

KIC 011358389

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})
011358389-01	OBS	2163.01	10.664898	132.008120	298.7	3.729	21.7	23.9	1.02	6014	2.27	132.52
011358389-02	OBS	2163.02	17.783540	146.925337	226.6	4.212	15.1	16.1	1.02	6014	1.73	67.02
011358389-03	OBS	2163.03	28.225120	153.744651	206.2	2.440	8.0	8.7	1.02	6014	1.72	36.20

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011358389-01	OBS	PC	0.99	0	0	0	0	NO_COMMENT
011358389-02	OBS	PC	1.00	0	0	0	0	NO_COMMENT
011358389-03	OBS	PC	0.79	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.

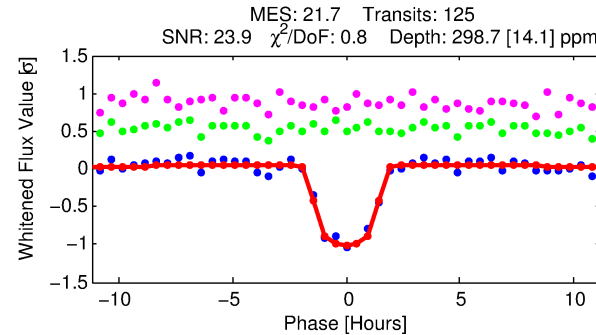
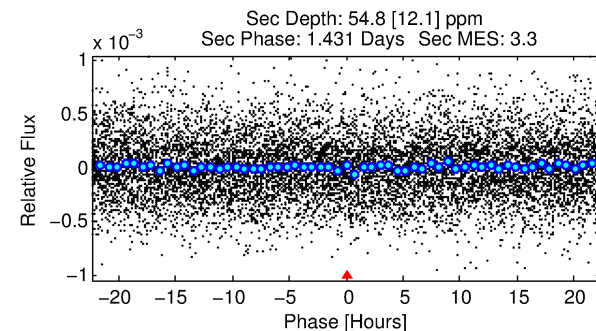
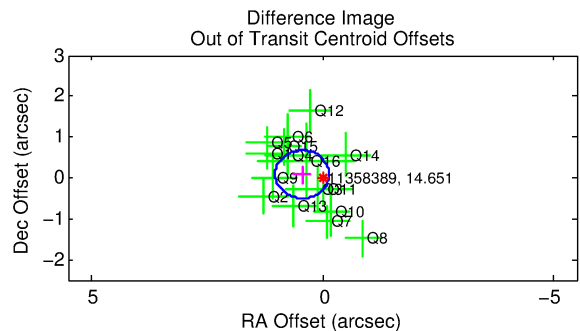
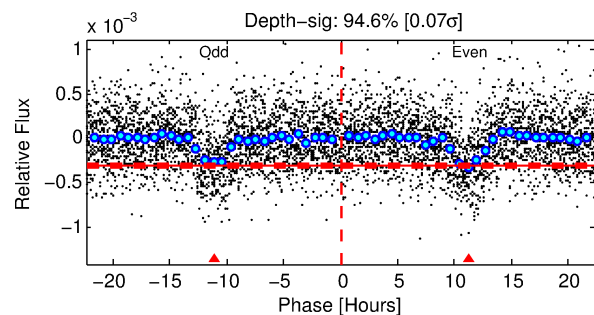
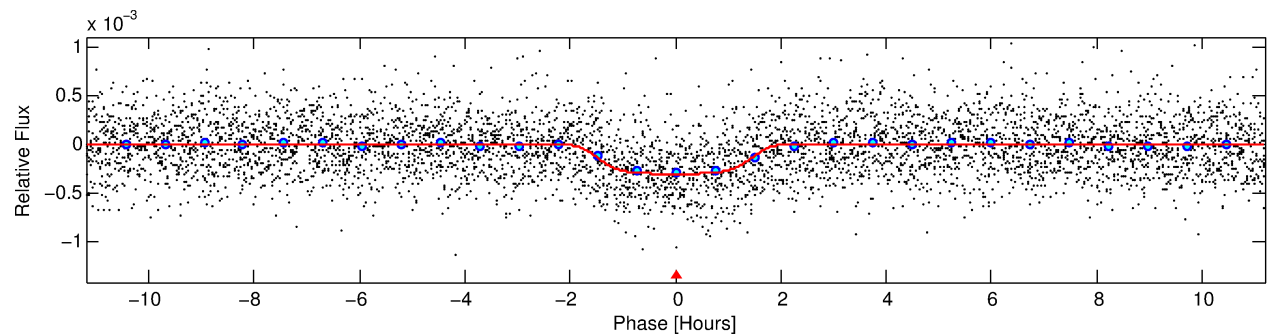
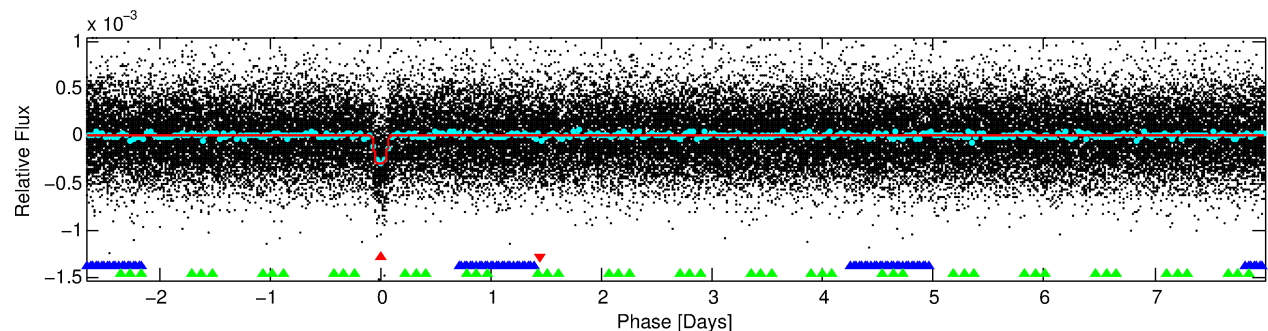
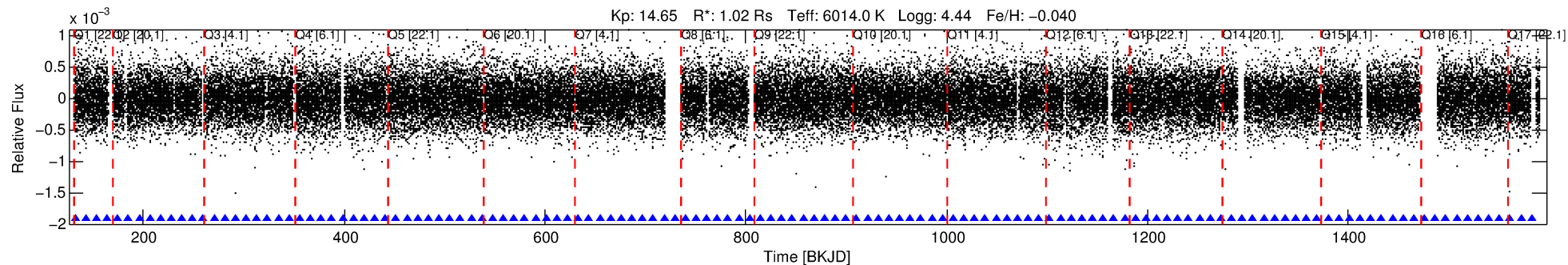
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 011358389-01

No Significant Match Found

DV One-Page Summary

KIC: 11358389 Candidate: 1 of 3 Period: 10.665 d
KOI: K02163.01 Name: Kepler-365b Corr: 0.914



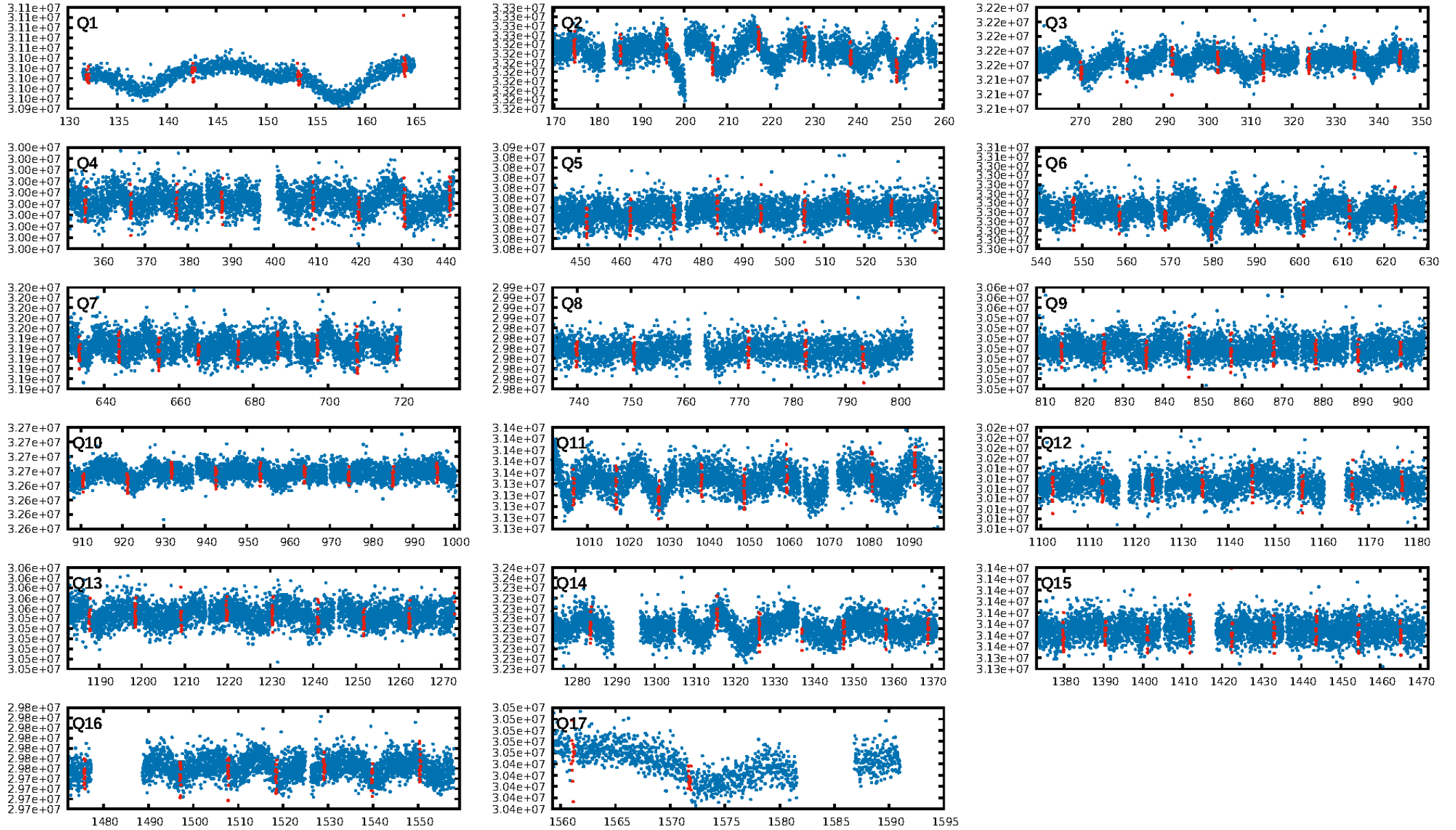
DV Fit Results:

Period = 10.66490 [0.00004] d
Epoch = 132.0081 [0.0034] BKJD
Rp/R* = 0.0203 [0.0009]
a/R* = 7.59 [1.32]
b = 0.96 [0.01]
Seff = 132.52 [55.90]
Teq = 865 [91] K
Rp = 2.26 [0.75] Re
a = 0.0960 [0.0263] AU
Ag = 54.24 [25.16] [2.12 σ]
Teffp = 3630 [251] K [10.35 σ]

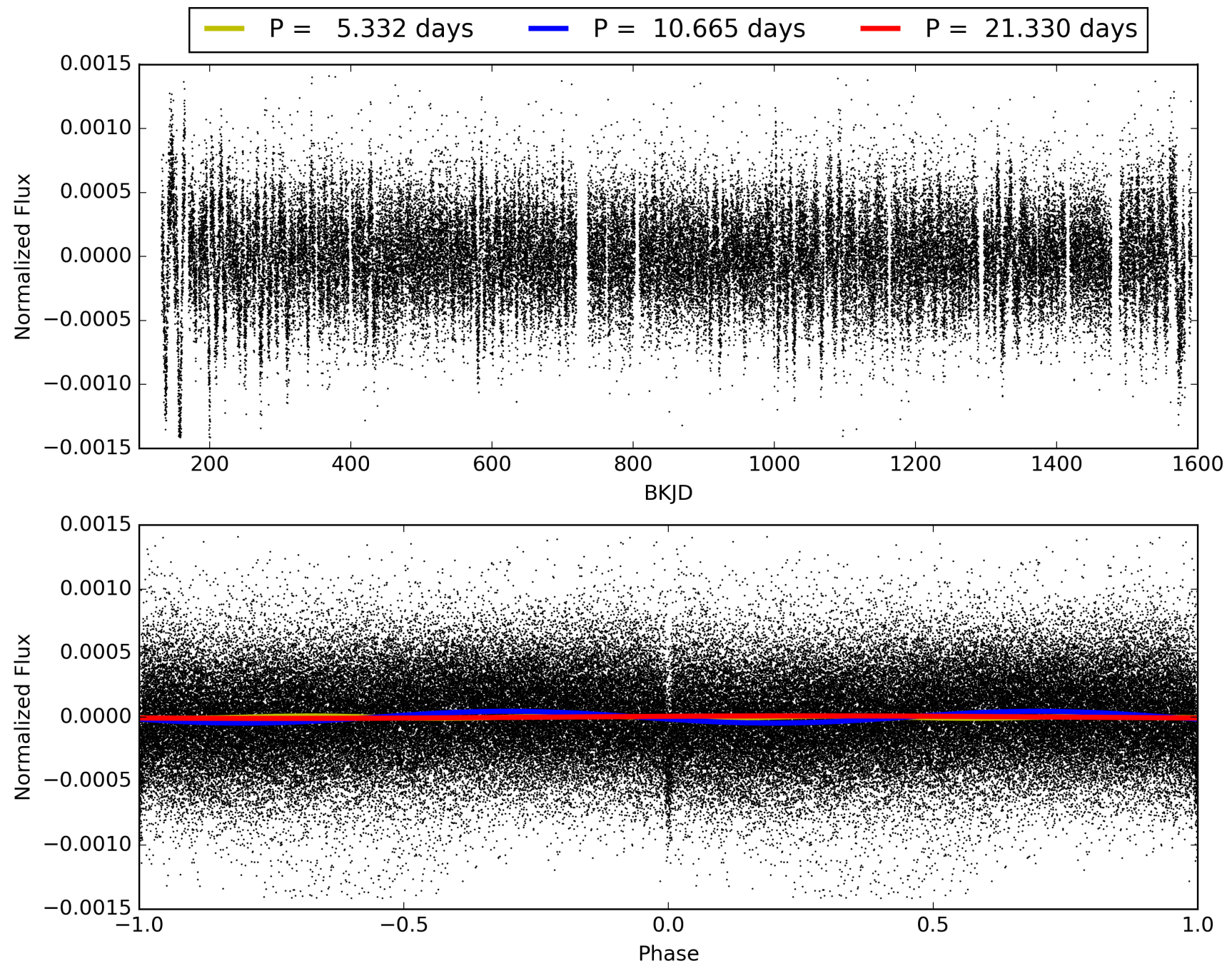
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [30.37 σ]
ModelChiSquare2-sig: 100.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 4.97e-103
RollingBand-fgt: 1.00 [119/119]
GhostDiagnostic-chr: 1.908
Centroid-sig: 35.8%
Centroid-so: 0.489 arcsec [0.86 σ]
OotOffset-rm: 0.452 arcsec [2.32 σ]
KicOffset-rm: 0.381 arcsec [1.98 σ]
OotOffset-st: 4/4/4/4 [16]
KicOffset-st: 4/4/4/4 [16]
DiffImageQuality-fgm: 1.00 [16/16]
DiffImageOverlap-fno: 1.00 [17/17]

TCE 011358389-01, PDC Light Curves

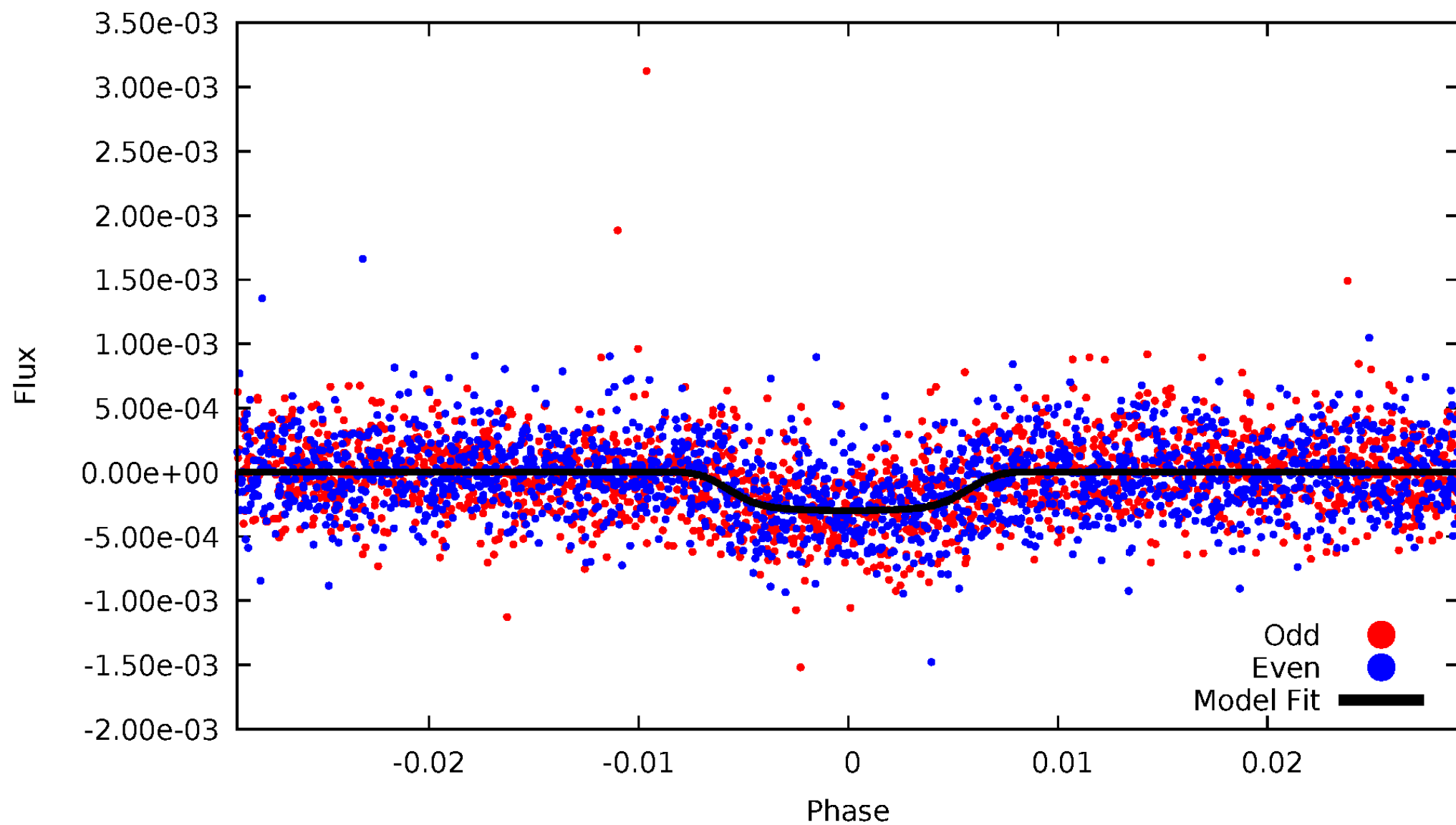


TCE 011358389-01



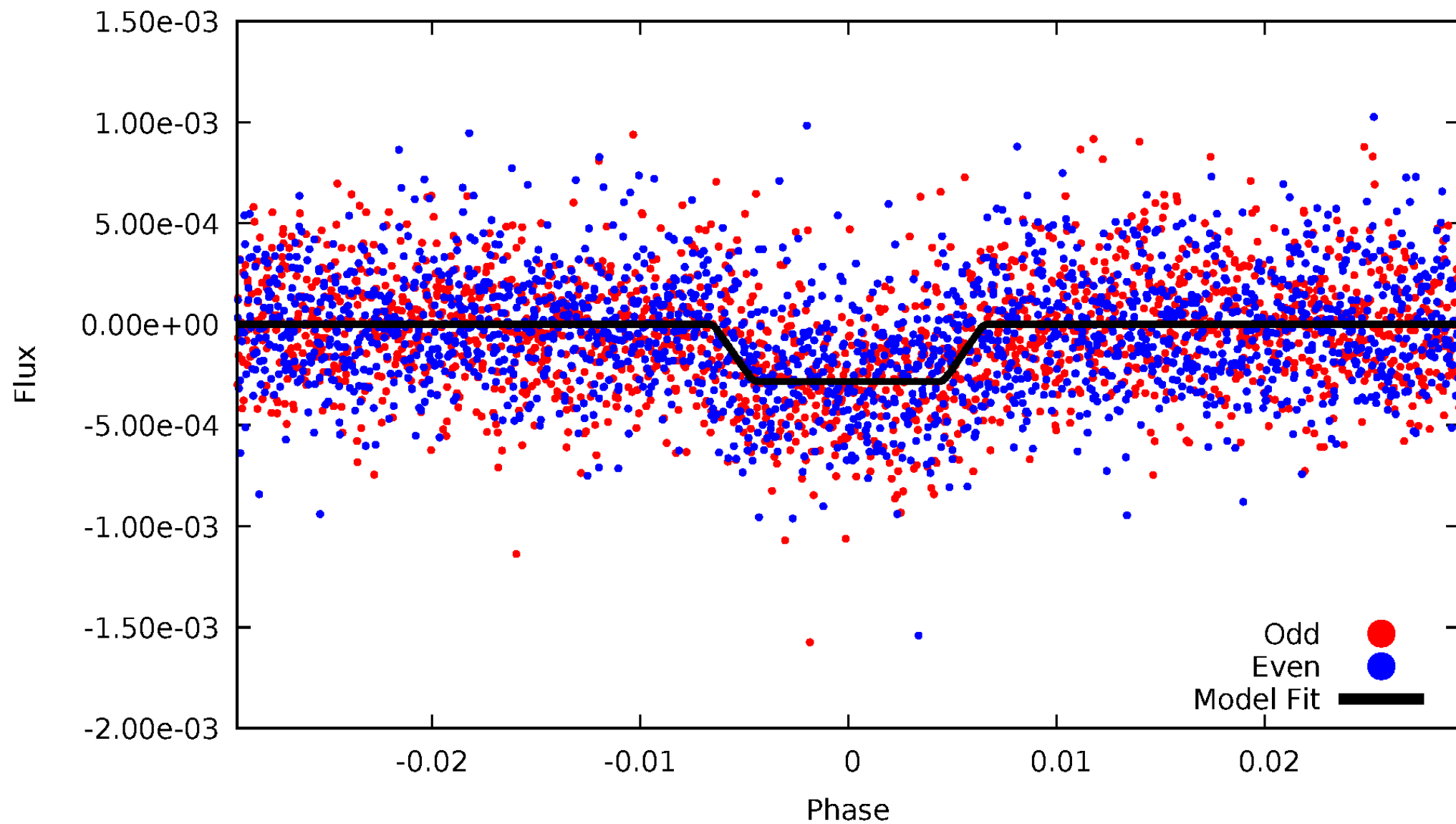
DV Odd/Even

TCE 011358389-01



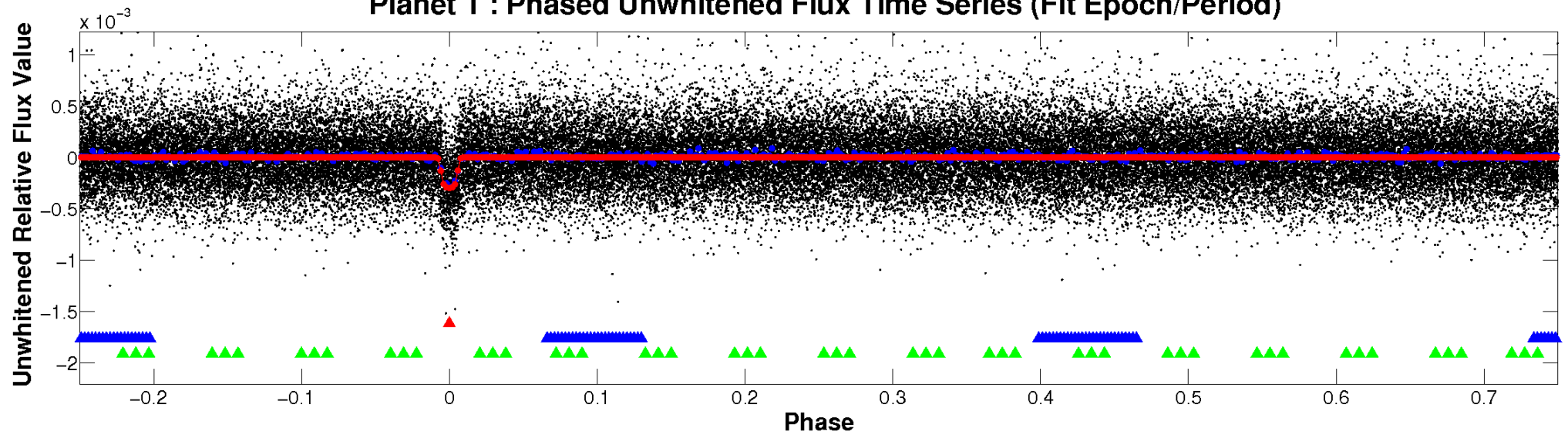
ALT Odd/Even

TCE 011358389-01

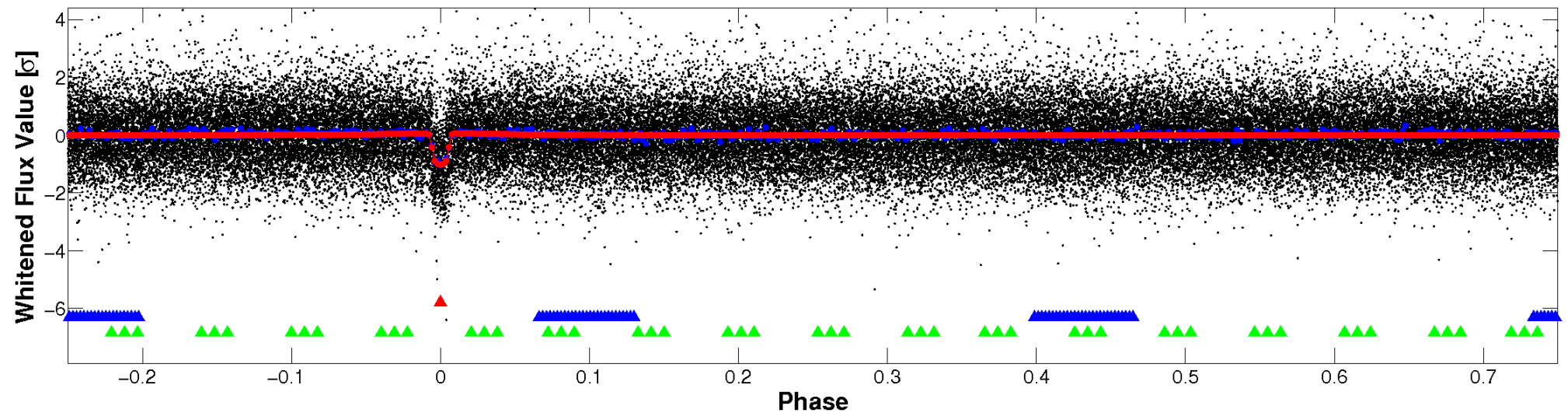


Non-Whitened Vs. Whitened Light Curve

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

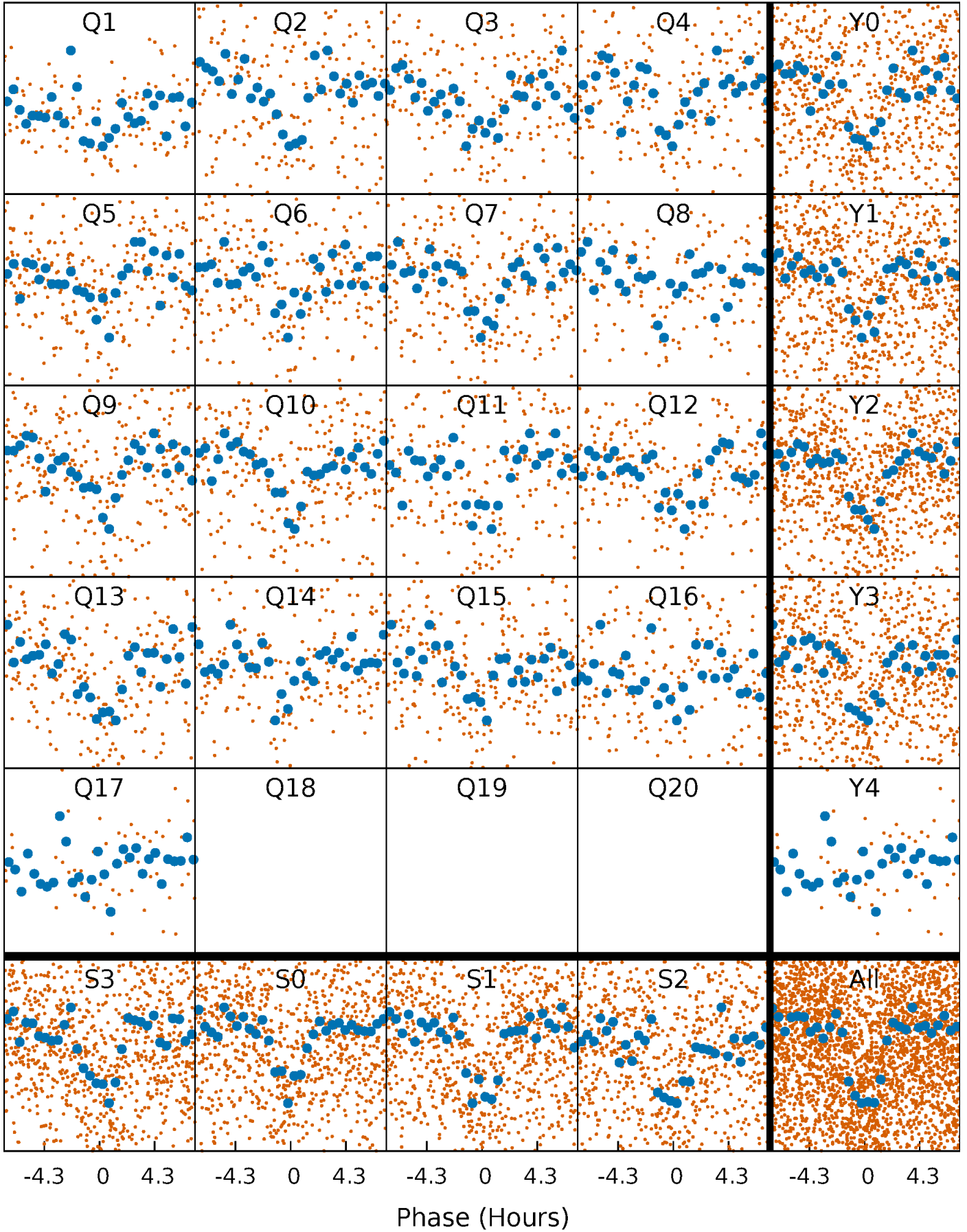


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



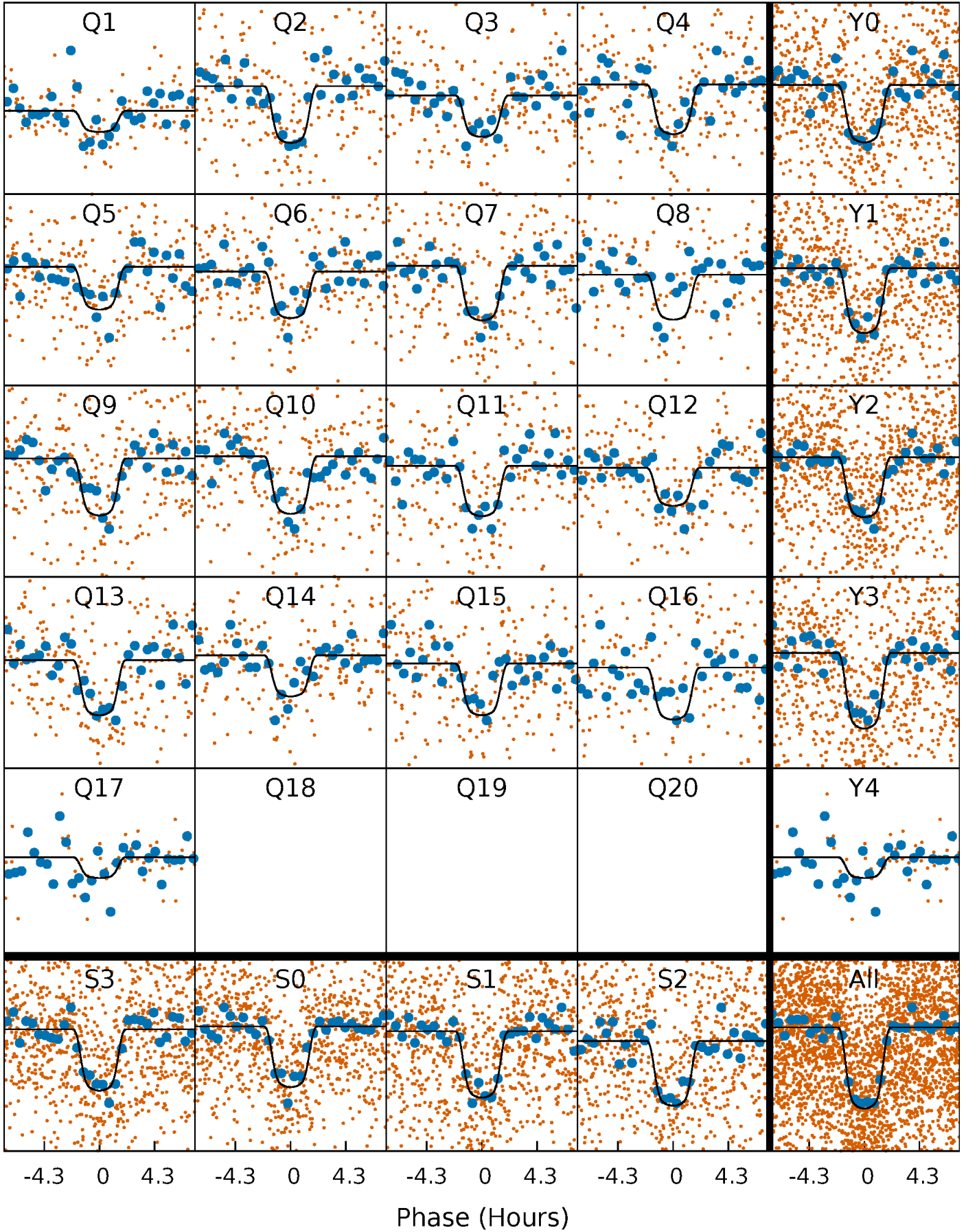
PDC Quarter-Phased Transit Curves

TCE 011358389-01 P= 10.664898 Days $T_0=132.008120$ (BKJD)



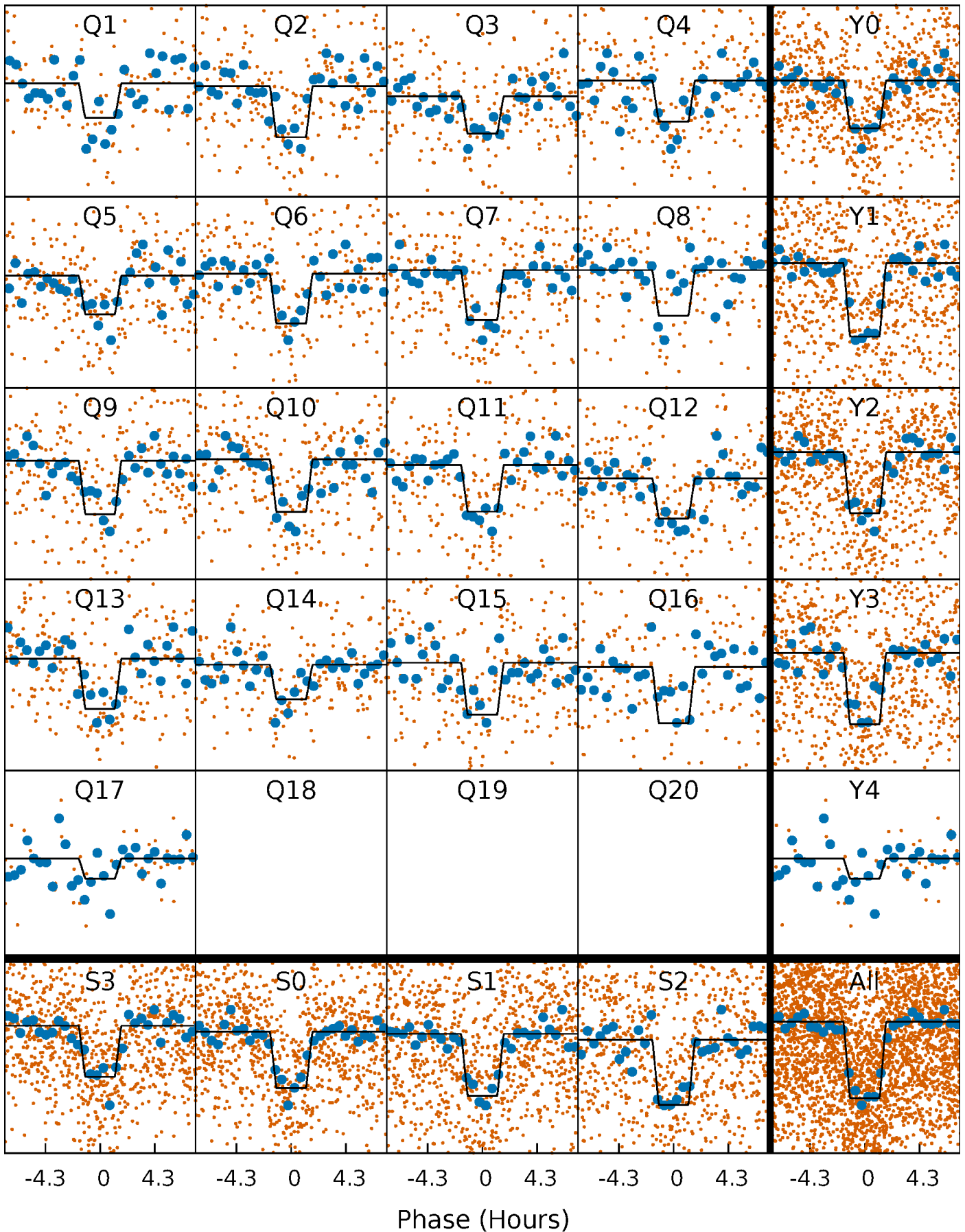
DV Quarter-Phased Transit Curves

TCE 011358389-01 P= 10.664898 Days $T_0=132.008120$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

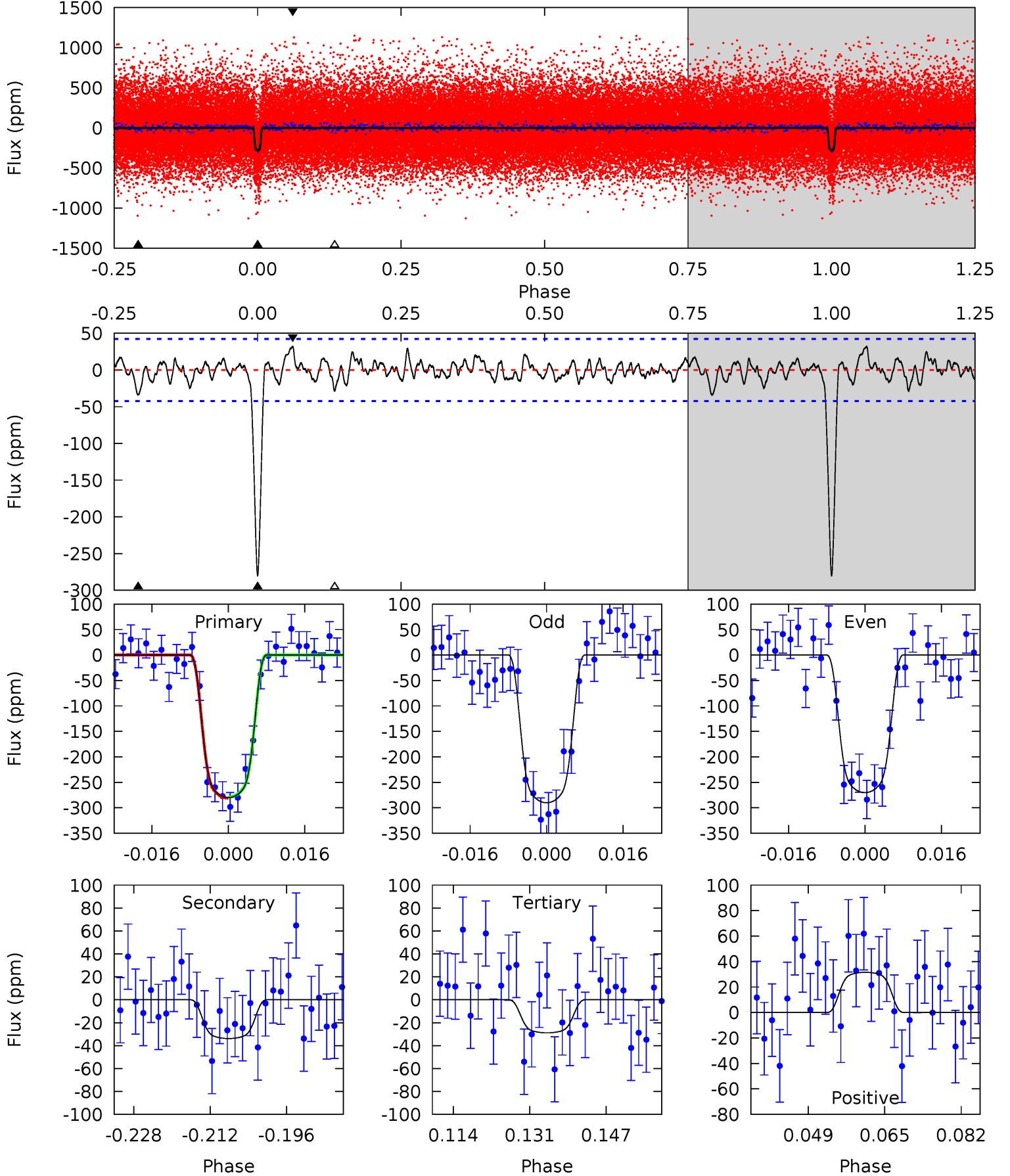
TCE 011358389-01 P= 10.664989 Days $T_0=132.002221$ (BKJD)



DV Model-Shift Uniqueness Test

011358389-01, $P = 10.664898$ Days, $E = 121.343222$ Days

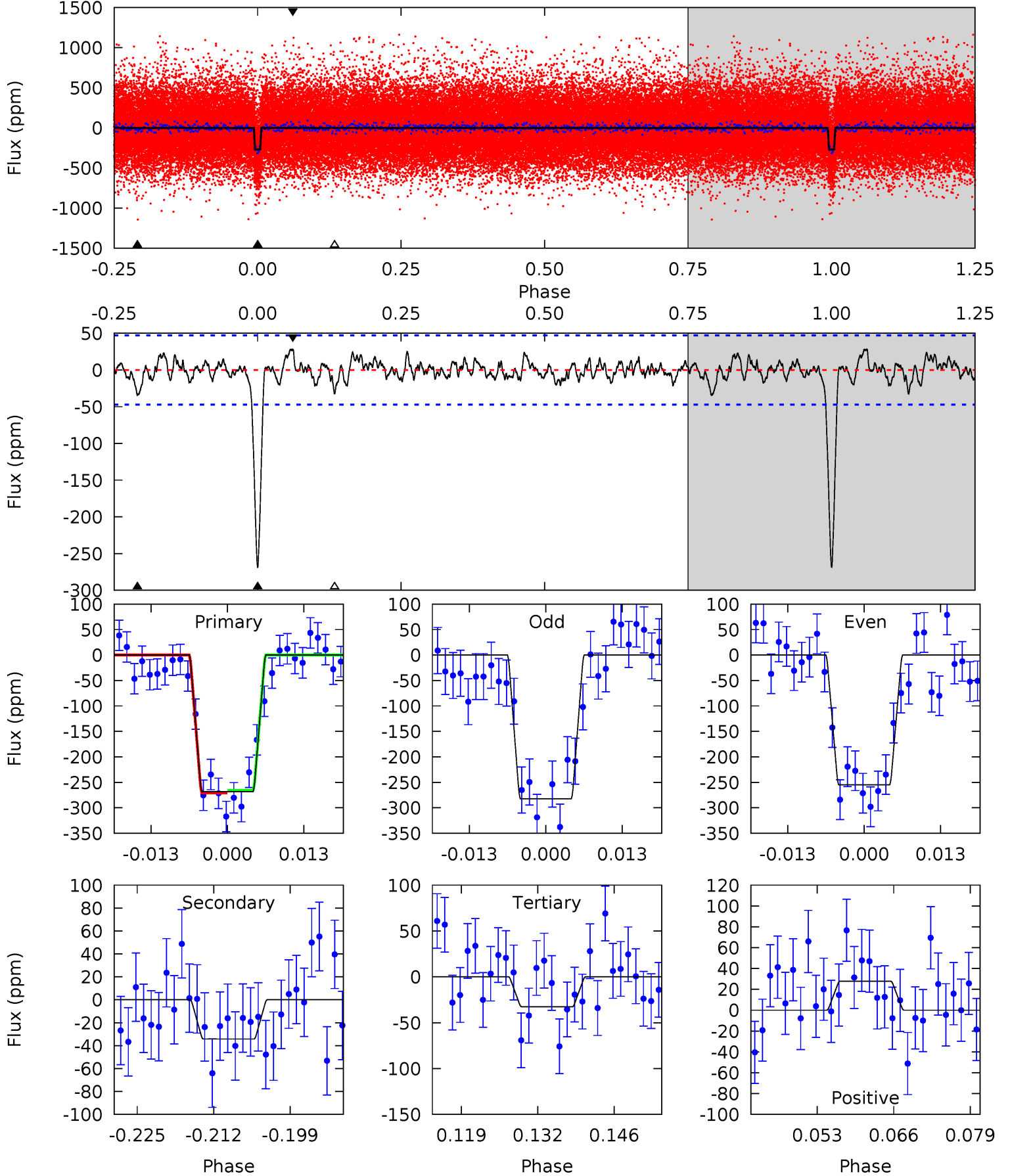
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
32.7	3.95	3.37	3.69	4.93	2.40	1.18	29.3	29.0	0.58	0.26	1.17	1.00	0.10	0.12



Alt Model-Shift Uniqueness Test

011358389-01, P = 10.664989 Days, E = 121.337232 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
28.2	3.61	3.44	2.93	4.97	2.48	1.03	24.8	25.3	0.17	0.68	1.45	0.99	0.09	0.28



Stellar Parameters For KIC 011358389

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6014^{+190}_{-211}	$4.436^{+0.072}_{-0.217}$	$-0.040^{+0.250}_{-0.300}$	$1.021^{+0.333}_{-0.133}$	$1.037^{+0.145}_{-0.130}$	$1.371^{+0.515}_{-0.721}$
	+3%/-4%	+2%/-5%	+625%/-750%	+33%/-13%	+14%/-13%	+38%/-53%
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 011358389-01 / KOI 2163.01

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-34 ± 9	$2.33^{+0.40}_{-0.23}$	1231^{+93}_{-66}	3635^{+178}_{-189}	30^{+11}_{-10}
Alt.	-34 ± 10	$1.93^{+0.35}_{-0.20}$	1233^{+101}_{-66}	3877^{+230}_{-242}	44^{+19}_{-16}

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 $A_{obs} \gg 1.0$

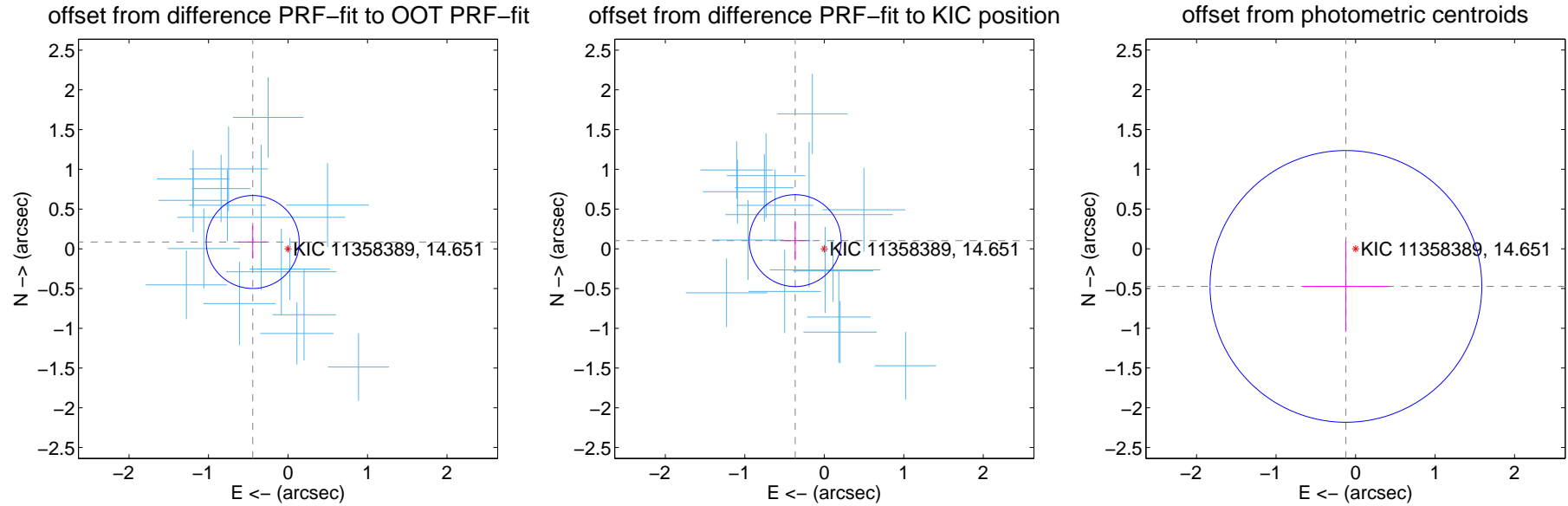
DV Centroid Data

Supplemental centroid analysis for 011358389-01. Kepler magnitude: 14.65. Transit SNR 23.87

There are 16 quarters with good PRF difference image offsets

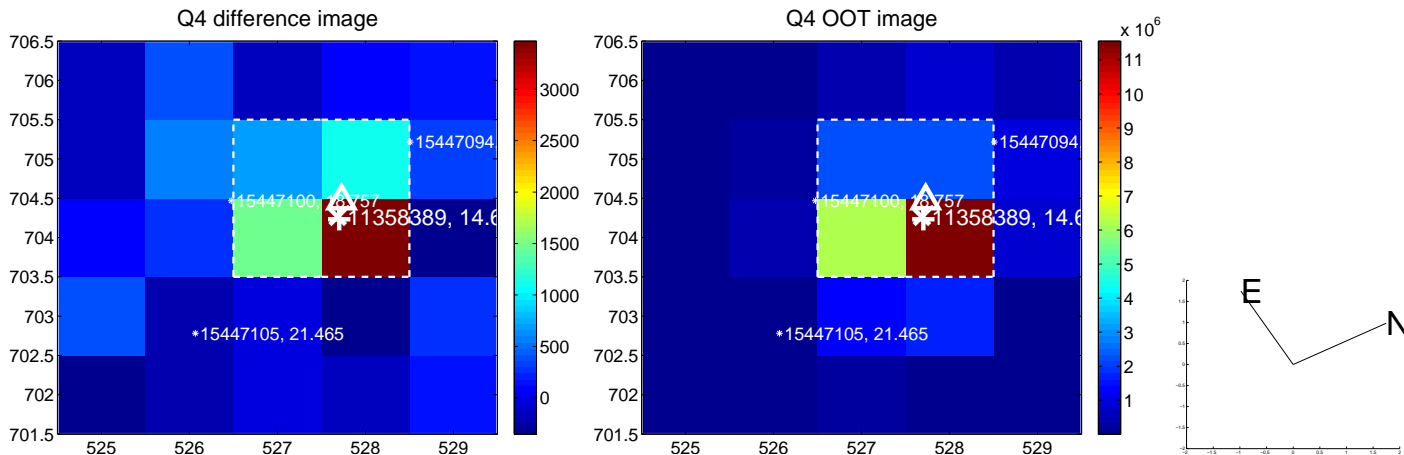
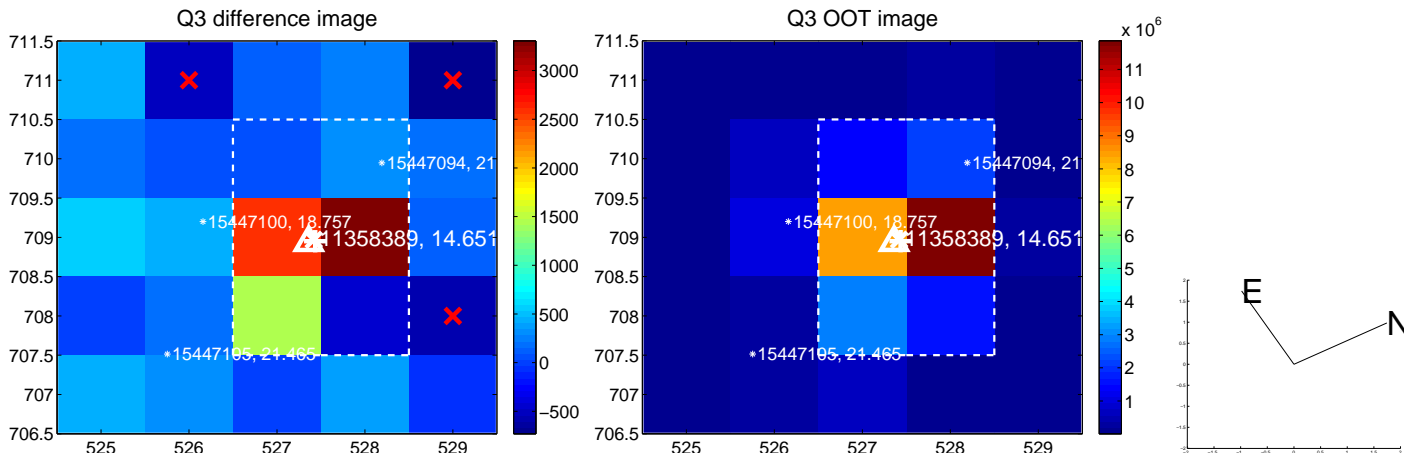
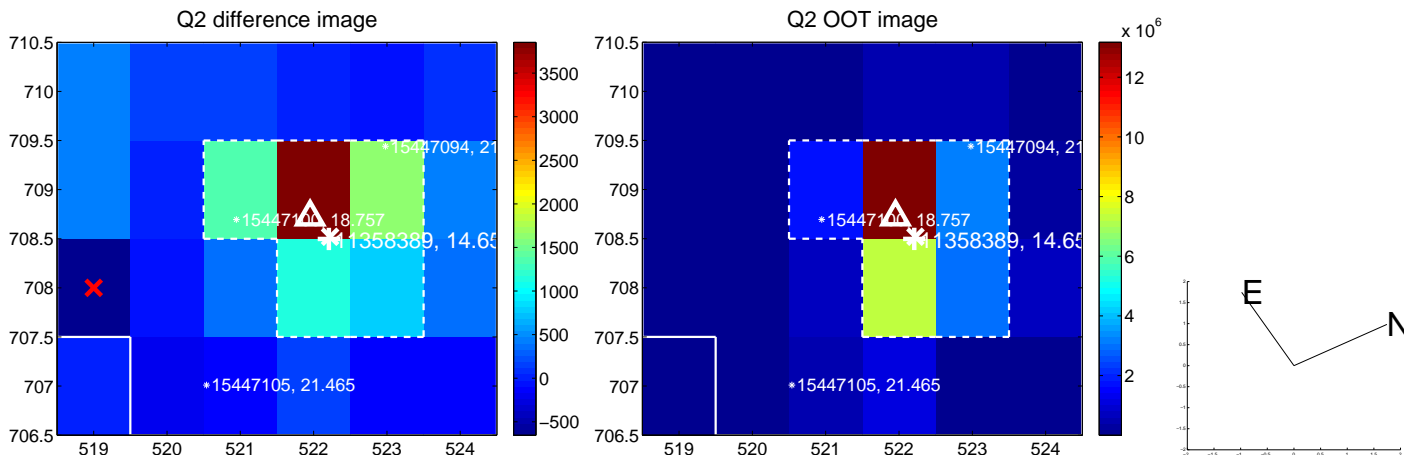
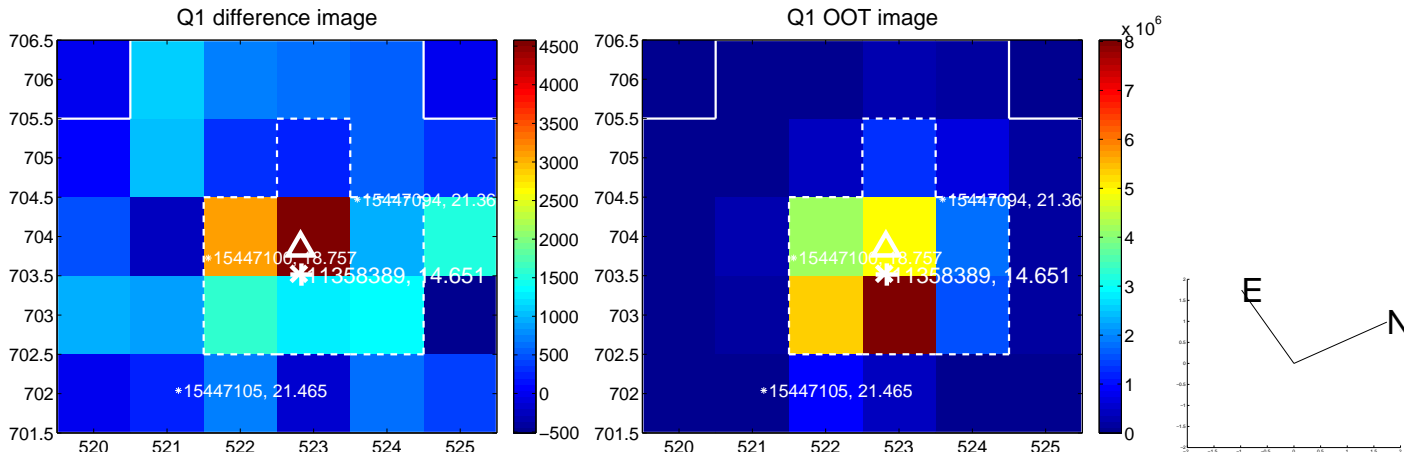
The direct PRF centroid is offset from the target star catalog position by about 0.15 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.452 ± 0.195	2.32	0.444 ± 0.179	0.086 ± 0.204
PRF-fit source offset from KIC position	0.381 ± 0.193	1.98	0.367 ± 0.188	0.103 ± 0.246
photometric centroid source offset	0.49 ± 0.57	0.86	0.12 ± 0.54	-0.47 ± 0.57

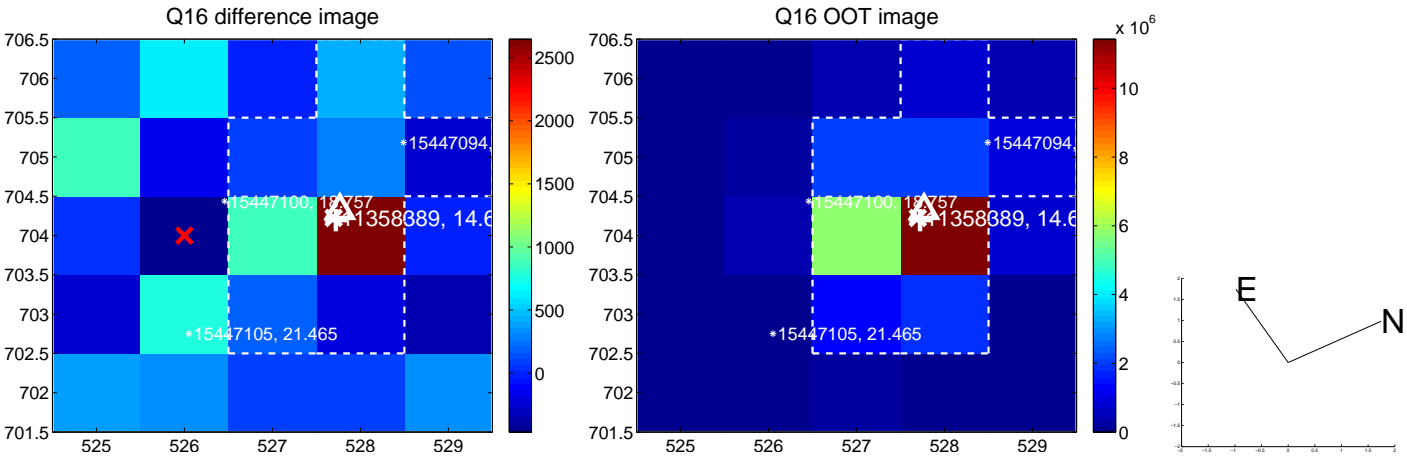
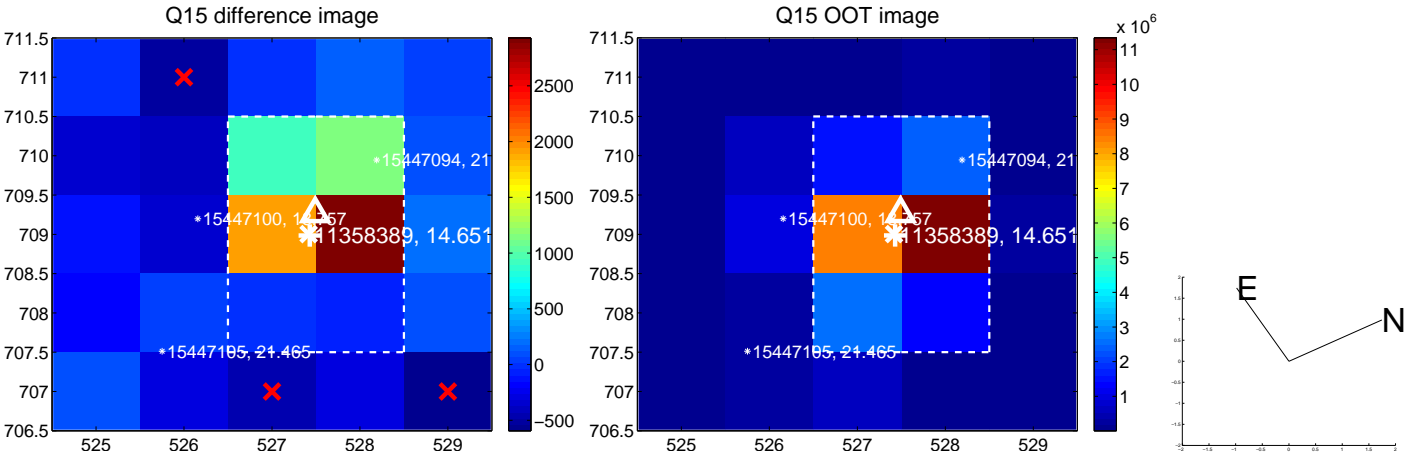
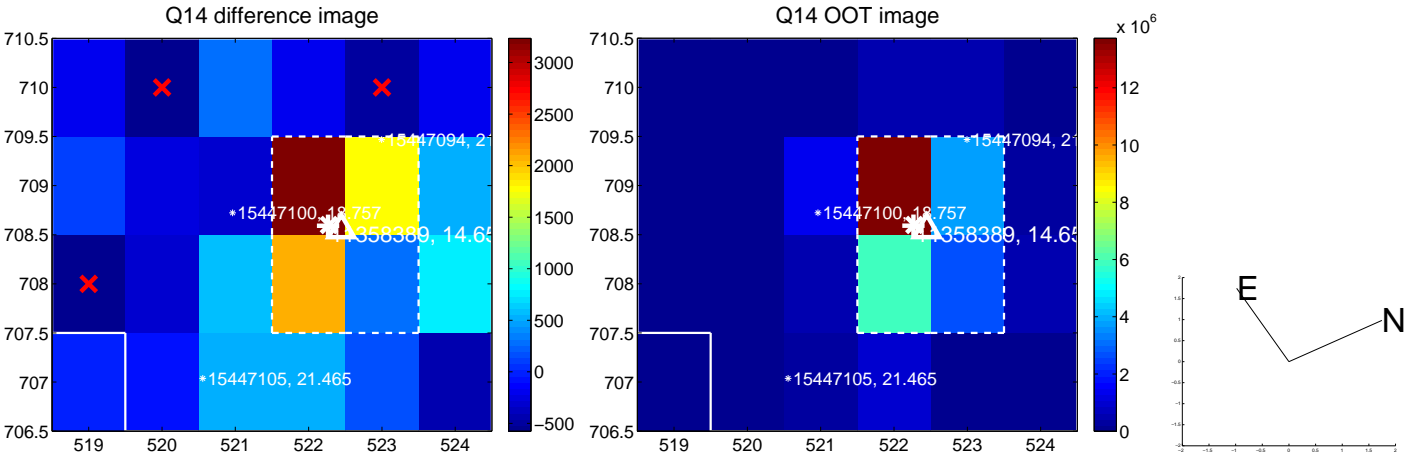
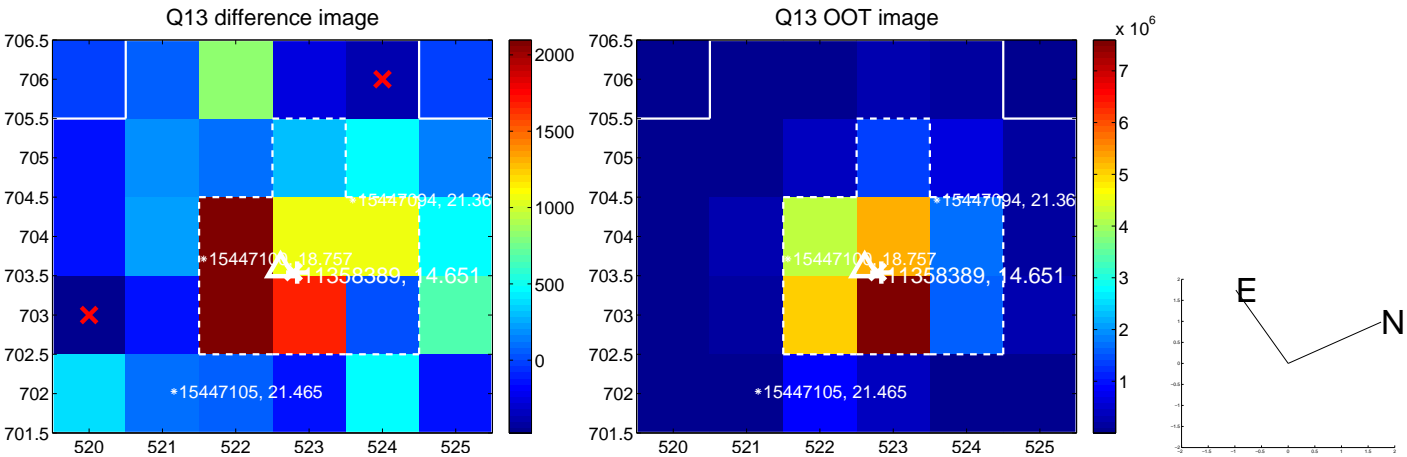


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

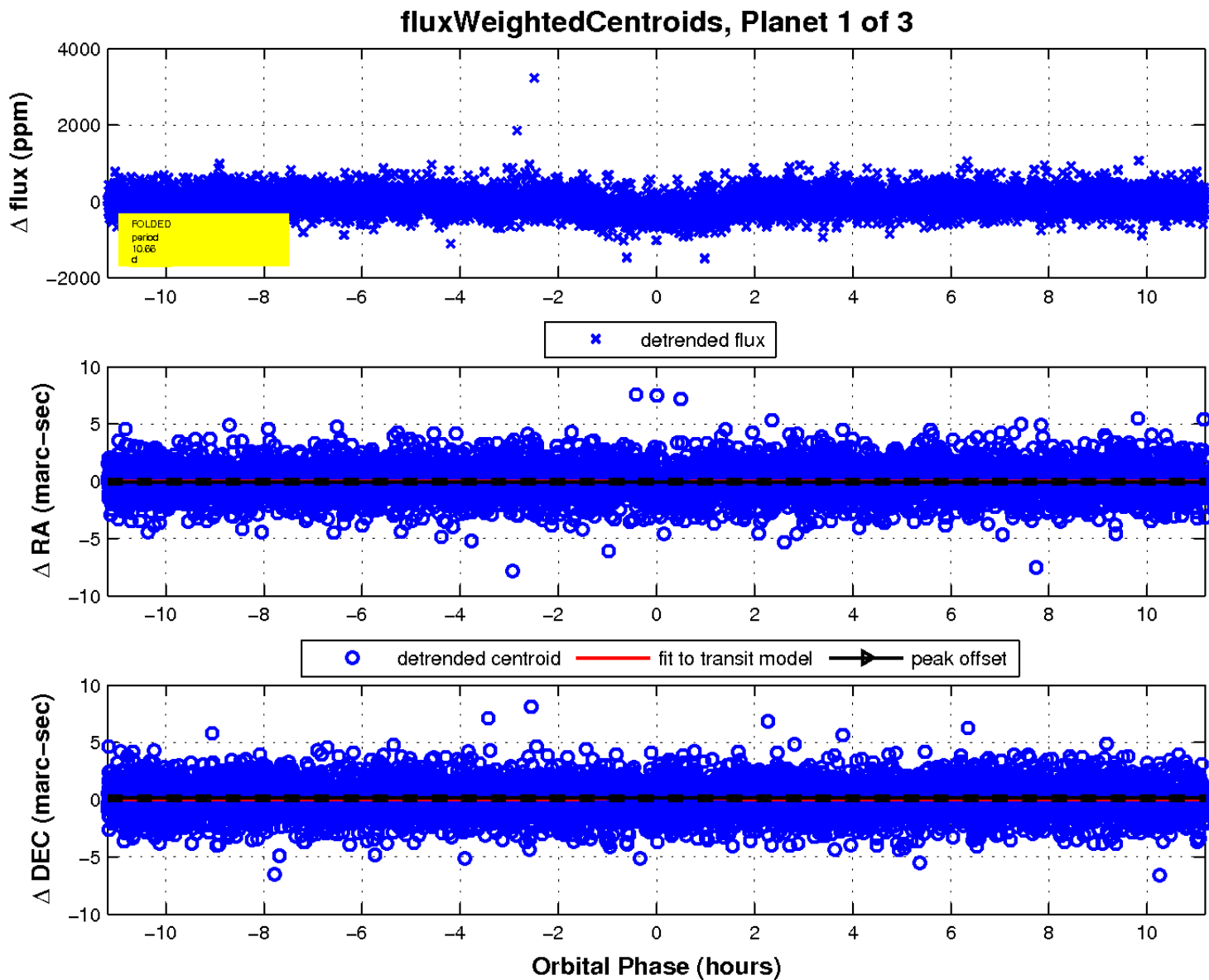
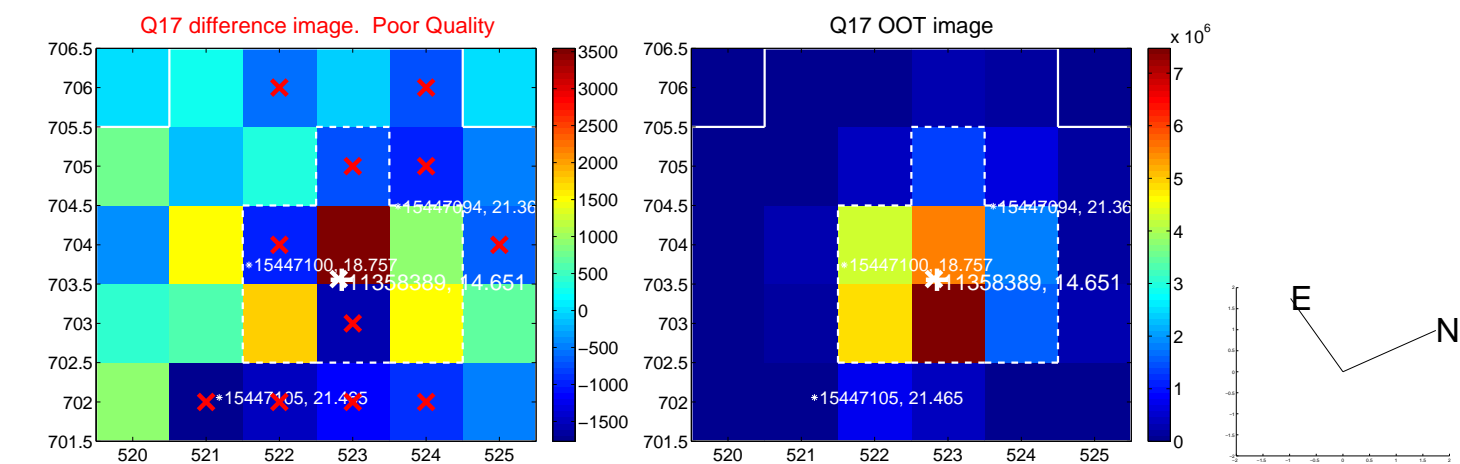
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

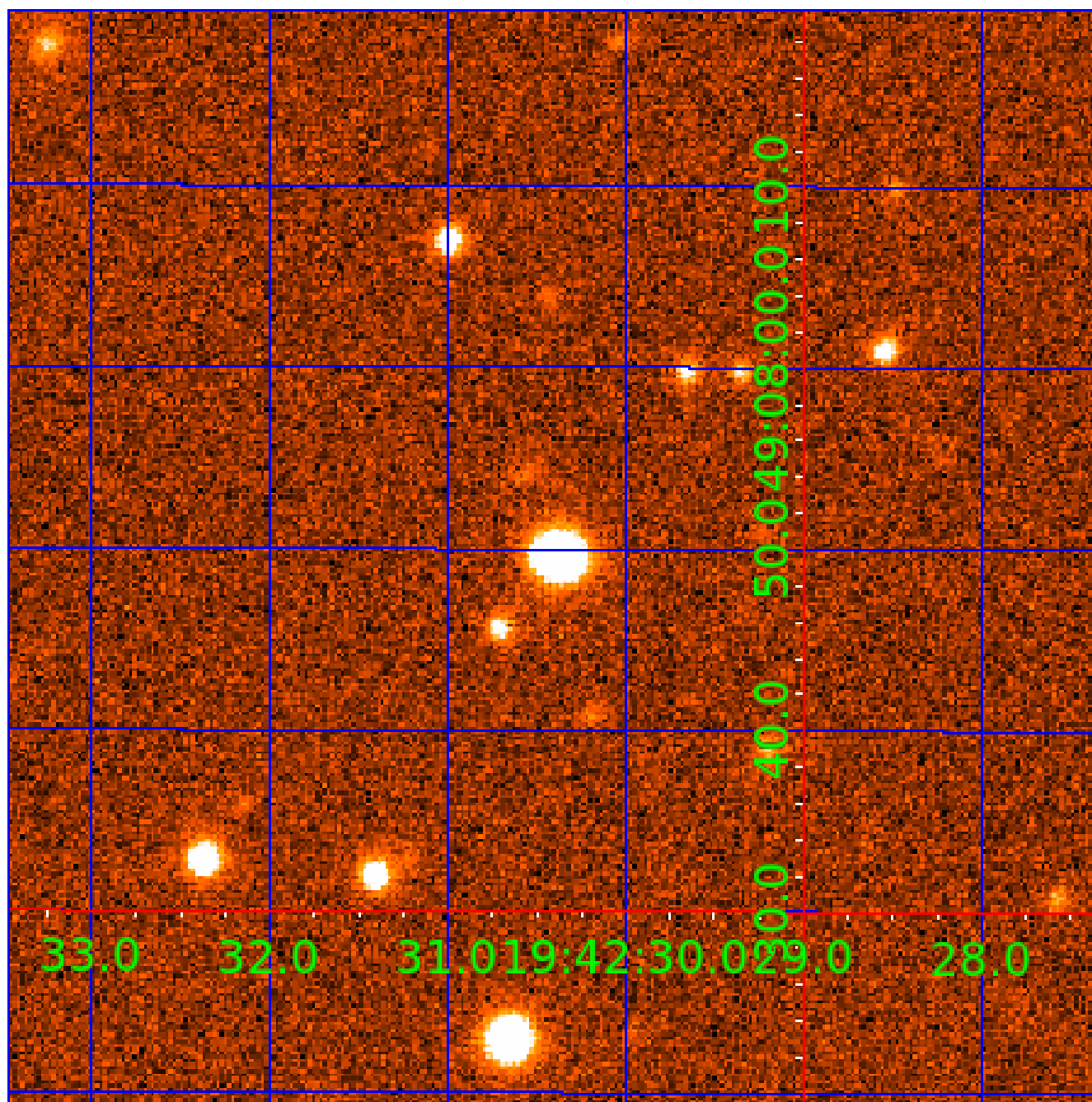


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 011358389

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})
011358389-01	OBS	2163.01	10.664898	132.008120	298.7	3.729	21.7	23.9	1.02	6014	2.27	132.52
011358389-02	OBS	2163.02	17.783540	146.925337	226.6	4.212	15.1	16.1	1.02	6014	1.73	67.02
011358389-03	OBS	2163.03	28.225120	153.744651	206.2	2.440	8.0	8.7	1.02	6014	1.72	36.20

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011358389-01	OBS	PC	0.99	0	0	0	0	NO_COMMENT
011358389-02	OBS	PC	1.00	0	0	0	0	NO_COMMENT
011358389-03	OBS	PC	0.79	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.

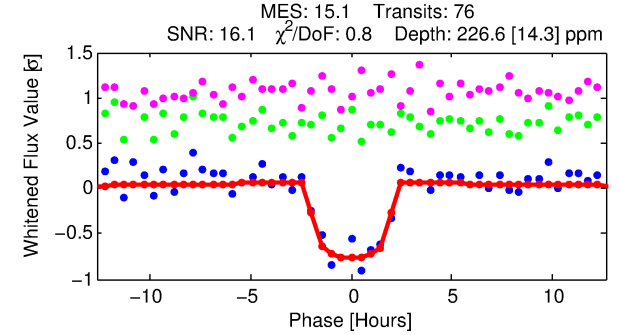
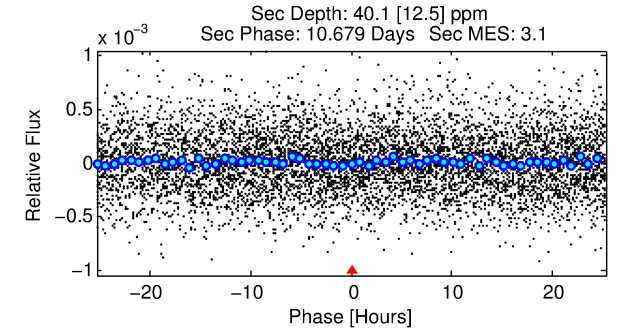
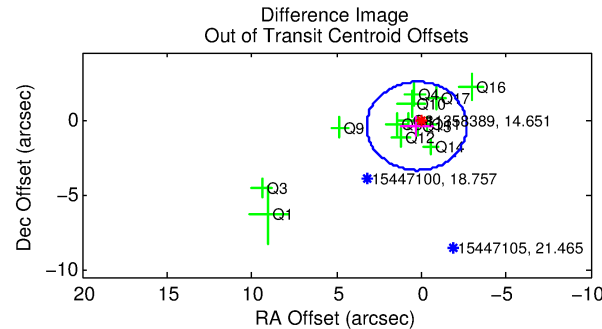
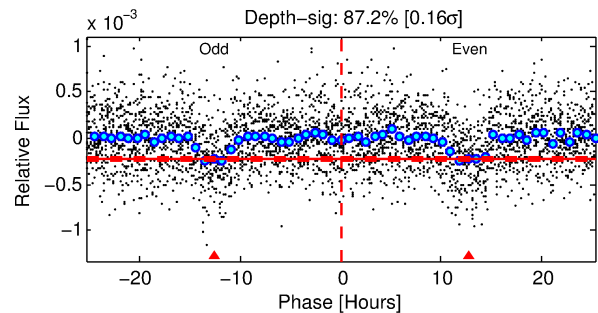
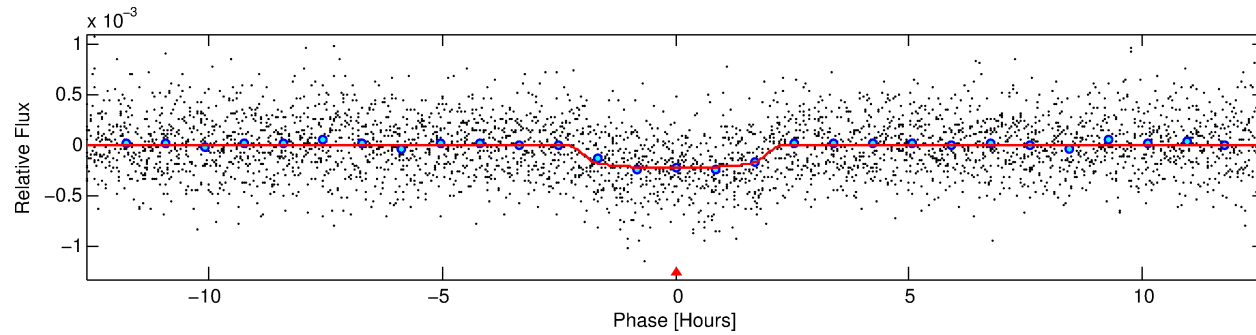
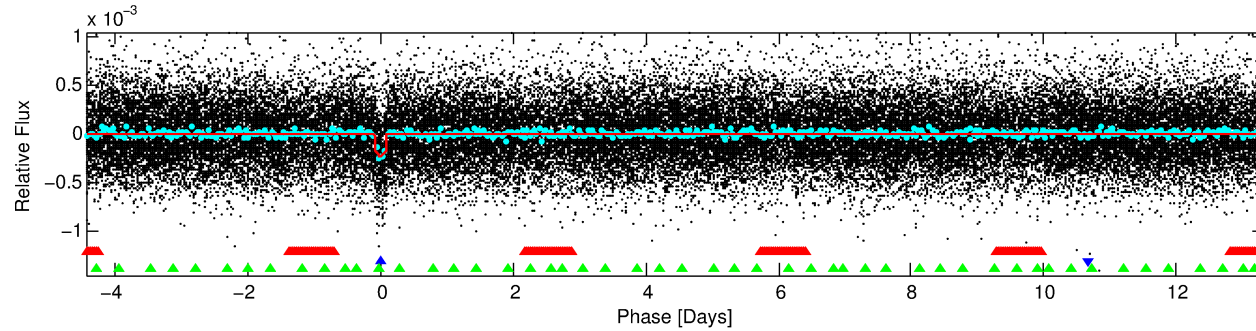
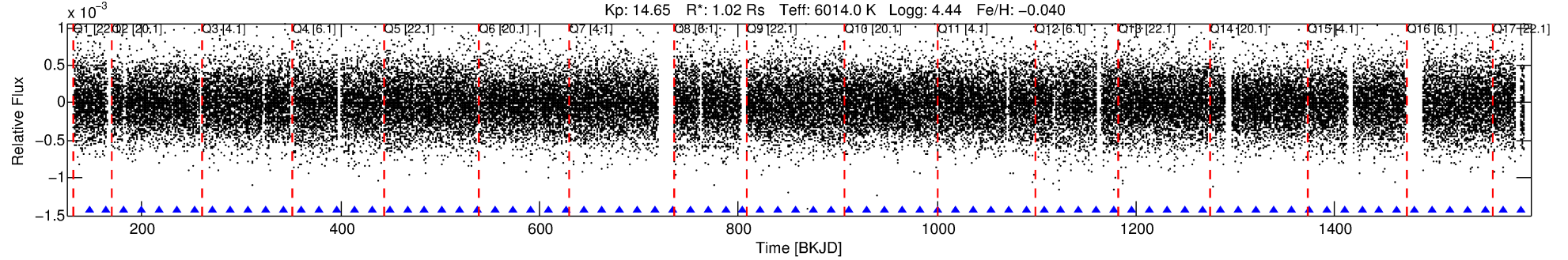
Ephemeris Match Information For 011358389-02

No Significant Match Found

DV One-Page Summary

KIC: 11358389 Candidate: 2 of 3 Period: 17.784 d
KOI: K02163.02 Name: Kepler-365c Corr: 0.976

Kp: 14.65 R*: 1.02 Rs Teff: 6014.0 K Logg: 4.44 Fe/H: -0.040



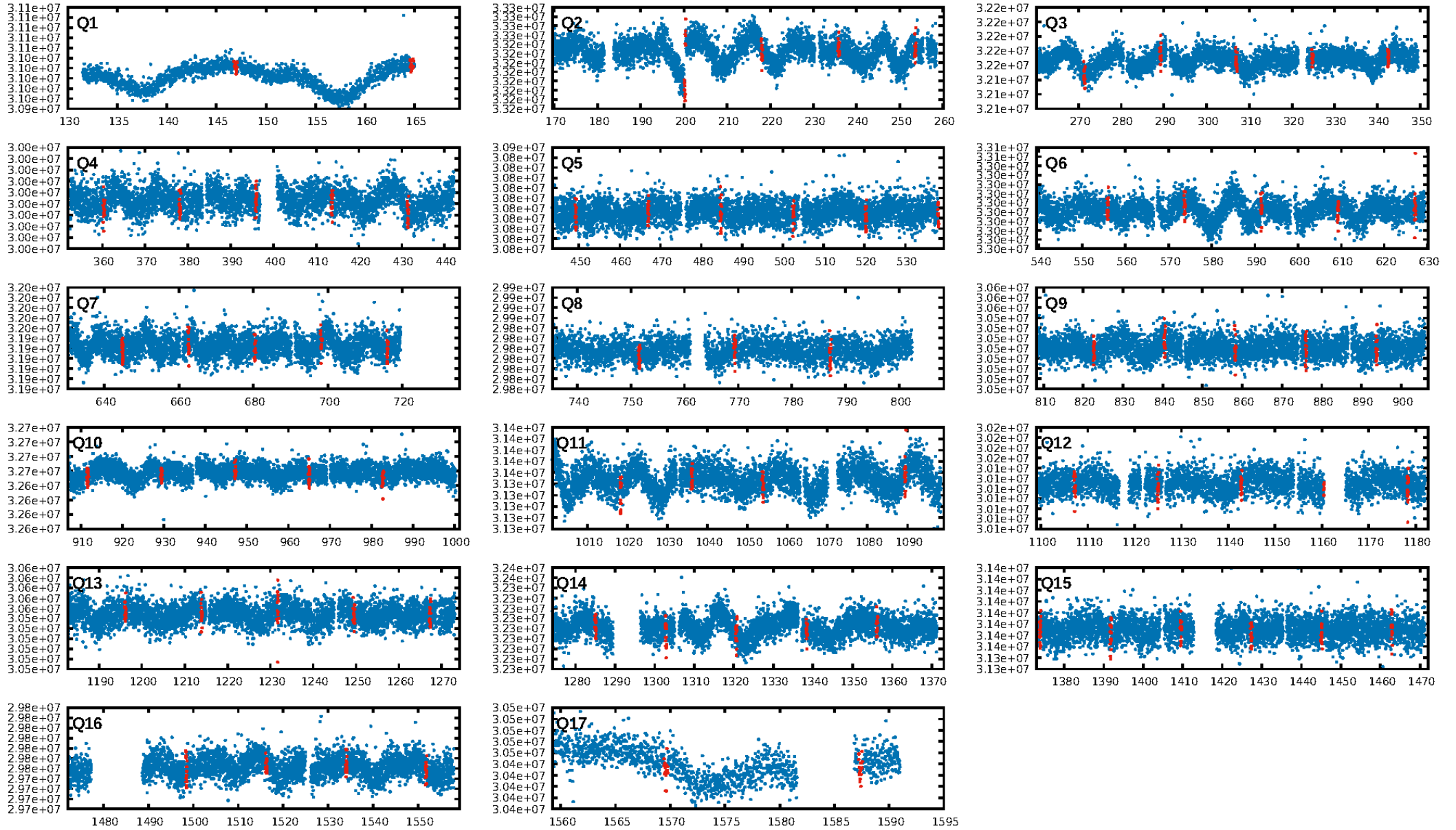
DV Fit Results:

Period = 17.78354 [0.00012] d
Epoch = 146.9253 [0.0056] BKJD
Rp/R* = 0.0156 [0.0064]
a/R* = 18.65 [37.78]
b = 0.84 [0.74]
Seff = 67.02 [28.27]
Teq = 730 [77] K
Rp = 1.73 [0.91] Re
a = 0.1350 [0.0370] AU
Ag = 133.73 [129.34] [1.03σ]
Teffp = 3836 [856] K [3.61σ]

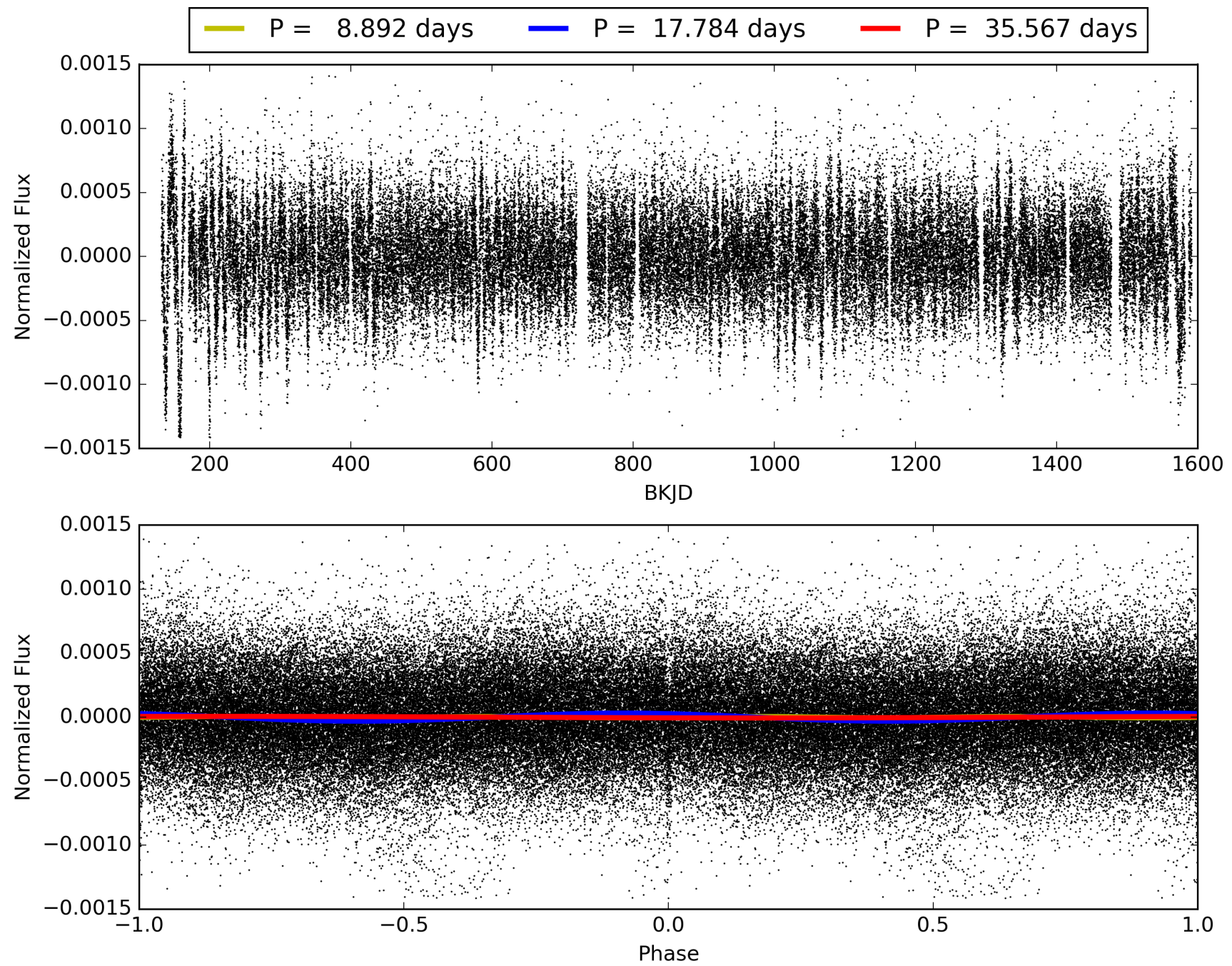
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [30.37σ]
LongPeriod-sig: 100.0% [51.48σ]
ModelChiSquare2-sig: 99.2%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 6.25e-51
RollingBand-fgt: 1.00 [72/72]
GhostDiagnostic-chr: 2.372
Centroid-sig: 24.1%
Centroid-so: 0.831 arcsec [1.02σ]
OotOffset-rm: 0.500 arcsec [0.51σ]
KicOffset-rm: 0.420 arcsec [0.49σ]
OotOffset-st: 3/3/4/3 [13]
KicOffset-st: 3/3/4/3 [13]
DiffImageQuality-fgm: 0.69 [9/13]
DiffImageOverlap-fno: 1.00 [17/17]

TCE 011358389-02, PDC Light Curves

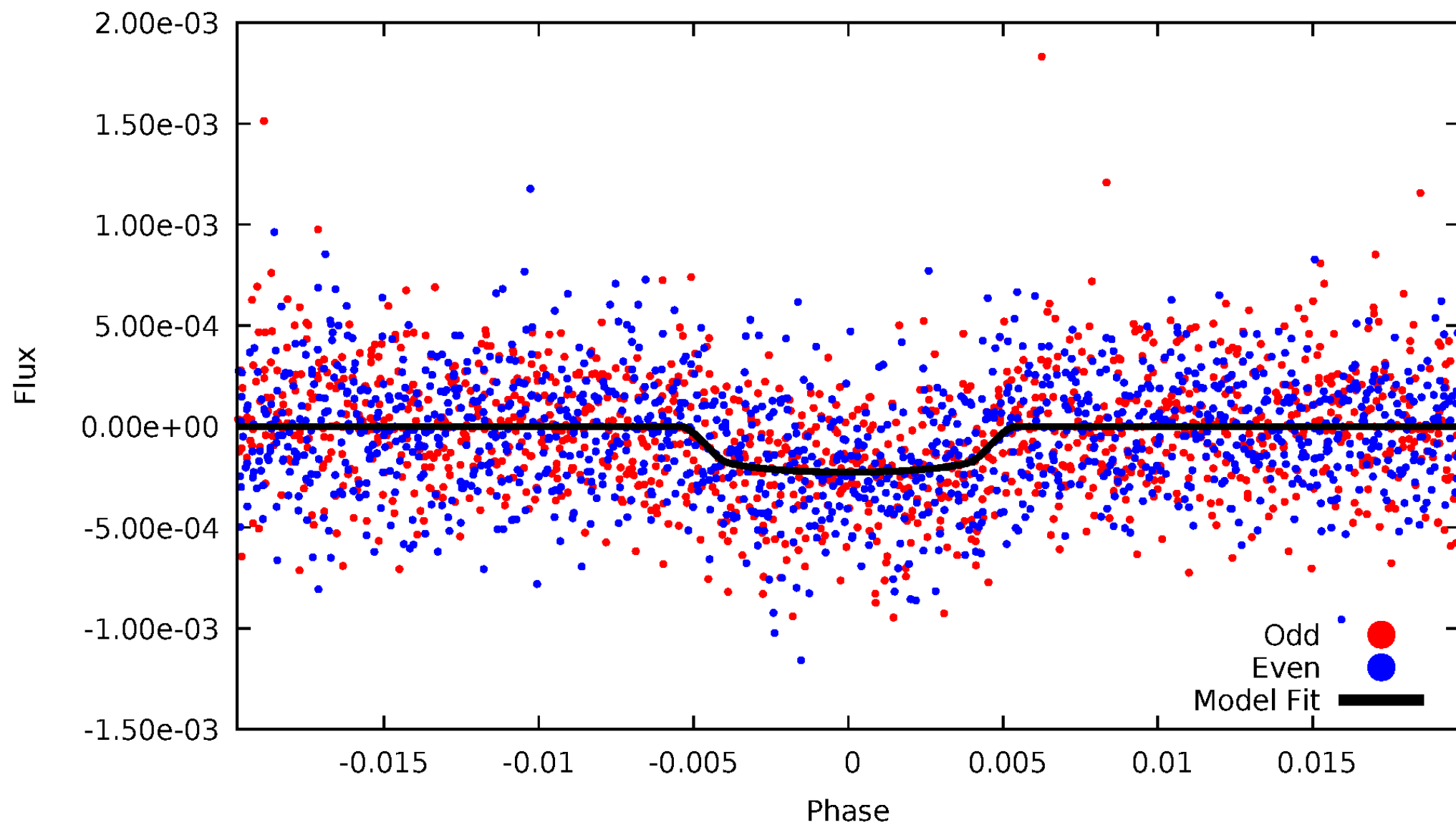


TCE 011358389-02



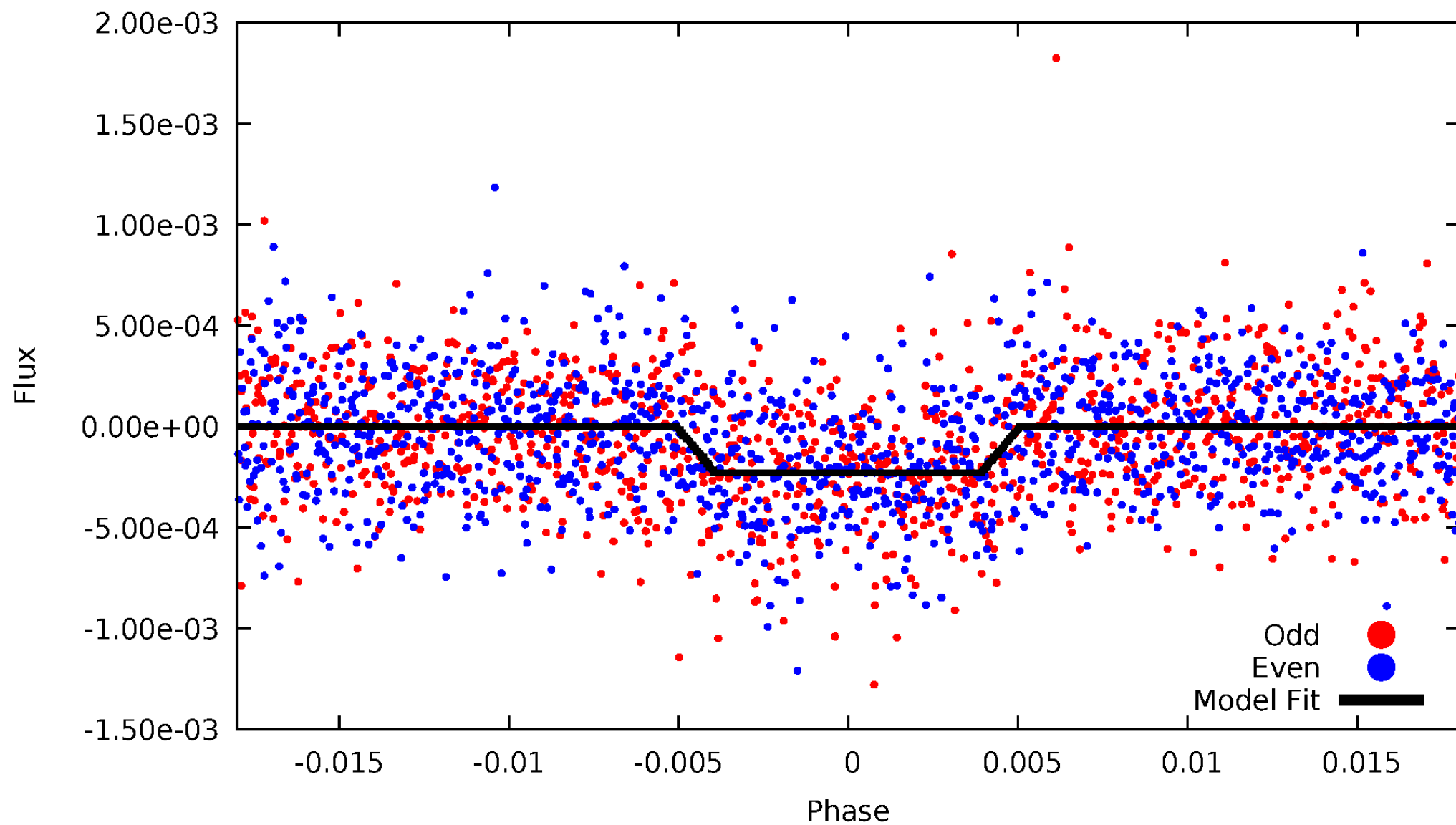
DV Odd/Even

TCE 011358389-02



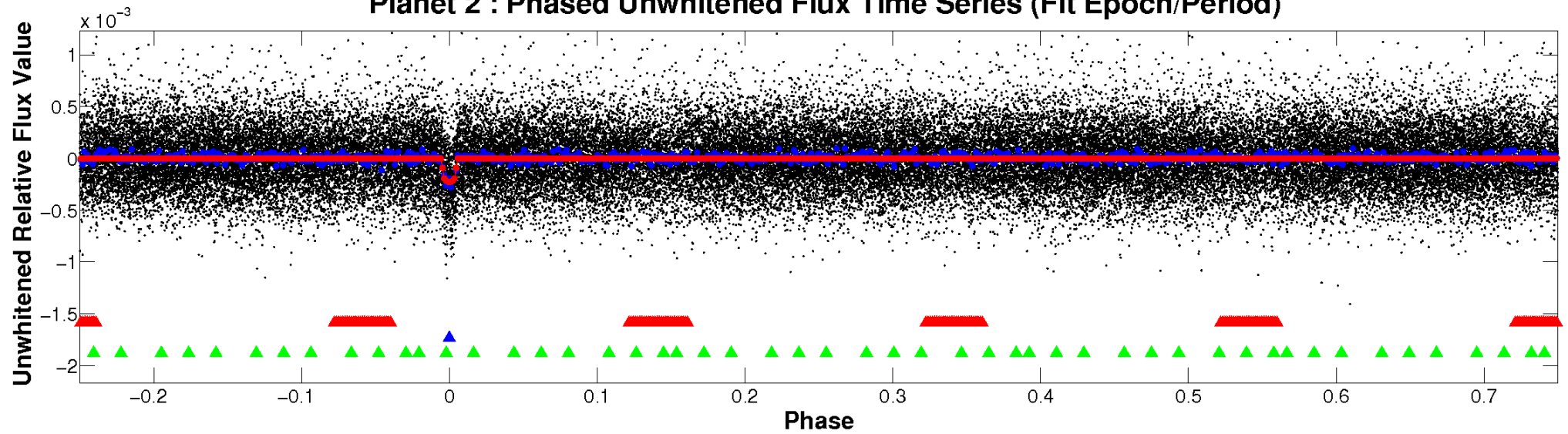
ALT Odd/Even

TCE 011358389-02

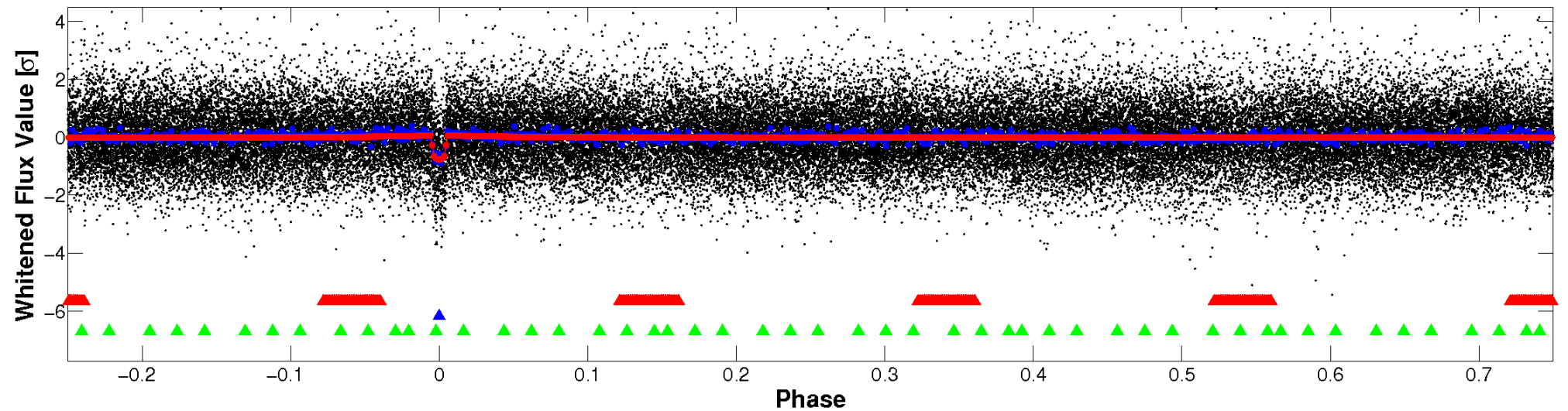


Non-Whitened Vs. Whitened Light Curve

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

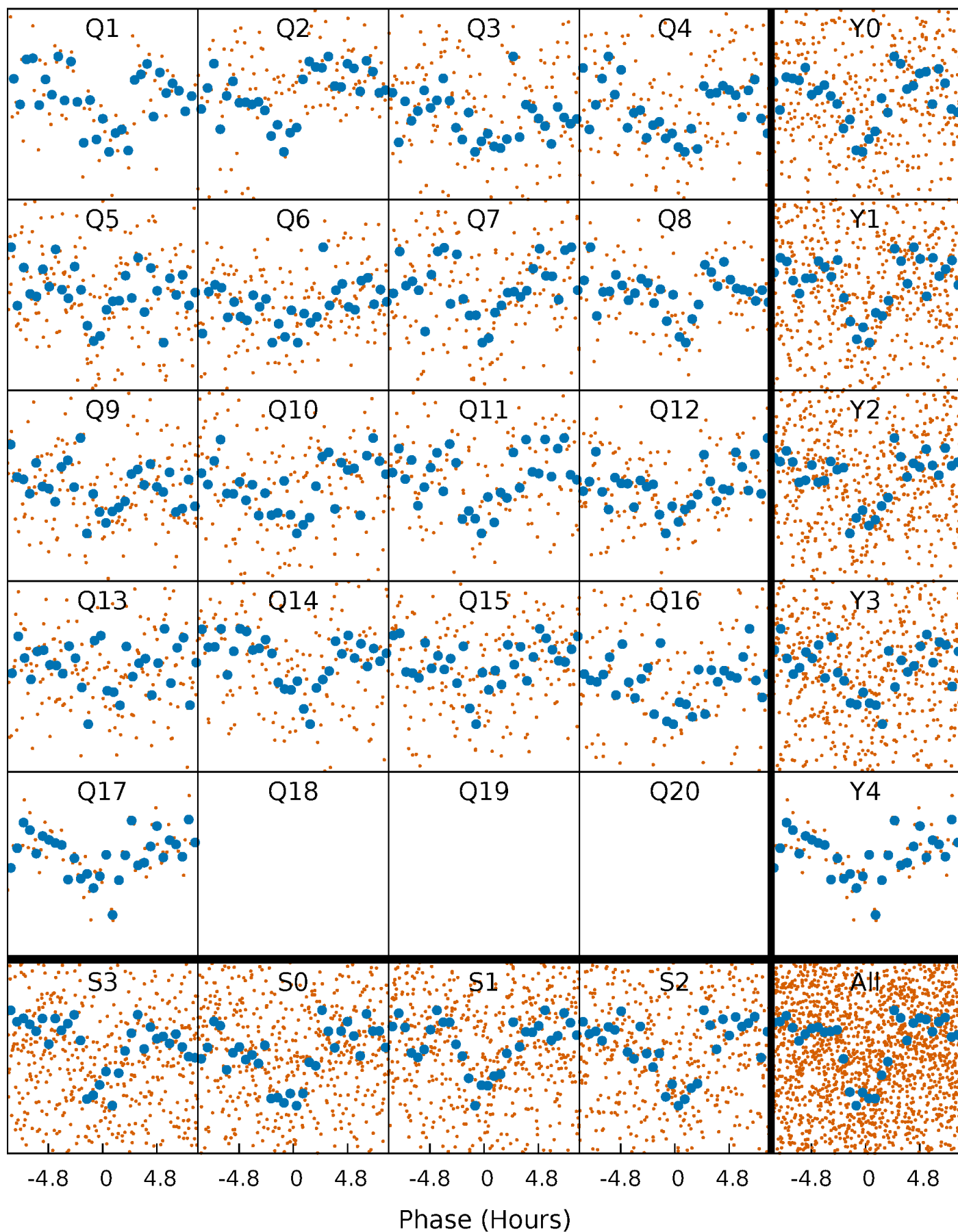


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



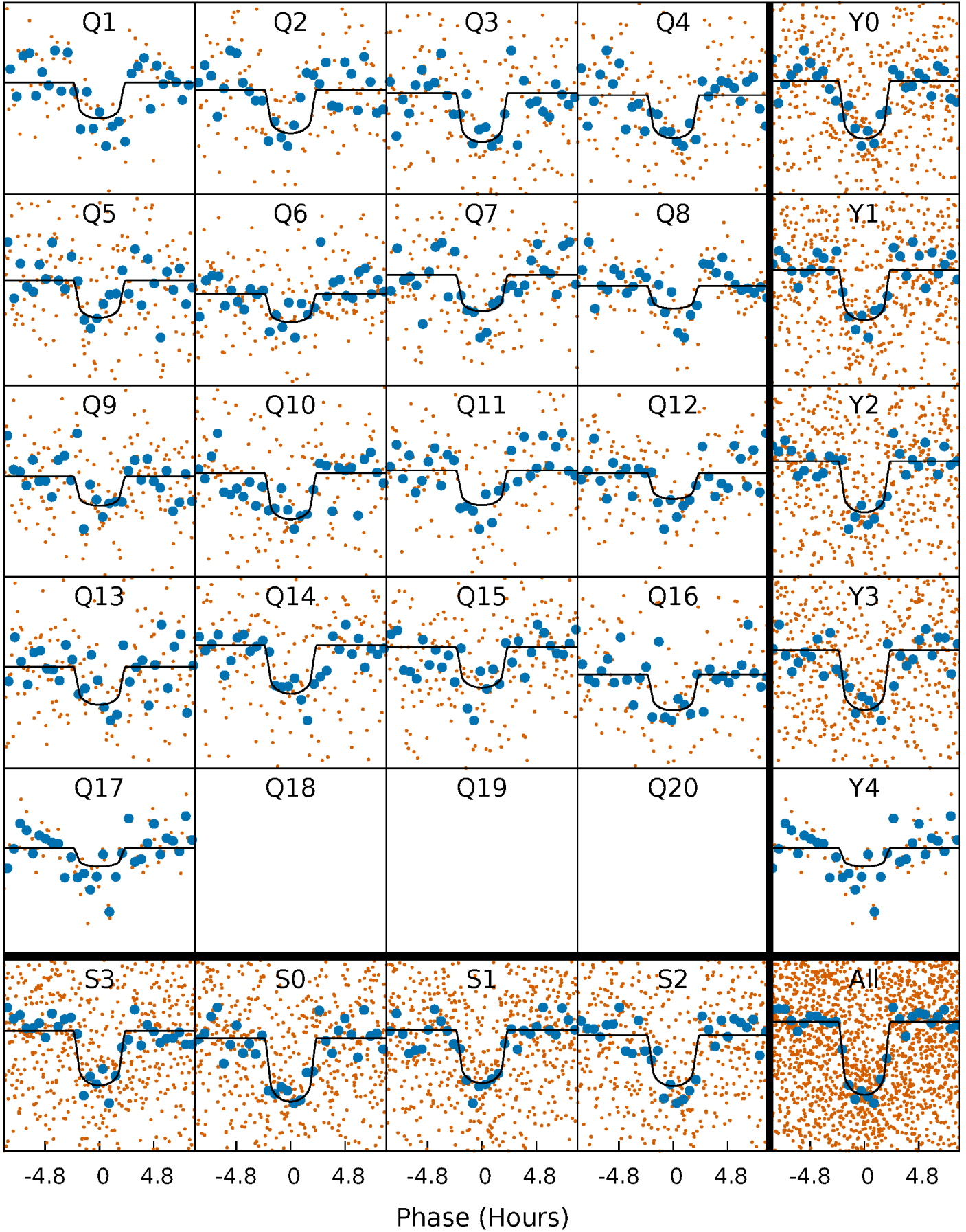
PDC Quarter-Phased Transit Curves

TCE 011358389-02 P= 17.783540 Days $T_0=146.925337$ (BKJD)



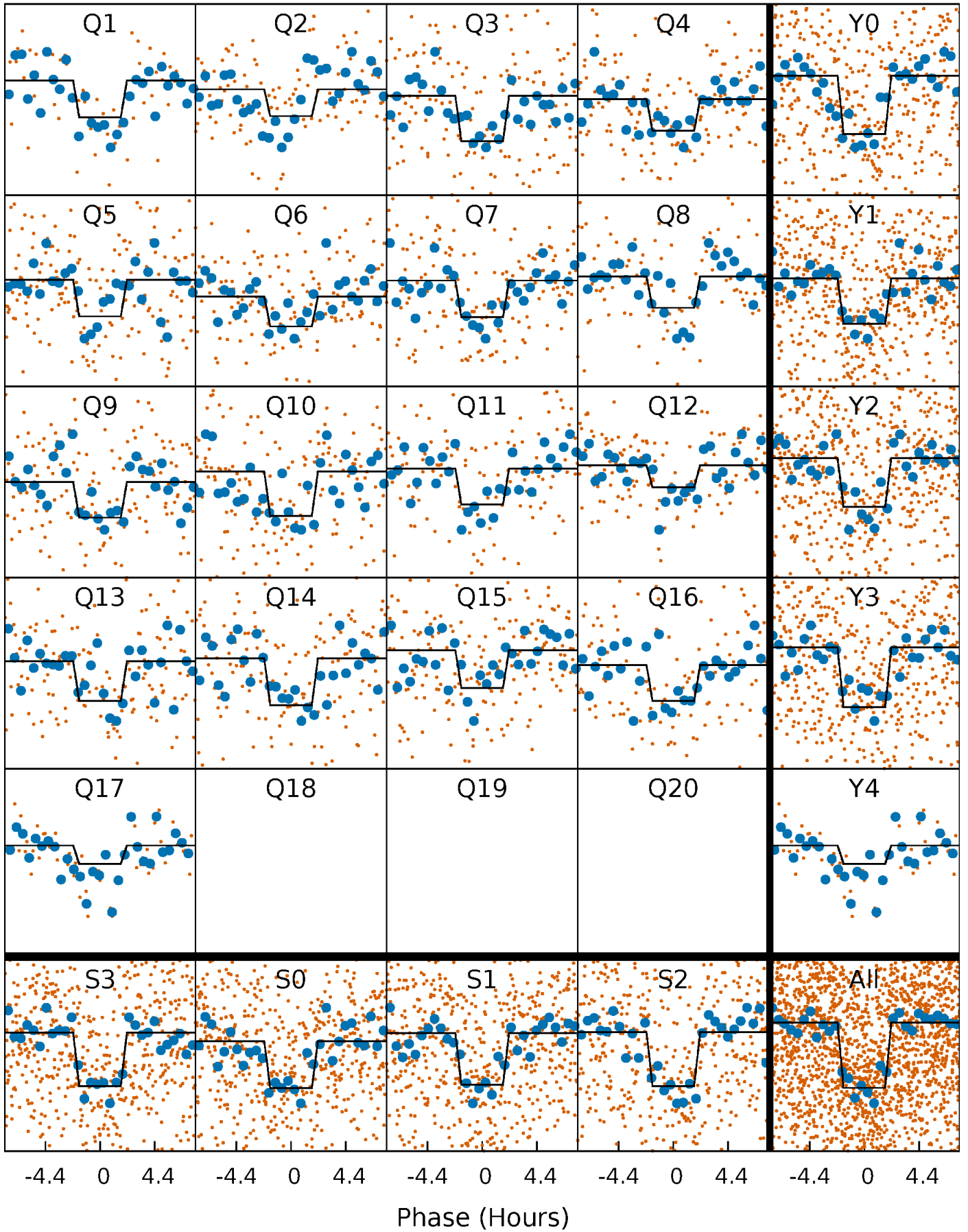
DV Quarter-Phased Transit Curves

TCE 011358389-02 P= 17.783540 Days $T_0=146.925337$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

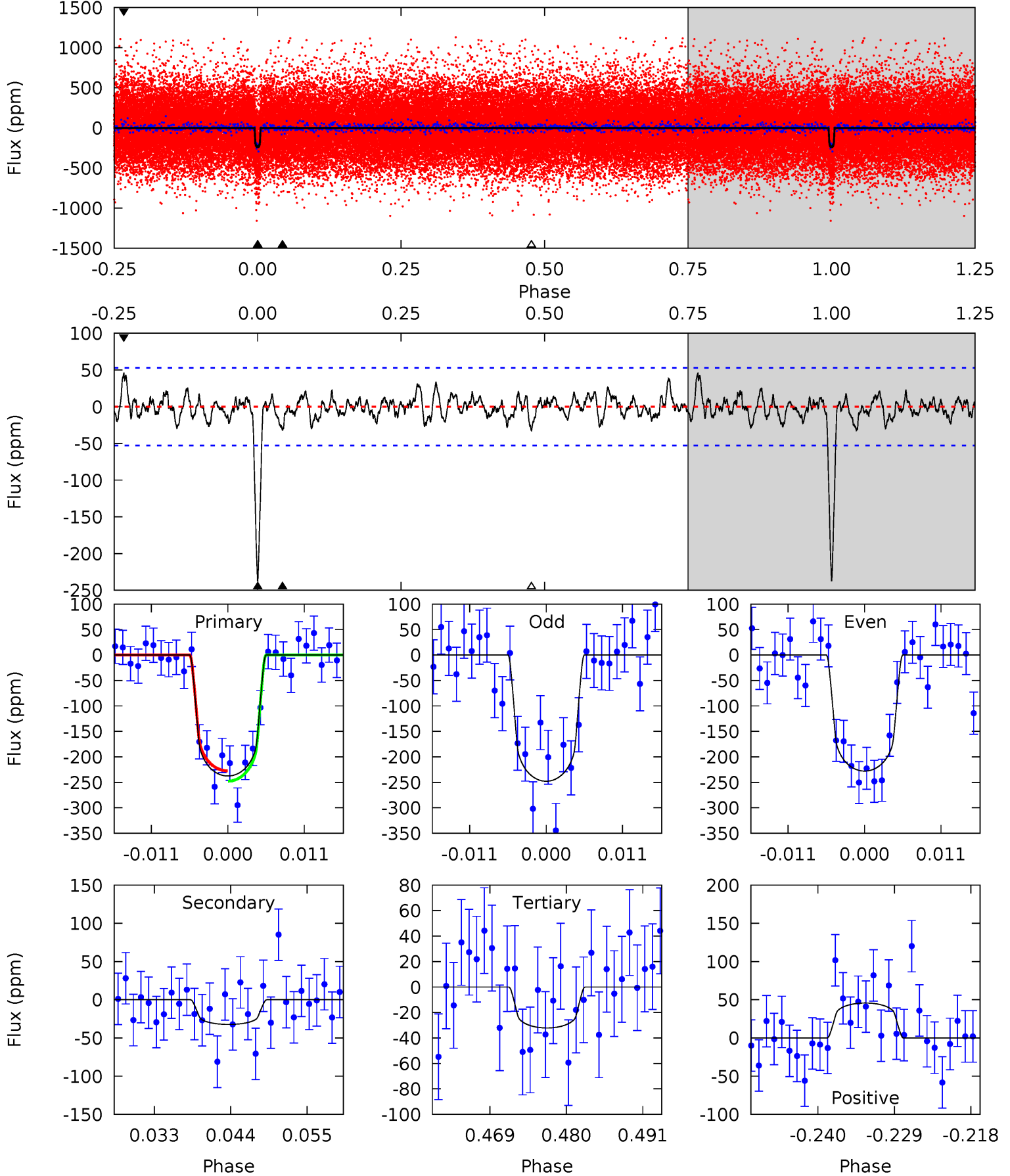
TCE 011358389-02 P= 17.783464 Days $T_0=146.929310$ (BKJD)



DV Model-Shift Uniqueness Test

011358389-02, $P = 17.783540$ Days, $E = 129.141797$ Days

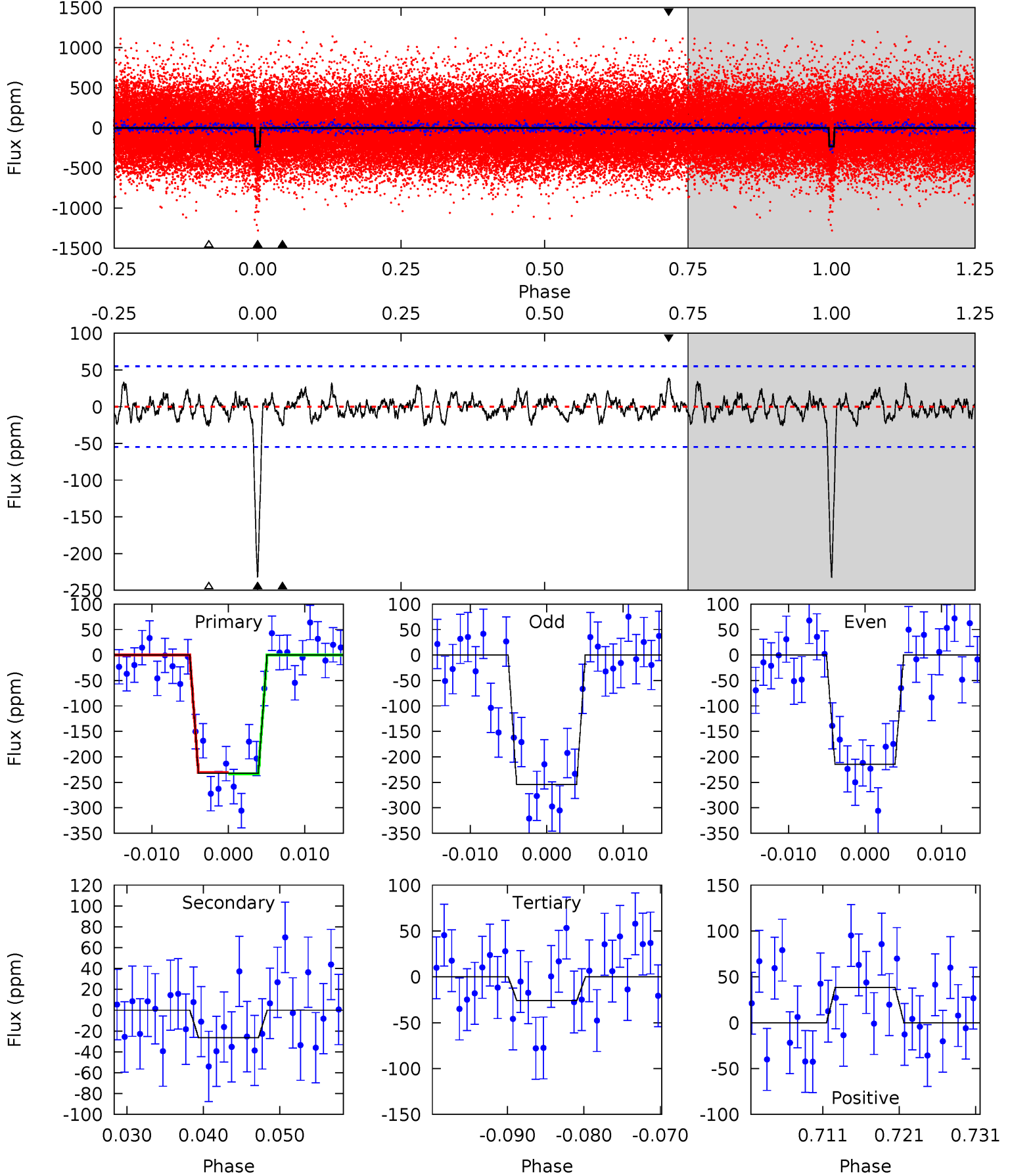
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
22.5	3.07	3.05	4.34	5.01	2.55	1.17	19.5	18.2	0.02	-1.27	0.95	0.93	0.16	0.96



Alt Model-Shift Uniqueness Test

011358389-02, $P = 17.783464$ Days, $E = 129.145846$ Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
21.2	2.42	2.37	3.50	5.03	2.58	1.02	18.9	17.7	0.05	-1.08	1.82	0.97	0.14	0.12



Stellar Parameters For KIC 011358389

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6014^{+190}_{-211}	$4.436^{+0.072}_{-0.217}$	$-0.040^{+0.250}_{-0.300}$	$1.021^{+0.333}_{-0.133}$	$1.037^{+0.145}_{-0.130}$	$1.371^{+0.515}_{-0.721}$
	+3%/-4%	+2%/-5%	+625%/-750%	+33%/-13%	+14%/-13%	+38%/-53%
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 011358389-02 / KOI 2163.02

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-32 ± 11	$1.83^{+0.80}_{-0.75}$	1041^{+79}_{-58}	3939^{+860}_{-463}	95^{+180}_{-52}
Alt.	-26 ± 11	$1.75^{+0.84}_{-0.77}$	1040^{+85}_{-53}	3854^{+993}_{-537}	83^{+199}_{-52}

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

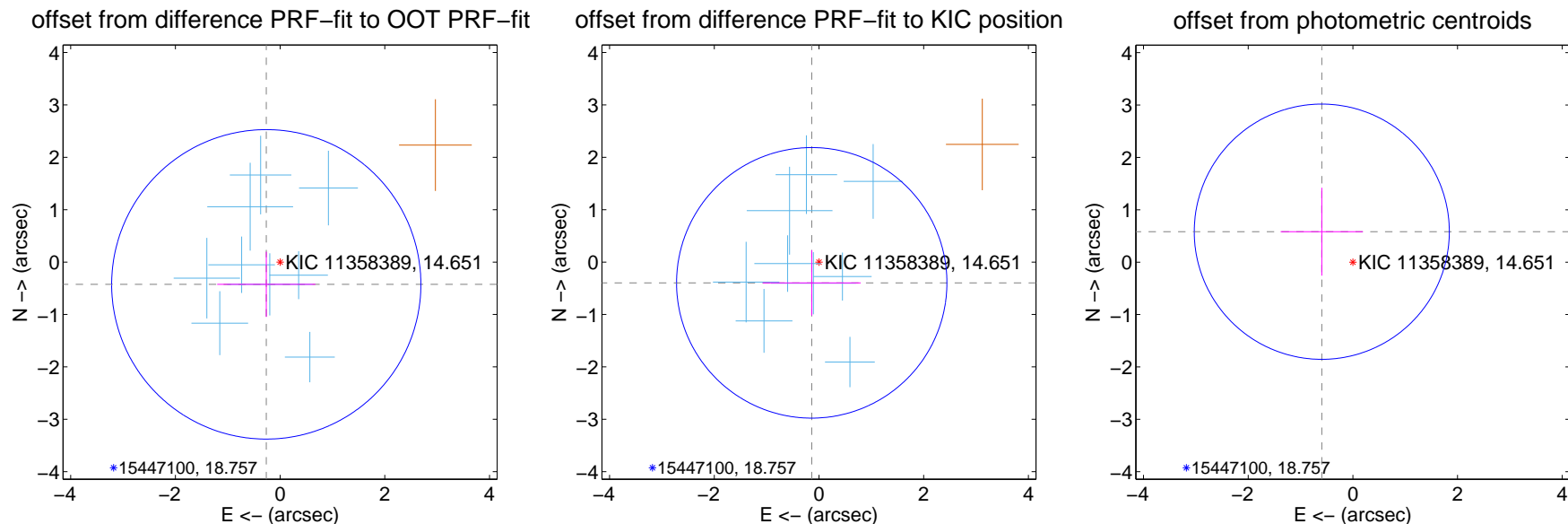
DV Centroid Data

Supplemental centroid analysis for 011358389-02. Kepler magnitude: 14.65. Transit SNR 16.15

There are 9 quarters with good PRF difference image offsets

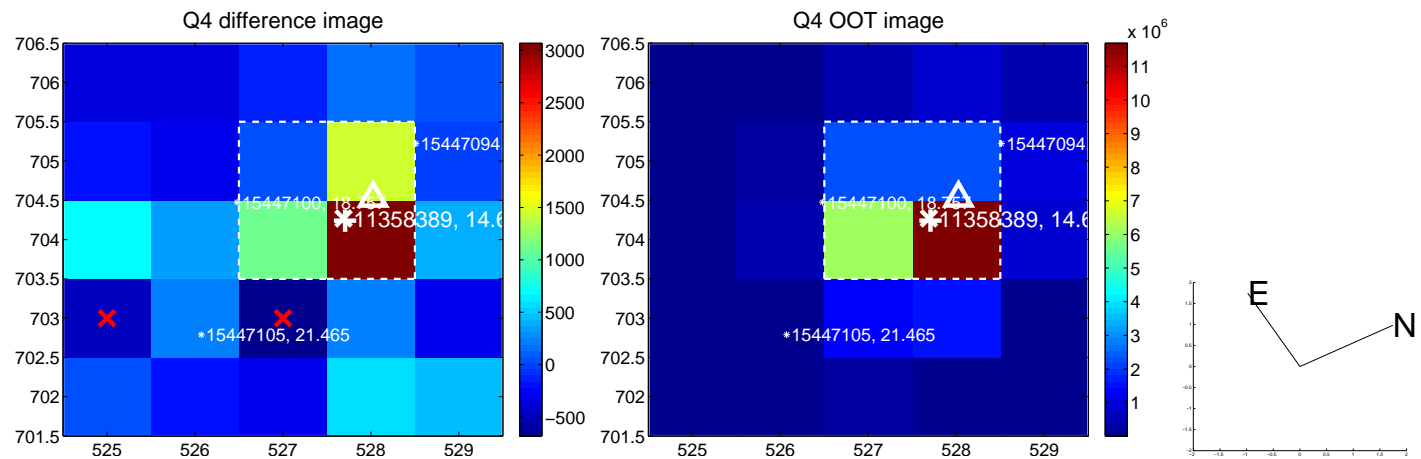
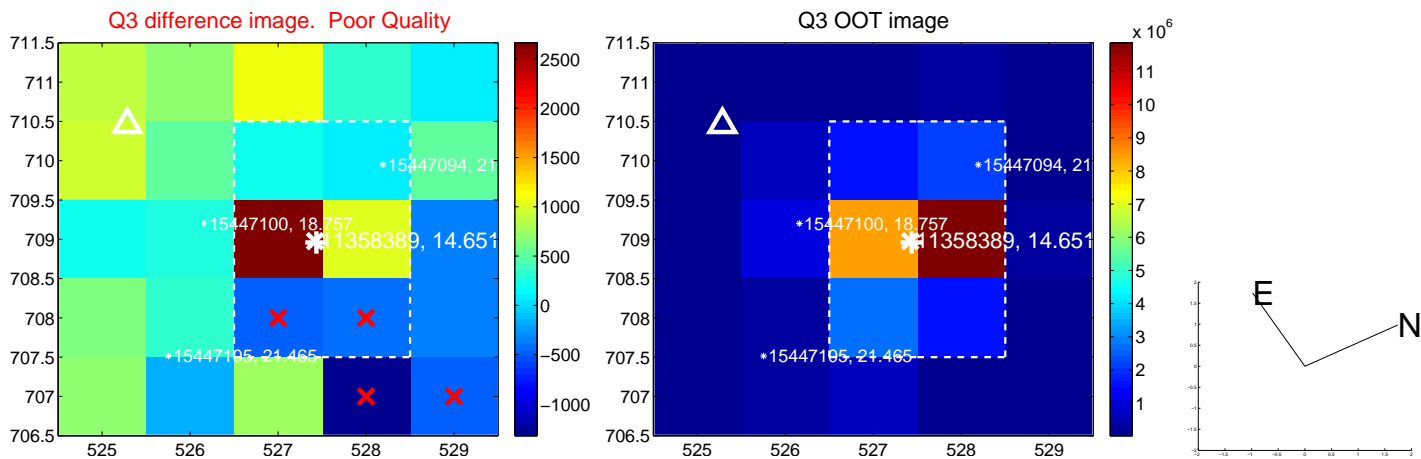
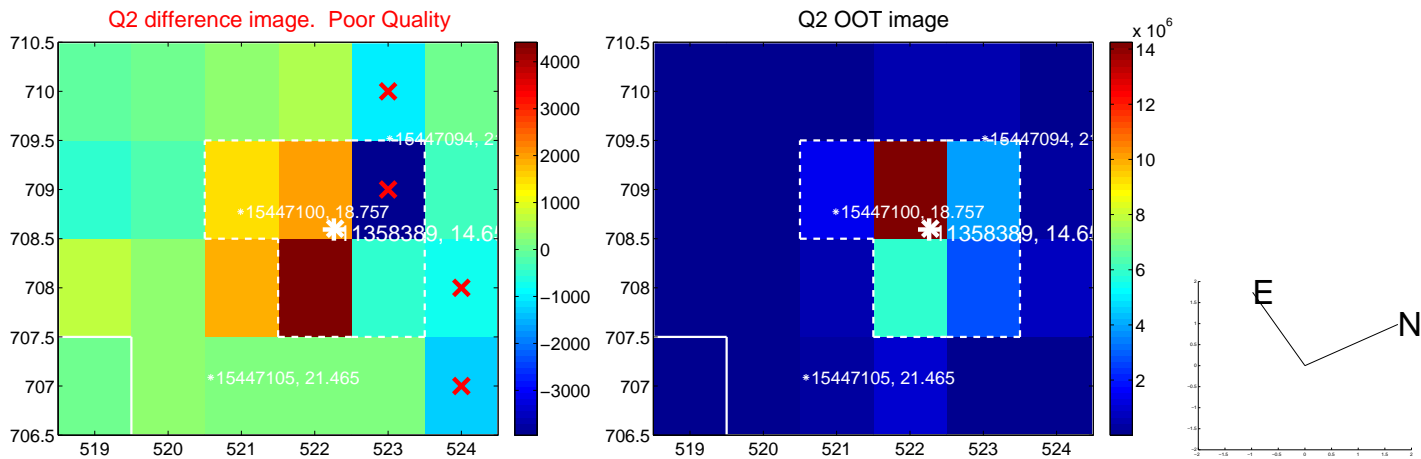
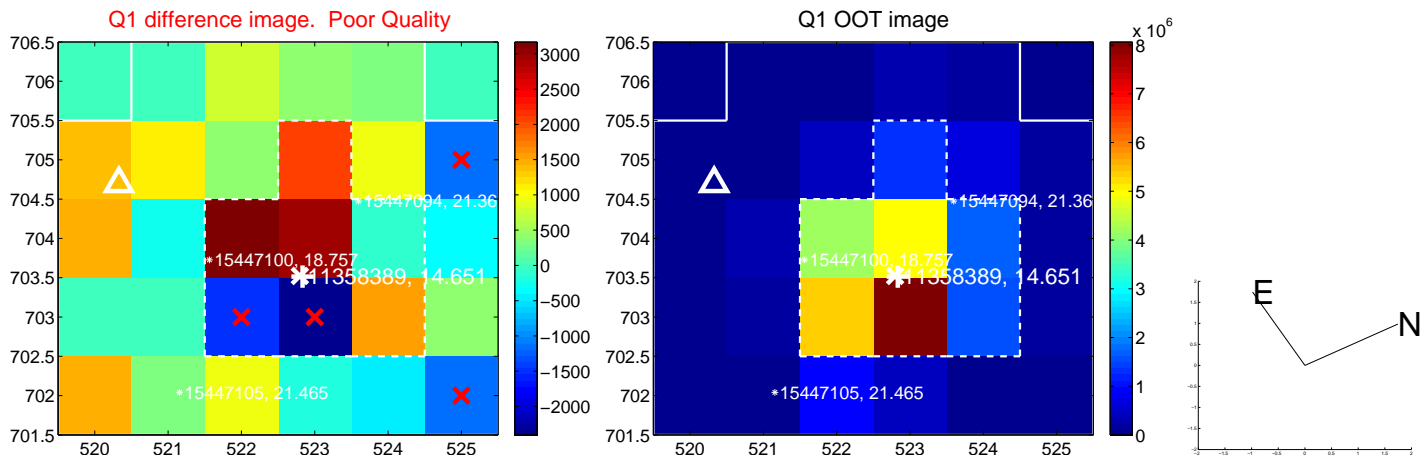
The direct PRF centroid is offset from the target star catalog position by about 0.17 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.500 ± 0.984	0.51	0.264 ± 0.937	-0.425 ± 0.621
PRF-fit source offset from KIC position	0.420 ± 0.860	0.49	0.138 ± 0.935	-0.396 ± 0.623
photometric centroid source offset	0.83 ± 0.81	1.02	0.59 ± 0.79	0.58 ± 0.84

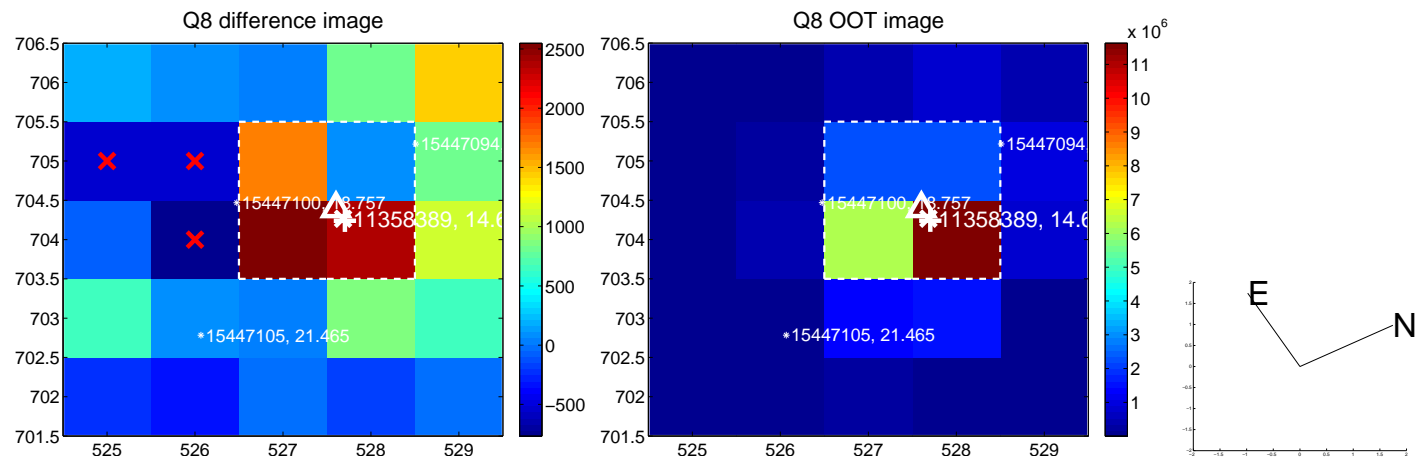
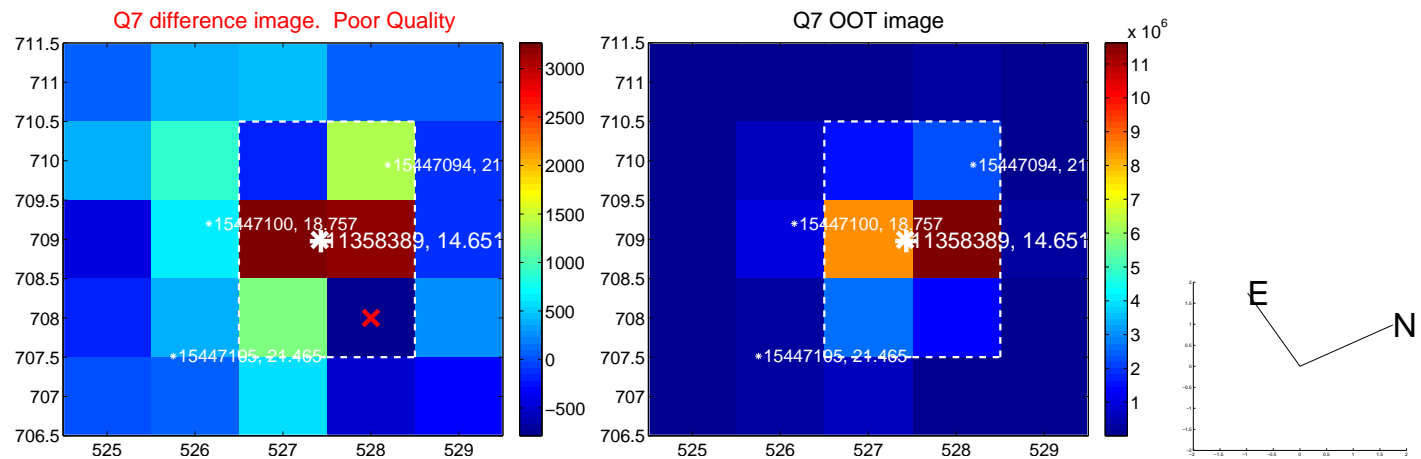
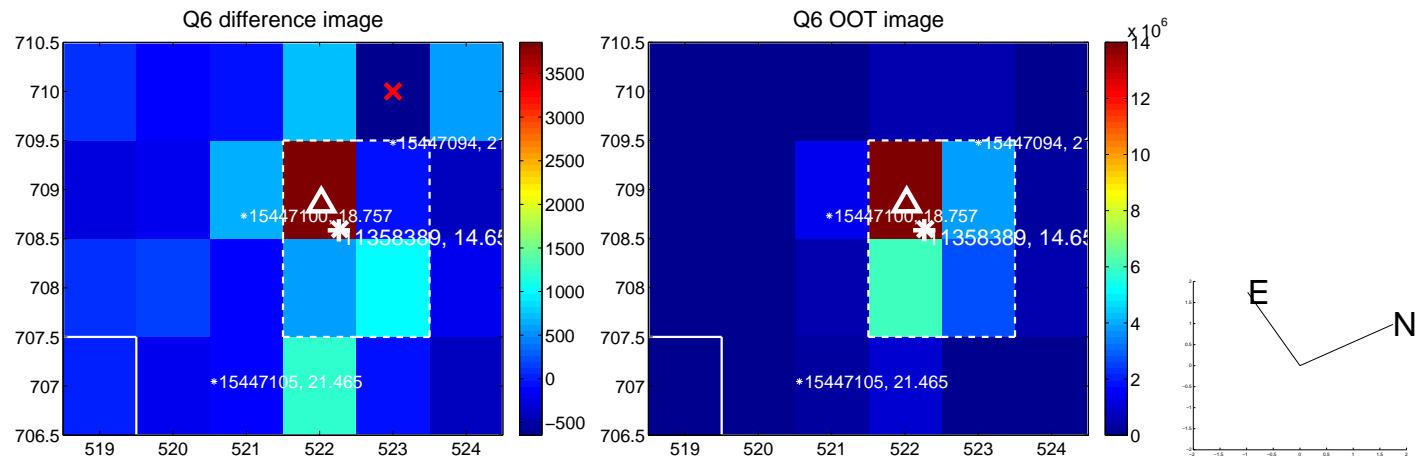
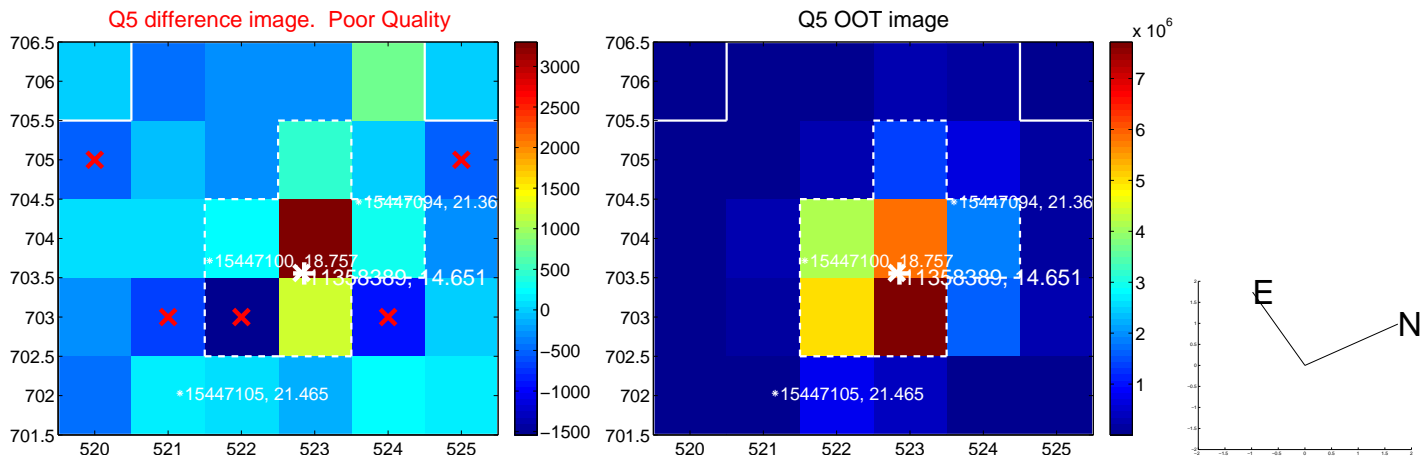


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

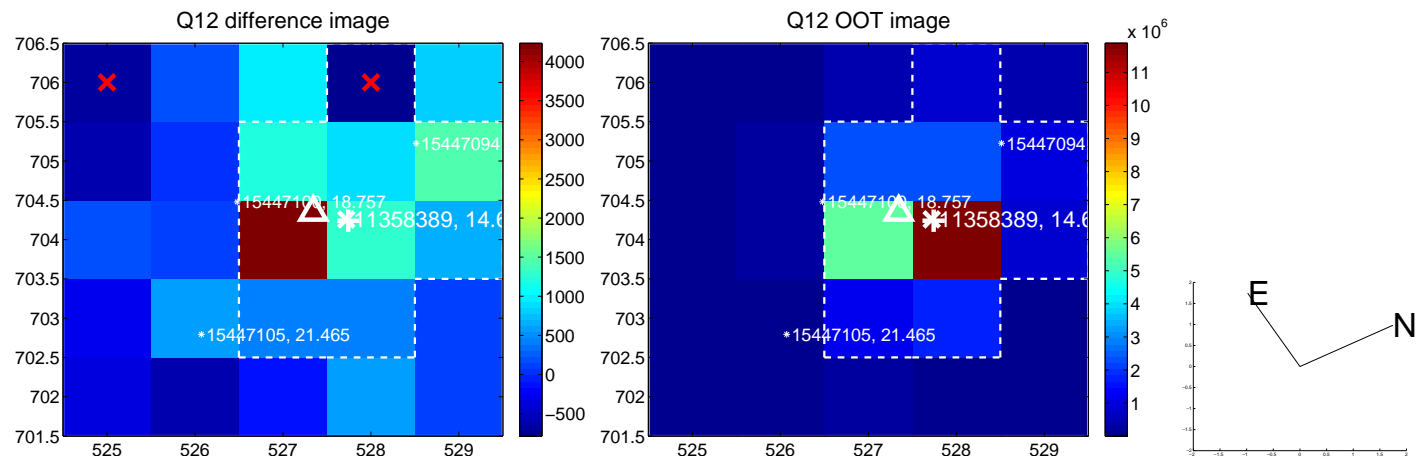
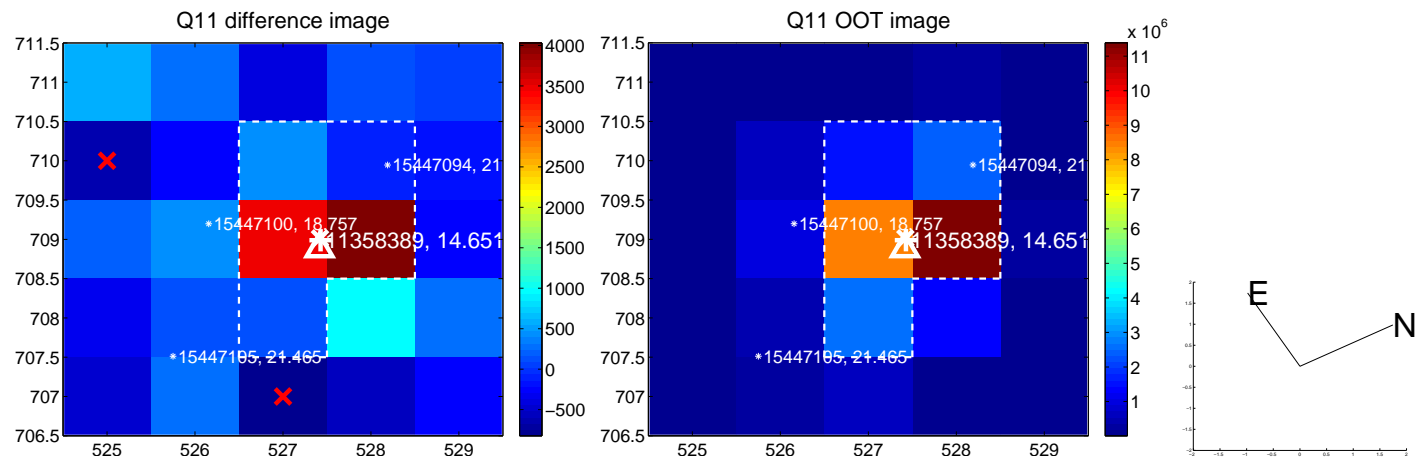
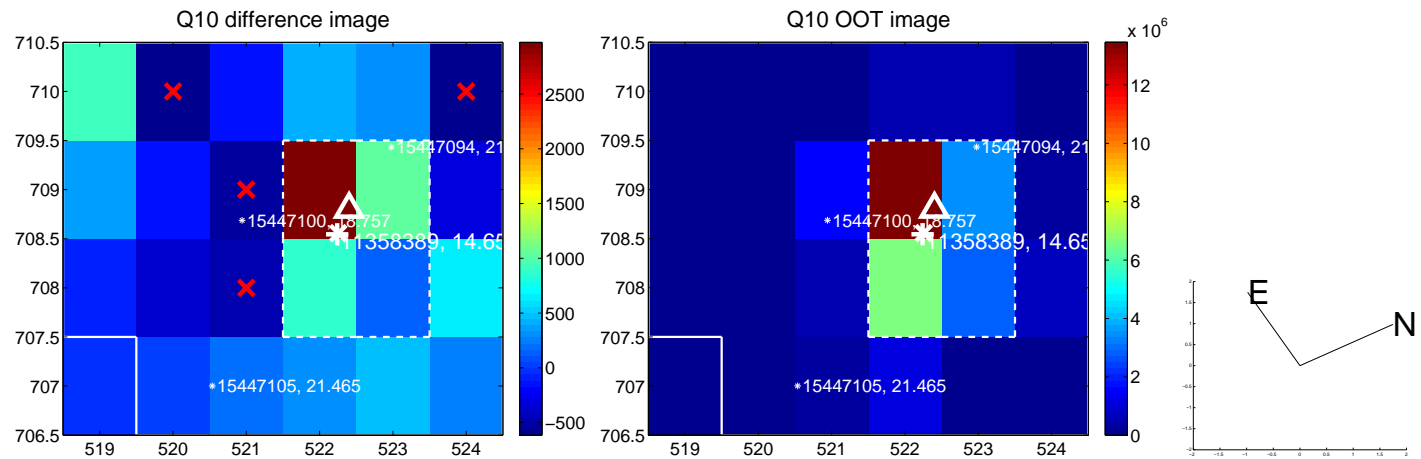
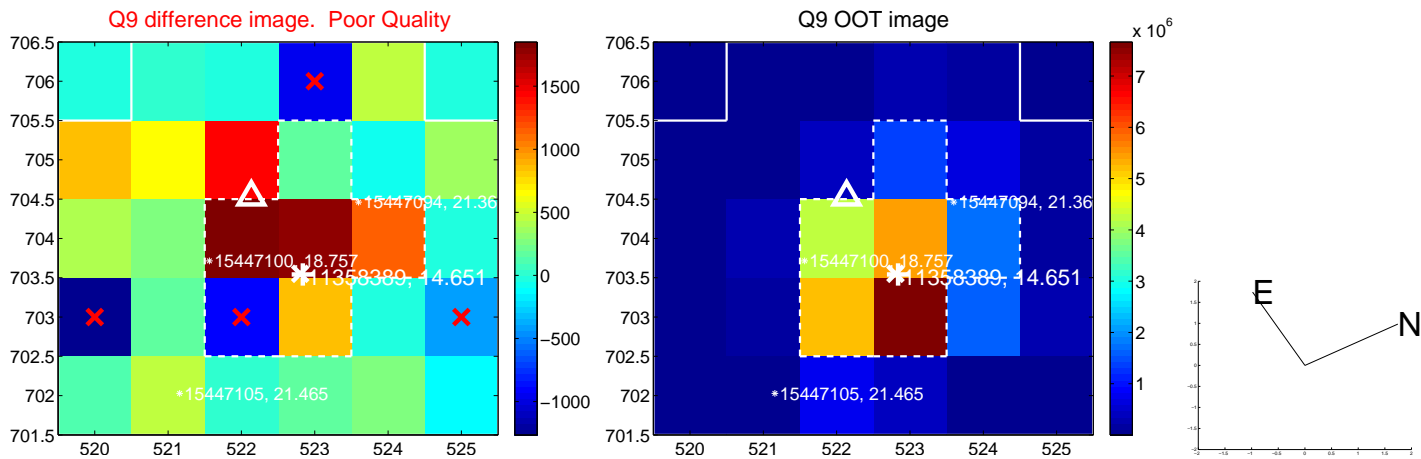
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



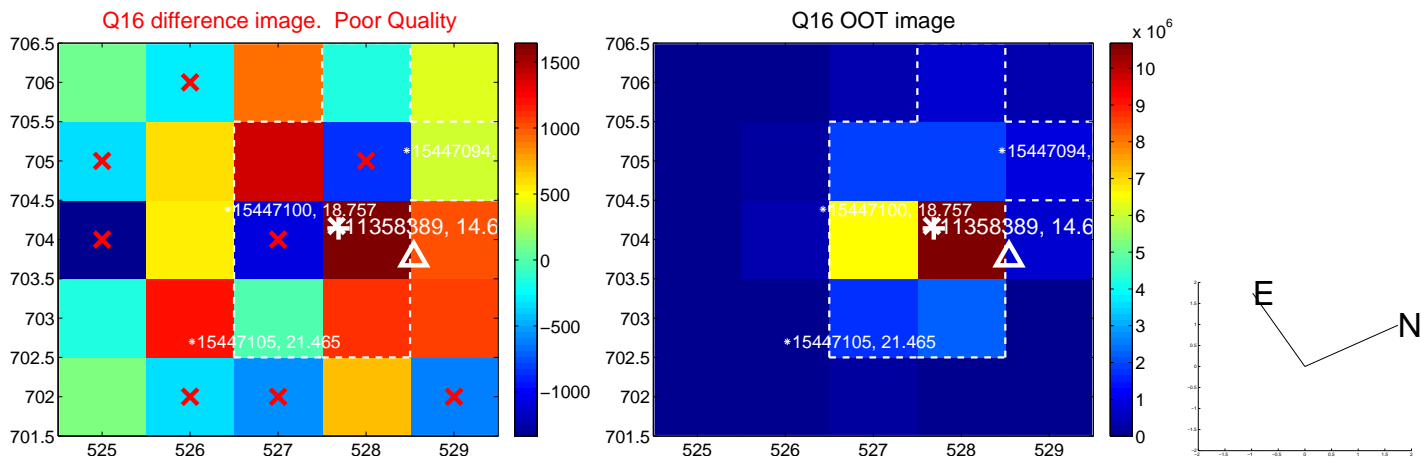
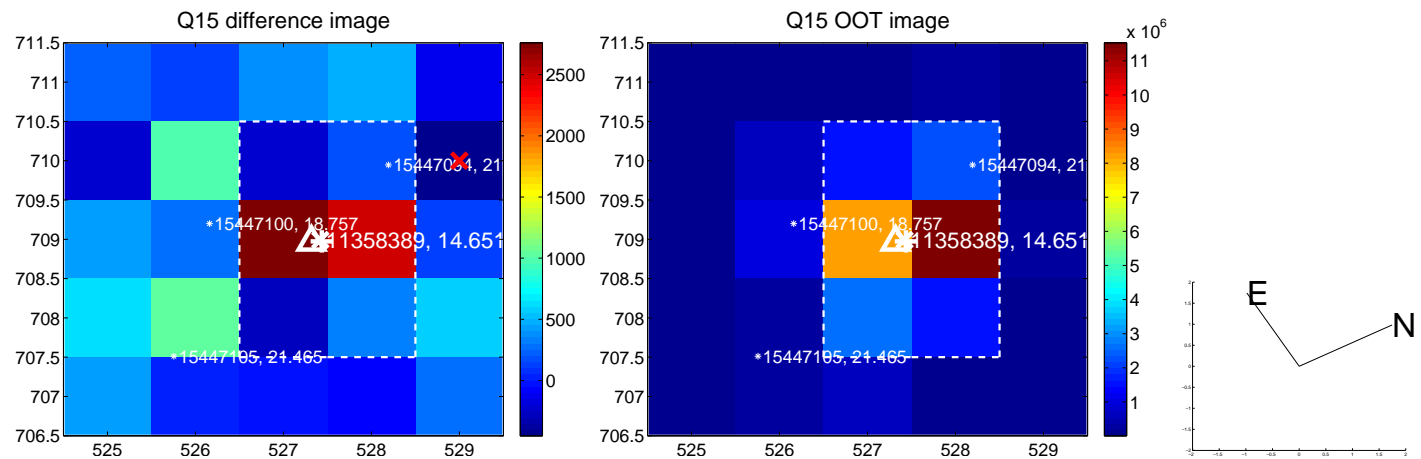
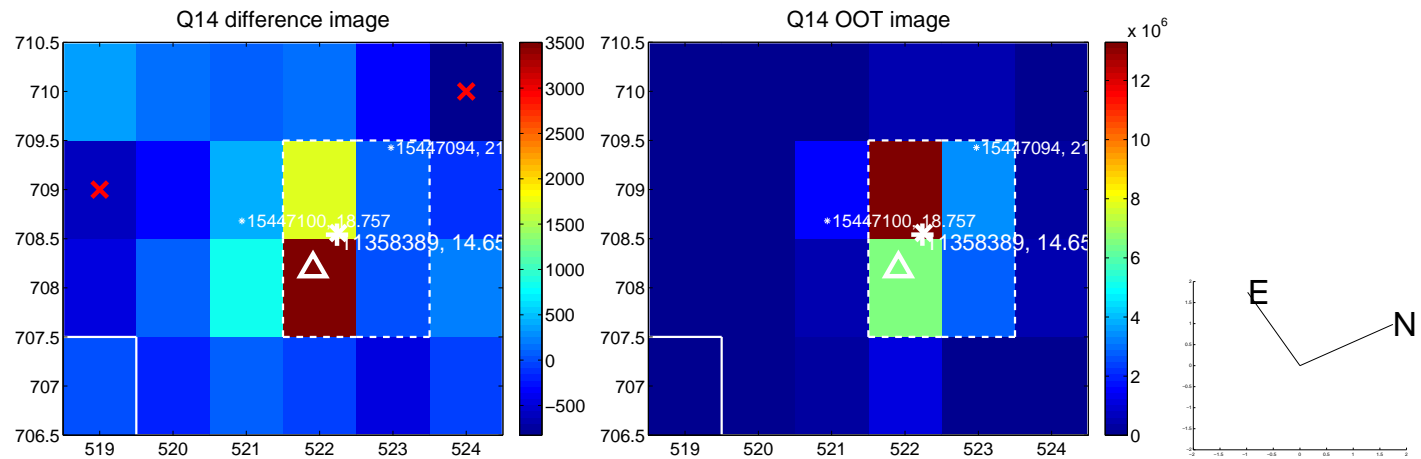
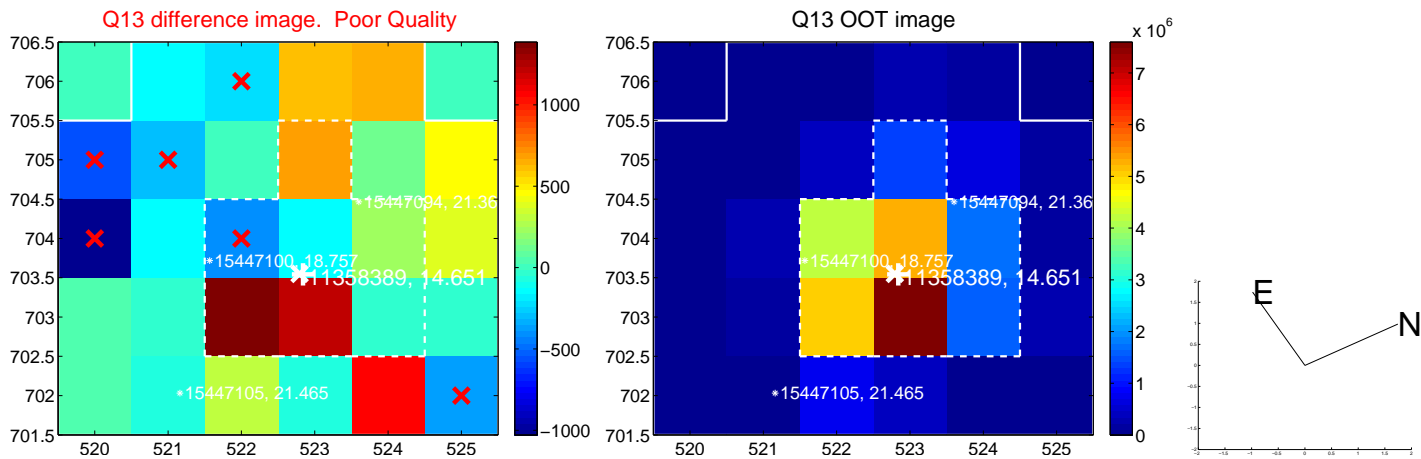
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



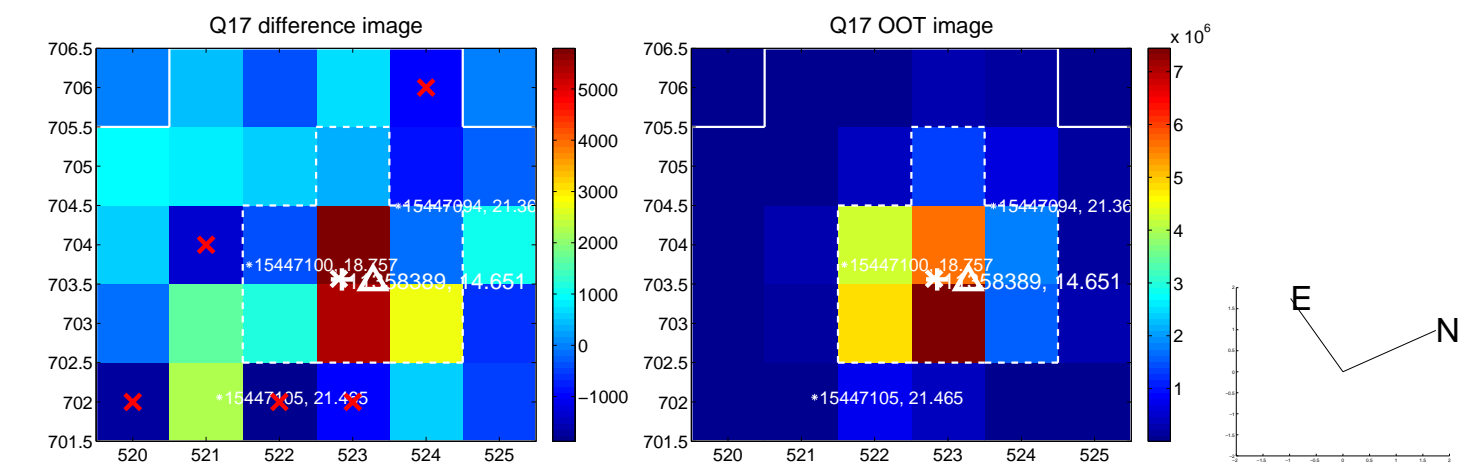
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



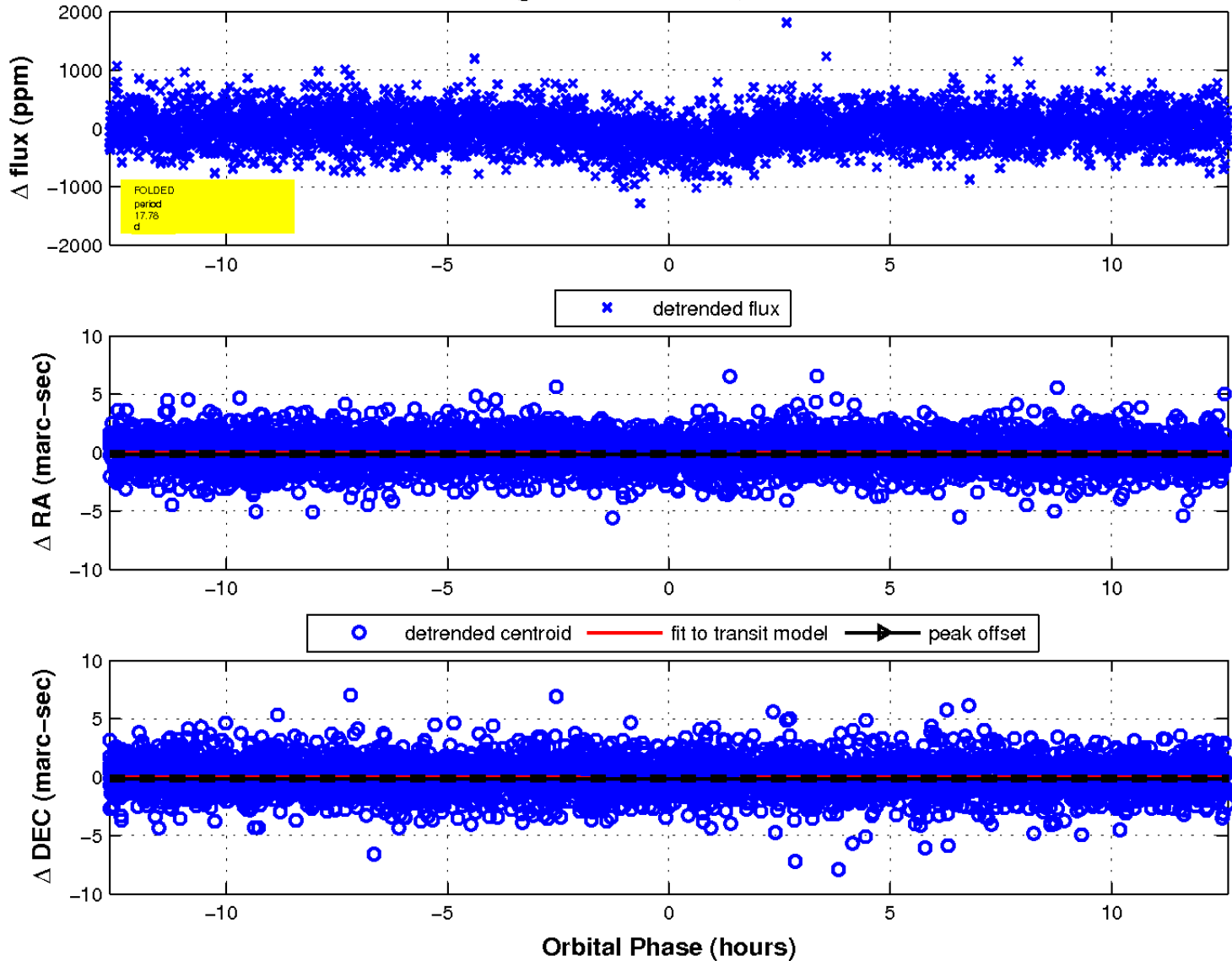
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

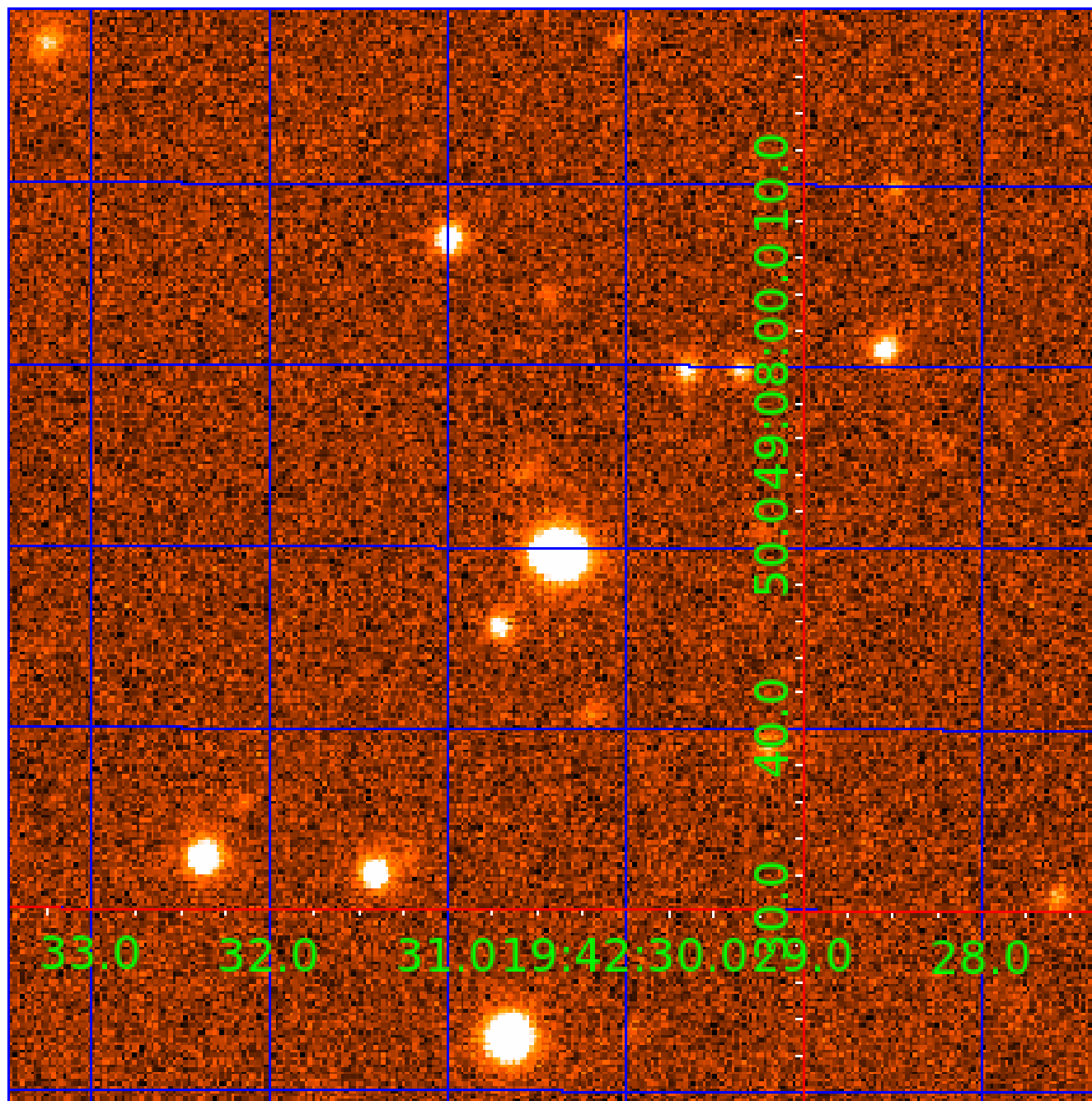


fluxWeightedCentroids, Planet 2 of 3



UKIRT Image

Declination



KIC 011358389

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})
011358389-01	OBS	2163.01	10.664898	132.008120	298.7	3.729	21.7	23.9	1.02	6014	2.27	132.52
011358389-02	OBS	2163.02	17.783540	146.925337	226.6	4.212	15.1	16.1	1.02	6014	1.73	67.02
011358389-03	OBS	2163.03	28.225120	153.744651	206.2	2.440	8.0	8.7	1.02	6014	1.72	36.20

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011358389-01	OBS	PC	0.99	0	0	0	0	NO_COMMENT
011358389-02	OBS	PC	1.00	0	0	0	0	NO_COMMENT
011358389-03	OBS	PC	0.79	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.

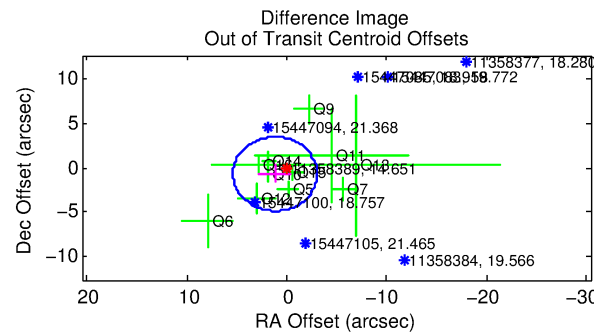
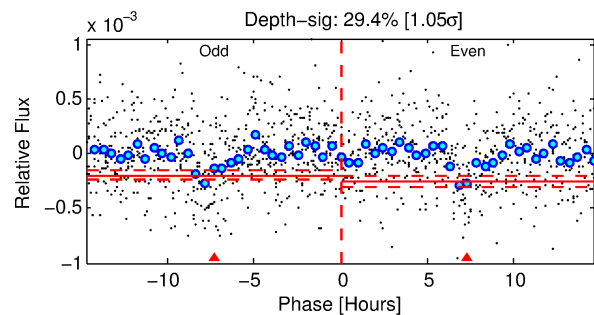
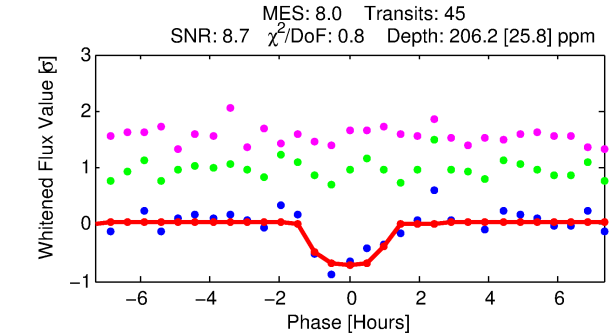
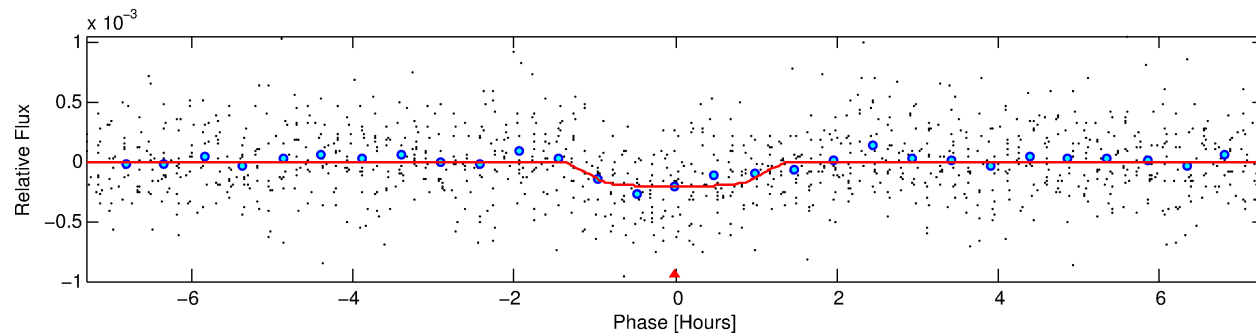
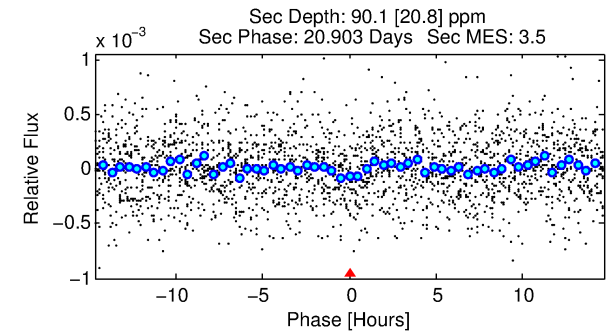
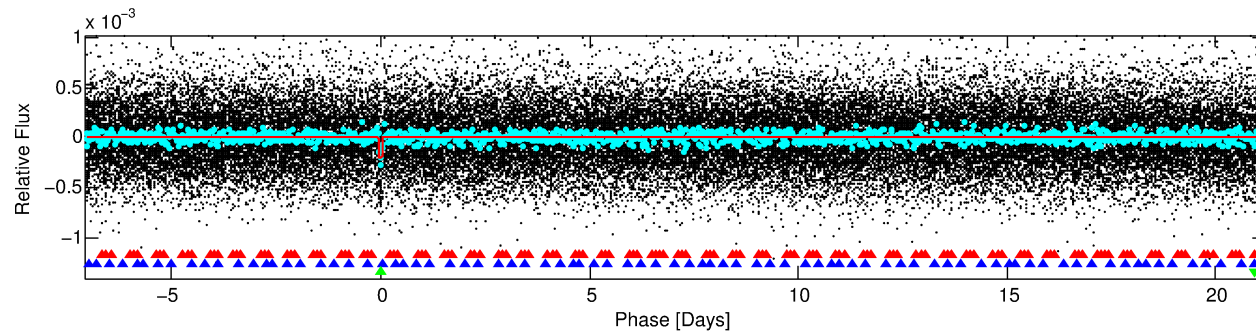
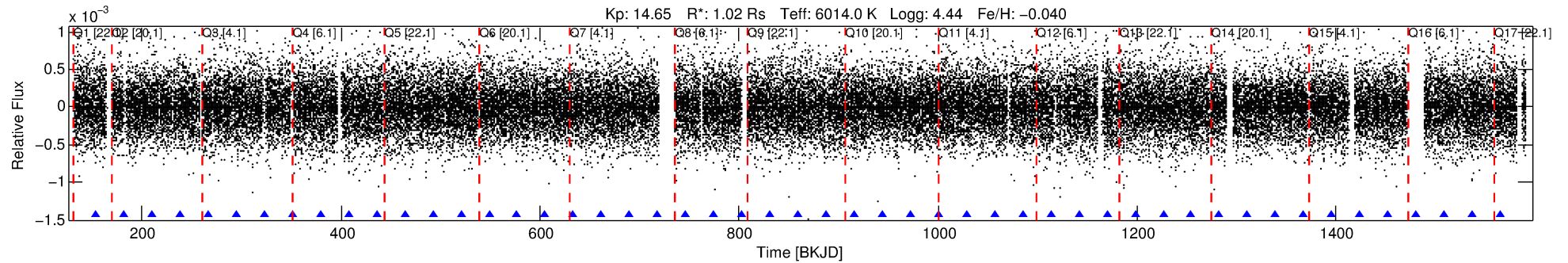
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 011358389-03

No Significant Match Found

DV One-Page Summary

KIC: 11358389 Candidate: 3 of 3 Period: 28.225 d
KOI: K02163.03 Corr: 0.913



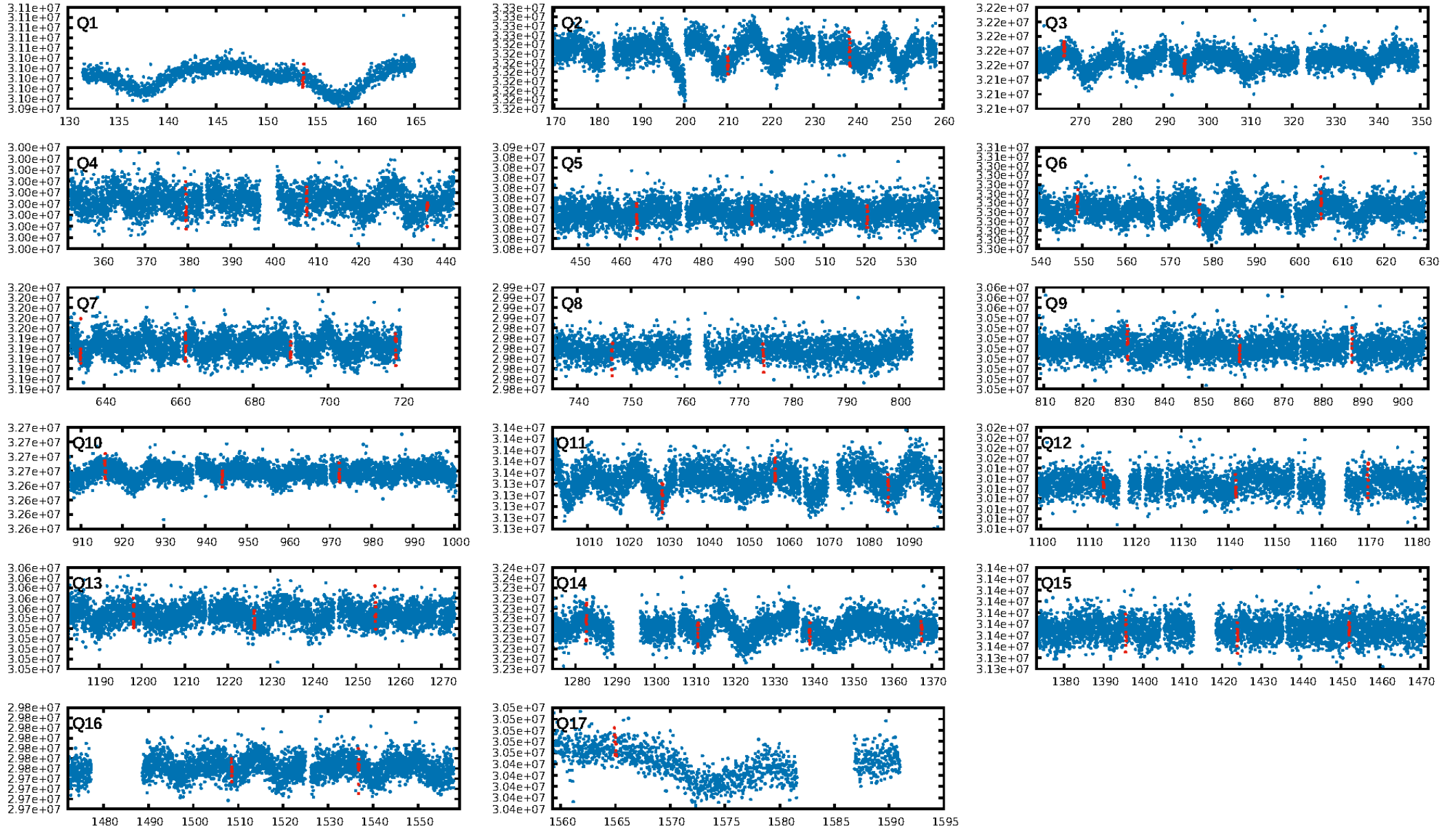
DV Fit Results:

Period = 28.22512 [0.00025] d
Epoch = 153.7447 [0.0073] BKJD
Rp/R* = 0.0154 [0.0119]
a/R* = 43.11 [168.13]
b = 0.89 [0.92]
Seff = 36.20 [15.27]
Teff = 625 [66] K
Rp = 1.72 [1.44] Re
a = 0.1837 [0.0503] AU
Ag = 566.28 [912.05] [0.62σ]
Teffp = 4717 [1848] K [2.21σ]

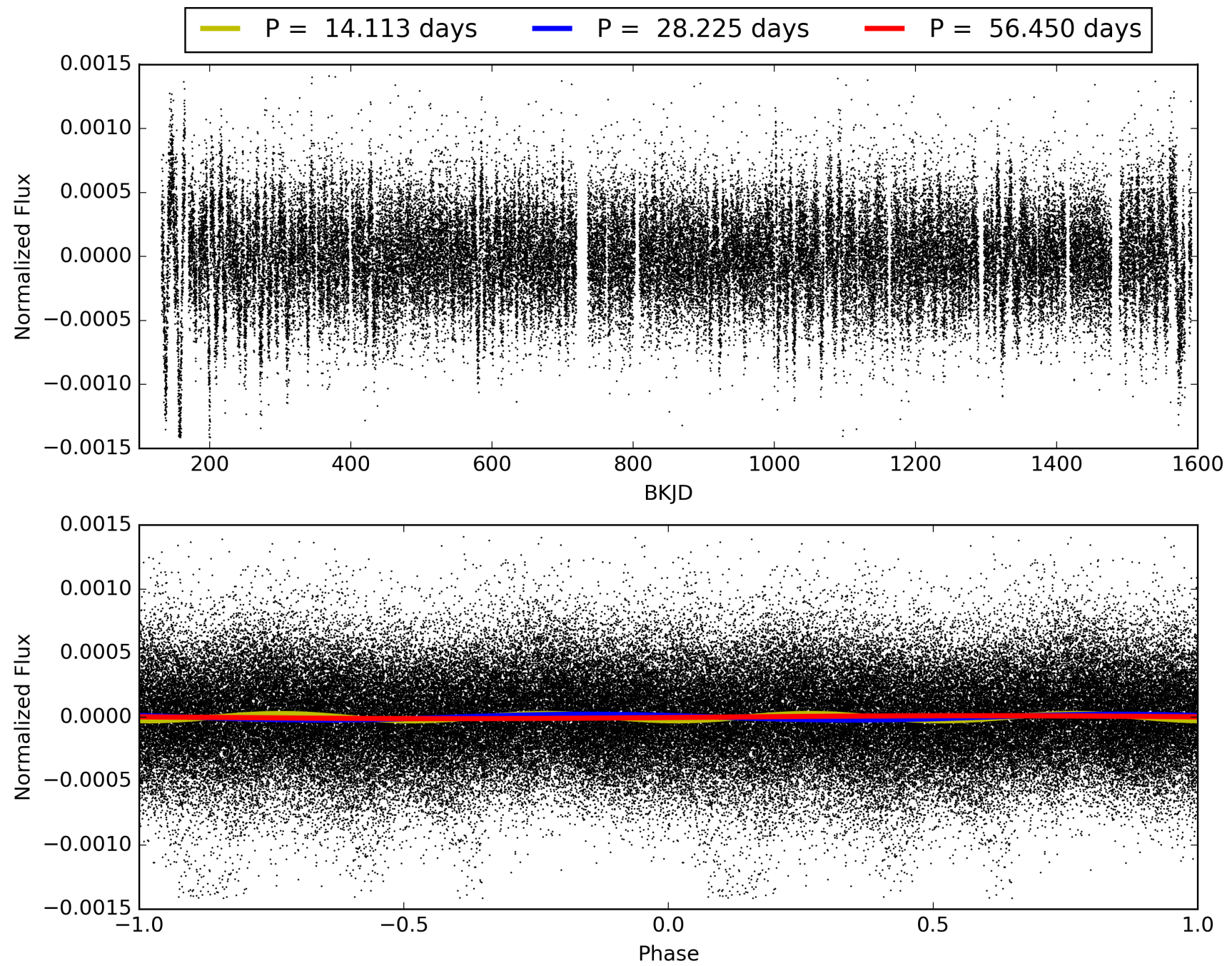
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [51.48σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 98.2%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 8.54e-16
RollingBand-fgt: 1.00 [43/43]
GhostDiagnostic-chr: -10.05
Centroid-sig: 87.7%
Centroid-so: 0.667 arcsec [0.45σ]
OotOffset-rm: 1.362 arcsec [0.97σ]
KicOffset-rm: 1.302 arcsec [0.94σ]
OotOffset-st: 3/3/2/3 [11]
KicOffset-st: 3/3/2/3 [11]
DiffImageQuality-fgm: 0.36 [4/11]
DiffImageOverlap-fno: 1.00 [17/17]

TCE 011358389-03, PDC Light Curves

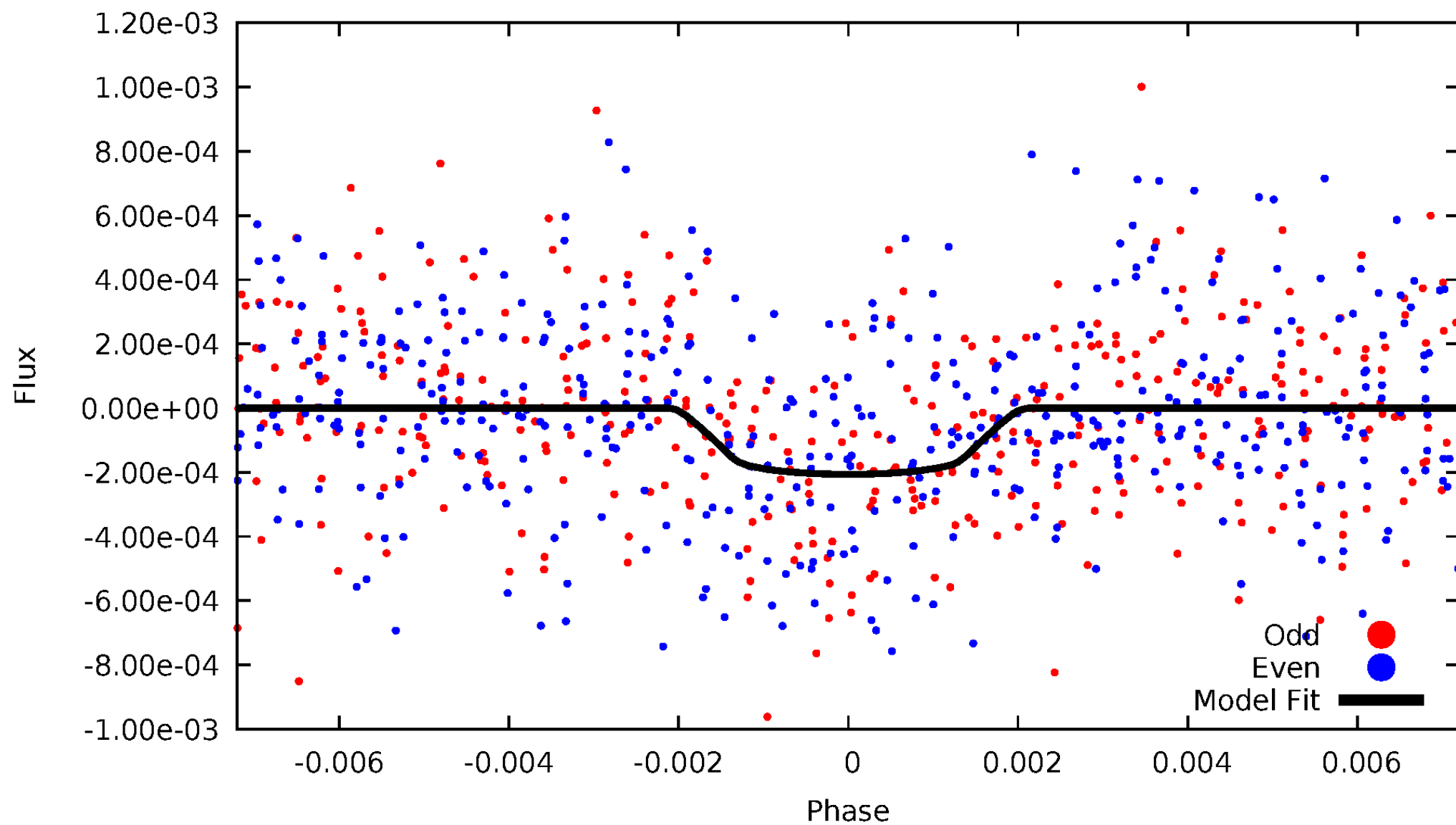


TCE 011358389-03



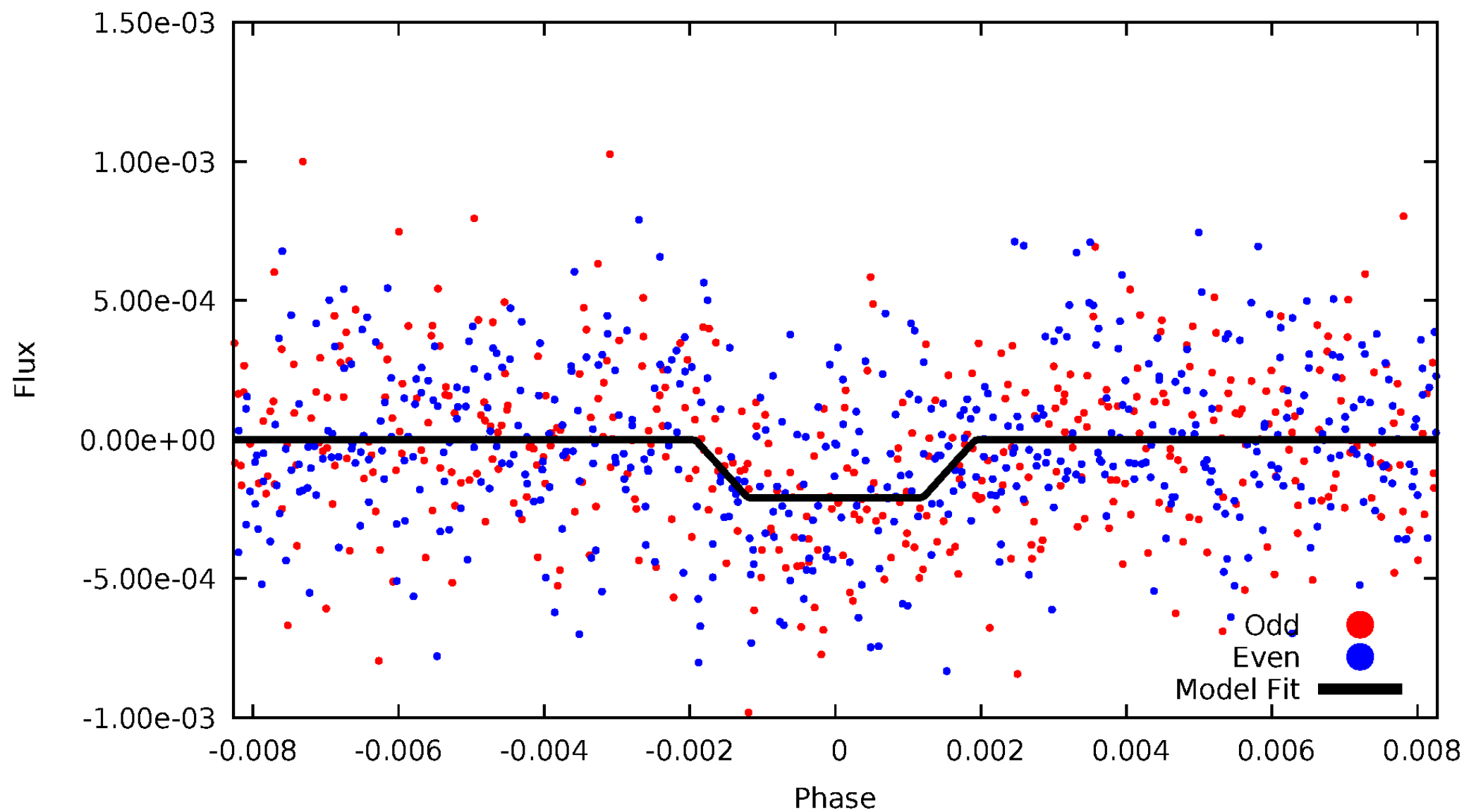
DV Odd/Even

TCE 011358389-03



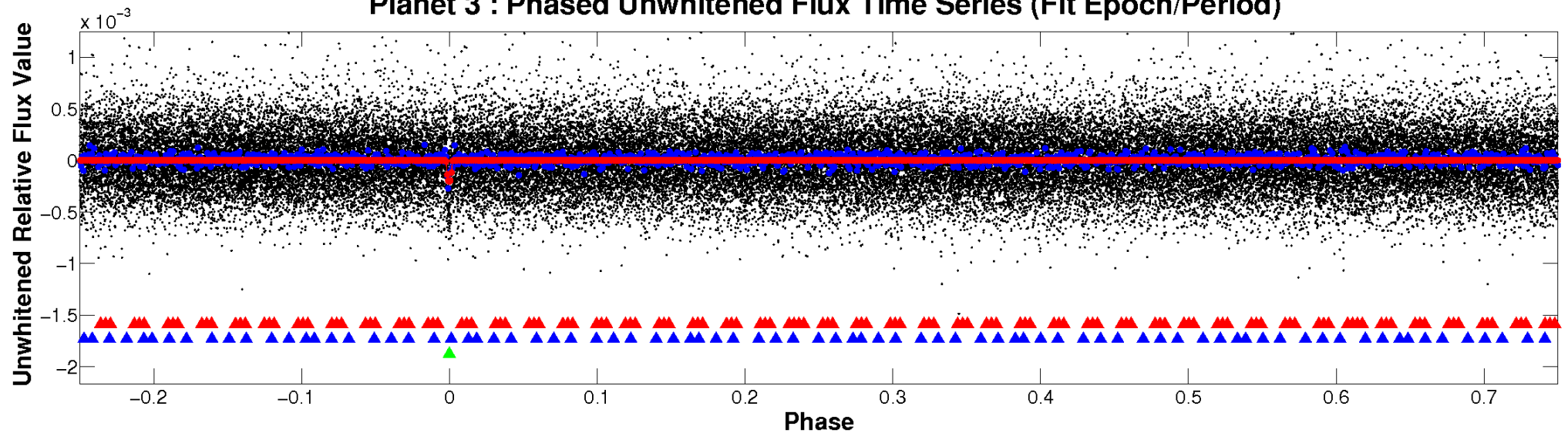
ALT Odd/Even

TCE 011358389-03

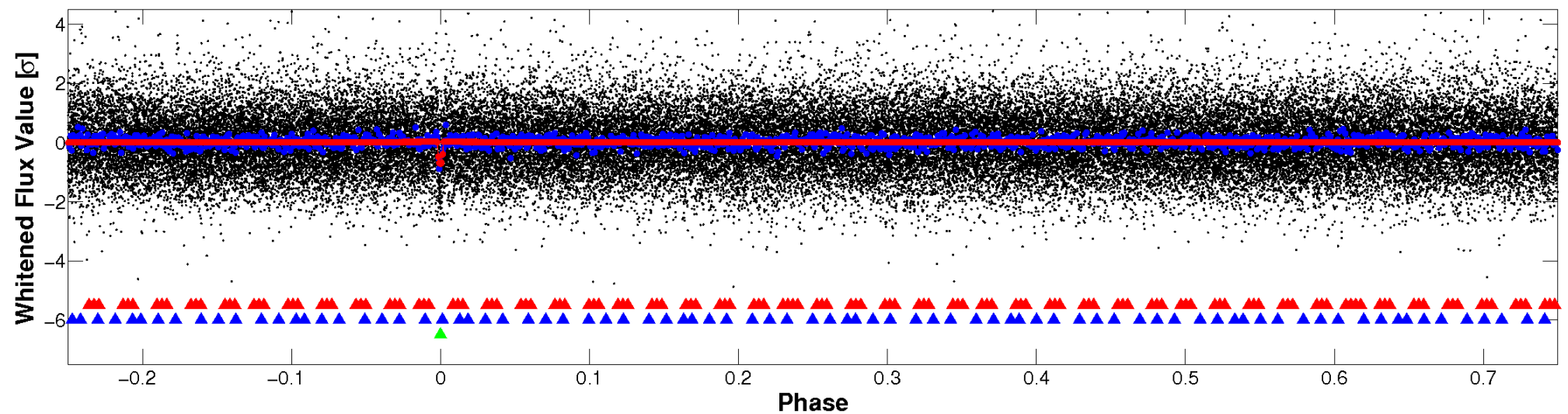


Non-Whitened Vs. Whitened Light Curve

Planet 3 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

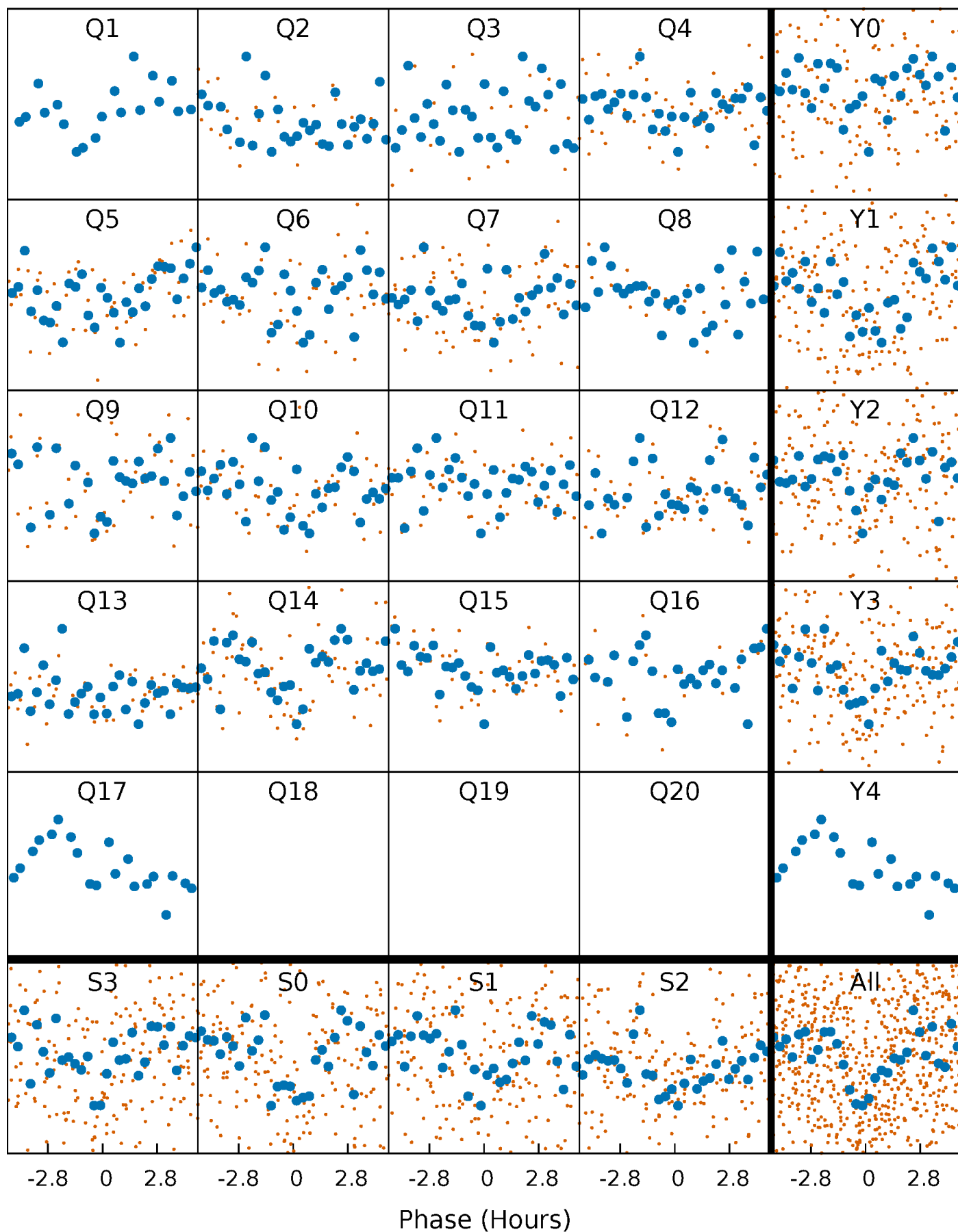


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



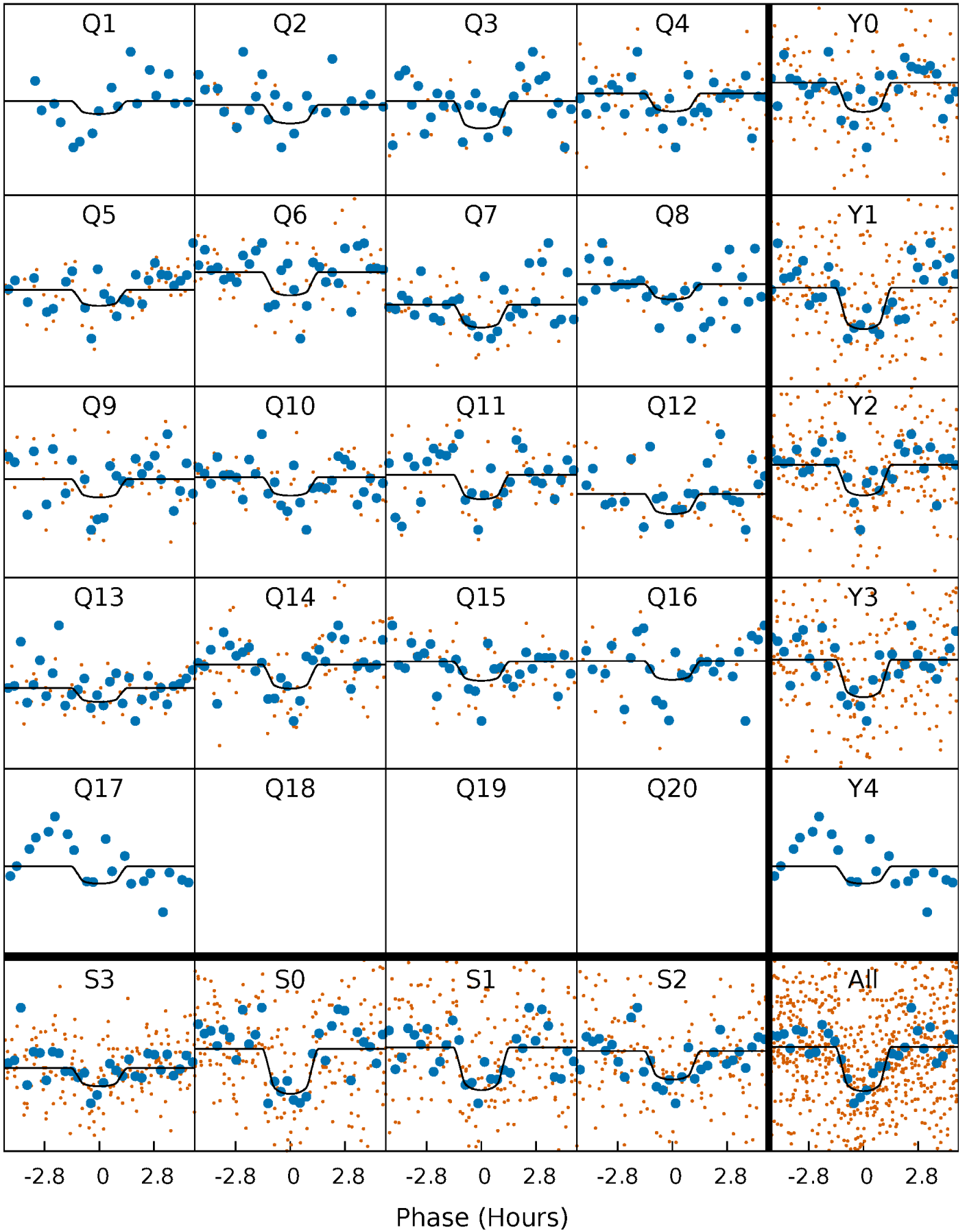
PDC Quarter-Phased Transit Curves

TCE 011358389-03 P= 28.225120 Days $T_0=153.744651$ (BKJD)



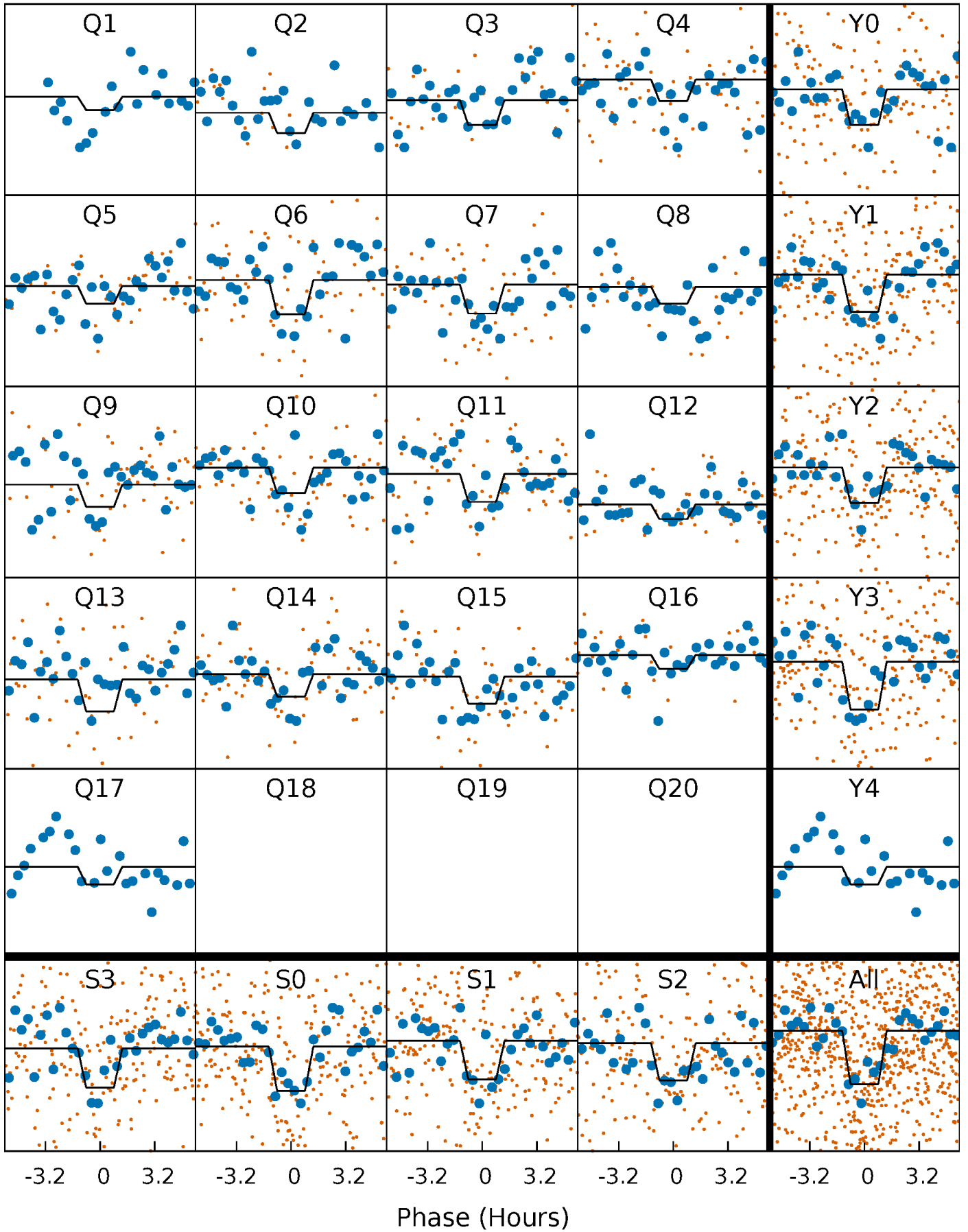
DV Quarter-Phased Transit Curves

TCE 011358389-03 P= 28.225120 Days $T_0=153.744651$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

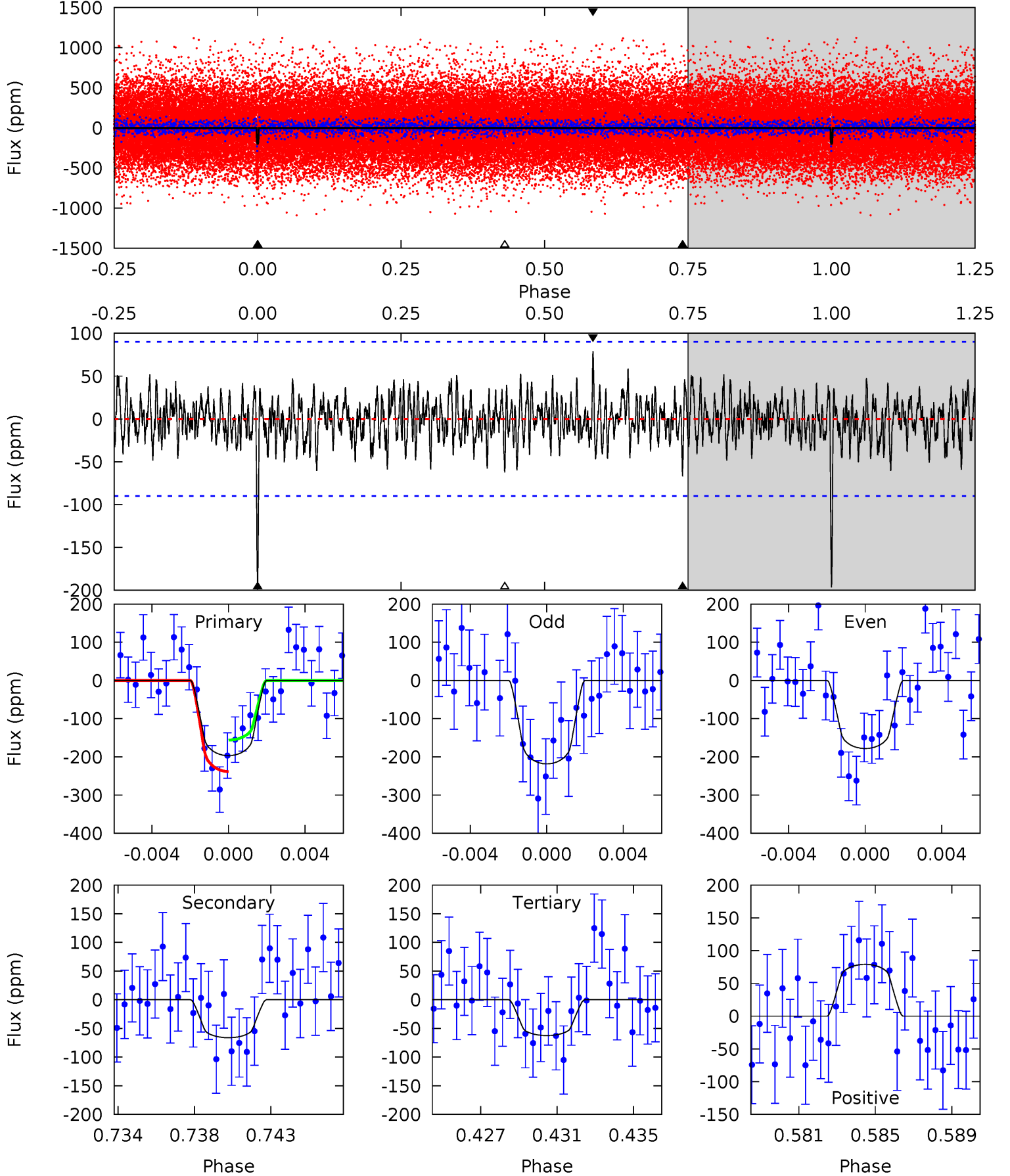
TCE 011358389-03 P= 28.225434 Days $T_0=153.736067$ (BKJD)



DV Model-Shift Uniqueness Test

011358389-03, P = 28.225120 Days, E = 125.519531 Days

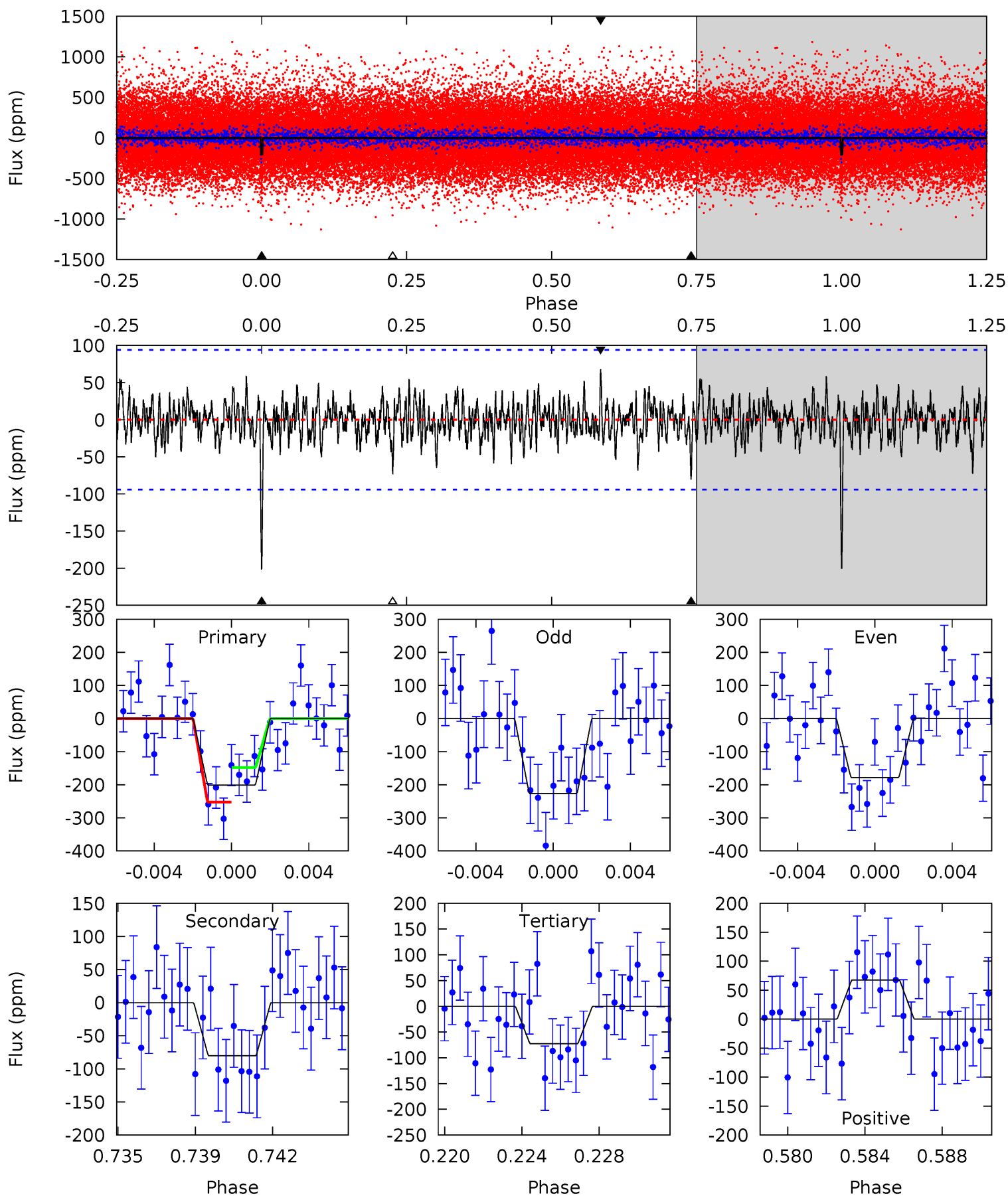
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.3	3.81	3.60	4.55	5.19	2.86	1.20	7.74	6.78	0.21	-0.74	1.16	1.03	0.29	2.38



Alt Model-Shift Uniqueness Test

011358389-03, P = 28.225434 Days, E = 125.510633 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.1	4.45	4.03	3.75	5.21	2.89	1.13	7.09	7.38	0.42	0.70	1.34	1.03	0.25	2.88



Stellar Parameters For KIC 011358389

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6014^{+190}_{-211}	$4.436^{+0.072}_{-0.217}$	$-0.040^{+0.250}_{-0.300}$	$1.021^{+0.333}_{-0.133}$	$1.037^{+0.145}_{-0.130}$	$1.371^{+0.515}_{-0.721}$
	+3%/-4%	+2%/-5%	+625%/-750%	+33%/-13%	+14%/-13%	+38%/-53%
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 011358389-03 / KOI 2163.03

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-66 ± 17	$1.97^{+1.27}_{-1.09}$	893^{+69}_{-50}	4358^{+1966}_{-691}	307^{+1284}_{-194}
Alt.	-80 ± 18	$1.93^{+1.37}_{-1.17}$	894^{+66}_{-49}	4601^{+2297}_{-832}	391^{+2151}_{-258}

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

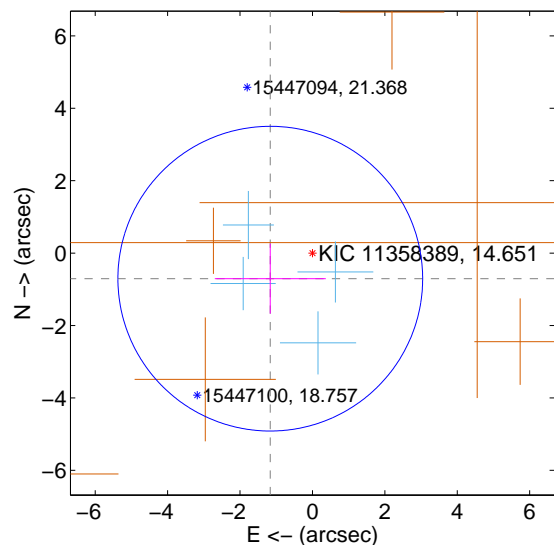
Supplemental centroid analysis for 011358389-03. Kepler magnitude: 14.65. Transit SNR 8.73

There are 4 quarters with good PRF difference image offsets

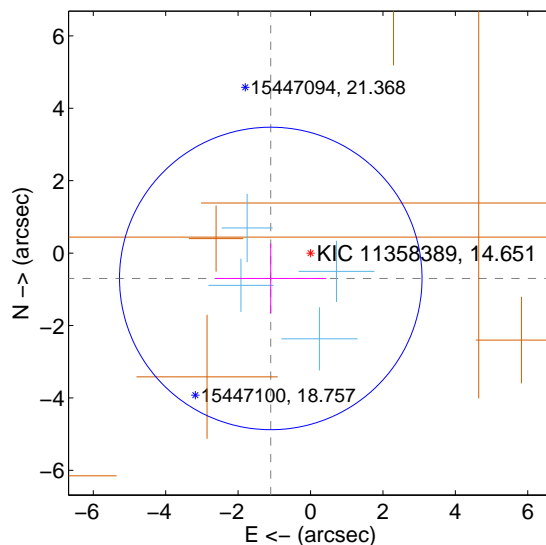
The direct PRF centroid is offset from the target star catalog position by about 0.14 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.362 ± 1.403	0.97	1.164 ± 1.532	-0.706 ± 0.966
PRF-fit source offset from KIC position	1.302 ± 1.392	0.94	1.098 ± 1.532	-0.700 ± 0.966
photometric centroid source offset	0.67 ± 1.48	0.45	-0.67 ± 1.48	-0.02 ± 1.56

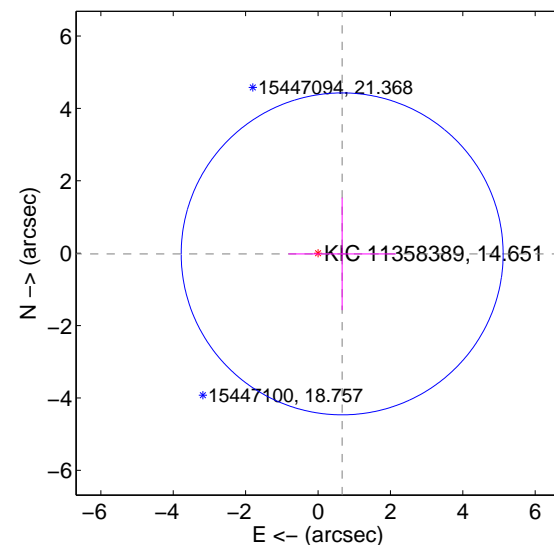
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

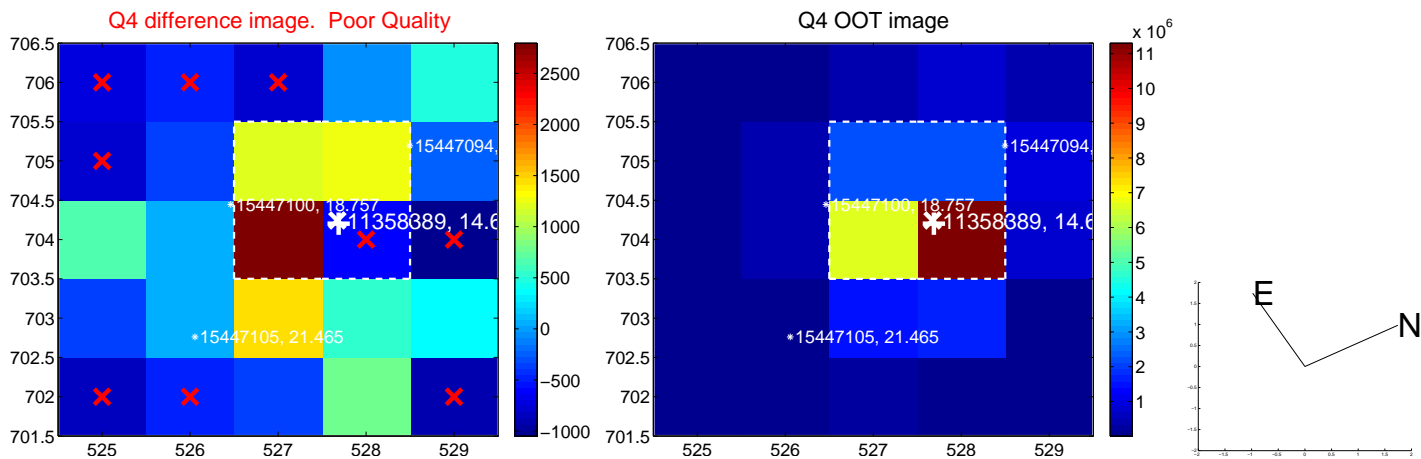
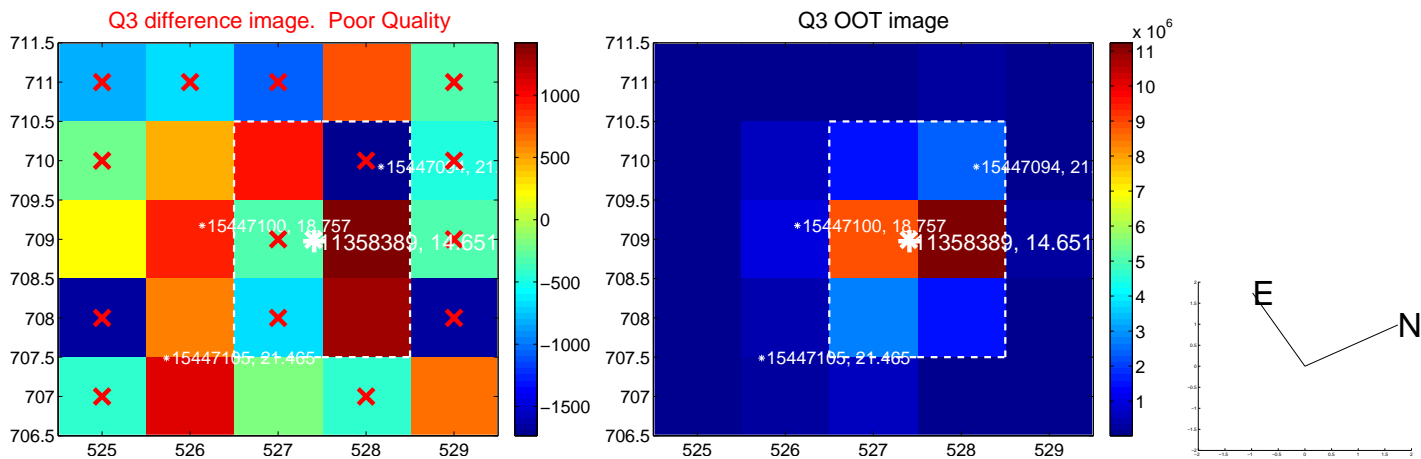
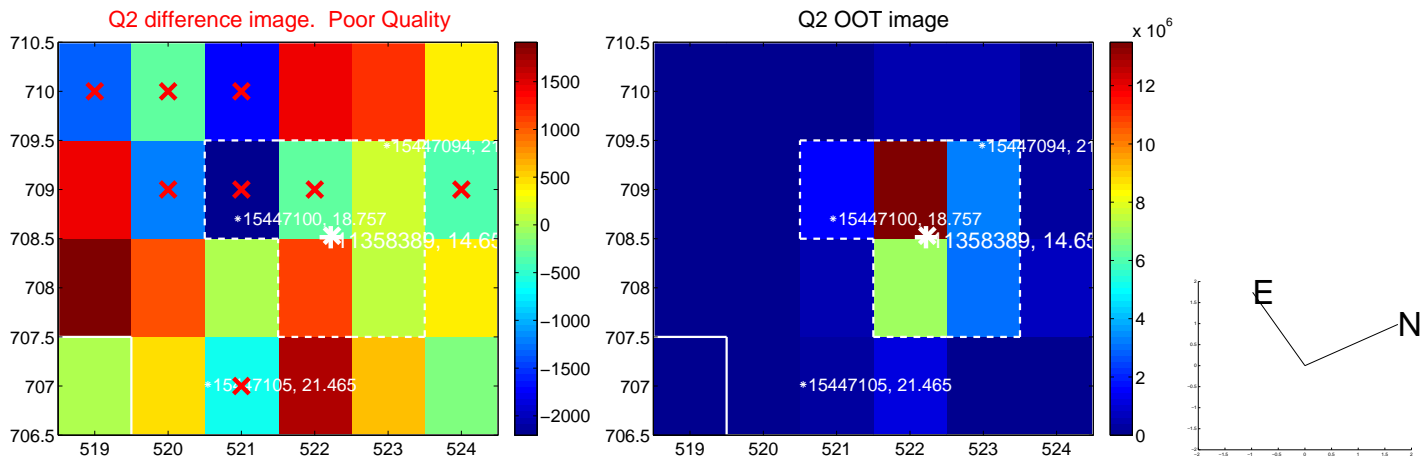
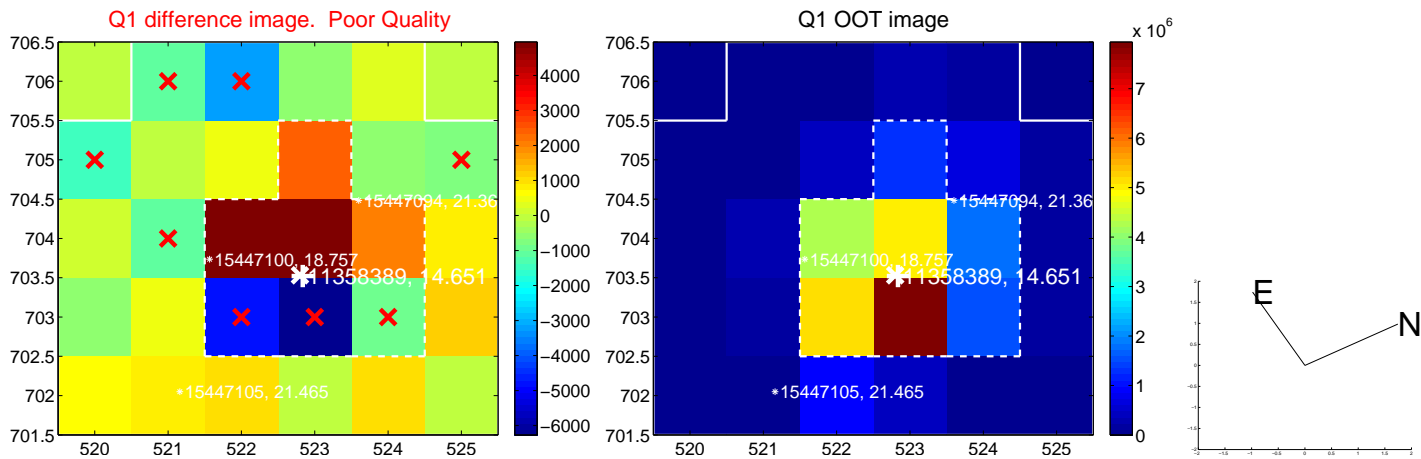


offset from photometric centroids

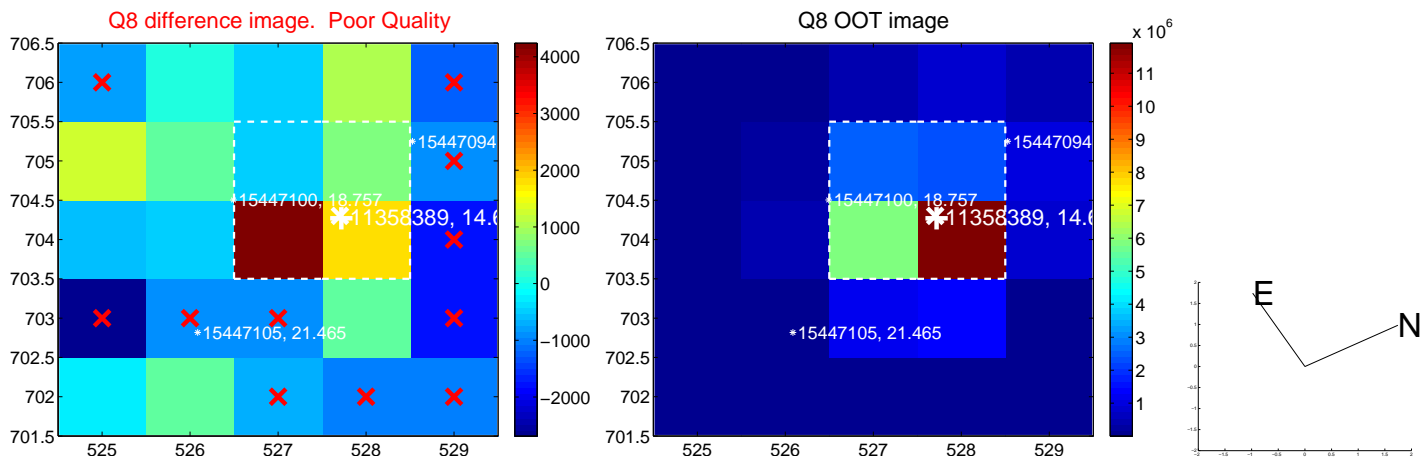
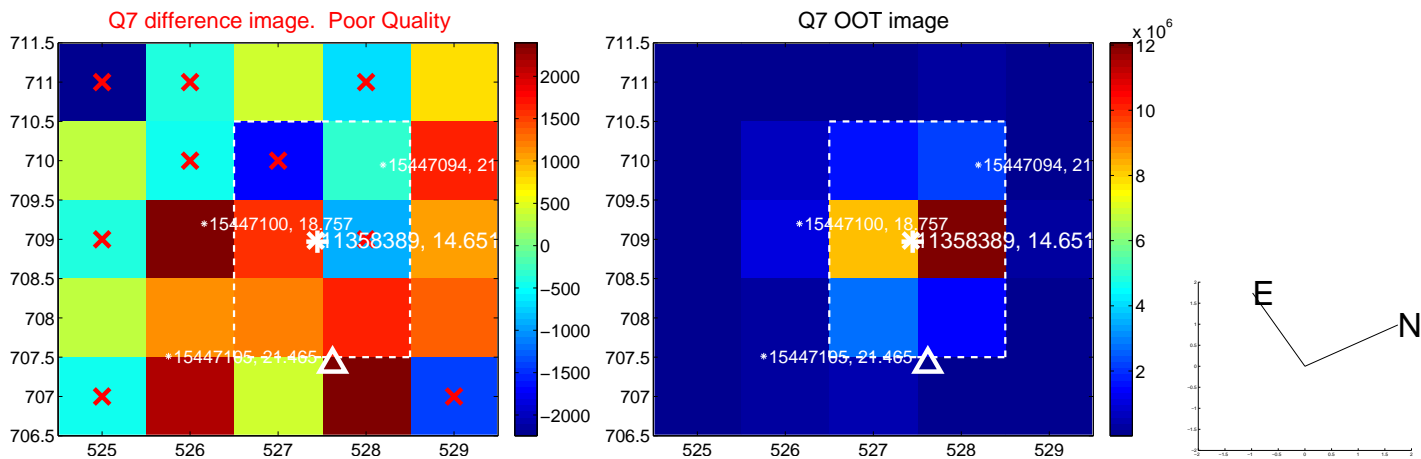
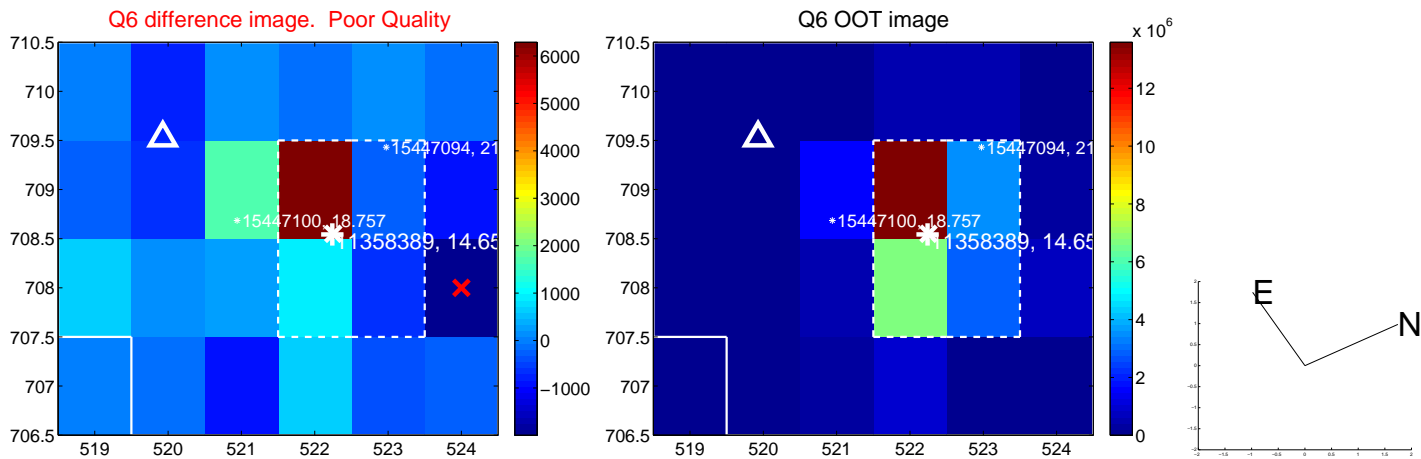
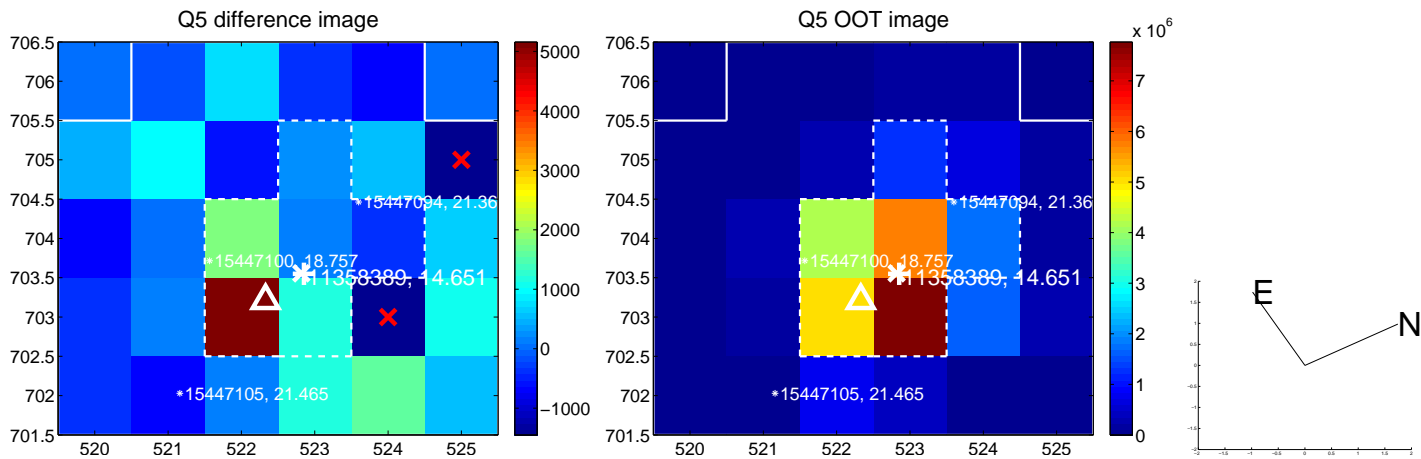


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

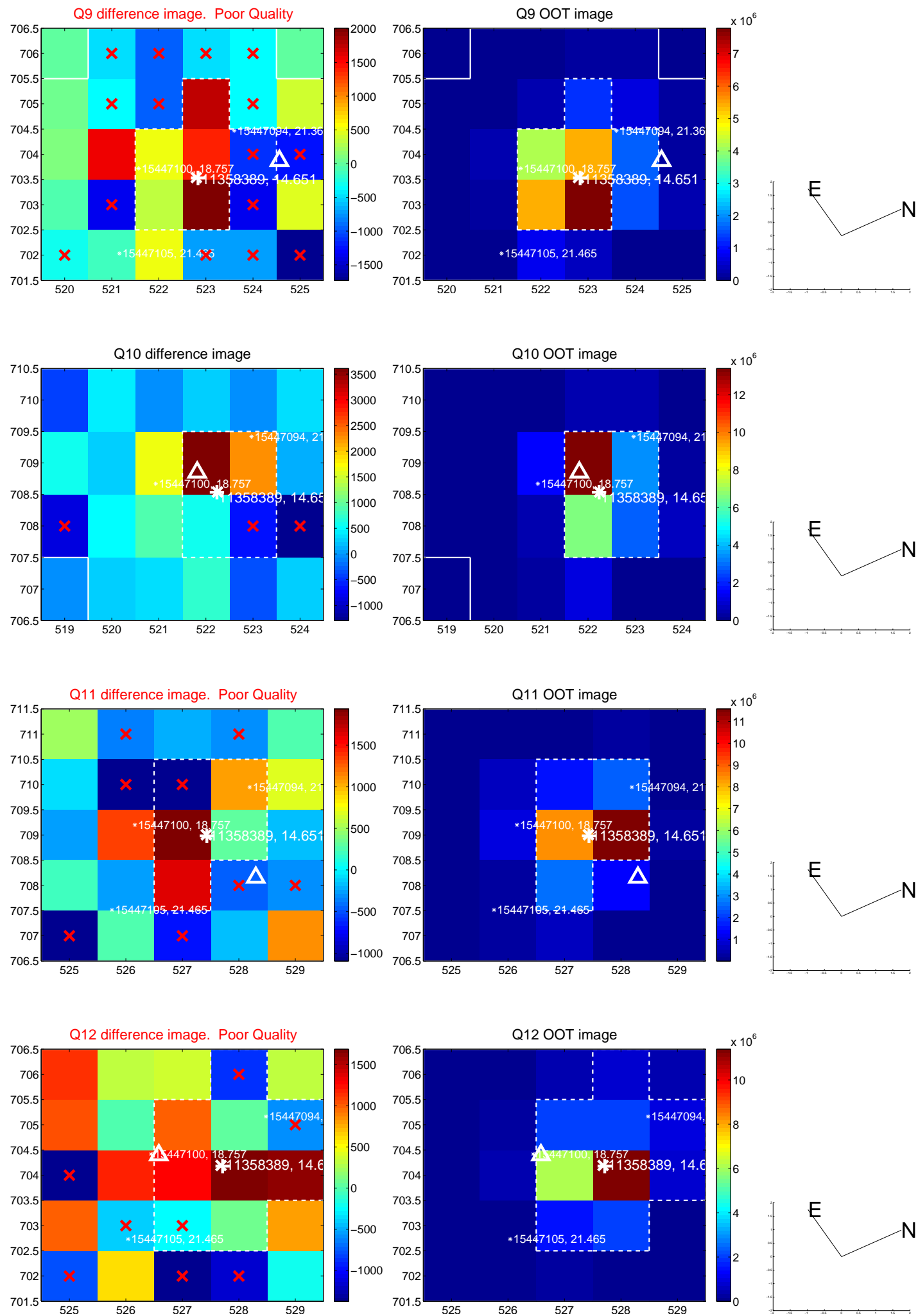
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



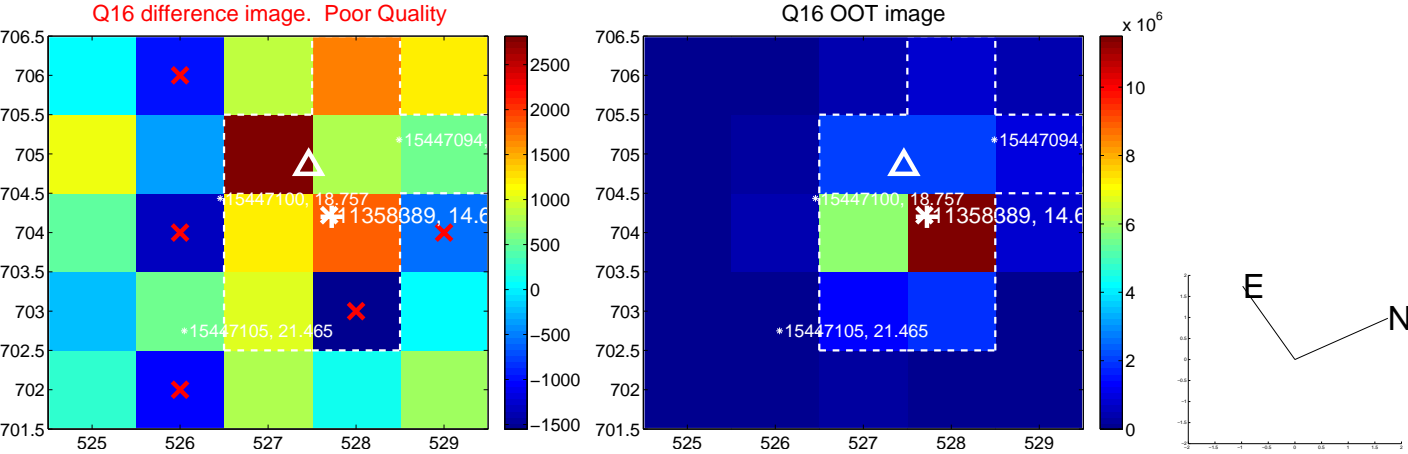
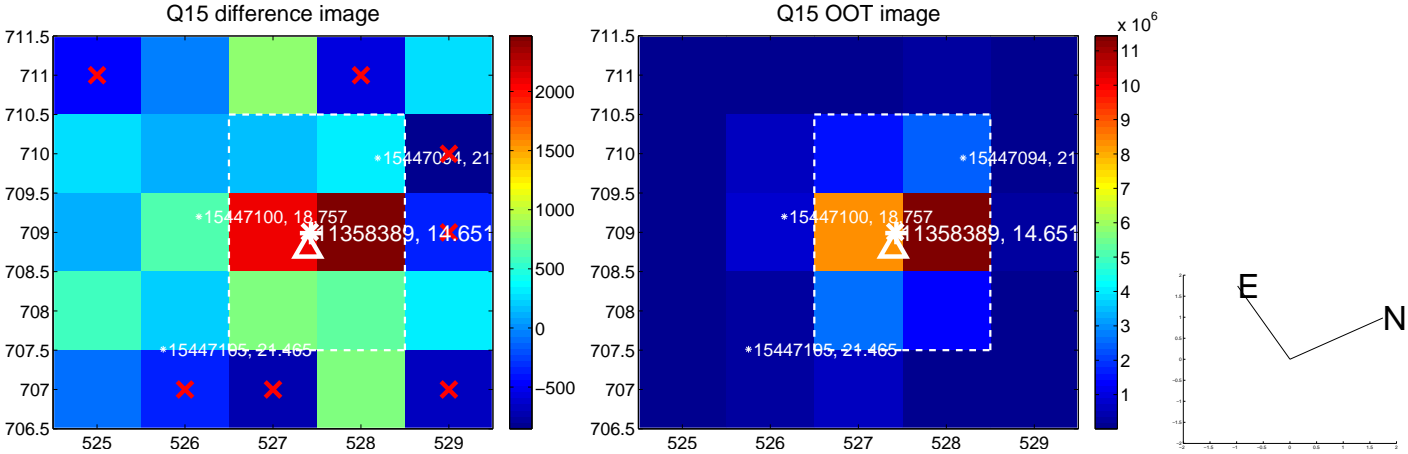
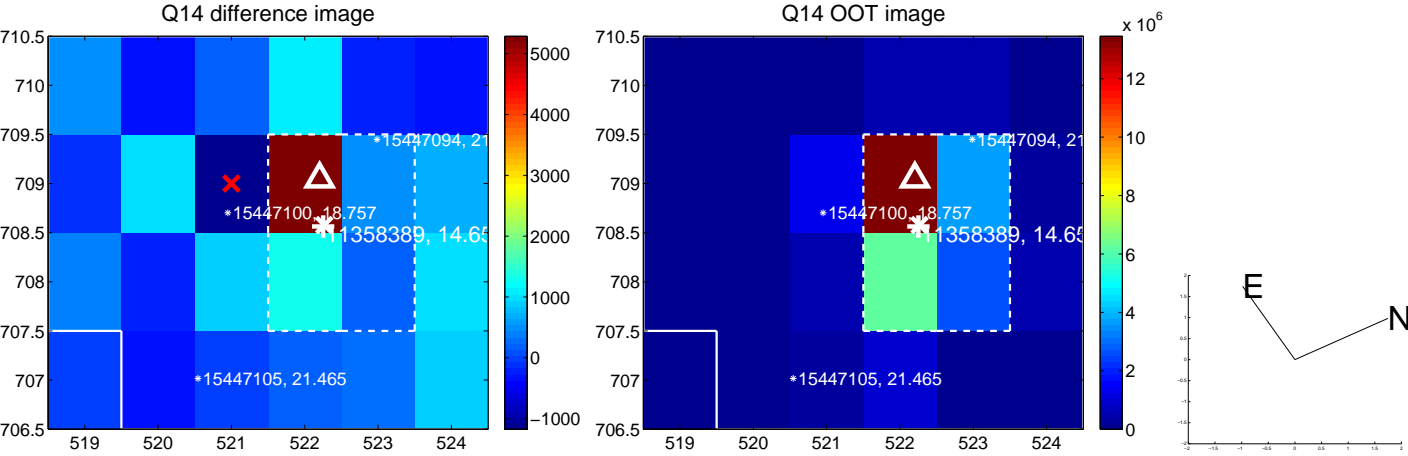
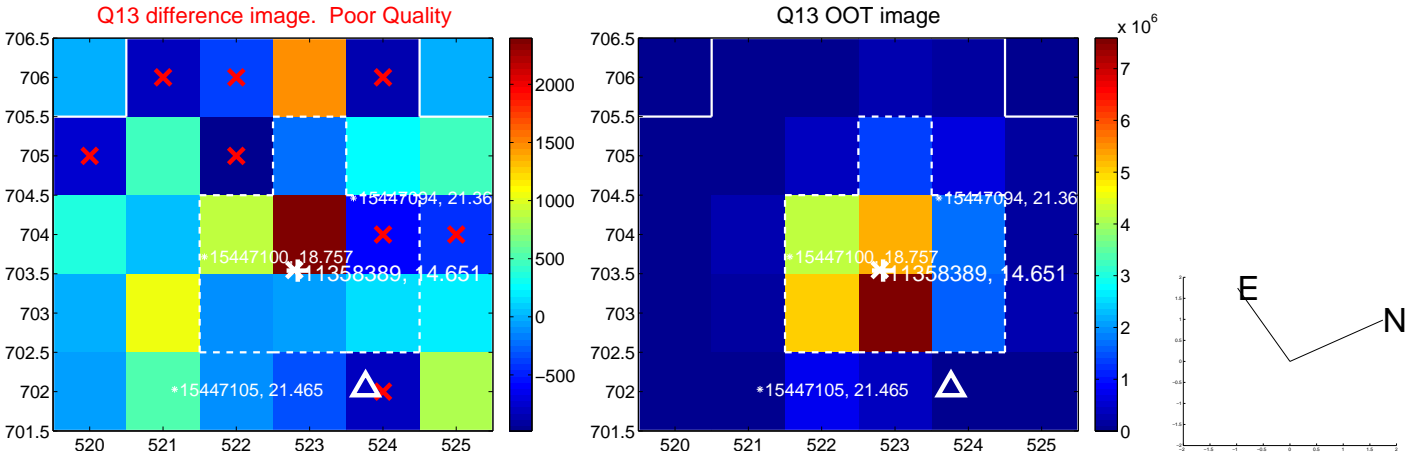
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



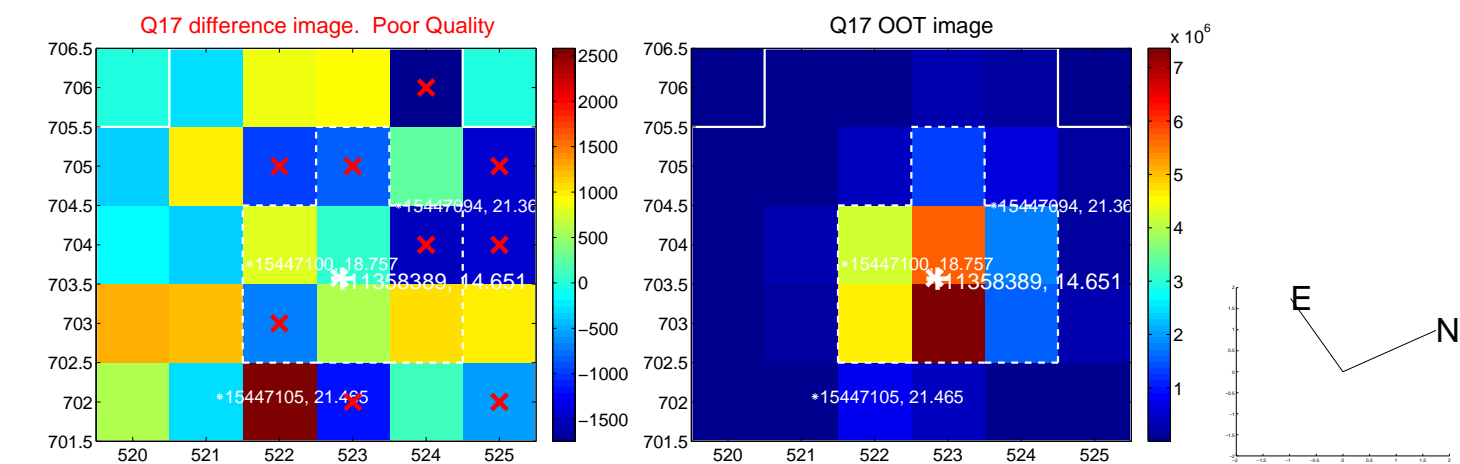
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



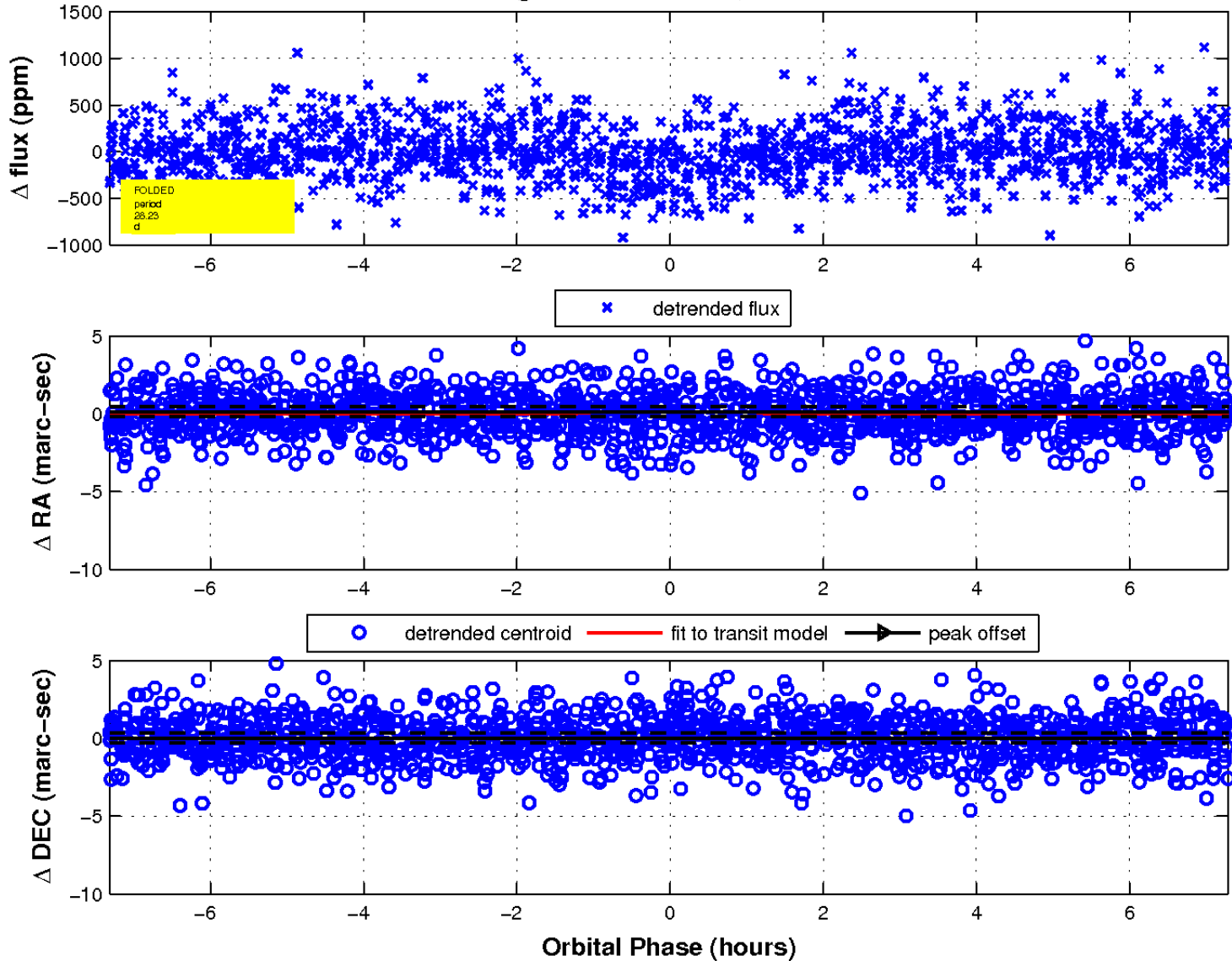
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 3 of 3



UKIRT Image

Declination

