

KIC 005209234

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})
005209234-01	OBS	No	1.045451	131.913275	109.1	4.883	14.0	14.2	2.17	6202	2.62	13778.09
005209234-02	OBS	No	0.573180	131.515687	192.6	1.623	12.4	15.1	2.17	6202	3.53	30704.75

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005209234-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV
005209234-02	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT

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

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

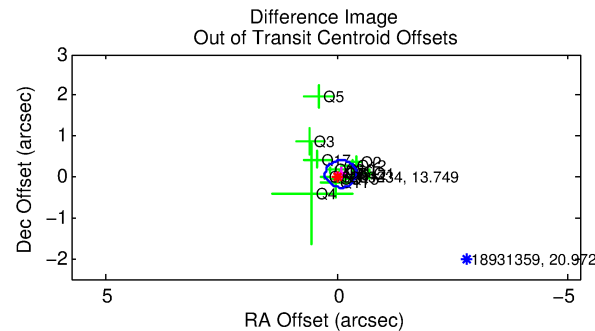
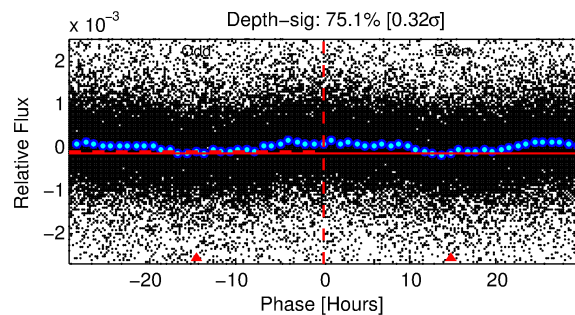
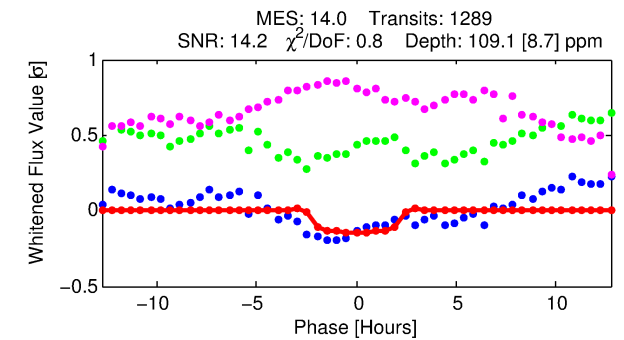
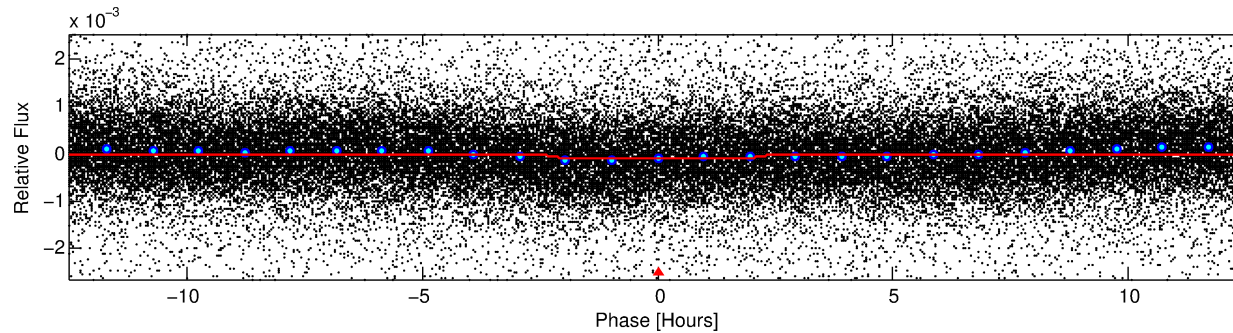
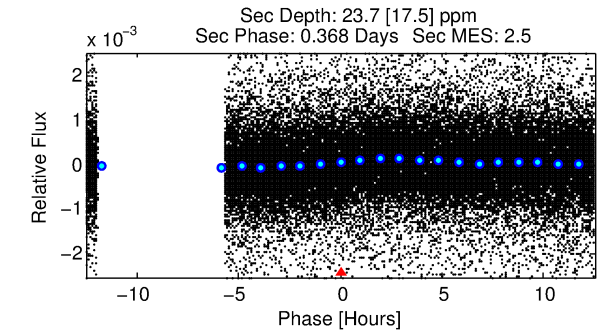
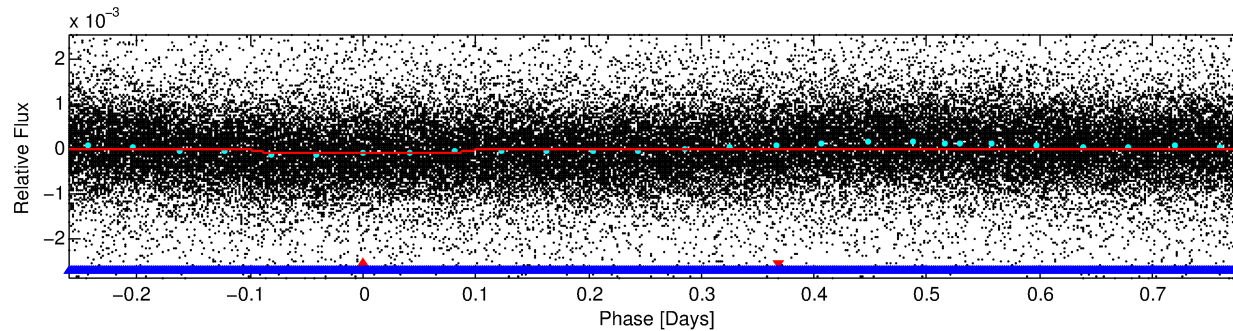
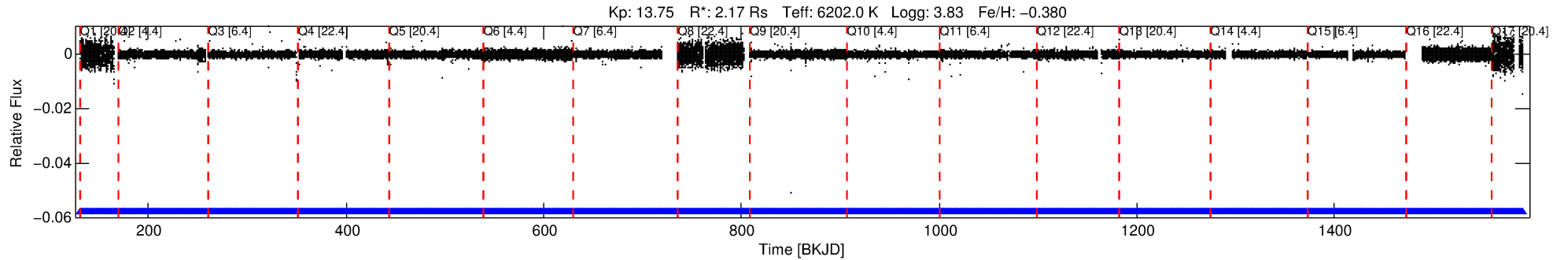
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 005209234-01

No Significant Match Found

DV One-Page Summary

KIC: 5209234 Candidate: 1 of 2 Period: 1.045 d



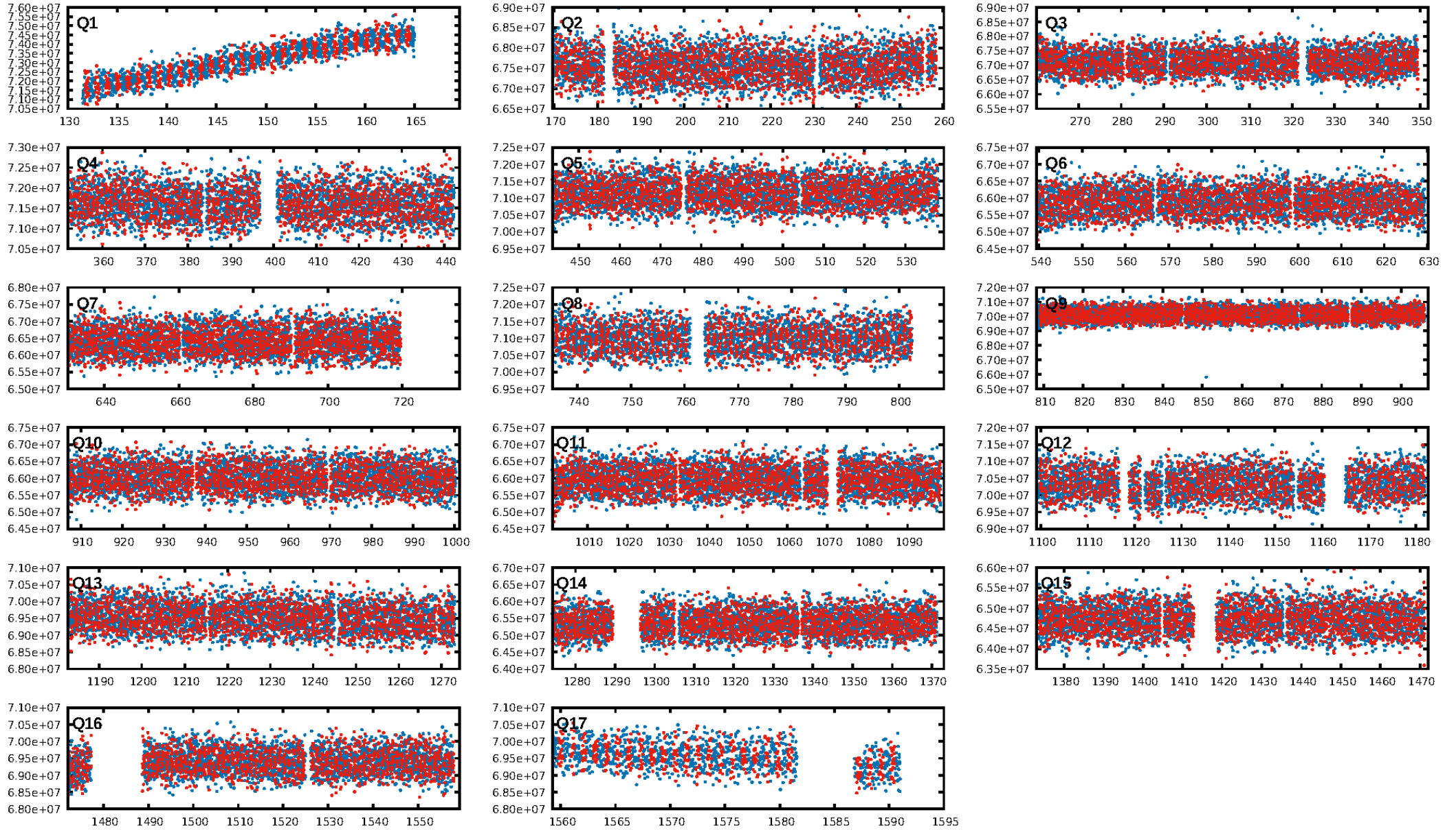
DV Fit Results:

Period = 1.04545 [0.00001] d
Epoch = 131.9133 [0.0032] BKJD
Rp/R* = 0.0111 [0.0028]
a/R* = 1.23 [0.58]
b = 0.88 [0.35]
Seff = 13778.09 [11994.35]
Teff = 2763 [601] K
Rp = 2.62 [1.40] Re
a = 0.0213 [0.0108] AU
Ag = 0.86 [1.07] [-0.13σ]
Teffp = 4113 [936] K [1.21σ]

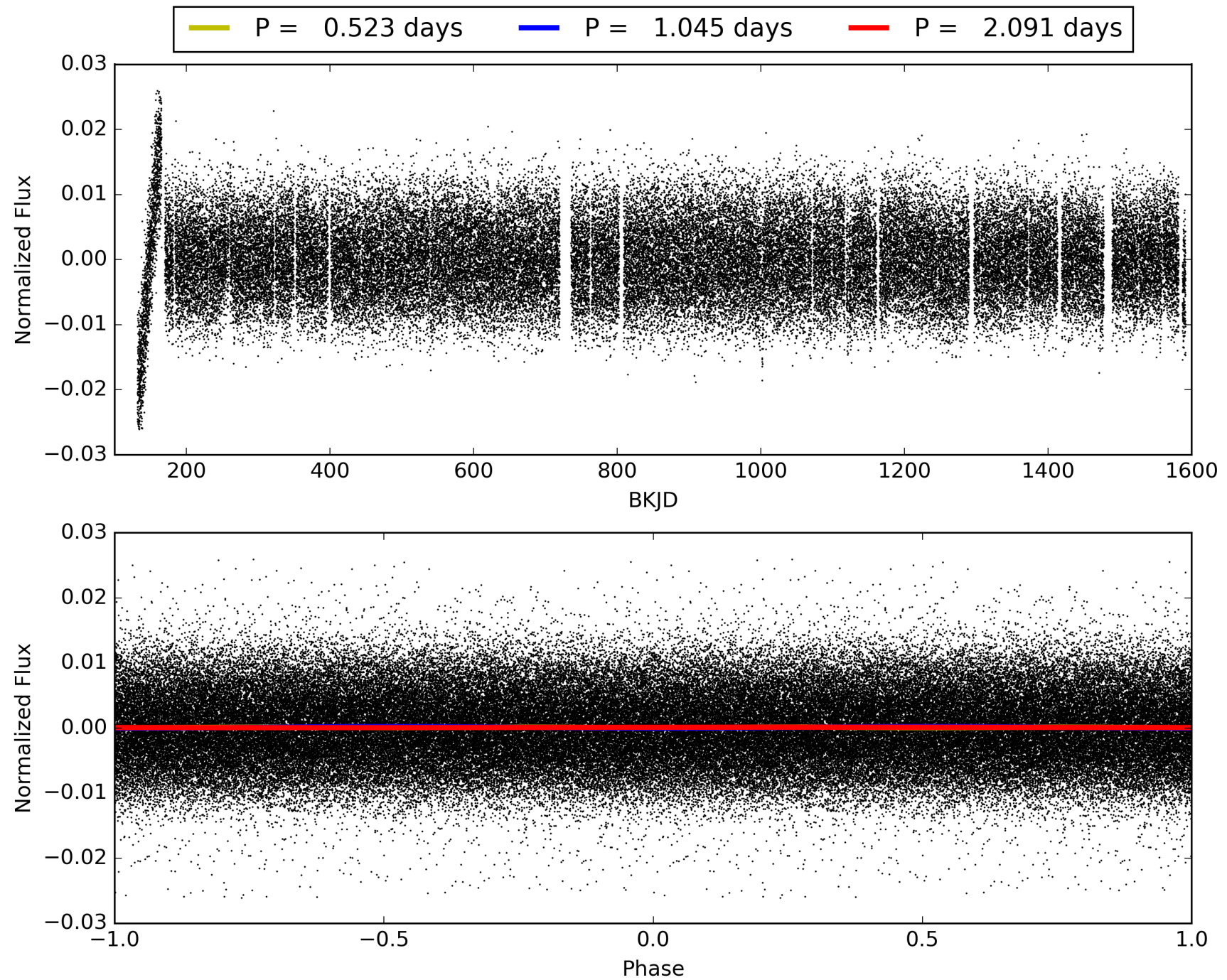
DV Diagnostic Results:

ShortPeriod-sig: 97.2% [2.20σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 2.71e-43
RollingBand-fgt: 1.00 [1232/1232]
GhostDiagnostic-chr: 0.6715
Centroid-sig: N/A
Centroid-so: 0.618 arcsec [2.15σ]
OotOffset-rm: 0.106 arcsec [0.96σ]
KicOffset-rm: 0.075 arcsec [0.57σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 0.82 [14/17]
DiffImageOverlap-fno: 0.00 [0/17]

TCE 005209234-01, PDC Light Curves

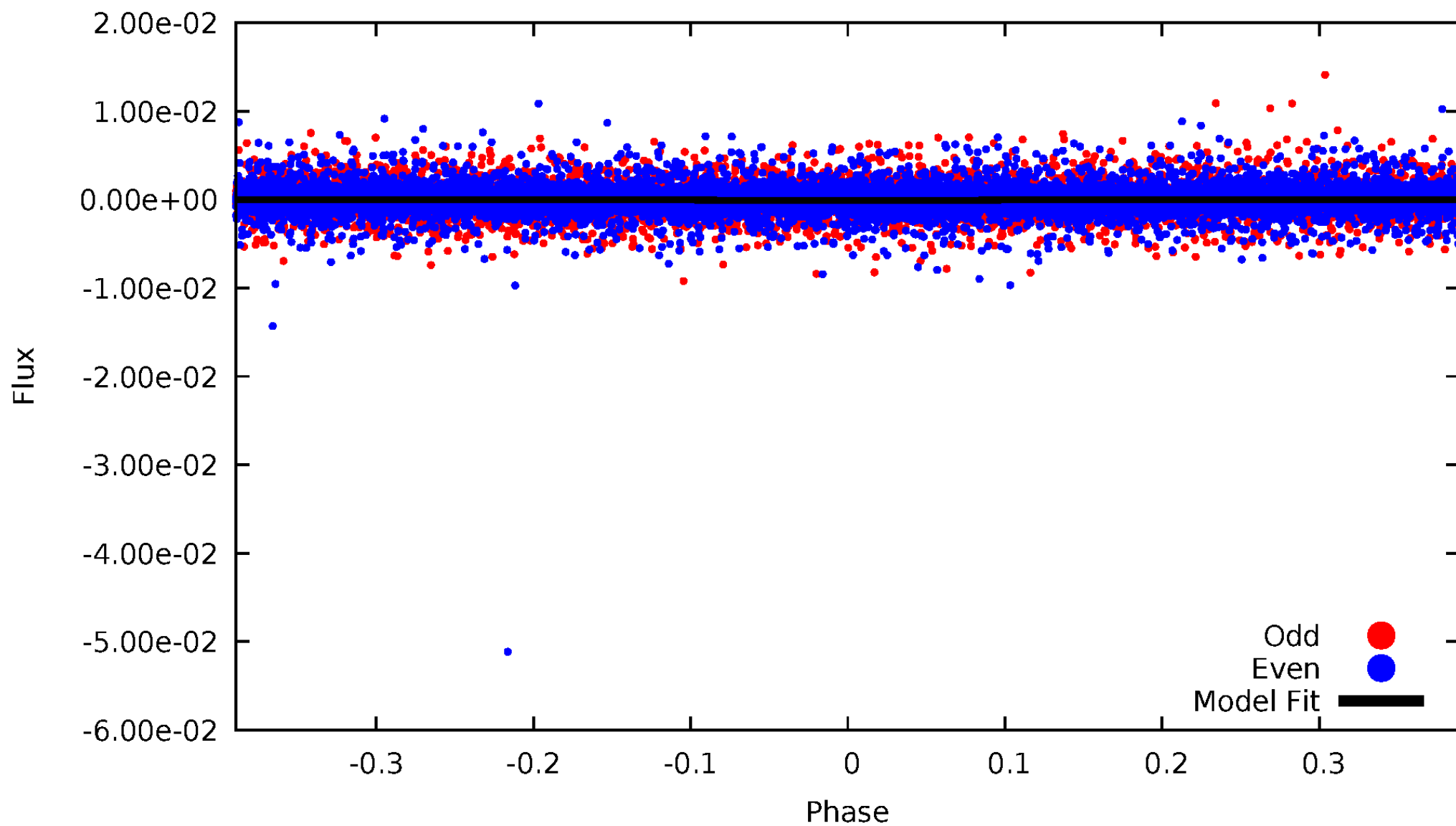


TCE 005209234-01



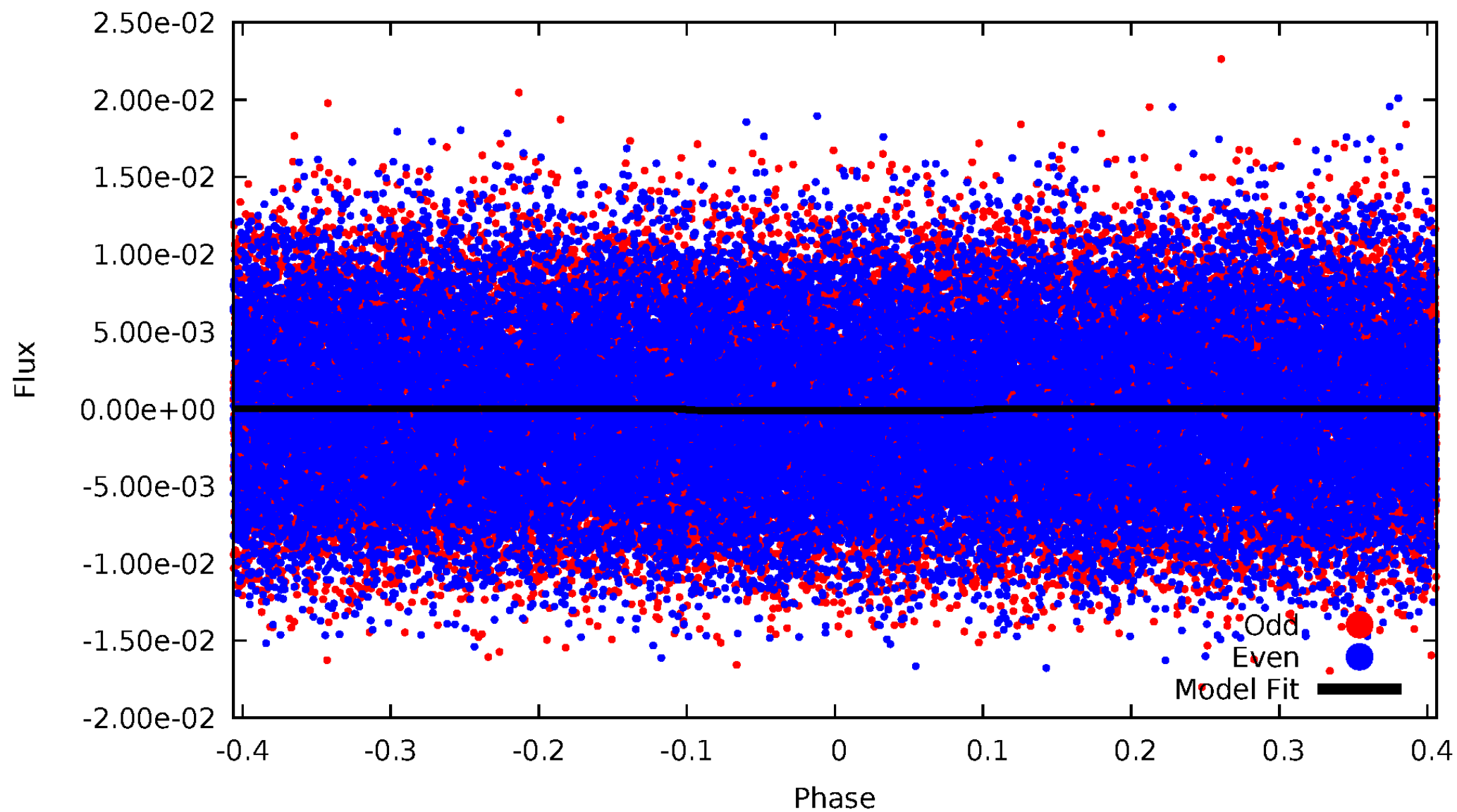
DV Odd/Even

TCE 005209234-01



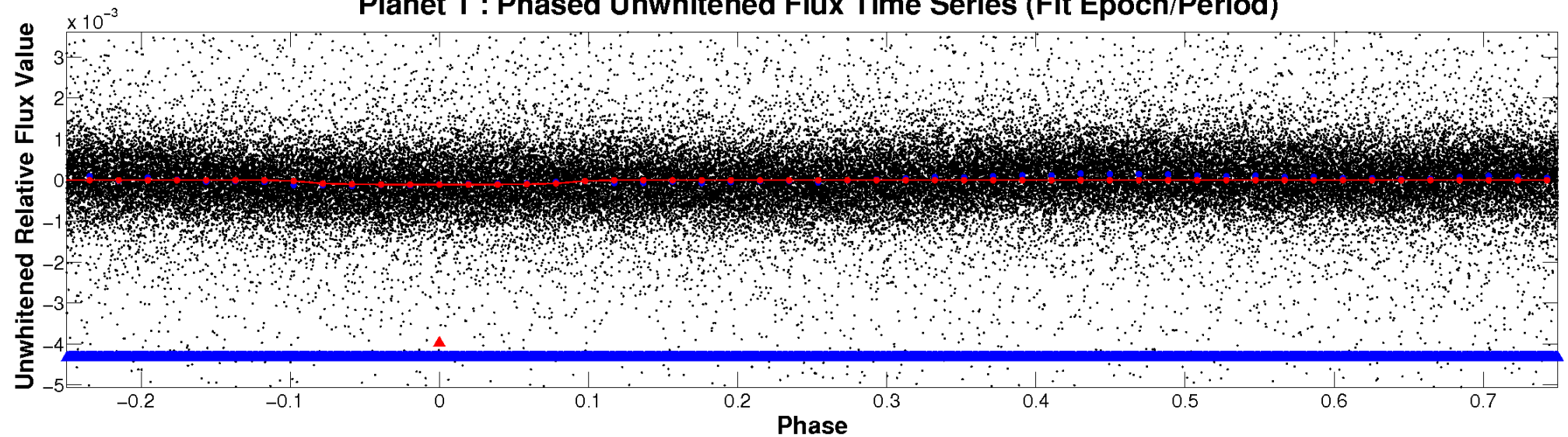
ALT Odd/Even

TCE 005209234-01

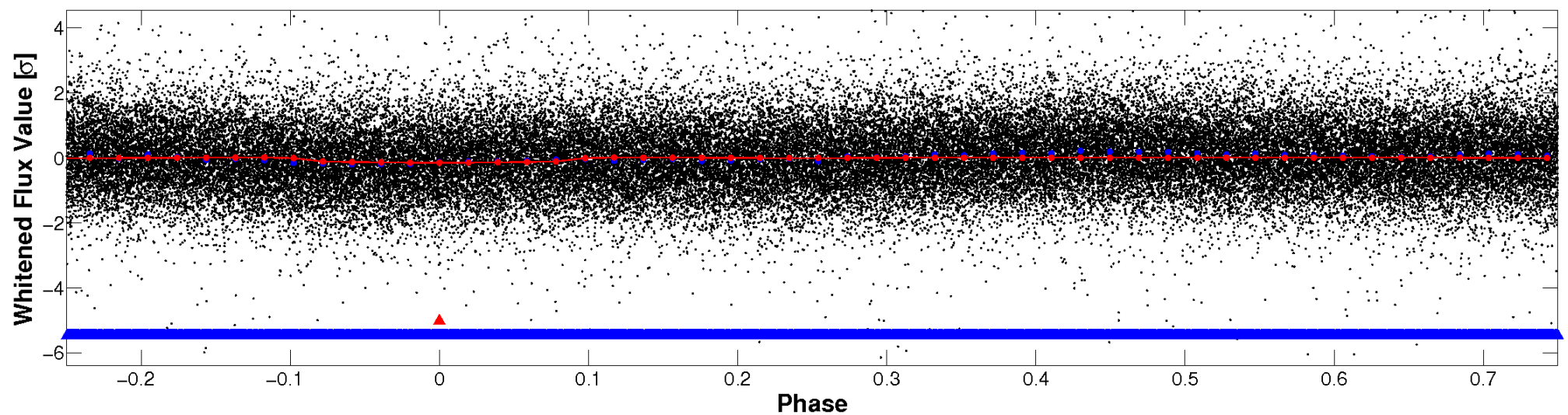


Non-Whitened Vs. Whitened Light Curve

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

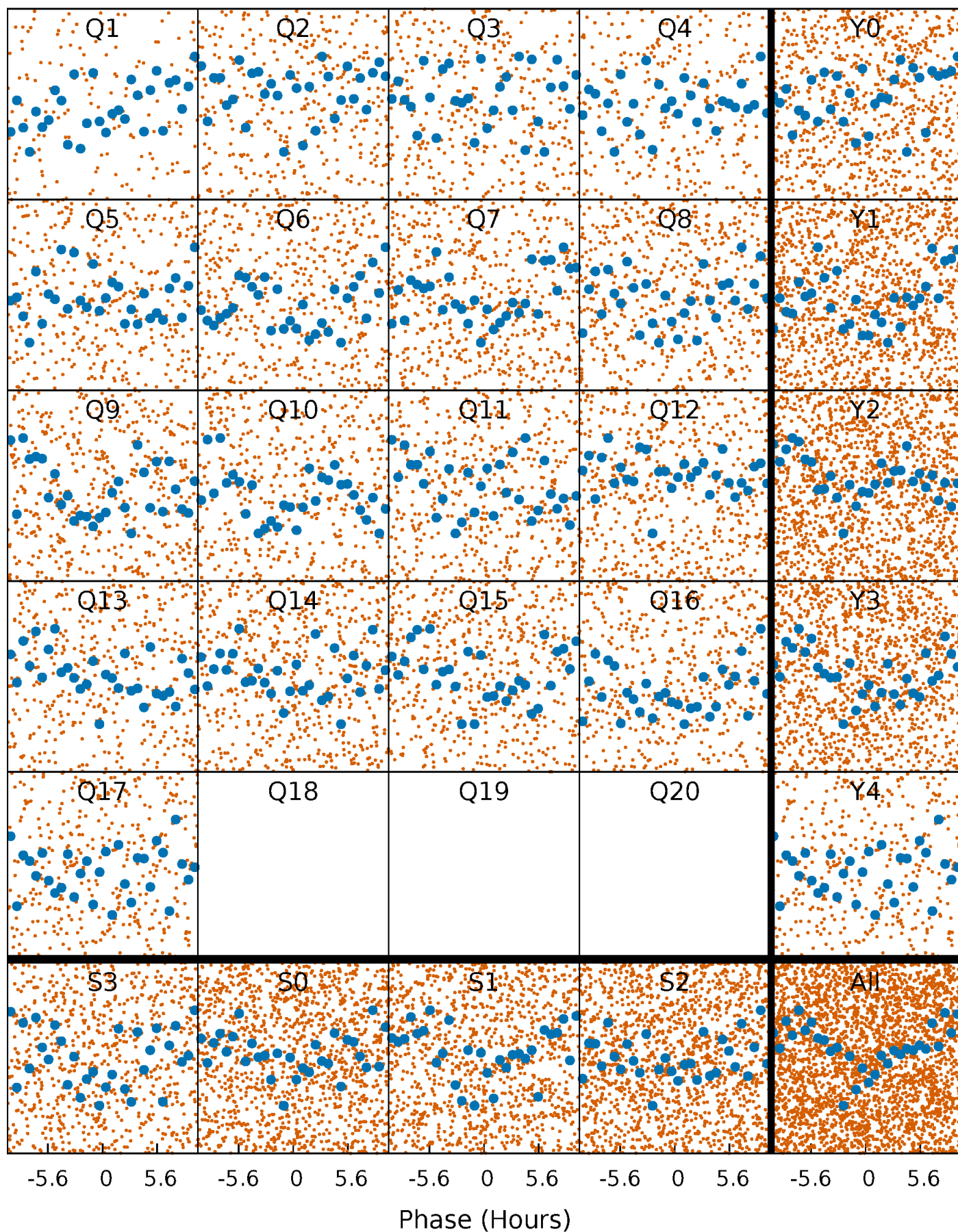


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



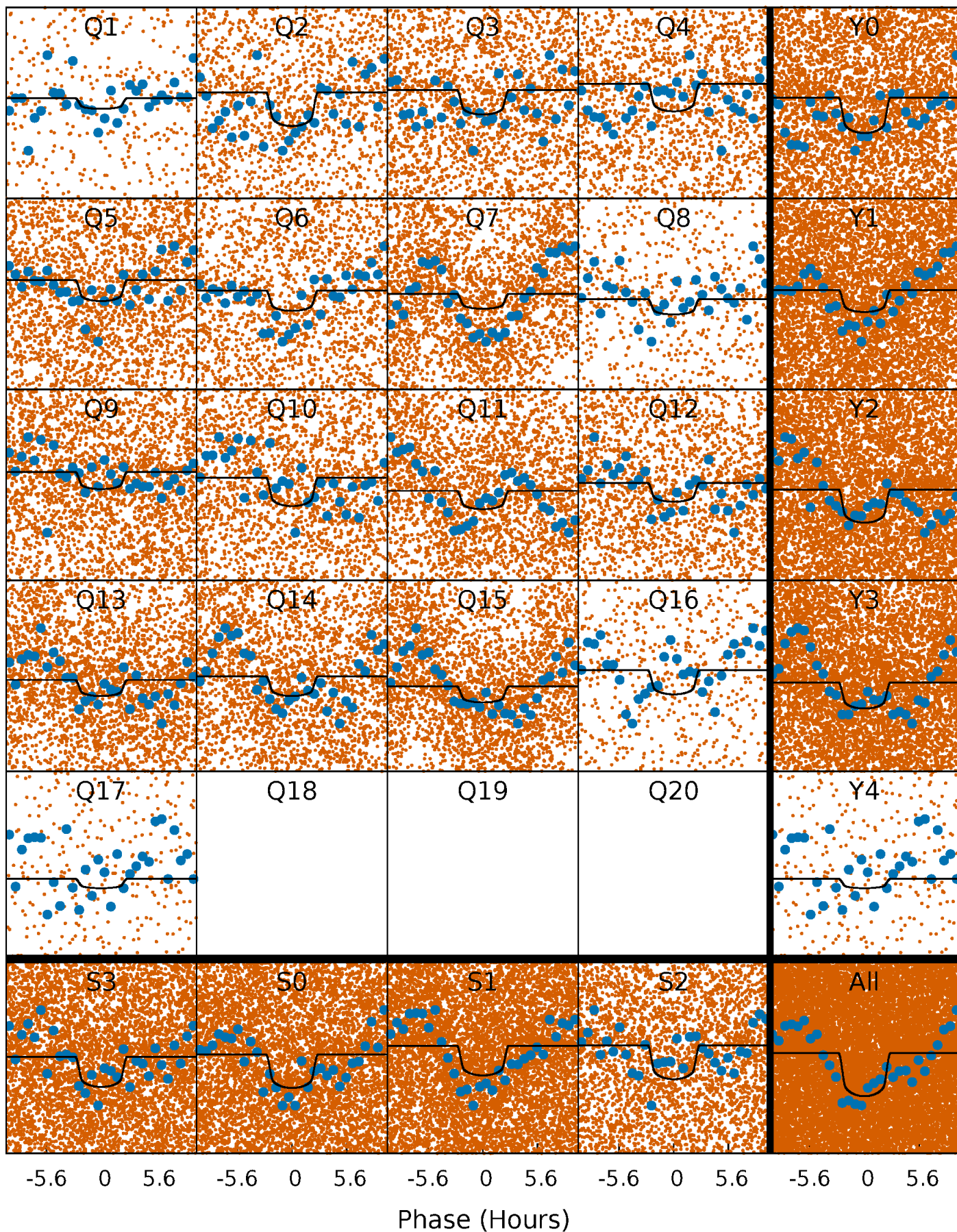
PDC Quarter-Phased Transit Curves

TCE 005209234-01 P= 1.045451 Days $T_0=131.913275$ (BKJD)



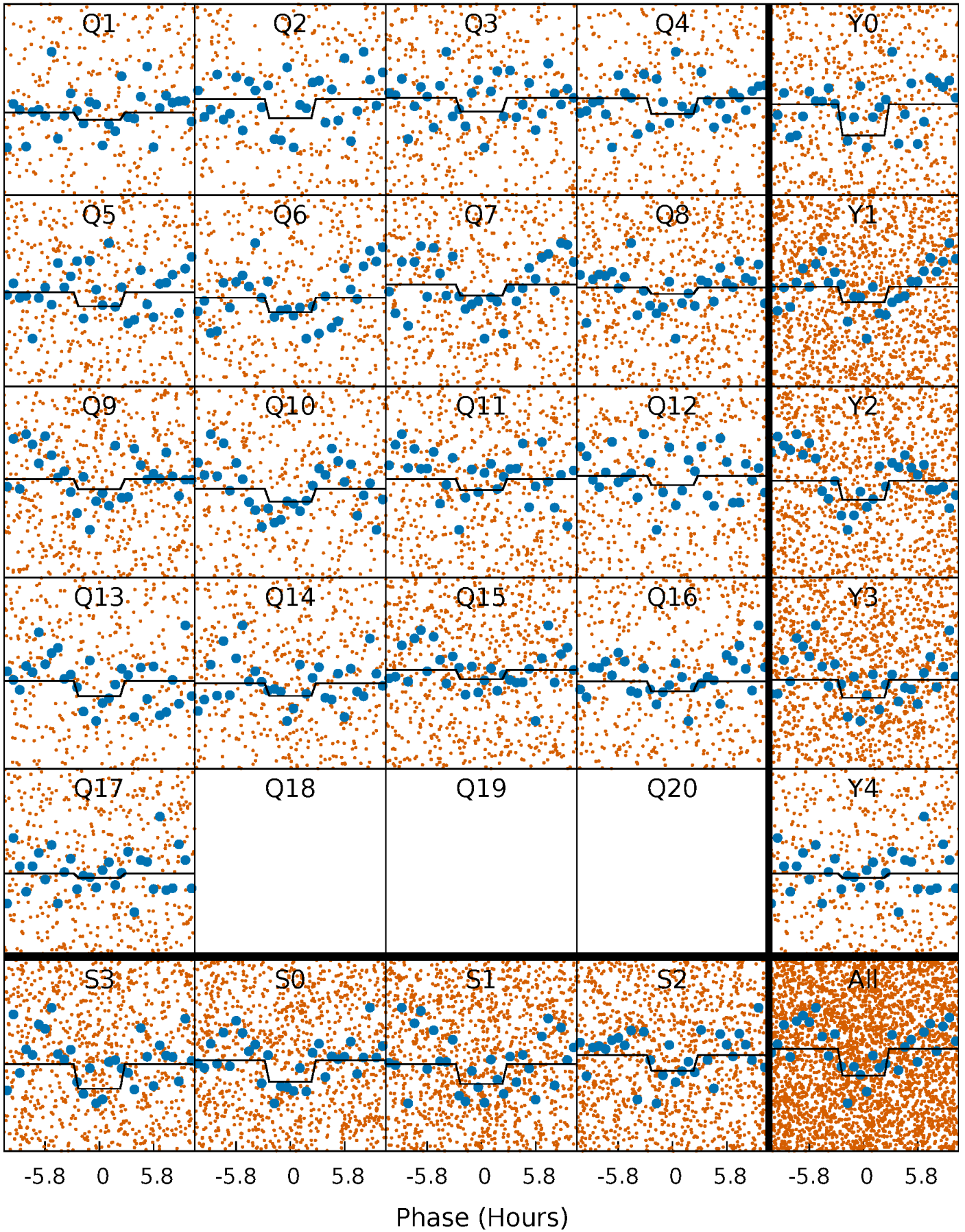
DV Quarter-Phased Transit Curves

TCE 005209234-01 P= 1.045451 Days $T_0=131.913275$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

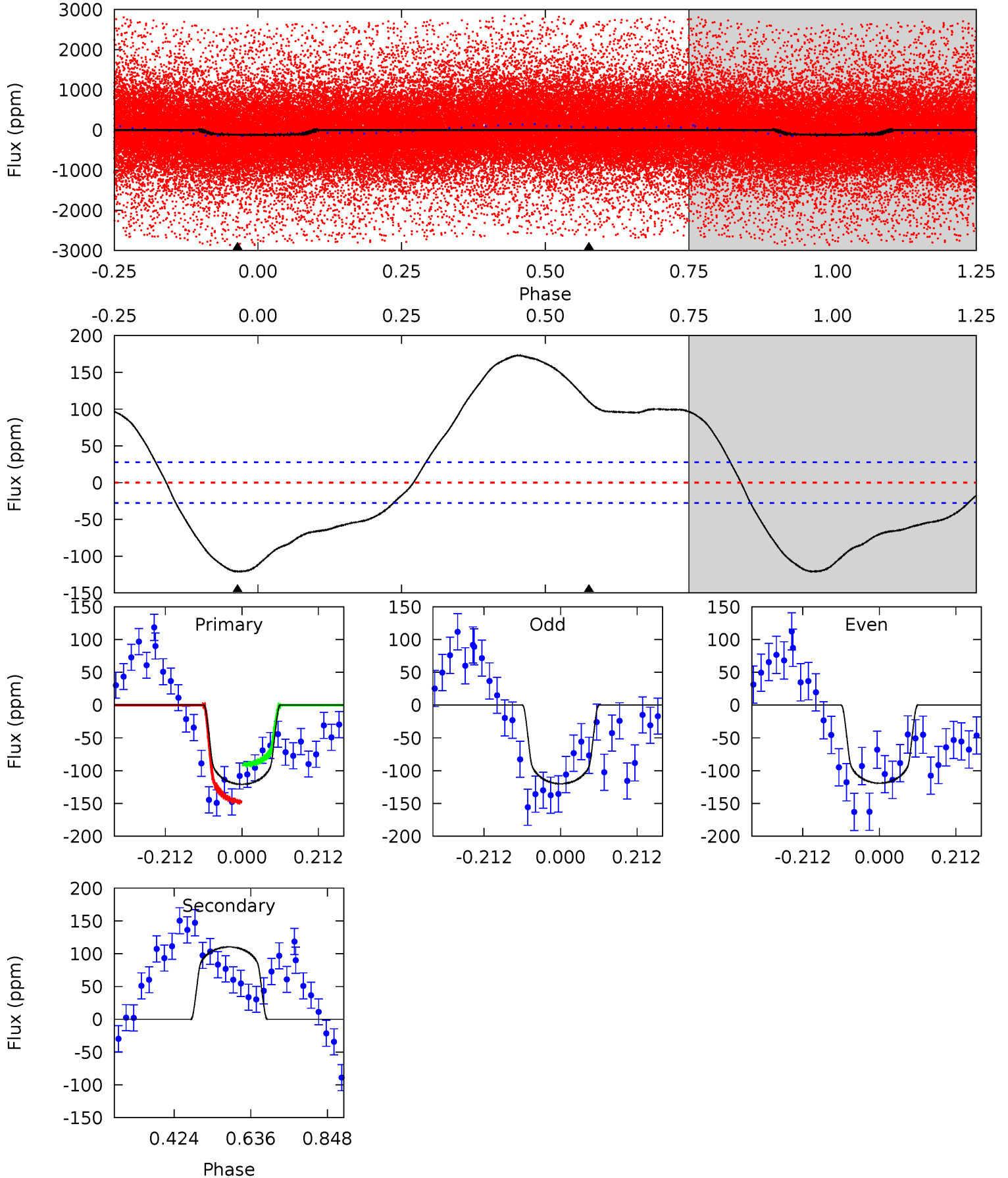
TCE 005209234-01 P= 1.045414 Days $T_0=131.928601$ (BKJD)



DV Model-Shift Uniqueness Test

005209234-01, P = 1.045451 Days, E = 130.867824 Days

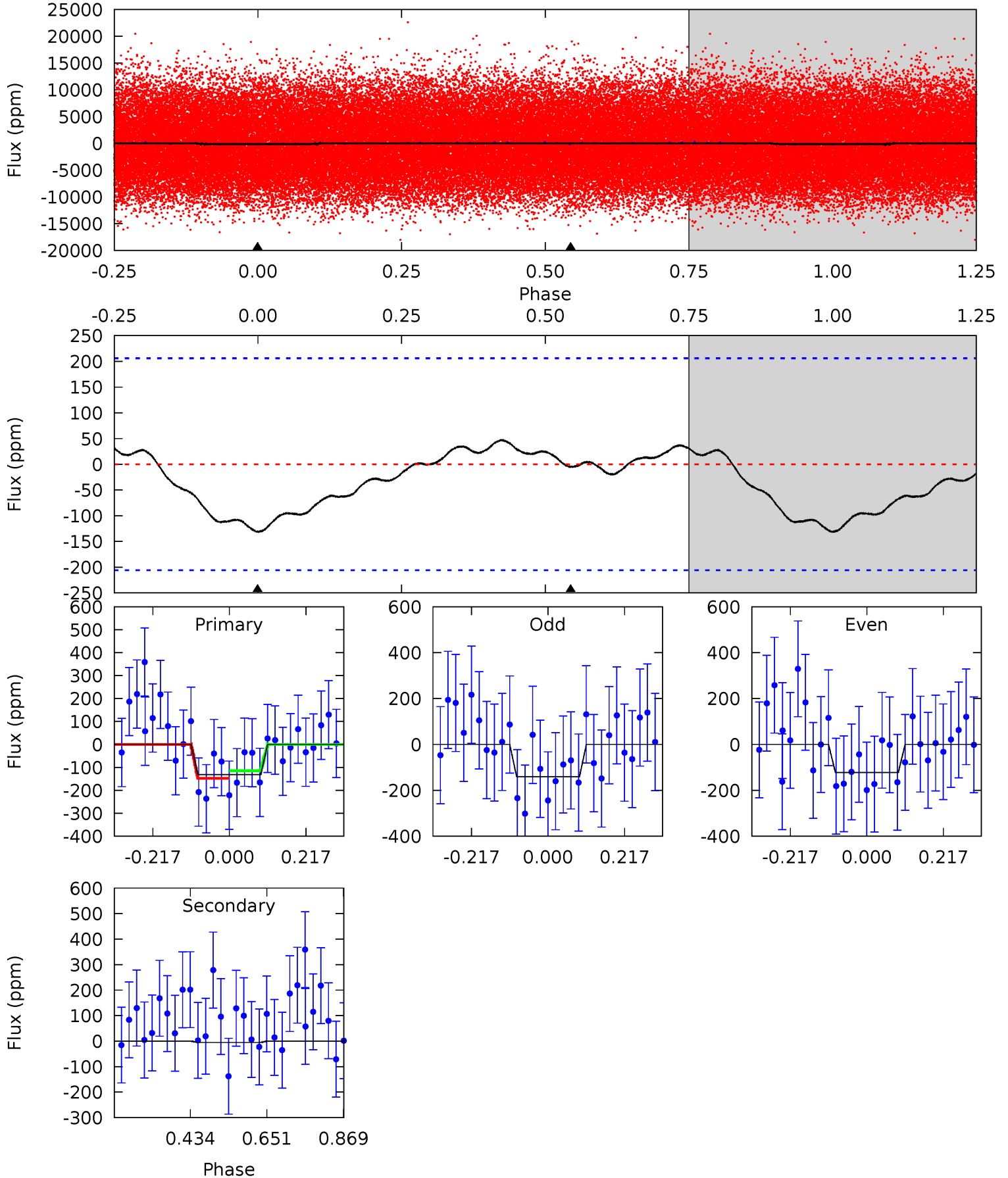
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
19.2	-17.5	0	0	4.40	1.25	8.09	19.2	19.2	-17.5	-17.5	0.07	0.91	0.59	4.53



Alt Model-Shift Uniqueness Test

005209234-01, P = 1.045414 Days, E = 130.883187 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2.80	0.11	0	0	4.40	1.23	0.36	2.80	2.80	0.11	0.11	0.19	0.93	0.26	0.35



Stellar Parameters For KIC 005209234

	$T_{\text{eff}} (K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6202^{+213}_{-233}	$3.835^{+0.520}_{-0.130}$	$-0.380^{+0.300}_{-0.300}$	$2.167^{+0.470}_{-1.018}$	$1.170^{+0.184}_{-0.253}$	$0.162^{+0.896}_{-0.060}$
	+3%/-4%	+14%/-3%	+79%/-79%	+22%/-47%	+16%/-22%	+553%/-37%
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 005209234-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	110 ± 6	$2.39^{+0.90}_{-0.79}$	3750^{+318}_{-540}	-6112^{+616}_{-1044}	$-4.862^{+2.277}_{-5.736}$
Alt.	-5 ± 47	$2.42^{+0.91}_{-0.72}$	3748^{+318}_{-440}	-2686^{+7661}_{-2302}	$0.252^{+2.173}_{-2.048}$

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 $A_{obs} \gg 1.0$

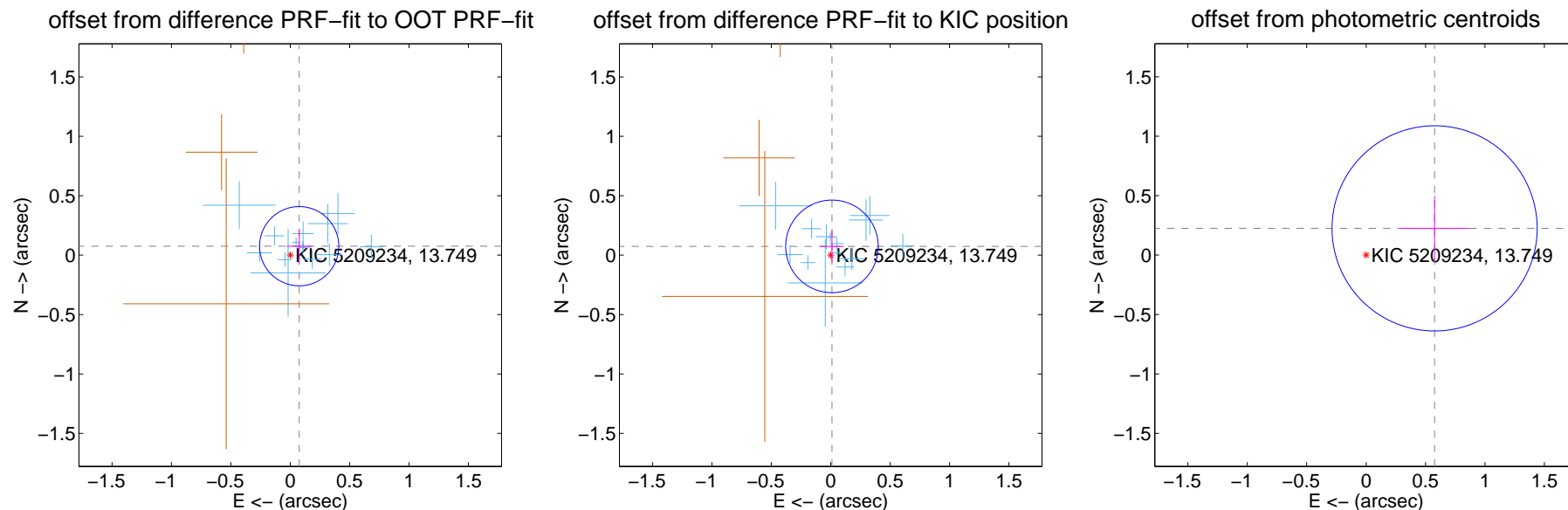
DV Centroid Data

Supplemental centroid analysis for 005209234-01. Kepler magnitude: 13.75. Transit SNR 14.22

There are 14 quarters with good PRF difference image offsets

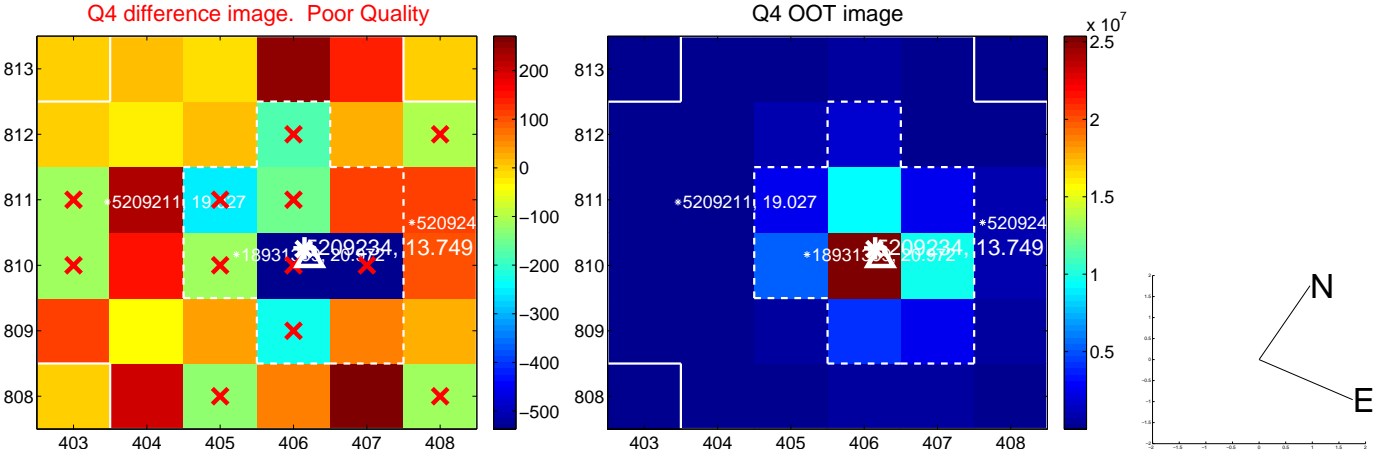
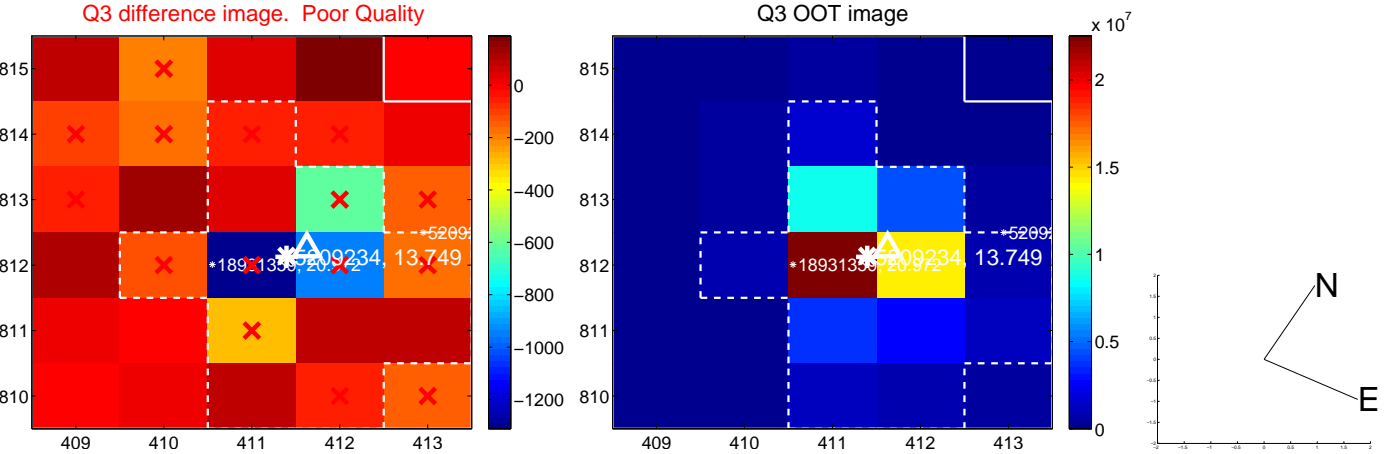
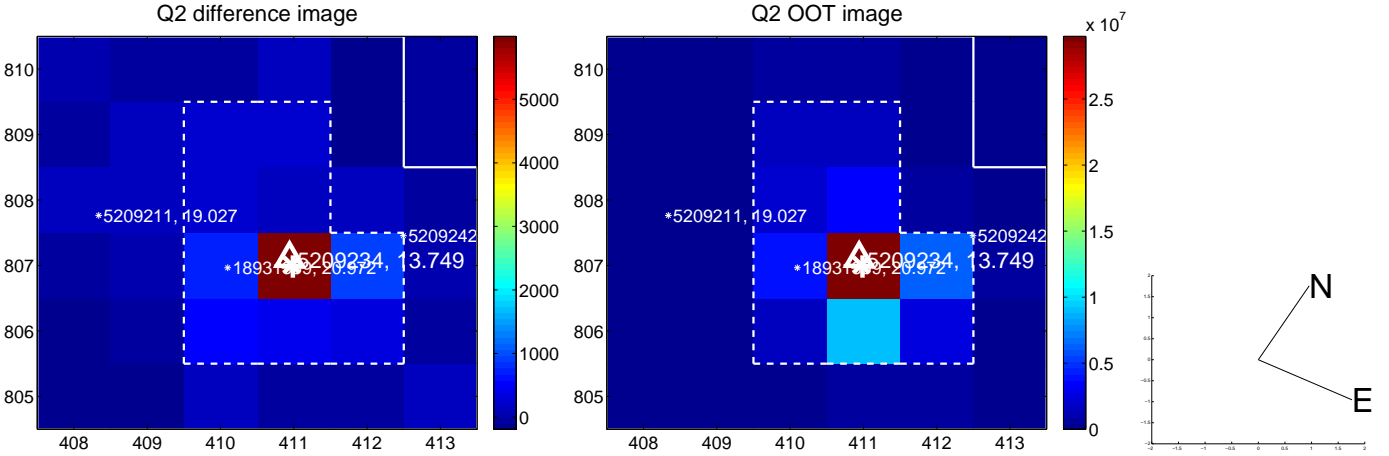
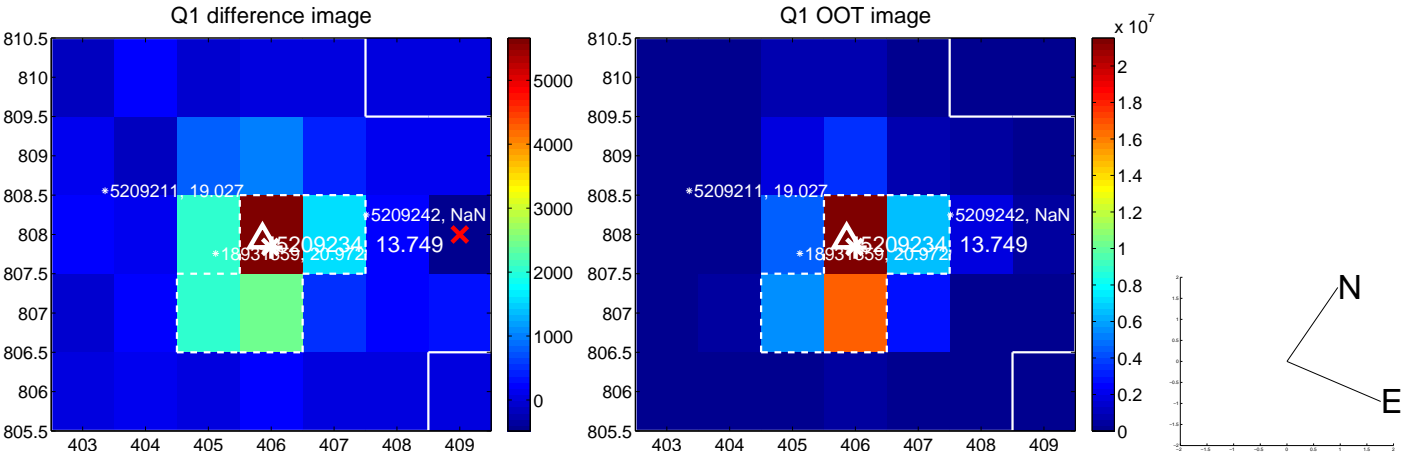
The direct PRF centroid is offset from the target star catalog position by about 0.04 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.106 ± 0.111	0.96	-0.075 ± 0.105	0.075 ± 0.144
PRF-fit source offset from KIC position	0.075 ± 0.130	0.57	-0.011 ± 0.100	0.074 ± 0.133
photometric centroid source offset	0.62 ± 0.29	2.15	-0.58 ± 0.29	0.22 ± 0.27

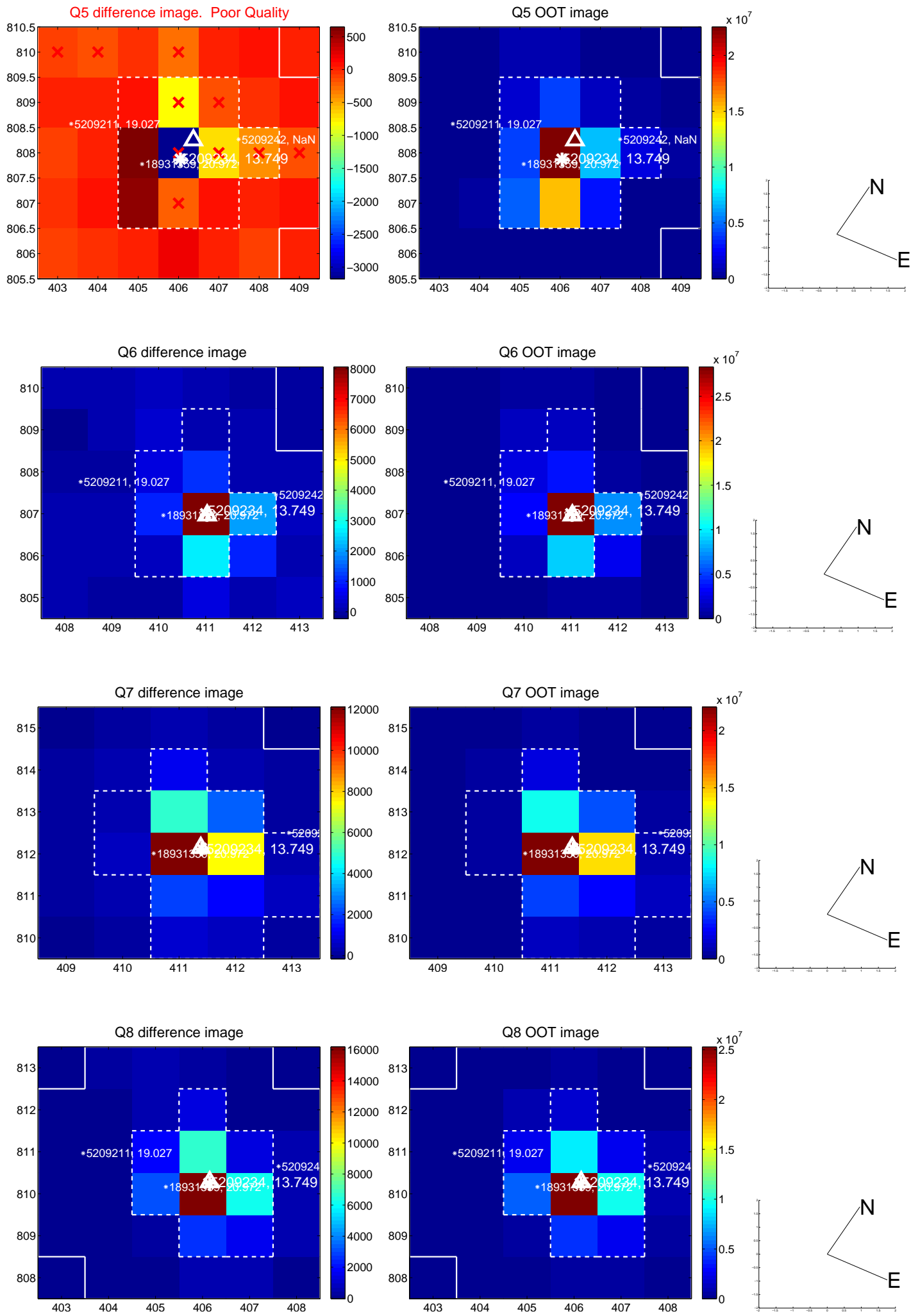


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

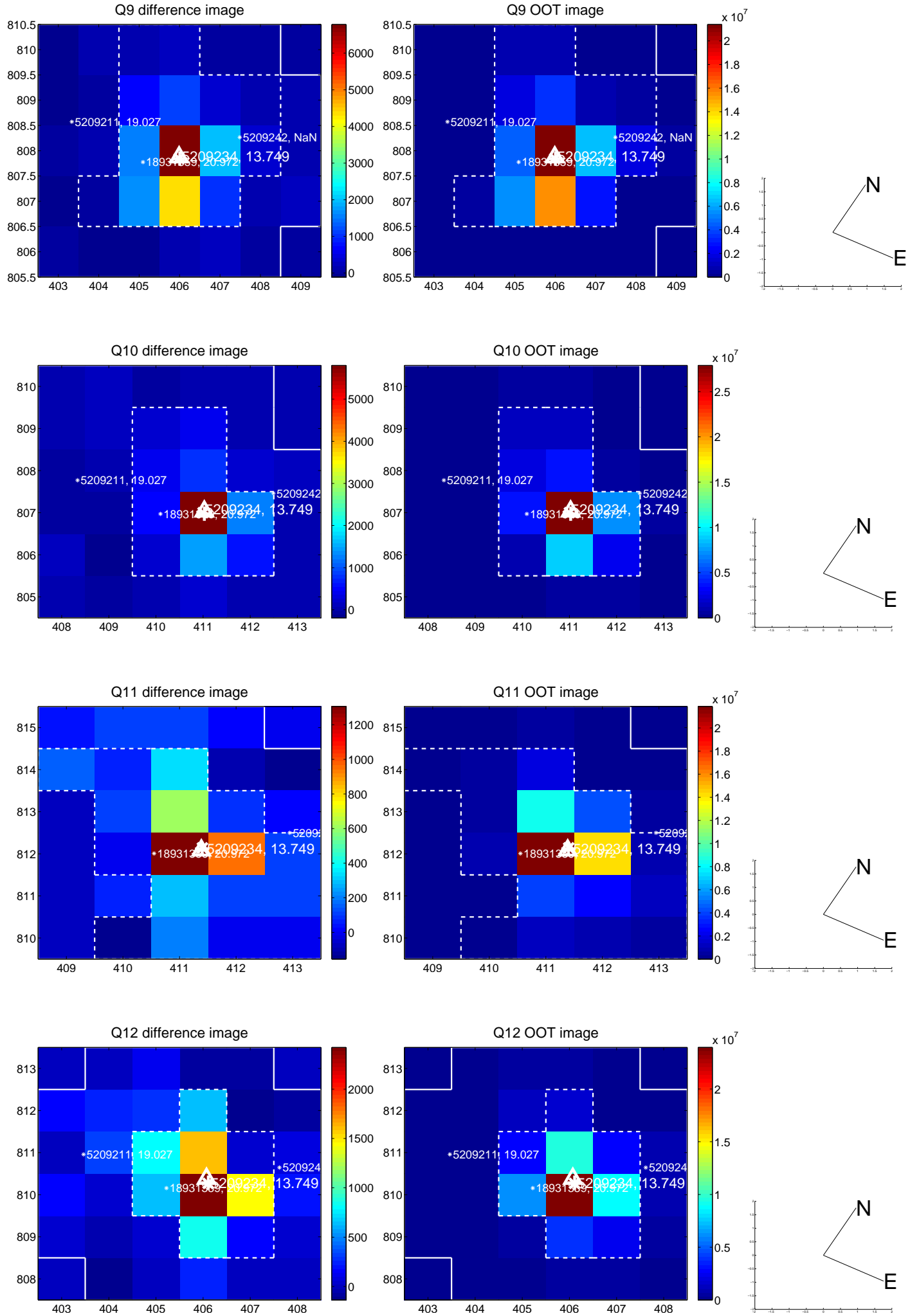
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



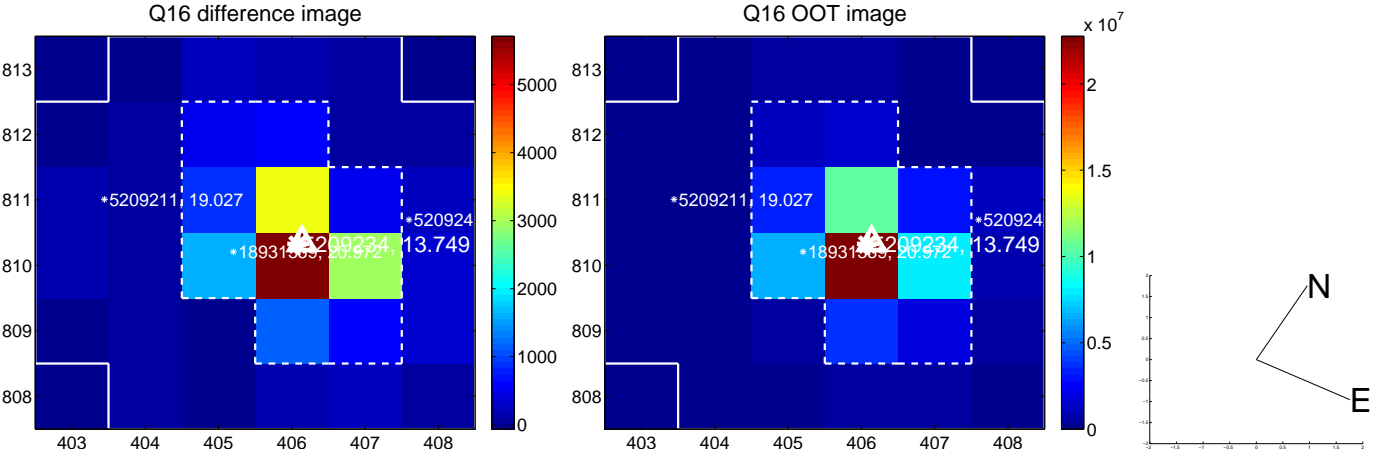
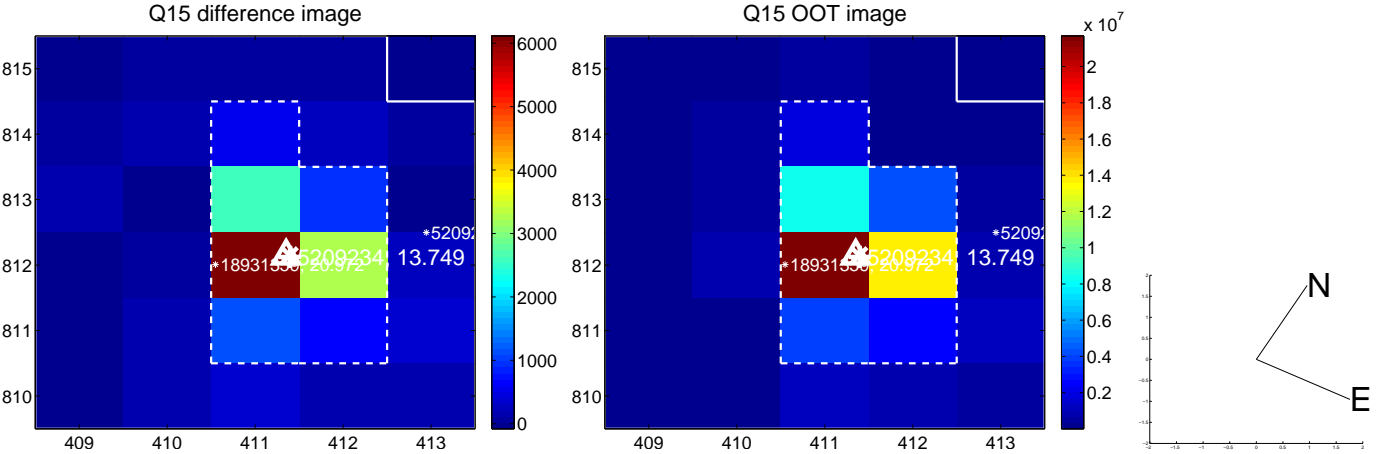
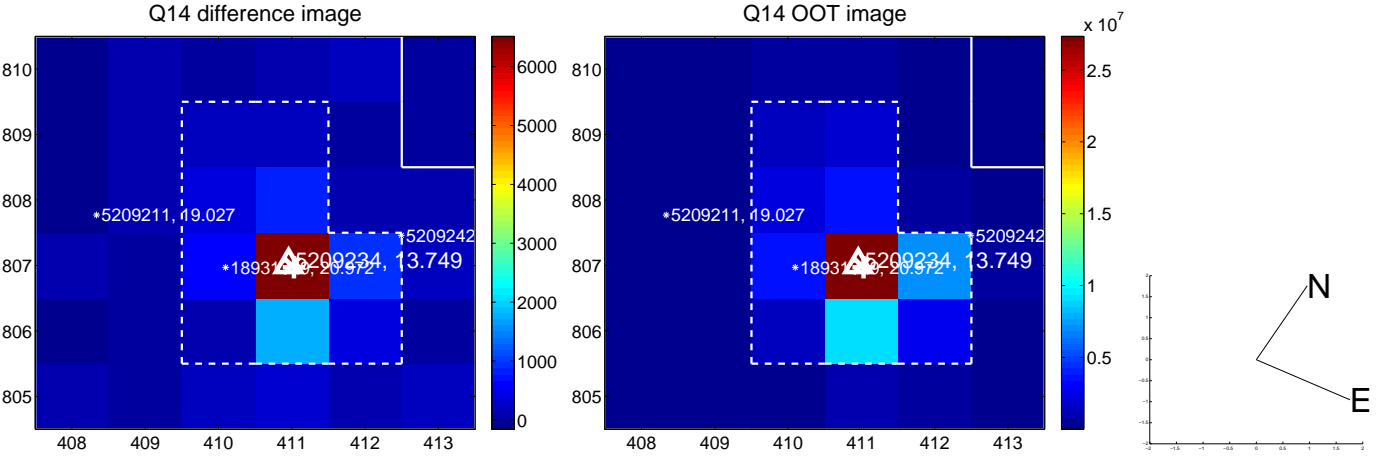
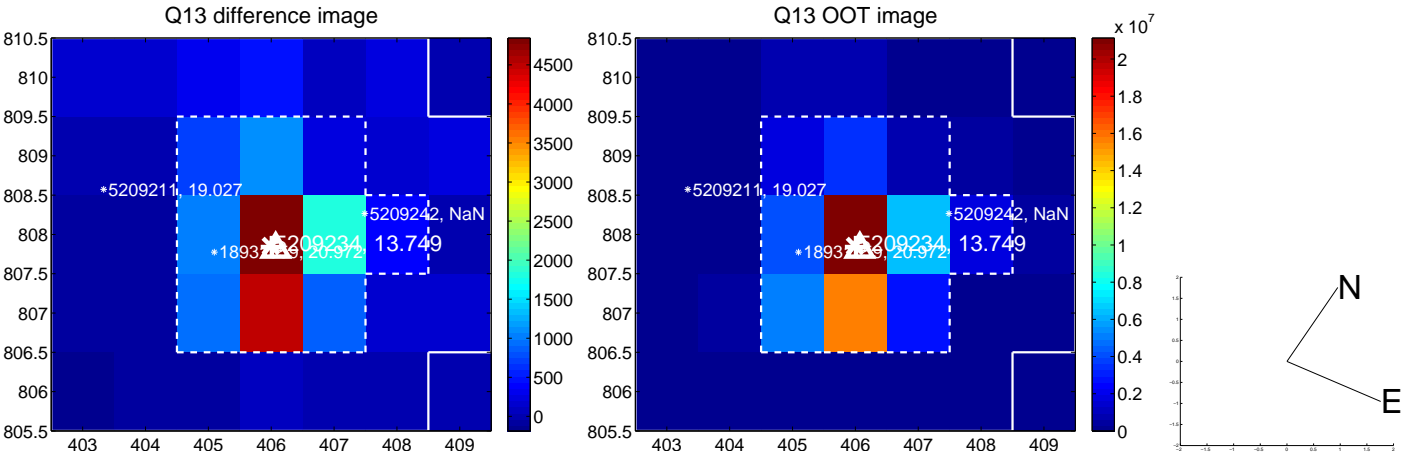
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



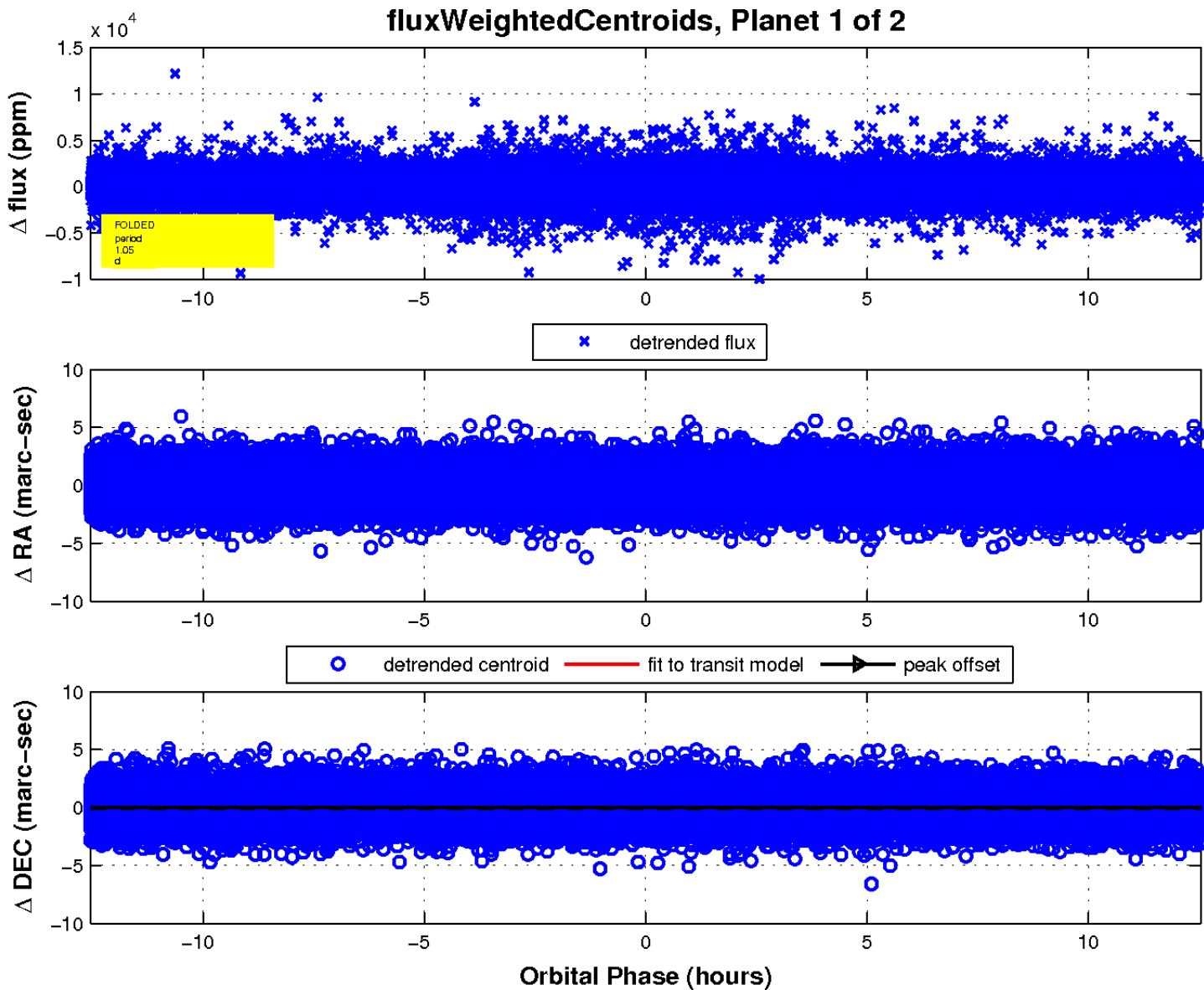
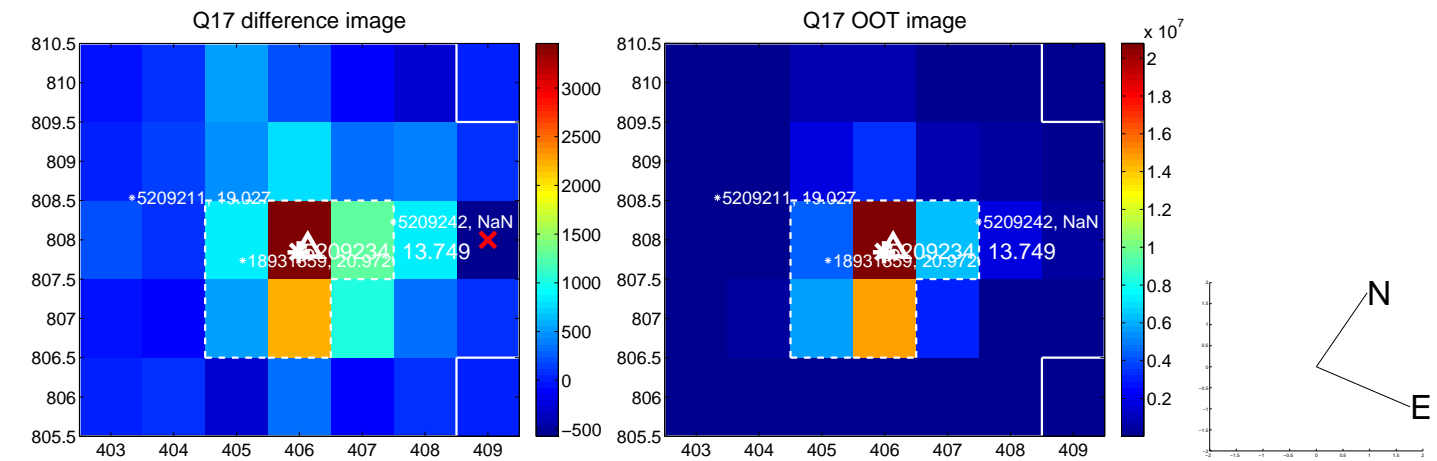
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



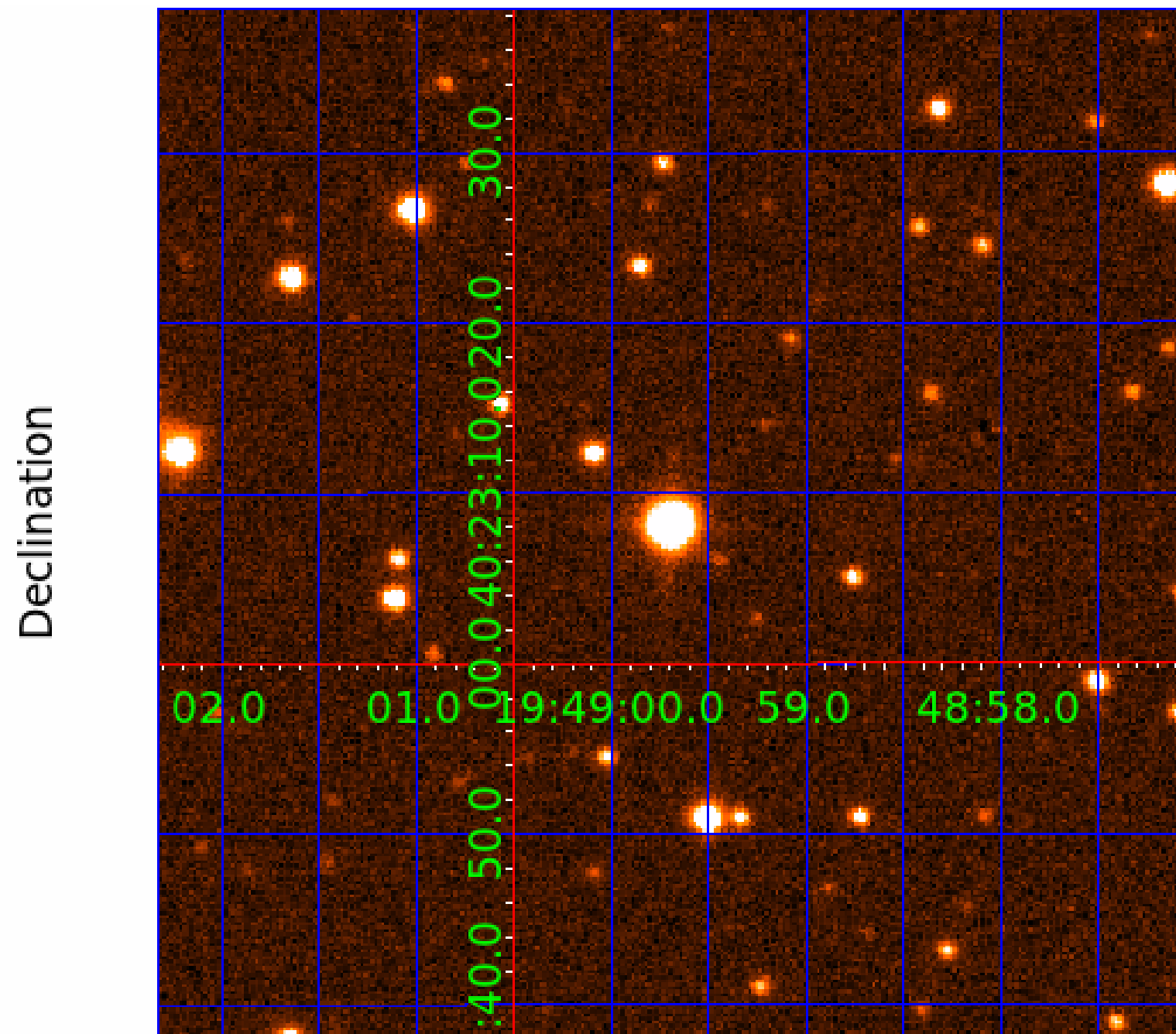
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image



KIC 005209234

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})
005209234-01	OBS	No	1.045451	131.913275	109.1	4.883	14.0	14.2	2.17	6202	2.62	13778.09
005209234-02	OBS	No	0.573180	131.515687	192.6	1.623	12.4	15.1	2.17	6202	3.53	30704.75

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005209234-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV
005209234-02	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT

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

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

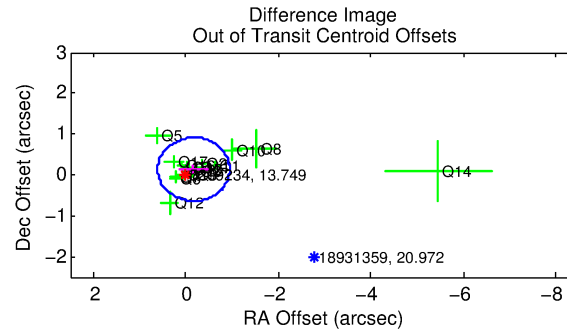
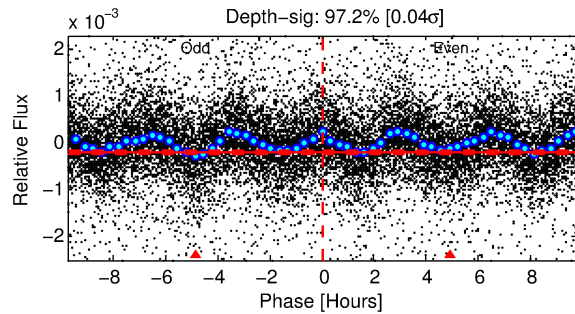
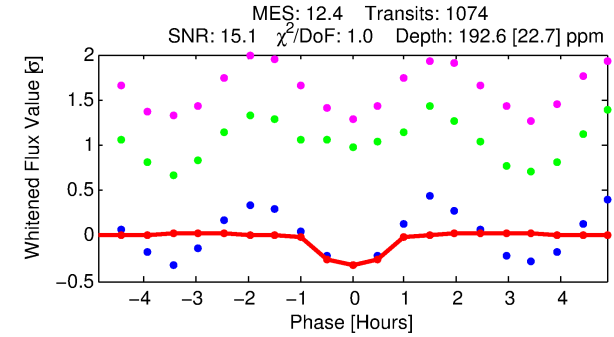
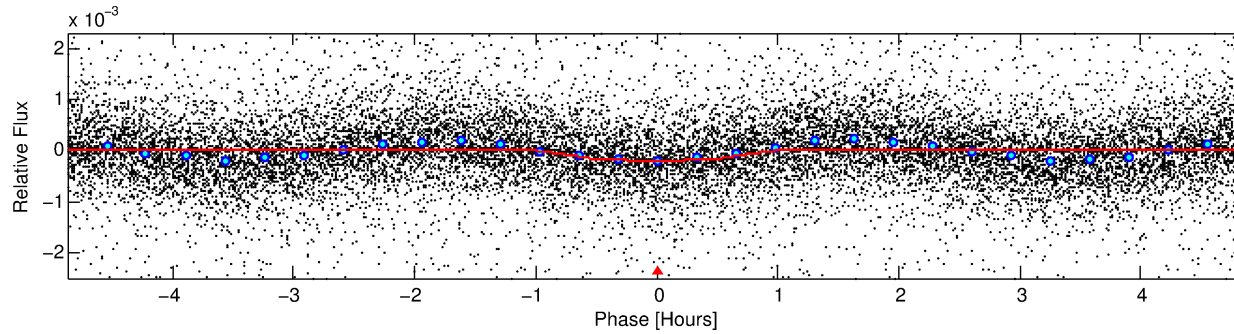
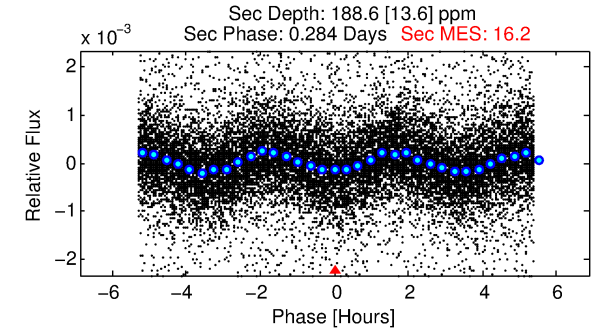
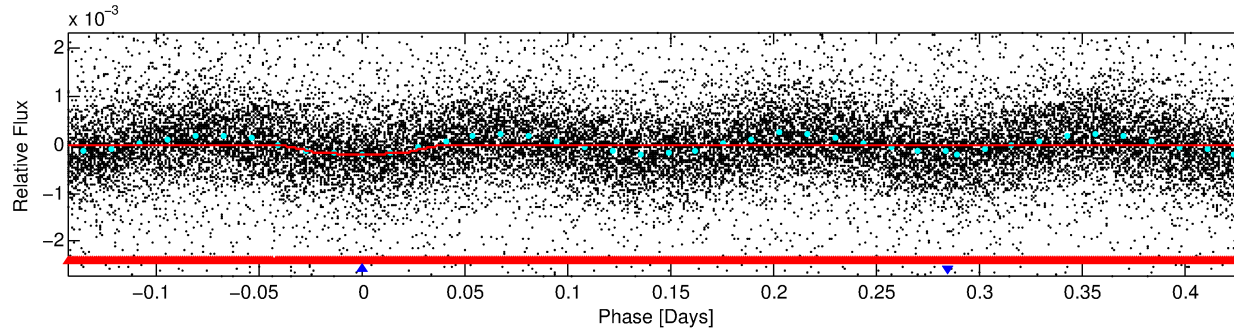
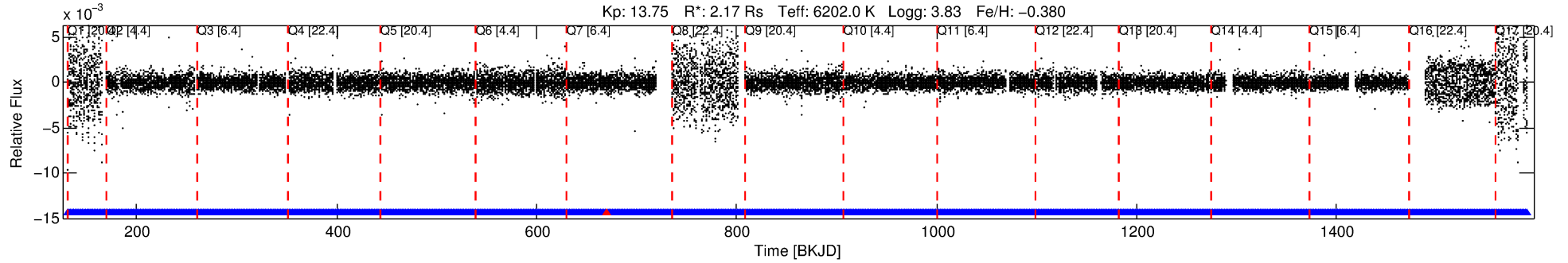
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 005209234-02

No Significant Match Found

DV One-Page Summary

KIC: 5209234 Candidate: 2 of 2 Period: 0.573 d



DV Fit Results:

Period = 0.57318 [0.00001] d
Epoch = 131.5157 [0.0016] BKJD
Rp/R* = 0.0149 [0.0072]
a/R* = 1.58 [2.48]
b = 0.90 [0.57]
Seff = 30704.75 [26729.64]
Teff = 3375 [735] K
Rp = 3.53 [2.37] Re
a = 0.0142 [0.0072] AU
Ag = 1.69 [2.17] [0.32σ]
Teffp = 5946 [1446] K [1.58σ]

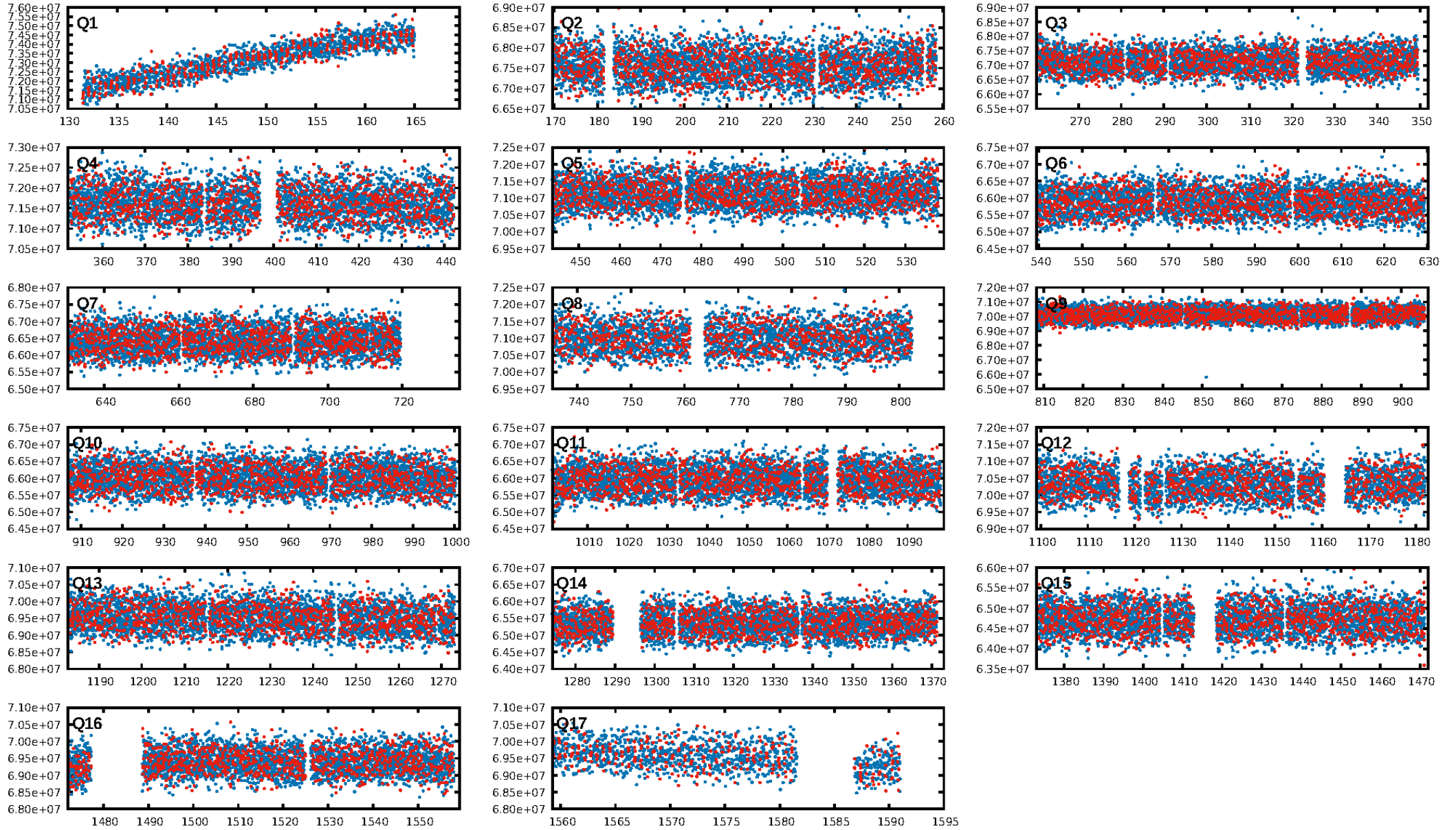
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 97.2% [2.20σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGoF-sig: N/A
Bootstrap-pfa: 2.14e-23
RollingBand-fgt: 1.00 [1022/1023]
GhostDiagnostic-chr: 10.85
Centroid-sig: N/A
Centroid-so: 0.275 arcsec [1.26σ]
OotOffset-rm: 0.213 arcsec [0.82σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-rm: 0.164 arcsec [0.63σ]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 0.71 [12/17]
DiffImageOverlap-fno: 1.00 [17/17]

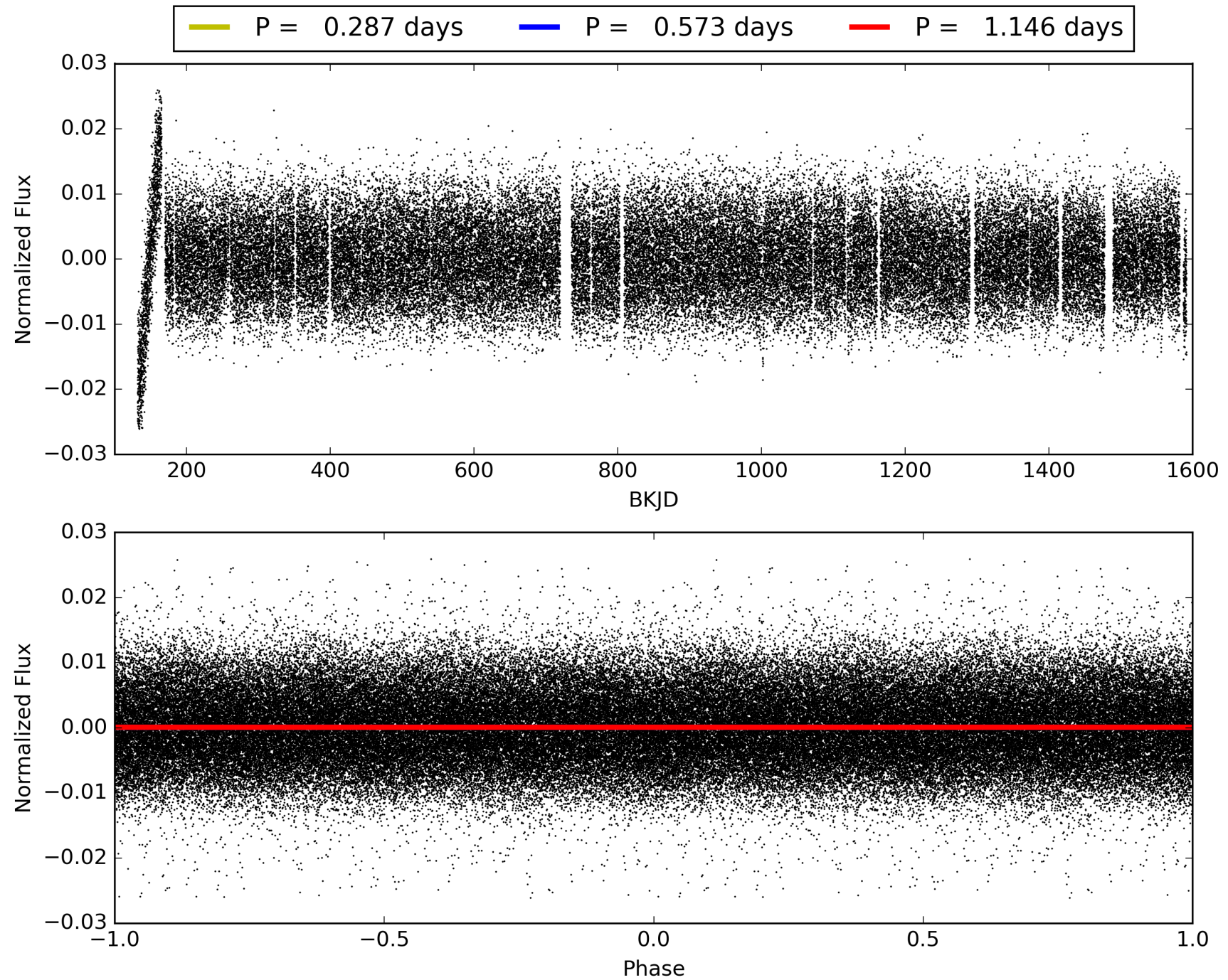
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 16:19:40 Z

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

TCE 005209234-02, PDC Light Curves

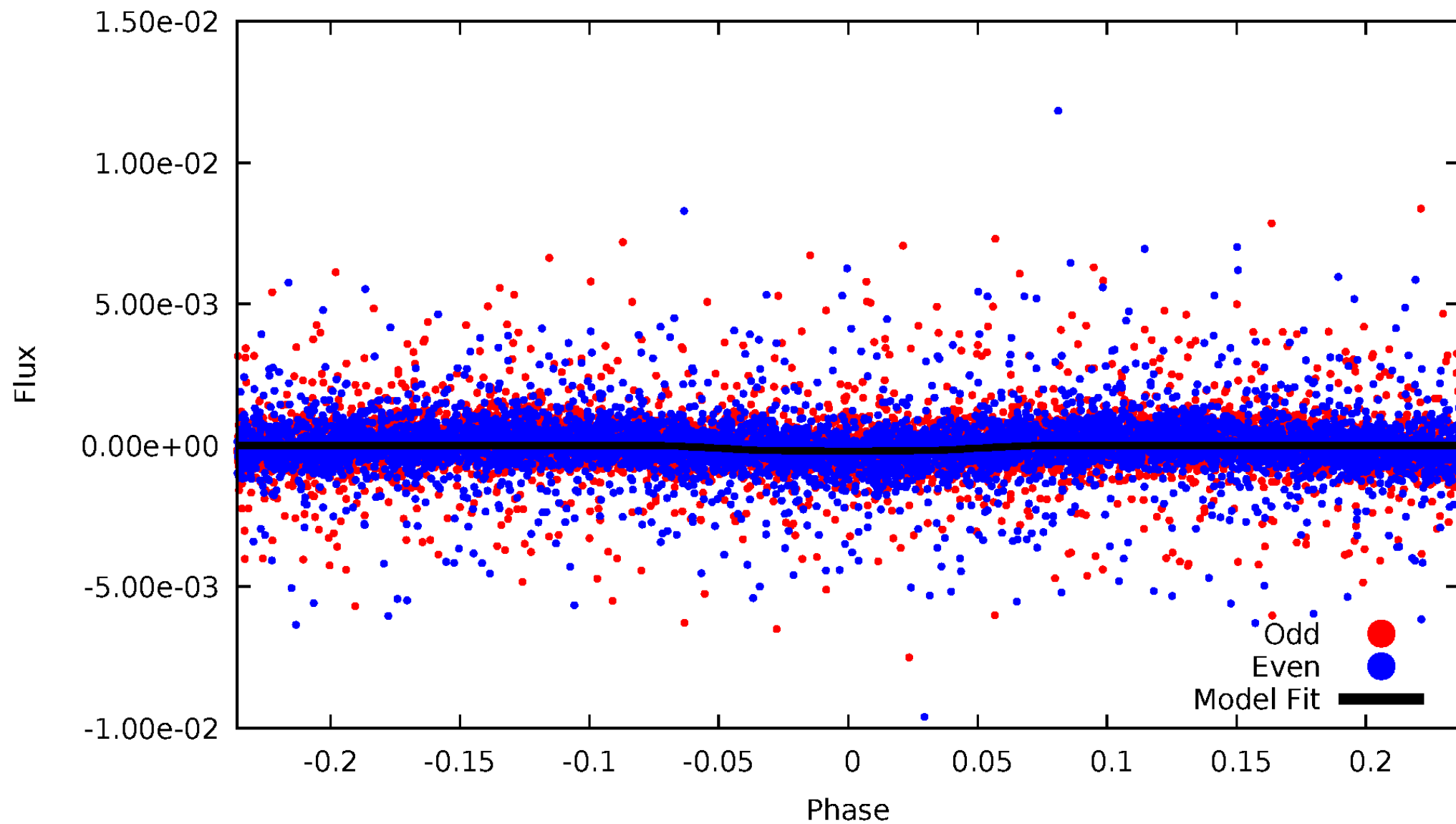


TCE 005209234-02



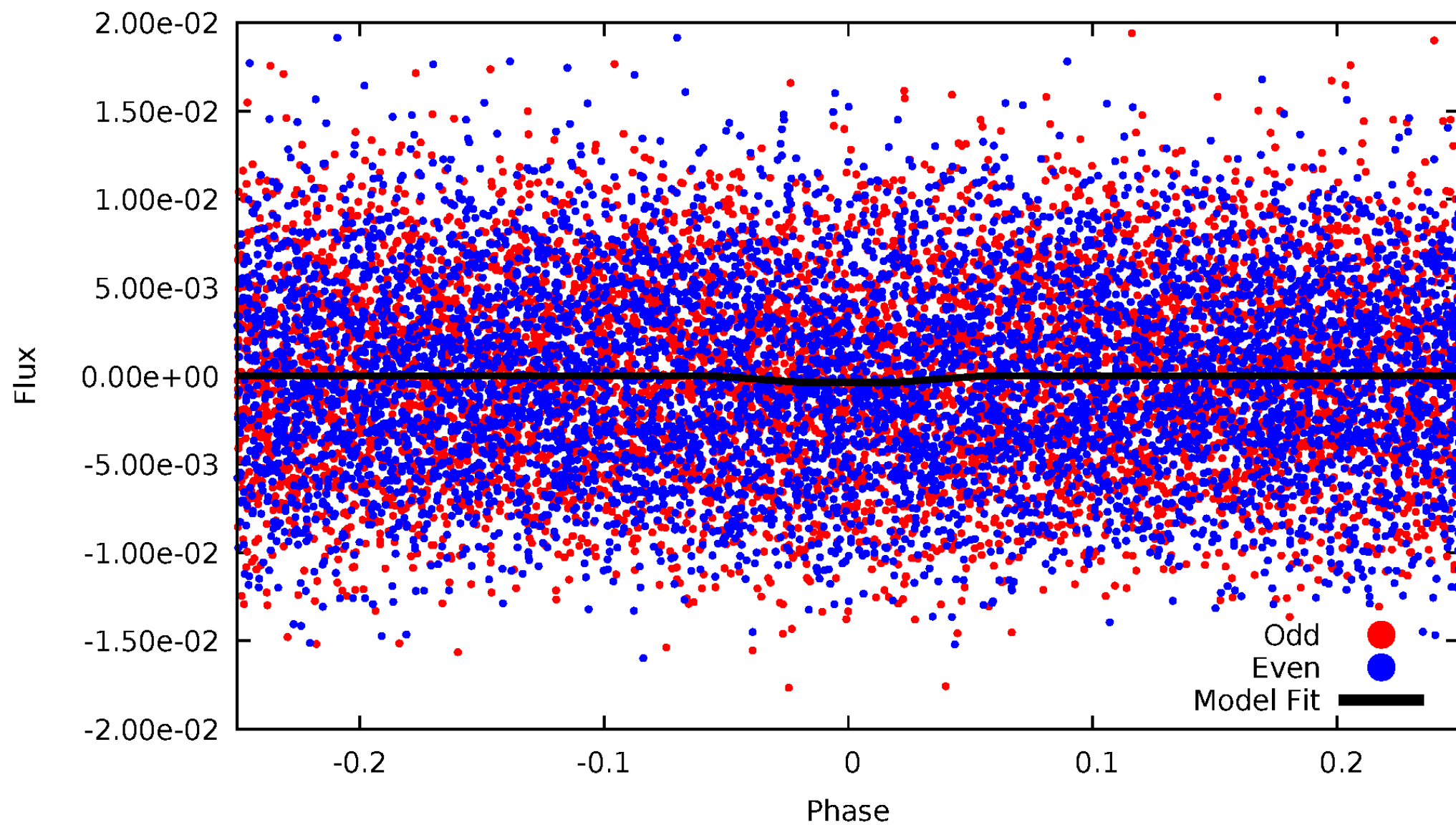
DV Odd/Even

TCE 005209234-02



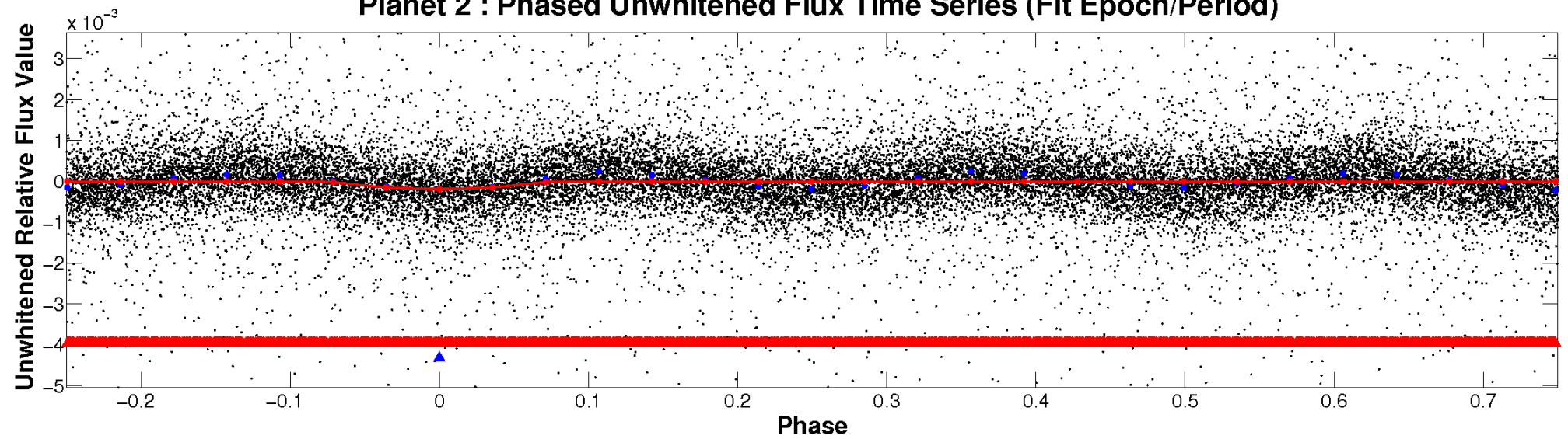
ALT Odd/Even

TCE 005209234-02

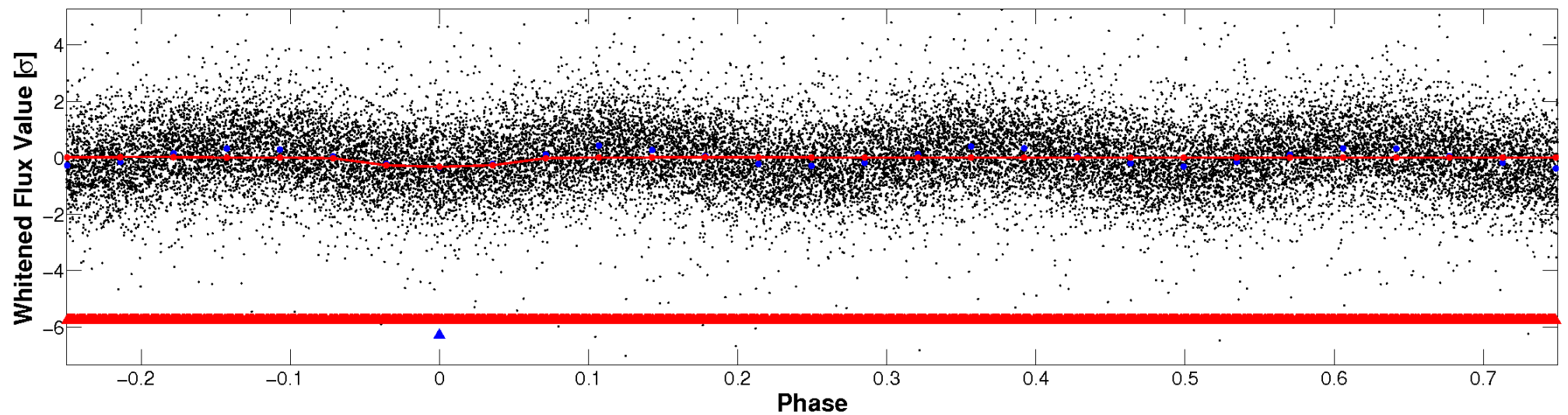


Non-Whitened Vs. Whitened Light Curve

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

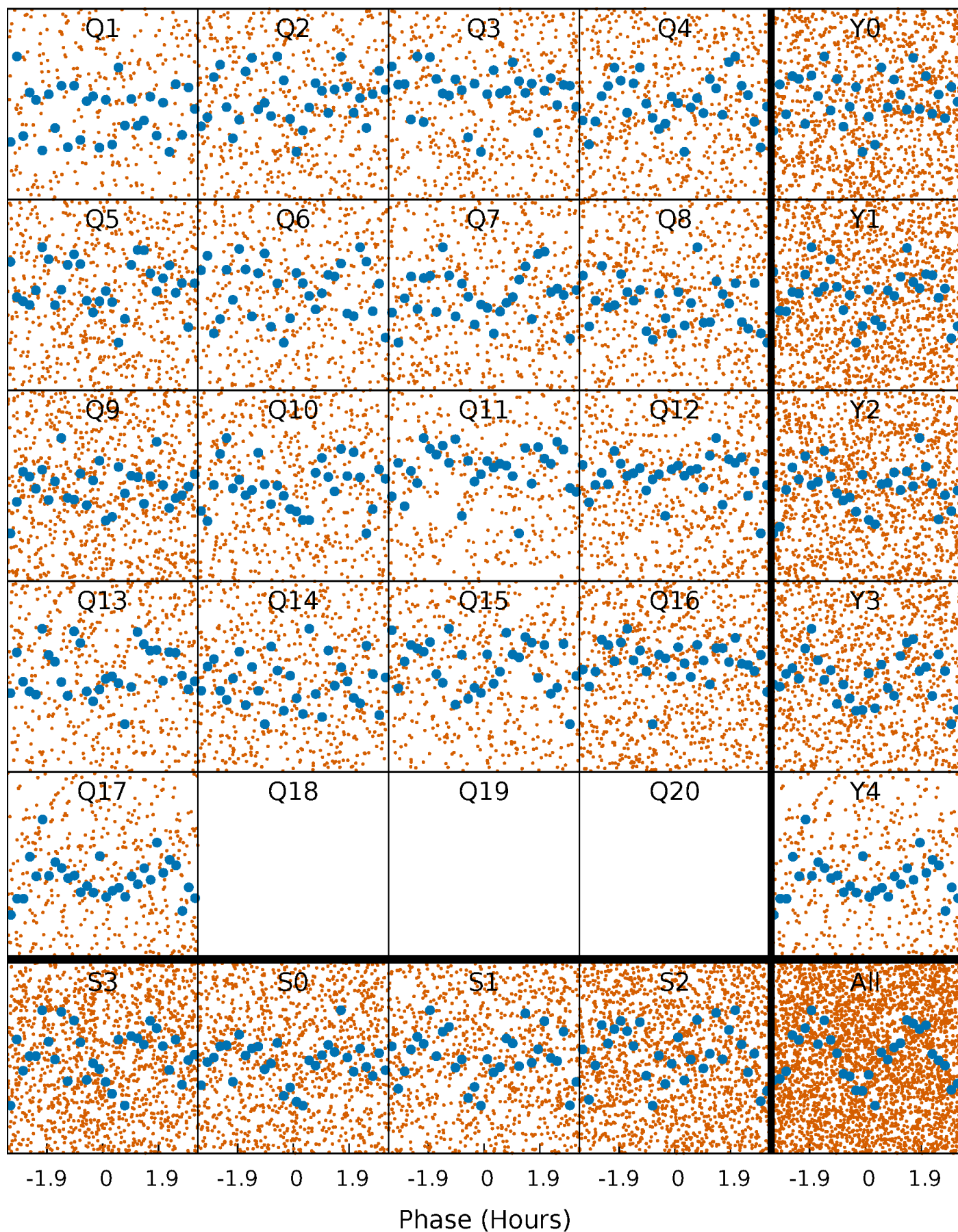


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



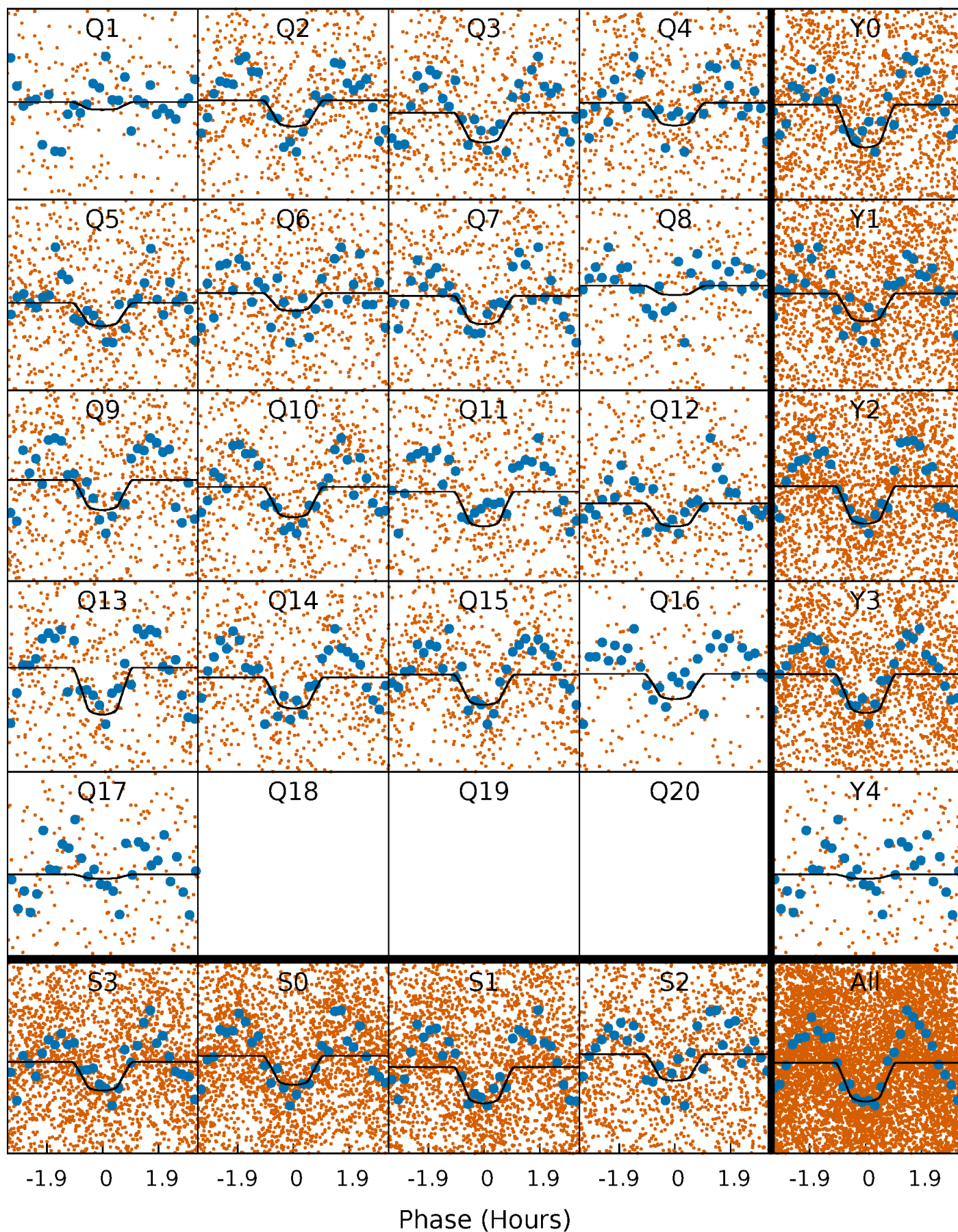
PDC Quarter-Phased Transit Curves

TCE 005209234-02 P= 0.573180 Days $T_0=131.515687$ (BKJD)



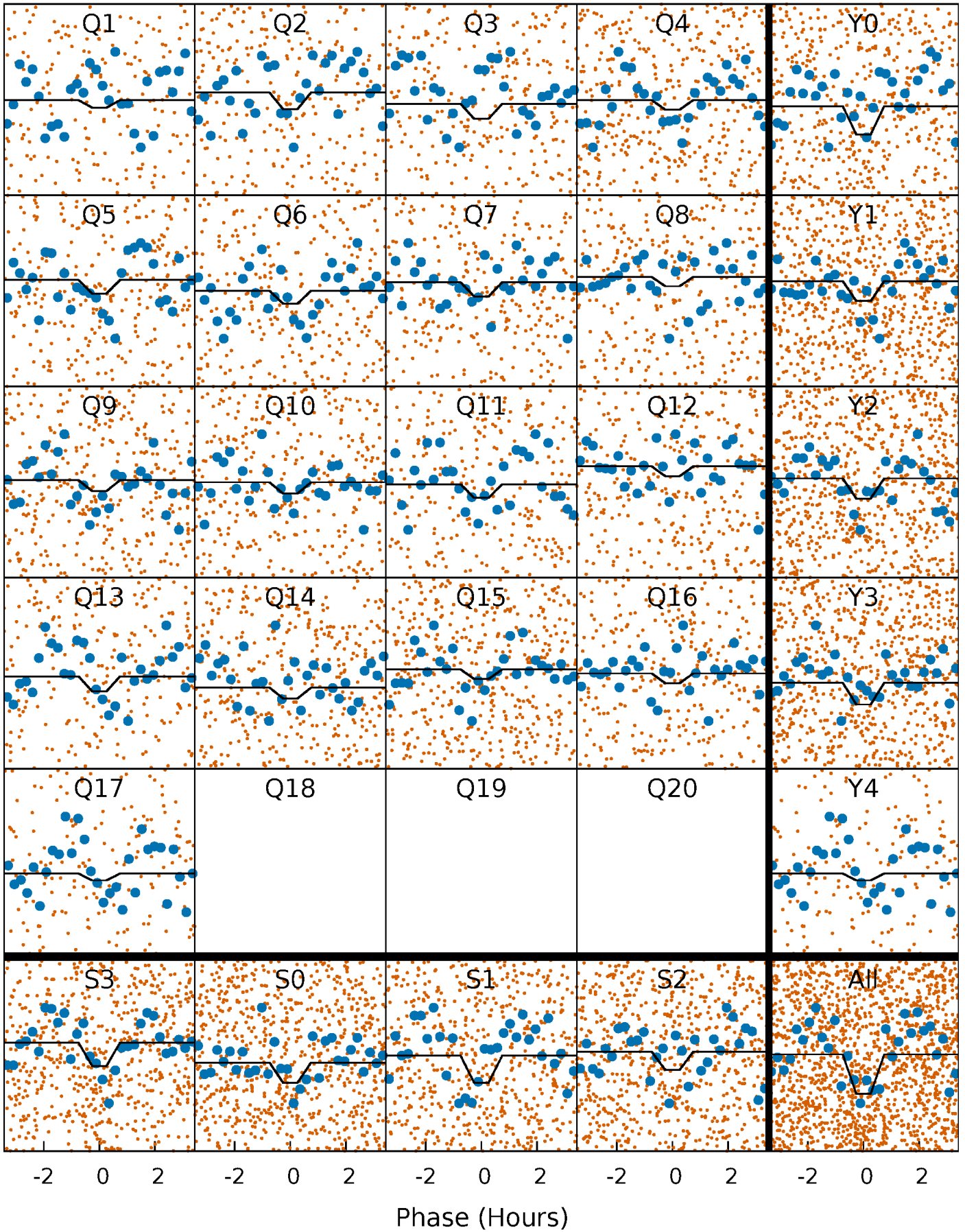
DV Quarter-Phased Transit Curves

TCE 005209234-02 P= 0.573180 Days $T_0=131.515687$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

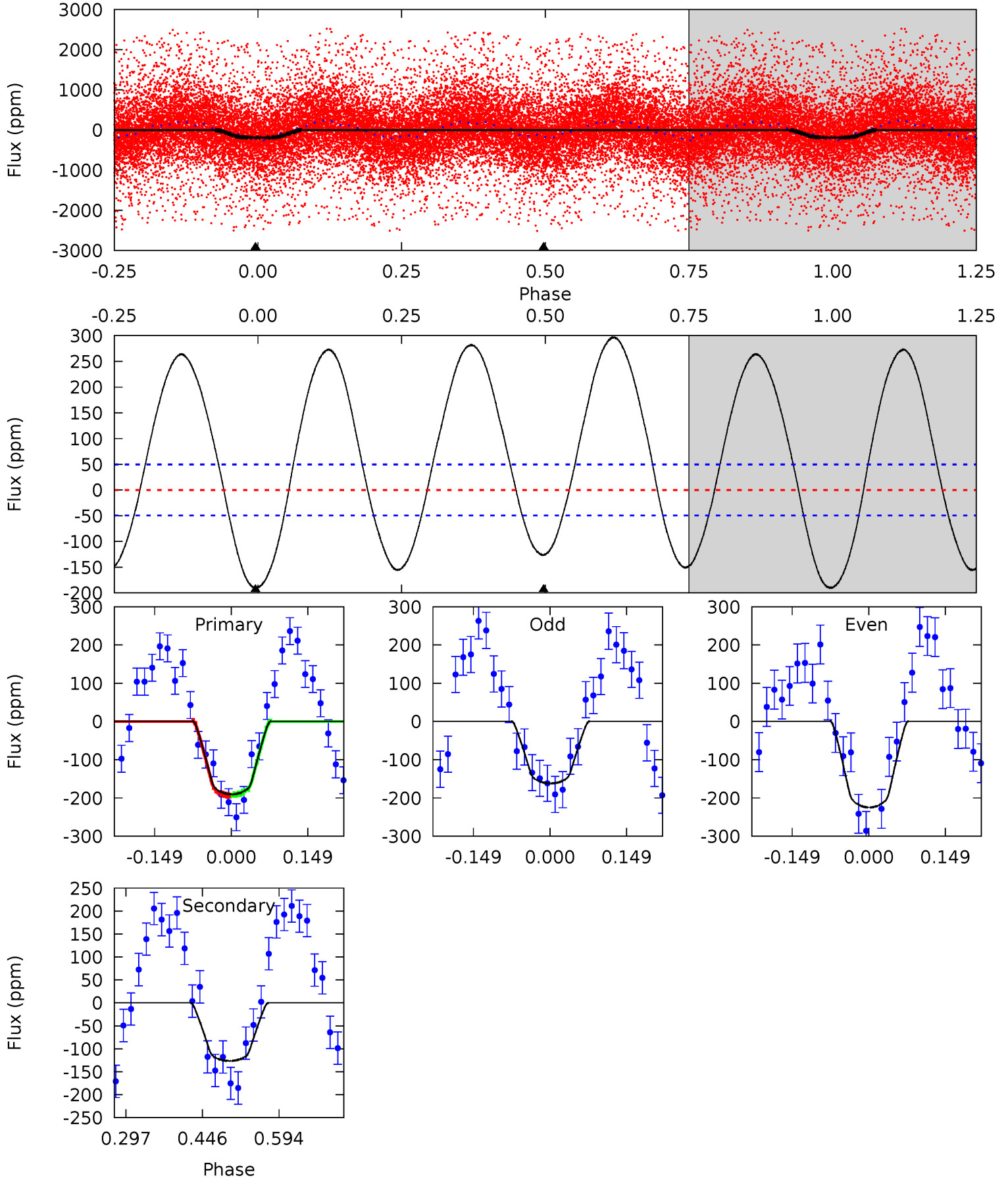
TCE 005209234-02 $P = 0.573177$ Days $T_0 = 131.514805$ (BKJD)



DV Model-Shift Uniqueness Test

005209234-02, P = 0.573180 Days, E = 130.942507 Days

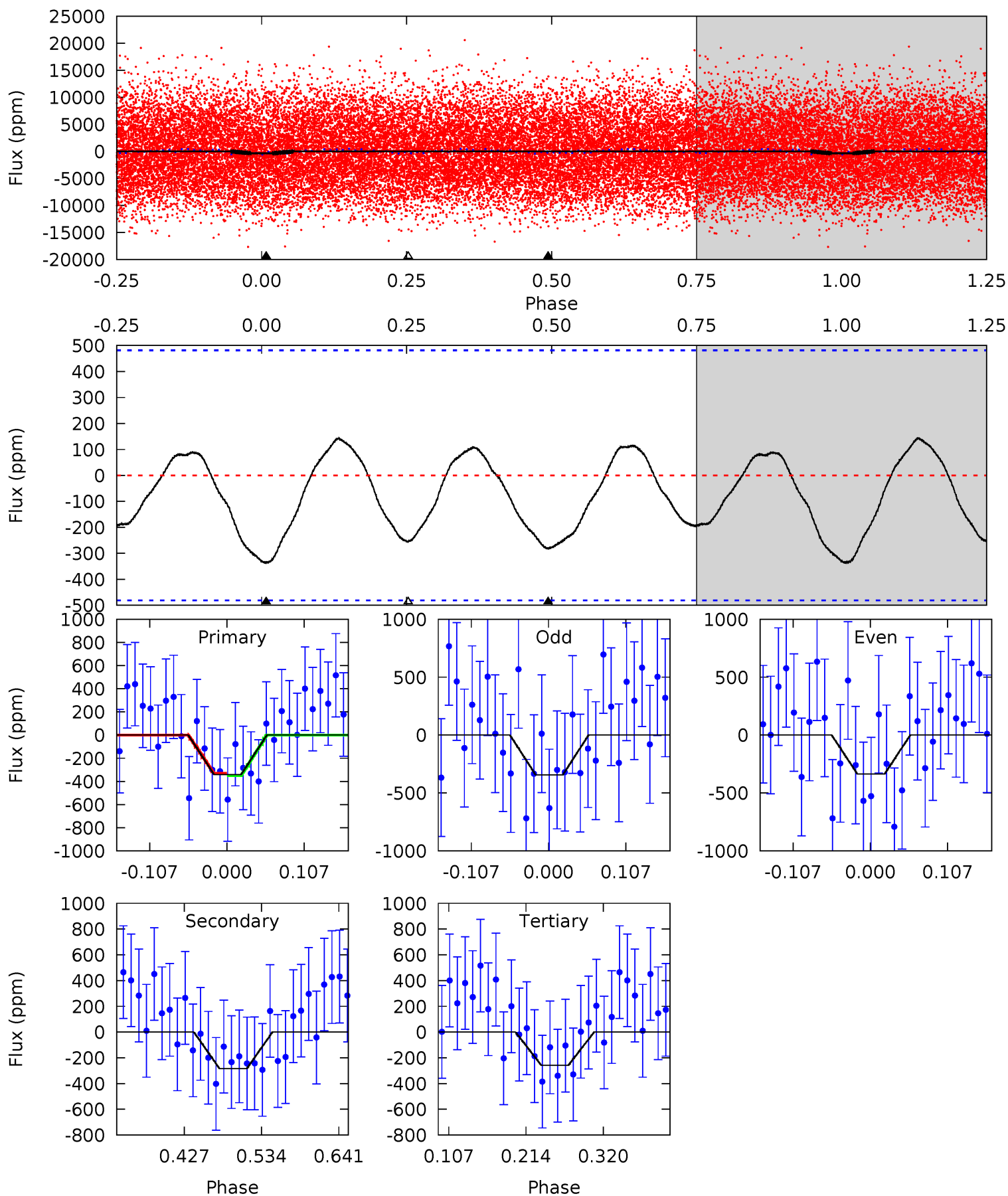
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
17.2	11.5	0	0	4.48	1.44	11.7	17.2	17.2	11.5	11.5	2.90	0.99	0.61	0.10



Alt Model-Shift Uniqueness Test

005209234-02, P = 0.573177 Days, E = 130.941628 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3.22	2.69	2.44	0	4.55	1.61	1.16	0.78	3.22	0.25	2.69	0.03	0.66	0.30	0.09



Stellar Parameters For KIC 005209234

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6202^{+213}_{-233}	$3.835^{+0.520}_{-0.130}$	$-0.380^{+0.300}_{-0.300}$	$2.167^{+0.470}_{-1.018}$	$1.170^{+0.184}_{-0.253}$	$0.162^{+0.896}_{-0.060}$
	+3%/-4%	+14%/-3%	+79%/-79%	+22%/-47%	+16%/-22%	+553%/-37%
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 005209234-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-126 ± 11	$3.24^{+1.82}_{-1.61}$	4582^{+363}_{-610}	5011^{+2020}_{-1068}	$1.352^{+3.983}_{-0.787}$
Alt.	-285 ± 106	$4.00^{+1.84}_{-1.68}$	4553^{+438}_{-607}	5582^{+1861}_{-1146}	$1.990^{+3.957}_{-1.190}$

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 $A_{obs} \gg 1.0$

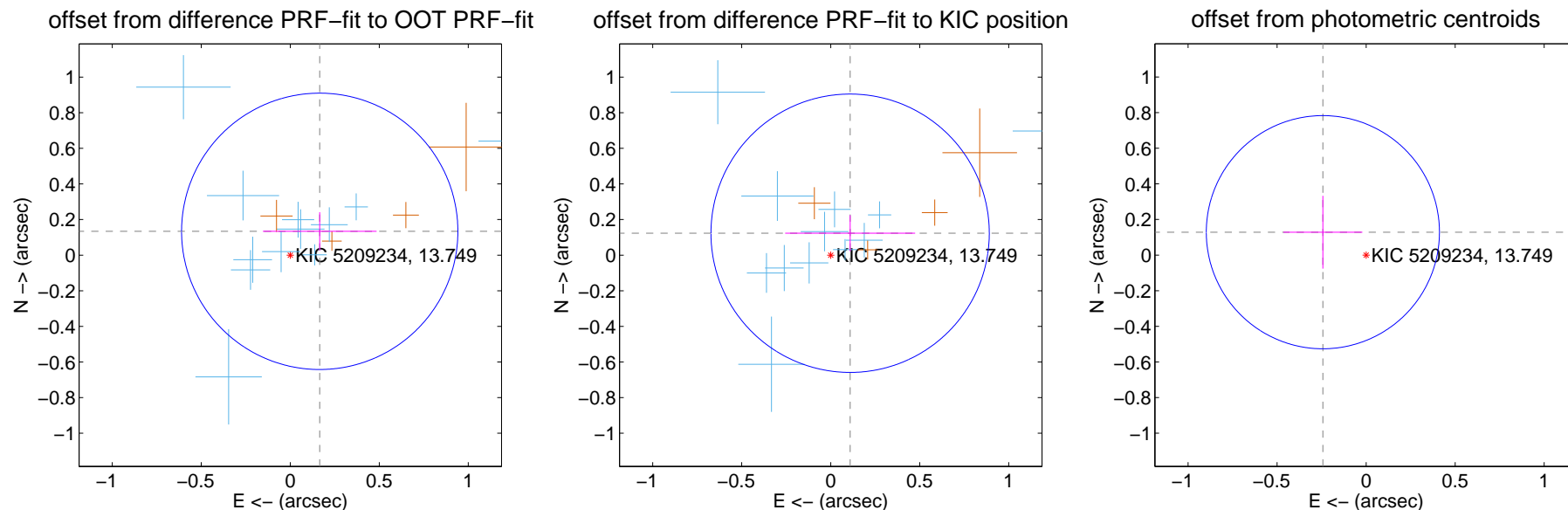
DV Centroid Data

Supplemental centroid analysis for 005209234-02. Kepler magnitude: 13.75. Transit SNR 15.05

There are 12 quarters with good PRF difference image offsets

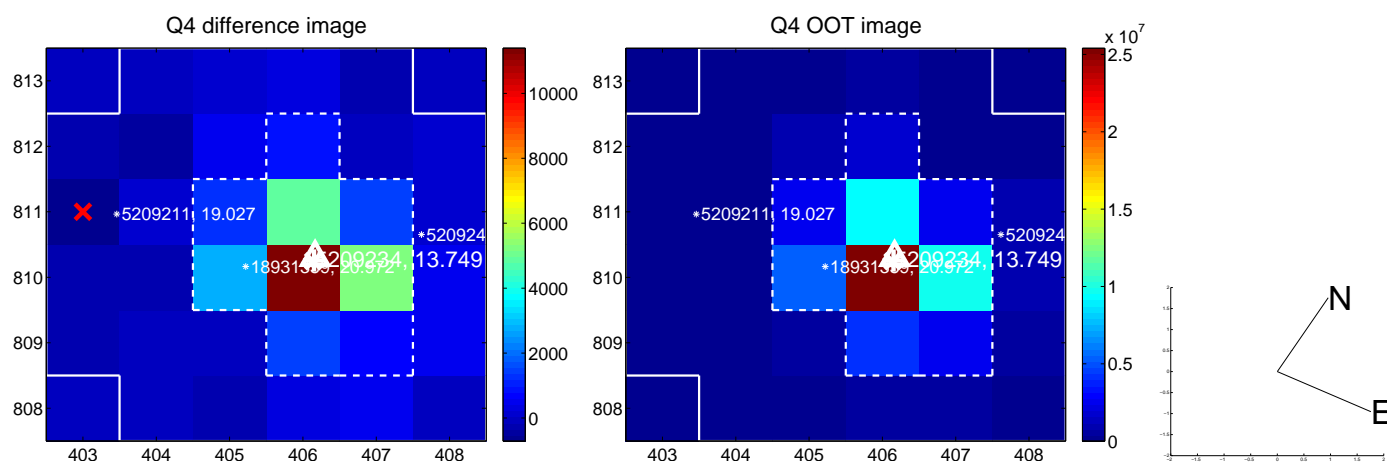
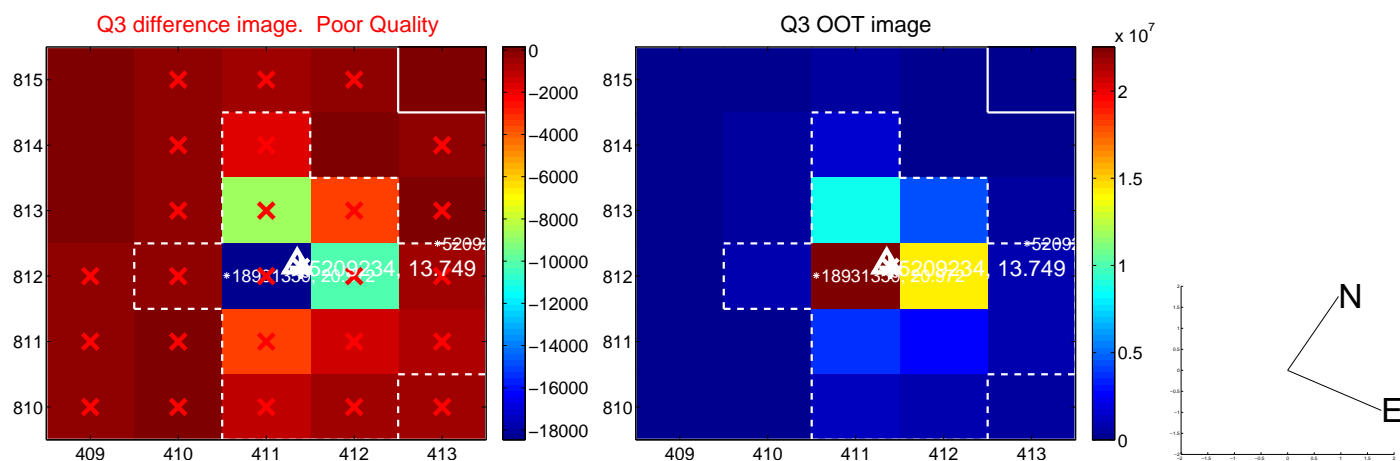
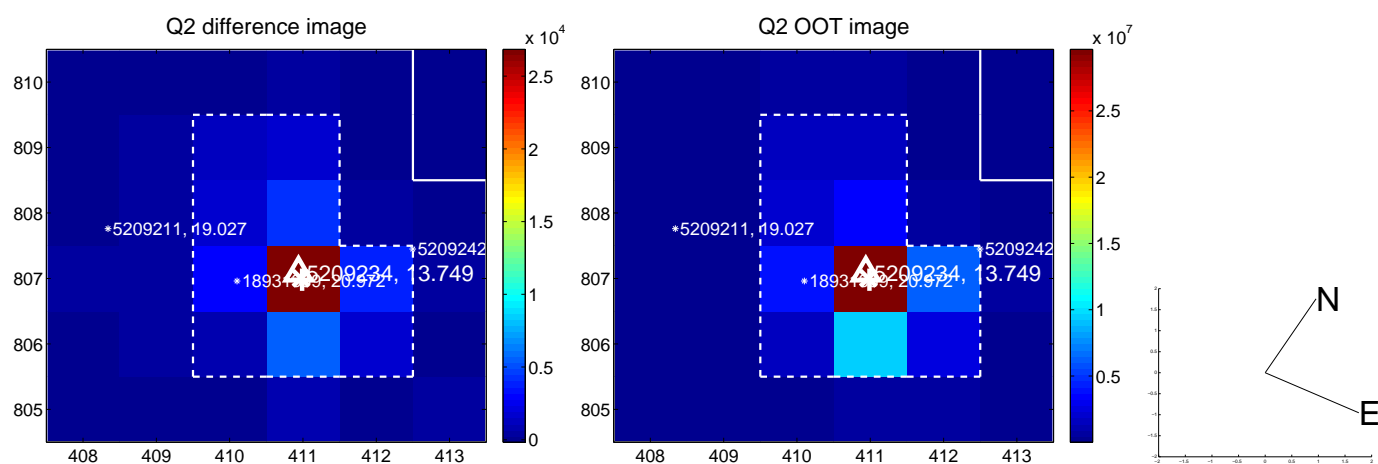
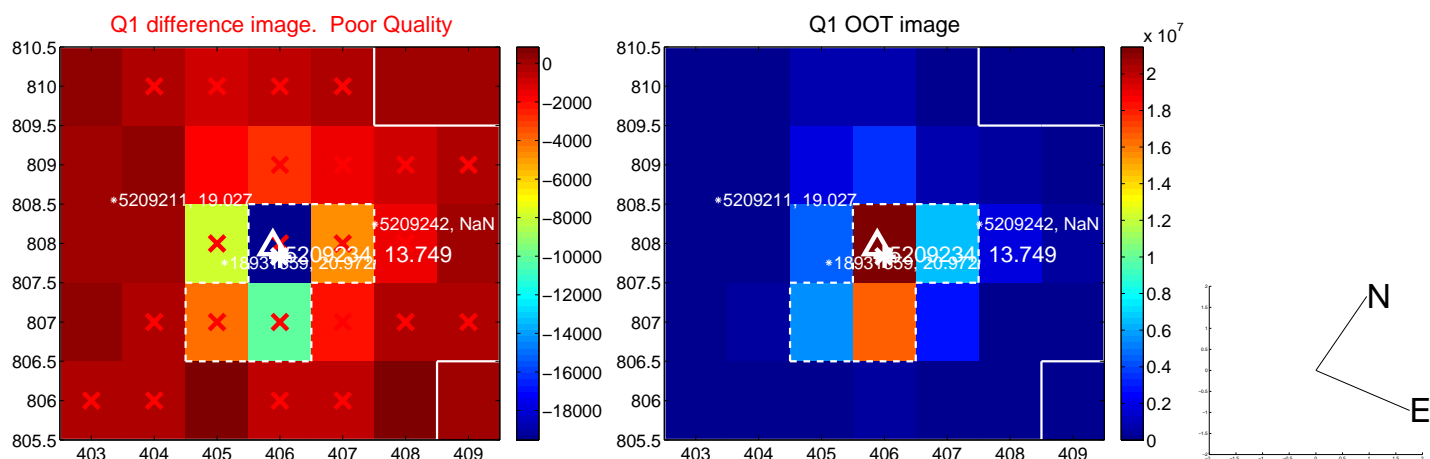
The direct PRF centroid is offset from the target star catalog position by about 0.03 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.213 ± 0.259	0.82	-0.166 ± 0.319	0.134 ± 0.108
PRF-fit source offset from KIC position	0.164 ± 0.261	0.63	-0.109 ± 0.365	0.123 ± 0.101
photometric centroid source offset	0.27 ± 0.22	1.26	0.24 ± 0.22	0.13 ± 0.20

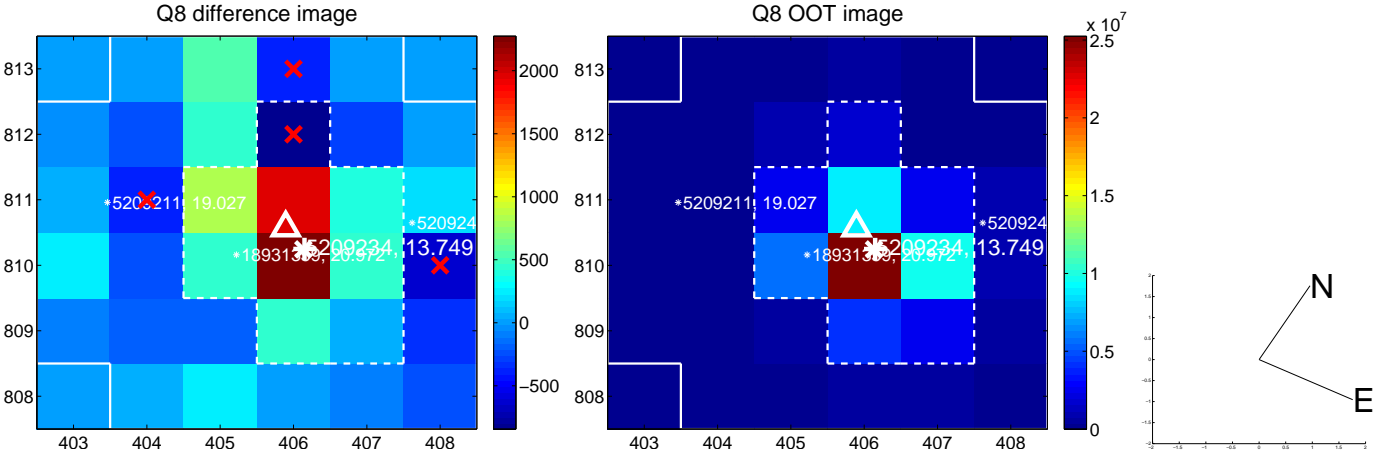
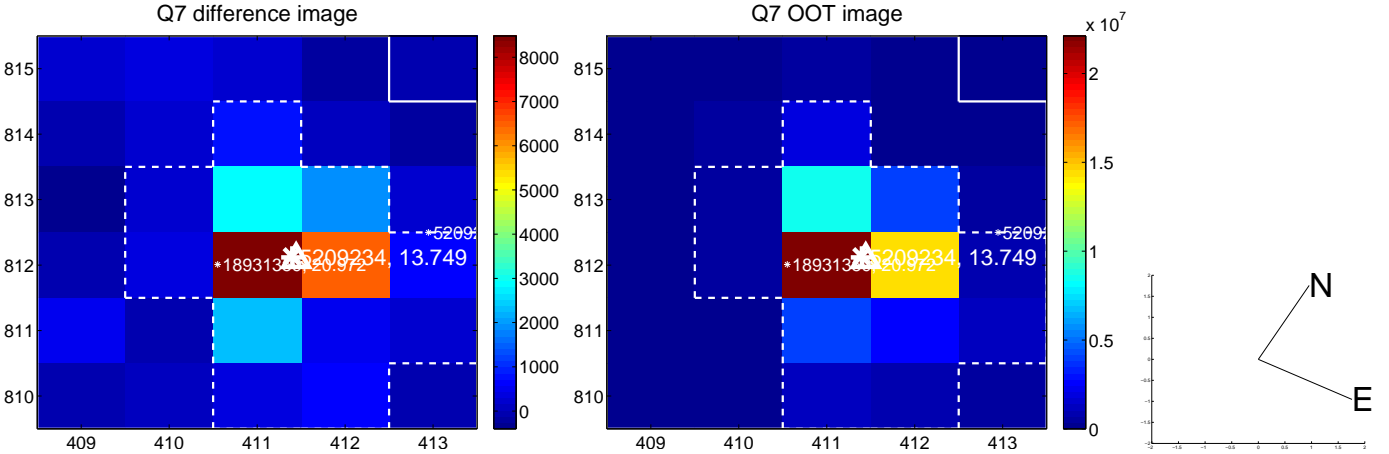
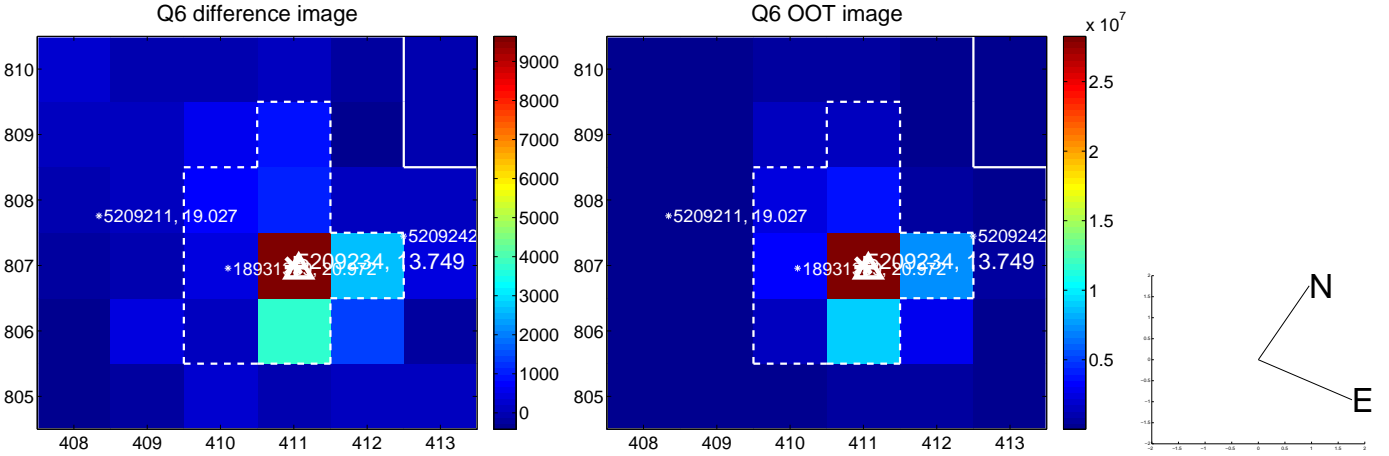
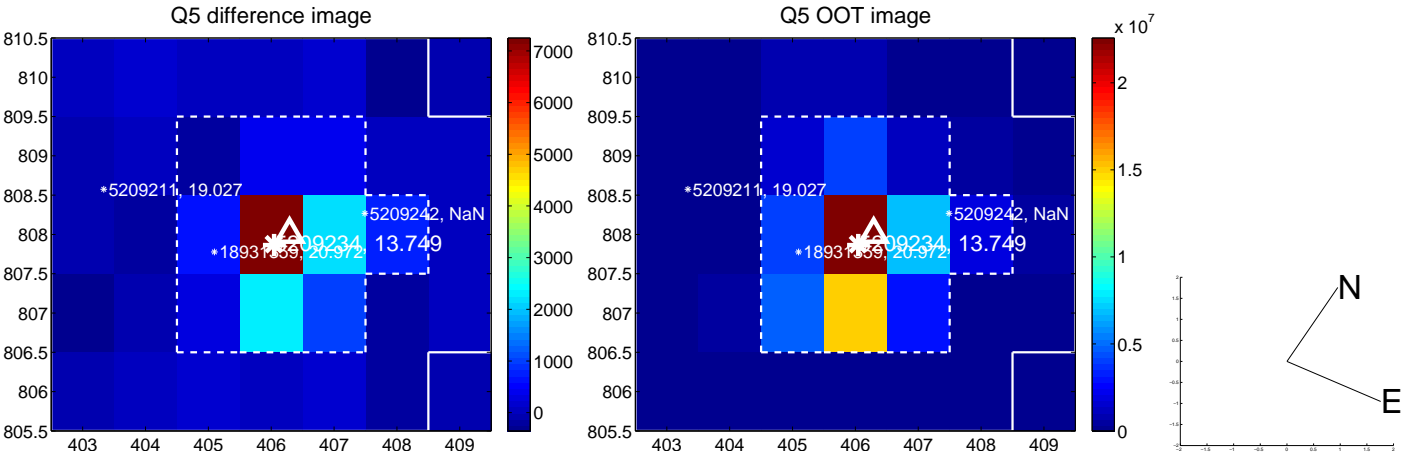


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

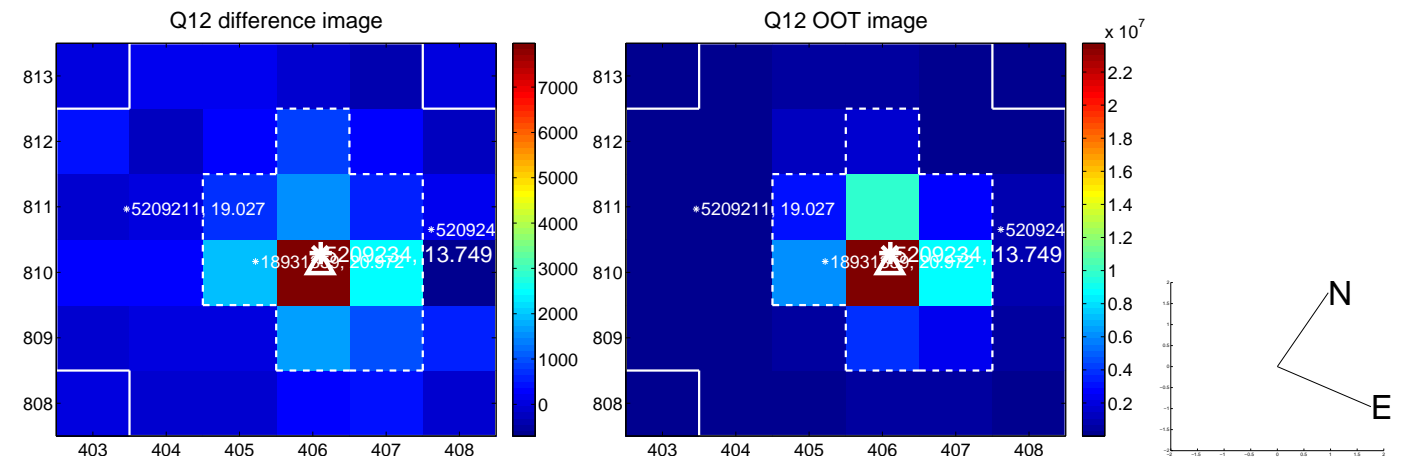
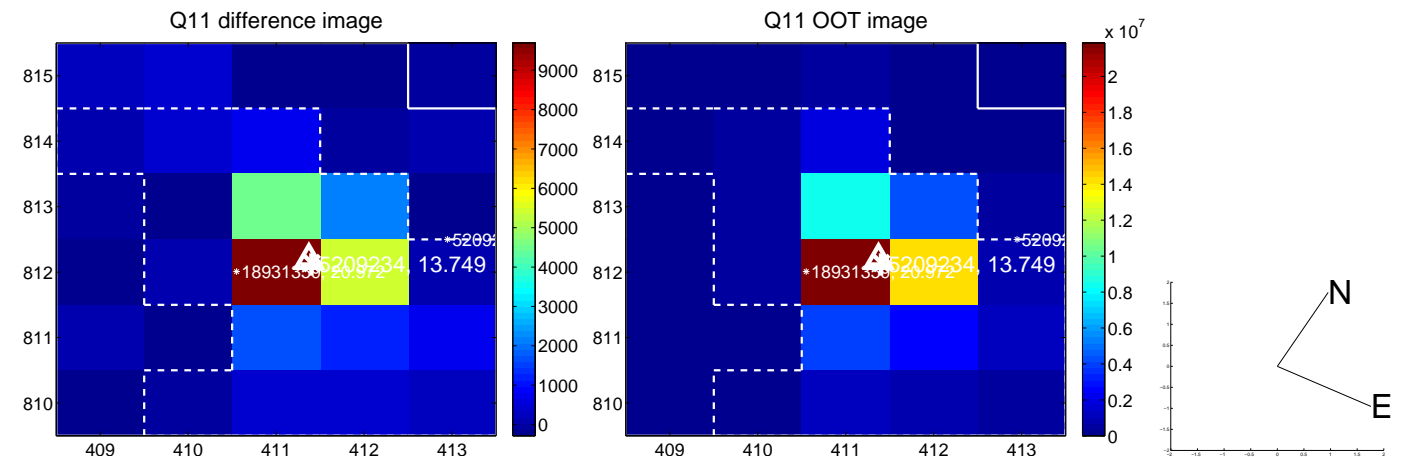
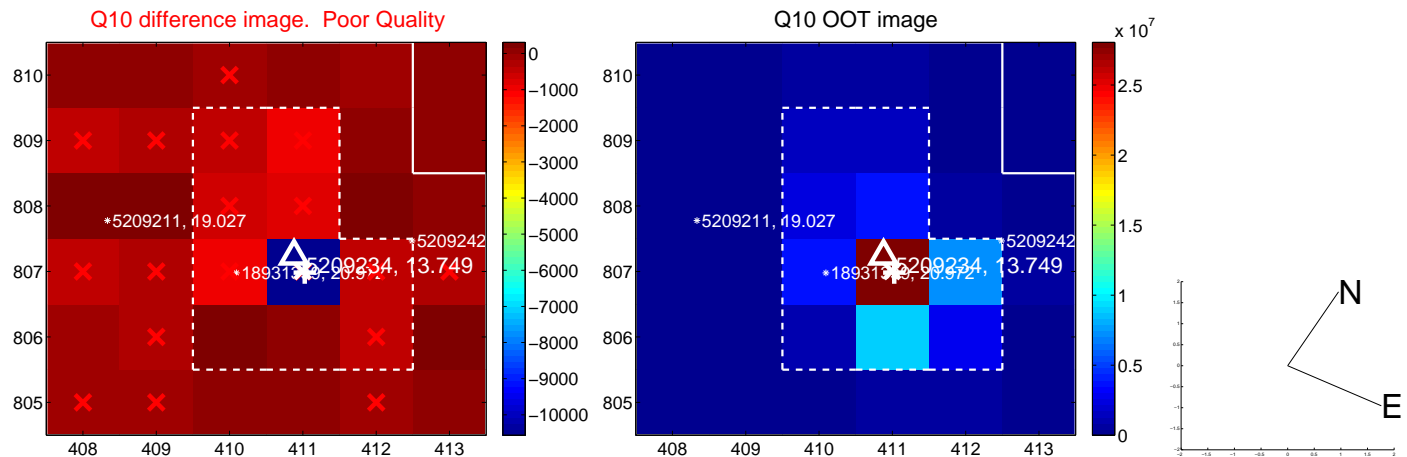
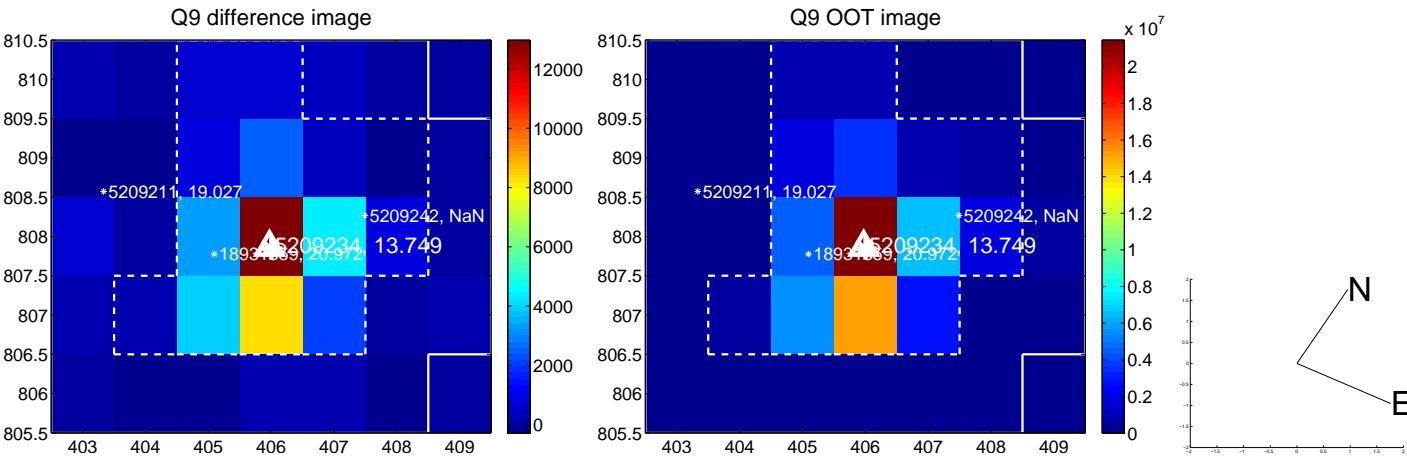
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



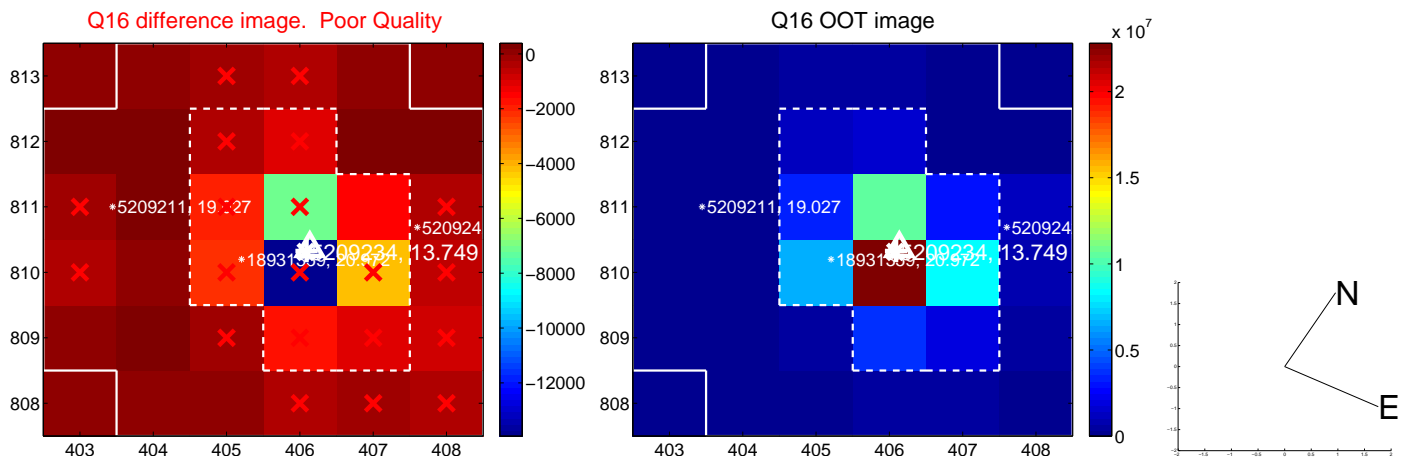
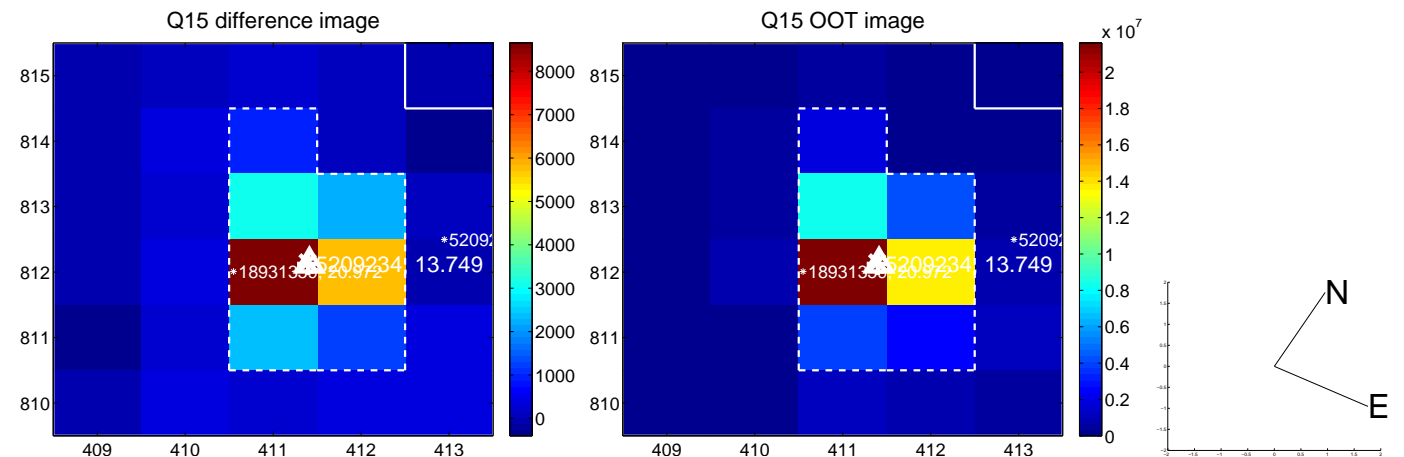
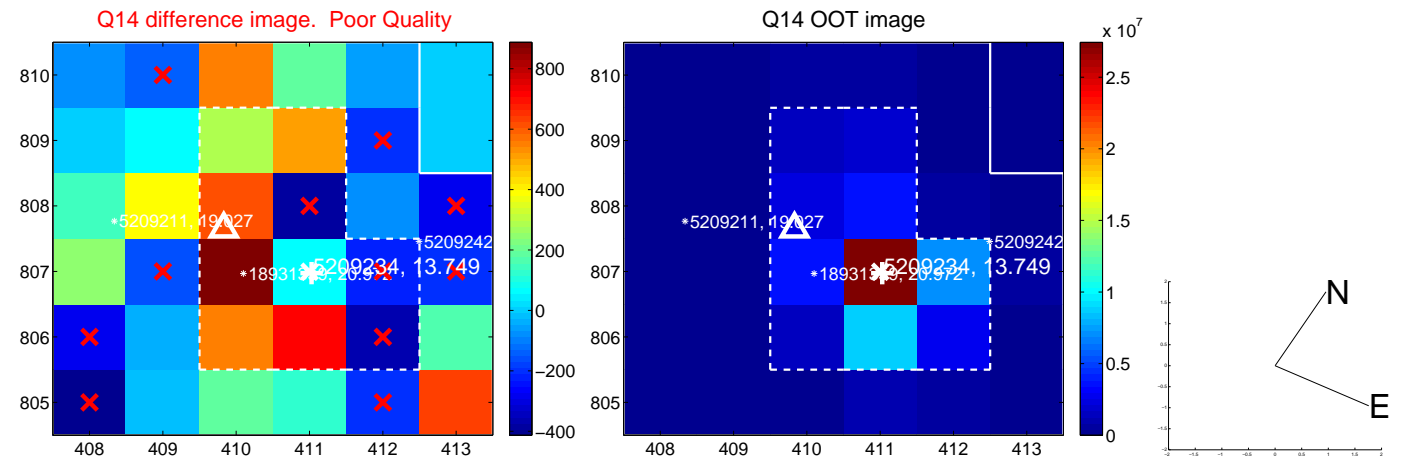
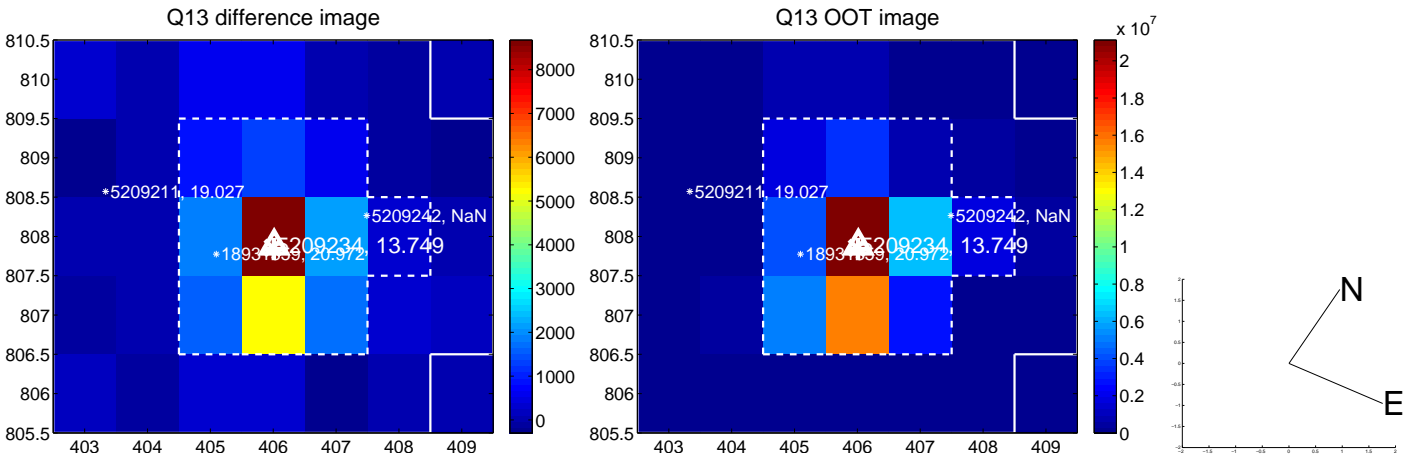
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



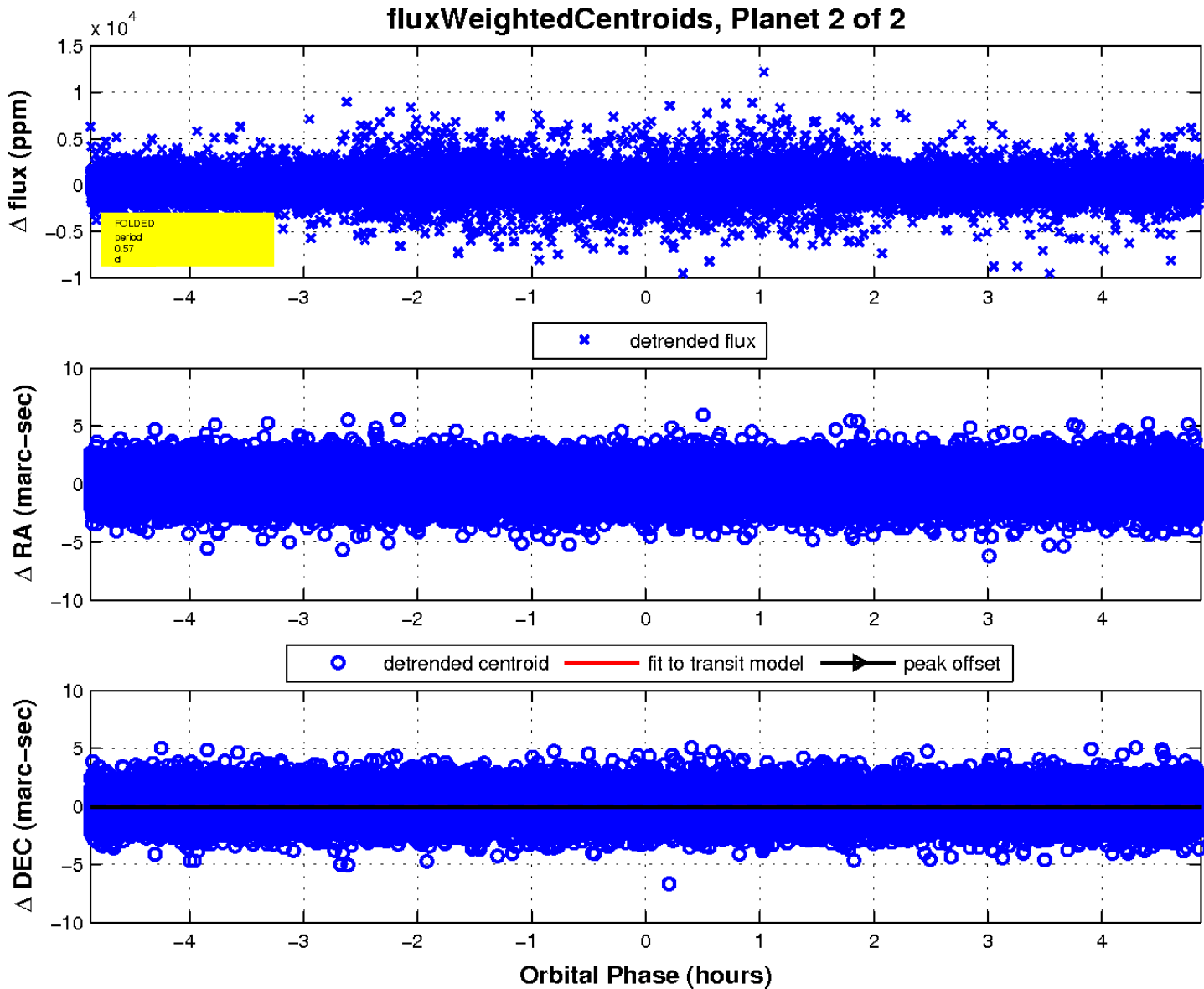
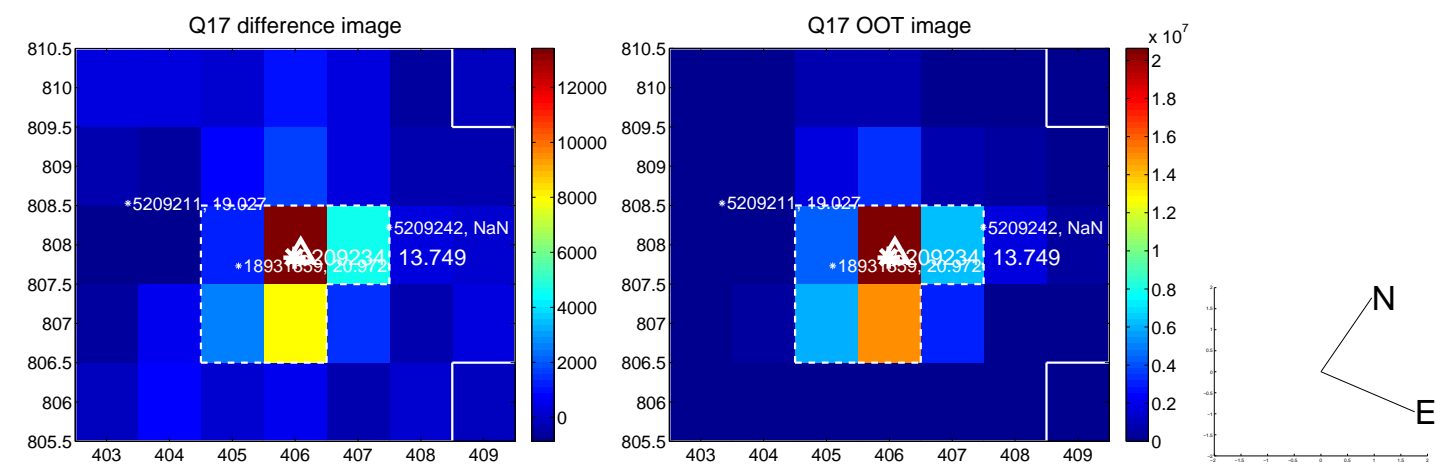
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

