

KIC 006936909

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})
006936909-01	OBS	1363.01	3.546512	134.905465	420.3	2.431	23.2	25.2	0.99	5993	2.39	510.88
006936909-02	OBS	1363.02	5.700742	132.688801	337.7	1.670	11.4	13.4	0.99	5993	1.91	271.32

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006936909-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT
006936909-02	OBS	PC	0.98	0	0	0	0	NO_COMMENT

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.

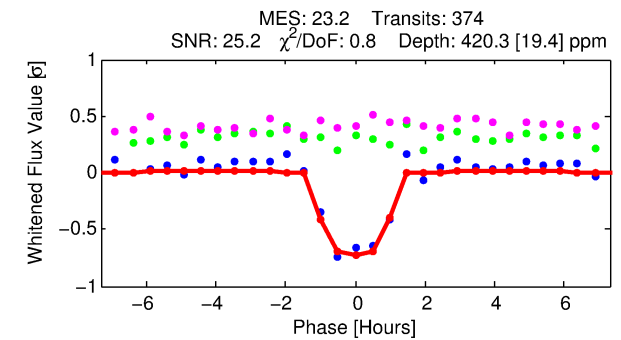
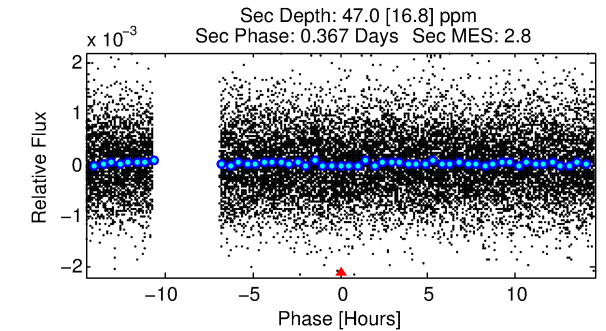
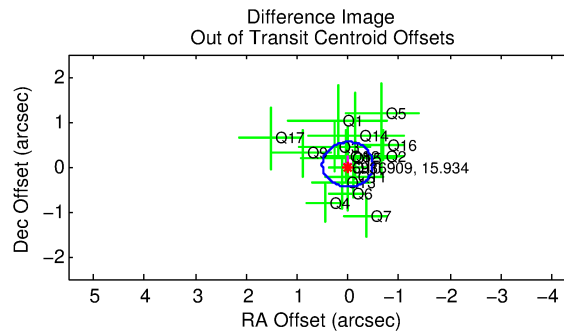
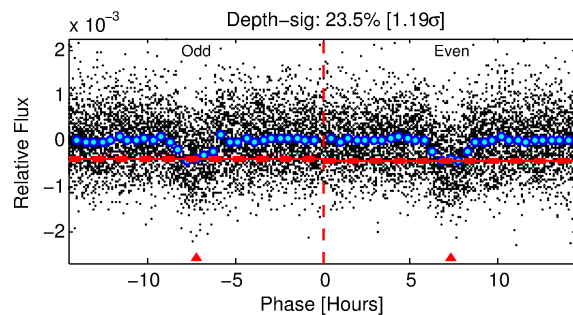
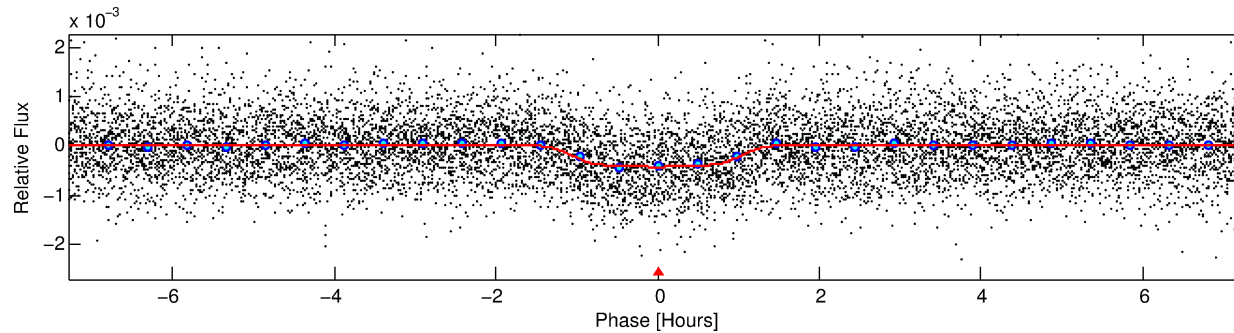
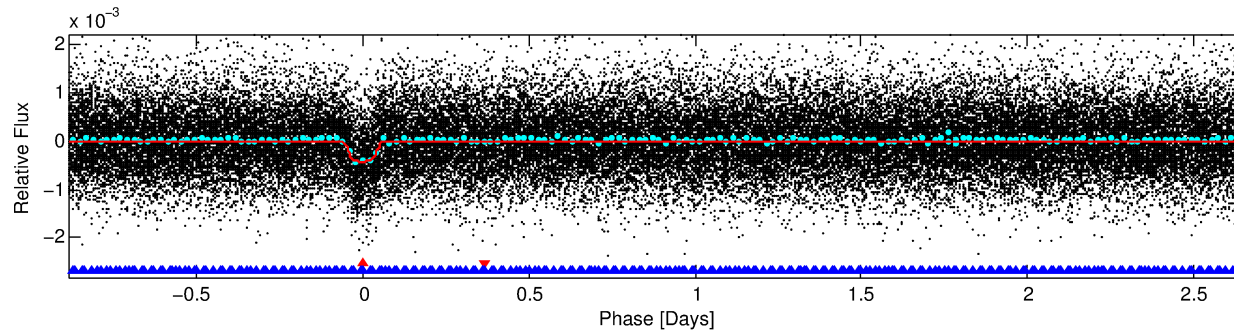
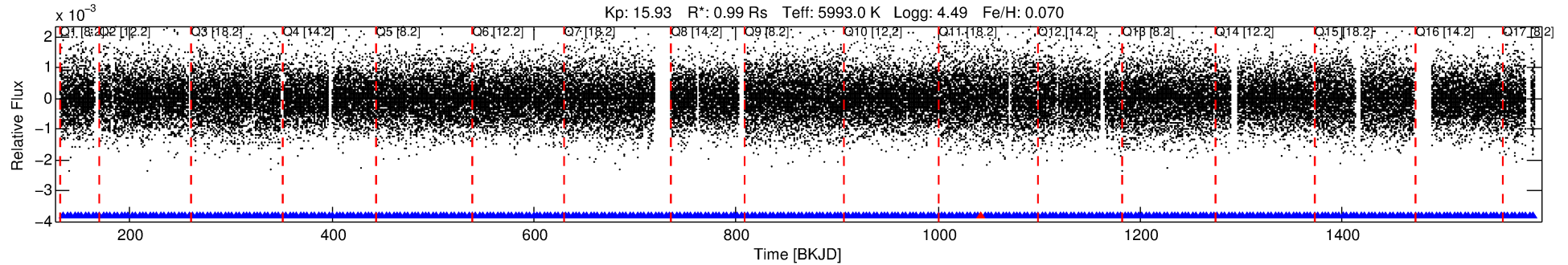
Ephemeris Match Information For 006936909-01

No Significant Match Found

DV One-Page Summary

KIC: 6936909 Candidate: 1 of 2 Period: 3.547 d
KOI: K01363.01 Name: Kepler-291b Corr: 0.969

Kp: 15.93 R*: 0.99 Rs Teff: 5993.0 K Logg: 4.49 Fe/H: 0.070



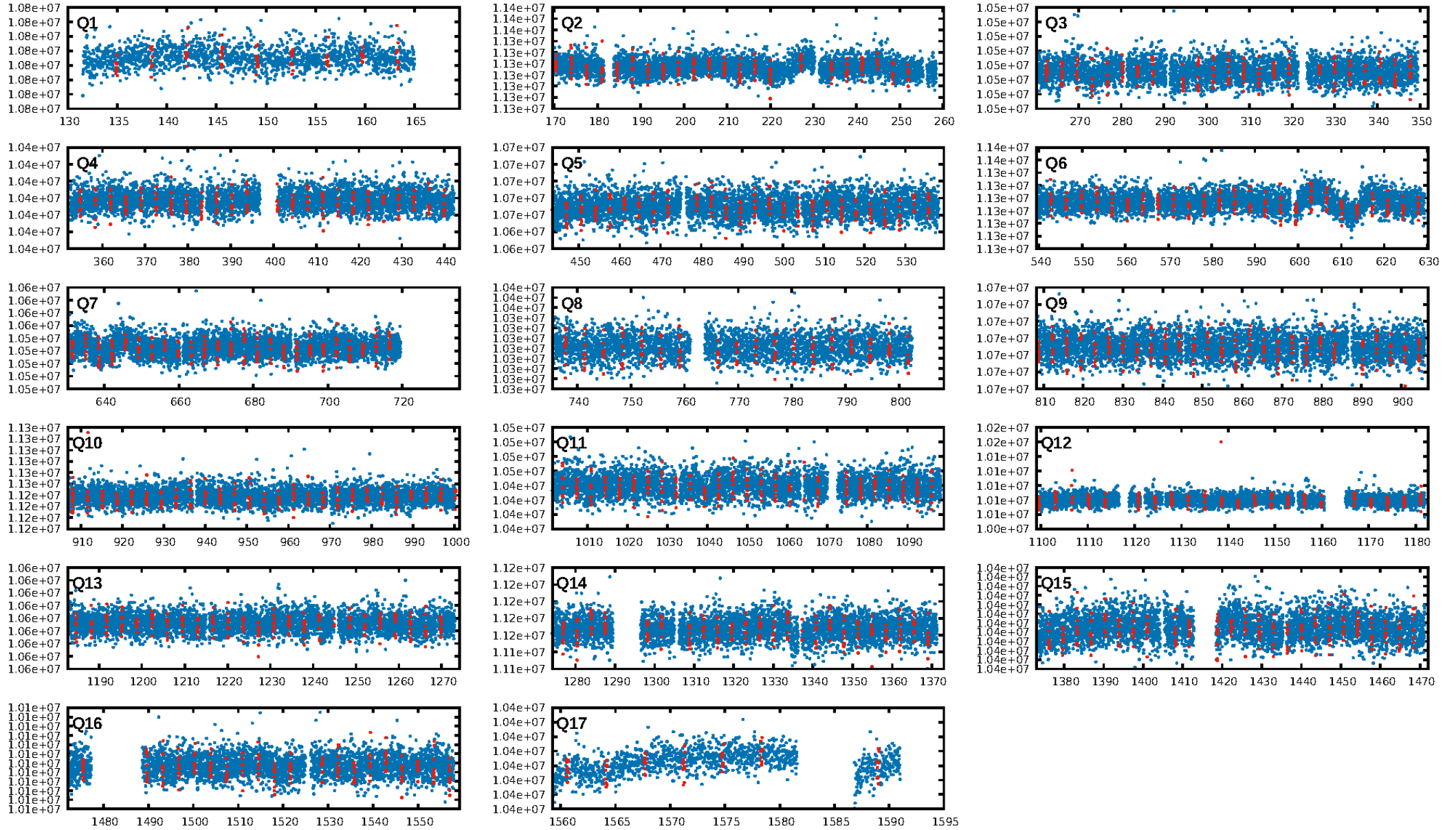
DV Fit Results:

Period = 3.54651 [0.00001] d
Epoch = 134.9055 [0.0017] BKJD
Rp/R* = 0.0222 [0.0040]
a/R* = 5.52 [4.70]
b = 0.90 [0.19]
Seff = 510.88 [209.16]
Teq = 1212 [124] K
Rp = 2.39 [0.85] Re
a = 0.0469 [0.0122] AU
Ag = 9.95 [6.31] [1.42σ]
Teffp = 3329 [442] K [4.61σ]

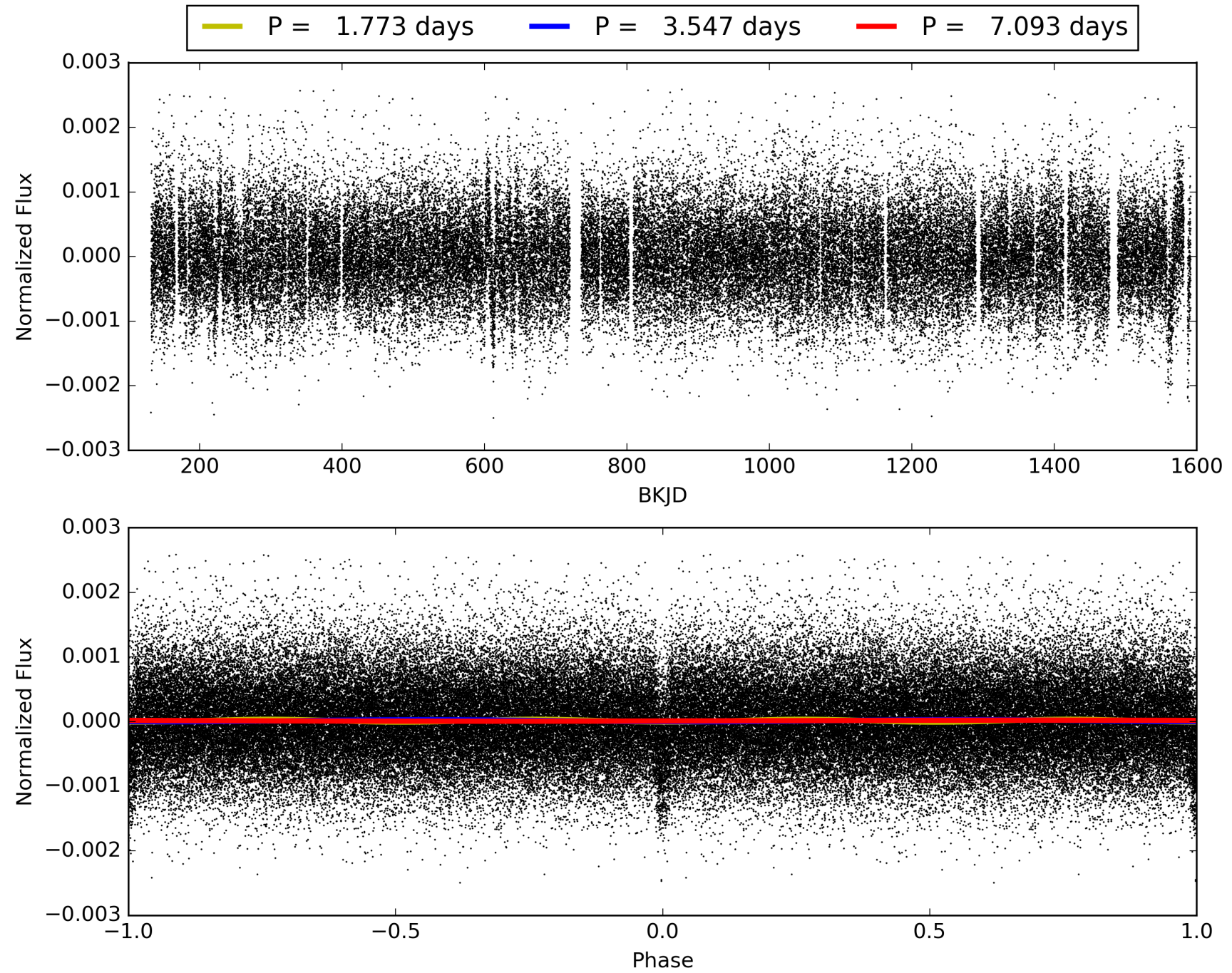
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [17.53σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 1.96e-117
RollingBand-fgt: 1.00 [357/358]
GhostDiagnostic-chr: 9.261
Centroid-sig: 33.8%
Centroid-so: 0.482 arcsec [0.86σ]
OotOffset-rm: 0.052 arcsec [0.31σ]
KicOffset-rm: 0.203 arcsec [1.26σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 0.94 [16/17]
DiffImageOverlap-fno: 1.00 [17/17]

TCE 006936909-01, PDC Light Curves

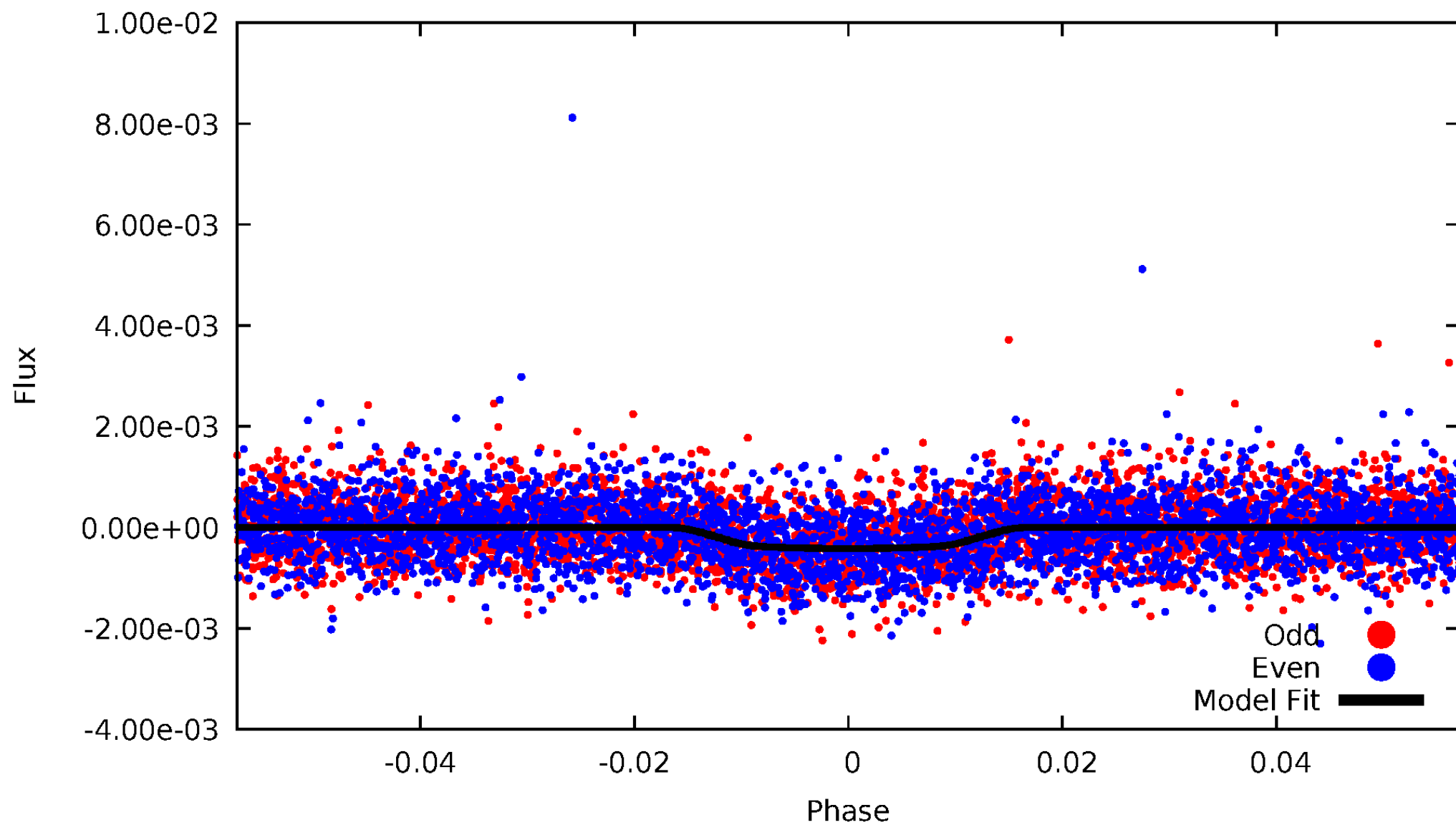


TCE 006936909-01



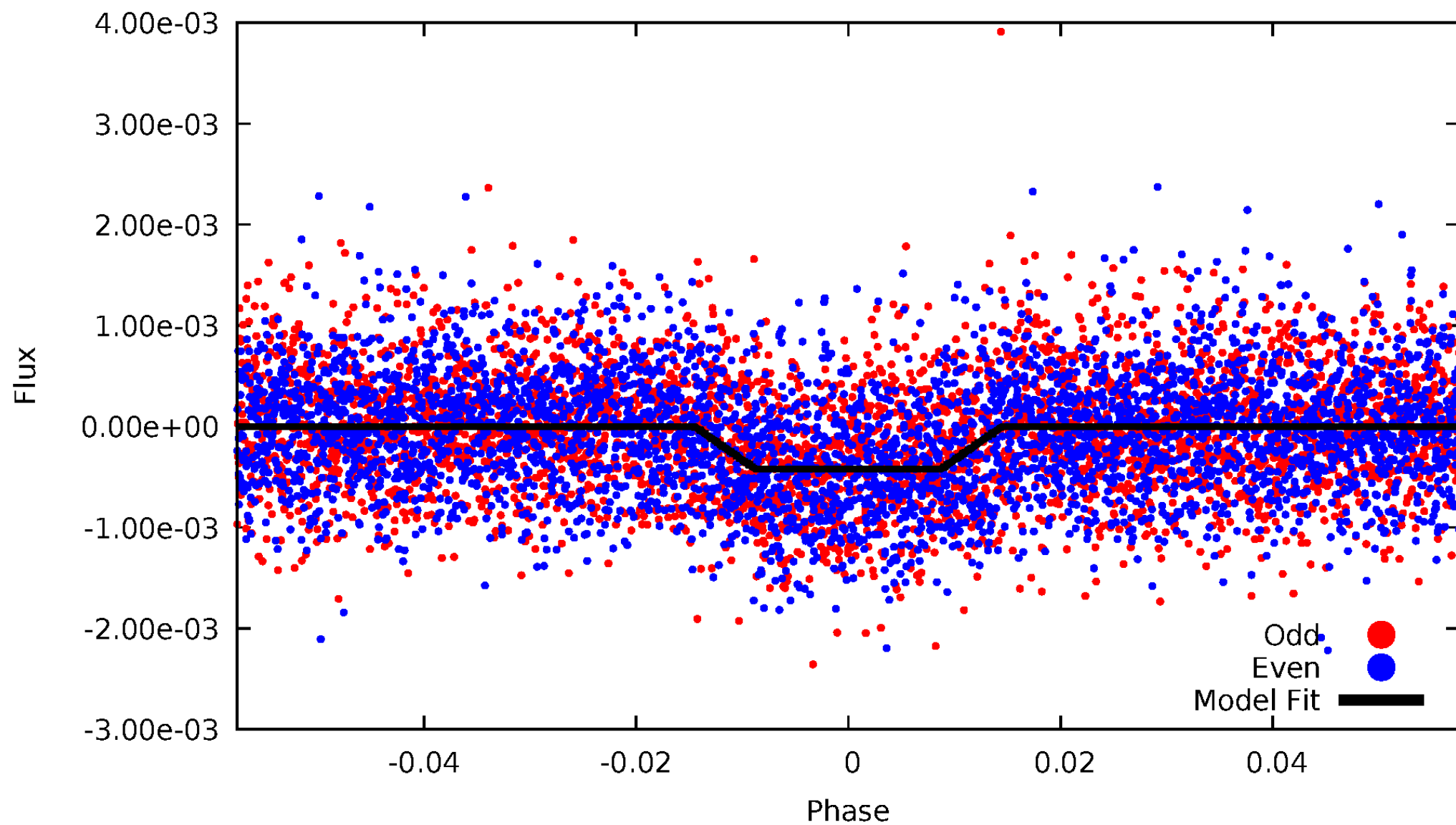
DV Odd/Even

TCE 006936909-01



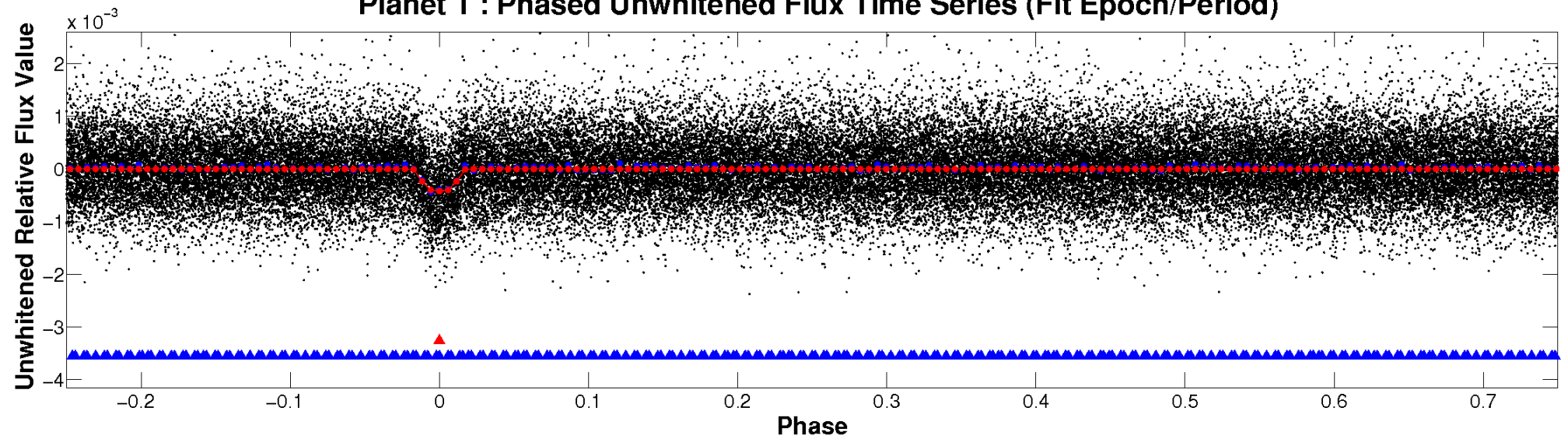
ALT Odd/Even

TCE 006936909-01

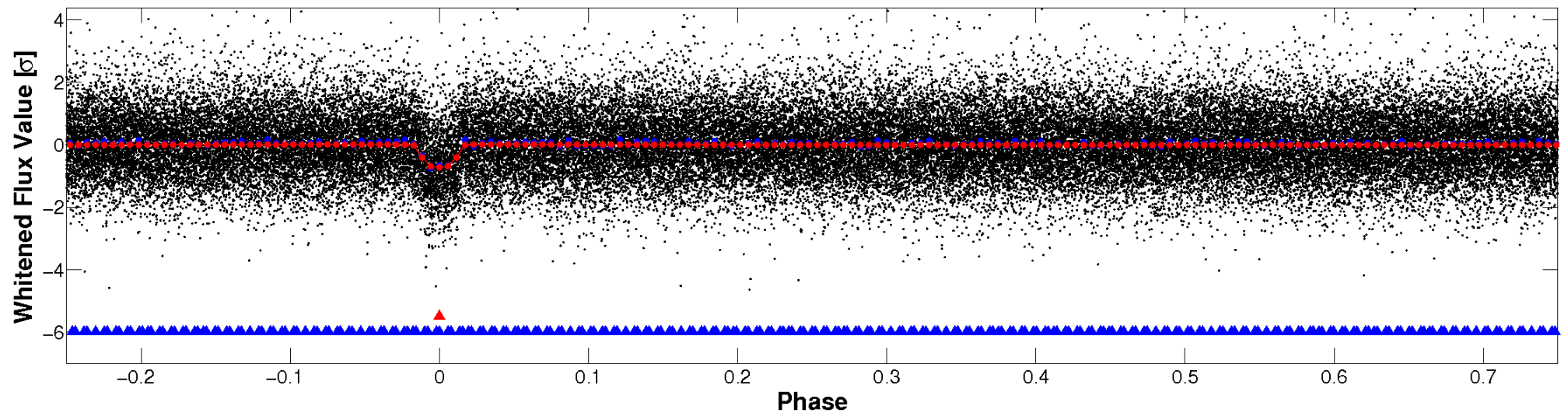


Non-Whitened Vs. Whitened Light Curve

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

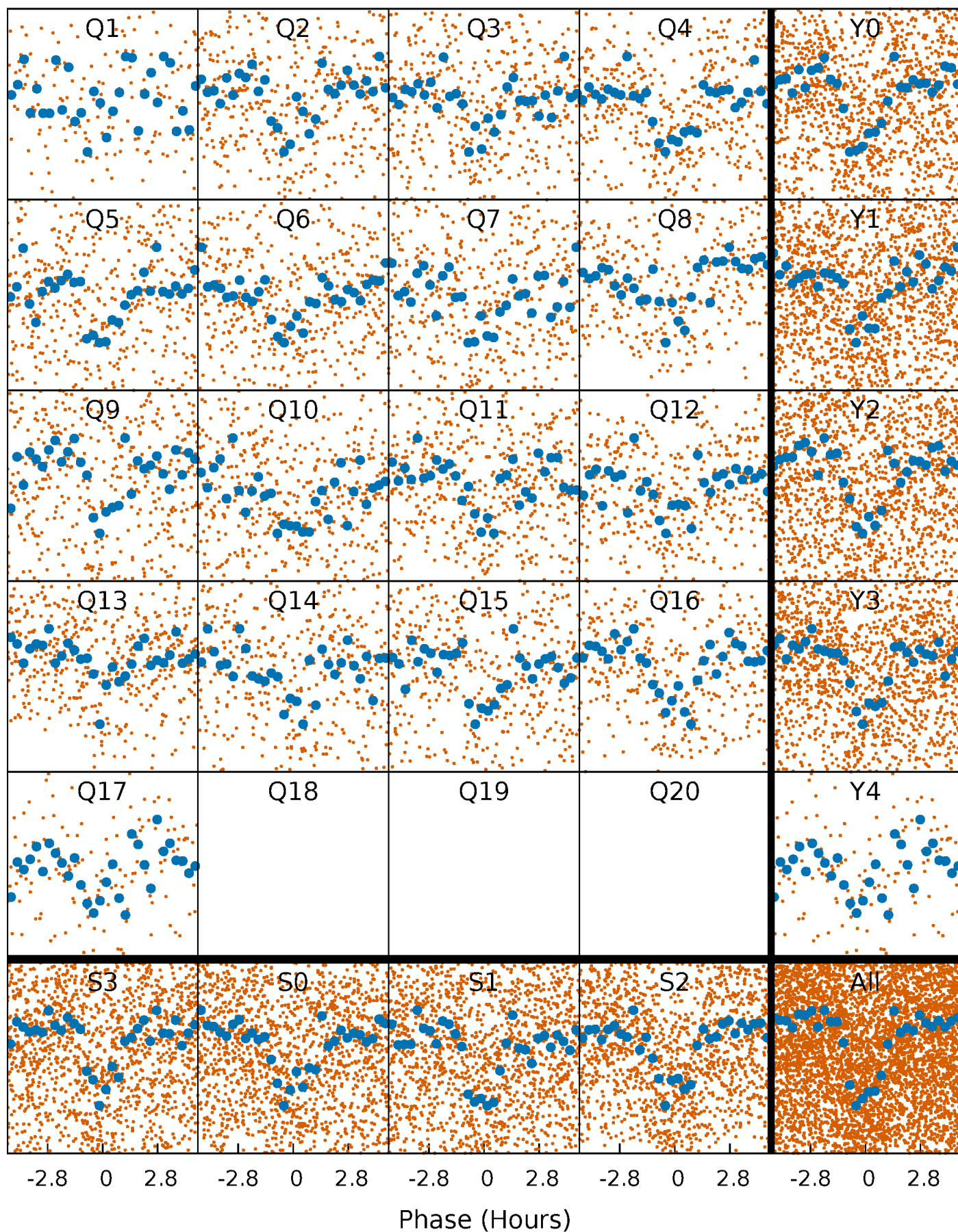


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



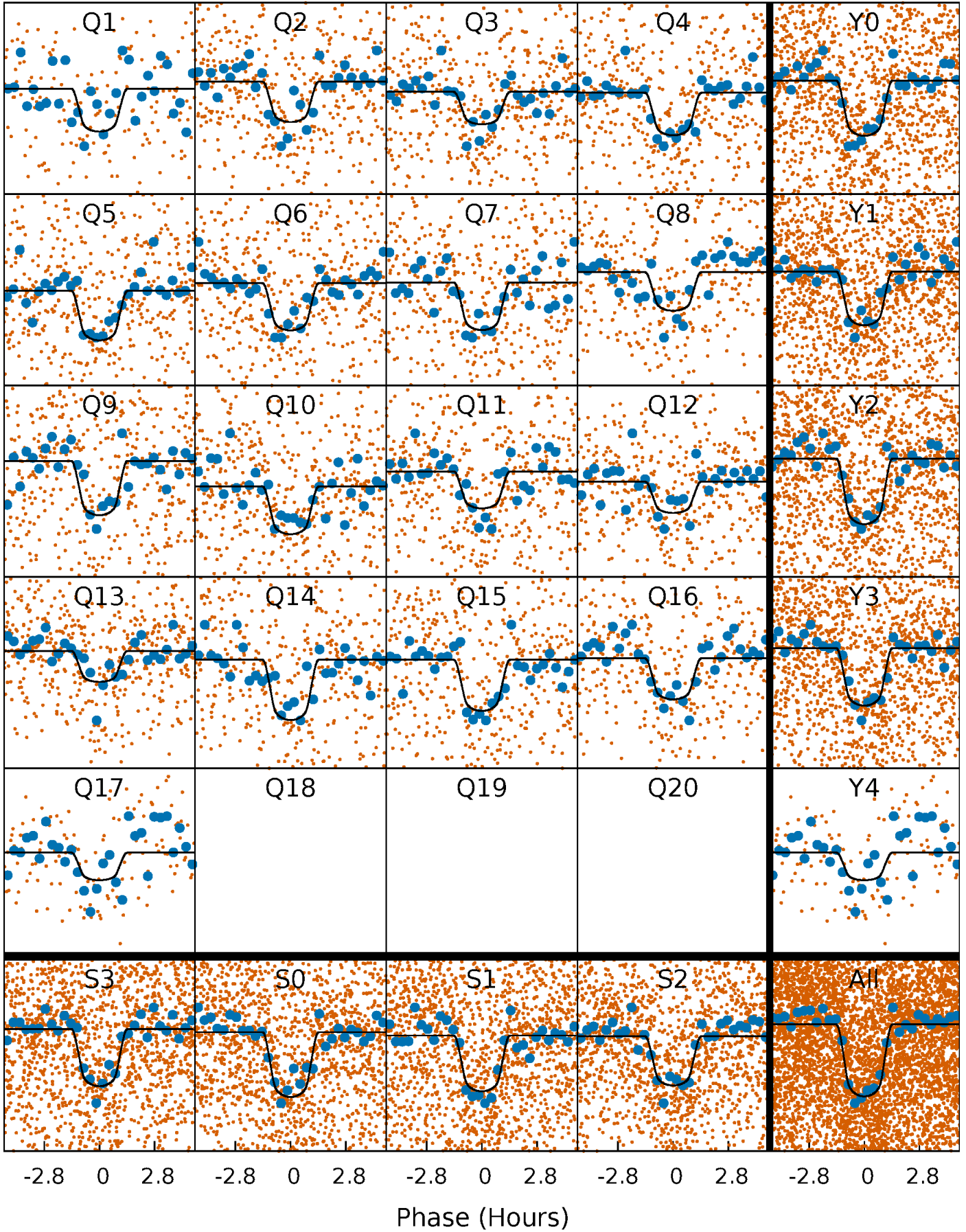
PDC Quarter-Phased Transit Curves

TCE 006936909-01 P= 3.546512 Days $T_0=134.905465$ (BKJD)



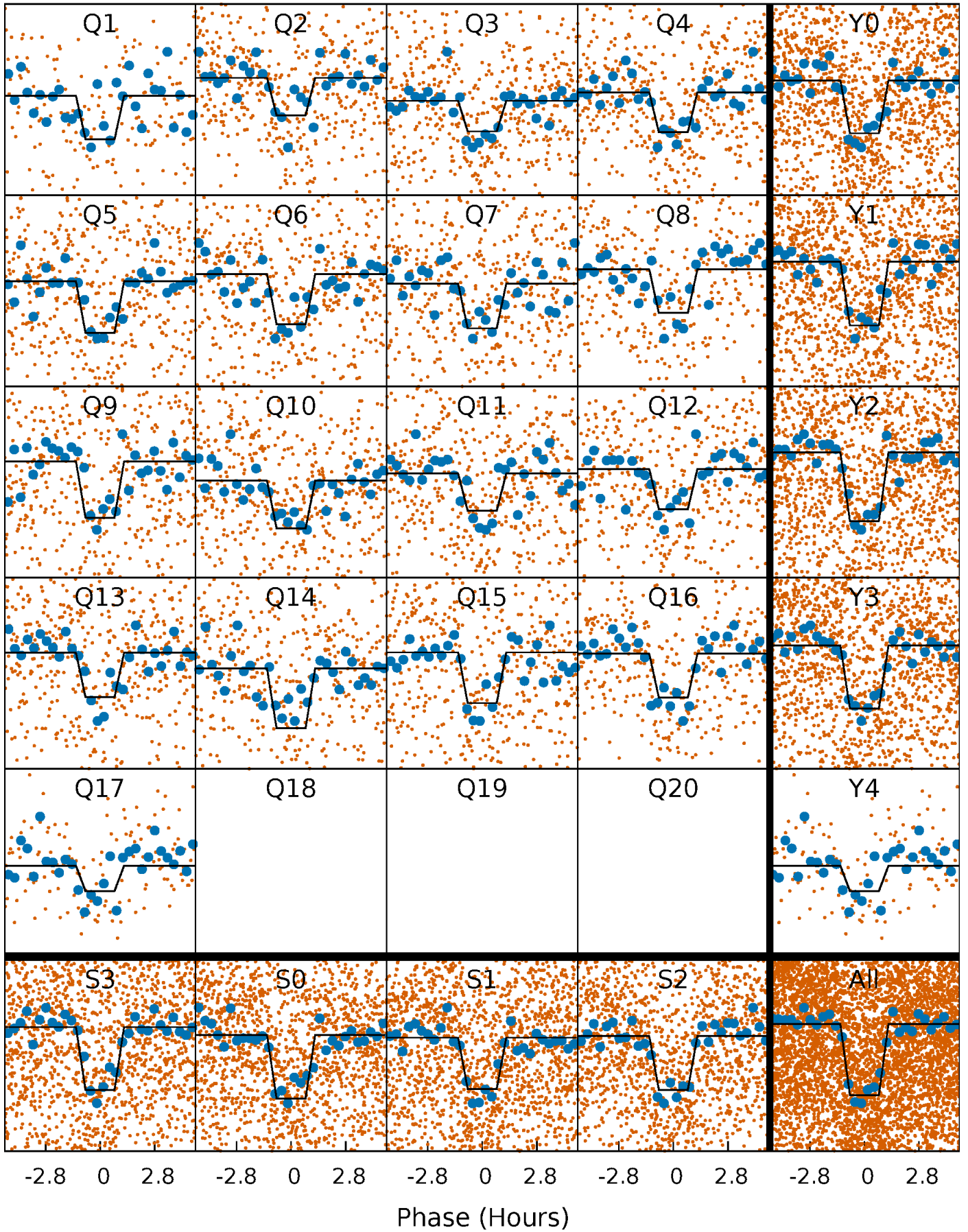
DV Quarter-Phased Transit Curves

TCE 006936909-01 P= 3.546512 Days $T_0=134.905465$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

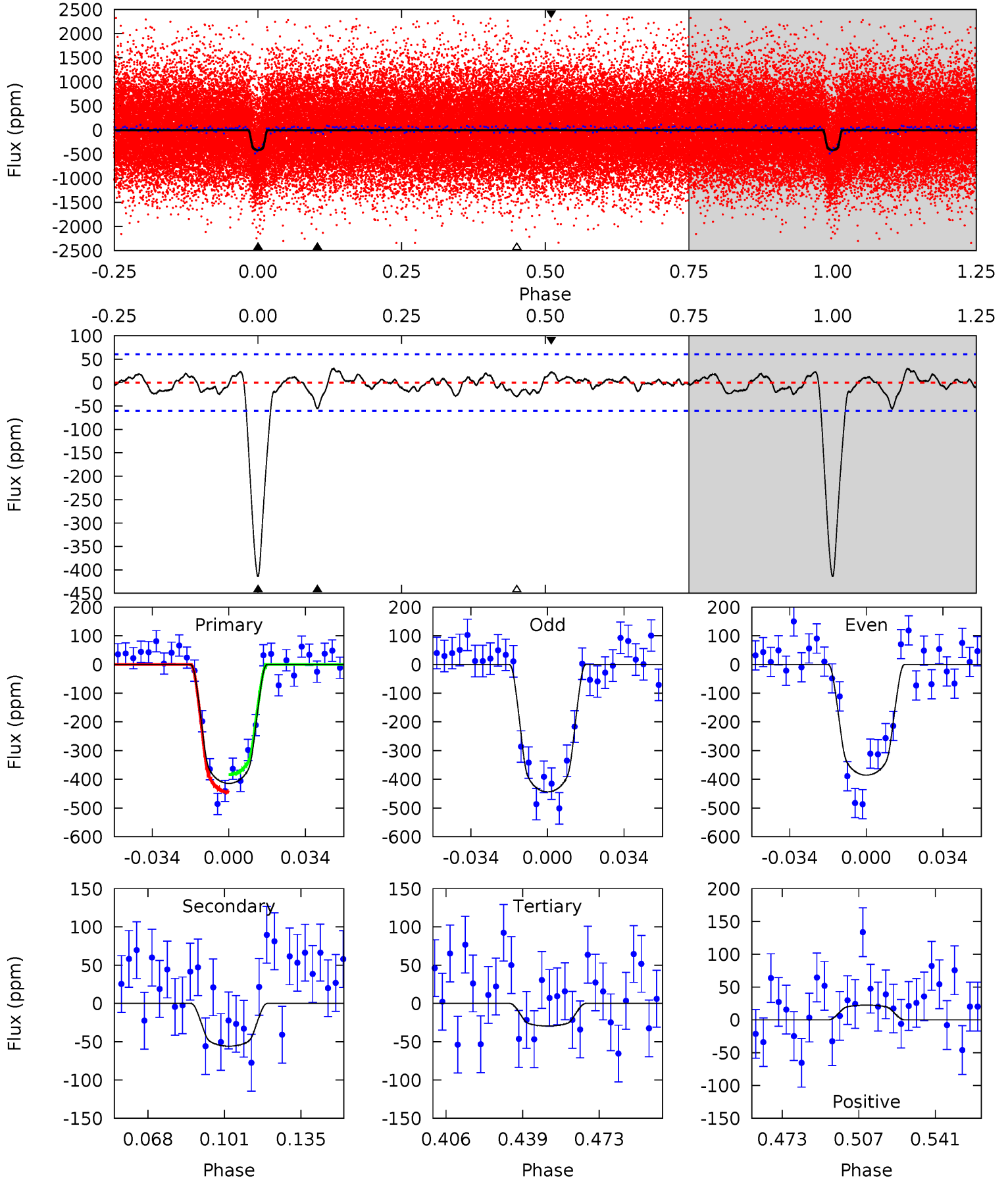
TCE 006936909-01 P= 3.546544 Days $T_0=134.898859$ (BKJD)



DV Model-Shift Uniqueness Test

006936909-01, P = 3.546512 Days, E = 131.358953 Days

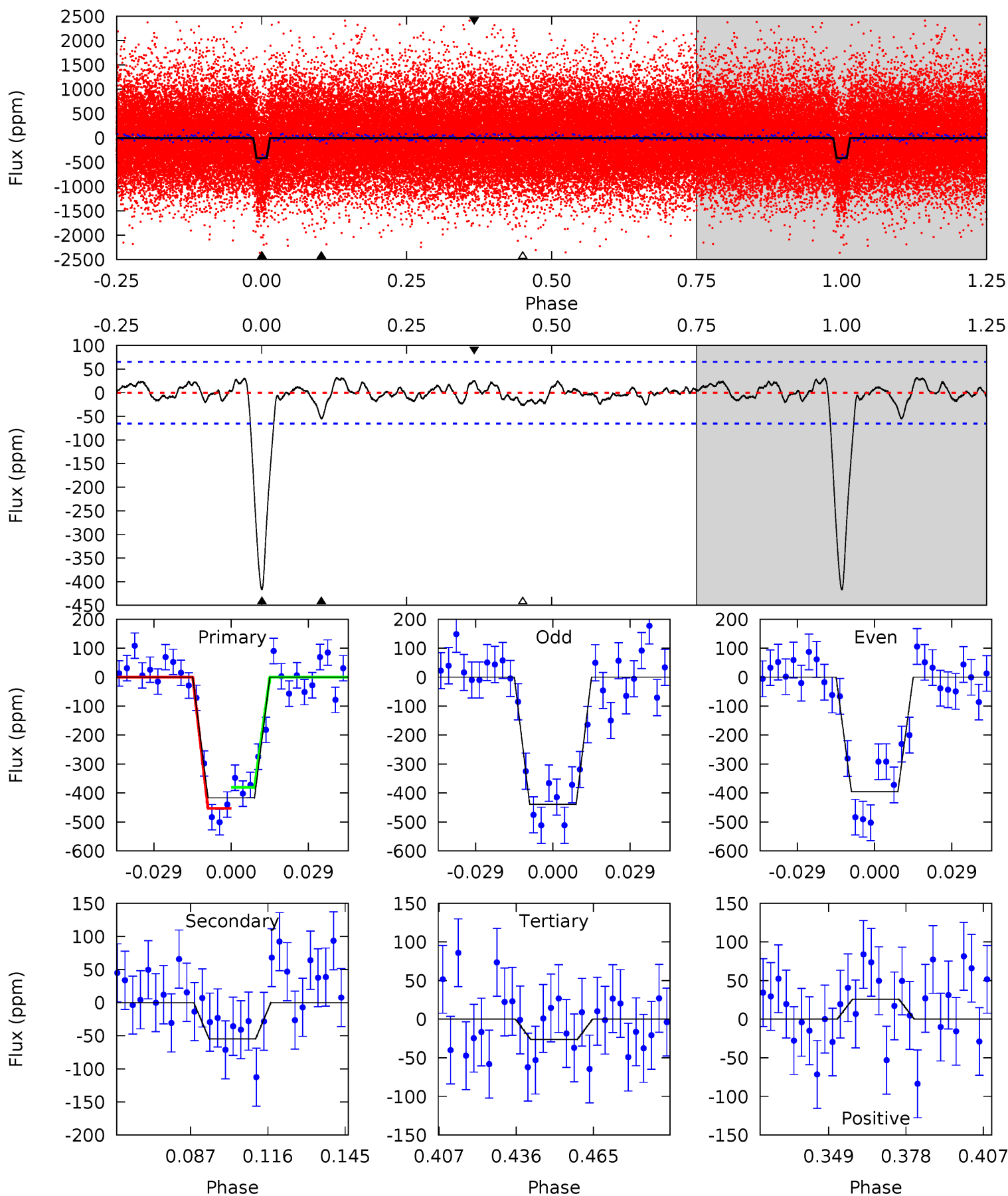
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
32.8	4.42	2.33	1.78	4.79	2.12	0.93	30.5	31.0	2.08	2.64	2.32	0.96	0.07	2.41



Alt Model-Shift Uniqueness Test

006936909-01, P = 3.546544 Days, E = 131.352315 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
30.7	4.04	1.93	1.90	4.82	2.18	0.93	28.7	28.8	2.10	2.14	1.61	0.94	0.07	2.67



Stellar Parameters For KIC 006936909

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5993^{+190}_{-232}	$4.489^{+0.052}_{-0.208}$	$0.070^{+0.250}_{-0.300}$	$0.986^{+0.302}_{-0.101}$	$1.093^{+0.130}_{-0.159}$	$1.607^{+0.422}_{-0.841}$
	+3%/-4%	+1%/-5%	+357%/-429%	+31%/-10%	+12%/-15%	+26%/-52%
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 006936909-01 / KOI 1363.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-56 ± 13	$2.49^{+0.62}_{-0.52}$	1737^{+125}_{-90}	3834^{+335}_{-286}	10^{+7}_{-4}
Alt.	-55 ± 14	$2.32^{+0.57}_{-0.45}$	1729^{+133}_{-89}	3891^{+363}_{-311}	12^{+8}_{-5}

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 $A_{obs} \gg 1.0$

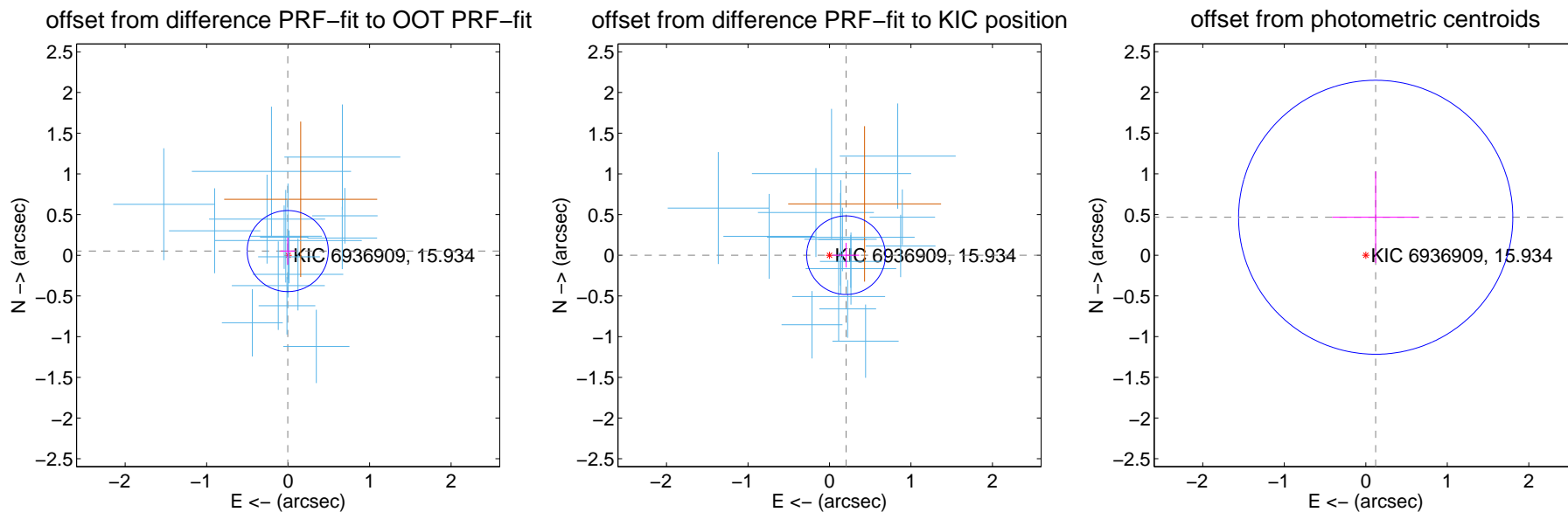
DV Centroid Data

Supplemental centroid analysis for 006936909-01. Kepler magnitude: 15.93. Transit SNR 25.22

There are 16 quarters with good PRF difference image offsets

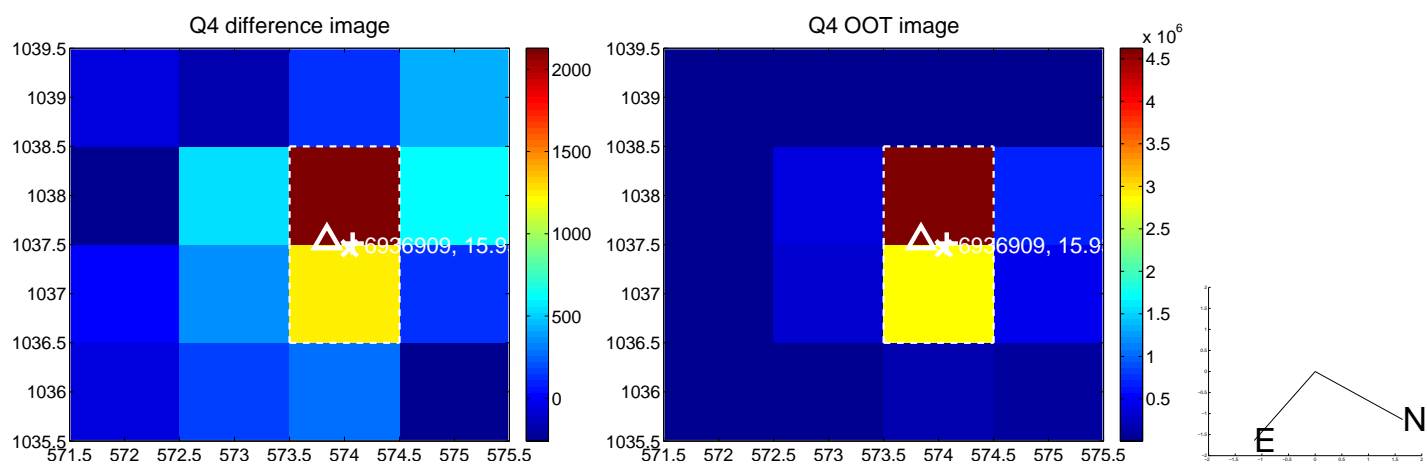
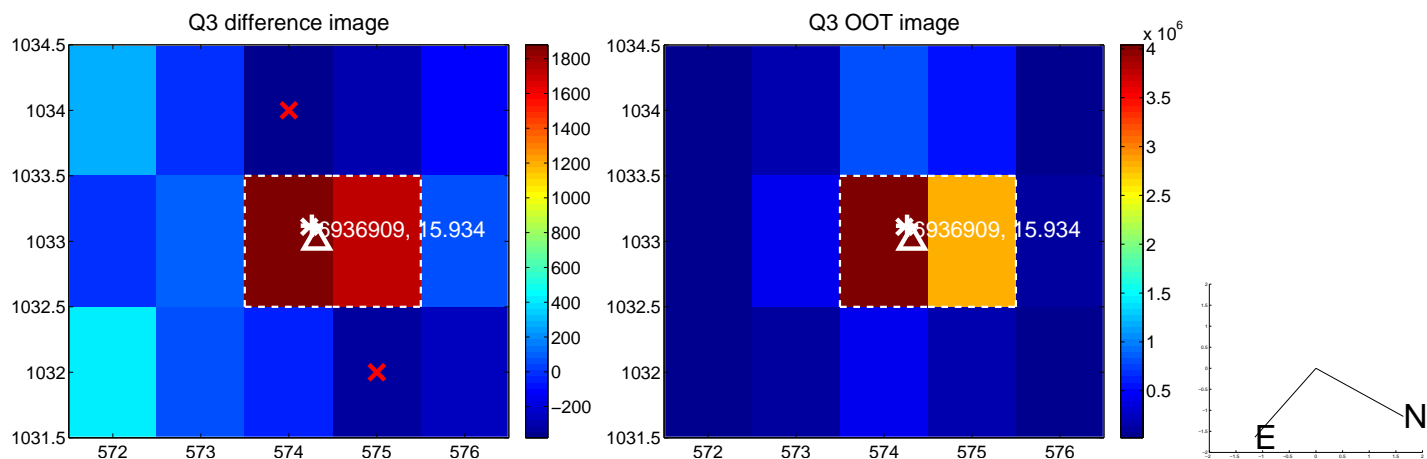
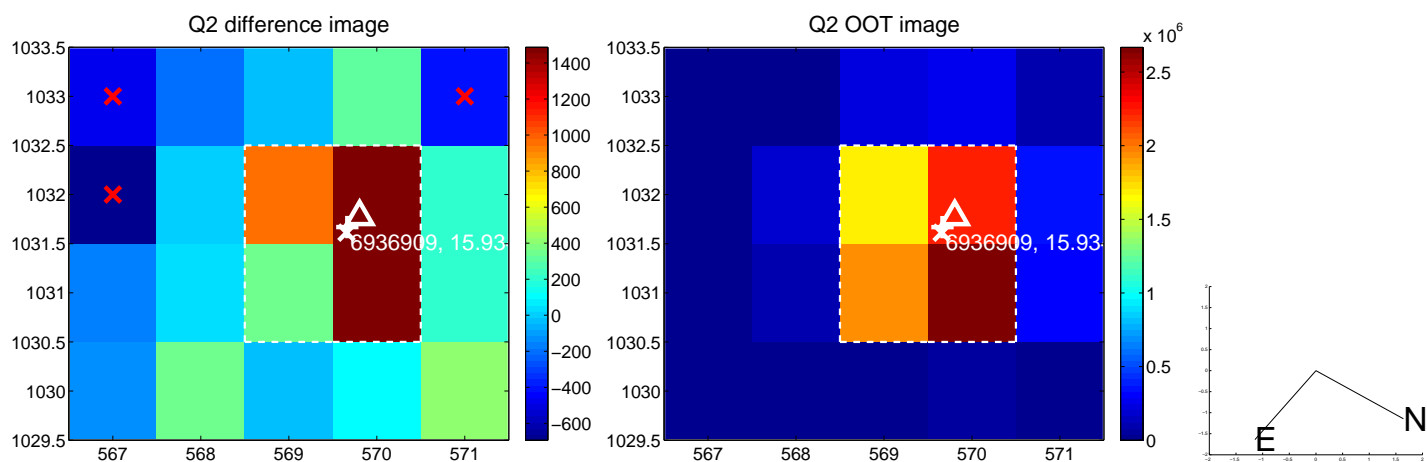
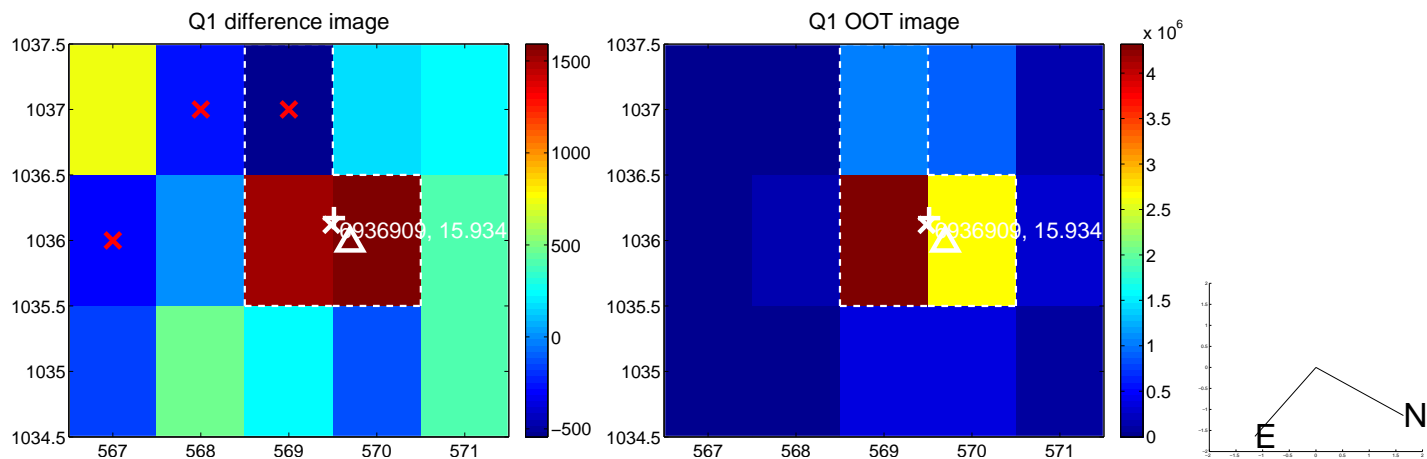
The direct PRF centroid is offset from the target star catalog position by about 0.17 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.052 ± 0.166	0.31	0.005 ± 0.090	0.052 ± 0.166
PRF-fit source offset from KIC position	0.203 ± 0.161	1.26	-0.203 ± 0.161	0.001 ± 0.151
photometric centroid source offset	0.48 ± 0.56	0.86	-0.12 ± 0.53	0.47 ± 0.56

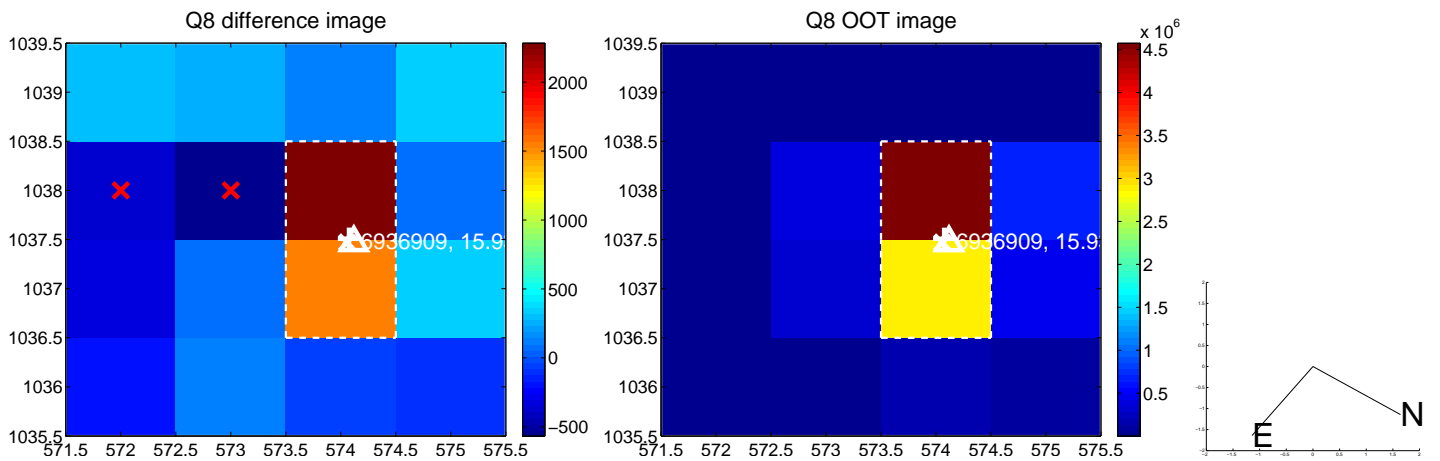
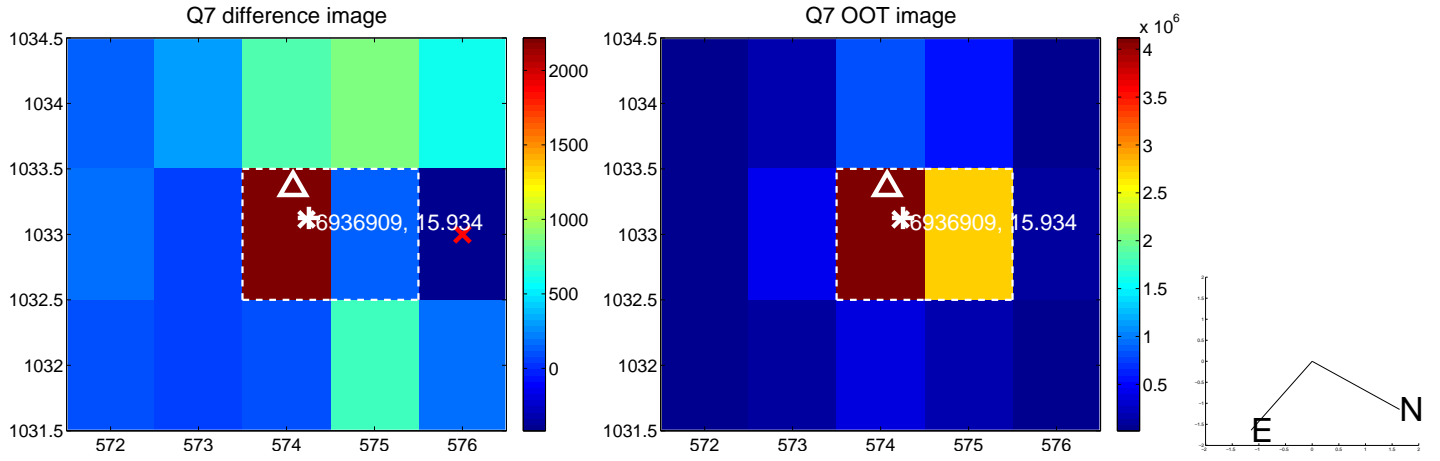
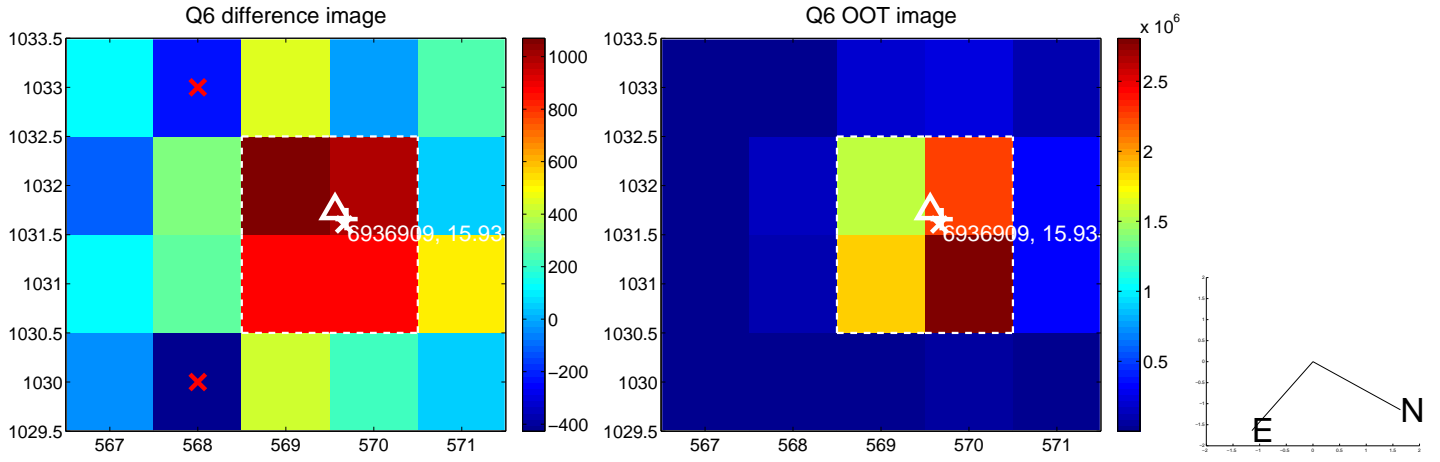
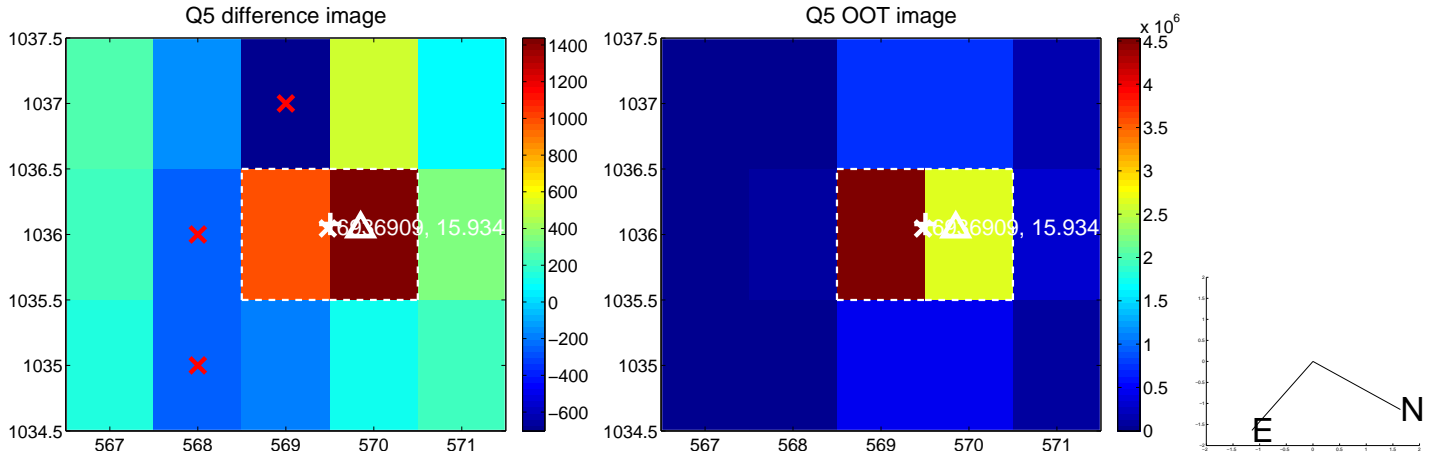


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

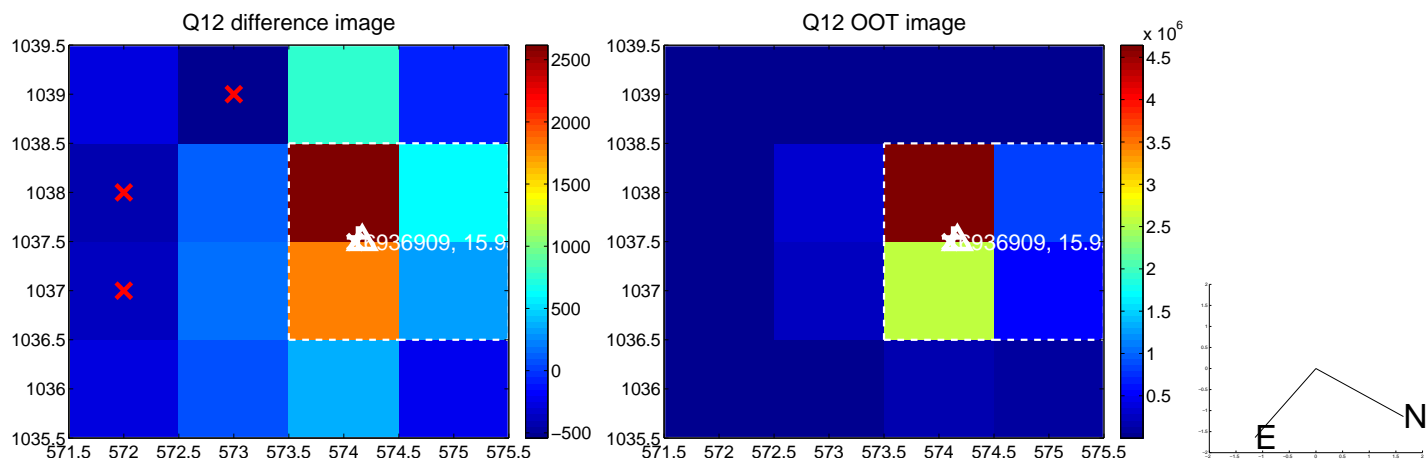
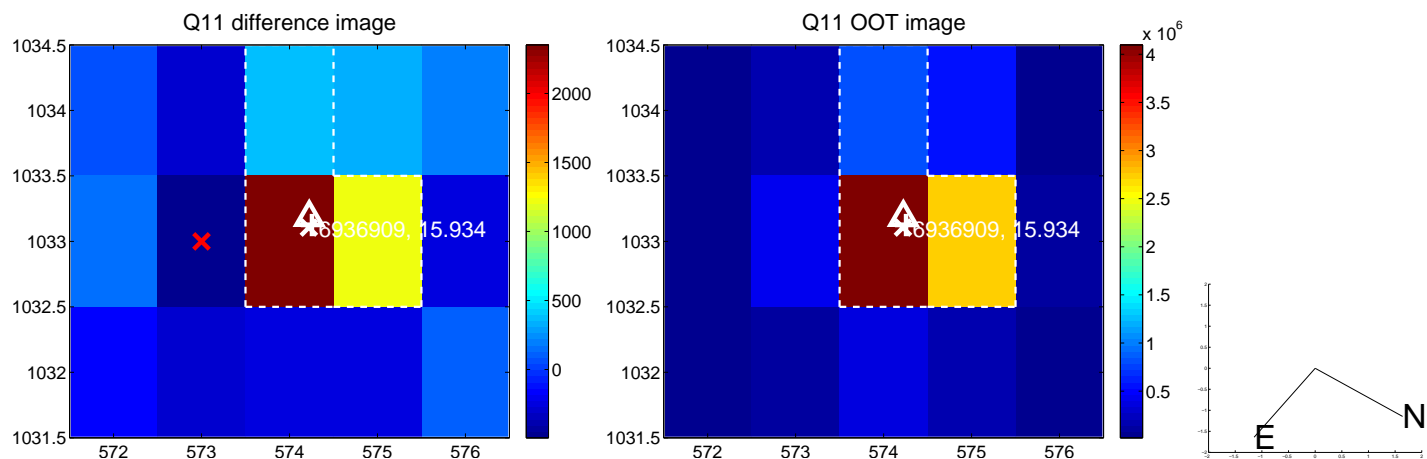
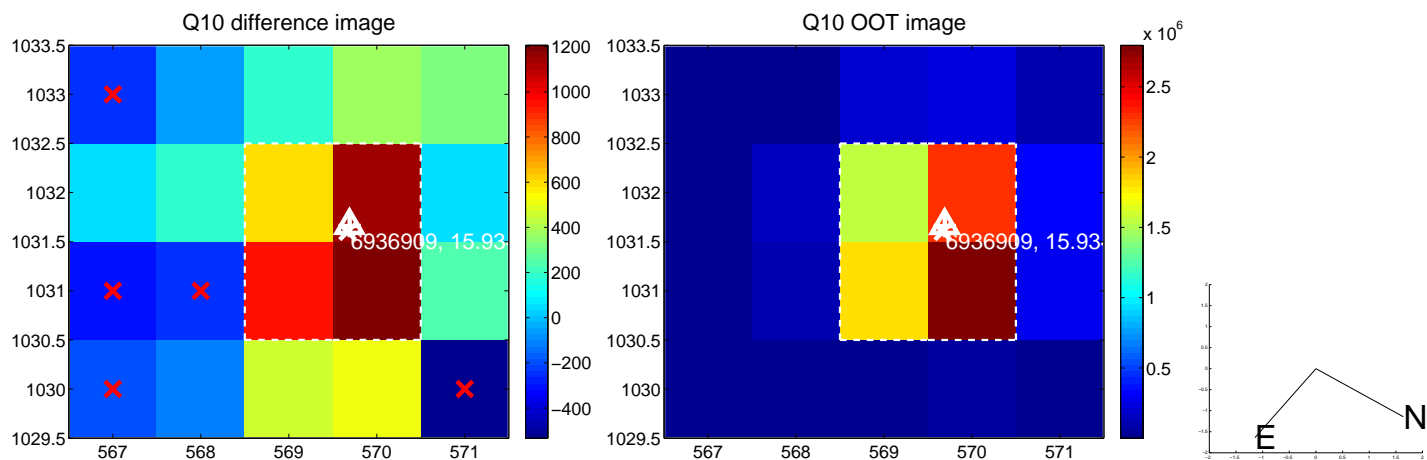
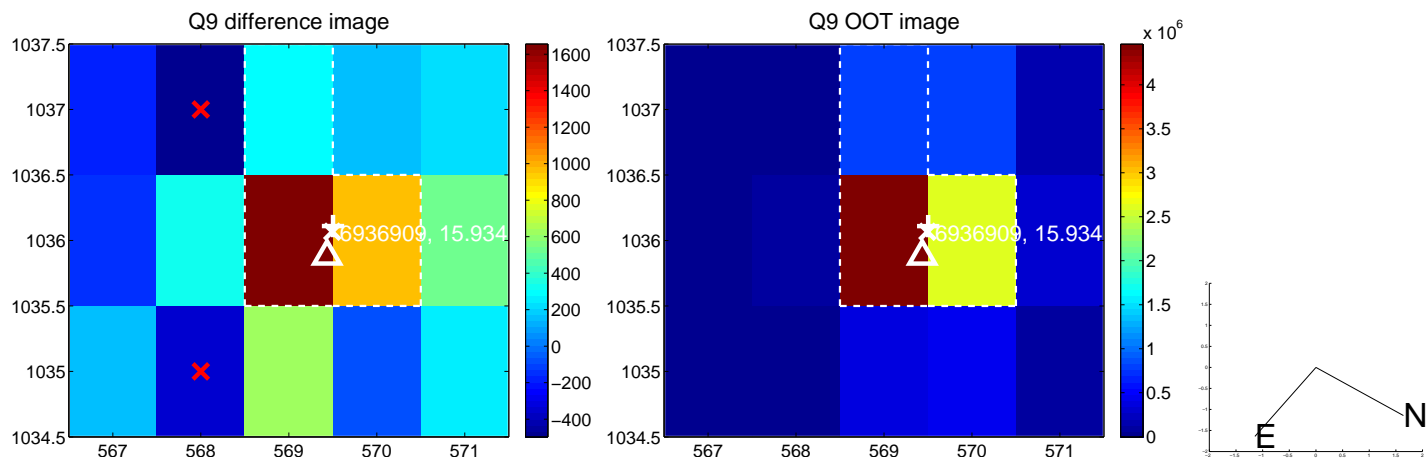
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



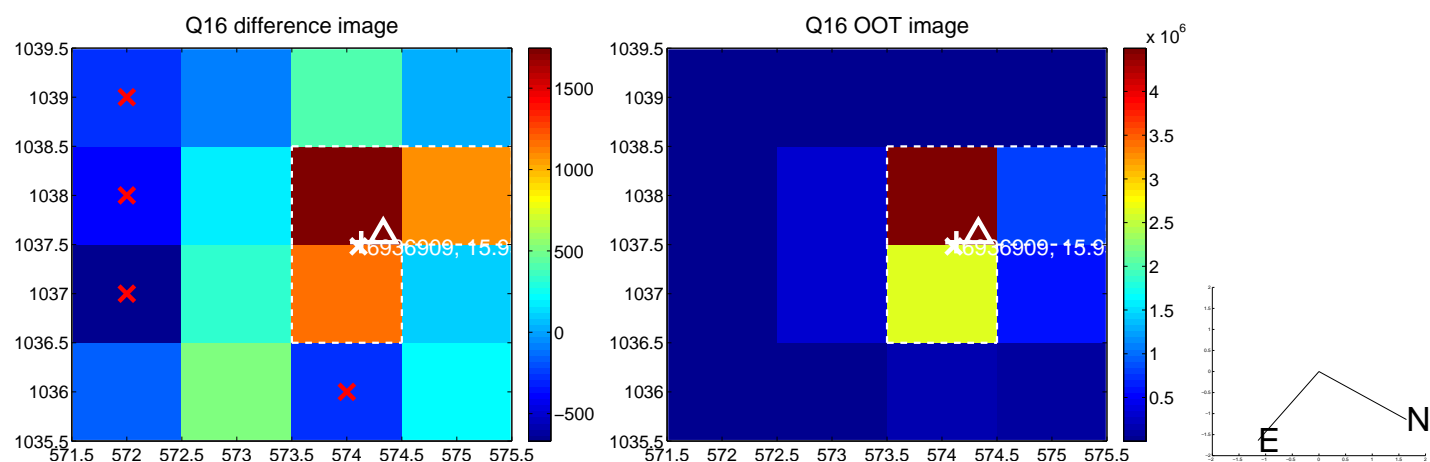
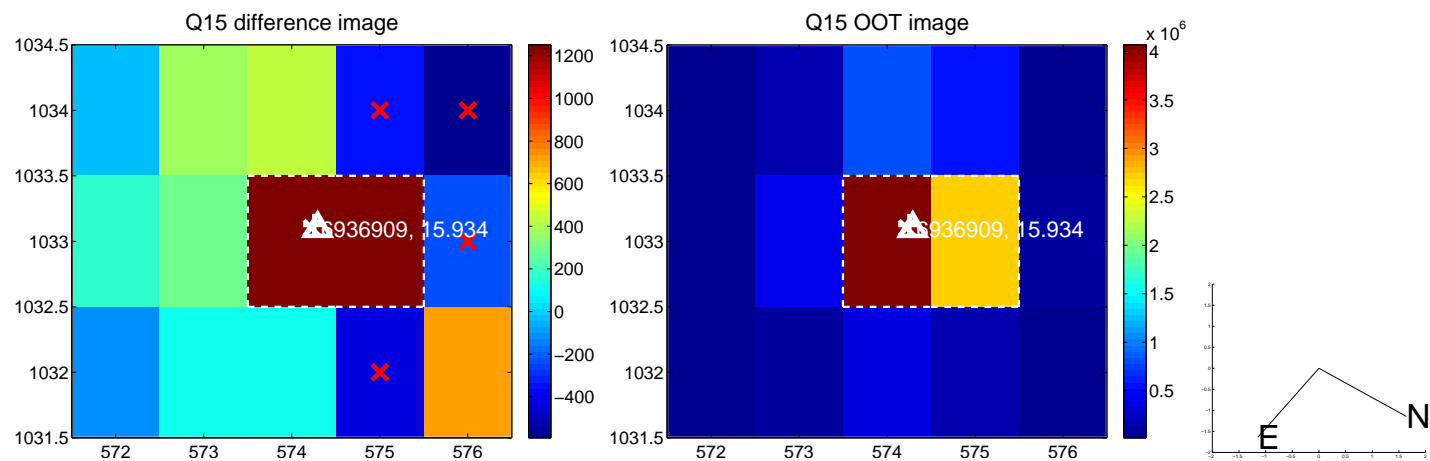
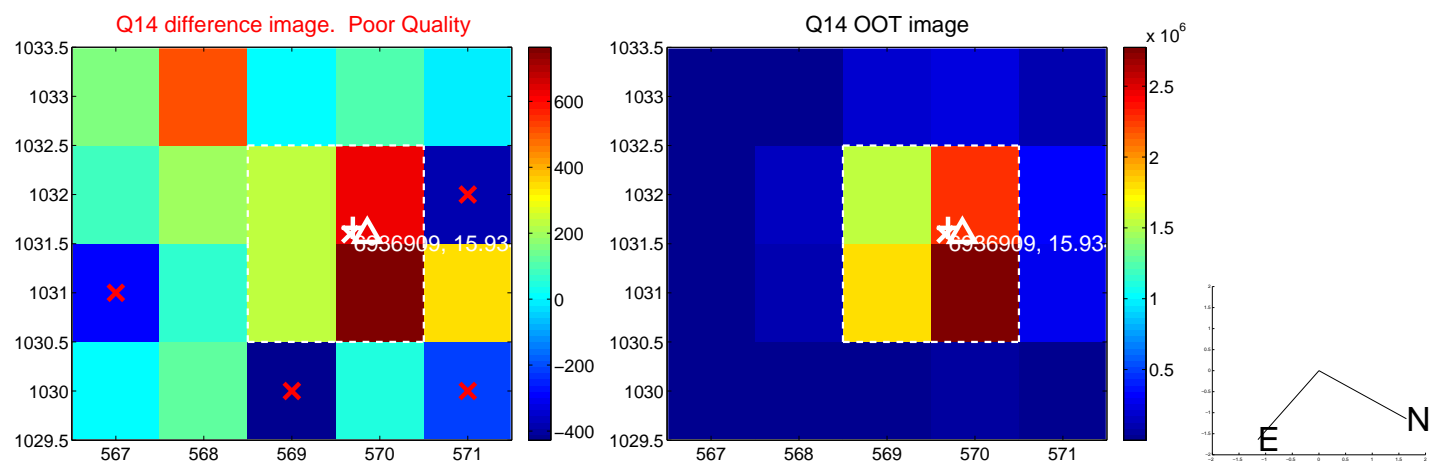
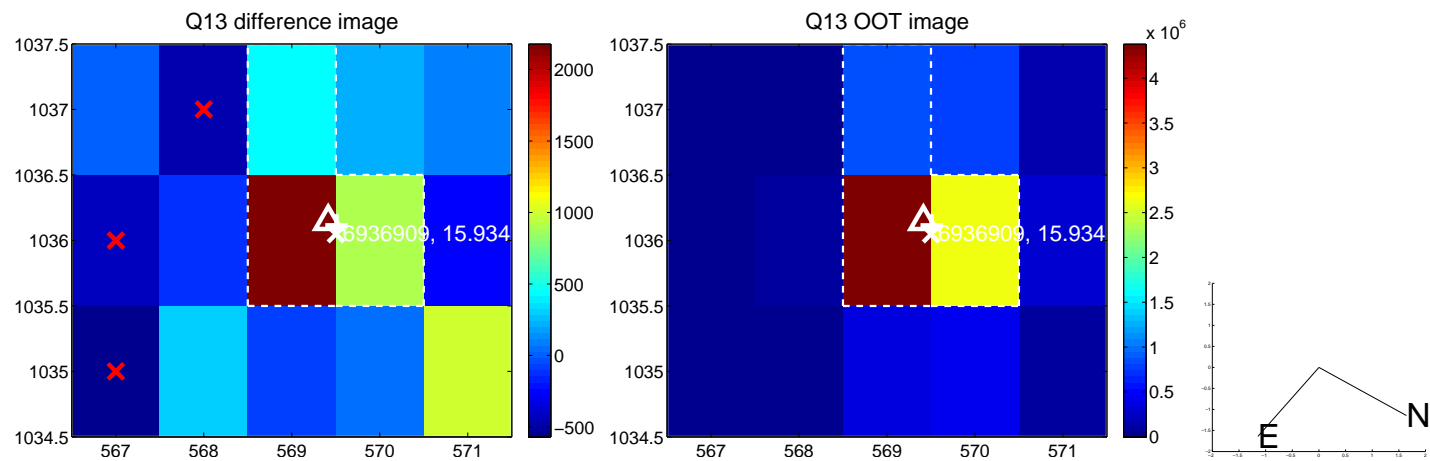
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



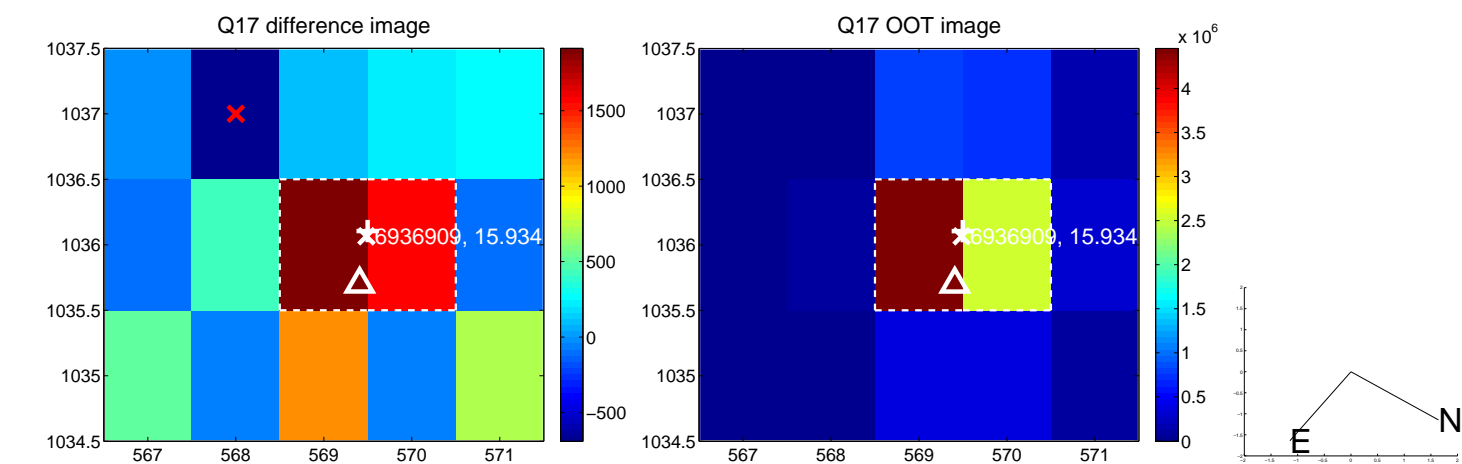
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



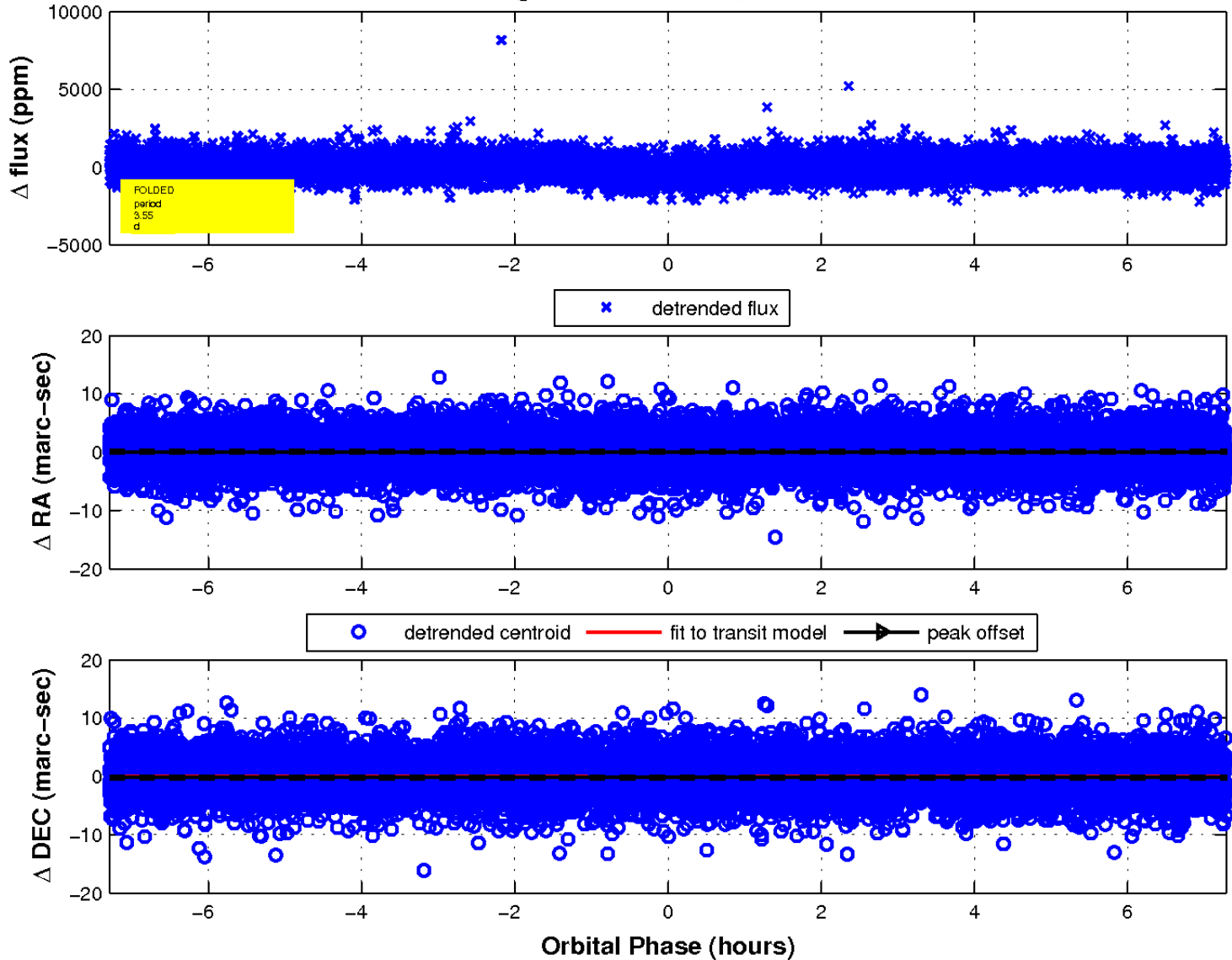
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

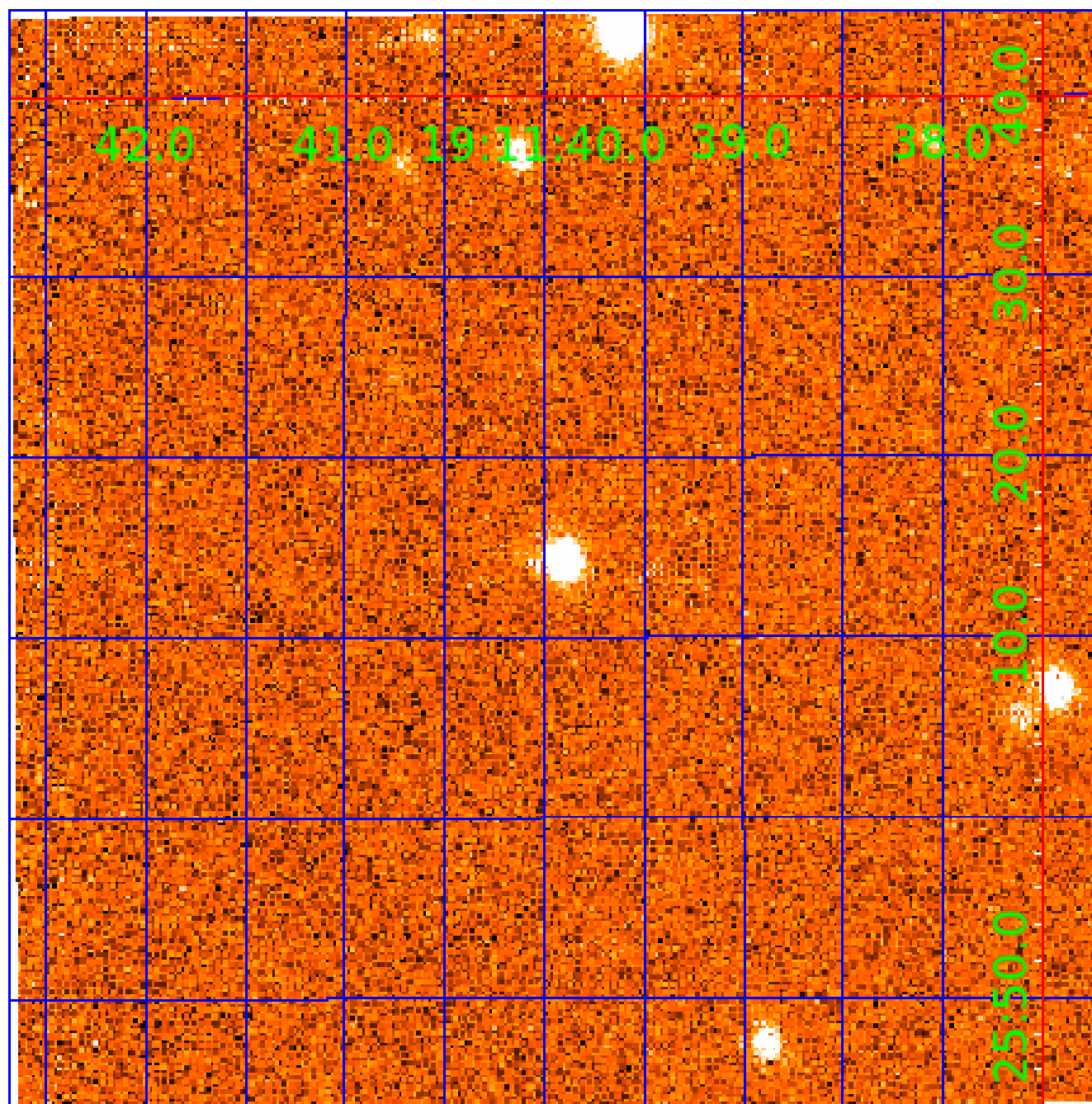


fluxWeightedCentroids, Planet 1 of 2



UKIRT Image

Declination



KIC 006936909

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})
006936909-01	OBS	1363.01	3.546512	134.905465	420.3	2.431	23.2	25.2	0.99	5993	2.39	510.88
006936909-02	OBS	1363.02	5.700742	132.688801	337.7	1.670	11.4	13.4	0.99	5993	1.91	271.32

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006936909-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT
006936909-02	OBS	PC	0.98	0	0	0	0	NO_COMMENT

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.

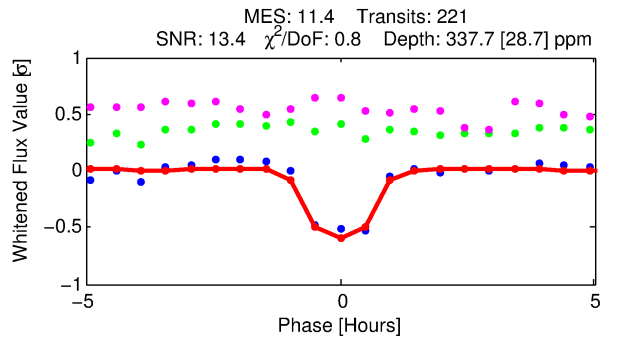
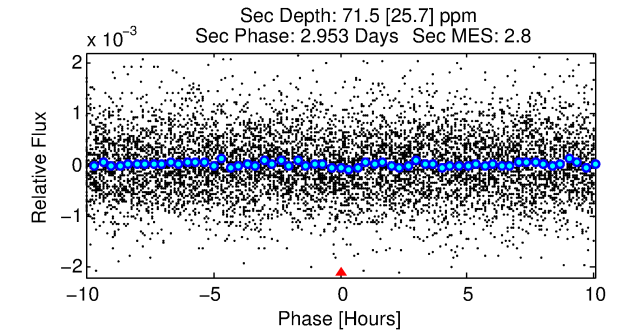
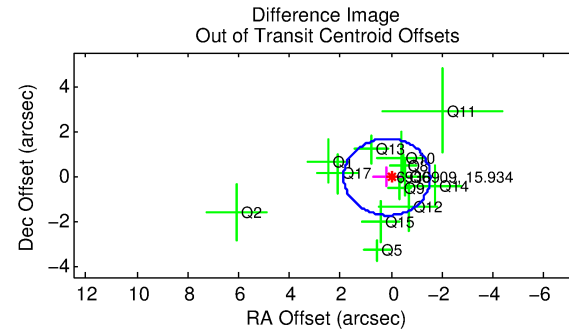
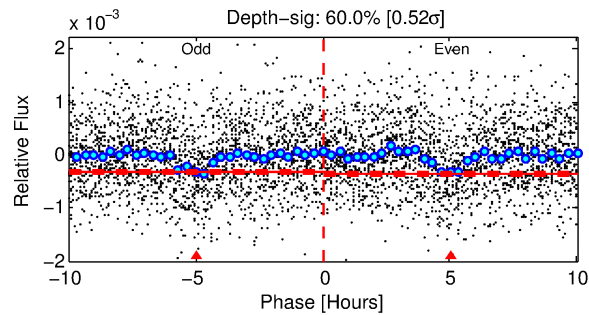
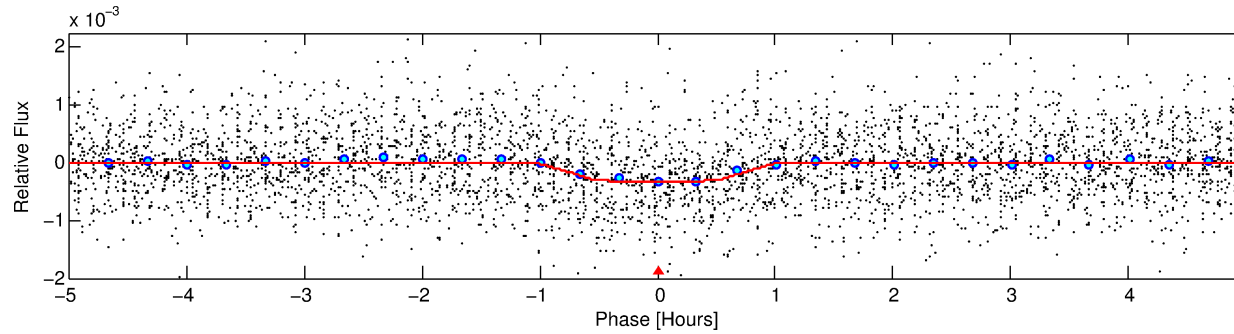
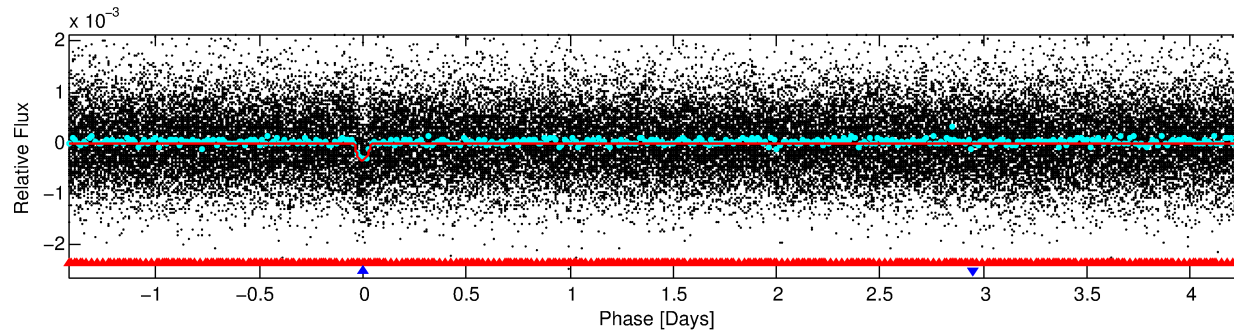
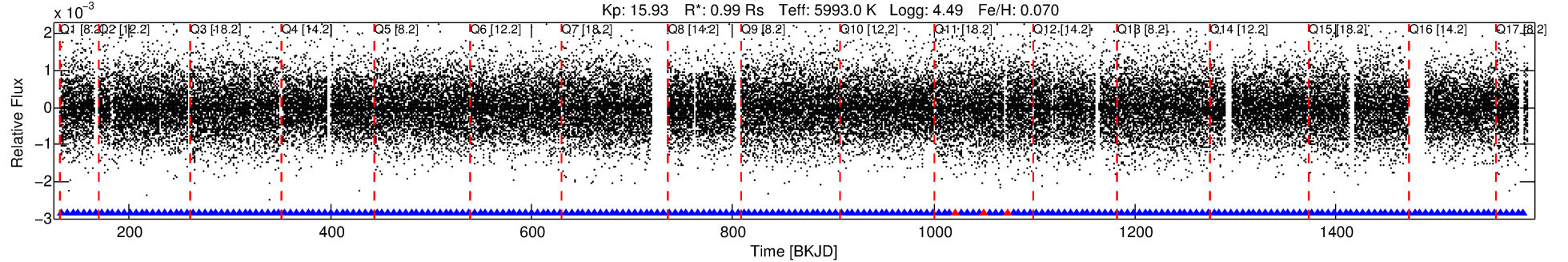
Ephemeris Match Information For 006936909-02

No Significant Match Found

DV One-Page Summary

KIC: 6936909 Candidate: 2 of 2 Period: 5.701 d
KOI: K01363.02 Name: Kepler-291c Corr: 0.966

Kp: 15.93 R*: 0.99 Rs Teff: 5993.0 K Logg: 4.49 Fe/H: 0.070



DV Fit Results:

Period = 5.70074 [0.00002] d
Epoch = 132.6888 [0.0030] BKJD
Rp/R* = 0.0178 [0.0123]
a/R* = 20.50 [64.85]
b = 0.65 [2.89]
Seff = 271.32 [111.08]
Teq = 1035 [106] K
Rp = 1.91 [1.44] Re
a = 0.0644 [0.0167] AU
Ag = 44.46 [65.51] [0.66σ]
Teffp = 4132 [1479] K [2.09σ]

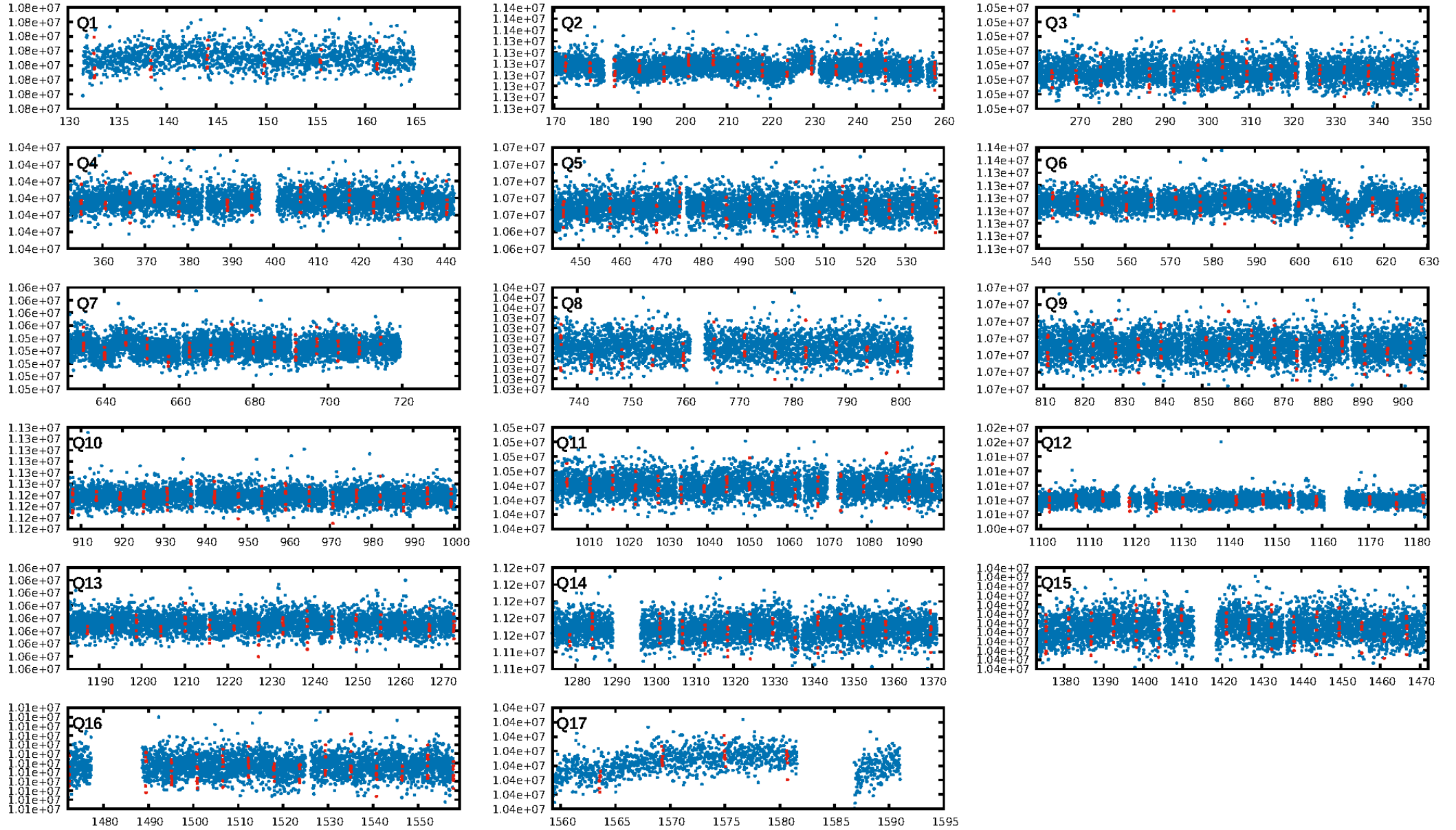
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [17.53σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 5.76e-30
RollingBand-fgt: 0.99 [209/212]
GhostDiagnostic-chr: 1.279
Centroid-sig: 0.0%
Centroid-so: 2.527 arcsec [2.48σ]
OotOffset-rm: 0.167 arcsec [0.29σ]
KicOffset-rm: 0.108 arcsec [0.25σ]
OotOffset-st: 4/2/2/5 [13]
KicOffset-st: 4/2/2/5 [13]
DiffImageQuality-fgm: 0.62 [8/13]
DiffImageOverlap-fno: 1.00 [17/17]

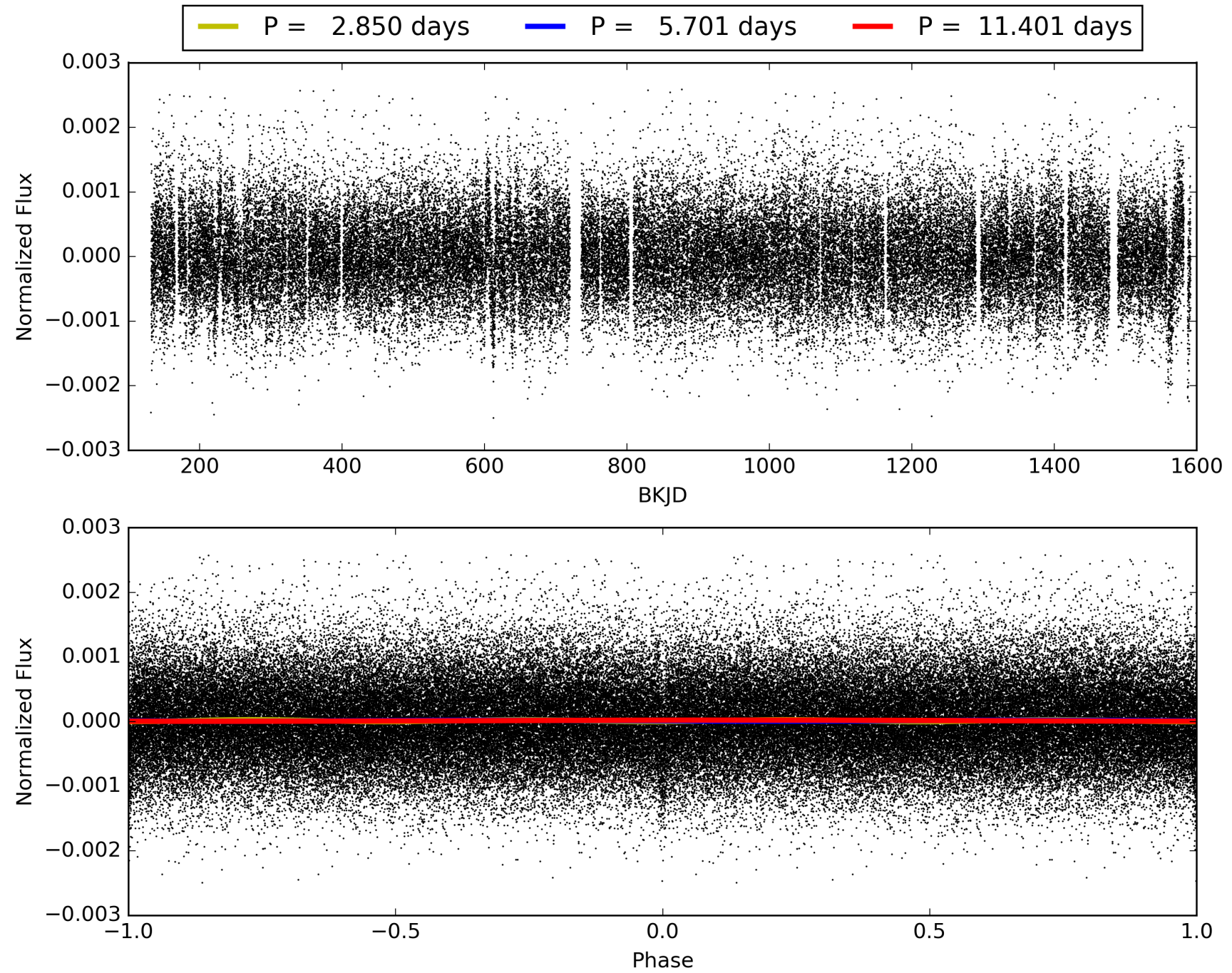
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 006936909-02, PDC Light Curves

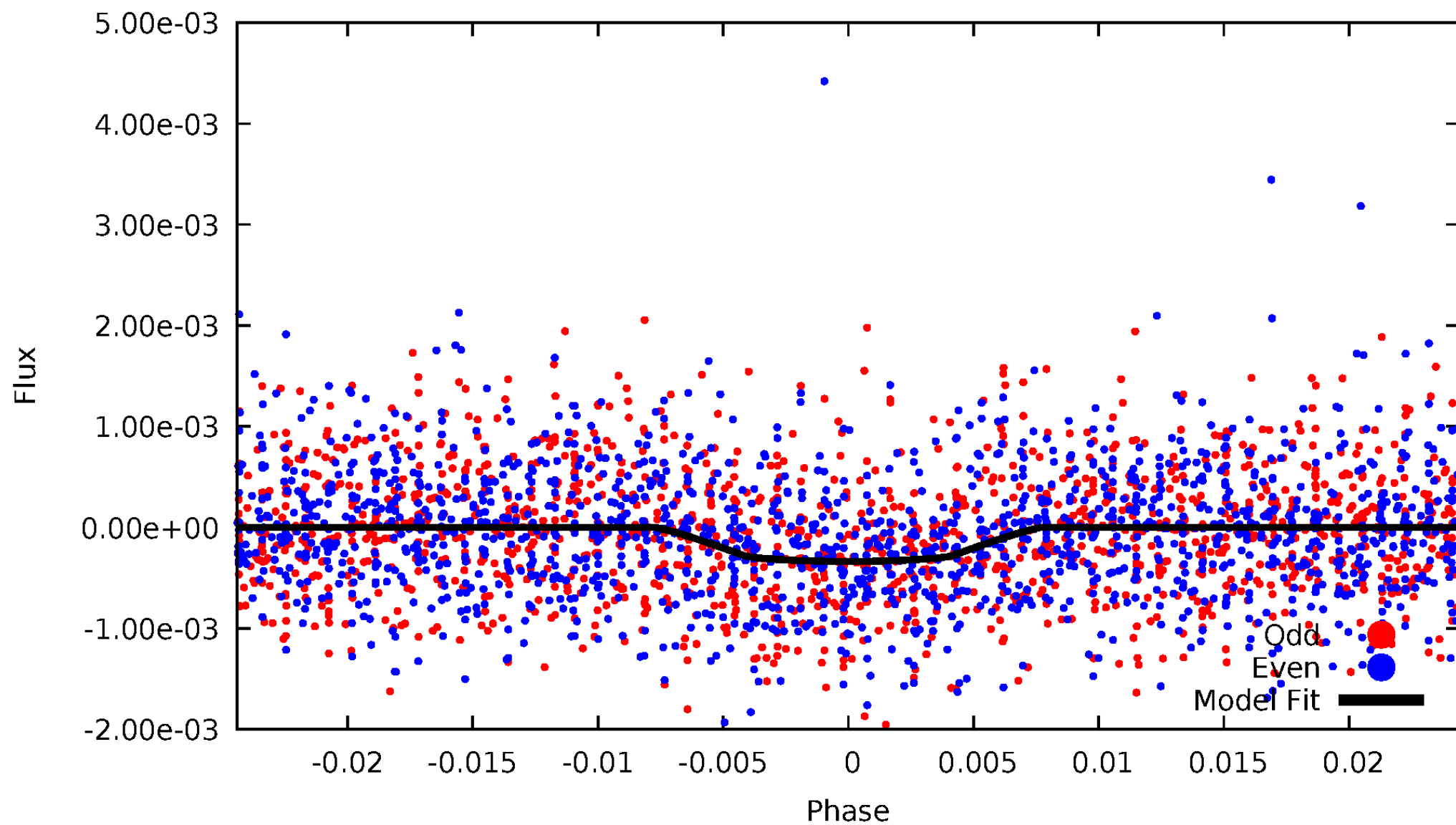


TCE 006936909-02



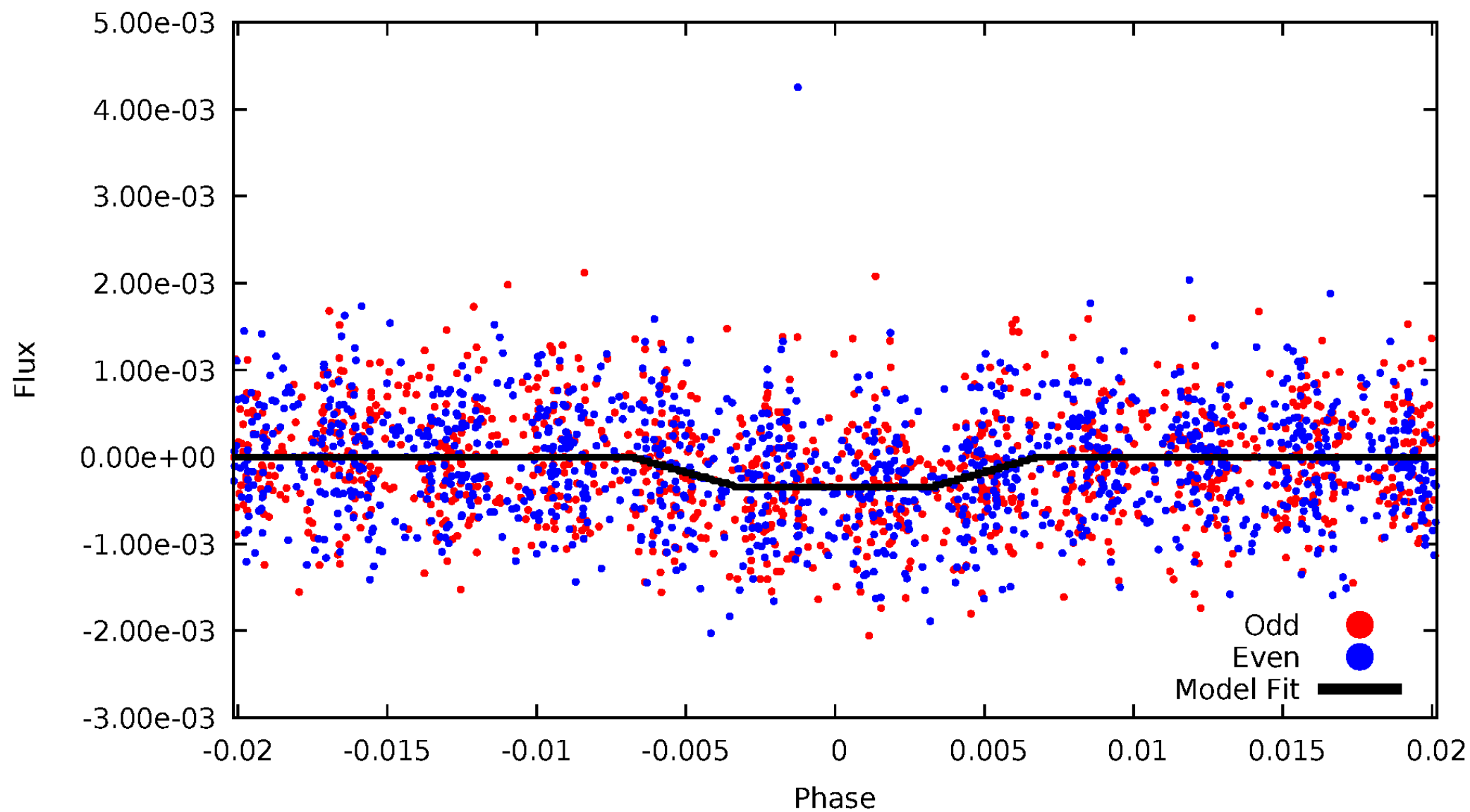
DV Odd/Even

TCE 006936909-02



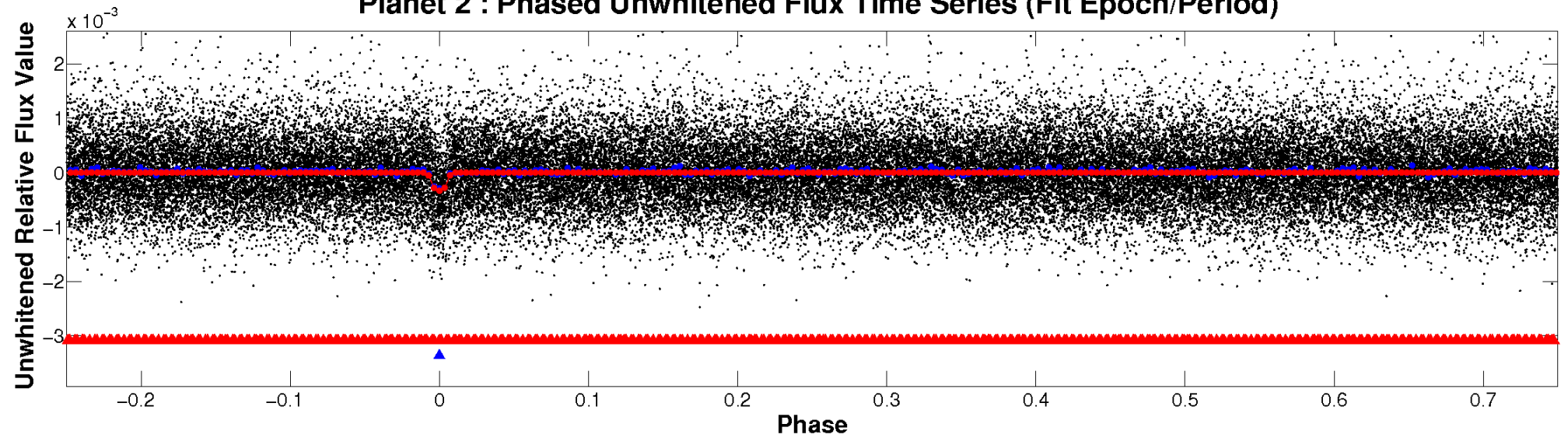
ALT Odd/Even

TCE 006936909-02

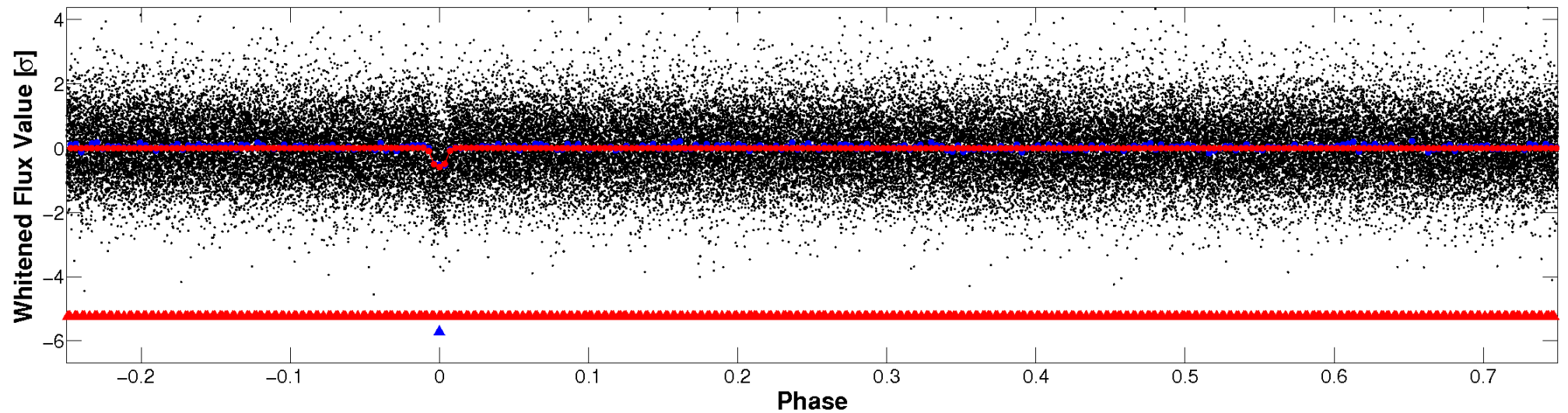


Non-Whitened Vs. Whitened Light Curve

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

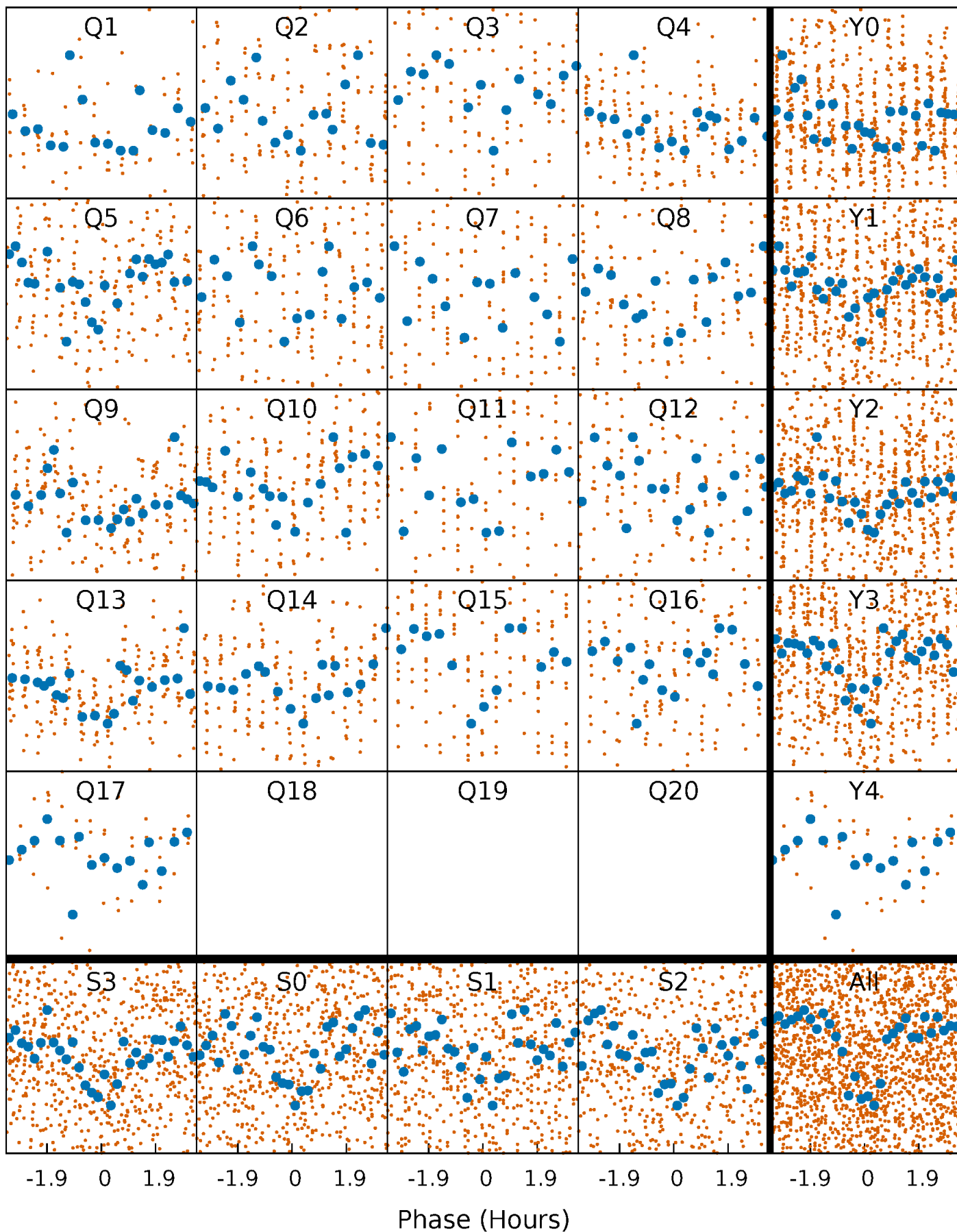


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



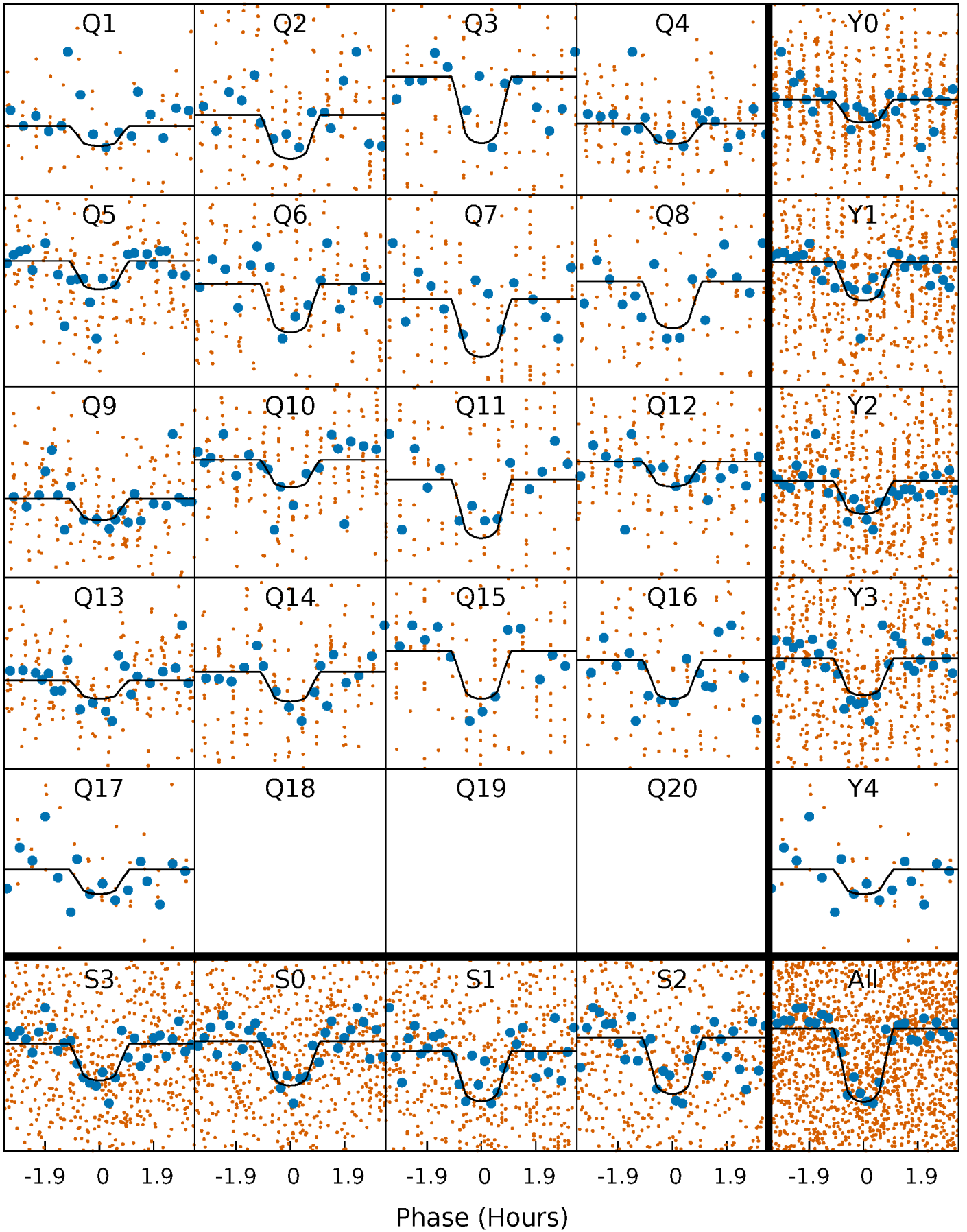
PDC Quarter-Phased Transit Curves

TCE 006936909-02 P= 5.700743 Days $T_0=132.688801$ (BKJD)



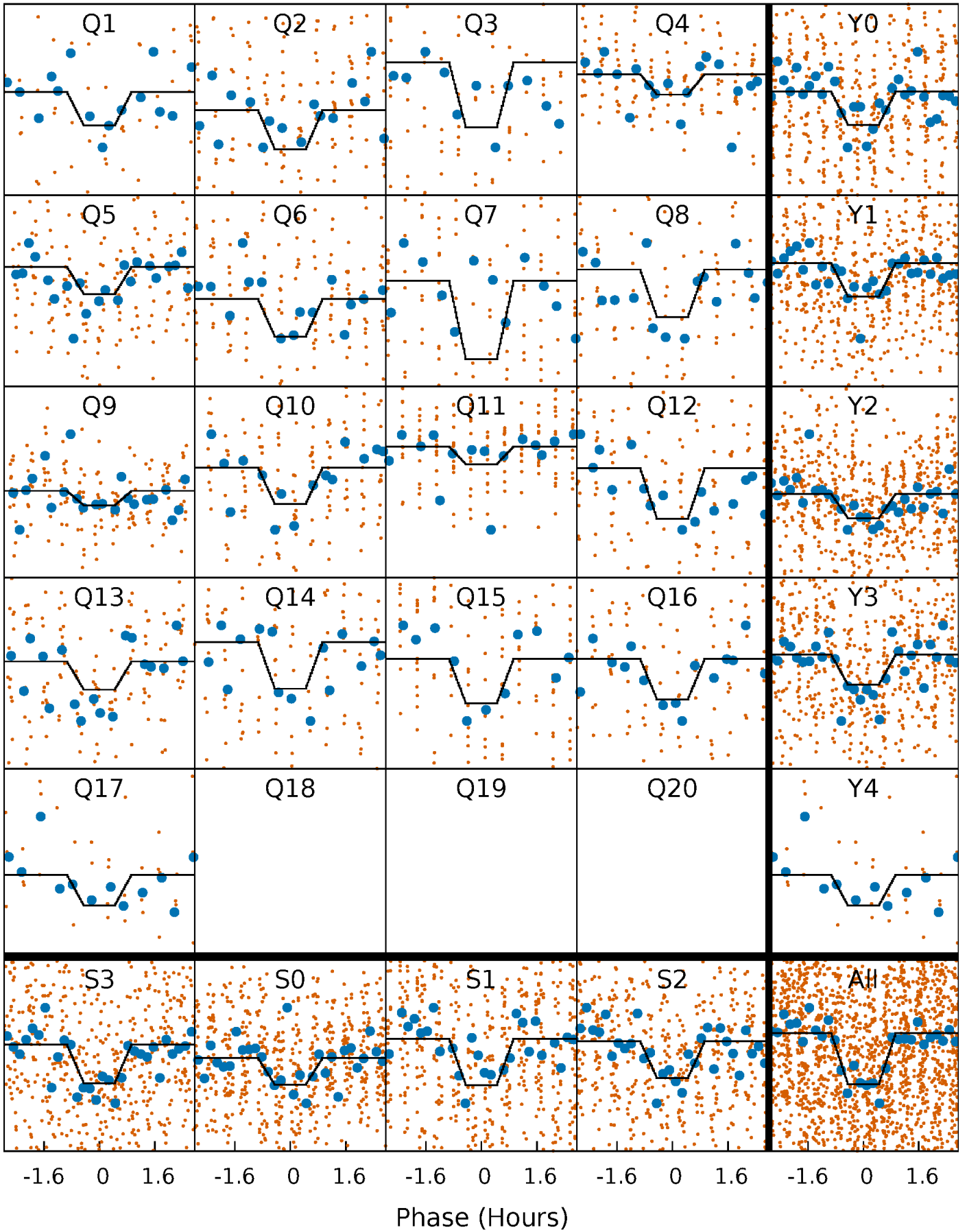
DV Quarter-Phased Transit Curves

TCE 006936909-02 P= 5.700743 Days $T_0=132.688801$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

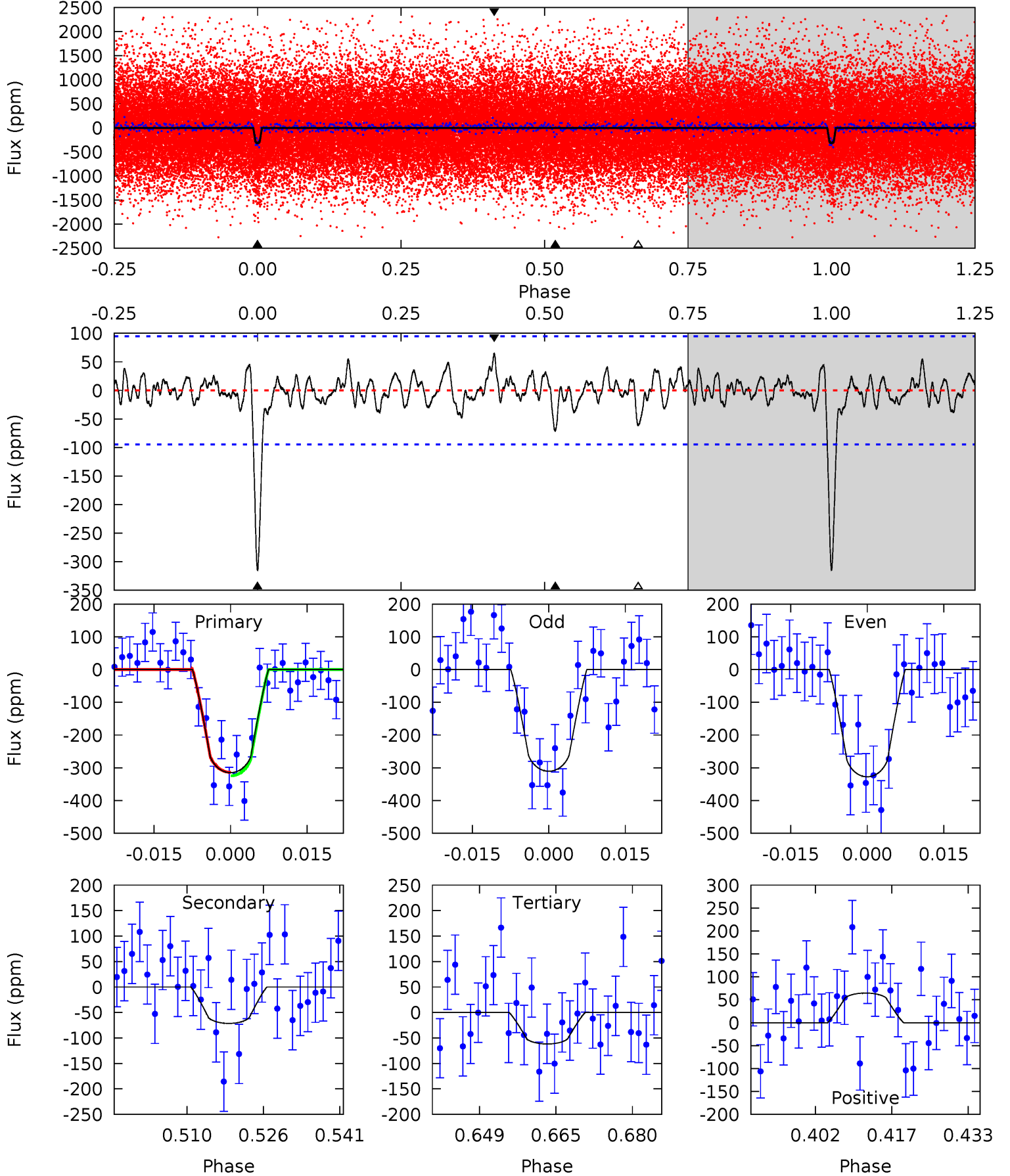
TCE 006936909-02 P= 5.700706 Days $T_0=132.691477$ (BKJD)



DV Model-Shift Uniqueness Test

006936909-02, P = 5.700743 Days, E = 126.988058 Days

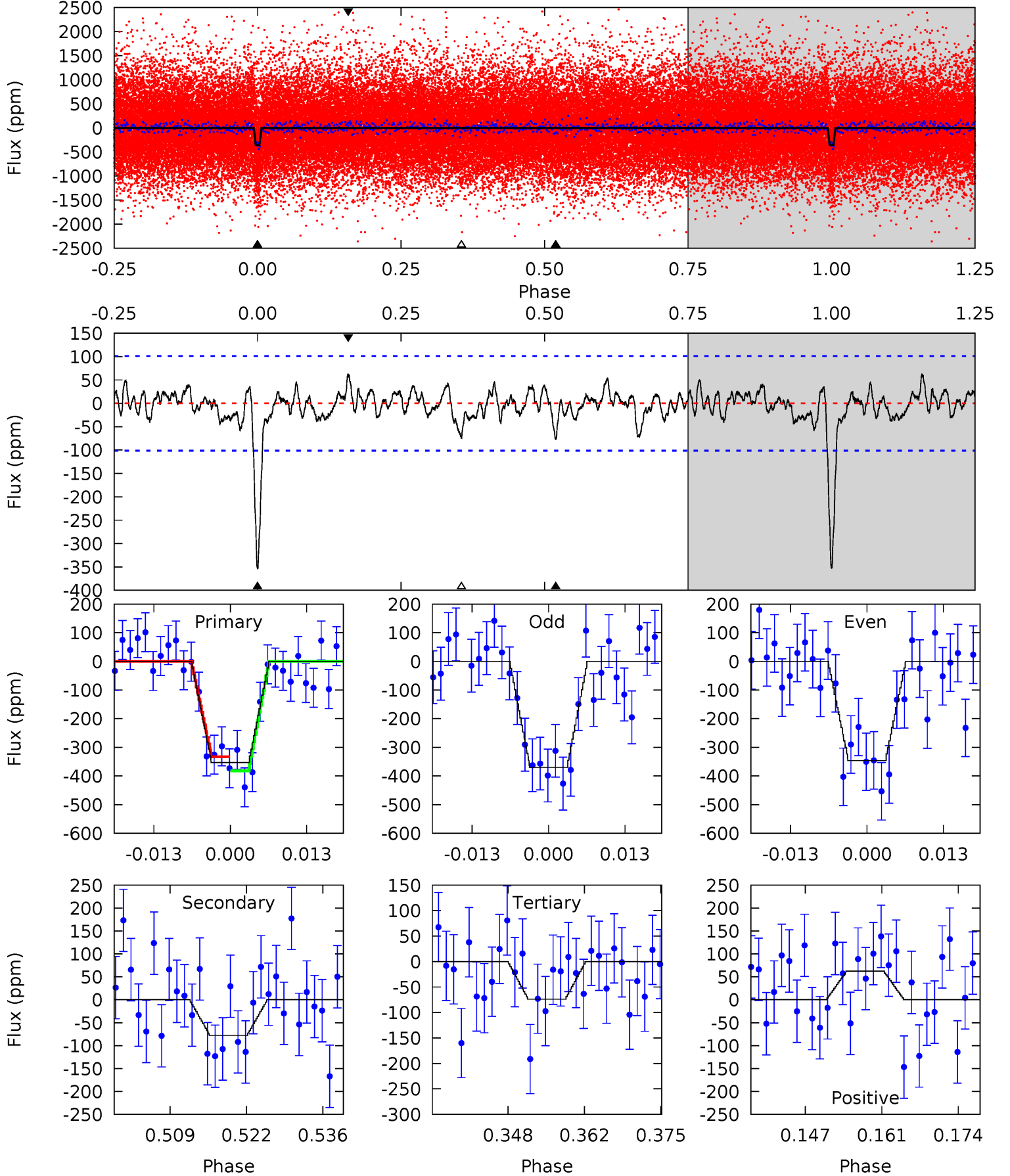
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
16.4	3.73	3.22	3.37	4.94	2.42	1.04	13.2	13.1	0.50	0.35	0.44	0.91	0.17	0.28



Alt Model-Shift Uniqueness Test

006936909-02, P = 5.700706 Days, E = 126.990771 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
17.3	3.82	3.63	3.06	4.97	2.47	1.13	13.7	14.3	0.19	0.76	0.59	0.85	0.15	1.21



Stellar Parameters For KIC 006936909

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5993^{+190}_{-232}	$4.489^{+0.052}_{-0.208}$	$0.070^{+0.250}_{-0.300}$	$0.986^{+0.302}_{-0.101}$	$1.093^{+0.130}_{-0.159}$	$1.607^{+0.422}_{-0.841}$
	+3%/-4%	+1%/-5%	+357%/-429%	+31%/-10%	+12%/-15%	+26%/-52%
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 006936909-02 / KOI 1363.02

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-71 ± 19	$2.13^{+1.40}_{-1.29}$	1472^{+106}_{-76}	4186^{+2236}_{-694}	33^{+197}_{-22}
Alt.	-78 ± 20	$2.22^{+1.36}_{-1.20}$	1469^{+110}_{-74}	4215^{+1677}_{-667}	34^{+129}_{-21}

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

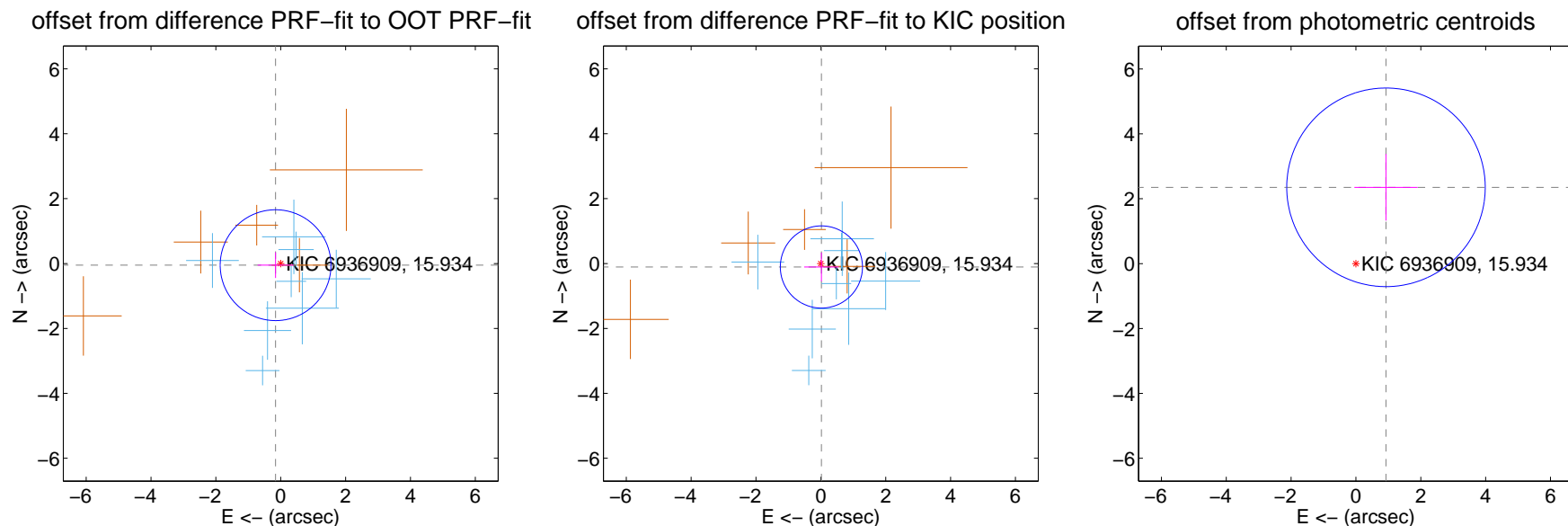
DV Centroid Data

Supplemental centroid analysis for 006936909-02. Kepler magnitude: 15.93. Transit SNR 13.35

There are 8 quarters with good PRF difference image offsets

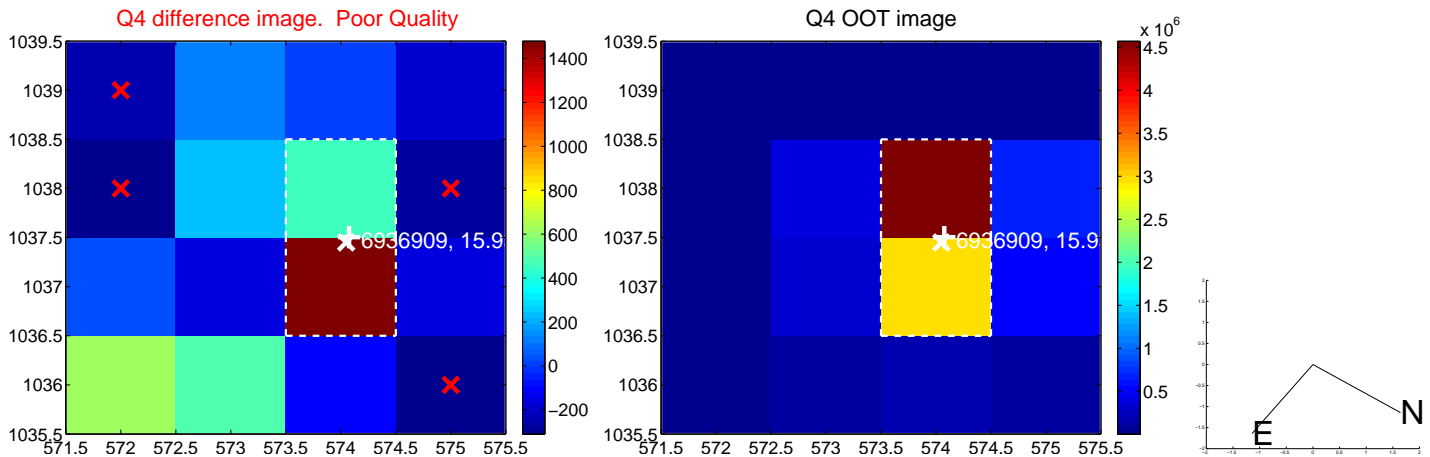
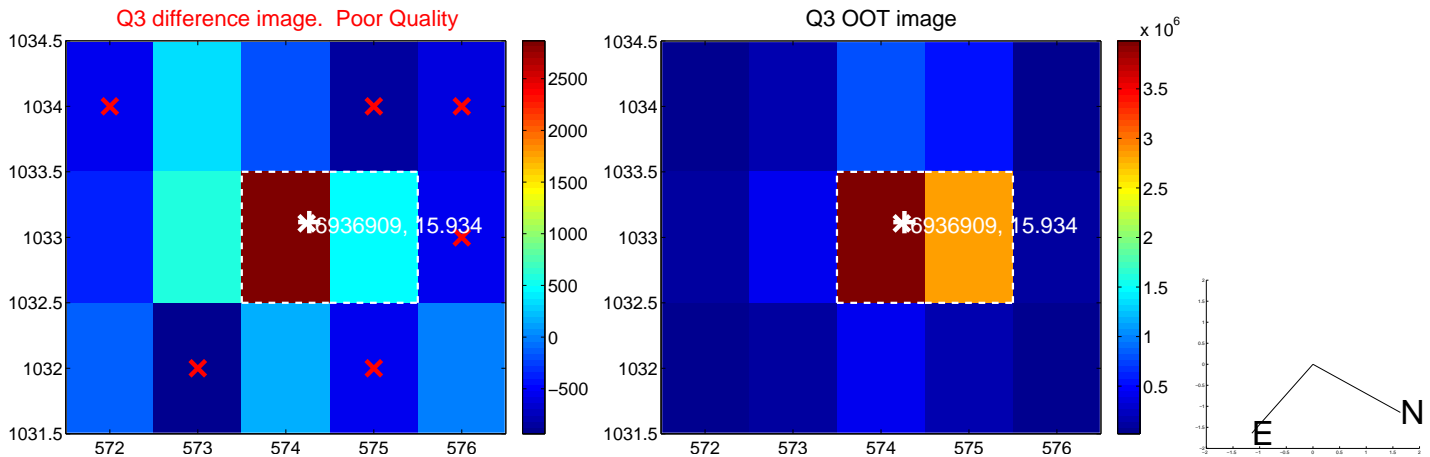
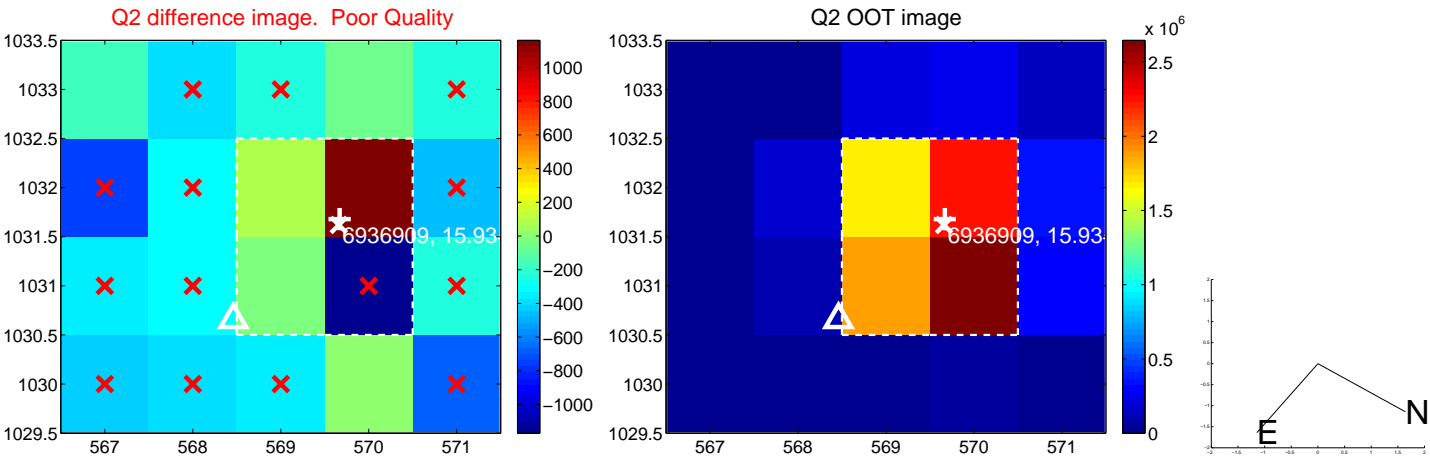
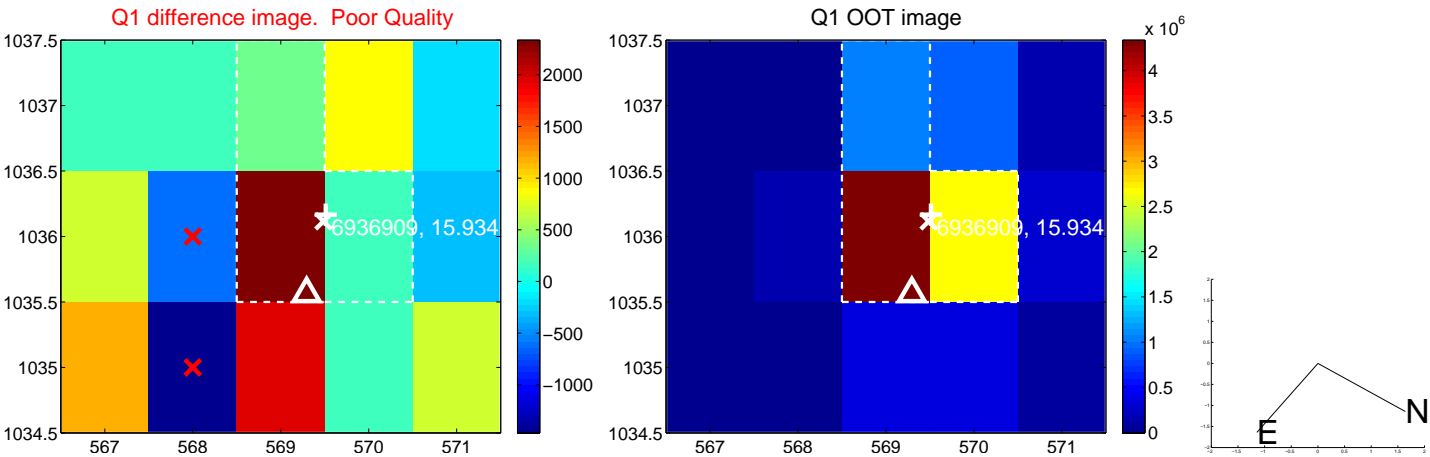
The direct PRF centroid is offset from the target star catalog position by about 0.17 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.167 ± 0.569	0.29	0.159 ± 0.553	-0.050 ± 0.394
PRF-fit source offset from KIC position	0.108 ± 0.422	0.25	-0.016 ± 0.532	-0.106 ± 0.444
photometric centroid source offset	2.53 ± 1.02	2.48	-0.93 ± 0.98	2.35 ± 1.03

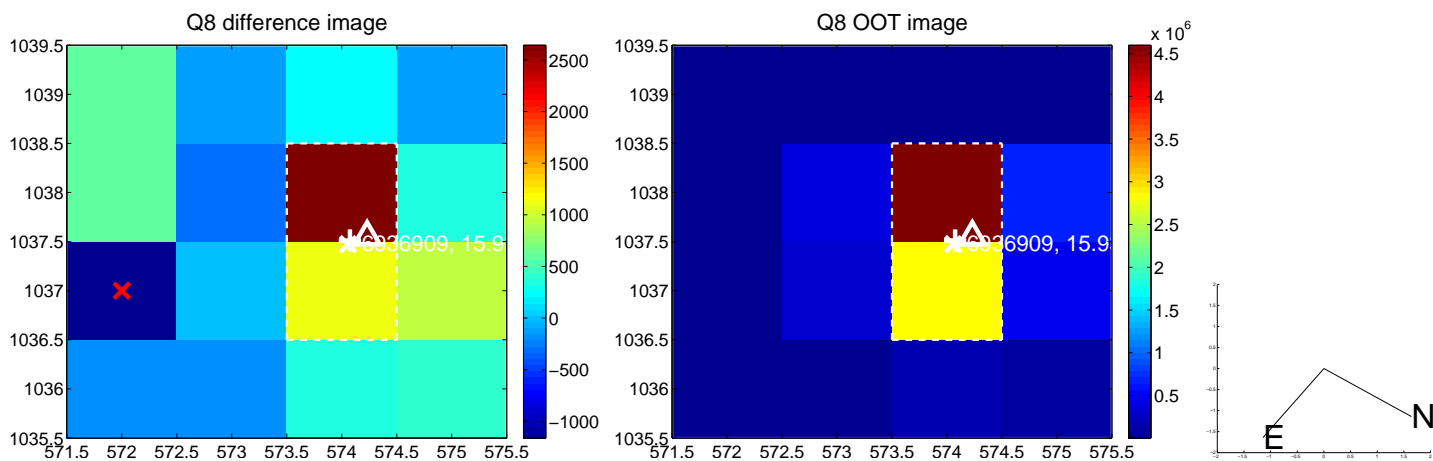
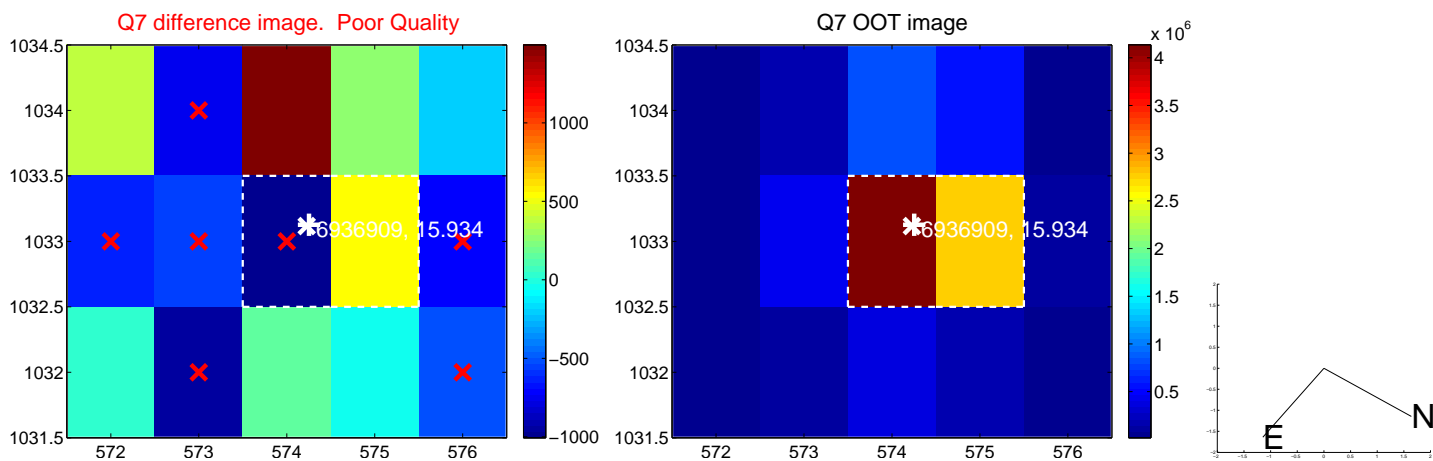
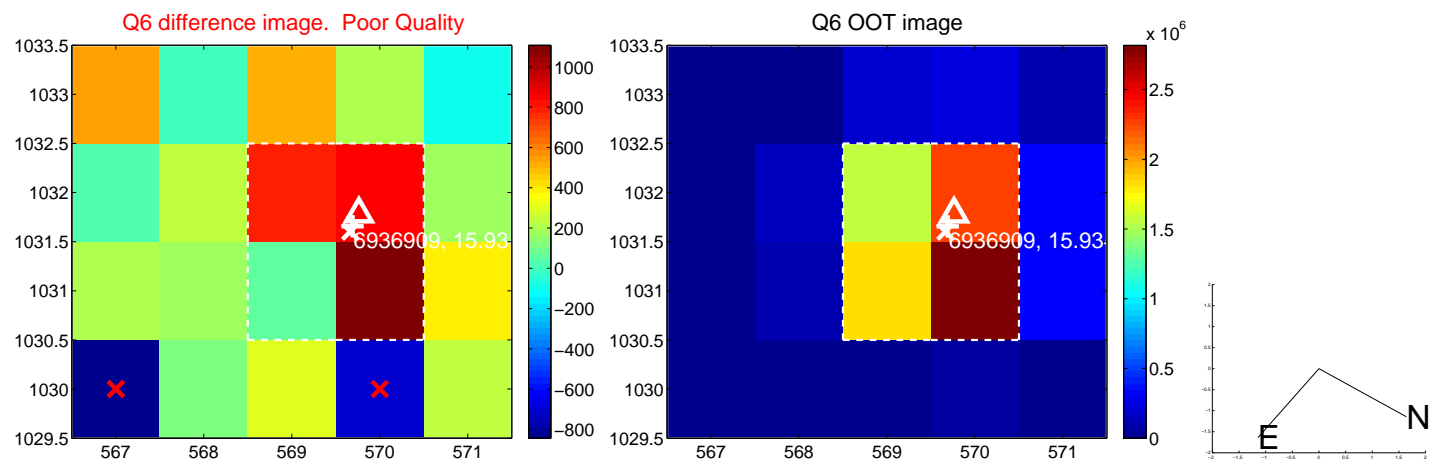
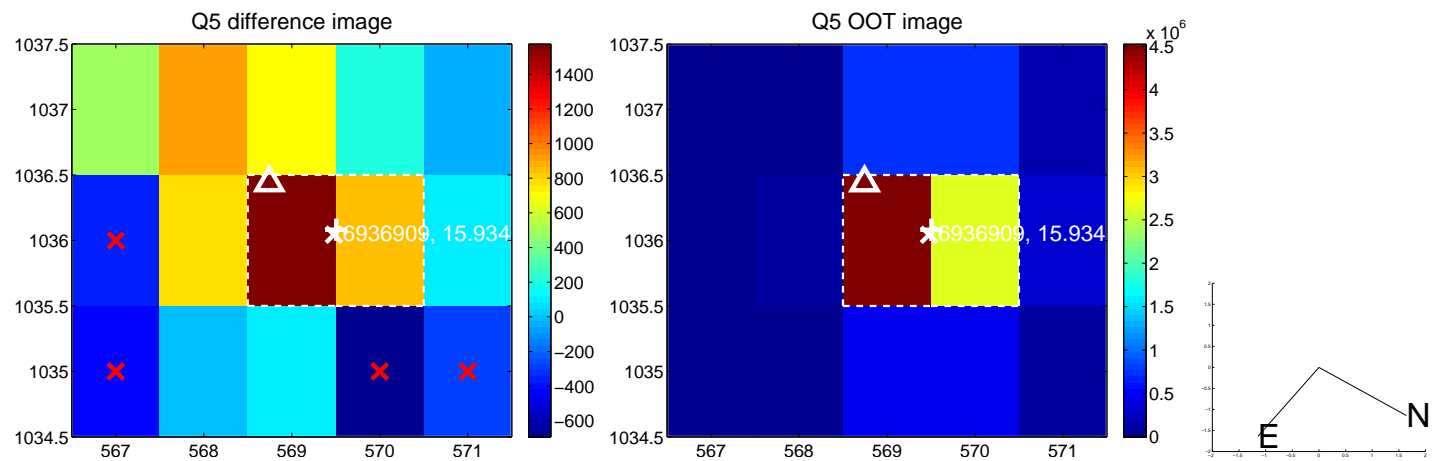


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

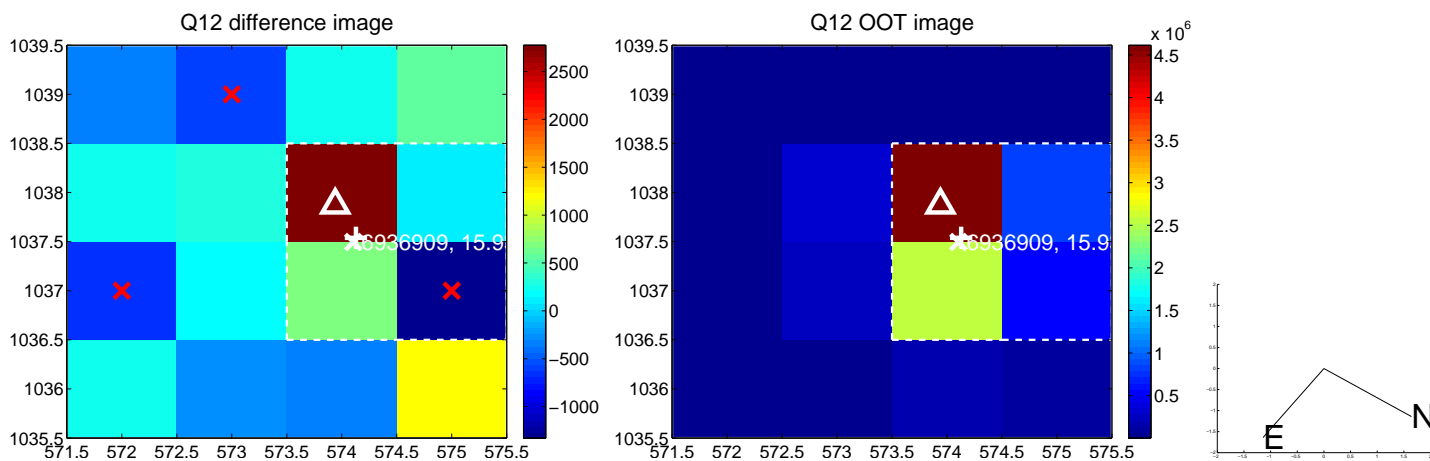
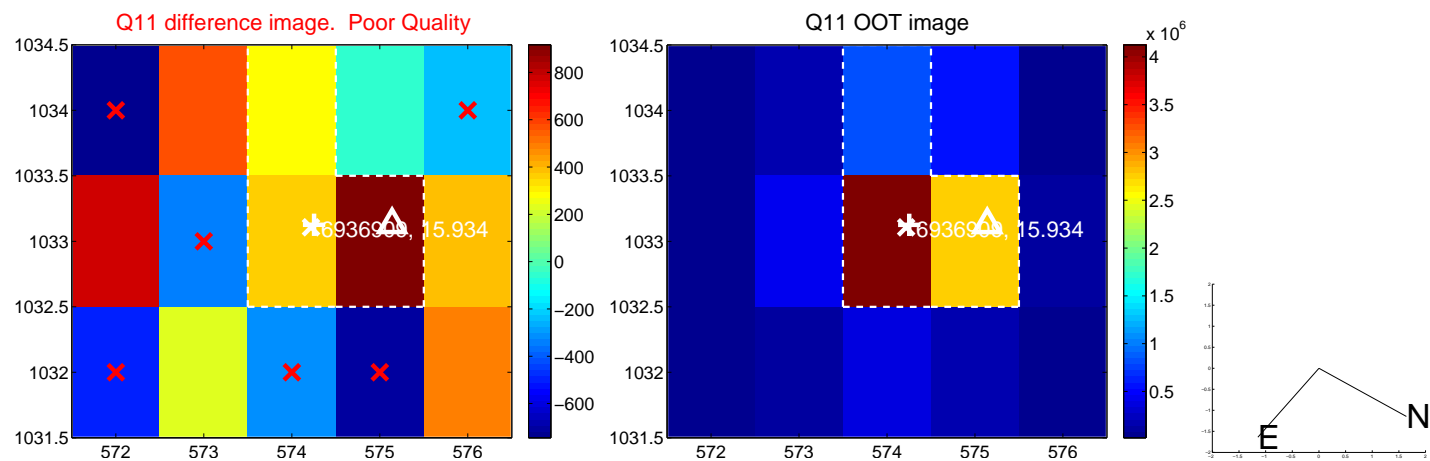
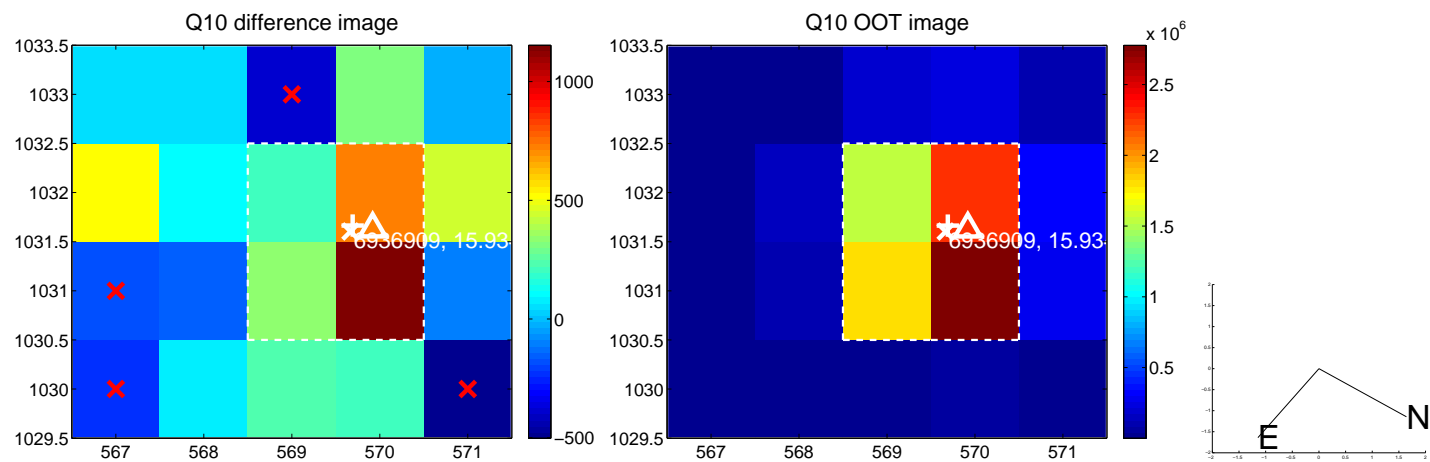
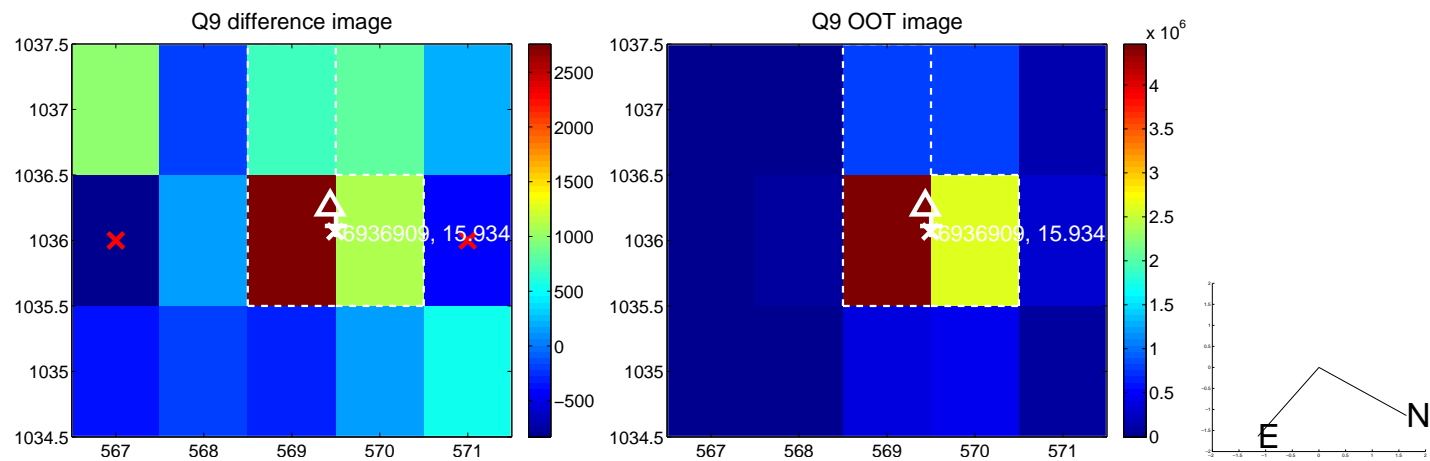
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



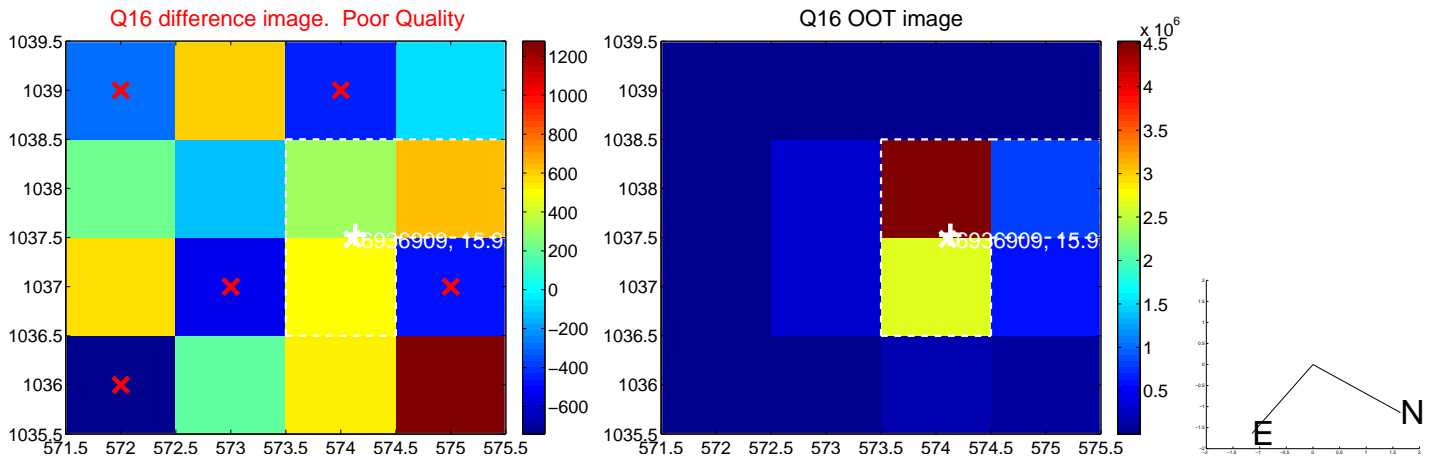
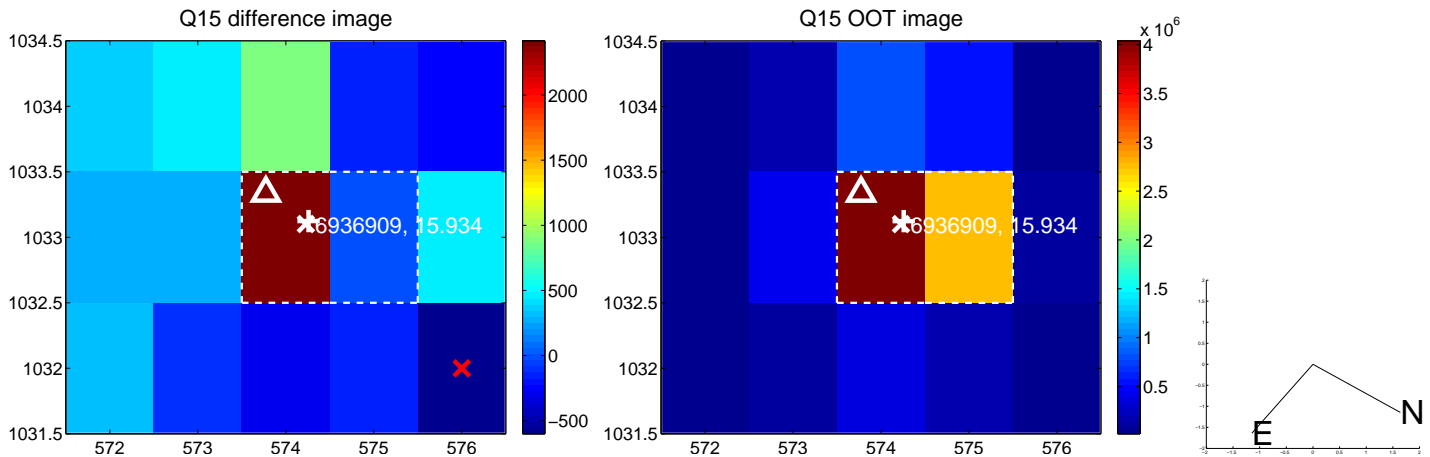
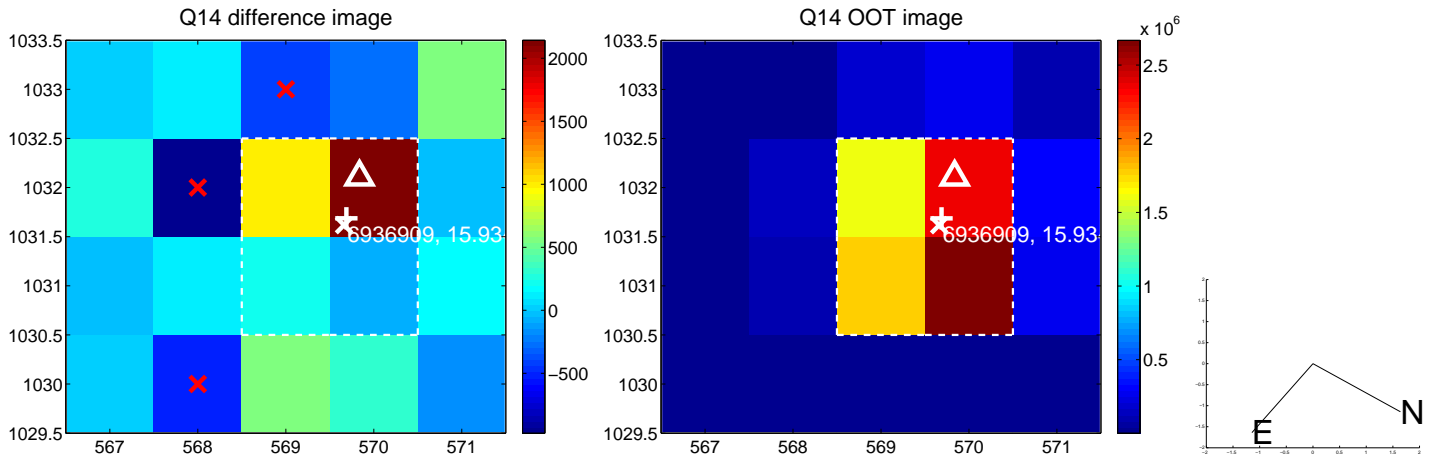
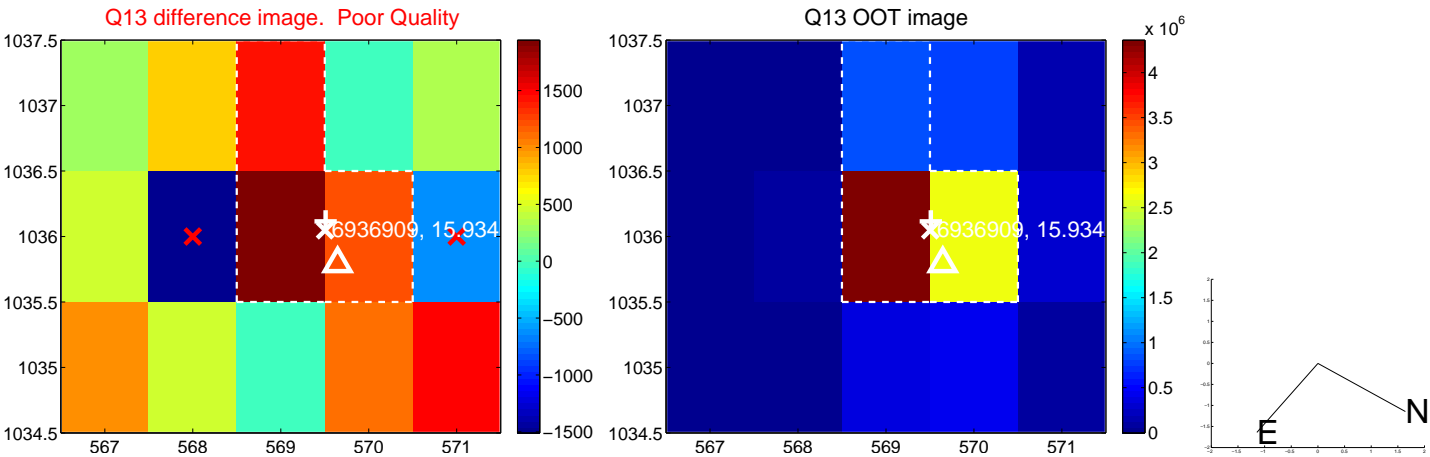
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



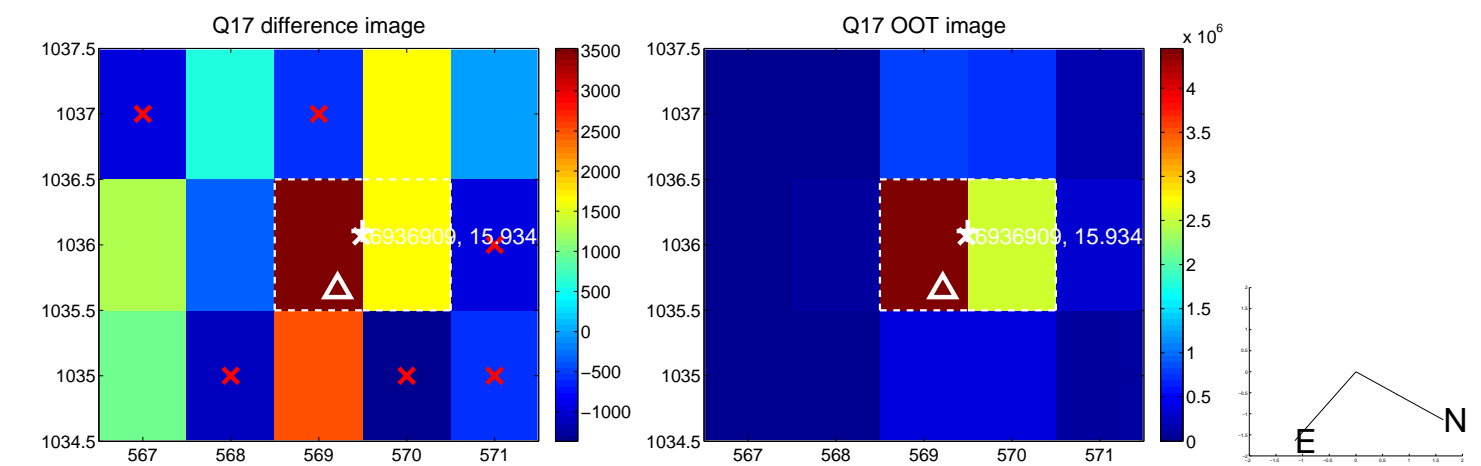
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



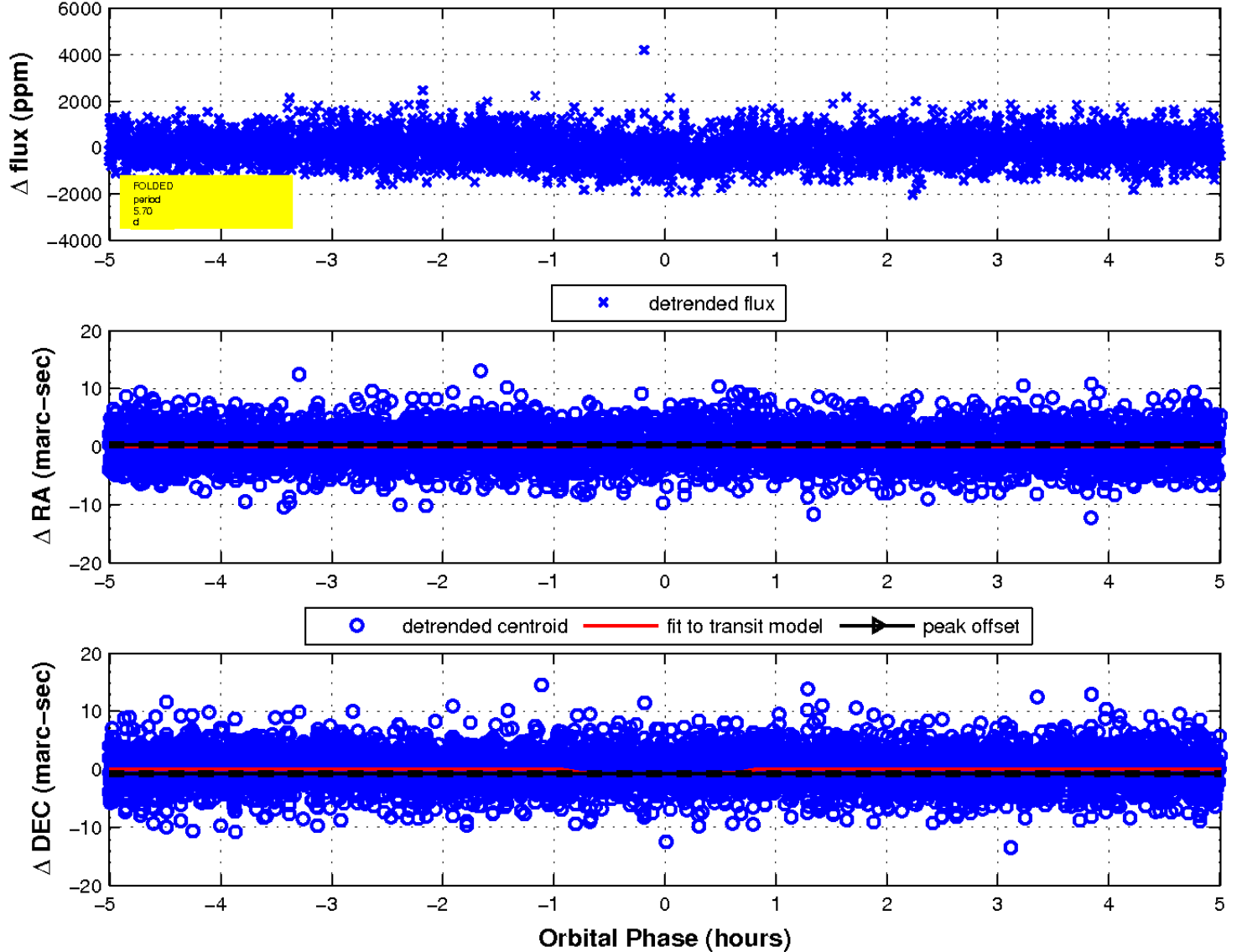
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 2 of 2



UKIRT Image

Declination

