

KIC 002716801

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})
002716801-01	OBS	3053.01	42.521931	136.120368	667.6	5.815	13.0	13.7	0.91	5911	2.49	16.00
002716801-02	OBS	3053.02	9.476528	134.743764	208.5	4.742	8.1	7.7	0.91	5911	1.70	118.39

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
002716801-01	OBS	PC	0.96	0	0	0	0	NO_COMMENT
002716801-02	OBS	PC	0.55	0	0	0	0	CENT_FEW_MEAS

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

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

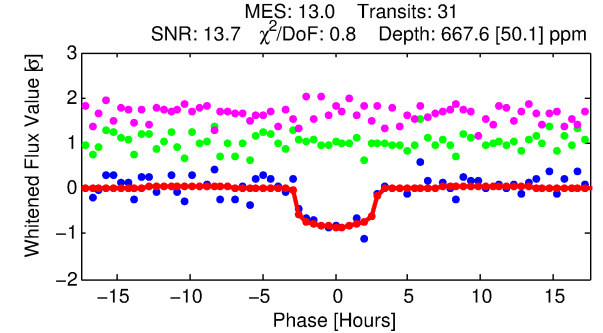
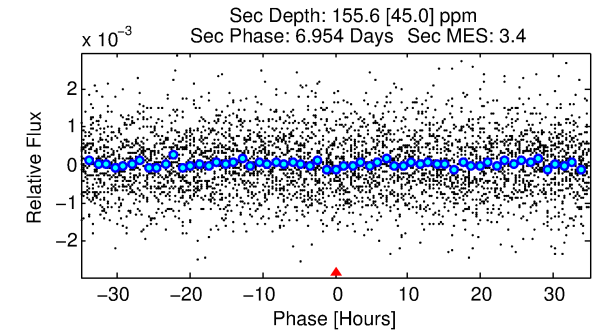
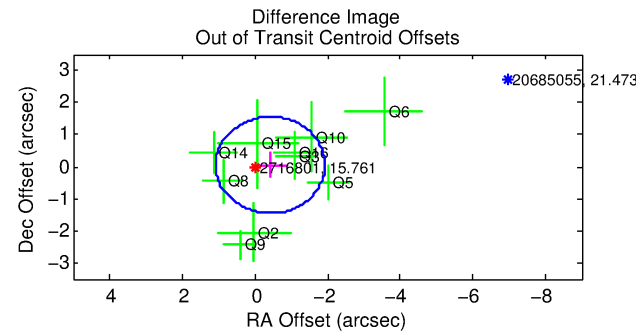
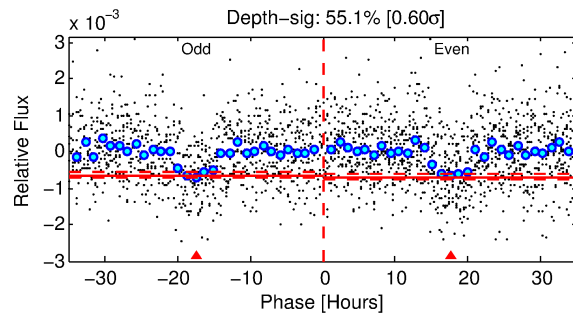
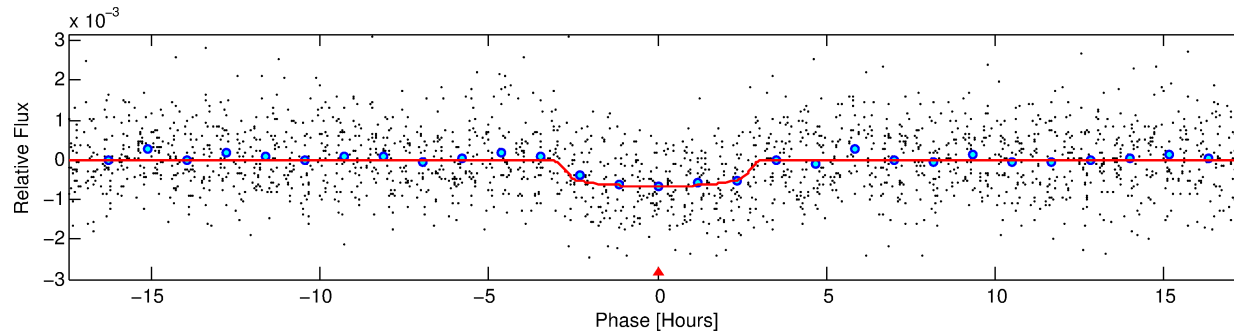
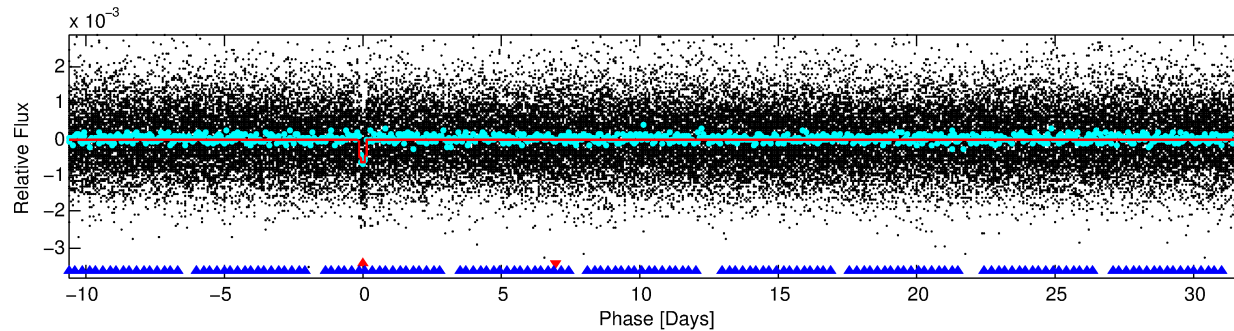
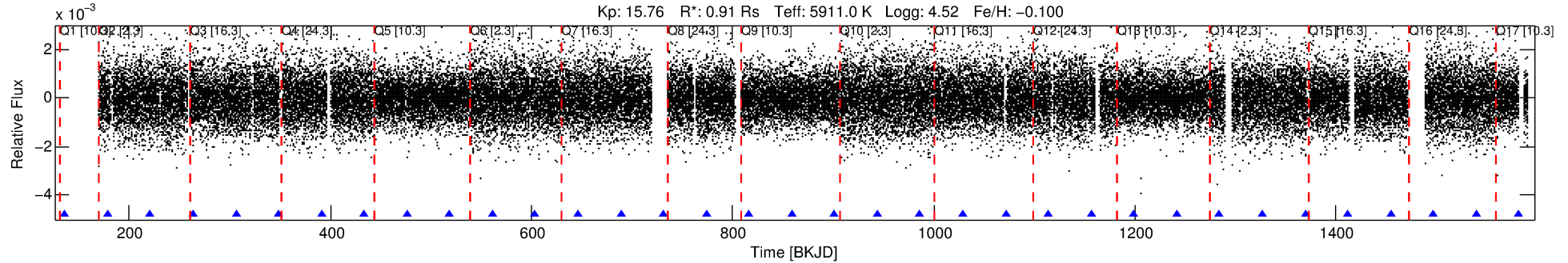
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 002716801-01

No Significant Match Found

DV One-Page Summary

KIC: 2716801 Candidate: 1 of 2 Period: 42.522 d
KOI: K03053.01 Corr: 0.986



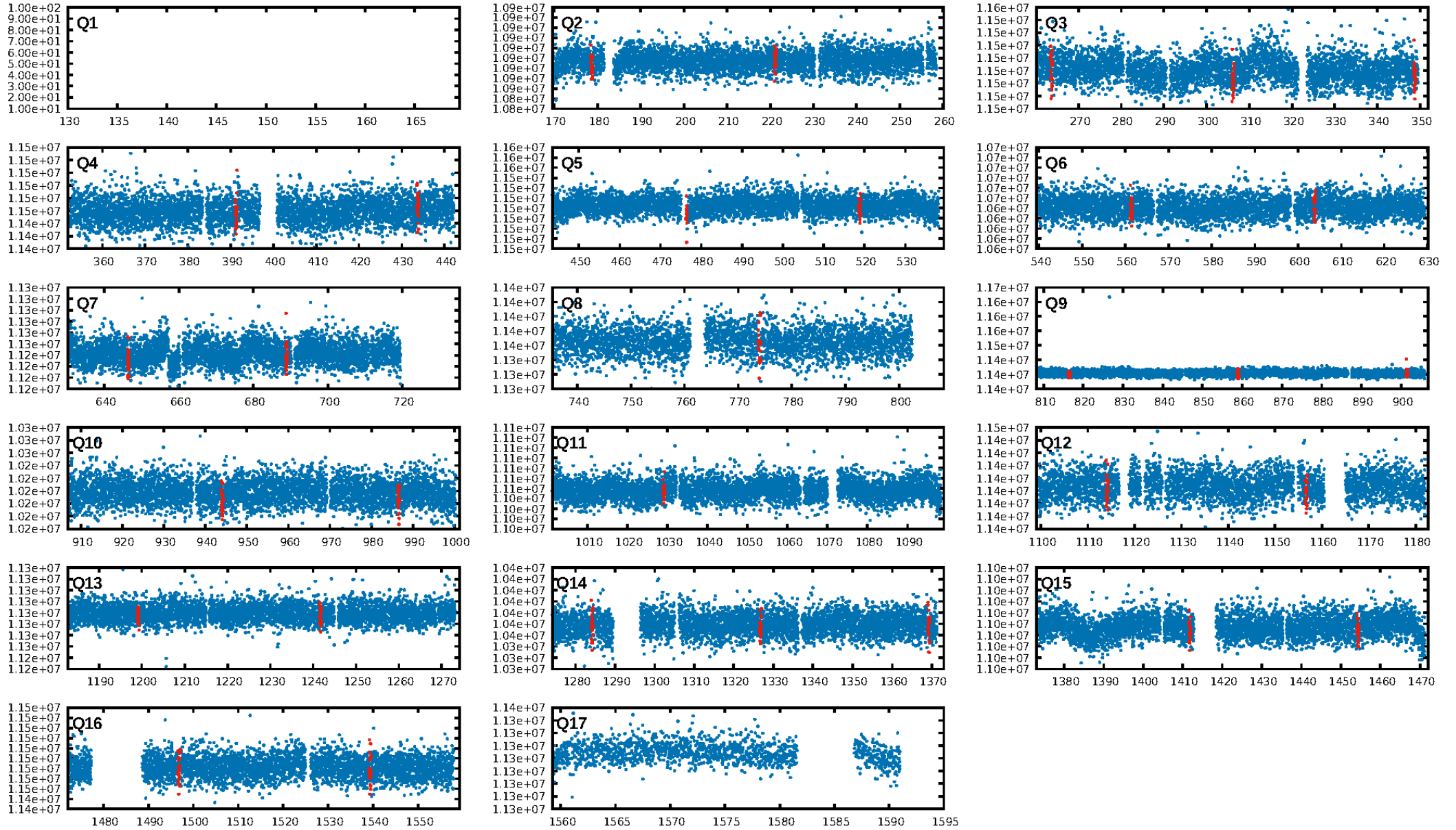
DV Fit Results:

Period = 42.52193 [0.00047] d
Epoch = 136.1204 [0.0086] BKJD
Rp/R* = 0.0250 [0.0180]
a/R* = 44.29 [147.71]
b = 0.65 [3.00]
Seff = 16.00 [6.35]
Teq = 510 [51] K
Rp = 2.49 [1.95] Re
a = 0.2390 [0.0616] AU
Ag = 789.14 [1197.94] [0.66 σ]
Teff = 4179 [1543] K [2.38 σ]

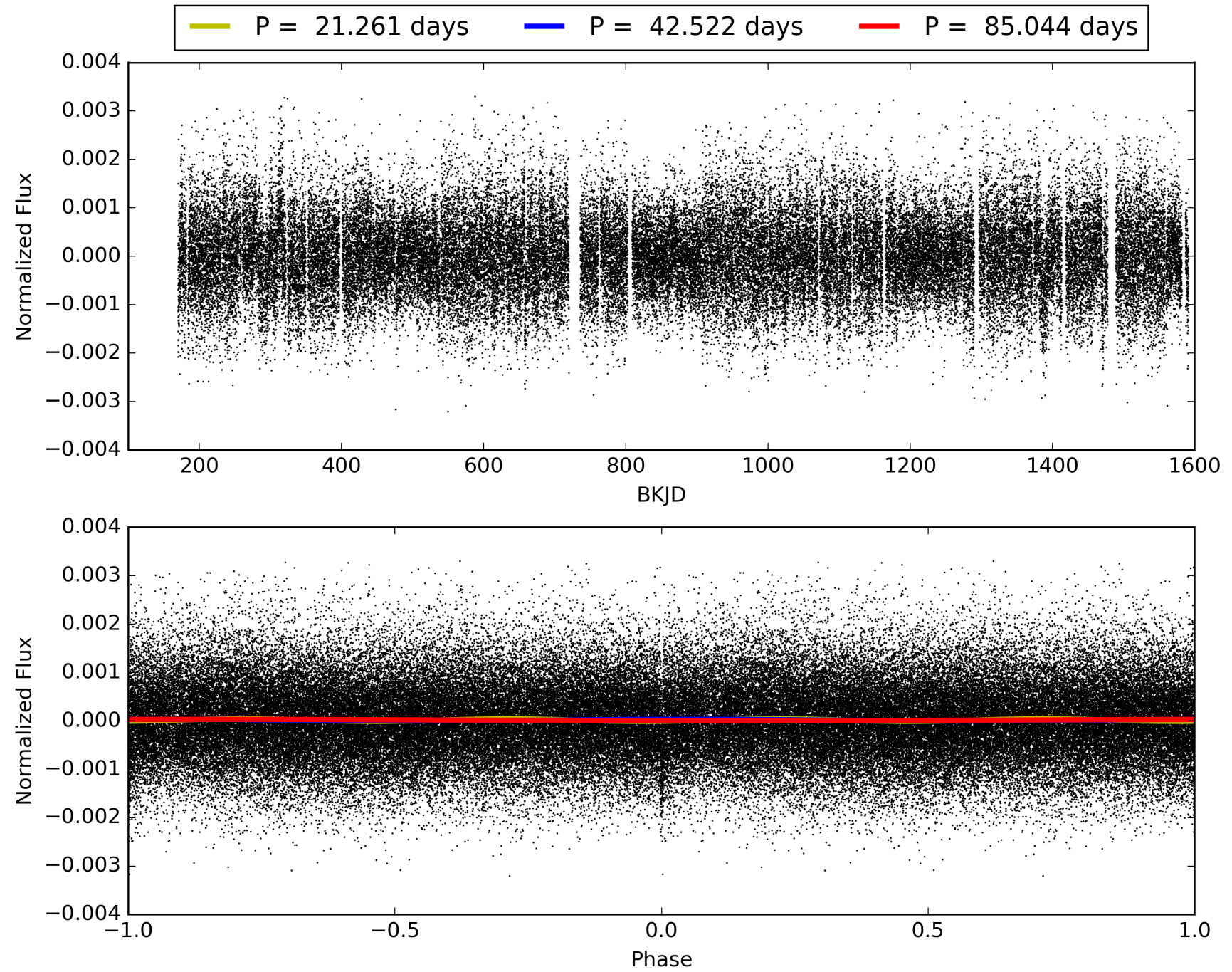
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [105.70 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 58.4%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 5.52e-38
RollingBand-fgt: 1.00 [31/31]
GhostDiagnostic-chr: 5.143
Centroid-sig: 0.0%
Centroid-so: 2.030 arcsec [1.98 σ]
OotOffset-rm: 0.425 arcsec [0.85 σ]
KicOffset-rm: 0.488 arcsec [1.06 σ]
OotOffset-st: 4/2/2/2 [10]
KicOffset-st: 4/2/2/2 [10]
DiffImageQuality-fgm: 0.70 [7/10]
DiffImageOverlap-fno: 1.00 [15/15]

TCE 002716801-01, PDC Light Curves

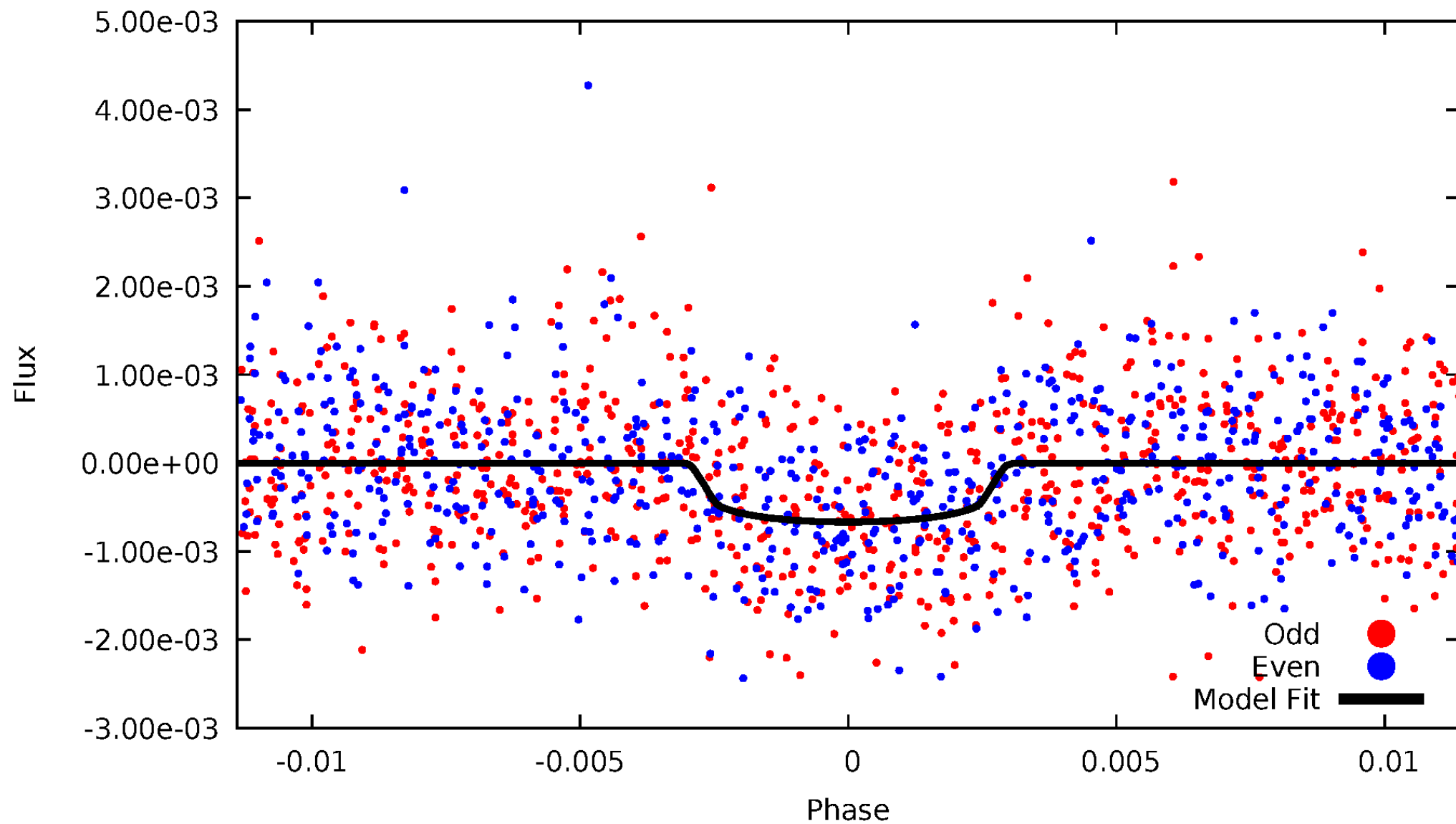


TCE 002716801-01



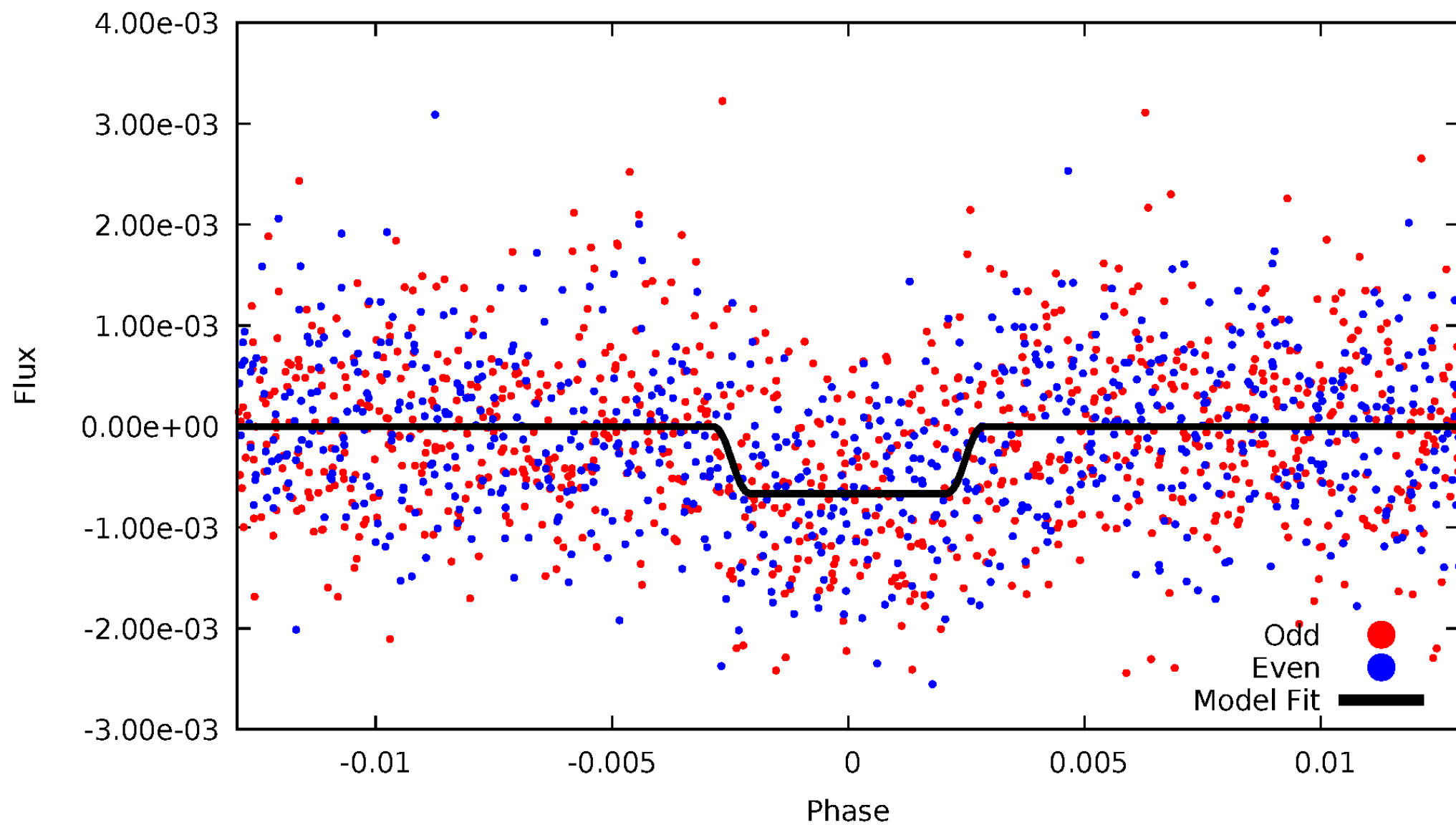
DV Odd/Even

TCE 002716801-01



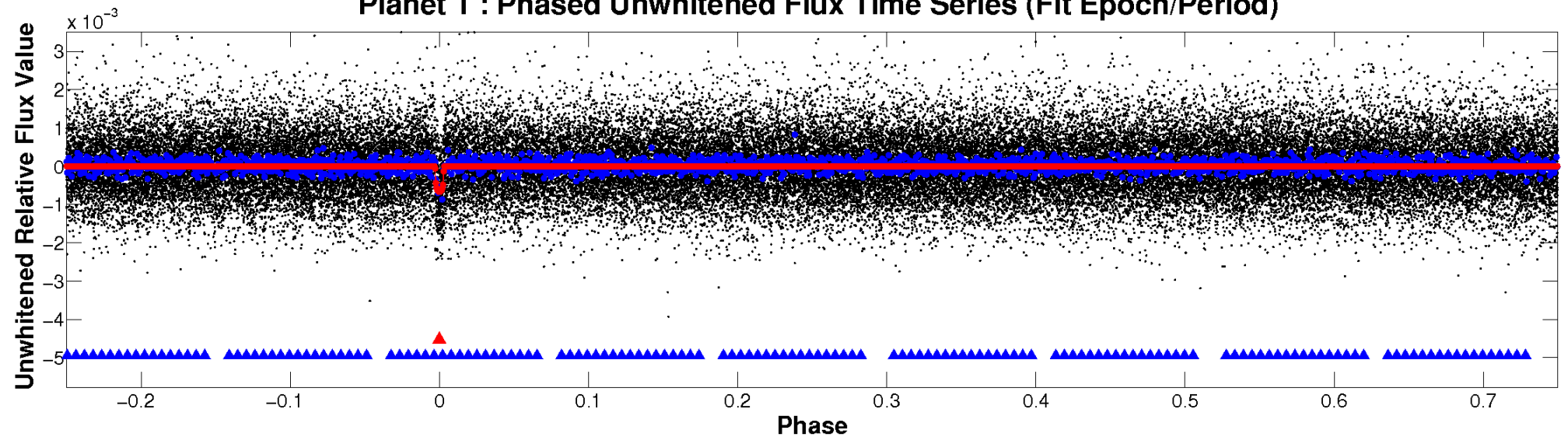
ALT Odd/Even

TCE 002716801-01

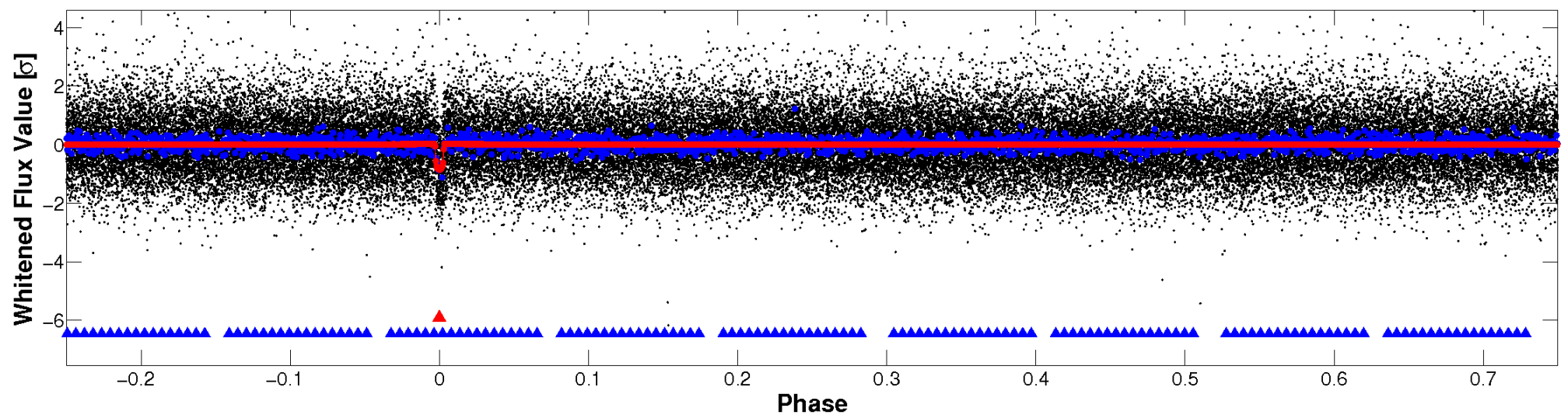


Non-Whitened Vs. Whitened Light Curve

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

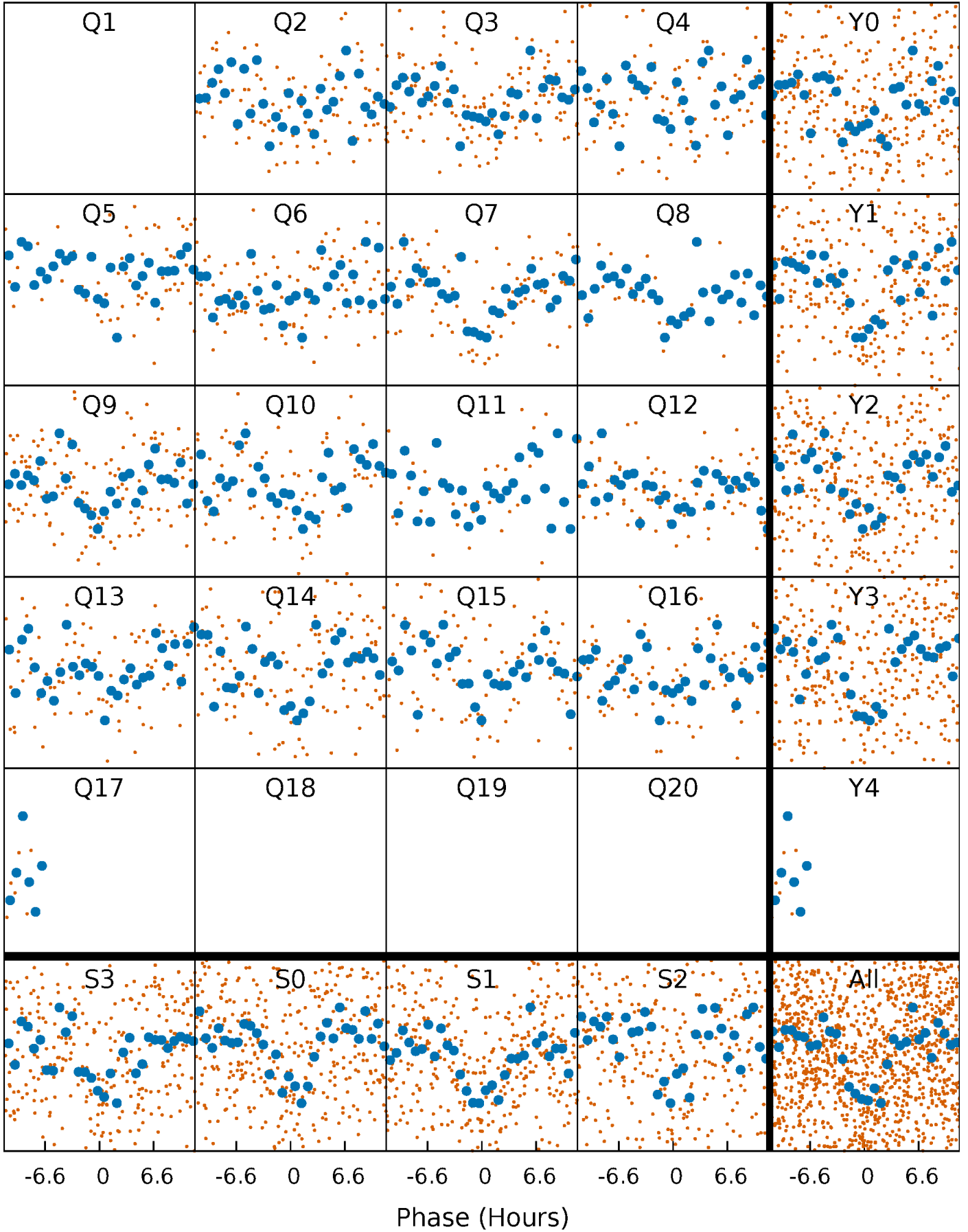


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



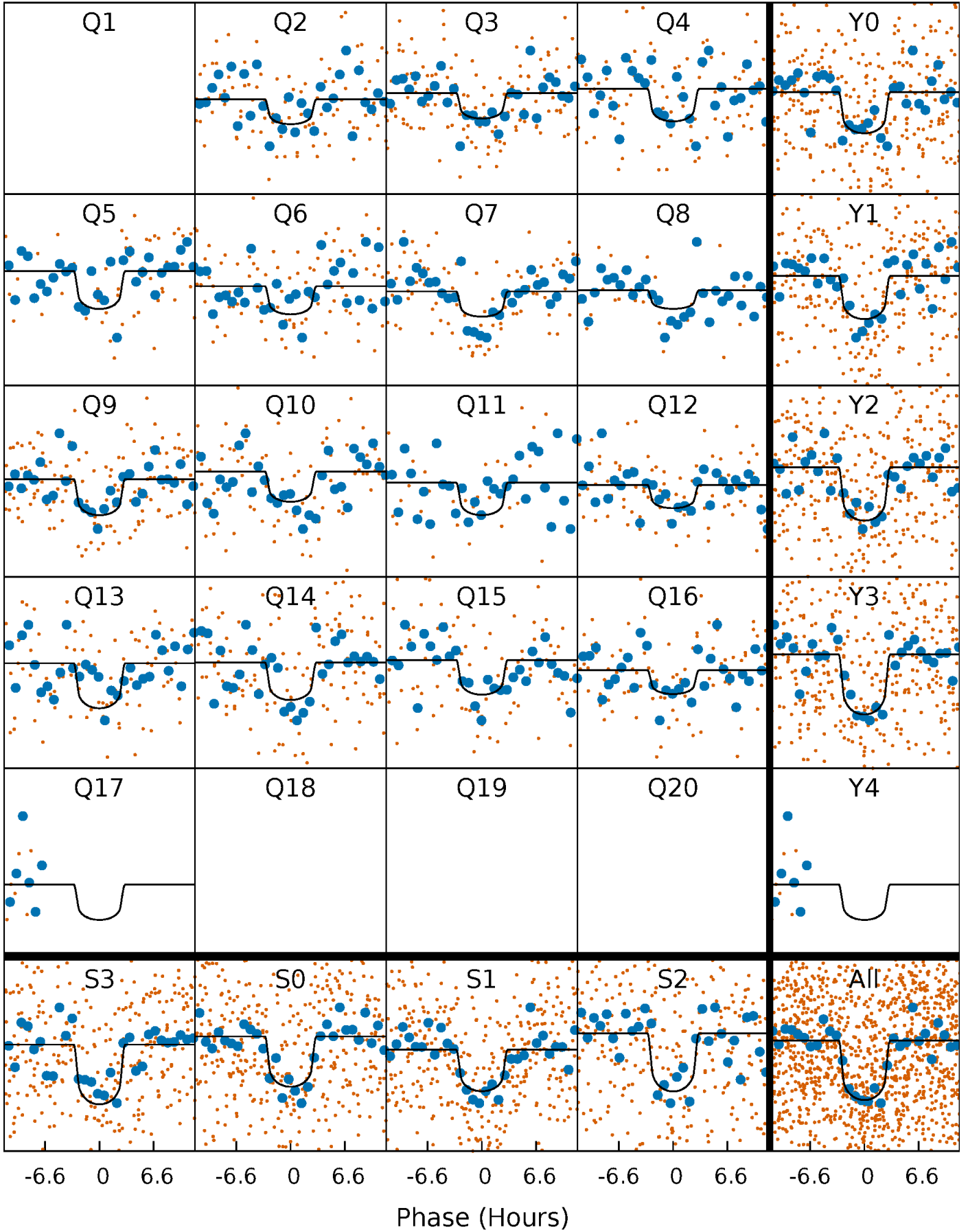
PDC Quarter-Phased Transit Curves

TCE 002716801-01 P= 42.521931 Days $T_0=136.120368$ (BKJD)



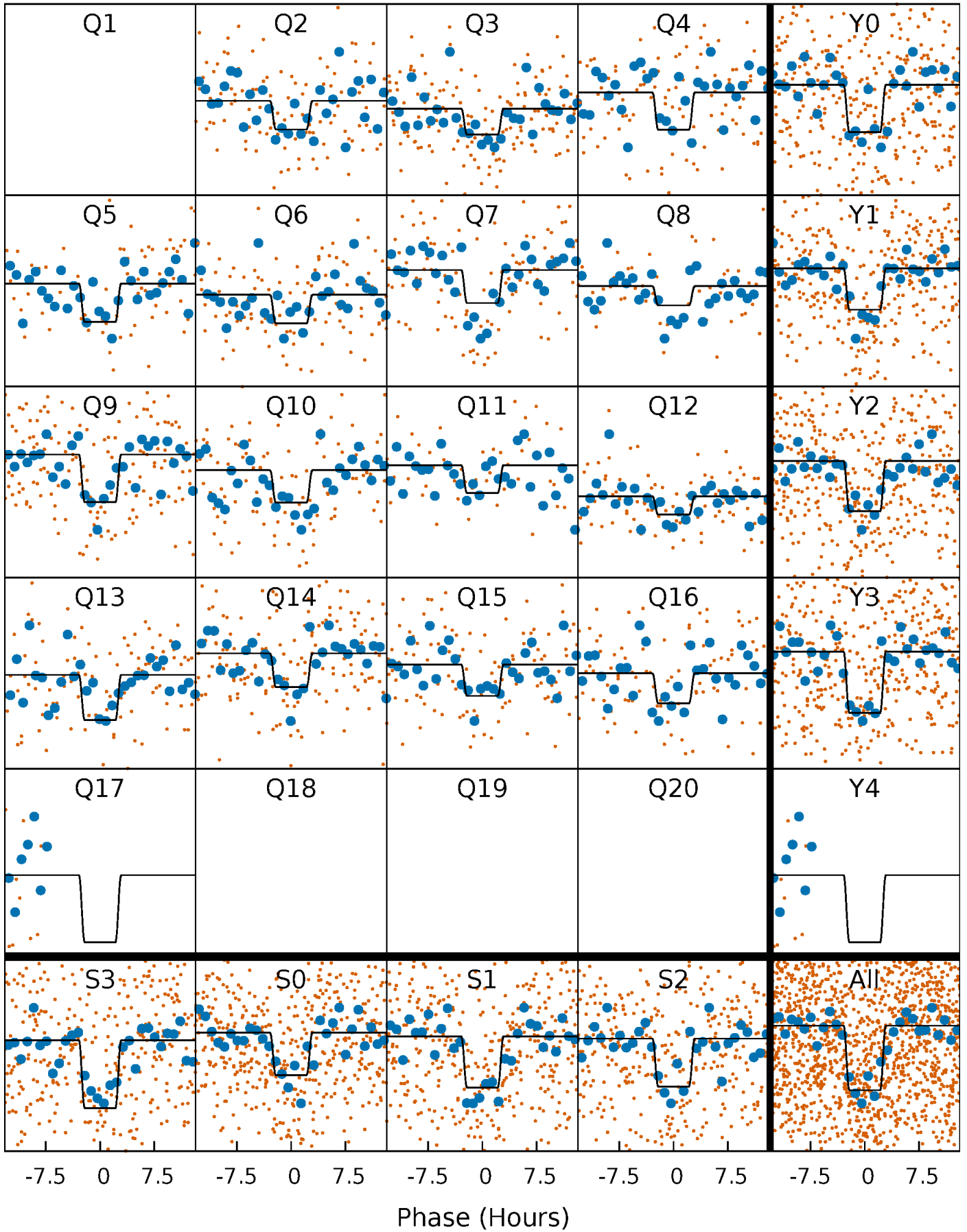
DV Quarter-Phased Transit Curves

TCE 002716801-01 $P = 42.521931$ Days $T_0 = 136.120368$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

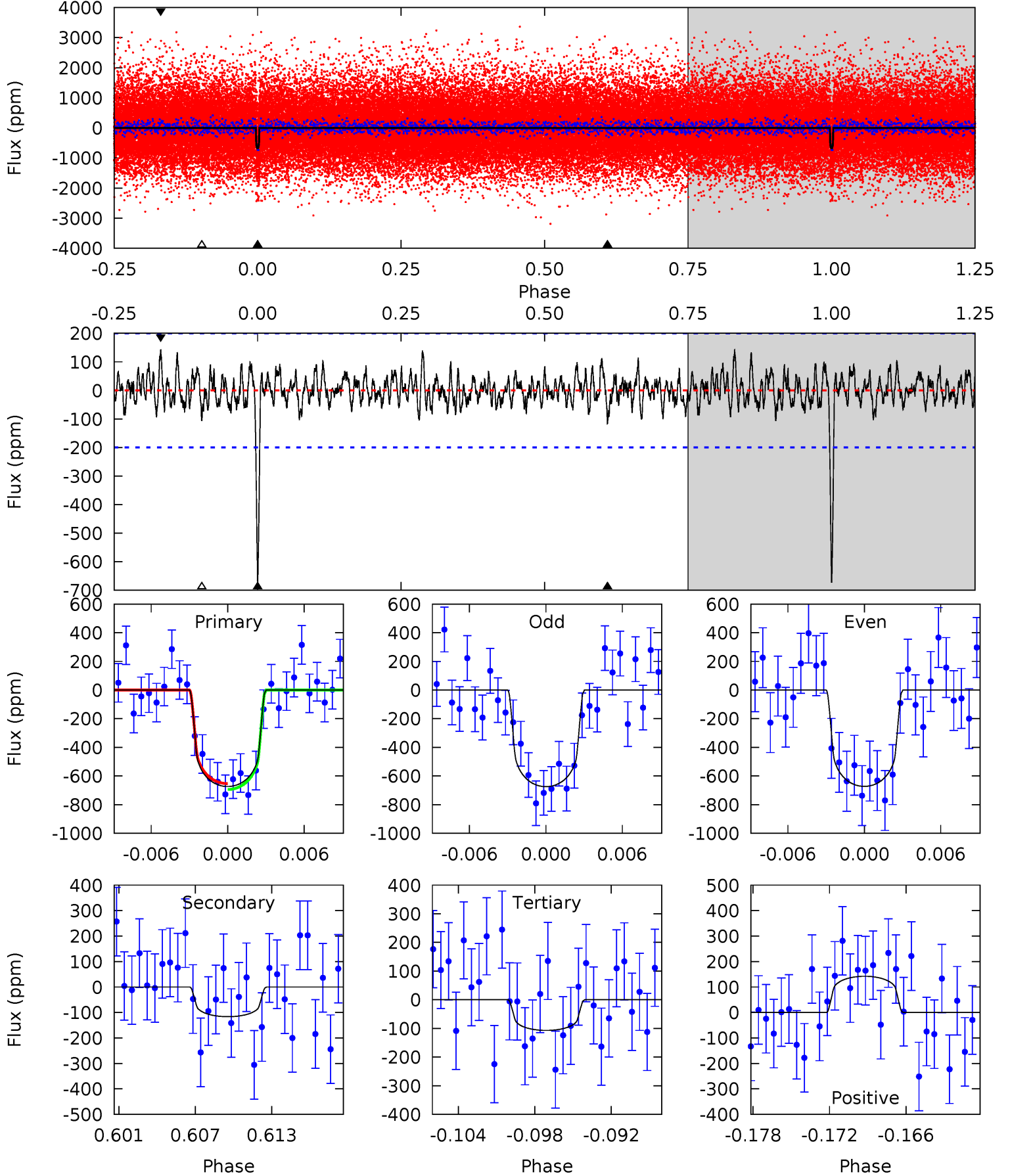
TCE 002716801-01 P= 42.523324 Days $T_0=136.106785$ (BKJD)



DV Model-Shift Uniqueness Test

002716801-01, P = 42.521931 Days, E = 136.120368 Days

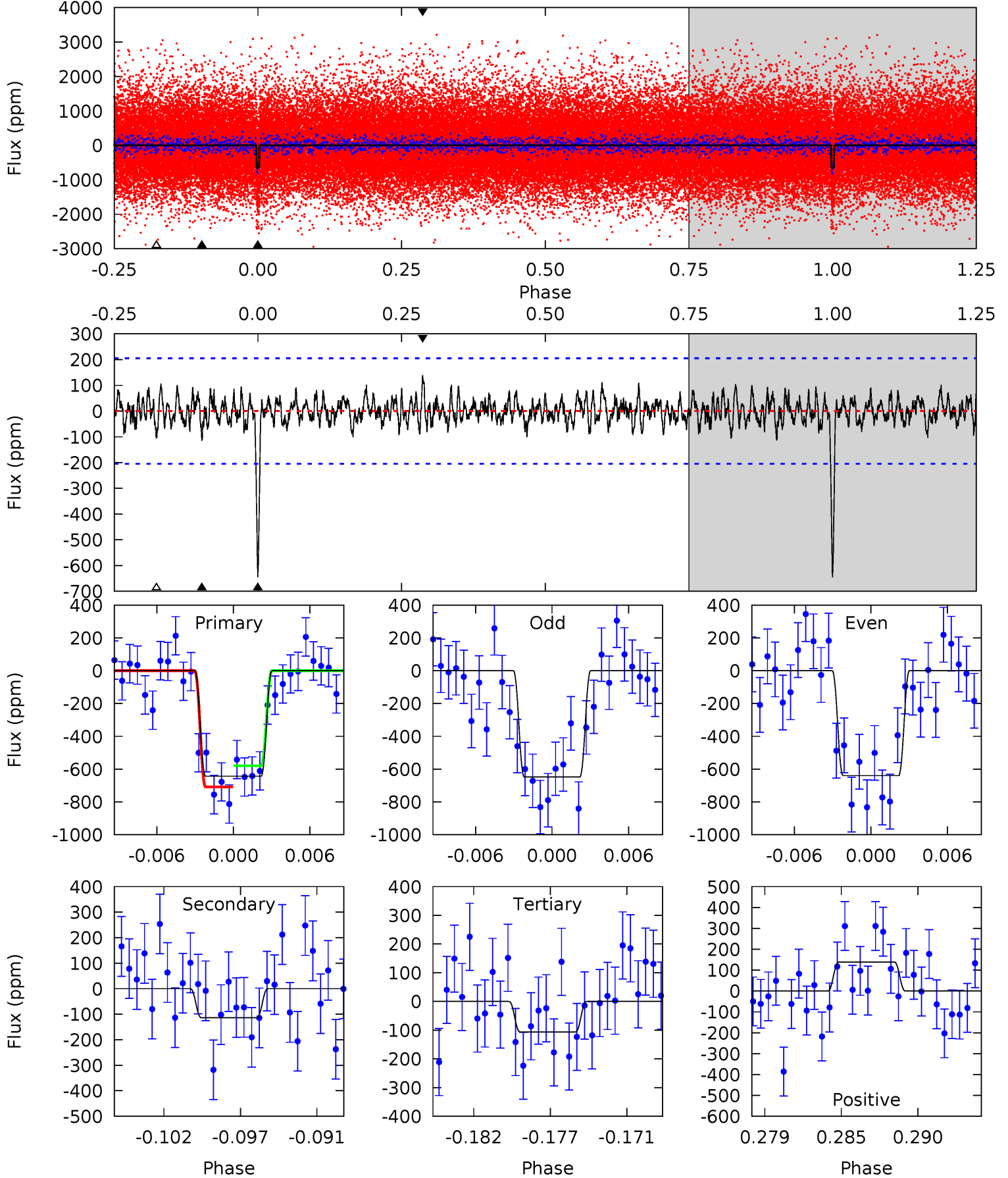
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
17.3	2.99	2.74	3.65	5.12	2.74	1.07	14.5	13.6	0.24	-0.66	0.03	1.05	0.17	0.53



Alt Model-Shift Uniqueness Test

002716801-01, $P = 42.523324$ Days, $E = 136.106785$ Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
16.1	2.85	2.65	3.48	5.13	2.76	0.98	13.5	12.6	0.20	-0.63	0.10	0.99	0.18	1.60



Stellar Parameters For KIC 002716801

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5911^{+177}_{-195}	$4.519^{+0.048}_{-0.204}$	$-0.100^{+0.300}_{-0.300}$	$0.914^{+0.281}_{-0.094}$	$1.006^{+0.123}_{-0.123}$	$1.854^{+0.372}_{-0.959}$
	+3%/-3%	+1%/-5%	+300%/-300%	+31%/-10%	+12%/-12%	+20%/-52%
Source	PHO1	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 002716801-01 / KOI 3053.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-116 ± 39	$2.86^{+1.89}_{-1.66}$	729^{+52}_{-37}	3979^{+1632}_{-628}	427^{+1995}_{-287}
Alt.	-114 ± 40	$2.94^{+1.86}_{-1.65}$	728^{+52}_{-35}	3958^{+1539}_{-624}	398^{+1678}_{-259}

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 $A_{obs} \gg 1.0$

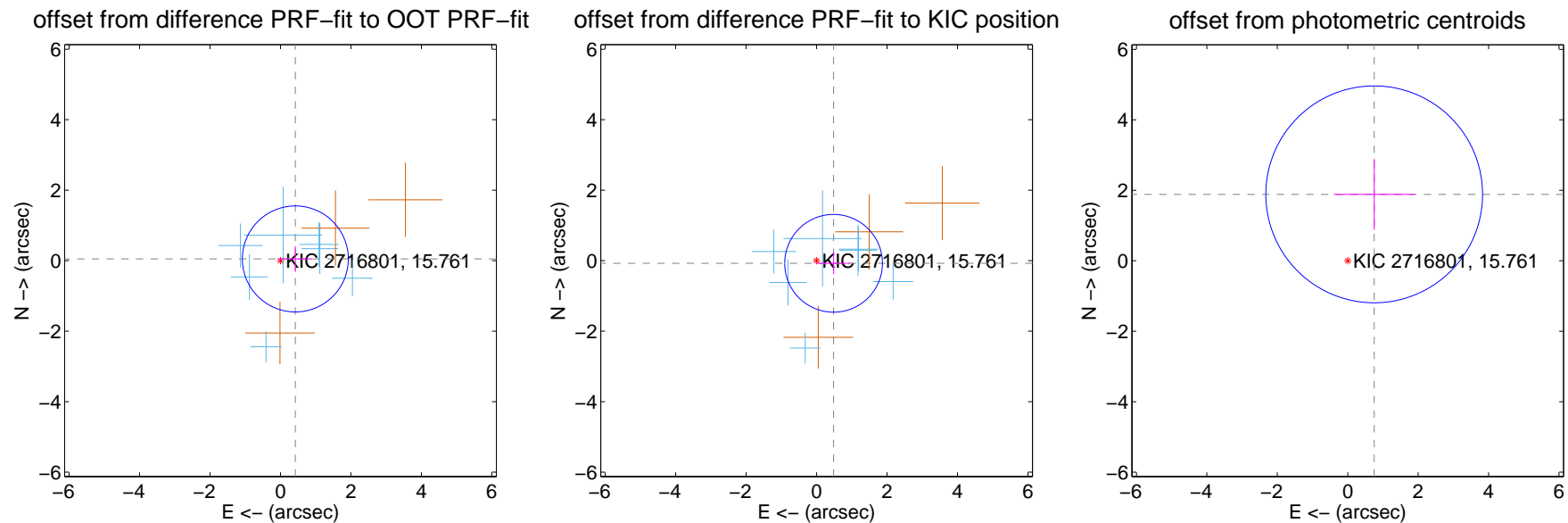
DV Centroid Data

Supplemental centroid analysis for 002716801-01. Kepler magnitude: 15.76. Transit SNR 13.74

There are 7 quarters with good PRF difference image offsets

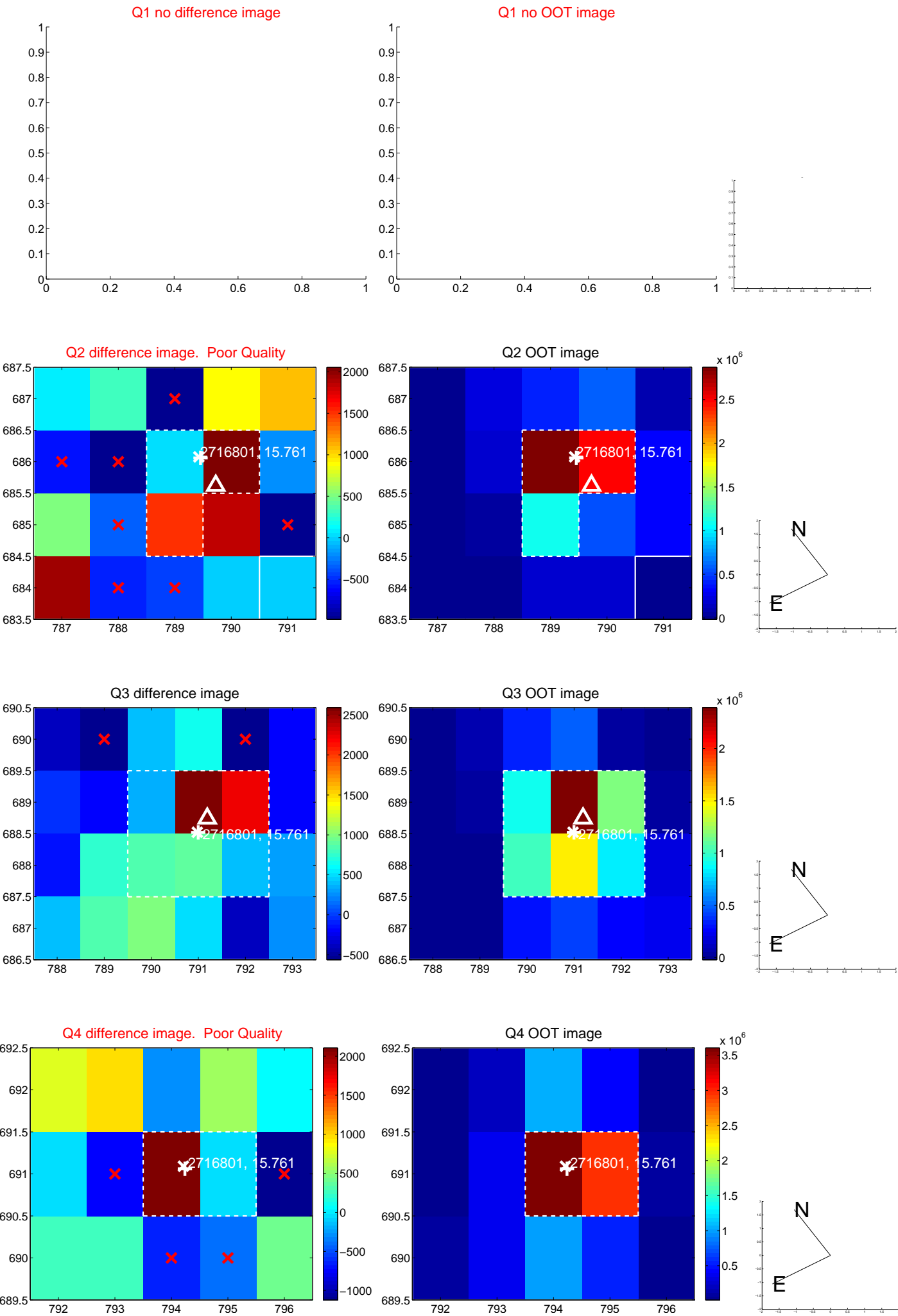
The direct PRF centroid is offset from the target star catalog position by about 0.17 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.425 ± 0.501	0.85	-0.423 ± 0.480	0.050 ± 0.368
PRF-fit source offset from KIC position	0.488 ± 0.462	1.06	-0.482 ± 0.465	-0.074 ± 0.317
photometric centroid source offset	2.03 ± 1.03	1.98	-0.75 ± 1.15	1.89 ± 1.01

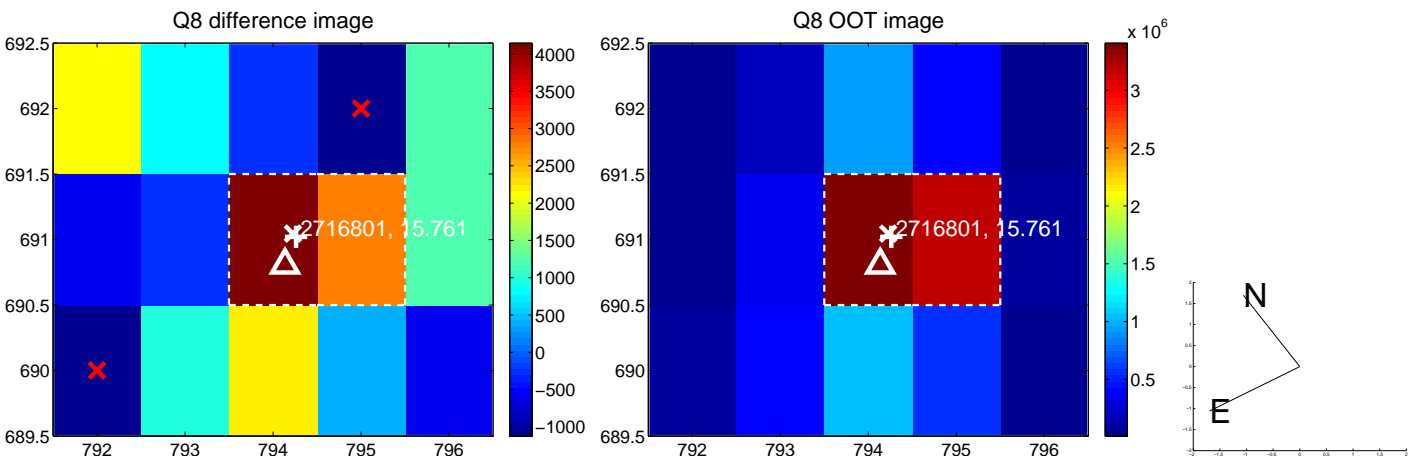
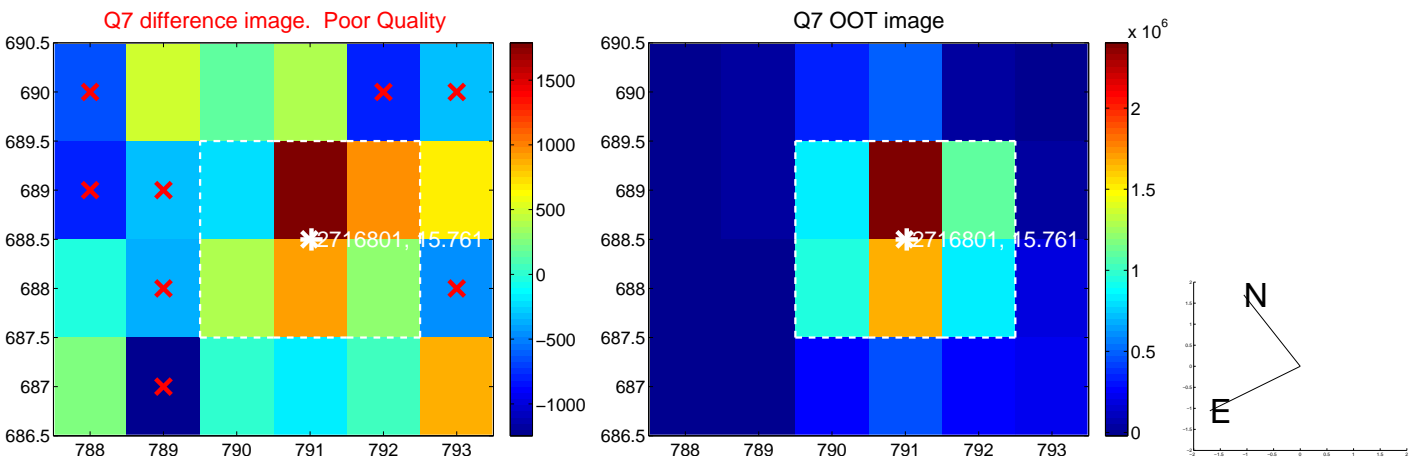
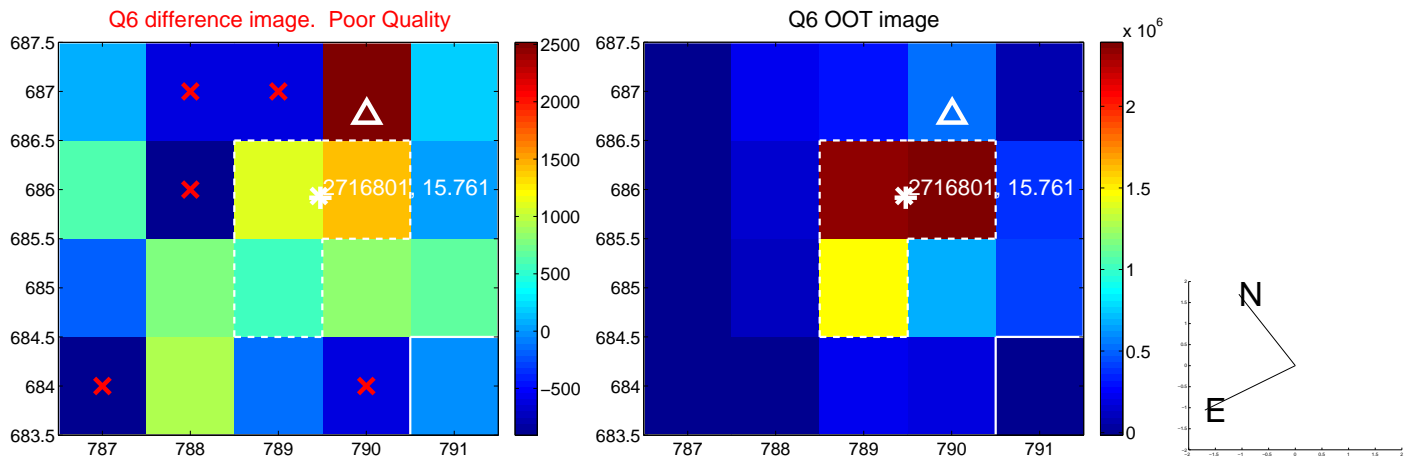
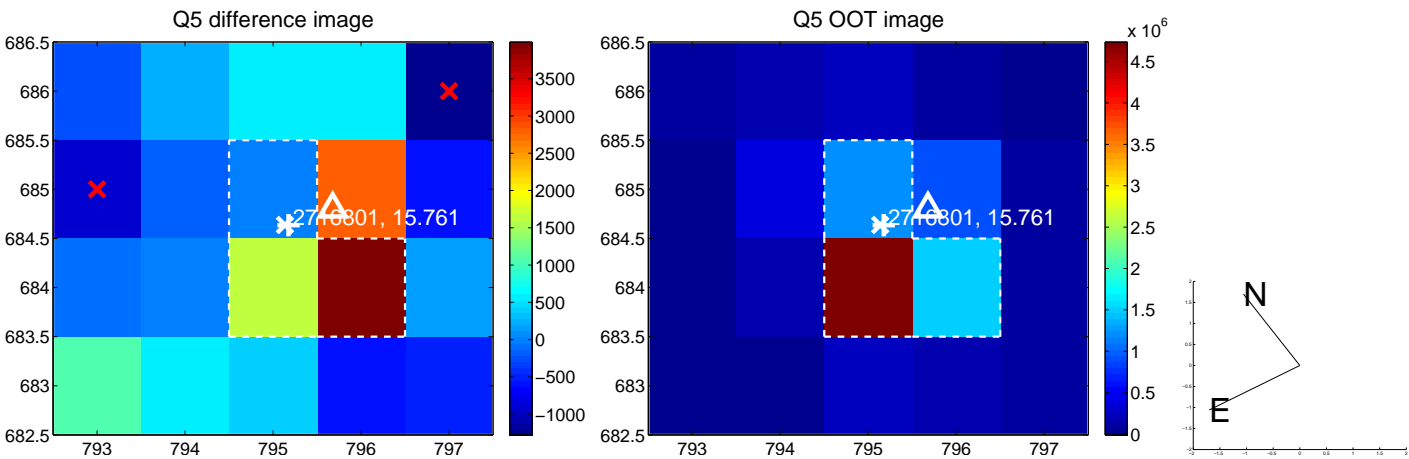


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

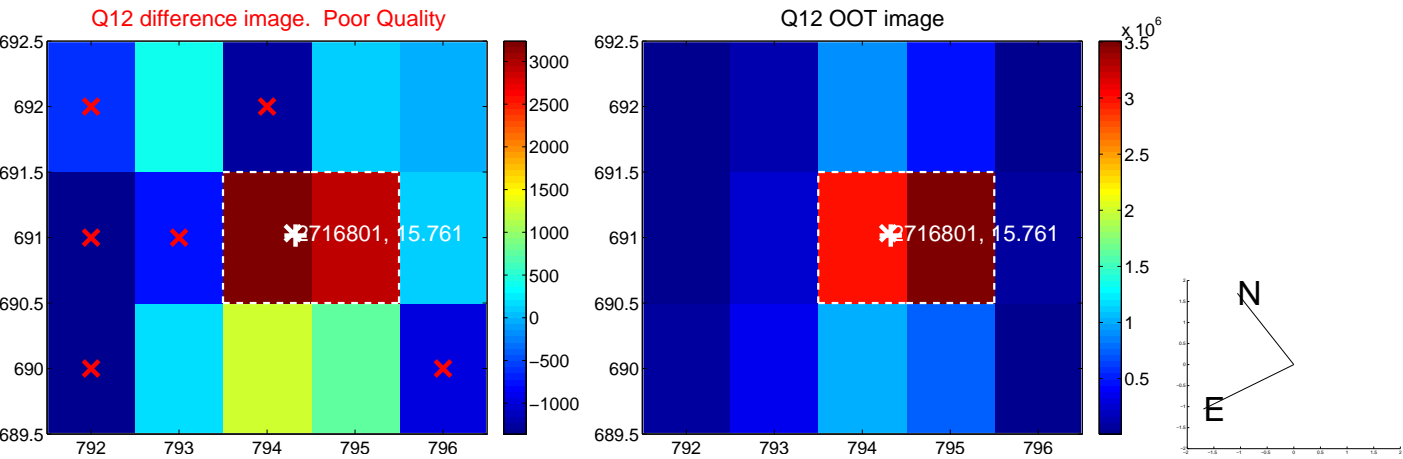
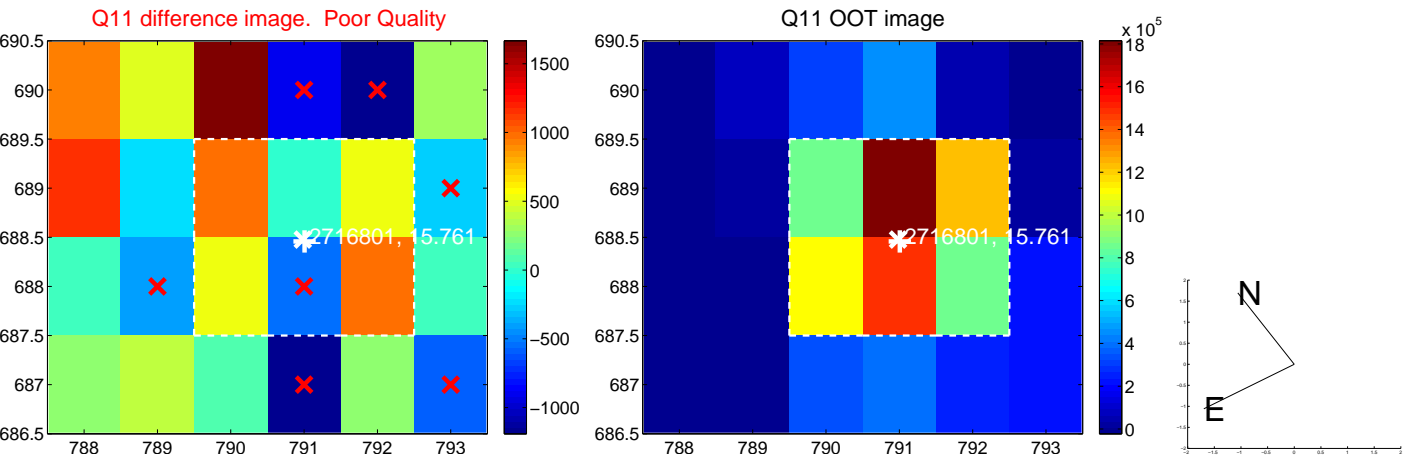
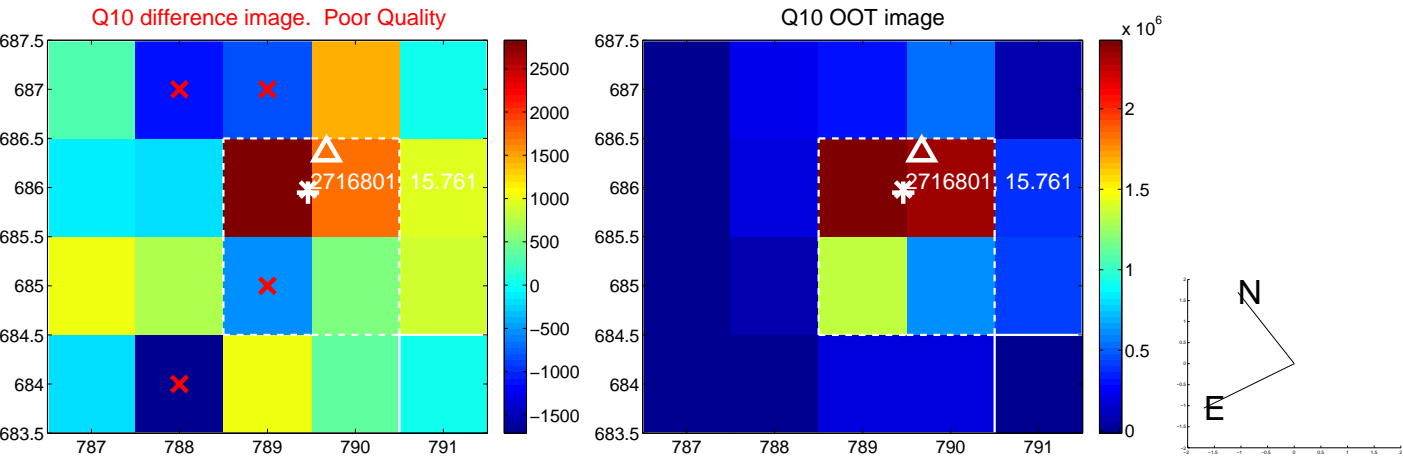
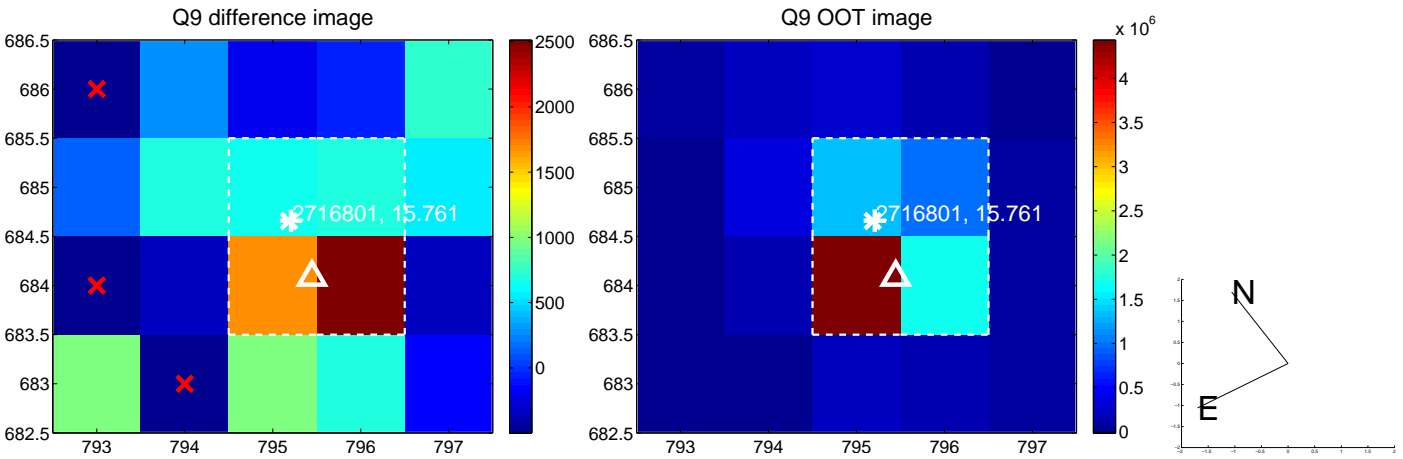
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



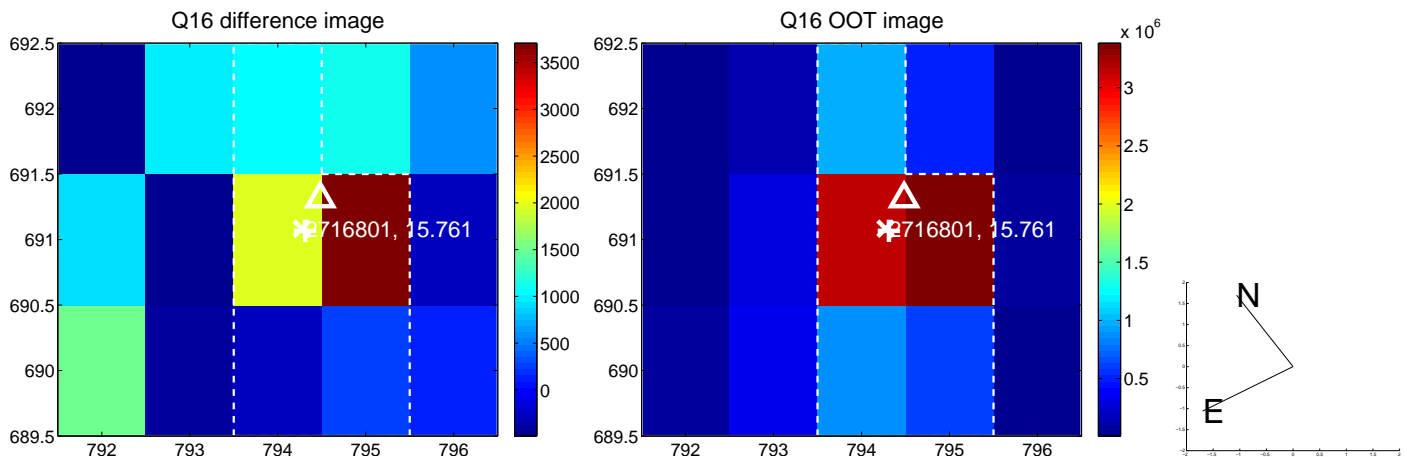
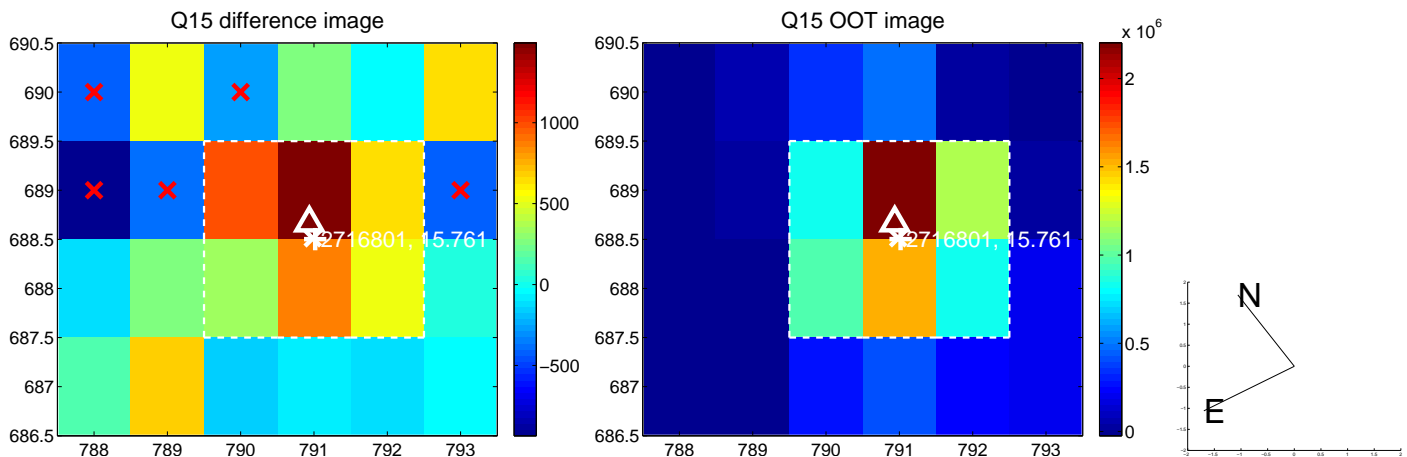
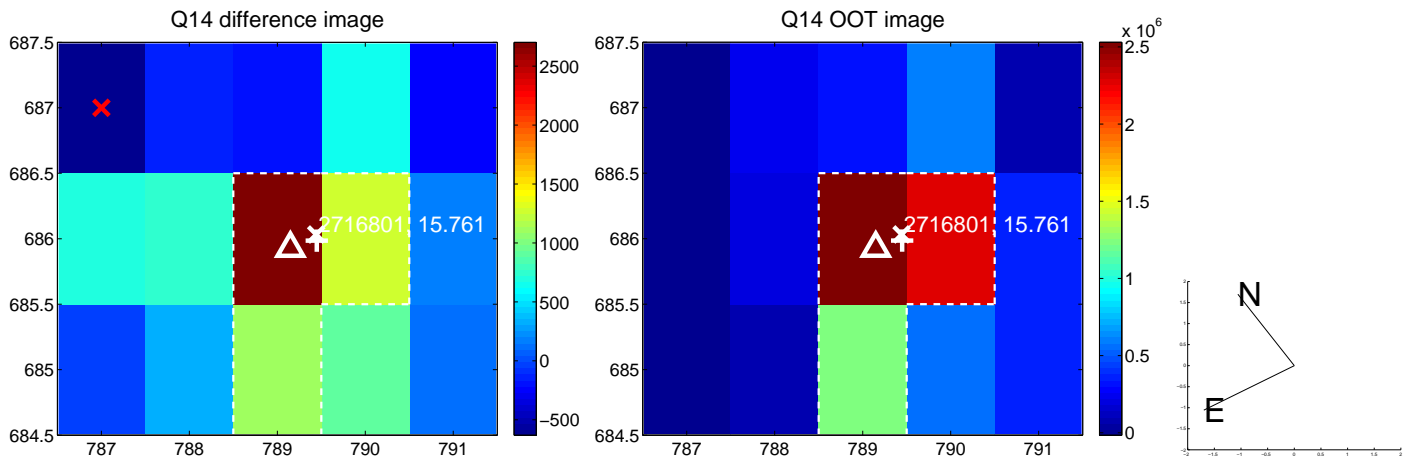
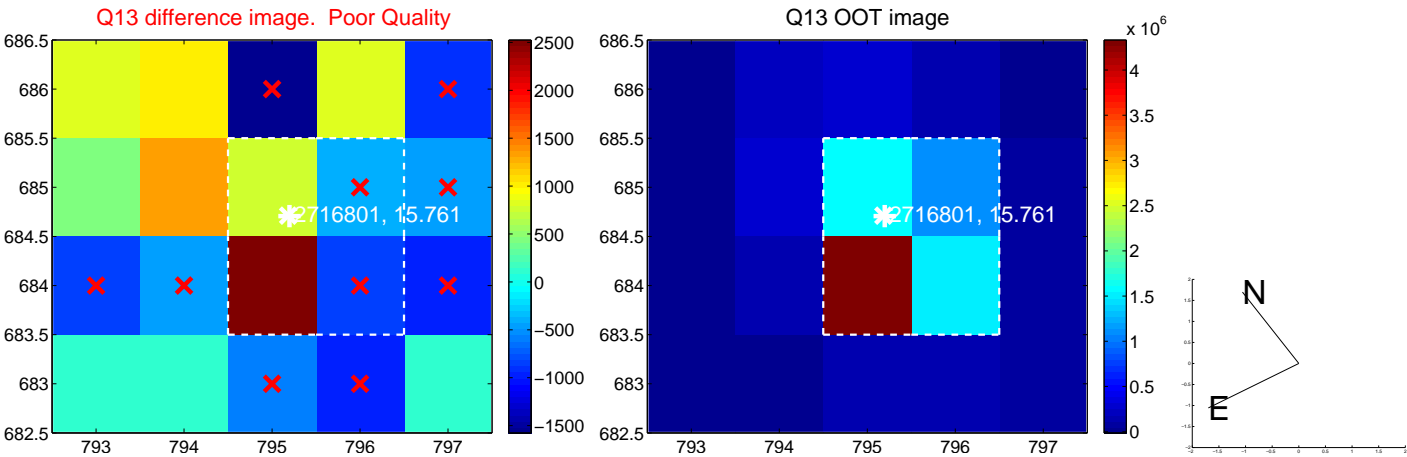
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



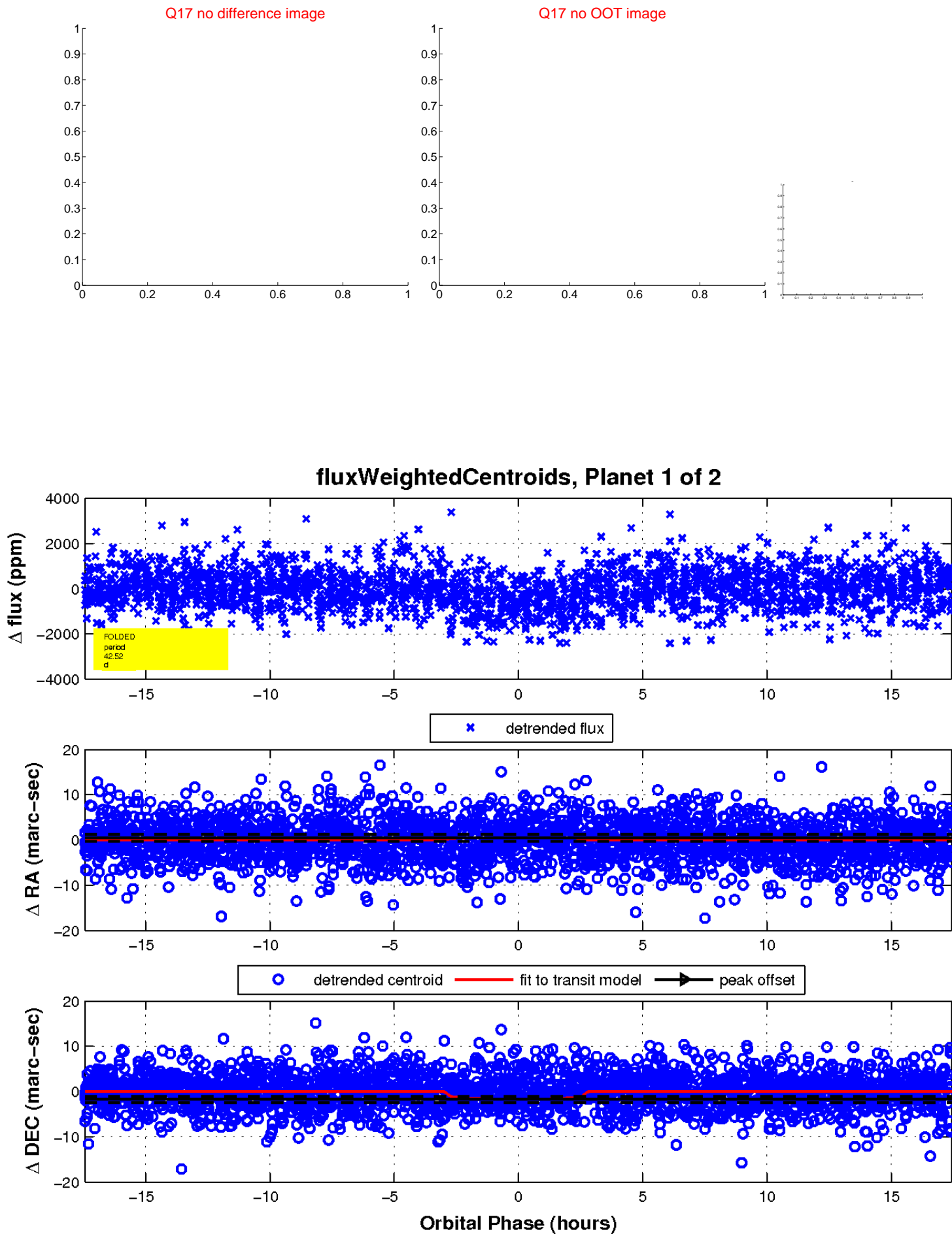
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

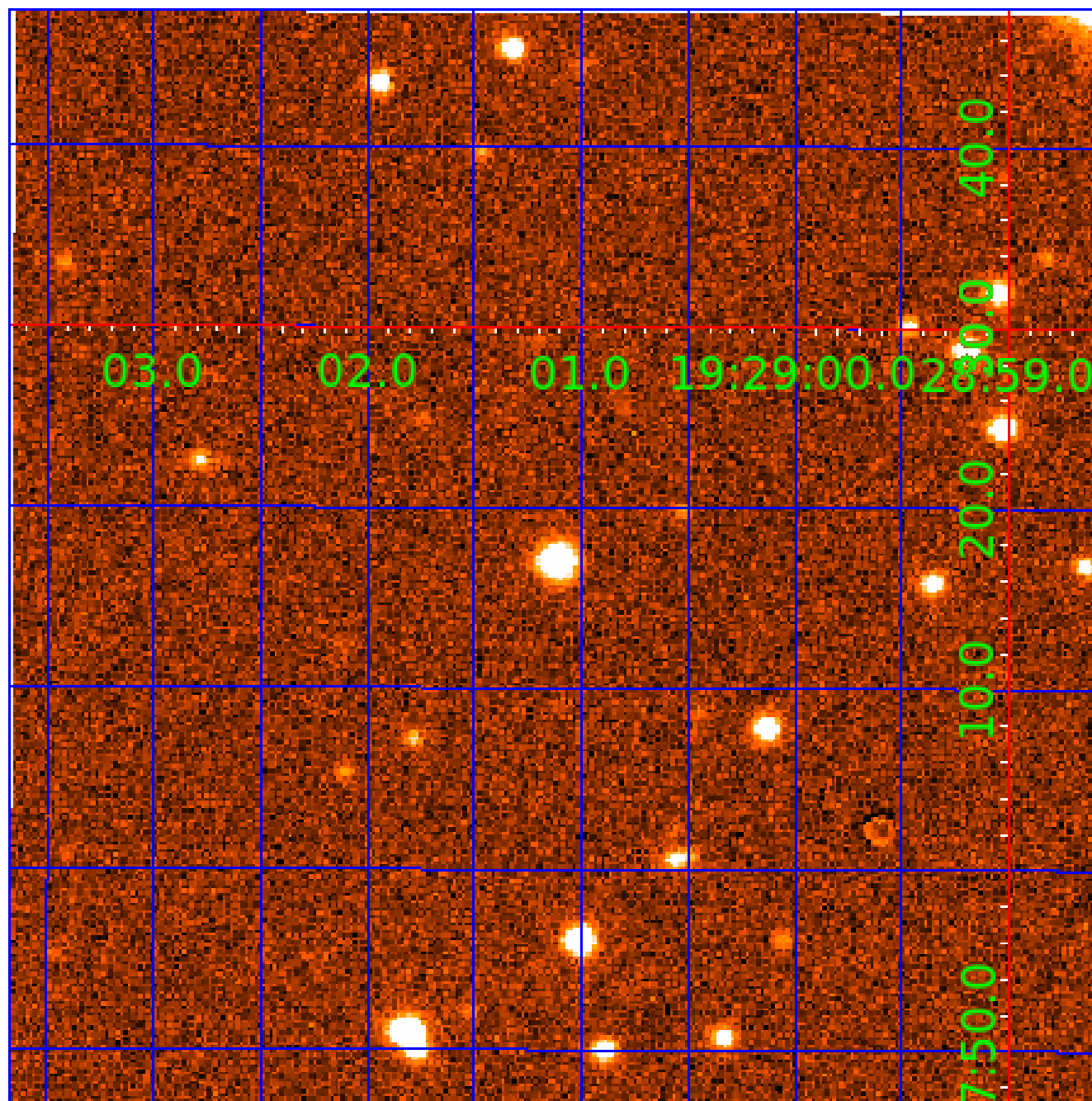


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 002716801

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})
002716801-01	OBS	3053.01	42.521931	136.120368	667.6	5.815	13.0	13.7	0.91	5911	2.49	16.00
002716801-02	OBS	3053.02	9.476528	134.743764	208.5	4.742	8.1	7.7	0.91	5911	1.70	118.39

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
002716801-01	OBS	PC	0.96	0	0	0	0	NO_COMMENT
002716801-02	OBS	PC	0.55	0	0	0	0	CENT_FEW_MEAS

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.

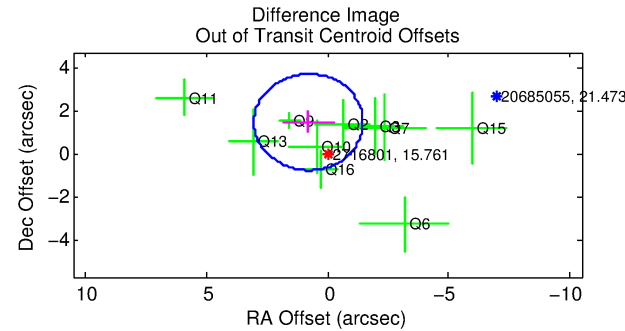
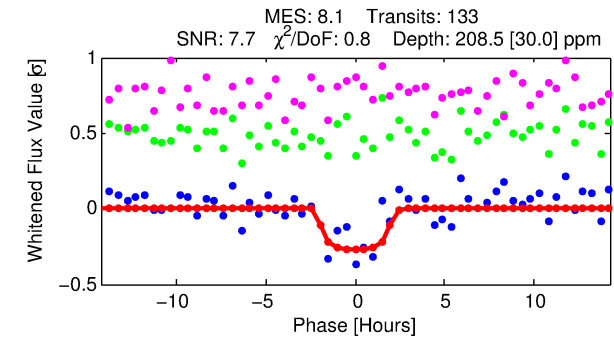
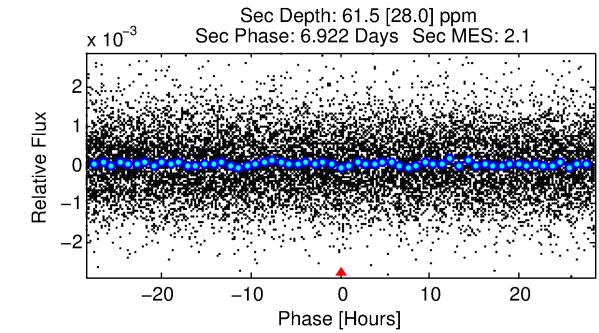
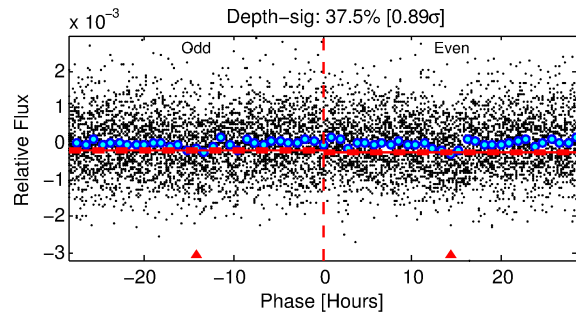
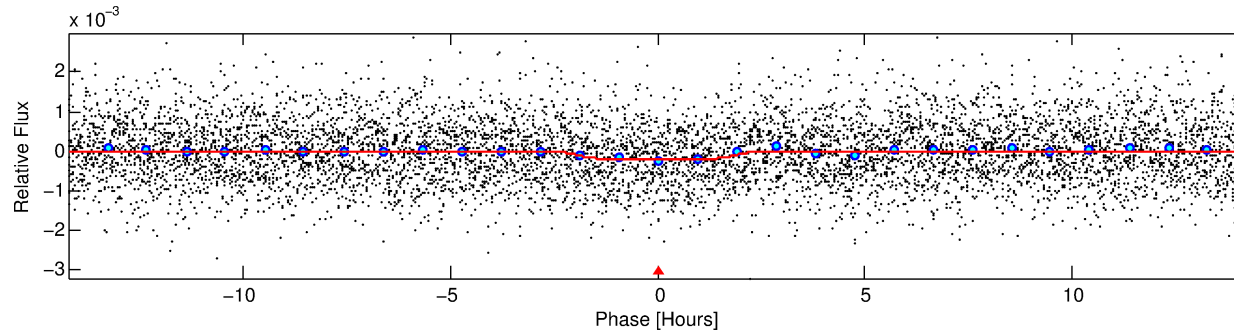
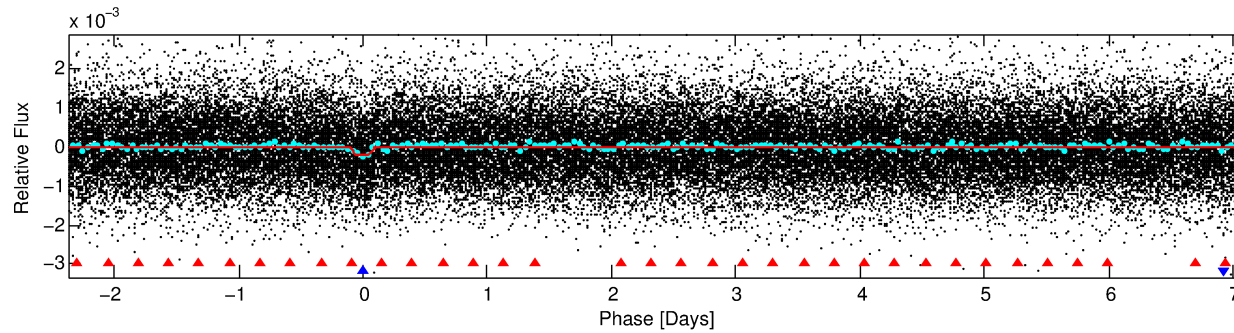
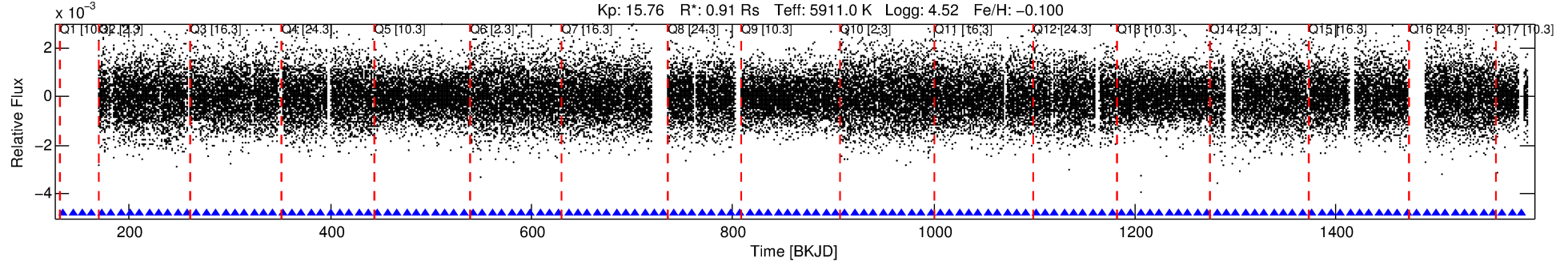
Ephemeris Match Information For 002716801-02

No Significant Match Found

DV One-Page Summary

KIC: 2716801 Candidate: 2 of 2 Period: 9.477 d
KOI: K03053.02 Corr: 0.926

Kp: 15.76 R*: 0.91 Rs Teff: 5911.0 K Logg: 4.52 Fe/H: -0.100



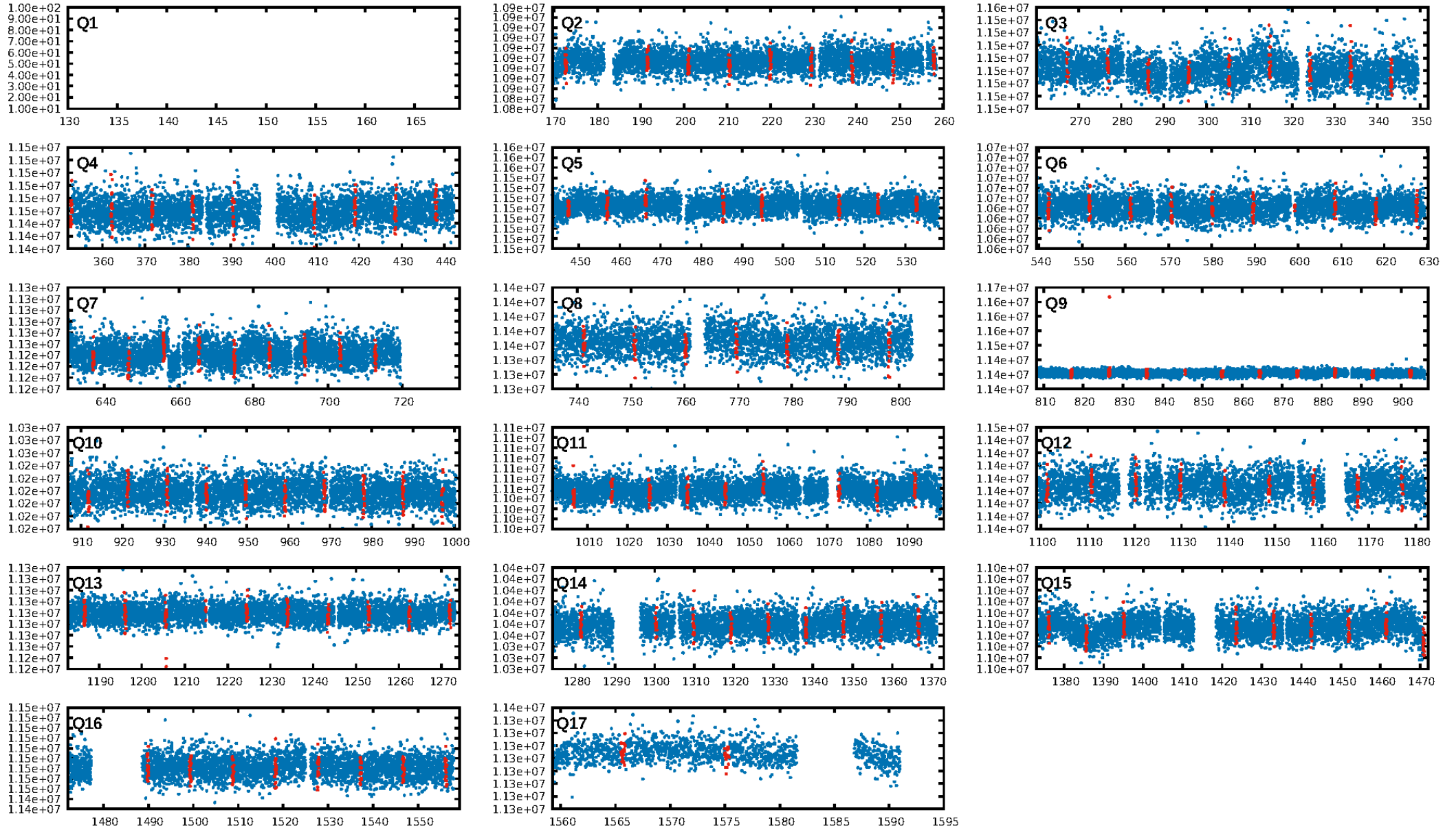
DV Fit Results:

Period = 9.47653 [0.00017] d
Epoch = 134.7438 [0.0144] BKJD
Rp/R* = 0.0170 [0.0025]
a/R* = 5.23 [3.13]
b = 0.96 [0.05]
Seff = 118.39 [46.98]
Teq = 841 [83] K
Rp = 1.70 [0.58] Re
a = 0.0879 [0.0227] AU
Ag = 90.88 [59.85] [1.50σ]
Teffp = 4015 [560] K [5.61σ]

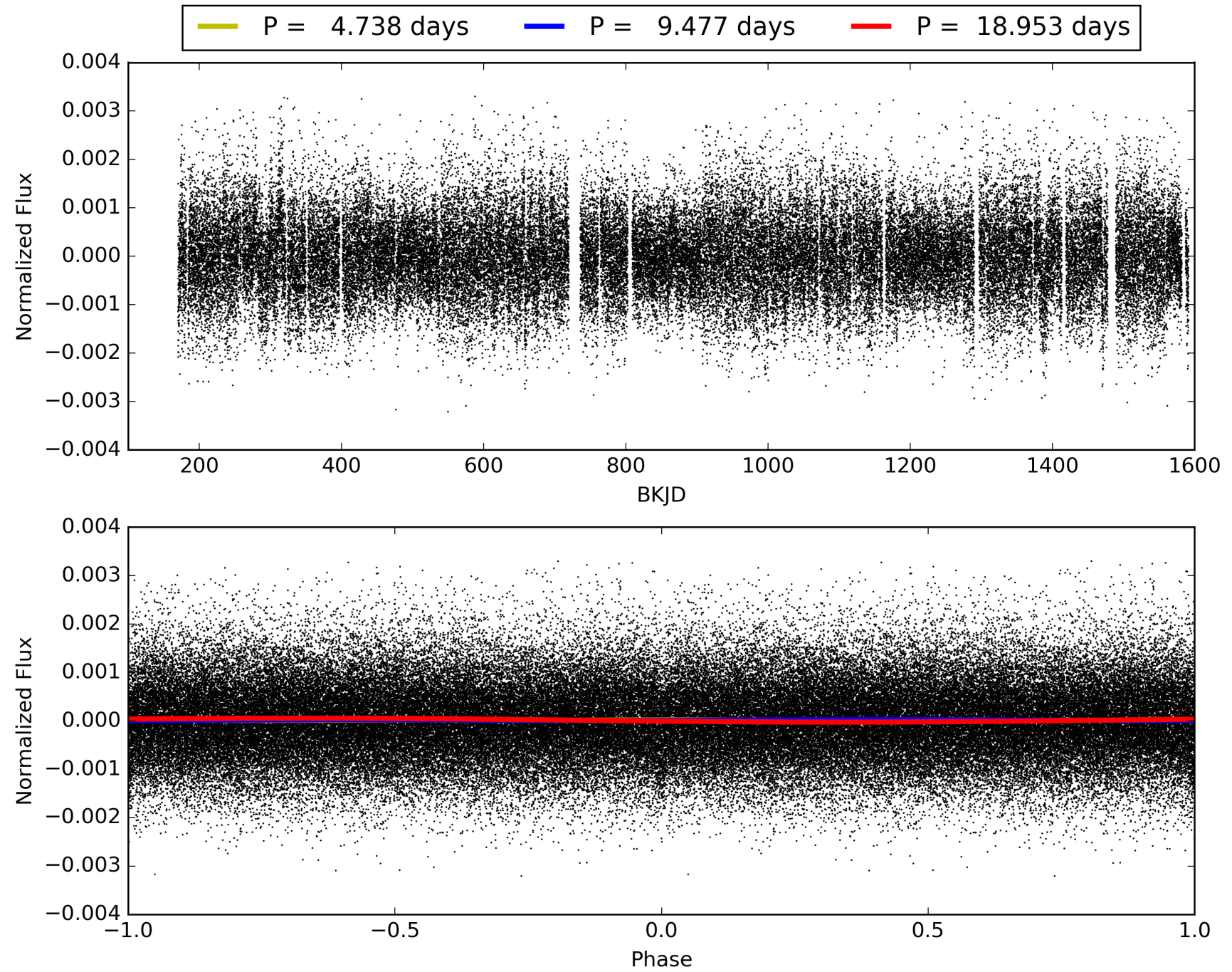
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [105.70σ]
ModelChiSquare2-sig: 100.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 5.70e-16
RollingBand-fgt: 1.00 [131/131]
GhostDiagnostic-chr: 0.2543
Centroid-sig: 17.2%
Centroid-so: 2.339 arcsec [1.14σ]
OotOffset-rm: 1.680 arcsec [2.24σ]
OotOffset-st: 3/4/1/2 [10]
KicOffset-rm: 1.490 arcsec [1.70σ]
KicOffset-st: 3/4/1/2 [10]
DiffImageQuality-fgm: 0.20 [2/10]
DiffImageOverlap-fno: 1.00 [16/16]

TCE 002716801-02, PDC Light Curves

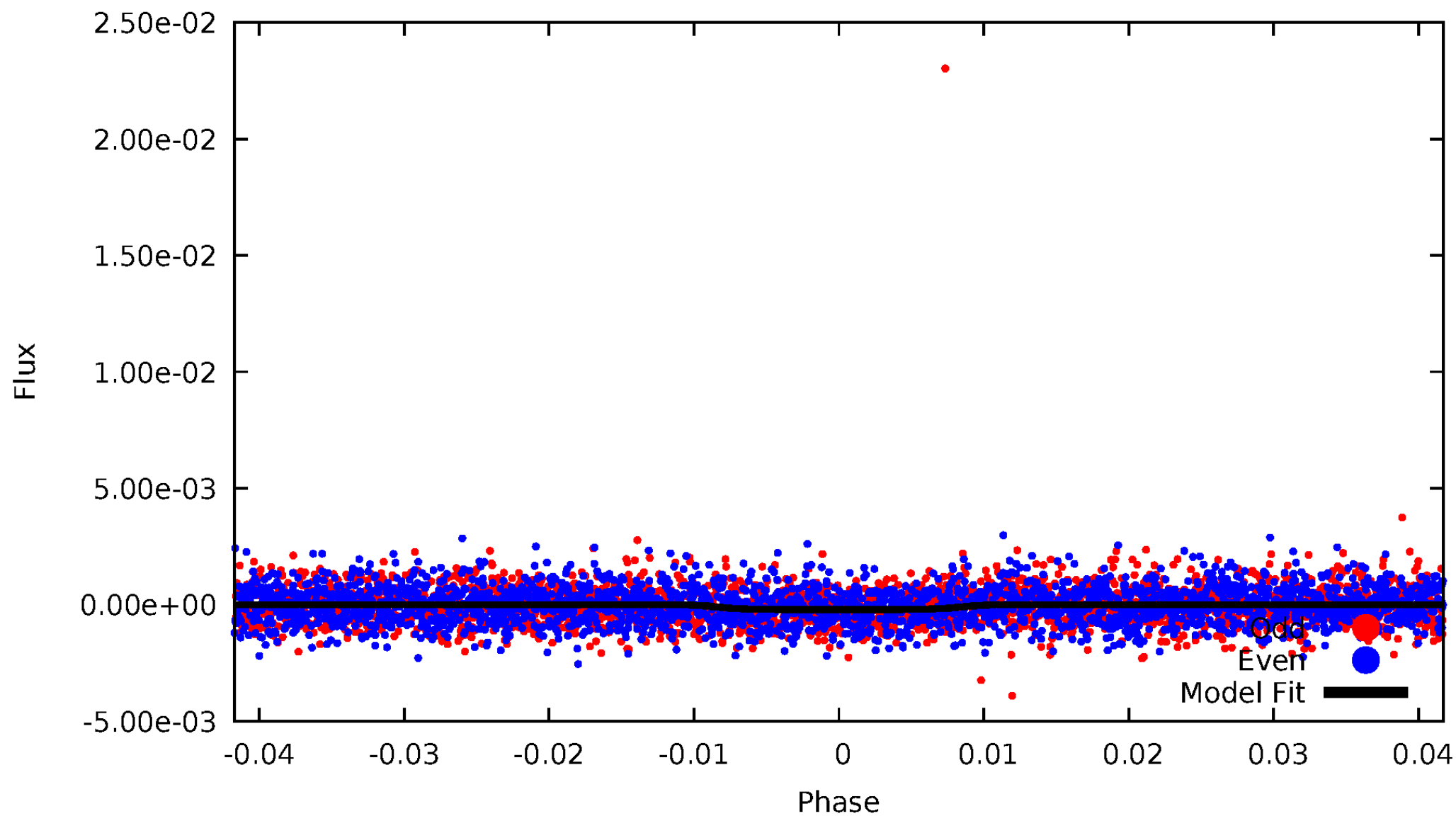


TCE 002716801-02



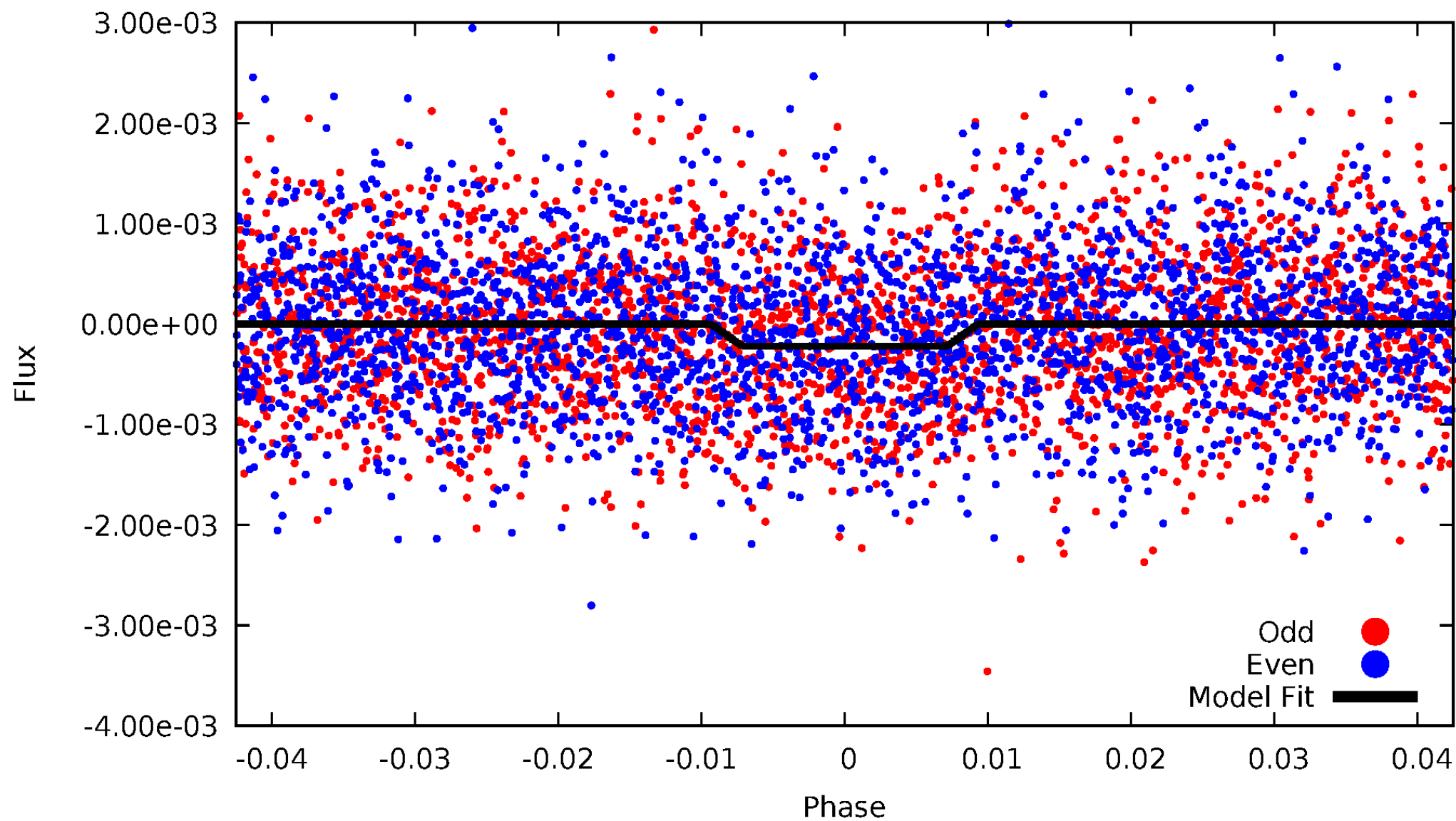
DV Odd/Even

TCE 002716801-02



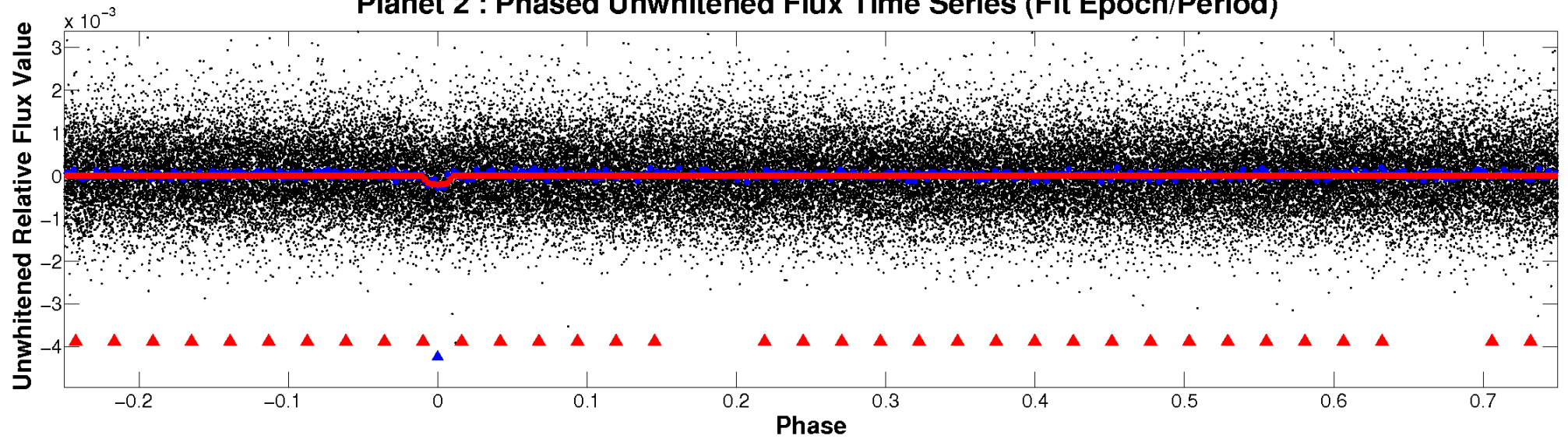
ALT Odd/Even

TCE 002716801-02

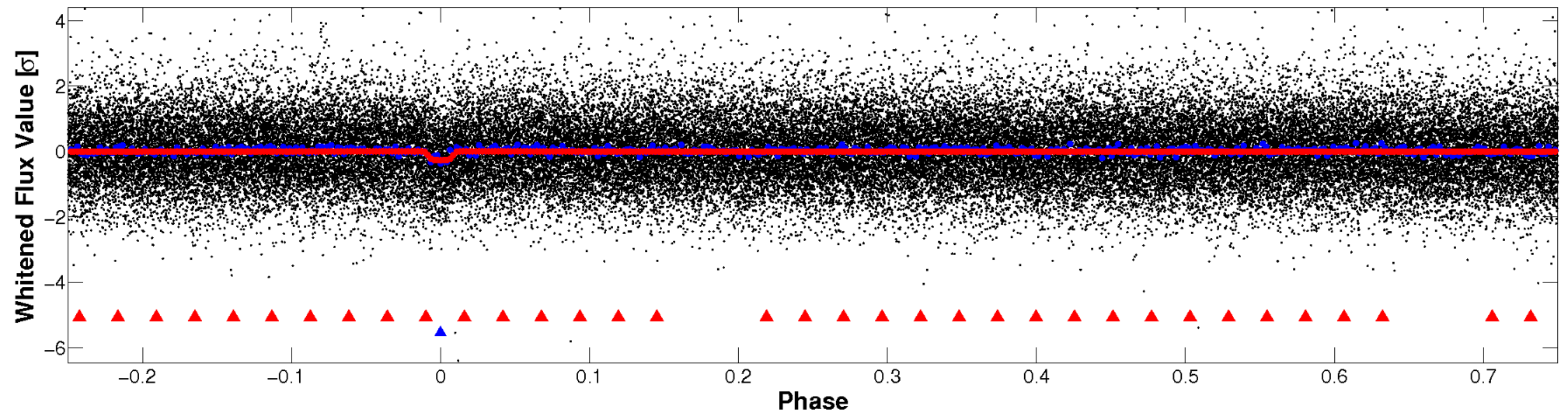


Non-Whitened Vs. Whitened Light Curve

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

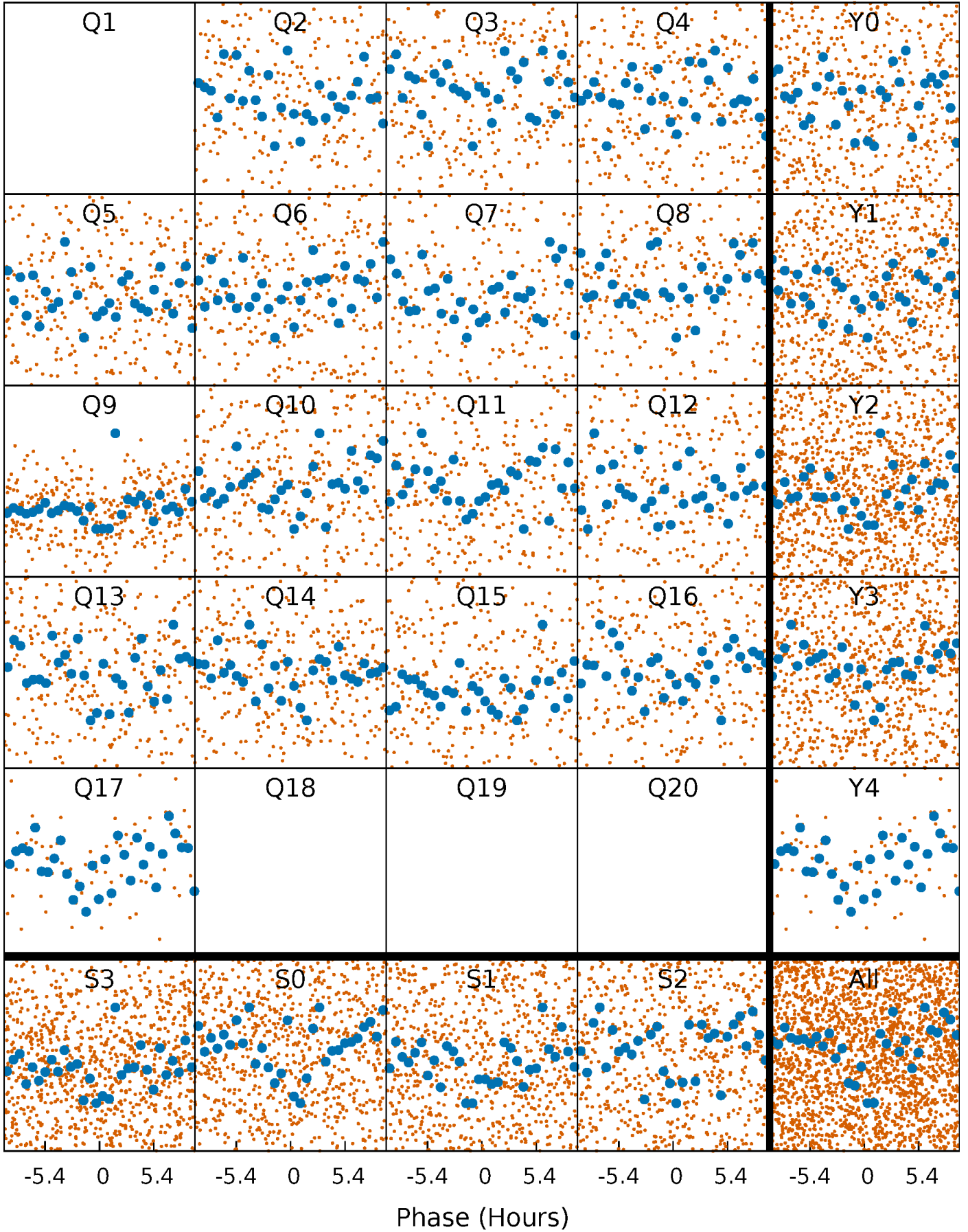


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



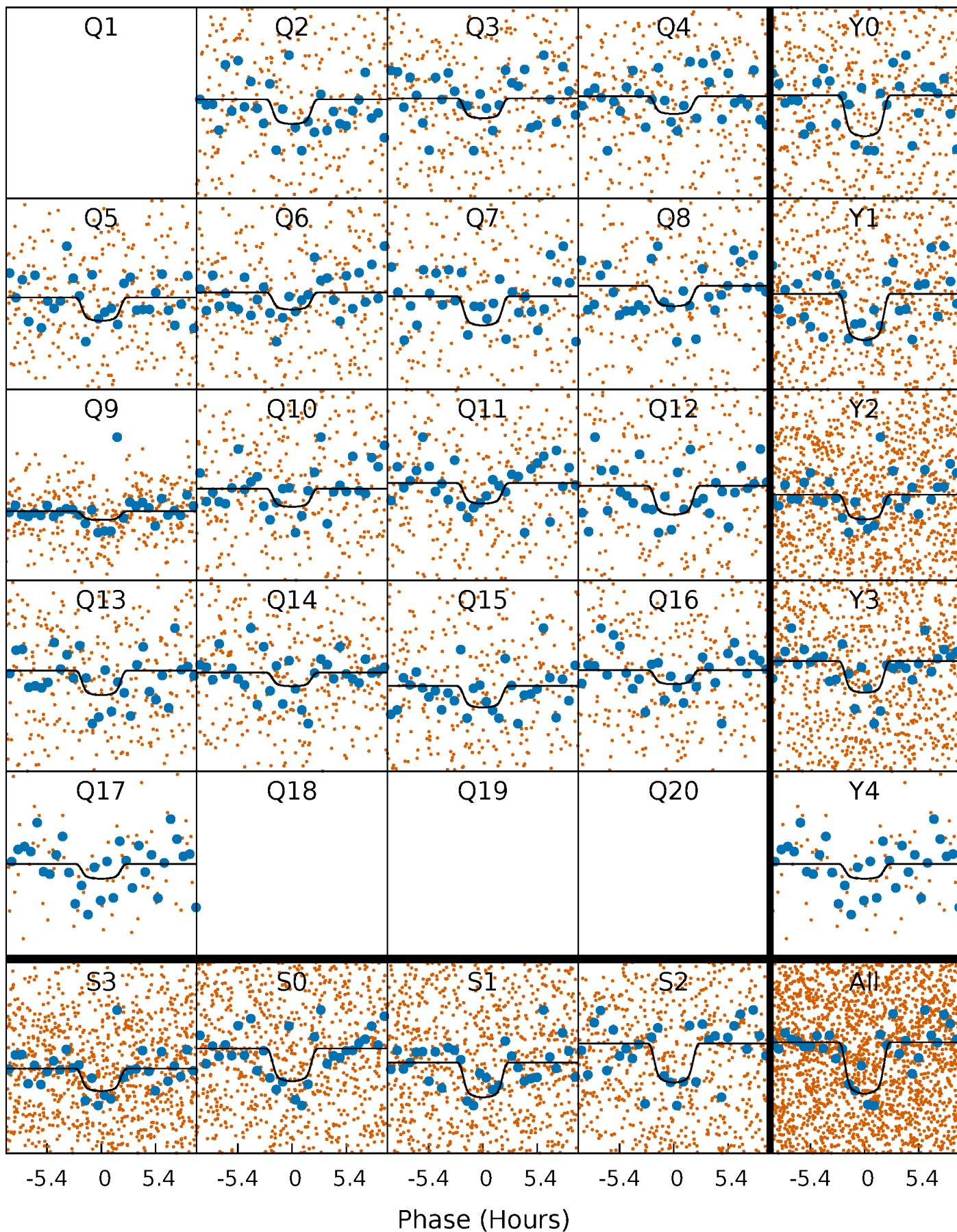
PDC Quarter-Phased Transit Curves

TCE 002716801-02 P= 9.476528 Days $T_0=134.743764$ (BKJD)



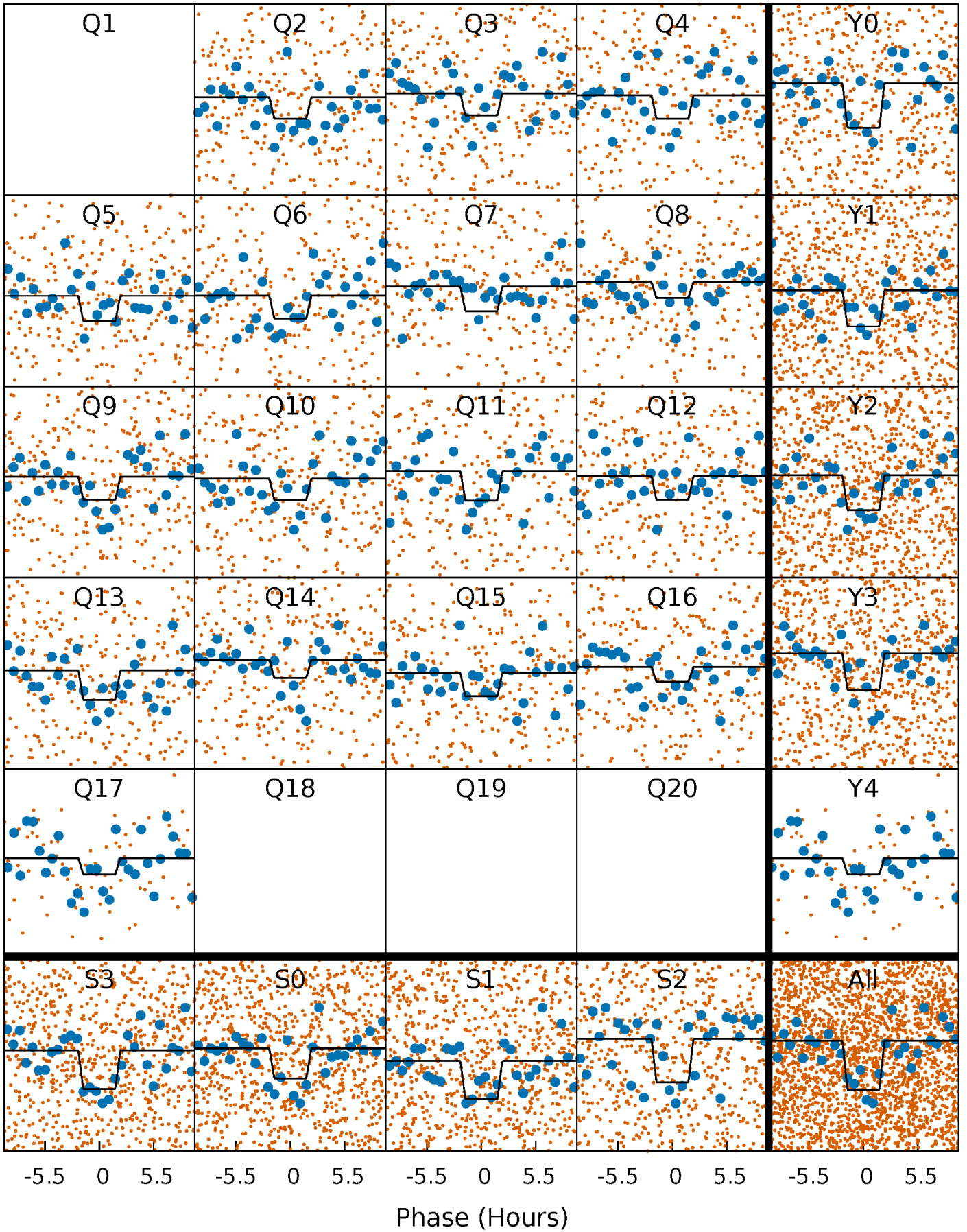
DV Quarter-Phased Transit Curves

TCE 002716801-02 P= 9.476528 Days $T_0=134.743764$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

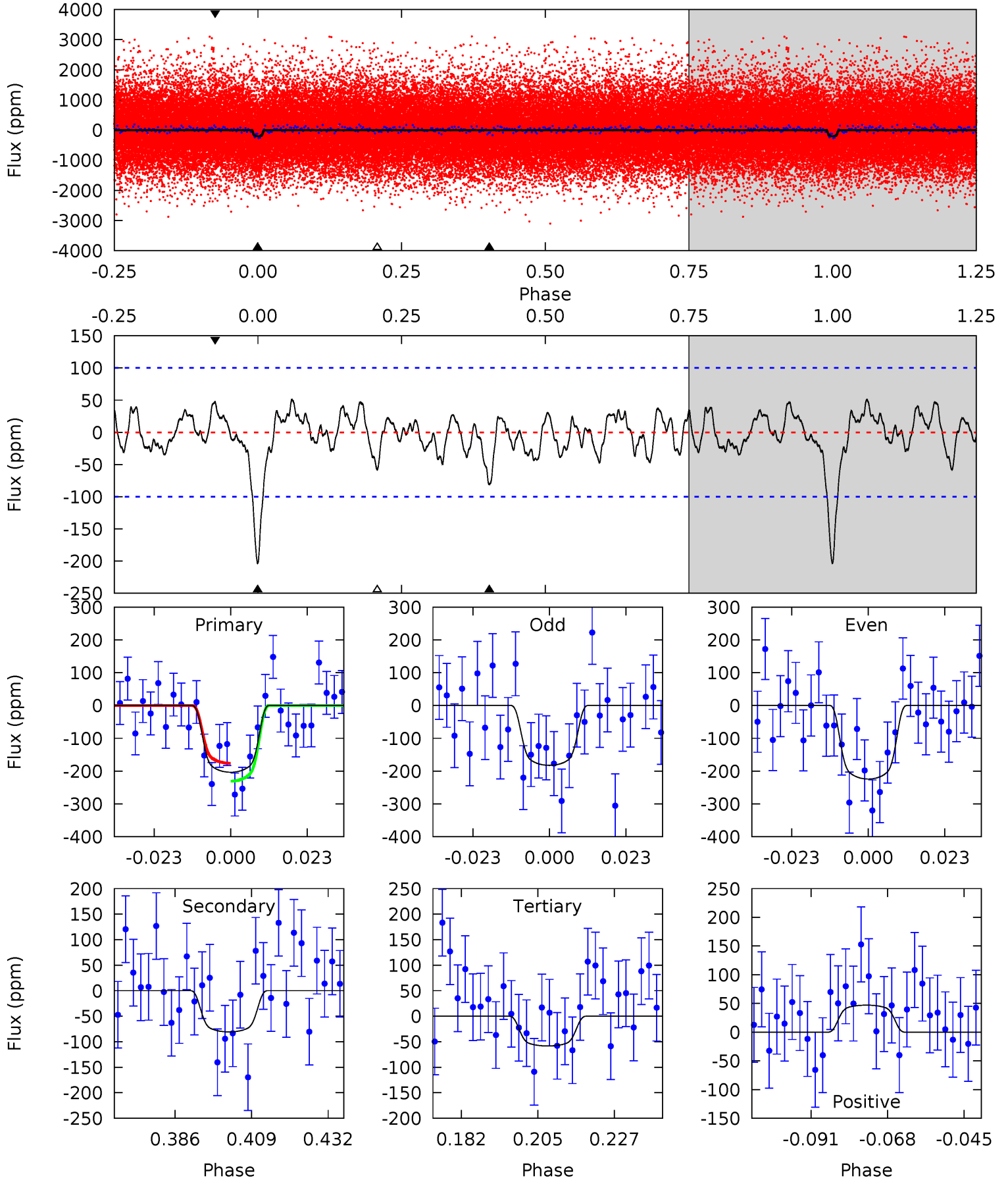
TCE 002716801-02 P= 9.476571 Days $T_0=134.737305$ (BKJD)



DV Model-Shift Uniqueness Test

002716801-02, P = 9.476528 Days, E = 134.743764 Days

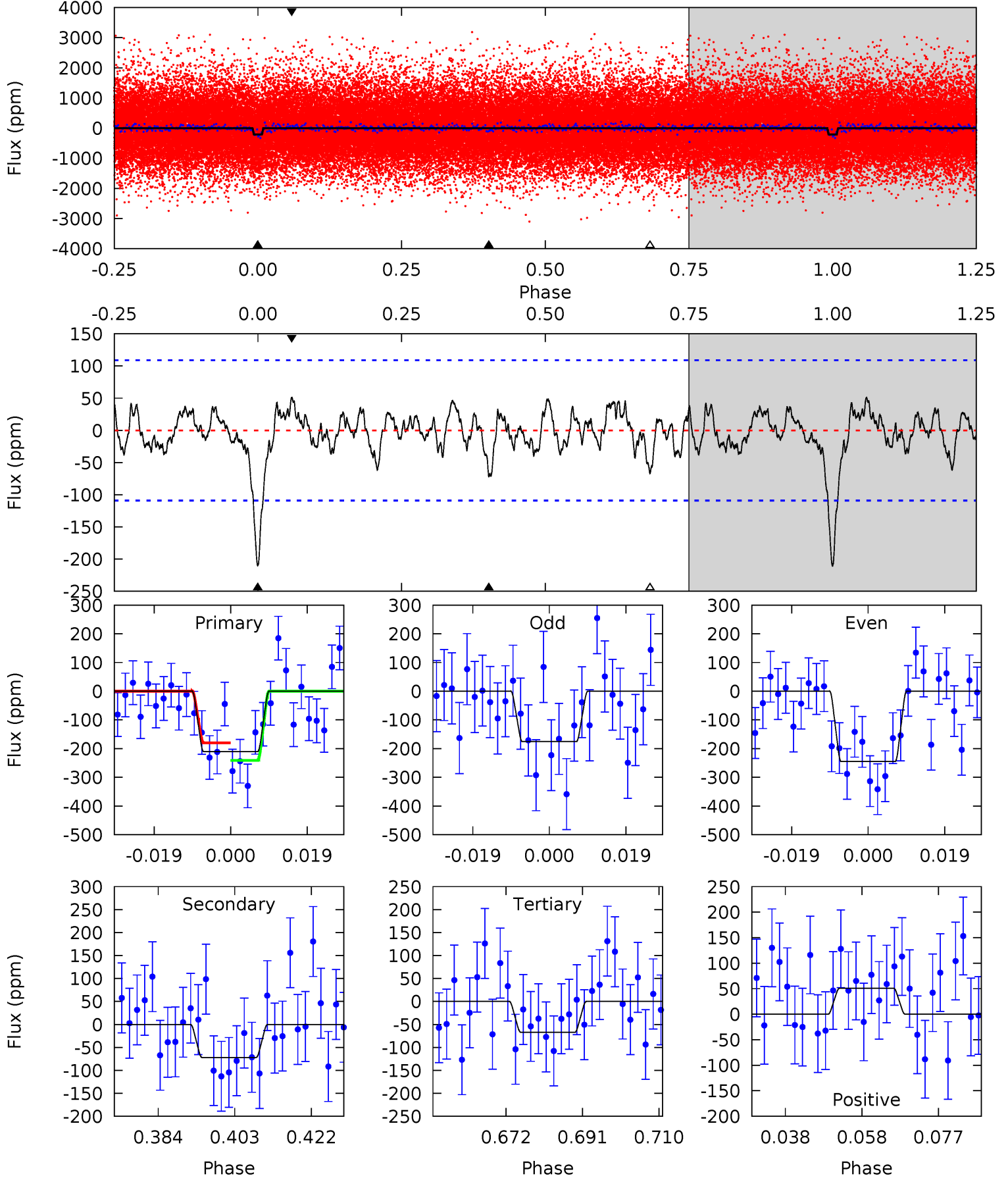
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.89	3.93	2.83	2.29	4.87	2.28	1.12	7.06	7.61	1.09	1.64	1.01	0.82	0.20	1.33



Alt Model-Shift Uniqueness Test

002716801-02, P = 9.476571 Days, E = 134.737305 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.45	3.24	3.01	2.28	4.90	2.34	1.03	6.44	7.17	0.22	0.95	1.57	0.94	0.19	1.38



Stellar Parameters For KIC 002716801

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5911^{+177}_{-195}	$4.519^{+0.048}_{-0.204}$	$-0.100^{+0.300}_{-0.300}$	$0.914^{+0.281}_{-0.094}$	$1.006^{+0.123}_{-0.123}$	$1.854^{+0.372}_{-0.959}$
	+3%/-3%	+1%/-5%	+300%/-300%	+31%/-10%	+12%/-12%	+20%/-52%
Source	PHO1	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 002716801-02 / KOI 3053.02

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-81 ± 21	$1.78^{+0.36}_{-0.33}$	1201^{+89}_{-57}	4465^{+405}_{-324}	105^{+59}_{-38}
Alt.	-72 ± 22	$1.58^{+0.37}_{-0.31}$	1207^{+87}_{-66}	4555^{+496}_{-425}	116^{+78}_{-51}

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

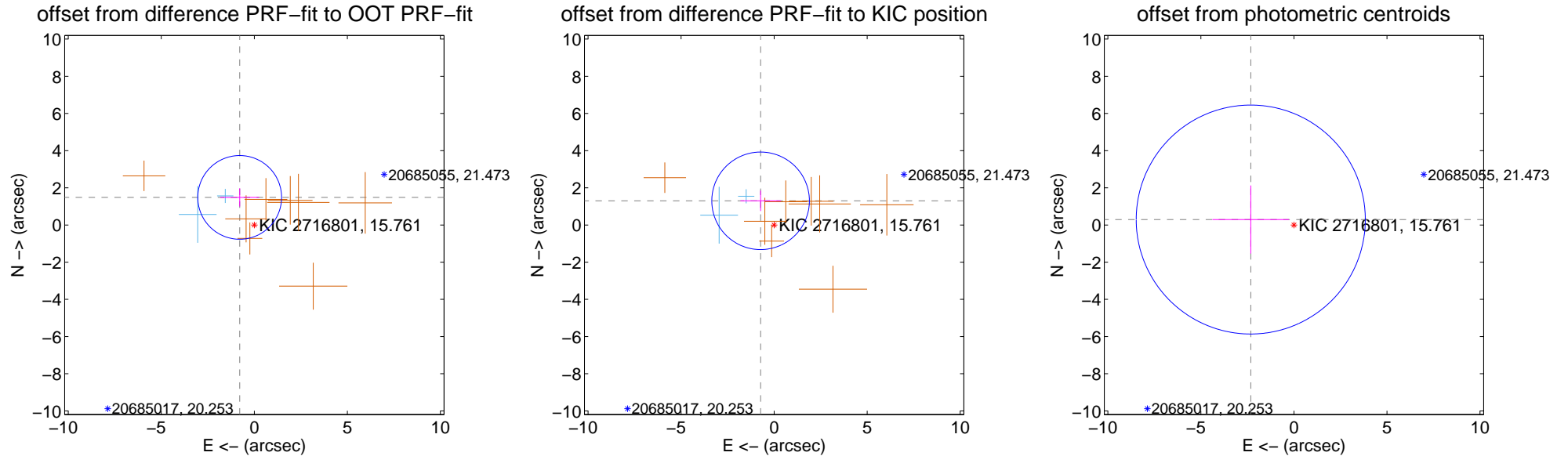
DV Centroid Data

Supplemental centroid analysis for 002716801-02. Kepler magnitude: 15.76. Transit SNR 7.72

There are 2 quarters with good PRF difference image offsets

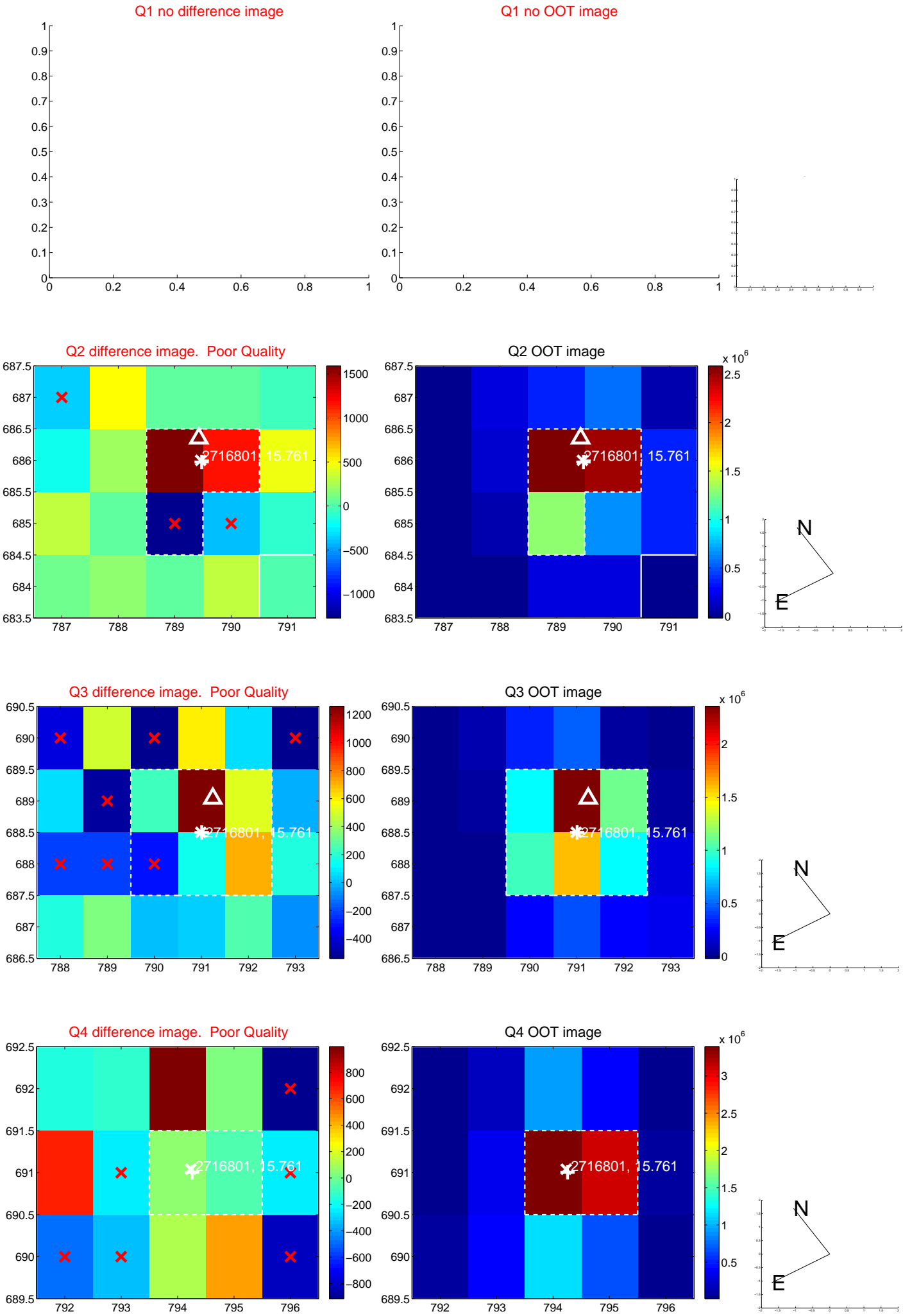
The direct PRF centroid is offset from the target star catalog position by about 0.18 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.680 ± 0.751	2.24	0.786 ± 1.045	1.485 ± 0.488
PRF-fit source offset from KIC position	1.490 ± 0.874	1.70	0.727 ± 1.085	1.301 ± 0.549
photometric centroid source offset	2.34 ± 2.05	1.14	2.32 ± 2.06	0.29 ± 1.83

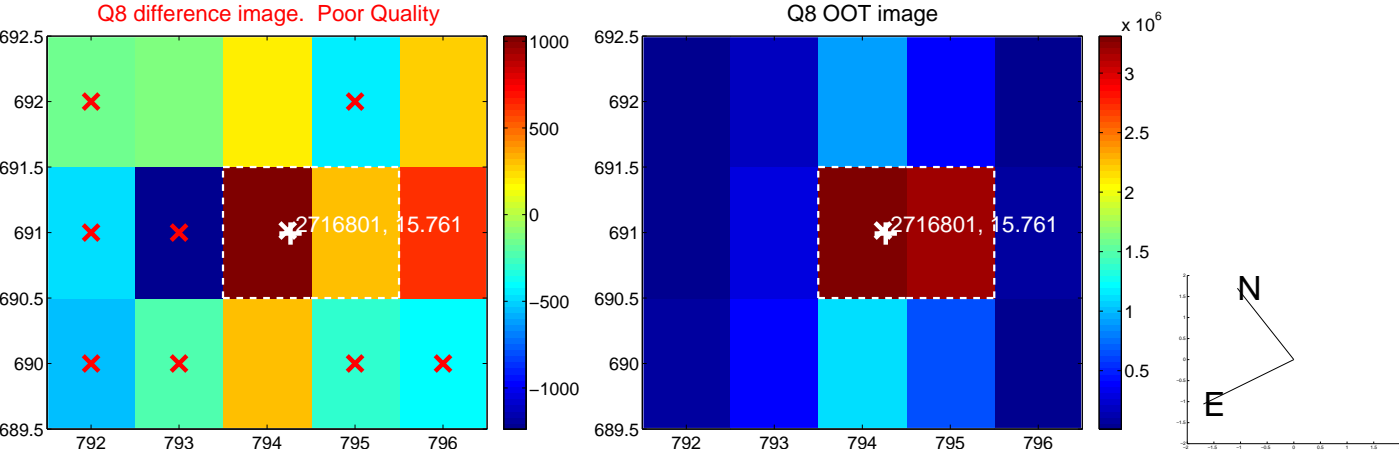
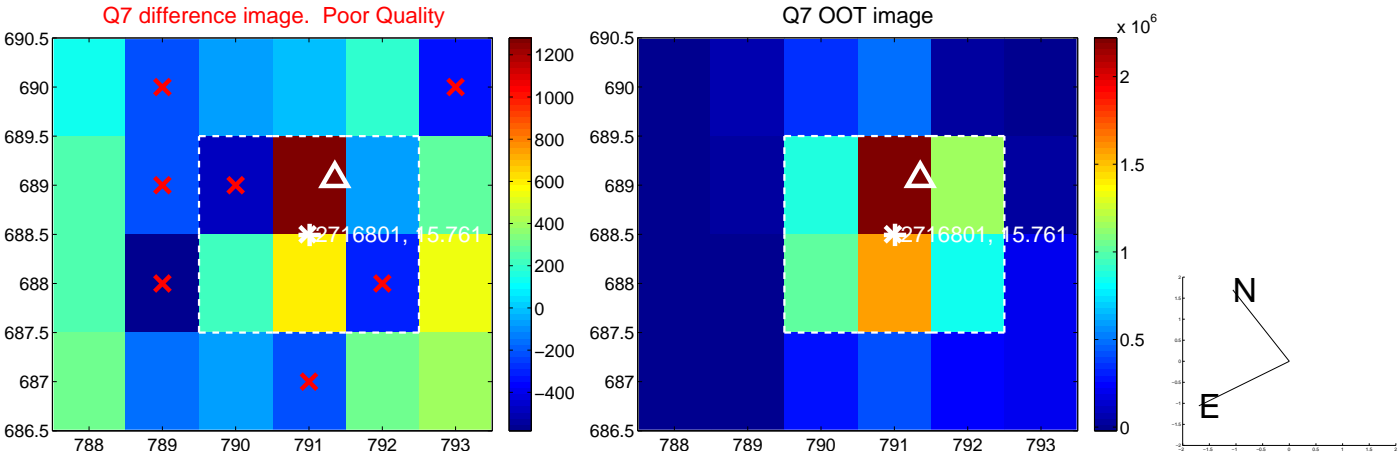
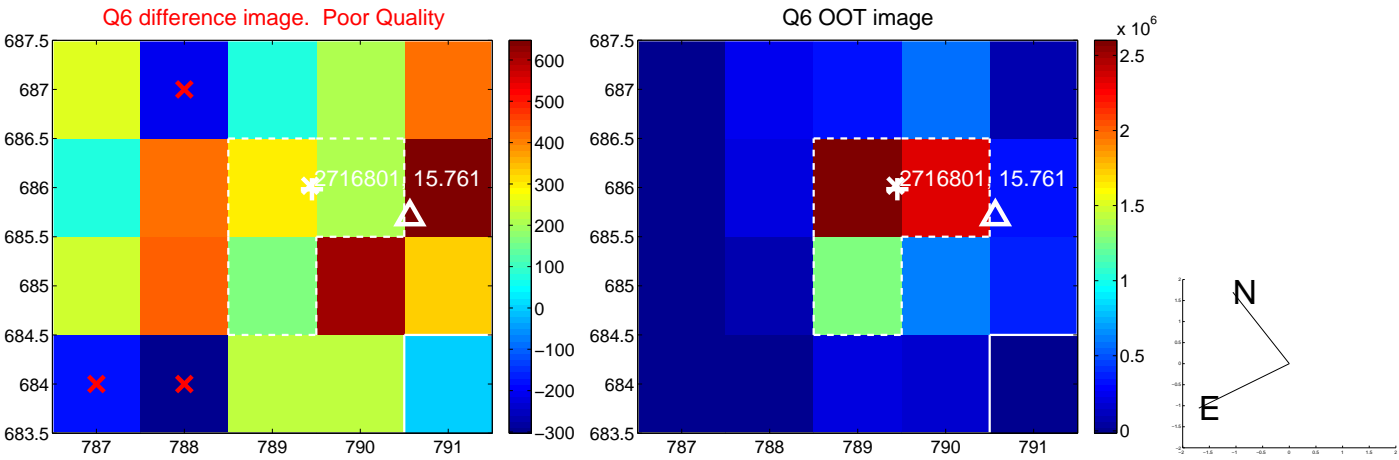
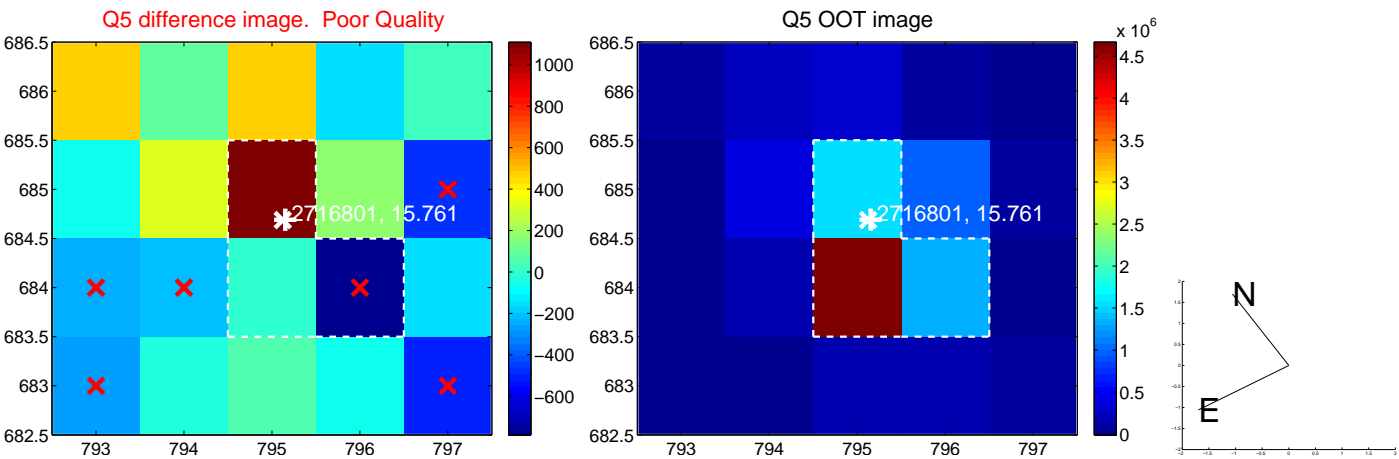


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

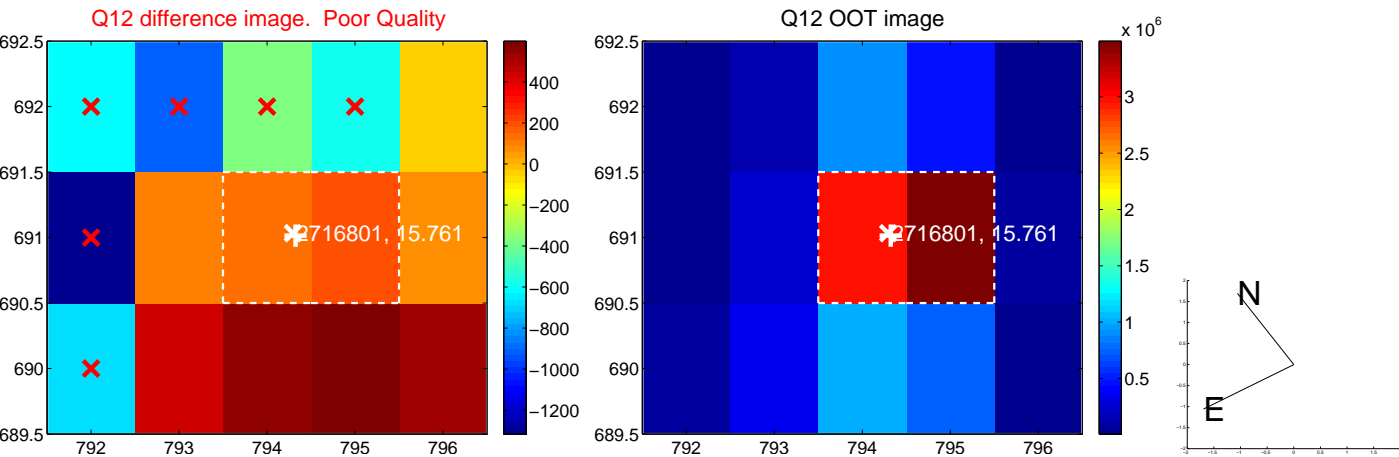
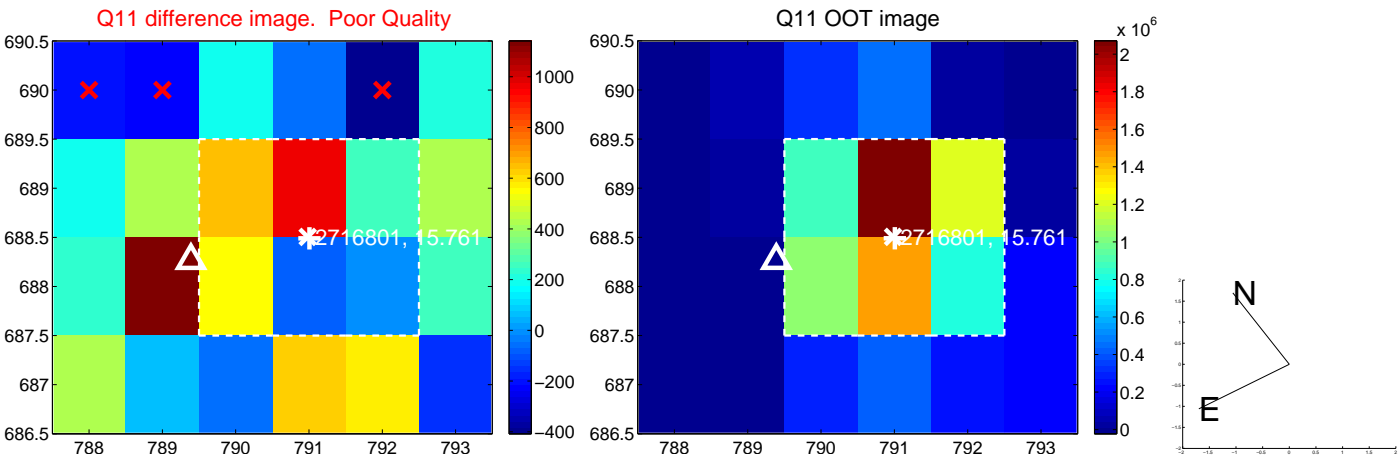
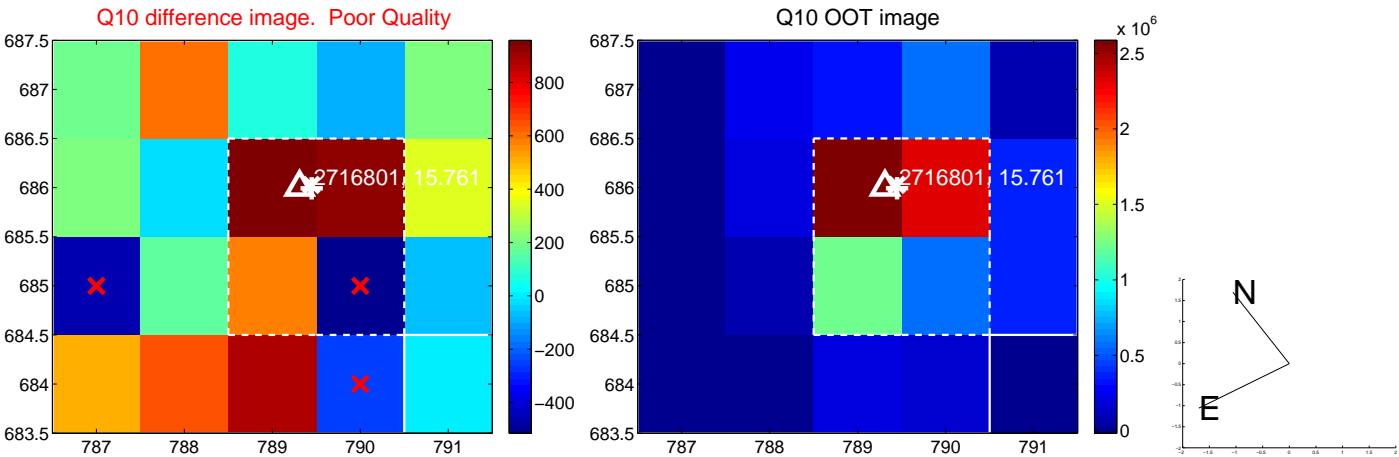
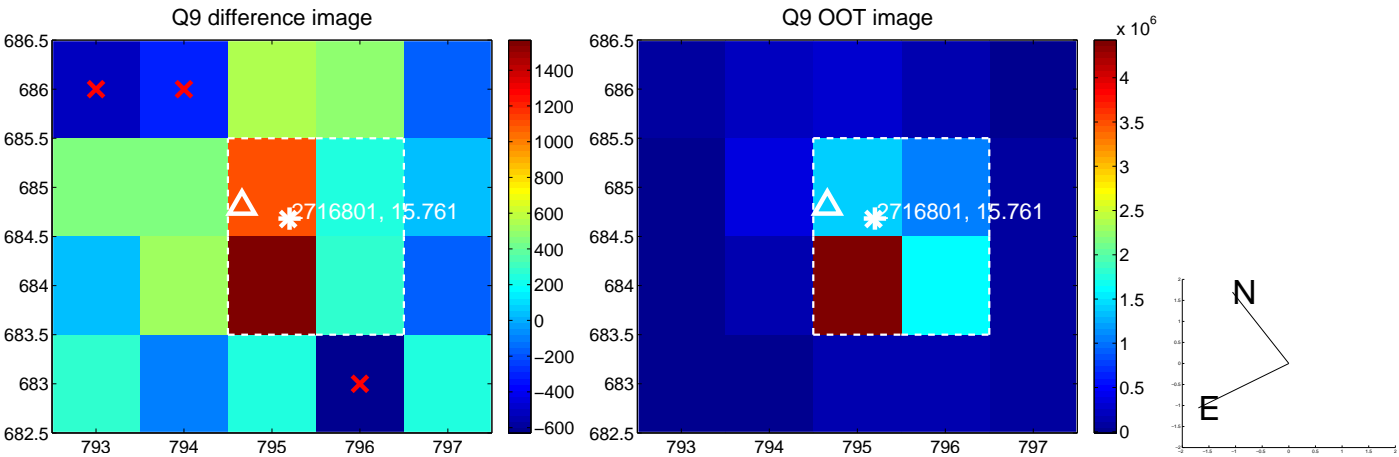
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



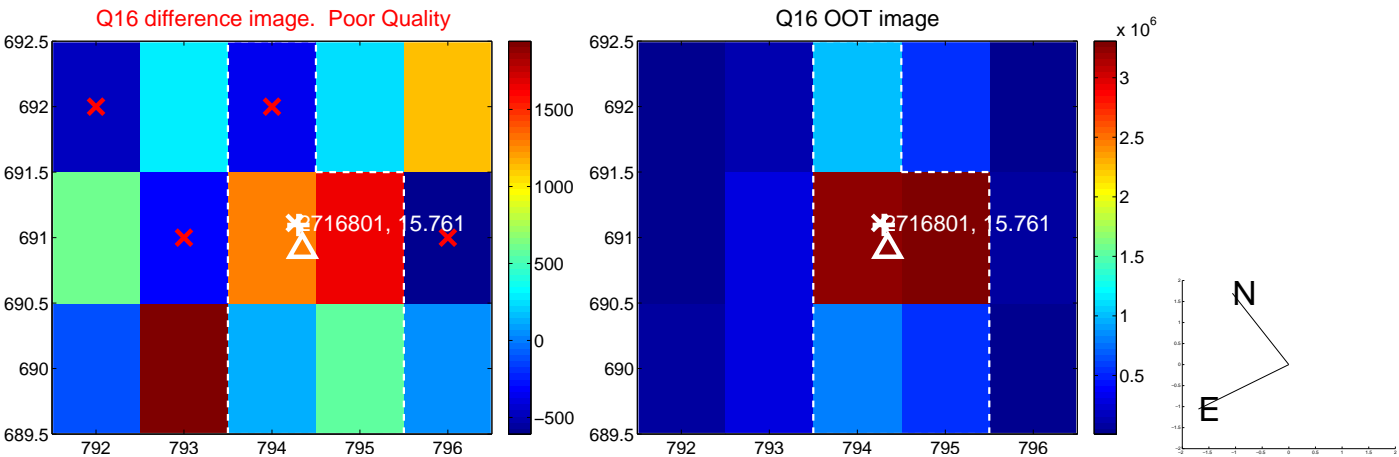
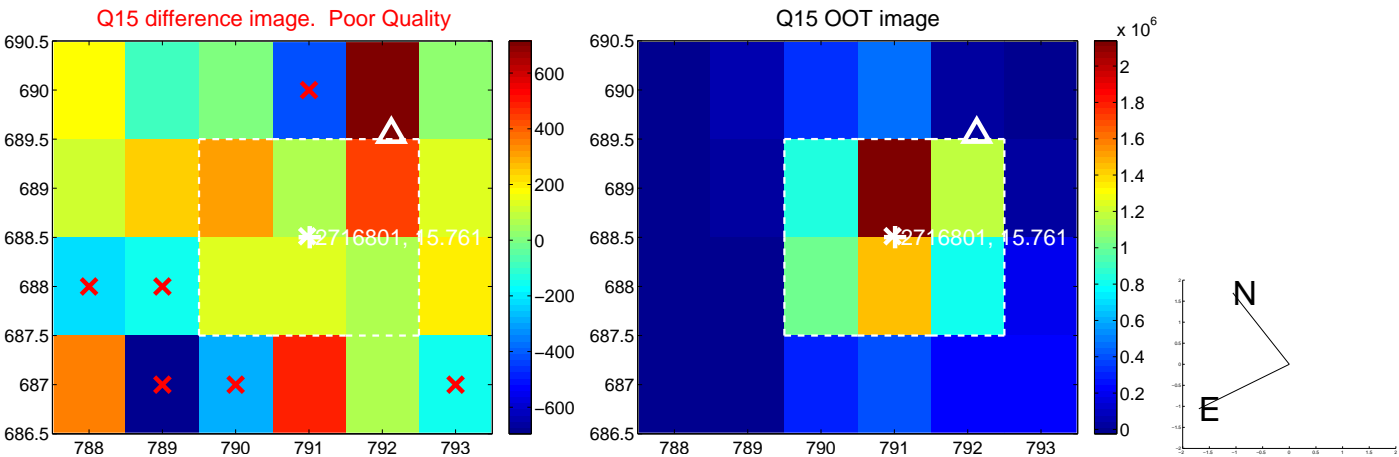
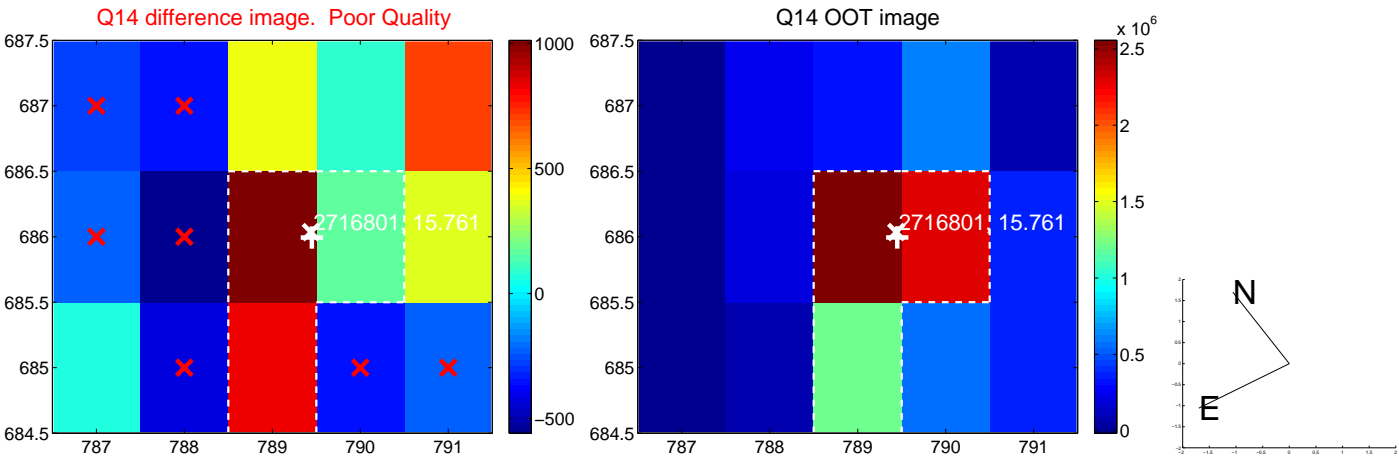
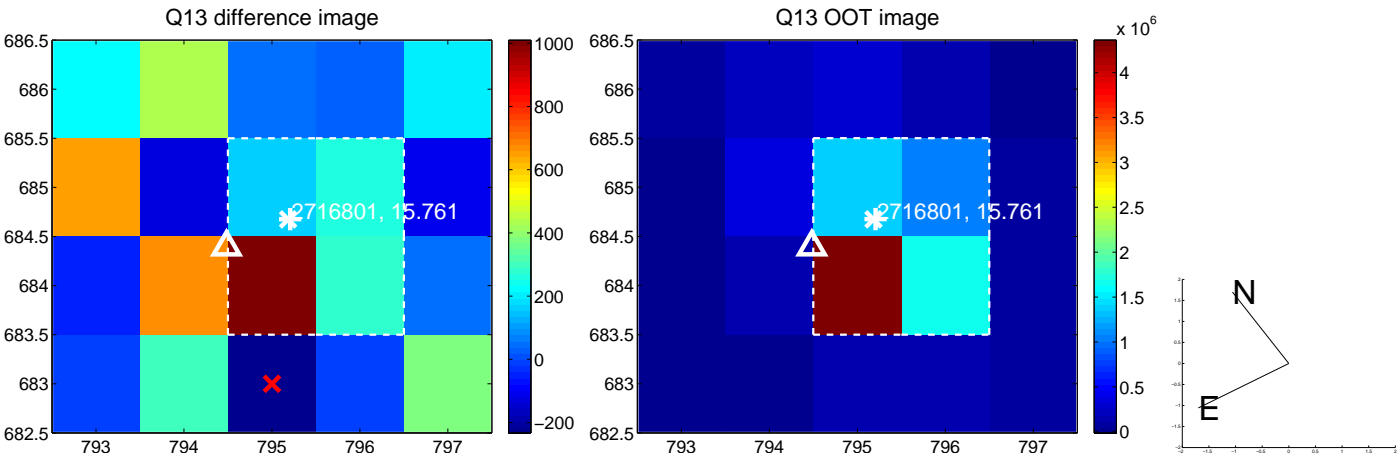
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



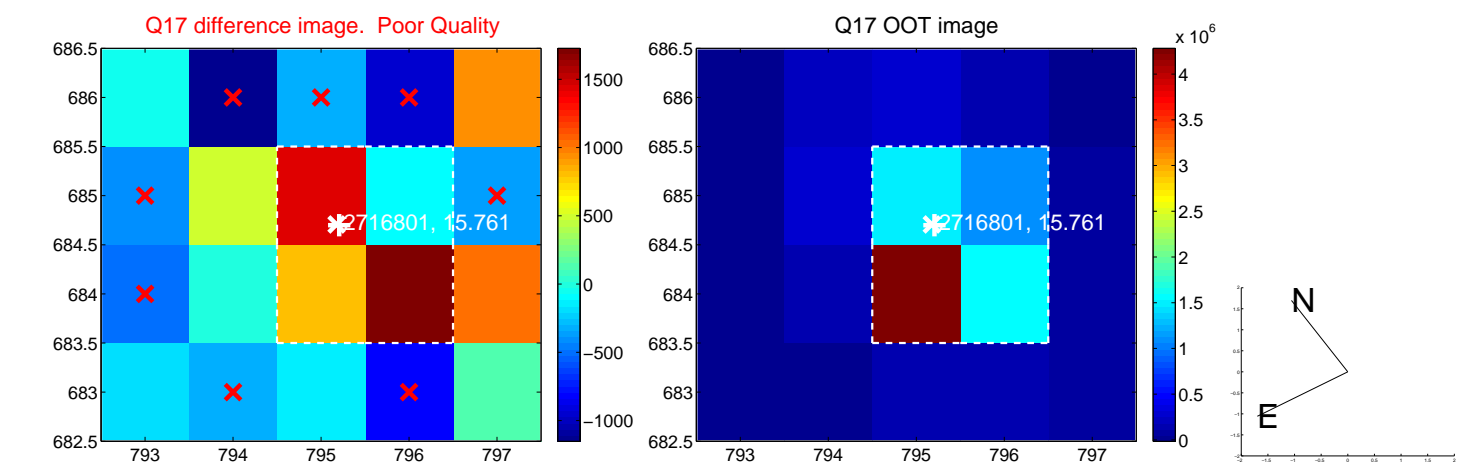
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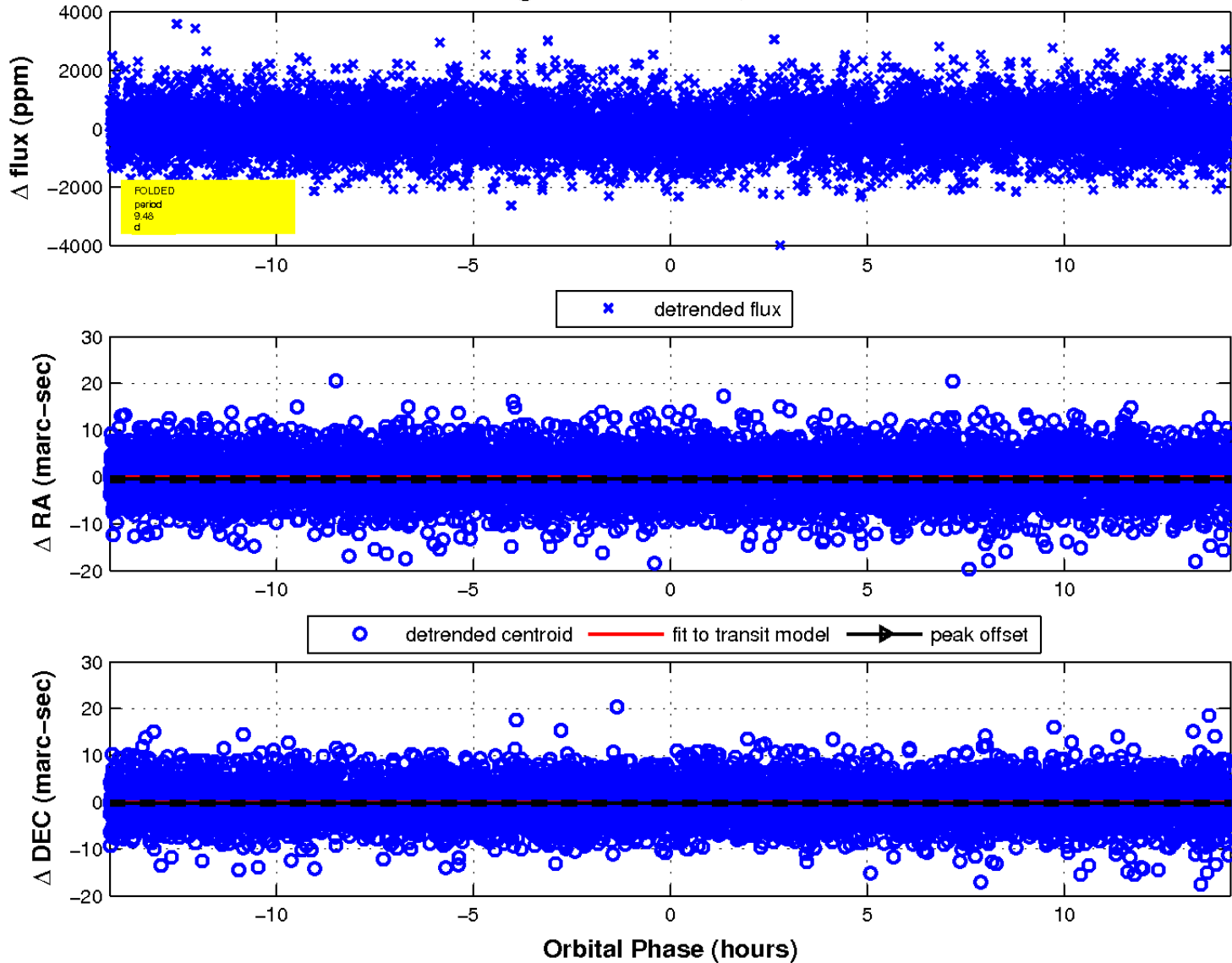
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fluxWeightedCentroids, Planet 2 of 2



UKIRT Image

Declination

