

KIC 002446113

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})
002446113-01	OBS	0379.01	6.717249	137.412039	274.9	2.643	40.4	45.7	1.68	6078	3.31	604.05
002446113-02	OBS	0379.02	23.137471	152.174118	128.6	4.781	11.2	12.4	1.68	6078	2.63	116.12

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
002446113-01	OBS	FP	0.07	0	0	1	0	CENT_UNRESOLVED_OFFSET
002446113-02	OBS	PC	1.00	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.

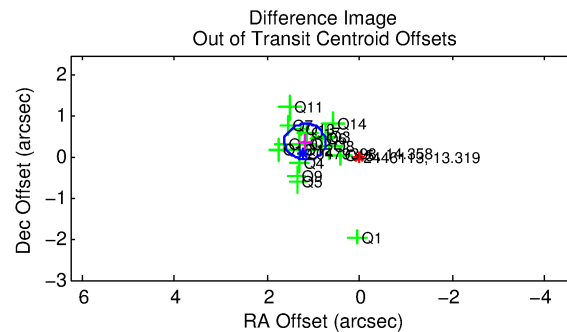
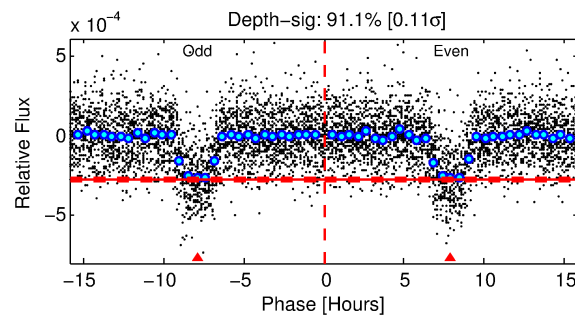
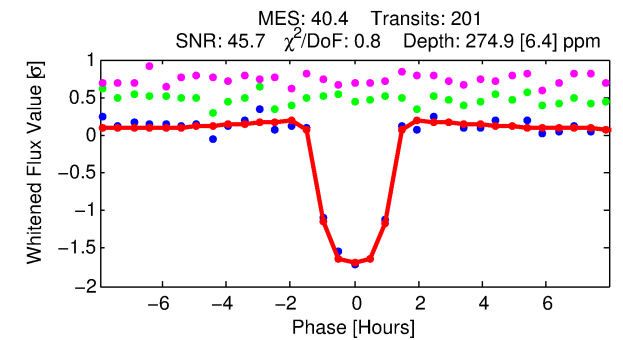
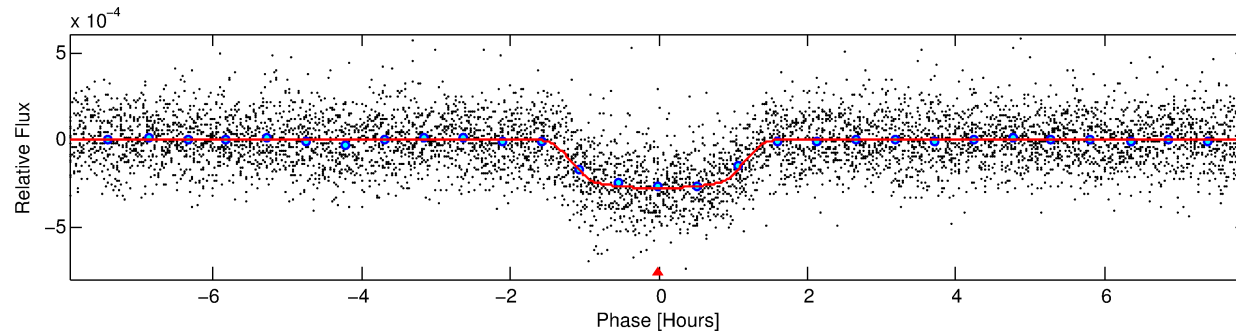
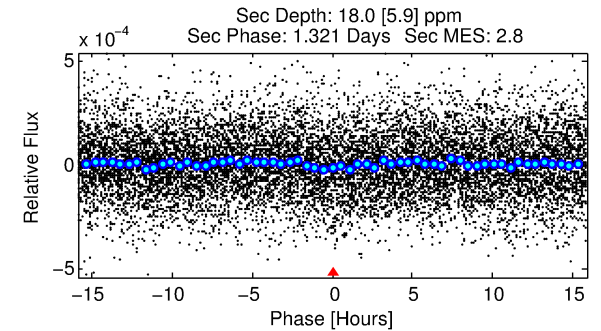
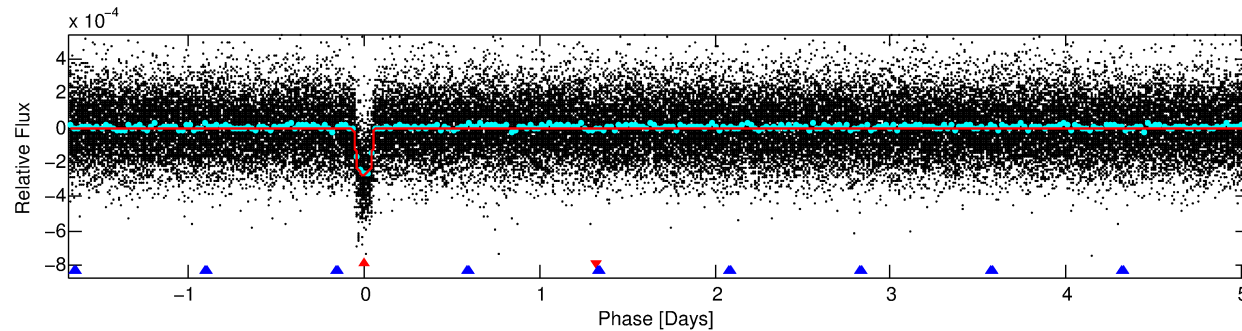
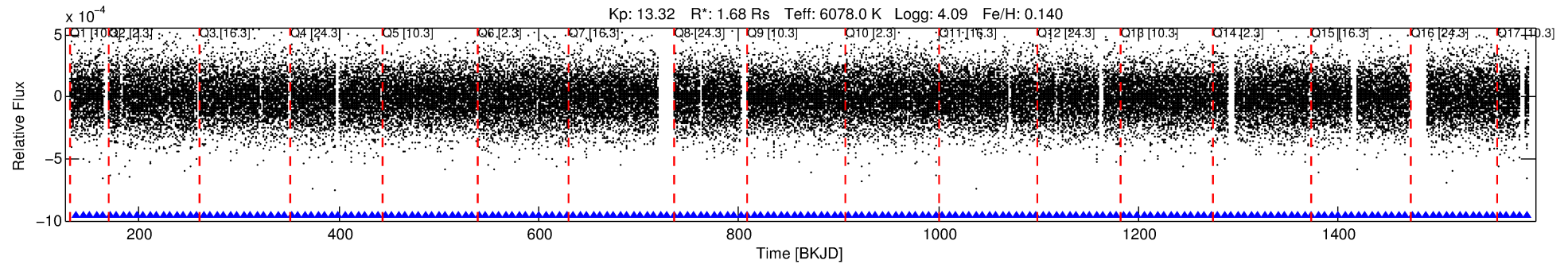
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 002446113-01

No Significant Match Found

DV One-Page Summary

KIC: 2446113 Candidate: 1 of 2 Period: 6.717 d
KOI: K00379.01 Corr: 0.980



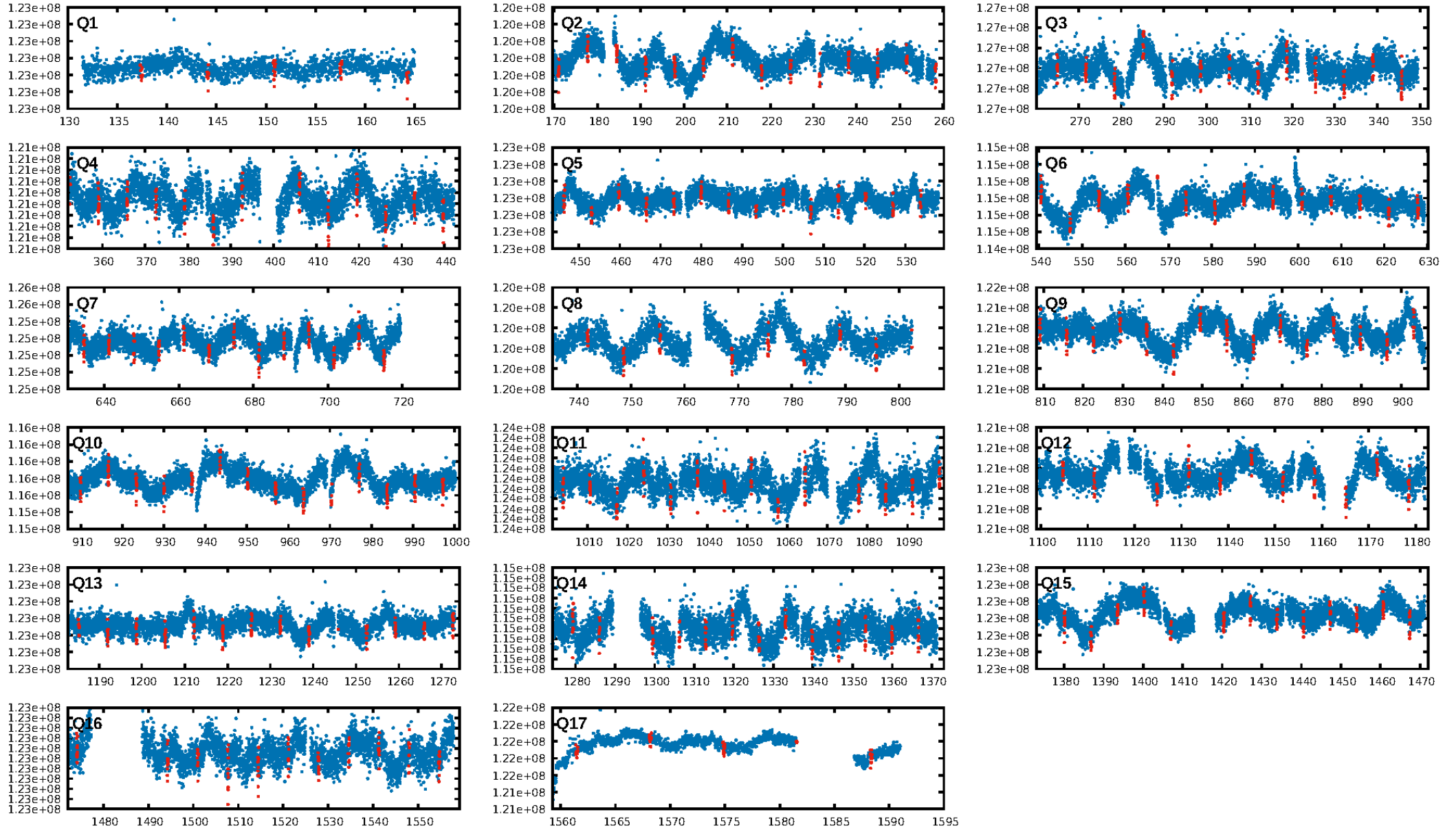
DV Fit Results:

Period = 6.71725 [0.00001] d
Epoch = 137.4120 [0.0011] BKJD
Rp/R* = 0.0180 [0.0017]
a/R* = 9.15 [4.17]
b = 0.90 [0.10]
Seff = 604.05 [191.26]
Teff = 1264 [100] K
Rp = 3.31 [0.78] Re
a = 0.0757 [0.0149] AU
Ag = 5.18 [2.51] [1.67σ]
Teffp = 2949 [285] K [5.57σ]

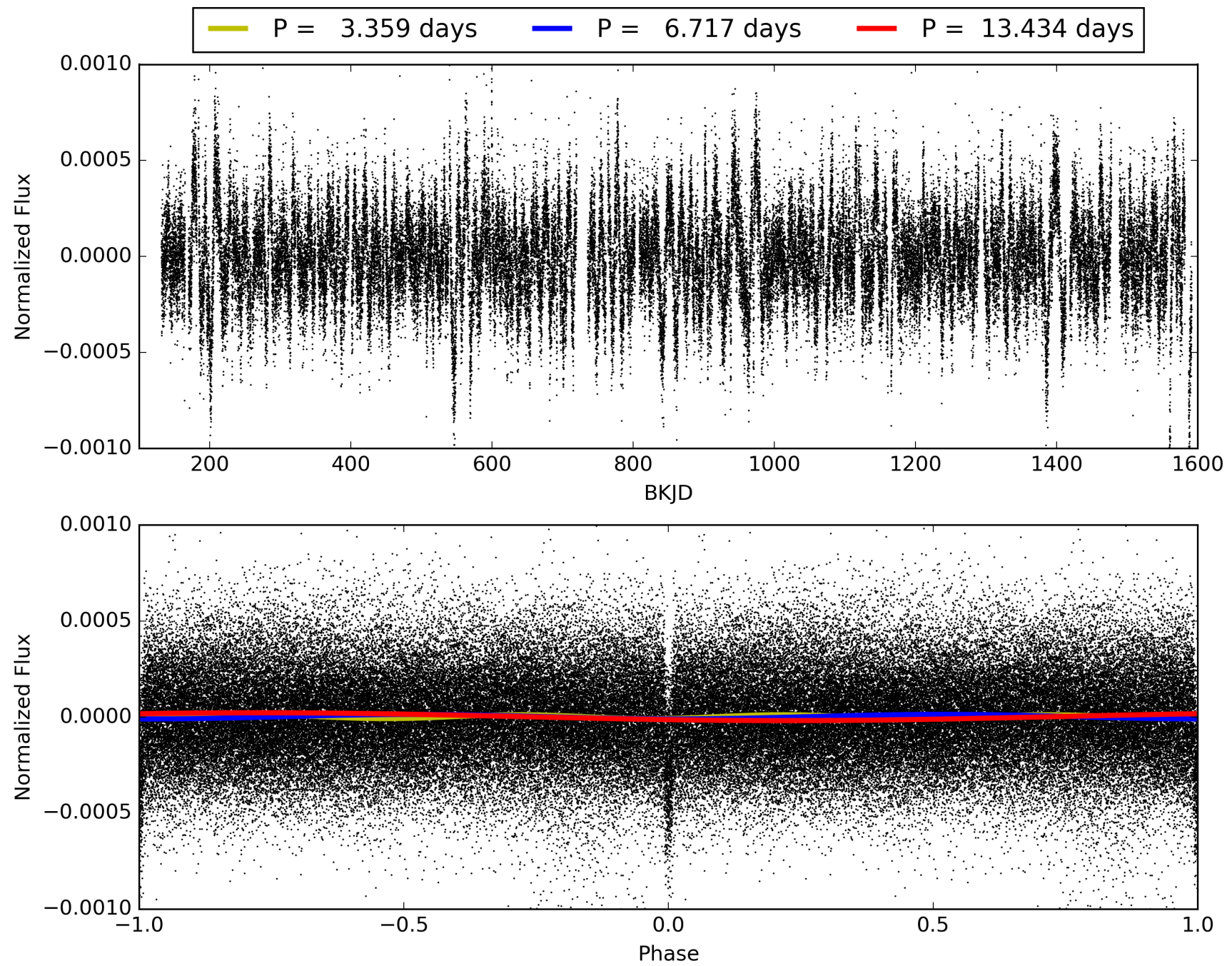
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [72.14σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 1.00 [191/191]
GhostDiagnostic-chr: 5.271
Centroid-sig: 0.0%
Centroid-so: 0.635 arcsec [2.39σ]
OotOffset-rm: 1.232 arcsec [8.37σ]
KicOffset-rm: 0.892 arcsec [6.38σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 1.00 [17/17]
DiffImageOverlap-fno: 1.00 [17/17]

TCE 002446113-01, PDC Light Curves

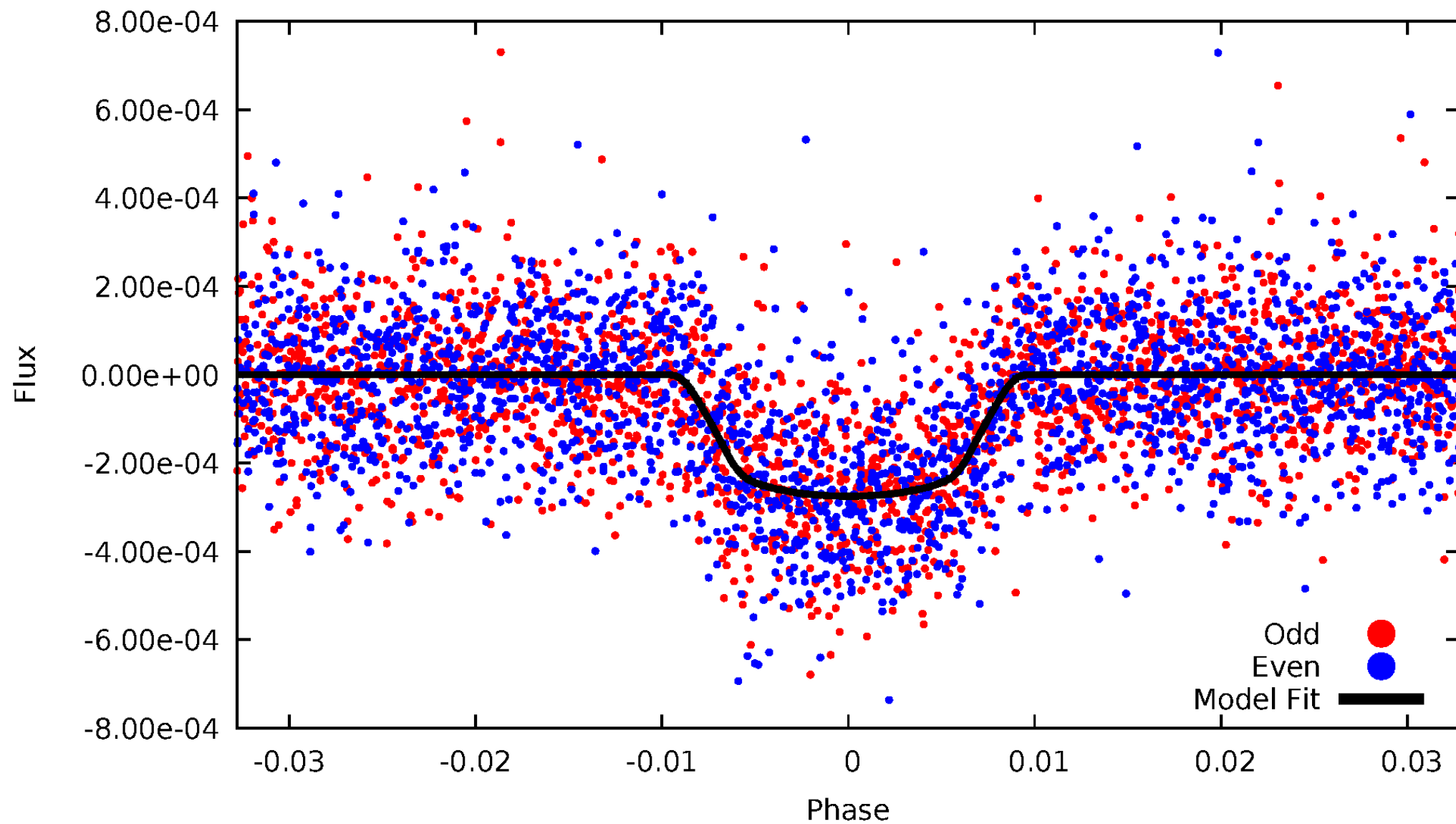


TCE 002446113-01



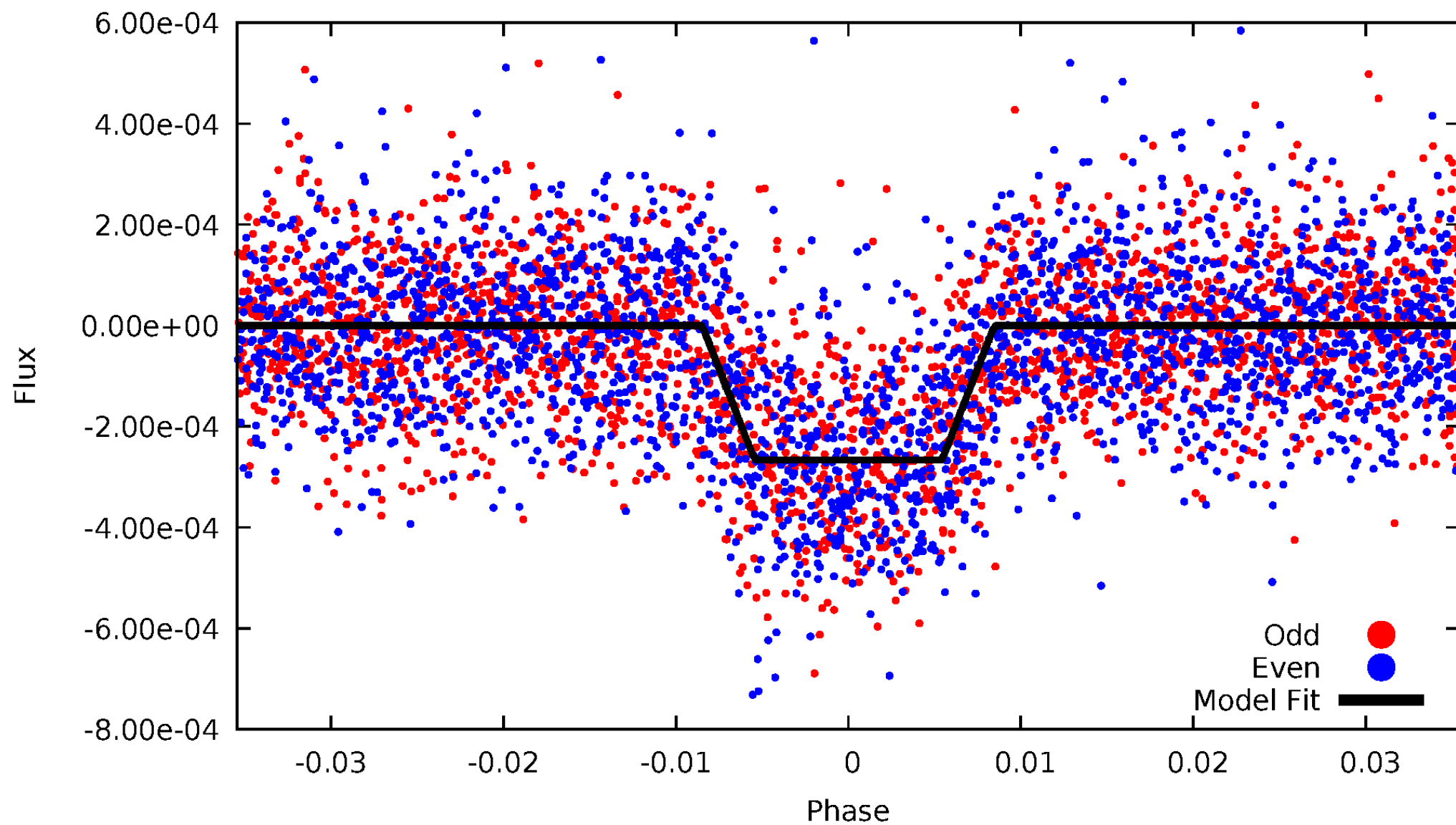
DV Odd/Even

TCE 002446113-01



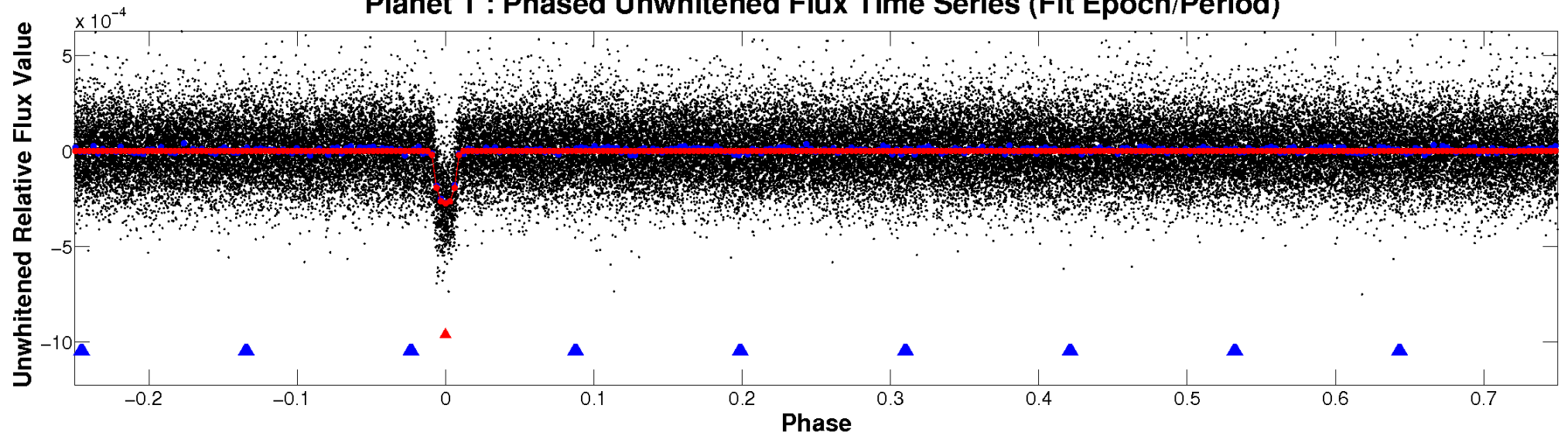
ALT Odd/Even

TCE 002446113-01

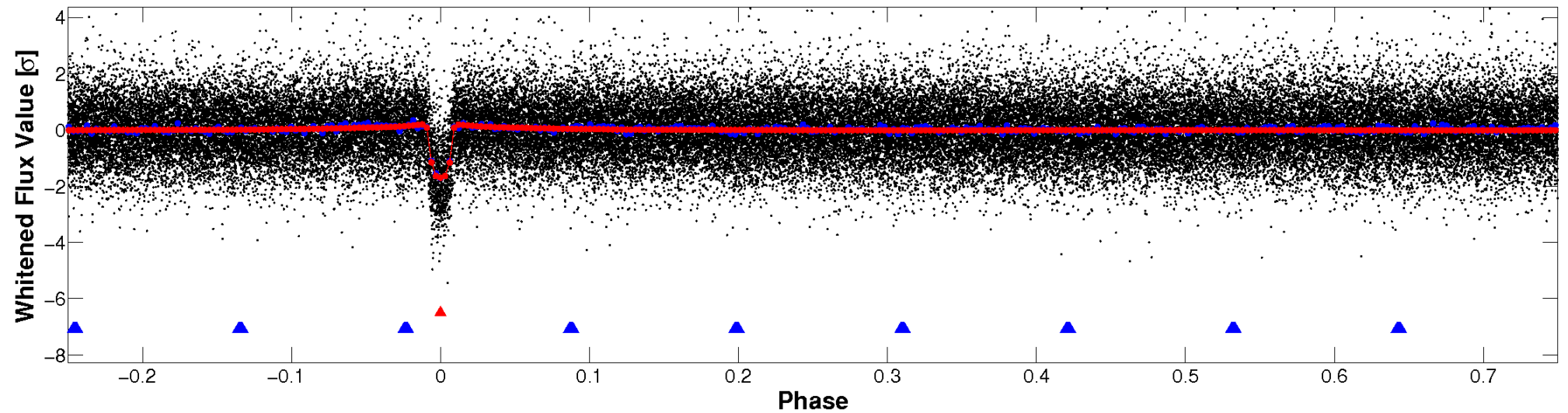


Non-Whitened Vs. Whitened Light Curve

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

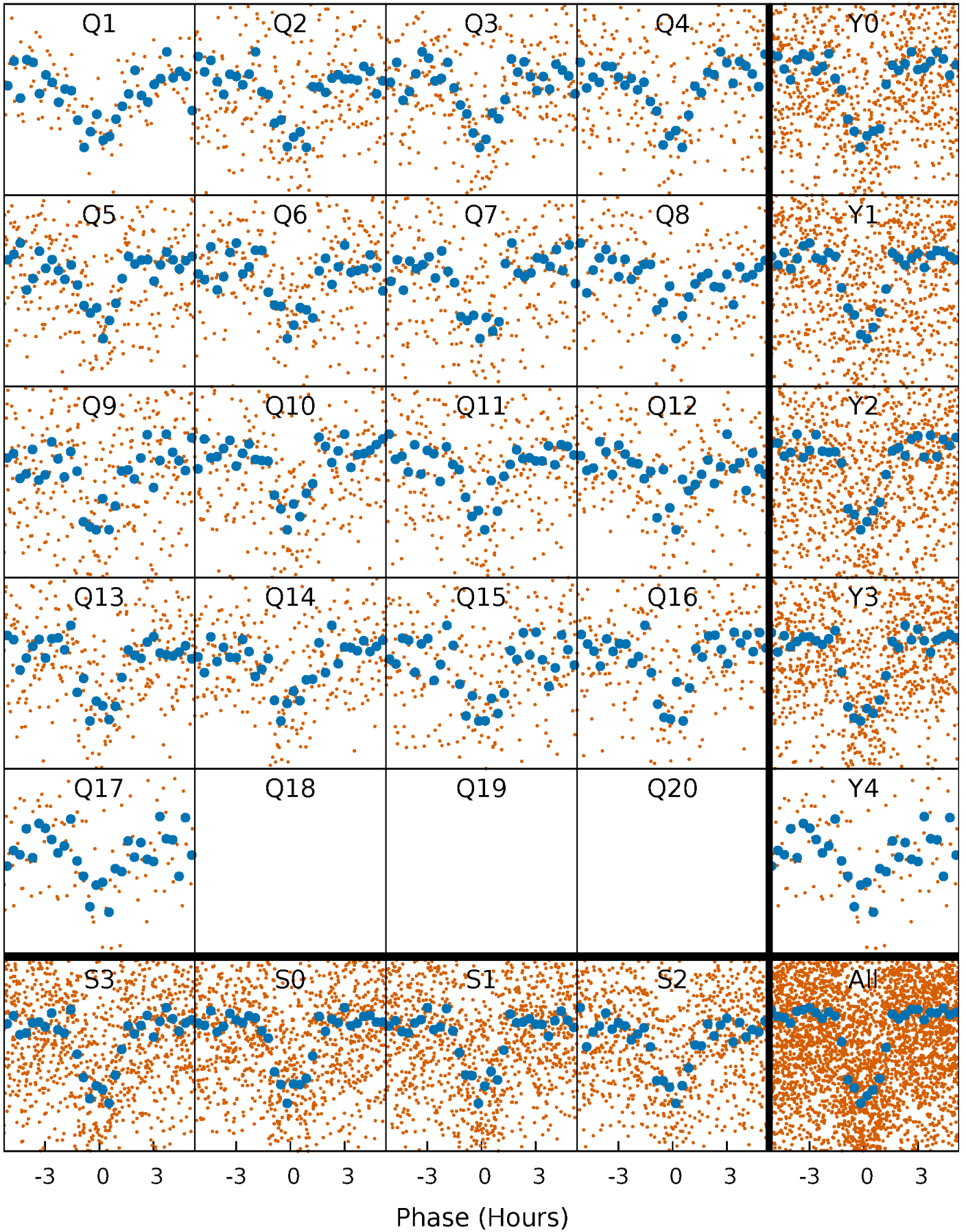


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



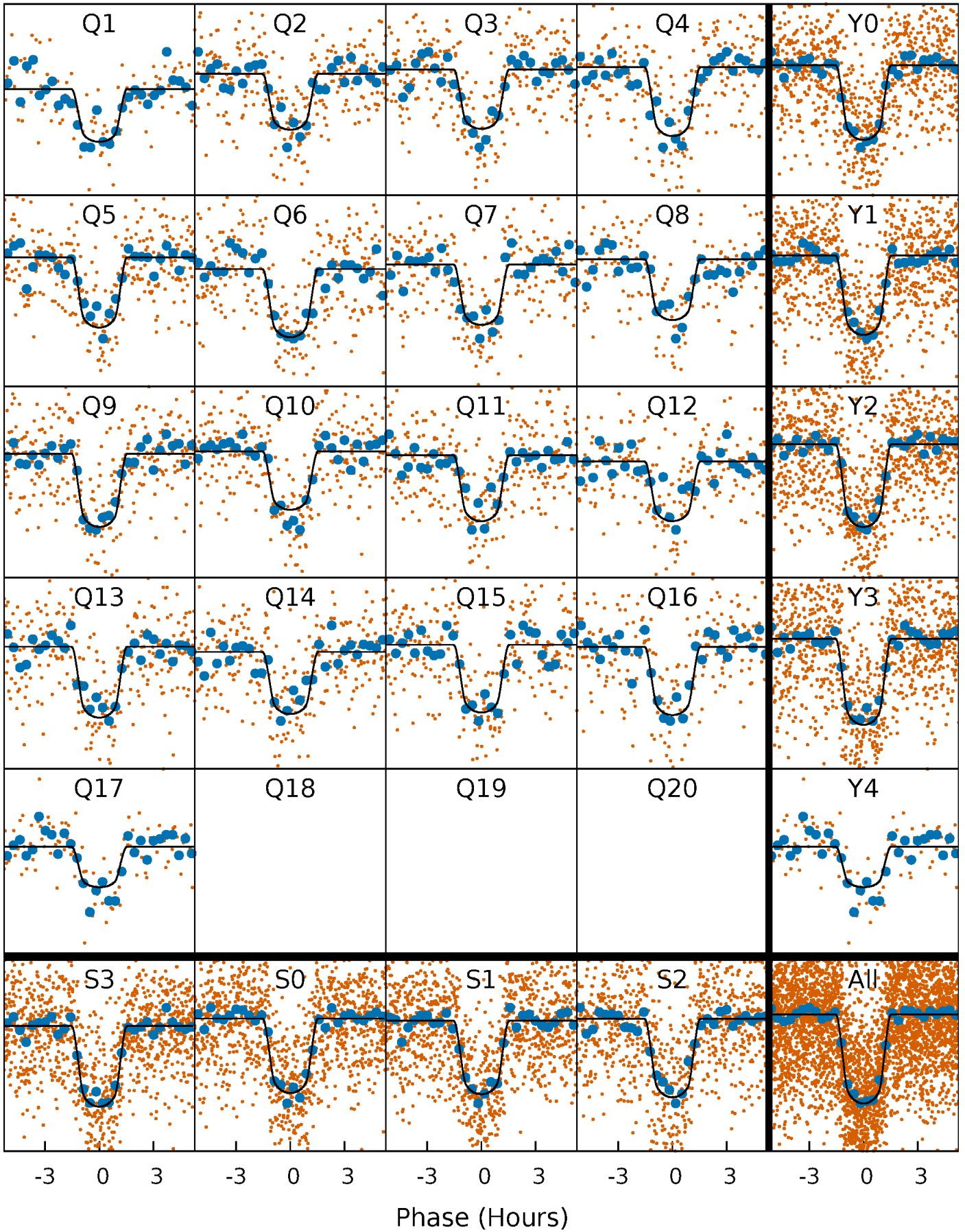
PDC Quarter-Phased Transit Curves

TCE 002446113-01 P= 6.717249 Days $T_0=137.412038$ (BKJD)



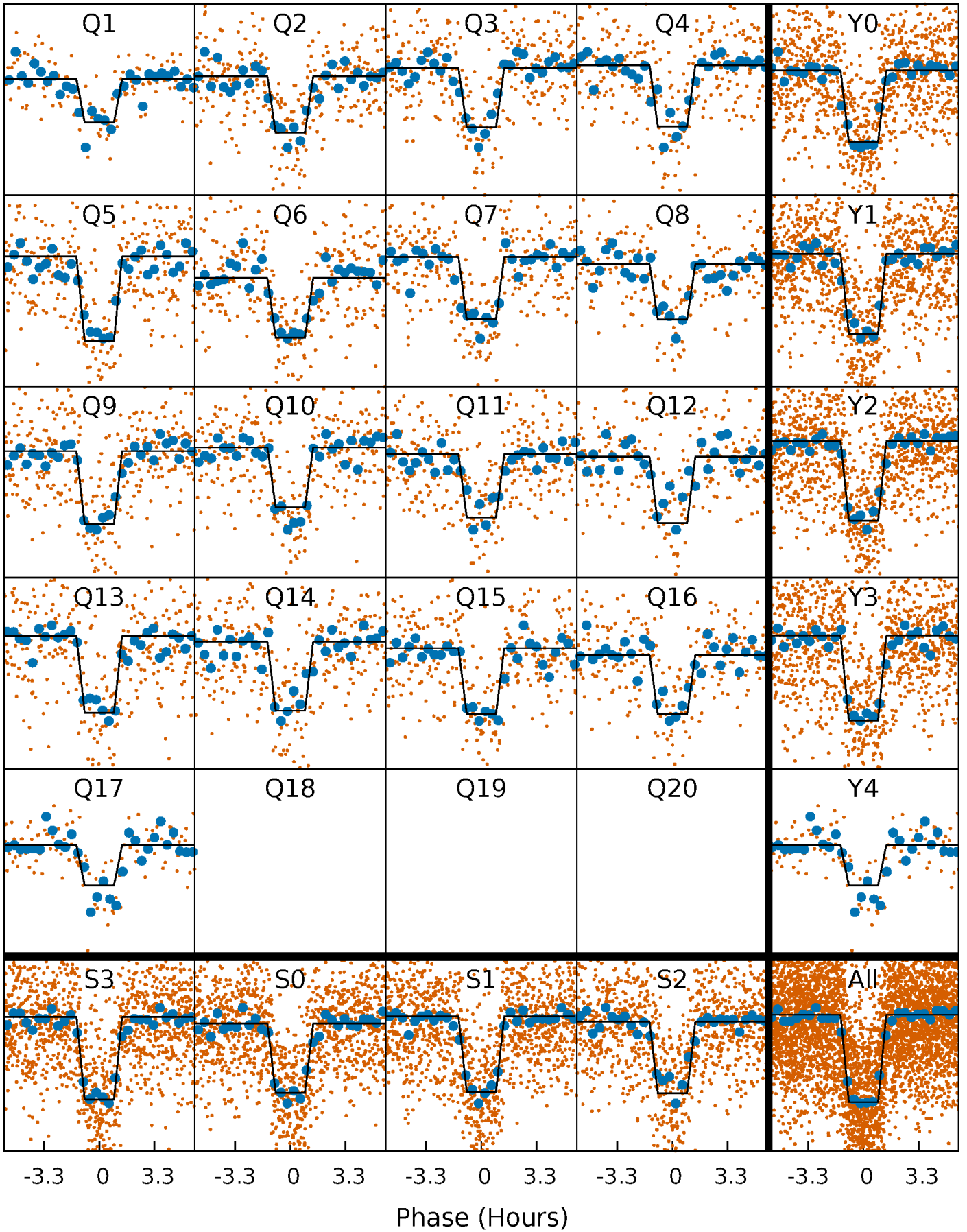
DV Quarter-Phased Transit Curves

TCE 002446113-01 P= 6.717249 Days $T_0=137.412038$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

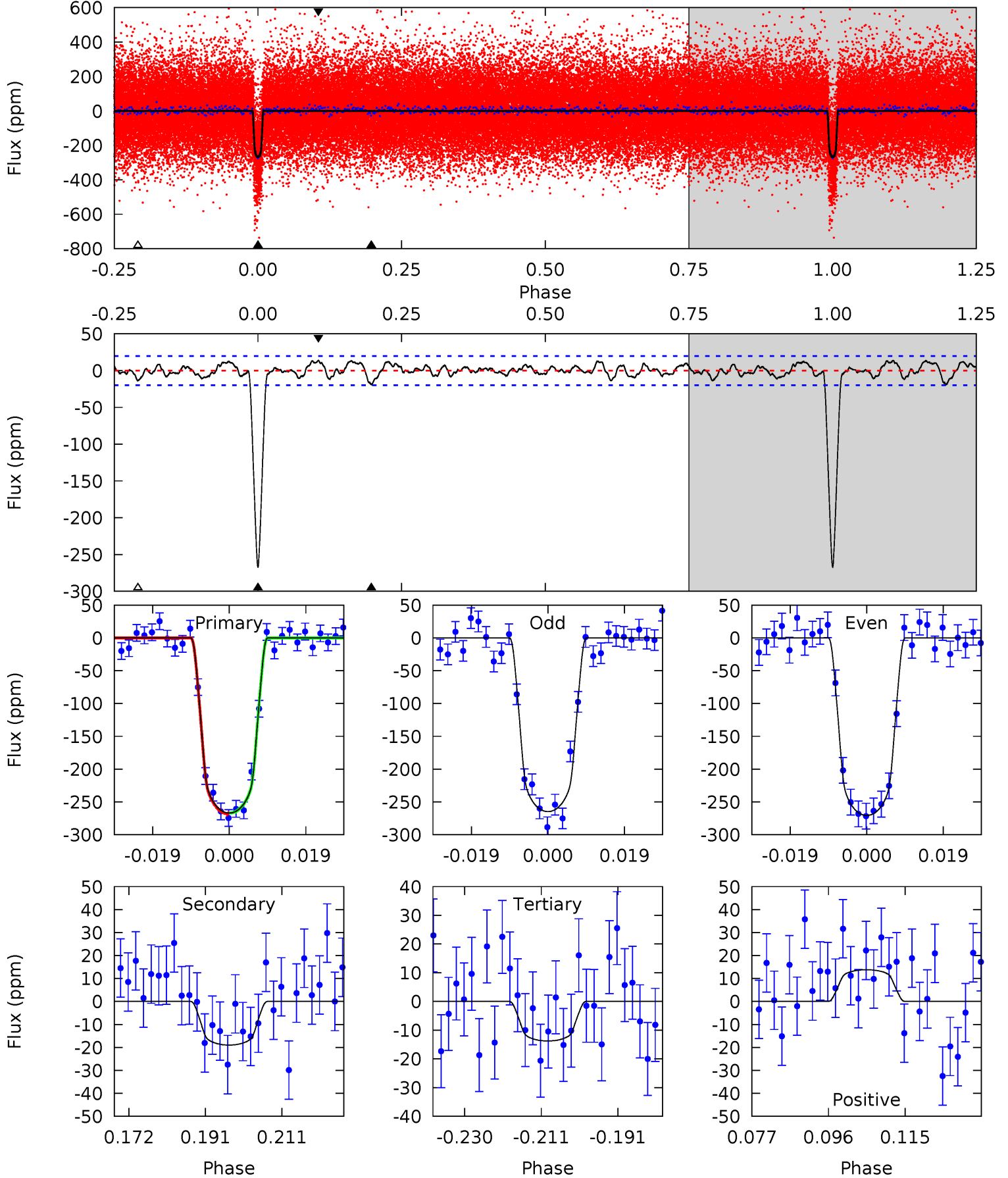
TCE 002446113-01 P= 6.717201 Days $T_0=137.417074$ (BKJD)



DV Model-Shift Uniqueness Test

002446113-01, P = 6.717249 Days, E = 130.694789 Days

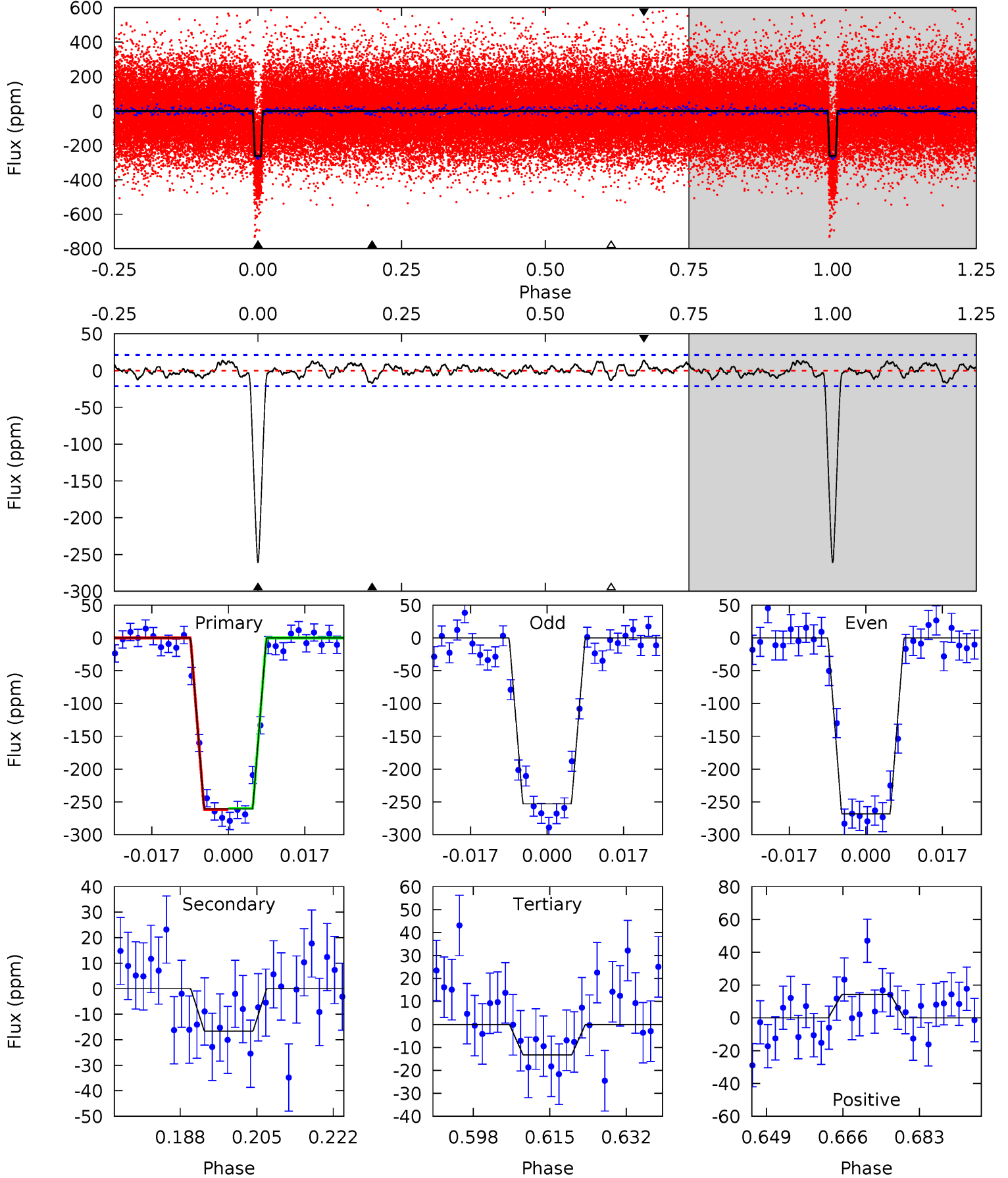
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
65.7	4.67	3.39	3.40	4.90	2.34	1.43	62.3	62.3	1.28	1.28	0.72	1.01	0.05	0.18



Alt Model-Shift Uniqueness Test

002446113-01, P = 6.717201 Days, E = 130.699873 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
60.9	3.90	3.11	3.32	4.92	2.38	1.28	57.8	57.6	0.79	0.57	1.77	1.02	0.05	0.21



Stellar Parameters For KIC 002446113

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6078^{+122}_{-134}	$4.094^{+0.174}_{-0.116}$	$0.140^{+0.150}_{-0.150}$	$1.683^{+0.300}_{-0.367}$	$1.285^{+0.106}_{-0.172}$	$0.379^{+0.353}_{-0.136}$
	+2%/-2%	+4%/-3%	+107%/-107%	+18%/-22%	+8%/-13%	+93%/-36%
Source	SPE58	SPE58	SPE58	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

Secondary Eclipse Parameters for KIC 002446113-01 / KOI 0379.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-19 ± 4	$3.27^{+0.49}_{-0.49}$	1760^{+91}_{-113}	3447^{+158}_{-166}	$5.574^{+2.409}_{-1.647}$
Alt.	-17 ± 4	$2.90^{+0.51}_{-0.40}$	1757^{+94}_{-99}	3491^{+195}_{-197}	$6.079^{+2.871}_{-2.054}$

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

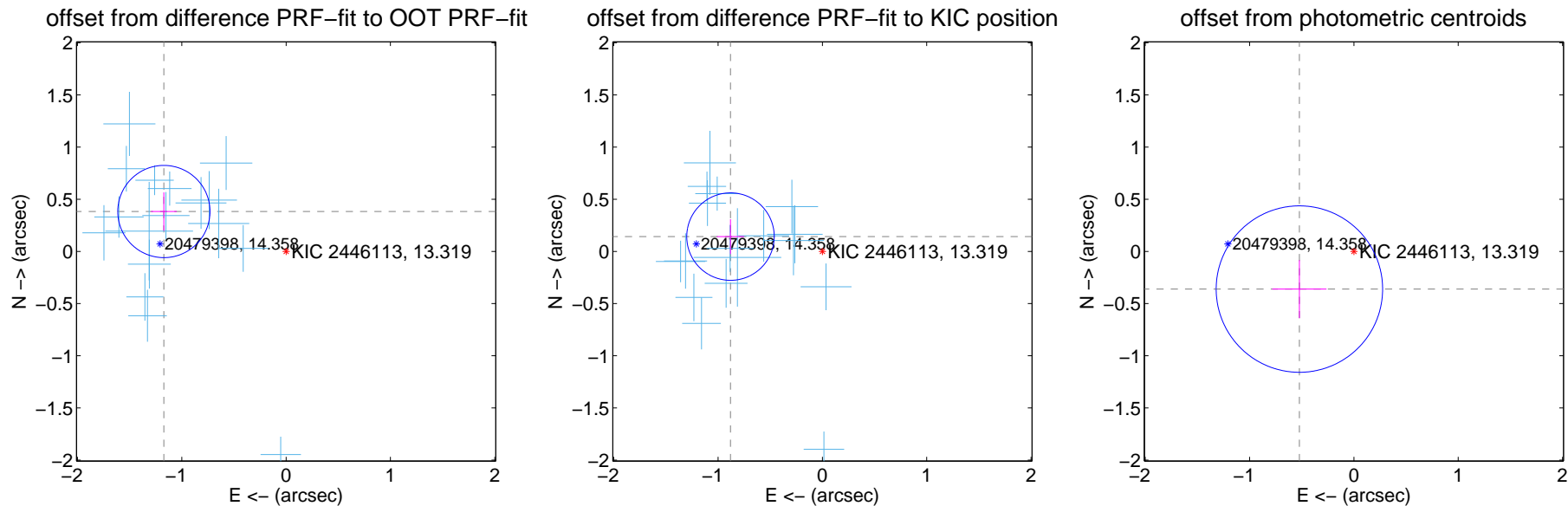
DV Centroid Data

Supplemental centroid analysis for 002446113-01. Kepler magnitude: 13.32. Transit SNR 45.74

There are 17 quarters with good PRF difference image offsets

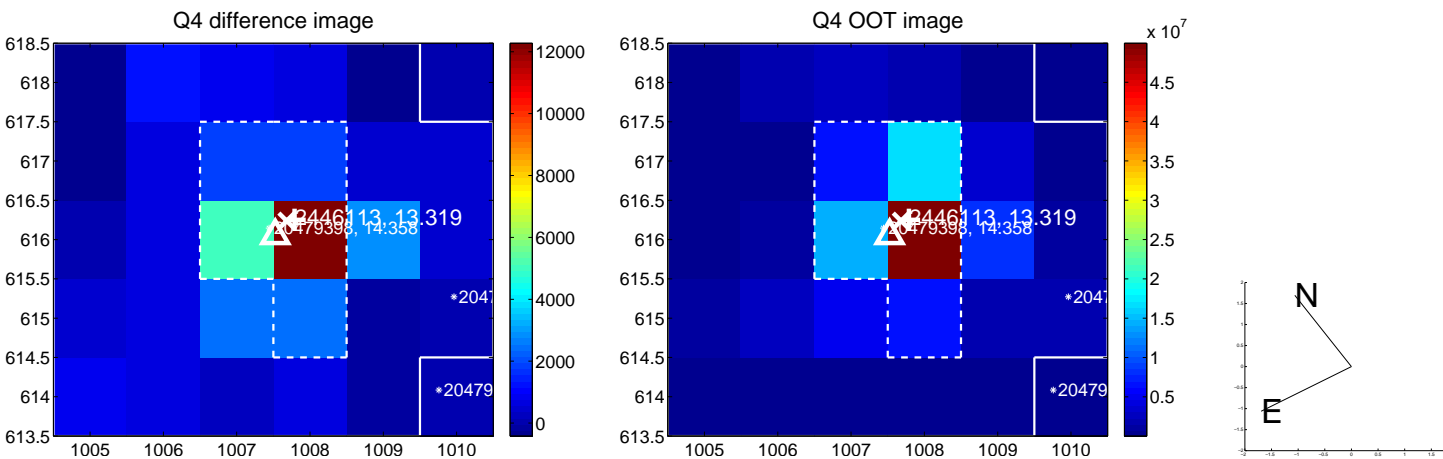
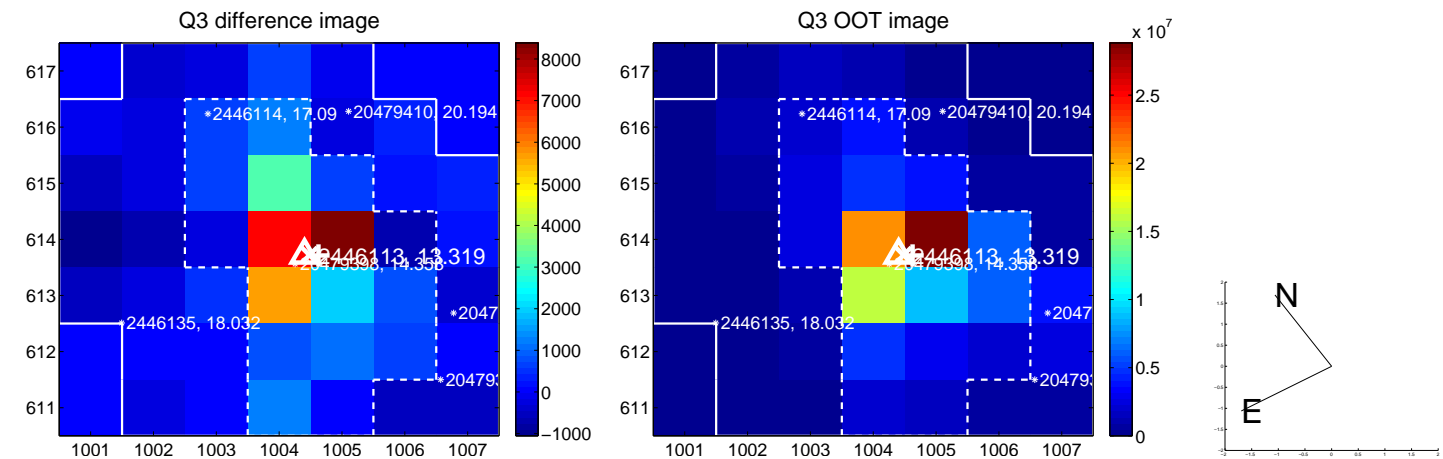
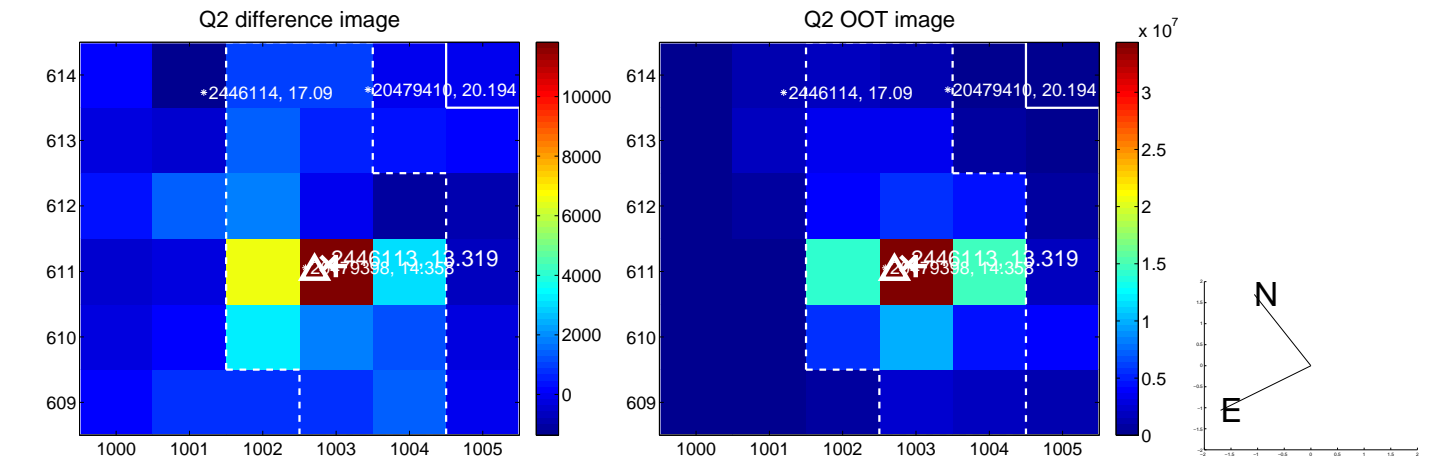
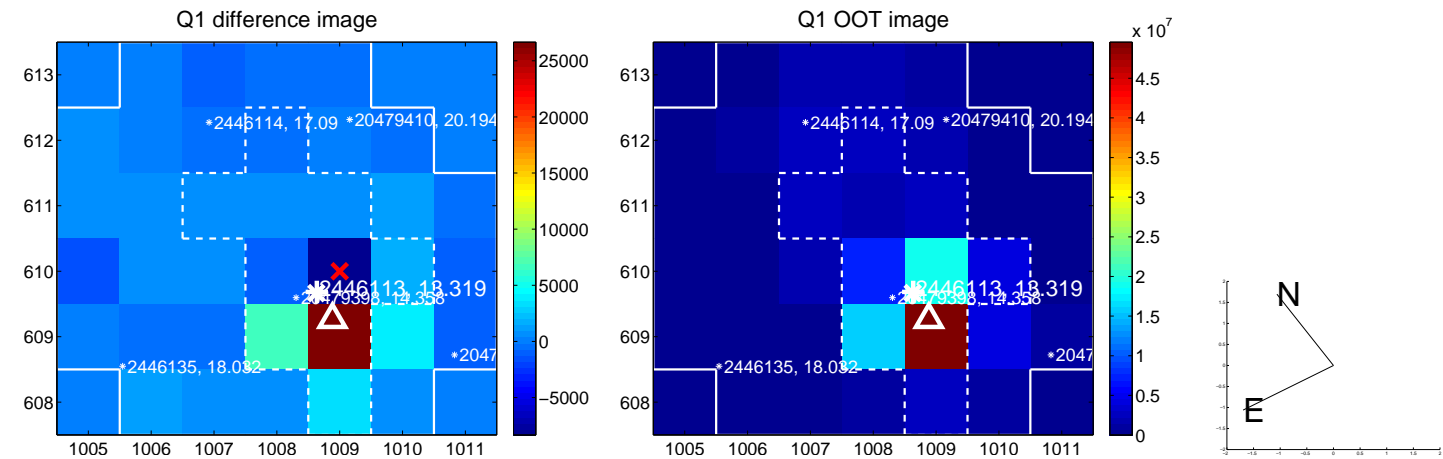
The direct PRF centroid is offset from the target star catalog position by about 0.12 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.232 \pm 0.147	8.37	1.172 \pm 0.124	0.382 \pm 0.184
PRF-fit source offset from KIC position	0.892 \pm 0.140	6.38	0.881 \pm 0.130	0.142 \pm 0.167
photometric centroid source offset	0.64 \pm 0.27	2.39	0.52 \pm 0.26	-0.36 \pm 0.28

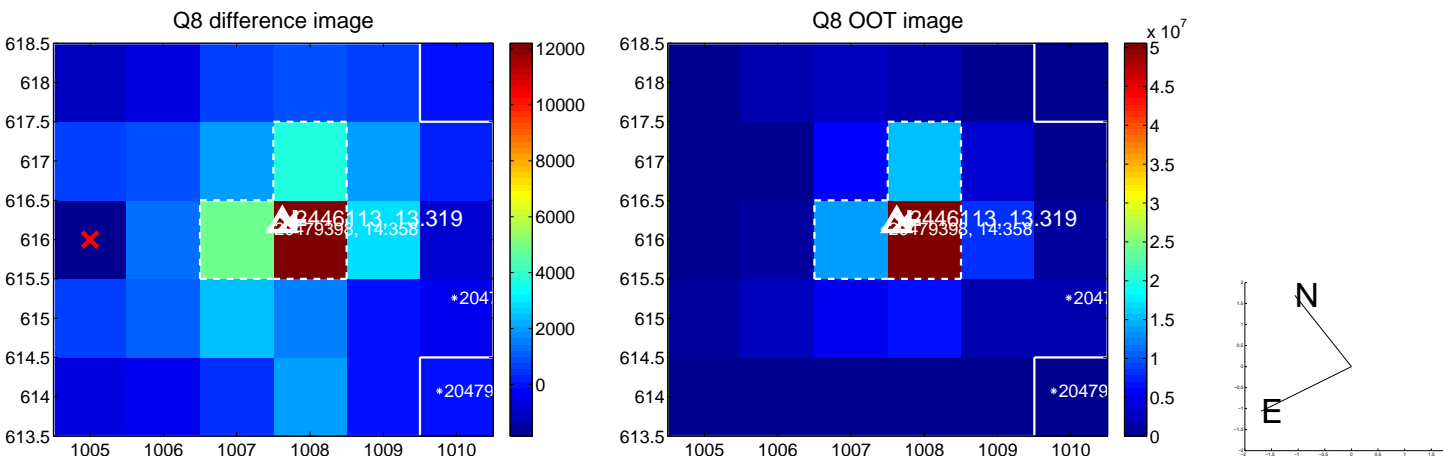
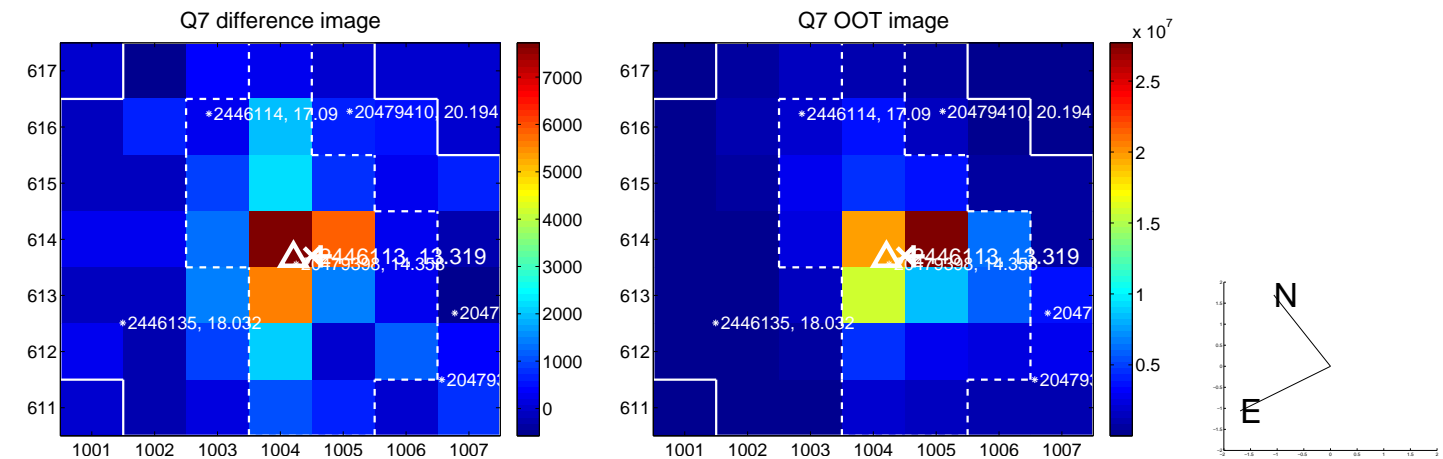
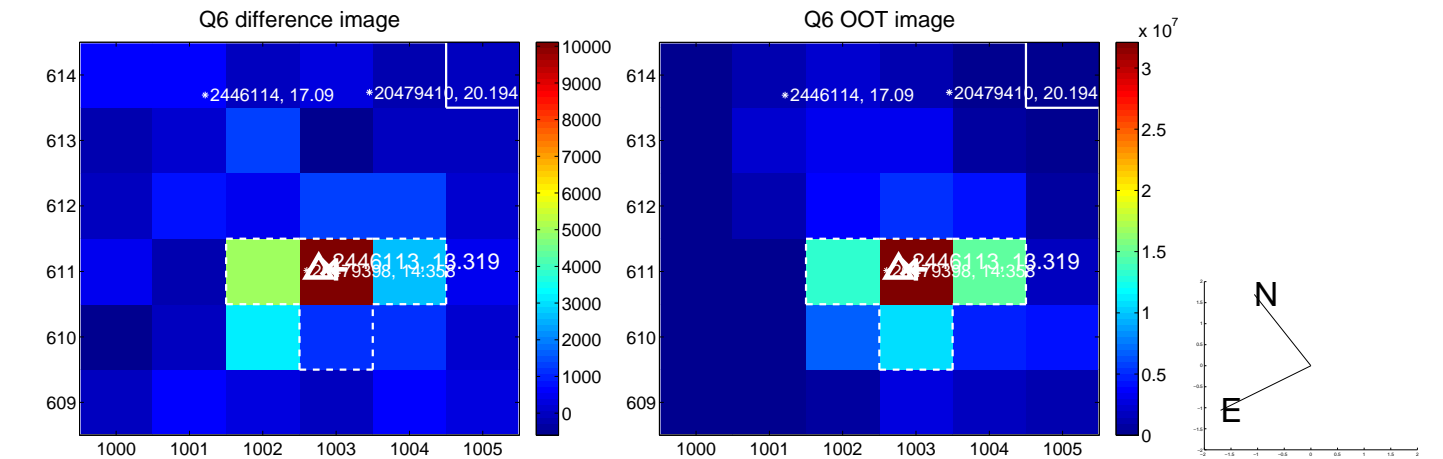
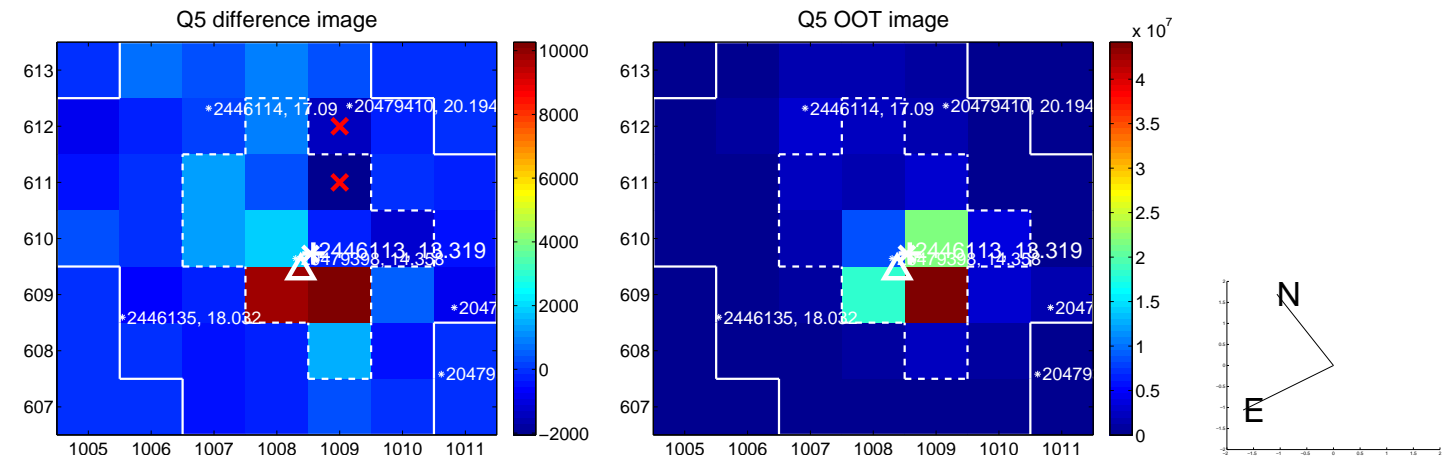


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

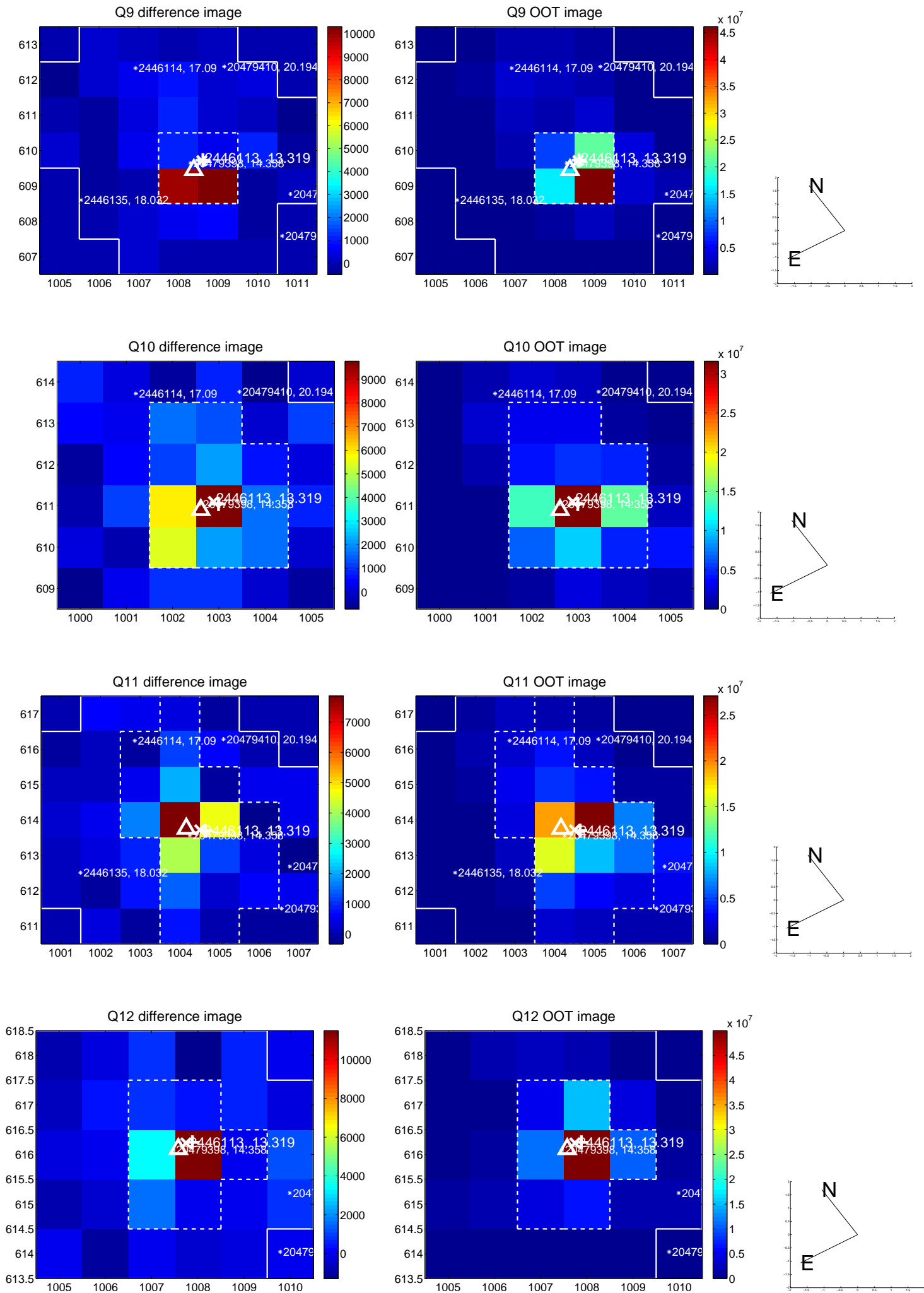
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



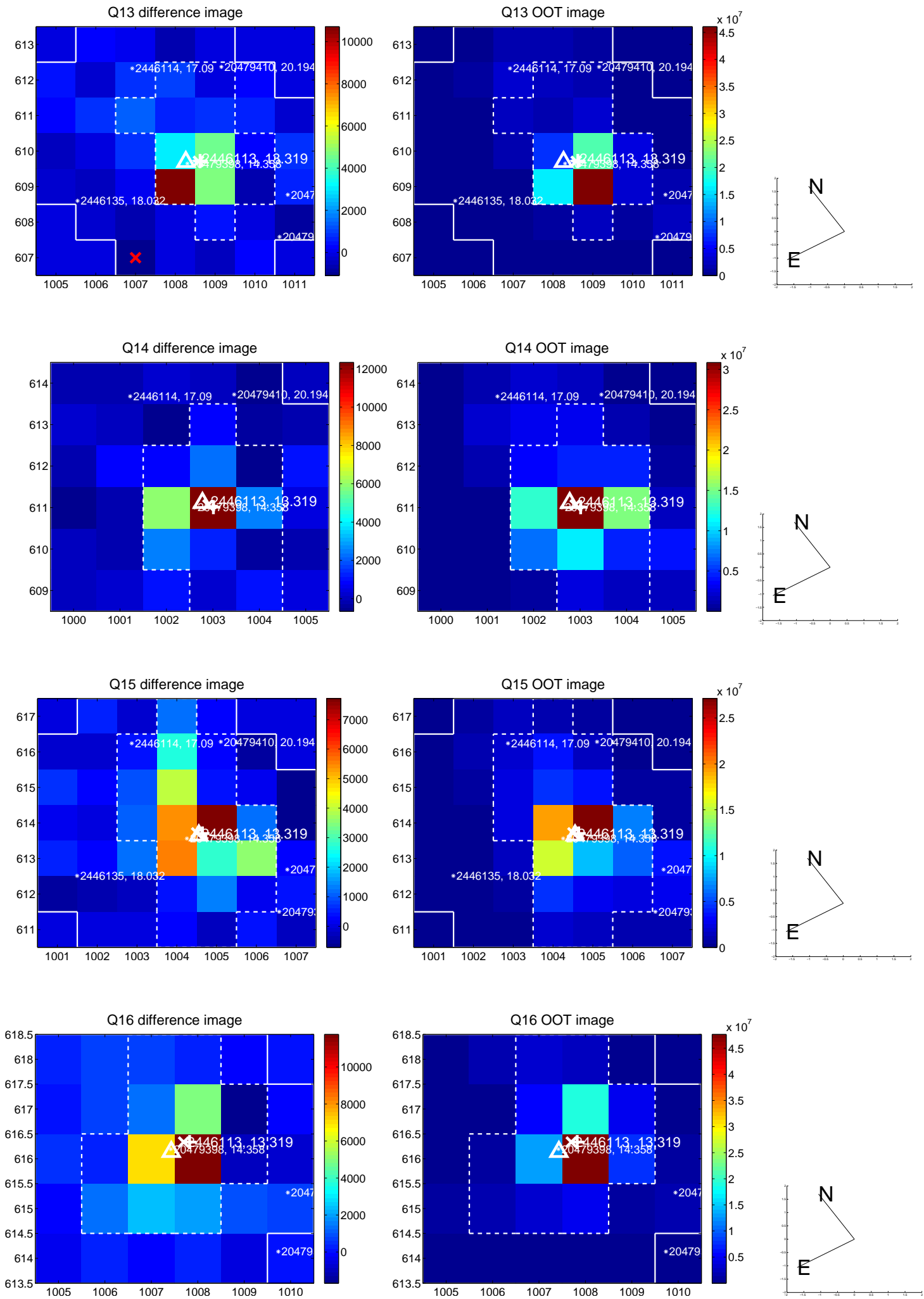
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



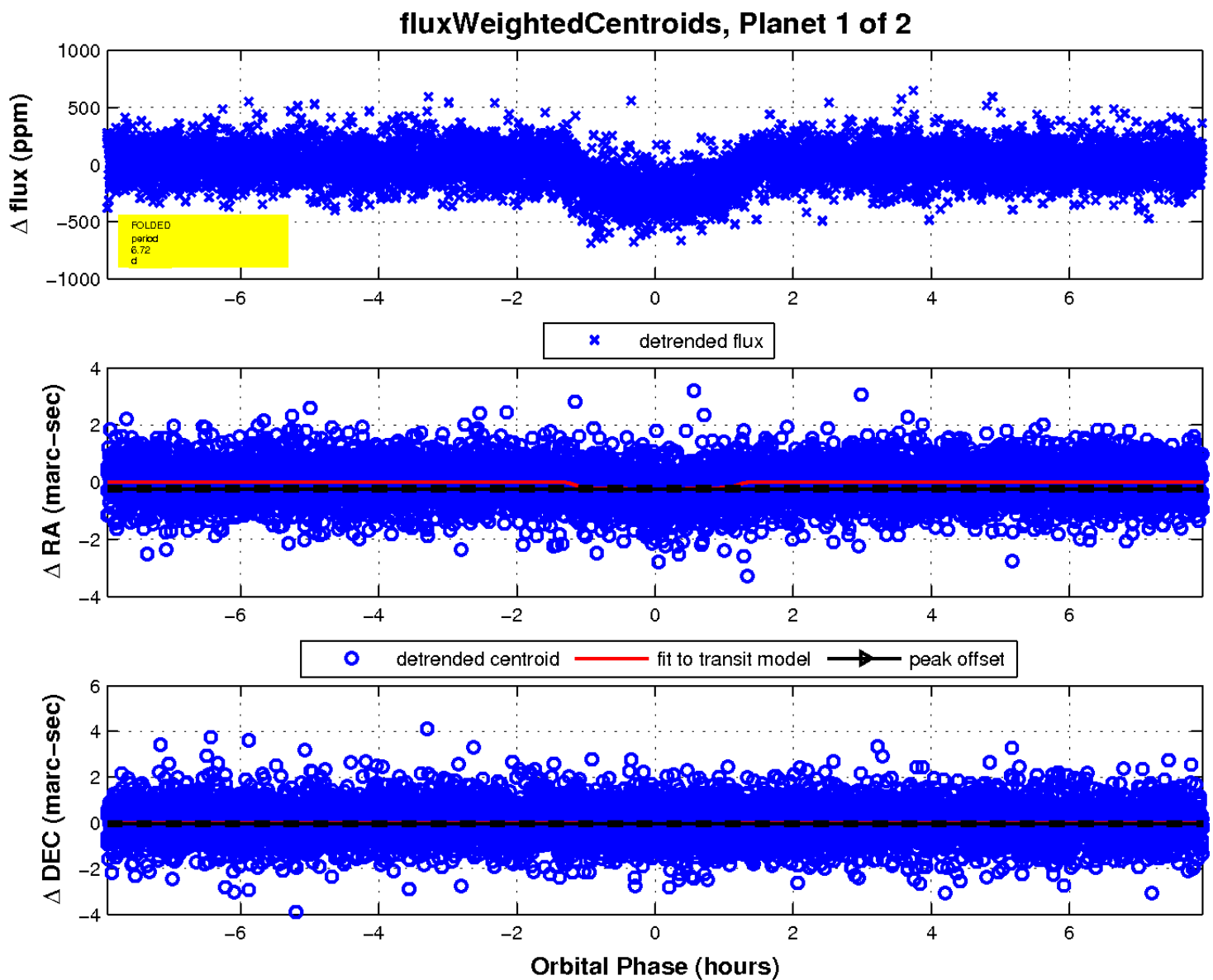
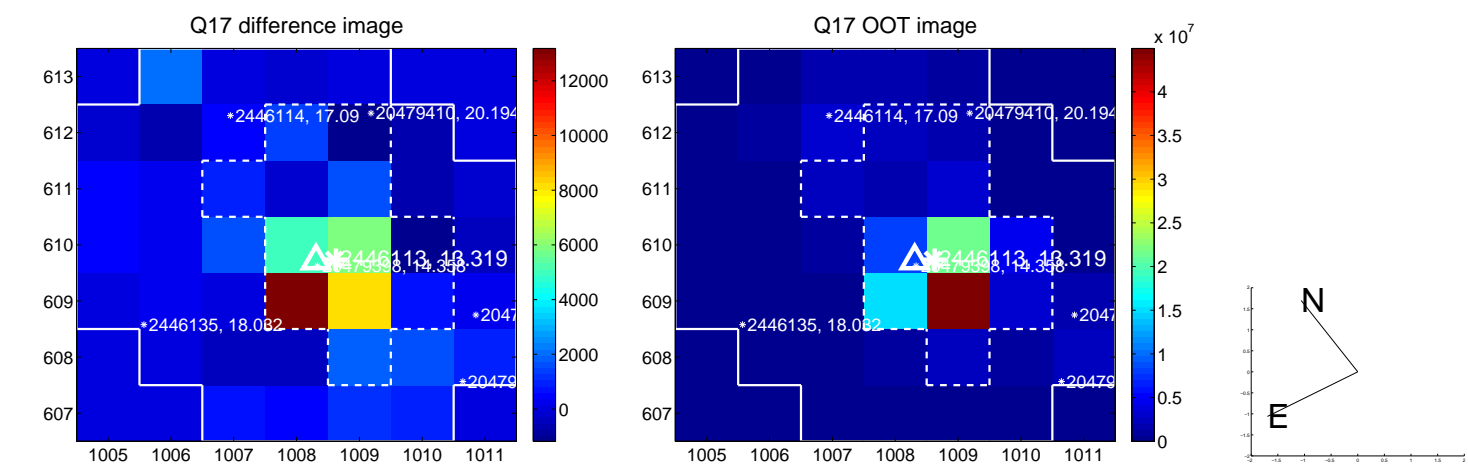
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

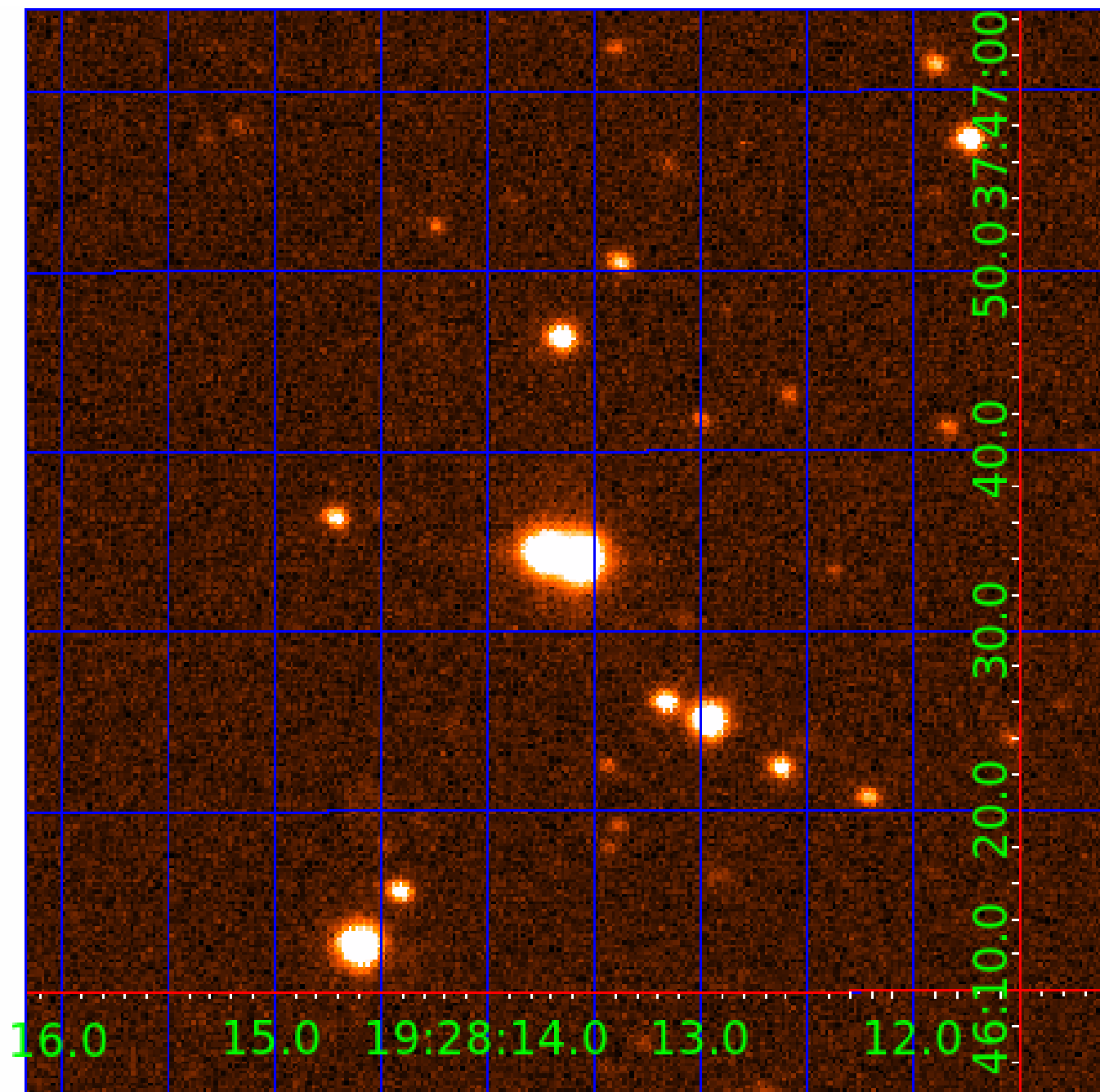


white \times : KIC target position; $+$: OOT centroid; Δ : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 002446113

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})
002446113-01	OBS	0379.01	6.717249	137.412039	274.9	2.643	40.4	45.7	1.68	6078	3.31	604.05
002446113-02	OBS	0379.02	23.137471	152.174118	128.6	4.781	11.2	12.4	1.68	6078	2.63	116.12

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
002446113-01	OBS	FP	0.07	0	0	1	0	CENT_UNRESOLVED_OFFSET
002446113-02	OBS	PC	1.00	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.

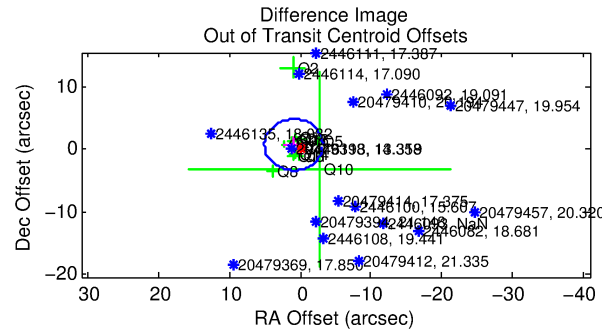
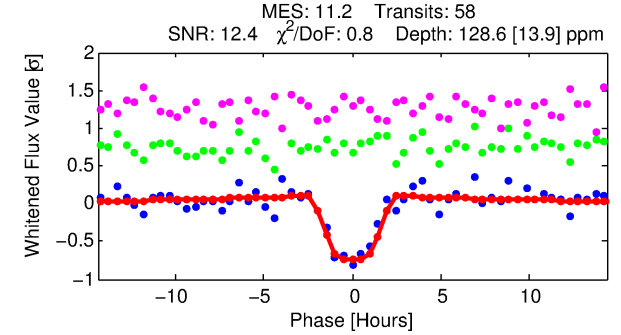
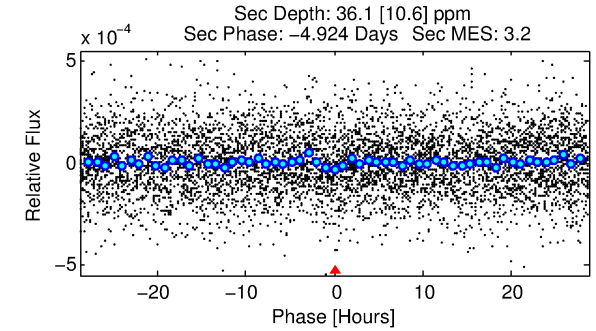
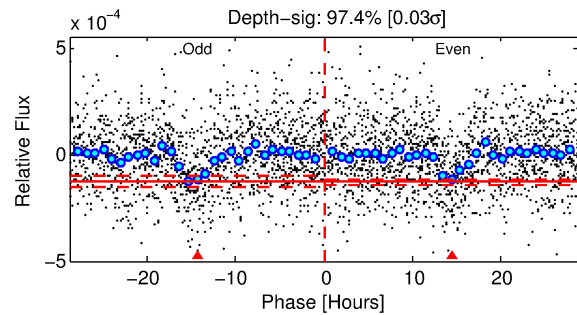
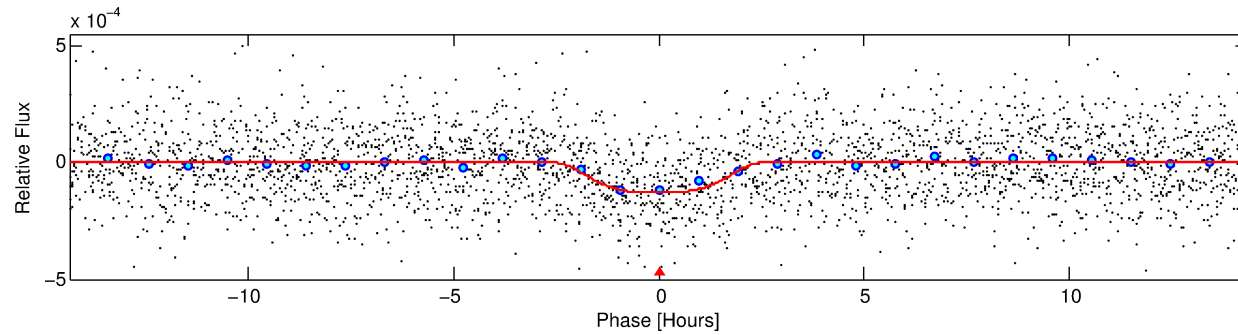
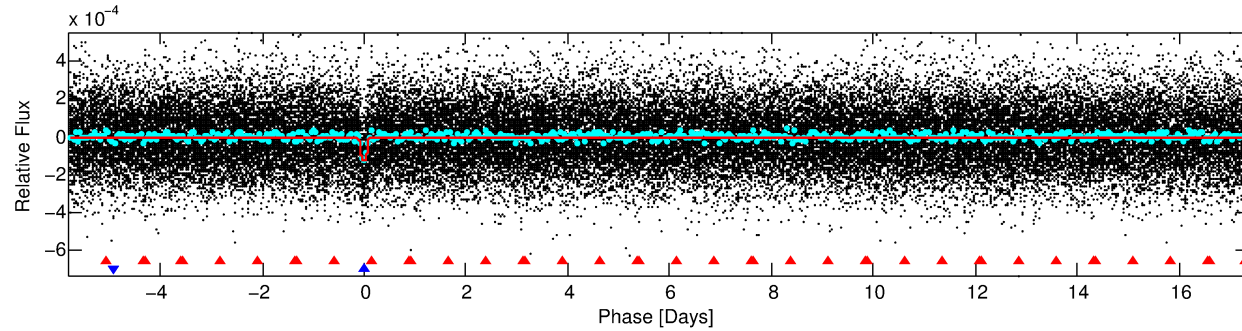
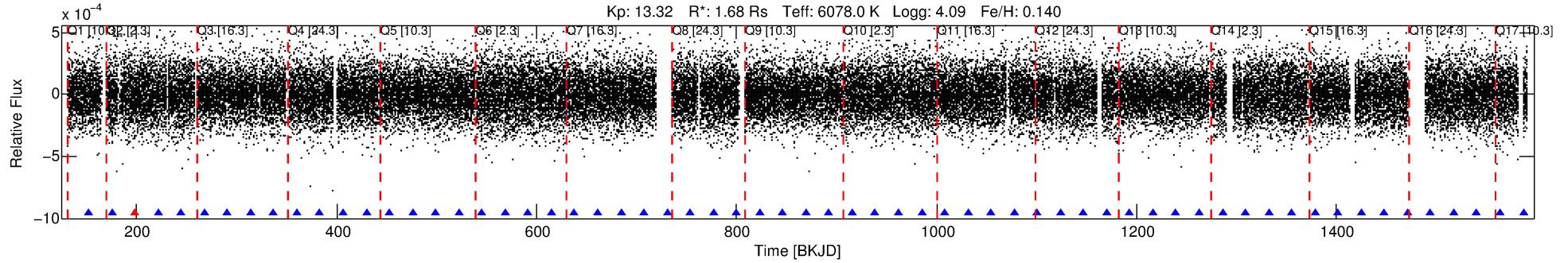
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 002446113-02

No Significant Match Found

DV One-Page Summary

KIC: 2446113 Candidate: 2 of 2 Period: 23.137 d
KOI: K00379.02 Corr: 0.870



DV Fit Results:

Period = 23.13747 [0.00023] d
Epoch = 152.1741 [0.0084] BKJD
Rp/R* = 0.0143 [0.0011]
a/R* = 9.28 [1.47]
b = 0.98 [0.01]
Seff = 116.12 [36.77]
Teff = 837 [66] K
Rp = 2.63 [0.61] Re
a = 0.1727 [0.0341] AU
Ag = 85.70 [38.43] [2.20 σ]
Teffp = 3938 [336] K [9.06 σ]

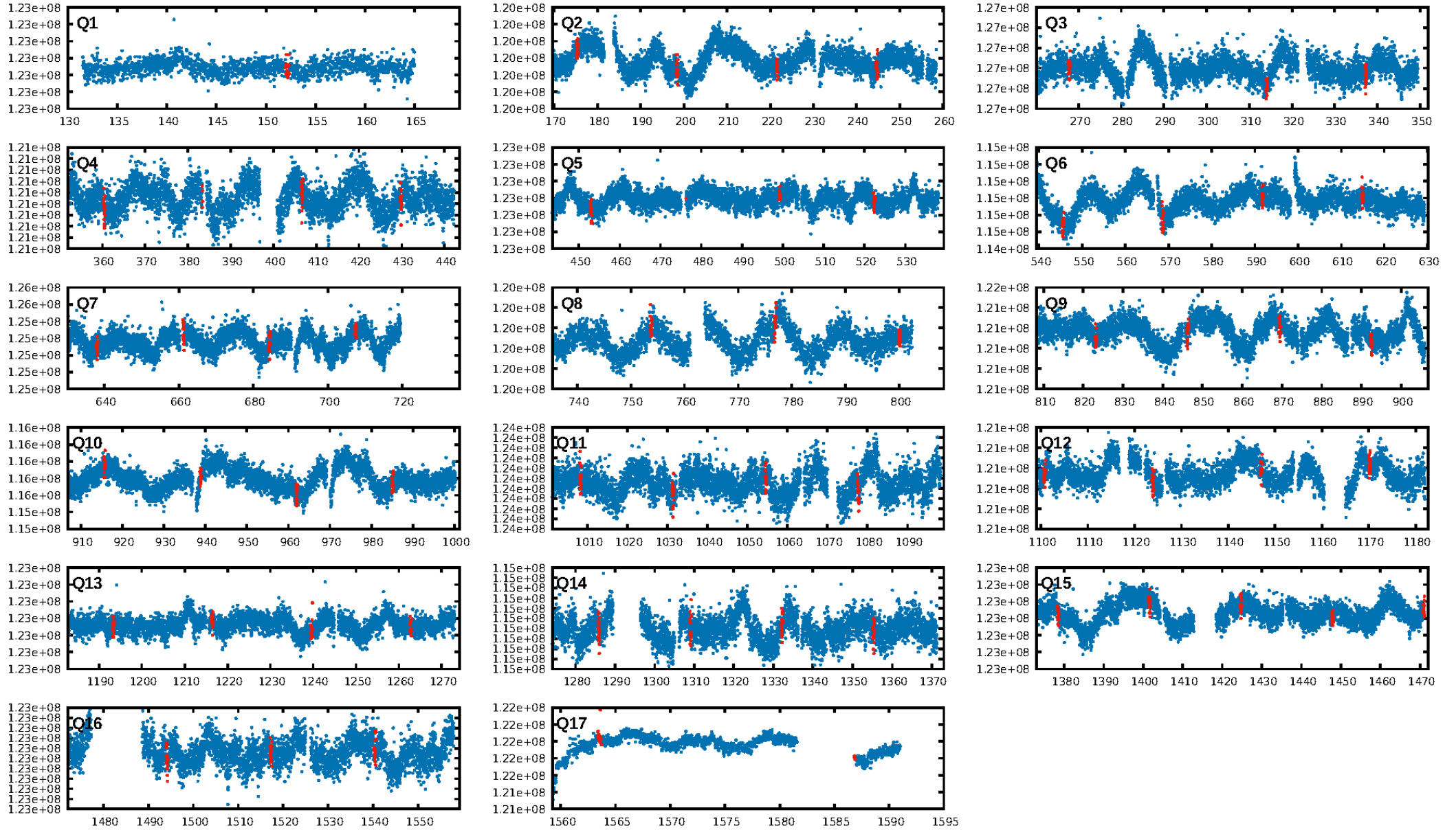
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [72.14 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 99.3%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 8.25e-29
RollingBand-fgt: 0.98 [55/56]
GhostDiagnostic-chr: 0.5981
Centroid-sig: 0.1%
Centroid-so: 1.503 arcsec [1.66 σ]
OotOffset-rm: 1.167 arcsec [0.85 σ]
KicOffset-rm: 0.765 arcsec [0.56 σ]
OotOffset-st: 4/4/2/3 [13]
KicOffset-st: 4/4/2/3 [13]
DiffImageQuality-fgm: 0.69 [9/13]
DiffImageOverlap-fno: 1.00 [17/17]

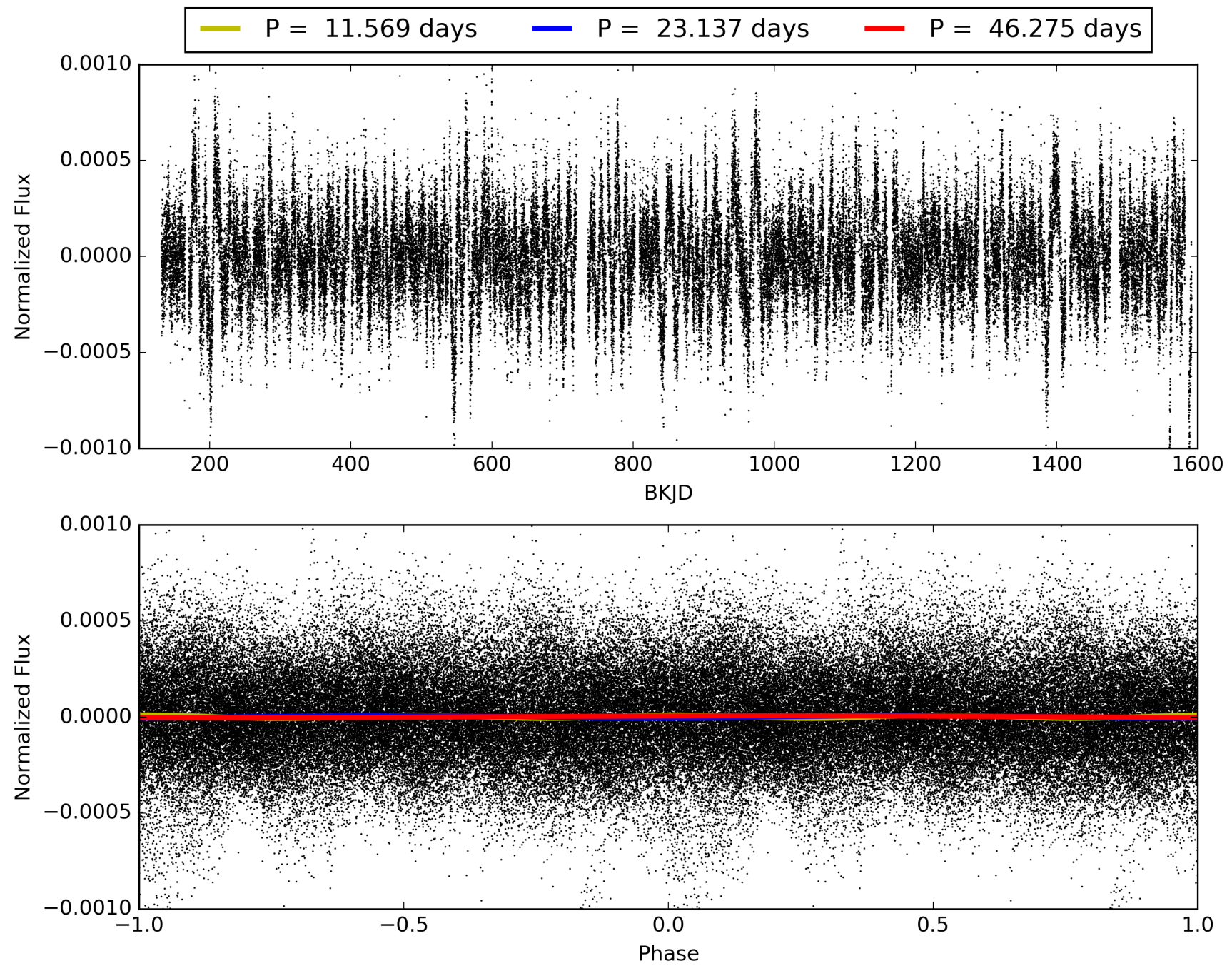
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 00:59:32 Z

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

TCE 002446113-02, PDC Light Curves

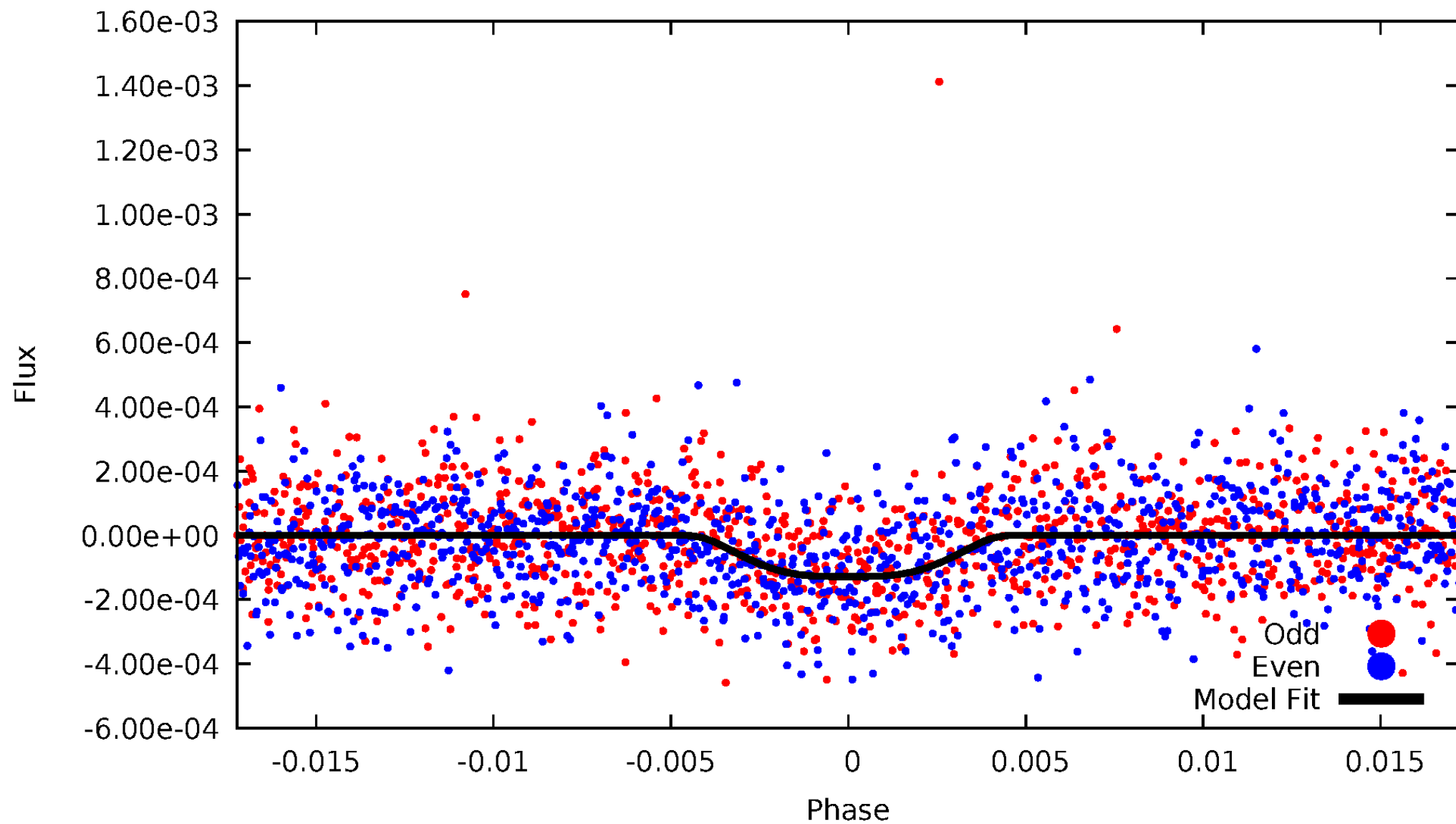


TCE 002446113-02



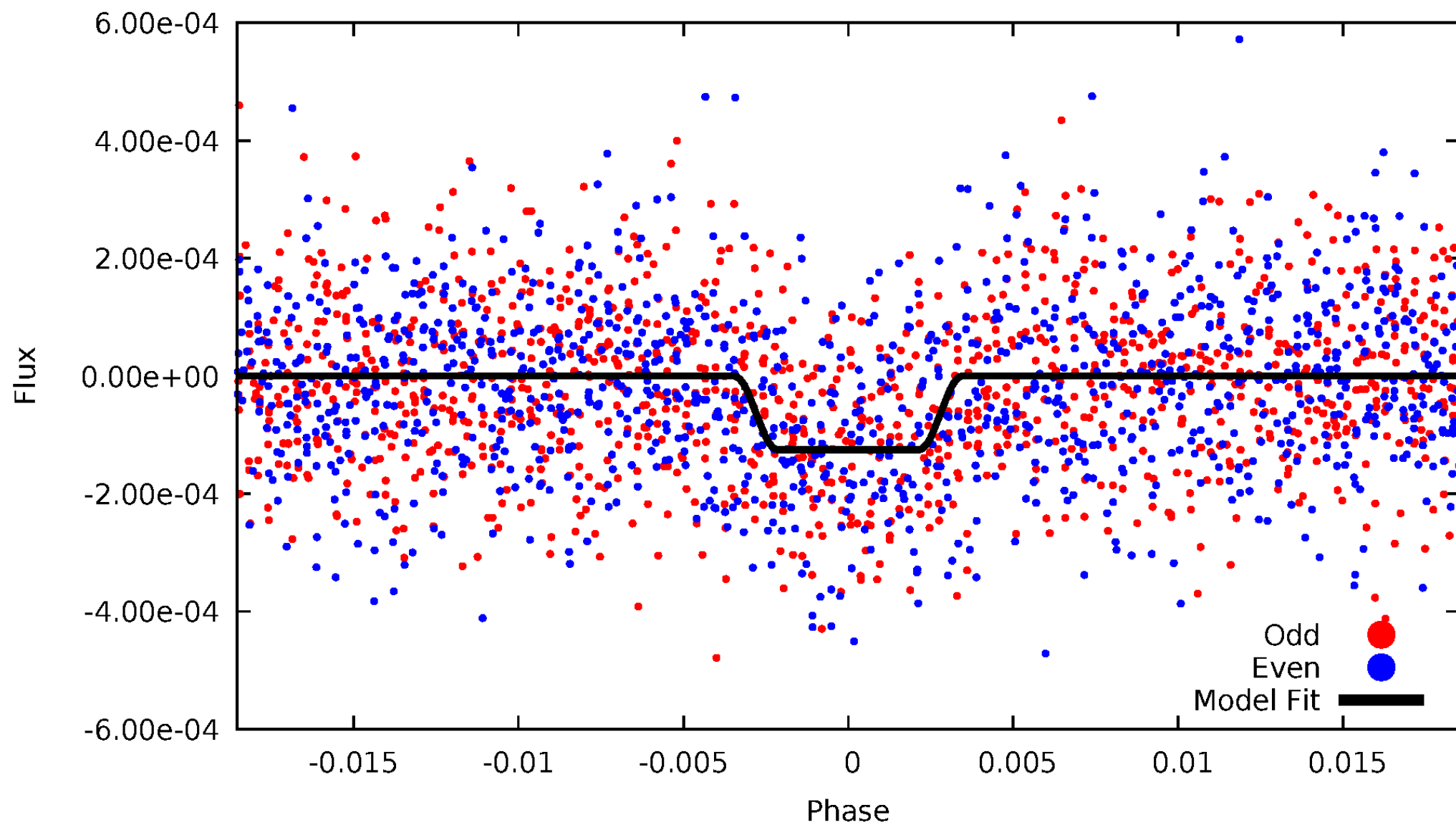
DV Odd/Even

TCE 002446113-02



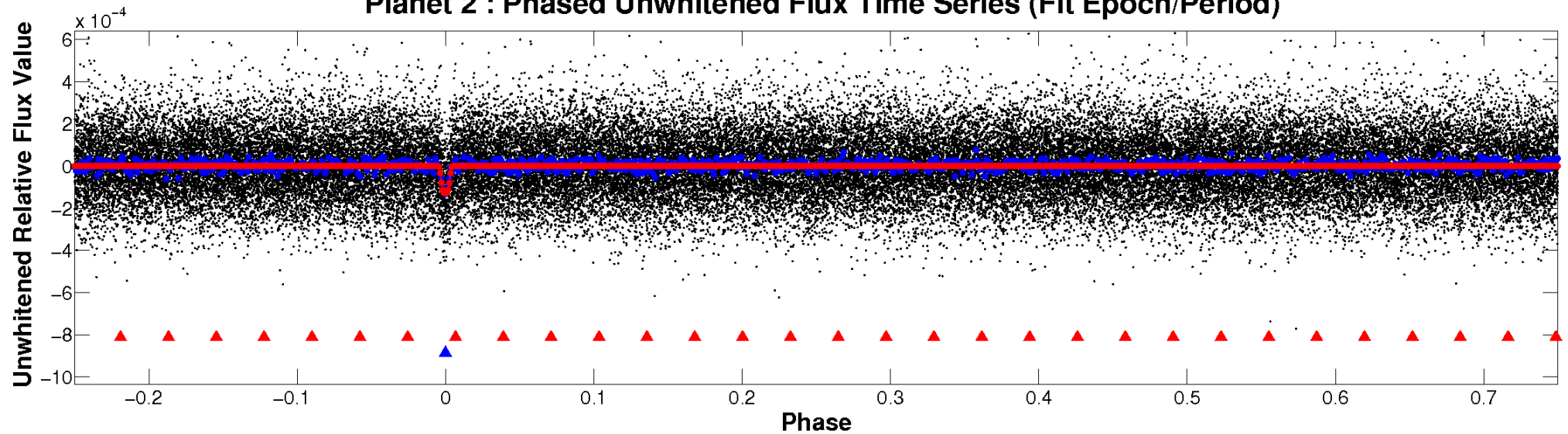
ALT Odd/Even

TCE 002446113-02

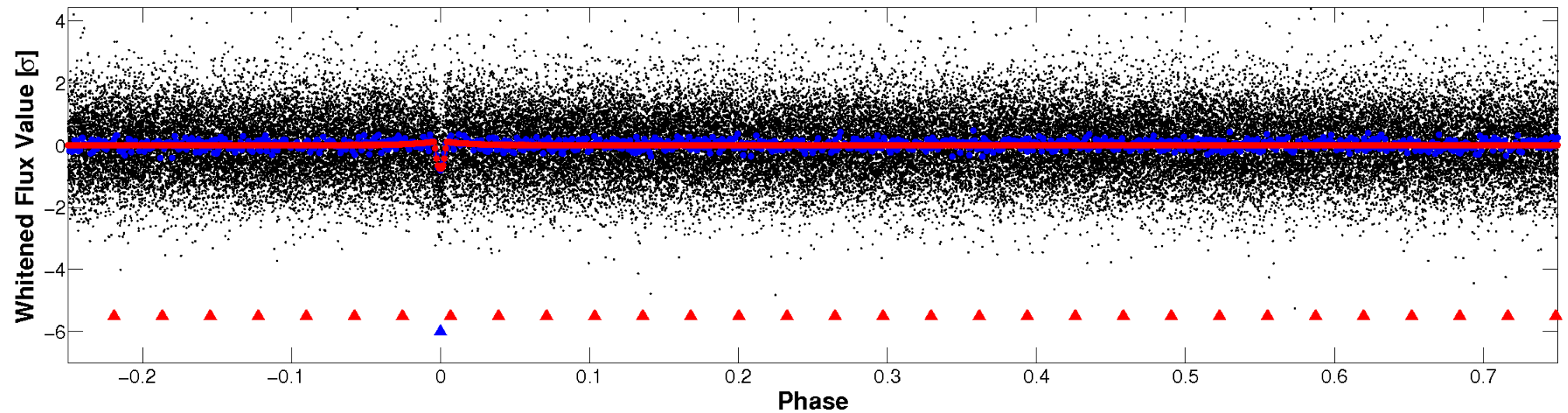


Non-Whitened Vs. Whitened Light Curve

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

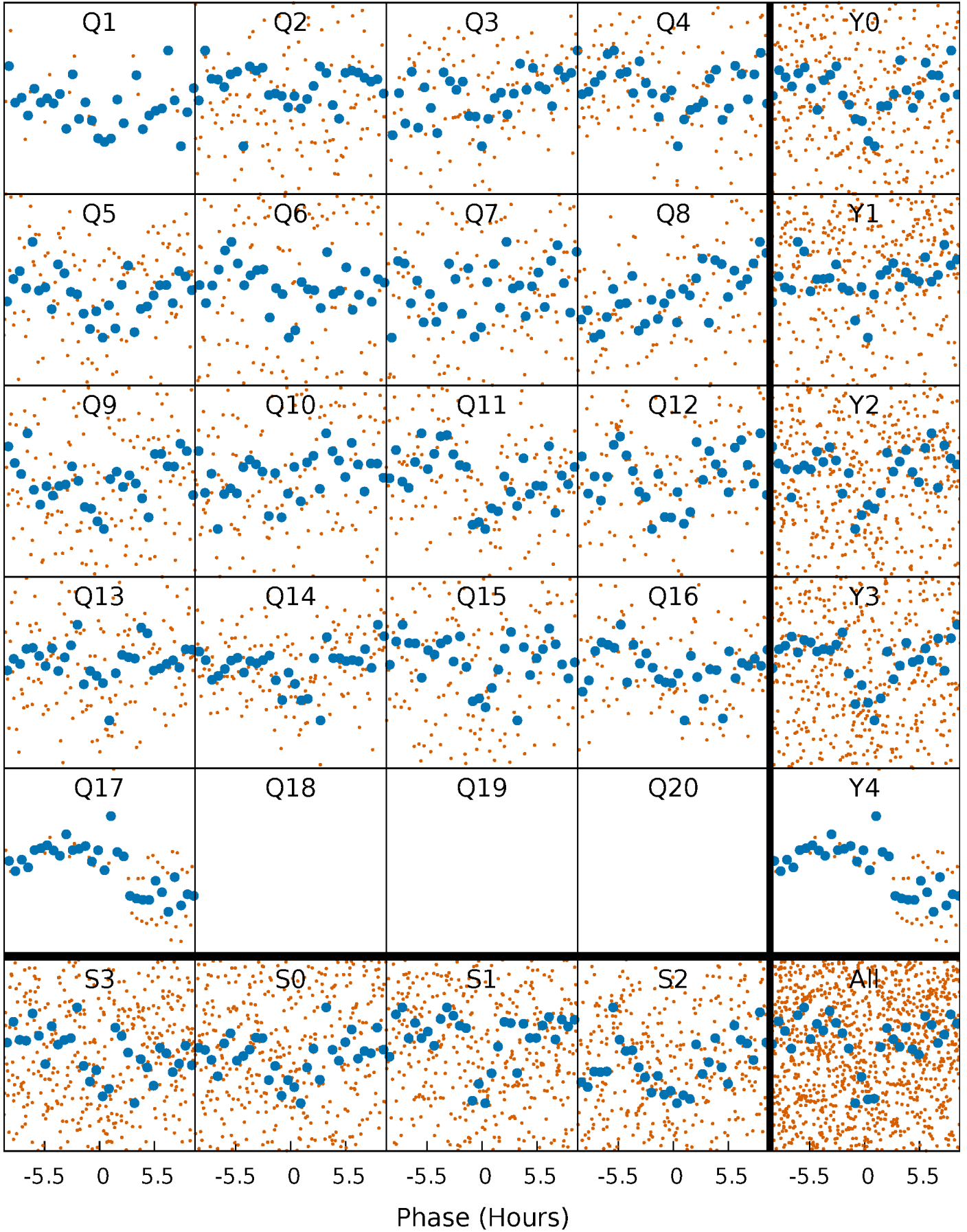


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



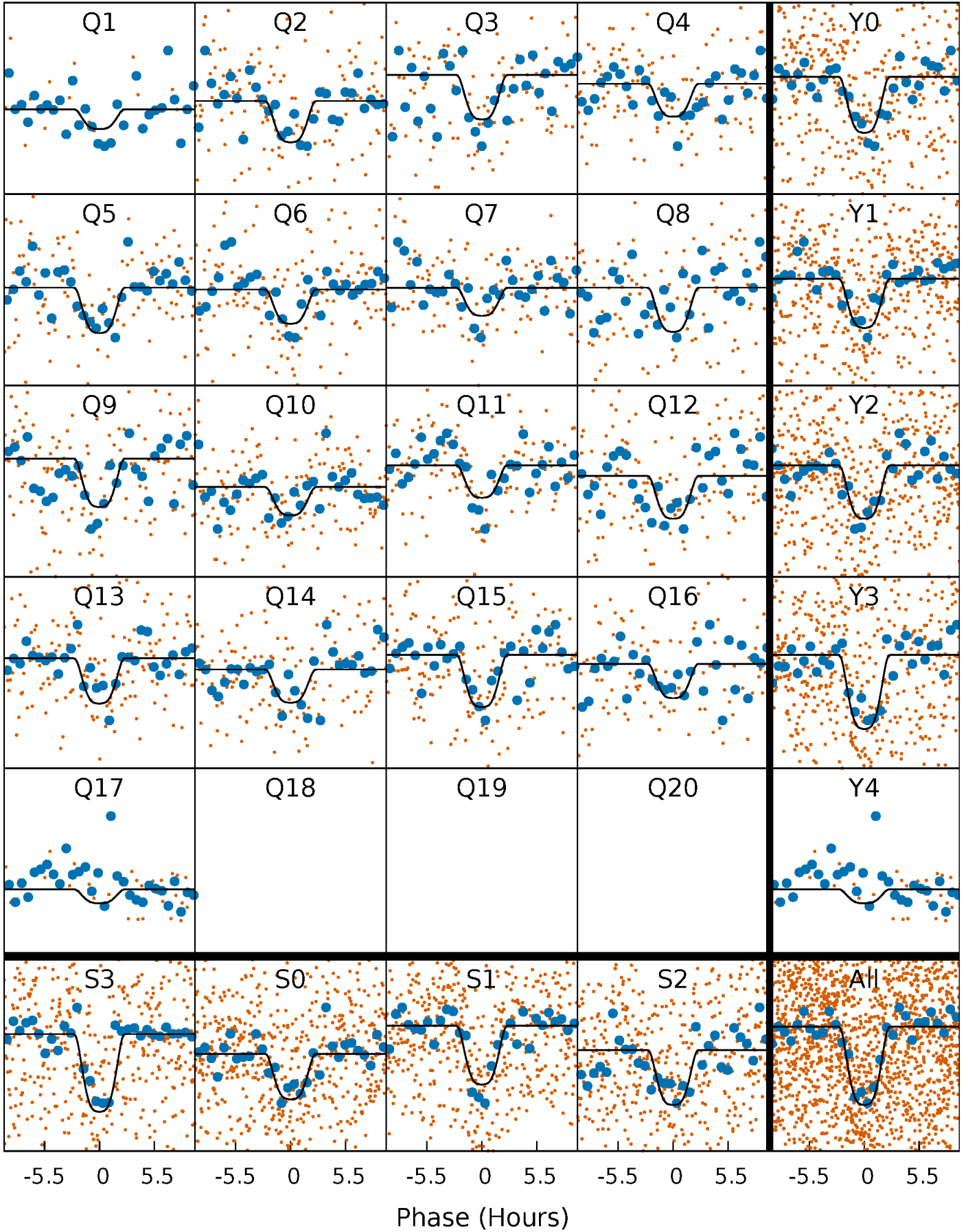
PDC Quarter-Phased Transit Curves

TCE 002446113-02 P= 23.137471 Days $T_0=152.174118$ (BKJD)



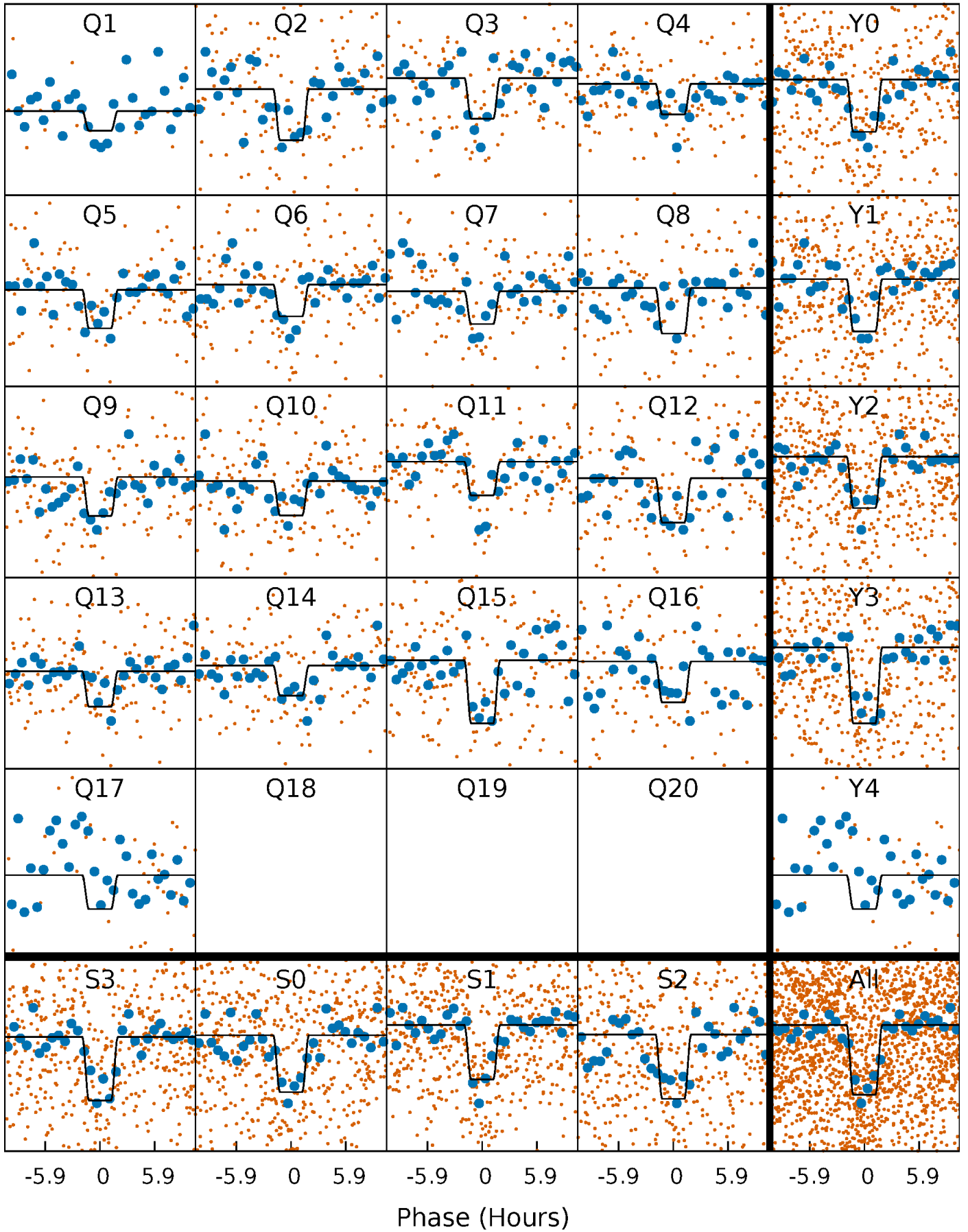
DV Quarter-Phased Transit Curves

TCE 002446113-02 P= 23.137471 Days $T_0=152.174118$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

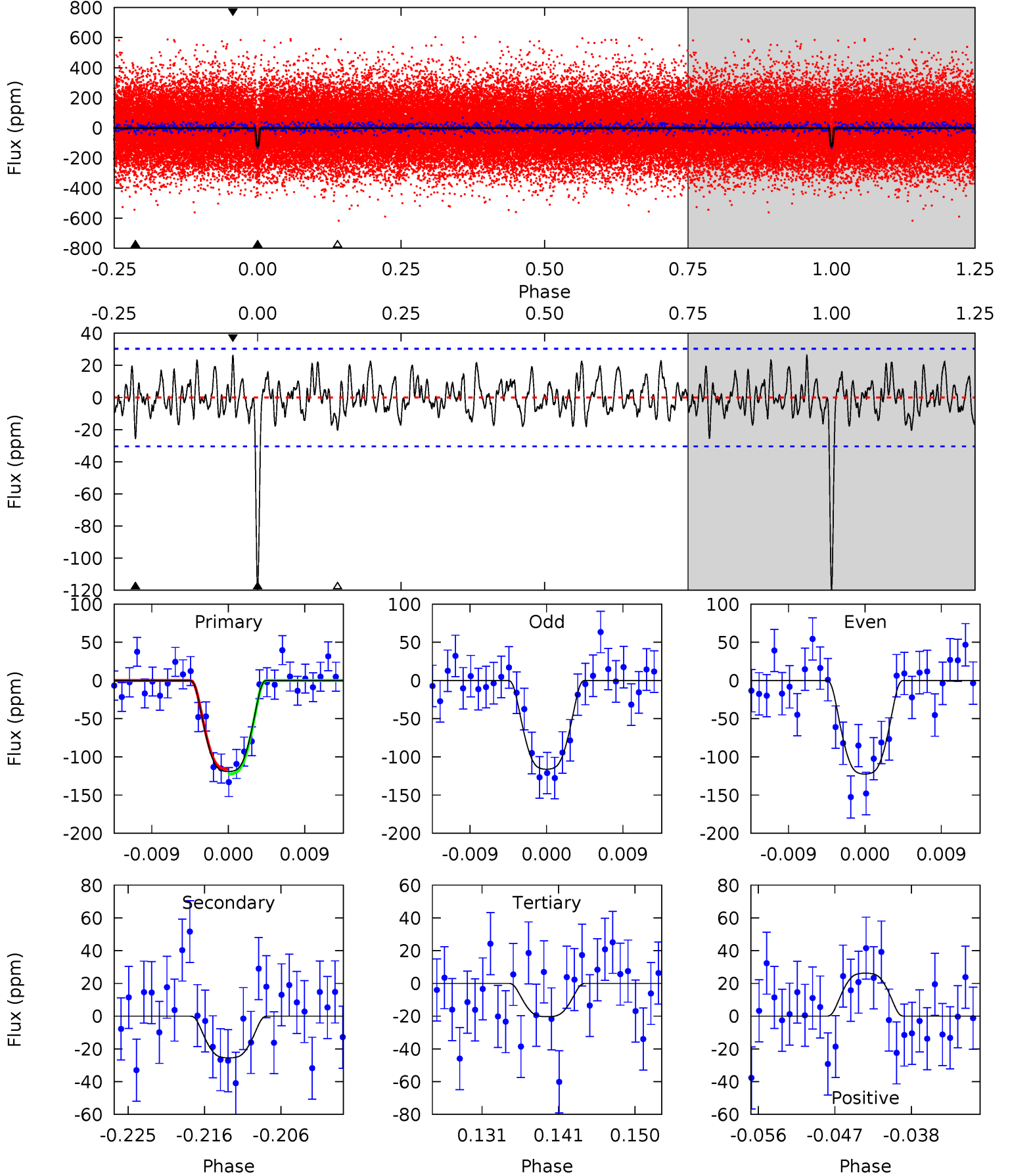
TCE 002446113-02 P= 23.136804 Days $T_0=152.194002$ (BKJD)



DV Model-Shift Uniqueness Test

002446113-02, P = 23.137471 Days, E = 129.036647 Days

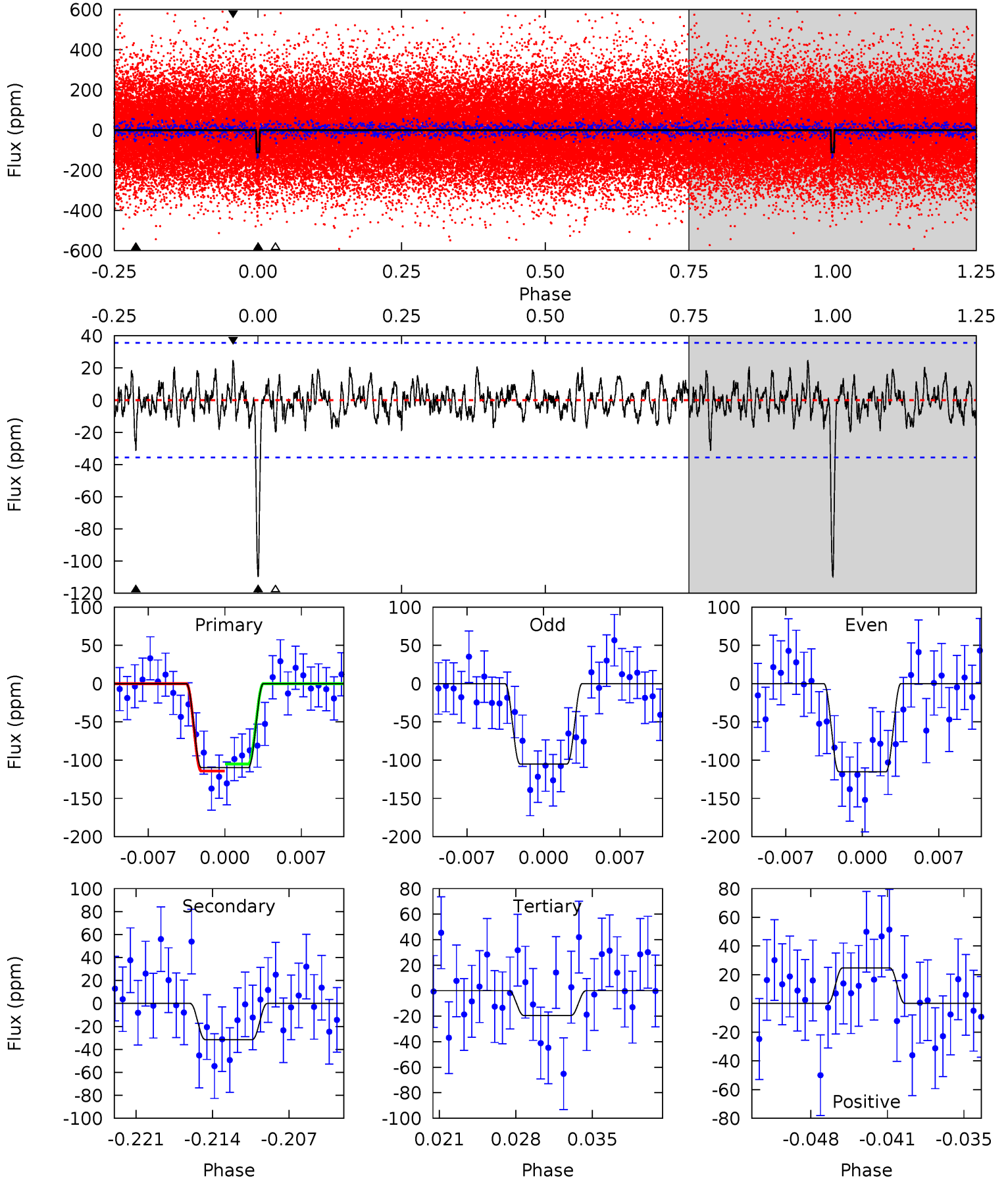
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
19.8	4.22	3.37	4.35	5.04	2.60	1.44	16.4	15.4	0.85	-0.13	0.52	0.90	0.18	0.53



Alt Model-Shift Uniqueness Test

002446113-02, $P = 23.136804$ Days, $E = 129.057198$ Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
15.7	4.50	2.79	3.55	5.10	2.70	1.08	12.9	12.2	1.72	0.95	0.74	1.02	0.18	0.66



Stellar Parameters For KIC 002446113

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6078^{+122}_{-134}	$4.094^{+0.174}_{-0.116}$	$0.140^{+0.150}_{-0.150}$	$1.683^{+0.300}_{-0.367}$	$1.285^{+0.106}_{-0.172}$	$0.379^{+0.353}_{-0.136}$
	+2%/-2%	+4%/-3%	+107%/-107%	+18%/-22%	+8%/-13%	+93%/-36%
Source	SPE58	SPE58	SPE58	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

Secondary Eclipse Parameters for KIC 002446113-02 / KOI 0379.02

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-25 ± 6	$2.57^{+0.35}_{-0.35}$	1163^{+64}_{-68}	3944^{+187}_{-213}	62^{+27}_{-20}
Alt.	-31 ± 7	$2.01^{+0.31}_{-0.32}$	1162^{+61}_{-77}	4478^{+266}_{-249}	126^{+56}_{-37}

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

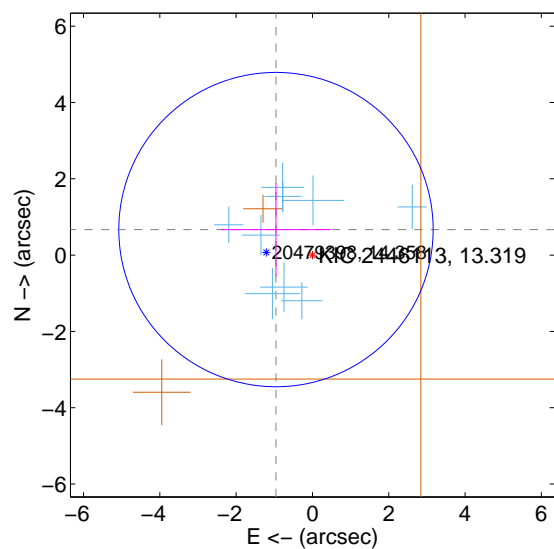
Supplemental centroid analysis for 002446113-02. Kepler magnitude: 13.32. Transit SNR 12.39

There are 9 quarters with good PRF difference image offsets

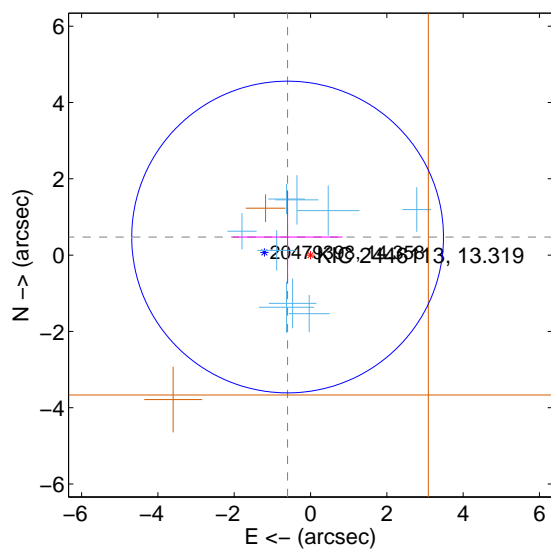
The direct PRF centroid is offset from the target star catalog position by about 0.61 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.167 ± 1.373	0.85	0.956 ± 1.441	0.669 ± 1.224
PRF-fit source offset from KIC position	0.765 ± 1.362	0.56	0.601 ± 1.441	0.474 ± 1.224
photometric centroid source offset	1.50 ± 0.90	1.66	1.45 ± 0.90	0.40 ± 0.94

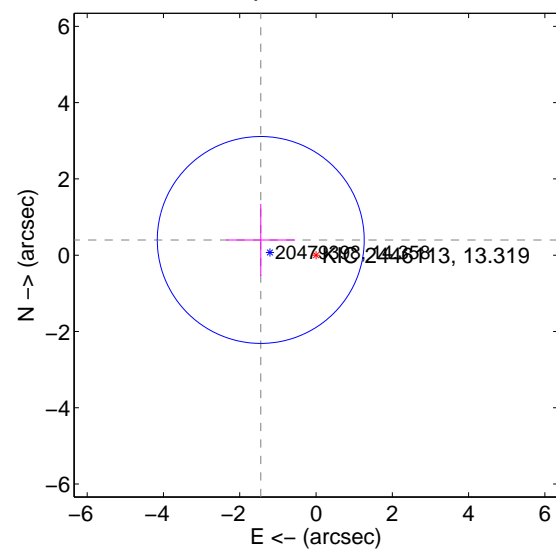
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

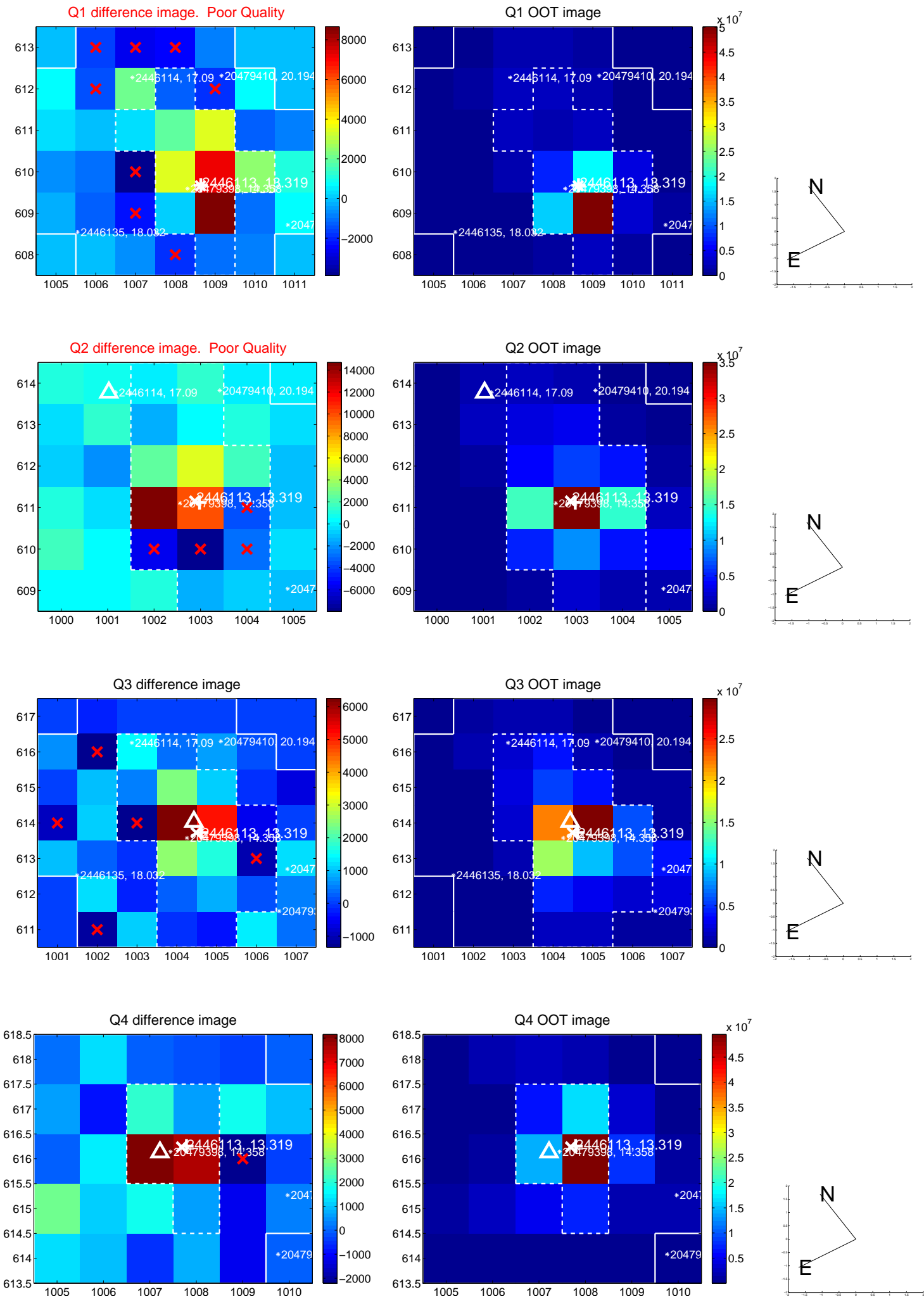


offset from photometric centroids

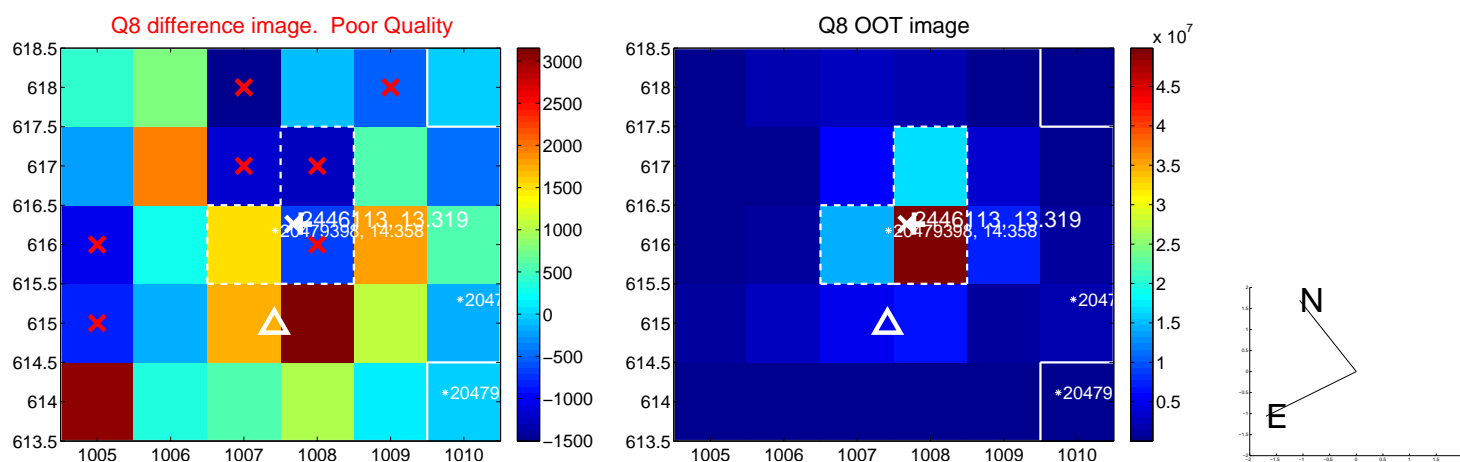
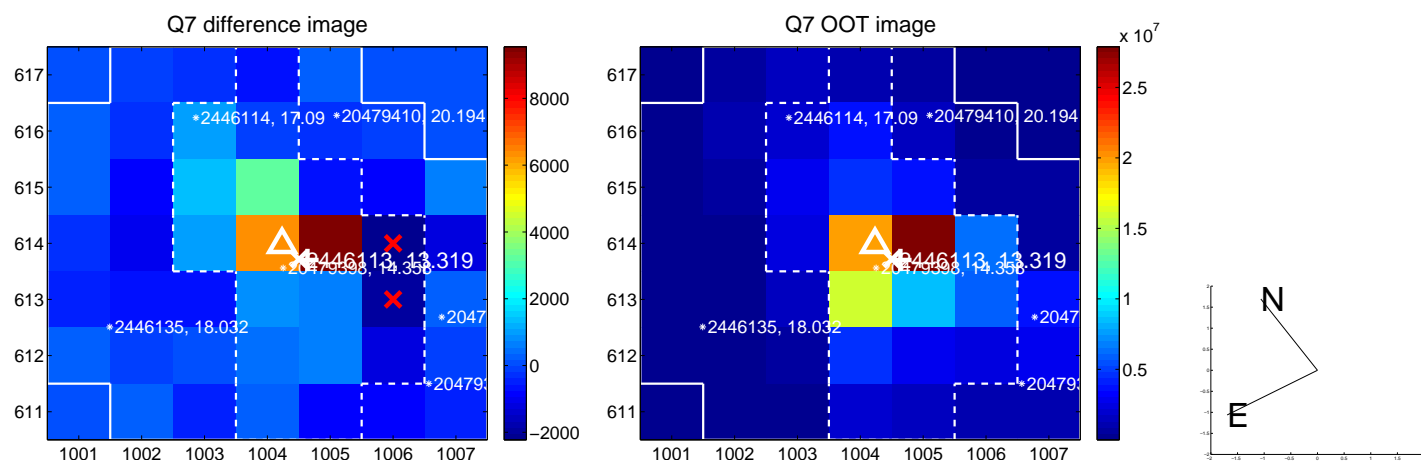
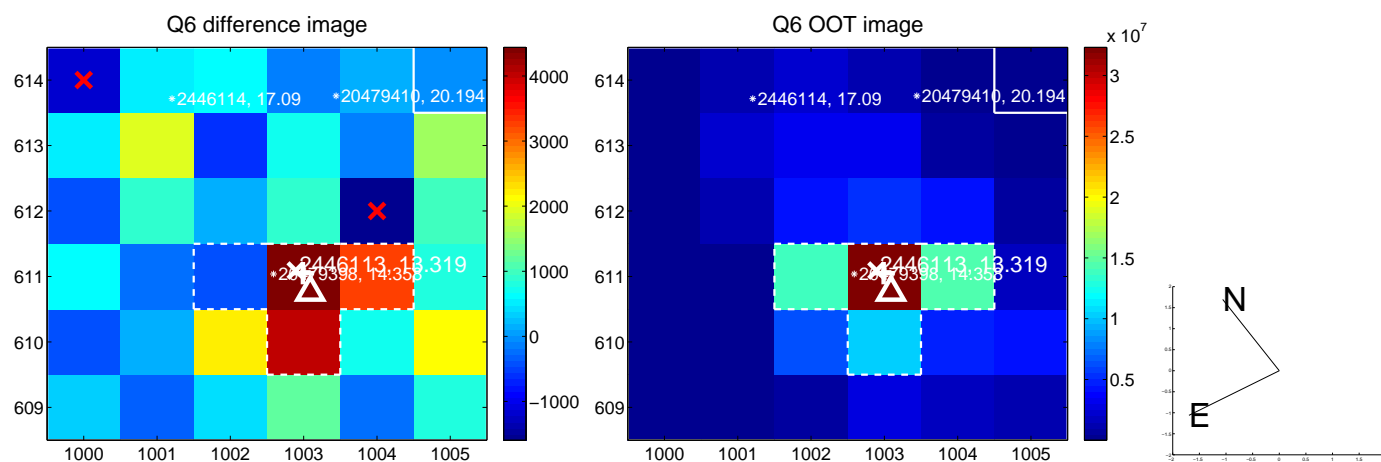
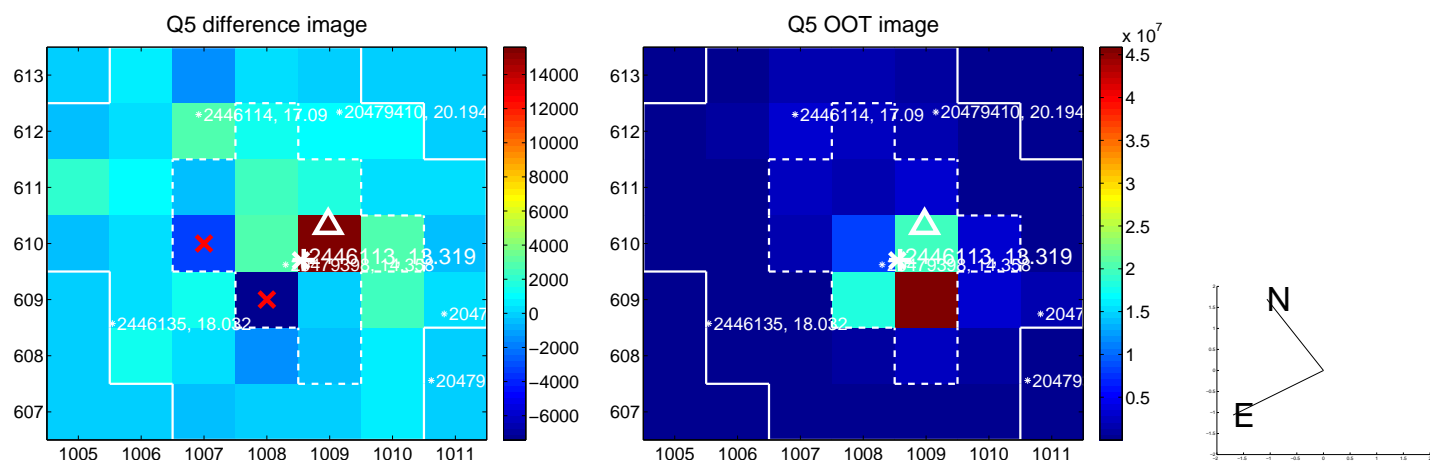


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

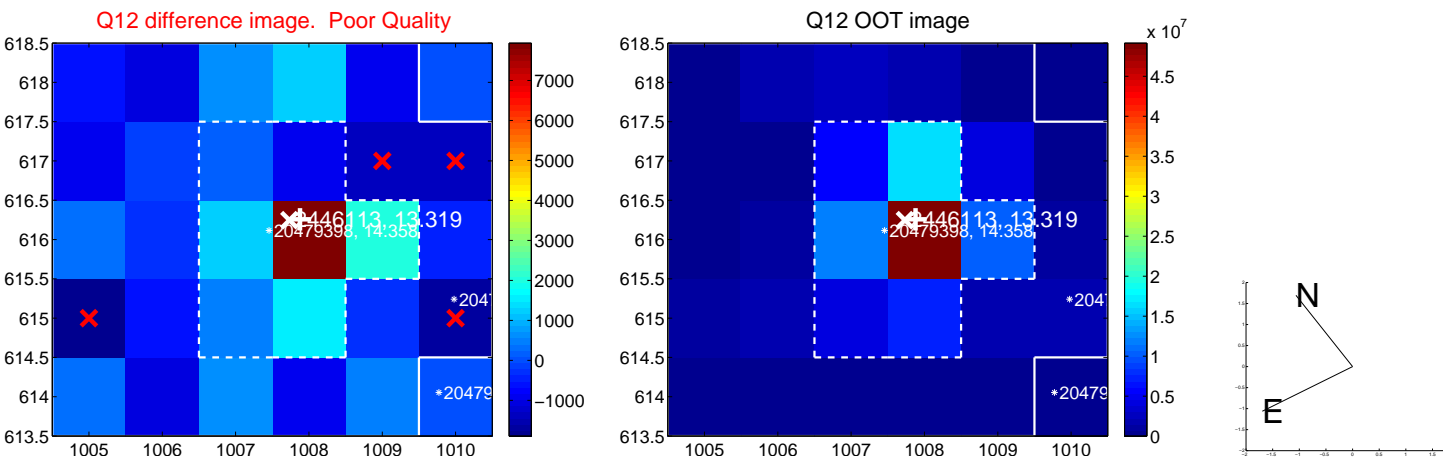
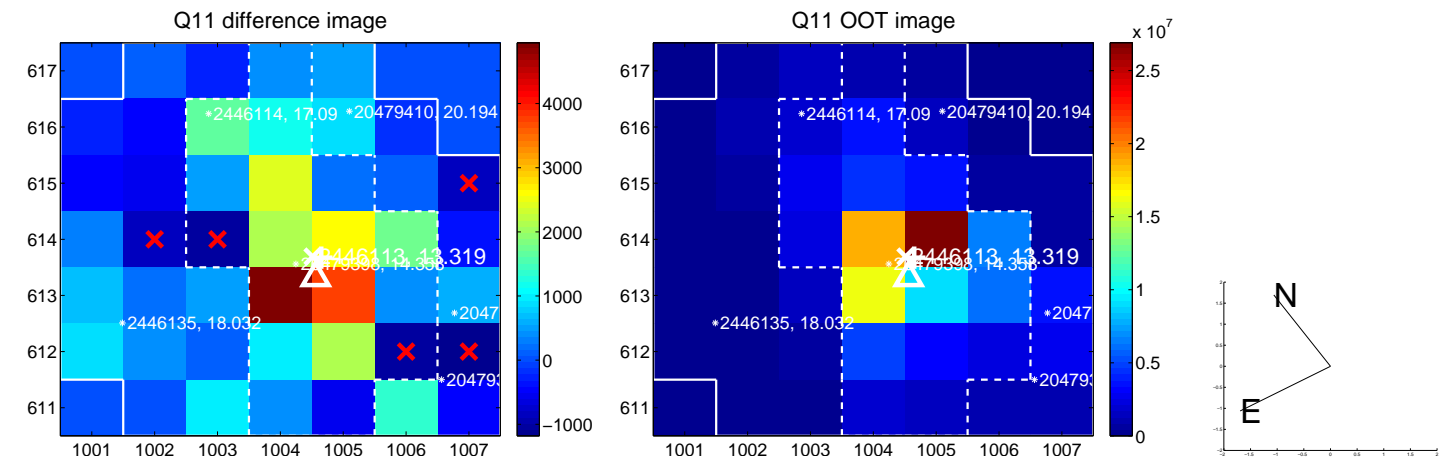
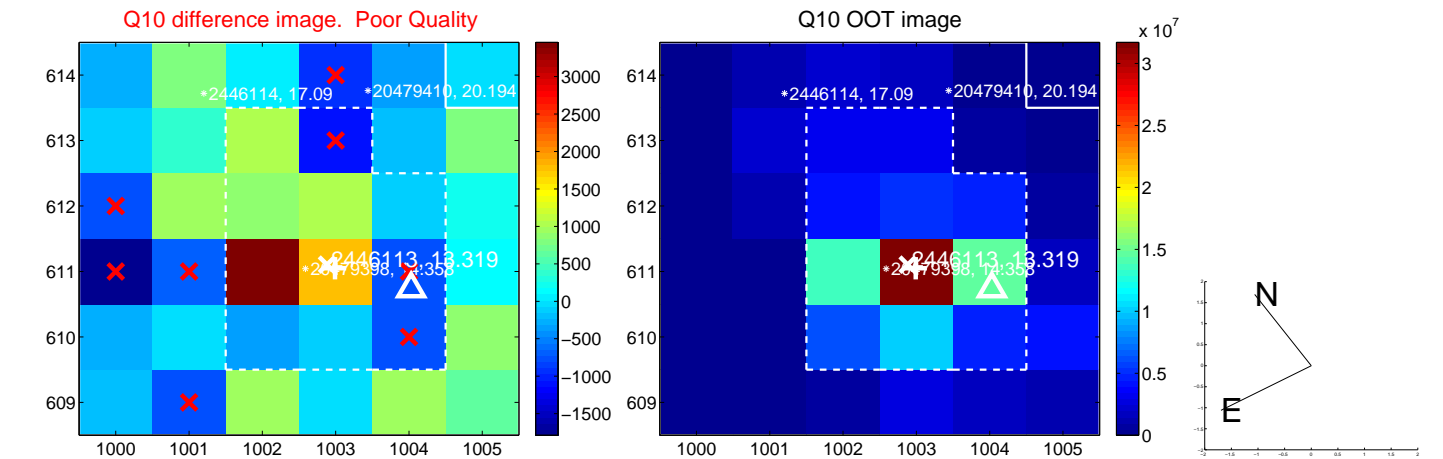
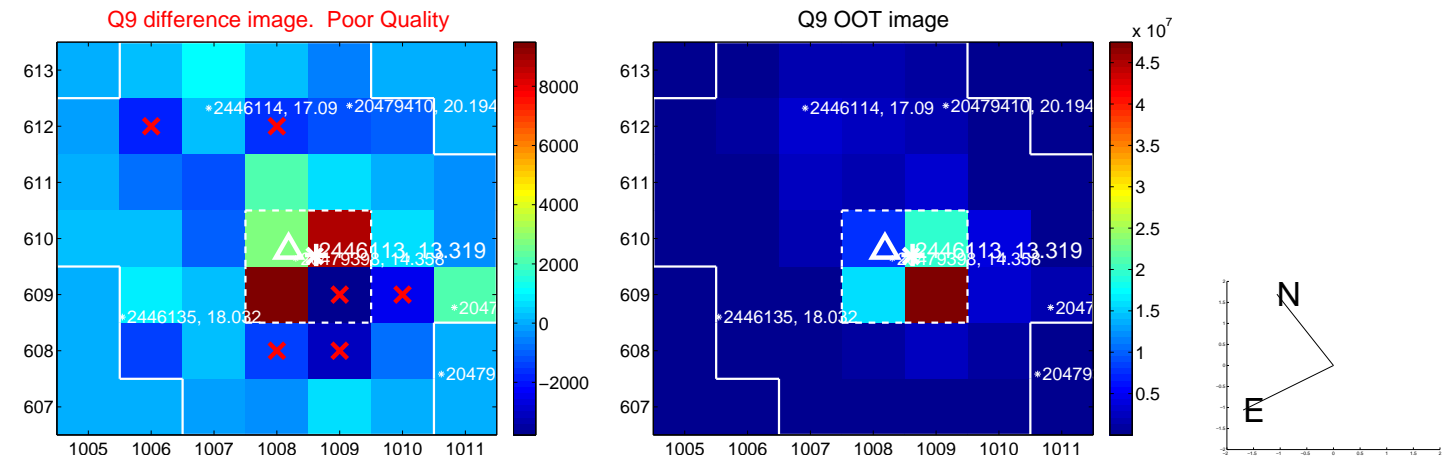
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



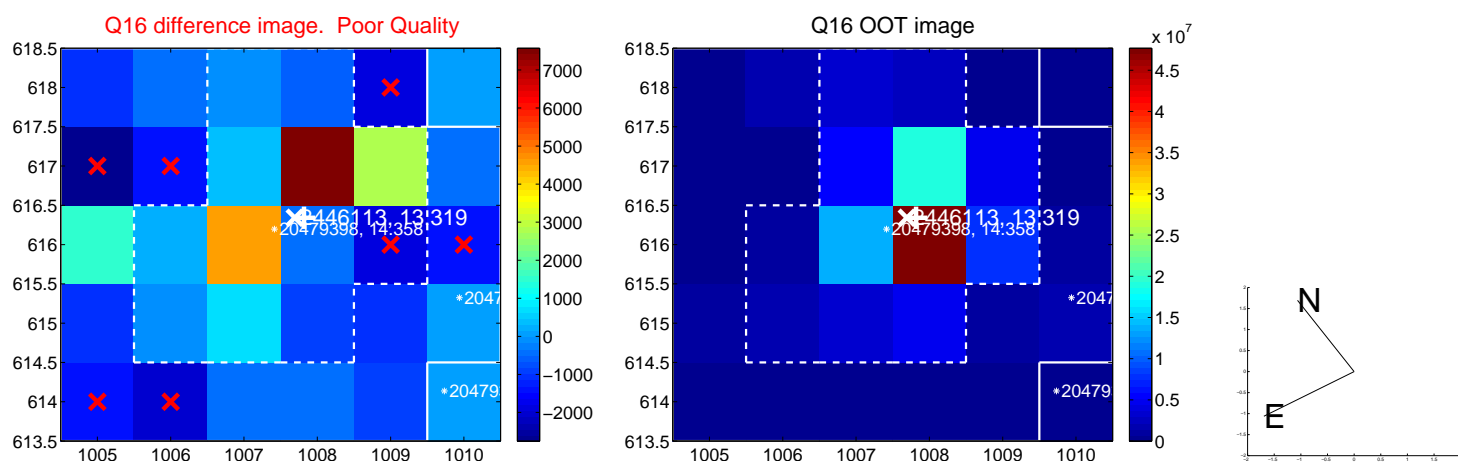
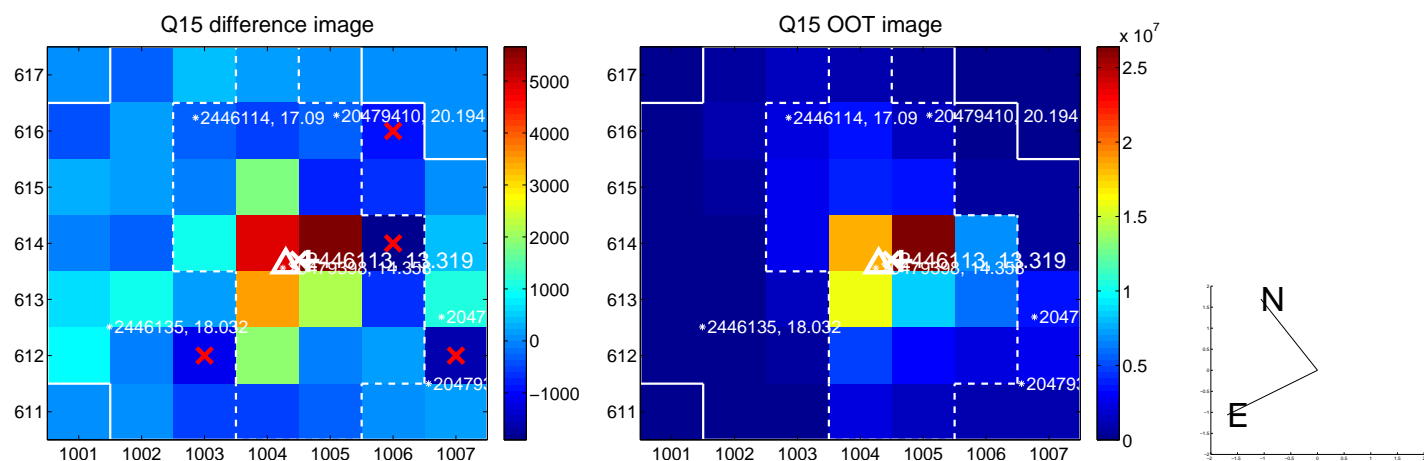
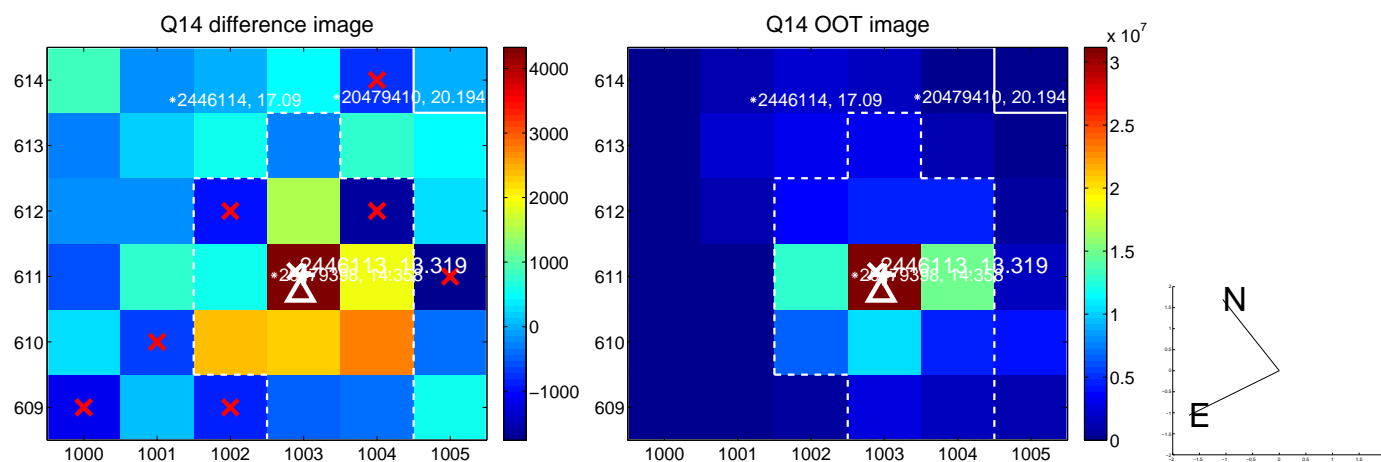
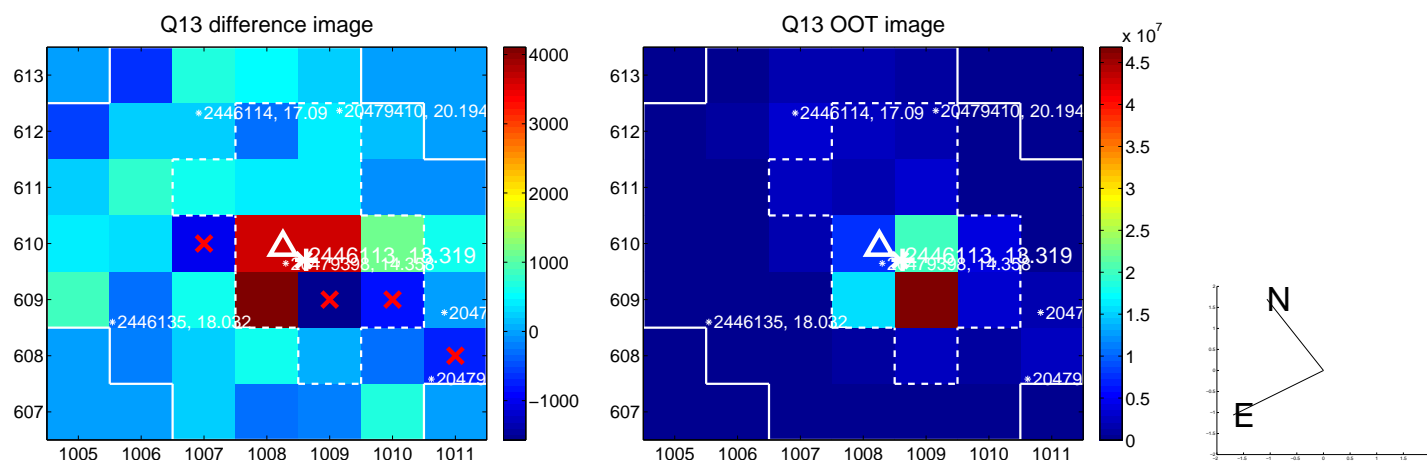
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



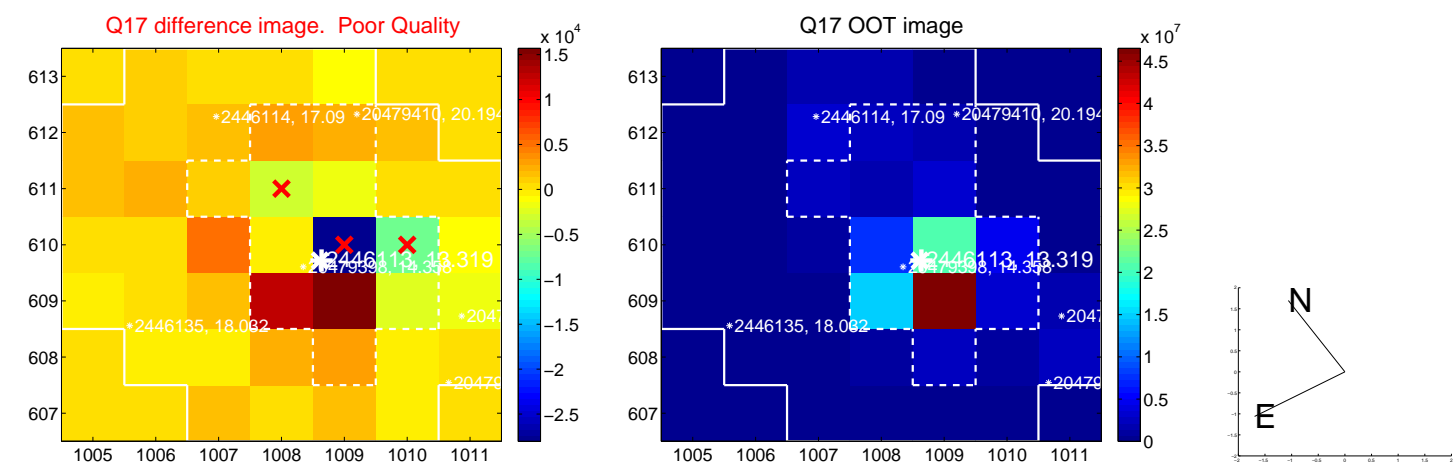
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



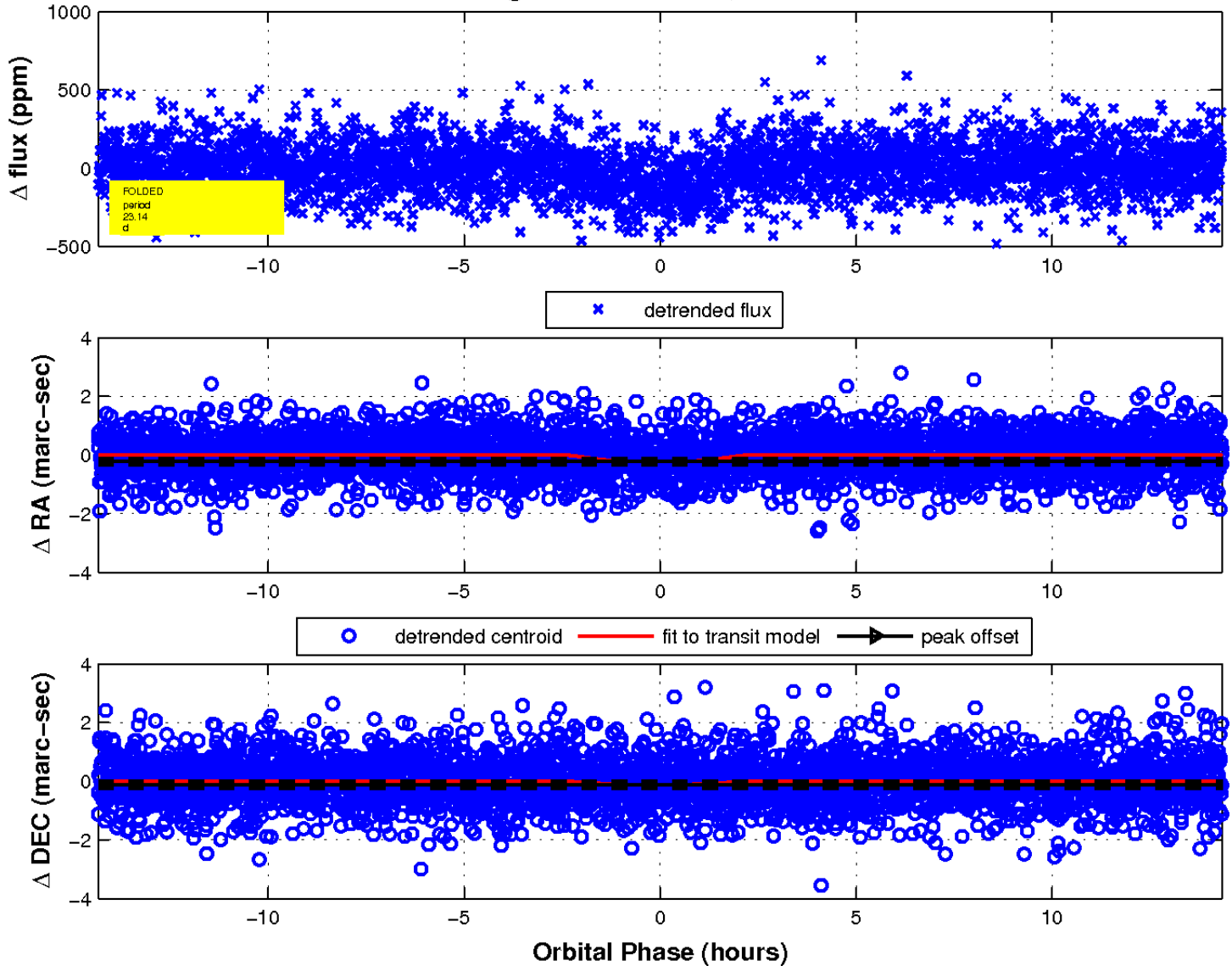
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 2 of 2



UKIRT Image

Declination

