

KIC 004574319

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})
004574319-01	OBS	7697.01	1.306270	132.081961	94.1	4.862	8.4	8.5	0.86	5513	0.97	1166.11
004574319-02	OBS	No	192.998825	219.717144	997.5	6.293	12.1	7.1	0.86	5513	2.95	1.49

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004574319-01	OBS	FP	0.00	0	0	1	1	HALO_GHOST—EPHEM_MATCH
004574319-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS—HALO_GHOST

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.

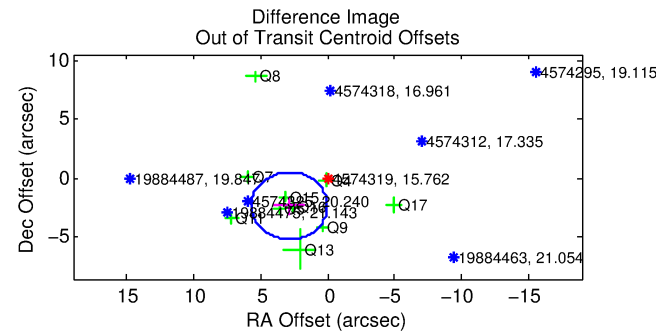
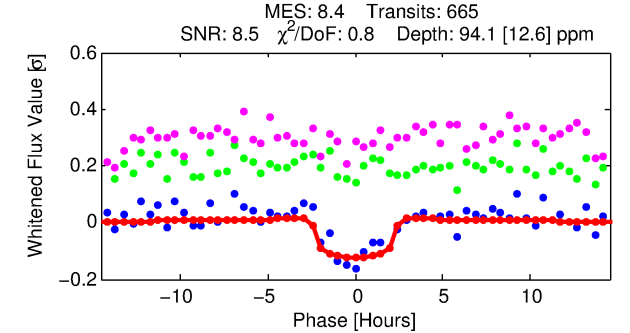
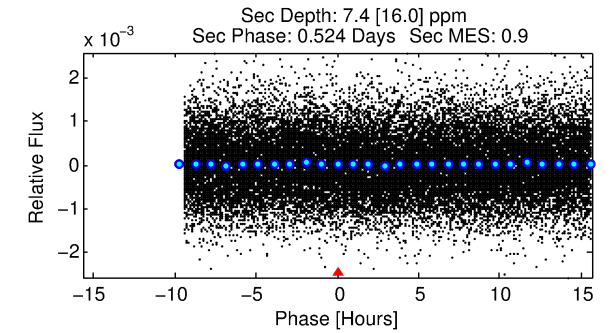
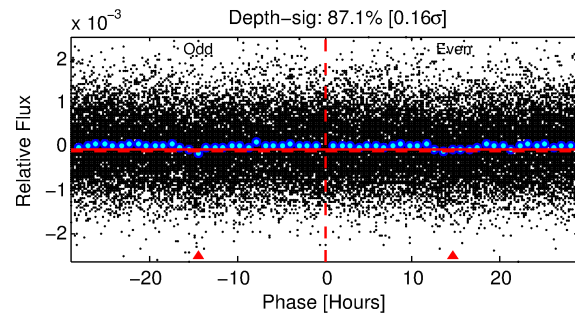
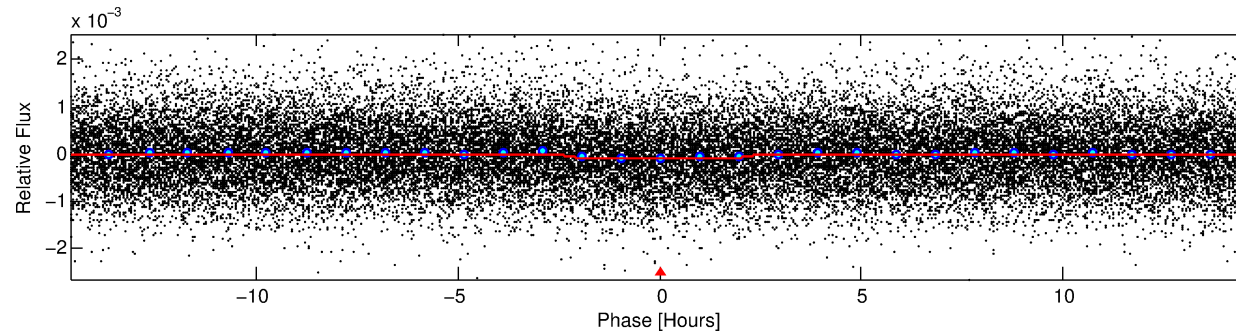
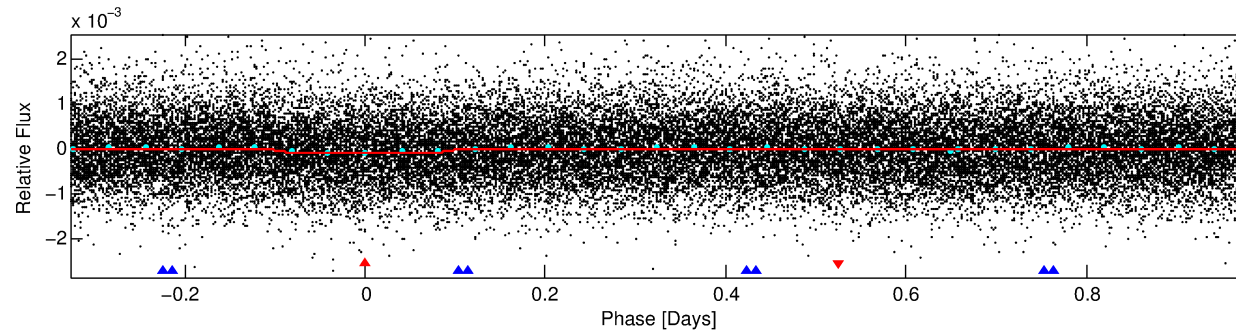
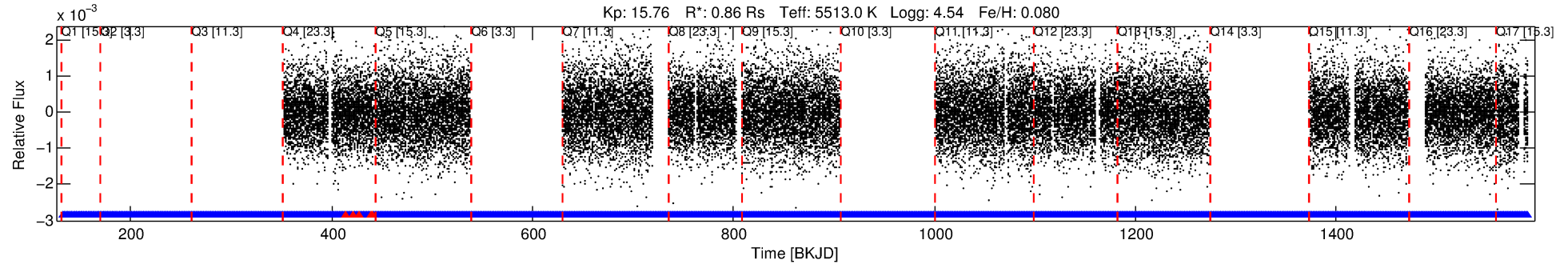
Ephemeris Match Information For 004574319-01

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
004574319-01	4574319	6427.01	4574310	1:1	47.1	-11	4	13.24	15.76	5191.20	Direct-PRF	0	3.21	2.00

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: 4574319 Candidate: 1 of 2 Period: 1.306 d



DV Fit Results:

Period = 1.30627 [0.00002] d
Epoch = 132.0820 [0.0064] BKJD
Rp/R* = 0.0103 [0.0085]
a/R* = 1.43 [2.59]
b = 0.86 [1.12]
Seff = 1166.11 [387.99]
Teff = 1490 [124] K
Rp = 0.97 [0.83] Re
a = 0.0230 [0.0048] AU
Ag = 2.30 [6.31] [0.21 σ]
Teffp = 2838 [1934] K [0.70 σ]

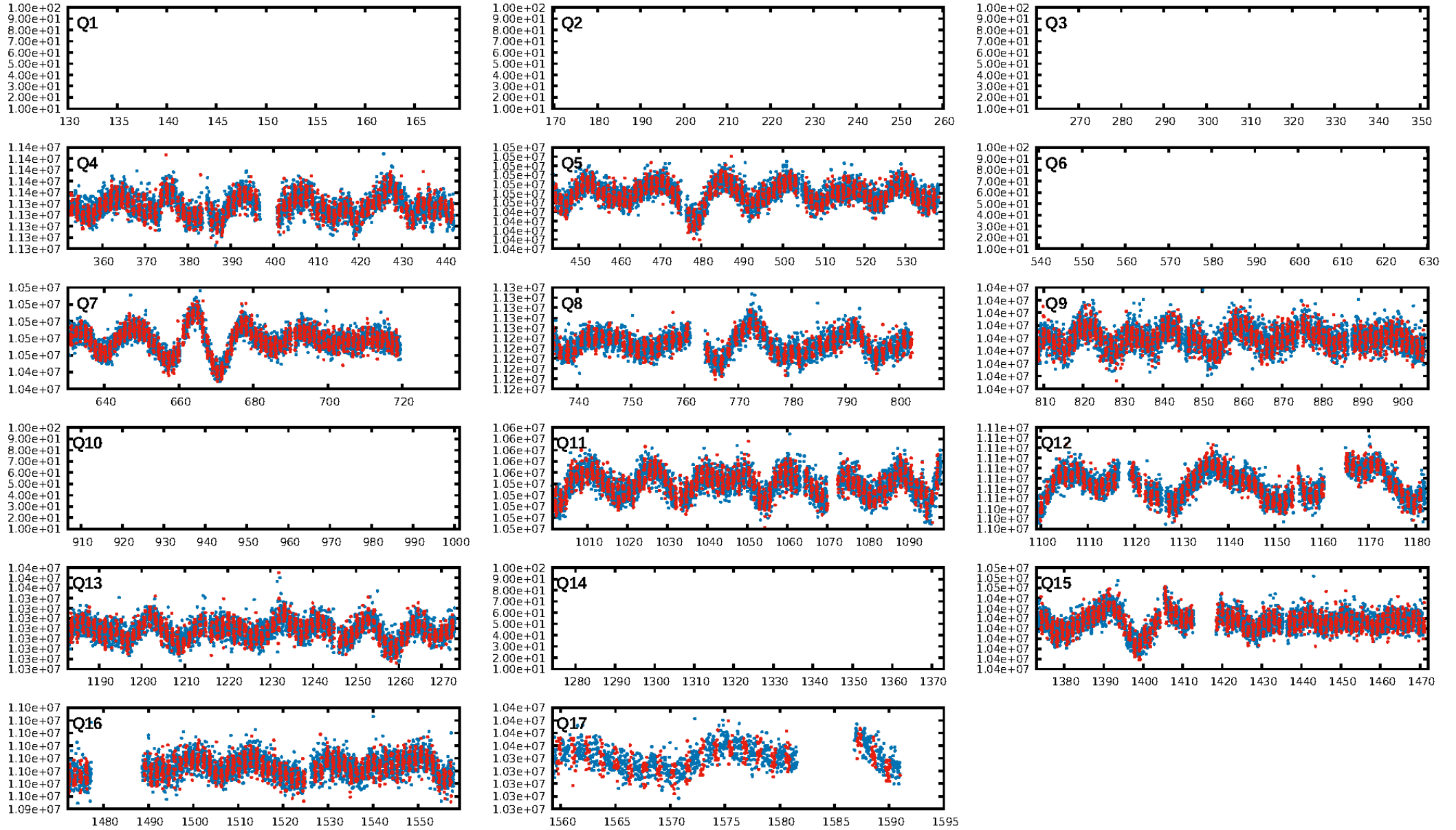
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [578.47 σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 3.88e-17
RollingBand-fgt: 0.99 [640/645]
GhostDiagnostic-chr: 0.1141
Centroid-sig: 0.0%
Centroid-so: 5.193 arcsec [3.49 σ]
OotOffset-rm: 3.676 arcsec [3.88 σ]
KicOffset-rm: 3.437 arcsec [3.48 σ]
OotOffset-st: 0/3/3/4 [10]
KicOffset-st: 0/3/3/4 [10]
DiffImageQuality-fgm: 0.00 [0/10]
DiffImageOverlap-fno: 1.00 [11/11]

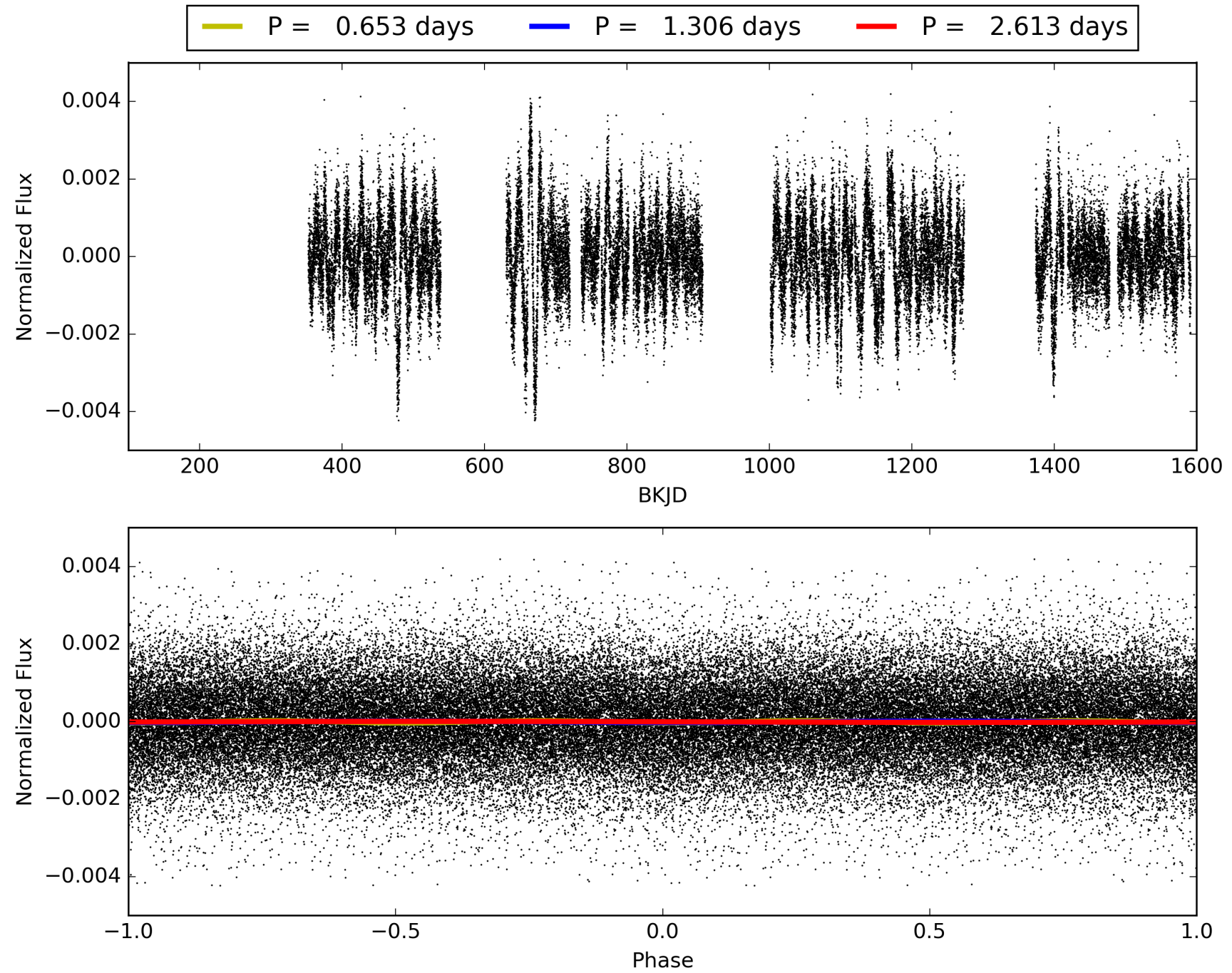
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 06:48:26 Z

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

TCE 004574319-01, PDC Light Curves

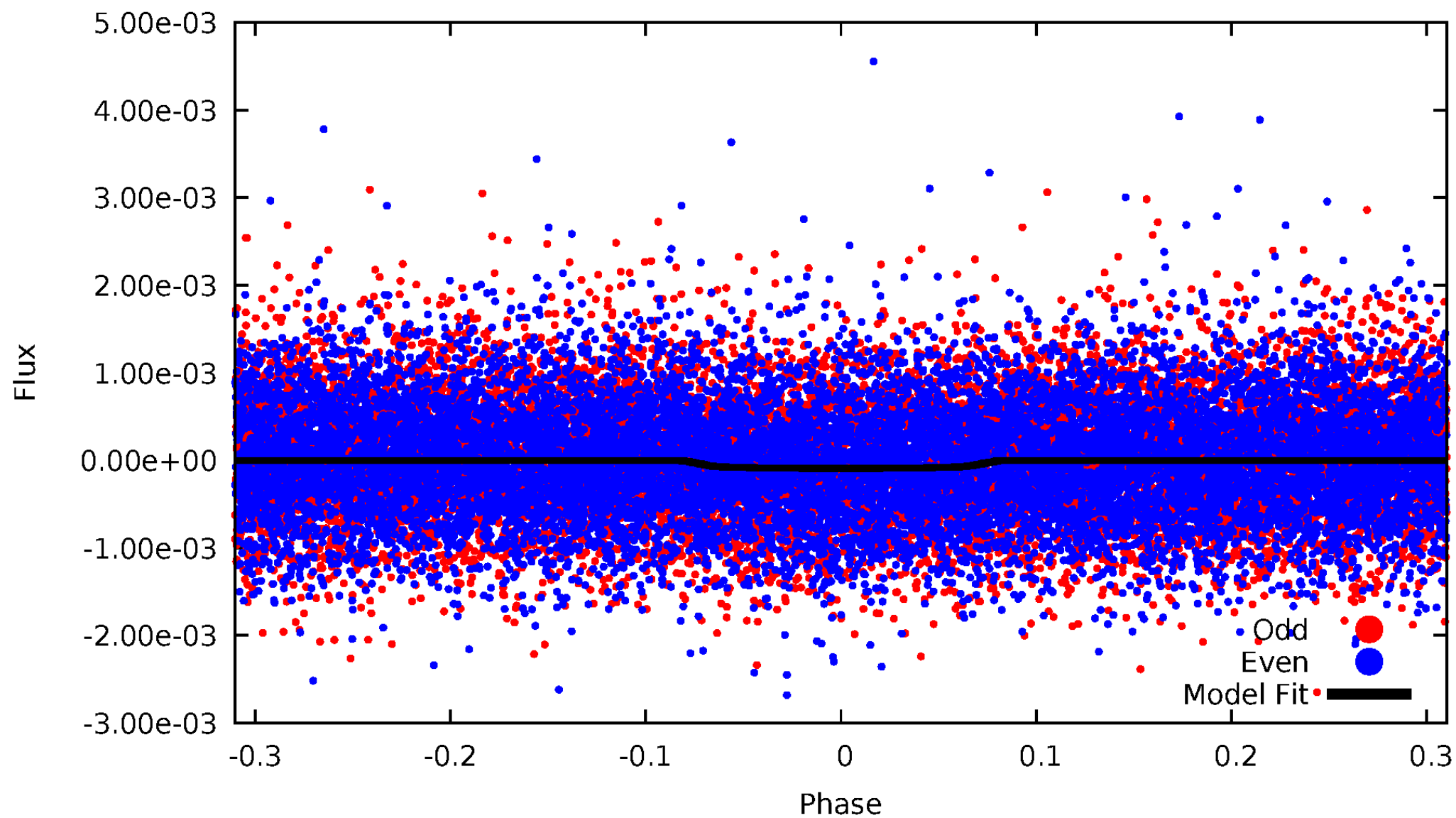


TCE 004574319-01



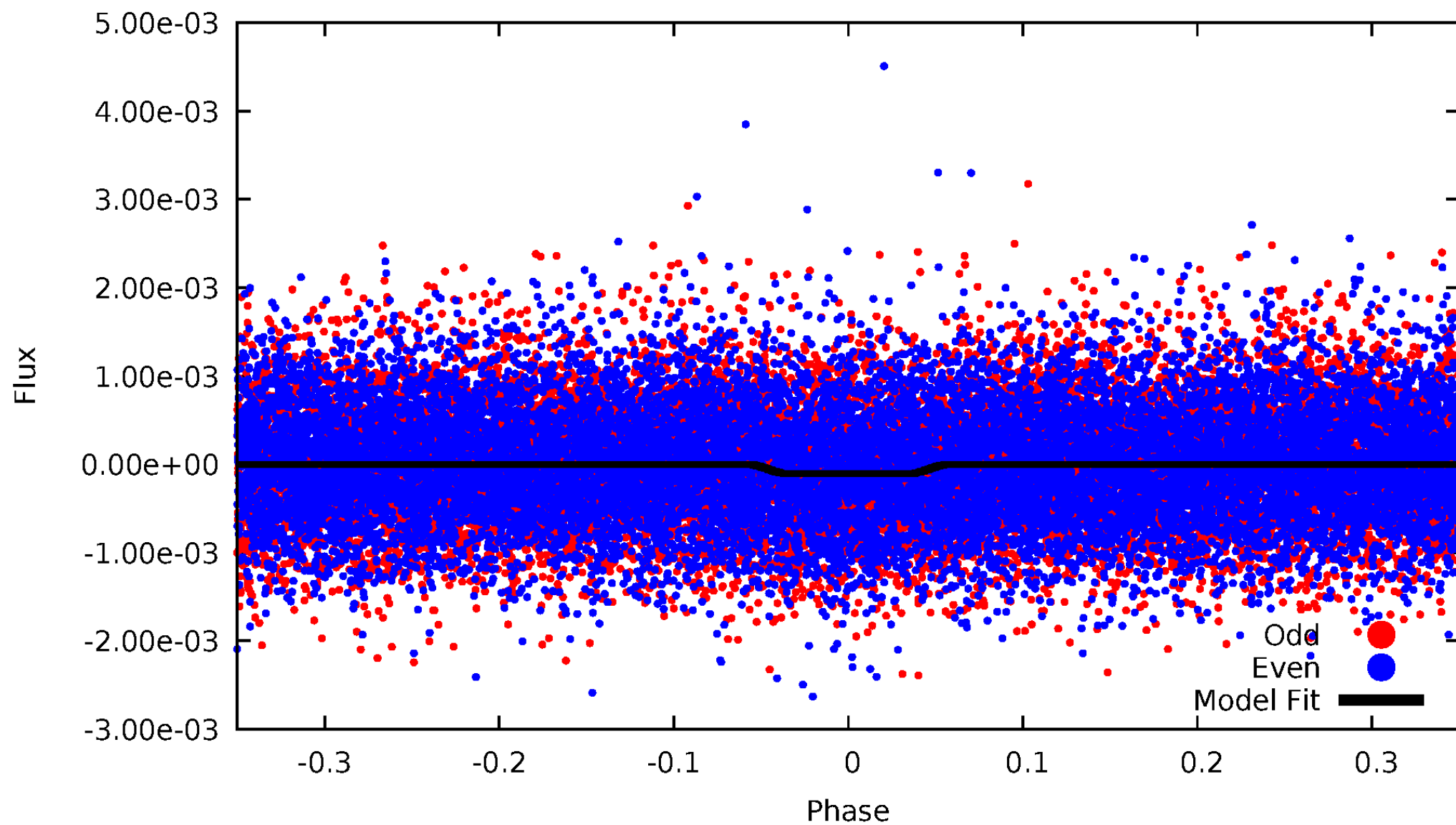
DV Odd/Even

TCE 004574319-01



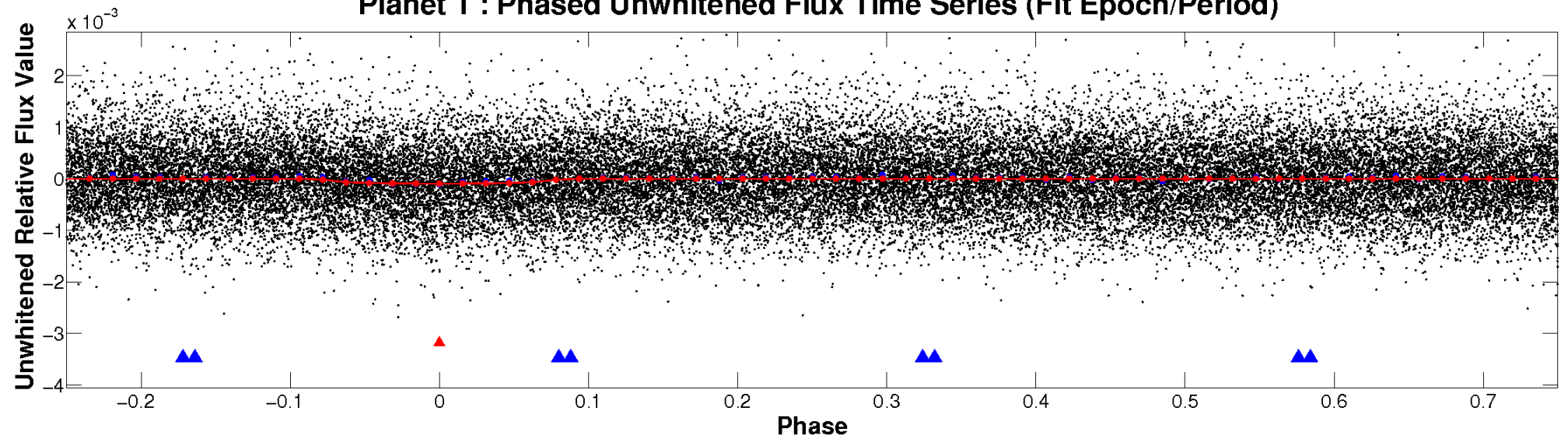
ALT Odd/Even

TCE 004574319-01

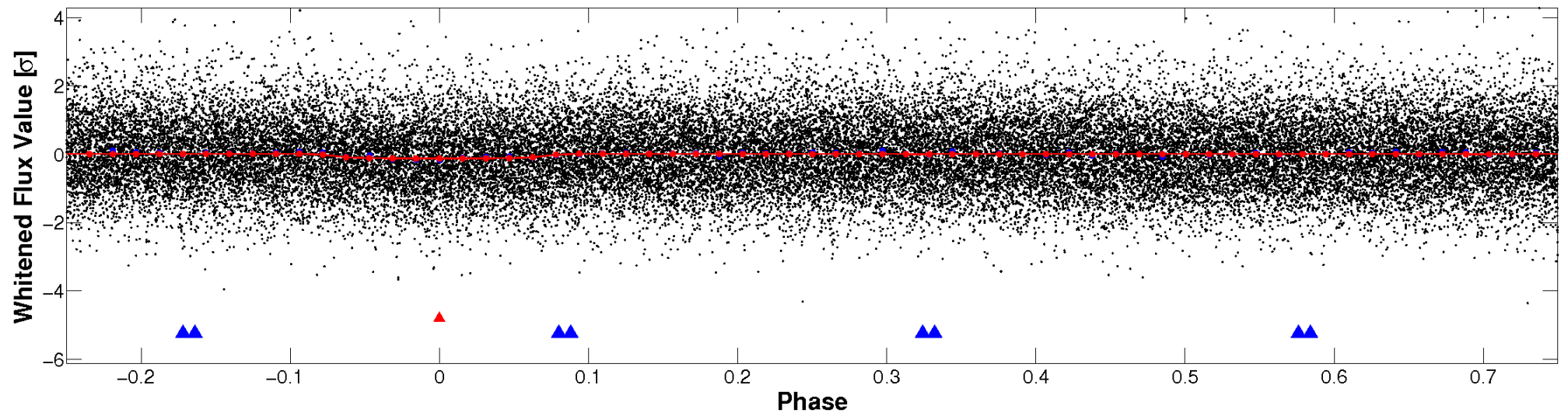


Non-Whitened Vs. Whitened Light Curve

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

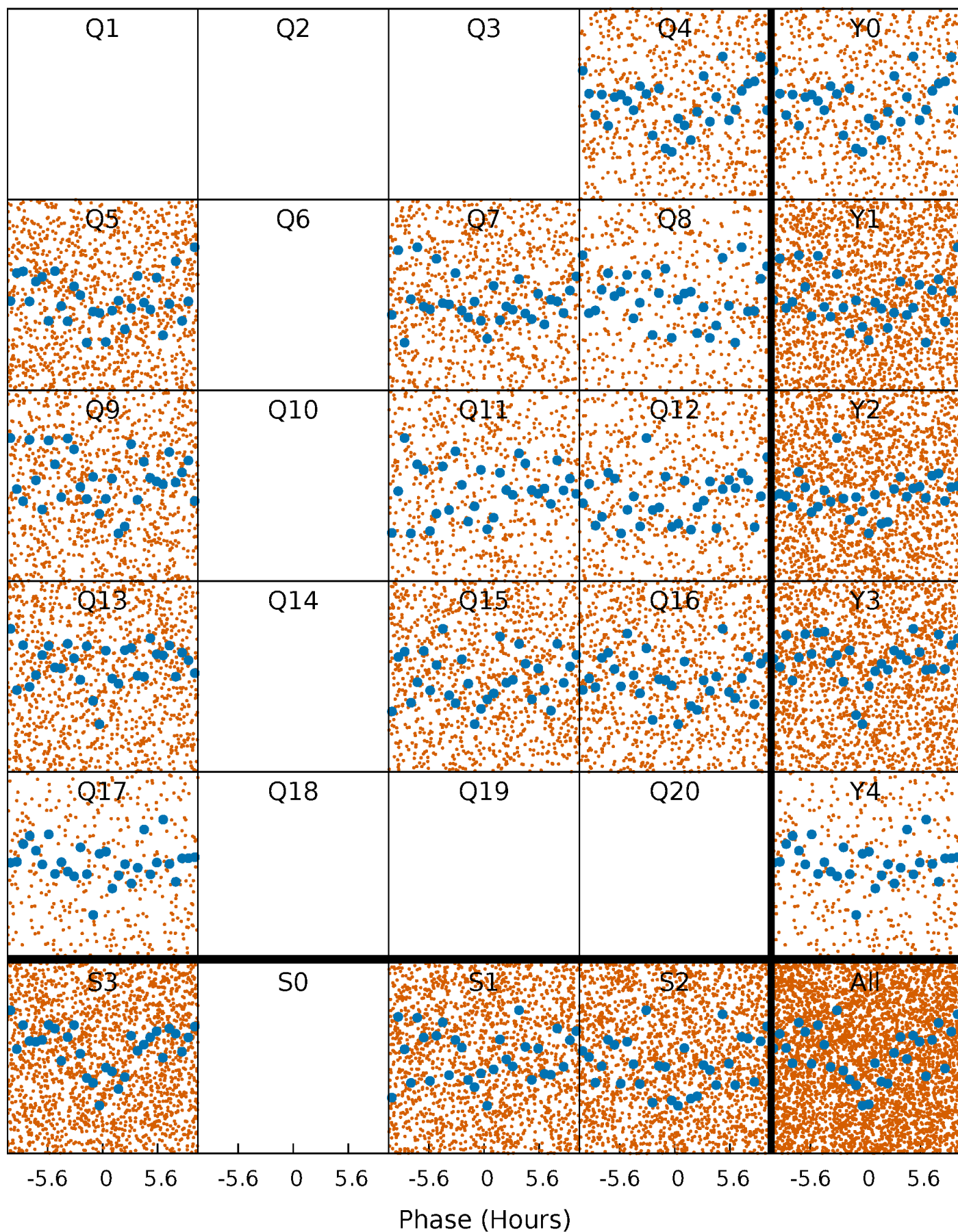


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



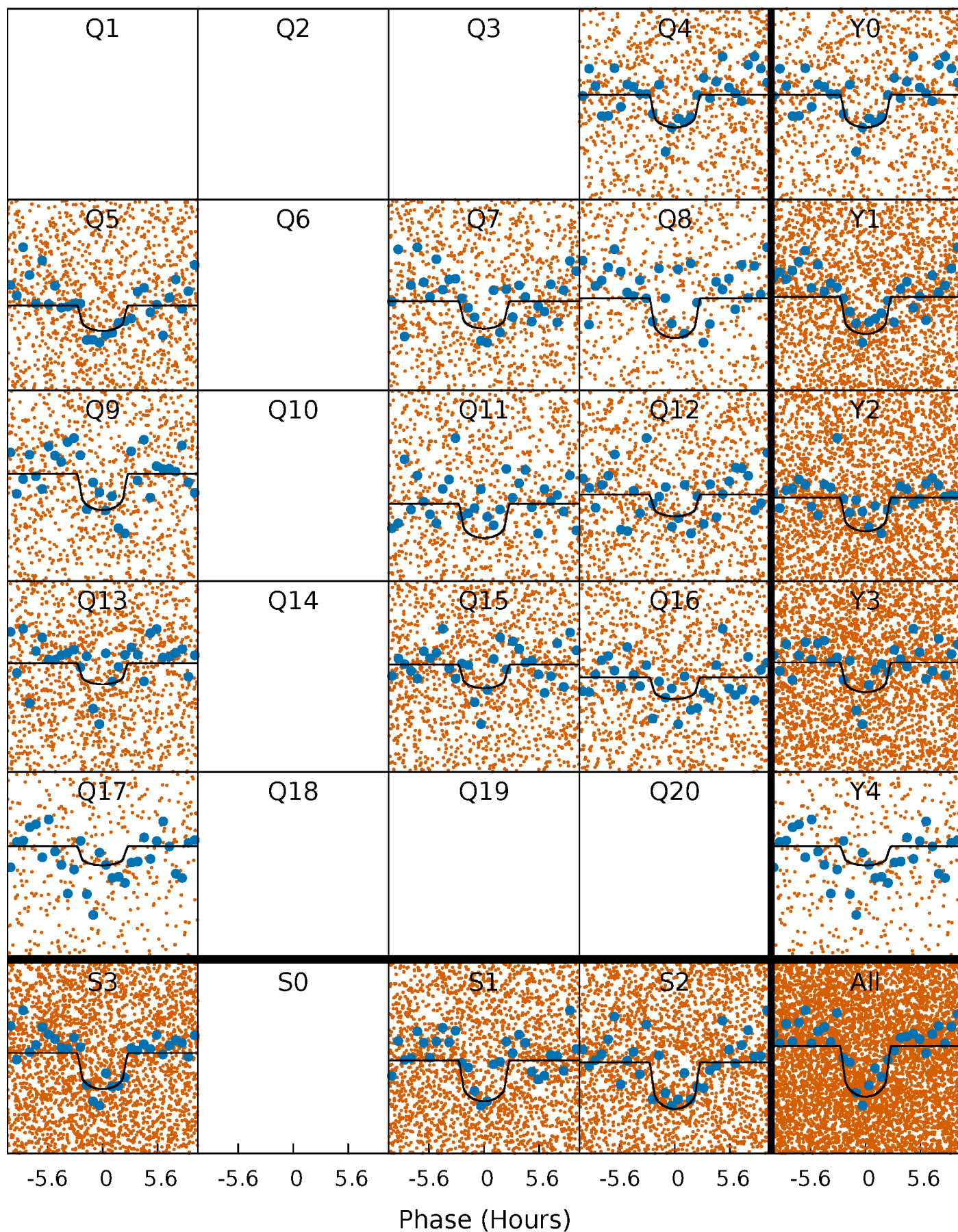
PDC Quarter-Phased Transit Curves

TCE 004574319-01 P= 1.306270 Days $T_0=132.081961$ (BKJD)



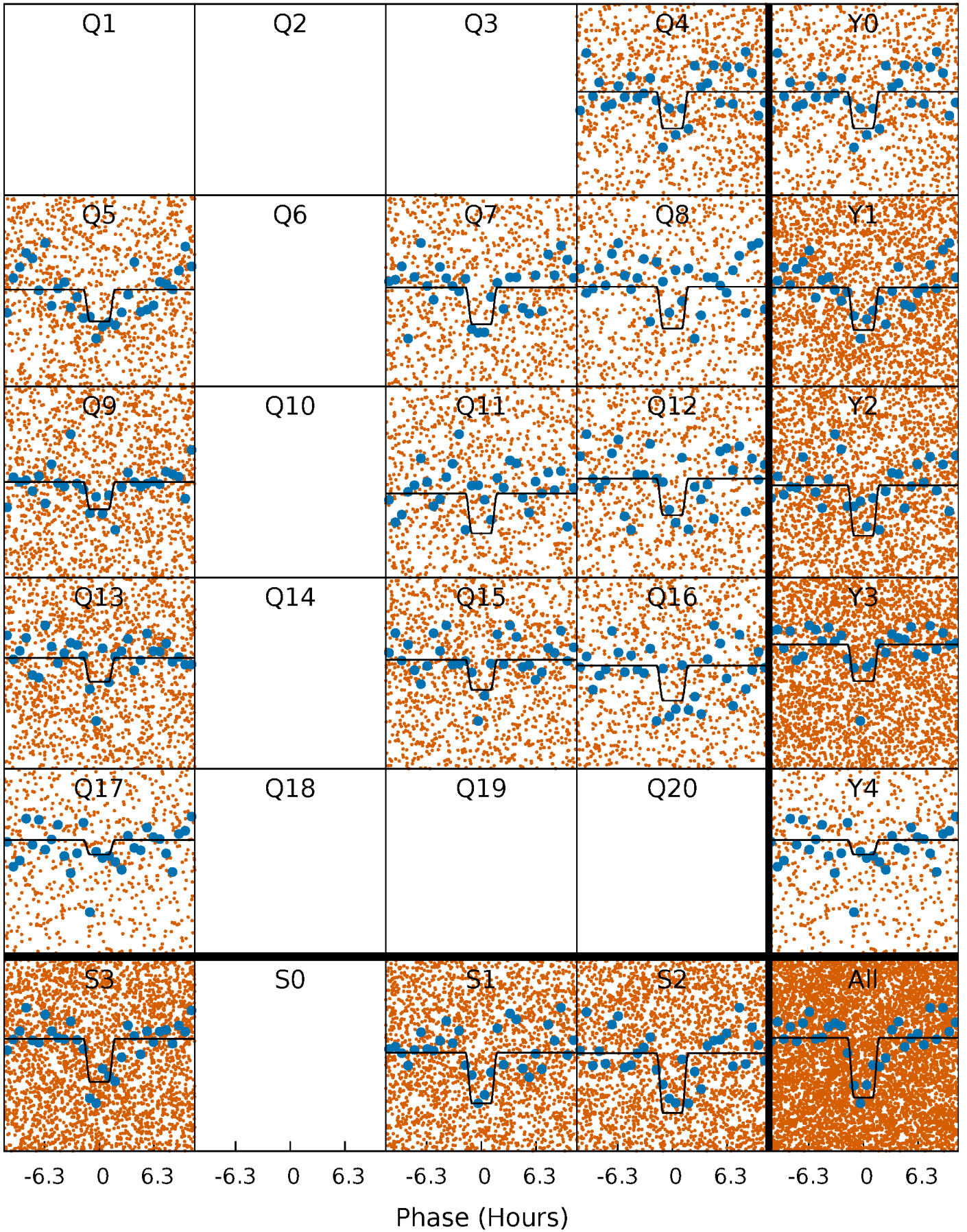
DV Quarter-Phased Transit Curves

TCE 004574319-01 P= 1.306270 Days $T_0=132.081961$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

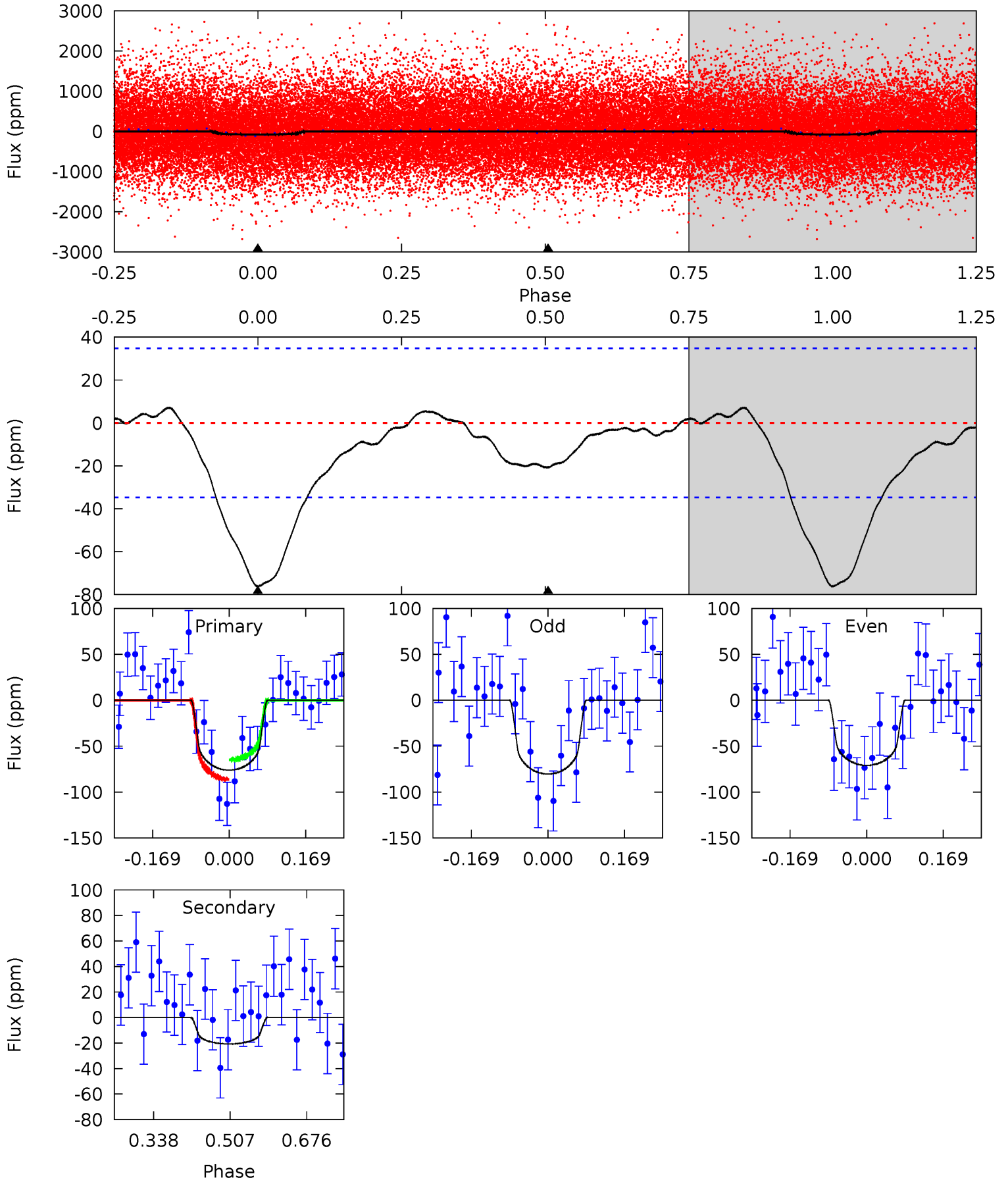
TCE 004574319-01 P= 1.306251 Days $T_0=132.093056$ (BKJD)



DV Model-Shift Uniqueness Test

004574319-01, P = 1.306270 Days, E = 132.081961 Days

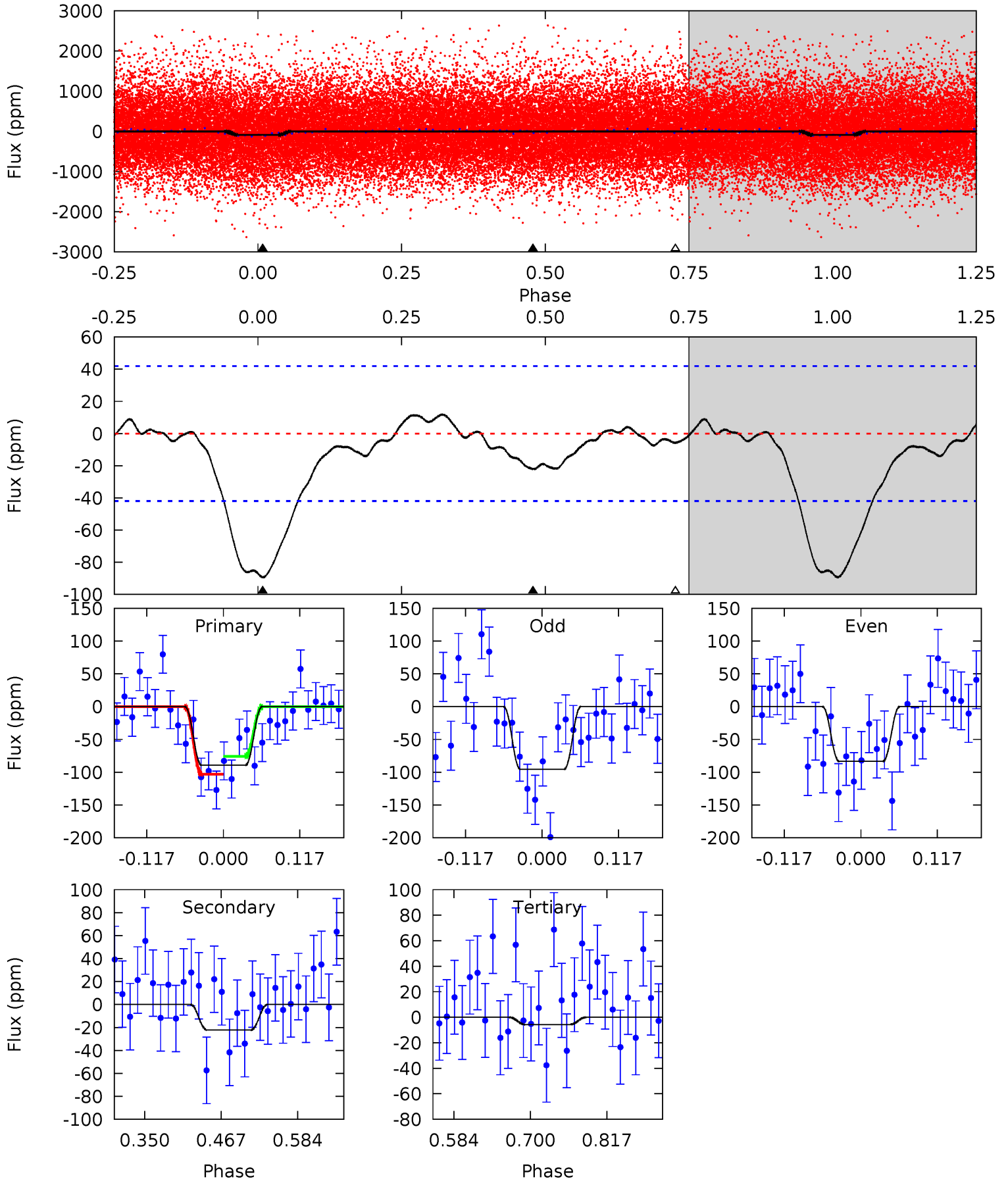
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.76	2.66	0	0	4.45	1.38	0.60	9.76	9.76	2.66	2.66	0.60	1.05	0.09	1.37



Alt Model-Shift Uniqueness Test

004574319-01, P = 1.306251 Days, E = 132.093056 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.65	2.40	0.63	0	4.53	1.57	0.69	9.02	9.65	1.77	2.40	0.66	0.99	0.12	1.47



Stellar Parameters For KIC 004574319

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5513^{+180}_{-180}	$4.543^{+0.042}_{-0.168}$	$0.080^{+0.250}_{-0.300}$	$0.862^{+0.213}_{-0.076}$	$0.948^{+0.083}_{-0.101}$	$2.082^{+0.369}_{-1.003}$
	+3%/-3%	+1%/-4%	+312%/-375%	+25%/-9%	+9%/-11%	+18%/-48%
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 004574319-01 / KOI 7697.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-21 ± 8	$1.12^{+0.78}_{-0.67}$	2120^{+122}_{-91}	3768^{+1482}_{-715}	$4.604^{+21.052}_{-3.253}$
Alt.	-22 ± 9	$1.16^{+0.86}_{-0.67}$	2123^{+143}_{-103}	3734^{+1568}_{-686}	$4.359^{+22.397}_{-3.033}$

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

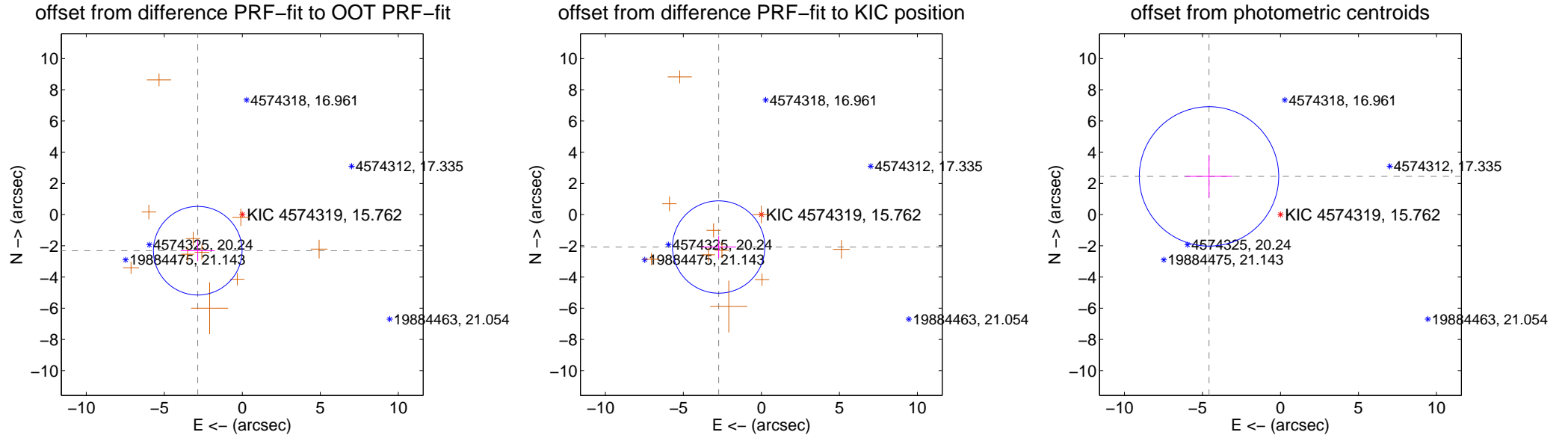
DV Centroid Data

Supplemental centroid analysis for 004574319-01. Kepler magnitude: 15.76. Transit SNR 8.50

There are 0 quarters with good PRF difference image offsets

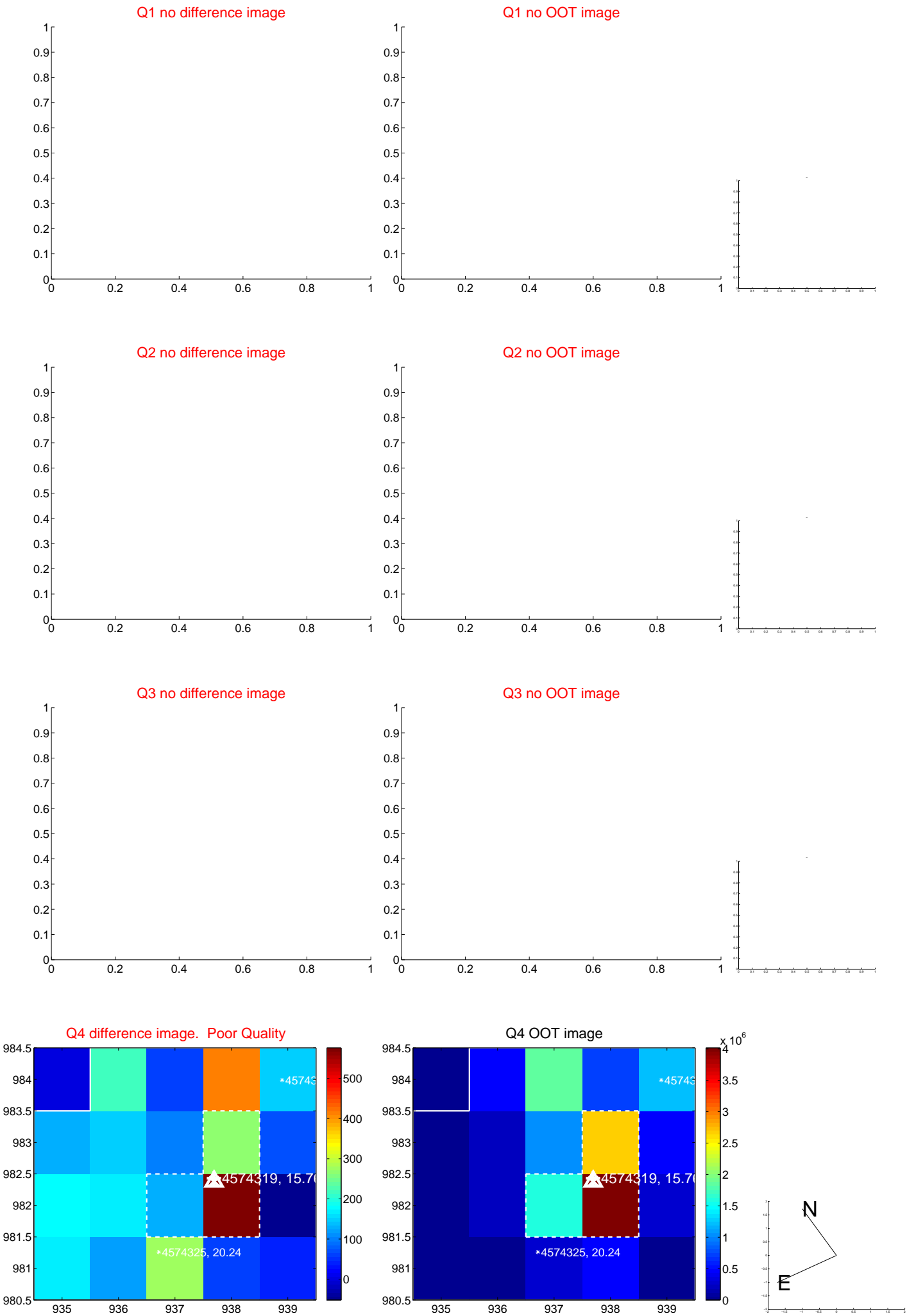
The direct PRF centroid is offset from the target star catalog position by about 0.21 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	3.676 ± 0.947	3.88	2.855 ± 1.096	-2.316 ± 0.659
PRF-fit source offset from KIC position	3.437 ± 0.986	3.48	2.738 ± 1.119	-2.079 ± 0.700
photometric centroid source offset	5.19 ± 1.49	3.49	4.58 ± 1.52	2.45 ± 1.36

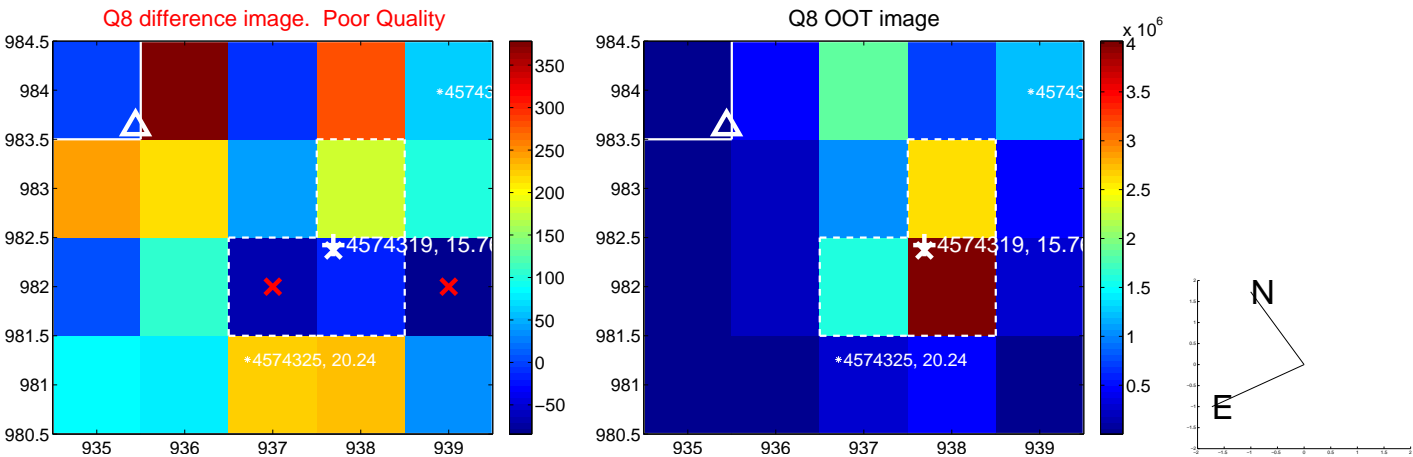
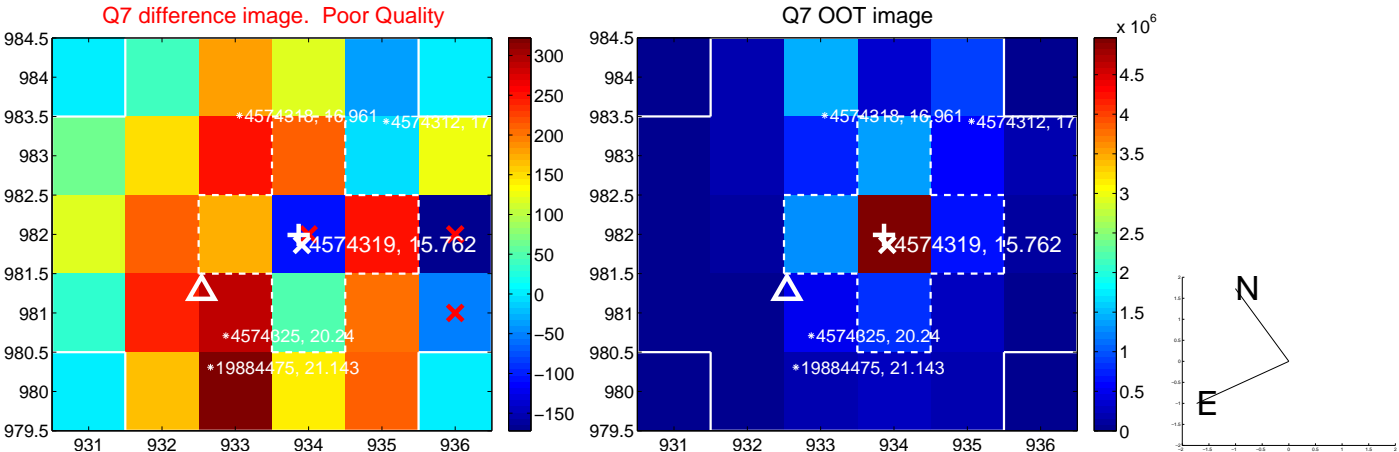
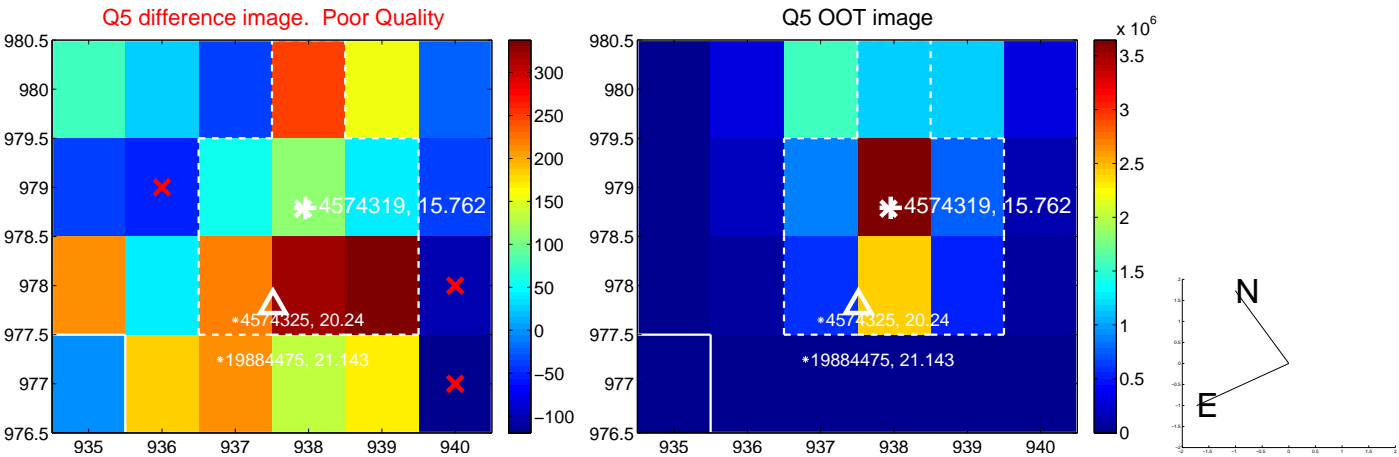


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

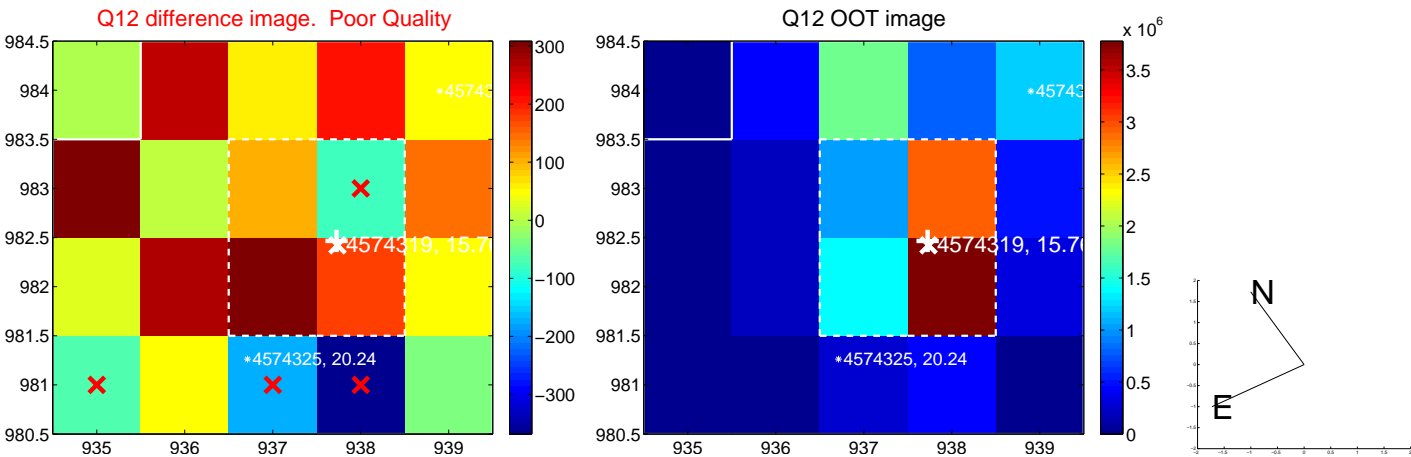
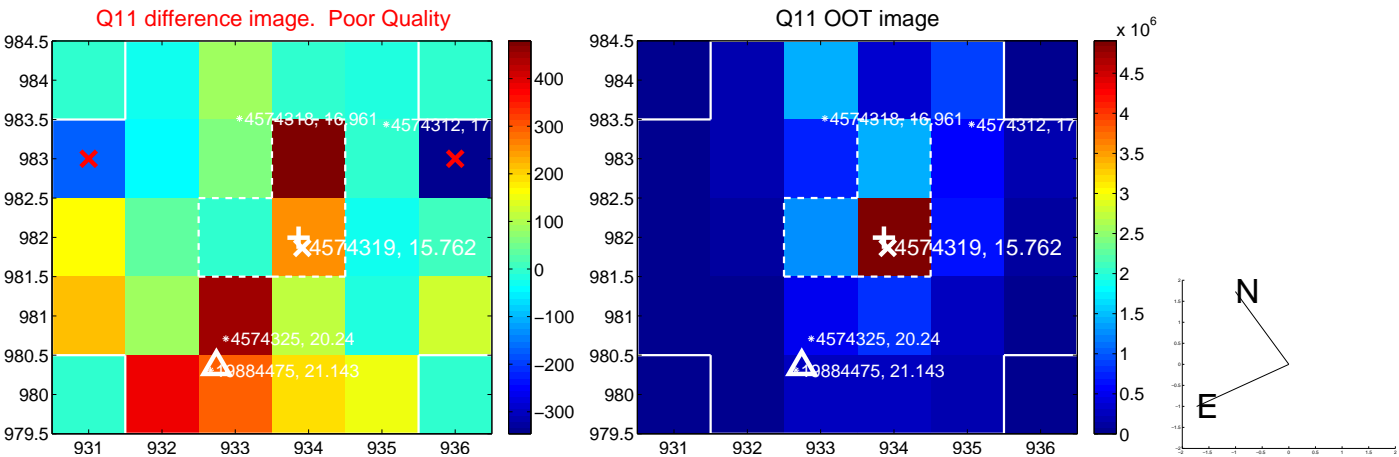
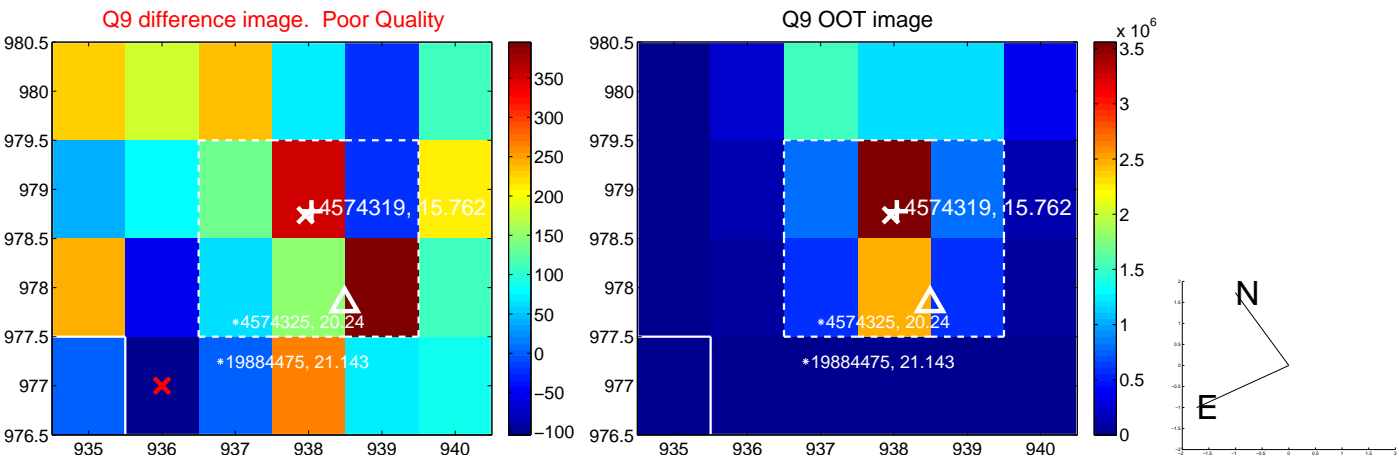
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



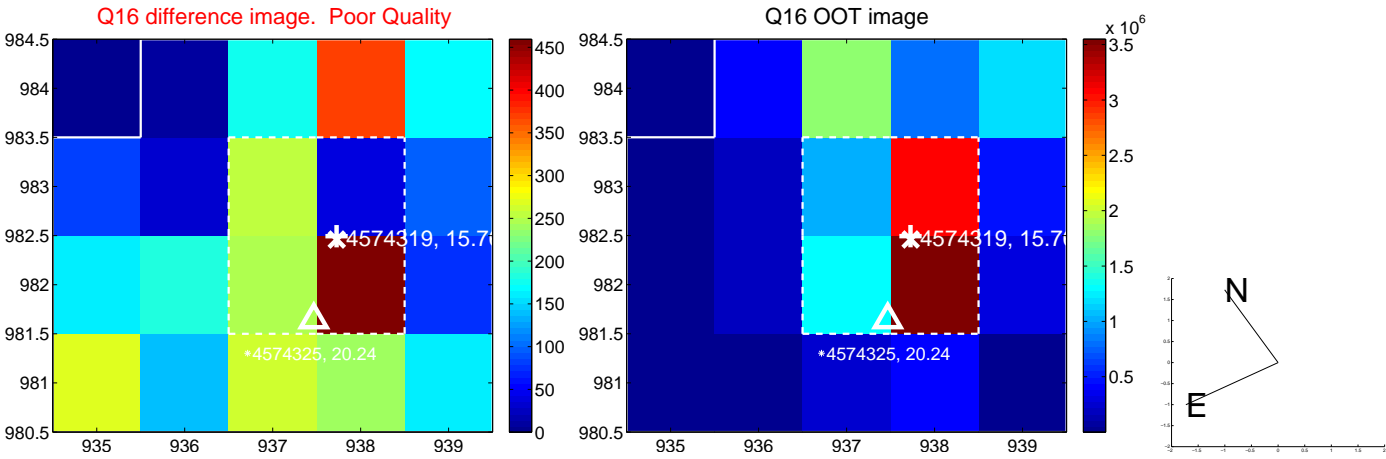
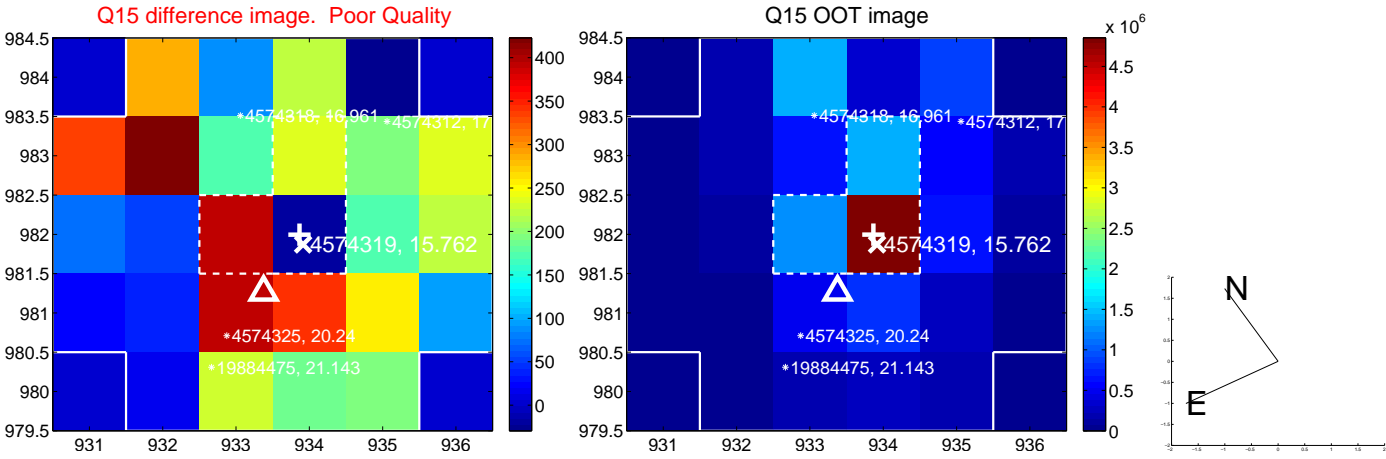
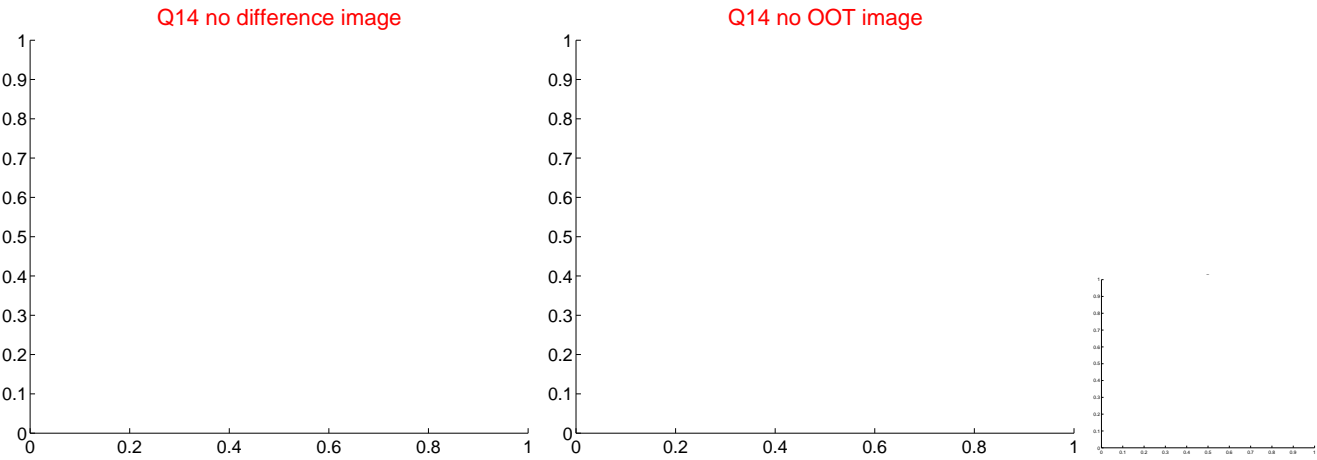
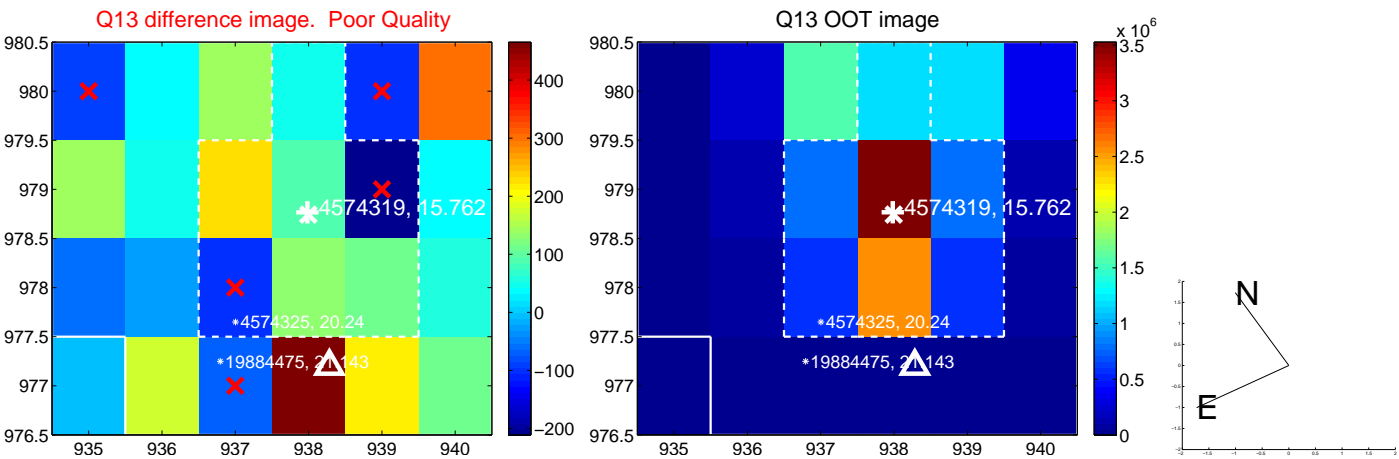
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



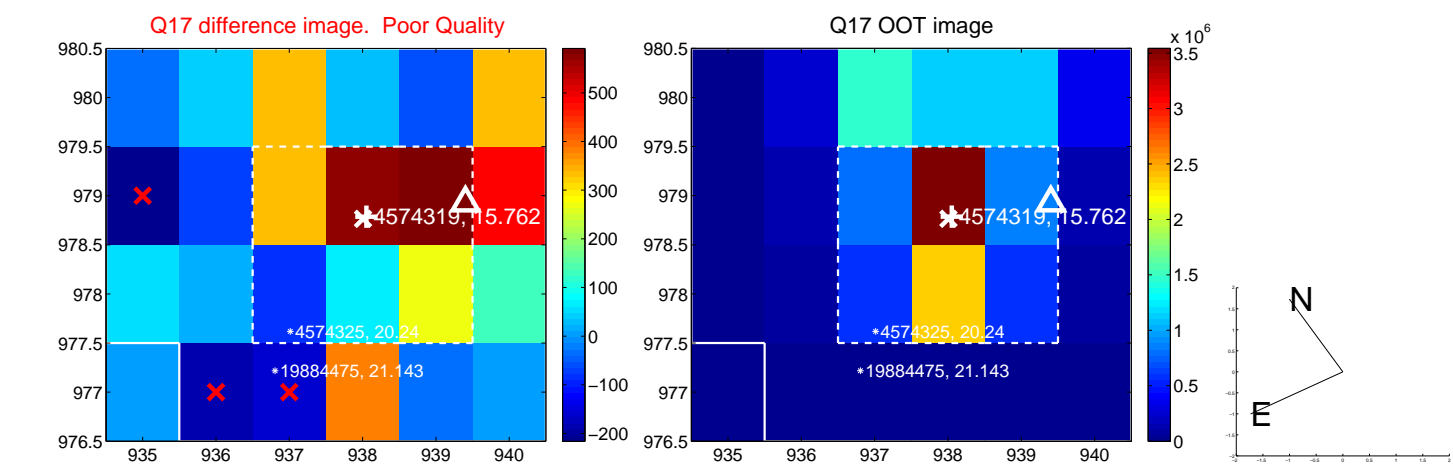
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



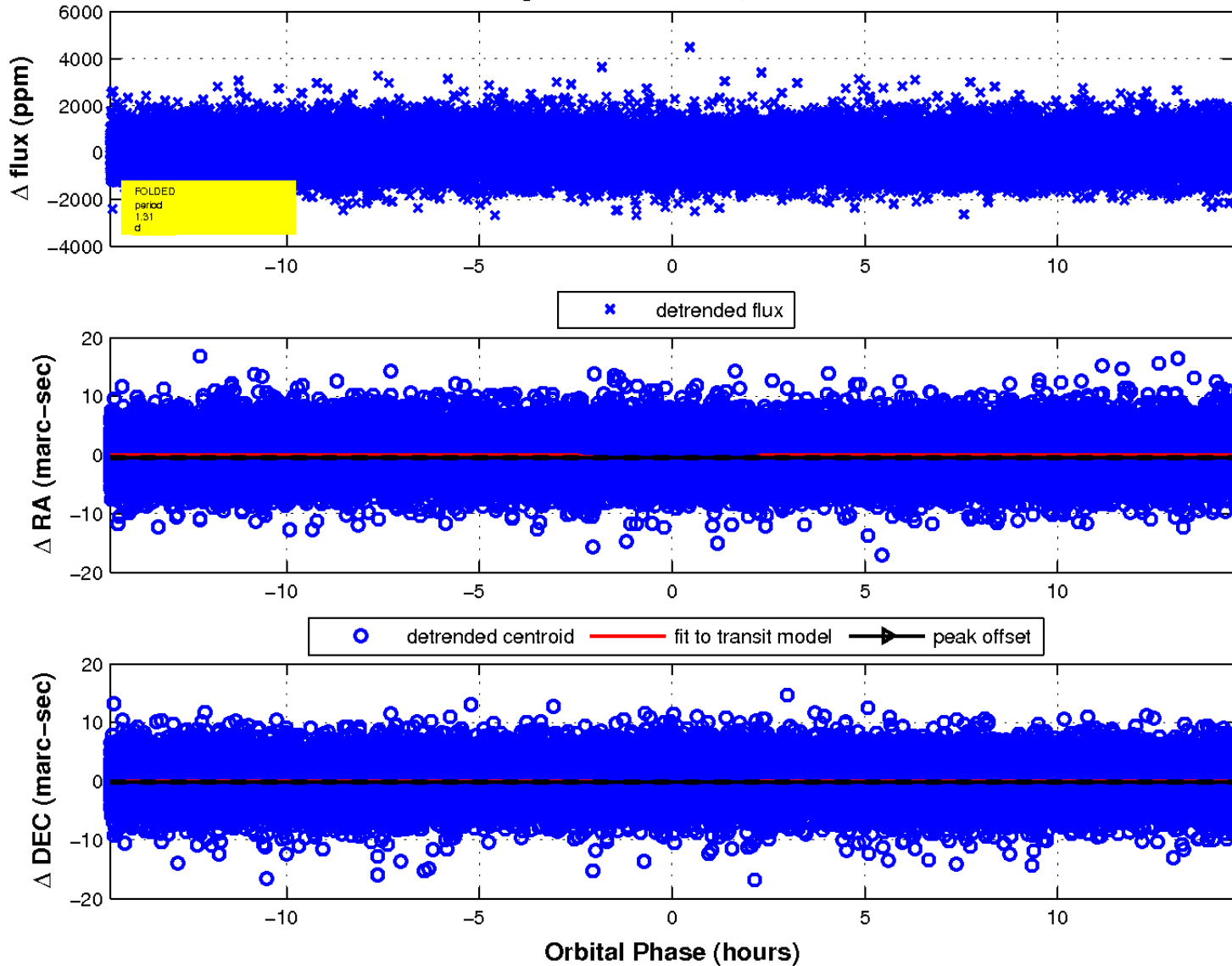
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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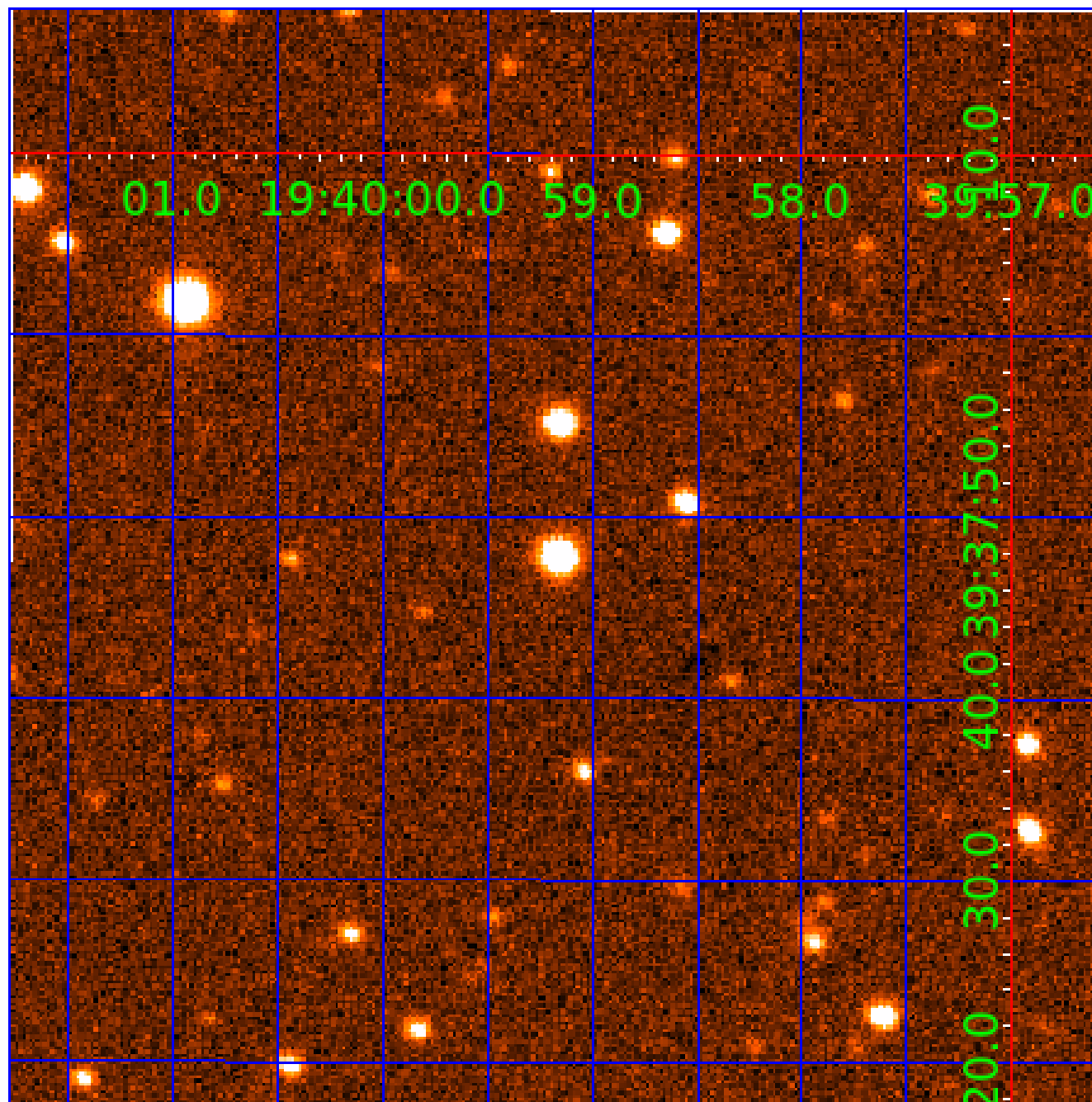


fluxWeightedCentroids, Planet 1 of 2



UKIRT Image

Declination



KIC 004574319

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})
004574319-01	OBS	7697.01	1.306270	132.081961	94.1	4.862	8.4	8.5	0.86	5513	0.97	1166.11
004574319-02	OBS	No	192.998825	219.717144	997.5	6.293	12.1	7.1	0.86	5513	2.95	1.49

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004574319-01	OBS	FP	0.00	0	0	1	1	HALO_GHOST—EPHEM_MATCH
004574319-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS—HALO_GHOST

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

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

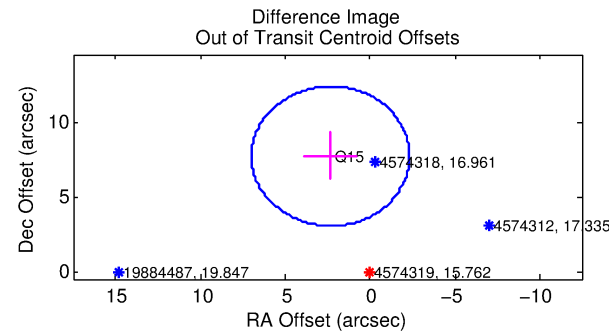
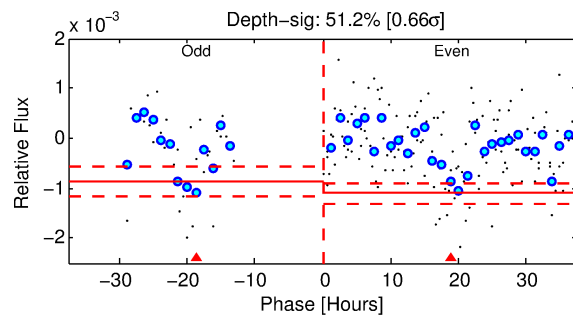
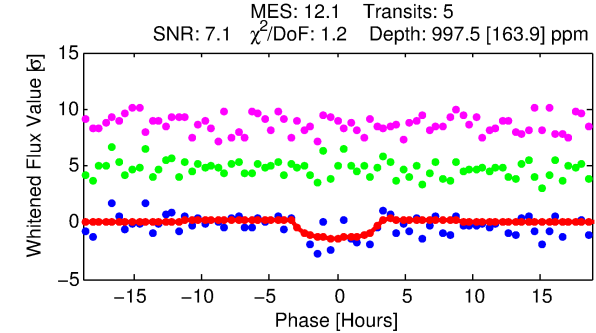
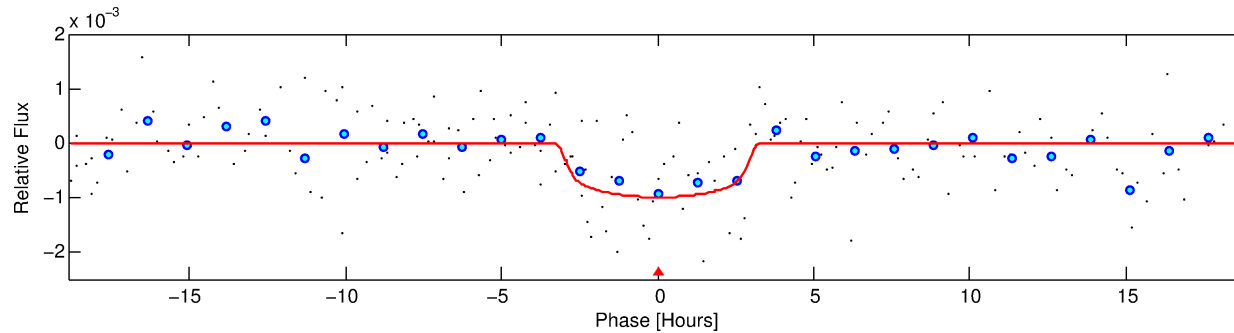
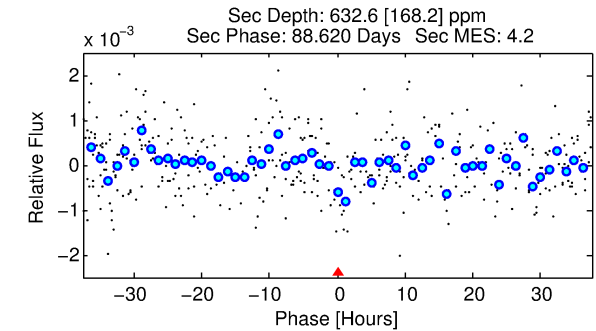
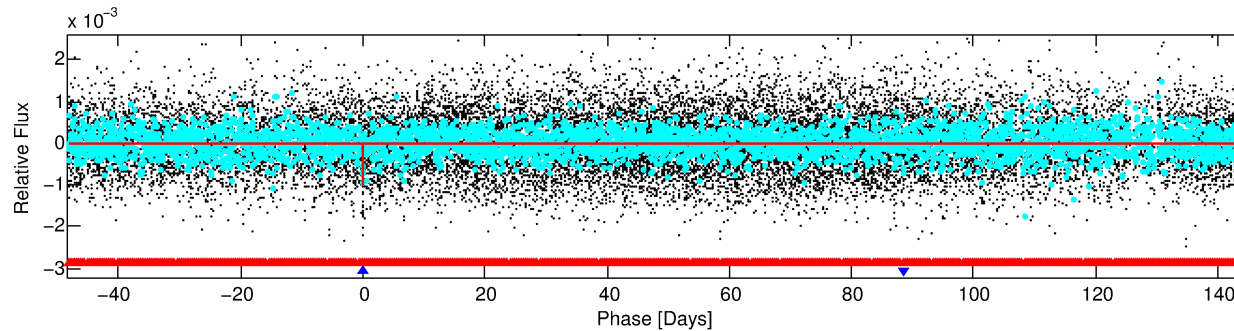
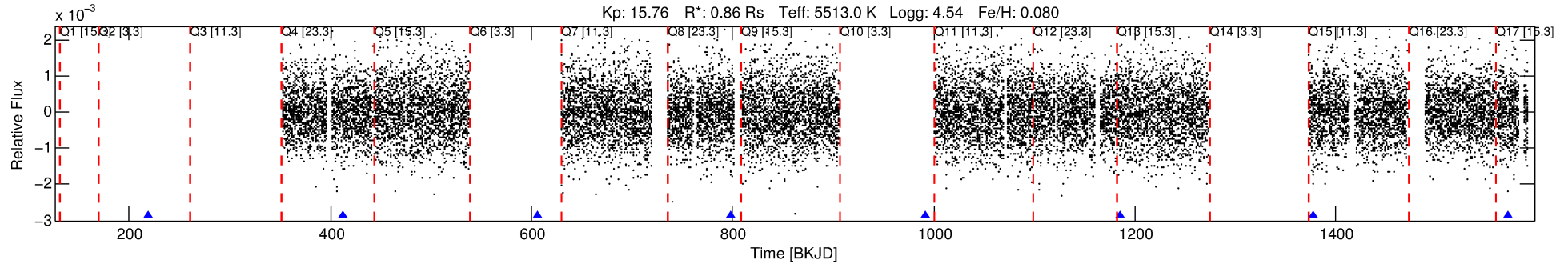
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004574319-02

No Significant Match Found

DV One-Page Summary

KIC: 4574319 Candidate: 2 of 2 Period: 192.999 d



DV Fit Results:

Period = 192.99882 [0.00488] d
Epoch = 219.7171 [0.0234] BKJD
Rp/R* = 0.0313 [0.0238]
a/R* = 168.18 [512.08]
b = 0.74 [1.88]
Seff = 1.49 [0.50]
Teq = 282 [23] K
Rp = 2.95 [2.35] Re
a = 0.6418 [0.1343] AU
Ag = 16487.03 [25872.05] [0.64σ]
Teffp = 4938 [1907] K [2.44σ]

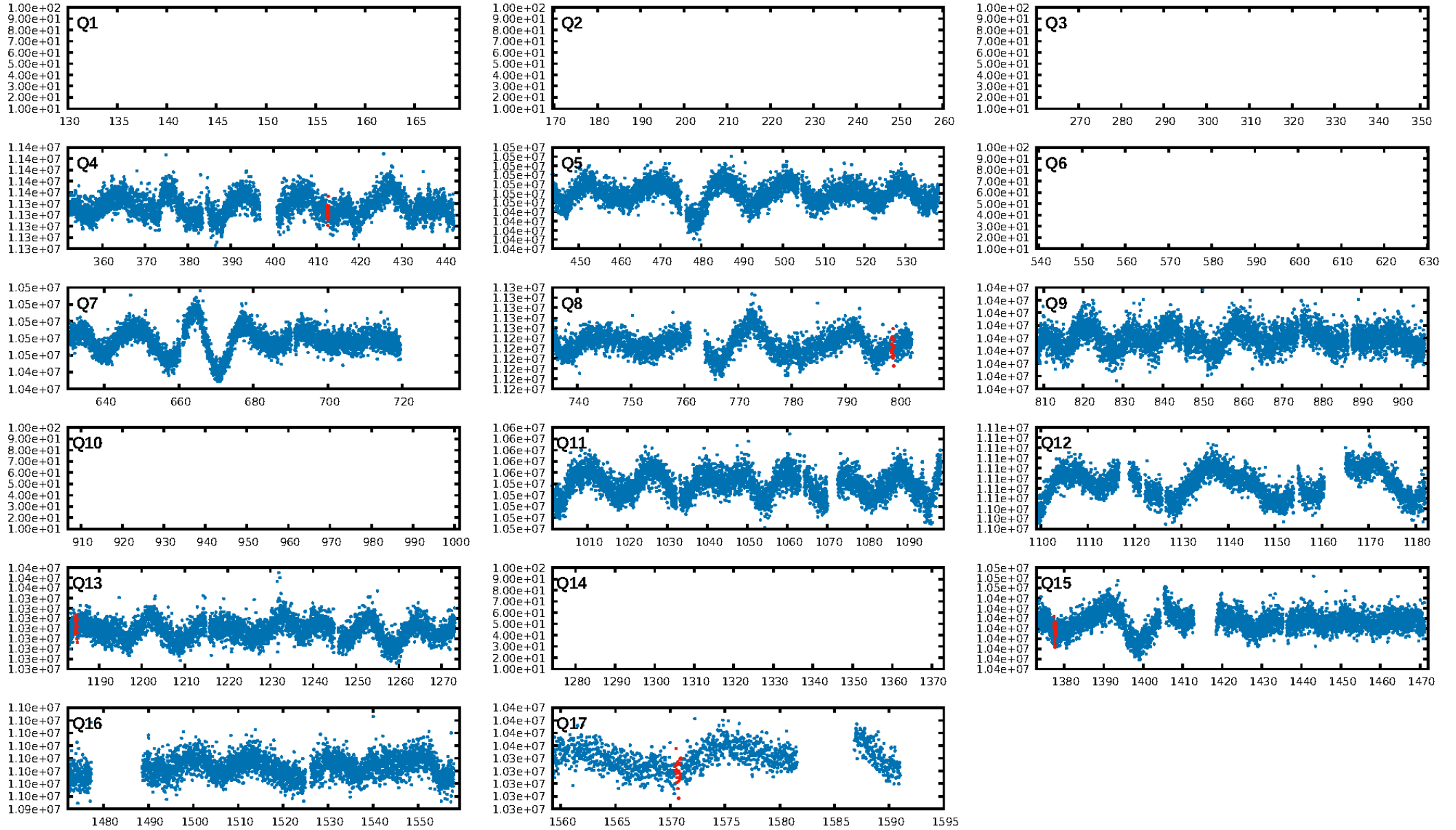
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [578.47σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 1.8%
ModelChiSquareGof-sig: 98.7%
Bootstrap-pfa: 6.95e-17
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: 0.2359
Centroid-sig: 61.4%
Centroid-so: 2.121 arcsec [1.52σ]
OotOffset-rm: 8.041 arcsec [5.17σ]
KicOffset-rm: 8.623 arcsec [5.55σ]
OotOffset-st: 0/1/0/0 [1]
KicOffset-st: 0/1/0/0 [1]
DiffImageQuality-fgm: 0.00 [0/1]
DiffImageOverlap-fno: 0.00 [0/5]

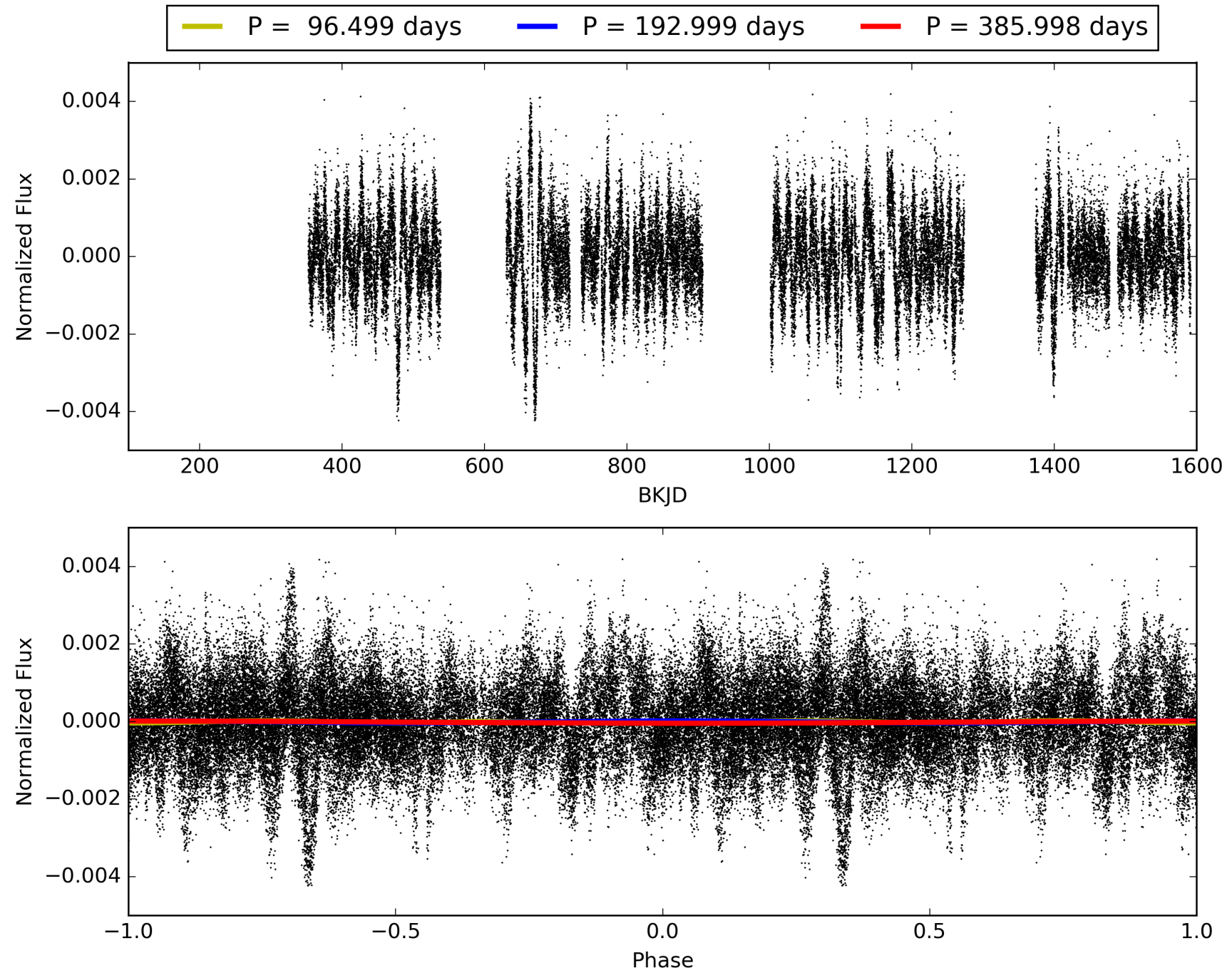
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 06:48:40 Z

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TCE 004574319-02, PDC Light Curves

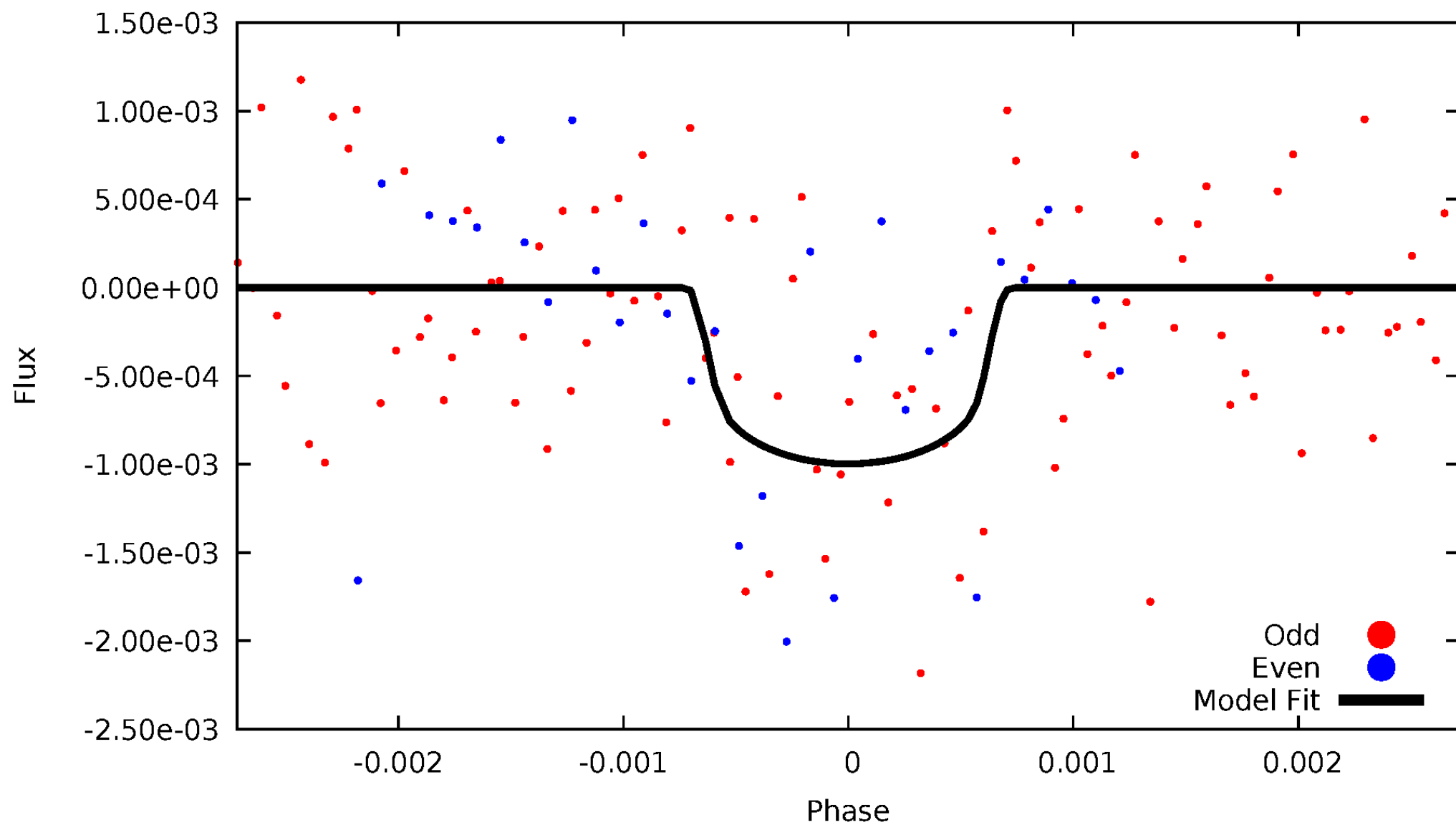


TCE 004574319-02



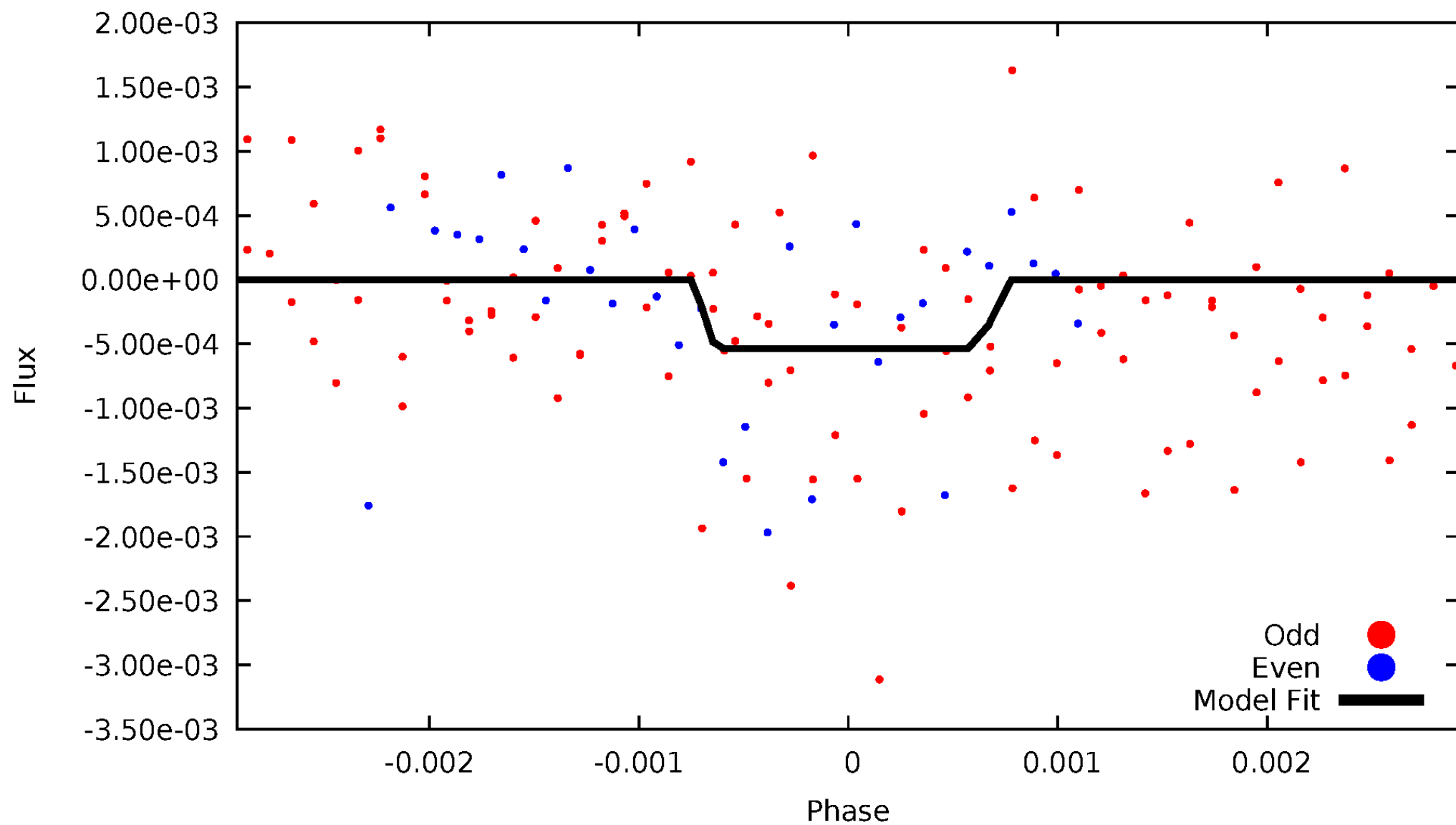
DV Odd/Even

TCE 004574319-02



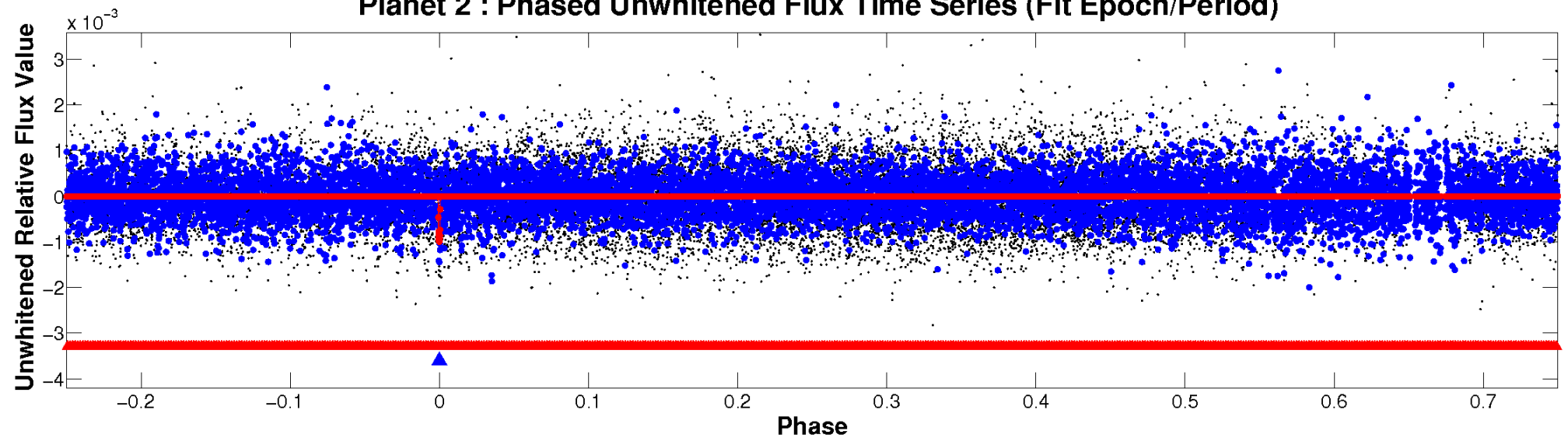
ALT Odd/Even

TCE 004574319-02

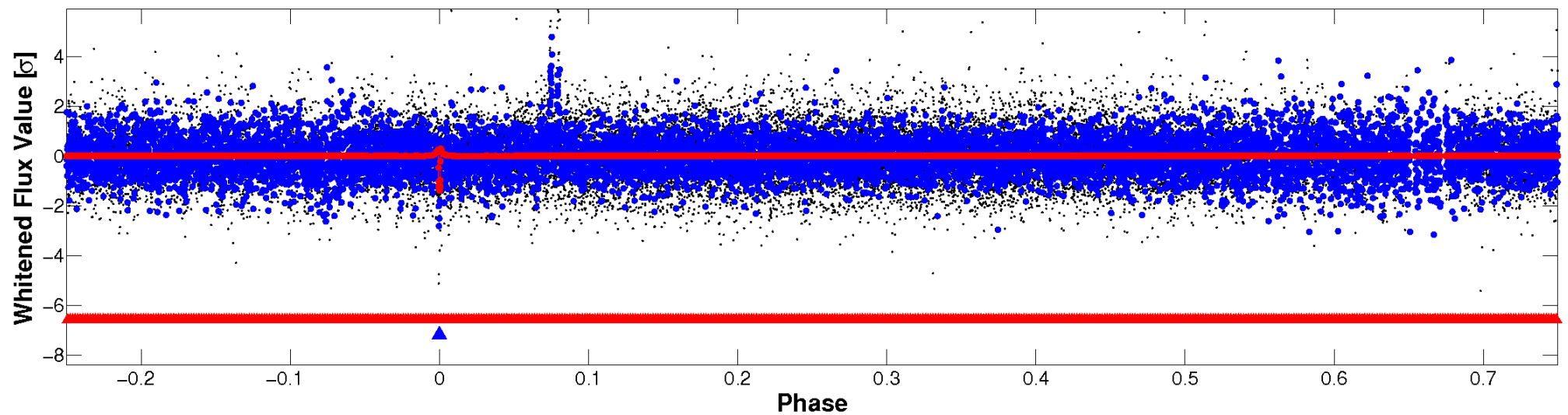


Non-Whitened Vs. Whitened Light Curve

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

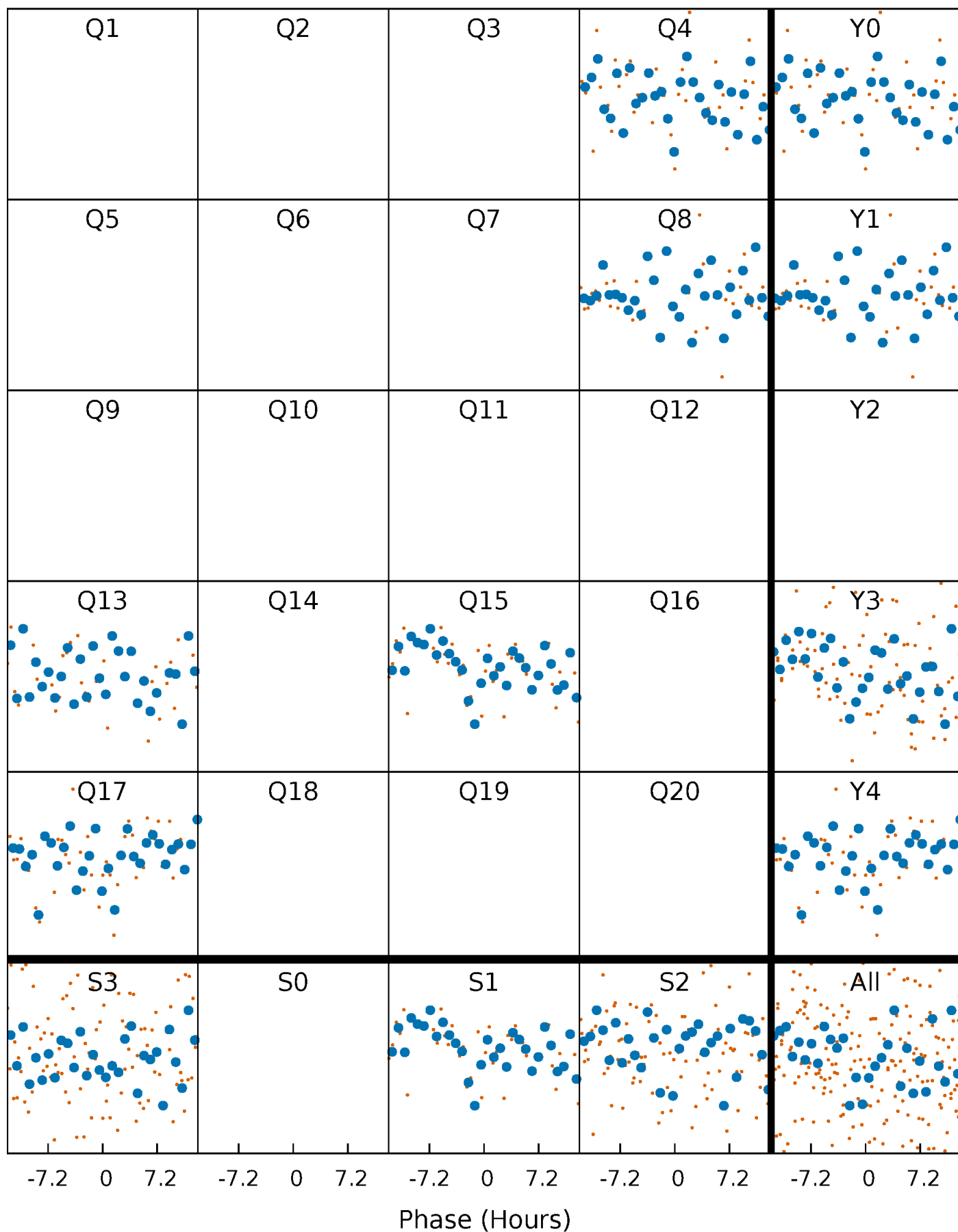


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



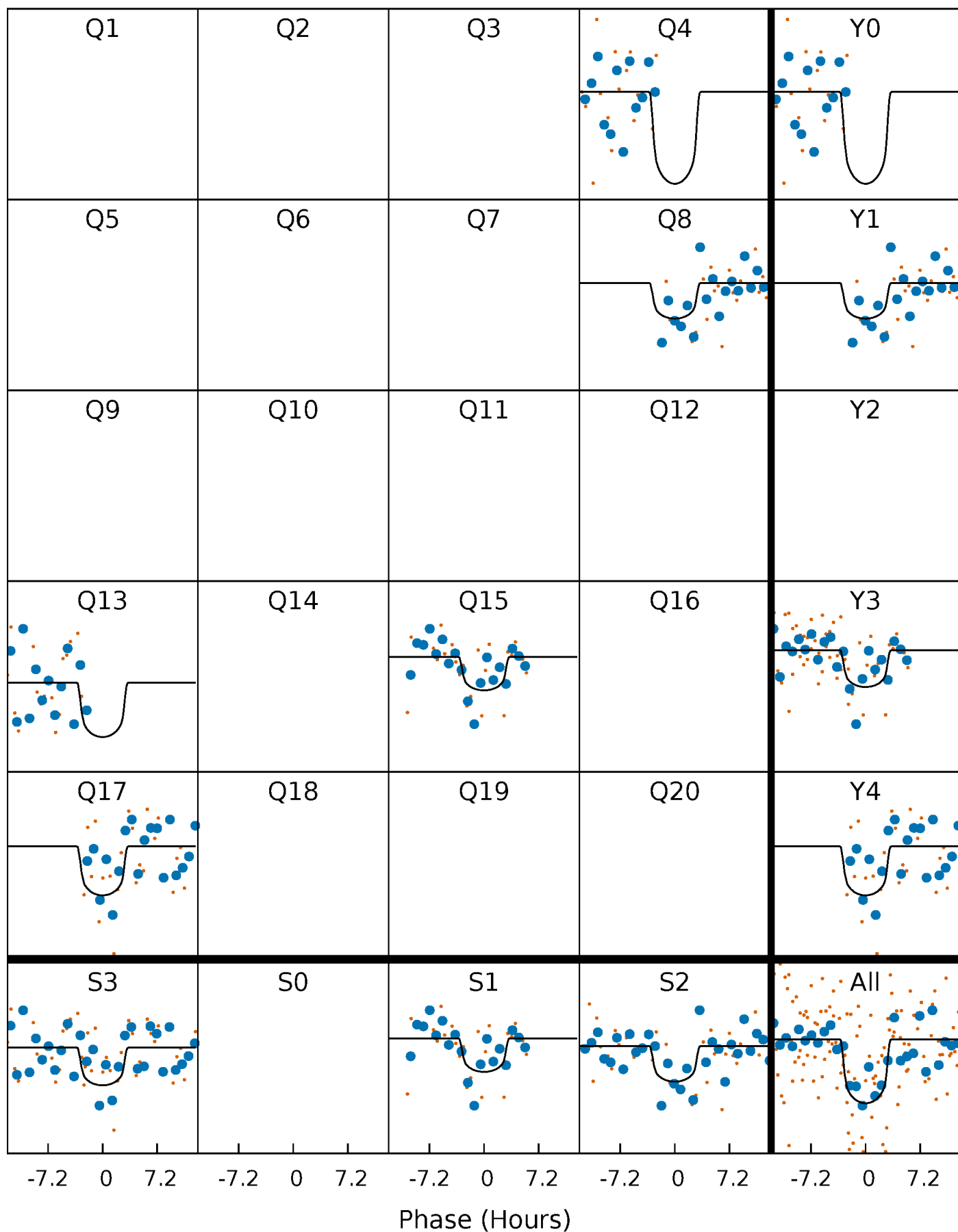
PDC Quarter-Phased Transit Curves

TCE 004574319-02 $P=192.998825$ Days $T_0=219.717144$ (BKJD)



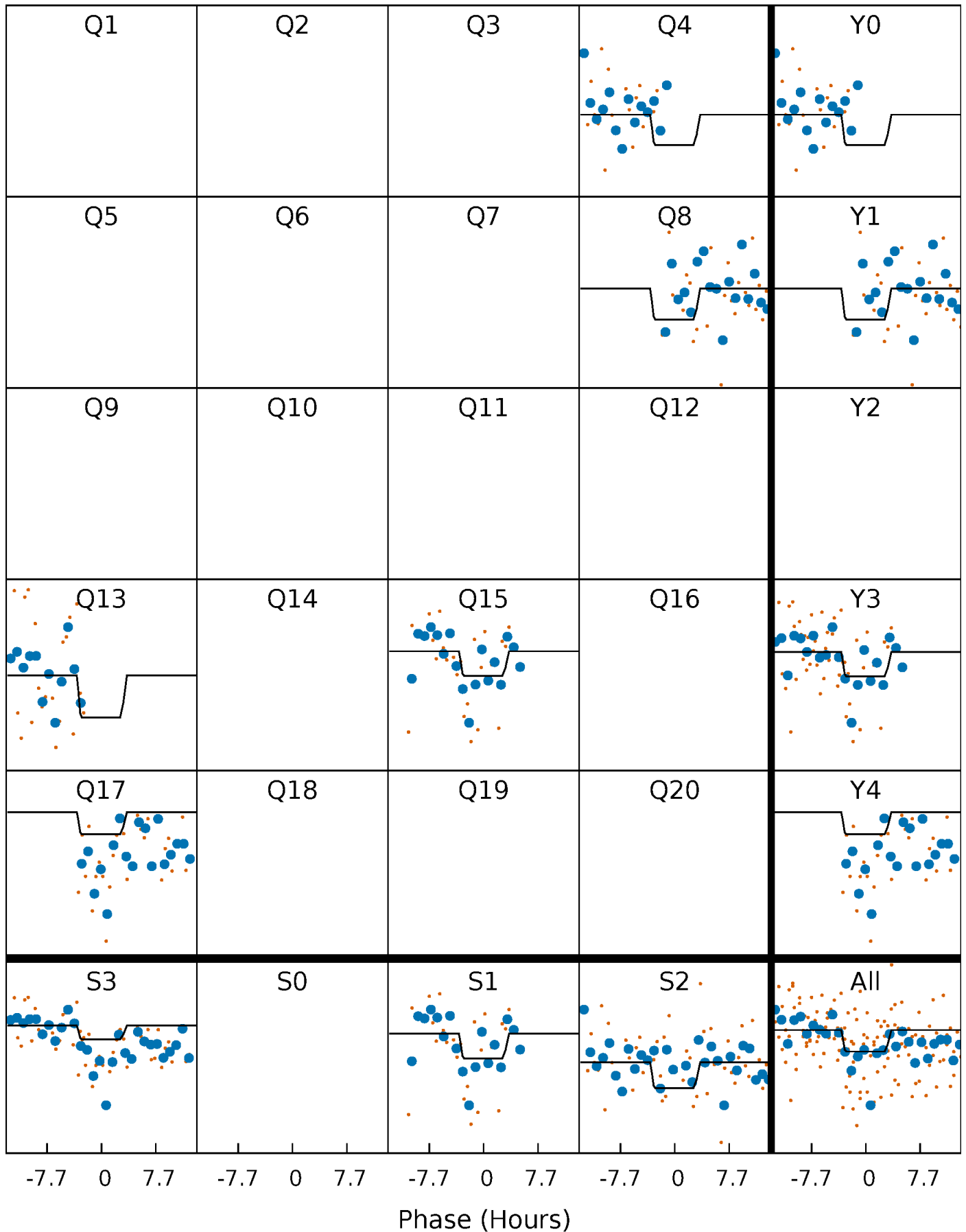
DV Quarter-Phased Transit Curves

TCE 004574319-02 P=192.998825 Days $T_0=219.717144$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

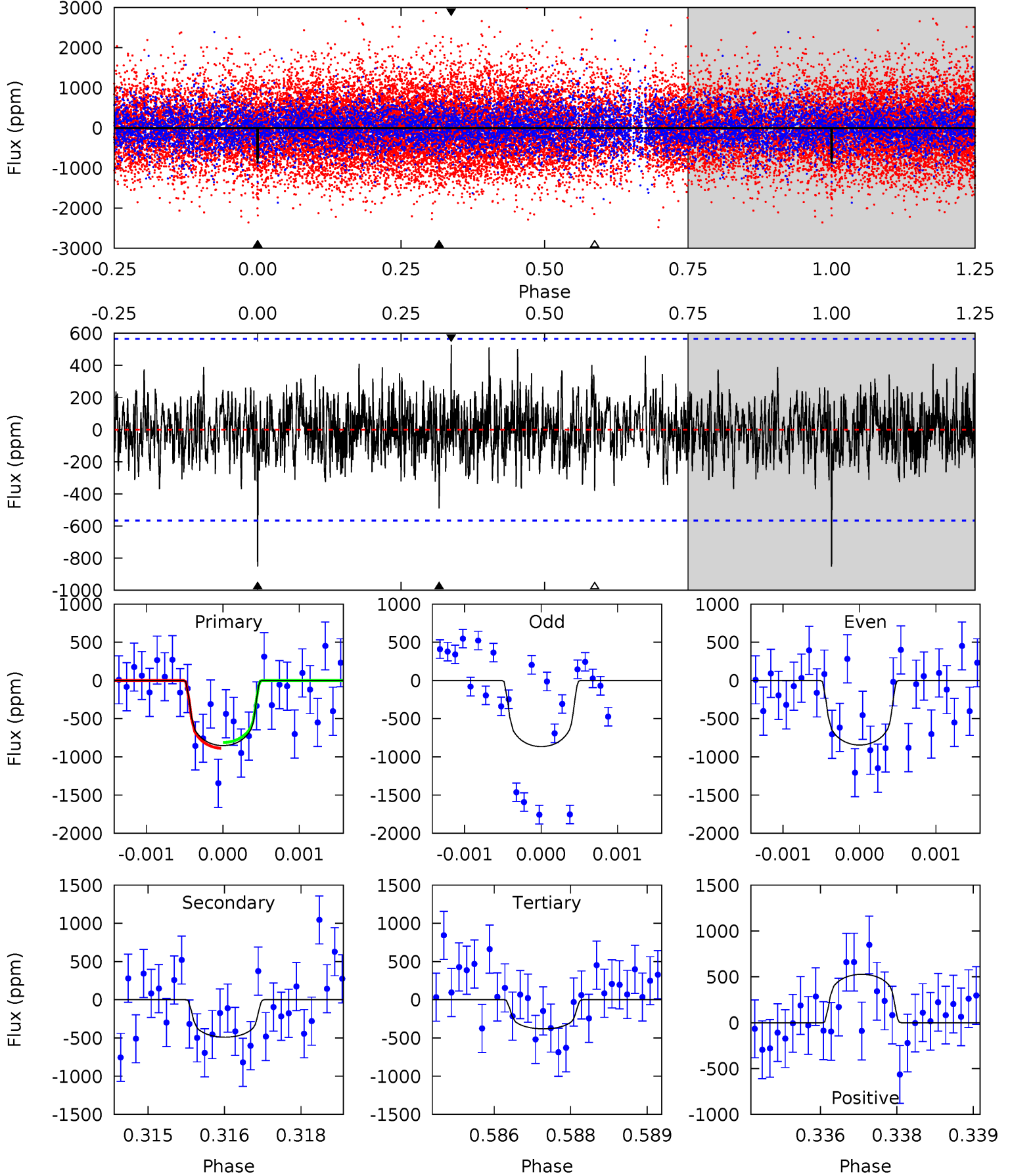
TCE 004574319-02 P=193.010809 Days $T_0=219.666569$ (BKJD)



DV Model-Shift Uniqueness Test

004574319-02, P = 192.998825 Days, E = 219.717144 Days

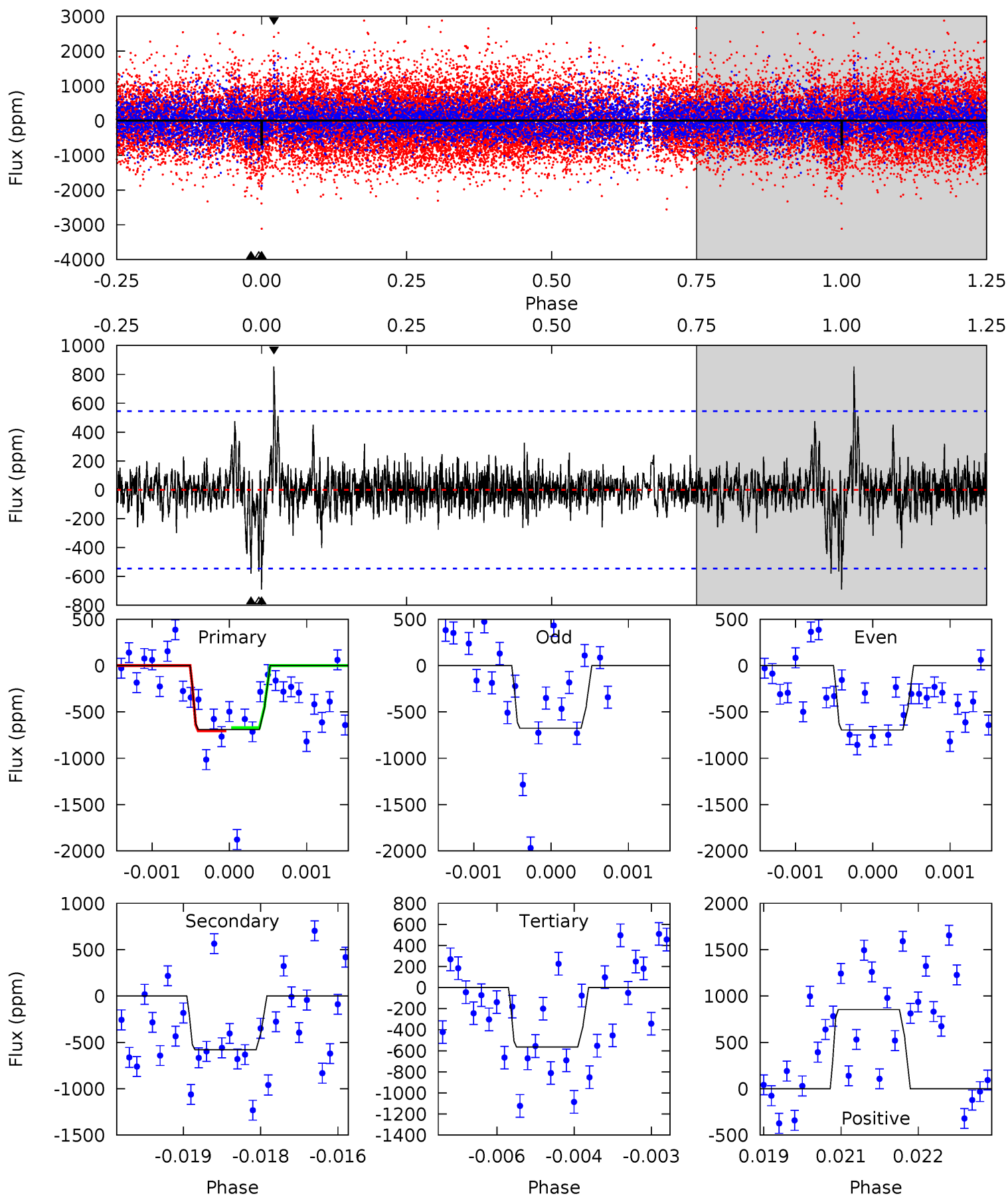
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.11	4.66	3.63	5.02	5.39	3.19	1.28	4.49	3.09	1.04	-0.36	0.09	0.89	0.38	0.36



Alt Model-Shift Uniqueness Test

004574319-02, P = 193.010809 Days, E = 219.666569 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.80	5.72	5.57	8.42	5.38	3.18	1.04	1.23	-1.62	0.15	-2.70	0.09	1.31	0.55	0.16



Stellar Parameters For KIC 004574319

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5513^{+180}_{-180}	$4.543^{+0.042}_{-0.168}$	$0.080^{+0.250}_{-0.300}$	$0.862^{+0.213}_{-0.076}$	$0.948^{+0.083}_{-0.101}$	$2.082^{+0.369}_{-1.003}$
	+3%/-3%	+1%/-4%	+312%/-375%	+25%/-9%	+9%/-11%	+18%/-48%
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 004574319-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-490 ± 105	$3.44^{+2.24}_{-2.00}$	401^{+23}_{-16}	4528^{+2318}_{-745}	9372^{+44030}_{-6068}
Alt.	-580 ± 101	$2.72^{+2.09}_{-1.71}$	402^{+26}_{-19}	5157^{+3741}_{-988}	$17087^{+108357}_{-11649}$

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

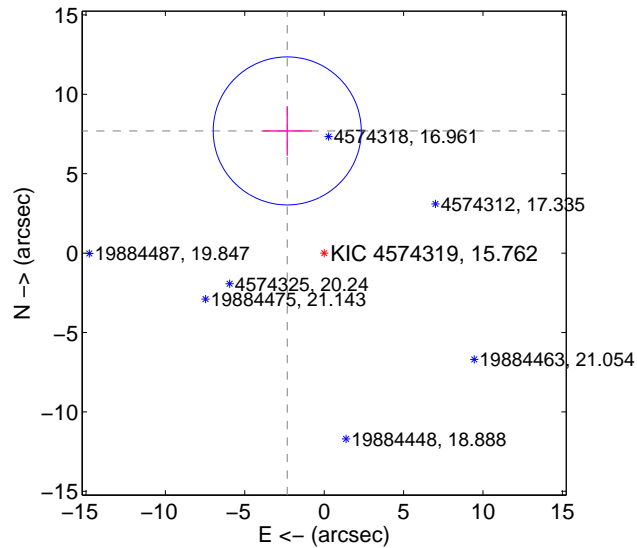
Supplemental centroid analysis for 004574319-02. Kepler magnitude: 15.76. Transit SNR 7.14

There are 0 quarters with good PRF difference image offsets

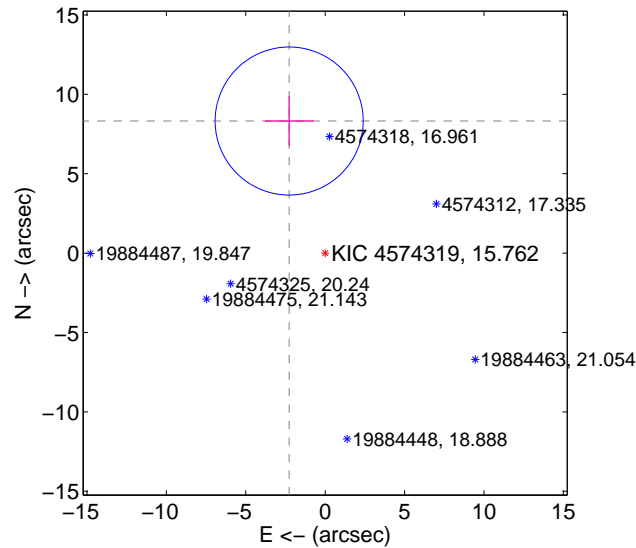
The direct PRF centroid is offset from the target star catalog position by about 0.63 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	8.041 \pm 1.554	5.17	2.328 \pm 1.531	7.697 \pm 1.556
PRF-fit source offset from KIC position	8.623 \pm 1.554	5.55	2.268 \pm 1.531	8.319 \pm 1.556
photometric centroid source offset	2.12 \pm 1.39	1.52	-0.59 \pm 1.60	2.04 \pm 1.38

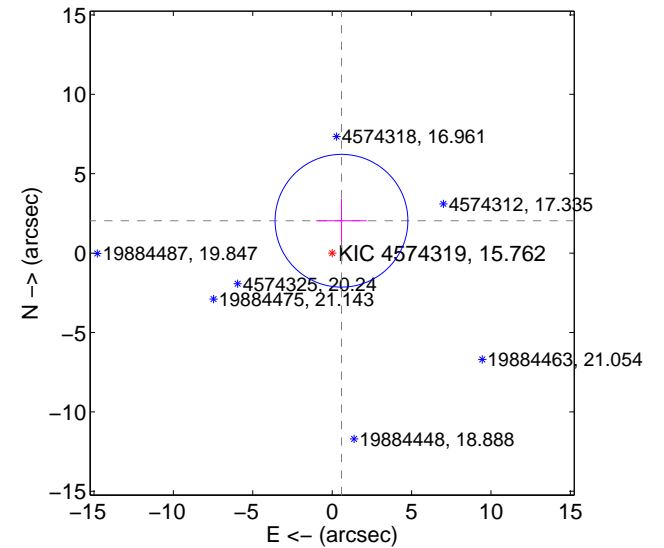
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

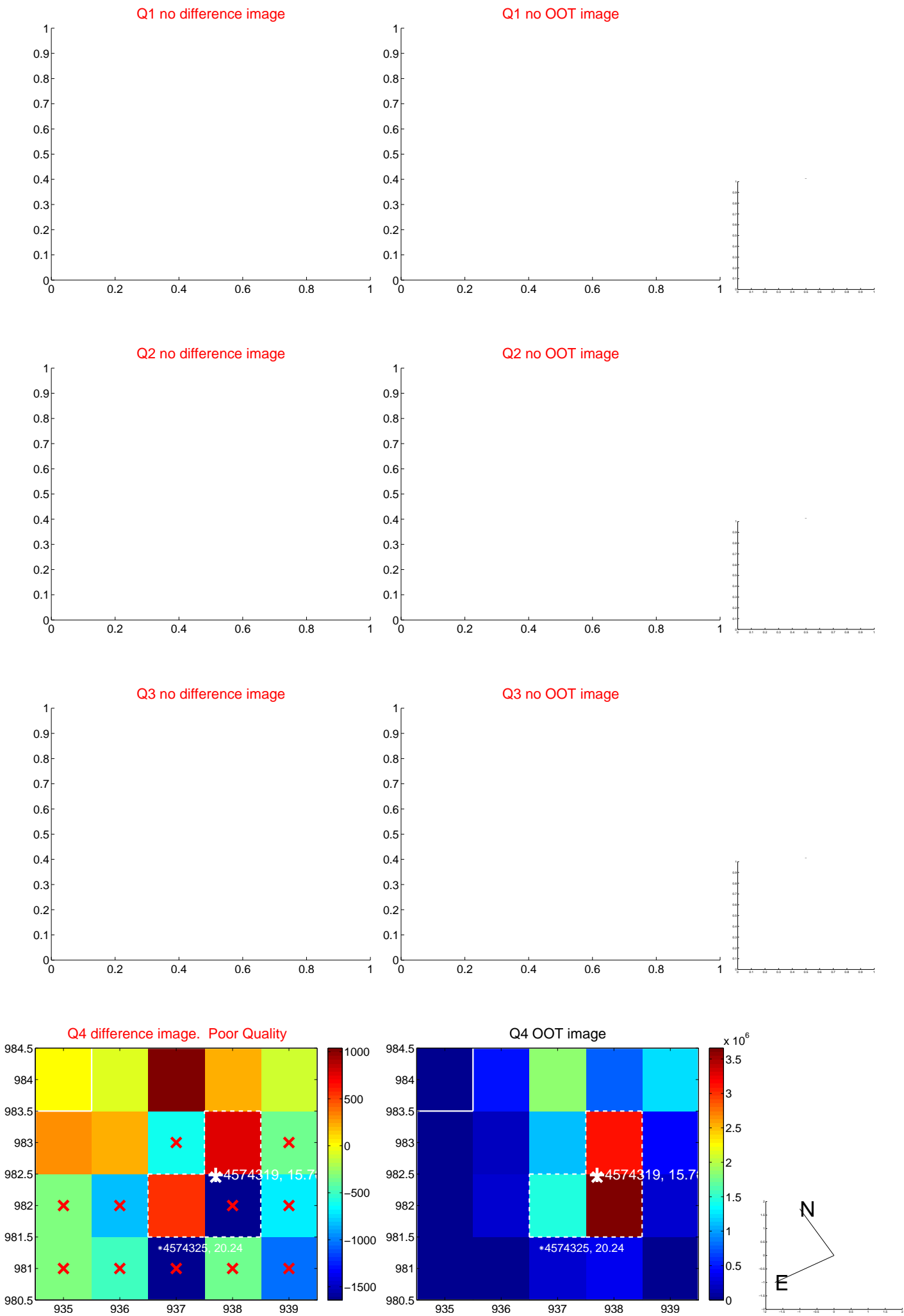


offset from photometric centroids

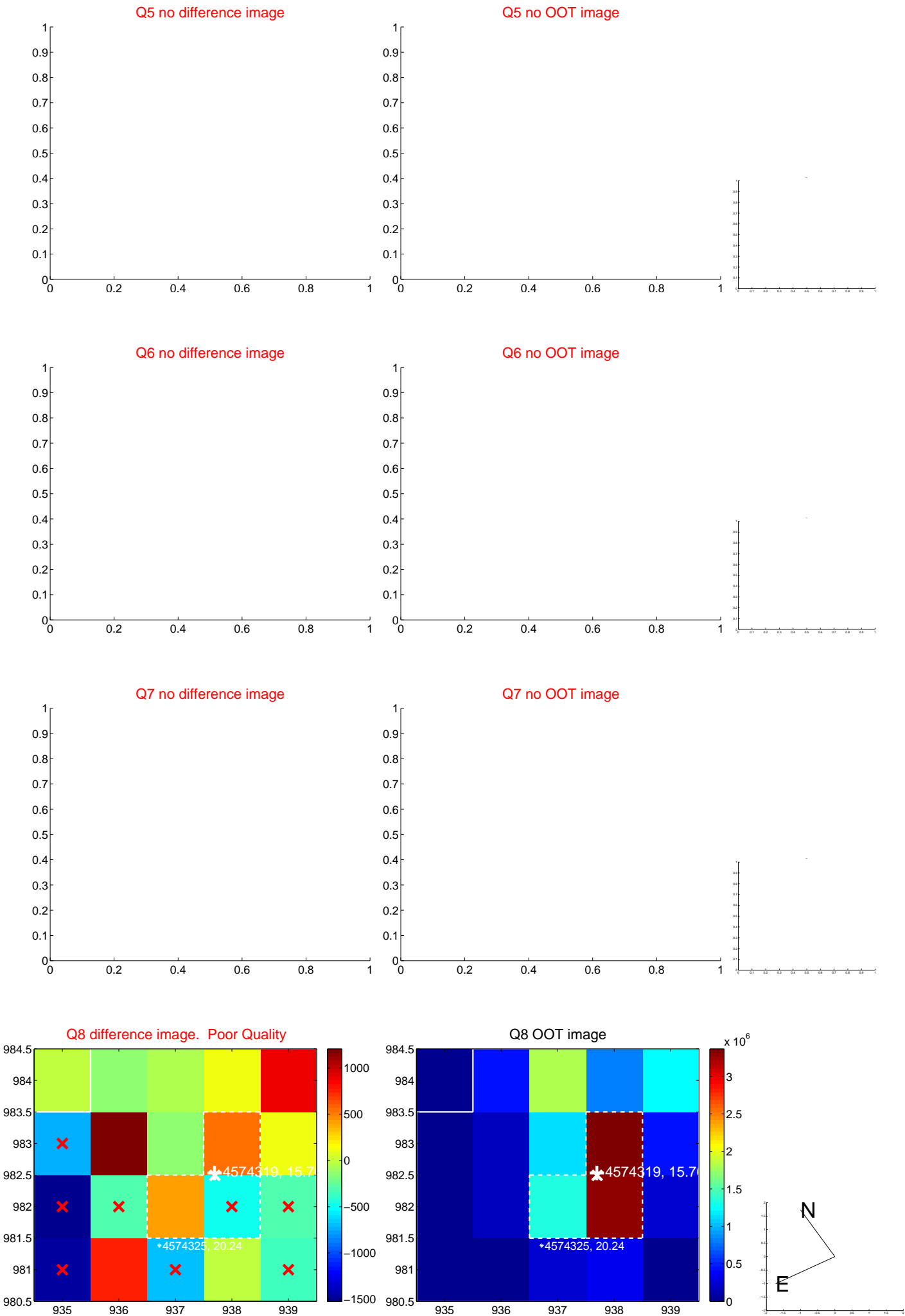


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ . 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 ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



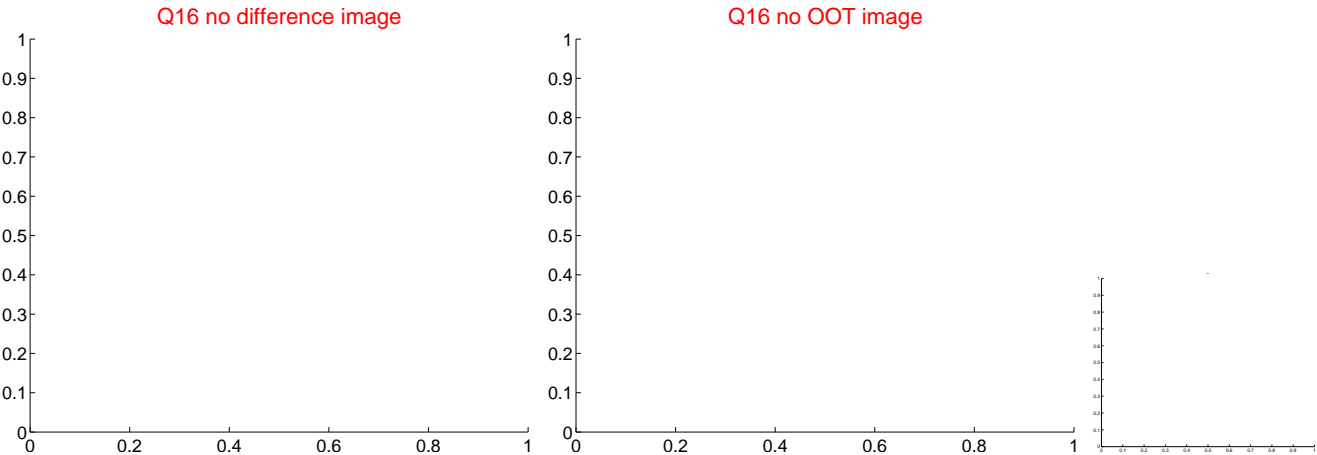
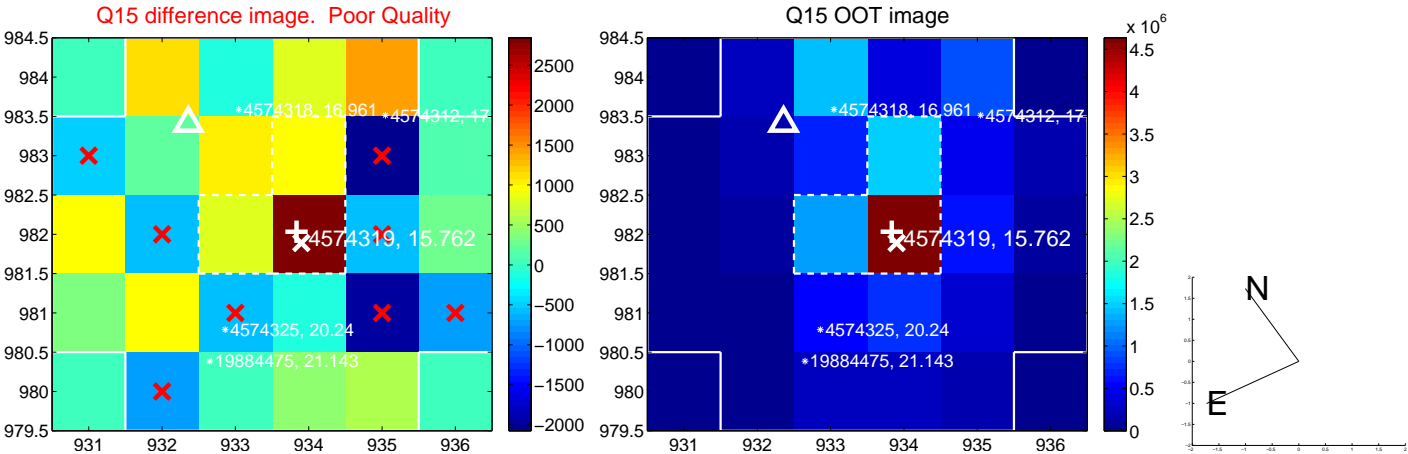
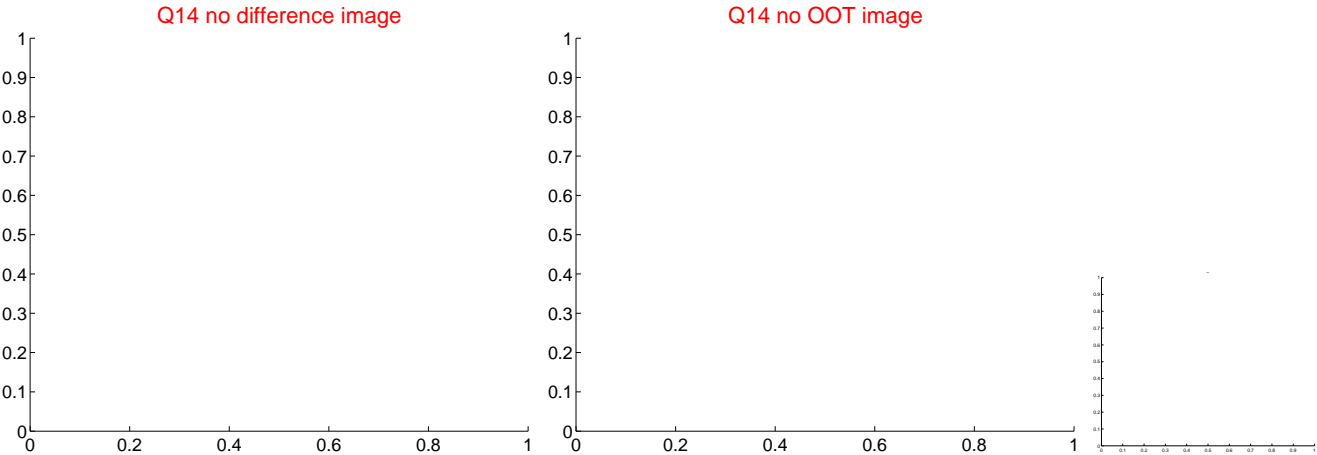
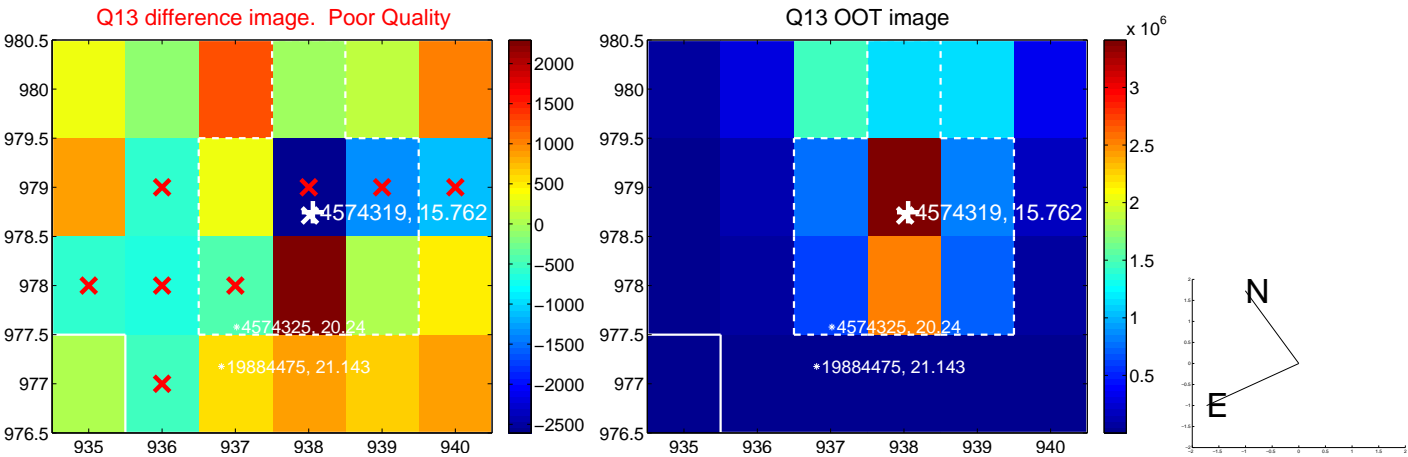
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



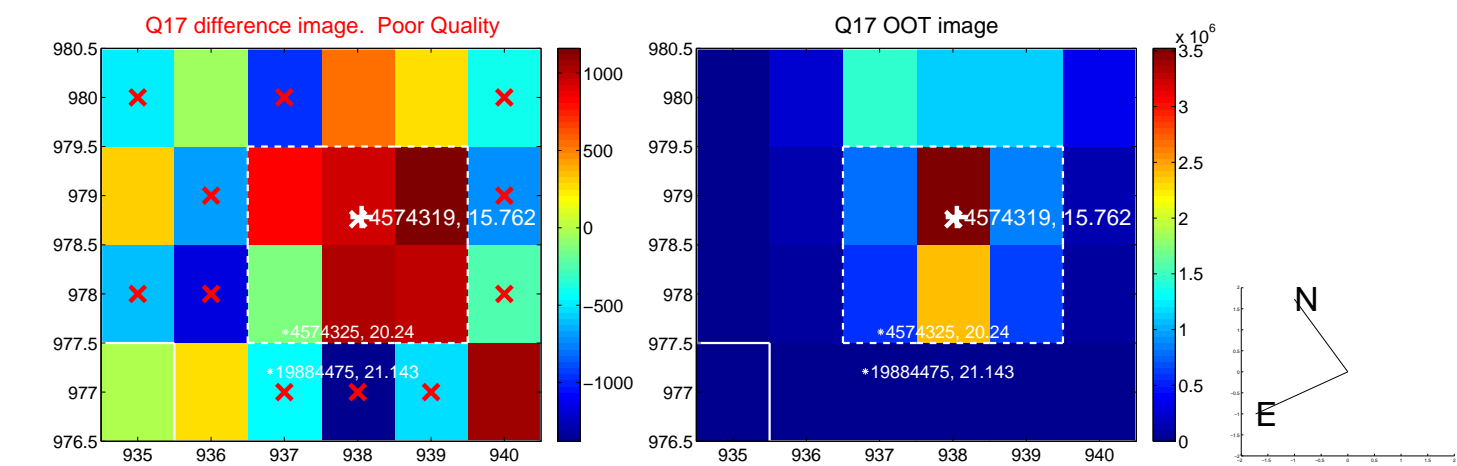
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



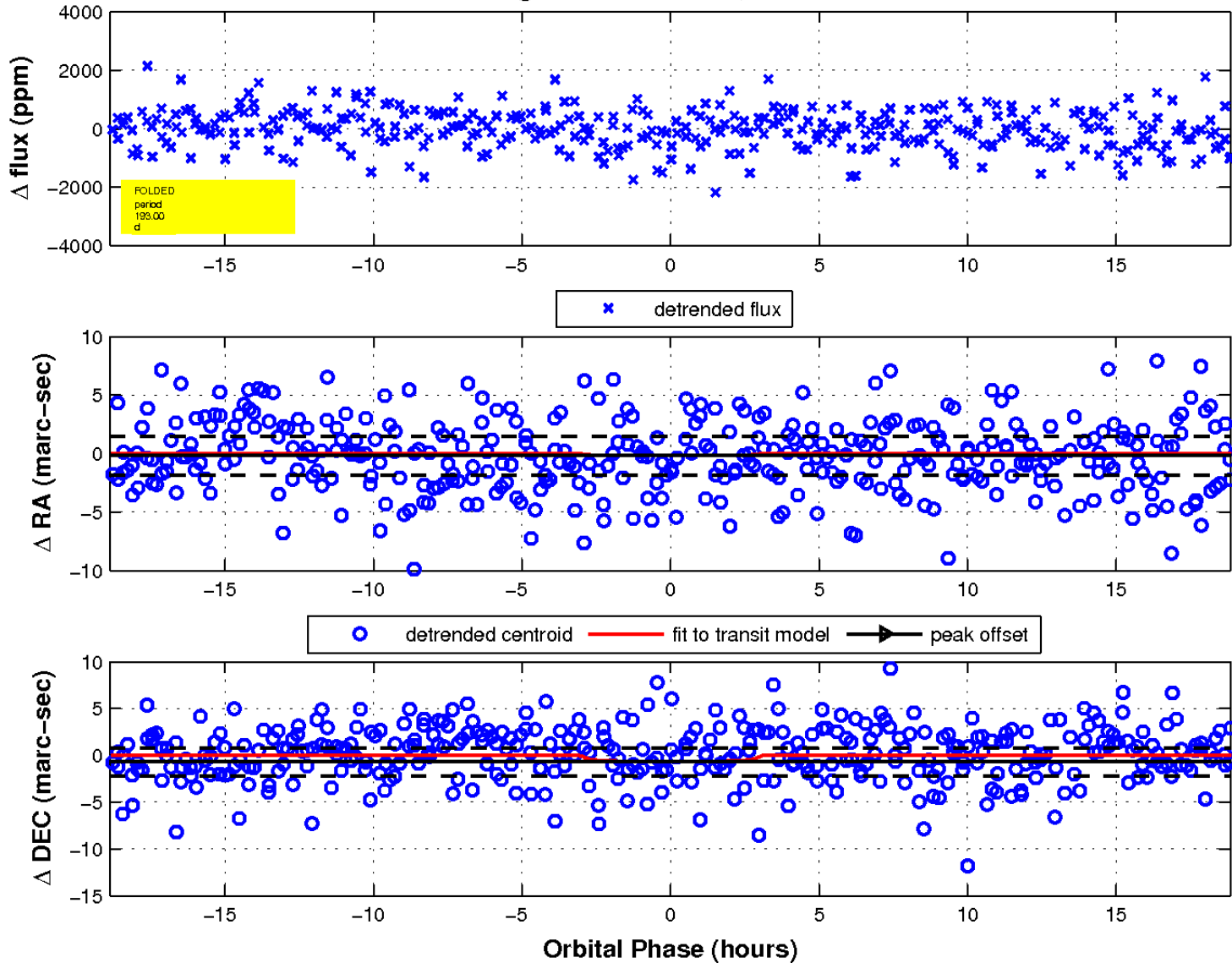
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 2 of 2



UKIRT Image

Declination

