

KIC 009418619

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})
009418619-01	OBS	6068.01	6.150253	134.422727	2069.5	1.655	1004.4	1005.9	2.87	8914	21.73	6075.93
009418619-02	OBS	No	3.075089	134.427936	24.7	1.339	12.5	13.4	2.87	8914	1.54	15310.63

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009418619-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_DV—MOD_SEC_ALT—DEEP_V_SHAPED—HAS_SEC_TCE—CENT_SATURATED
009418619-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE—CENT_SATURATED

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.

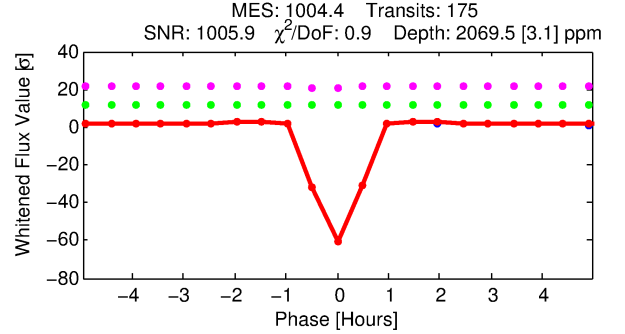
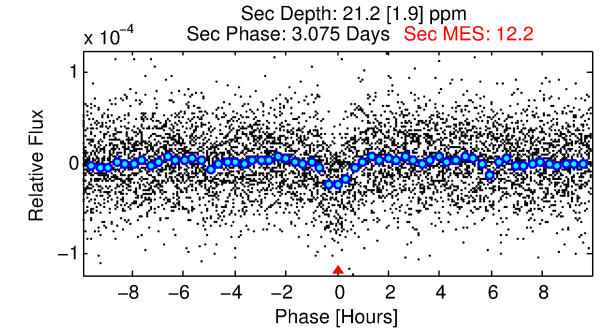
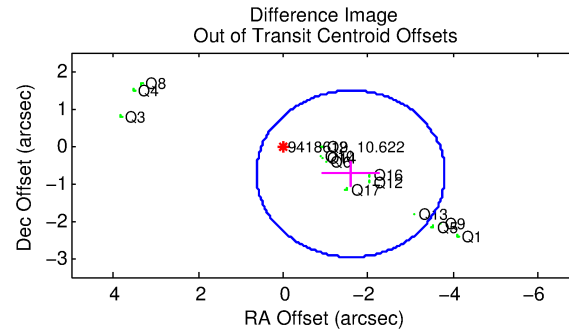
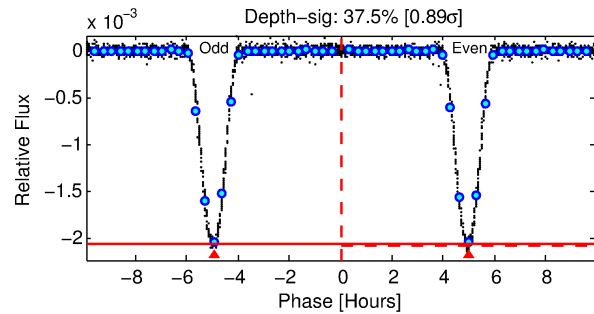
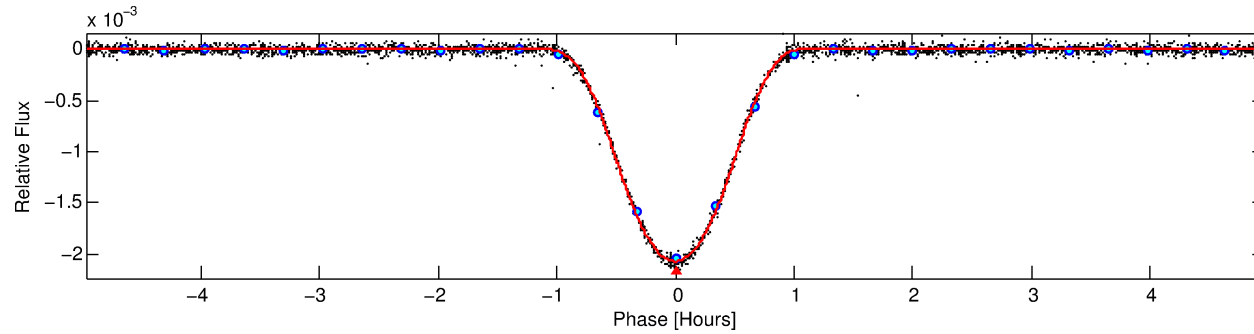
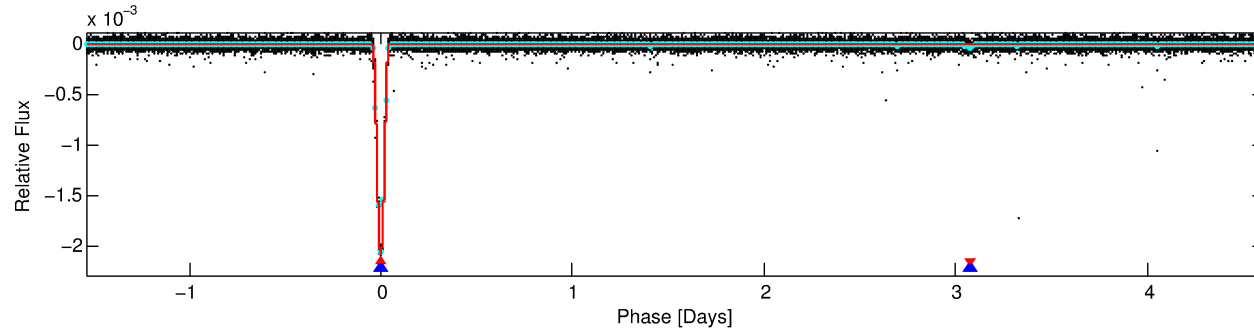
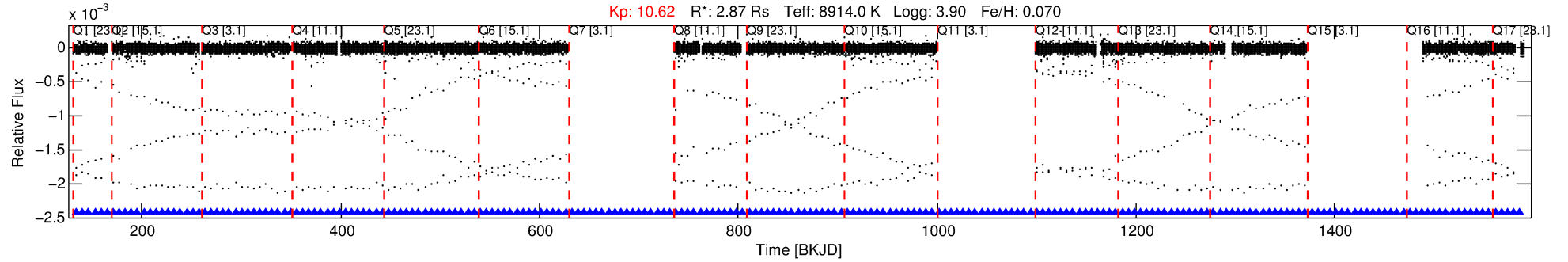
Ephemeris Match Information For 009418619-01

No Significant Match Found

DV One-Page Summary

KIC: 9418619 Candidate: 1 of 2 Period: 6.150 d

KOI: K06068.01 Corr: 0.994



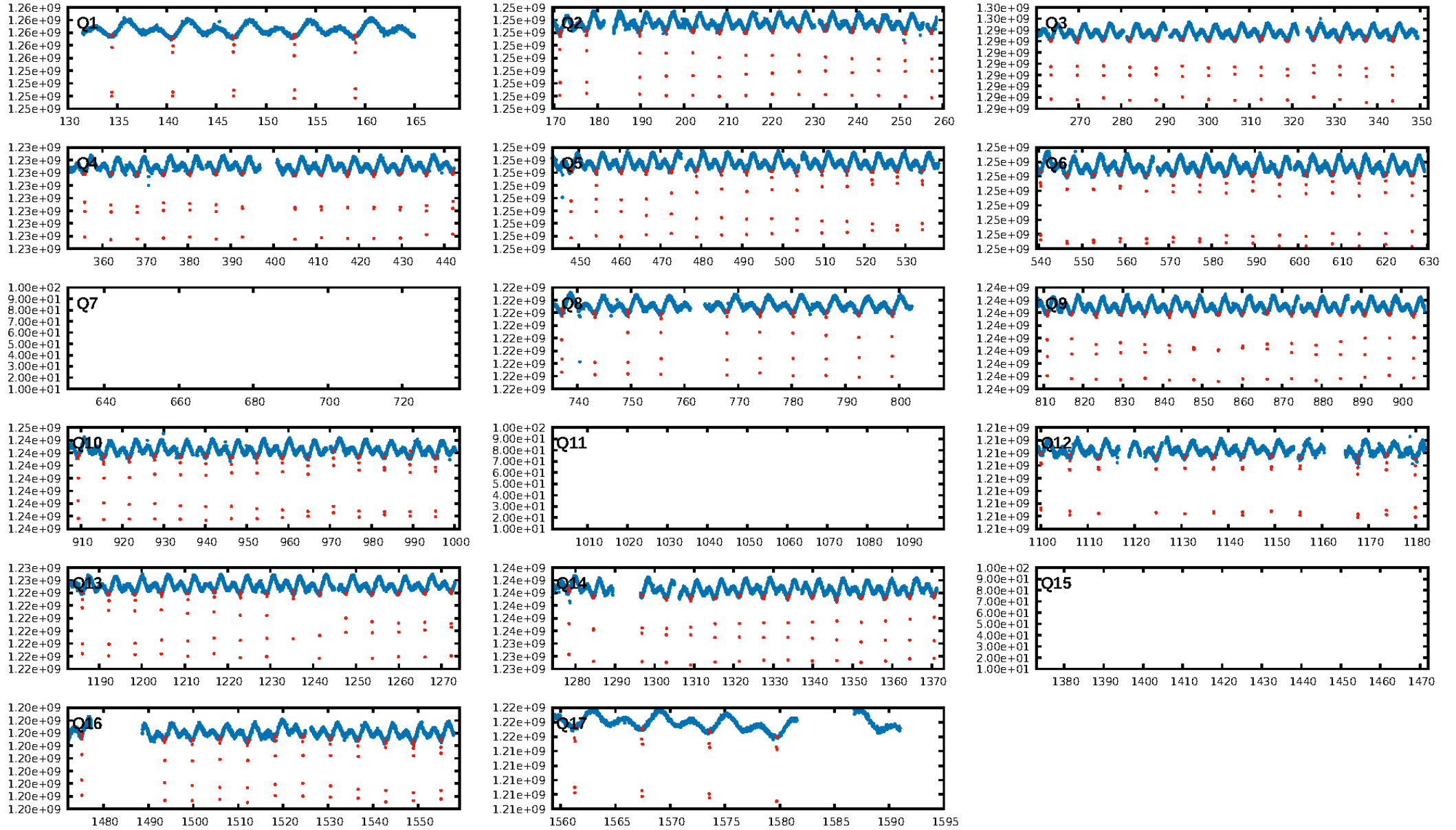
DV Fit Results:

Period = 6.15025 [0.00000] d
Epoch = 134.4227 [0.0000] BKJD
 R_p/R^* = 0.0694 [0.0038]
 a/R^* = 11.55 [0.17]
 b = 0.99 [0.01]
 S_{eff} = 6075.93 [3203.05]
 T_{eq} = 2251 [297] K
 R_p = 21.73 [8.32] R_e
 a = 0.0875 [0.0286] AU
 A_g = 0.19 [0.10] [-8.48 σ]
 T_{eff} = 2296 [143] K [0.14 σ]

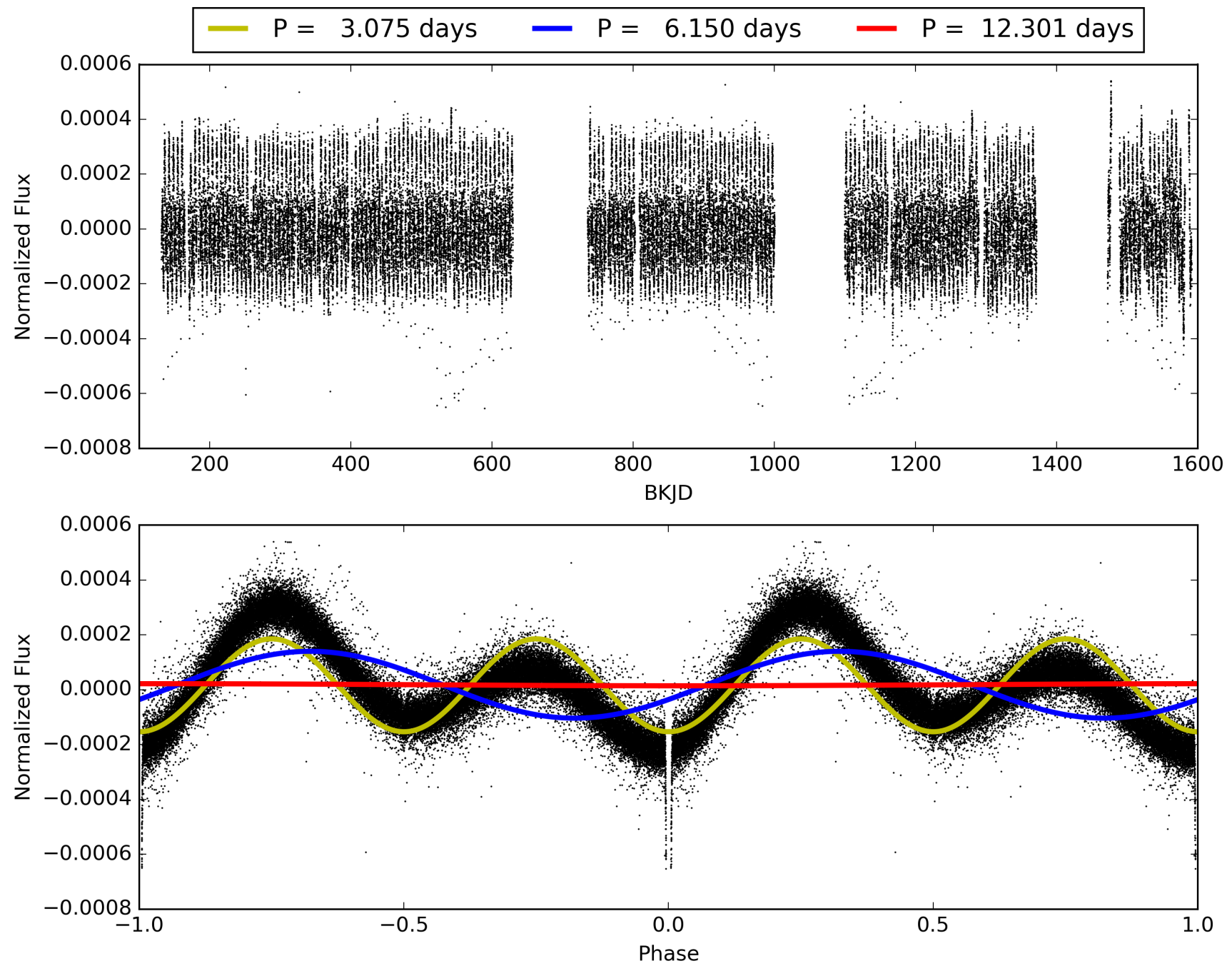
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [34.67 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 96.9%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 1.00 [166/166]
GhostDiagnostic-chr: 14.16
Centroid-sig: N/A
Centroid-so: 0.223 arcsec [9.04 σ]
OotOffset-rm: 1.763 arcsec [2.38 σ]
KicOffset-rm: 2.248 arcsec [3.11 σ]
OotOffset-st: 4/1/4/5 [14]
KicOffset-st: 4/1/4/5 [14]
DiffImageQuality-fgm: 0.57 [8/14]
DiffImageOverlap-fno: 0.00 [0/14]

TCE 009418619-01, PDC Light Curves

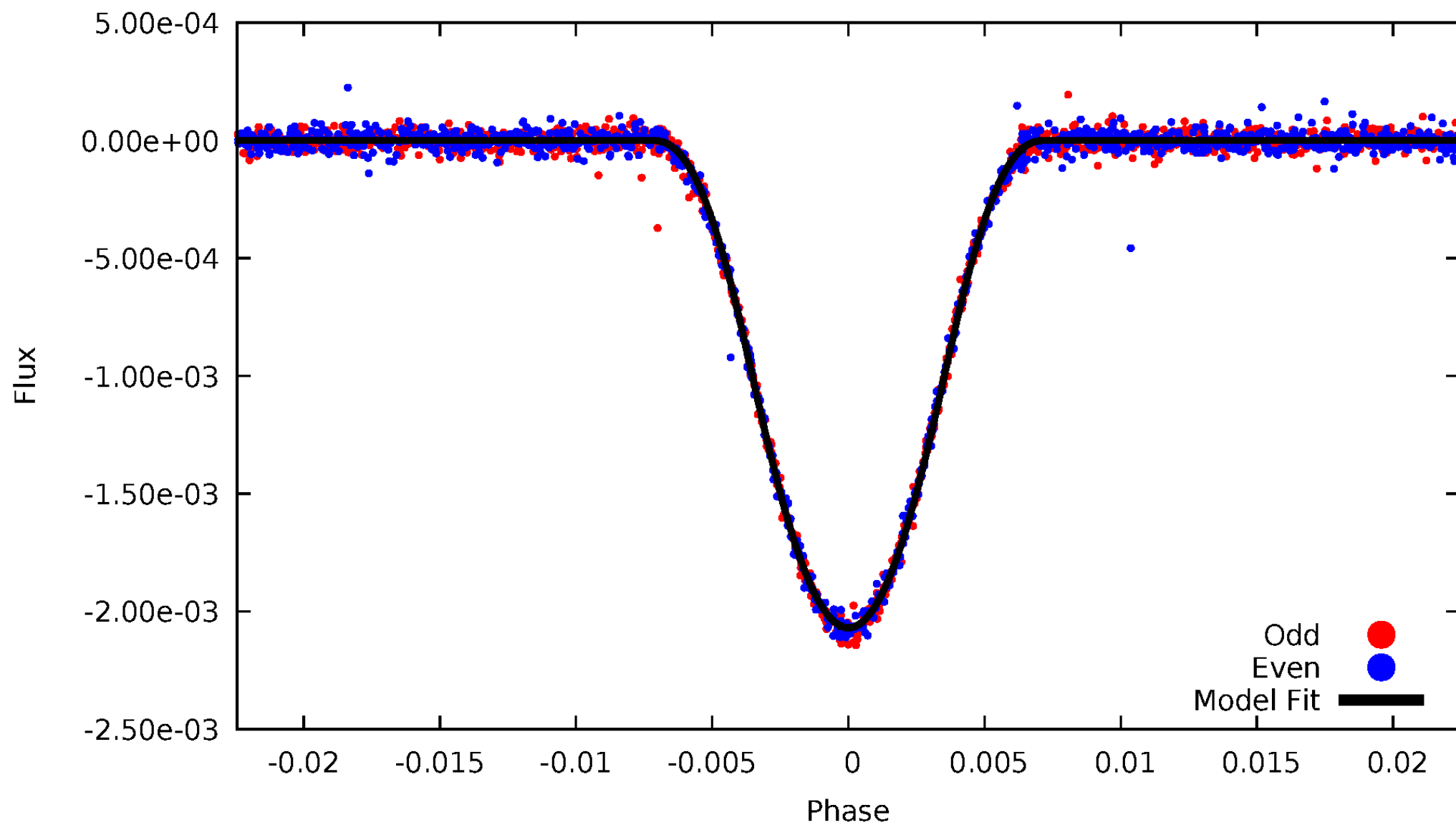


TCE 009418619-01



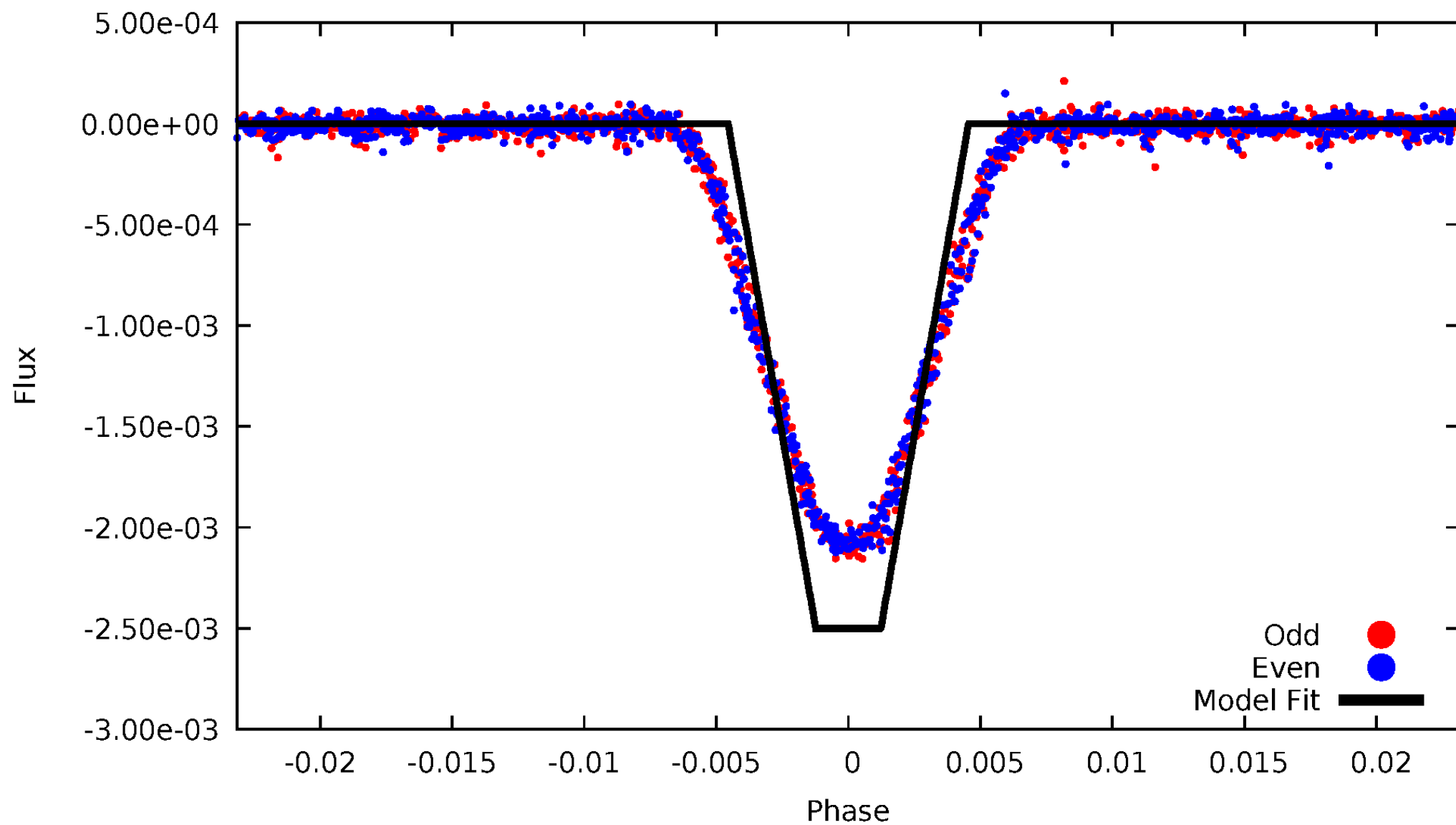
DV Odd/Even

TCE 009418619-01



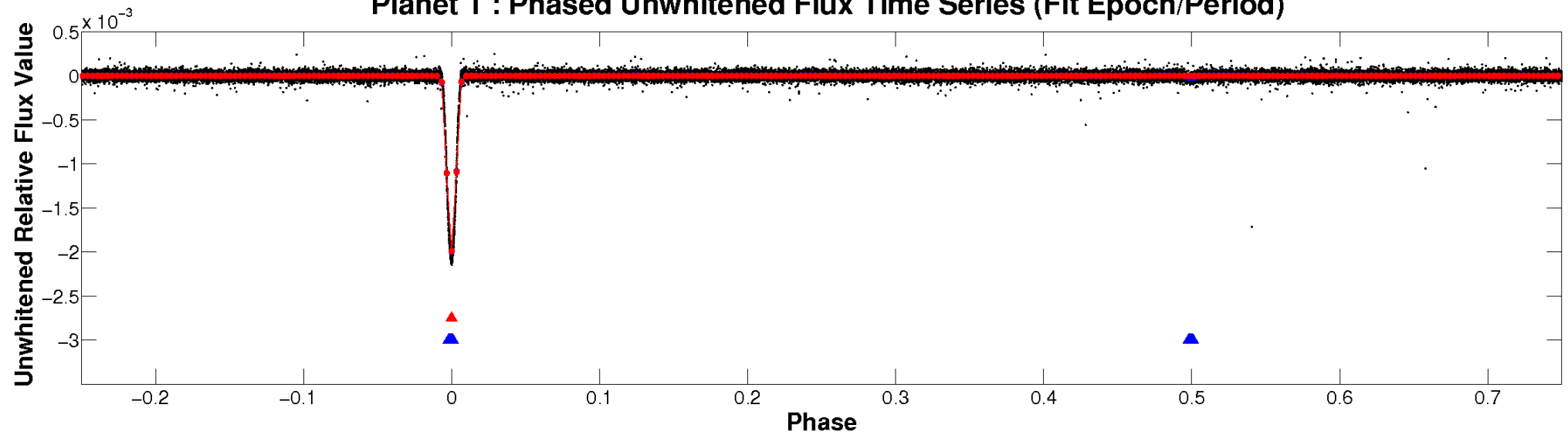
ALT Odd/Even

TCE 009418619-01

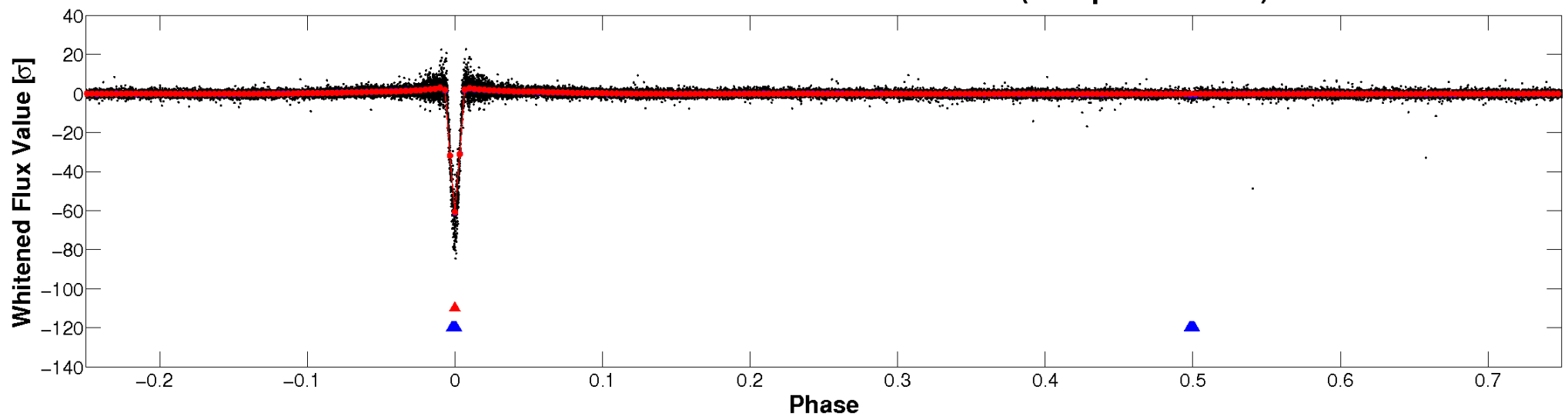


Non-Whitened Vs. Whitened Light Curve

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

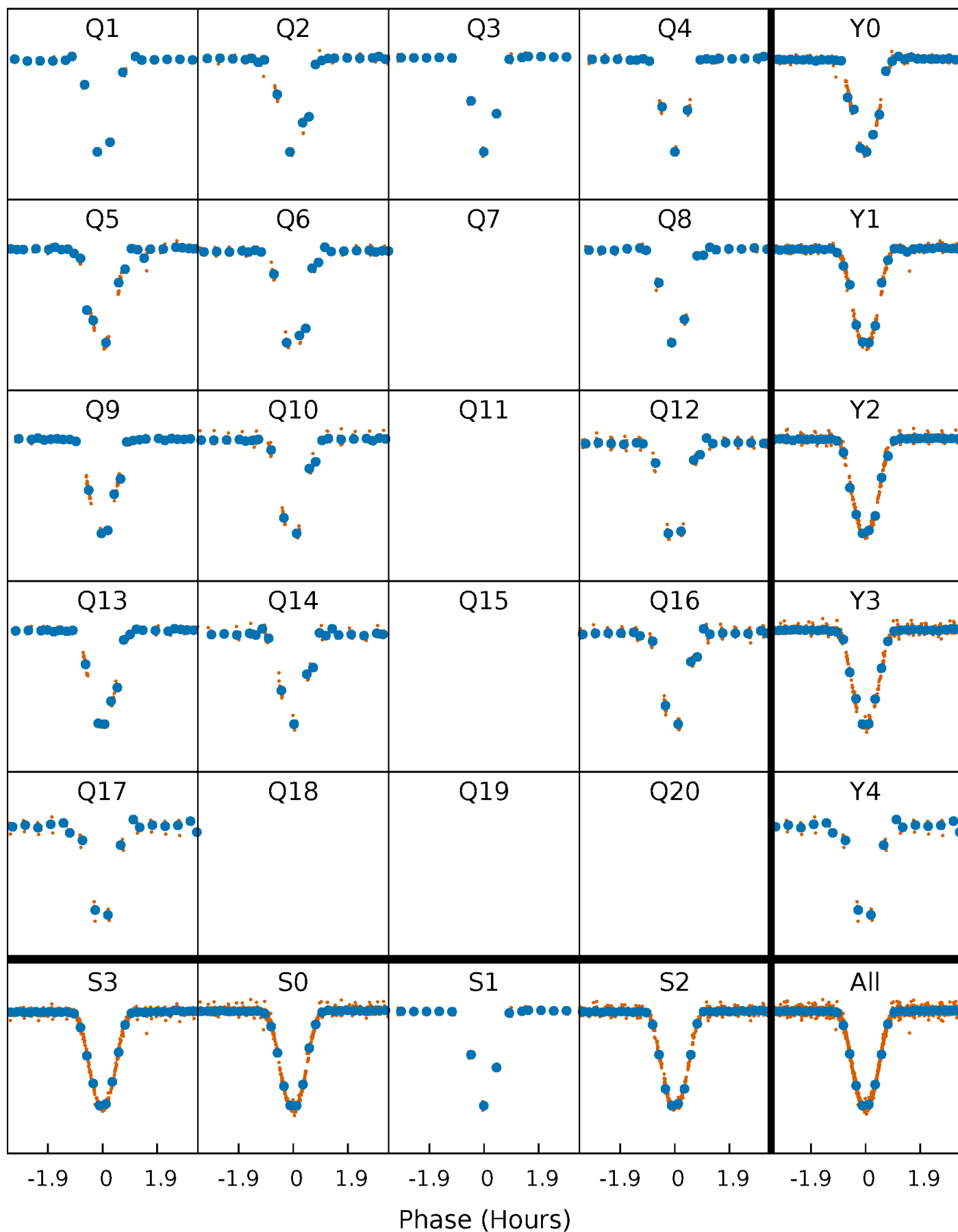


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



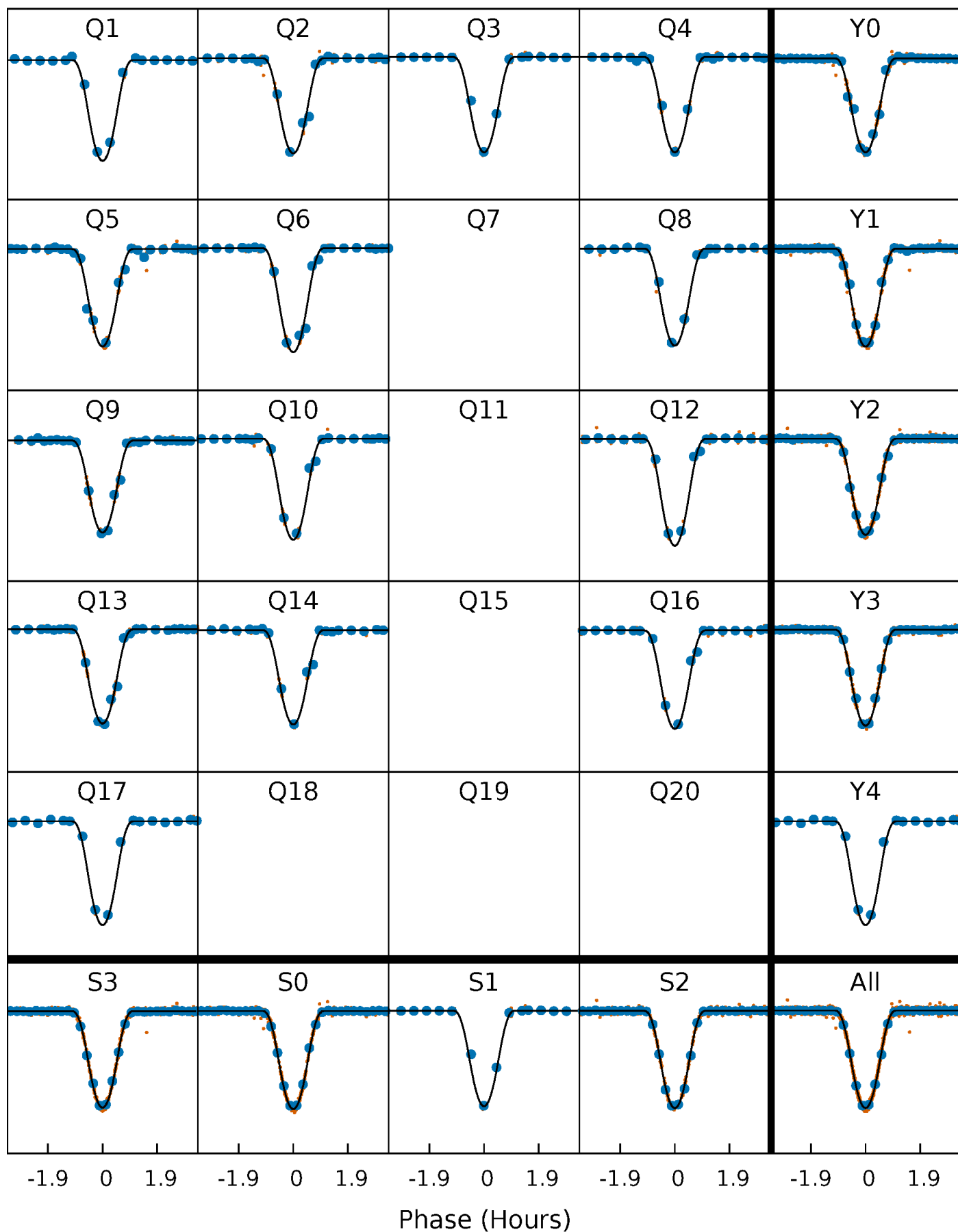
PDC Quarter-Phased Transit Curves

TCE 009418619-01 P= 6.150253 Days $T_0=134.422727$ (BKJD)



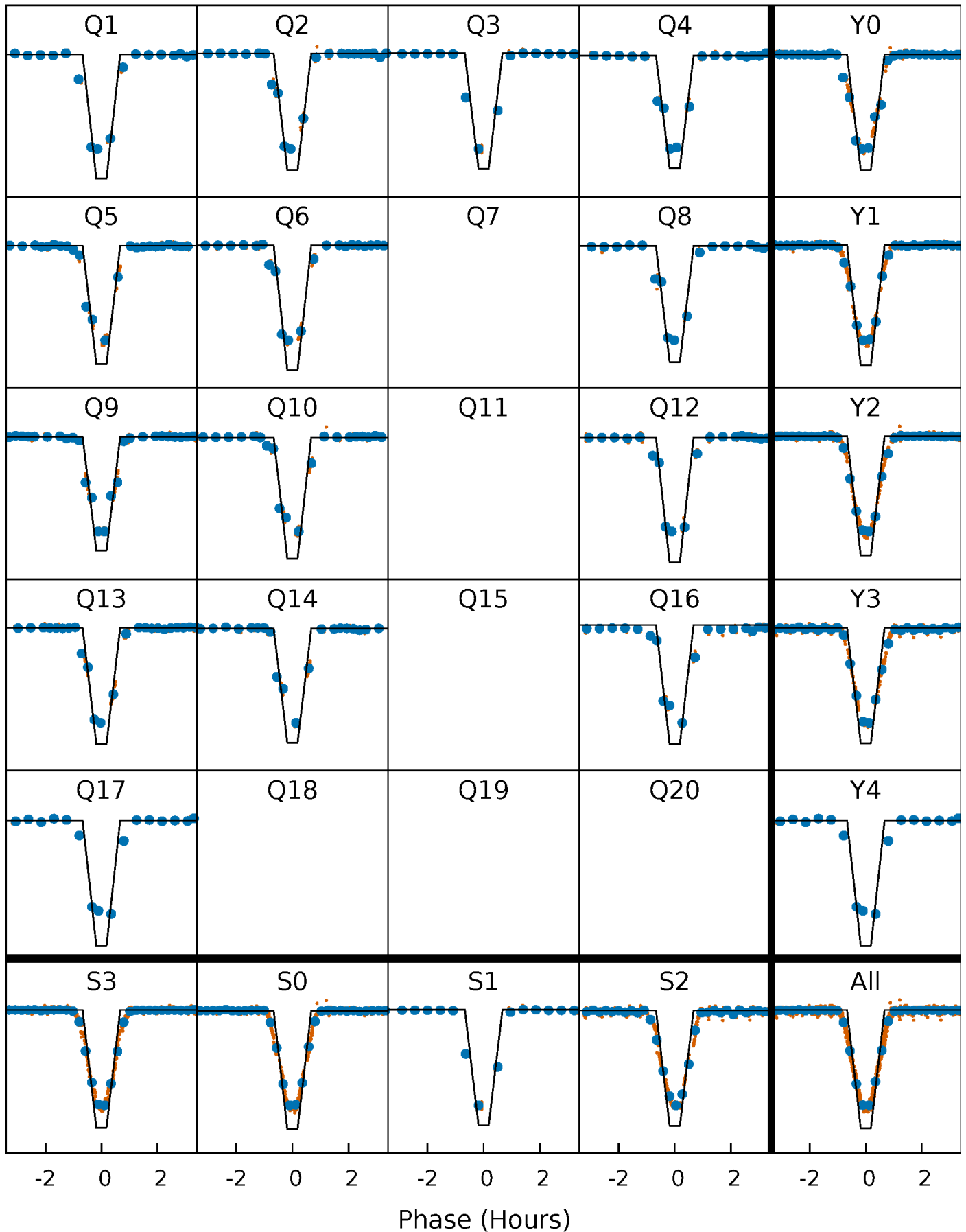
DV Quarter-Phased Transit Curves

TCE 009418619-01 P= 6.150253 Days $T_0=134.422727$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

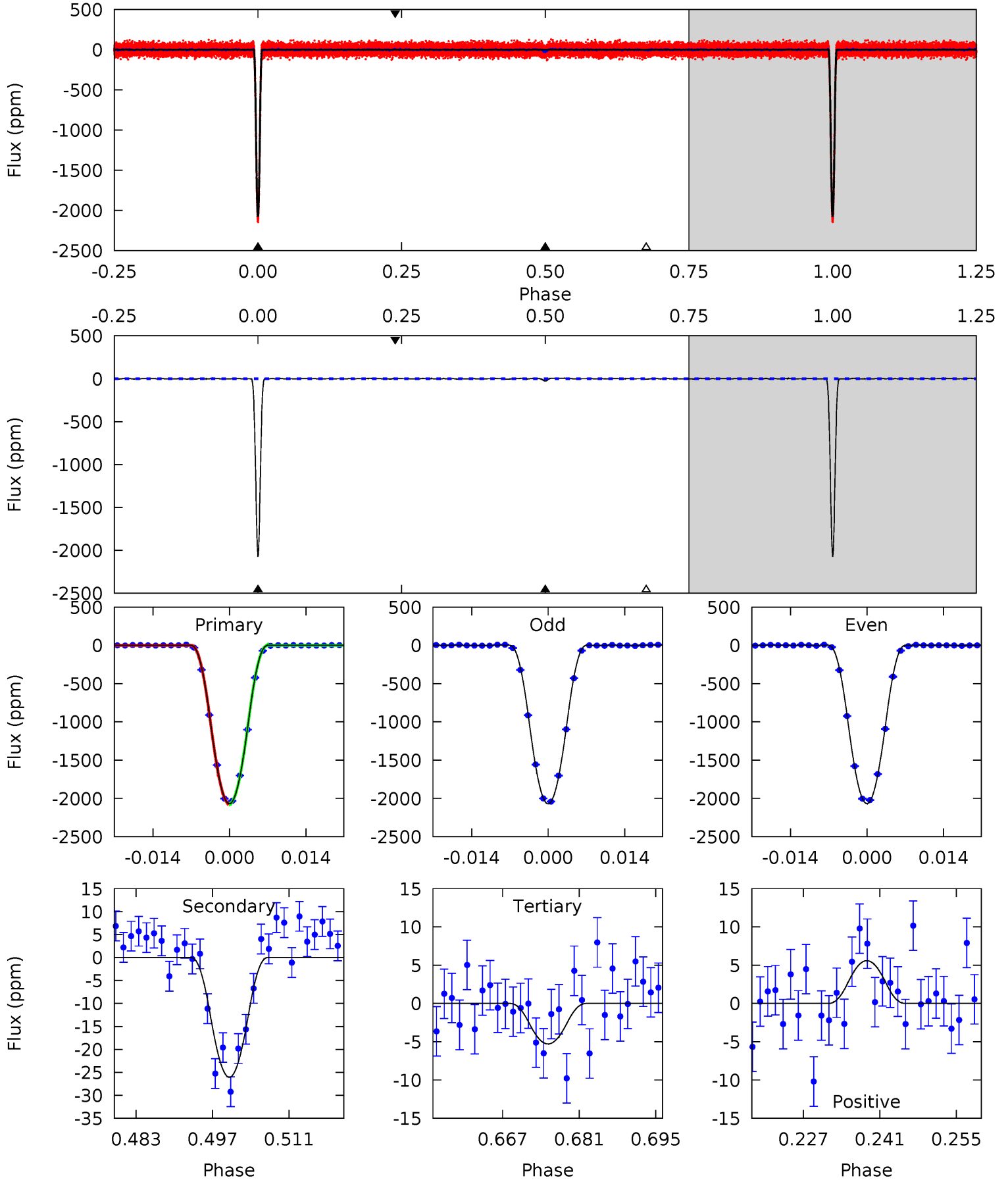
TCE 009418619-01 P= 6.150234 Days $T_0=134.424596$ (BKJD)



DV Model-Shift Uniqueness Test

009418619-01, P = 6.150253 Days, E = 128.272474 Days

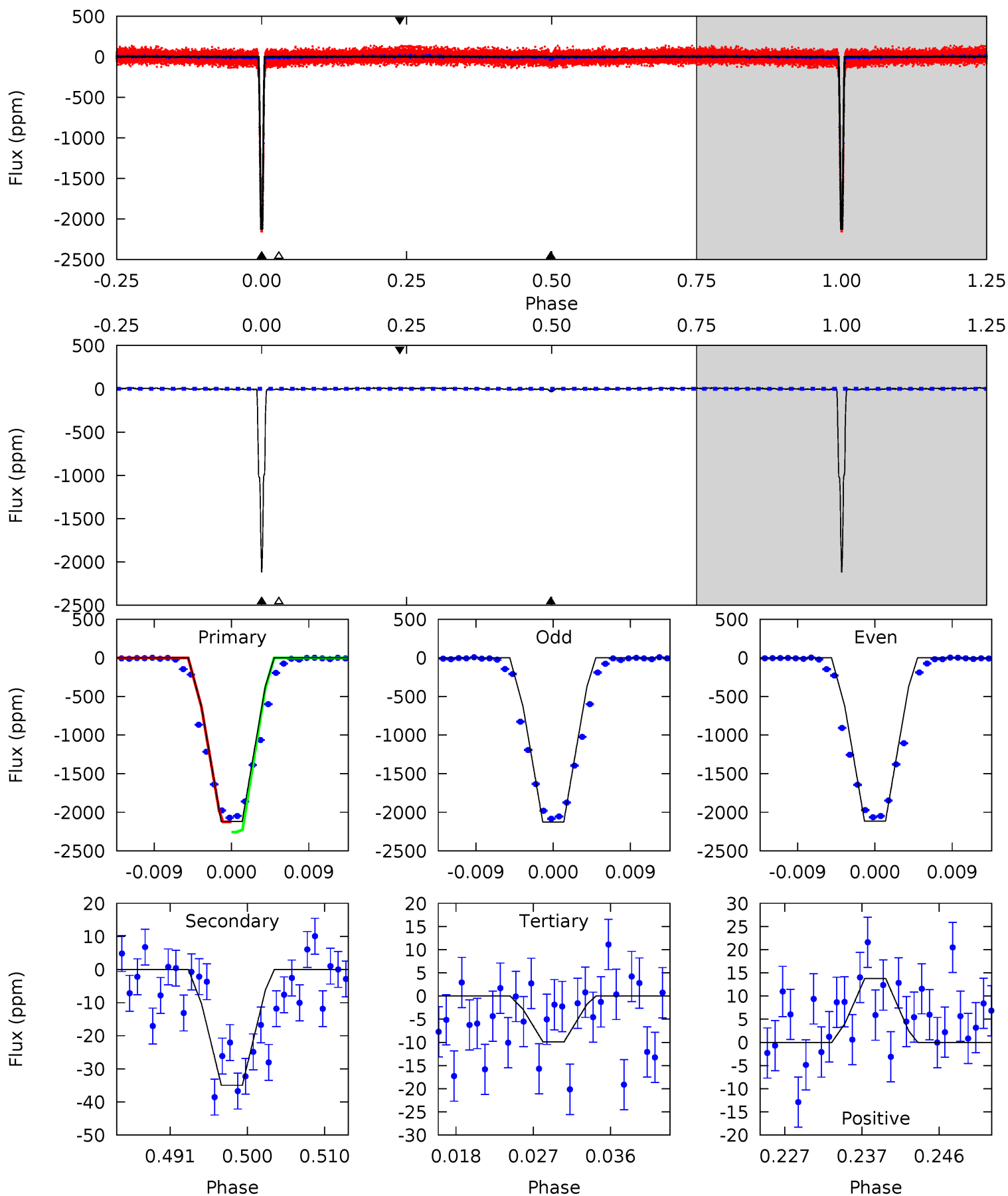
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1777	22.4	4.54	4.80	4.96	2.45	1.70	1772	1772	17.8	17.6	1.09	1.00	0.00	1.96



Alt Model-Shift Uniqueness Test

009418619-01, P = 6.150234 Days, E = 128.274362 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1083	17.9	5.07	7.04	5.04	2.61	2.32	1078	1076	12.8	10.8	2.95	1.00	0.01	28.2



Stellar Parameters For KIC 009418619

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$
	8914^{+246}_{-458}	$3.896^{+0.270}_{-0.180}$	$0.070^{+0.250}_{-0.600}$	$2.867^{+0.988}_{-1.087}$	$2.357^{+0.353}_{-0.656}$	$0.141^{+0.299}_{-0.069}$
	+3%/-5%	+7%/-5%	+357%/-857%	+34%/-38%	+15%/-28%	+212%/-49%
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 009418619-01 / KOI 6068.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-26 ± 1	$21.18^{+4.08}_{-4.14}$	3090^{+296}_{-305}	-2467^{+4835}_{-368}	$0.241^{+0.117}_{-0.067}$
Alt.	-35 ± 2	$15.38^{+2.98}_{-3.31}$	3102^{+277}_{-317}	3072^{+210}_{-225}	$0.617^{+0.309}_{-0.183}$

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

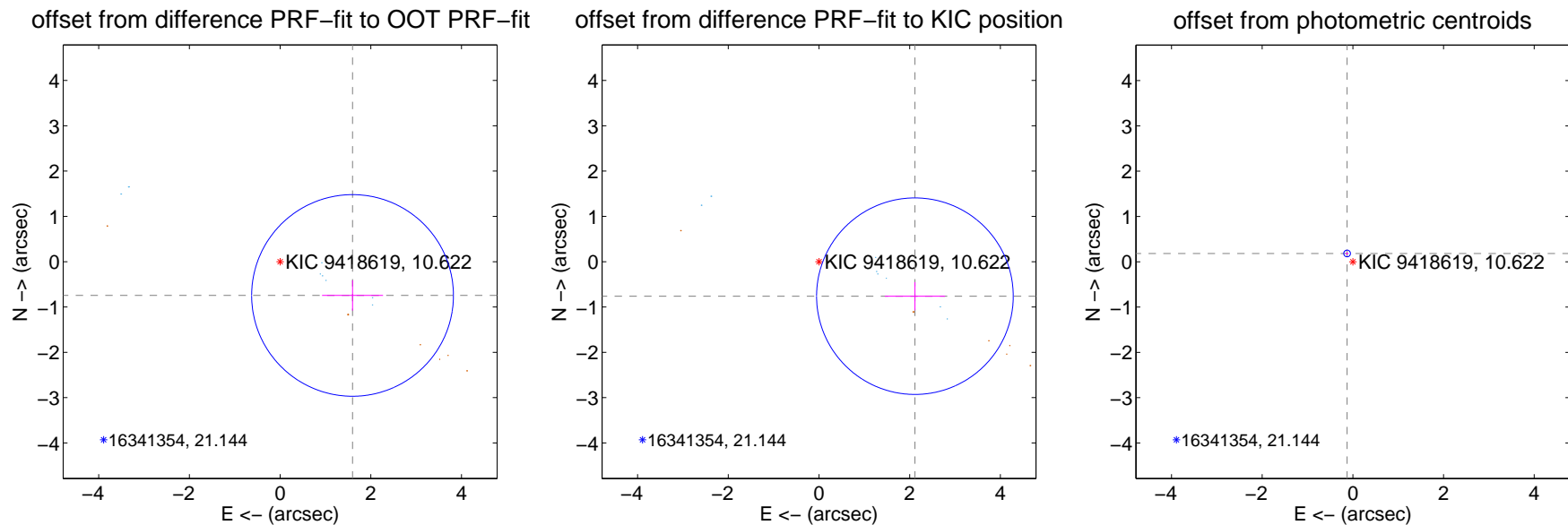
DV Centroid Data

Supplemental centroid analysis for 009418619-01. **Kepler magnitude: 10.62.** Transit SNR 1005.92

There are 8 quarters with good PRF difference image offsets

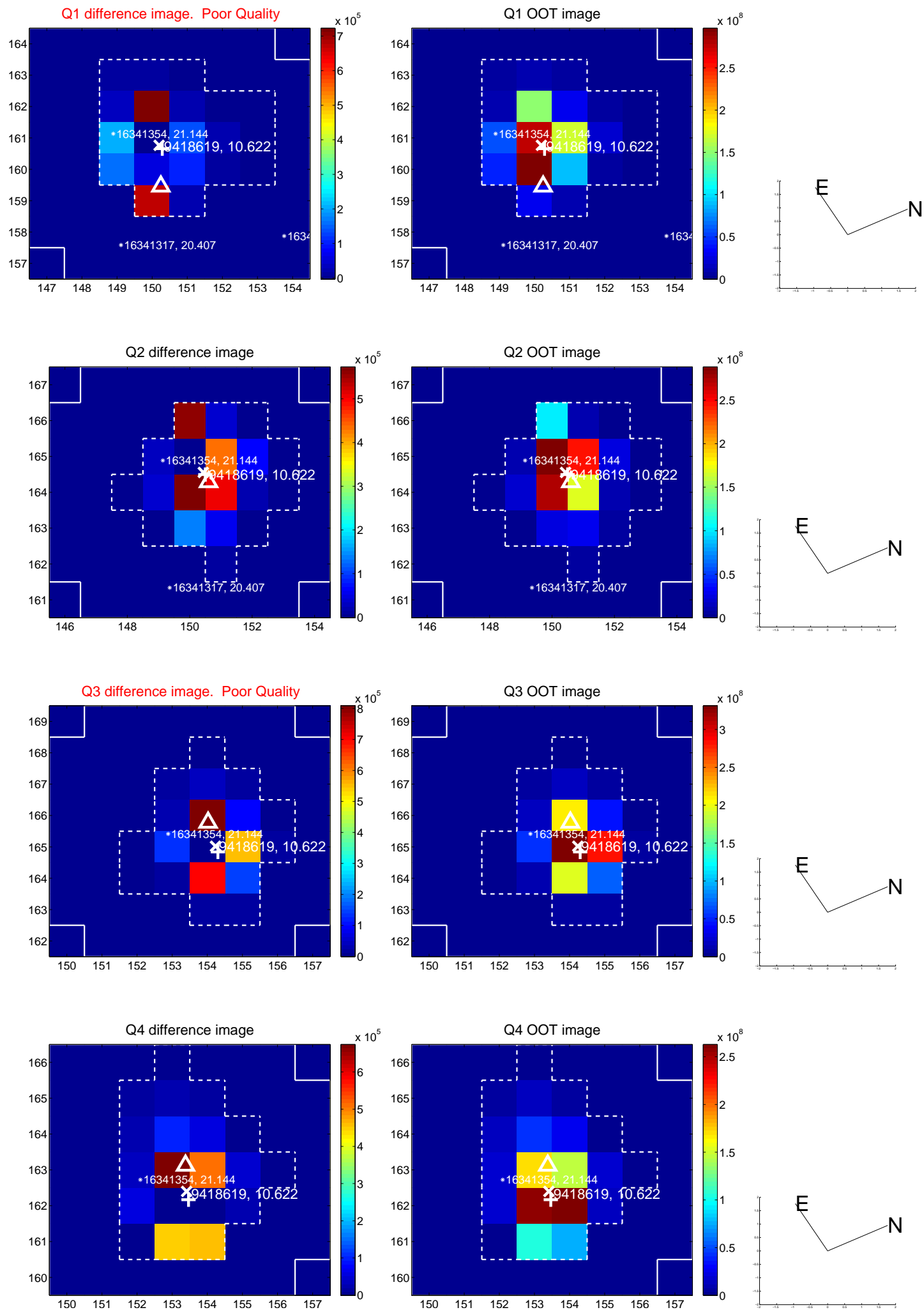
The direct PRF centroid is offset from the target star catalog position by about 0.59 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.763 ± 0.742	2.38	-1.597 ± 0.673	-0.745 ± 0.335
PRF-fit source offset from KIC position	2.248 ± 0.723	3.11	-2.116 ± 0.663	-0.761 ± 0.309
photometric centroid source offset	0.22 ± 0.02	9.04	0.13 ± 0.03	0.18 ± 0.02

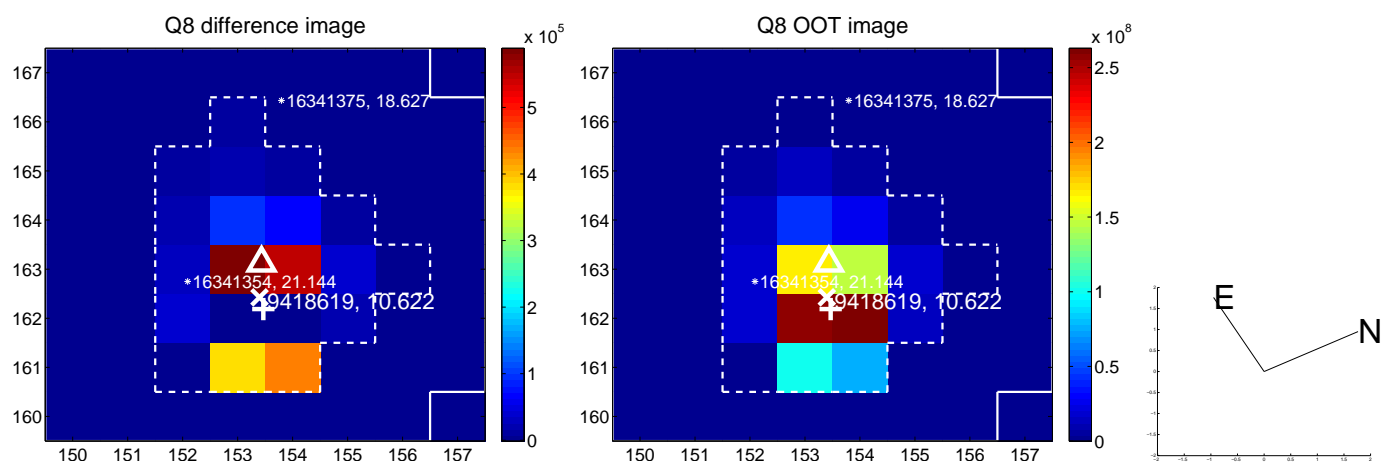
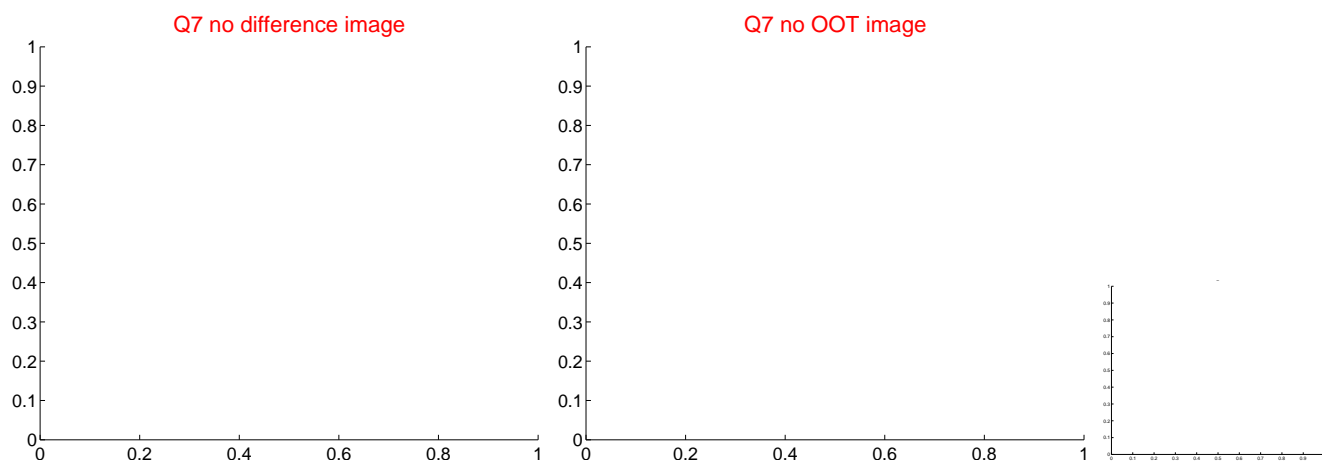
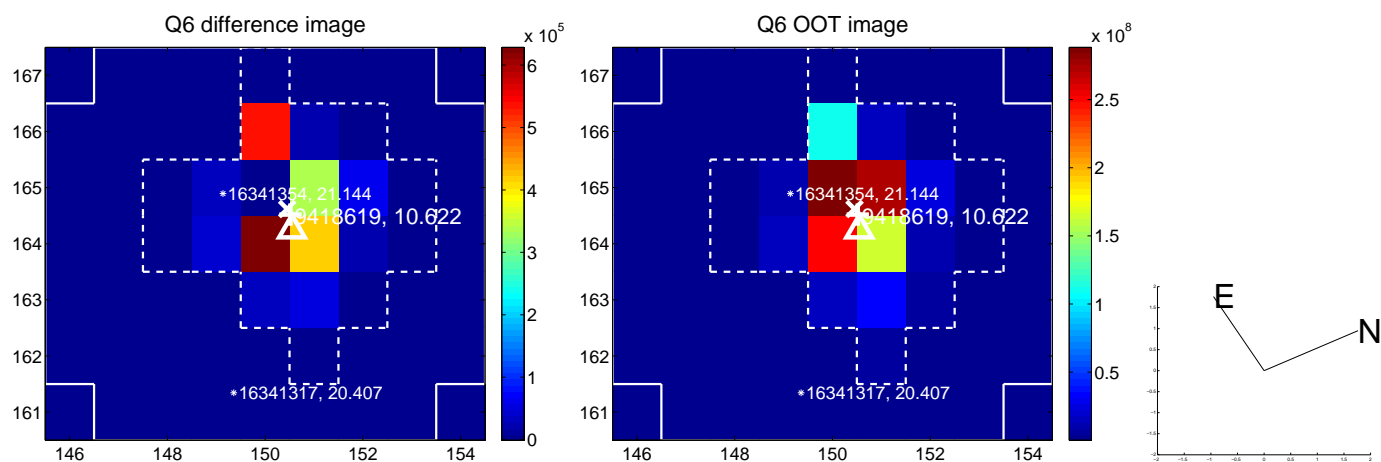
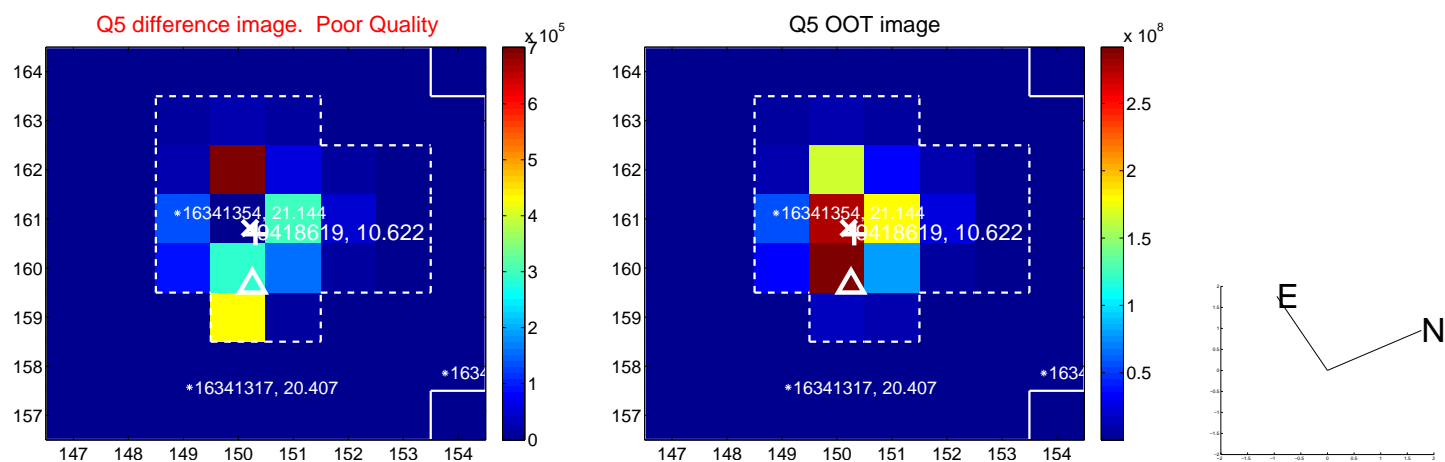


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

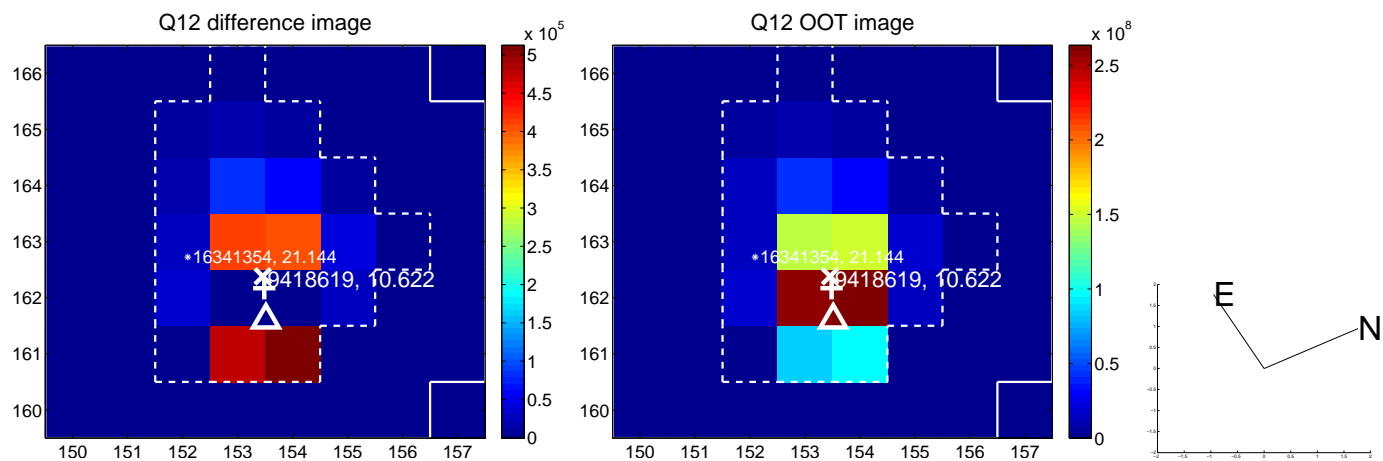
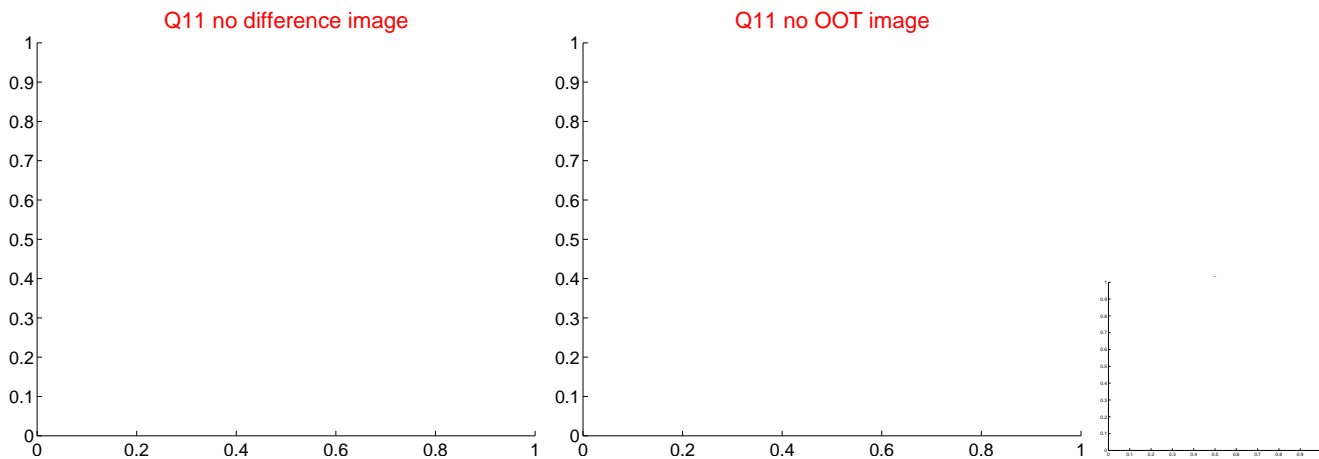
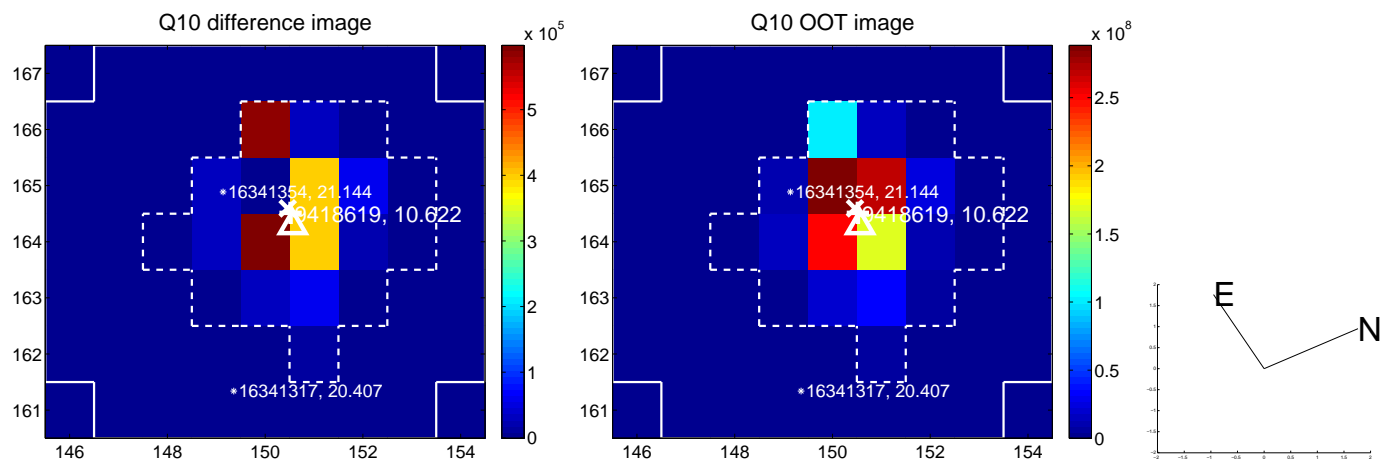
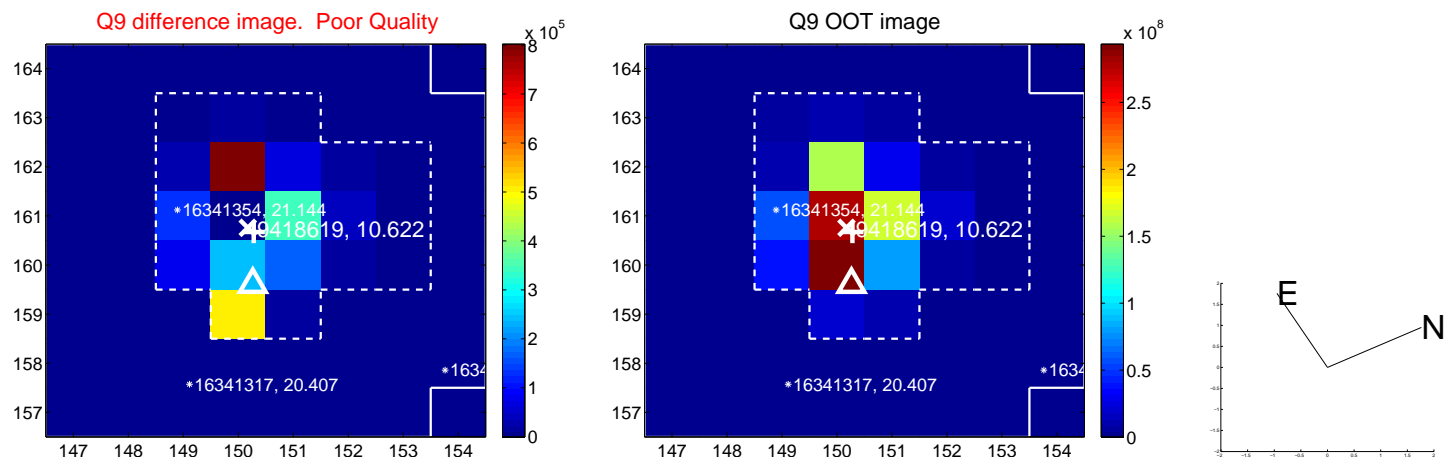
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



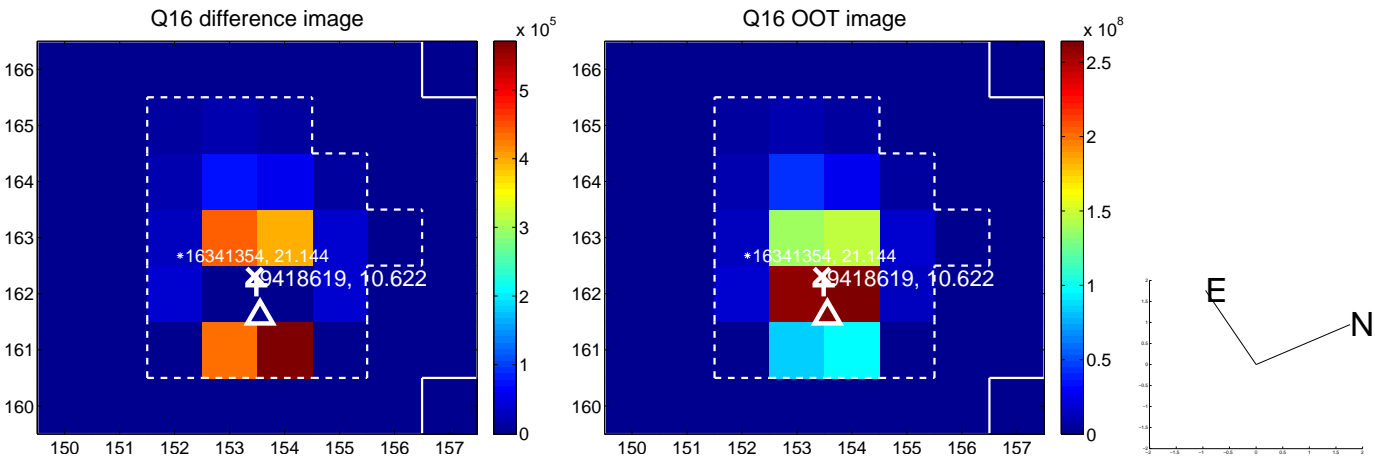
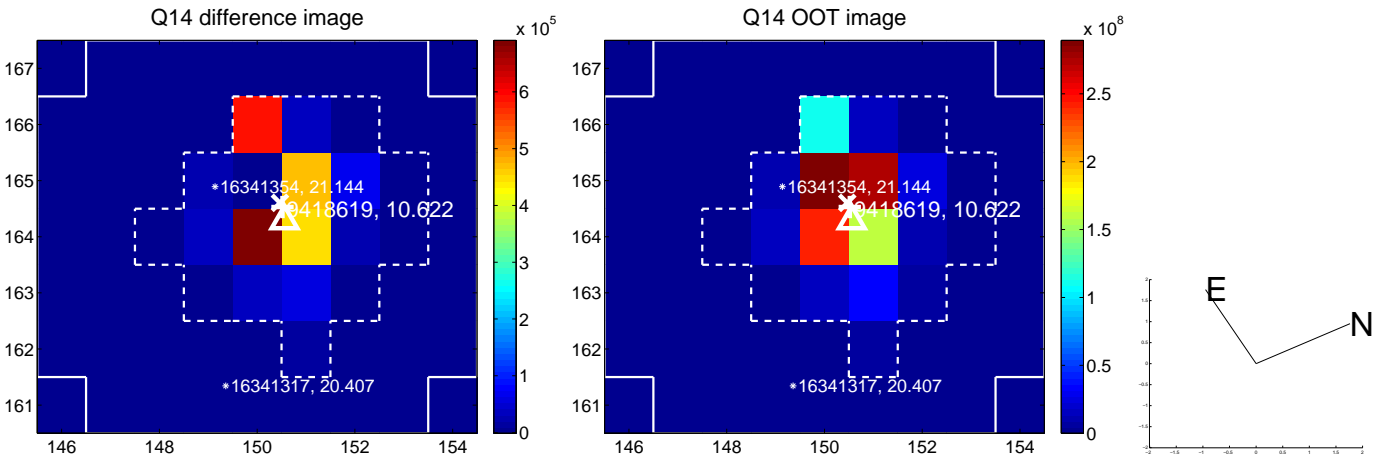
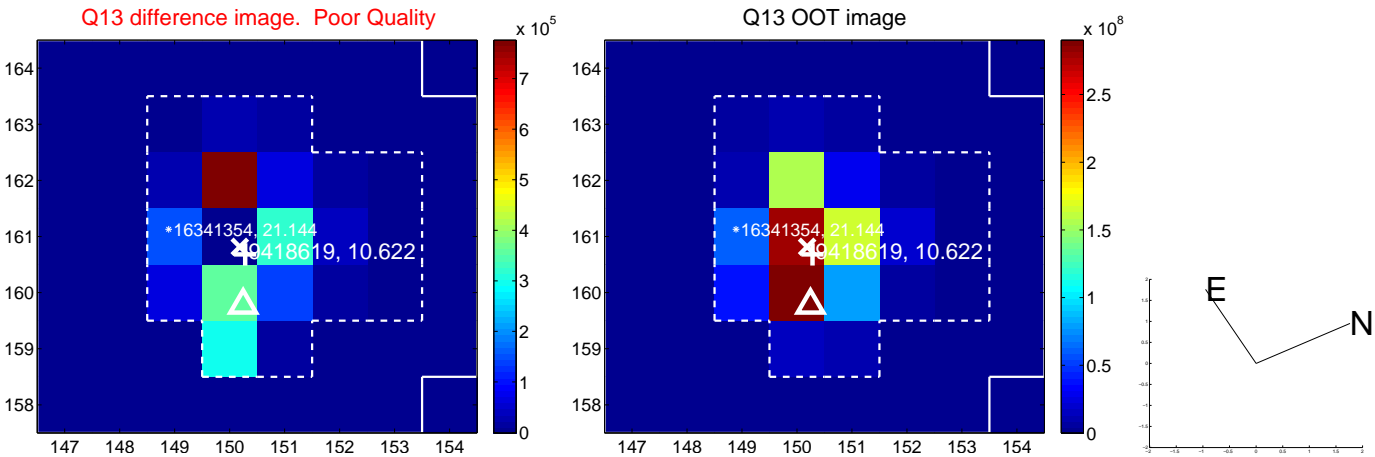
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



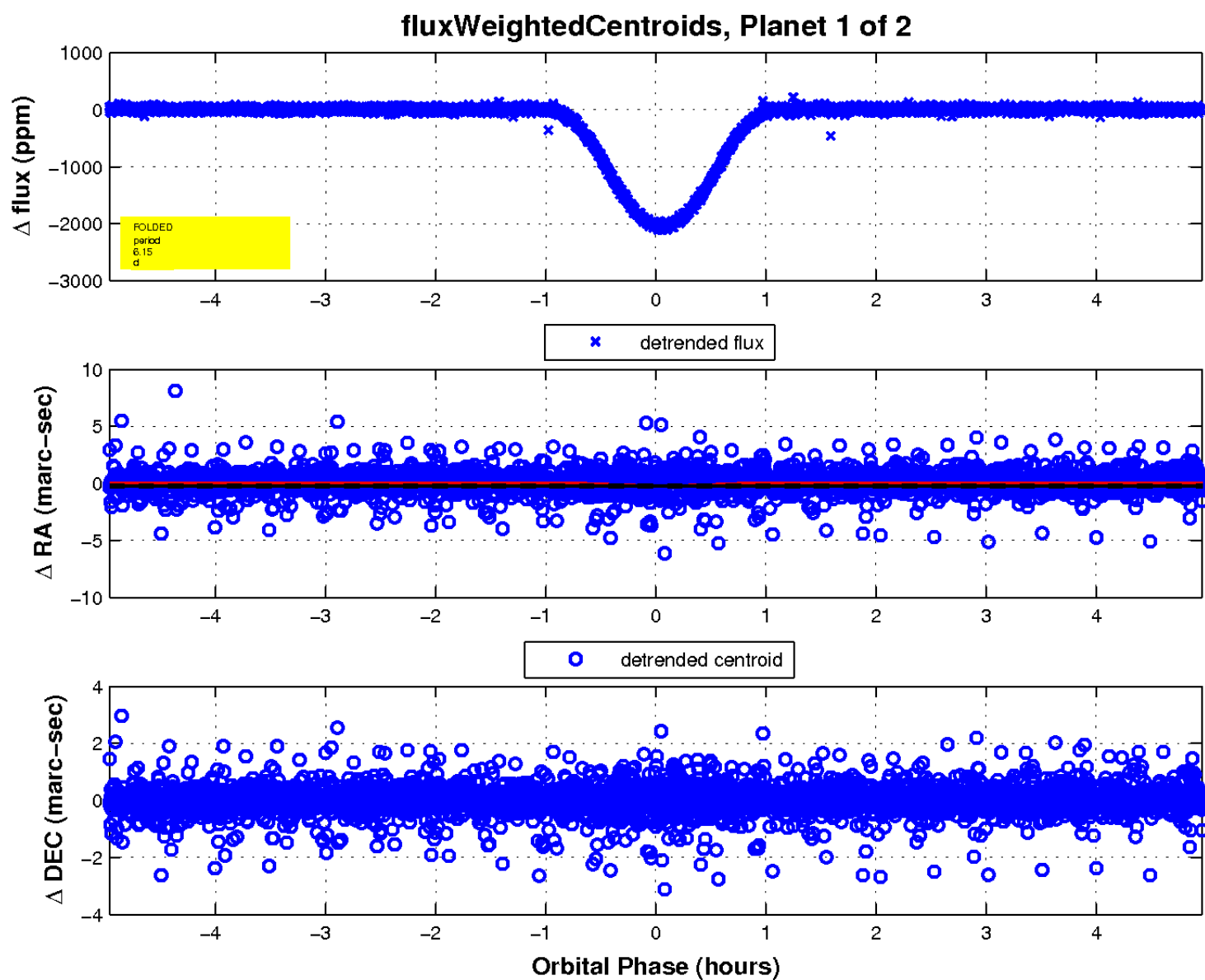
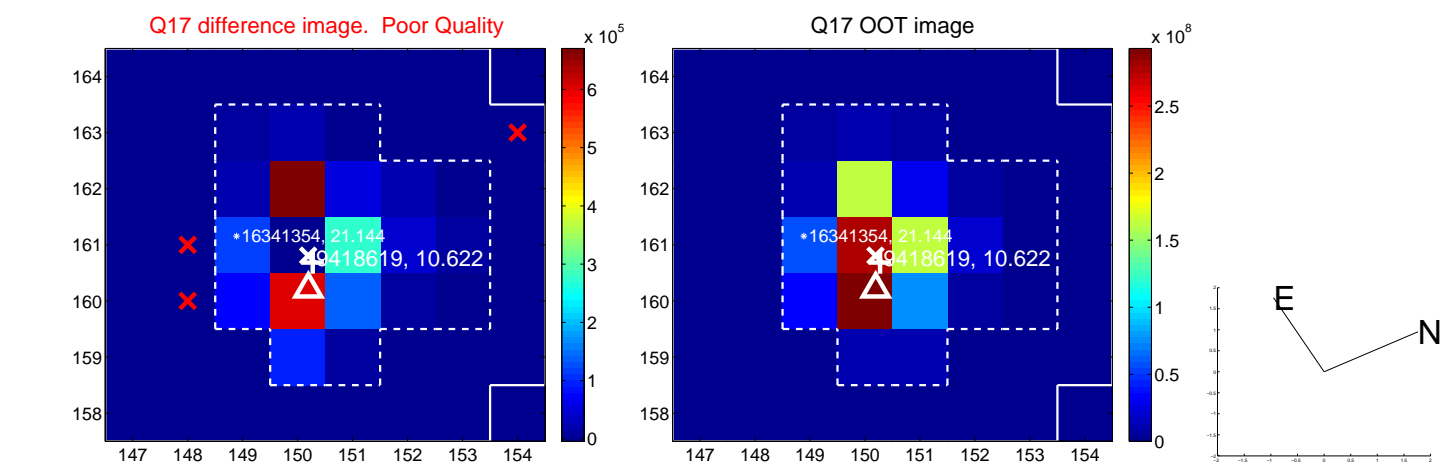
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

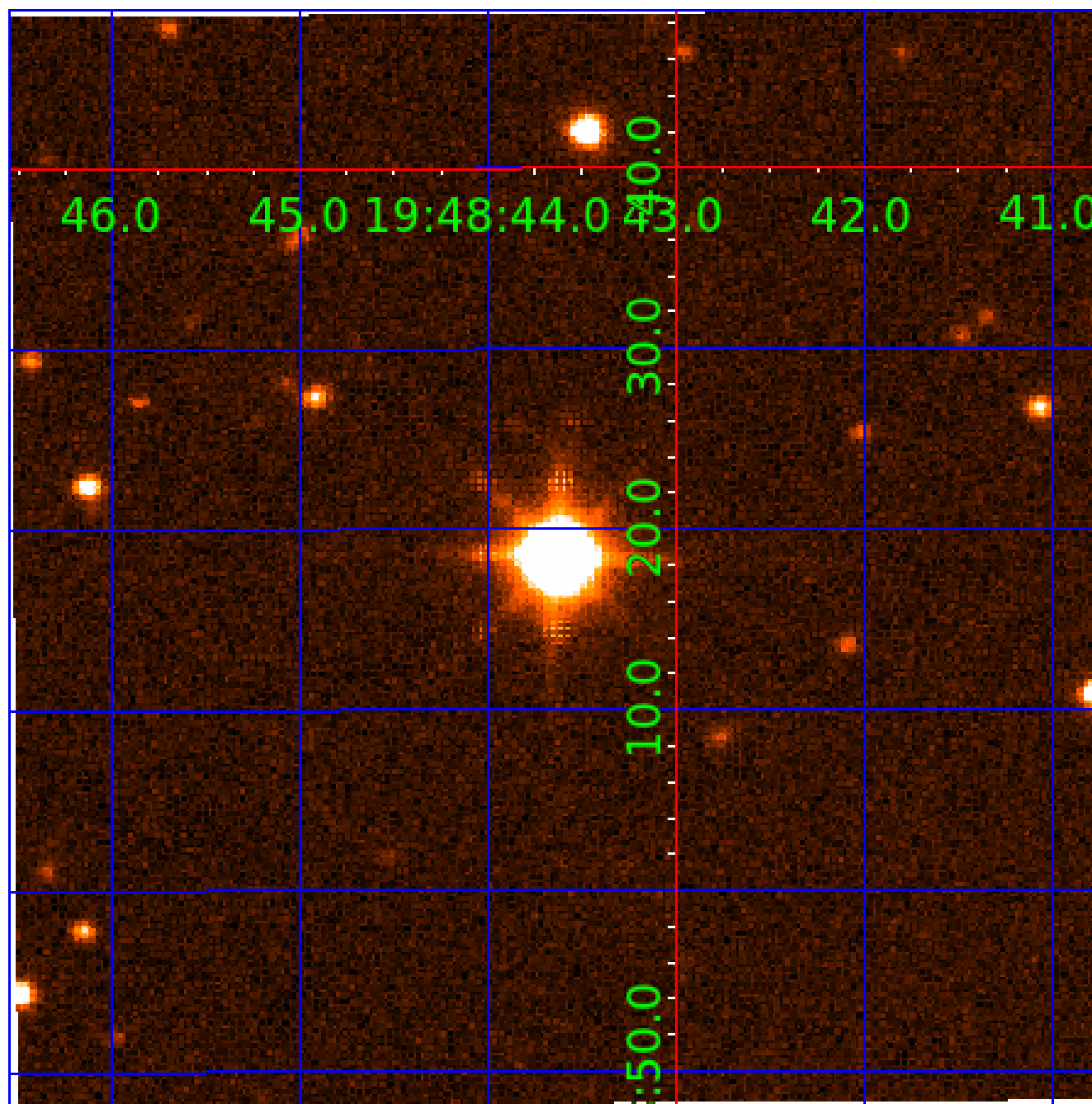


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value



UKIRT Image

Declination



KIC 009418619

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})
009418619-01	OBS	6068.01	6.150253	134.422727	2069.5	1.655	1004.4	1005.9	2.87	8914	21.73	6075.93
009418619-02	OBS	No	3.075089	134.427936	24.7	1.339	12.5	13.4	2.87	8914	1.54	15310.63

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009418619-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_DV—MOD_SEC_ALT—DEEP_V_SHAPED—HAS_SEC_TCE—CENT_SATURATED
009418619-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE—CENT_SATURATED

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.

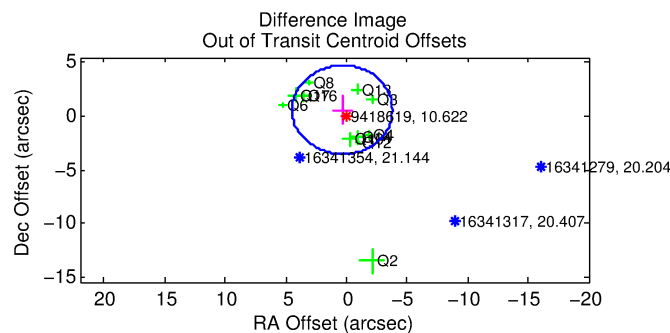
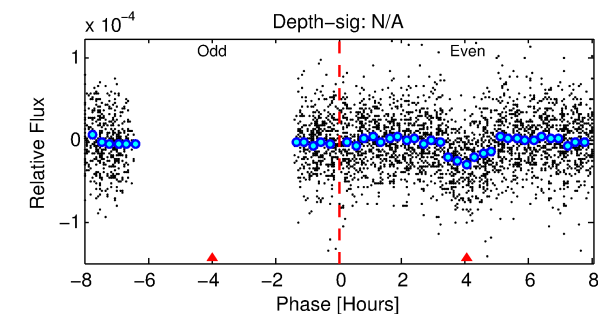
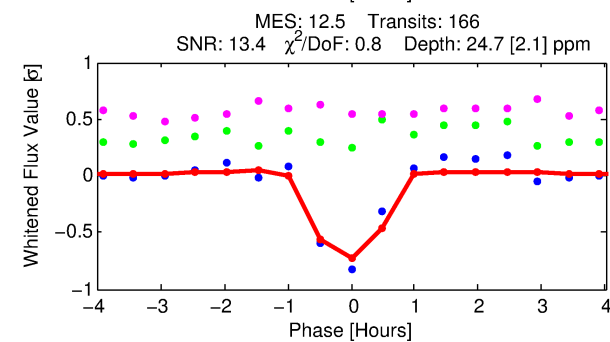
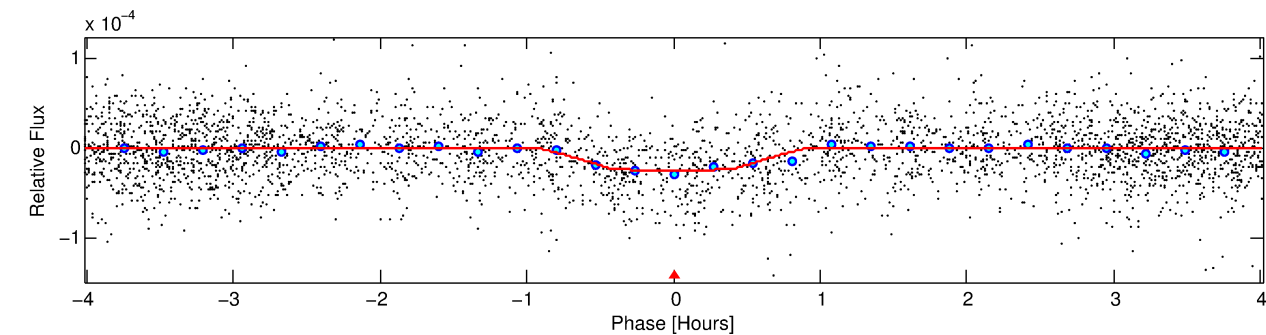
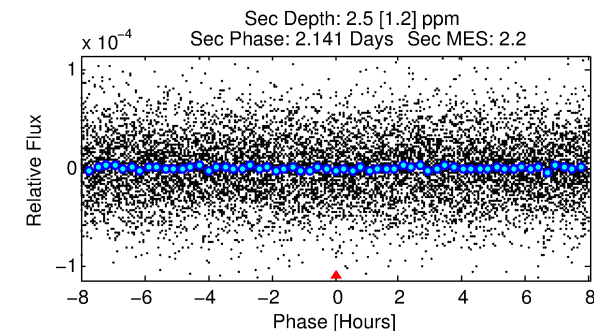
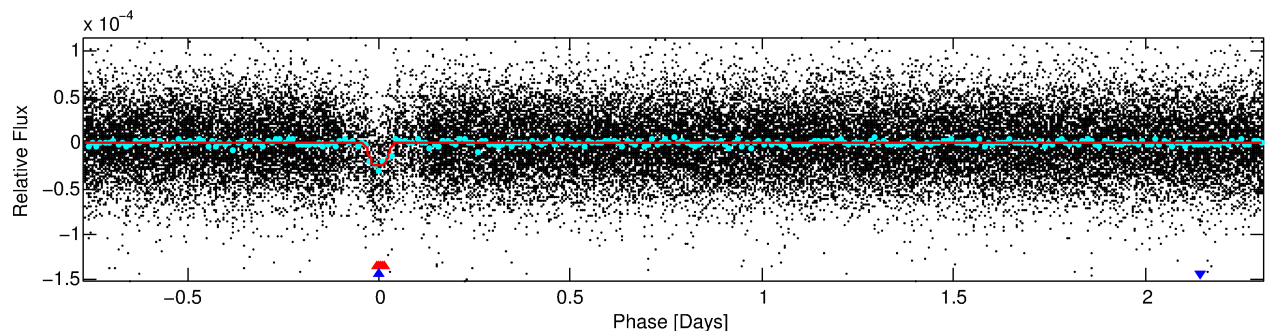
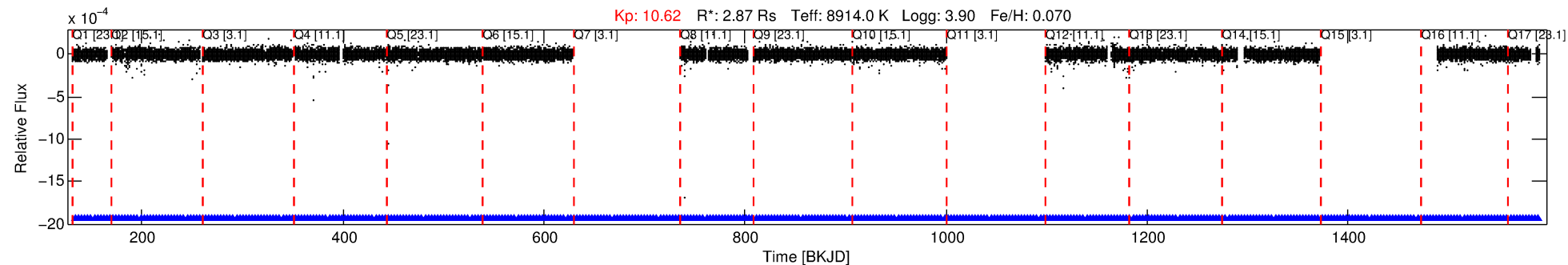
Ephemeris Match Information For 009418619-02

No Significant Match Found

DV One-Page Summary

KIC: 9418619 Candidate: 2 of 2 Period: 3.075 d

KOI: K06068 Corr: No Ephemeris Match



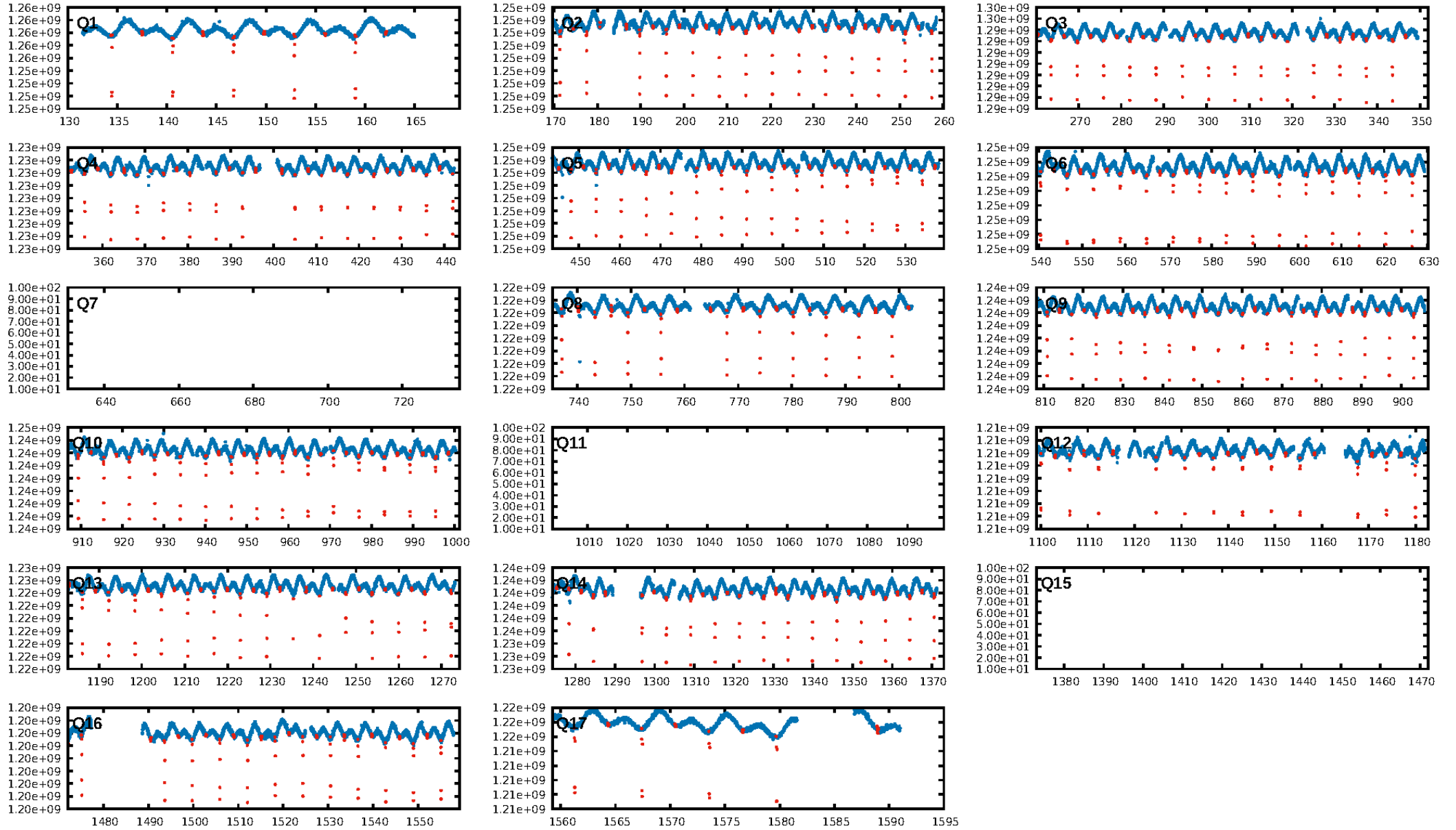
DV Fit Results:

Period = 3.07509 [0.00001] d
Epoch = 134.4279 [0.0018] BKJD
 $R_p/R^* = 0.0049$ [0.0005]
 $a/R^* = 12.62$ [7.99]
 $b = 0.70$ [0.46]
 $\text{Seff} = 15310.63$ [8071.30]
 $\text{Teq} = 2836$ [374] K
 $R_p = 1.54$ [0.60] R_e
 $a = 0.0551$ [0.0180] AU
 $\text{Ag} = 1.76$ [1.25] [0.61σ]
 $\text{Teffp} = 5054$ [699] K [2.80σ]

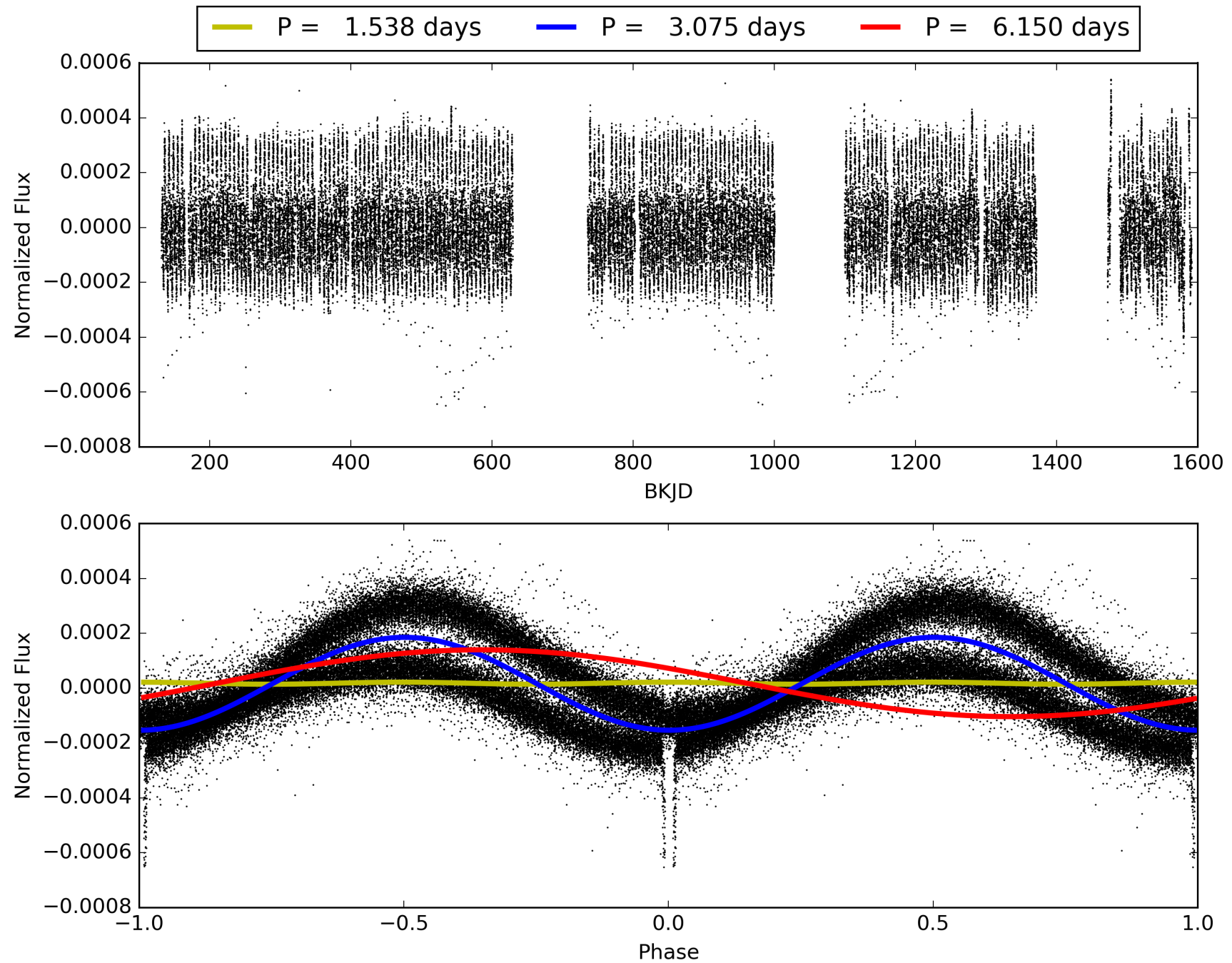
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [34.67σ]
ModelChiSquare2-sig: 100.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 1.26e-32
RollingBand-fgt: 1.00 [157/157]
GhostDiagnostic-chr: -12.01
Centroid-sig: N/A
Centroid-so: 0.629 arcsec [0.49σ]
OotOffset-rm: 0.687 arcsec [0.50σ]
KicOffset-rm: 0.804 arcsec [0.73σ]
OotOffset-st: 4/1/4/2 [11]
KicOffset-st: 4/1/4/2 [11]
DiffImageQuality-fgm: 0.64 [7/11]
DiffImageOverlap-fno: 1.00 [14/14]

TCE 009418619-02, PDC Light Curves

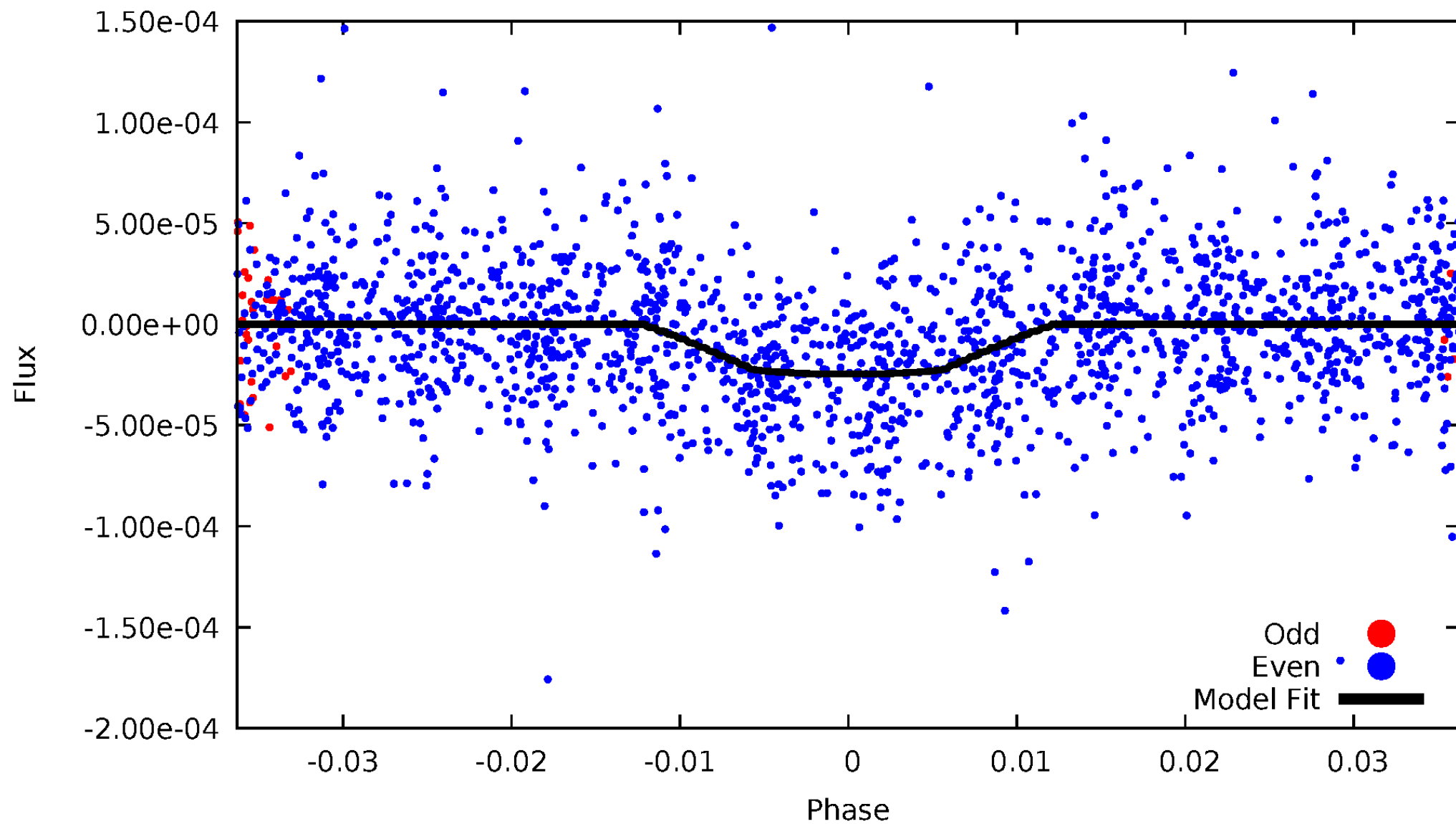


TCE 009418619-02



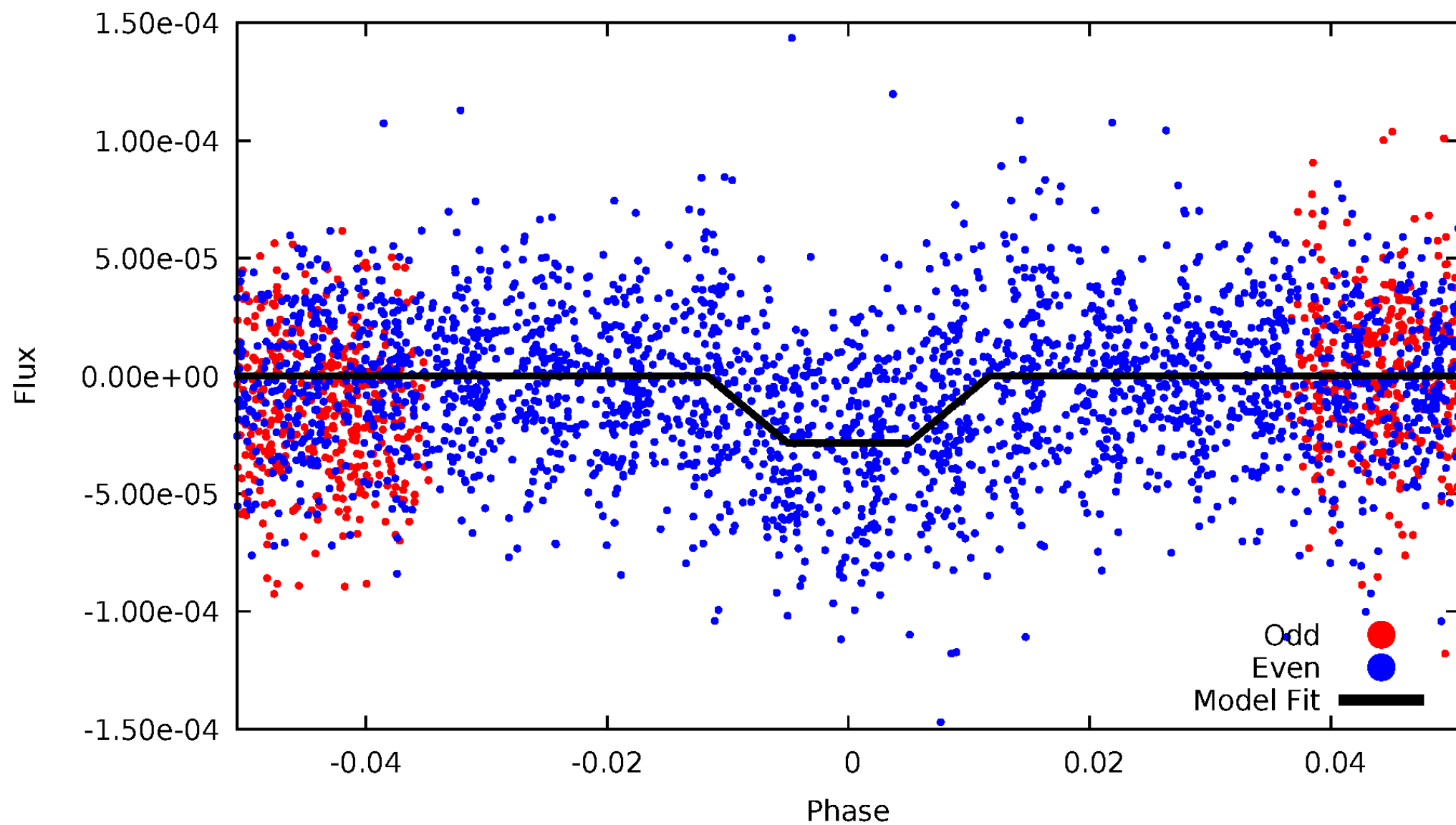
DV Odd/Even

TCE 009418619-02



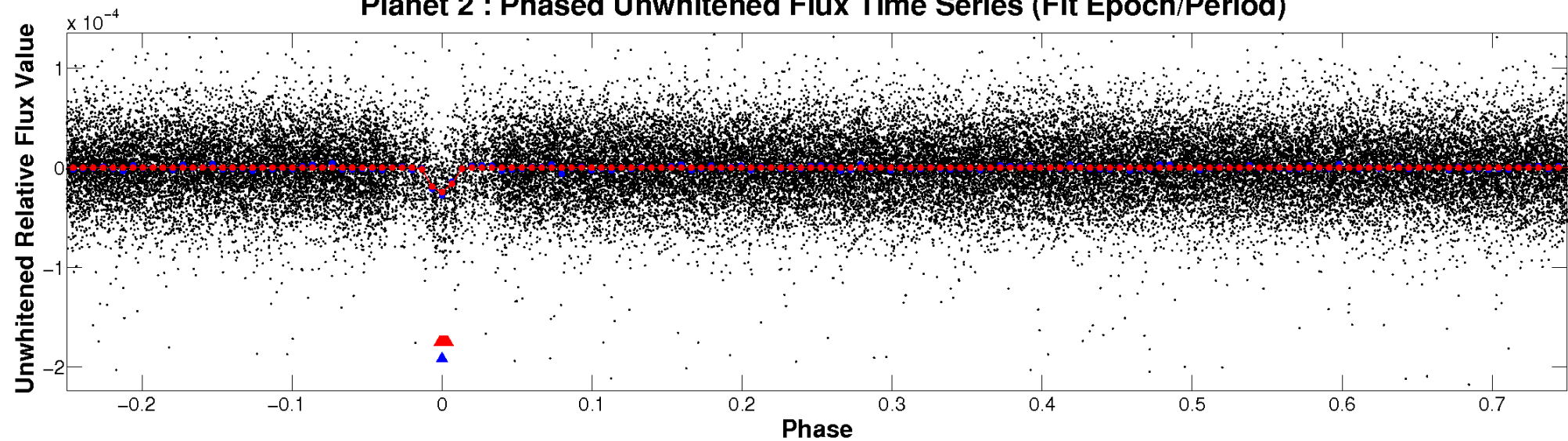
ALT Odd/Even

TCE 009418619-02

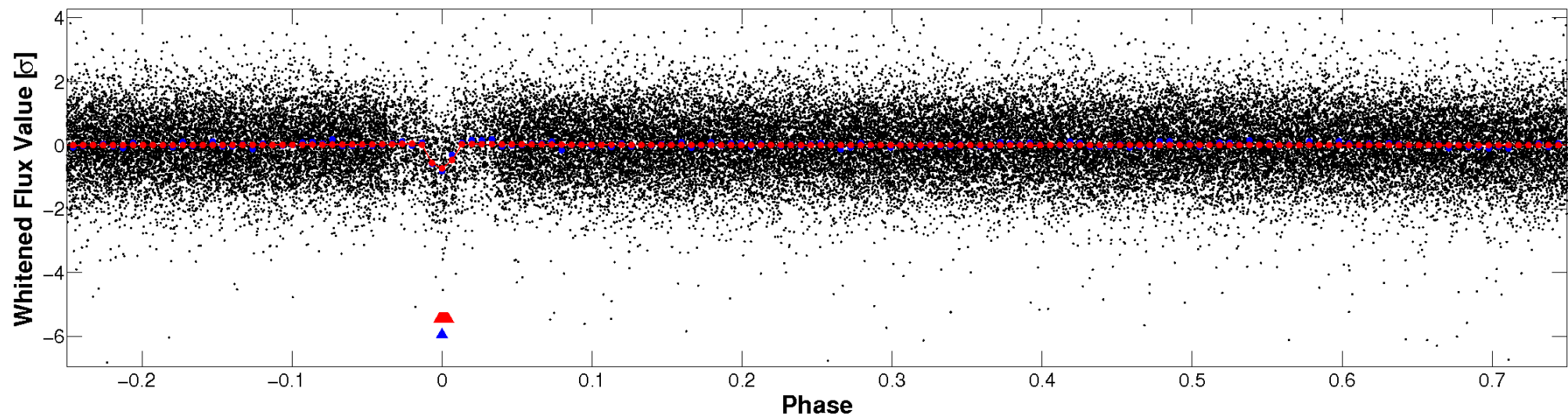


Non-Whitened Vs. Whitened Light Curve

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

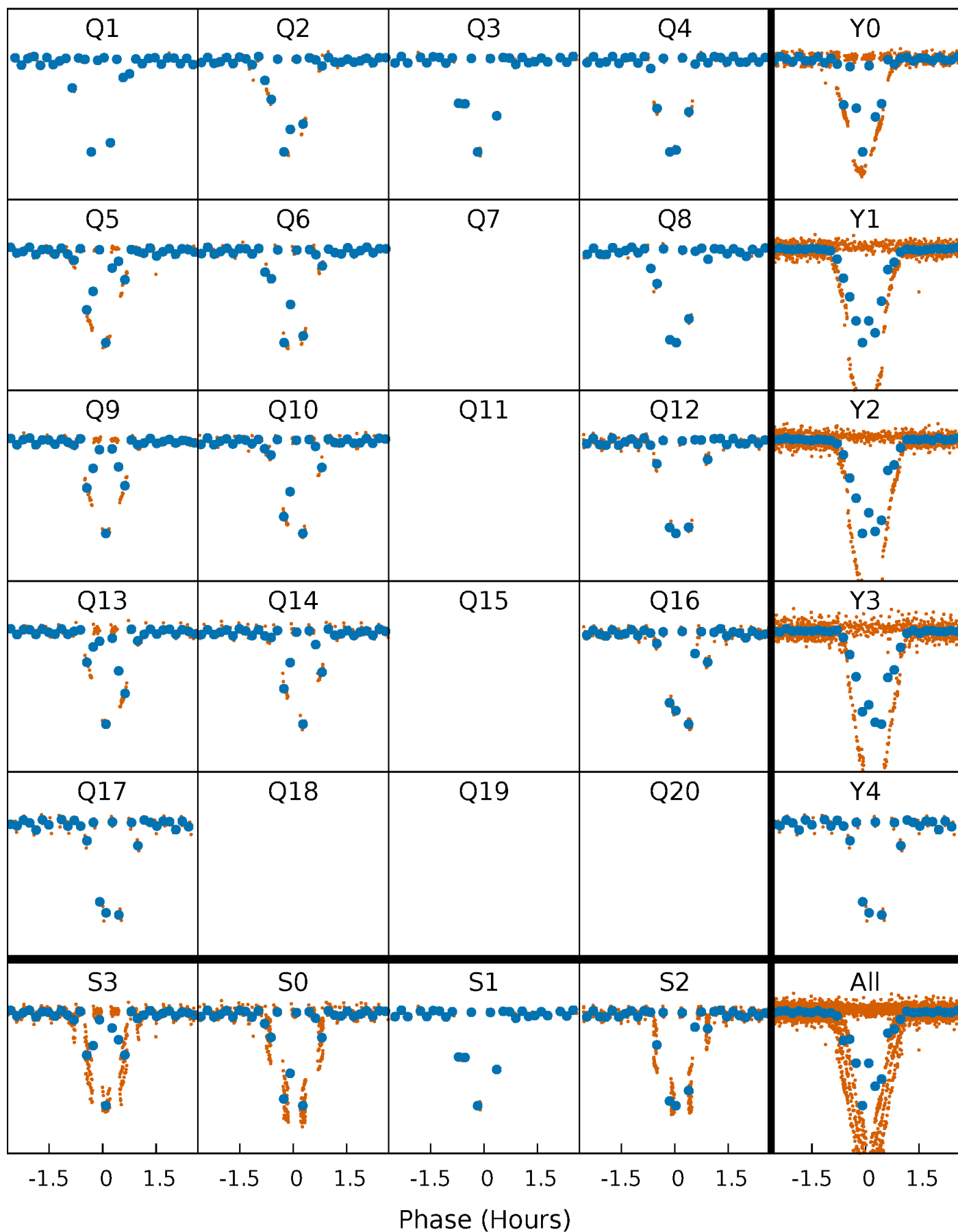


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



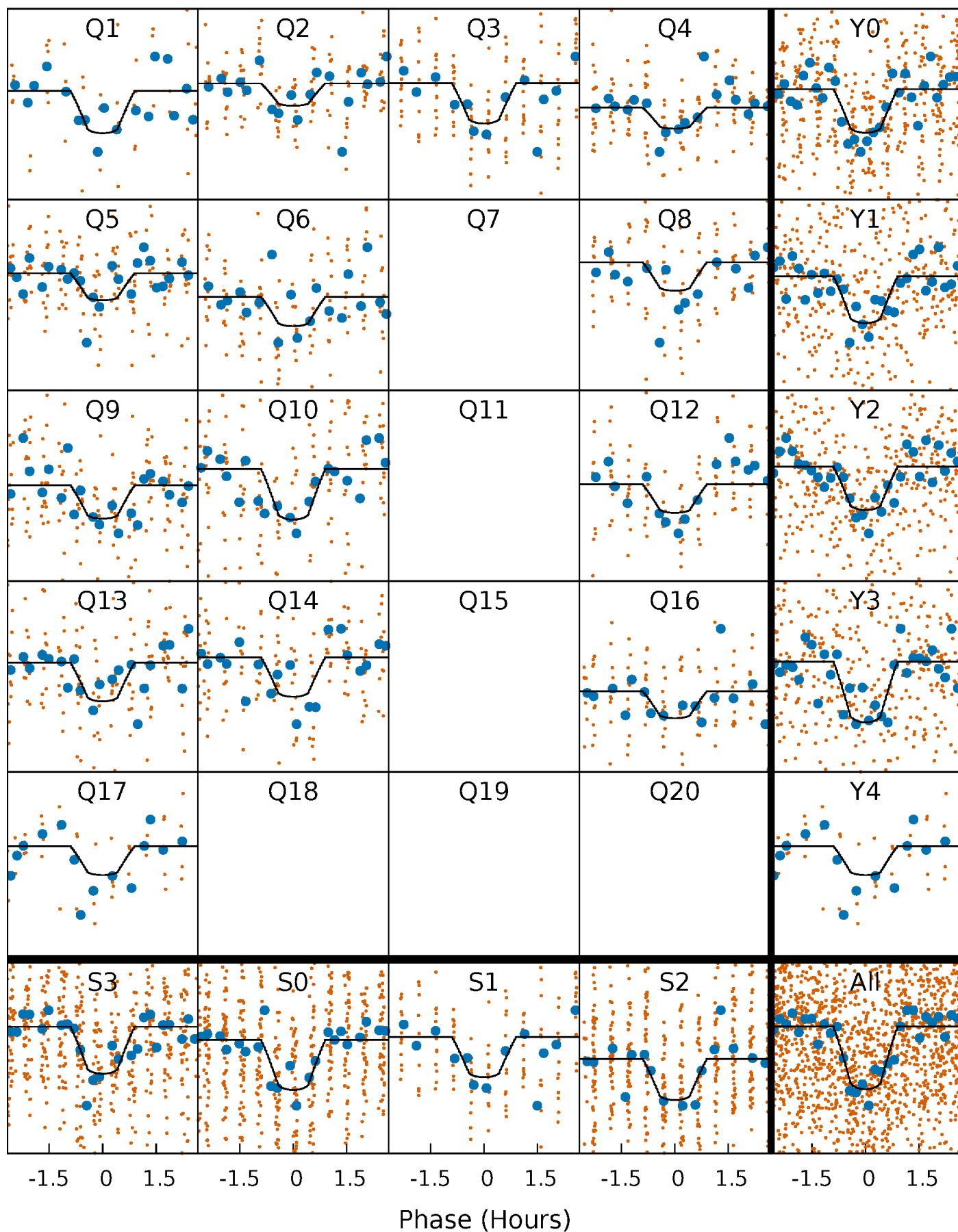
PDC Quarter-Phased Transit Curves

TCE 009418619-02 $P = 3.075089$ Days $T_0 = 134.427936$ (BKJD)



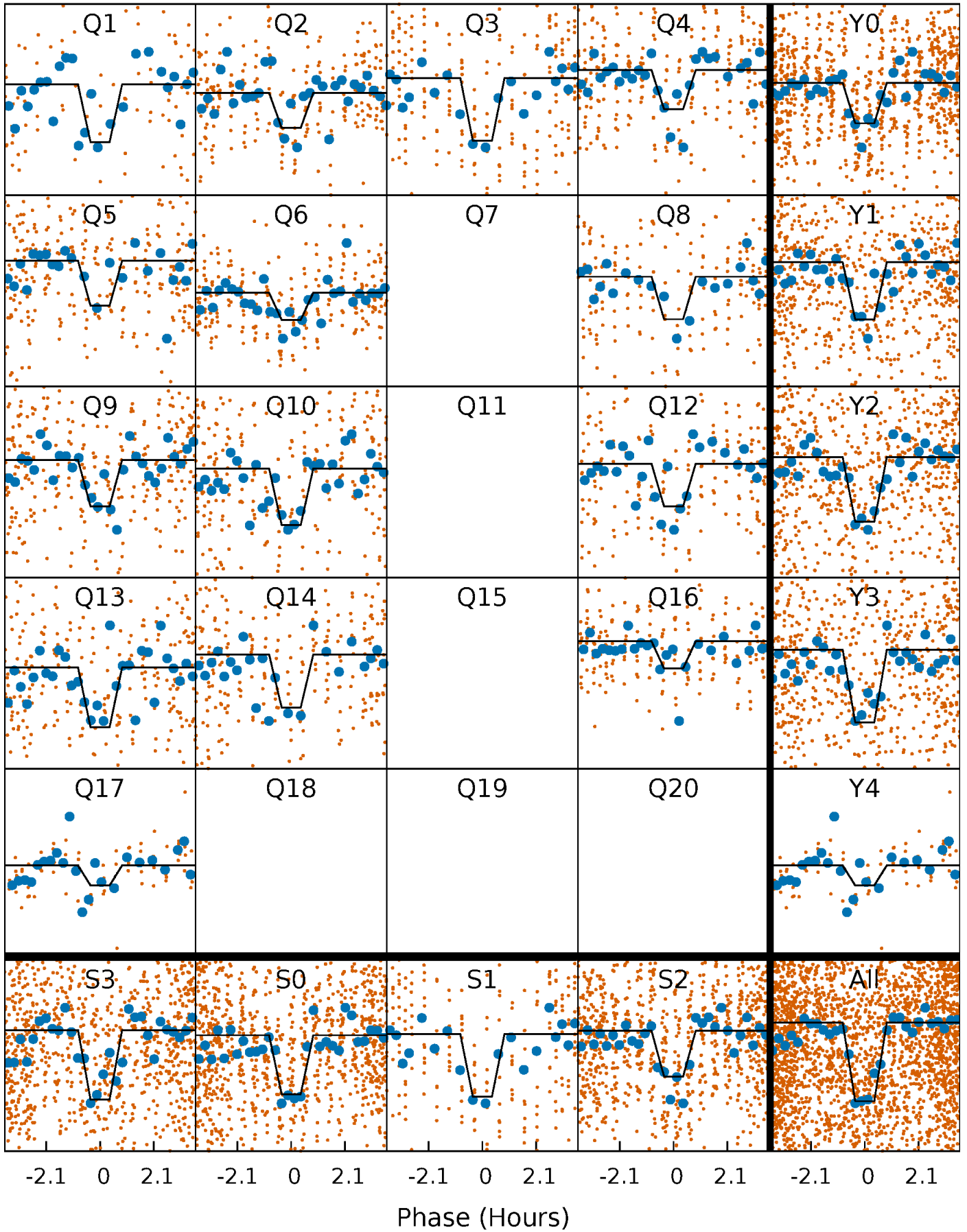
DV Quarter-Phased Transit Curves

TCE 009418619-02 P= 3.075089 Days $T_0=134.427936$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

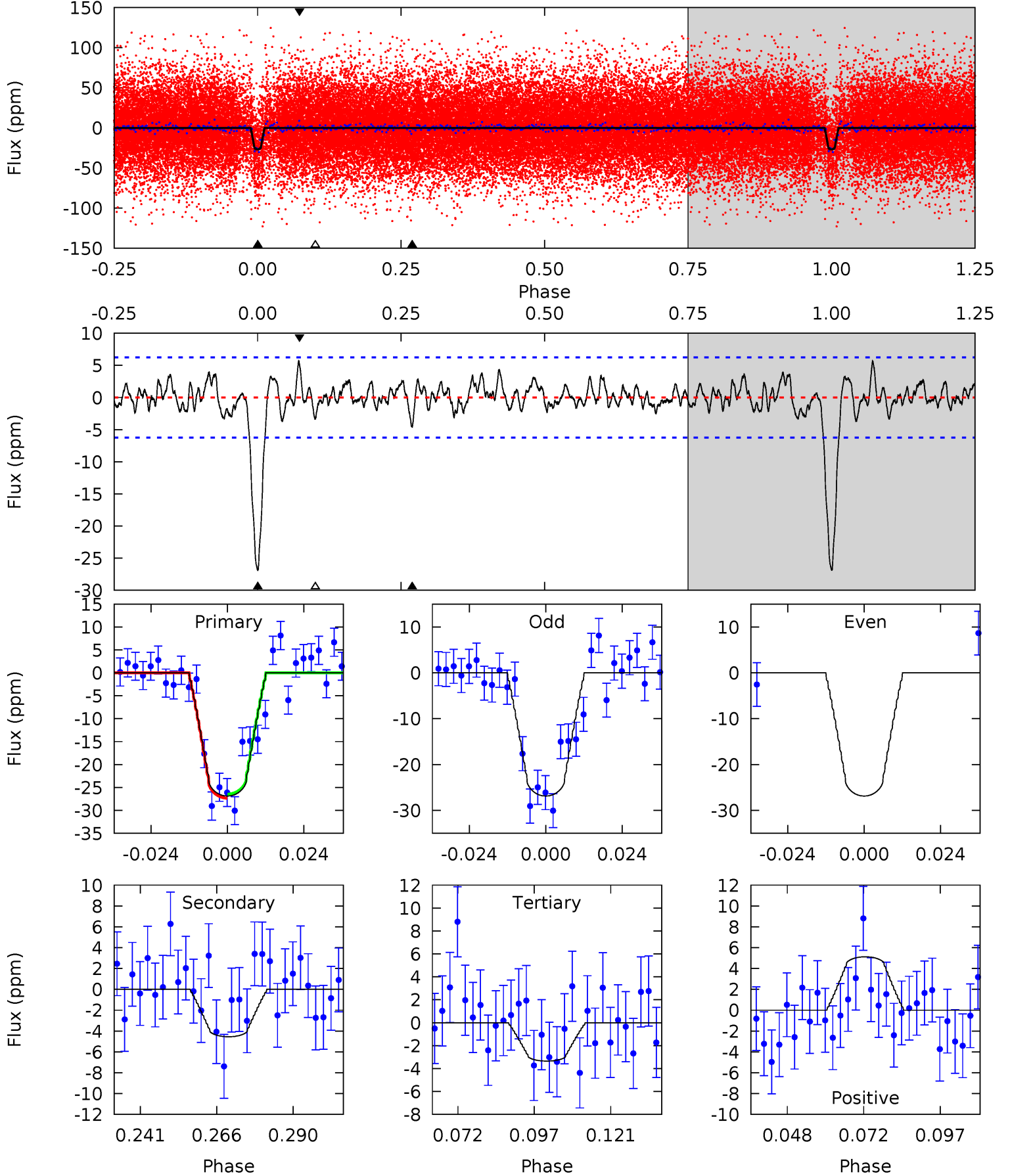
TCE 009418619-02 P= 3.075107 Days $T_0=134.424803$ (BKJD)



DV Model-Shift Uniqueness Test

009418619-02, P = 3.075089 Days, E = 131.352847 Days

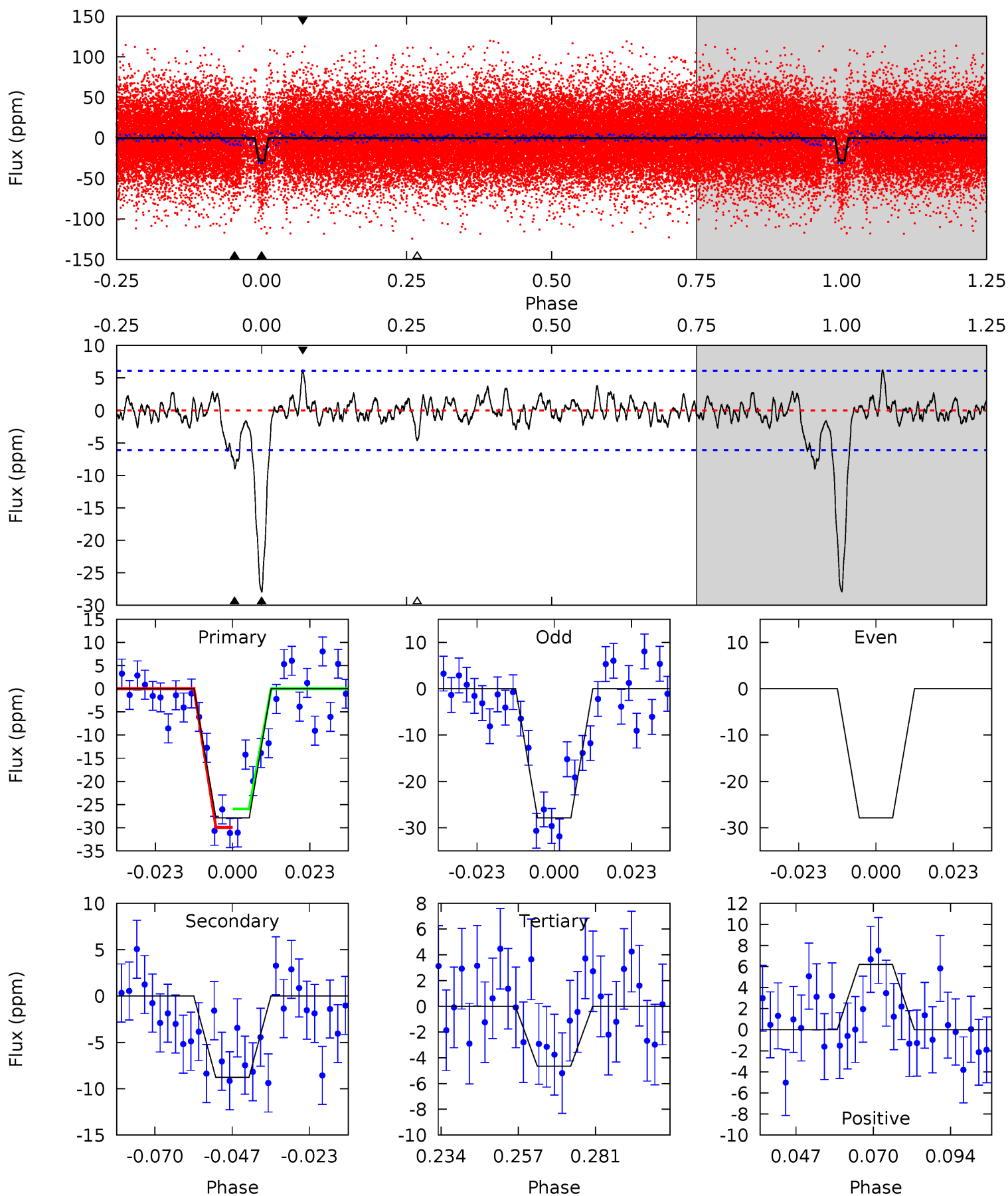
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
20.9	3.54	2.61	3.99	4.85	2.25	1.20	18.3	16.9	0.94	-0.44	0	0.98	0.18	0.35



Alt Model-Shift Uniqueness Test

009418619-02, P = 3.075107 Days, E = 131.349696 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
22.2	6.97	3.70	4.93	4.86	2.27	1.12	18.5	17.2	3.27	2.04	0	0.95	0.18	1.58



Stellar Parameters For KIC 009418619

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$
	8914^{+246}_{-458}	$3.896^{+0.270}_{-0.180}$	$0.070^{+0.250}_{-0.600}$	$2.867^{+0.988}_{-1.087}$	$2.357^{+0.353}_{-0.656}$	$0.141^{+0.299}_{-0.069}$
	+3%/-5%	+7%/-5%	+357%/-857%	+34%/-38%	+15%/-28%	+212%/-49%
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 009418619-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-5 ± 1	$1.50^{+0.34}_{-0.34}$	3890^{+397}_{-382}	5434^{+533}_{-474}	$3.248^{+2.423}_{-1.184}$
Alt.	-9 ± 1	$1.62^{+0.35}_{-0.34}$	3912^{+328}_{-396}	6190^{+462}_{-397}	$5.525^{+2.924}_{-1.793}$

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

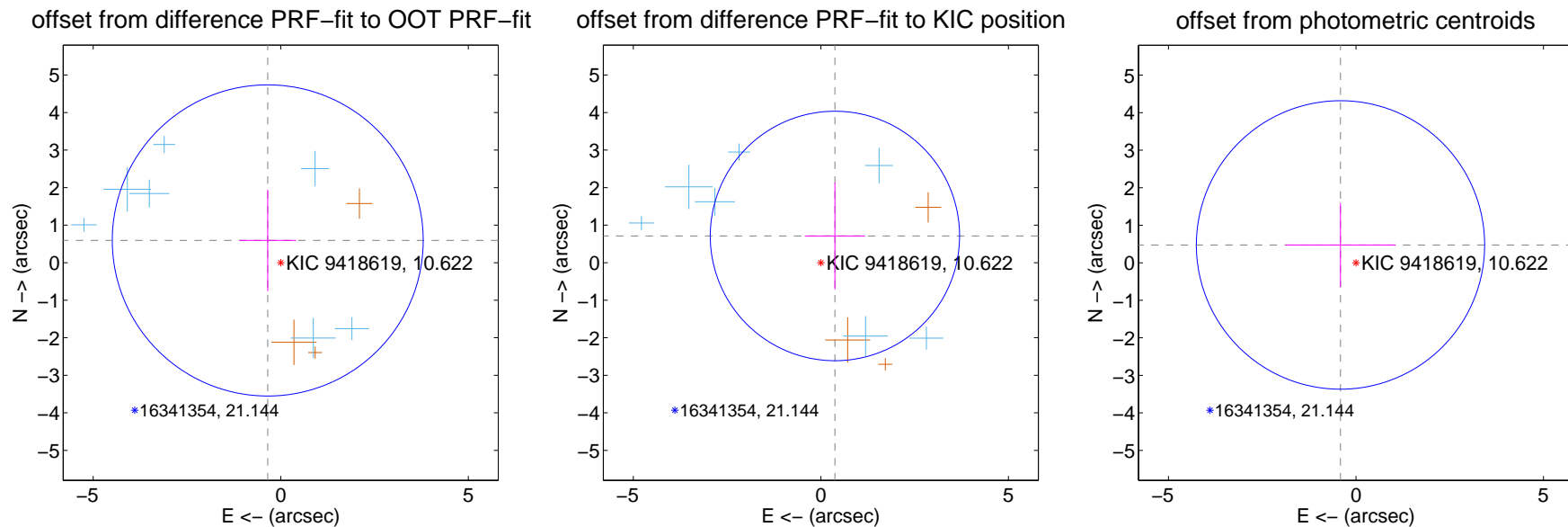
DV Centroid Data

Supplemental centroid analysis for 009418619-02. **Kepler magnitude: 10.62.** Transit SNR 13.41

There are 7 quarters with good PRF difference image offsets

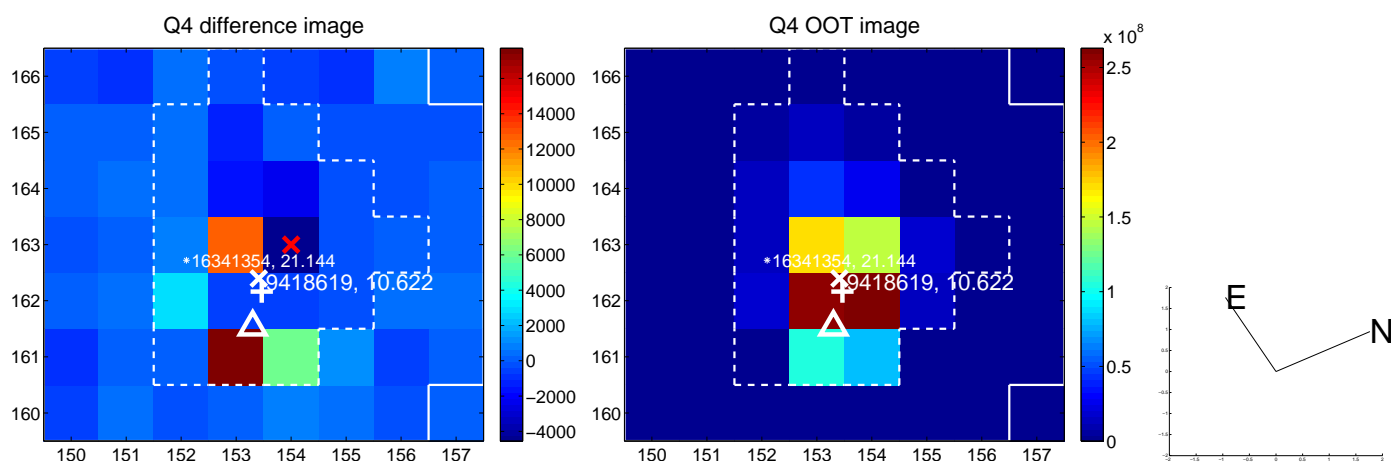
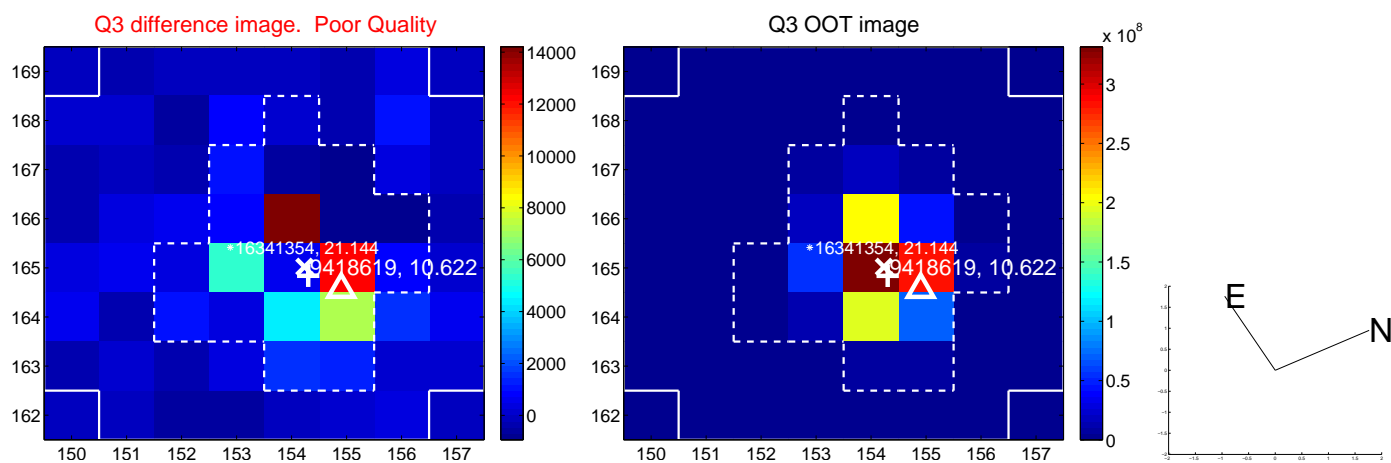
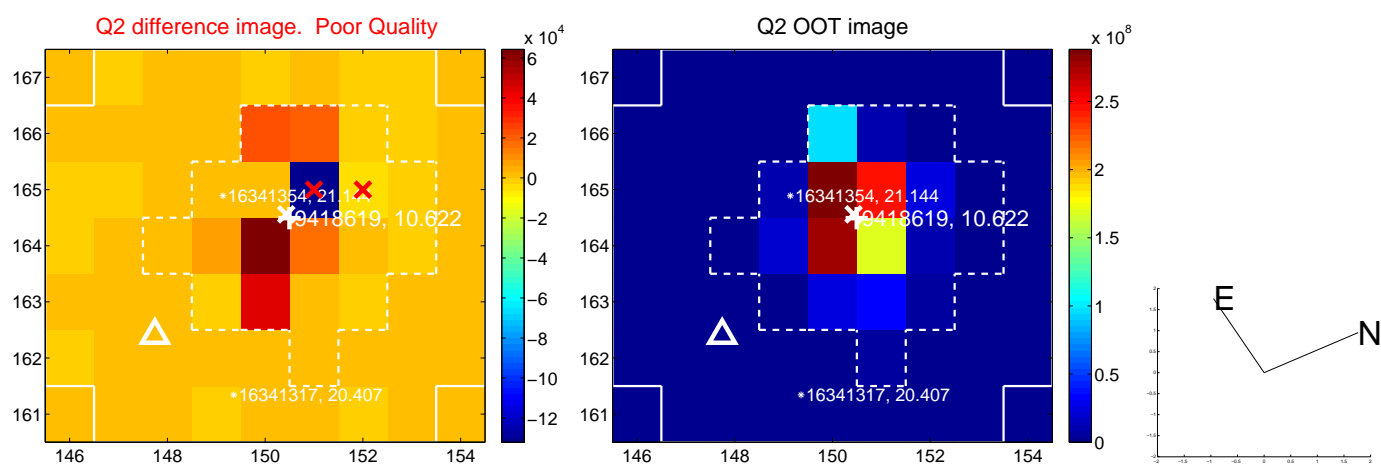
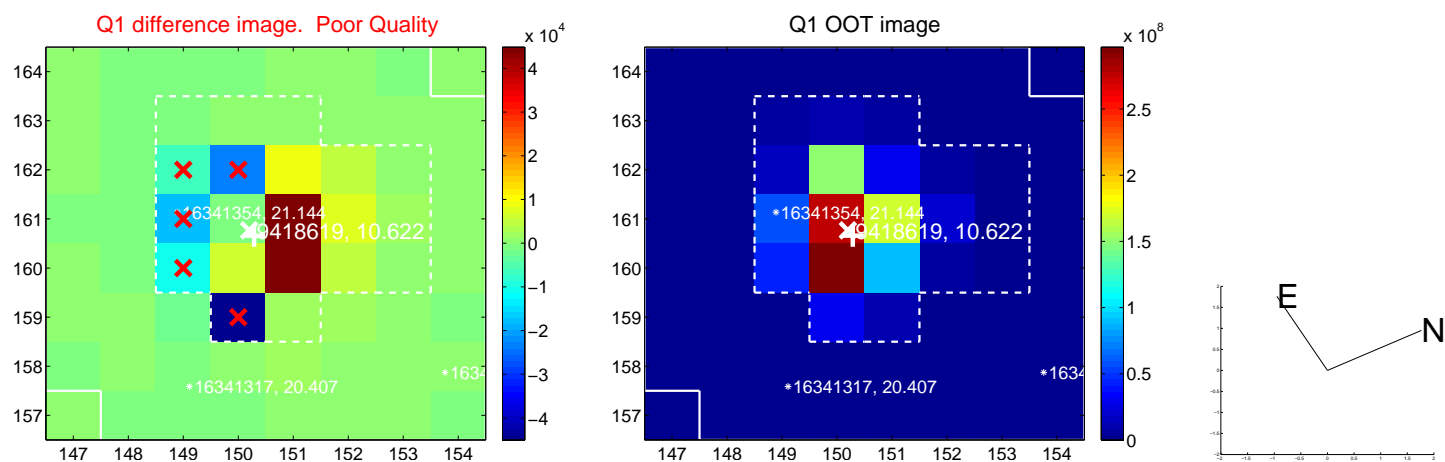
The direct PRF centroid is offset from the target star catalog position by about 0.58 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.687 ± 1.382	0.50	0.347 ± 0.755	0.593 ± 1.349
PRF-fit source offset from KIC position	0.804 ± 1.108	0.73	-0.375 ± 0.804	0.712 ± 1.423
photometric centroid source offset	0.63 ± 1.28	0.49	0.41 ± 1.47	0.47 ± 1.12

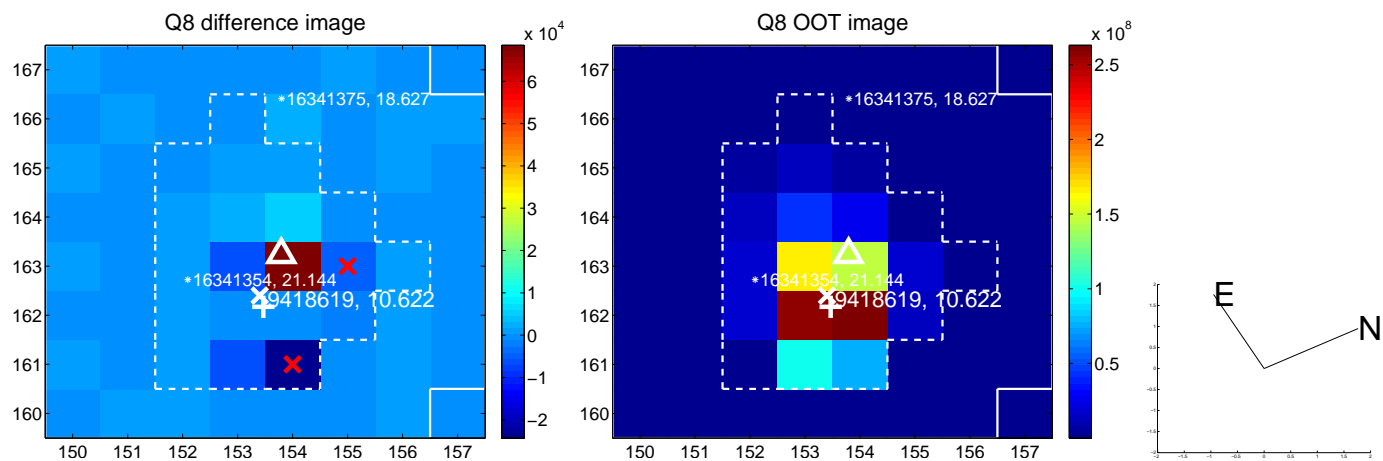
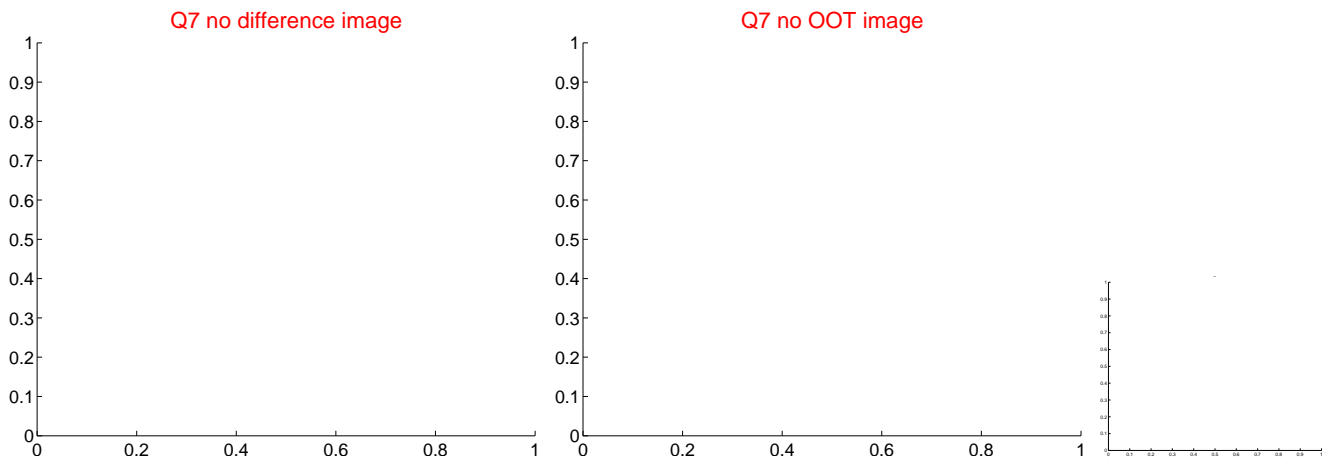
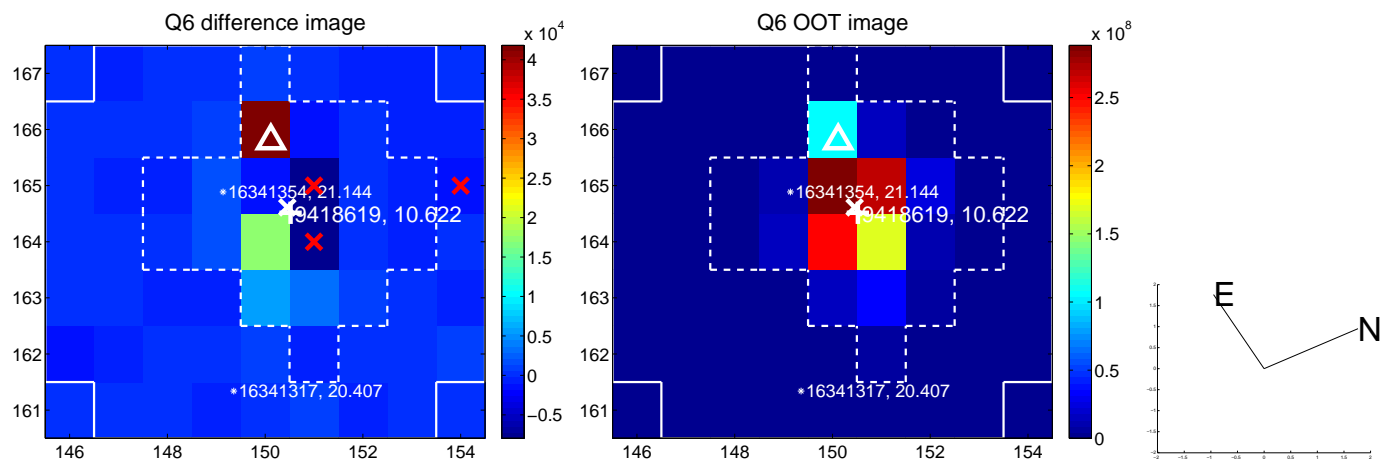
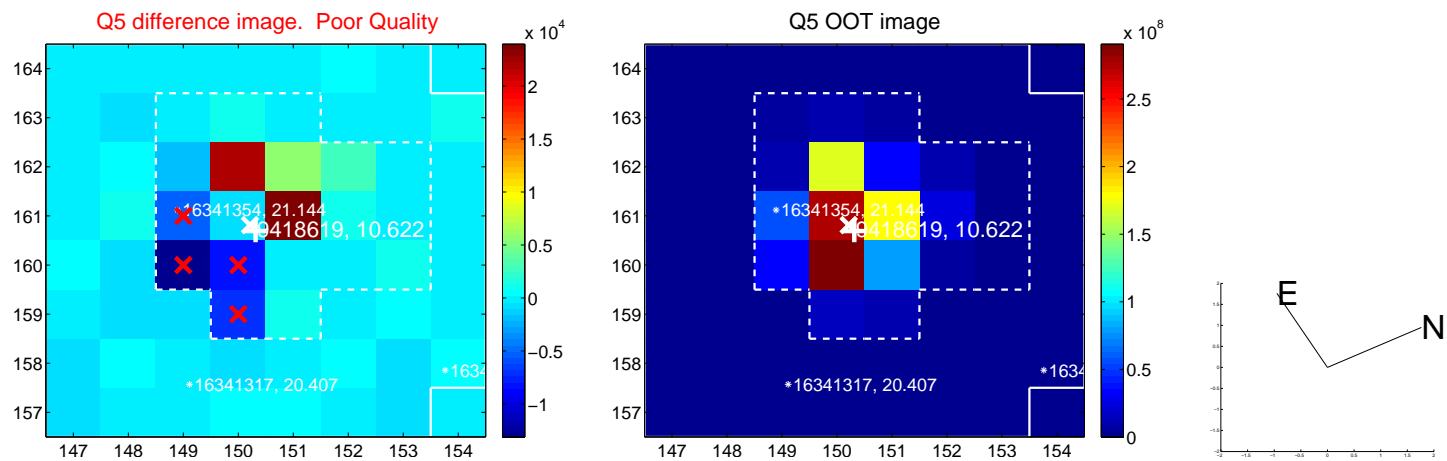


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

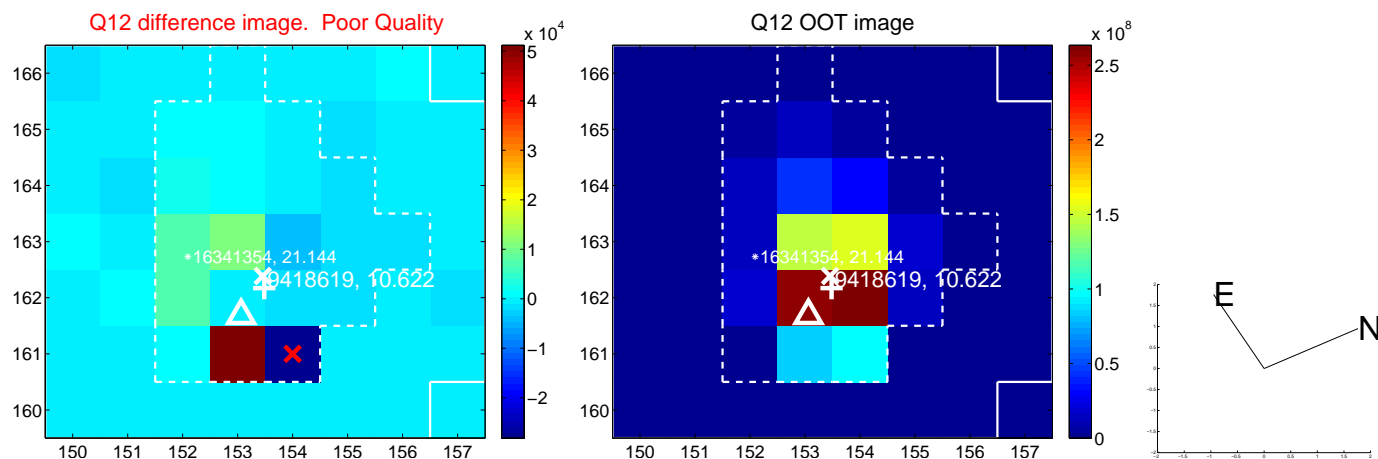
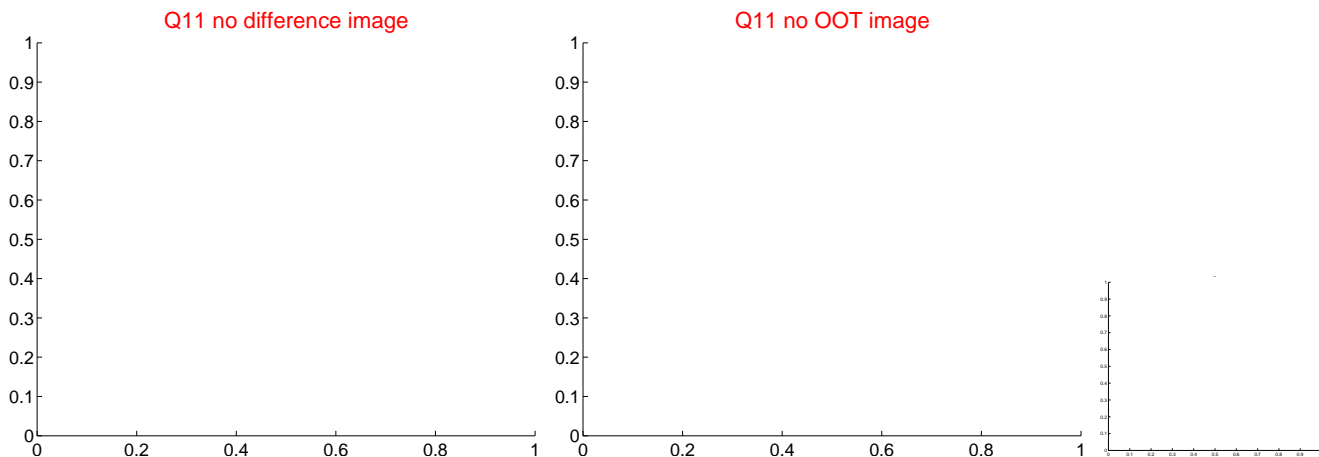
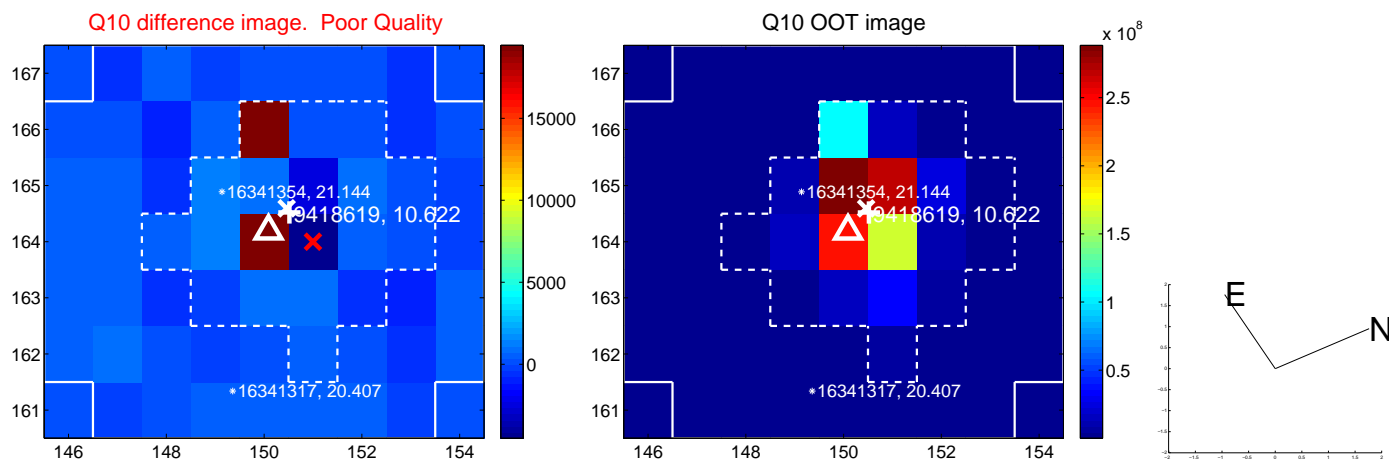
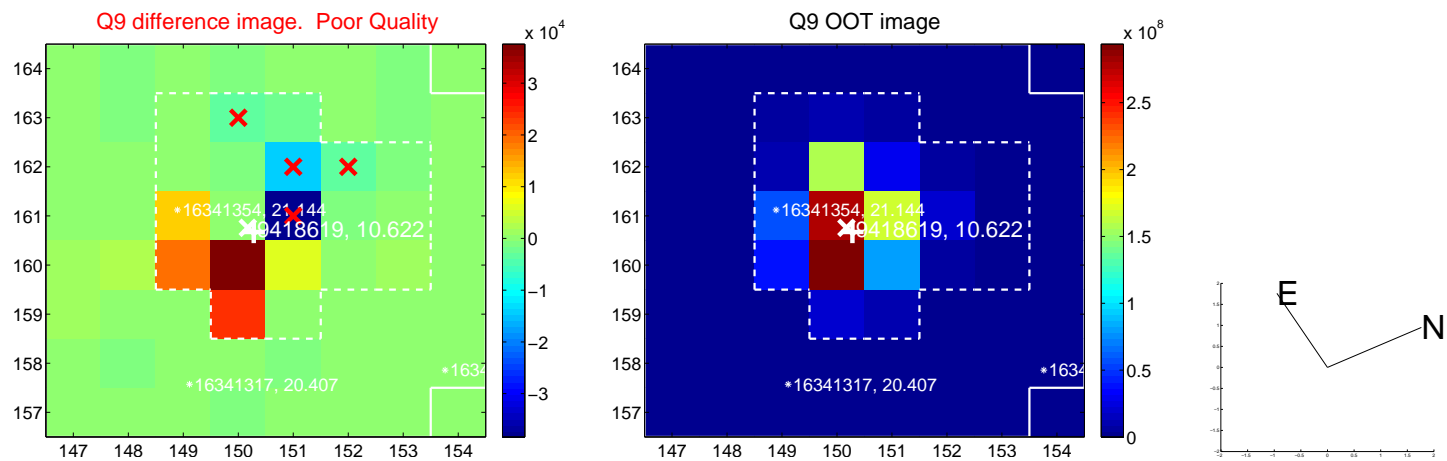
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



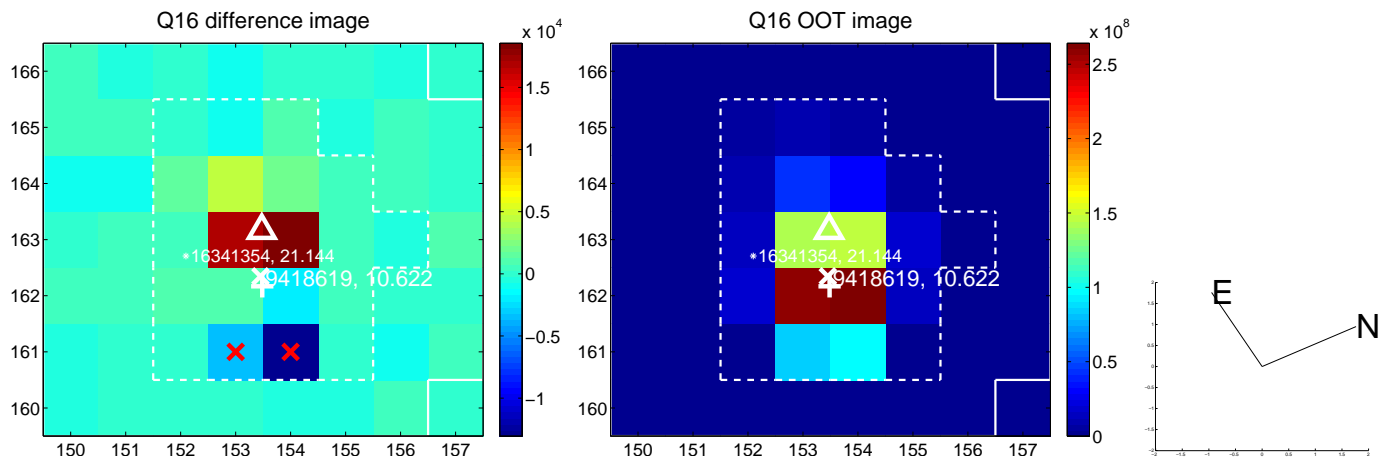
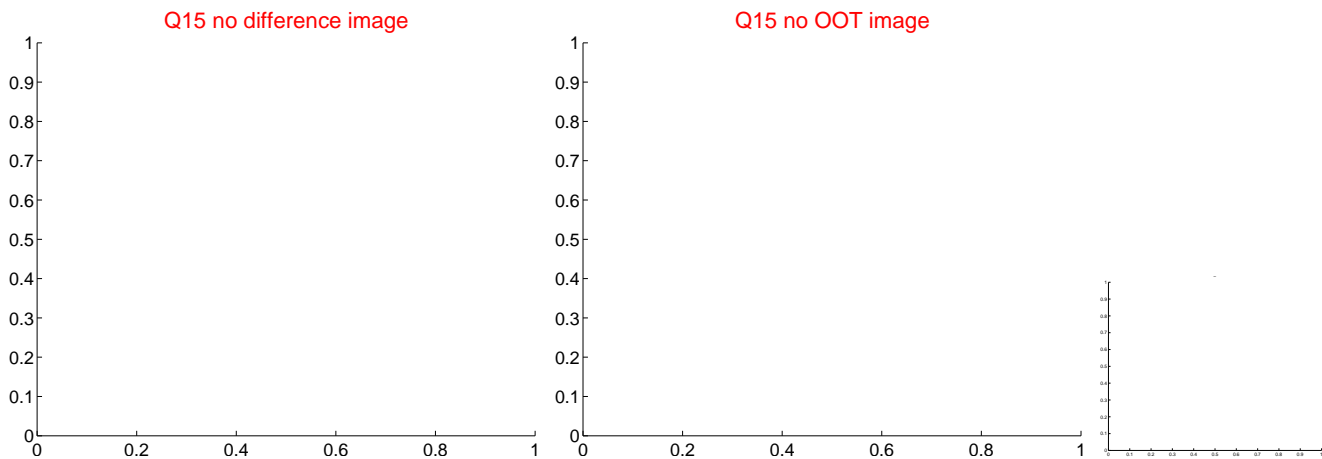
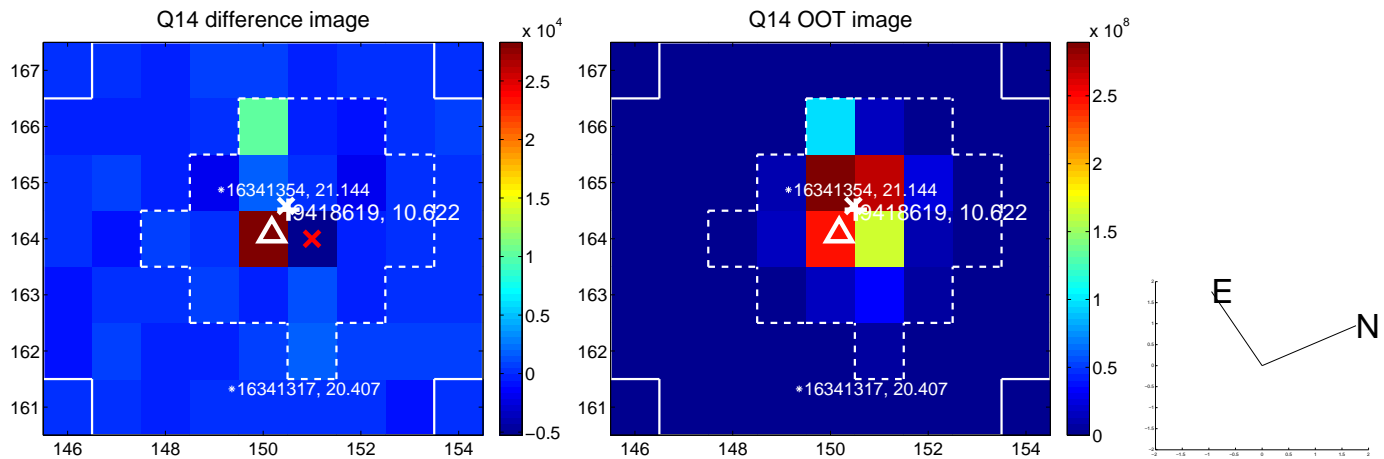
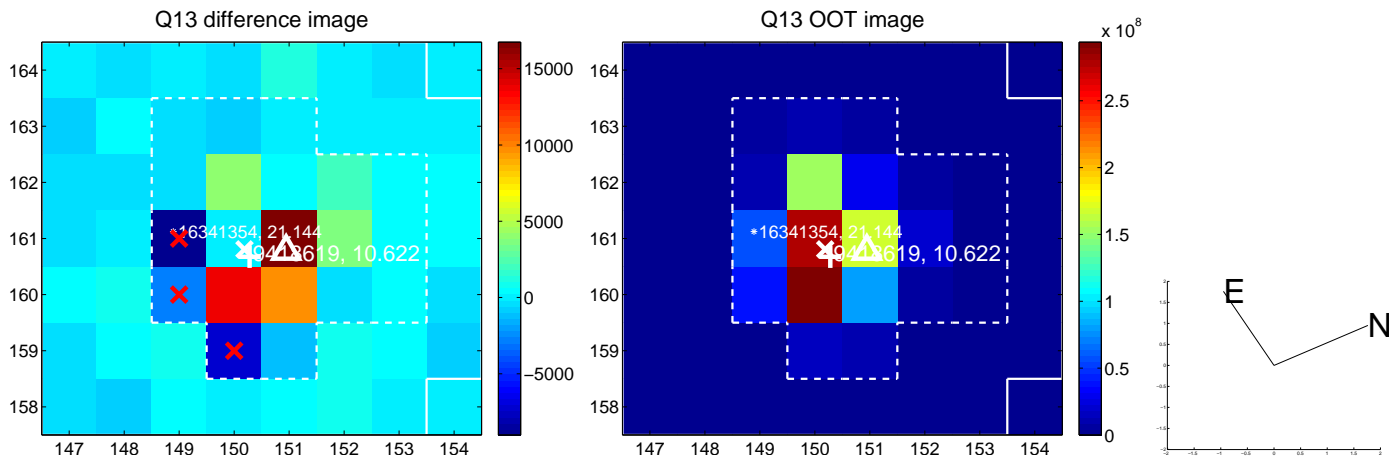
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



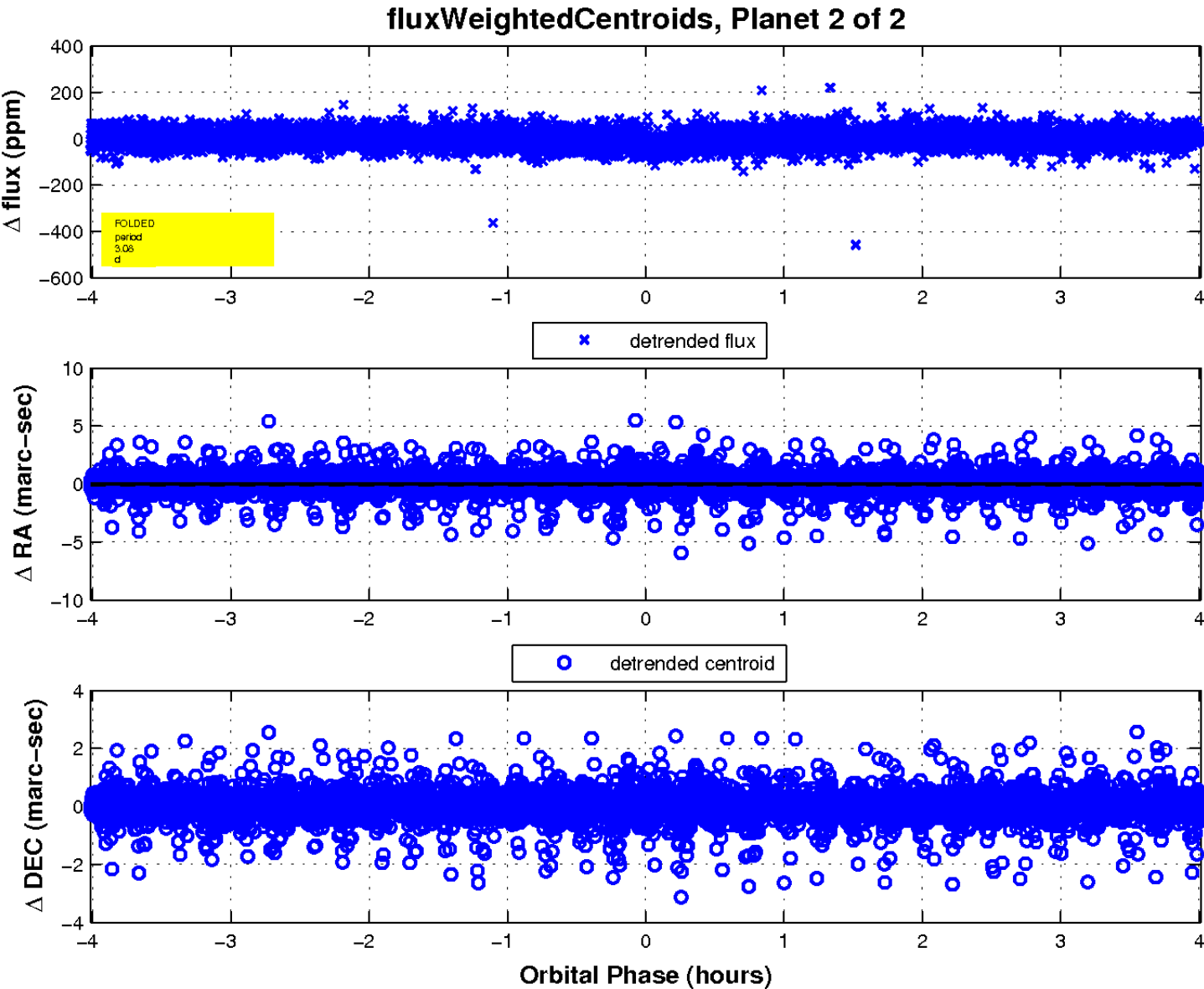
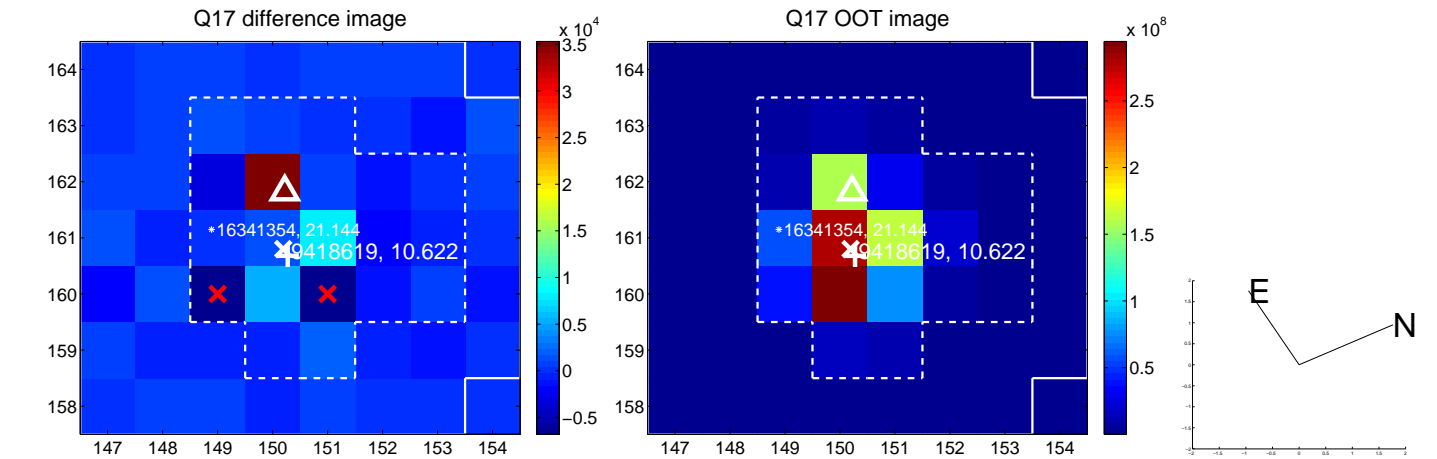
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

