

KIC 008564587

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})
008564587-01	OBS	1270.01	5.729327	132.829750	855.5	1.203	41.1	51.2	0.79	5320	2.89	123.41
008564587-02	OBS	1270.02	11.609110	133.993957	517.9	2.517	21.8	24.6	0.79	5320	3.30	48.13

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008564587-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT
008564587-02	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.

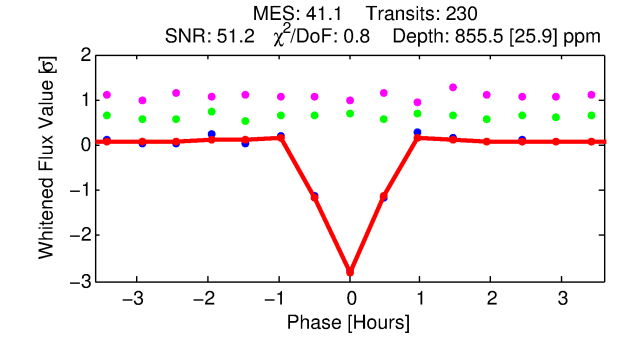
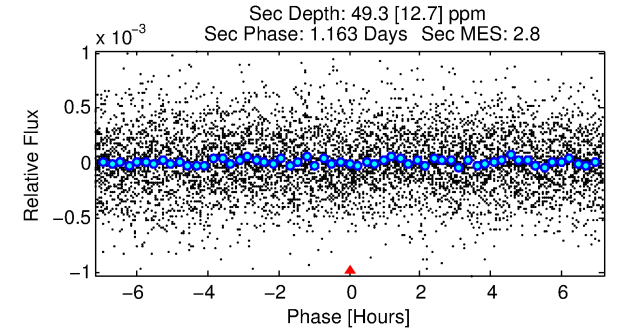
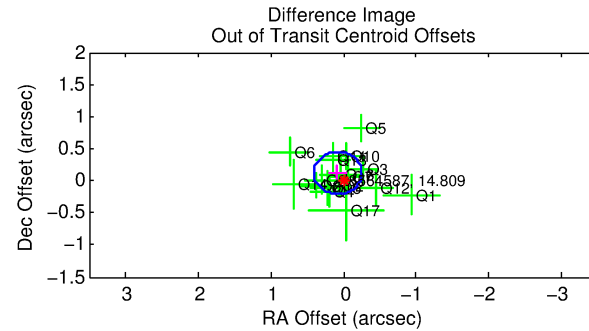
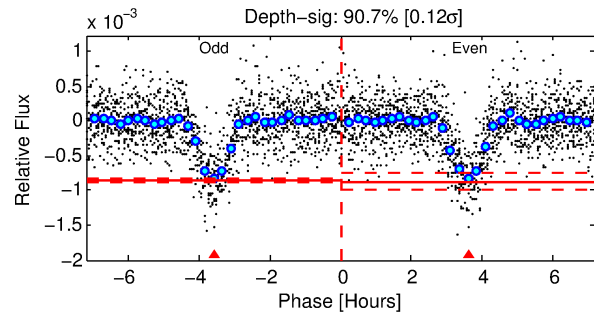
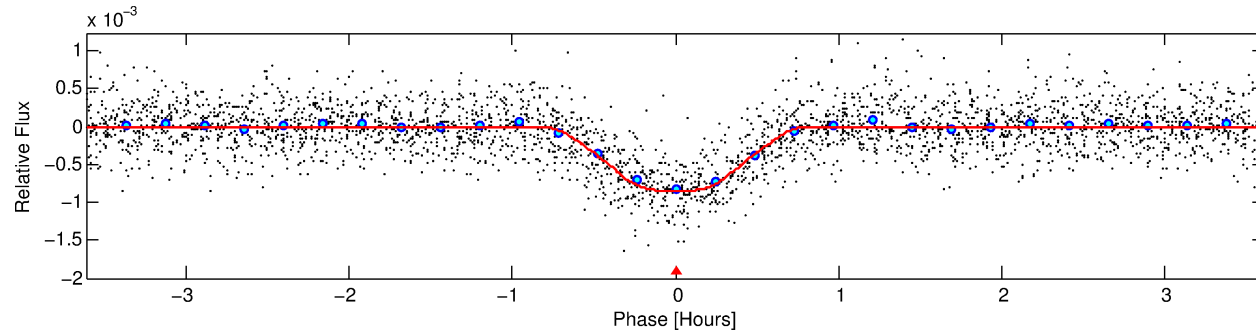
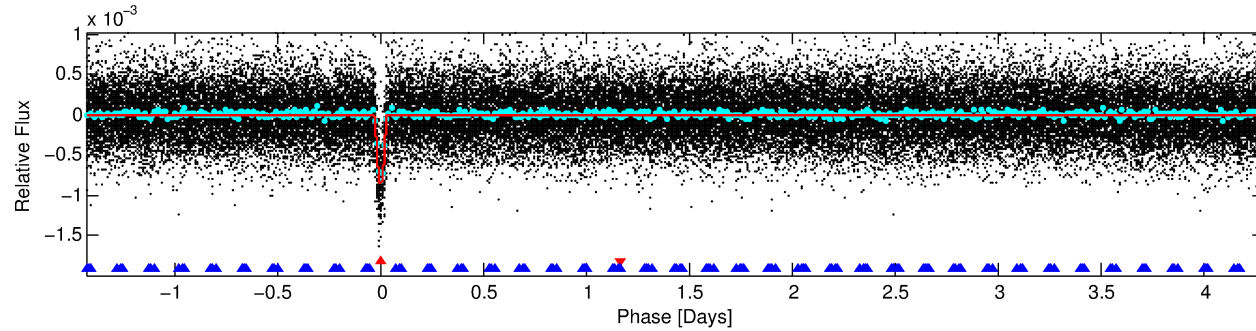
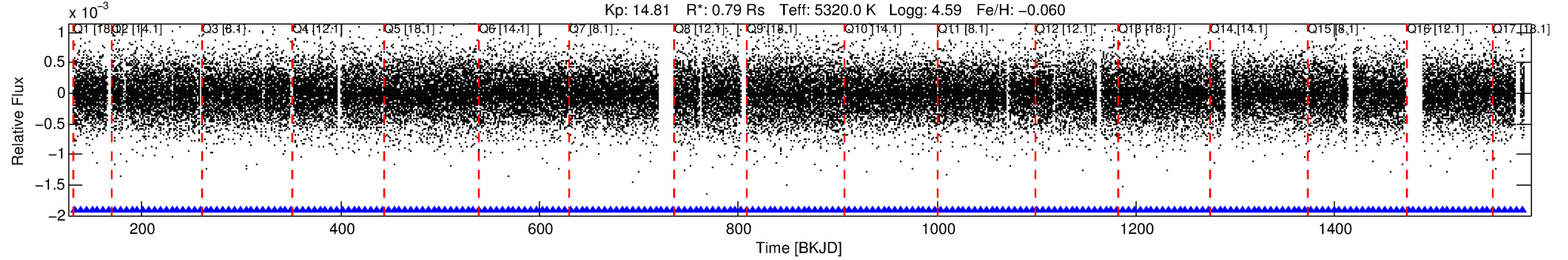
Ephemeris Match Information For 008564587-01

No Significant Match Found

DV One-Page Summary

KIC: 8564587 Candidate: 1 of 2 Period: 5.729 d
KOI: K01270.01 Name: Kepler-57b Corr: 0.981

Kp: 14.81 R*: 0.79 Rs Teff: 5320.0 K Logg: 4.59 Fe/H: -0.060



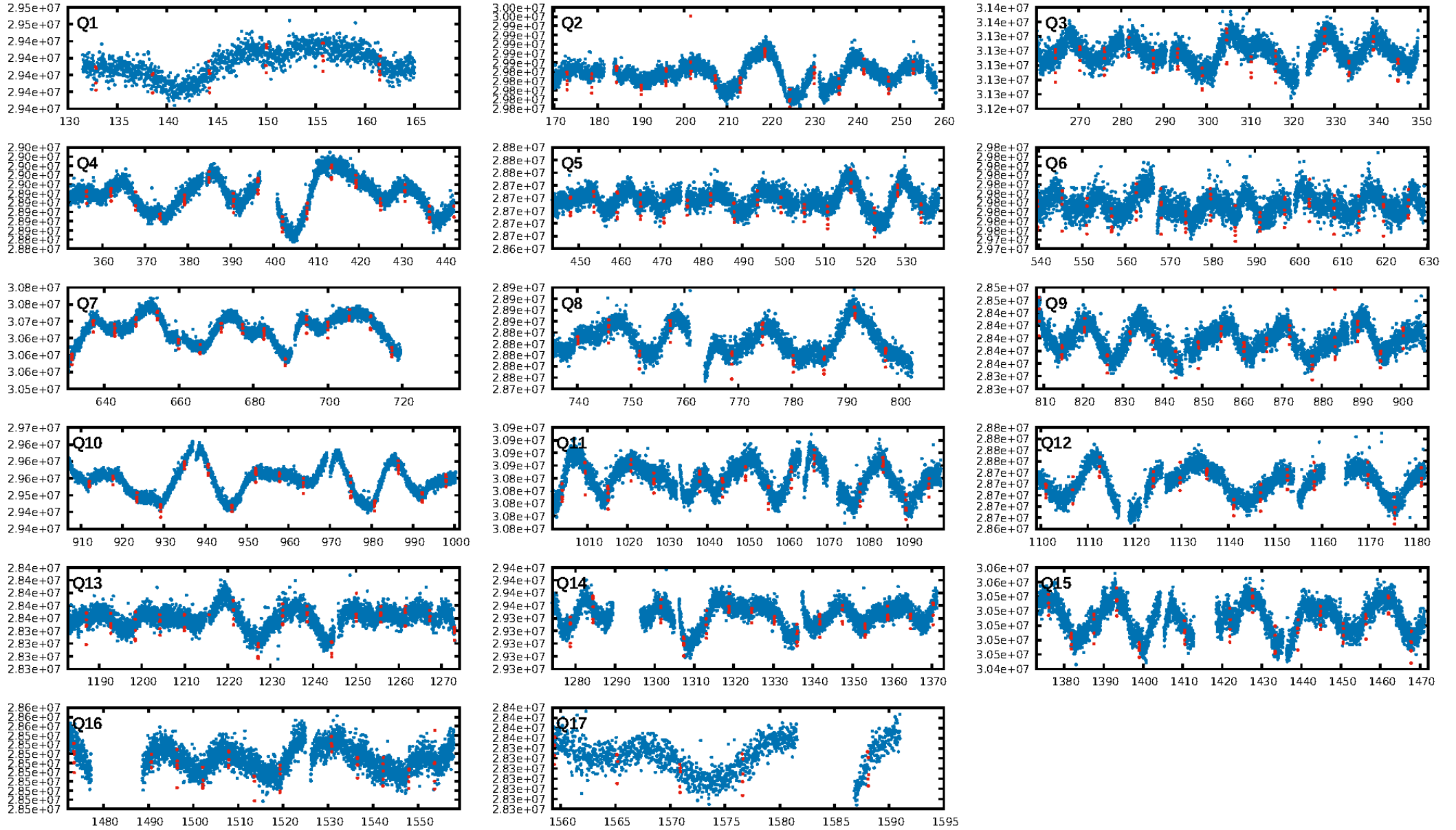
DV Fit Results:

Period = 5.72933 [0.00000] d
Epoch = 132.8297 [0.0005] BKJD
Rp/R* = 0.0337 [0.0026]
a/R* = 16.73 [5.05]
b = 0.93 [0.05]
Seff = 123.41 [27.86]
Teff = 850 [48] K
Rp = 2.89 [0.50] Re
a = 0.0599 [0.0079] AU
Ag = 11.66 [4.16] [2.56σ]
Teffp = 2428 [196] K [7.80σ]

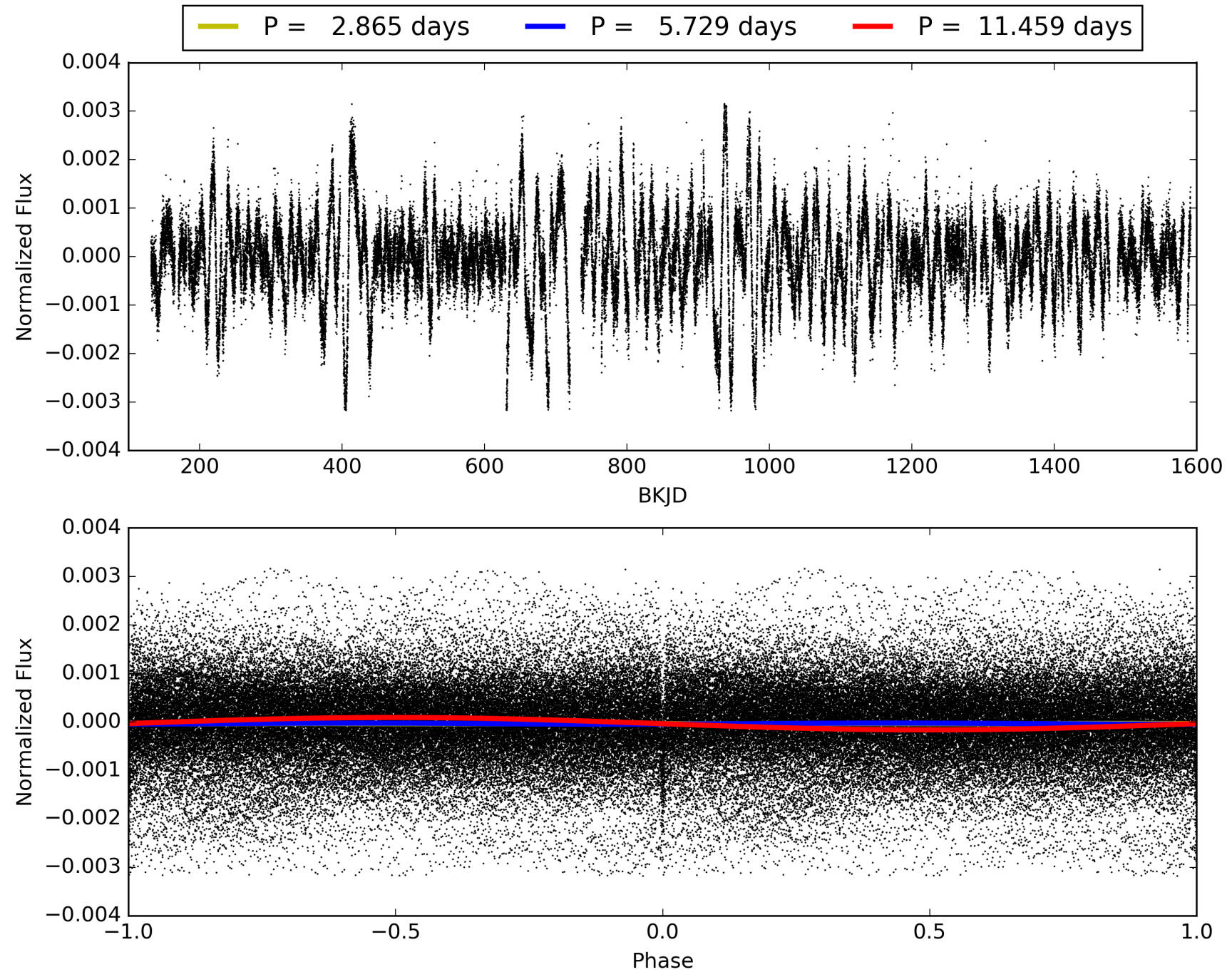
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [50.59σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 1.00 [219/219]
GhostDiagnostic-chr: 3.892
Centroid-sig: N/A
Centroid-so: 0.364 arcsec [1.44σ]
OotOffset-rm: 0.144 arcsec [1.31σ]
KicOffset-rm: 0.303 arcsec [2.75σ]
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 008564587-01, PDC Light Curves

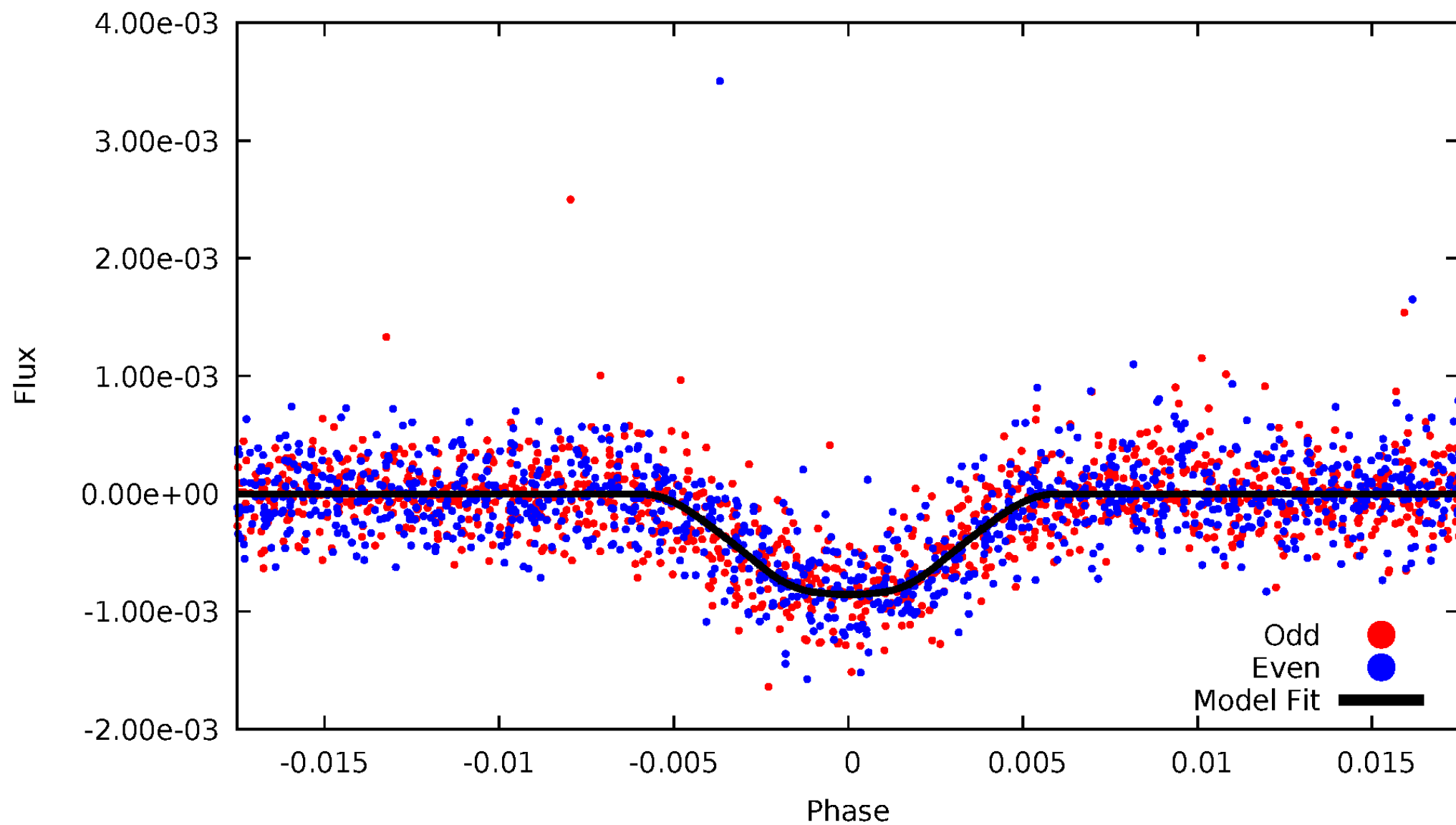


TCE 008564587-01



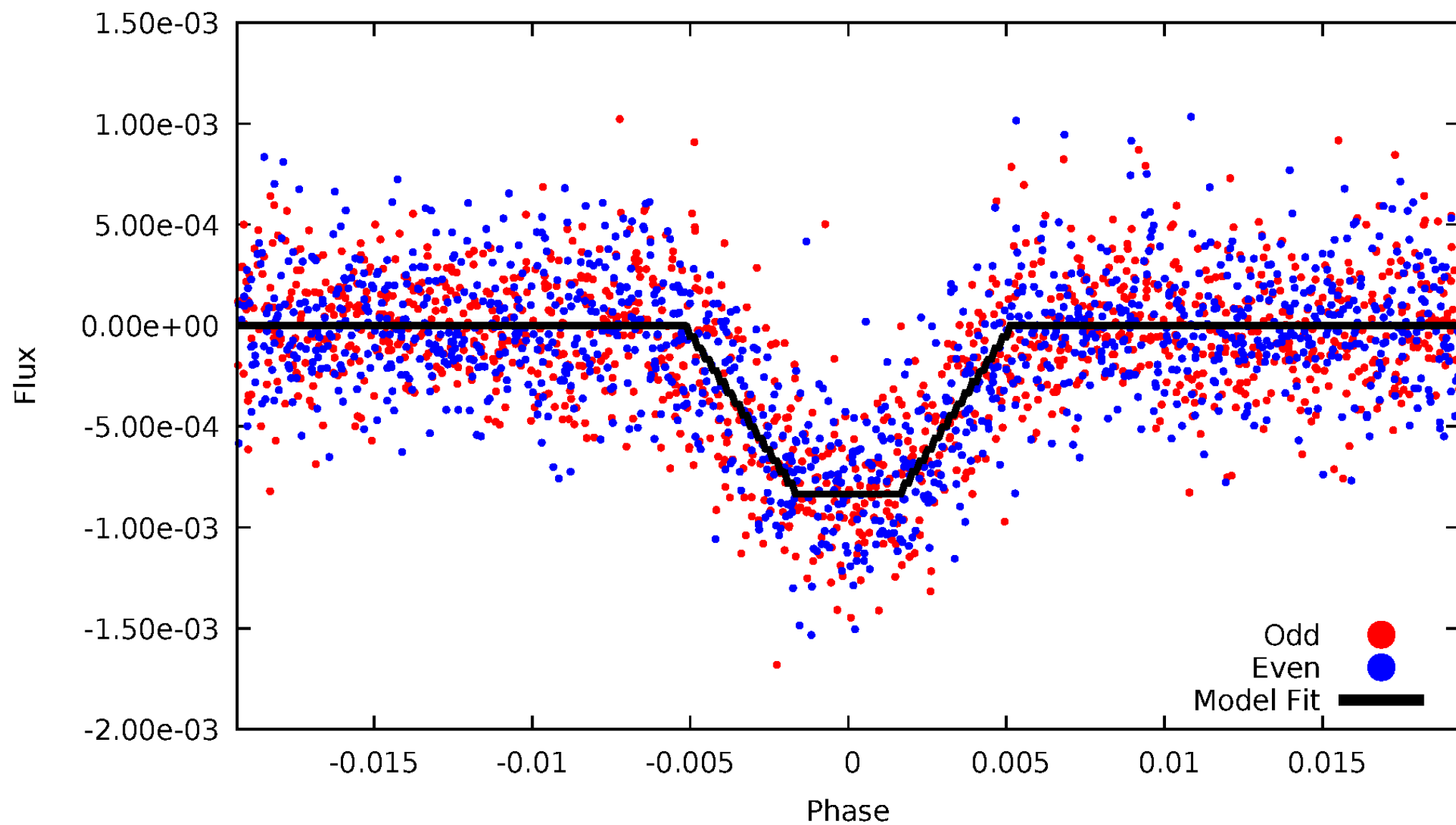
DV Odd/Even

TCE 008564587-01

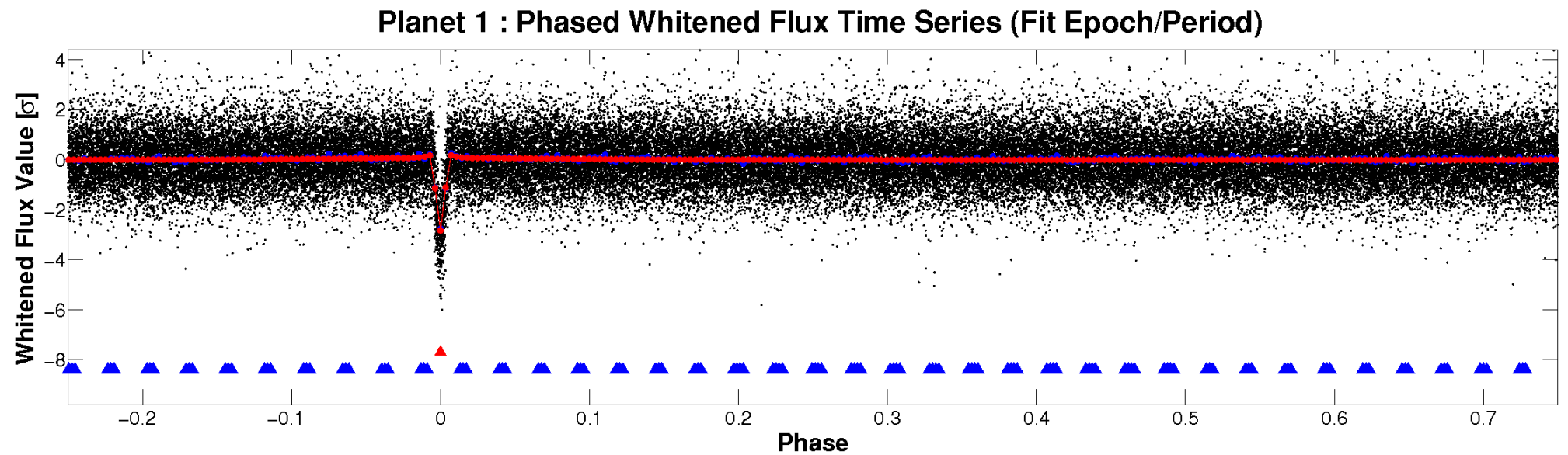
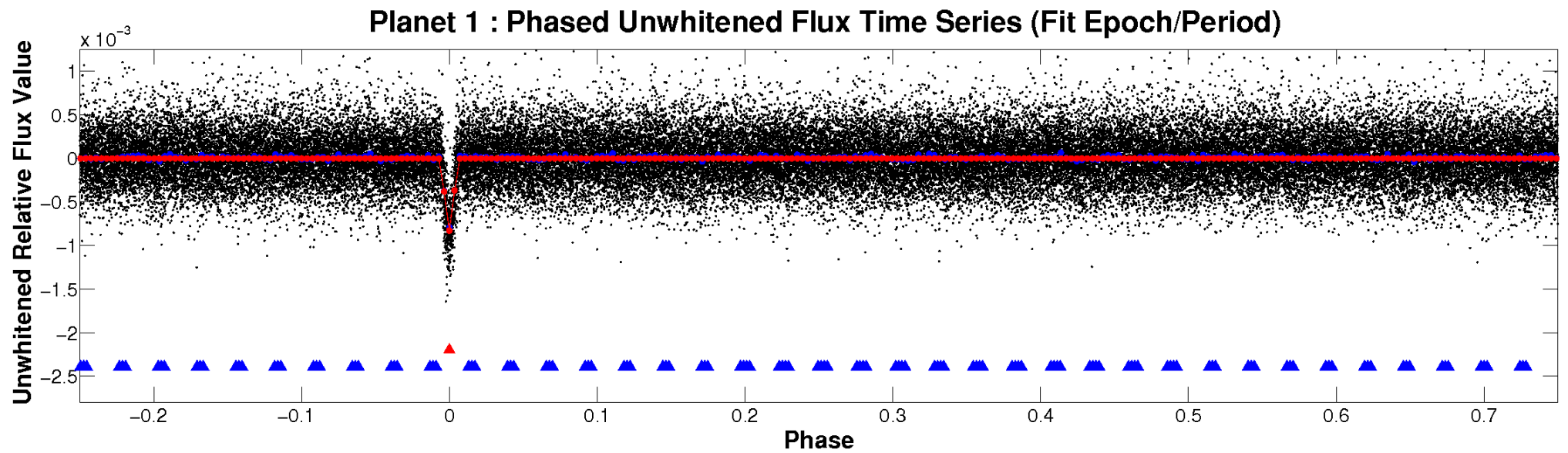


ALT Odd/Even

TCE 008564587-01

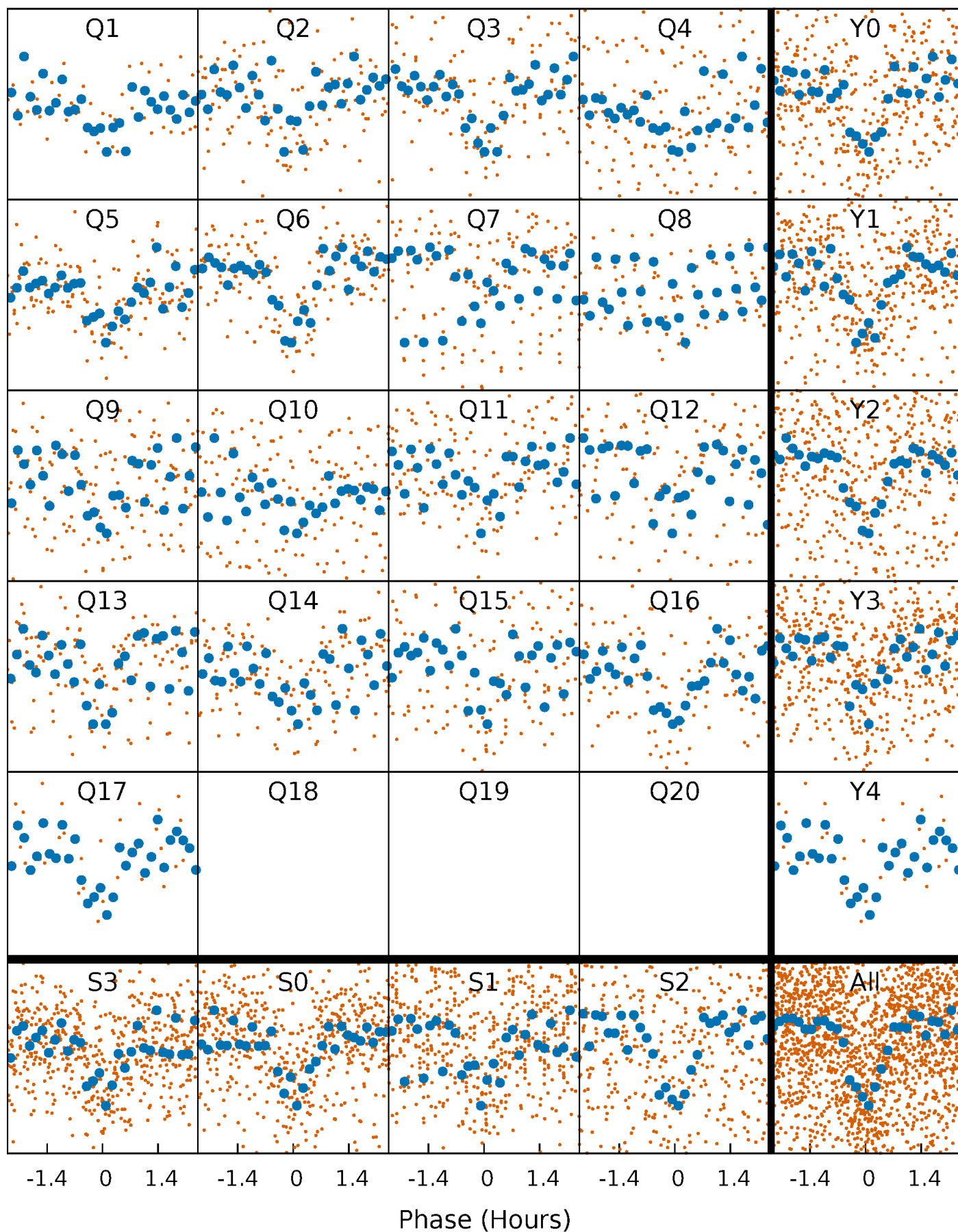


Non-Whitened Vs. Whitened Light Curve



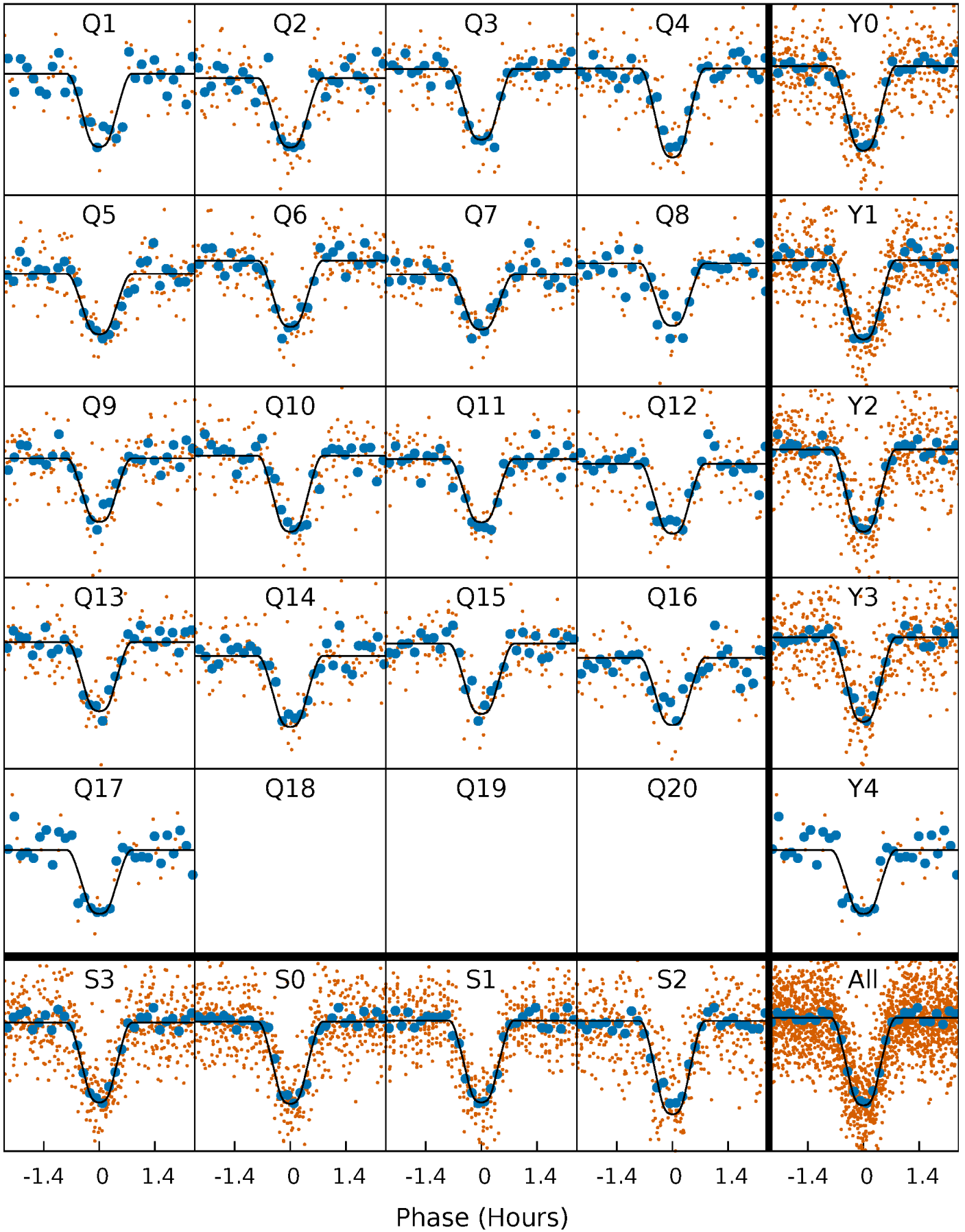
PDC Quarter-Phased Transit Curves

TCE 008564587-01 P= 5.729327 Days $T_0=132.829750$ (BKJD)



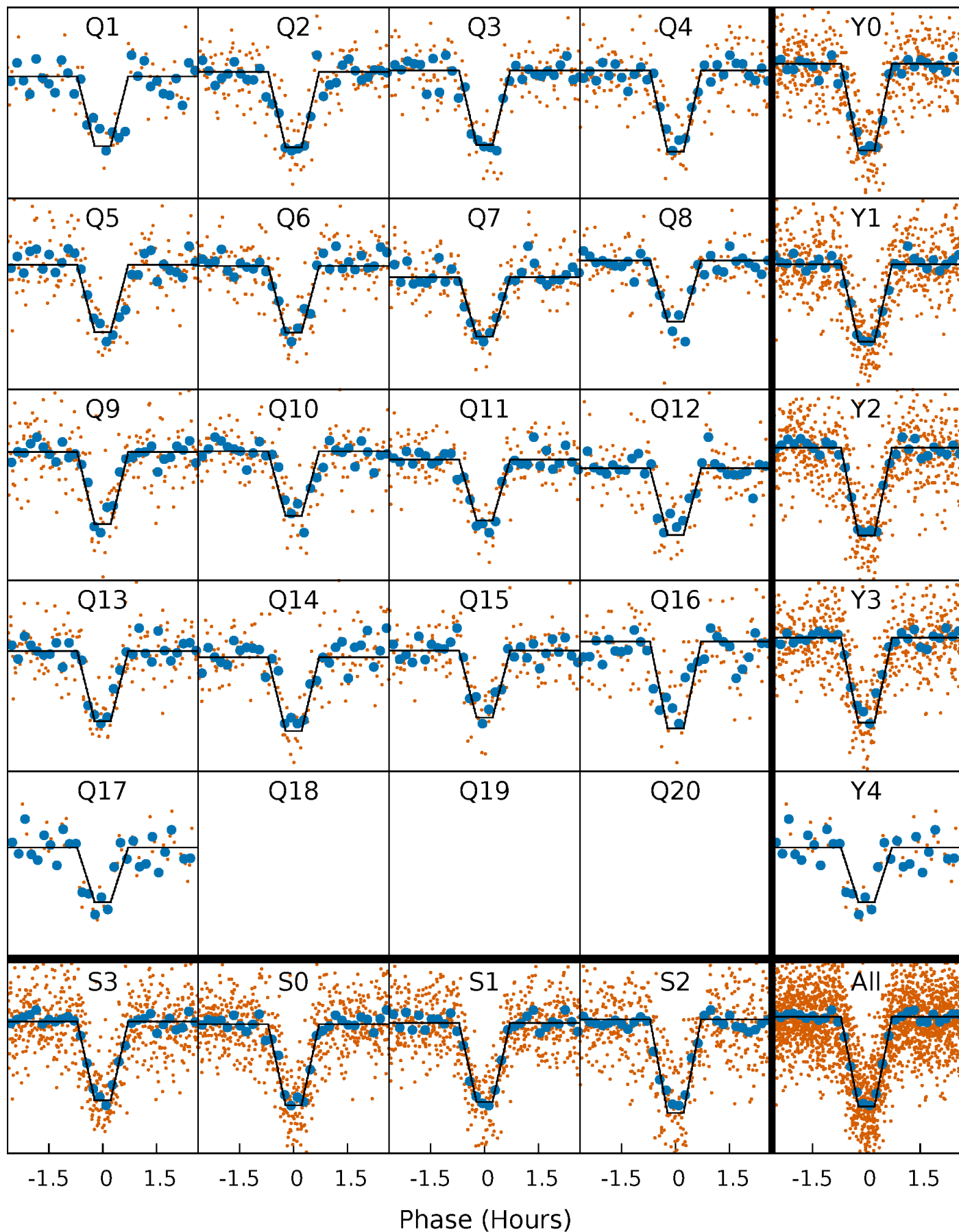
DV Quarter-Phased Transit Curves

TCE 008564587-01 P= 5.729327 Days $T_0=132.829750$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

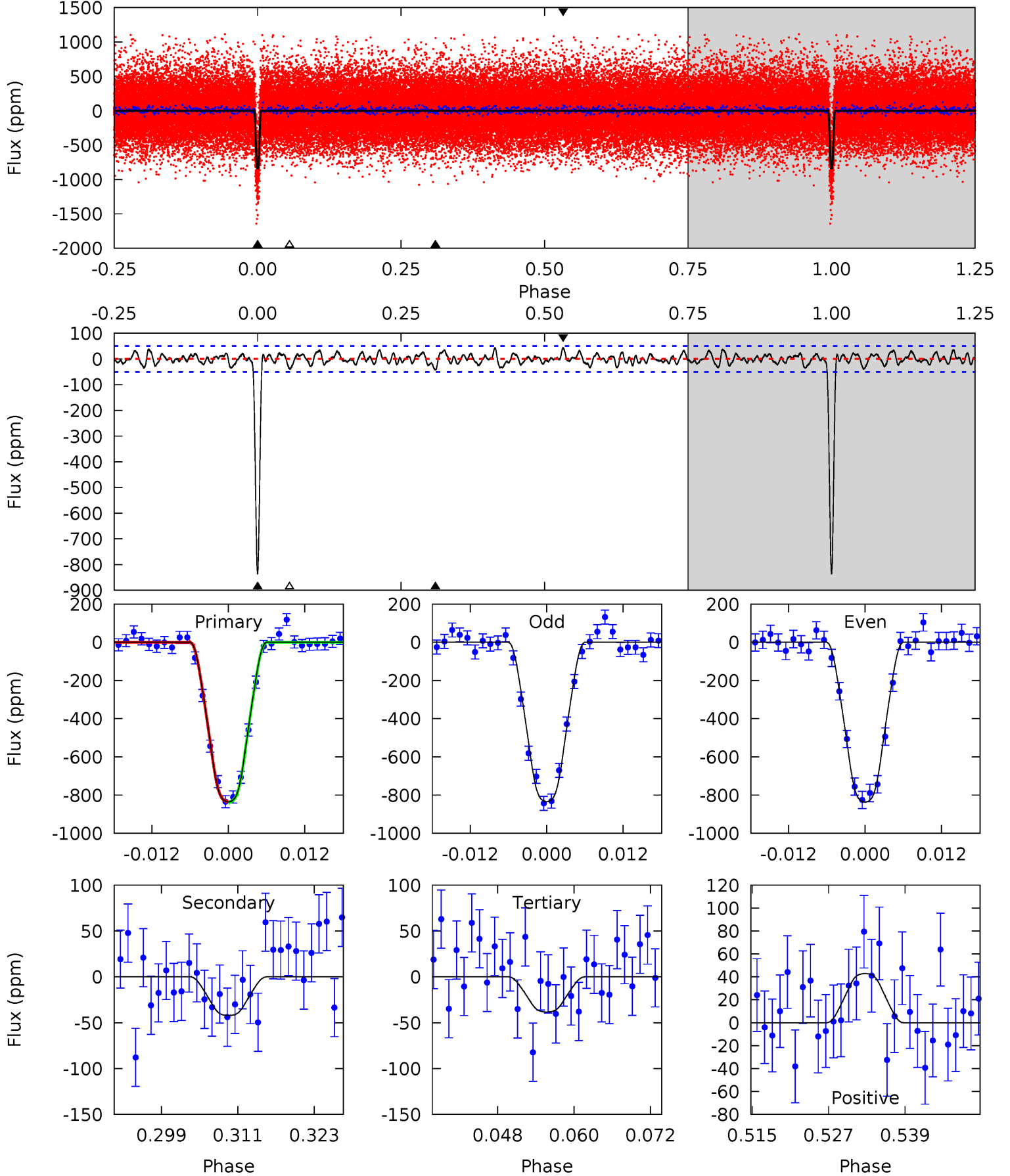
TCE 008564587-01 P= 5.729339 Days $T_0=132.828198$ (BKJD)



DV Model-Shift Uniqueness Test

008564587-01, P = 5.729327 Days, E = 127.100423 Days

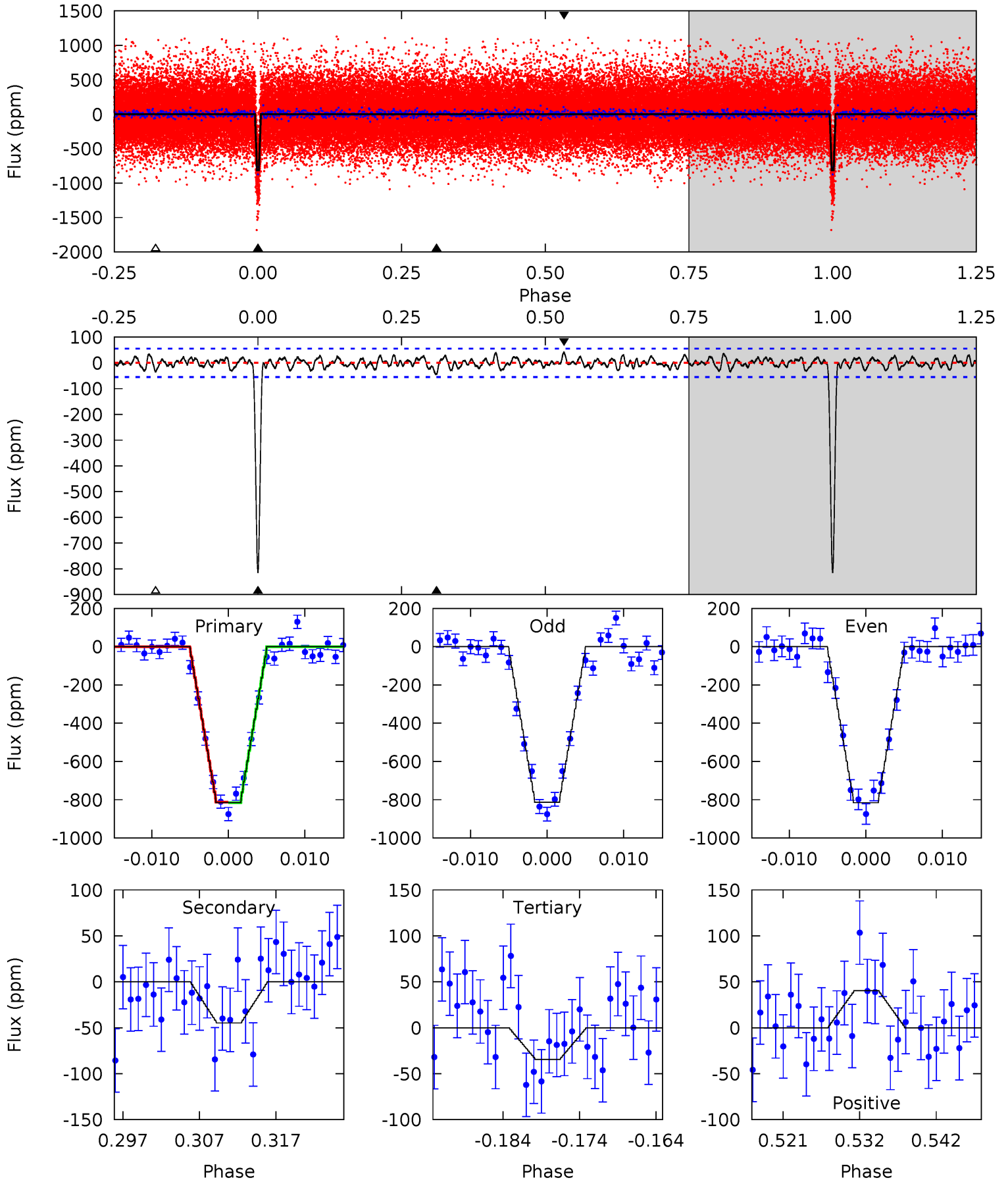
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
82.1	4.14	3.77	4.21	4.99	2.51	1.50	78.4	77.9	0.38	-0.07	0.15	0.99	0.05	0.18



Alt Model-Shift Uniqueness Test

008564587-01, P = 5.729339 Days, E = 127.098859 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
74.4	4.09	3.15	3.69	5.02	2.57	1.29	71.3	70.8	0.94	0.40	0.10	0.98	0.05	0.12



Stellar Parameters For KIC 008564587

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5320^{+159}_{-143}	$4.589^{+0.028}_{-0.105}$	$-0.060^{+0.300}_{-0.300}$	$0.786^{+0.122}_{-0.066}$	$0.882^{+0.061}_{-0.104}$	$2.559^{+0.461}_{-0.820}$
	+3%/-3%	+1%/-2%	+500%/-500%	+16%/-8%	+7%/-12%	+18%/-32%
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 008564587-01 / KOI 1270.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-42 ± 10	$2.95^{+0.33}_{-0.28}$	1206^{+51}_{-42}	2977^{+141}_{-129}	$9.302^{+2.872}_{-2.563}$
Alt.	-45 ± 11	$2.52^{+0.31}_{-0.26}$	1209^{+51}_{-43}	3138^{+154}_{-149}	13^{+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 $A_{\text{obs}} \gg 1.0$

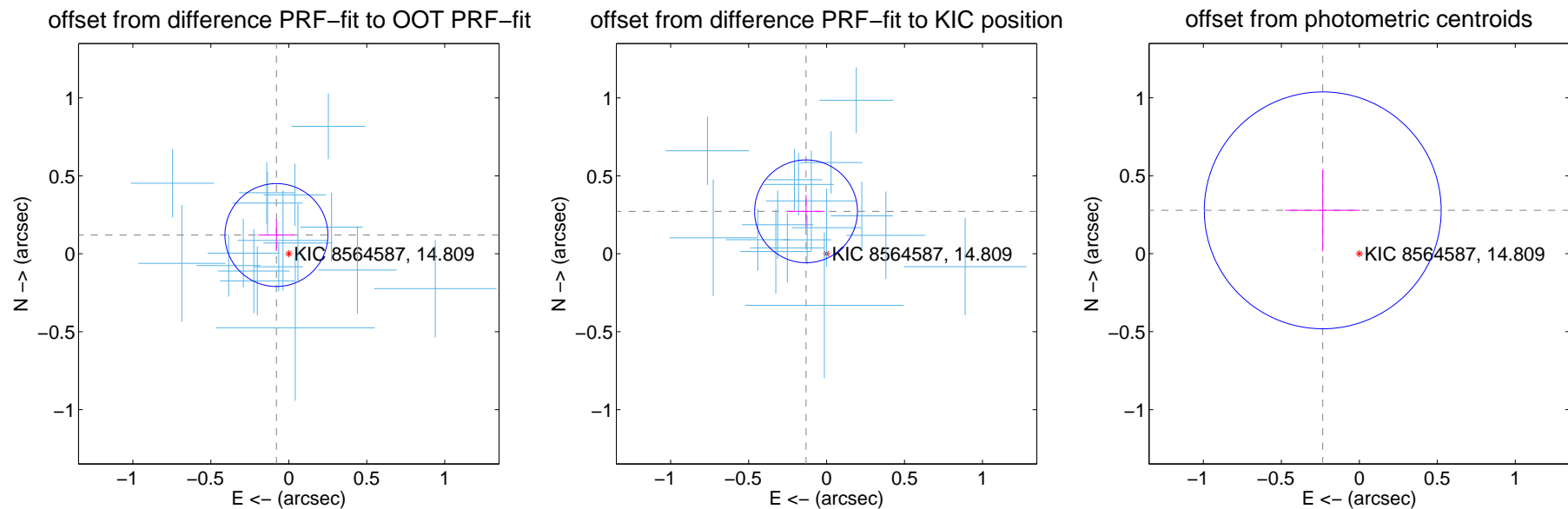
DV Centroid Data

Supplemental centroid analysis for 008564587-01. Kepler magnitude: 14.81. Transit SNR 51.21

There are 17 quarters with good PRF difference image offsets

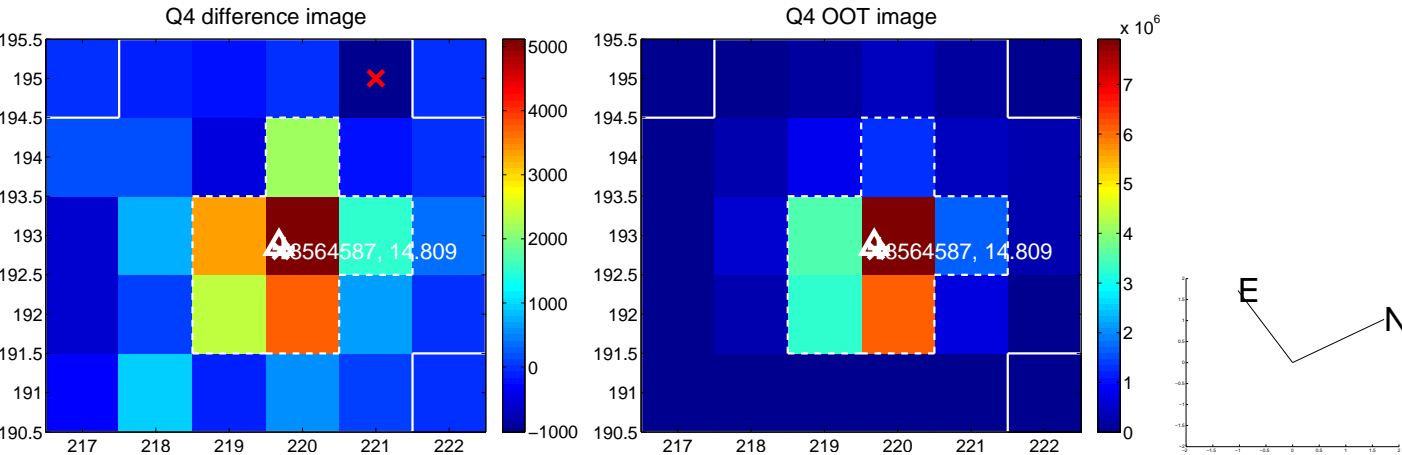
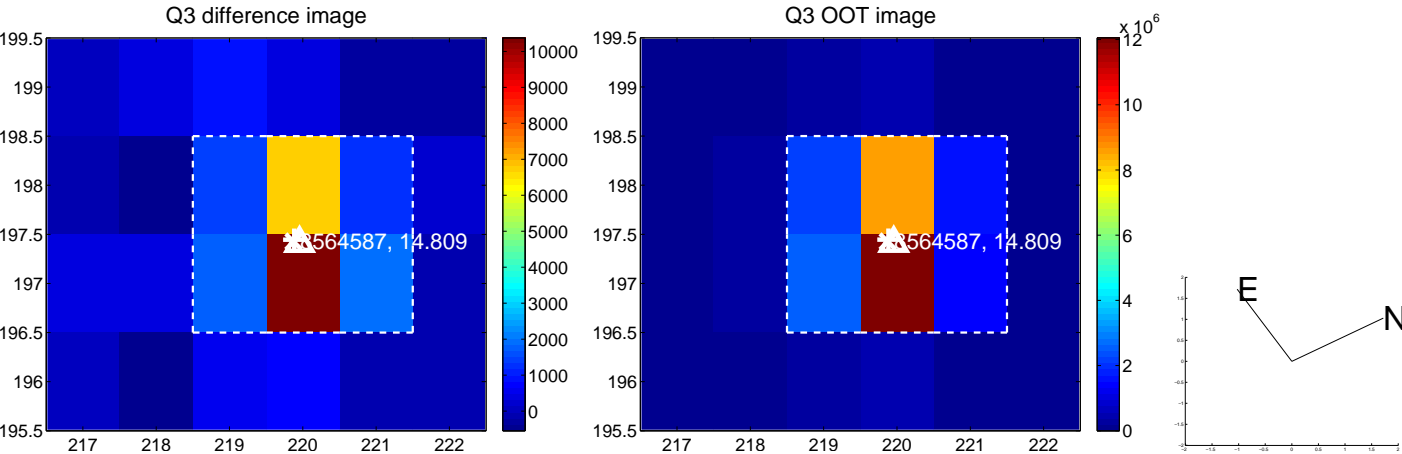
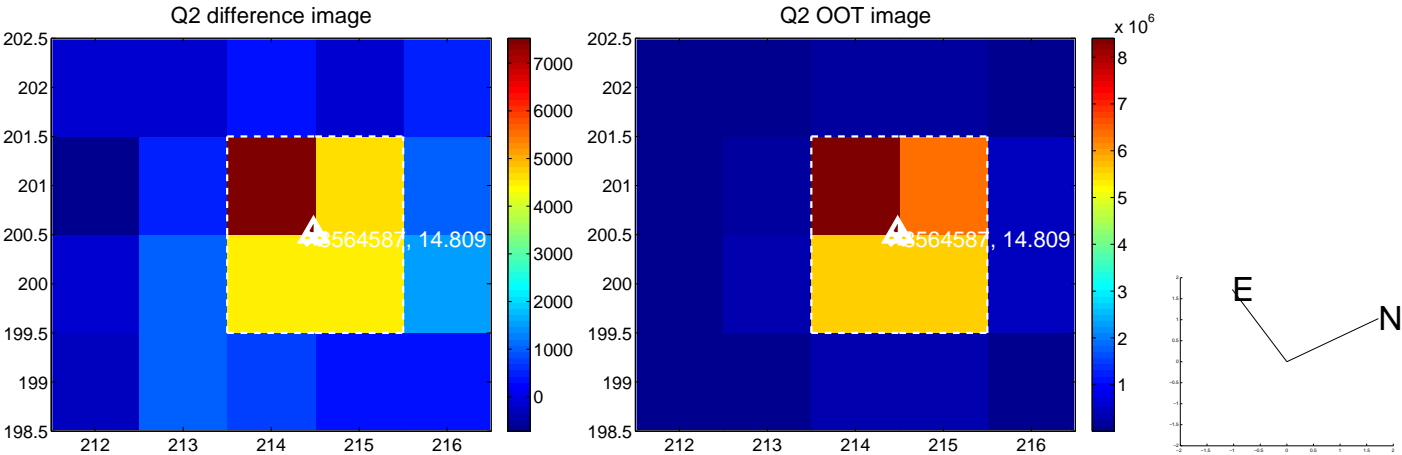
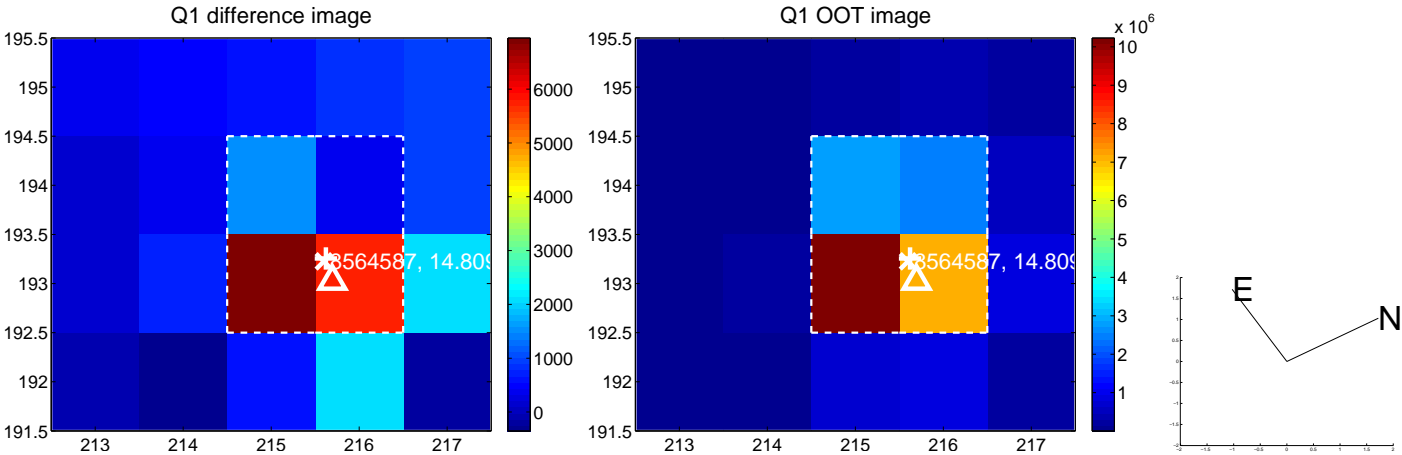
The direct PRF centroid is offset from the target star catalog position by about 0.15 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.144 ± 0.110	1.31	0.080 ± 0.116	0.120 ± 0.101
PRF-fit source offset from KIC position	0.303 ± 0.110	2.75	0.132 ± 0.120	0.272 ± 0.104
photometric centroid source offset	0.36 ± 0.25	1.44	0.23 ± 0.24	0.28 ± 0.26

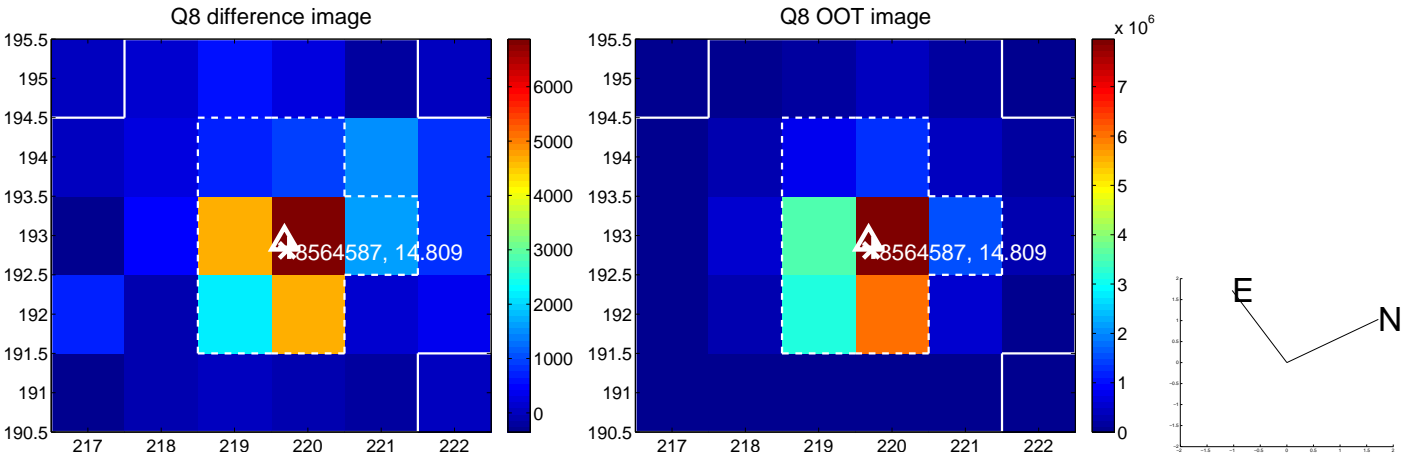
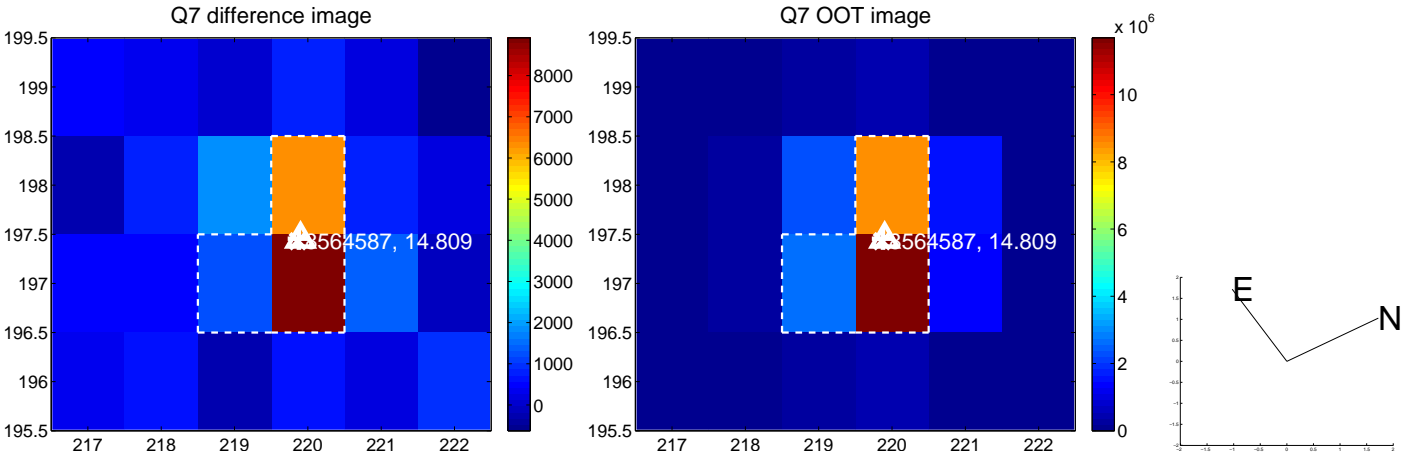
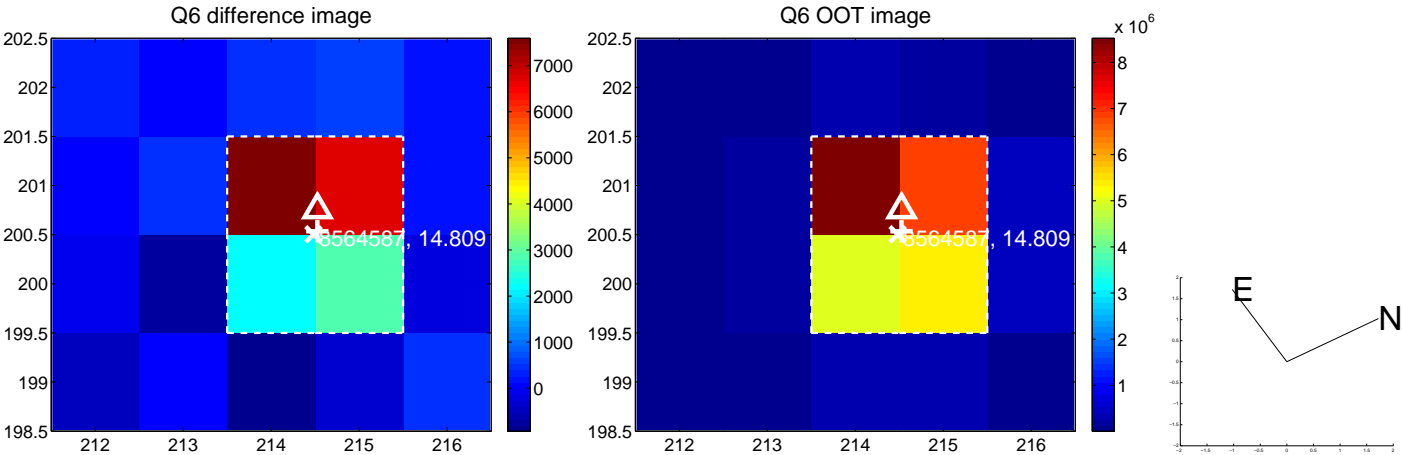
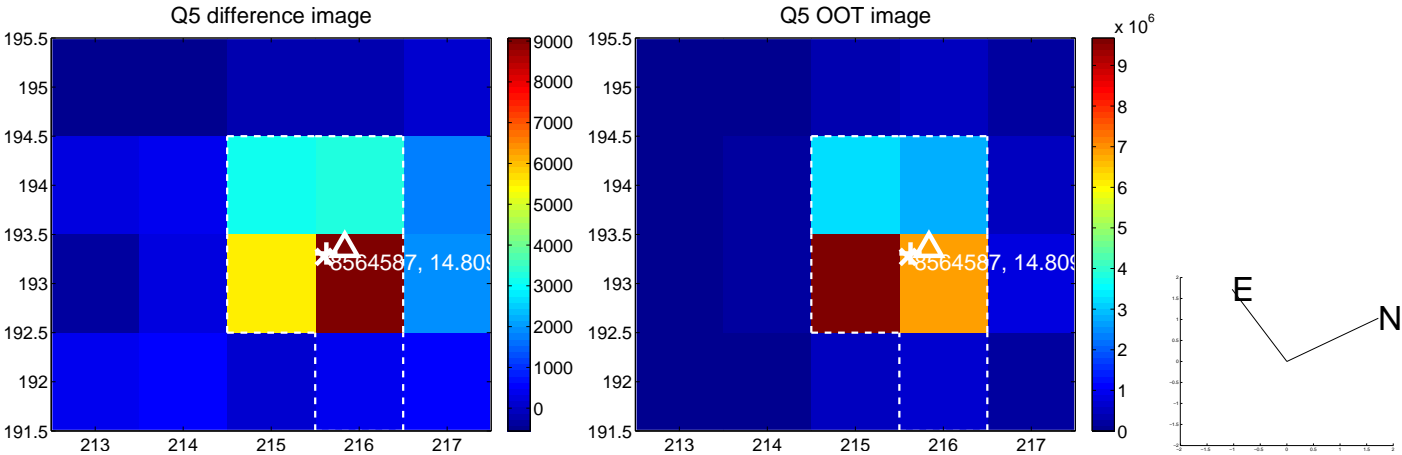


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

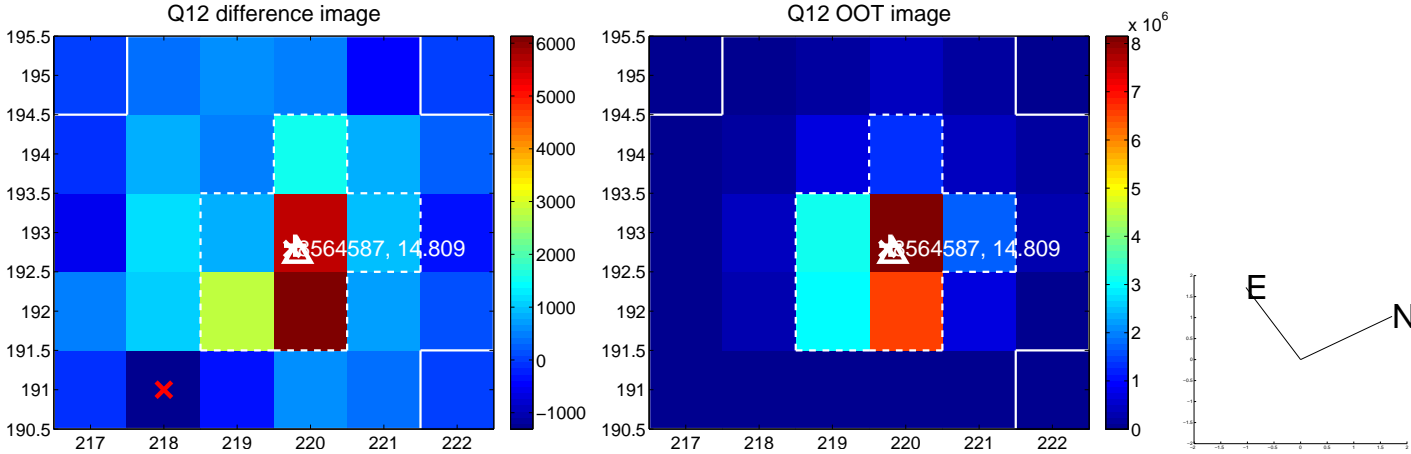
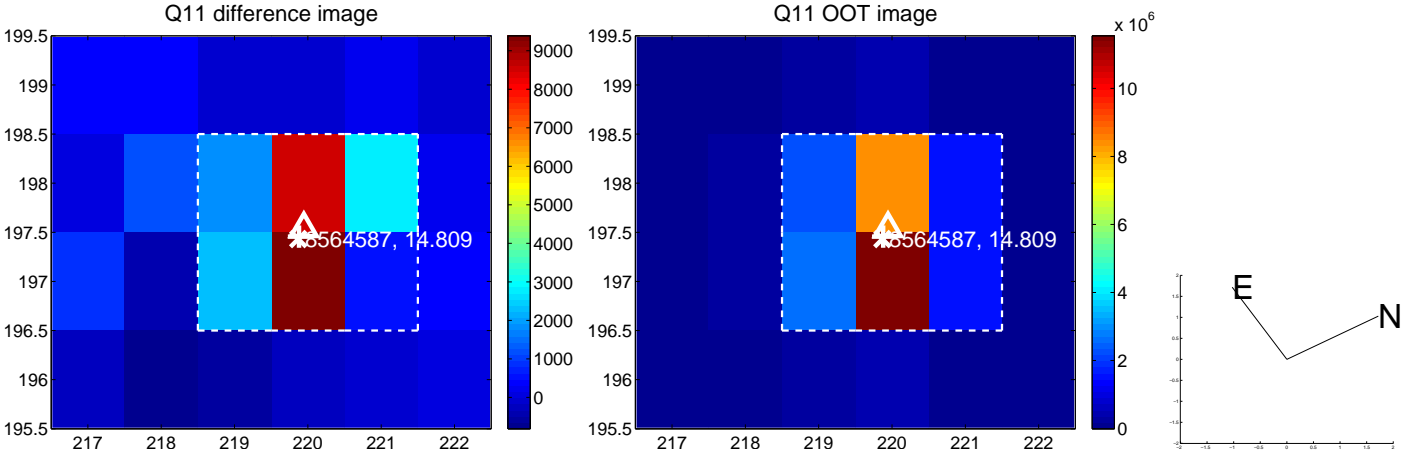
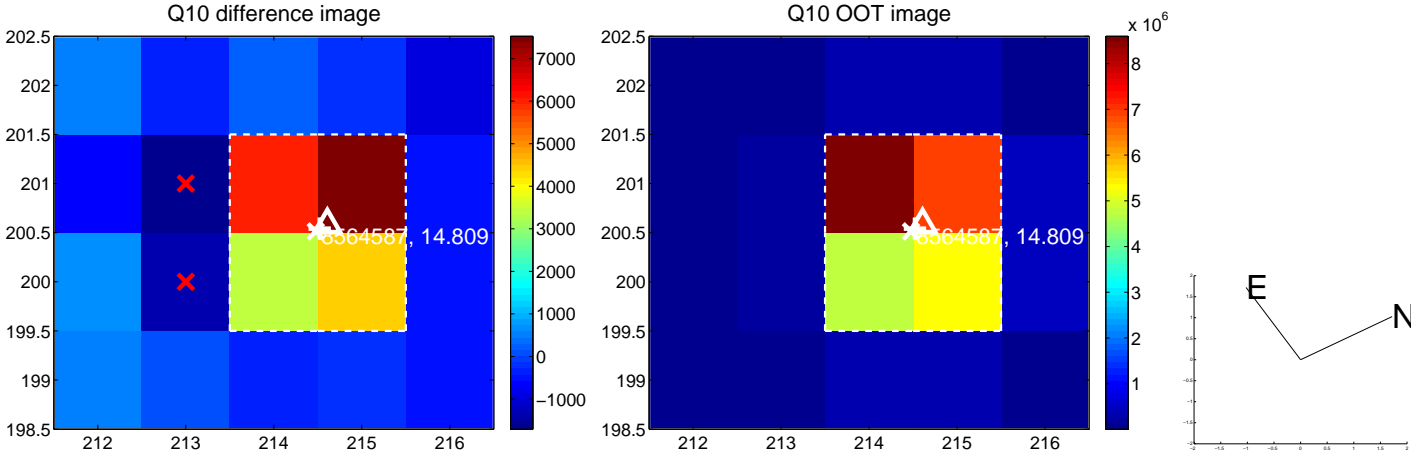
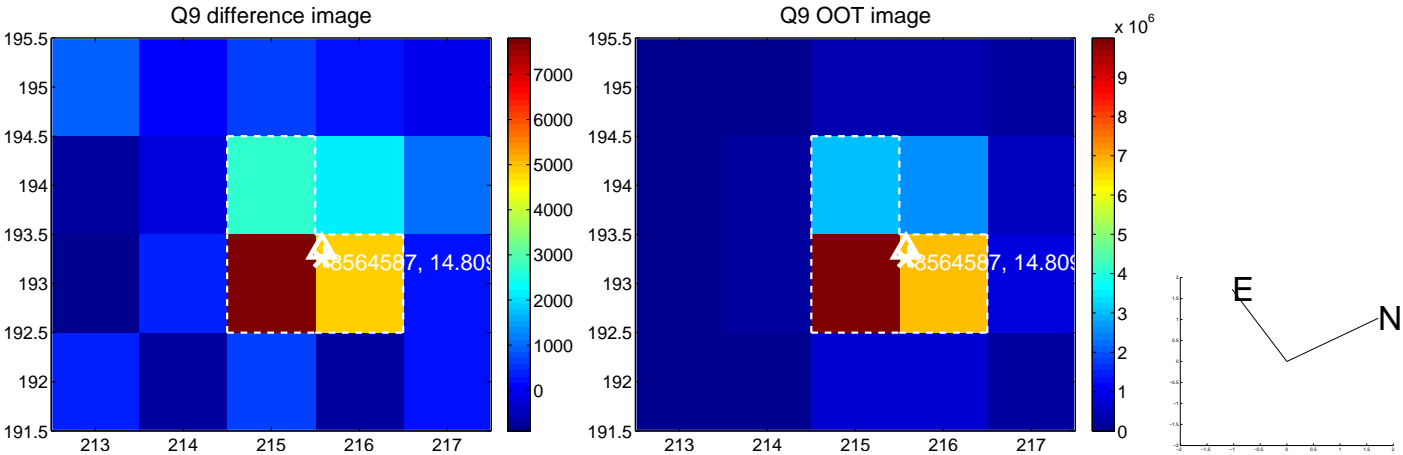
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



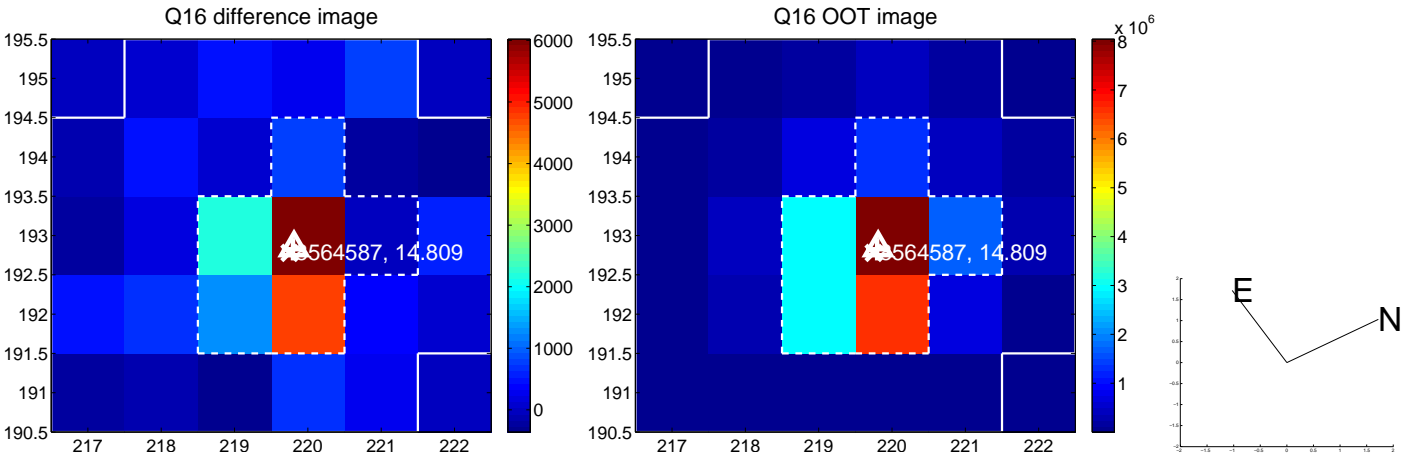
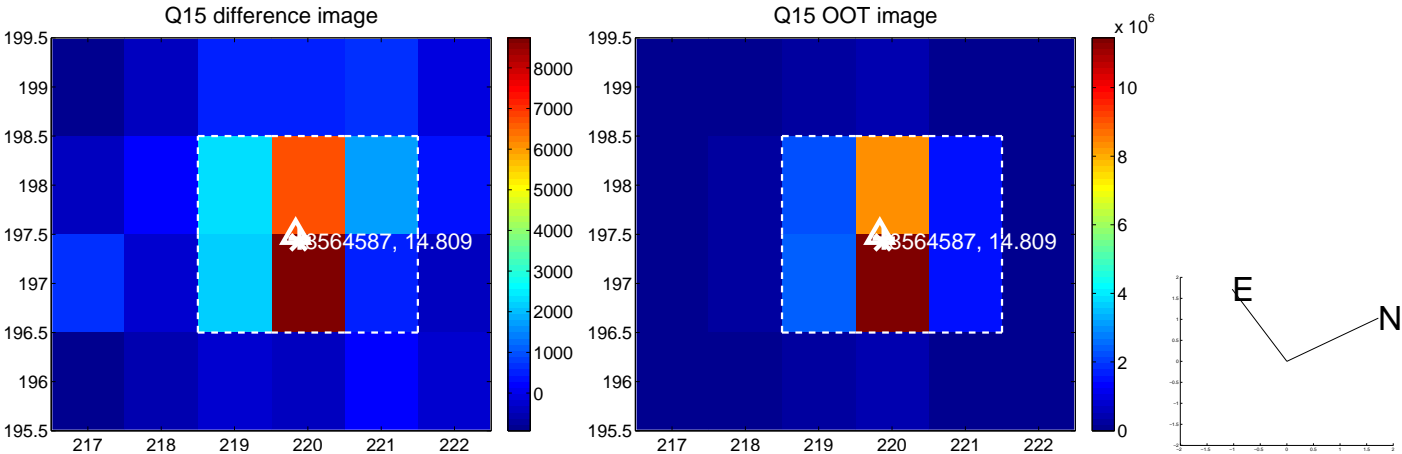
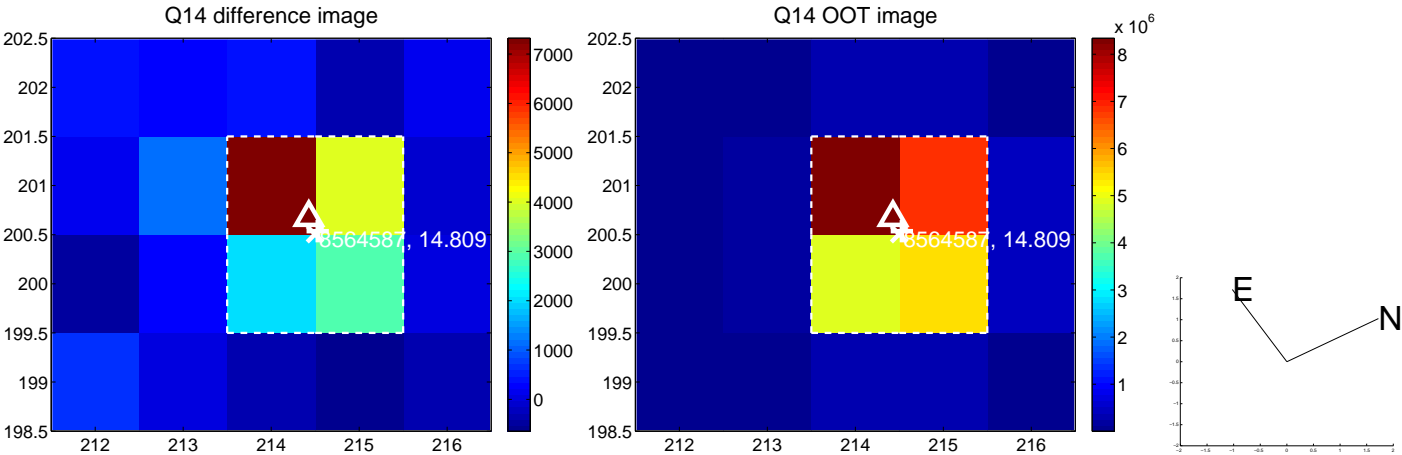
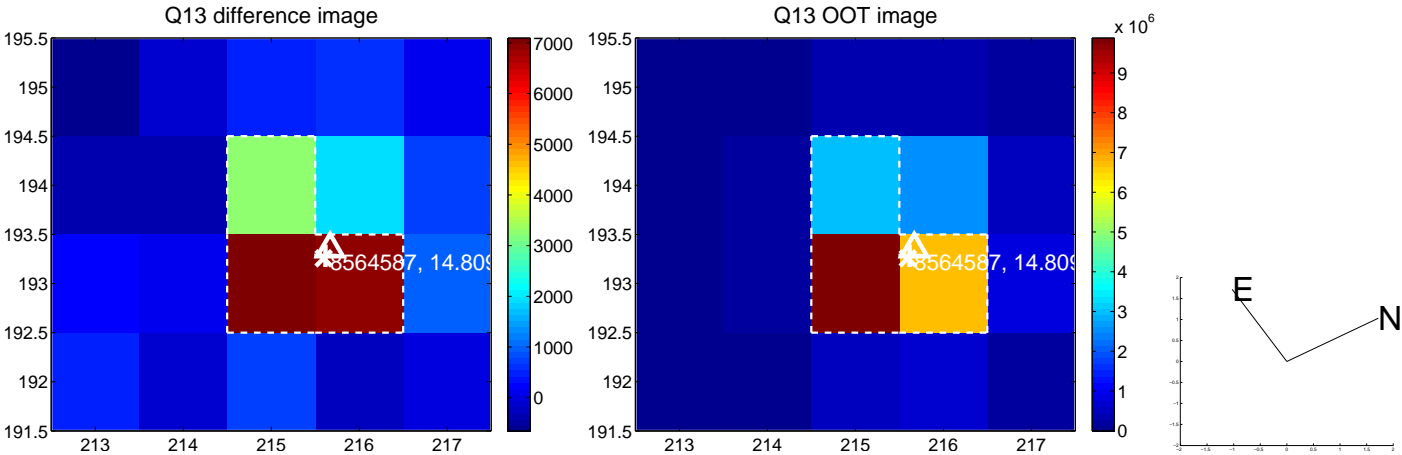
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



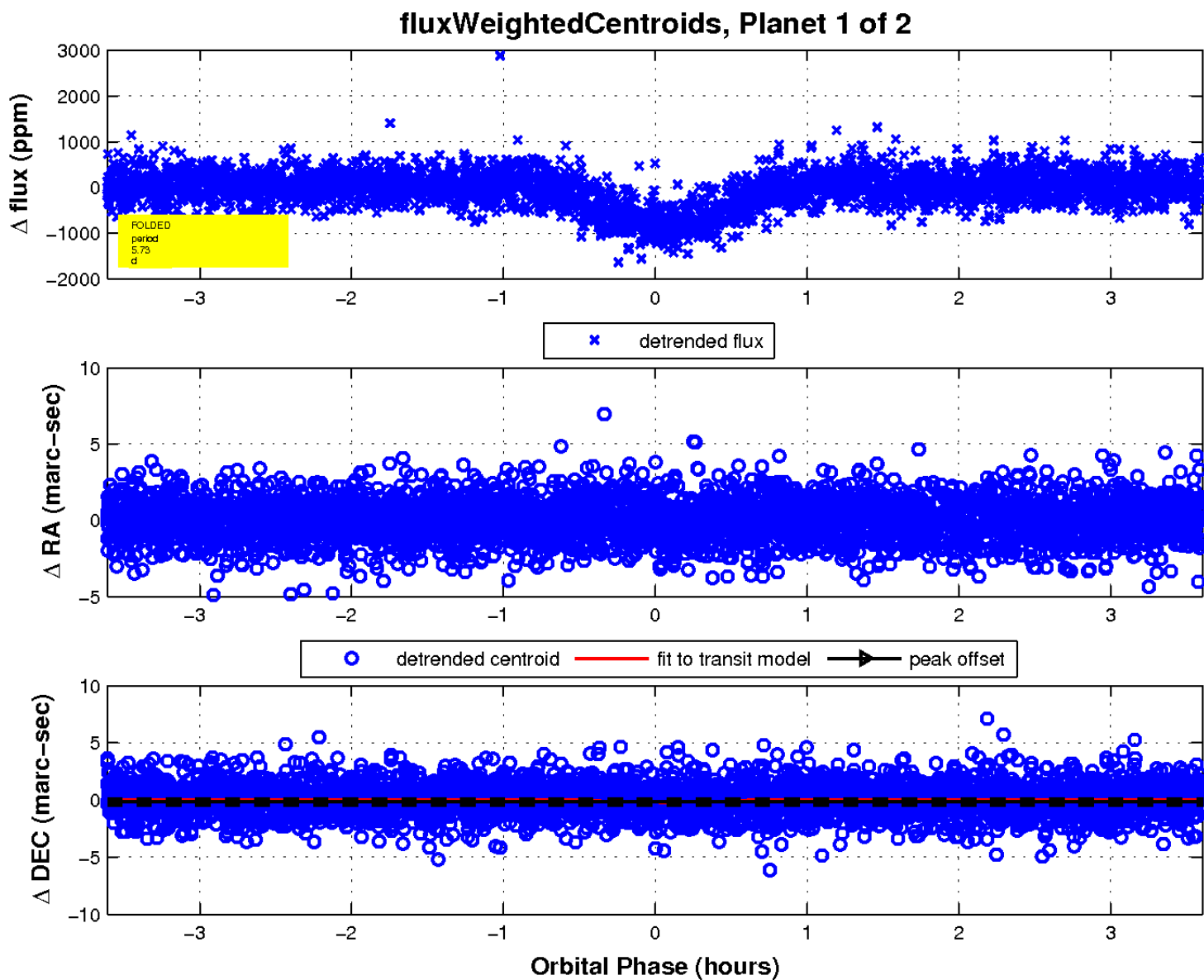
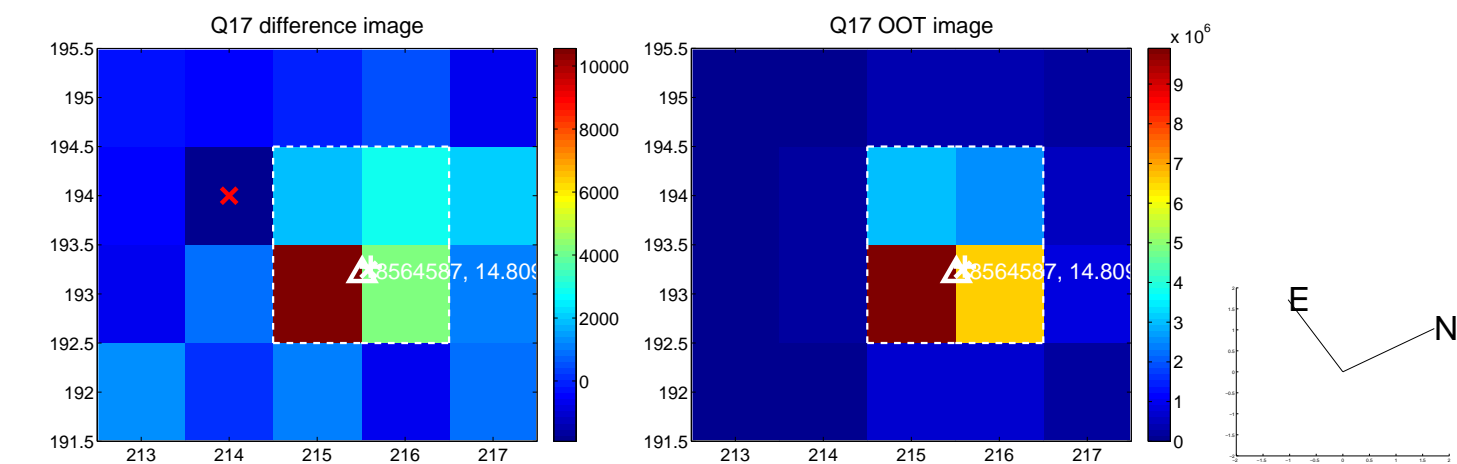
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

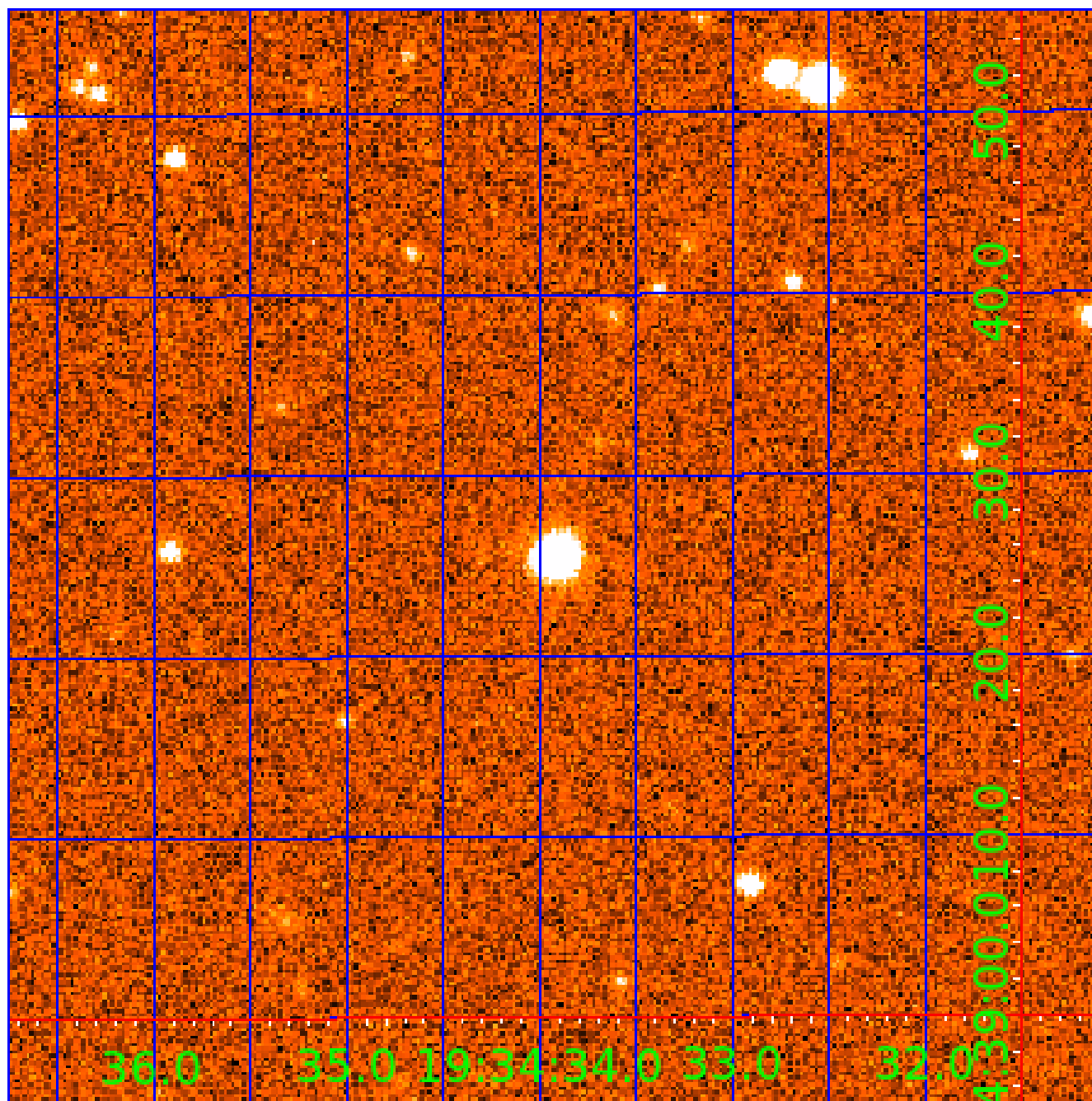


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 008564587

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})
008564587-01	OBS	1270.01	5.729327	132.829750	855.5	1.203	41.1	51.2	0.79	5320	2.89	123.41
008564587-02	OBS	1270.02	11.609110	133.993957	517.9	2.517	21.8	24.6	0.79	5320	3.30	48.13

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008564587-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT
008564587-02	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.

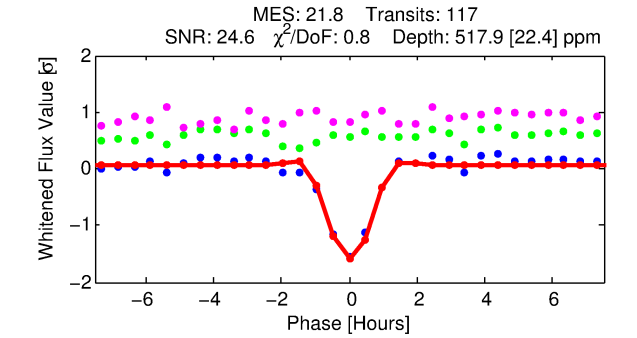
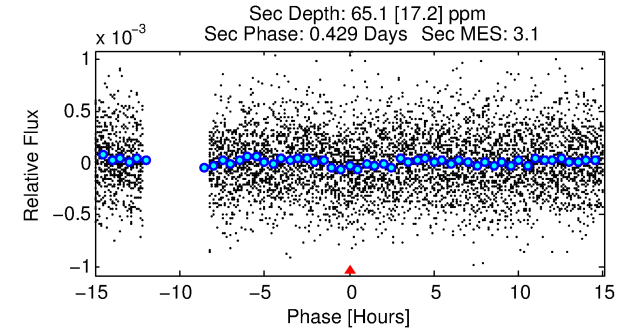
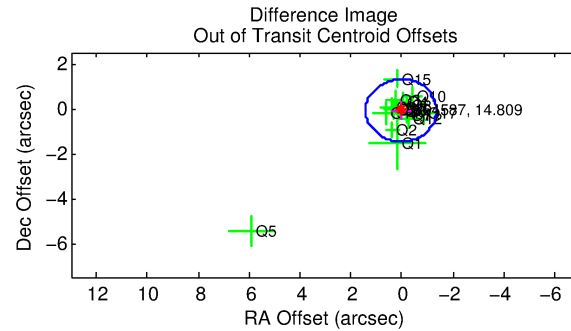
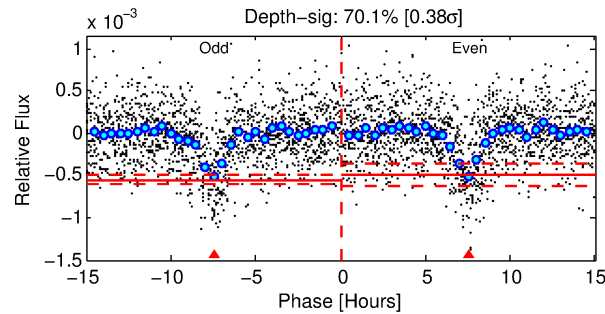
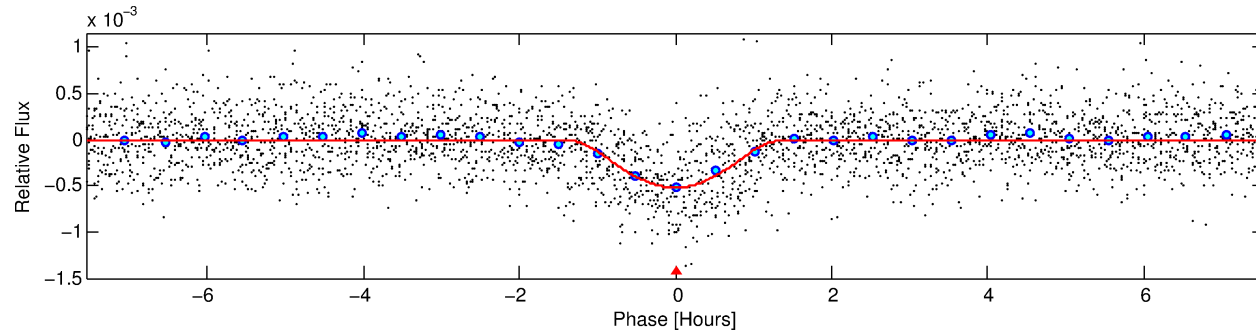
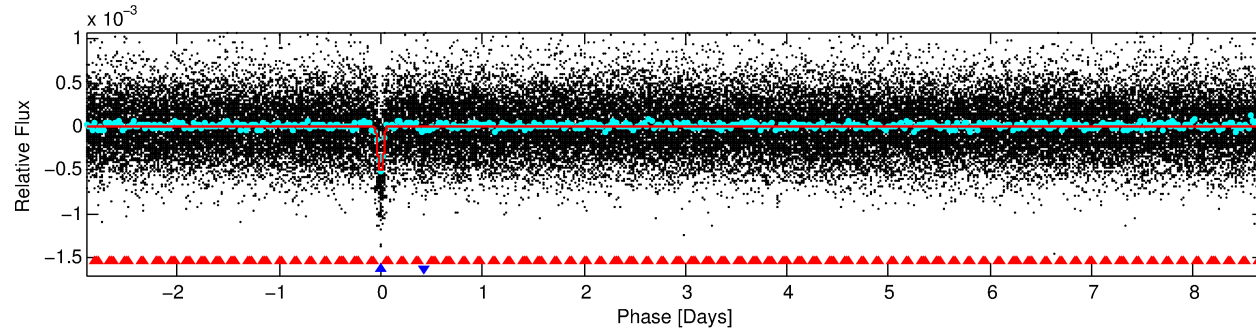
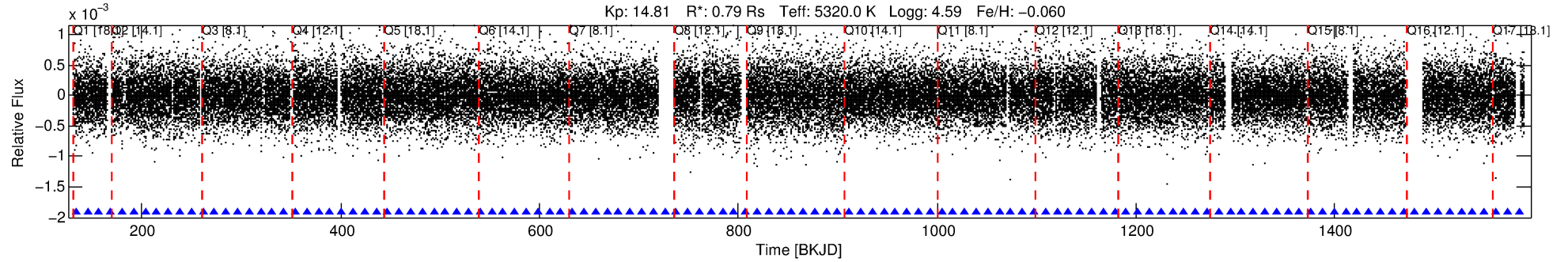
Ephemeris Match Information For 008564587-02

No Significant Match Found

DV One-Page Summary

KIC: 8564587 Candidate: 2 of 2 Period: 11.609 d
KOI: K01270.02 Name: Kepler-57c Corr: 0.955

Kp: 14.81 R*: 0.79 Rs Teff: 5320.0 K Logg: 4.59 Fe/H: -0.060



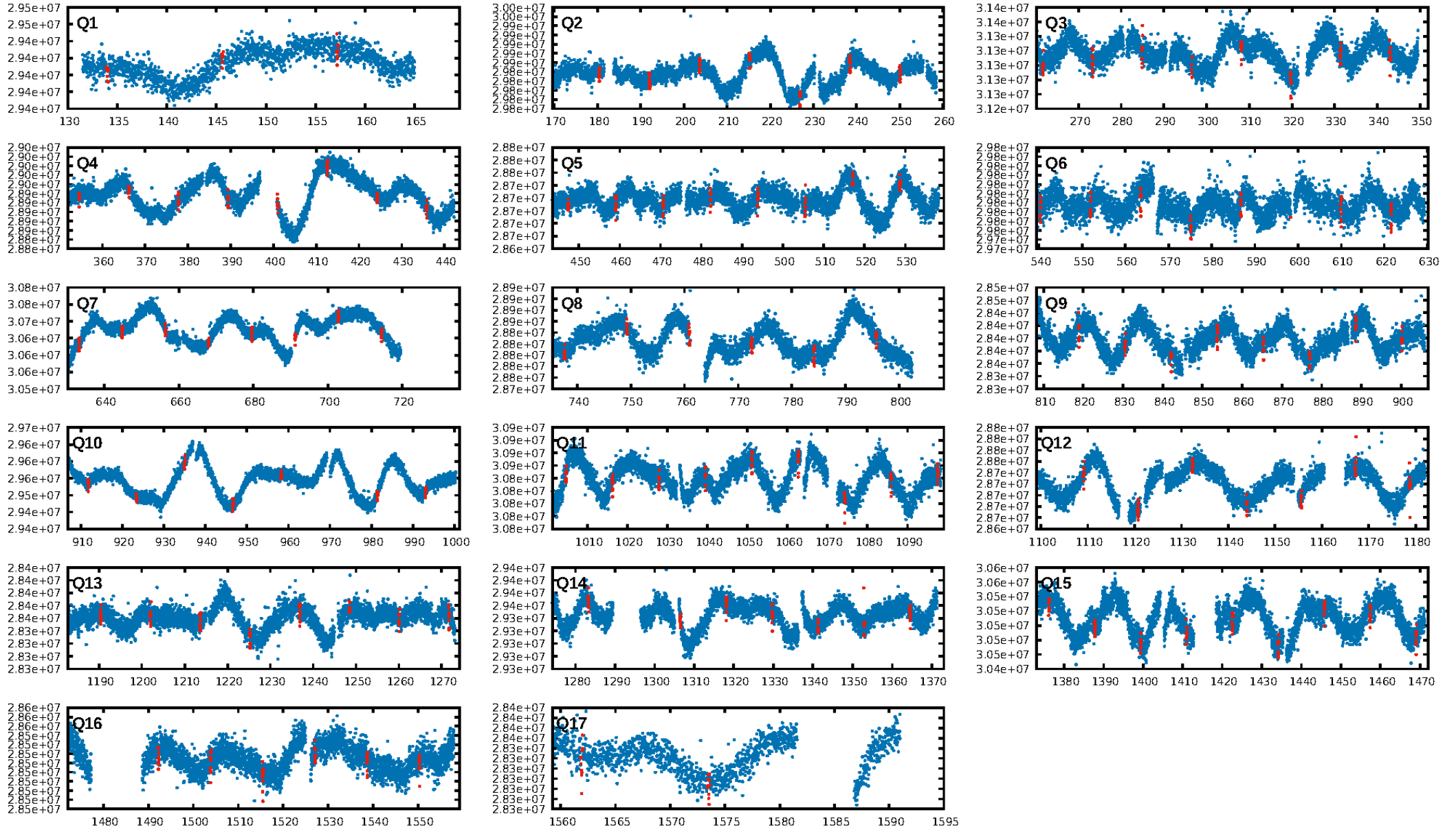
DV Fit Results:

Period = 11.60911 [0.00003] d
Epoch = 133.9940 [0.0023] BKJD
Rp/R* = 0.0384 [0.0455]
a/R* = 10.75 [3.74]
b = 0.99 [0.07]
Seff = 48.13 [10.87]
Teff = 672 [38] K
Rp = 3.30 [3.93] Re
a = 0.0960 [0.0126] AU
Ag = 30.34 [72.42] [0.41σ]
Teffp = 2437 [1452] K [1.22σ]

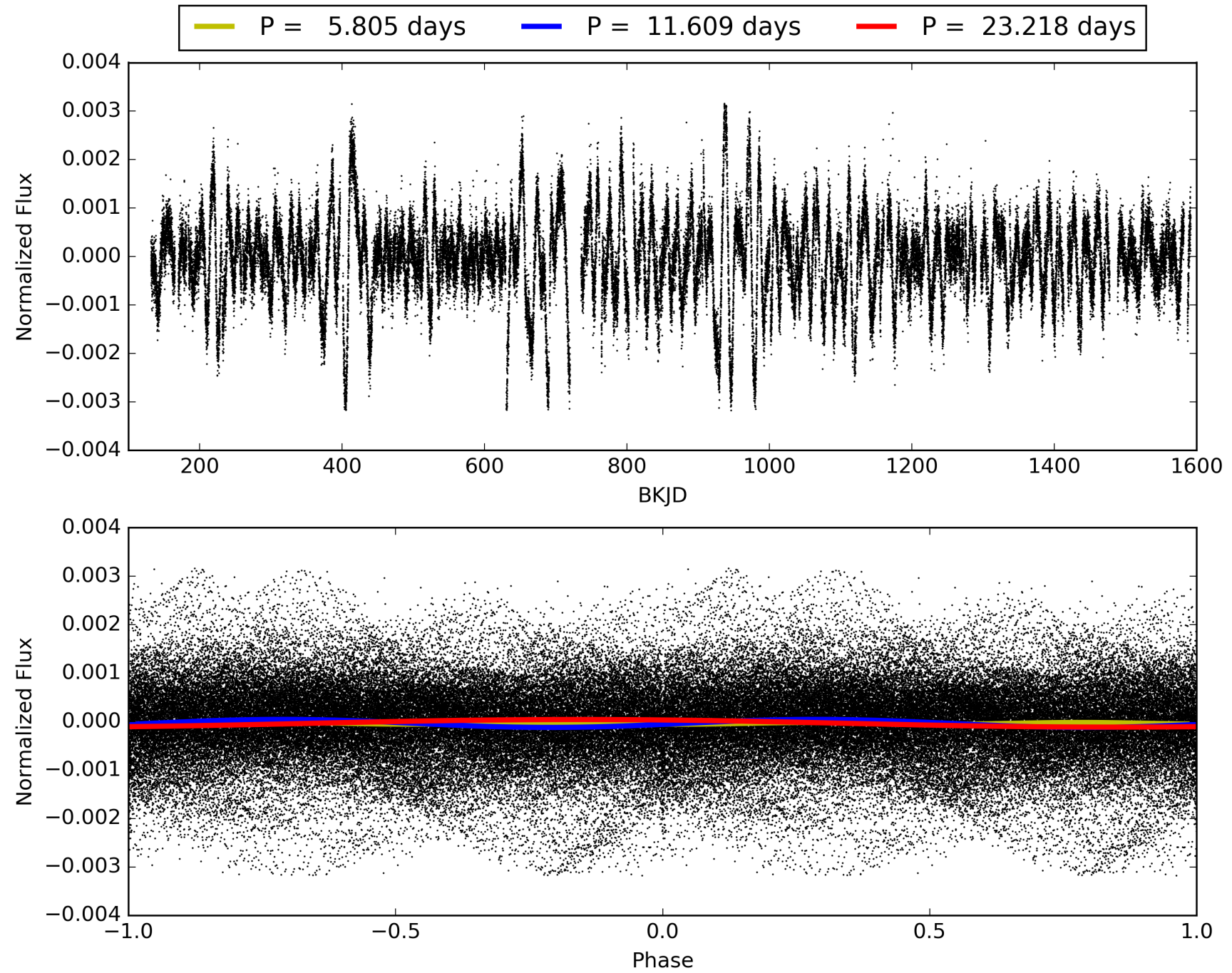
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [50.59σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 74.4%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 6.07e-103
RollingBand-fgt: 1.00 [112/112]
GhostDiagnostic-chr: 2.61
Centroid-sig: N/A
Centroid-so: 0.436 arcsec [0.97σ]
OotOffset-rm: 0.095 arcsec [0.20σ]
KicOffset-rm: 0.110 arcsec [0.73σ]
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 008564587-02, PDC Light Curves

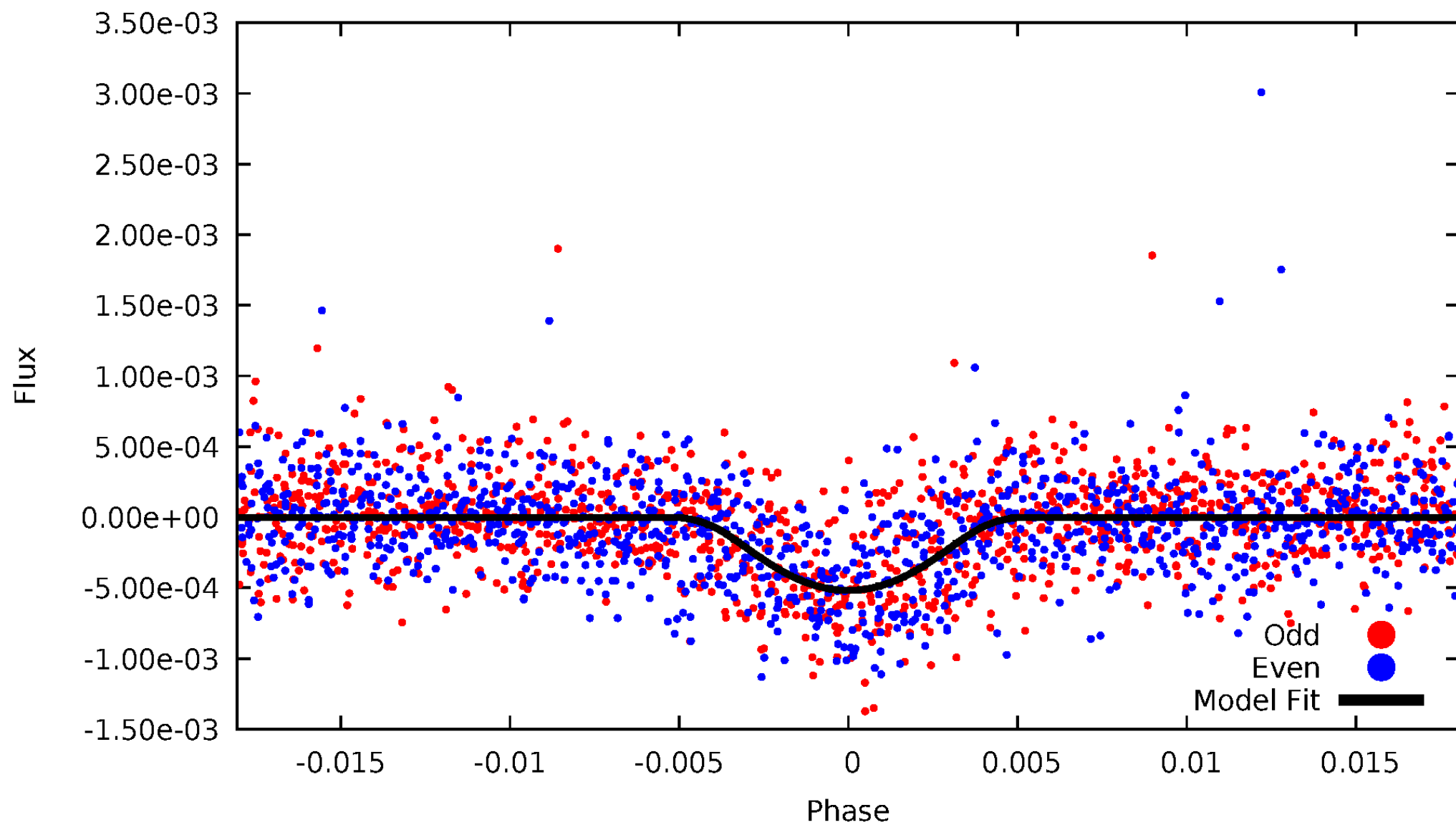


TCE 008564587-02



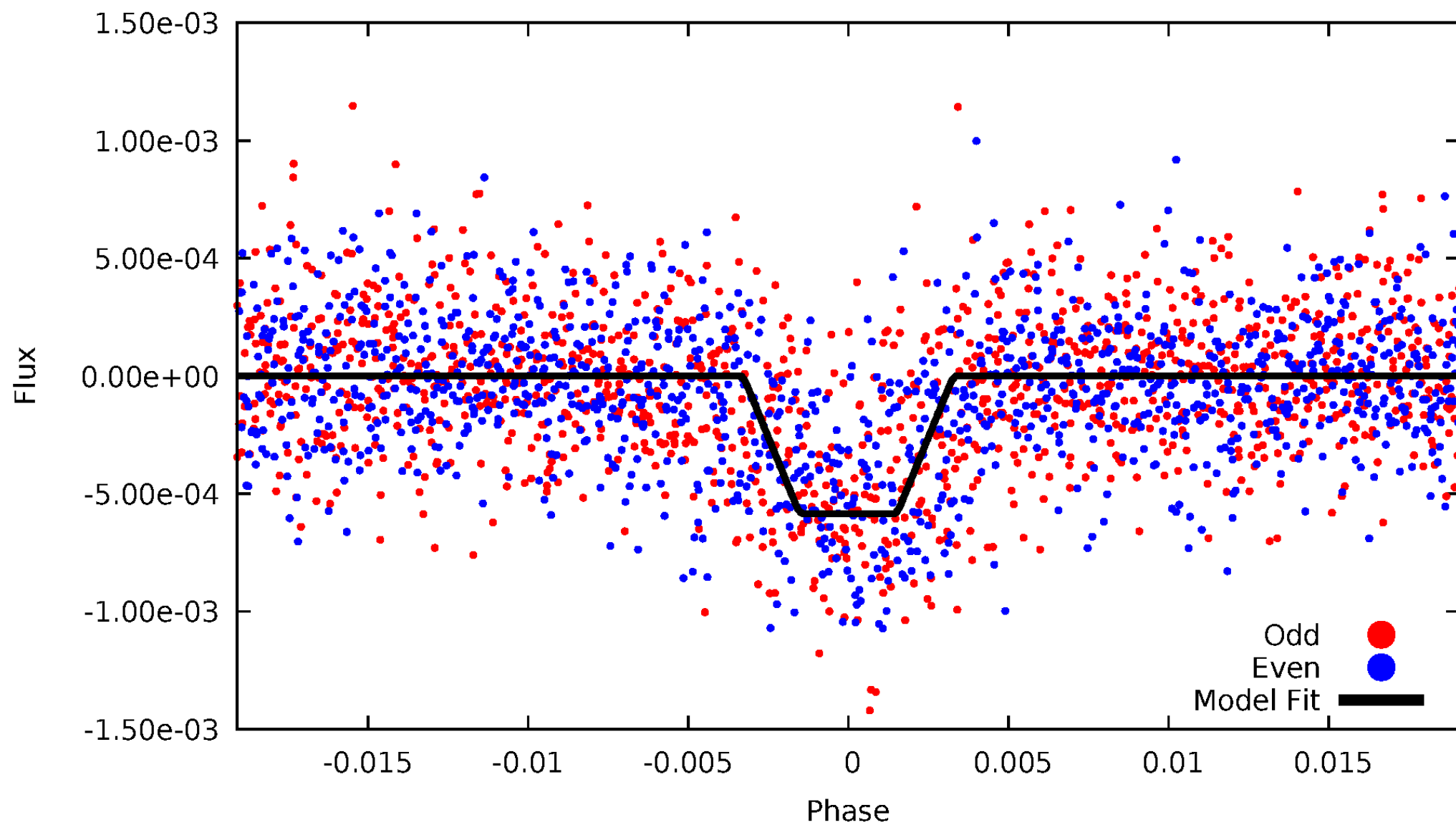
DV Odd/Even

TCE 008564587-02



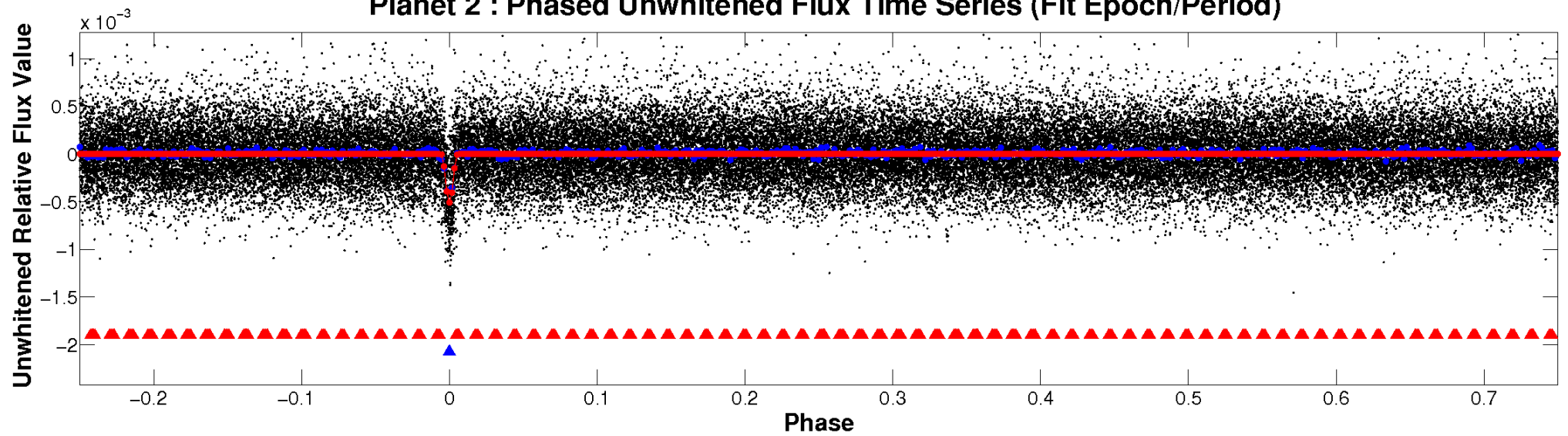
ALT Odd/Even

TCE 008564587-02

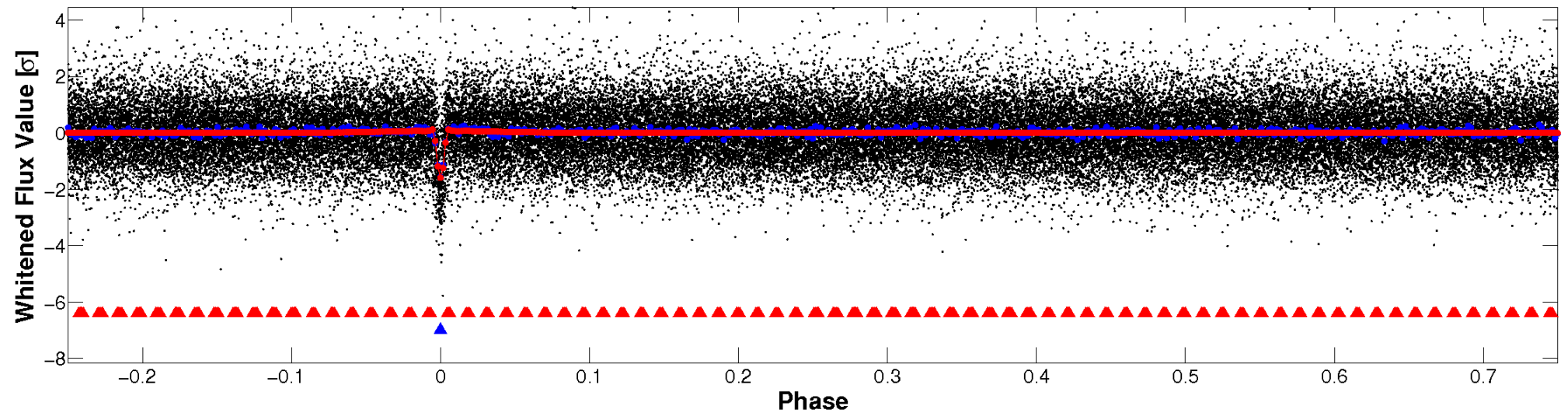


Non-Whitened Vs. Whitened Light Curve

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

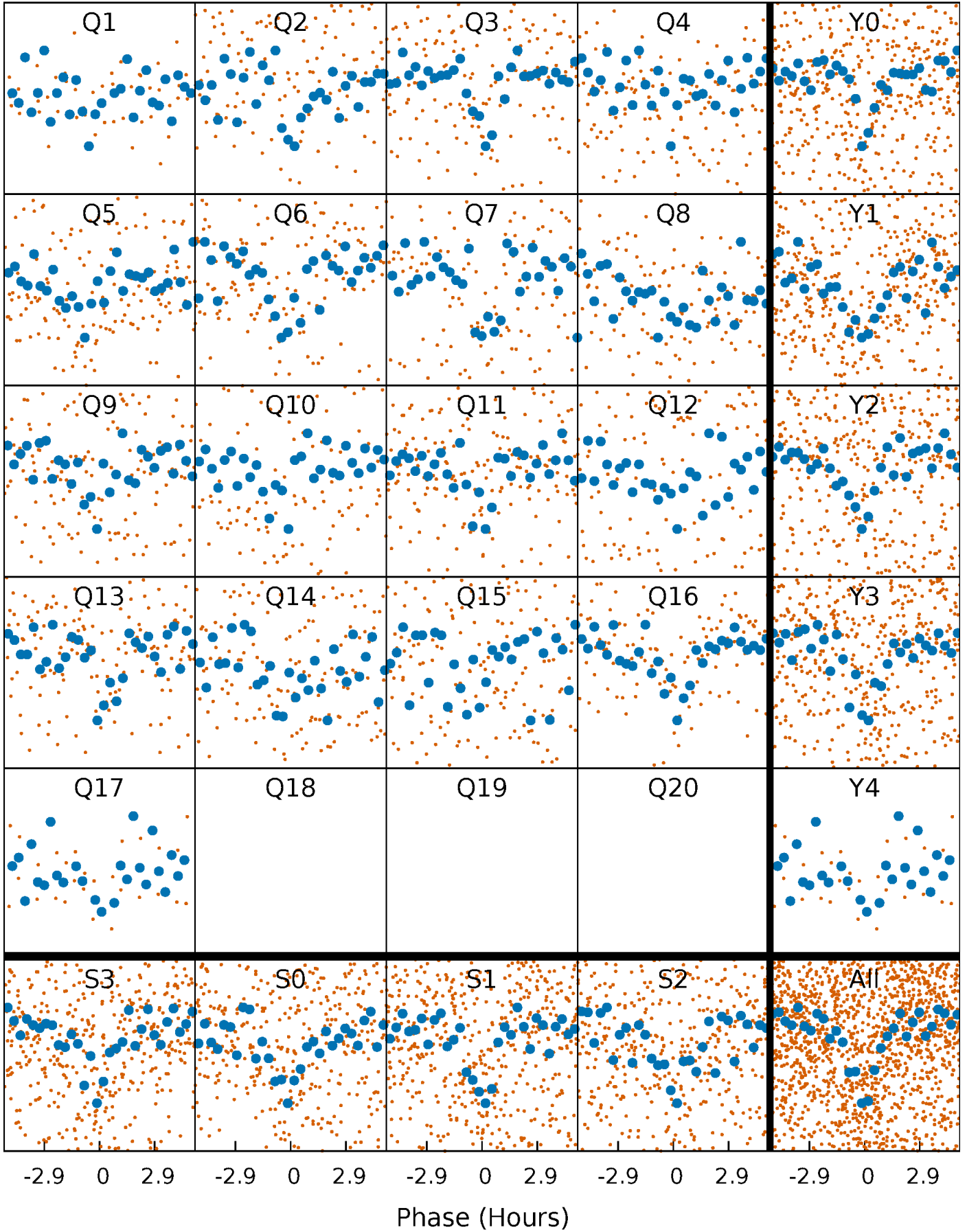


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



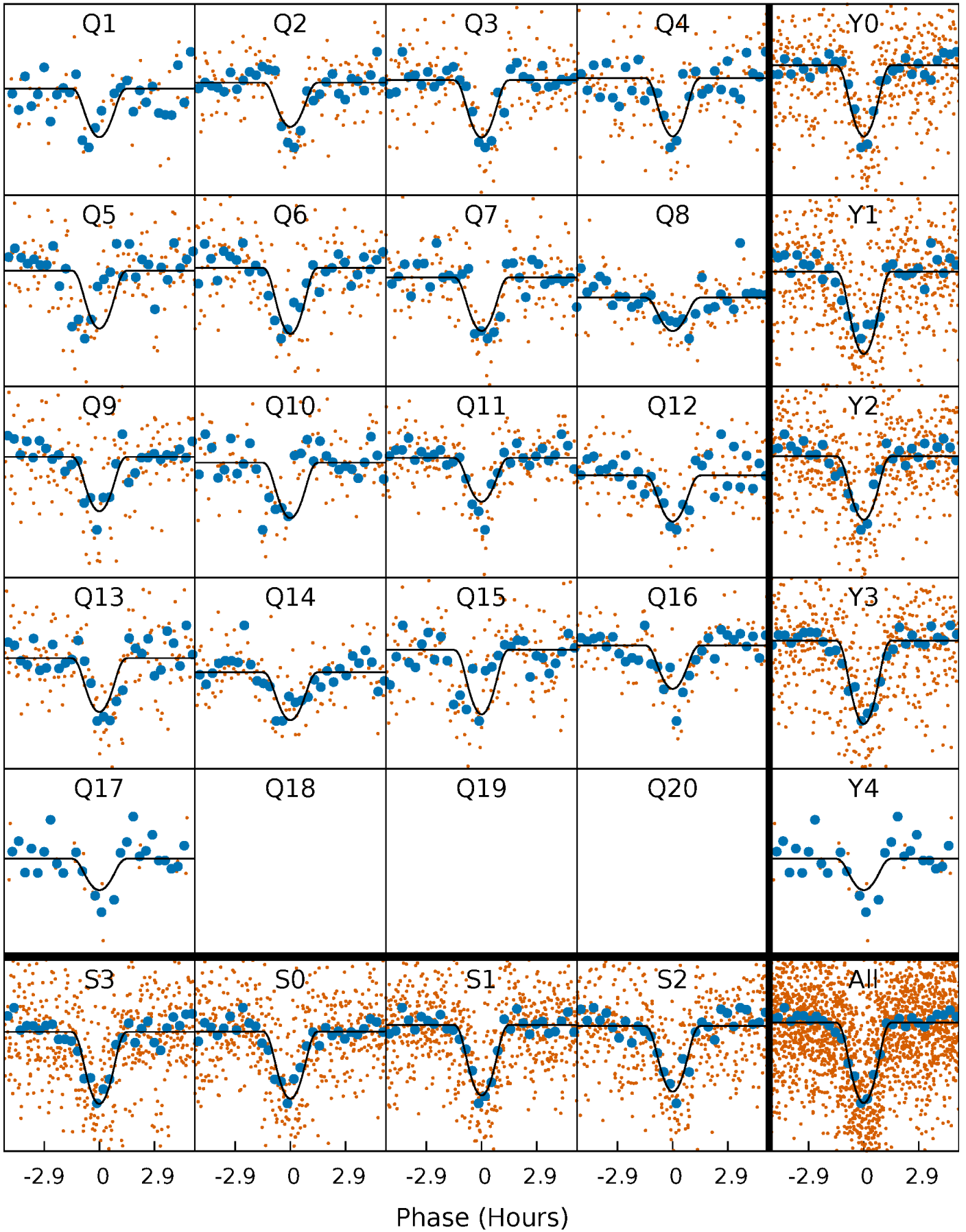
PDC Quarter-Phased Transit Curves

TCE 008564587-02 P= 11.609110 Days $T_0=133.993957$ (BKJD)



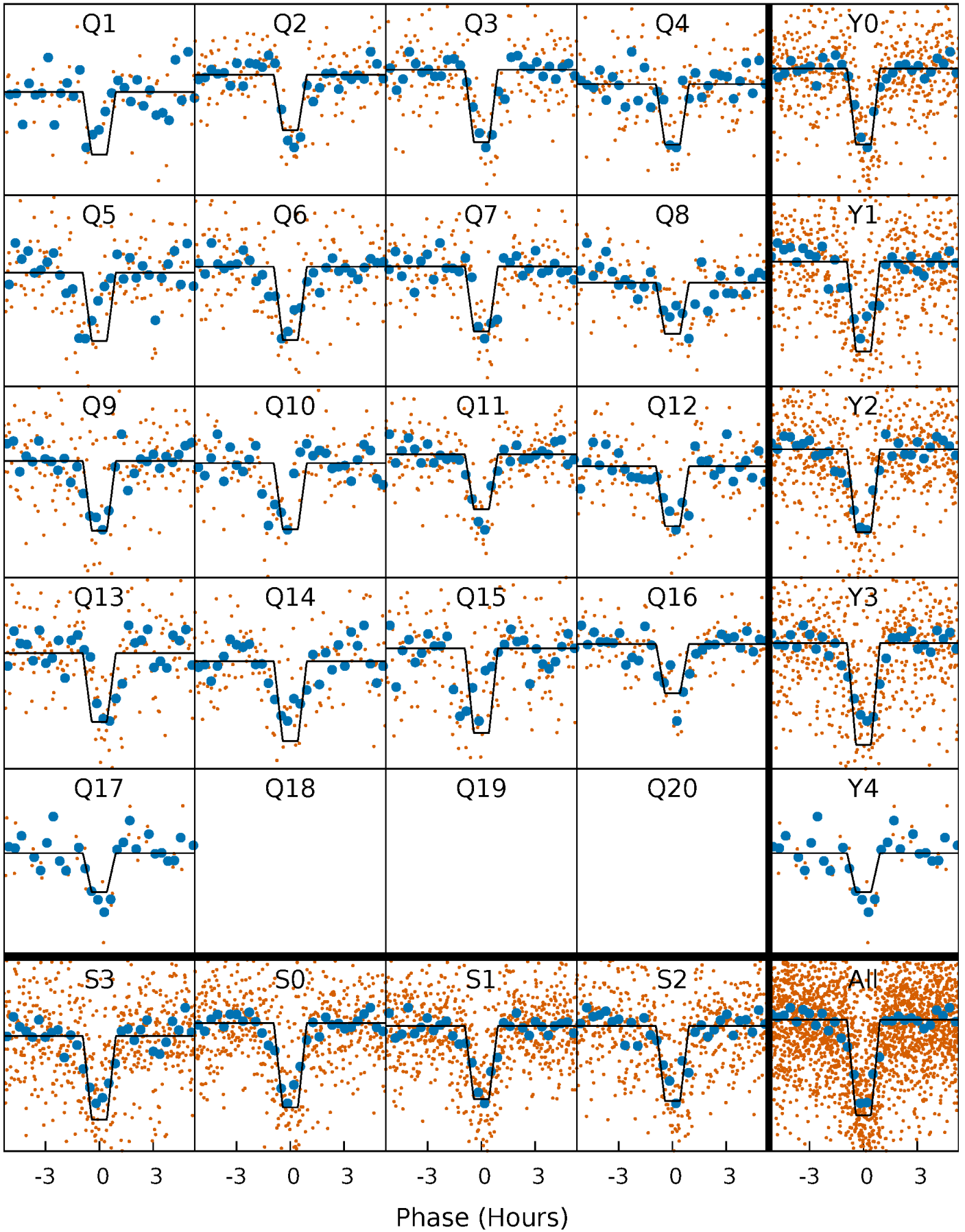
DV Quarter-Phased Transit Curves

TCE 008564587-02 P= 11.609110 Days $T_0=133.993957$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

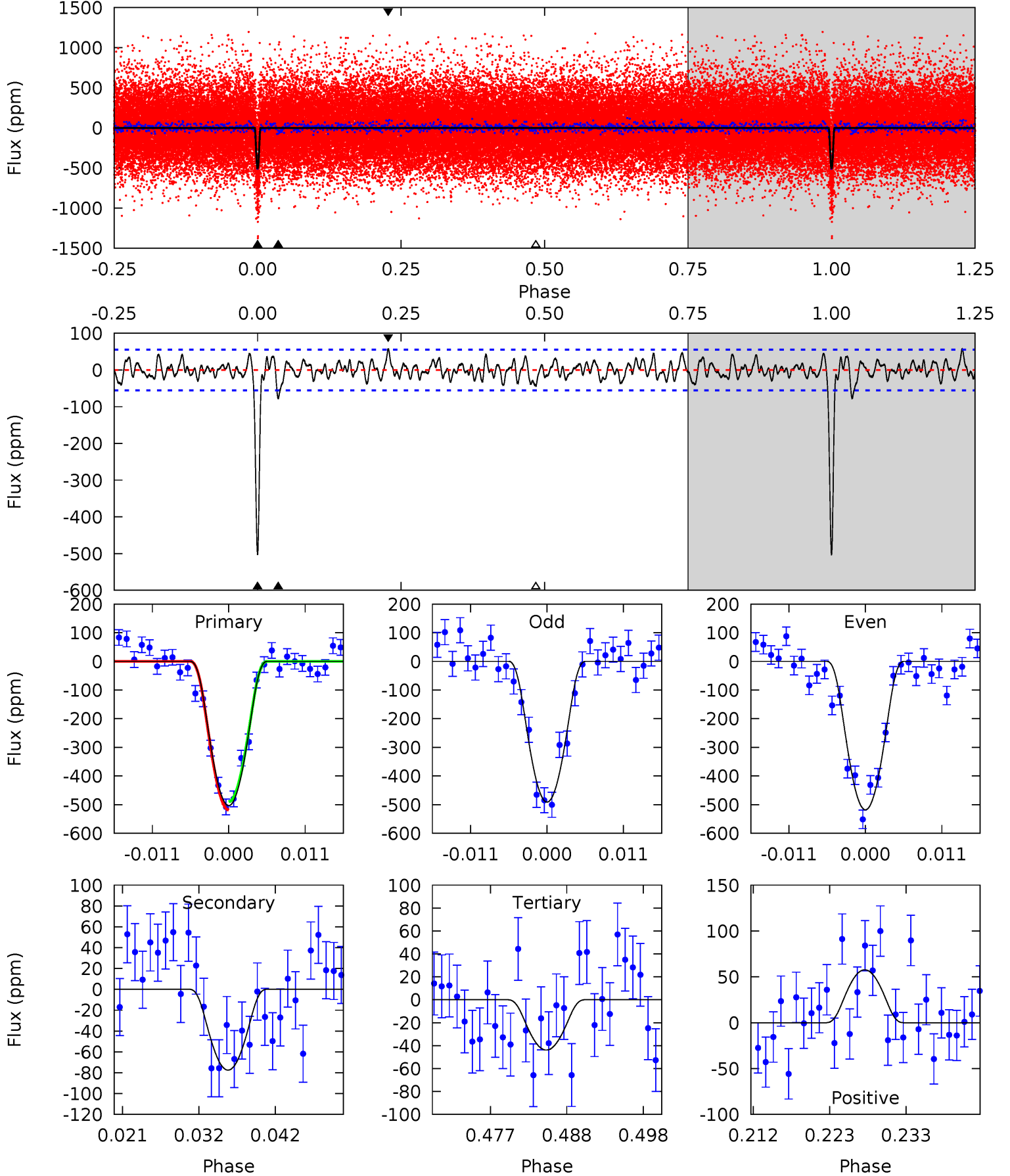
TCE 008564587-02 P= 11.609129 Days $T_0=133.990339$ (BKJD)



DV Model-Shift Uniqueness Test

008564587-02, P = 11.609110 Days, E = 122.384847 Days

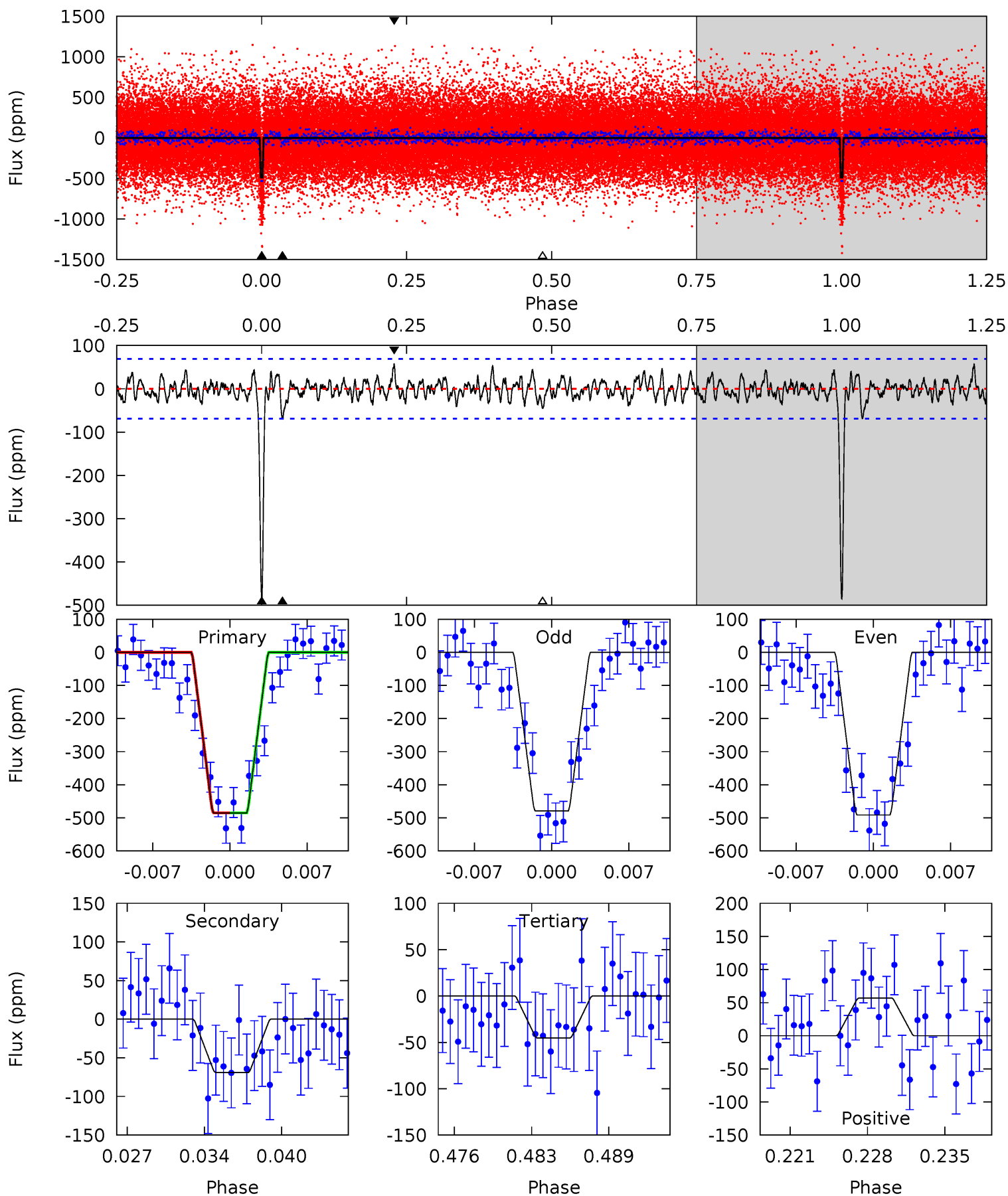
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
45.7	7.04	3.98	5.23	5.02	2.56	1.64	41.7	40.5	3.05	1.81	1.23	0.99	0.10	1.29



Alt Model-Shift Uniqueness Test

008564587-02, P = 11.609129 Days, E = 122.381210 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
35.9	5.10	3.35	4.21	5.10	2.71	1.30	32.5	31.7	1.74	0.89	0.44	1.08	0.10	0.01



Stellar Parameters For KIC 008564587

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5320^{+159}_{-143}	$4.589^{+0.028}_{-0.105}$	$-0.060^{+0.300}_{-0.300}$	$0.786^{+0.122}_{-0.066}$	$0.882^{+0.061}_{-0.104}$	$2.559^{+0.461}_{-0.820}$
	+3%/-3%	+1%/-2%	+500%/-500%	+16%/-8%	+7%/-12%	+18%/-32%
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 008564587-02 / KOI 1270.02

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-78 ± 11	$4.36^{+3.63}_{-2.88}$	958^{+40}_{-40}	2909^{+1235}_{-414}	19^{+166}_{-13}
Alt.	-69 ± 14	$3.57^{+3.19}_{-2.35}$	954^{+39}_{-36}	3032^{+1297}_{-499}	25^{+205}_{-18}

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

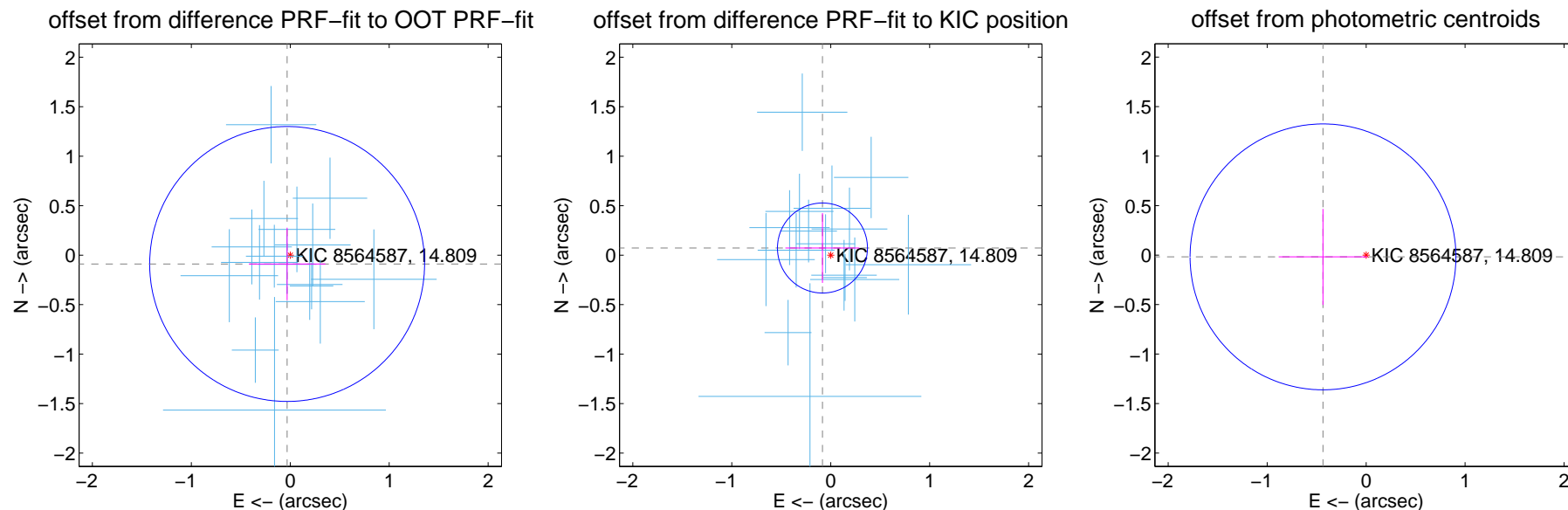
DV Centroid Data

Supplemental centroid analysis for 008564587-02. Kepler magnitude: 14.81. Transit SNR 24.59

There are 16 quarters with good PRF difference image offsets

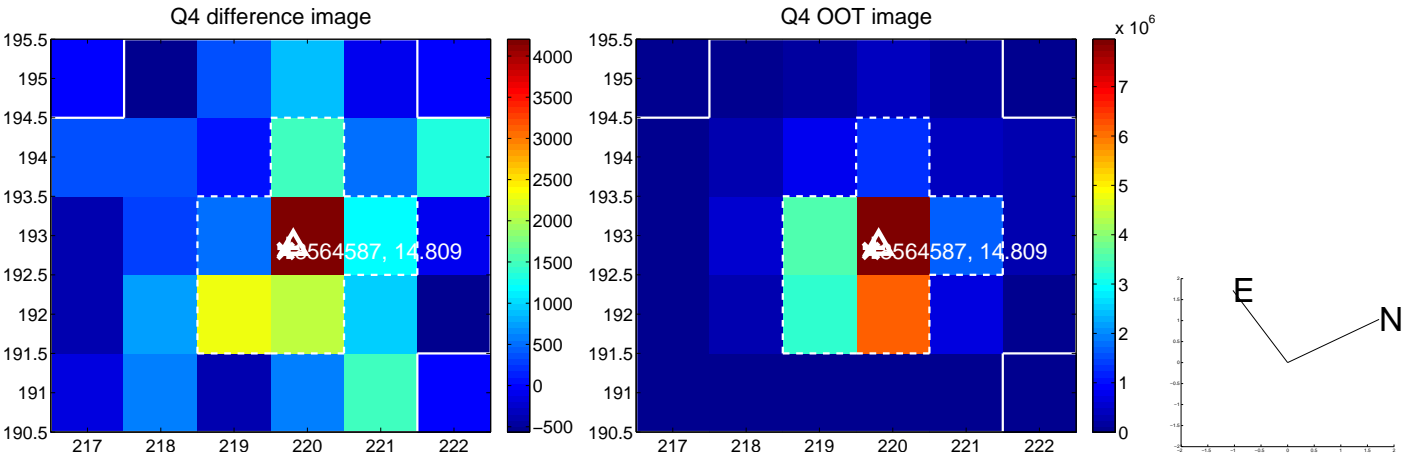
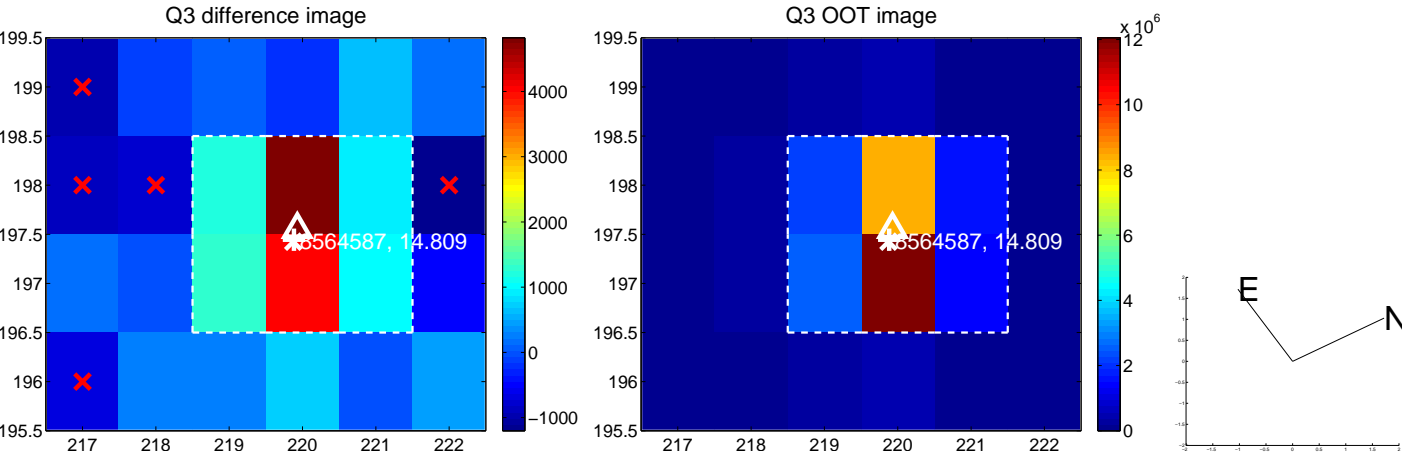
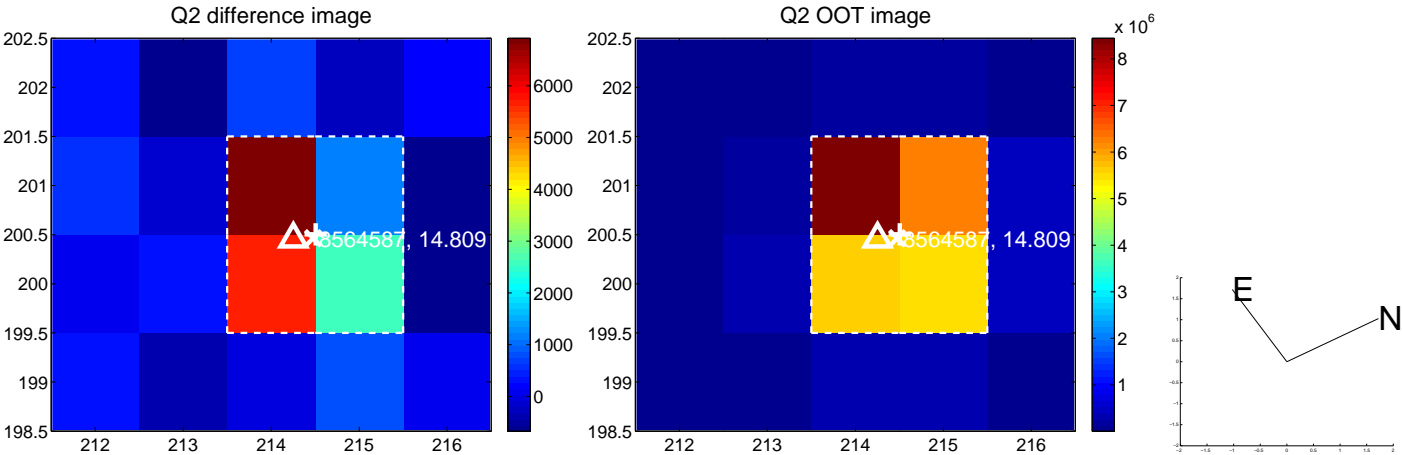
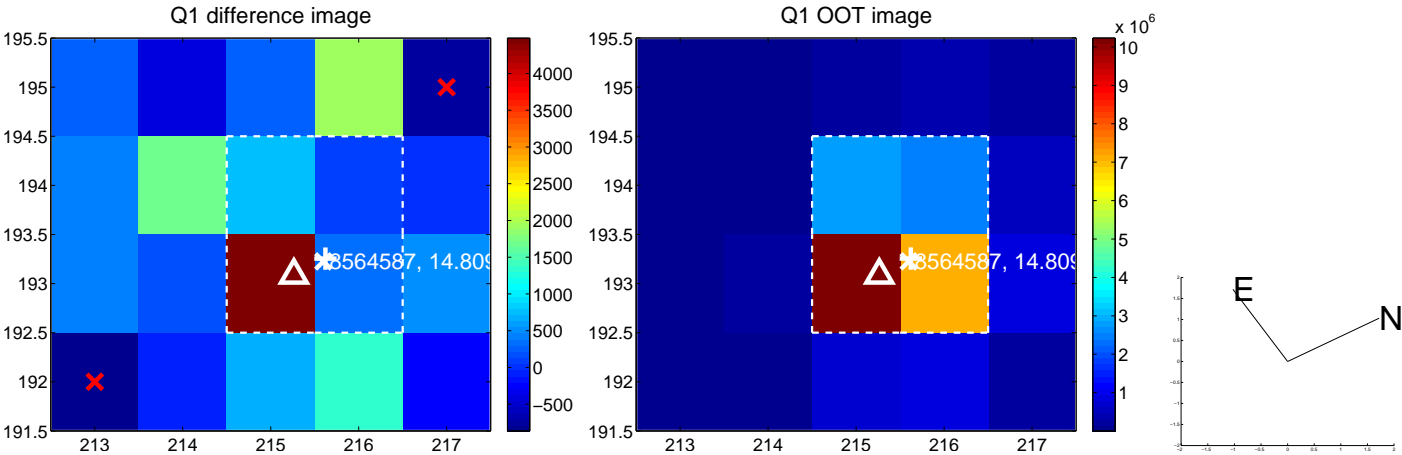
The direct PRF centroid is offset from the target star catalog position by about 0.16 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.095 ± 0.463	0.20	0.032 ± 0.387	-0.089 ± 0.366
PRF-fit source offset from KIC position	0.110 ± 0.152	0.73	0.083 ± 0.374	0.072 ± 0.352
photometric centroid source offset	0.44 ± 0.45	0.97	0.44 ± 0.45	-0.02 ± 0.48

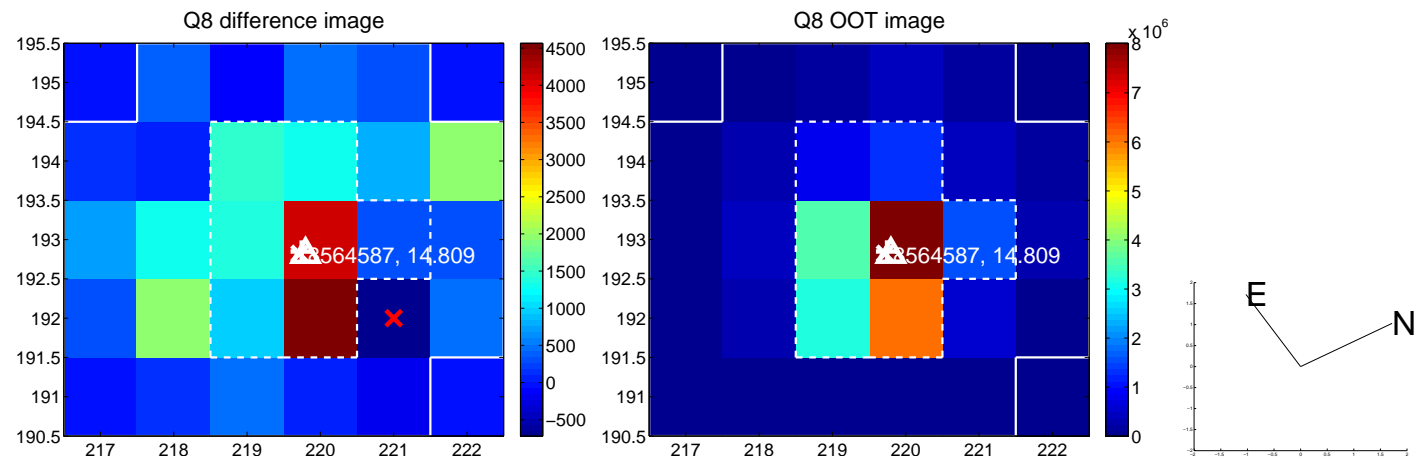
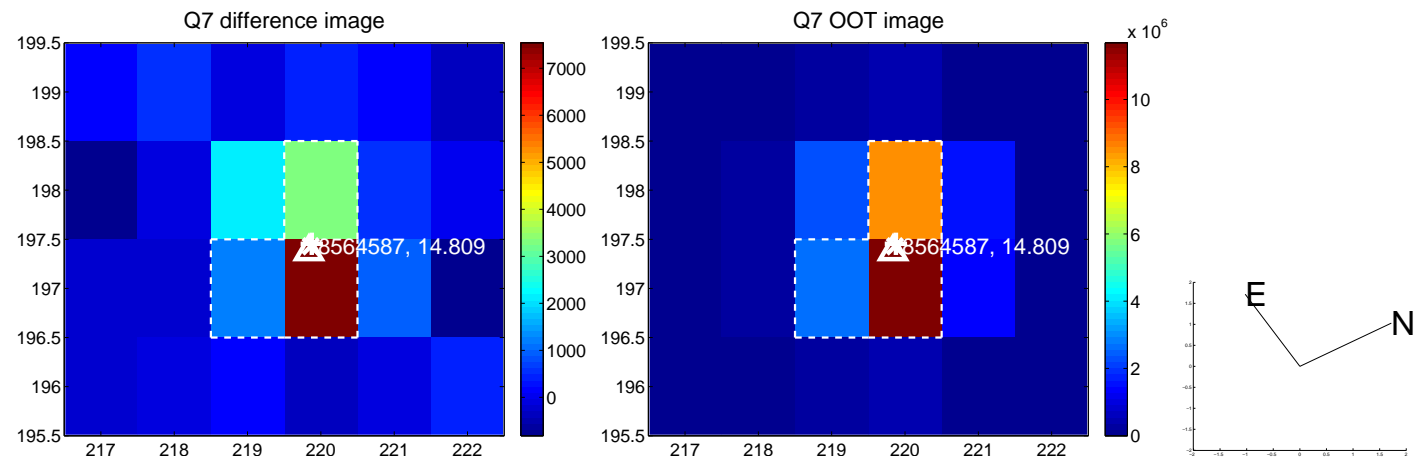
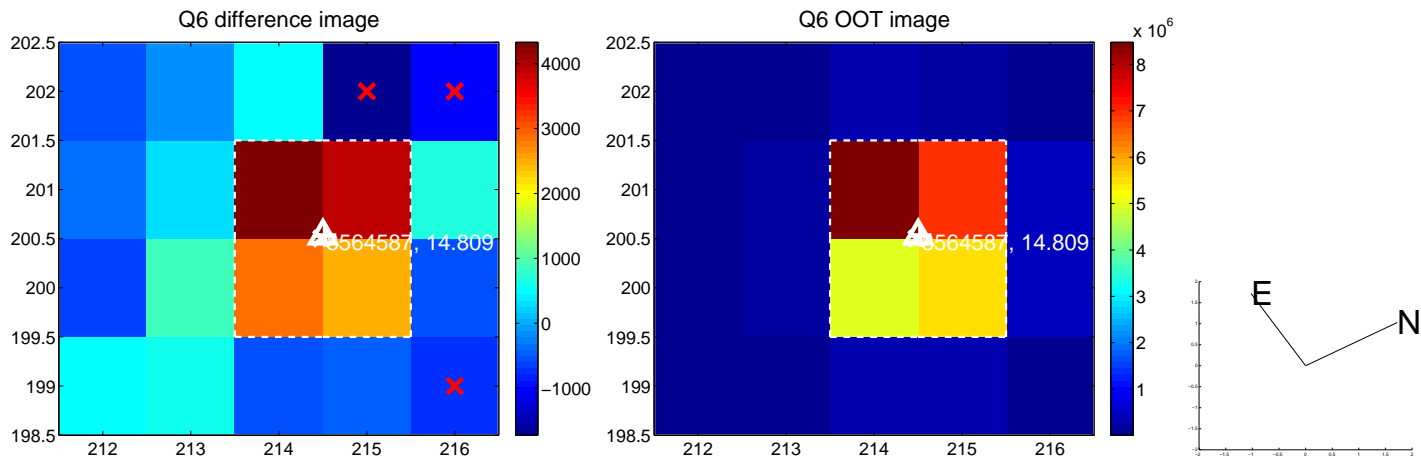
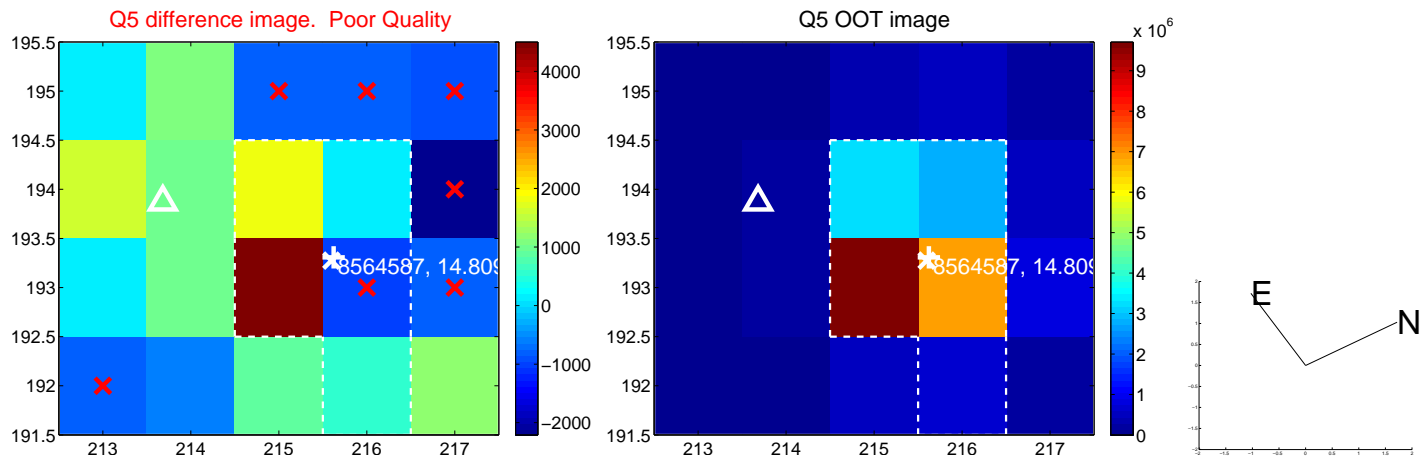


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

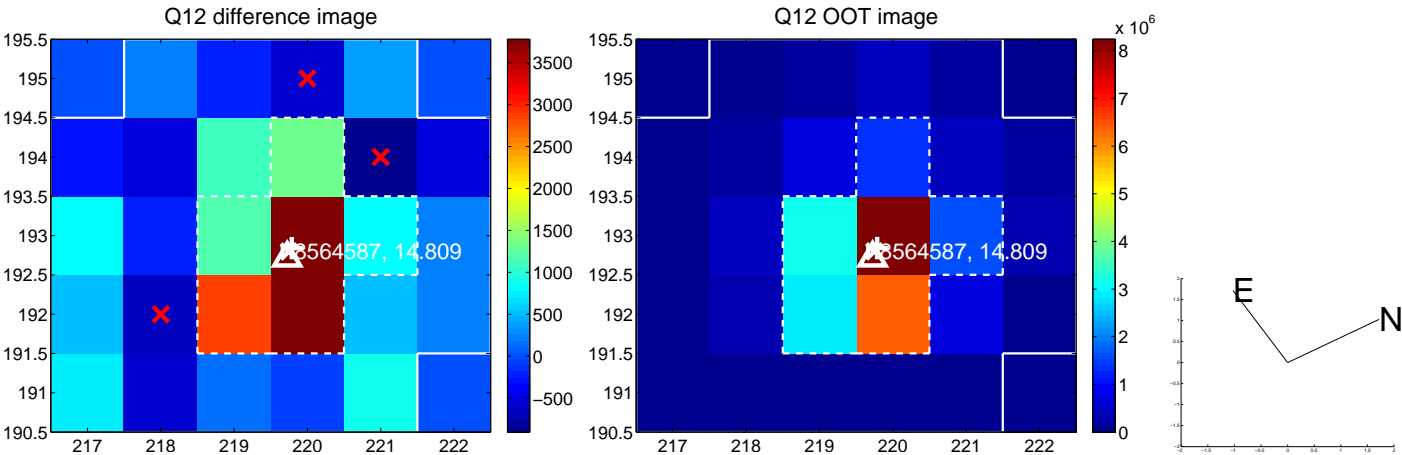
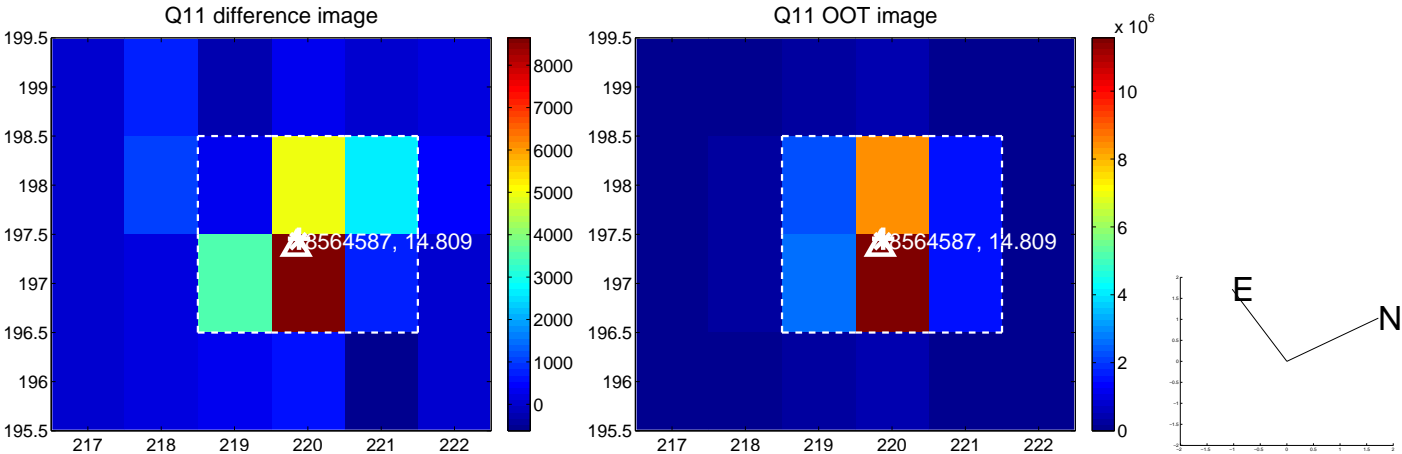
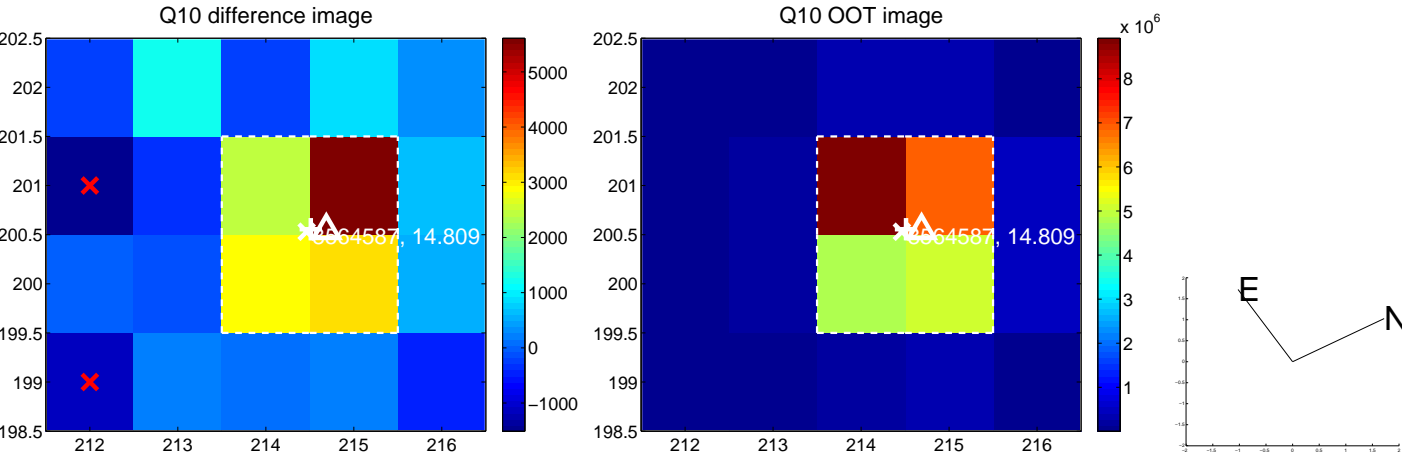
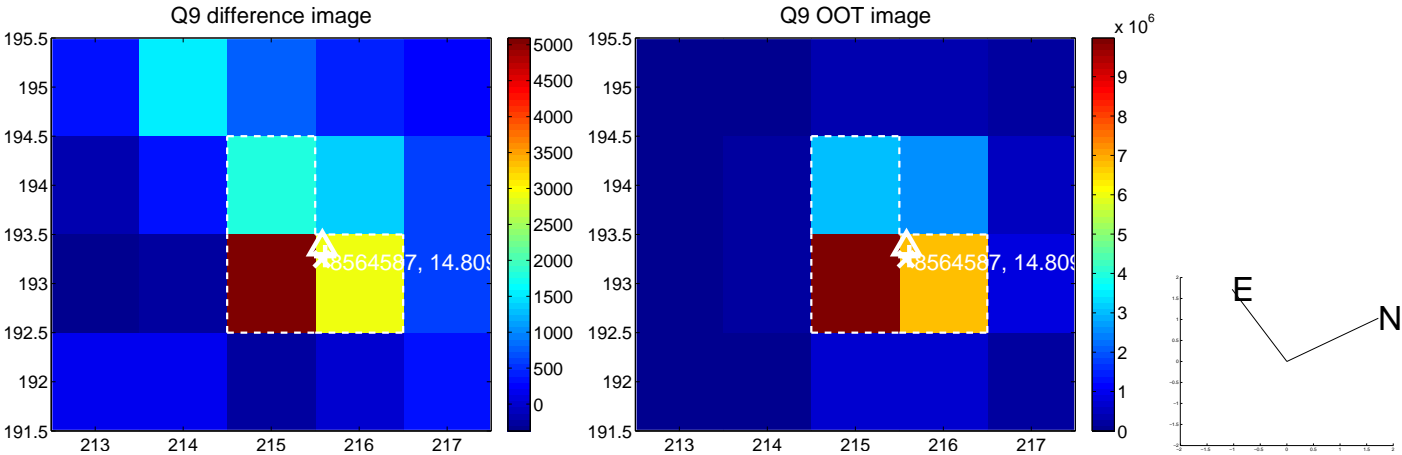
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



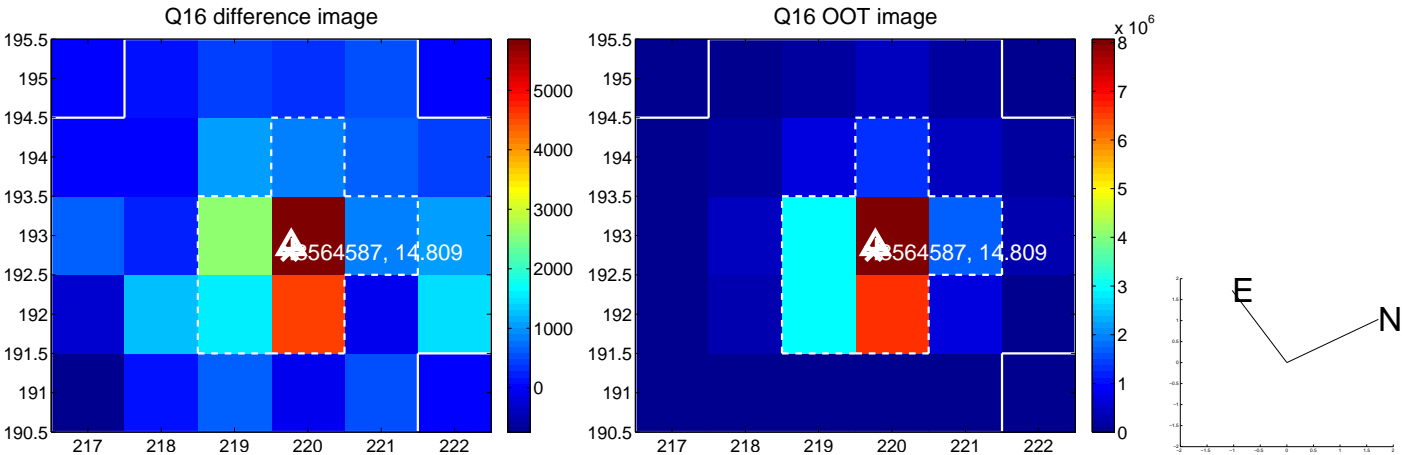
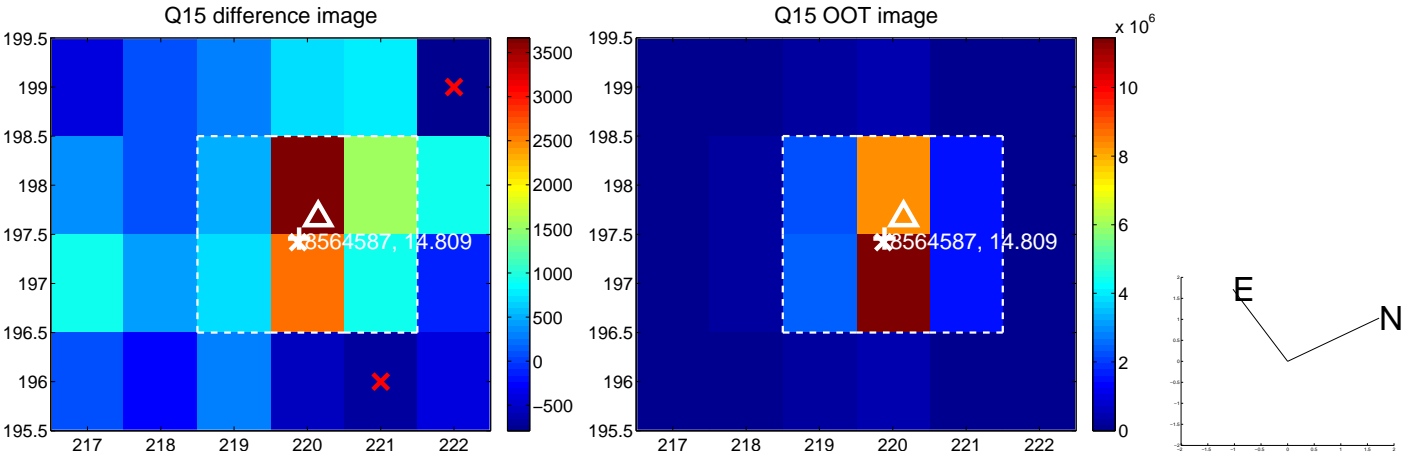
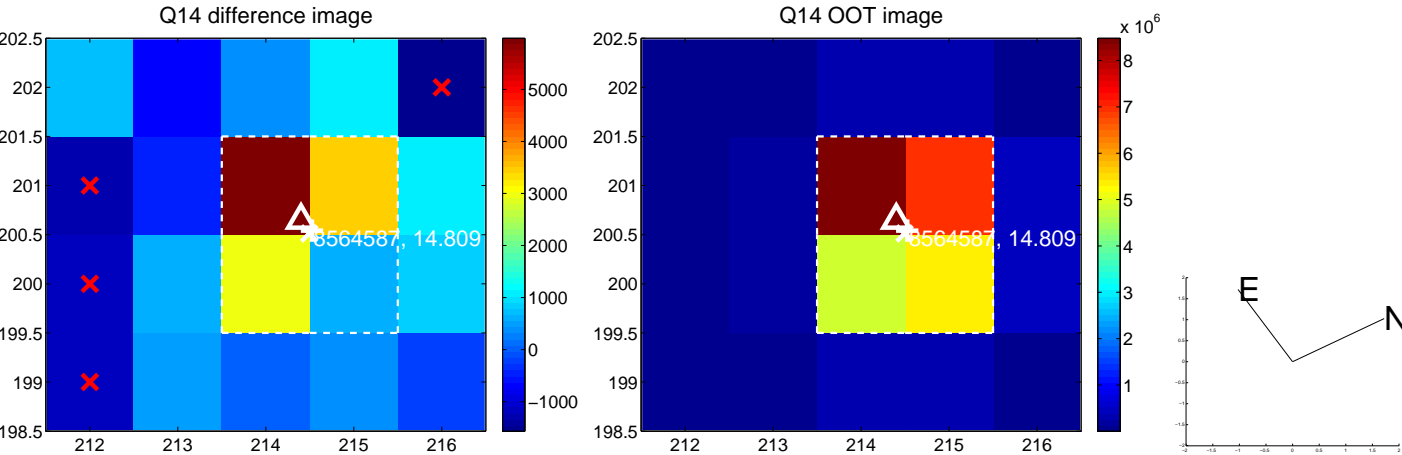
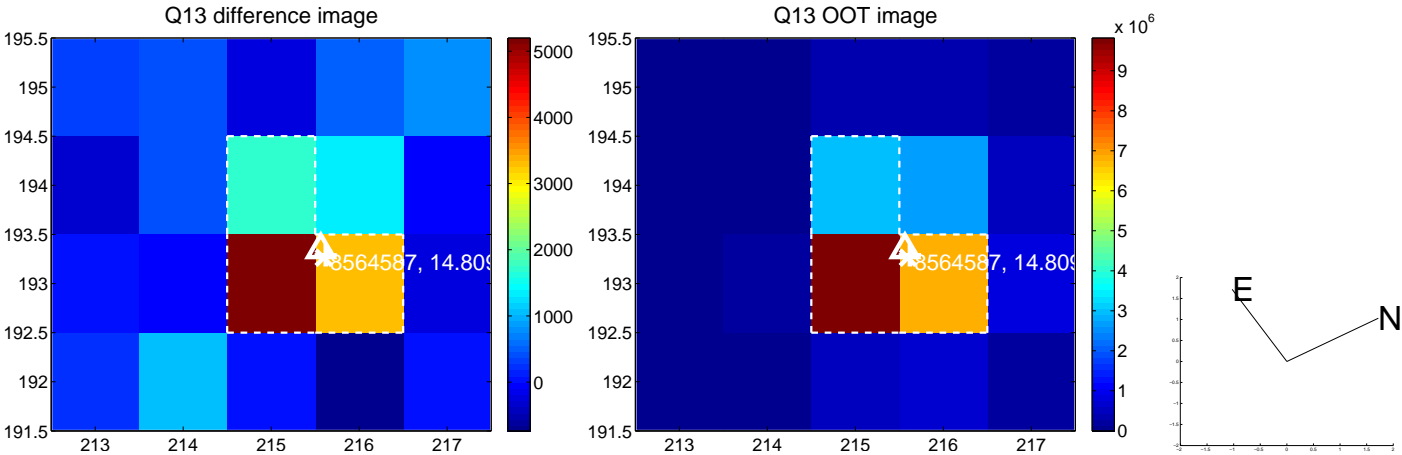
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



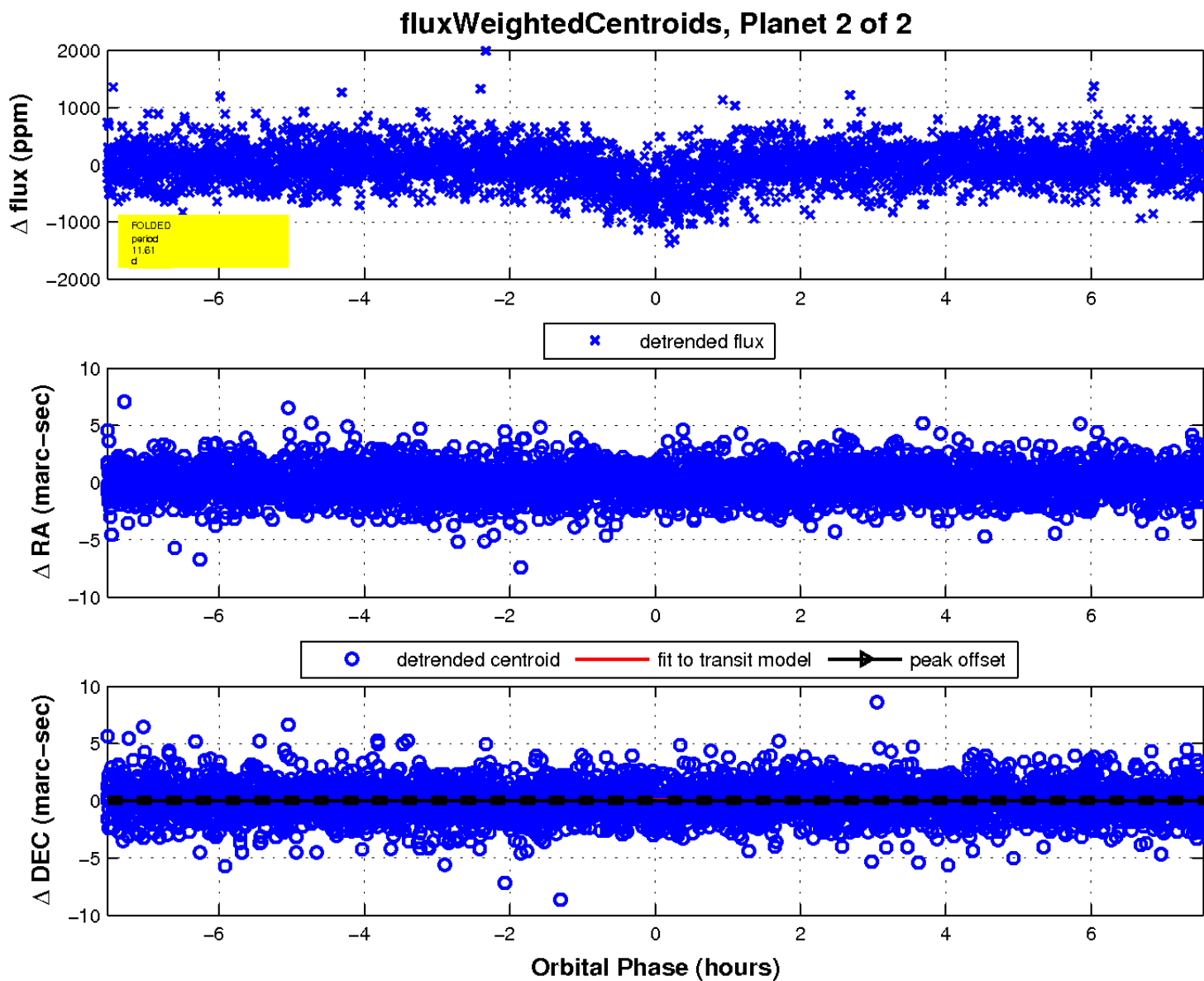
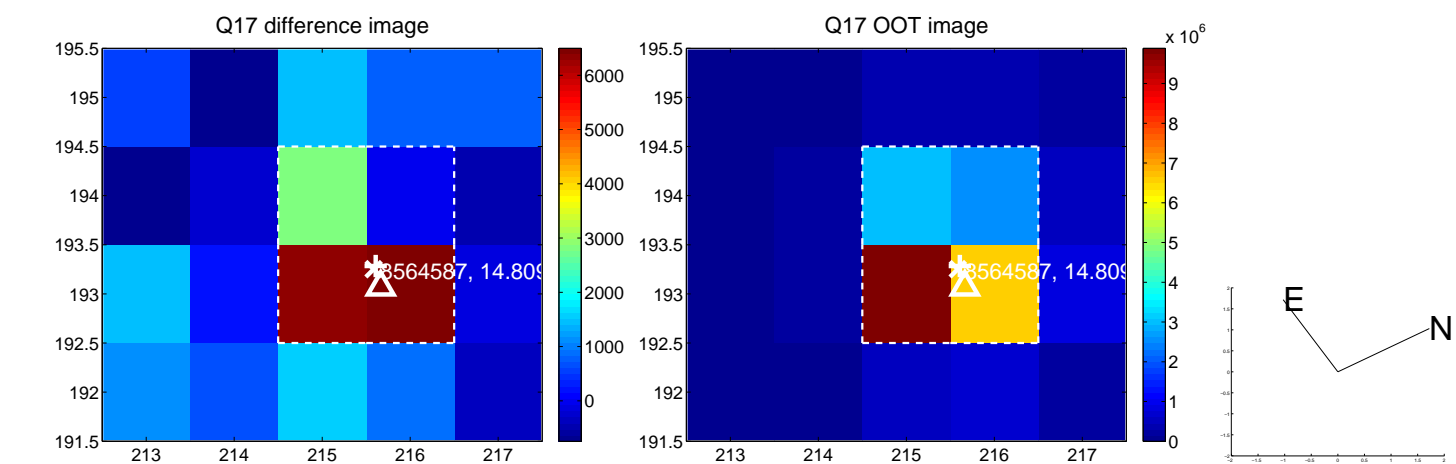
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image

Declination

