

KIC 006528464

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})
006528464-01	OBS	0270.01	12.582269	137.276194	112.1	6.528	40.9	45.8	1.42	5587	1.74	167.78
006528464-02	OBS	0270.02	33.672627	162.041954	170.0	8.302	35.4	43.0	1.42	5587	2.06	45.16

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006528464-01	OBS	PC	1.00	0	0	0	0	CENT_SATURATED
006528464-02	OBS	PC	0.80	0	0	0	0	CENT_SATURATED

Notes: OBS = Observed. INJ = Injected. INV = Inverted. SCR = Scrambled.

N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

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

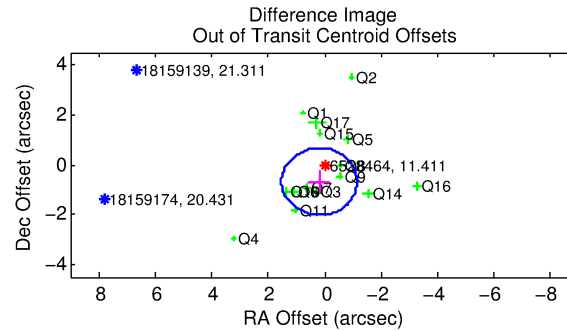
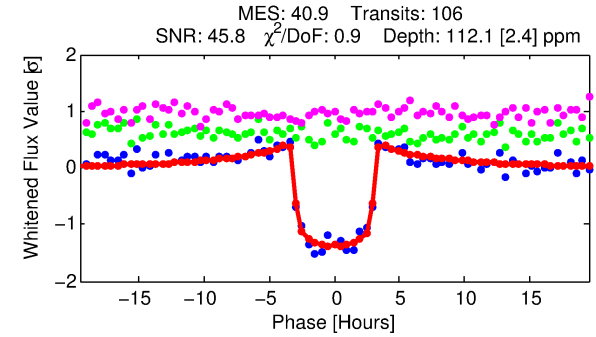
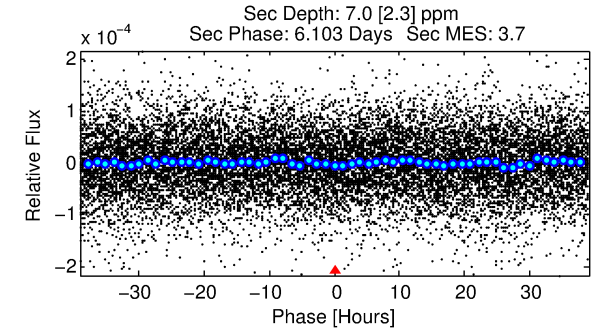
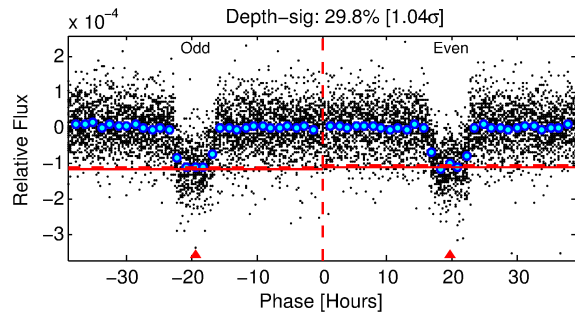
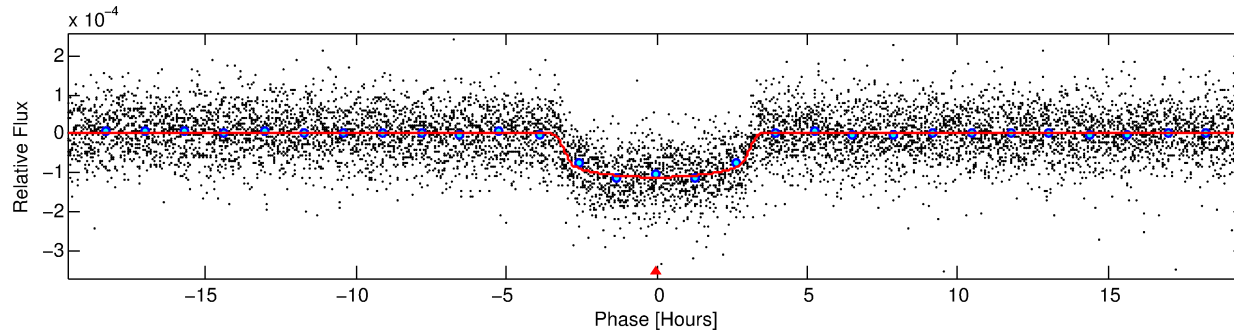
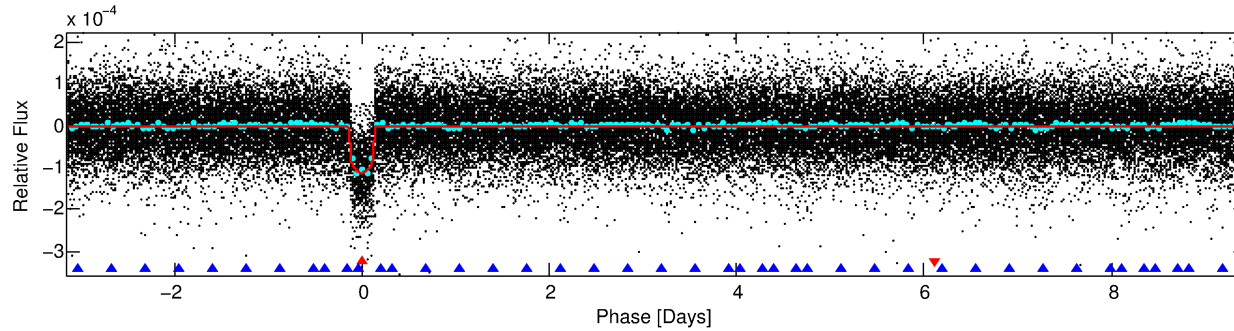
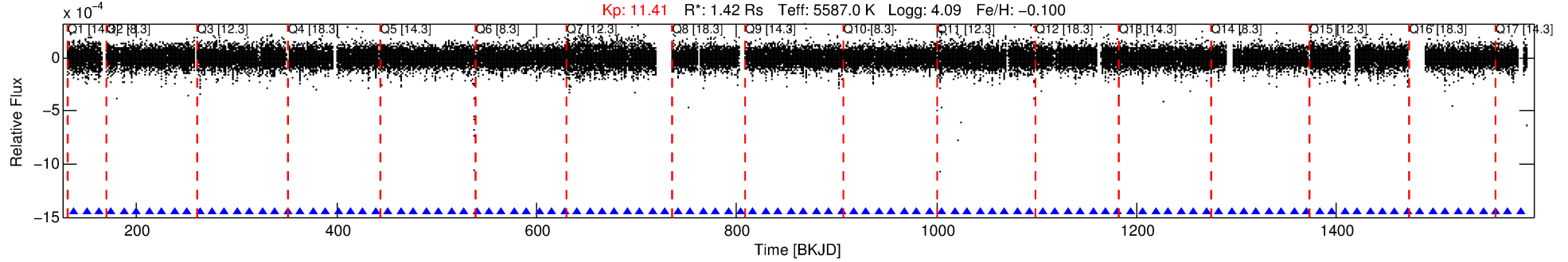
Ephemeris Match Information For 006528464-01

No Significant Match Found

DV One-Page Summary

KIC: 6528464 Candidate: 1 of 2 Period: 12.582 d
KOI: K00270.01 Name: Kepler-449b Corr: 0.985

Kp: 11.41 R*: 1.42 Rs Teff: 5587.0 K Logg: 4.09 Fe/H: -0.100



DV Fit Results:

Period = 12.58227 [0.00003] d
Epoch = 137.2762 [0.0021] BKJD
Rp/R* = 0.0112 [0.0010]
a/R* = 7.78 [3.02]
b = 0.86 [0.12]
Seff = 167.78 [12.88]
Teq = 918 [18] K
Rp = 1.74 [0.16] Re
a = 0.1026 [0.0024] AU
Ag = 13.41 [5.05] [2.46σ]
Teffp = 2715 [259] K [6.91σ]

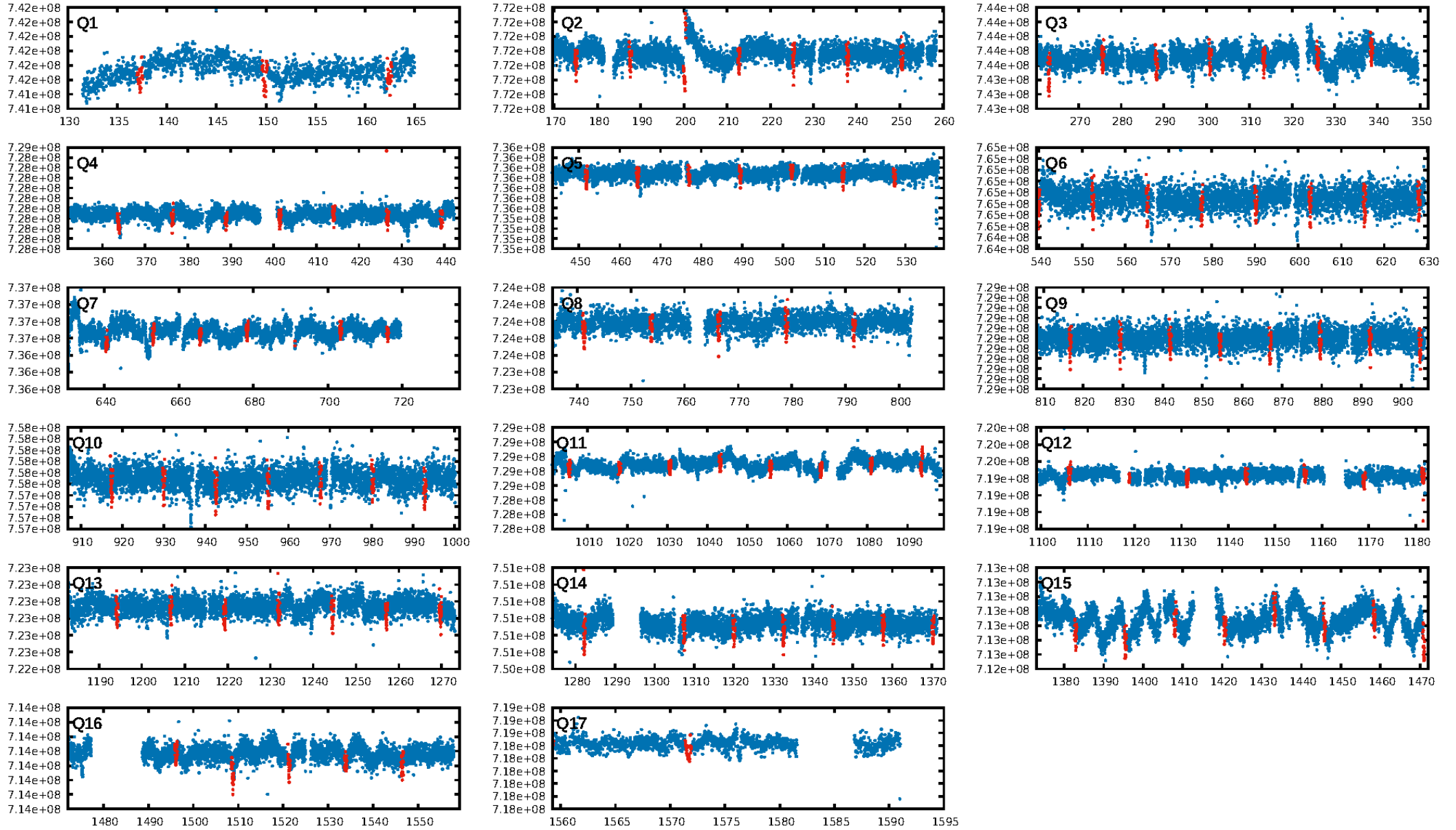
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [47.93σ]
ModelChiSquare2-sig: 92.1%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 1.00 [102/102]
GhostDiagnostic-chr: 13.38
Centroid-sig: 0.9%
Centroid-so: 0.537 arcsec [2.21σ]
OotOffset-rm: 0.704 arcsec [1.58σ]
KicOffset-rm: 1.225 arcsec [2.83σ]
OotOffset-st: 4/4/3/4 [15]
KicOffset-st: 4/4/3/4 [15]
DiffImageQuality-fgm: 0.73 [11/15]
DiffImageOverlap-fno: 1.00 [17/17]

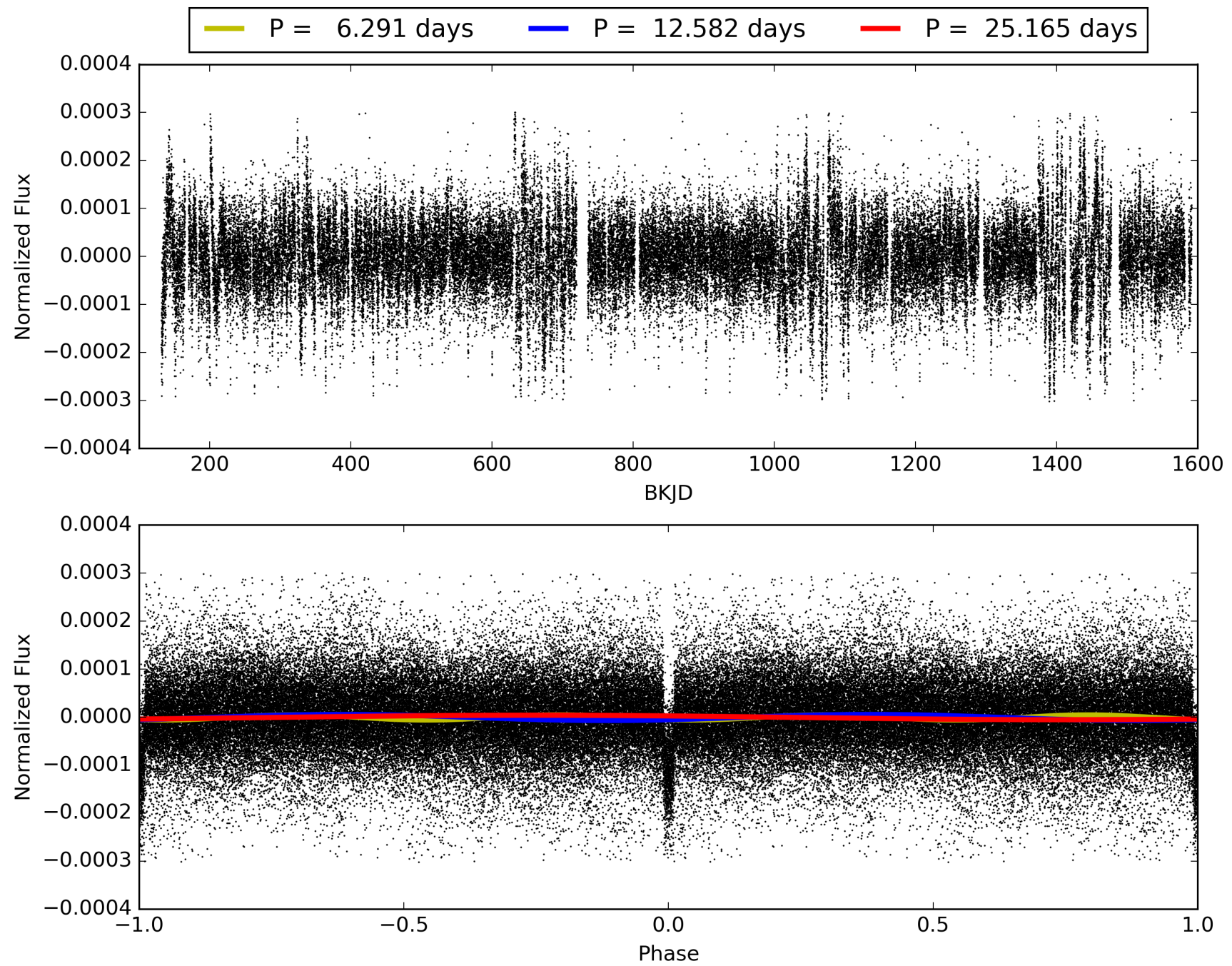
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 23:00:11 Z

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

TCE 006528464-01, PDC Light Curves

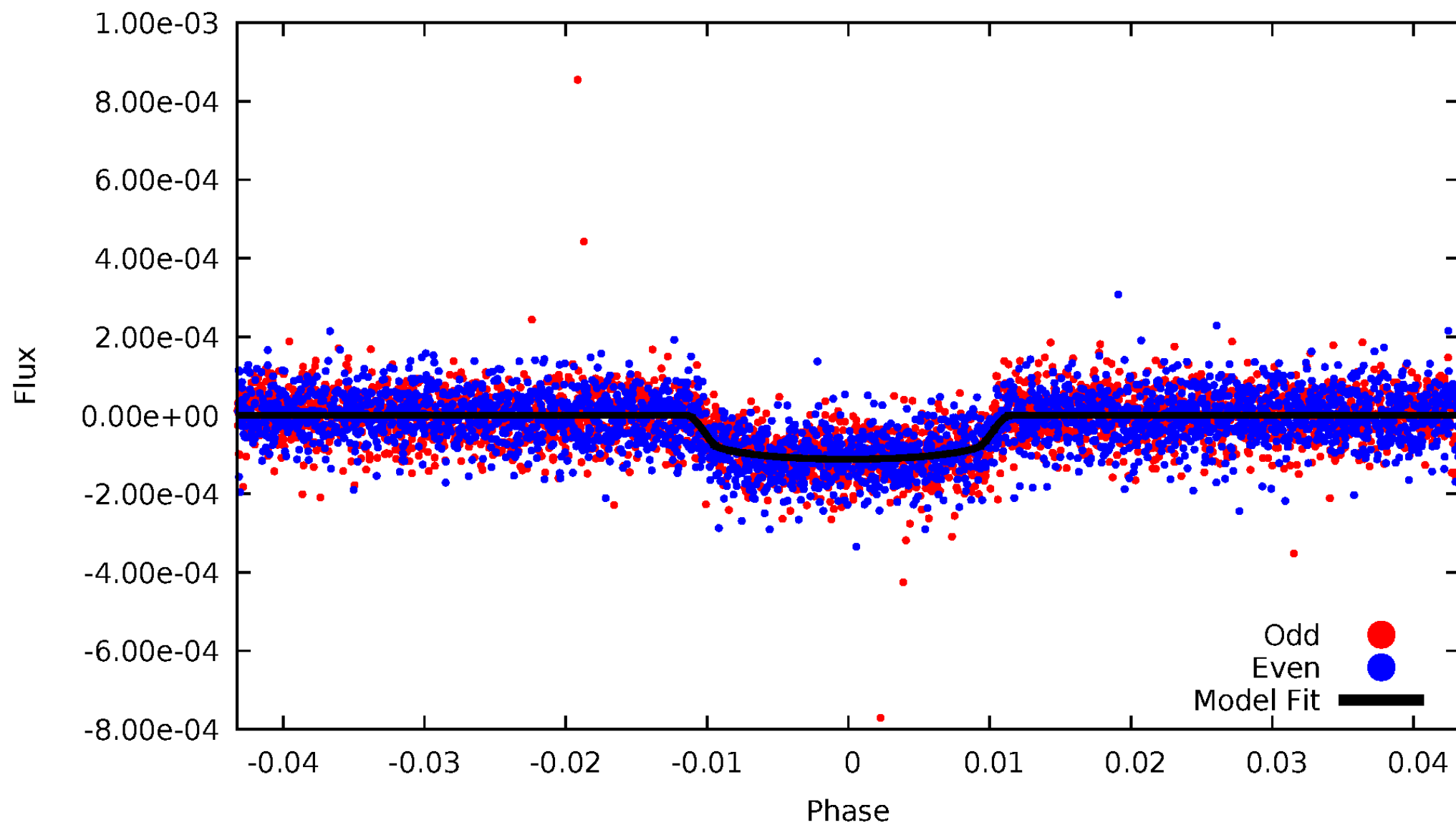


TCE 006528464-01



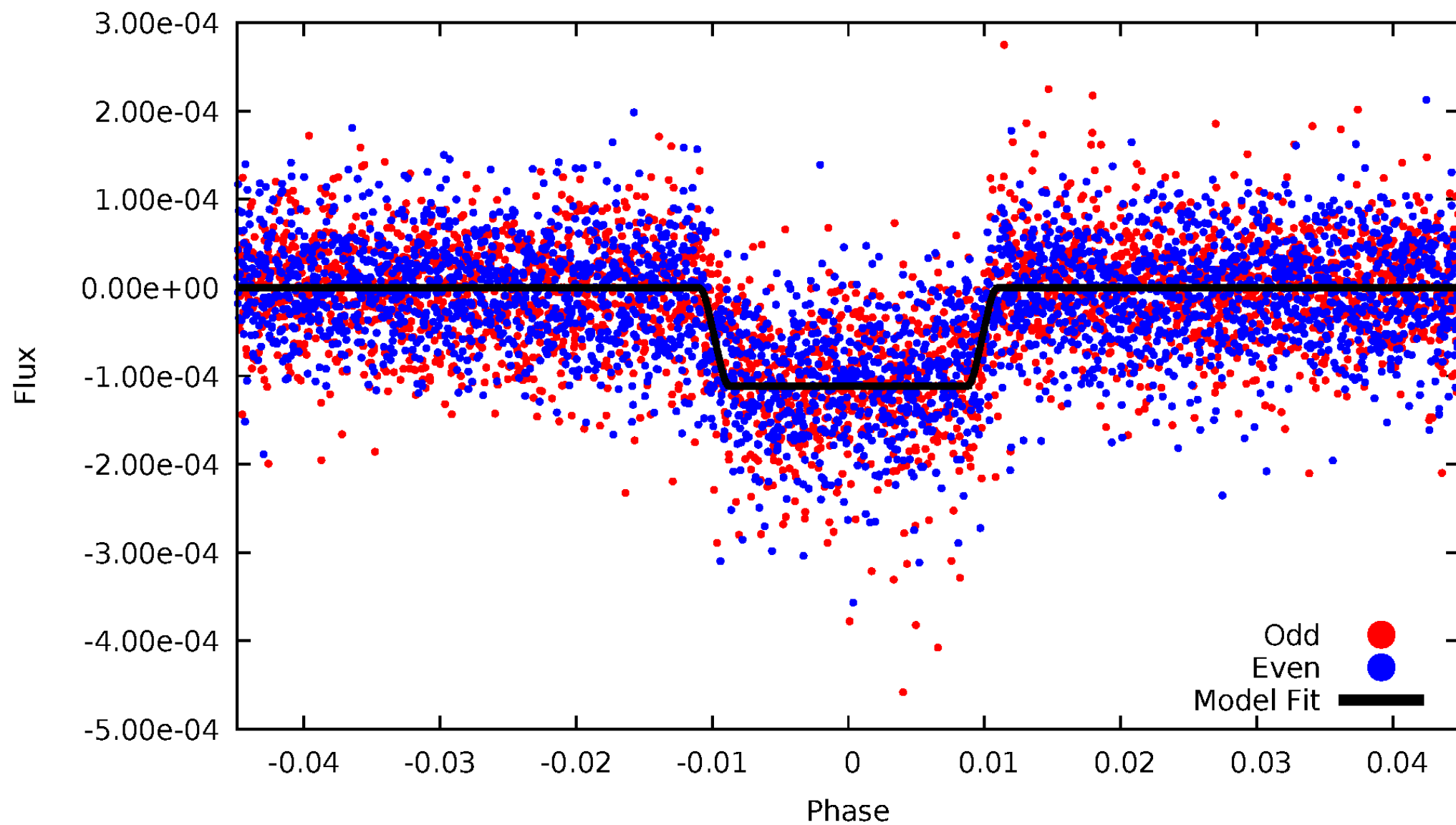
DV Odd/Even

TCE 006528464-01

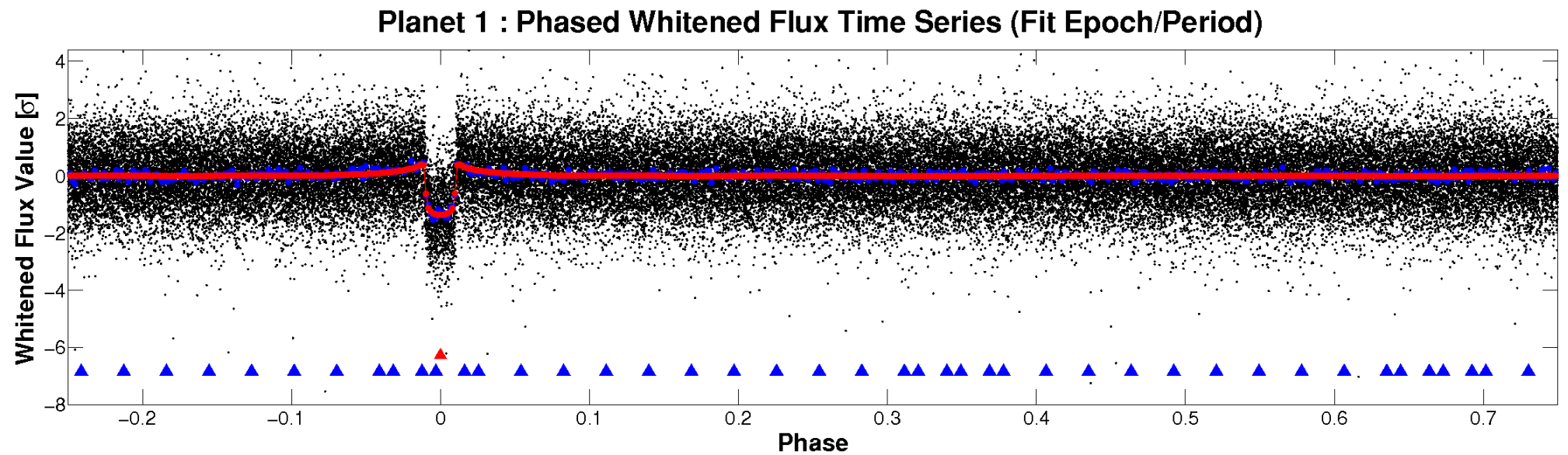
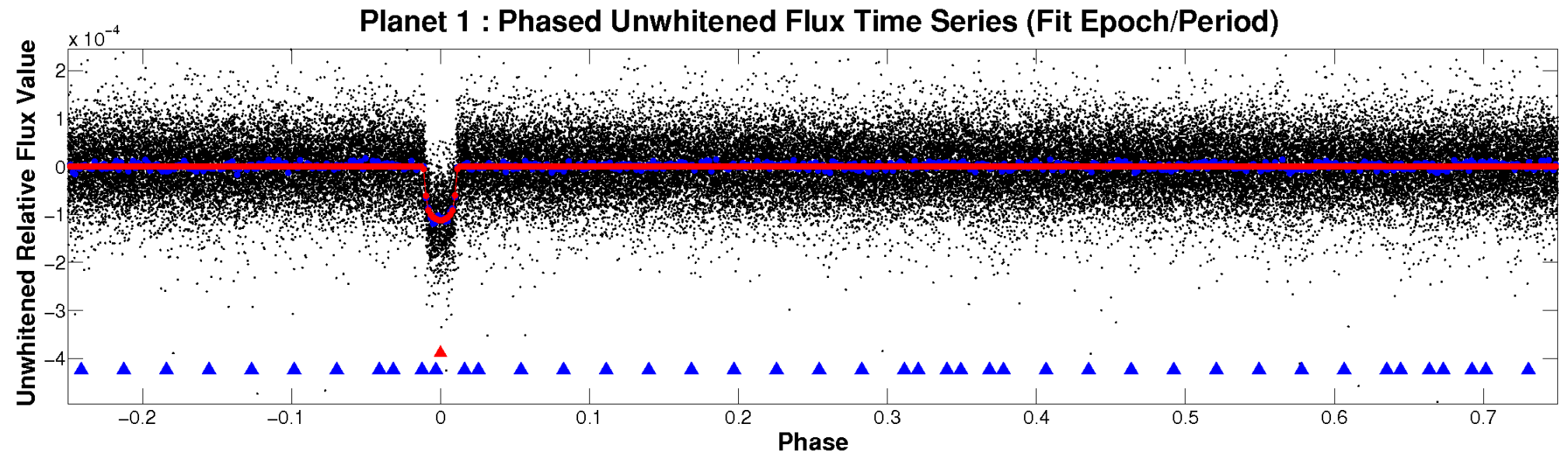


ALT Odd/Even

TCE 006528464-01

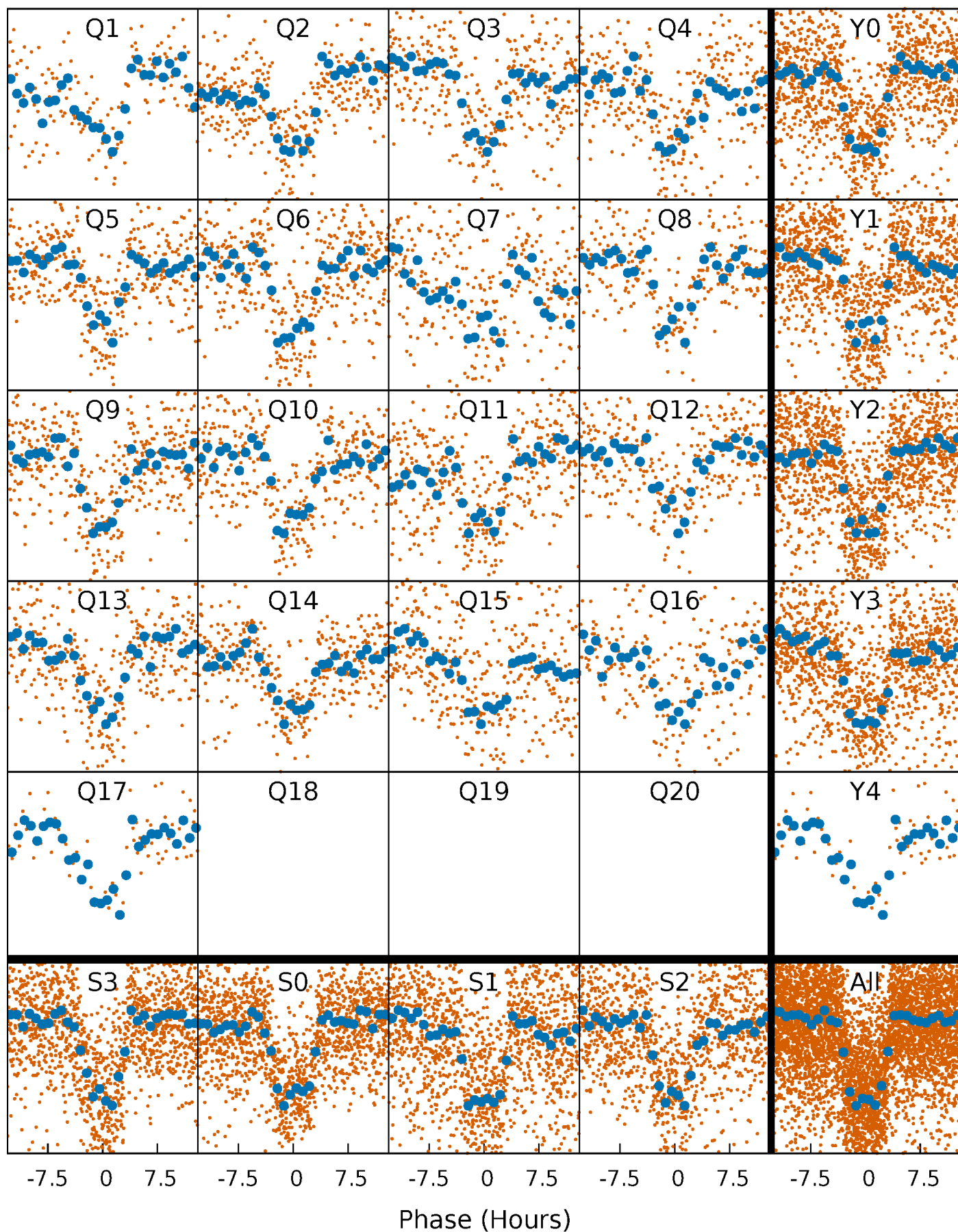


Non-Whitened Vs. Whitened Light Curve



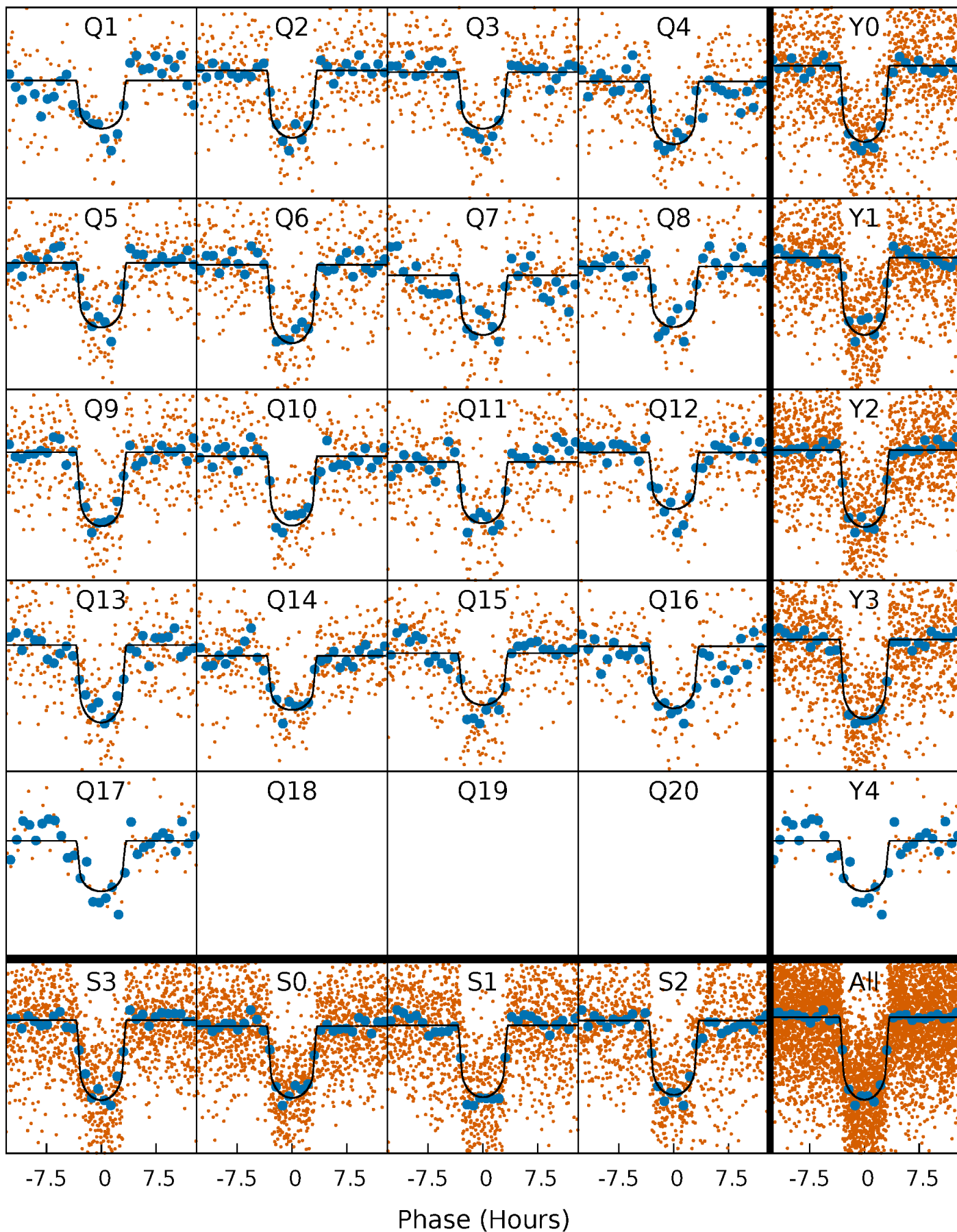
PDC Quarter-Phased Transit Curves

TCE 006528464-01 P= 12.582269 Days $T_0=137.276194$ (BKJD)



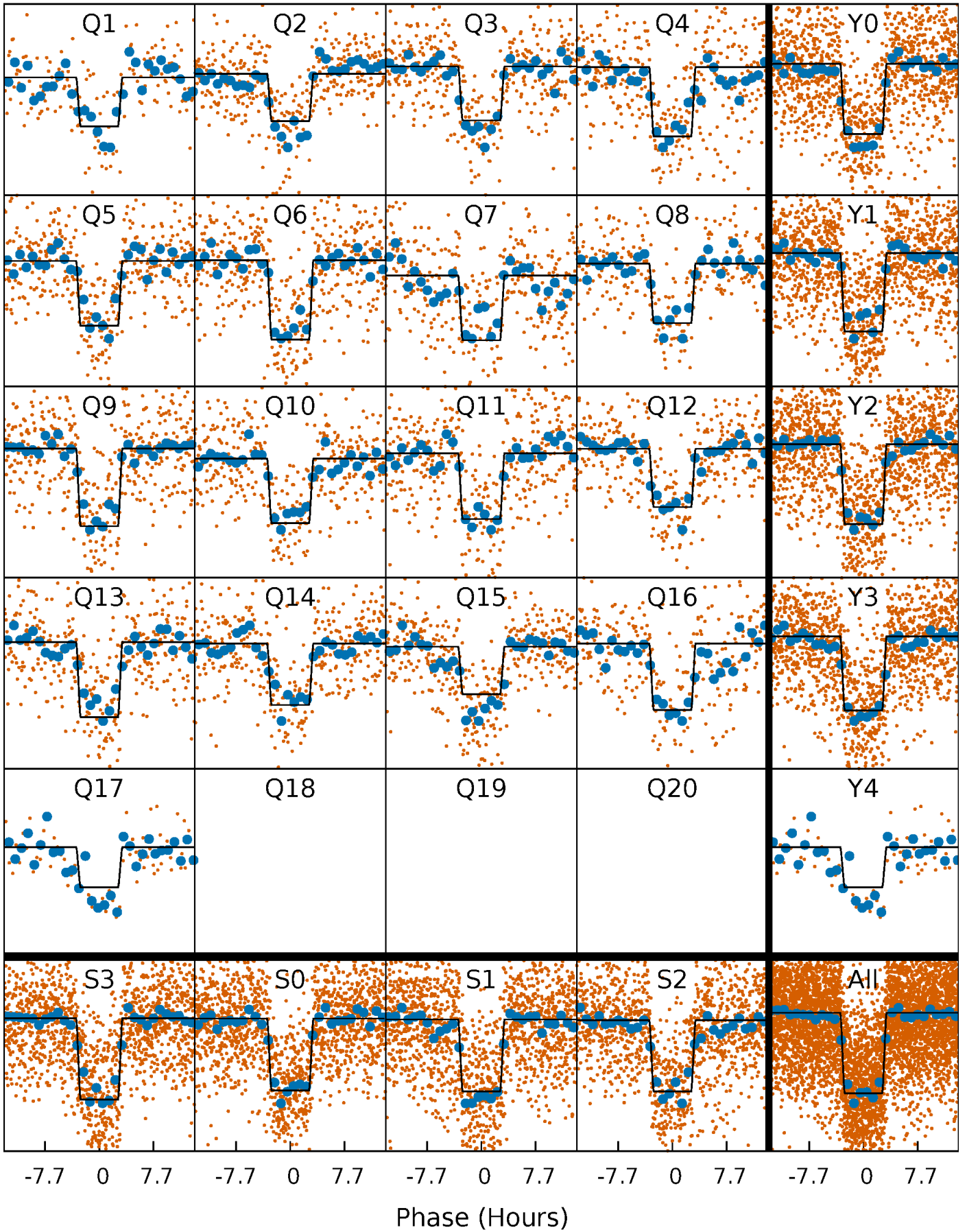
DV Quarter-Phased Transit Curves

TCE 006528464-01 P= 12.582269 Days $T_0=137.276194$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

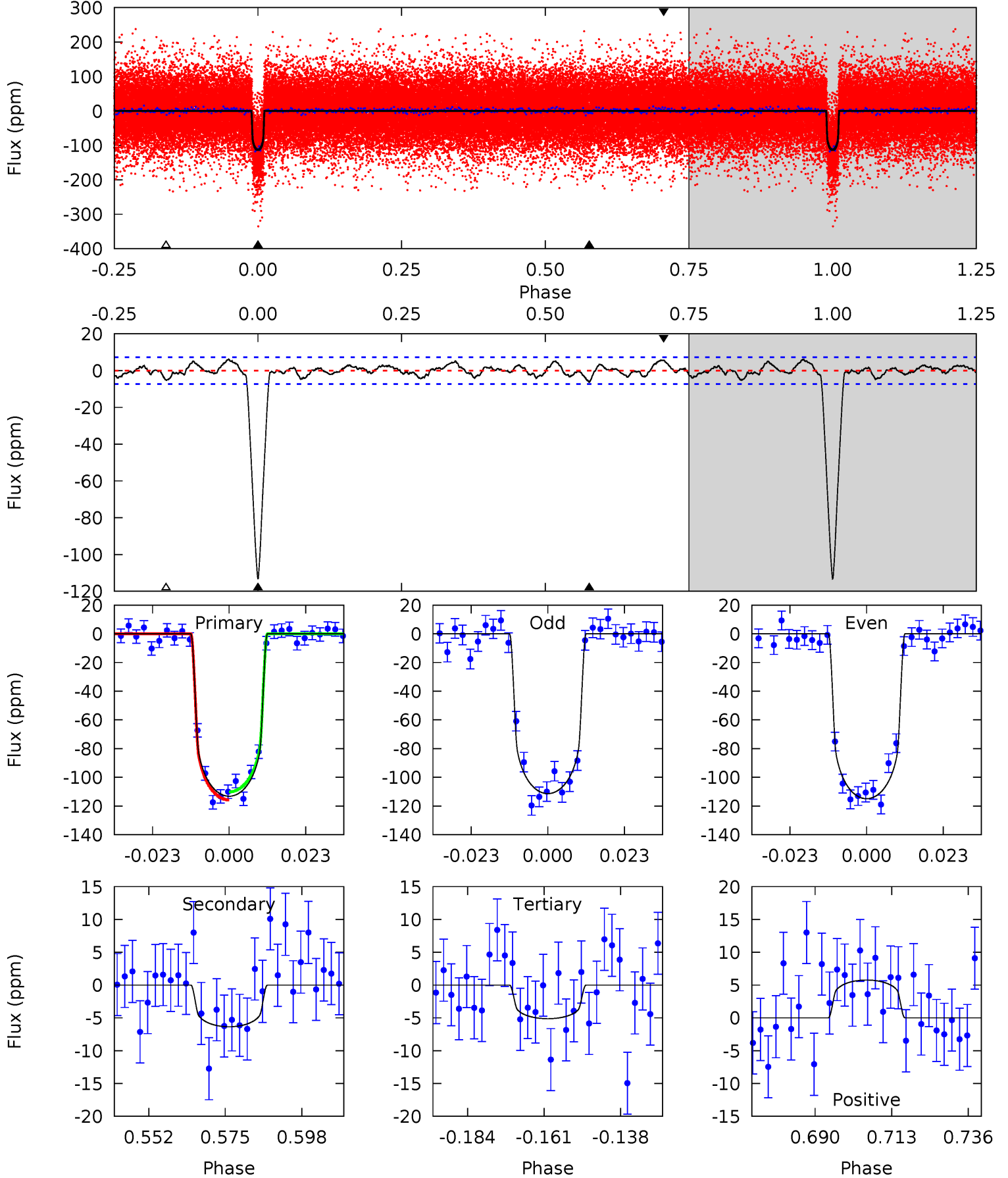
TCE 006528464-01 P= 12.582211 Days $T_0=137.279592$ (BKJD)



DV Model-Shift Uniqueness Test

006528464-01, P = 12.582269 Days, E = 124.693925 Days

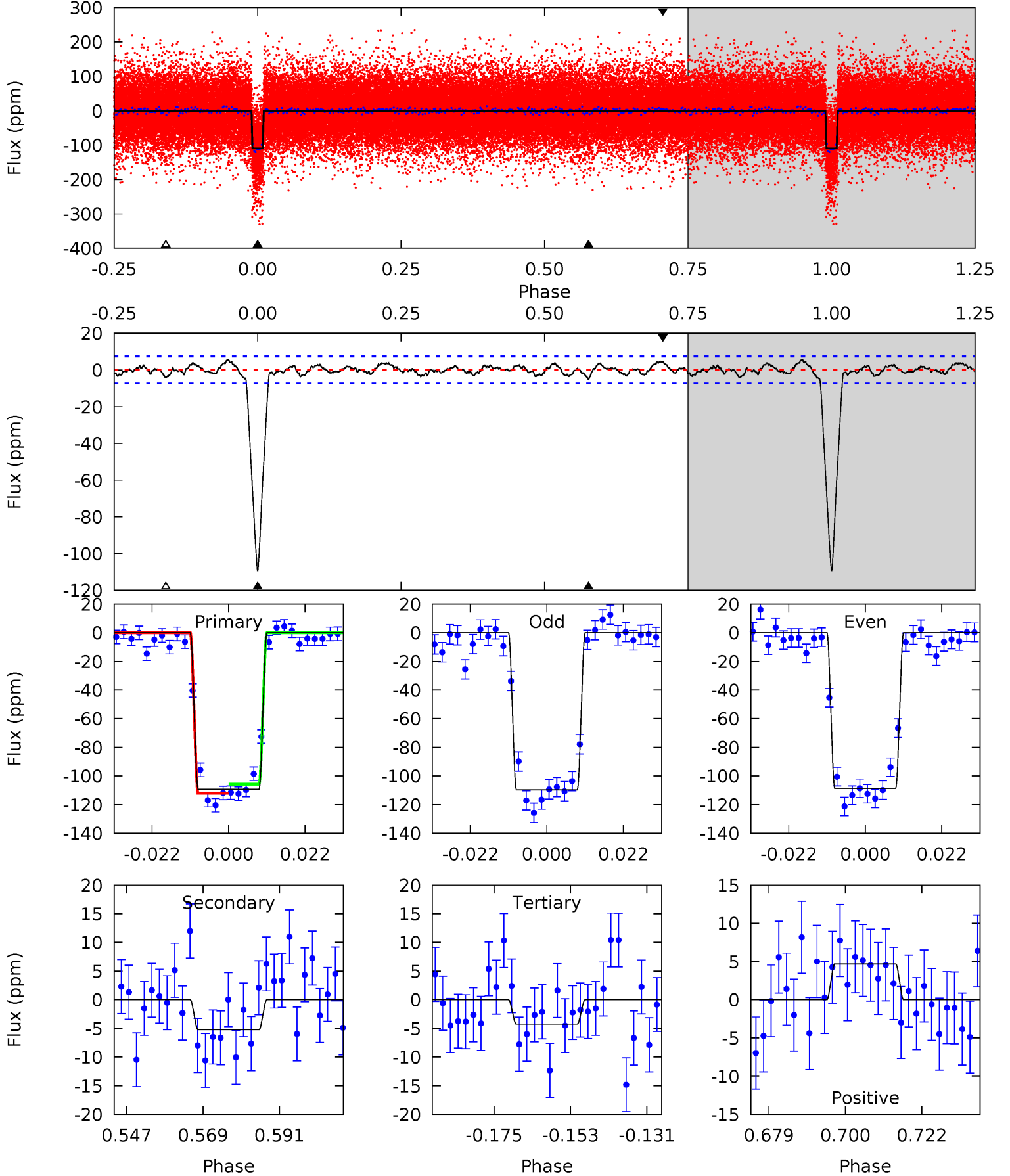
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
75.7	4.25	3.43	3.85	4.86	2.27	1.54	72.2	71.8	0.82	0.40	1.19	1.03	0.05	1.85



Alt Model-Shift Uniqueness Test

006528464-01, $P = 12.582211$ Days, $E = 124.697381$ Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
72.9	3.50	2.84	3.12	4.87	2.29	1.27	70.0	69.7	0.66	0.37	0.35	1.05	0.05	2.07



Stellar Parameters For KIC 006528464

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5587^{+100}_{-58}	$4.091^{+0.011}_{-0.011}$	$-0.100^{+0.100}_{-0.100}$	$1.423^{+0.047}_{-0.026}$	$0.911^{+0.055}_{-0.026}$	$0.445^{+0.019}_{-0.024}$
	+2%/-1%	+0%/-0%	+100%/-100%	+3%/-2%	+6%/-3%	+4%/-5%
Source	SPE8	AST8	SPE8	DSEP		

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

Secondary Eclipse Parameters for KIC 006528464-01 / KOI 0270.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-6 ± 1	$1.75^{+0.16}_{-0.16}$	1283^{+22}_{-15}	3223^{+142}_{-154}	12^{+4}_{-3}
Alt.	-5 ± 1	$1.64^{+0.15}_{-0.15}$	1284^{+22}_{-16}	3176^{+179}_{-188}	11^{+5}_{-4}

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

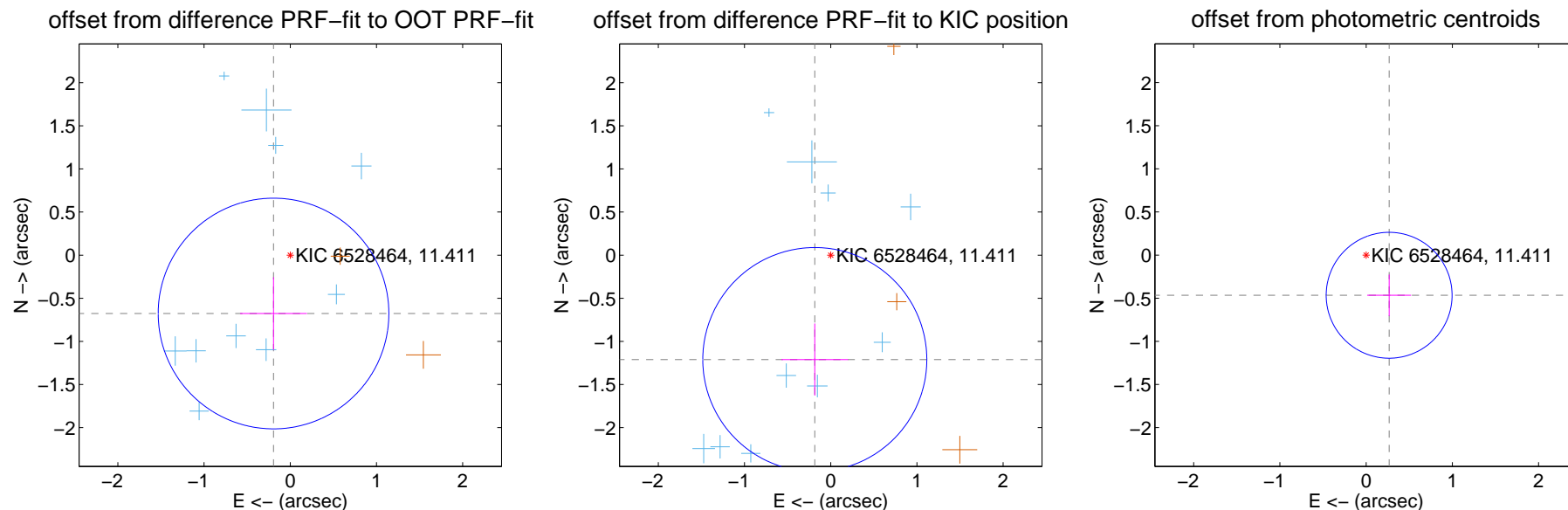
DV Centroid Data

Supplemental centroid analysis for 006528464-01. **Kepler magnitude: 11.41.** Transit SNR 45.85

There are 11 quarters with good PRF difference image offsets

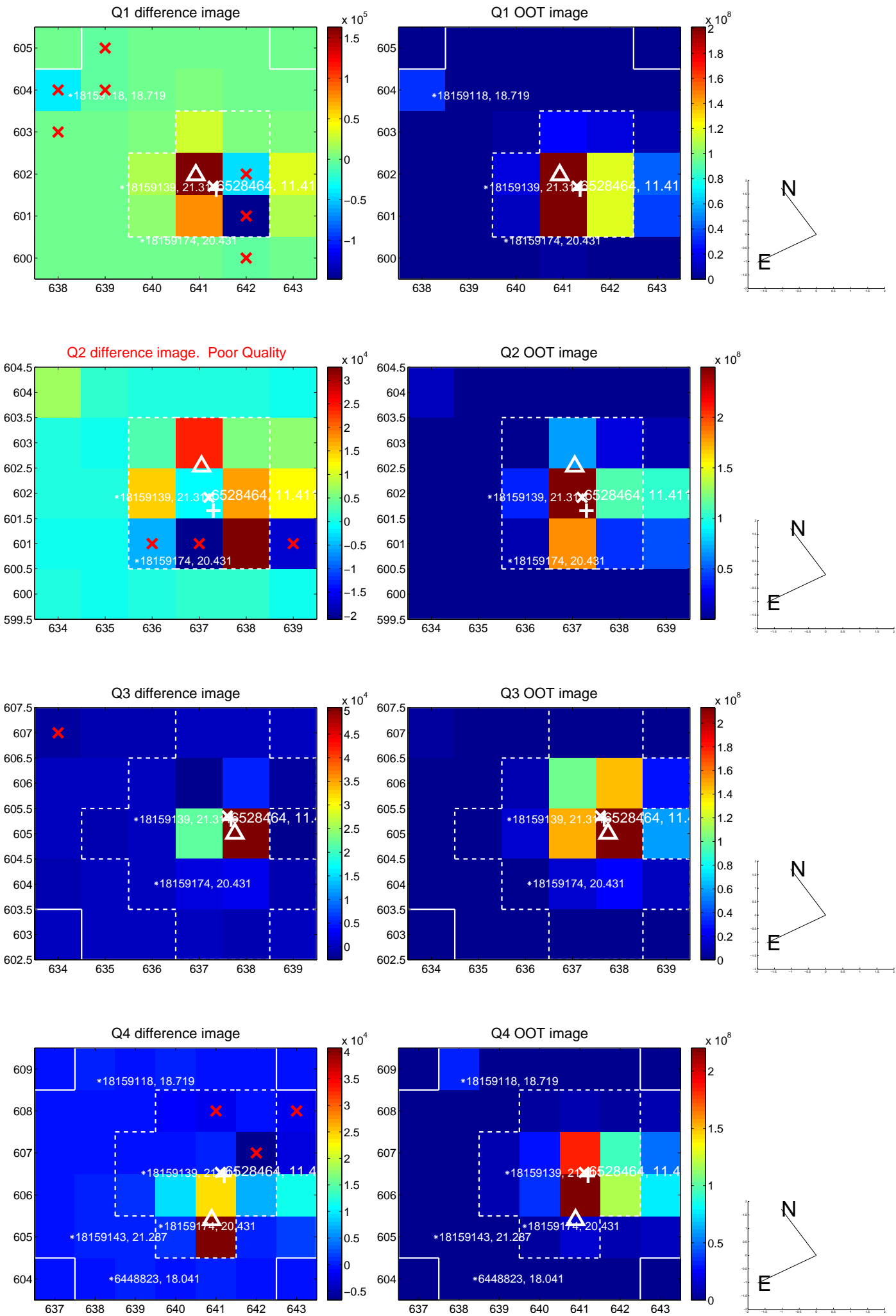
The direct PRF centroid is offset from the target star catalog position by about 0.60 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.704 ± 0.446	1.58	0.194 ± 0.388	-0.677 ± 0.421
PRF-fit source offset from KIC position	1.225 ± 0.433	2.83	0.185 ± 0.387	-1.211 ± 0.418
photometric centroid source offset	0.54 ± 0.24	2.21	-0.27 ± 0.25	-0.47 ± 0.24

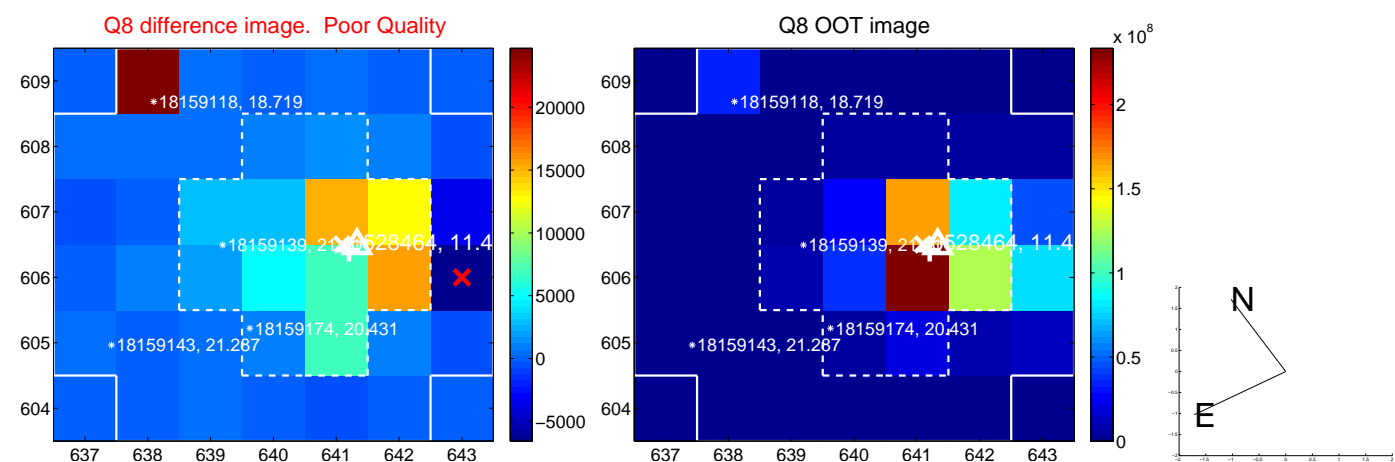
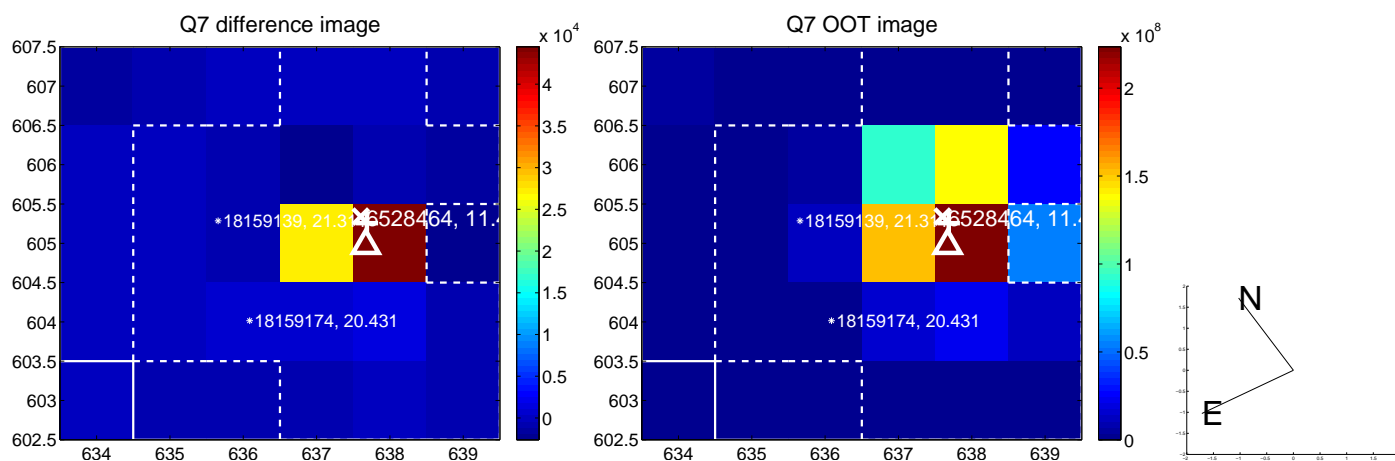
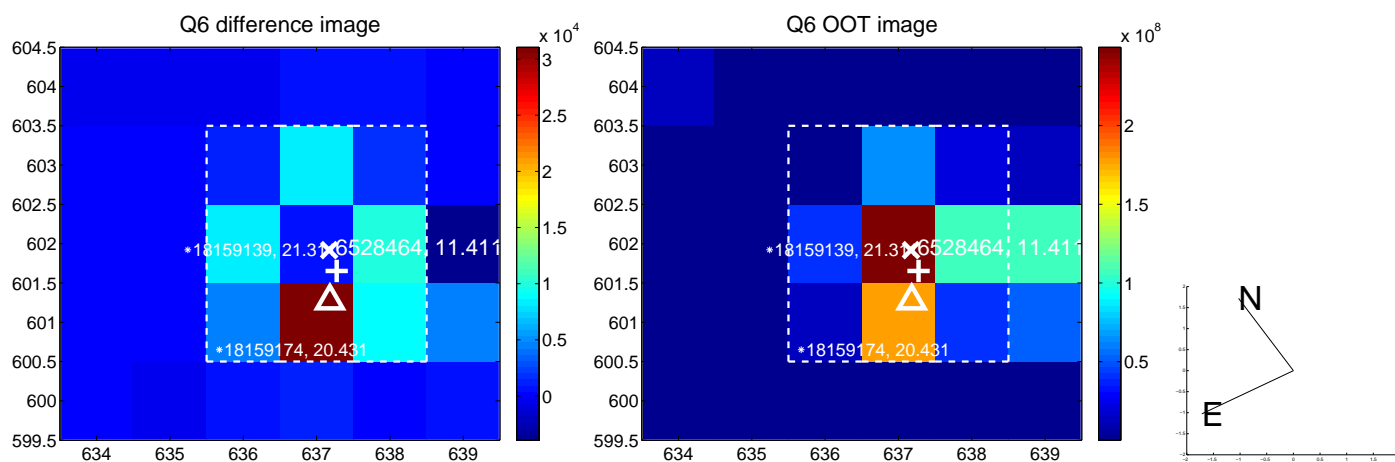
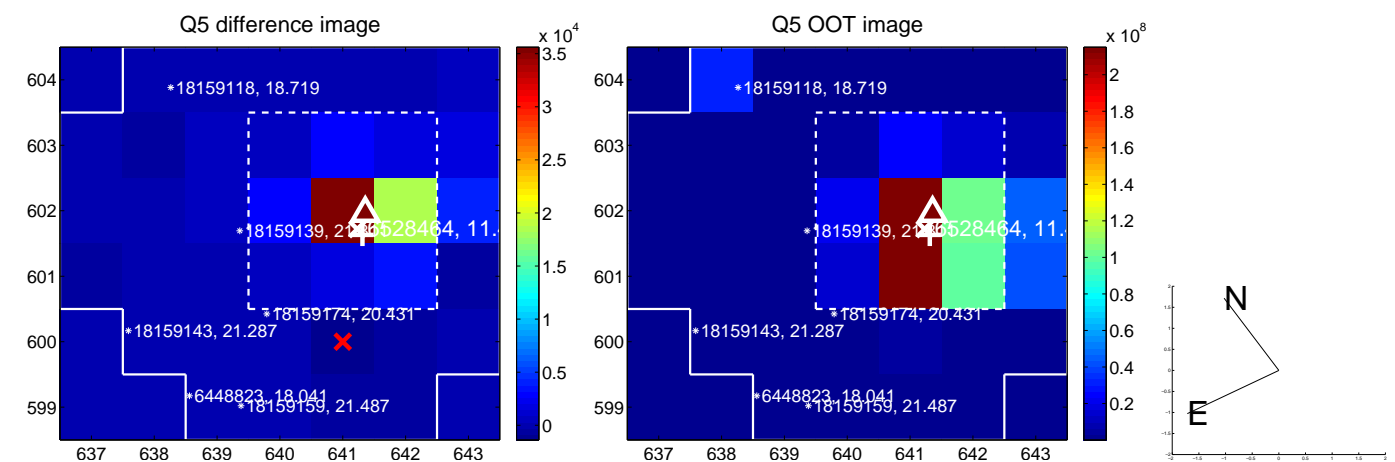


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

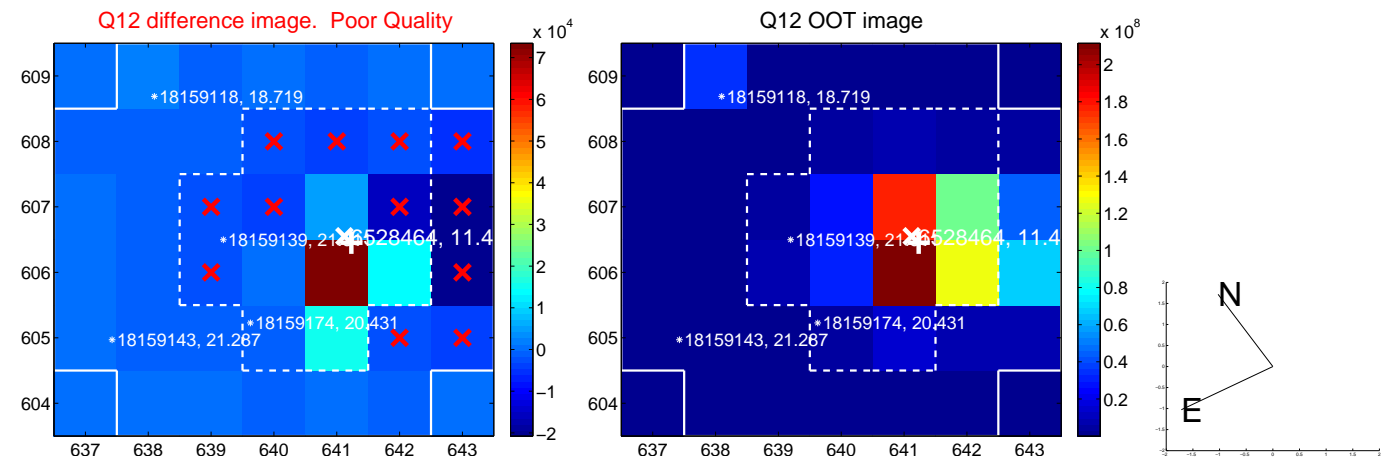
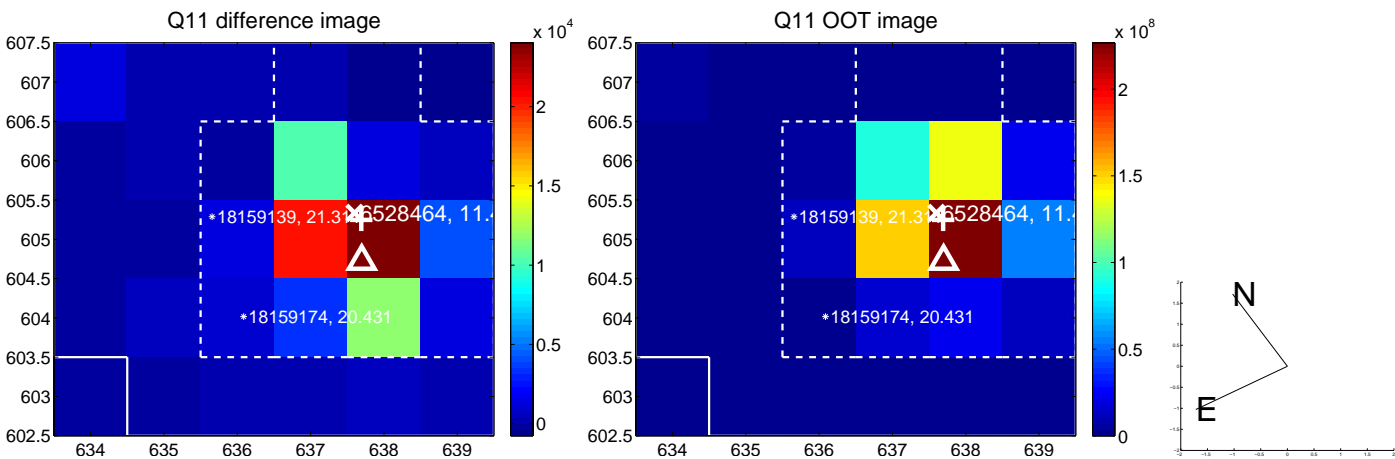
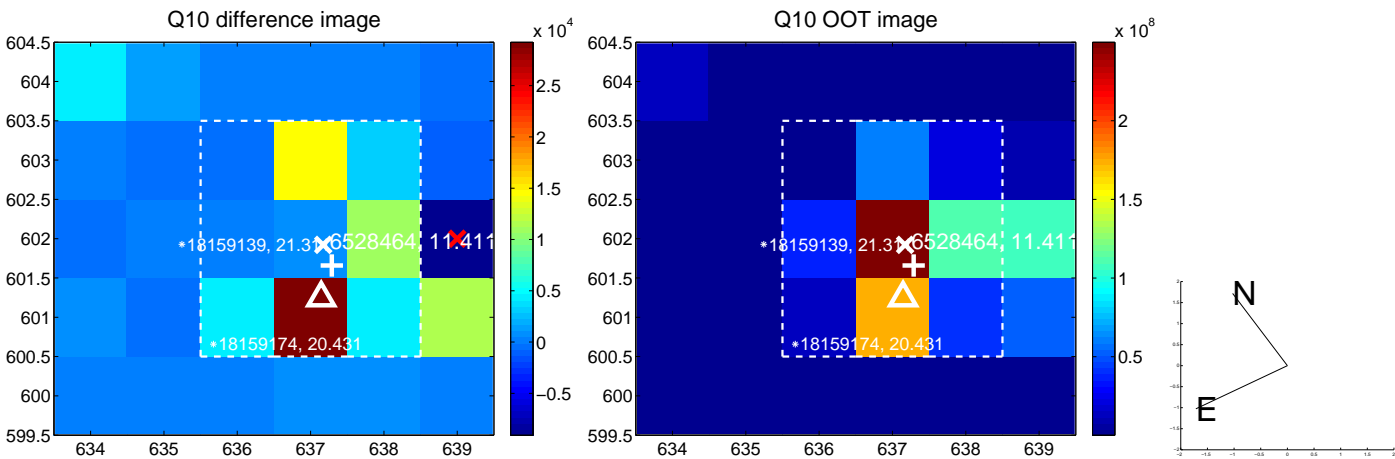
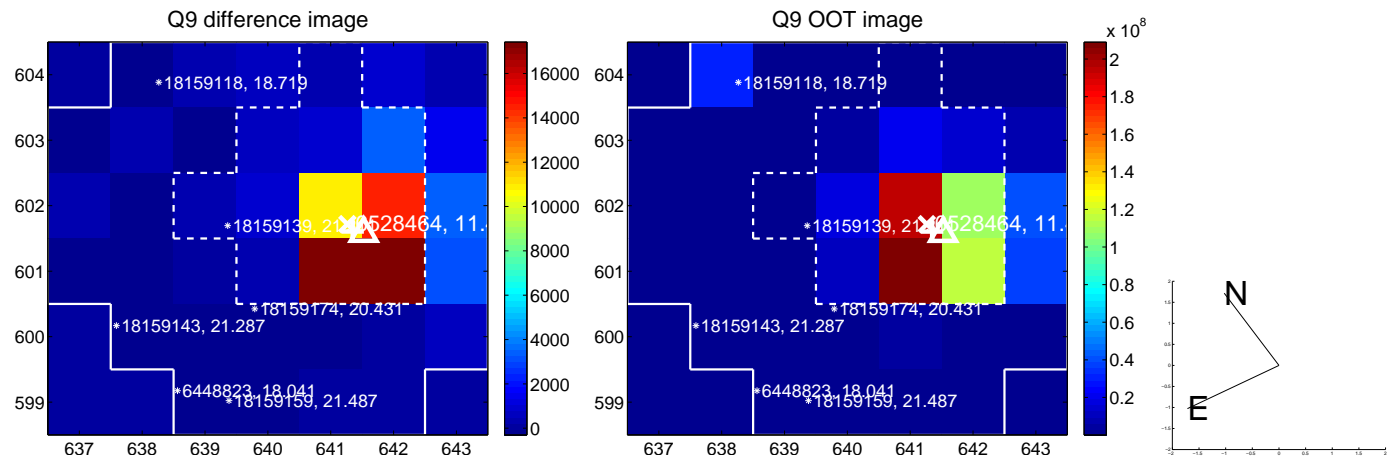
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



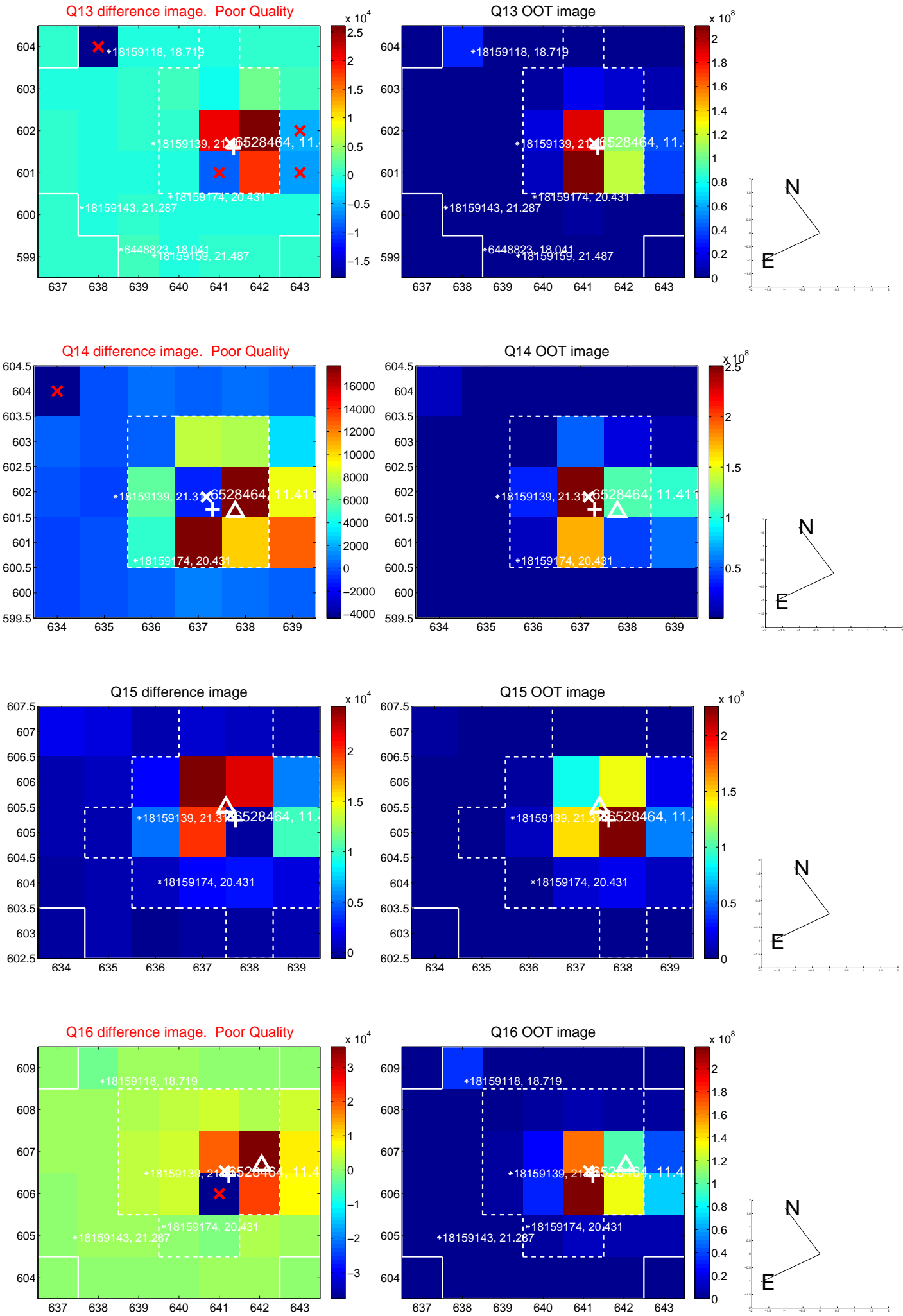
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



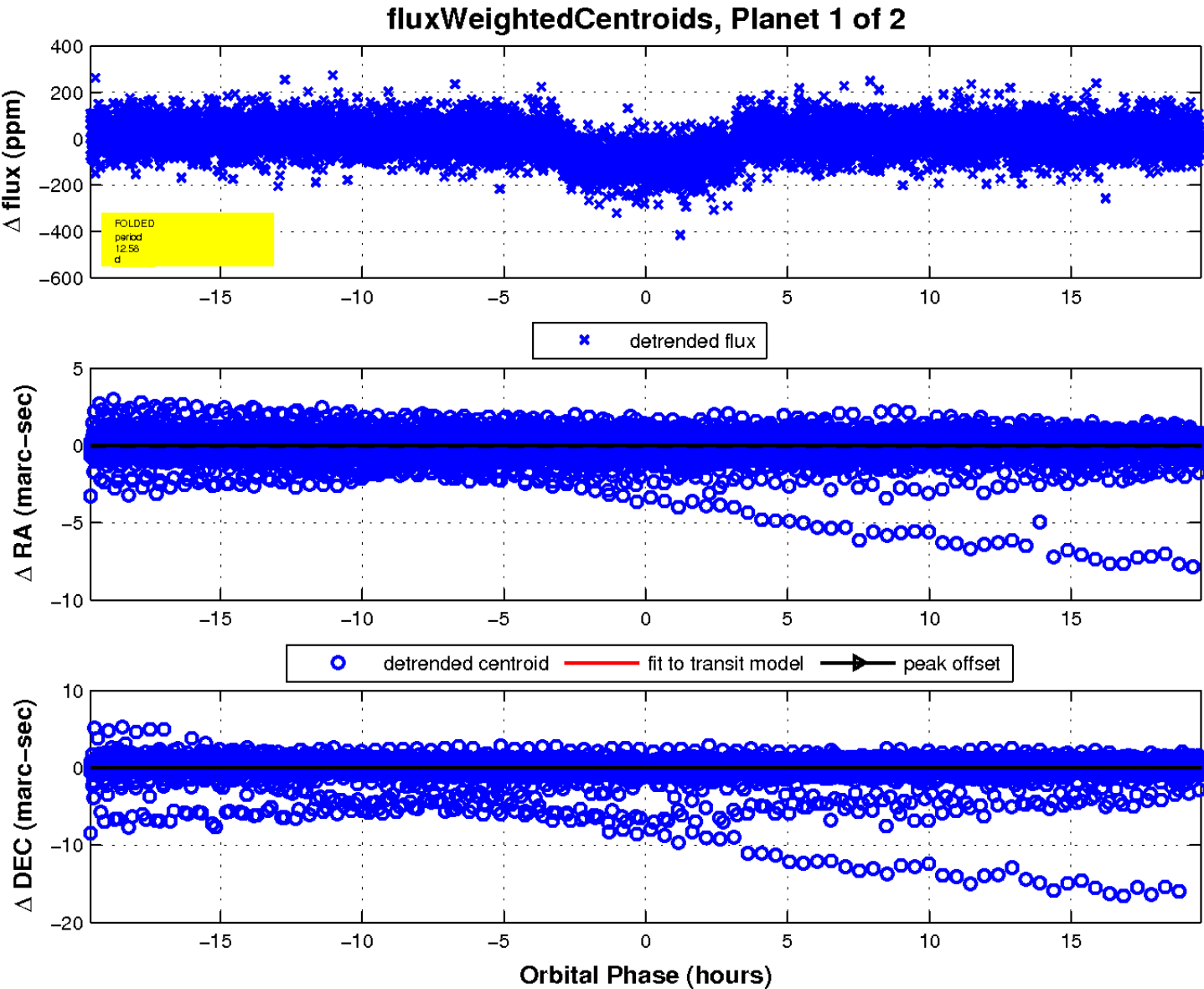
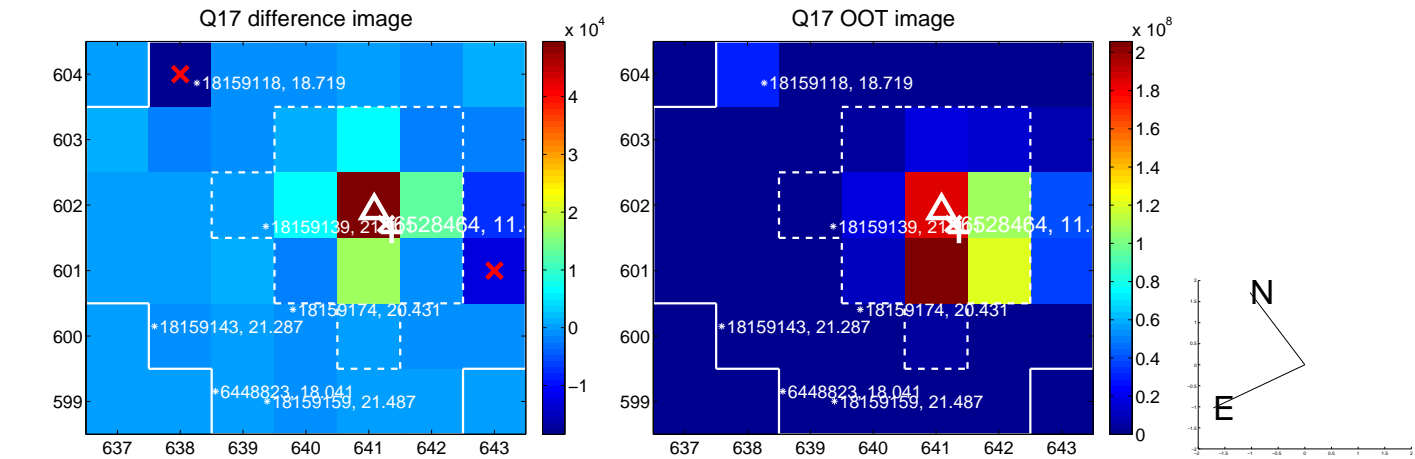
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

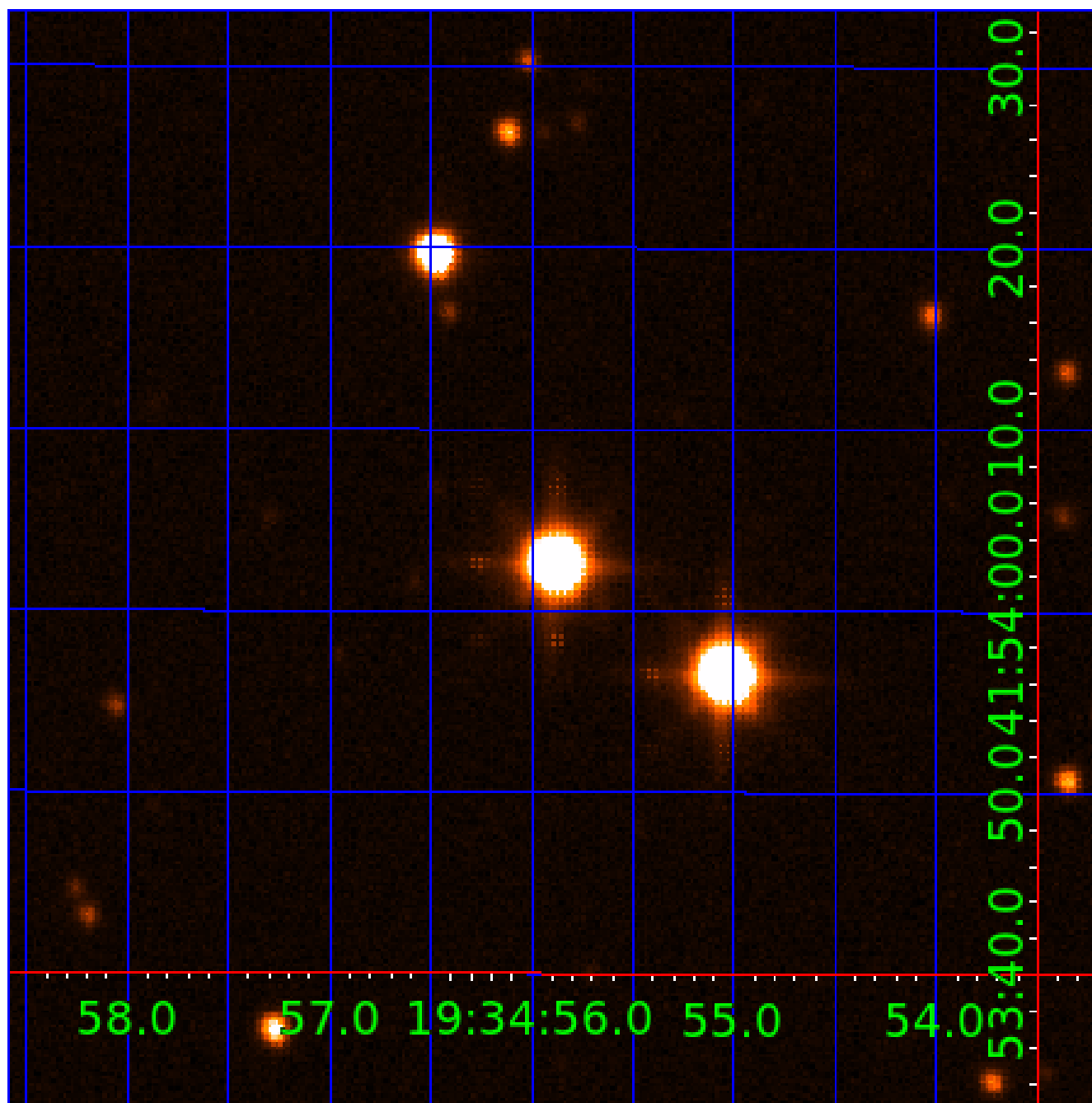


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 006528464

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})
006528464-01	OBS	0270.01	12.582269	137.276194	112.1	6.528	40.9	45.8	1.42	5587	1.74	167.78
006528464-02	OBS	0270.02	33.672627	162.041954	170.0	8.302	35.4	43.0	1.42	5587	2.06	45.16

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006528464-01	OBS	PC	1.00	0	0	0	0	CENT_SATURATED
006528464-02	OBS	PC	0.80	0	0	0	0	CENT_SATURATED

Notes: OBS = Observed. INJ = Injected. INV = Inverted. SCR = Scrambled.

N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

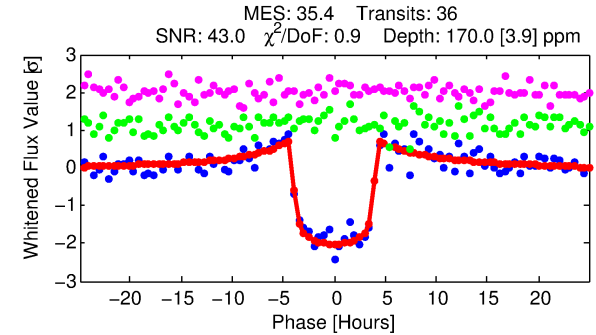
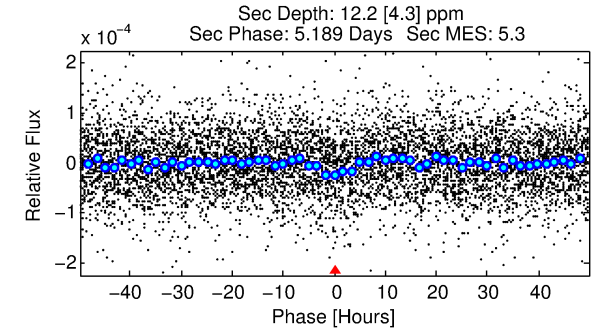
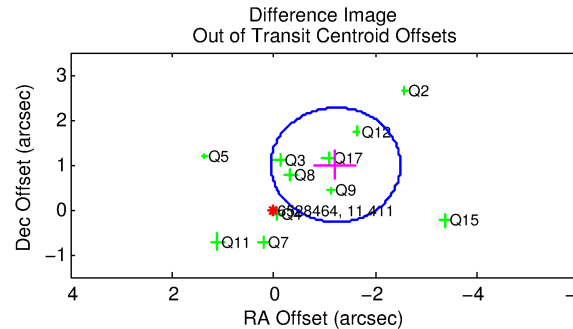
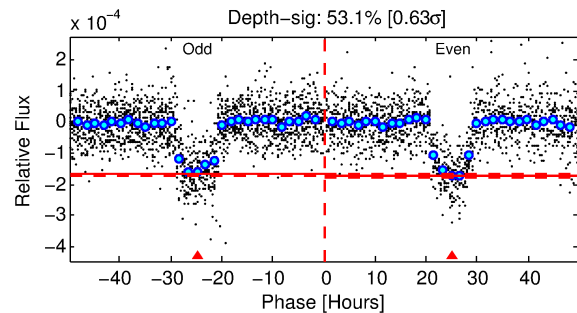
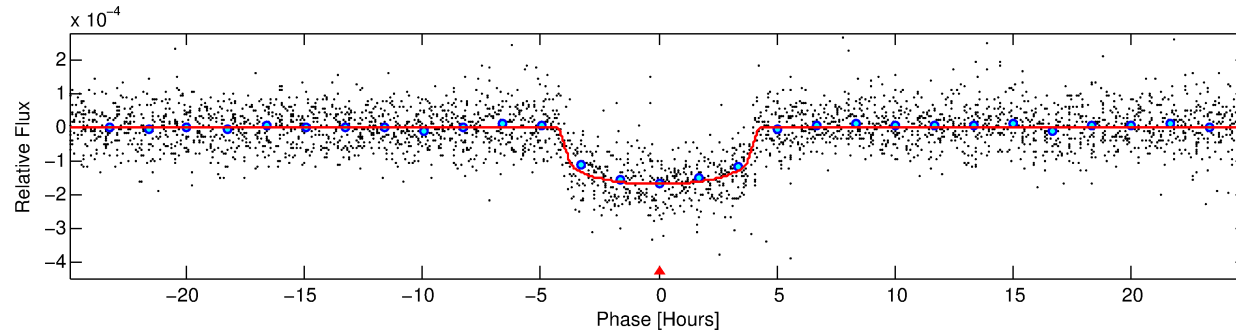
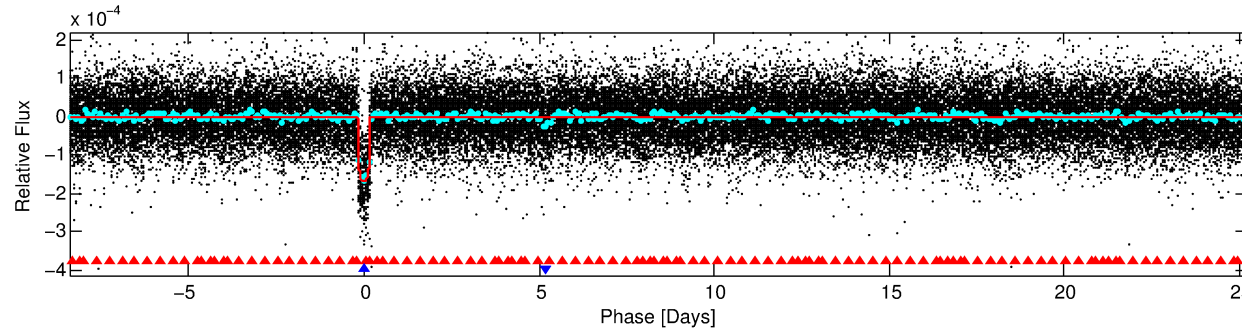
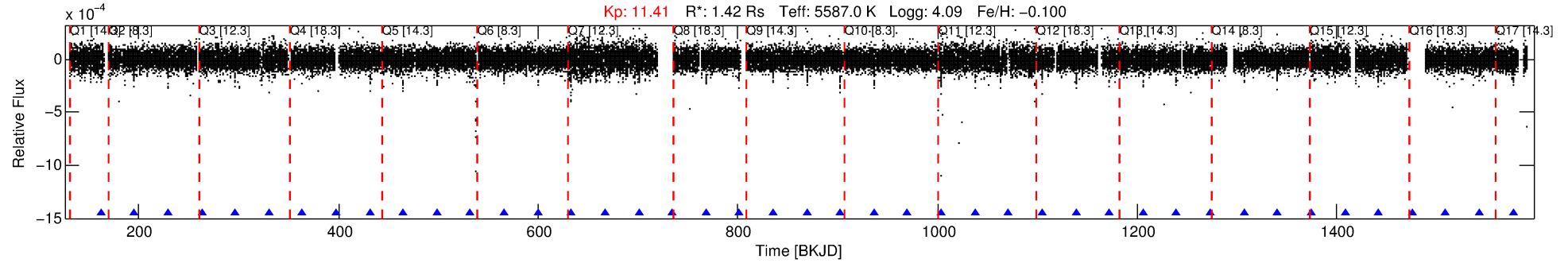
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 006528464-02

No Significant Match Found

DV One-Page Summary

KIC: 6528464 Candidate: 2 of 2 Period: 33.673 d
KOI: K00270.02 Name: Kepler-449c Corr: 0.992



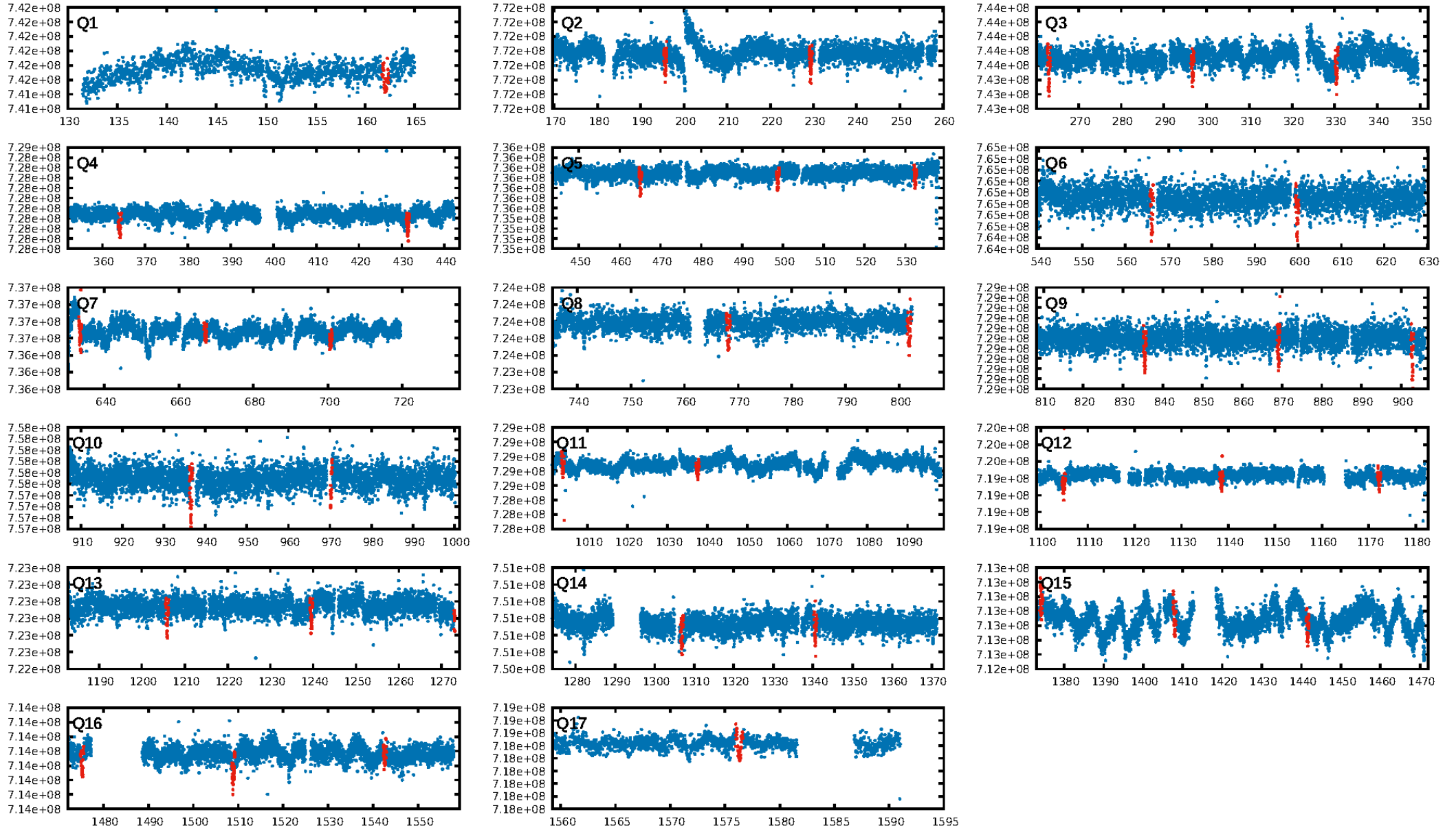
DV Fit Results:

Period = 33.67263 [0.00012] d
Epoch = 162.0420 [0.0028] BKJD
Rp/R* = 0.0132 [0.0013]
a/R* = 19.54 [8.34]
b = 0.79 [0.20]
Seff = 45.16 [3.47]
Teq = 661 [13] K
Rp = 2.05 [0.21] Re
a = 0.1979 [0.0047] AU
Ag = 62.09 [25.14] [2.43 σ]
Teffp = 2869 [294] K [7.50 σ]

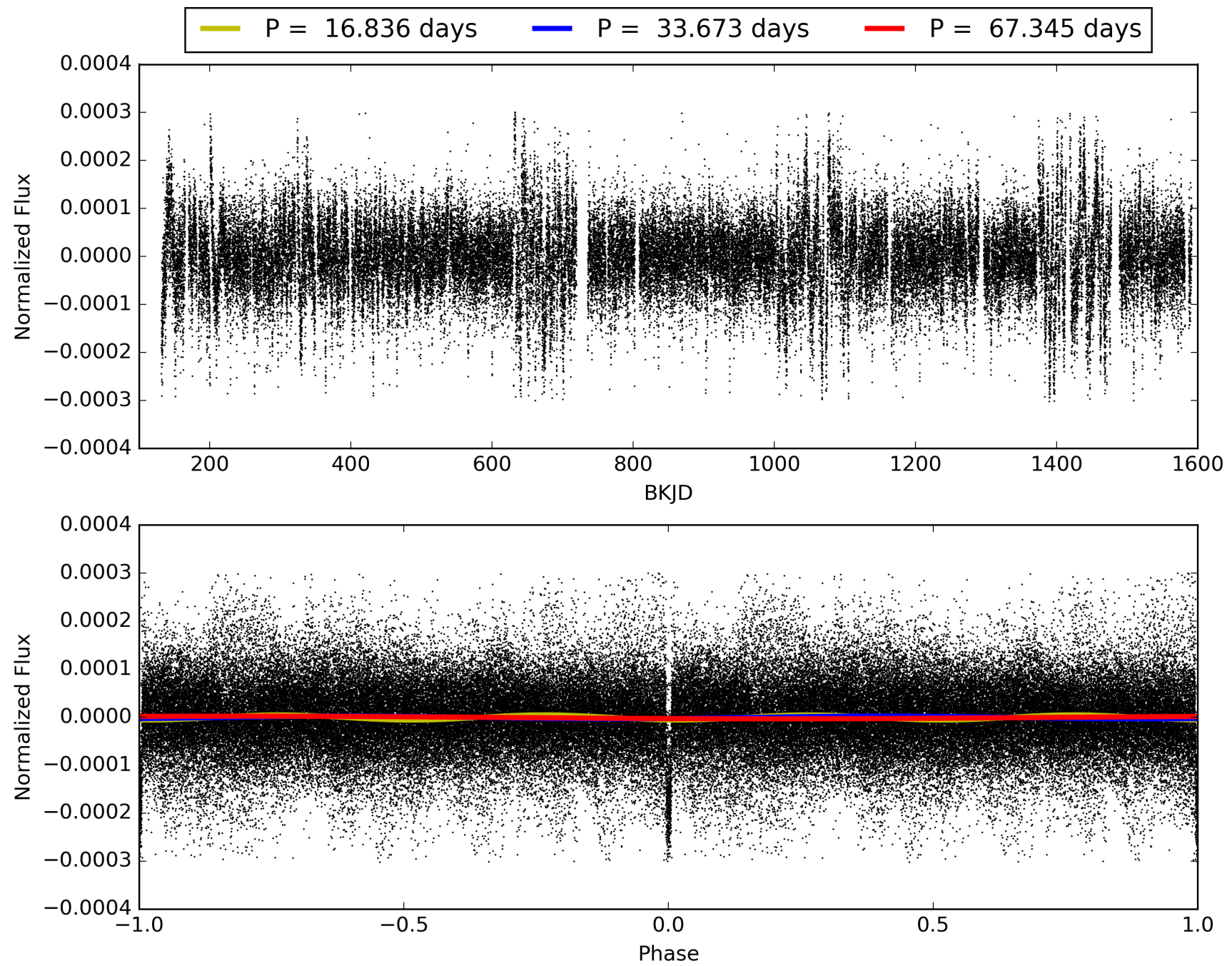
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [47.93 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 23.3%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 2.65e-205
RollingBand-fgt: 1.00 [34/34]
GhostDiagnostic-chr: -9.943
Centroid-sig: 22.8%
Centroid-so: 0.857 arcsec [3.18 σ]
OotOffset-rm: 1.571 arcsec [3.70 σ]
KicOffset-rm: 1.235 arcsec [2.96 σ]
OotOffset-st: 1/4/3/3 [11]
KicOffset-st: 1/4/3/3 [11]
DiffImageQuality-fgm: 0.82 [9/11]
DiffImageOverlap-fno: 0.93 [14/15]

TCE 006528464-02, PDC Light Curves

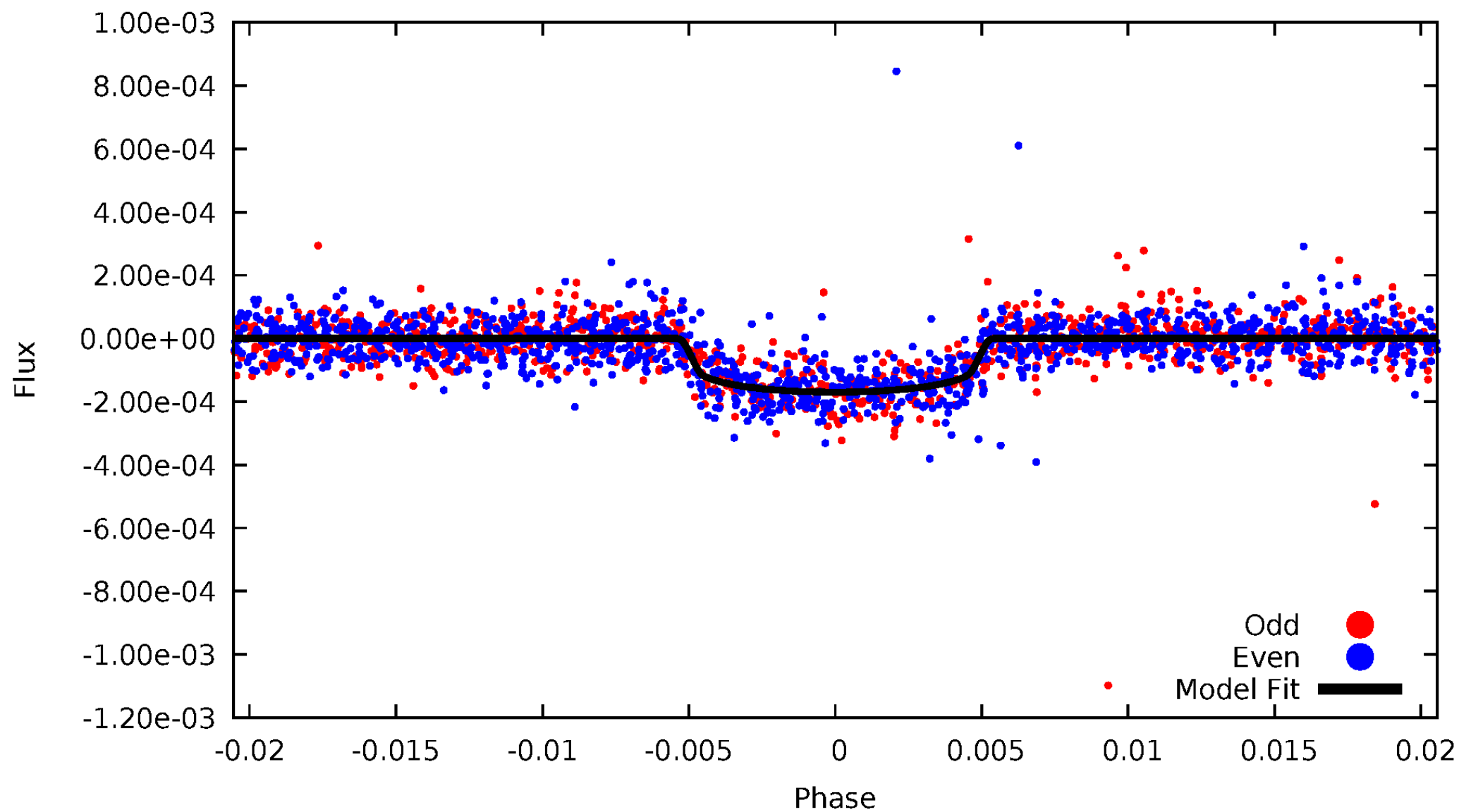


TCE 006528464-02



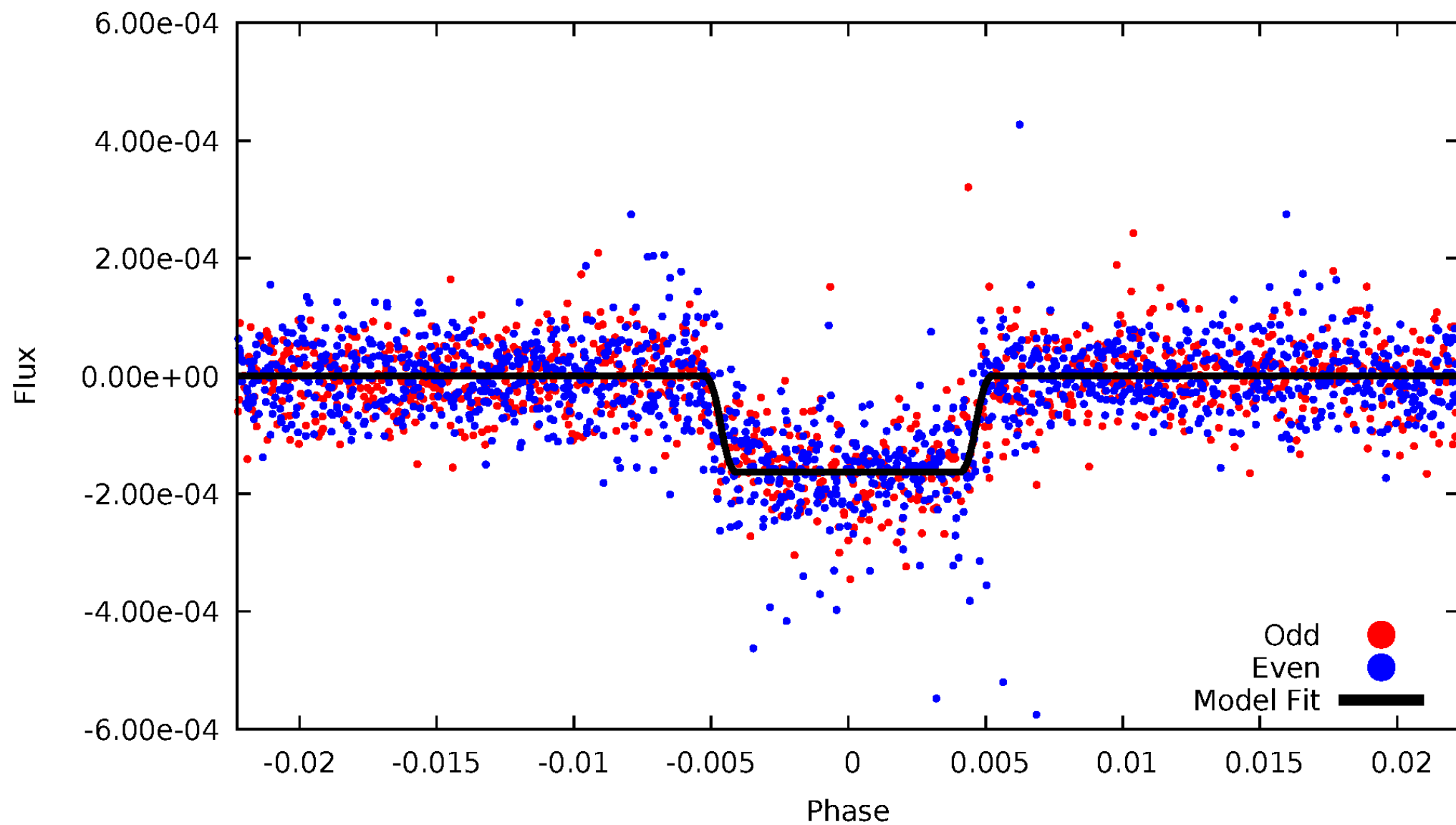
DV Odd/Even

TCE 006528464-02



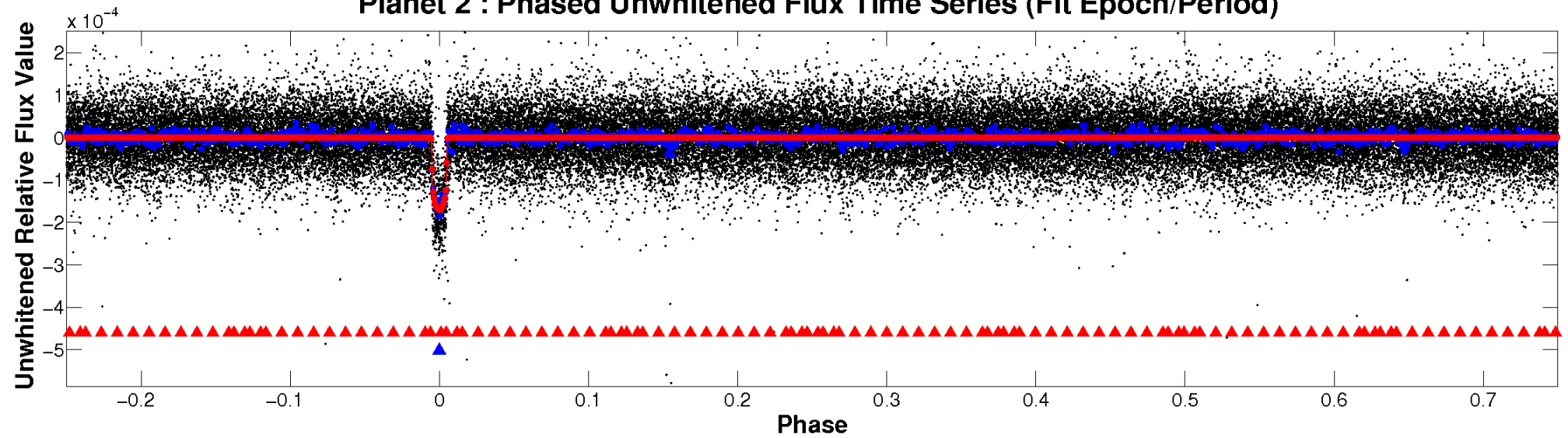
ALT Odd/Even

TCE 006528464-02

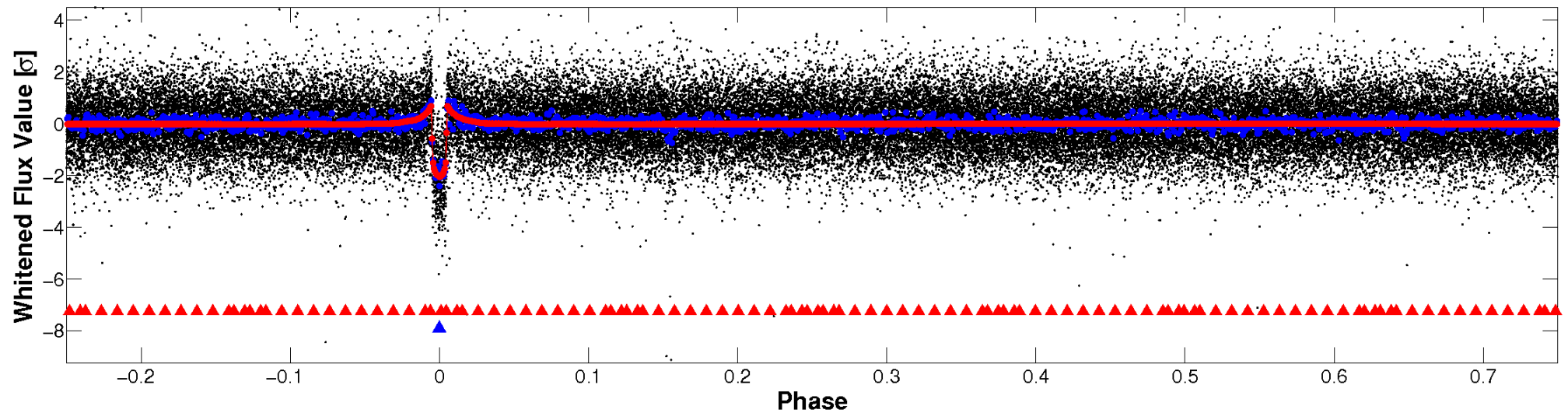


Non-Whitened Vs. Whitened Light Curve

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

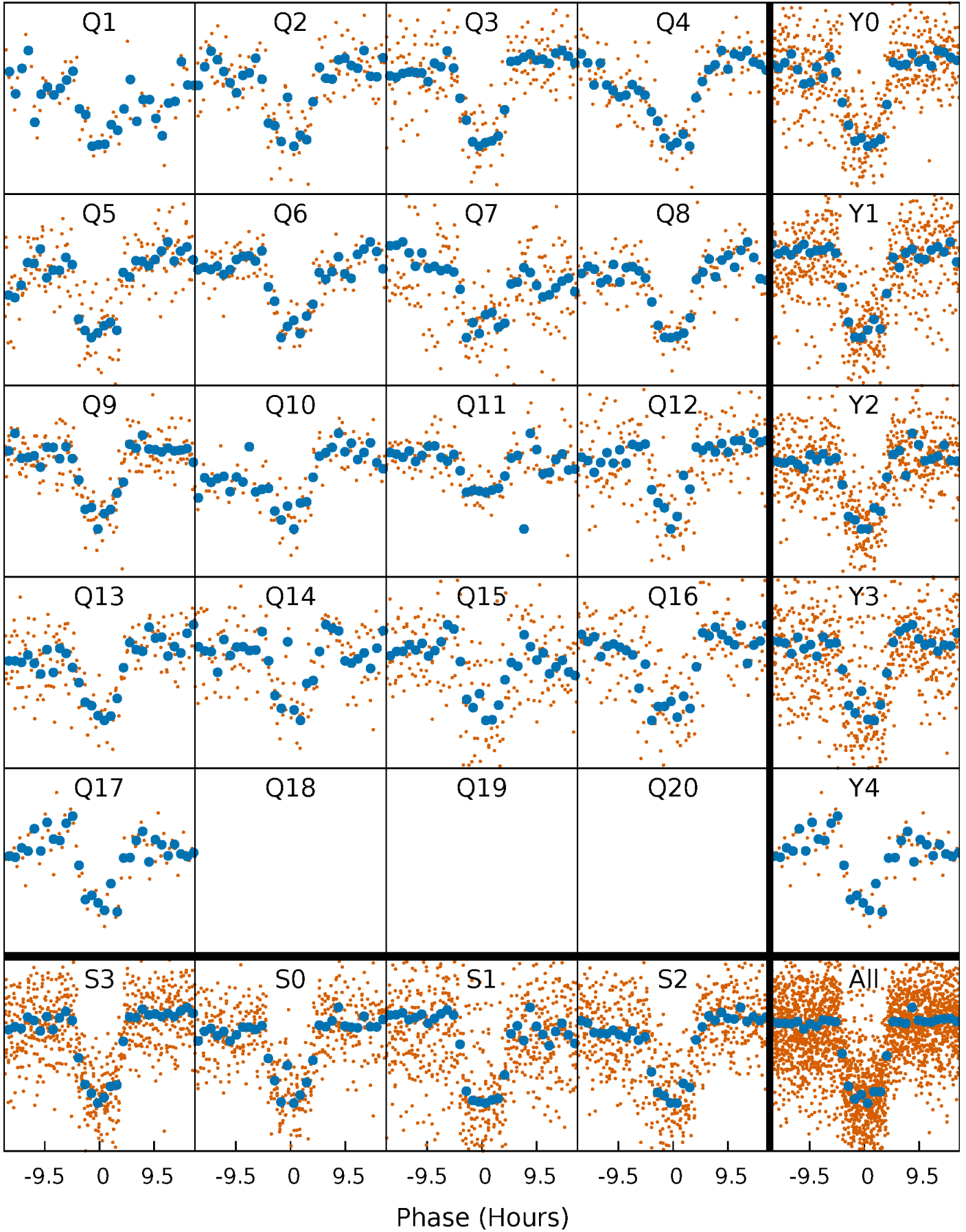


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



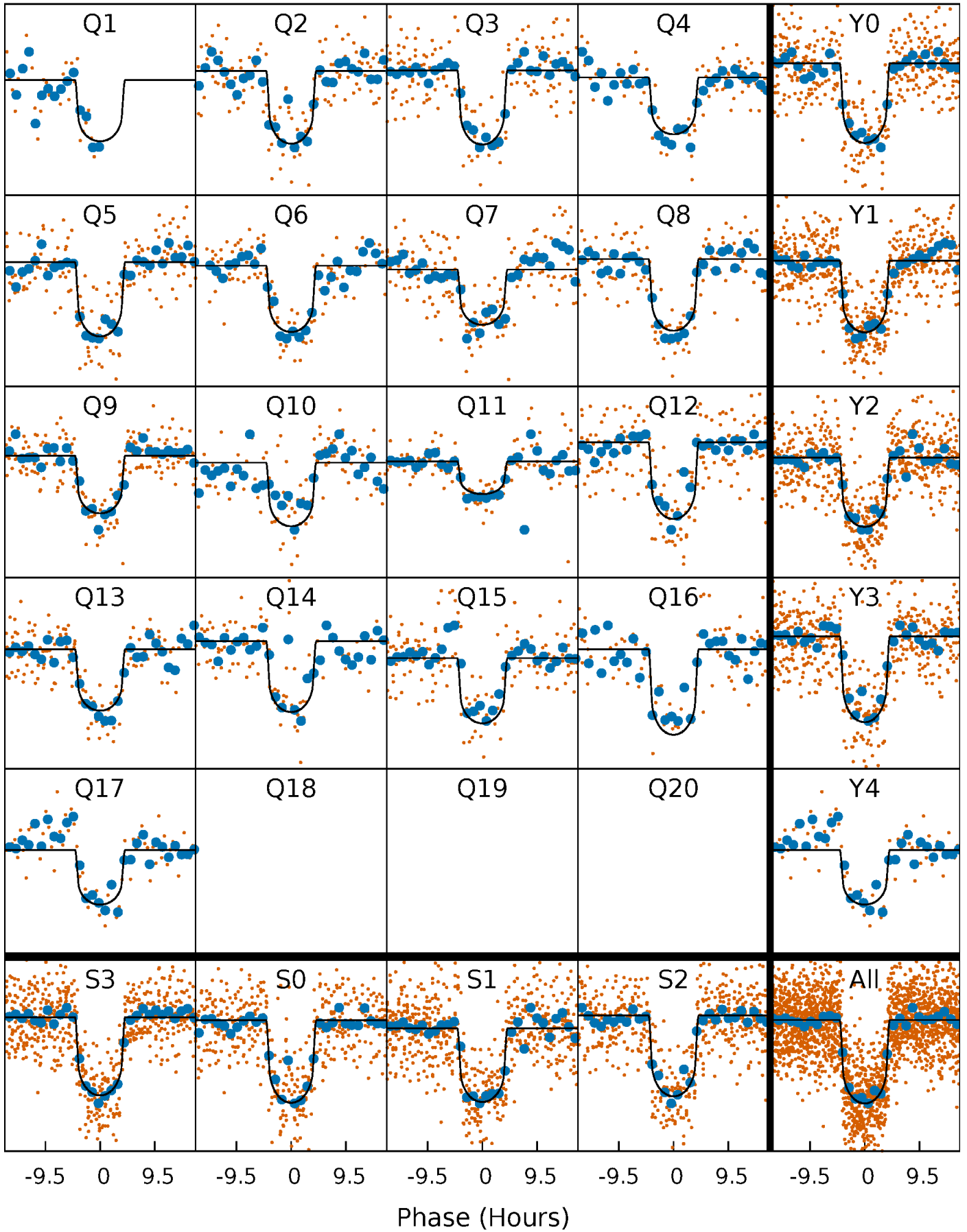
PDC Quarter-Phased Transit Curves

TCE 006528464-02 P= 33.672627 Days $T_0=162.041954$ (BKJD)



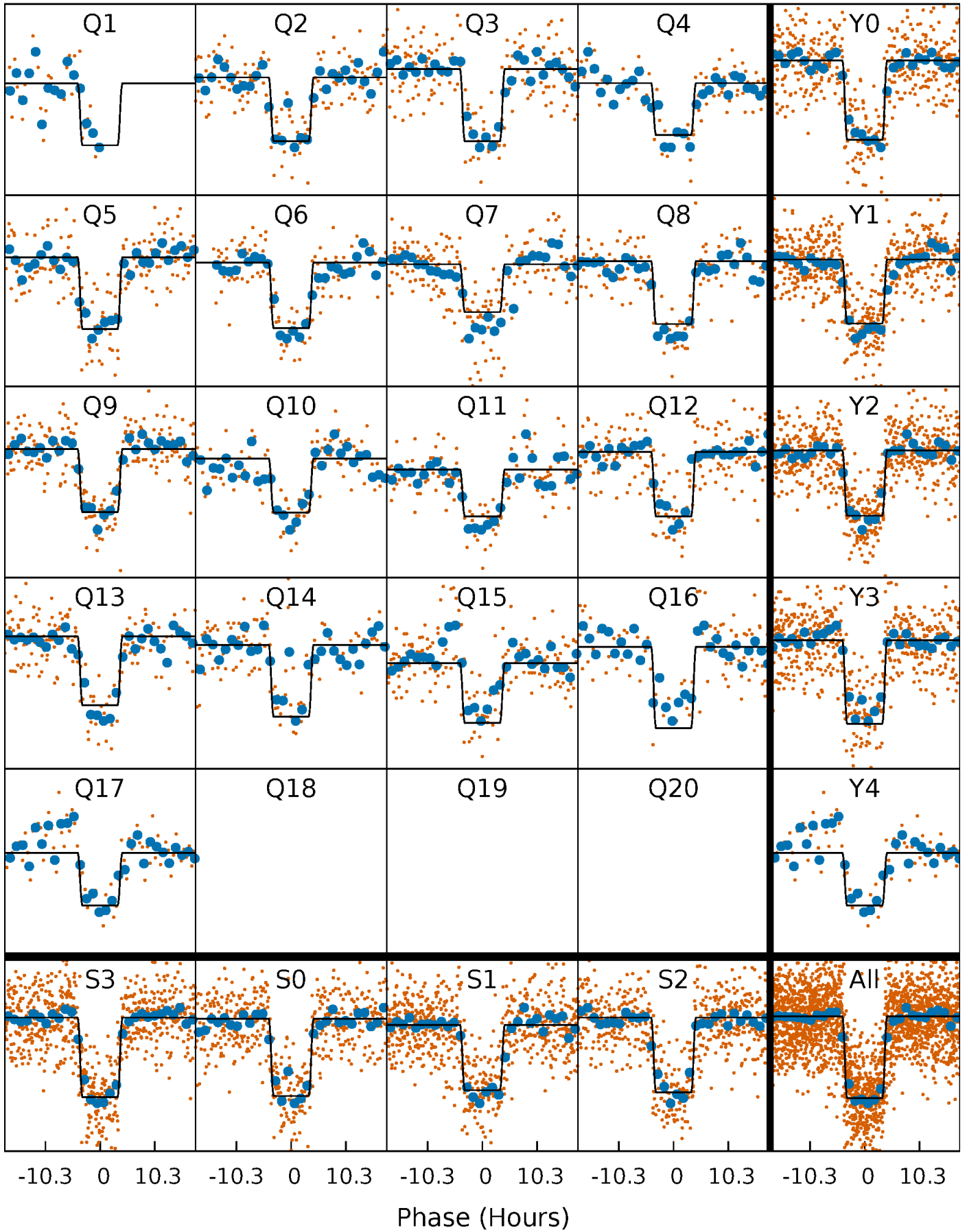
DV Quarter-Phased Transit Curves

TCE 006528464-02 P= 33.672627 Days $T_0=162.041954$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

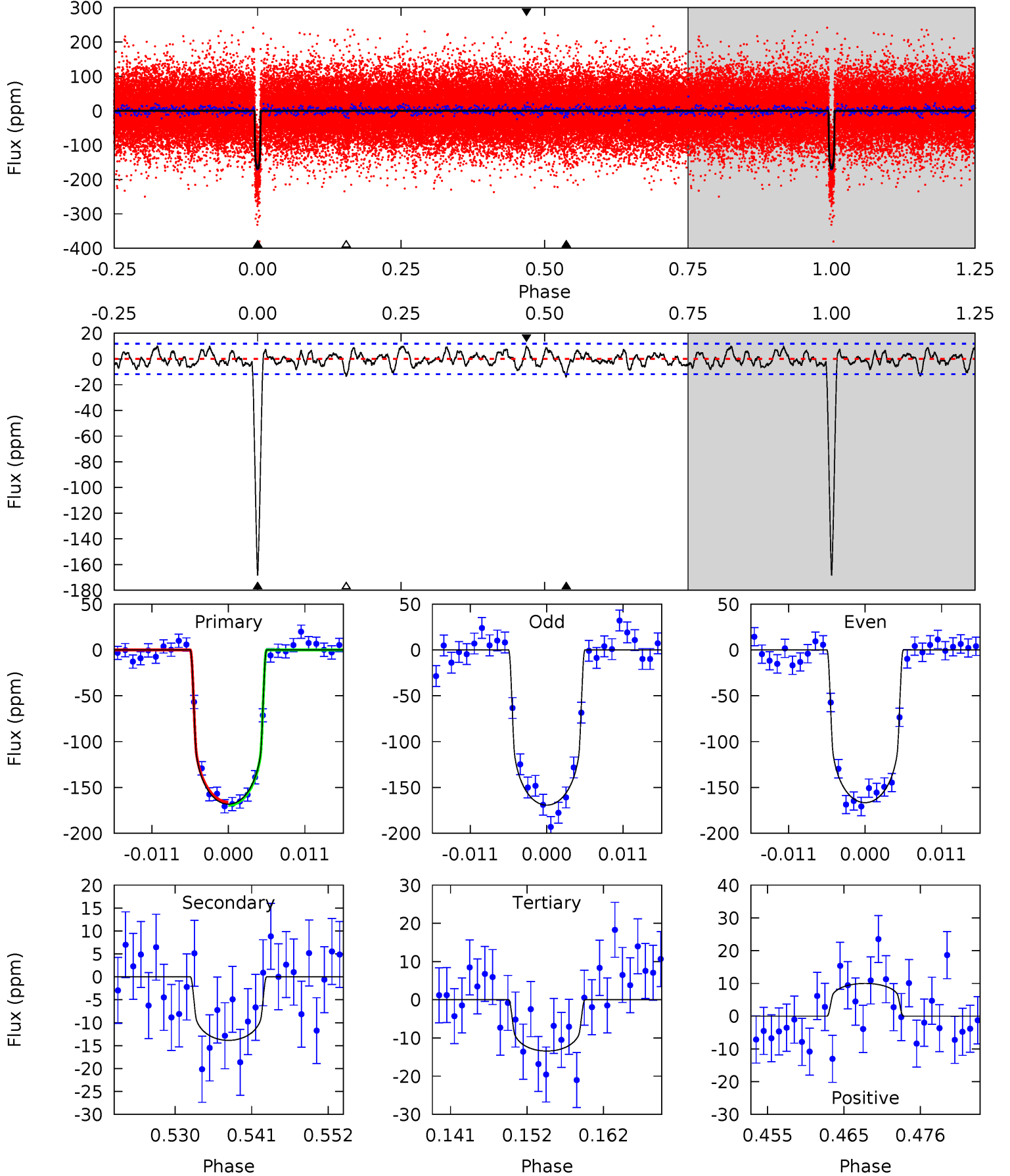
TCE 006528464-02 P= 33.673031 Days $T_0=162.036665$ (BKJD)



DV Model-Shift Uniqueness Test

006528464-02, $P = 33.672627$ Days, $E = 128.369327$ Days

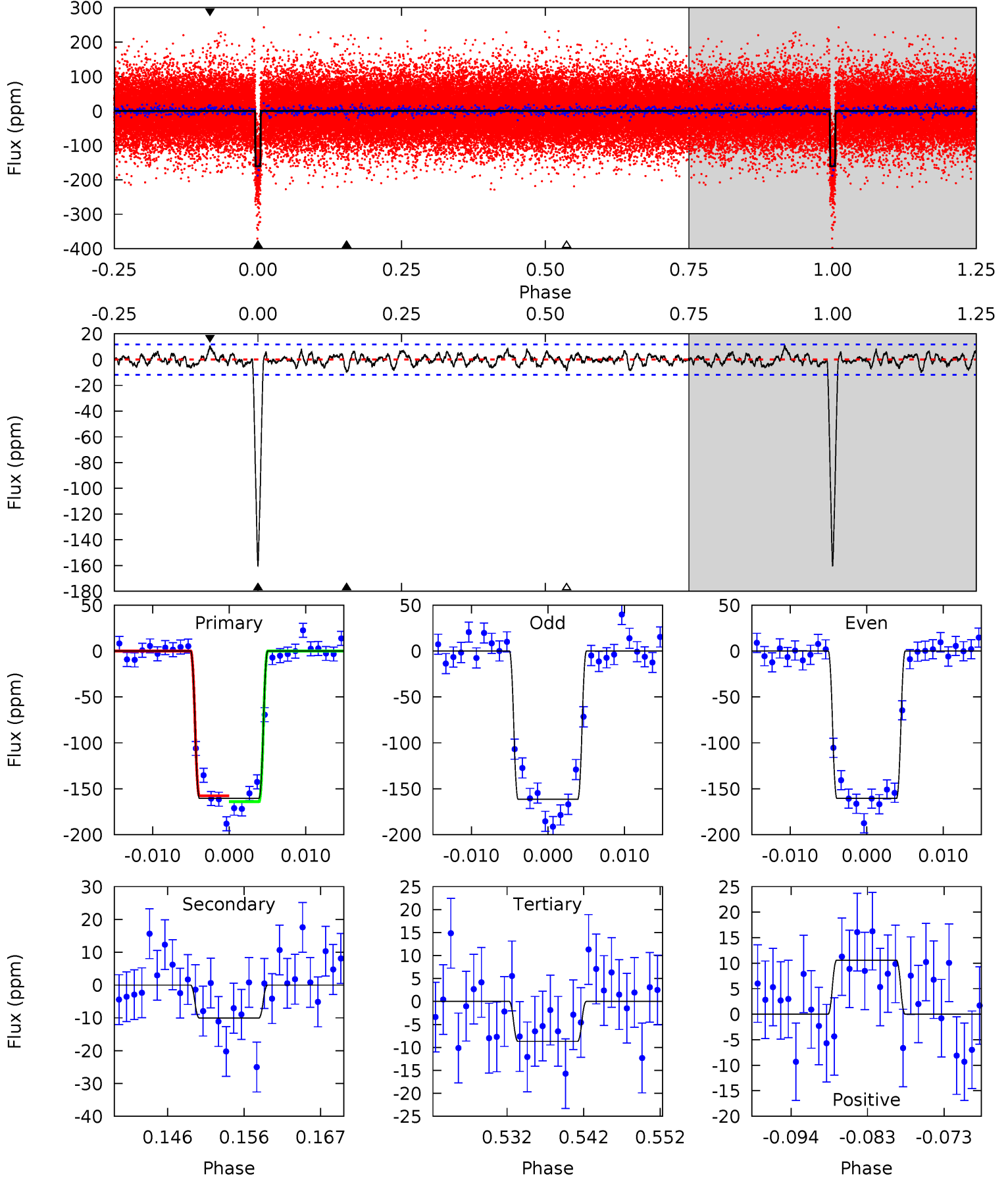
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
71.0	5.85	5.67	4.21	5.01	2.55	1.74	65.3	66.8	0.18	1.63	0.57	0.98	0.06	0.72



Alt Model-Shift Uniqueness Test

006528464-02, P = 33.673031 Days, E = 128.363634 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
68.3	4.27	3.70	4.51	5.02	2.56	1.34	64.6	63.8	0.57	-0.24	0.21	0.99	0.06	1.33



Stellar Parameters For KIC 006528464

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5587^{+100}_{-58}	$4.091^{+0.011}_{-0.011}$	$-0.100^{+0.100}_{-0.100}$	$1.423^{+0.047}_{-0.026}$	$0.911^{+0.055}_{-0.026}$	$0.445^{+0.019}_{-0.024}$
	+2%/-1%	+0%/-0%	+100%/-100%	+3%/-2%	+6%/-3%	+4%/-5%
Source	SPE8	AST8	SPE8	DSEP		

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

Secondary Eclipse Parameters for KIC 006528464-02 / KOI 0270.02

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-14 ± 2	$2.06^{+0.22}_{-0.22}$	925^{+17}_{-12}	3452^{+164}_{-143}	69^{+23}_{-16}
Alt.	-10 ± 2	$1.99^{+0.19}_{-0.19}$	925^{+16}_{-11}	3332^{+163}_{-169}	55^{+19}_{-15}

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 $A_{obs} \gg 1.0$

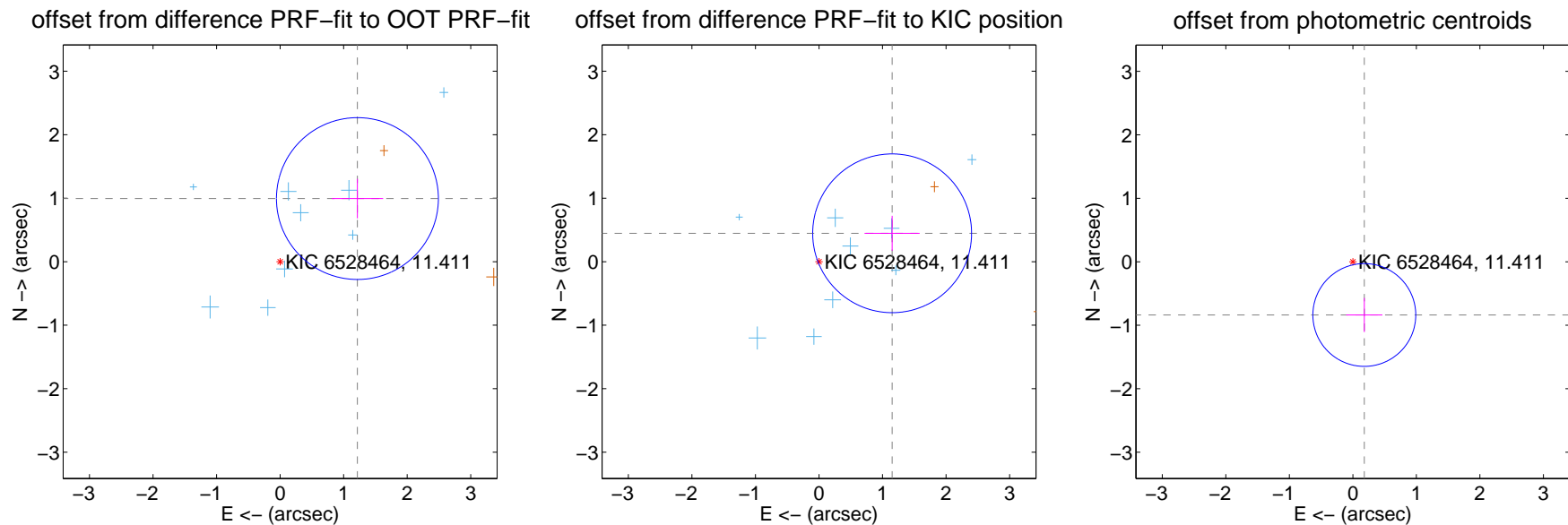
DV Centroid Data

Supplemental centroid analysis for 006528464-02. **Kepler magnitude: 11.41.** Transit SNR 42.98

There are 9 quarters with good PRF difference image offsets

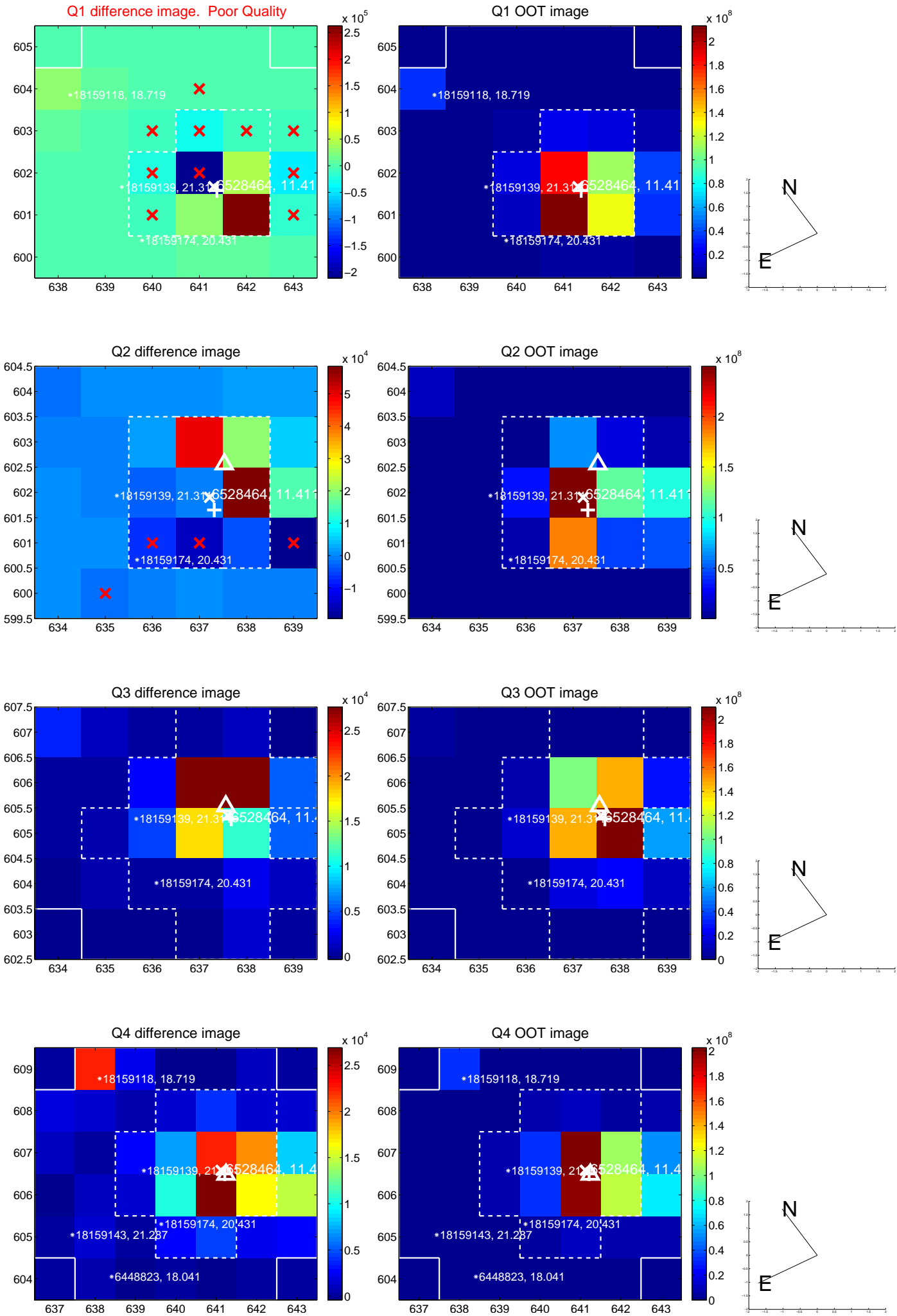
The direct PRF centroid is offset from the target star catalog position by about 0.60 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.571 ± 0.425	3.70	-1.217 ± 0.404	0.994 ± 0.311
PRF-fit source offset from KIC position	1.235 ± 0.417	2.96	-1.151 ± 0.434	0.447 ± 0.276
photometric centroid source offset	0.86 ± 0.27	3.18	-0.18 ± 0.28	-0.84 ± 0.27

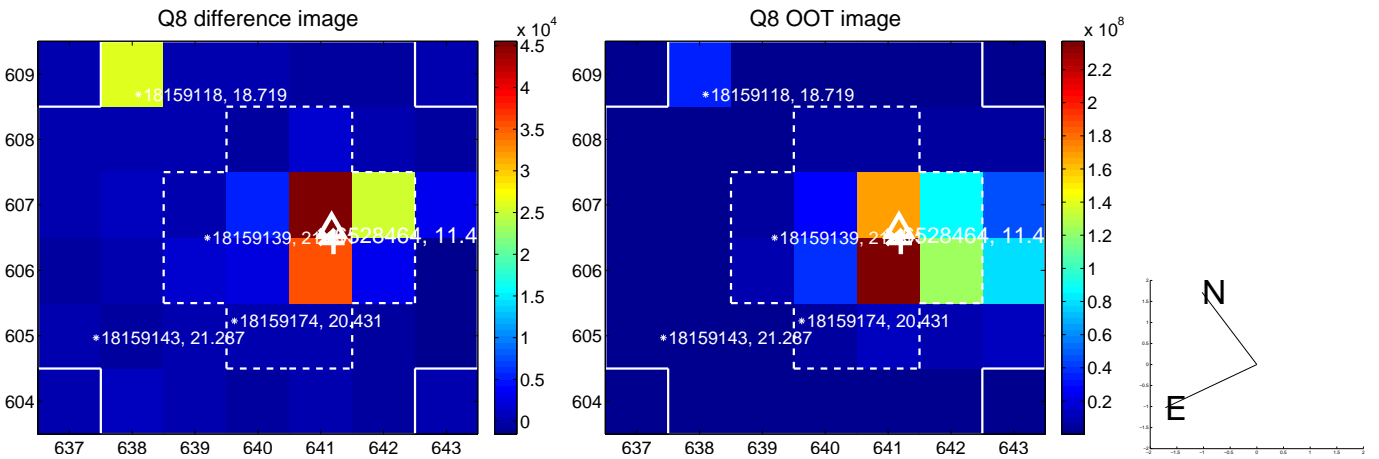
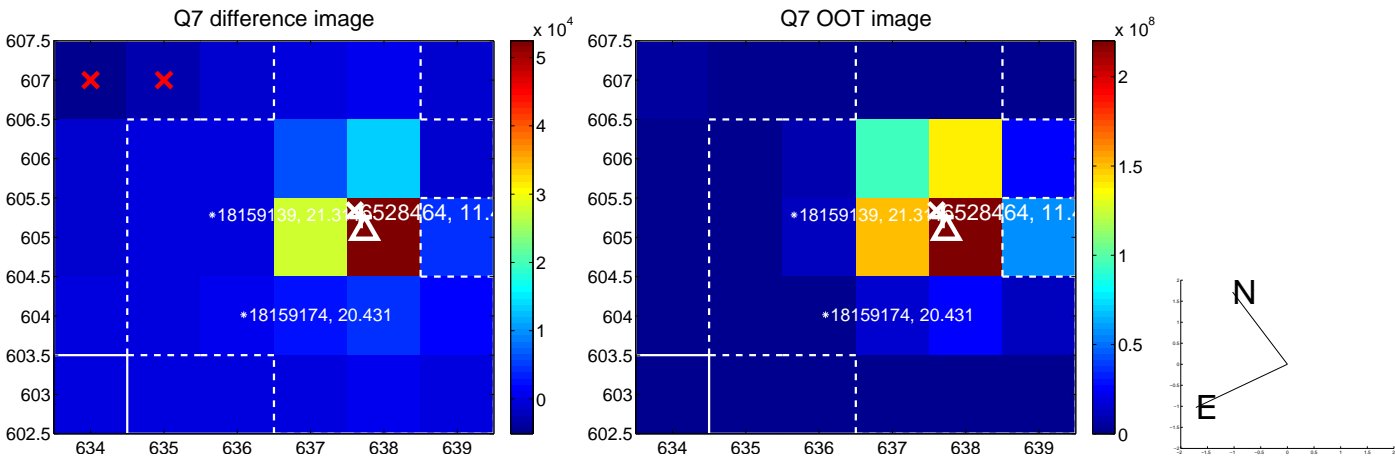
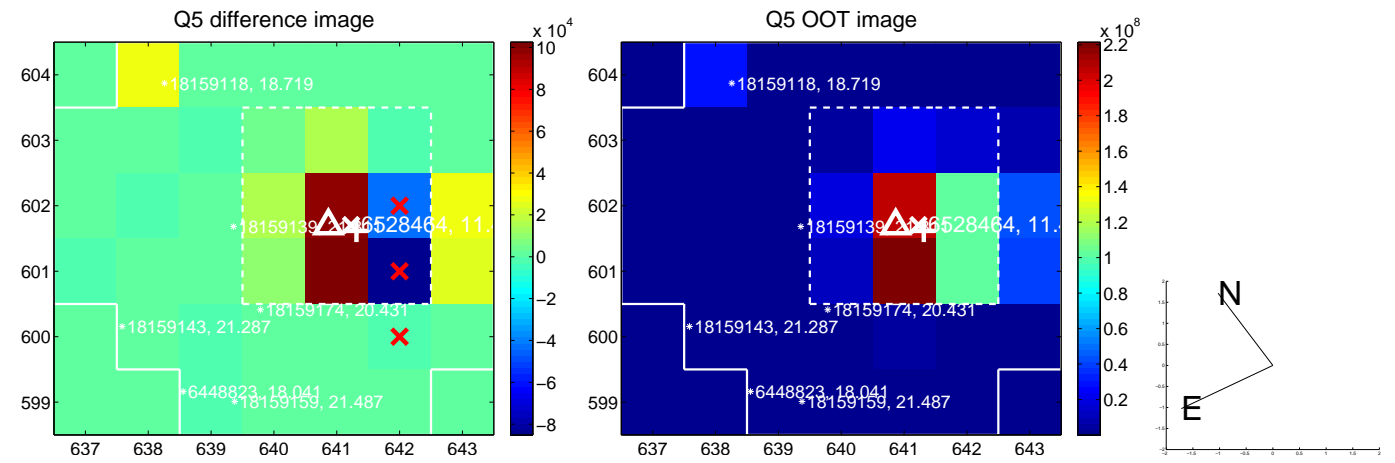


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

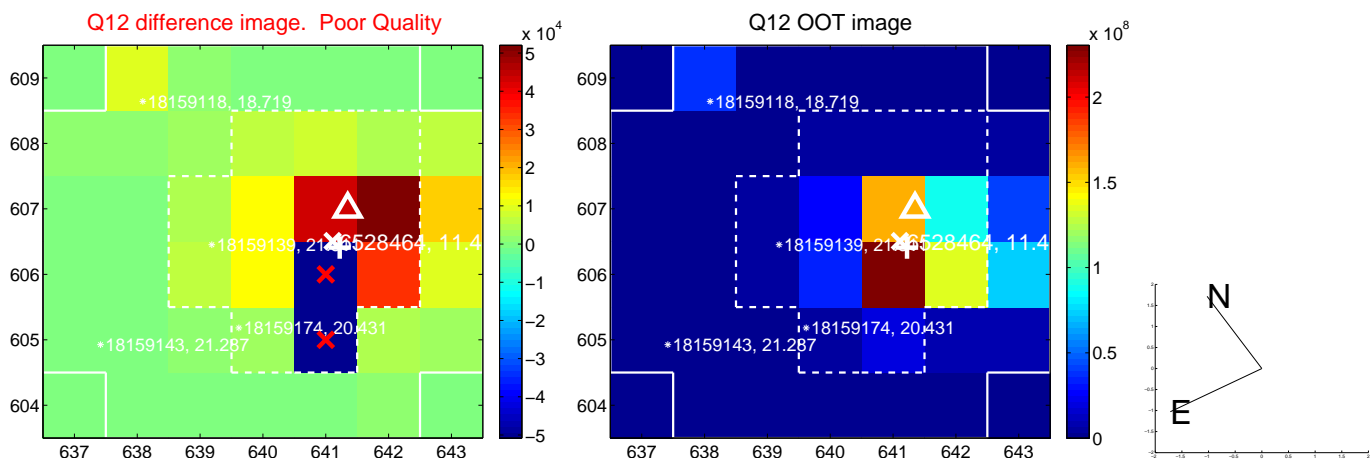
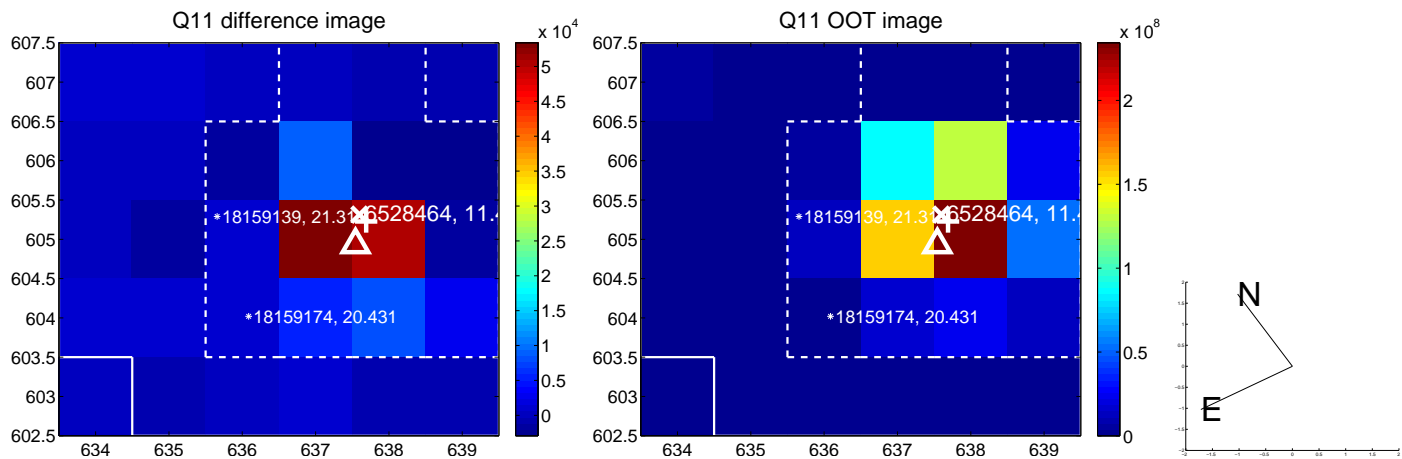
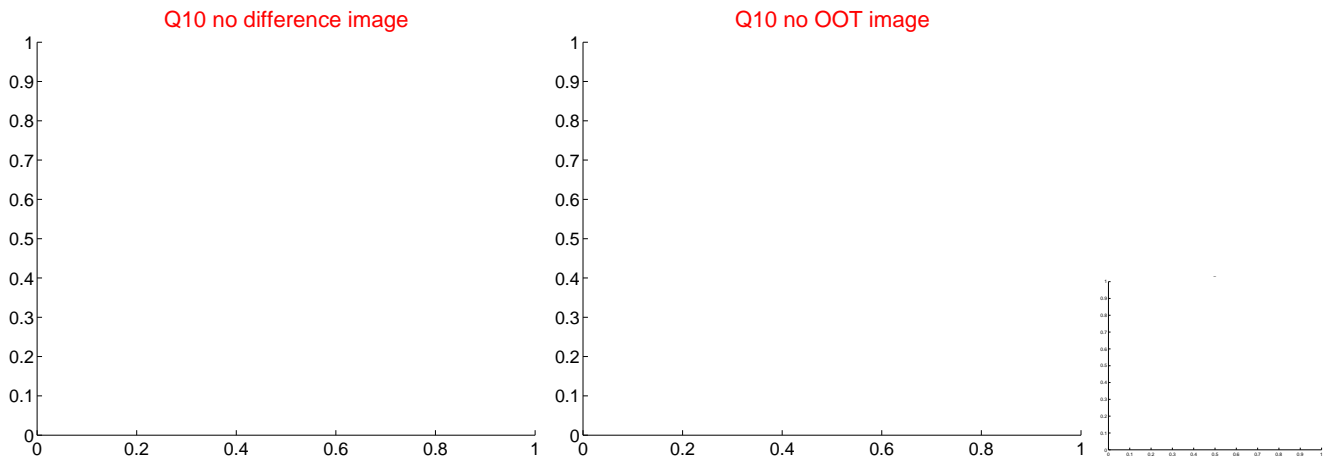
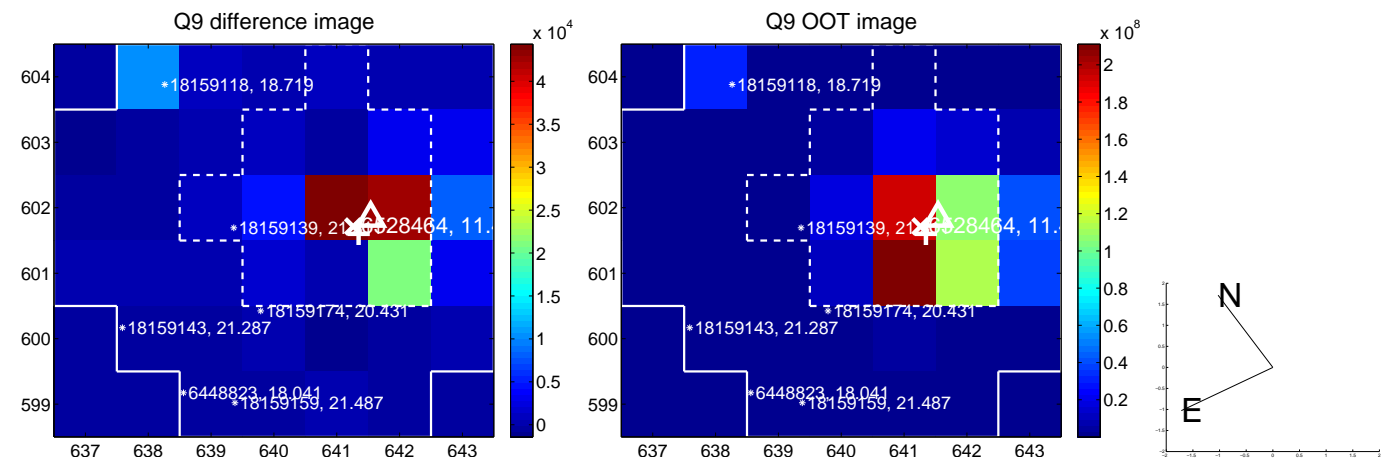
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



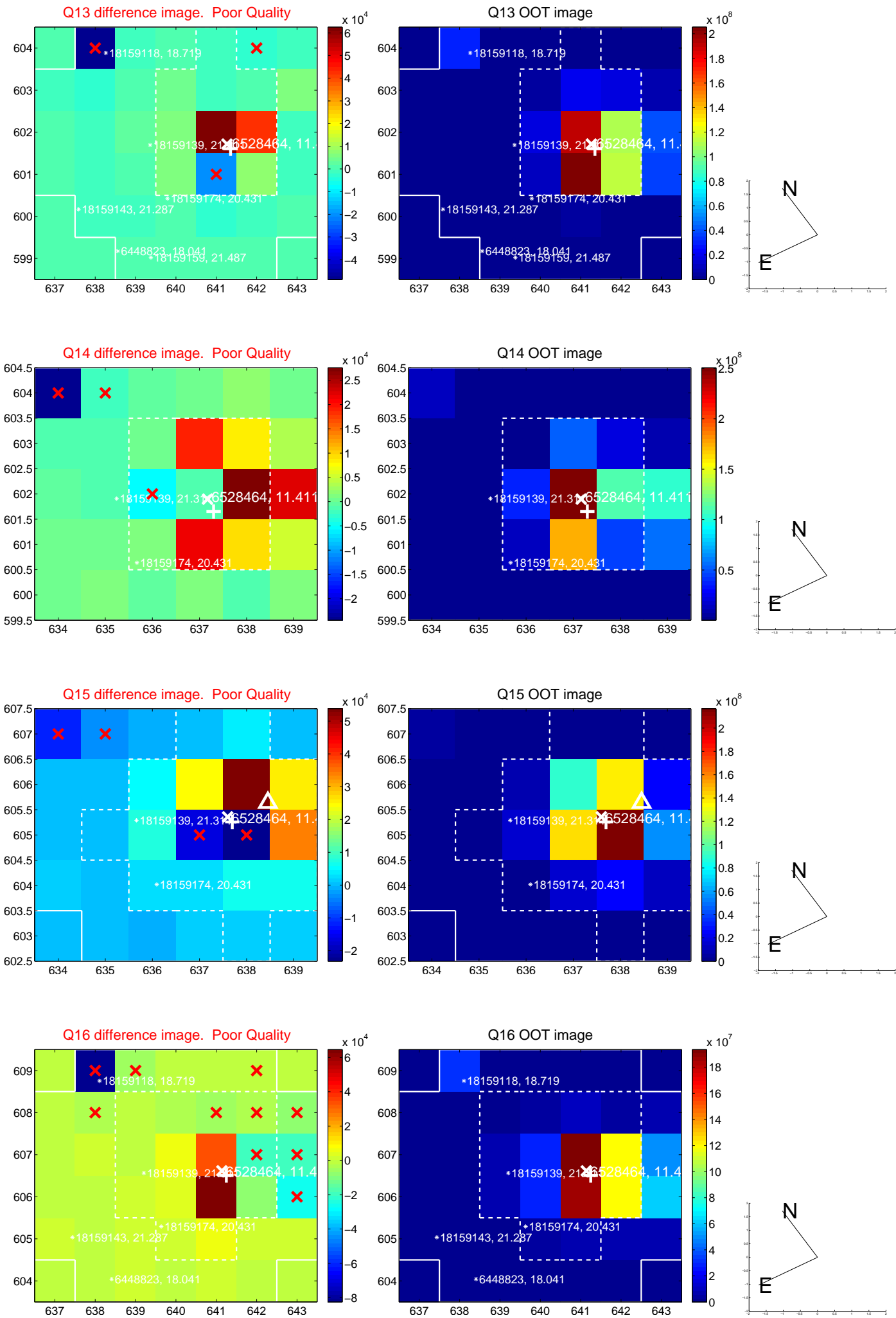
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



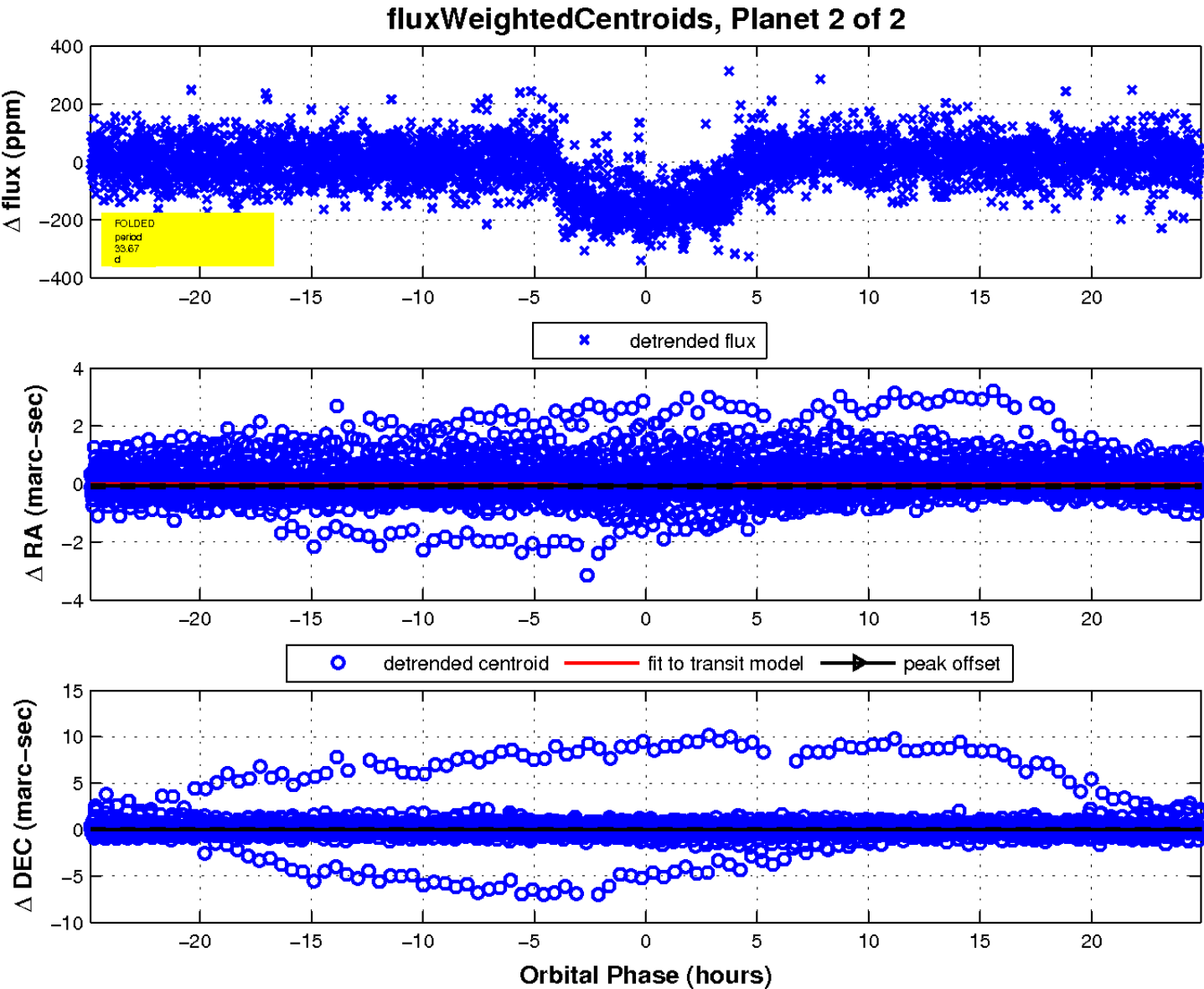
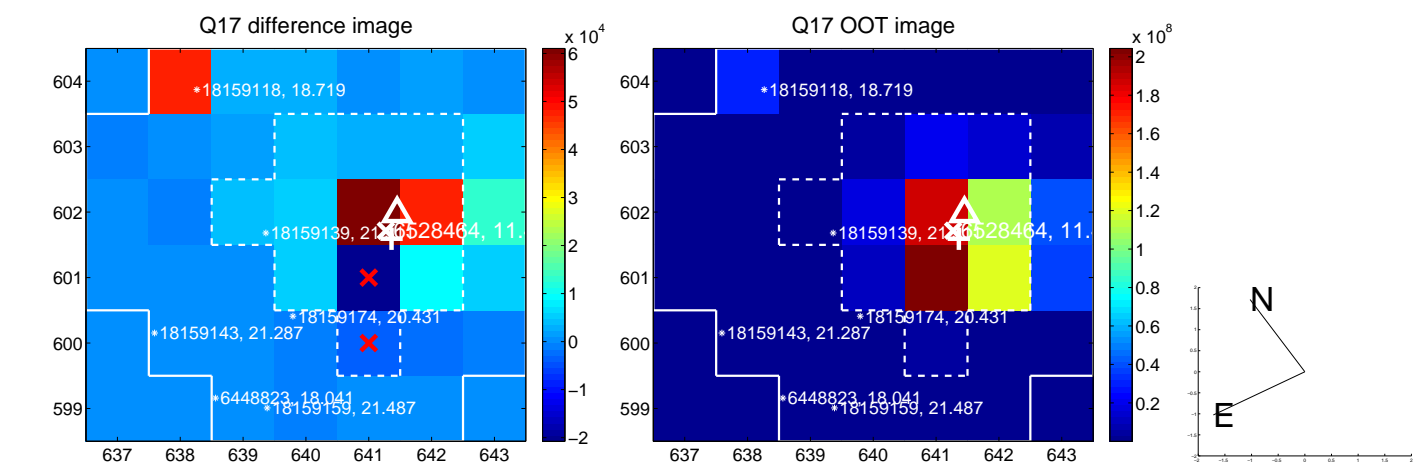
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

