

KIC 006436505

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})
006436505-01	OBS	6707.01	43.536056	155.197666	494.9	4.677	9.8	10.5	0.78	5481	1.82	9.20
006436505-02	OBS	6707.02	24.722198	146.461016	299.0	4.599	8.3	8.5	0.78	5481	1.52	19.57

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006436505-01	OBS	PC	0.99	0	0	0	0	CENT_FEW_MEAS
006436505-02	OBS	FP	0.37	1	0	0	0	MOD_NONUNIQ_ALT—CENT_FEW_DIFFS

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 006436505-01

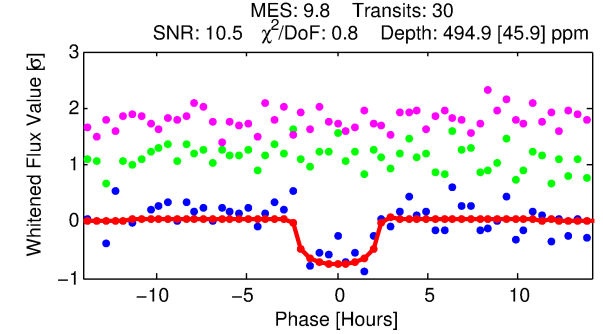
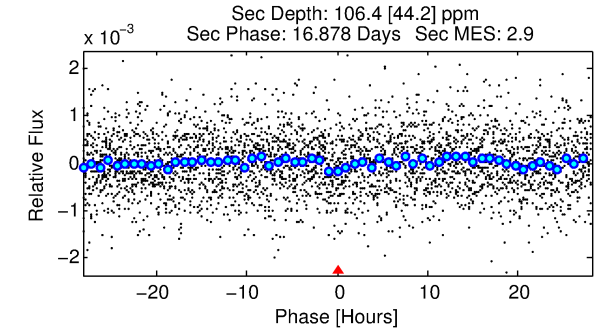
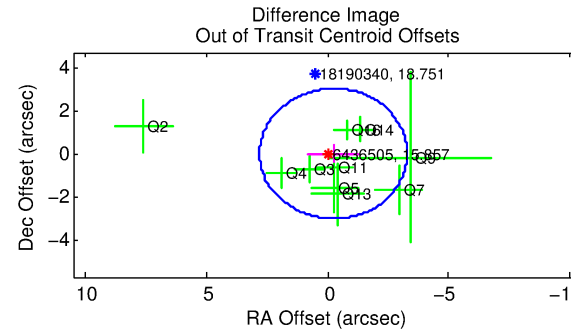
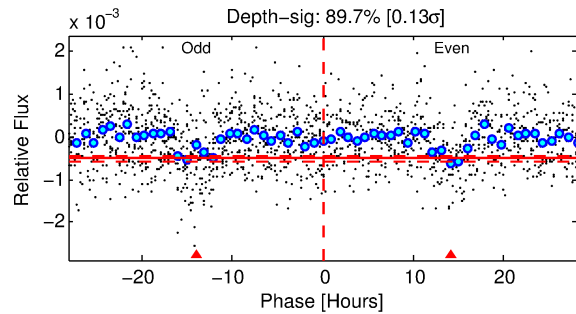
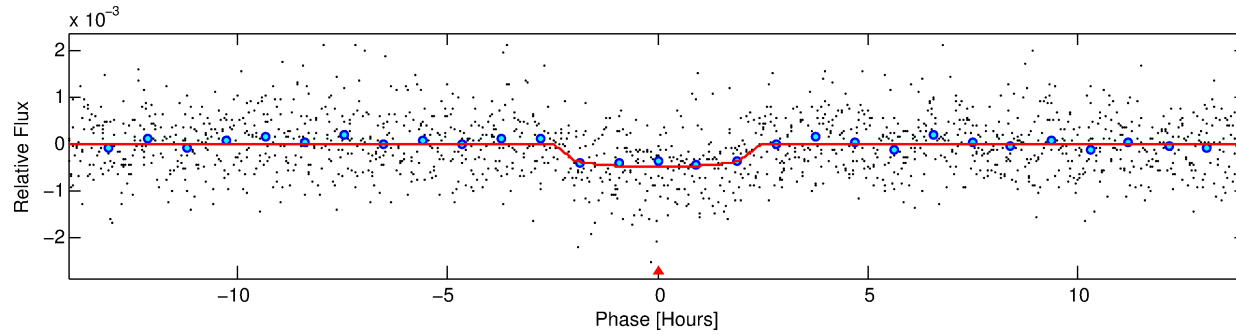
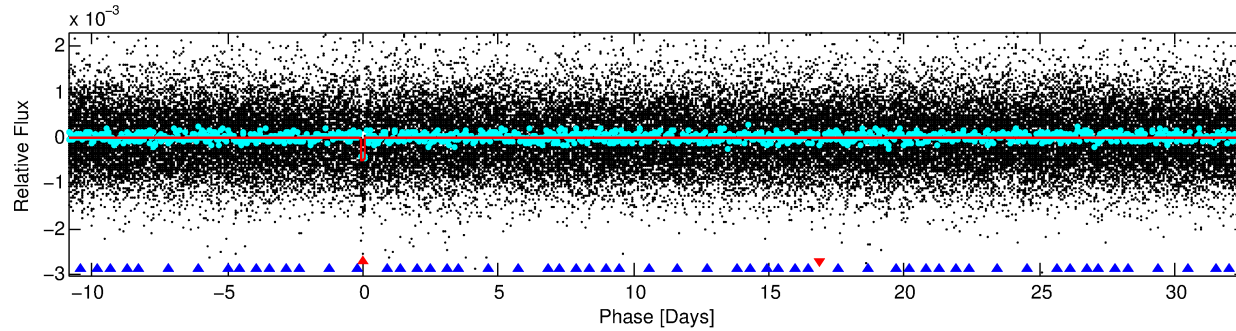
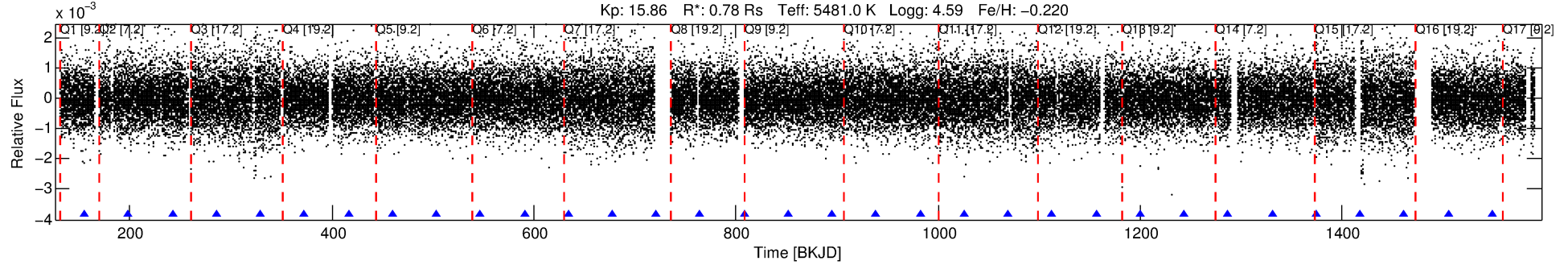
No Significant Match Found

DV One-Page Summary

KIC: 6436505 Candidate: 1 of 2 Period: 43.536 d

KOI: K06707.01 Corr: 0.979

Kp: 15.86 R*: 0.78 Rs Teff: 5481.0 K Logg: 4.59 Fe/H: -0.220



DV Fit Results:

Period = 43.53606 [0.00046] d
Epoch = 155.1977 [0.0087] BKJD
Rp/R* = 0.0214 [0.0277]
a/R* = 56.01 [297.71]
b = 0.65 [4.79]
Seff = 9.20 [2.31]
Teq = 444 [28] K
Rp = 1.82 [2.37] Re
a = 0.2306 [0.0350] AU
Ag = 940.06 [2466.01] [0.38σ]
Teffp = 3802 [2487] K [1.35σ]

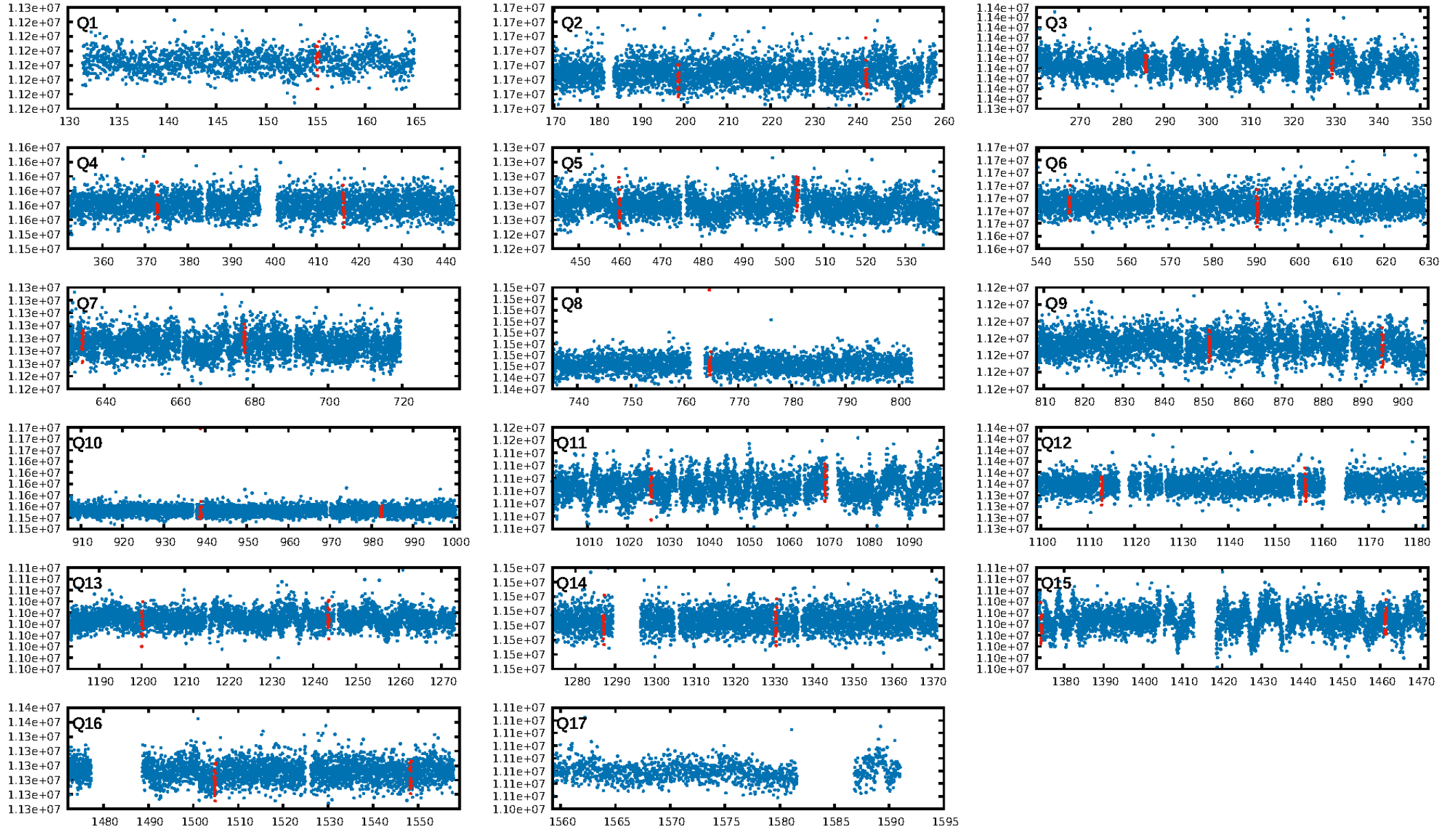
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [68.84σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 83.5%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 2.98e-22
RollingBand-fgt: 1.00 [29/29]
GhostDiagnostic-chr: 13.09
Centroid-sig: 85.5%
Centroid-so: 0.427 arcsec [0.31σ]
OotOffset-rm: 0.241 arcsec [0.24σ]
KicOffset-rm: 0.152 arcsec [0.18σ]
OotOffset-st: 2/3/2/3 [10]
KicOffset-st: 2/3/2/3 [10]
DiffImageQuality-fgm: 0.40 [4/10]
DiffImageOverlap-fno: 1.00 [15/15]

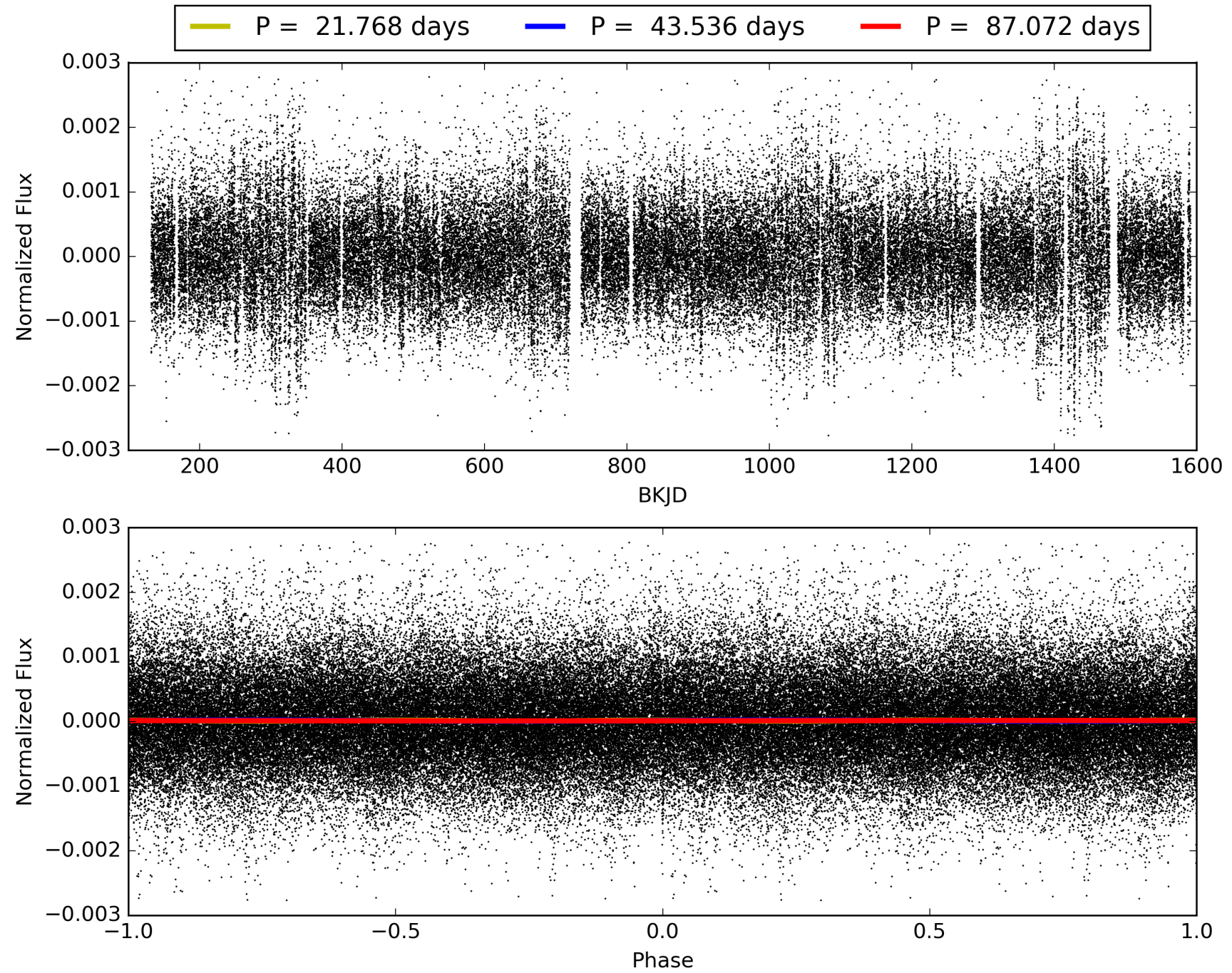
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 18:57:29 Z

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

TCE 006436505-01, PDC Light Curves

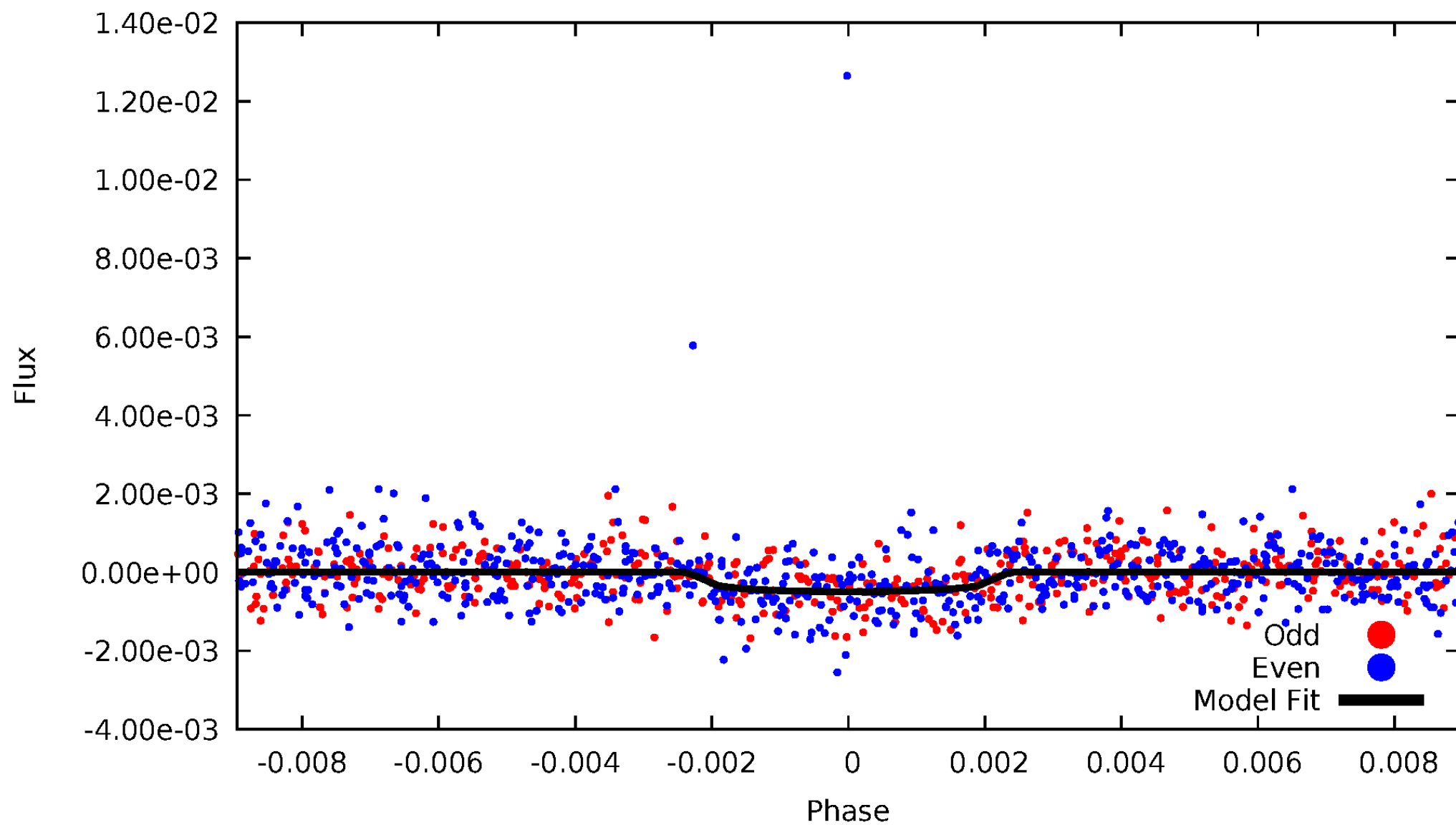


TCE 006436505-01



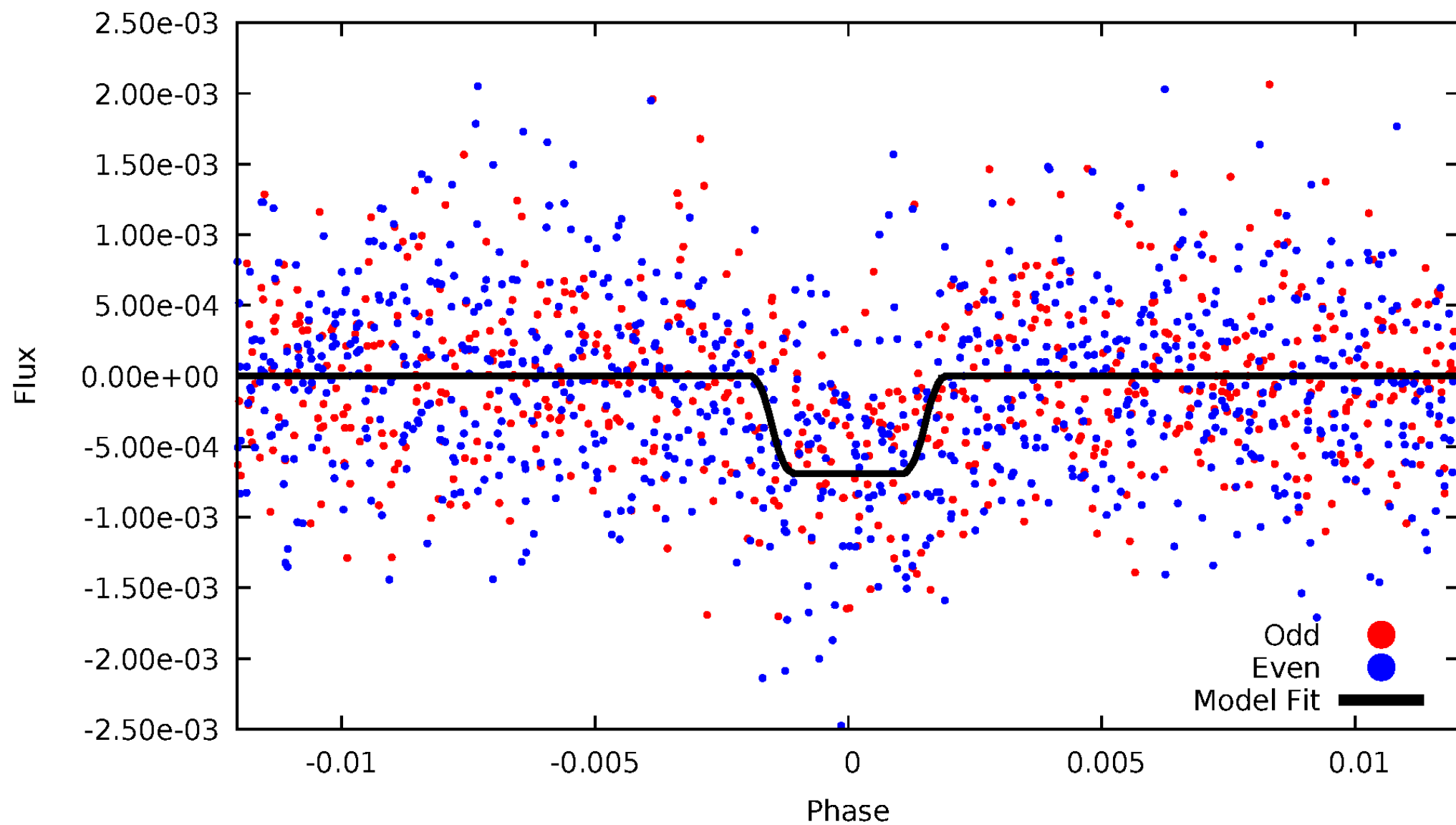
DV Odd/Even

TCE 006436505-01

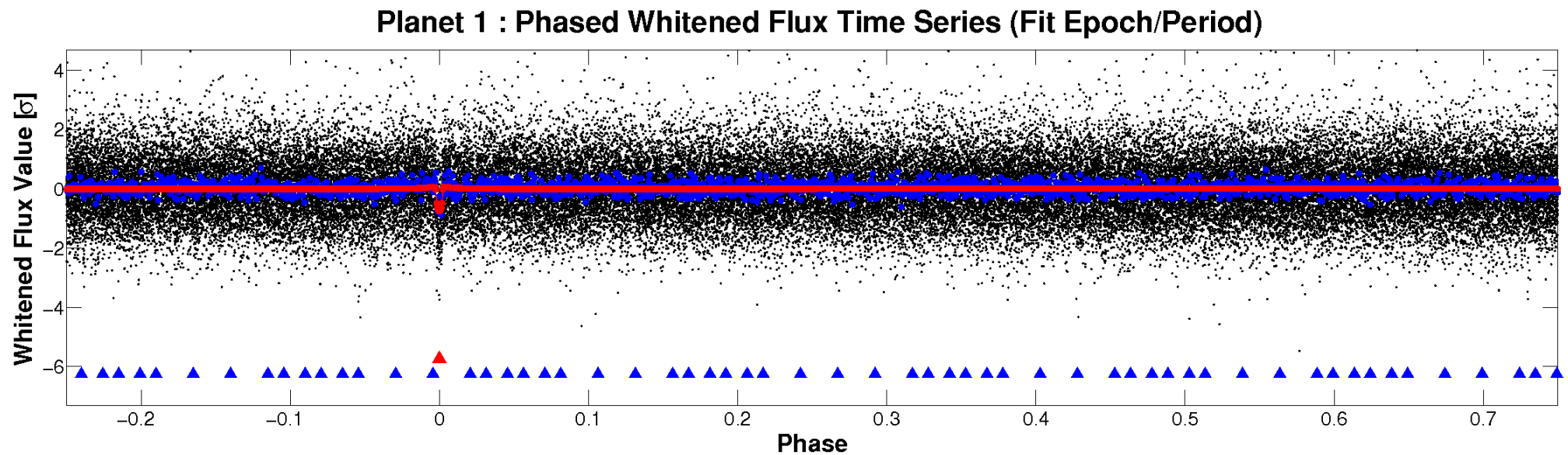
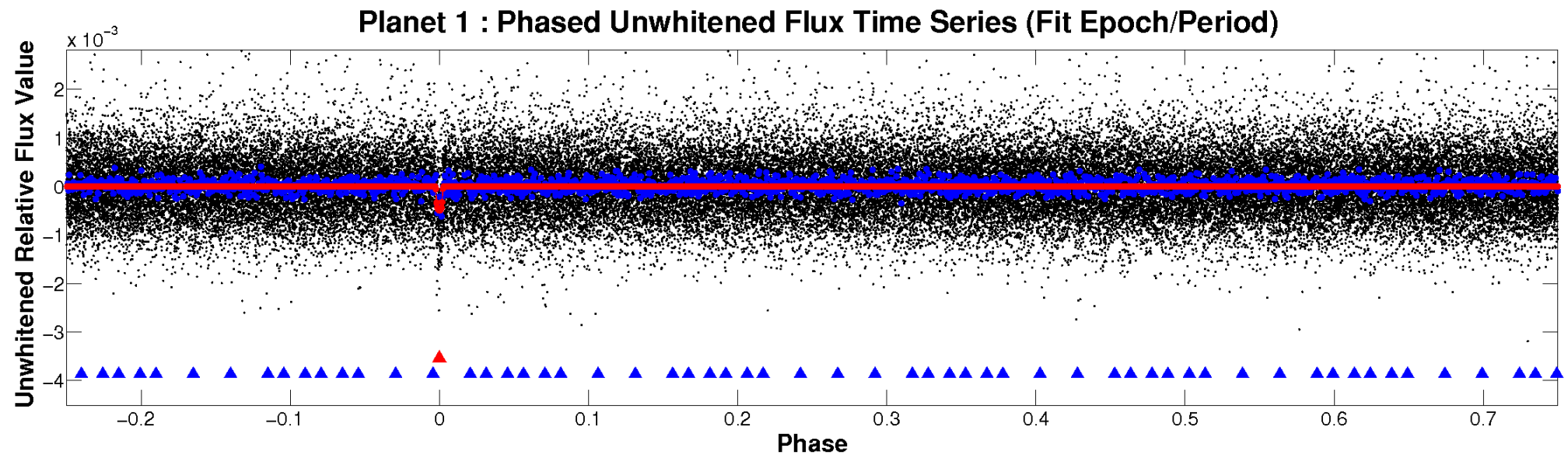


ALT Odd/Even

TCE 006436505-01

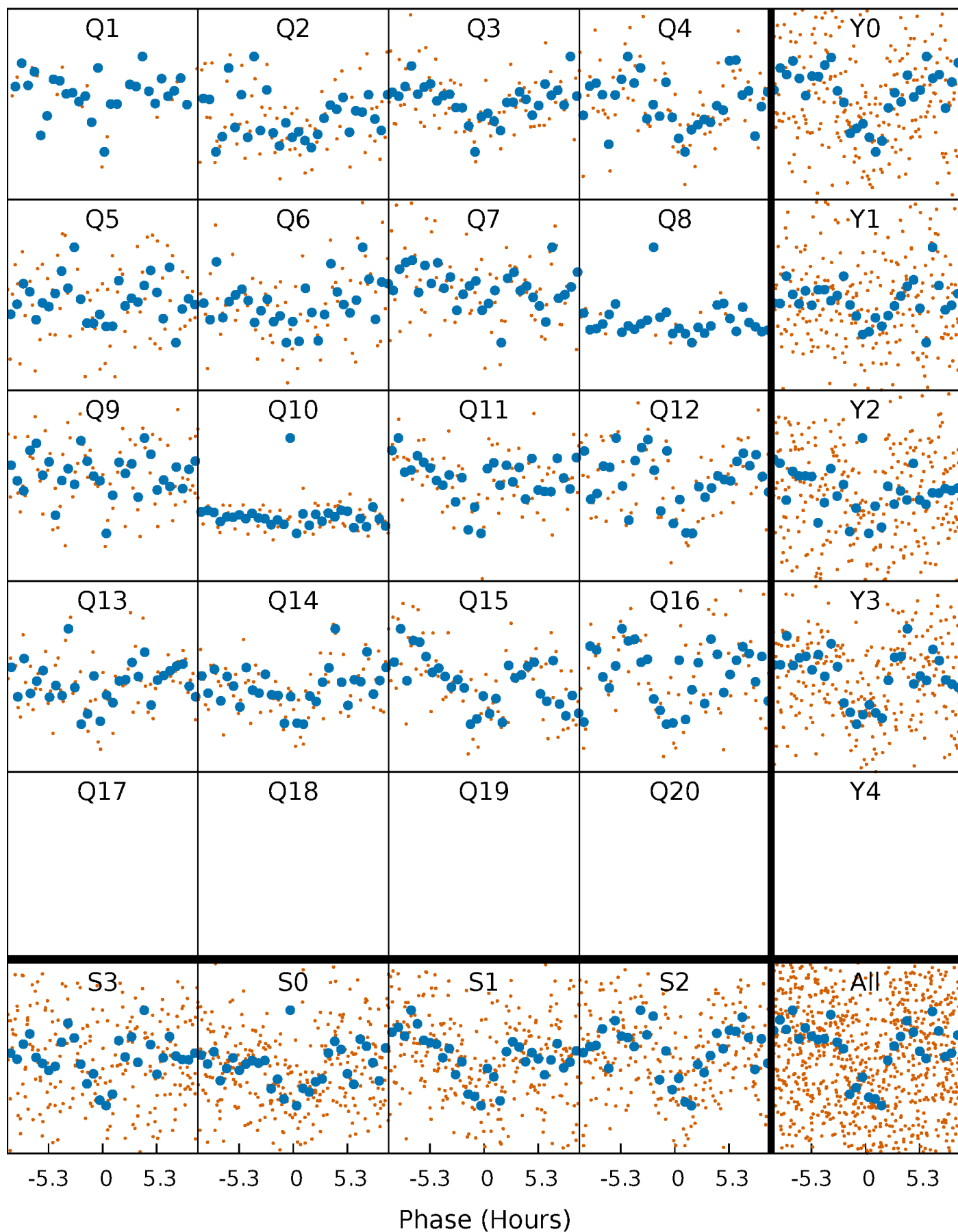


Non-Whitened Vs. Whitened Light Curve



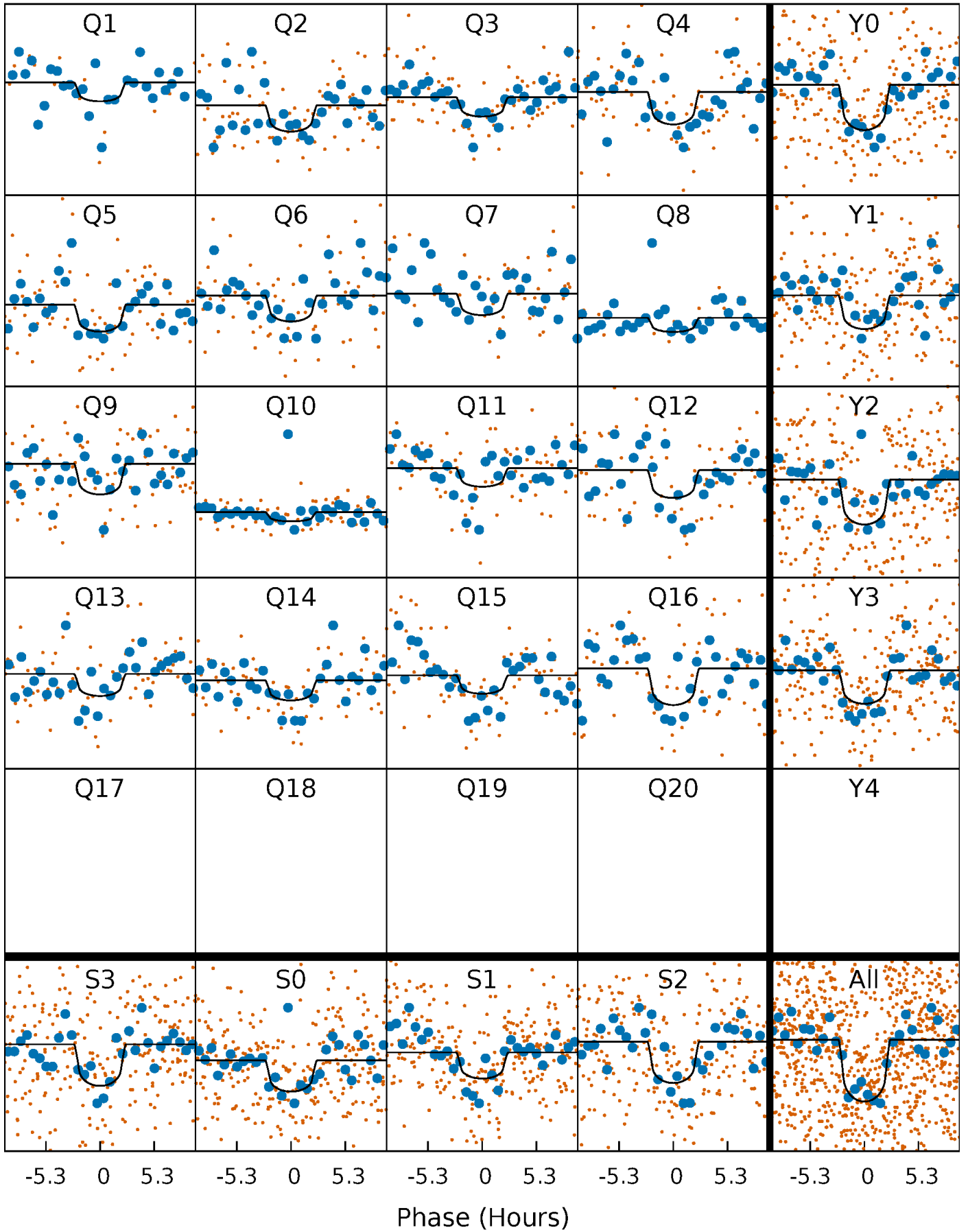
PDC Quarter-Phased Transit Curves

TCE 006436505-01 P= 43.536056 Days $T_0=155.197666$ (BKJD)



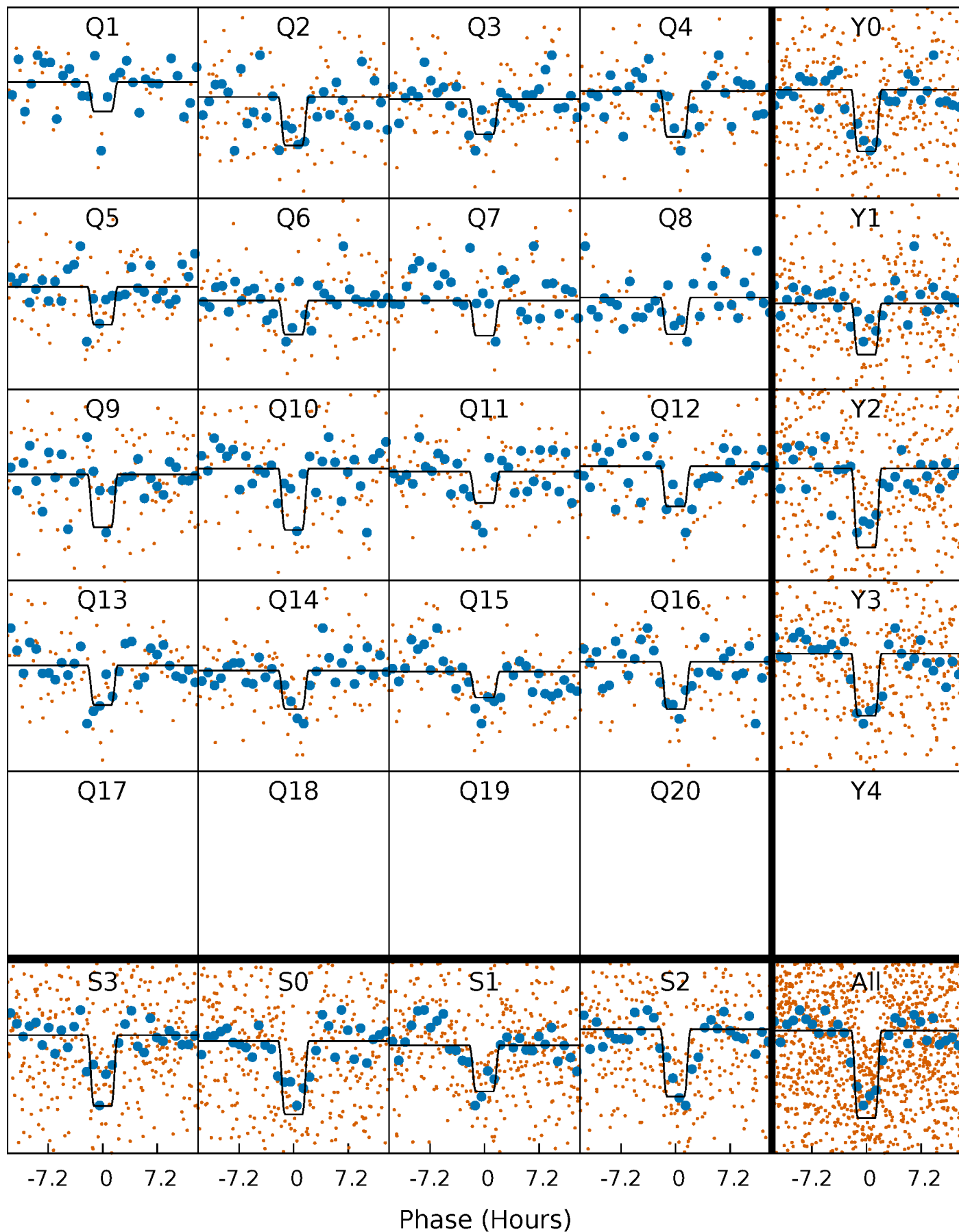
DV Quarter-Phased Transit Curves

TCE 006436505-01 P= 43.536056 Days $T_0=155.197666$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

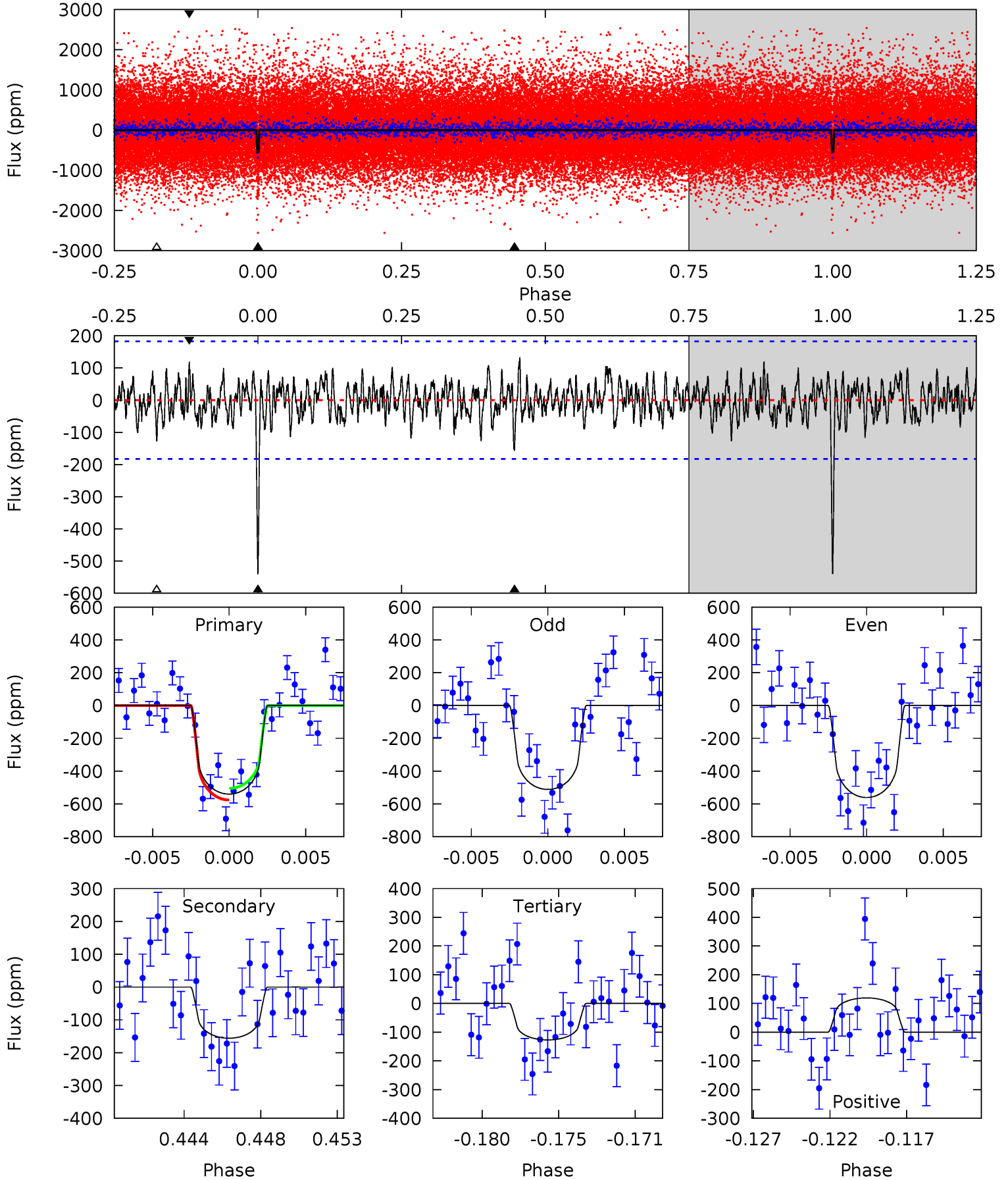
TCE 006436505-01 P= 43.534835 Days $T_0=155.221086$ (BKJD)



DV Model-Shift Uniqueness Test

006436505-01, P = 43.536056 Days, E = 111.661610 Days

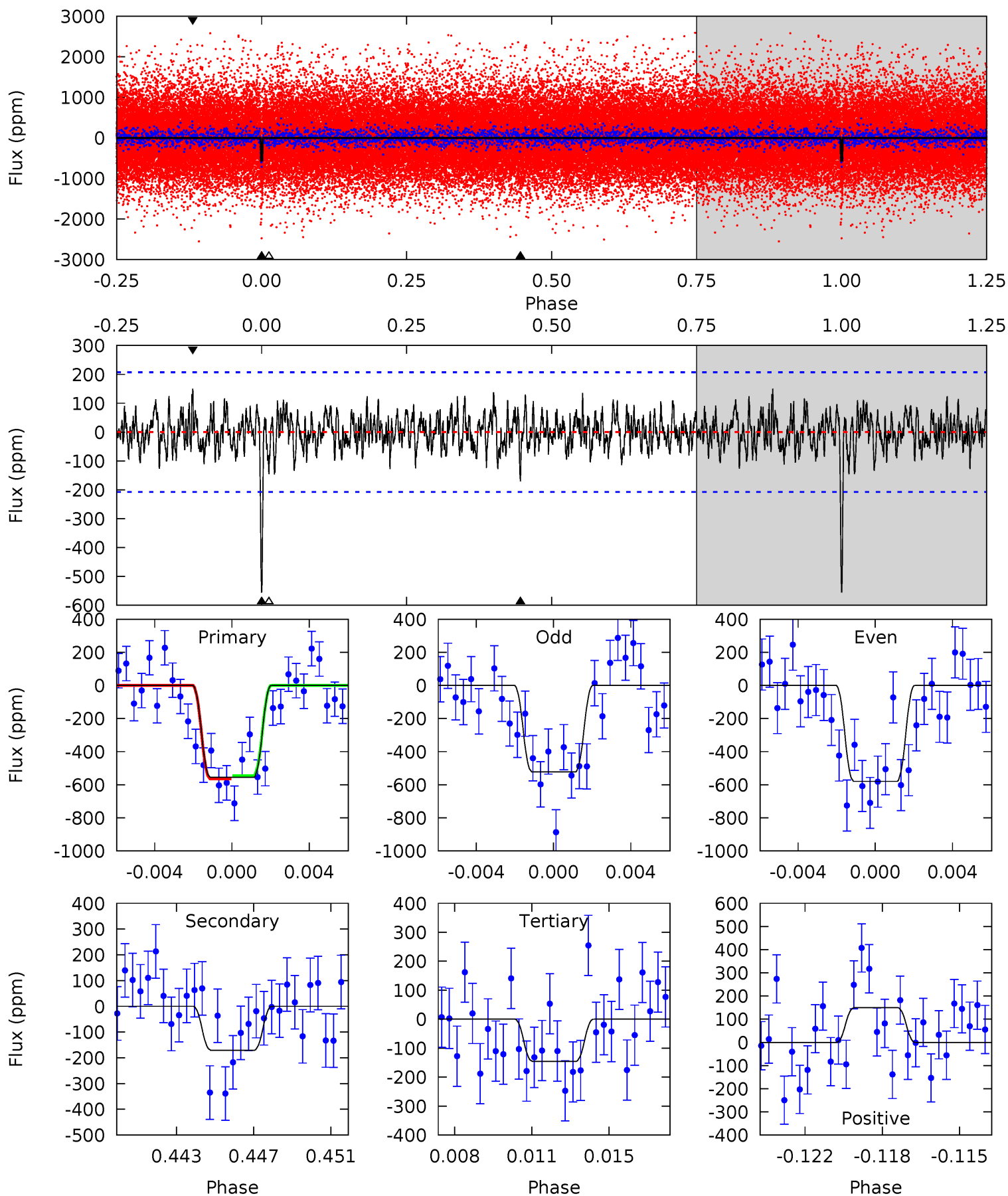
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
15.3	4.41	3.59	3.37	5.16	2.82	1.22	11.7	11.9	0.81	1.04	0.69	0.90	0.20	1.00



Alt Model-Shift Uniqueness Test

006436505-01, P = 43.534835 Days, E = 111.686251 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
14.0	4.28	3.66	3.76	5.21	2.89	1.22	10.3	10.2	0.62	0.52	0.71	0.98	0.21	0.25



Stellar Parameters For KIC 006436505

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5481^{+166}_{-149}	$4.592^{+0.032}_{-0.120}$	$-0.220^{+0.300}_{-0.300}$	$0.778^{+0.141}_{-0.065}$	$0.871^{+0.075}_{-0.100}$	$2.607^{+0.444}_{-0.985}$
	+3%/-3%	+1%/-3%	+136%/-136%	+18%/-8%	+9%/-11%	+17%/-38%
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 006436505-01 / KOI 6707.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-156 ± 35	$2.57^{+2.15}_{-1.69}$	630^{+30}_{-24}	3872^{+2189}_{-672}	661^{+5019}_{-463}
Alt.	-170 ± 40	$2.73^{+2.33}_{-1.77}$	631^{+29}_{-23}	3885^{+1948}_{-710}	643^{+4255}_{-460}

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

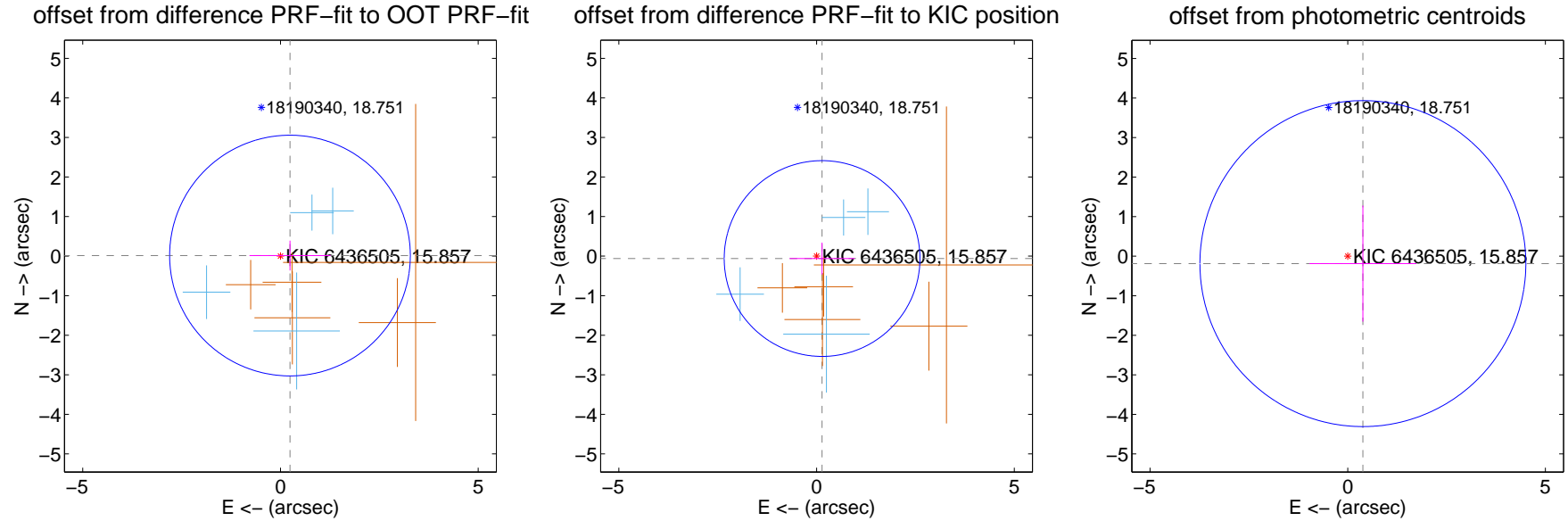
DV Centroid Data

Supplemental centroid analysis for 006436505-01. Kepler magnitude: 15.86. Transit SNR 10.49

There are 4 quarters with good PRF difference image offsets

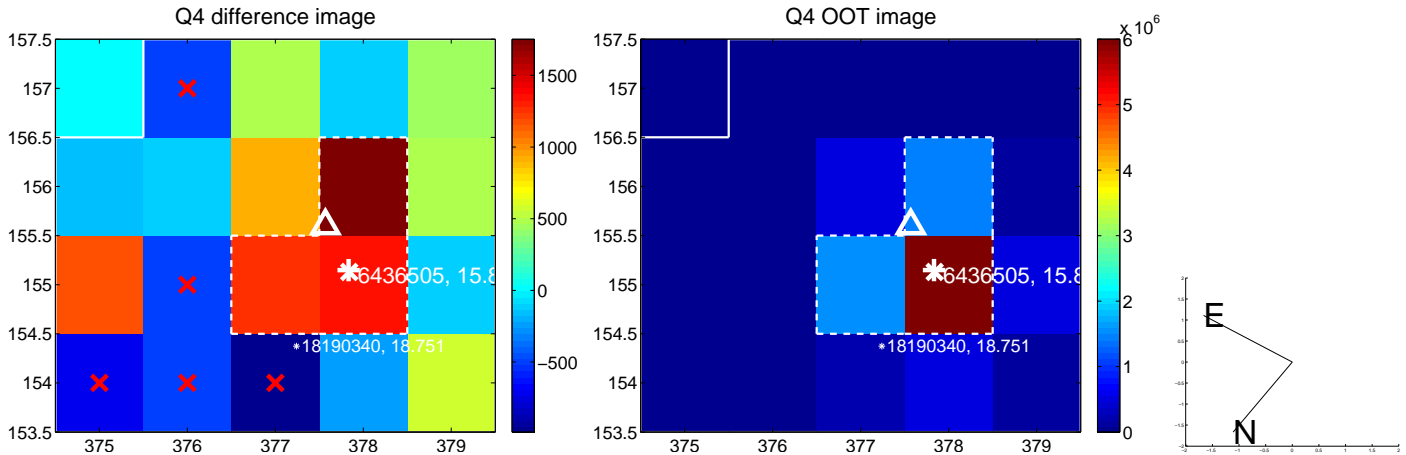
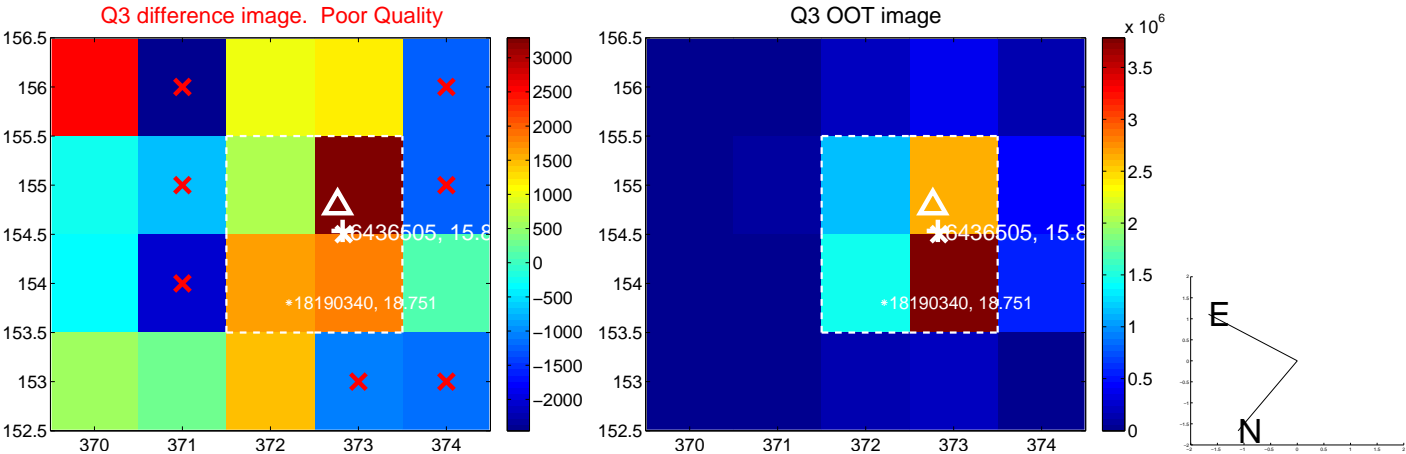
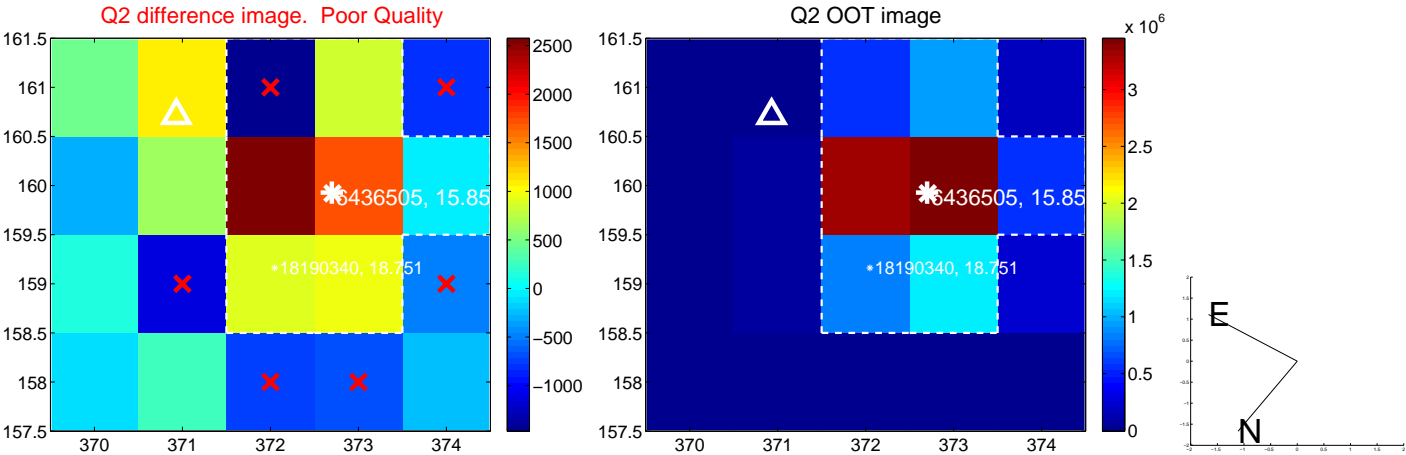
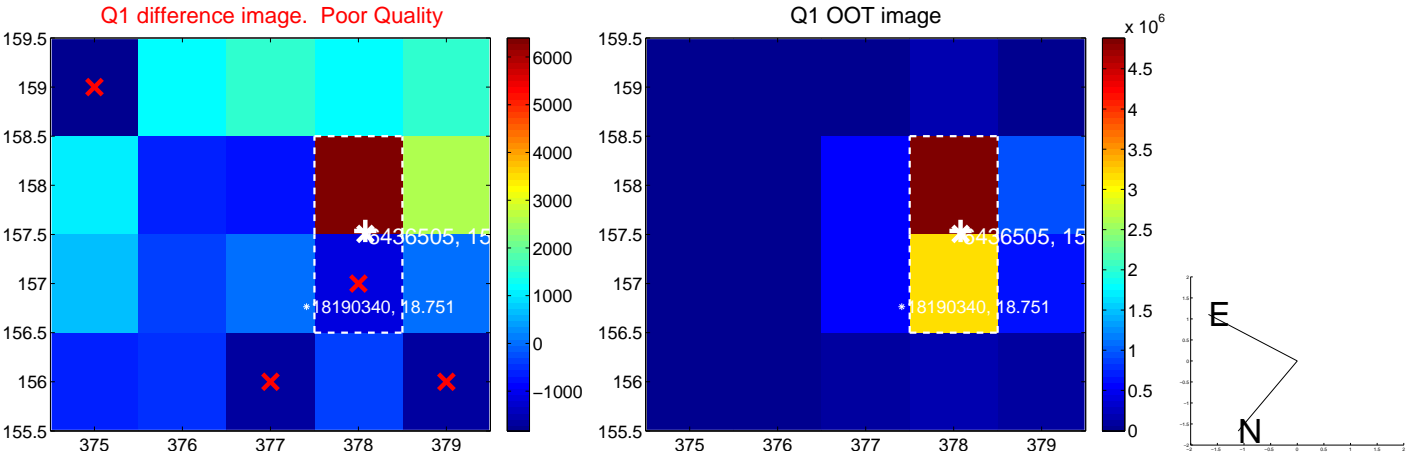
The direct PRF centroid is offset from the target star catalog position by about 0.17 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.241 ± 1.014	0.24	-0.241 ± 1.025	0.014 ± 0.378
PRF-fit source offset from KIC position	0.152 ± 0.825	0.18	-0.139 ± 0.823	-0.061 ± 0.402
photometric centroid source offset	0.43 ± 1.37	0.31	-0.38 ± 1.35	-0.19 ± 1.47

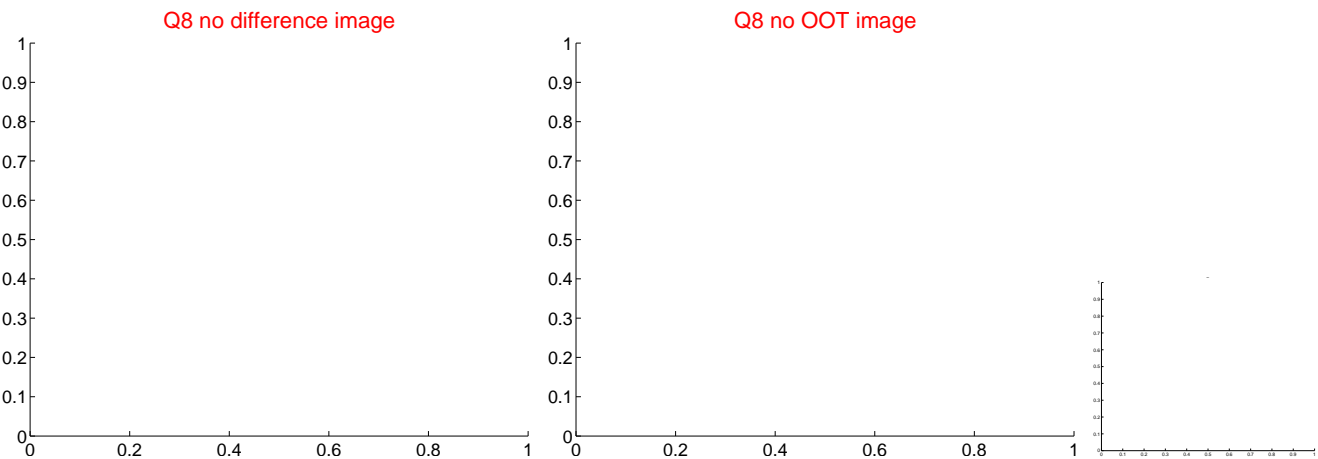
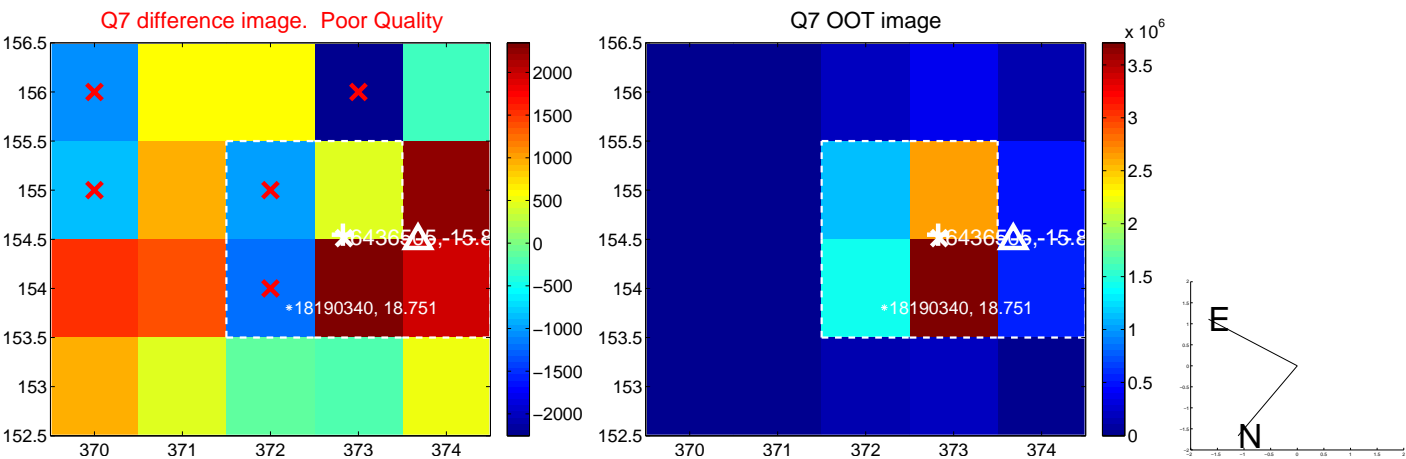
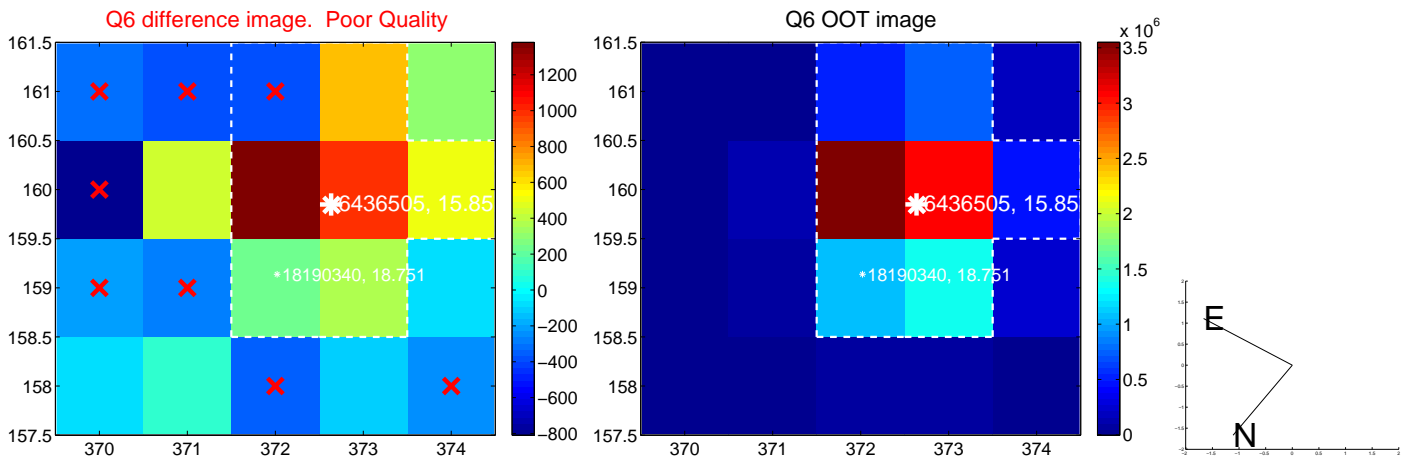
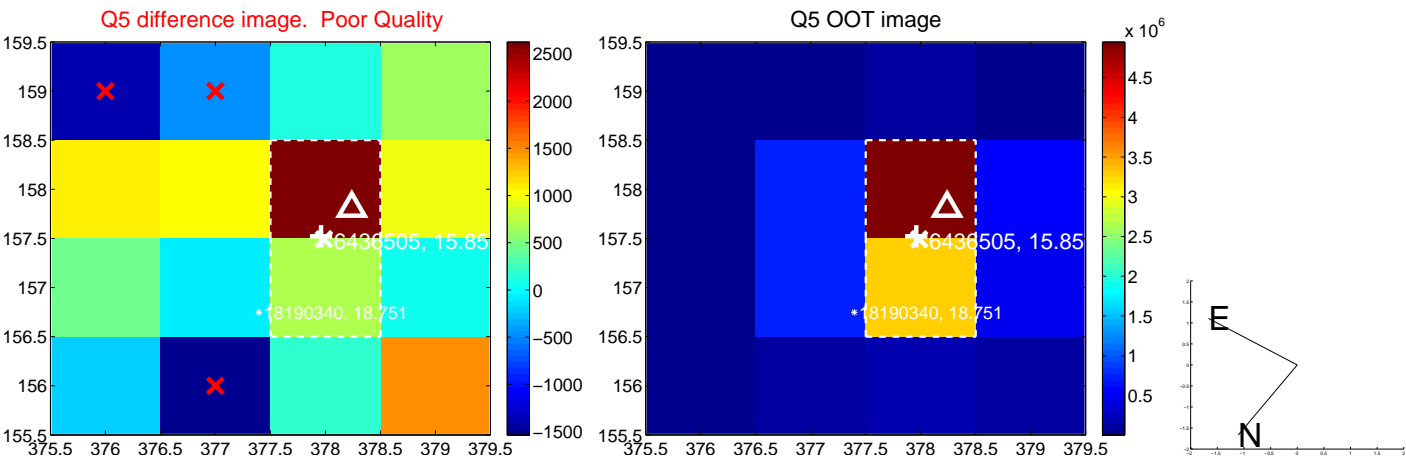


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

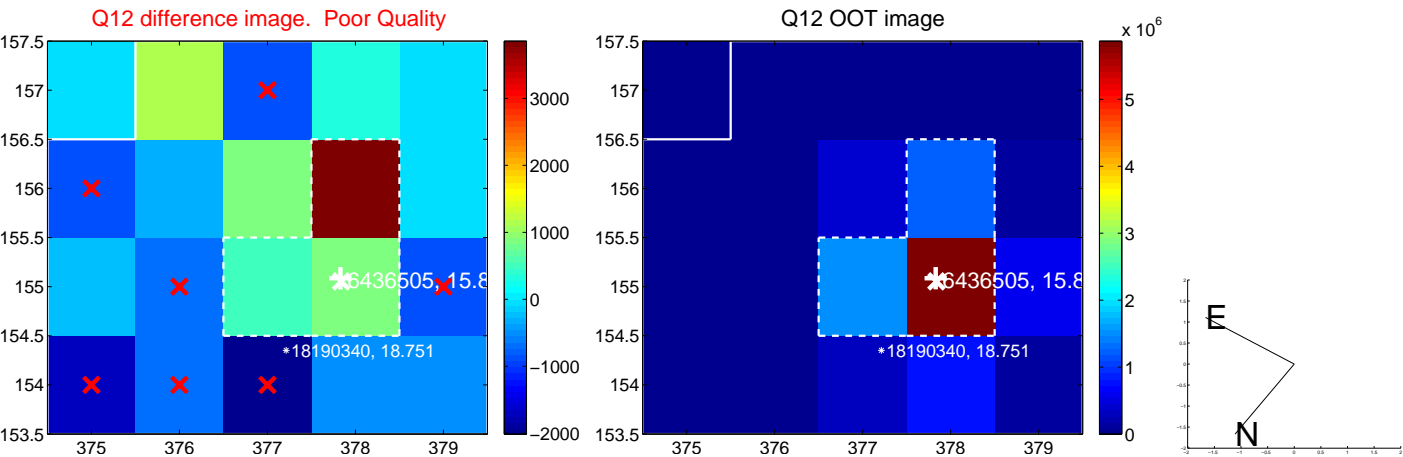
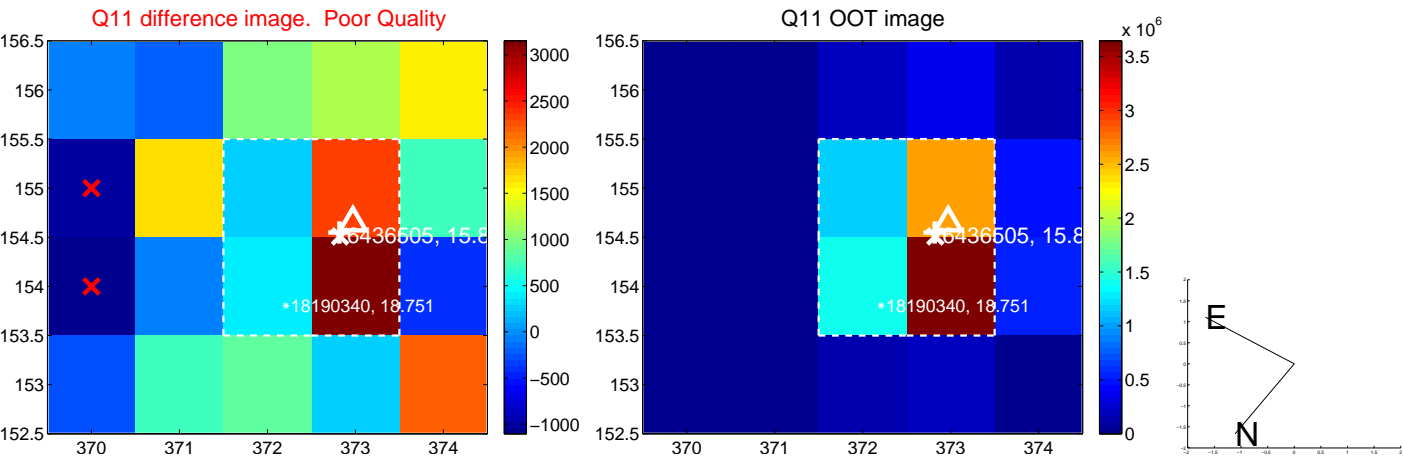
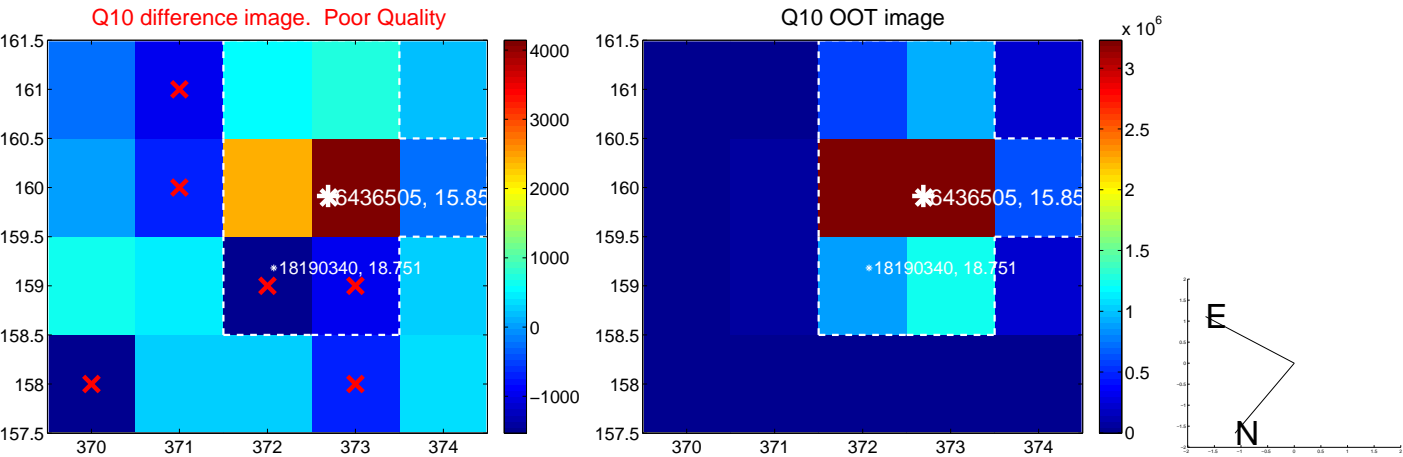
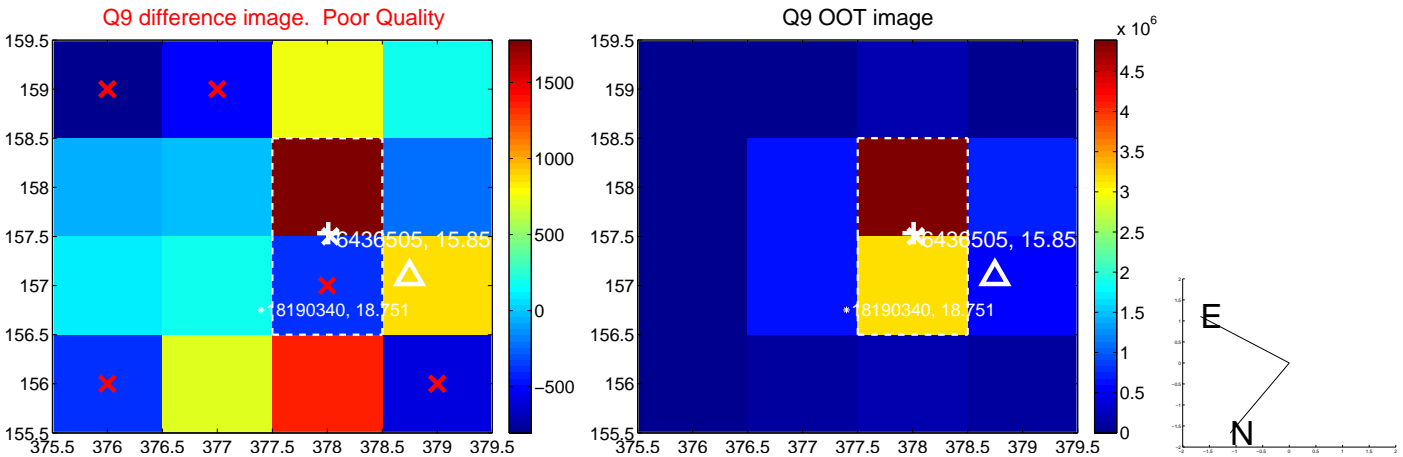
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



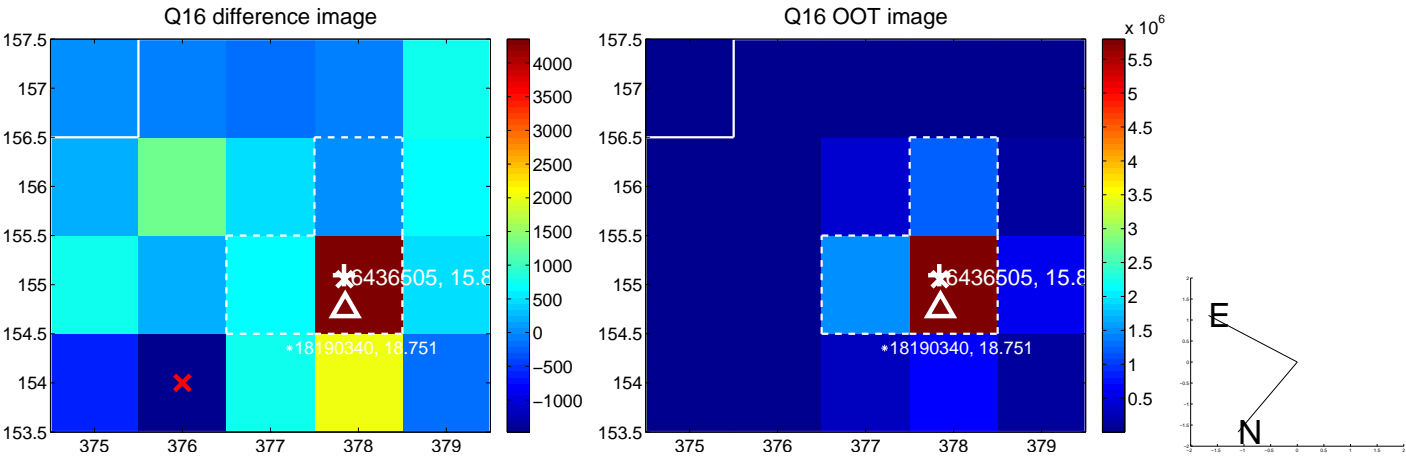
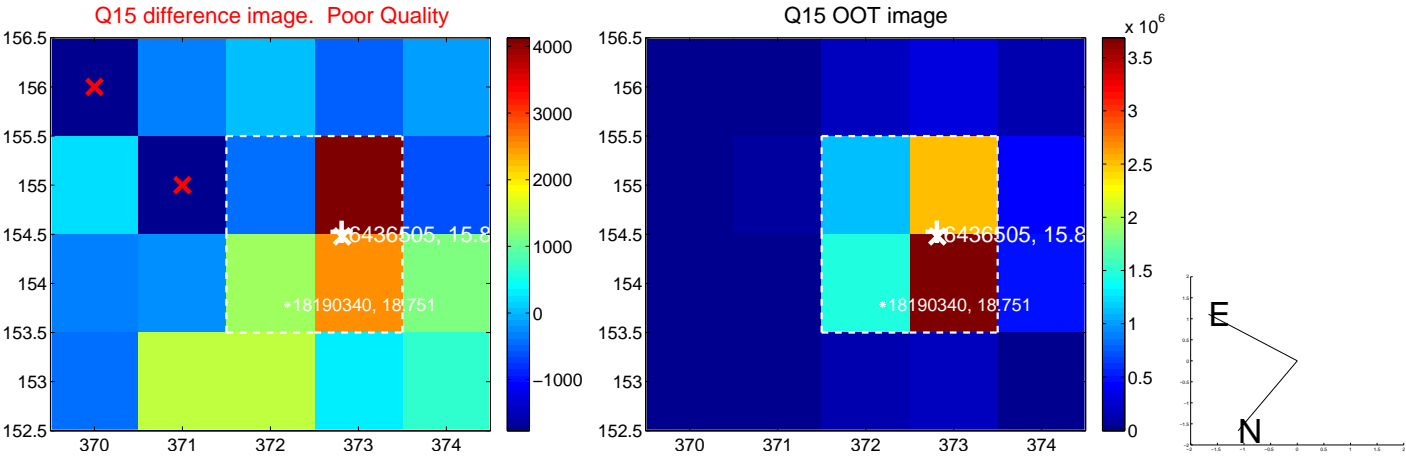
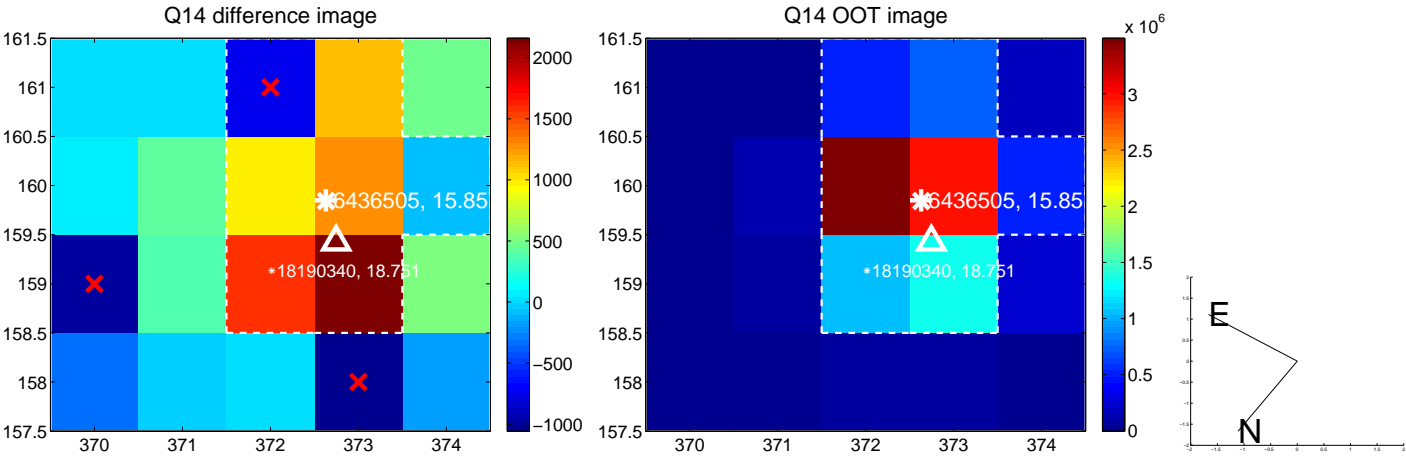
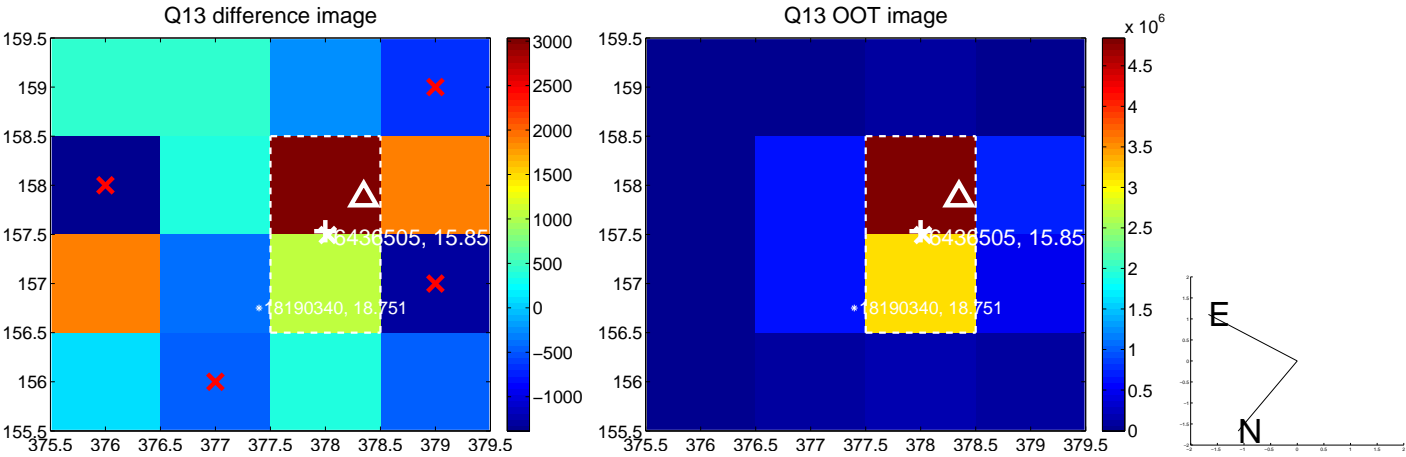
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



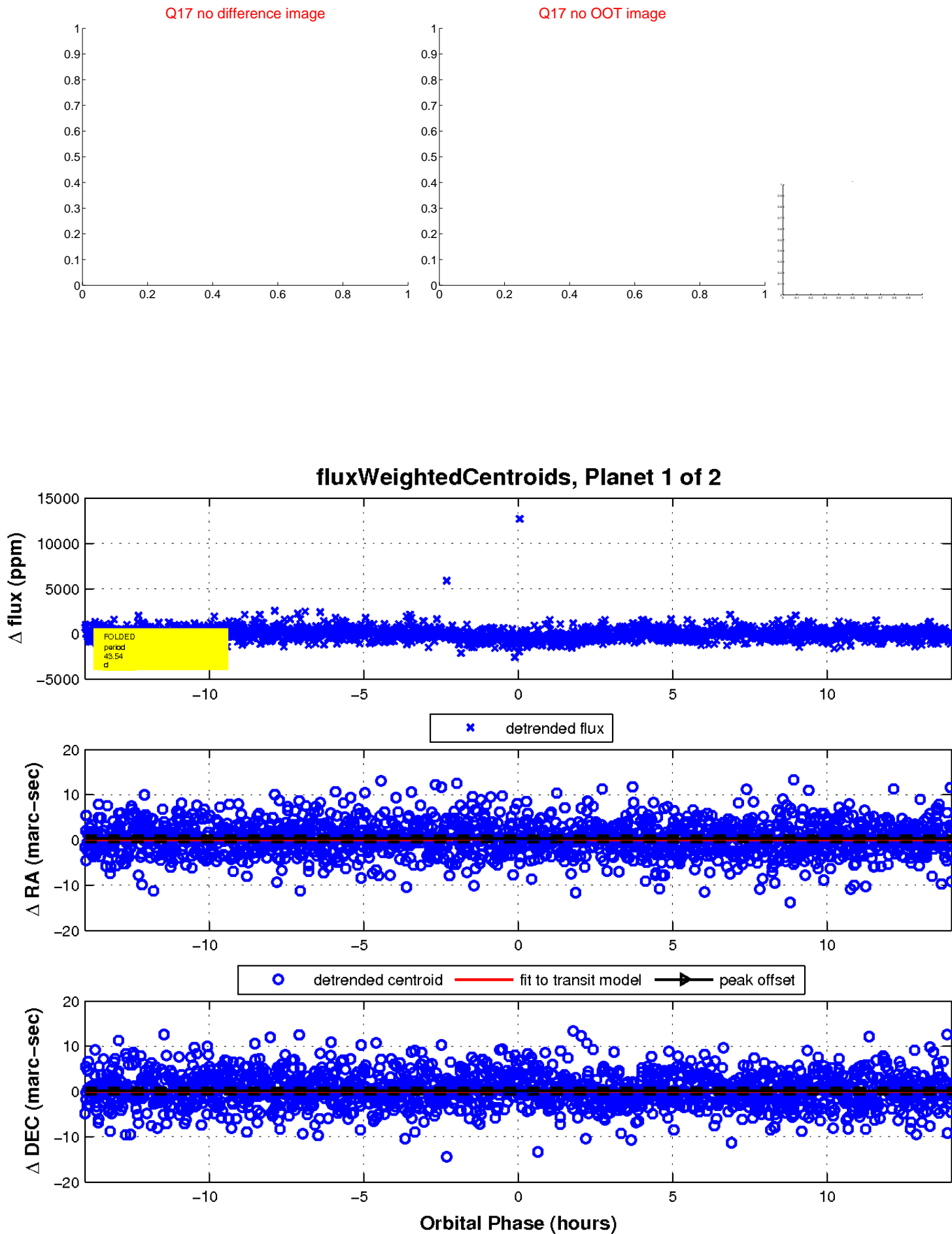
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

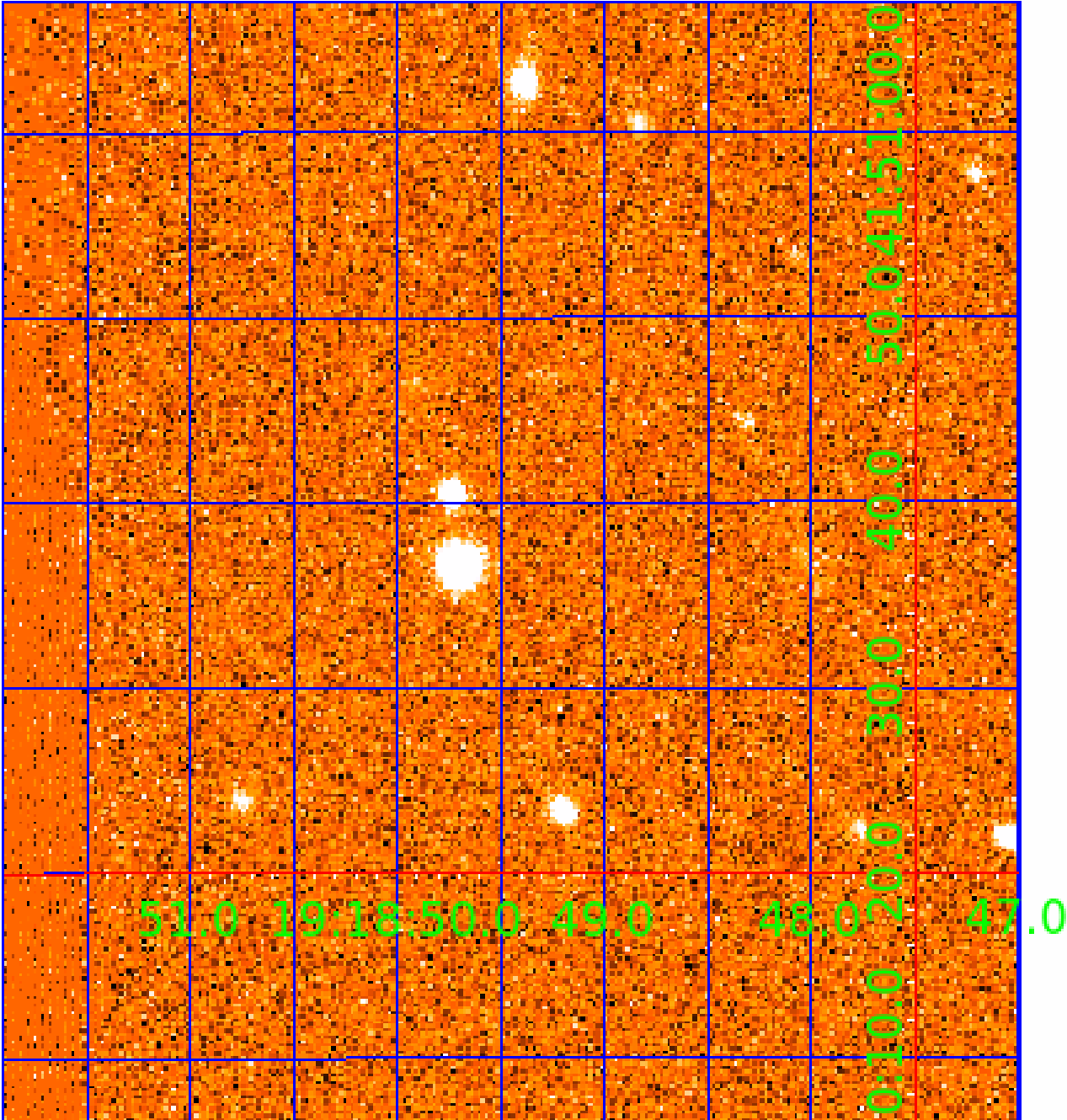


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 006436505

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})
006436505-01	OBS	6707.01	43.536056	155.197666	494.9	4.677	9.8	10.5	0.78	5481	1.82	9.20
006436505-02	OBS	6707.02	24.722198	146.461016	299.0	4.599	8.3	8.5	0.78	5481	1.52	19.57

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006436505-01	OBS	PC	0.99	0	0	0	0	CENT_FEW_MEAS
006436505-02	OBS	FP	0.37	1	0	0	0	MOD_NONUNIQ_ALT—CENT_FEW_DIFFS

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.

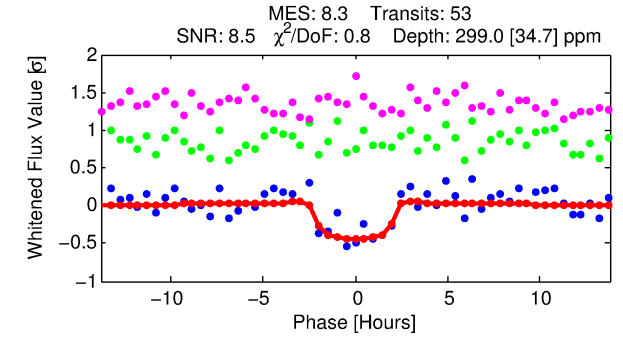
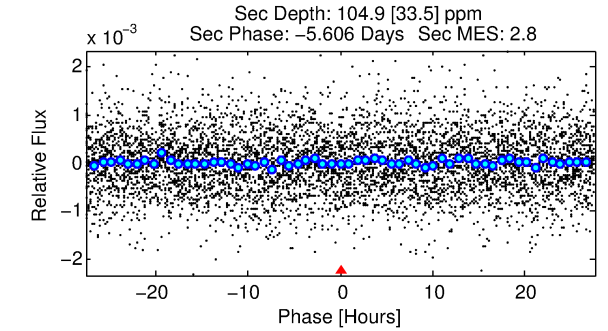
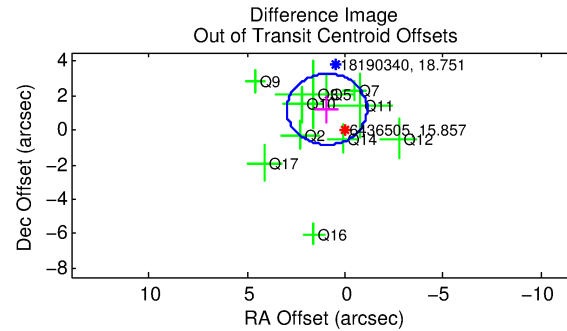
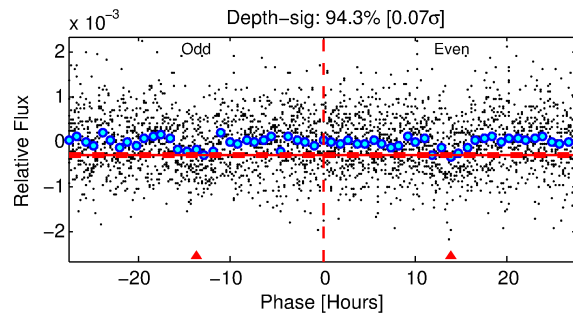
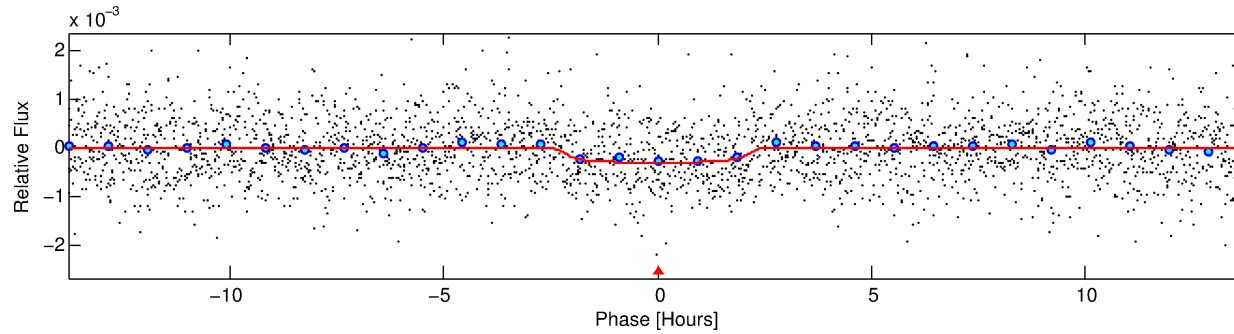
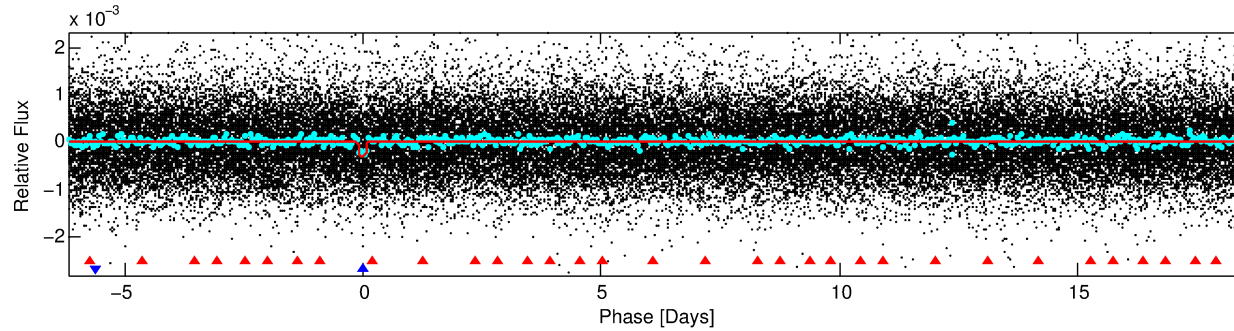
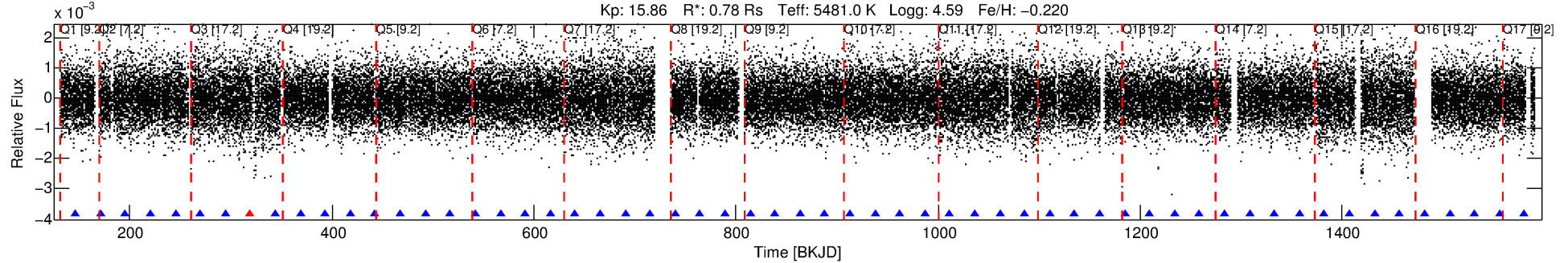
Ephemeris Match Information For 006436505-02

No Significant Match Found

DV One-Page Summary

KIC: 6436505 Candidate: 2 of 2 Period: 24.722 d
KOI: K06707 Corr: No Ephemeris Match

Kp: 15.86 R*: 0.78 Rs Teff: 5481.0 K Logg: 4.59 Fe/H: -0.220



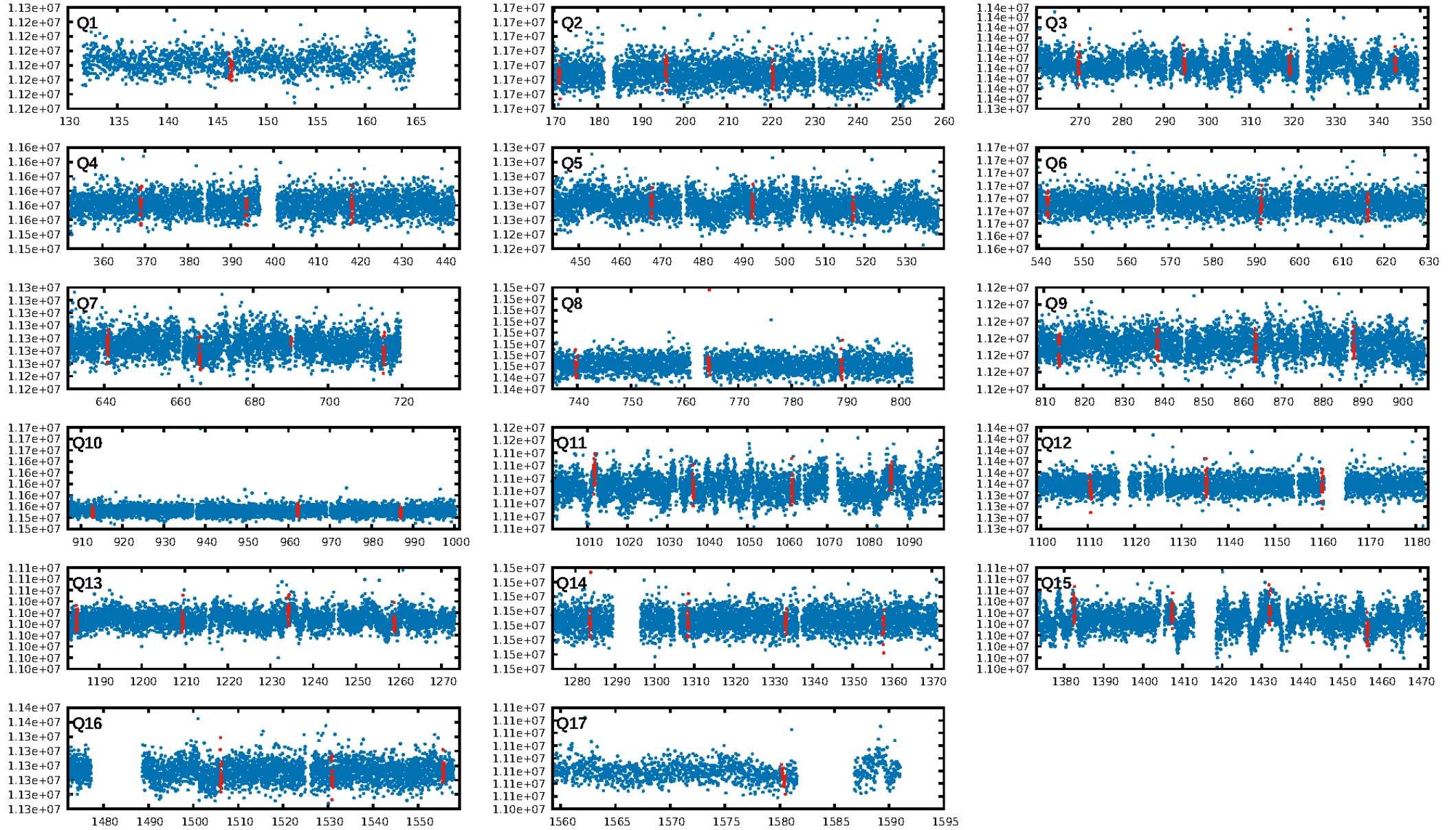
DV Fit Results:

Period = 24.72220 [0.00032] d
Epoch = 146.4610 [0.0110] BKJD
Rp/R* = 0.0179 [0.0149]
a/R* = 24.55 [87.54]
b = 0.82 [1.42]
Seff = 19.57 [4.92]
Teq = 536 [34] K
Rp = 1.52 [1.29] Re
a = 0.1582 [0.0240] AU
Ag = 627.95 [1073.38] [0.58σ]
Teff = 4151 [1763] K [2.05σ]

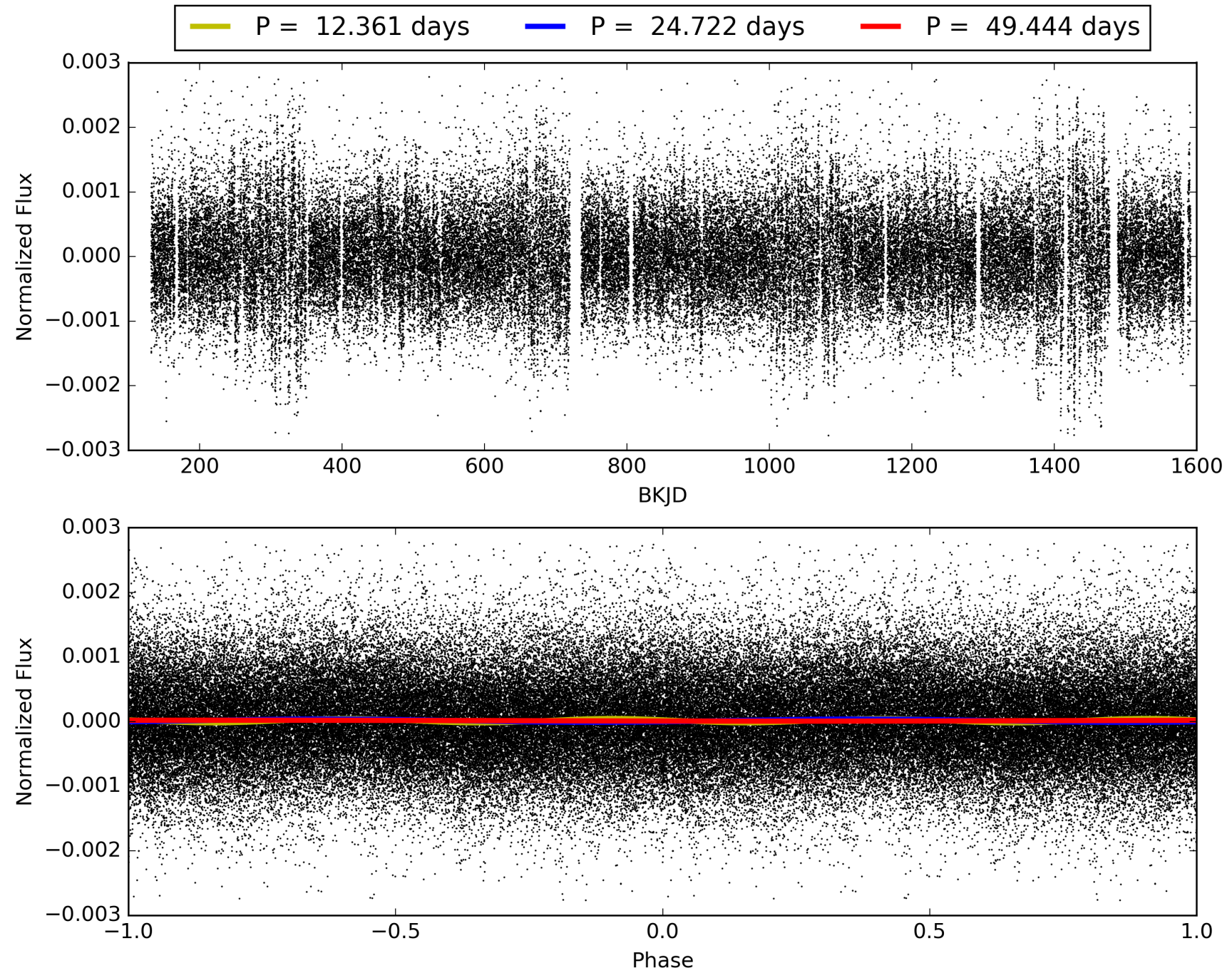
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [68.84σ]
ModelChiSquare2-sig: 99.8%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 1.22e-16
RollingBand-fgt: 0.98 [50/51]
GhostDiagnostic-chr: 1.132
Centroid-sig: 7.0%
Centroid-so: 2.958 arcsec [1.72σ]
OotOffset-rm: 1.523 arcsec [2.22σ]
KicOffset-rm: 1.544 arcsec [2.16σ]
OotOffset-st: 3/3/2/3 [11]
KicOffset-st: 3/3/2/3 [11]
DiffImageQuality-fgm: 0.18 [2/11]
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TCE 006436505-02, PDC Light Curves

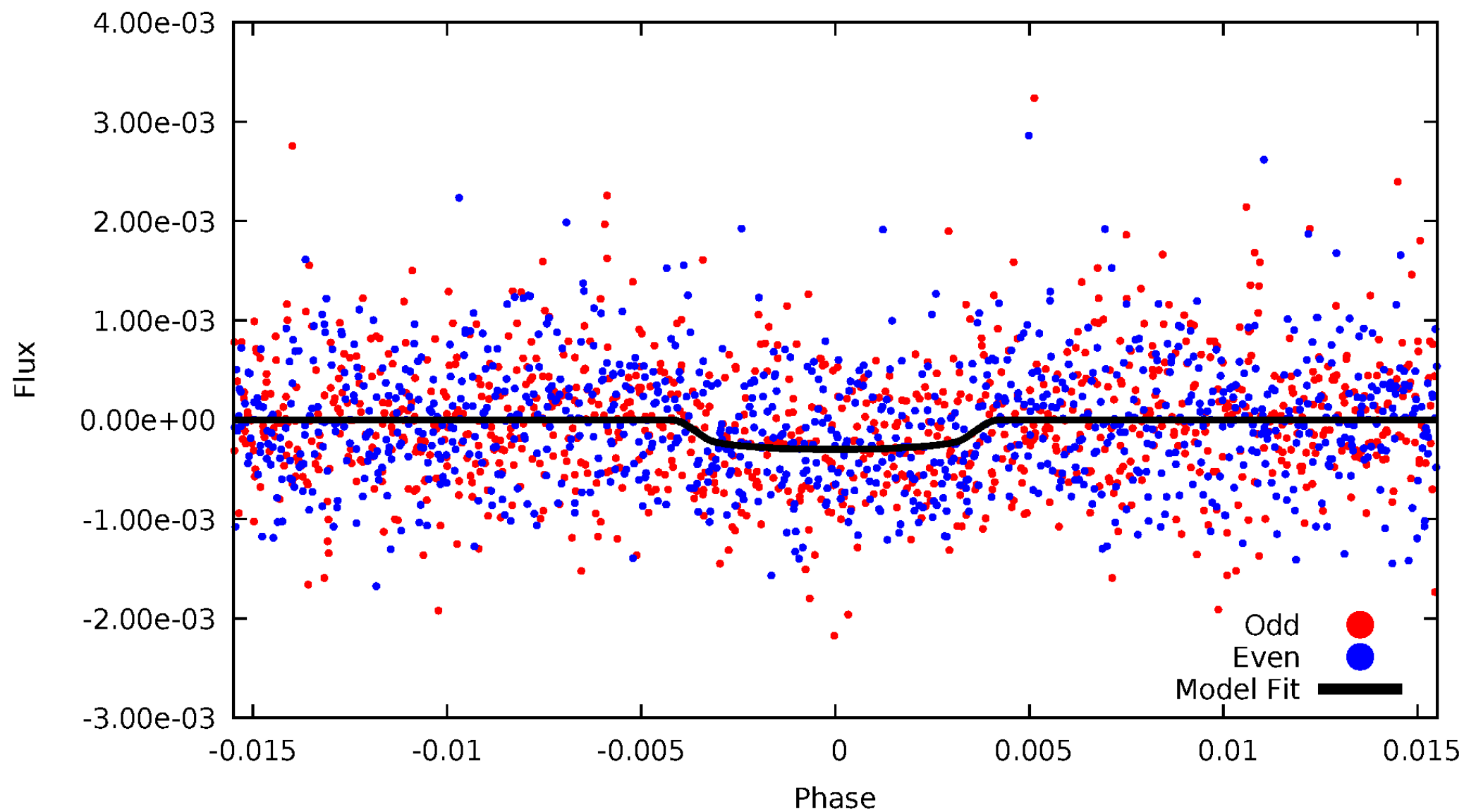


TCE 006436505-02



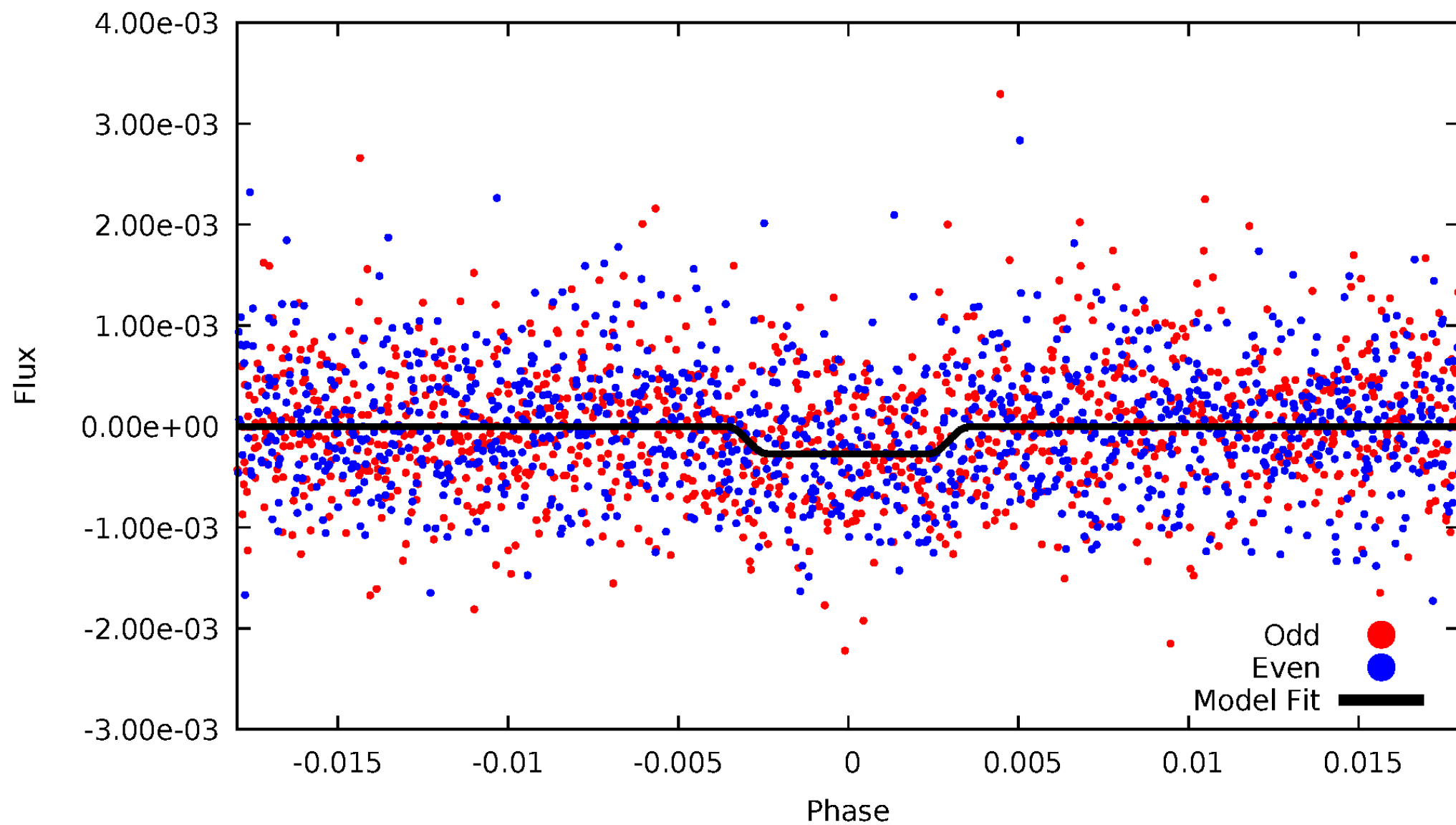
DV Odd/Even

TCE 006436505-02



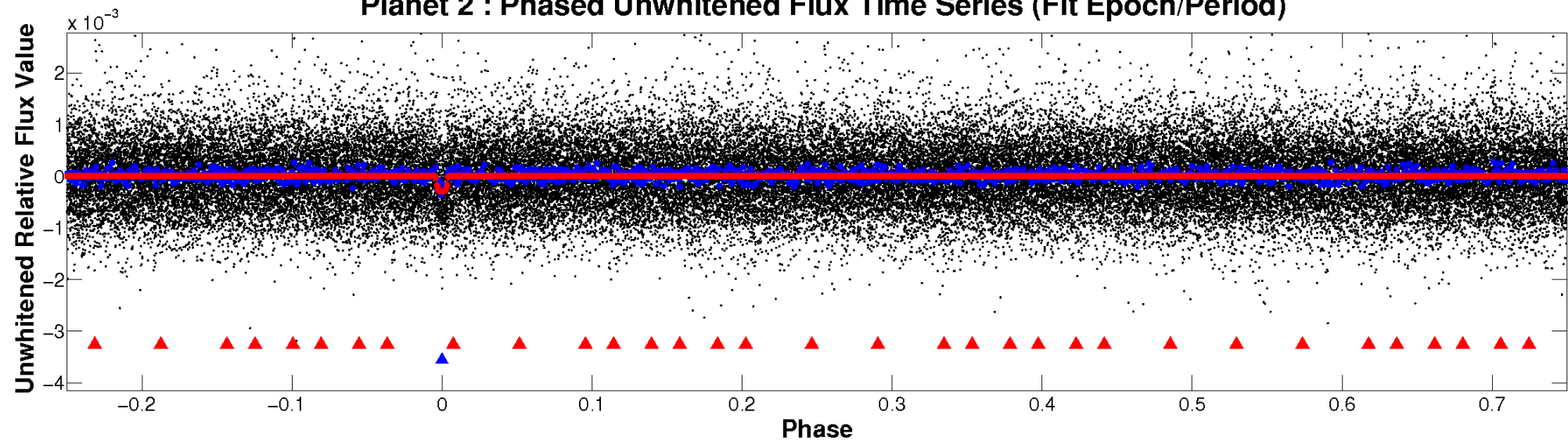
ALT Odd/Even

TCE 006436505-02

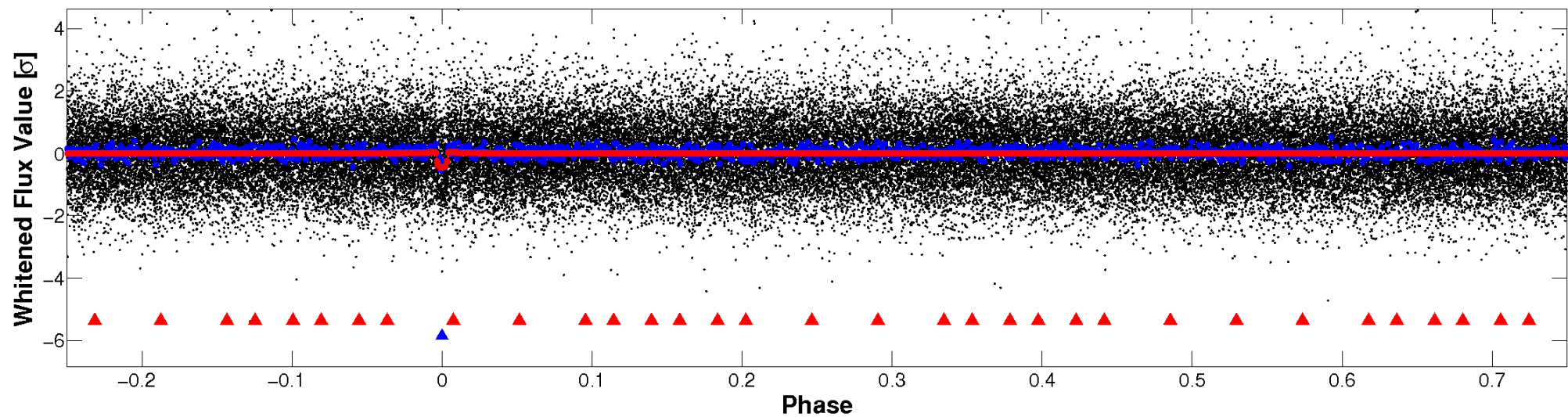


Non-Whitened Vs. Whitened Light Curve

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

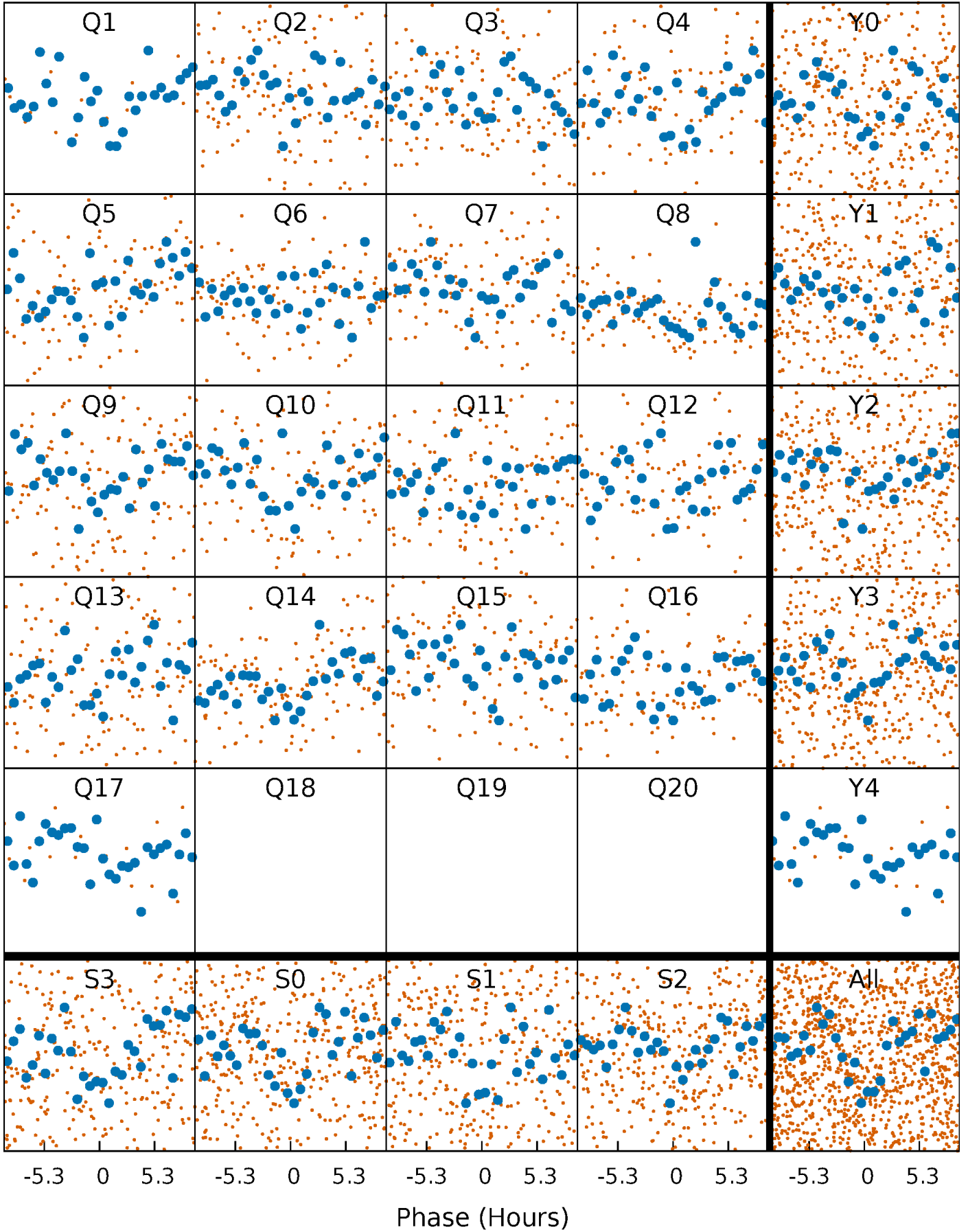


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



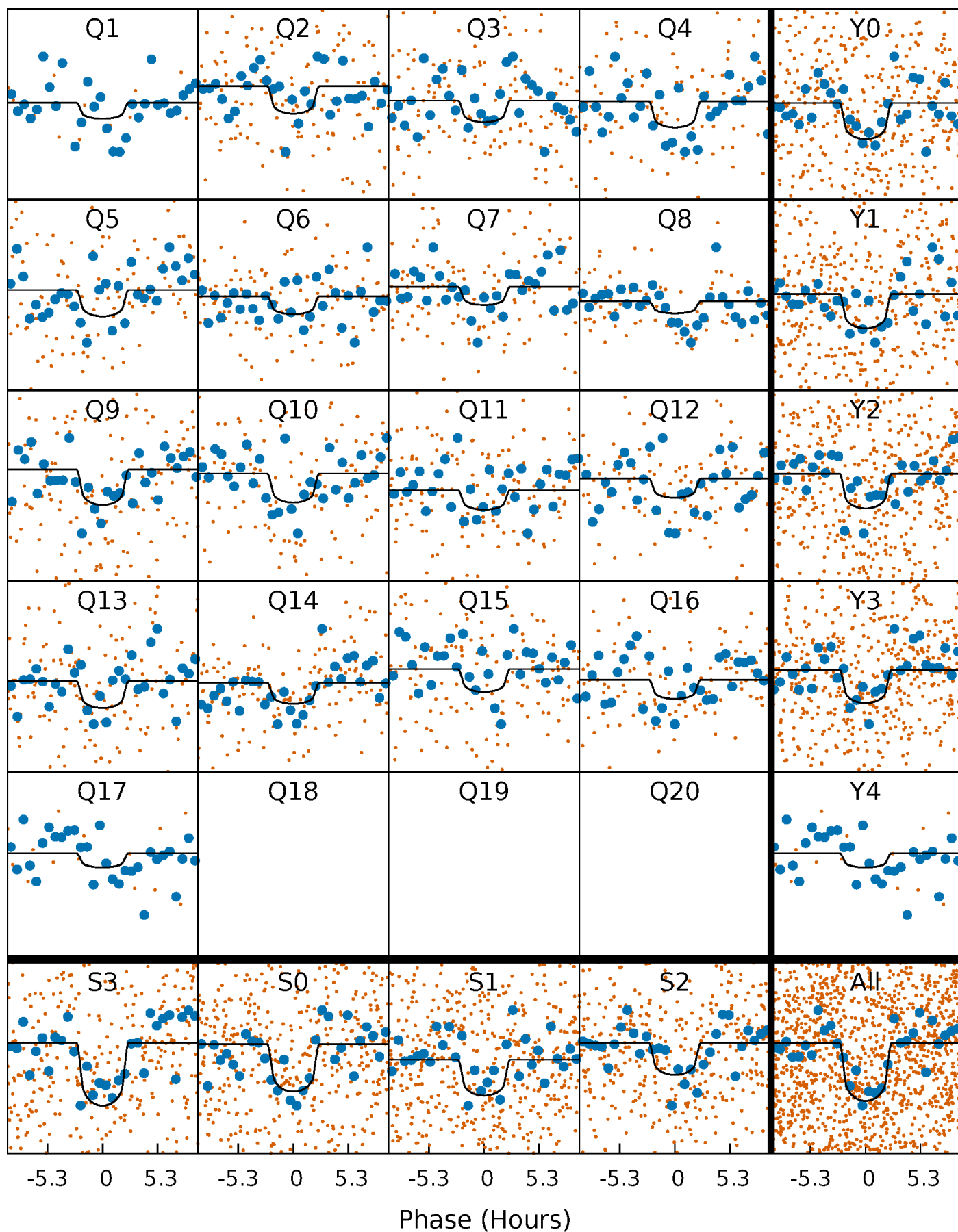
PDC Quarter-Phased Transit Curves

TCE 006436505-02 P= 24.722198 Days $T_0=146.461016$ (BKJD)



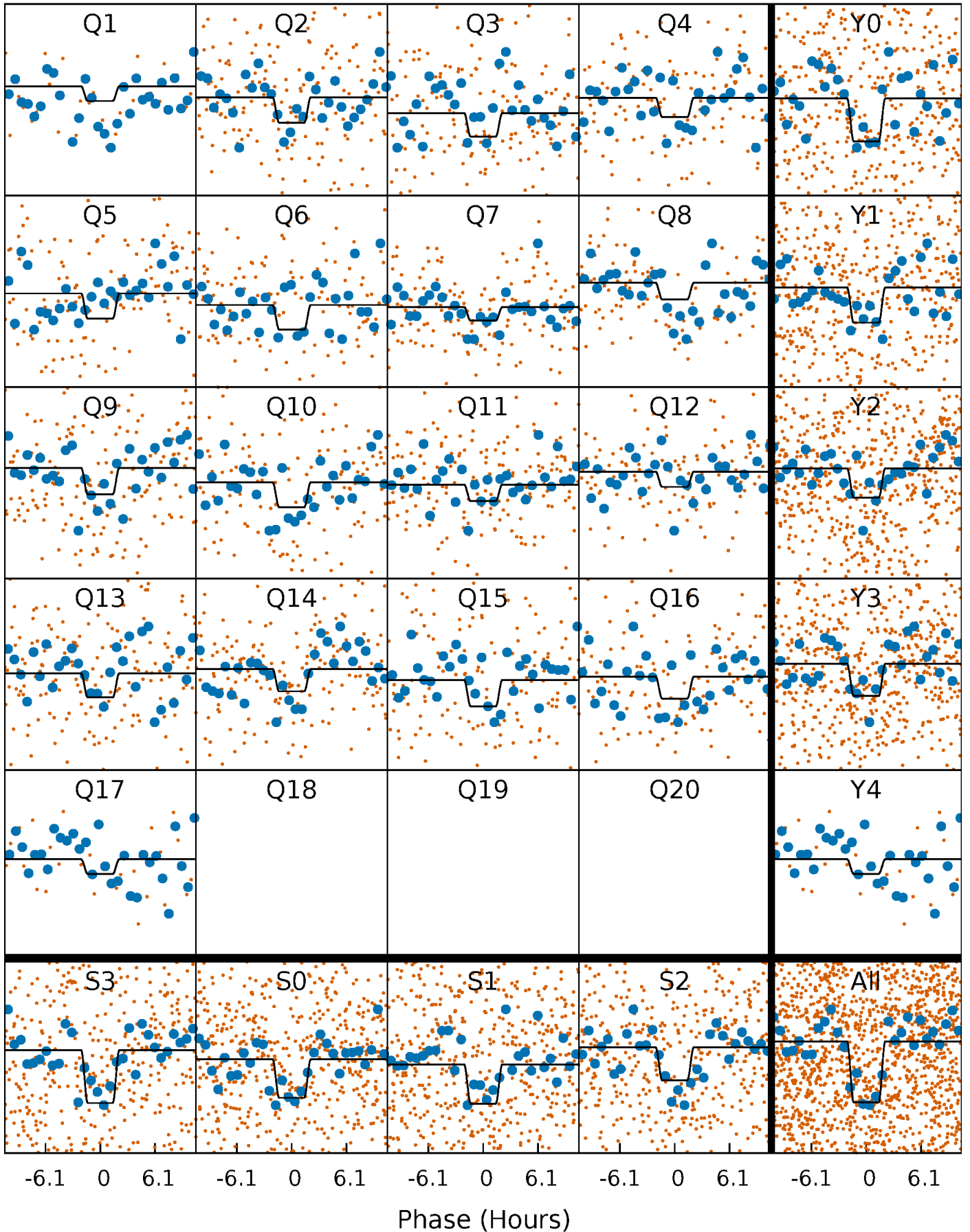
DV Quarter-Phased Transit Curves

TCE 006436505-02 P= 24.722198 Days $T_0=146.461016$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

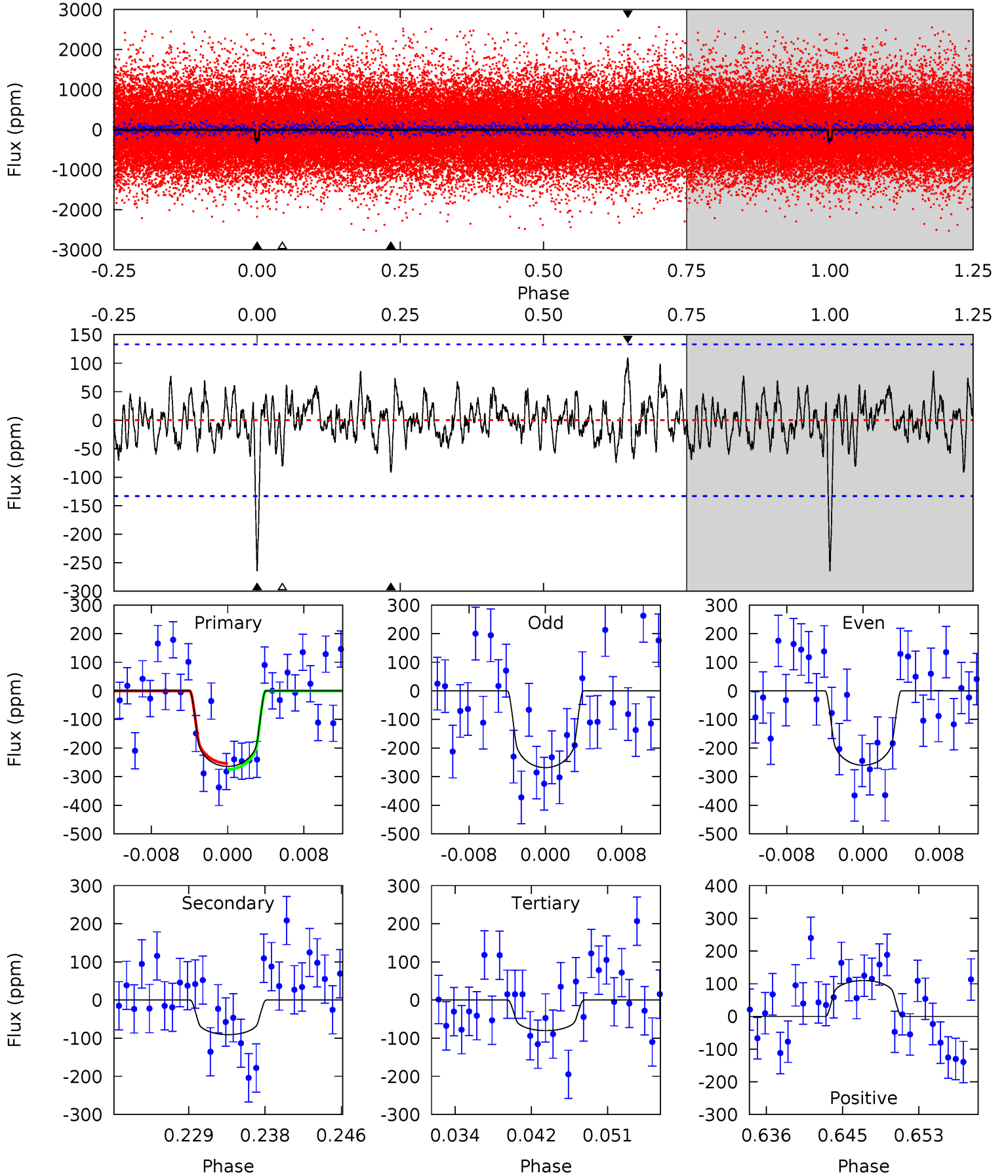
TCE 006436505-02 P= 24.721746 Days $T_0=146.480436$ (BKJD)



DV Model-Shift Uniqueness Test

006436505-02, P = 24.722198 Days, E = 121.738818 Days

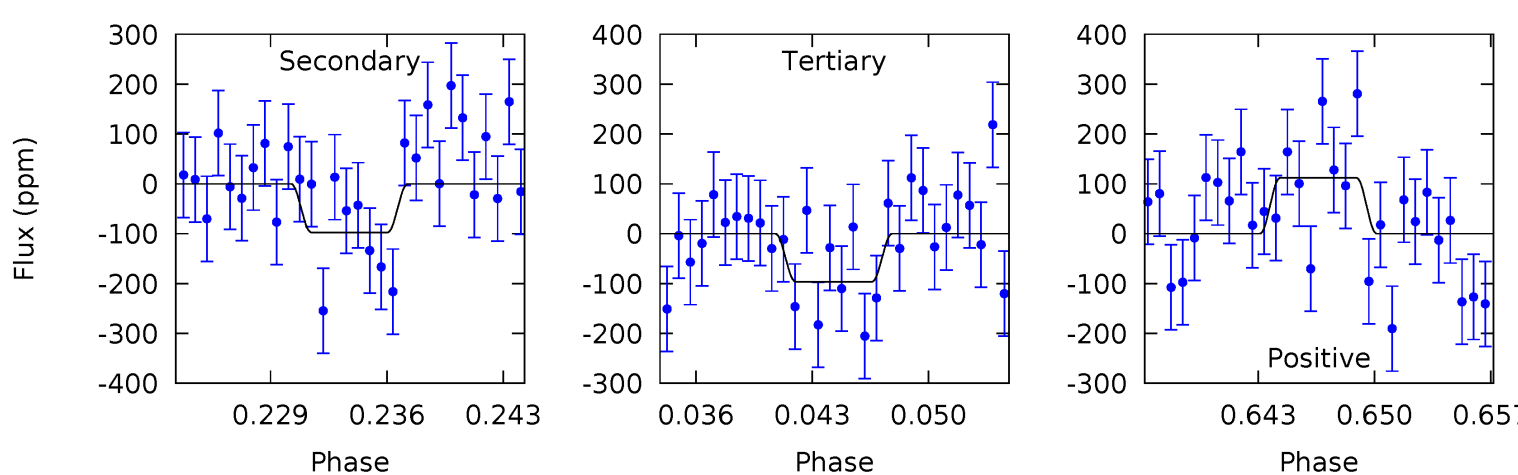
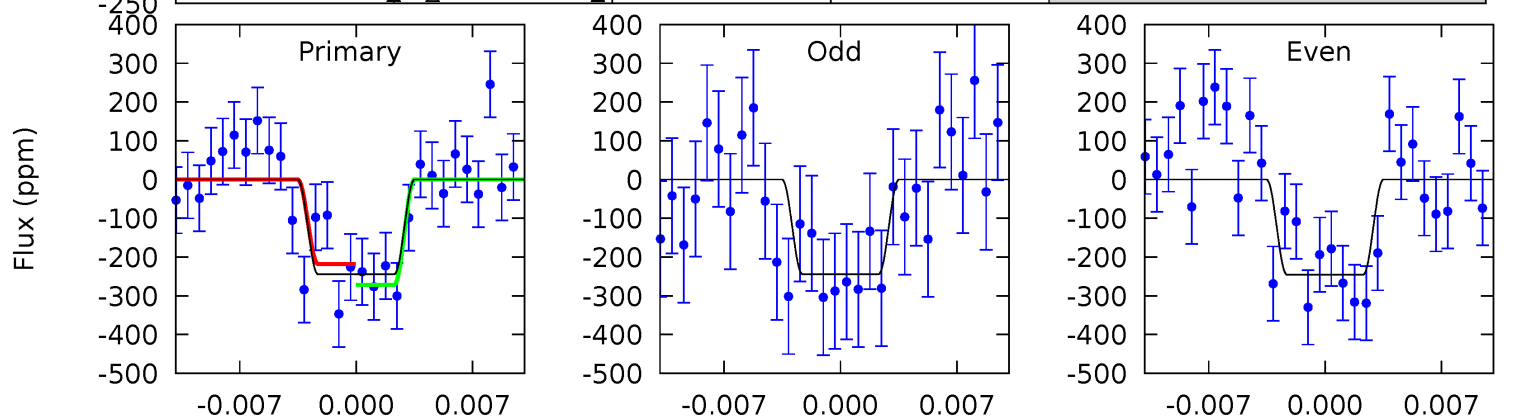
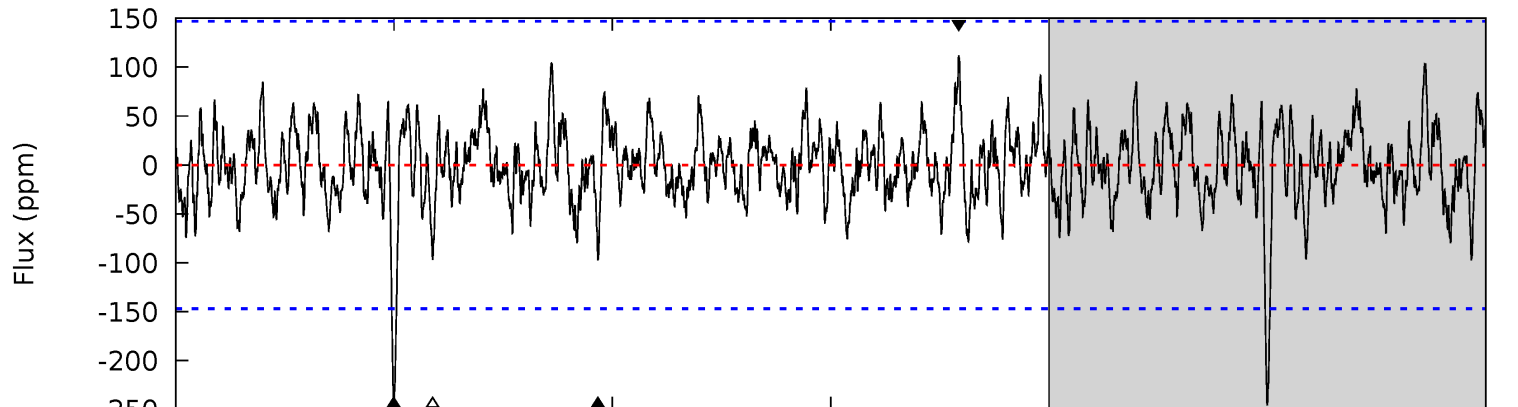
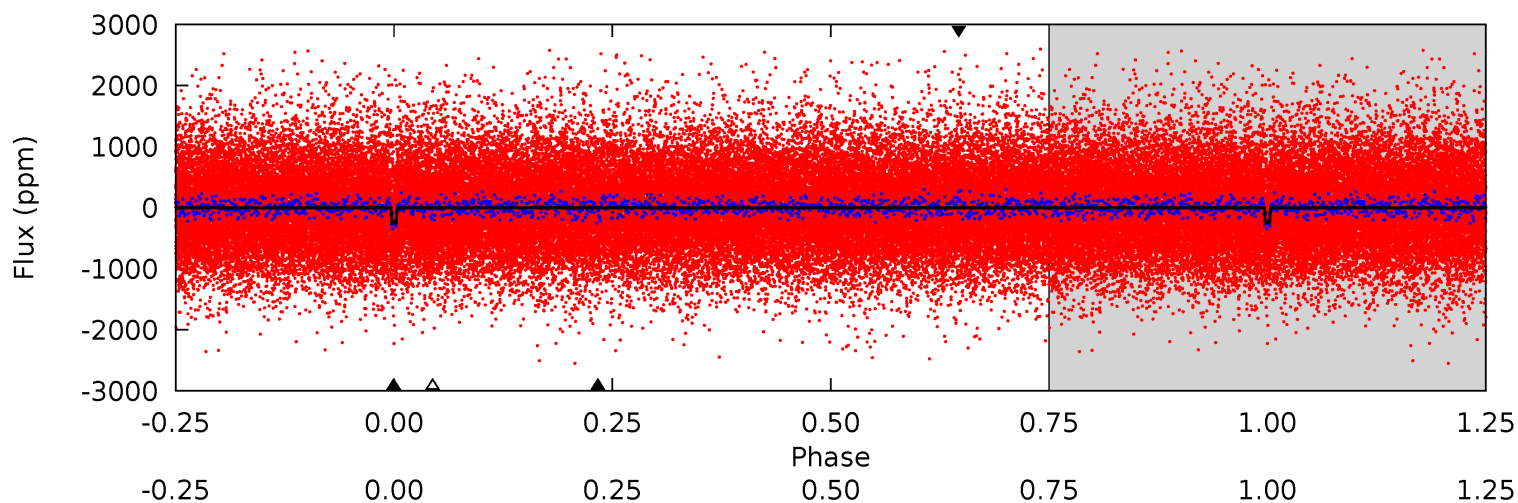
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.0	3.44	3.04	4.17	5.06	2.63	1.14	7.00	5.88	0.40	-0.72	0.16	1.09	0.29	0.40



Alt Model-Shift Uniqueness Test

006436505-02, P = 24.721746 Days, E = 121.758690 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.47	3.38	3.34	3.88	5.09	2.69	1.11	5.13	4.59	0.03	-0.51	0.03	1.06	0.31	0.93



Stellar Parameters For KIC 006436505

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5481^{+166}_{-149}	$4.592^{+0.032}_{-0.120}$	$-0.220^{+0.300}_{-0.300}$	$0.778^{+0.141}_{-0.065}$	$0.871^{+0.075}_{-0.100}$	$2.607^{+0.444}_{-0.985}$
	+3%/-3%	+1%/-3%	+136%/-136%	+18%/-8%	+9%/-11%	+17%/-38%
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 006436505-02 / KOI 6707.02

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-91 ± 26	$1.78^{+1.16}_{-1.01}$	760^{+37}_{-26}	4005^{+1760}_{-641}	369^{+1788}_{-243}
Alt.	-97 ± 29	$1.68^{+1.22}_{-0.99}$	762^{+35}_{-29}	4179^{+1956}_{-761}	474^{+2248}_{-332}

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

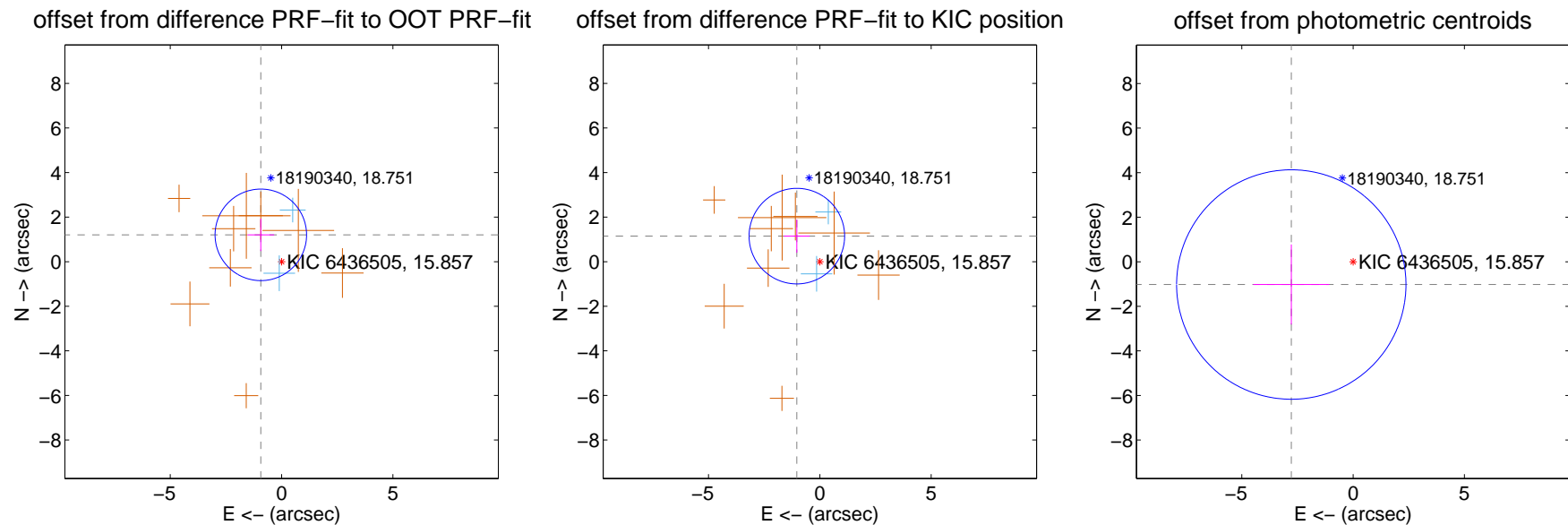
DV Centroid Data

Supplemental centroid analysis for 006436505-02. Kepler magnitude: 15.86. Transit SNR 8.49

There are 2 quarters with good PRF difference image offsets

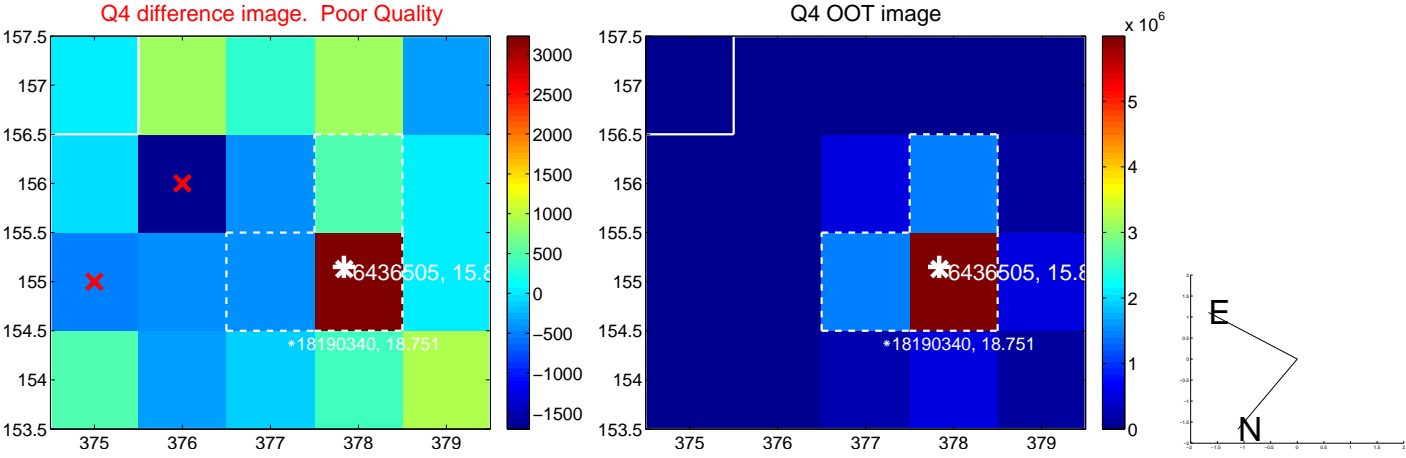
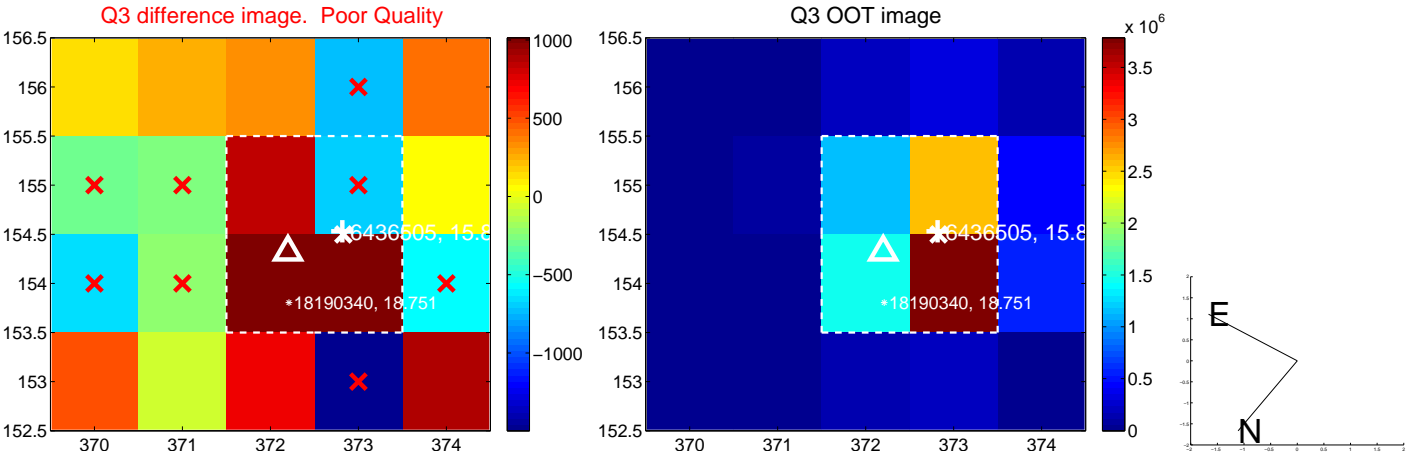
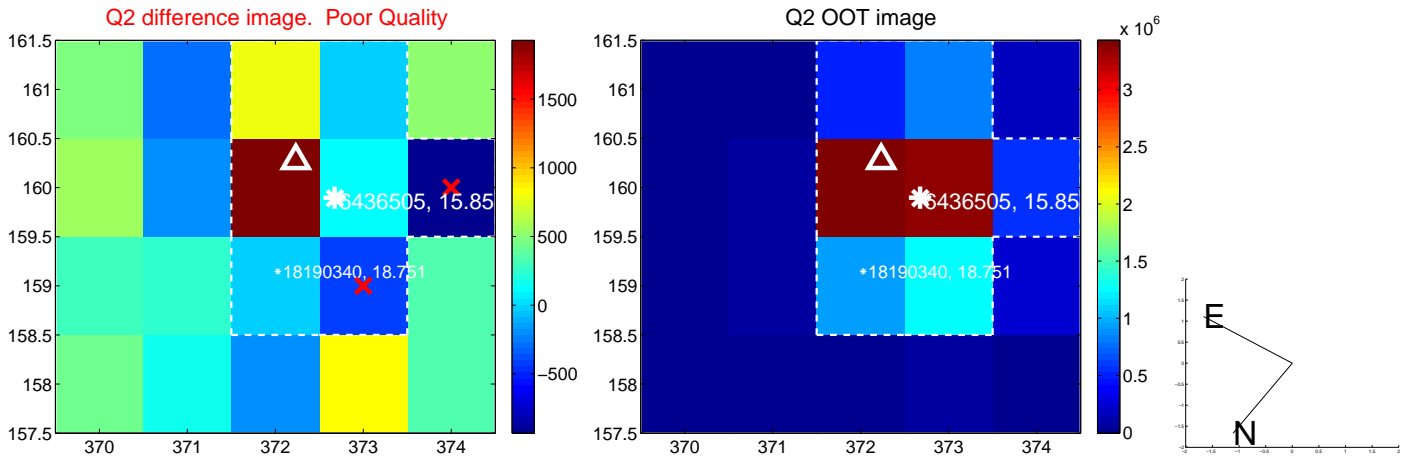
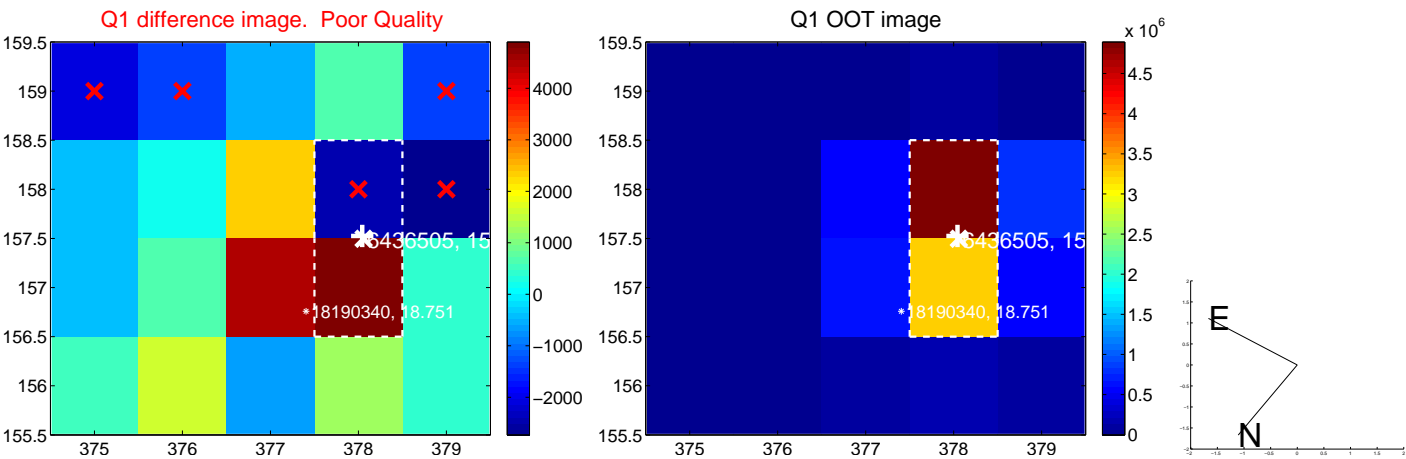
The direct PRF centroid is offset from the target star catalog position by about 0.21 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.523 ± 0.685	2.22	0.932 ± 0.598	1.205 ± 0.727
PRF-fit source offset from KIC position	1.544 ± 0.715	2.16	1.033 ± 0.575	1.148 ± 0.743
photometric centroid source offset	2.96 ± 1.72	1.72	2.78 ± 1.71	-1.02 ± 1.80

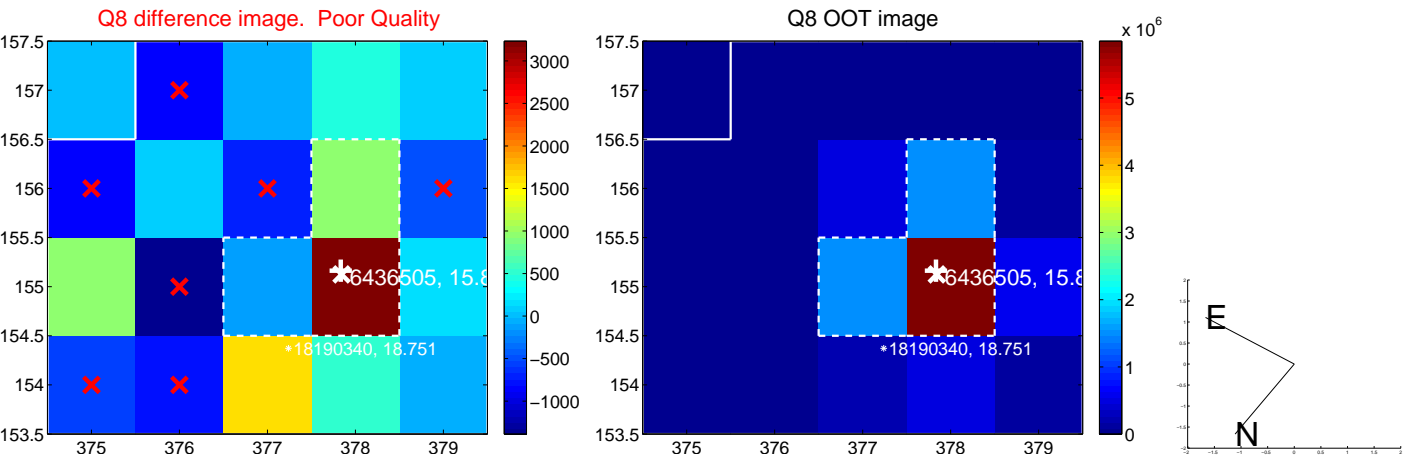
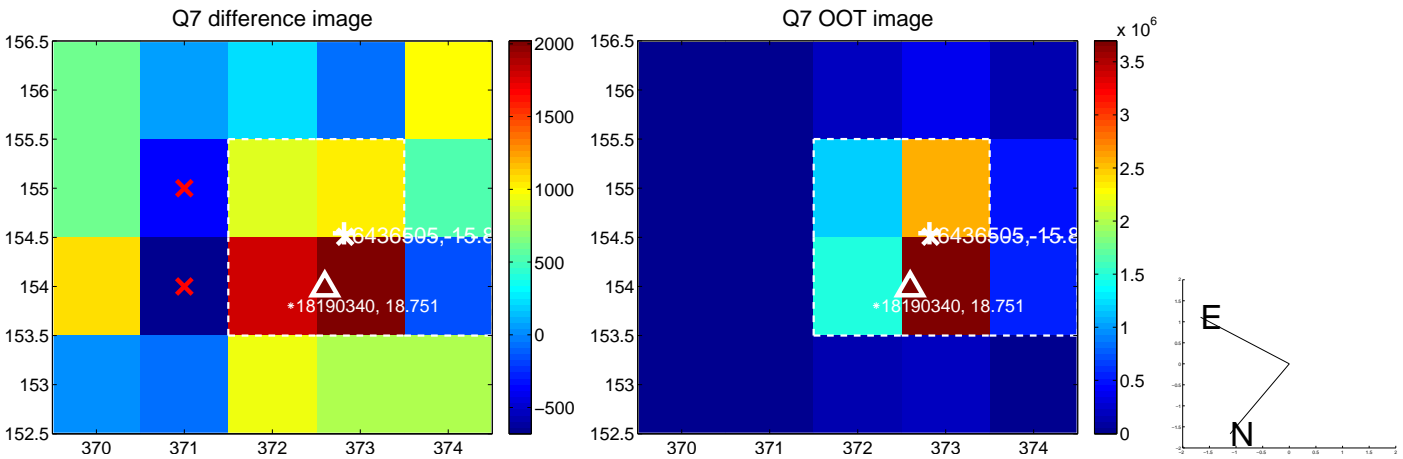
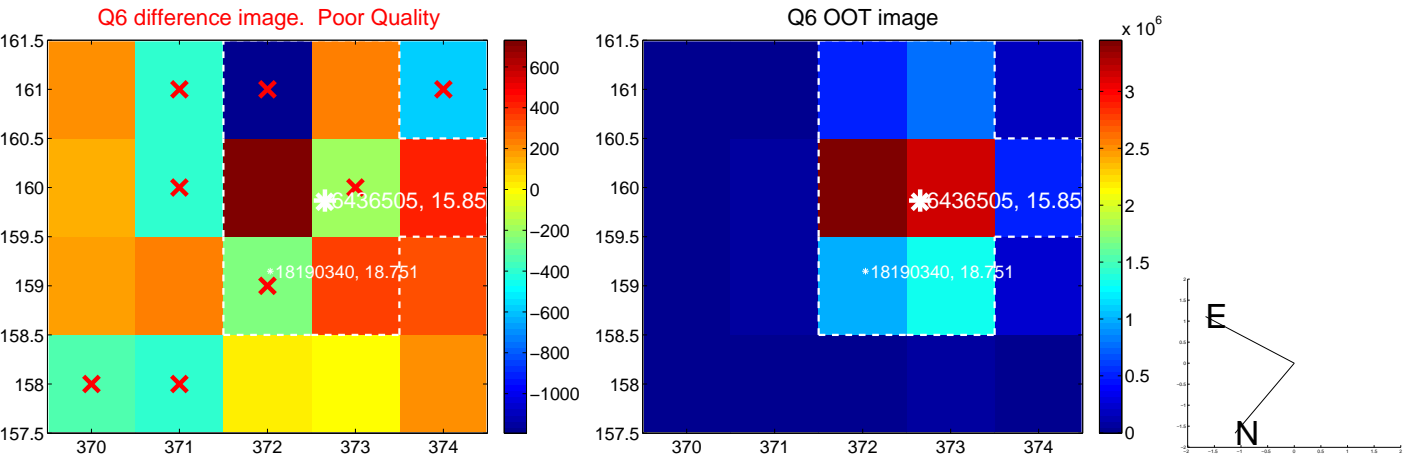
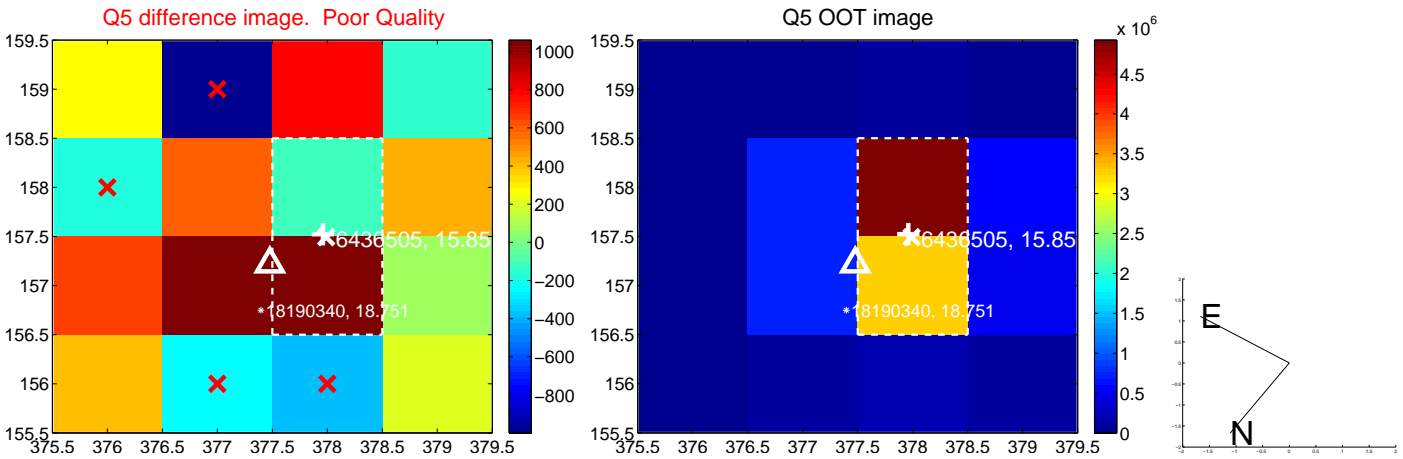


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

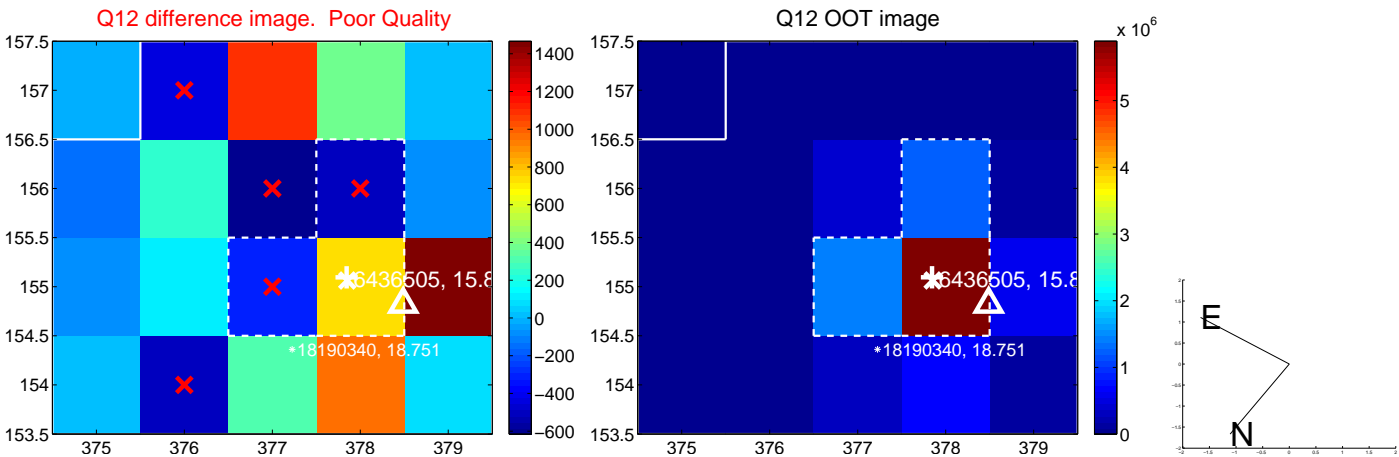
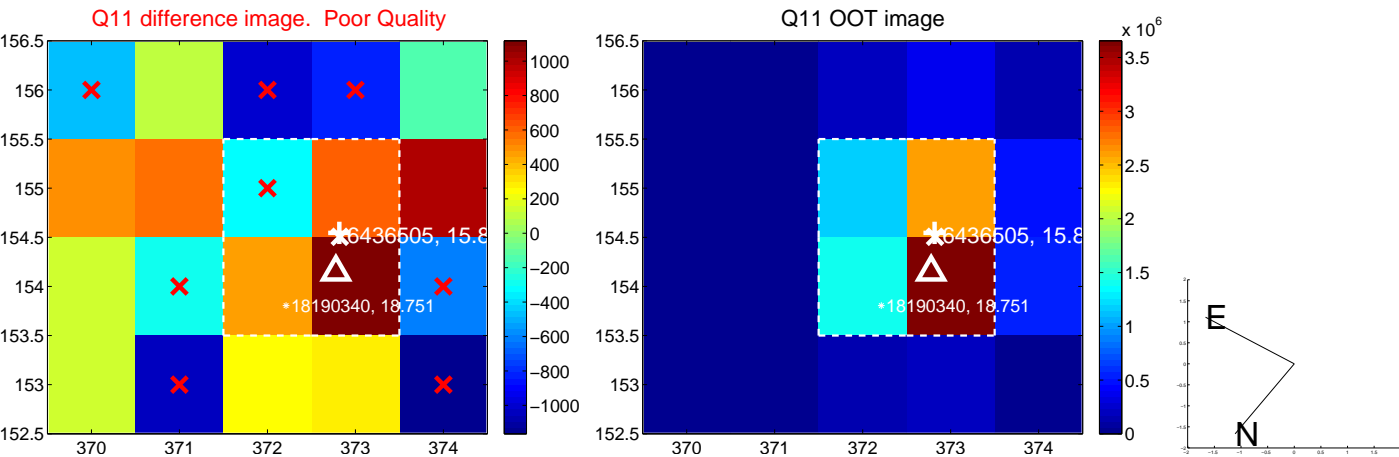
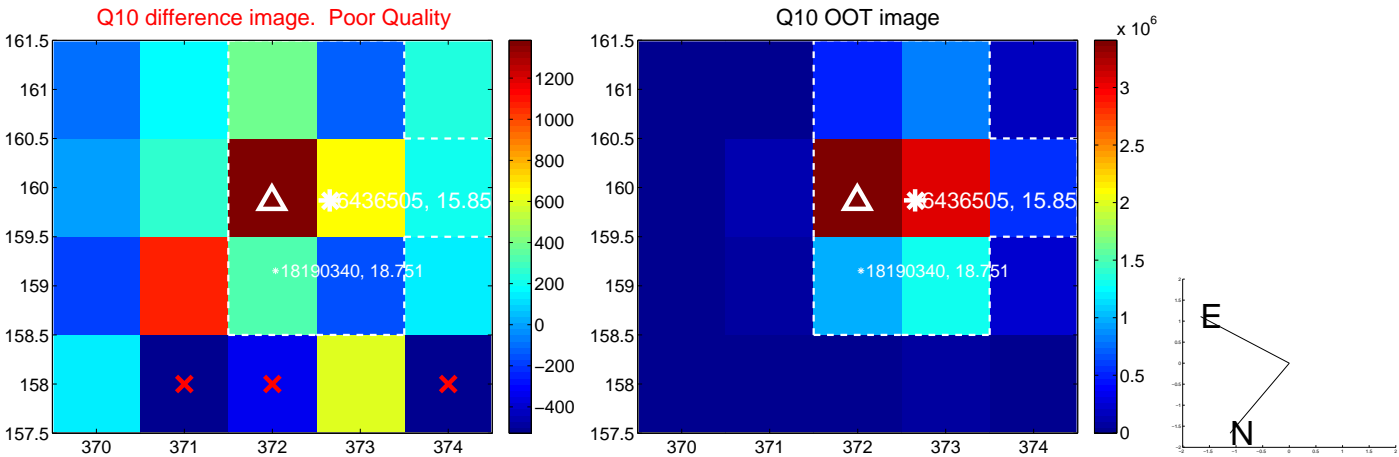
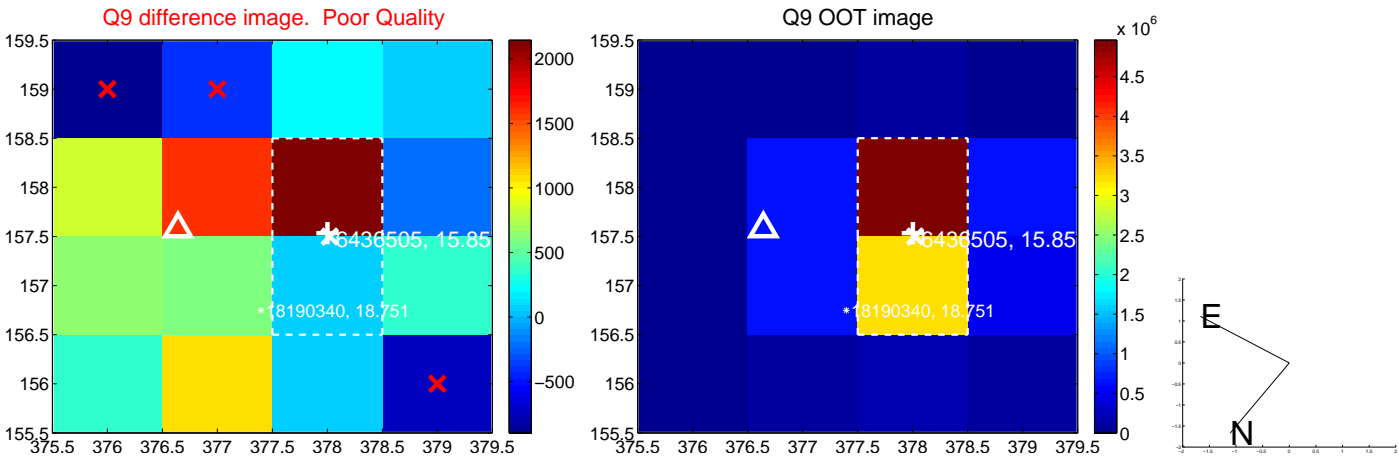
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



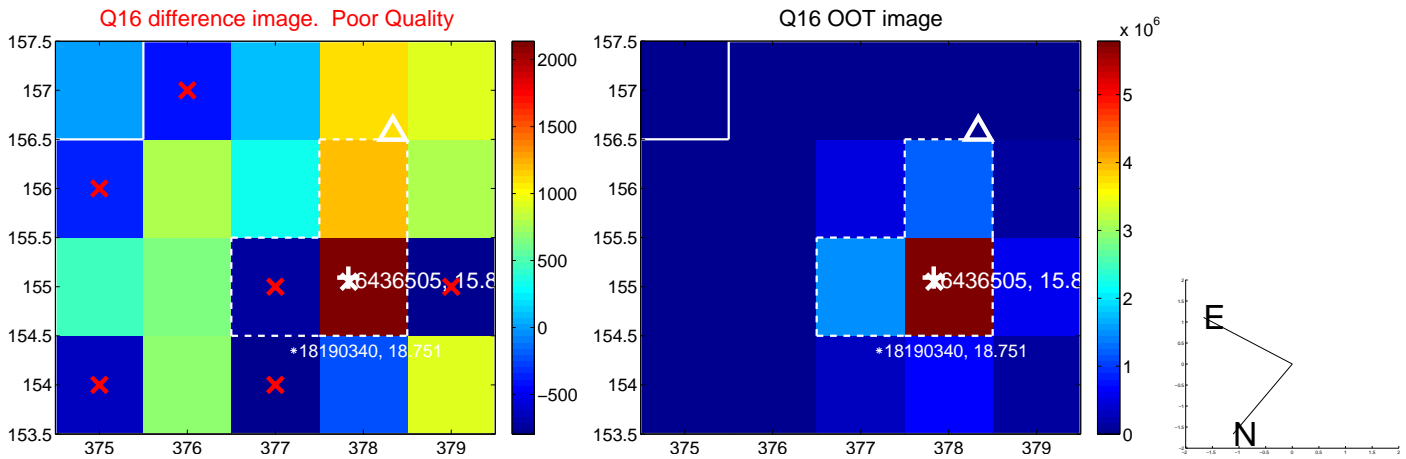
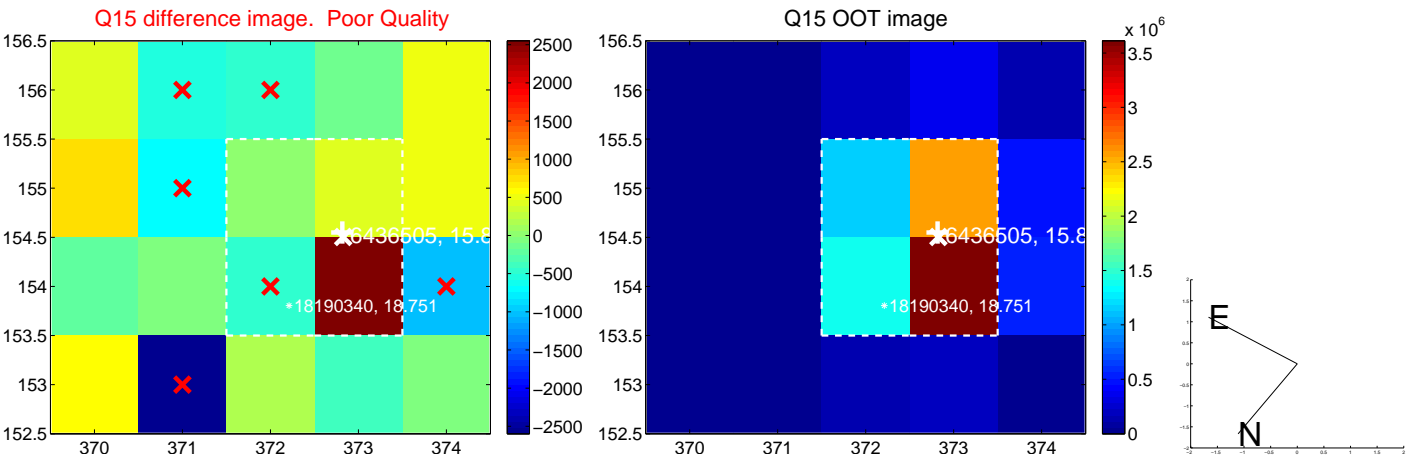
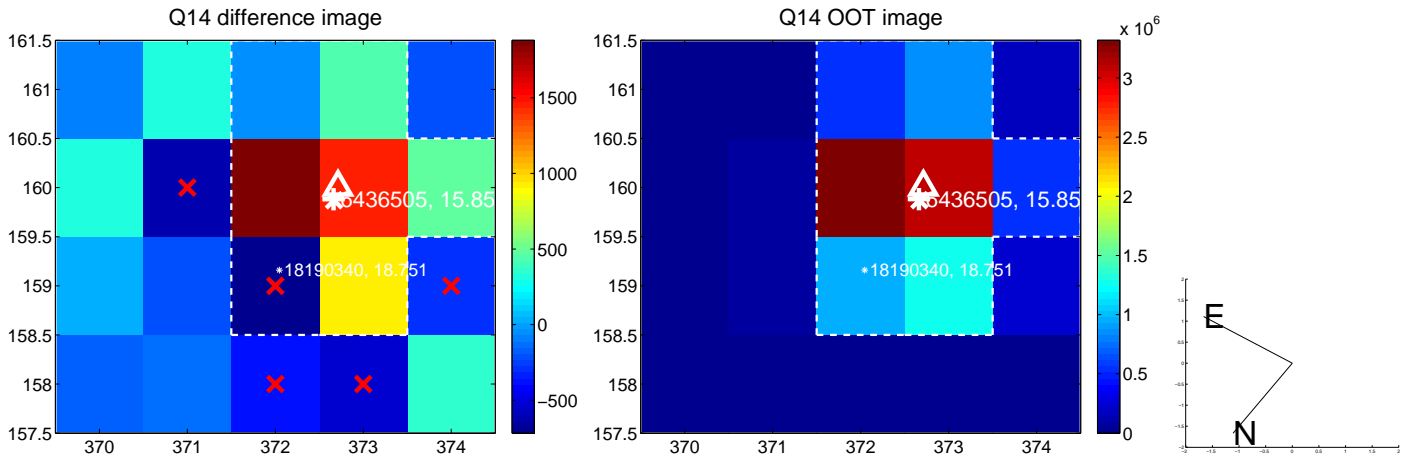
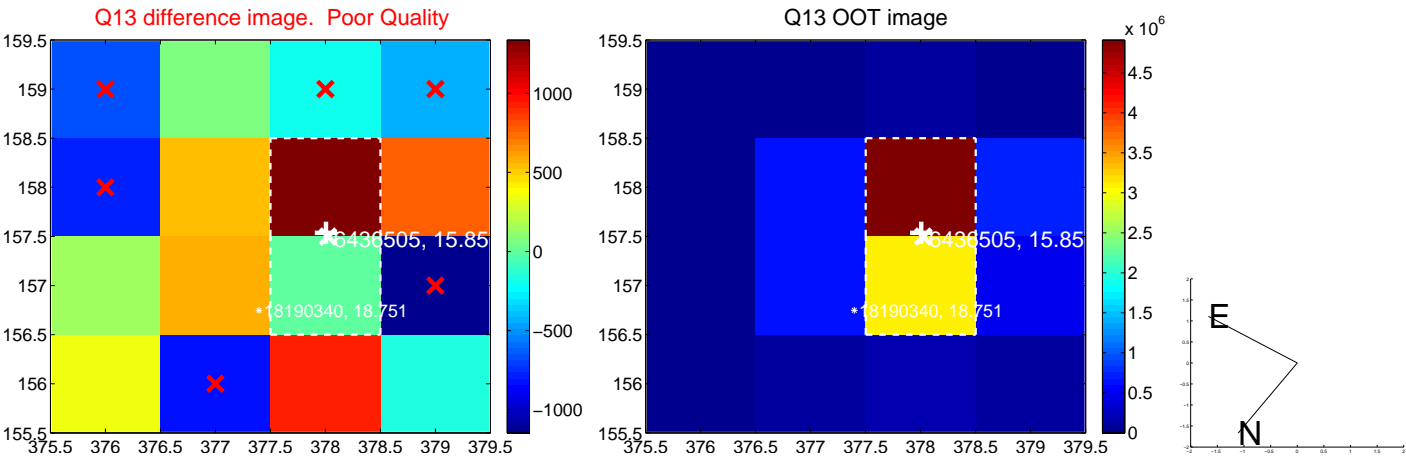
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



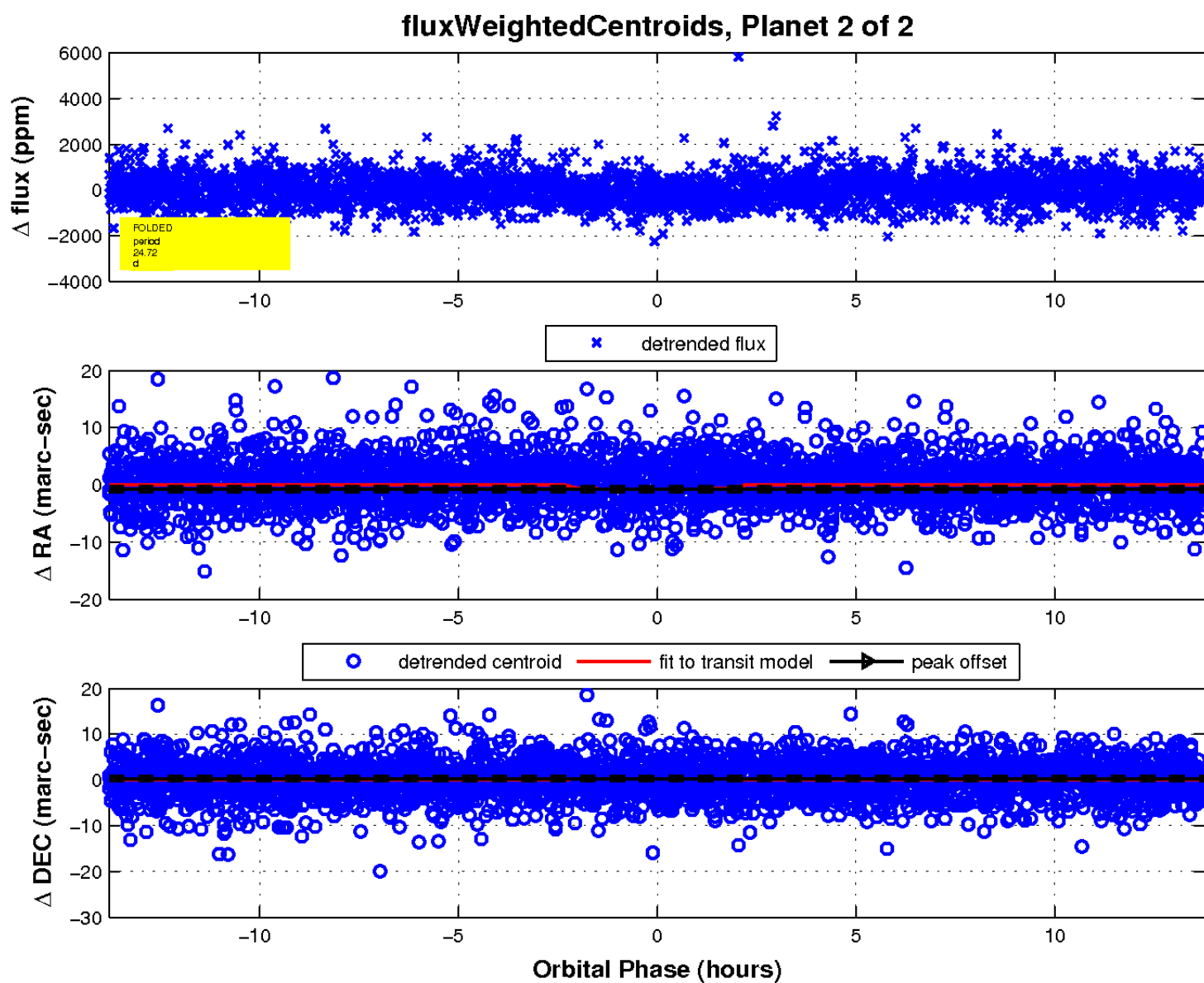
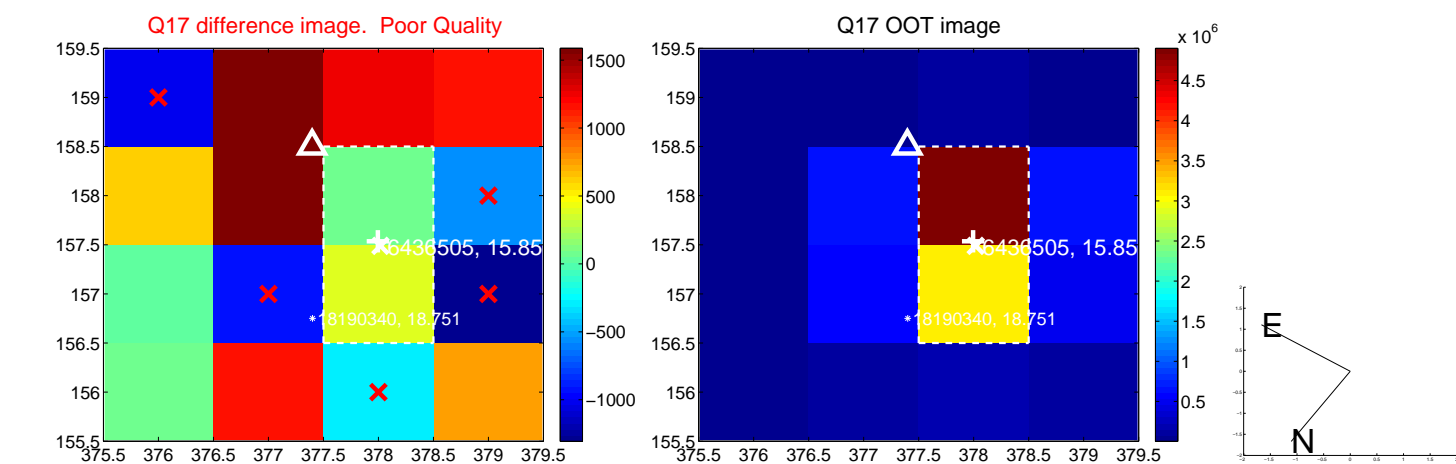
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



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



UKIRT Image

Declination

