

KIC 004936990

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})
004936990-01	OBS	3290.01	10.314513	137.704300	9775.9	3.502	342.5	316.7	0.84	6335	14.57	145.13
004936990-02	OBS	No	10.314535	132.537376	1990.2	3.546	65.3	67.5	0.84	6335	6.18	145.13

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004936990-01	OBS	FP	0.00	0	1	1	0	MOD_SEC_DV—MOD_SEC_ALT—DEEP_V_SHAPED—HAS_SEC_TCE—CENT_UNRESOLVED_OFFSET
004936990-02	OBS	FP	0.00	1	1	1	0	IS_SEC_TCE—CENT_UNRESOLVED_OFFSET

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.

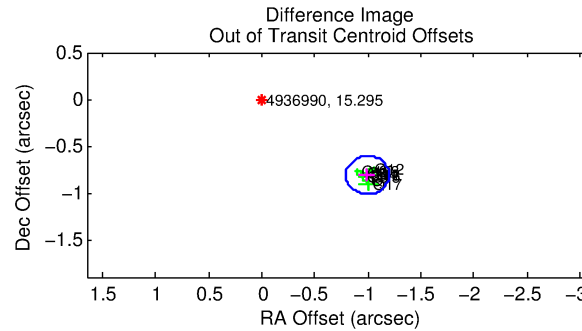
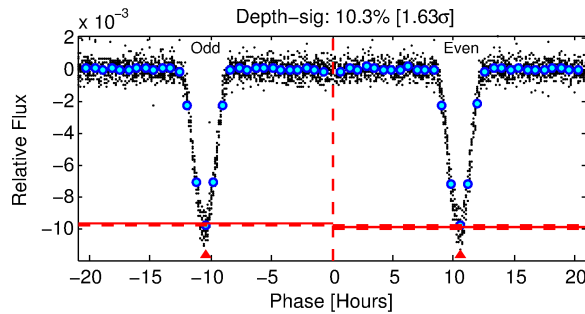
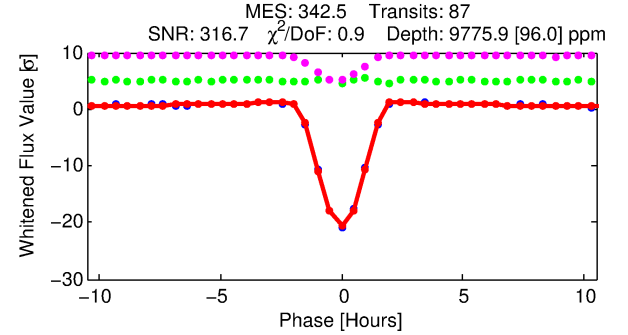
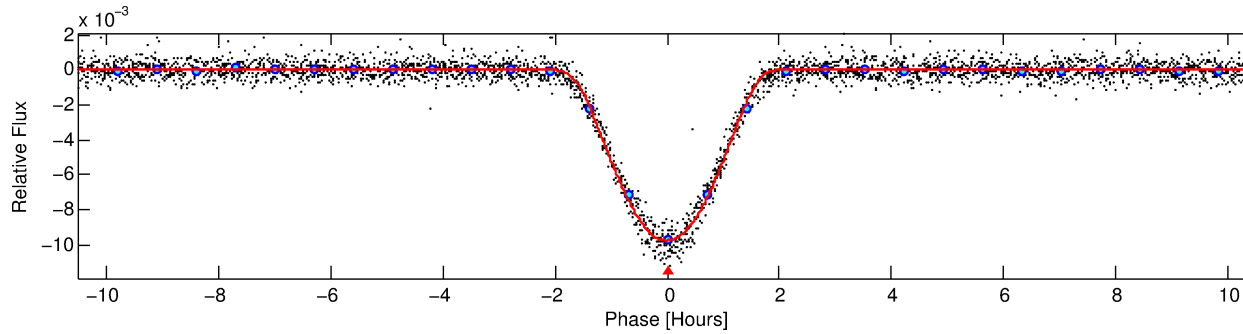
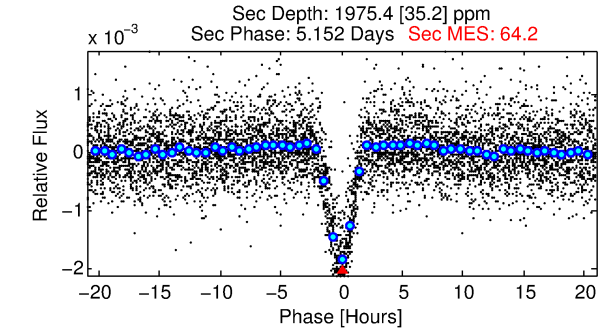
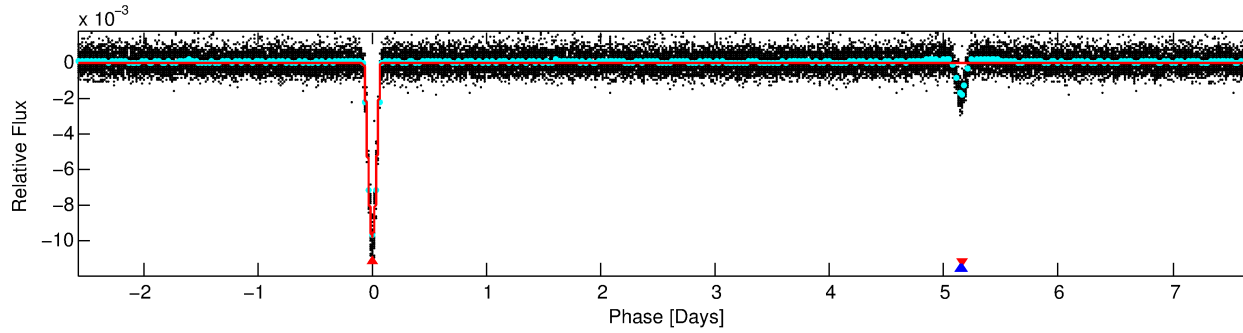
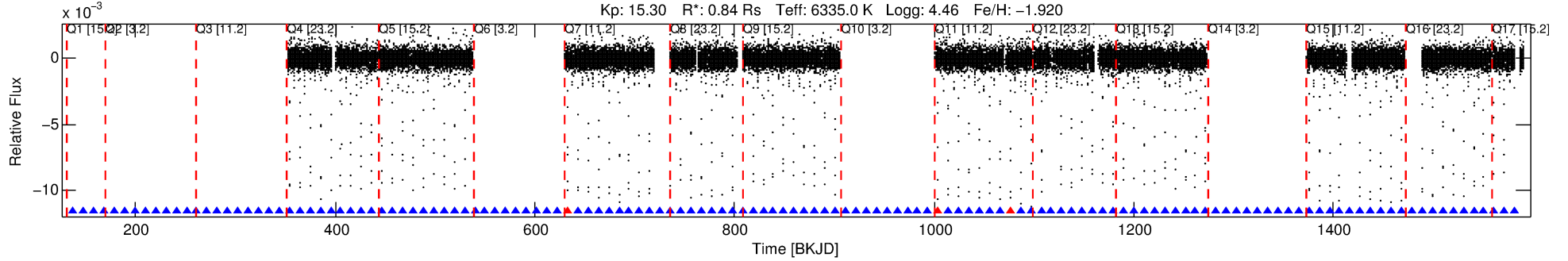
Ephemeris Match Information For 004936990-01

No Significant Match Found

DV One-Page Summary

KIC: 4936990 Candidate: 1 of 2 Period: 10.315 d
KOI: K03290 Corr: No Ephemeris Match

Kp: 15.30 R*: 0.84 Rs Teff: 6335.0 K Logg: 4.46 Fe/H: -1.920



DV Fit Results:

Period = 10.31451 [0.00000] d
Epoch = 137.7043 [0.0003] BKJD
Rp/R* = 0.1596 [0.0280]
a/R* = 13.29 [0.36]
b = 1.00 [0.04]
Seff = 145.13 [42.39]
Teq = 885 [65] K
Rp = 14.58 [3.71] Re
a = 0.0835 [0.0140] AU
Ag = 35.63 [15.60] [2.22σ]
Teffp = 3343 [314] K [7.68σ]

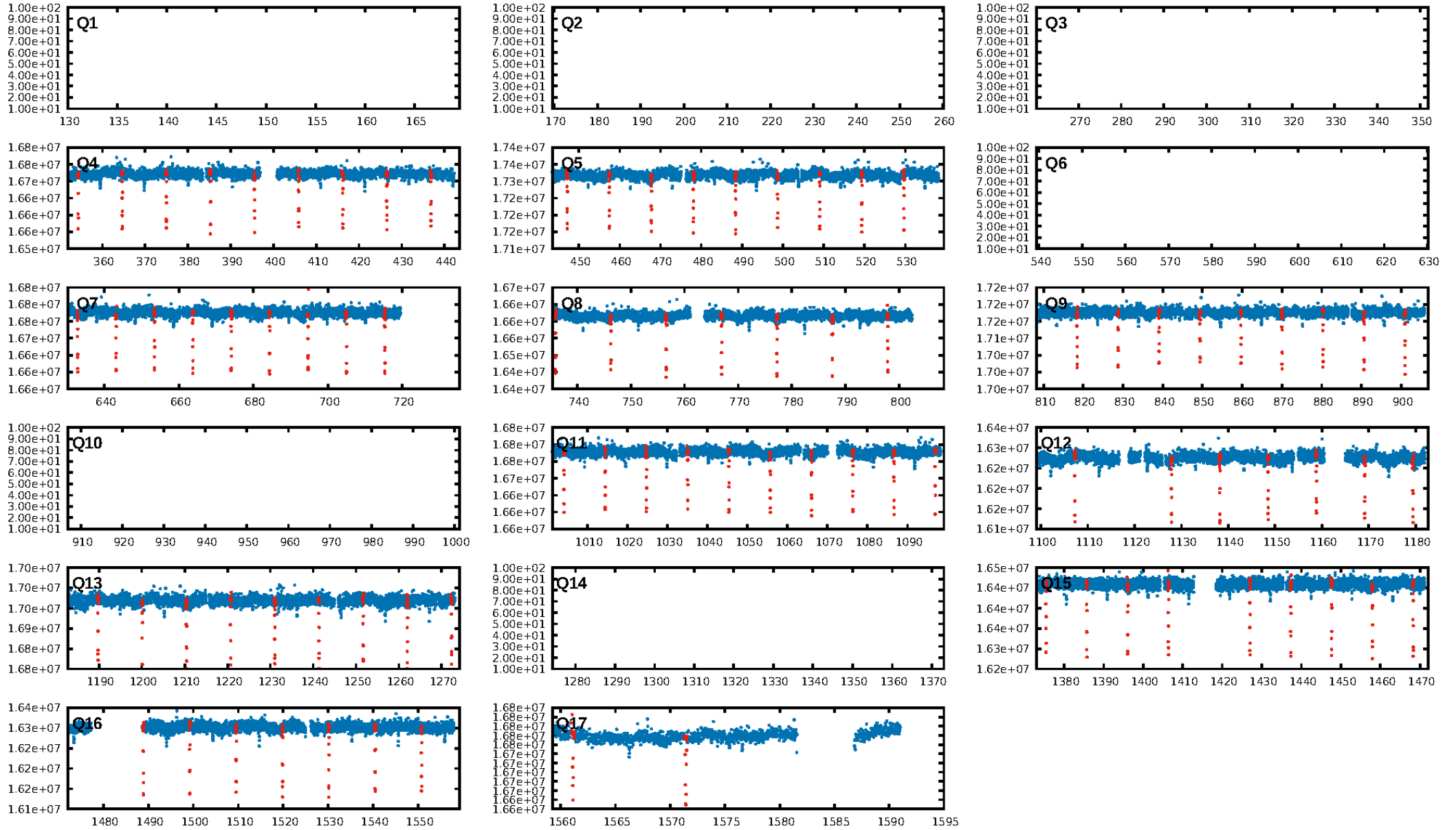
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.0% [0.00σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 0.96 [82/85]
GhostDiagnostic-chr: 3.63
Centroid-sig: 0.0%
Centroid-so: 1.177 arcsec [30.76σ]
OotOffset-rm: 1.284 arcsec [18.87σ]
KicOffset-rm: 1.320 arcsec [19.43σ]
OotOffset-st: 0/3/4/4 [11]
KicOffset-st: 0/3/4/4 [11]
DiffImageQuality-fgm: 1.00 [11/11]
DiffImageOverlap-fno: 1.00 [11/11]

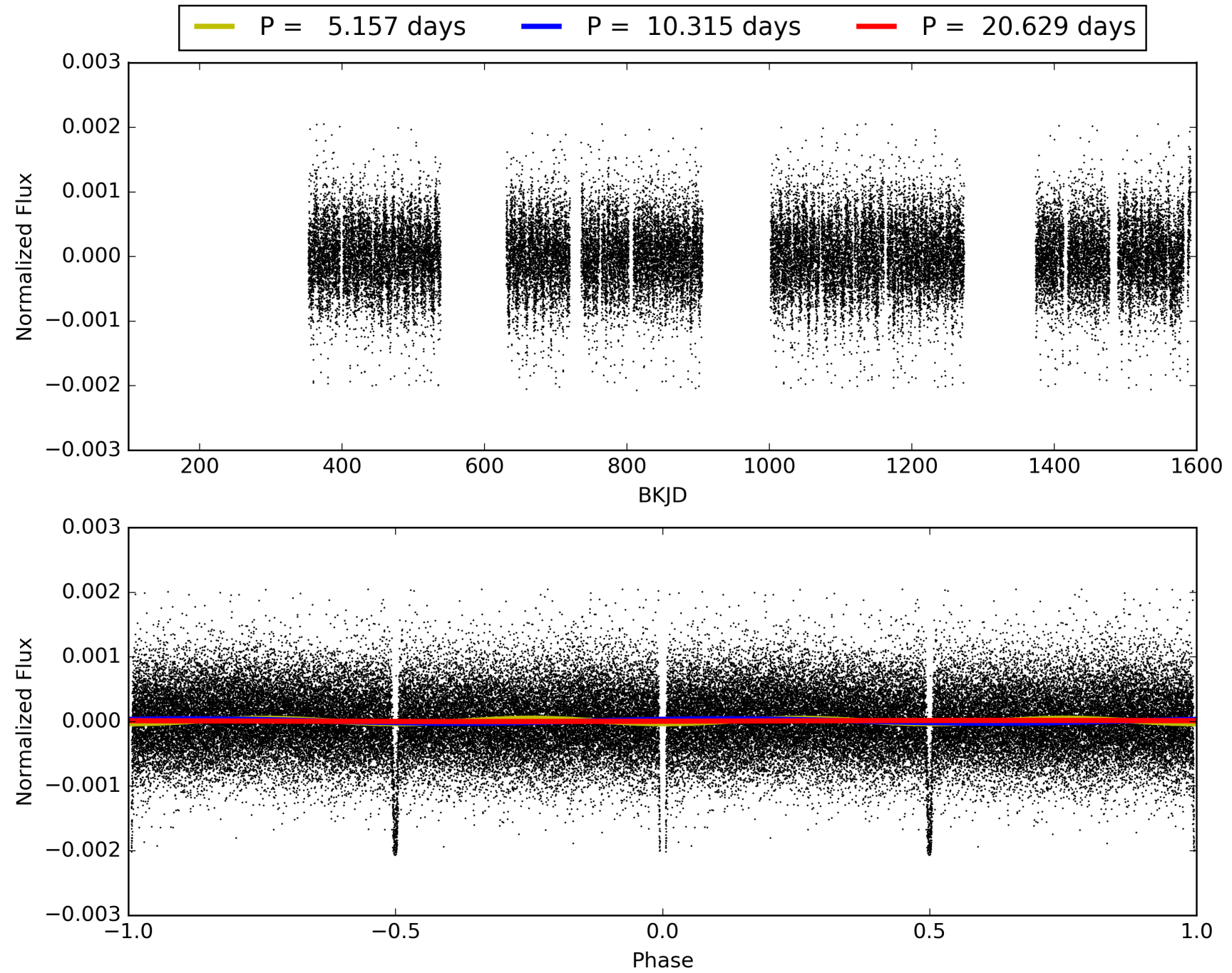
Software Revision: svn-ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 02:06:25 Z

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

TCE 004936990-01, PDC Light Curves

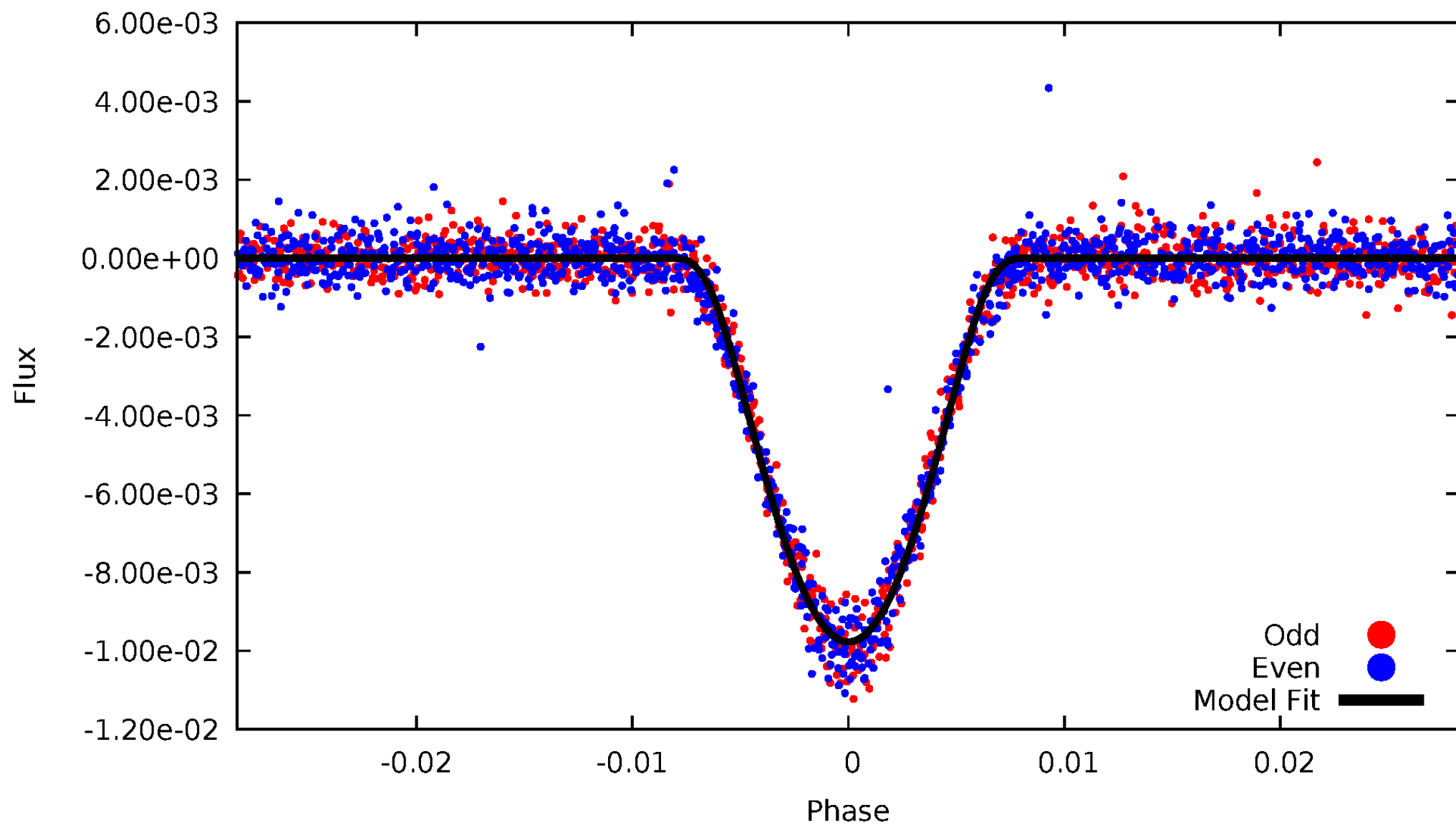


TCE 004936990-01



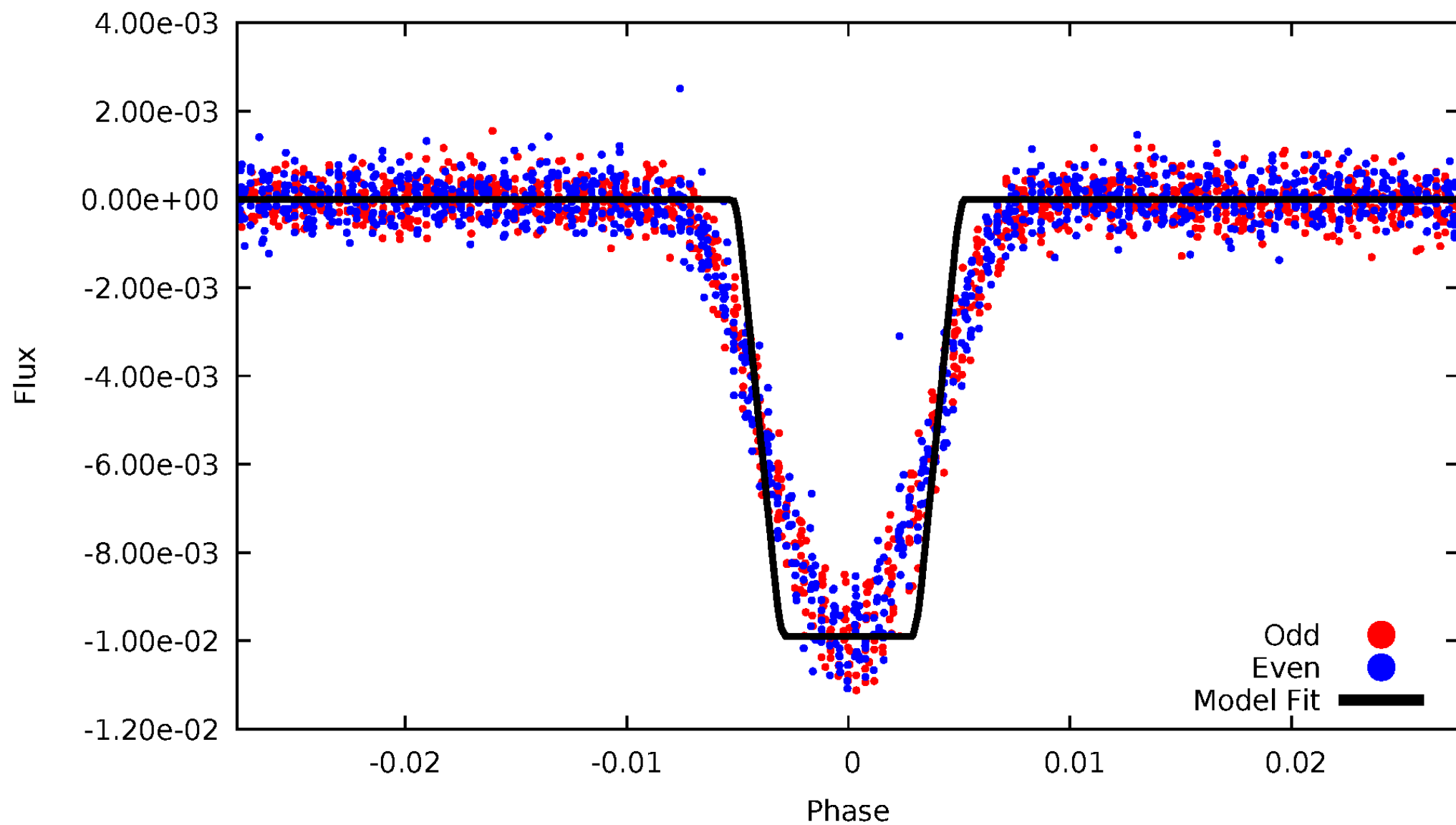
DV Odd/Even

TCE 004936990-01

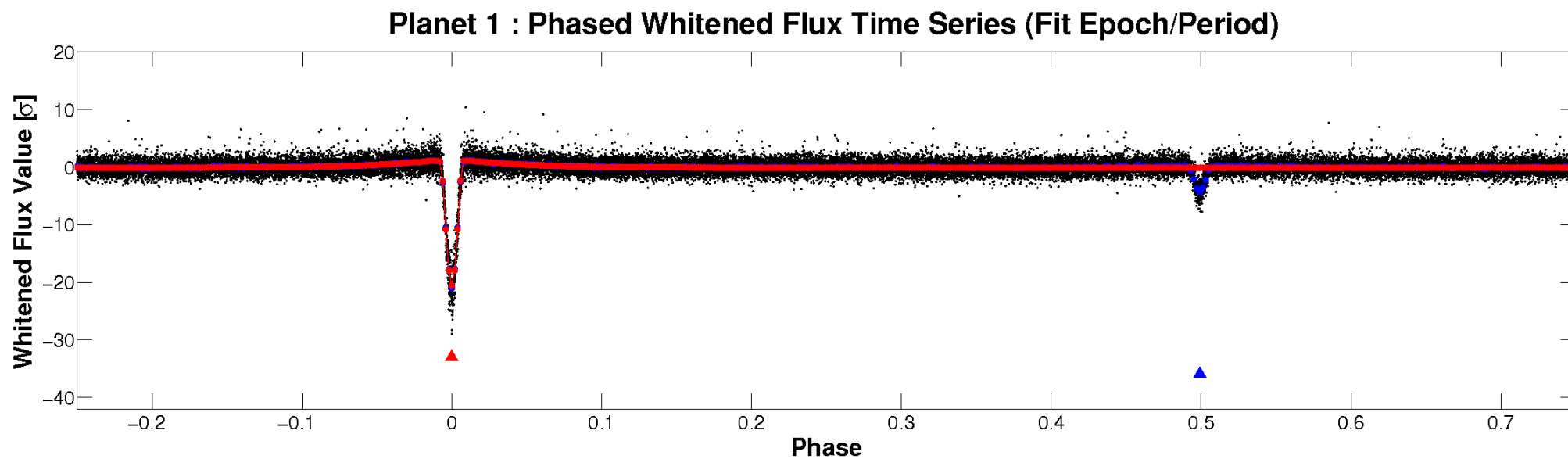
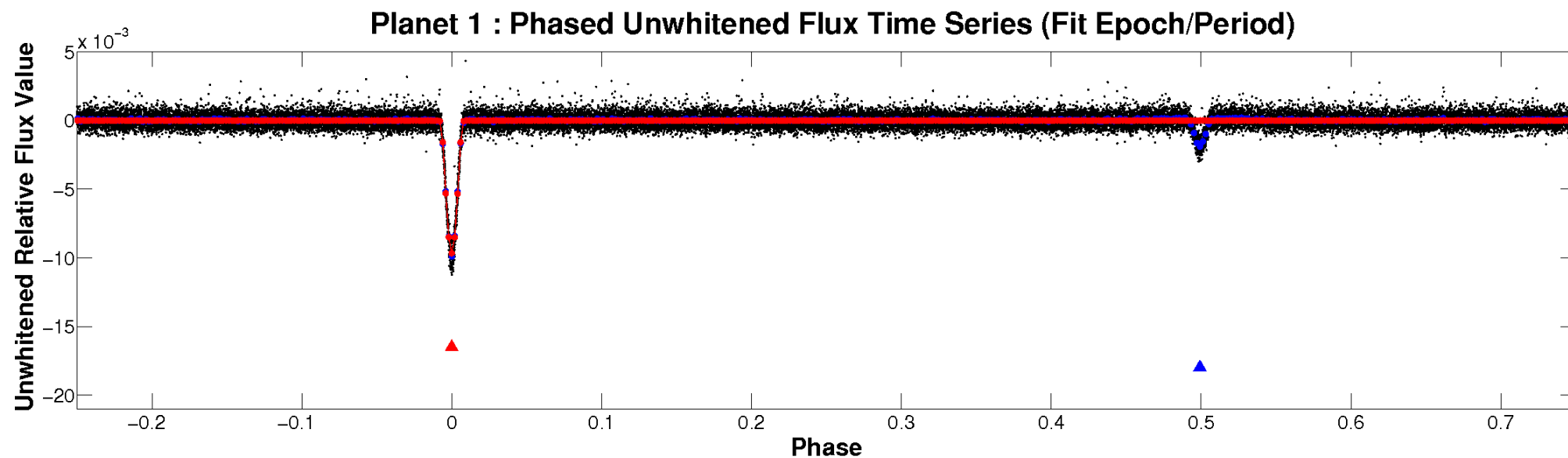


ALT Odd/Even

TCE 004936990-01

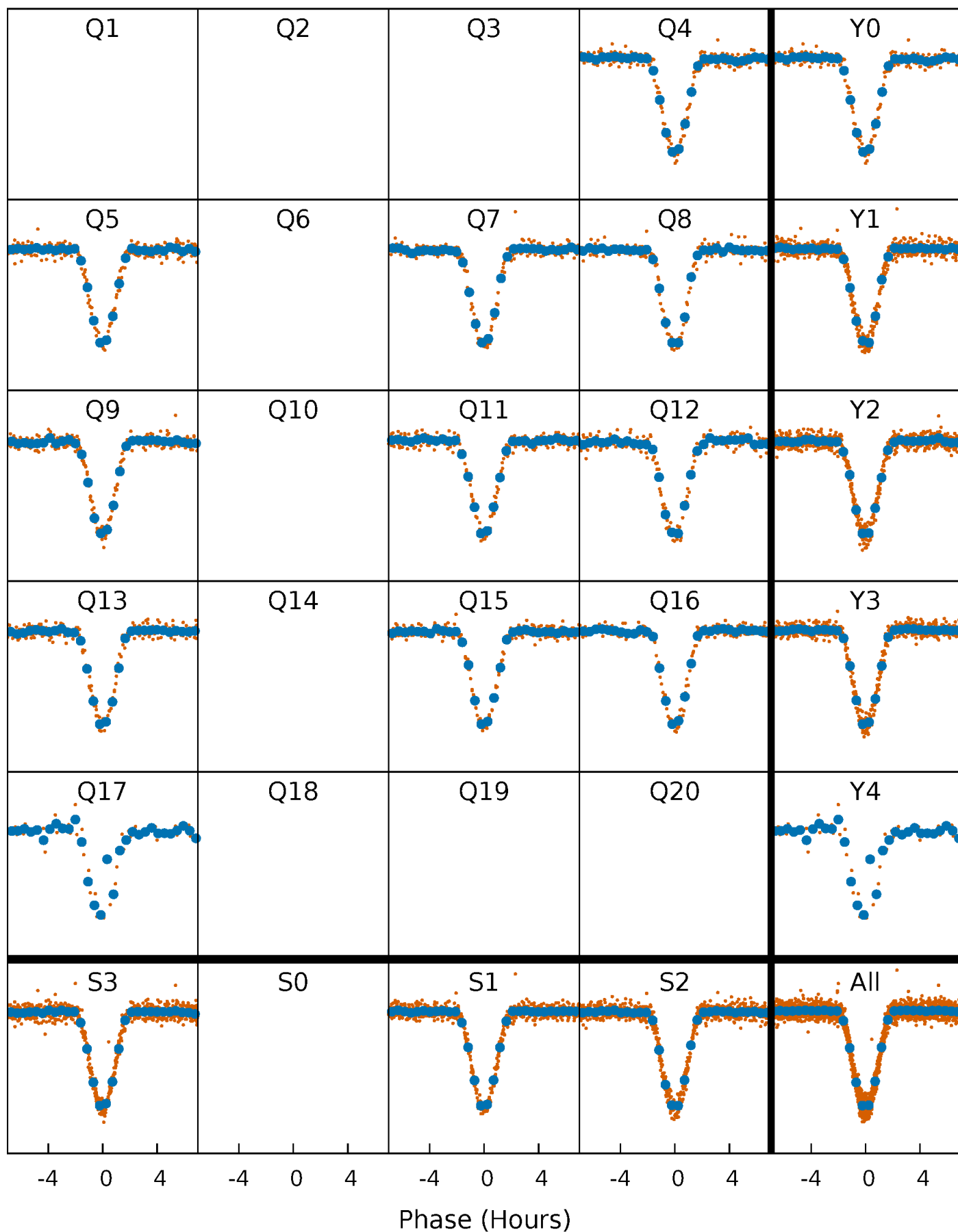


Non-Whitened Vs. Whitened Light Curve



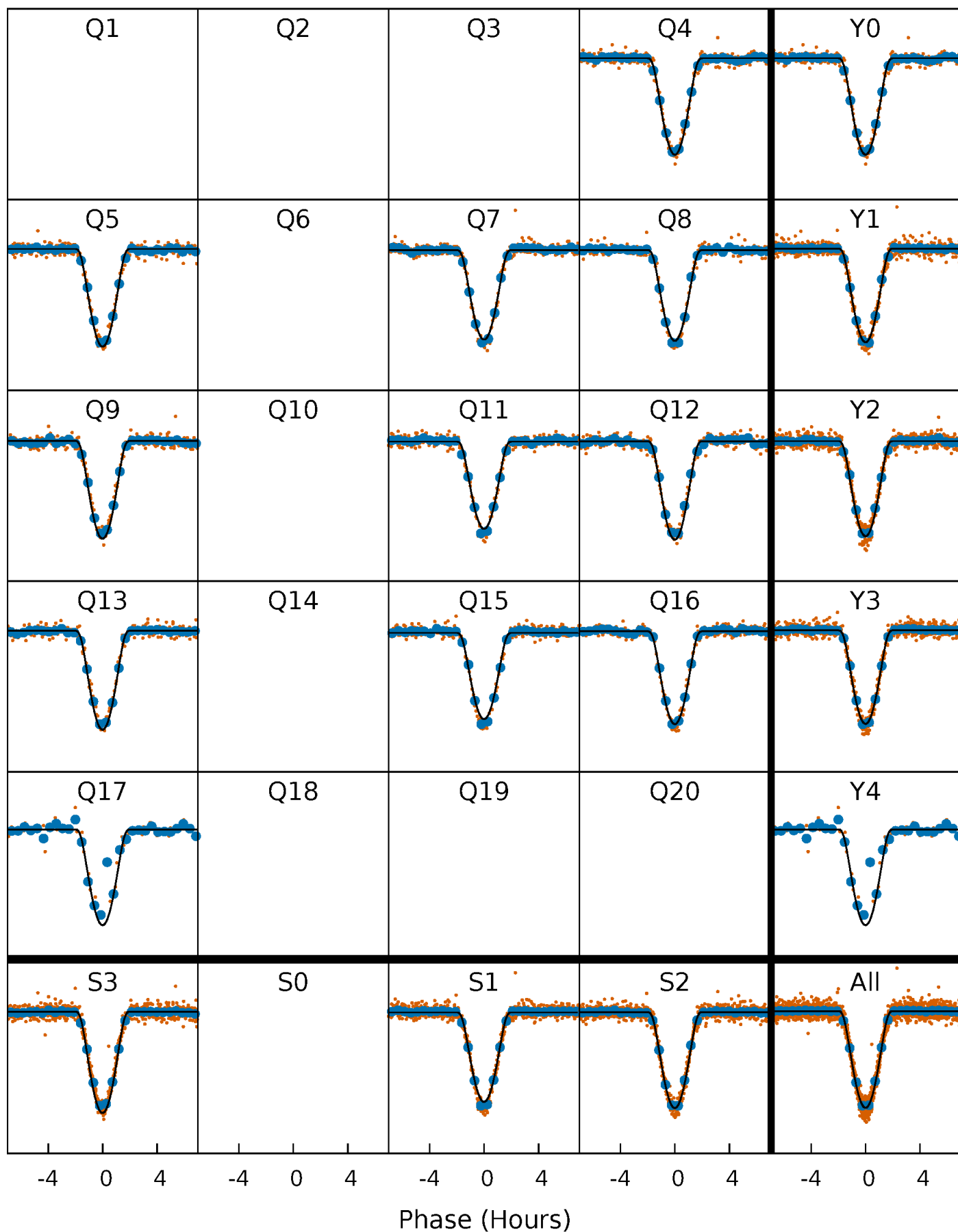
PDC Quarter-Phased Transit Curves

TCE 004936990-01 P= 10.314513 Days $T_0=137.704300$ (BKJD)



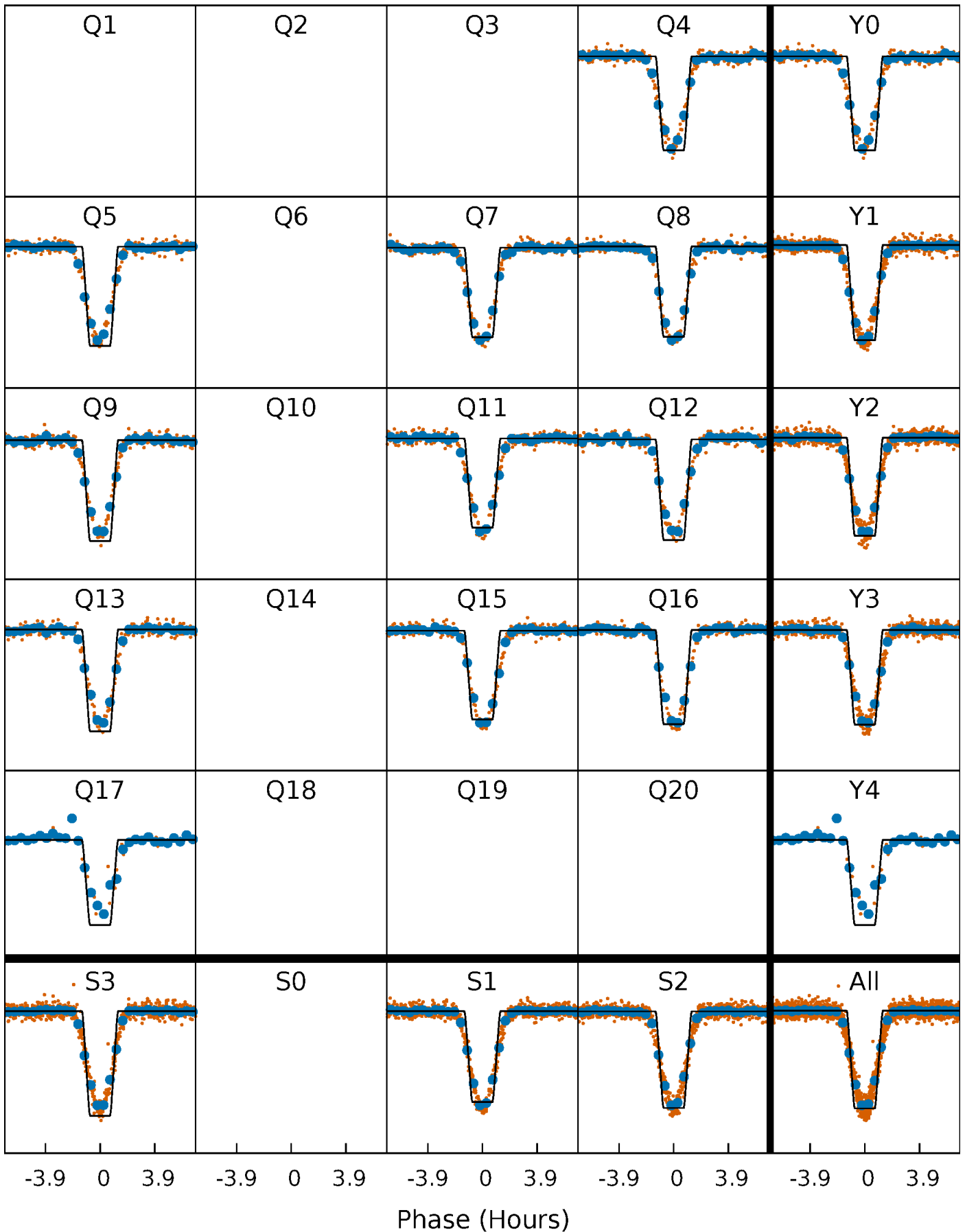
DV Quarter-Phased Transit Curves

TCE 004936990-01 P= 10.314513 Days $T_0=137.704300$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

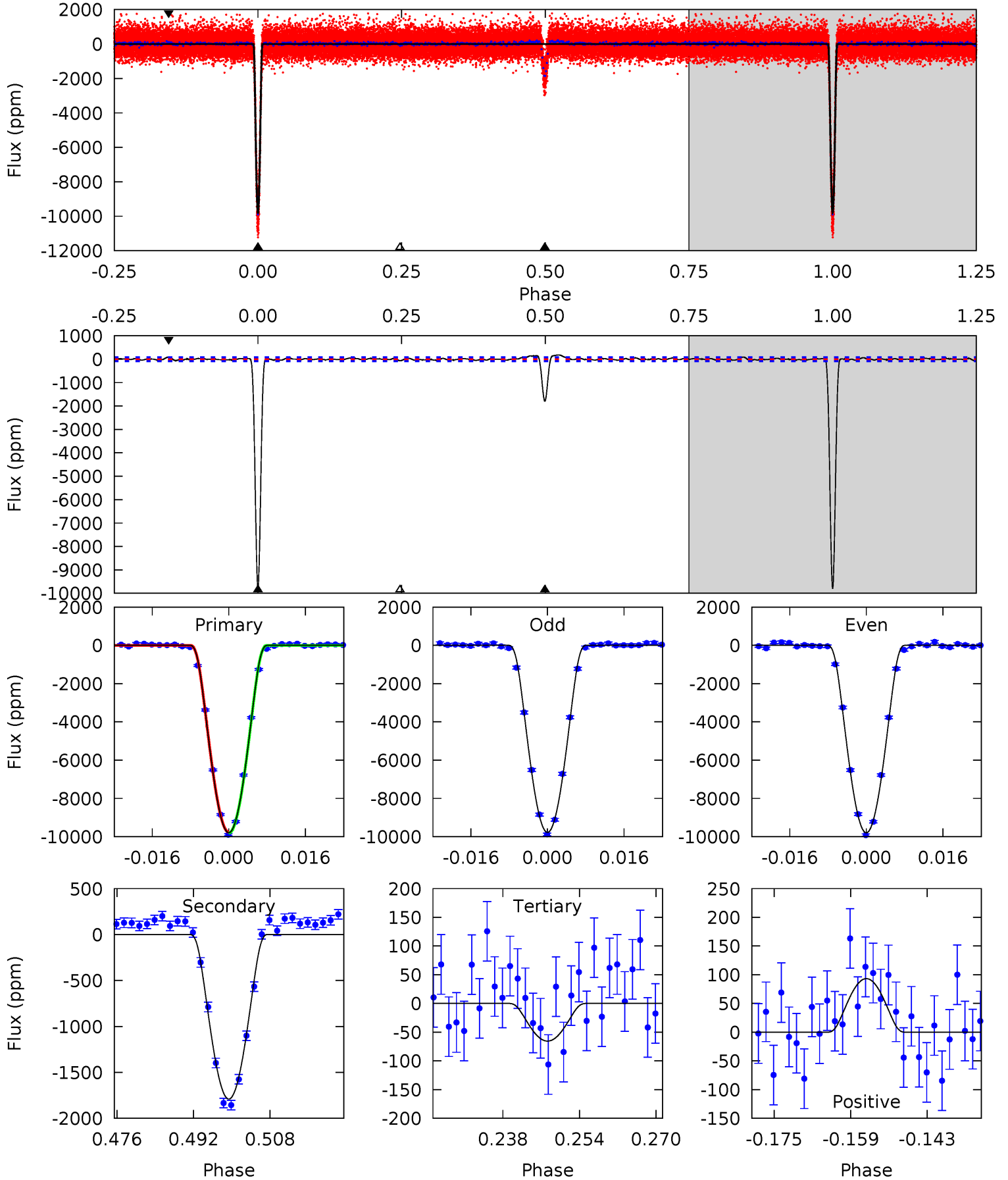
TCE 004936990-01 P= 10.314430 Days $T_0=137.710807$ (BKJD)



DV Model-Shift Uniqueness Test

004936990-01, P = 10.314513 Days, E = 137.704300 Days

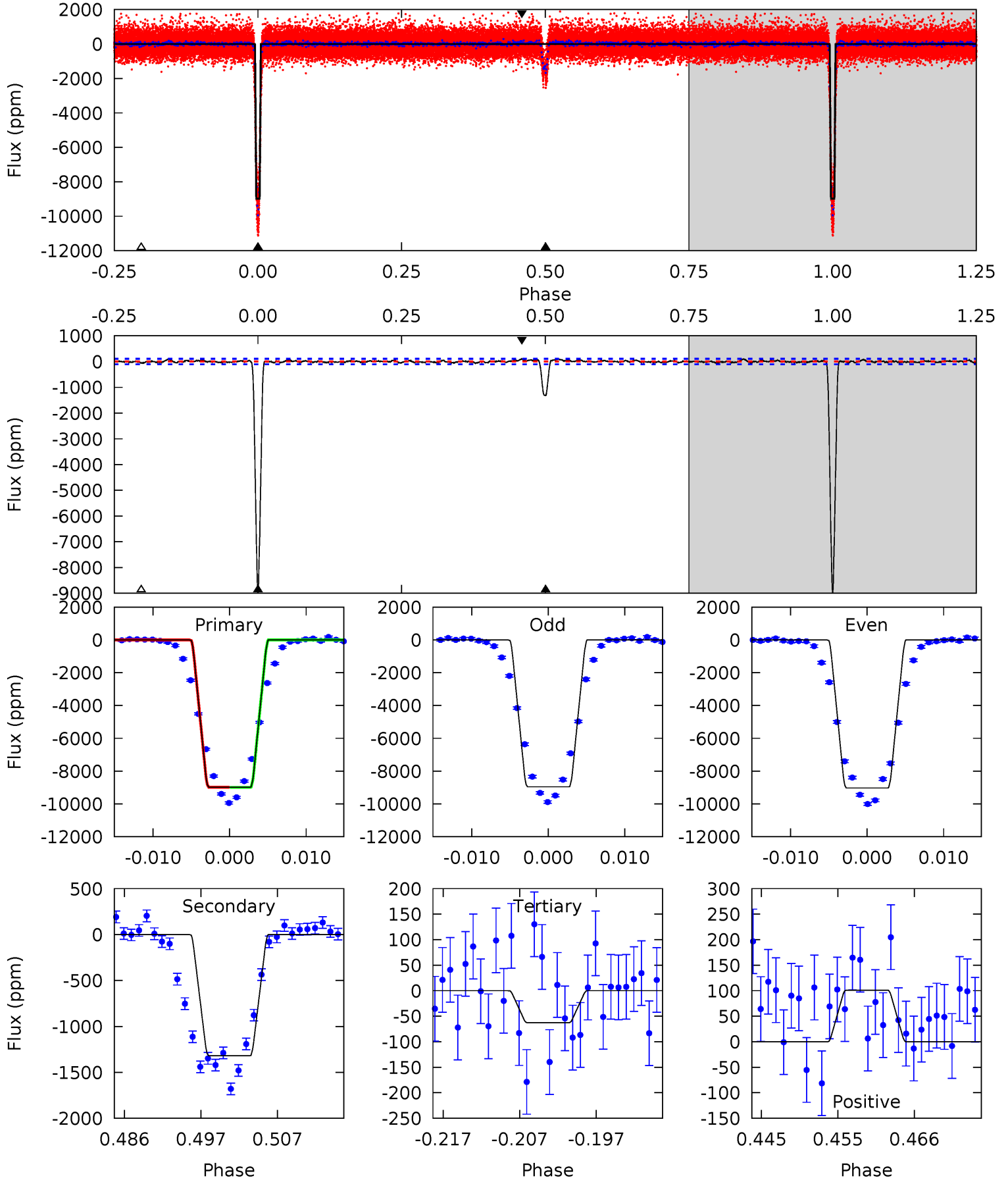
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
591.1	108.1	3.96	5.63	4.94	2.41	2.24	587.1	585.5	104.2	102.5	0.66	1.00	0.02	1.38



Alt Model-Shift Uniqueness Test

004936990-01, P = 10.314430 Days, E = 137.710807 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
417.2	61.2	2.92	4.70	5.02	2.56	1.37	414.3	412.5	58.3	56.5	1.64	1.00	0.01	0.24



Stellar Parameters For KIC 004936990

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6335^{+208}_{-208}	$4.455^{+0.150}_{-0.150}$	$-1.920^{+0.300}_{-0.050}$	$0.837^{+0.154}_{-0.103}$	$0.728^{+0.074}_{-0.026}$	$1.750^{+1.087}_{-0.721}$
	+3%/-3%	+3%/-3%	+16%/-3%	+18%/-12%	+10%/-4%	+62%/-41%
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 004936990-01 / KOI 3290.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-1791 ± 17	$14.55^{+3.14}_{-2.75}$	1230^{+79}_{-62}	3690^{+261}_{-205}	33^{+17}_{-11}
Alt.	-1318 ± 22	$9.02^{+2.90}_{-2.40}$	1234^{+77}_{-69}	4126^{+498}_{-372}	63^{+54}_{-26}

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 $A_{obs} \gg 1.0$

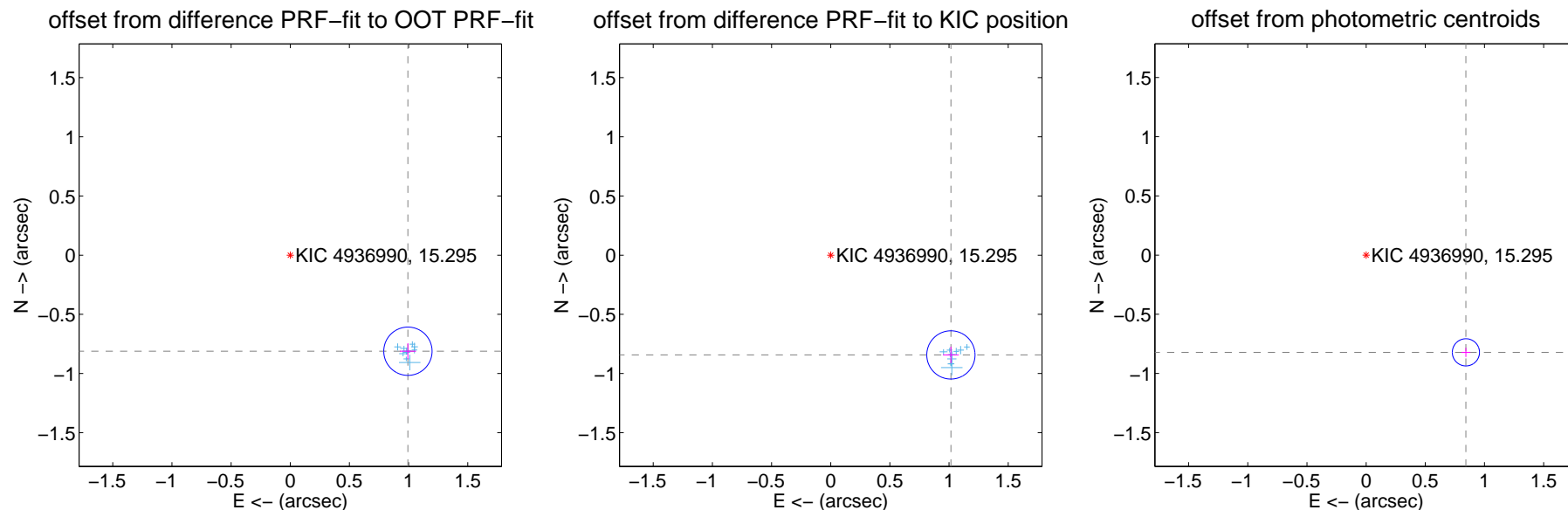
DV Centroid Data

Supplemental centroid analysis for 004936990-01. Kepler magnitude: 15.29. Transit SNR 316.69

There are 11 quarters with good PRF difference image offsets

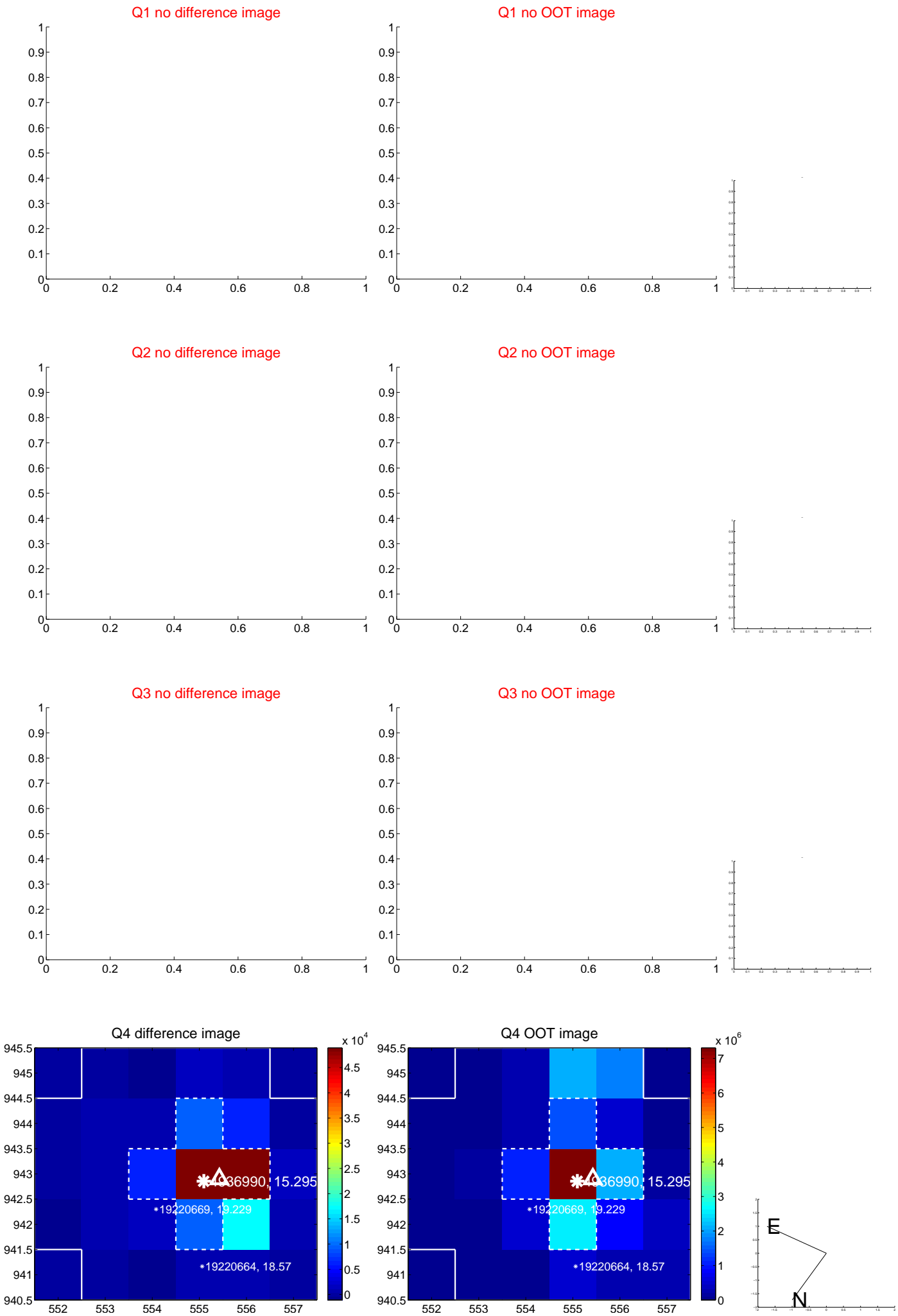
The direct PRF centroid is offset from the target star catalog position by about 0.05 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.284 ± 0.068	18.87	-0.994 ± 0.068	-0.812 ± 0.068
PRF-fit source offset from KIC position	1.320 ± 0.068	19.43	-1.016 ± 0.067	-0.843 ± 0.069
photometric centroid source offset	1.18 ± 0.04	30.76	-0.84 ± 0.04	-0.82 ± 0.04

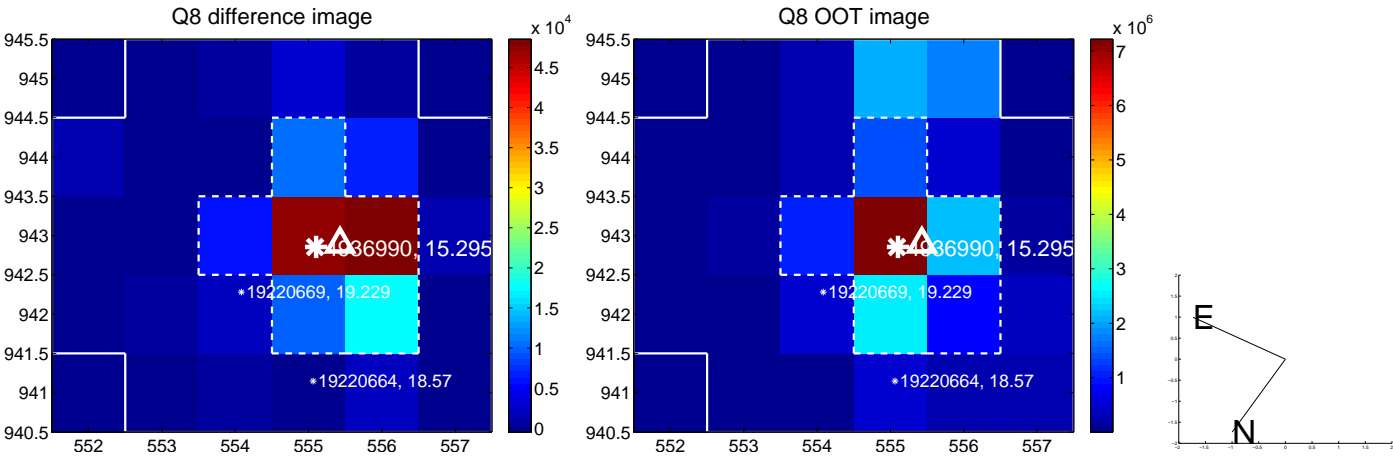
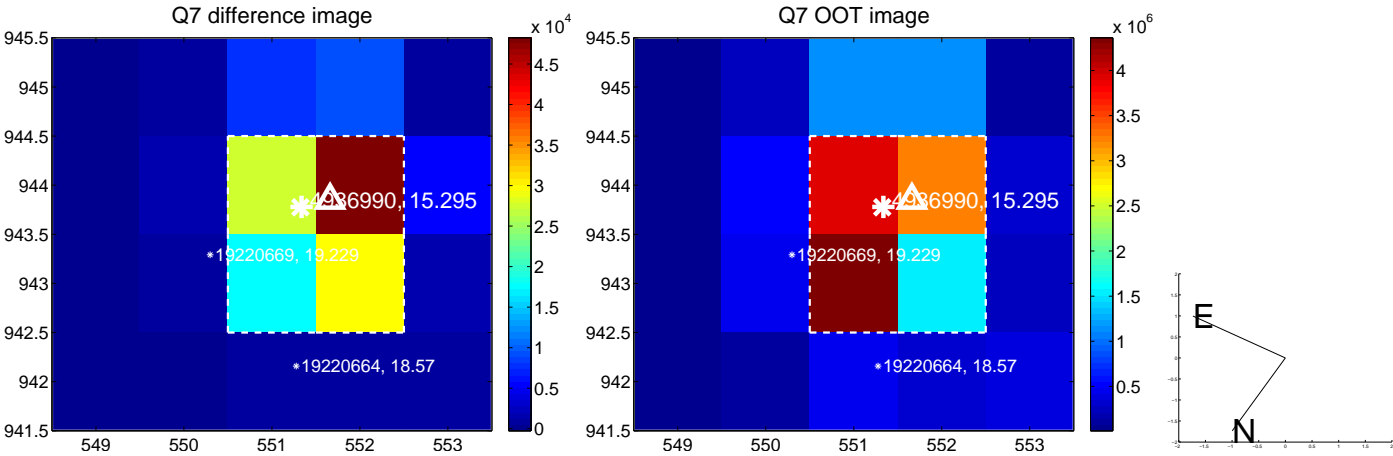
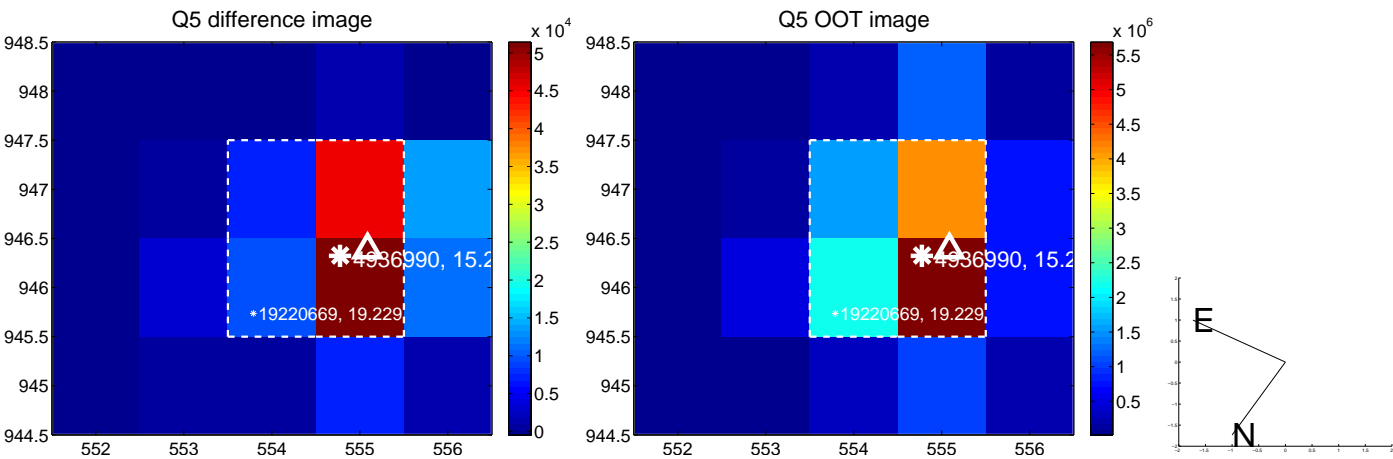


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

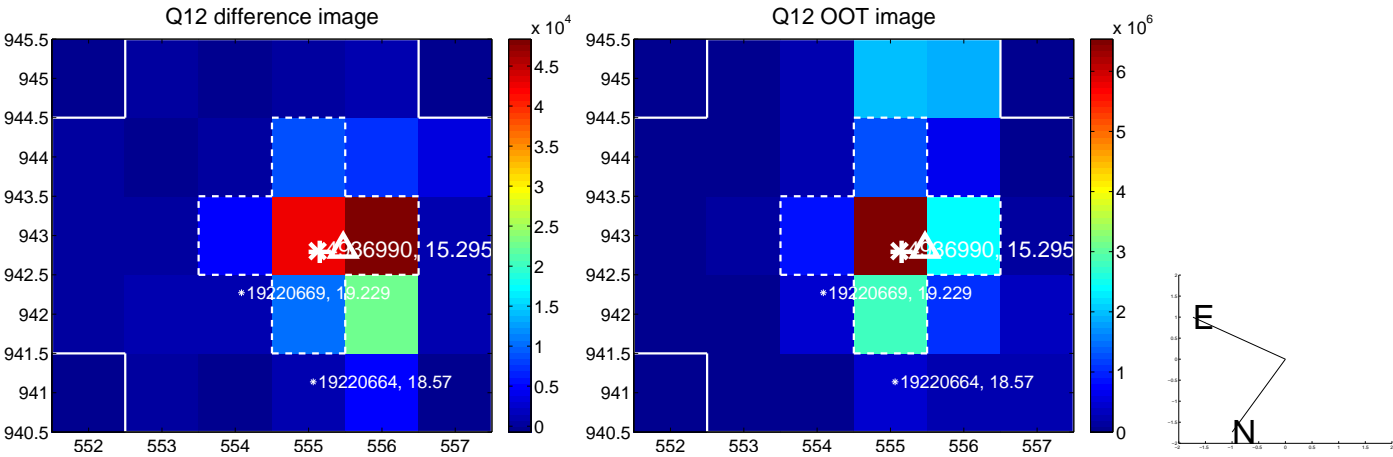
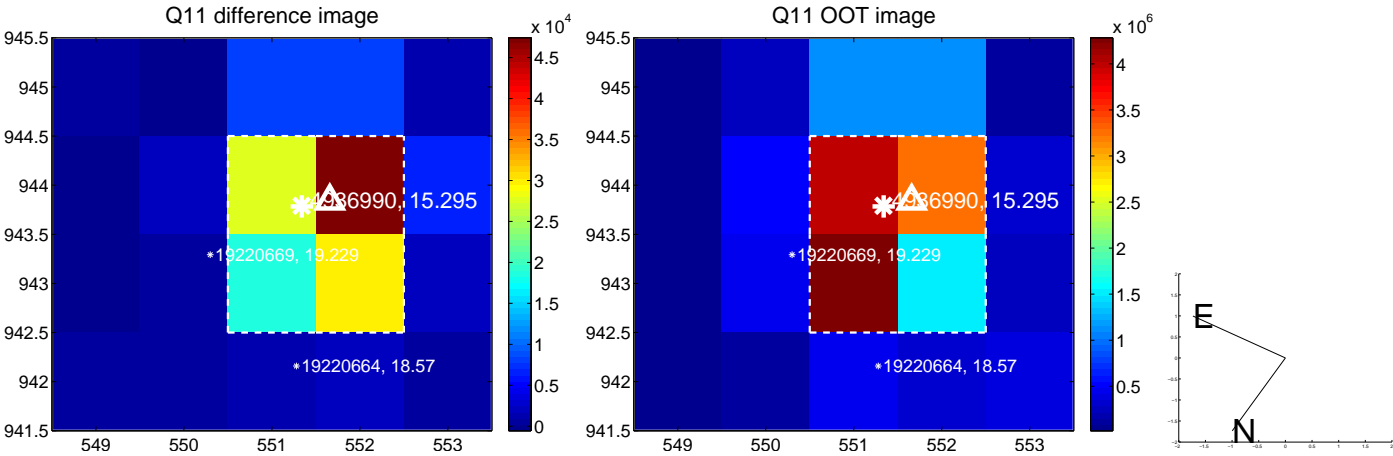
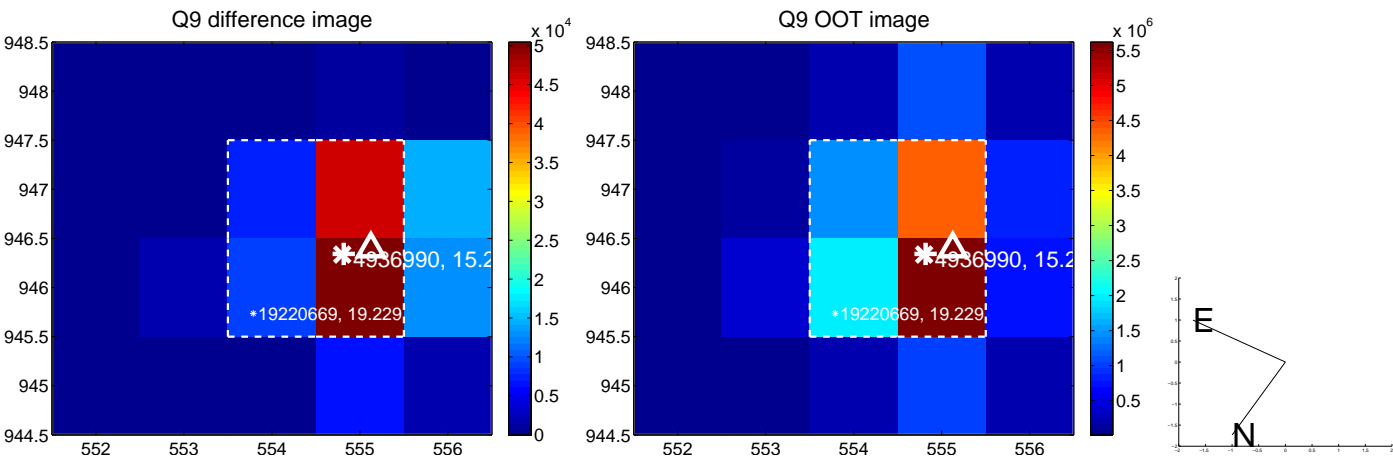
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



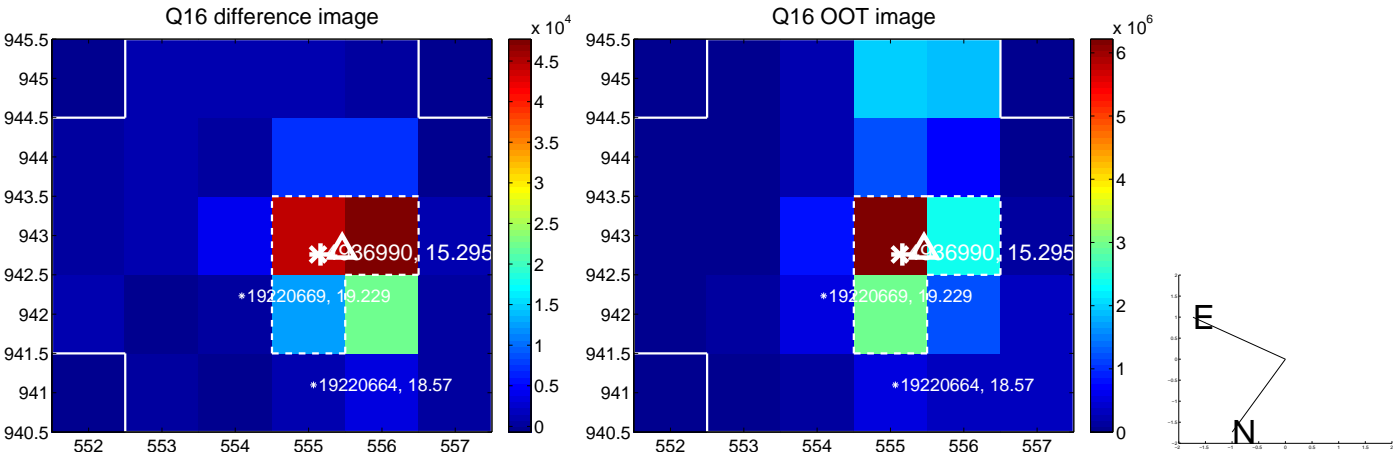
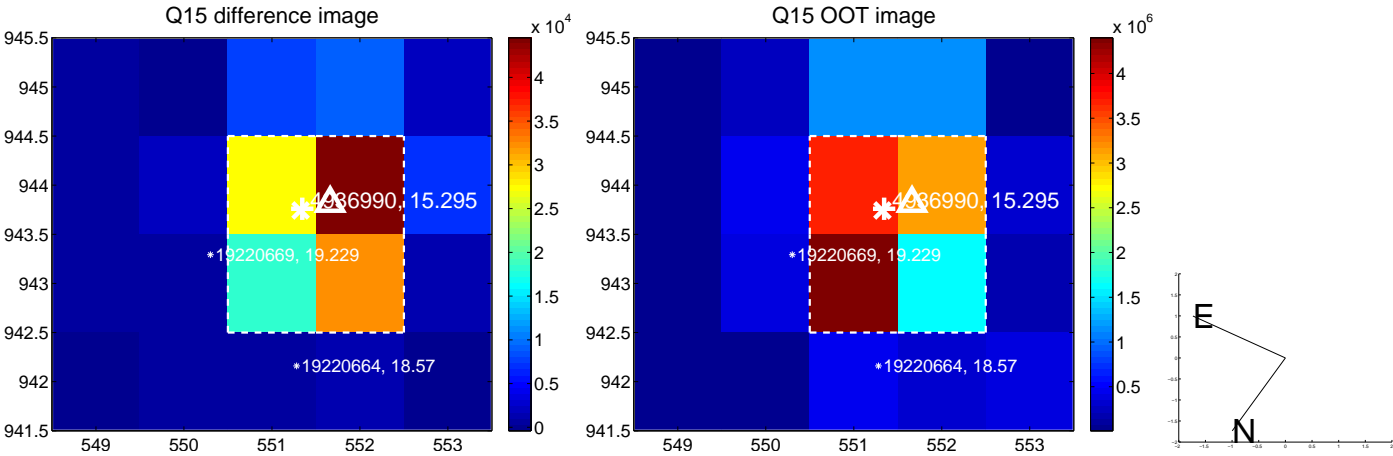
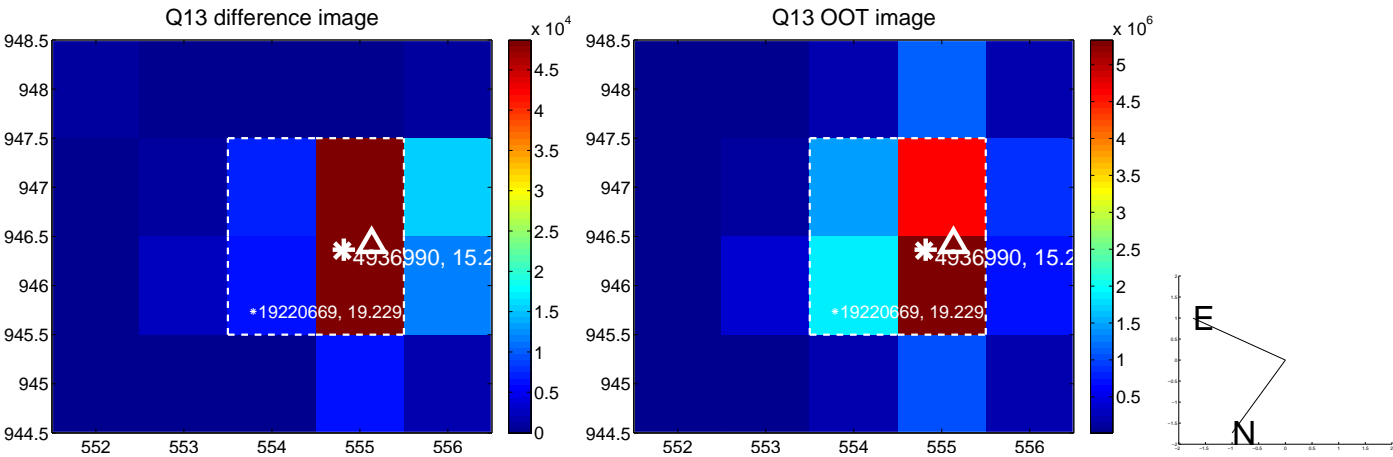
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



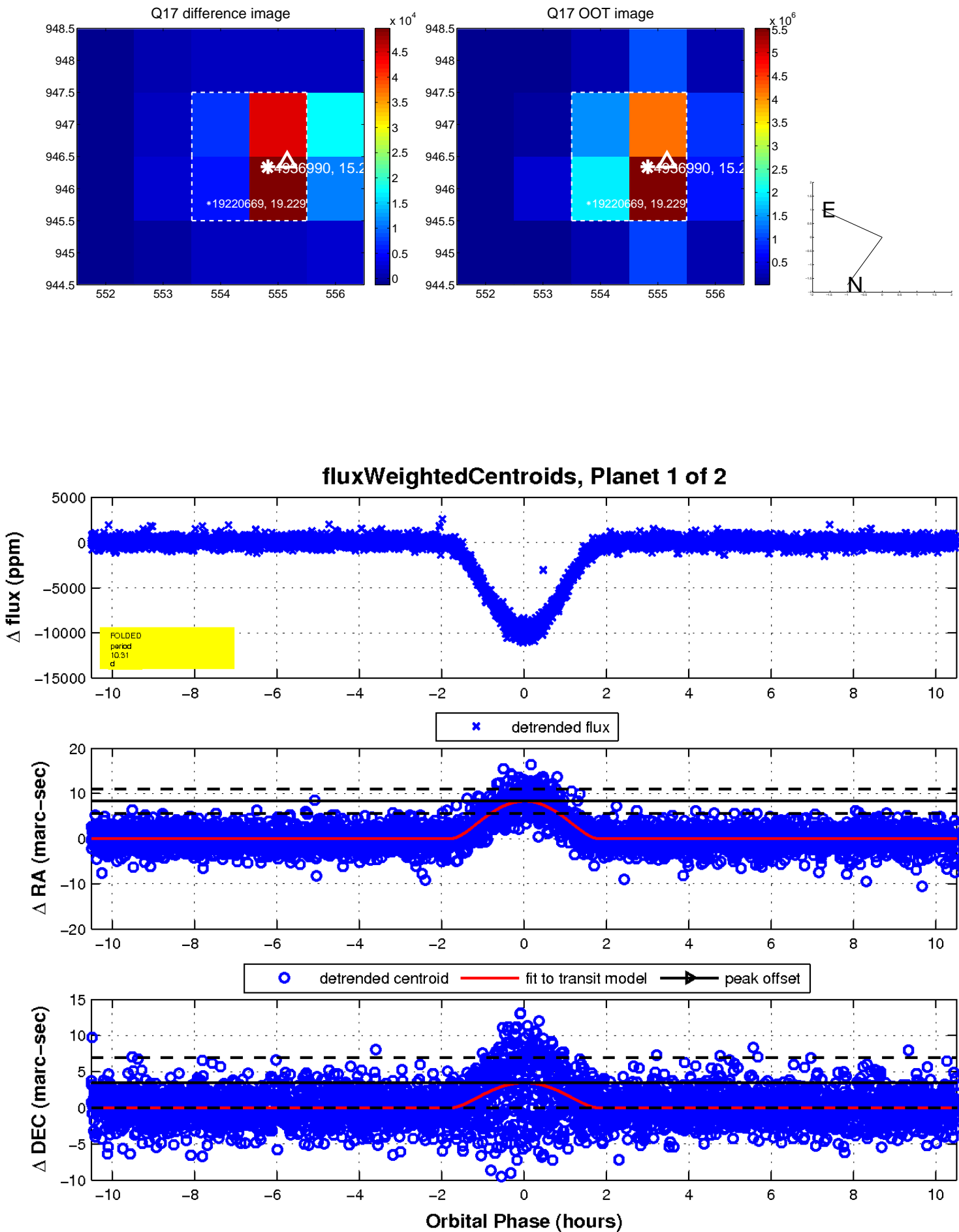
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

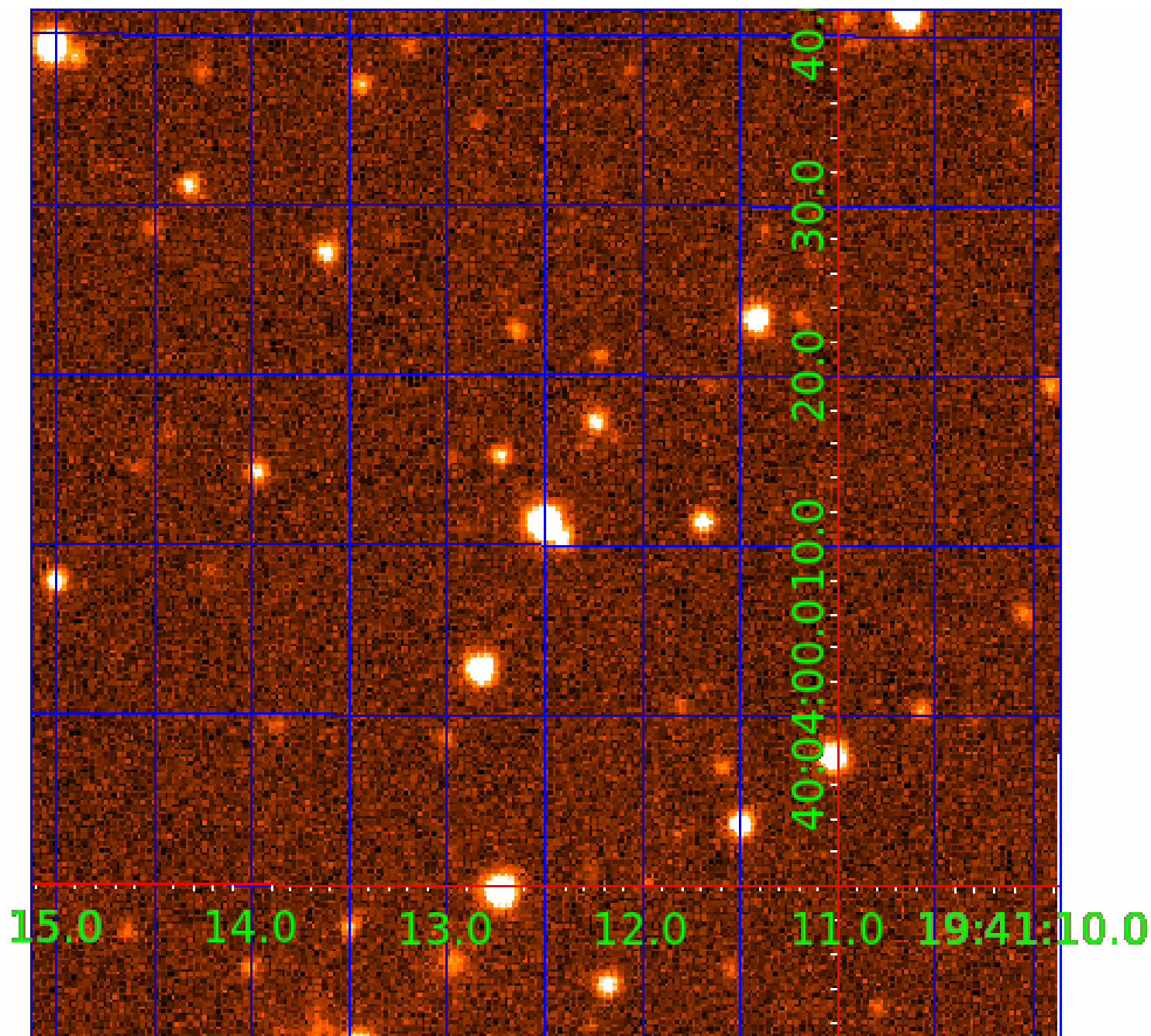


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 004936990

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})
004936990-01	OBS	3290.01	10.314513	137.704300	9775.9	3.502	342.5	316.7	0.84	6335	14.57	145.13
004936990-02	OBS	No	10.314535	132.537376	1990.2	3.546	65.3	67.5	0.84	6335	6.18	145.13

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004936990-01	OBS	FP	0.00	0	1	1	0	MOD_SEC_DV—MOD_SEC_ALT—DEEP_V_SHAPED—HAS_SEC_TCE—CENT_UNRESOLVED_OFFSET
004936990-02	OBS	FP	0.00	1	1	1	0	IS_SEC_TCE—CENT_UNRESOLVED_OFFSET

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 004936990-02

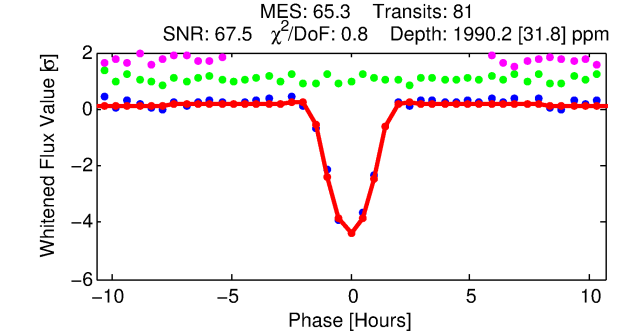
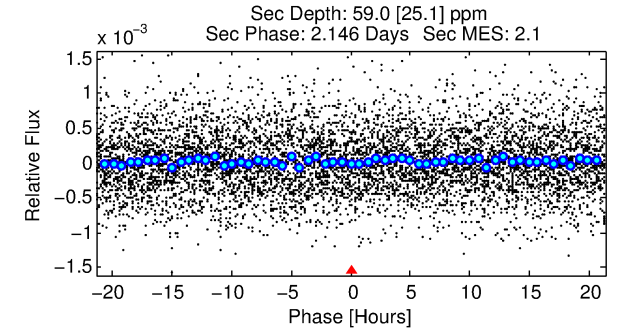
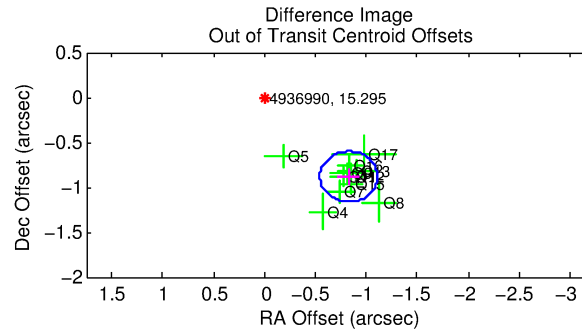
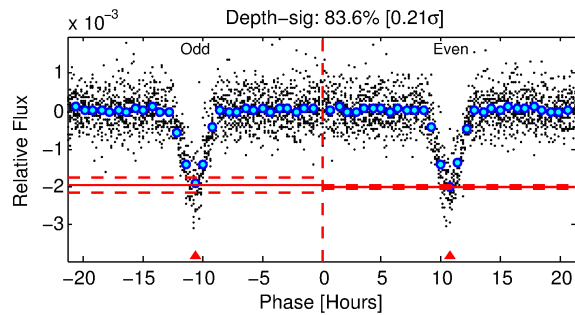
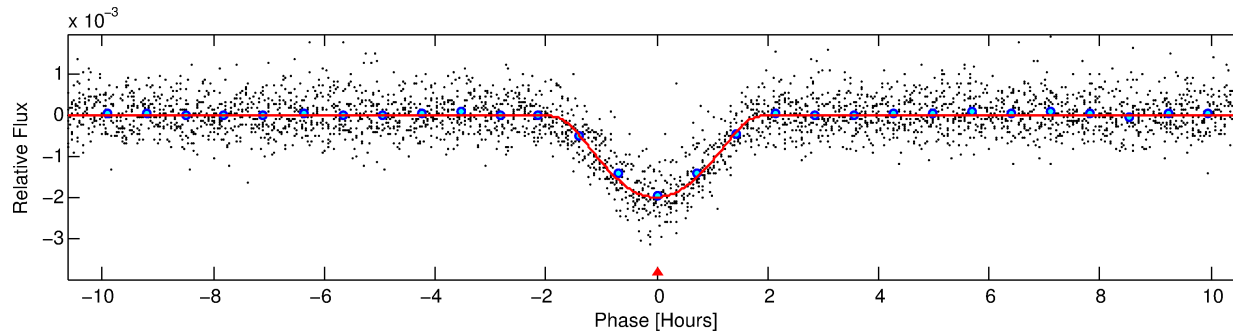
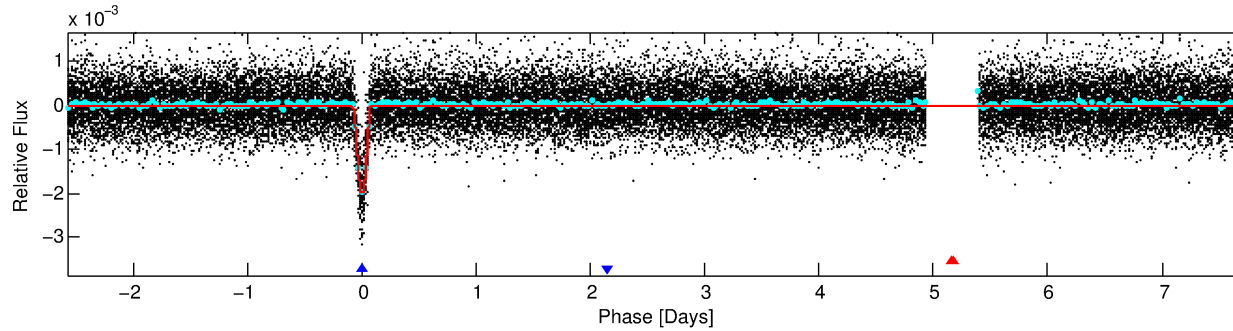
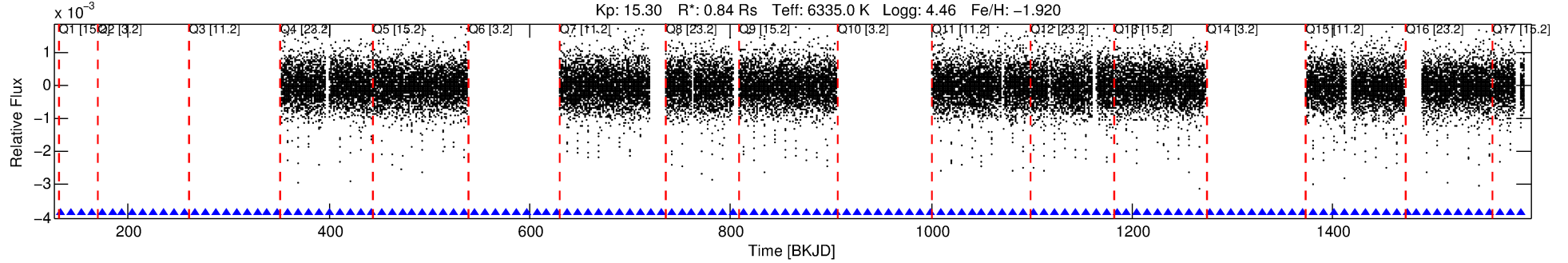
No Significant Match Found

DV One-Page Summary

KIC: 4936990 Candidate: 2 of 2 Period: 10.315 d

KOI: K03290.01 Corr: 0.988

Kp: 15.30 R*: 0.84 Rs Teff: 6335.0 K Logg: 4.46 Fe/H: -1.920



DV Fit Results:

Period = 10.31453 [0.00002] d
Epoch = 132.5374 [0.0015] BKJD
Rp/R* = 0.0677 [0.0299]
a/R* = 9.06 [1.08]
b = 0.99 [0.05]
Seff = 145.13 [42.39]
Teq = 885 [65] K
Rp = 6.18 [2.96] Re
a = 0.0835 [0.0140] AU
Ag = 5.92 [6.01] [0.82σ]
Teff = 2134 [528] K [2.35σ]

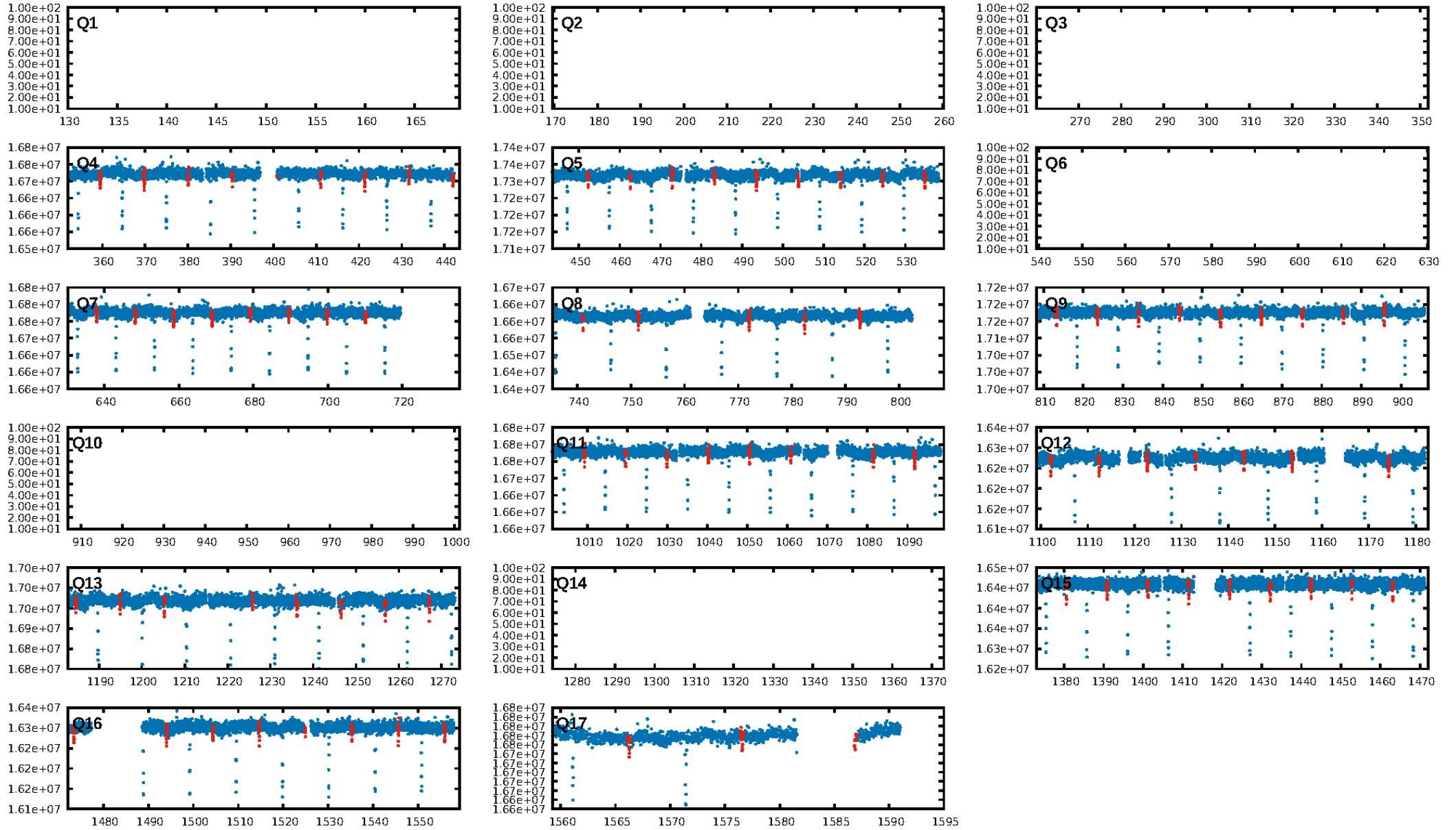
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 67.9%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 1.00 [78/78]
GhostDiagnostic-chr: 3.319
Centroid-sig: 0.0%
Centroid-so: 1.168 arcsec [6.20σ]
OotOffset-rm: 1.209 arcsec [12.88σ]
KicOffset-rm: 1.265 arcsec [12.63σ]
OotOffset-st: 0/3/4/4 [11]
KicOffset-st: 0/3/4/4 [11]
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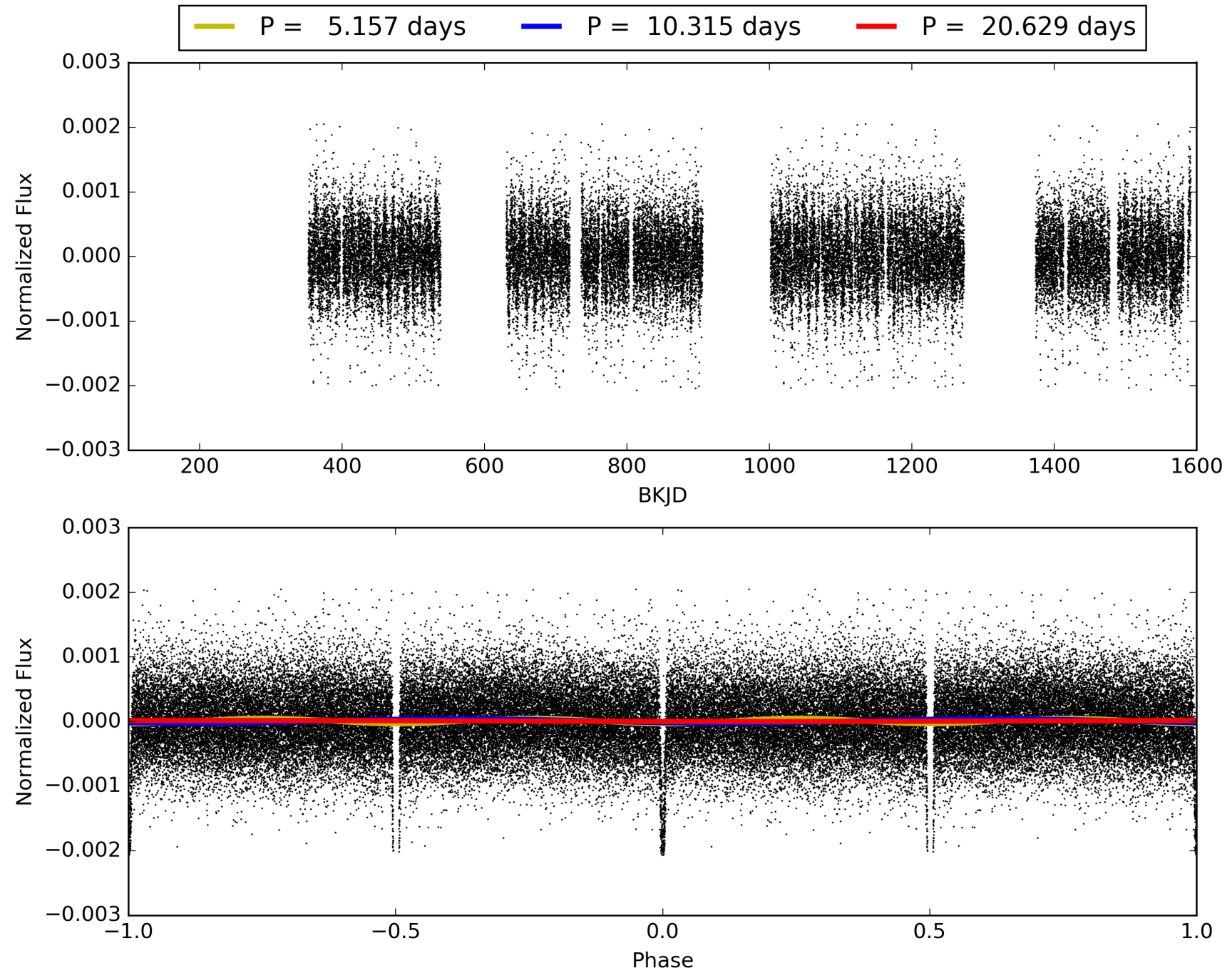
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 004936990-02, PDC Light Curves

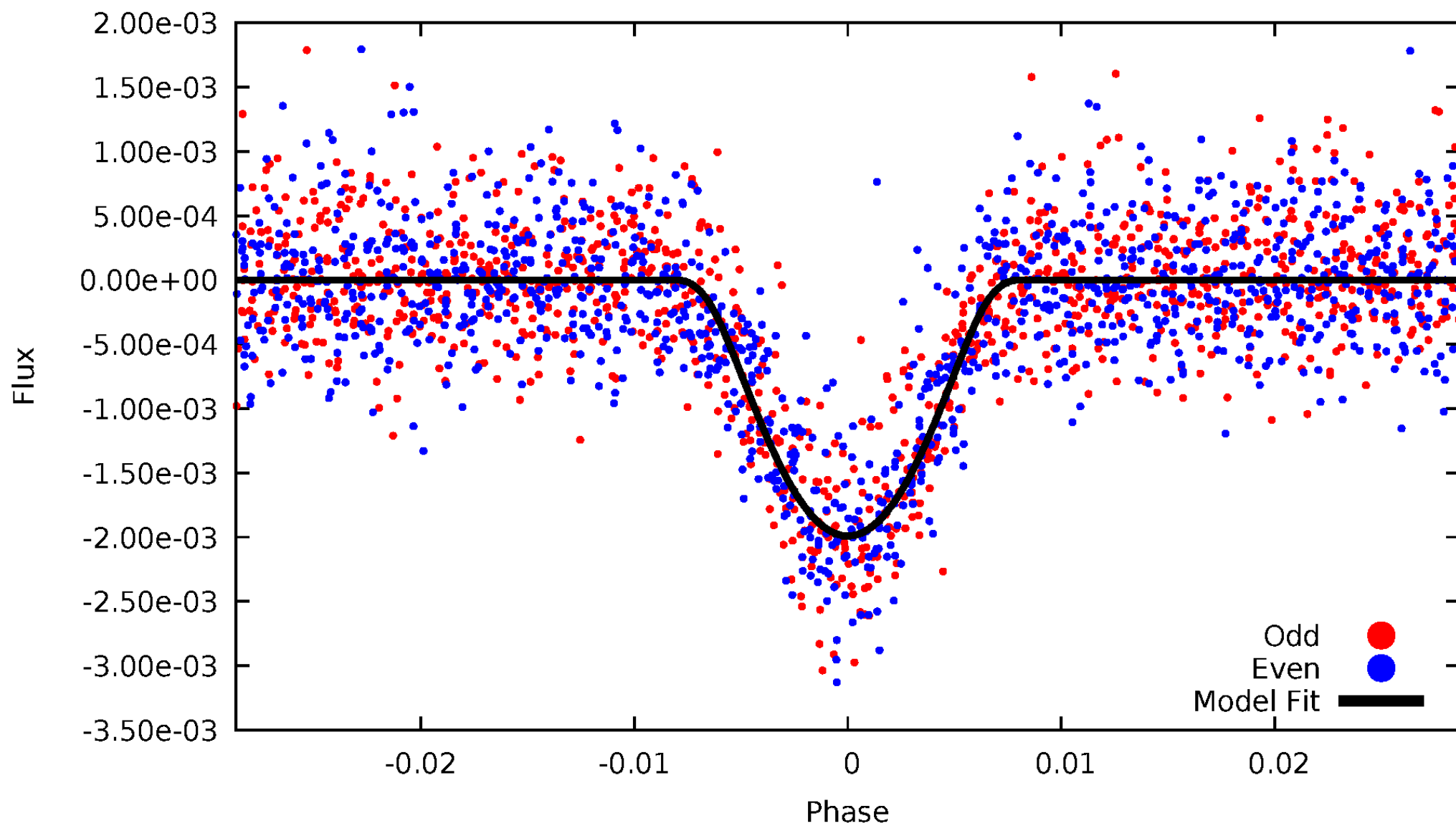


TCE 004936990-02



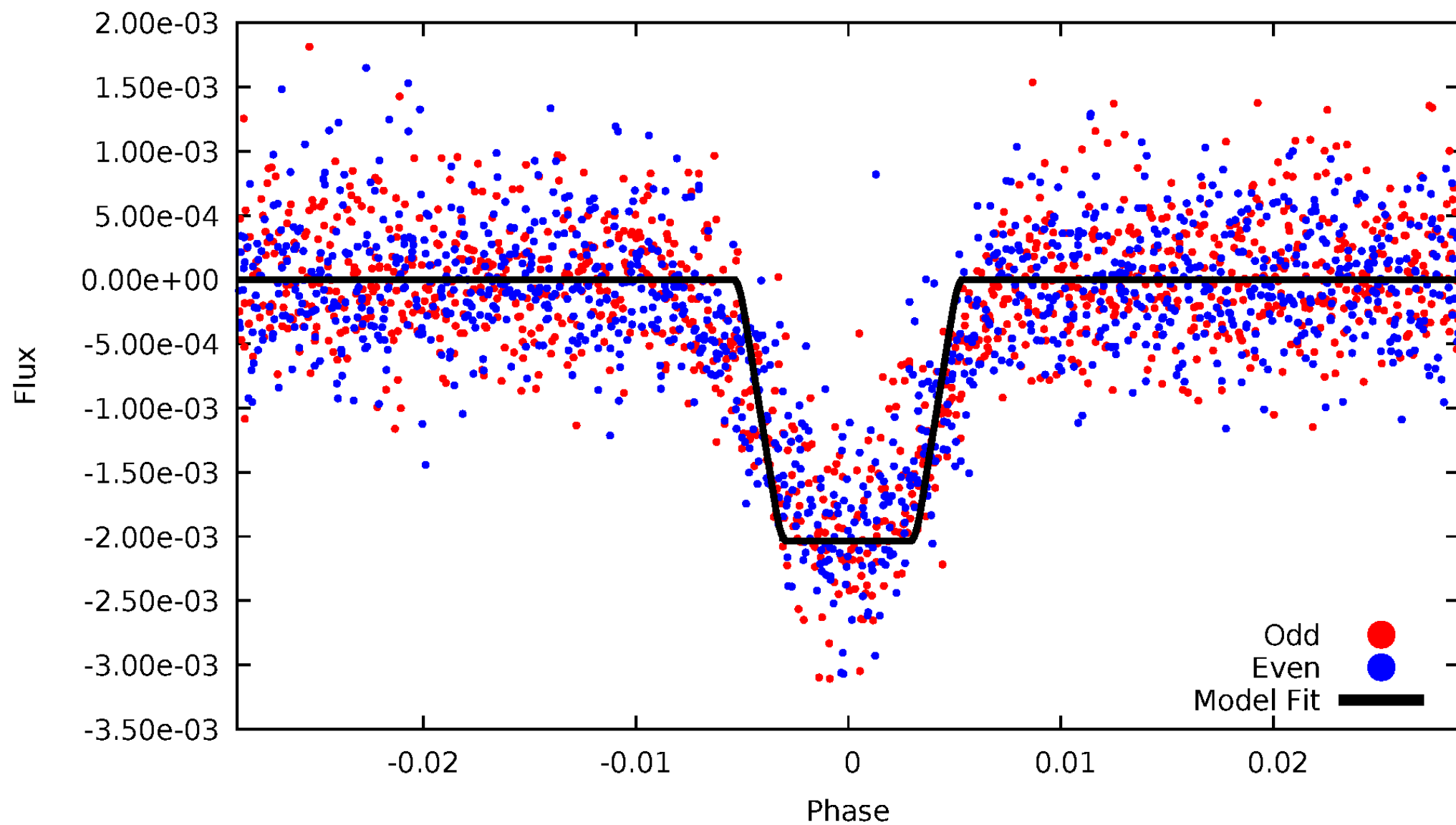
DV Odd/Even

TCE 004936990-02



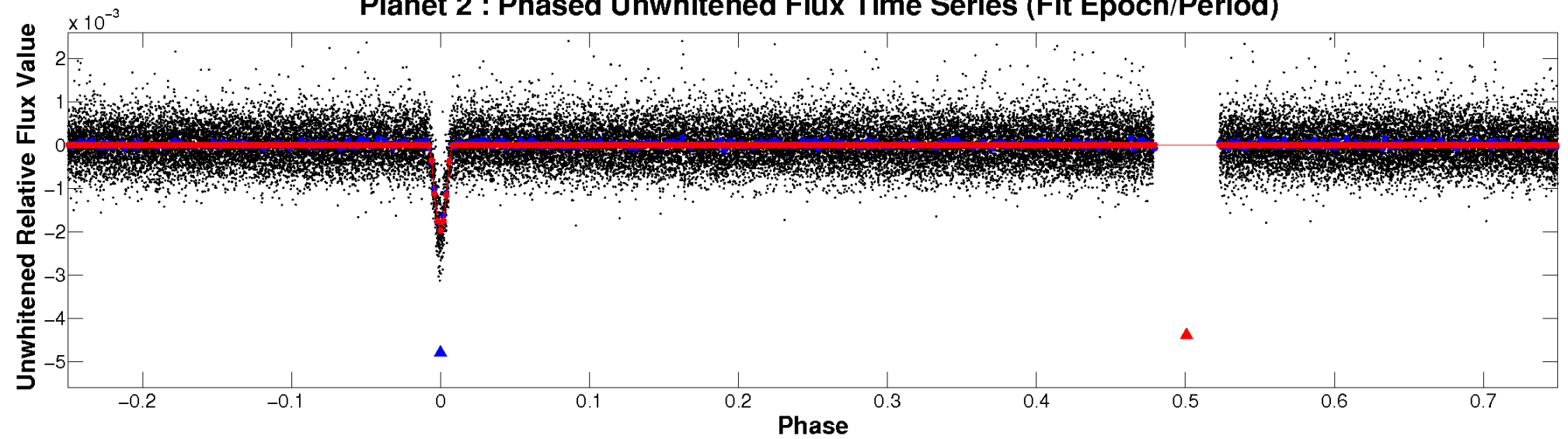
ALT Odd/Even

TCE 004936990-02

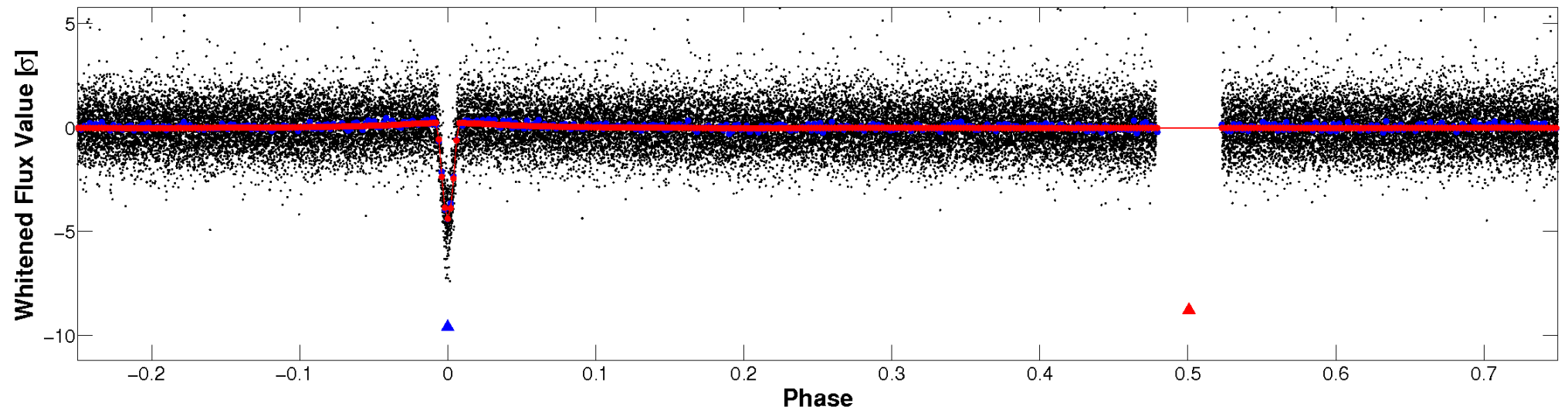


Non-Whitened Vs. Whitened Light Curve

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

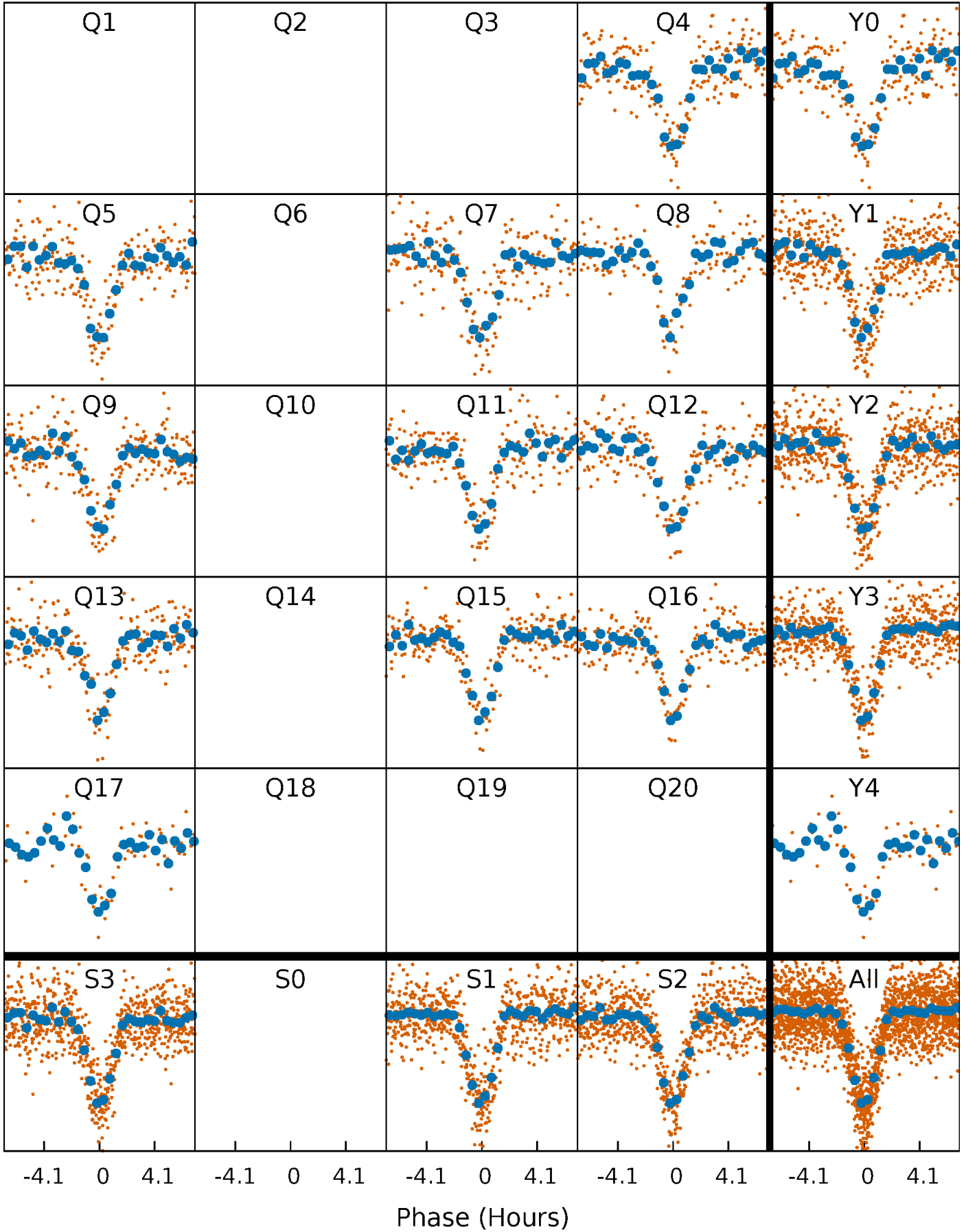


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



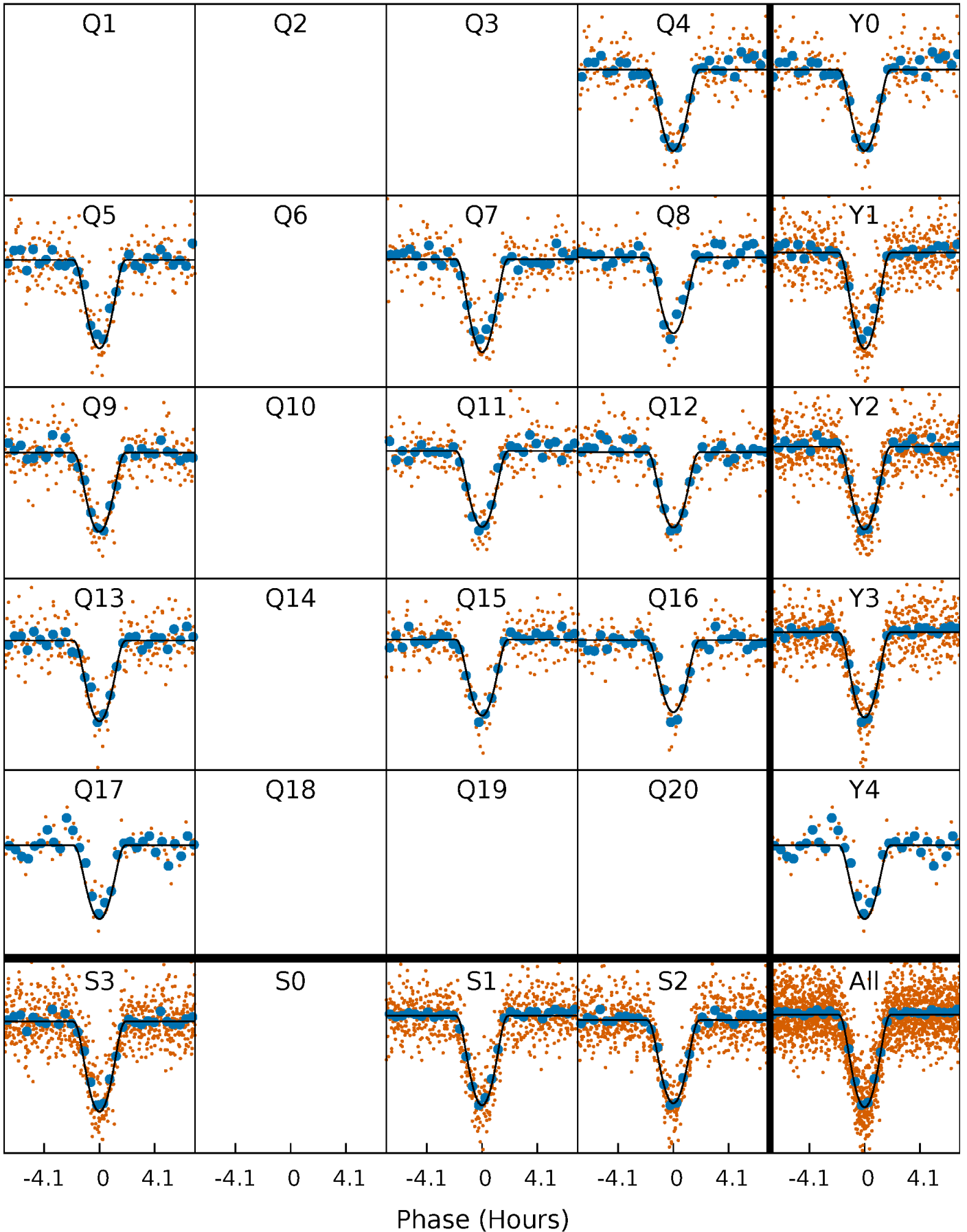
PDC Quarter-Phased Transit Curves

TCE 004936990-02 P= 10.314535 Days $T_0=132.537376$ (BKJD)



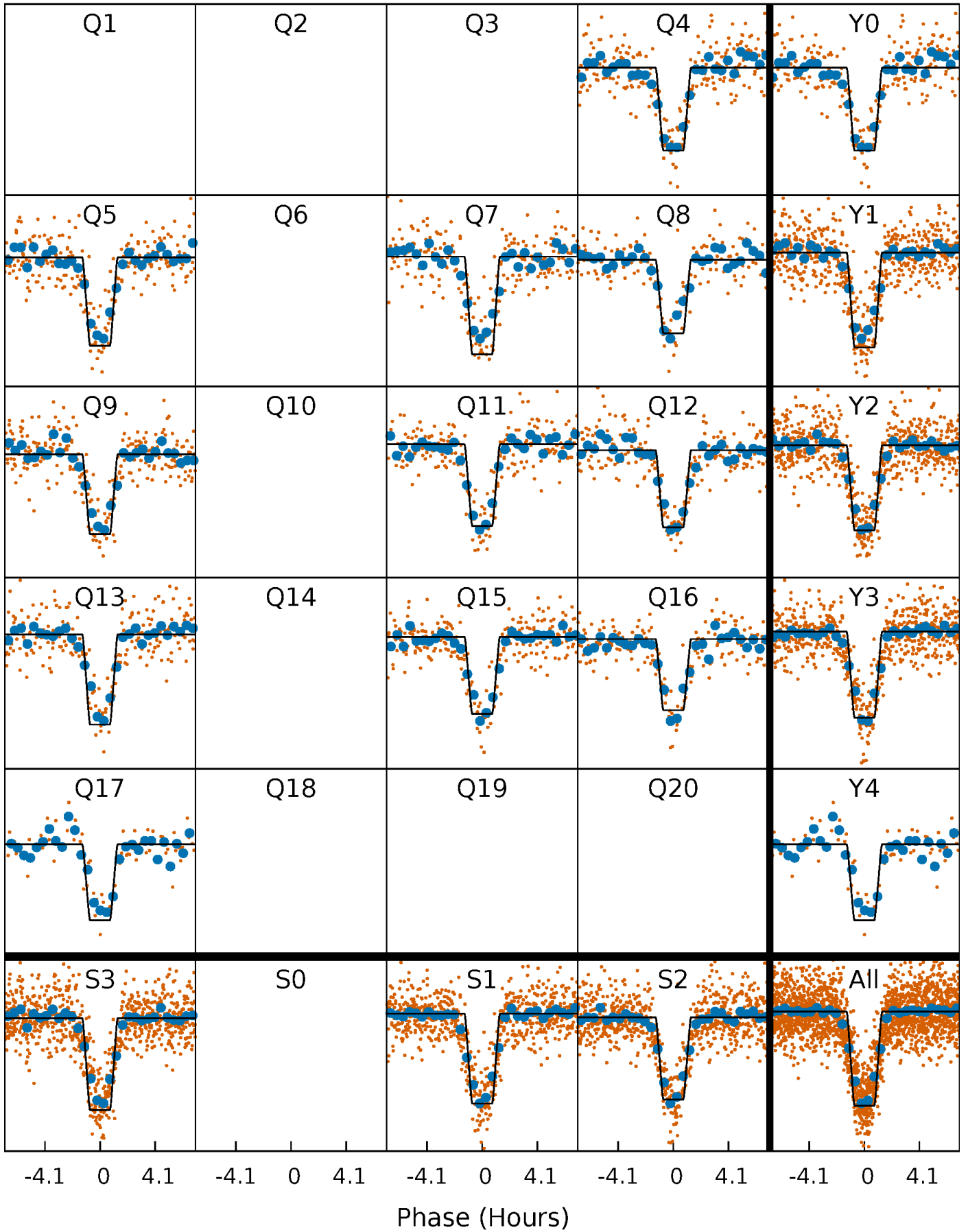
DV Quarter-Phased Transit Curves

TCE 004936990-02 $P = 10.314535$ Days $T_0 = 132.537376$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

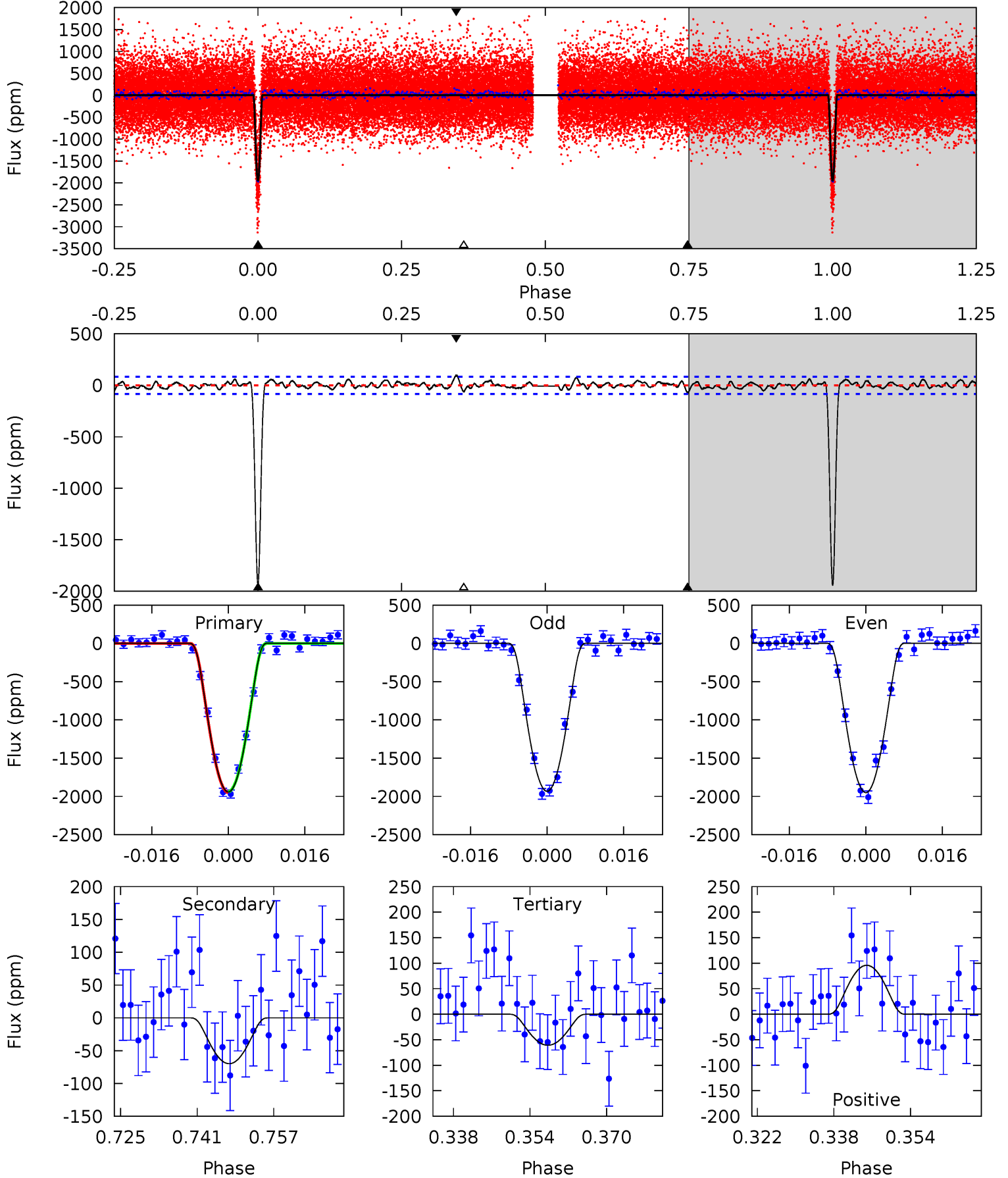
TCE 004936990-02 P= 10.314484 Days $T_0=132.541150$ (BKJD)



DV Model-Shift Uniqueness Test

004936990-02, P = 10.314535 Days, E = 132.537376 Days

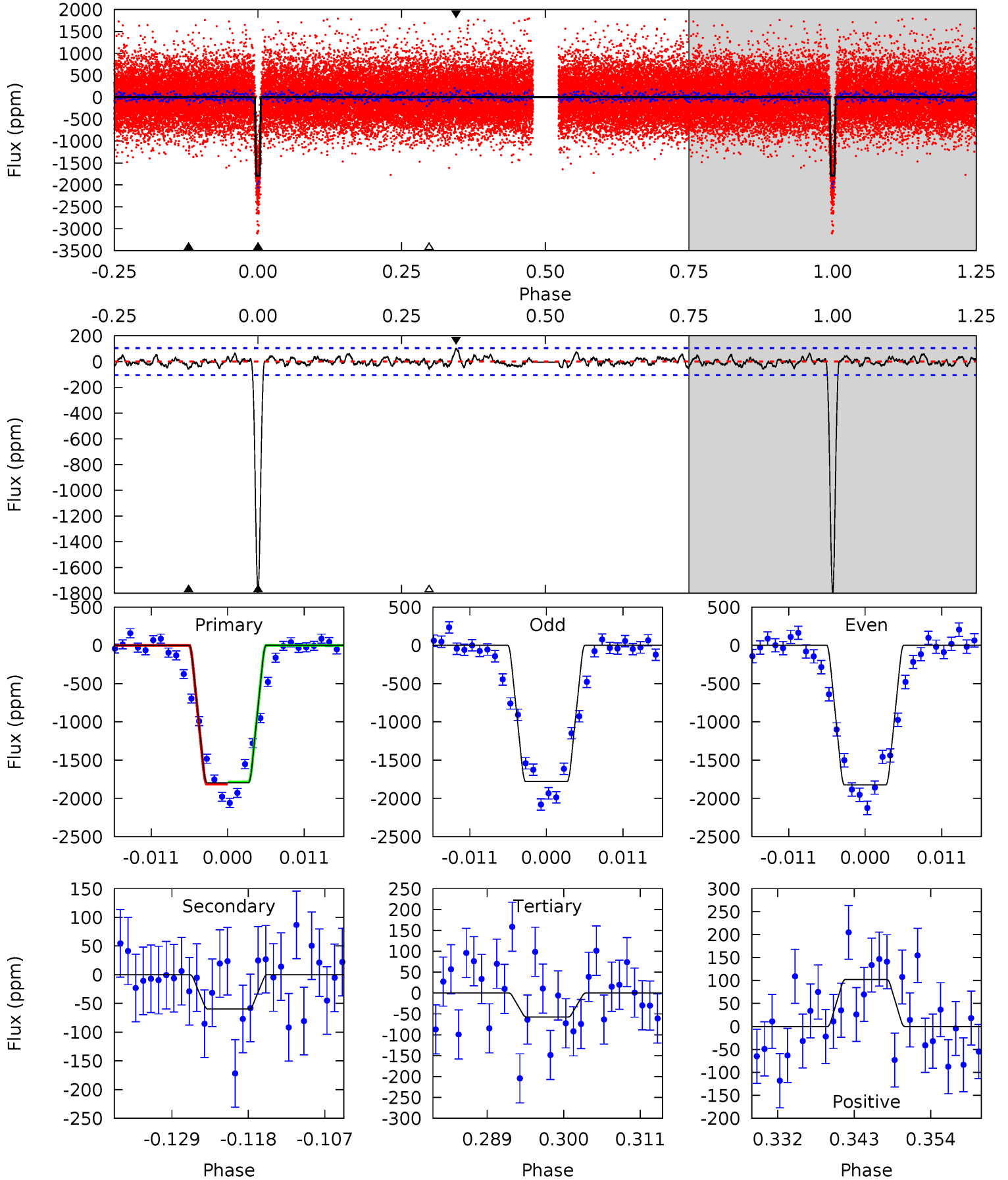
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
113.8	4.10	3.57	5.62	4.93	2.41	1.47	110.3	108.2	0.53	-1.52	0.50	0.96	0.05	0.35



Alt Model-Shift Uniqueness Test

004936990-02, $P = 10.314484$ Days, $E = 132.541150$ Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
86.1	2.87	2.77	4.90	5.01	2.55	1.18	83.4	81.2	0.10	-2.04	1.03	0.98	0.05	0.66



Stellar Parameters For KIC 004936990

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6335^{+208}_{-208}	$4.455^{+0.150}_{-0.150}$	$-1.920^{+0.300}_{-0.050}$	$0.837^{+0.154}_{-0.103}$	$0.728^{+0.074}_{-0.026}$	$1.750^{+1.087}_{-0.721}$
	+3%/-3%	+3%/-3%	+16%/-3%	+18%/-12%	+10%/-4%	+62%/-41%
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 004936990-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-70 ± 17	$6.37^{+2.65}_{-2.84}$	1238^{+81}_{-74}	2880^{+557}_{-276}	$6.581^{+14.998}_{-3.469}$
Alt.	-60 ± 21	$4.42^{+2.57}_{-2.36}$	1239^{+72}_{-67}	3140^{+895}_{-417}	12^{+40}_{-7}

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

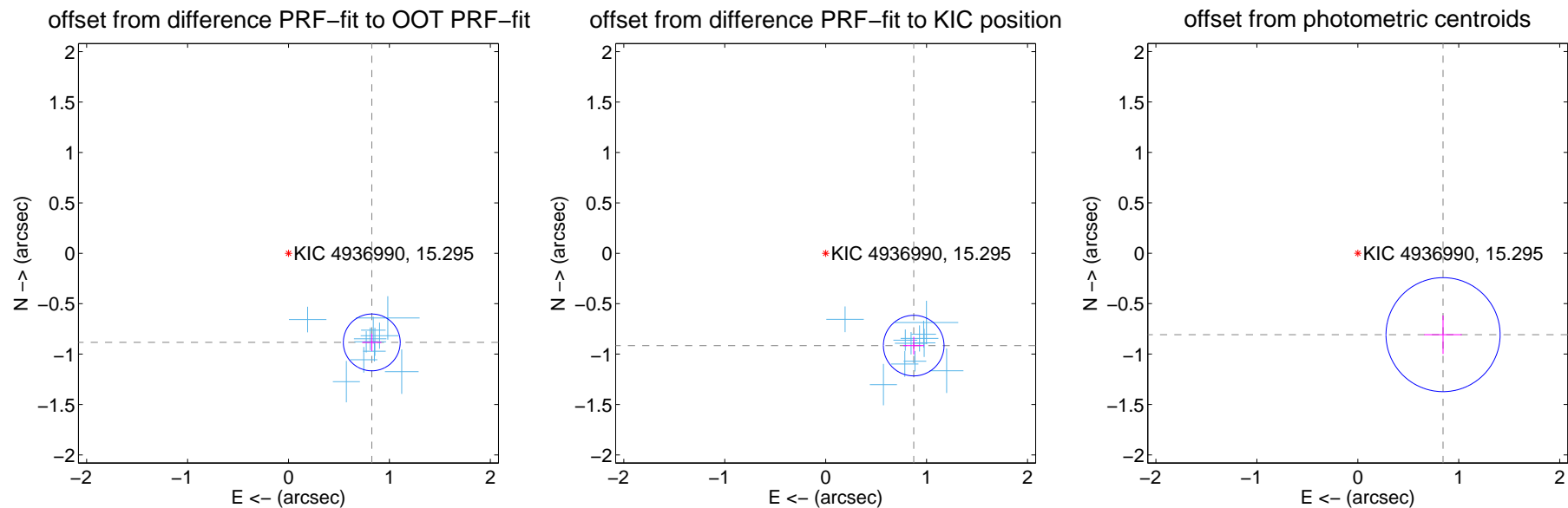
DV Centroid Data

Supplemental centroid analysis for 004936990-02. Kepler magnitude: 15.29. Transit SNR 67.48

There are 11 quarters with good PRF difference image offsets

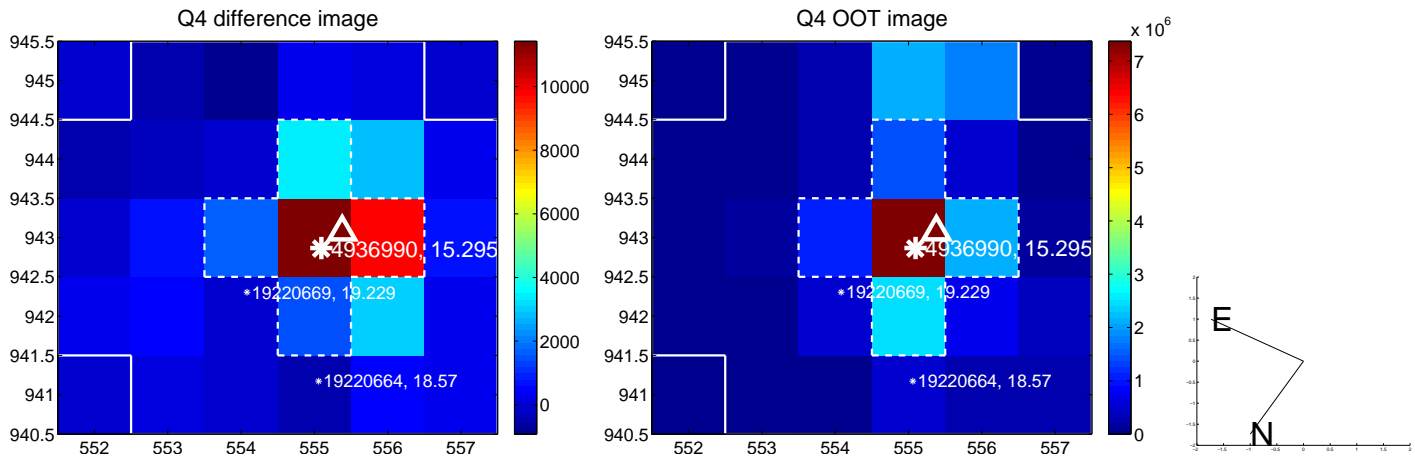
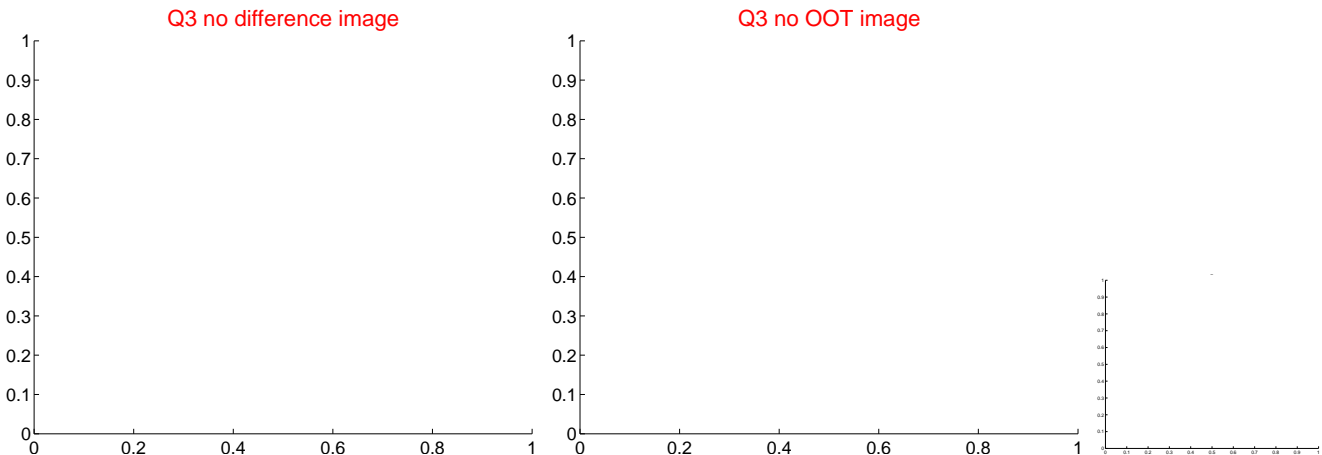
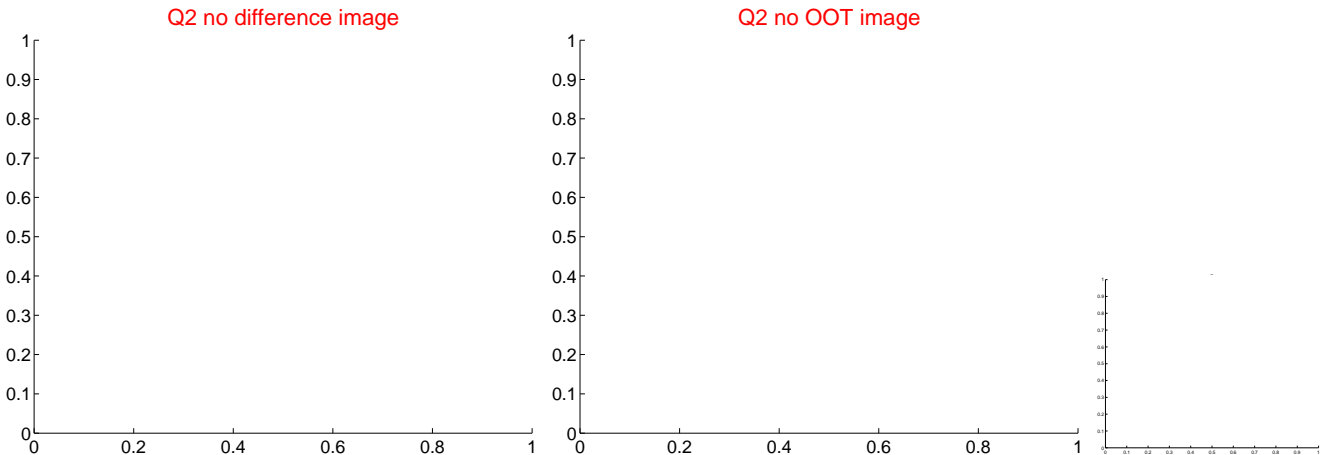
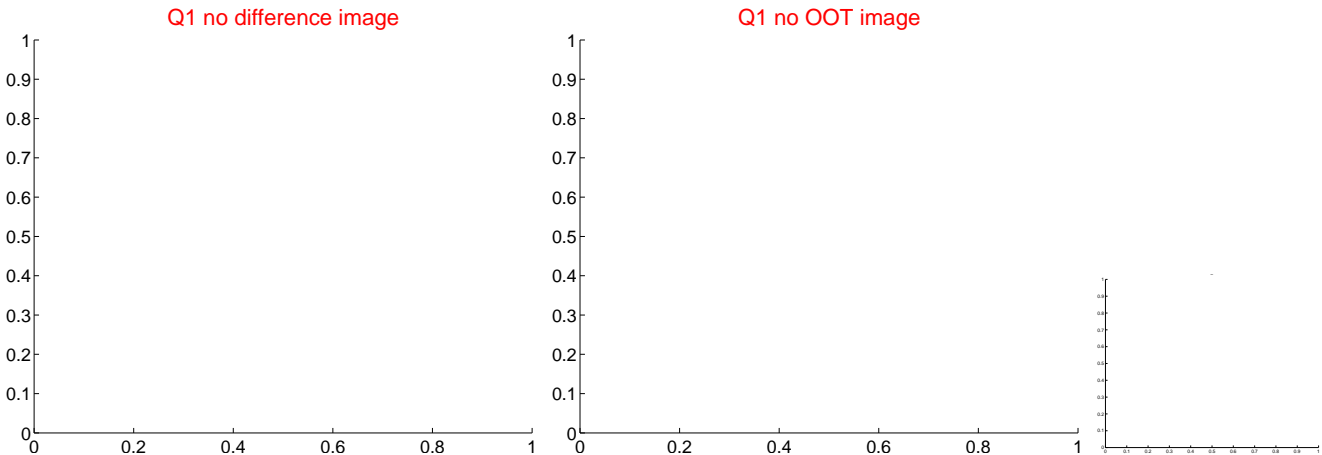
The direct PRF centroid is offset from the target star catalog position by about 0.05 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.209 ± 0.094	12.88	-0.825 ± 0.095	-0.884 ± 0.087
PRF-fit source offset from KIC position	1.265 ± 0.100	12.63	-0.872 ± 0.104	-0.916 ± 0.088
photometric centroid source offset	1.17 ± 0.19	6.20	-0.84 ± 0.19	-0.81 ± 0.19

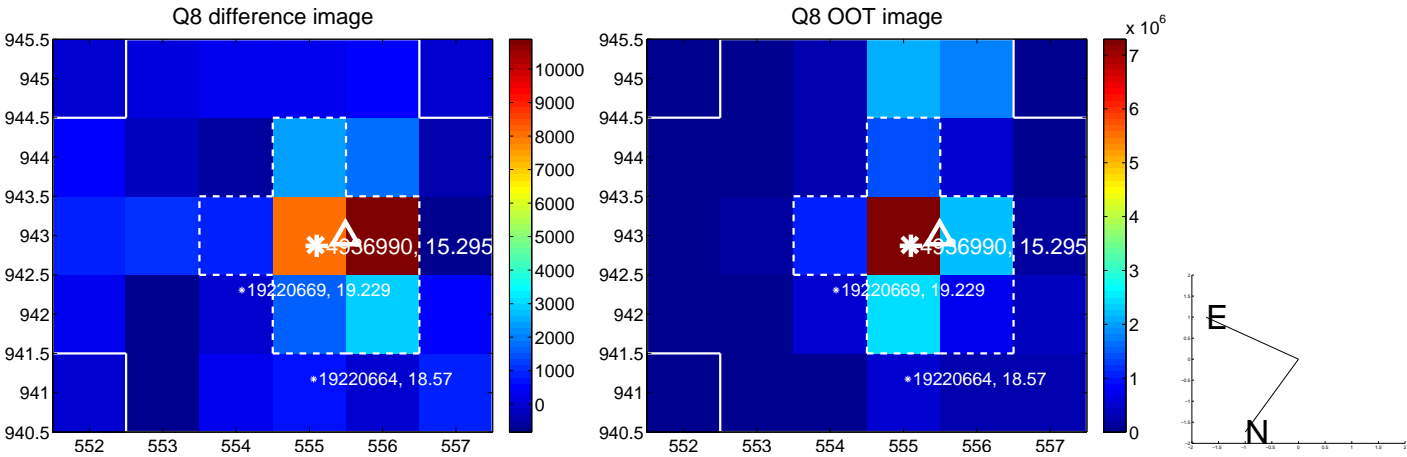
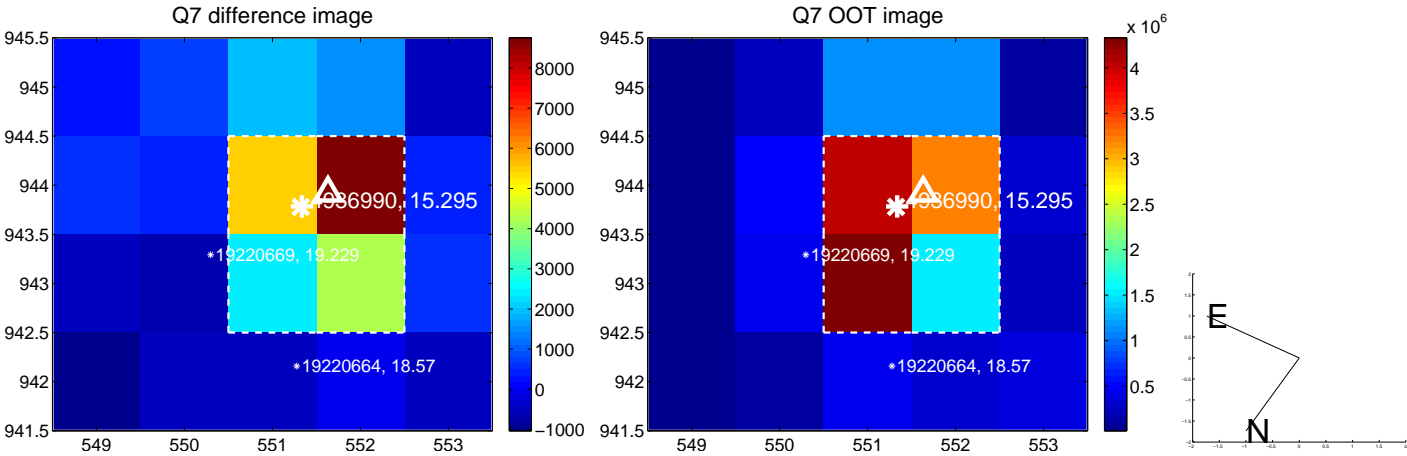
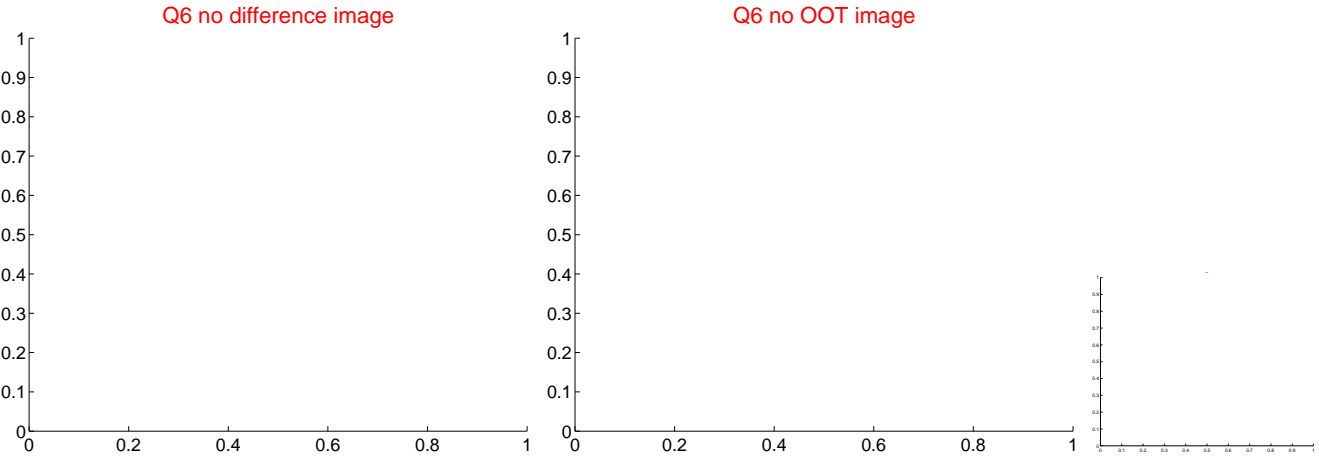
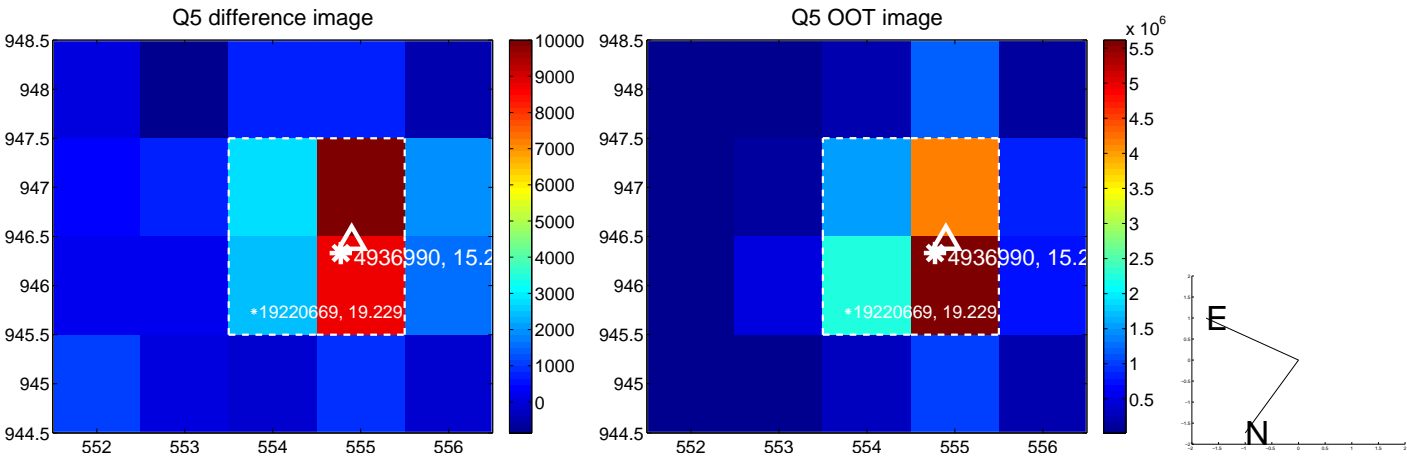


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ . Red *: target star. Blue *: Other stars. Text next to a star gives its KIC ID and kepmag. KIC IDs > 15,000,000 are from the UKIRT catalog.

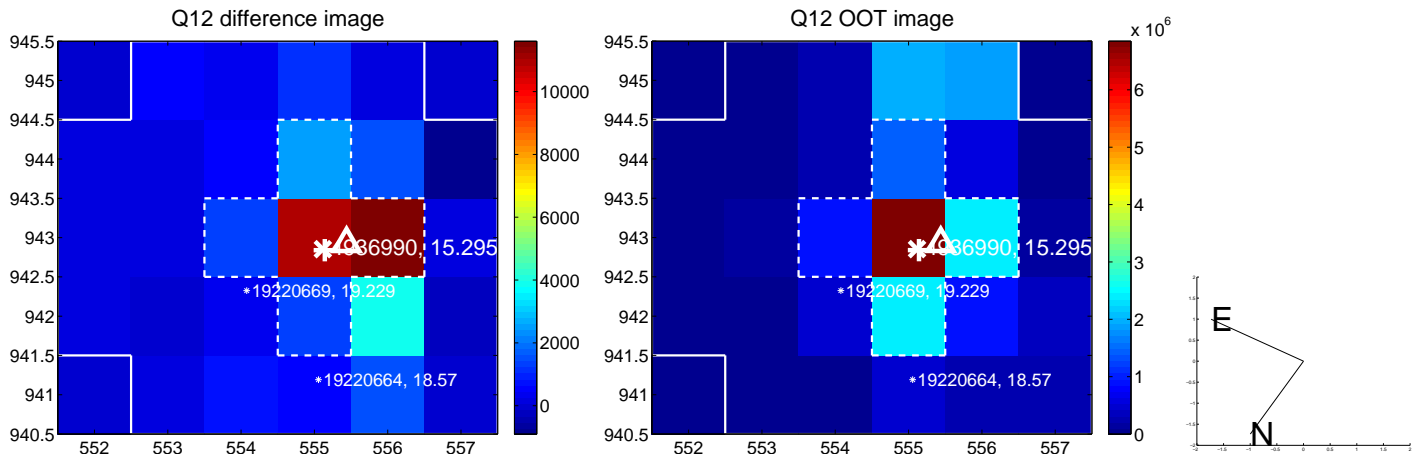
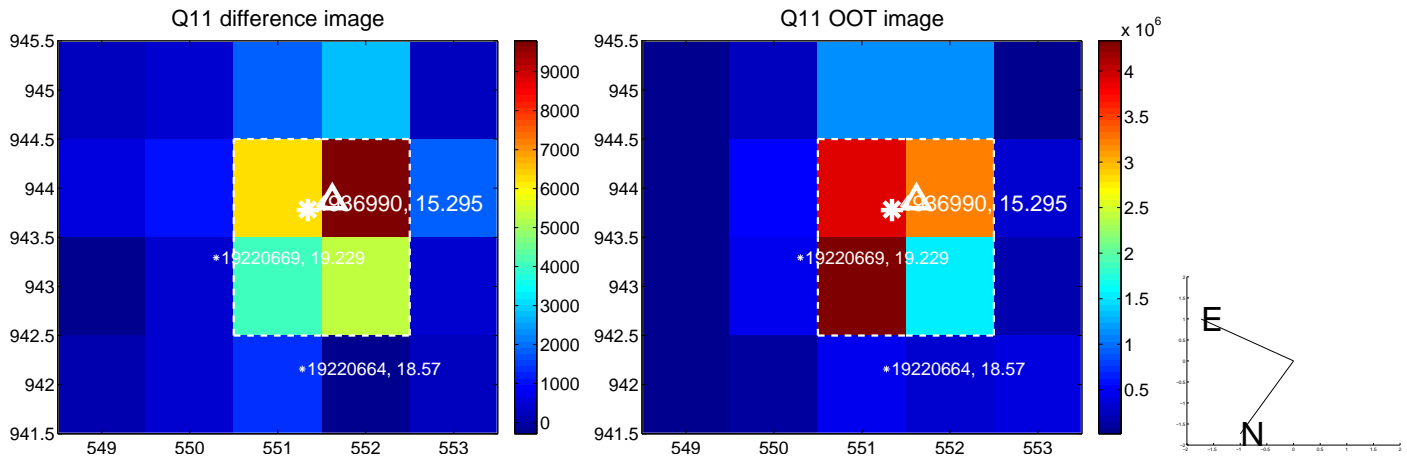
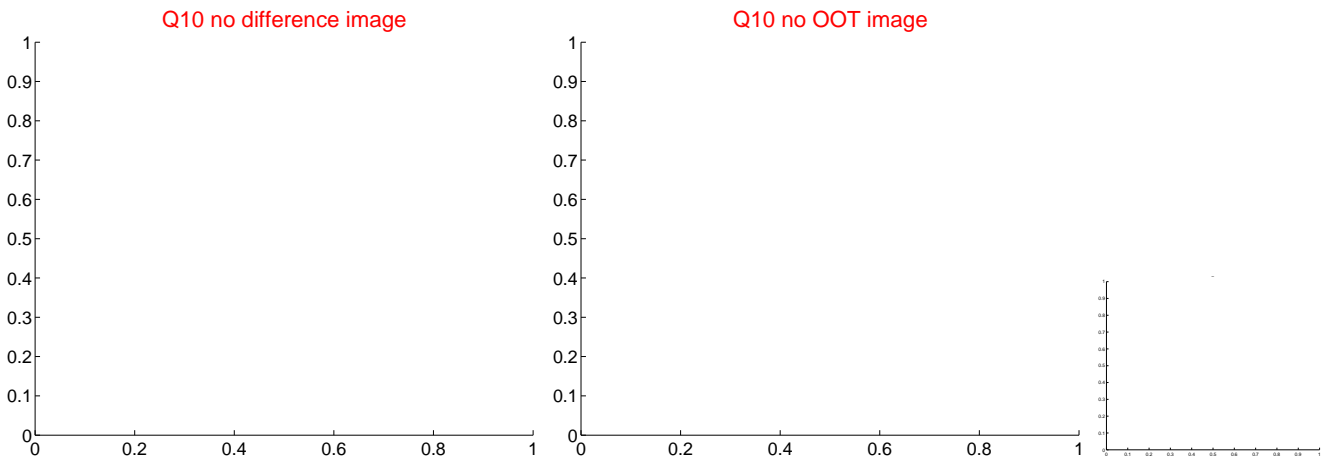
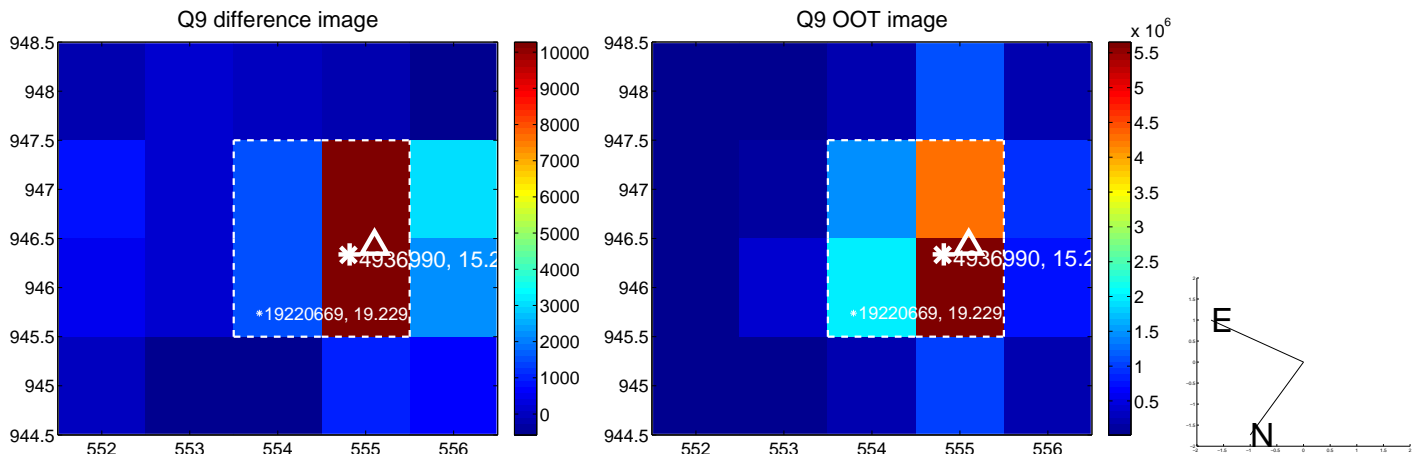
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value



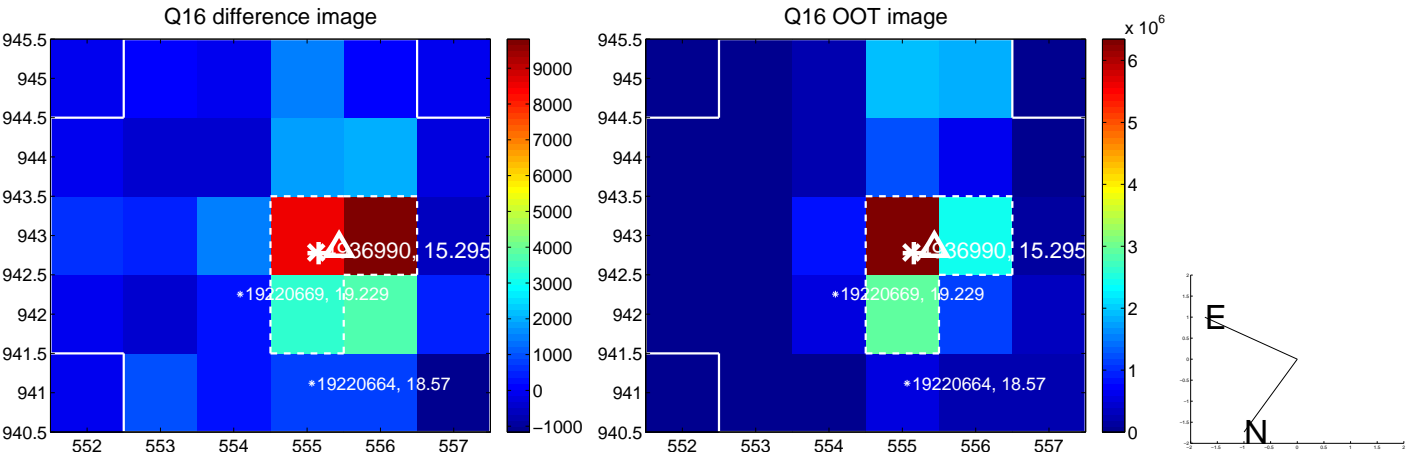
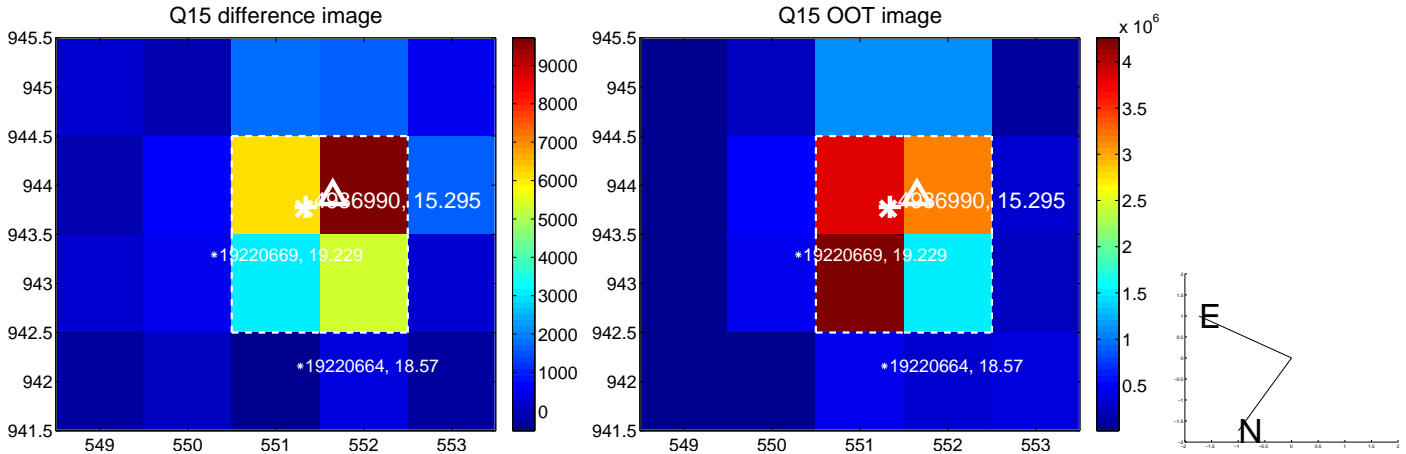
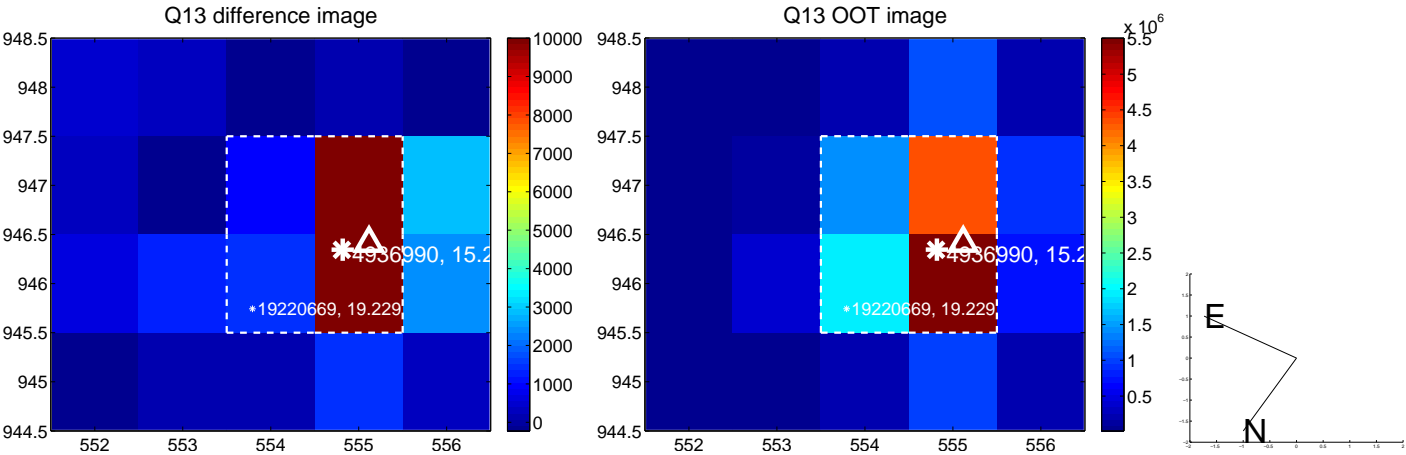
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



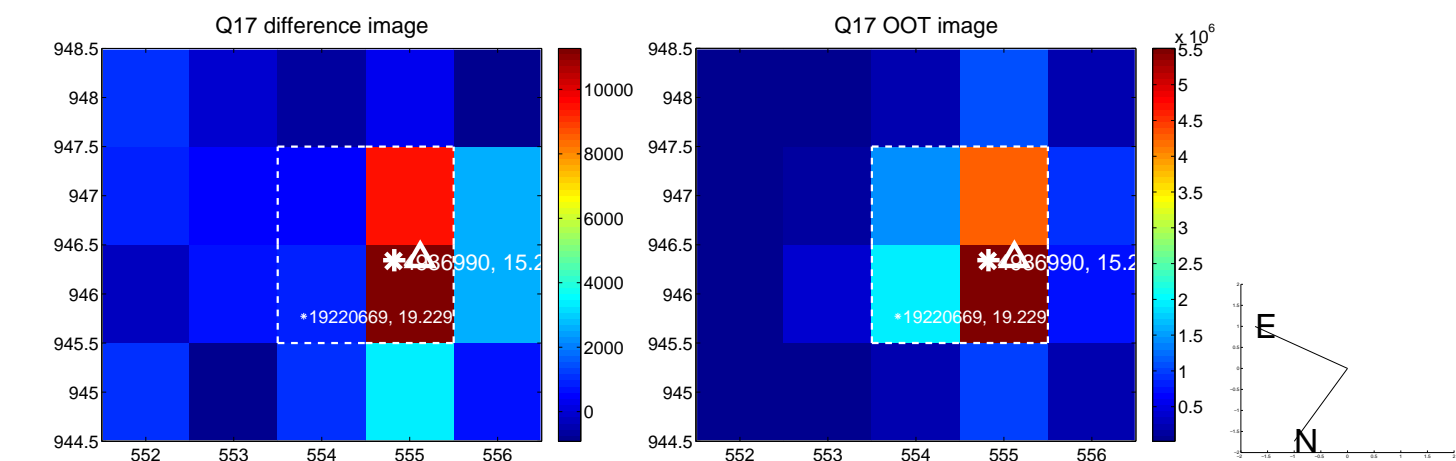
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value



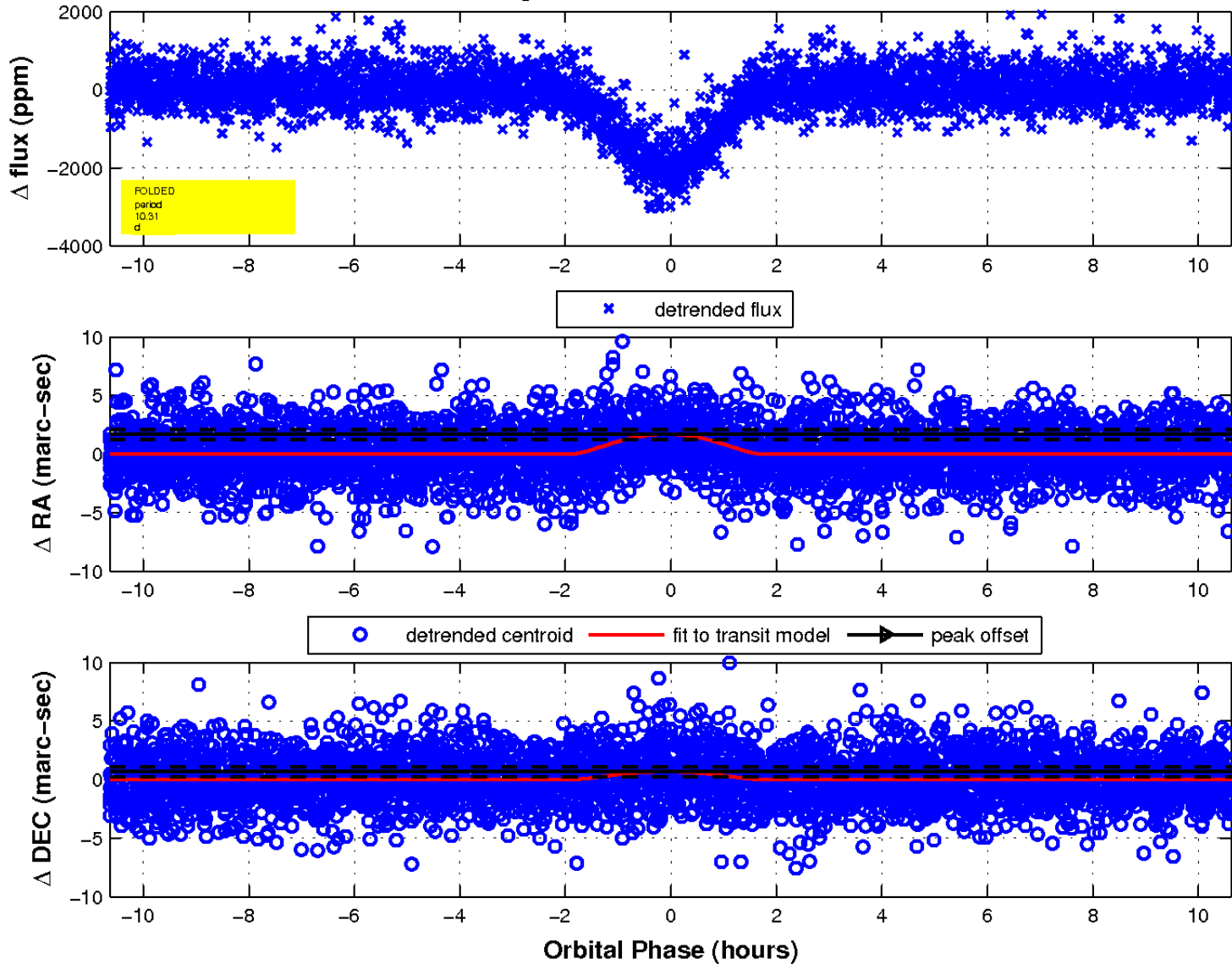
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 2 of 2



UKIRT Image

Declination

