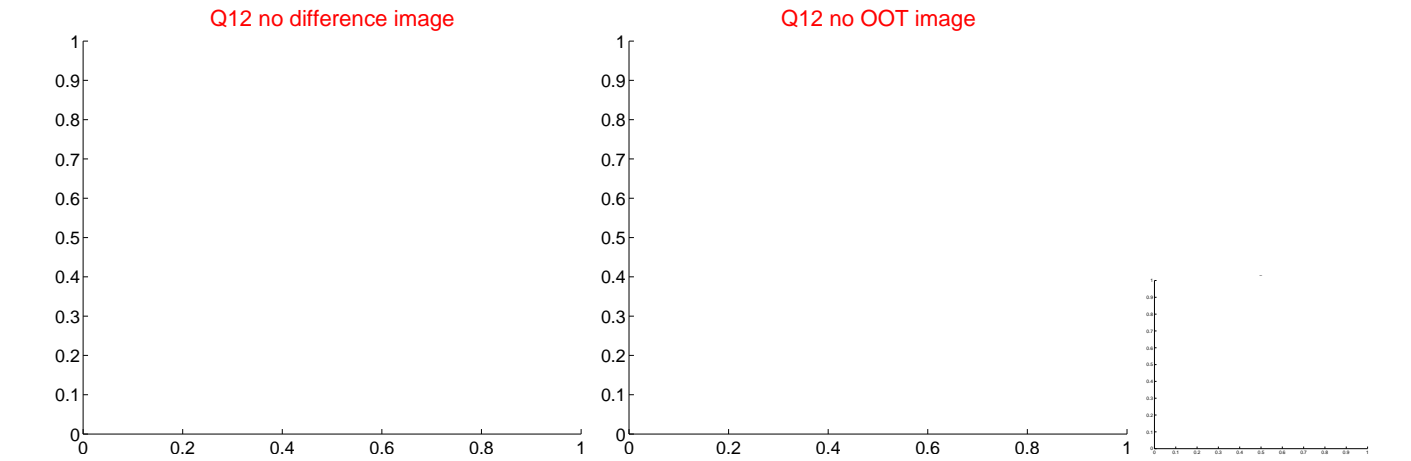
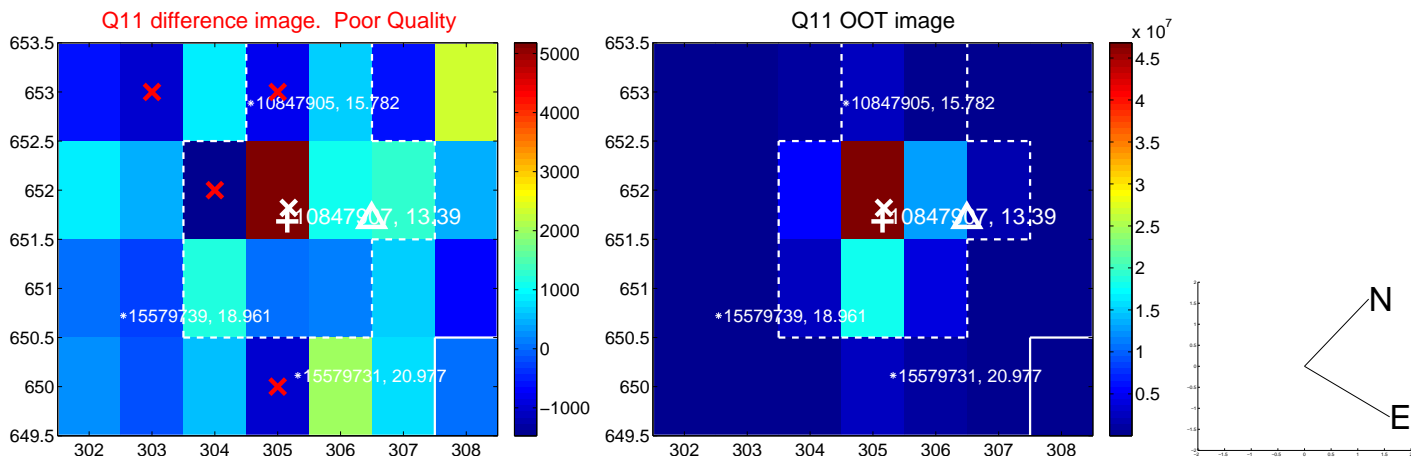
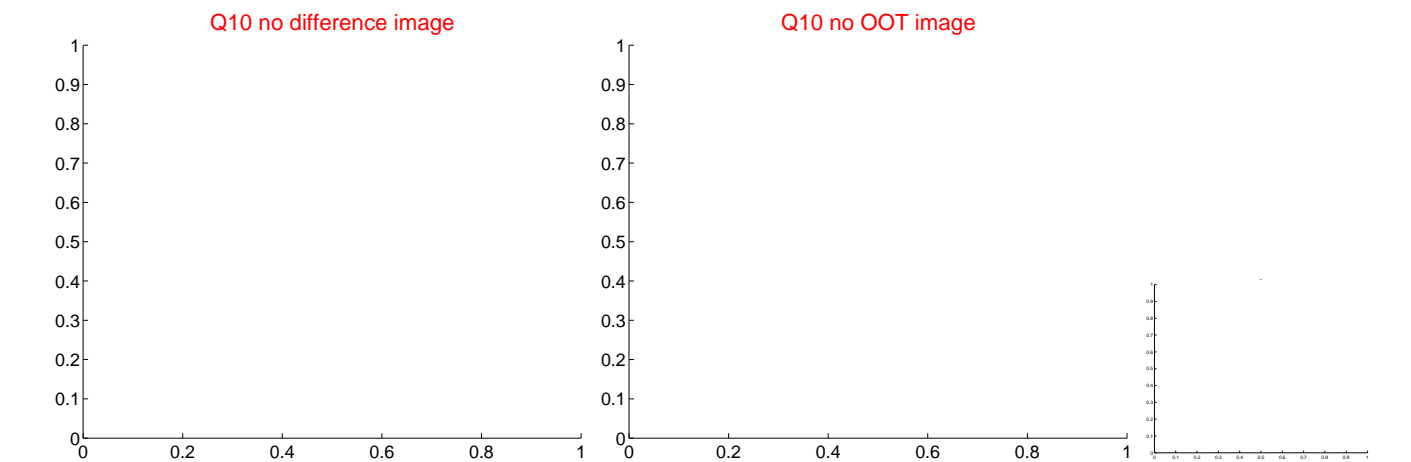
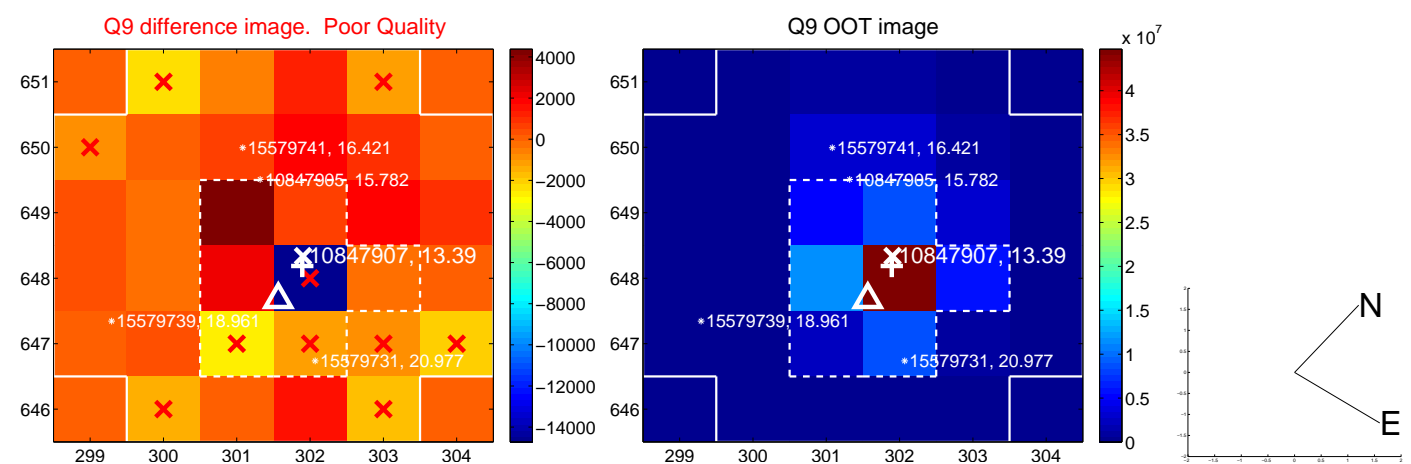
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value



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.

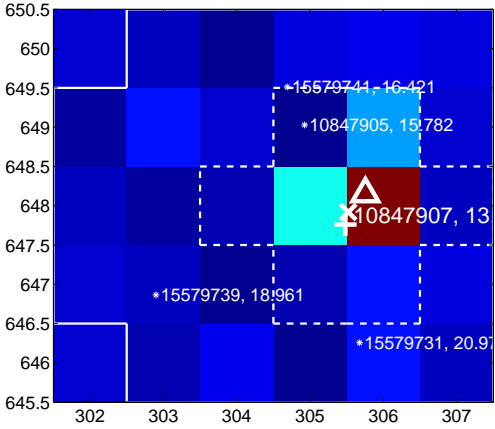
Q13 no difference image



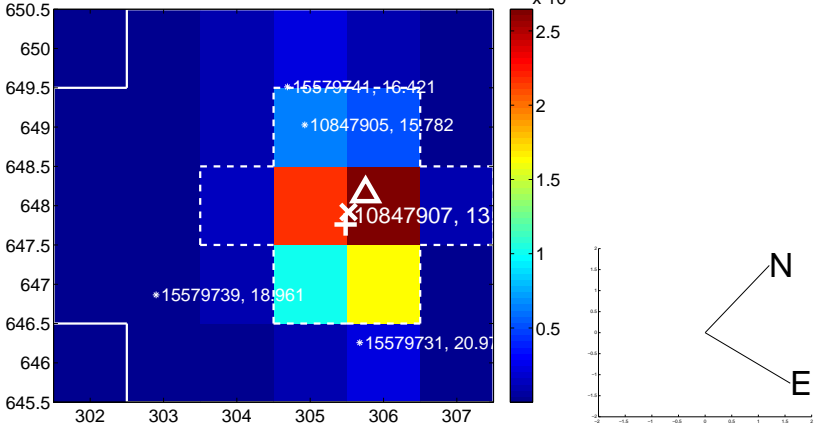
Q13 no OOT image



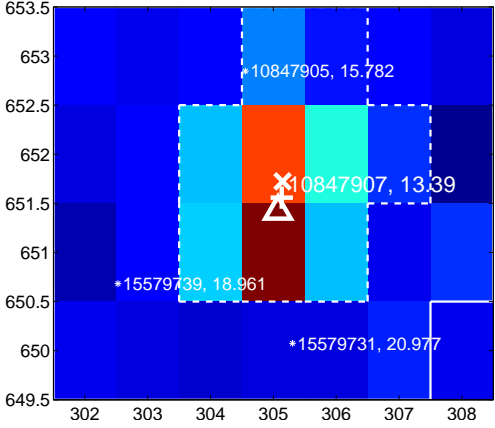
Q14 difference image



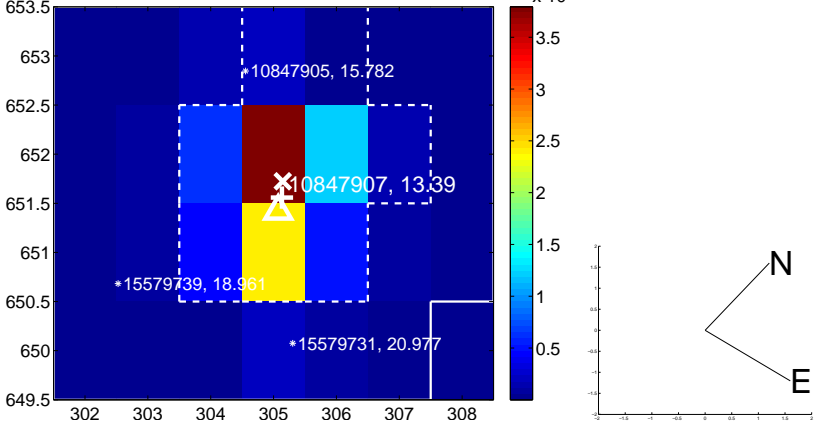
Q14 OOT image



Q15 difference image



Q15 OOT image



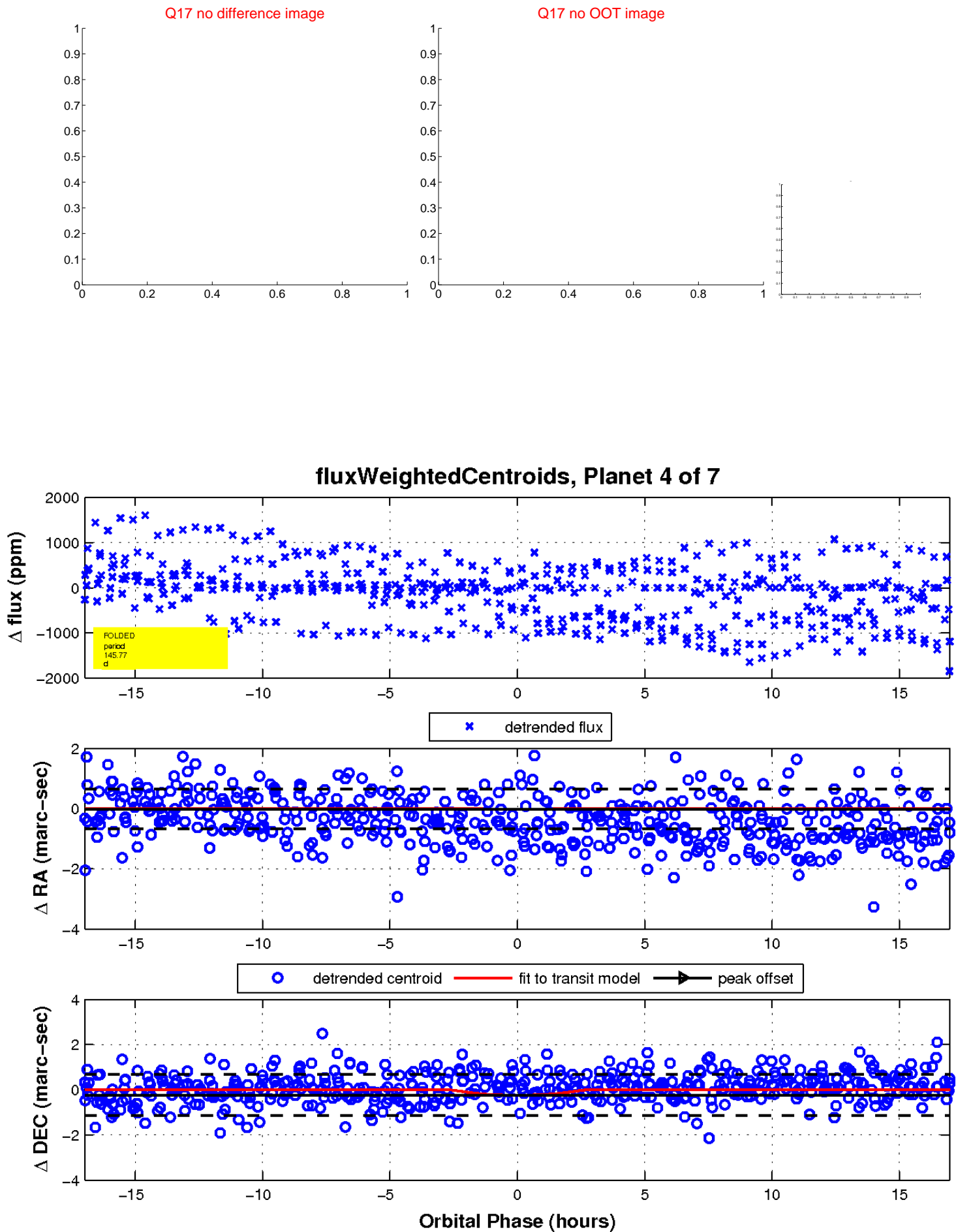
Q16 no difference image



Q16 no OOT image

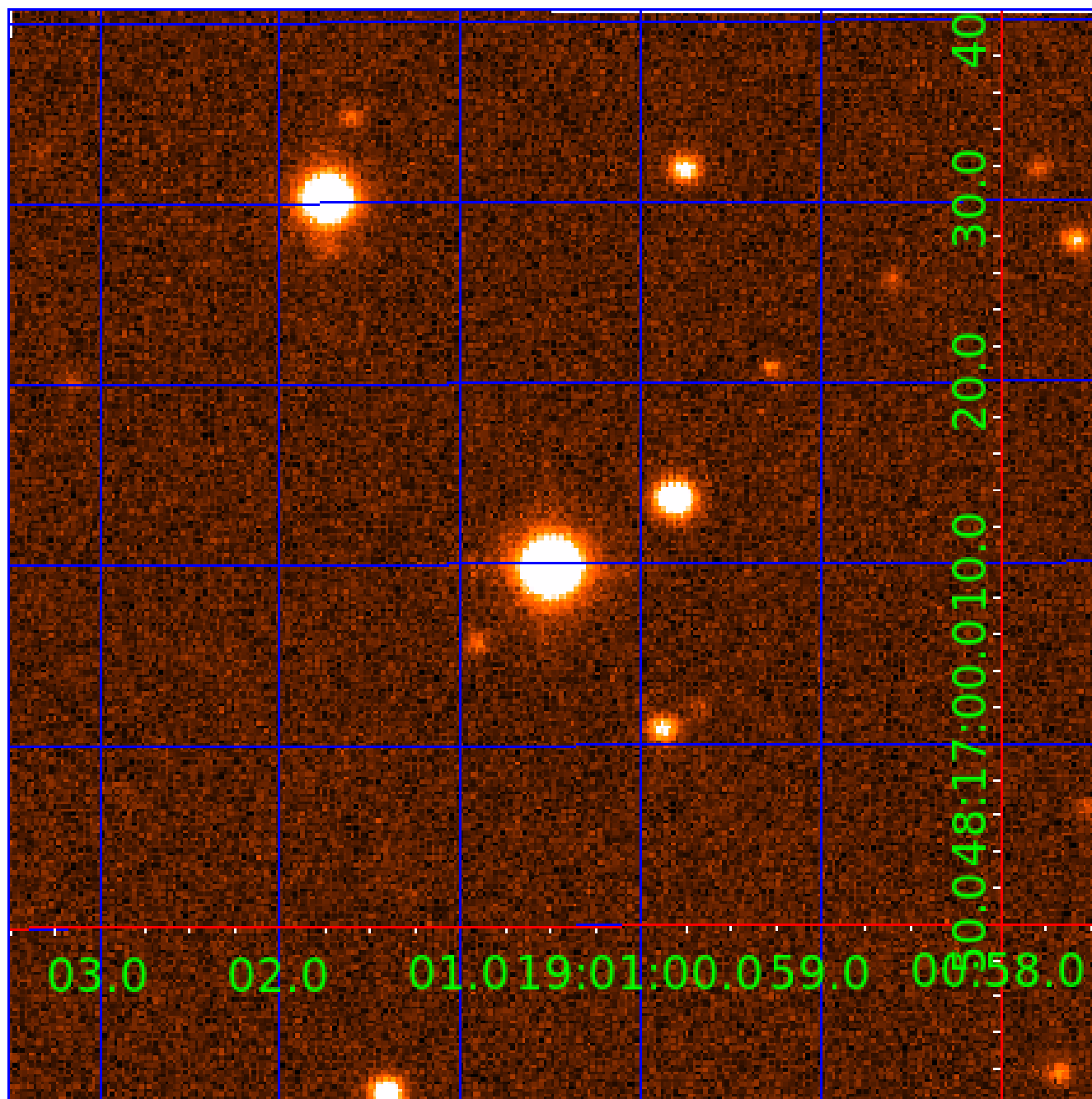


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 010847907

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
010847907-01	OBS	7379.01	0.535526	131.720096	6.9	2.954	7.9	3.2	1.86	6328	0.57	24240.96
010847907-02	OBS	No	57.955427	185.718370	652.7	3.573	13.1	6.8	1.86	6328	5.08	47.00
010847907-03	OBS	No	96.548511	167.060852	491.8	6.802	10.1	4.6	1.86	6328	4.44	23.80
010847907-04	OBS	No	145.765628	151.183770	1096.4	5.661	9.6	6.8	1.86	6328	7.80	13.74
010847907-05	OBS	No	105.732218	190.578954	795.5	8.314	7.4	6.3	1.86	6328	10.09	21.09
010847907-06	OBS	No	81.089666	150.861185	666.3	4.471	7.2	6.4	1.86	6328	5.32	30.04
010847907-07	OBS	No	148.438162	135.699589	942.1	7.145	8.4	5.7	1.86	6328	5.80	13.41

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010847907-01	OBS	FP	0.00	1	0	0	0	LPP_DV—CENT_KIC_POS
010847907-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—ALL_TRANS_CHASES—CENT_FEW_MEAS
010847907-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT— INCONSISTENT_TRANS—CENT_KIC_POS
010847907-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_DIFFS
010847907-05	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT— MOD_POS_ALT—CENT_KIC_POS—HALO_GHOST
010847907-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—ALL_TRANS_CHASES—CENT_KIC_POS
010847907-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT— INCONSISTENT_TRANS—CENT_FEW_MEAS

**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.

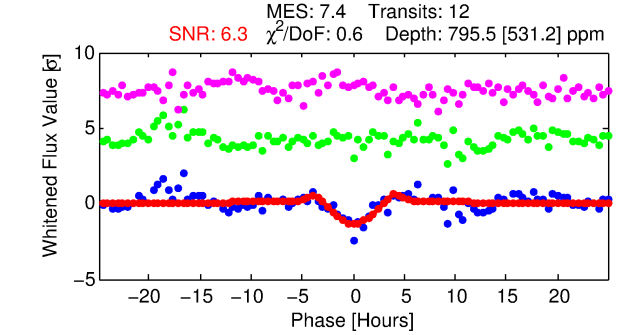
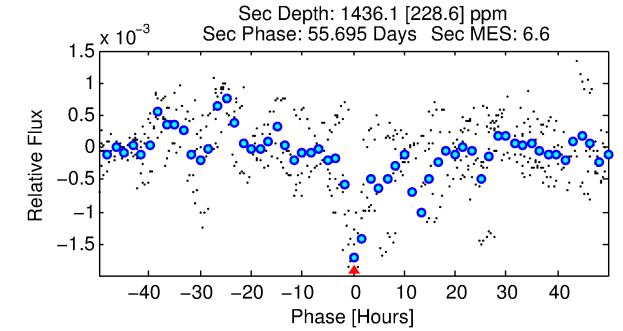
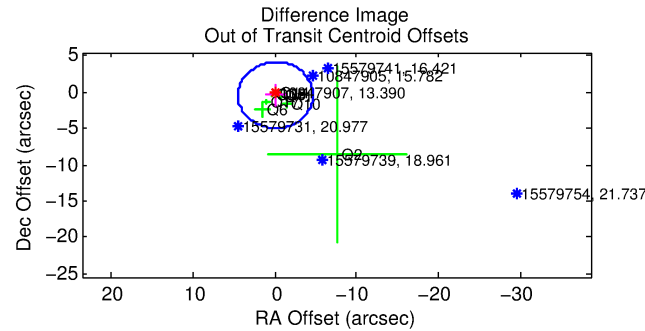
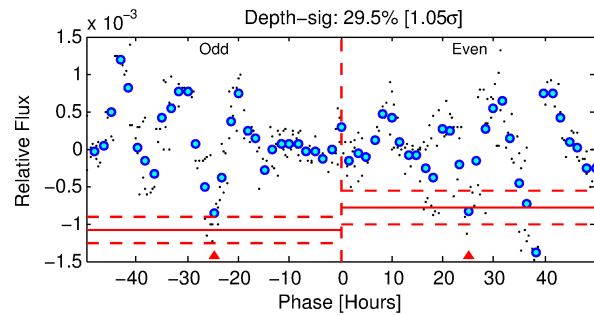
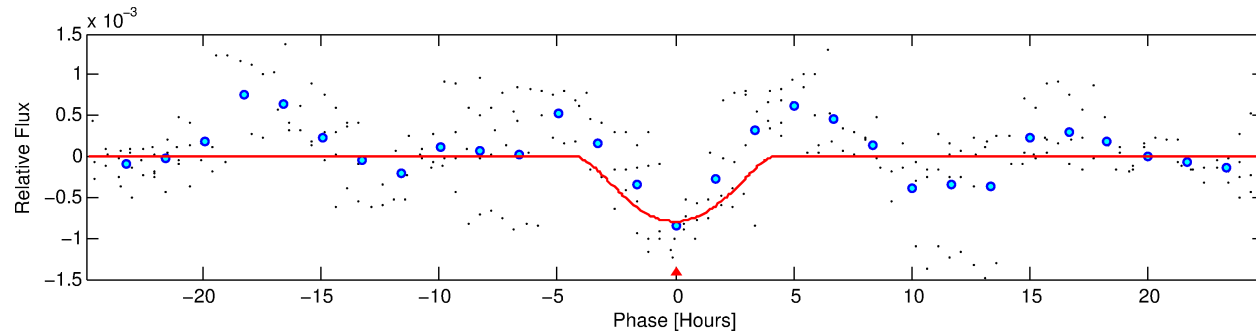
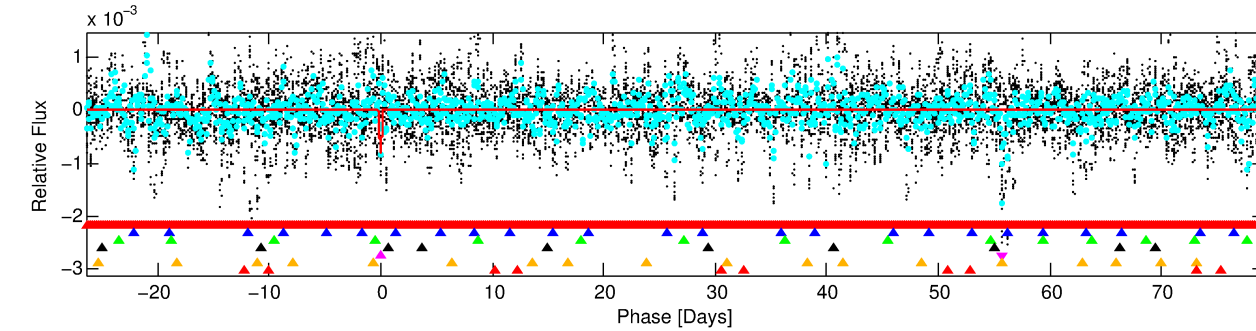
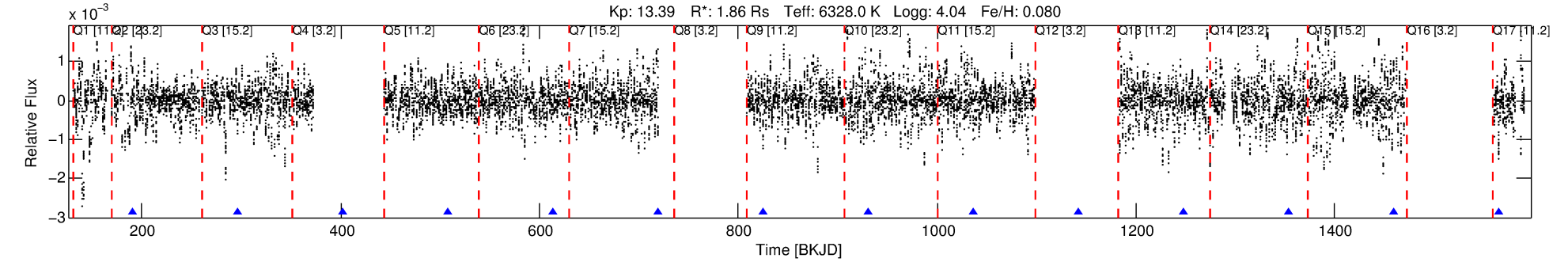
Ephemeris Match Information For 010847907-05

No Significant Match Found



# DV One-Page Summary

KIC: 10847907 Candidate: 5 of 7 Period: 105.732 d  
KOI: K07379 Corr: No Ephemeris Match



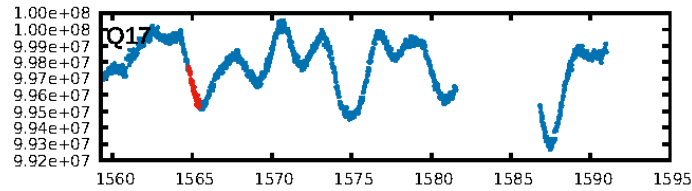
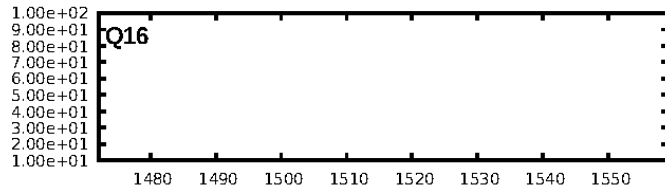
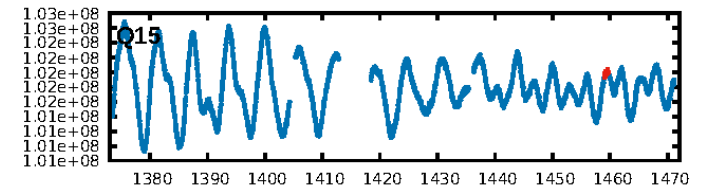
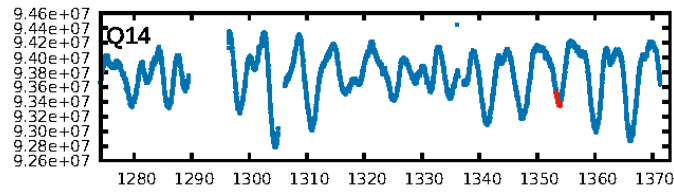
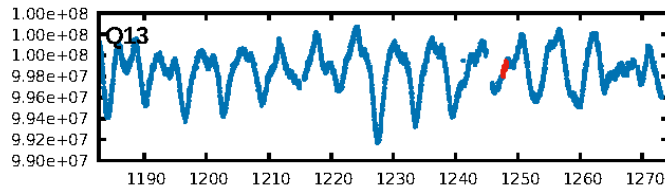
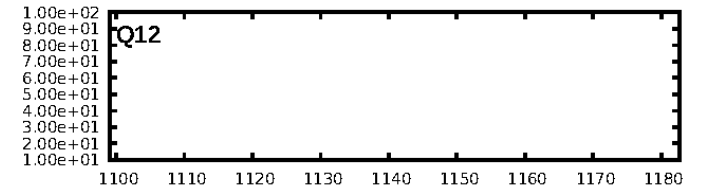
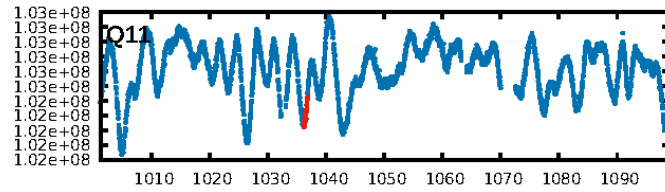
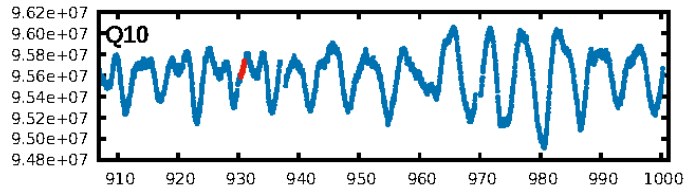
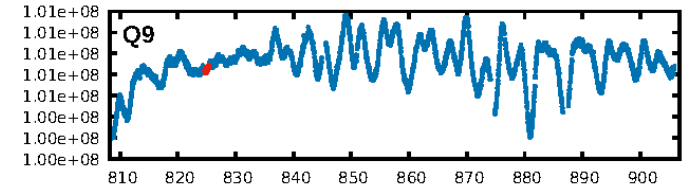
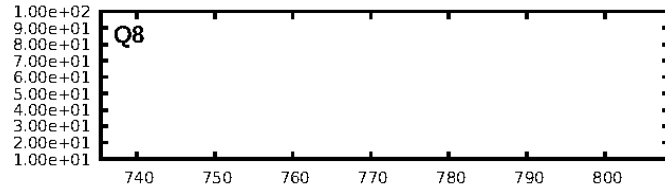
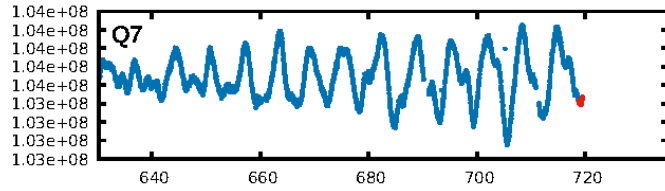
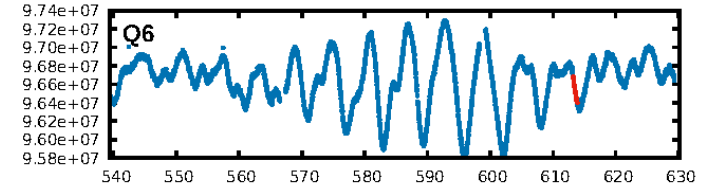
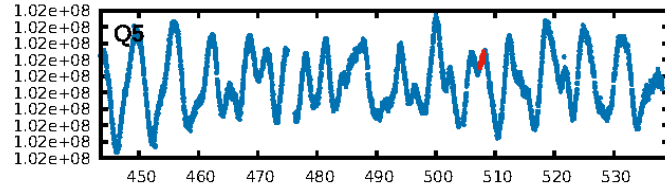
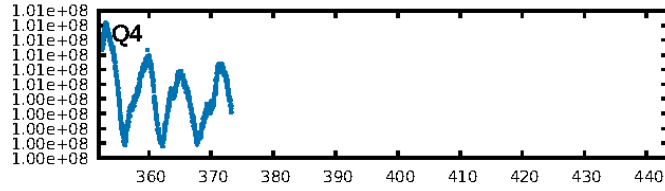
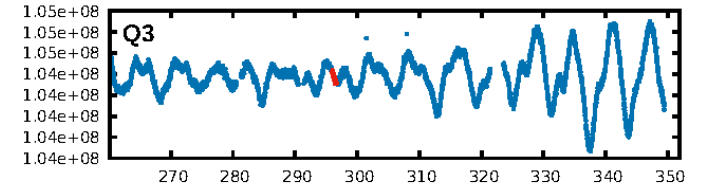
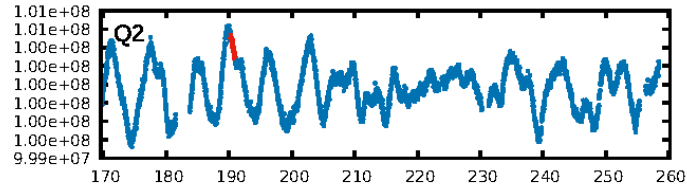
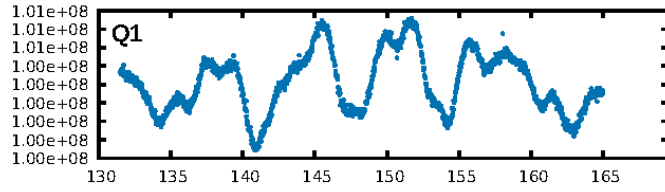
## DV Fit Results:

Period = 105.73222 [0.00239] d  
Epoch = 190.5790 [0.0190] BKJD  
Rp/R\* = 0.0496 [0.1294]  
a/R\* = 31.00 [19.65]  
b = 1.00 [0.21]  
Seff = 21.09 [10.71]  
Teq = 546 [69] K  
Rp = 10.09 [26.56] Re  
a = 0.4866 [0.1537] AU  
Ag = 1838.22 [9641.00] [0.19 $\sigma$ ]  
Teff = 5532 [7225] K [0.69 $\sigma$ ]

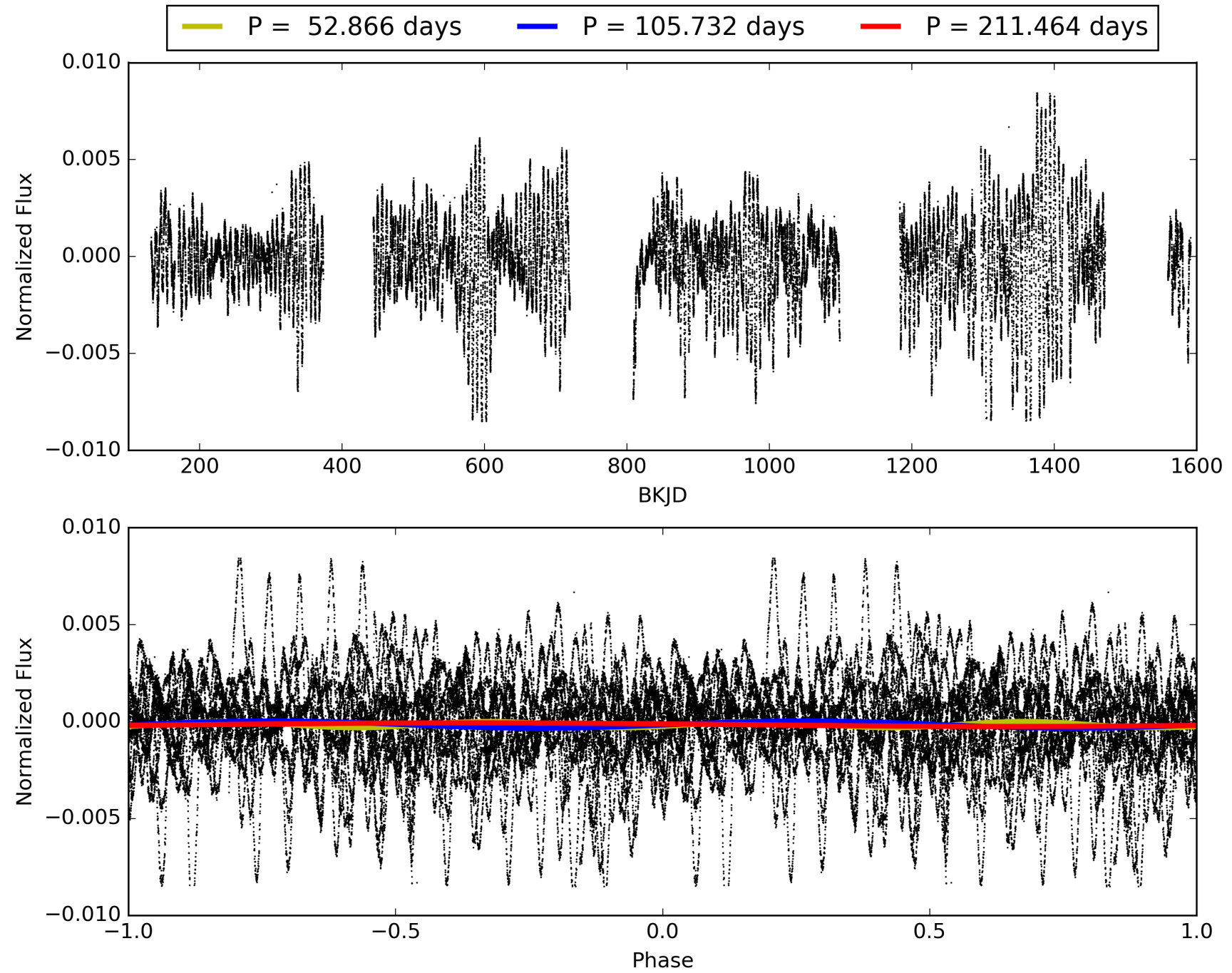
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [20.52 $\sigma$ ]  
LongPeriod-sig: 100.0% [95.52 $\sigma$ ]  
ModelChiSquare2-sig: 32.2%  
ModelChiSquareGof-sig: 100.0%  
**Bootstrap-pfa: 8.20e-10**  
**RollingBand-fgt: 1.00 [11/11]**  
**GhostDiagnostic-chr: -0.1625**  
Centroid-sig: 16.1%  
Centroid-so: 0.633 arcsec [2.40 $\sigma$ ]  
OotOffset-rm: 0.431 arcsec [0.28 $\sigma$ ]  
KicOffset-rm: 1.018 arcsec [0.67 $\sigma$ ]  
OotOffset-st: 4/2/0/2 [8]  
KicOffset-st: 4/2/0/2 [8]  
DiffImageQuality-fgm: 0.62 [5/8]  
DiffImageOverlap-fno: 0.00 [0/11]

# TCE 010847907-05, PDC Light Curves

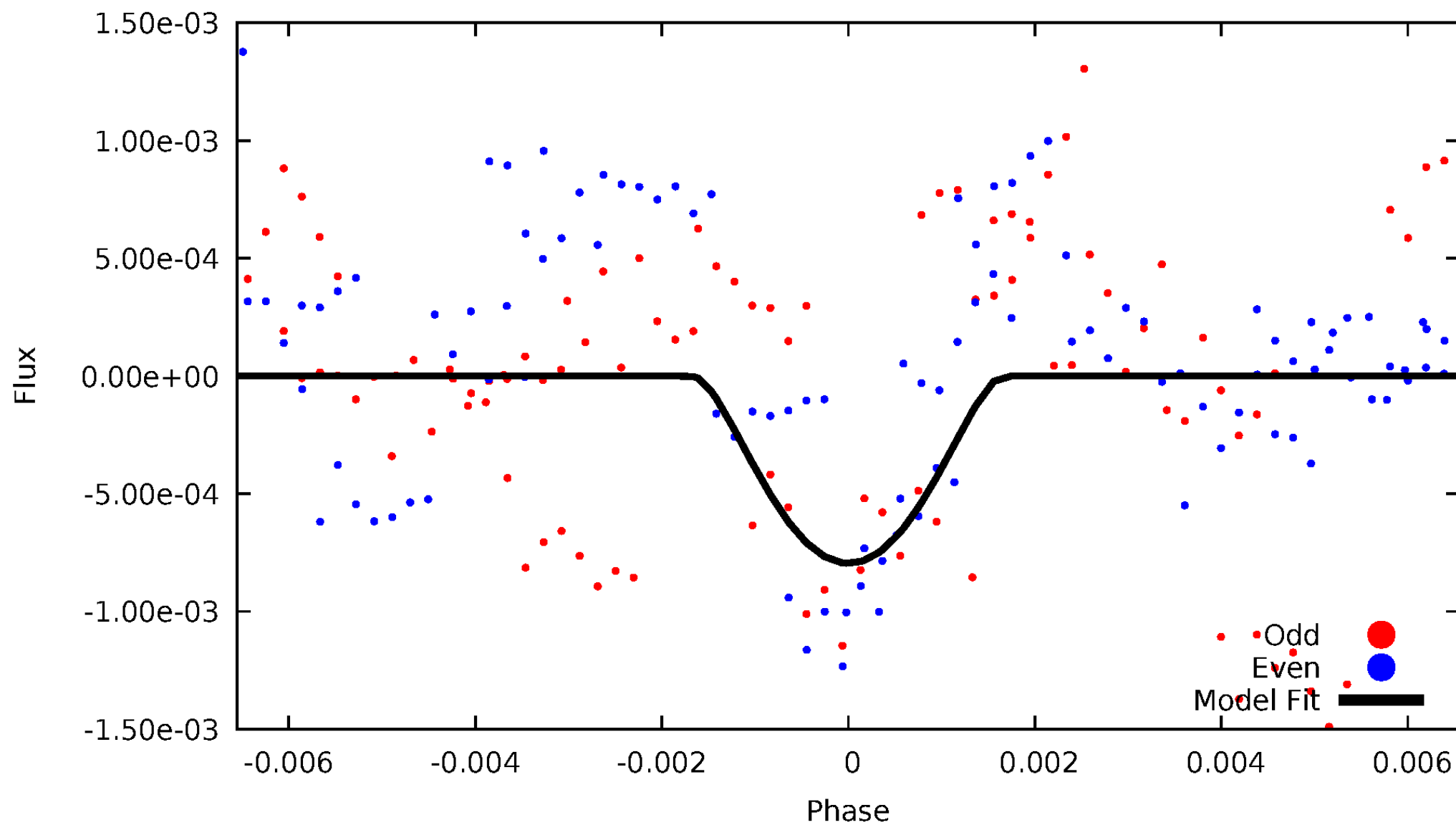


TCE 010847907-05



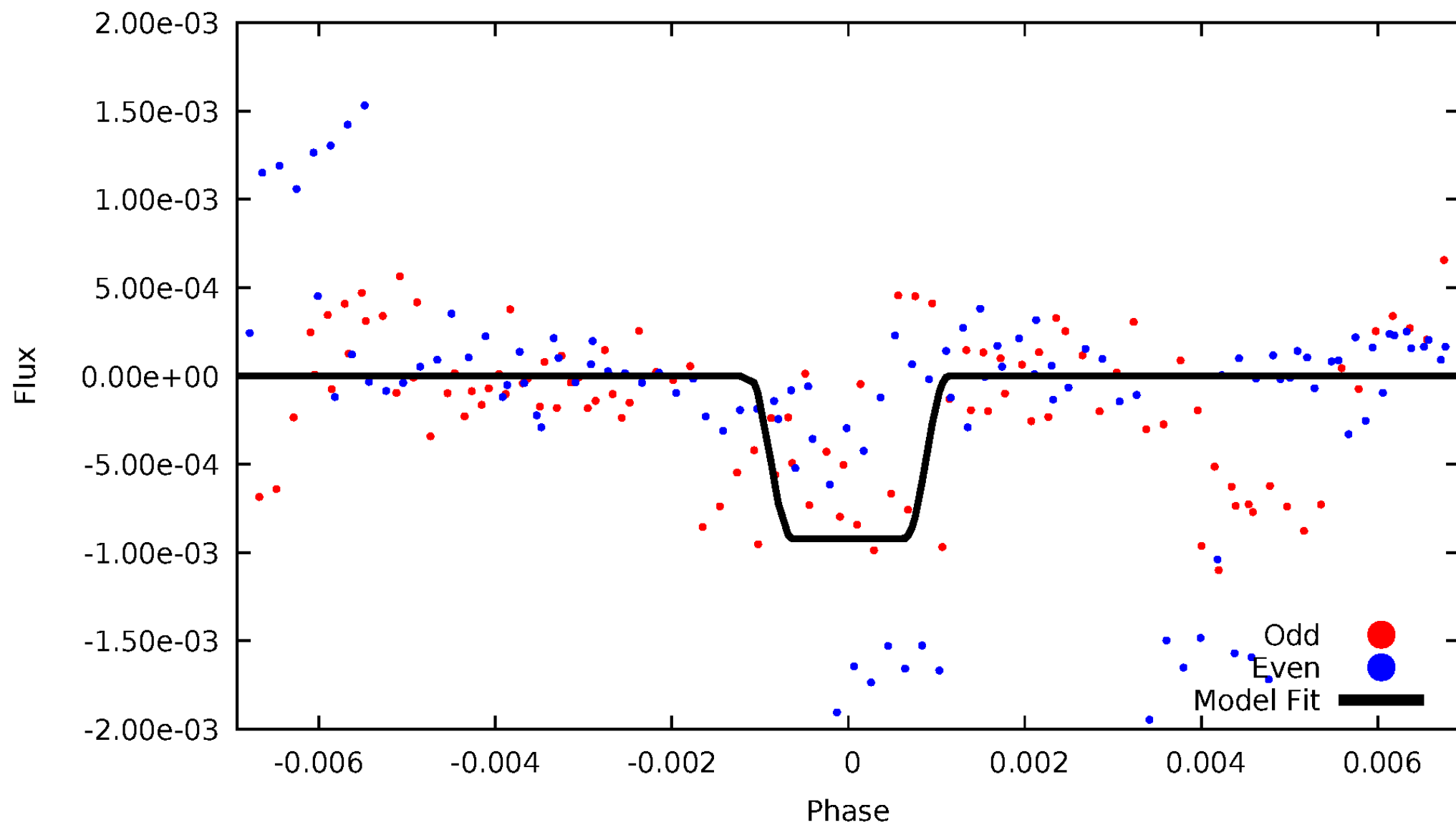
# DV Odd/Even

TCE 010847907-05



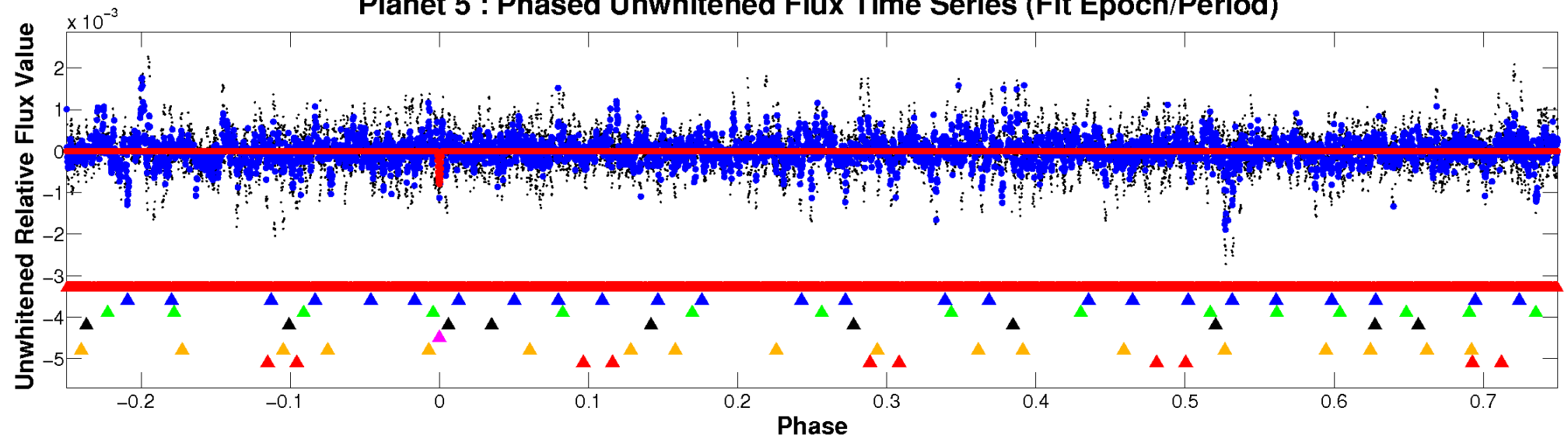
# ALT Odd/Even

TCE 010847907-05

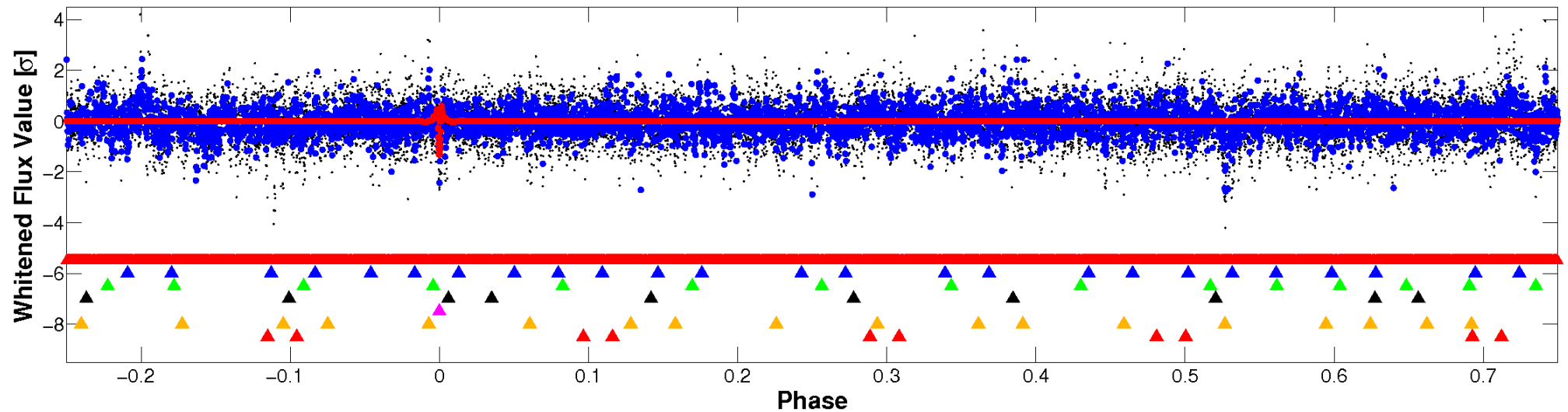


# Non-Whitened Vs. Whitened Light Curve

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

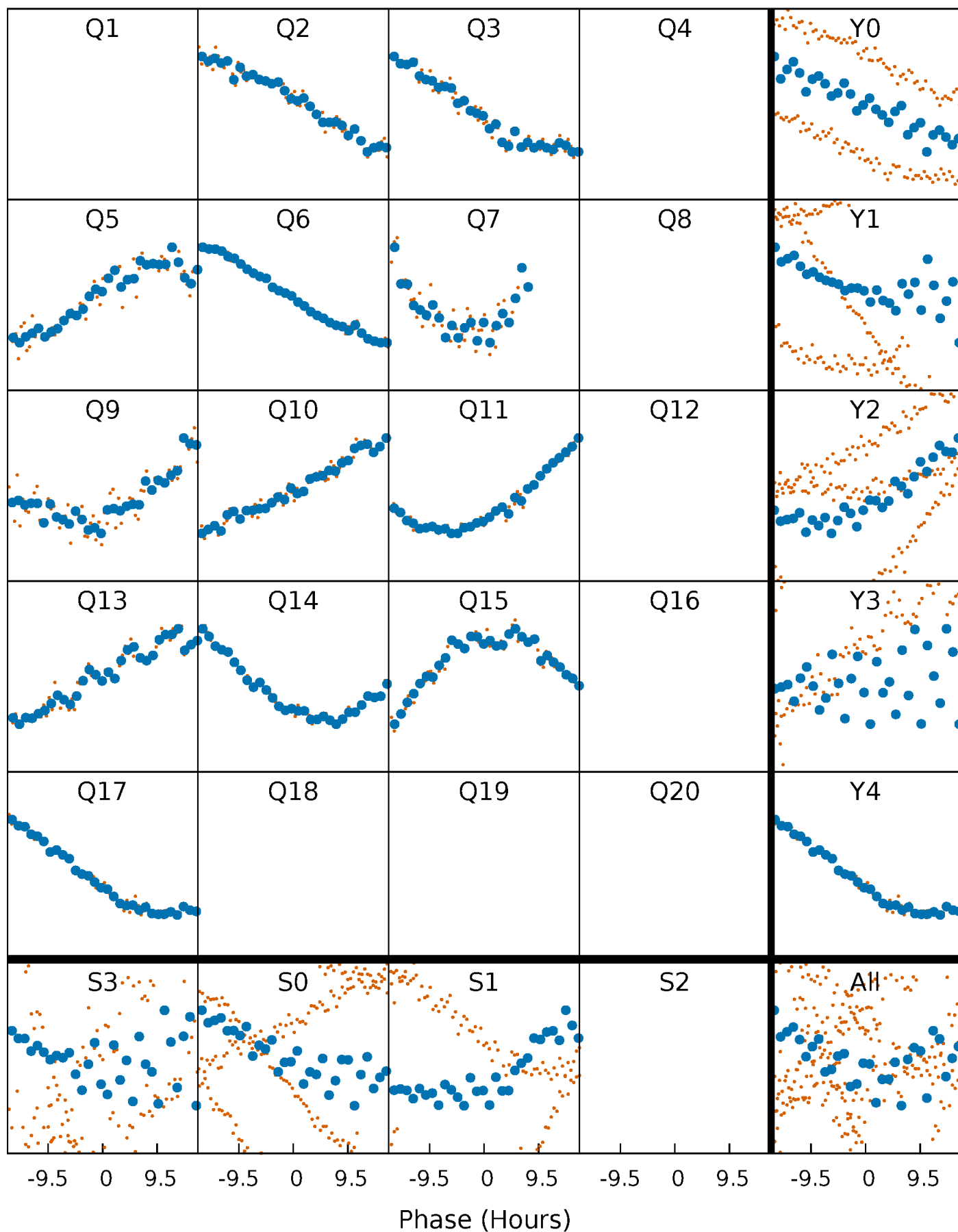


## Planet 5 : Phased Whitened Flux Time Series (Fit Epoch/Period)



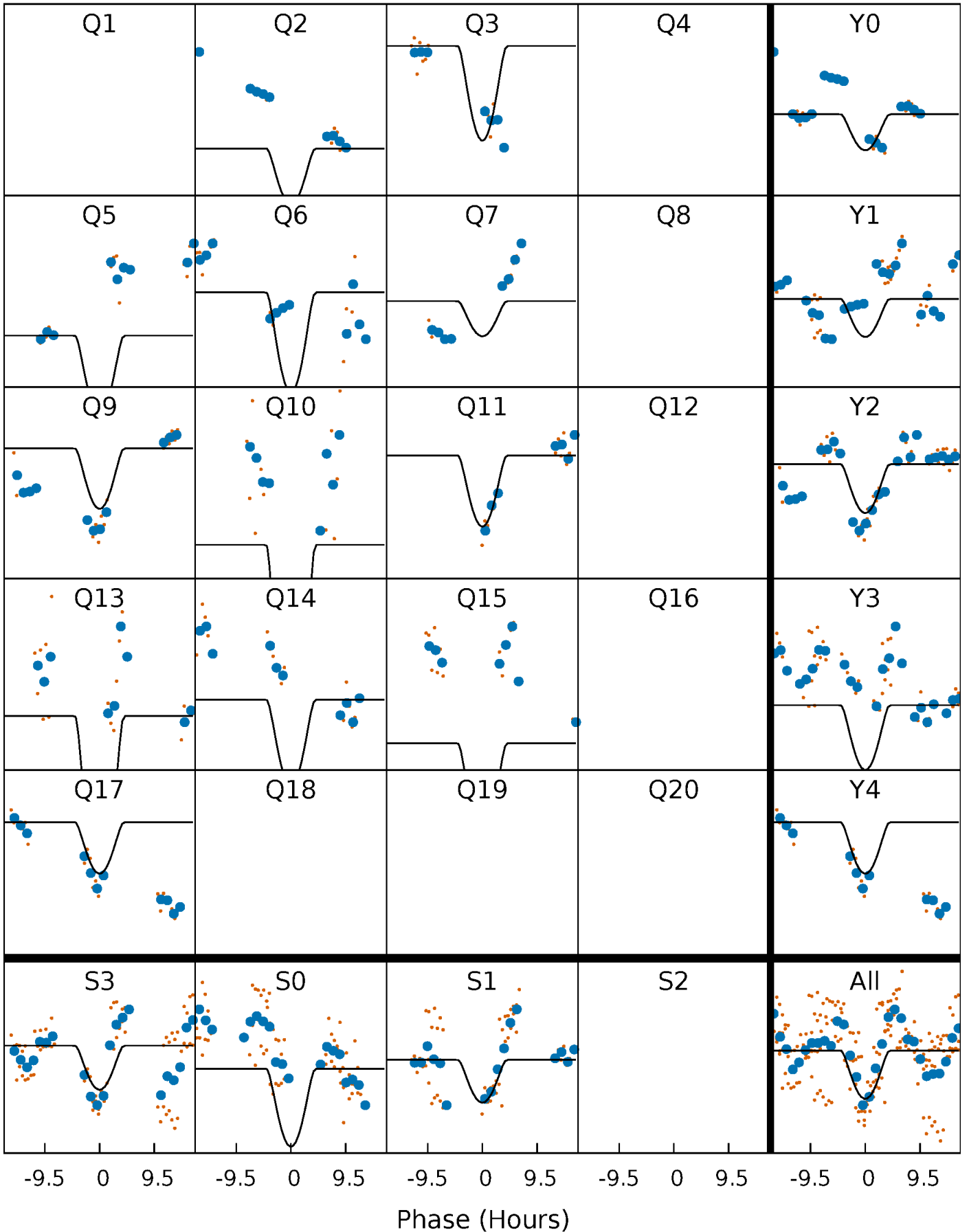
# PDC Quarter-Phased Transit Curves

TCE 010847907-05     $P=105.732218$  Days     $T_0=190.578954$  (BKJD)



# DV Quarter-Phased Transit Curves

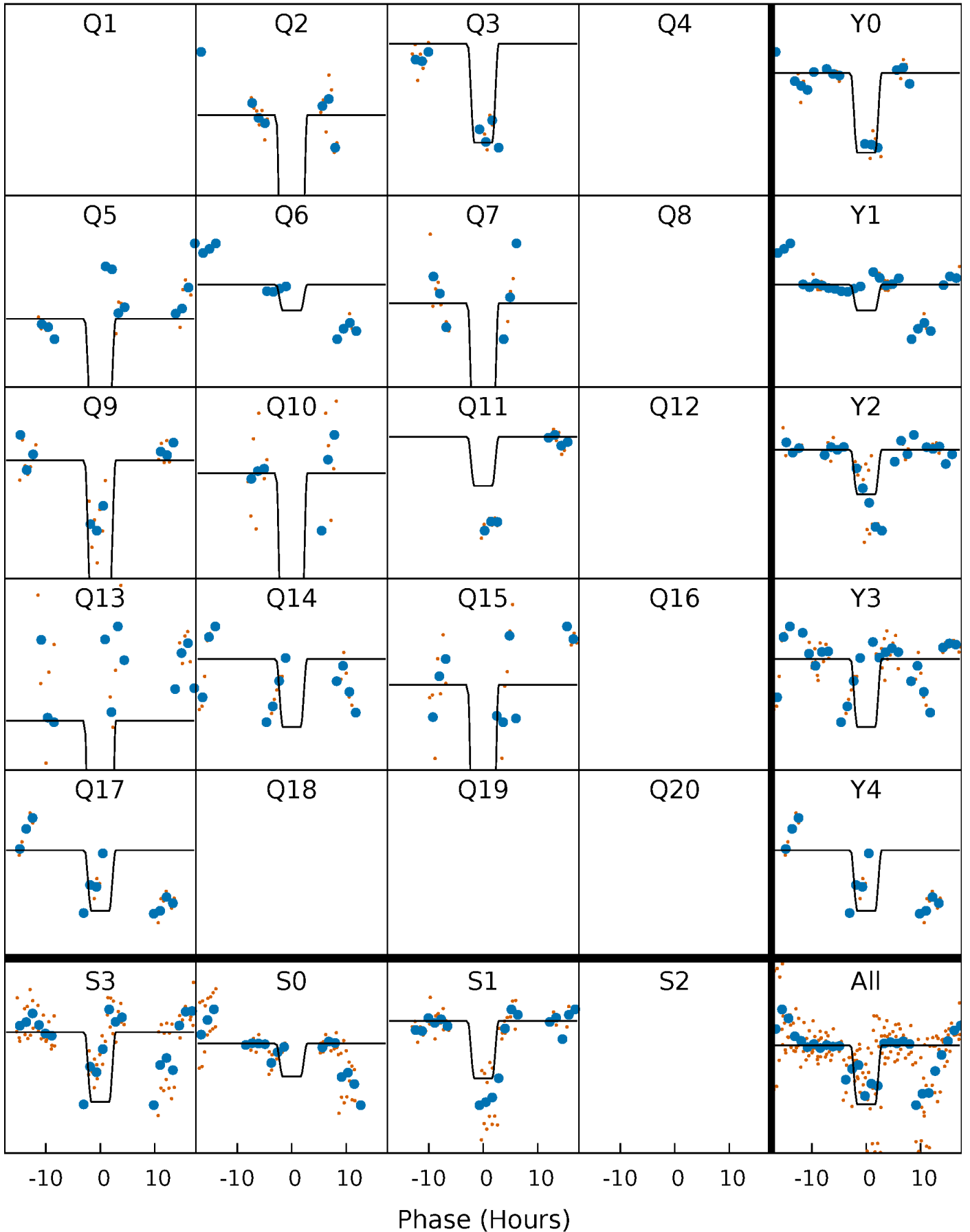
TCE 010847907-05     $P=105.732218$  Days     $T_0=190.578954$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

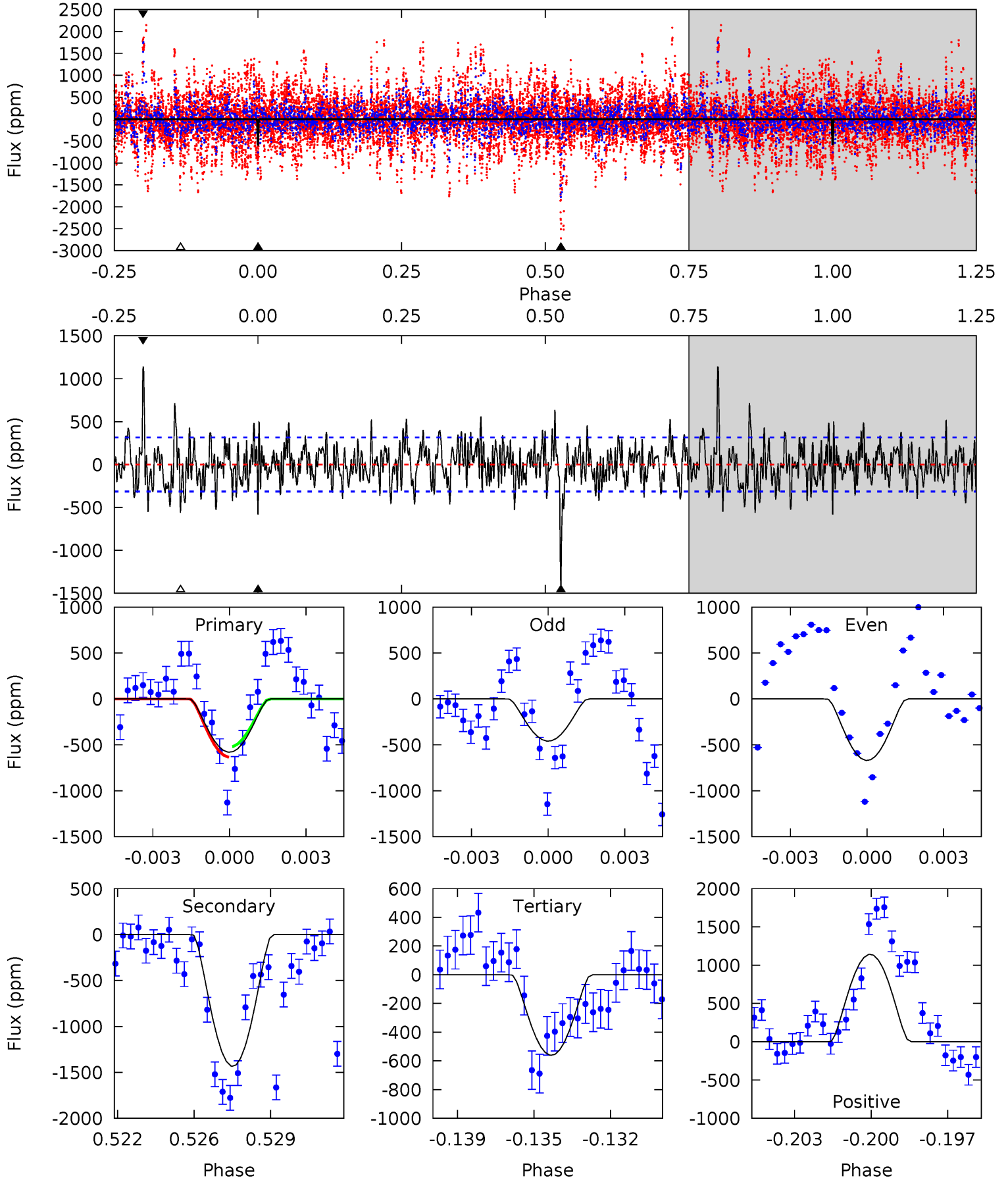
TCE 010847907-05     $P=105.729801$  Days     $T_0=190.609595$  (BKJD)



# DV Model-Shift Uniqueness Test

010847907-05, P = 105.732218 Days, E = 84.846736 Days

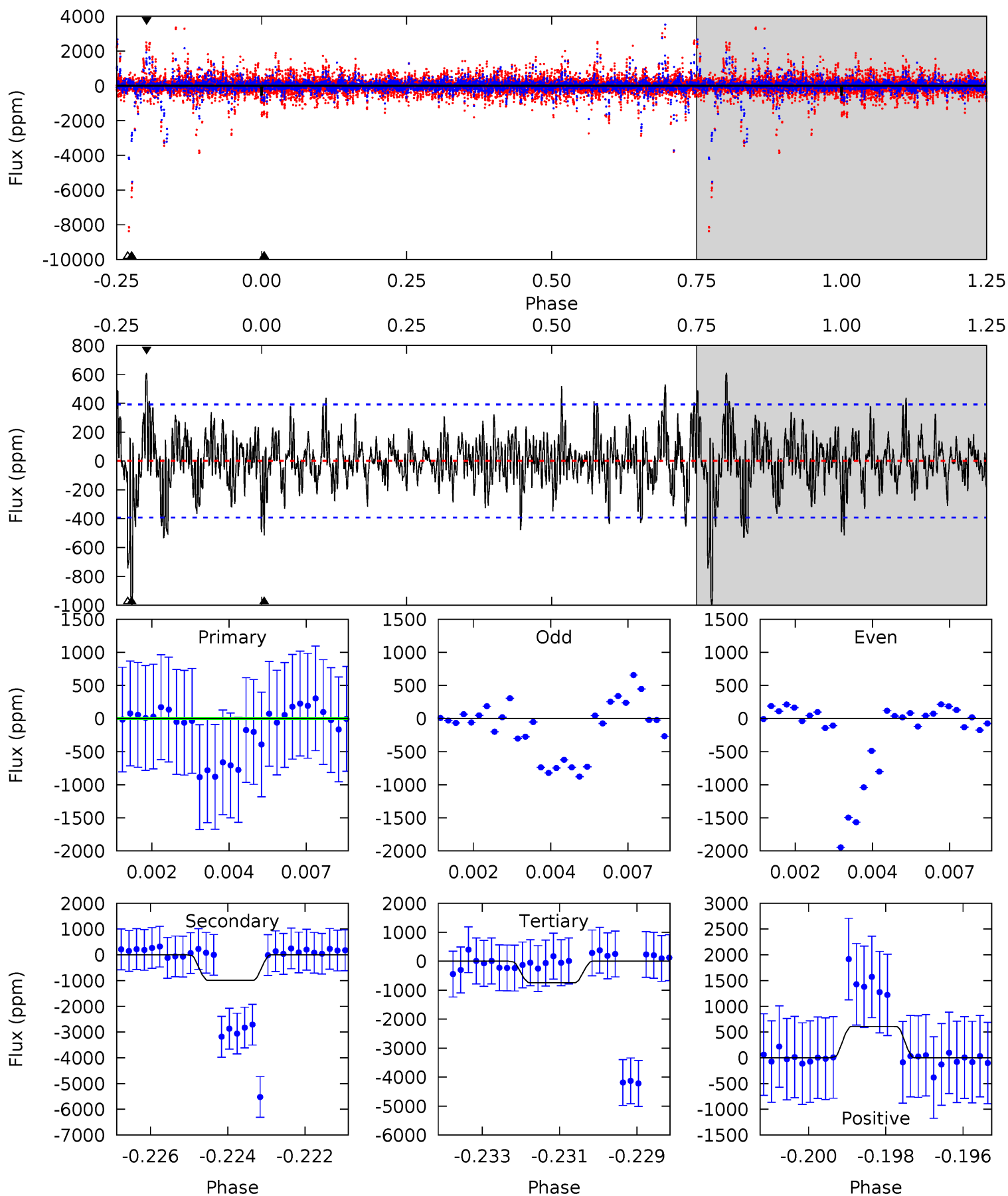
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.64	23.8	9.33	19.0	5.24	2.95	3.26	0.31	-9.34	14.5	4.86	1.71	-17.3	0.44	0.95



# Alt Model-Shift Uniqueness Test

010847907-05,  $P = 105.729801$  Days,  $E = 84.879794$  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
6.99	13.5	10.1	8.27	5.31	3.07	2.05	-3.12	-1.28	3.40	5.24	1.83	1.41	0.38	0.93



### Stellar Parameters For KIC 010847907

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6328^{+177}_{-243}$	$4.035^{+0.276}_{-0.161}$	$0.080^{+0.250}_{-0.300}$	$1.864^{+0.536}_{-0.655}$	$1.374^{+0.190}_{-0.285}$	$0.299^{+0.555}_{-0.139}$
	+3%/-4%	+7%/-4%	+312%/-375%	+29%/-35%	+14%/-21%	+186%/-46%
Source	PHO54	PHO54	PHO54	DSEP		

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

### Secondary Eclipse Parameters for KIC 010847907-05 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-1434 \pm 60$	$20.23^{+20.91}_{-14.34}$	$749^{+68}_{-65}$	$4130^{+2874}_{-864}$	$449^{+4897}_{-338}$
Alt.	$-994 \pm 74$	$19.00^{+20.28}_{-13.07}$	$752^{+63}_{-69}$	$3899^{+2579}_{-766}$	$347^{+3453}_{-264}$

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

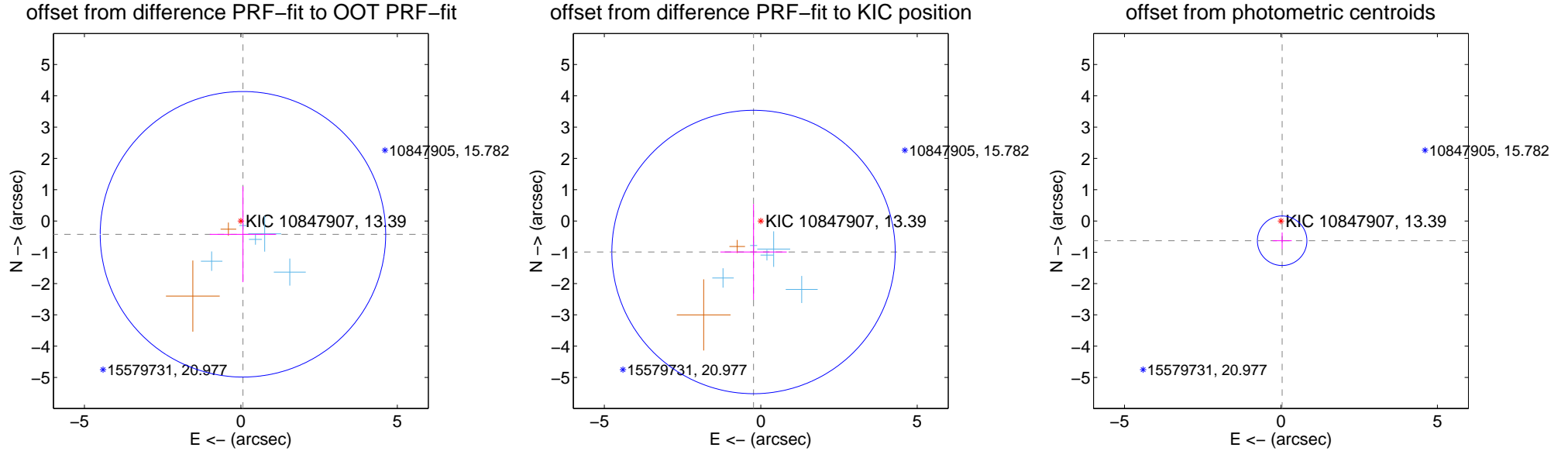
## DV Centroid Data

Supplemental centroid analysis for 010847907-05. Kepler magnitude: 13.39. Transit SNR 6.28

There are 5 quarters with good PRF difference image offsets

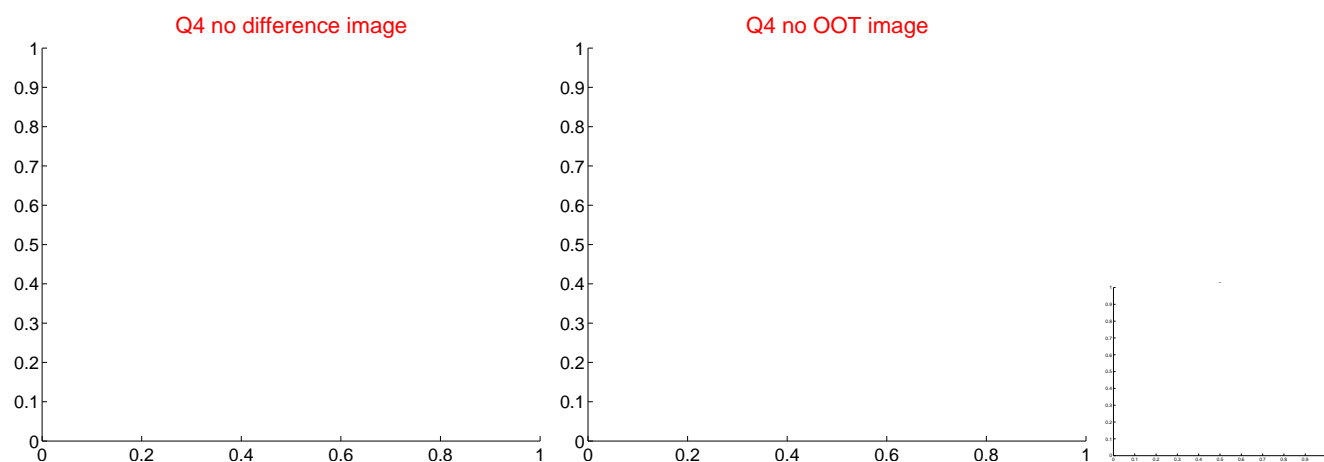
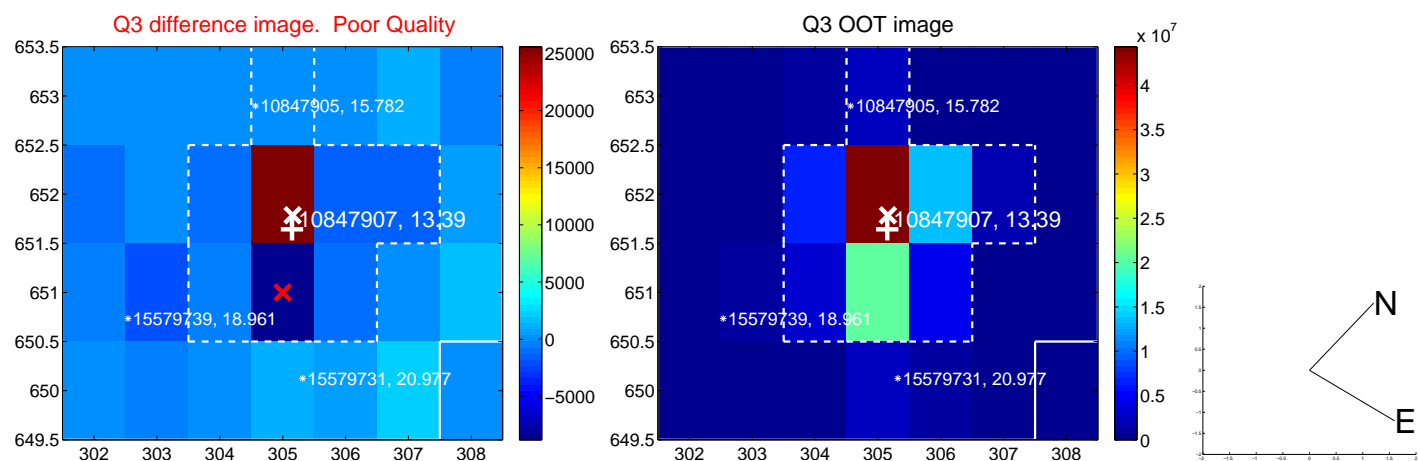
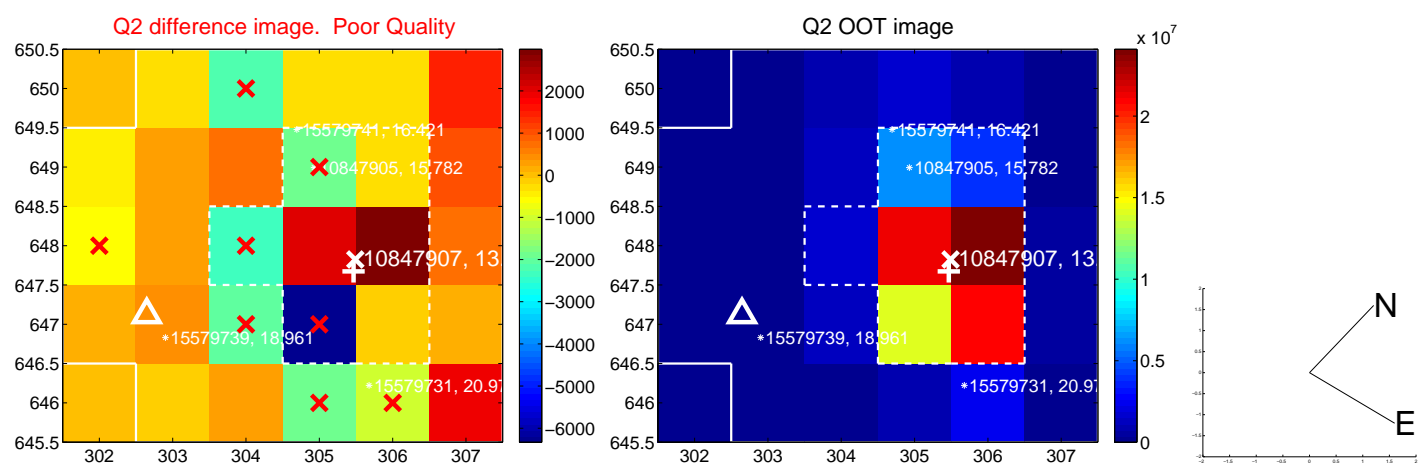
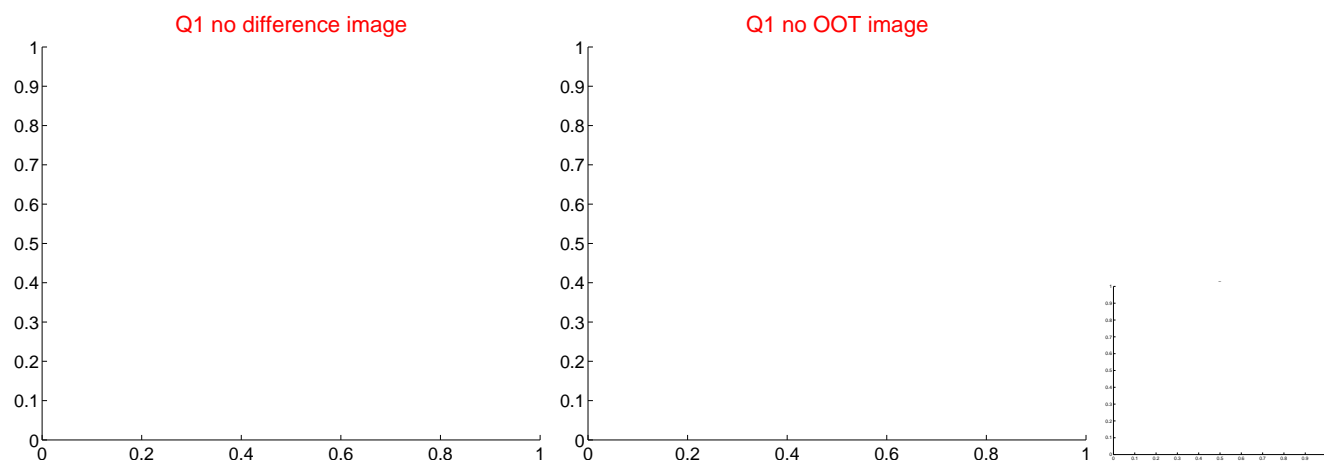
The direct PRF centroid is offset from the target star catalog position by about 0.60 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.431 \pm 1.521$	0.28	$-0.066 \pm 1.060$	$-0.425 \pm 1.530$
PRF-fit source offset from KIC position	$1.018 \pm 1.510$	0.67	$0.231 \pm 1.060$	$-0.991 \pm 1.530$
photometric centroid source offset	$0.63 \pm 0.26$	2.40	$-0.04 \pm 0.31$	$-0.63 \pm 0.26$

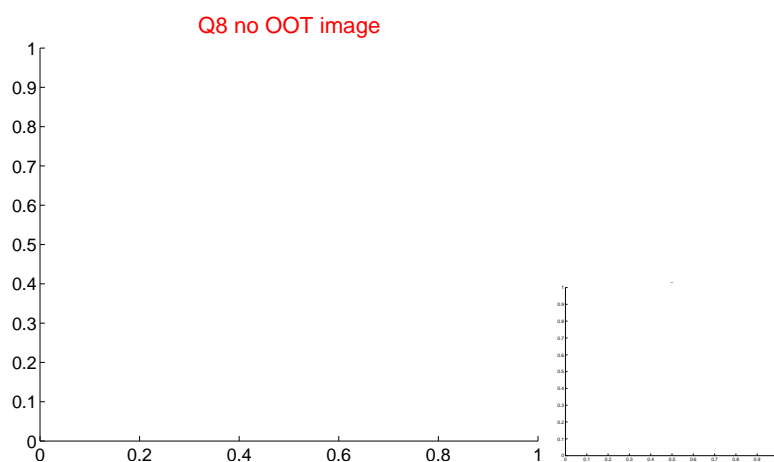
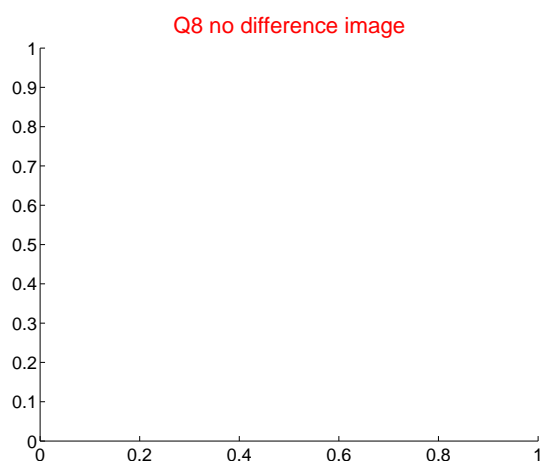
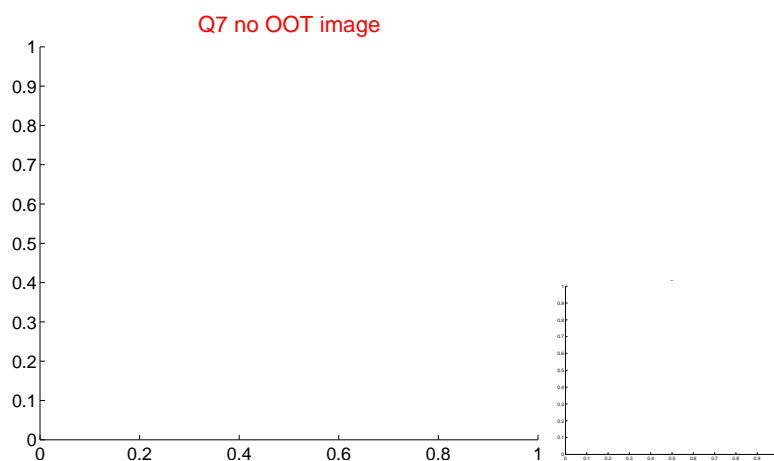
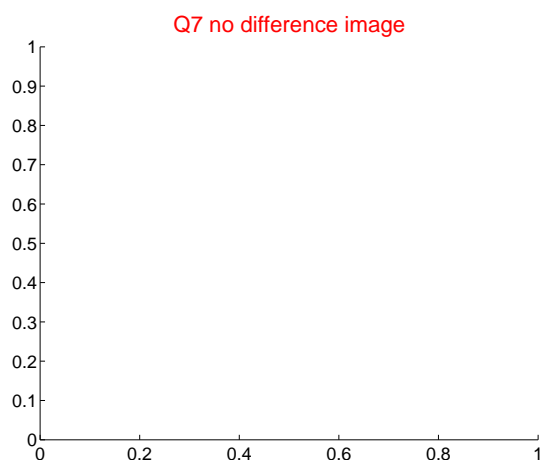
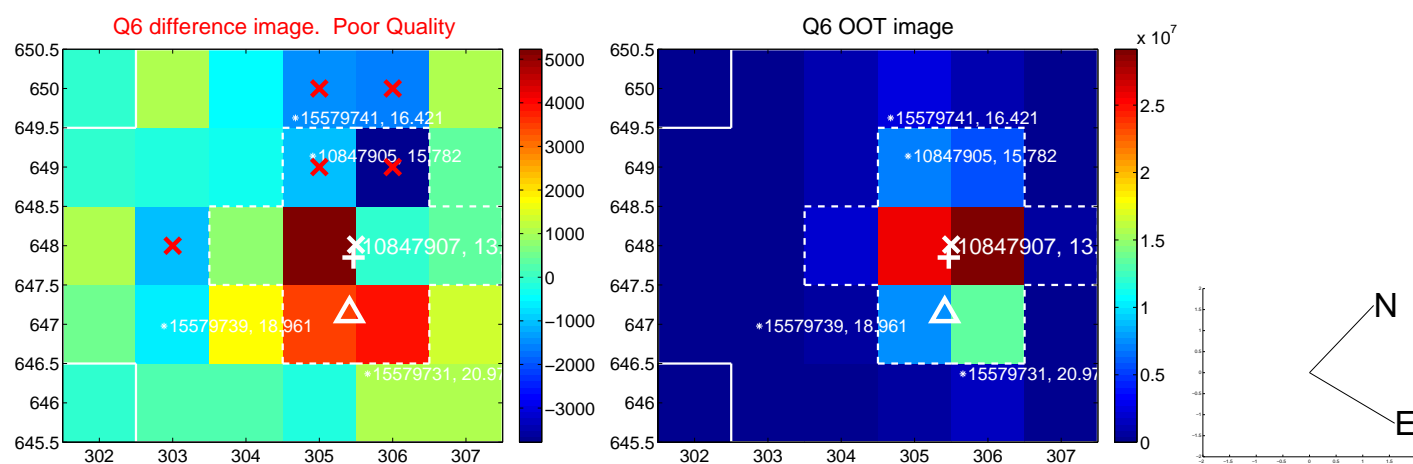
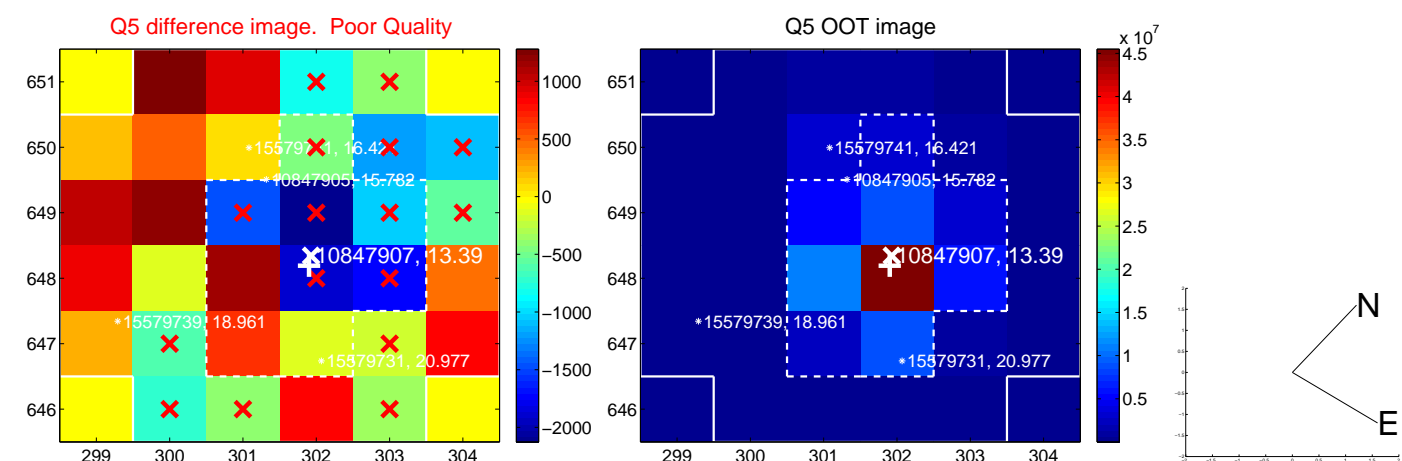


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

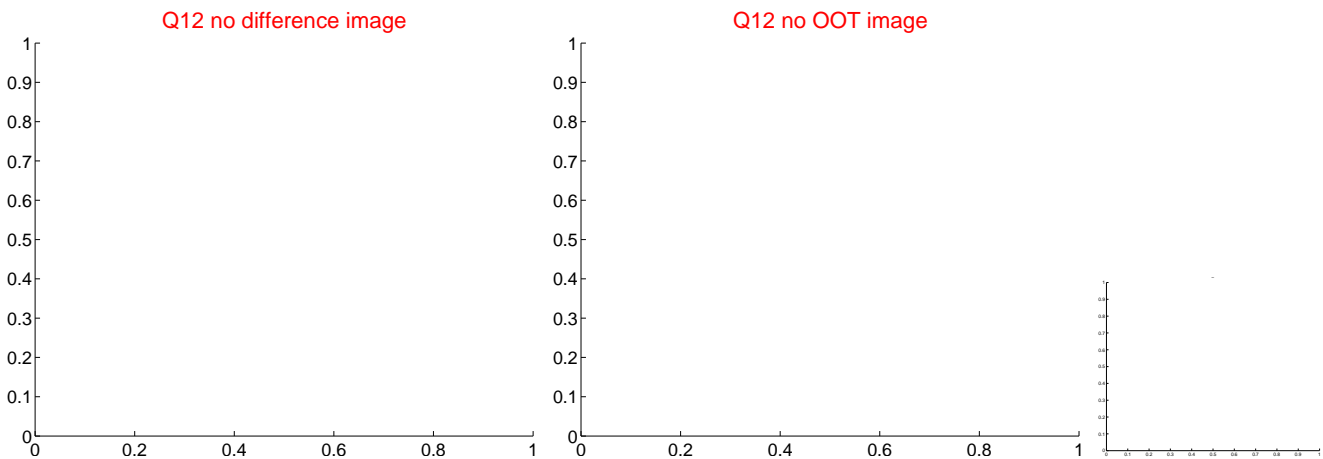
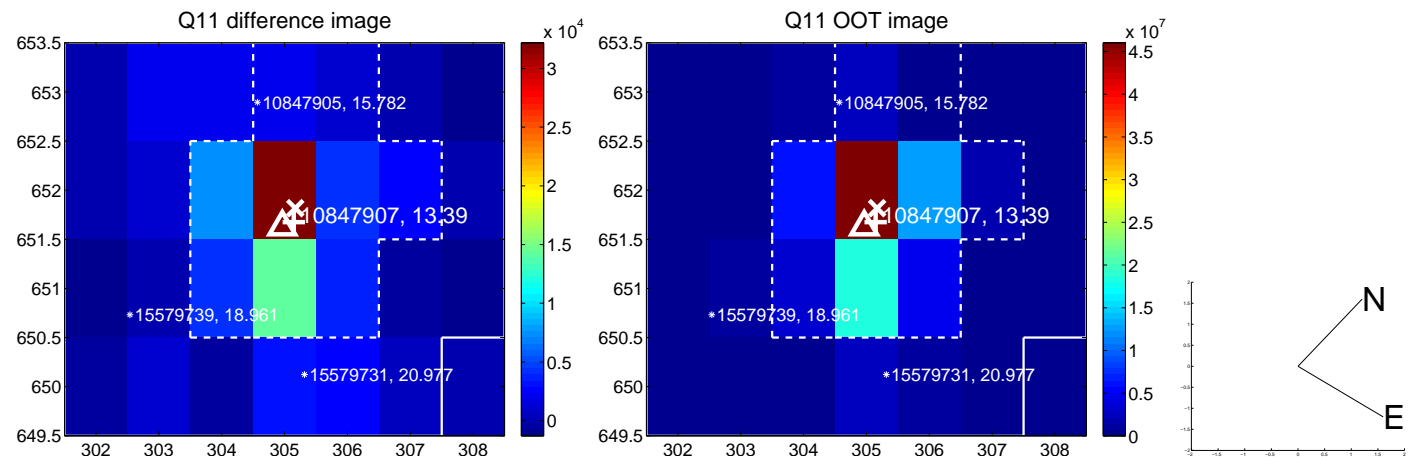
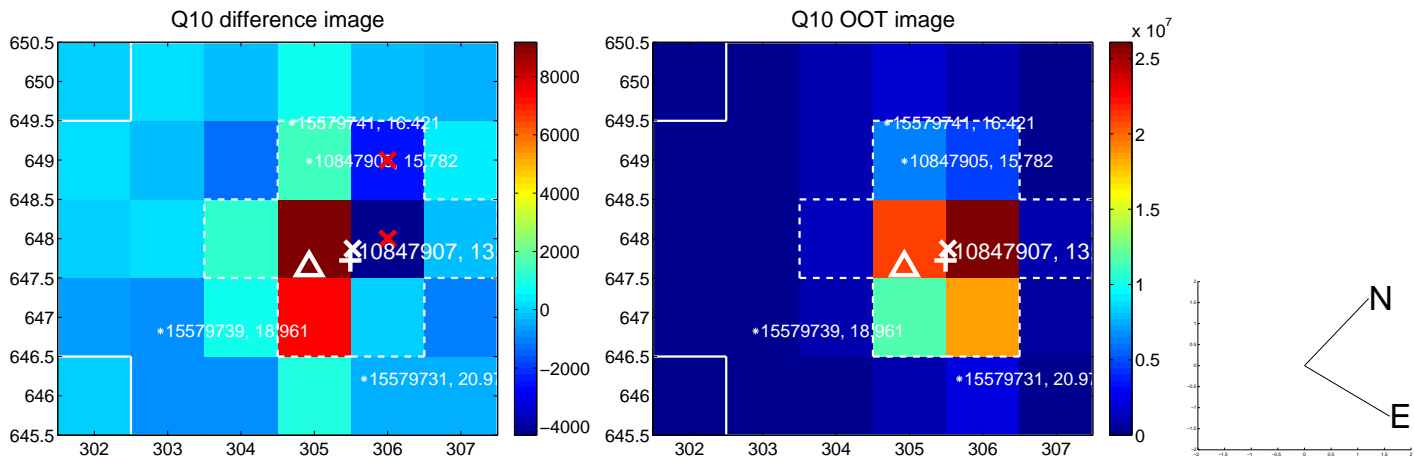
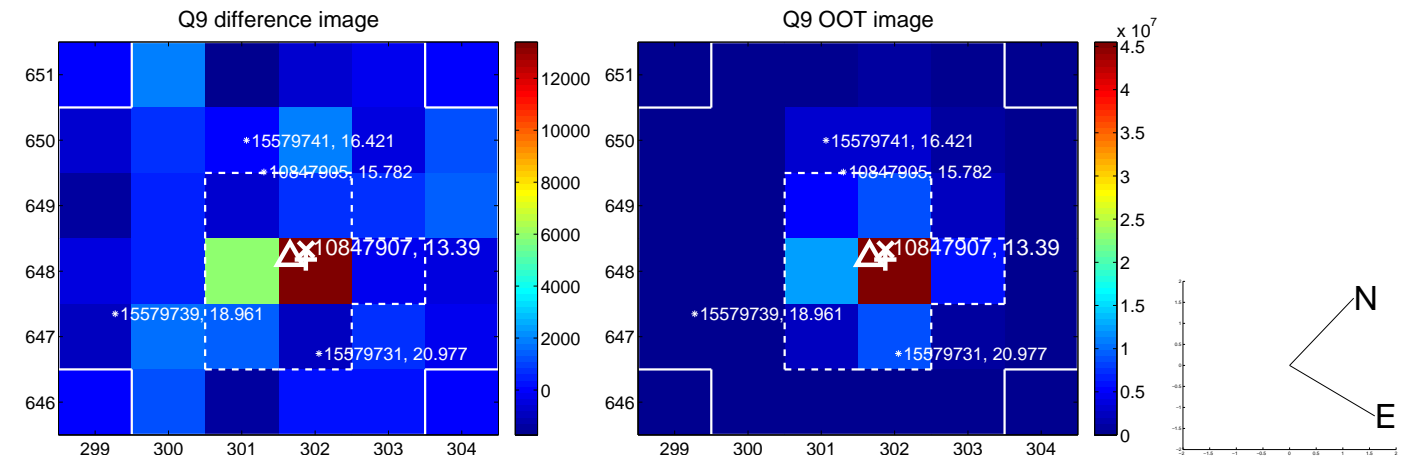
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value



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

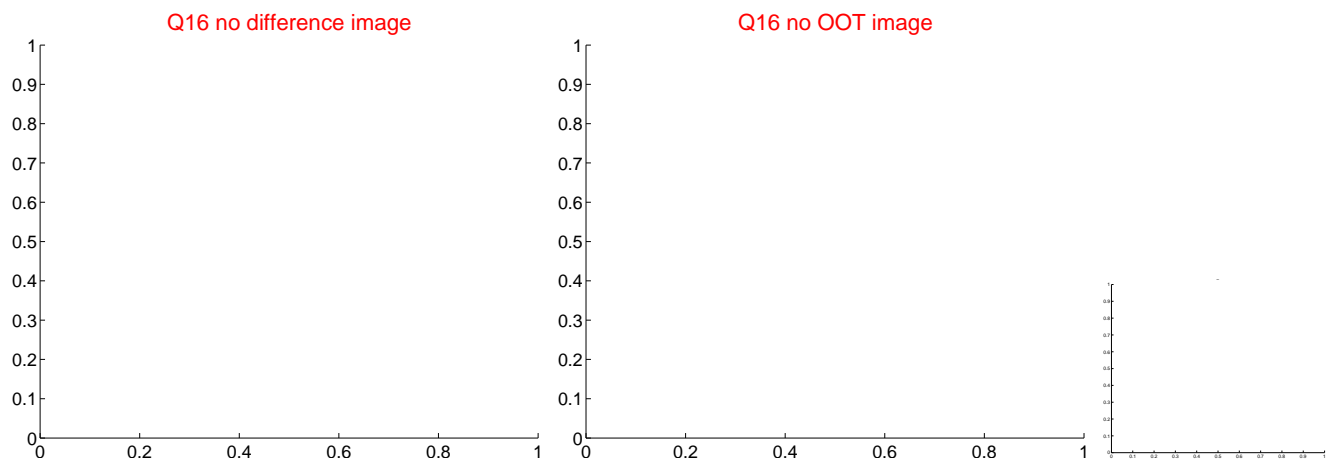
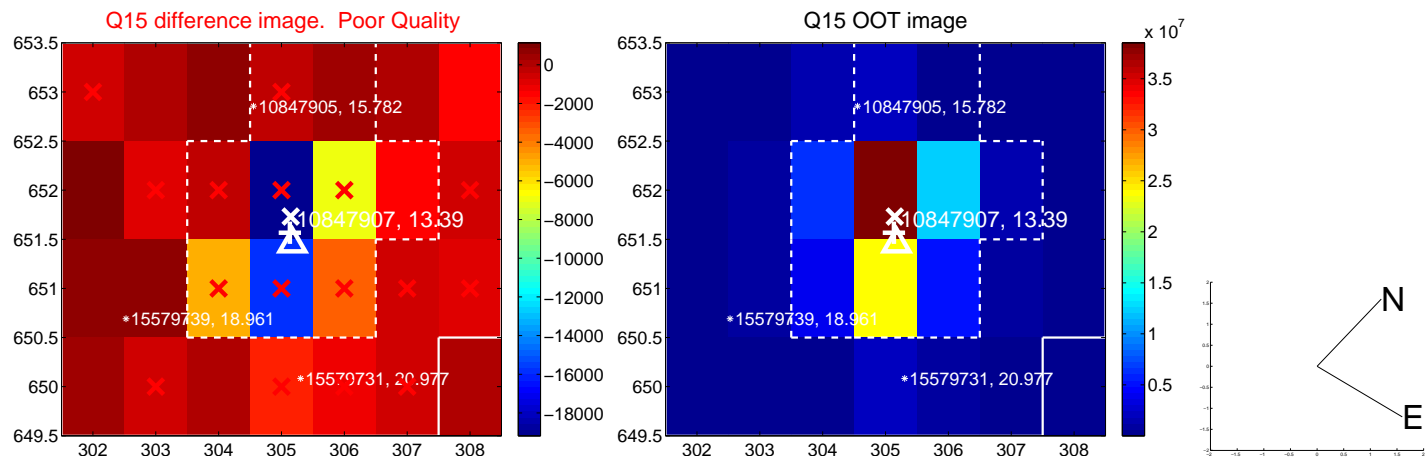
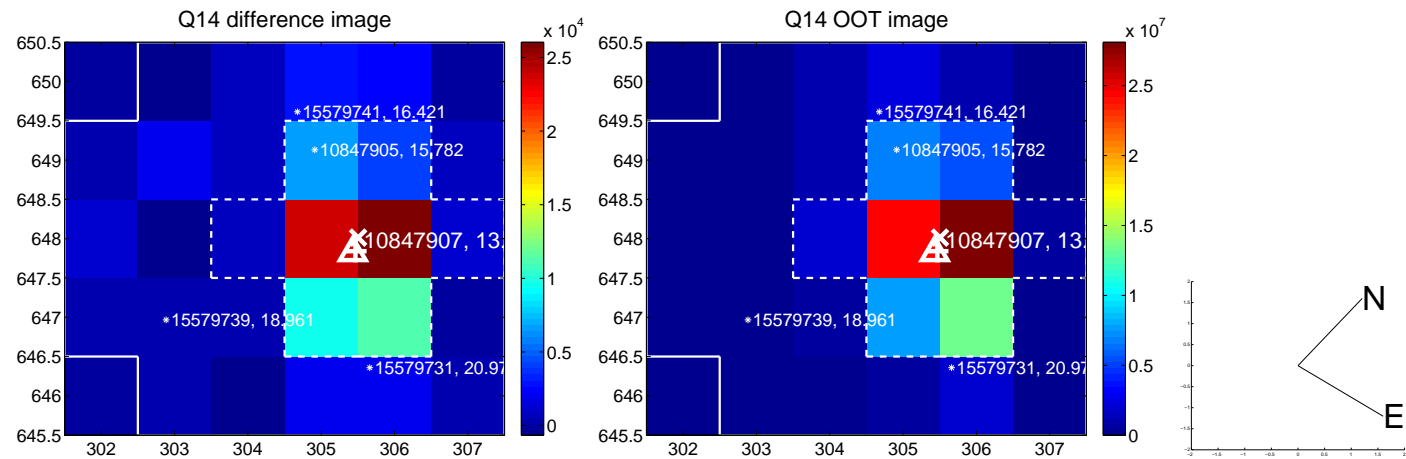
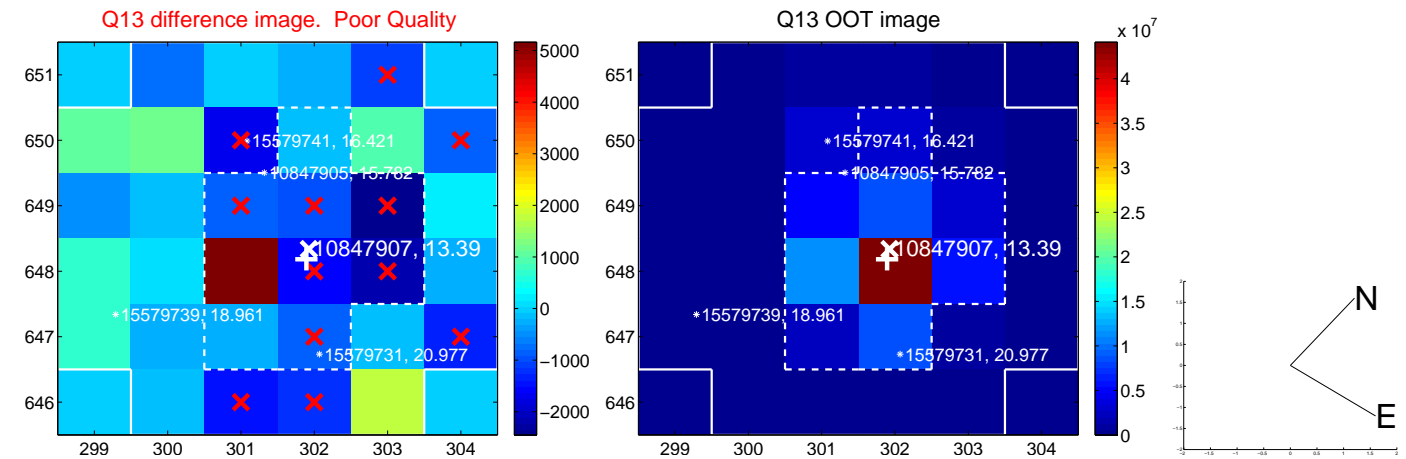


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

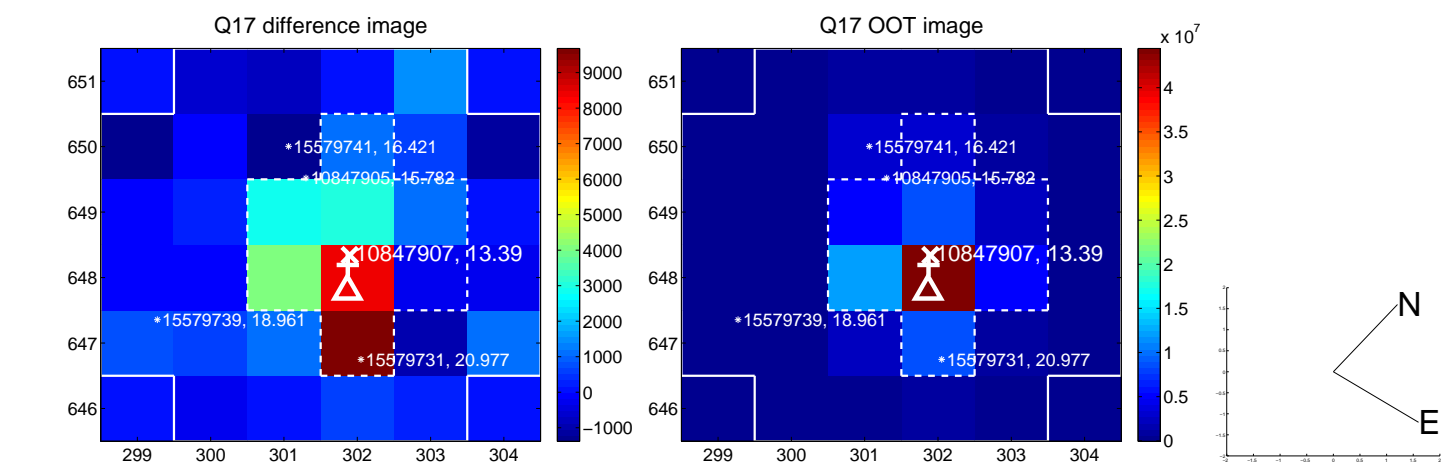




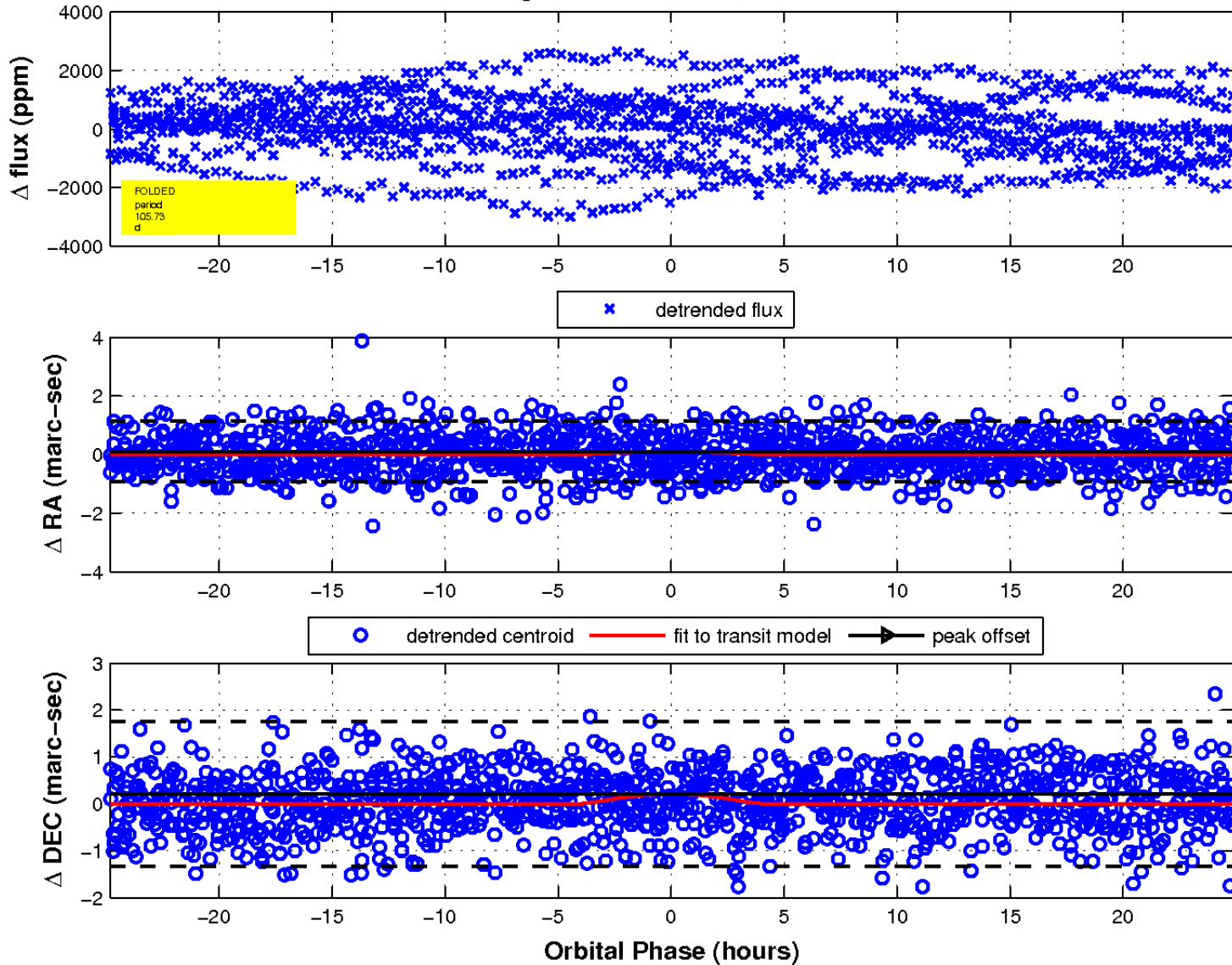
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

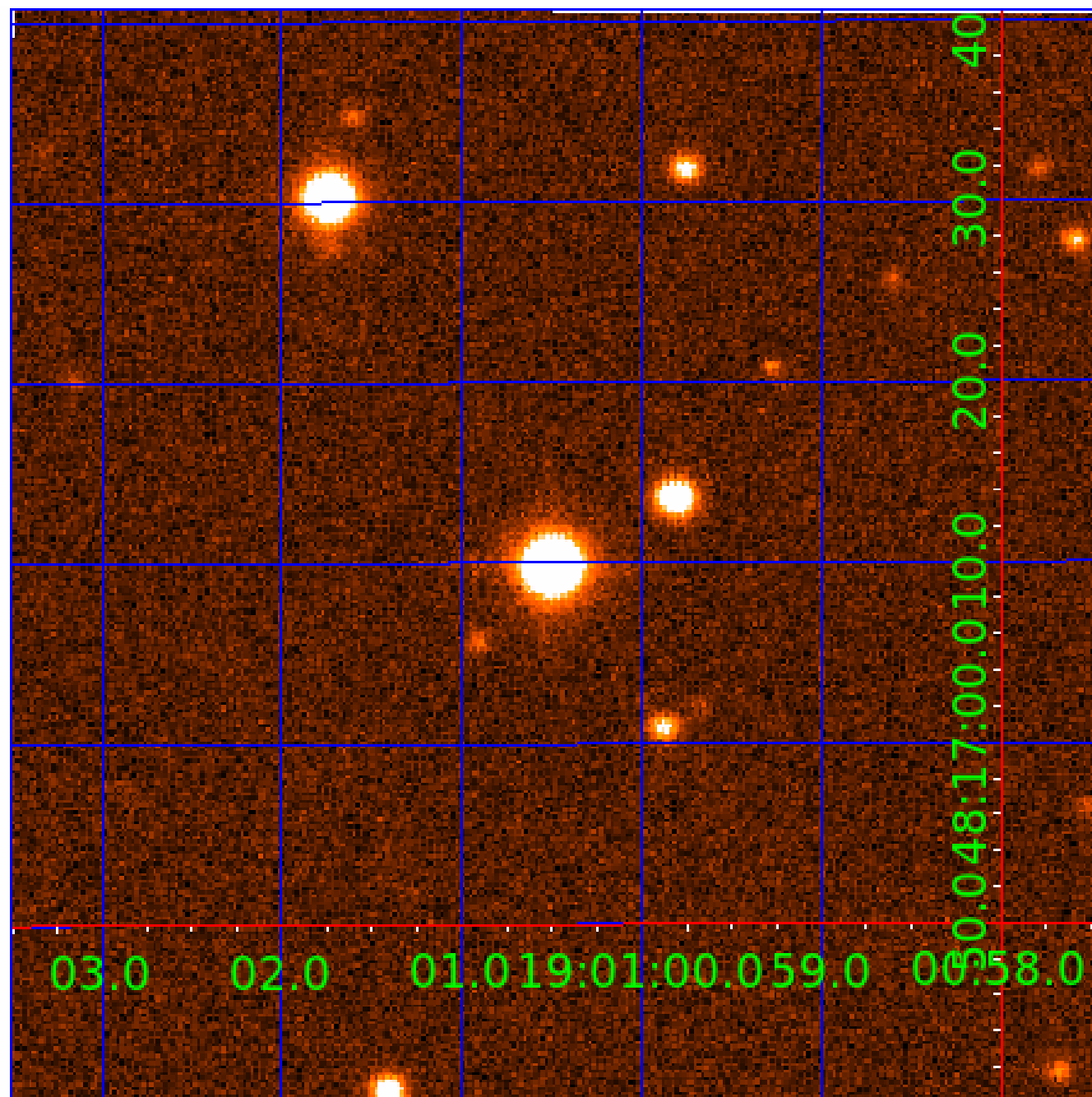


fluxWeightedCentroids, Planet 5 of 7



UKIRT Image

Declination



# KIC 010847907

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
010847907-01	OBS	7379.01	0.535526	131.720096	6.9	2.954	7.9	3.2	1.86	6328	0.57	24240.96
010847907-02	OBS	No	57.955427	185.718370	652.7	3.573	13.1	6.8	1.86	6328	5.08	47.00
010847907-03	OBS	No	96.548511	167.060852	491.8	6.802	10.1	4.6	1.86	6328	4.44	23.80
010847907-04	OBS	No	145.765628	151.183770	1096.4	5.661	9.6	6.8	1.86	6328	7.80	13.74
010847907-05	OBS	No	105.732218	190.578954	795.5	8.314	7.4	6.3	1.86	6328	10.09	21.09
010847907-06	OBS	No	81.089666	150.861185	666.3	4.471	7.2	6.4	1.86	6328	5.32	30.04
010847907-07	OBS	No	148.438162	135.699589	942.1	7.145	8.4	5.7	1.86	6328	5.80	13.41

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010847907-01	OBS	FP	0.00	1	0	0	0	LPP_DV—CENT_KIC_POS
010847907-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—ALL_TRANS_CHASES—CENT_FEW_MEAS
010847907-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT— INCONSISTENT_TRANS—CENT_KIC_POS
010847907-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_DIFFS
010847907-05	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT— MOD_POS_ALT—CENT_KIC_POS—HALO_GHOST
010847907-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—ALL_TRANS_CHASES—CENT_KIC_POS
010847907-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT— INCONSISTENT_TRANS—CENT_FEW_MEAS

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

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

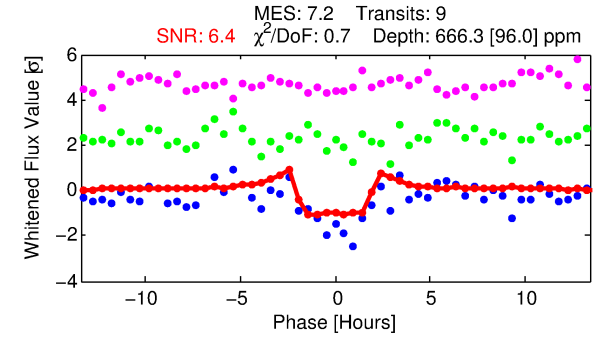
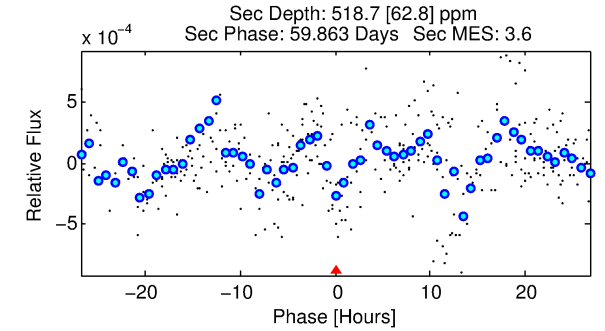
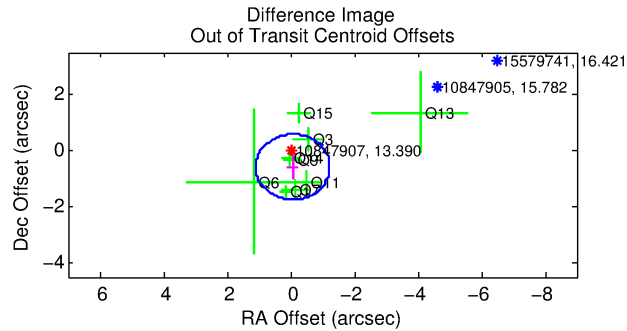
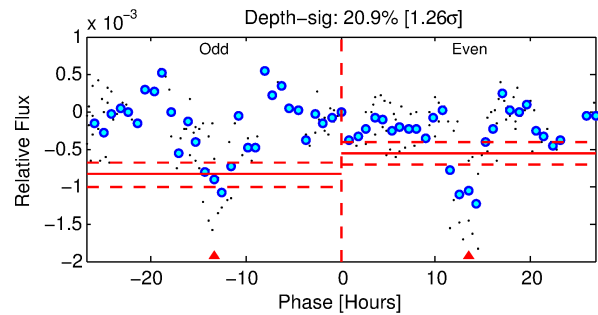
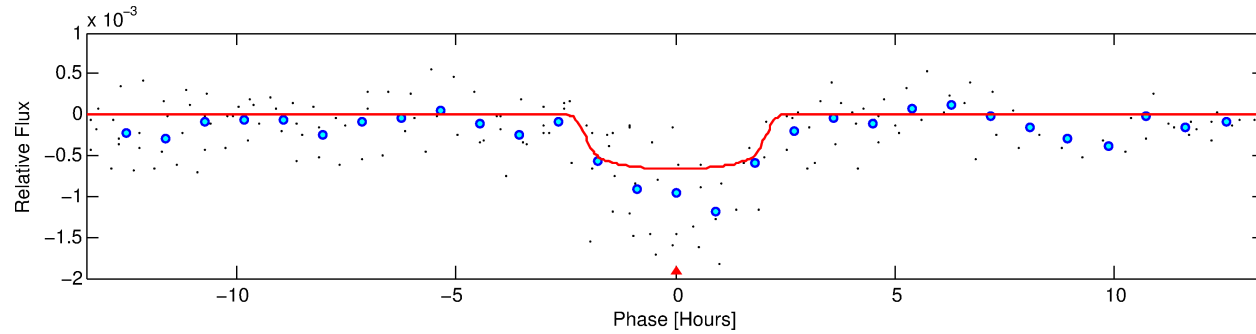
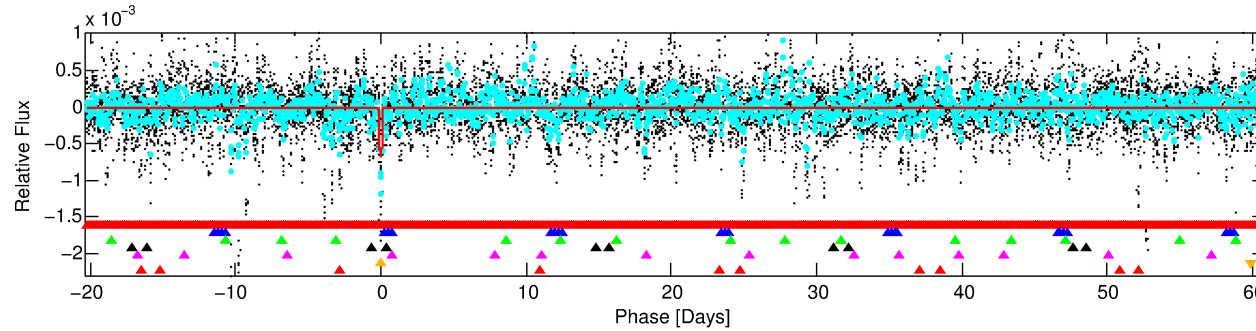
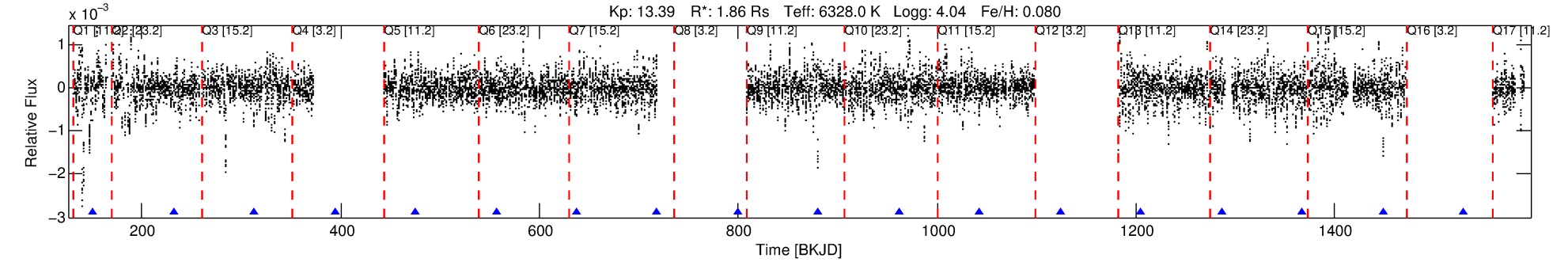
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 010847907-06

No Significant Match Found

# DV One-Page Summary

KIC: 10847907 Candidate: 6 of 7 Period: 81.090 d  
KOI: K07379 Corr: No Ephemeris Match



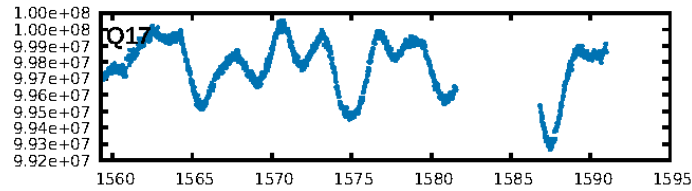
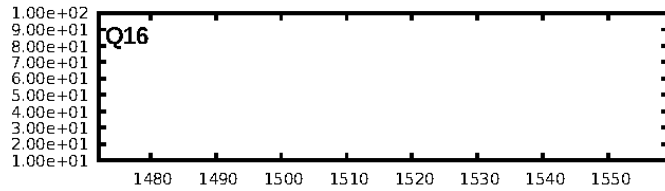
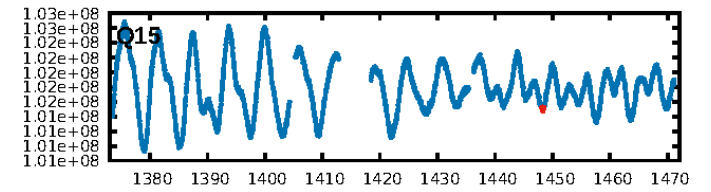
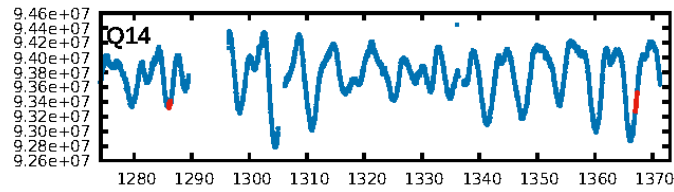
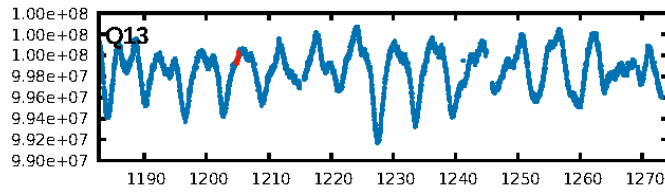
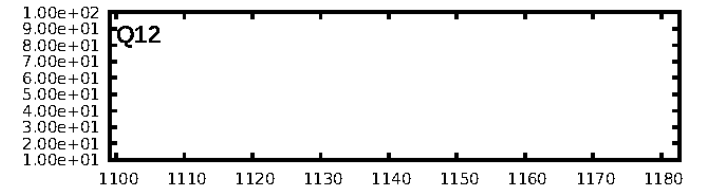
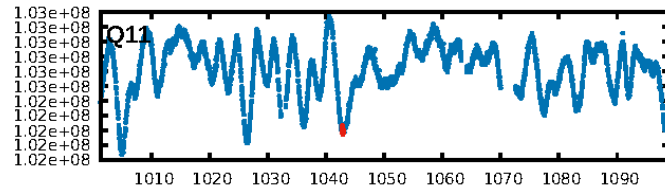
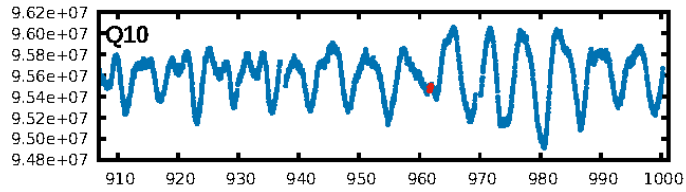
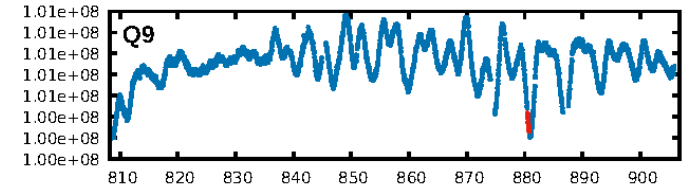
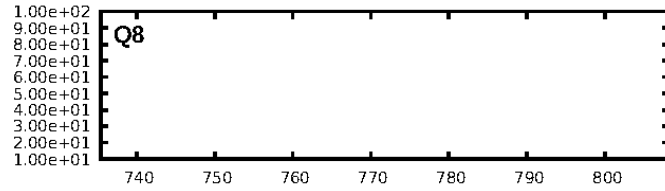
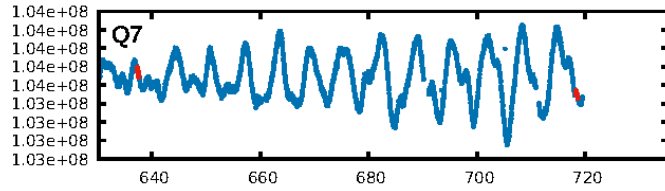
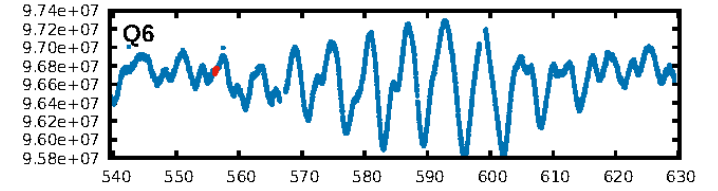
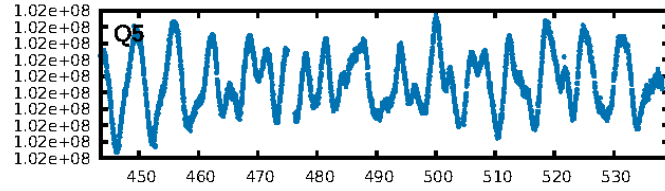
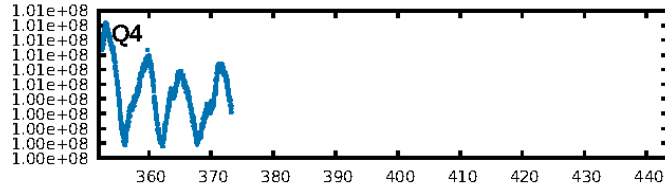
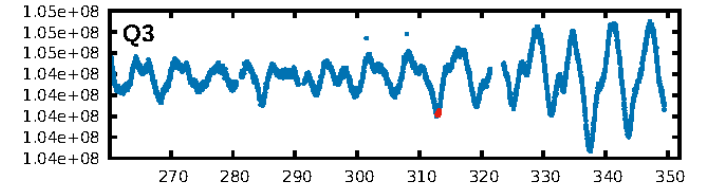
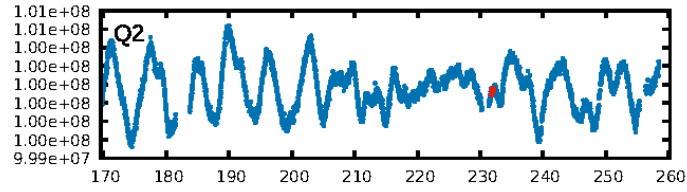
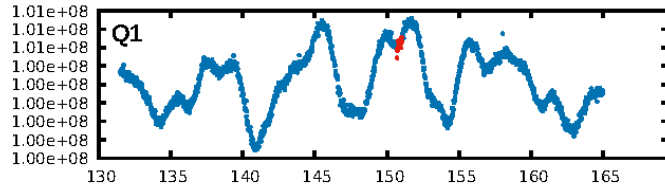
## DV Fit Results:

Period = 81.08967 [0.00090] d  
Epoch = 150.8612 [0.0090] BKJD  
Rp/R\* = 0.0261 [0.0143]  
a/R\* = 89.44 [253.10]  
b = 0.80 [1.30]  
Seff = 30.04 [15.26]  
Teff = 597 [76] K  
Rp = 5.32 [3.46] Re  
a = 0.4077 [0.1288] AU  
Ag = 1677.58 [2021.08] [0.83 $\sigma$ ]  
Teffp = 5907 [1645] K [3.22 $\sigma$ ]

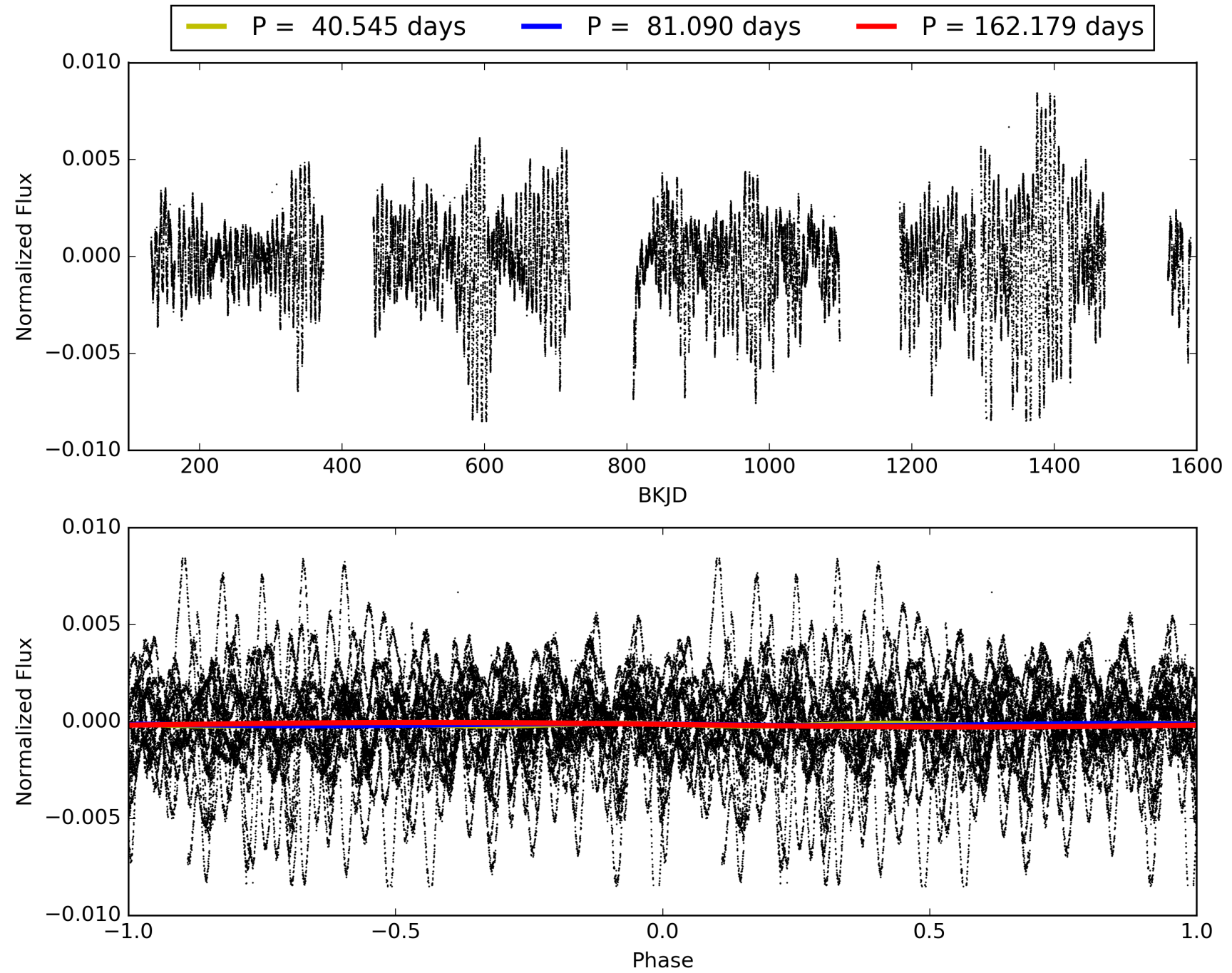
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [97.01 $\sigma$ ]  
LongPeriod-sig: 100.0% [45.58 $\sigma$ ]  
ModelChiSquare2-sig: 11.6%  
ModelChiSquareGof-sig: 100.0%  
**Bootstrap-pfa: 1.72e-11**  
RollingBand-fgt: 1.00 [8/8]  
GhostDiagnostic-chr: 2.882  
Centroid-sig: 25.2%  
Centroid-so: 0.602 arcsec [2.01 $\sigma$ ]  
OotOffset-rm: 0.589 arcsec [1.51 $\sigma$ ]  
OotOffset-st: 2/4/0/3 [9]  
KicOffset-rm: 1.170 arcsec [2.60 $\sigma$ ]  
KicOffset-st: 2/4/0/3 [9]  
DiffImageQuality-fgm: 0.67 [6/9]  
DiffImageOverlap-fno: 0.00 [0/10]

# TCE 010847907-06, PDC Light Curves



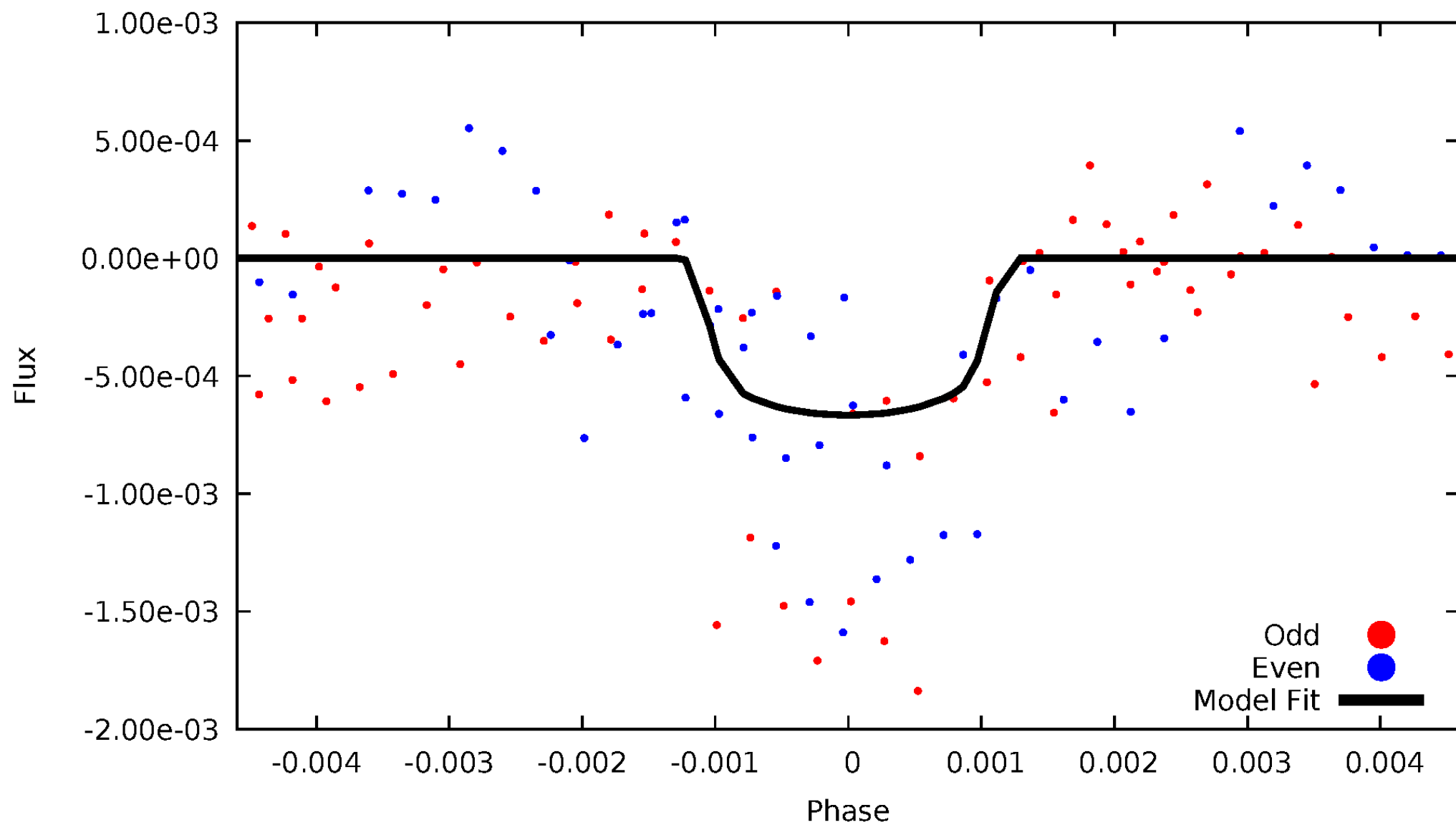
TCE 010847907-06





# DV Odd/Even

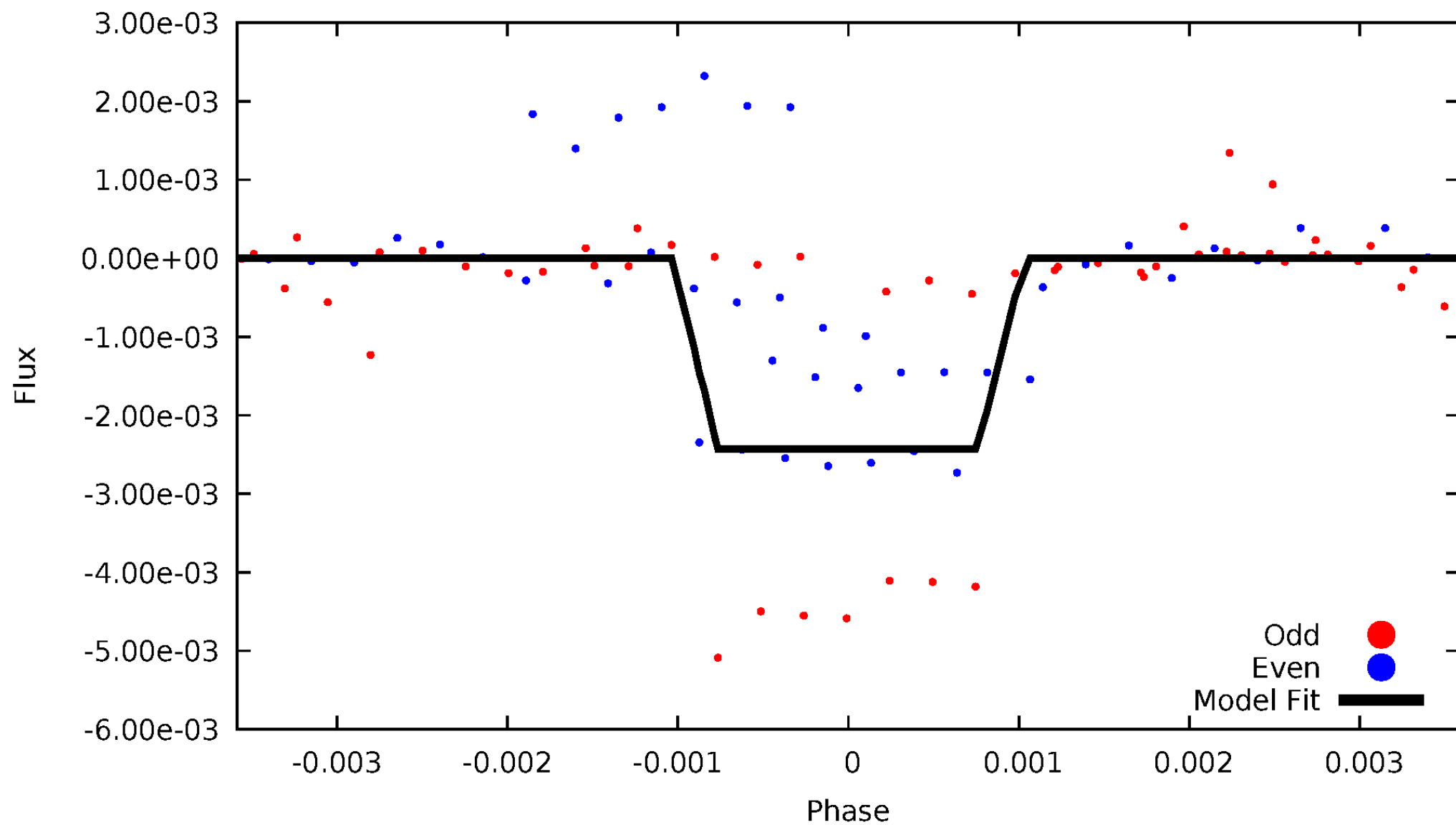
TCE 010847907-06





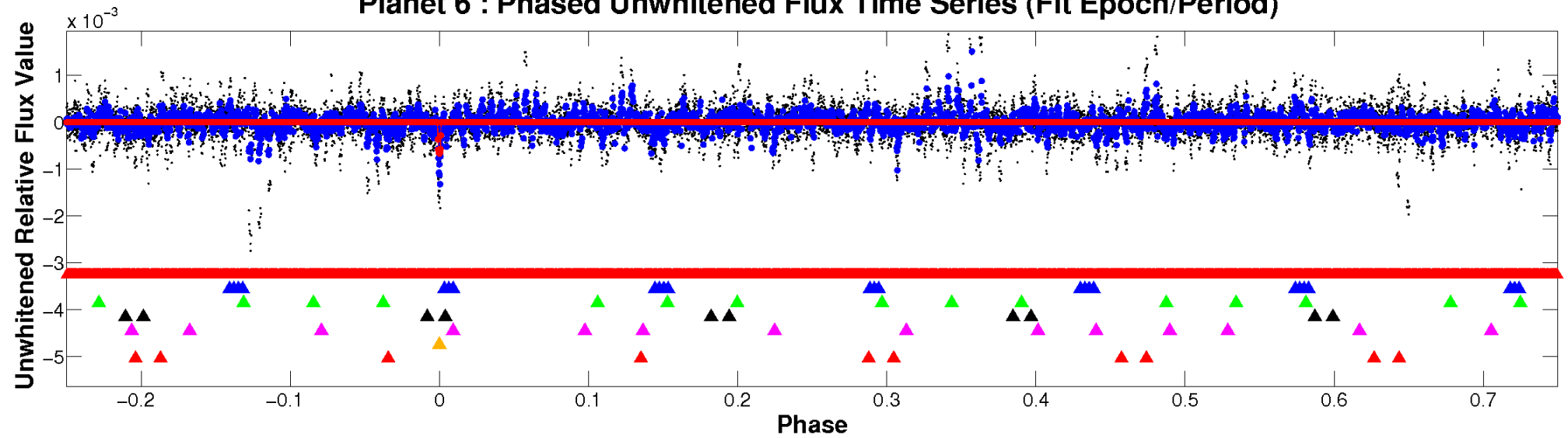
# ALT Odd/Even

TCE 010847907-06

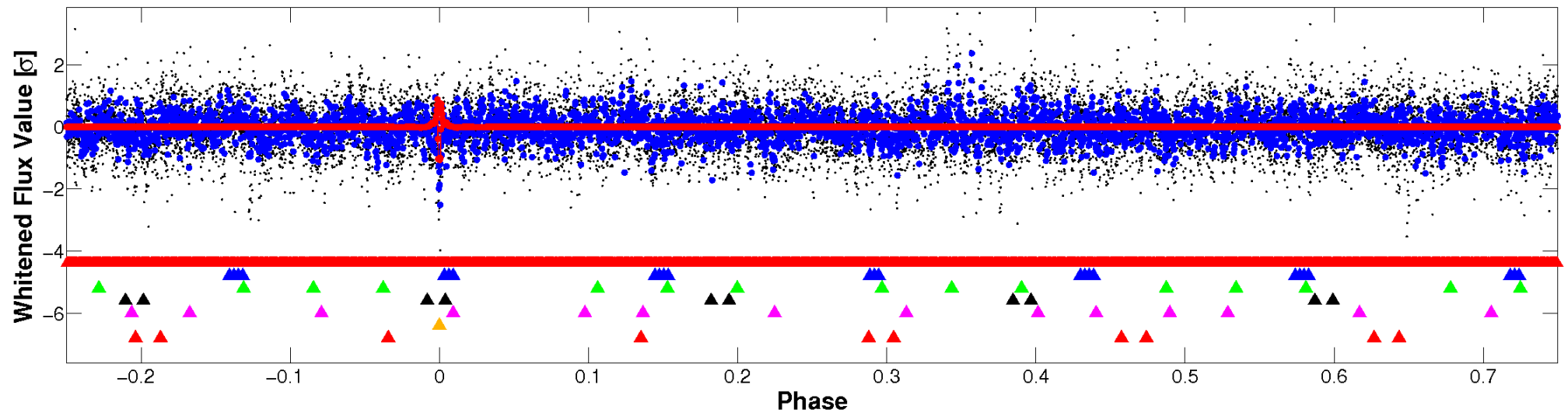


# Non-Whitened Vs. Whitened Light Curve

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

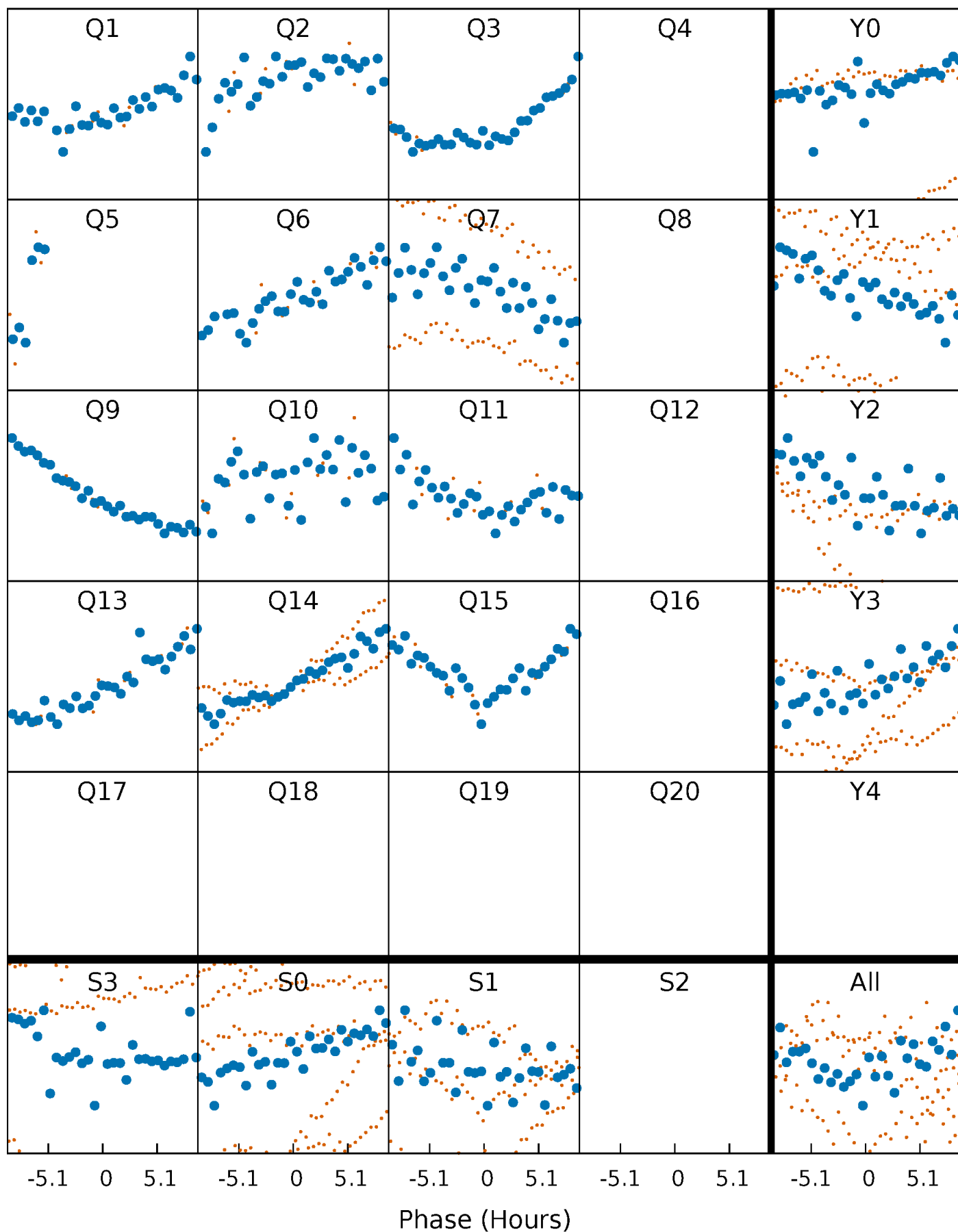


## Planet 6 : Phased Whitened Flux Time Series (Fit Epoch/Period)



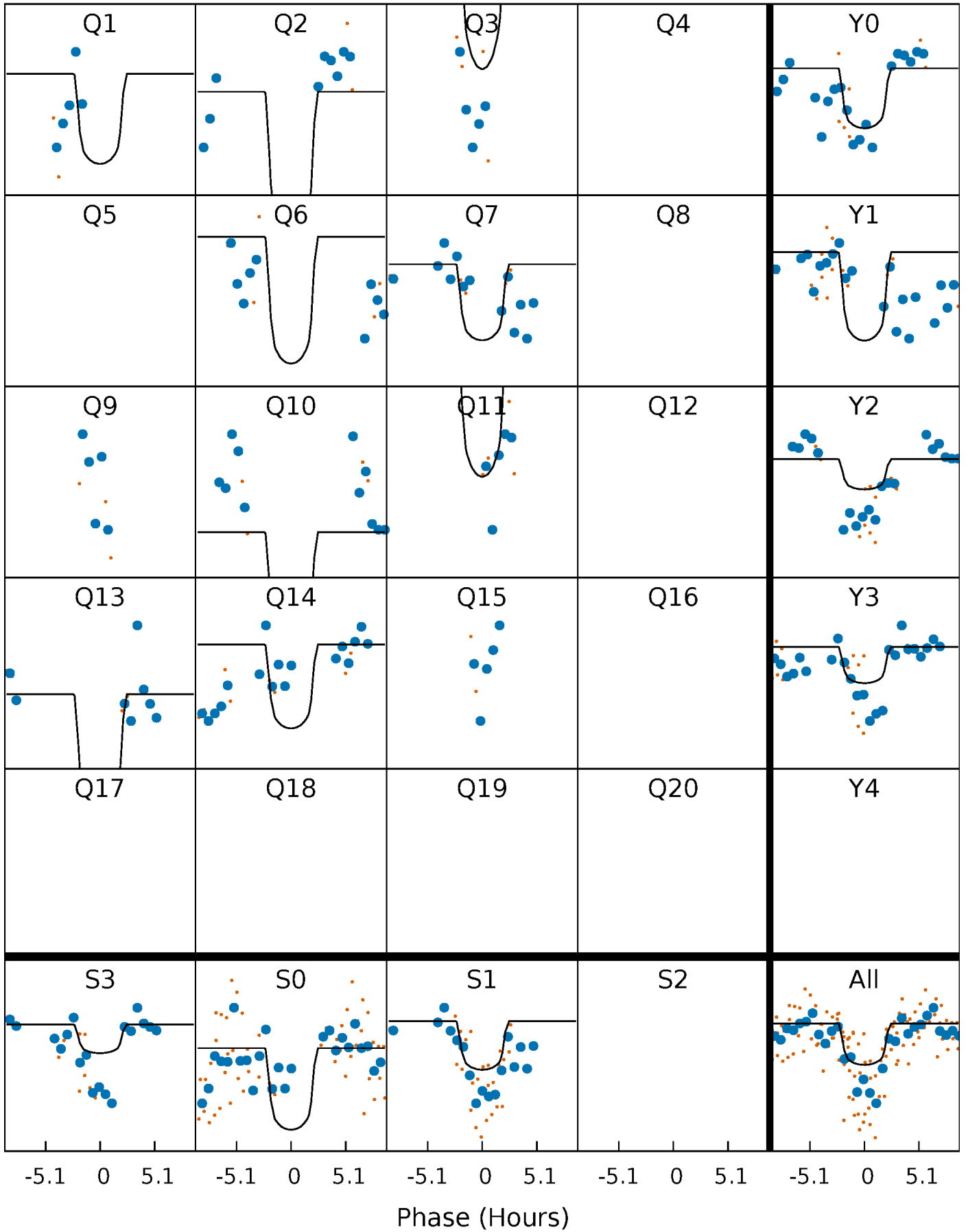
# PDC Quarter-Phased Transit Curves

TCE 010847907-06     $P = 81.089666$  Days     $T_0 = 150.861185$  (BKJD)



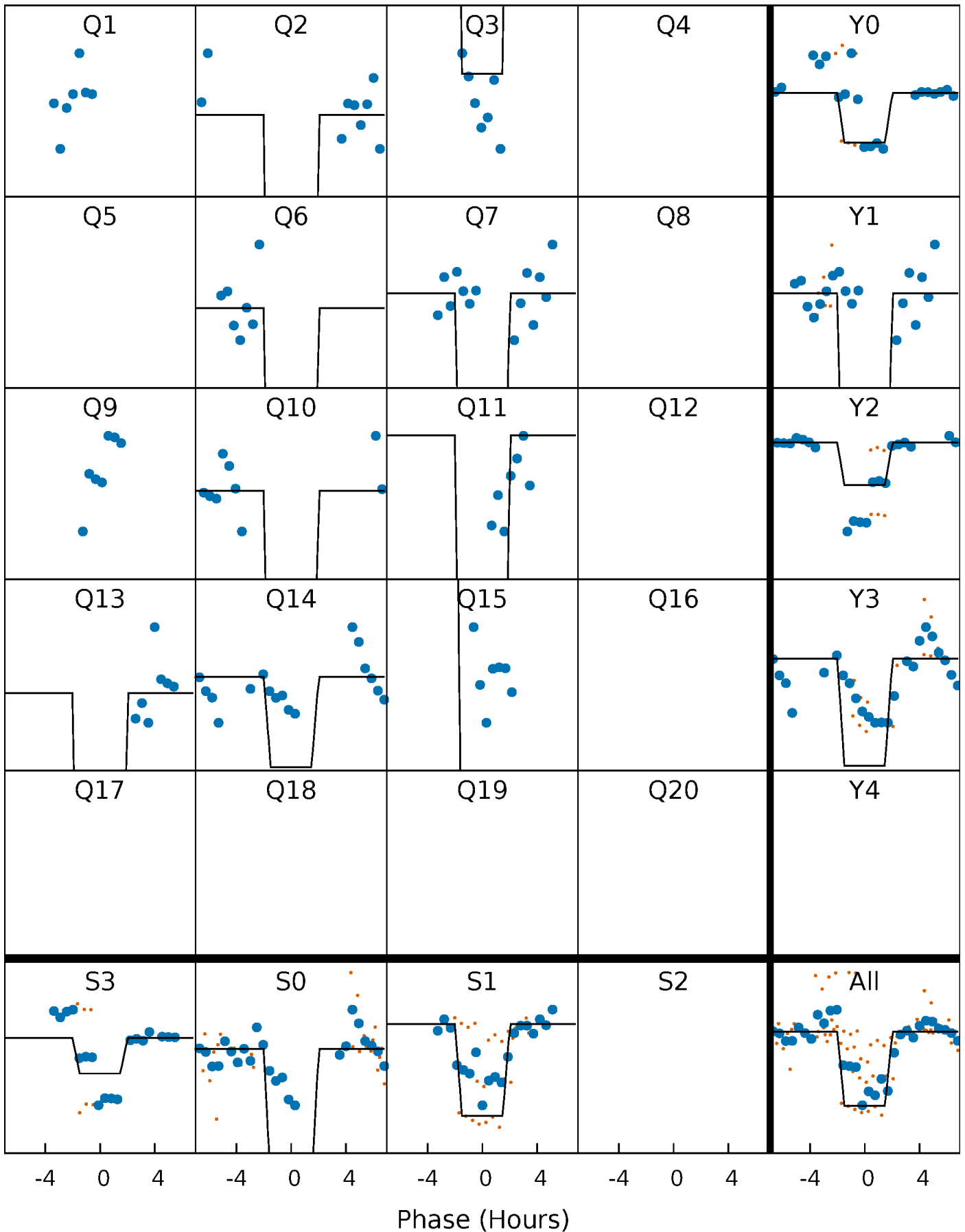
# DV Quarter-Phased Transit Curves

TCE 010847907-06 P= 81.089666 Days  $T_0=150.861185$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

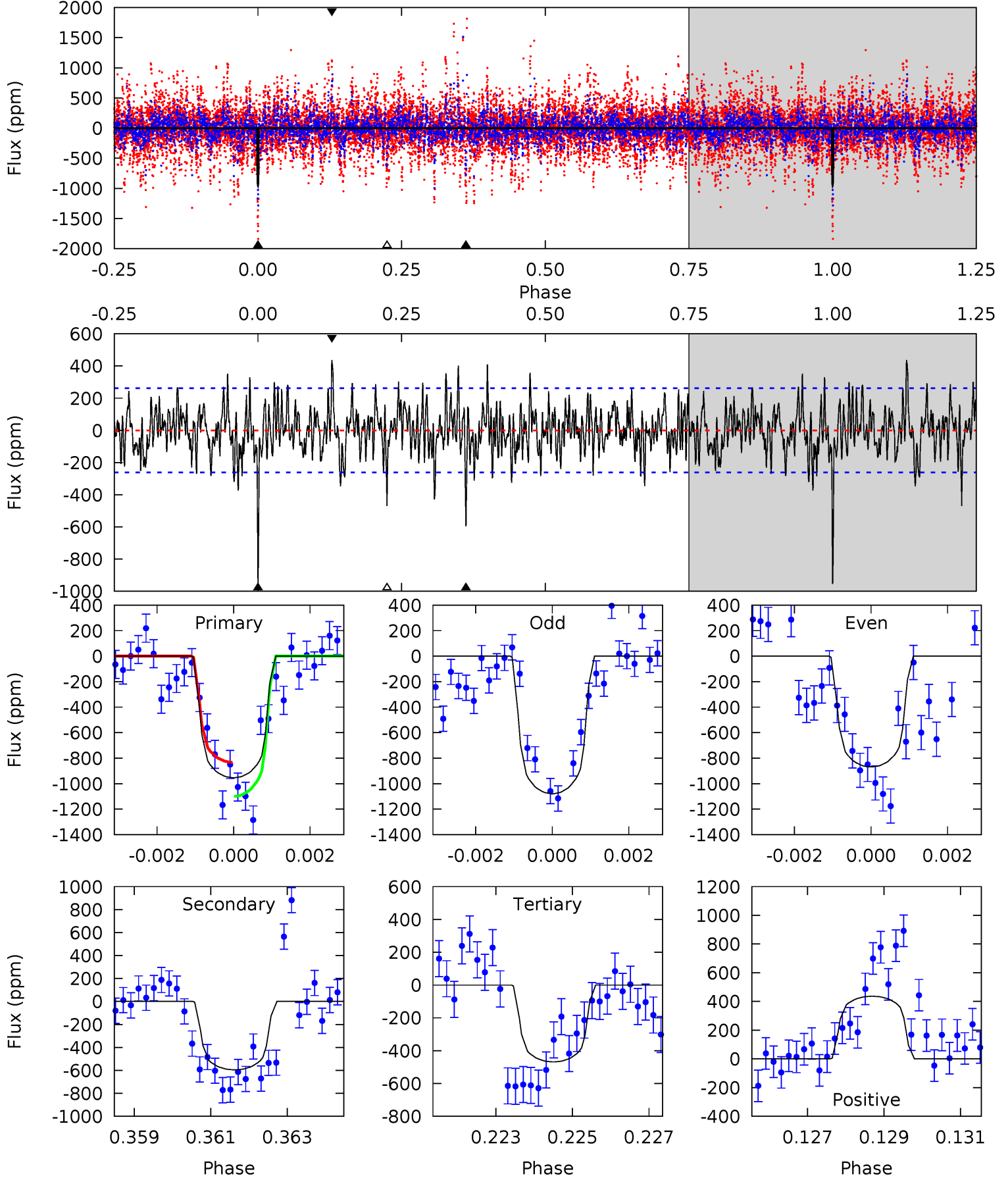
TCE 010847907-06     $P = 81.091127$  Days     $T_0 = 150.829894$  (BKJD)



# DV Model-Shift Uniqueness Test

010847907-06, P = 81.089666 Days, E = 69.771519 Days

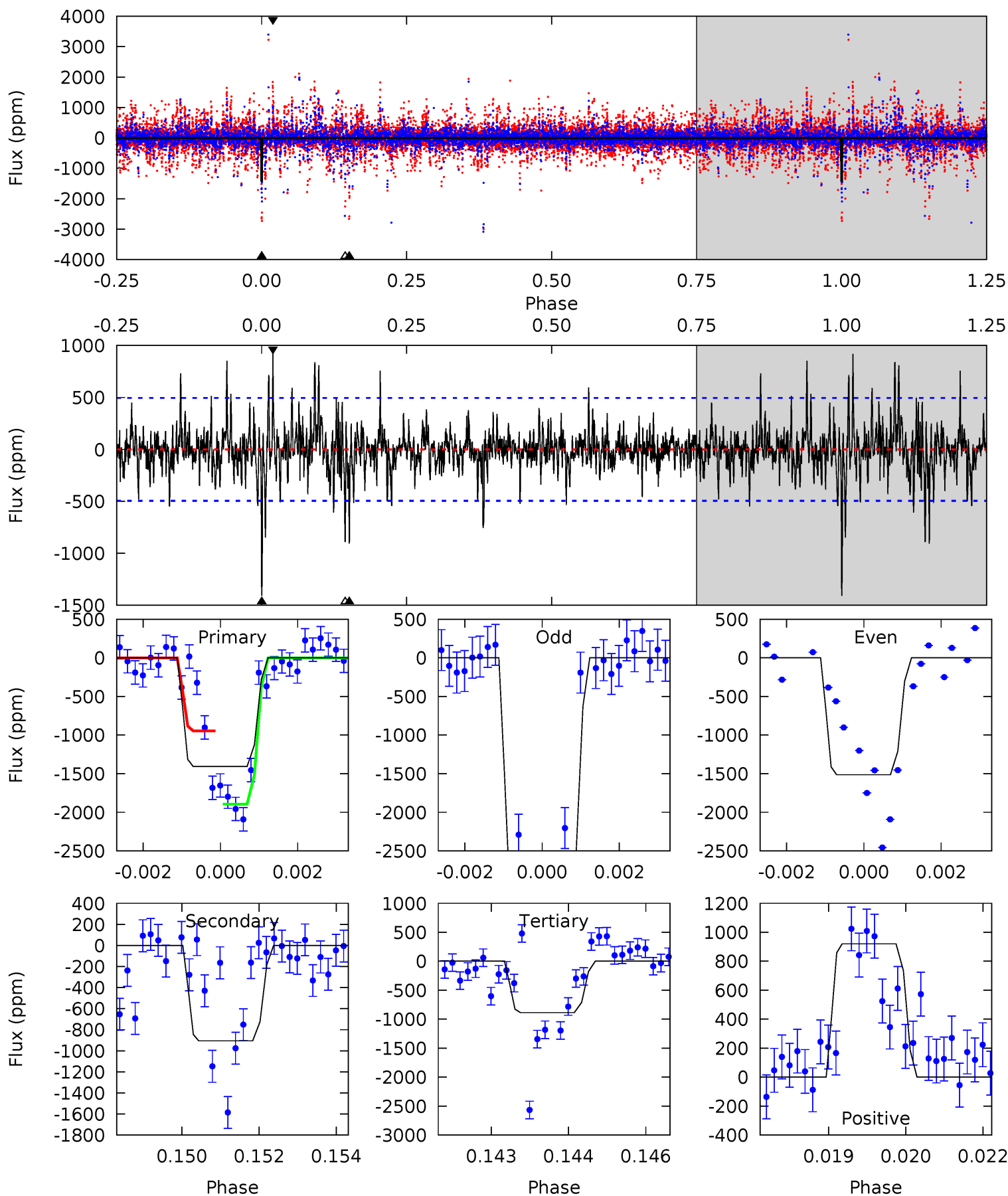
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
19.3	12.0	9.48	8.83	5.30	3.04	2.46	9.81	10.5	2.57	3.21	1.99	1.19	0.31	2.65



# Alt Model-Shift Uniqueness Test

010847907-06, P = 81.091127 Days, E = 69.738767 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
15.2	9.78	9.56	9.93	5.34	3.11	1.83	5.64	5.27	0.22	-0.15	8.28	1.46	0.40	0



### Stellar Parameters For KIC 010847907

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6328^{+177}_{-243}$	$4.035^{+0.276}_{-0.161}$	$0.080^{+0.250}_{-0.300}$	$1.864^{+0.536}_{-0.655}$	$1.374^{+0.190}_{-0.285}$	$0.299^{+0.555}_{-0.139}$
	+3%/-4%	+7%/-4%	+312%/-375%	+29%/-35%	+14%/-21%	+186%/-46%
Source	PHO54	PHO54	PHO54	DSEP		

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

### Secondary Eclipse Parameters for KIC 010847907-06 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-595 \pm 49$	$4.96^{+3.10}_{-2.22}$	$823^{+70}_{-72}$	$6131^{+2446}_{-1134}$	$2167^{+5101}_{-1342}$
Alt.	$-906 \pm 93$	$9.64^{+3.49}_{-3.02}$	$825^{+61}_{-74}$	$4991^{+827}_{-487}$	$878^{+1016}_{-400}$

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



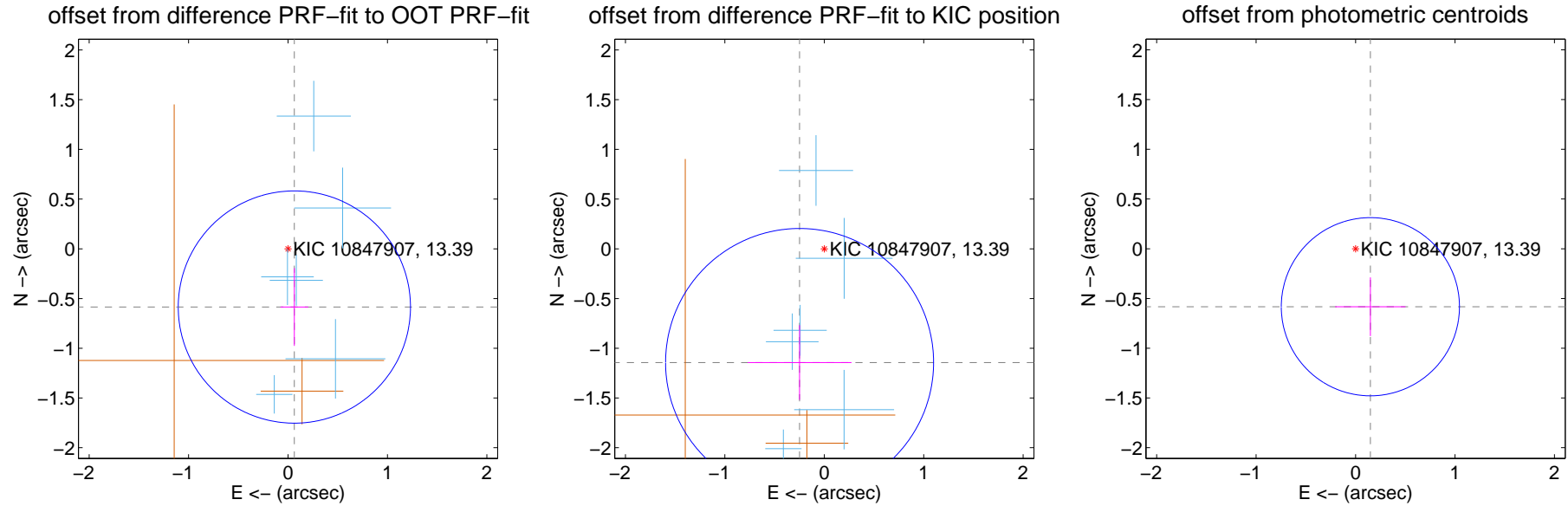
## DV Centroid Data

Supplemental centroid analysis for 010847907-06. Kepler magnitude: 13.39. Transit SNR 6.35

There are 6 quarters with good PRF difference image offsets

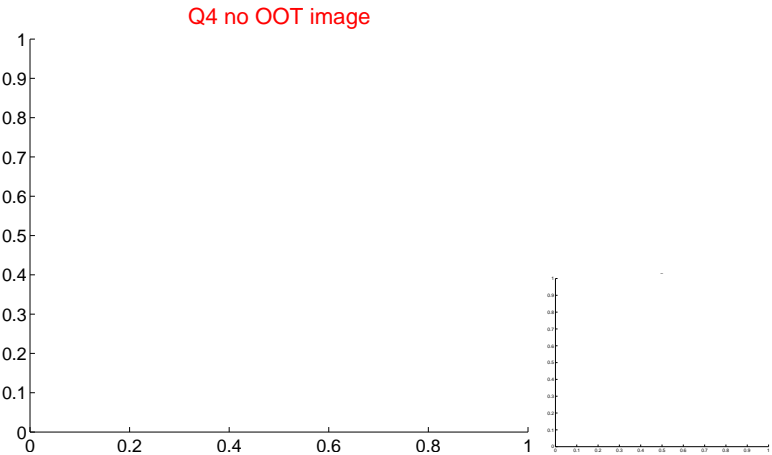
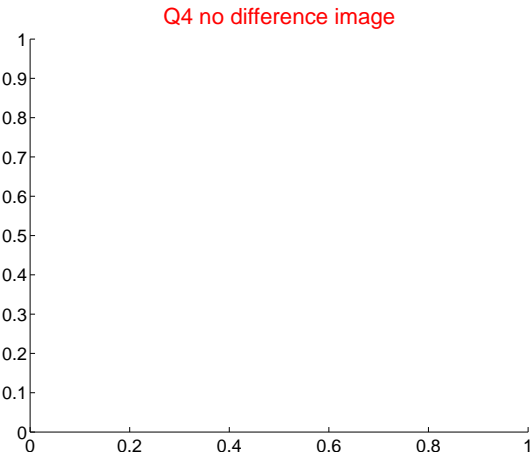
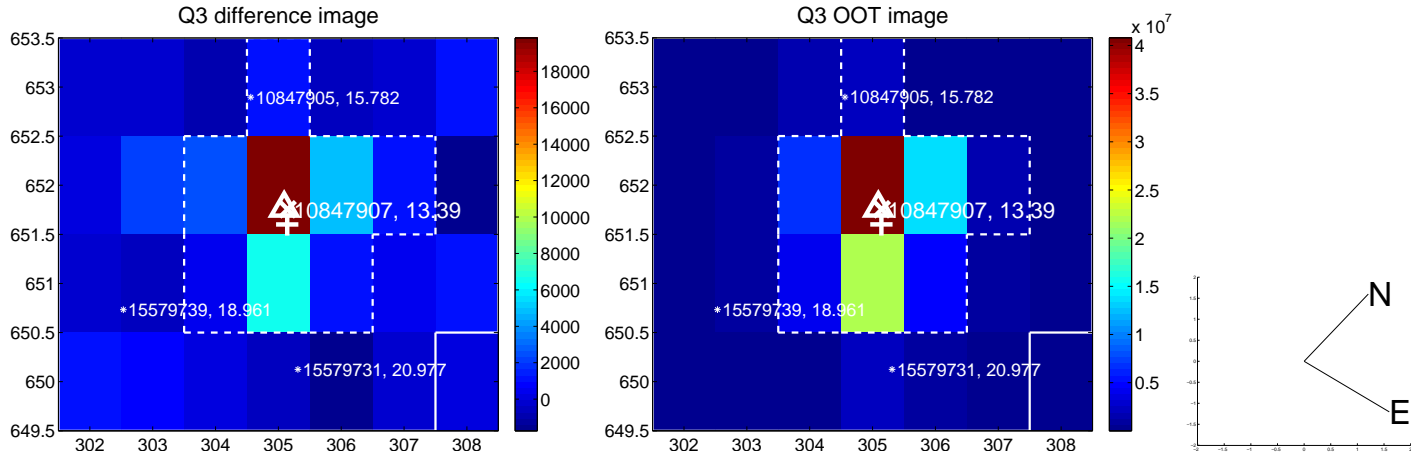
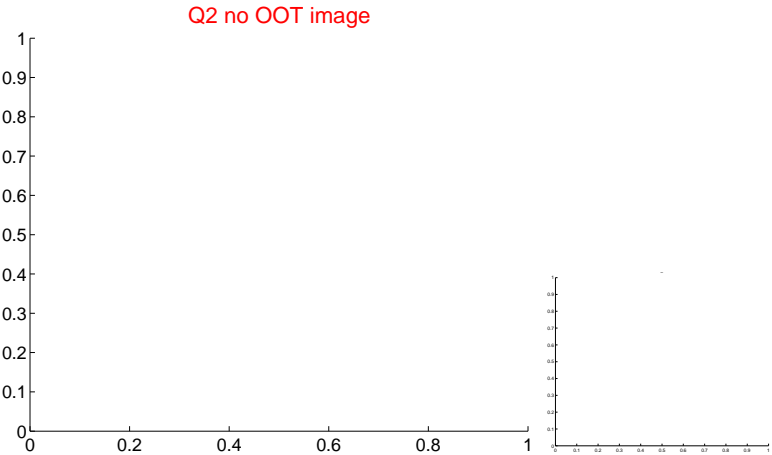
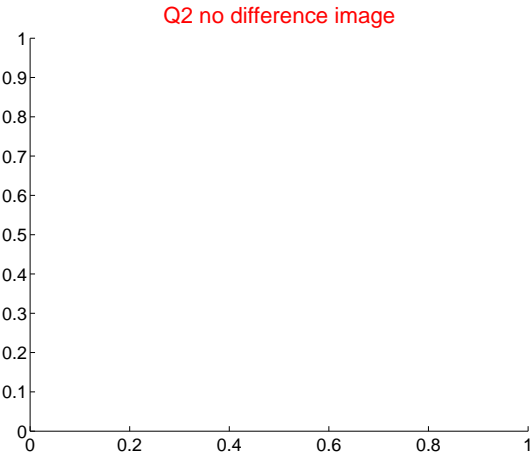
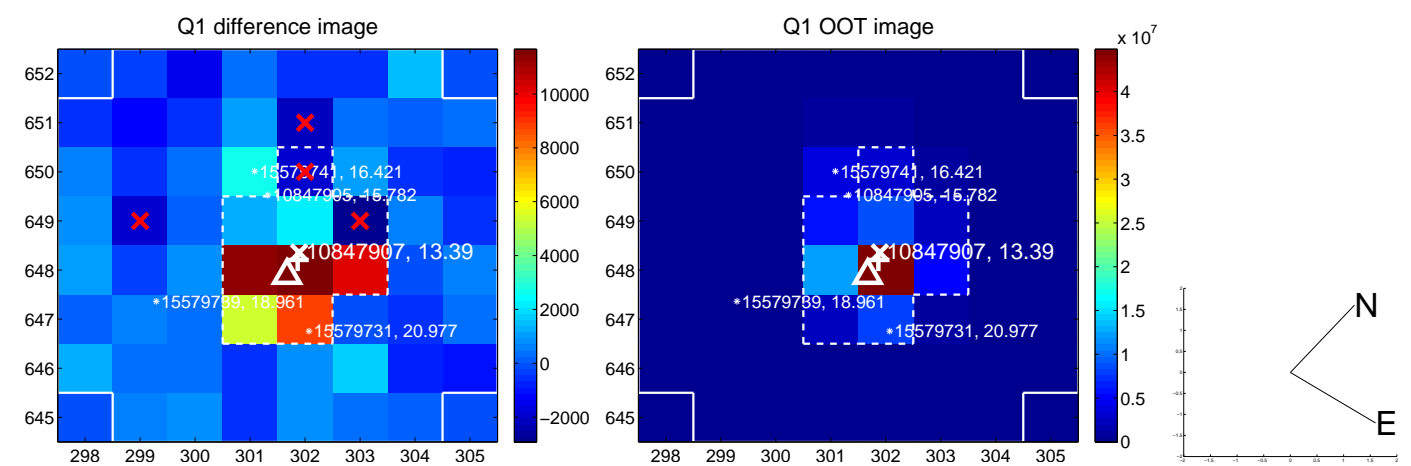
The direct PRF centroid is offset from the target star catalog position by about 0.65 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.589 \pm 0.389$	1.51	$-0.064 \pm 0.139$	$-0.586 \pm 0.391$
PRF-fit source offset from KIC position	$1.170 \pm 0.449$	2.60	$0.249 \pm 0.523$	$-1.144 \pm 0.375$
photometric centroid source offset	$0.60 \pm 0.30$	2.01	$-0.15 \pm 0.35$	$-0.58 \pm 0.29$

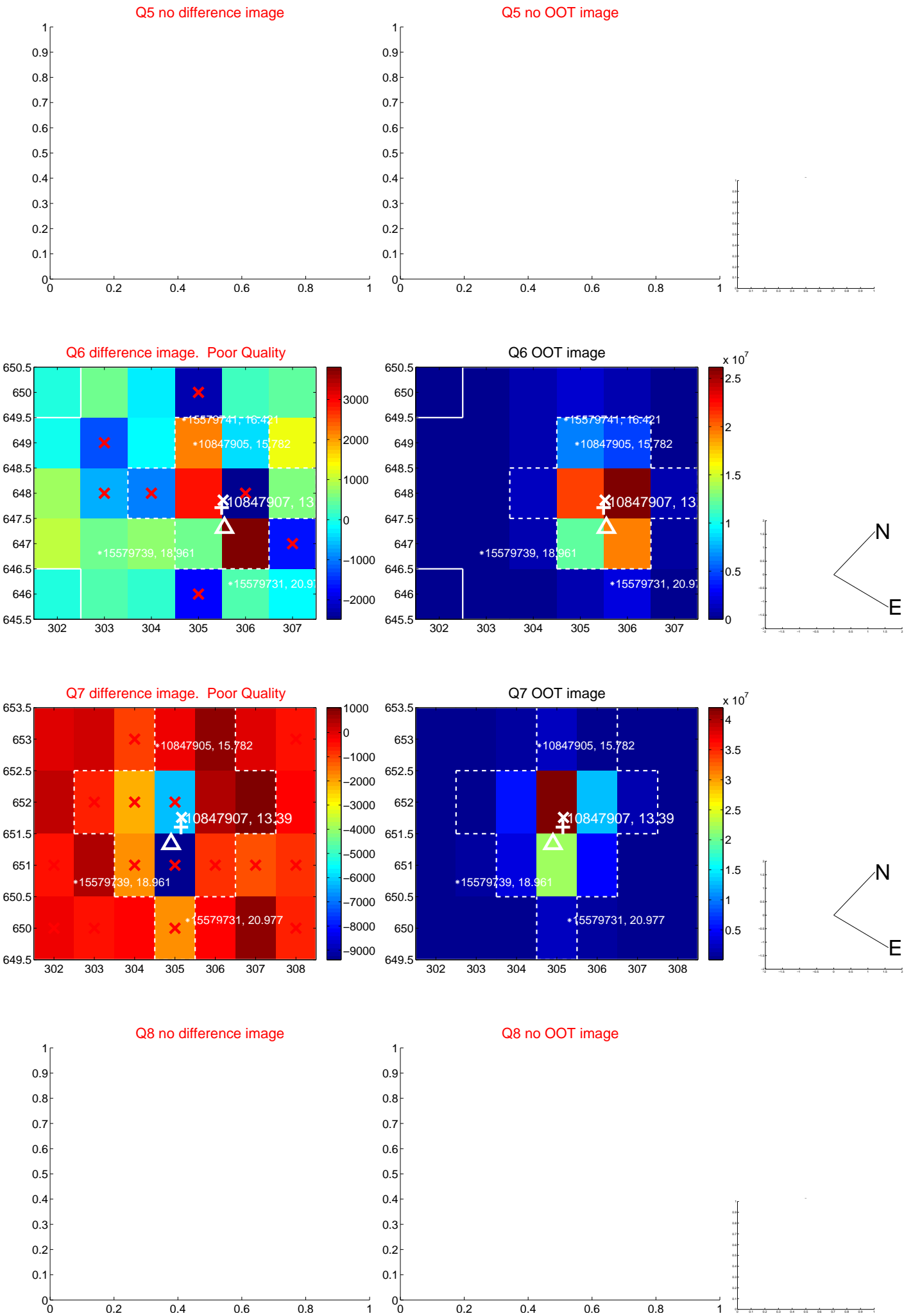


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

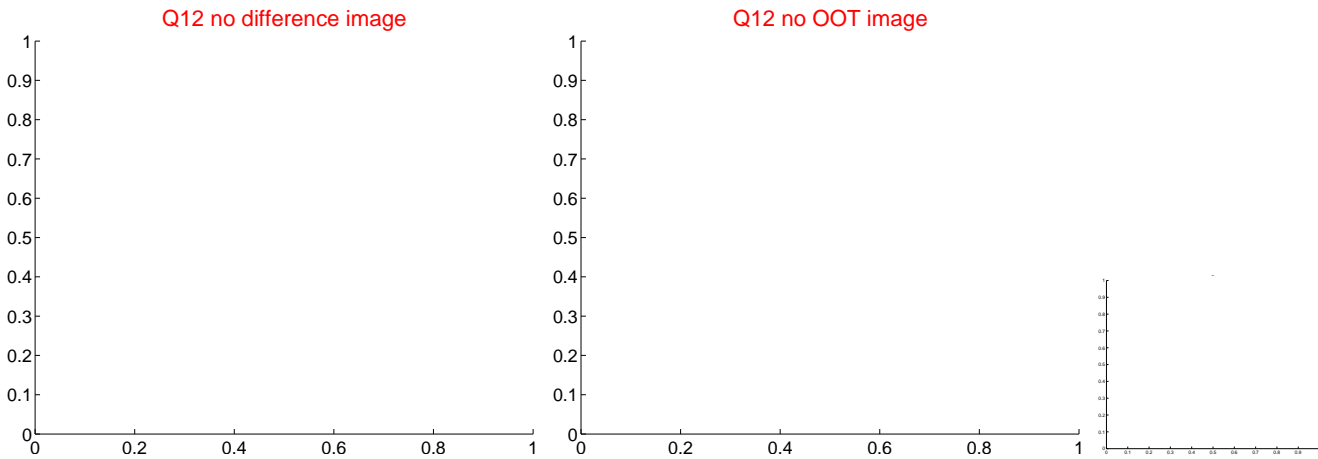
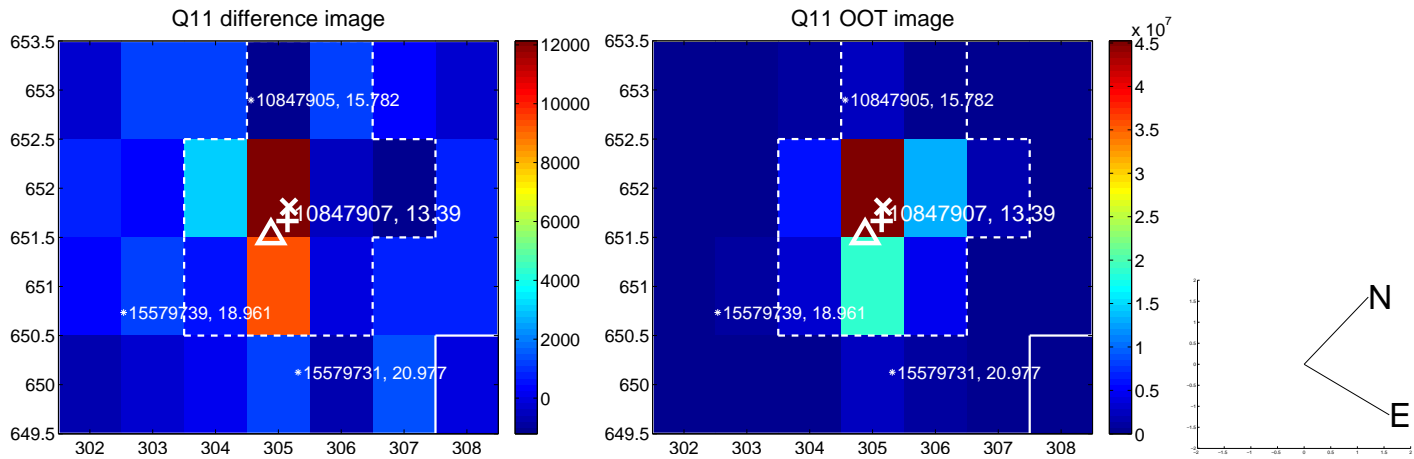
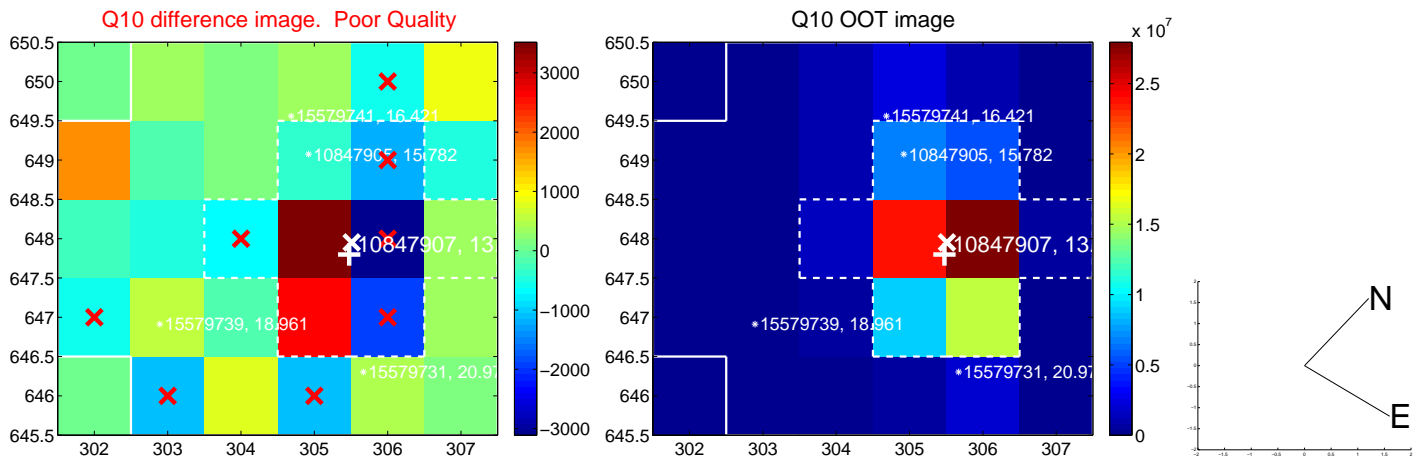
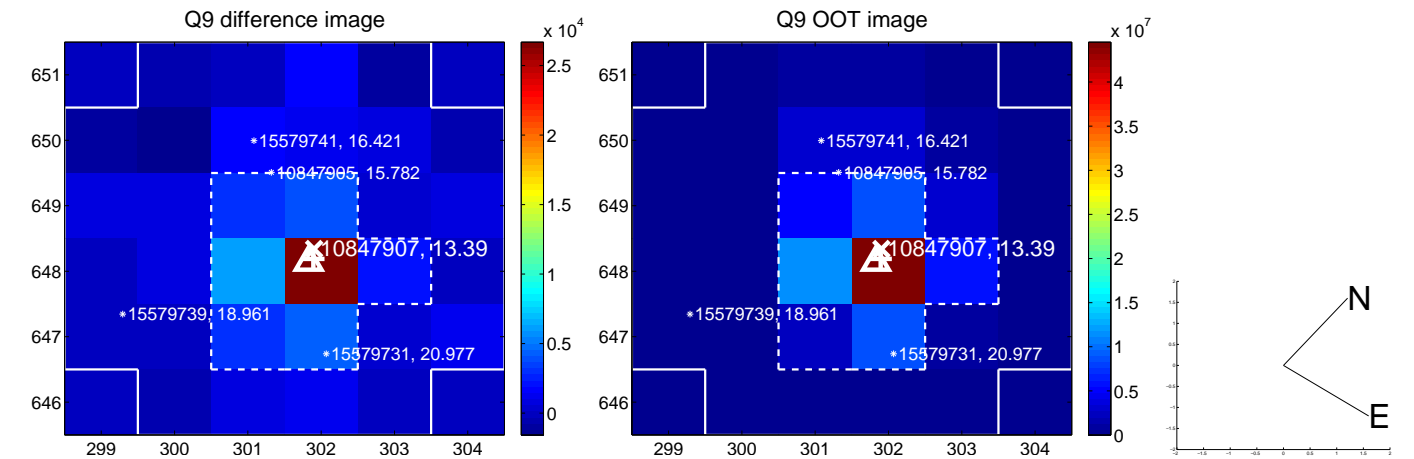
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



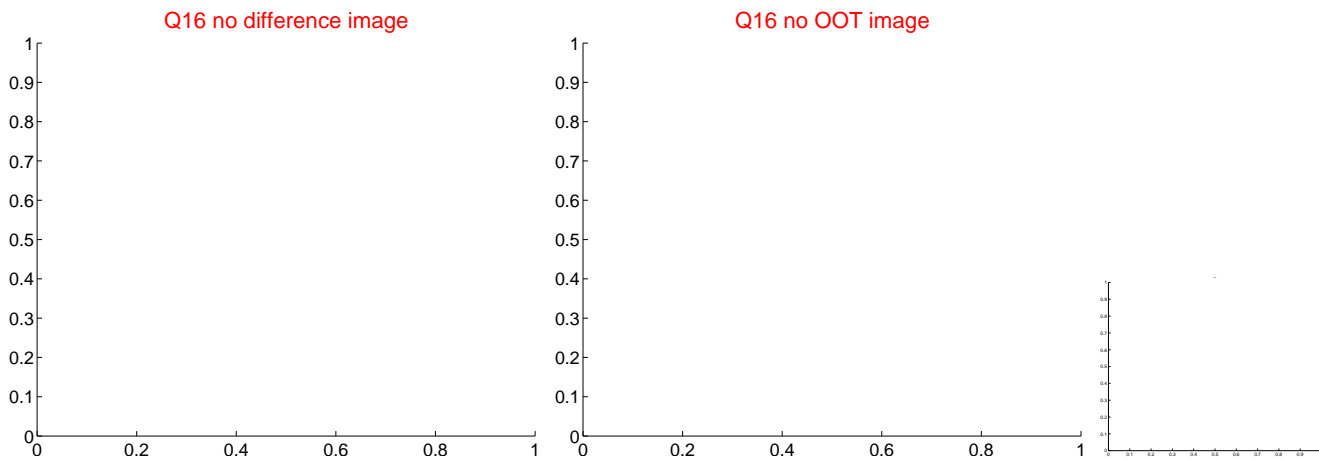
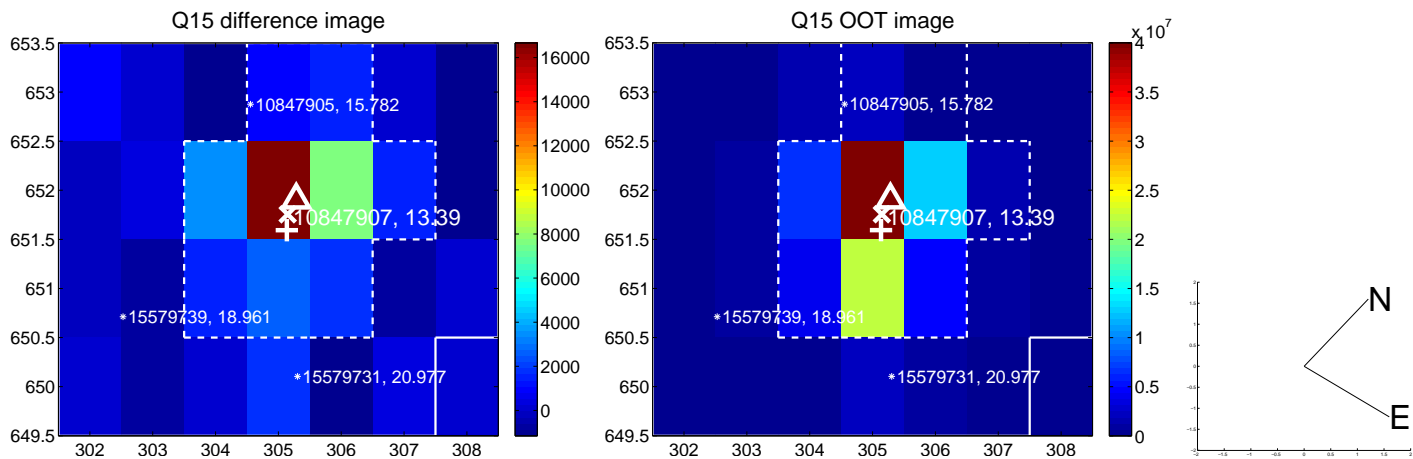
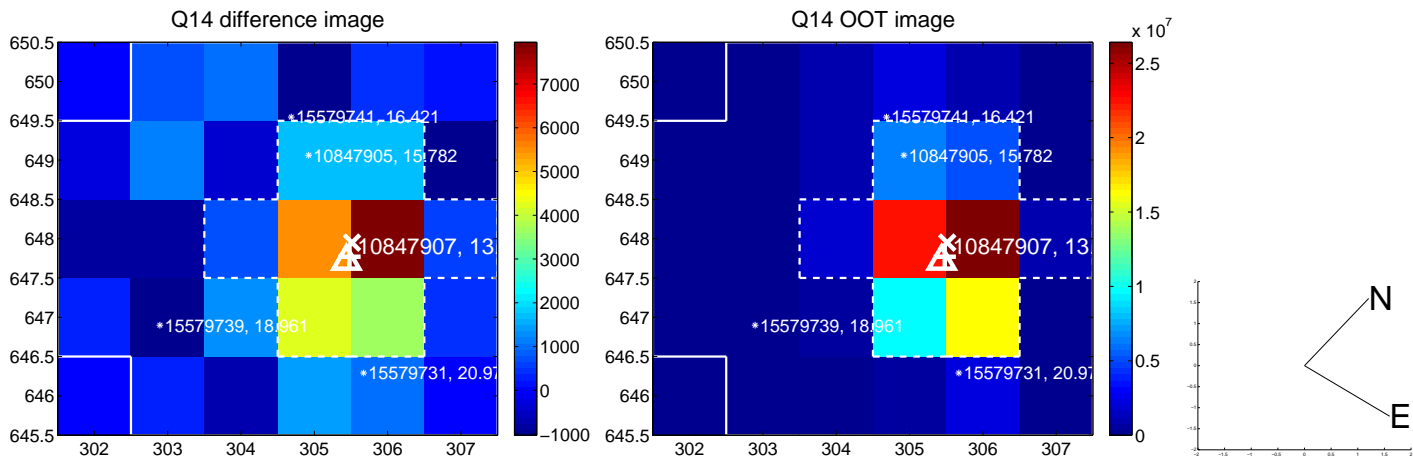
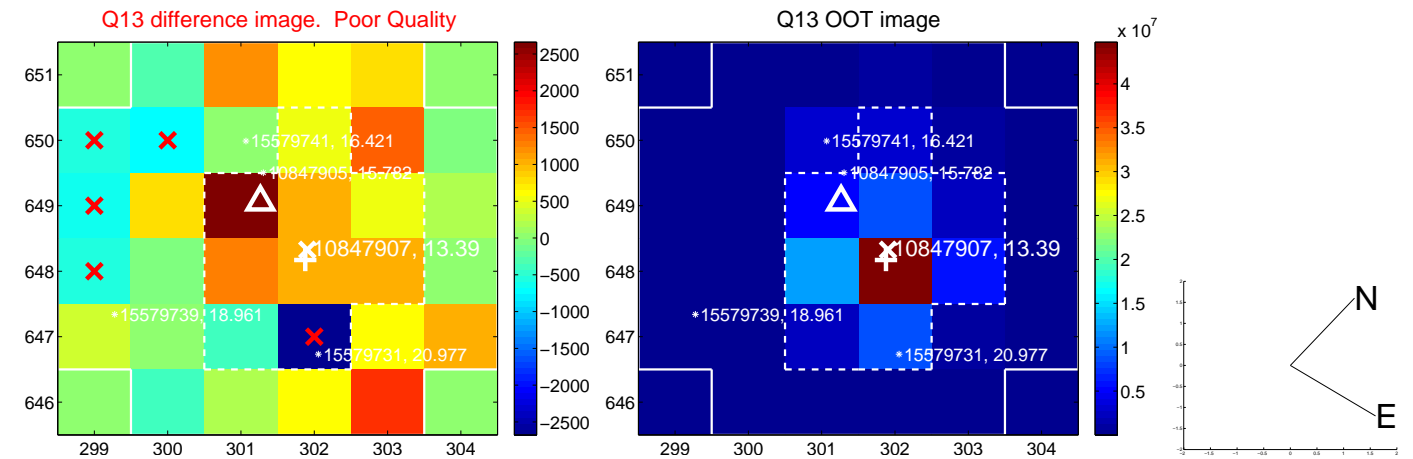
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



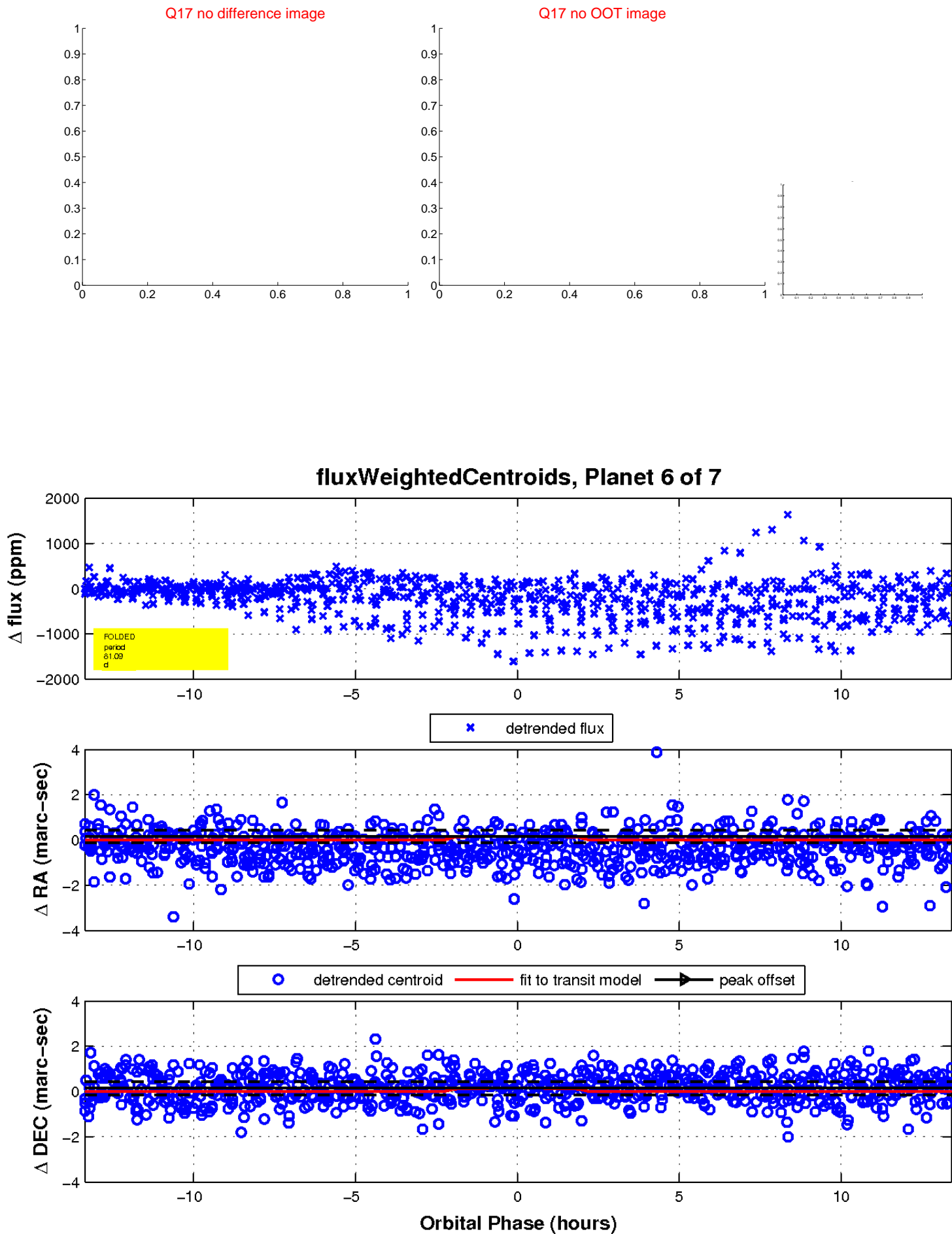
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

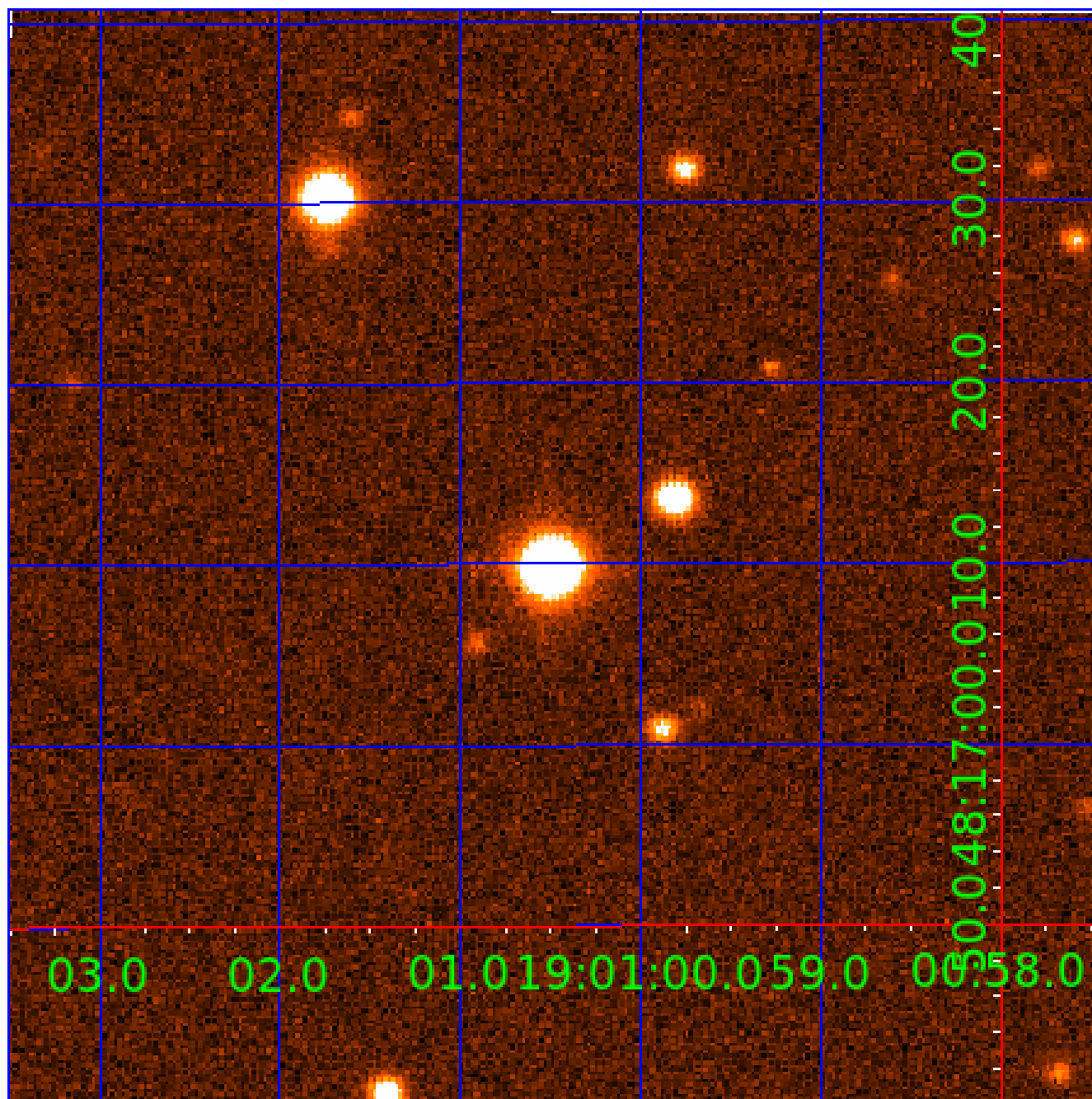


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 010847907

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
010847907-01	OBS	7379.01	0.535526	131.720096	6.9	2.954	7.9	3.2	1.86	6328	0.57	24240.96
010847907-02	OBS	No	57.955427	185.718370	652.7	3.573	13.1	6.8	1.86	6328	5.08	47.00
010847907-03	OBS	No	96.548511	167.060852	491.8	6.802	10.1	4.6	1.86	6328	4.44	23.80
010847907-04	OBS	No	145.765628	151.183770	1096.4	5.661	9.6	6.8	1.86	6328	7.80	13.74
010847907-05	OBS	No	105.732218	190.578954	795.5	8.314	7.4	6.3	1.86	6328	10.09	21.09
010847907-06	OBS	No	81.089666	150.861185	666.3	4.471	7.2	6.4	1.86	6328	5.32	30.04
010847907-07	OBS	No	148.438162	135.699589	942.1	7.145	8.4	5.7	1.86	6328	5.80	13.41

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010847907-01	OBS	FP	0.00	1	0	0	0	LPP_DV—CENT_KIC_POS
010847907-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—ALL_TRANS_CHASES—CENT_FEW_MEAS
010847907-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT— INCONSISTENT_TRANS—CENT_KIC_POS
010847907-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_DIFFS
010847907-05	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT— MOD_POS_ALT—CENT_KIC_POS—HALO_GHOST
010847907-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—ALL_TRANS_CHASES—CENT_KIC_POS
010847907-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT— INCONSISTENT_TRANS—CENT_FEW_MEAS

**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 010847907-07

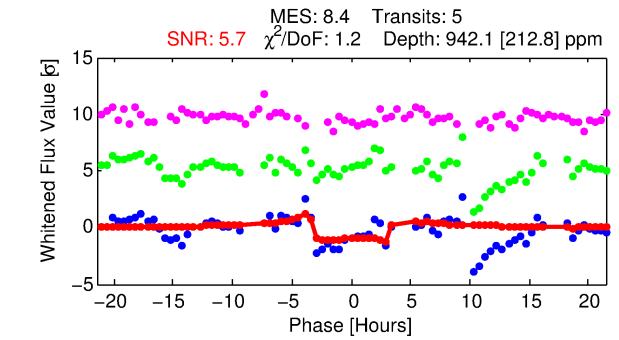
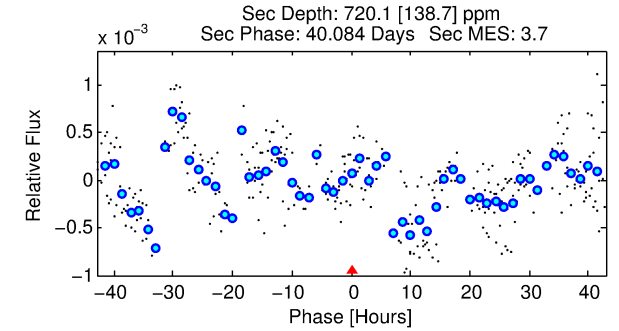
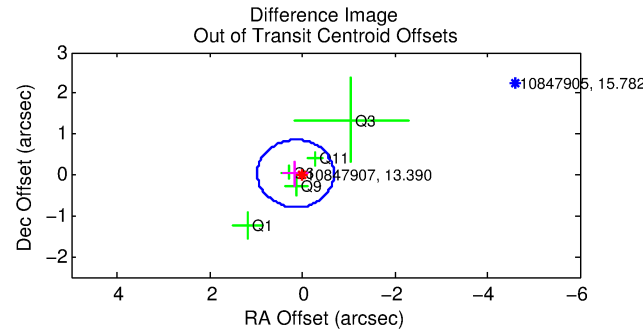
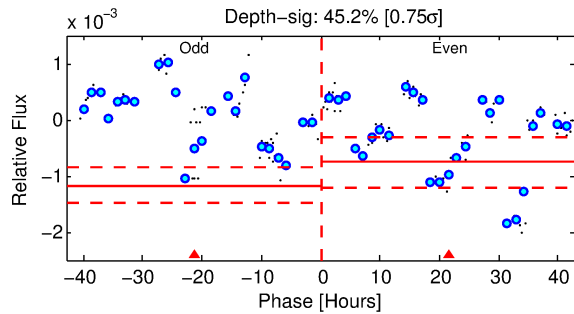
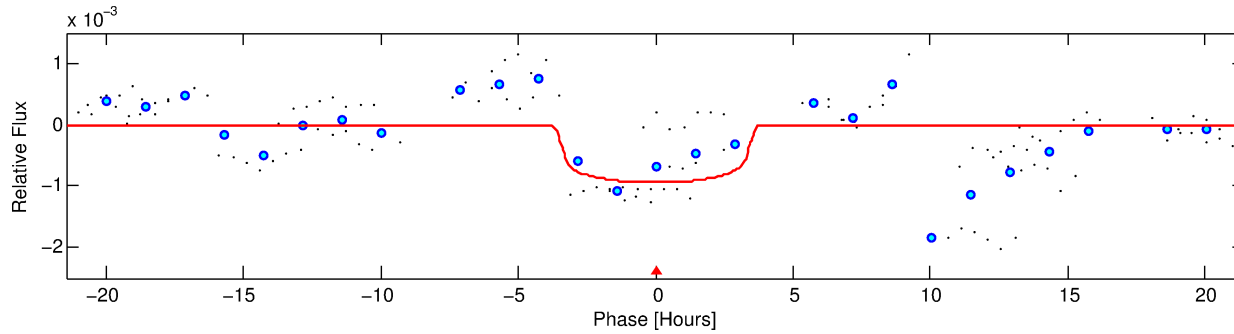
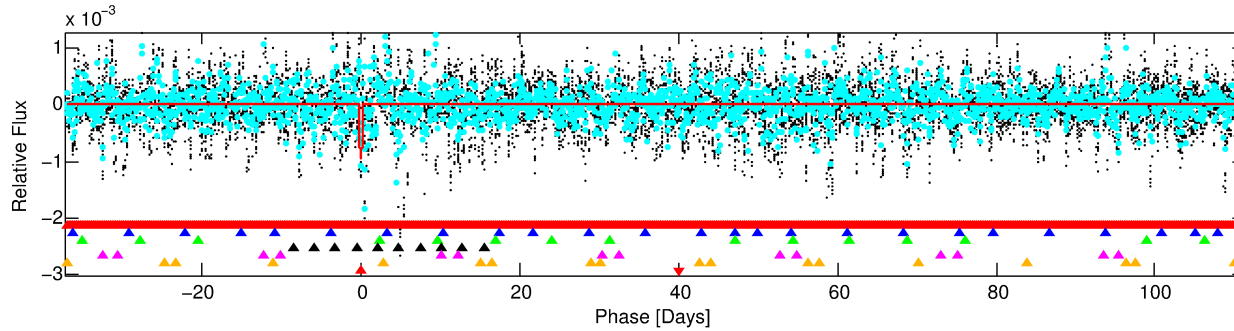
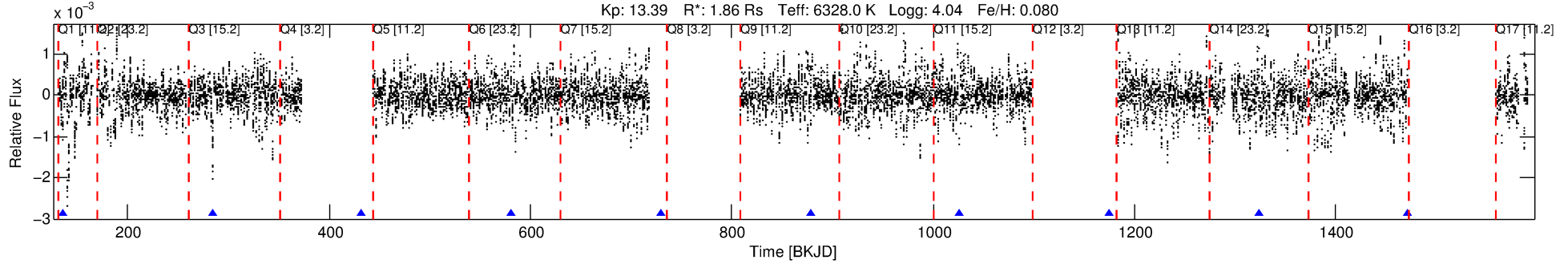
No Significant Match Found



# DV One-Page Summary

KIC: 10847907 Candidate: 7 of 7 Period: 148.438 d  
KOI: K07379 Corr: No Ephemeris Match

Kp: 13.39 R\*: 1.86 Rs Teff: 6328.0 K Logg: 4.04 Fe/H: 0.080



## DV Fit Results:

Period = 148.43816 [0.00456] d  
Epoch = 135.6996 [0.0306] BKJD  
Rp/R\* = 0.0285 [0.0911]  
a/R\* = 153.82 [2470.23]  
b = 0.34 [41.40]  
Seff = 13.41 [6.81]  
Teq = 488 [62] K  
Rp = 5.80 [18.64] Re  
a = 0.6100 [0.1927] AU  
Ag = 4386.24 [28135.15] [0.16σ]  
Teffp = 6140 [9821] K [0.58σ]

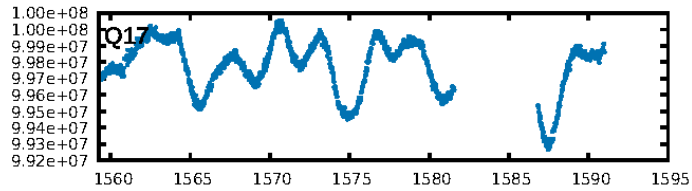
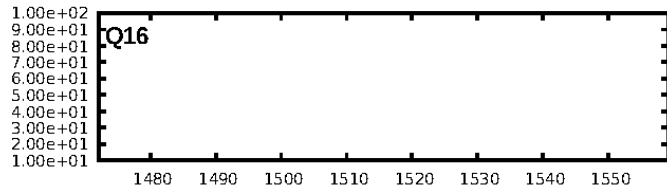
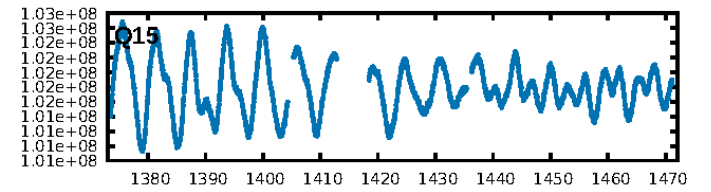
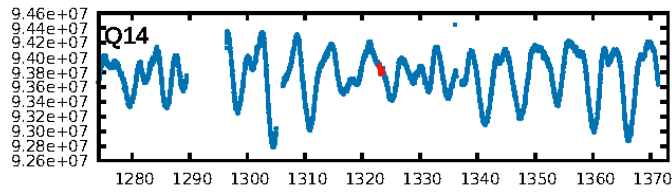
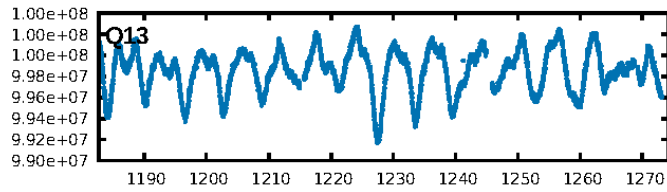
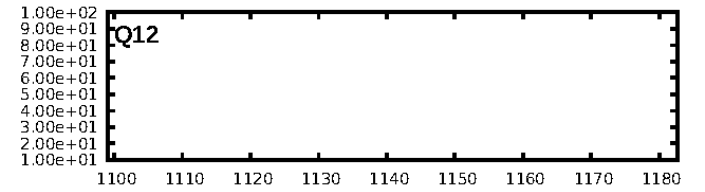
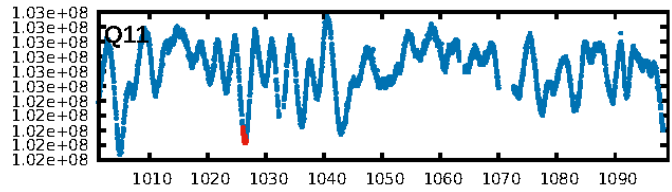
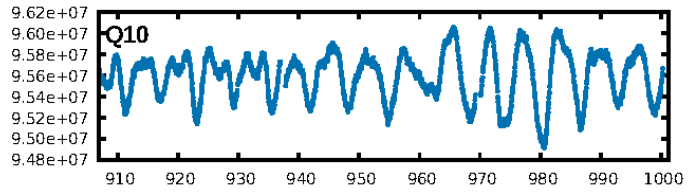
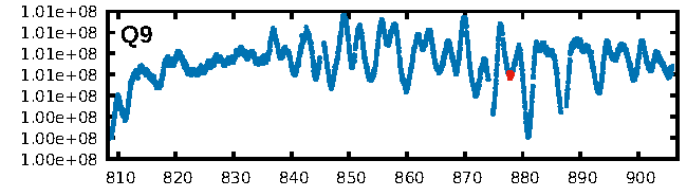
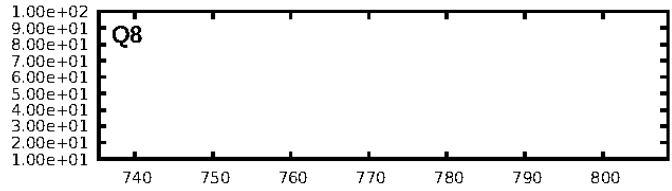
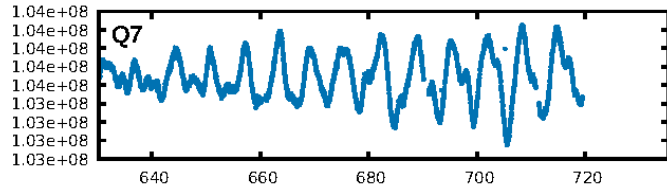
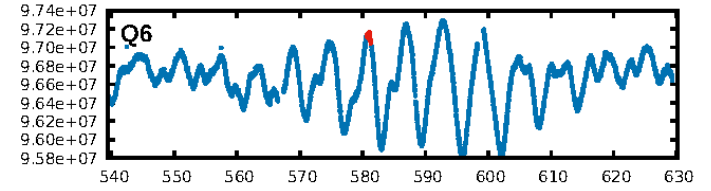
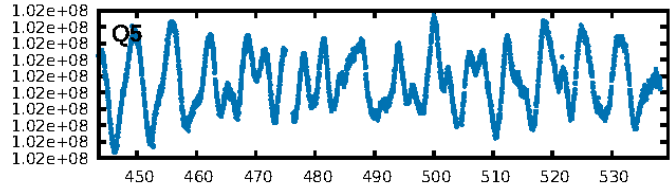
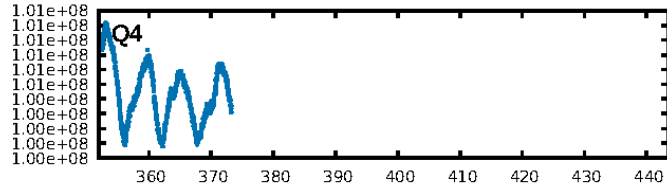
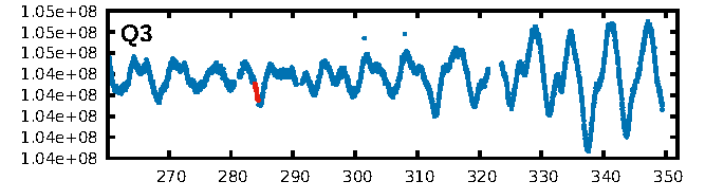
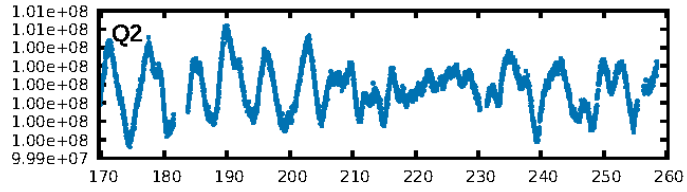
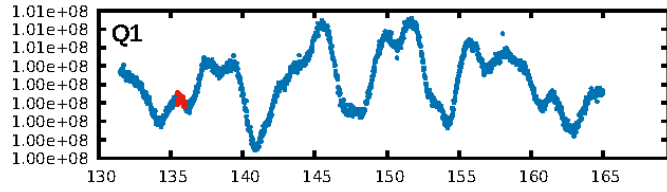
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [7.04σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 0.6%  
ModelChiSquareGof-sig: 100.0%  
**Bootstrap-pfa: 9.83e-12**  
RollingBand-fgt: 1.00 [4/4]  
GhostDiagnostic-chr: -1.199  
Centroid-sig: 35.5%  
Centroid-so: 0.374 arcsec [1.41σ]  
OotOffset-rm: 0.151 arcsec [0.55σ]  
OotOffset-st: 1/2/0/2 [5]  
KicOffset-rm: 0.663 arcsec [1.43σ]  
KicOffset-st: 1/2/0/2 [5]  
DiffImageQuality-fgm: 0.60 [3/5]  
DiffImageOverlap-fno: 0.00 [0/6]

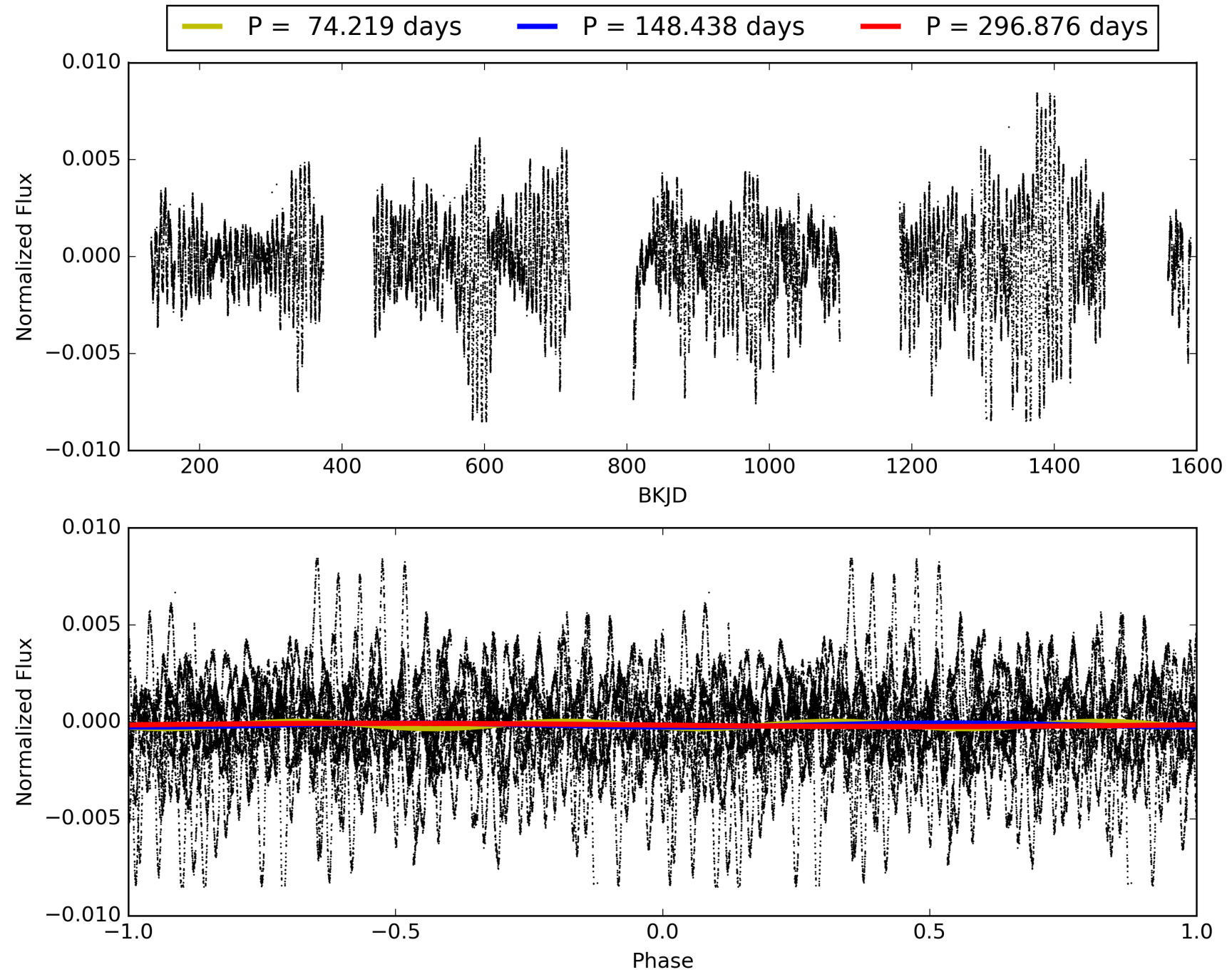
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 01:13:35 Z

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

## TCE 010847907-07, PDC Light Curves

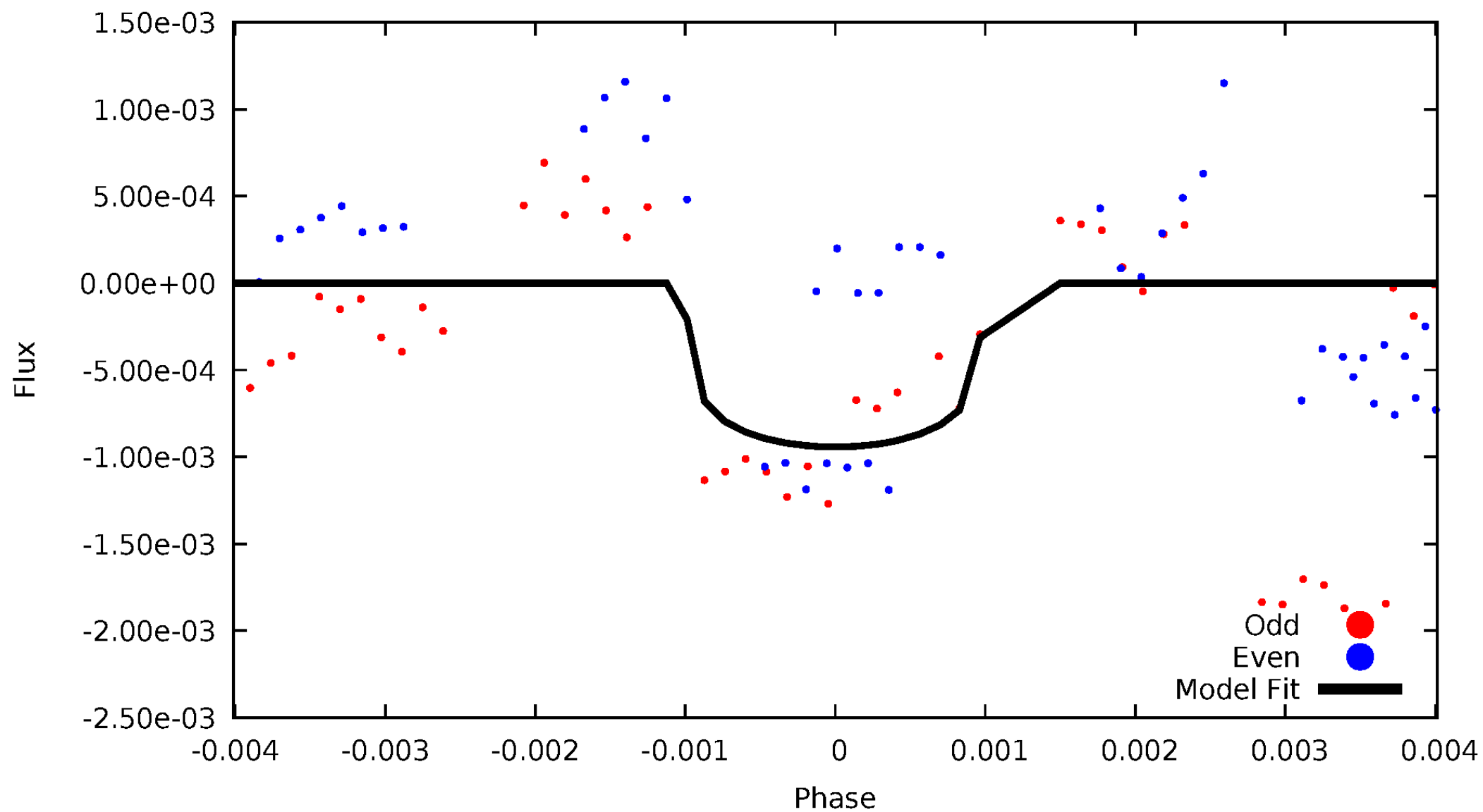


TCE 010847907-07



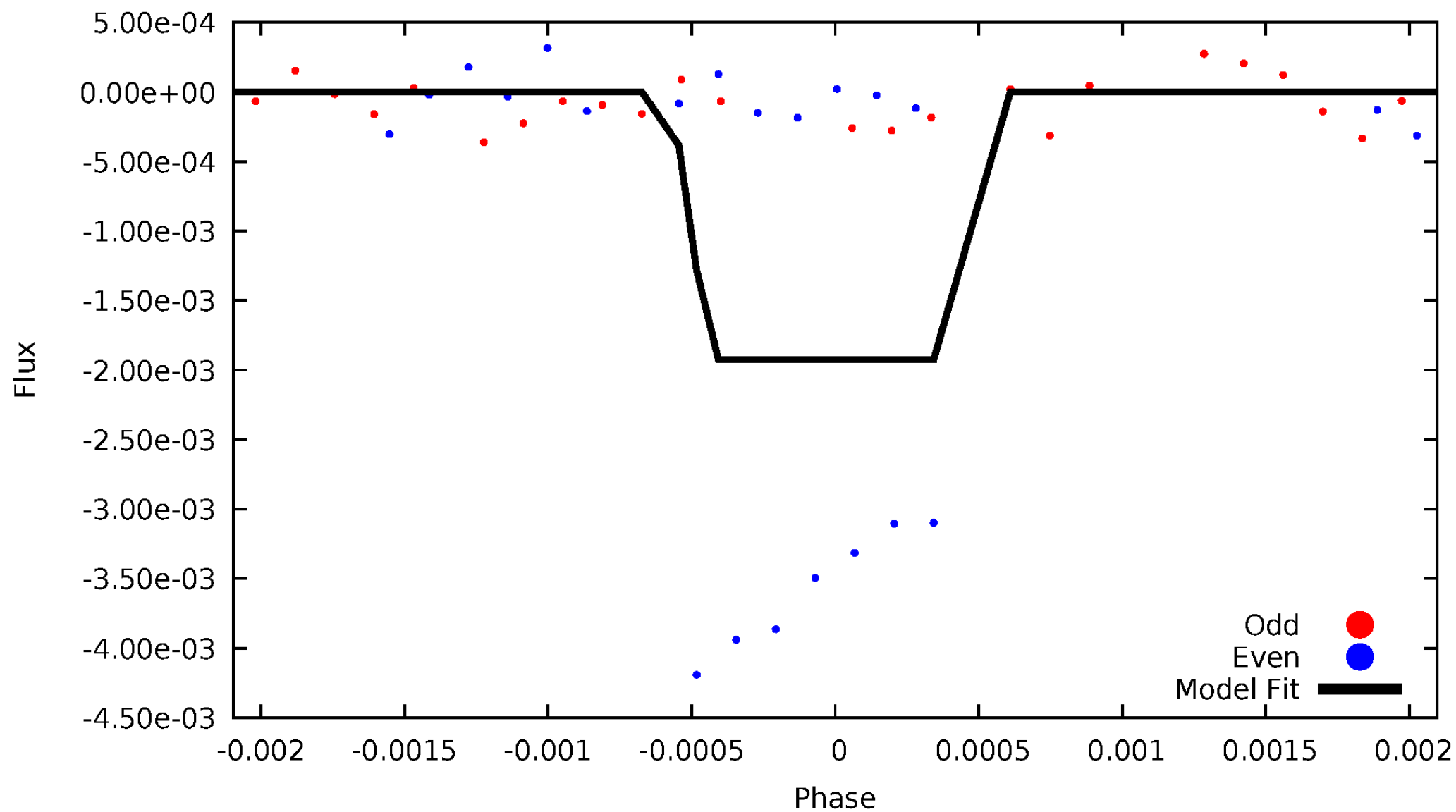
# DV Odd/Even

TCE 010847907-07

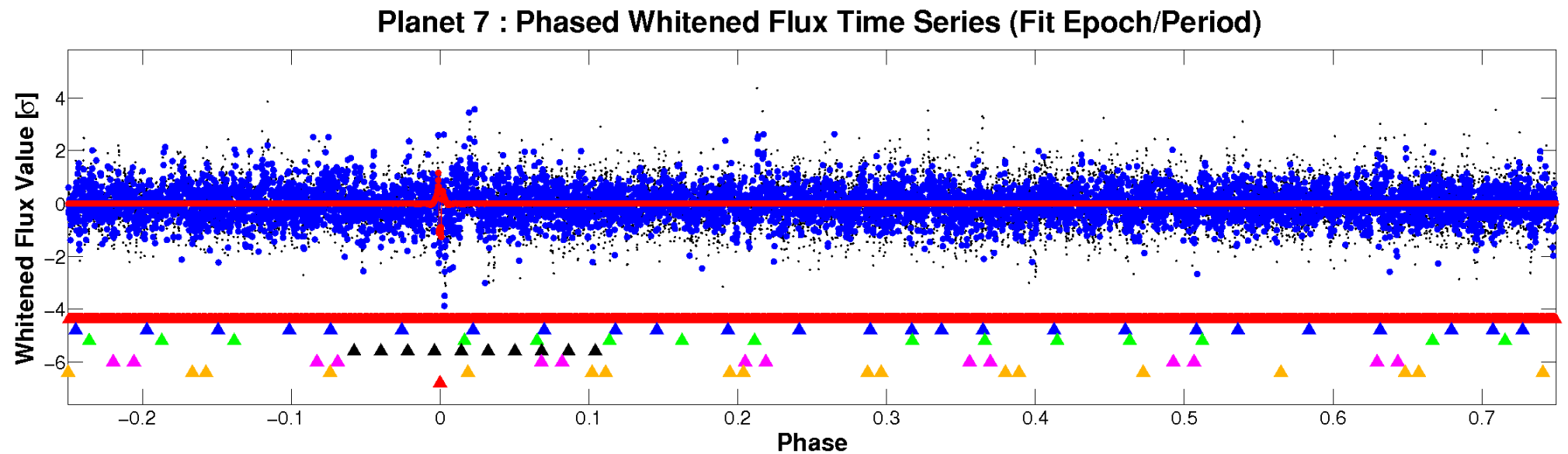
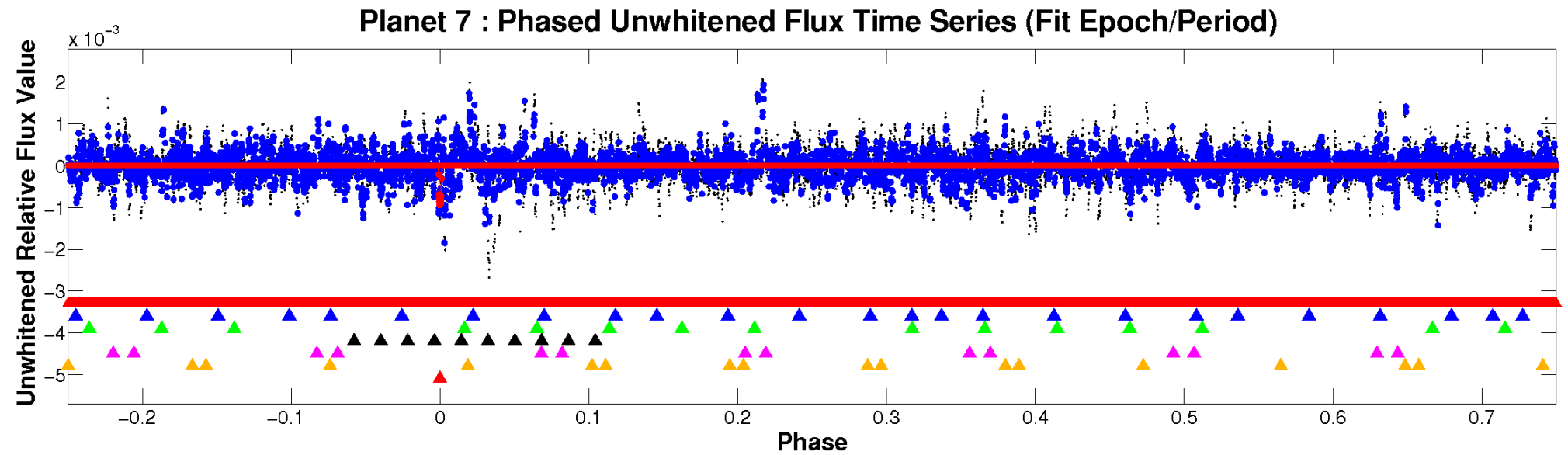


# ALT Odd/Even

TCE 010847907-07

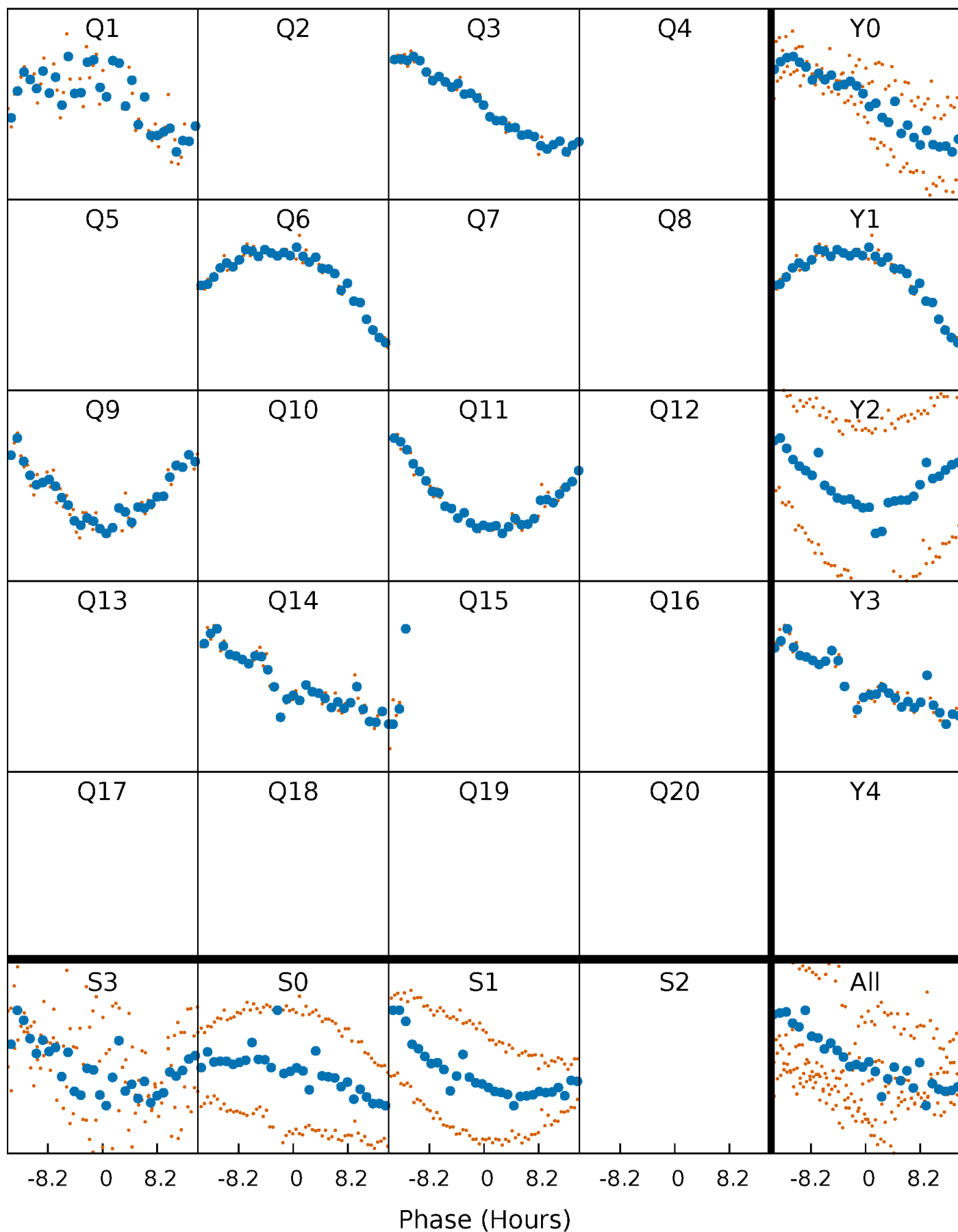


# Non-Whitened Vs. Whitened Light Curve



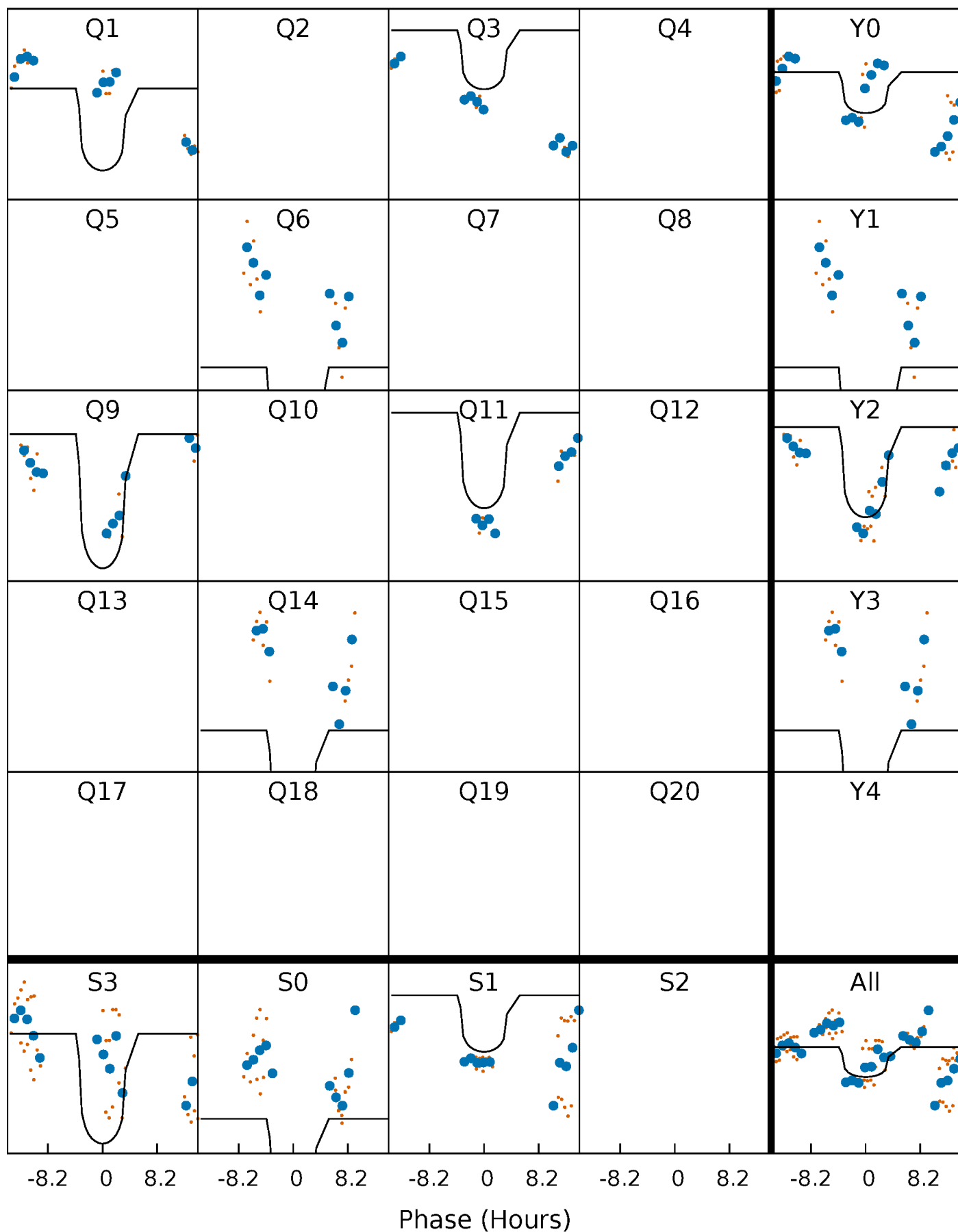
# PDC Quarter-Phased Transit Curves

TCE 010847907-07     $P=148.438162$  Days     $T_0=135.699589$  (BKJD)



# DV Quarter-Phased Transit Curves

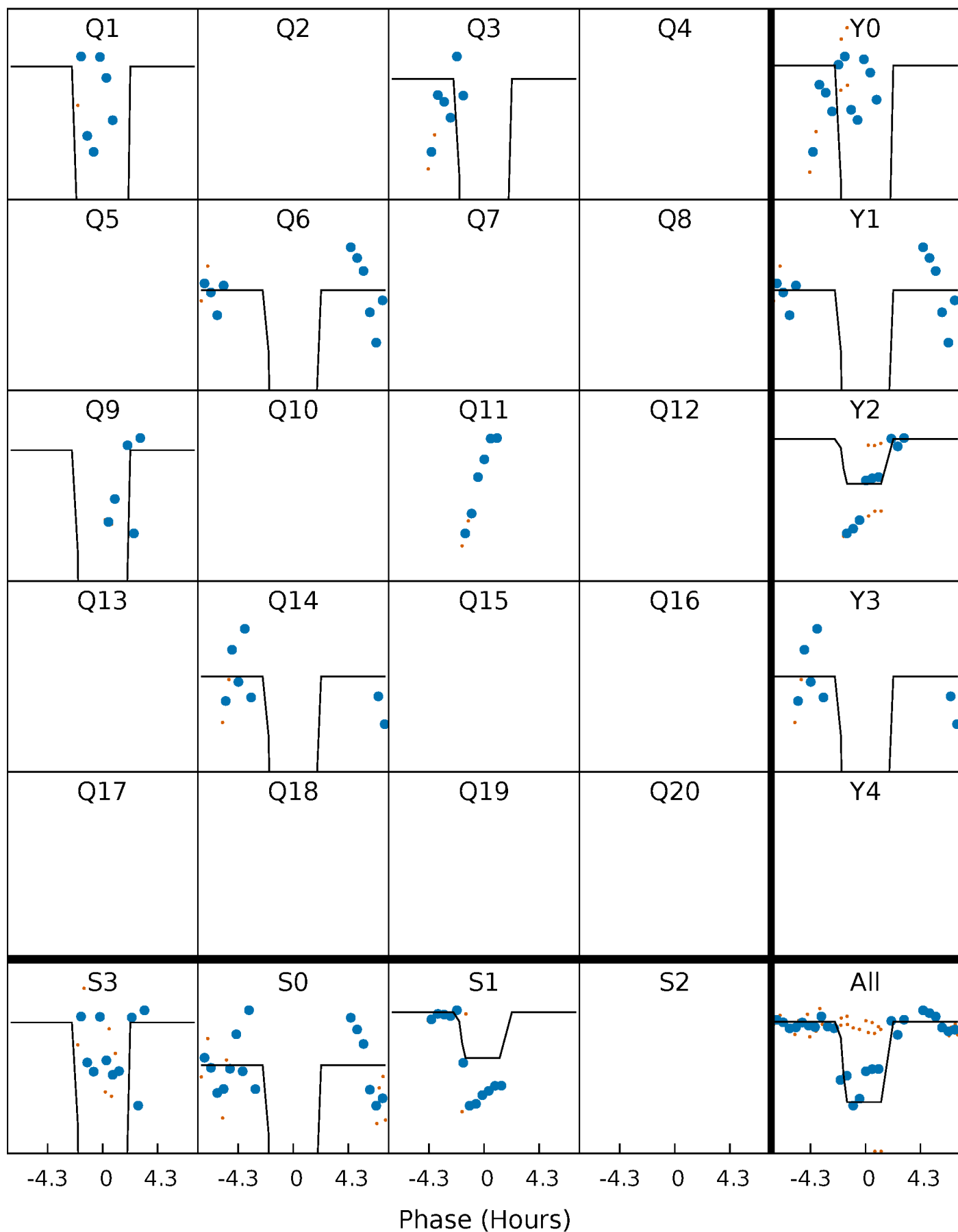
TCE 010847907-07     $P=148.438162$  Days     $T_0=135.699589$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

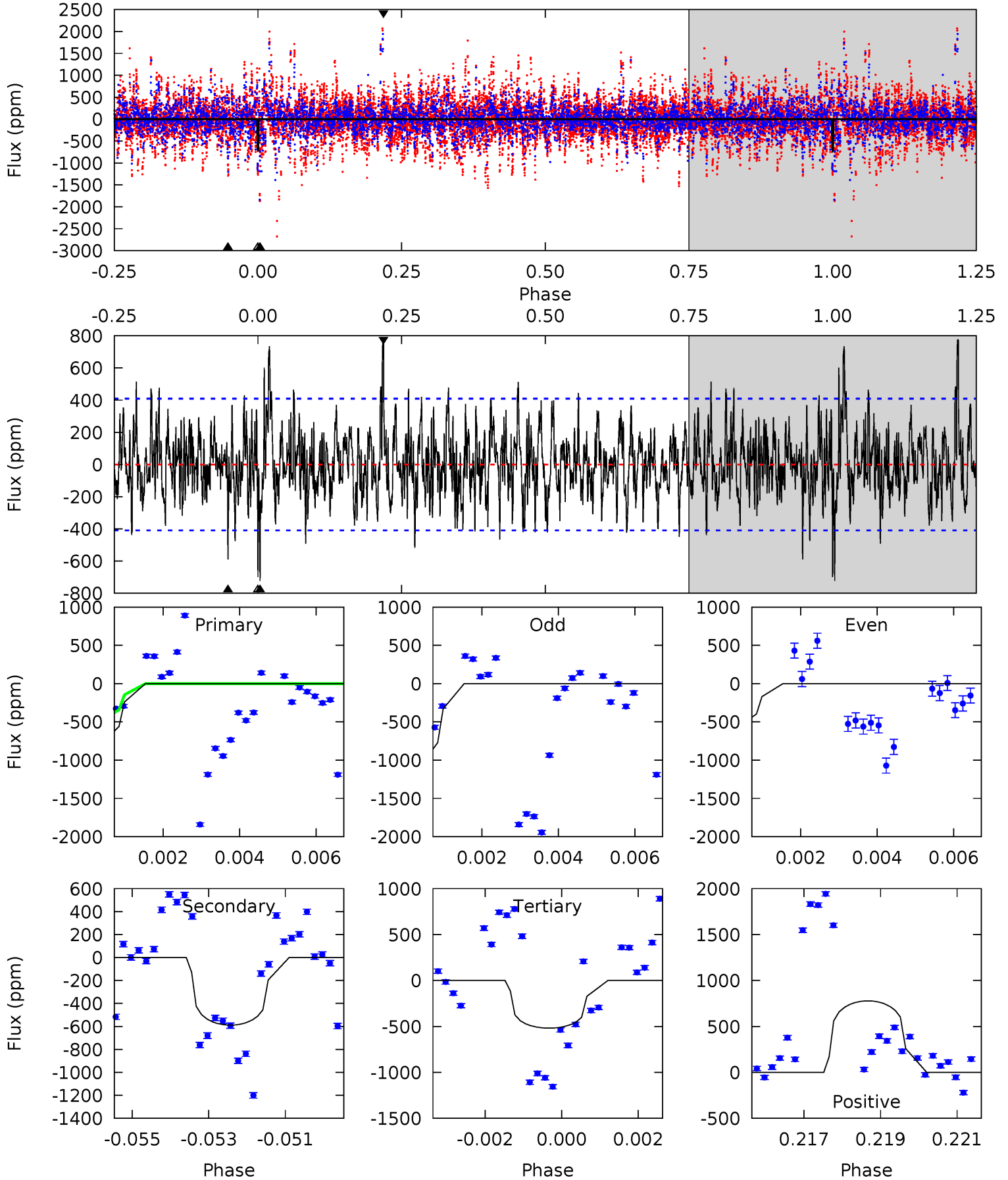
TCE 010847907-07     $P=148.428087$  Days     $T_0=135.761866$  (BKJD)



# DV Model-Shift Uniqueness Test

010847907-07, P = 148.438162 Days, E = 135.699589 Days

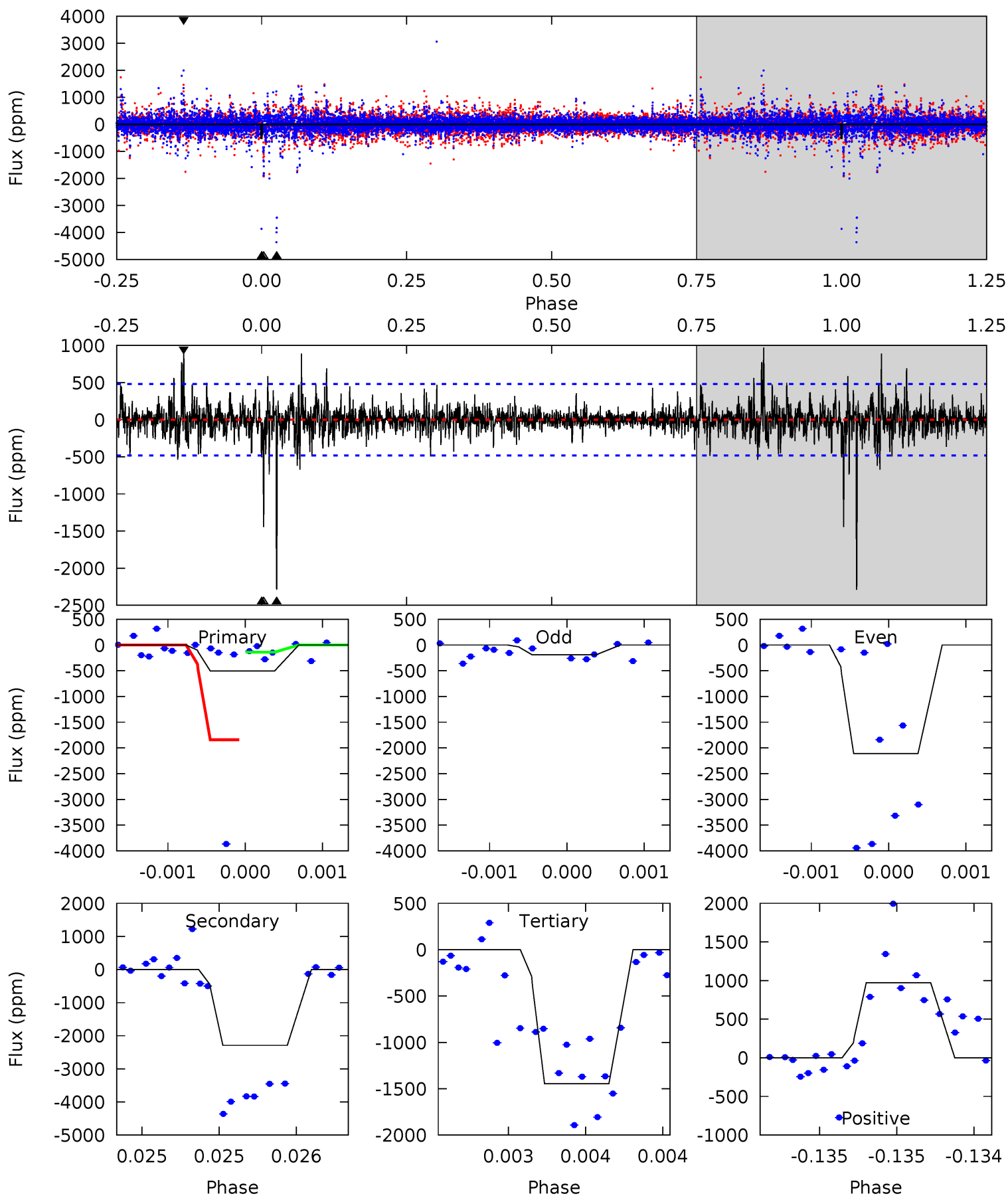
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.41	7.66	6.75	10.1	5.33	3.10	2.30	2.66	-0.72	0.91	-2.47	3.09	0.81	0.52	3.99



# Alt Model-Shift Uniqueness Test

010847907-07, P = 148.428087 Days, E = 135.761866 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
5.74	26.0	16.4	11.1	5.47	3.33	1.56	-10.7	-5.31	9.61	15.0	11.3	6.72	0.30	9.65



### Stellar Parameters For KIC 010847907

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6328^{+177}_{-243}$	$4.035^{+0.276}_{-0.161}$	$0.080^{+0.250}_{-0.300}$	$1.864^{+0.536}_{-0.655}$	$1.374^{+0.190}_{-0.285}$	$0.299^{+0.555}_{-0.139}$
	+3%/-4%	+7%/-4%	+312%/-375%	+29%/-35%	+14%/-21%	+186%/-46%
Source	PHO54	PHO54	PHO54	DSEP		

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

### Secondary Eclipse Parameters for KIC 010847907-07 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-589 \pm 77$	$14.09^{+14.74}_{-9.96}$	$671^{+53}_{-65}$	$3984^{+2871}_{-841}$	$611^{+6525}_{-469}$
Alt.	$-2290 \pm 88$	$16.91^{+15.62}_{-11.47}$	$672^{+53}_{-60}$	$4798^{+3727}_{-1000}$	$1591^{+14054}_{-1144}$

$T_{max}$  = 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

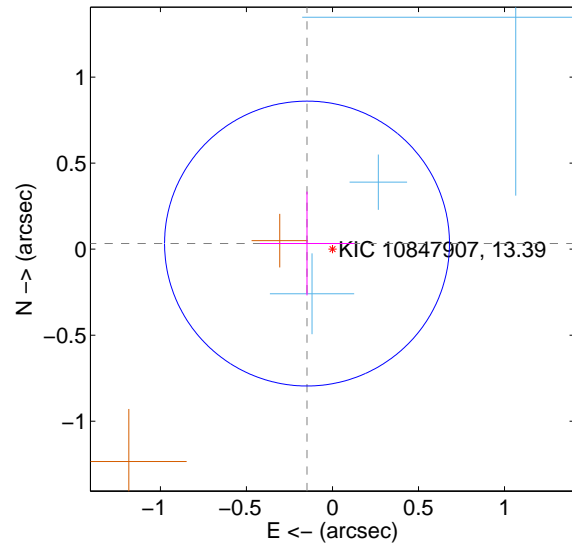
Supplemental centroid analysis for 010847907-07. Kepler magnitude: 13.39. Transit SNR 5.67

There are 3 quarters with good PRF difference image offsets

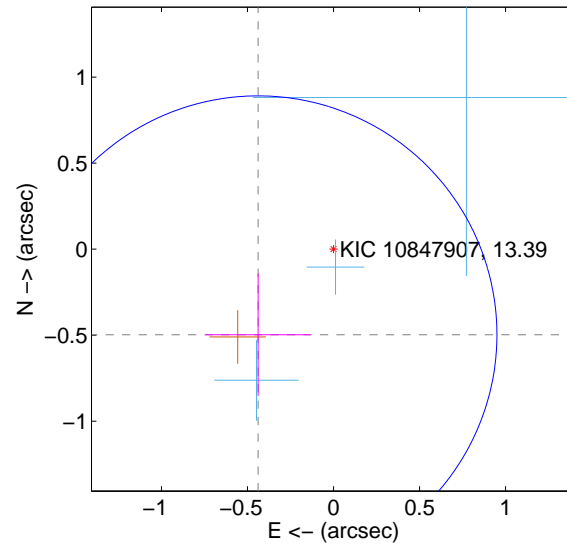
The direct PRF centroid is offset from the target star catalog position by about 0.56 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.151 \pm 0.276$	0.55	$0.148 \pm 0.275$	$0.033 \pm 0.301$
PRF-fit source offset from KIC position	$0.663 \pm 0.463$	1.43	$0.438 \pm 0.305$	$-0.497 \pm 0.356$
photometric centroid source offset	$0.37 \pm 0.27$	1.41	$-0.22 \pm 0.29$	$-0.30 \pm 0.25$

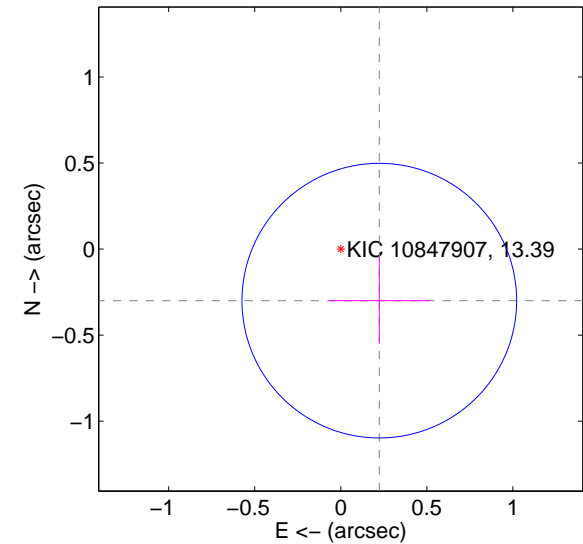
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

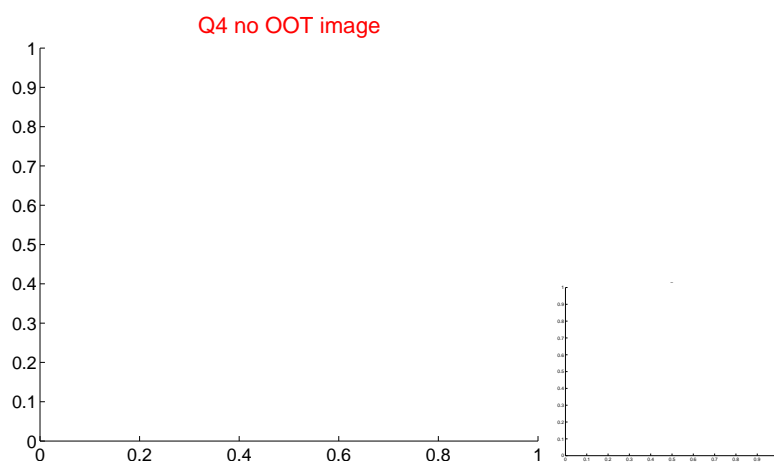
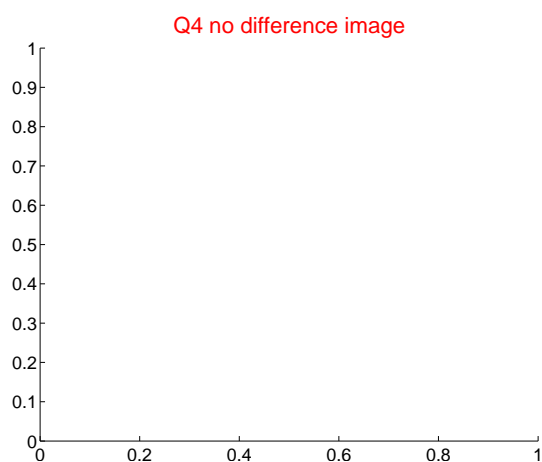
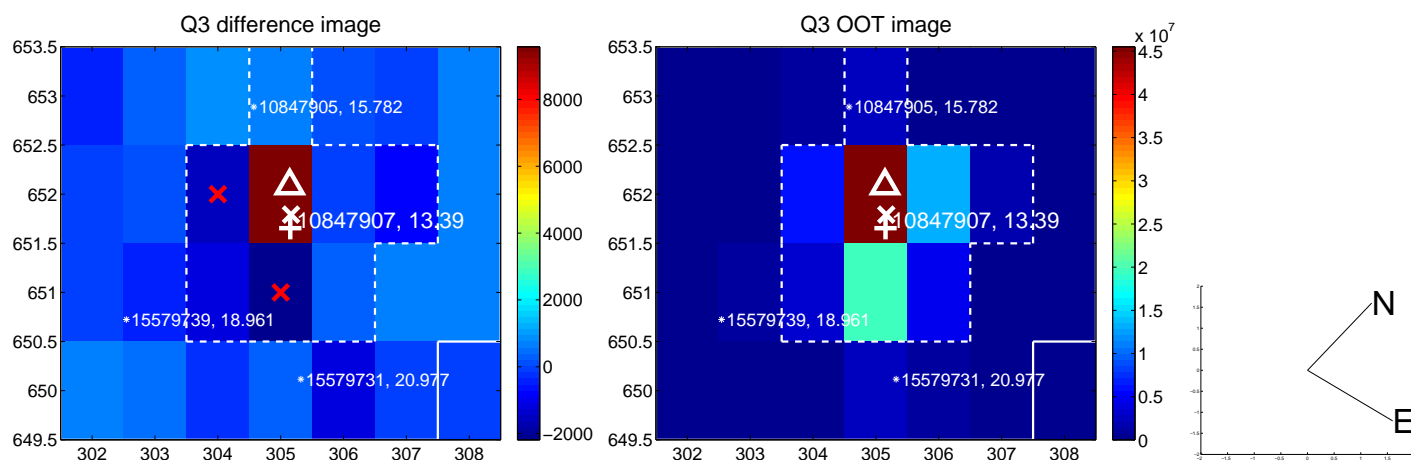
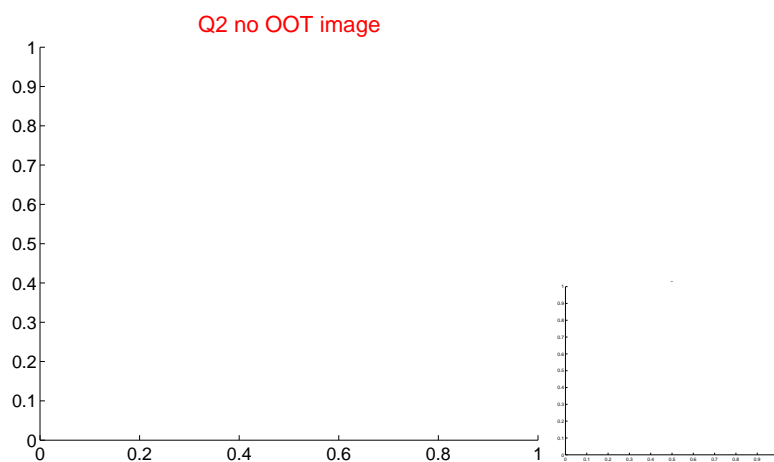
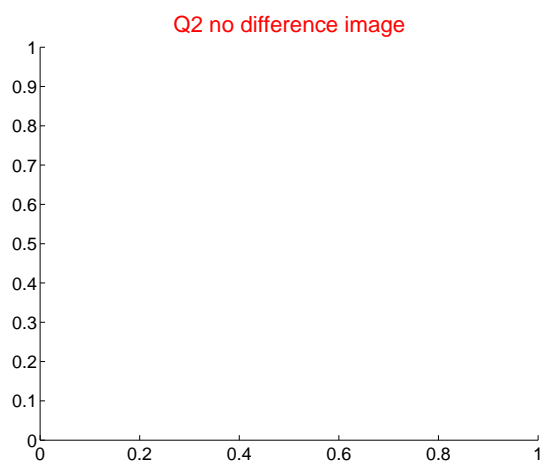
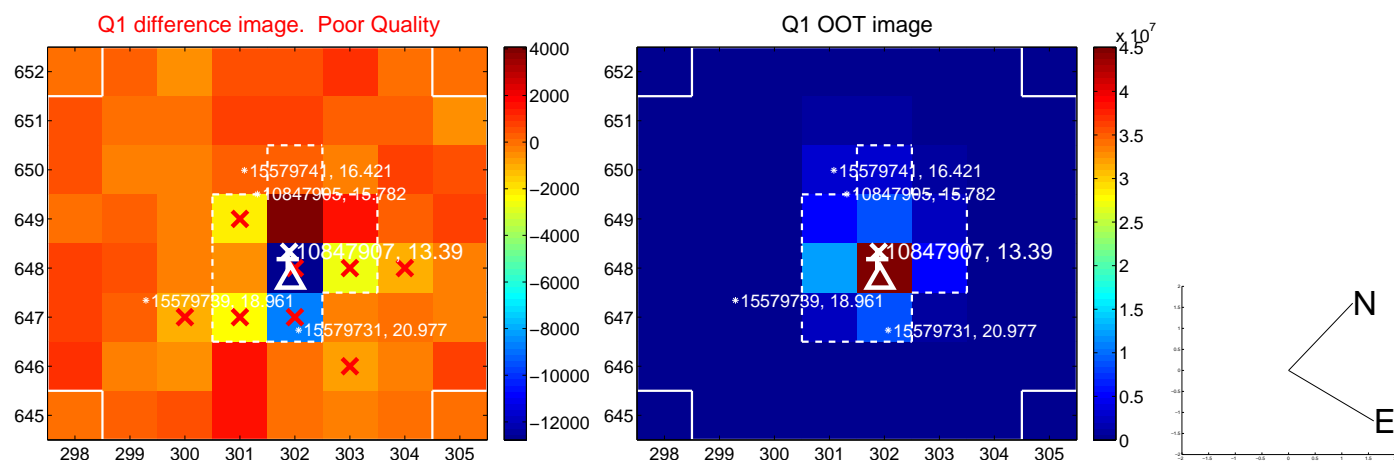


offset from photometric centroids



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.

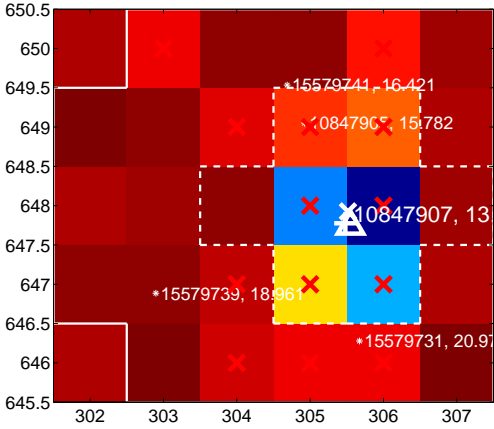
Q5 no difference image



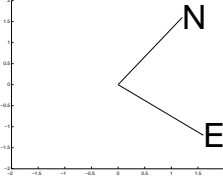
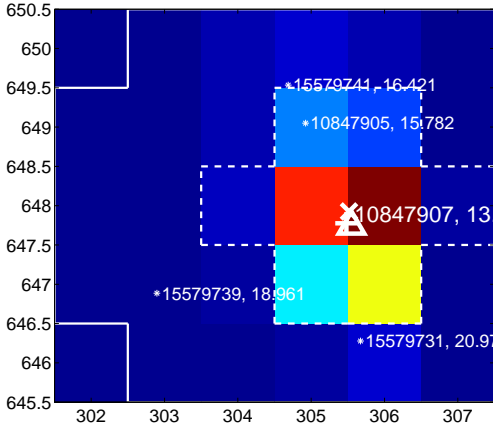
Q5 no OOT image



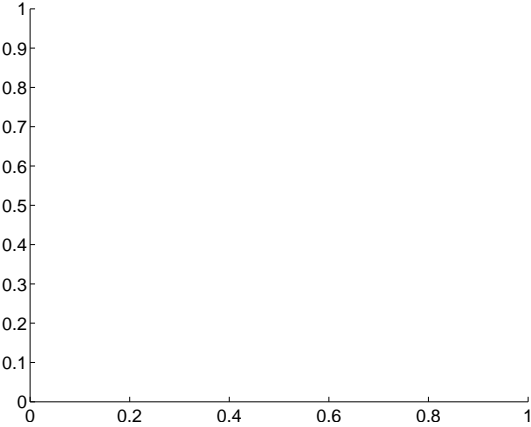
Q6 difference image. Poor Quality



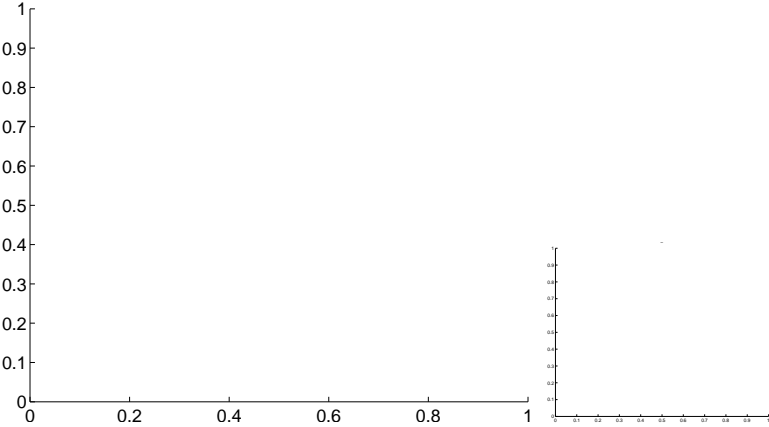
Q6 OOT image



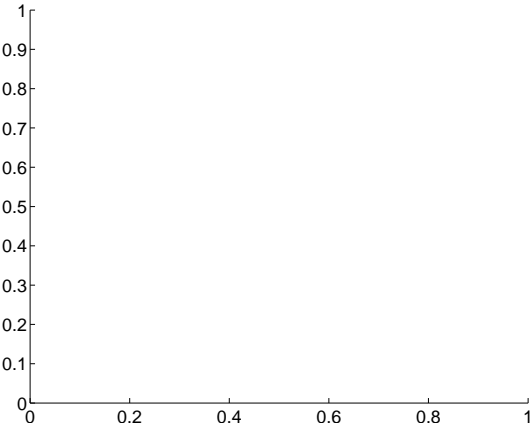
Q7 no difference image



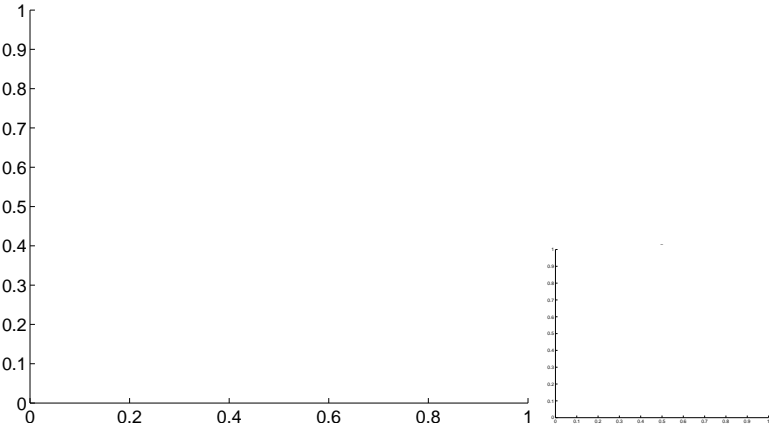
Q7 no OOT image



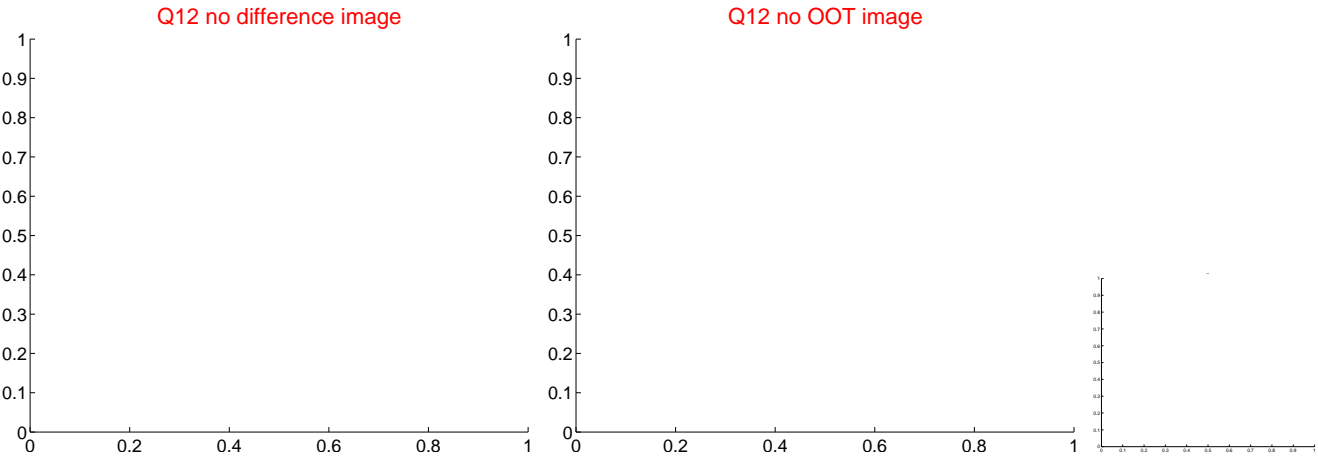
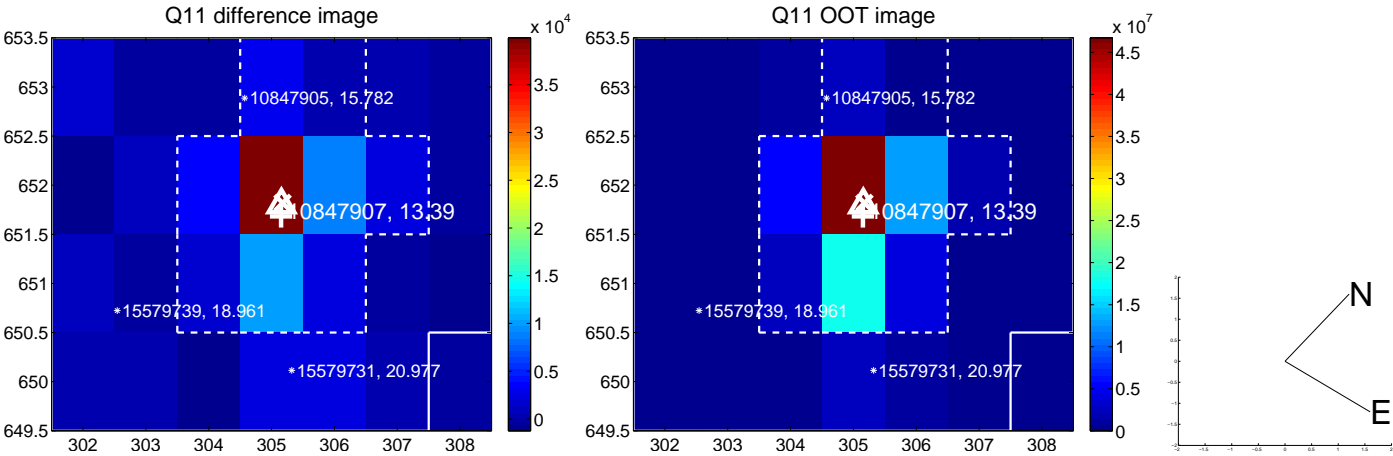
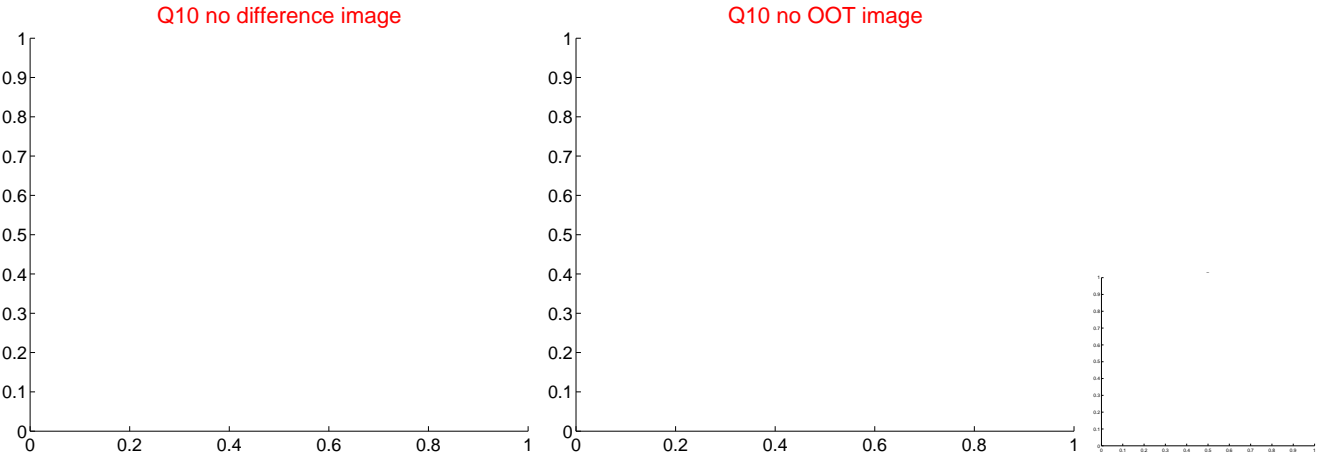
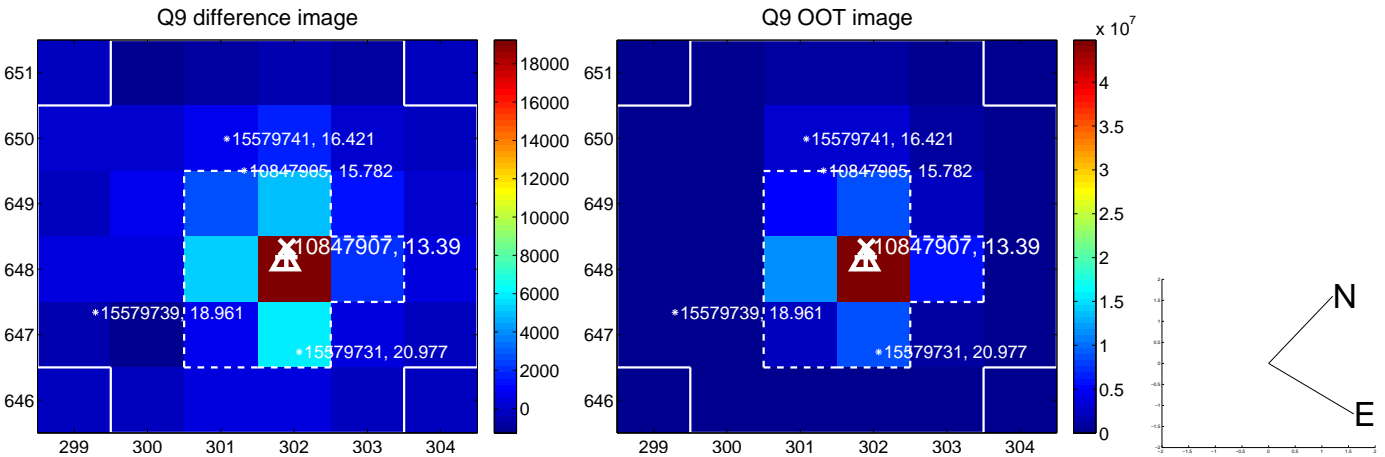
Q8 no difference image



Q8 no OOT image

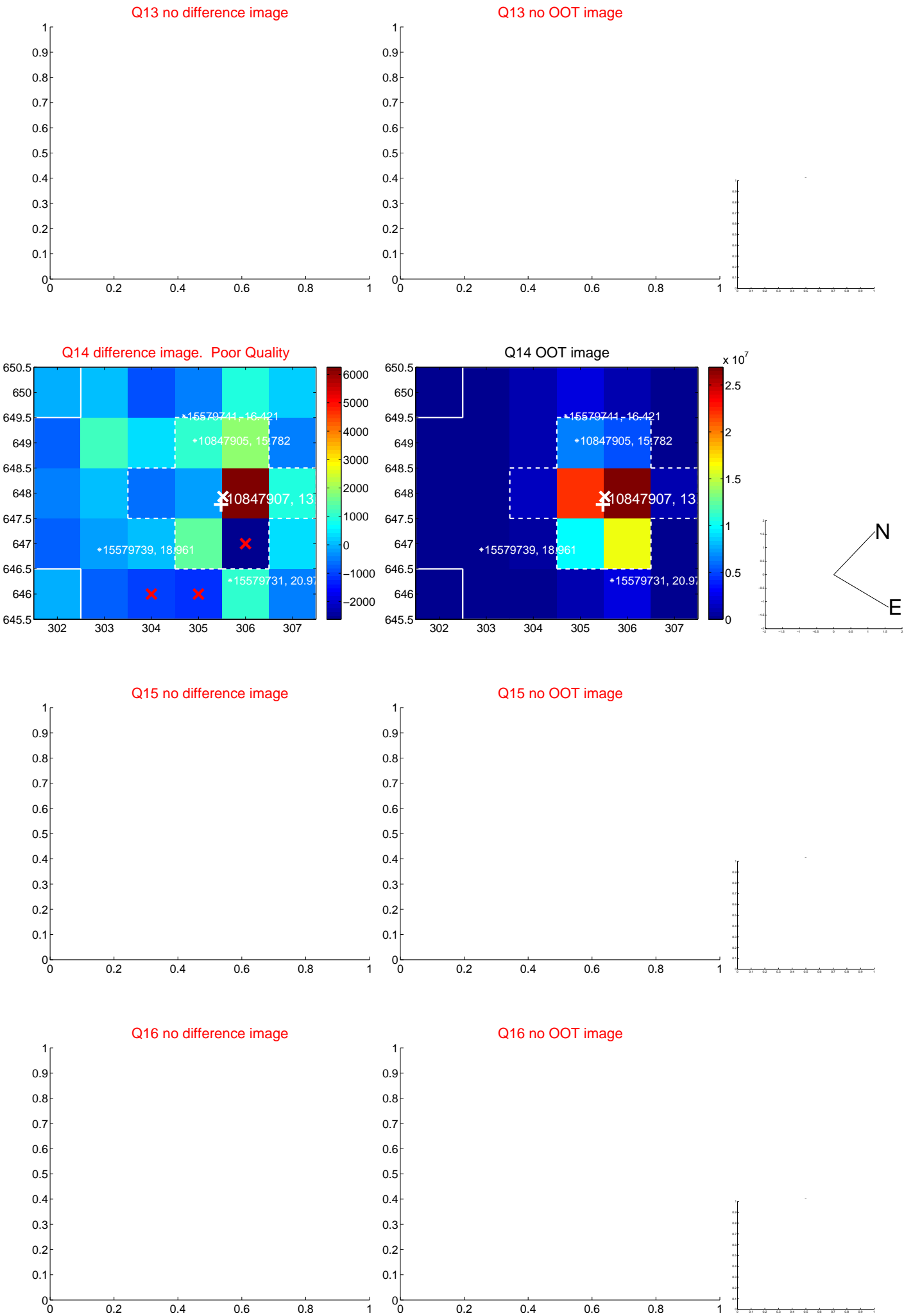


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

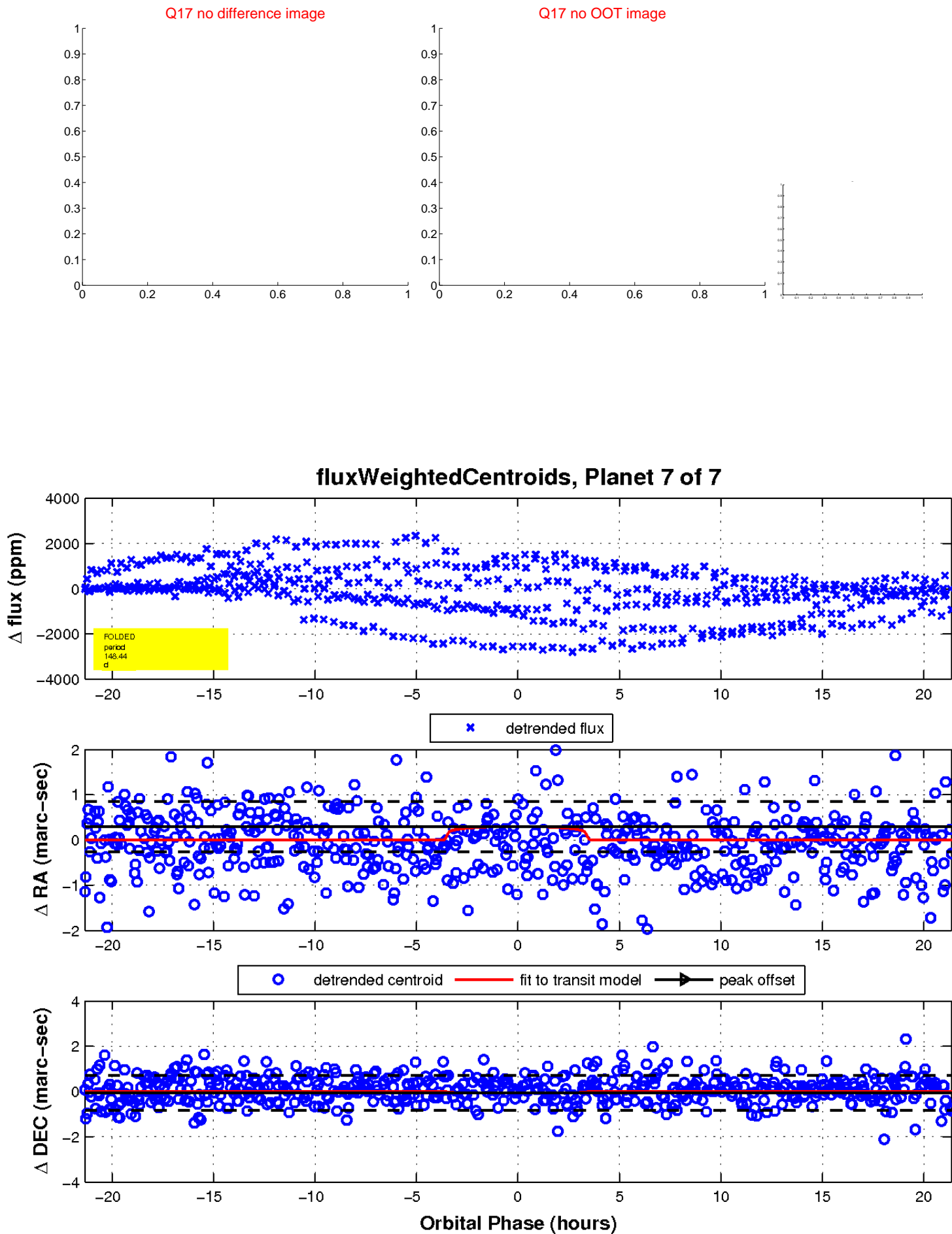




white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



UKIRT Image

Declination

