

KIC 010749841

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})
010749841-01	OBS	No	0.890472	131.975260	23.3	6.849	8.1	8.7	1.07	6193	0.52	4218.07
010749841-02	OBS	No	2.027140	132.158913	21.0	10.459	14.3	3.7	1.07	6193	0.58	1408.52

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010749841-01	OBS	FP	0.00	1	0	1	1	LPP_DV—CENT_RESOLVED_OFFSET—EPHEM_MATCH
010749841-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS

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

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

See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

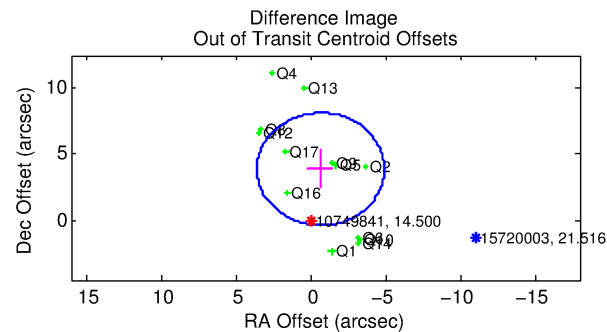
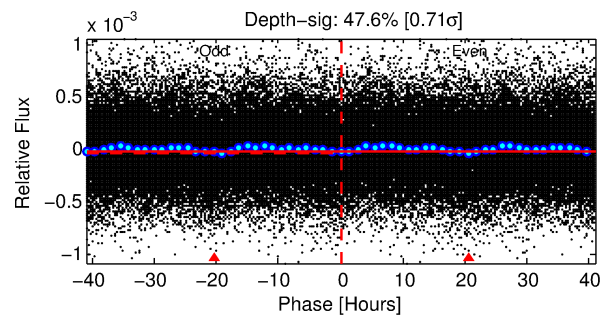
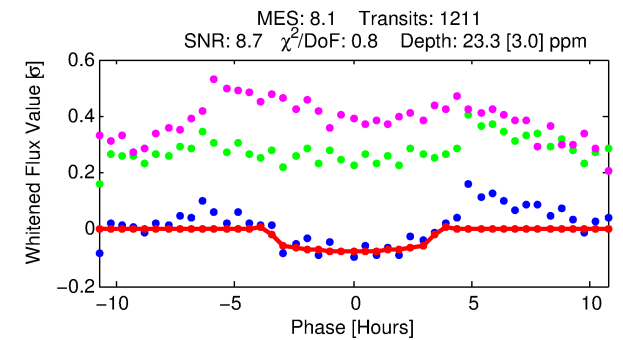
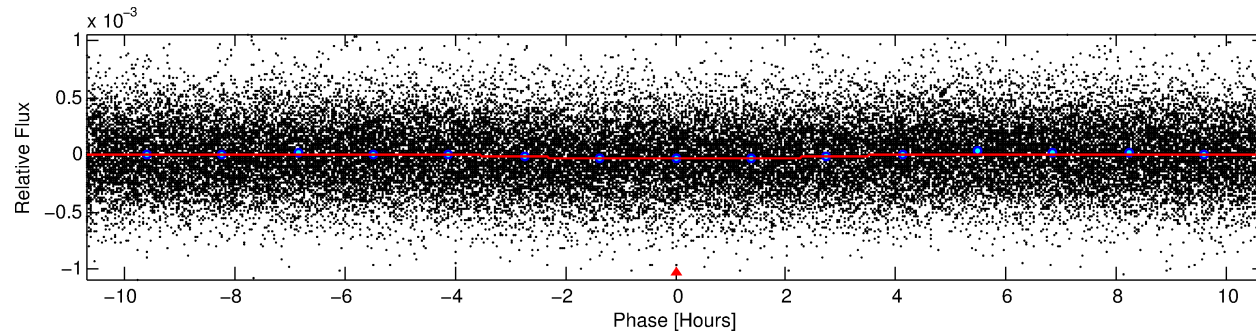
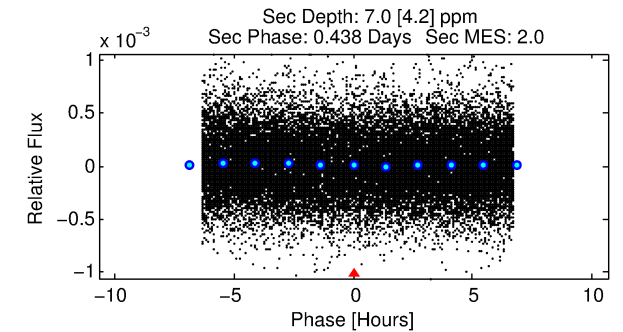
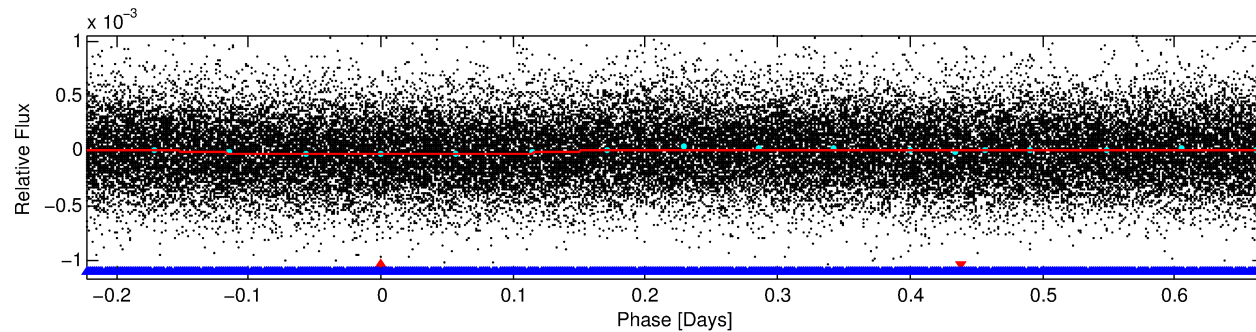
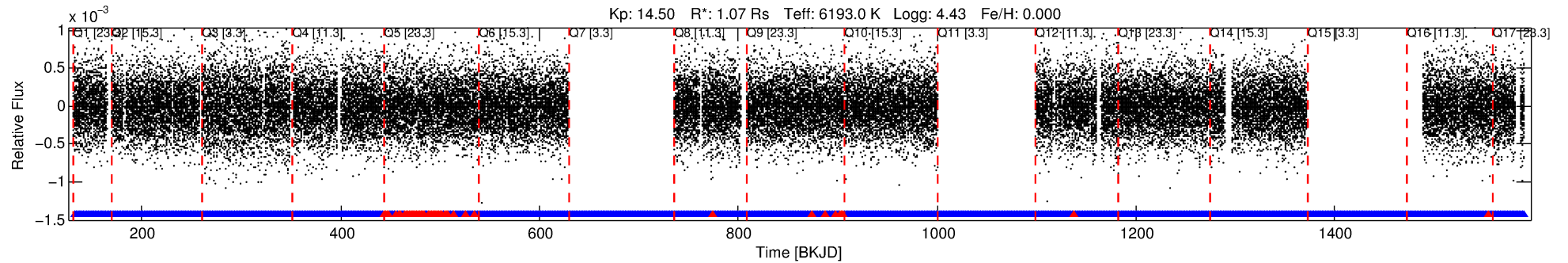
Ephemeris Match Information For 010749841-01

TCE (1)	KIC	Parent (2)	Parent KIC	$P_1:P_2$	Dist (μ)	Δ Row	Δ Col	m_2	m_1	D_2/D_1	Mechanism	Flag	σ_P	σ_T
010749841-01	10749841	010749766-01	10749766	1:1	38.2	-9	3	14.64	14.50	1.48	Direct-PRF	1	3.15	3.47

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

DV One-Page Summary

KIC: 10749841 Candidate: 1 of 2 Period: 0.890 d



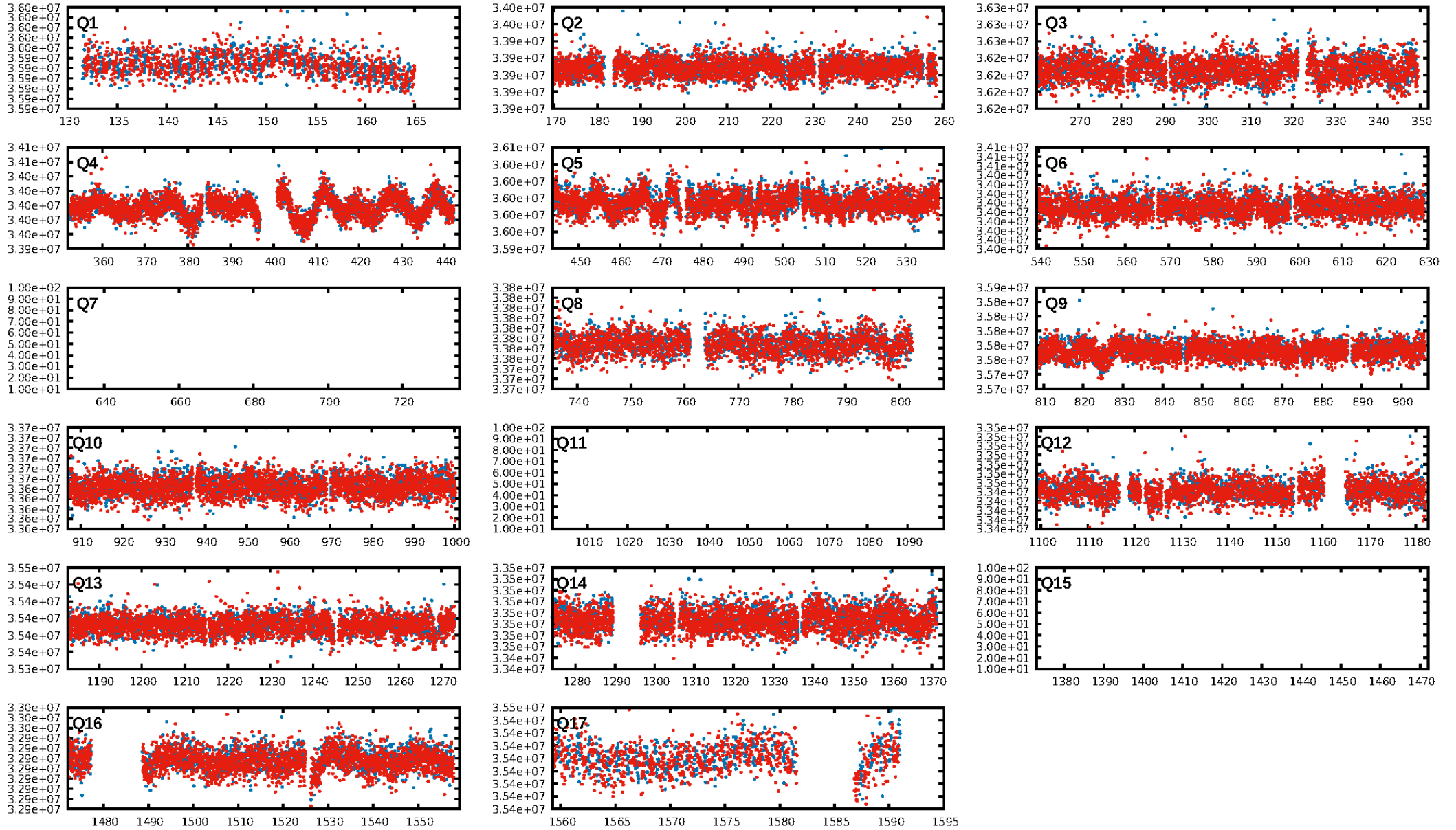
DV Fit Results:

Period = 0.89047 [0.00002] d
Epoch = 131.9753 [0.0083] BKJD
Rp/R* = 0.0044 [0.0074]
a/R* = 1.18 [2.77]
b = 0.17 [47.60]
Seff = 4218.08 [1806.03]
Teff = 2055 [220] K
Rp = 0.52 [0.88] Re
a = 0.0189 [0.0052] AU
Ag = 5.13 [17.60] [0.23σ]
Teffp = 4781 [4077] K [0.67σ]

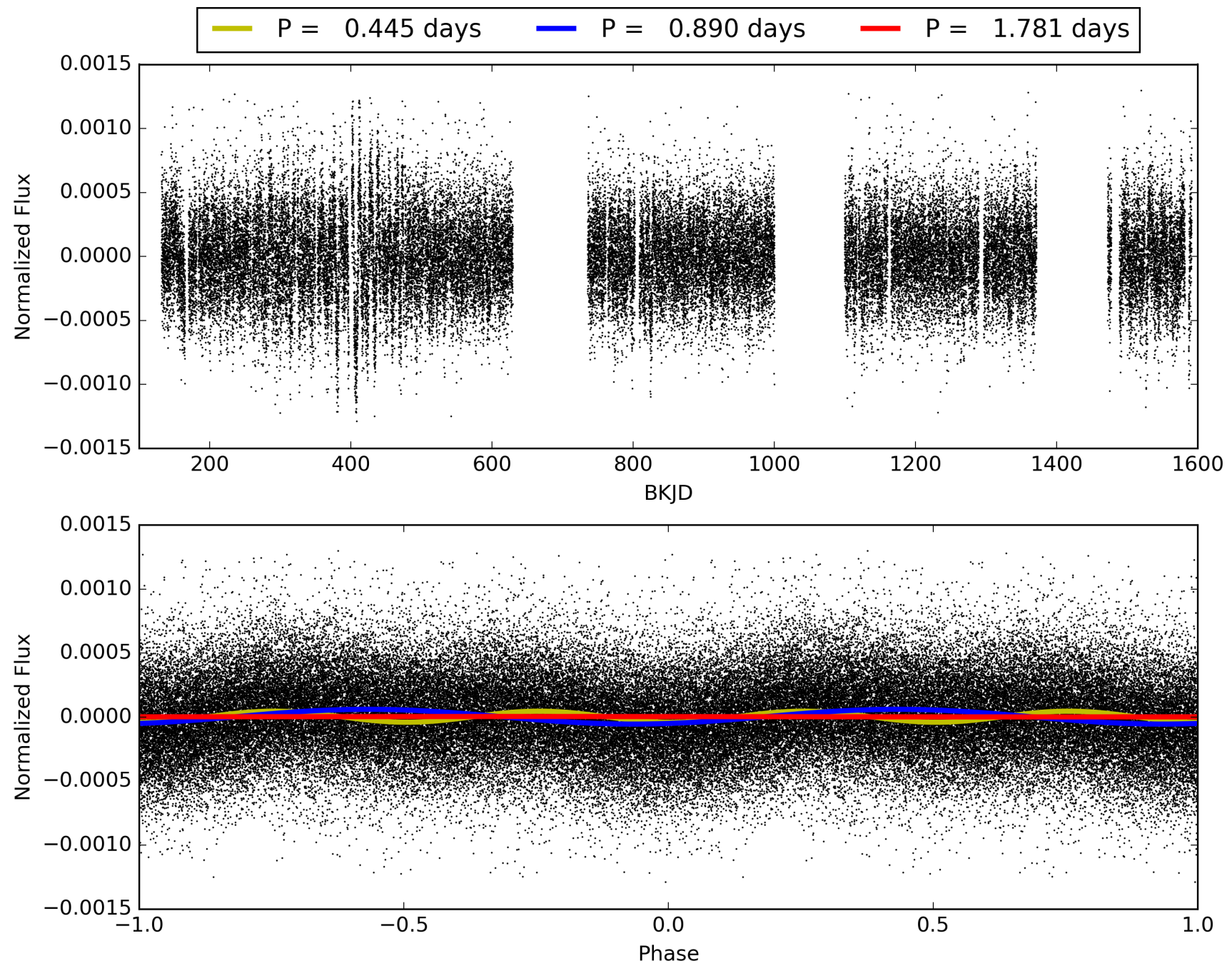
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 97.1% [2.18σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 9.87e-02
RollingBand-fgt: 0.95 [1083/1142]
GhostDiagnostic-chr: 0.847
Centroid-sig: 0.0%
Centroid-so: 5.958 arcsec [3.27σ]
OotOffset-rm: 3.945 arcsec [2.78σ]
KicOffset-rm: 3.934 arcsec [2.78σ]
OotOffset-st: 4/0/4/5 [13]
KicOffset-st: 4/0/4/5 [13]
DiffImageQuality-fgm: 0.15 [2/13]
DiffImageOverlap-fno: 1.00 [14/14]

TCE 010749841-01, PDC Light Curves

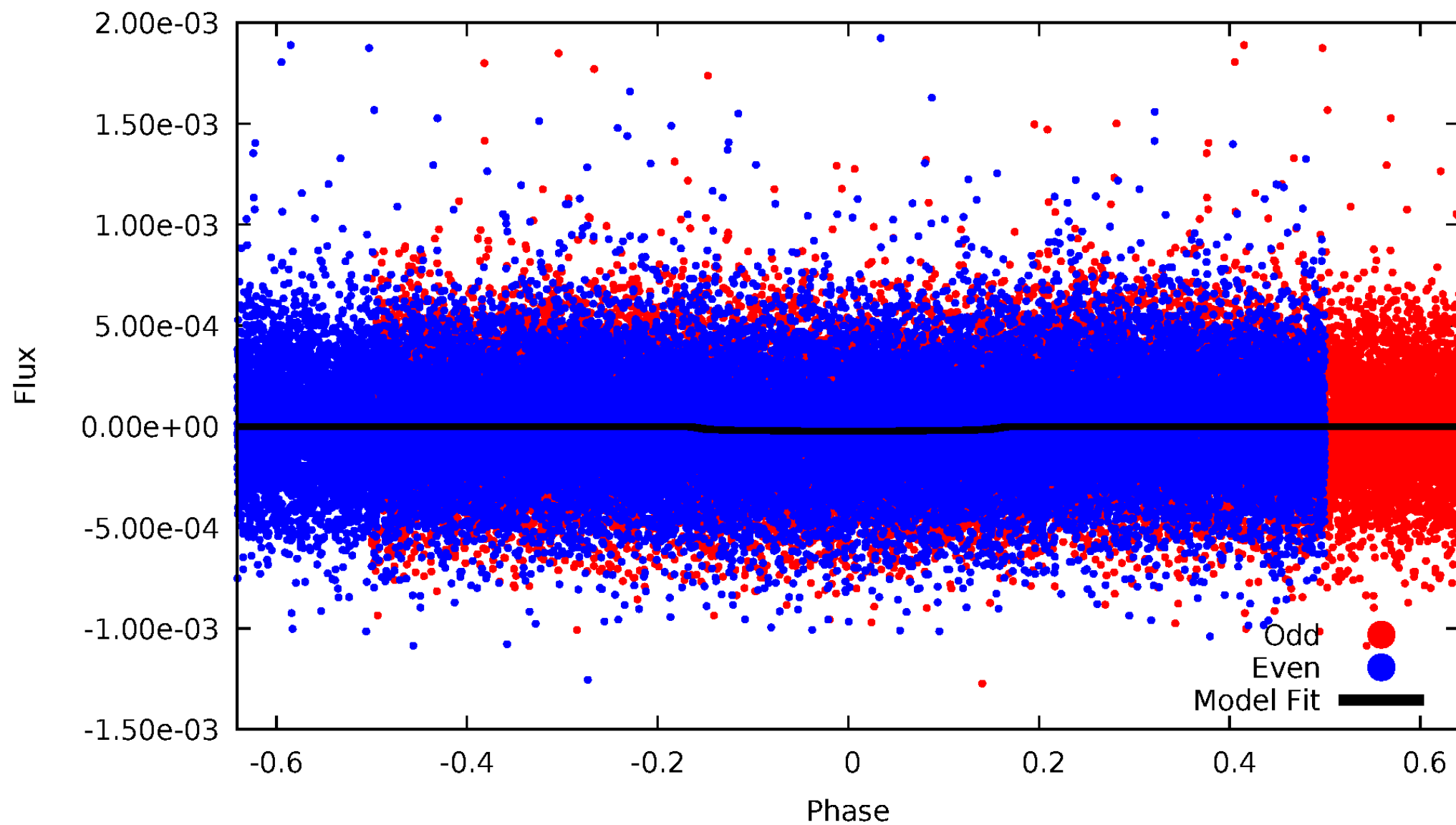


TCE 010749841-01



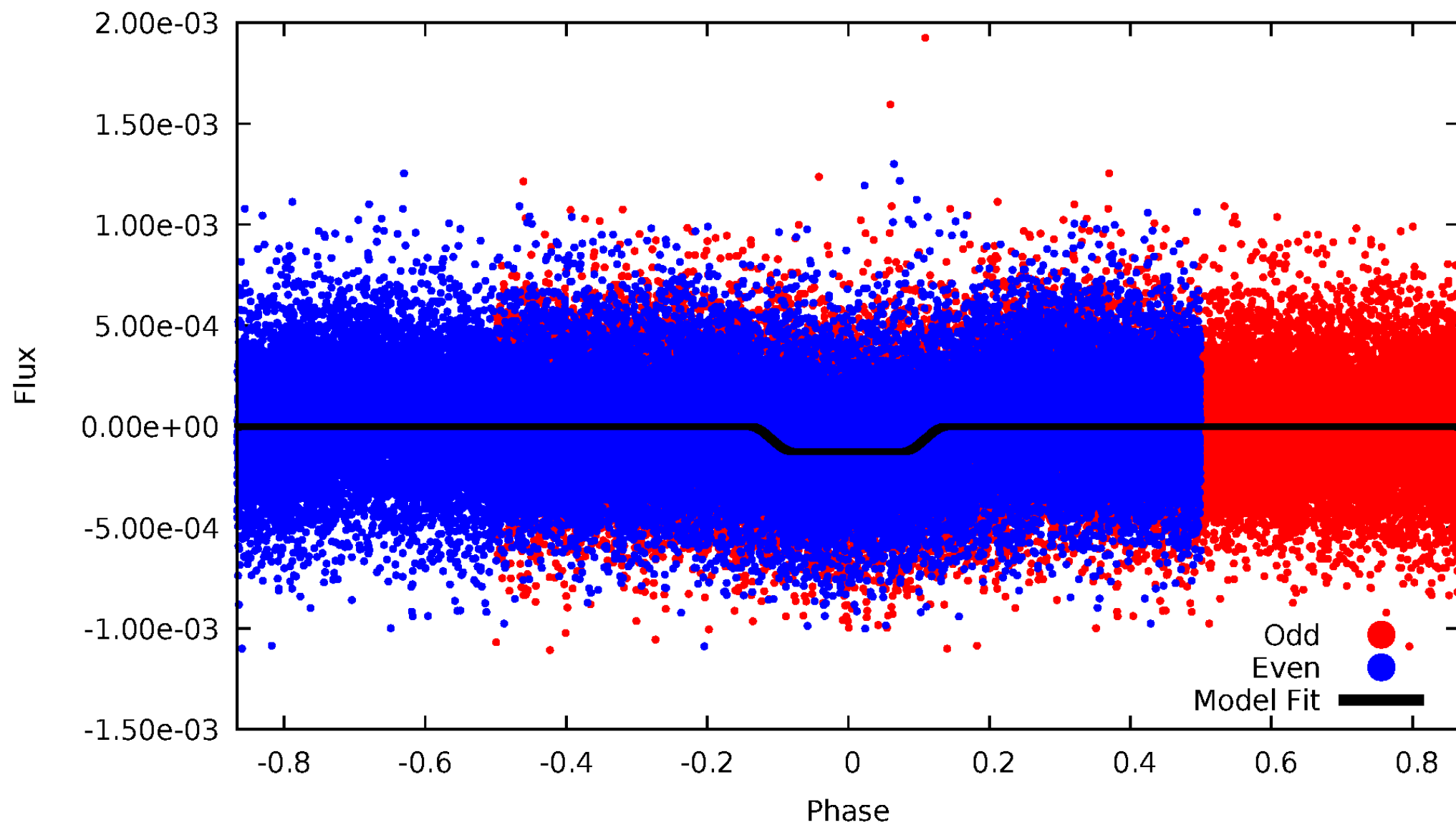
DV Odd/Even

TCE 010749841-01



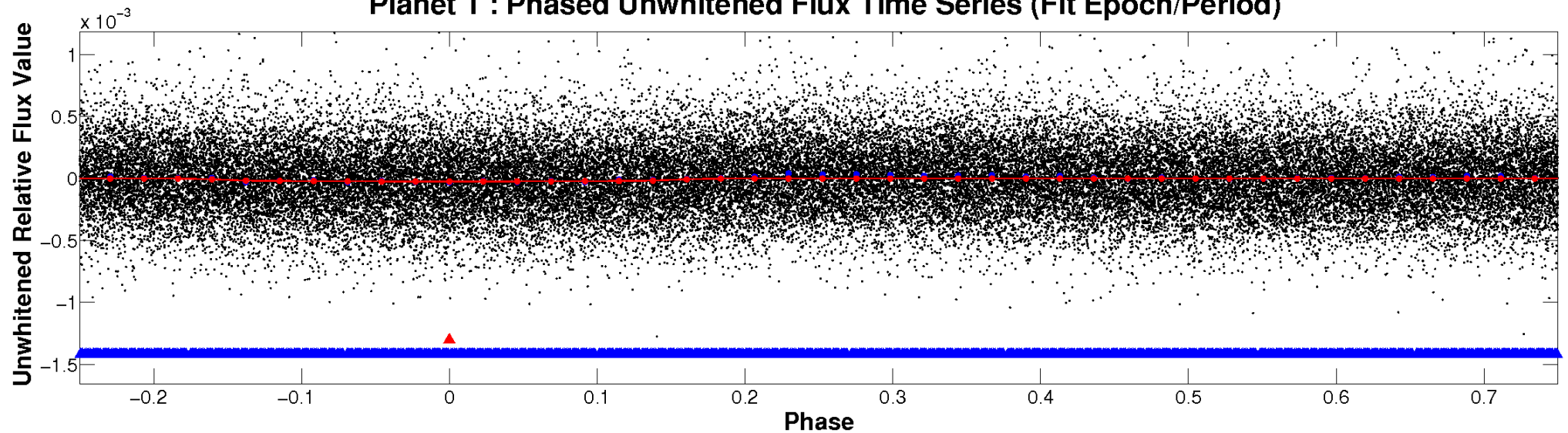
ALT Odd/Even

TCE 010749841-01

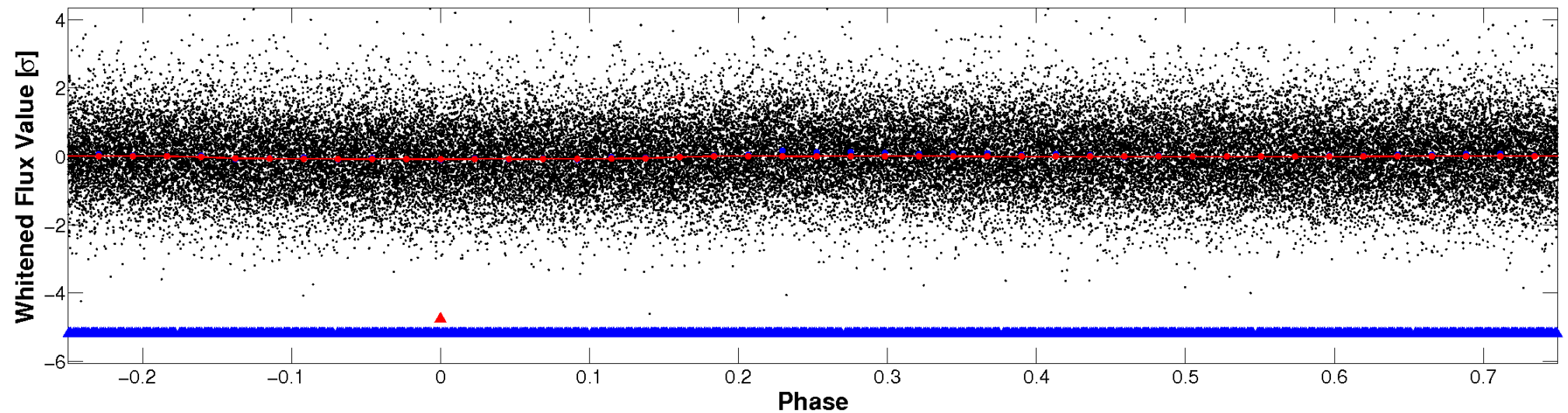


Non-Whitened Vs. Whitened Light Curve

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

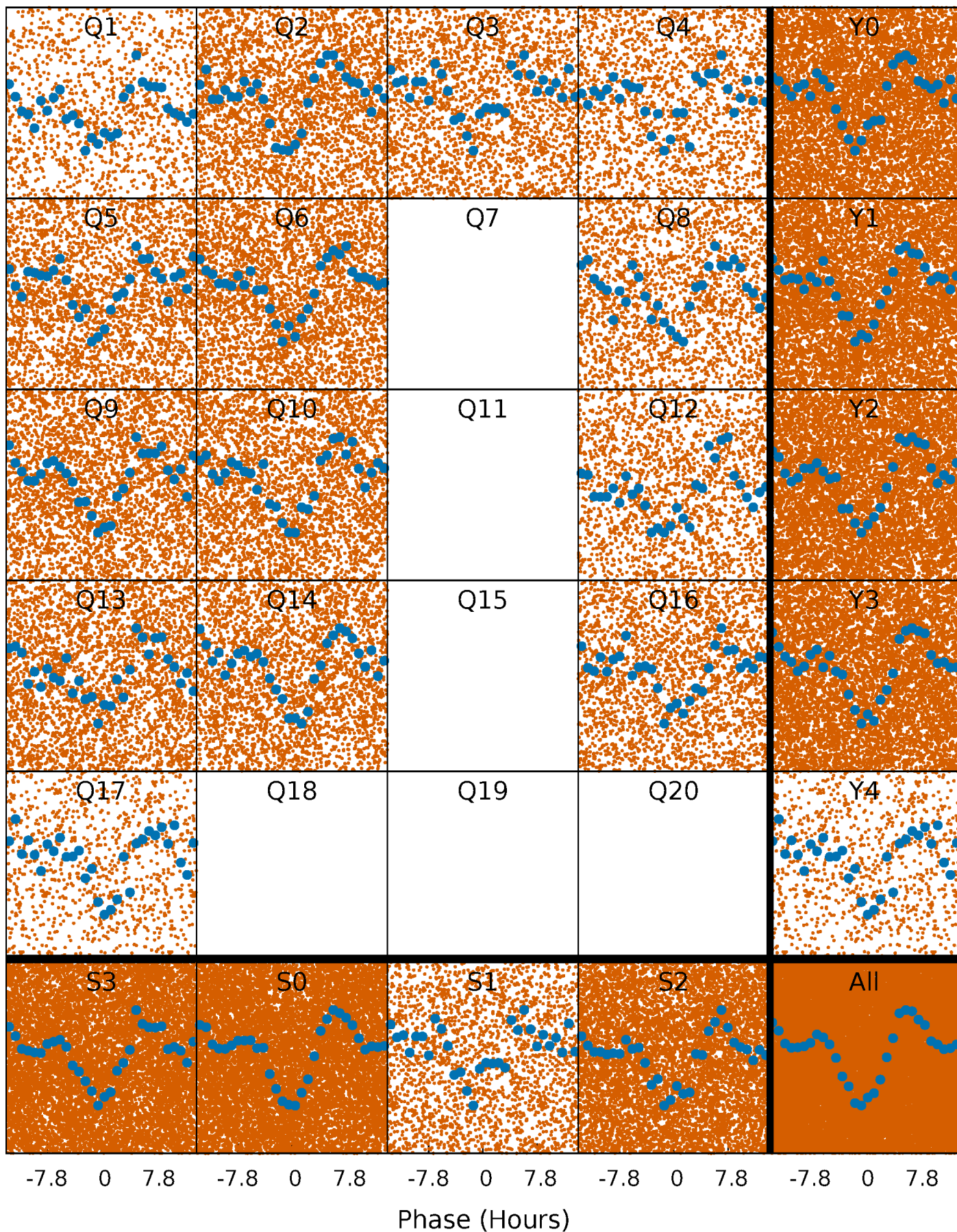


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



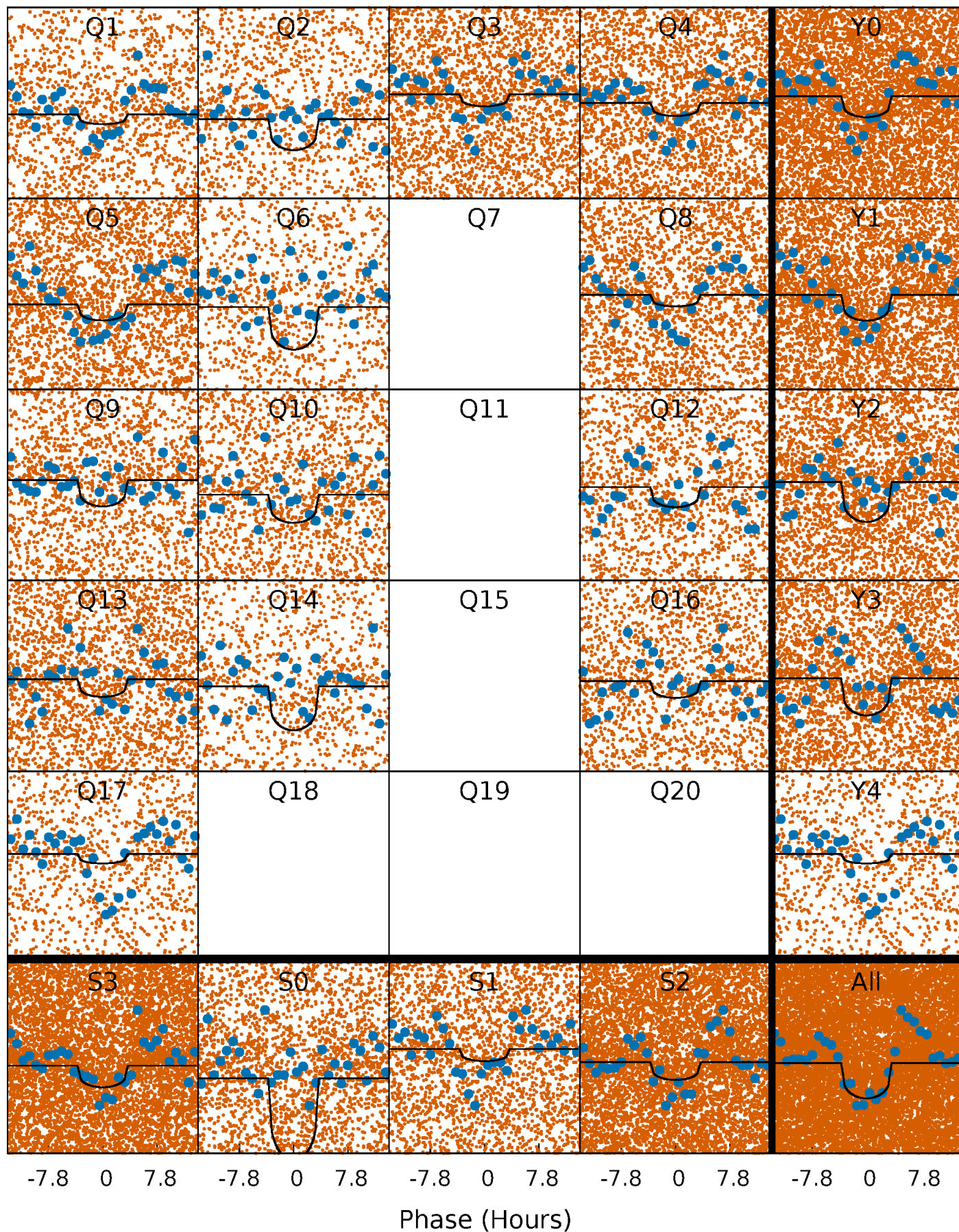
PDC Quarter-Phased Transit Curves

TCE 010749841-01 P= 0.890472 Days $T_0=131.975260$ (BKJD)



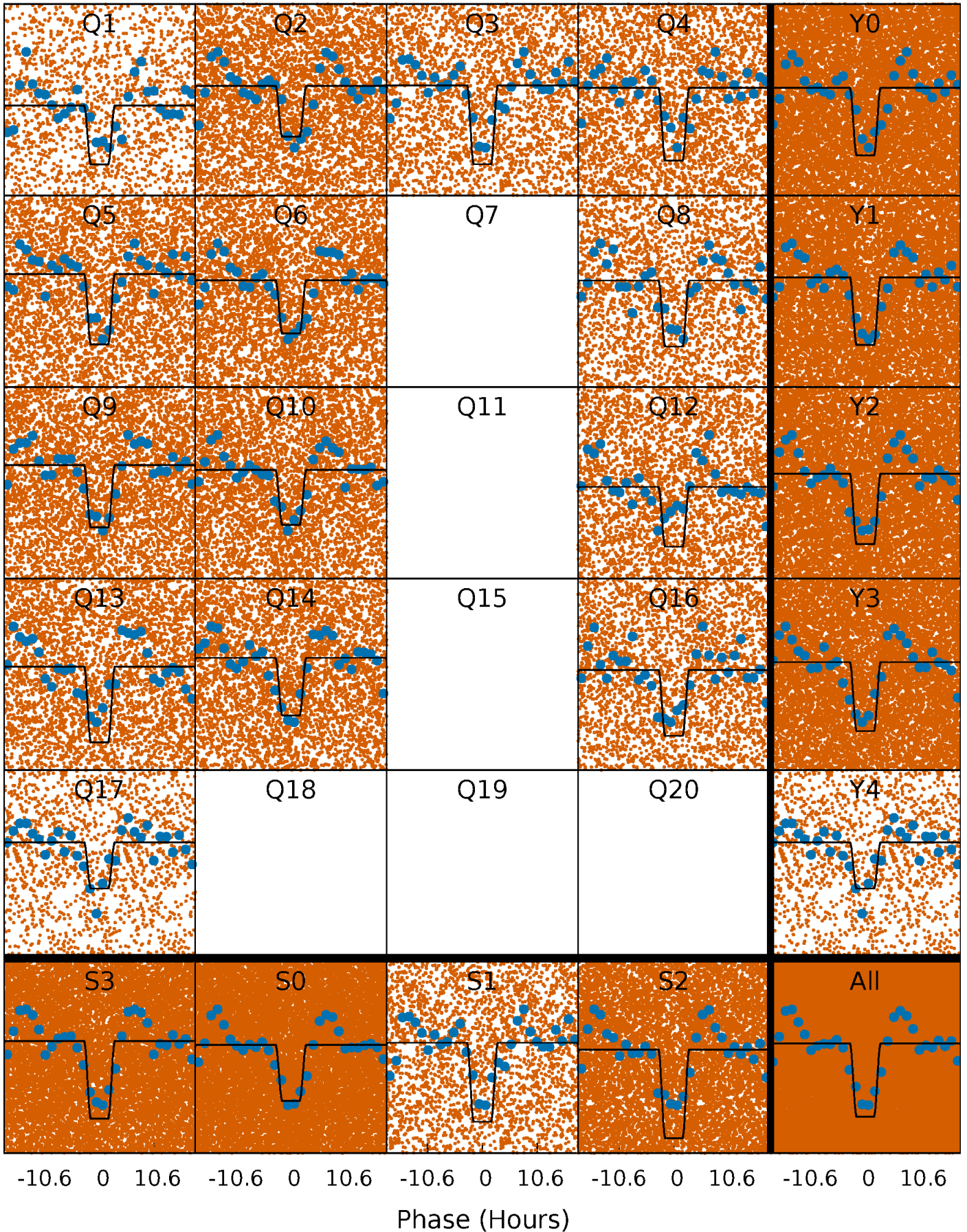
DV Quarter-Phased Transit Curves

TCE 010749841-01 P= 0.890472 Days $T_0=131.975260$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

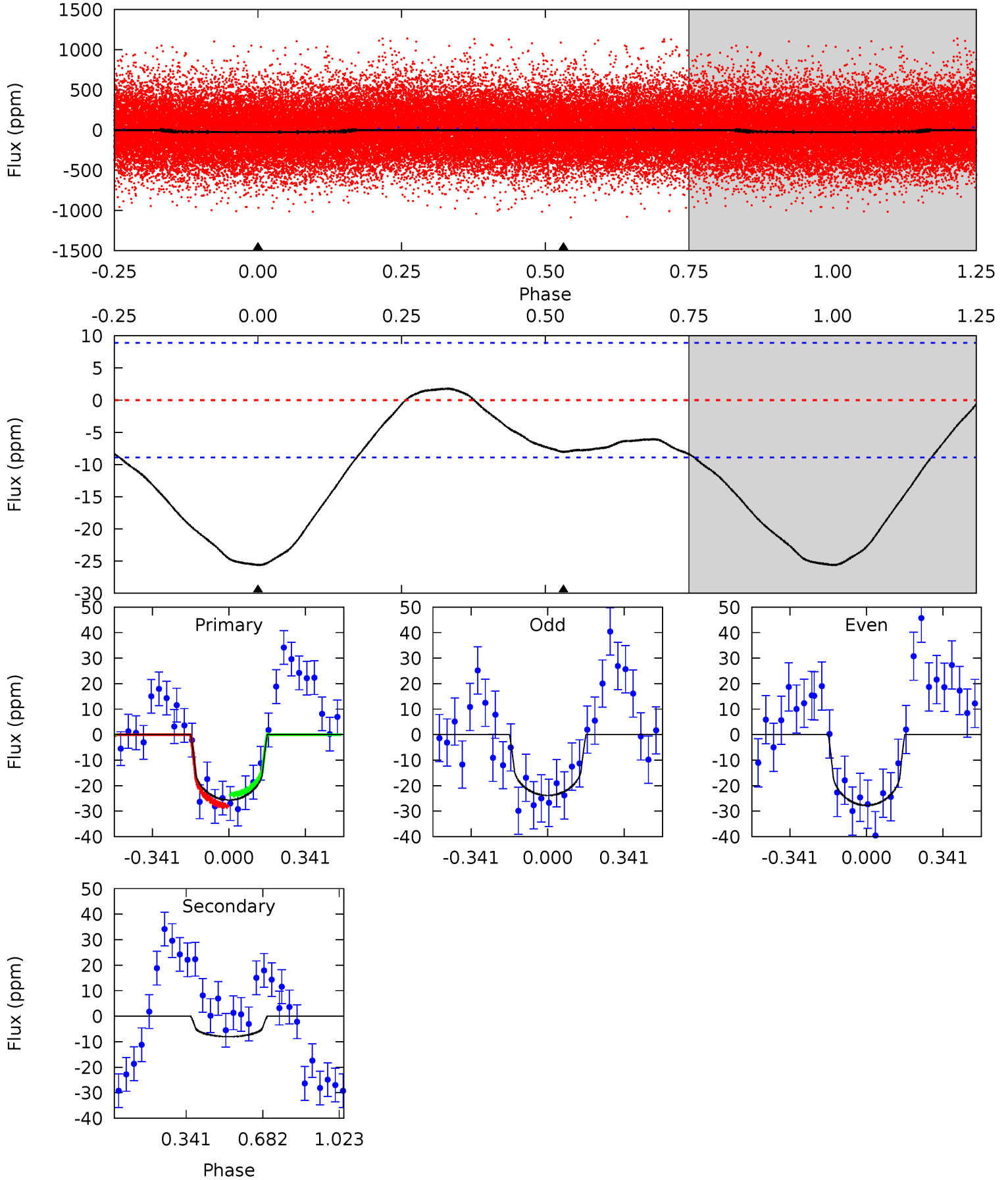
TCE 010749841-01 P= 0.890568 Days $T_0=131.883645$ (BKJD)



DV Model-Shift Uniqueness Test

010749841-01, P = 0.890472 Days, E = 131.084788 Days

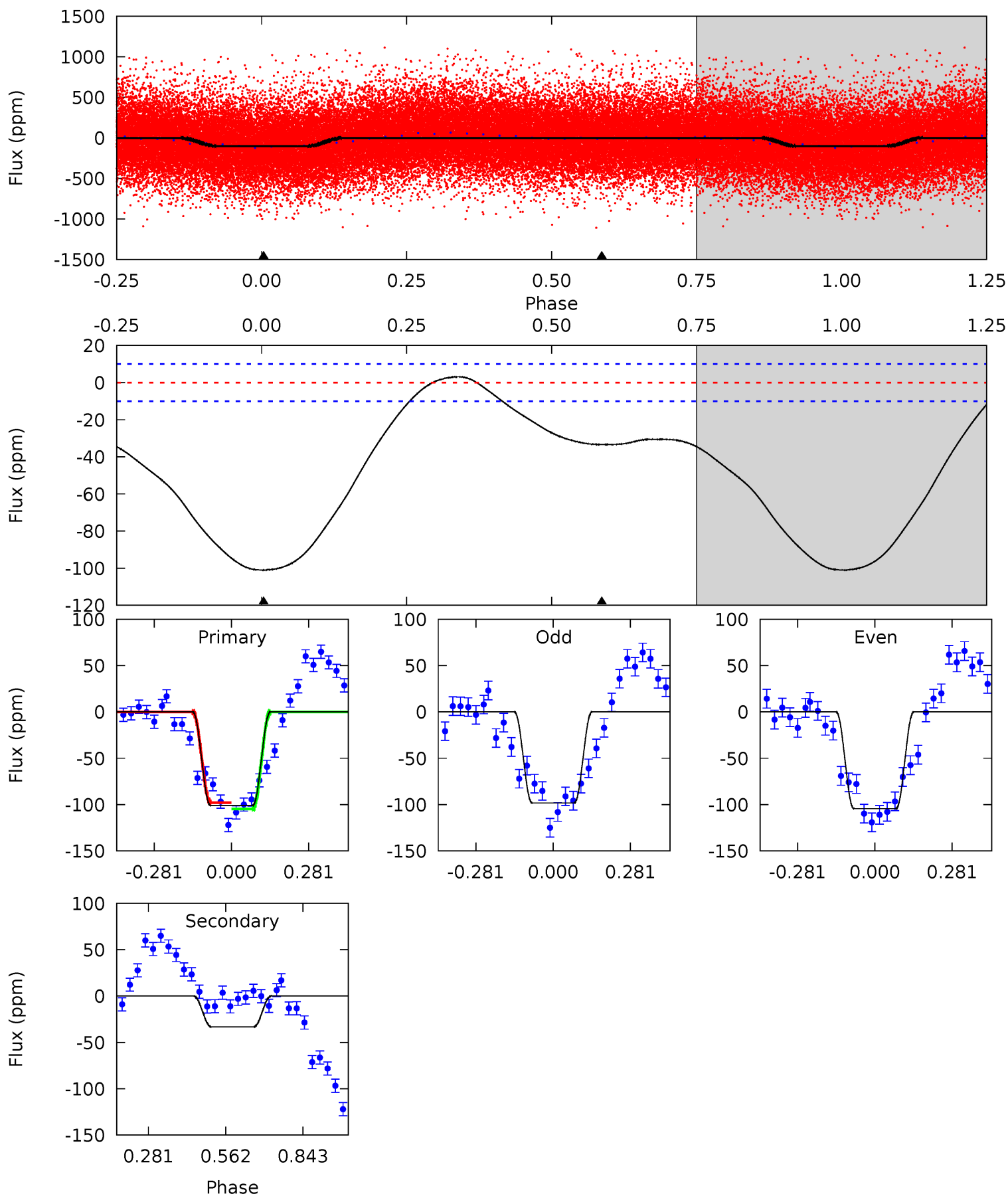
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.4	3.88	0	0	4.30	0.95	1.88	12.4	12.4	3.88	3.88	0.94	1.12	0.07	1.06



Alt Model-Shift Uniqueness Test

010749841-01, P = 0.890568 Days, E = 130.993077 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
43.8	14.5	0	0	4.34	1.08	2.23	43.8	43.8	14.5	14.5	1.35	0.98	0.03	1.48



Stellar Parameters For KIC 010749841

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6193^{+173}_{-238}	$4.434^{+0.054}_{-0.216}$	$0.000^{+0.250}_{-0.300}$	$1.067^{+0.357}_{-0.119}$	$1.127^{+0.155}_{-0.155}$	$1.307^{+0.388}_{-0.708}$
	+3%/-4%	+1%/-5%	+inf%/-inf%	+33%/-11%	+14%/-14%	+30%/-54%
Source	PHO1	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 010749841-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-8 ± 2	$0.87^{+0.78}_{-0.56}$	2929^{+212}_{-161}	3974^{+2385}_{-1052}	$1.933^{+13.438}_{-1.415}$
Alt.	-33 ± 2	$1.45^{+0.96}_{-0.82}$	2926^{+224}_{-143}	4414^{+2143}_{-842}	$3.036^{+13.648}_{-1.918}$

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

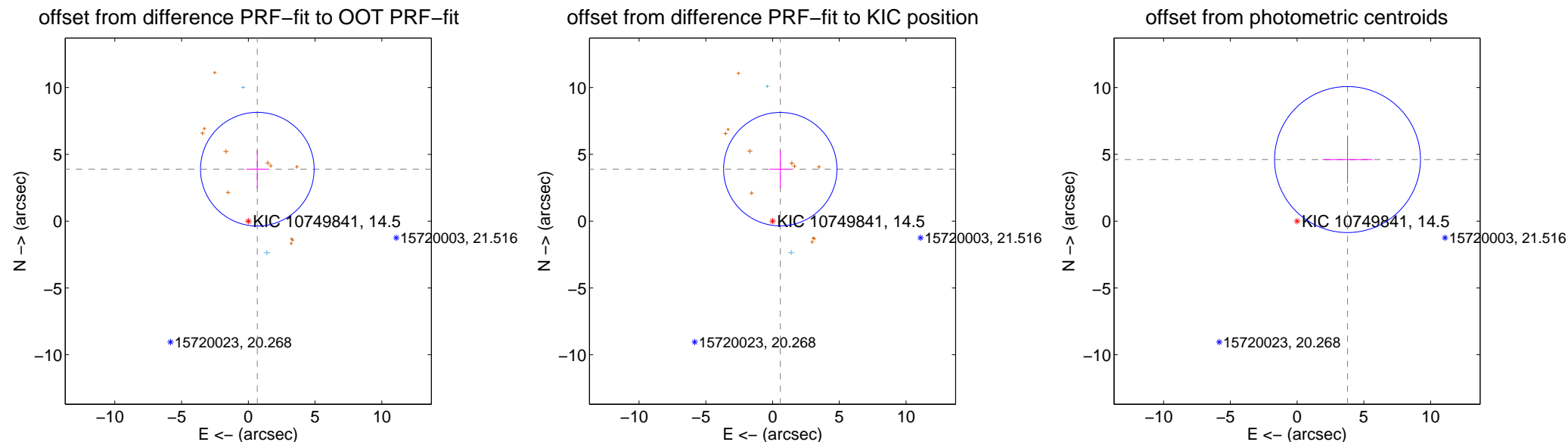
DV Centroid Data

Supplemental centroid analysis for 010749841-01. Kepler magnitude: 14.50. Transit SNR 8.71

There are 2 quarters with good PRF difference image offsets

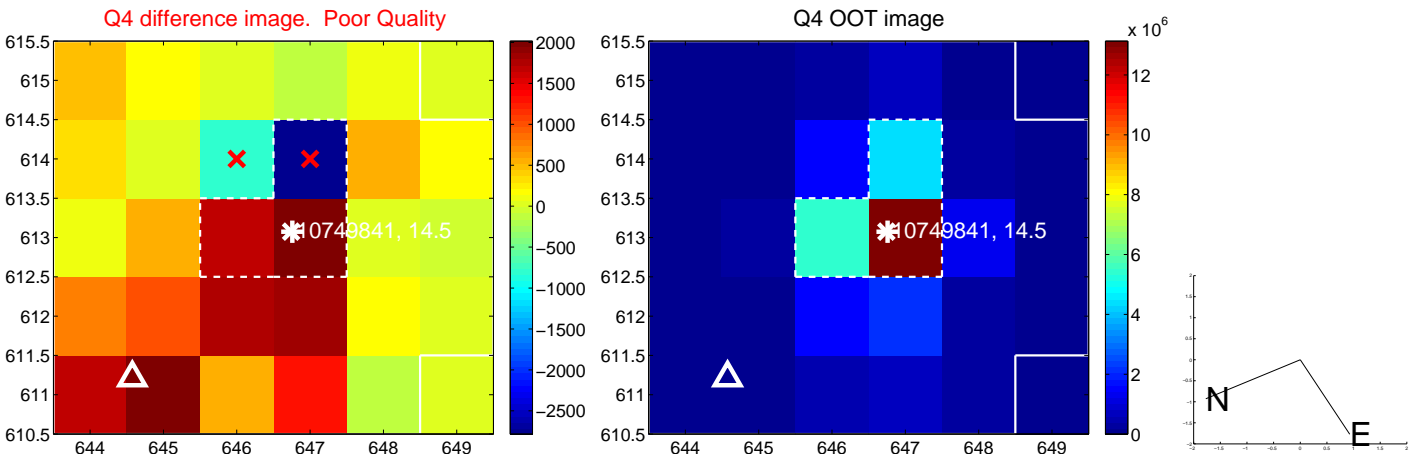
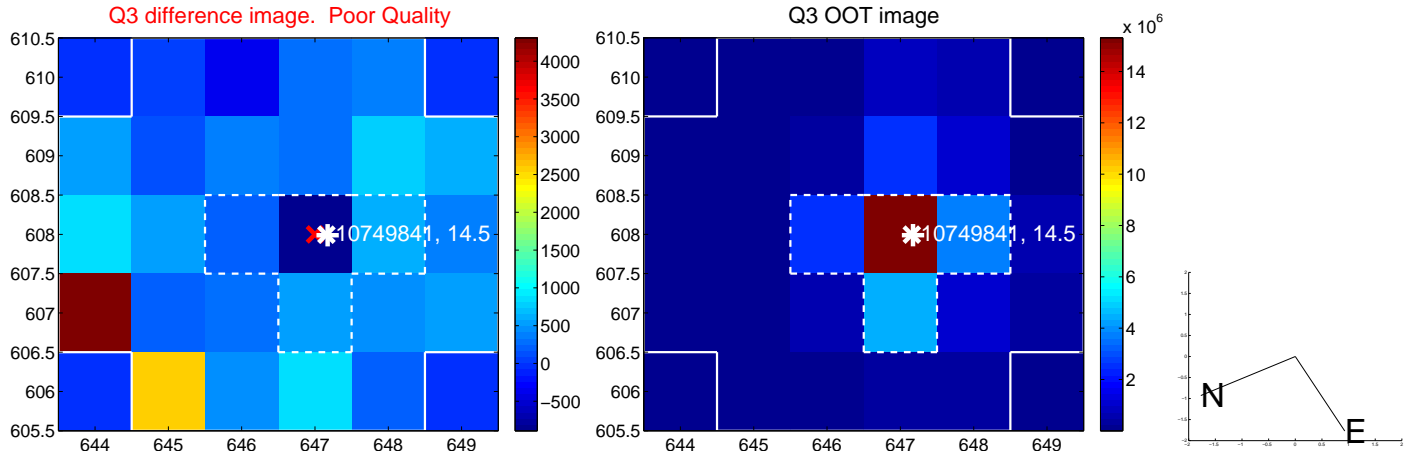
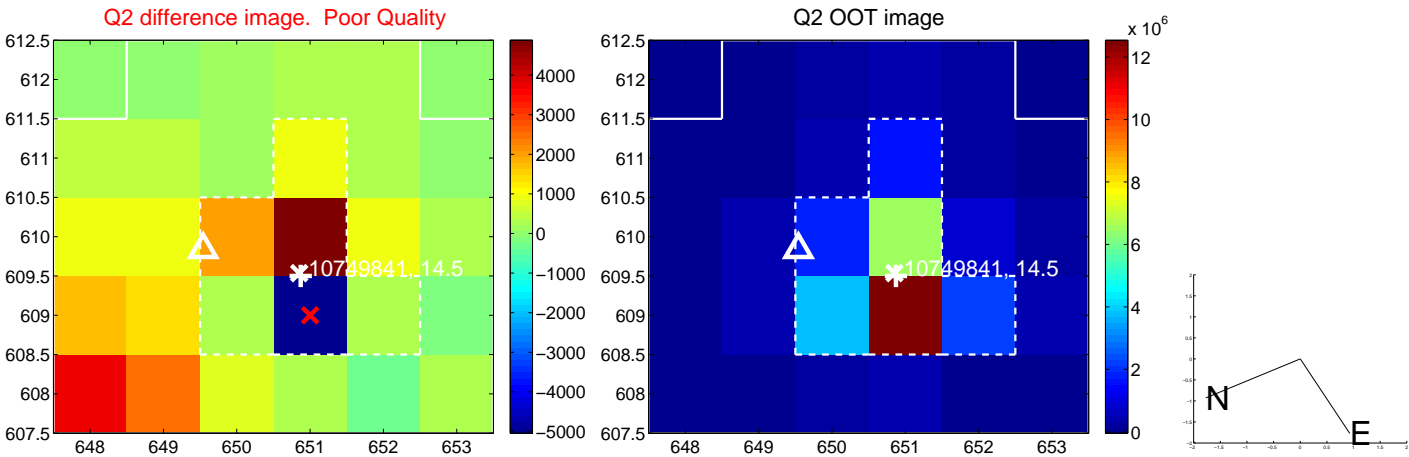
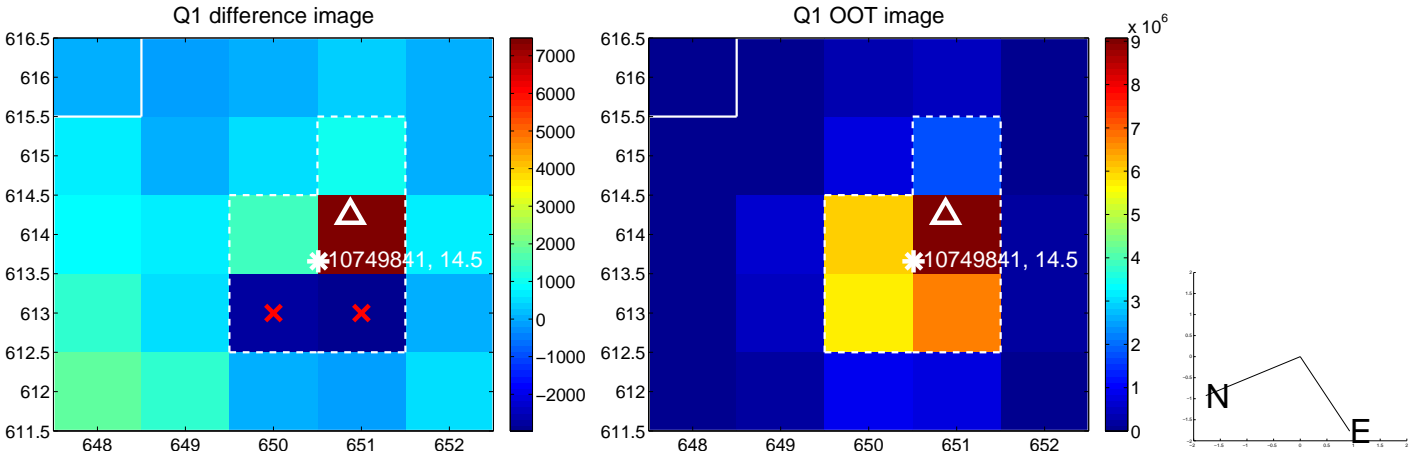
The direct PRF centroid is offset from the target star catalog position by about 0.04 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	3.945 ± 1.419	2.78	-0.674 ± 0.822	3.887 ± 1.433
PRF-fit source offset from KIC position	3.934 ± 1.415	2.78	-0.578 ± 0.807	3.891 ± 1.425
photometric centroid source offset	5.96 ± 1.82	3.27	-3.78 ± 1.87	4.61 ± 1.79

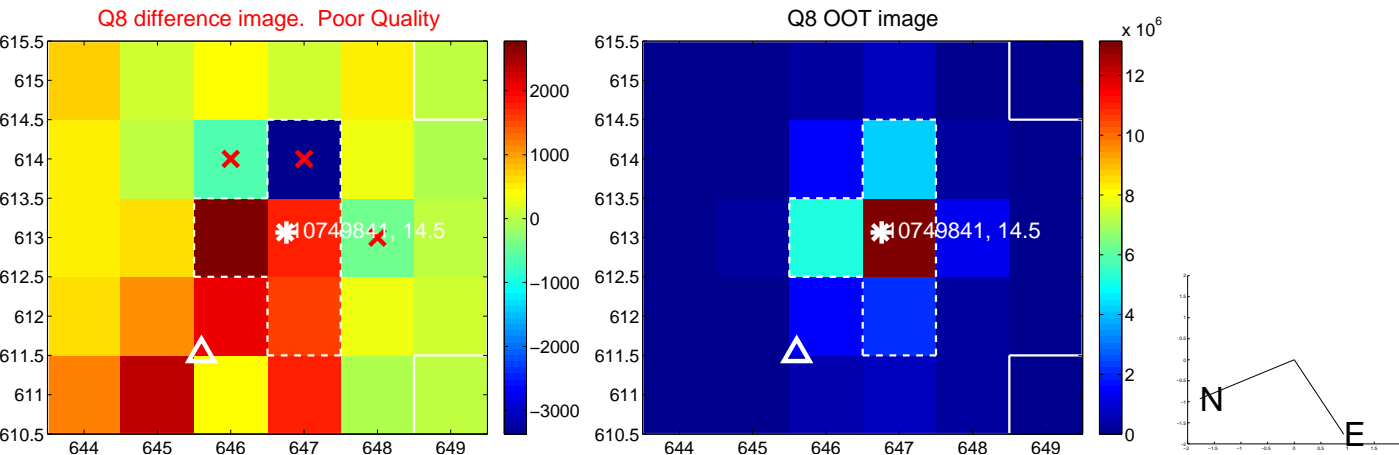
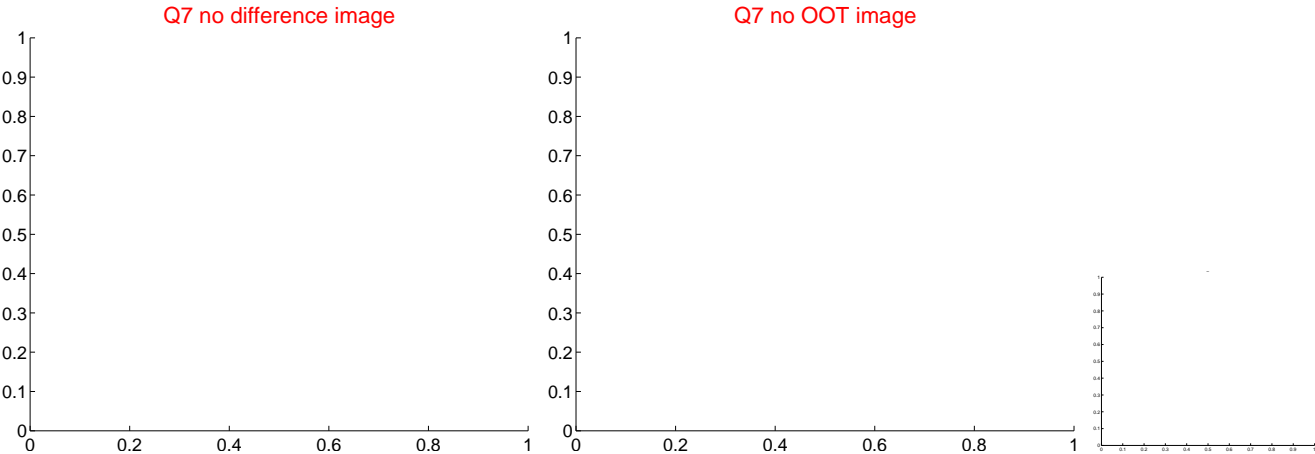
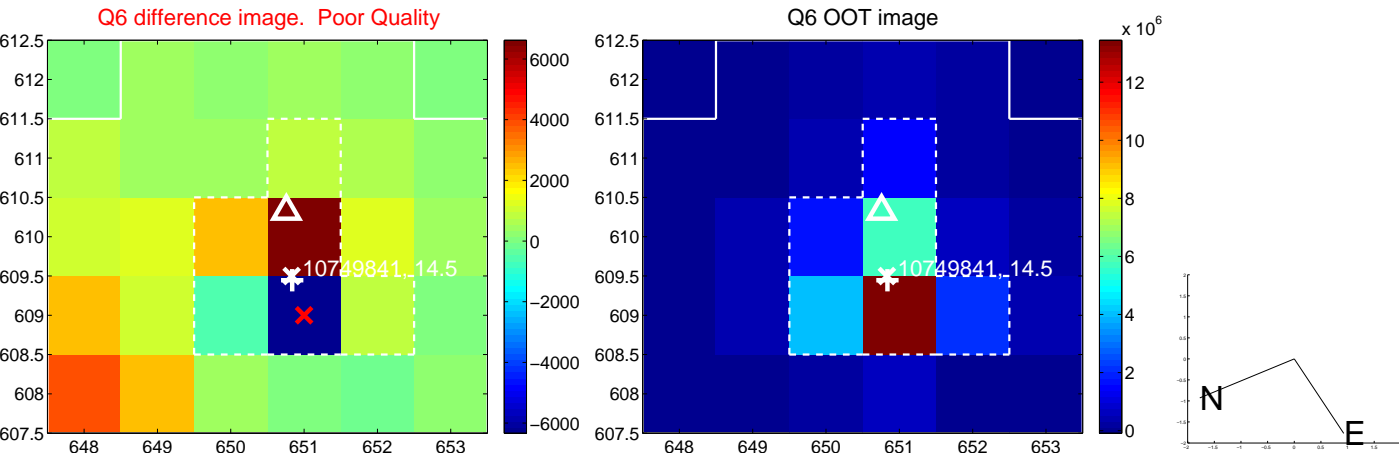
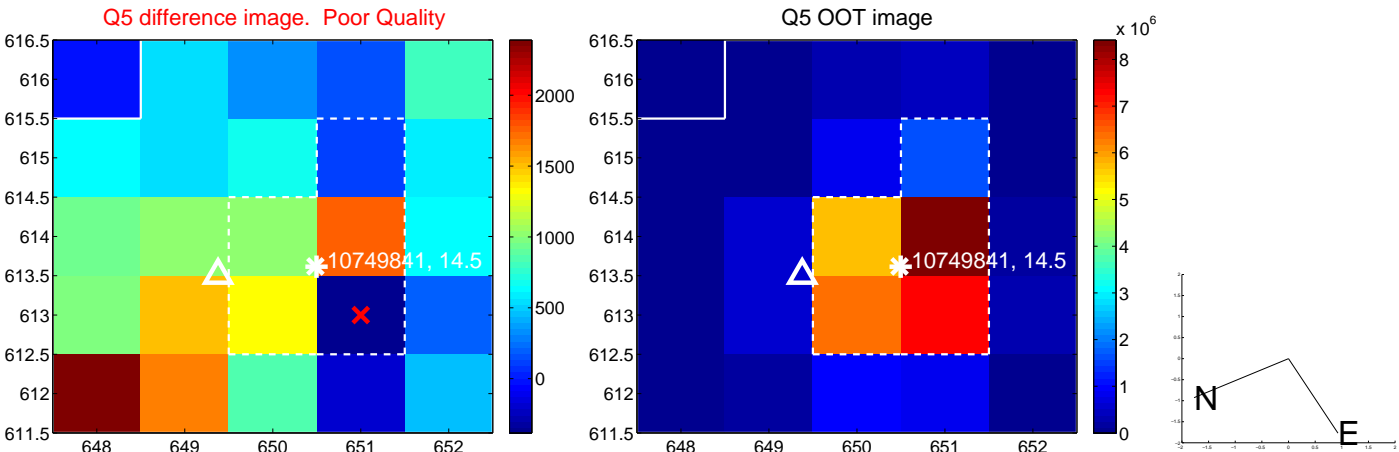


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

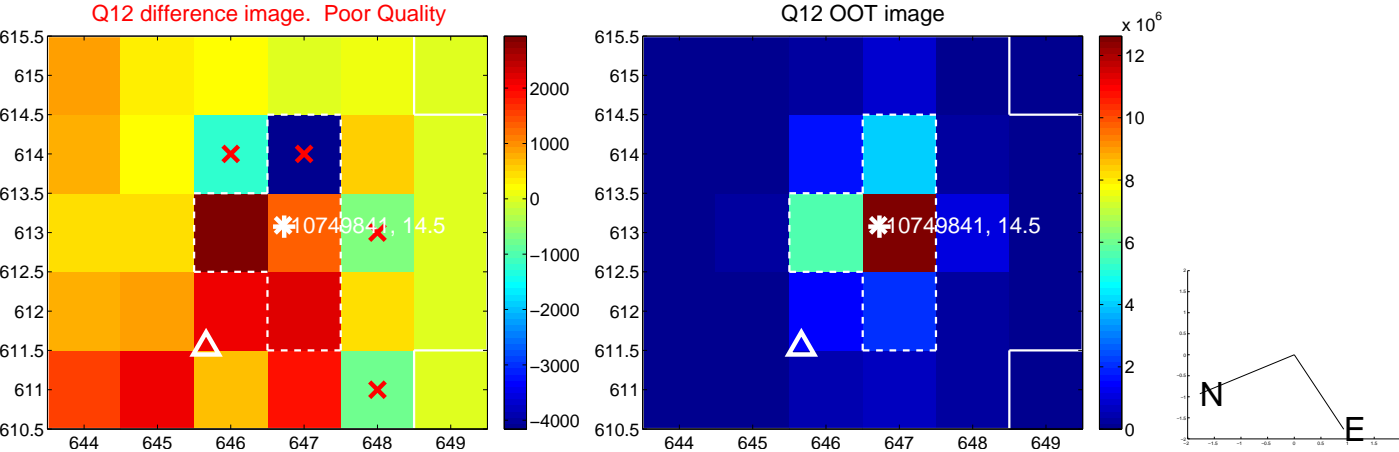
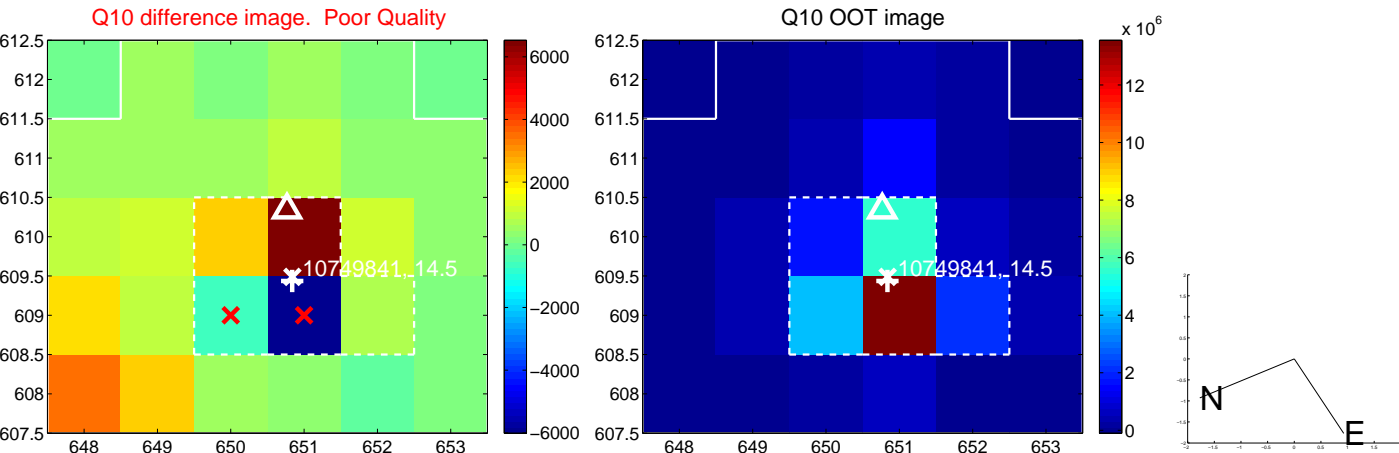
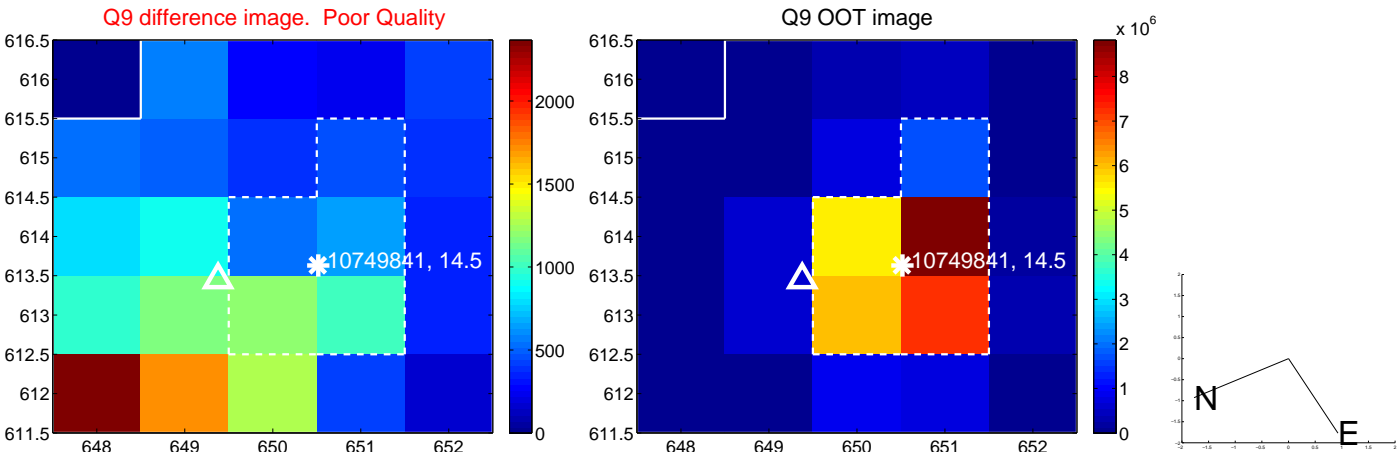
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



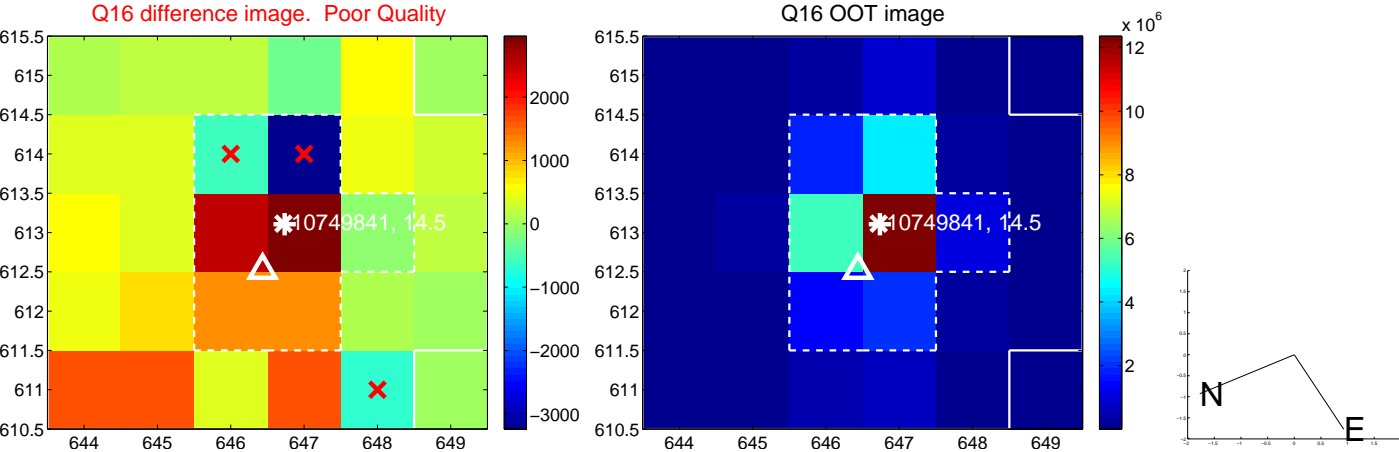
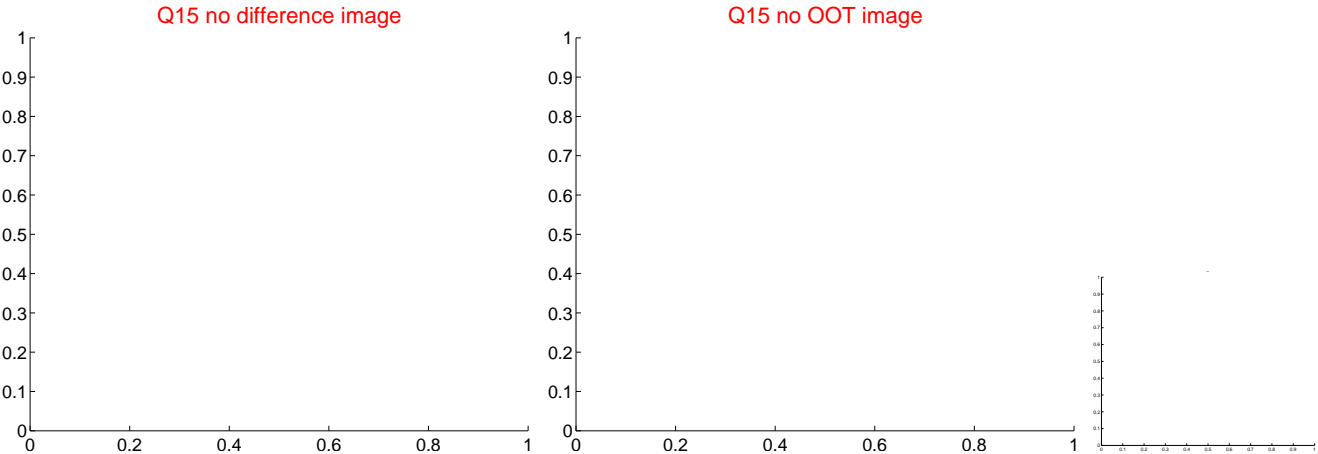
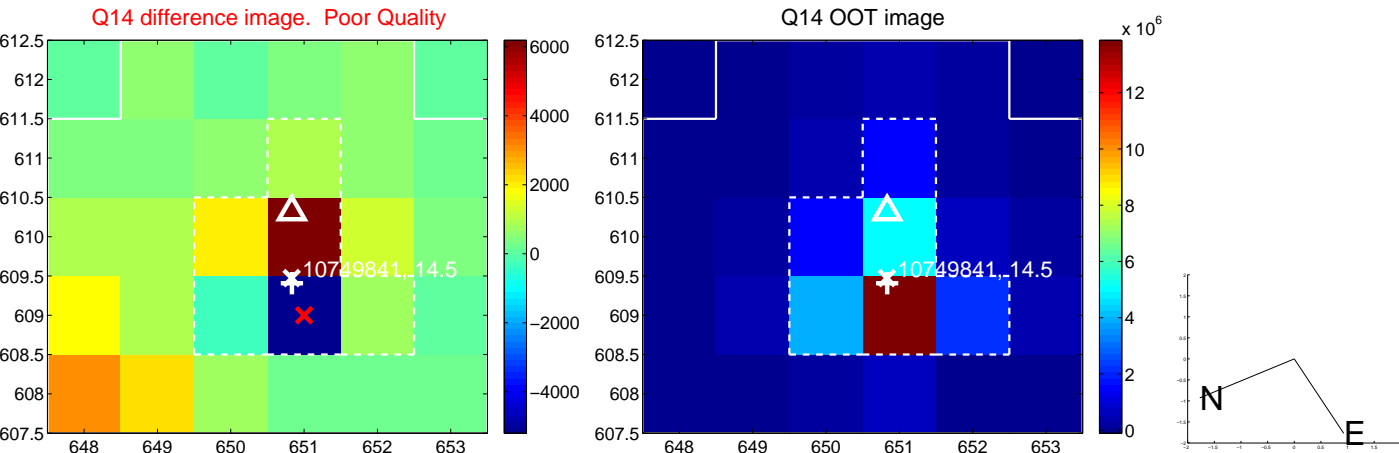
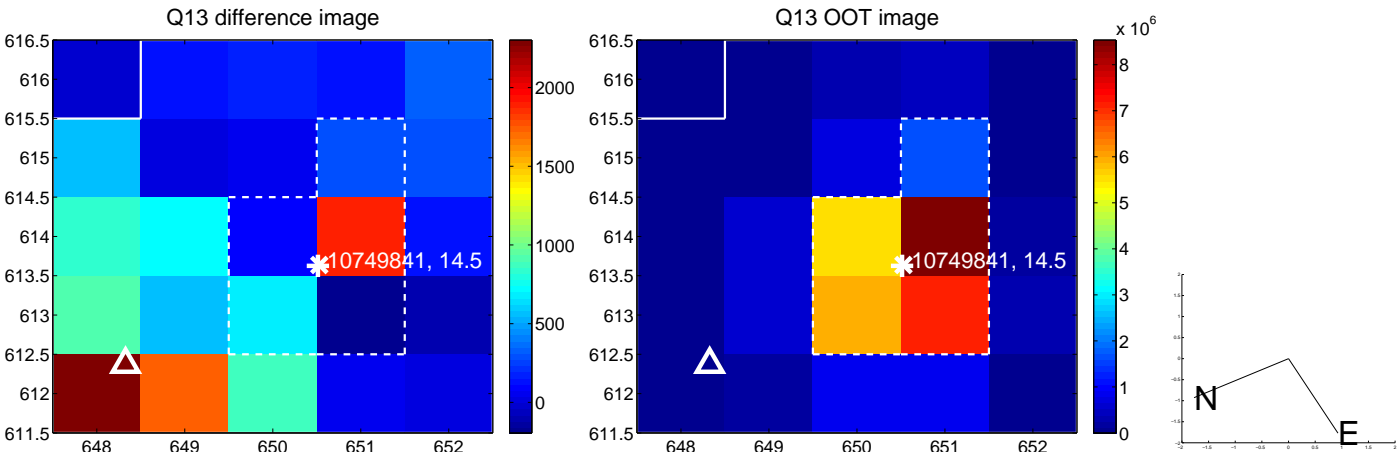
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



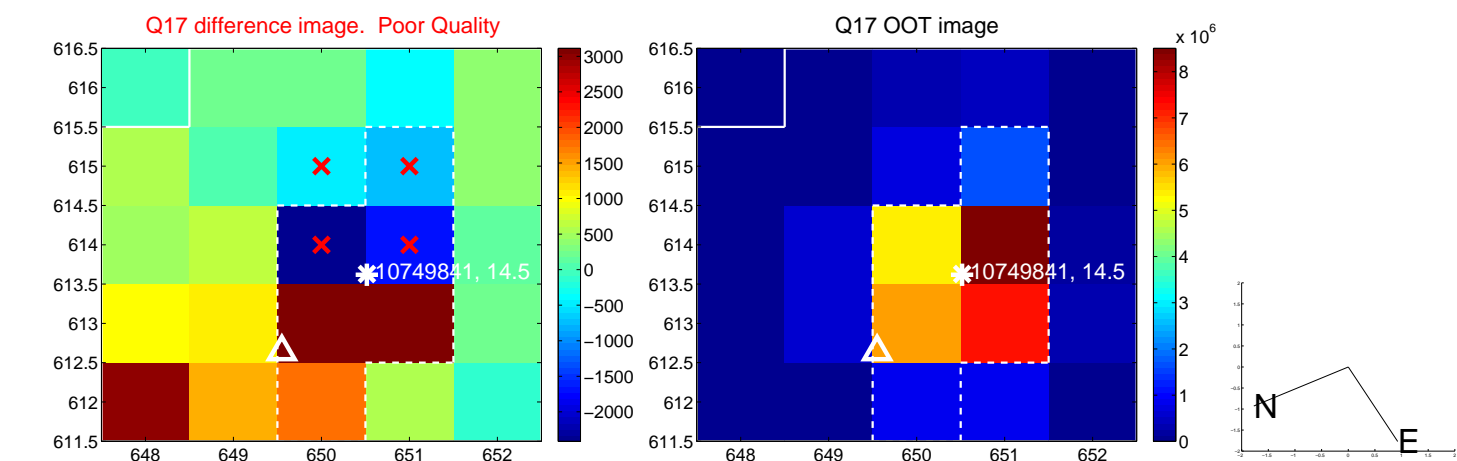
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



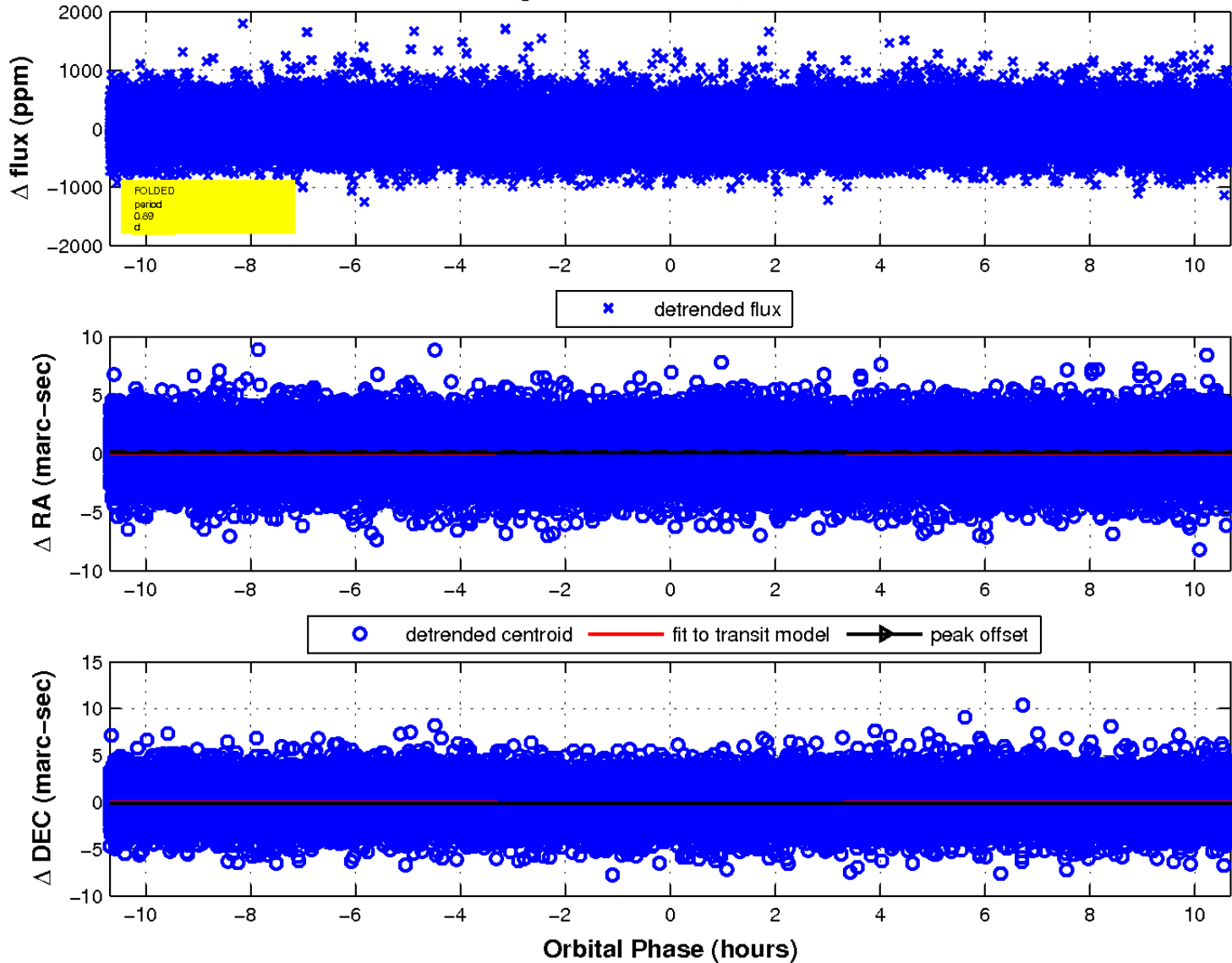
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.



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

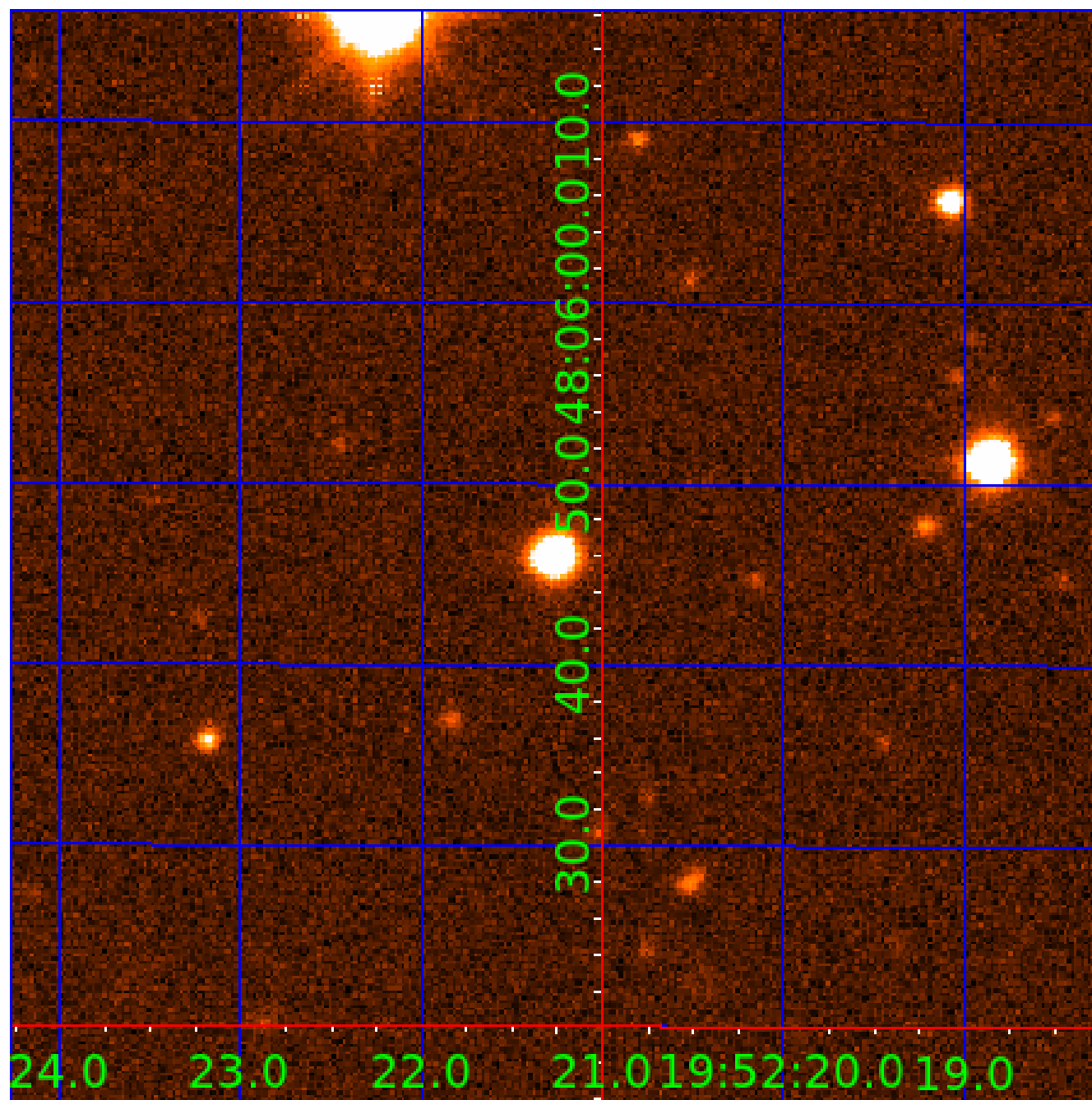


fluxWeightedCentroids, Planet 1 of 2



UKIRT Image

Declination



KIC 010749841

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})
010749841-01	OBS	No	0.890472	131.975260	23.3	6.849	8.1	8.7	1.07	6193	0.52	4218.07
010749841-02	OBS	No	2.027140	132.158913	21.0	10.459	14.3	3.7	1.07	6193	0.58	1408.52

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010749841-01	OBS	FP	0.00	1	0	1	1	LPP_DV—CENT_RESOLVED_OFFSET—EPHEM_MATCH
010749841-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS

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

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

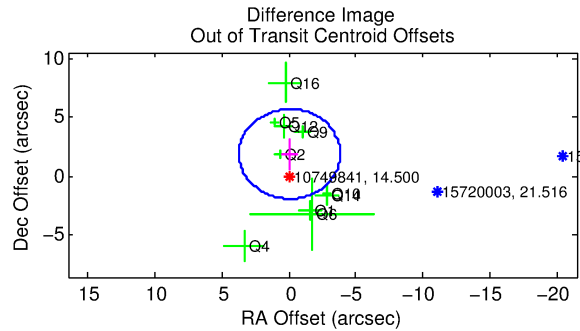
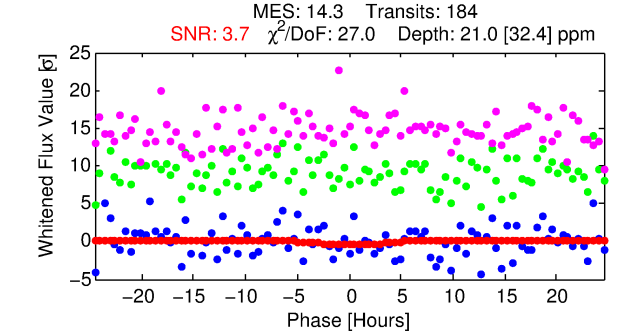
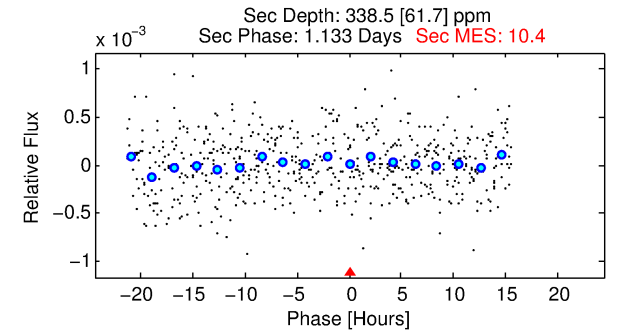
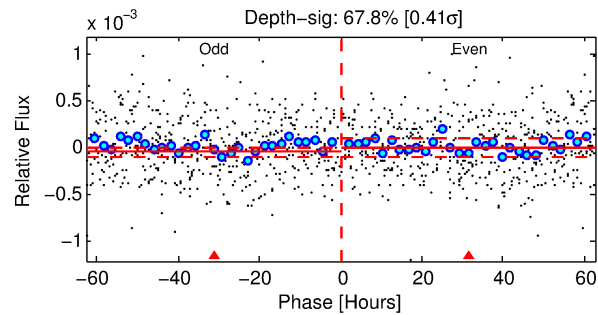
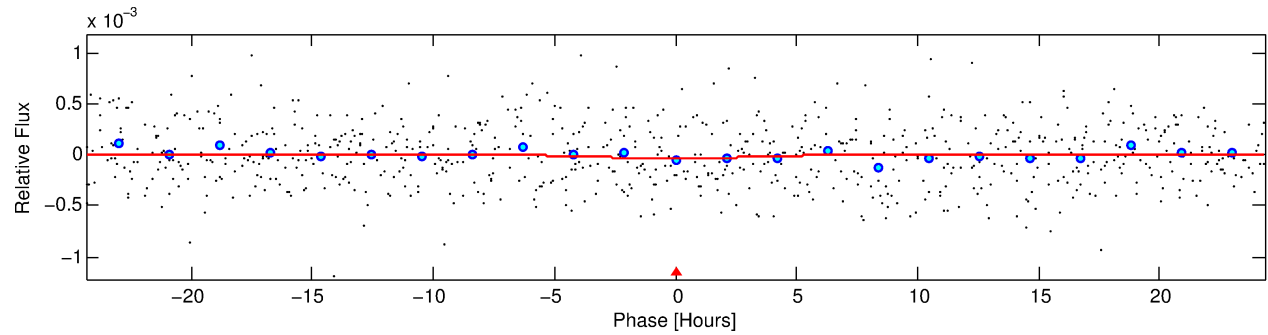
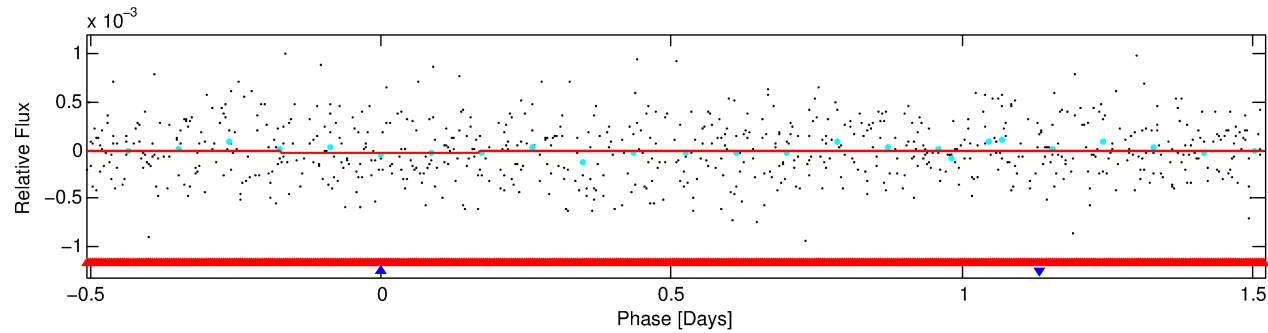
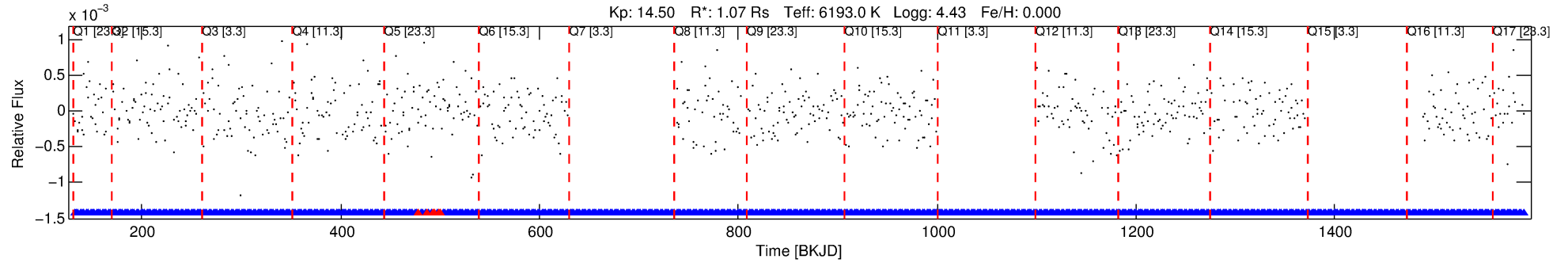
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 010749841-02

No Significant Match Found

DV One-Page Summary

KIC: 10749841 Candidate: 2 of 2 Period: 2.027 d



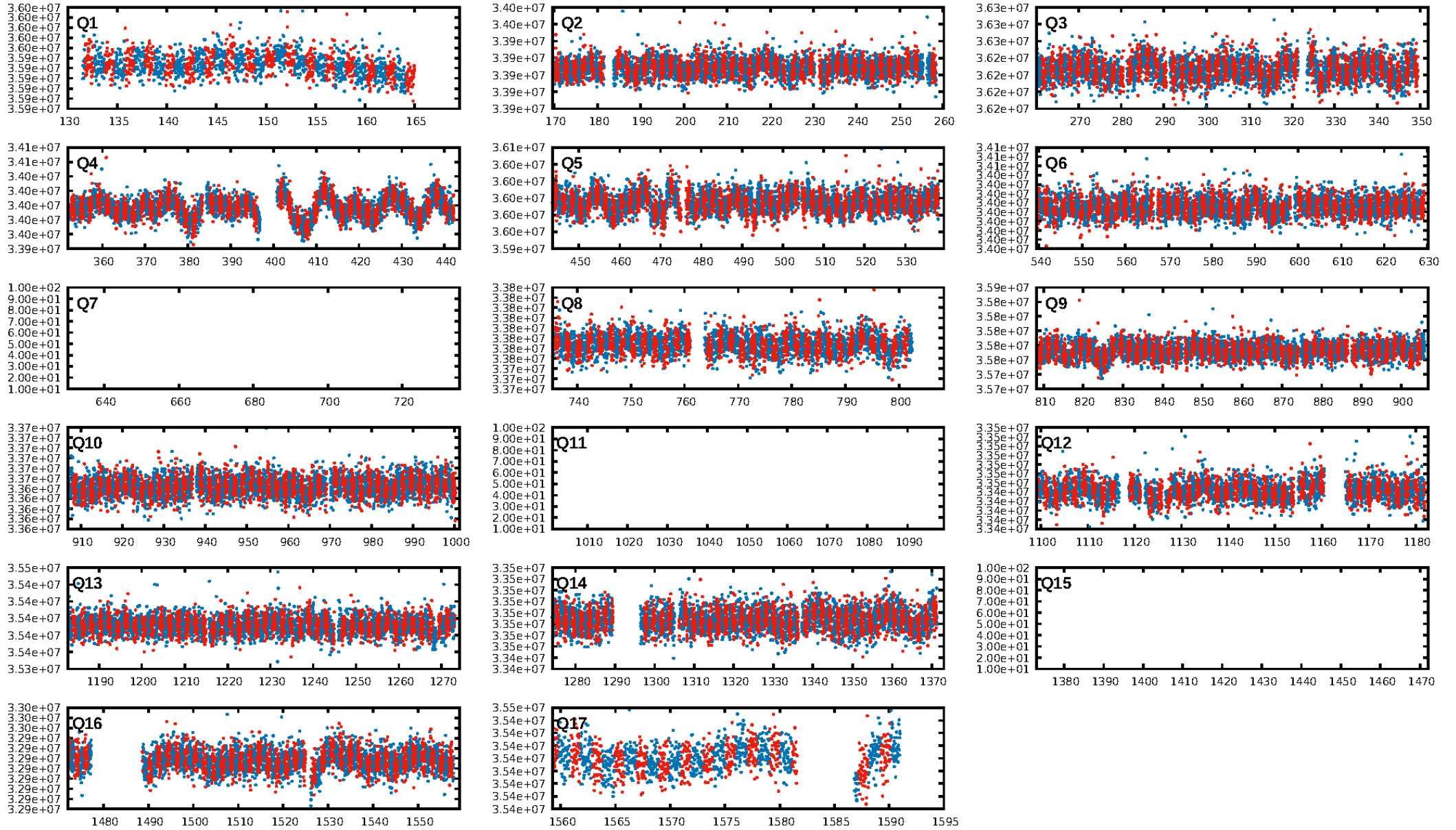
DV Fit Results:

Period = 2.02714 [0.00050] d
Epoch = 132.1589 [0.1389] BKJD
Rp/R* = 0.0050 [0.0267]
a/R* = 1.14 [7.64]
b = 0.91 [5.73]
Seff = 1408.52 [603.08]
Teff = 1562 [167] K
Rp = 0.58 [3.11] Re
a = 0.0326 [0.0091] AU
Ag = 592.65 [6365.81] [0.09 σ]
Teffp = 11917 [31981] K [0.32 σ]

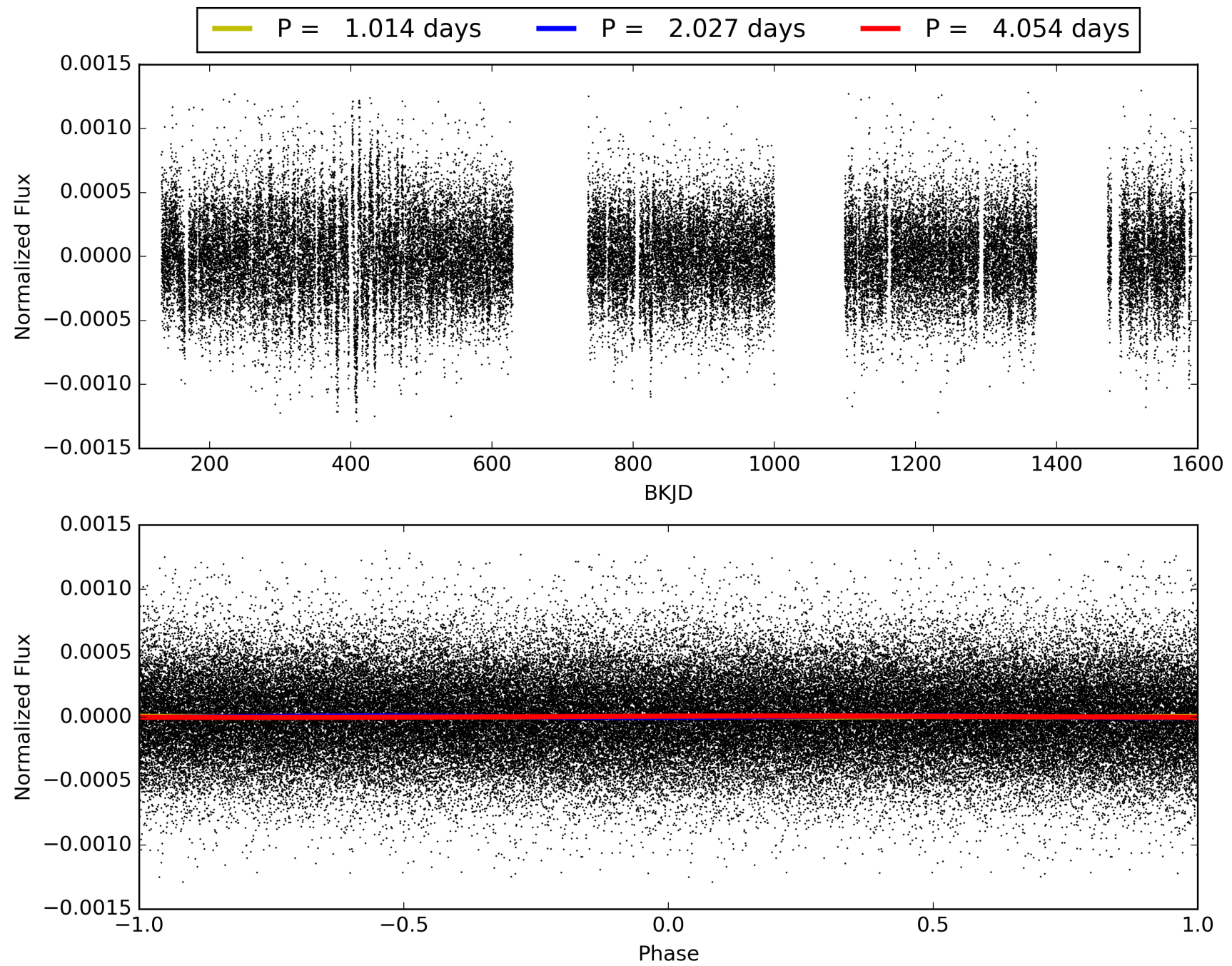
DV Diagnostic Results:

ShortPeriod-sig: 97.1% [2.18 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 6.81e-04
RollingBand-fgt: 0.96 [164/170]
GhostDiagnostic-chr: 0.2655
Centroid-sig: 86.5%
Centroid-so: 1.089 arcsec [0.43 σ]
OotOffset-rm: 1.903 arcsec [1.51 σ]
KicOffset-rm: 1.907 arcsec [1.37 σ]
OotOffset-st: 4/0/3/3 [10]
KicOffset-st: 4/0/3/3 [10]
DiffImageQuality-fgm: 0.20 [2/10]
DiffImageOverlap-fno: 0.00 [0/14]

TCE 010749841-02, PDC Light Curves

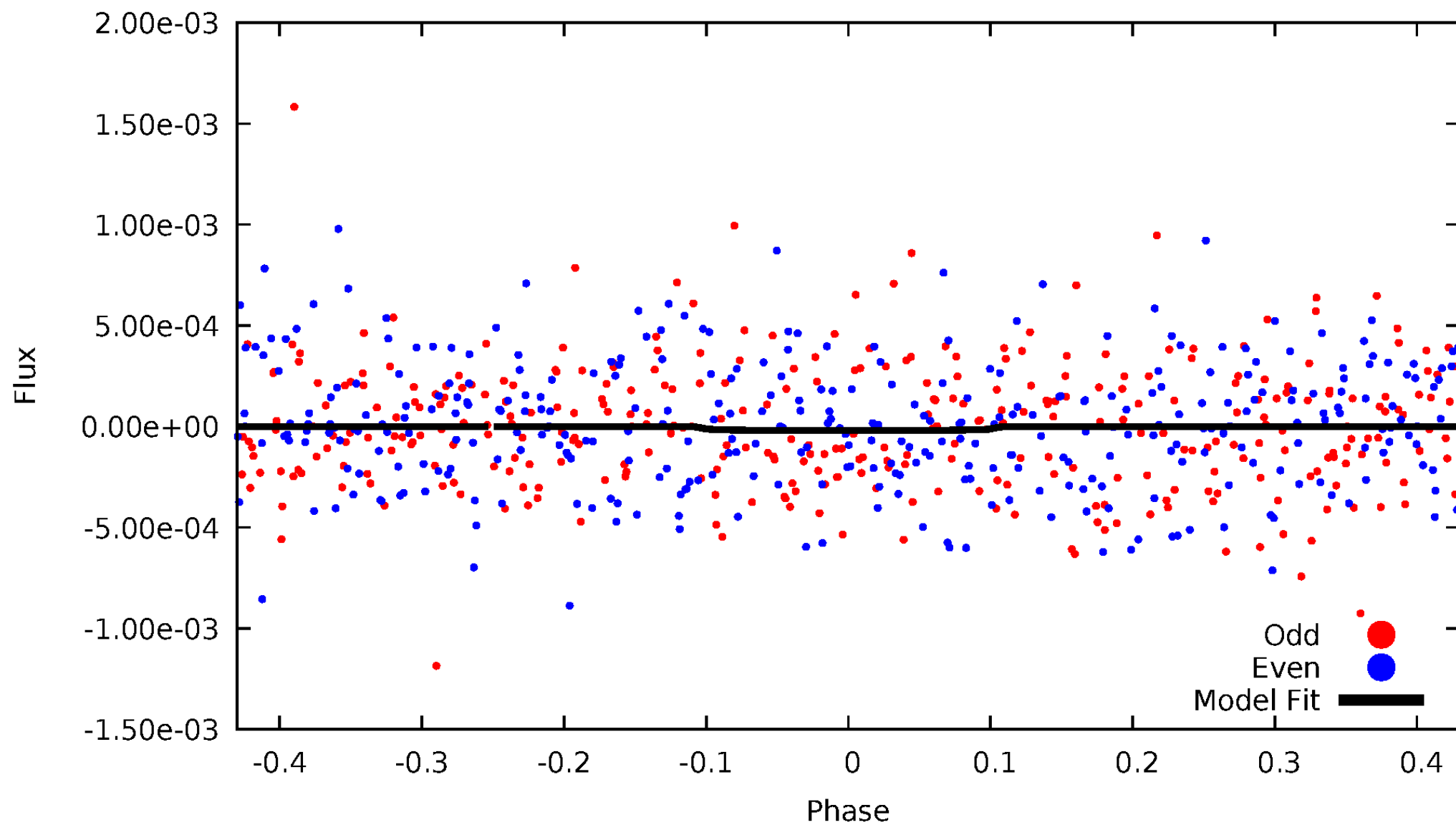


TCE 010749841-02



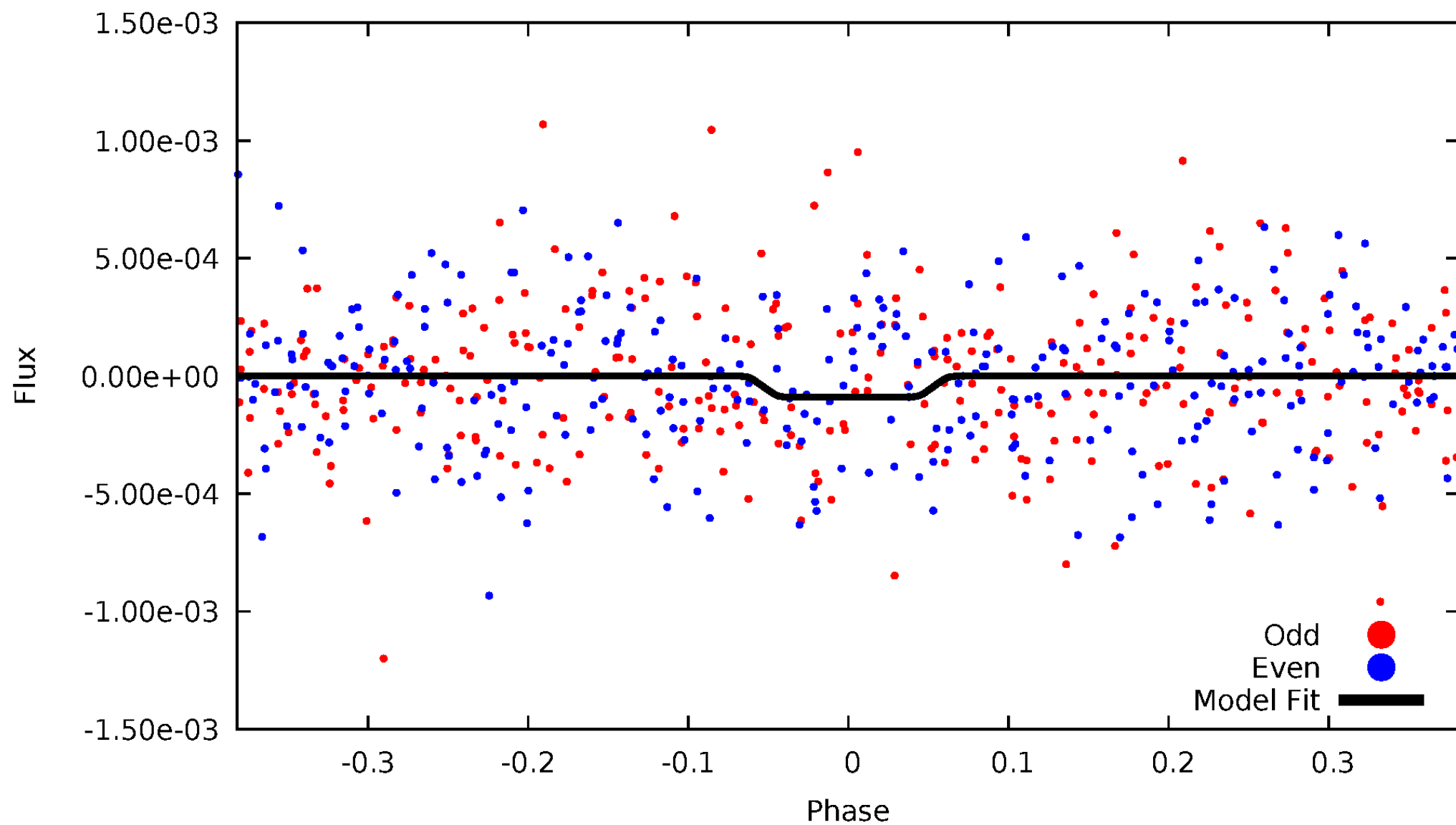
DV Odd/Even

TCE 010749841-02



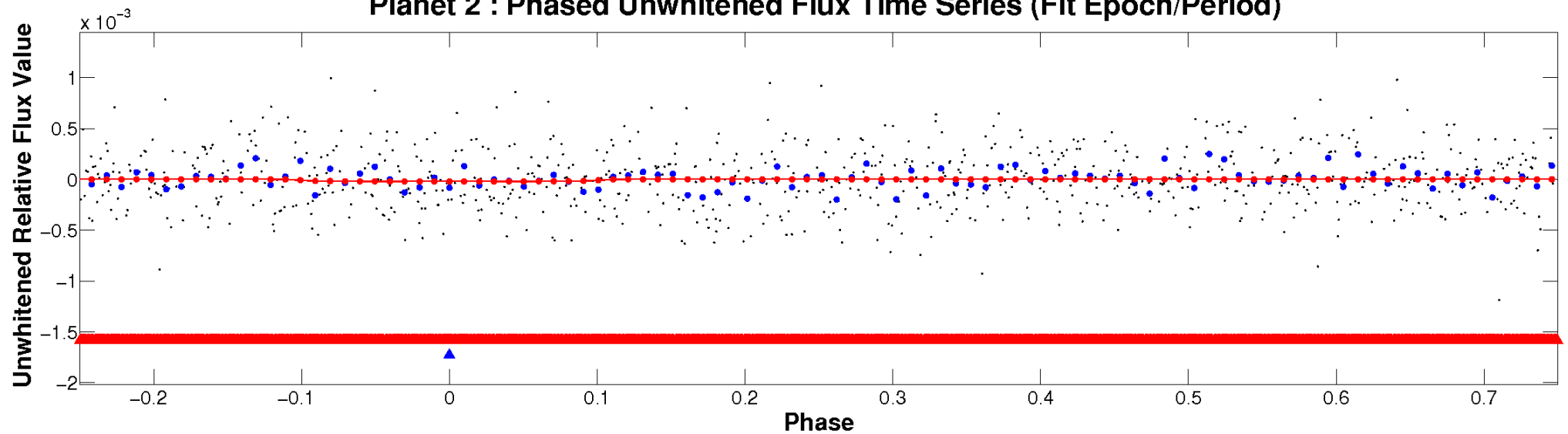
ALT Odd/Even

TCE 010749841-02

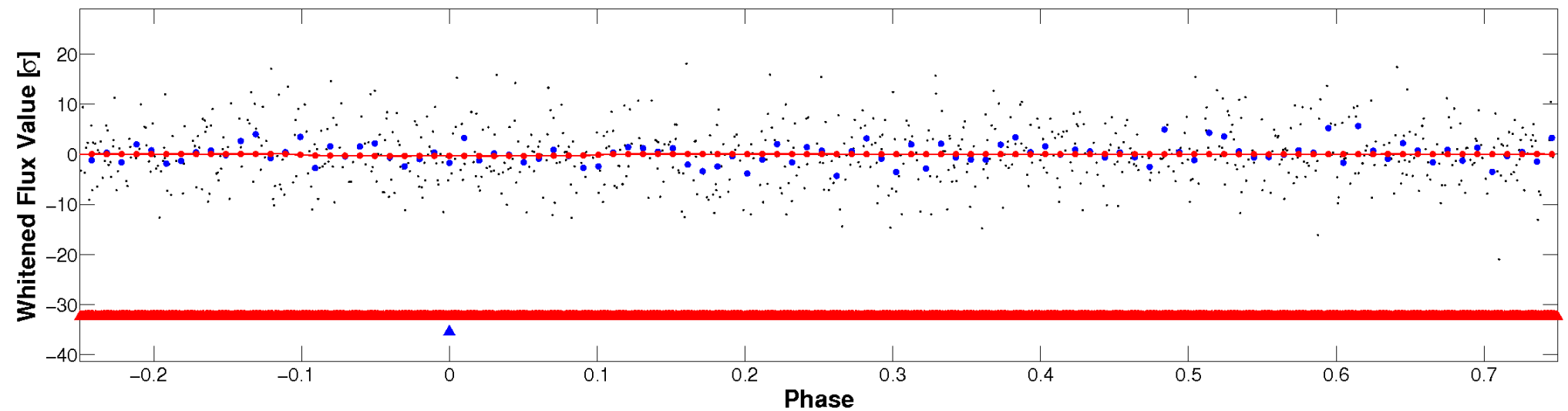


Non-Whitened Vs. Whitened Light Curve

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

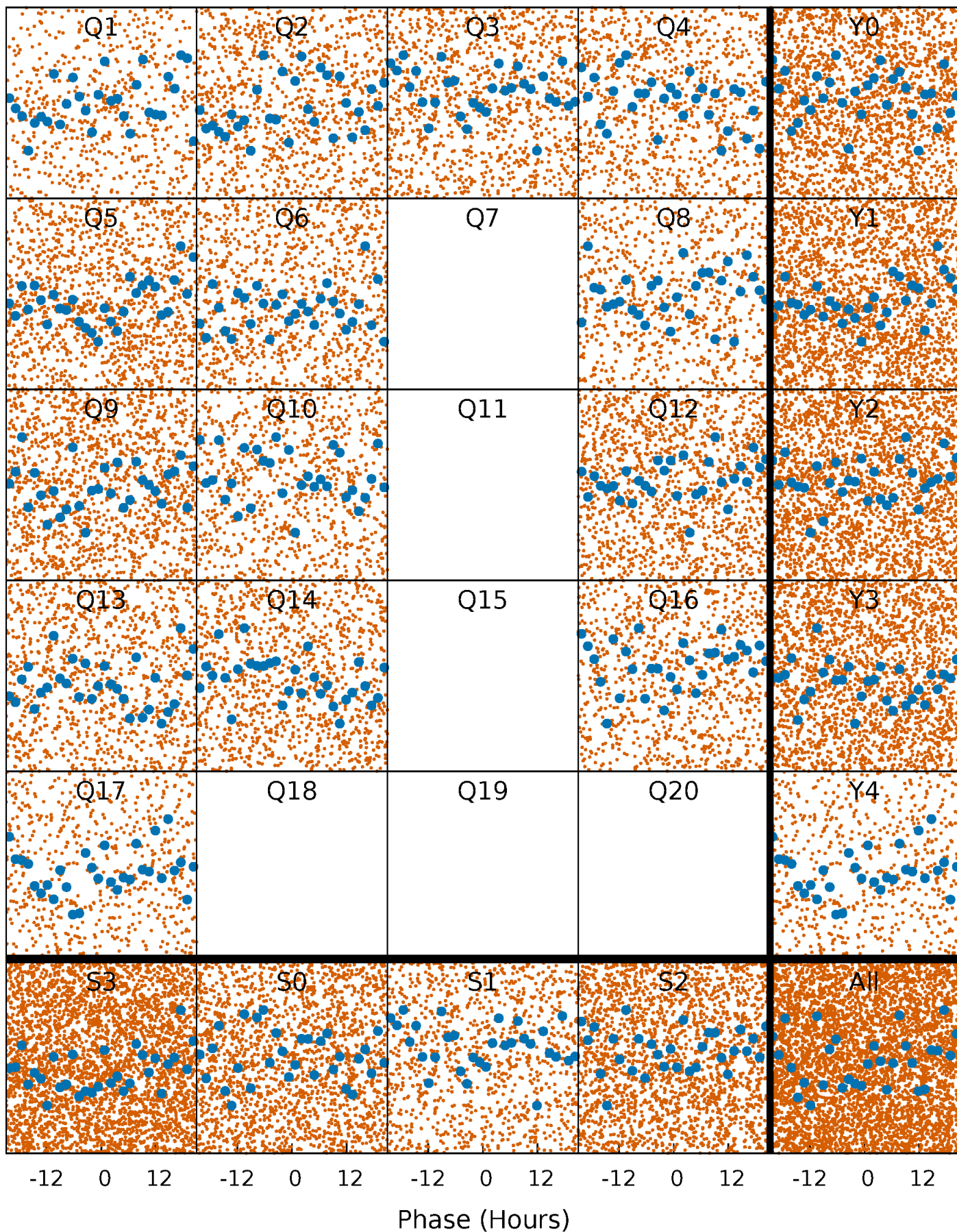


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



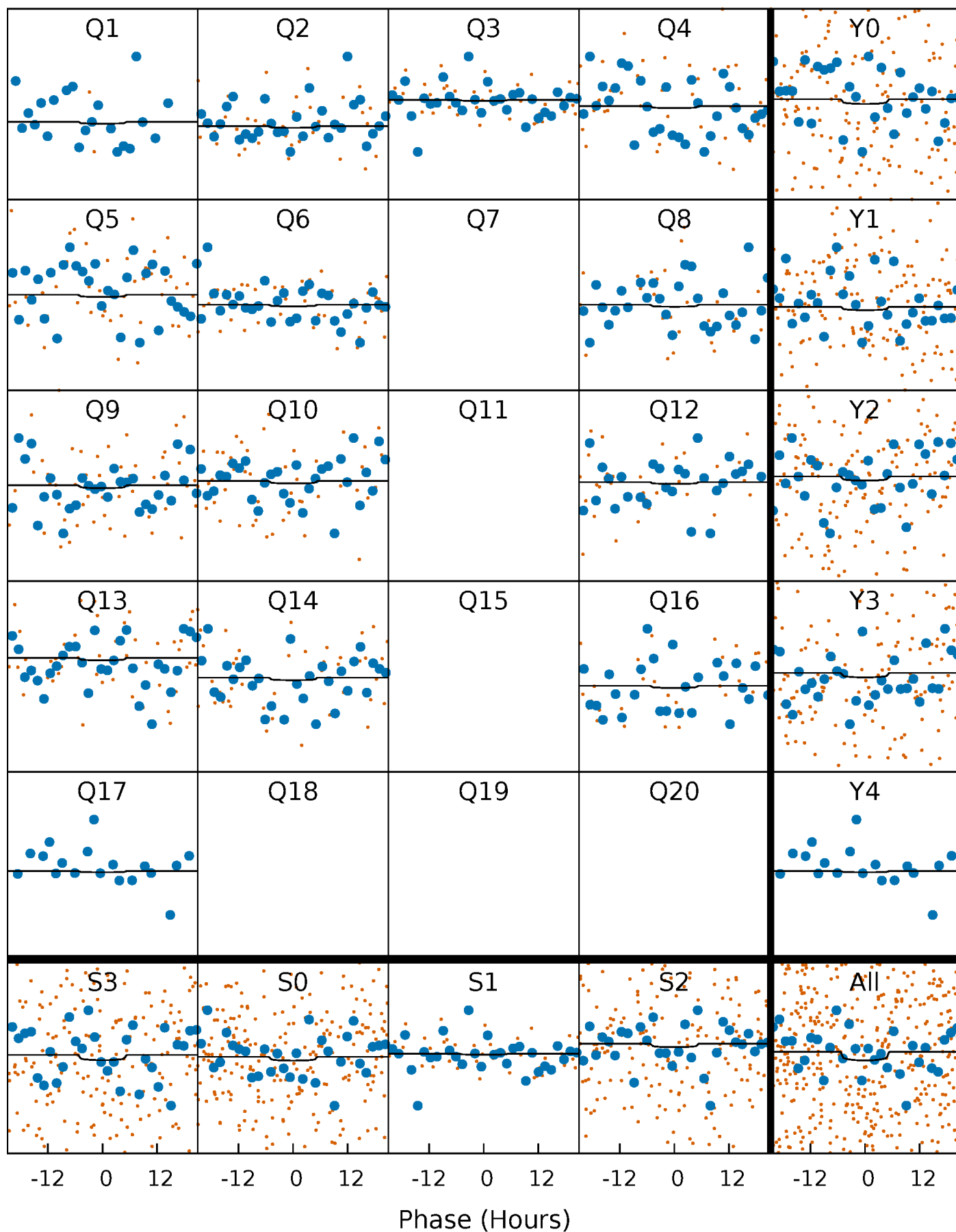
PDC Quarter-Phased Transit Curves

TCE 010749841-02 P= 2.027140 Days $T_0=132.158913$ (BKJD)



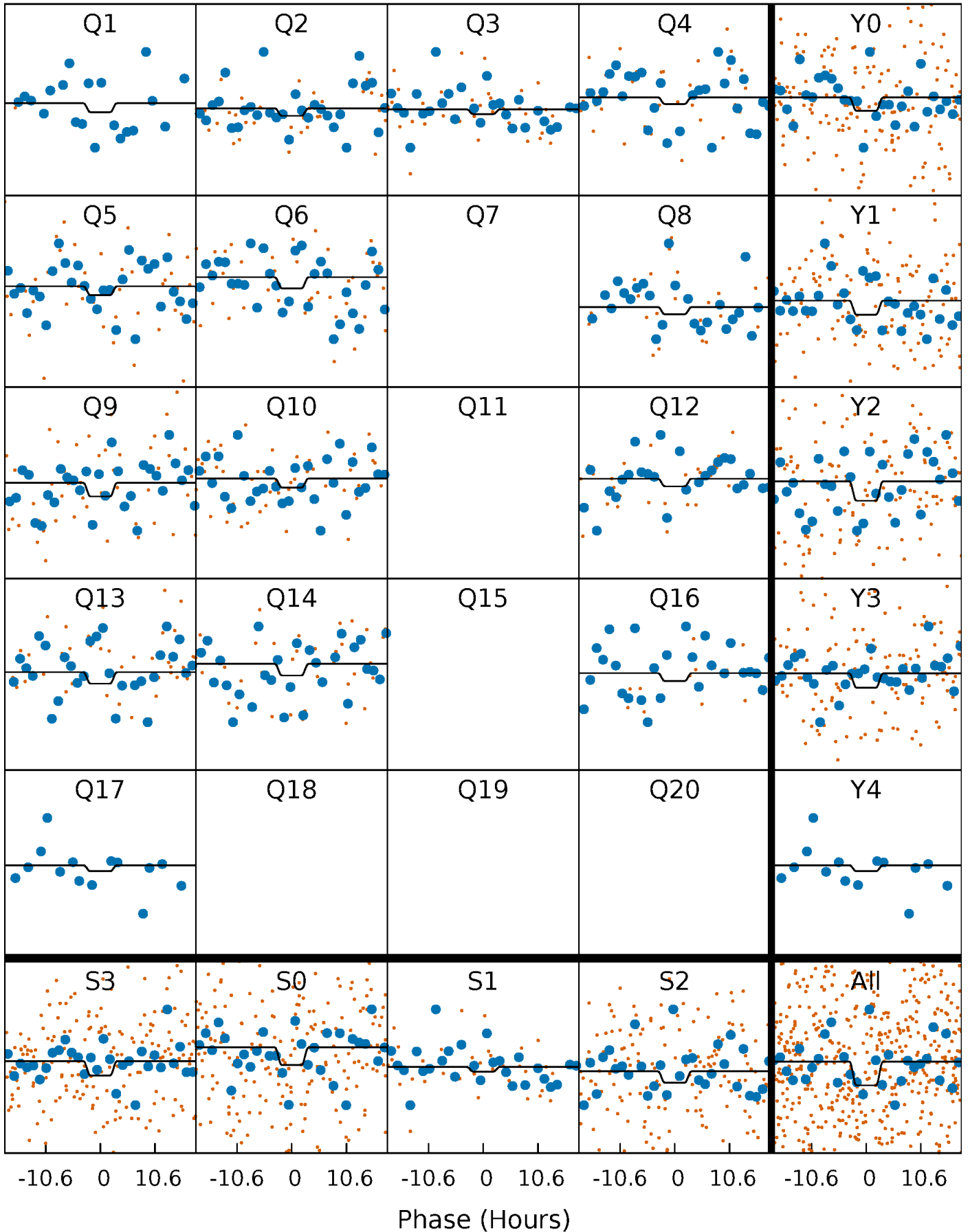
DV Quarter-Phased Transit Curves

TCE 010749841-02 P= 2.027140 Days $T_0=132.158913$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

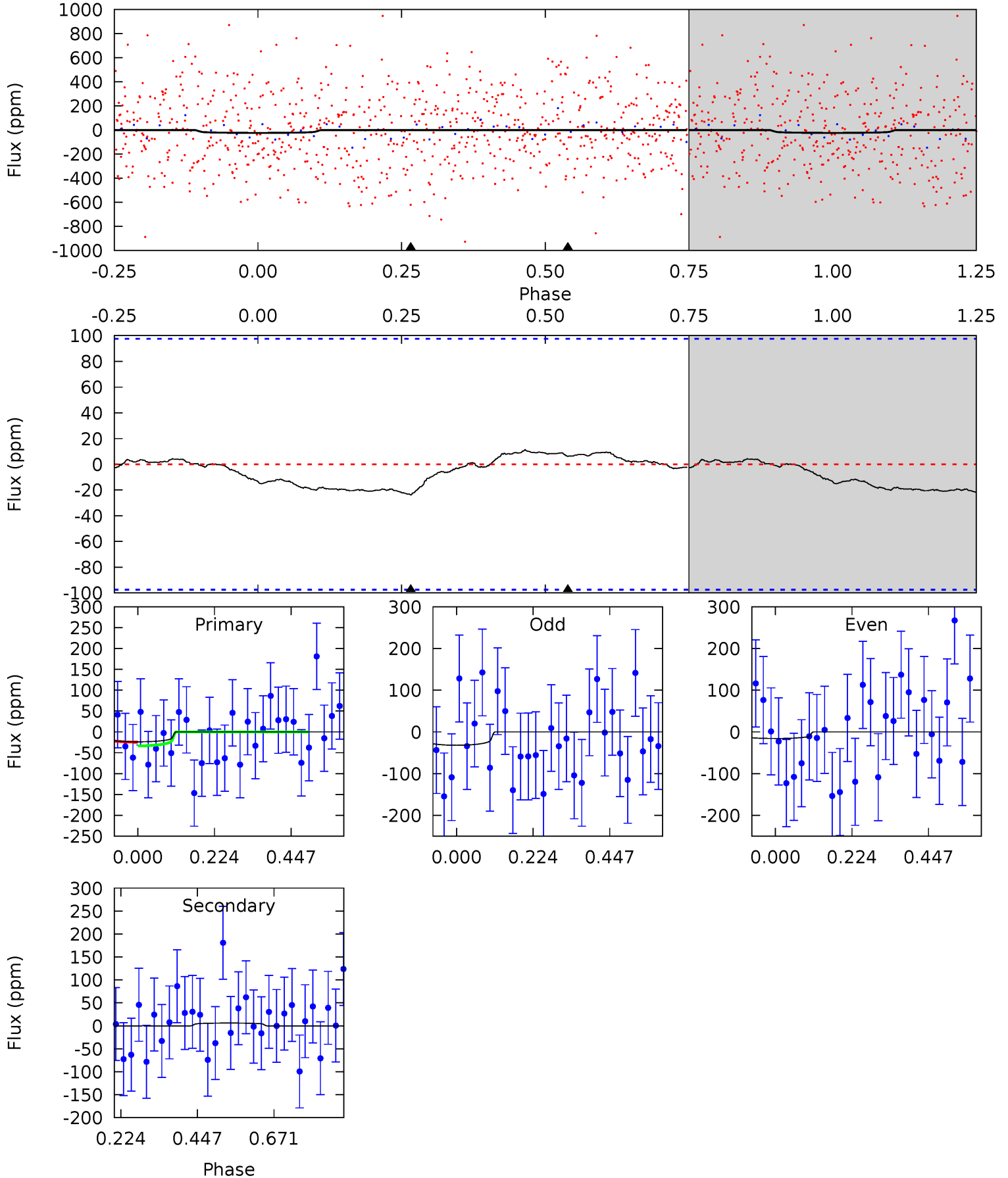
TCE 010749841-02 $P = 2.027630$ Days $T_0 = 132.119265$ (BKJD)



DV Model-Shift Uniqueness Test

010749841-02, P = 2.027140 Days, E = 130.131773 Days

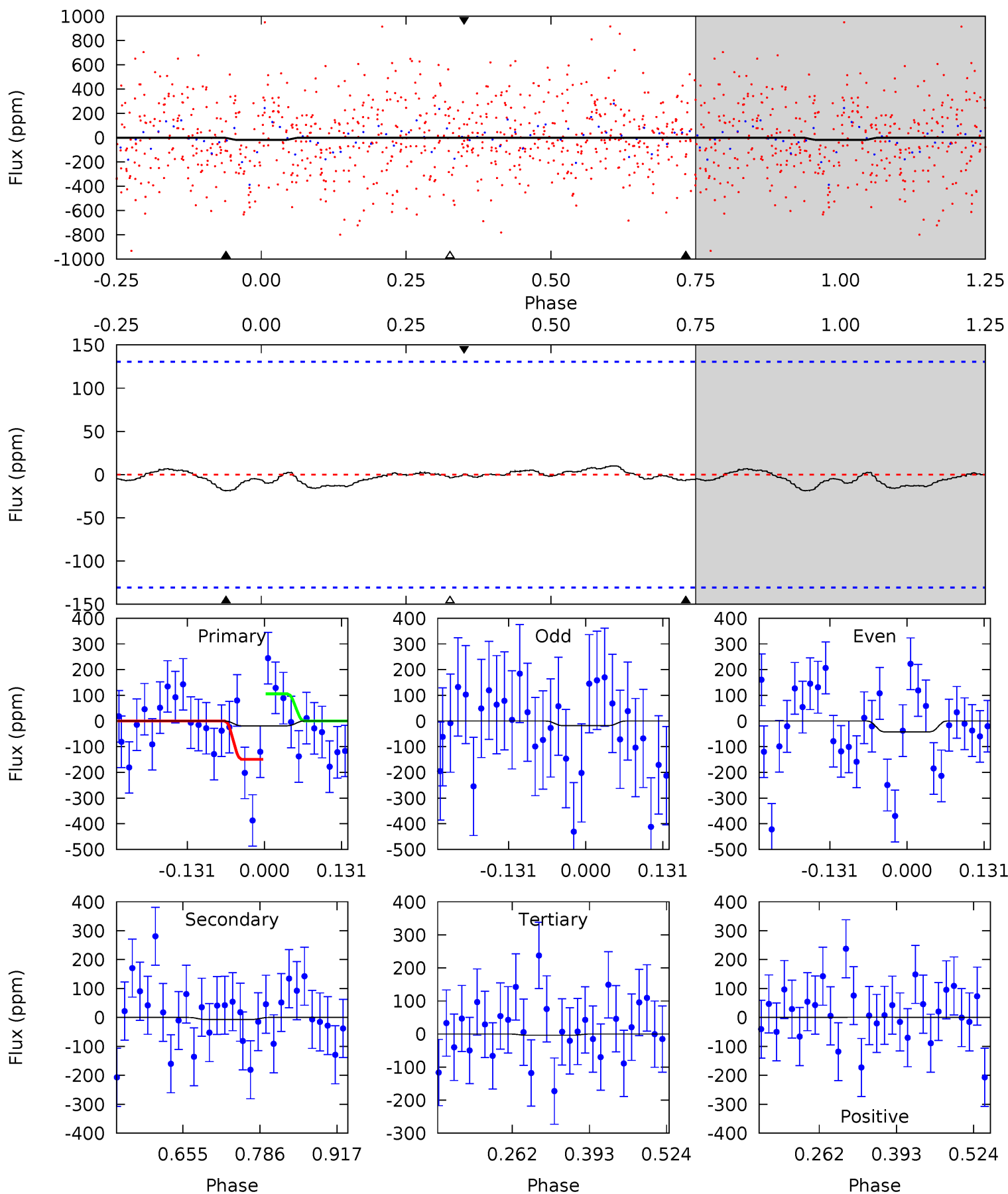
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1.07	-0.27	0	0	4.39	1.22	0.28	1.07	1.07	-0.27	-0.27	0.37	0	0.32	0.20



Alt Model-Shift Uniqueness Test

010749841-02, P = 2.027630 Days, E = 130.091635 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0.64	0.24	0.13	0.03	4.51	1.51	0.22	0.51	0.62	0.11	0.21	0.42	0	0.35	0.74



Stellar Parameters For KIC 010749841

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6193^{+173}_{-238}	$4.434^{+0.054}_{-0.216}$	$0.000^{+0.250}_{-0.300}$	$1.067^{+0.357}_{-0.119}$	$1.127^{+0.155}_{-0.155}$	$1.307^{+0.388}_{-0.708}$
	+3%/-4%	+1%/-5%	+inf%/-inf%	+33%/-11%	+14%/-14%	+30%/-54%
Source	PHO1	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 010749841-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	6 ± 22	$2.51^{+2.45}_{-1.80}$	2229^{+166}_{-120}	-2921^{+6253}_{-1342}	$-0.315^{+2.207}_{-6.532}$
Alt.	-7 ± 29	$2.88^{+2.69}_{-1.89}$	2218^{+153}_{-119}	-1822^{+5882}_{-1658}	$0.287^{+5.040}_{-2.009}$

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

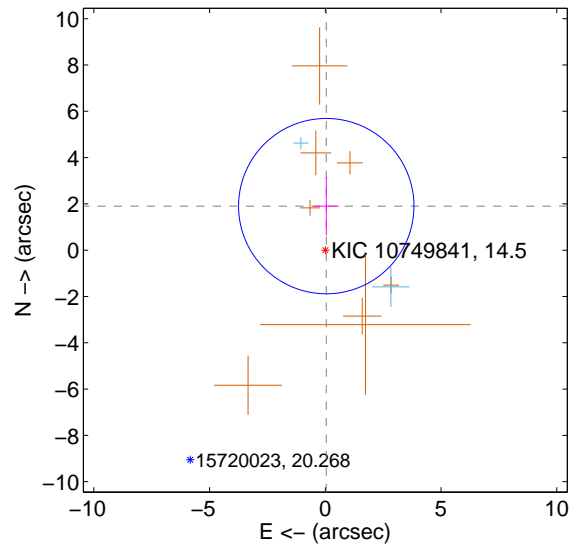
Supplemental centroid analysis for 010749841-02. Kepler magnitude: 14.50. Transit SNR 3.73

There are 2 quarters with good PRF difference image offsets

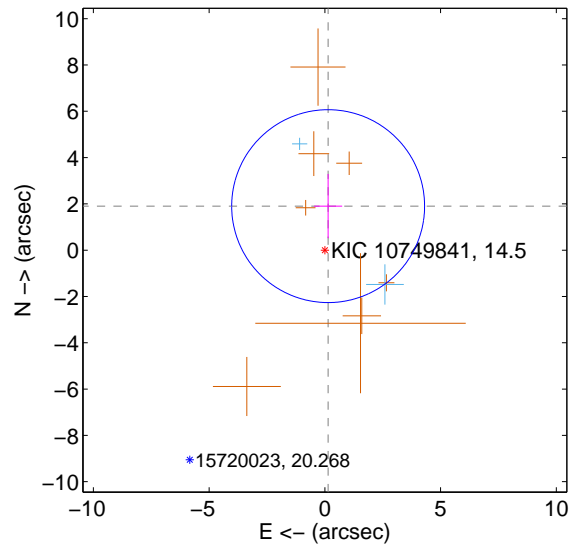
The direct PRF centroid is offset from the target star catalog position by about 0.07 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.903 ± 1.262	1.51	-0.041 ± 0.545	1.902 ± 1.265
PRF-fit source offset from KIC position	1.907 ± 1.389	1.37	-0.142 ± 0.607	1.902 ± 1.387
photometric centroid source offset	1.09 ± 2.54	0.43	1.00 ± 2.56	0.43 ± 2.43

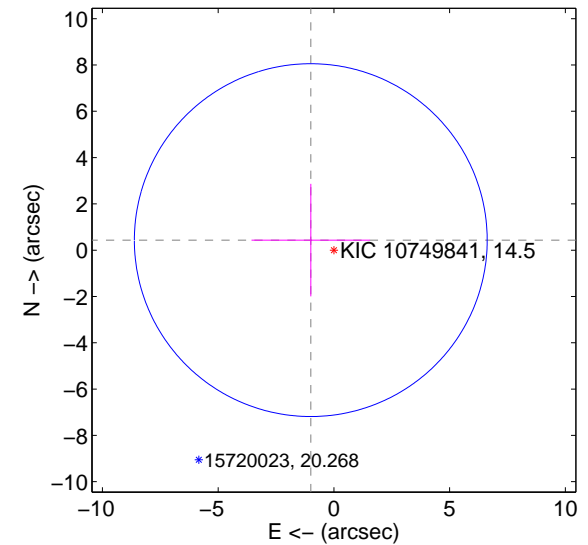
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

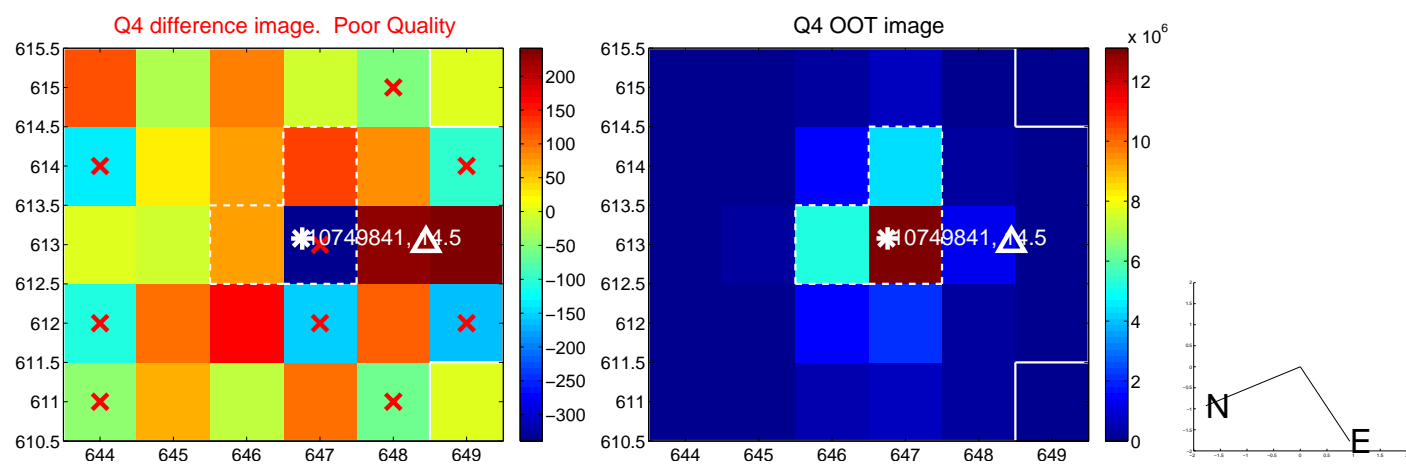
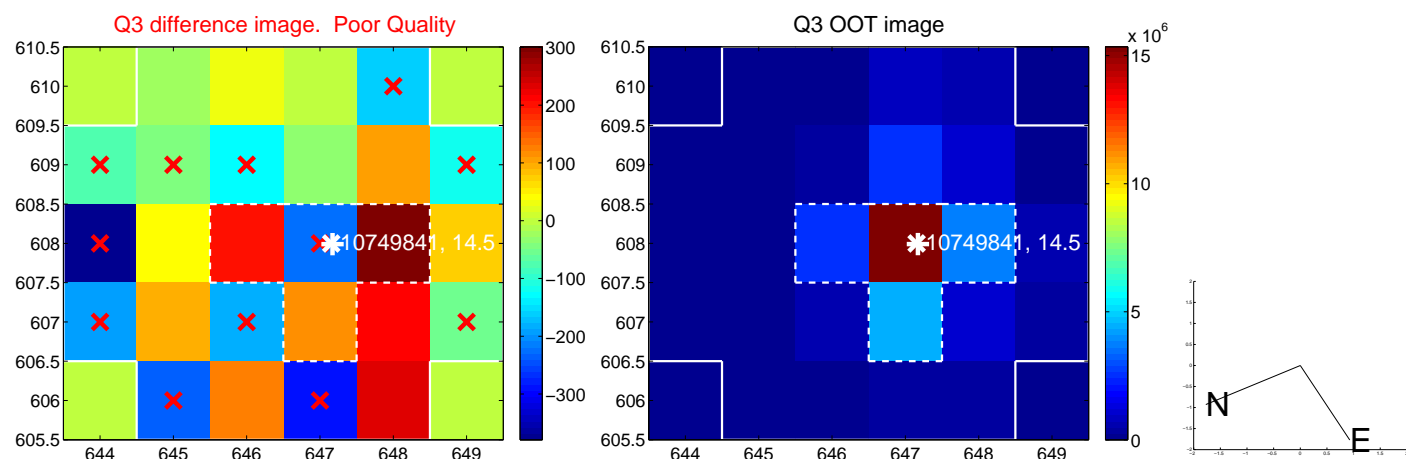
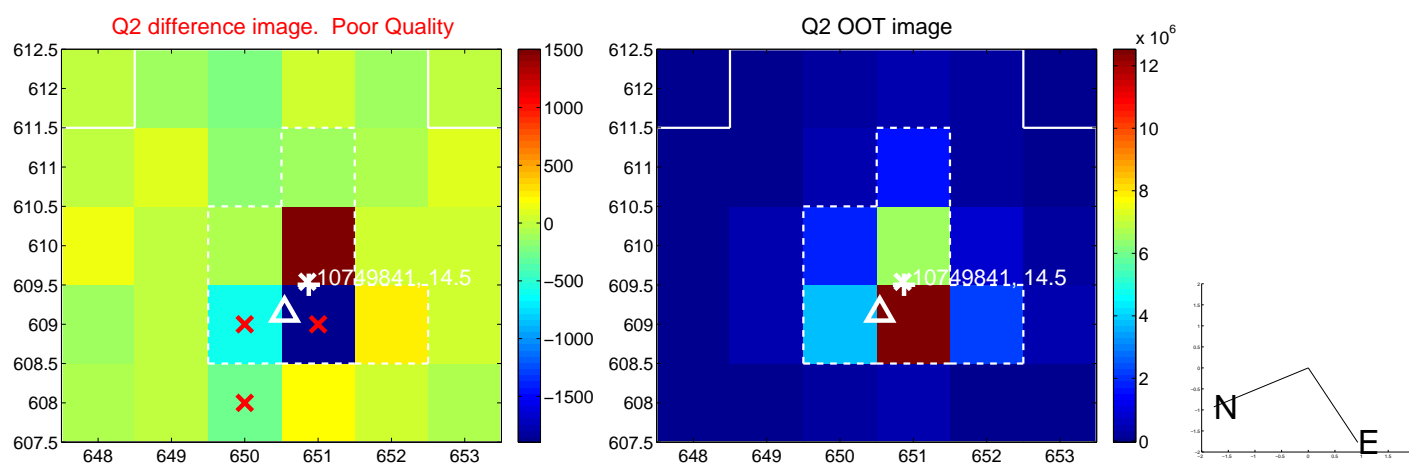
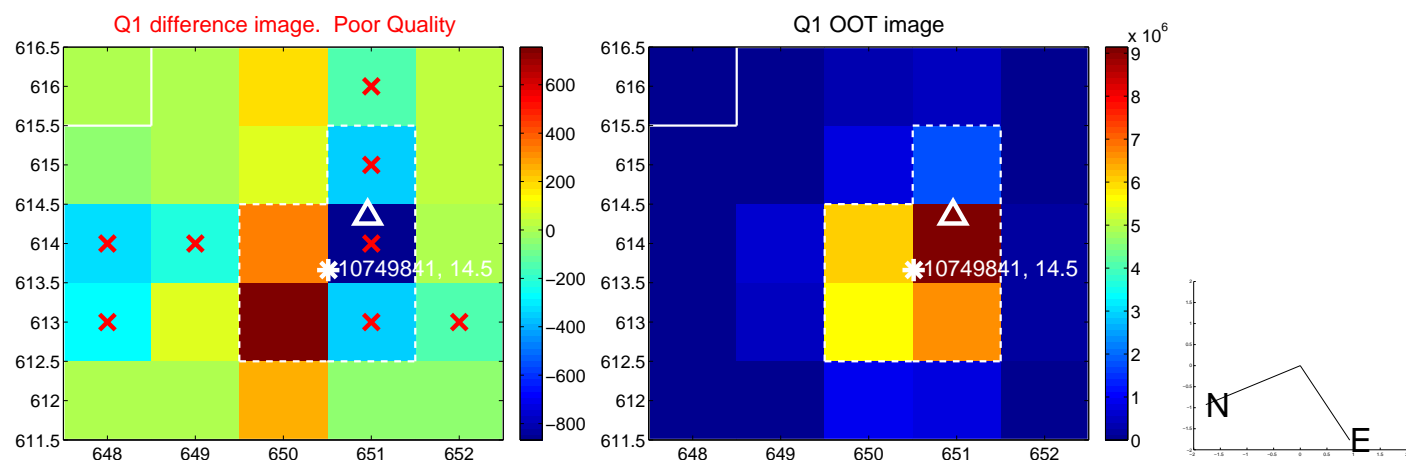


offset from photometric centroids

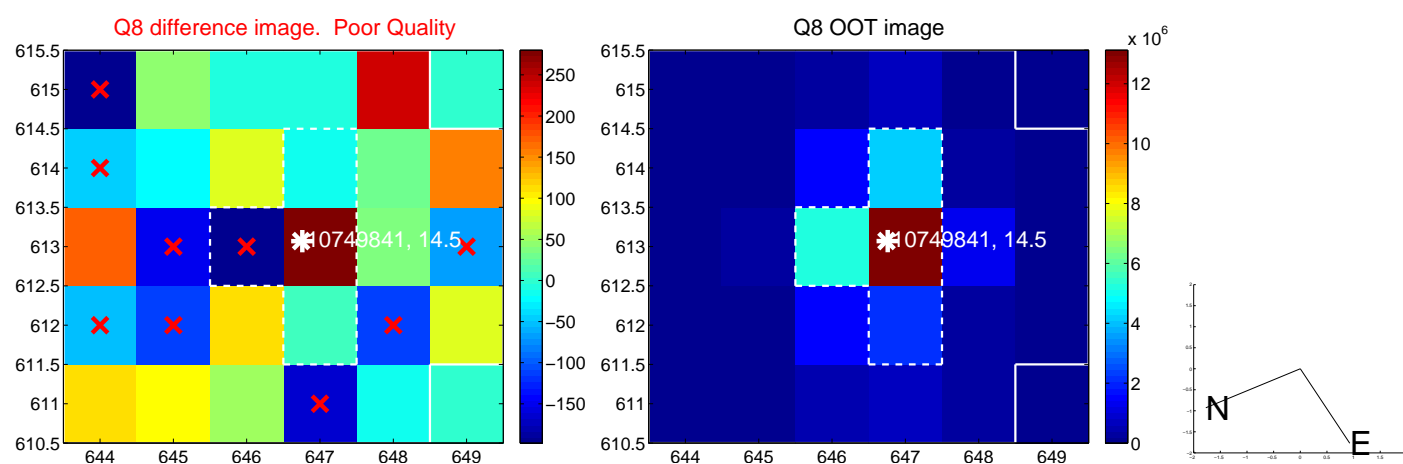
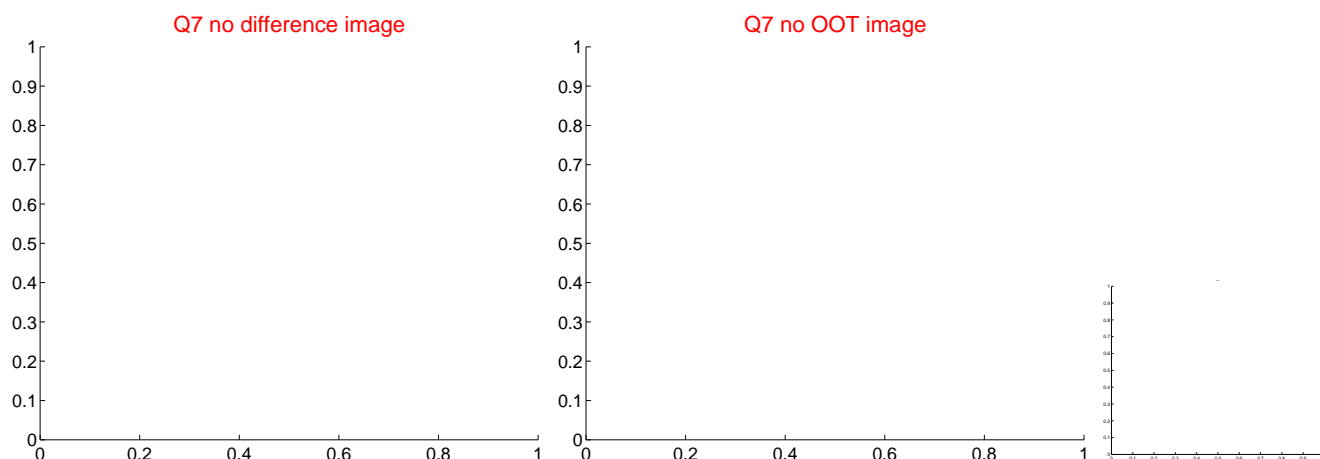
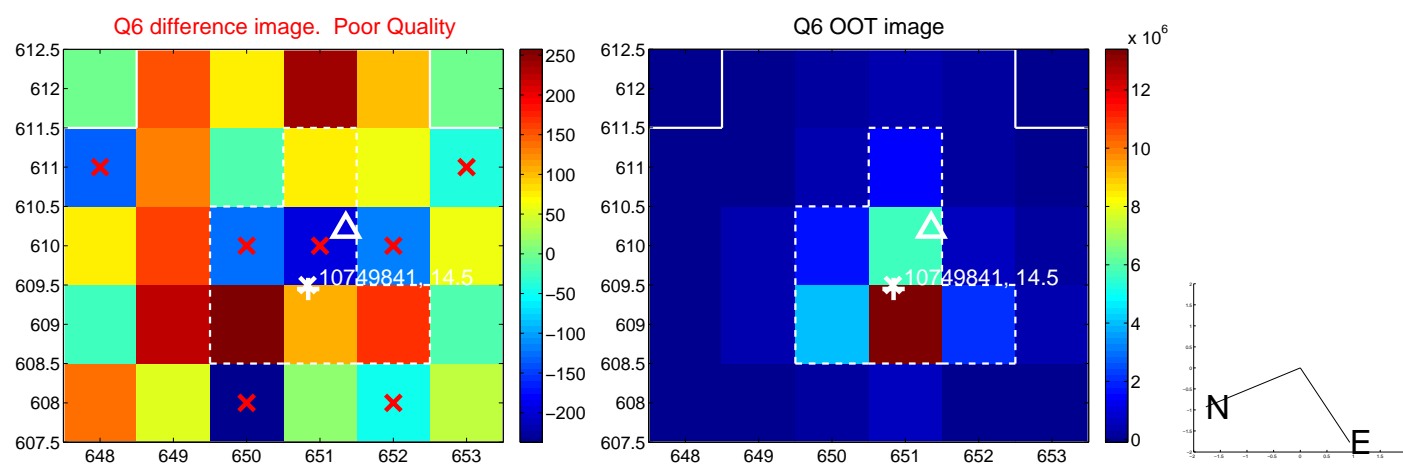
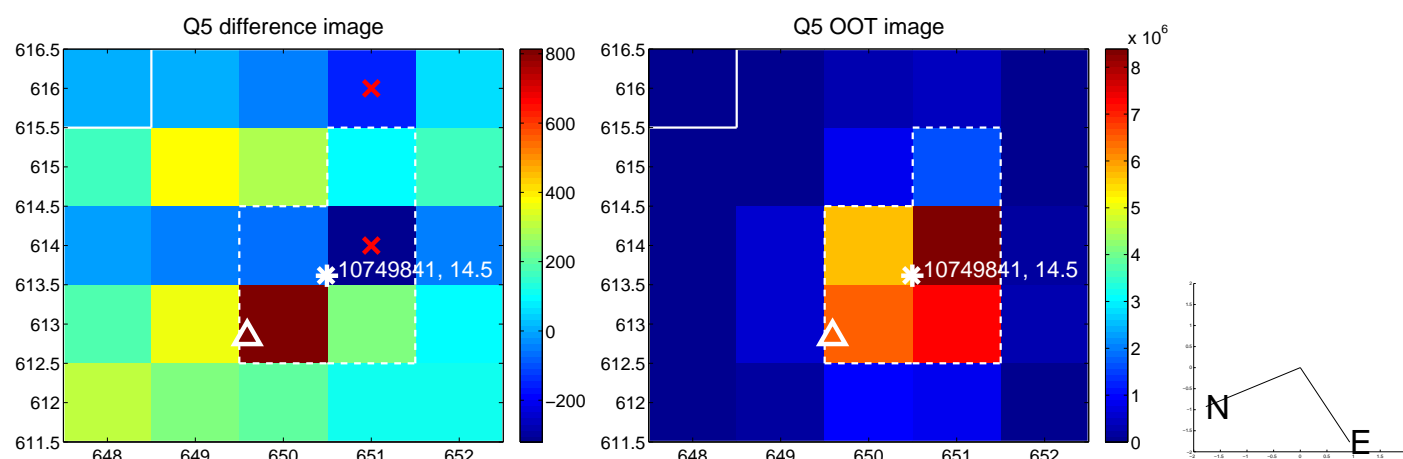


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

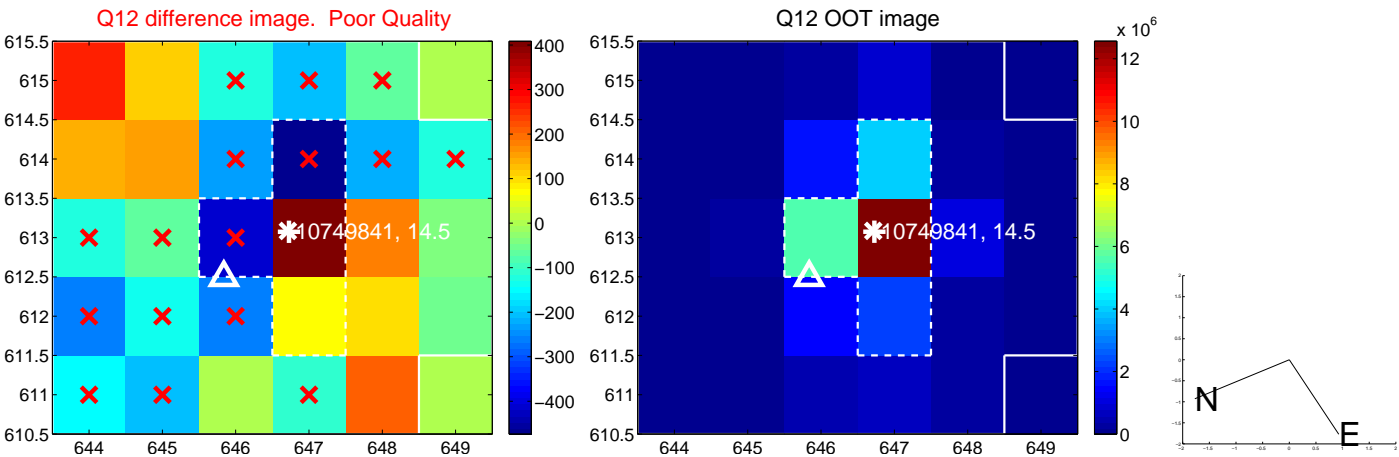
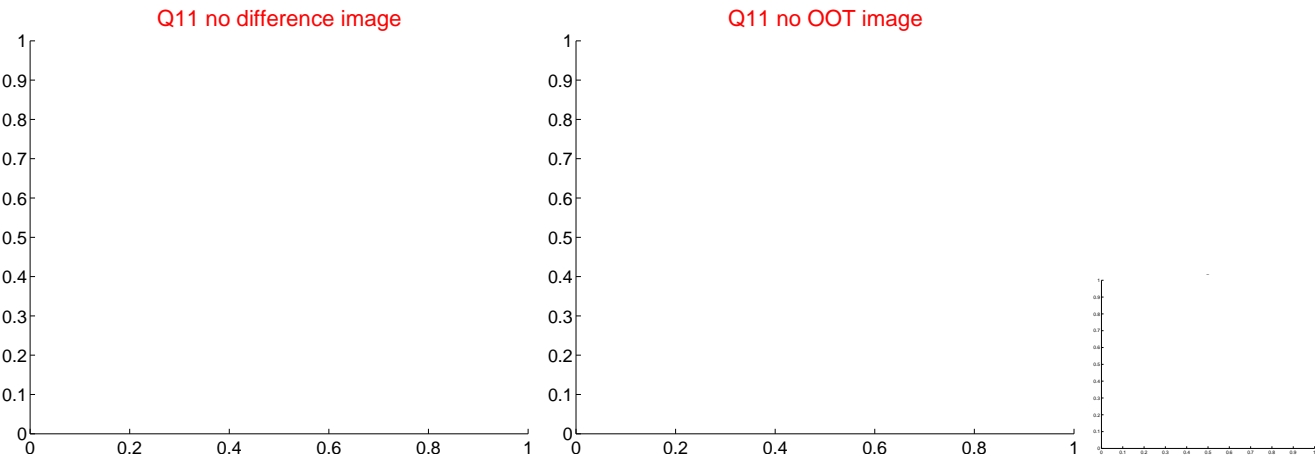
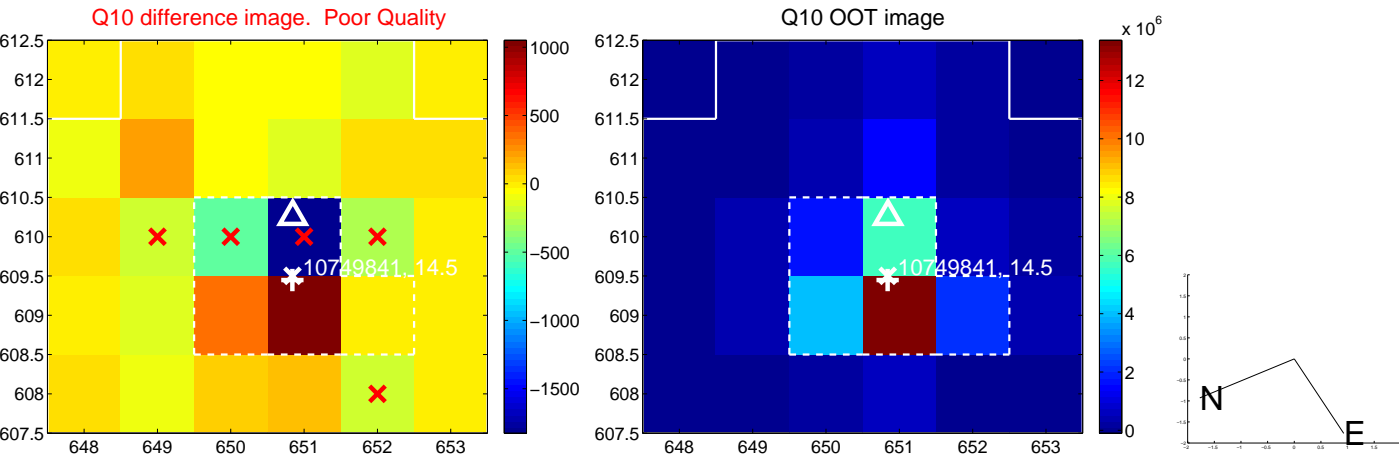
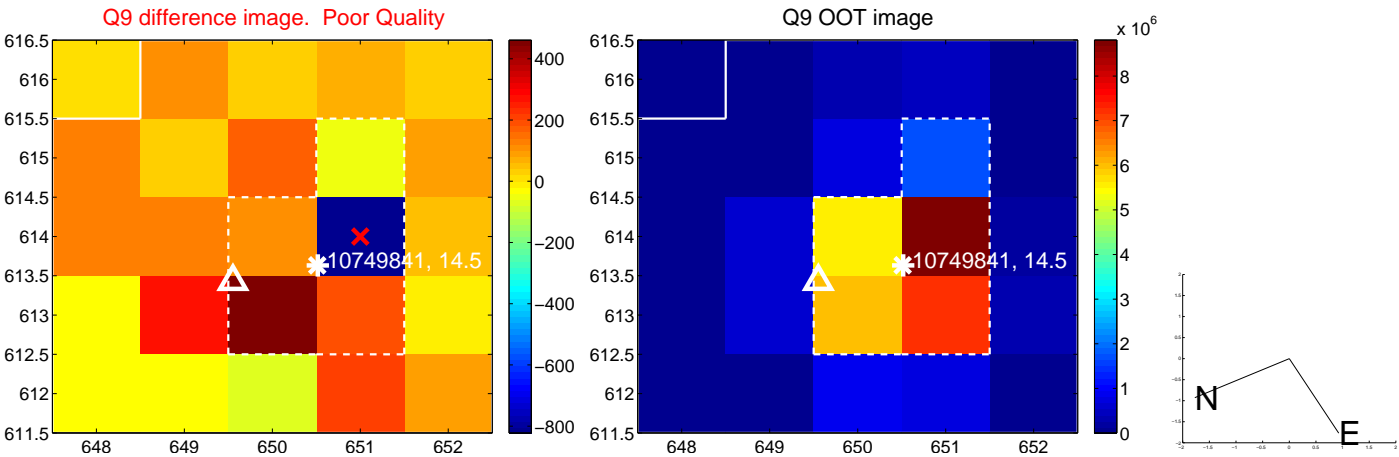
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



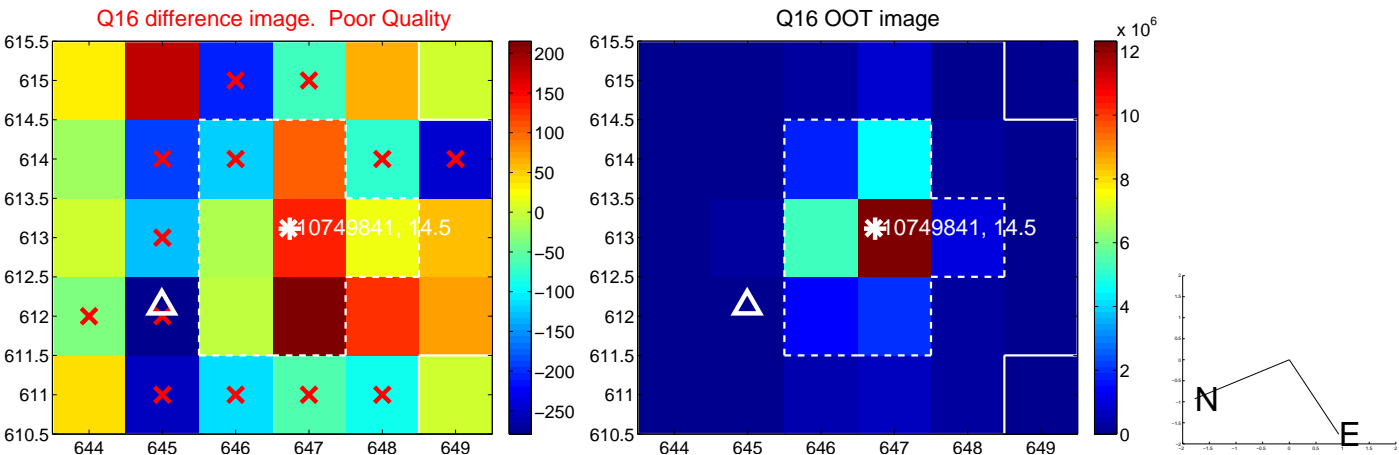
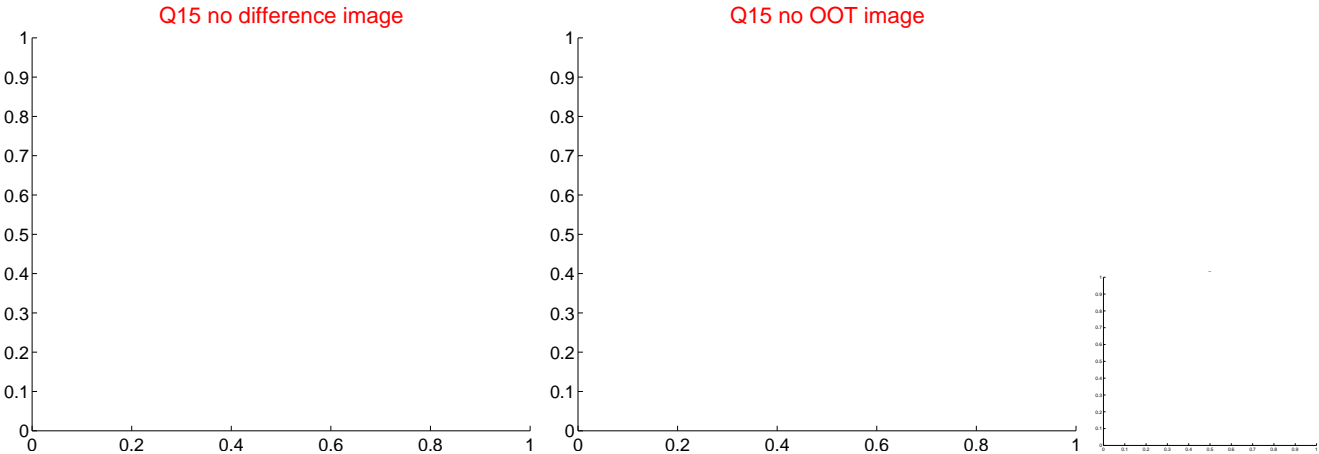
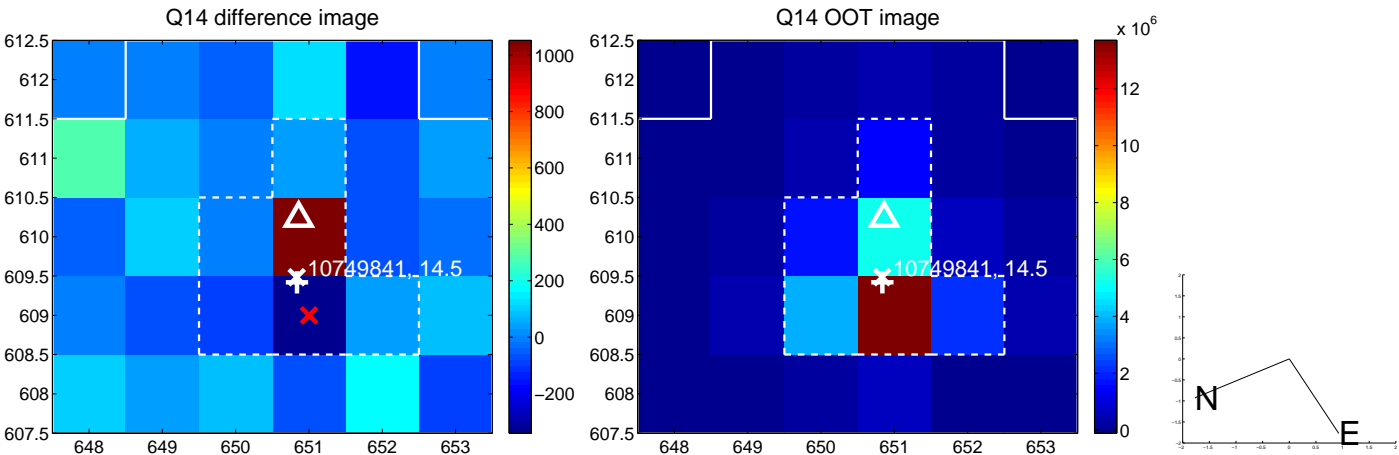
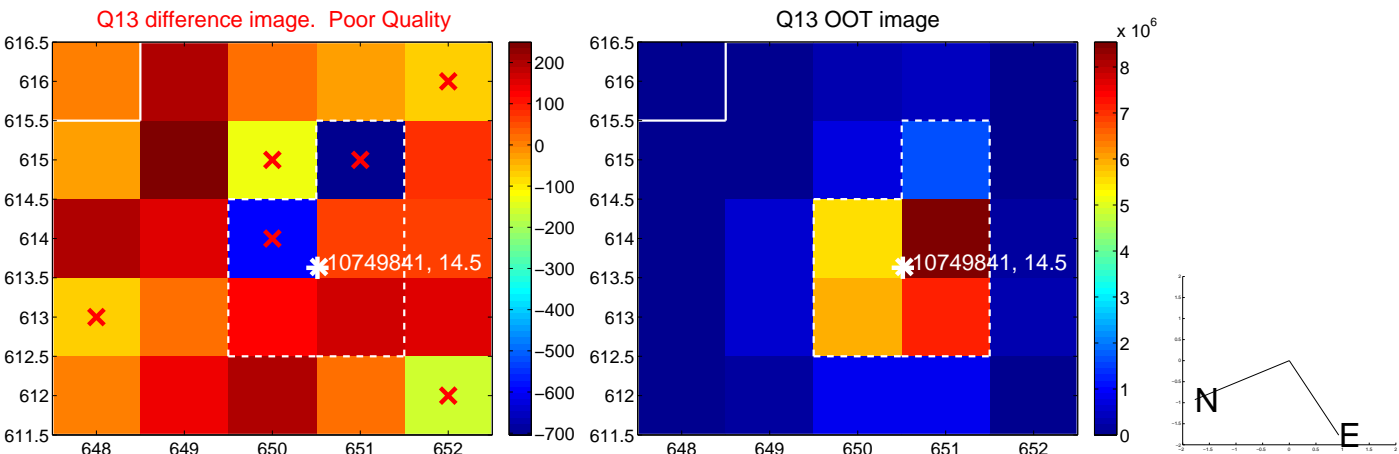
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



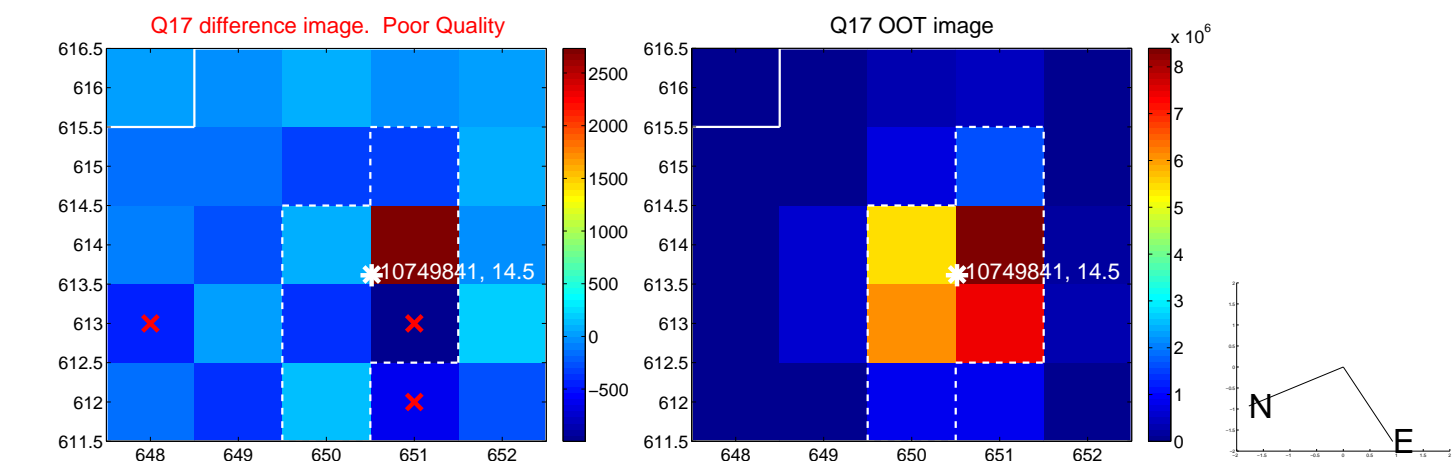
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



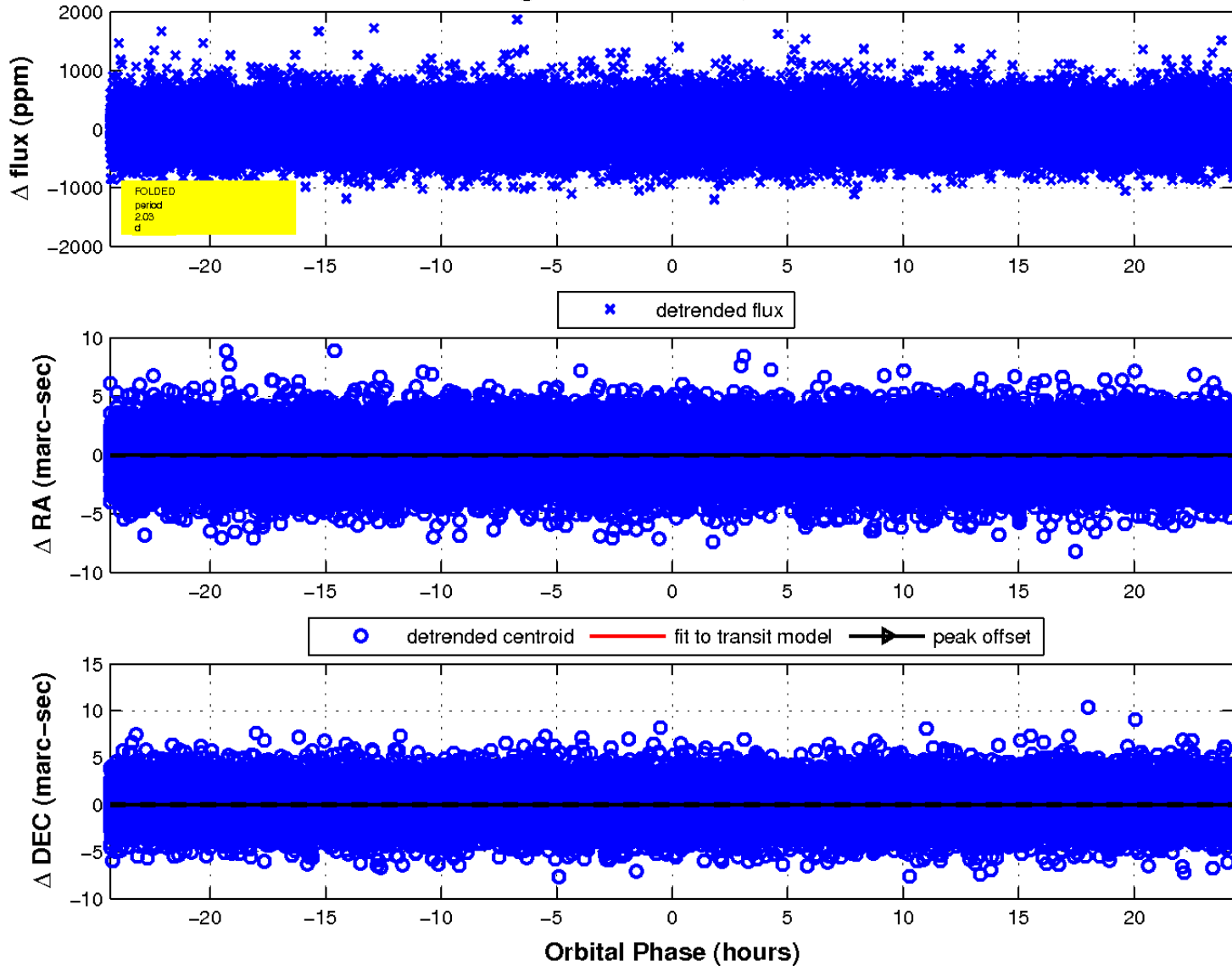
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 2 of 2



UKIRT Image

Declination

