

KIC 008240109

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})
008240109-01	OBS	6998.01	2.301190	132.191643	68955.0	4.768	2523.9	2021.3	2.65	7970	96.70	14207.14
008240109-02	OBS	No	1.150587	132.194647	586.3	4.109	28.3	29.4	2.65	7970	7.51	35800.07
008240109-03	OBS	No	4.602558	134.498574	180.6	15.284	9.5	2.8	2.65	7970	4.11	5637.82

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008240109-01	OBS	FP	0.00	0	1	0	0	SWEET_EB—MOD_SEC_ALT—MOD_ODDEVEN_DV—DEEP_V_SHAPED—HAS_SEC_TCE
008240109-02	OBS	FP	0.00	1	1	0	1	IS_SEC_TCE—EPHEM_MATCH
008240109-03	OBS	FP	0.00	1	0	1	1	INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—SWEET_NTL—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—RESIDUAL_TCE—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.

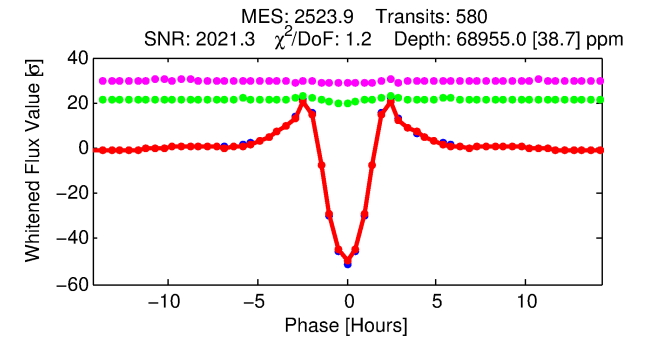
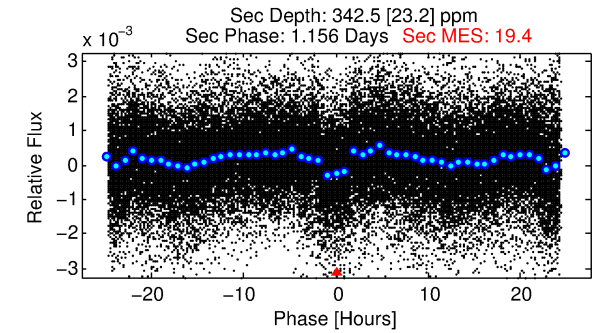
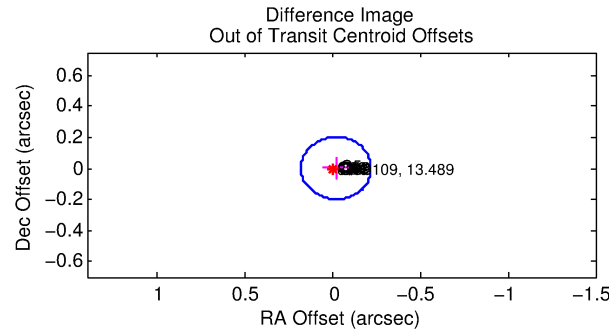
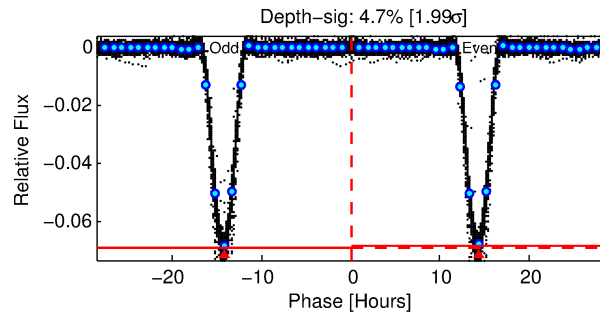
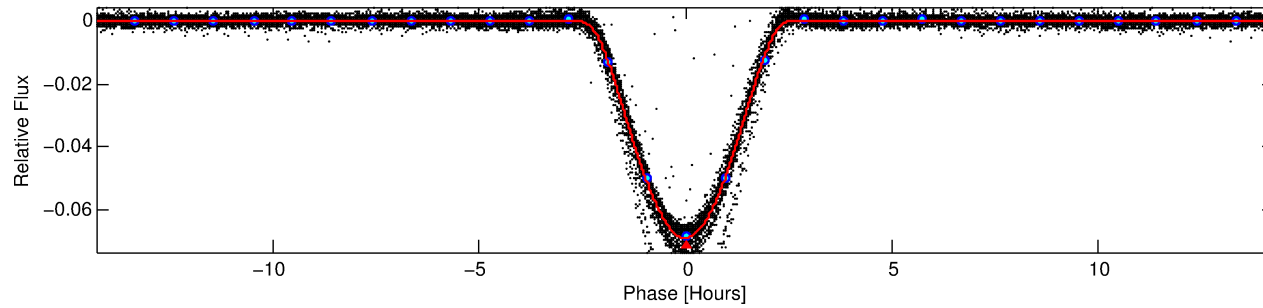
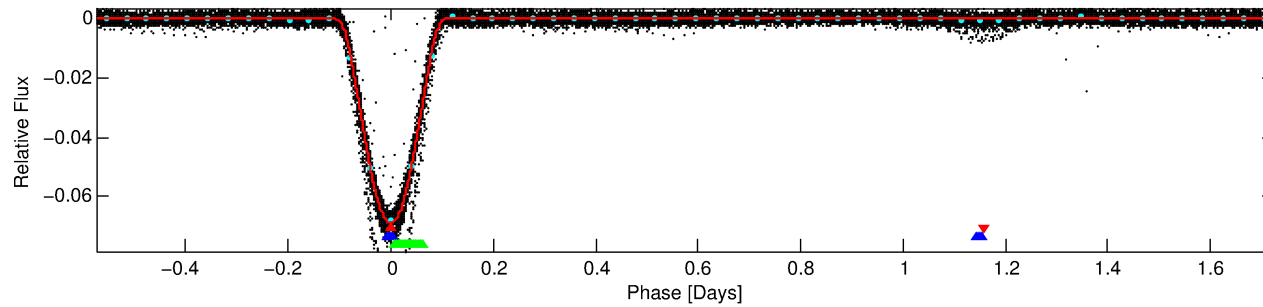
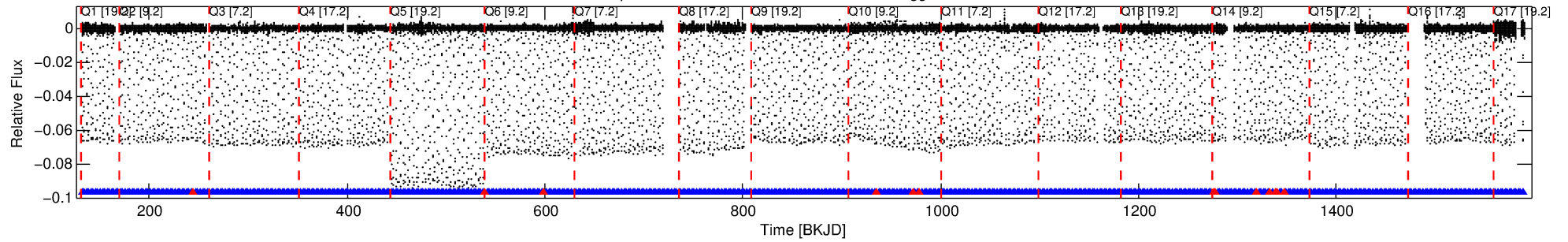
Ephemeris Match Information For 008240109-01

No Significant Match Found

DV One-Page Summary

KIC: 8240109 Candidate: 1 of 3 Period: 2.301 d
KOI: K06998.01 Corr: 0.777

Kp: 13.49 R*: 2.65 Rs Teff: 7970.0 K Logg: 3.87 Fe/H: -0.200



DV Fit Results:

Period = 2.30119 [0.00000] d
Epoch = 132.1916 [0.0000] BKJD
Rp/R* = 0.3341 [0.0024]
a/R* = 3.81 [0.00]
b = 0.89 [0.00]
Seff = 14207.14 [8463.15]
Teff = 2784 [415] K
Rp = 96.70 [35.85] Re
a = 0.0423 [0.0151] AU
Ag = 0.04 [0.02] [-46.40σ]
Teffp = 1876 [85] K [-2.15σ]

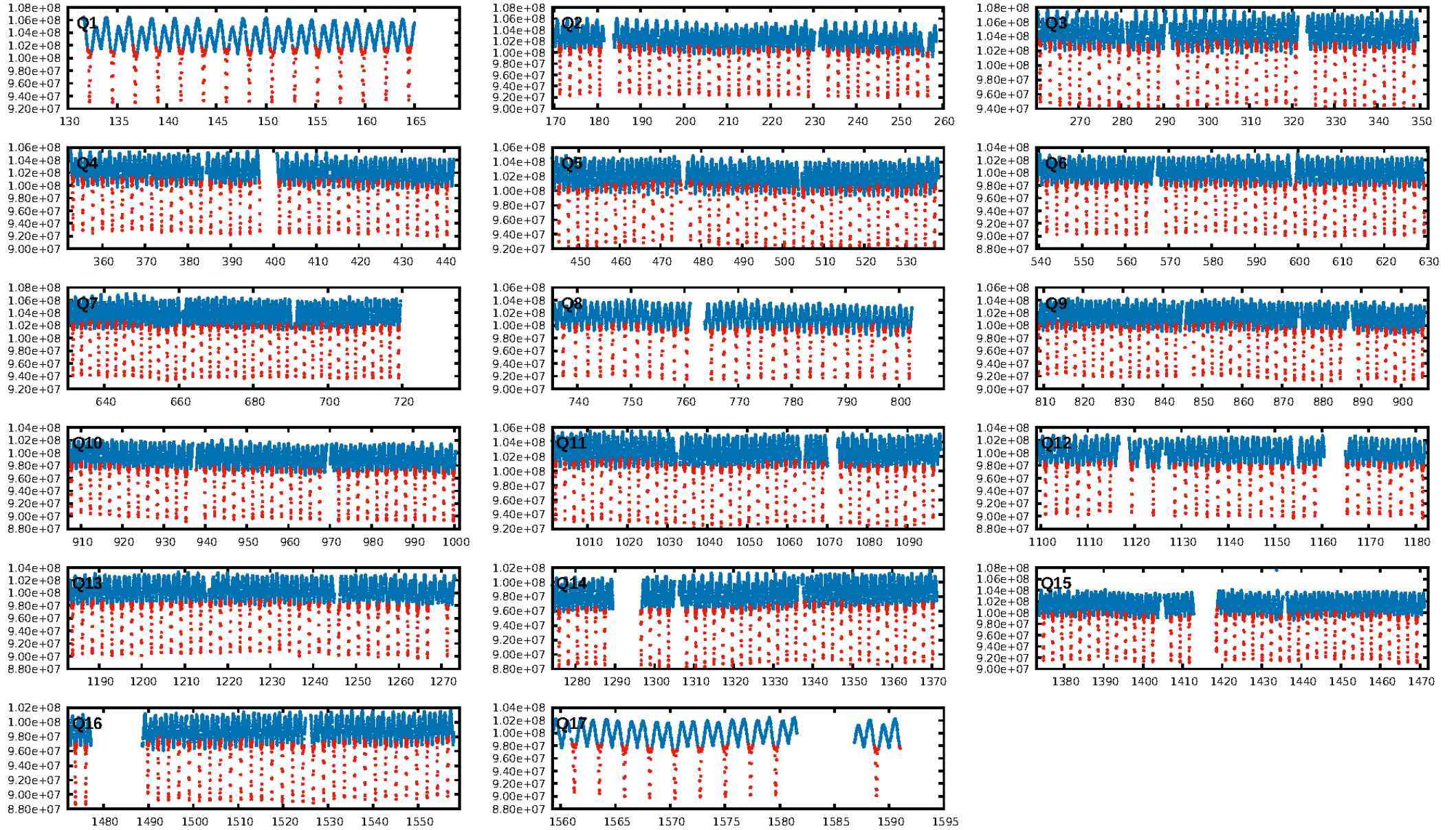
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [4.39σ]
LongPeriod-sig: 99.9% [3.45σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 0.98 [542/555]
GhostDiagnostic-chr: 2.337
Centroid-sig: N/A
Centroid-so: 0.162 arcsec [112.04σ]
OotOffset-rm: 0.019 arcsec [0.28σ]
KicOffset-rm: 0.073 arcsec [1.07σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 1.00 [17/17]
DiffImageOverlap-fno: 0.00 [0/17]

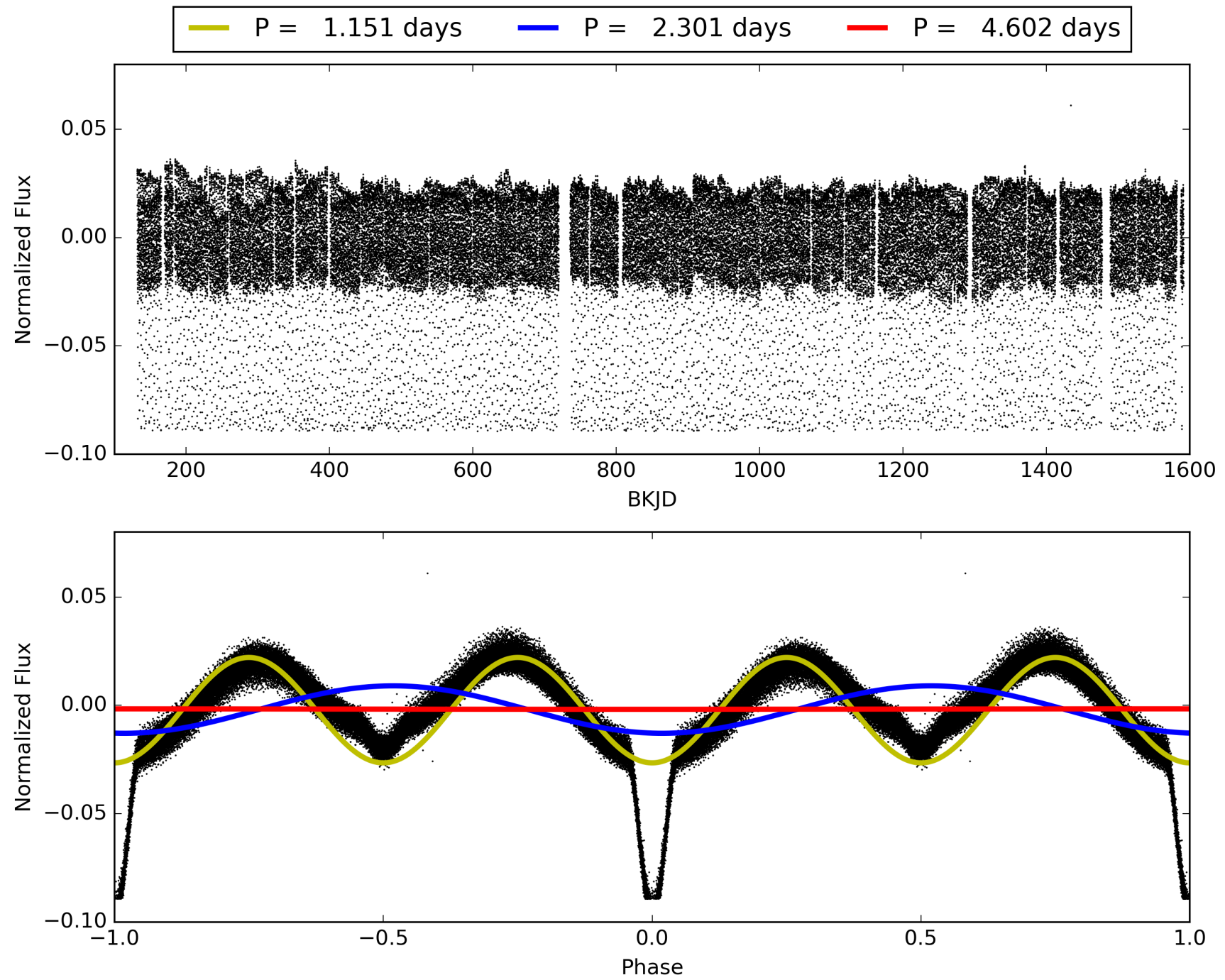
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 10:58:19 Z

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

TCE 008240109-01, PDC Light Curves

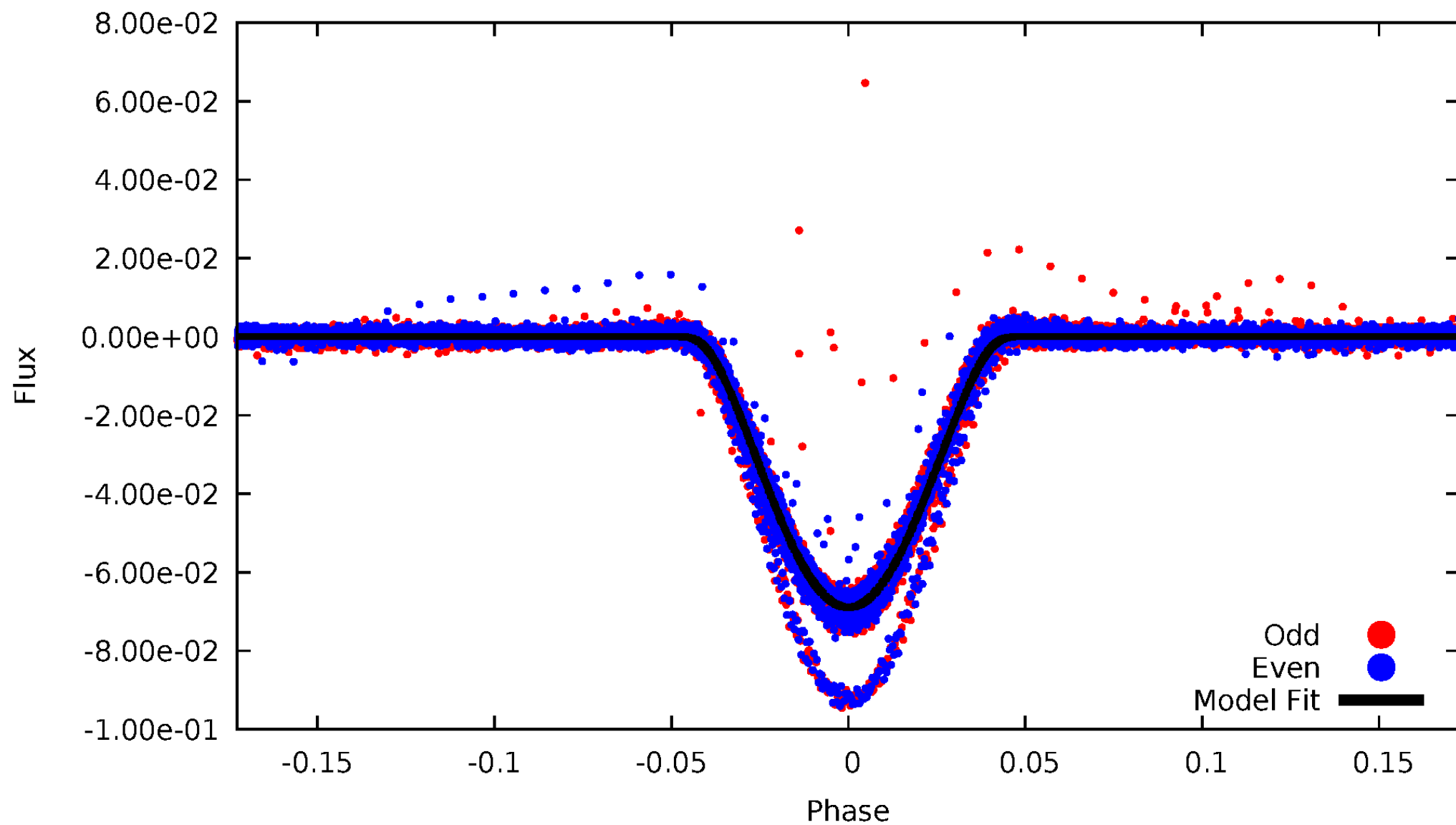


TCE 008240109-01



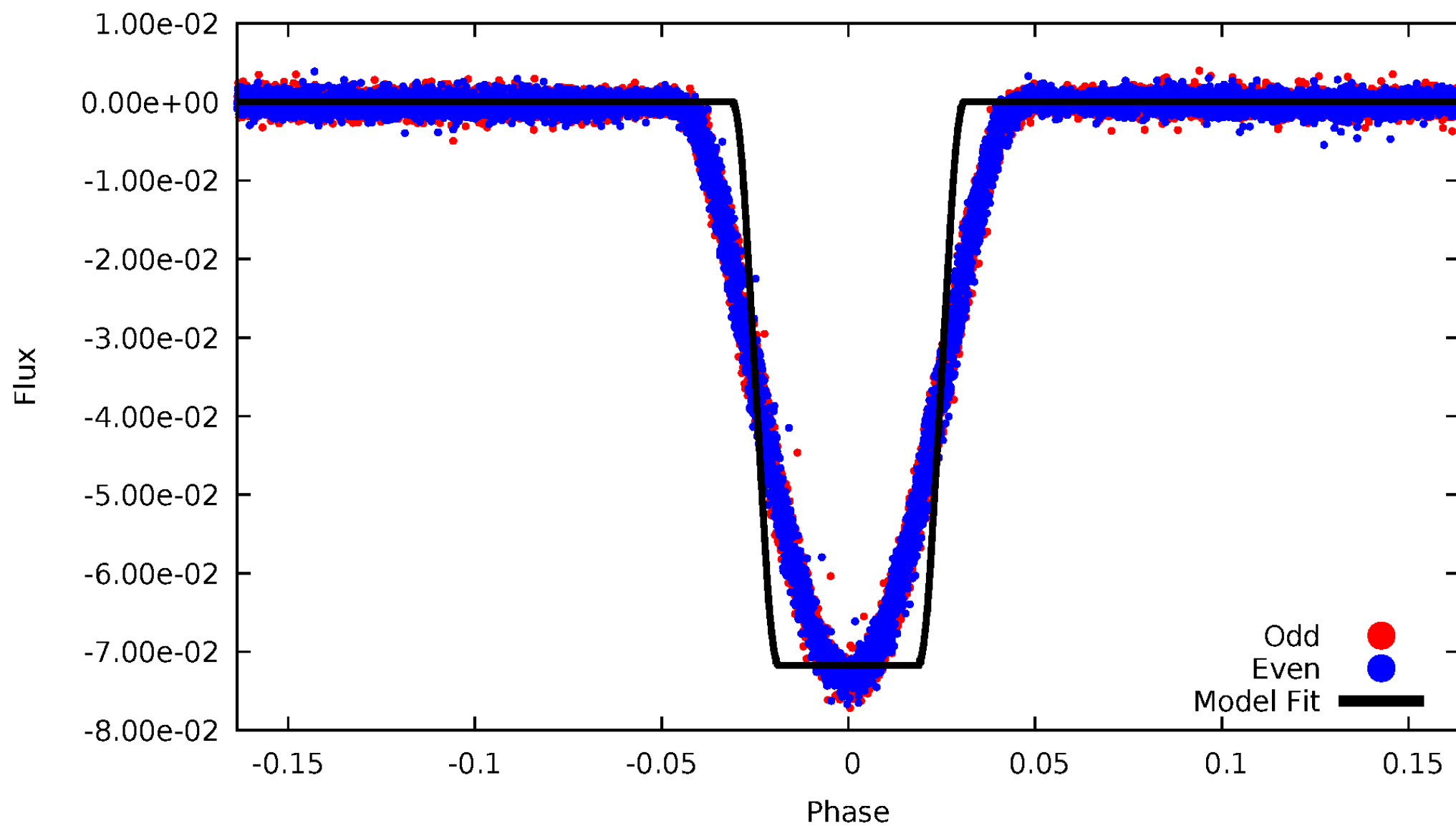
DV Odd/Even

TCE 008240109-01



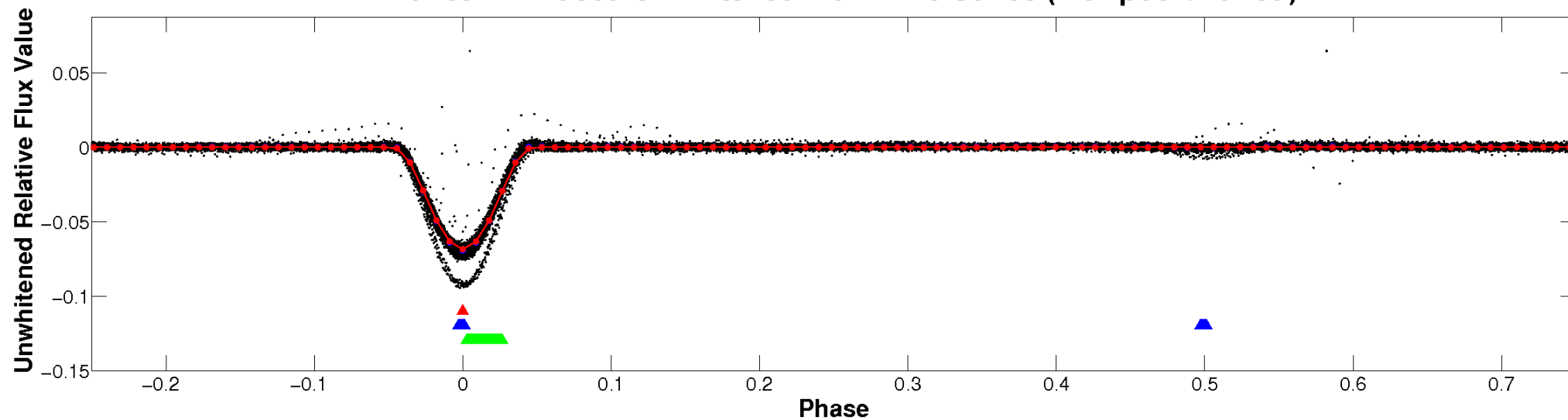
ALT Odd/Even

TCE 008240109-01

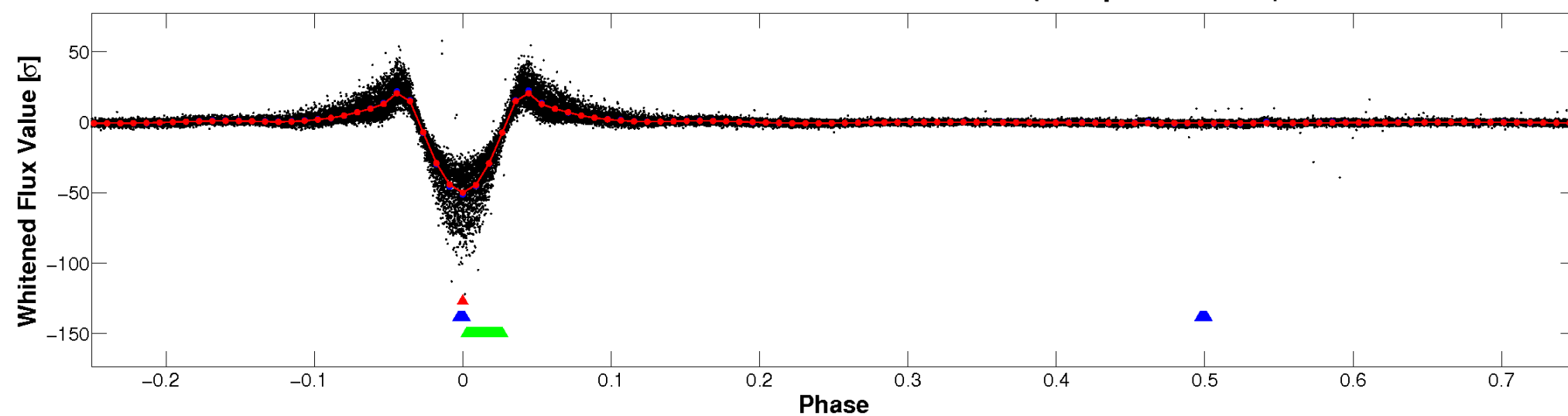


Non-Whitened Vs. Whitened Light Curve

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

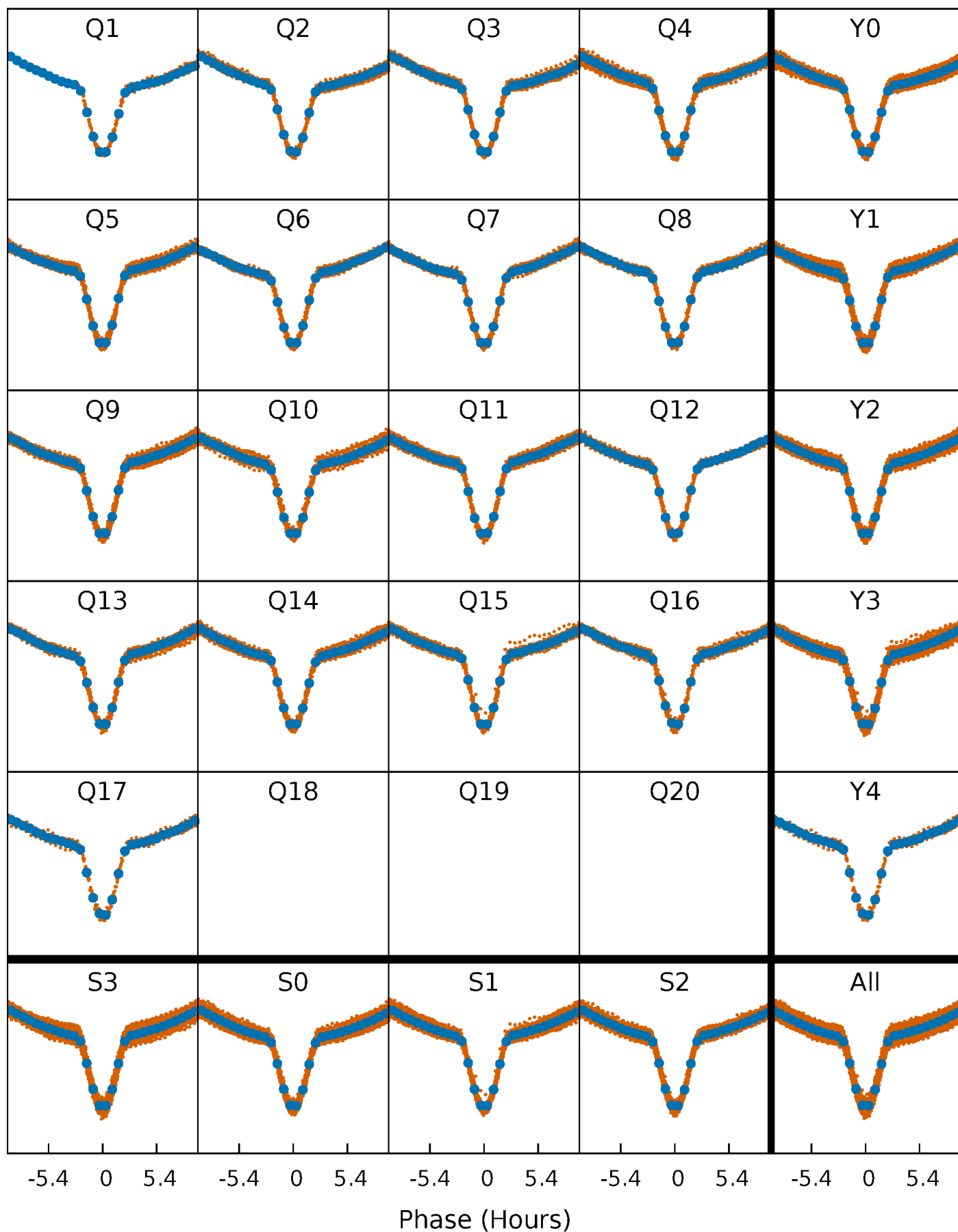


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



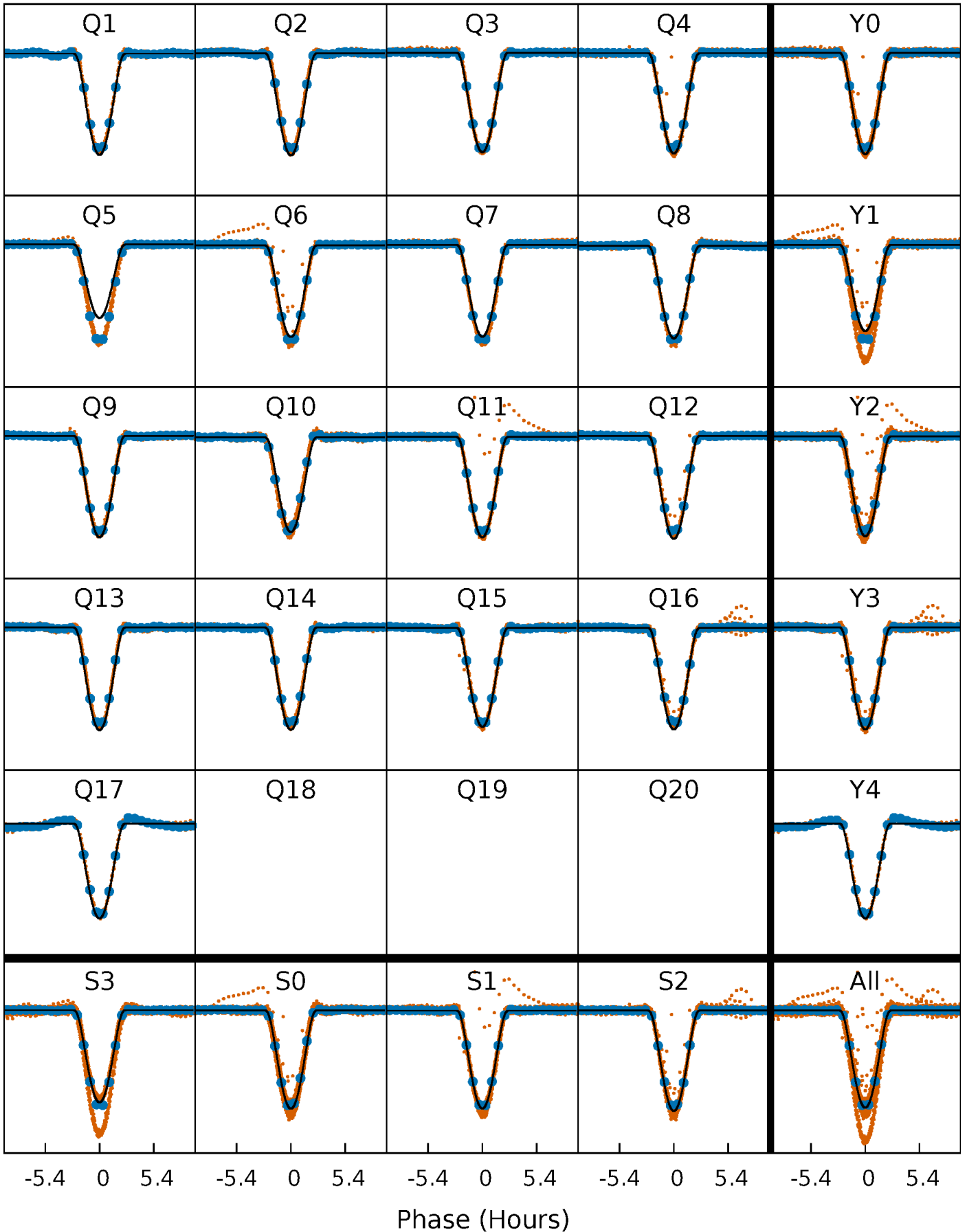
PDC Quarter-Phased Transit Curves

TCE 008240109-01 P= 2.301190 Days $T_0=132.191643$ (BKJD)



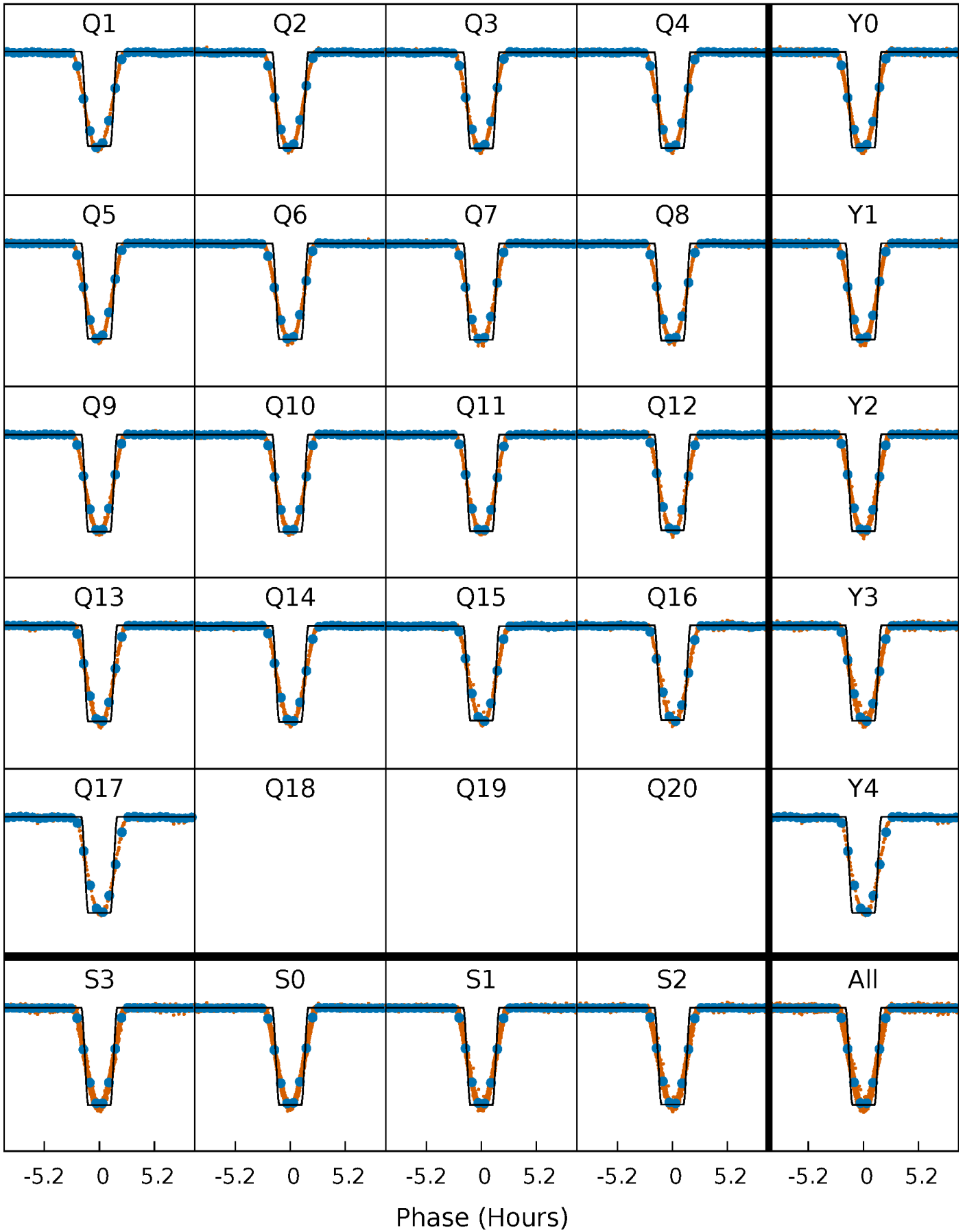
DV Quarter-Phased Transit Curves

TCE 008240109-01 P= 2.301190 Days $T_0=132.191643$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

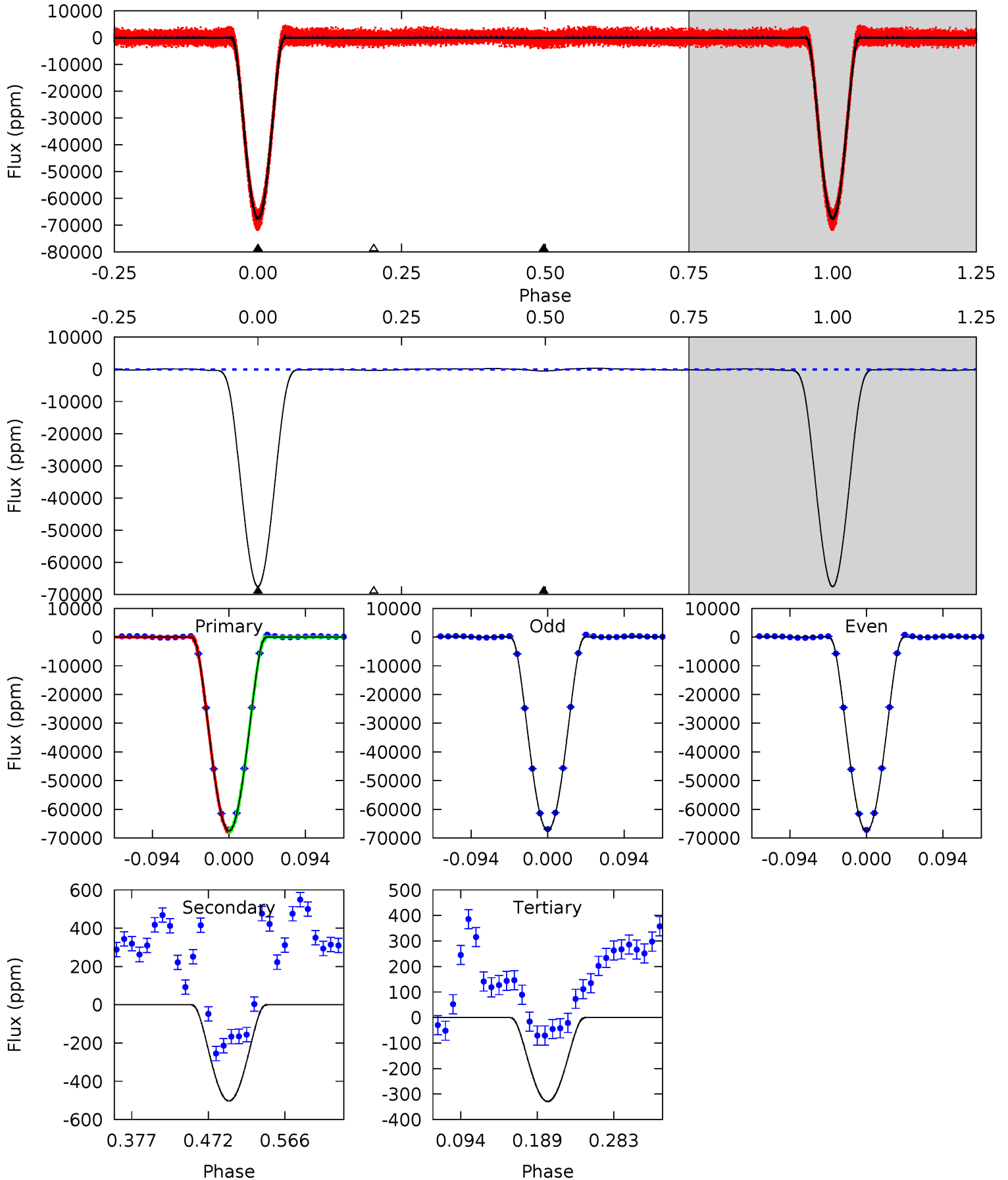
TCE 008240109-01 P= 2.301175 Days $T_0=132.197039$ (BKJD)



DV Model-Shift Uniqueness Test

008240109-01, P = 2.301190 Days, E = 129.890453 Days

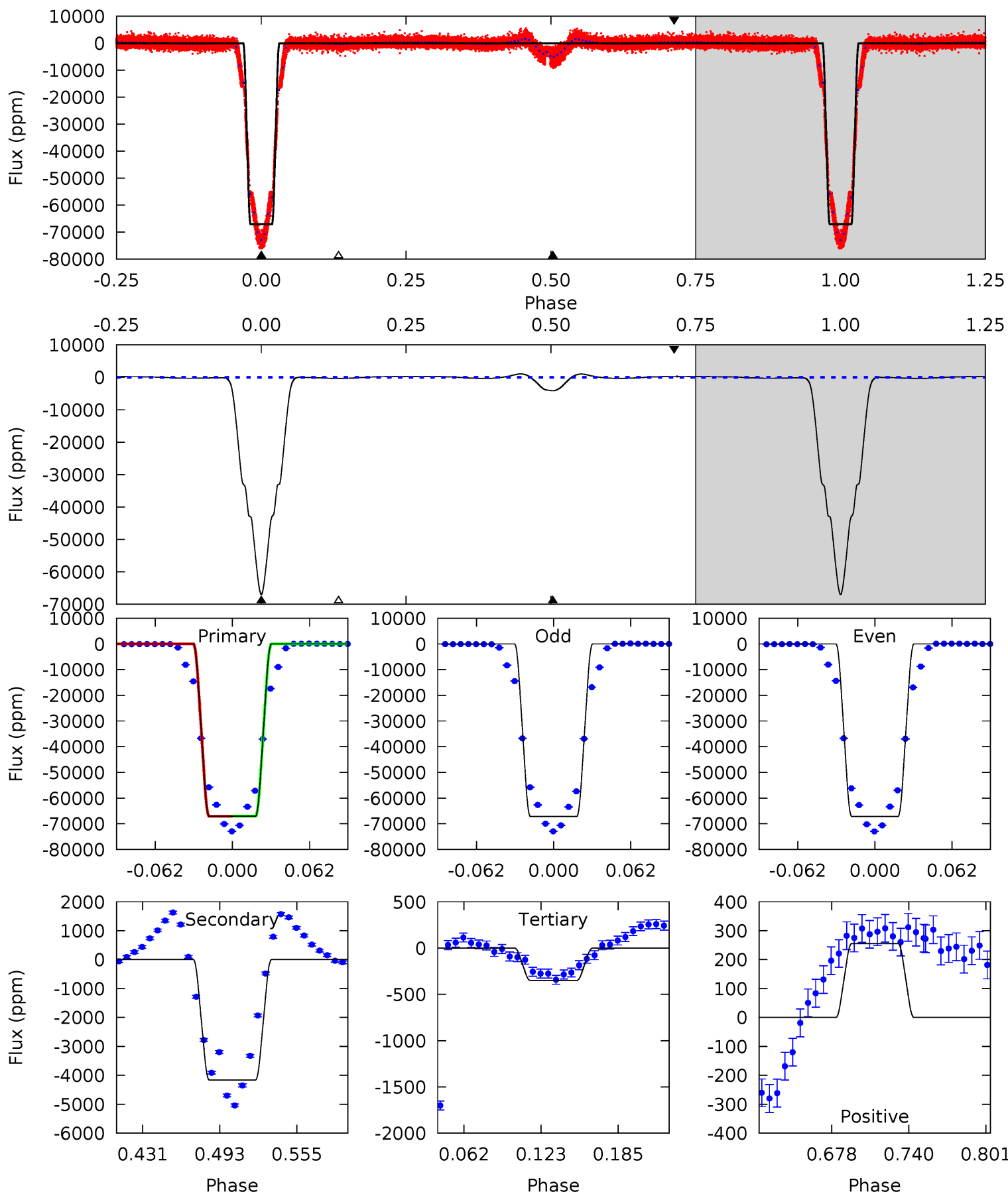
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5042	37.5	24.6	0	4.58	1.67	11.7	5017	5042	13.0	37.5	11.4	1.03	0.00	0.09



Alt Model-Shift Uniqueness Test

008240109-01, P = 2.301175 Days, E = 129.895864 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3899	241.9	20.4	14.9	4.67	1.87	13.5	3879	3884	221.6	227.1	1.02	1.00	0.02	2.06



Stellar Parameters For KIC 008240109

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	7970^{+221}_{-332}	$3.871^{+0.336}_{-0.105}$	$-0.200^{+0.200}_{-0.350}$	$2.652^{+0.351}_{-0.983}$	$1.906^{+0.101}_{-0.456}$	$0.144^{+0.347}_{-0.037}$
	+3%/-4%	+9%/-3%	+100%/-175%	+13%/-37%	+5%/-24%	+241%/-26%
Source	KIC0	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 008240109-01 / KOI 6998.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-503 ± 13	$95.27^{+9.30}_{-20.54}$	3801^{+260}_{-371}	-3412^{+261}_{-156}	$0.055^{+0.029}_{-0.009}$
Alt.	-4160 ± 17	$75.62^{+7.61}_{-15.95}$	3815^{+234}_{-396}	3731^{+157}_{-127}	$0.716^{+0.377}_{-0.123}$

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 $A_{obs} \gg 1.0$

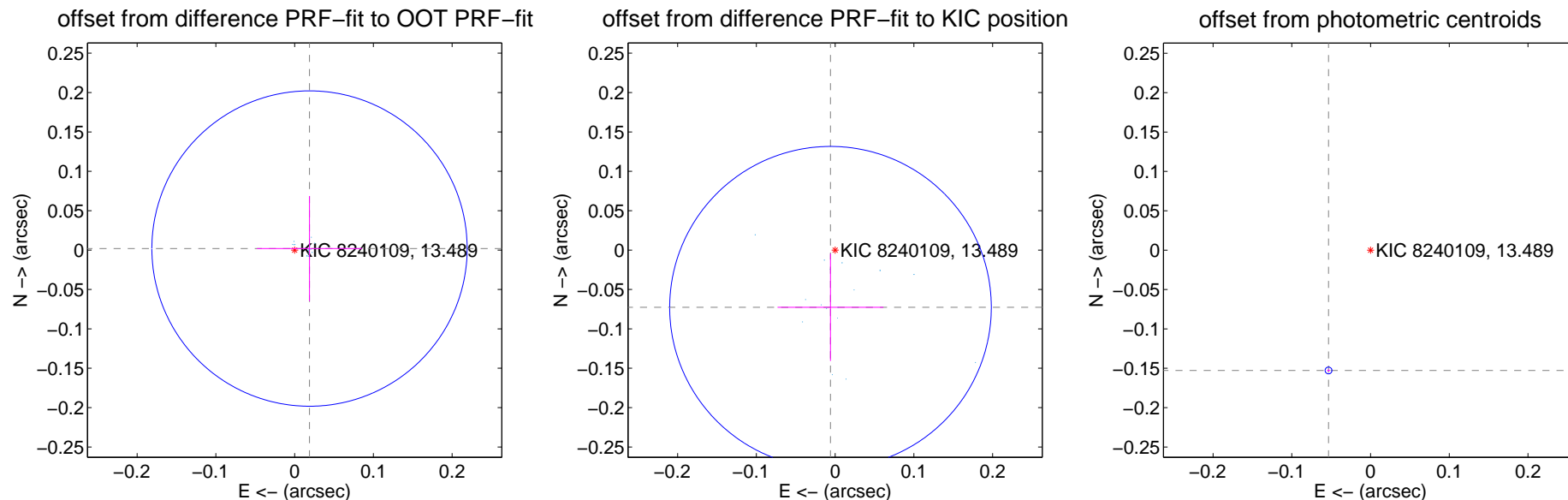
DV Centroid Data

Supplemental centroid analysis for 008240109-01. Kepler magnitude: 13.49. Transit SNR 2021.28

There are 17 quarters with good PRF difference image offsets

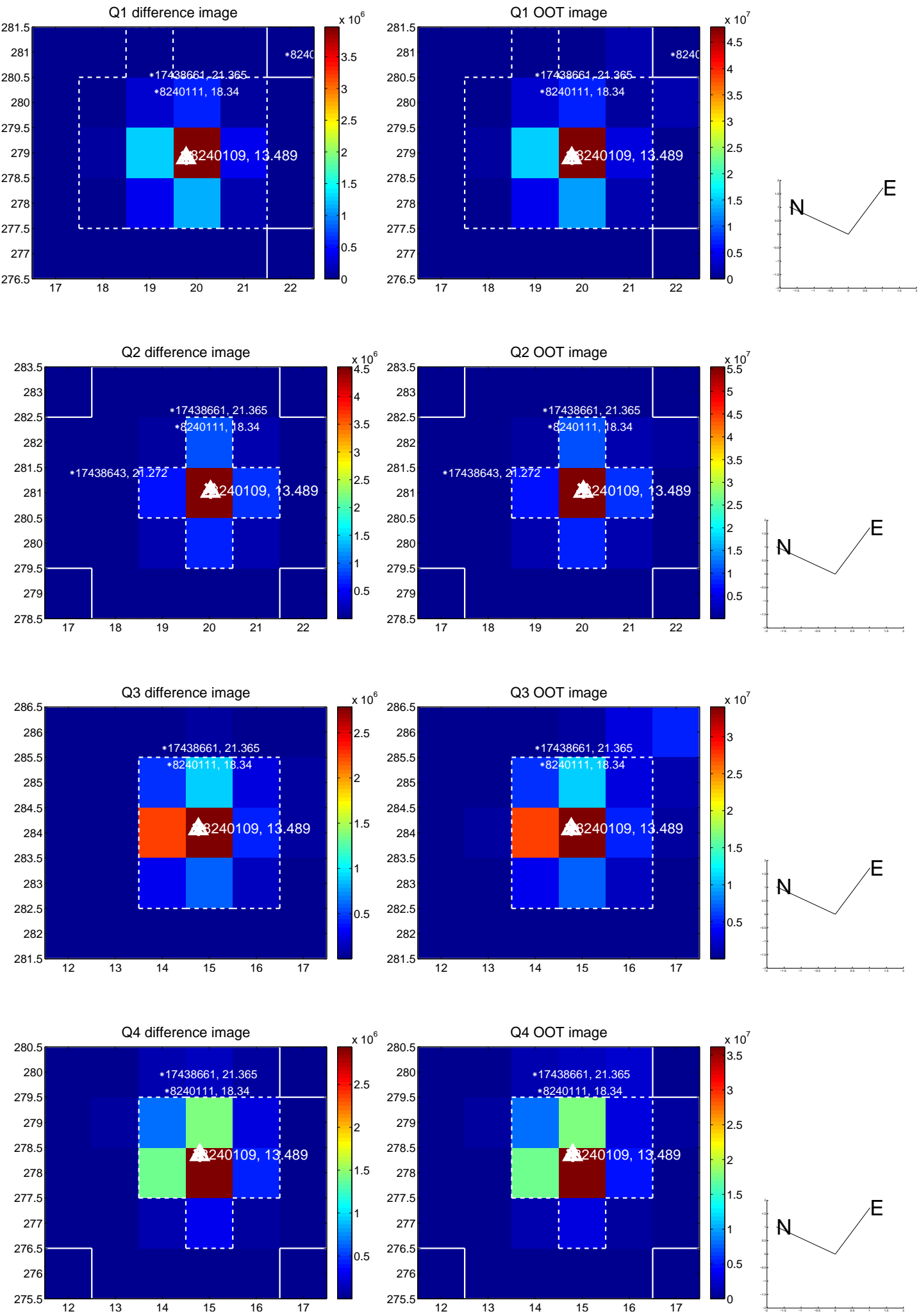
The direct PRF centroid is offset from the target star catalog position by about 0.05 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.019 ± 0.067	0.28	-0.019 ± 0.067	0.002 ± 0.067
PRF-fit source offset from KIC position	0.073 ± 0.068	1.07	0.006 ± 0.067	-0.073 ± 0.068
photometric centroid source offset	0.16 ± 0.00	112.04	0.05 ± 0.00	-0.15 ± 0.00

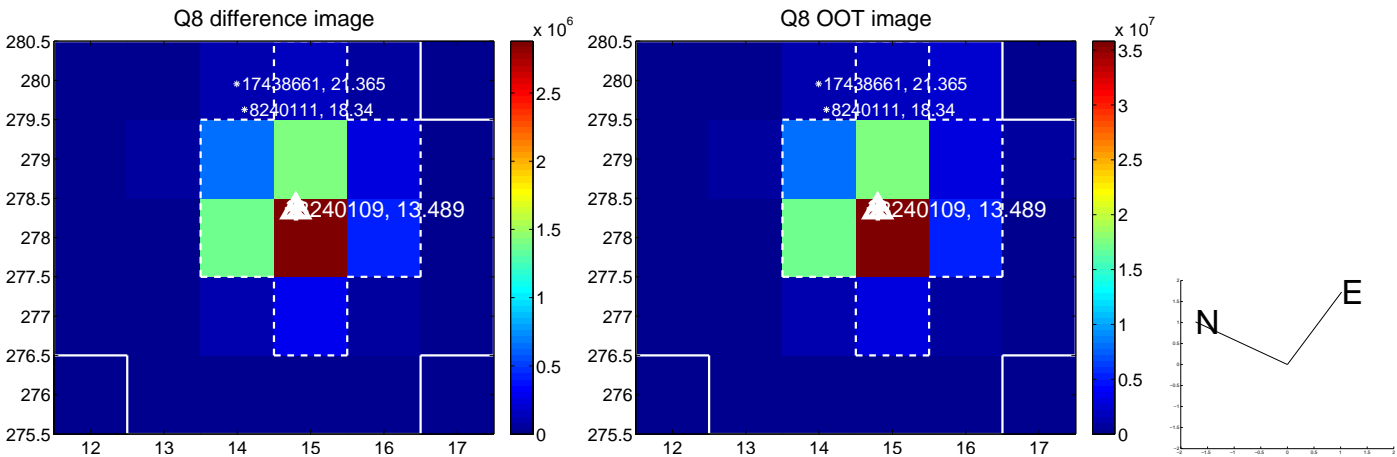
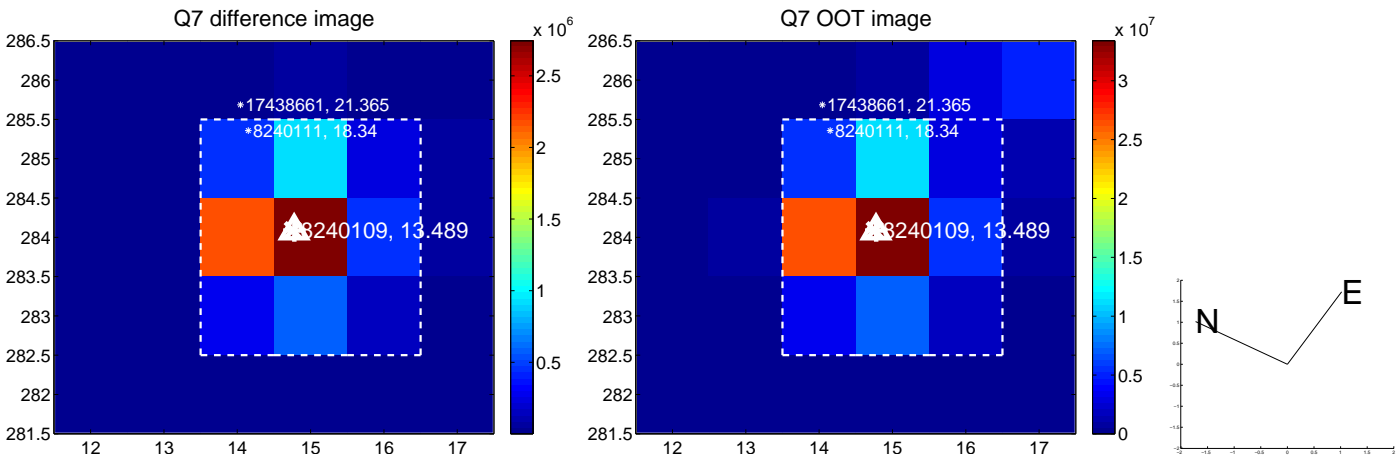
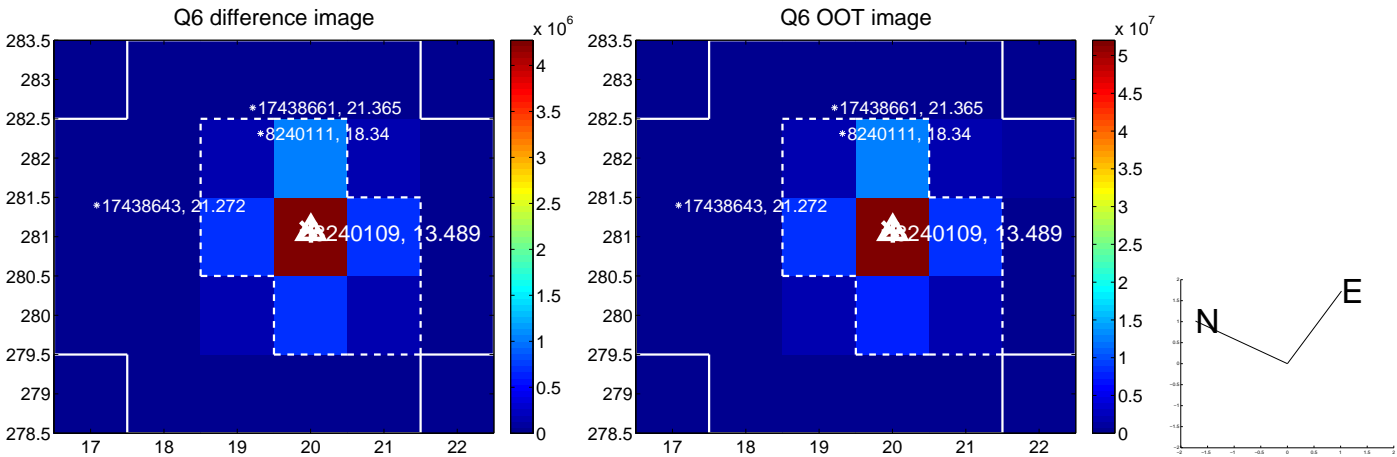
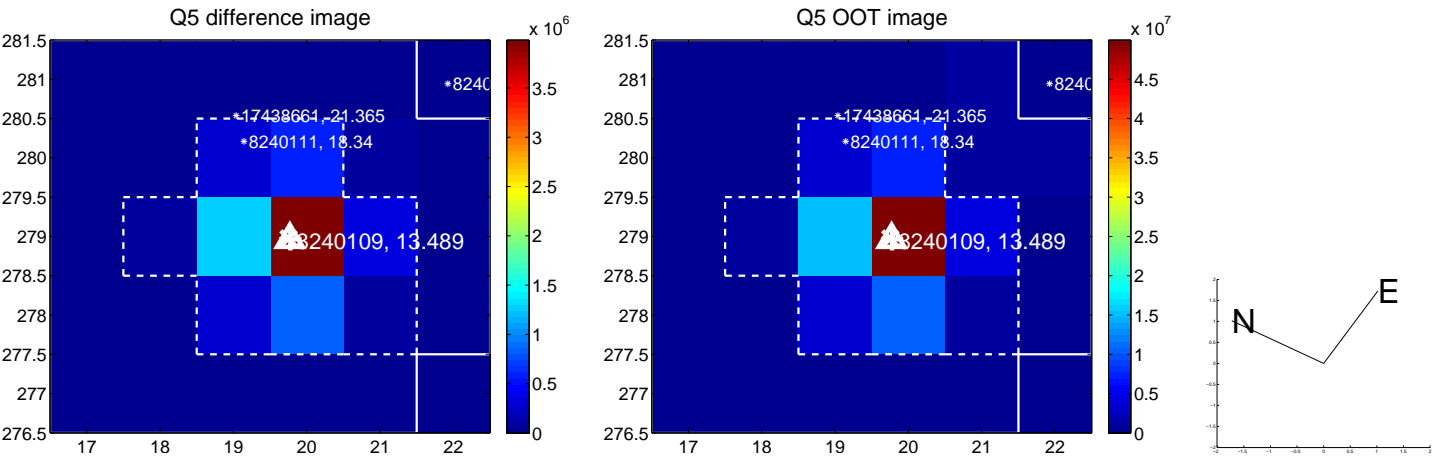


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

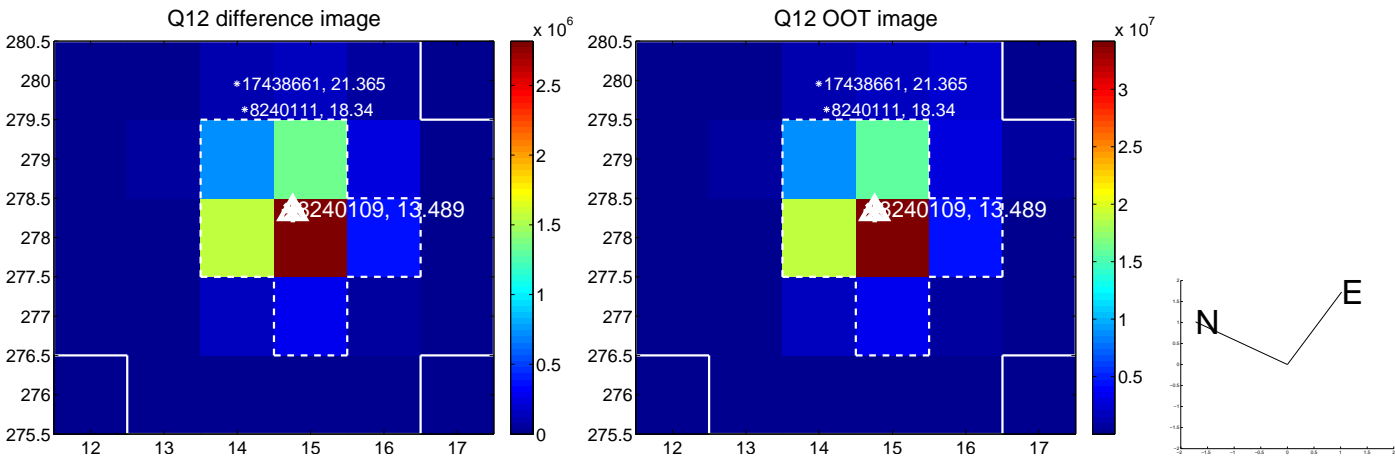
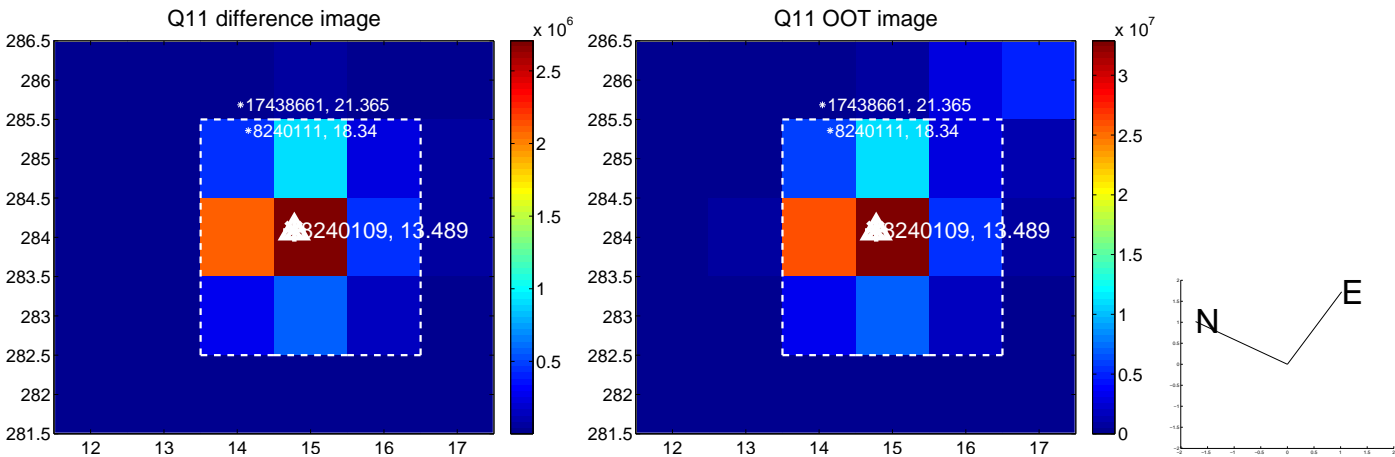
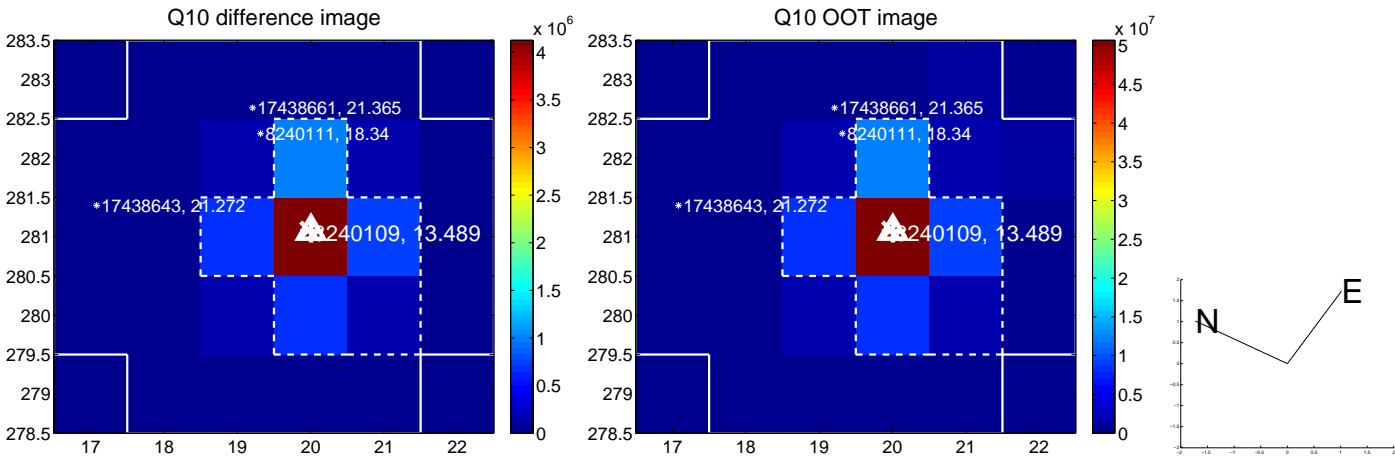
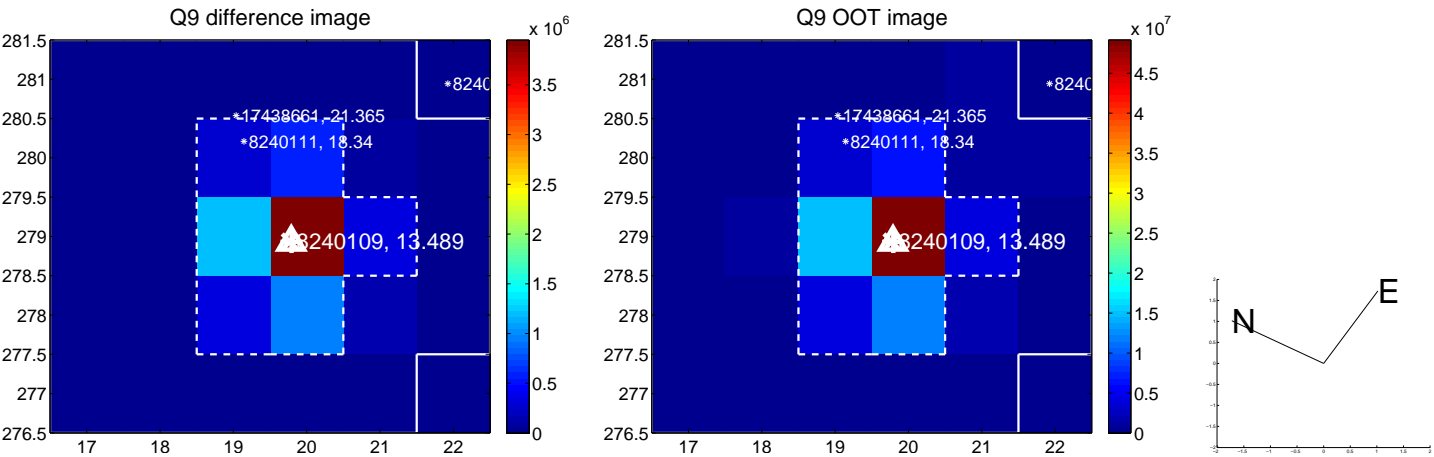
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



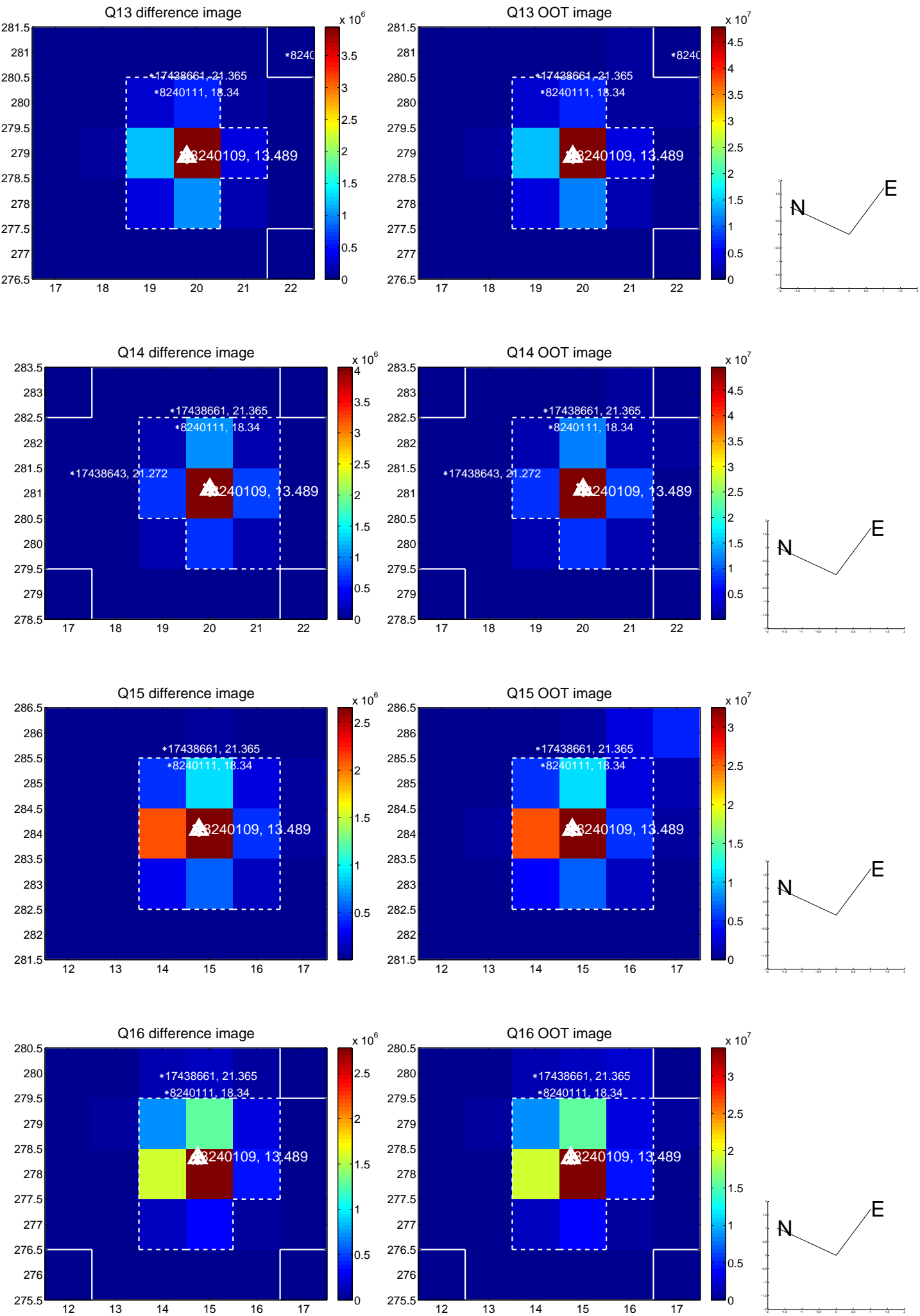
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



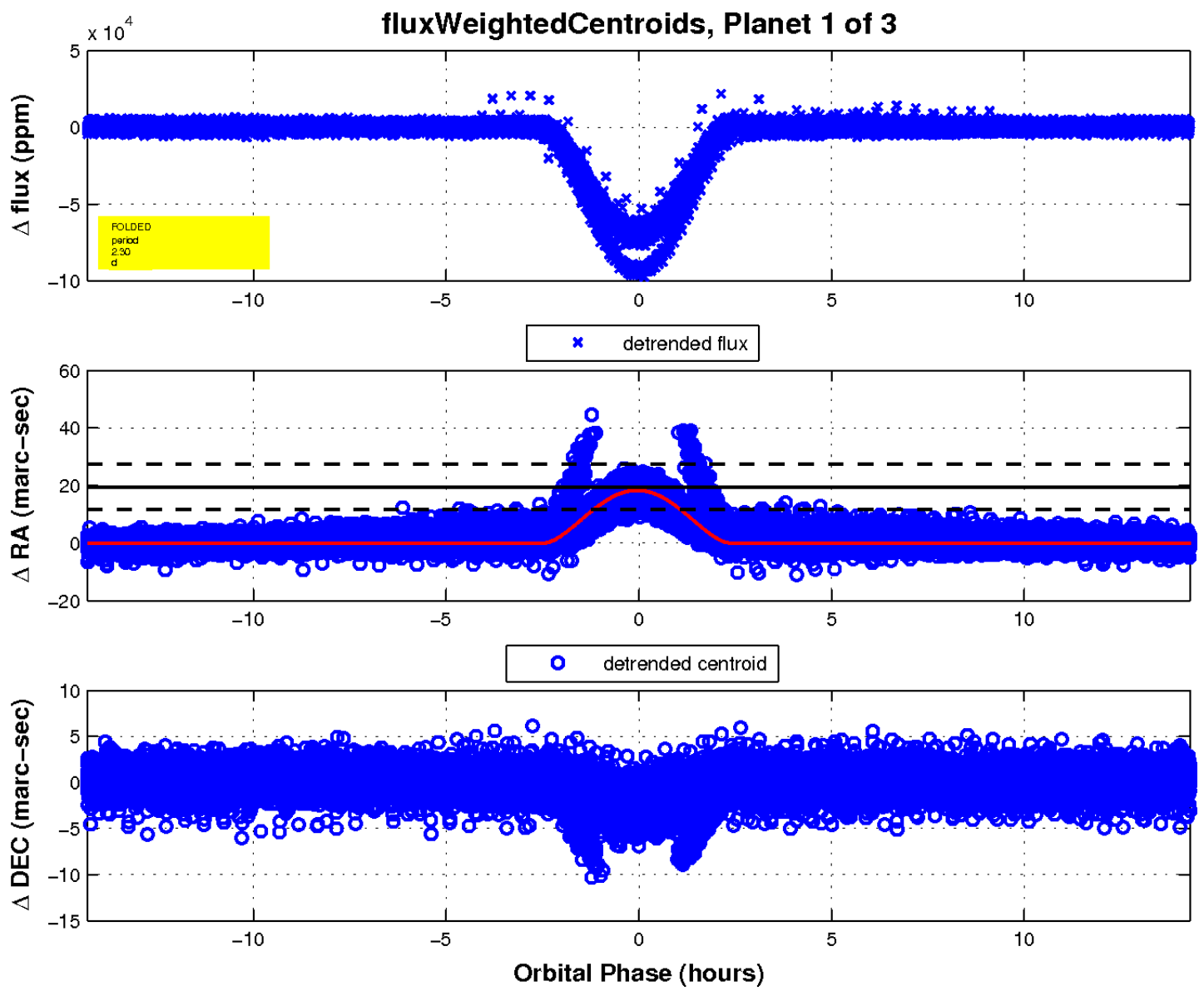
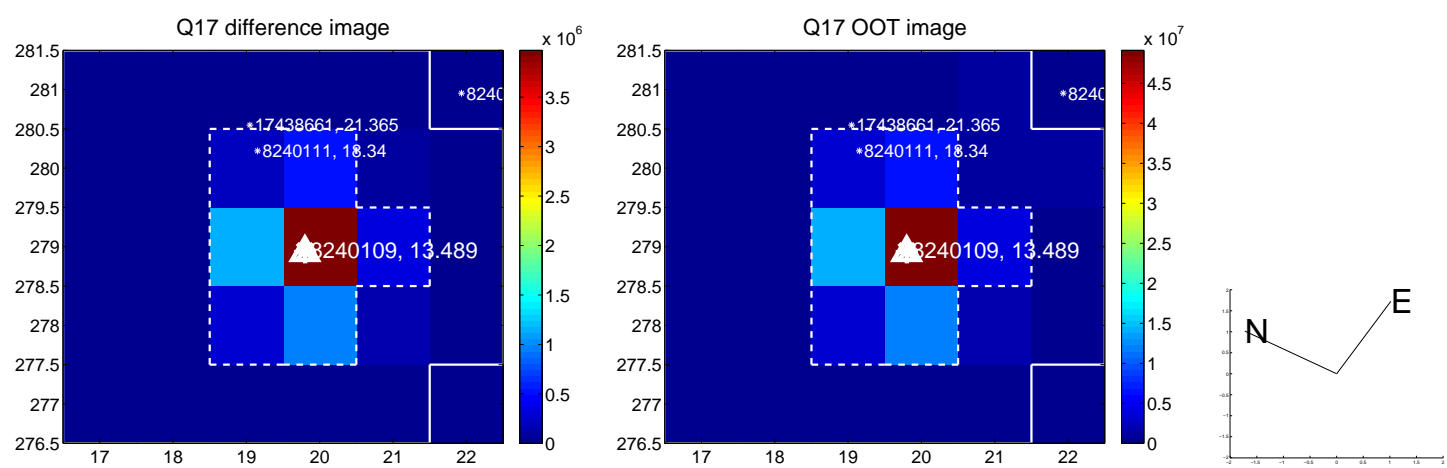
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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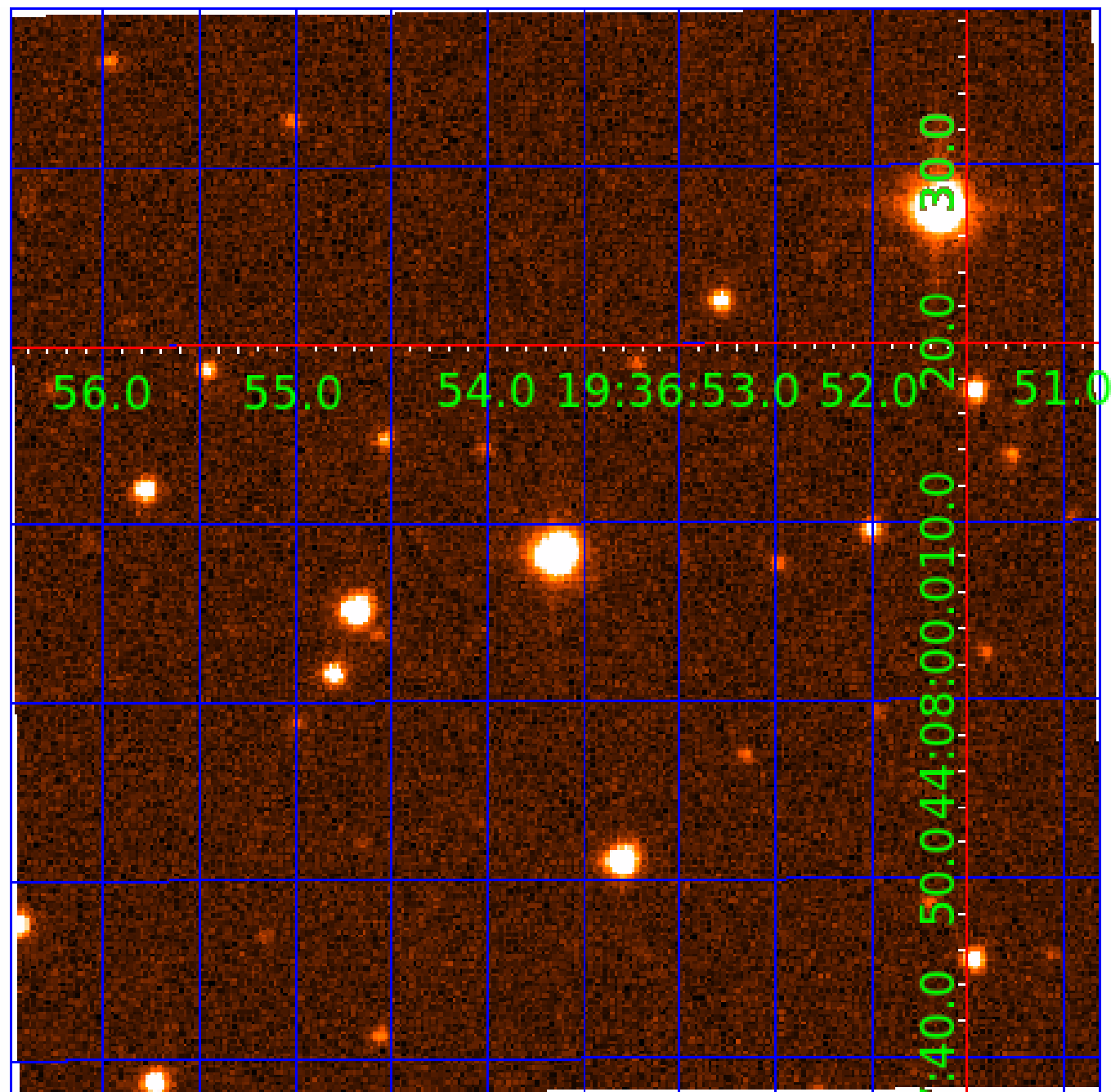


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 008240109

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})
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Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008240109-01	OBS	FP	0.00	0	1	0	0	SWEET_EB—MOD_SEC_ALT—MOD_ODDEVEN_DV—DEEP_V_SHAPED—HAS_SEC_TCE
008240109-02	OBS	FP	0.00	1	1	0	1	IS_SEC_TCE—EPHEM_MATCH
008240109-03	OBS	FP	0.00	1	0	1	1	INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—SWEET_NTL—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—RESIDUAL_TCE—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 008240109-02

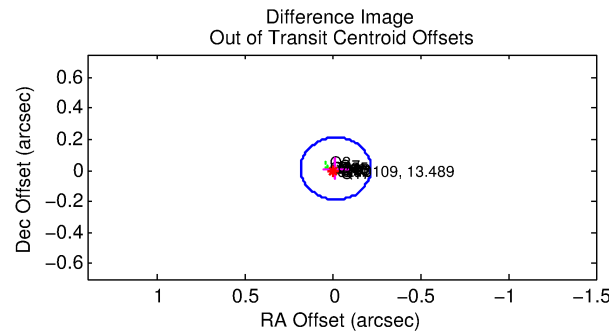
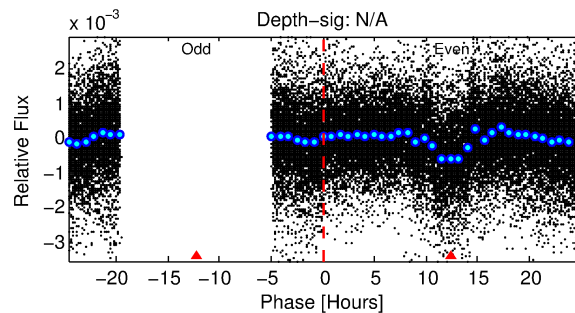
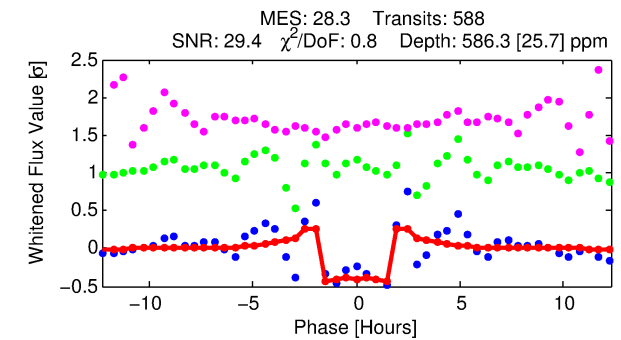
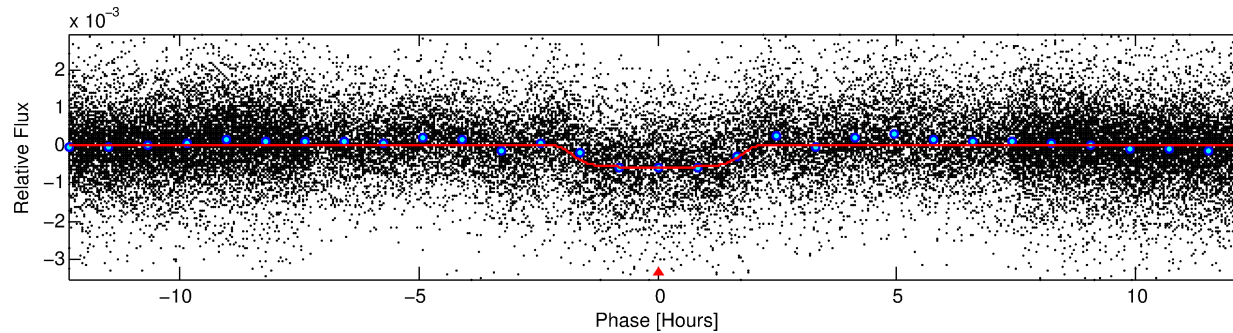
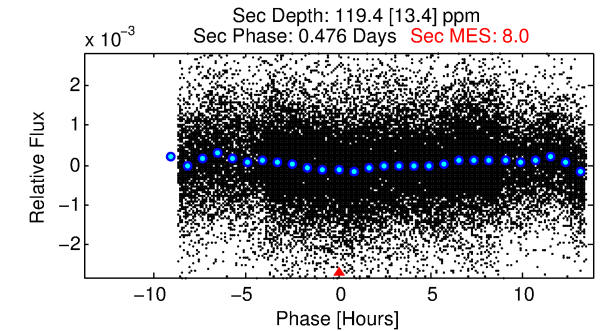
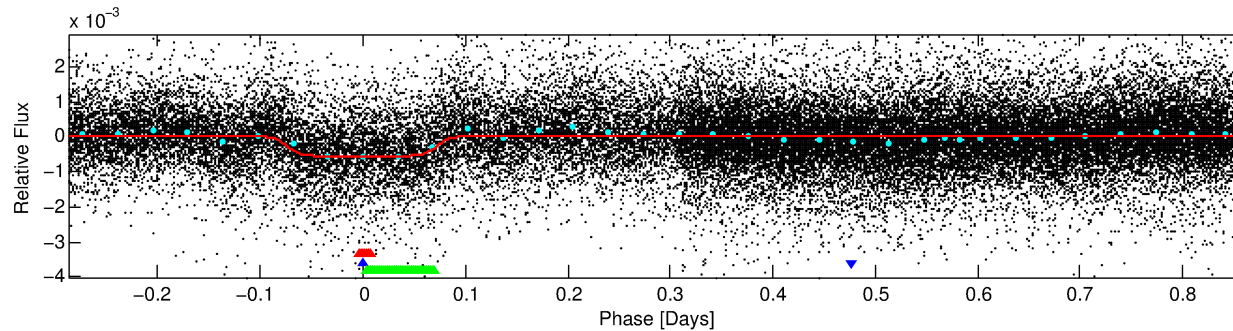
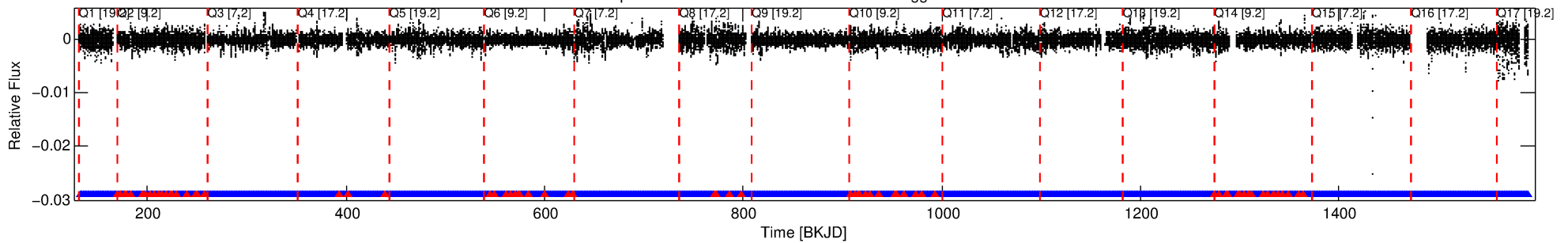
TCE (1)	KIC	Parent (2)	Parent KIC	P ₁ :P ₂	Dist ($''$)	Δ Row	Δ Col	m ₂	m ₁	D ₂ /D ₁	Mechanism	Flag	σ_P	σ_T
008240109-02	8240109	3826.01	8240123	1:2	11.7	-2	-2	15.82	13.49	5.07	Direct-PRF	0	1.72	0.29

Notes: P₁:P₂ 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. m₂ and m₁ are the magnitudes of the parent and child. D₂/D₁ 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: 8240109 Candidate: 2 of 3 Period: 1.151 d
KOI: K06998 Corr: No Ephemeris Match

Kp: 13.49 R*: 2.65 Rs Teff: 7970.0 K Logg: 3.87 Fe/H: -0.200



DV Fit Results:

Period = 1.15059 [0.00000] d
Epoch = 132.1946 [0.0007] BKJD
Rp/R* = 0.0259 [0.0008]
a/R* = 1.42 [0.07]
b = 0.90 [0.02]
Seff = 35800.07 [21325.99]
Teff = 3507 [522] K
Rp = 7.51 [2.79] Re
a = 0.0266 [0.0095] AU
Ag = 0.83 [0.48] [-0.36σ]
Teffp = 5172 [271] K [2.83σ]

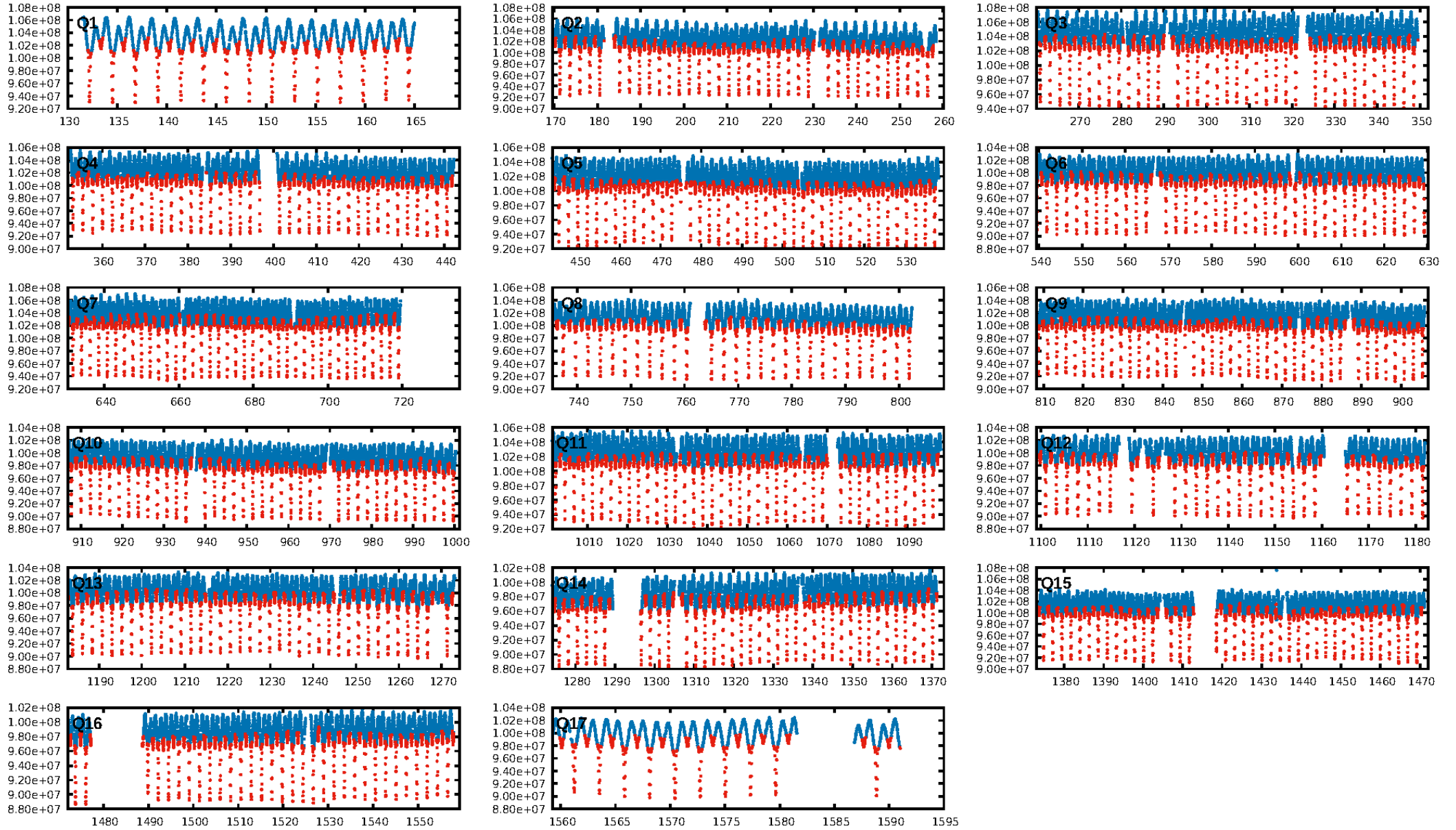
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [4.39σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 0.88 [495/562]
GhostDiagnostic-chr: 1.234
Centroid-sig: N/A
Centroid-so: 0.689 arcsec [5.72σ]
OotOffset-rm: 0.022 arcsec [0.33σ]
KicOffset-rm: 0.066 arcsec [0.97σ]
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]

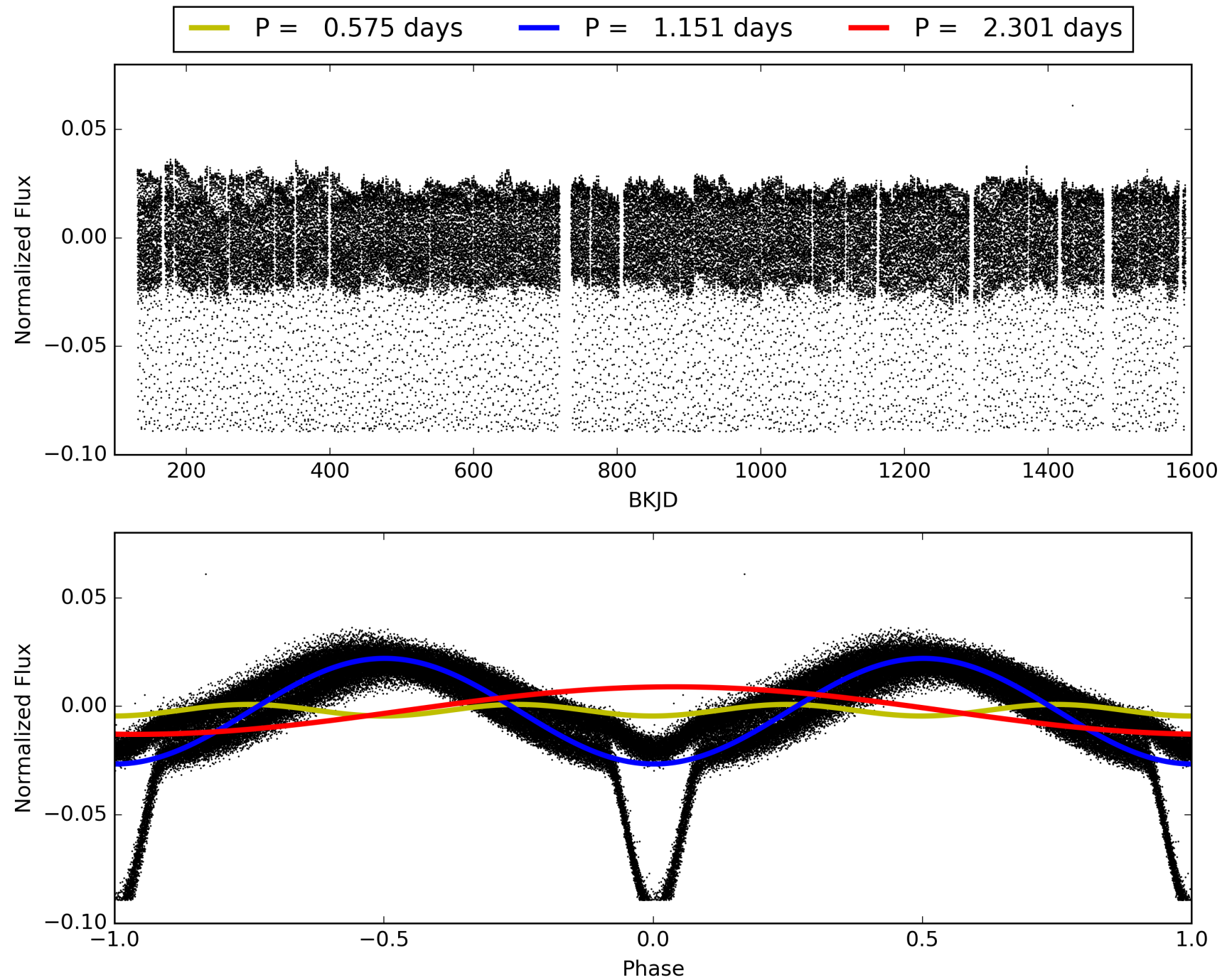
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 10:58:28 Z

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TCE 008240109-02, PDC Light Curves

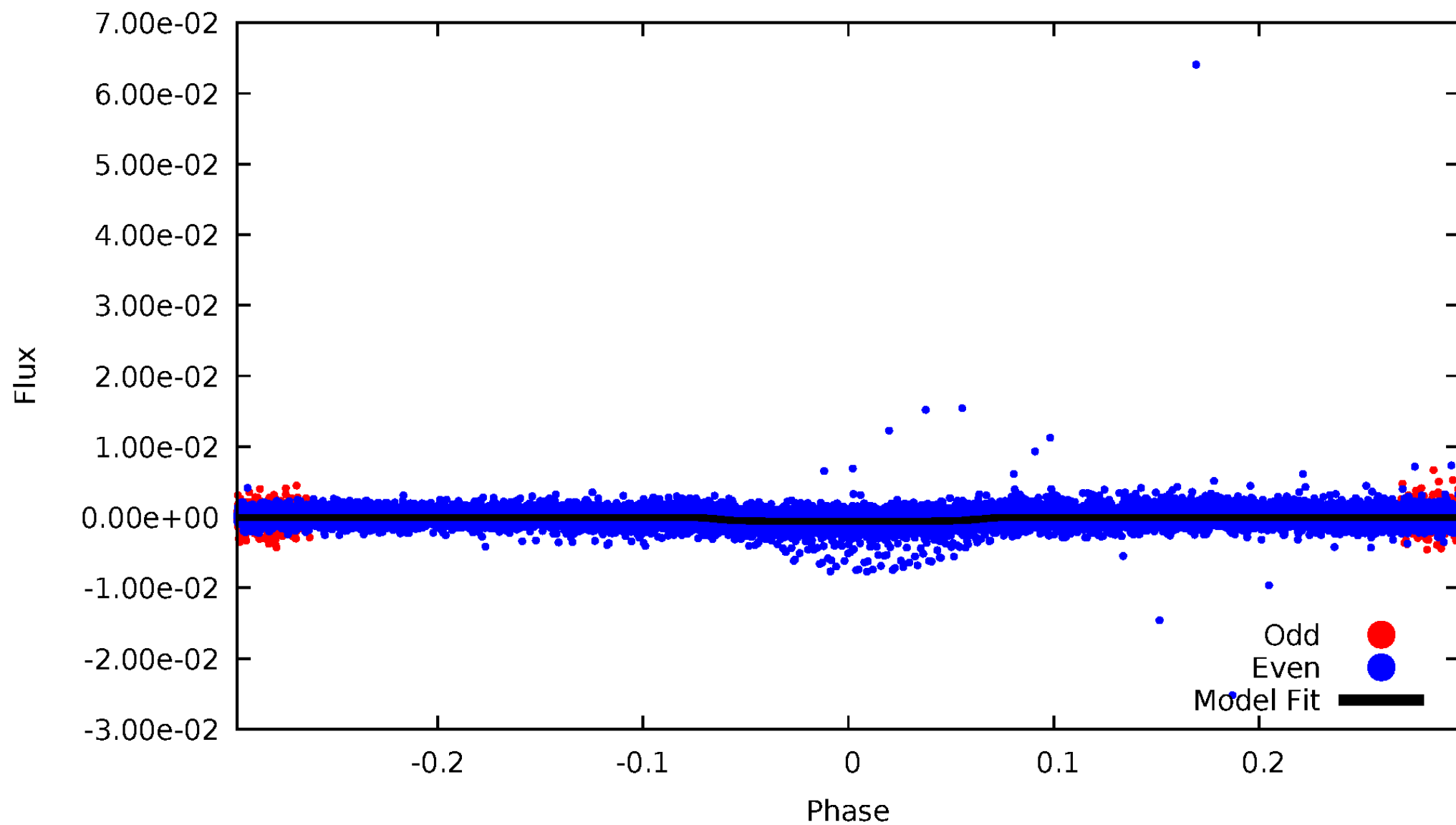


TCE 008240109-02



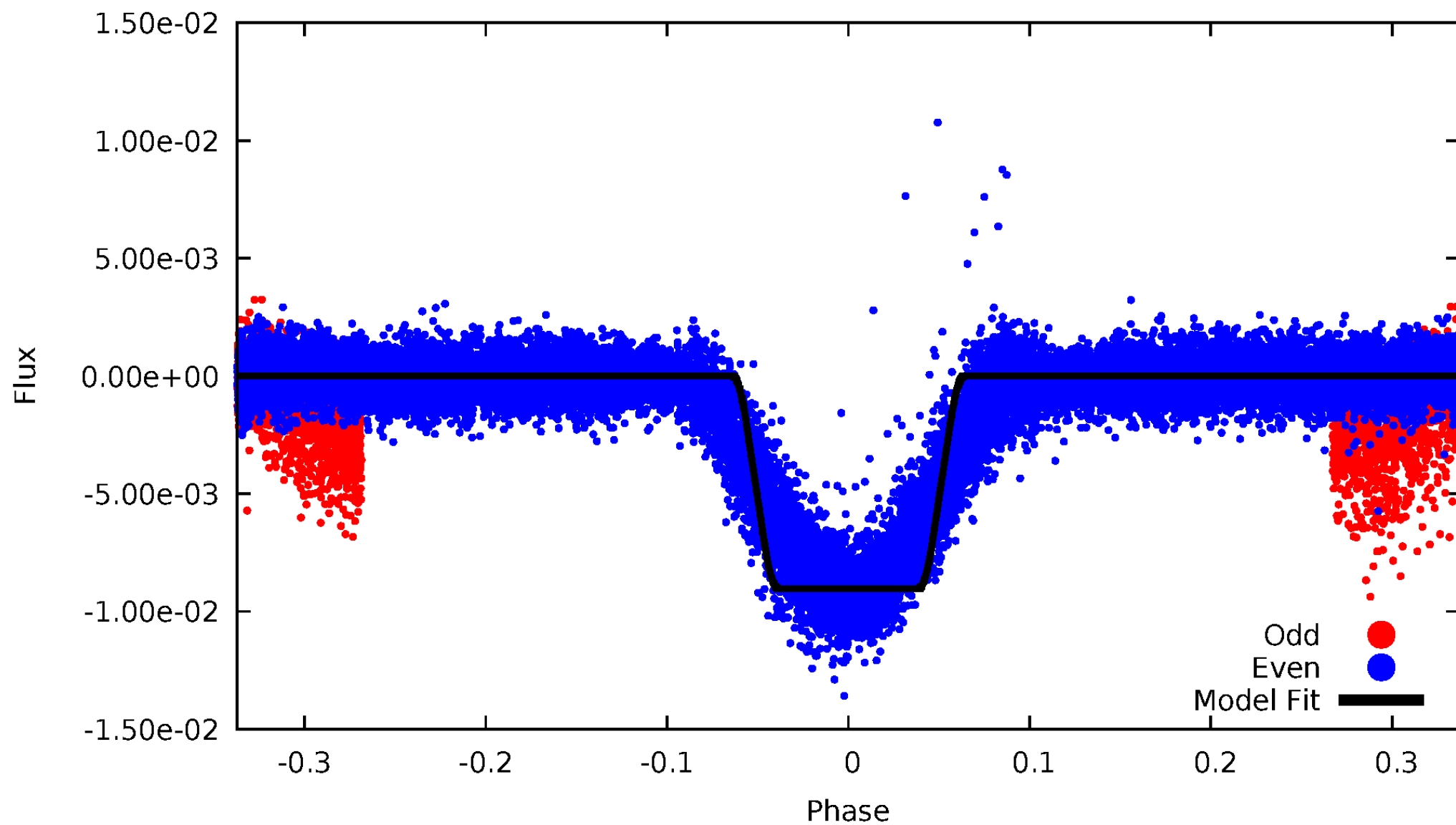
DV Odd/Even

TCE 008240109-02



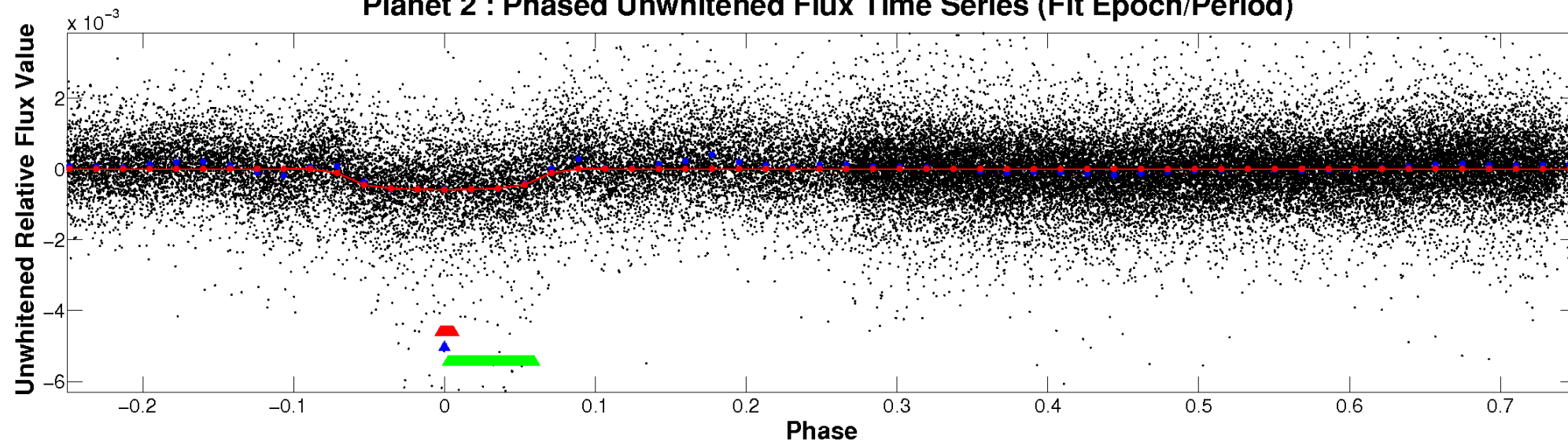
ALT Odd/Even

TCE 008240109-02

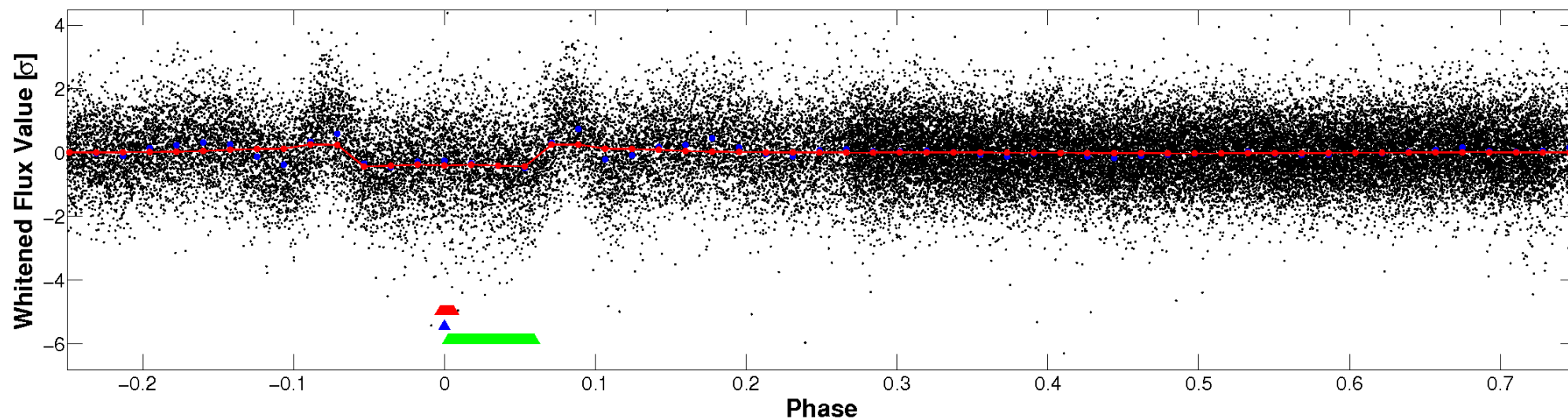


Non-Whitened Vs. Whitened Light Curve

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

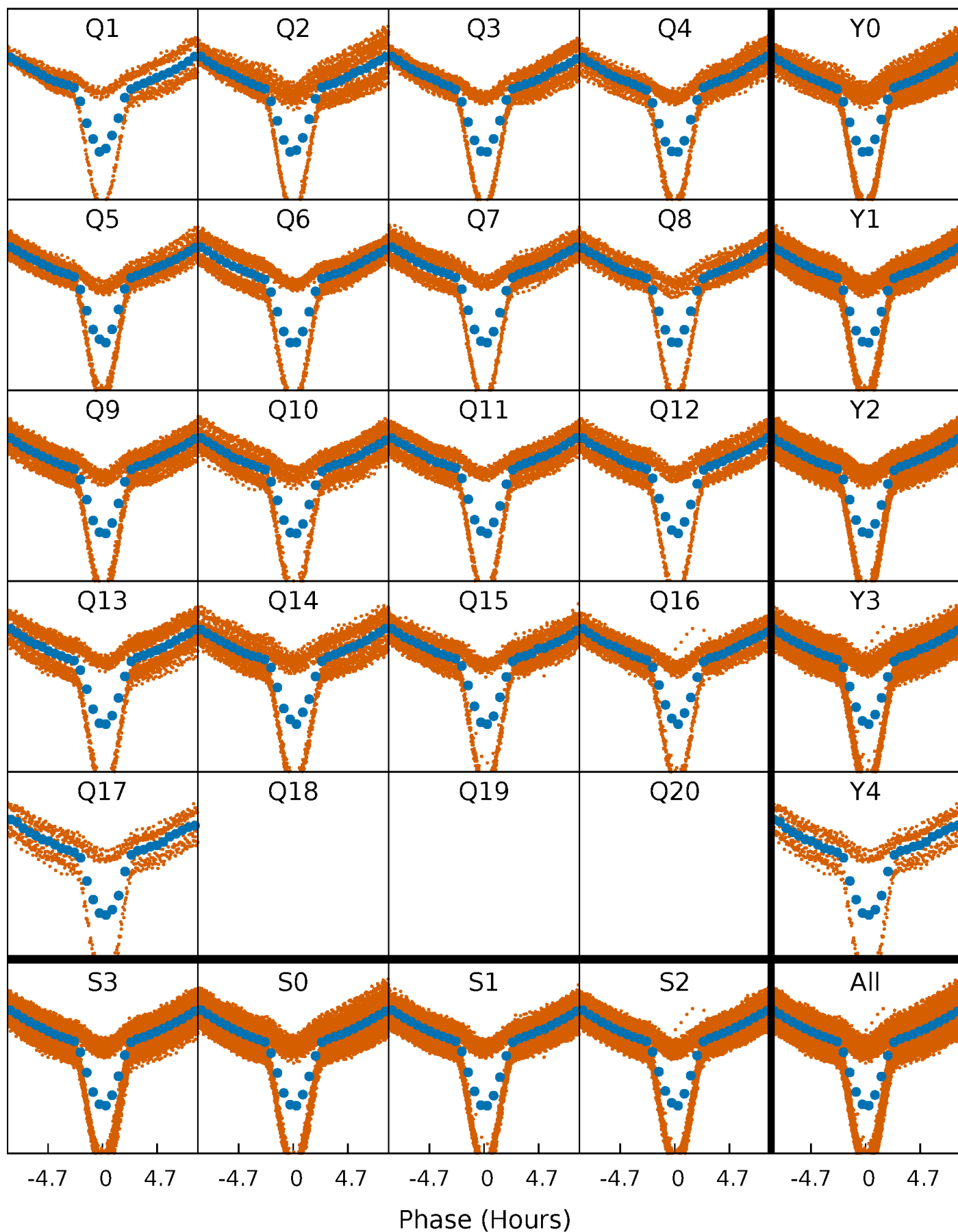


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



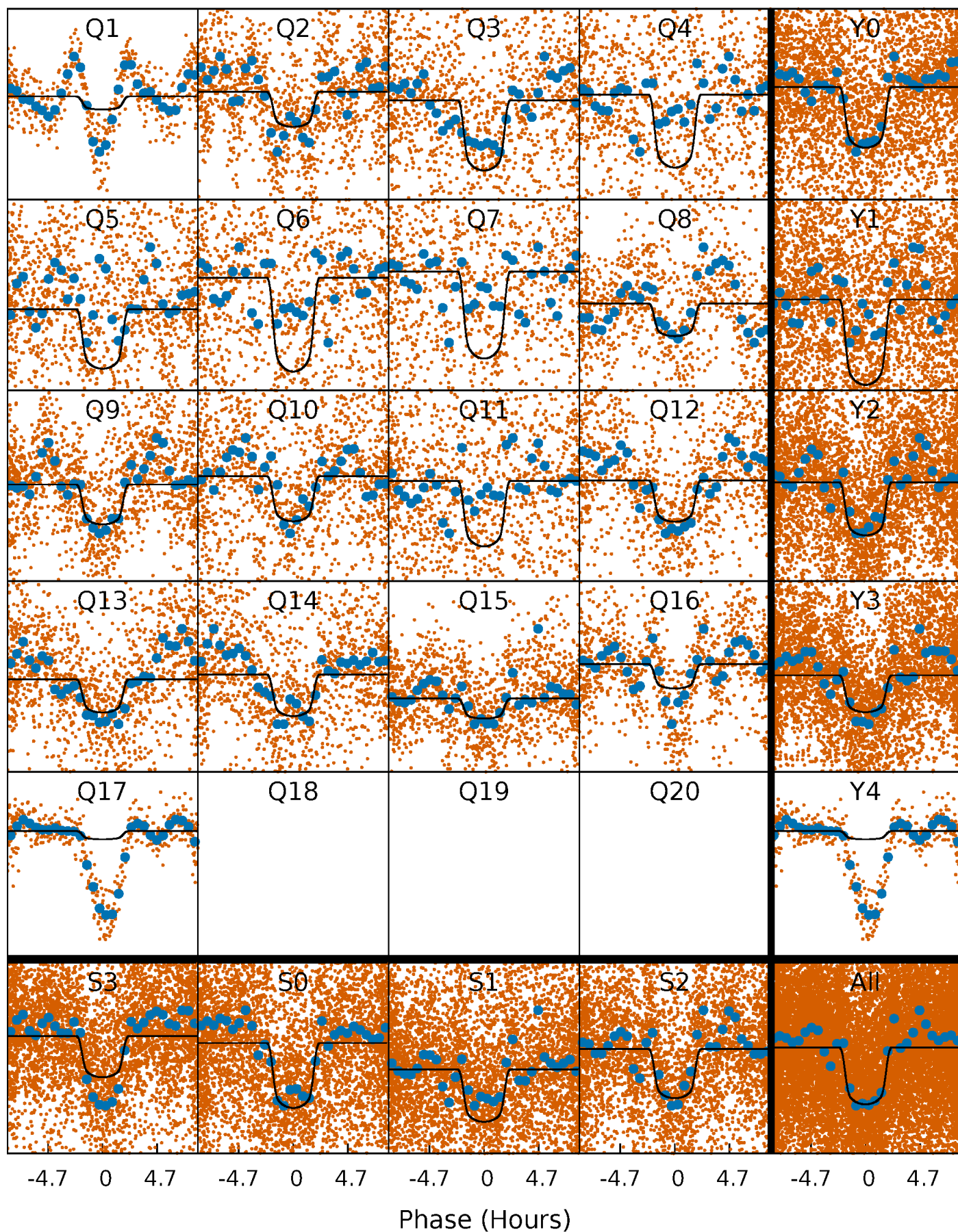
PDC Quarter-Phased Transit Curves

TCE 008240109-02 P= 1.150587 Days $T_0=132.194648$ (BKJD)



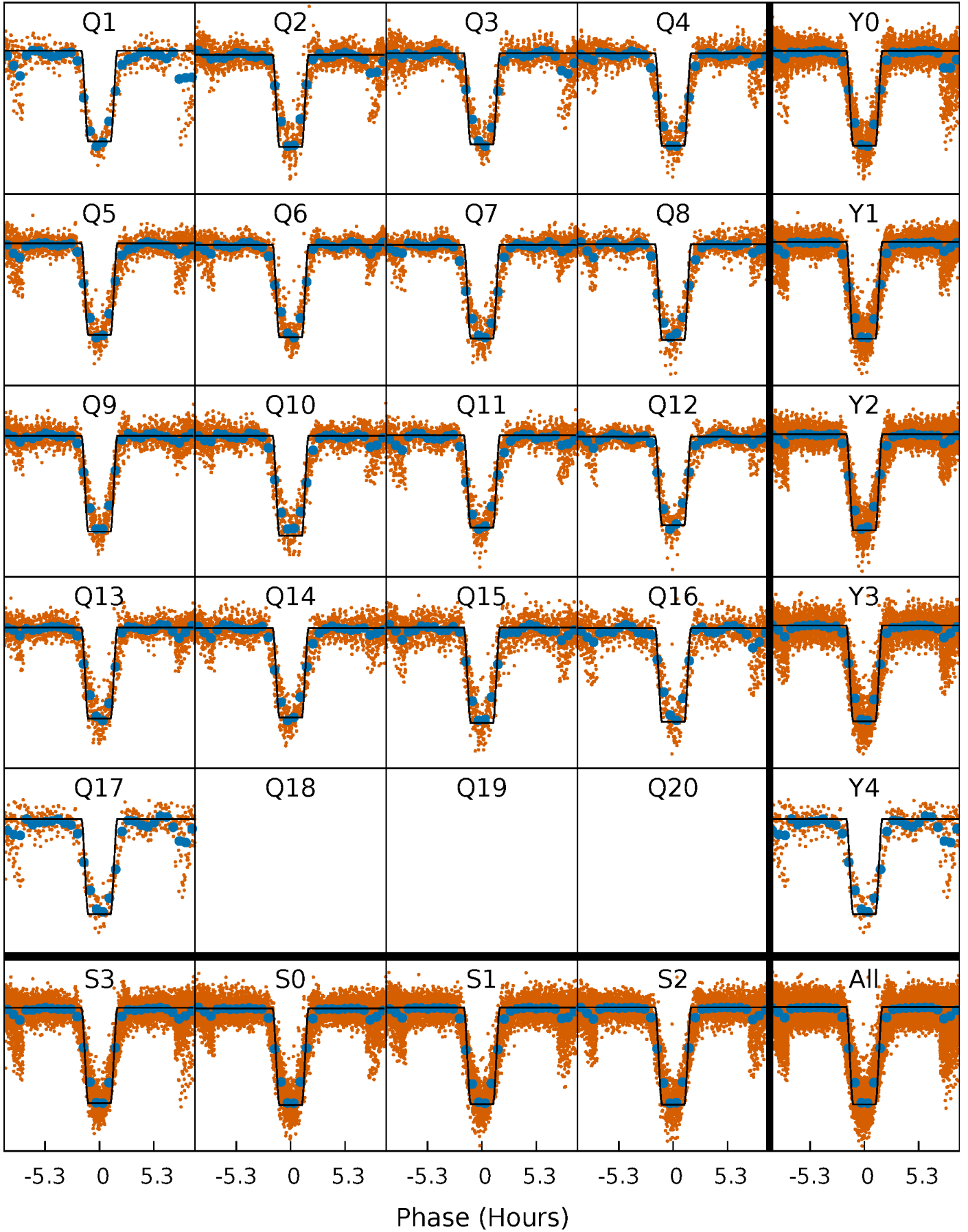
DV Quarter-Phased Transit Curves

TCE 008240109-02 P= 1.150587 Days $T_0=132.194648$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

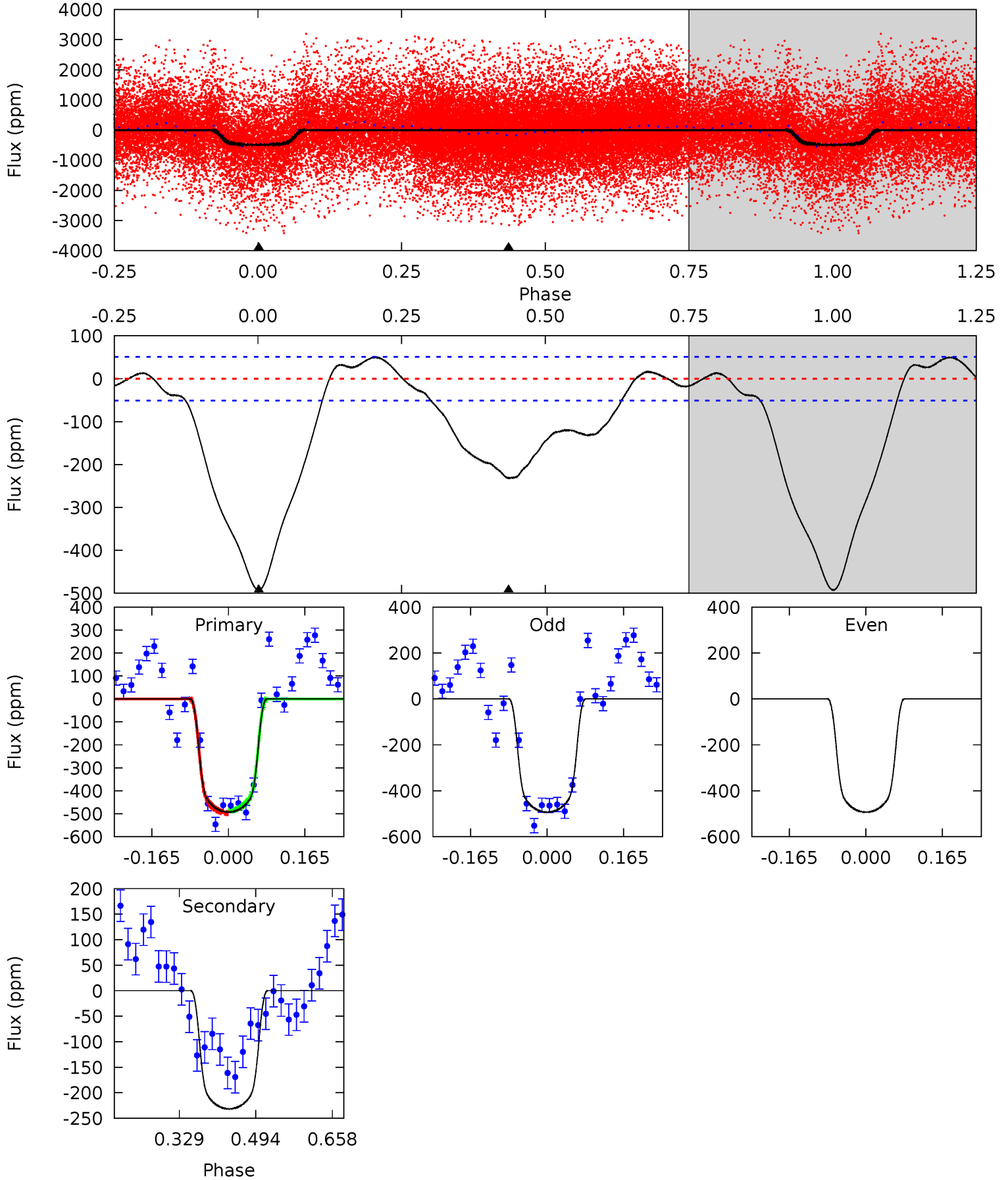
TCE 008240109-02 P= 1.150594 Days $T_0=132.193112$ (BKJD)



DV Model-Shift Uniqueness Test

008240109-02, P = 1.150587 Days, E = 131.044061 Days

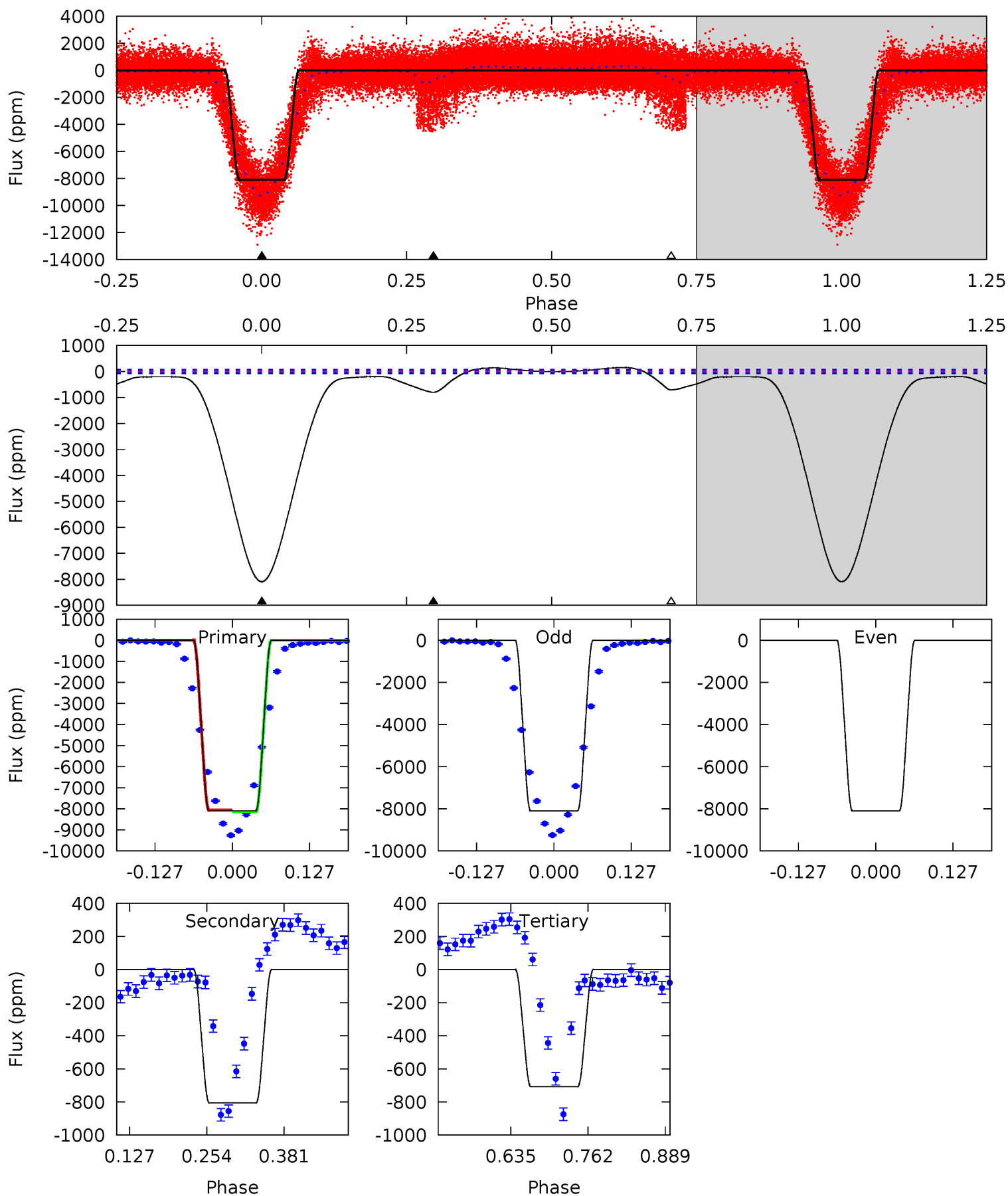
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
42.9	20.2	0	0	4.46	1.39	3.21	42.9	42.9	20.2	20.2	0	1.09	0.09	0.47



Alt Model-Shift Uniqueness Test

008240109-02, P = 1.150594 Days, E = 131.042518 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
554.4	55.2	48.5	0	4.51	1.53	16.5	505.9	554.4	6.69	55.2	0	1.00	0.02	2.38



Stellar Parameters For KIC 008240109

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	7970^{+221}_{-332}	$3.871^{+0.336}_{-0.105}$	$-0.200^{+0.200}_{-0.350}$	$2.652^{+0.351}_{-0.983}$	$1.906^{+0.101}_{-0.456}$	$0.144^{+0.347}_{-0.037}$
	+3%/-4%	+9%/-3%	+100%/-175%	+13%/-37%	+5%/-24%	+241%/-26%
Source	KIC0	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 008240109-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-232 ± 11	$7.31^{+0.77}_{-1.57}$	4804^{+307}_{-486}	5689^{+208}_{-212}	$1.713^{+0.848}_{-0.343}$
Alt.	-806 ± 15	$26.58^{+2.95}_{-5.55}$	4777^{+327}_{-489}	3609^{+371}_{-366}	$0.433^{+0.236}_{-0.075}$

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

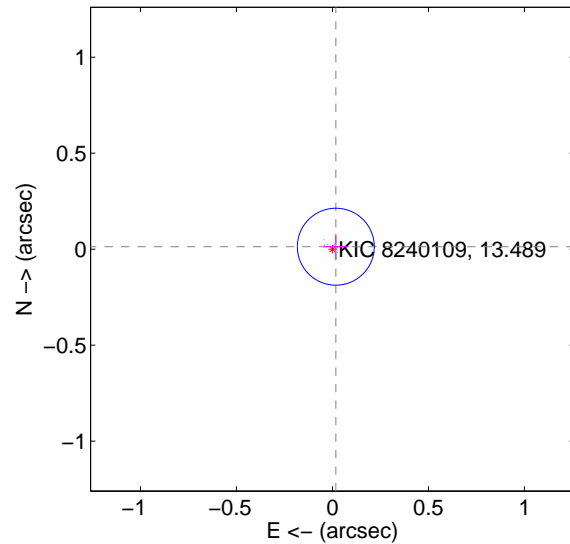
Supplemental centroid analysis for 008240109-02. Kepler magnitude: 13.49. Transit SNR 29.45

There are 17 quarters with good PRF difference image offsets

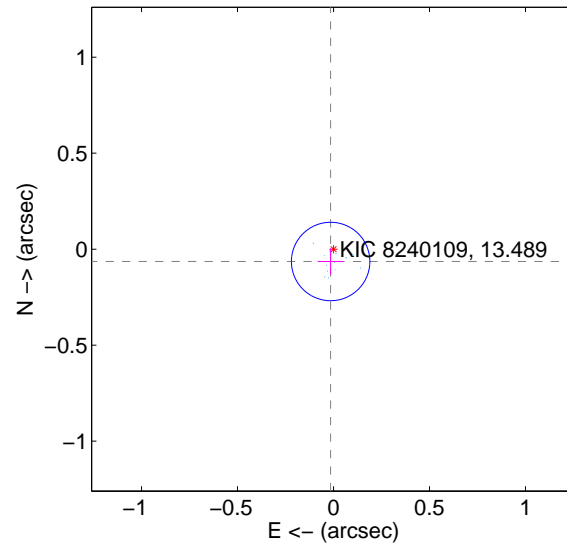
The direct PRF centroid is offset from the target star catalog position by about 0.05 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.022 ± 0.067	0.33	-0.018 ± 0.067	0.013 ± 0.067
PRF-fit source offset from KIC position	0.066 ± 0.068	0.97	0.015 ± 0.067	-0.064 ± 0.068
photometric centroid source offset	0.69 ± 0.12	5.72	-0.65 ± 0.12	0.24 ± 0.09

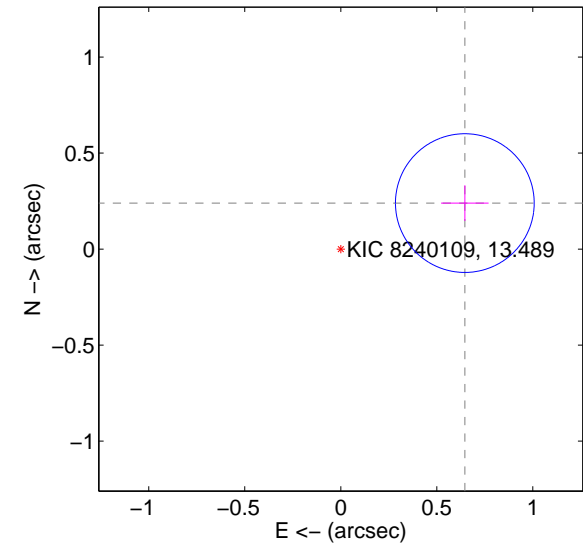
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

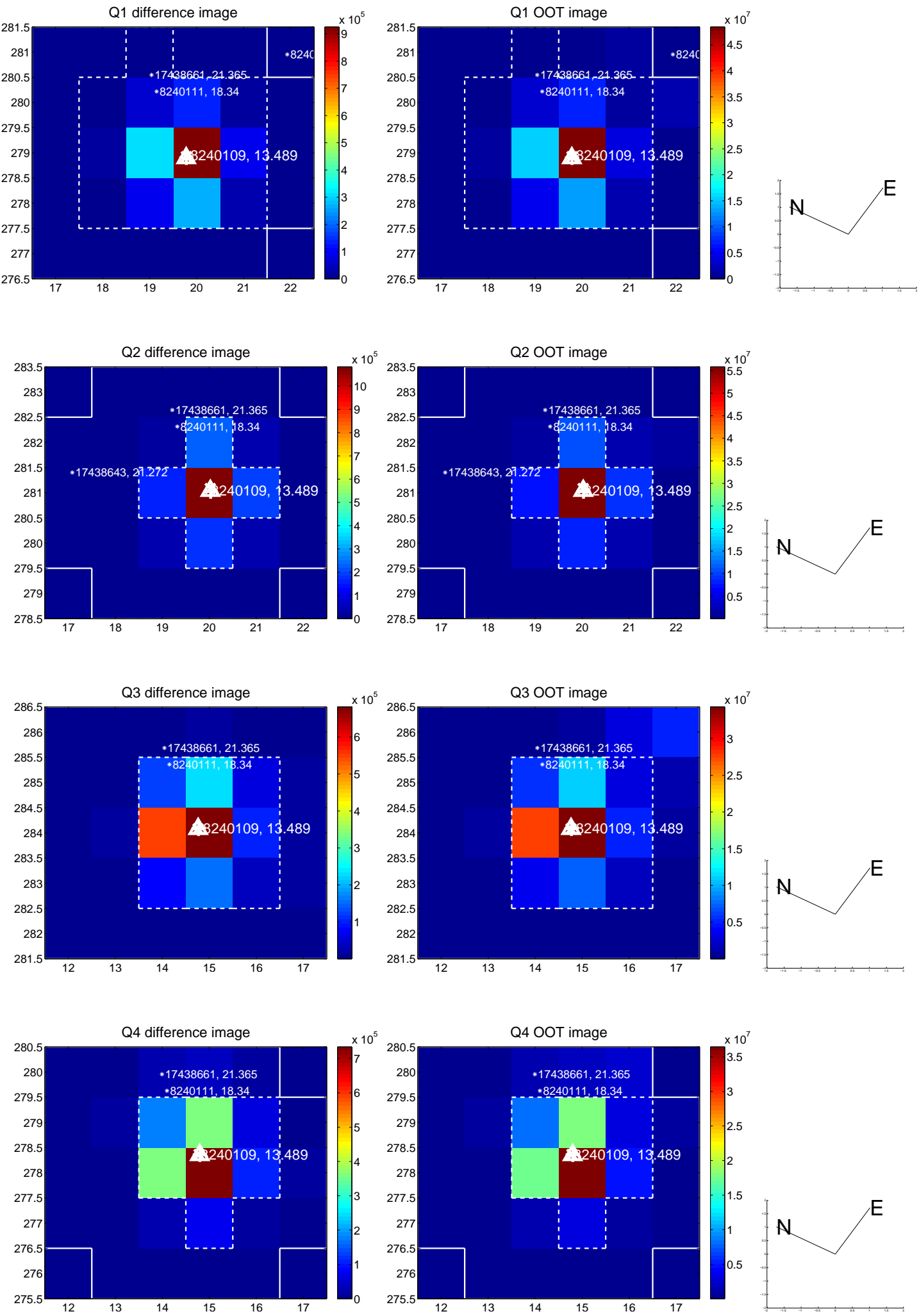


offset from photometric centroids

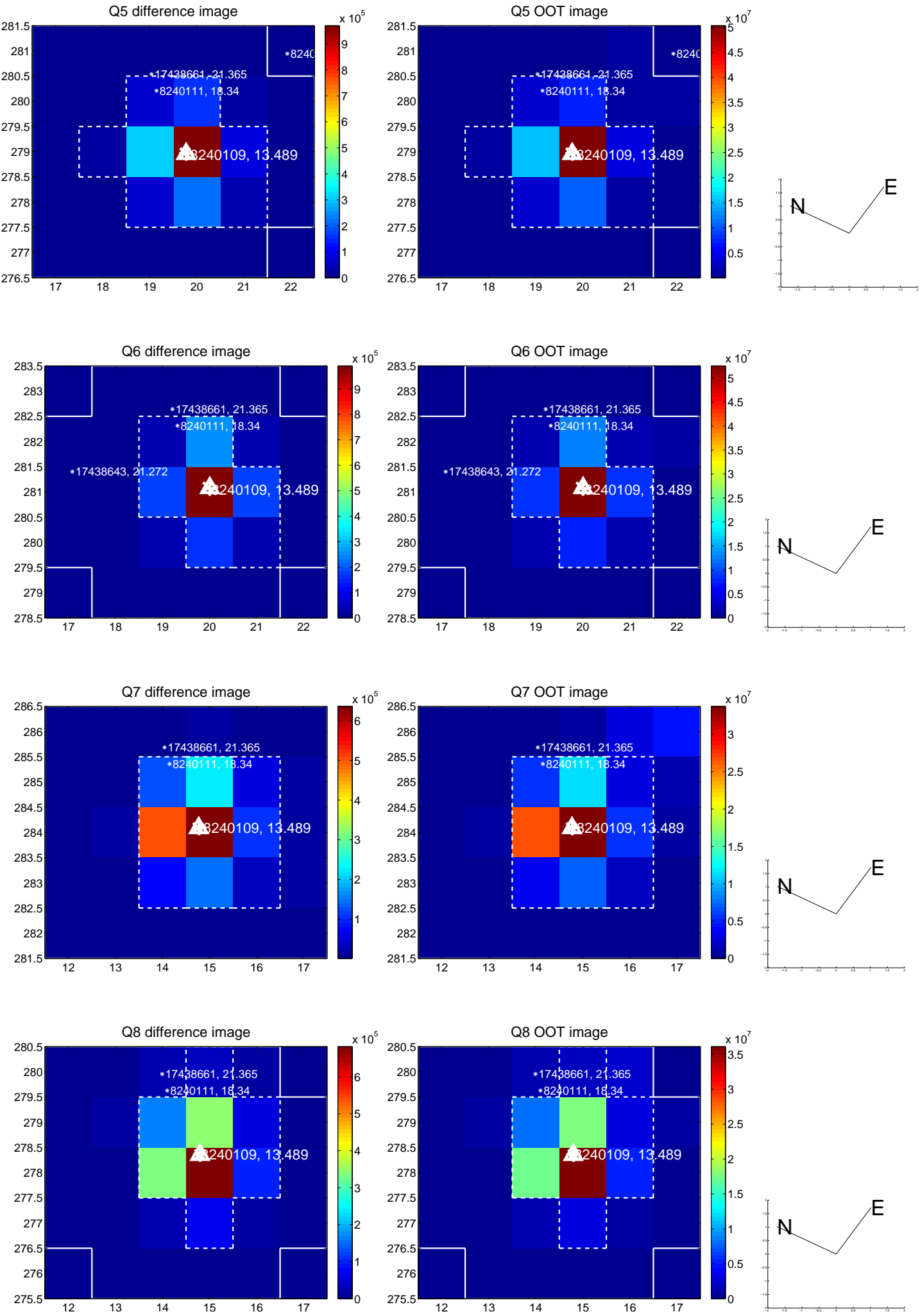


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

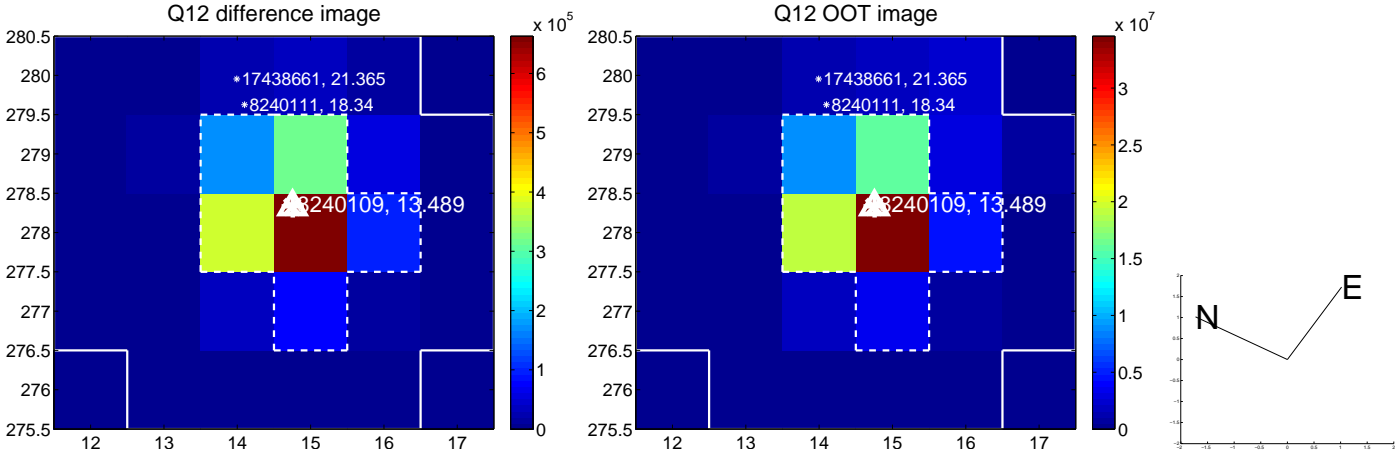
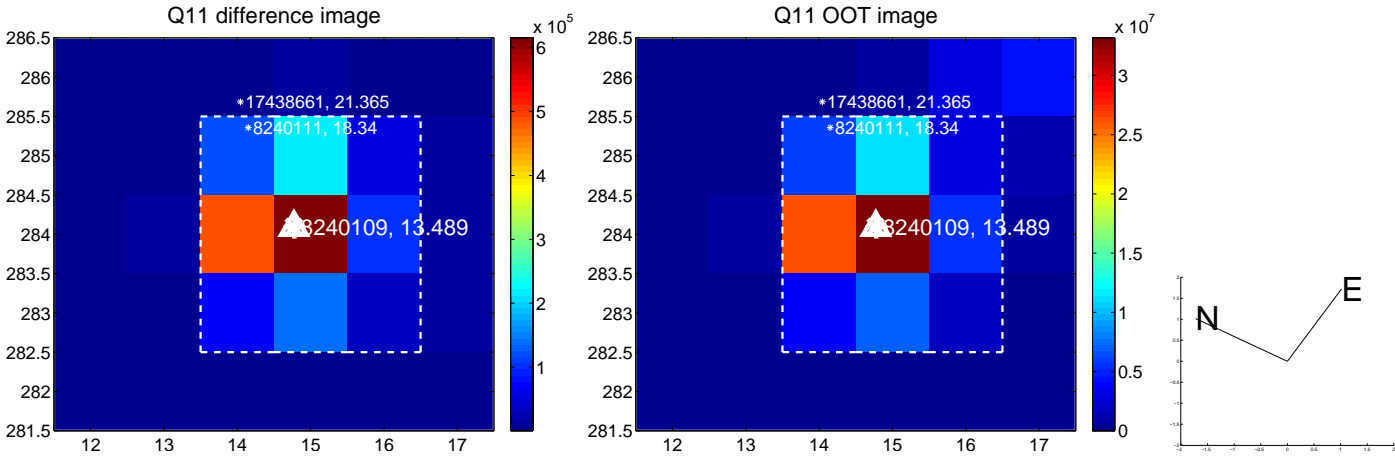
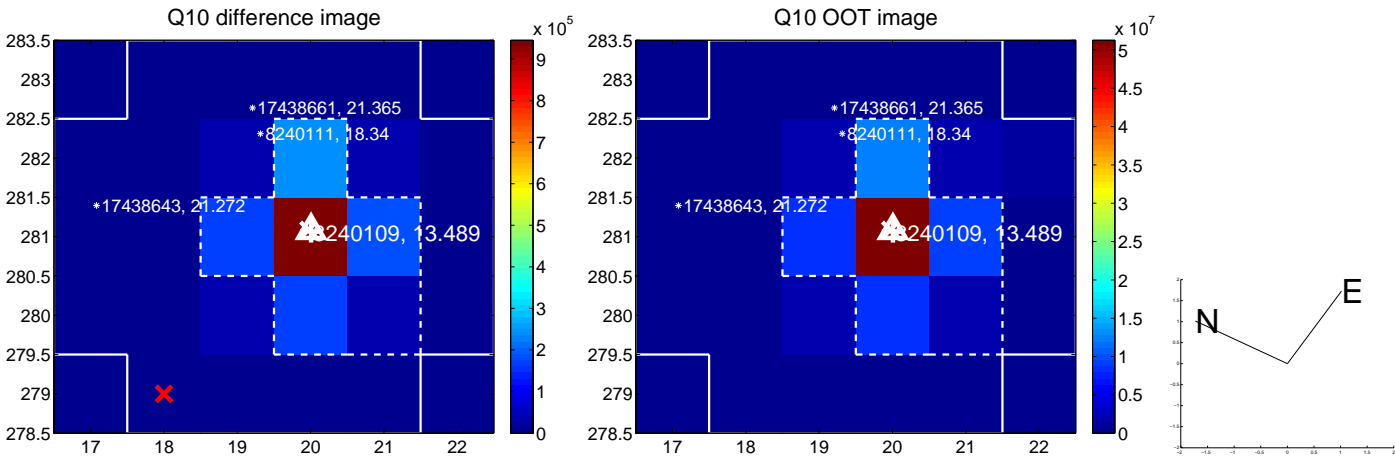
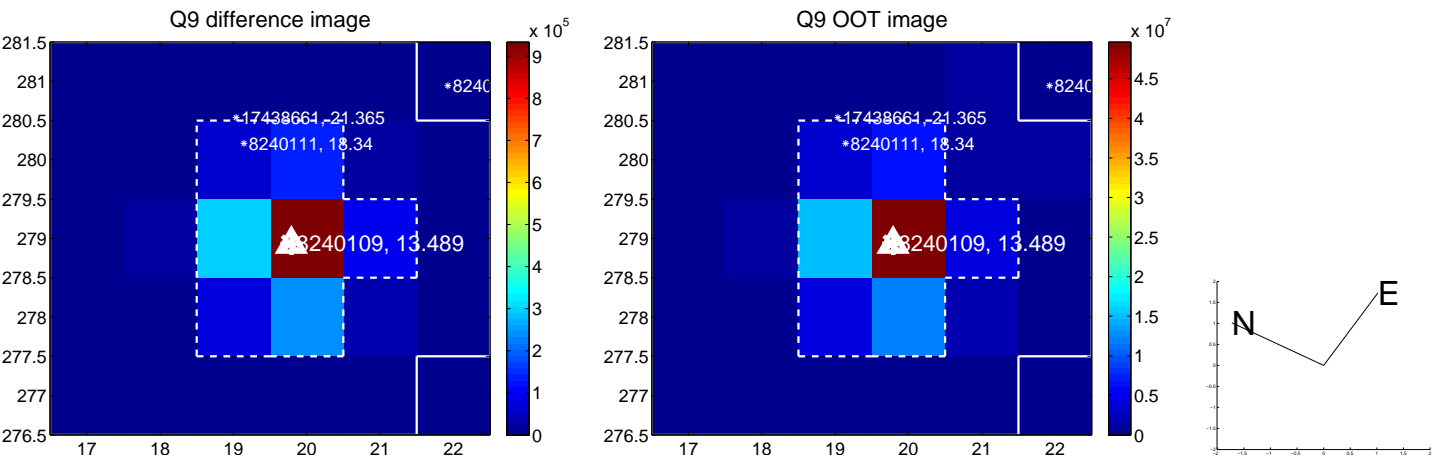
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



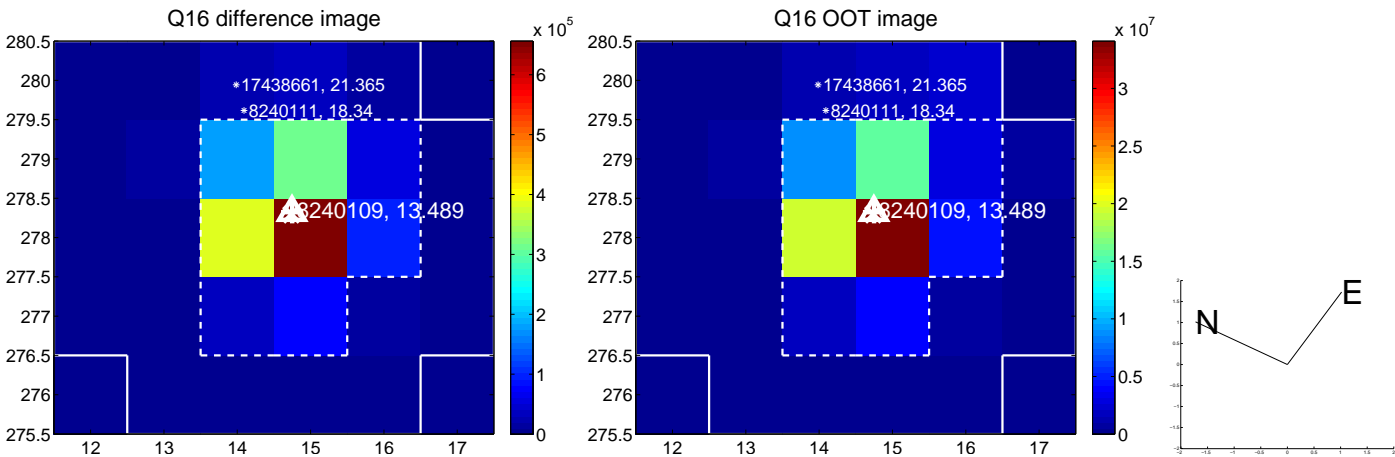
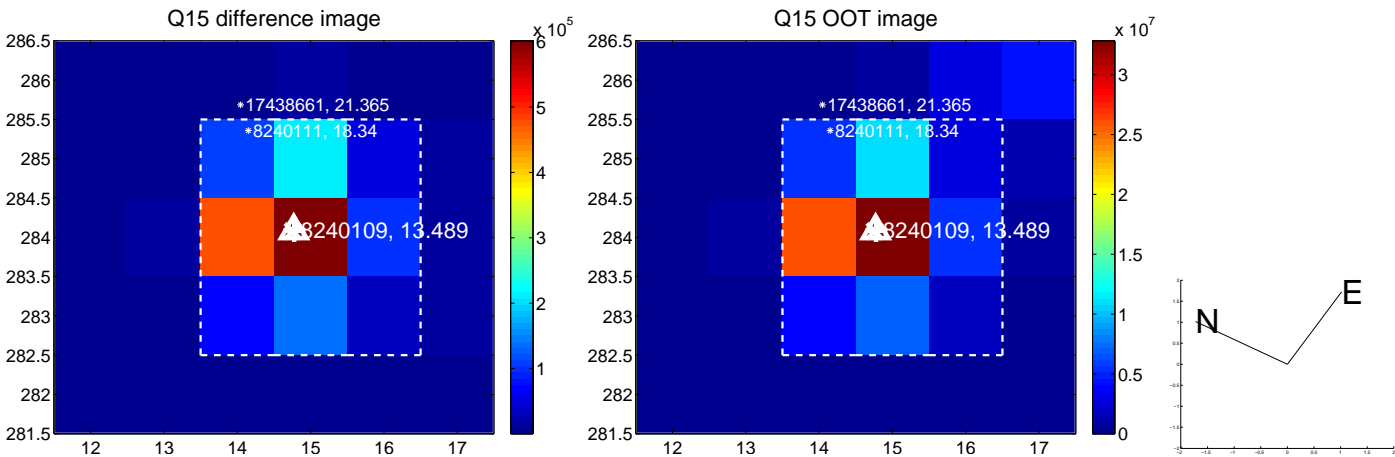
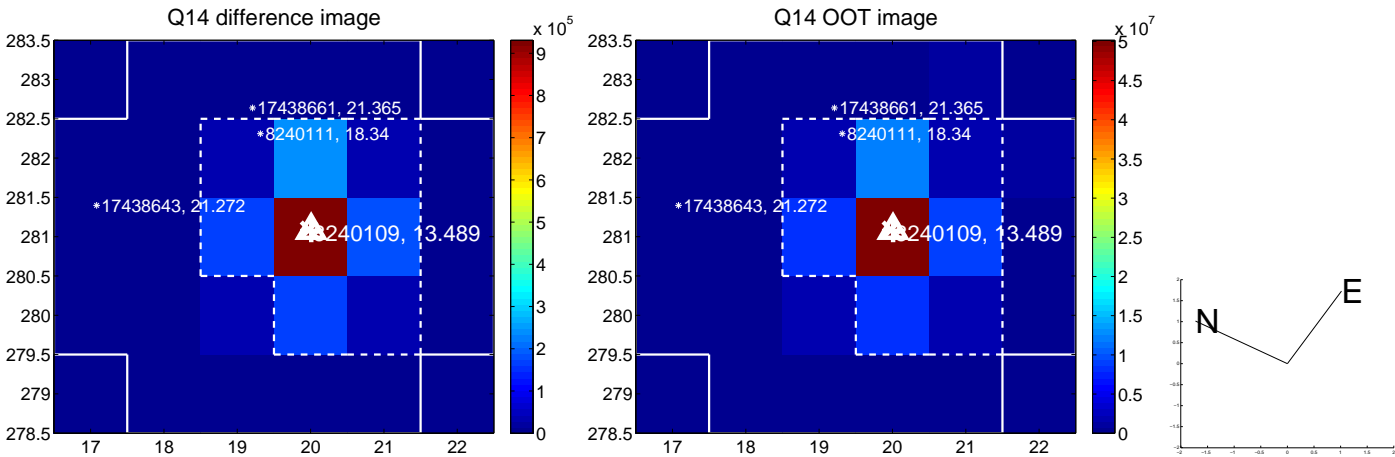
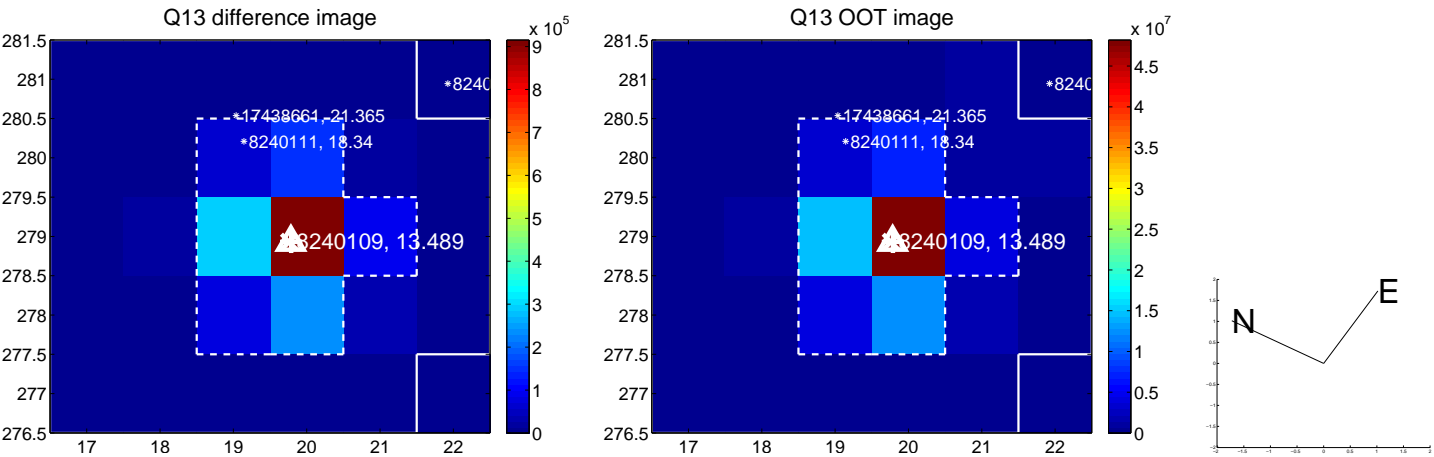
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



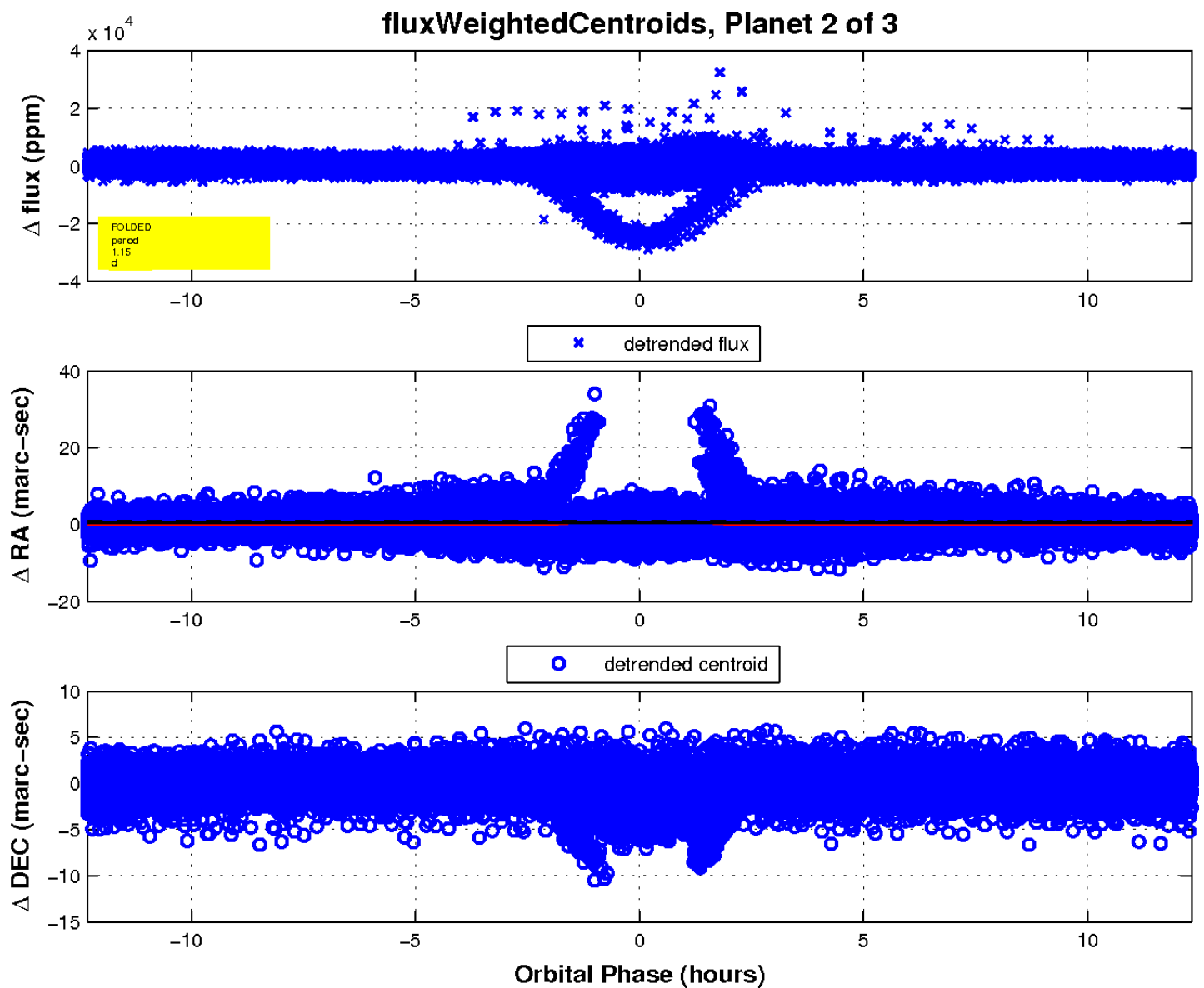
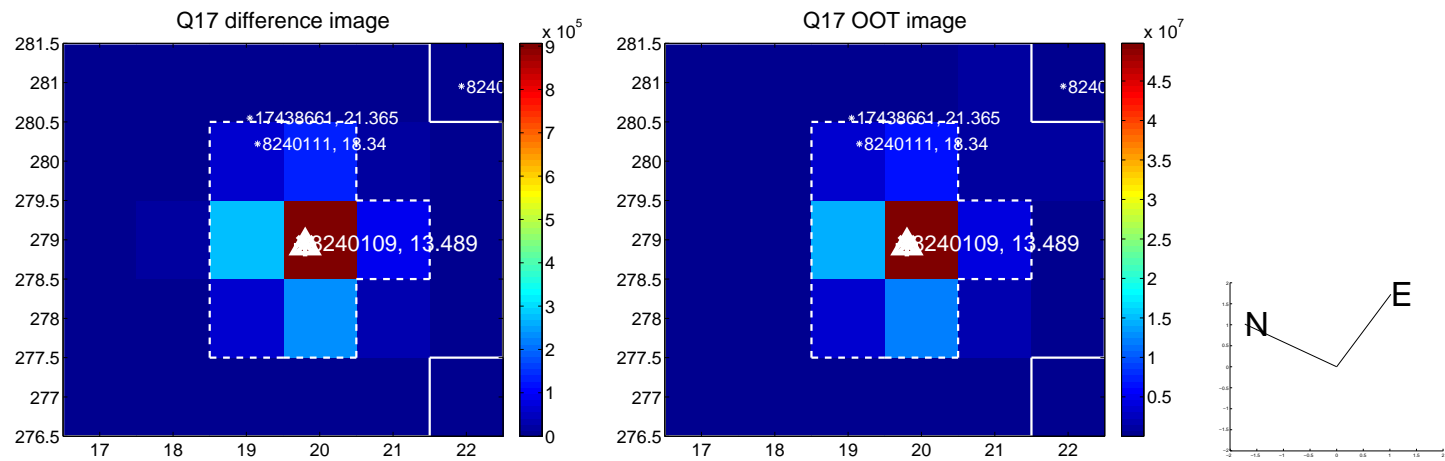
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

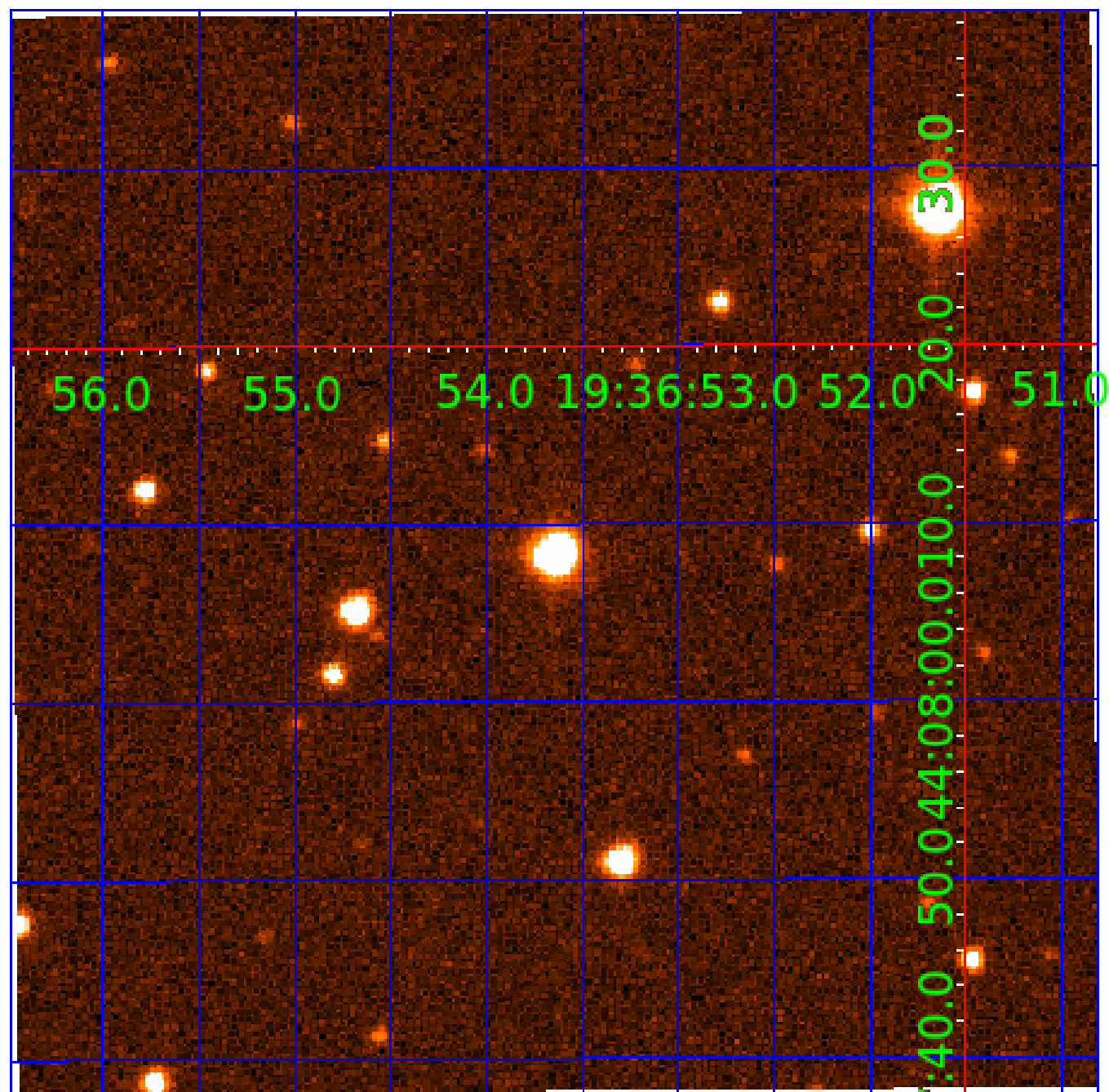


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 008240109

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})
008240109-01	OBS	6998.01	2.301190	132.191643	68955.0	4.768	2523.9	2021.3	2.65	7970	96.70	14207.14
008240109-02	OBS	No	1.150587	132.194647	586.3	4.109	28.3	29.4	2.65	7970	7.51	35800.07
008240109-03	OBS	No	4.602558	134.498574	180.6	15.284	9.5	2.8	2.65	7970	4.11	5637.82

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008240109-01	OBS	FP	0.00	0	1	0	0	SWEET_EB—MOD_SEC_ALT—MOD_ODDEVEN_DV—DEEP_V_SHAPED—HAS_SEC_TCE
008240109-02	OBS	FP	0.00	1	1	0	1	IS_SEC_TCE—EPHEM_MATCH
008240109-03	OBS	FP	0.00	1	0	1	1	INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—SWEET_NTL—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—RESIDUAL_TCE—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 008240109-03

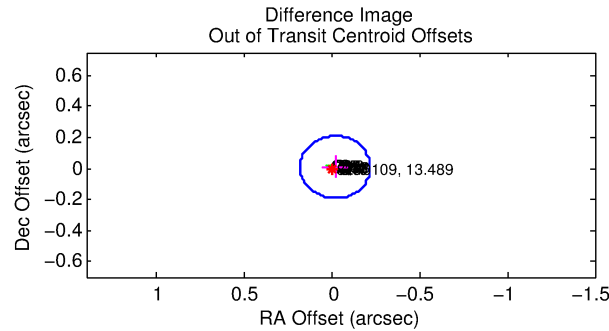
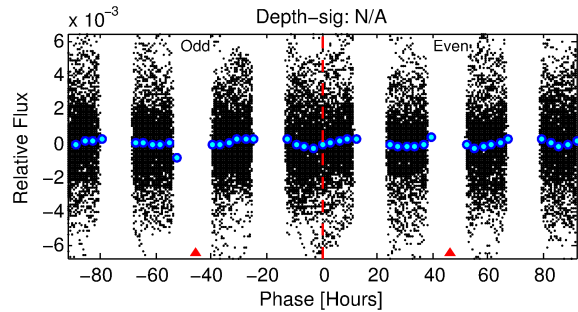
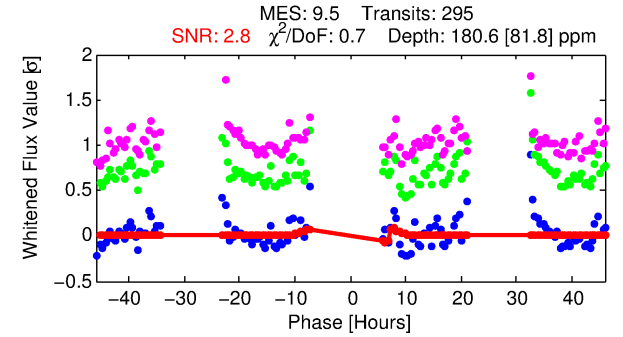
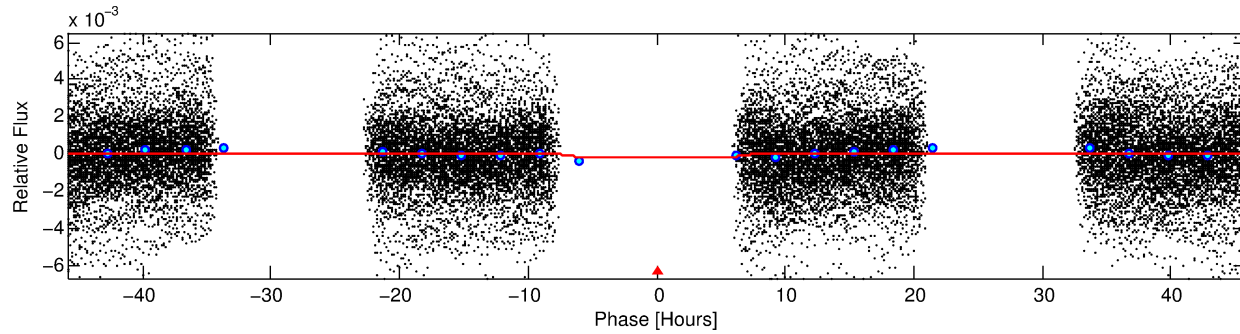
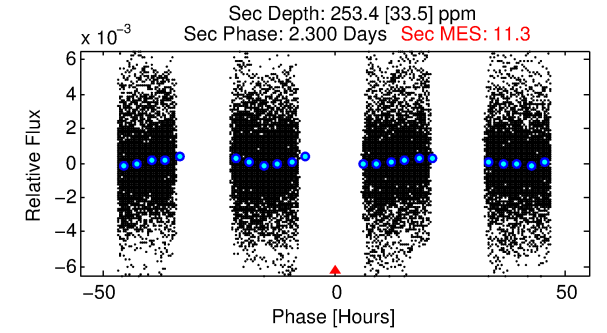
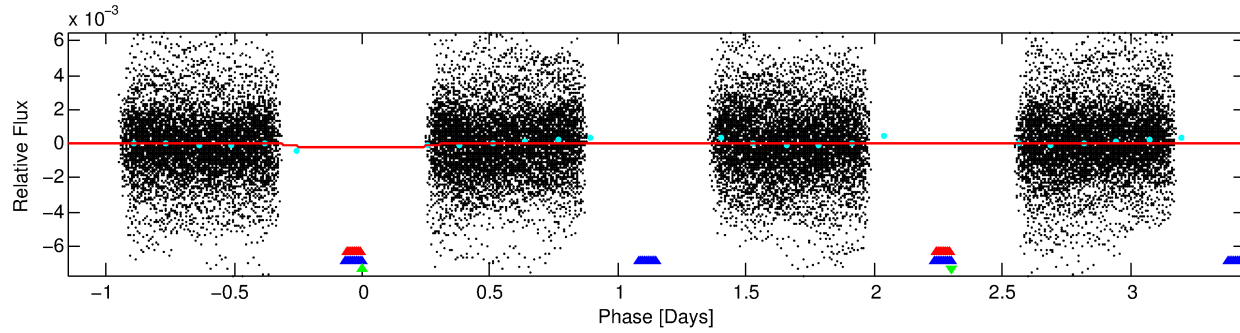
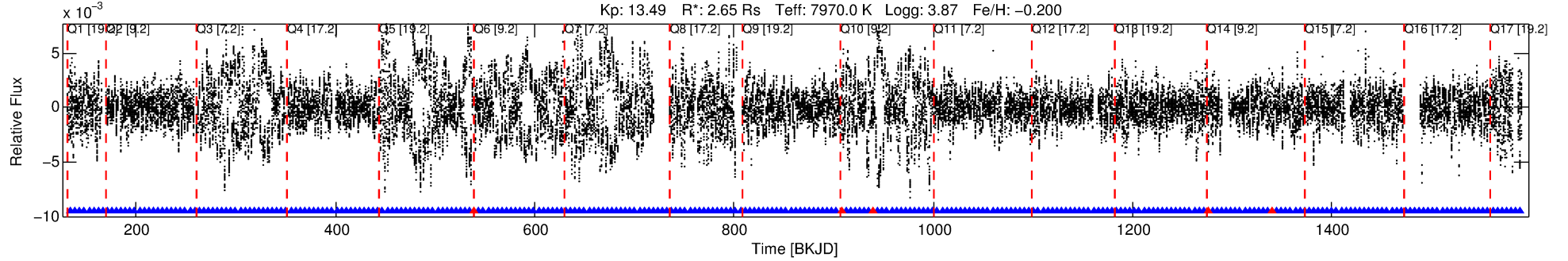
TCE (1)	KIC	Parent (2)	Parent KIC	$P_1:P_2$	Dist ($''$)	Δ Row	Δ Col	m_2	m_1	D_2/D_1	Mechanism	Flag	σ_P	σ_T
008240109-03	8240109	3826.01	8240123	2:1	11.7	-2	-2	15.82	13.49	16.40	Direct-PRF	0	4.78	0.37

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: 8240109 Candidate: 3 of 3 Period: 4.603 d
KOI: K06998 Corr: No Ephemeris Match

Kp: 13.49 R*: 2.65 Rs Teff: 7970.0 K Logg: 3.87 Fe/H: -0.200



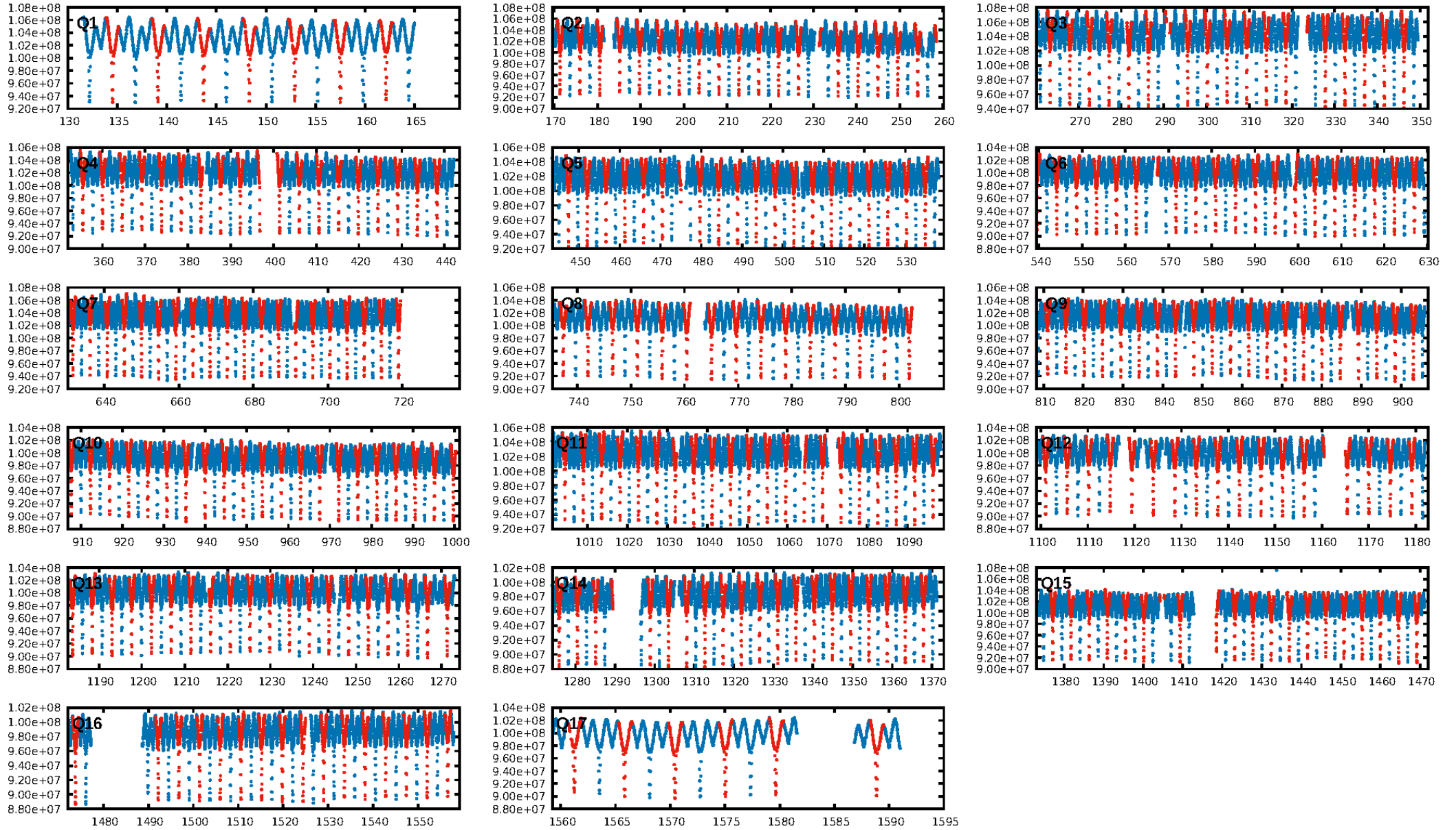
DV Fit Results:

Period = 4.60256 [0.00009] d
Epoch = 134.4986 [0.0246] BKJD
Rp/R* = 0.0142 [0.0035]
a/R* = 1.48 [0.32]
b = 0.88 [0.10]
Seff = 5637.82 [3358.43]
Teq = 2210 [329] K
Rp = 4.11 [1.83] Re
a = 0.0672 [0.0240] AU
Ag = 37.17 [28.44] [1.27σ]
Teffp = 8435 [1127] K [5.30σ]

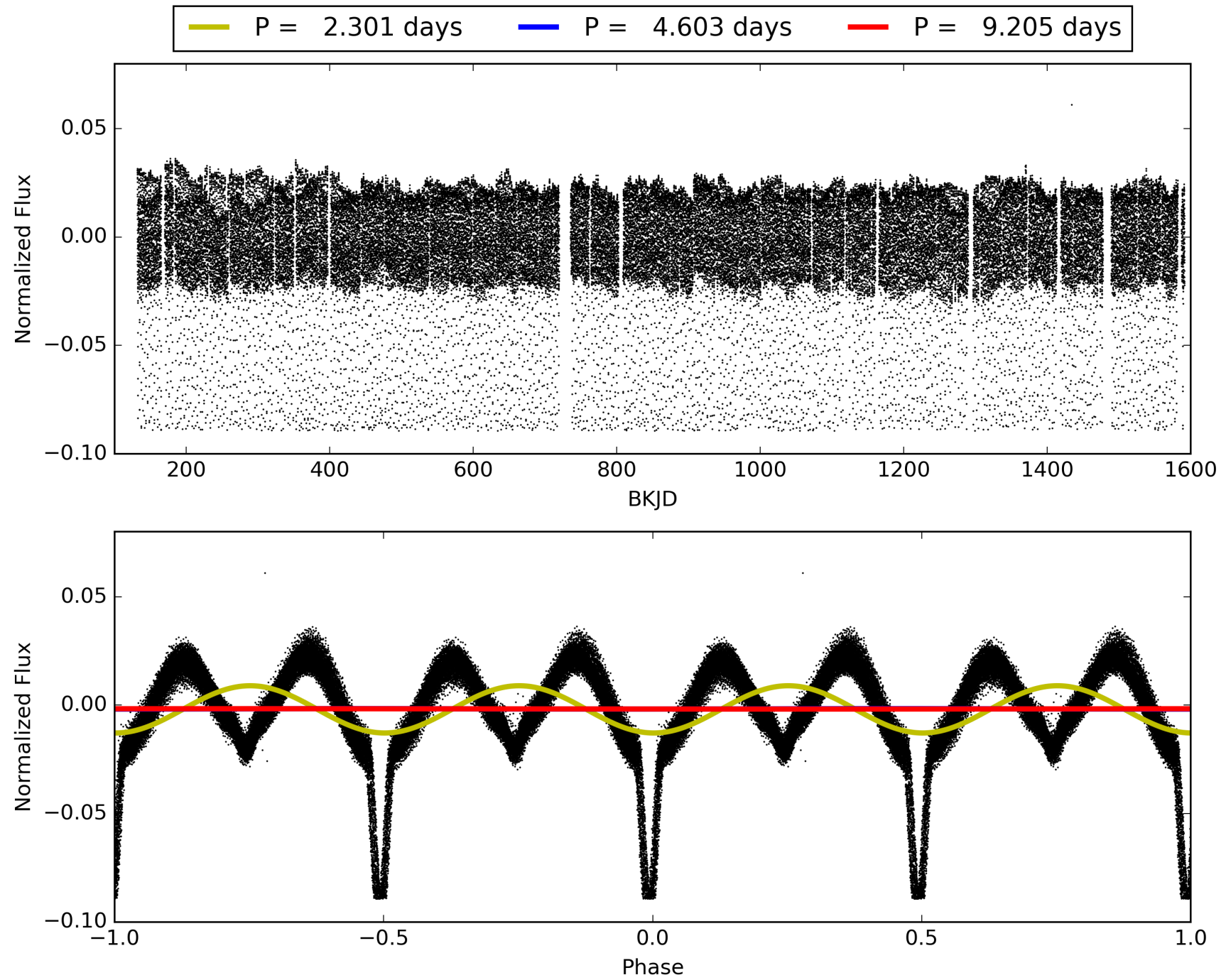
DV Diagnostic Results:

ShortPeriod-sig: 99.9% [3.45σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 0.98 [277/282]
GhostDiagnostic-chr: 0.1788
Centroid-sig: N/A
Centroid-so: 2.184 arcsec [4.27σ]
OotOffset-rm: 0.021 arcsec [0.31σ]
KicOffset-rm: 0.072 arcsec [1.05σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 1.00 [17/17]
DiffImageOverlap-fno: 0.00 [0/17]

TCE 008240109-03, PDC Light Curves

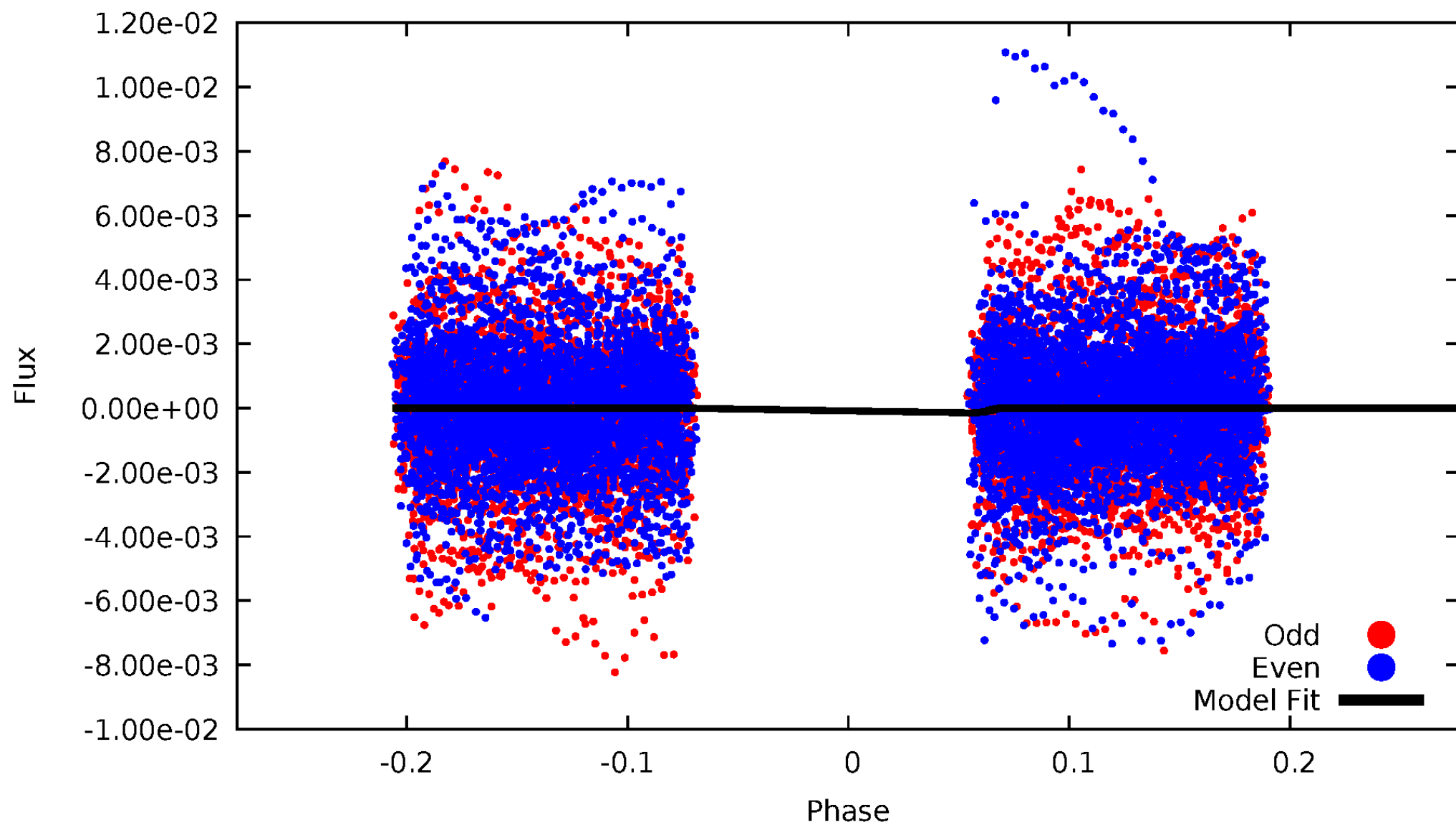


TCE 008240109-03



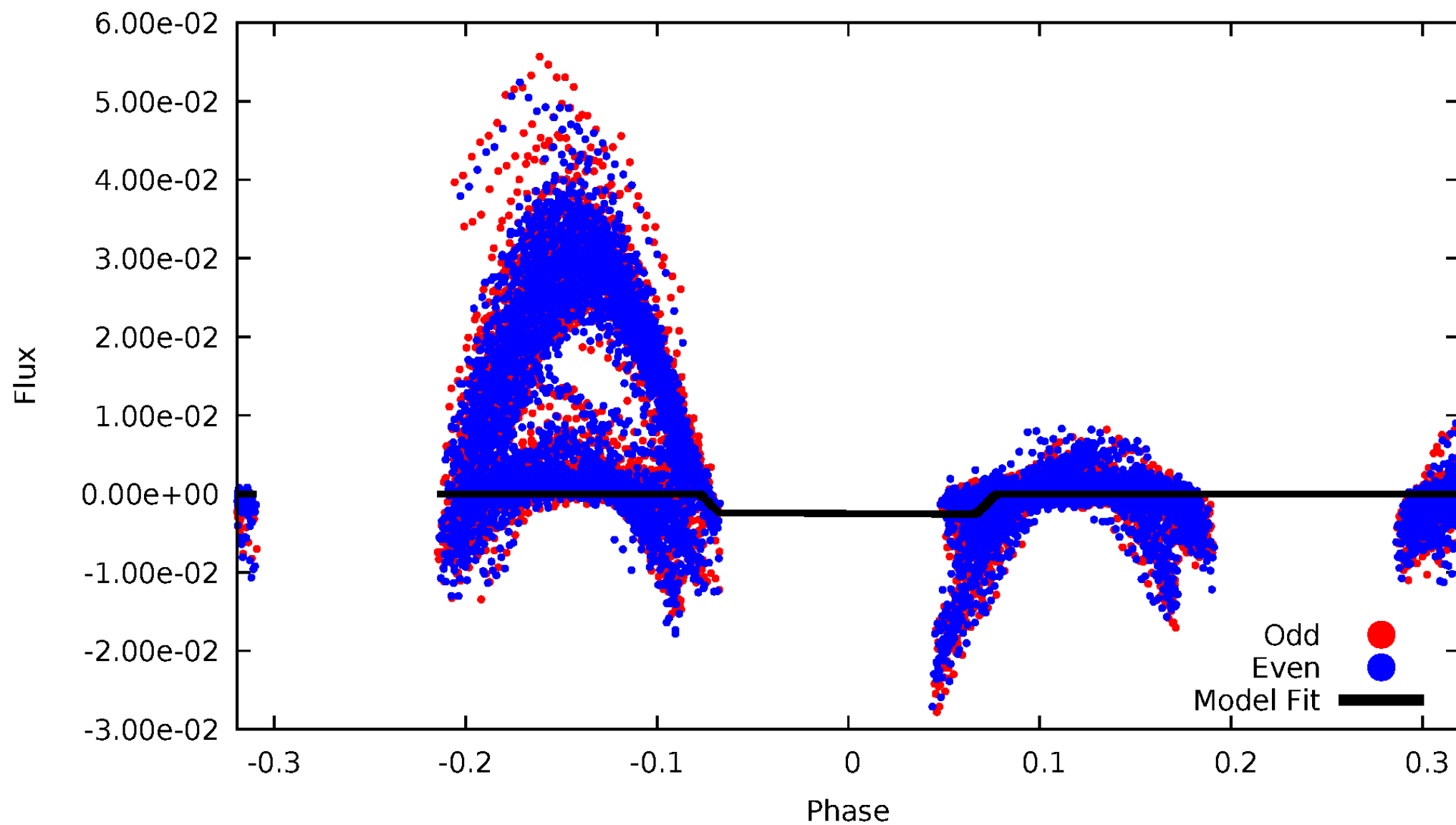
DV Odd/Even

TCE 008240109-03



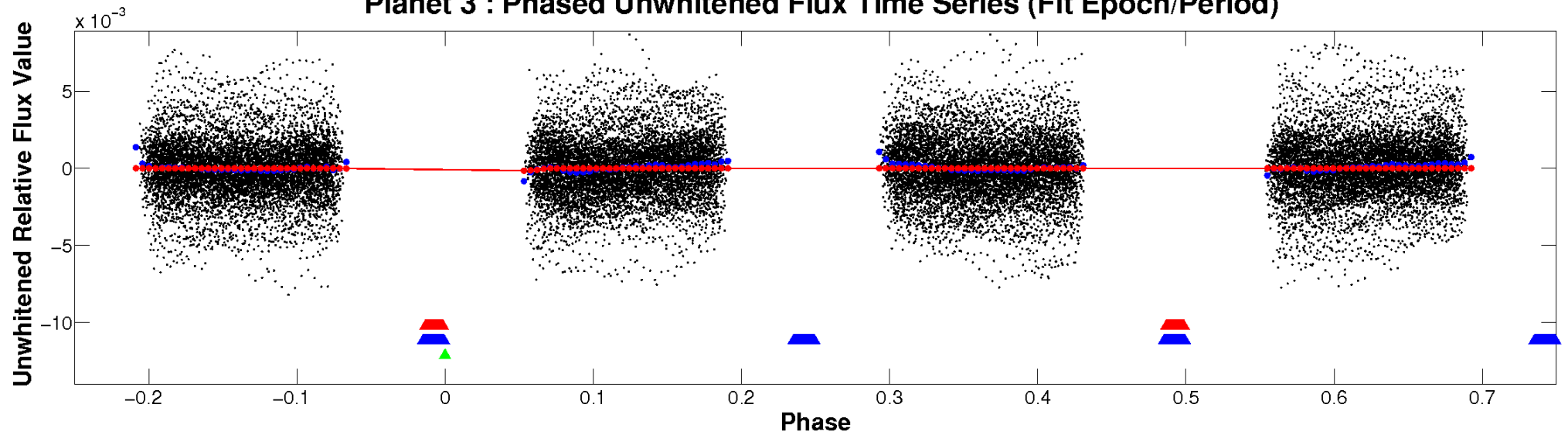
ALT Odd/Even

TCE 008240109-03

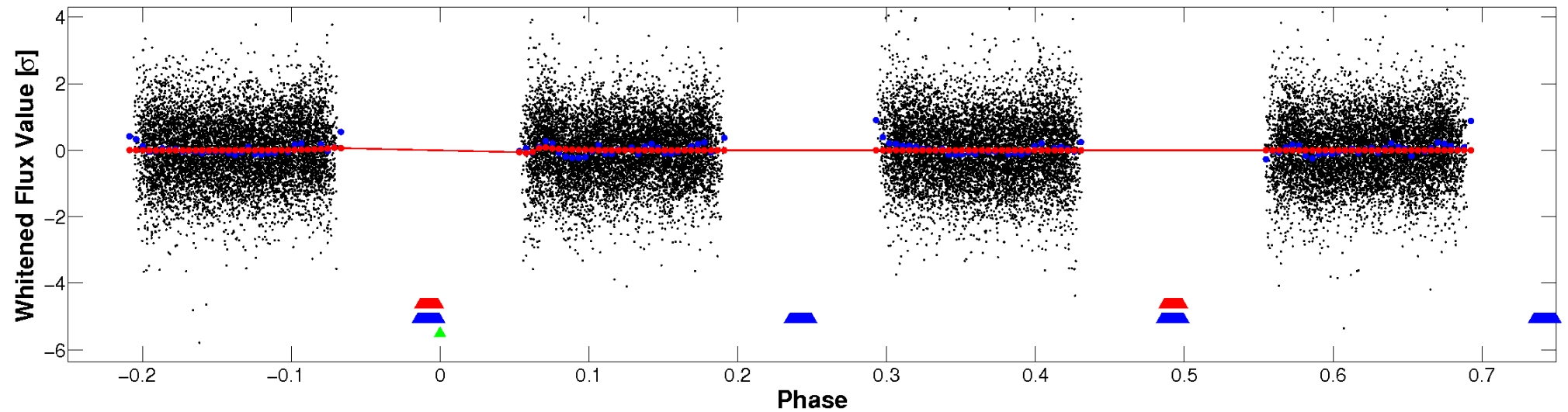


Non-Whitened Vs. Whitened Light Curve

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

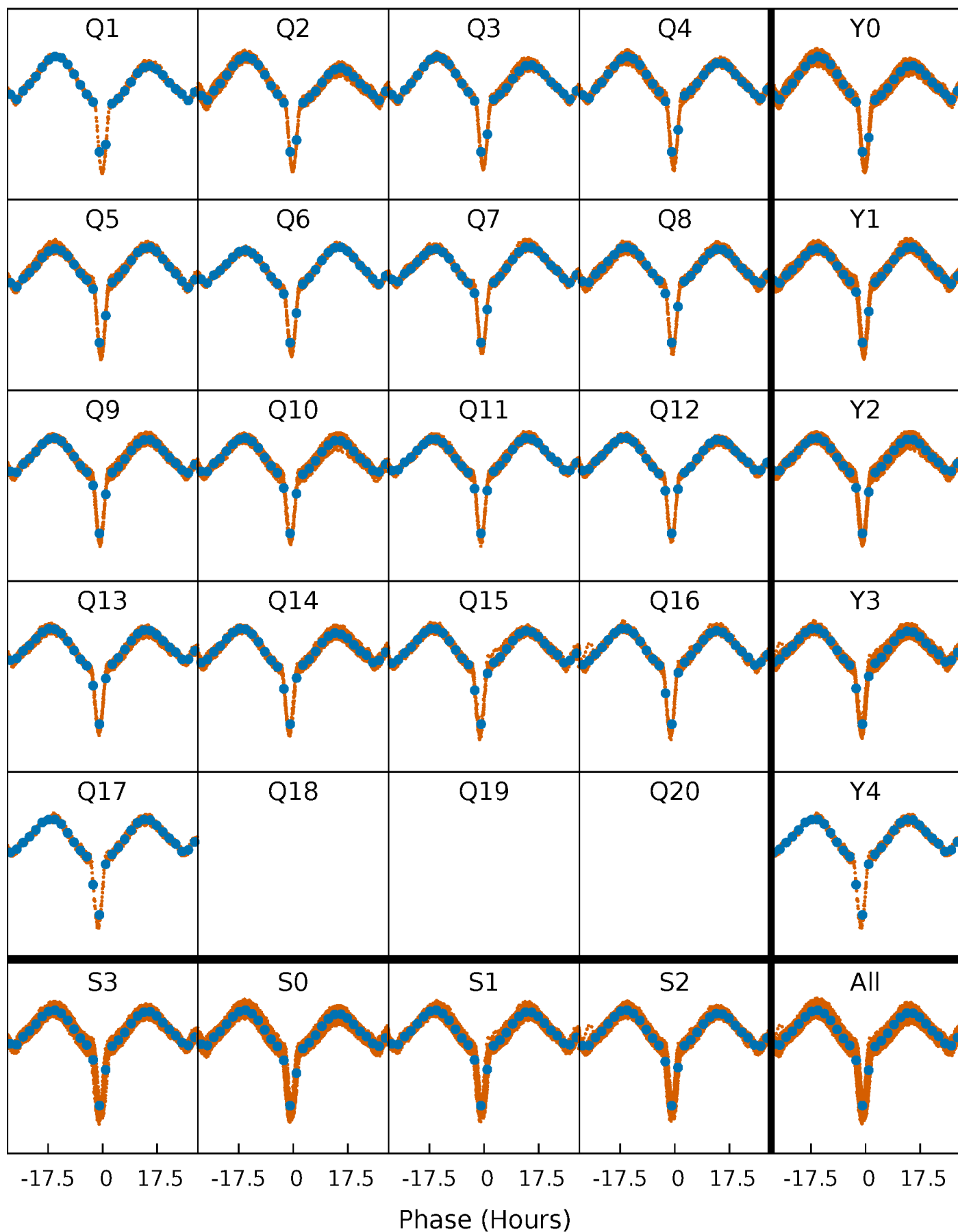


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



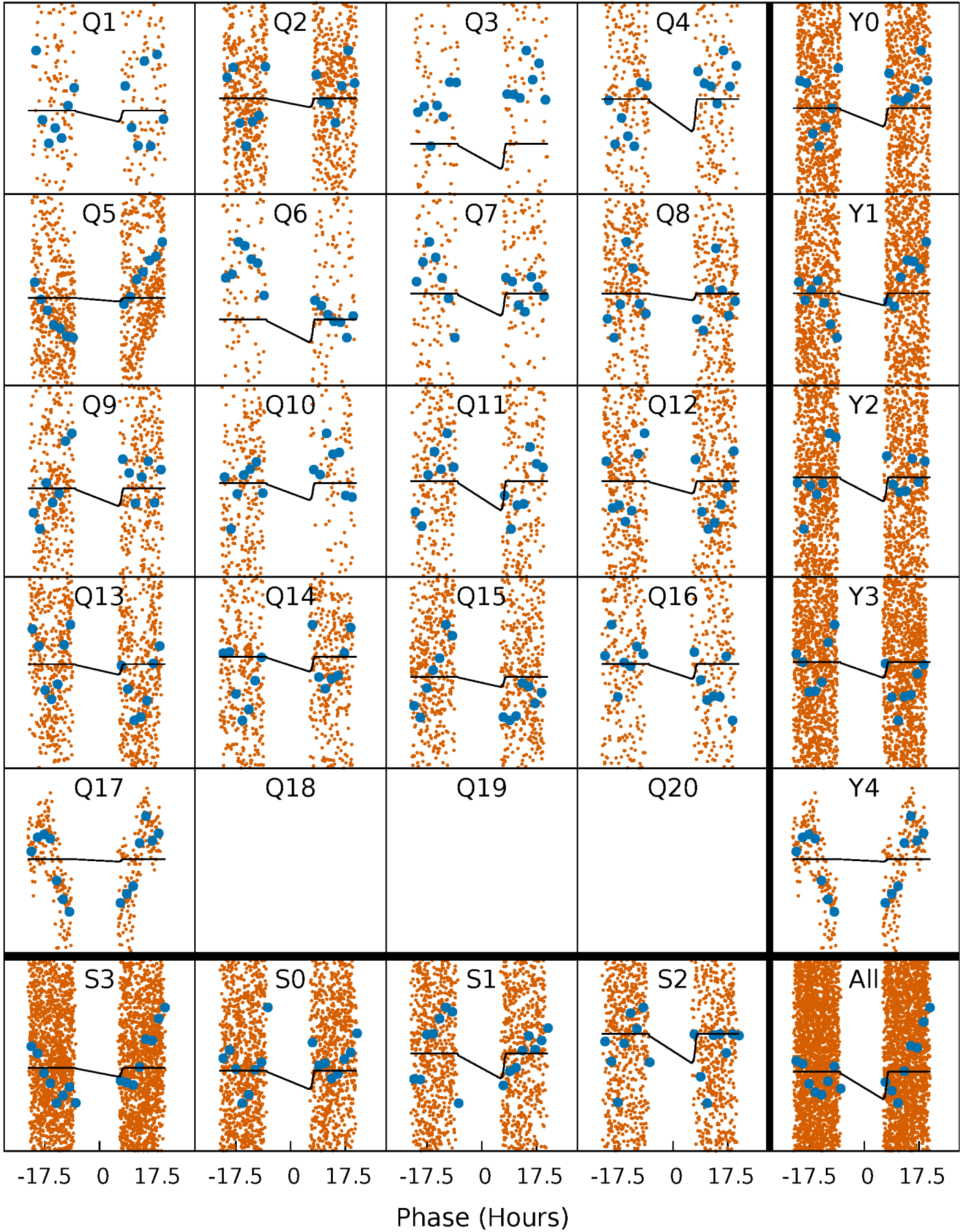
PDC Quarter-Phased Transit Curves

TCE 008240109-03 P= 4.602558 Days $T_0=134.498574$ (BKJD)



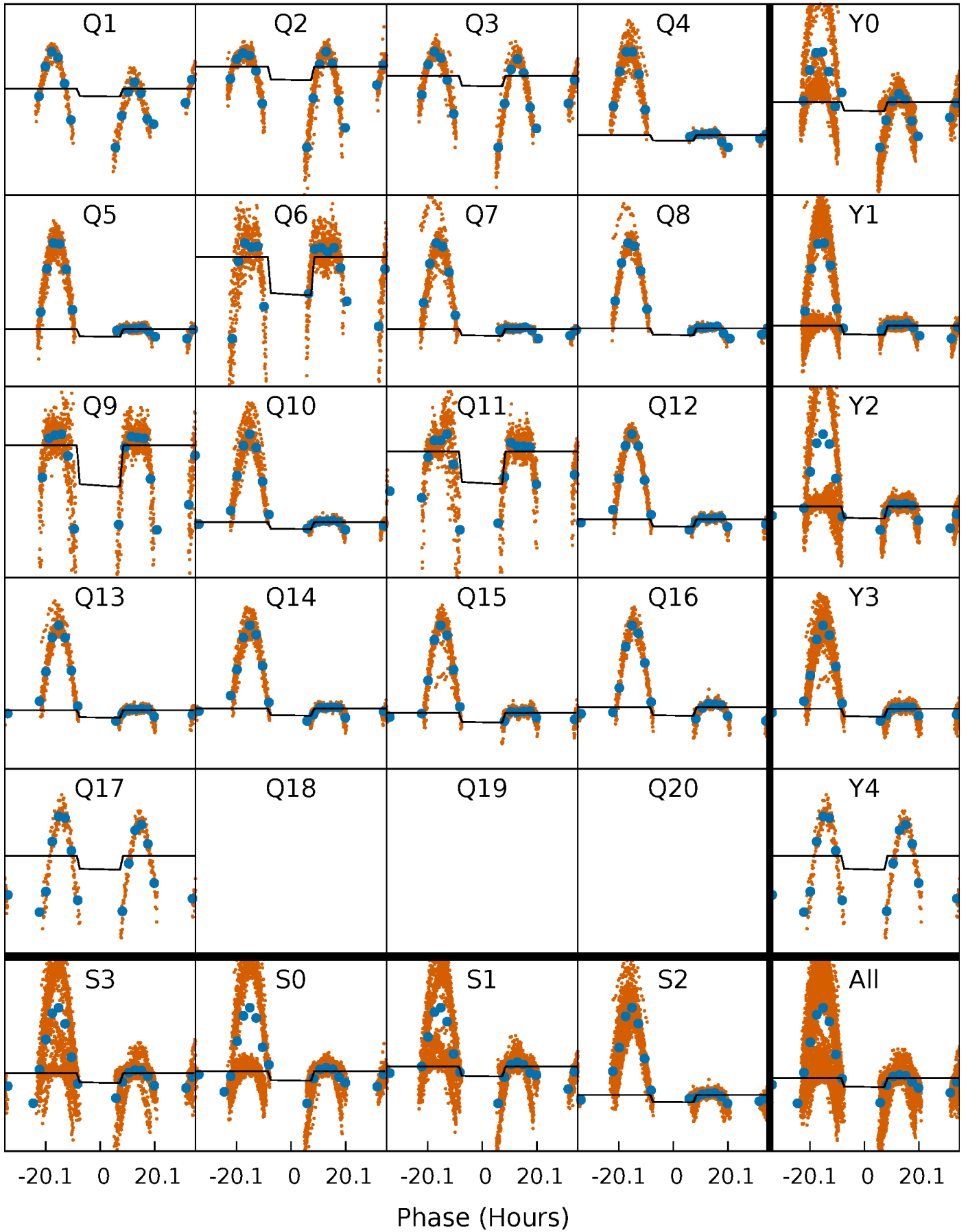
DV Quarter-Phased Transit Curves

TCE 008240109-03 P= 4.602558 Days $T_0=134.498574$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

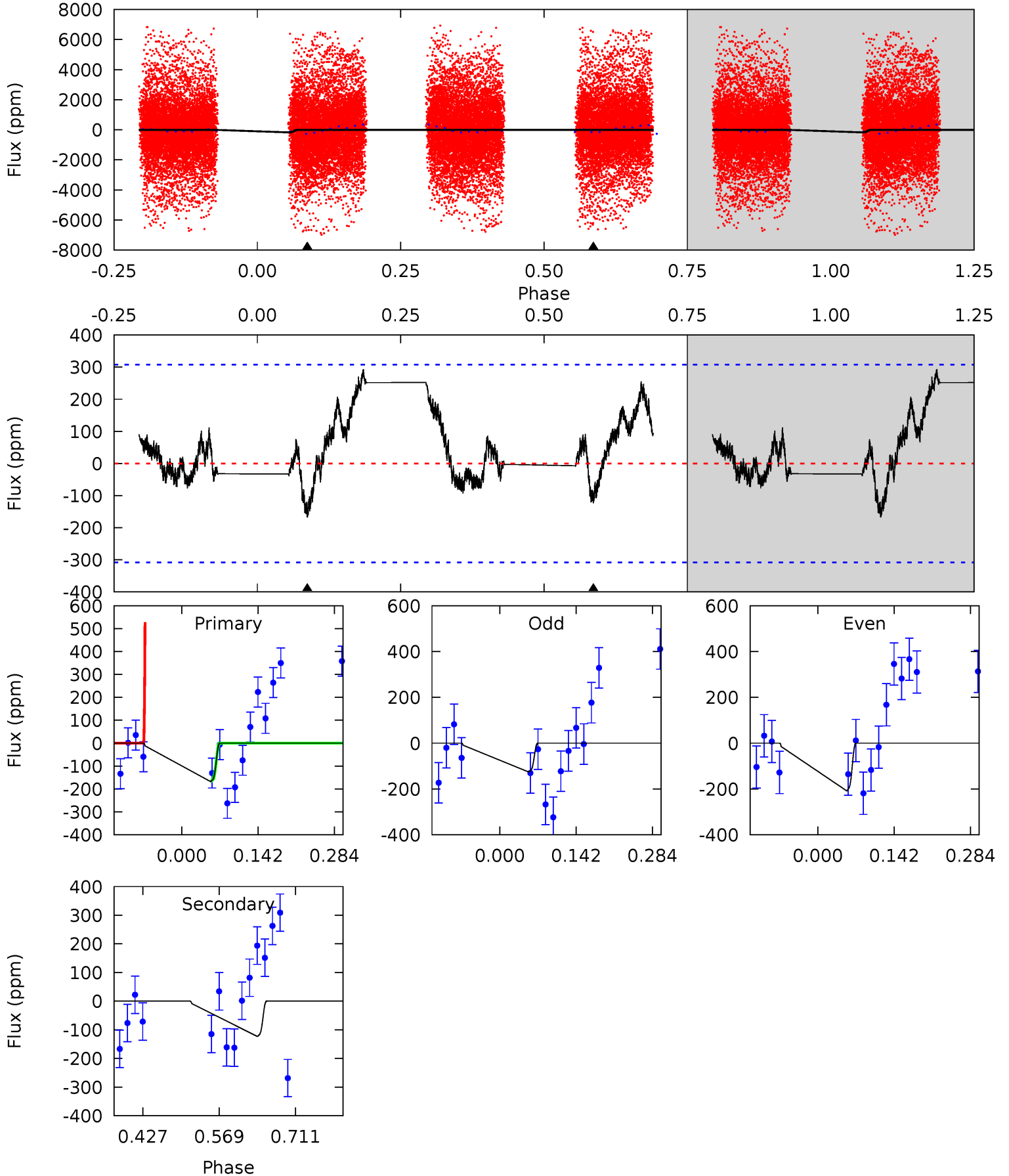
TCE 008240109-03 P= 4.602026 Days $T_0=134.599862$ (BKJD)



DV Model-Shift Uniqueness Test

008240109-03, P = 4.602558 Days, E = 129.896016 Days

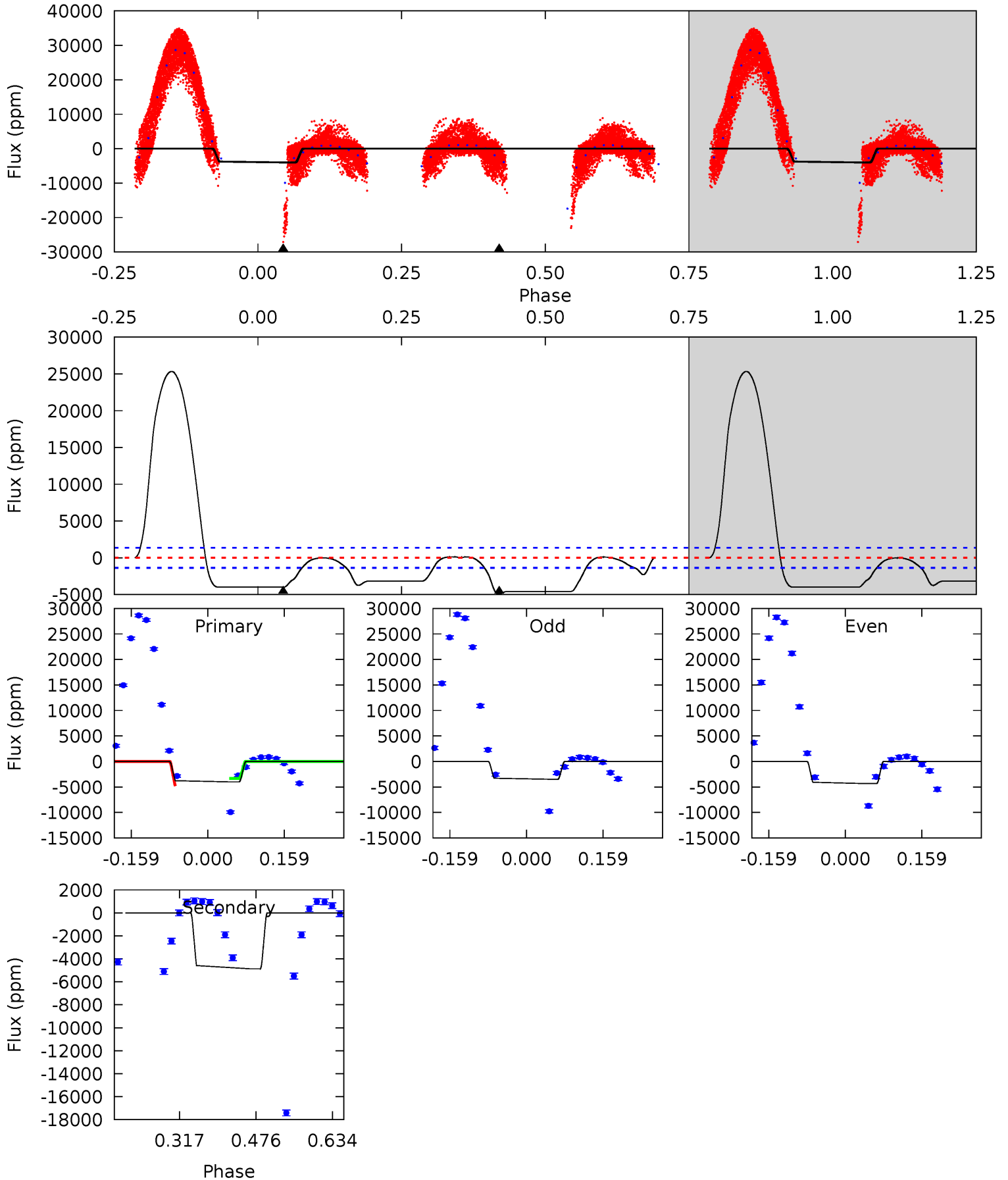
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2.45	1.80	0	0	4.49	1.47	0.94	2.45	2.45	1.80	1.80	0.61	2.38	0.64	0.92



Alt Model-Shift Uniqueness Test

008240109-03, P = 4.602026 Days, E = 129.997836 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.0	15.8	0	0	4.47	1.41	31.1	13.0	13.0	15.8	15.8	1.39	1.60	0.84	4.13



Stellar Parameters For KIC 008240109

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	7970^{+221}_{-332}	$3.871^{+0.336}_{-0.105}$	$-0.200^{+0.200}_{-0.350}$	$2.652^{+0.351}_{-0.983}$	$1.906^{+0.101}_{-0.456}$	$0.144^{+0.347}_{-0.037}$
	+3%/-4%	+9%/-3%	+100%/-175%	+13%/-37%	+5%/-24%	+241%/-26%
Source	KIC0	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 008240109-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-123 ± 69	$3.74^{+1.13}_{-1.03}$	3021^{+204}_{-277}	6903^{+1752}_{-1503}	20^{+26}_{-13}
Alt.	-4865 ± 307	$13.97^{+2.14}_{-2.57}$	3010^{+206}_{-267}	9799^{+712}_{-643}	61^{+27}_{-15}

T_{max} = Theoretical Maximum Planetary Temperature

T_{obs} = Observed Planetary Temperature (Assuming $A=0.3$)

A_{obs} = Observed Albedo (Assuming $T=0$)

If a secondary eclipse is present, the system is likely an EB if $T_{\text{obs}} \gg T_{\text{max}}$ AND $A_{\text{obs}} \gg 1.0$

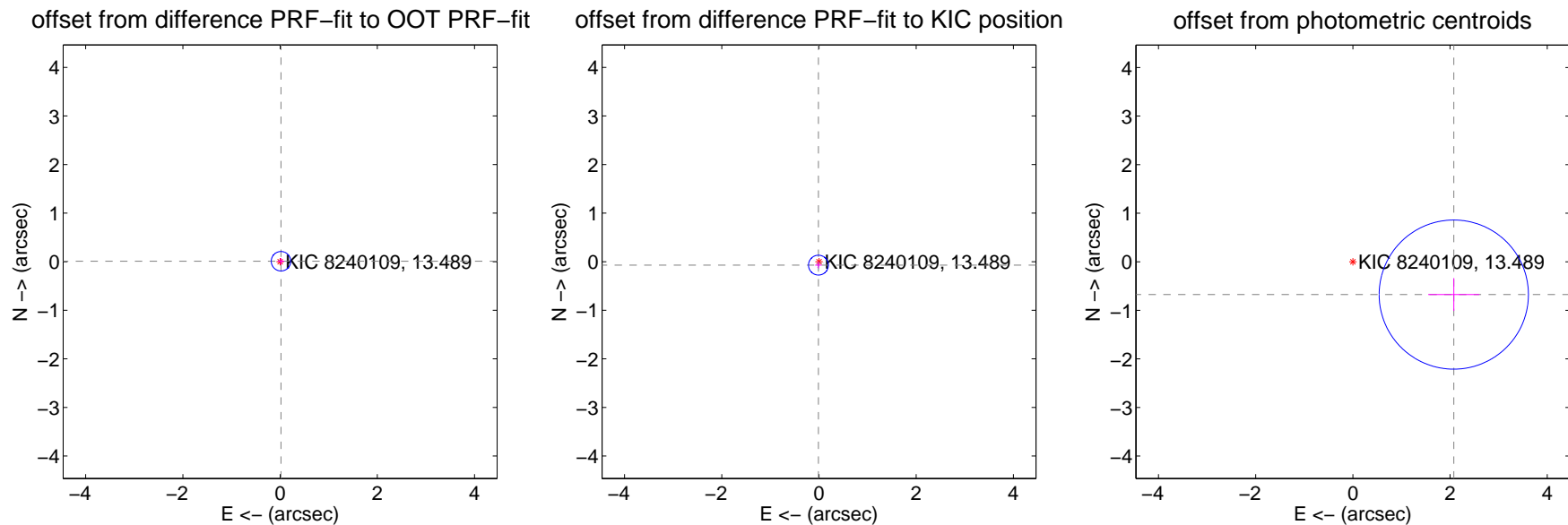
DV Centroid Data

Supplemental centroid analysis for 008240109-03. Kepler magnitude: 13.49. Transit SNR 2.77

There are 17 quarters with good PRF difference image offsets

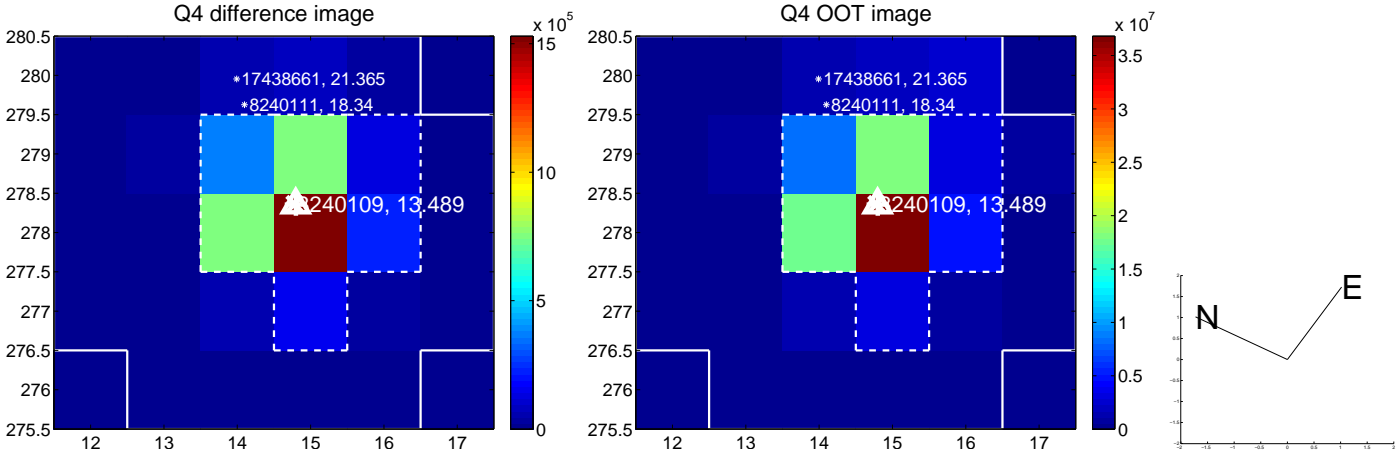
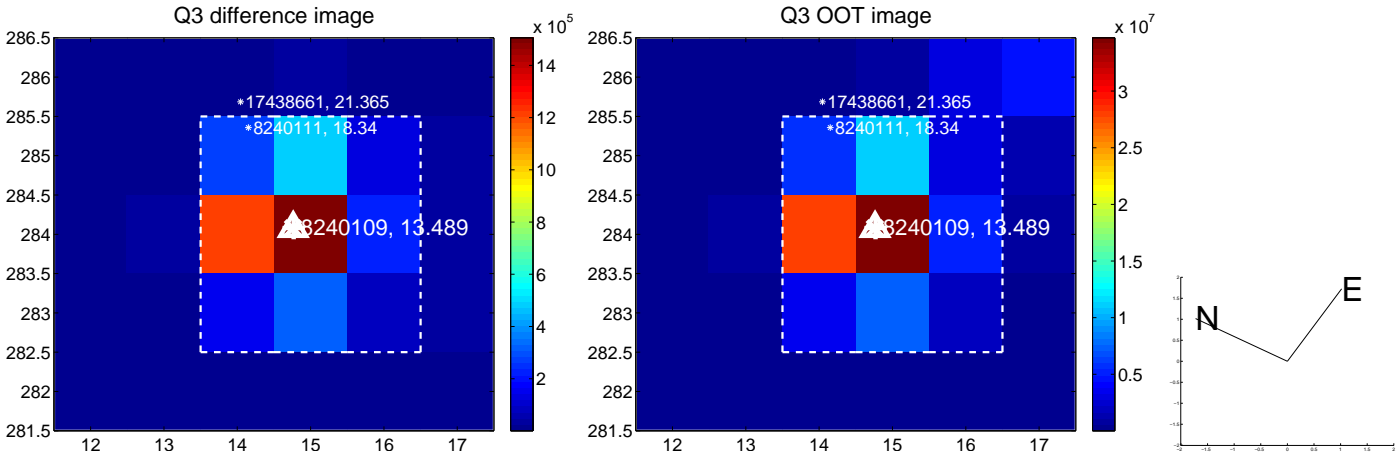
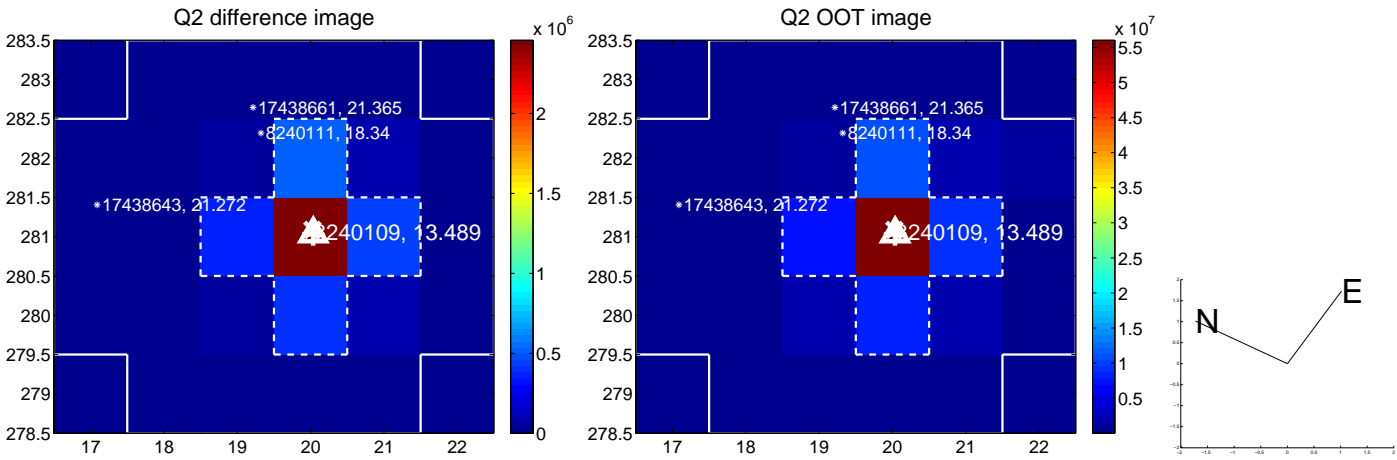
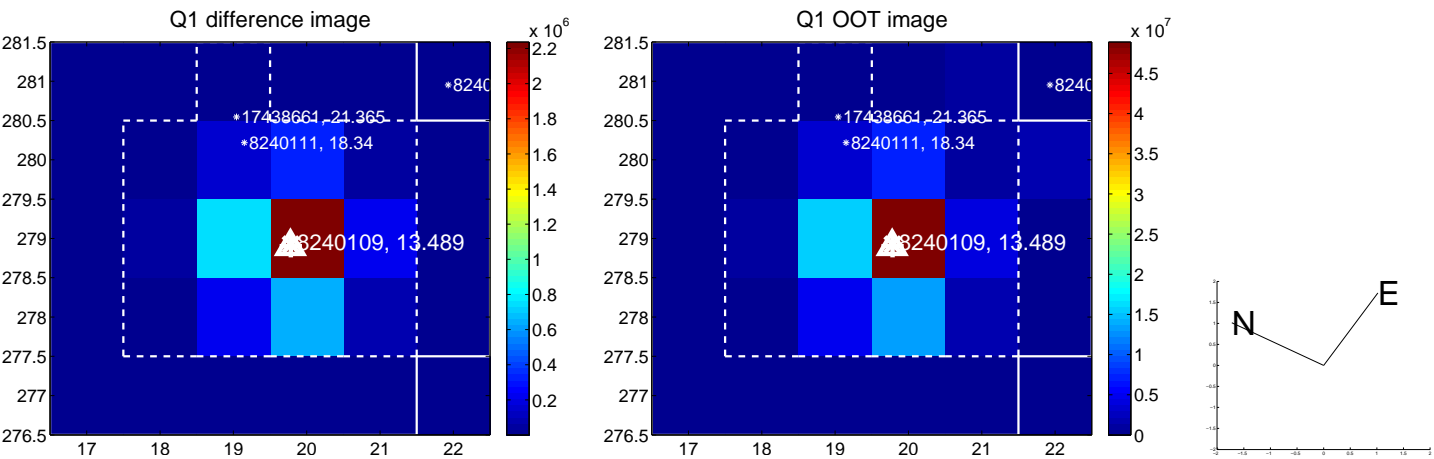
The direct PRF centroid is offset from the target star catalog position by about 0.05 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.021 ± 0.067	0.31	-0.018 ± 0.067	0.009 ± 0.067
PRF-fit source offset from KIC position	0.072 ± 0.068	1.05	0.011 ± 0.067	-0.071 ± 0.068
photometric centroid source offset	2.18 ± 0.51	4.27	-2.08 ± 0.53	-0.68 ± 0.34

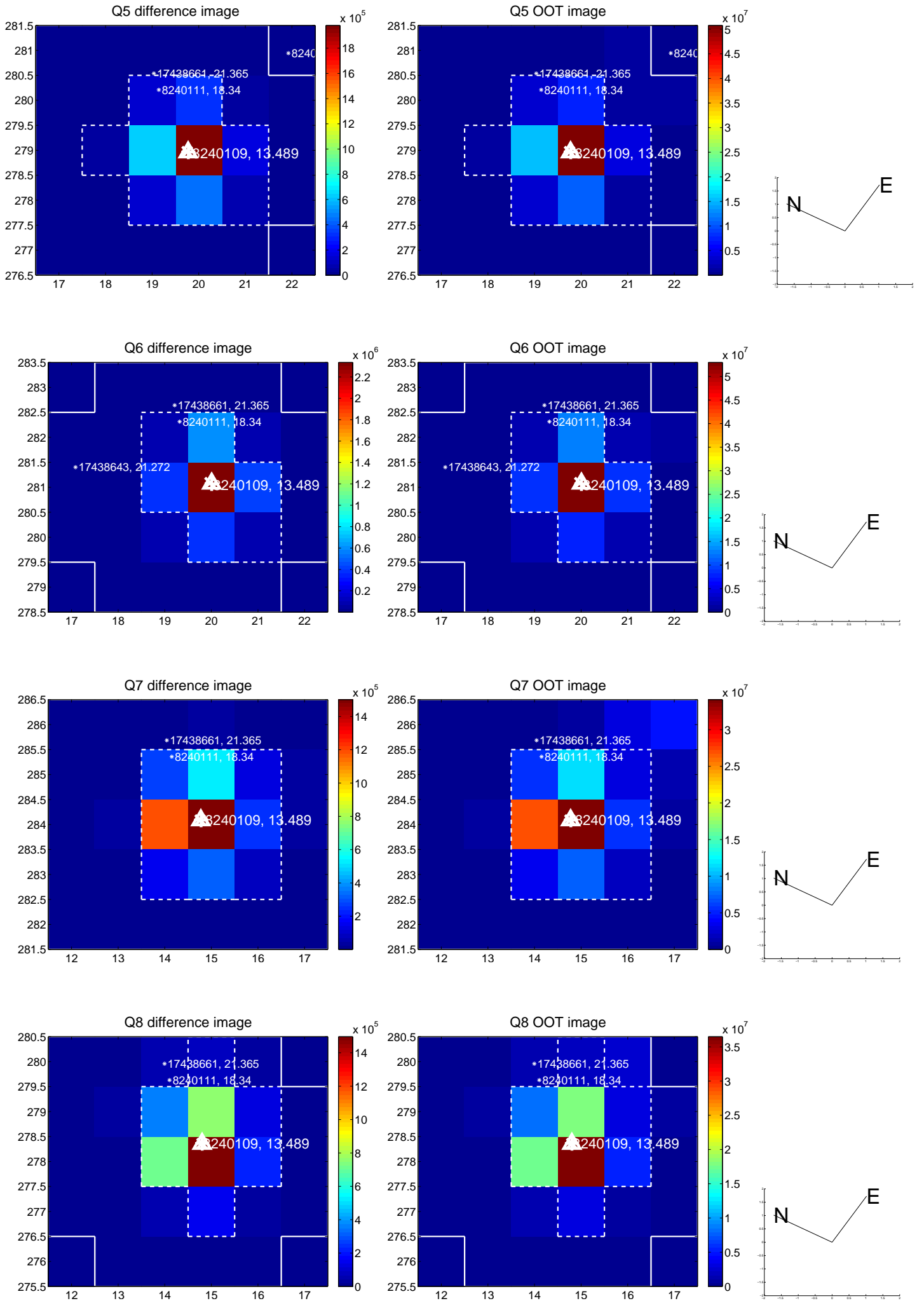


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

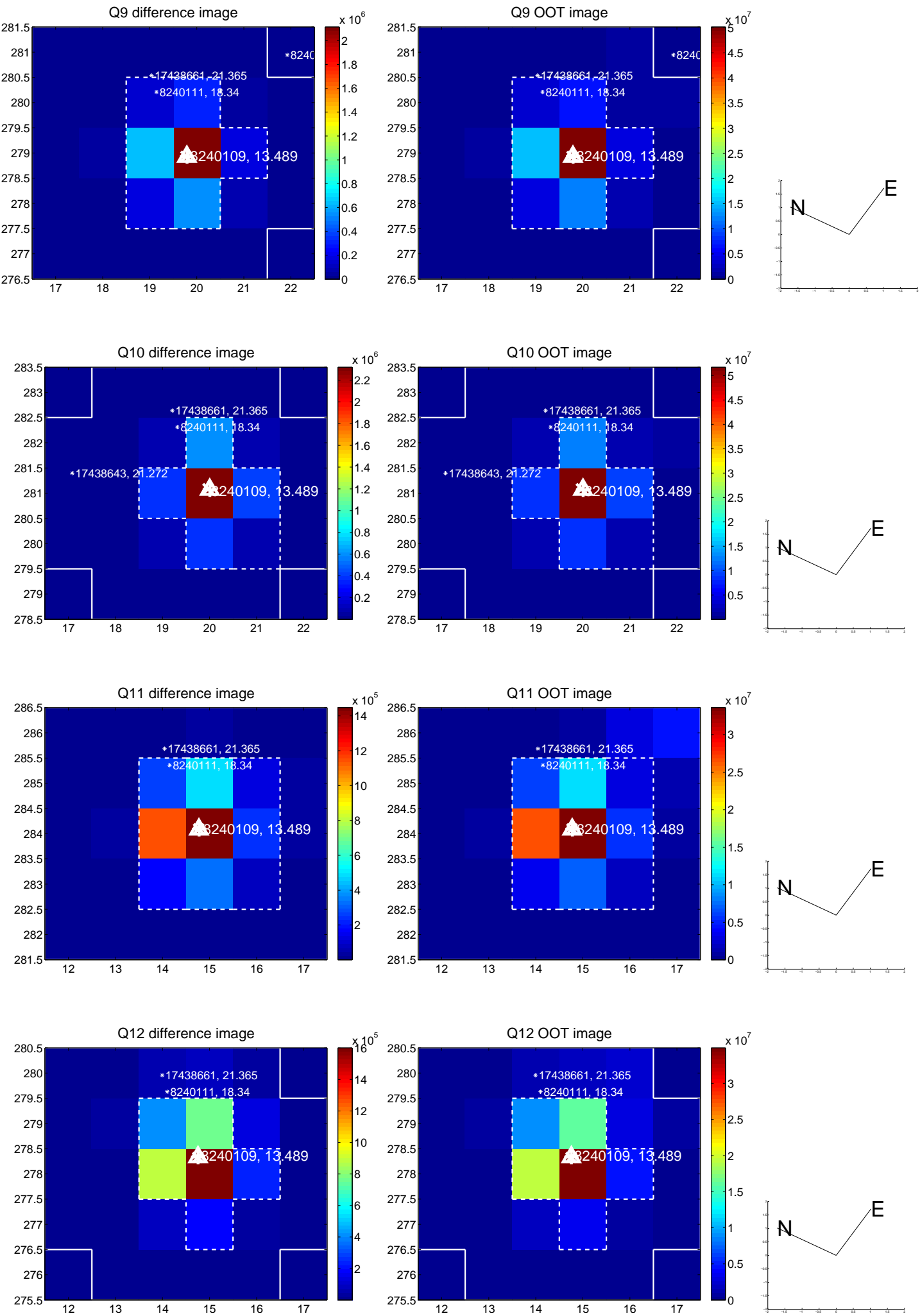
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



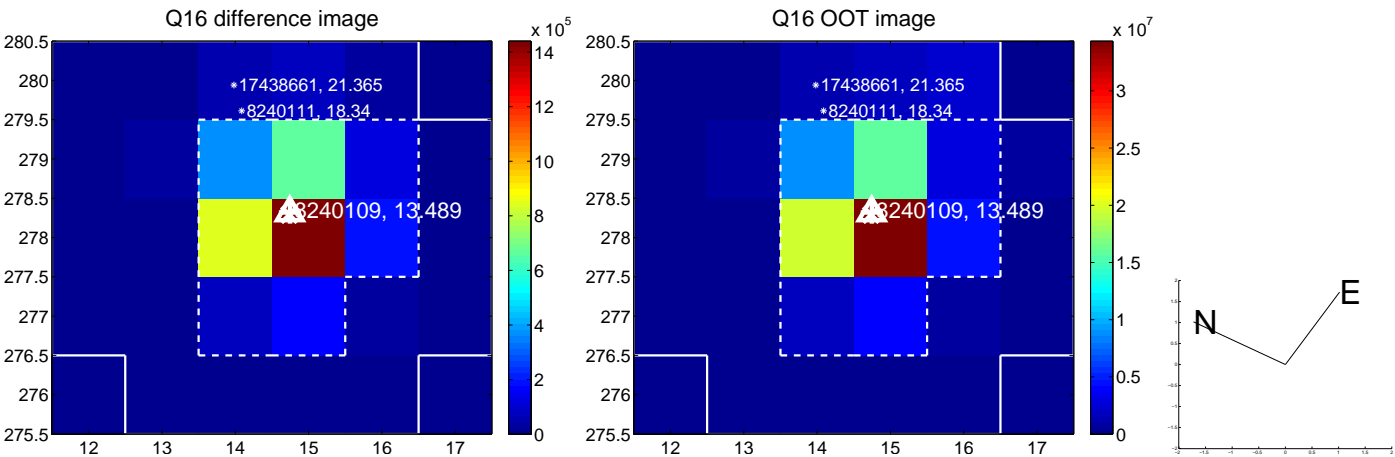
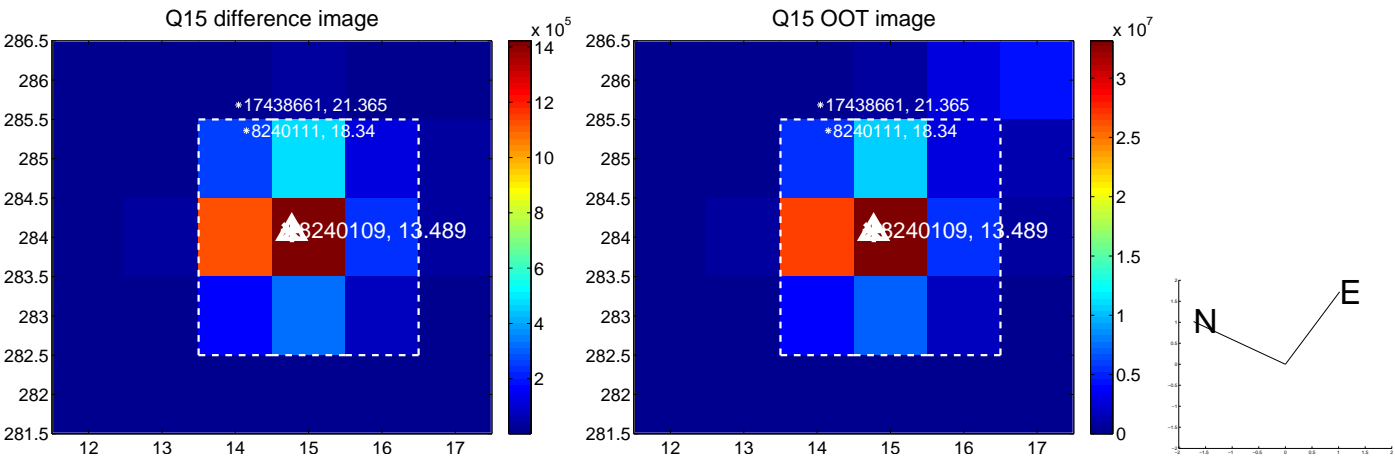
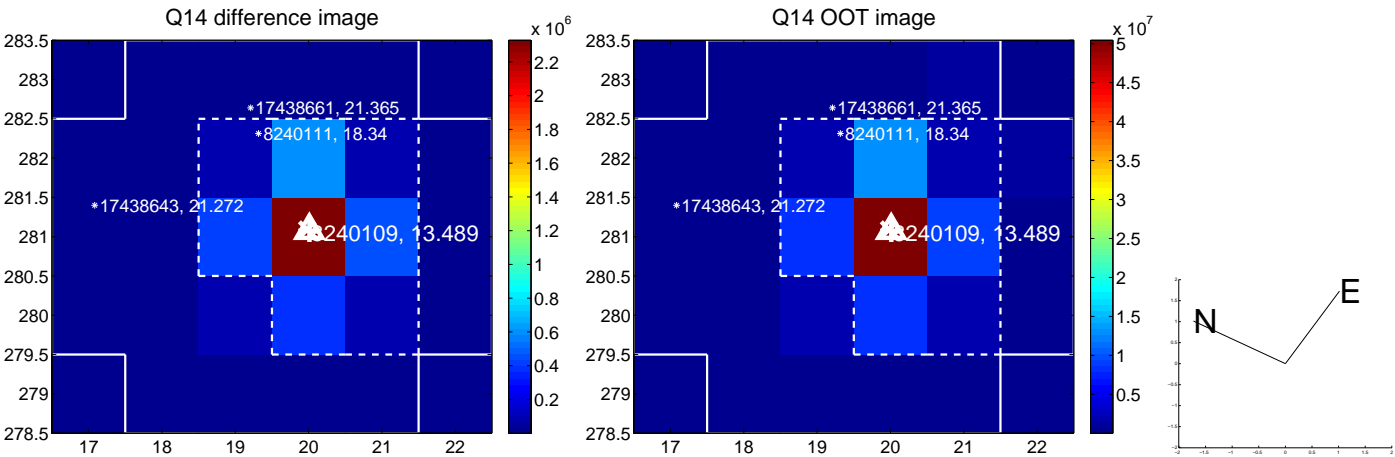
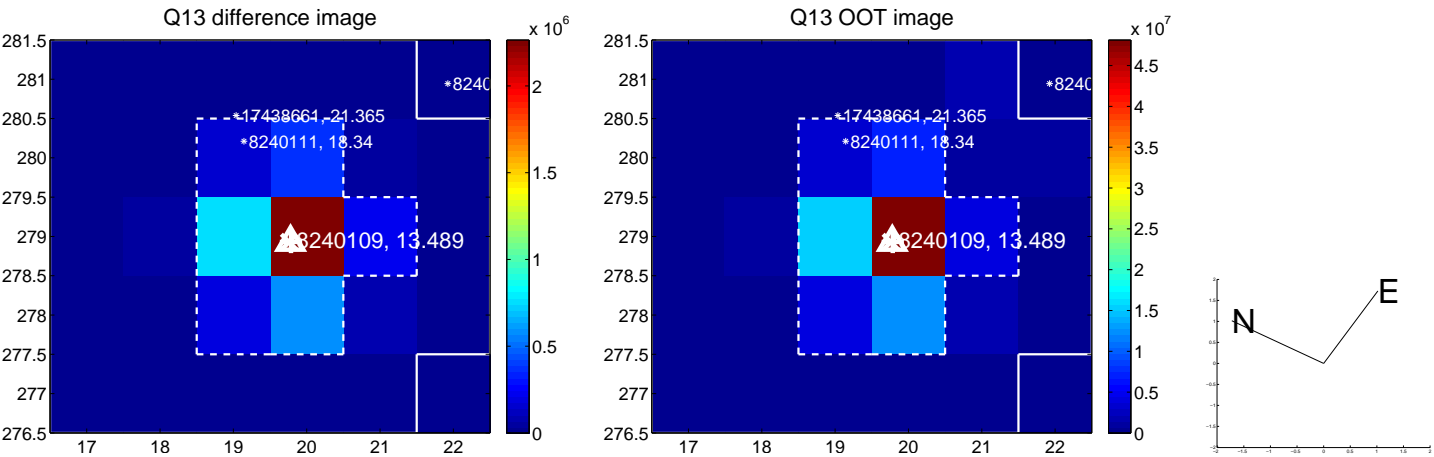
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image

Declination

