

KIC 005471688

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})
005471688-01	OBS	3499.01	12.425738	141.517071	352.5	25.907	16.7	22.4	0.73	5940	1.79	61.86
005471688-02	OBS	No	12.426337	133.895673	295.6	27.521	15.7	21.2	0.73	5940	1.64	61.86

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005471688-01	OBS	FP	0.00	1	0	1	1	LPP_DV—CENT_KIC_POS—CENT_UNCERTAIN—HALO_GHOST—EPHEM_MATCH
005471688-02	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 005471688-01

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
005471688-01	5471688	V380-Cyg-pri	5385723	1:1	248.6	13	61	5.77	15.06	410.58	Direct-PRF	0	0.05	0.76

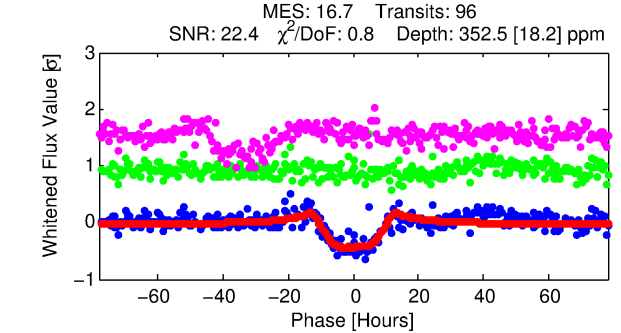
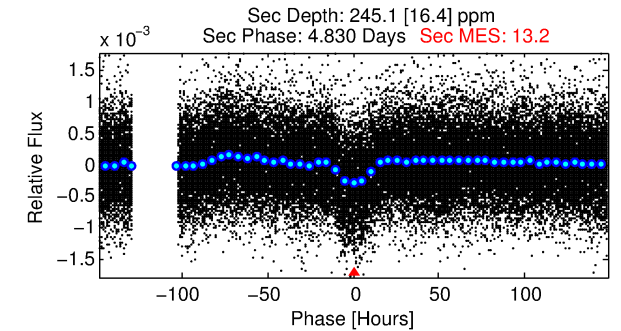
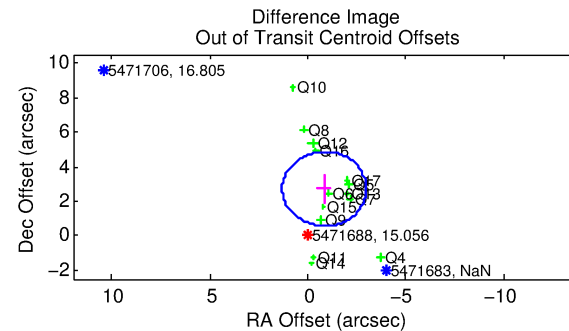
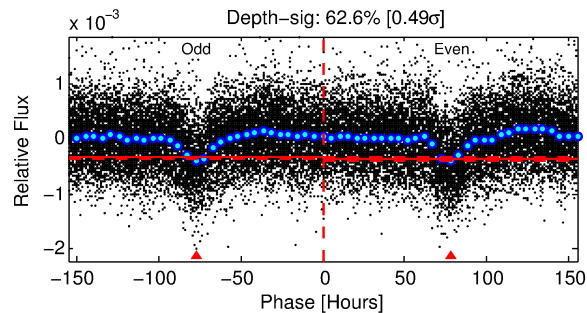
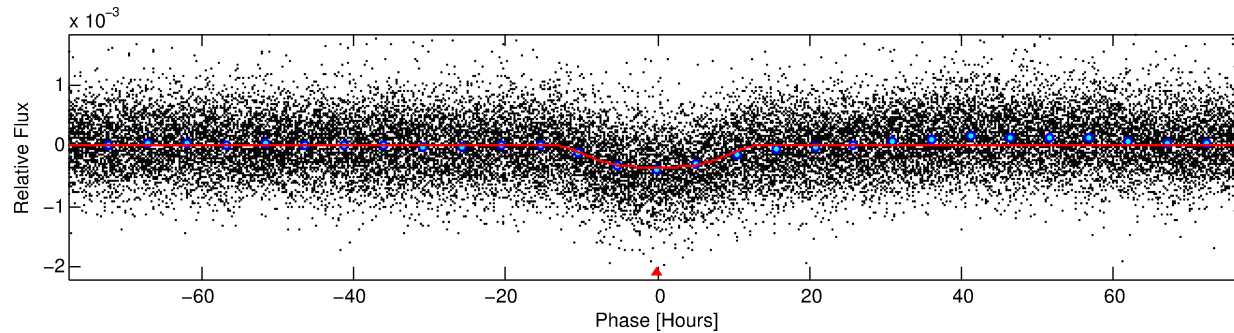
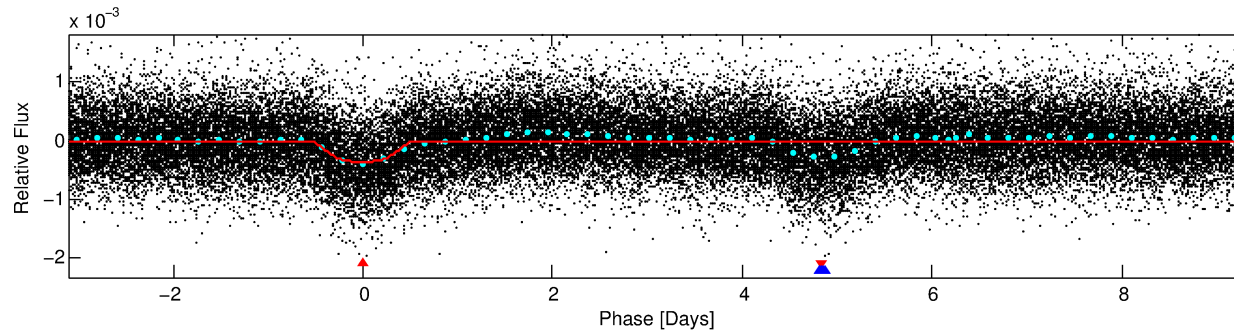
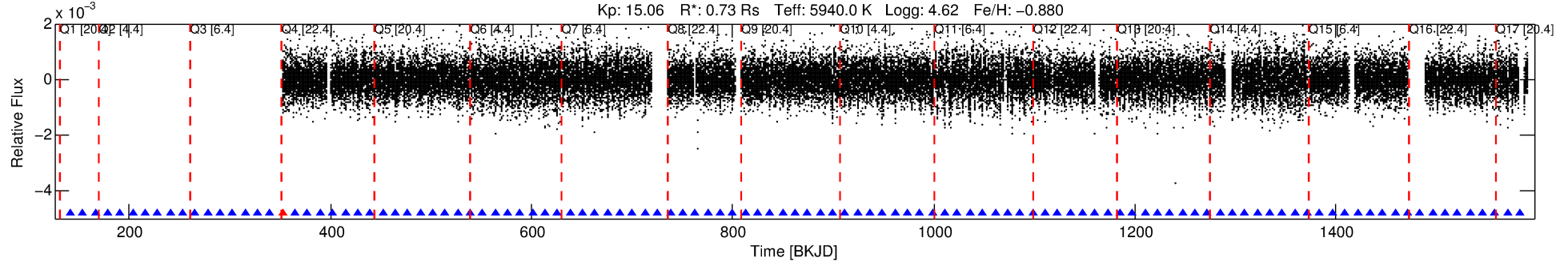
Notes: $P_1:P_2$ is the period ratio. Dist is the distance in arcseconds. Δ Row and Δ Col are the number of pixels apart in row and column. m_2 and m_1 are the magnitudes of the parent and child. D_2/D_1 is the parent's transit depth divided by the child's. σ_P and σ_T are the significance of the match 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: 5471688 Candidate: 1 of 2 Period: 12.426 d

KOI: K03499 Corr: No Ephemeris Match

Kp: 15.06 R*: 0.73 Rs Teff: 5940.0 K Logg: 4.62 Fe/H: -0.880



DV Fit Results:

Period = 12.42574 [0.00036] d
Epoch = 141.5171 [0.0250] BKJD
Rp/R* = 0.0225 [0.0007]
a/R* = 1.52 [0.05]
b = 0.97 [0.00]
Seff = 61.86 [18.05]
Teq = 715 [52] K
Rp = 1.79 [0.37] Re
a = 0.0979 [0.0172] AU
Ag = 401.99 [111.07] [3.61σ]
Teff = 4951 [200] K [20.50σ]

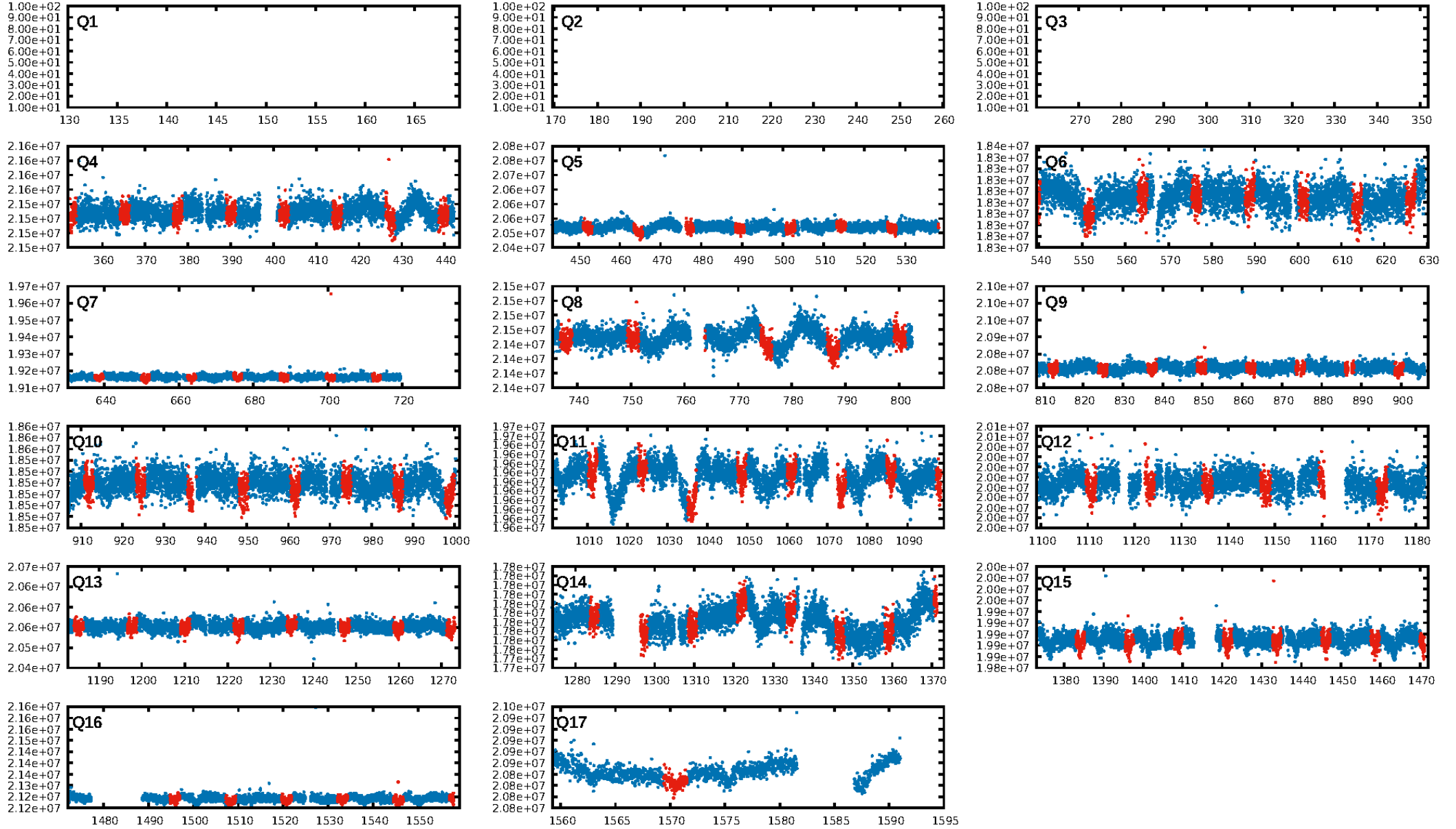
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.0% [0.00σ]
ModelChiSquare2-sig: 63.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 2.57e-64
RollingBand-fgt: 0.99 [94/95]
GhostDiagnostic-chr: 0.05926
Centroid-sig: 0.0%
Centroid-so: 0.612 arcsec [2.09σ]
OotOffset-rm: 2.836 arcsec [3.96σ]
KicOffset-rm: 2.232 arcsec [5.50σ]
OotOffset-st: 3/3/4/4 [14]
KicOffset-st: 3/3/4/4 [14]
DiffImageQuality-fgm: 0.07 [1/14]
DiffImageOverlap-fno: 1.00 [14/14]

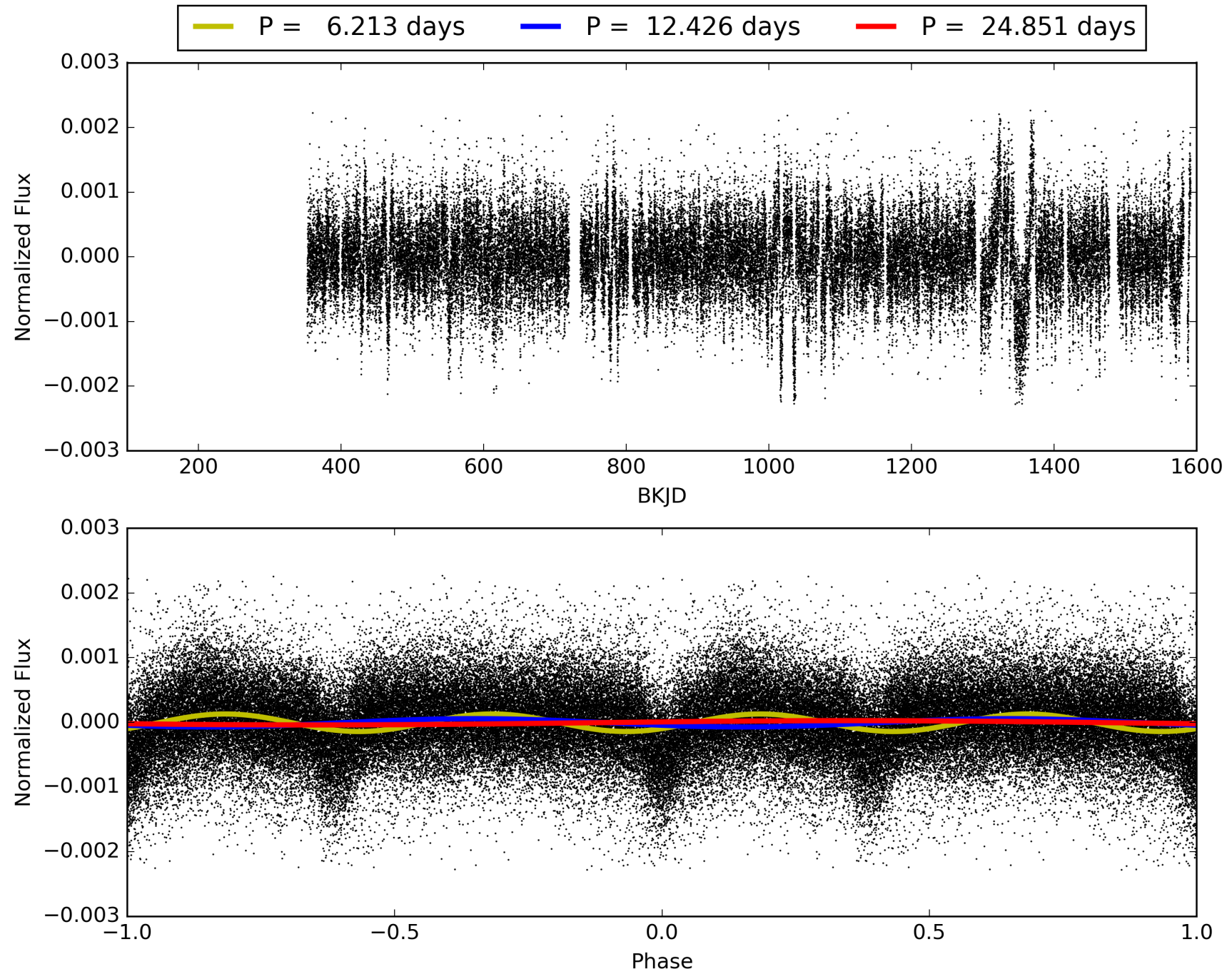
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 005471688-01, PDC Light Curves

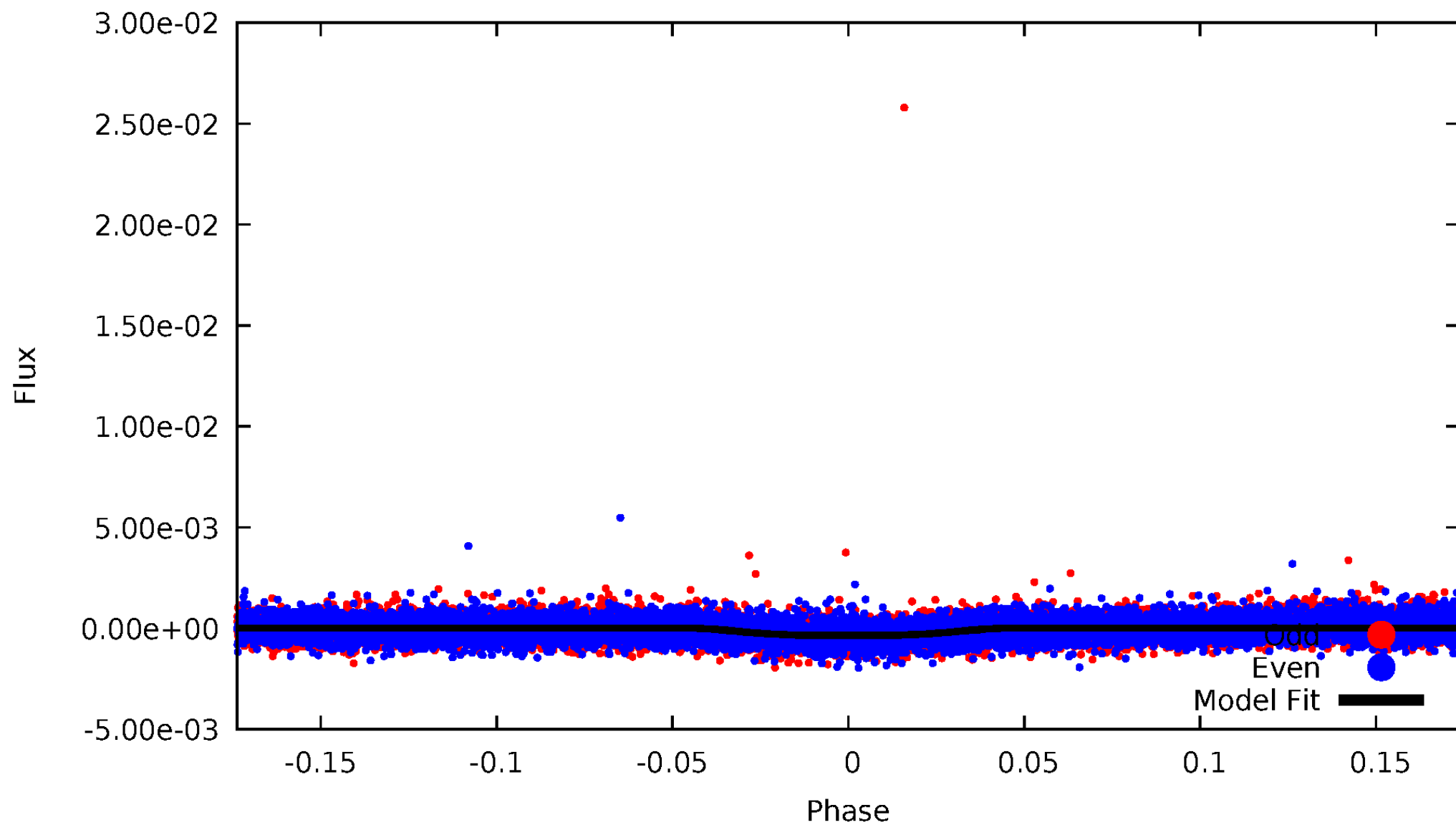


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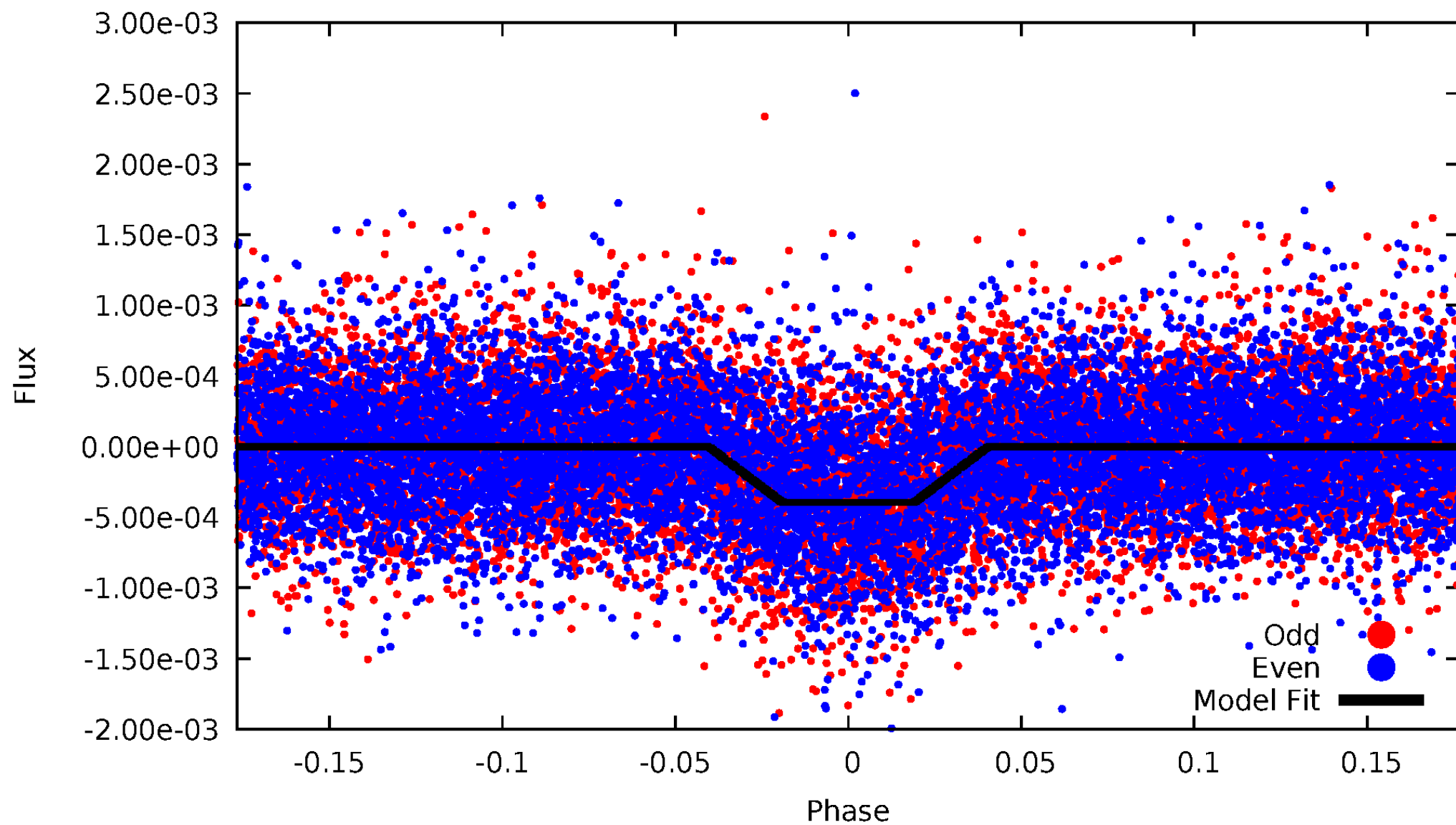
DV Odd/Even

TCE 005471688-01



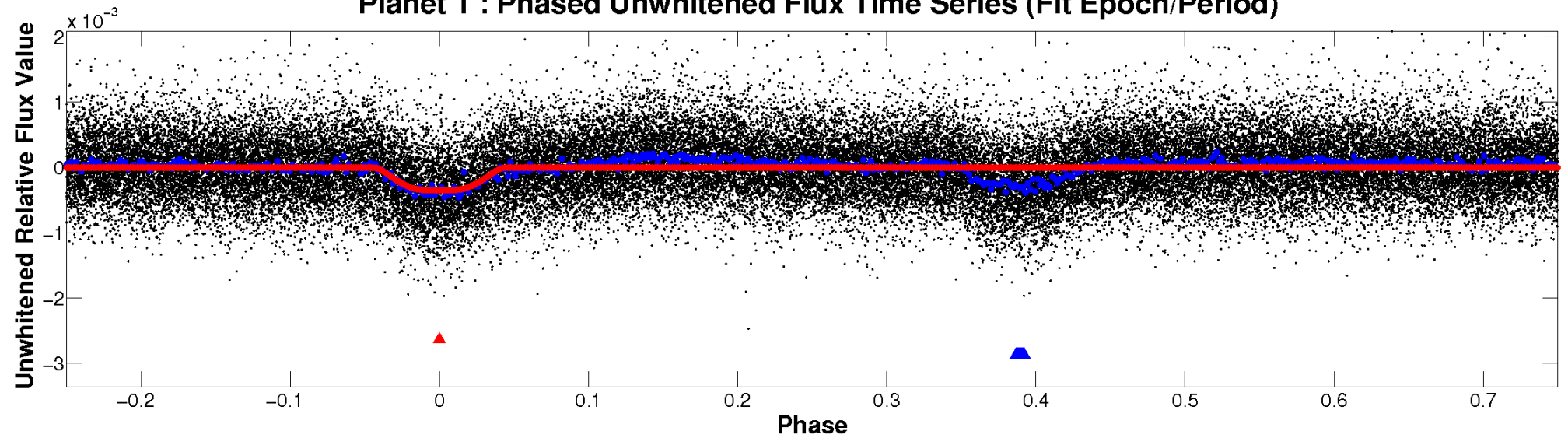
ALT Odd/Even

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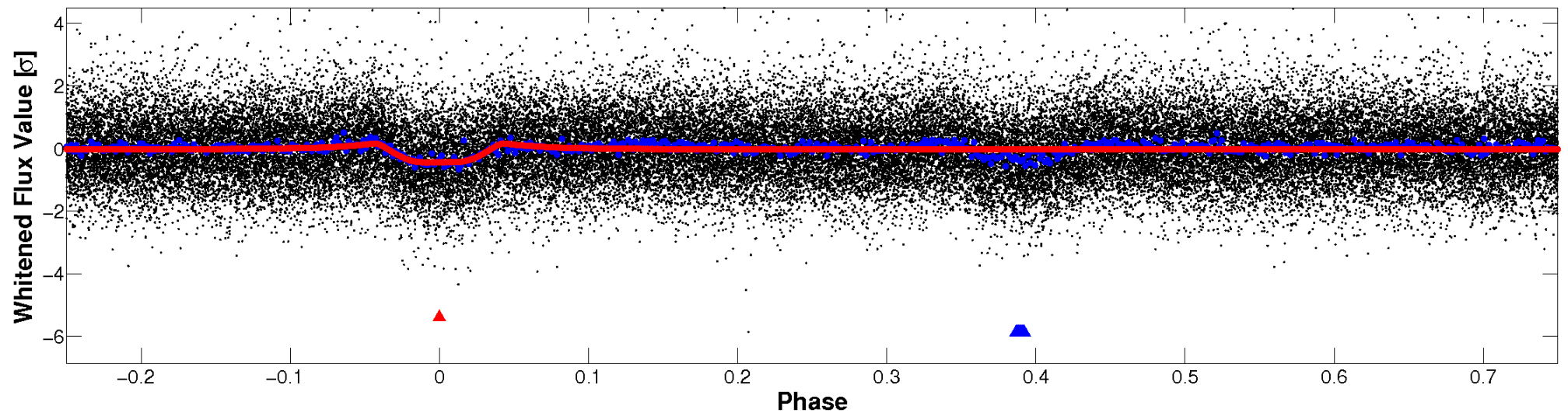


Non-Whitened Vs. Whitened Light Curve

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

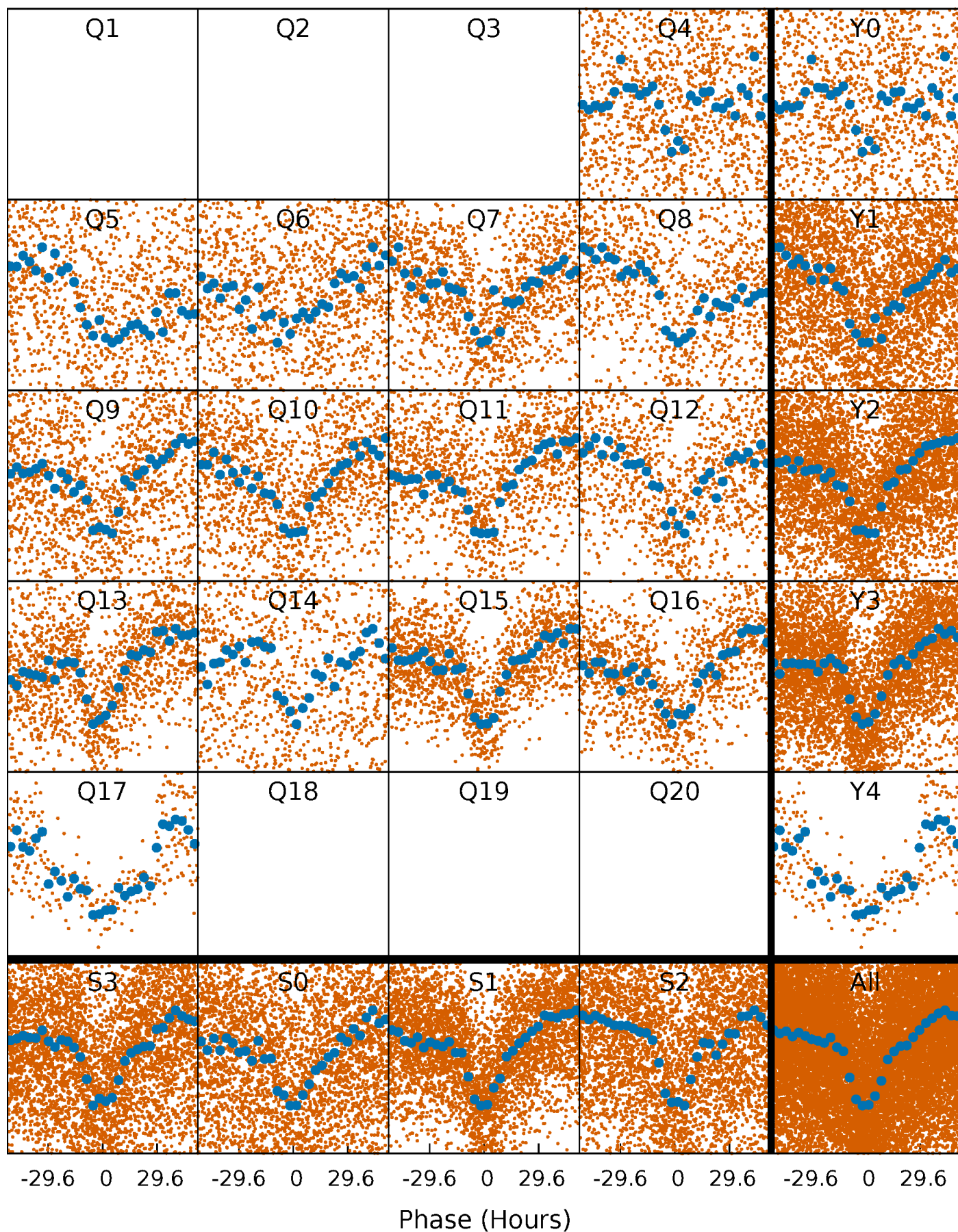


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



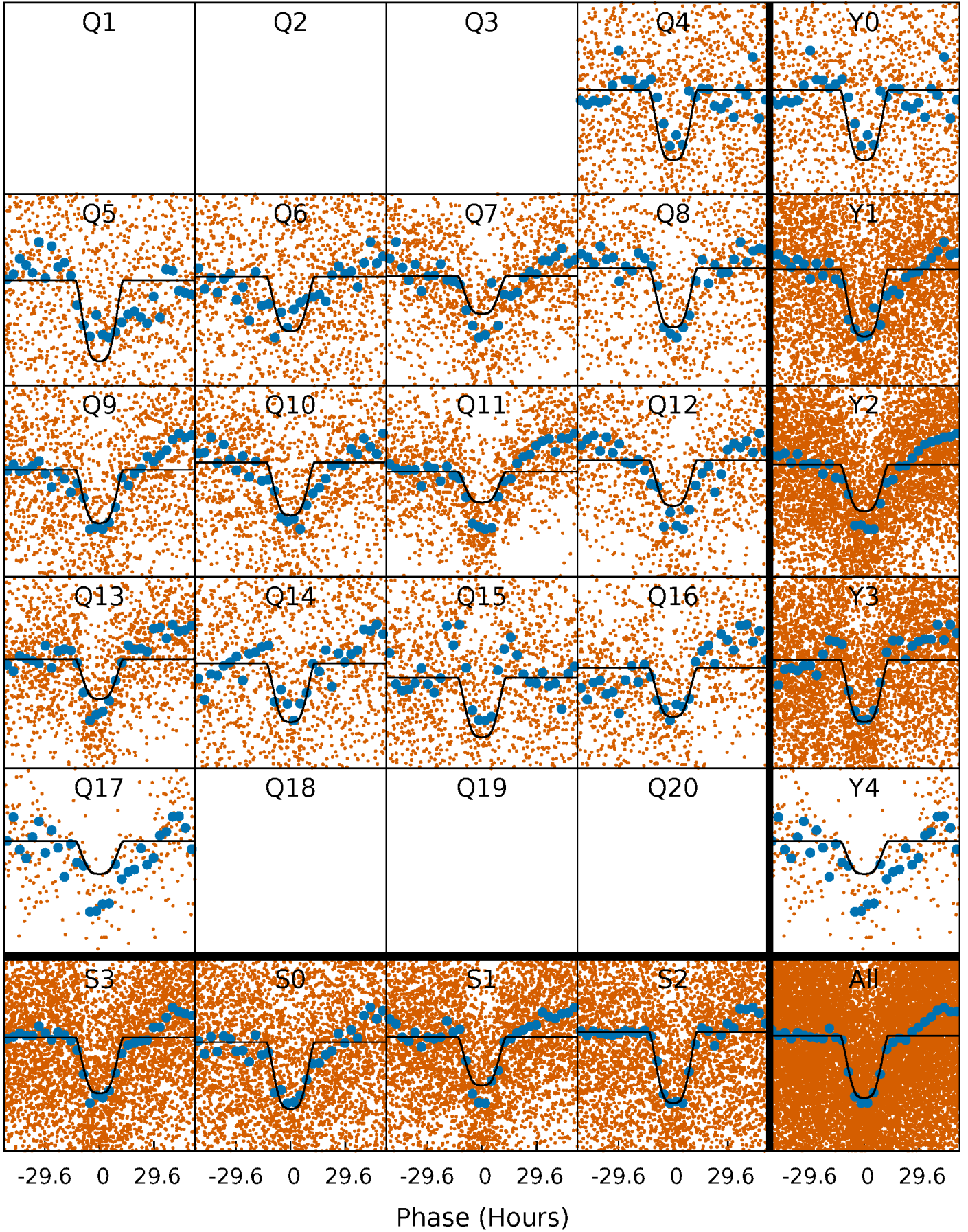
PDC Quarter-Phased Transit Curves

TCE 005471688-01 P= 12.425738 Days $T_0=141.517071$ (BKJD)



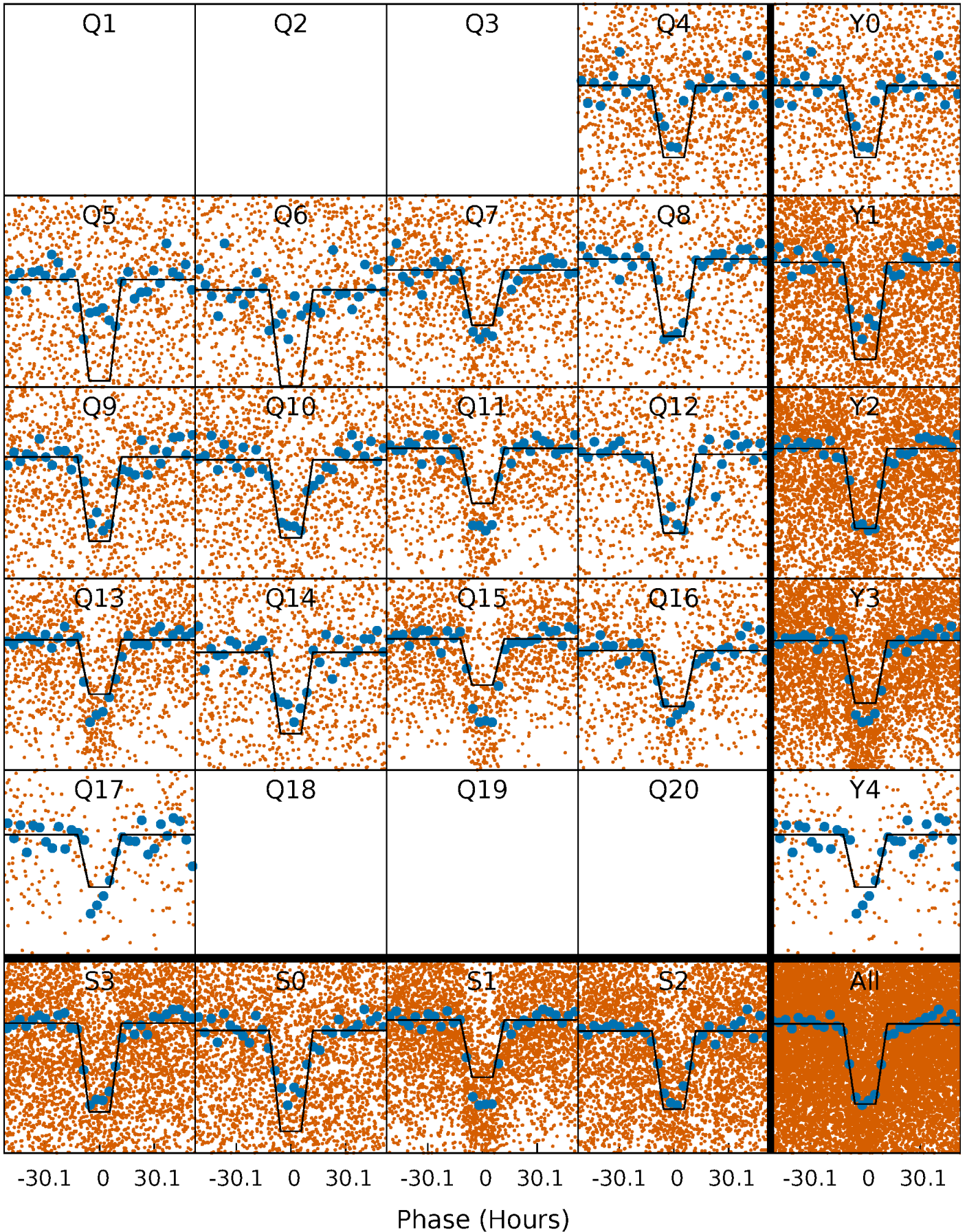
DV Quarter-Phased Transit Curves

TCE 005471688-01 P= 12.425738 Days $T_0=141.517071$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

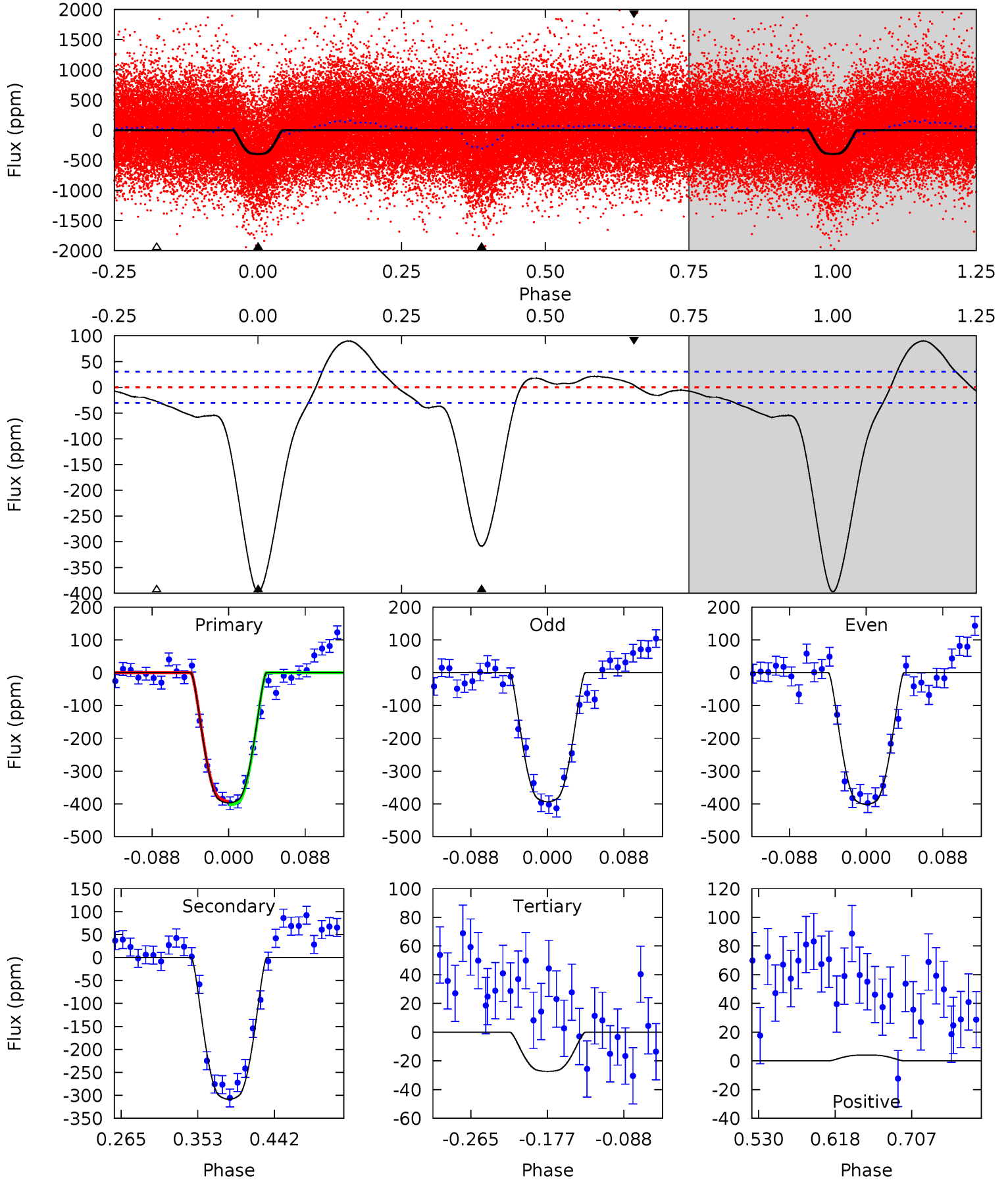
TCE 005471688-01 P= 12.424613 Days $T_0=141.604663$ (BKJD)



DV Model-Shift Uniqueness Test

005471688-01, P = 12.425738 Days, E = 141.517071 Days

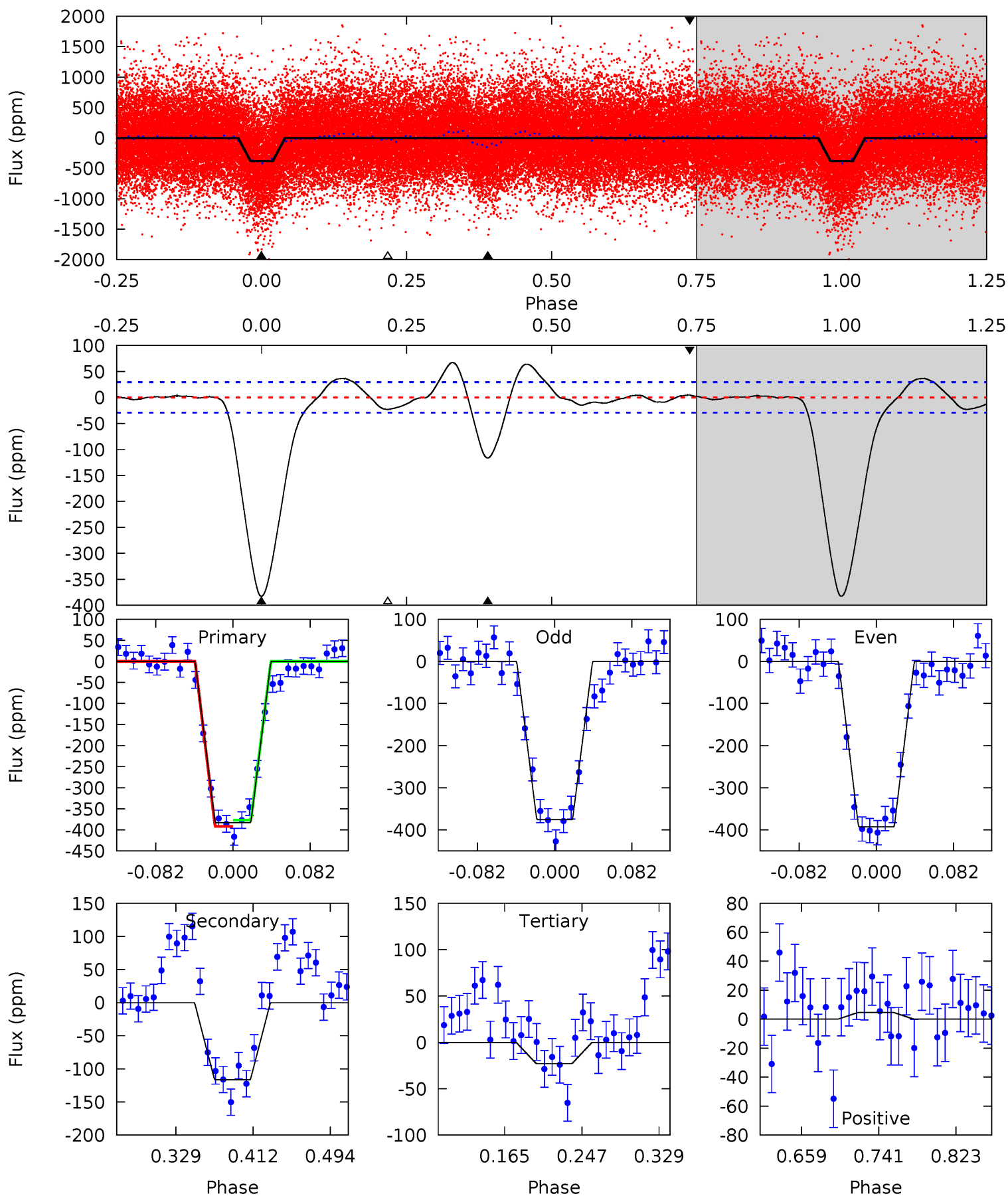
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
60.0	46.6	4.13	0.61	4.59	1.70	5.41	55.9	59.4	42.5	46.0	0.59	0.96	0.18	0.82



Alt Model-Shift Uniqueness Test

005471688-01, P = 12.424613 Days, E = 141.604663 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
59.8	18.2	3.58	0.72	4.61	1.74	2.25	56.2	59.0	14.6	17.5	1.32	1.02	0.15	1.17



Stellar Parameters For KIC 005471688

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5940^{+196}_{-196}	$4.621^{+0.036}_{-0.144}$	$-0.880^{+0.300}_{-0.300}$	$0.729^{+0.150}_{-0.050}$	$0.819^{+0.064}_{-0.085}$	$2.978^{+0.428}_{-1.239}$
	+3%/-3%	+1%/-3%	+34%/-34%	+21%/-7%	+8%/-10%	+14%/-42%
Source	KIC0	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 005471688-01 / KOI 3499.01

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-308 ± 7	$1.84^{+0.19}_{-0.13}$	1015^{+54}_{-39}	5291^{+183}_{-166}	478^{+63}_{-80}
Alt.	-117 ± 6	$1.63^{+0.18}_{-0.12}$	1020^{+57}_{-45}	4560^{+140}_{-142}	230^{+35}_{-41}

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 $A_{\text{obs}} \gg 1.0$

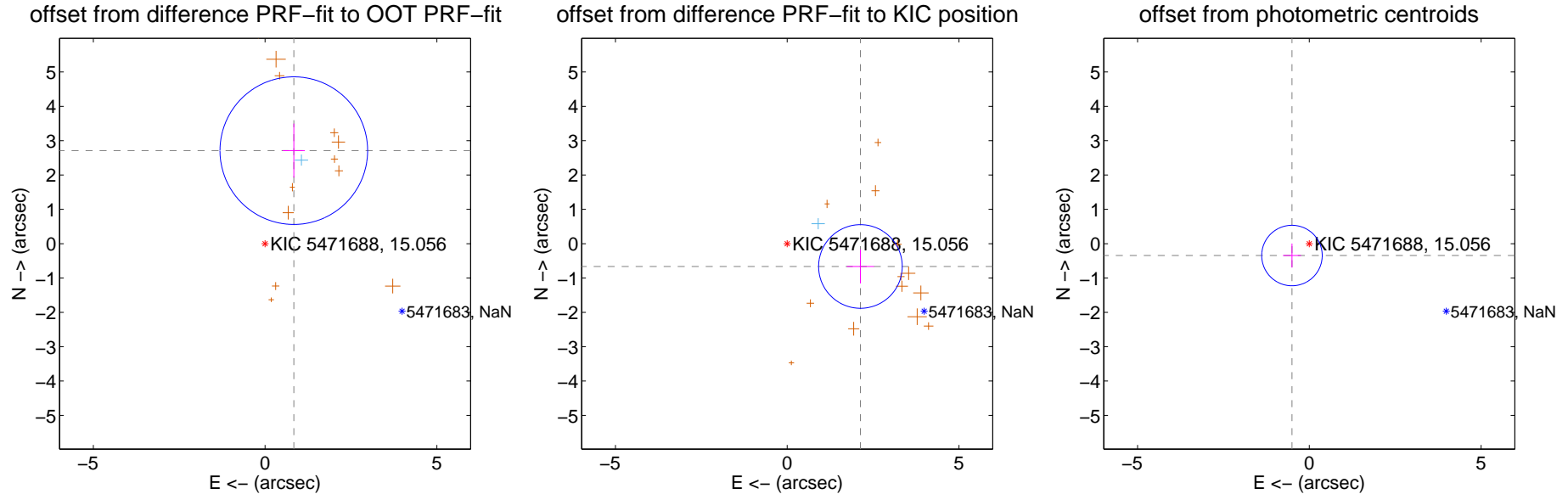
DV Centroid Data

Supplemental centroid analysis for 005471688-01. Kepler magnitude: 15.06. Transit SNR 22.38

There are 1 quarters with good PRF difference image offsets

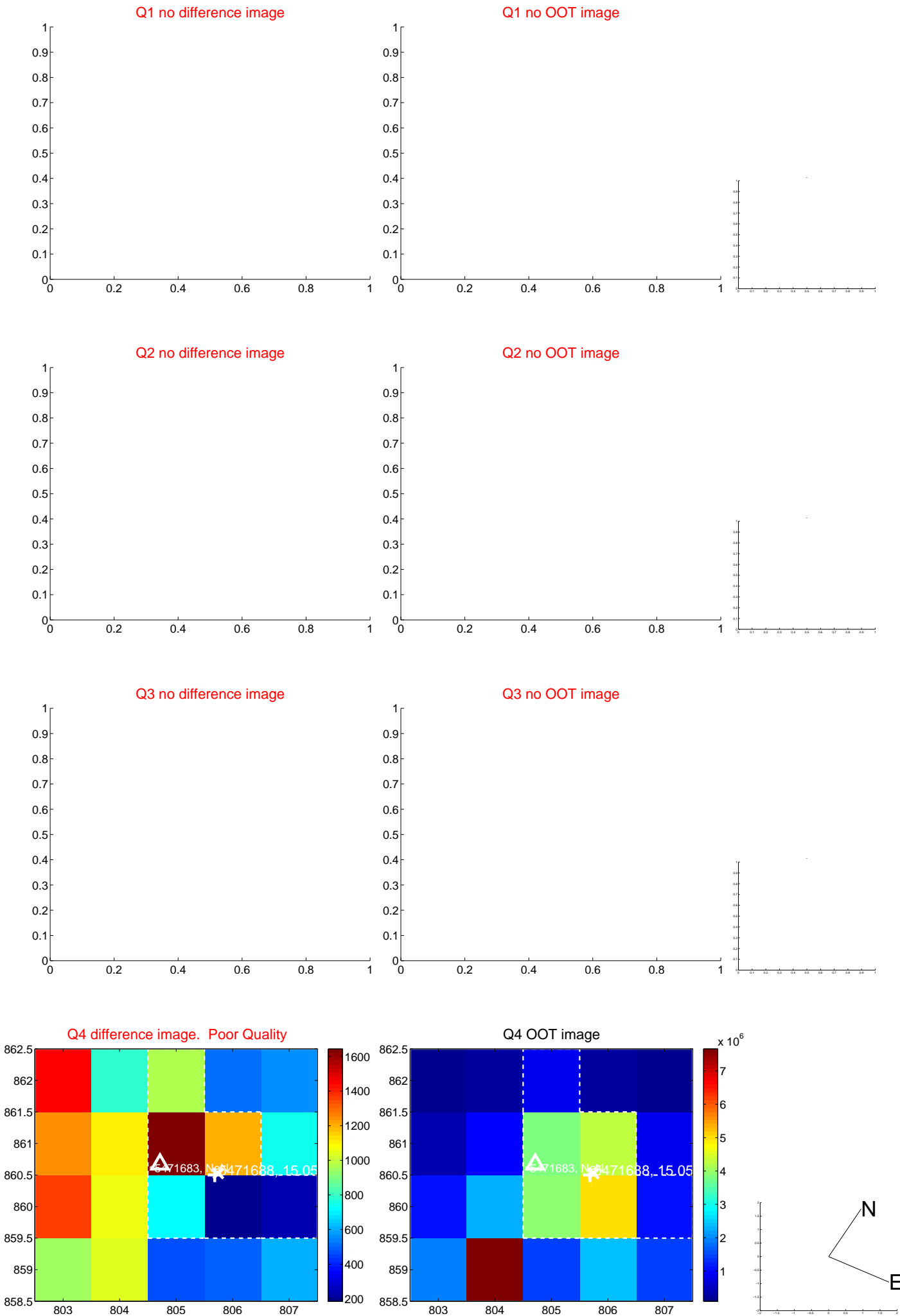
The OOT PRF centroid is offset from the target star catalog position by about 3.47 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	2.836 ± 0.716	3.96	-0.835 ± 0.322	2.710 ± 0.786
PRF-fit source offset from KIC position	2.232 ± 0.406	5.50	-2.131 ± 0.396	-0.664 ± 0.492
photometric centroid source offset	0.61 ± 0.29	2.09	0.51 ± 0.26	-0.34 ± 0.35

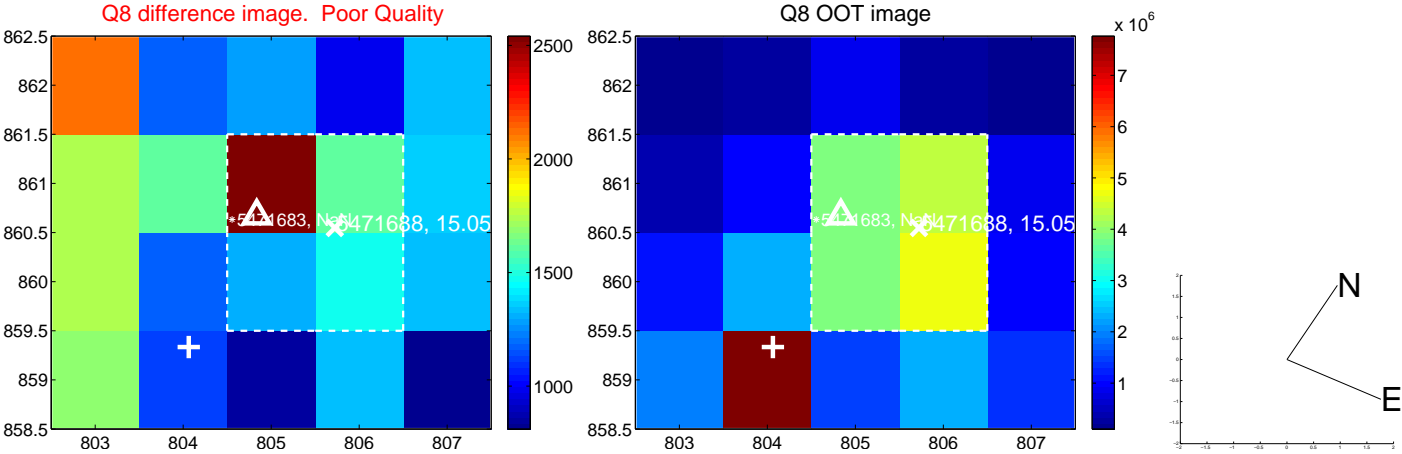
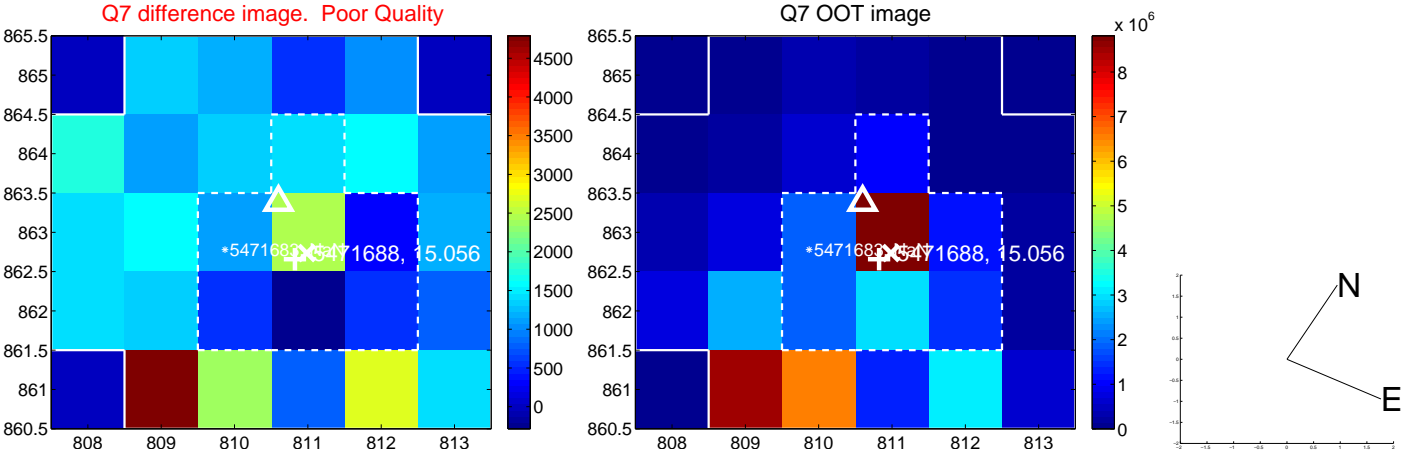
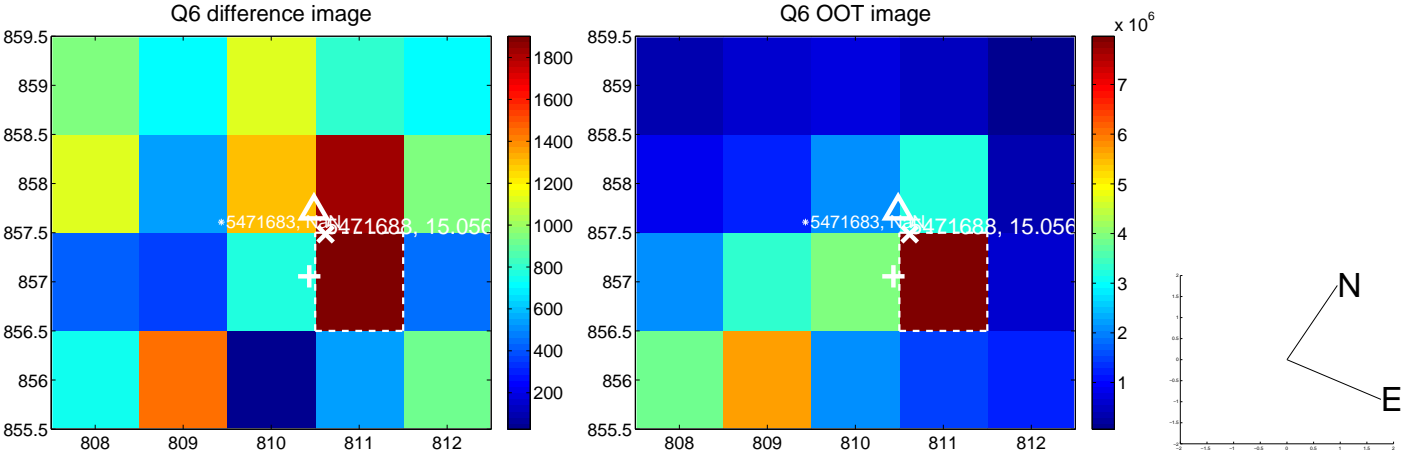
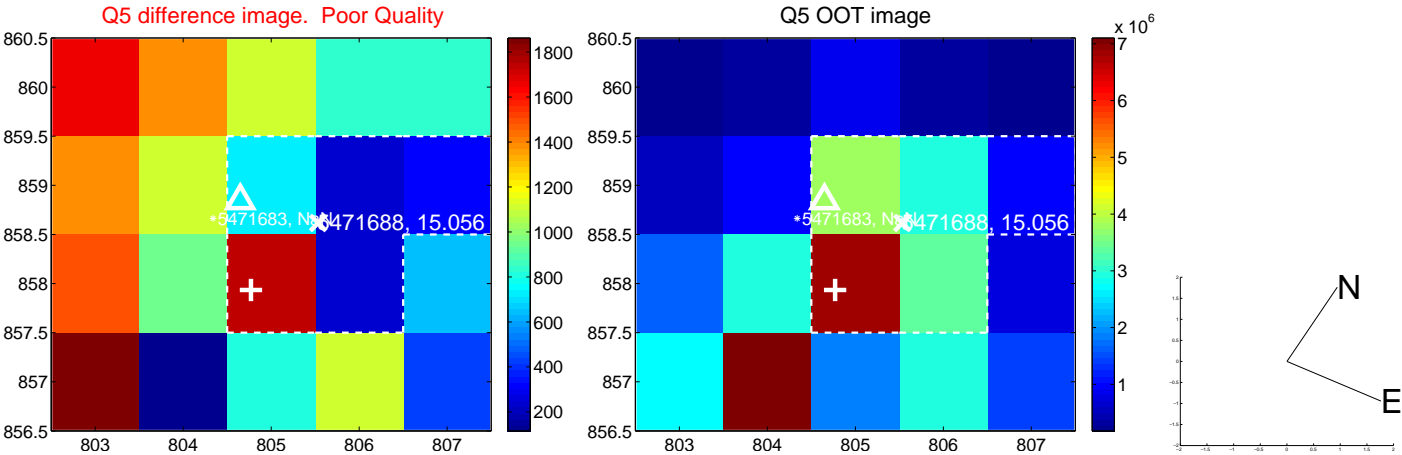


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

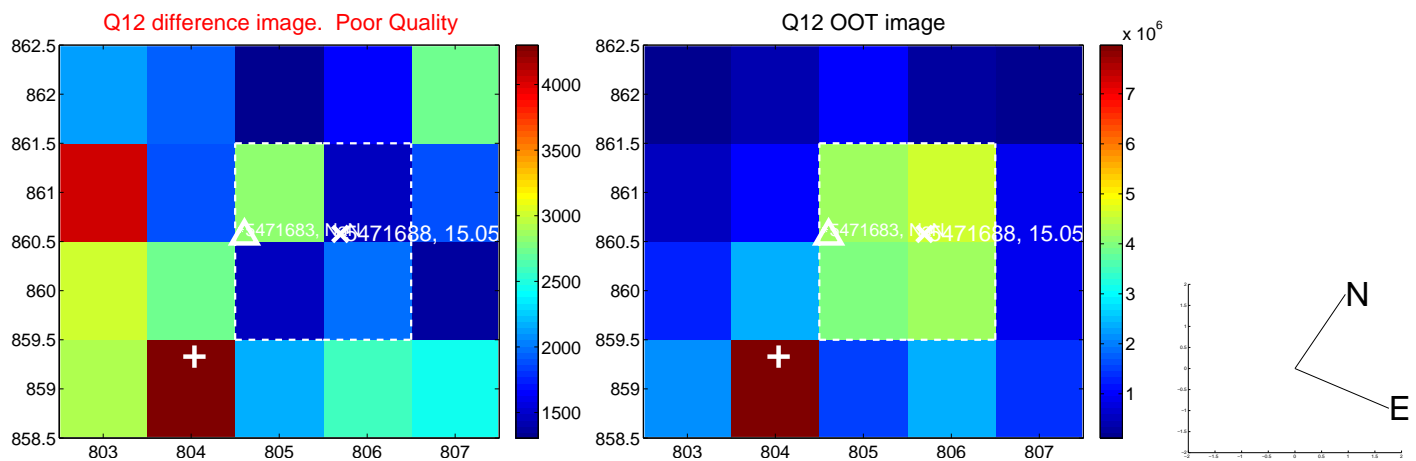
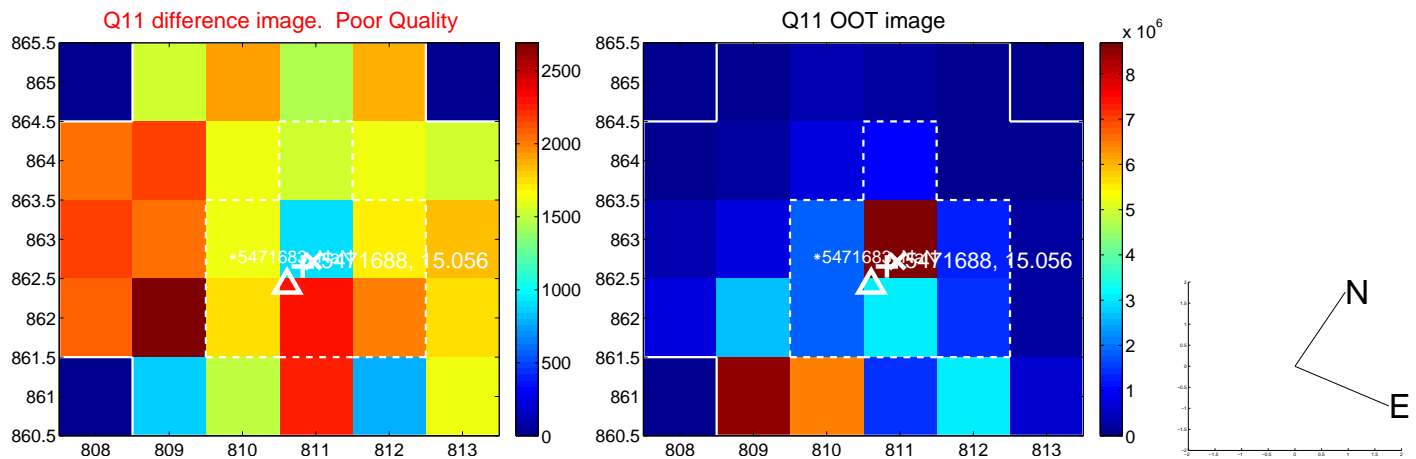
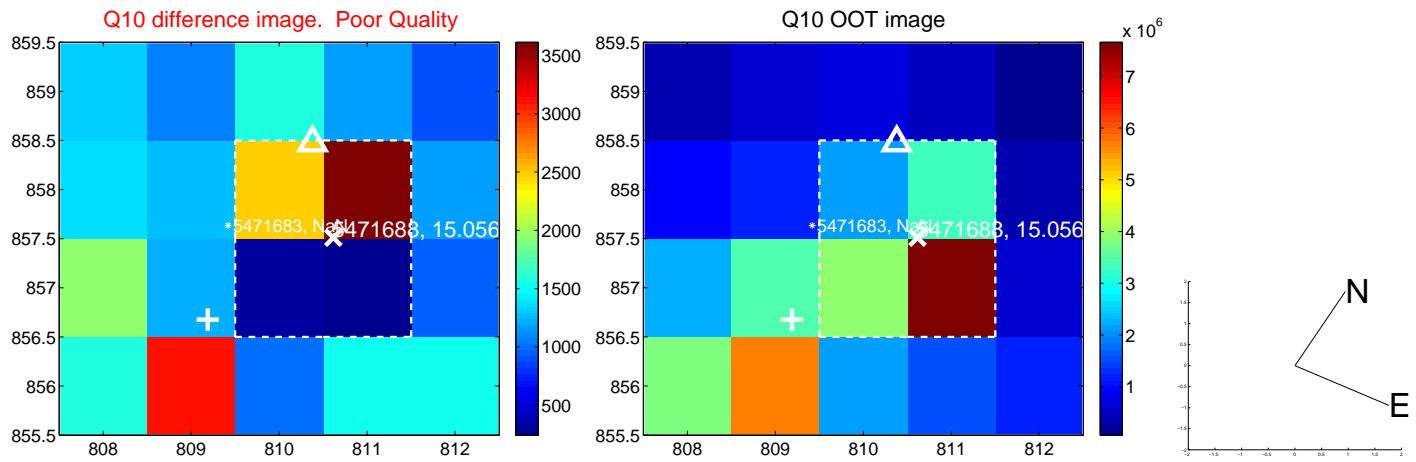
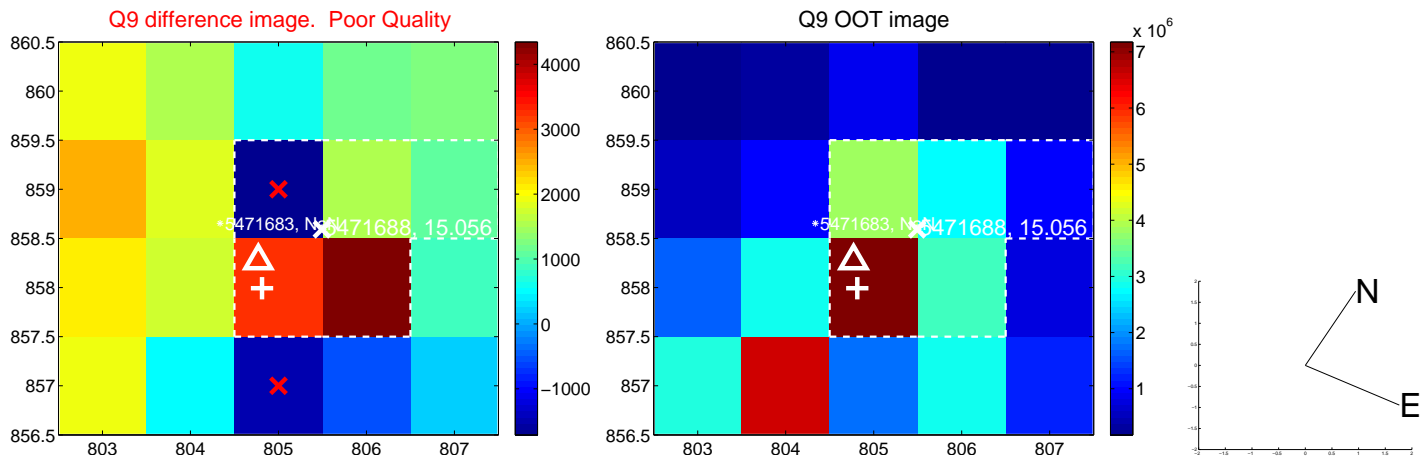
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



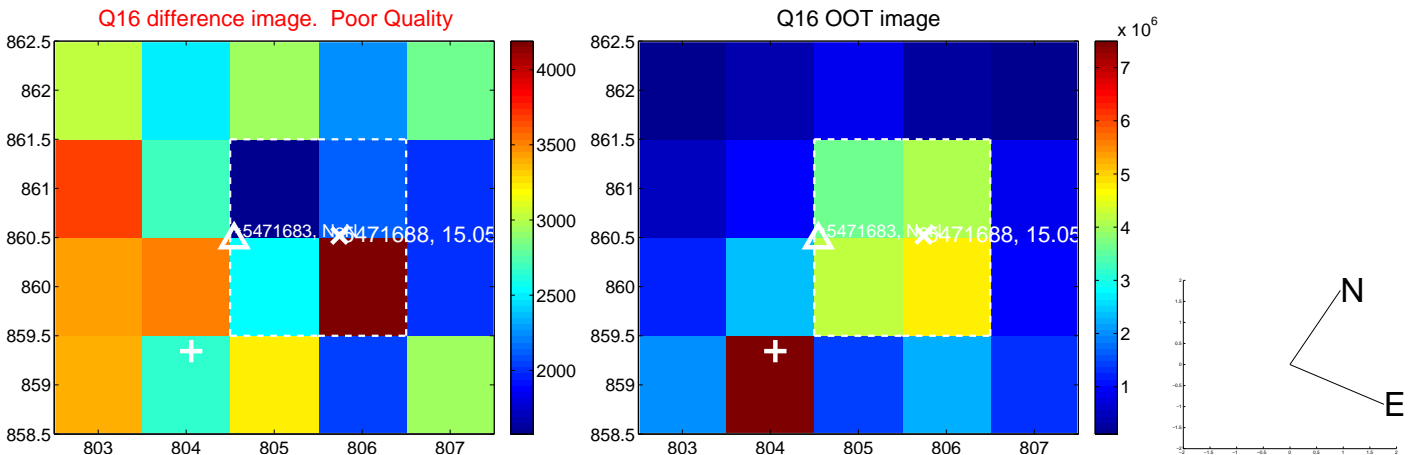
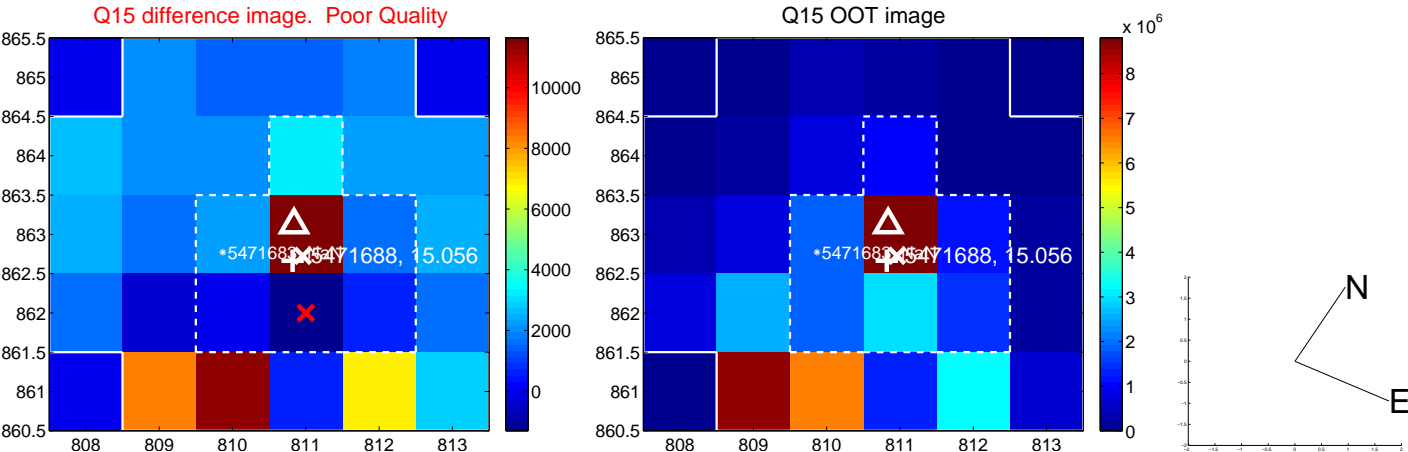
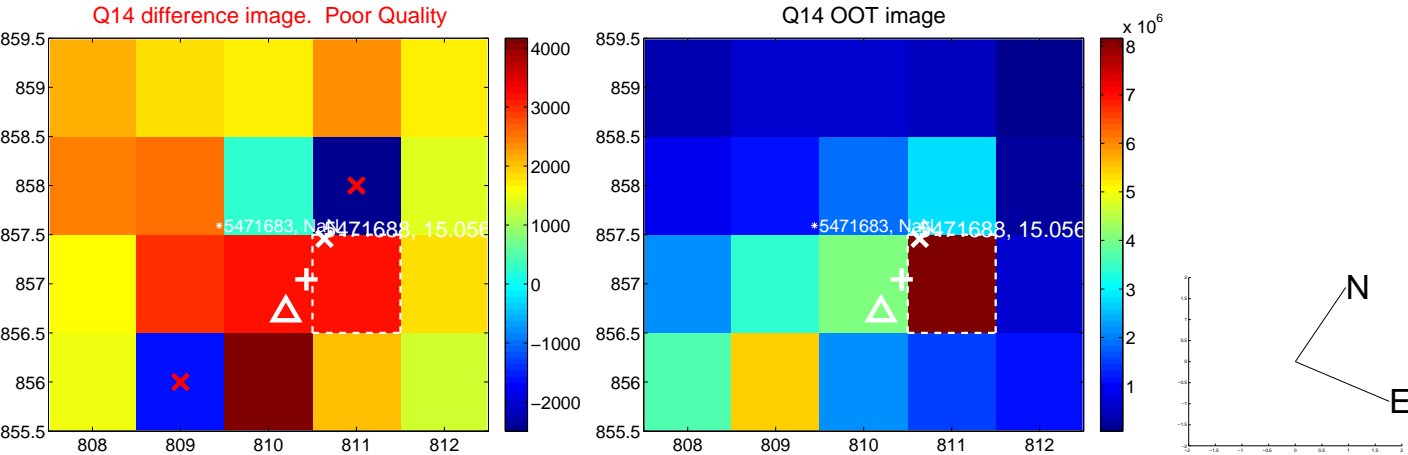
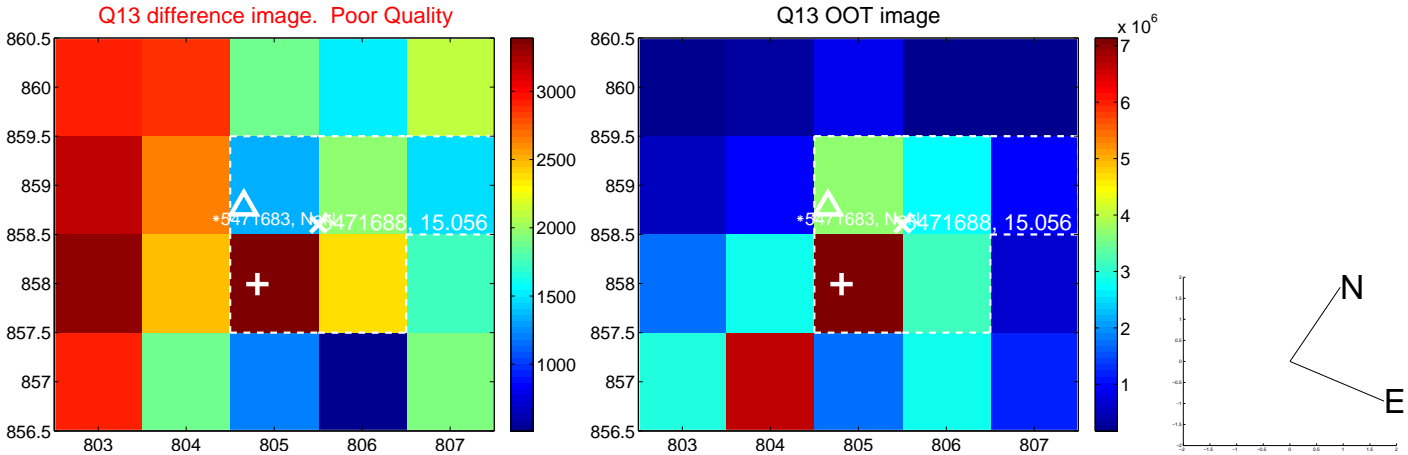
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



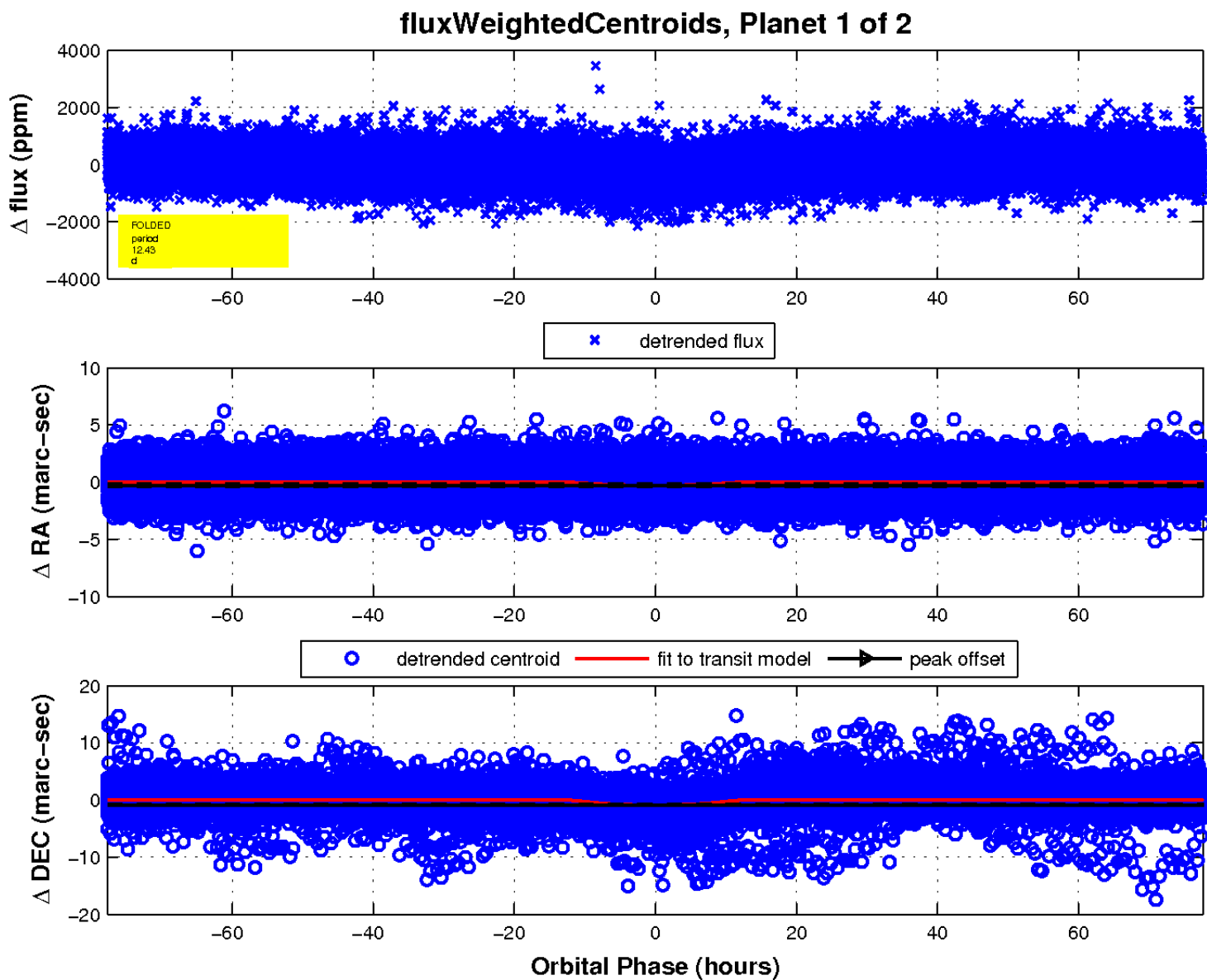
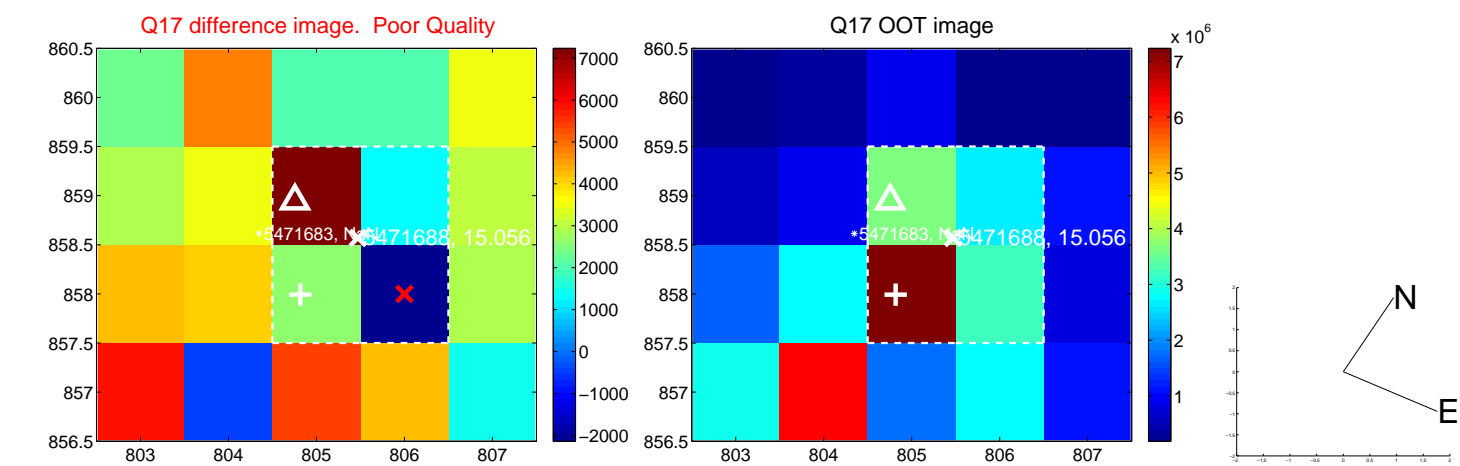
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

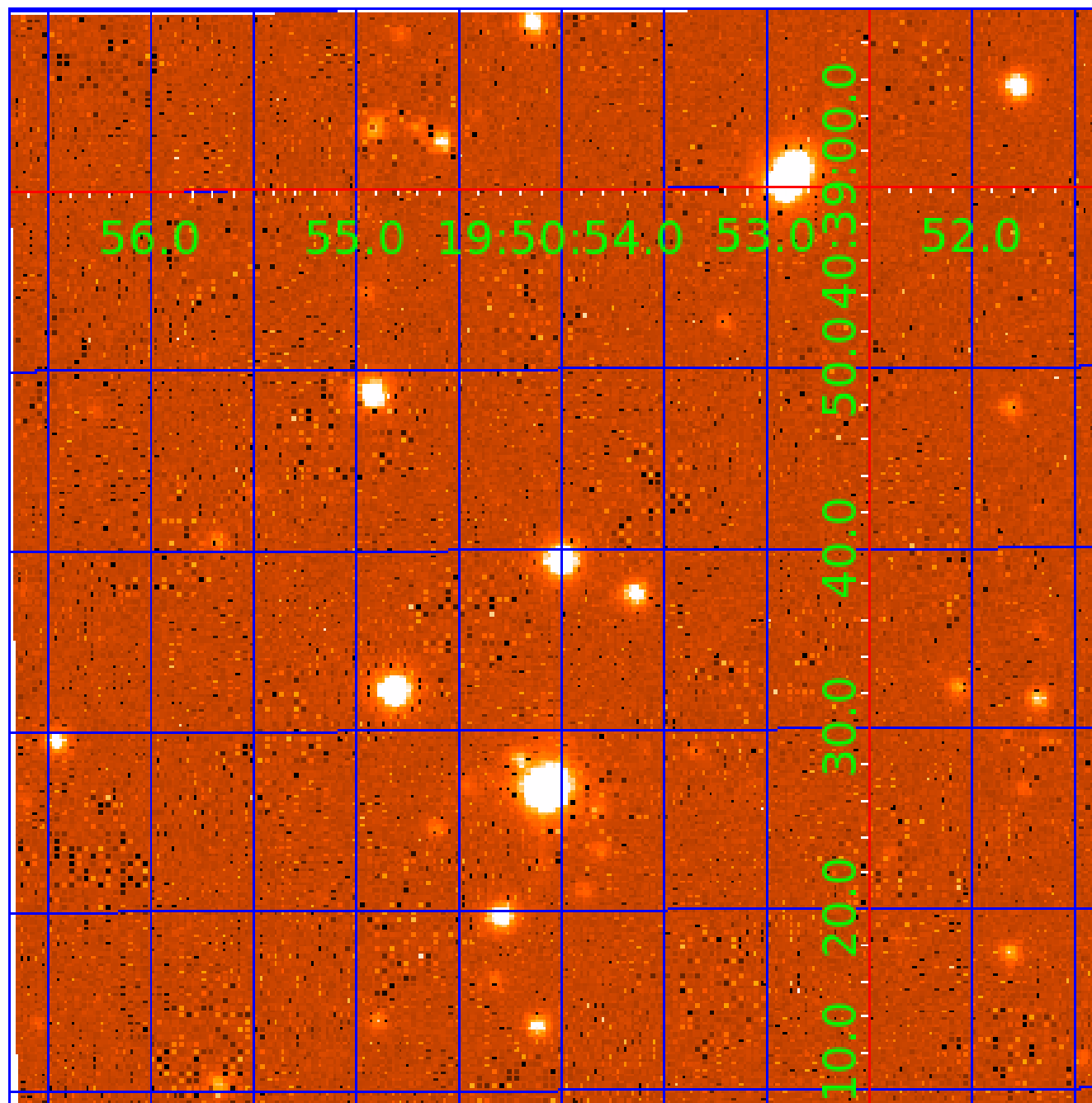


white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 005471688

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})
005471688-01	OBS	3499.01	12.425738	141.517071	352.5	25.907	16.7	22.4	0.73	5940	1.79	61.86
005471688-02	OBS	No	12.426337	133.895673	295.6	27.521	15.7	21.2	0.73	5940	1.64	61.86

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005471688-01	OBS	FP	0.00	1	0	1	1	LPP_DV—CENT_KIC_POS—CENT_UNCERTAIN—HALO_GHOST—EPHEM_MATCH
005471688-02	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 005471688-02

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
005471688-02	5471688	V380-Cyg-sec	5385723	1:1	248.6	13	61	5.77	15.06	435.93	Direct-PRF	0	2.44	1.50

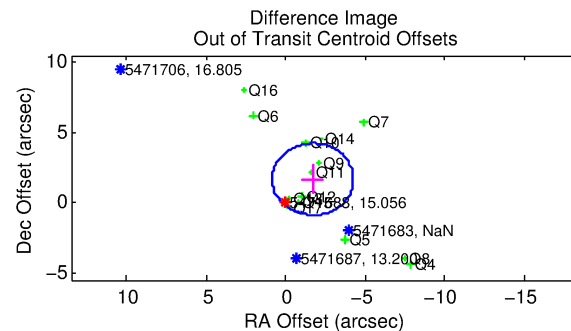
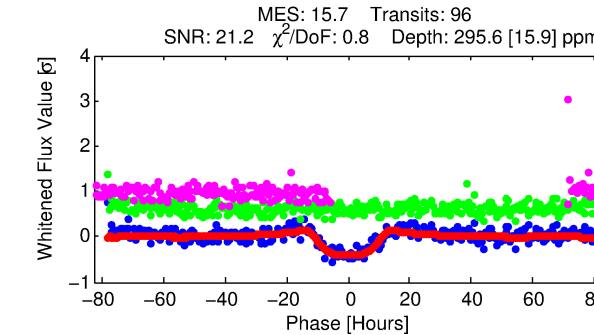
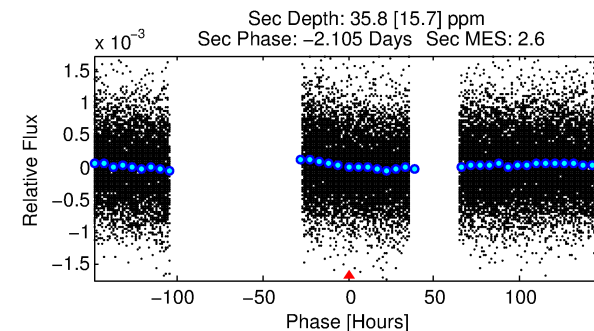
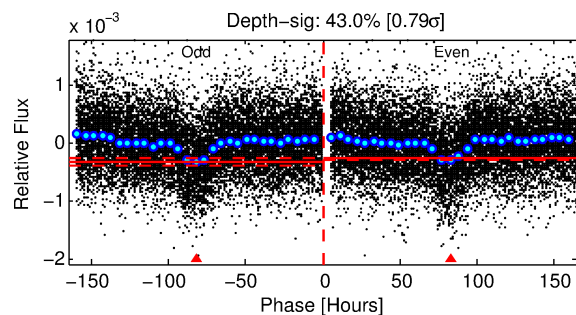
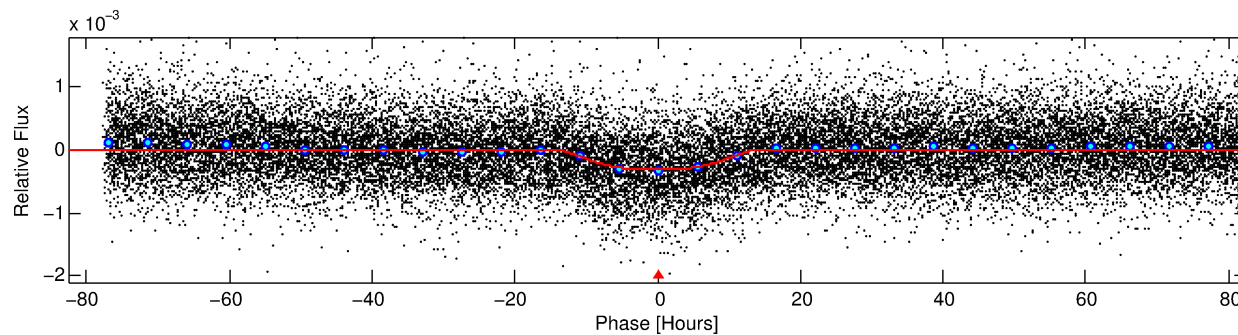
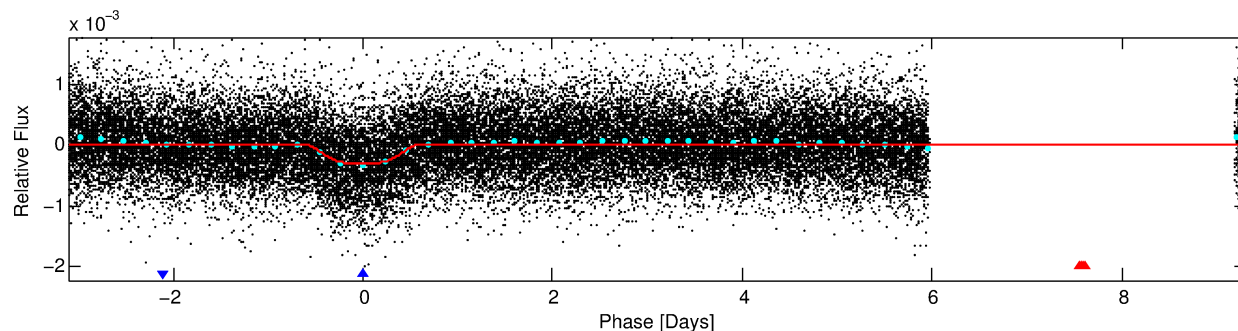
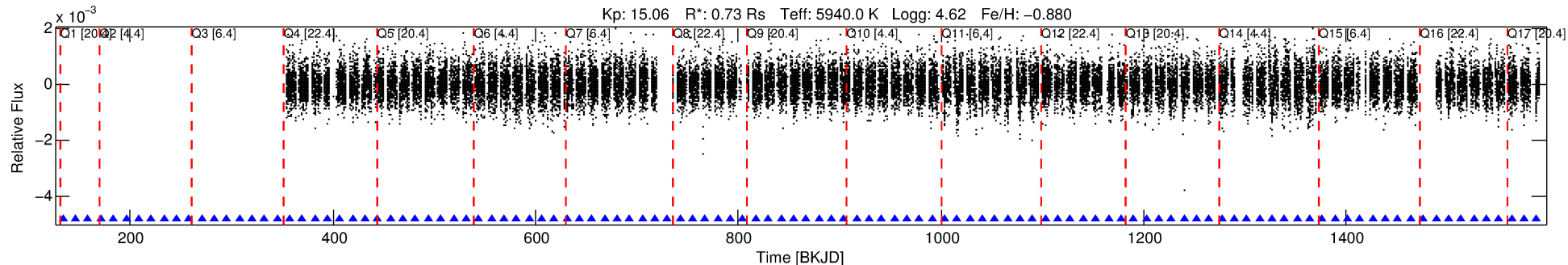
Notes: $P_1:P_2$ is the period ratio. Dist is the distance in arcseconds. Δ Row and Δ Col are the number of pixels apart in row and column. m_2 and m_1 are the magnitudes of the parent and child. D_2/D_1 is the parent's transit depth divided by the child's. σ_P and σ_T are the significance of the match 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: 5471688 Candidate: 2 of 2 Period: 12.426 d

KOI: K03499 Corr: No Ephemeris Match

Kp: 15.06 R*: 0.73 Rs Teff: 5940.0 K Logg: 4.62 Fe/H: -0.880



DV Fit Results:

Period = 12.42634 [0.00041] d
Epoch = 133.8957 [0.0289] BKJD
Rp/R* = 0.0207 [0.0007]
a/R* = 1.44 [0.05]
b = 0.97 [0.00]
Seff = 61.86 [18.05]
Teq = 715 [52] K
Rp = 1.64 [0.34] Re
a = 0.0979 [0.0172] AU
Ag = 69.84 [35.92] [1.92σ]
Teffp = 3196 [370] K [6.64σ]

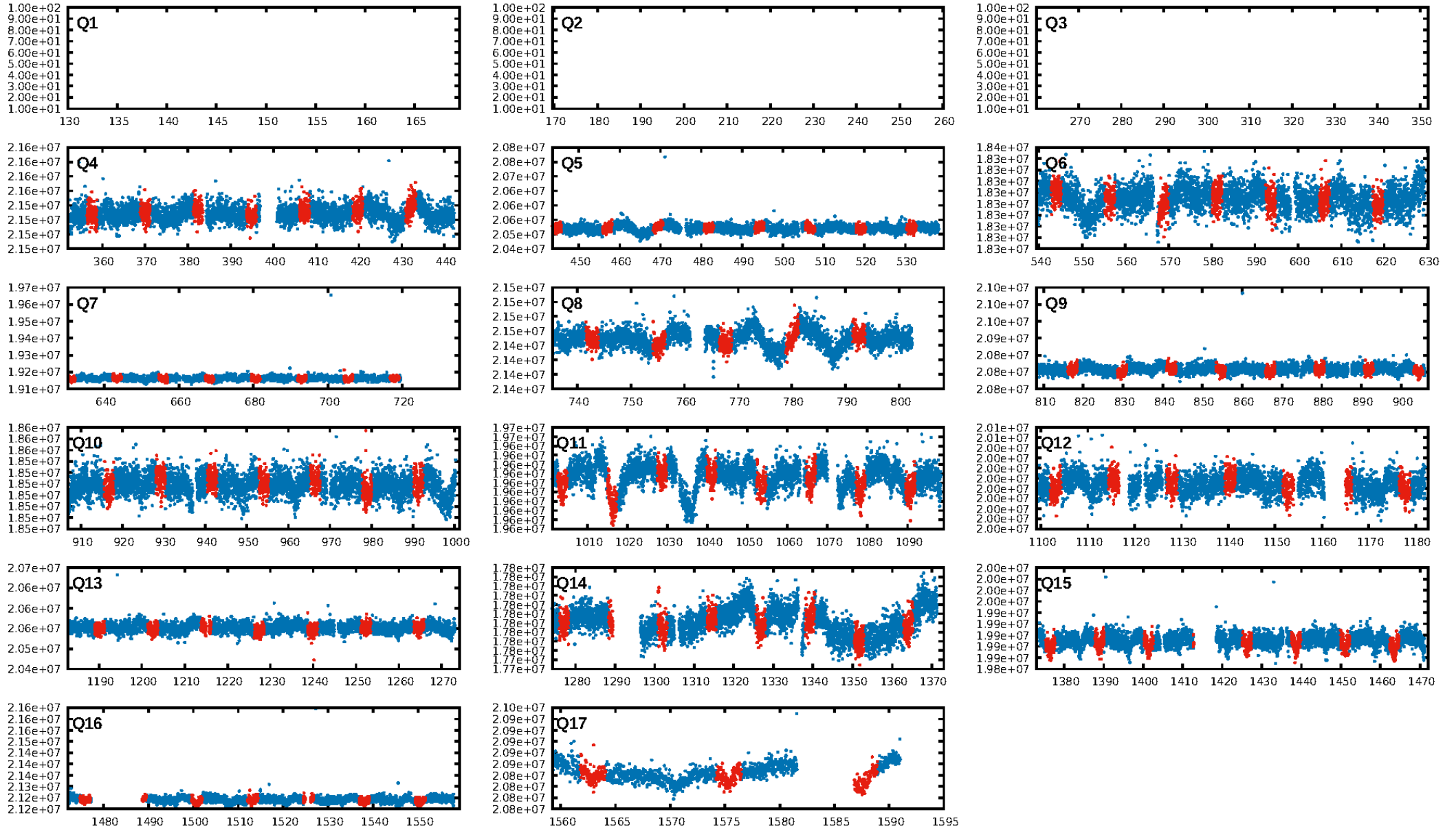
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 1.2%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 3.19e-57
RollingBand-fgt: 1.00 [93/93]
GhostDiagnostic-chr: 0.01027
Centroid-sig: 0.0%
Centroid-so: 0.905 arcsec [2.49σ]
OotOffset-rm: 2.391 arcsec [2.80σ]
KicOffset-rm: 2.636 arcsec [3.33σ]
OotOffset-st: 3/3/4/4 [14]
KicOffset-st: 3/3/4/4 [14]
DiffImageQuality-fgm: 0.07 [1/14]
DiffImageOverlap-fno: 1.00 [14/14]

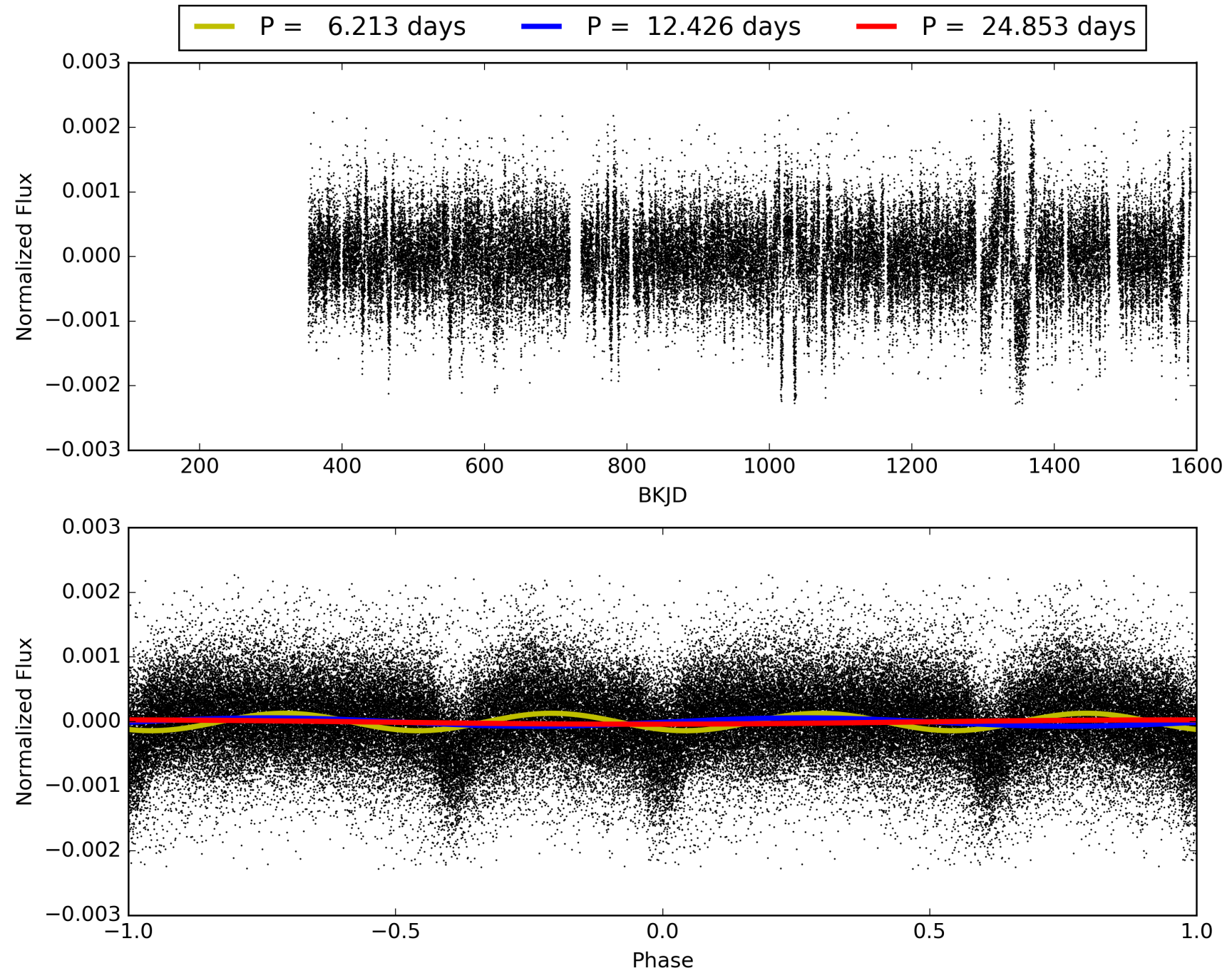
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 005471688-02, PDC Light Curves

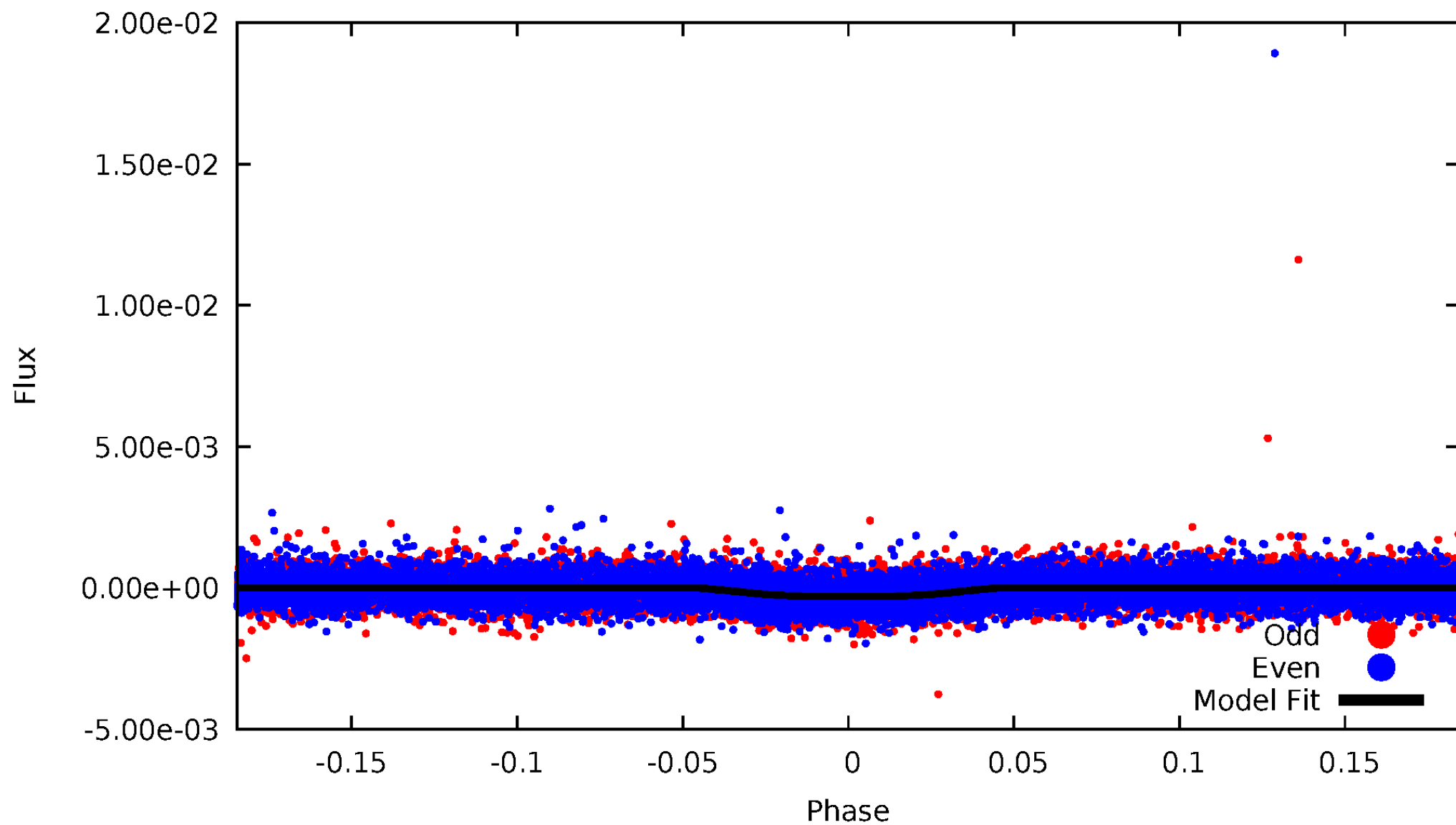


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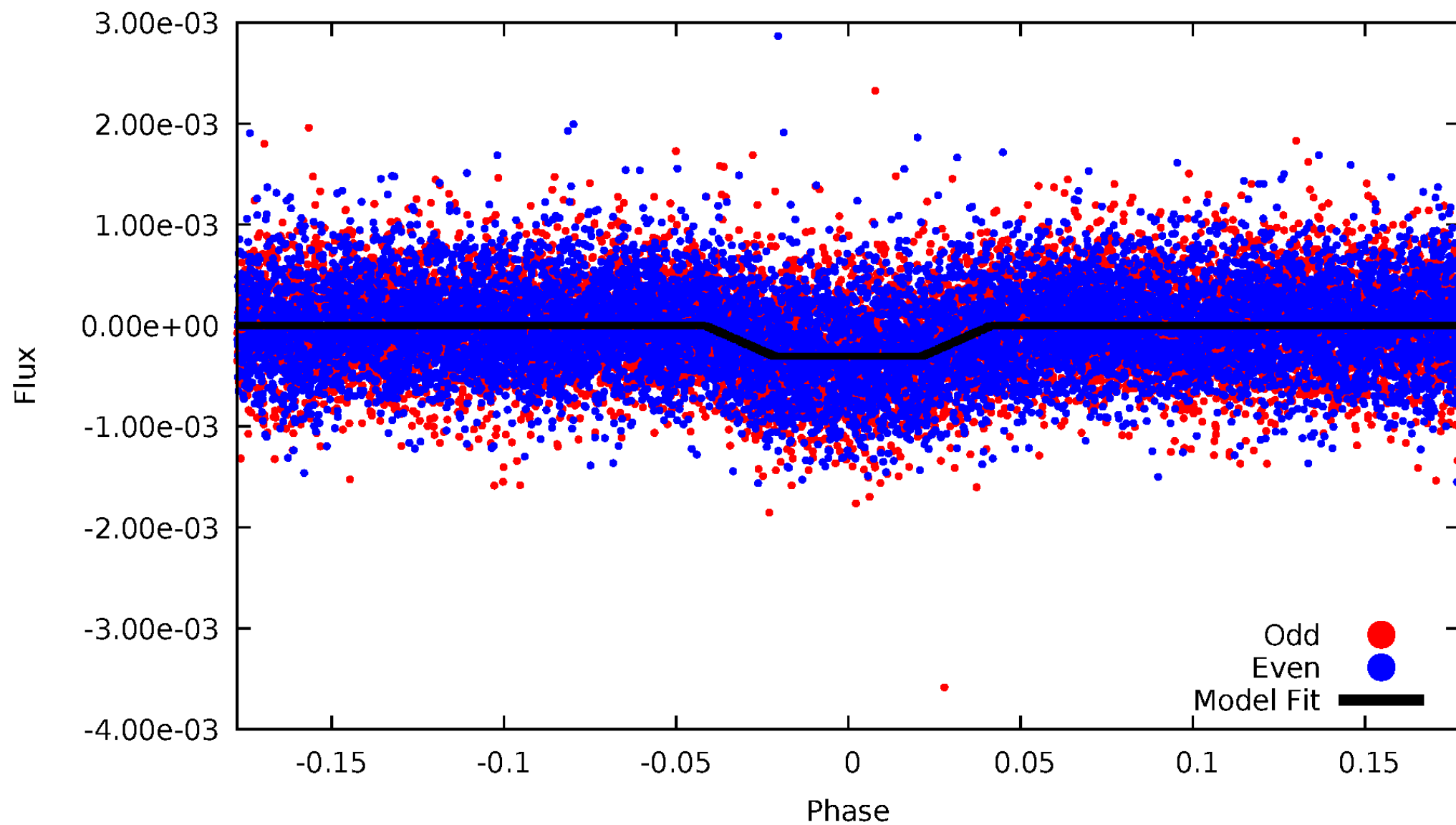
DV Odd/Even

TCE 005471688-02



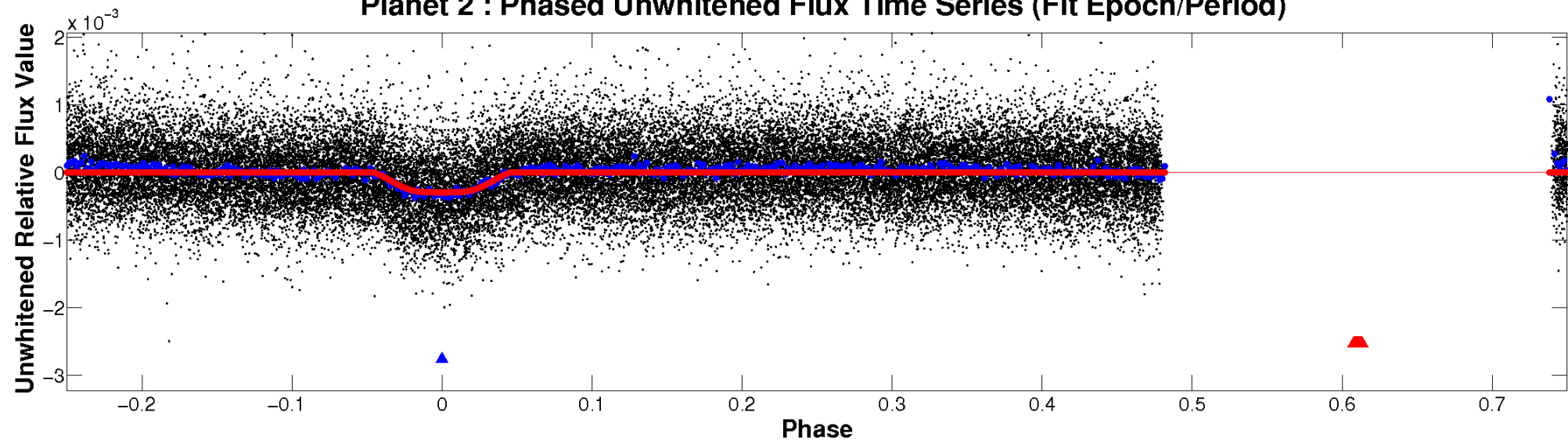
ALT Odd/Even

TCE 005471688-02

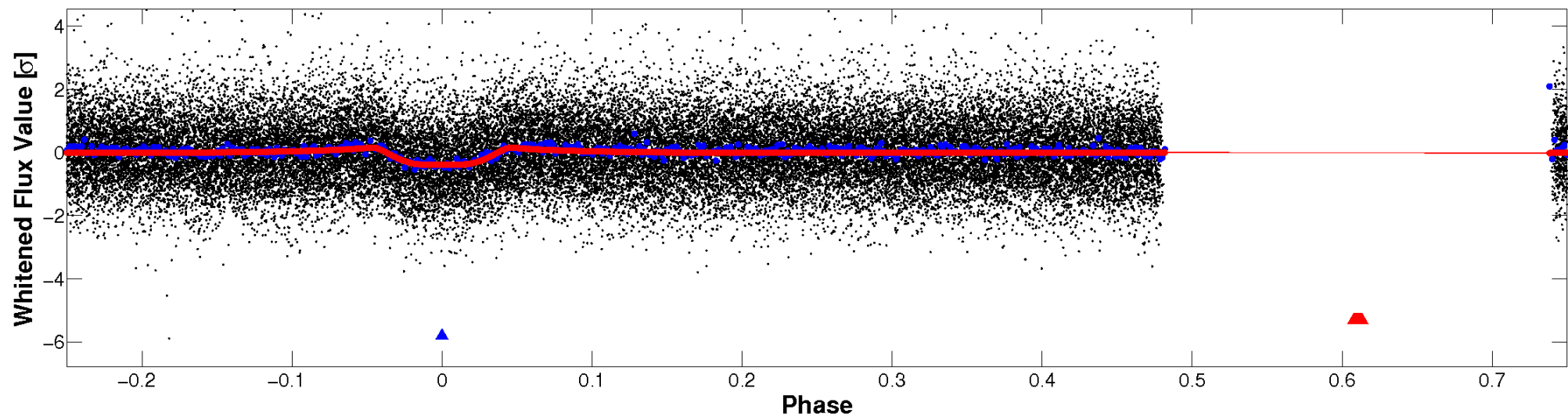


Non-Whitened Vs. Whitened Light Curve

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

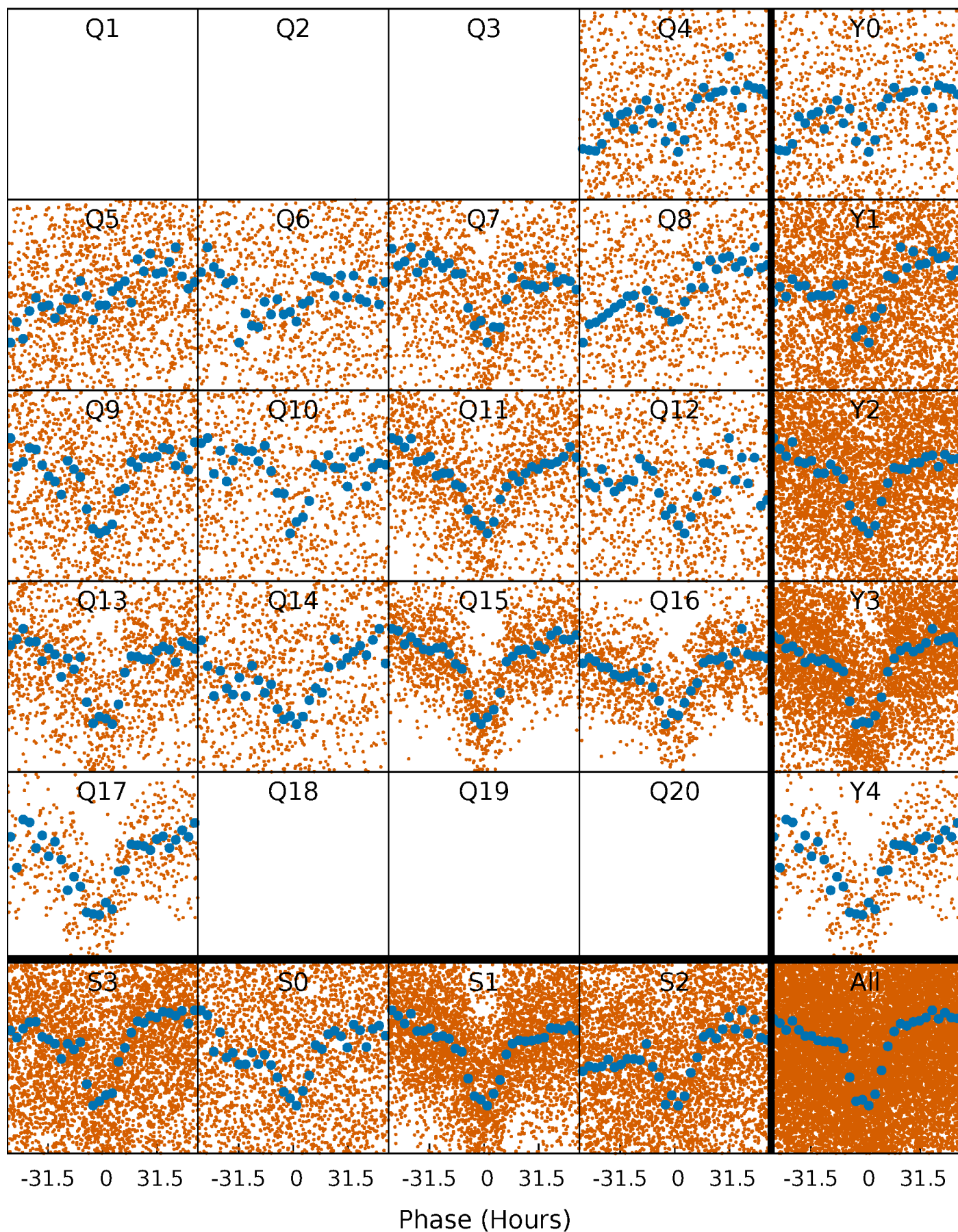


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



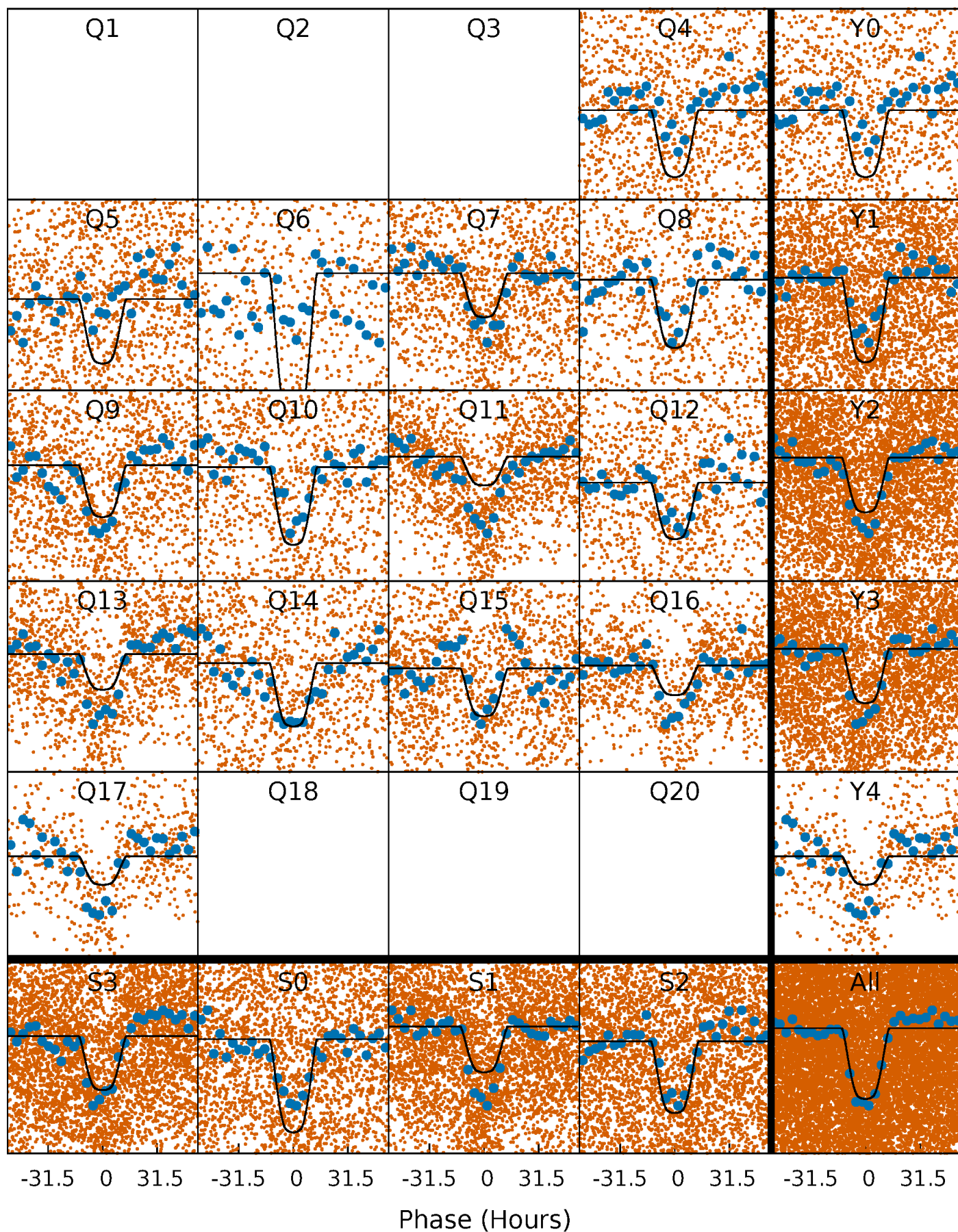
PDC Quarter-Phased Transit Curves

TCE 005471688-02 P= 12.426337 Days $T_0=133.895673$ (BKJD)



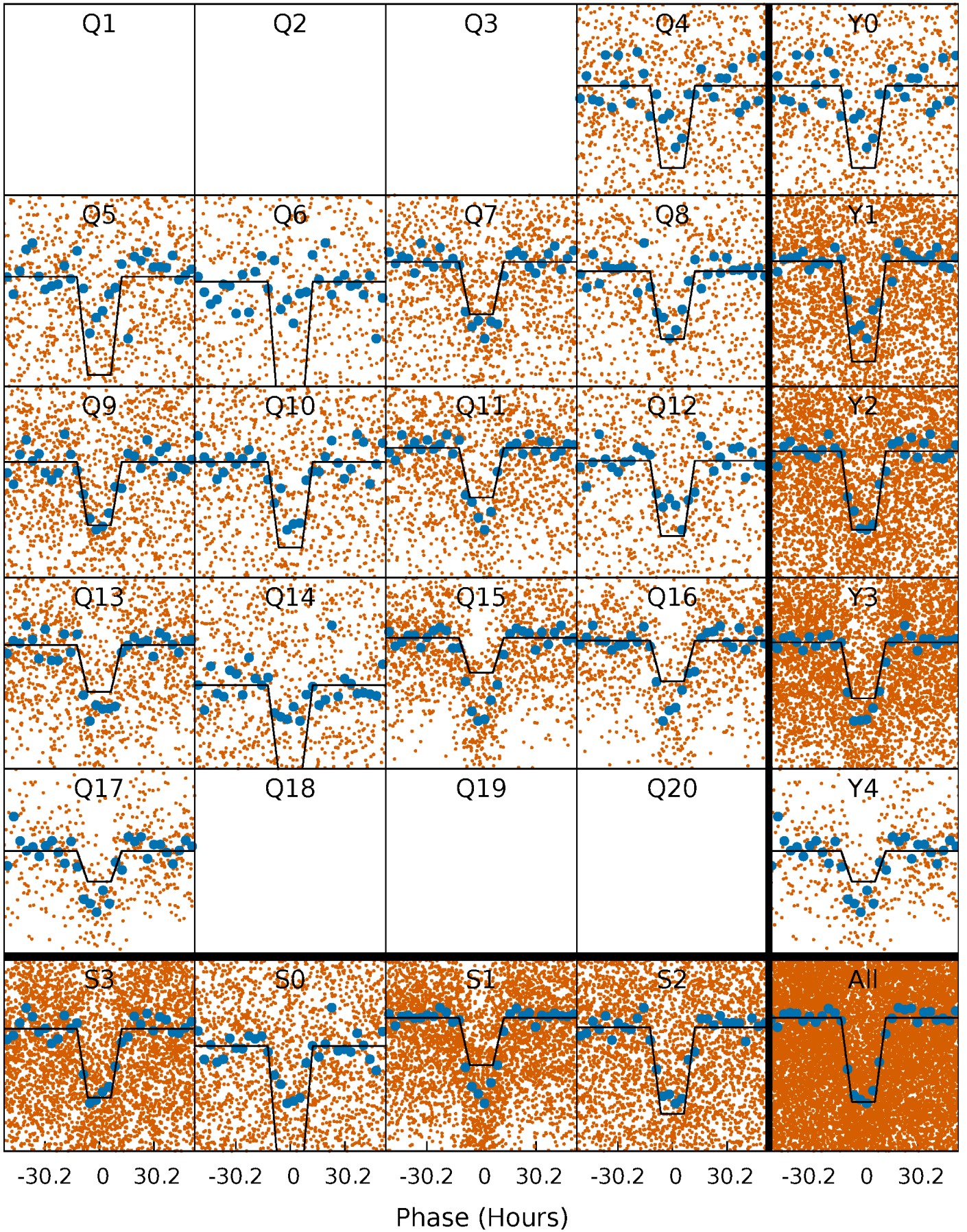
DV Quarter-Phased Transit Curves

TCE 005471688-02 P= 12.426337 Days $T_0=133.895673$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

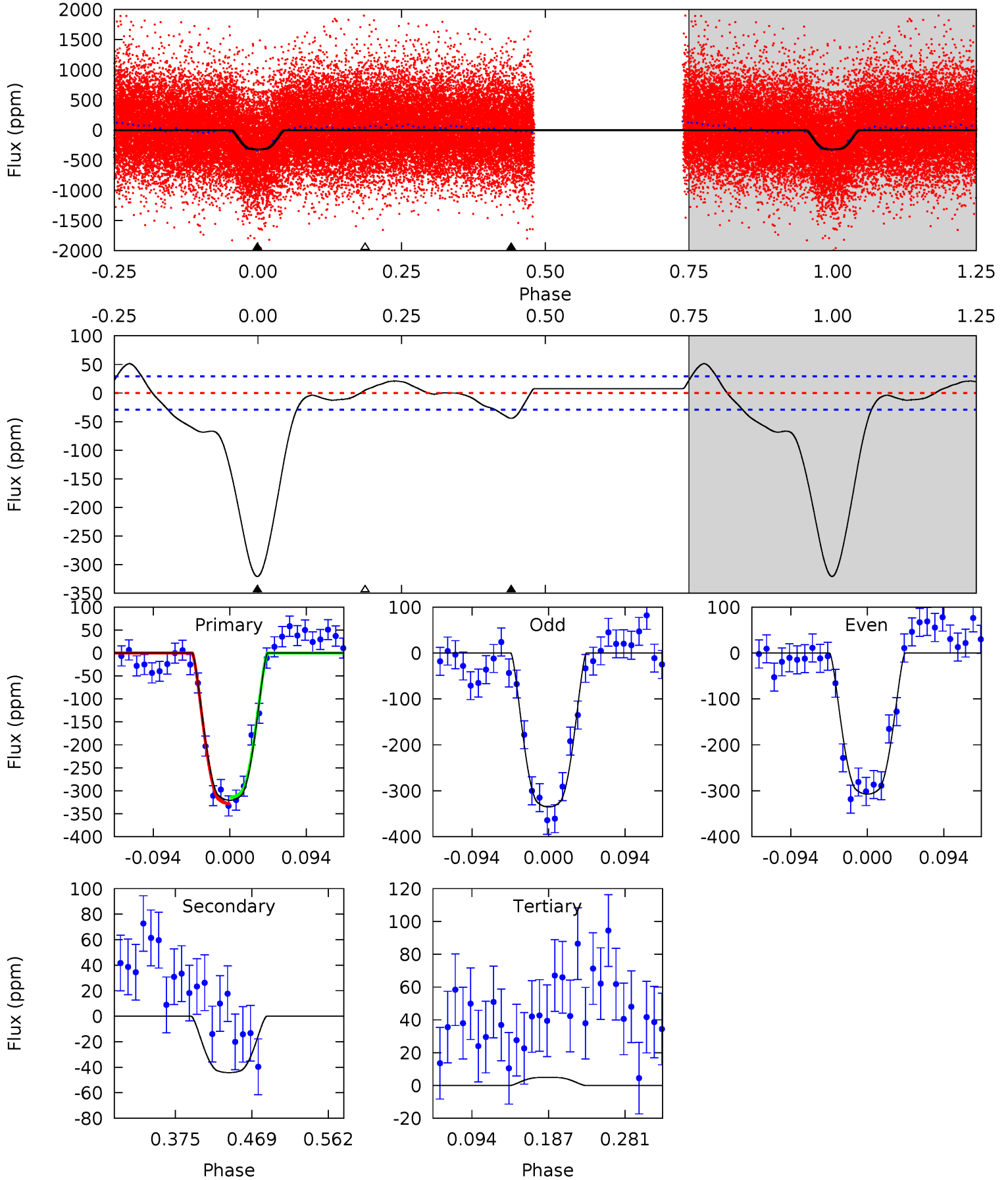
TCE 005471688-02 P= 12.426067 Days $T_0=133.910880$ (BKJD)



DV Model-Shift Uniqueness Test

005471688-02, P = 12.426337 Days, E = 133.895673 Days

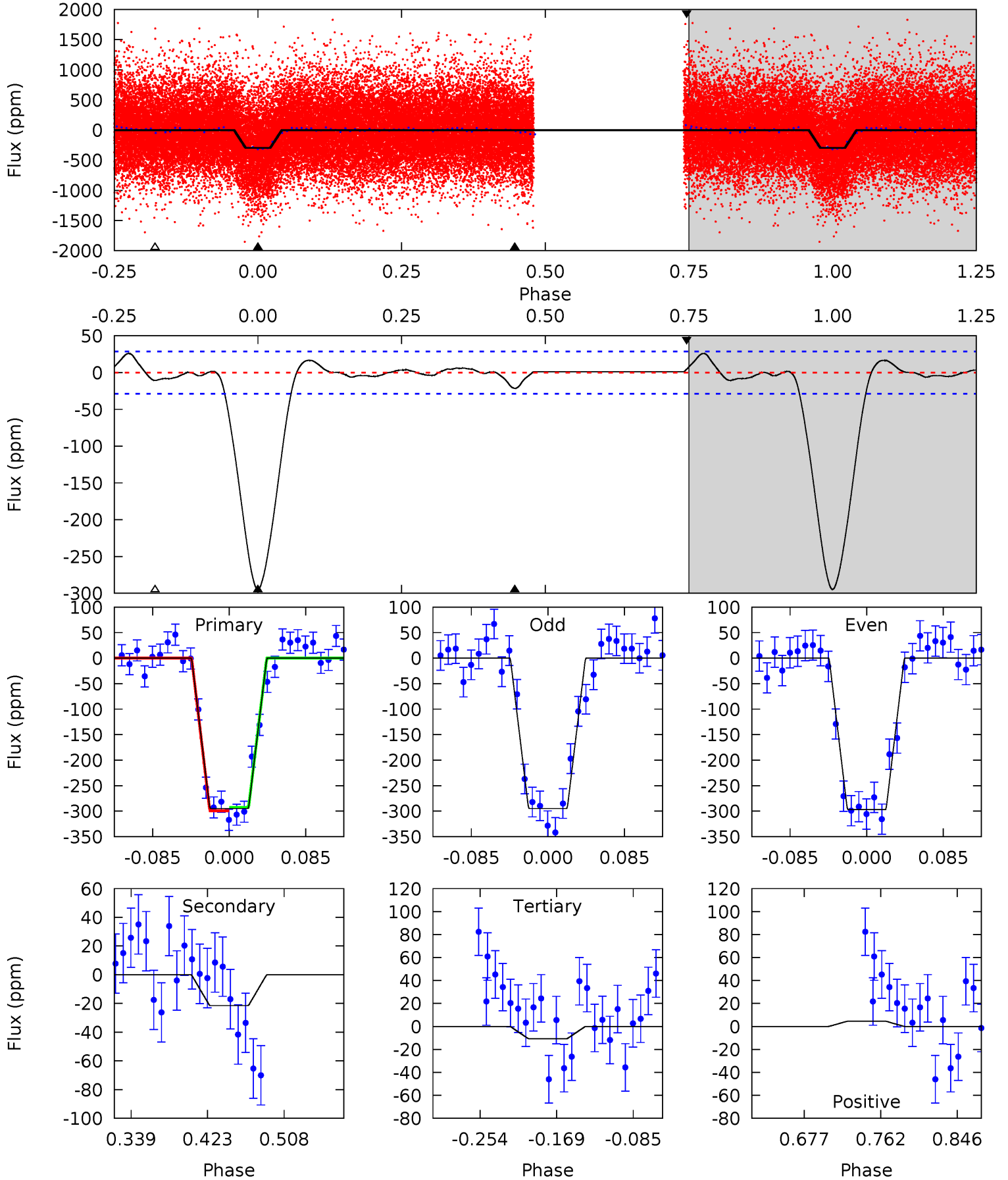
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
50.6	6.98	-0.78	0	4.58	1.68	4.32	51.3	50.6	7.76	6.98	2.22	1.07	0.14	1.09



Alt Model-Shift Uniqueness Test

005471688-02, P = 12.426067 Days, E = 133.910880 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
47.1	3.44	1.71	0.72	4.60	1.72	1.29	45.4	46.3	1.73	2.72	0.17	0.98	0.08	0.54



Stellar Parameters For KIC 005471688

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5940^{+196}_{-196}	$4.621^{+0.036}_{-0.144}$	$-0.880^{+0.300}_{-0.300}$	$0.729^{+0.150}_{-0.050}$	$0.819^{+0.064}_{-0.085}$	$2.978^{+0.428}_{-1.239}$
	+3%/-3%	+1%/-3%	+34%/-34%	+21%/-7%	+8%/-10%	+14%/-42%
Source	KIC0	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 005471688-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-44 ± 6	$1.69^{+0.18}_{-0.12}$	1018^{+53}_{-47}	3764^{+135}_{-145}	80^{+18}_{-16}
Alt.	-22 ± 6	$1.42^{+0.16}_{-0.10}$	1016^{+56}_{-43}	3532^{+174}_{-200}	53^{+19}_{-16}

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 $A_{obs} \gg 1.0$

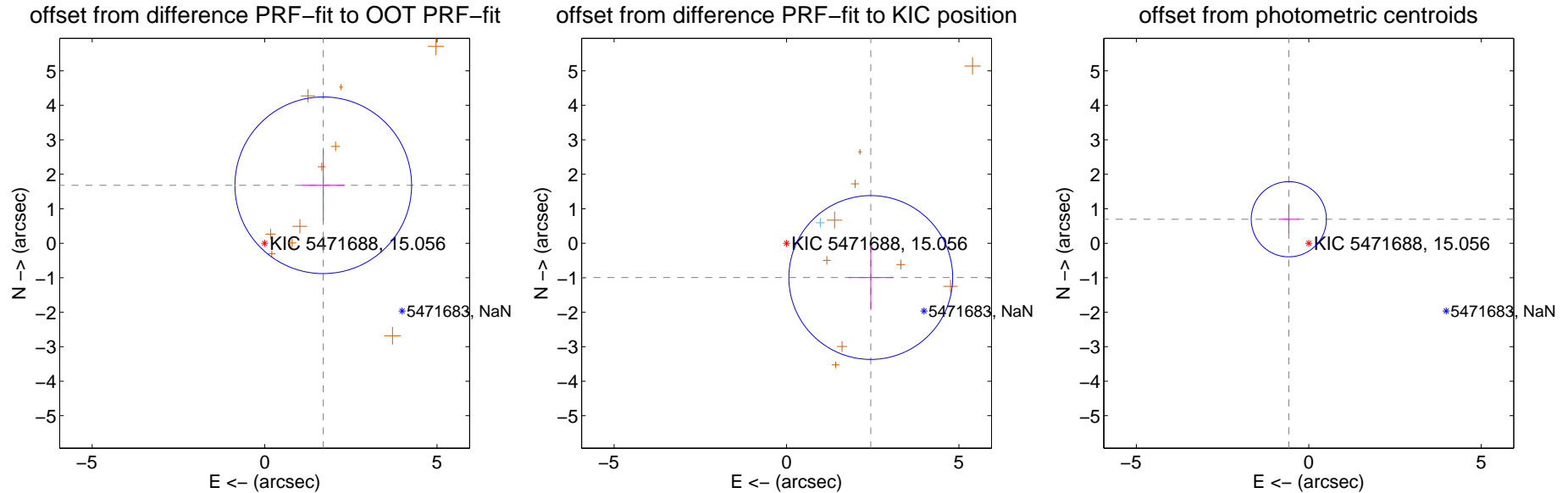
DV Centroid Data

Supplemental centroid analysis for 005471688-02. Kepler magnitude: 15.06. Transit SNR 21.23

There are 1 quarters with good PRF difference image offsets

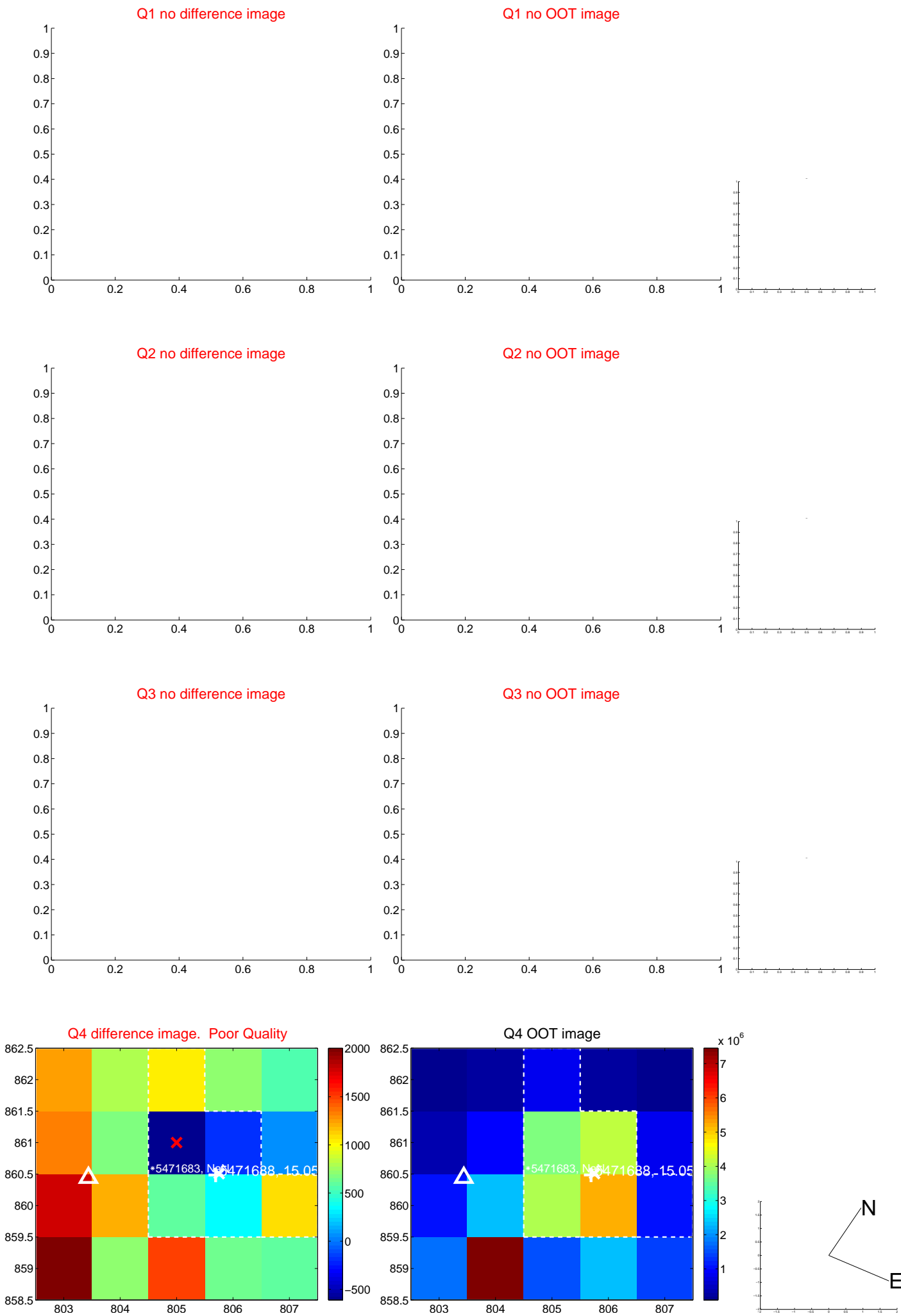
The OOT PRF centroid is offset from the target star catalog position by about 3.44 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	2.391 ± 0.854	2.80	-1.700 ± 0.628	1.681 ± 1.035
PRF-fit source offset from KIC position	2.636 ± 0.792	3.33	-2.442 ± 0.650	-0.993 ± 0.936
photometric centroid source offset	0.91 ± 0.36	2.49	0.58 ± 0.30	0.70 ± 0.40

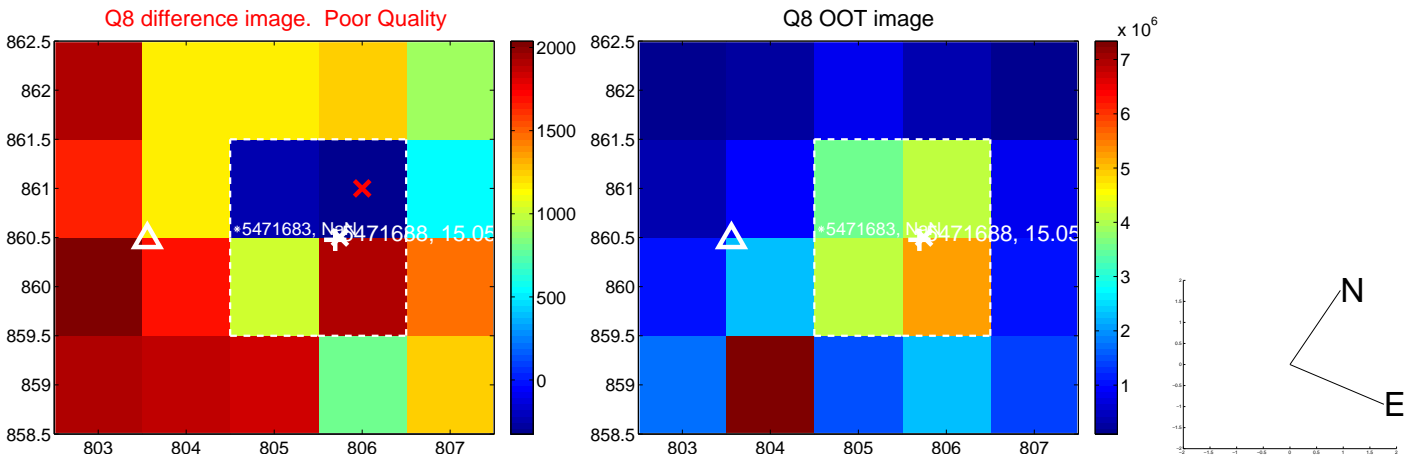
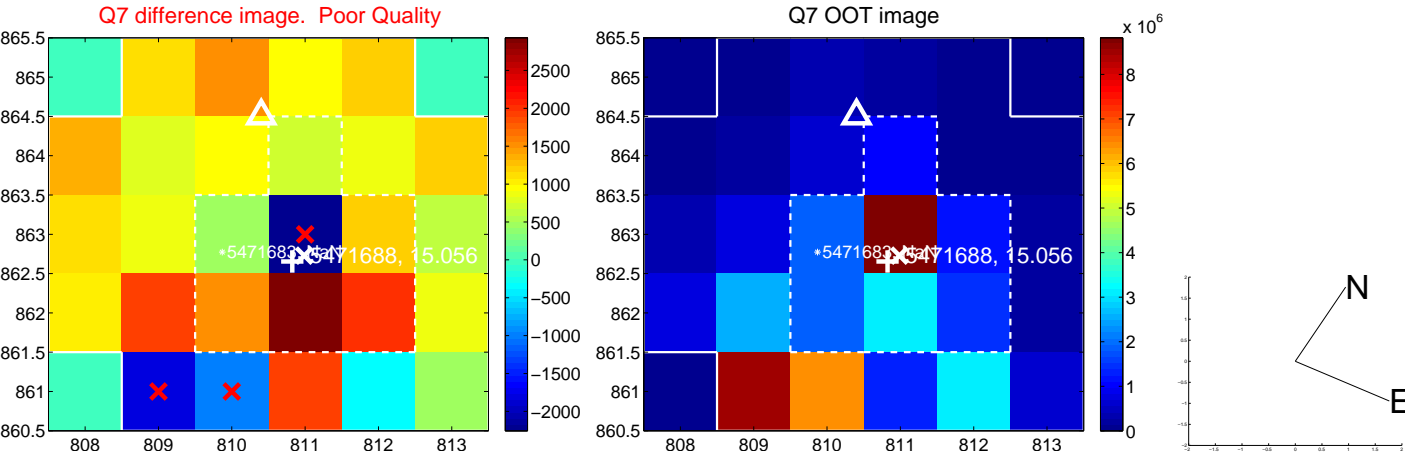
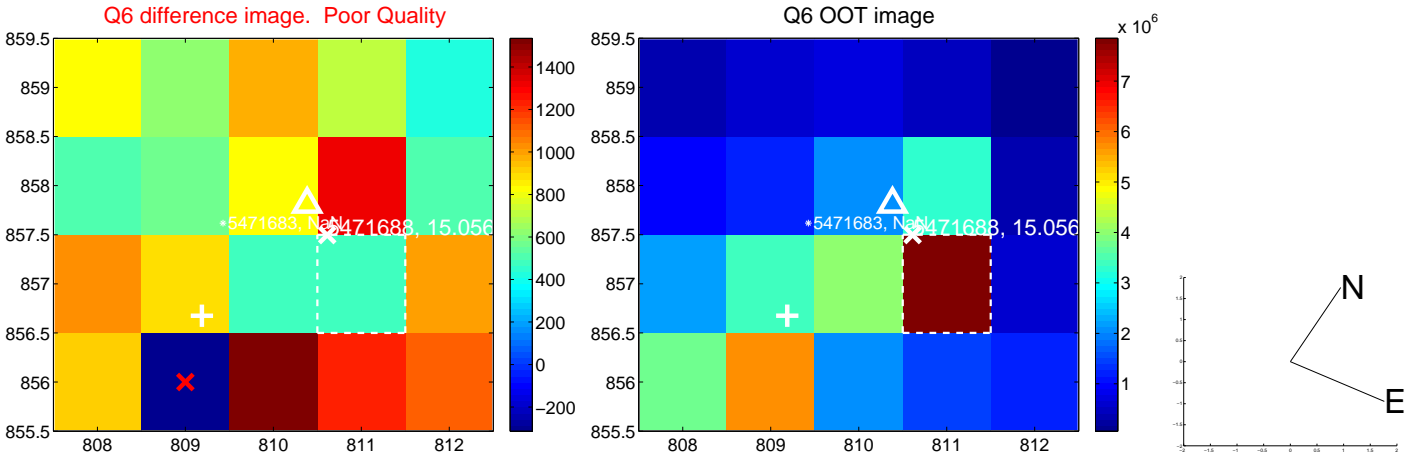
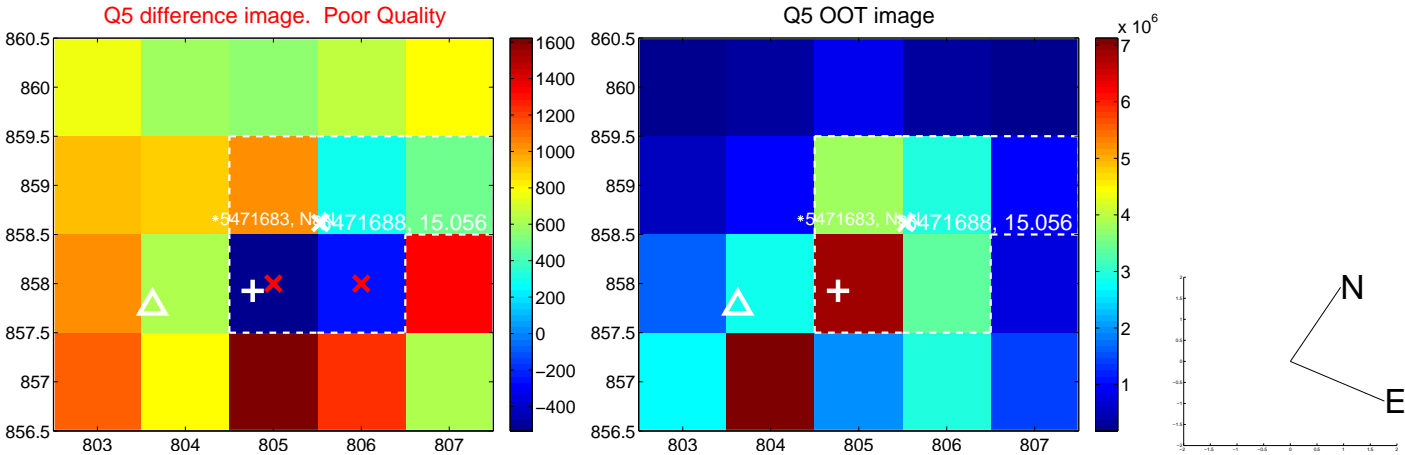


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

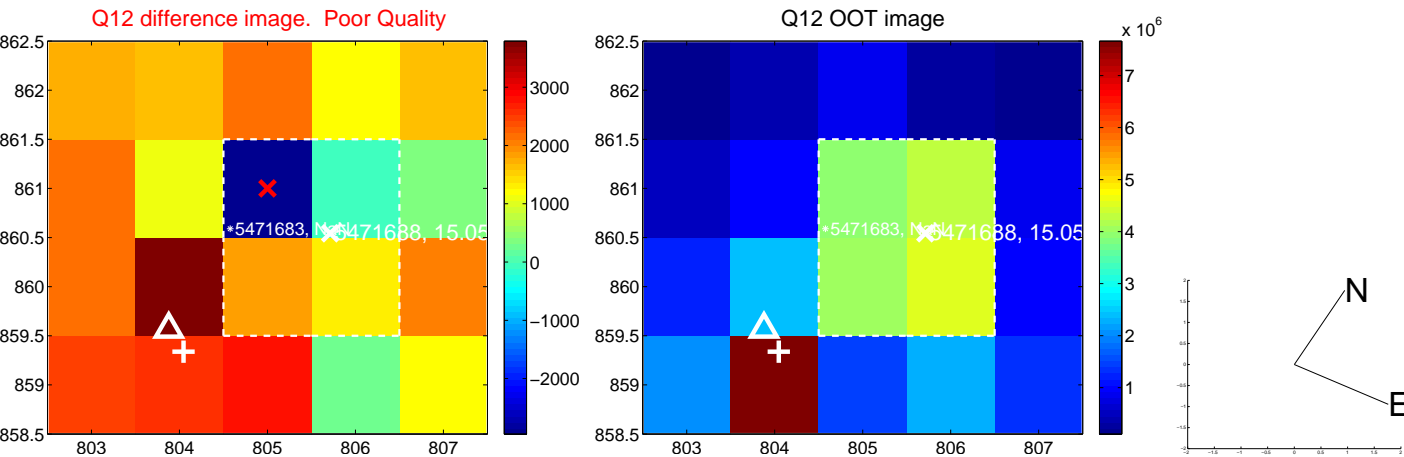
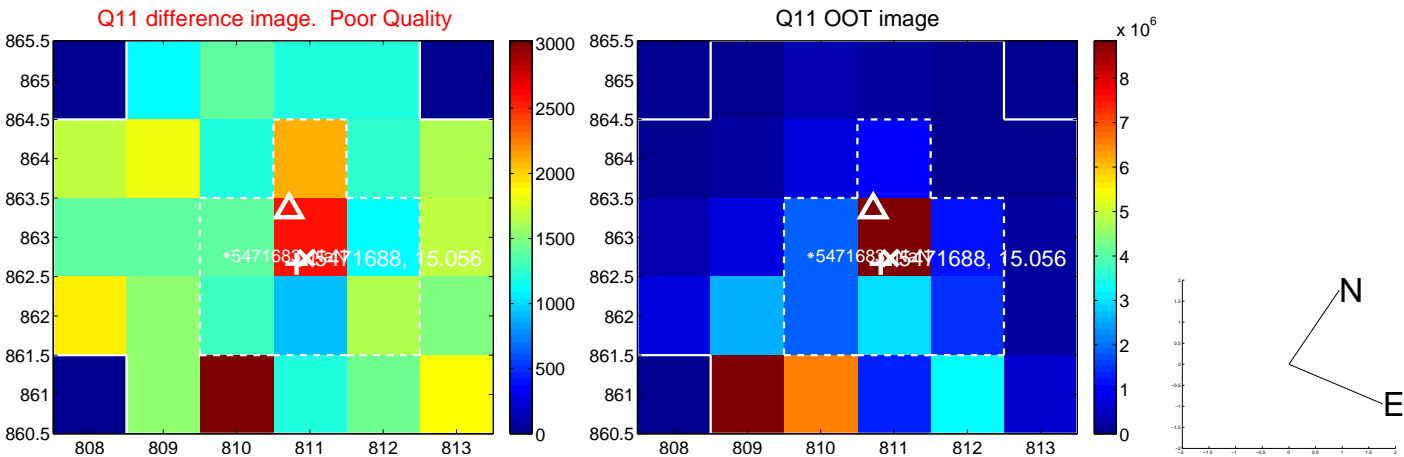
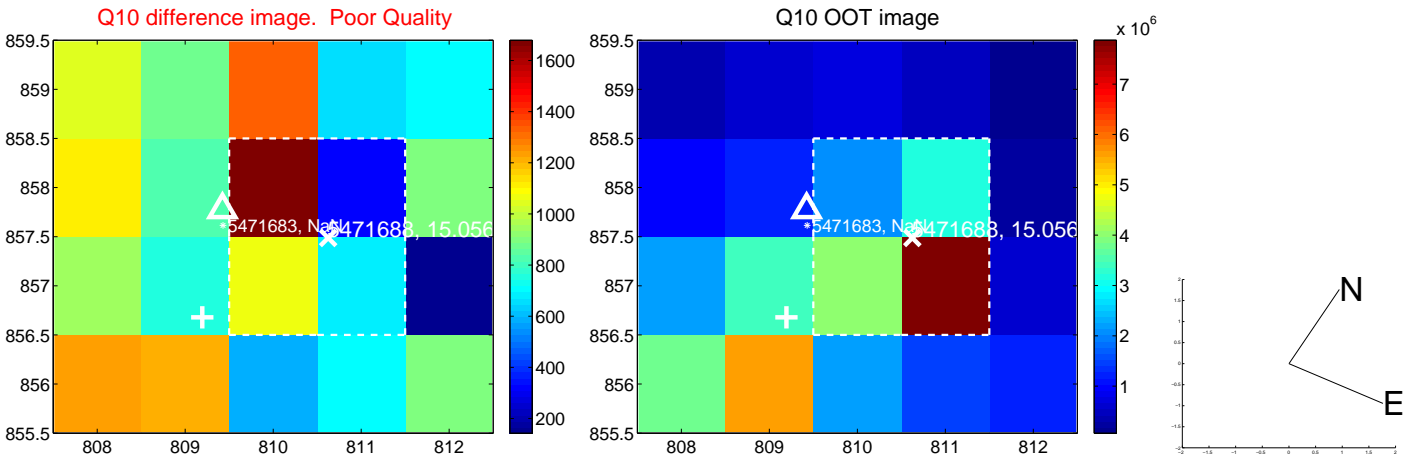
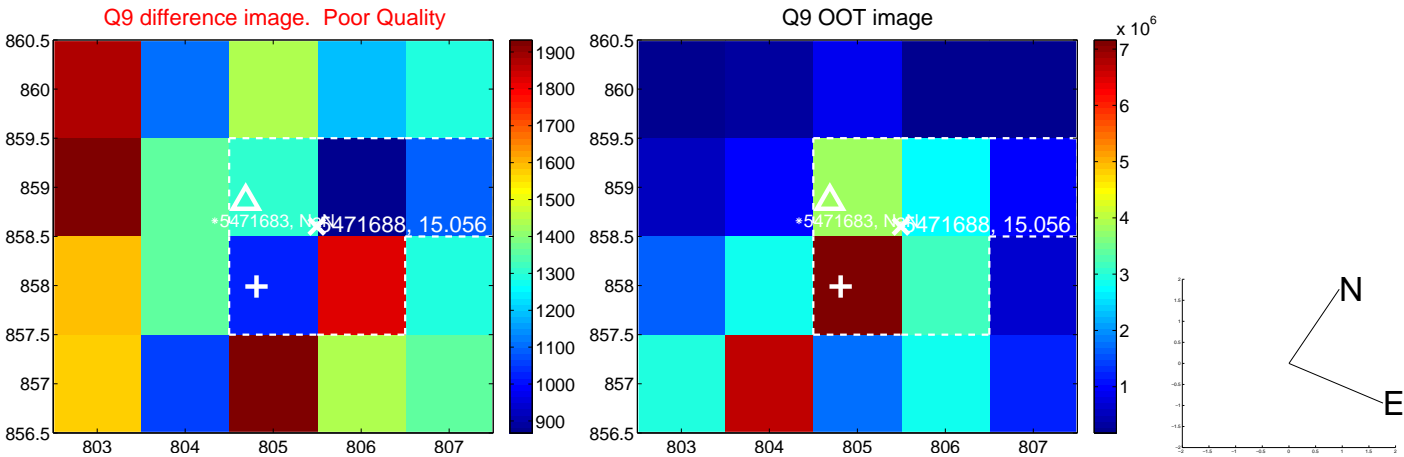
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



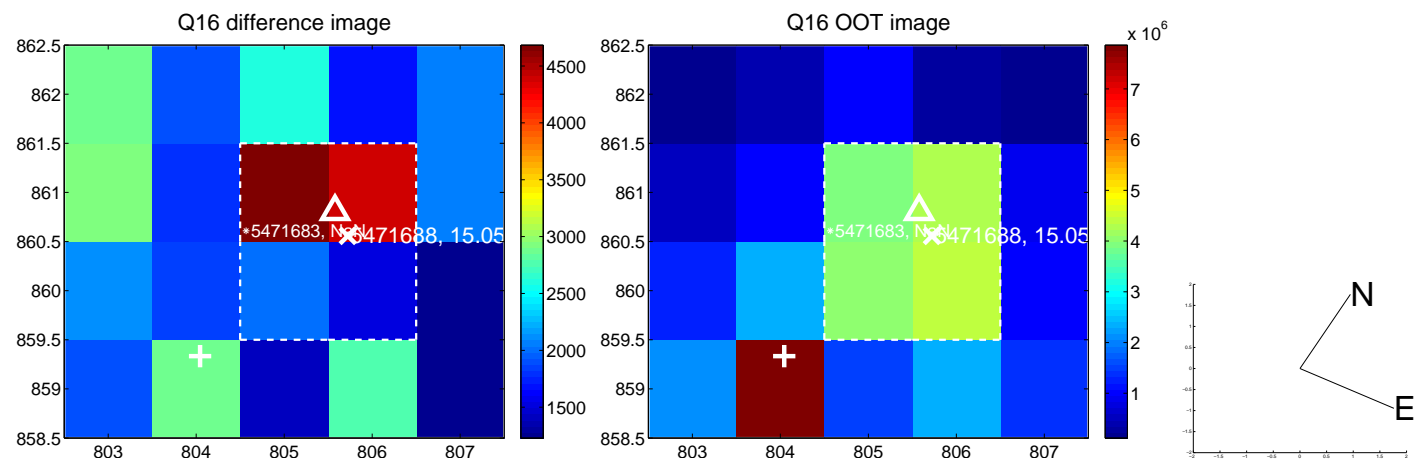
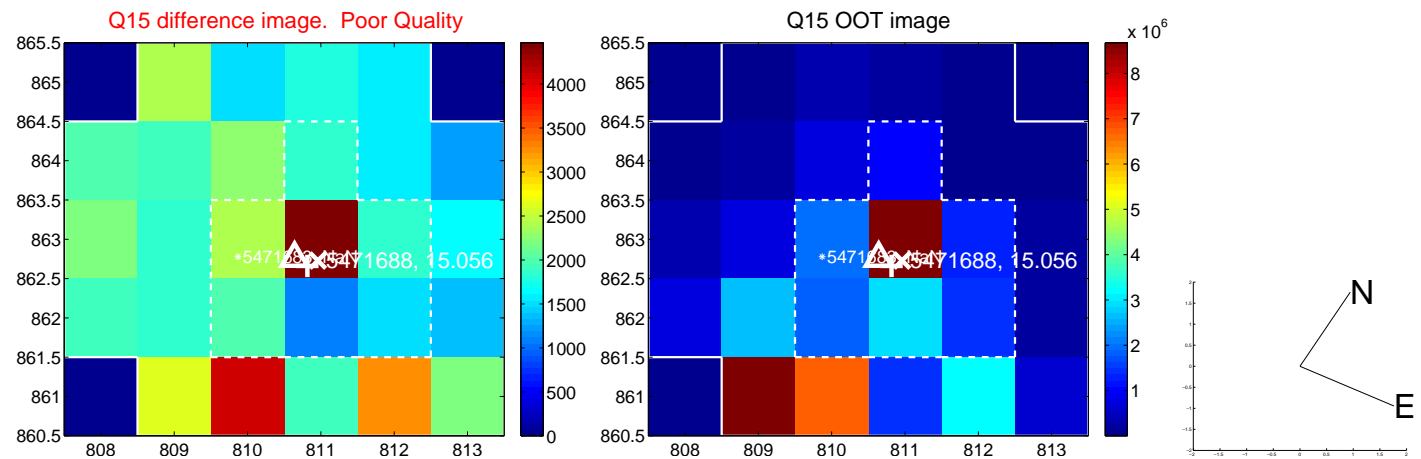
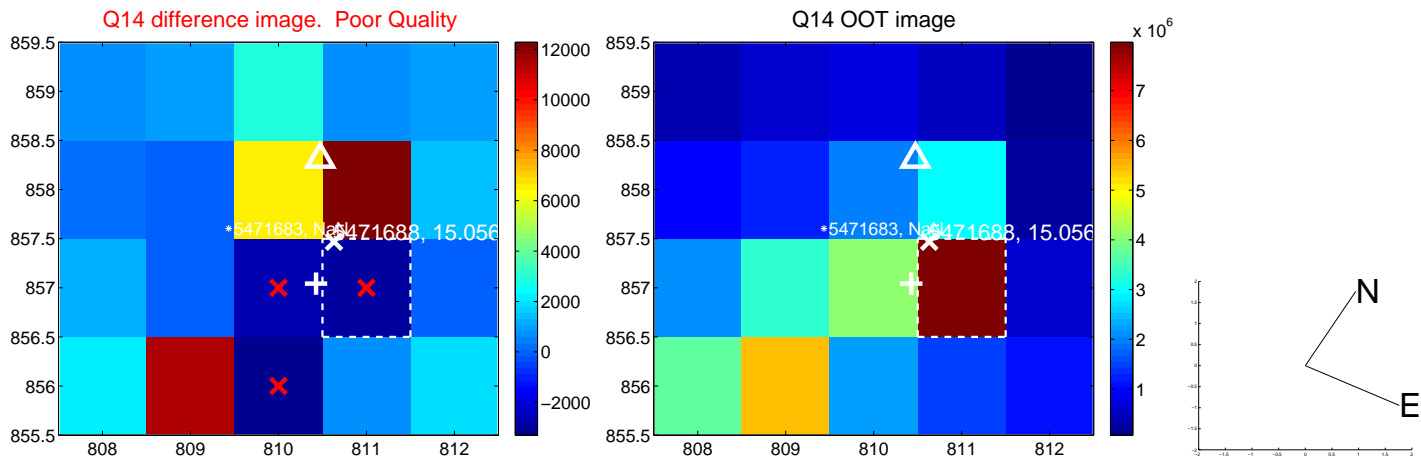
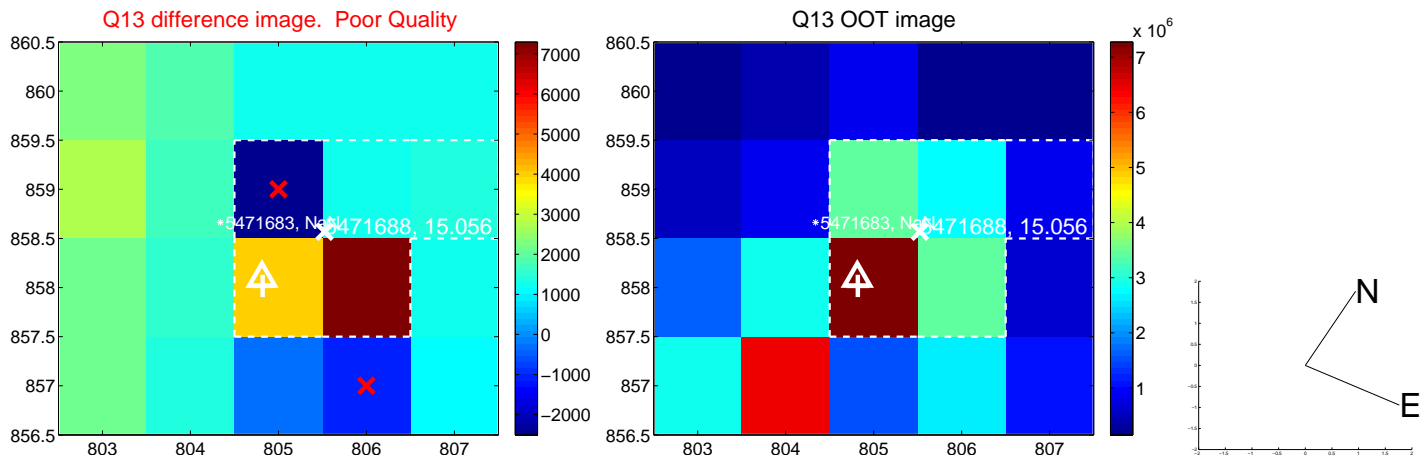
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



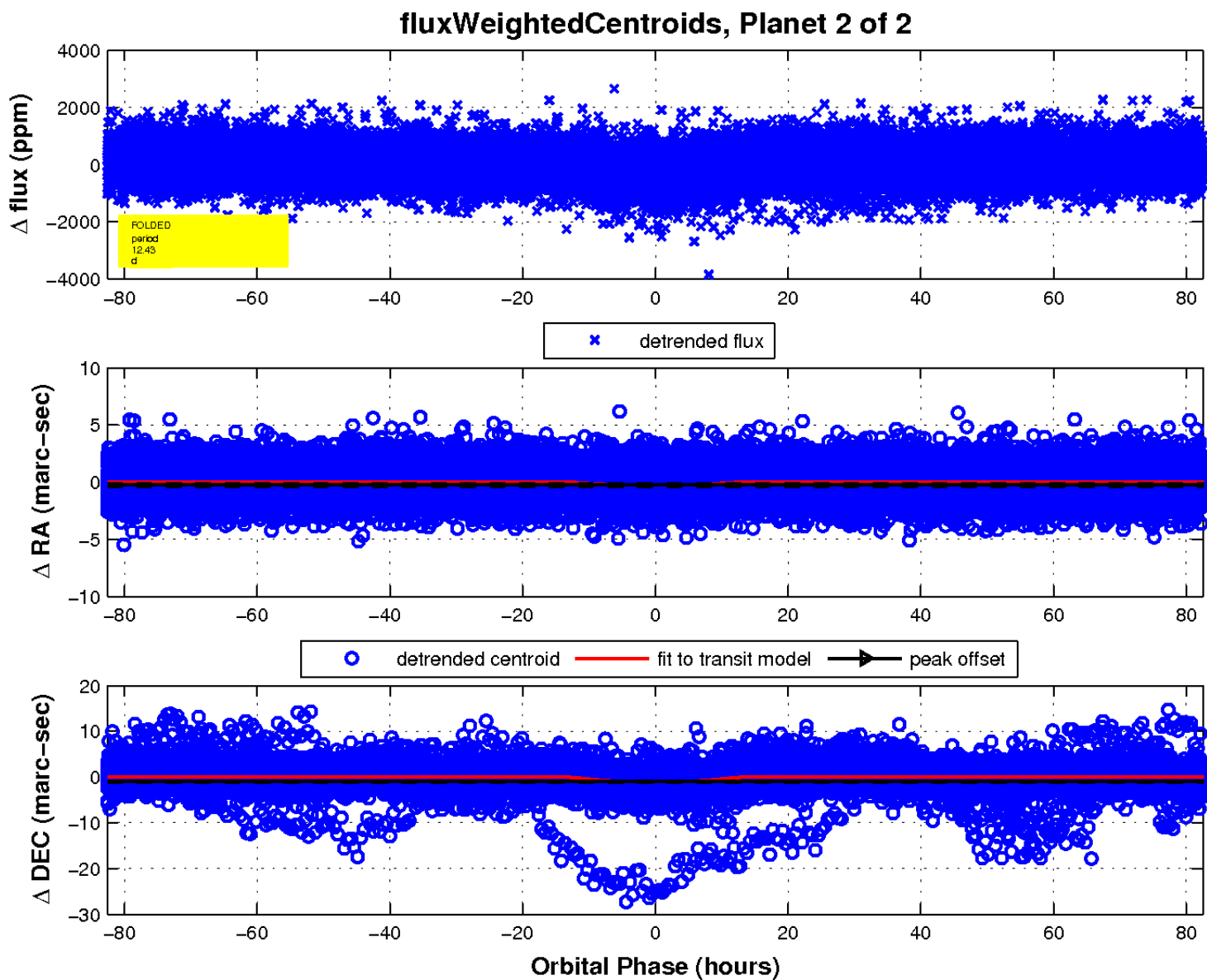
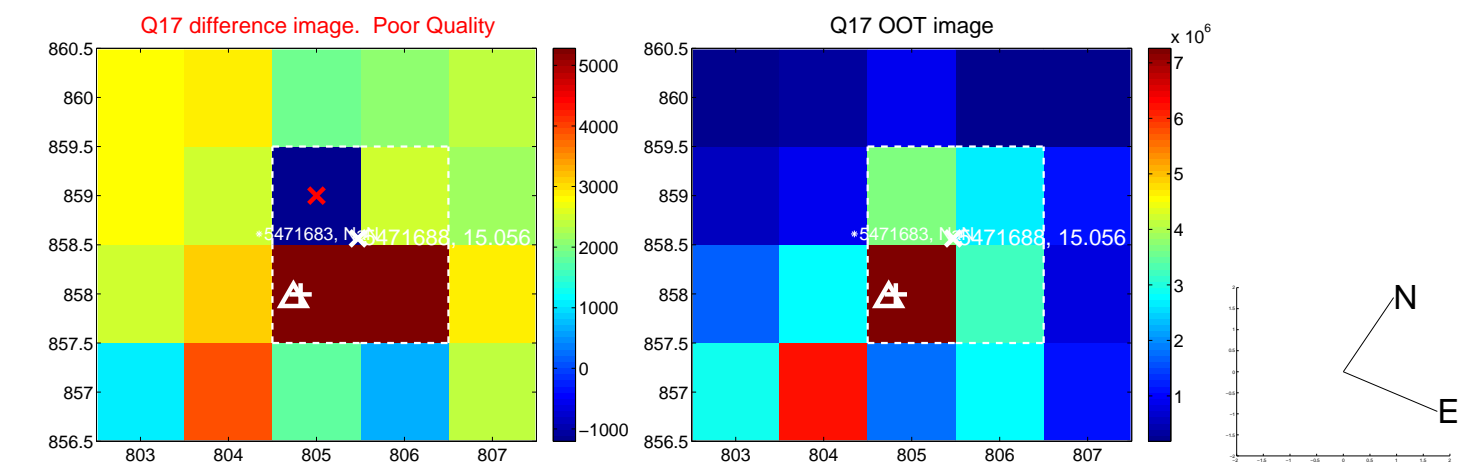
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

