

KIC 010518424

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})
010518424-01	OBS	2188.01	2.696306	133.007306	181.1	3.767	21.0	21.3	0.92	6106	1.47	751.10
010518424-02	OBS	No	2.696409	131.625712	92.7	3.166	9.9	10.4	0.92	6106	1.04	751.06

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010518424-01	OBS	FP	0.00	0	1	1	1	MOD_SEC_DV—MOD_SEC_ALT—HAS_SEC_TCE—CENT_UNRESOLVED_OFFSET—HALO_GHOST—EPHEM_MATCH
010518424-02	OBS	FP	0.00	1	1	1	1	IS_SEC_TCE—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.

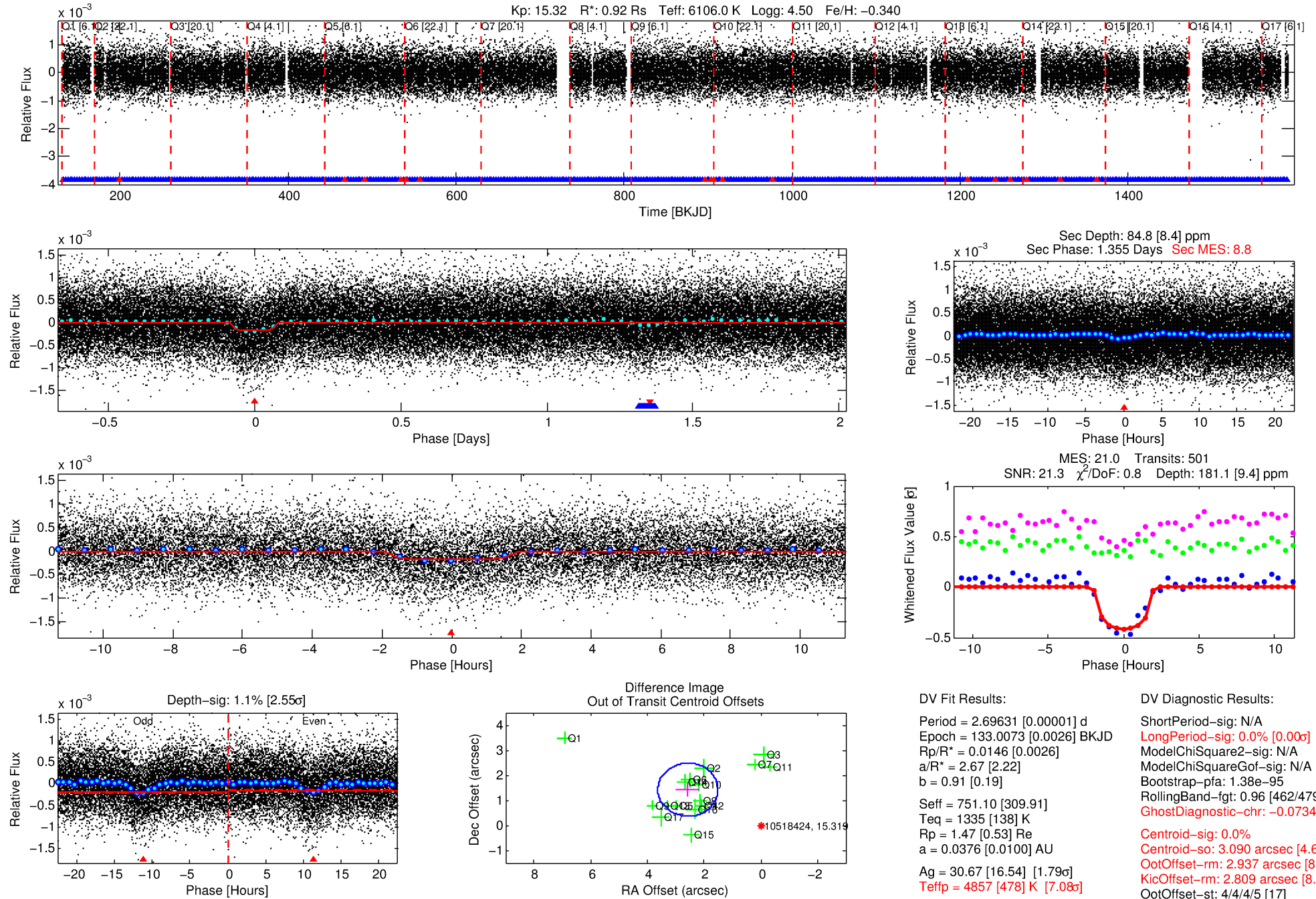
Ephemeris Match Information For 010518424-01

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
010518424-01	10518424	010583181-pri	10583181	1:1	85.0	-11	19	11.01	15.32	1400.60	Direct-PRF	0	0.39	0.57

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

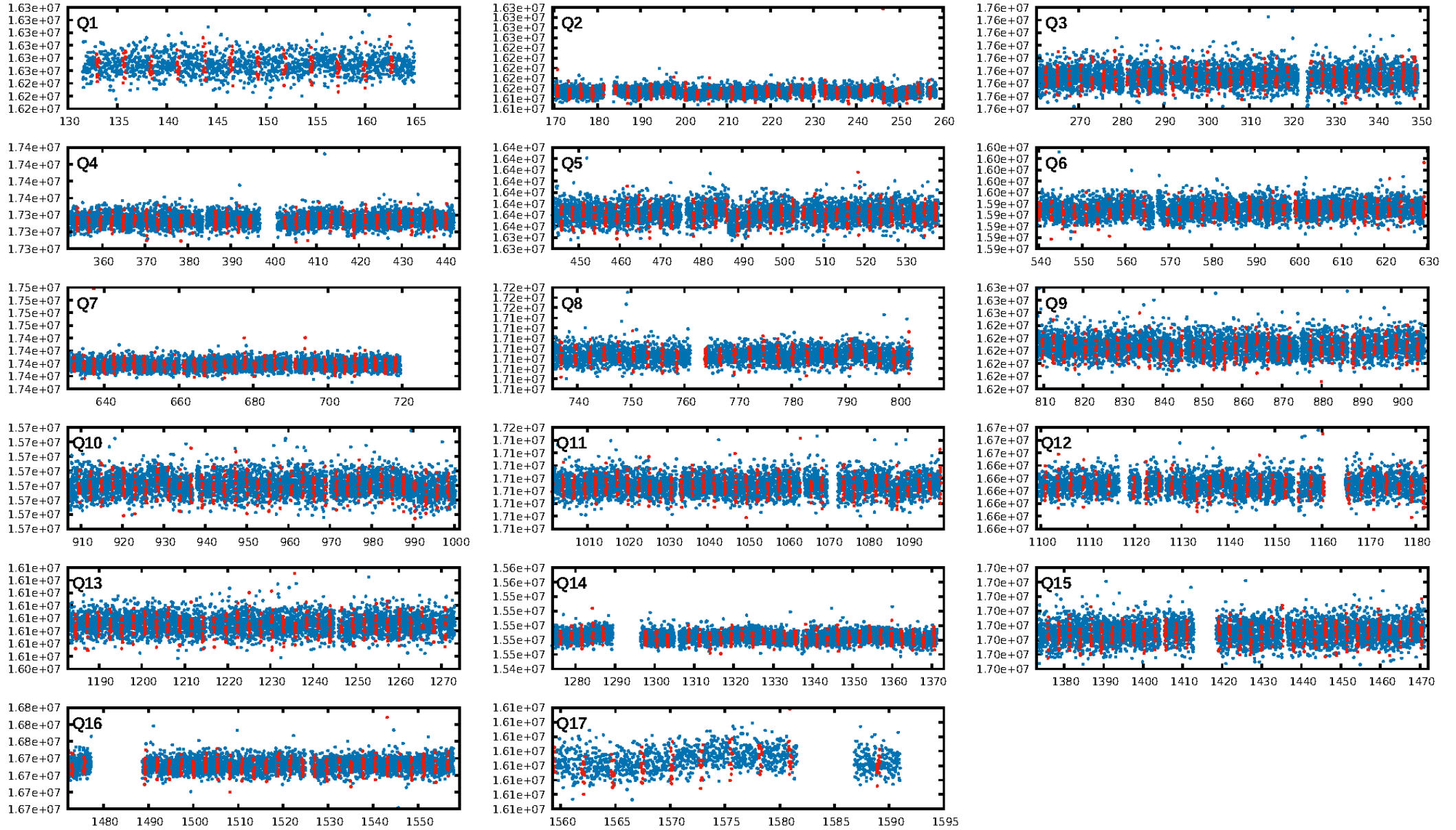
KIC: 10518424 Candidate: 1 of 2 Period: 2.696 d
KOI: K02188.01 Corr: 0.948



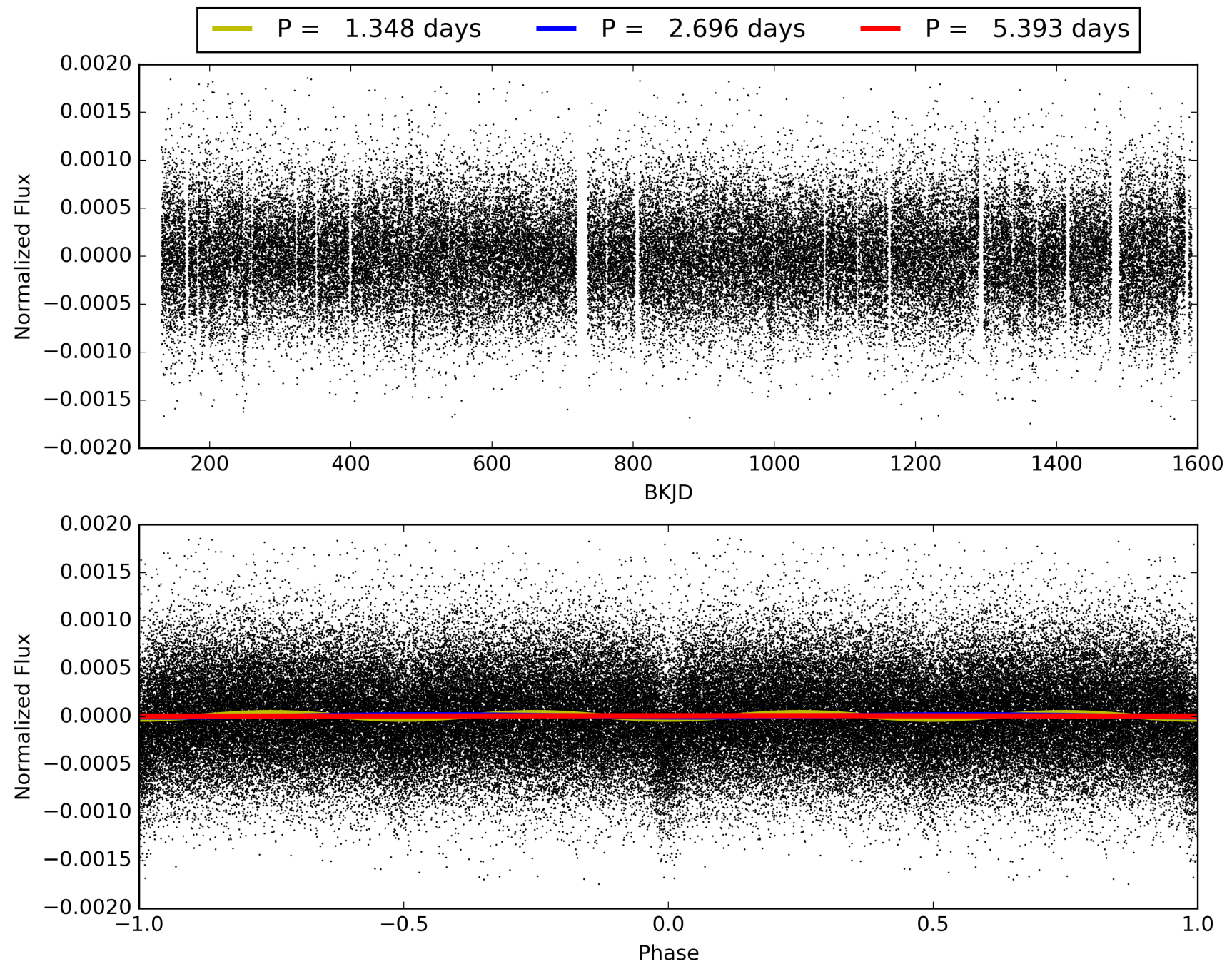
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 05:01:43 Z

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

TCE 010518424-01, PDC Light Curves

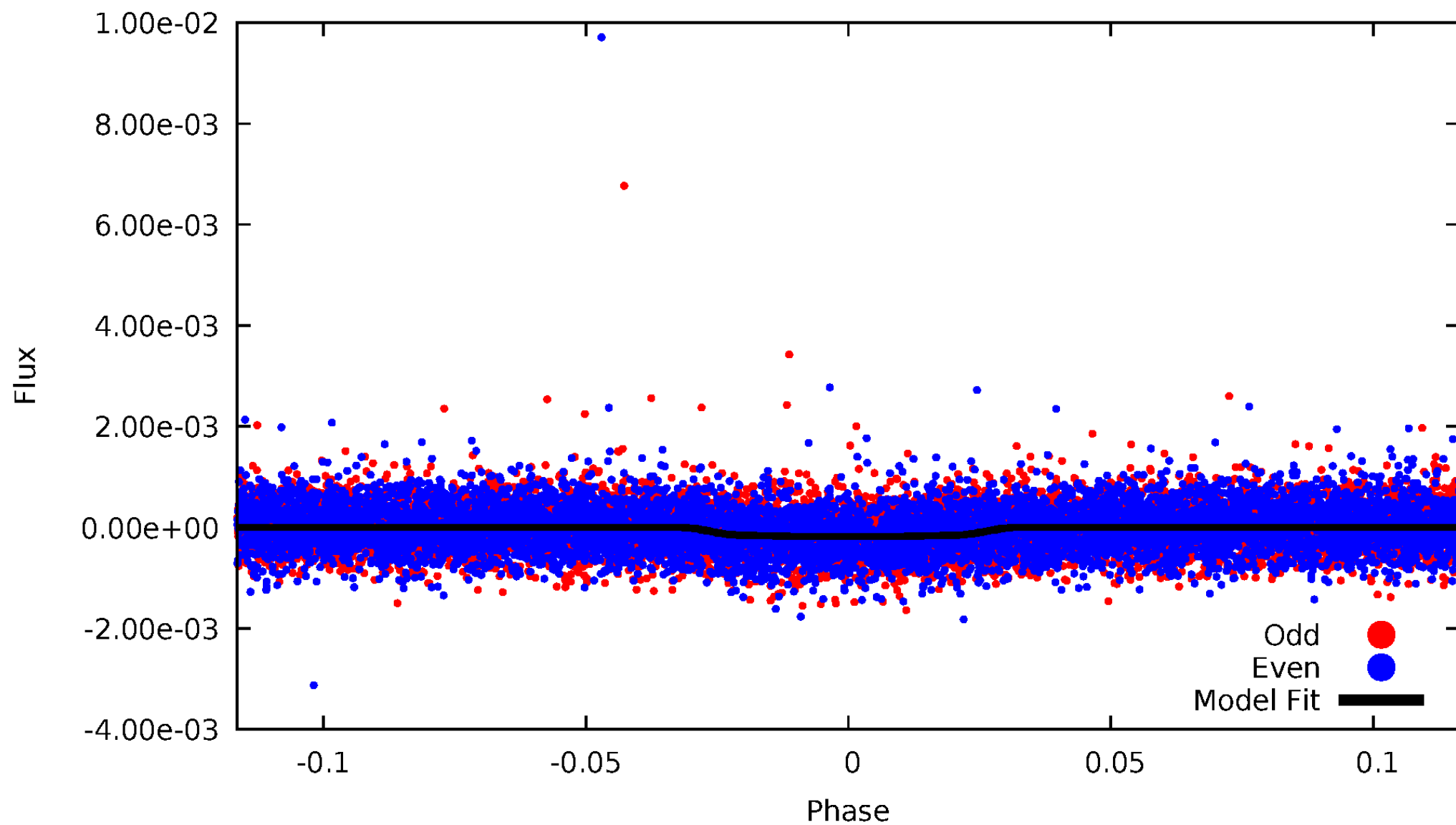


TCE 010518424-01



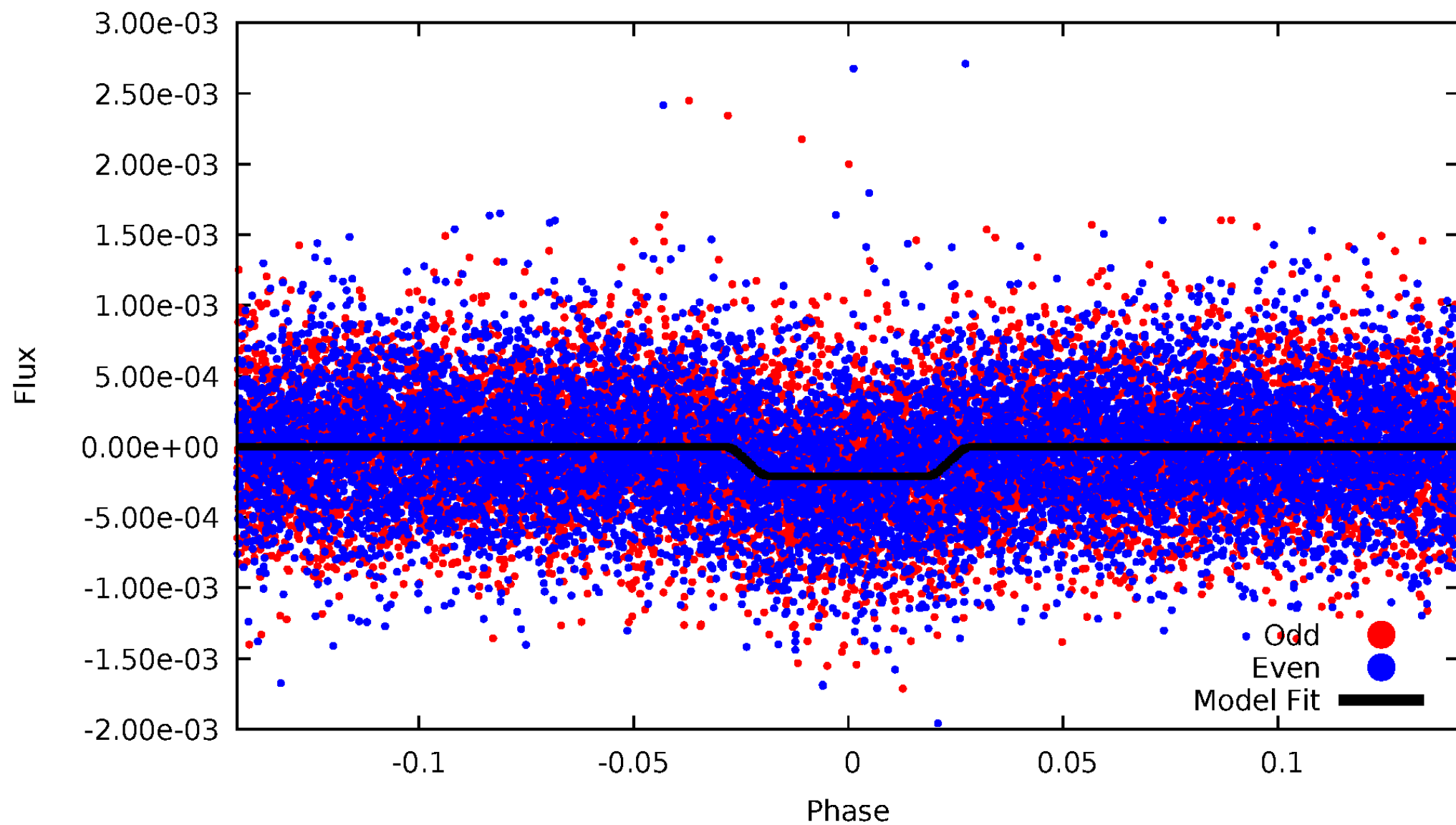
DV Odd/Even

TCE 010518424-01

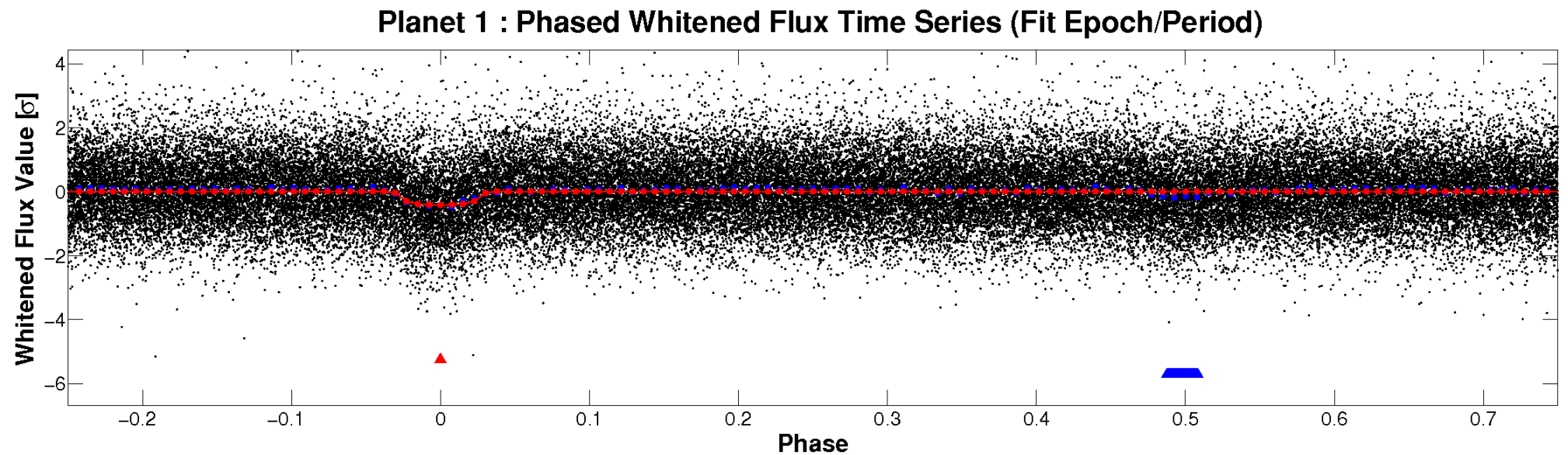
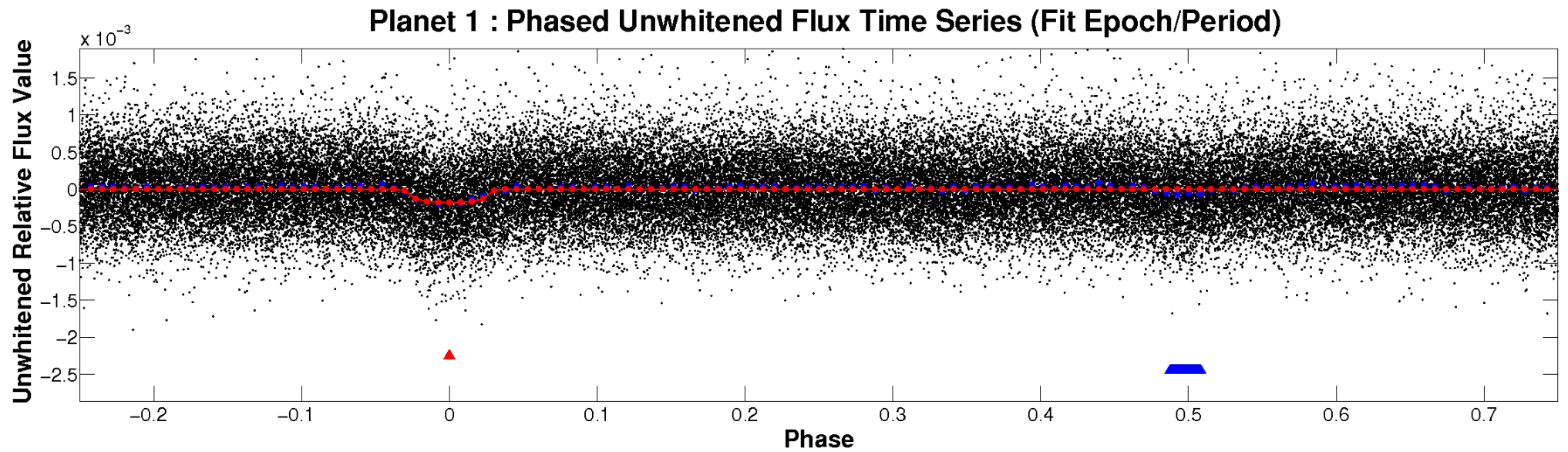


ALT Odd/Even

TCE 010518424-01

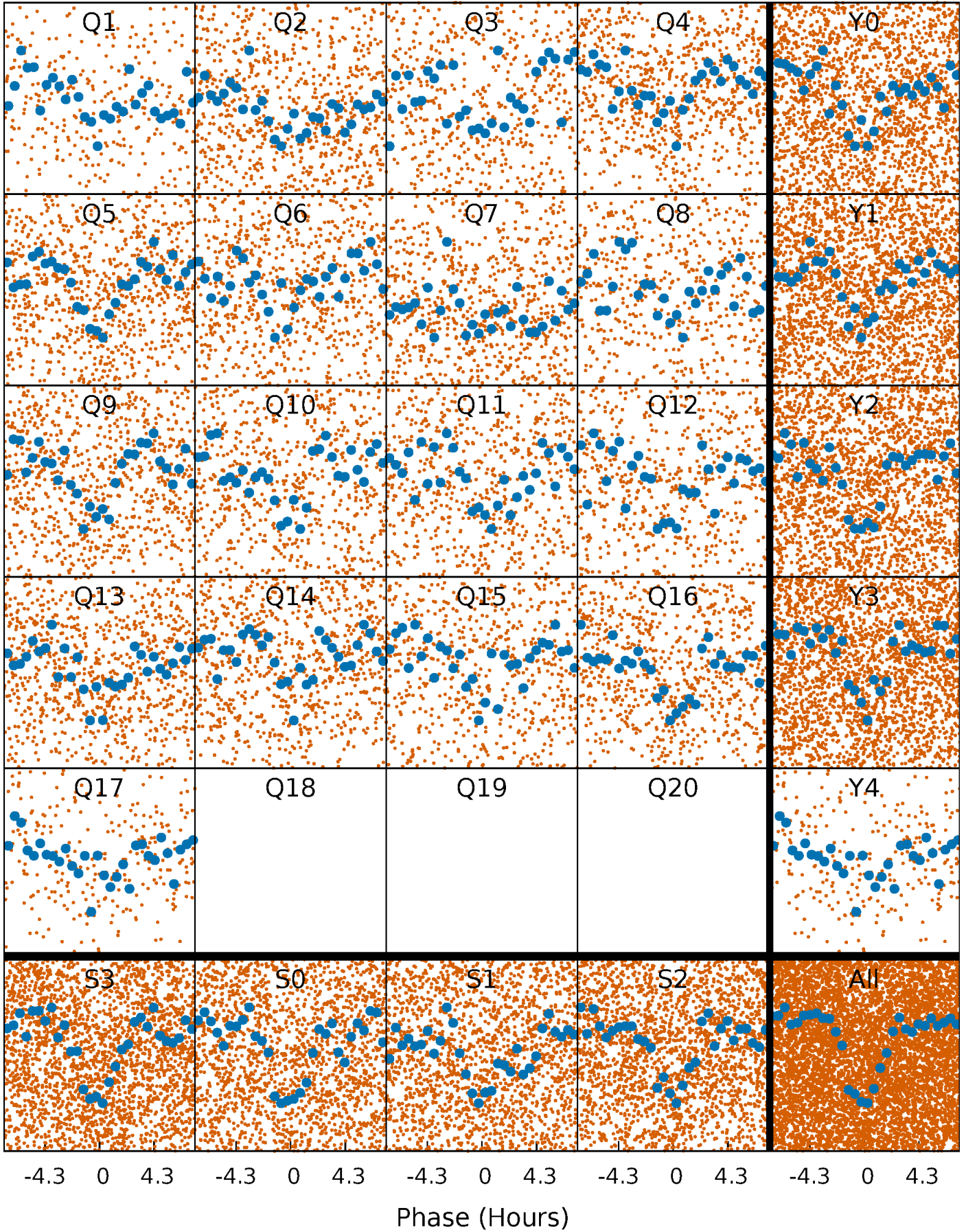


Non-Whitened Vs. Whitened Light Curve



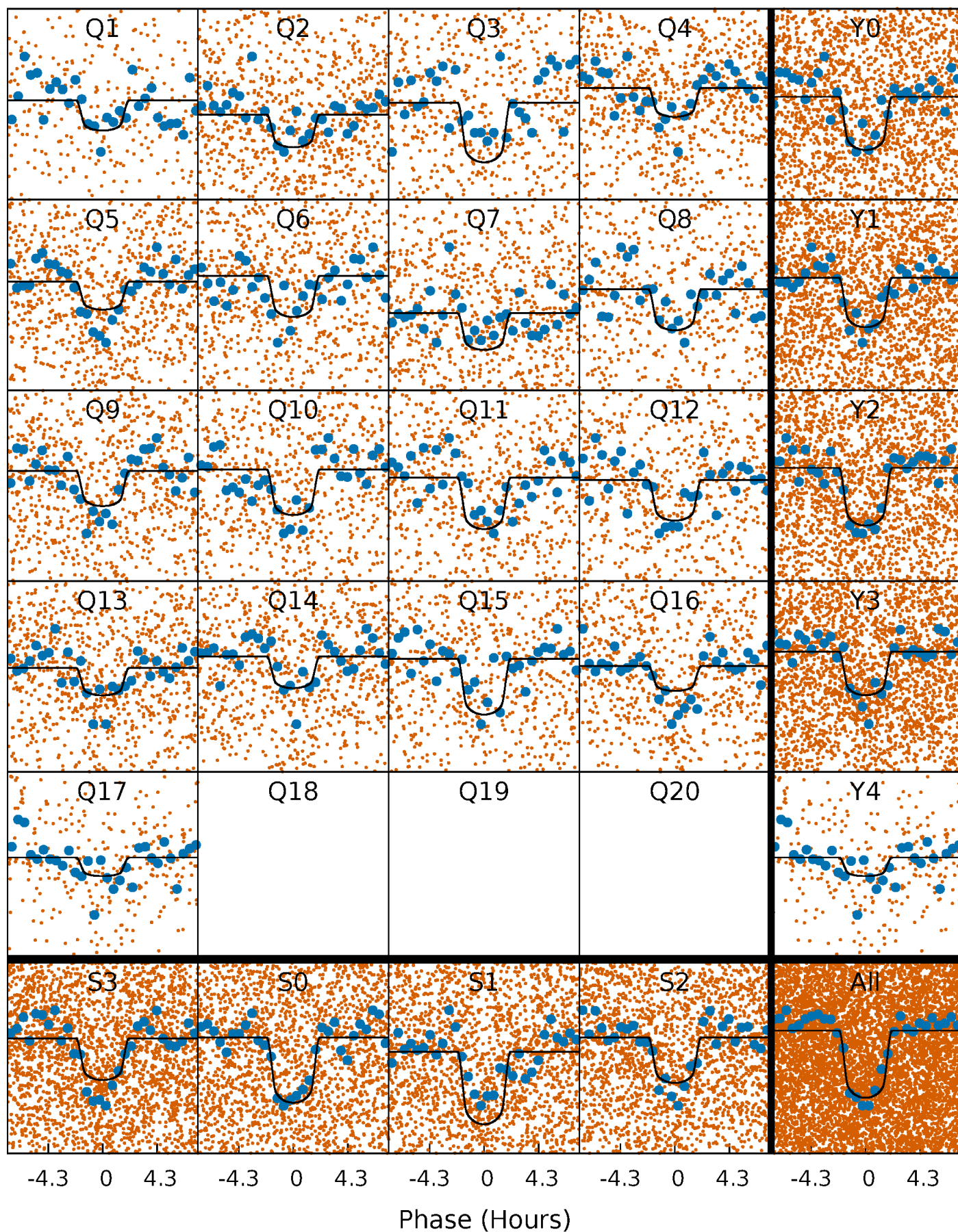
PDC Quarter-Phased Transit Curves

TCE 010518424-01 P= 2.696306 Days $T_0=133.007306$ (BKJD)



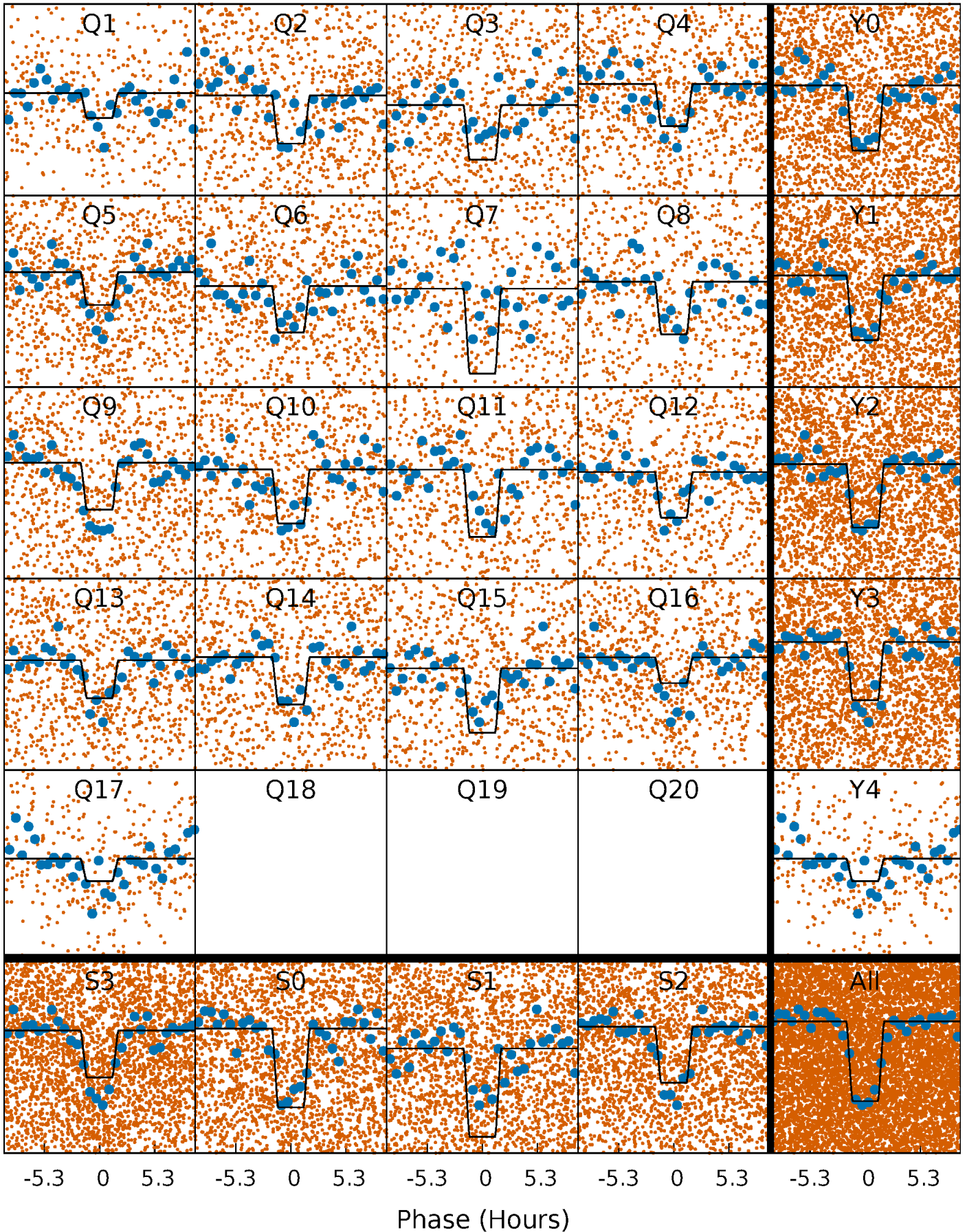
DV Quarter-Phased Transit Curves

TCE 010518424-01 P= 2.696306 Days $T_0=133.007306$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

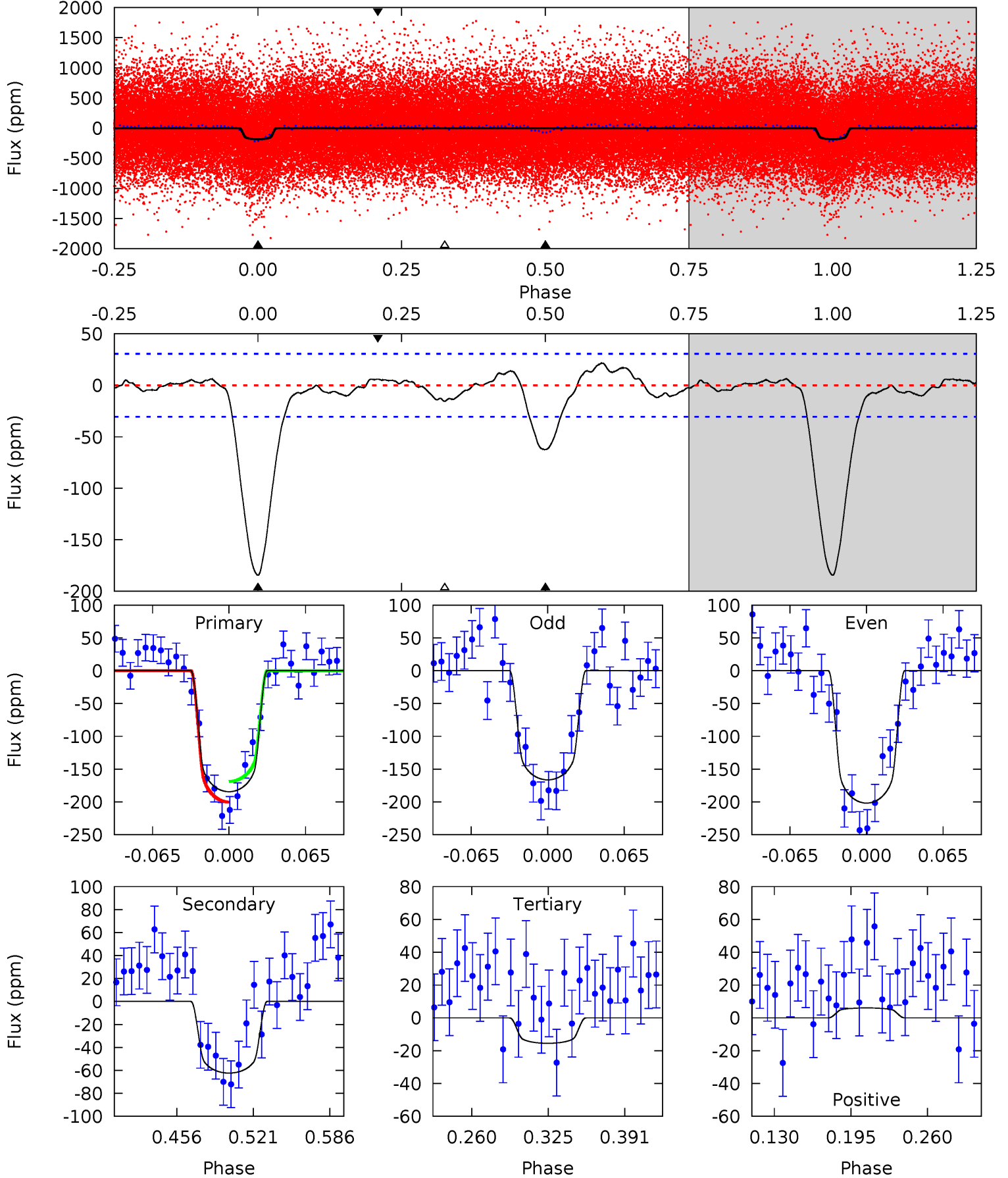
TCE 010518424-01 P= 2.696338 Days $T_0=132.994047$ (BKJD)



DV Model-Shift Uniqueness Test

010518424-01, P = 2.696306 Days, E = 130.311000 Days

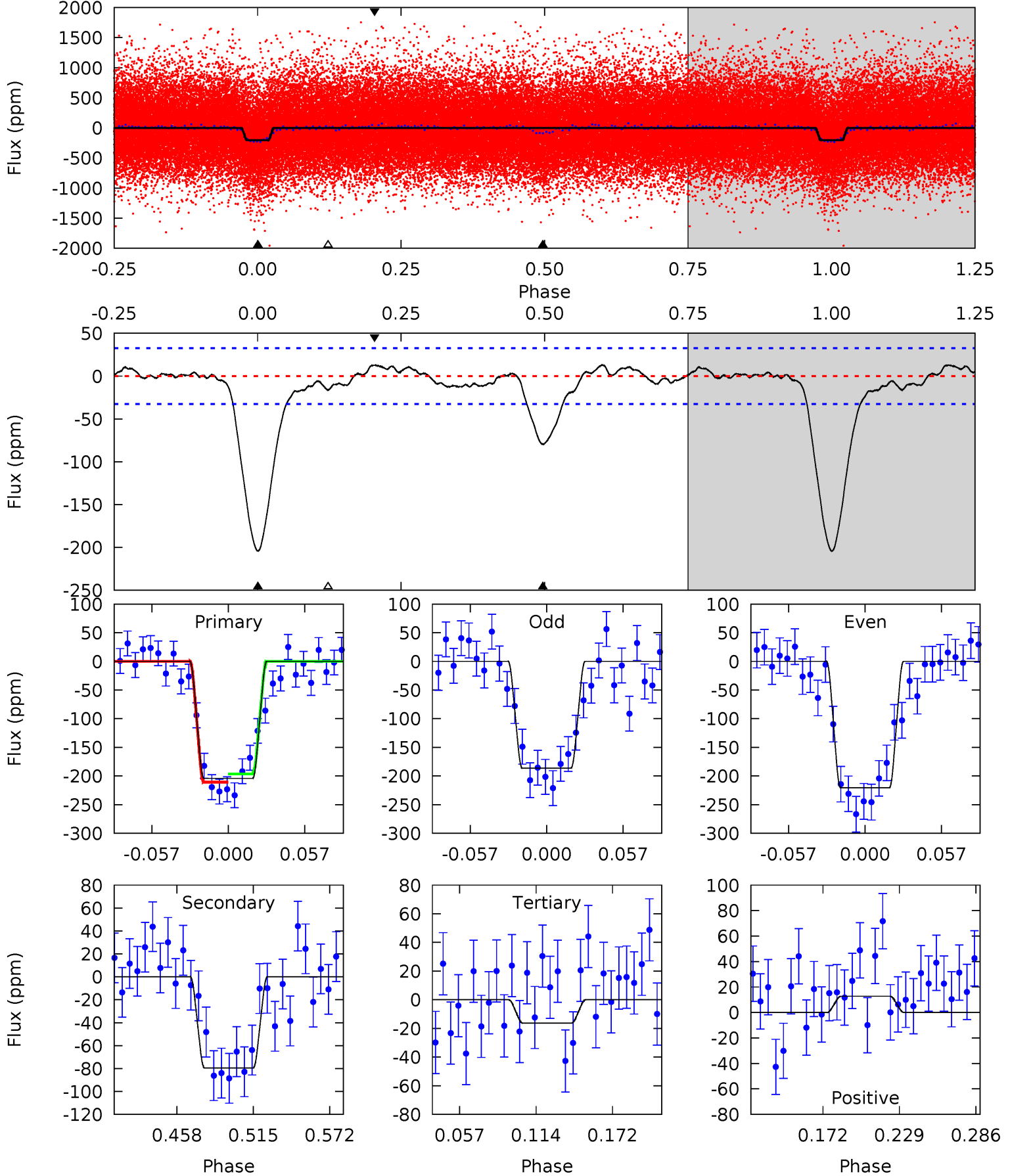
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
28.1	9.49	2.36	0.92	4.65	1.84	1.24	25.7	27.1	7.13	8.57	2.70	1.03	0.11	2.40



Alt Model-Shift Uniqueness Test

010518424-01, P = 2.696338 Days, E = 130.297709 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
29.3	11.4	2.33	1.83	4.68	1.90	1.14	26.9	27.4	9.07	9.56	2.47	1.07	0.06	1.03



Stellar Parameters For KIC 010518424

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6106^{+164}_{-201}	$4.496^{+0.054}_{-0.216}$	$-0.340^{+0.300}_{-0.300}$	$0.923^{+0.287}_{-0.096}$	$0.974^{+0.128}_{-0.115}$	$1.744^{+0.391}_{-0.937}$
	+3%/-3%	+1%/-5%	+88%/-88%	+31%/-10%	+13%/-12%	+22%/-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 010518424-01 / KOI 2188.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-62 ± 7	$1.53^{+0.37}_{-0.29}$	1902^{+141}_{-93}	4650^{+372}_{-333}	20^{+10}_{-7}
Alt.	-80 ± 7	$1.52^{+0.36}_{-0.29}$	1900^{+140}_{-85}	4888^{+443}_{-361}	26^{+14}_{-9}

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

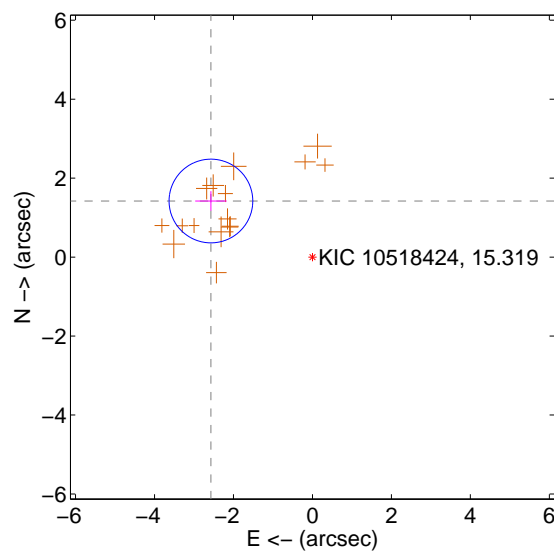
Supplemental centroid analysis for 010518424-01. Kepler magnitude: 15.32. Transit SNR 21.34

There are 0 quarters with good PRF difference image offsets

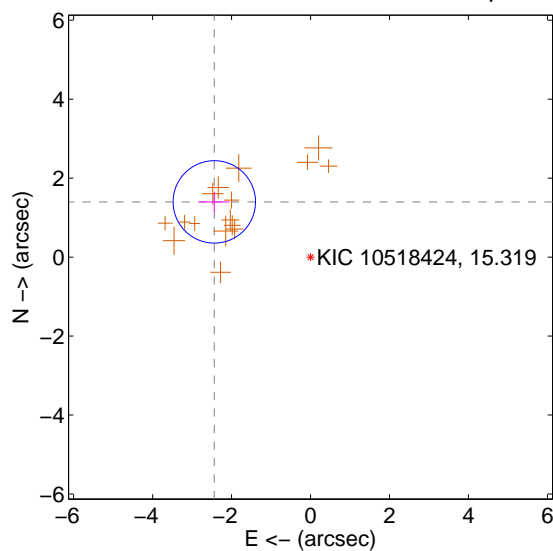
The direct PRF centroid is offset from the target star catalog position by about 0.10 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	2.937 ± 0.353	8.31	2.571 ± 0.399	1.421 ± 0.248
PRF-fit source offset from KIC position	2.809 ± 0.348	8.08	2.437 ± 0.381	1.398 ± 0.257
photometric centroid source offset	3.09 ± 0.67	4.60	3.08 ± 0.67	0.19 ± 0.70

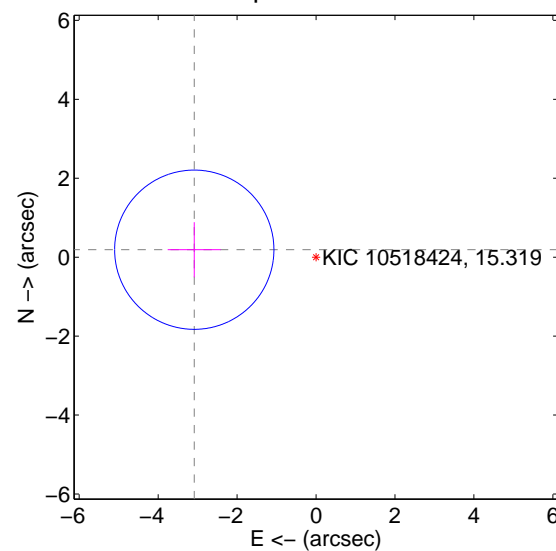
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

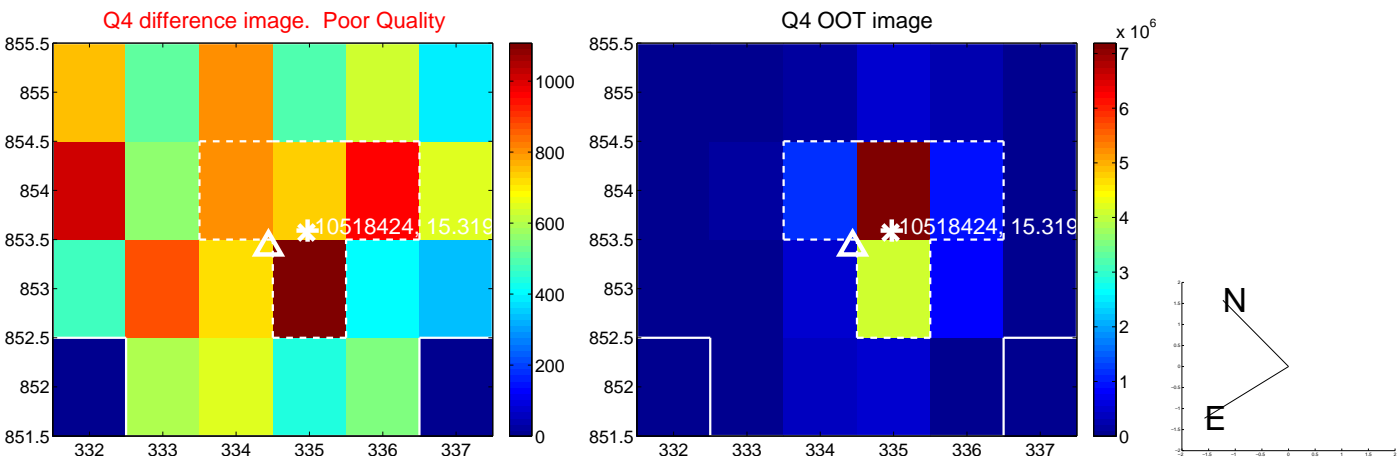
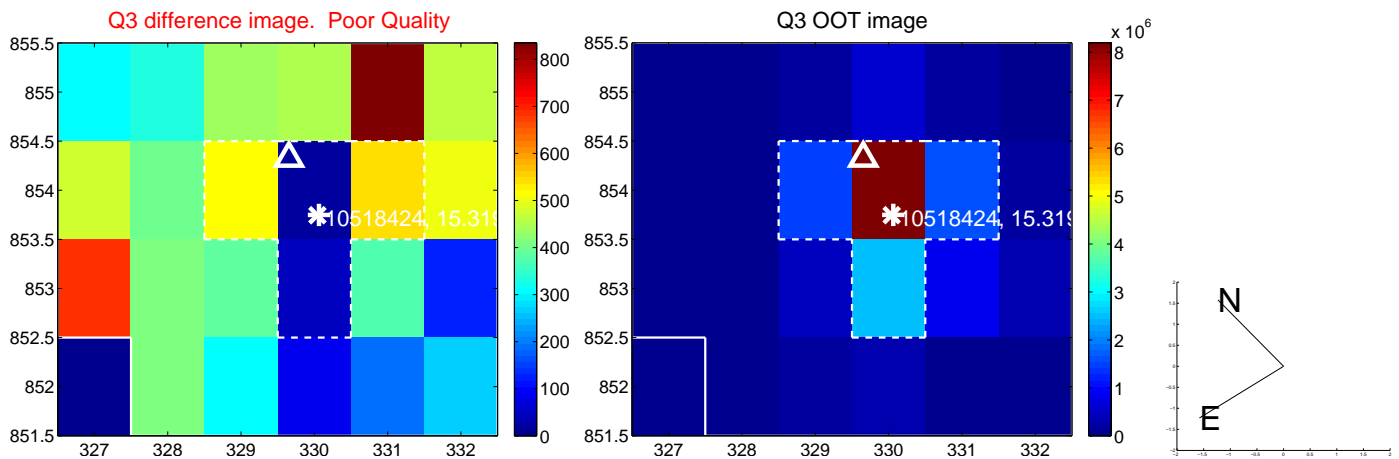
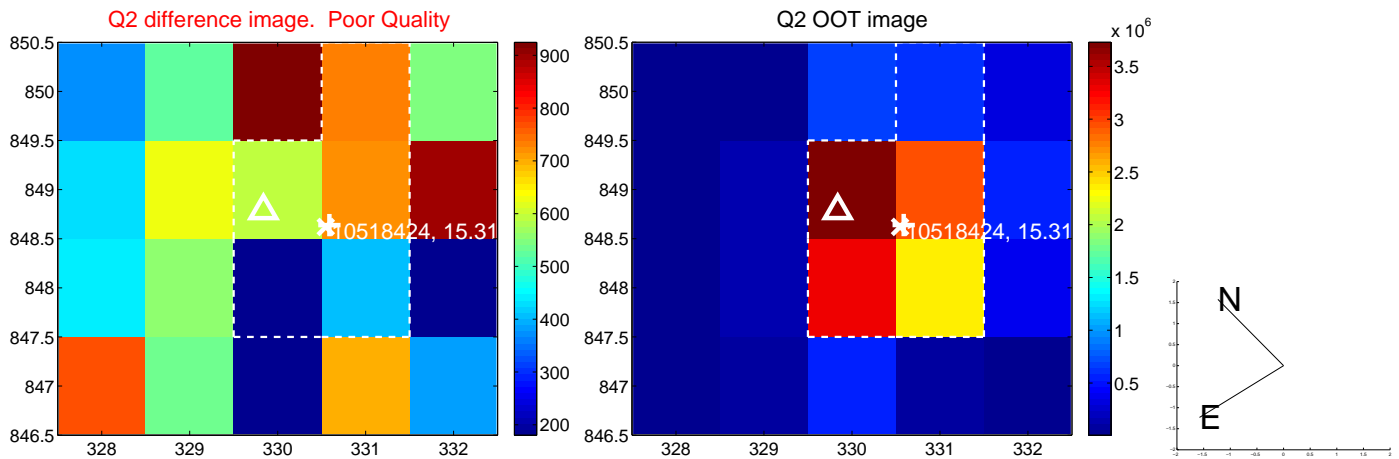
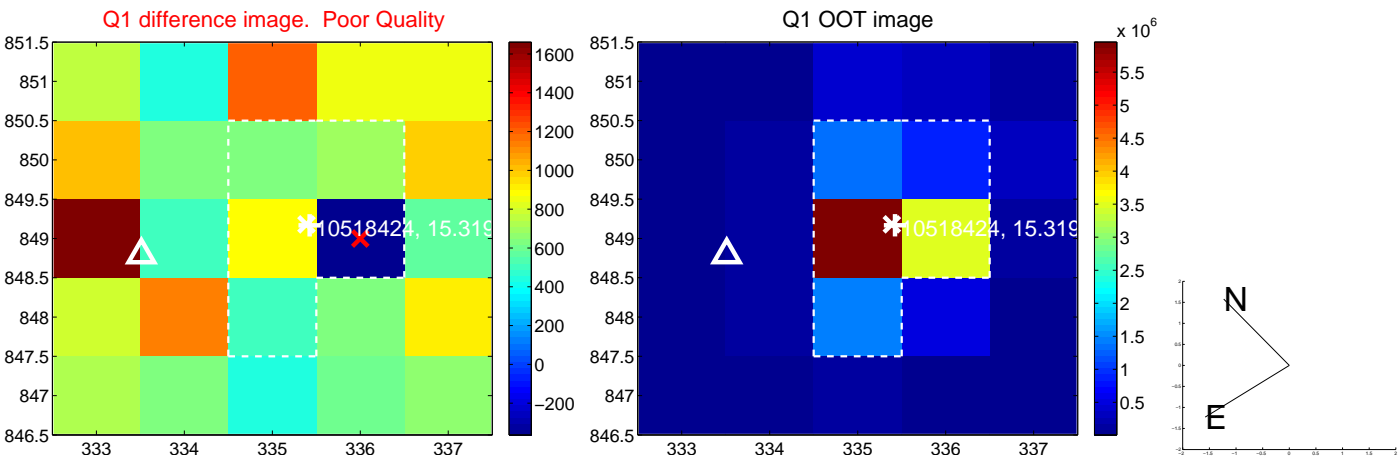


offset from photometric centroids

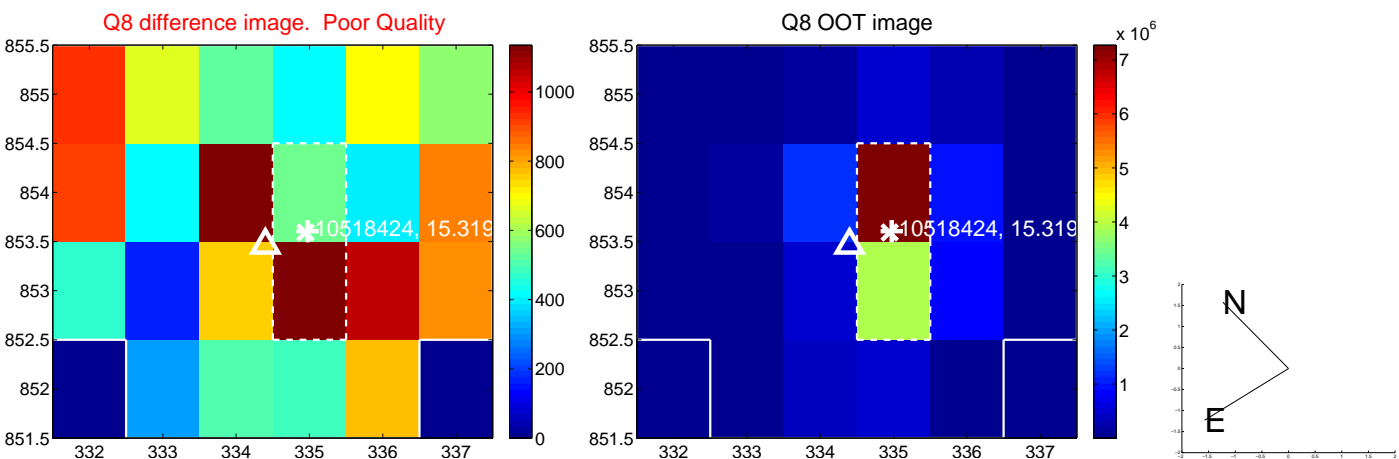
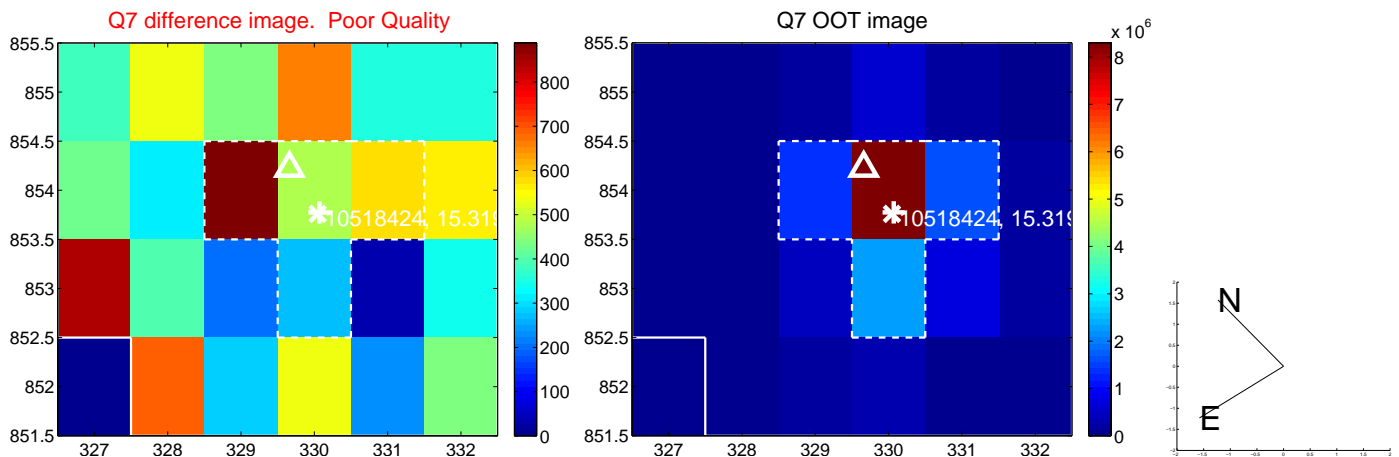
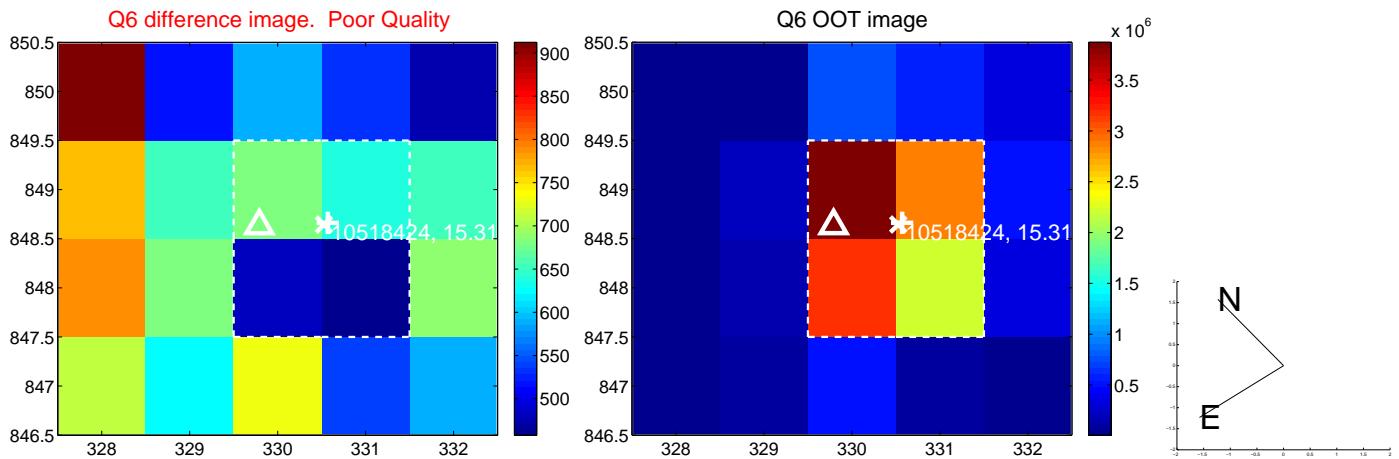
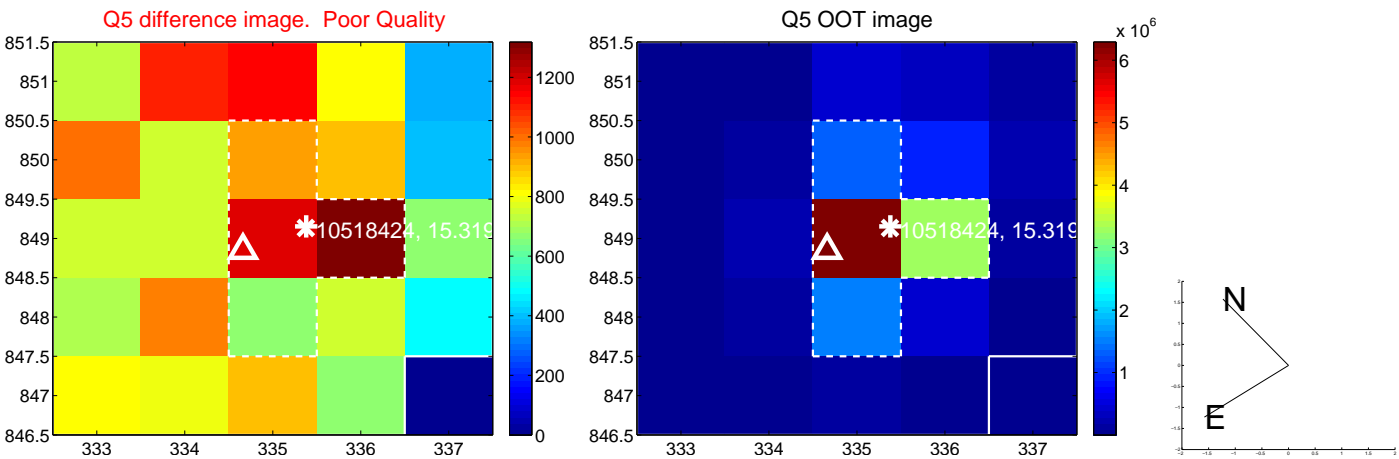


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

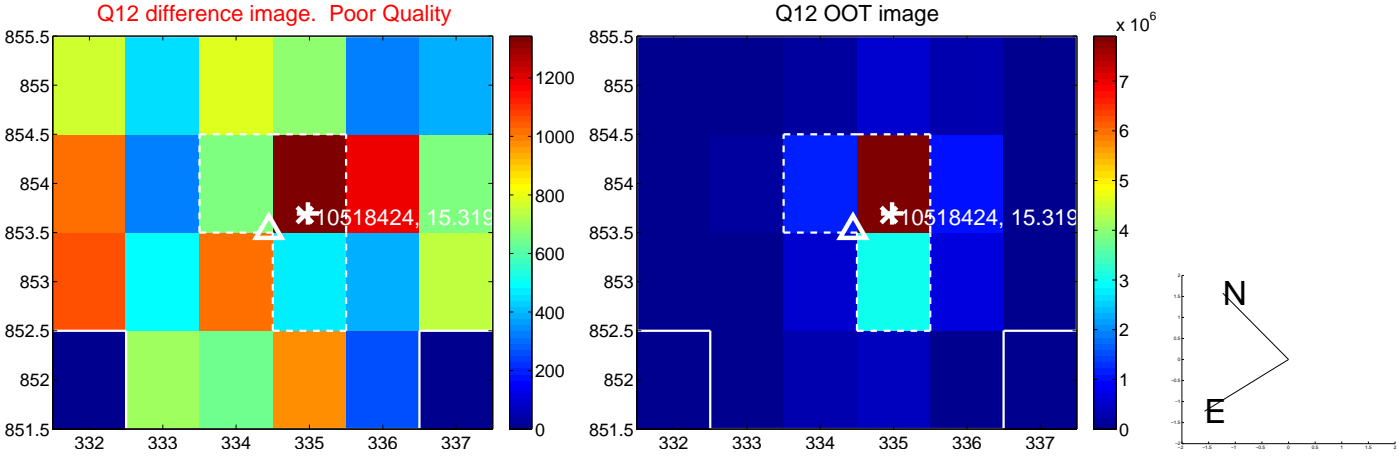
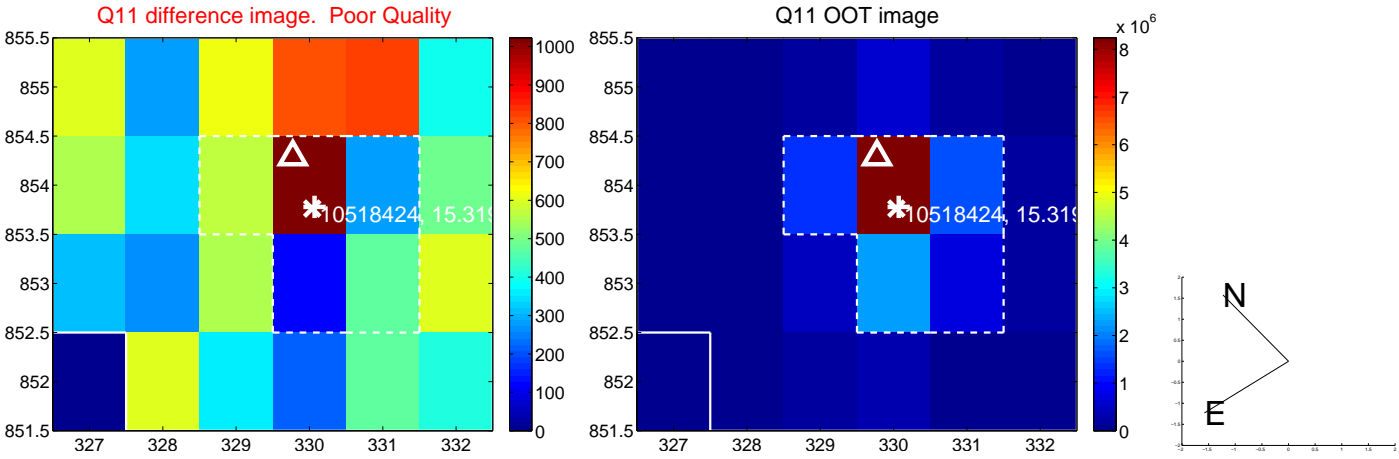
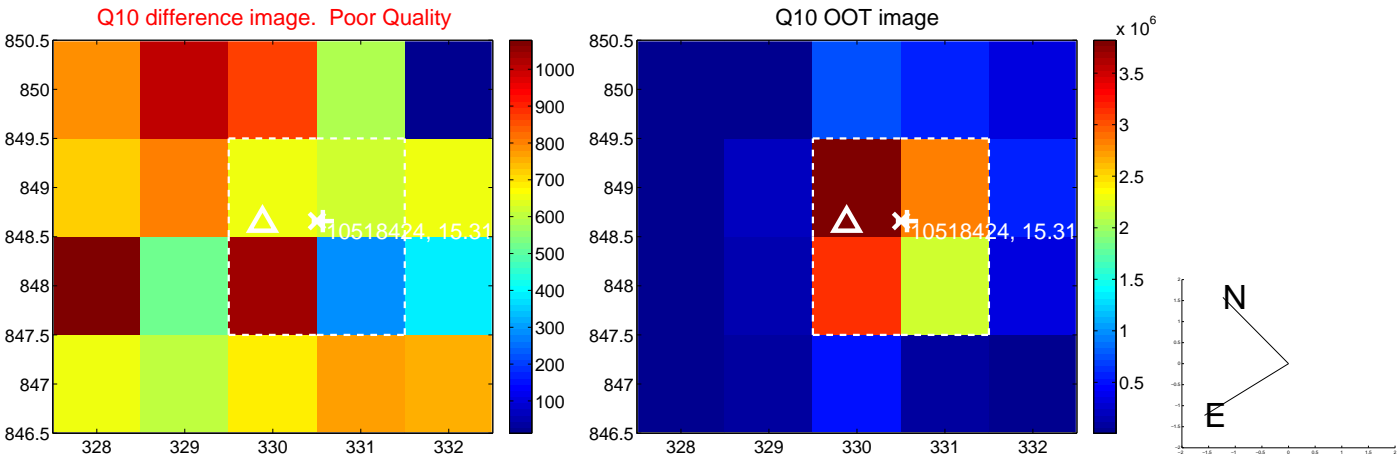
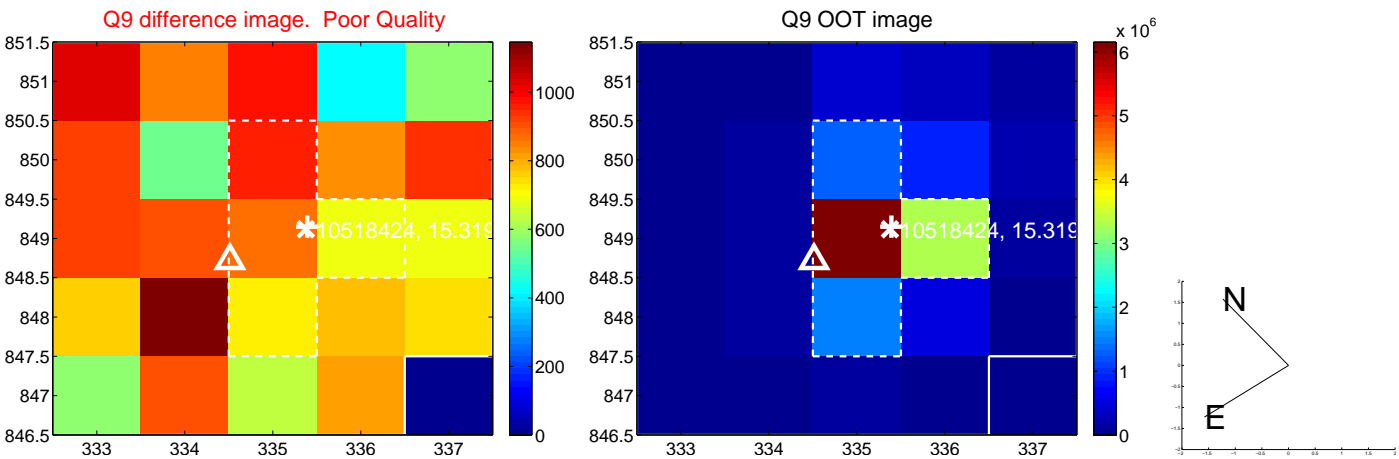
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



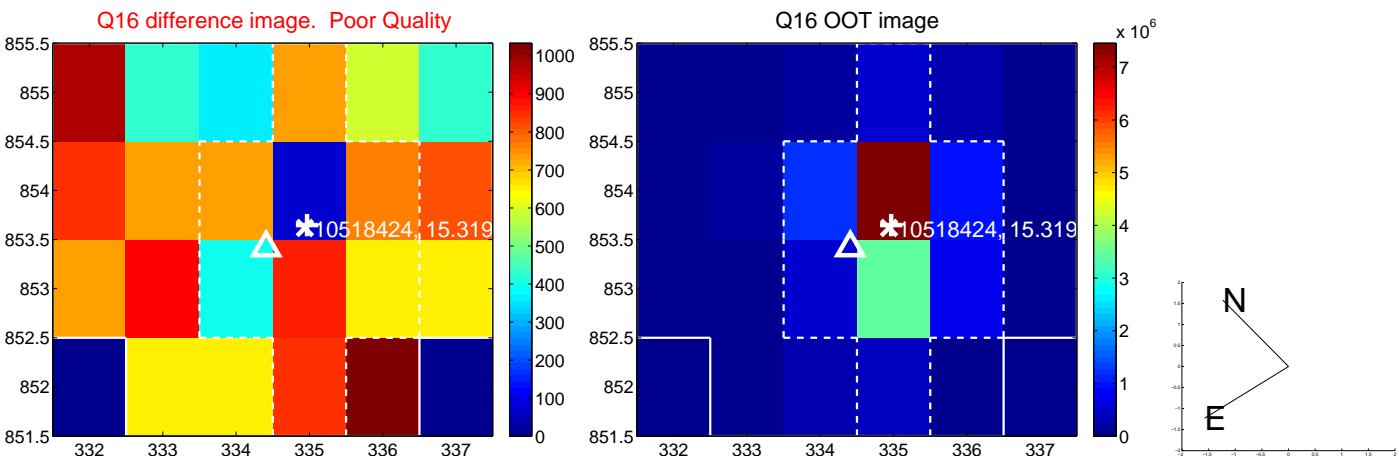
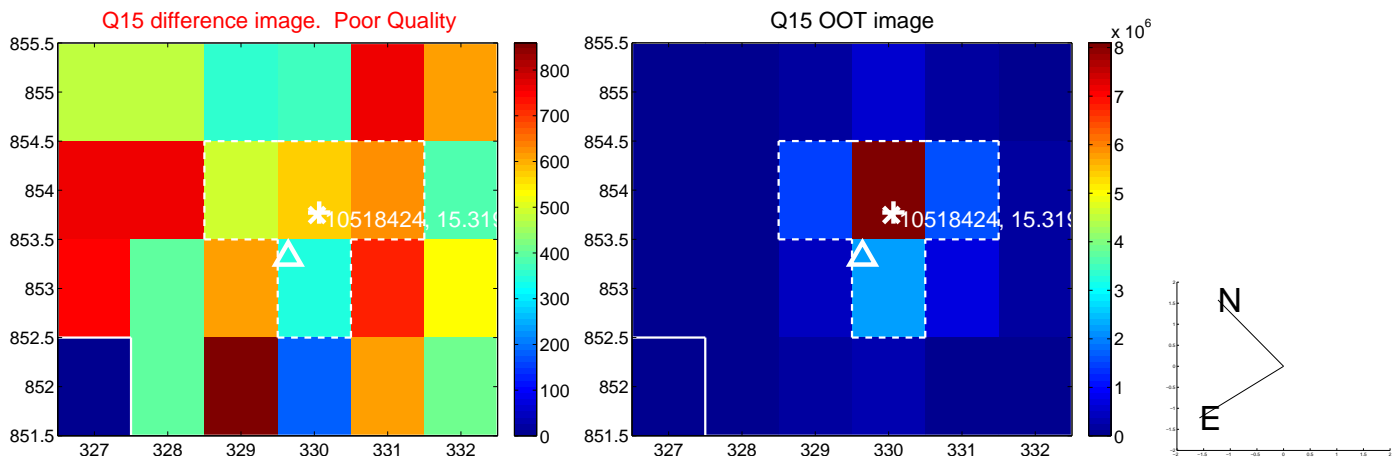
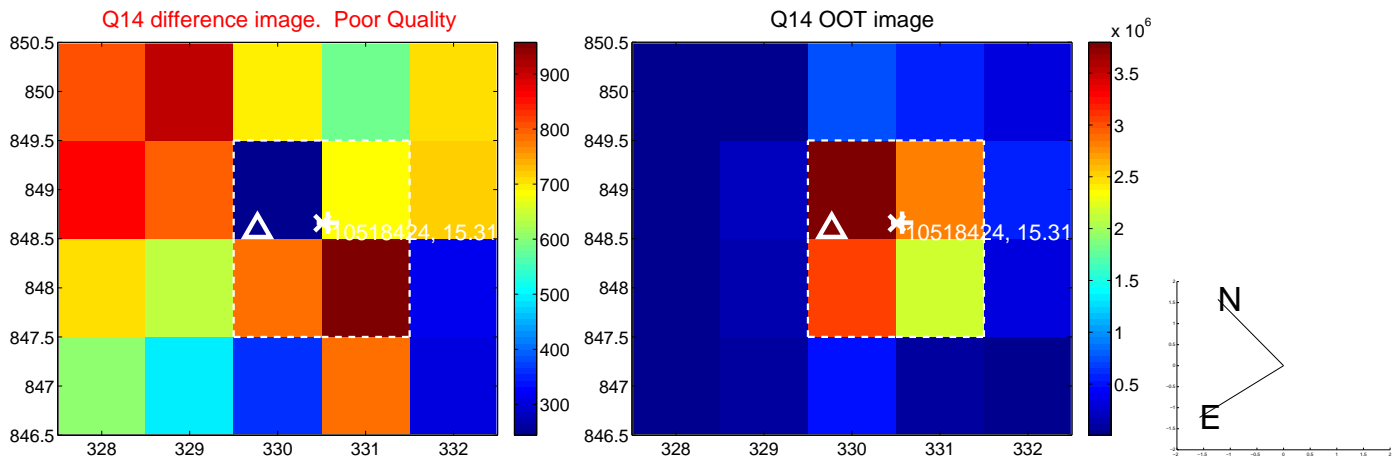
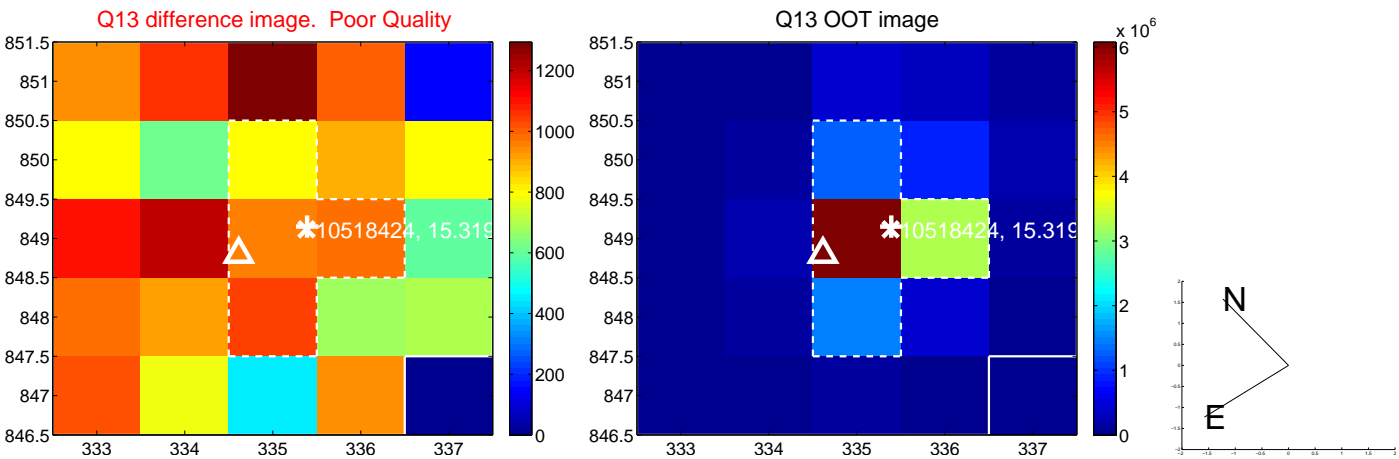
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



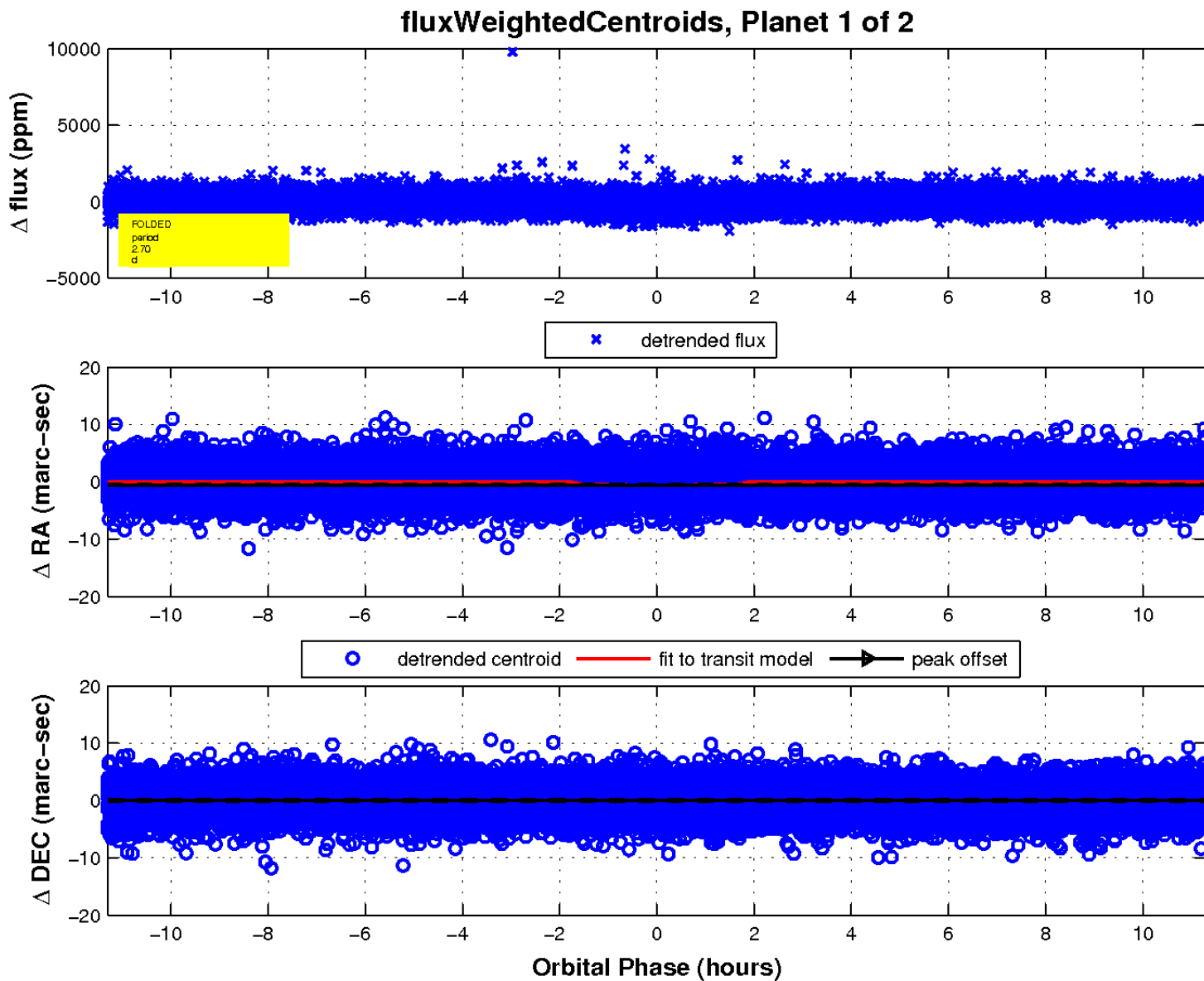
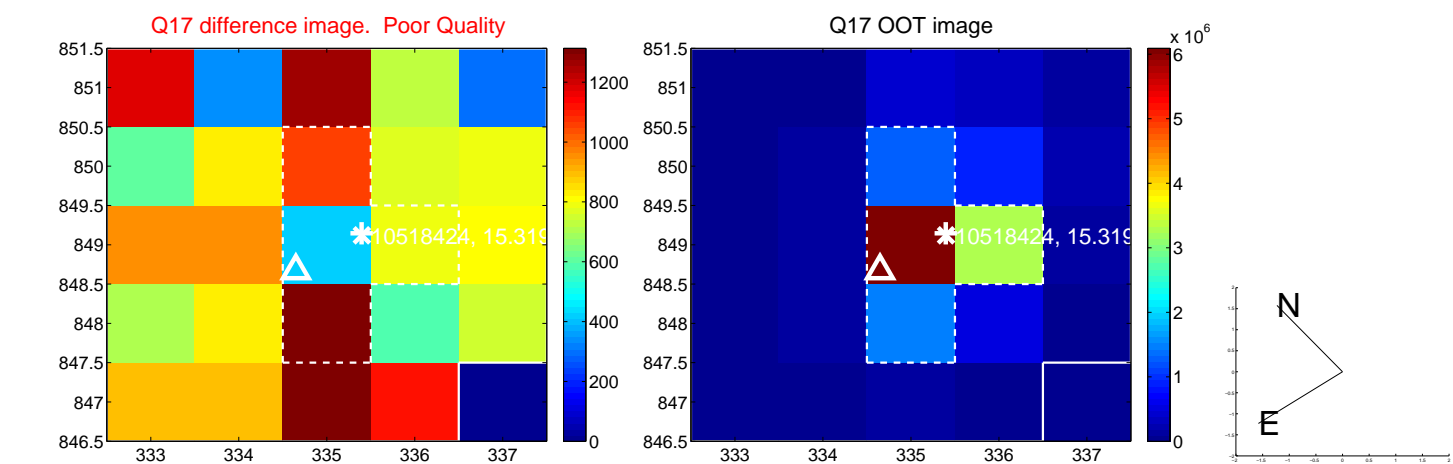
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

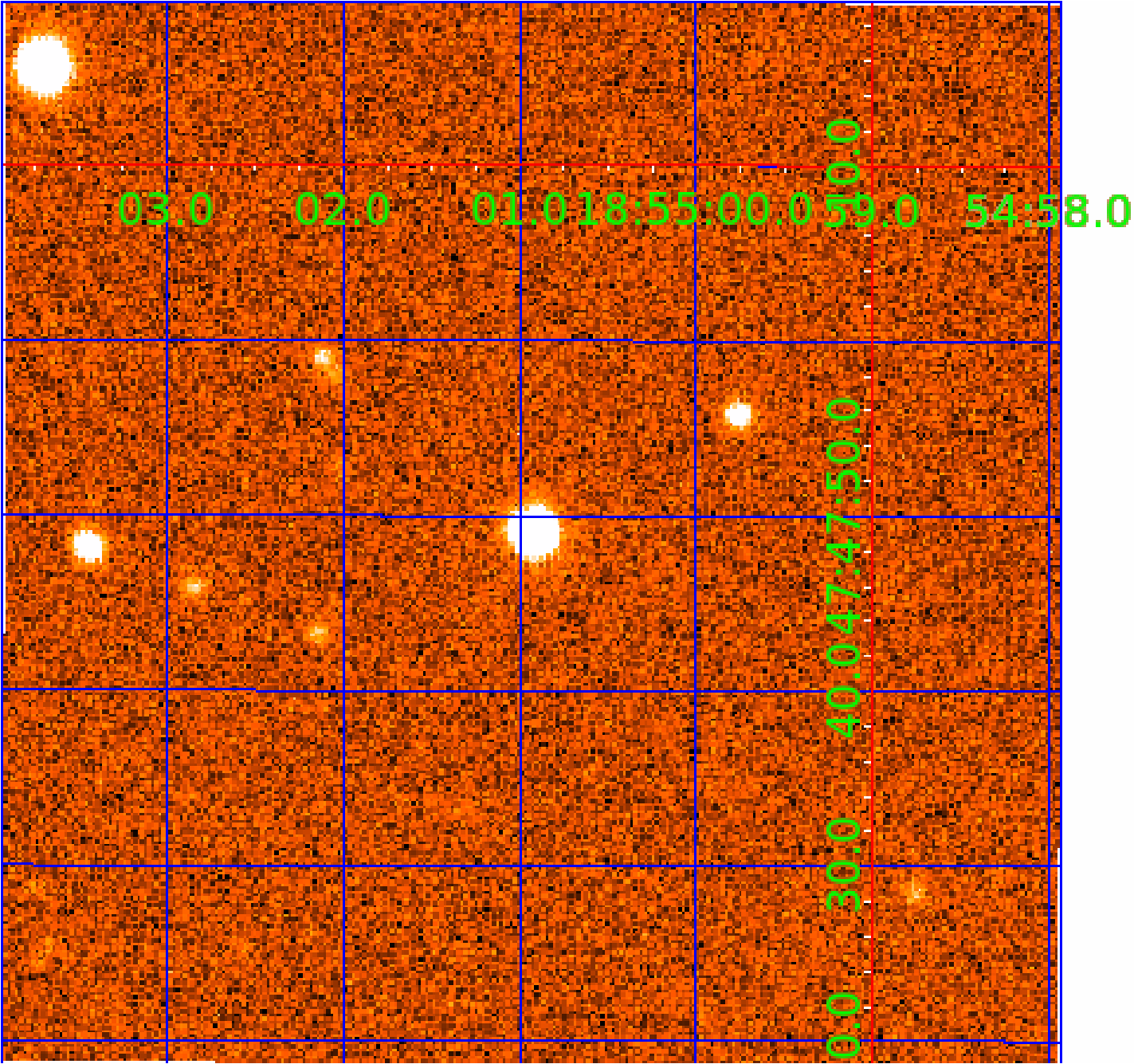


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 010518424

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})
010518424-01	OBS	2188.01	2.696306	133.007306	181.1	3.767	21.0	21.3	0.92	6106	1.47	751.10
010518424-02	OBS	No	2.696409	131.625712	92.7	3.166	9.9	10.4	0.92	6106	1.04	751.06

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010518424-01	OBS	FP	0.00	0	1	1	1	MOD_SEC_DV—MOD_SEC_ALT—HAS_SEC_TCE—CENT_UNRESOLVED_OFFSET—HALO_GHOST—EPHEM_MATCH
010518424-02	OBS	FP	0.00	1	1	1	1	IS_SEC_TCE—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 010518424-02

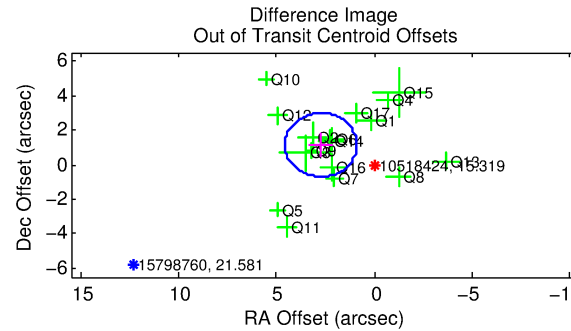
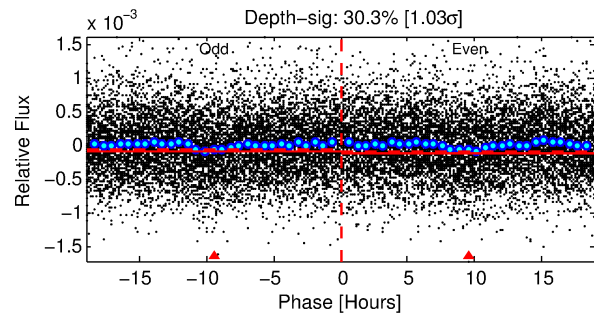
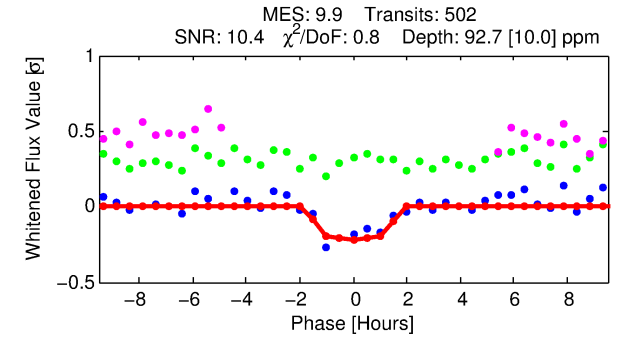
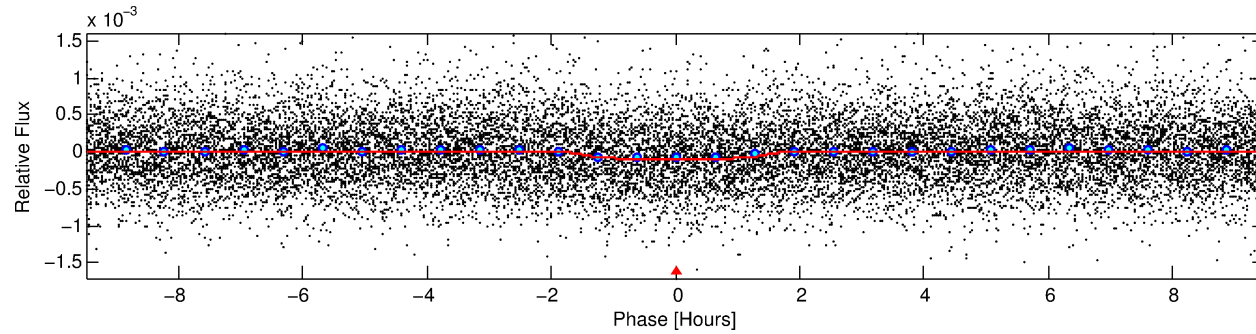
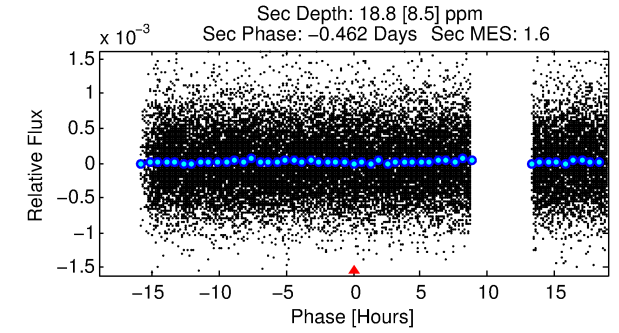
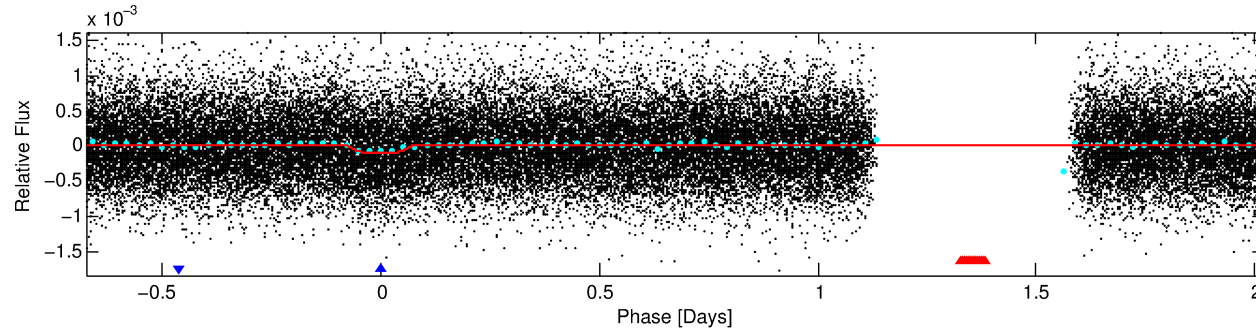
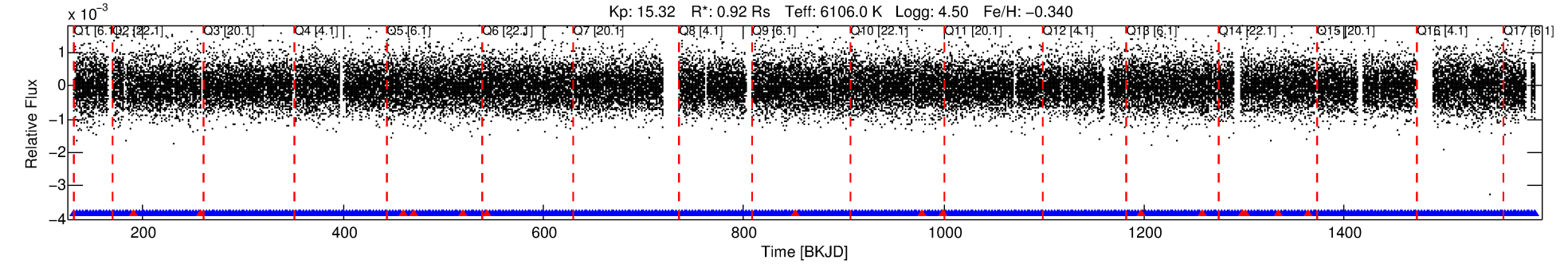
TCE (1)	KIC	Parent (2)	Parent KIC	$P_1:P_2$	Dist ($''$)	Δ Row	Δ Col	m_2	m_1	D_2/D_1	Mechanism	Flag	σ_P	σ_T
010518424-02	10518424	010583181-sec	10583181	1:1	85.0	-11	19	11.01	15.32	1072.00	Direct-PRF	0	2.04	1.09

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: 10518424 Candidate: 2 of 2 Period: 2.696 d
KOI: K02188 Corr: No Ephemeris Match

Kp: 15.32 R*: 0.92 Rs Teff: 6106.0 K Logg: 4.50 Fe/H: -0.340



DV Fit Results:

Period = 2.69641 [0.00002] d
Epoch = 131.6257 [0.0047] BKJD
Rp/R* = 0.0103 [0.0062]
a/R* = 3.20 [9.44]
b = 0.89 [0.74]
Seff = 751.06 [309.90]
Teff = 1335 [138] K
Rp = 1.04 [0.70] Re
a = 0.0376 [0.0100] AU
Ag = 13.55 [18.20] [0.69σ]
Teffp = 3960 [1278] K [2.04σ]

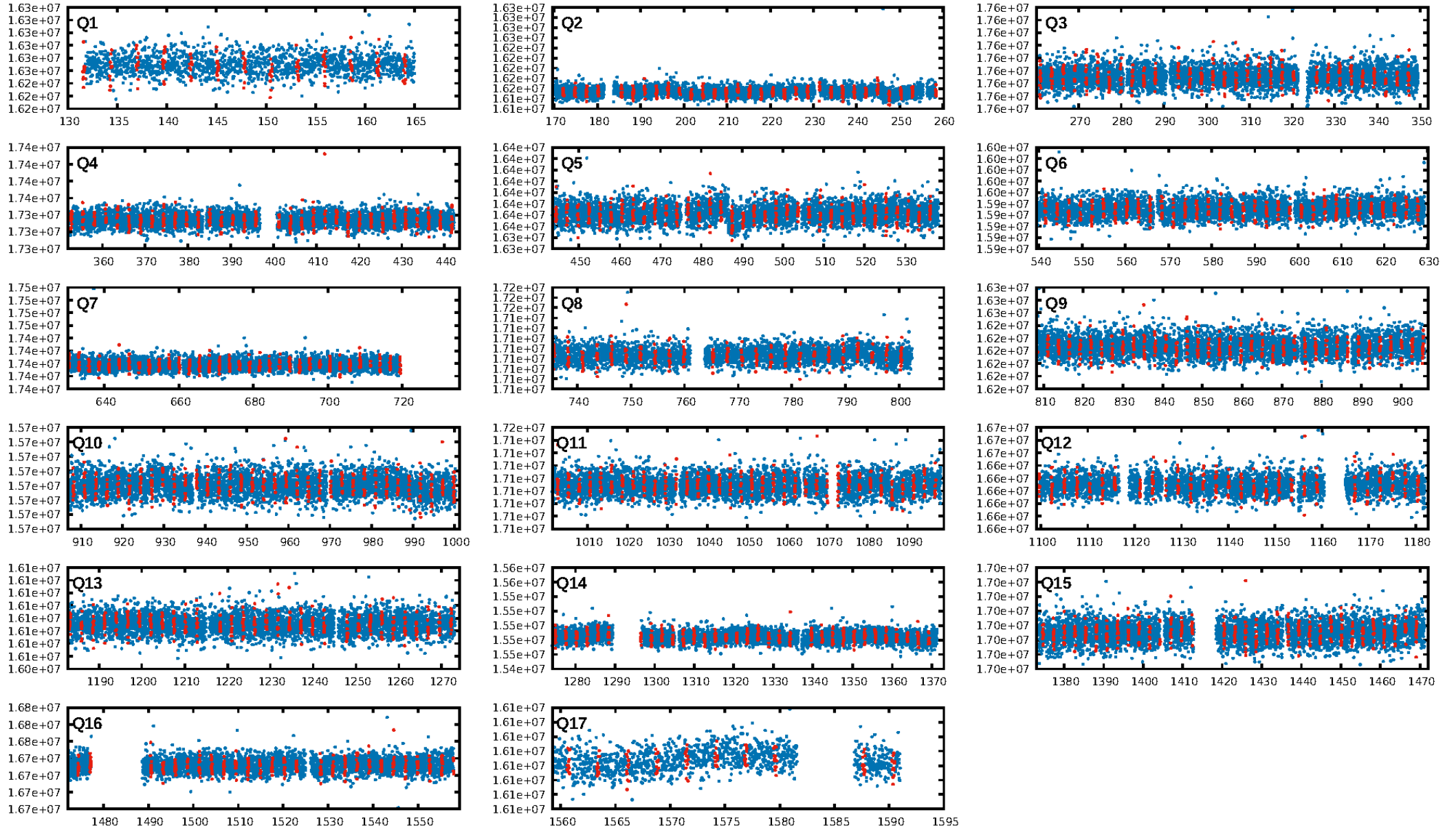
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 1.08e-23
RollingBand-fgt: 0.97 [464/479]
GhostDiagnostic-chr: 0.1687
Centroid-sig: 16.7%
Centroid-so: 1.613 arcsec [1.11σ]
OotOffset-rm: 2.973 arcsec [4.83σ]
KicOffset-rm: 2.859 arcsec [4.65σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 0.12 [2/17]
DiffImageOverlap-fno: 1.00 [17/17]

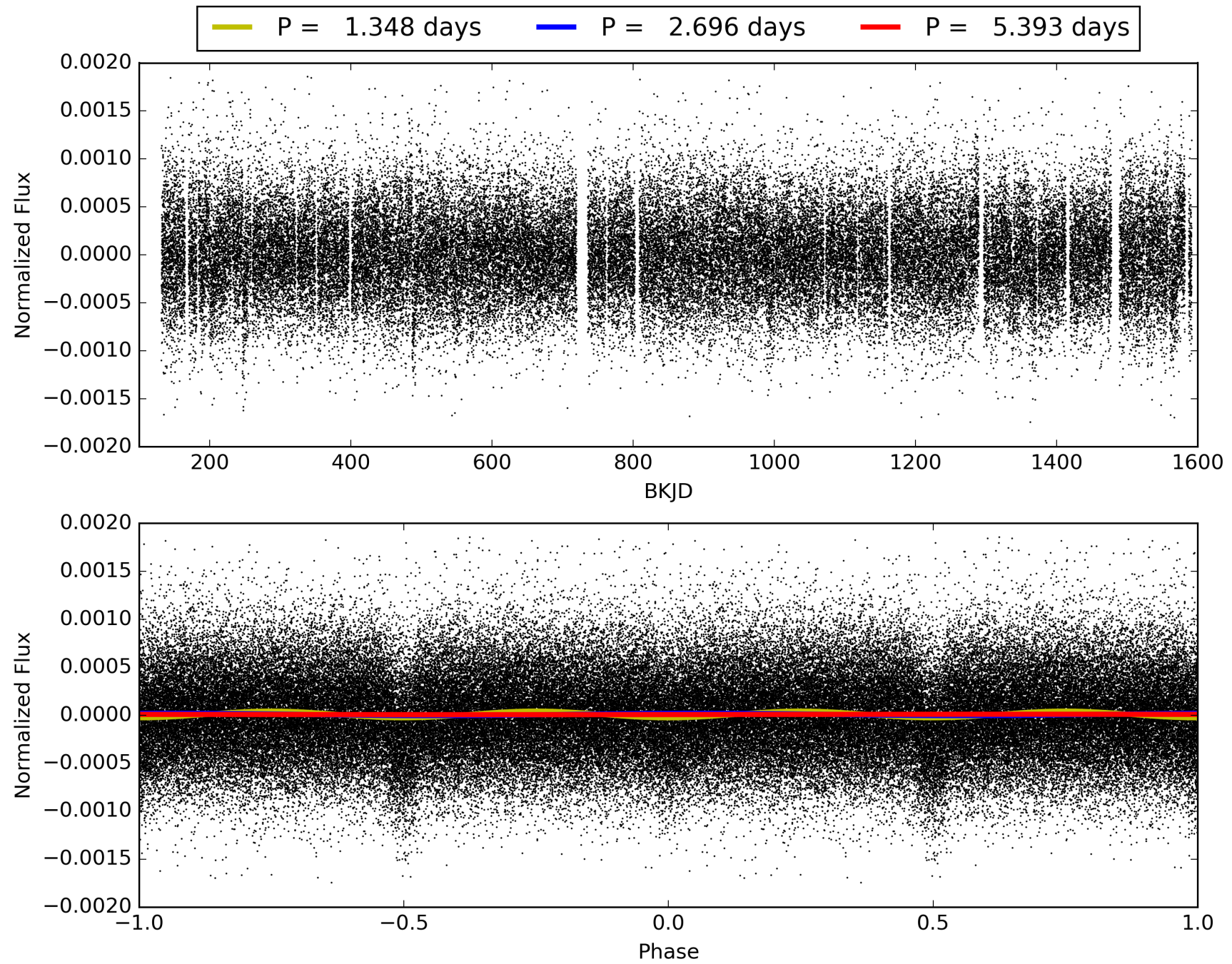
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 05:01:52 Z

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

TCE 010518424-02, PDC Light Curves

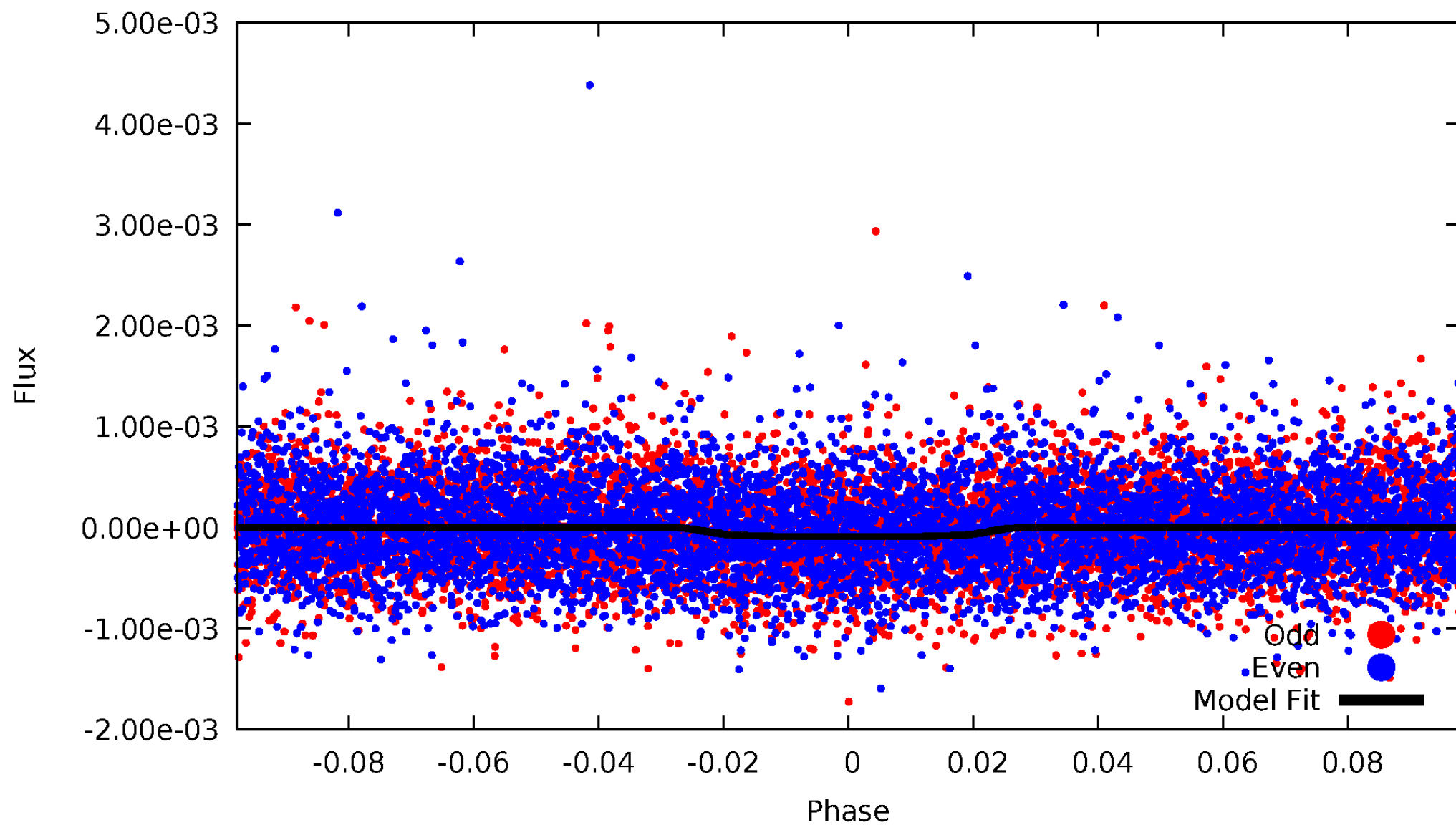


TCE 010518424-02



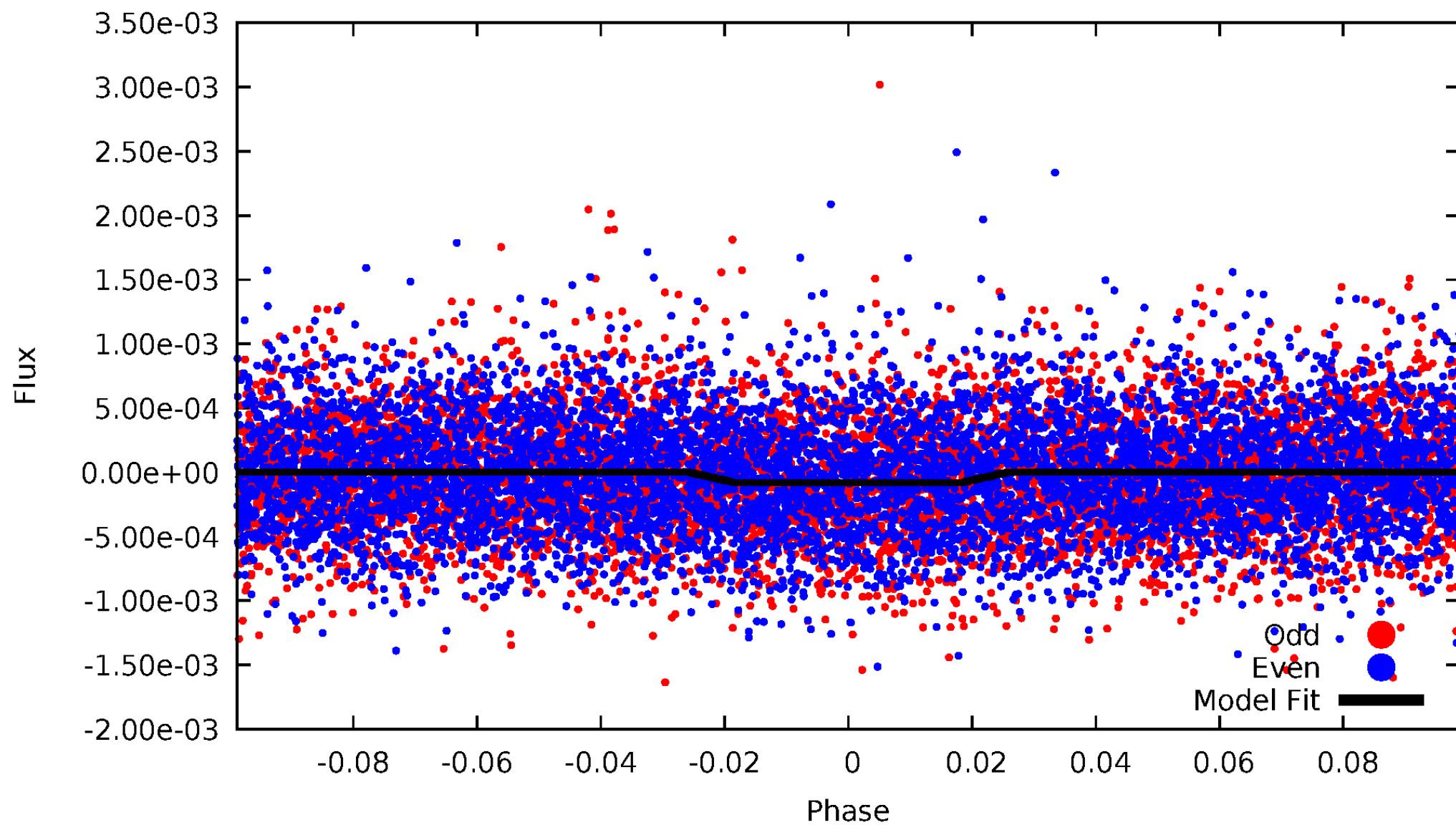
DV Odd/Even

TCE 010518424-02



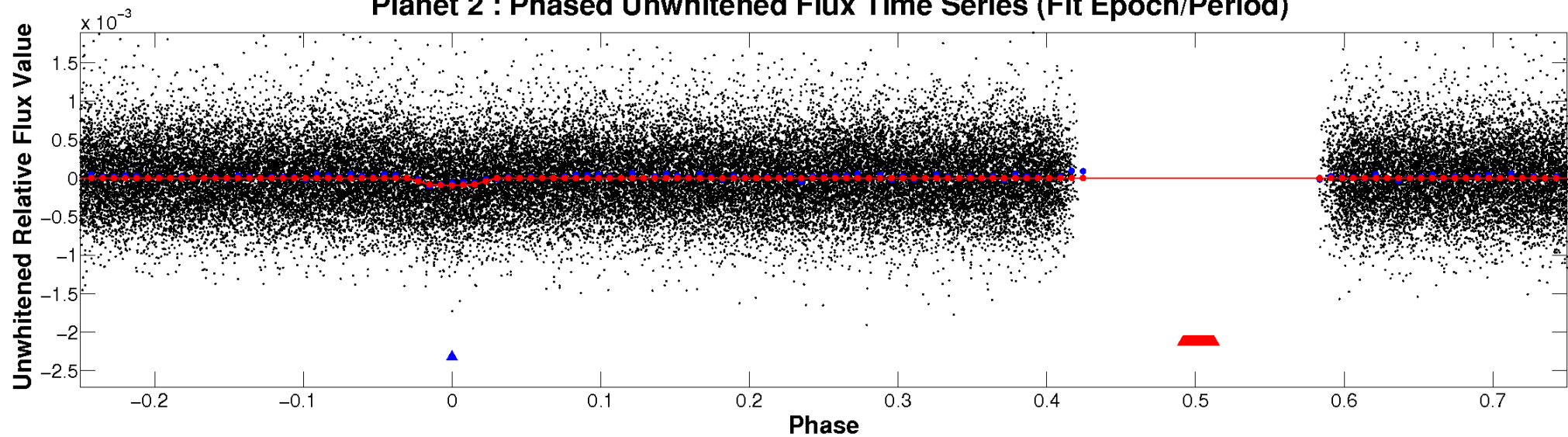
ALT Odd/Even

TCE 010518424-02

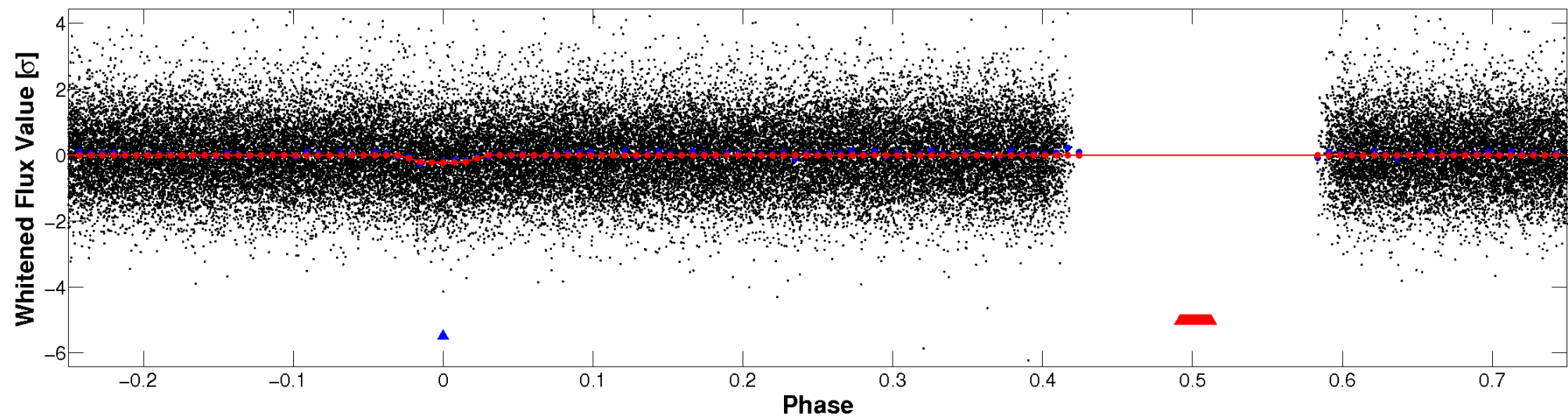


Non-Whitened Vs. Whitened Light Curve

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

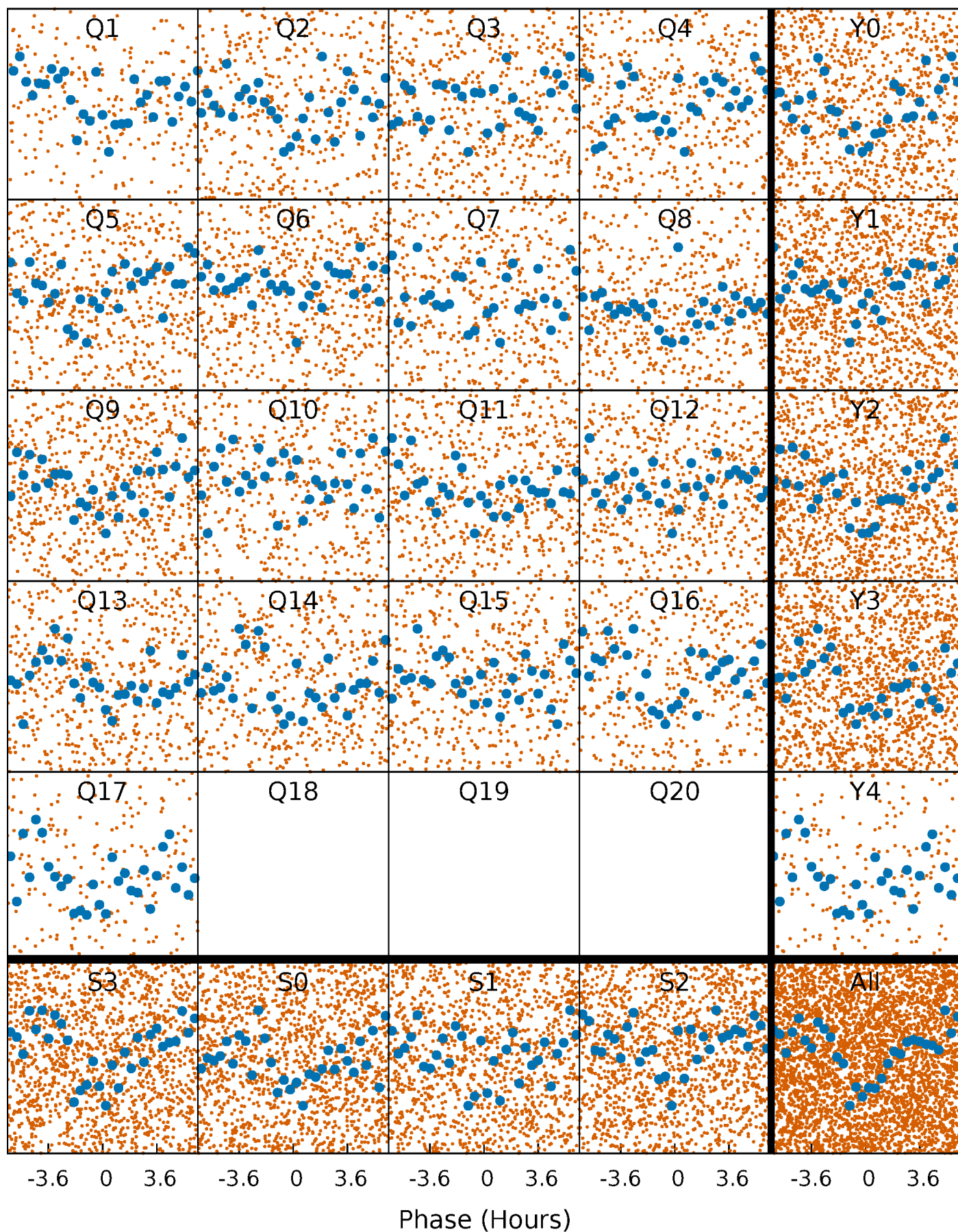


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



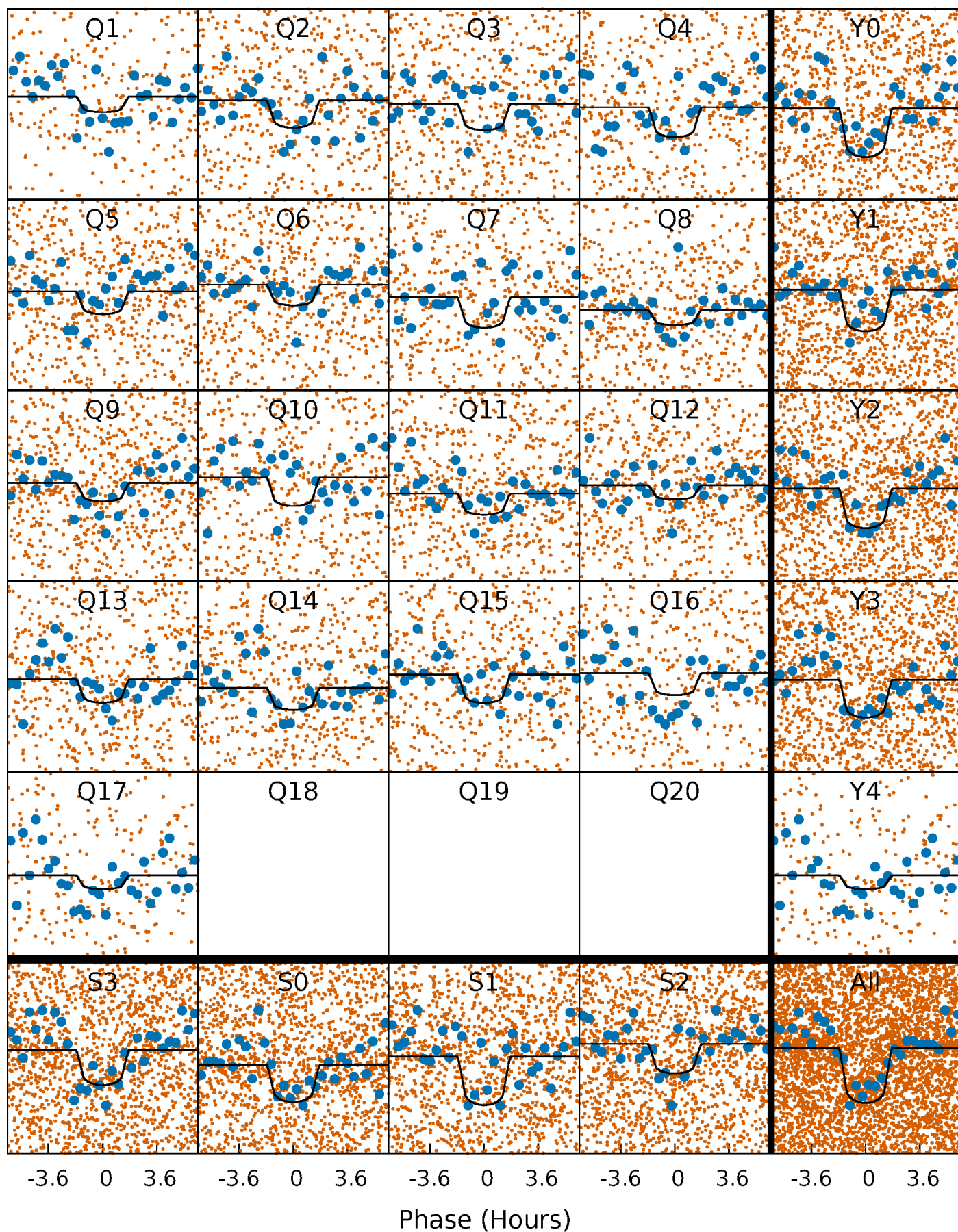
PDC Quarter-Phased Transit Curves

TCE 010518424-02 $P = 2.696409$ Days $T_0 = 131.625712$ (BKJD)



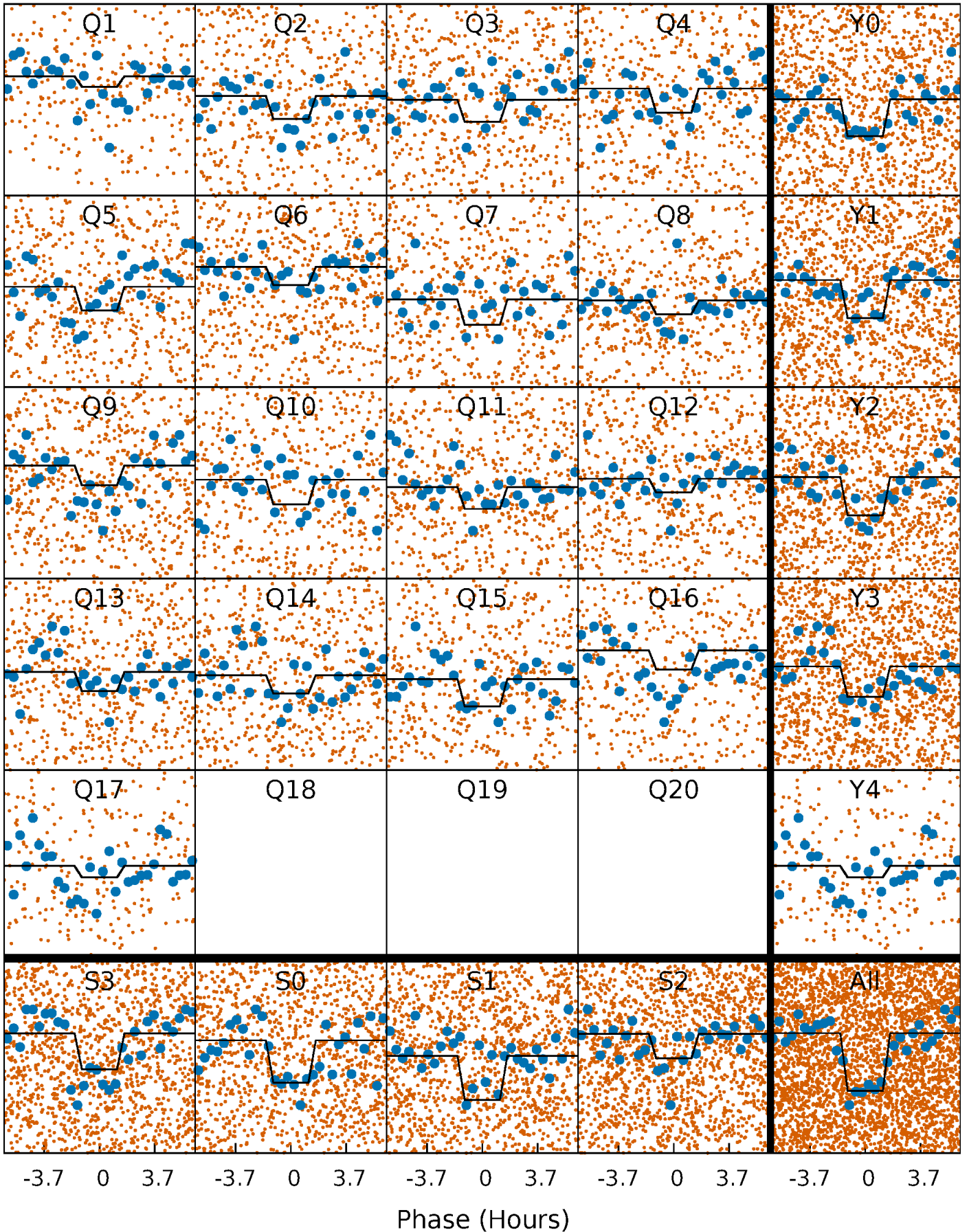
DV Quarter-Phased Transit Curves

TCE 010518424-02 P= 2.696409 Days $T_0=131.625712$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

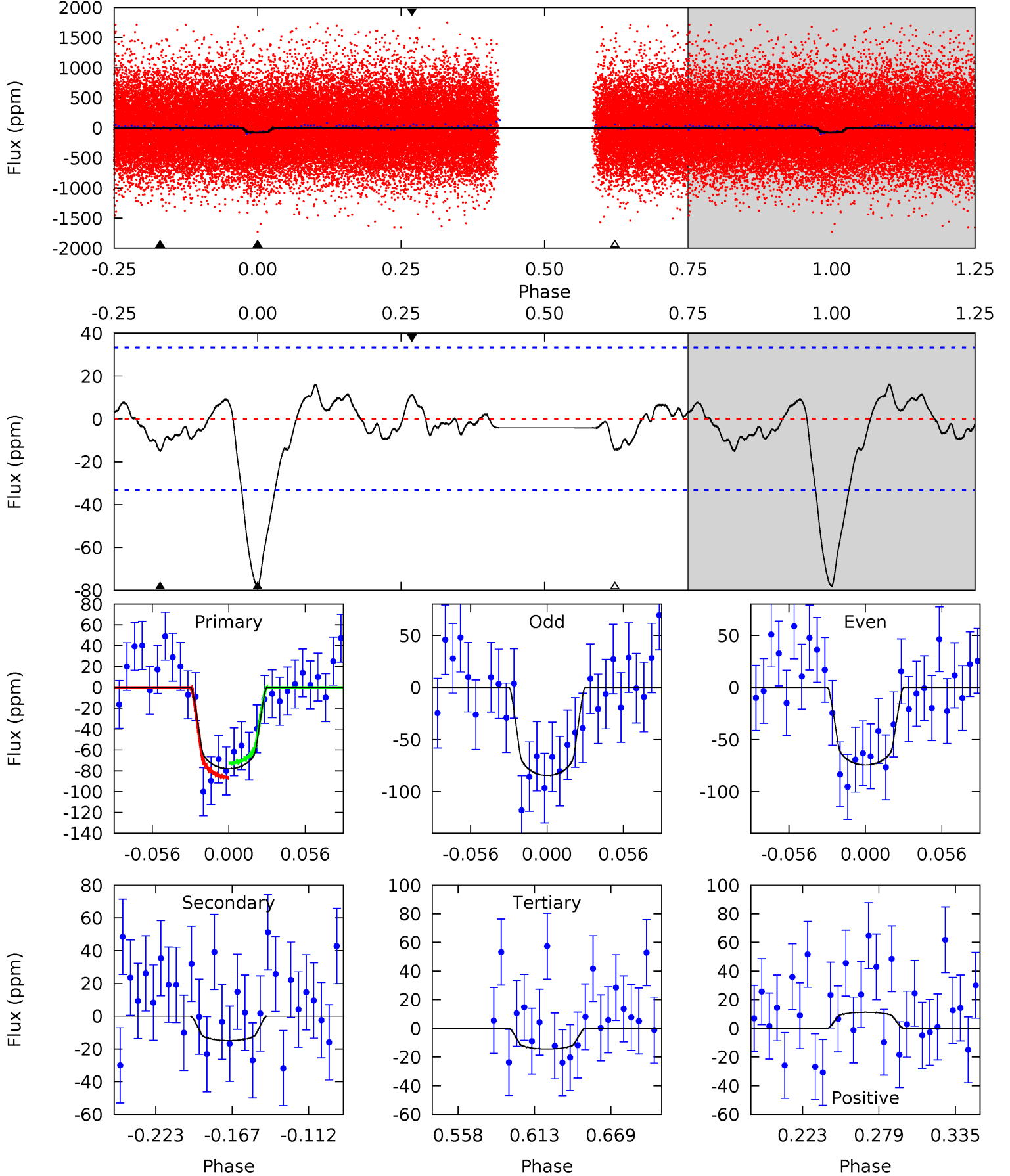
TCE 010518424-02 P= 2.696431 Days $T_0=131.619013$ (BKJD)



DV Model-Shift Uniqueness Test

010518424-02, P = 2.696409 Days, E = 128.929303 Days

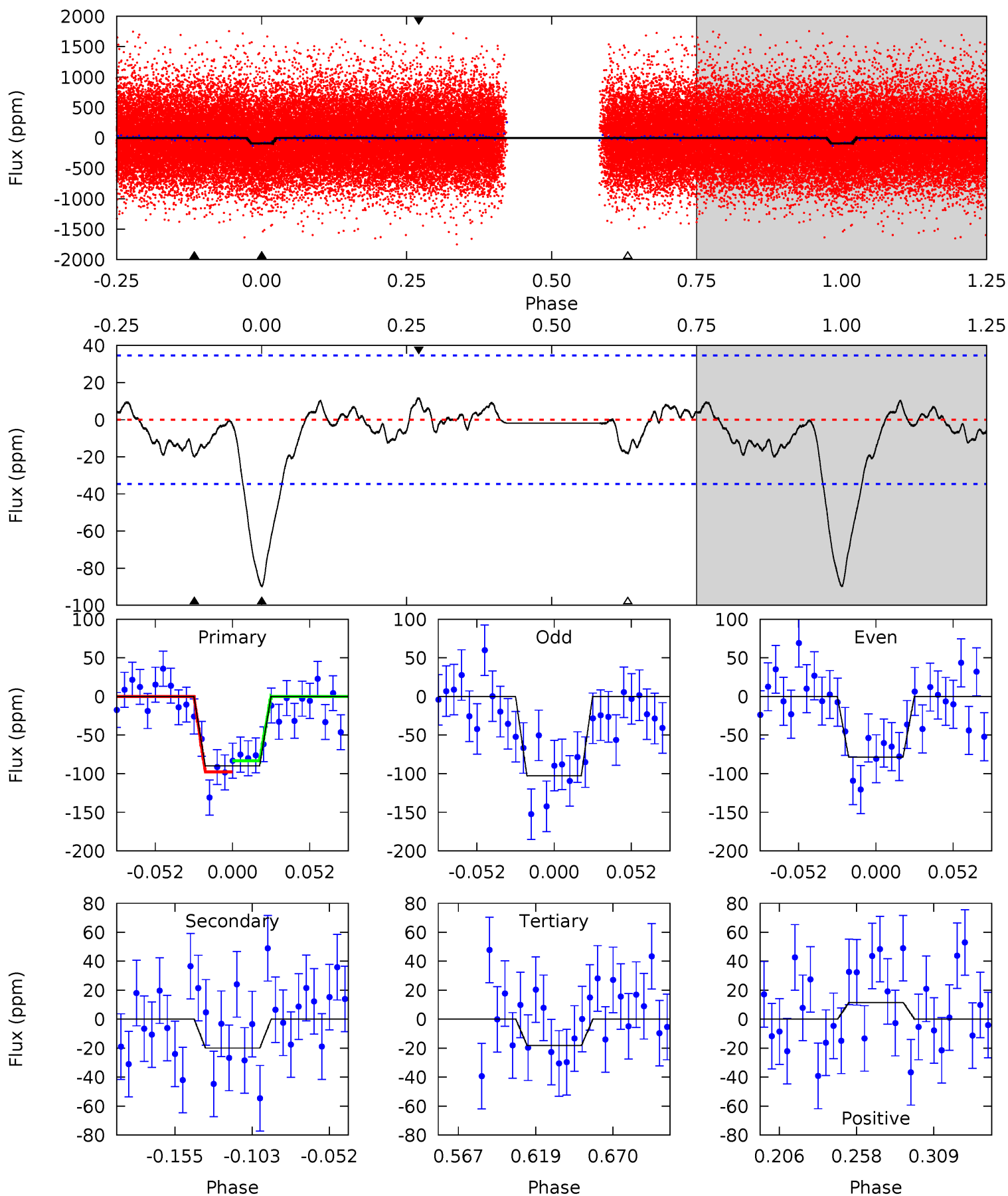
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.0	2.10	2.02	1.59	4.69	1.91	0.92	8.96	9.40	0.08	0.51	0.71	0.92	0.17	0.95



Alt Model-Shift Uniqueness Test

010518424-02, P = 2.696431 Days, E = 128.922582 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.2	2.70	2.47	1.56	4.70	1.95	0.96	9.73	10.6	0.23	1.14	1.64	0.88	0.11	0.98



Stellar Parameters For KIC 010518424

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6106^{+164}_{-201}	$4.496^{+0.054}_{-0.216}$	$-0.340^{+0.300}_{-0.300}$	$0.923^{+0.287}_{-0.096}$	$0.974^{+0.128}_{-0.115}$	$1.744^{+0.391}_{-0.937}$
	+3%/-3%	+1%/-5%	+88%/-88%	+31%/-10%	+13%/-12%	+22%/-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 010518424-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-15 ± 7	$1.15^{+0.67}_{-0.59}$	1899^{+139}_{-85}	3921^{+1385}_{-699}	$8.792^{+29.391}_{-6.297}$
Alt.	-20 ± 7	$1.02^{+0.69}_{-0.60}$	1904^{+151}_{-94}	4315^{+2127}_{-723}	14^{+65}_{-10}

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

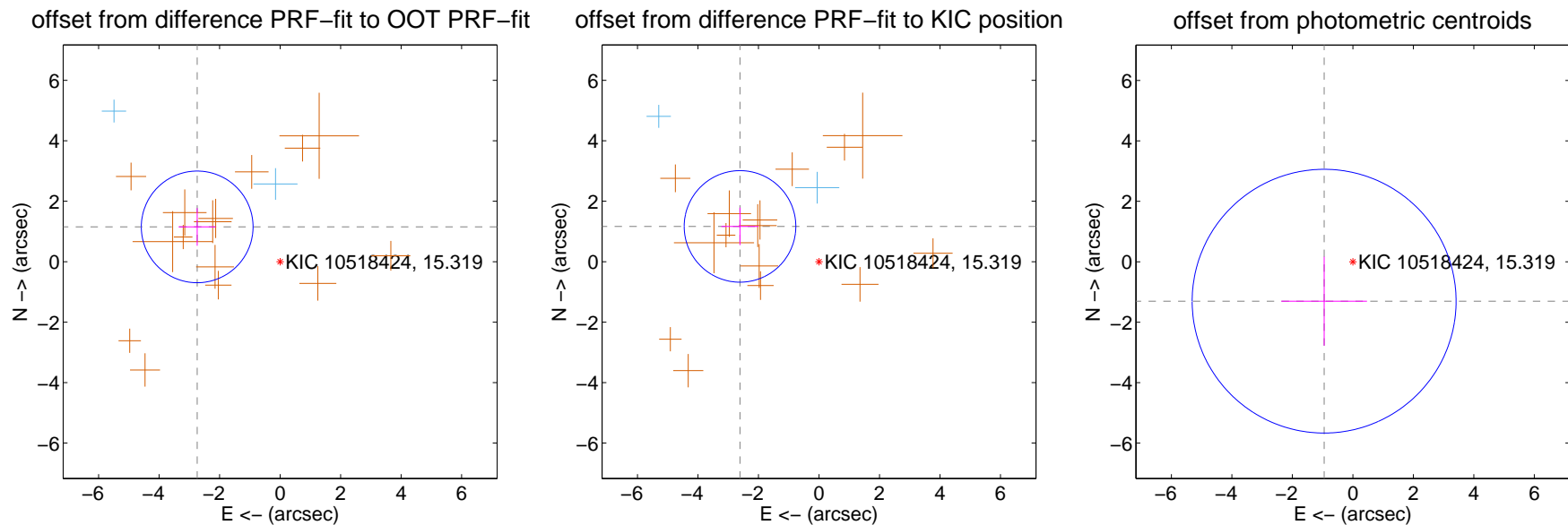
DV Centroid Data

Supplemental centroid analysis for 010518424-02. Kepler magnitude: 15.32. Transit SNR 10.40

There are 2 quarters with good PRF difference image offsets

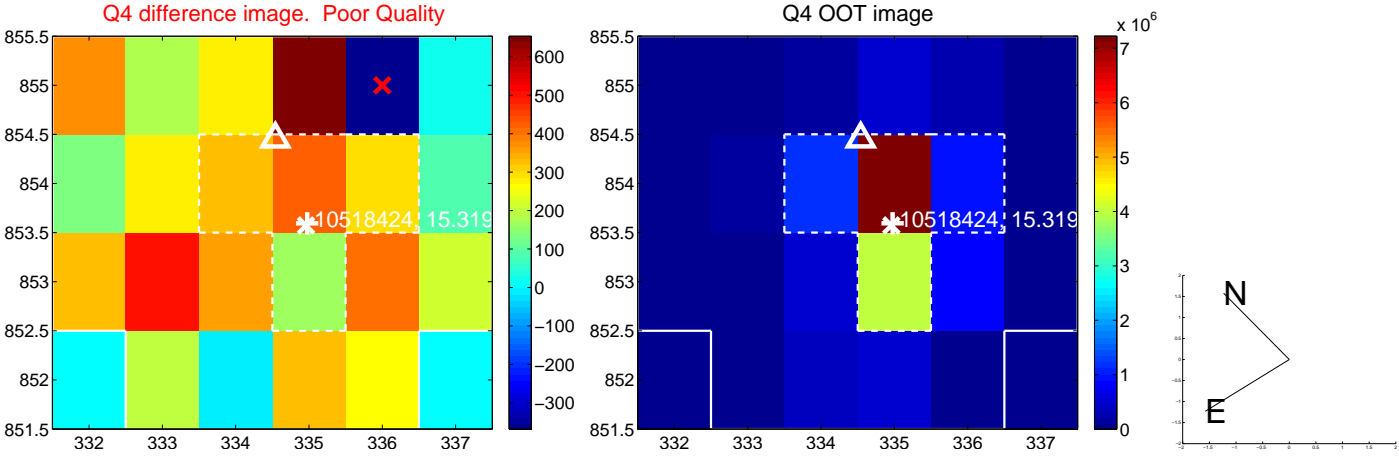
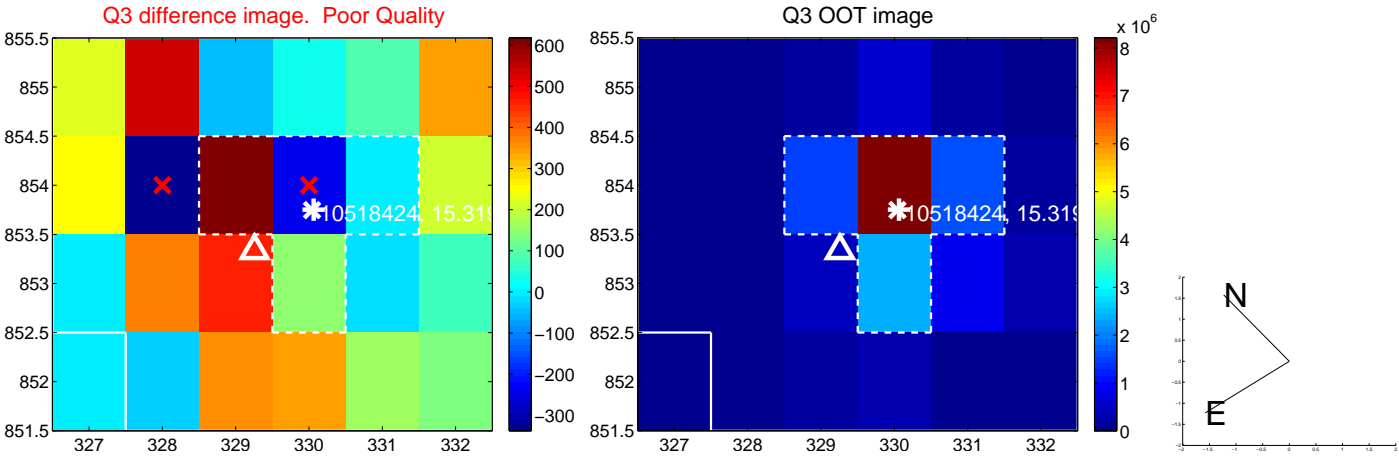
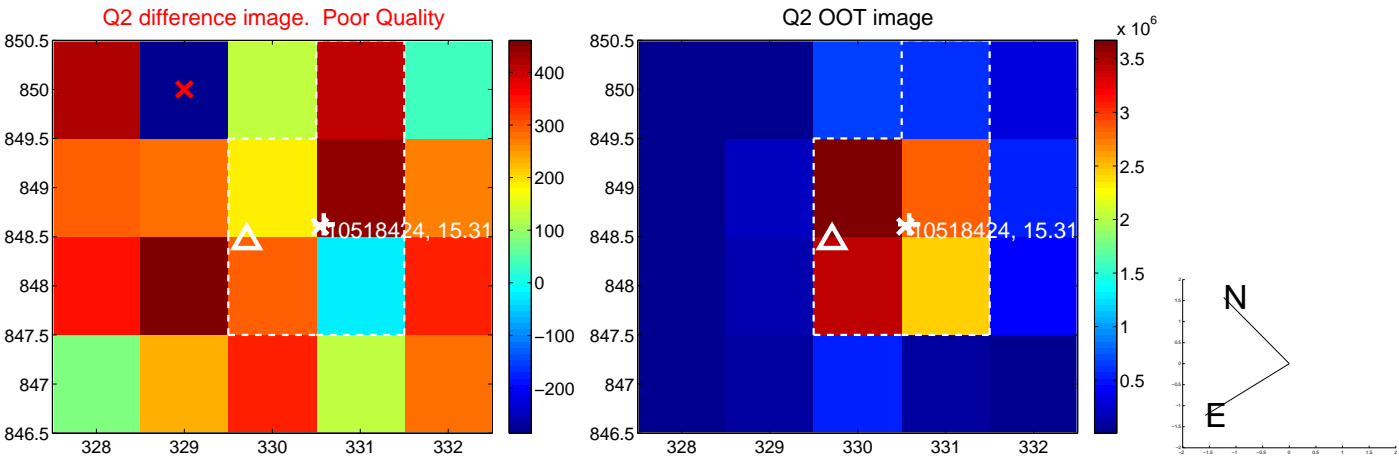
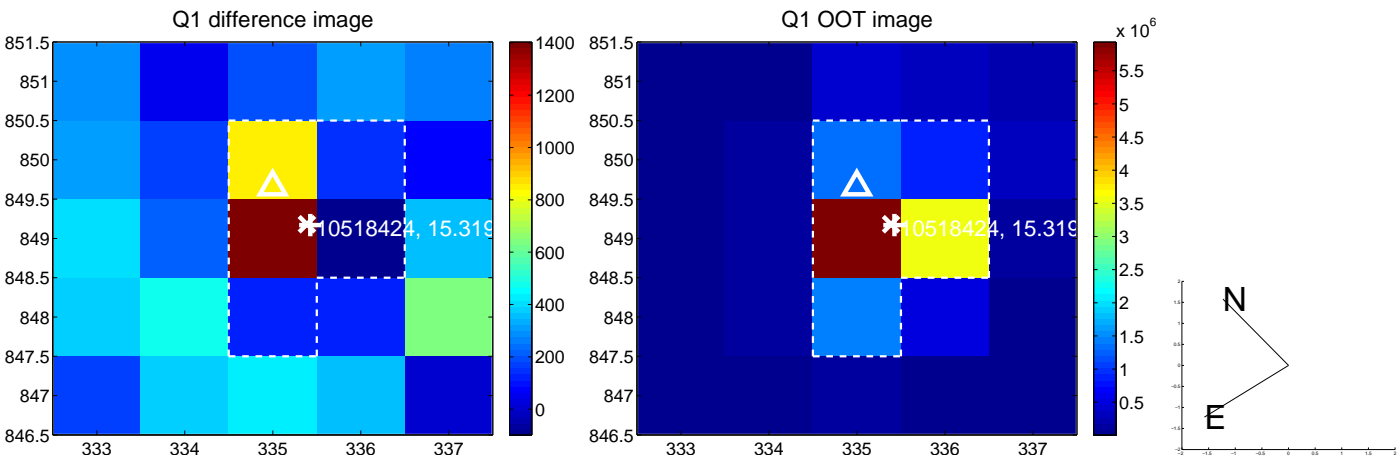
The direct PRF centroid is offset from the target star catalog position by about 0.10 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	2.973 ± 0.616	4.83	2.741 ± 0.614	1.151 ± 0.623
PRF-fit source offset from KIC position	2.859 ± 0.615	4.65	2.610 ± 0.614	1.167 ± 0.619
photometric centroid source offset	1.61 ± 1.45	1.11	0.95 ± 1.42	-1.30 ± 1.47

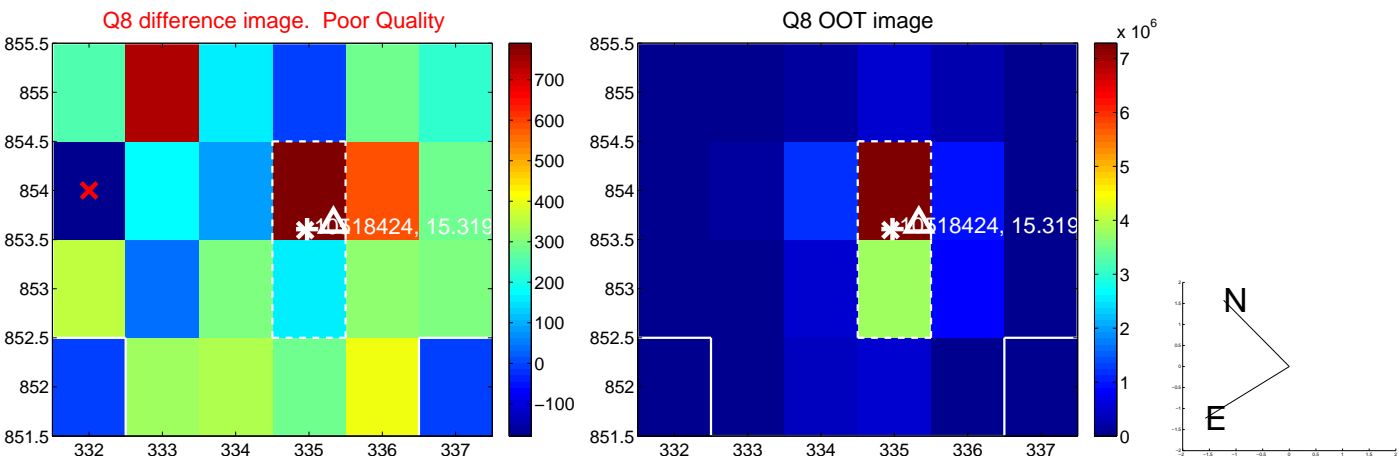
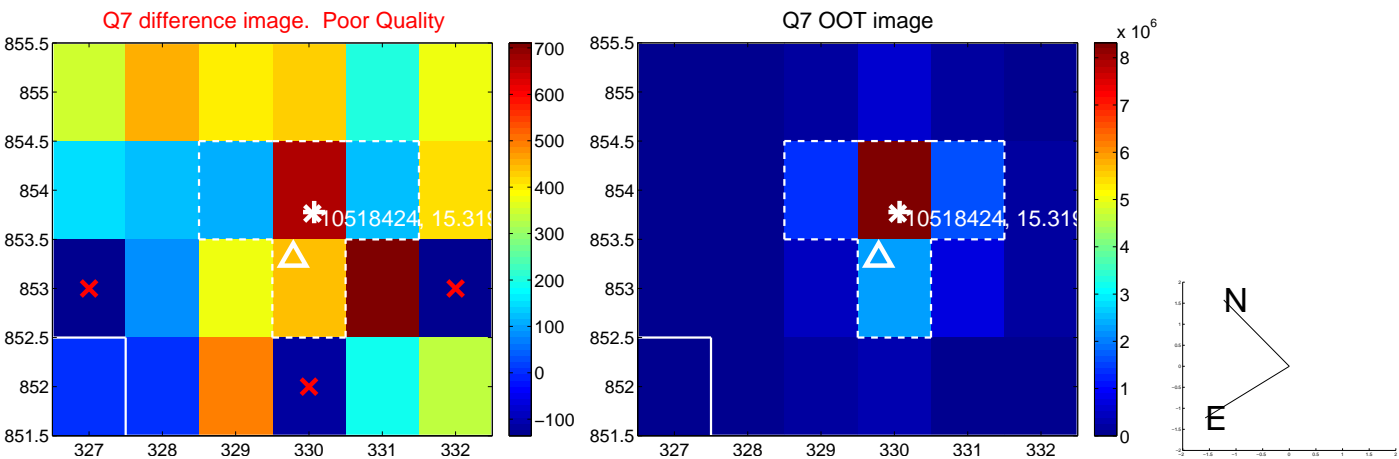
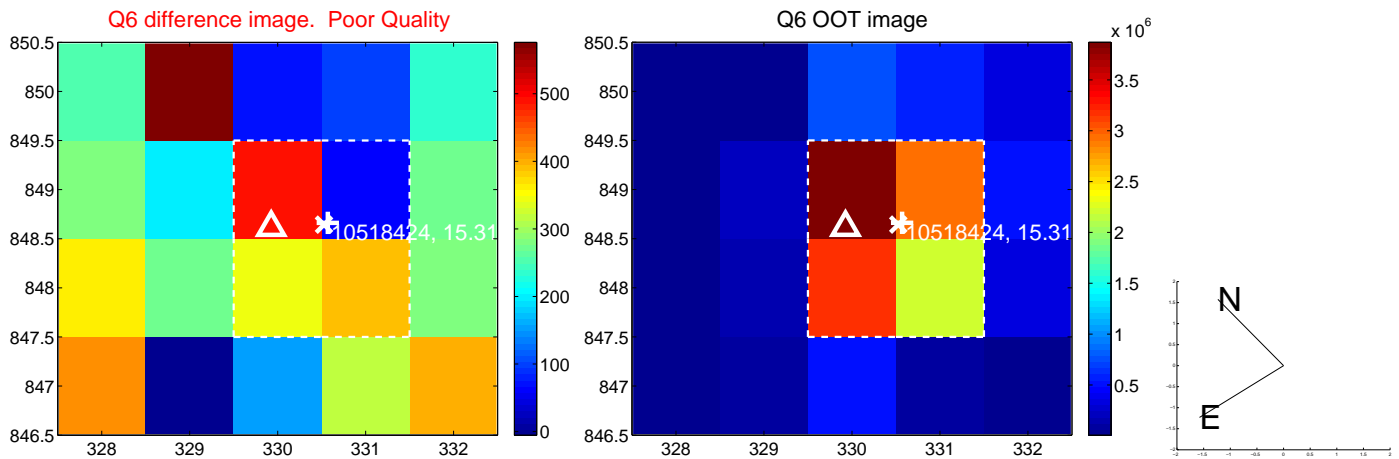
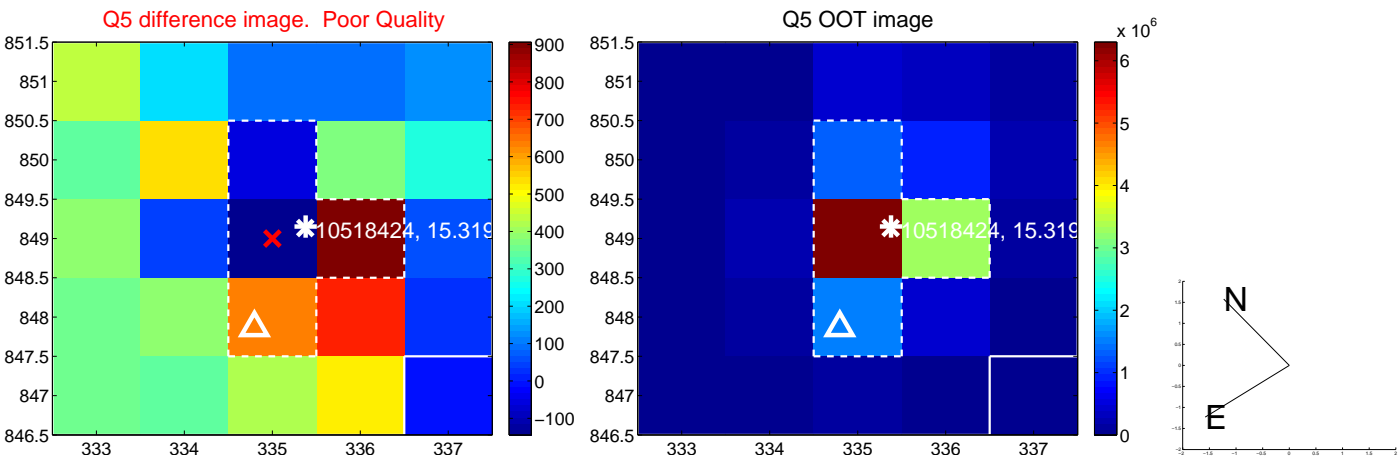


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

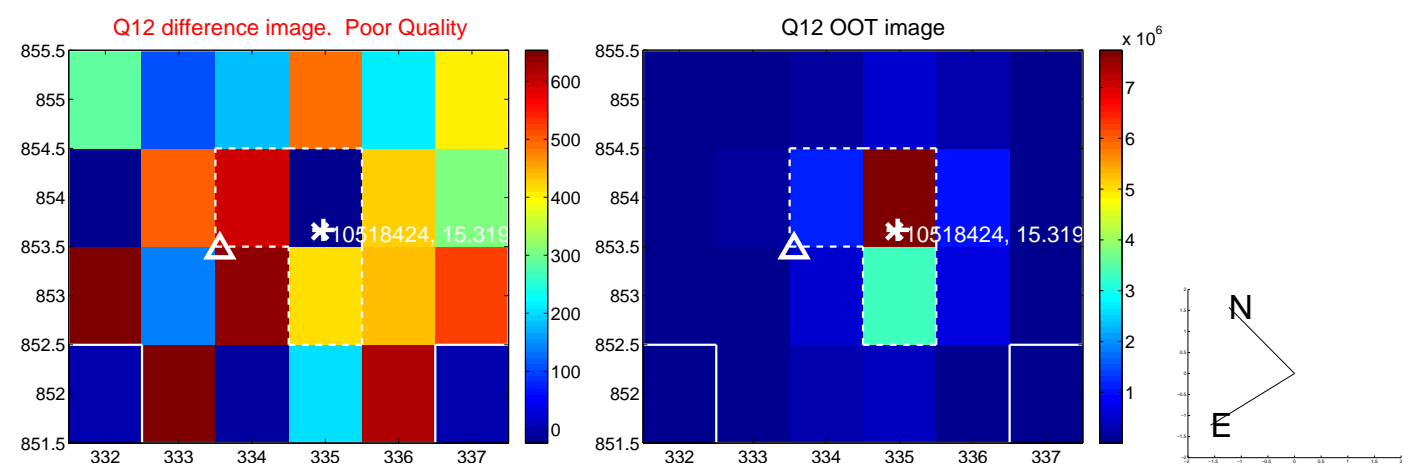
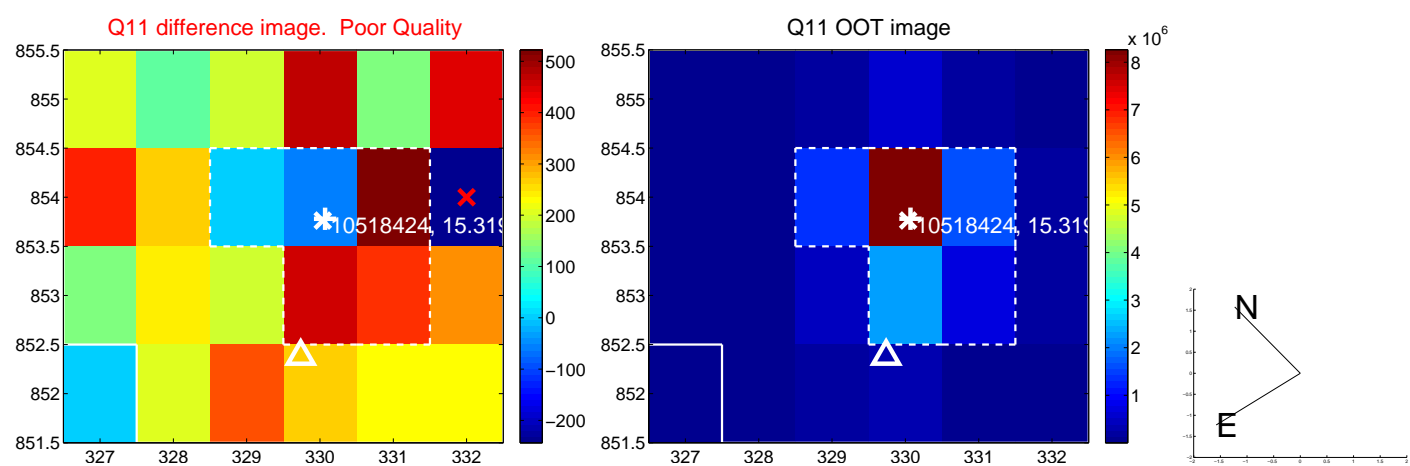
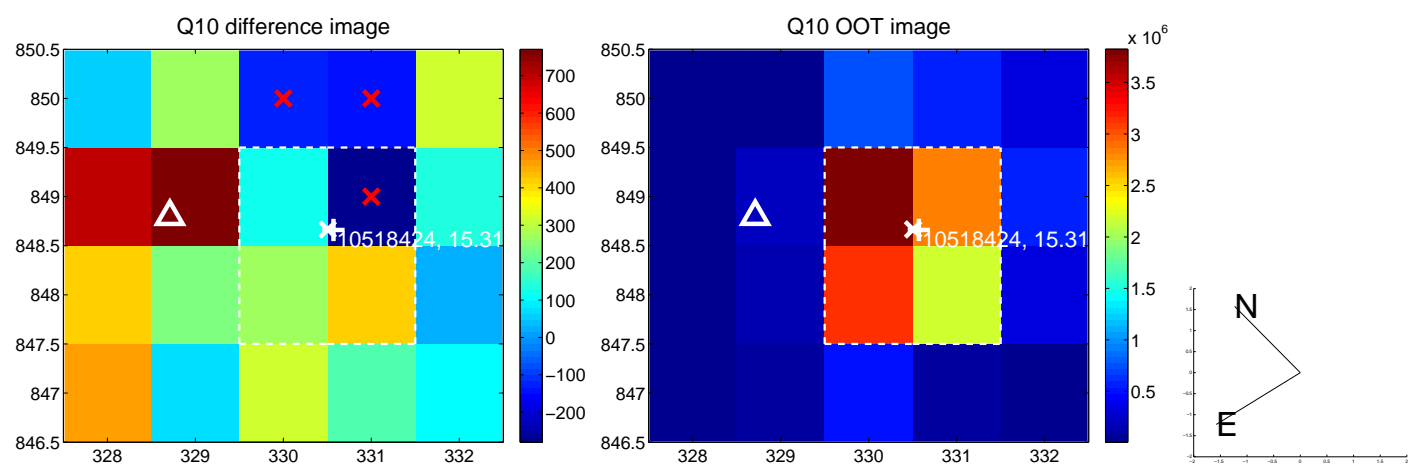
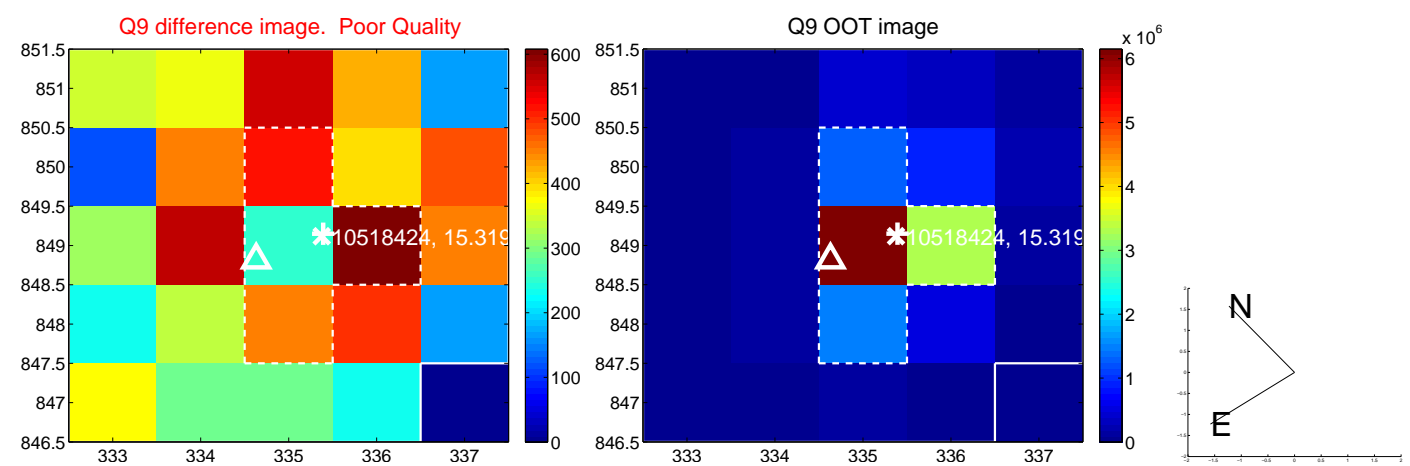
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



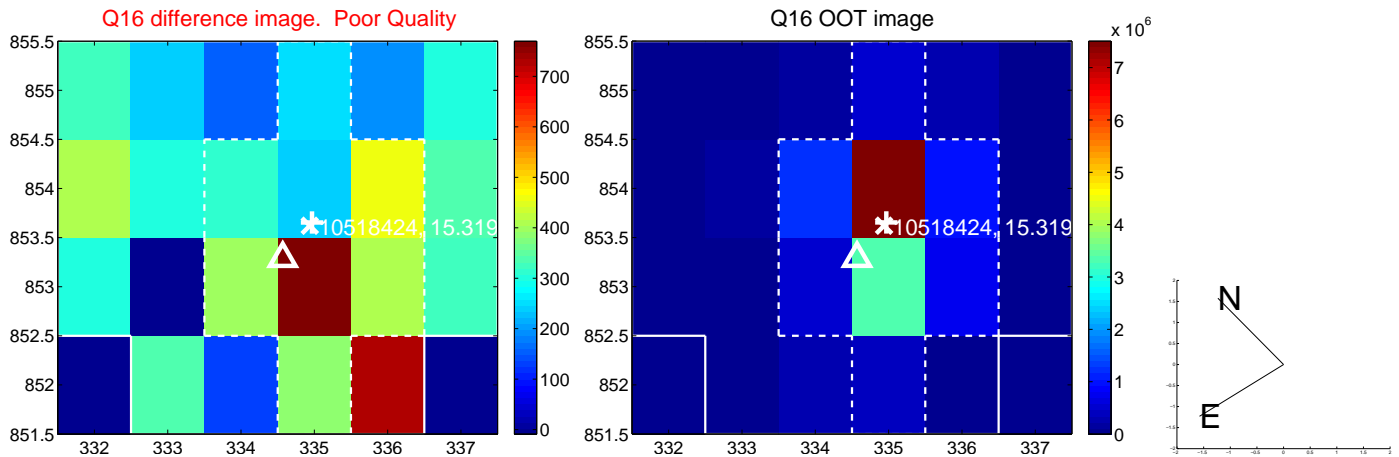
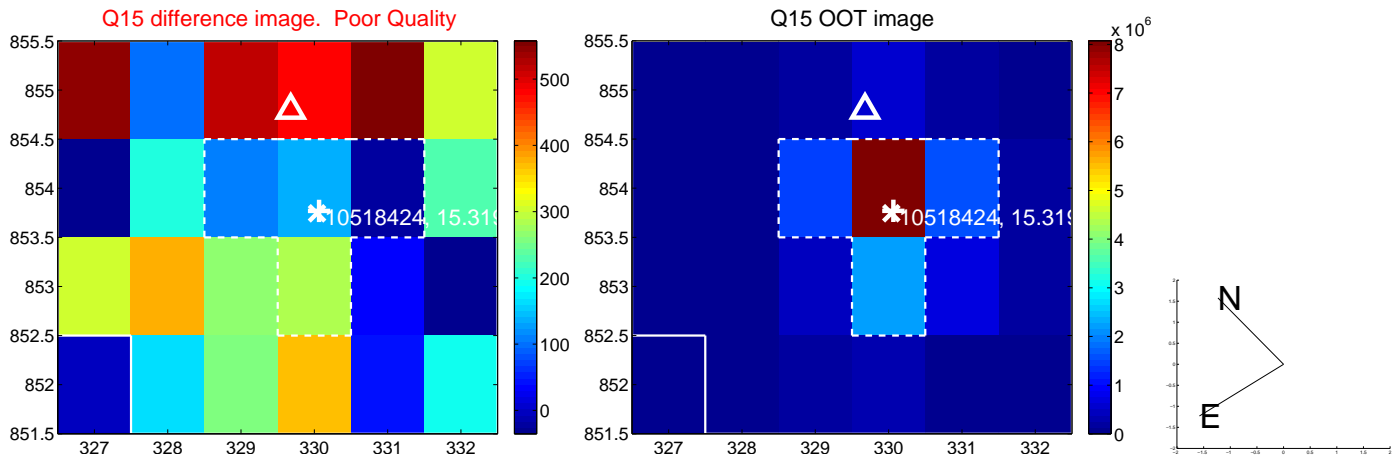
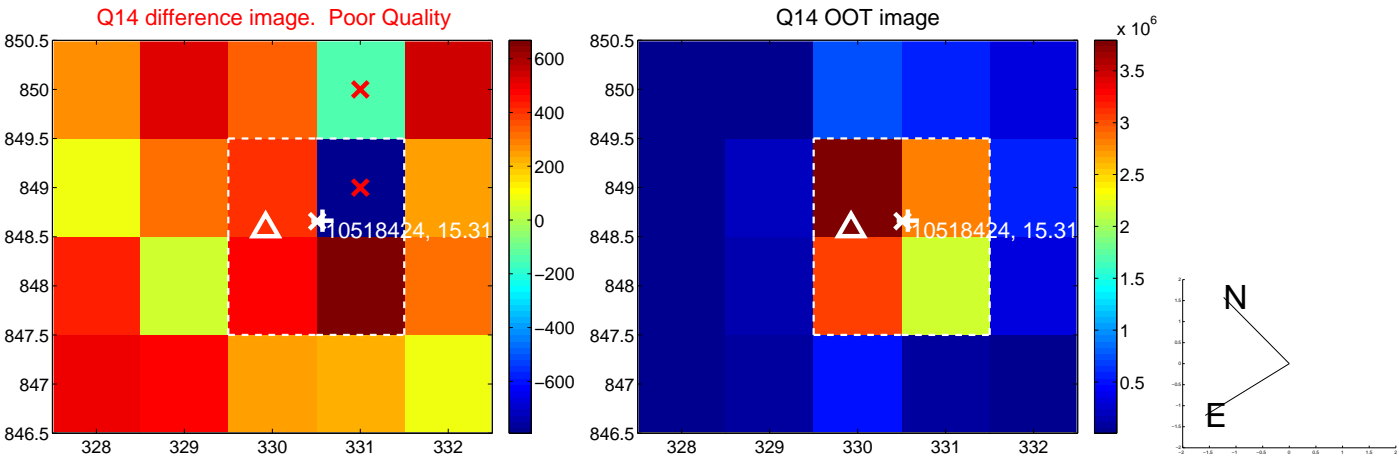
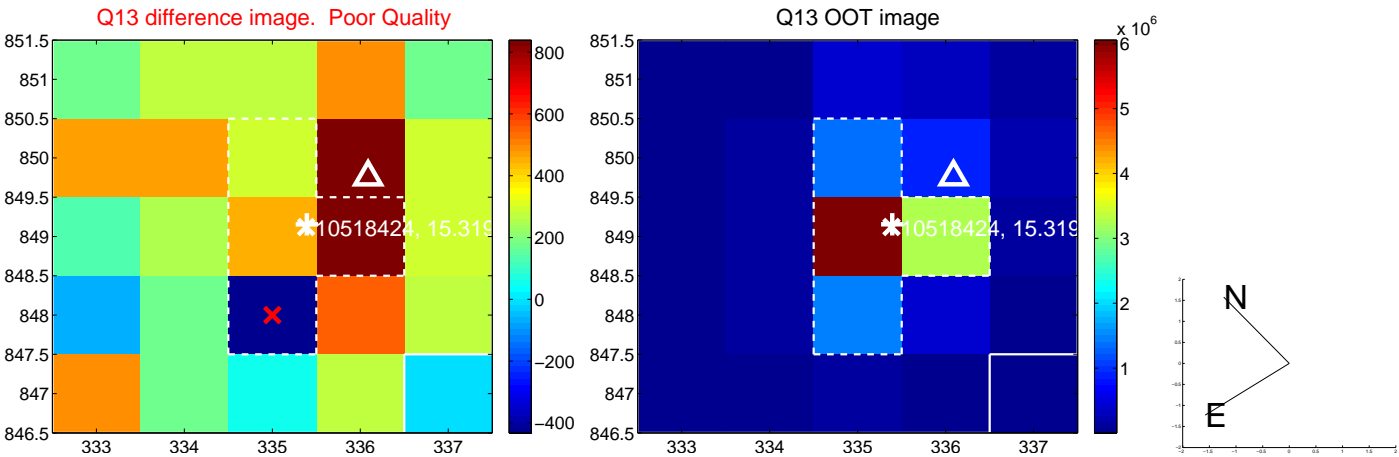
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



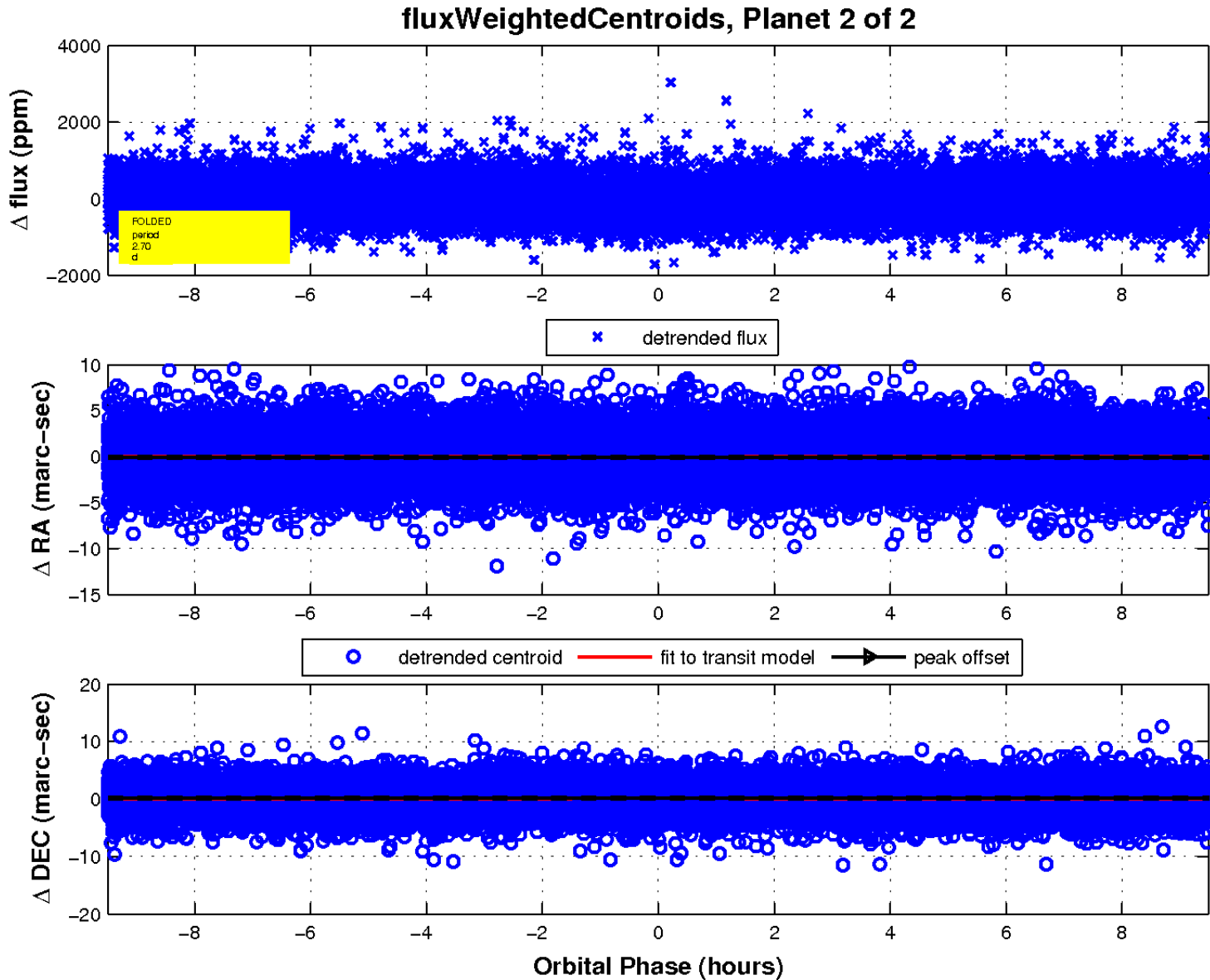
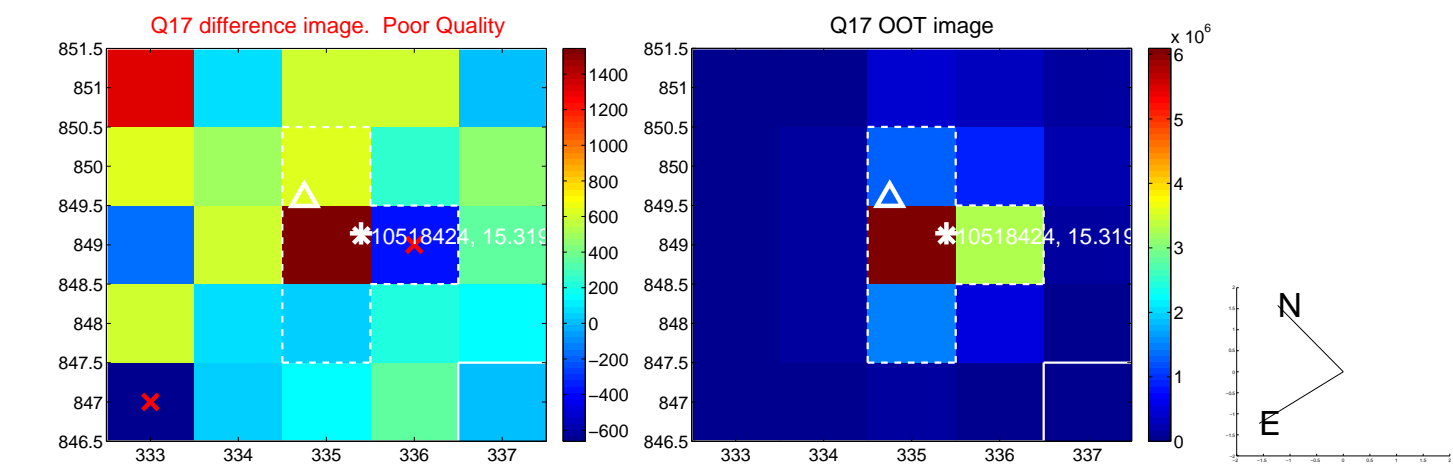
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image

Declination

