

KIC 007115291

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})
007115291-01	OBS	3357.01	52.802768	167.270355	51634.2	5.608	1409.6	1193.4	0.90	5835	28.73	11.75
007115291-02	OBS	No	0.566741	131.892357	28.0	3.570	12.3	8.2	0.90	5835	0.48	4962.43

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007115291-01	OBS	FP	0.00	0	1	0	0	DEEP_V_SHAPED
007115291-02	OBS	FP	0.00	1	0	1	1	LPP_DV—HALO_GHOST—EPHEM_MATCH

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 007115291-01

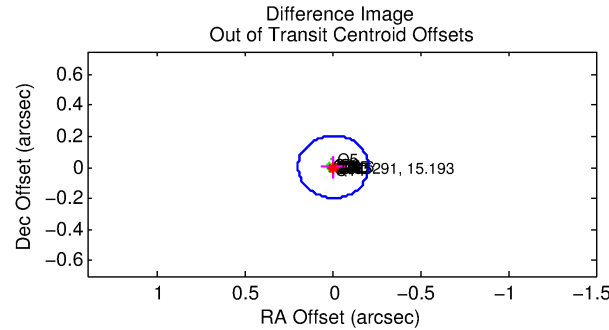
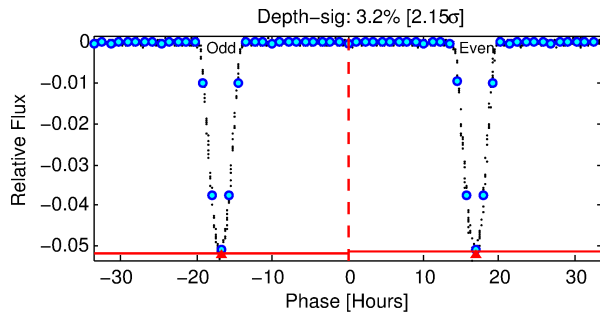
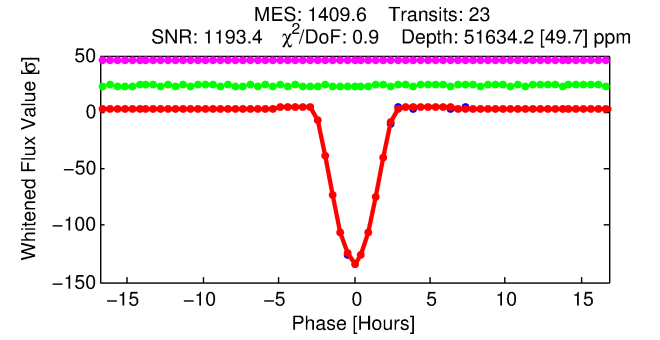
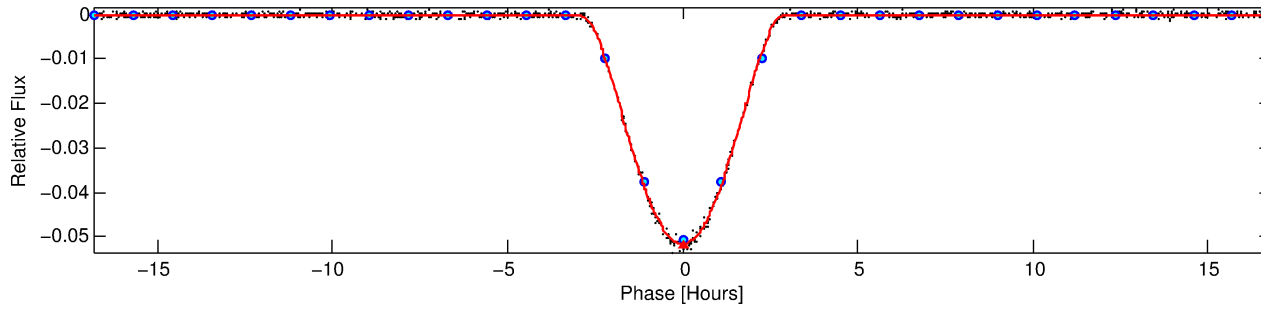
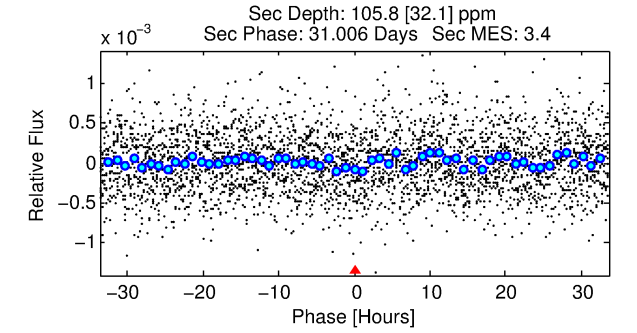
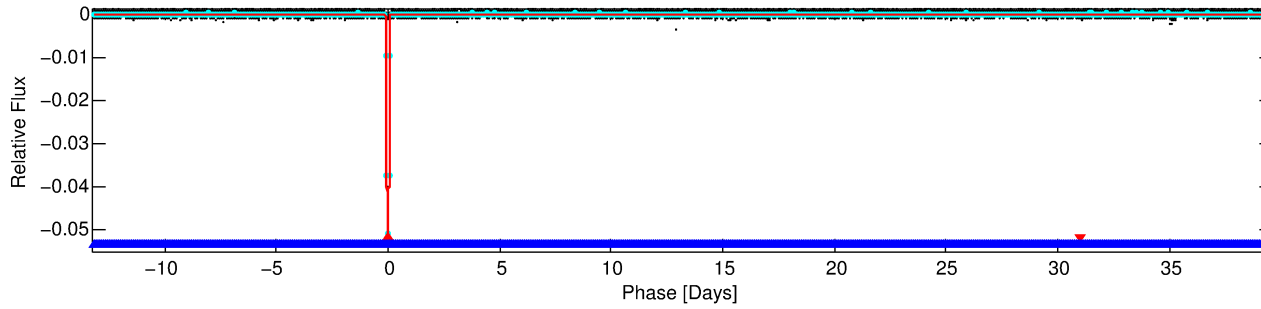
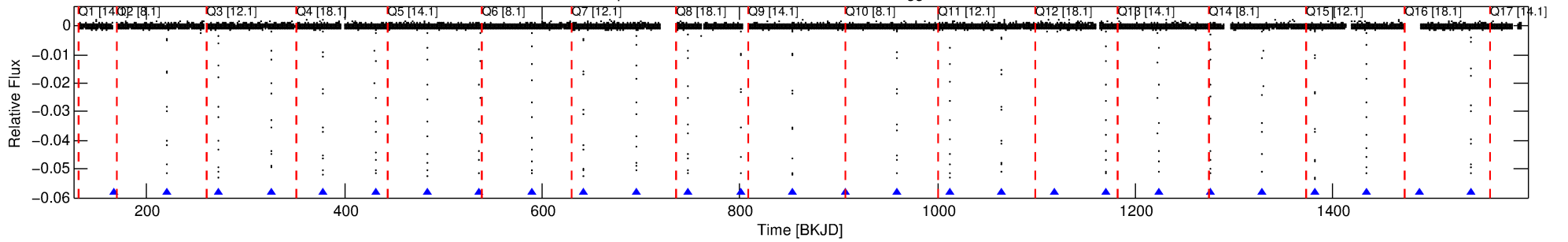
No Significant Match Found

DV One-Page Summary

KIC: 7115291 Candidate: 1 of 2 Period: 52.803 d

KOI: K03357.01 Corr: 0.998

Kp: 15.19 R*: 0.90 Rs Teff: 5835.0 K Logg: 4.49 Fe/H: -0.240



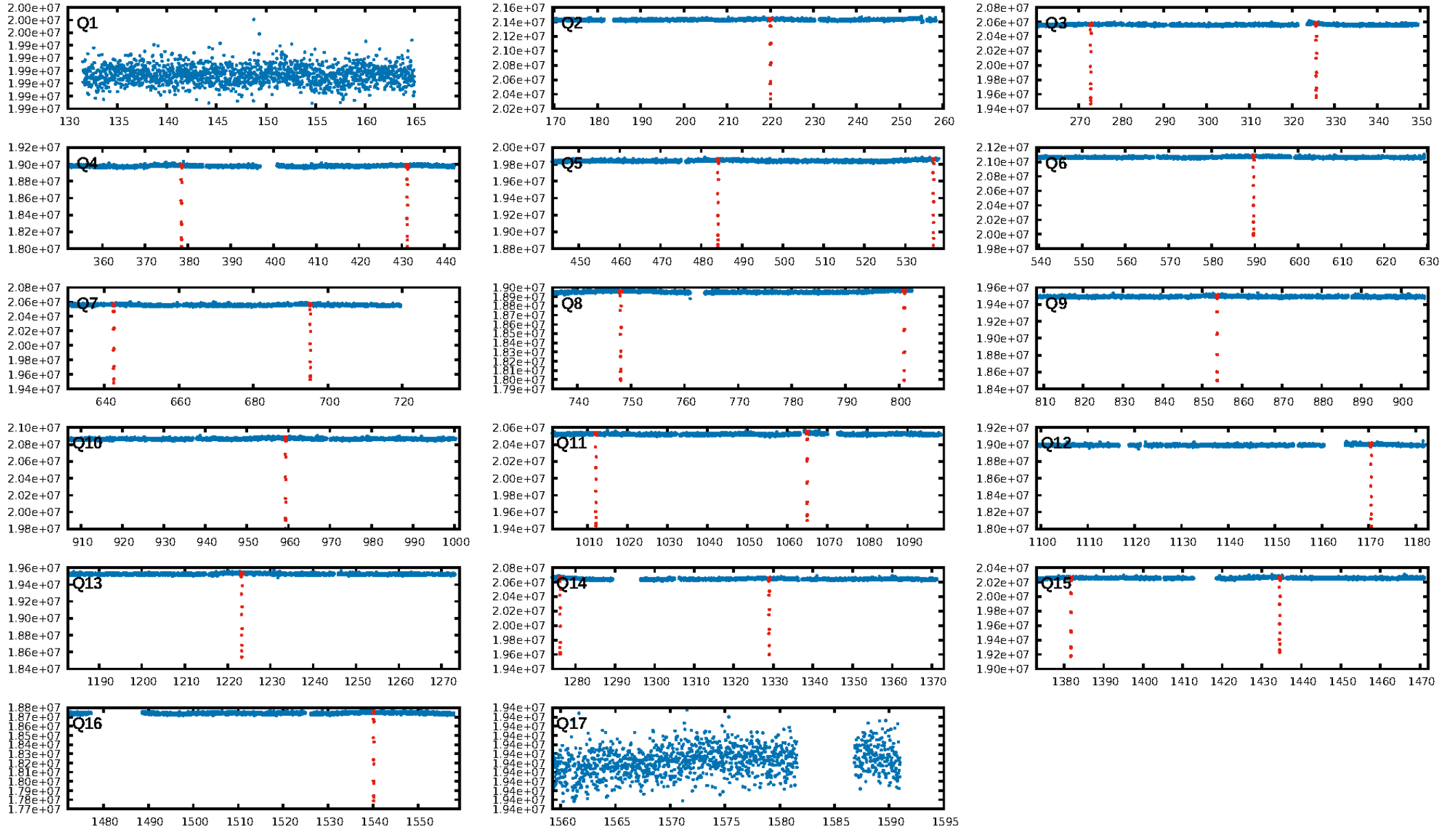
DV Fit Results:

Period = 52.80277 [0.00001] d
Epoch = 167.2704 [0.0001] BKJD
Rp/R* = 0.2922 [0.0081]
a/R* = 66.46 [0.19]
b = 0.90 [0.01]
Seff = 11.75 [4.42]
Teq = 472 [44] K
Rp = 28.73 [8.42] Re
a = 0.2679 [0.0658] AU
Ag = 5.06 [2.39] [1.70σ]
Teffp = 1095 [91] K [6.17σ]

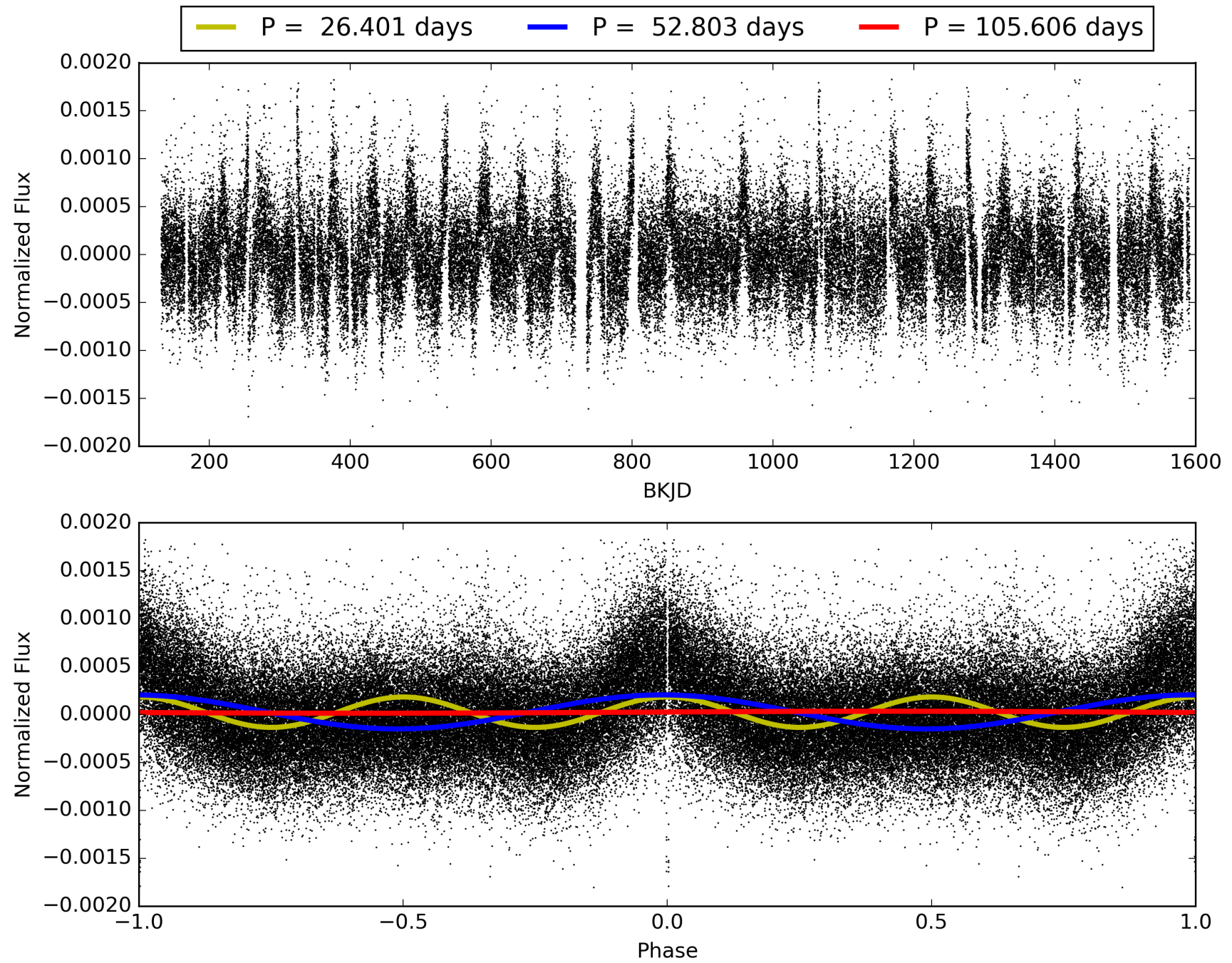
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [188.58σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 1.00 [23/23]
GhostDiagnostic-chr: 4.048
Centroid-sig: 0.0%
Centroid-so: 0.277 arcsec [28.35σ]
OotOffset-rm: 0.004 arcsec [0.07σ]
KicOffset-rm: 0.073 arcsec [1.05σ]
OotOffset-st: 4/4/4/3 [15]
KicOffset-st: 4/4/4/3 [15]
DiffImageQuality-fgm: 1.00 [15/15]
DiffImageOverlap-fno: 0.00 [0/15]

TCE 007115291-01, PDC Light Curves

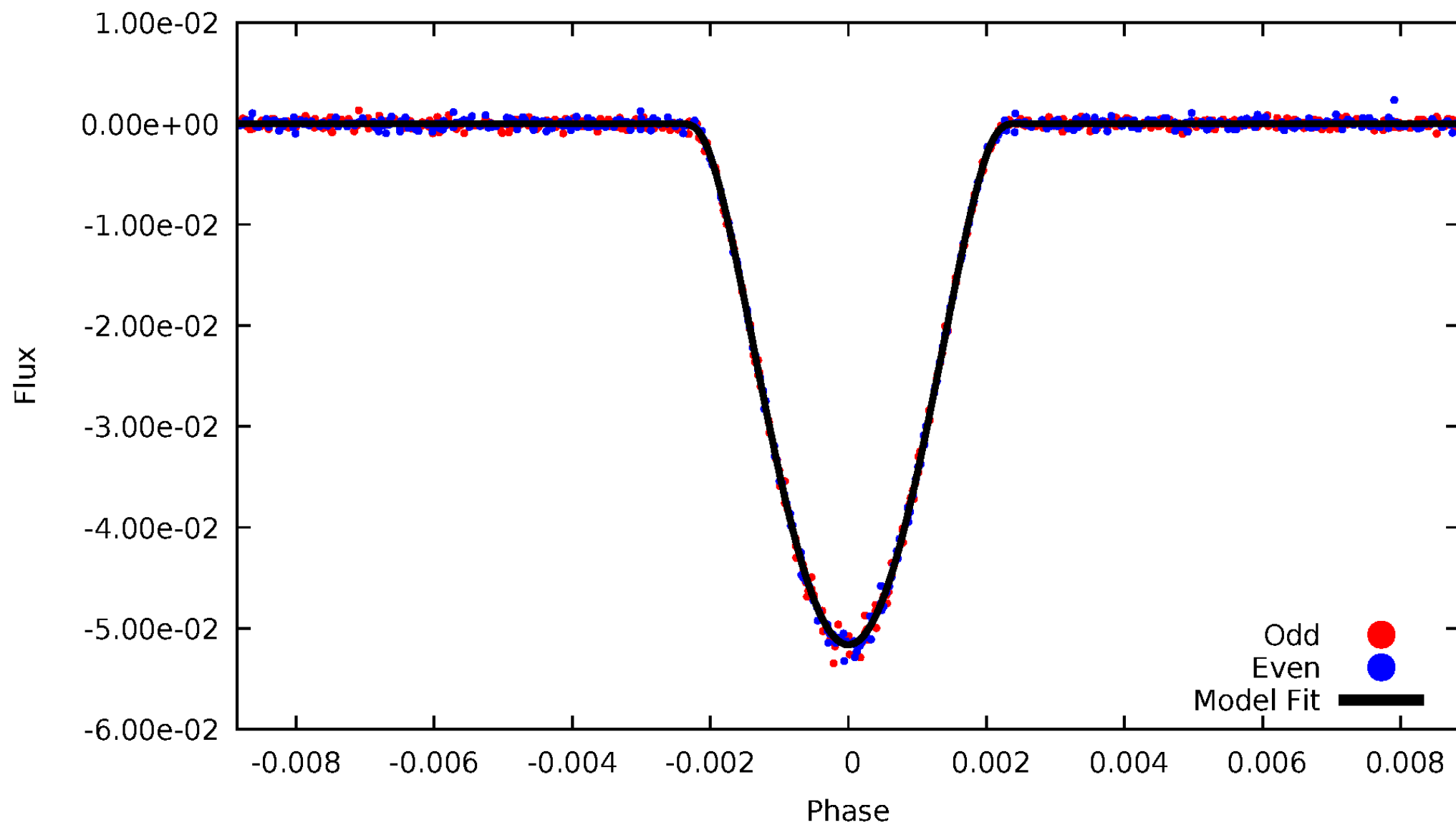


TCE 007115291-01



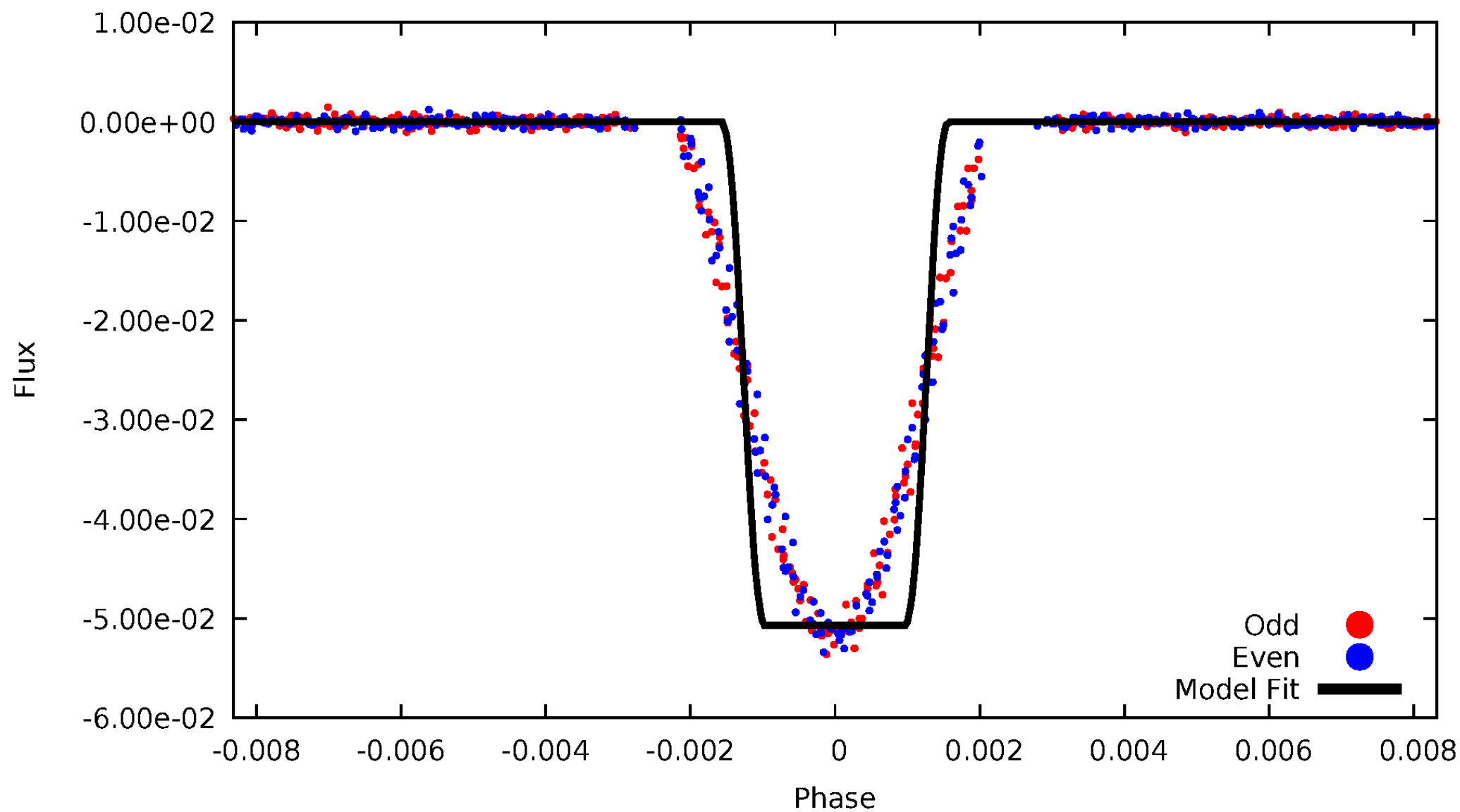
DV Odd/Even

TCE 007115291-01



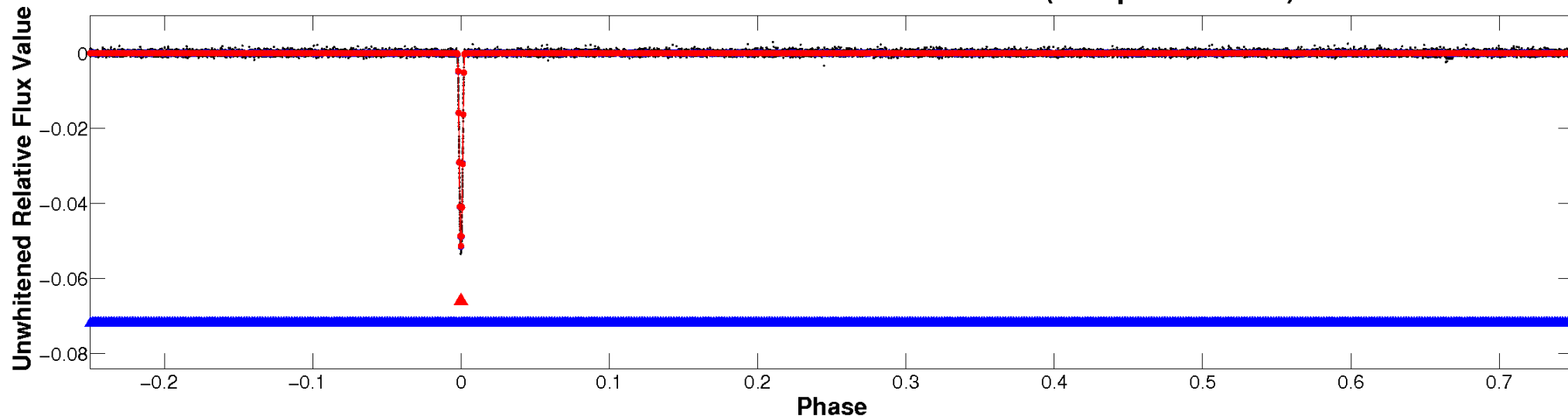
ALT Odd/Even

TCE 007115291-01

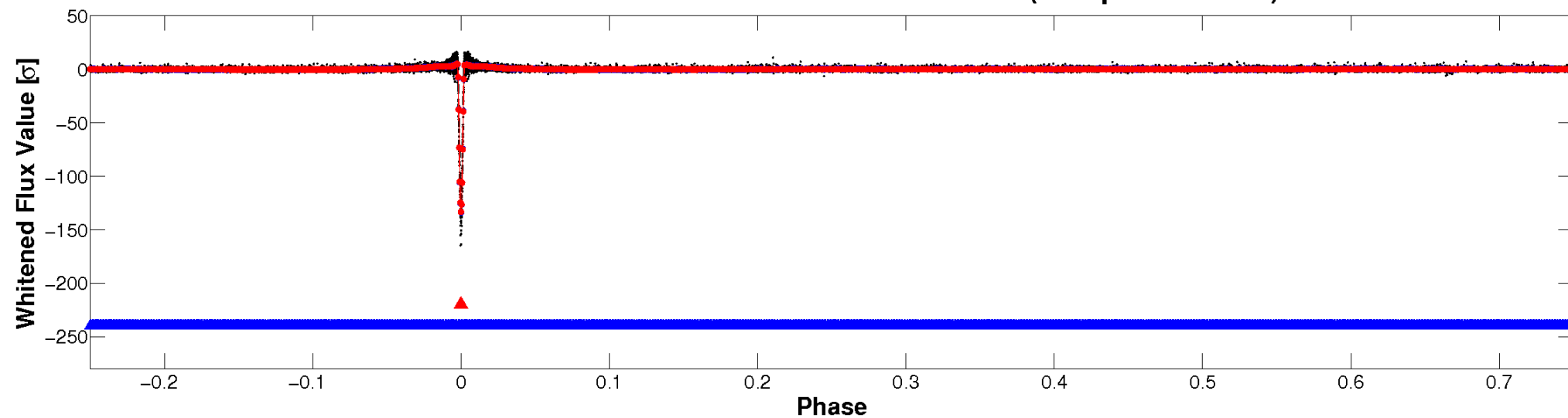


Non-Whitened Vs. Whitened Light Curve

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

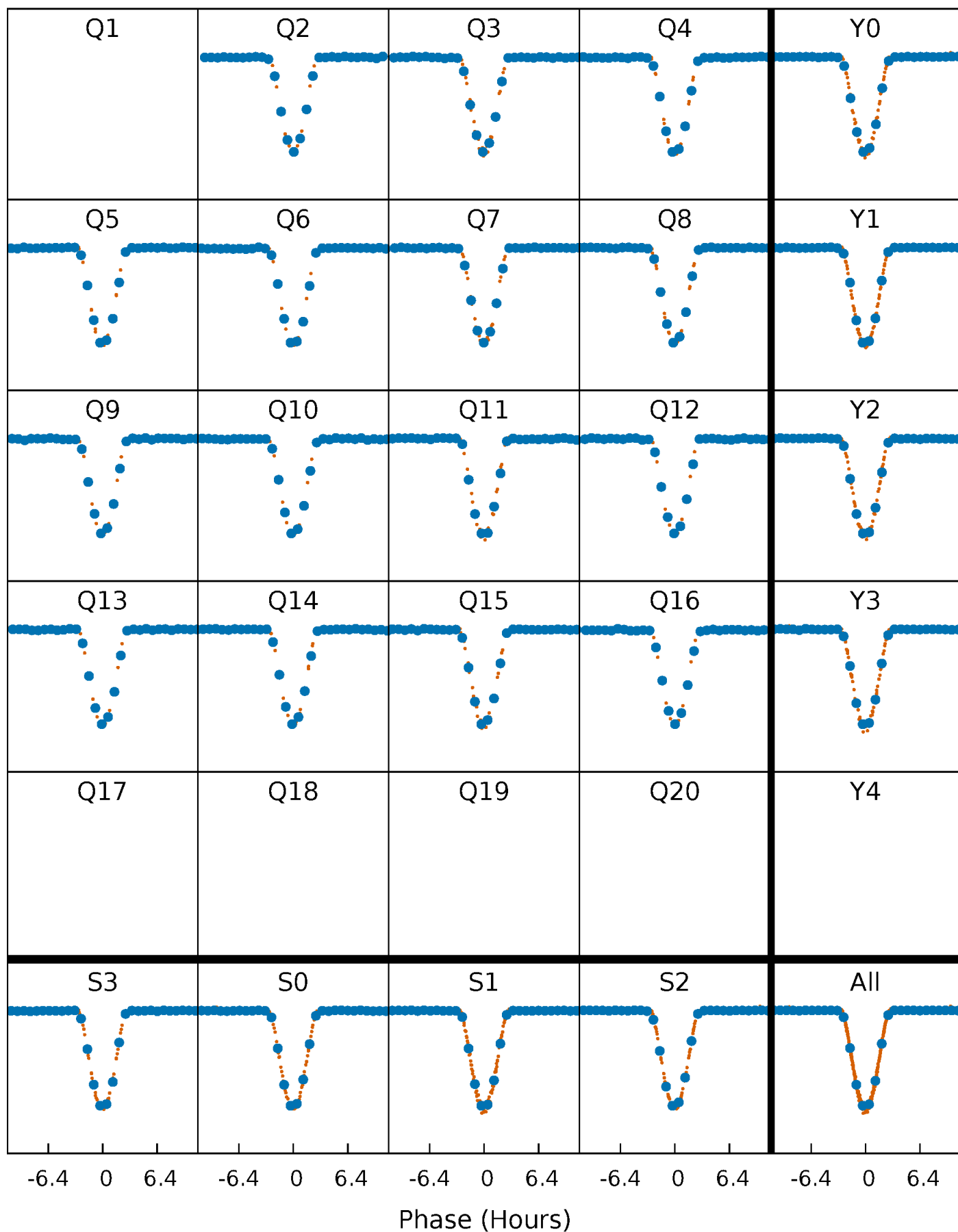


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



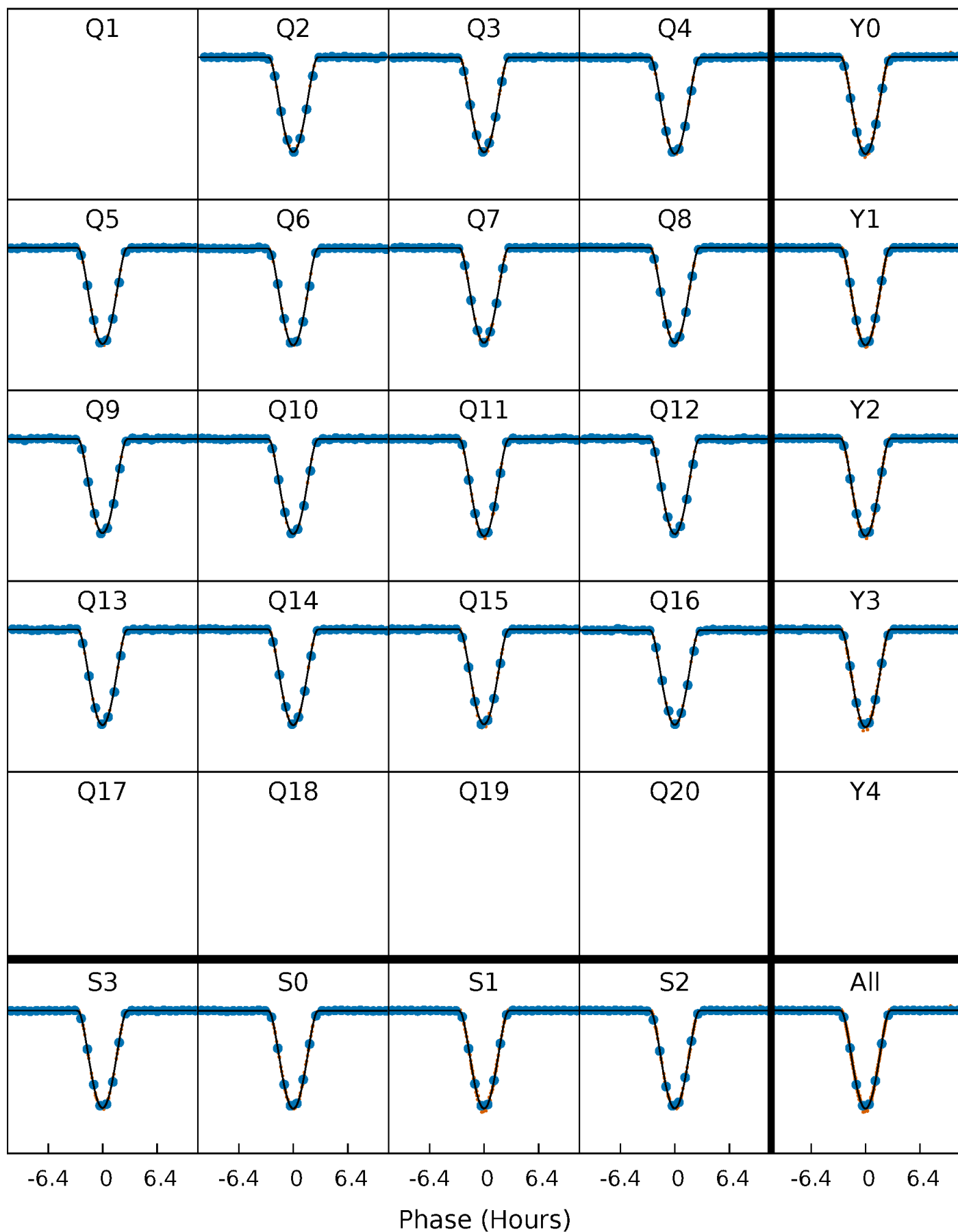
PDC Quarter-Phased Transit Curves

TCE 007115291-01 P= 52.802768 Days $T_0=167.270355$ (BKJD)



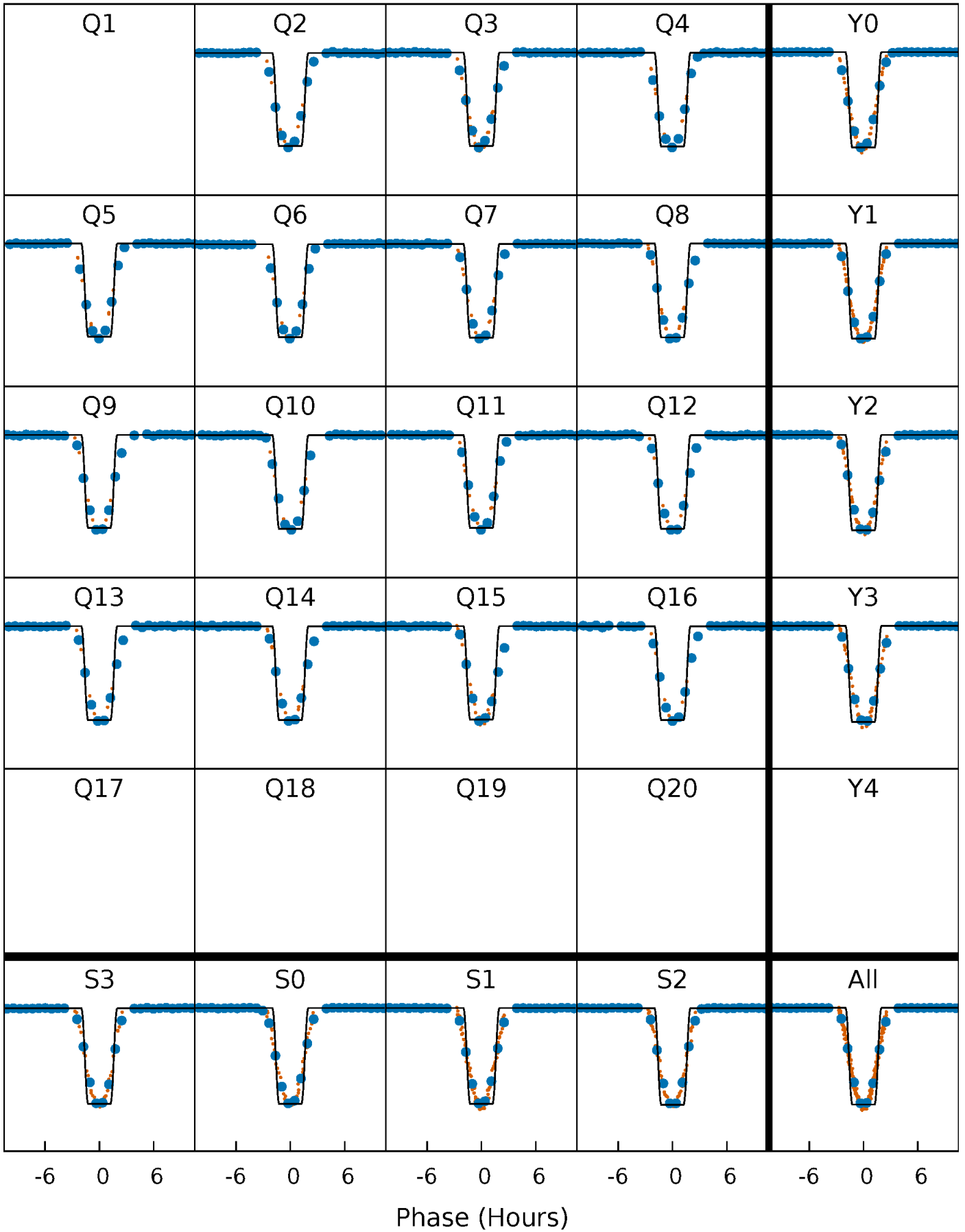
DV Quarter-Phased Transit Curves

TCE 007115291-01 P= 52.802768 Days $T_0=167.270355$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

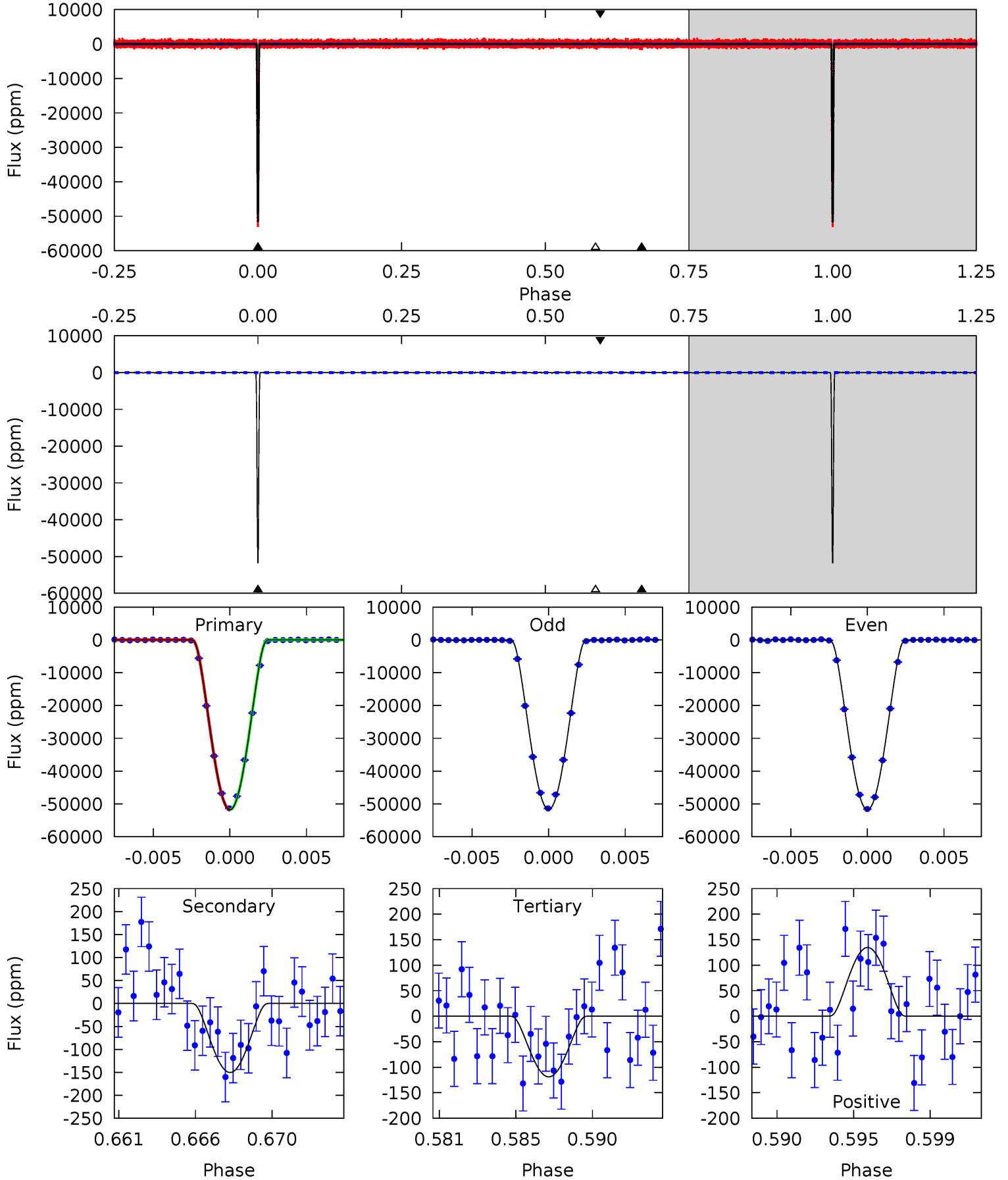
TCE 007115291-01 P= 52.802284 Days $T_0=167.276459$ (BKJD)



DV Model-Shift Uniqueness Test

007115291-01, P = 52.802768 Days, E = 114.467587 Days

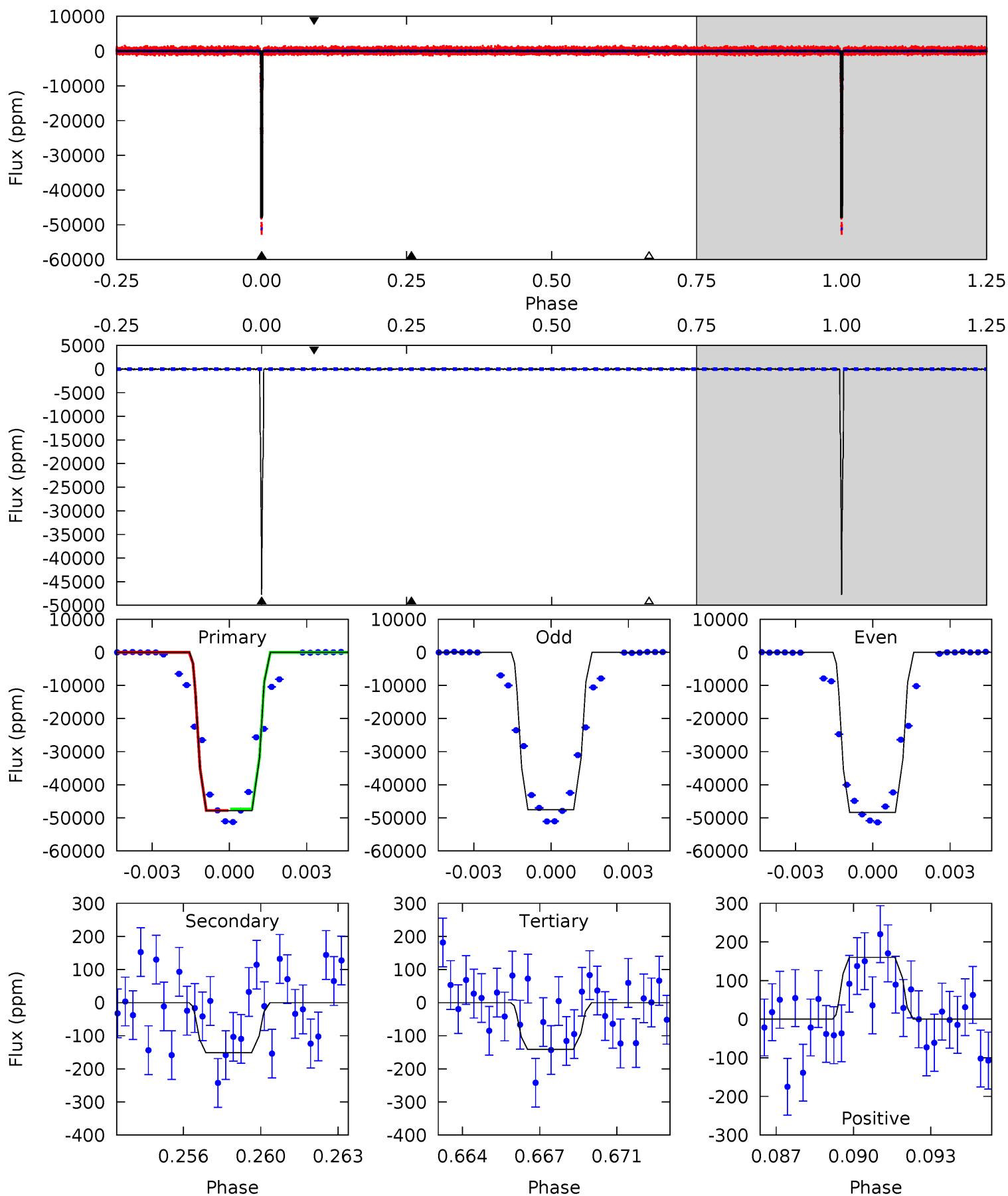
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2327	6.76	5.34	6.05	5.17	2.83	1.59	2322	2321	1.42	0.70	2.08	1.00	0.00	0.03



Alt Model-Shift Uniqueness Test

007115291-01, P = 52.802284 Days, E = 114.474175 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1288	4.07	3.80	4.31	5.25	2.96	3.51	1284	1284	0.27	-0.24	9.89	1.00	0.00	0



Stellar Parameters For KIC 007115291

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5835^{+157}_{-174}	$4.492^{+0.065}_{-0.195}$	$-0.240^{+0.300}_{-0.300}$	$0.901^{+0.263}_{-0.105}$	$0.918^{+0.110}_{-0.099}$	$1.771^{+0.593}_{-0.867}$
	+3%/-3%	+1%/-4%	+125%/-125%	+29%/-12%	+12%/-11%	+34%/-49%
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 007115291-01 / KOI 3357.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-150 ± 22	$29.21^{+4.51}_{-2.21}$	669^{+42}_{-31}	2144^{+46}_{-50}	$6.640^{+1.662}_{-1.698}$
Alt.	-151 ± 37	$22.77^{+3.46}_{-2.08}$	674^{+41}_{-34}	2277^{+70}_{-76}	11^{+3}_{-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 $T_{obs} \gg T_{max}$ AND $A_{obs} \gg 1.0$

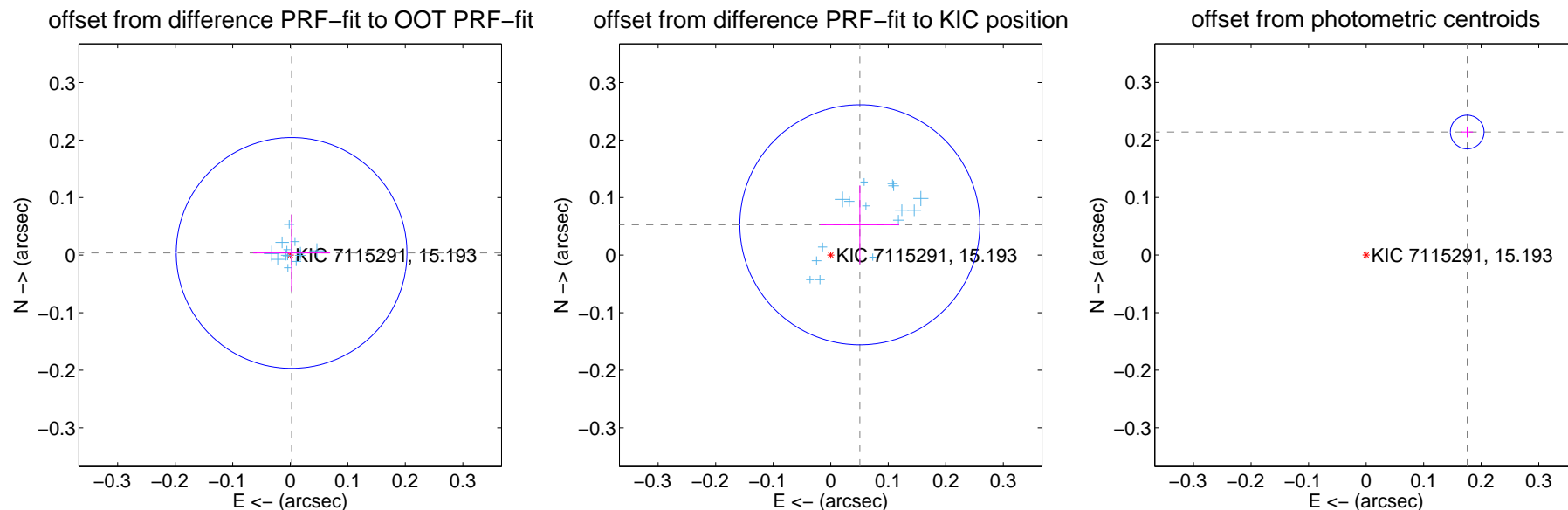
DV Centroid Data

Supplemental centroid analysis for 007115291-01. Kepler magnitude: 15.19. Transit SNR 1193.37

There are 15 quarters with good PRF difference image offsets

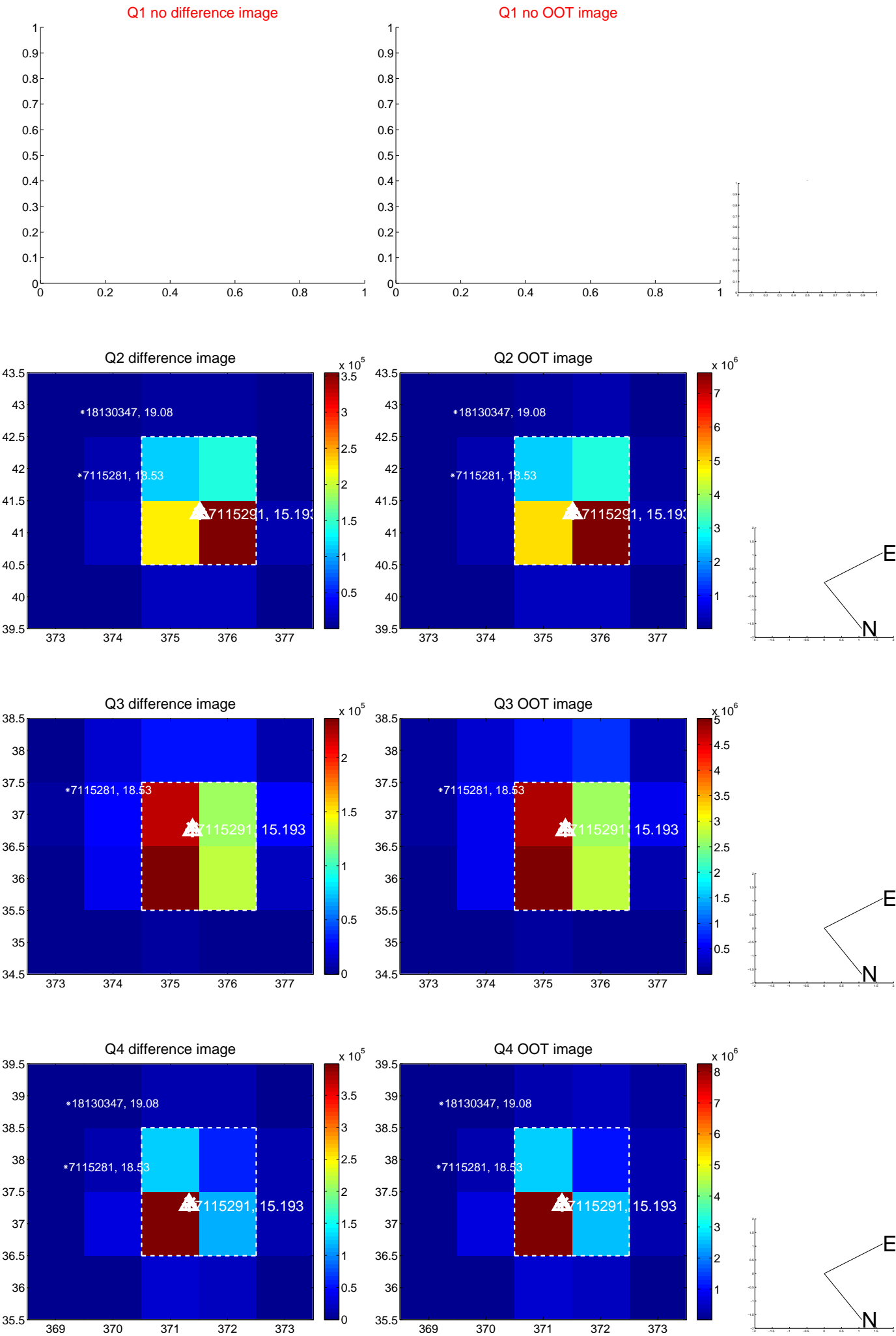
The direct PRF centroid is offset from the target star catalog position by about 0.14 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.004 ± 0.067	0.07	-0.002 ± 0.067	0.004 ± 0.067
PRF-fit source offset from KIC position	0.073 ± 0.070	1.05	-0.051 ± 0.069	0.053 ± 0.068
photometric centroid source offset	0.28 ± 0.01	28.35	-0.18 ± 0.01	0.21 ± 0.01

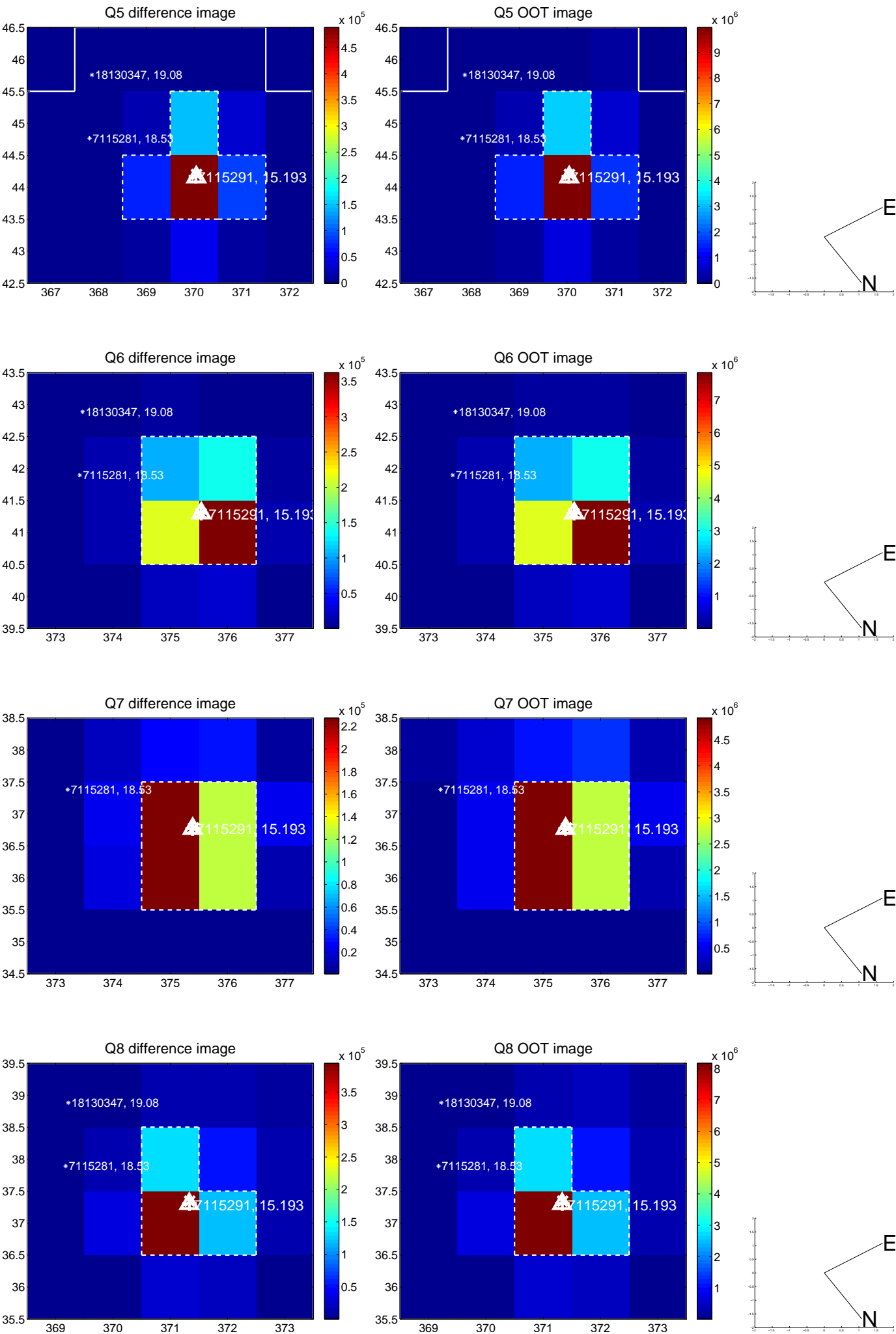


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

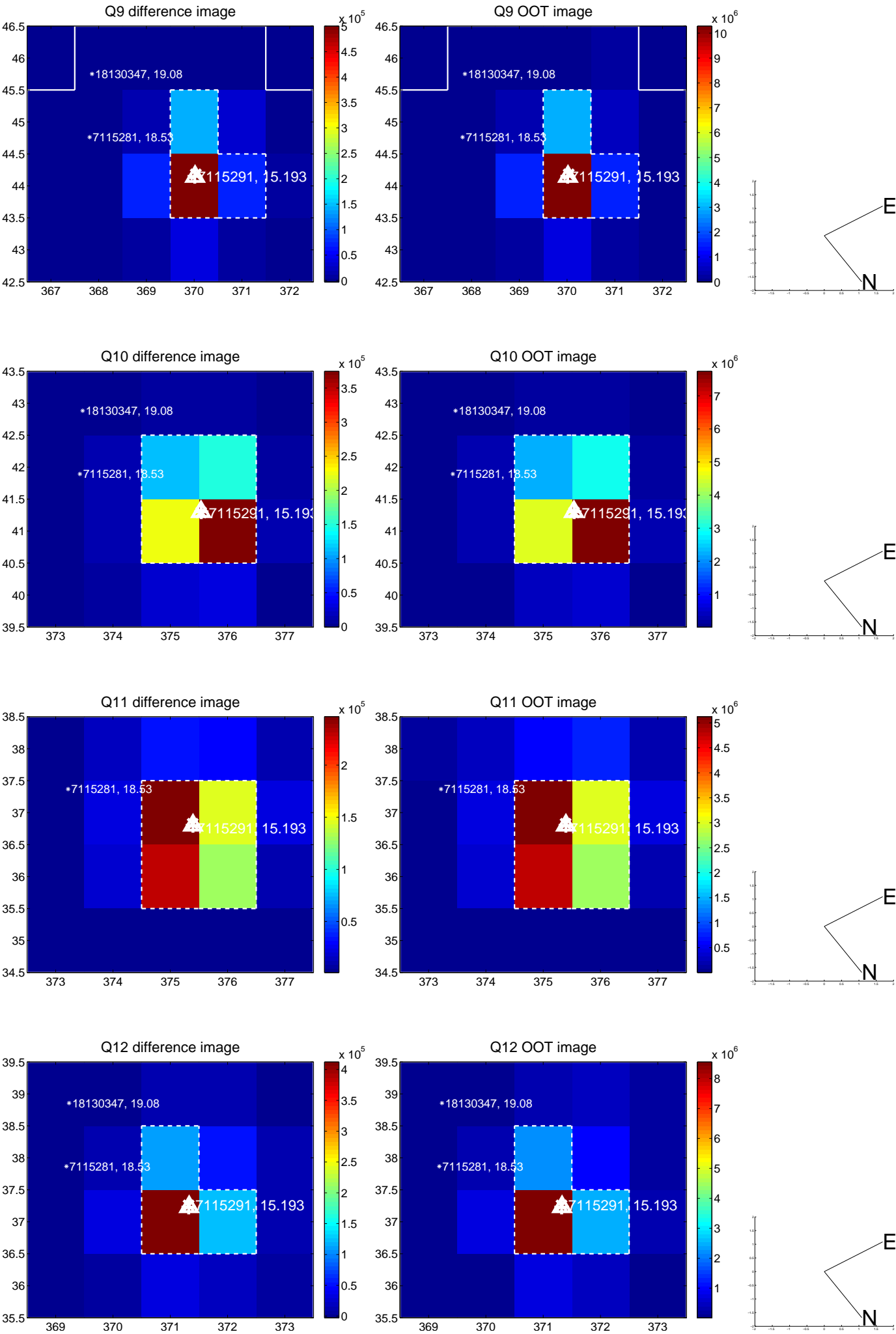
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



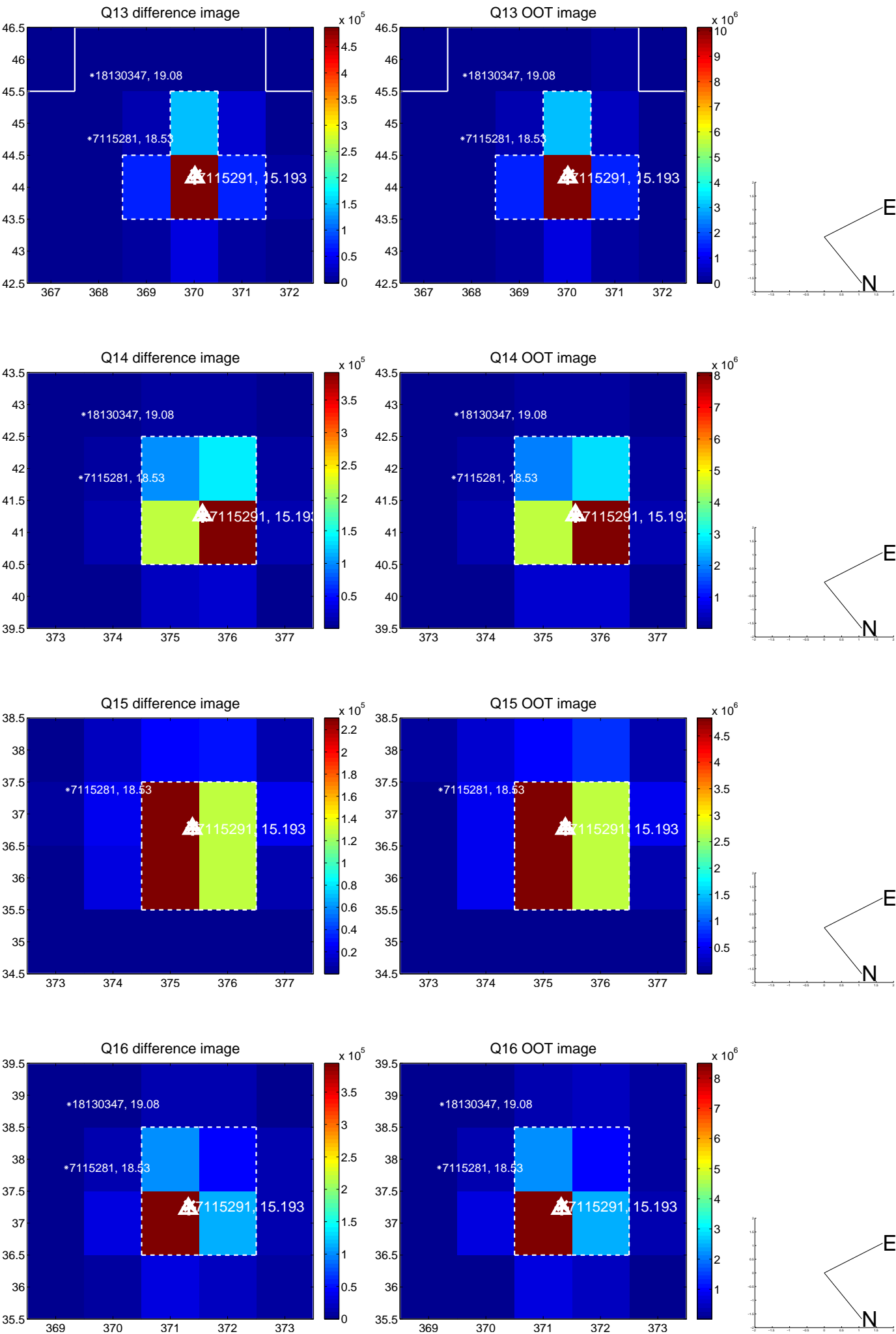
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



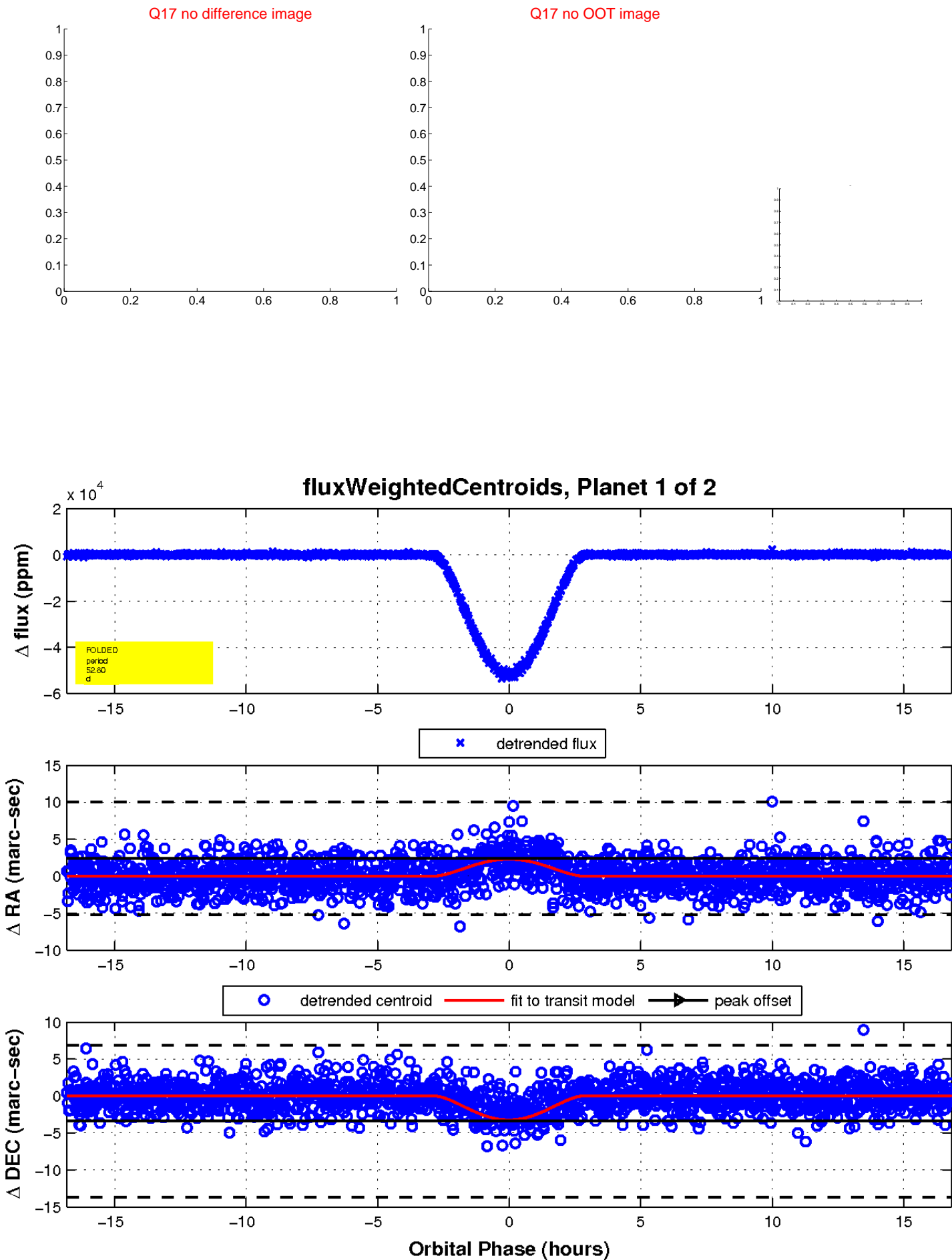
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

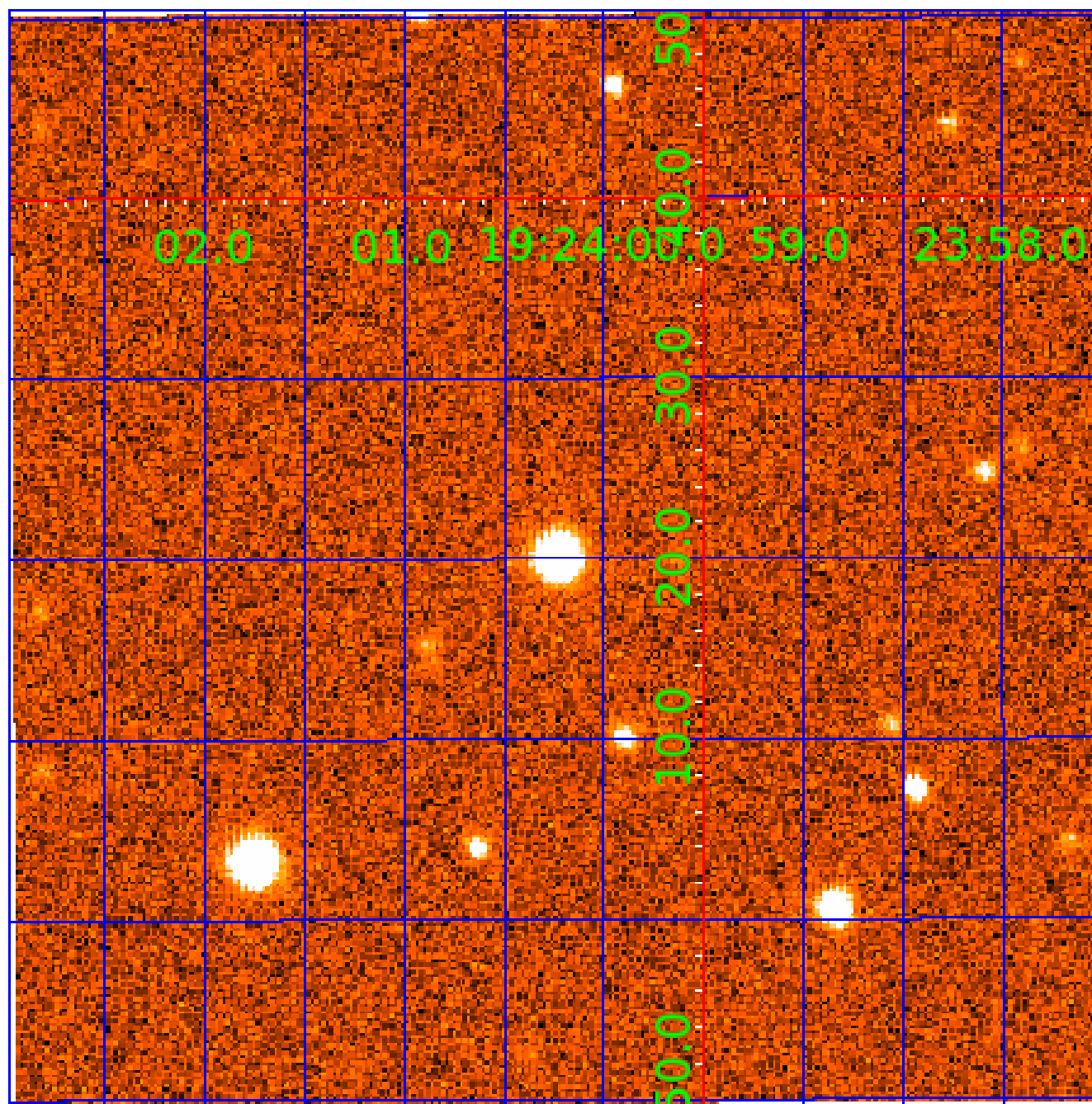


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 007115291

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})
007115291-01	OBS	3357.01	52.802768	167.270355	51634.2	5.608	1409.6	1193.4	0.90	5835	28.73	11.75
007115291-02	OBS	No	0.566741	131.892357	28.0	3.570	12.3	8.2	0.90	5835	0.48	4962.43

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007115291-01	OBS	FP	0.00	0	1	0	0	DEEP_V_SHAPED
007115291-02	OBS	FP	0.00	1	0	1	1	LPP_DV—HALO_GHOST—EPHEM_MATCH

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.

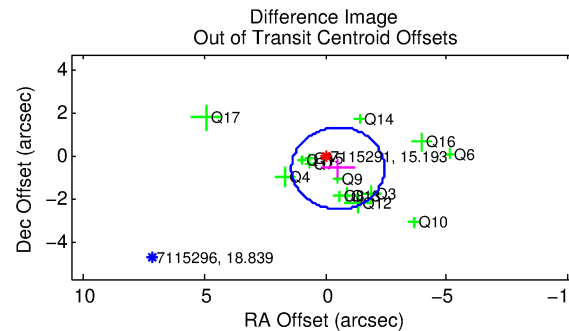
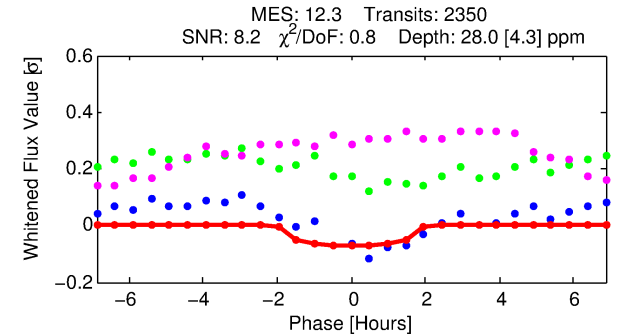
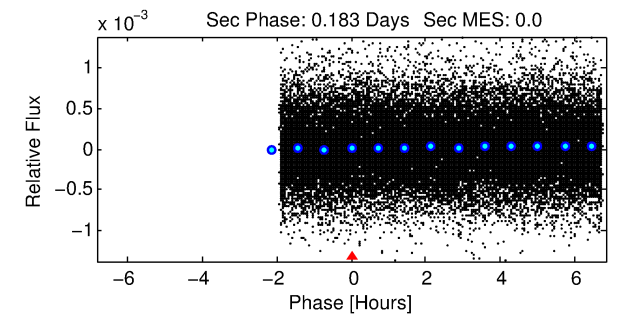
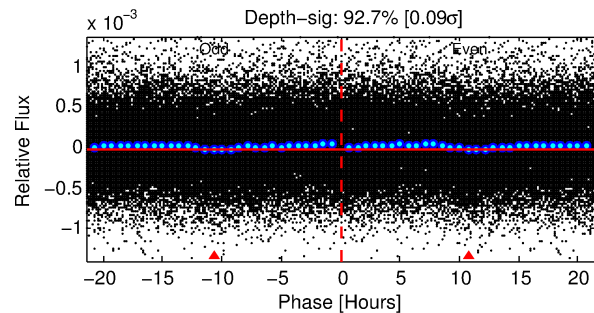
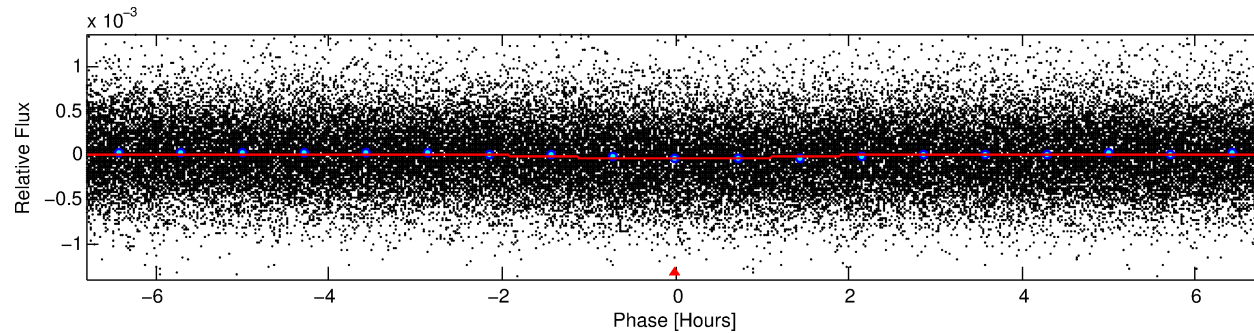
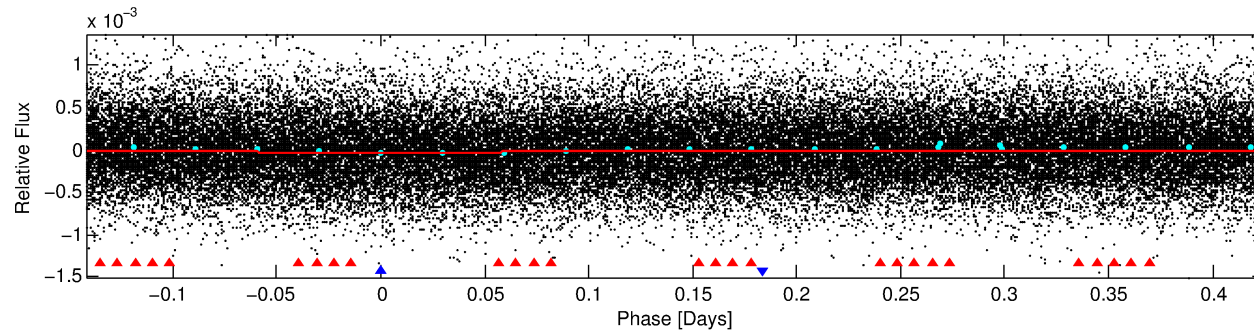
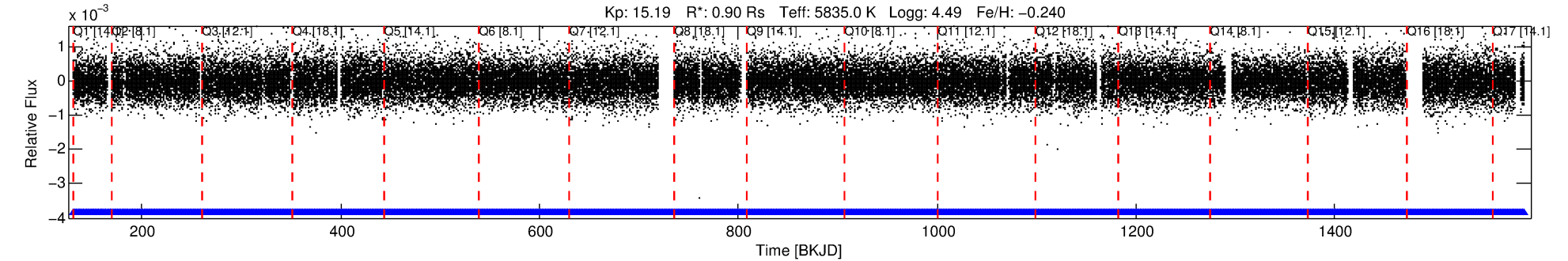
Ephemeris Match Information For 007115291-02

TCE (1)	KIC	Parent (2)	Parent KIC	$P_1:P_2$	Dist ($''$)	Δ Row	Δ Col	m_2	m_1	D_2/D_1	Mechanism	Flag	σ_P	σ_T
007115291-02	7115291	RR-Lyr-pri	7198959	1:1	1129.1	-8	-284	7.86	15.19	22261.00	Direct-PRF	0	1.37	19.41

Notes: $P_1:P_2$ is the period ratio. Dist is the distance in arcseconds. Δ Row and Δ Col are the number of pixels apart in row and column. m_2 and m_1 are the magnitudes of the parent and child. D_2/D_1 is the parent's transit depth divided by the child's. σ_P and σ_T are the significance of the match in period and epoch. For a match to be considered significant $\sigma_P < 5.0$ and $\sigma_T < 5.0$. Matches which have σ_P and σ_T very close to this cutoff should receive extra scrutiny, especially if the period ratio is very large.

DV One-Page Summary

KIC: 7115291 Candidate: 2 of 2 Period: 0.567 d
KOI: K03357 Corr: No Ephemeris Match



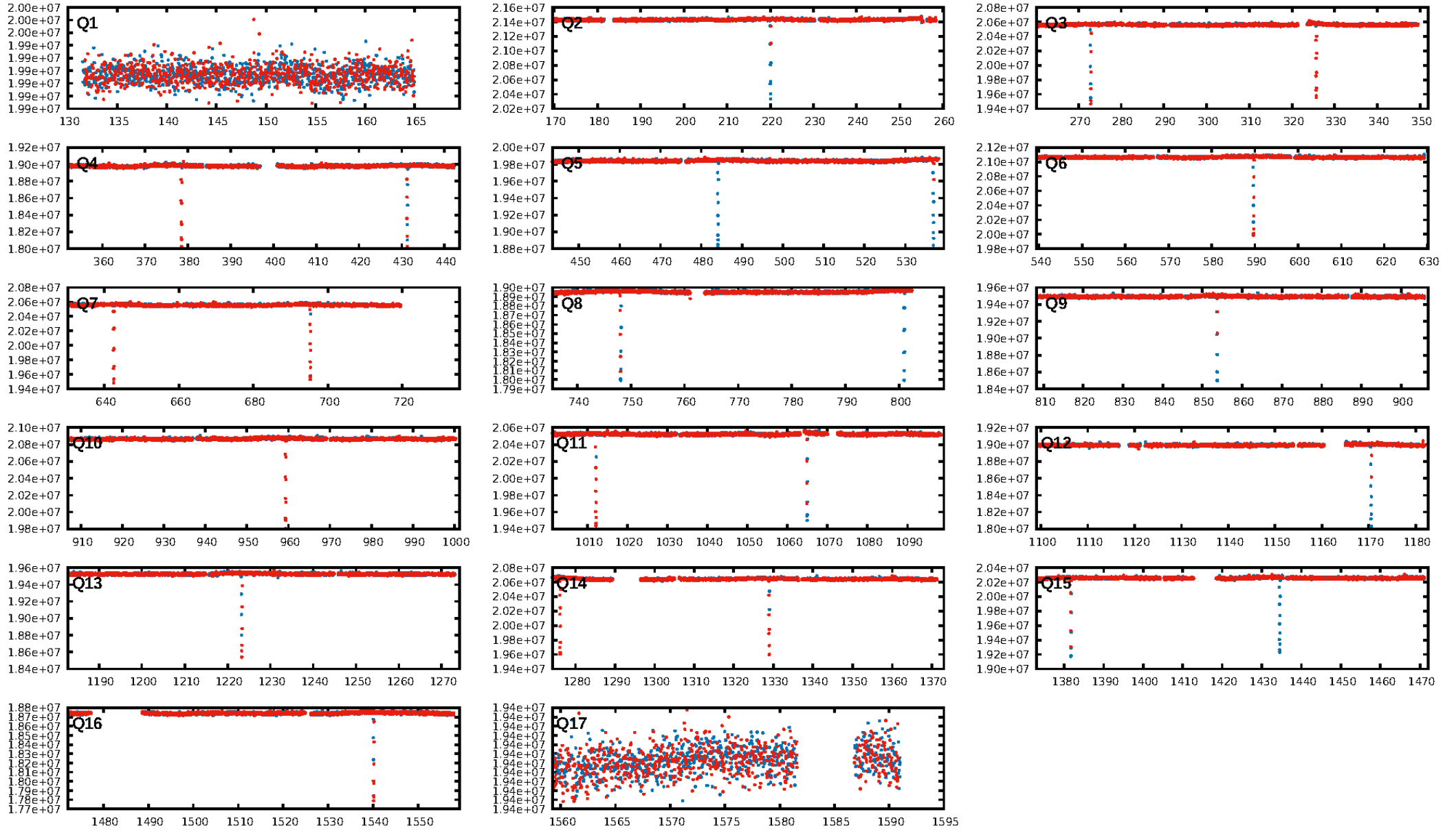
DV Fit Results:

Period = 0.56674 [0.00001] d
Epoch = 131.8924 [0.0052] BKJD
Rp/R* = 0.0049 [0.0076]
a/R* = 1.34 [4.28]
b = 0.30 [22.43]
Seff = 4962.43 [1868.00]
Teff = 2140 [201] K
Rp = 0.48 [0.76] Re
a = 0.0130 [0.0032] AU
Ag = N/A
Teffp = N/A

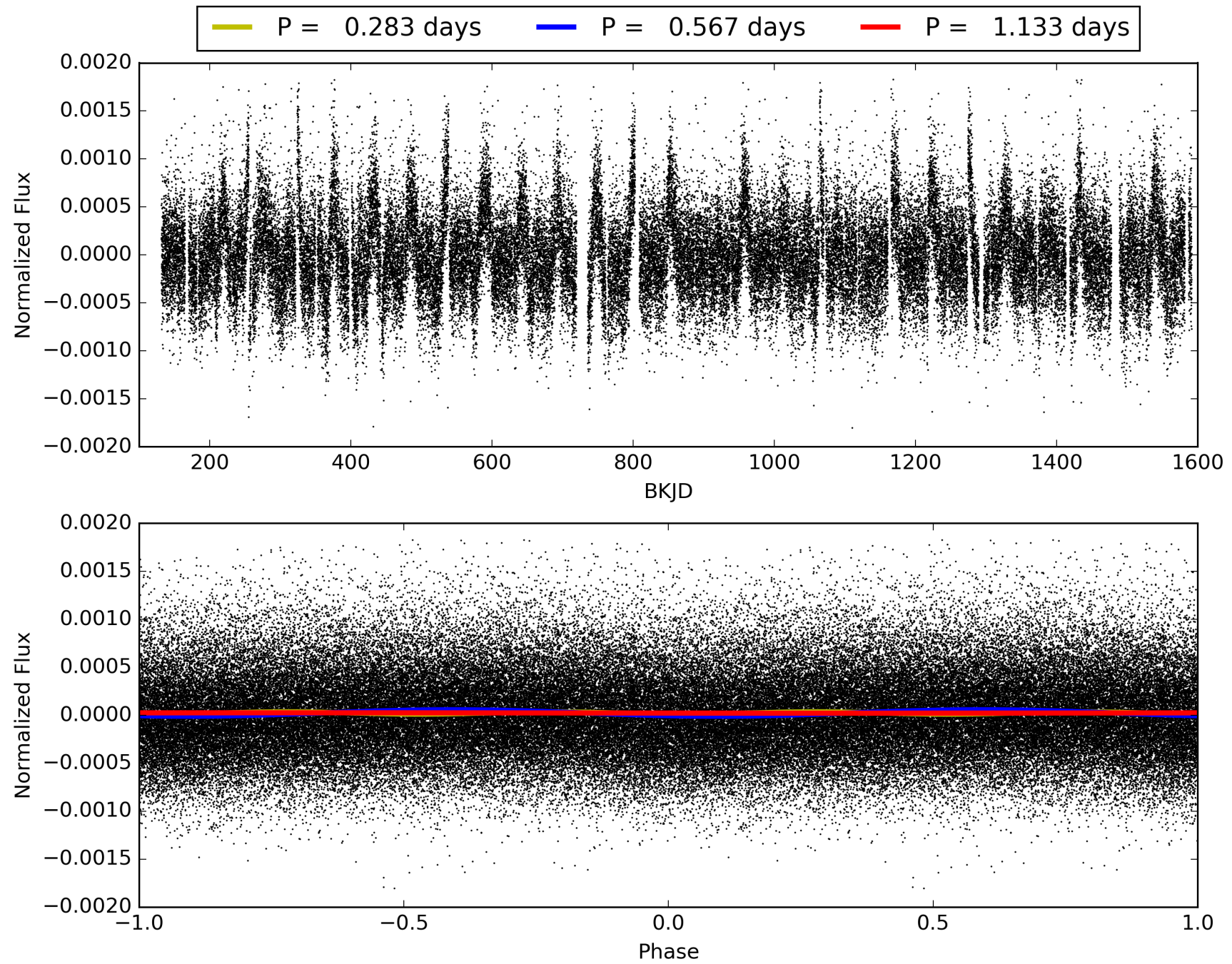
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [188.58 σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 4.39e-26
RollingBand-fgt: 1.00 [2244/2244]
GhostDiagnostic-chr: -0.1452
Centroid-sig: 0.2%
Centroid-so: 4.088 arcsec [2.39 σ]
OotOffset-rm: 0.778 arcsec [1.22 σ]
KicOffset-rm: 0.781 arcsec [1.27 σ]
OotOffset-st: 3/4/4/3 [14]
KicOffset-st: 3/4/4/3 [14]
DiffImageQuality-fgm: 0.29 [4/14]
DiffImageOverlap-fno: 1.00 [17/17]

TCE 007115291-02, PDC Light Curves

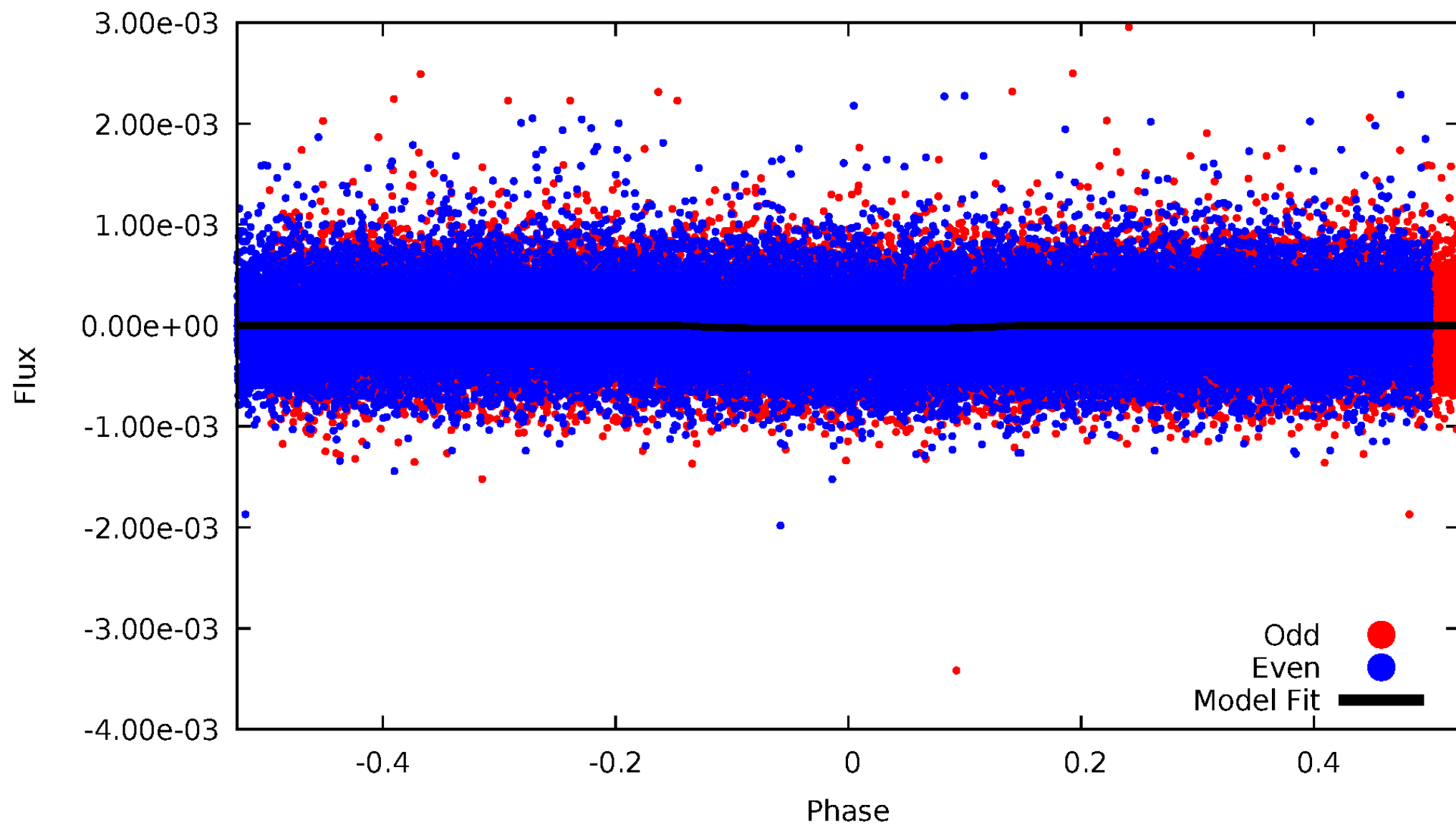


TCE 007115291-02



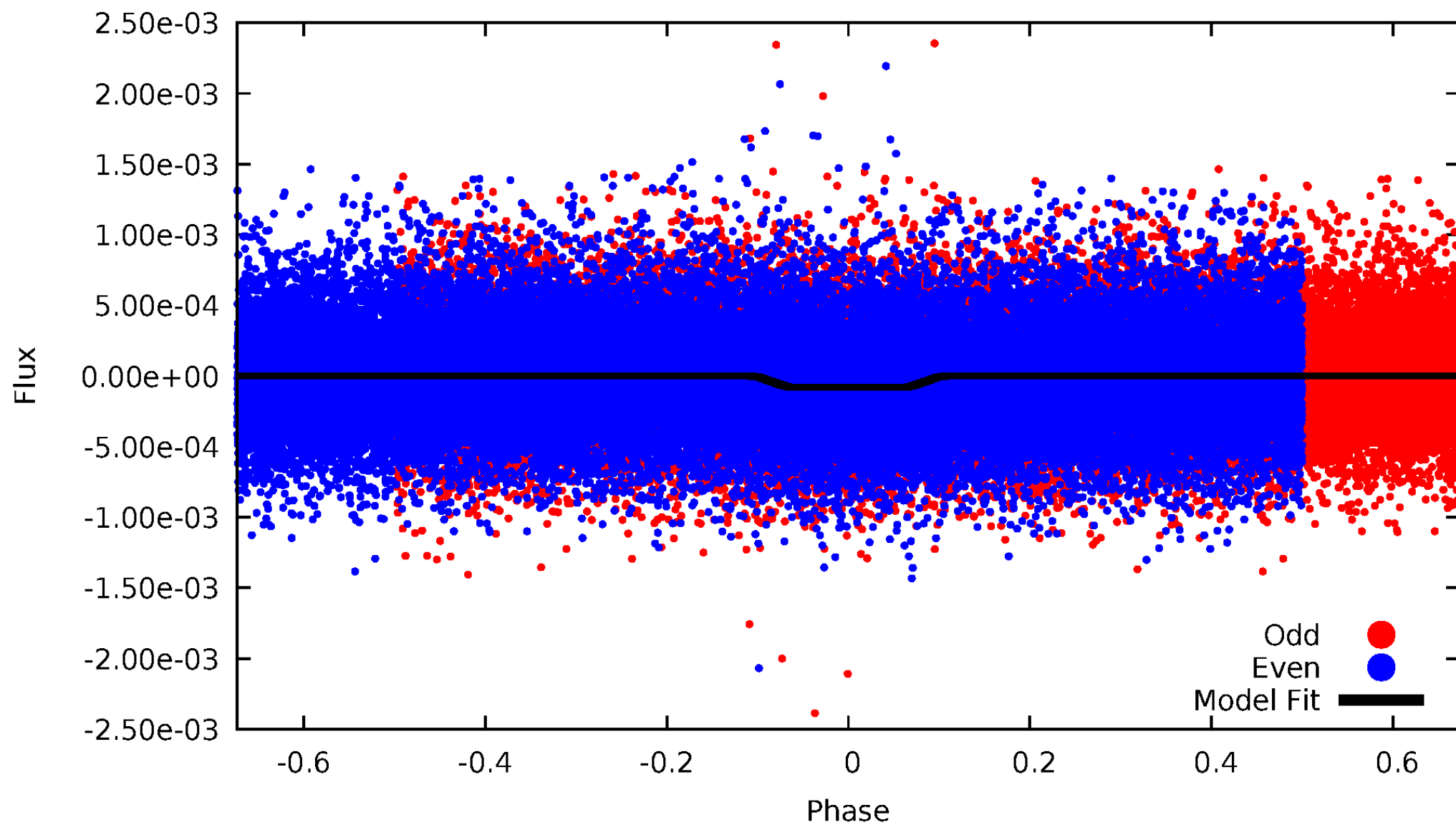
DV Odd/Even

TCE 007115291-02



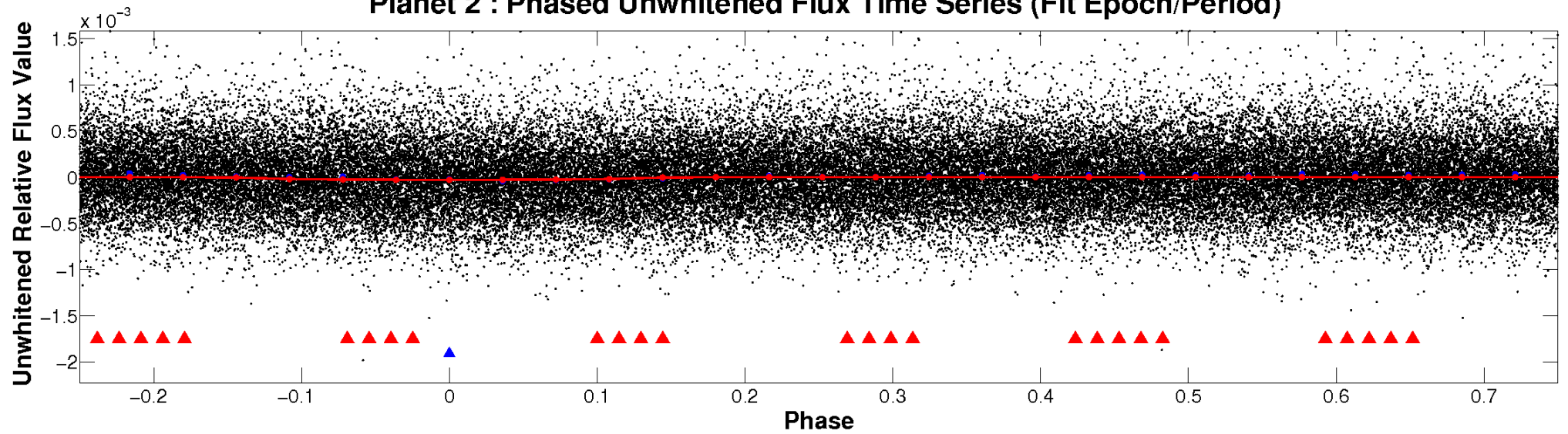
ALT Odd/Even

TCE 007115291-02

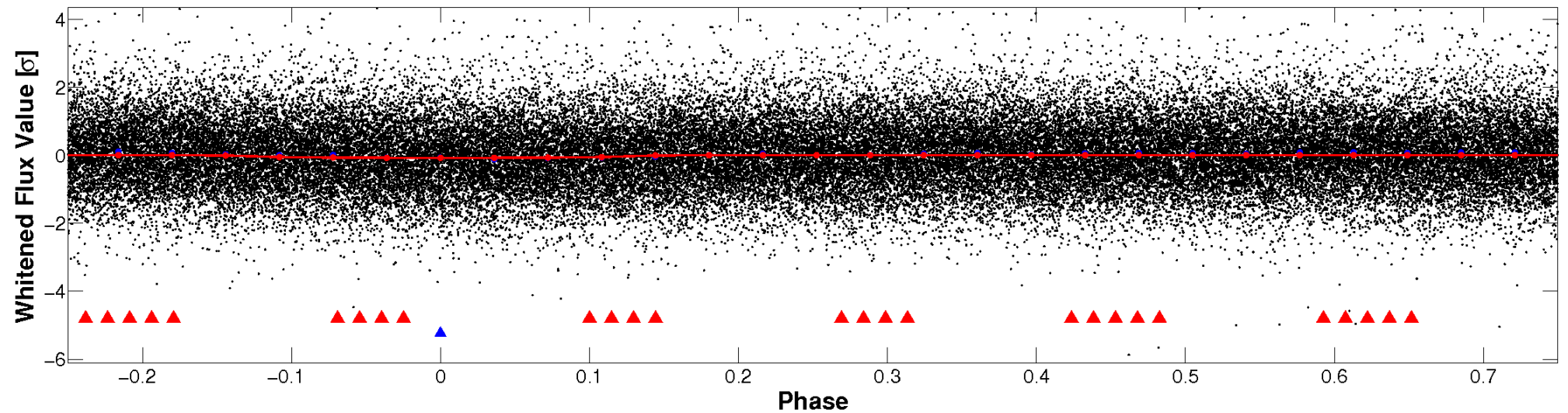


Non-Whitened Vs. Whitened Light Curve

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

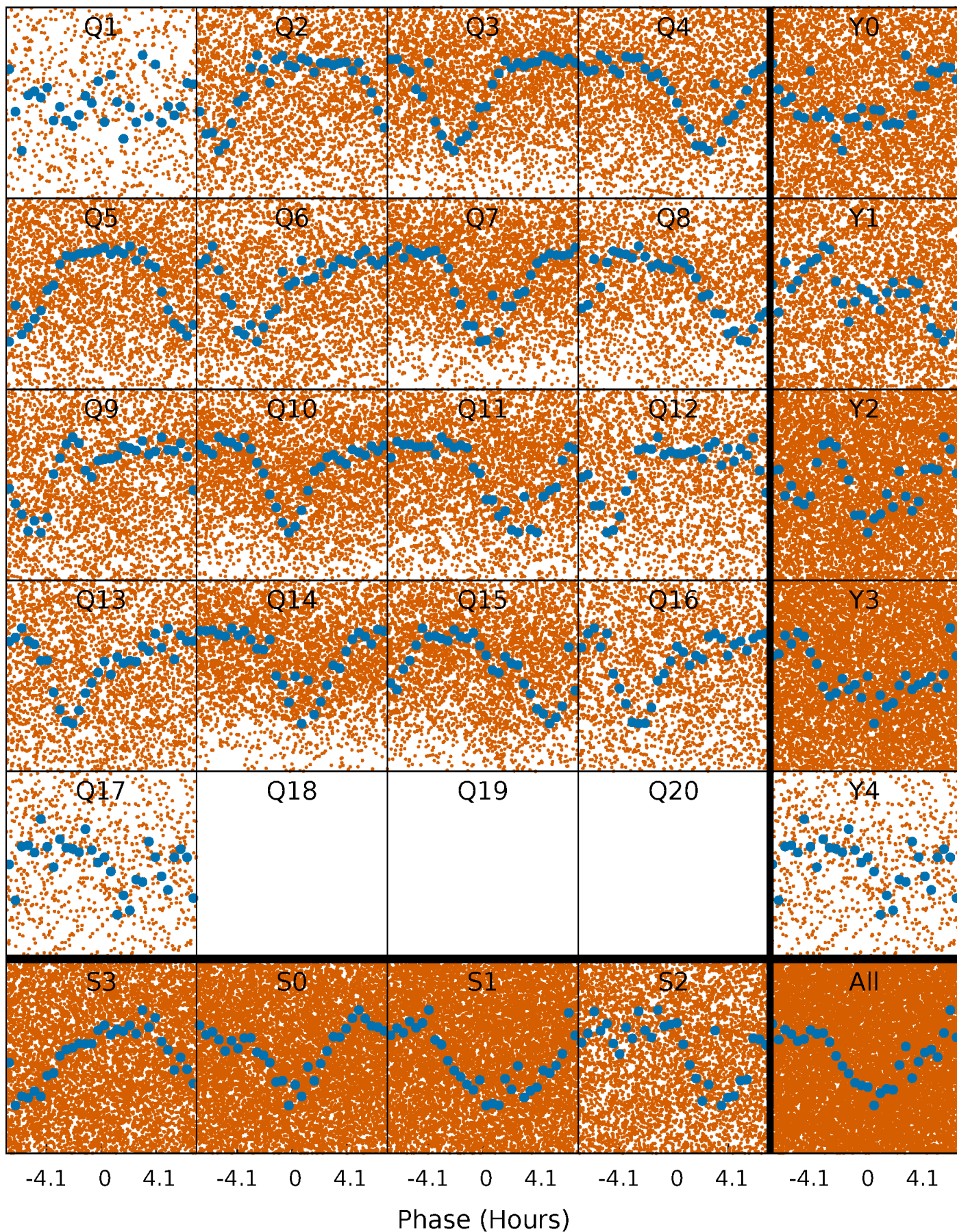


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



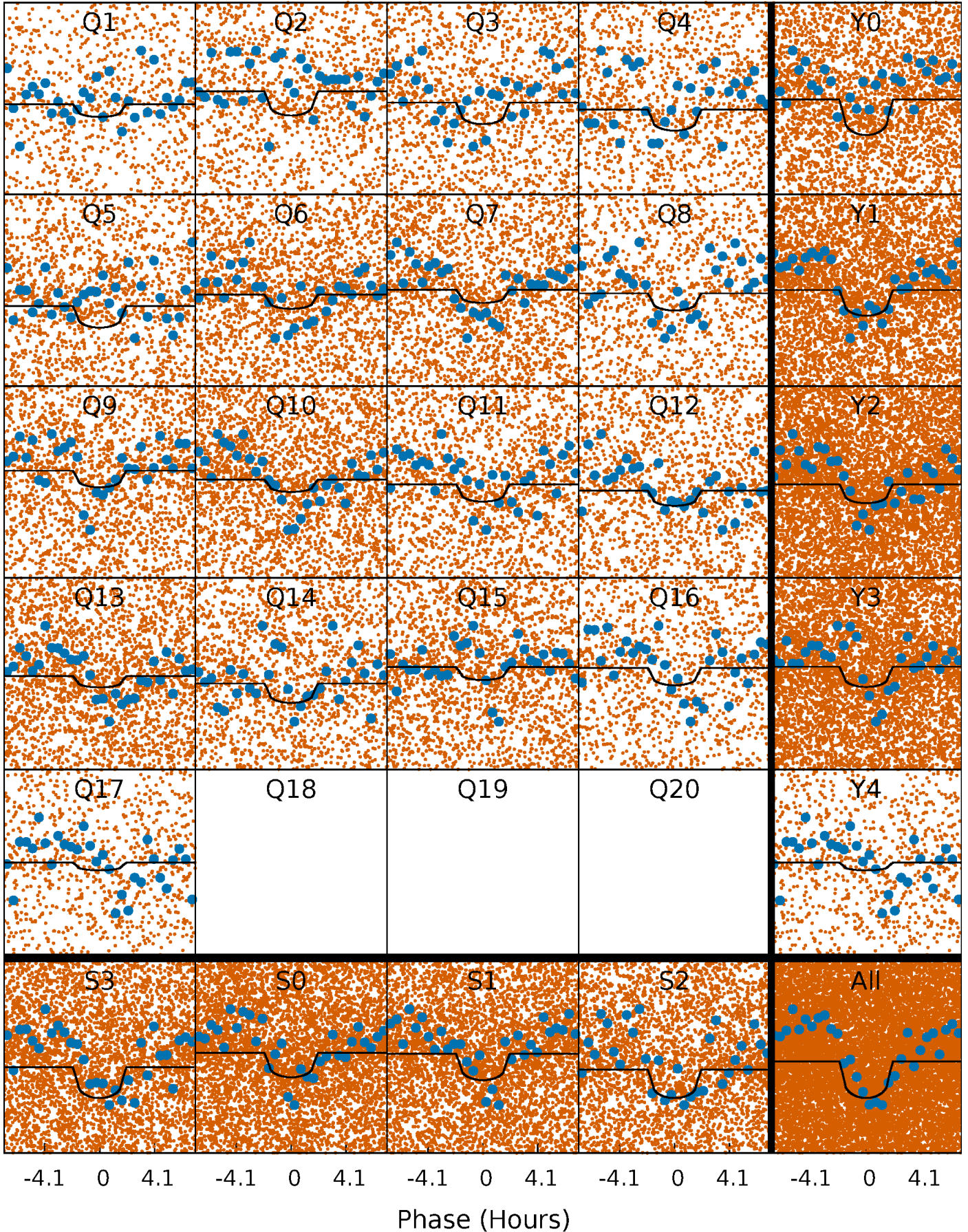
PDC Quarter-Phased Transit Curves

TCE 007115291-02 P= 0.566741 Days $T_0=131.892357$ (BKJD)



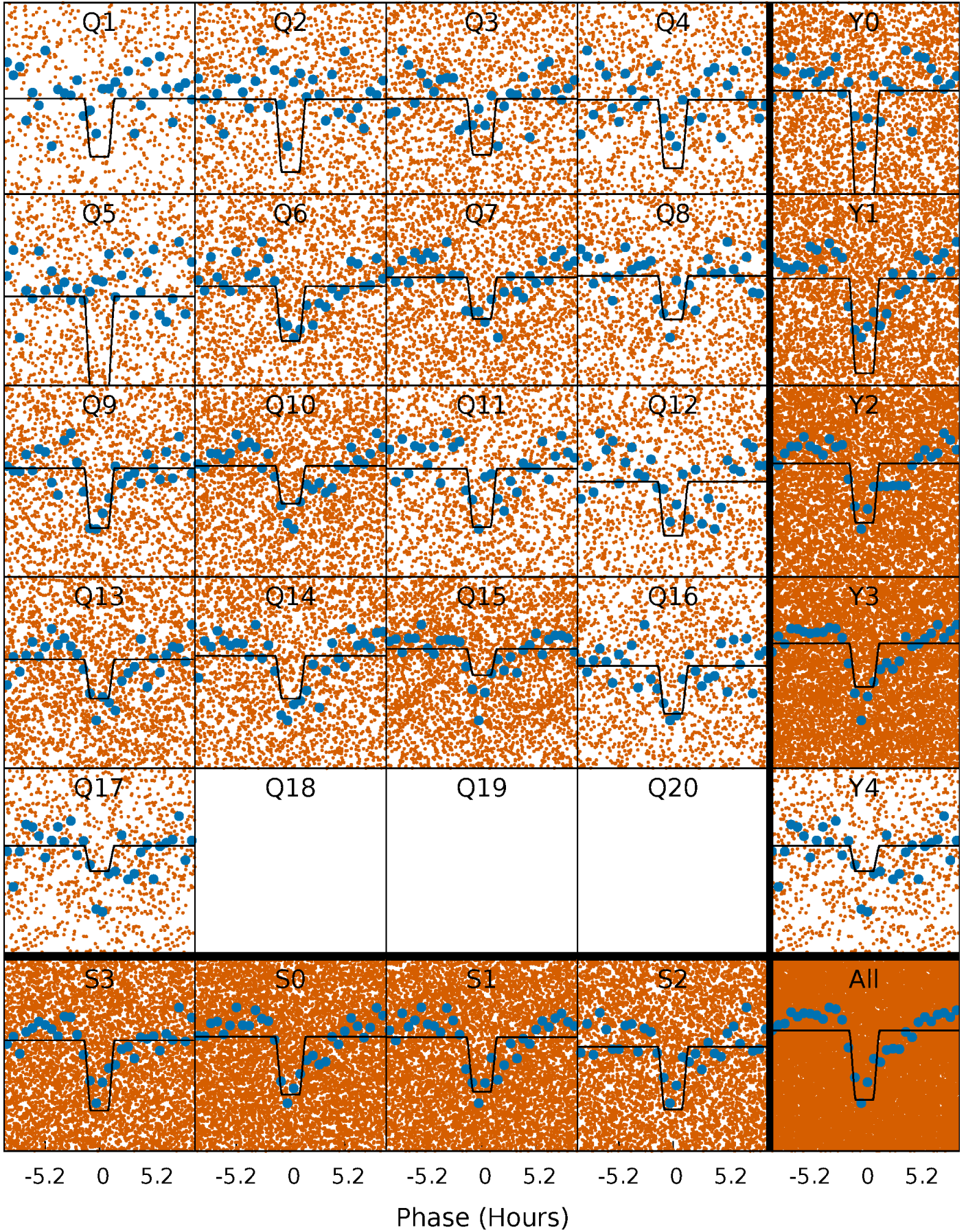
DV Quarter-Phased Transit Curves

TCE 007115291-02 P= 0.566741 Days $T_0=131.892357$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

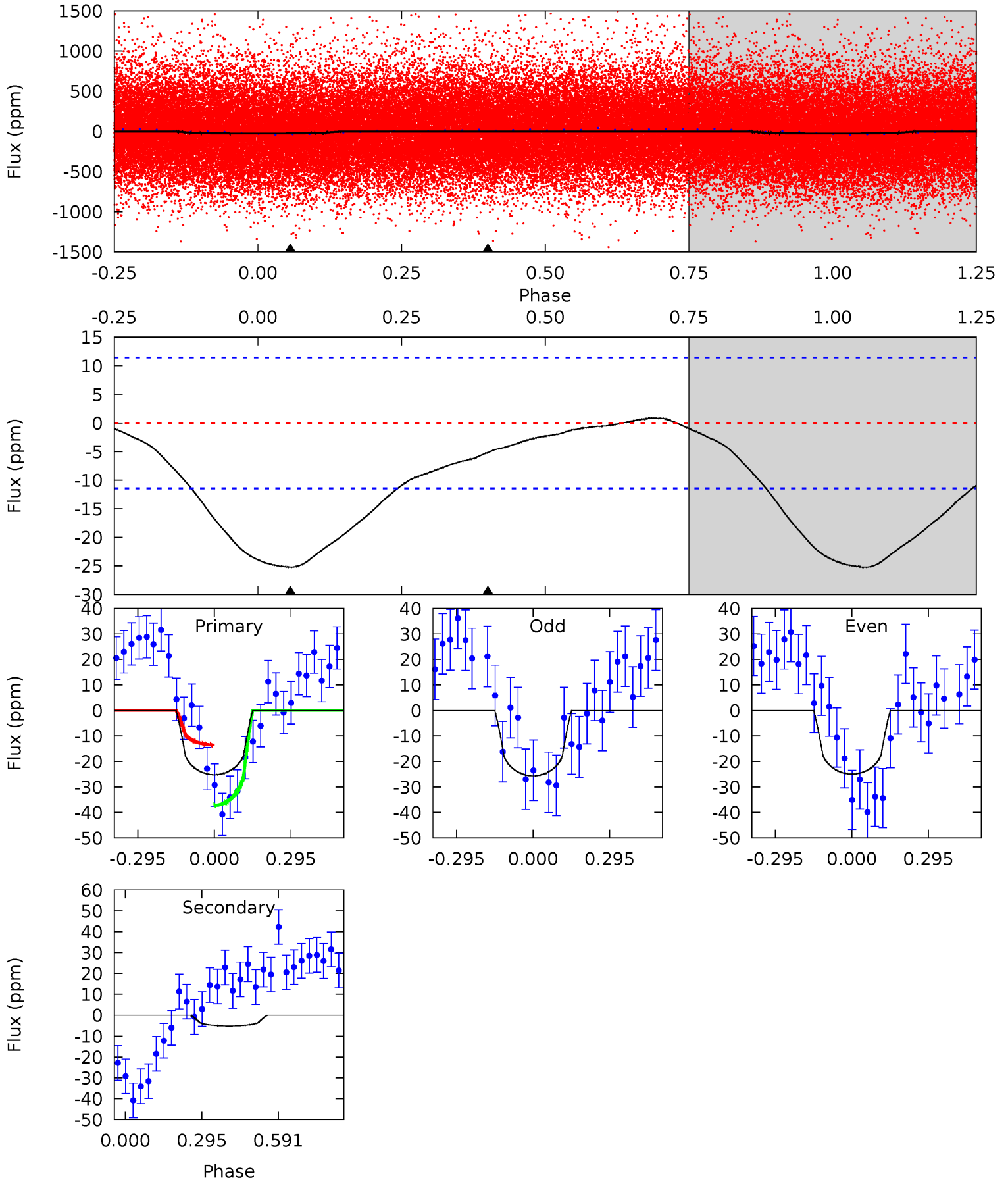
TCE 007115291-02 P= 0.566795 Days $T_0=131.821407$ (BKJD)



DV Model-Shift Uniqueness Test

007115291-02, P = 0.566741 Days, E = 131.325616 Days

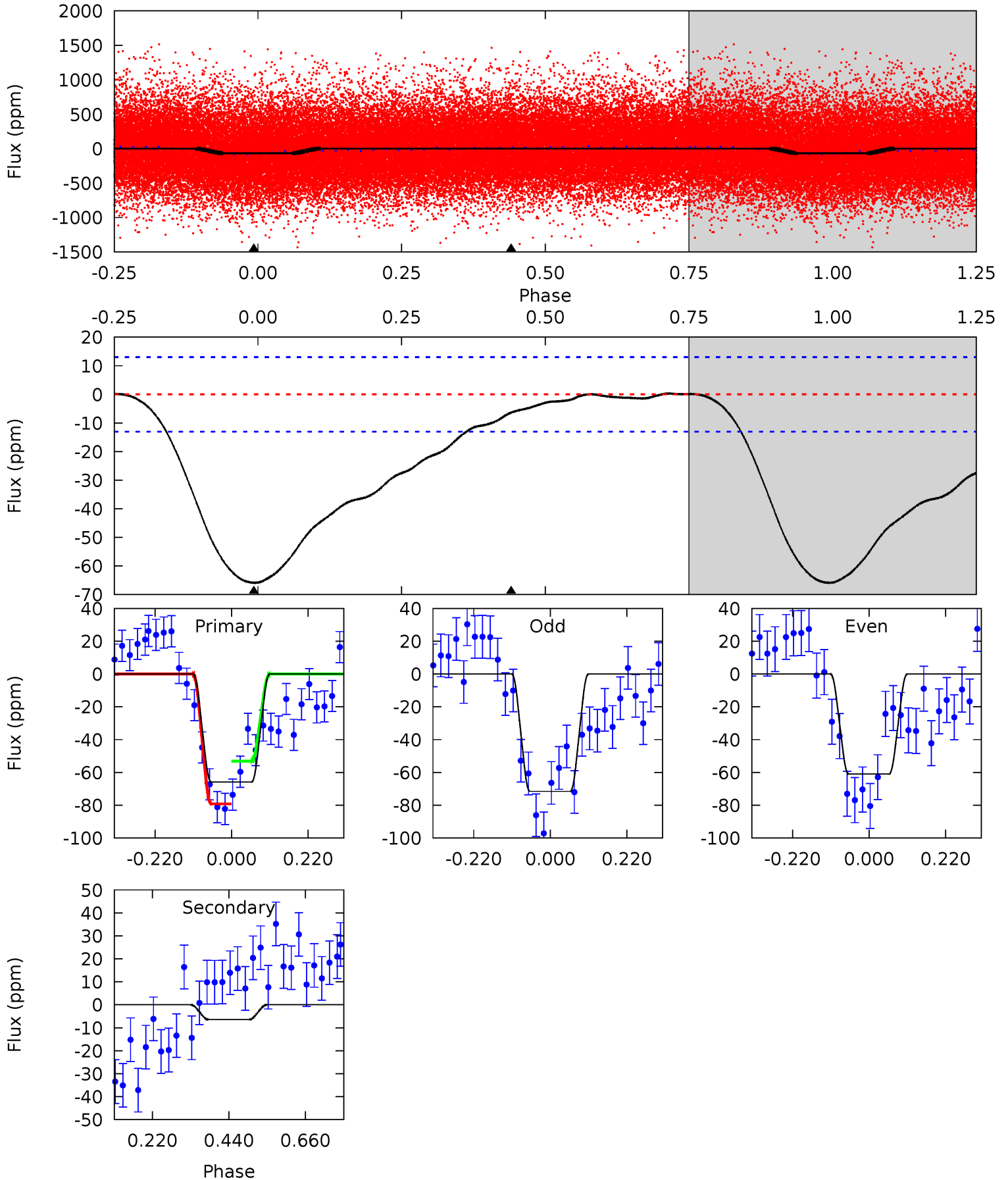
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.56	1.96	0	0	4.33	1.05	0.39	9.56	9.56	1.96	1.96	0.13	0.93	0.03	4.51



Alt Model-Shift Uniqueness Test

007115291-02, P = 0.566795 Days, E = 131.254612 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
22.2	2.17	0	0	4.40	1.23	2.65	22.2	22.2	2.17	2.17	1.77	0.87	0.01	4.35



Stellar Parameters For KIC 007115291

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5835^{+157}_{-174}	$4.492^{+0.065}_{-0.195}$	$-0.240^{+0.300}_{-0.300}$	$0.901^{+0.263}_{-0.105}$	$0.918^{+0.110}_{-0.099}$	$1.771^{+0.593}_{-0.867}$
	+3%/-3%	+1%/-4%	+125%/-125%	+29%/-12%	+12%/-11%	+34%/-49%
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 007115291-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-5 ± 3	$0.78^{+0.68}_{-0.48}$	3048^{+209}_{-157}	3318^{+1661}_{-6042}	$0.739^{+4.168}_{-0.544}$
Alt.	-6 ± 3	$1.04^{+0.78}_{-0.62}$	3034^{+206}_{-144}	3003^{+1570}_{-5844}	$0.545^{+2.783}_{-0.405}$

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

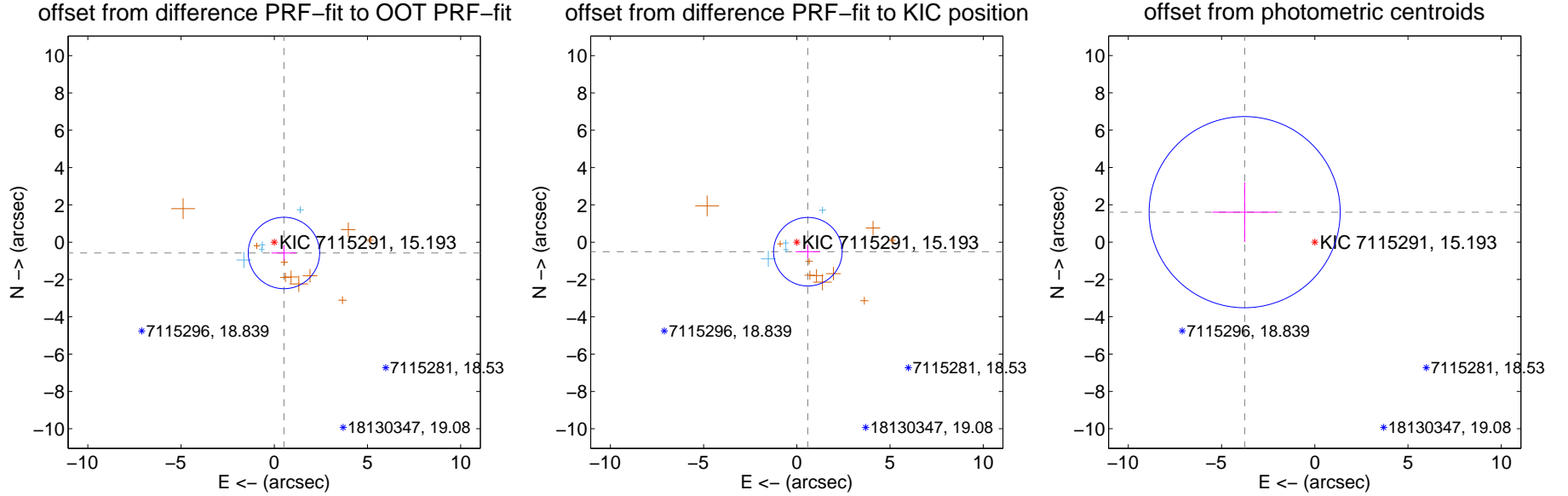
DV Centroid Data

Supplemental centroid analysis for 007115291-02. Kepler magnitude: 15.19. Transit SNR 8.21

There are 4 quarters with good PRF difference image offsets

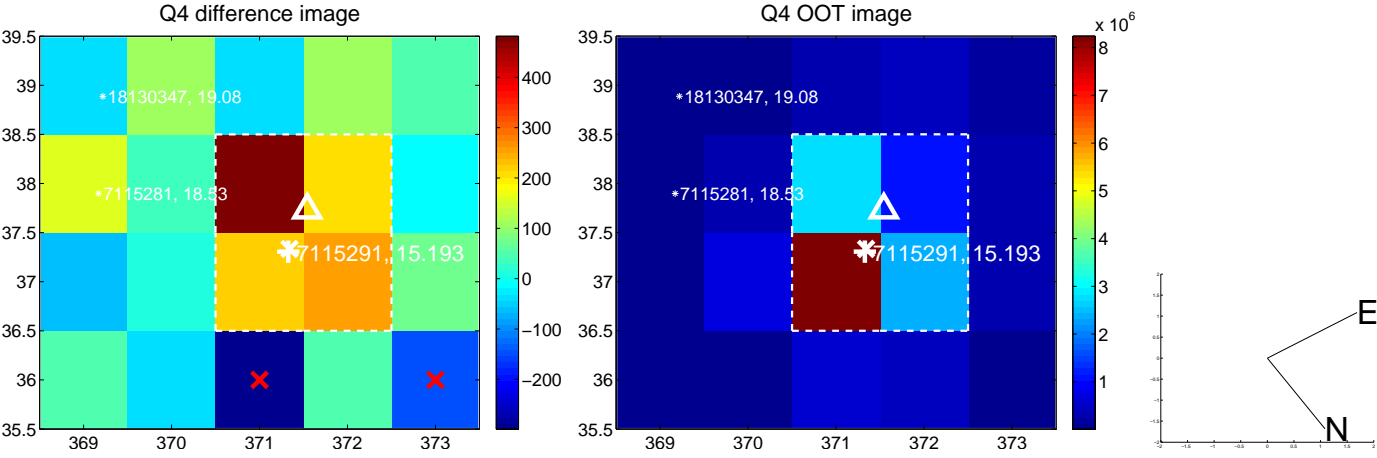
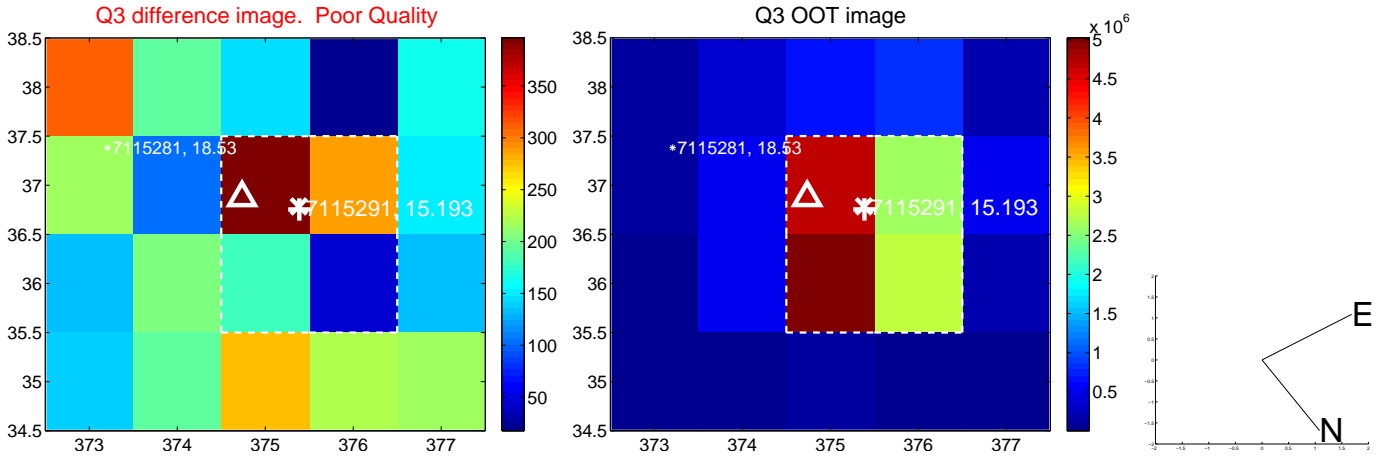
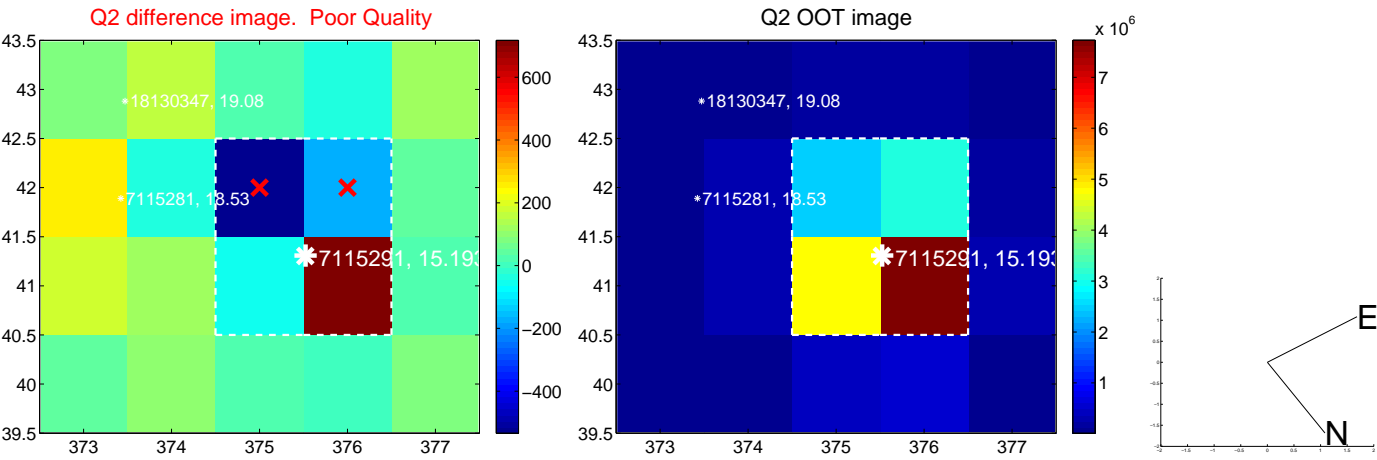
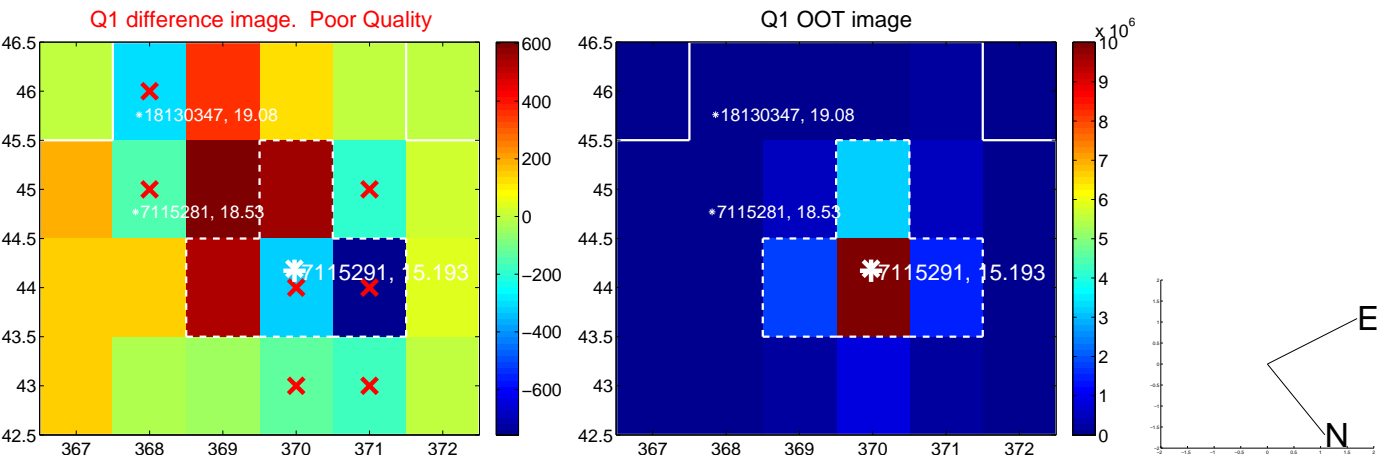
The direct PRF centroid is offset from the target star catalog position by about 0.17 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.778 ± 0.638	1.22	-0.520 ± 0.666	-0.579 ± 0.405
PRF-fit source offset from KIC position	0.781 ± 0.613	1.27	-0.591 ± 0.657	-0.511 ± 0.363
photometric centroid source offset	4.09 ± 1.71	2.39	3.76 ± 1.73	1.61 ± 1.60

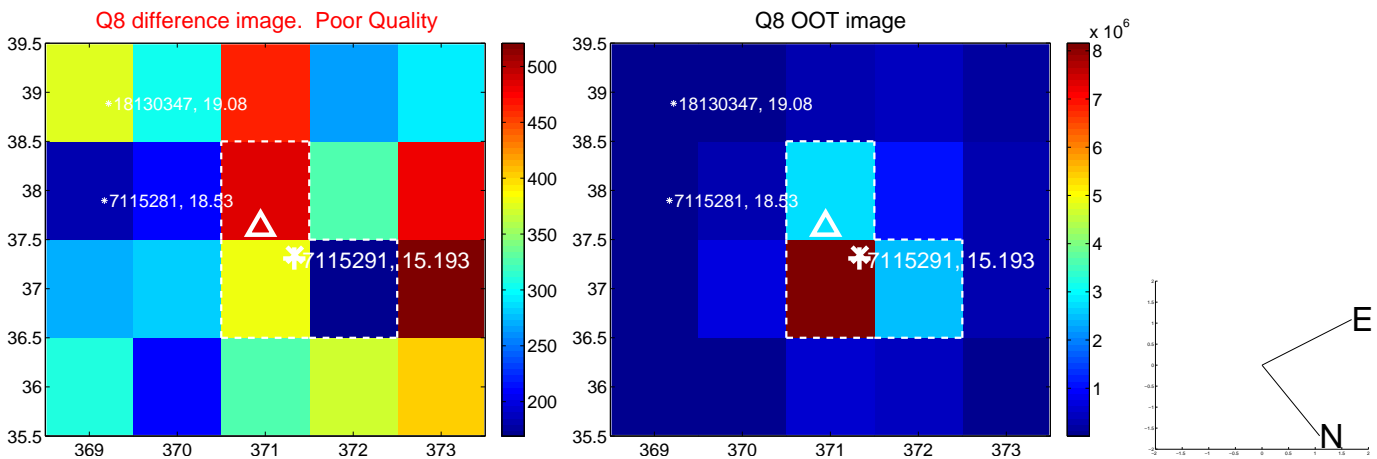
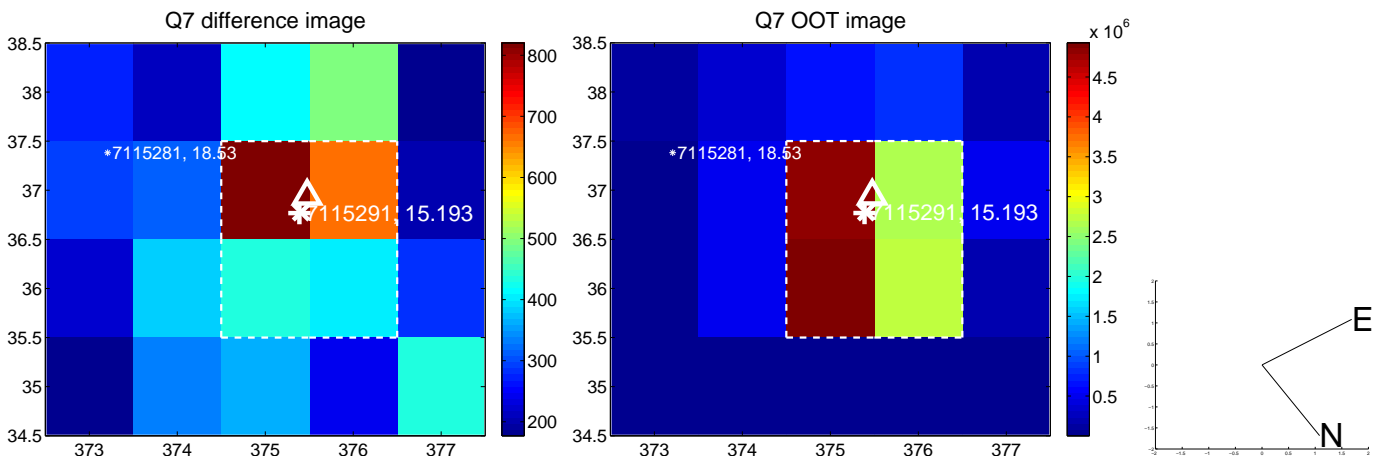
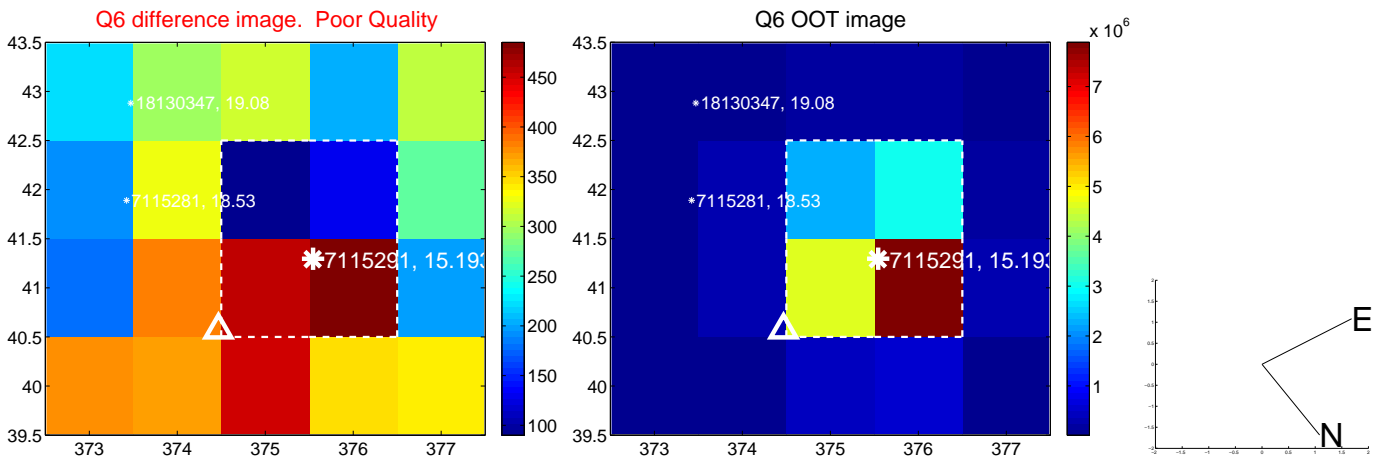
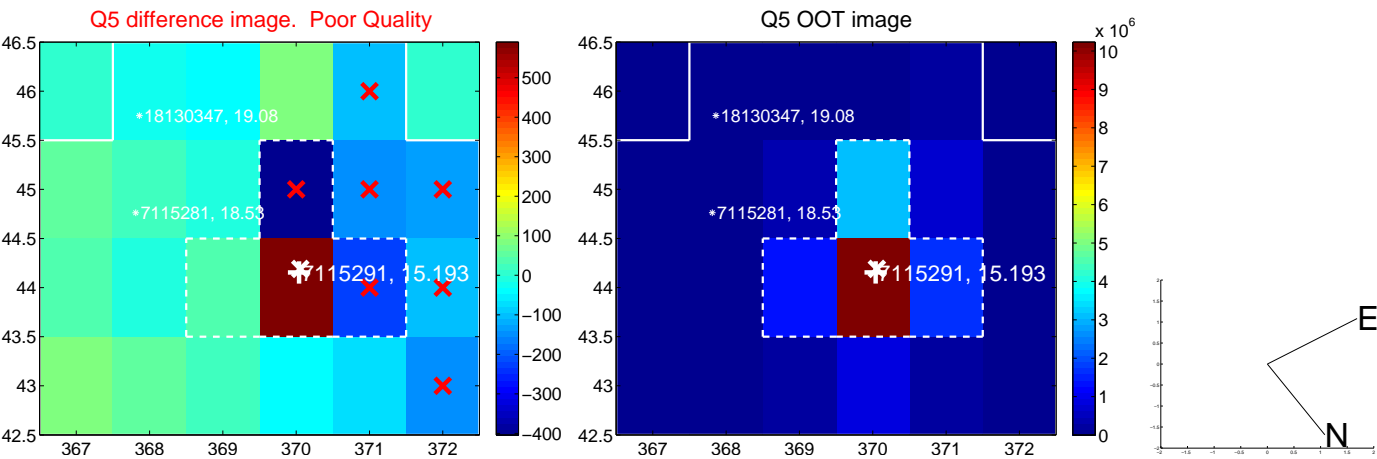


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

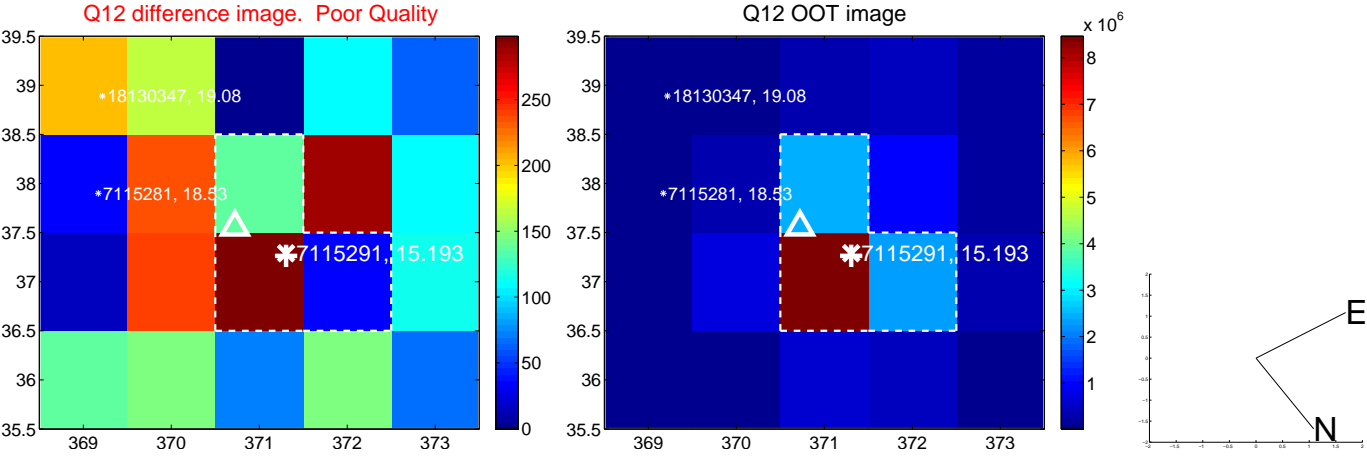
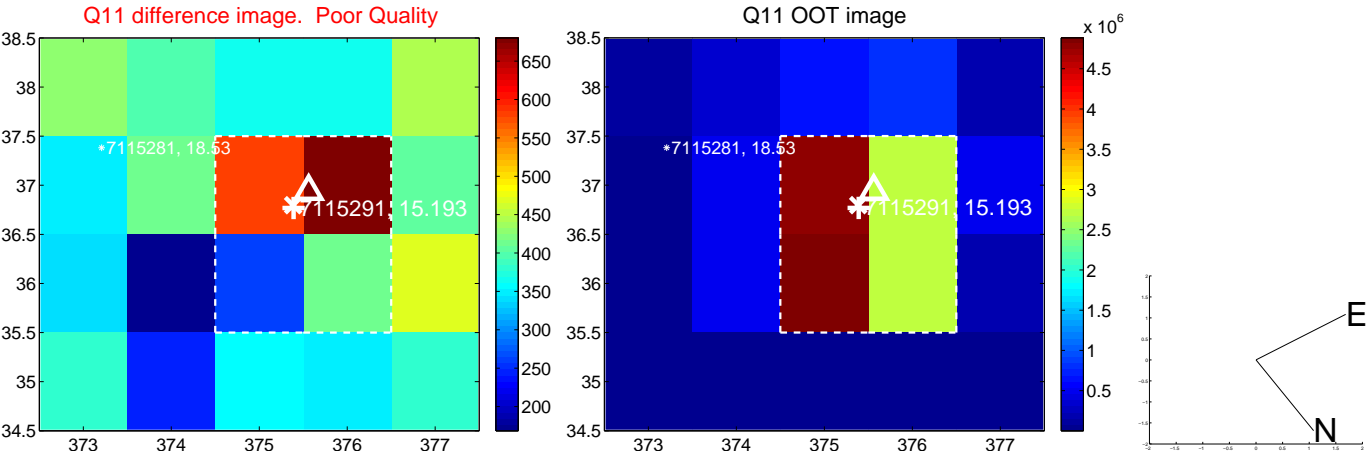
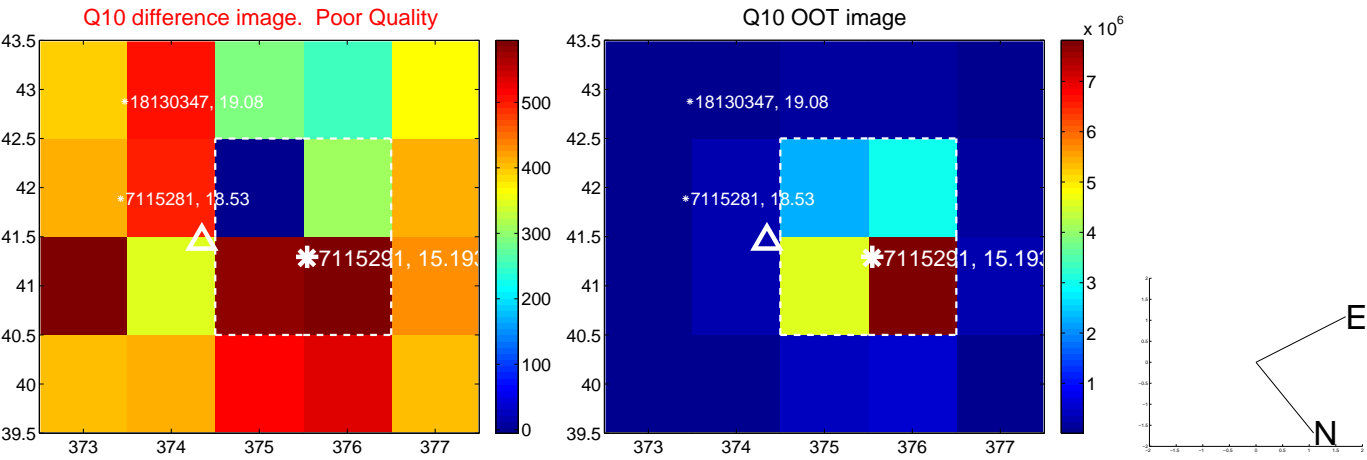
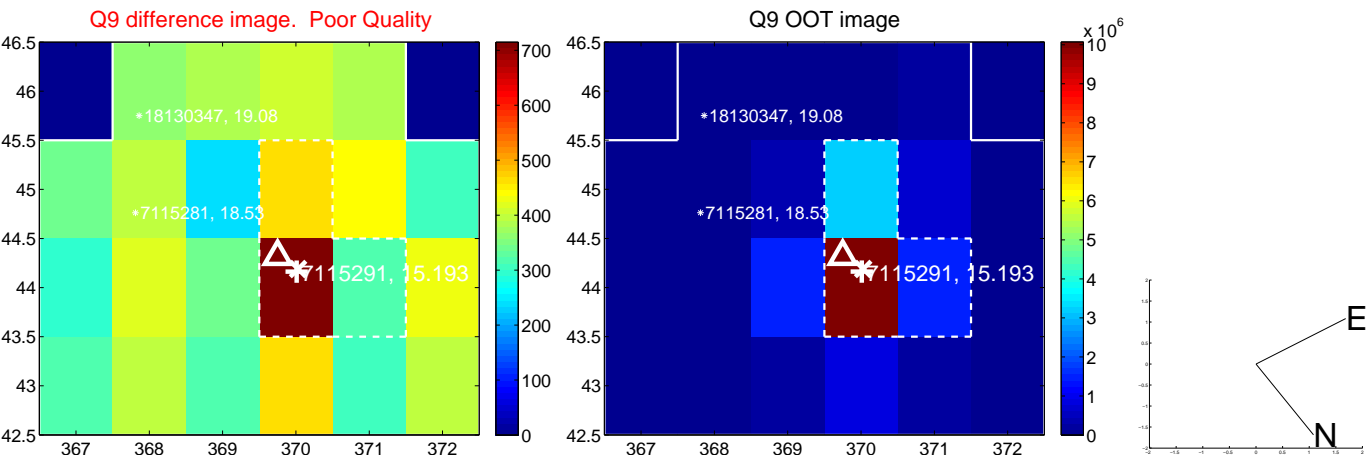
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



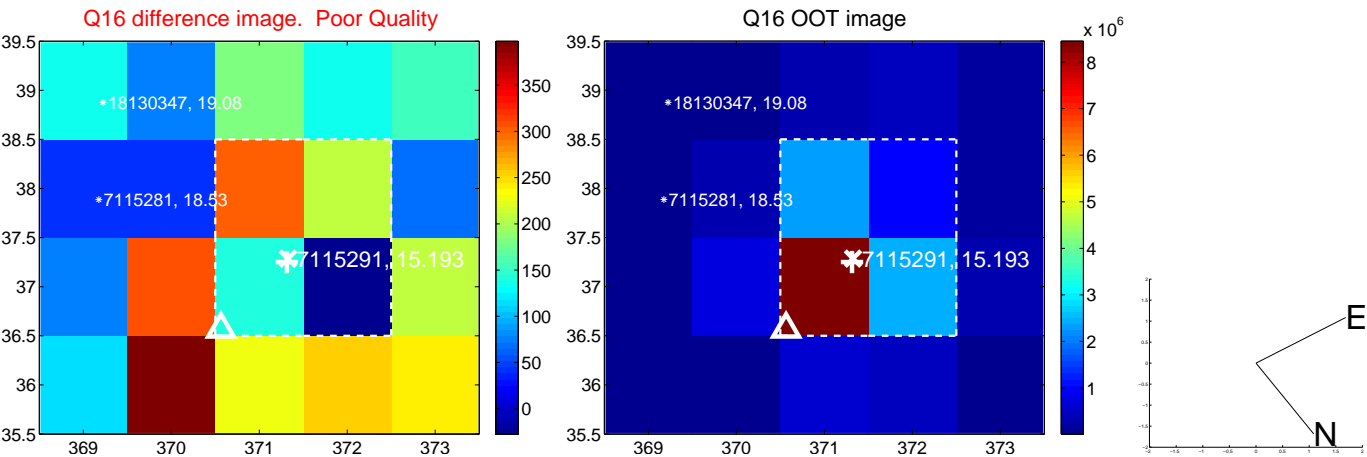
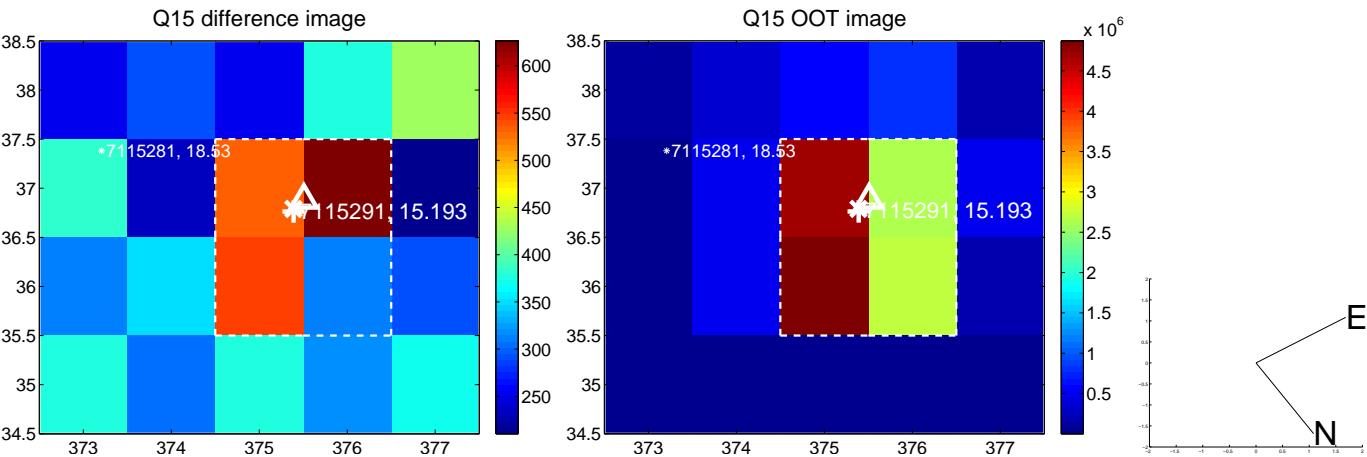
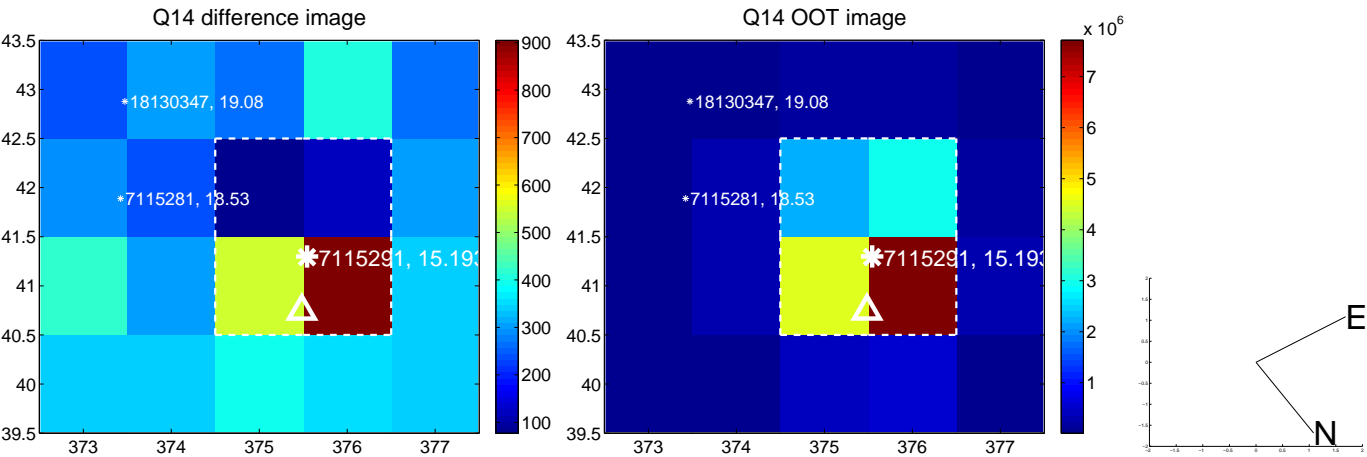
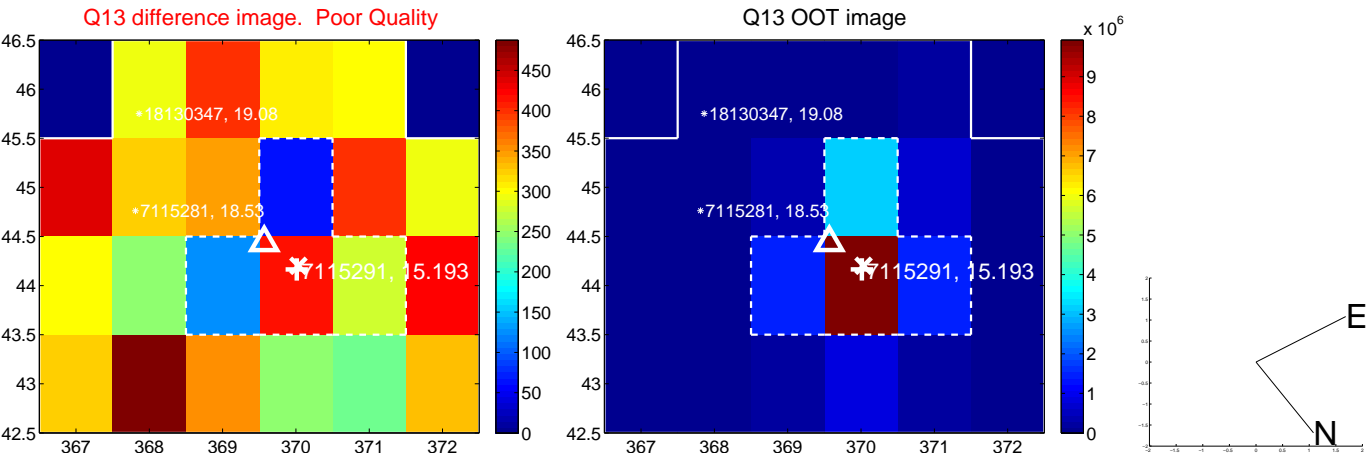
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



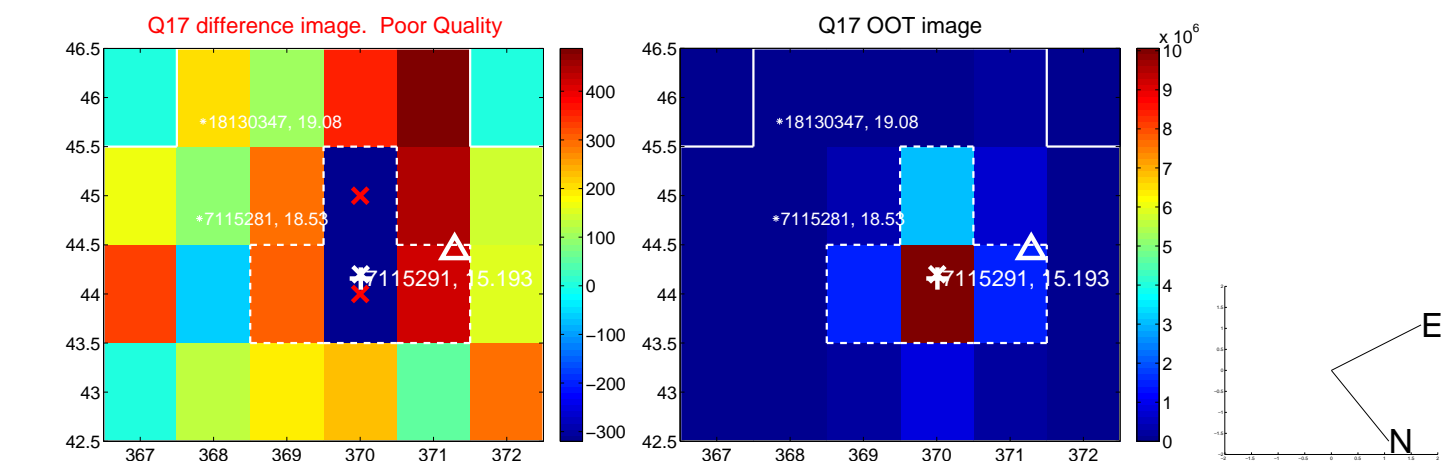
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



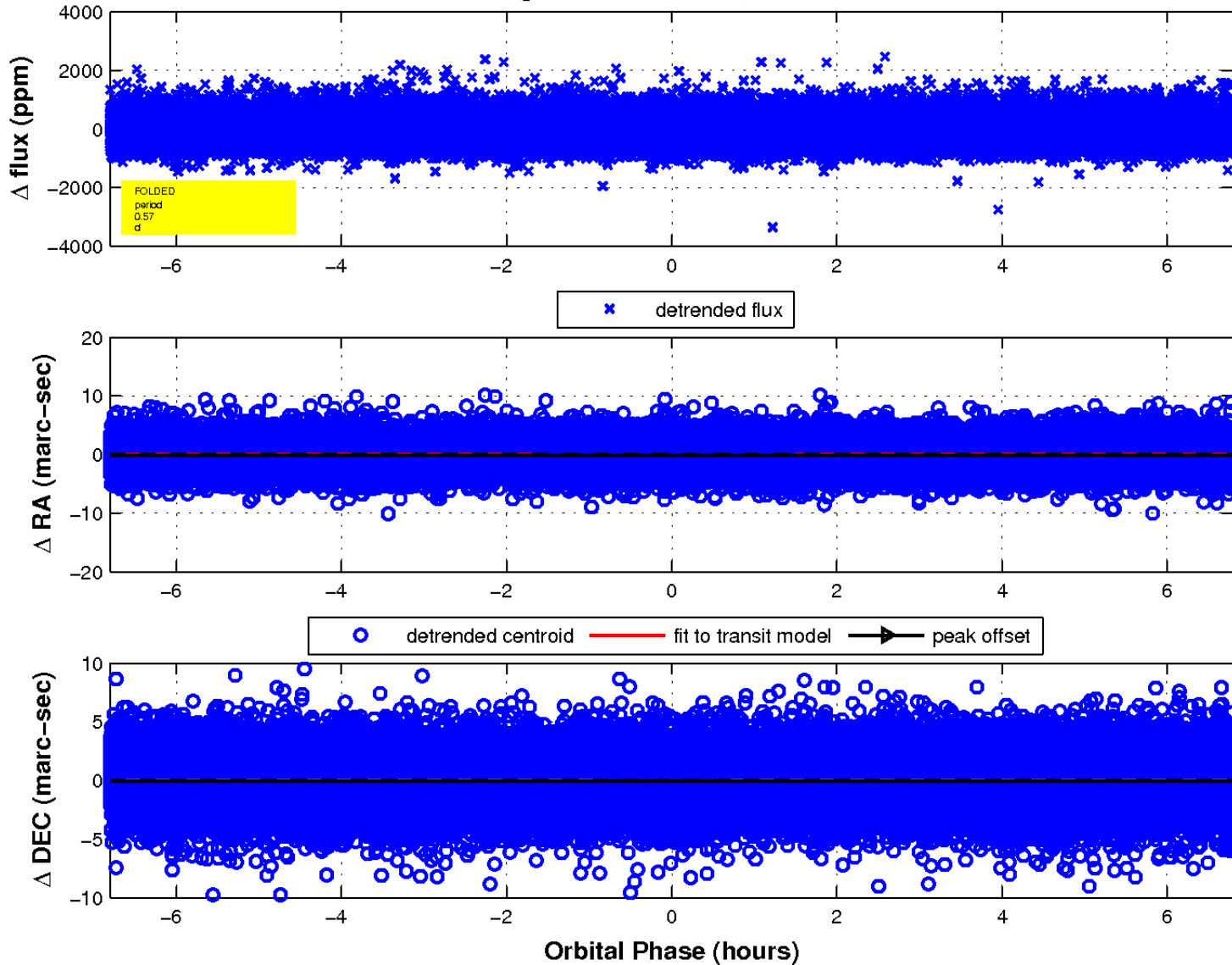
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 2 of 2



UKIRT Image

Declination

