

KIC 005471690

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})
005471690-01	OBS	No	12.425690	141.518539	76.3	22.644	15.6	20.7	2.19	6632	2.52	644.27
005471690-02	OBS	4006.01	6.212464	134.072411	59.4	30.366	17.2	17.5	2.19	6632	3.22	1623.60

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005471690-01	OBS	FP	0.00	1	0	1	1	LPP_DV—LPP_ALT—HALO_GHOST—EPHEM_MATCH
005471690-02	OBS	FP	0.00	1	0	1	1	LPP_DV—SAME_NTL_PERIOD—CENT_FEW_DIFFS—HALO_GHOST—EPHEM_MATCH

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.

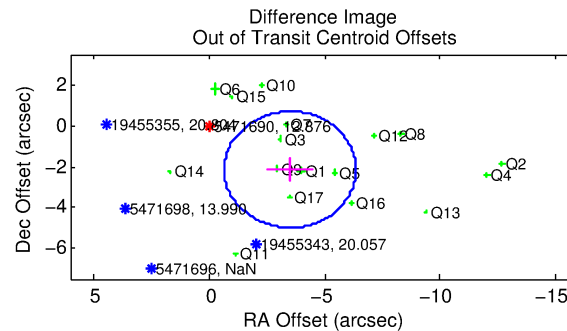
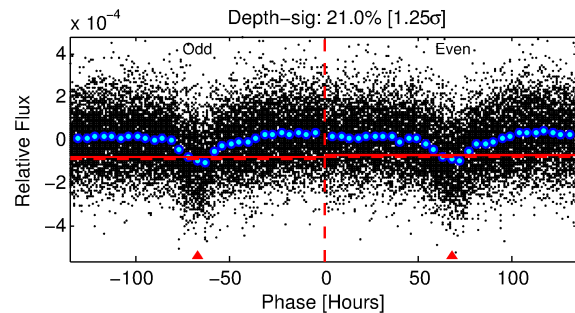
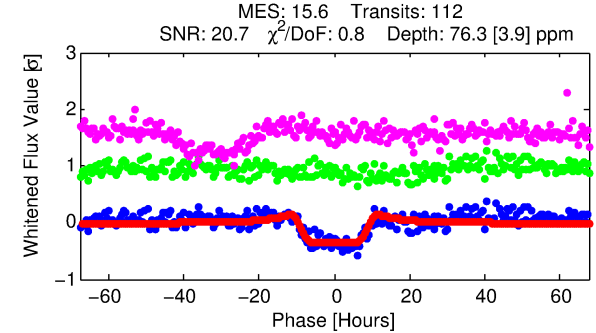
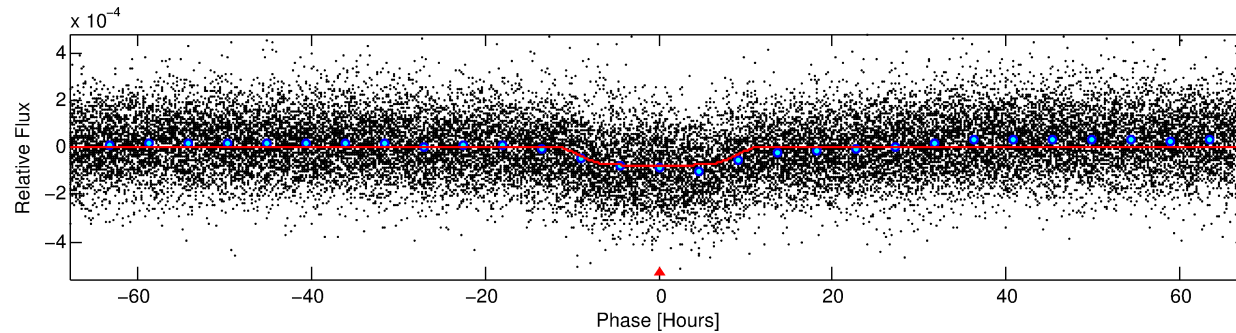
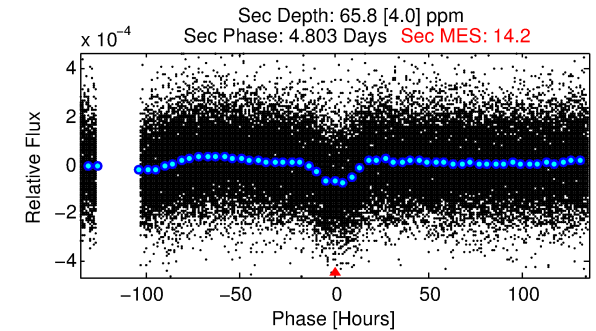
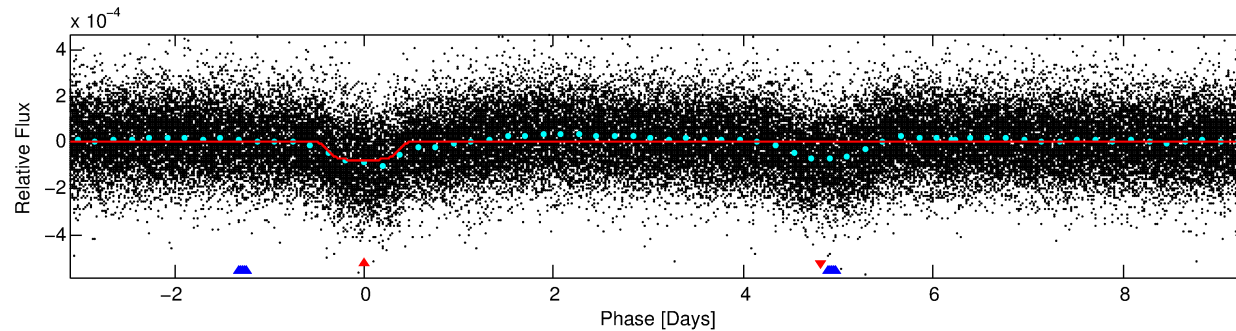
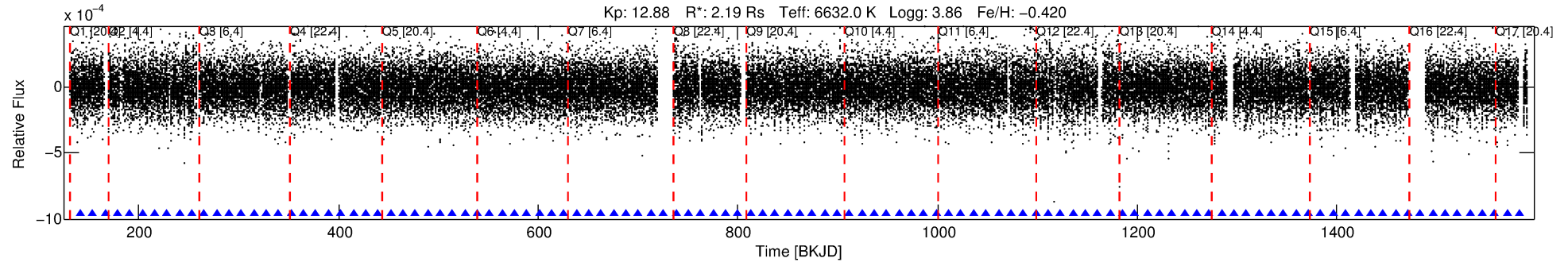
Ephemeris Match Information For 005471690-01

TCE (1)	KIC	Parent (2)	Parent KIC	$P_1:P_2$	Dist ($''$)	Δ Row	Δ Col	m_2	m_1	D_2/D_1	Mechanism	Flag	σ_P	σ_T
005471690-01	5471690	V380-Cyg-pri	5385723	1:1	241.2	10	60	5.77	12.87	1907.00	Direct-PRF	0	0.09	0.72

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: 5471690 Candidate: 1 of 2 Period: 12.426 d
KOI: K04006 Corr: No Ephemeris Match



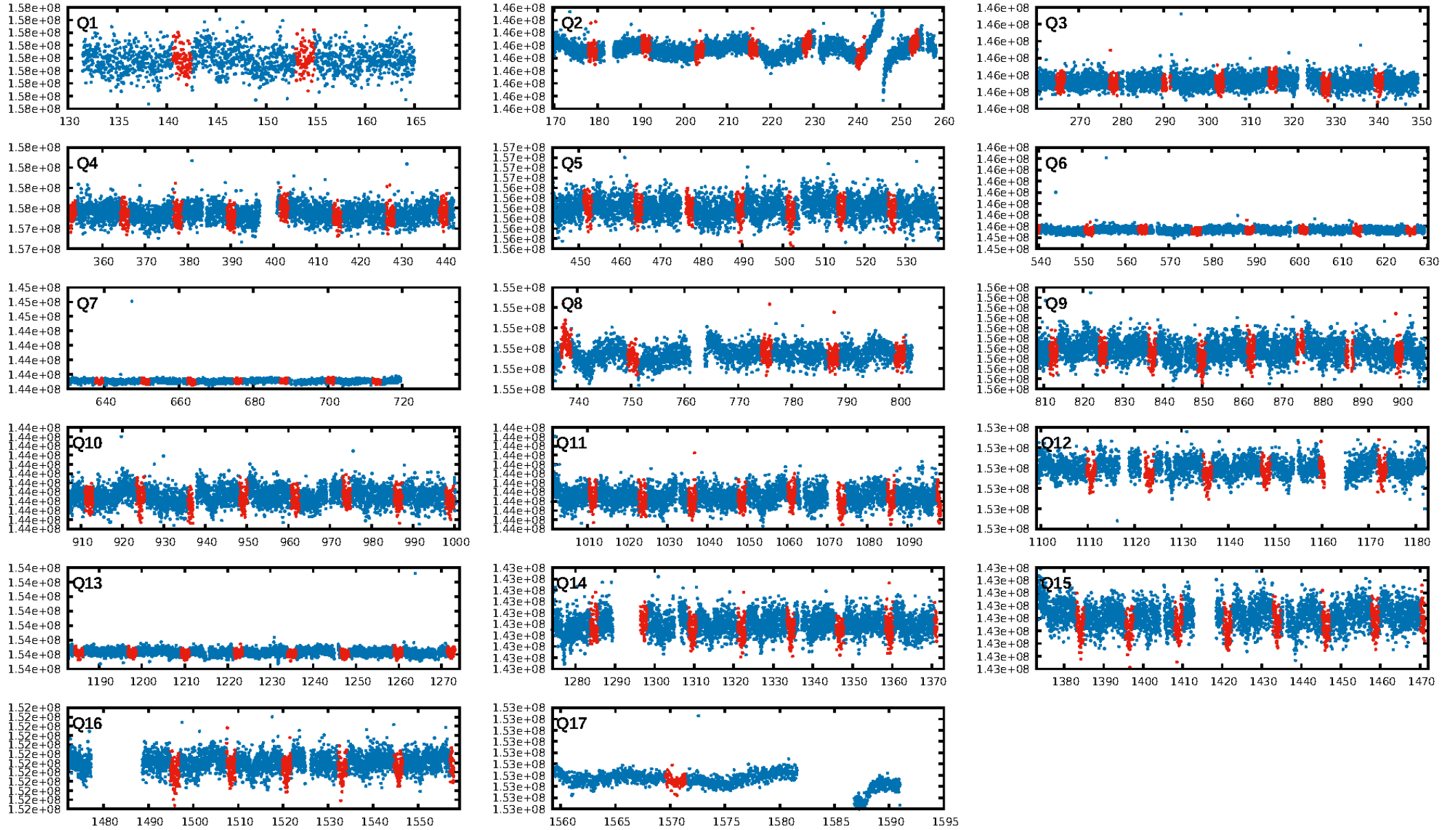
DV Fit Results:

Period = 12.42569 [0.00026] d
Epoch = 141.5185 [0.0171] BKJD
Rp/R* = 0.0105 [0.0003]
a/R* = 1.44 [0.06]
b = 0.98 [0.00]
Seff = 644.27 [339.71]
Teq = 1285 [169] K
Rp = 2.51 [0.83] Re
a = 0.1137 [0.0362] AU
Ag = 74.06 [38.32] [1.91σ]
Teffp = 5827 [231] K [15.85σ]

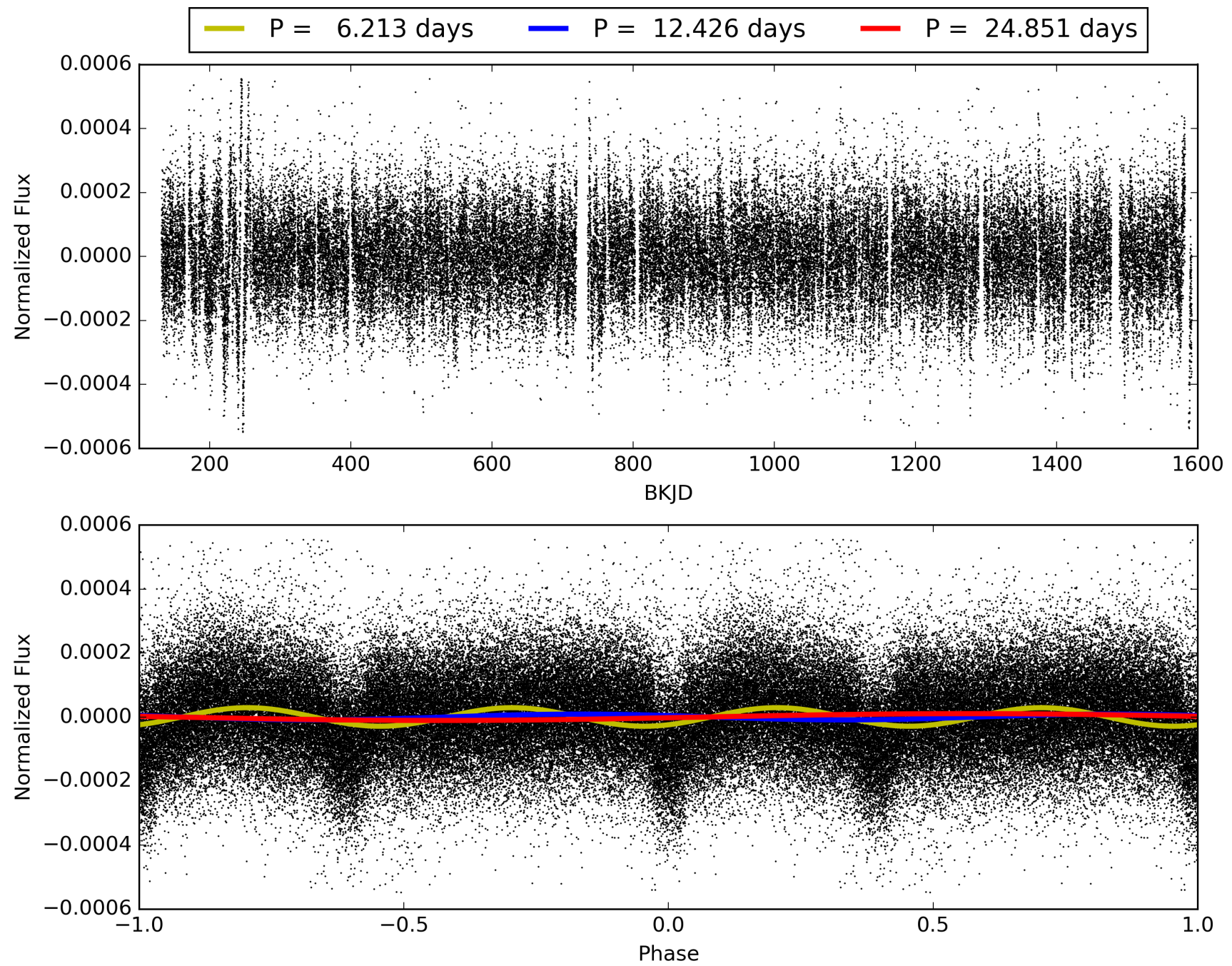
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [3.94σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 15.6%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 2.33e-58
RollingBand-fgt: 1.00 [109/109]
GhostDiagnostic-chr: 0.003171
Centroid-sig: N/A
Centroid-so: 2.365 arcsec [4.37σ]
OotOffset-rm: 4.106 arcsec [4.33σ]
KicOffset-rm: 3.931 arcsec [4.49σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 0.24 [4/17]
DiffImageOverlap-fno: 0.00 [0/17]

TCE 005471690-01, PDC Light Curves

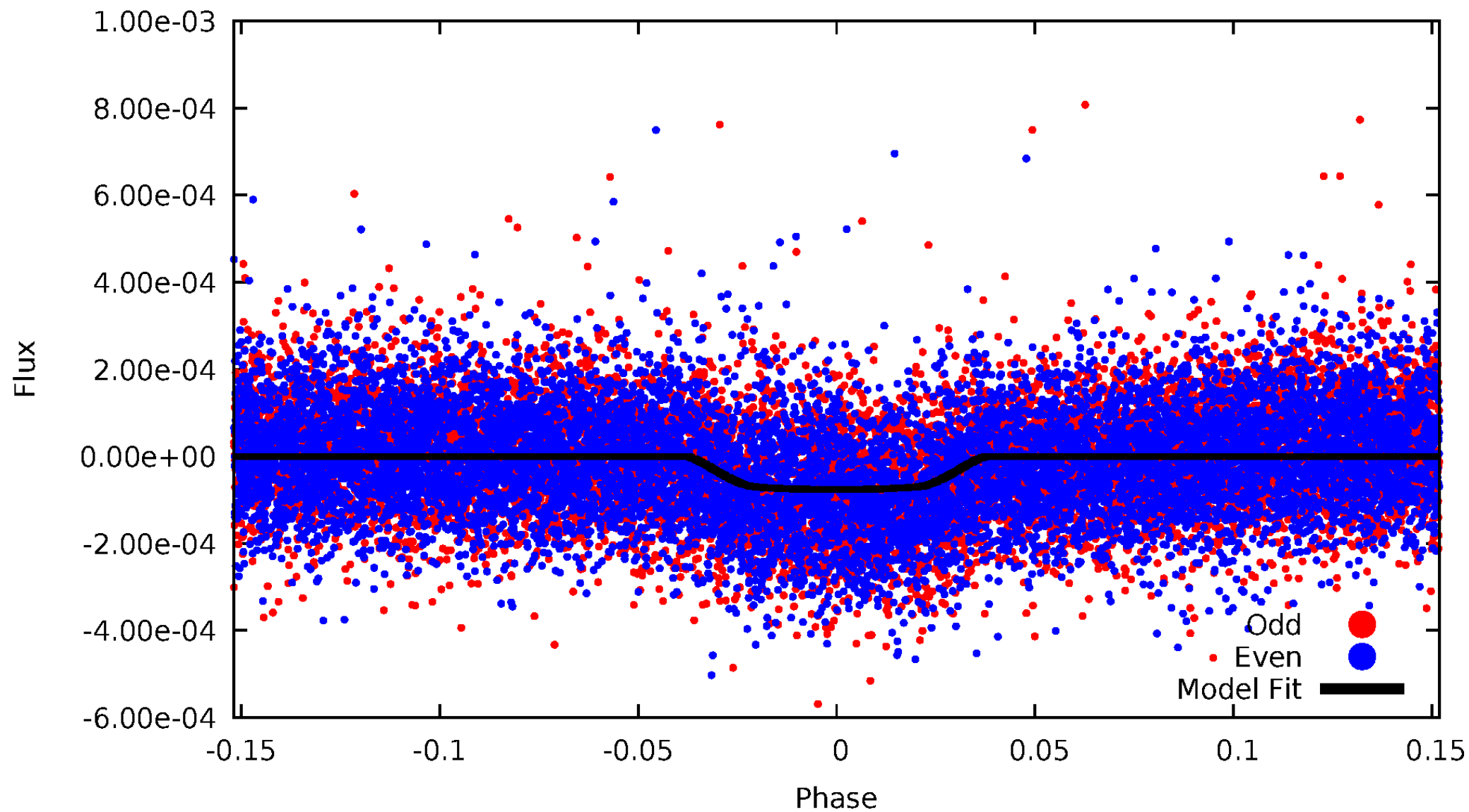


TCE 005471690-01



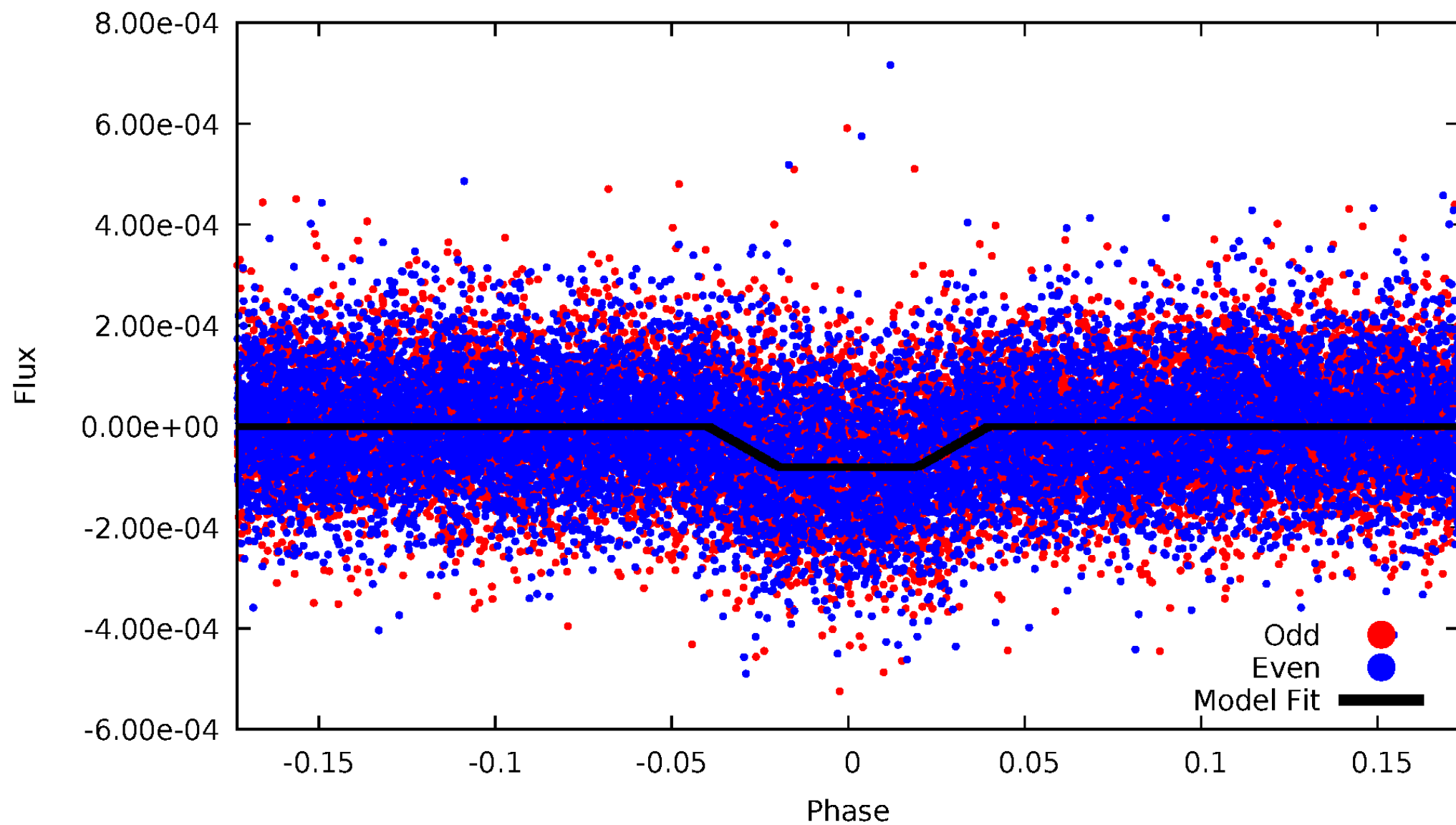
DV Odd/Even

TCE 005471690-01



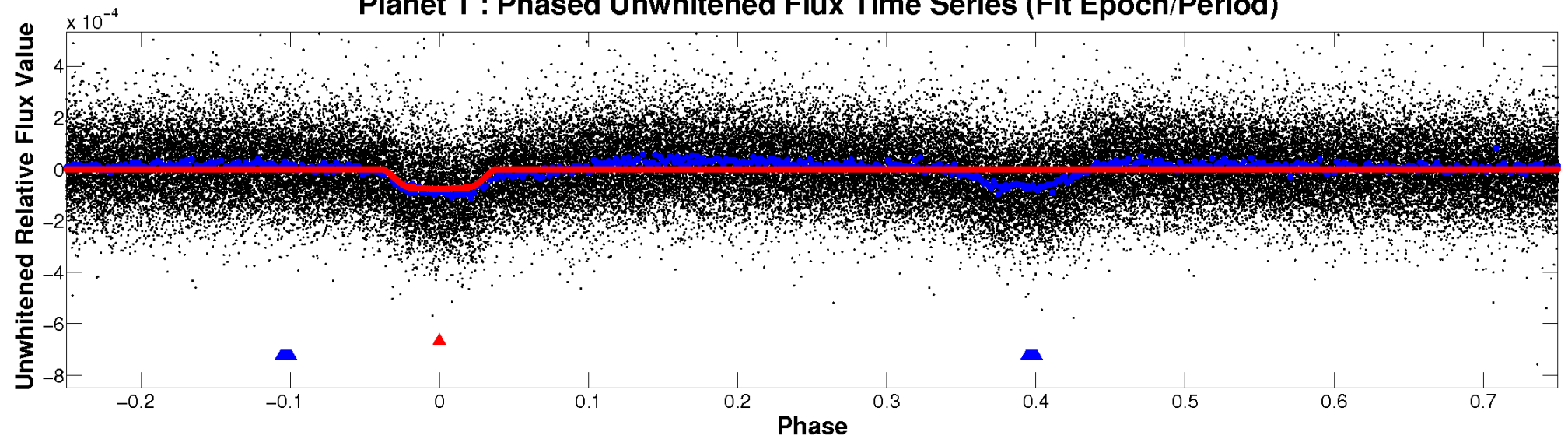
ALT Odd/Even

TCE 005471690-01

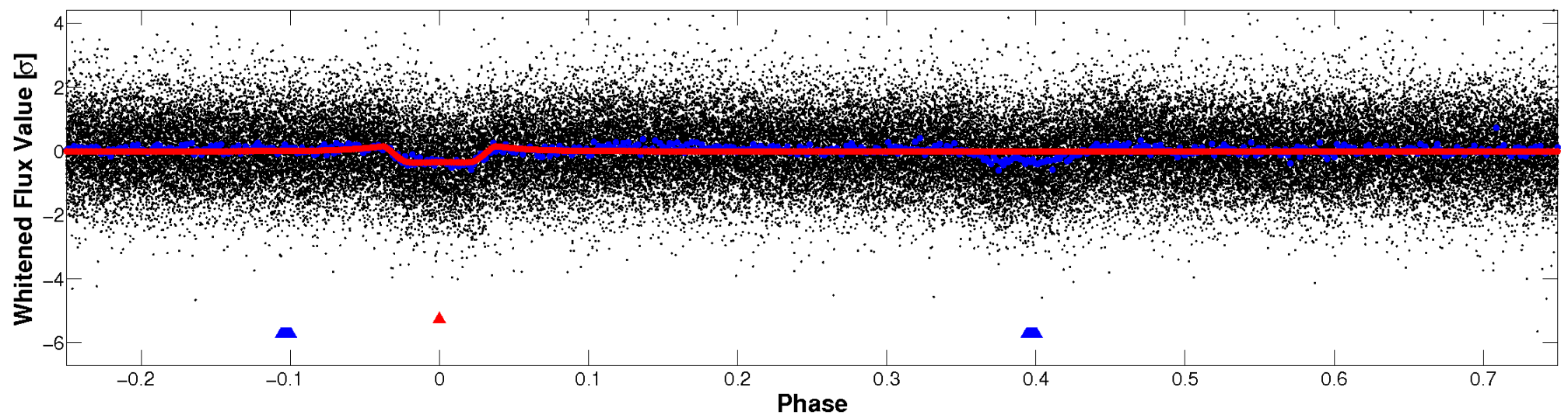


Non-Whitened Vs. Whitened Light Curve

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

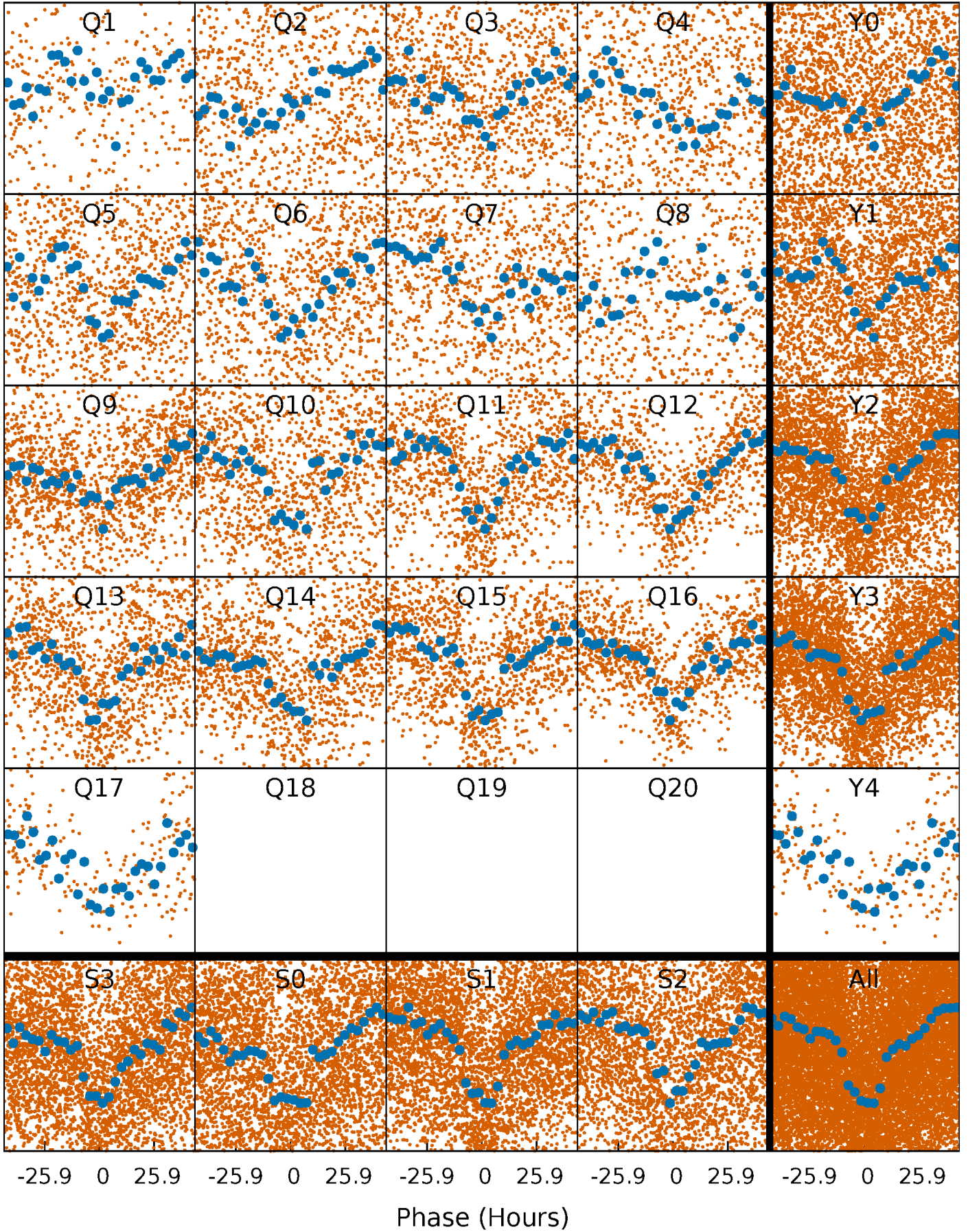


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



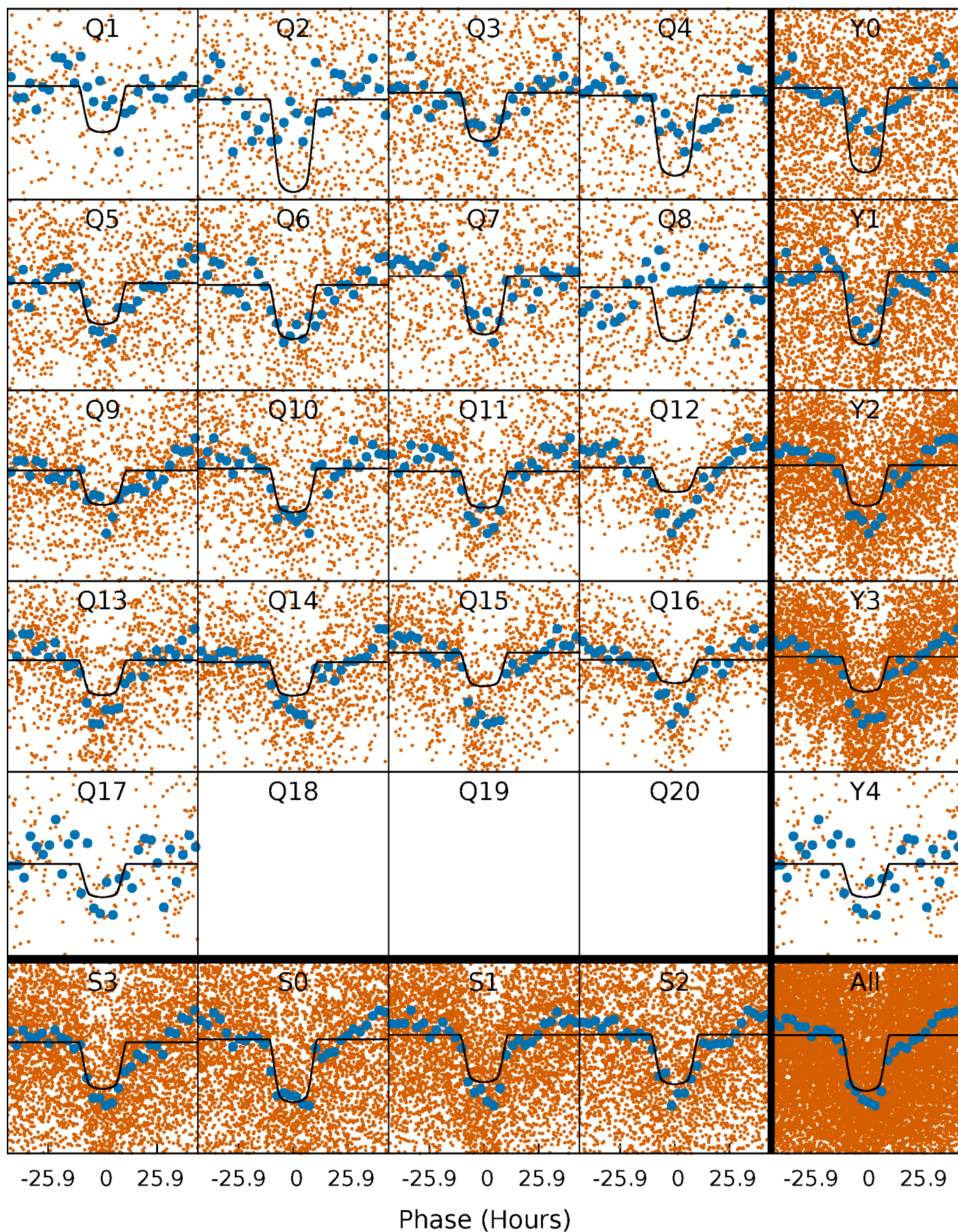
PDC Quarter-Phased Transit Curves

TCE 005471690-01 P= 12.425690 Days $T_0=141.518539$ (BKJD)



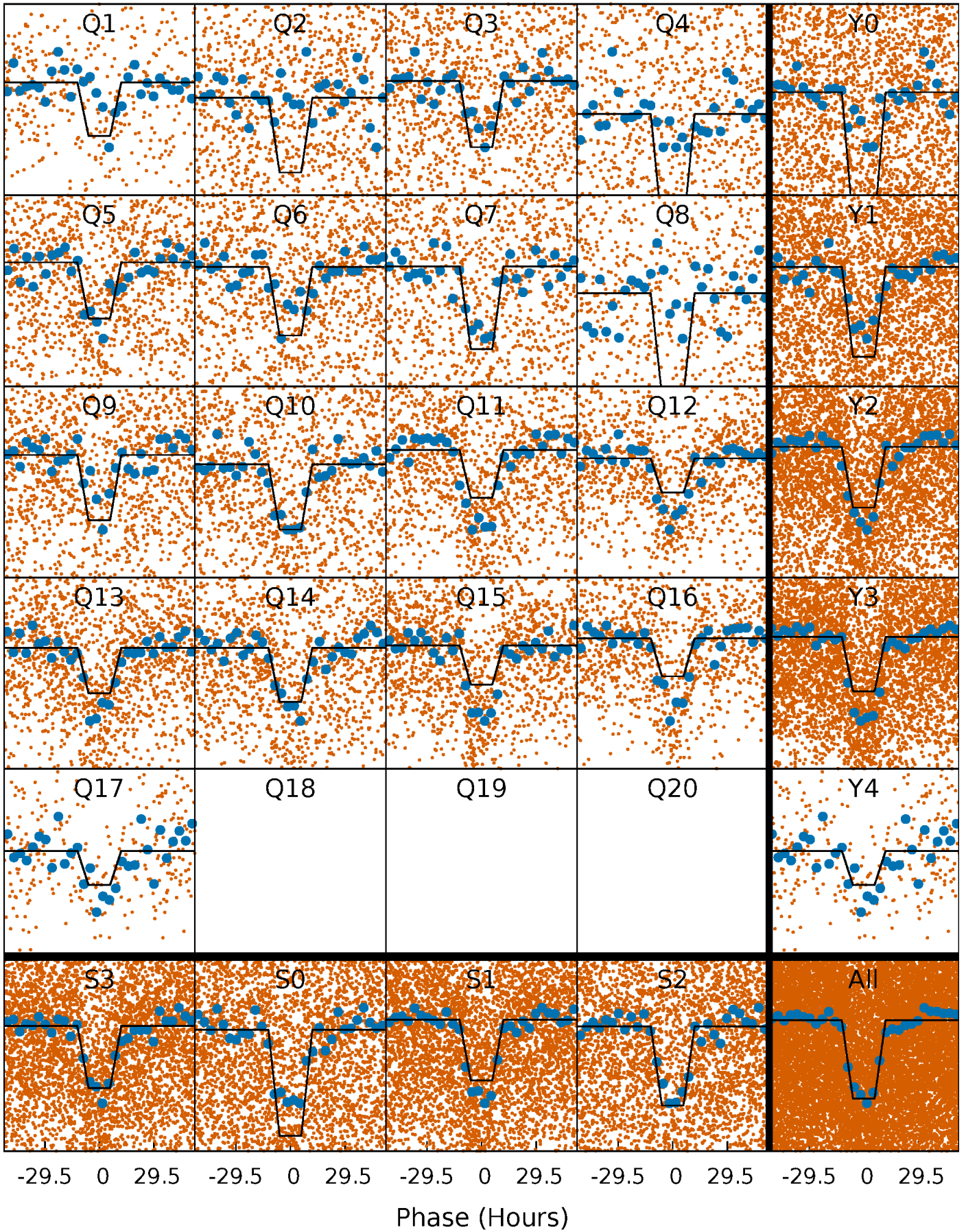
DV Quarter-Phased Transit Curves

TCE 005471690-01 P= 12.425690 Days $T_0=141.518539$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

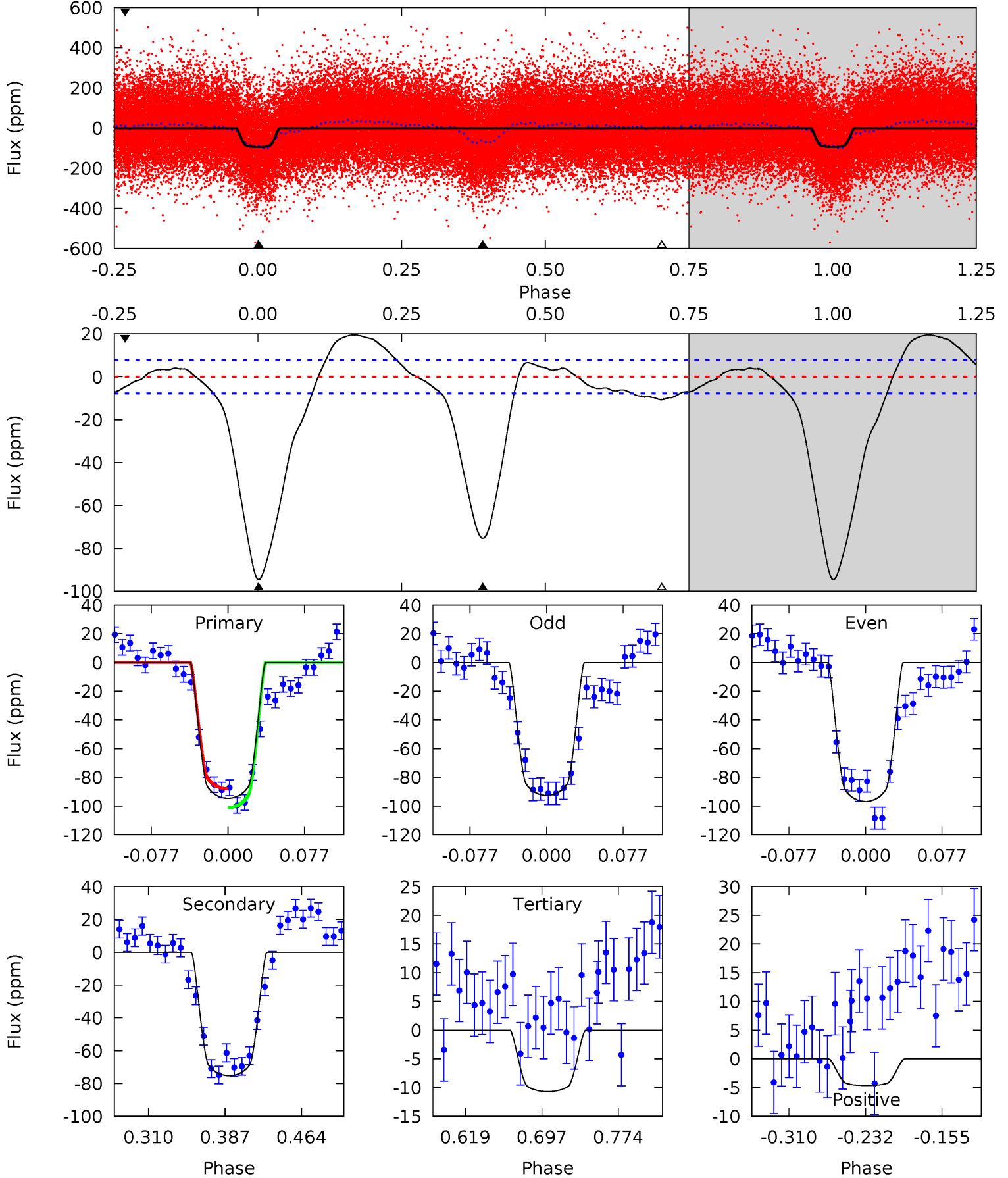
TCE 005471690-01 P= 12.424613 Days $T_0=141.608450$ (BKJD)



DV Model-Shift Uniqueness Test

005471690-01, P = 12.425690 Days, E = 129.092849 Days

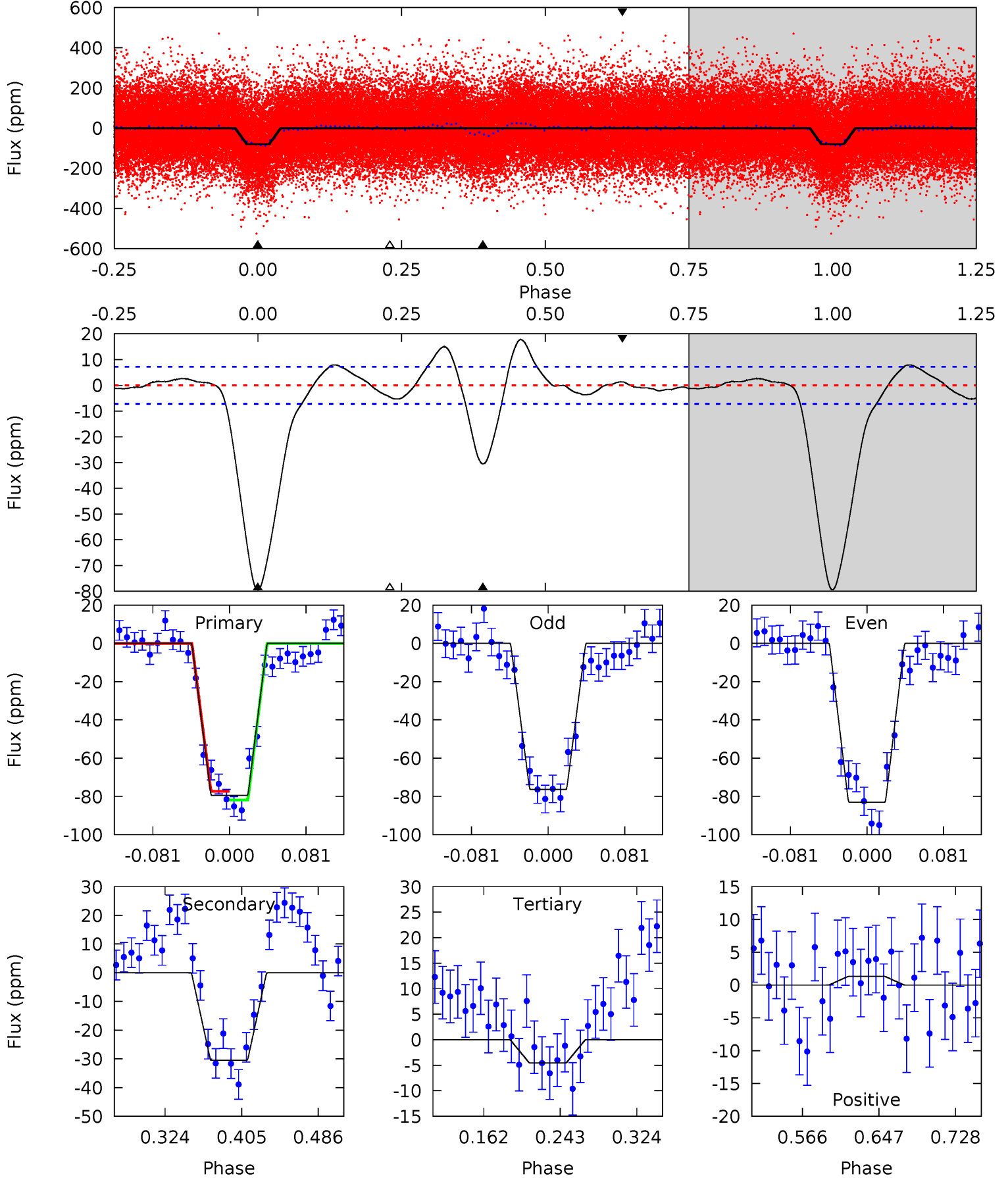
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
56.3	44.8	6.37	-2.77	4.62	1.77	5.10	50.0	59.1	38.4	47.6	1.25	1.00	0.17	3.84



Alt Model-Shift Uniqueness Test

005471690-01, P = 12.424613 Days, E = 129.183837 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
50.9	19.5	2.91	0.84	4.61	1.75	2.24	48.0	50.1	16.6	18.7	2.12	0.97	0.18	1.41



Stellar Parameters For KIC 005471690

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6632^{+201}_{-221}	$3.860^{+0.300}_{-0.100}$	$-0.420^{+0.300}_{-0.250}$	$2.193^{+0.421}_{-0.722}$	$1.270^{+0.220}_{-0.220}$	$0.170^{+0.332}_{-0.051}$
	+3%/-3%	+8%/-3%	+71%/-60%	+19%/-33%	+17%/-17%	+196%/-30%
Source	PHO1	FLK73	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 005471690-01 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-75 ± 2	$2.47^{+0.30}_{-0.45}$	1761^{+111}_{-143}	6002^{+192}_{-194}	89^{+38}_{-16}
Alt.	-30 ± 2	$2.11^{+0.27}_{-0.38}$	1761^{+116}_{-151}	5229^{+173}_{-171}	50^{+19}_{-11}

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

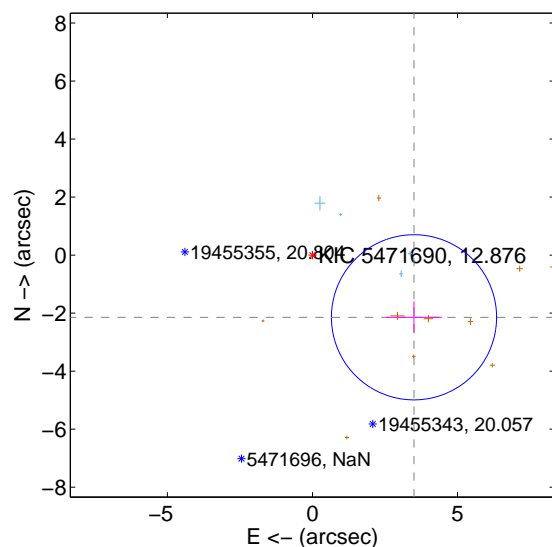
Supplemental centroid analysis for 005471690-01. Kepler magnitude: 12.88. Transit SNR 20.69

There are 4 quarters with good PRF difference image offsets

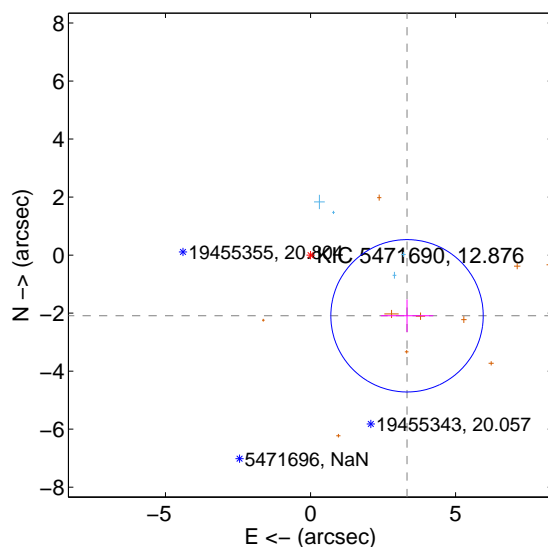
The direct PRF centroid is offset from the target star catalog position by about 0.23 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	4.106 ± 0.949	4.33	-3.501 ± 0.964	-2.145 ± 0.551
PRF-fit source offset from KIC position	3.931 ± 0.875	4.49	-3.327 ± 0.905	-2.093 ± 0.564
photometric centroid source offset	2.37 ± 0.54	4.37	-2.37 ± 0.54	-0.03 ± 0.50

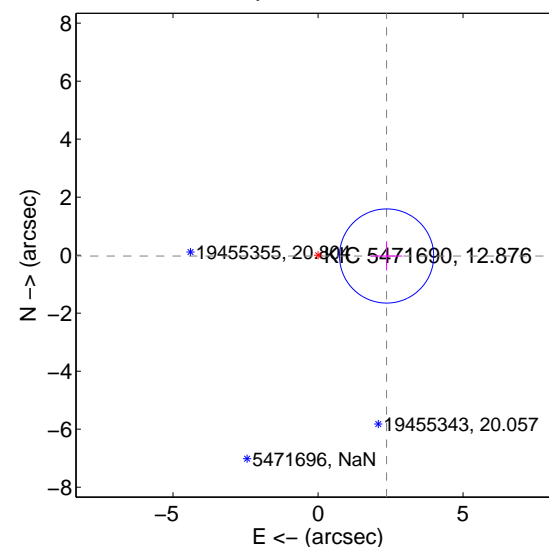
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

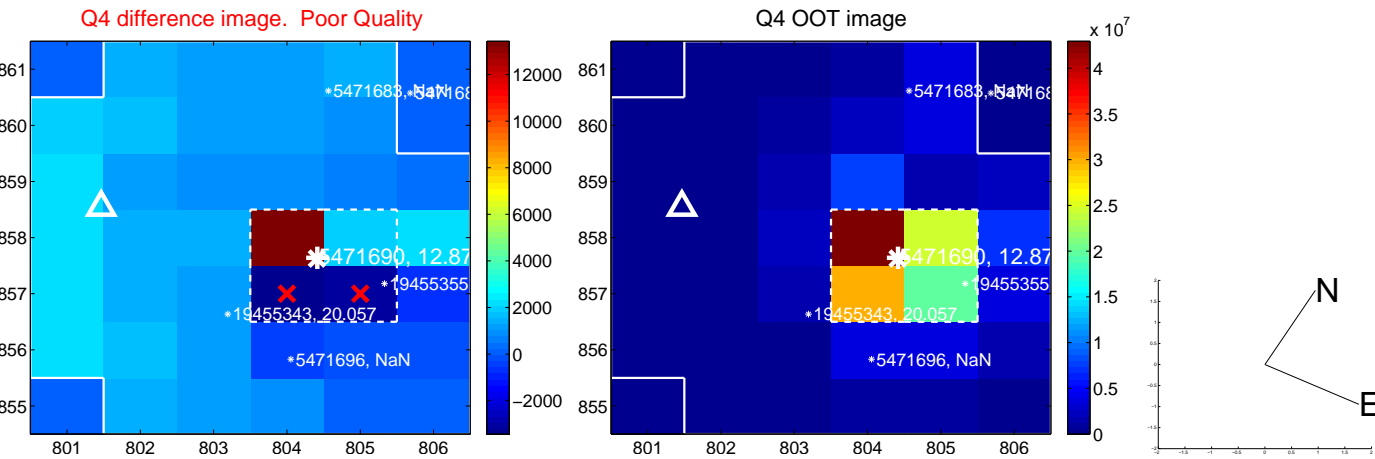
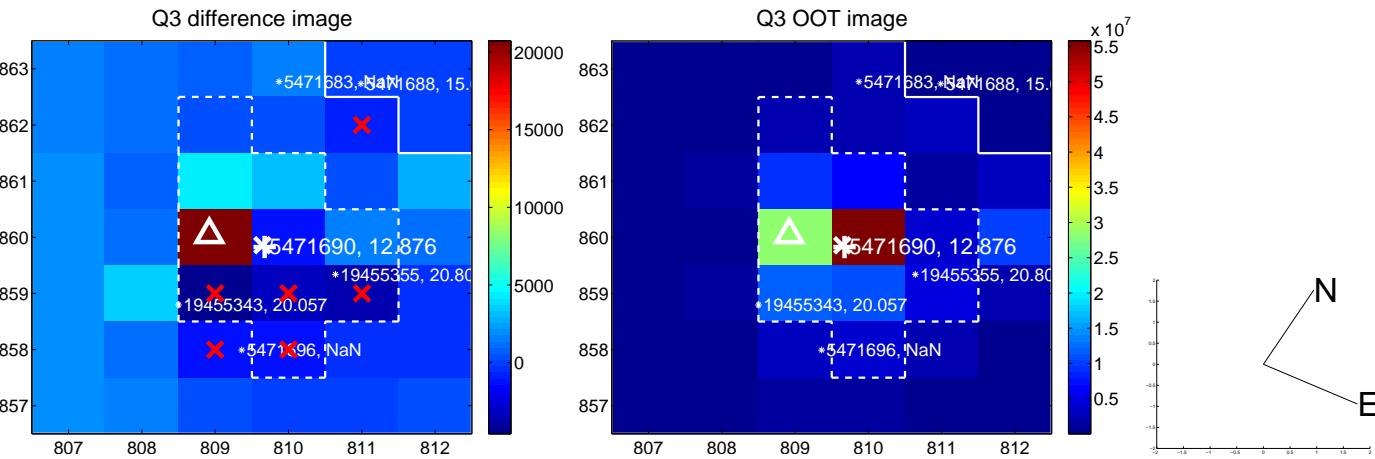
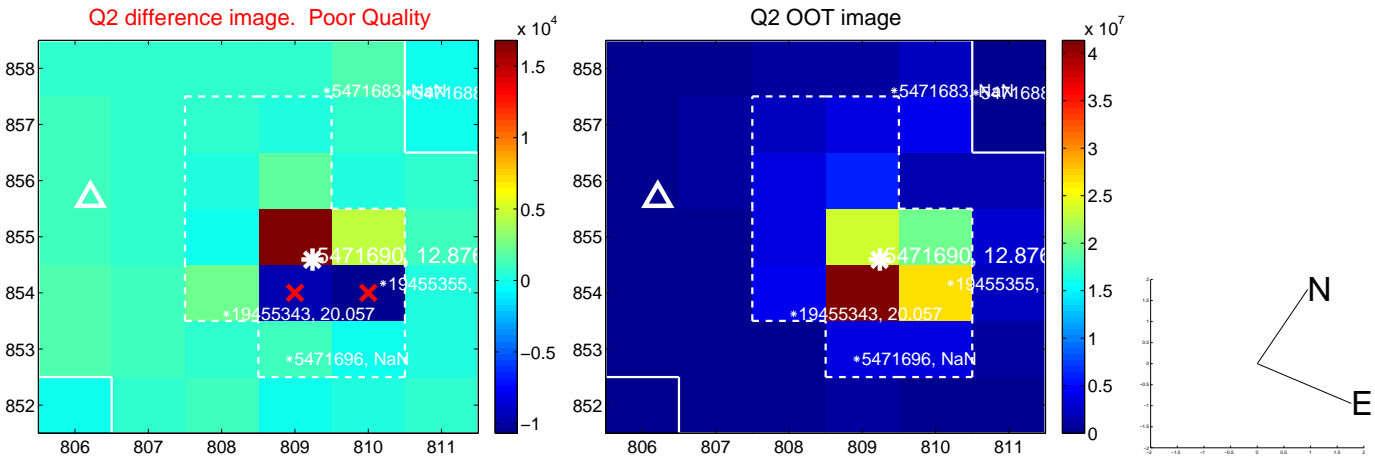
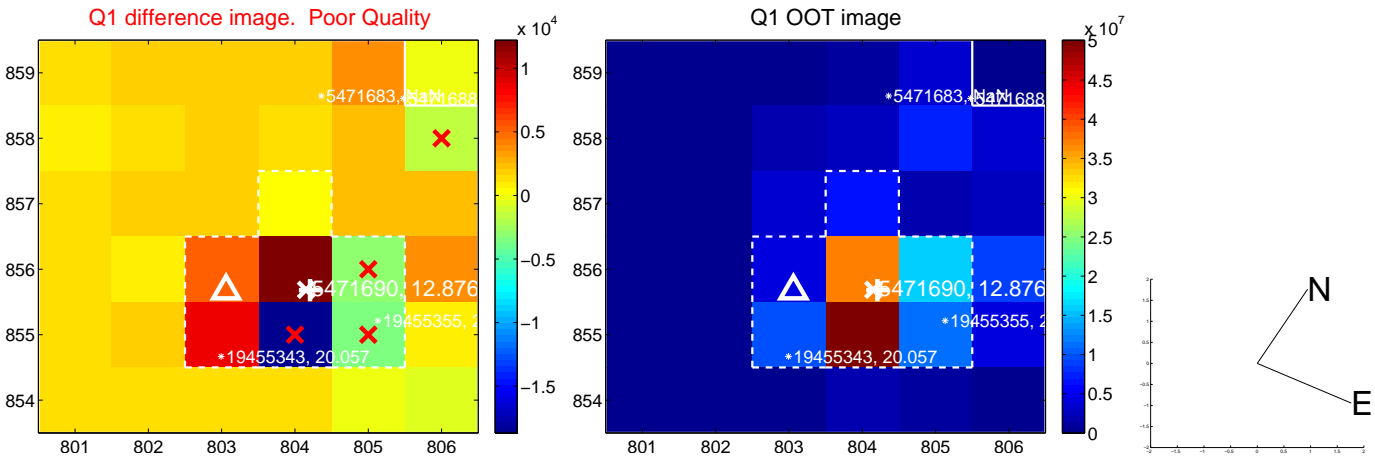


offset from photometric centroids

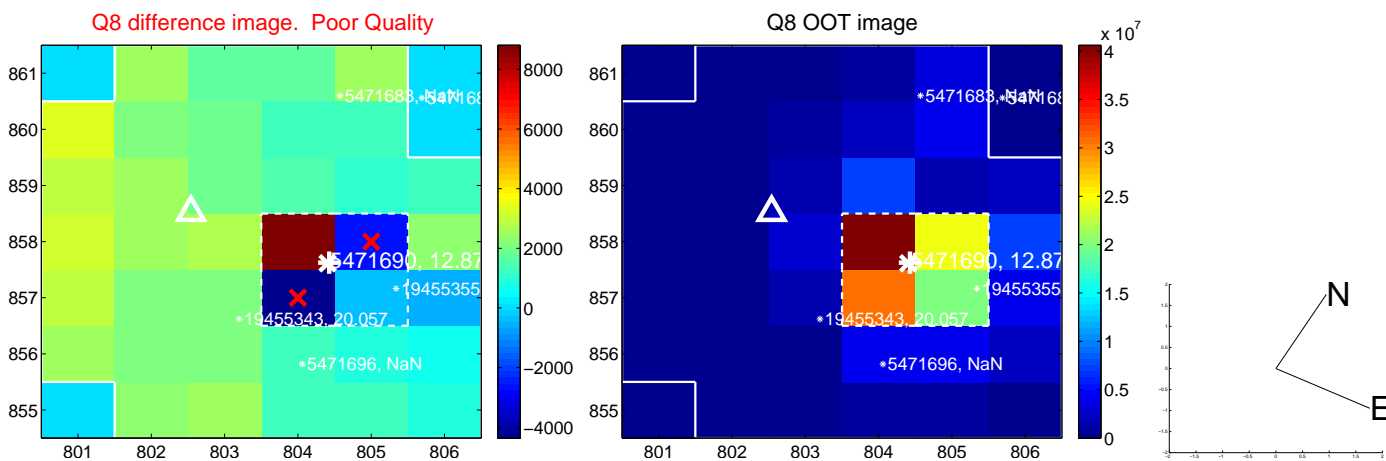
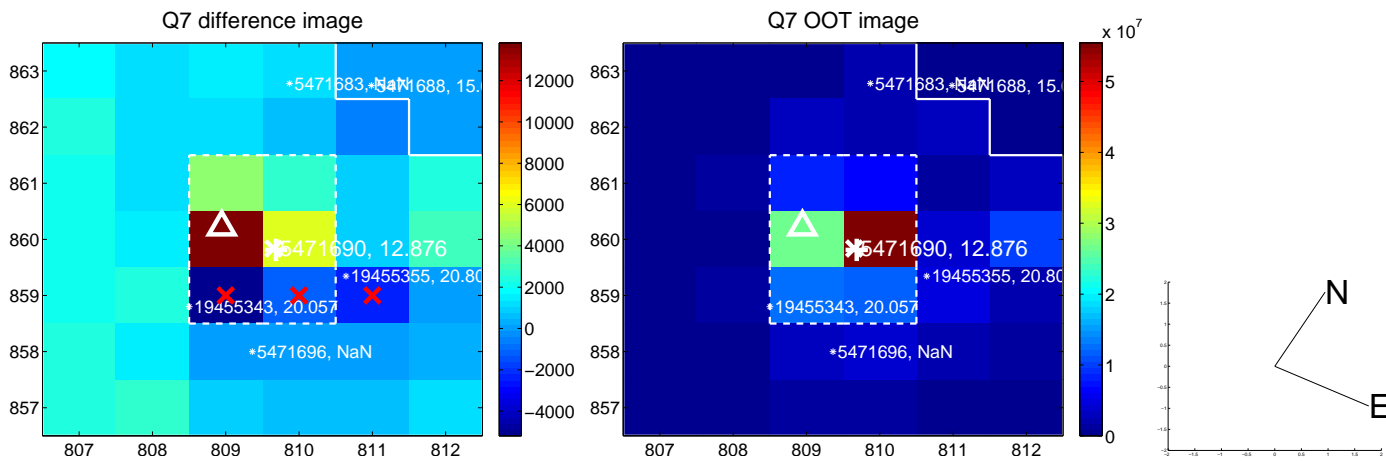
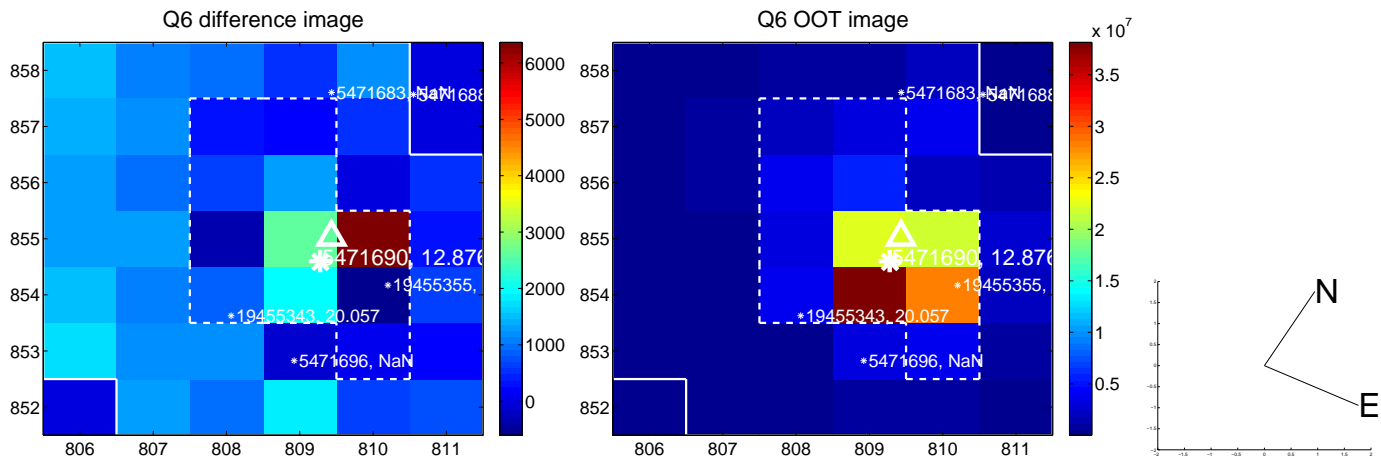
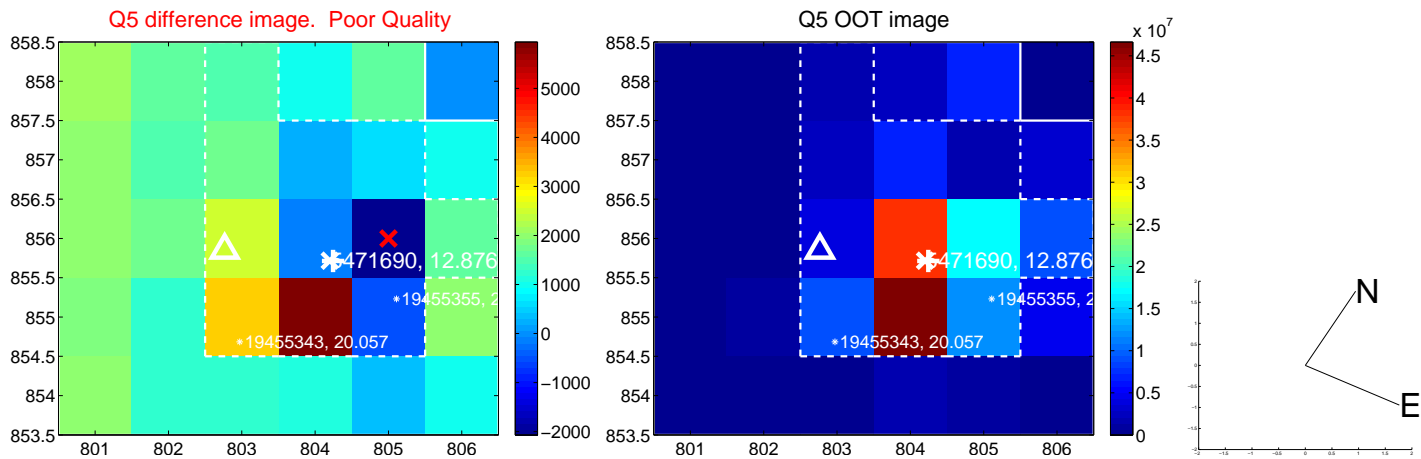


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

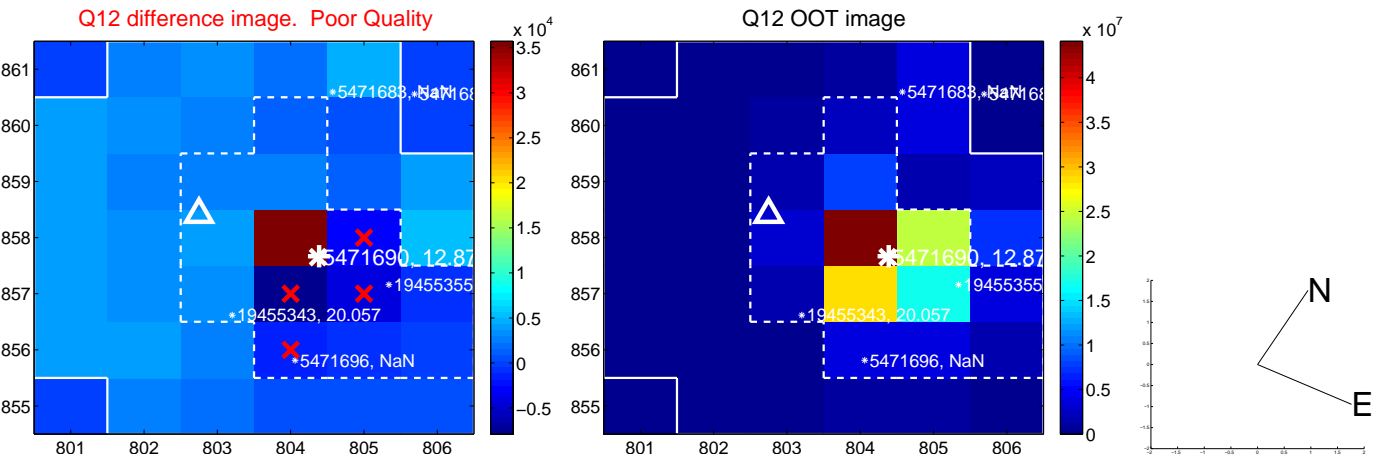
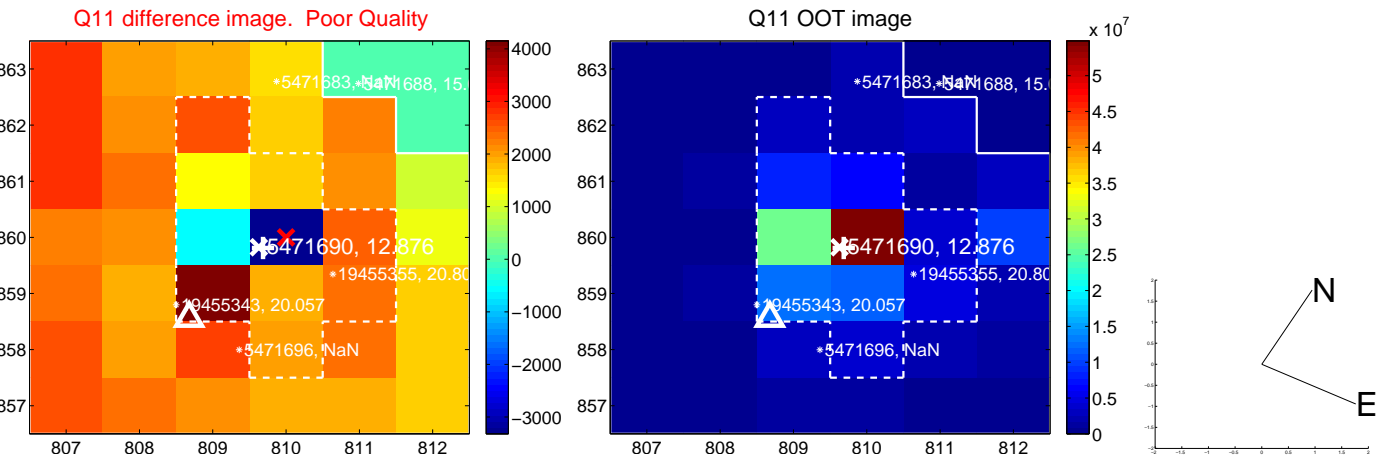
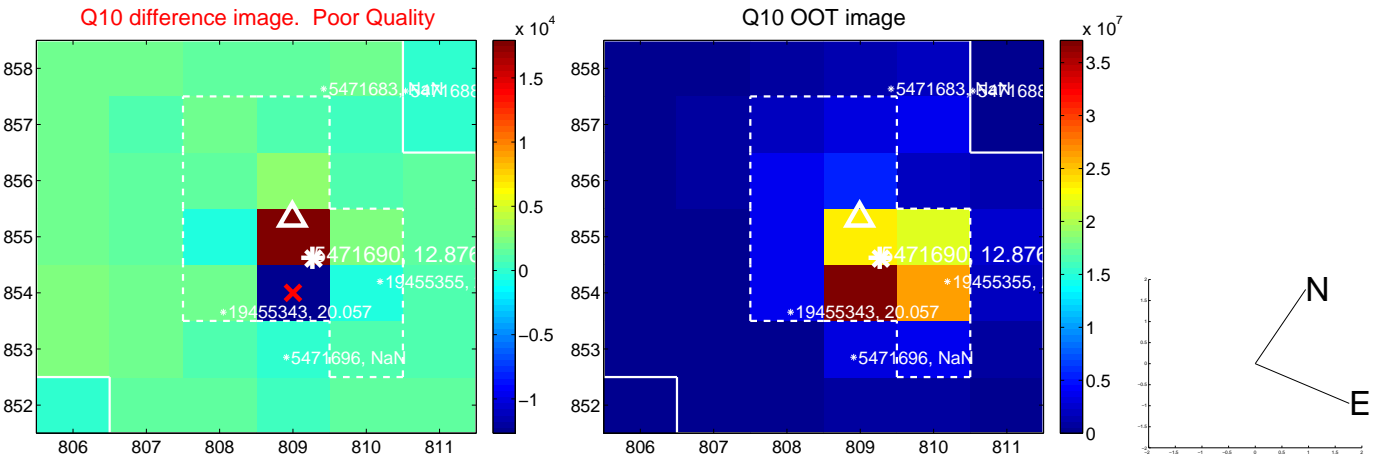
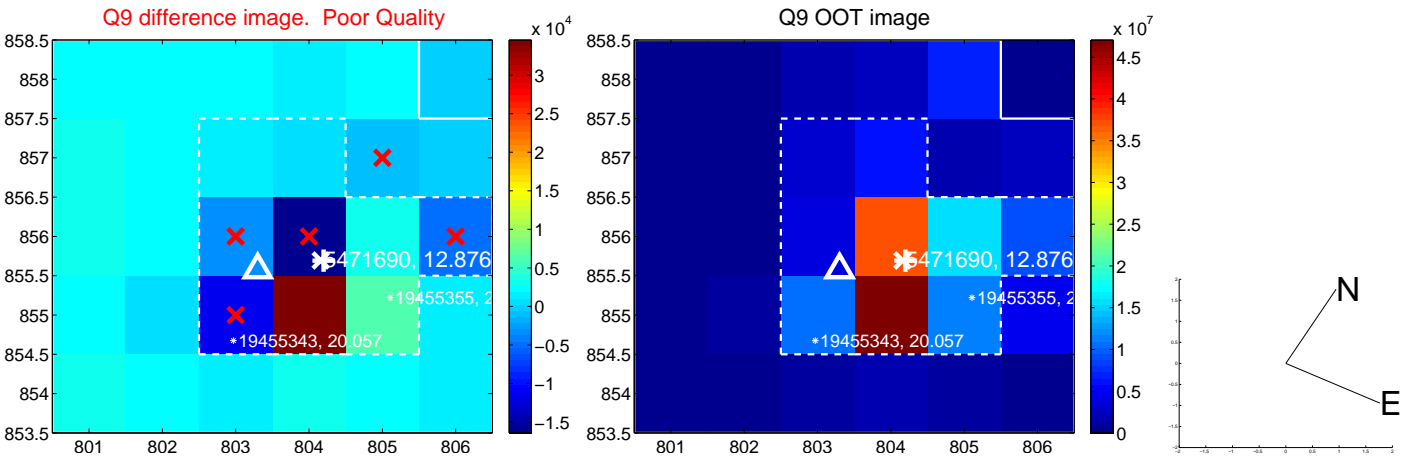
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



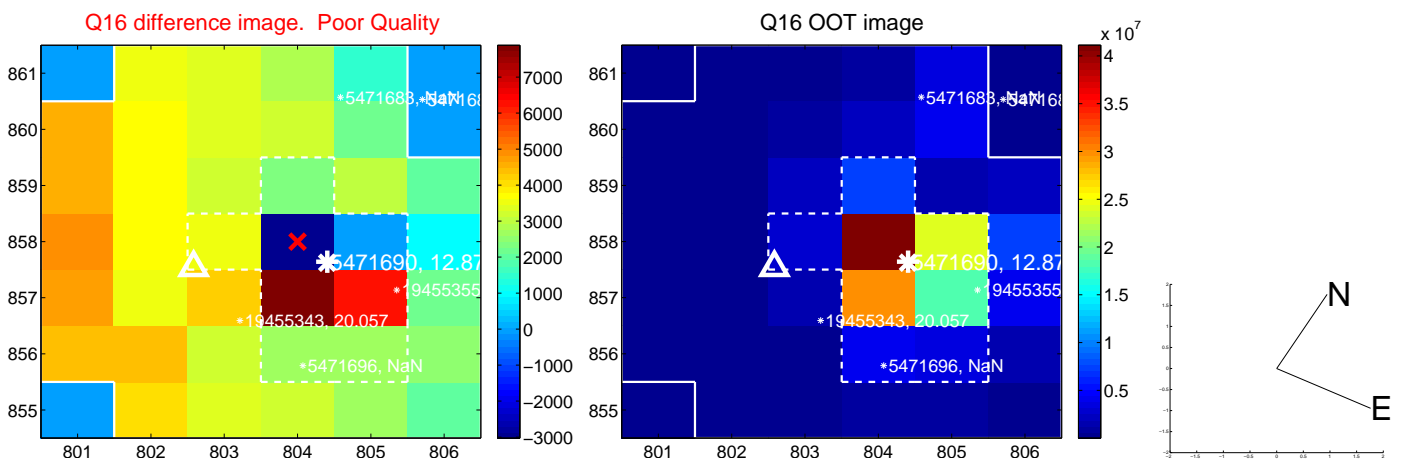
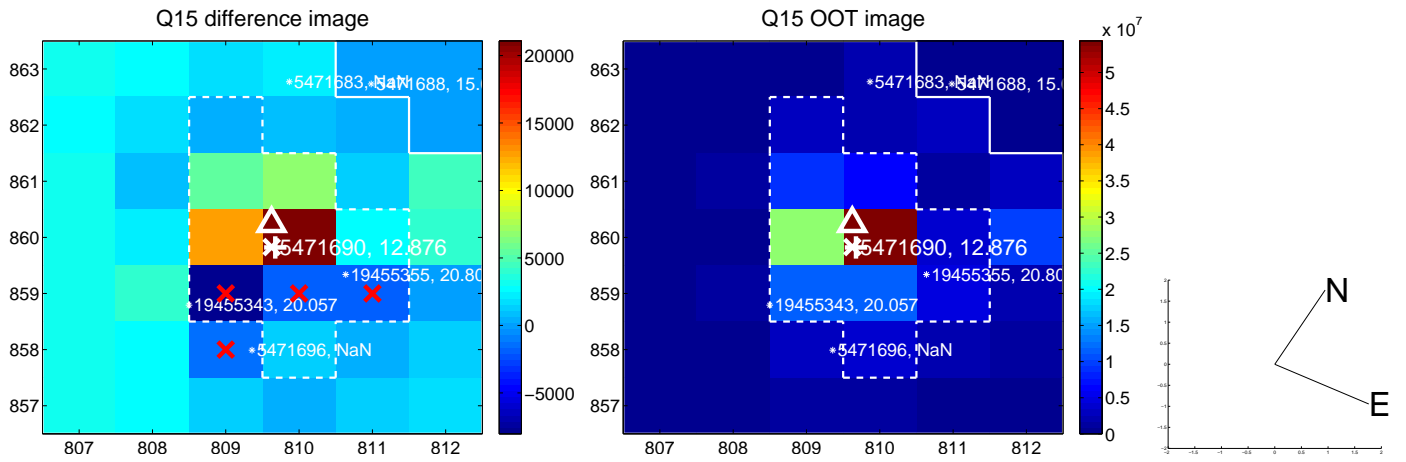
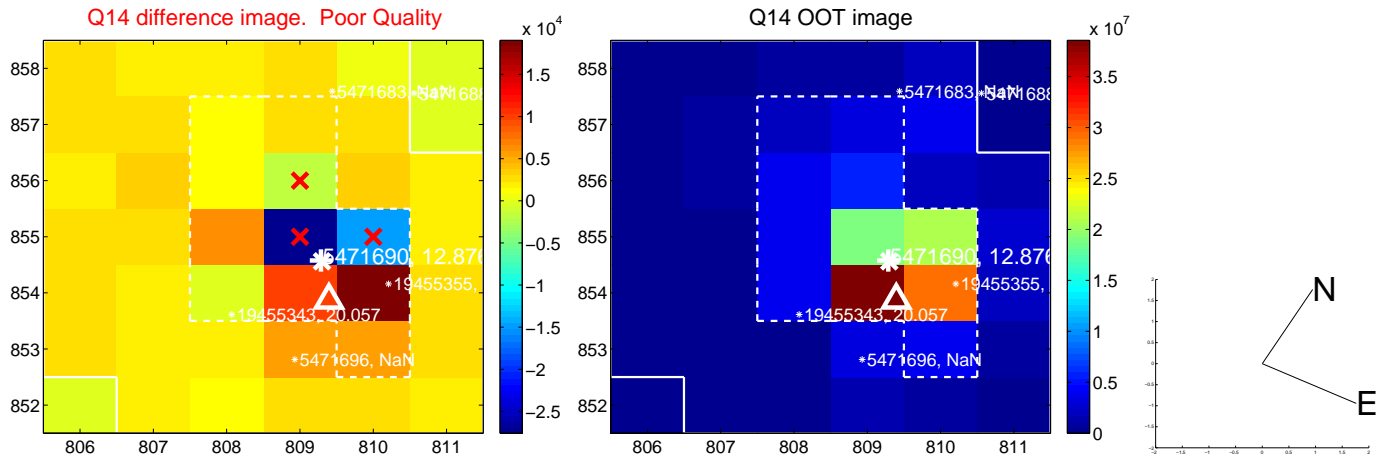
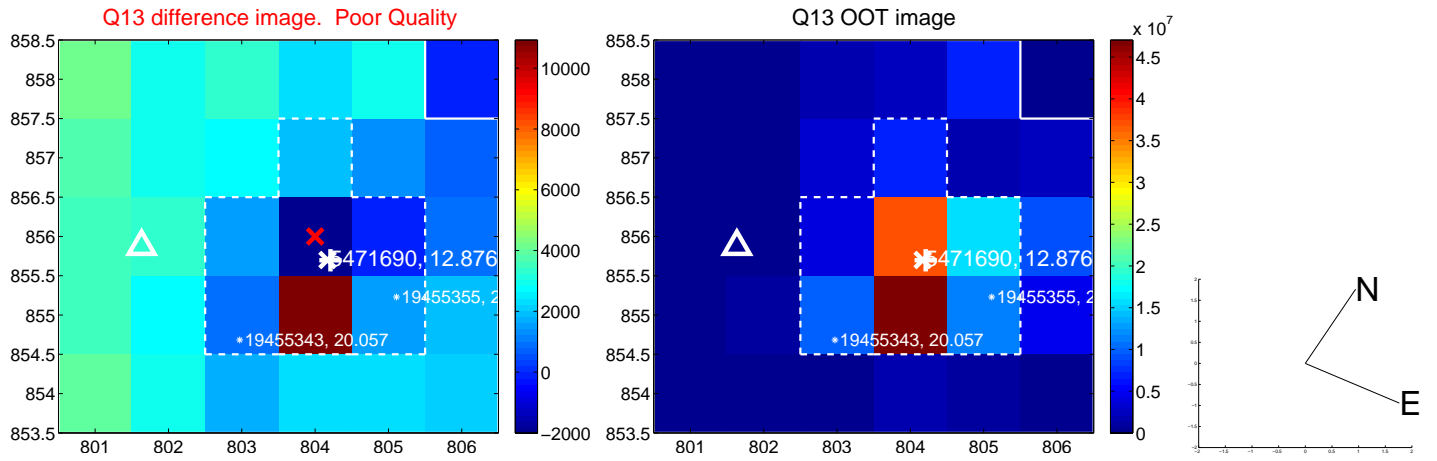
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



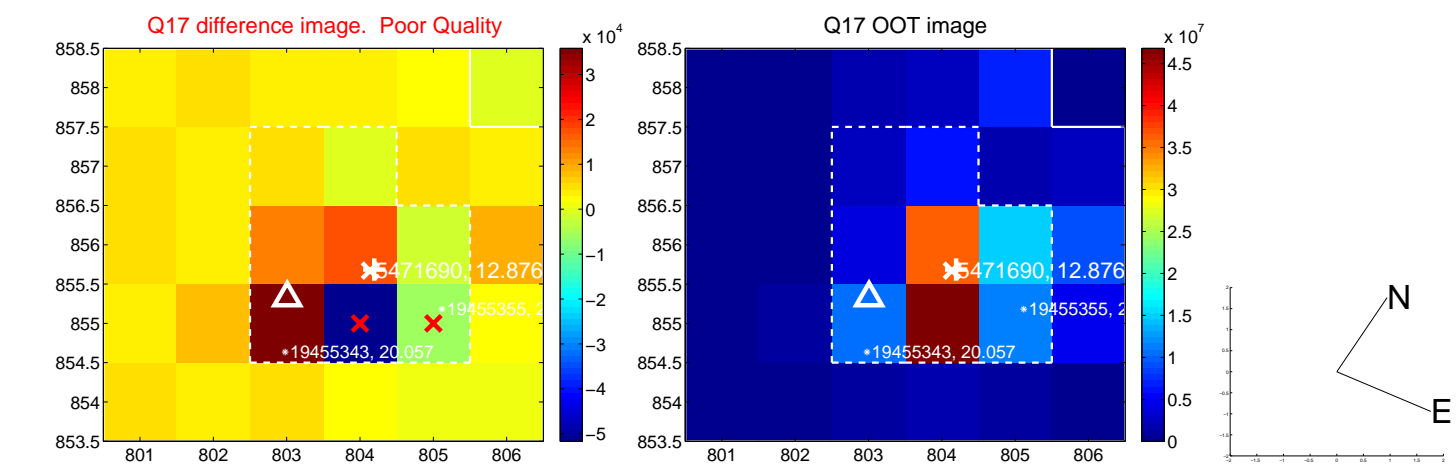
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



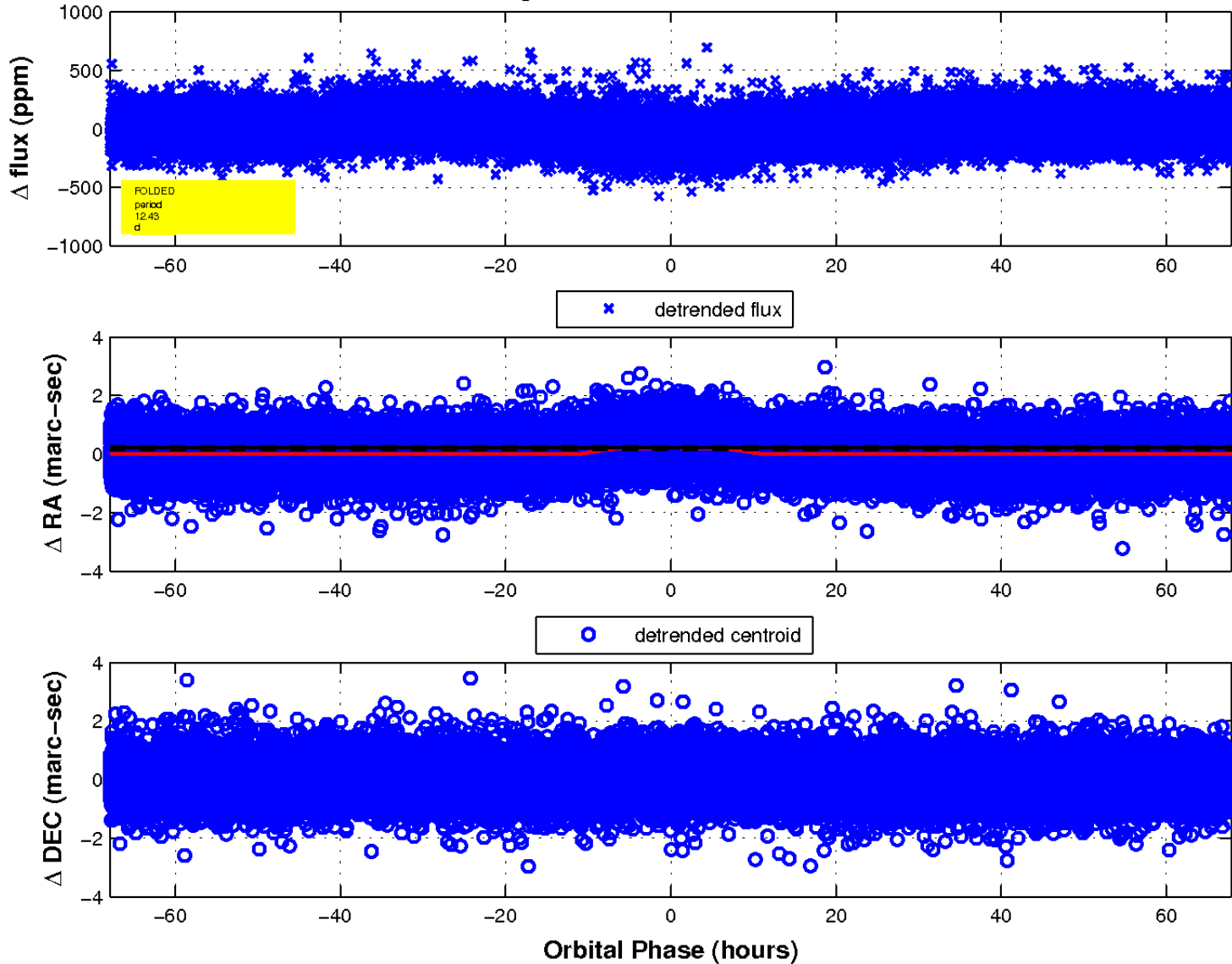
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

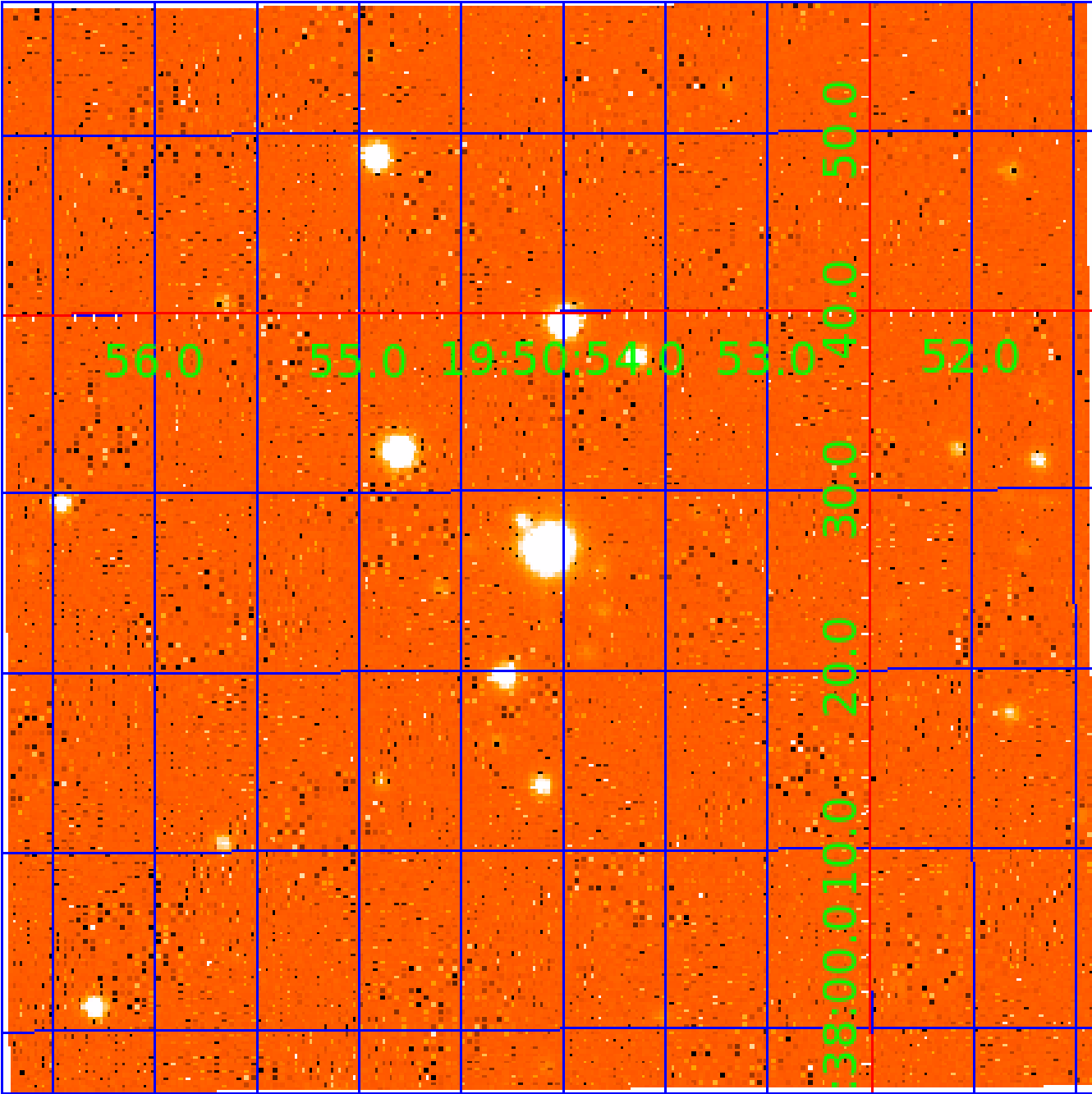


fluxWeightedCentroids, Planet 1 of 2



UKIRT Image

Declination



KIC 005471690

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})
005471690-01	OBS	No	12.425690	141.518539	76.3	22.644	15.6	20.7	2.19	6632	2.52	644.27
005471690-02	OBS	4006.01	6.212464	134.072411	59.4	30.366	17.2	17.5	2.19	6632	3.22	1623.60

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005471690-01	OBS	FP	0.00	1	0	1	1	LPP_DV—LPP_ALT—HALO_GHOST—EPHEM_MATCH
005471690-02	OBS	FP	0.00	1	0	1	1	LPP_DV—SAME_NTL_PERIOD—CENT_FEW_DIFFS—HALO_GHOST—EPHEM_MATCH

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.

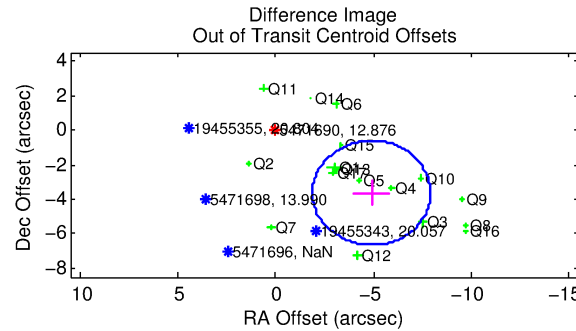
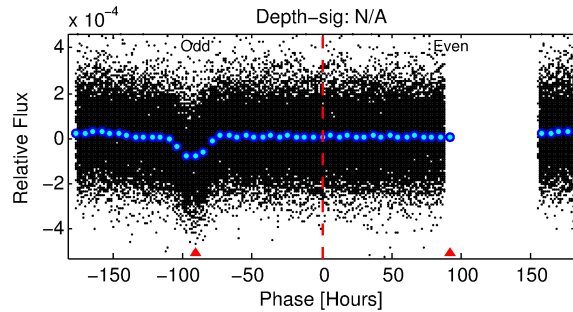
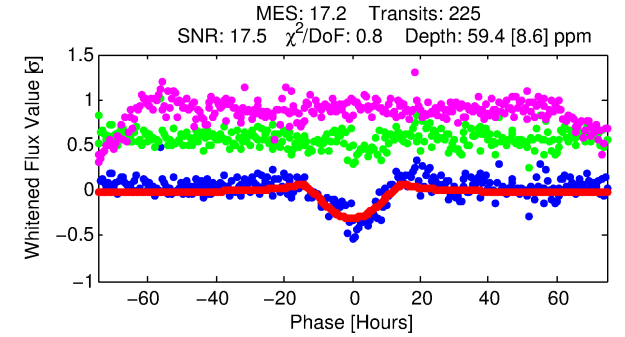
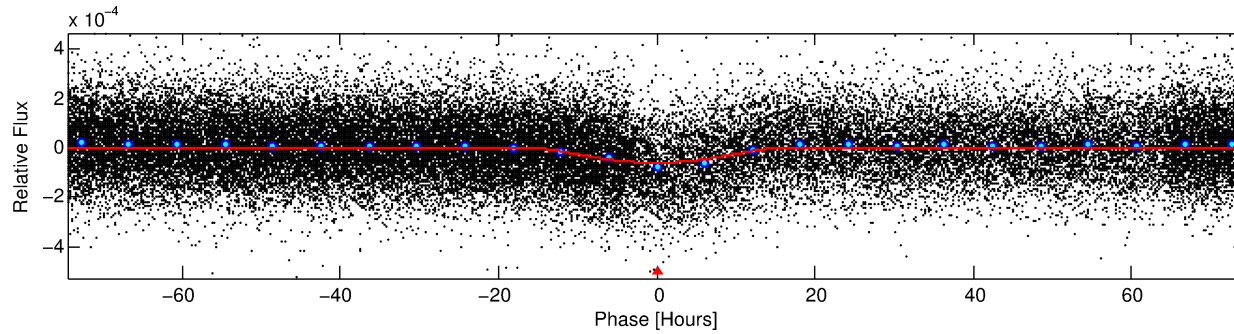
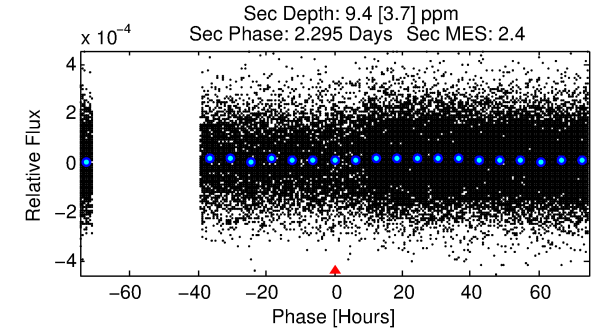
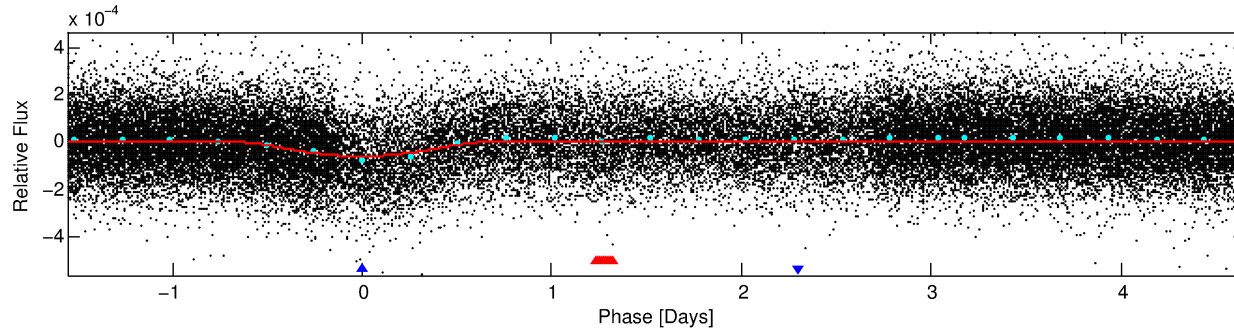
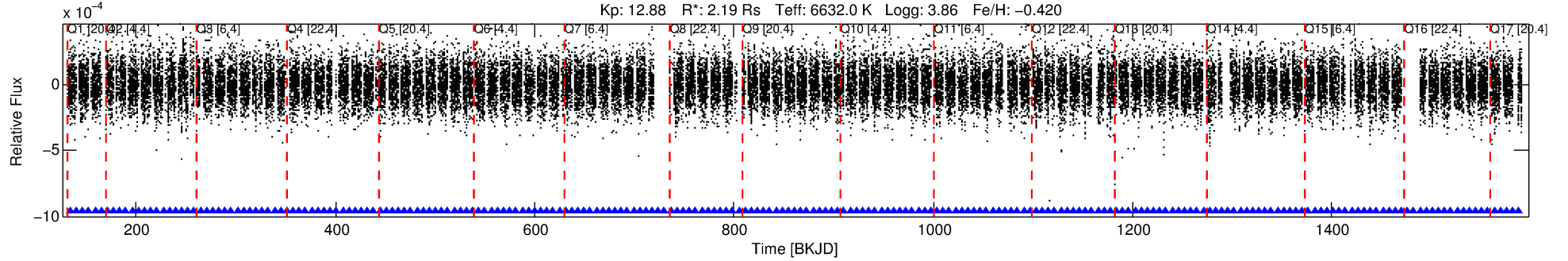
Ephemeris Match Information For 005471690-02

TCE (1)	KIC	Parent (2)	Parent KIC	$P_1:P_2$	Dist ($''$)	Δ Row	Δ Col	m_2	m_1	D_2/D_1	Mechanism	Flag	σ_P	σ_T
005471690-02	5471690	V380-Cyg-sec	5385723	1:2	241.2	10	60	5.77	12.87	2187.10	Direct-PRF	0	4.15	4.83

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: 5471690 Candidate: 2 of 2 Period: 6.212 d
KOI: K04006 Corr: No Ephemeris Match



DV Fit Results:

Period = 6.21246 [0.00023] d
Epoch = 134.0724 [0.0313] BKJD
Rp/R* = 0.0135 [0.0121]
a/R* = 1.04 [0.00]
b = 1.00 [0.02]
Seff = 1623.60 [856.08]
Teq = 1619 [213] K
Rp = 3.22 [3.08] Re
a = 0.0717 [0.0228] AU
Ag = 2.57 [4.89] [0.32σ]
Teffp = 3168 [1458] K [1.05σ]

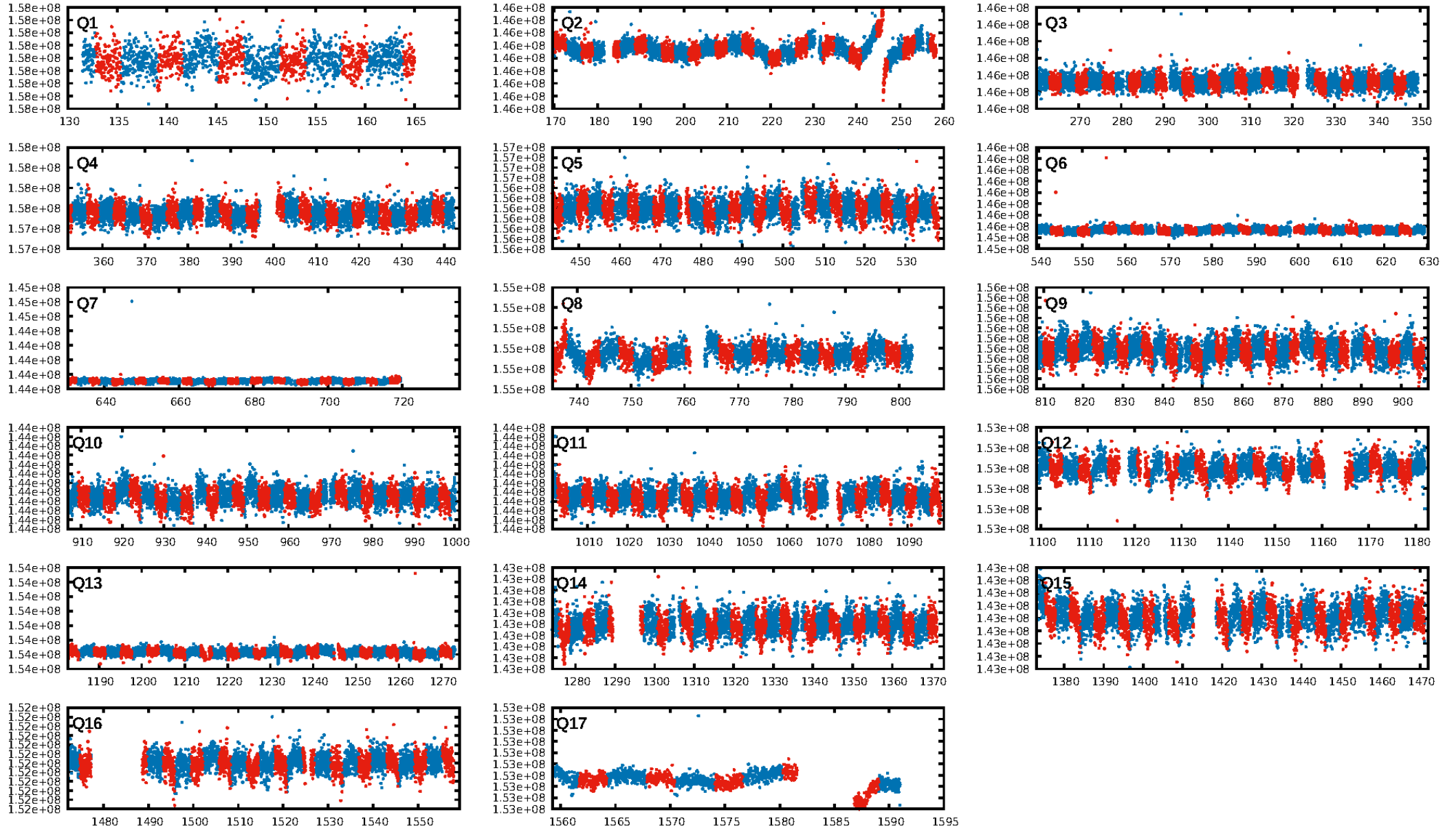
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [3.94σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 3.10e-72
RollingBand-fgt: 1.00 [214/214]
GhostDiagnostic-chr: 0.004073
Centroid-sig: N/A
Centroid-so: 2.087 arcsec [4.15σ]
OotOffset-rm: 6.093 arcsec [6.06σ]
KicOffset-rm: 5.970 arcsec [5.93σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 0.06 [1/17]
DiffImageOverlap-fno: 1.00 [17/17]

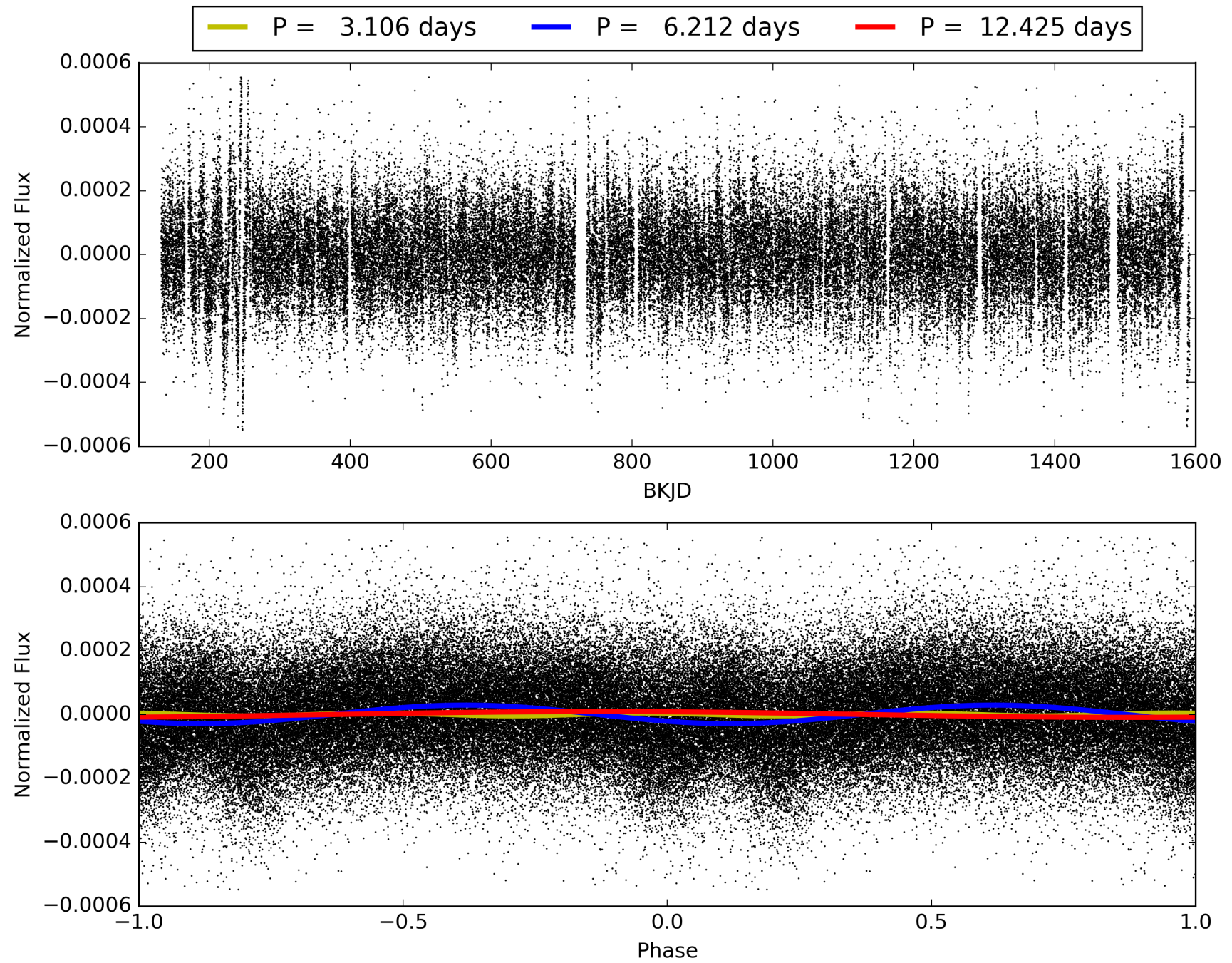
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 15:12:47 Z

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

TCE 005471690-02, PDC Light Curves

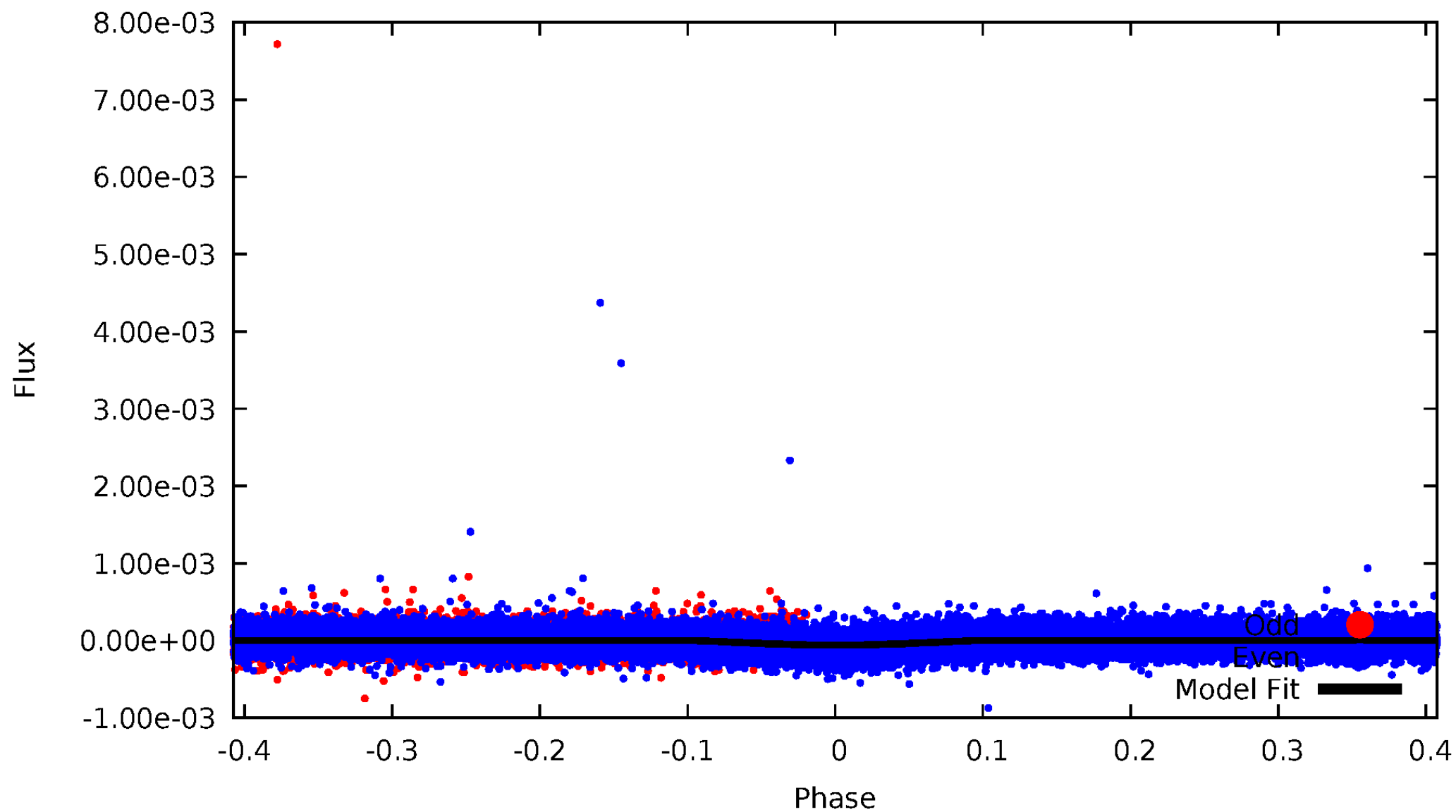


TCE 005471690-02



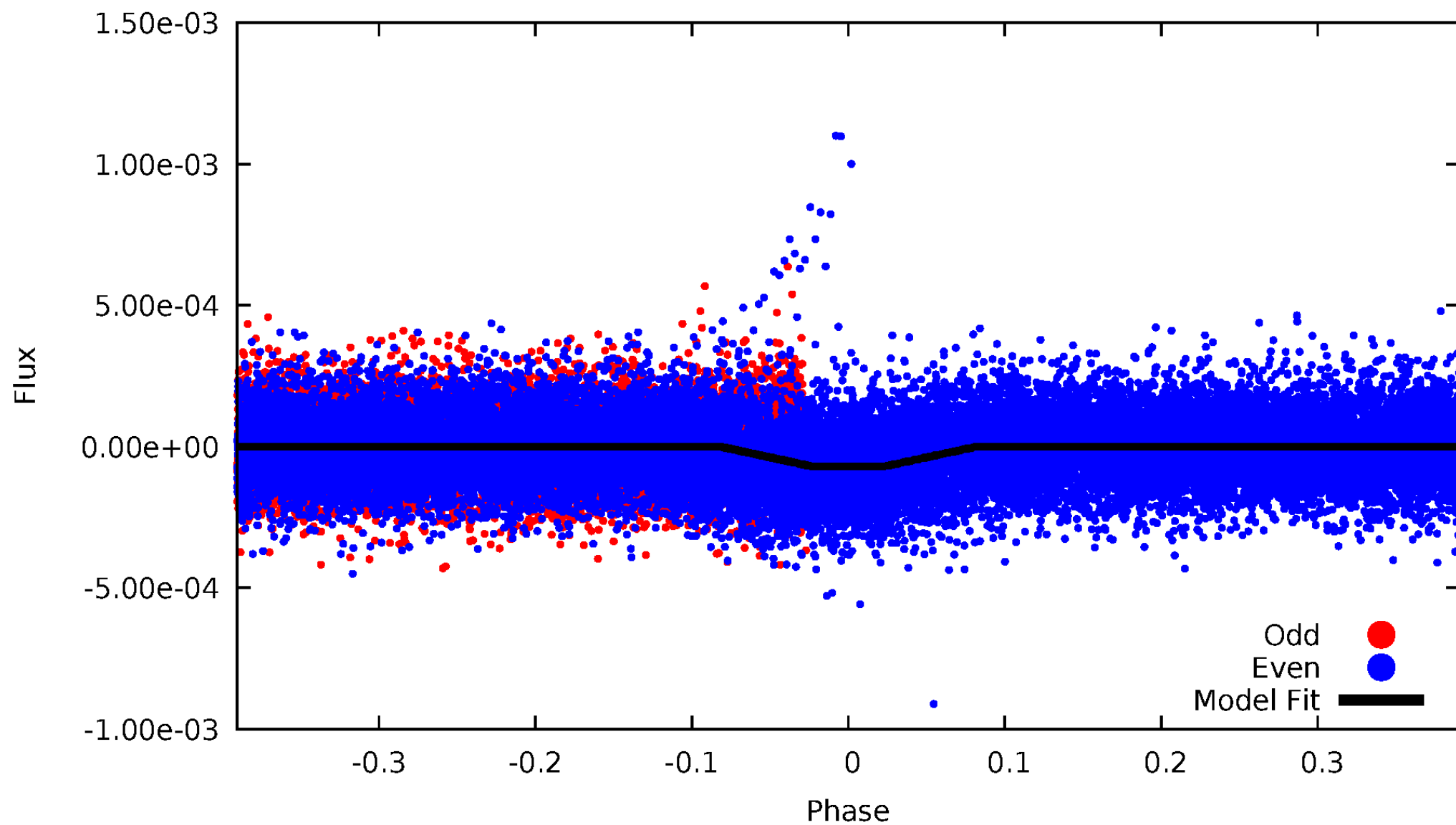
DV Odd/Even

TCE 005471690-02



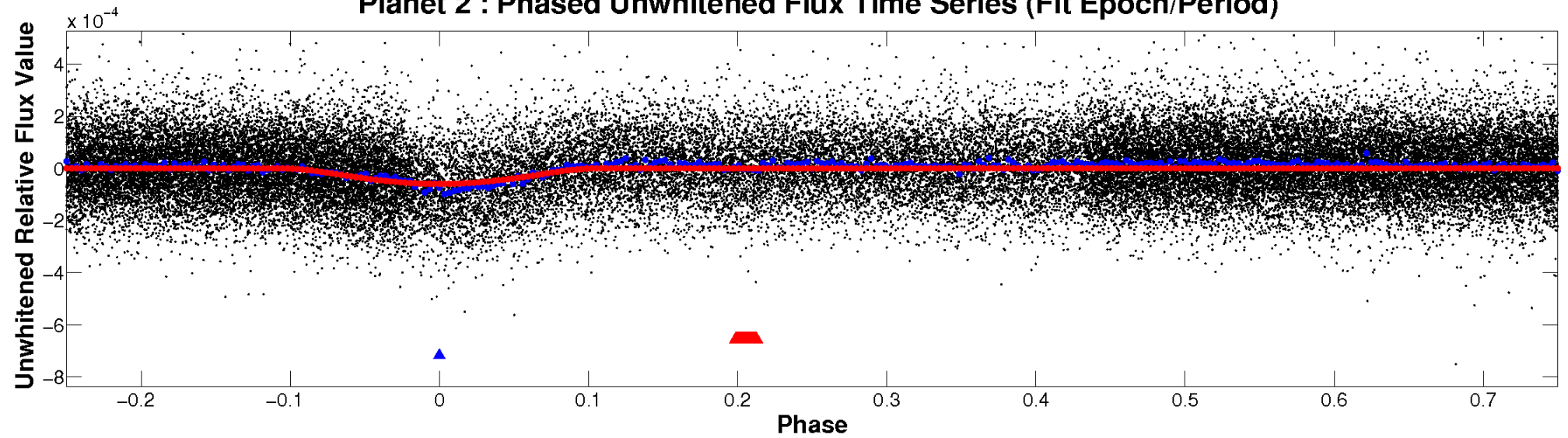
ALT Odd/Even

TCE 005471690-02

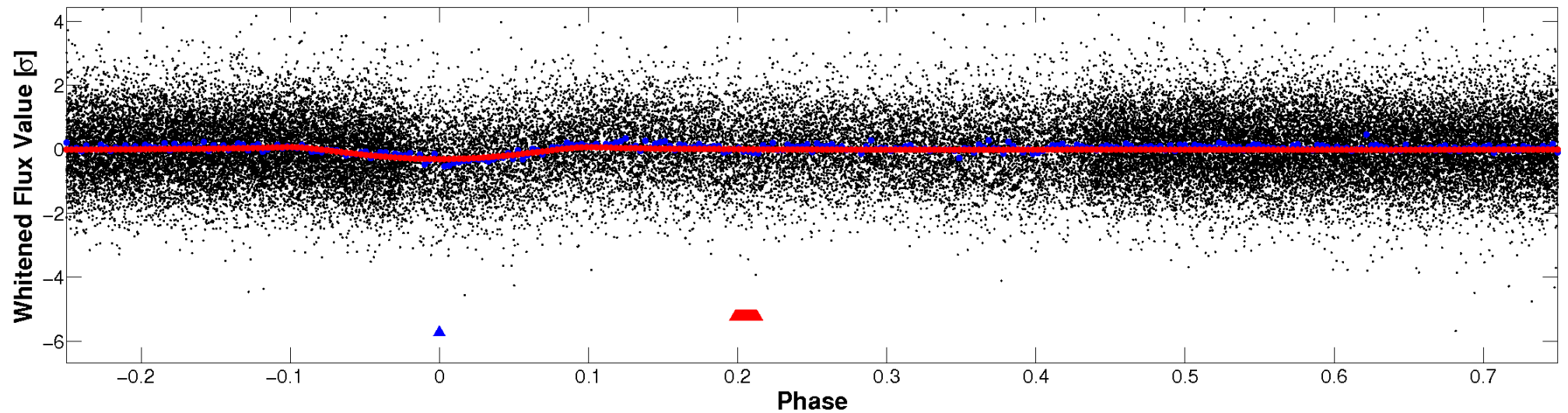


Non-Whitened Vs. Whitened Light Curve

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

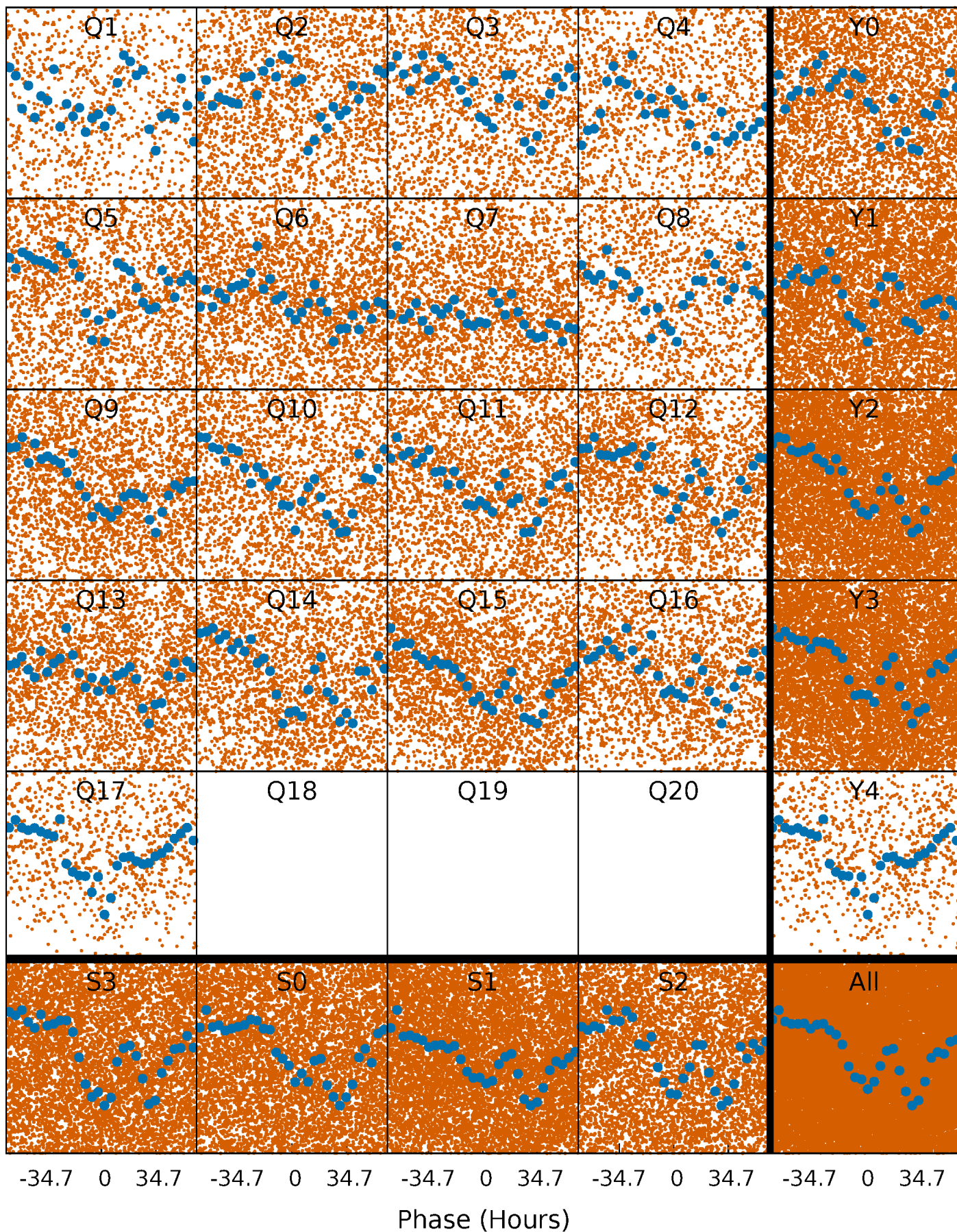


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



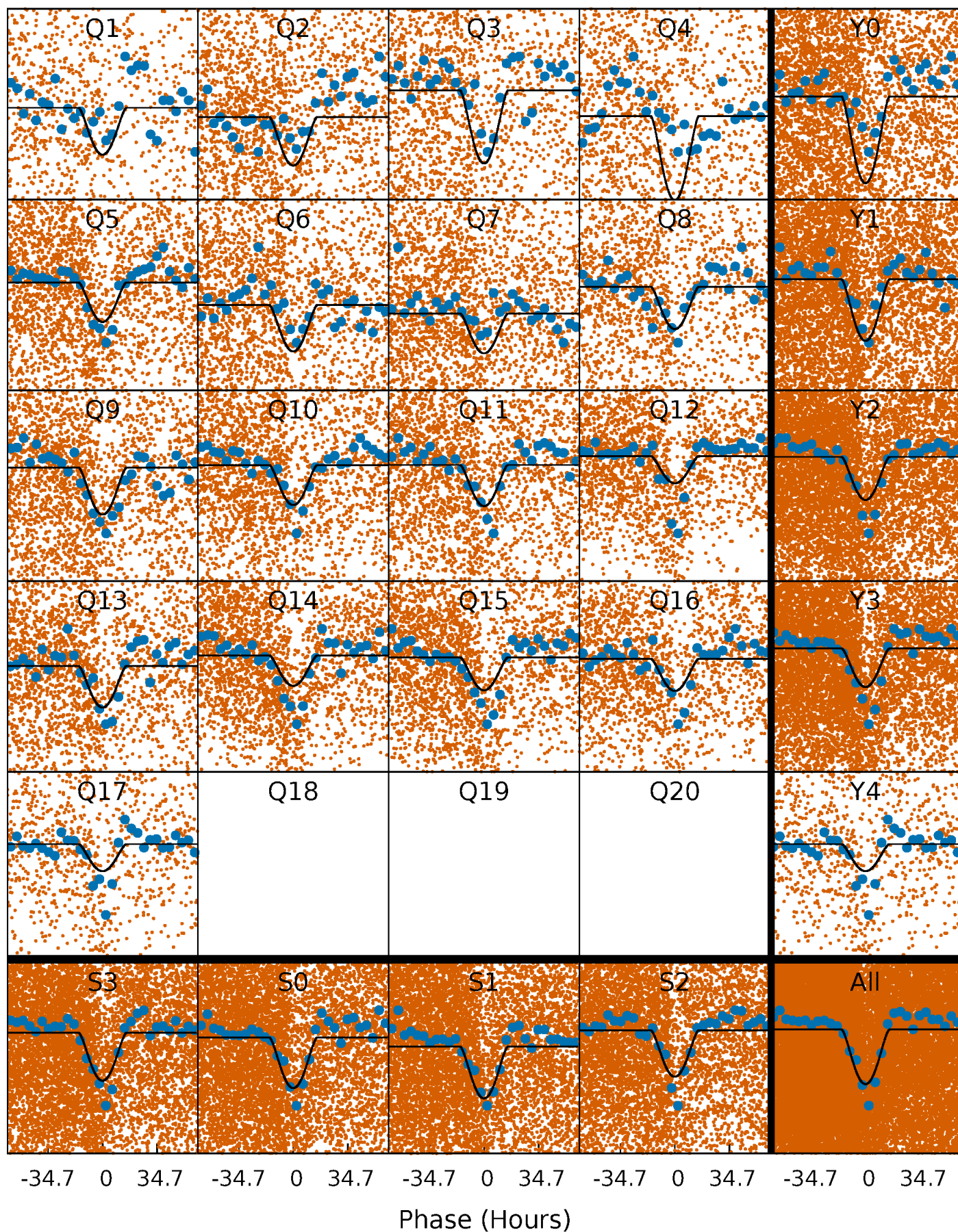
PDC Quarter-Phased Transit Curves

TCE 005471690-02 P= 6.212464 Days $T_0=134.072411$ (BKJD)



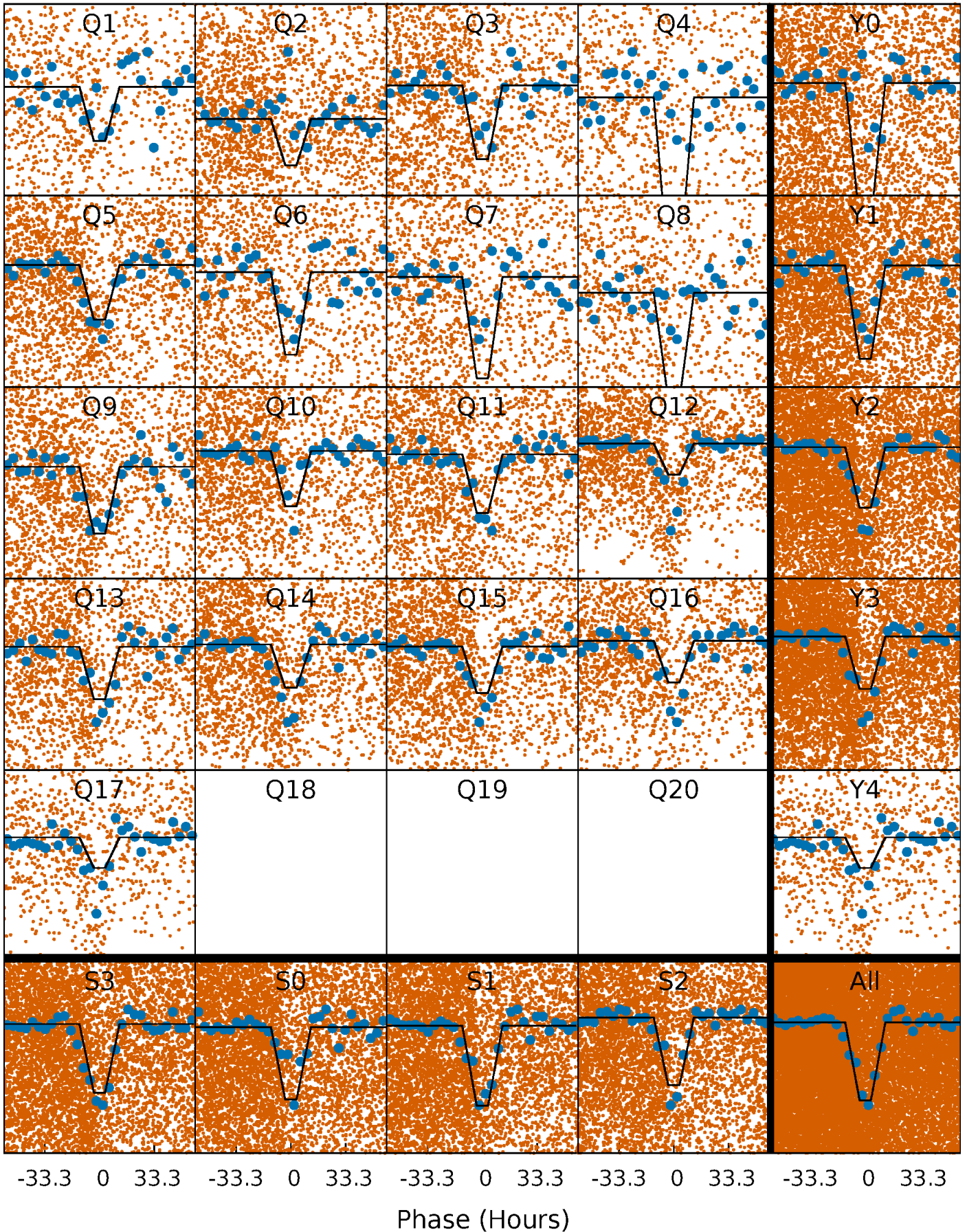
DV Quarter-Phased Transit Curves

TCE 005471690-02 P= 6.212464 Days $T_0=134.072411$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

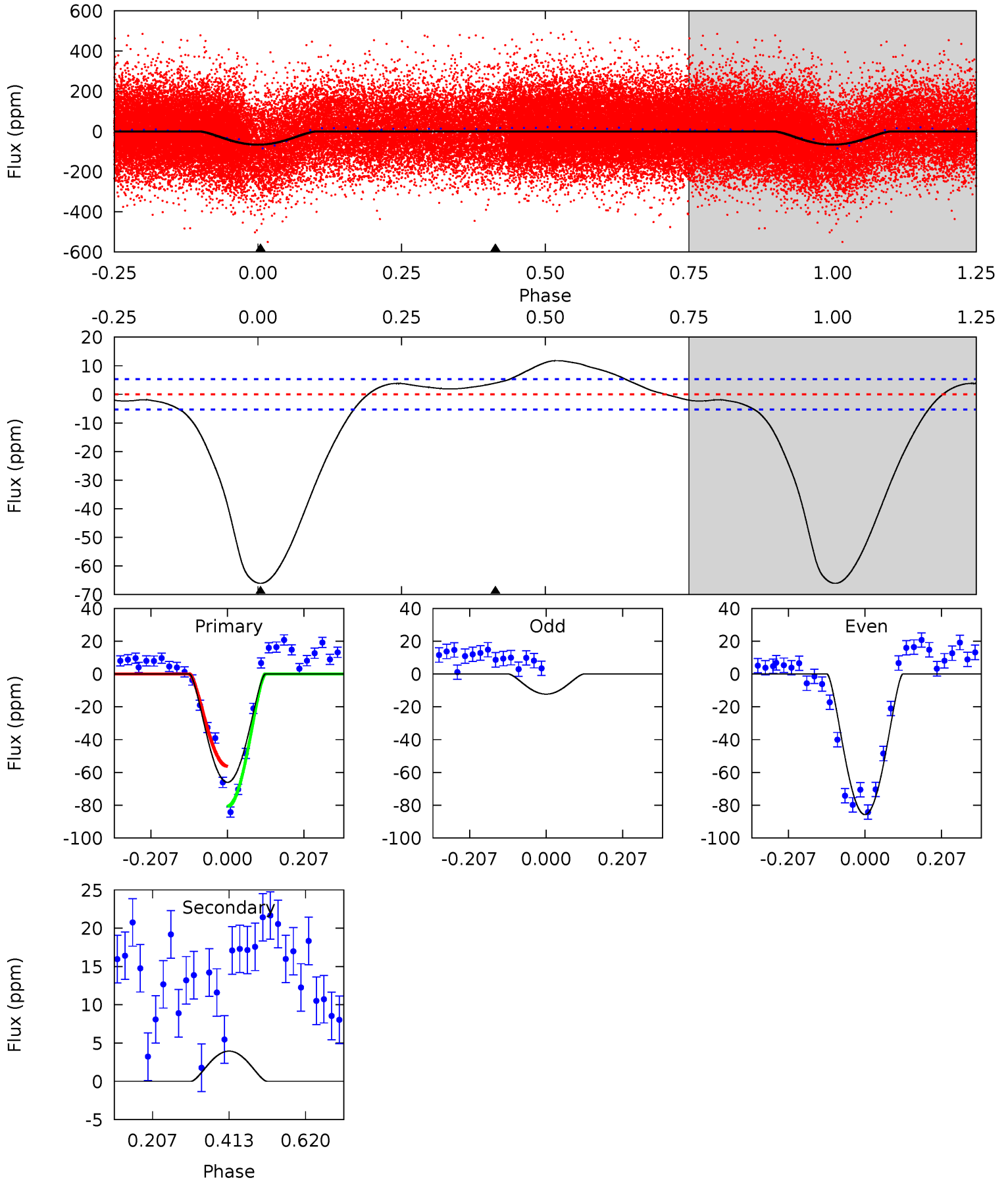
TCE 005471690-02 $P = 6.213033$ Days $T_0 = 134.034764$ (BKJD)



DV Model-Shift Uniqueness Test

005471690-02, P = 6.212464 Days, E = 127.859947 Days

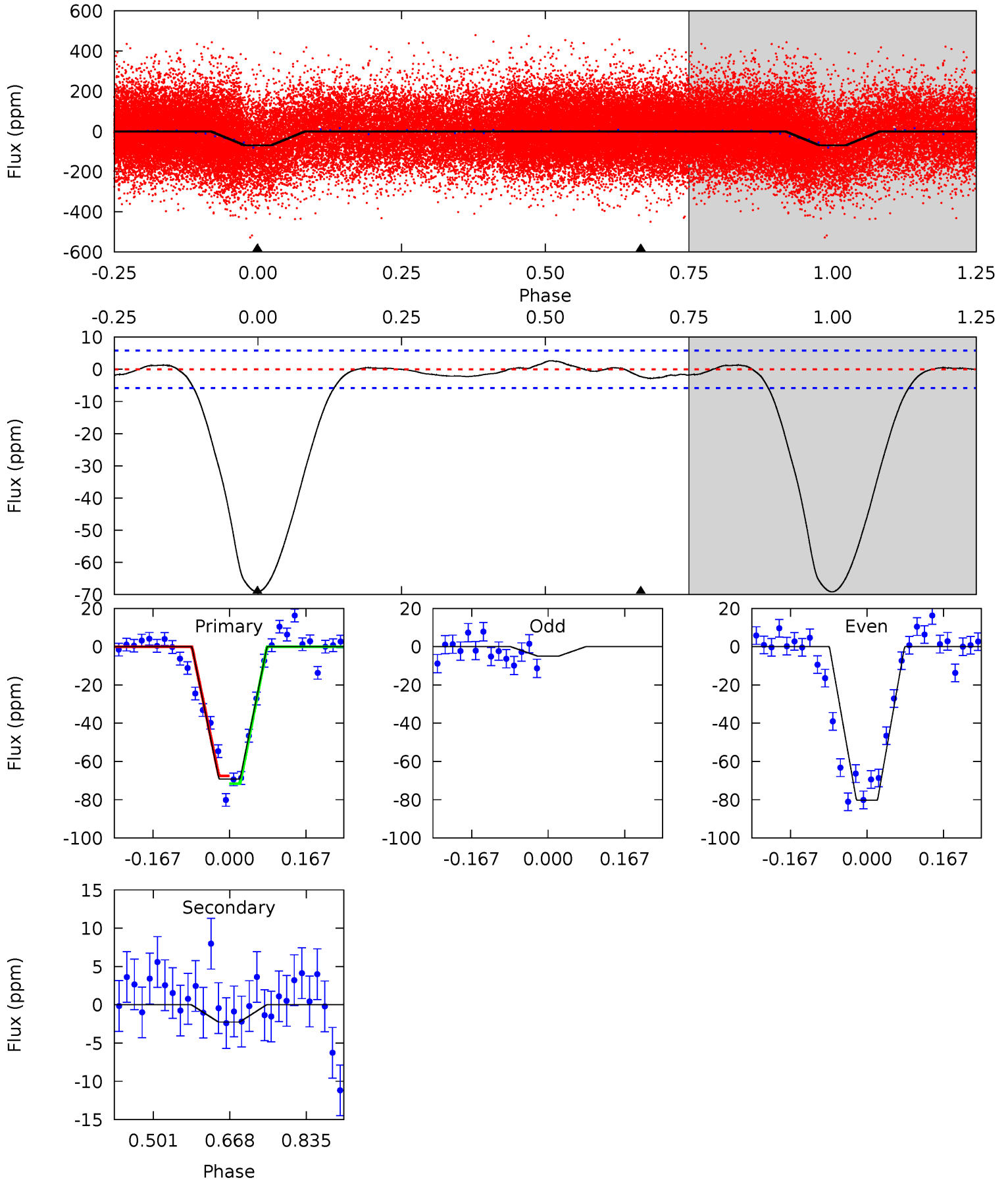
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
55.1	-3.29	0	0	4.41	1.26	2.42	55.1	55.1	-3.29	-3.29	27.6	1.17	0.15	9.85



Alt Model-Shift Uniqueness Test

005471690-02, P = 6.213033 Days, E = 127.821731 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
53.0	1.73	0	0	4.46	1.38	0.87	53.0	53.0	1.73	1.73	24.6	0.74	0.04	1.50



Stellar Parameters For KIC 005471690

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6632^{+201}_{-221}	$3.860^{+0.300}_{-0.100}$	$-0.420^{+0.300}_{-0.250}$	$2.193^{+0.421}_{-0.722}$	$1.270^{+0.220}_{-0.220}$	$0.170^{+0.332}_{-0.051}$
	+3%/-3%	+8%/-3%	+71%/-60%	+19%/-33%	+17%/-17%	+196%/-30%
Source	PHO1	FLK73	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 005471690-02 / KOI 4006.01

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	4 ± 1	$3.49^{+2.82}_{-2.01}$	2208^{+139}_{-174}	-3151^{+300}_{-915}	$-0.920^{+0.638}_{-4.562}$
Alt.	-2 ± 1	$2.65^{+2.62}_{-1.66}$	2217^{+133}_{-180}	2830^{+1262}_{-5181}	$0.844^{+5.374}_{-0.671}$

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

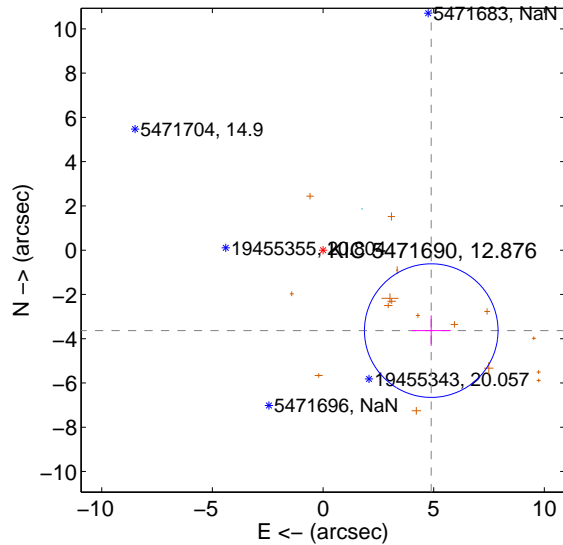
Supplemental centroid analysis for 005471690-02. Kepler magnitude: 12.88. Transit SNR 17.52

There are 1 quarters with good PRF difference image offsets

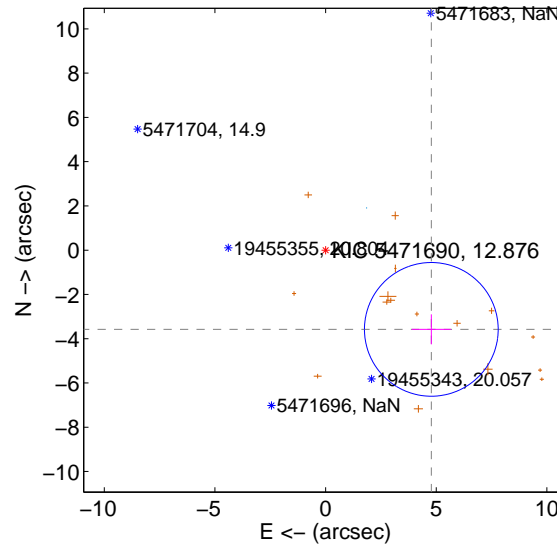
The direct PRF centroid is offset from the target star catalog position by about 0.24 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	6.093 ± 1.006	6.06	-4.890 ± 0.878	-3.635 ± 0.689
PRF-fit source offset from KIC position	5.970 ± 1.007	5.93	-4.778 ± 0.886	-3.579 ± 0.678
photometric centroid source offset	2.09 ± 0.50	4.15	-1.92 ± 0.51	-0.83 ± 0.46

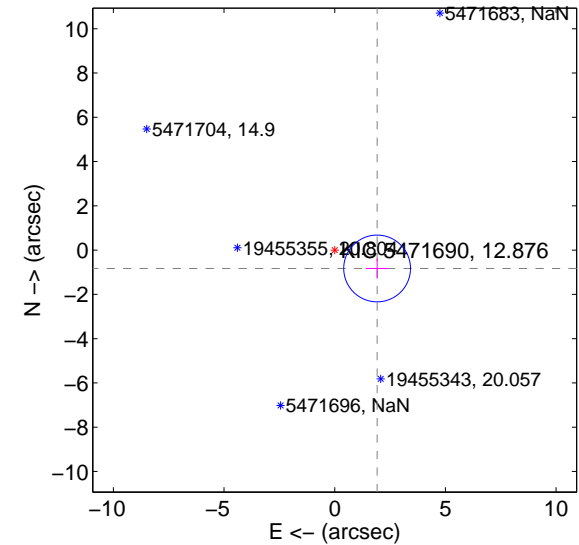
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

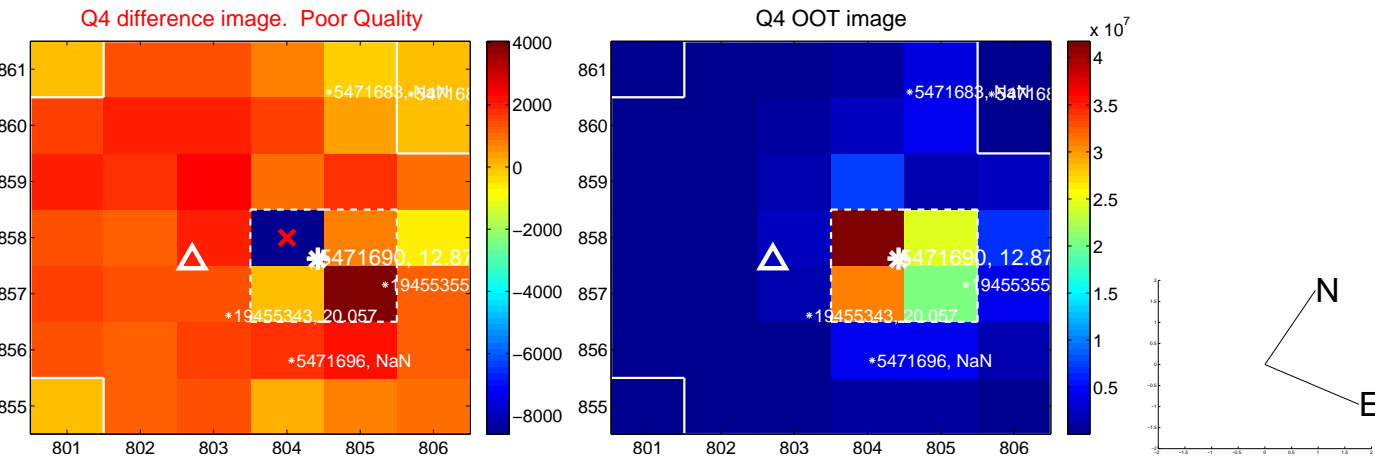
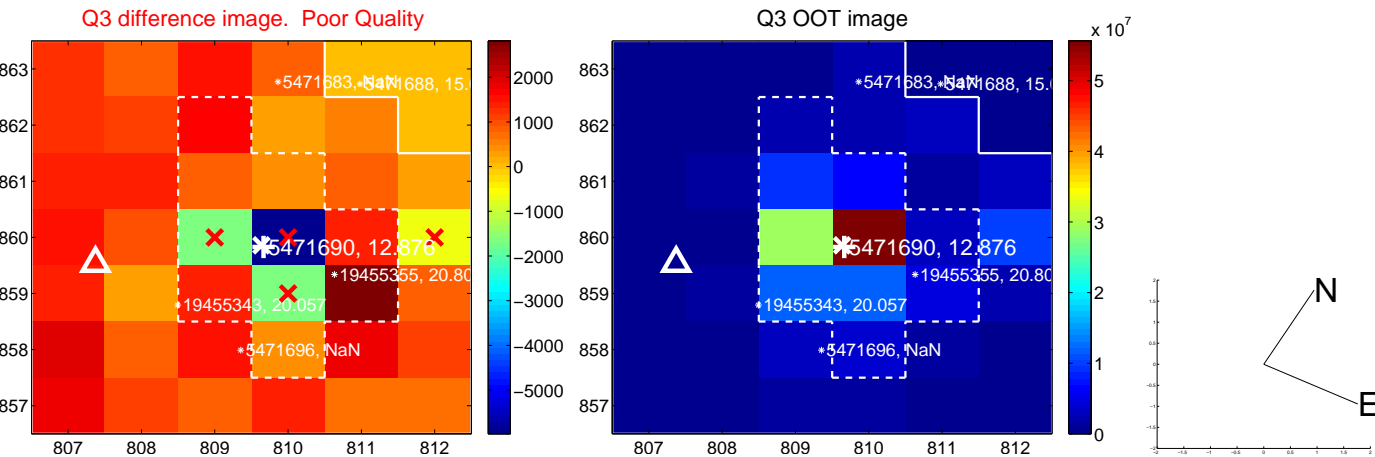
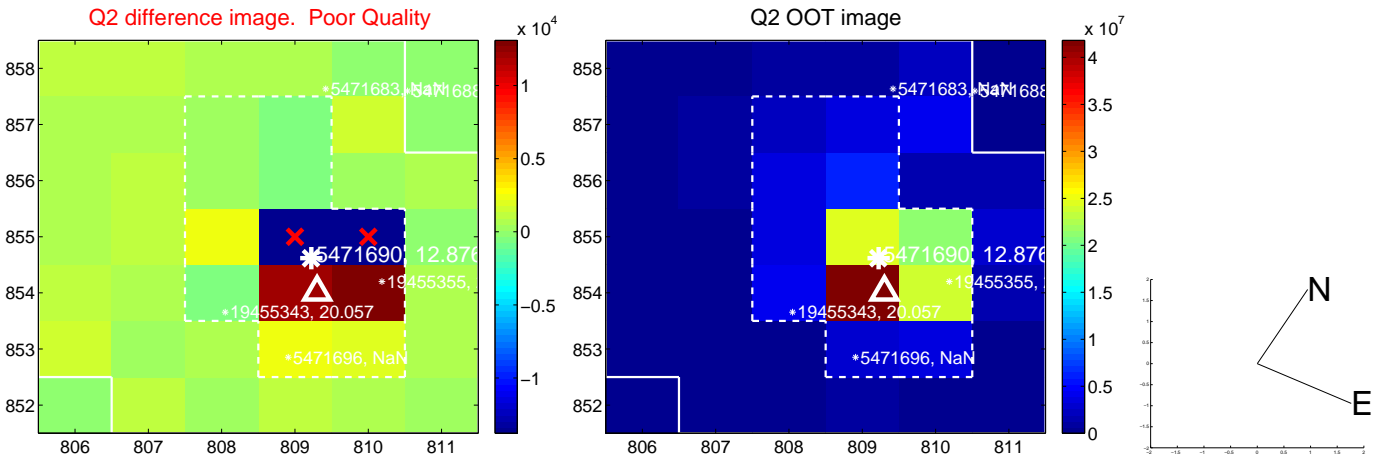
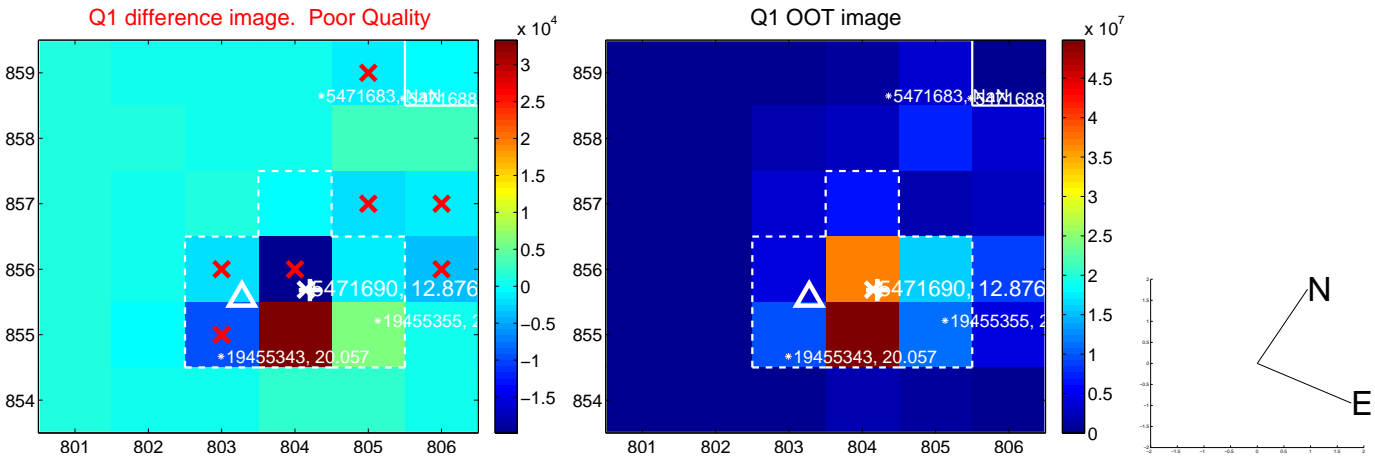


offset from photometric centroids

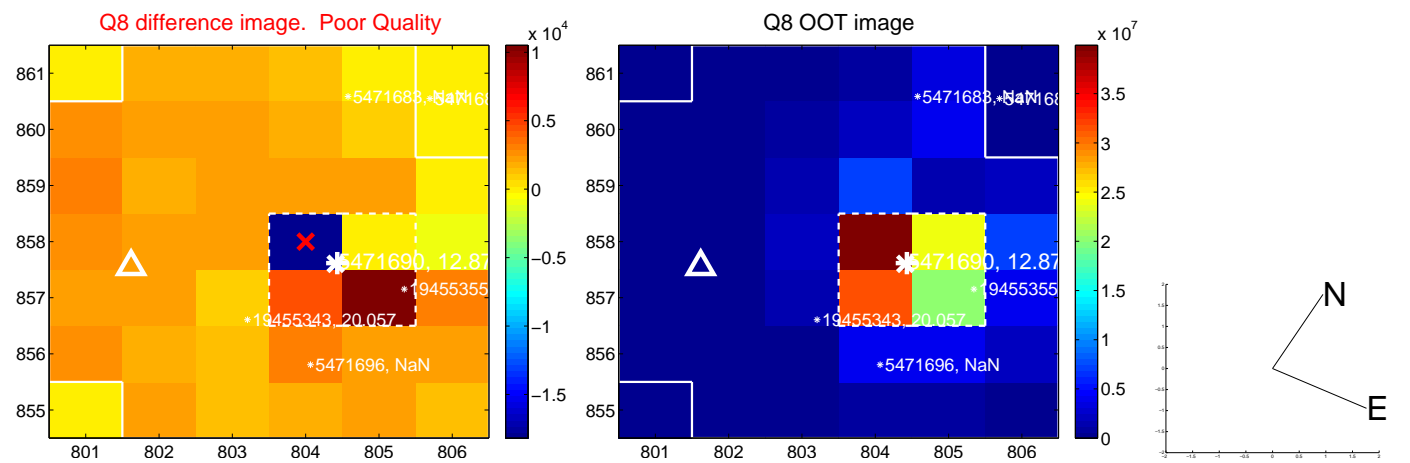
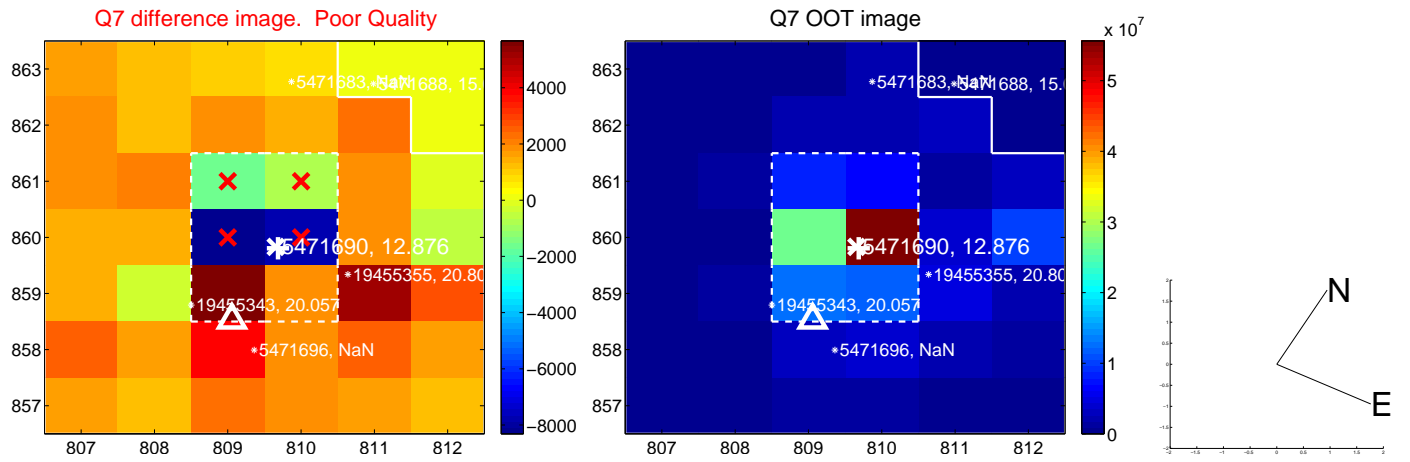
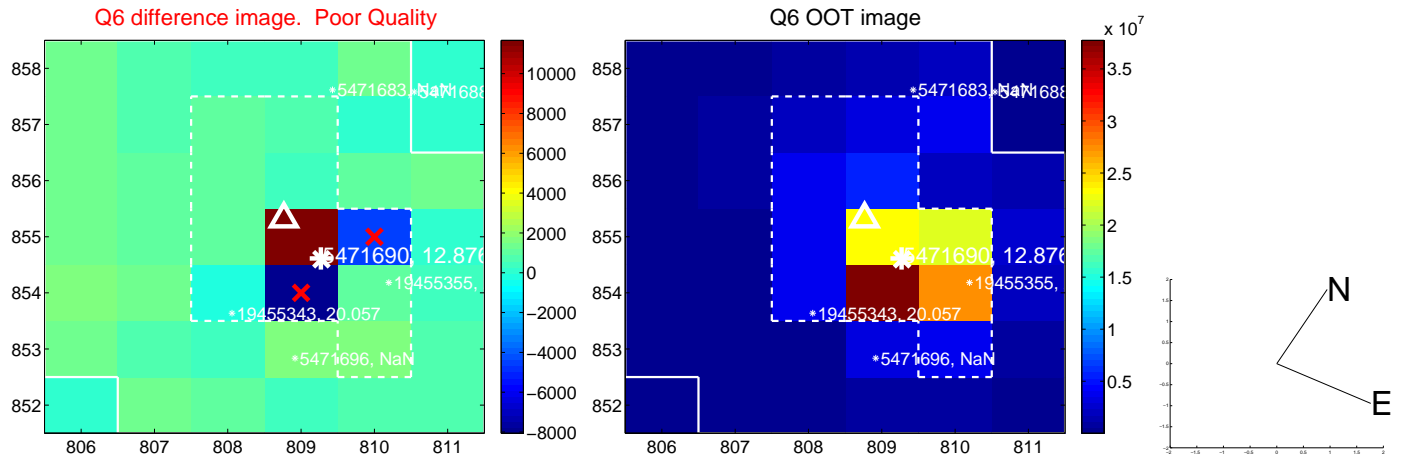
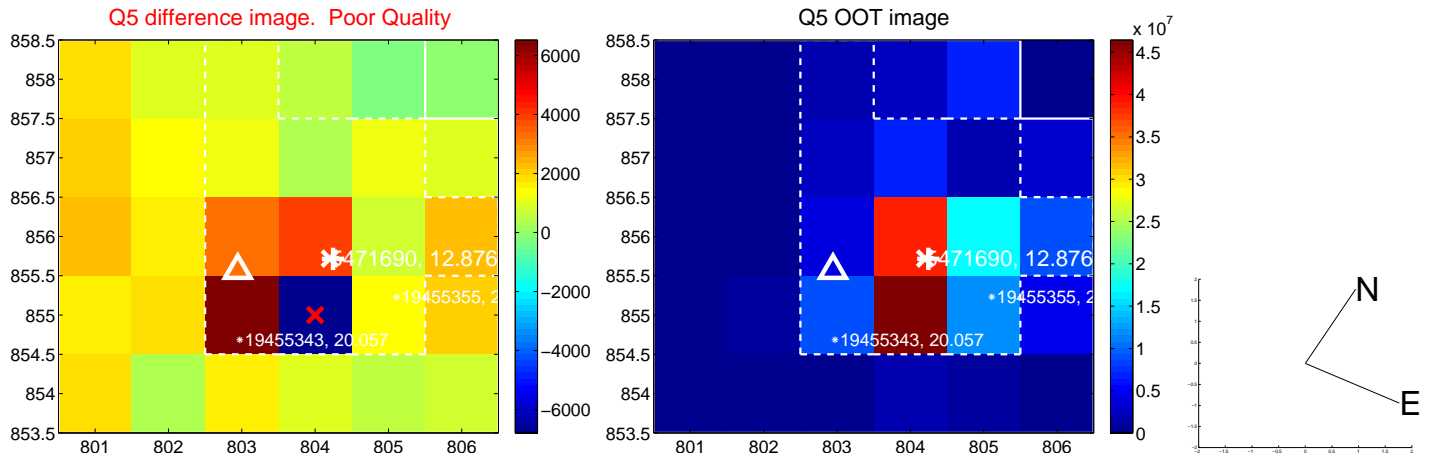


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

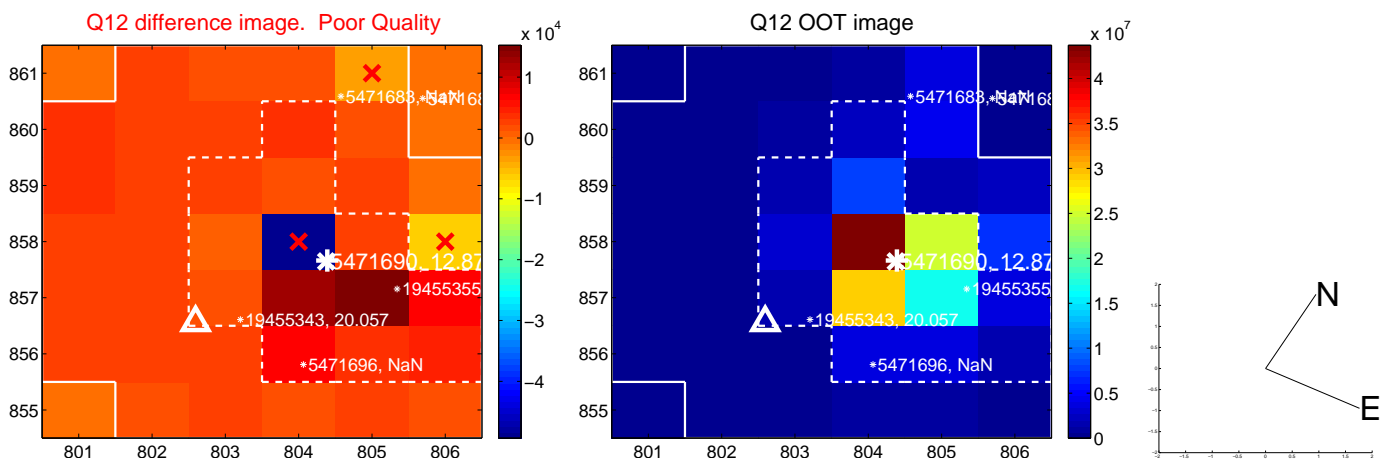
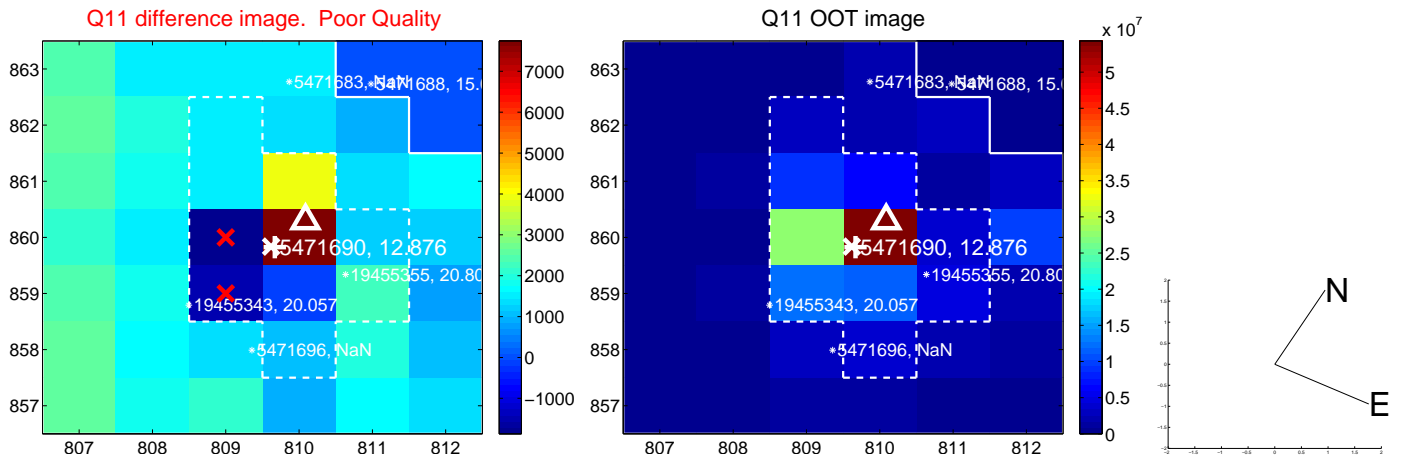
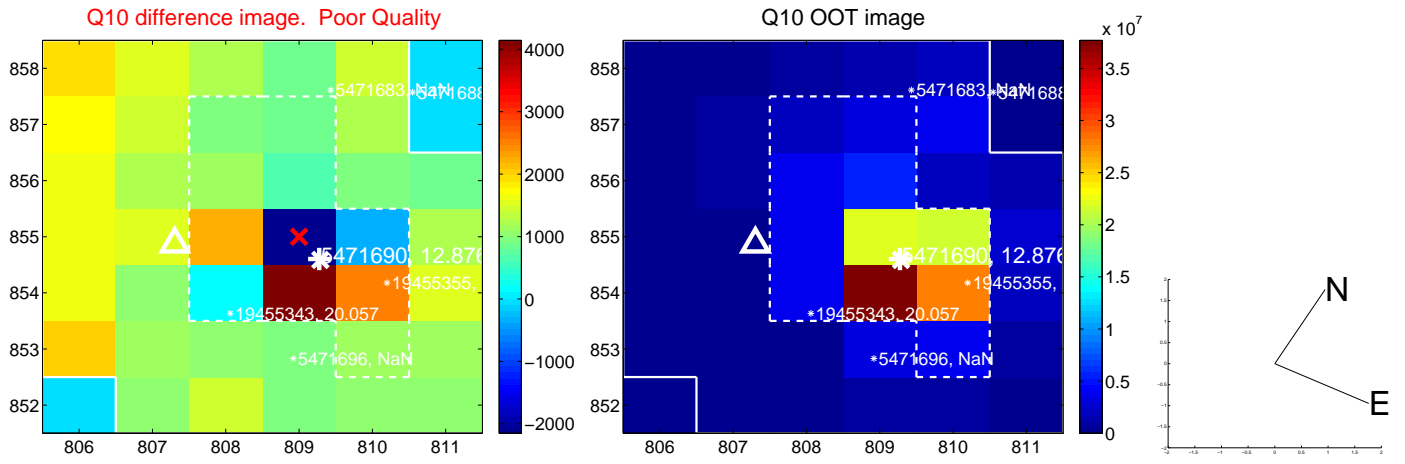
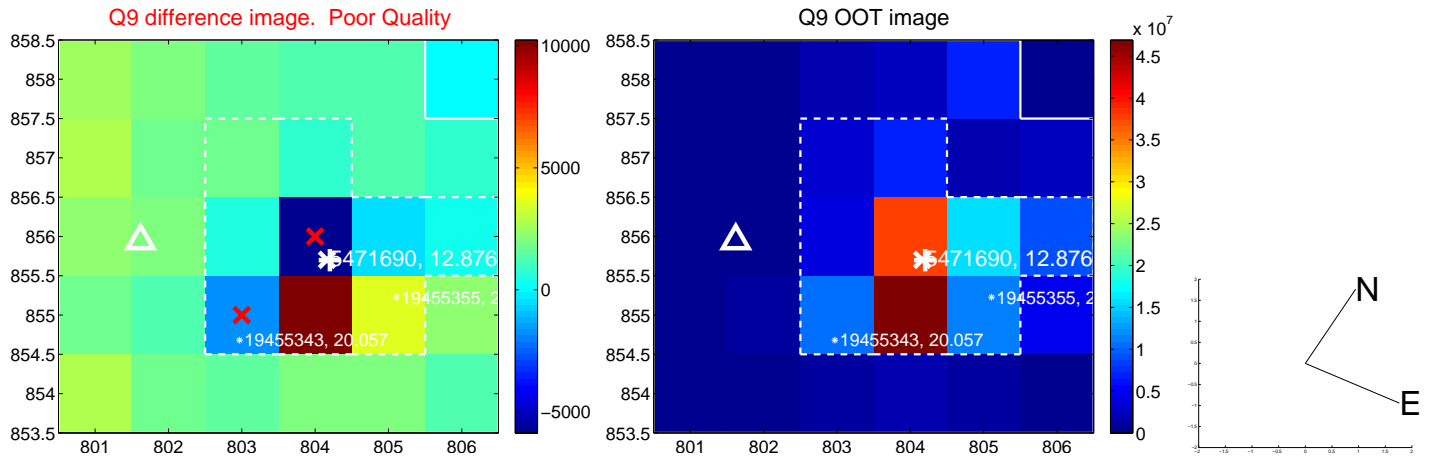
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



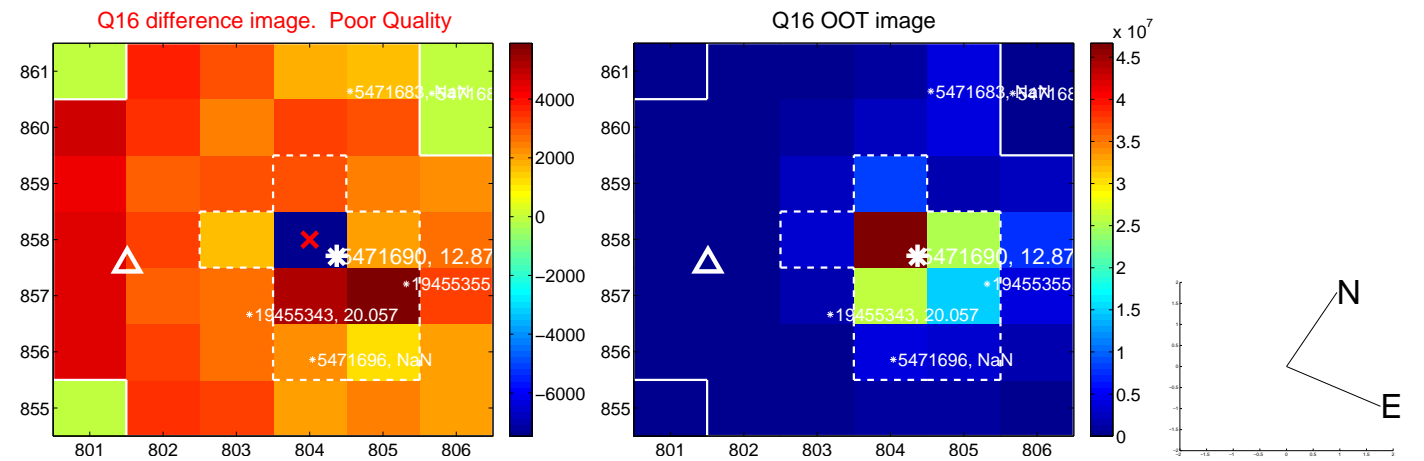
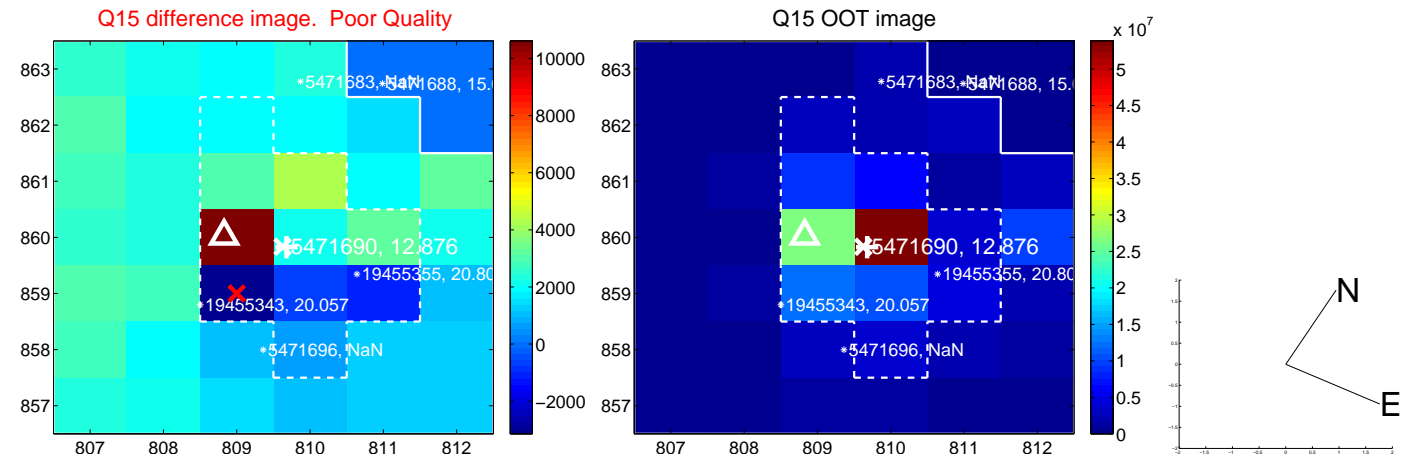
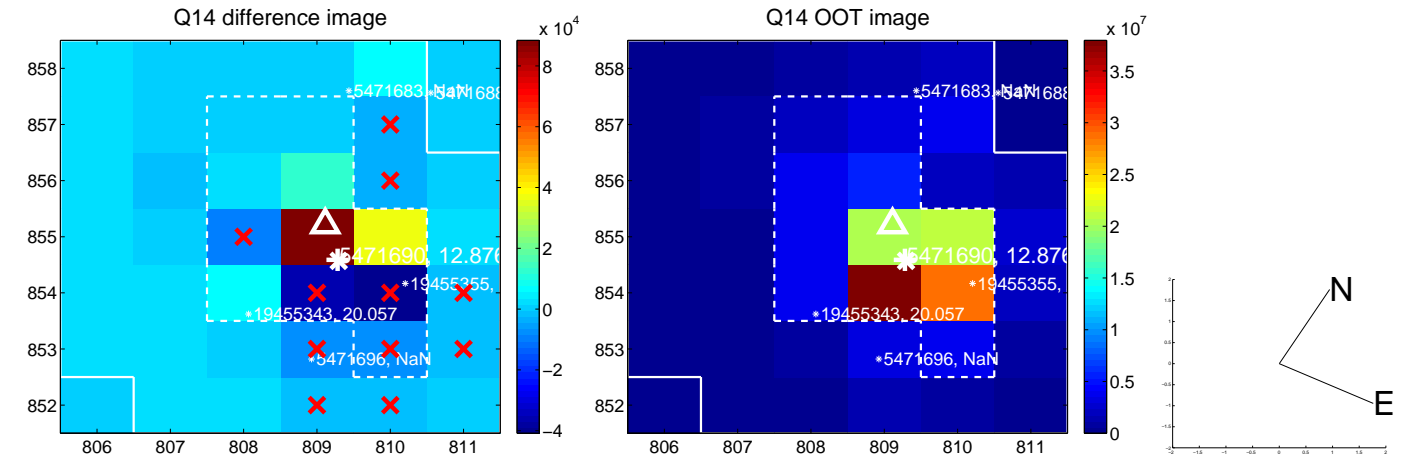
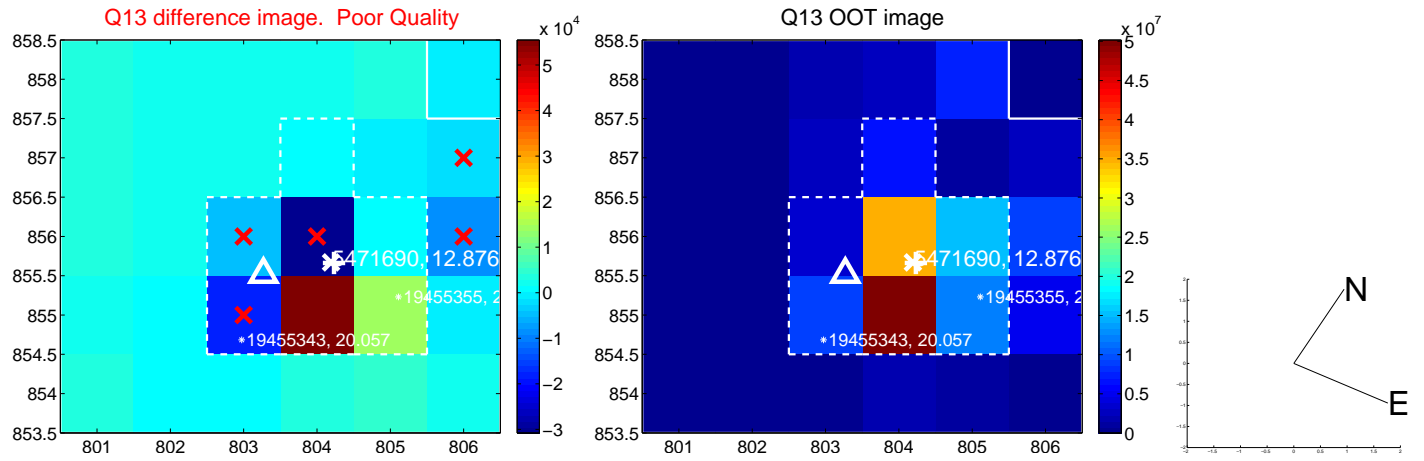
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



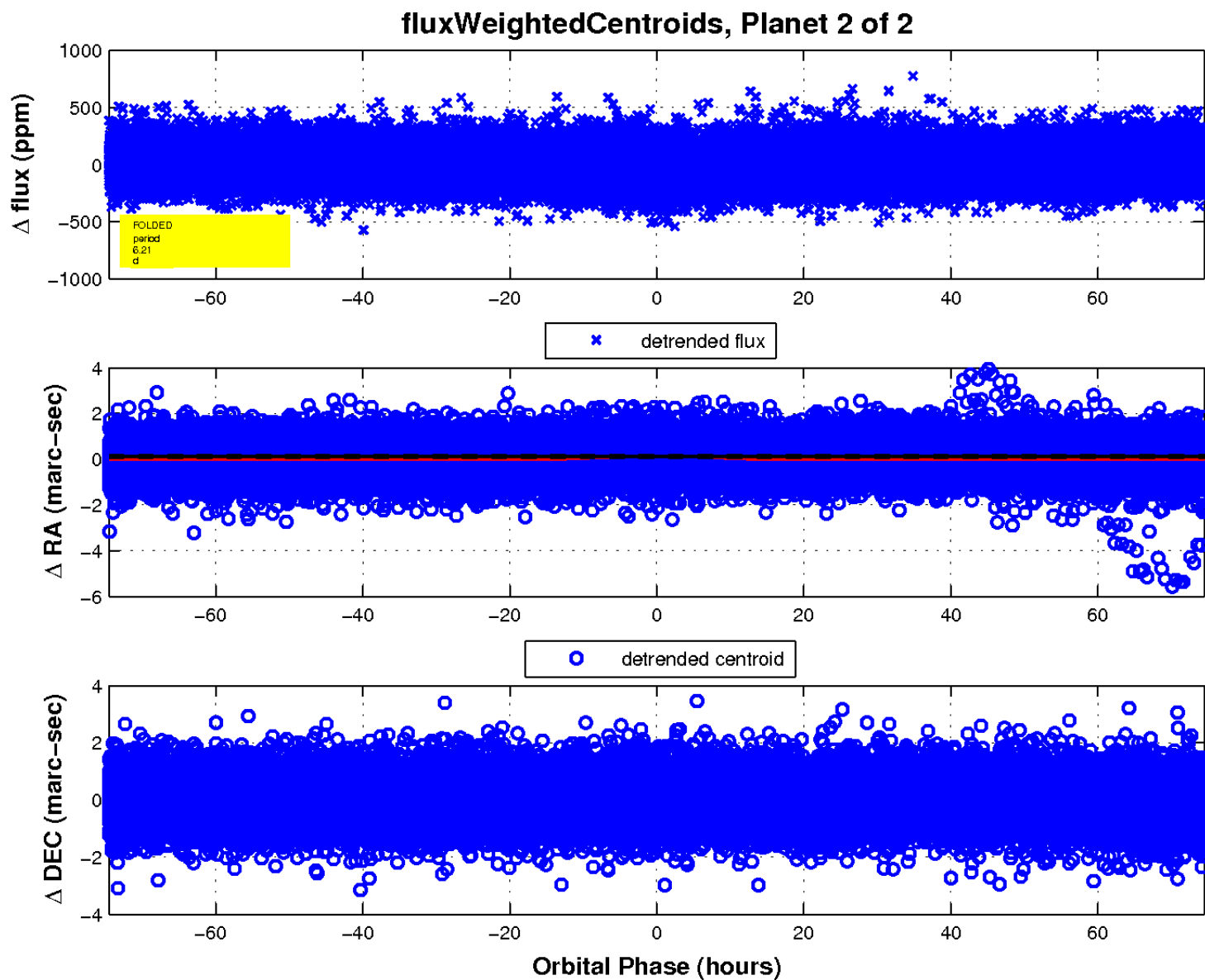
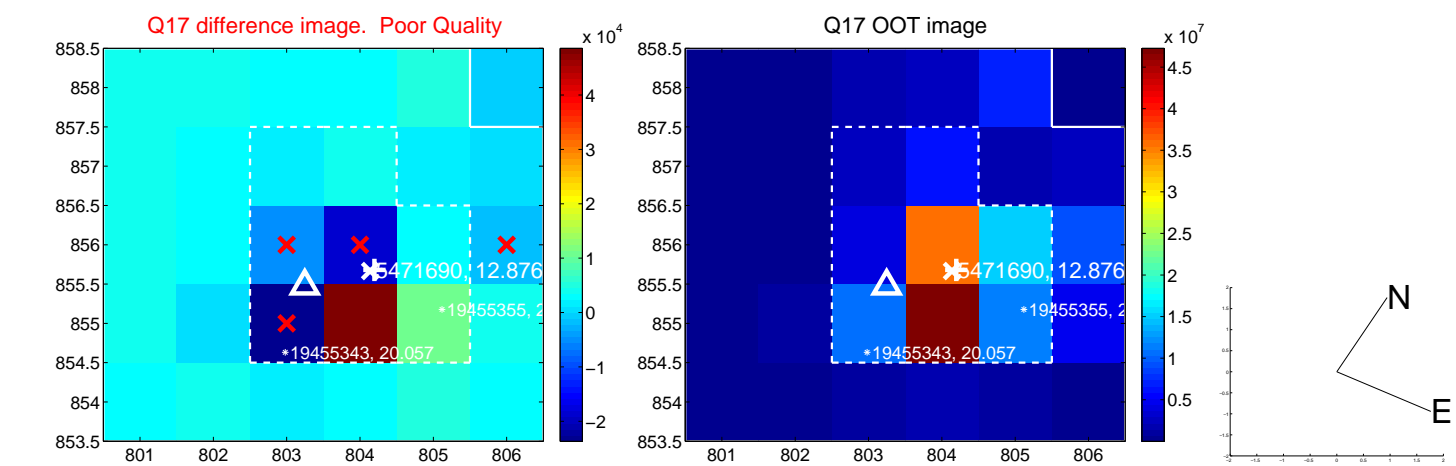
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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.



UKIRT Image

Declination

