

KIC 006860968

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})
006860968-01	OBS	No	0.578700	132.065653	24.1	1.539	10.4	10.9	2.83	7956	1.63	105122.49
006860968-02	OBS	No	0.807006	131.829163	27.4	2.132	8.8	9.5	2.83	7956	1.73	67473.17

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006860968-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
006860968-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—CENT_SATURATED

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

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

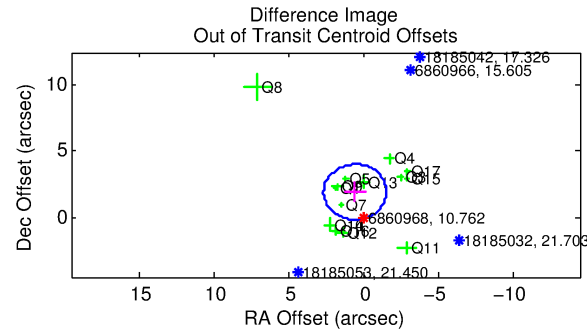
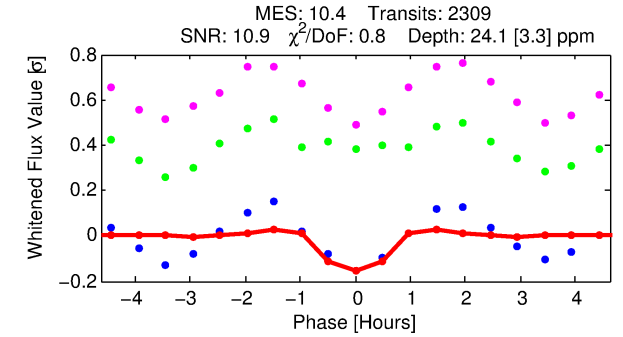
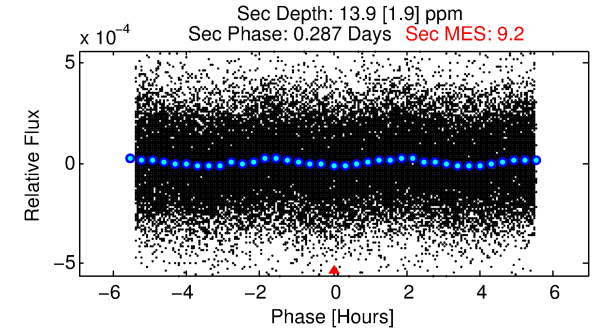
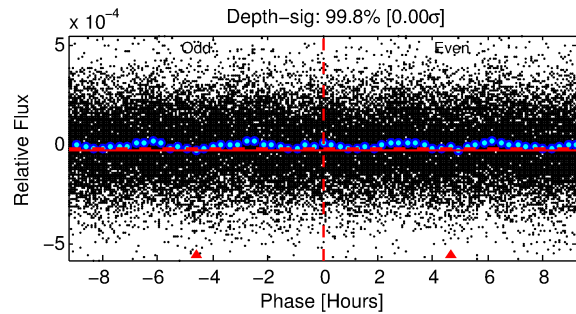
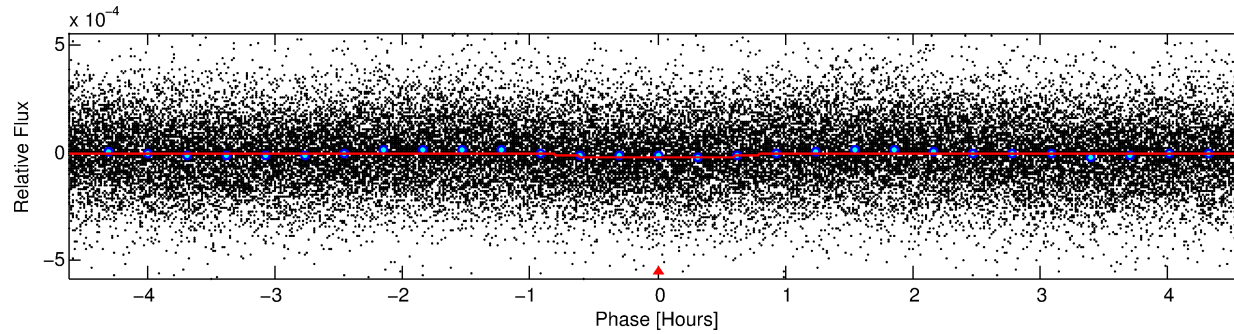
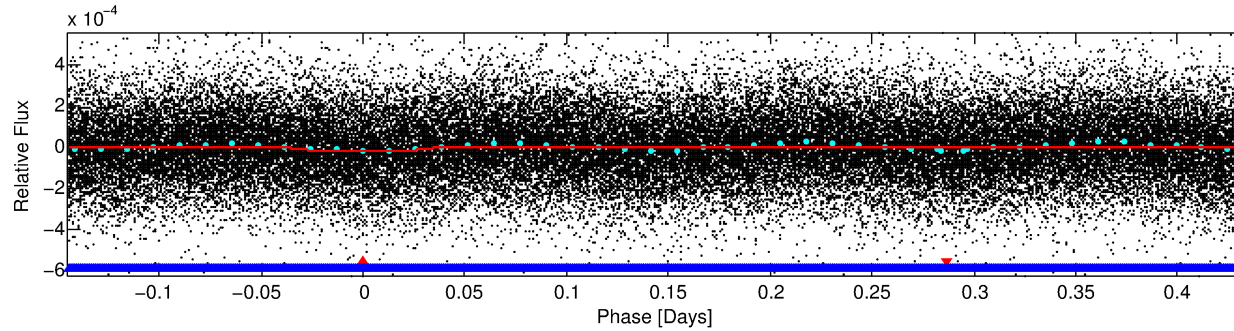
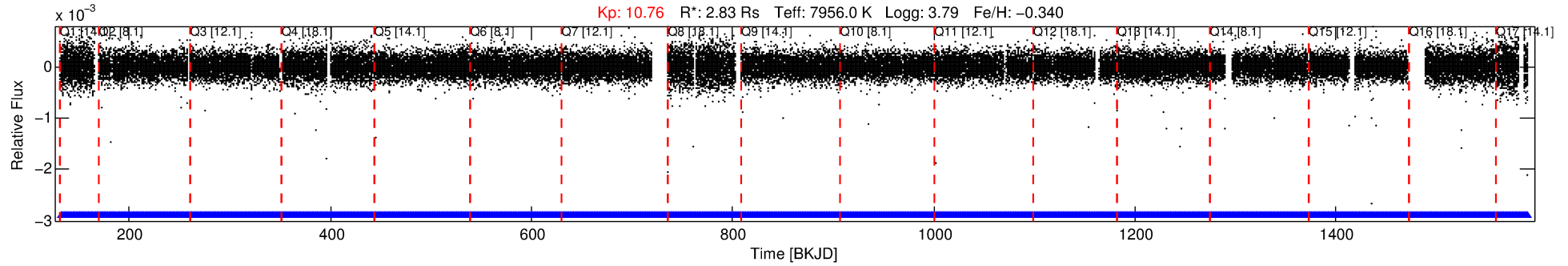
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 006860968-01

No Significant Match Found

DV One-Page Summary

KIC: 6860968 Candidate: 1 of 2 Period: 0.579 d



DV Fit Results:

Period = 0.57870 [0.00001] d
Epoch = 132.0657 [0.0019] BKJD
Rp/R* = 0.0053 [0.0011]
a/R* = 1.59 [1.12]
b = 0.90 [0.25]
Seff = 105122.48 [74984.29]
Teq = 4591 [819] K
Rp = 1.63 [0.80] Re
a = 0.0165 [0.0071] AU
Ag = 0.79 [0.65] [-0.32 σ]
Teffp = 6700 [770] K [1.88 σ]

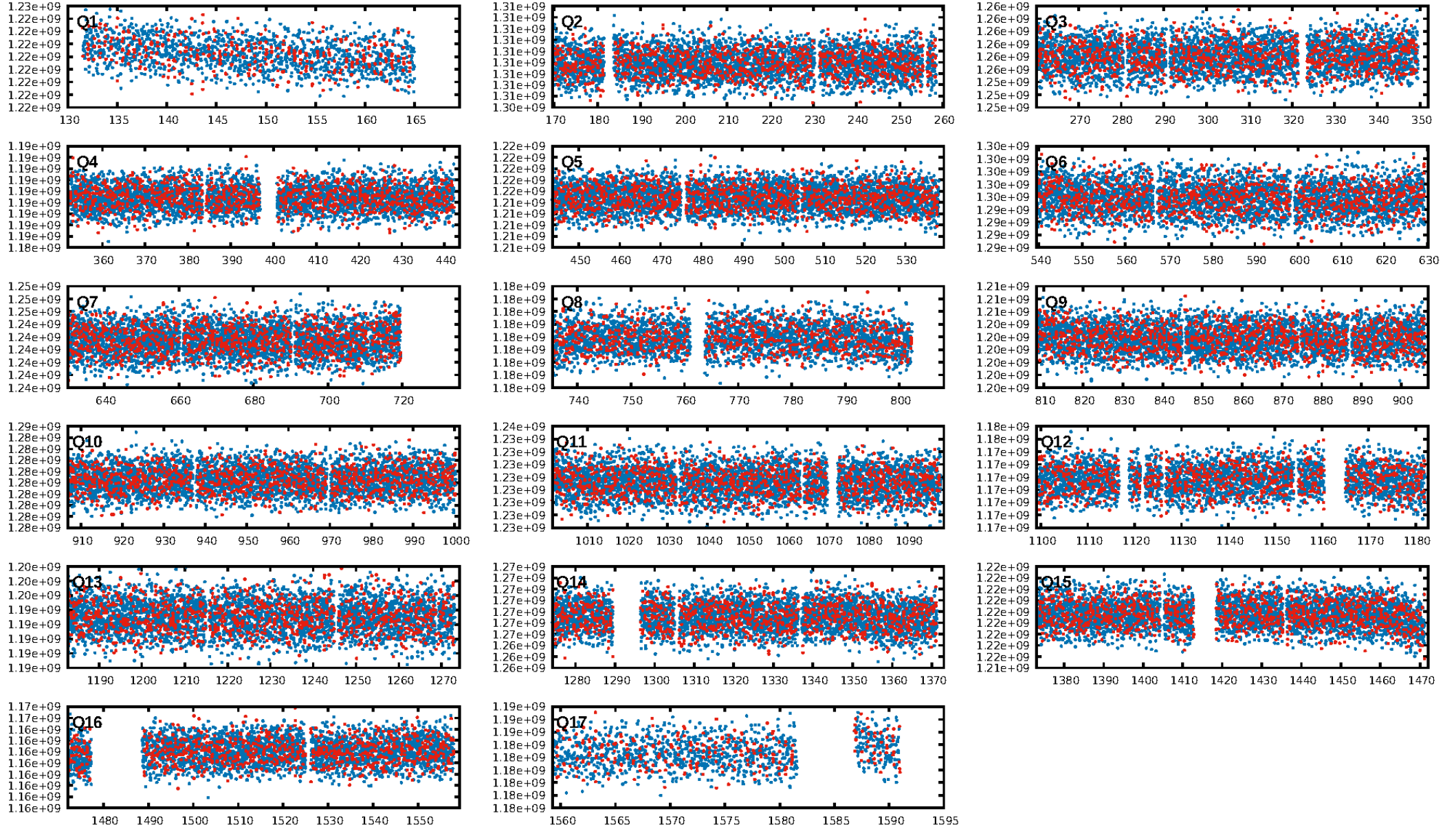
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 96.3% [2.08 σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 1.46e-20
RollingBand-fgt: 1.00 [2205/2205]
GhostDiagnostic-chr: -17.61
Centroid-sig: 41.8%
Centroid-so: 0.615 arcsec [1.58 σ]
OotOffset-rm: 2.004 arcsec [2.87 σ]
KicOffset-rm: 2.098 arcsec [2.75 σ]
OotOffset-st: 2/4/4/5 [15]
KicOffset-st: 2/4/4/5 [15]
DiffImageQuality-fgm: 0.27 [4/15]
DiffImageOverlap-fno: 1.00 [17/17]

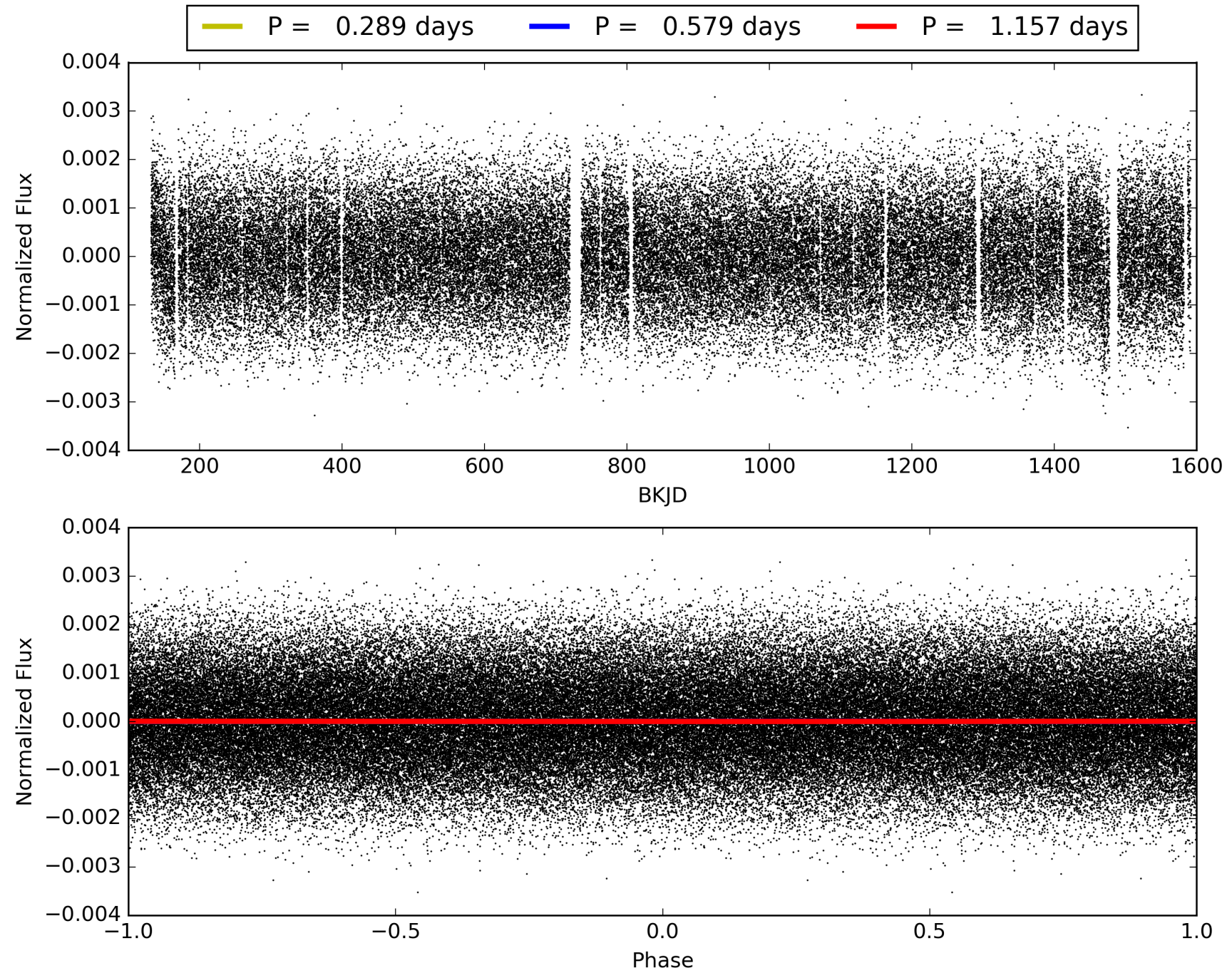
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 19:00:43 Z

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

TCE 006860968-01, PDC Light Curves

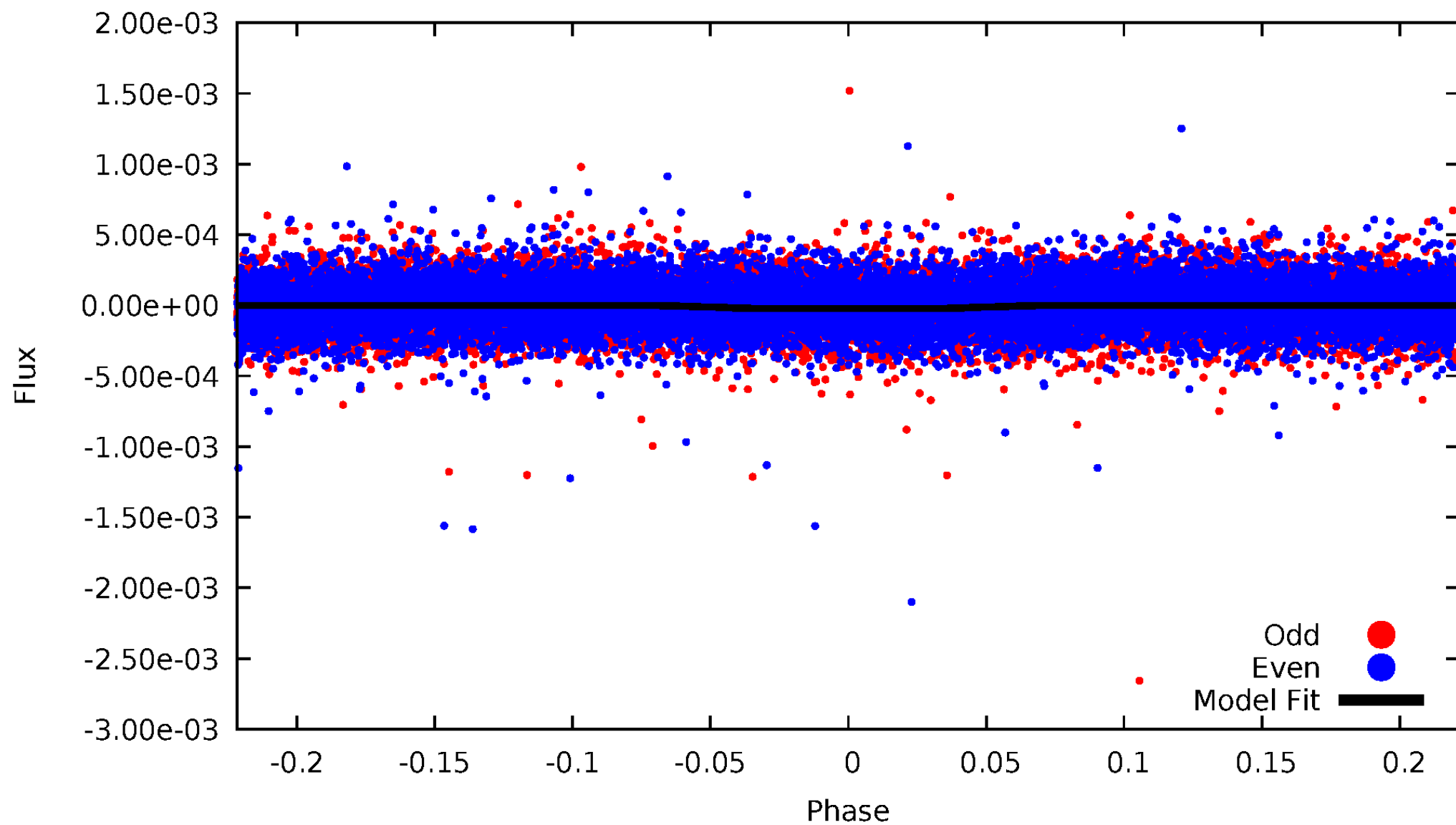


TCE 006860968-01



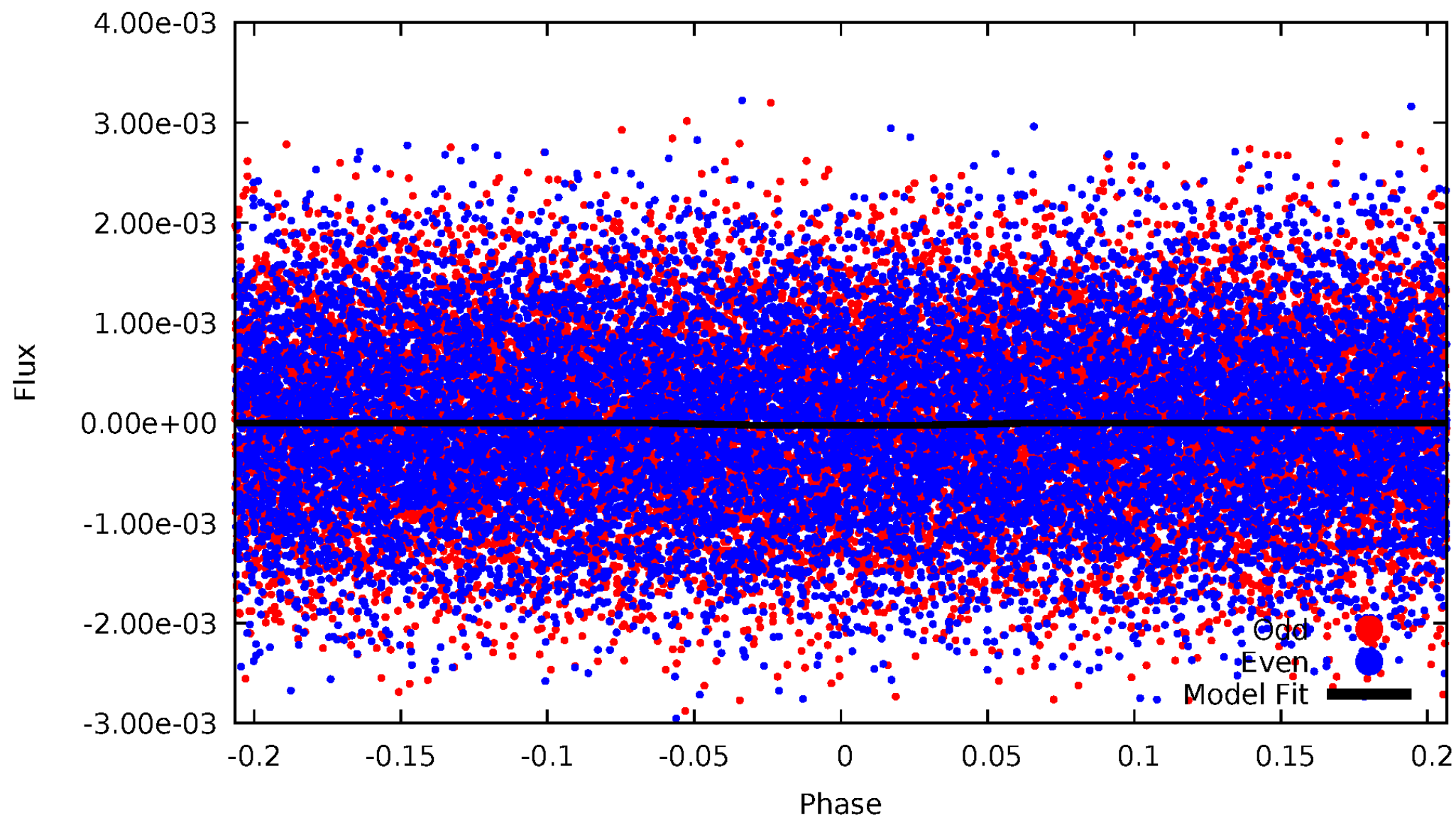
DV Odd/Even

TCE 006860968-01



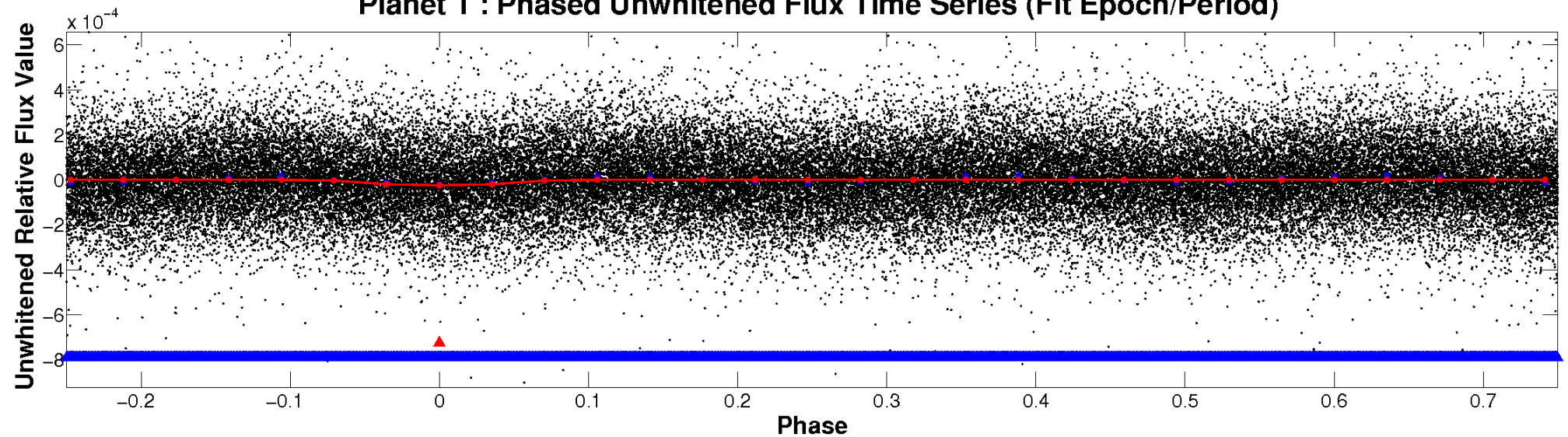
ALT Odd/Even

TCE 006860968-01

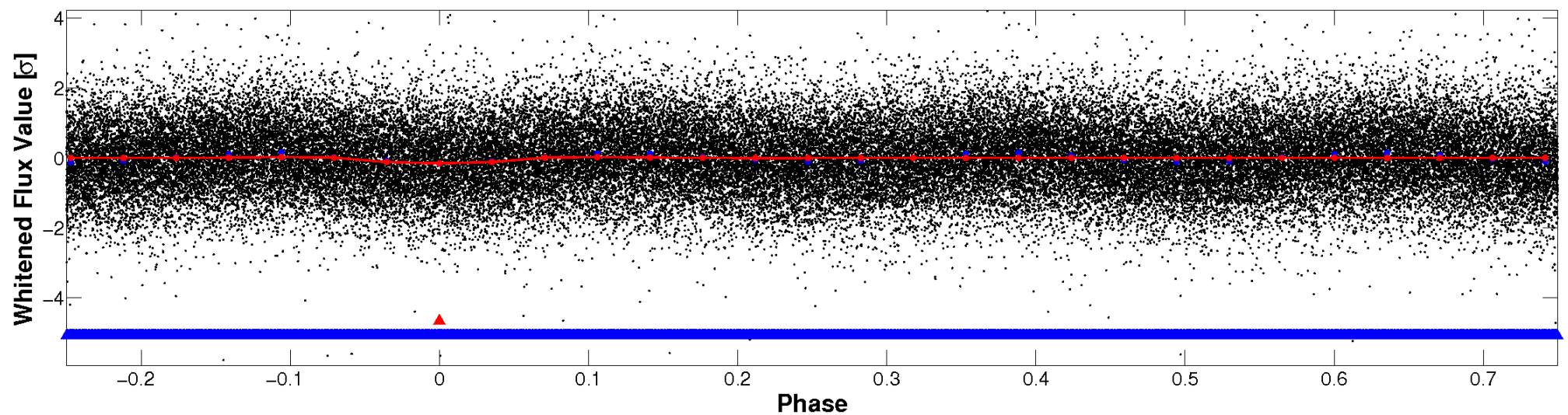


Non-Whitened Vs. Whitened Light Curve

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

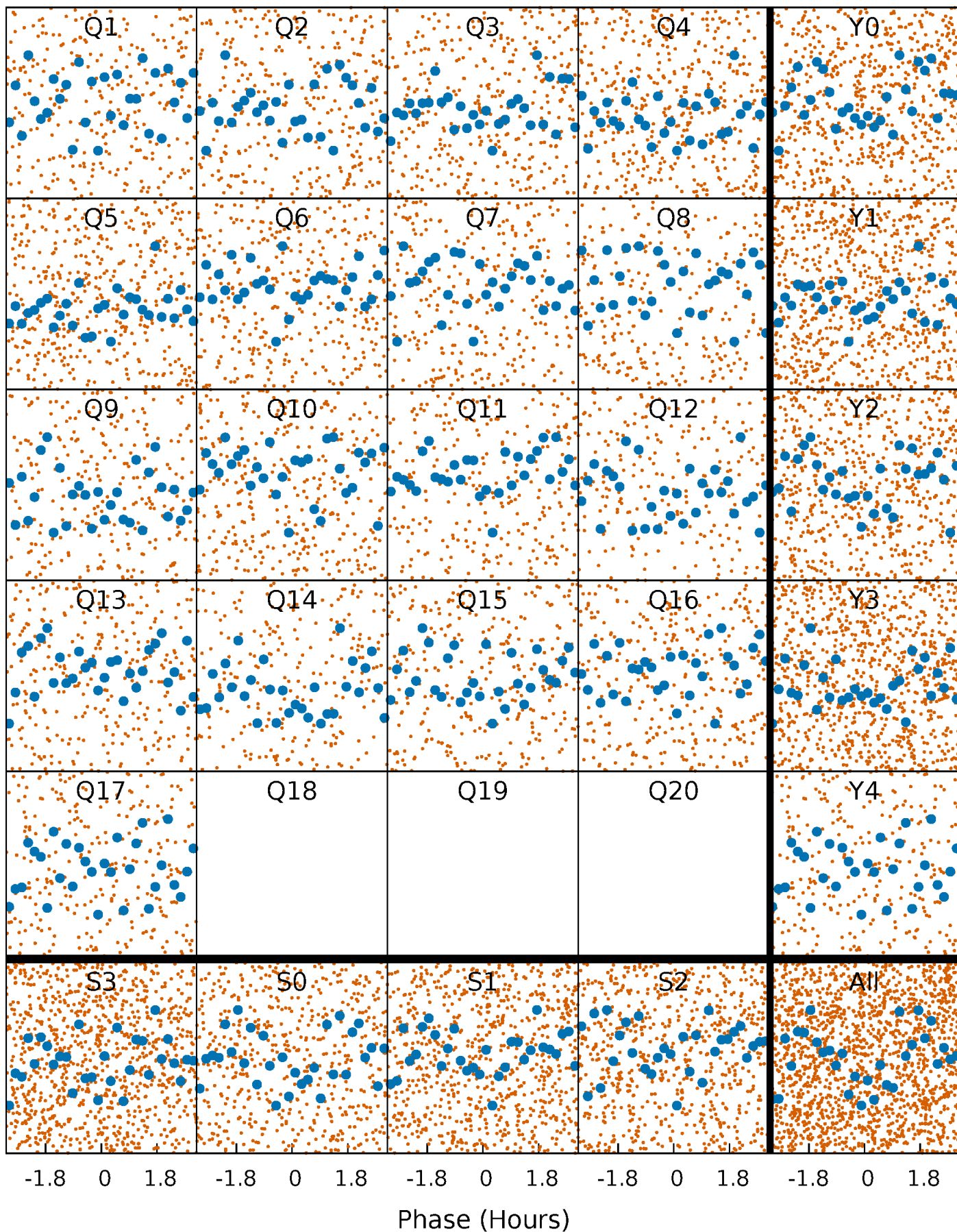


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



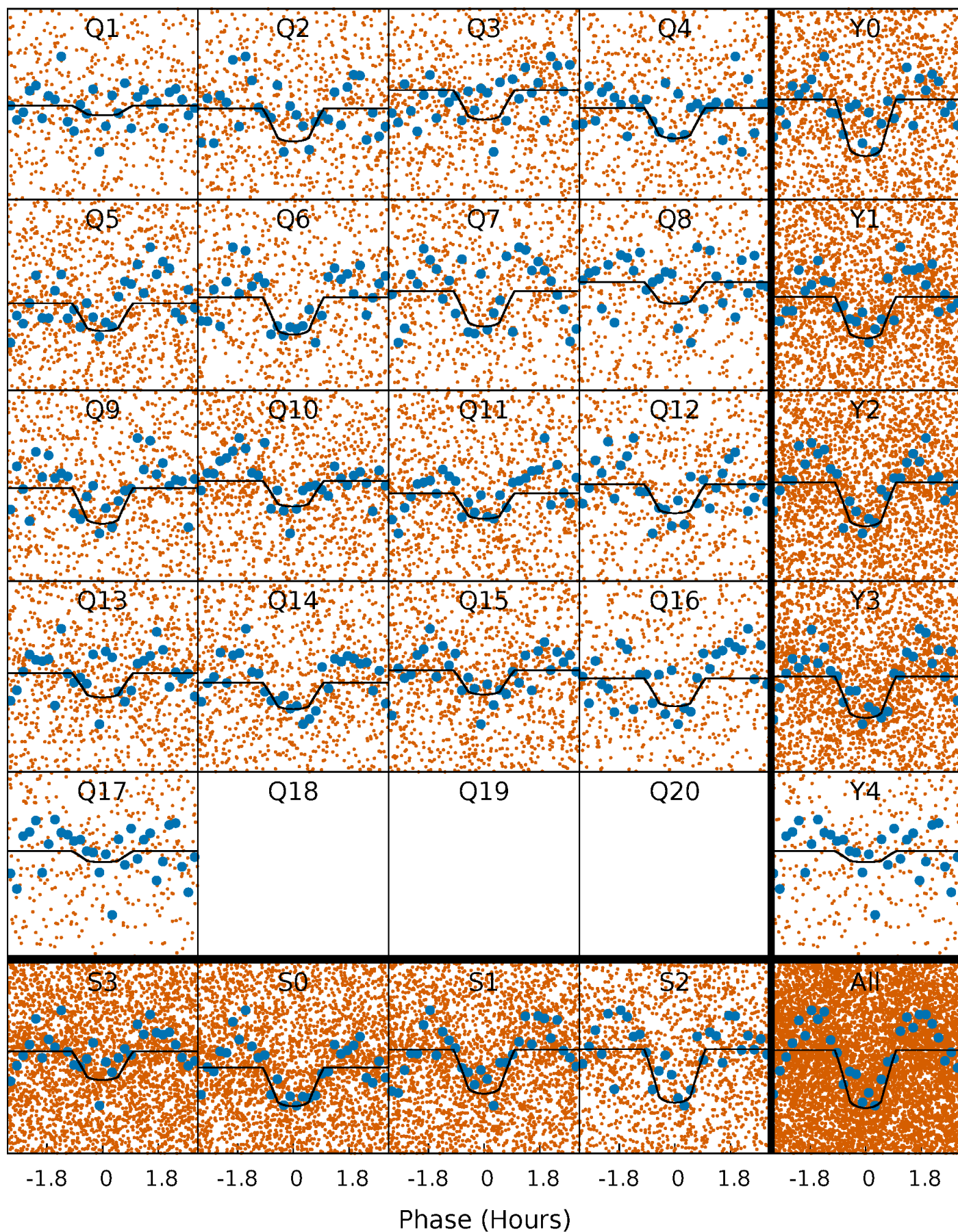
PDC Quarter-Phased Transit Curves

TCE 006860968-01 P= 0.578700 Days $T_0=132.065653$ (BKJD)



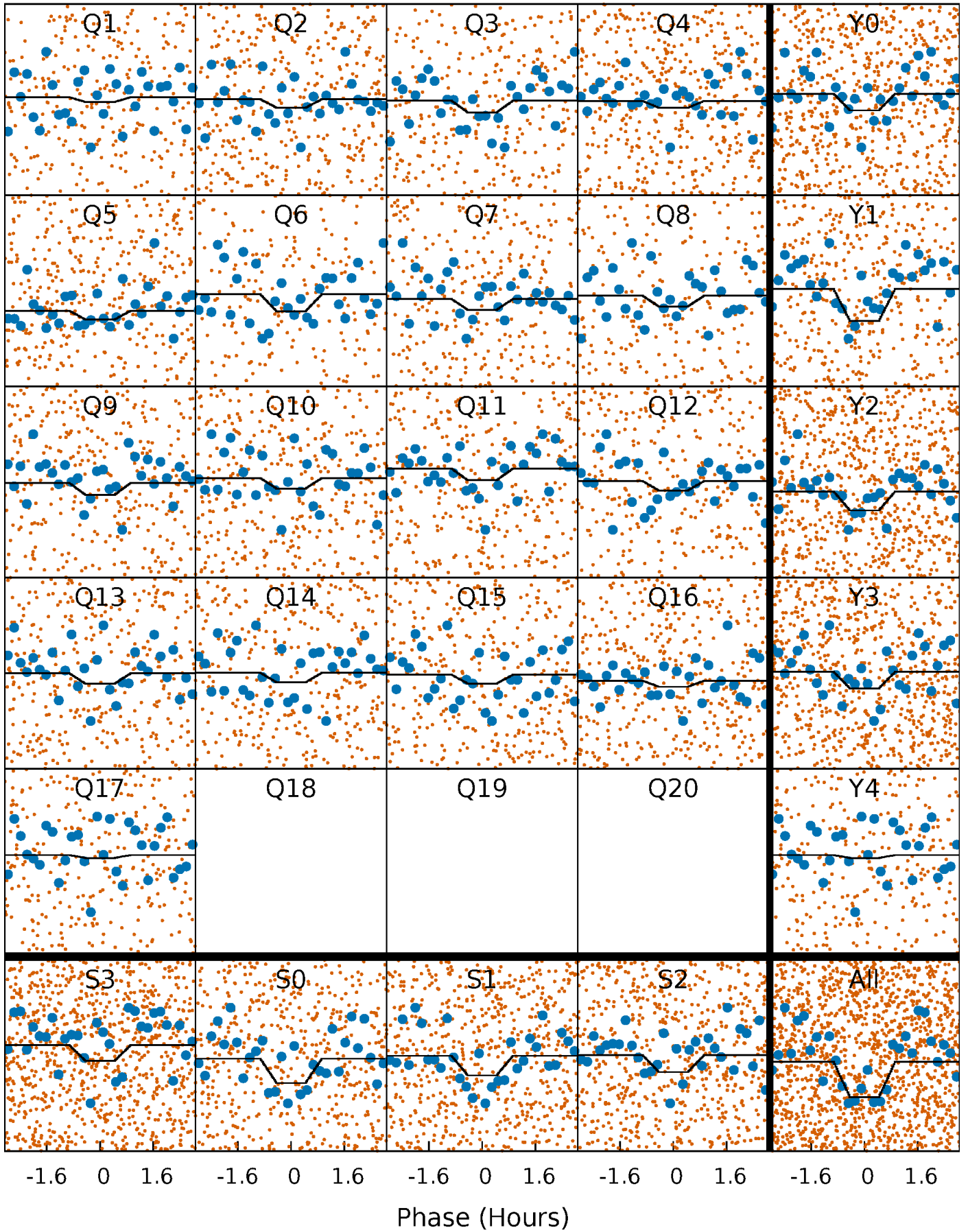
DV Quarter-Phased Transit Curves

TCE 006860968-01 P= 0.578700 Days $T_0=132.065653$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

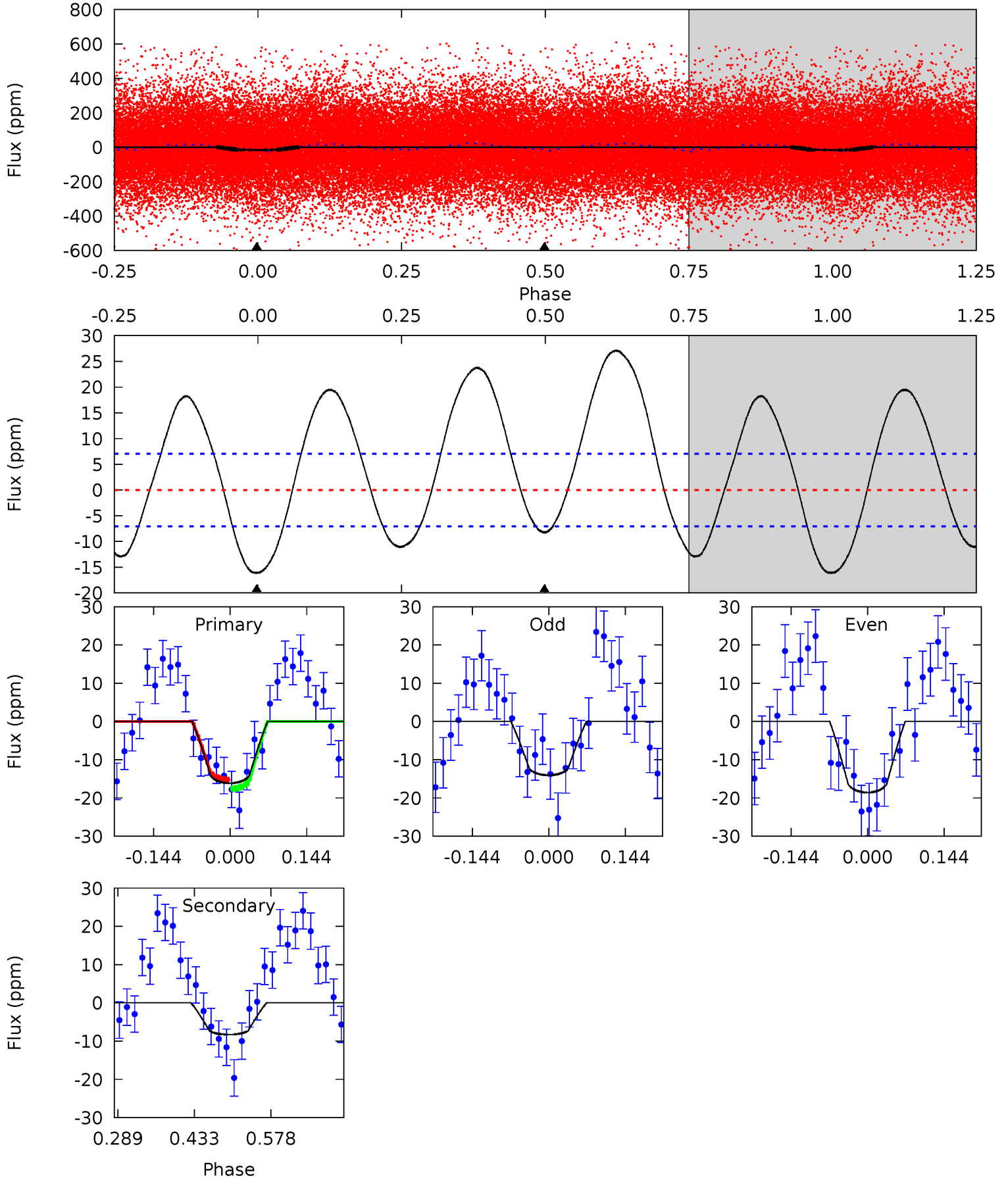
TCE 006860968-01 P= 0.578702 Days $T_0=132.067981$ (BKJD)



DV Model-Shift Uniqueness Test

006860968-01, P = 0.578700 Days, E = 131.486953 Days

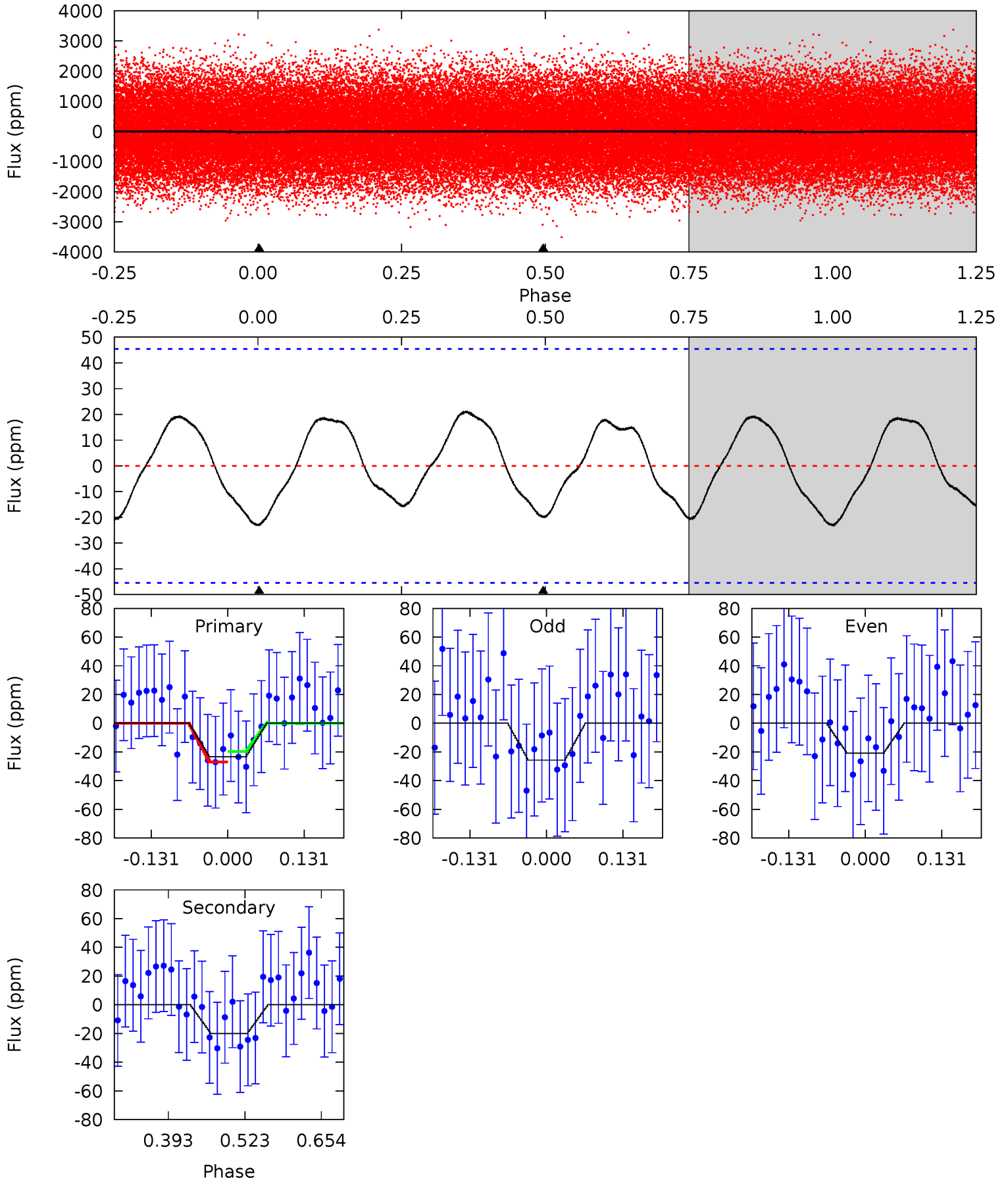
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.3	5.27	0	0	4.49	1.46	6.92	10.3	10.3	5.27	5.27	1.45	0.91	0.63	0.76



Alt Model-Shift Uniqueness Test

006860968-01, P = 0.578702 Days, E = 131.489279 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2.31	1.98	0	0	4.51	1.51	1.25	2.31	2.31	1.98	1.98	0.24	0.68	0.48	0.36



Stellar Parameters For KIC 006860968

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	7956^{+223}_{-335}	$3.790^{+0.408}_{-0.072}$	$-0.340^{+0.200}_{-0.300}$	$2.831^{+0.315}_{-1.261}$	$1.804^{+0.103}_{-0.412}$	$0.112^{+0.404}_{-0.027}$
	+3%/-4%	+11%/-2%	+59%/-88%	+11%/-45%	+6%/-23%	+361%/-24%
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 006860968-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-8 ± 2	$1.48^{+0.41}_{-0.41}$	6230^{+418}_{-680}	4797^{+1098}_{-1270}	$0.551^{+0.505}_{-0.210}$
Alt.	-20 ± 10	$1.34^{+0.42}_{-0.38}$	6193^{+416}_{-589}	7128^{+1775}_{-1855}	$1.597^{+1.743}_{-0.949}$

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 $A_{obs} \gg 1.0$

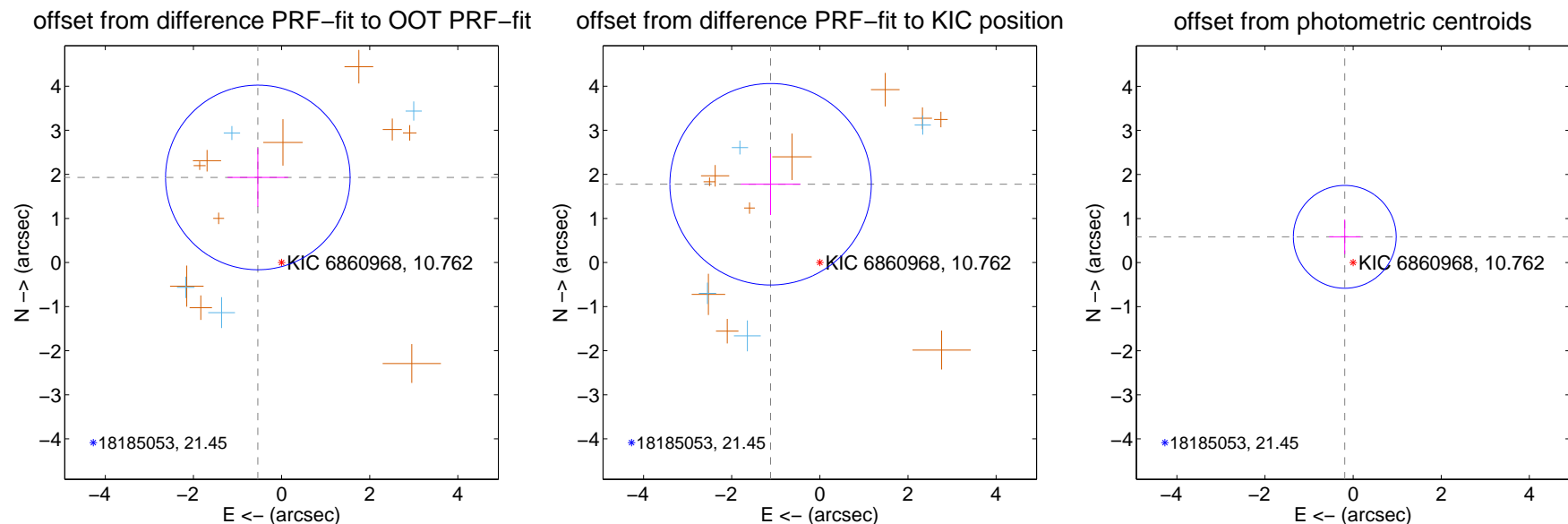
DV Centroid Data

Supplemental centroid analysis for 006860968-01. **Kepler magnitude: 10.76.** Transit SNR 10.90

There are 4 quarters with good PRF difference image offsets

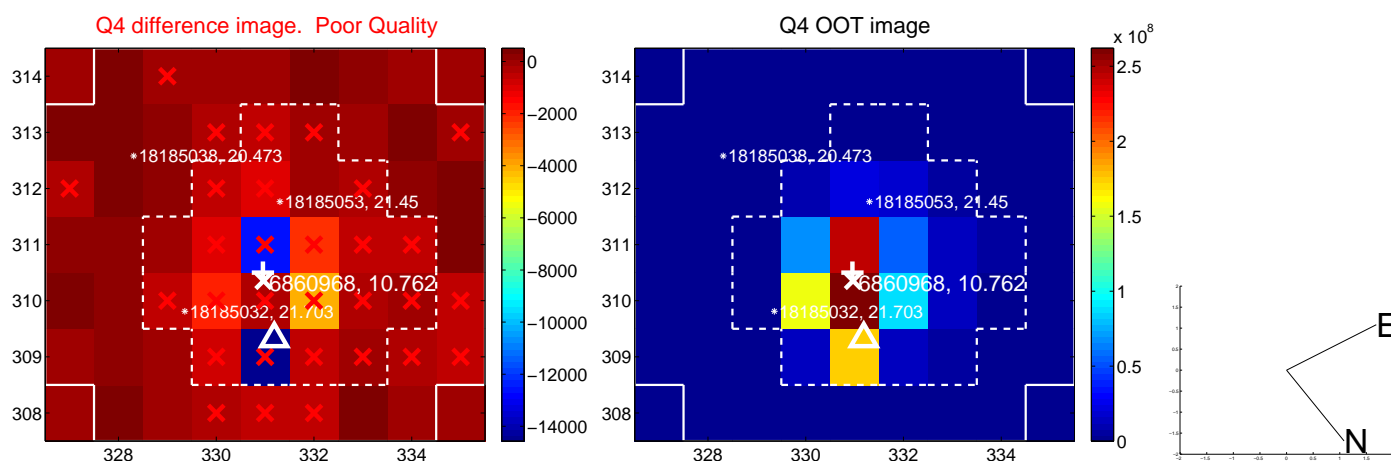
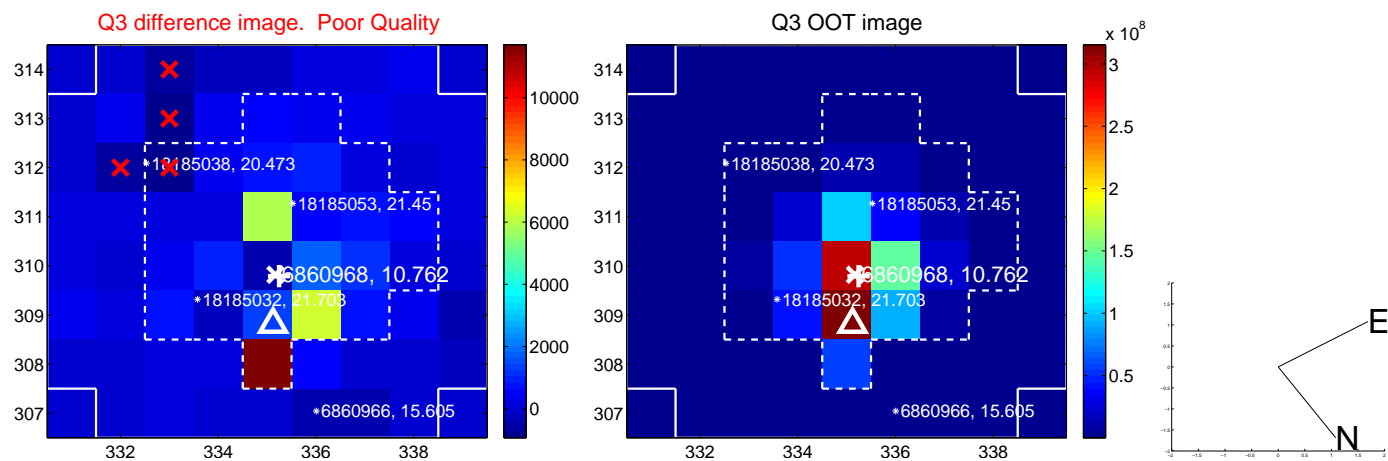
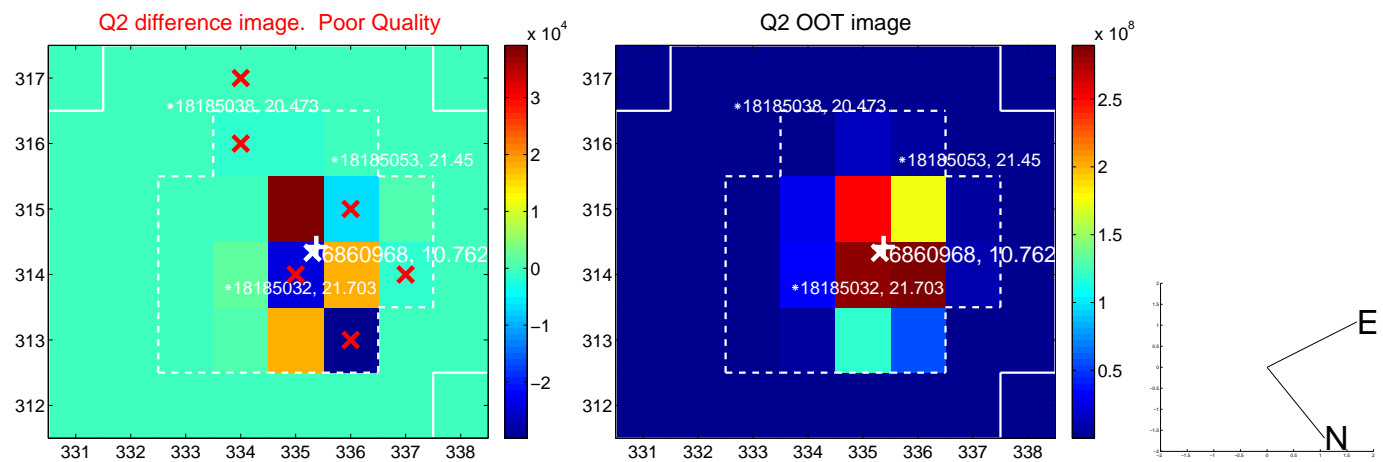
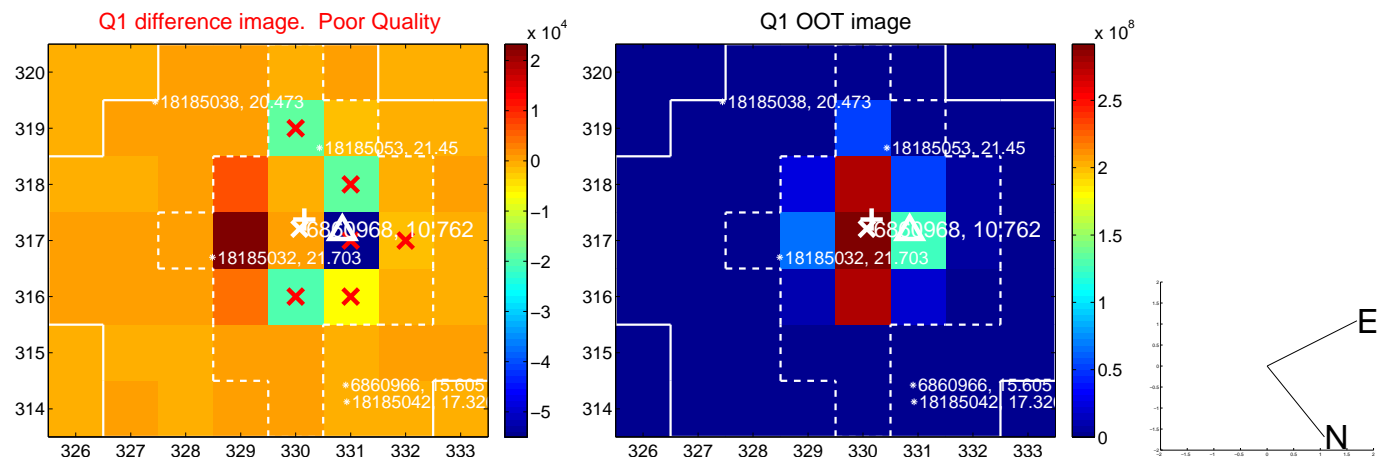
The direct PRF centroid is offset from the target star catalog position by about 0.74 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	2.004 ± 0.698	2.87	0.539 ± 0.687	1.930 ± 0.663
PRF-fit source offset from KIC position	2.098 ± 0.762	2.75	1.118 ± 0.674	1.776 ± 0.698
photometric centroid source offset	0.61 ± 0.39	1.58	0.19 ± 0.35	0.58 ± 0.39

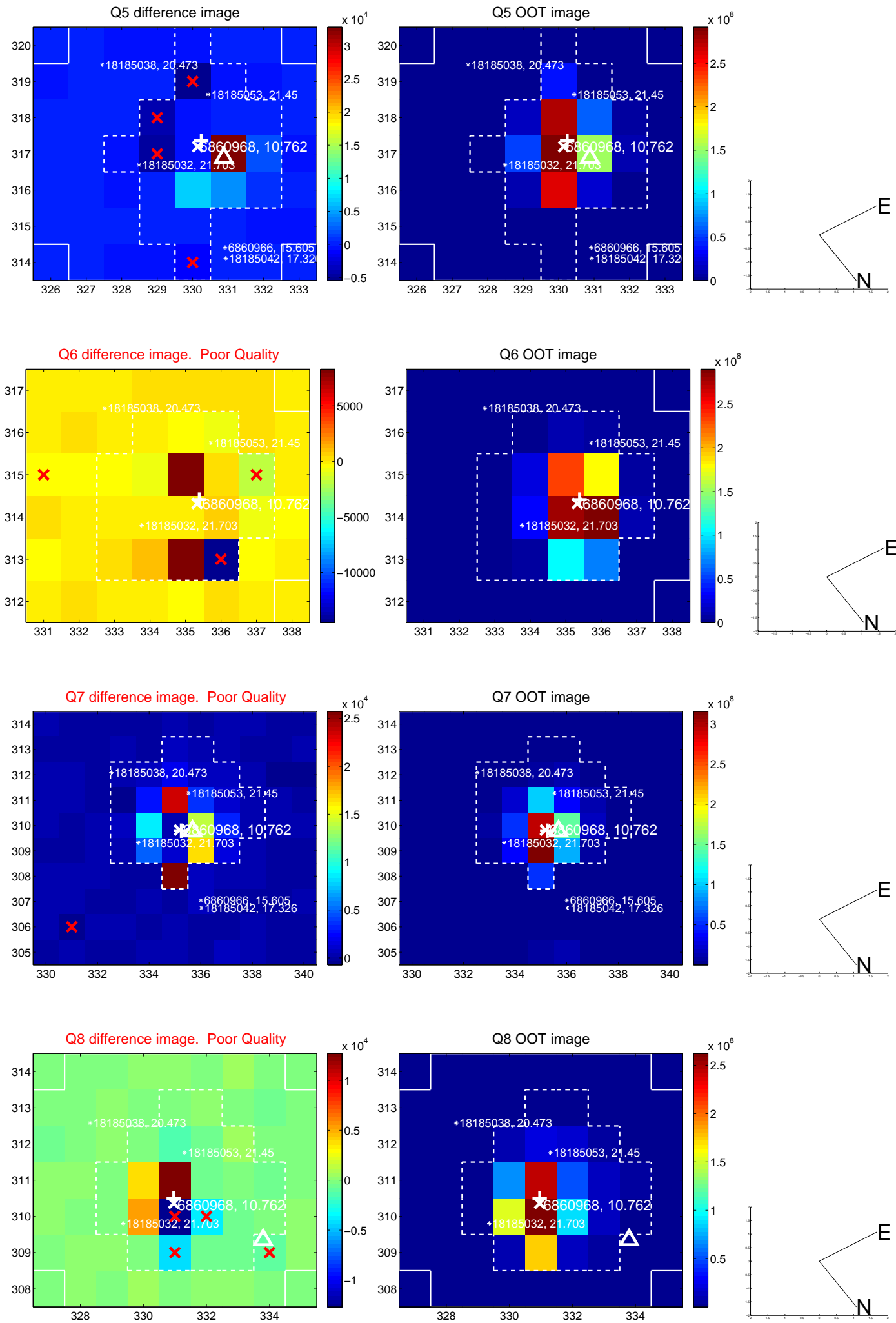


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

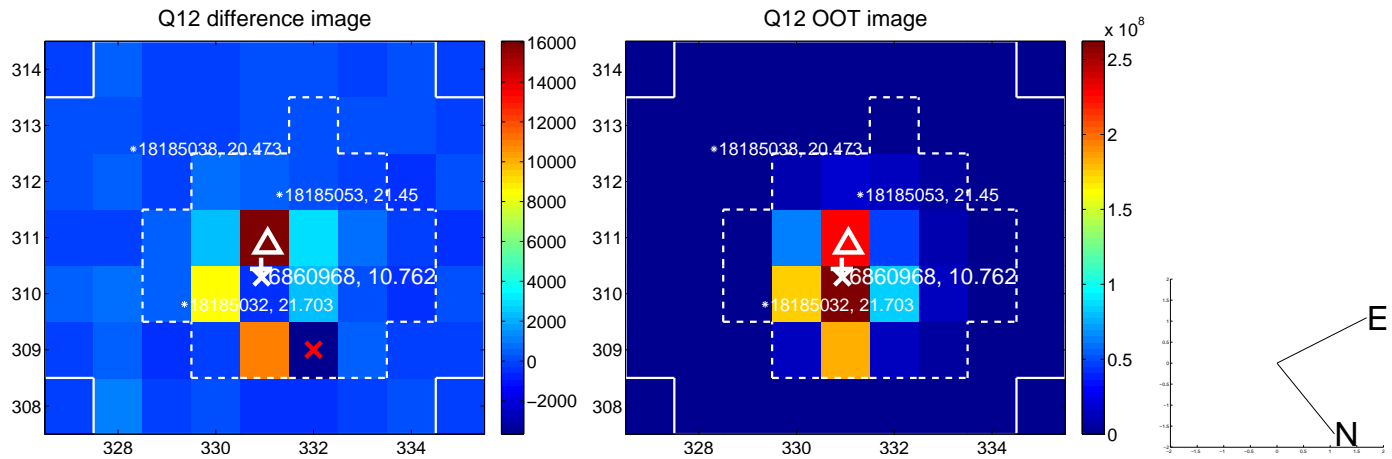
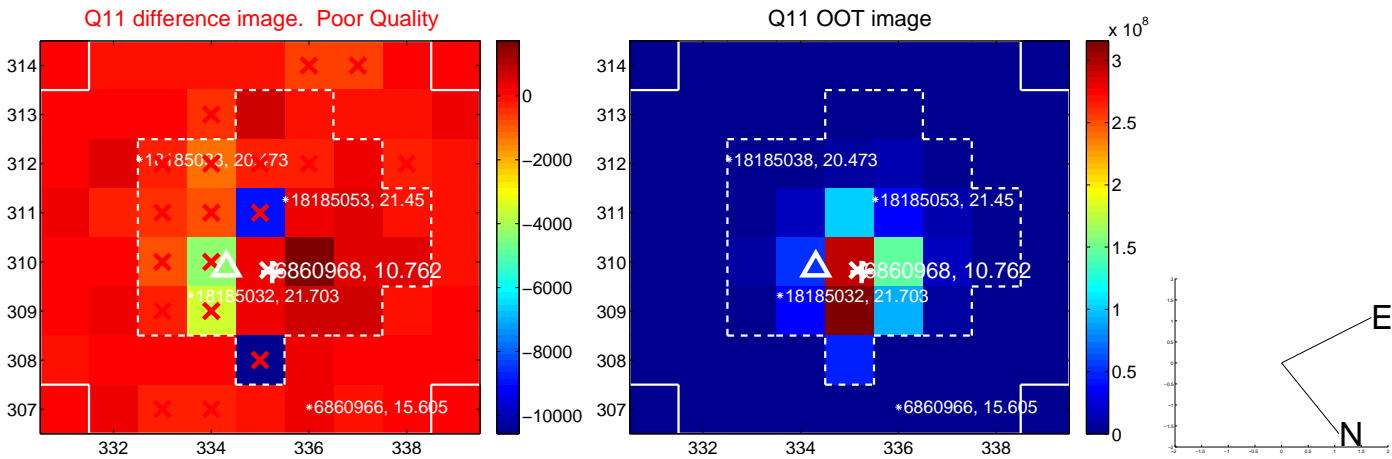
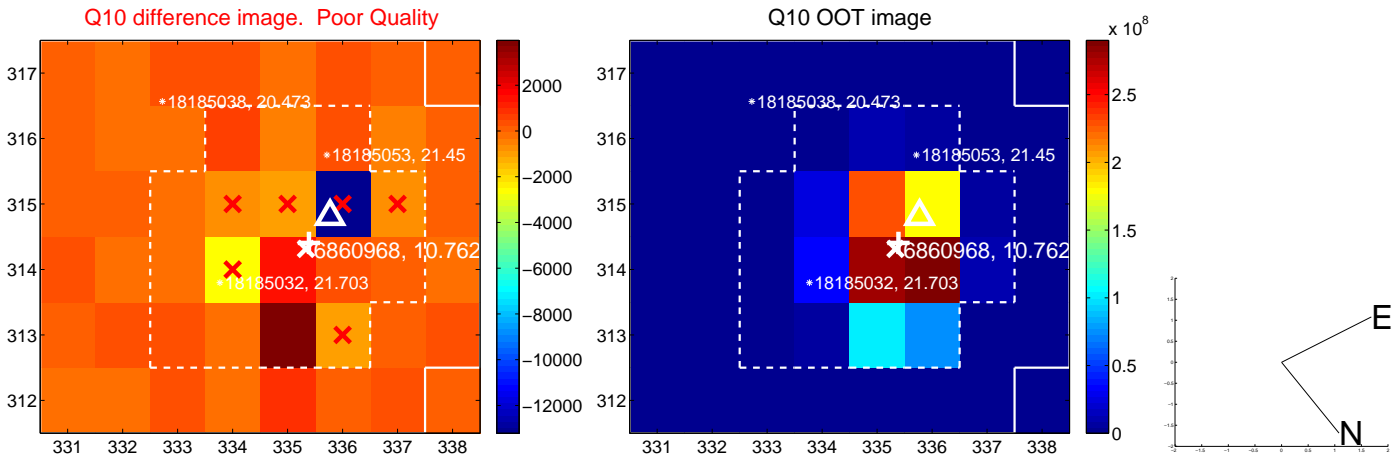
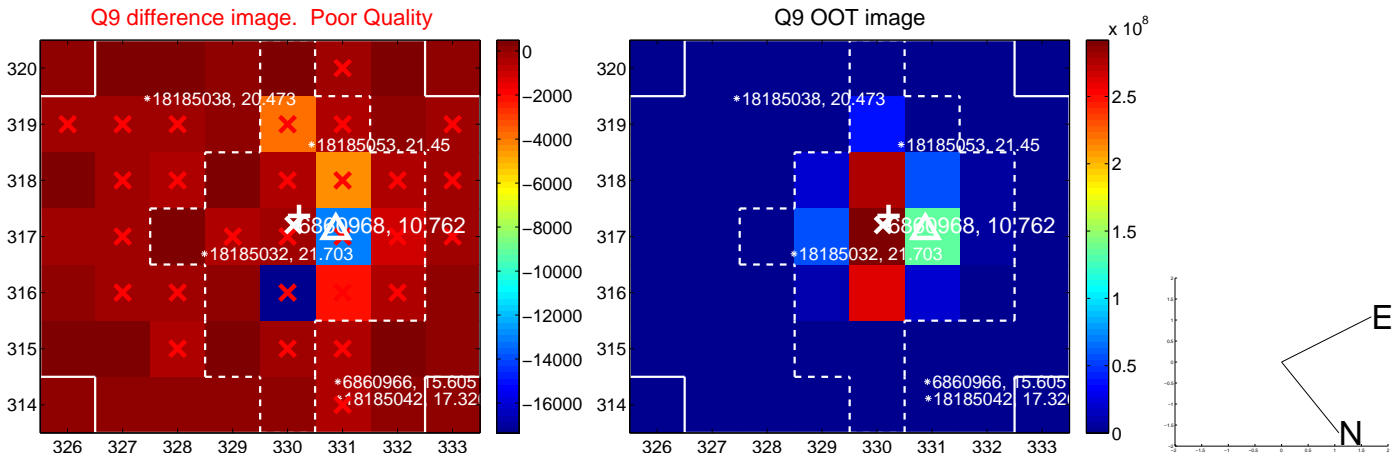
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



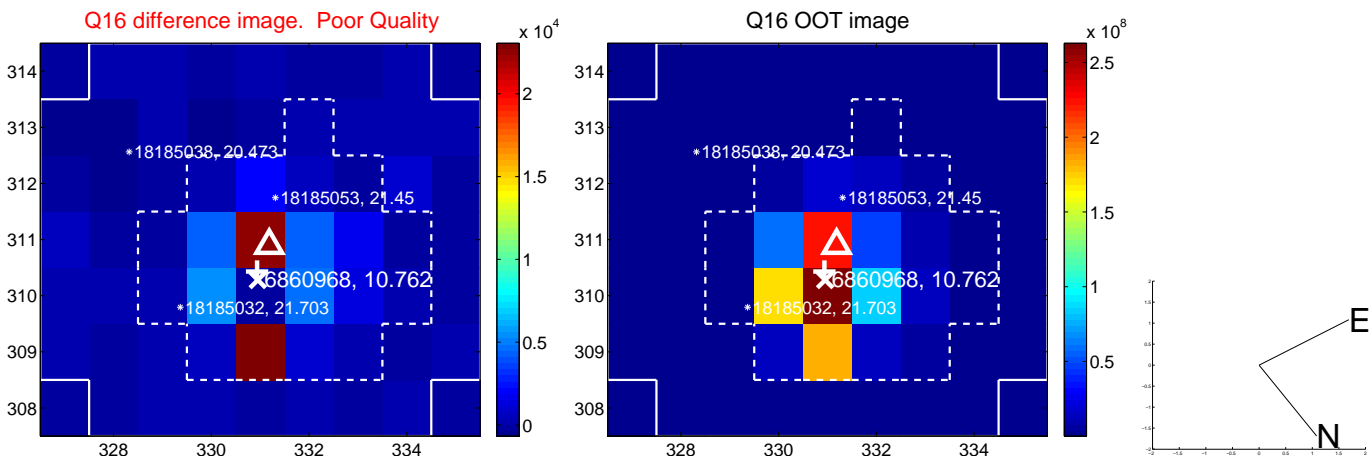
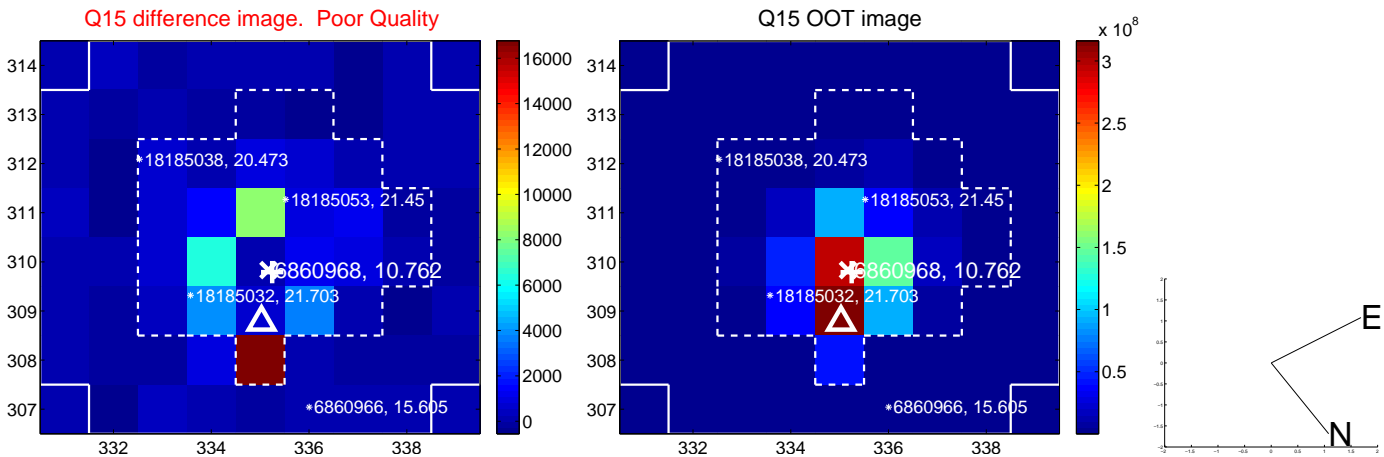
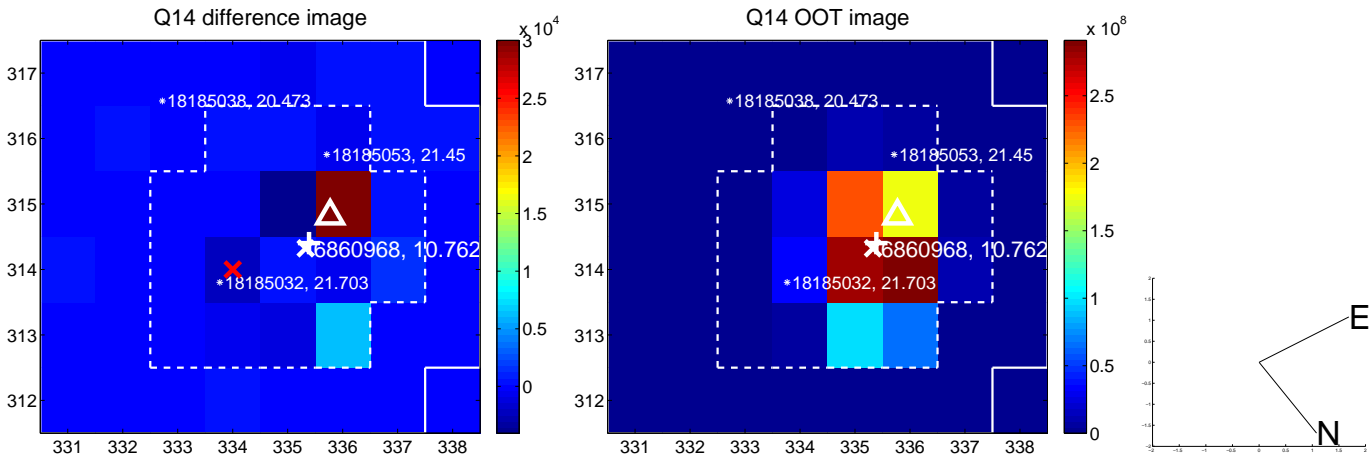
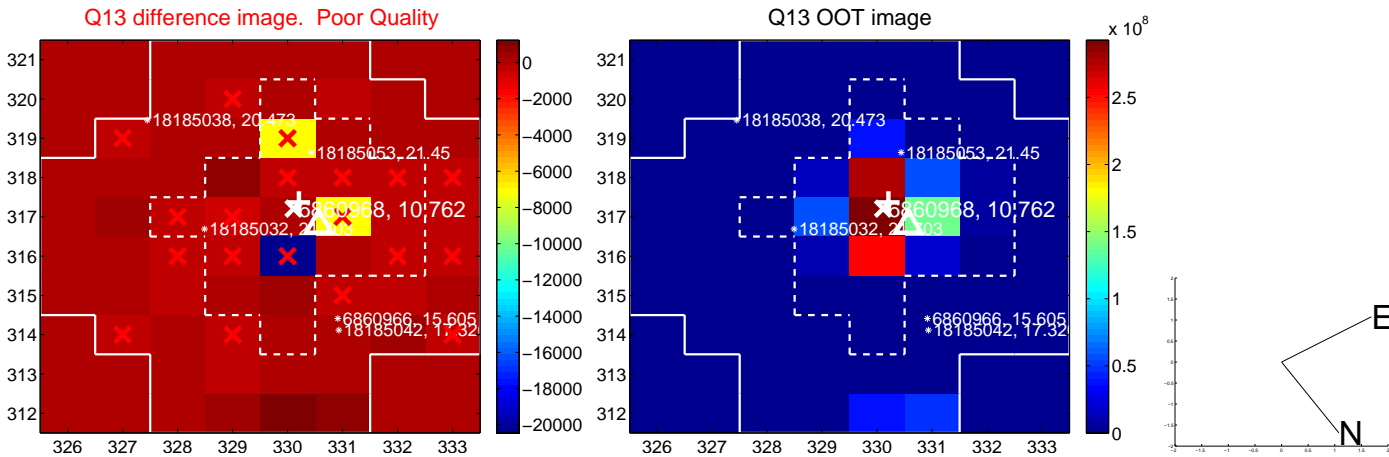
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



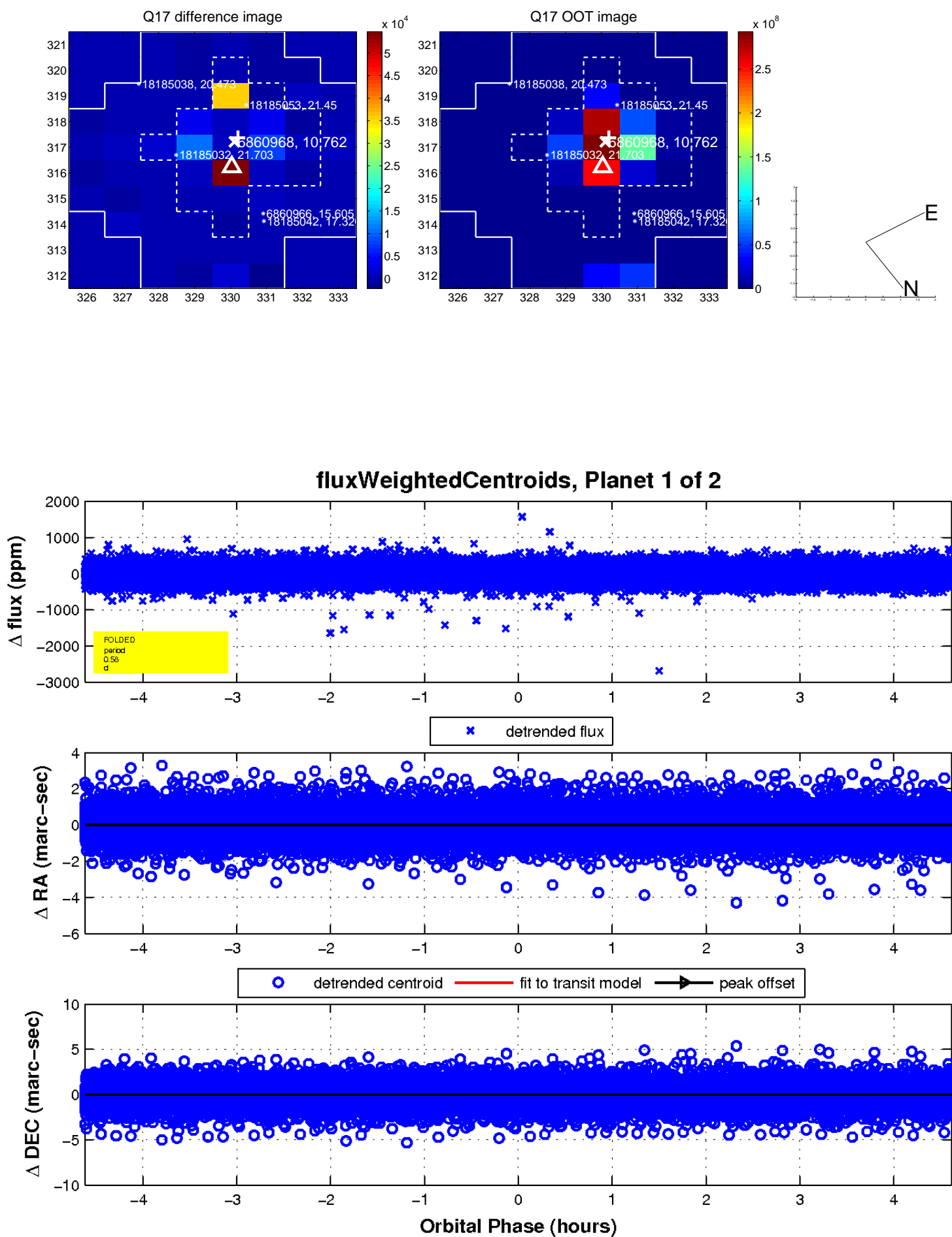
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

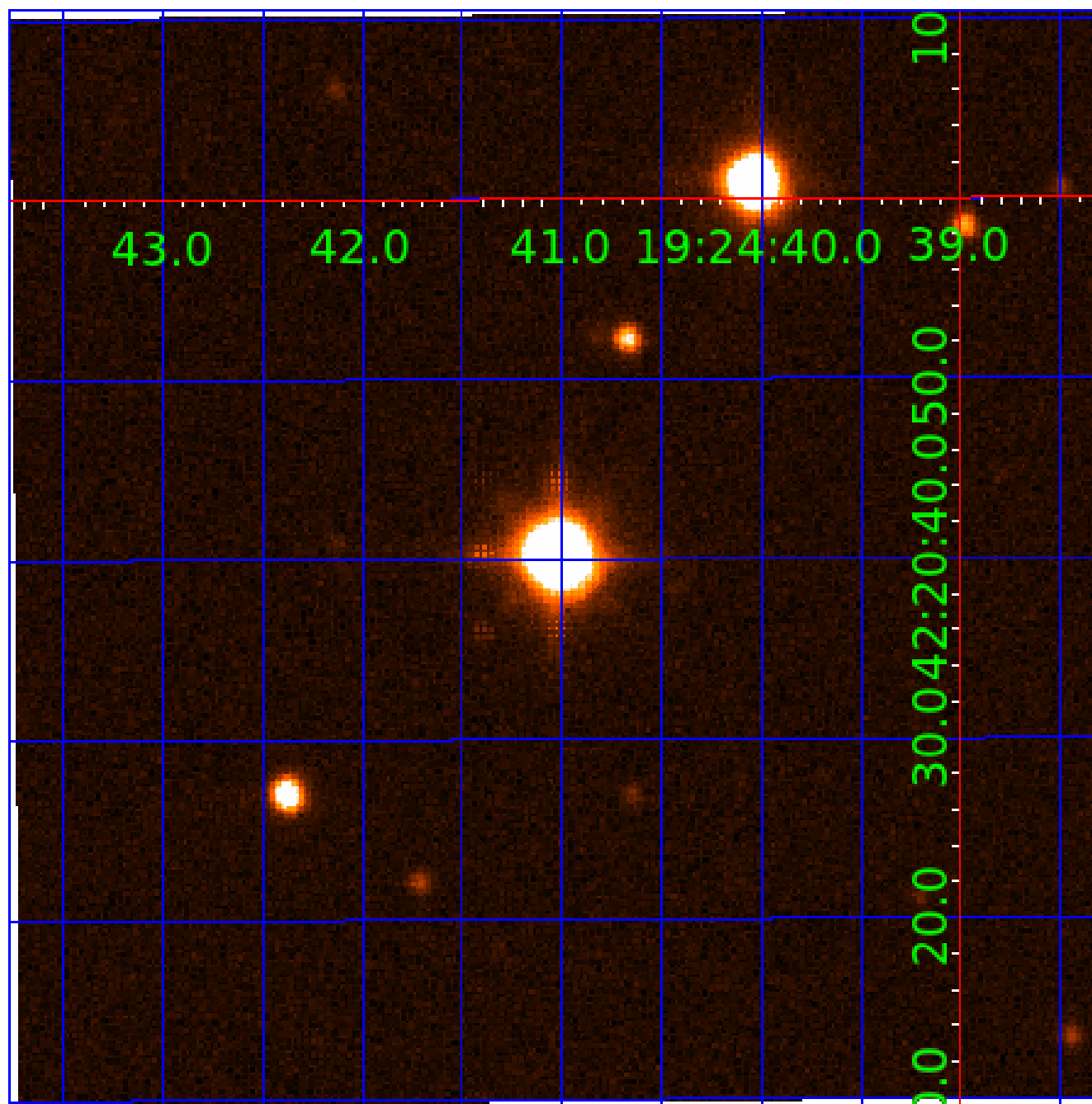


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 006860968

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})
006860968-01	OBS	No	0.578700	132.065653	24.1	1.539	10.4	10.9	2.83	7956	1.63	105122.49
006860968-02	OBS	No	0.807006	131.829163	27.4	2.132	8.8	9.5	2.83	7956	1.73	67473.17

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006860968-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
006860968-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—CENT_SATURATED

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

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

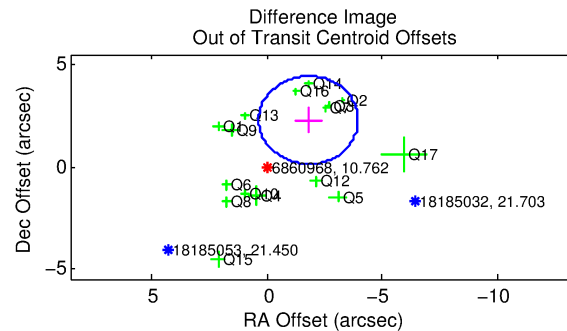
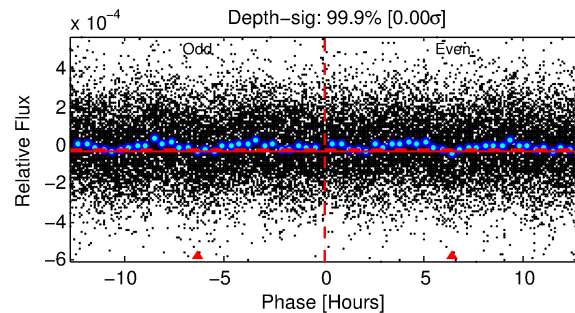
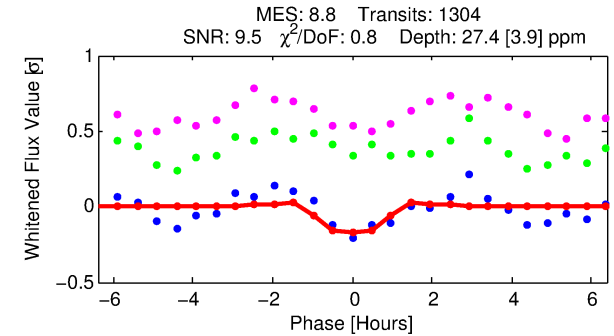
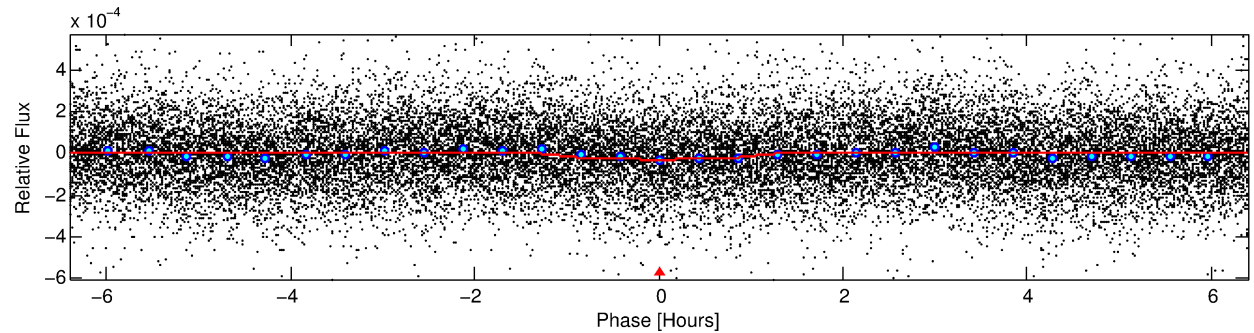
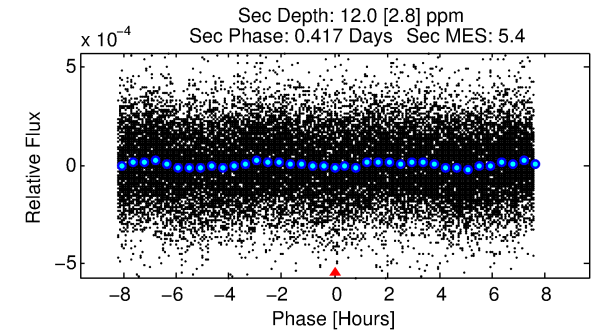
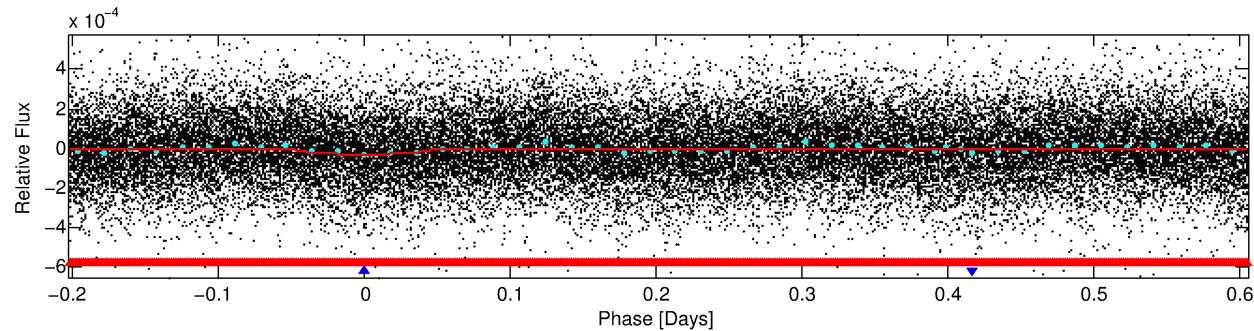
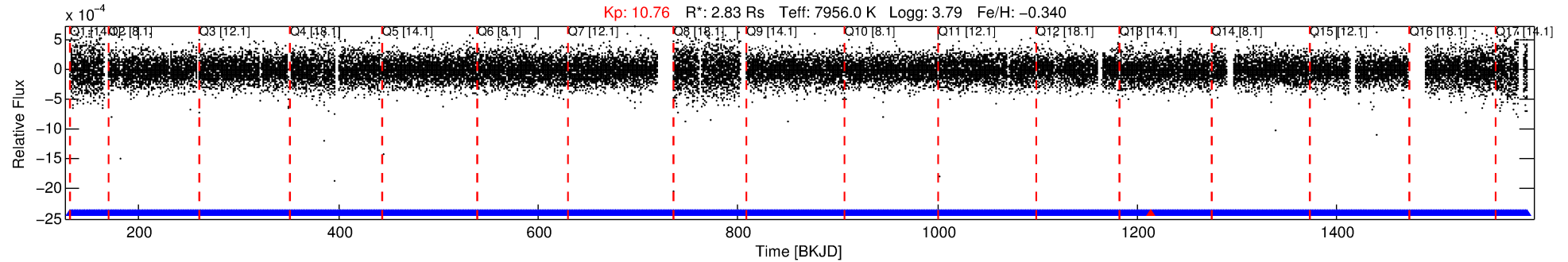
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 006860968-02

No Significant Match Found

DV One-Page Summary

KIC: 6860968 Candidate: 2 of 2 Period: 0.807 d



DV Fit Results:

Period = 0.80701 [0.00001] d
Epoch = 131.8292 [0.0028] BKJD
Rp/R* = 0.0056 [0.0022]
a/R* = 1.59 [2.32]
b = 0.90 [0.51]
Seff = 67473.17 [48128.88]
Teq = 4110 [733] K
Rp = 1.73 [1.04] Re
a = 0.0206 [0.0089] AU
Ag = 0.94 [1.01] [-0.06σ]
Teffp = 6248 [1326] K [1.41σ]

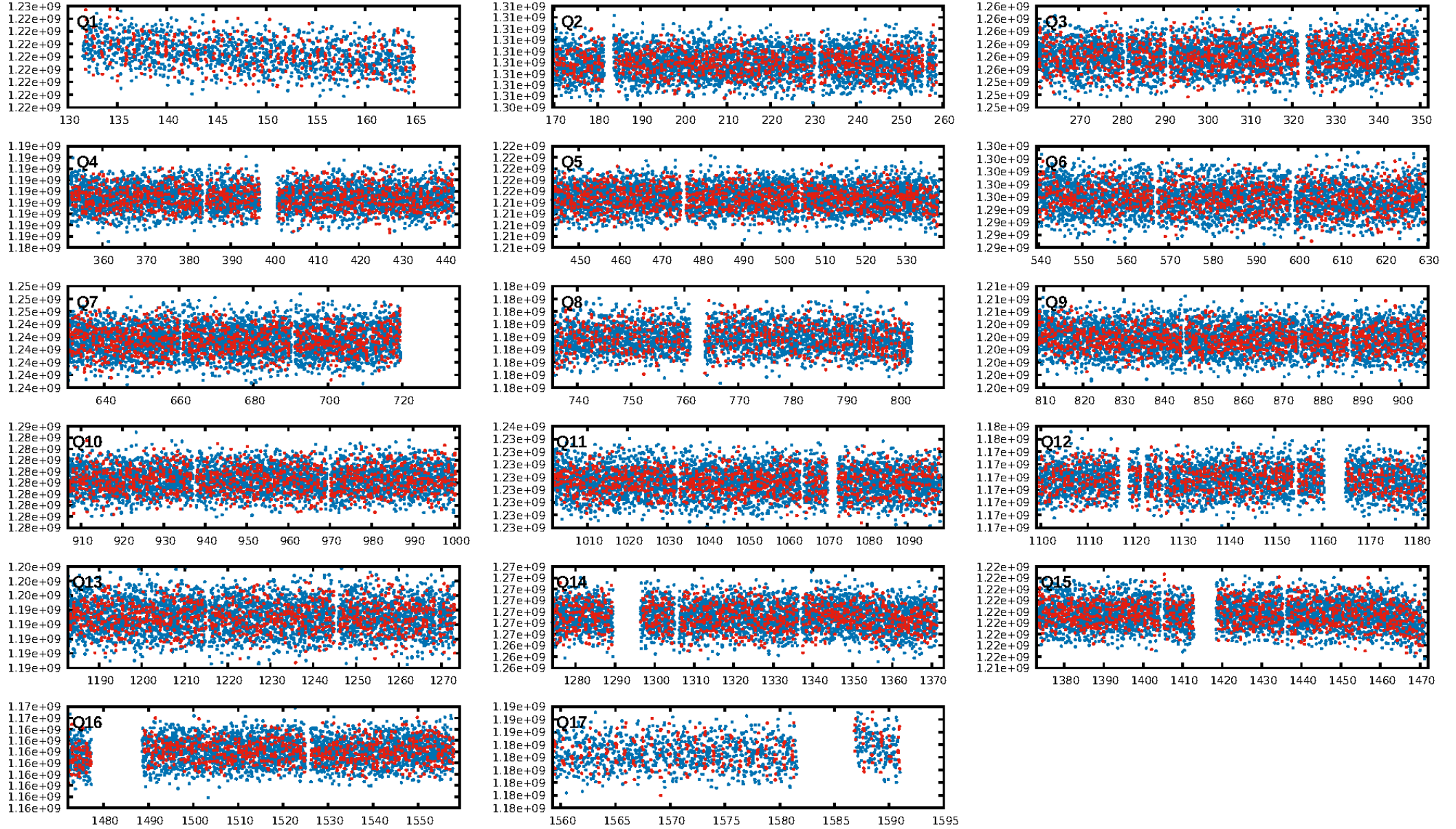
DV Diagnostic Results:

ShortPeriod-sig: 96.3% [2.08σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 1.57e-15
RollingBand-fgt: 1.00 [1243/1244]
GhostDiagnostic-chr: 1.88
Centroid-sig: 25.8%
Centroid-so: 0.659 arcsec [1.83σ]
OotOffset-rm: 2.906 arcsec [4.05σ]
KicOffset-rm: 2.625 arcsec [3.73σ]
OotOffset-st: 4/3/4/5 [16]
KicOffset-st: 4/3/4/5 [16]
DiffImageQuality-fgm: 0.38 [6/16]
DiffImageOverlap-fno: 0.00 [0/17]

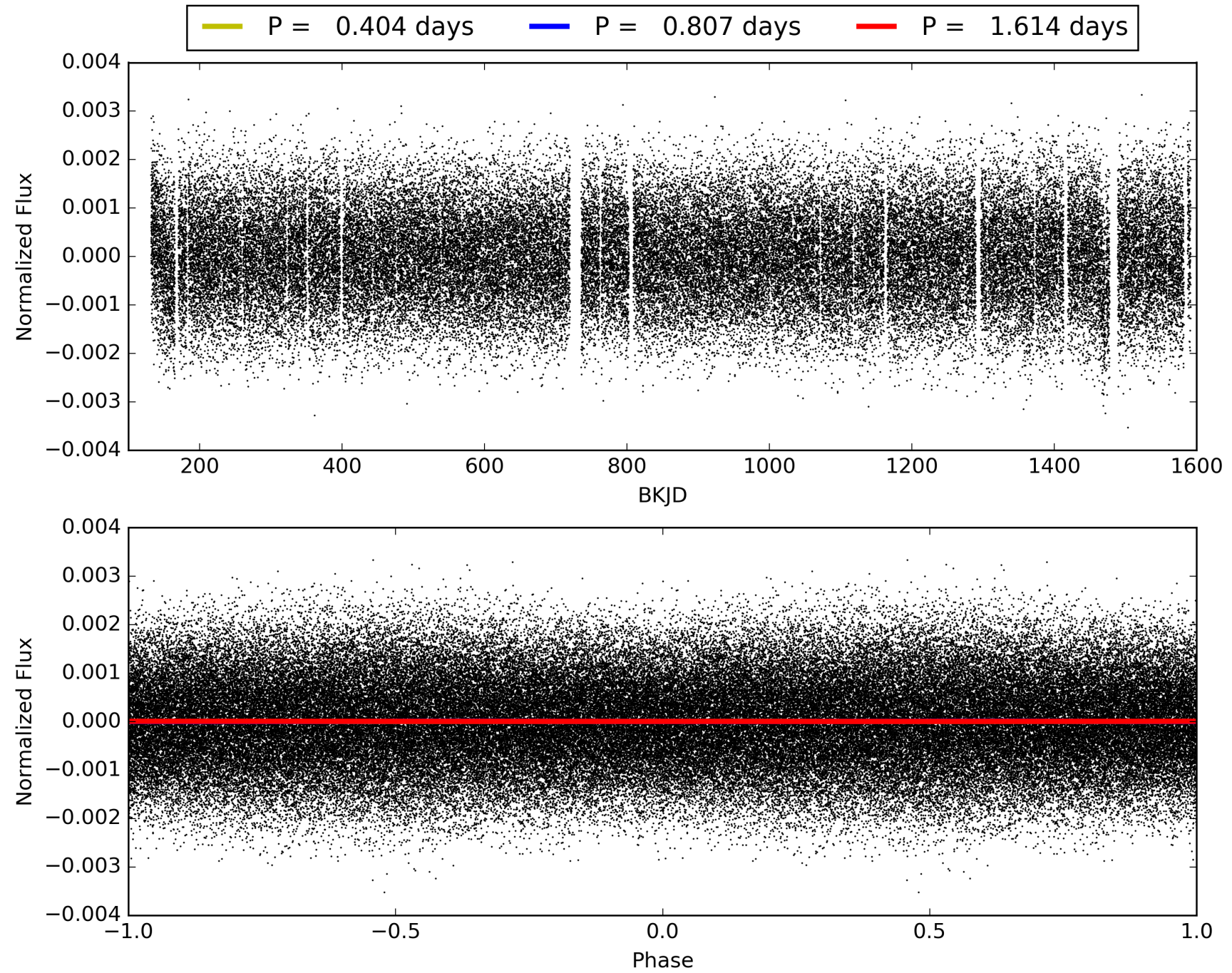
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 19:00:54 Z

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

TCE 006860968-02, PDC Light Curves

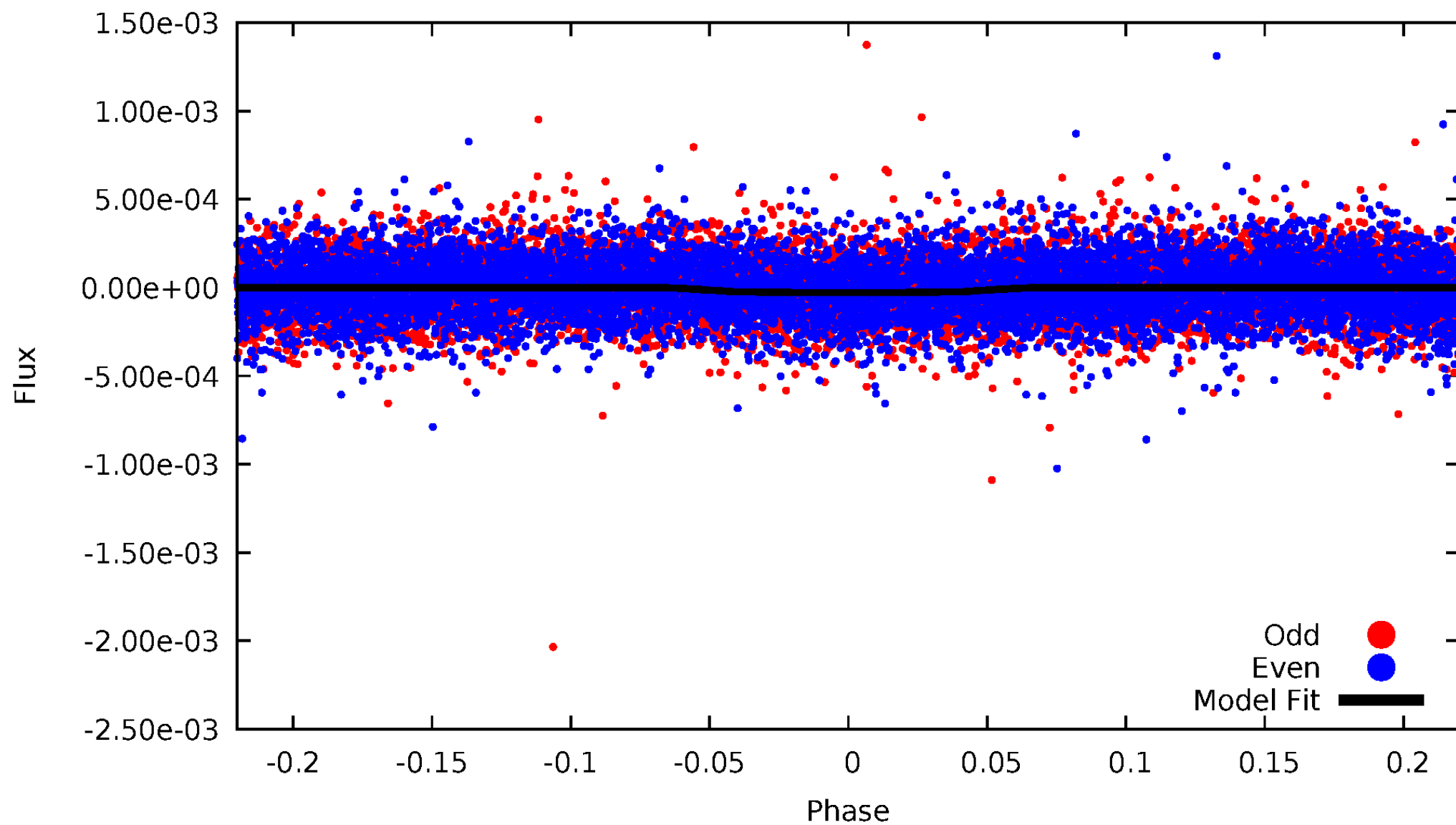


TCE 006860968-02



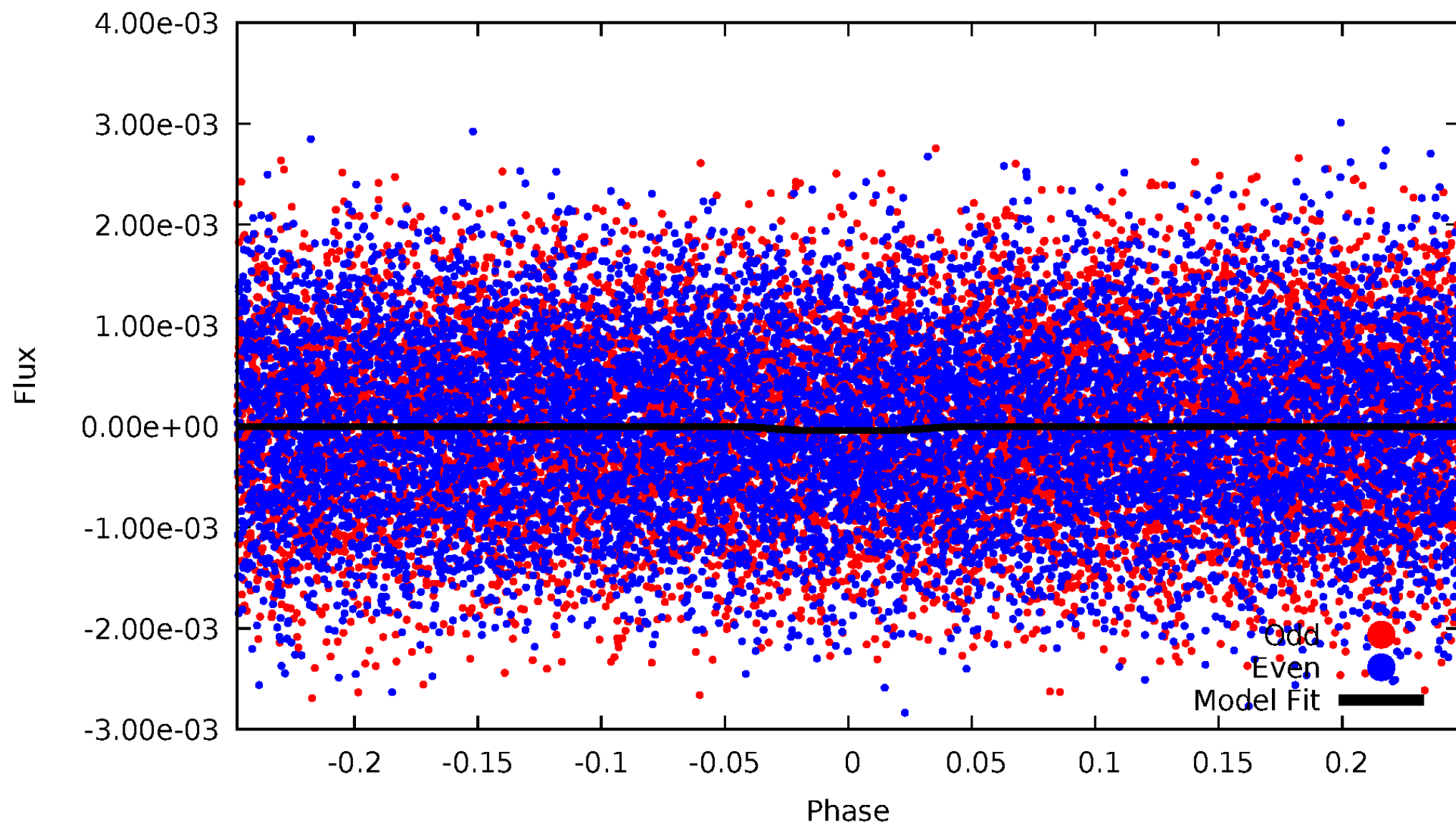
DV Odd/Even

TCE 006860968-02



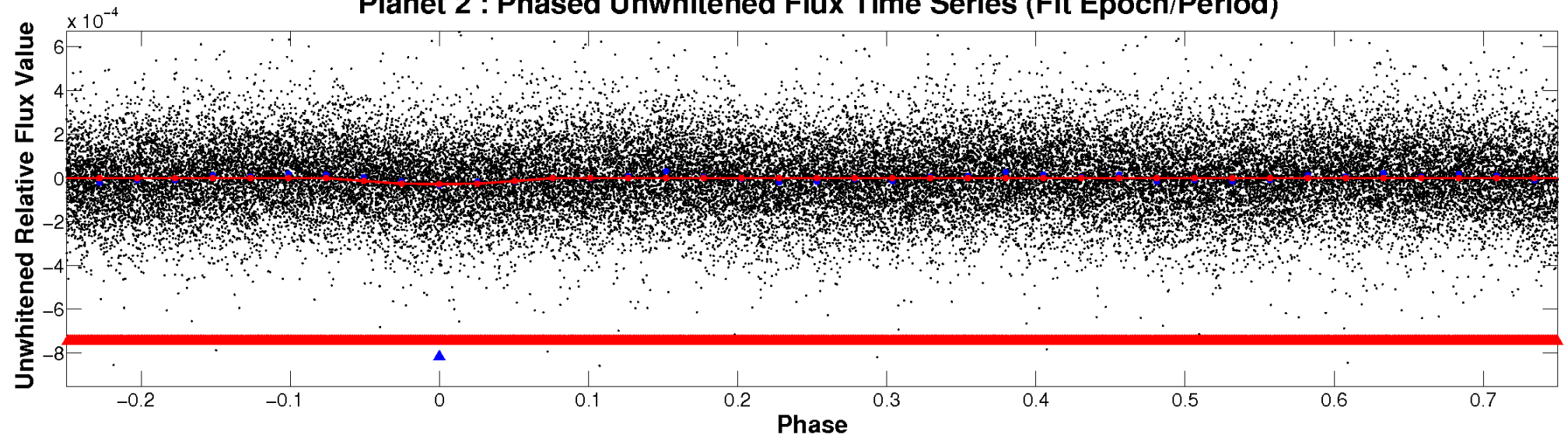
ALT Odd/Even

TCE 006860968-02

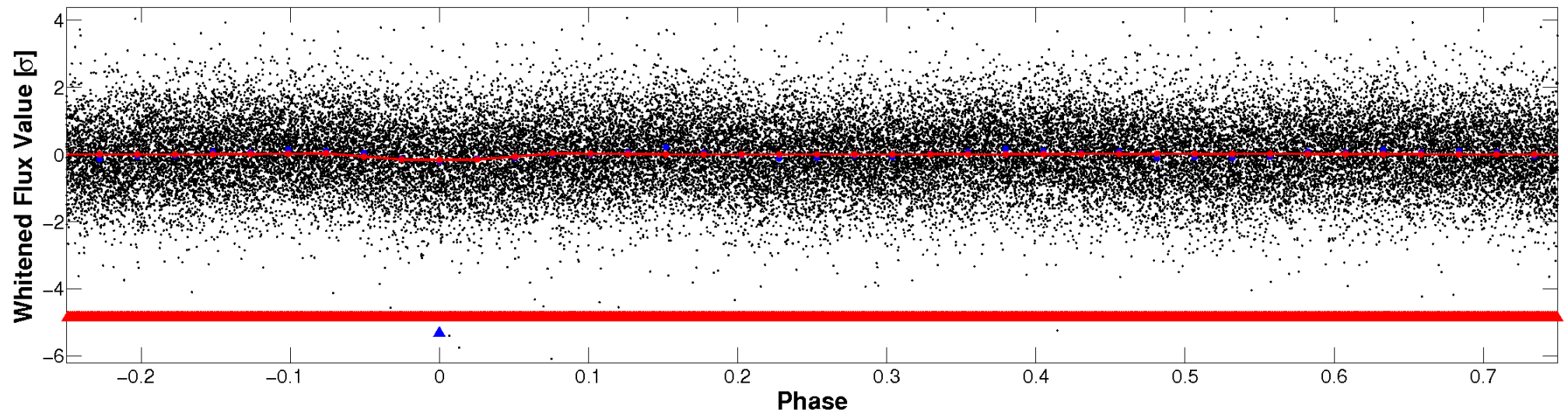


Non-Whitened Vs. Whitened Light Curve

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

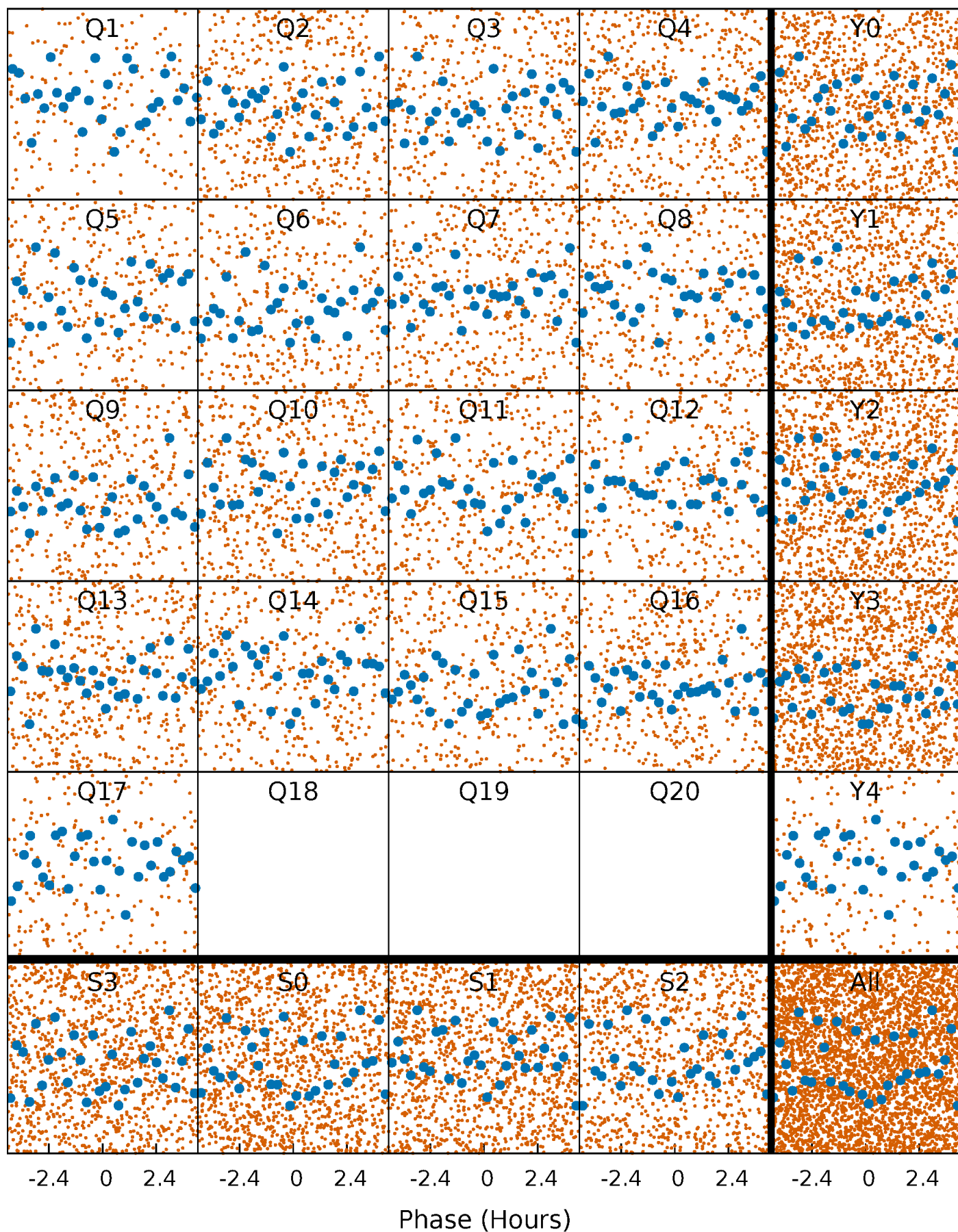


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



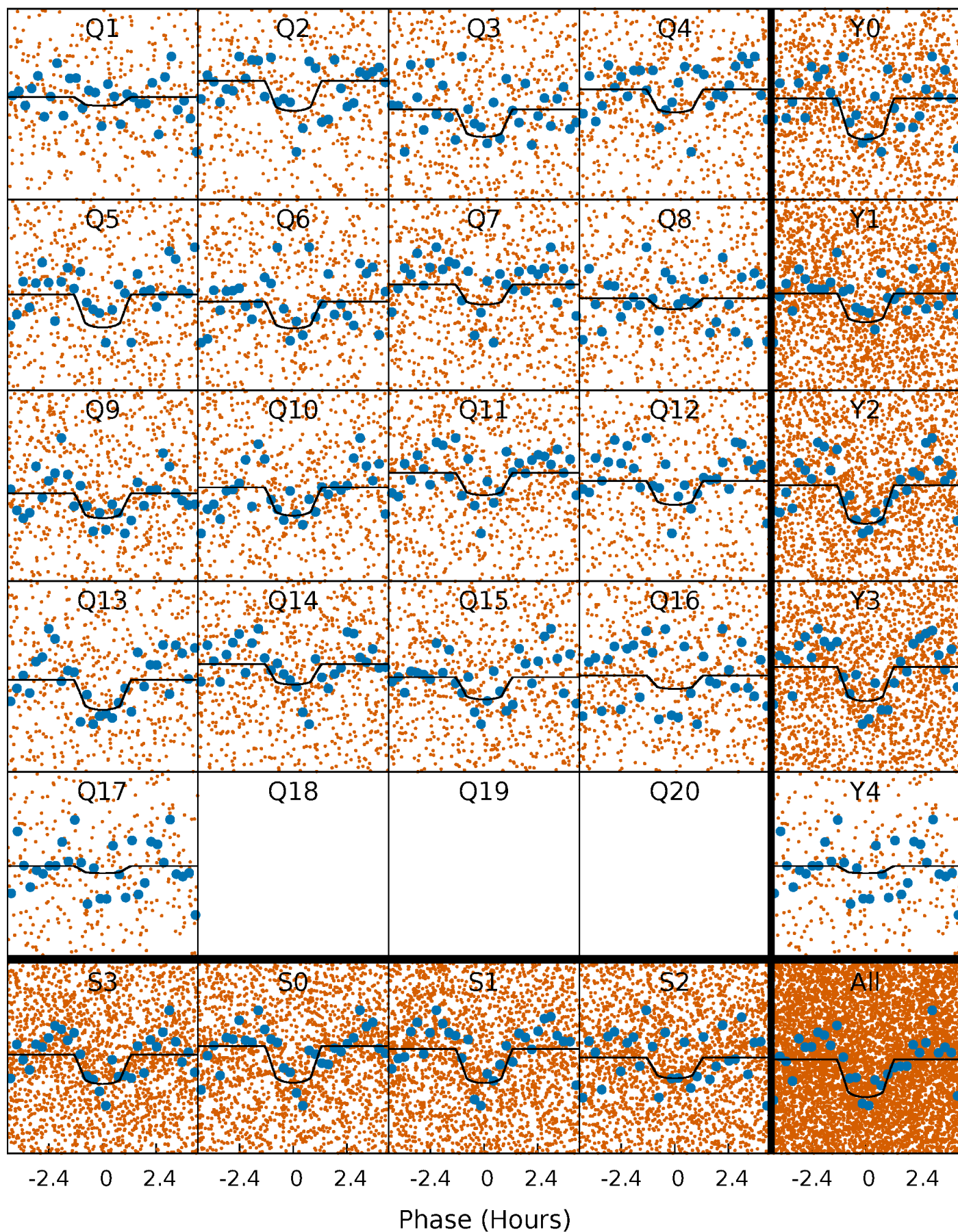
PDC Quarter-Phased Transit Curves

TCE 006860968-02 P= 0.807006 Days $T_0=131.829163$ (BKJD)



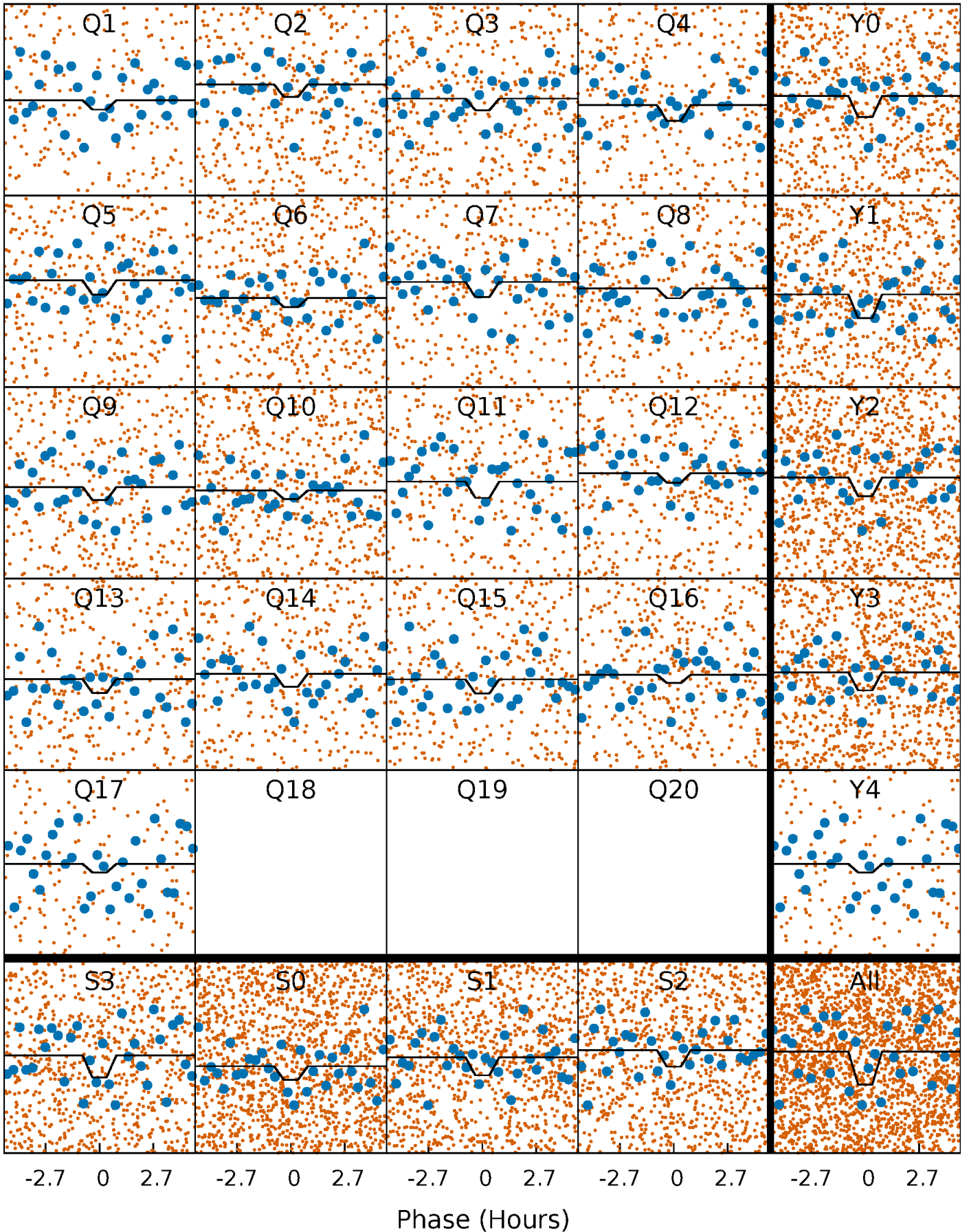
DV Quarter-Phased Transit Curves

TCE 006860968-02 P= 0.807006 Days $T_0=131.829163$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

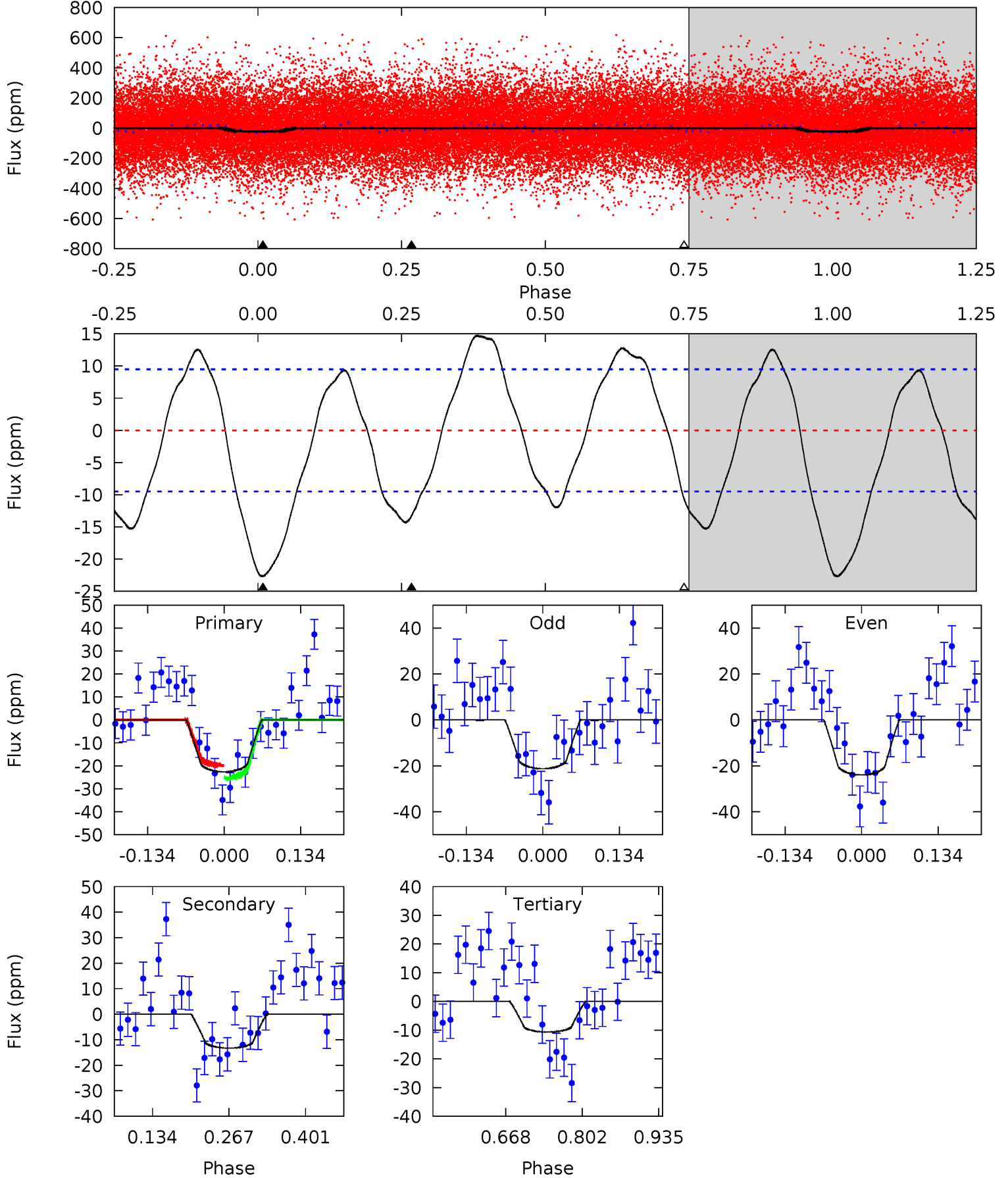
TCE 006860968-02 P= 0.807015 Days $T_0=131.823816$ (BKJD)



DV Model-Shift Uniqueness Test

006860968-02, P = 0.807006 Days, E = 131.022157 Days

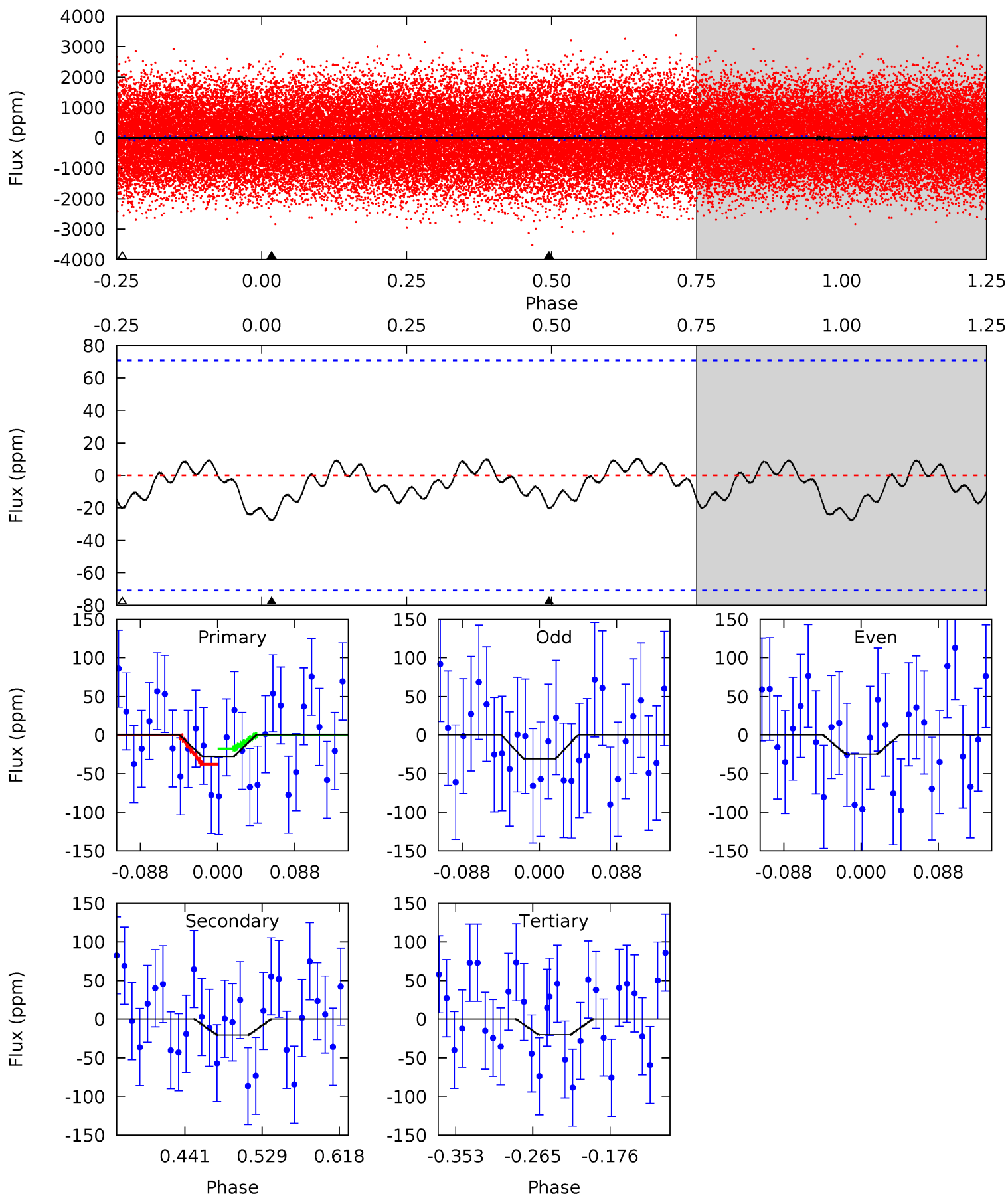
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.8	6.31	5.06	0	4.50	1.50	4.29	5.69	10.8	1.25	6.31	0.64	1.11	0.39	1.30



Alt Model-Shift Uniqueness Test

006860968-02, P = 0.807015 Days, E = 131.016801 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1.80	1.32	1.31	0	4.59	1.70	0.51	0.49	1.80	0.01	1.32	0.21	0.77	0.27	0.64



Stellar Parameters For KIC 006860968

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	7956^{+223}_{-335}	$3.790^{+0.408}_{-0.072}$	$-0.340^{+0.200}_{-0.300}$	$2.831^{+0.315}_{-1.261}$	$1.804^{+0.103}_{-0.412}$	$0.112^{+0.404}_{-0.027}$
	+3%/-4%	+11%/-2%	+59%/-88%	+11%/-45%	+6%/-23%	+361%/-24%
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 006860968-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-13 ± 2	$1.54^{+0.74}_{-0.65}$	5594^{+341}_{-580}	5768^{+2178}_{-1216}	$1.239^{+2.461}_{-0.674}$
Alt.	-20 ± 15	$1.80^{+0.78}_{-0.65}$	5529^{+379}_{-627}	5782^{+2305}_{-2904}	$1.279^{+2.528}_{-0.962}$

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

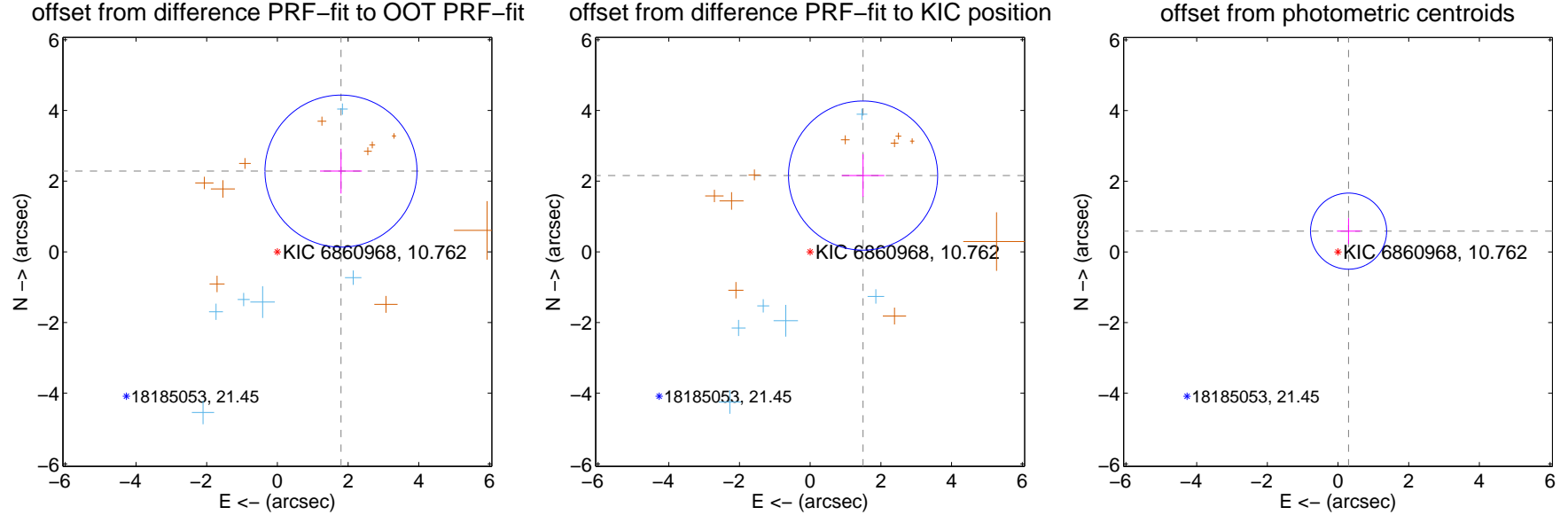
DV Centroid Data

Supplemental centroid analysis for 006860968-02. **Kepler magnitude: 10.76.** Transit SNR 9.47

There are 6 quarters with good PRF difference image offsets

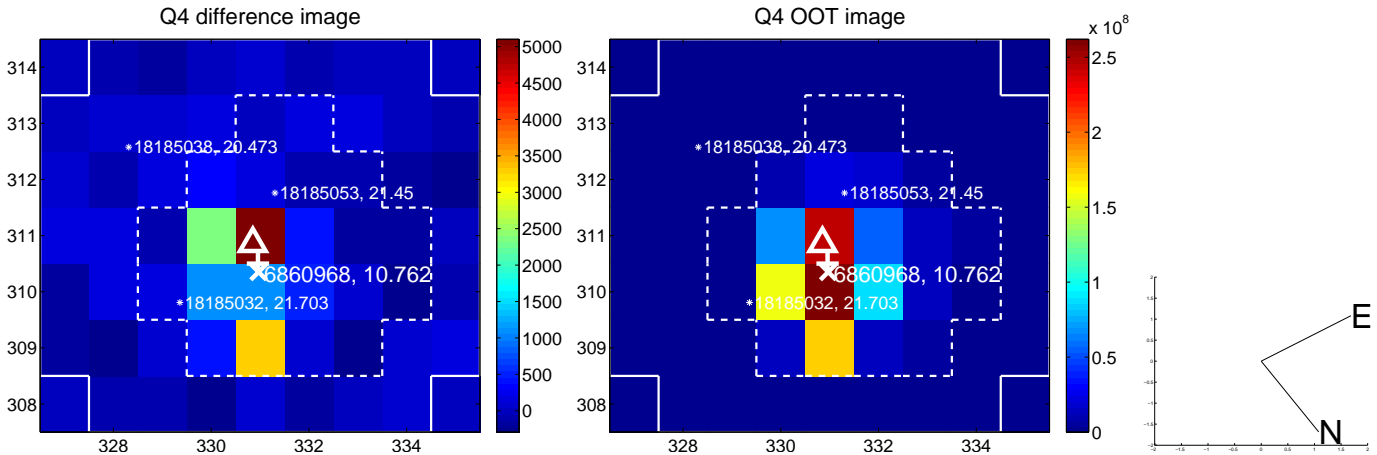
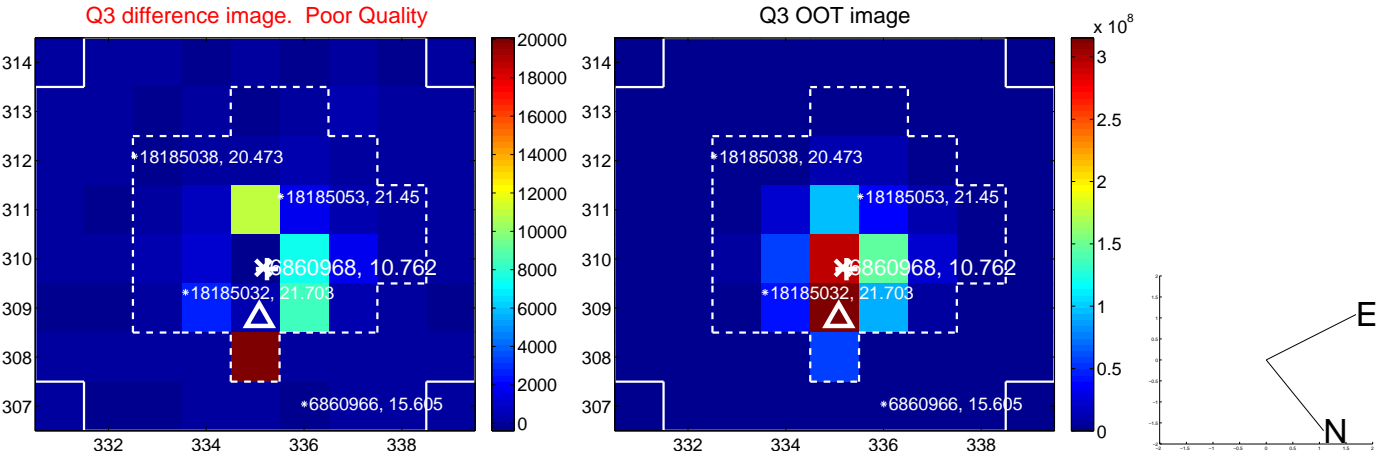
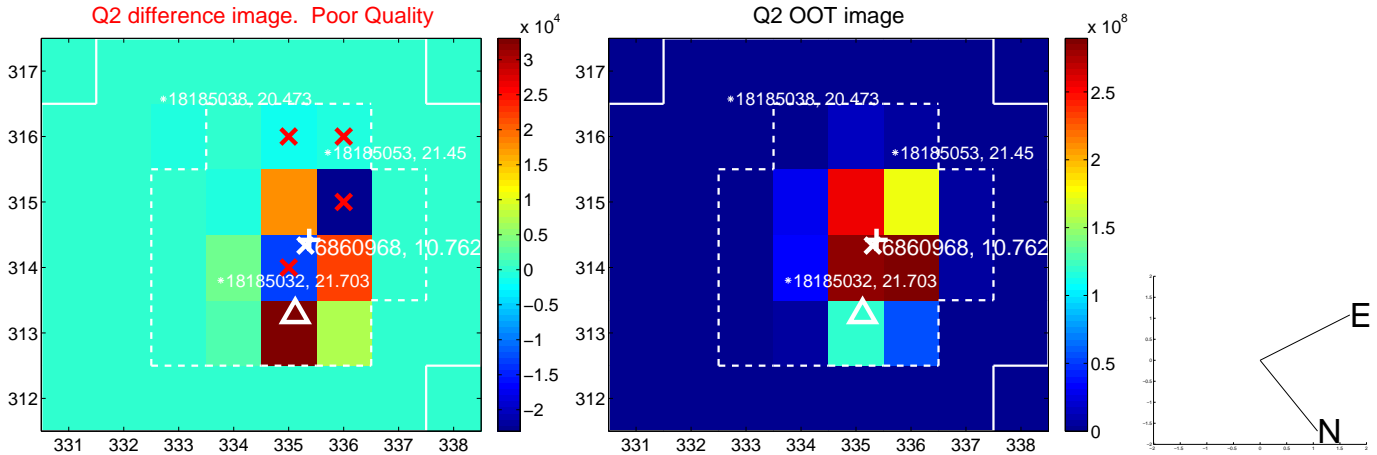
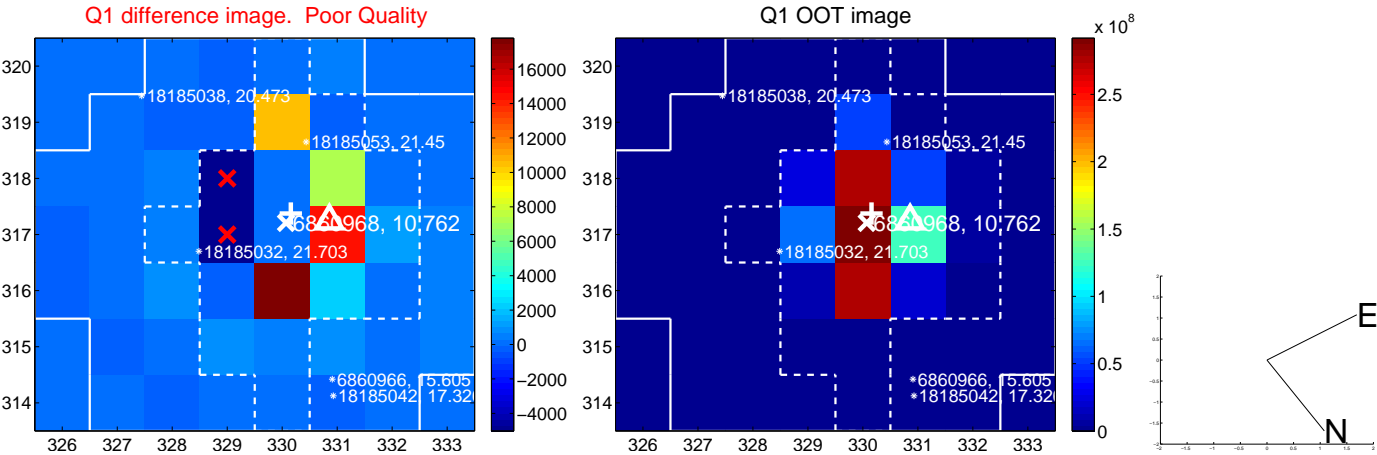
The direct PRF centroid is offset from the target star catalog position by about 0.73 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	2.906 ± 0.717	4.05	-1.798 ± 0.592	2.283 ± 0.633
PRF-fit source offset from KIC position	2.625 ± 0.703	3.73	-1.496 ± 0.603	2.157 ± 0.600
photometric centroid source offset	0.66 ± 0.36	1.83	-0.30 ± 0.33	0.59 ± 0.37

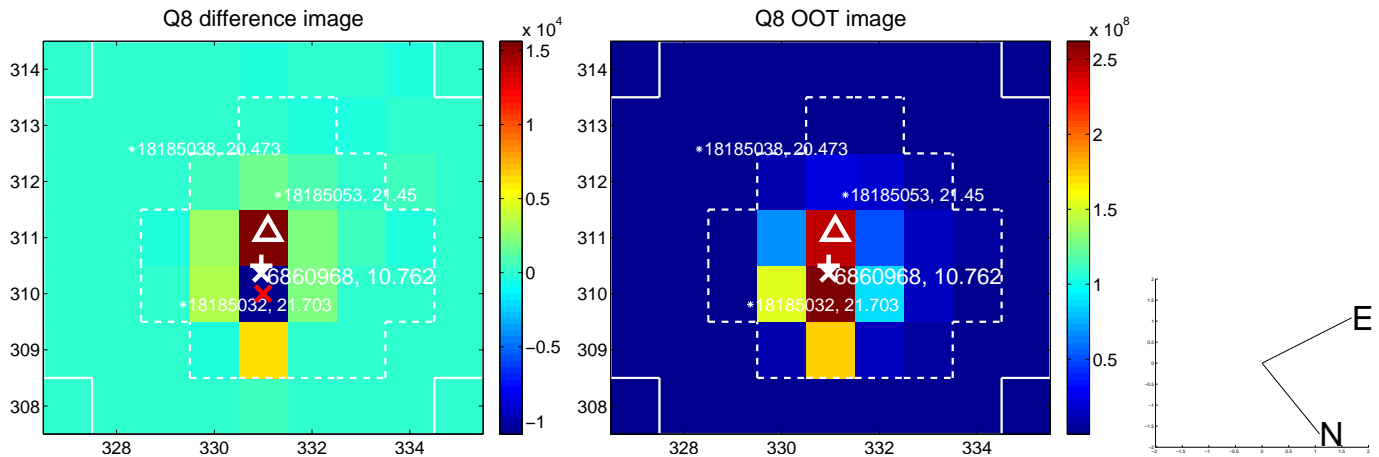
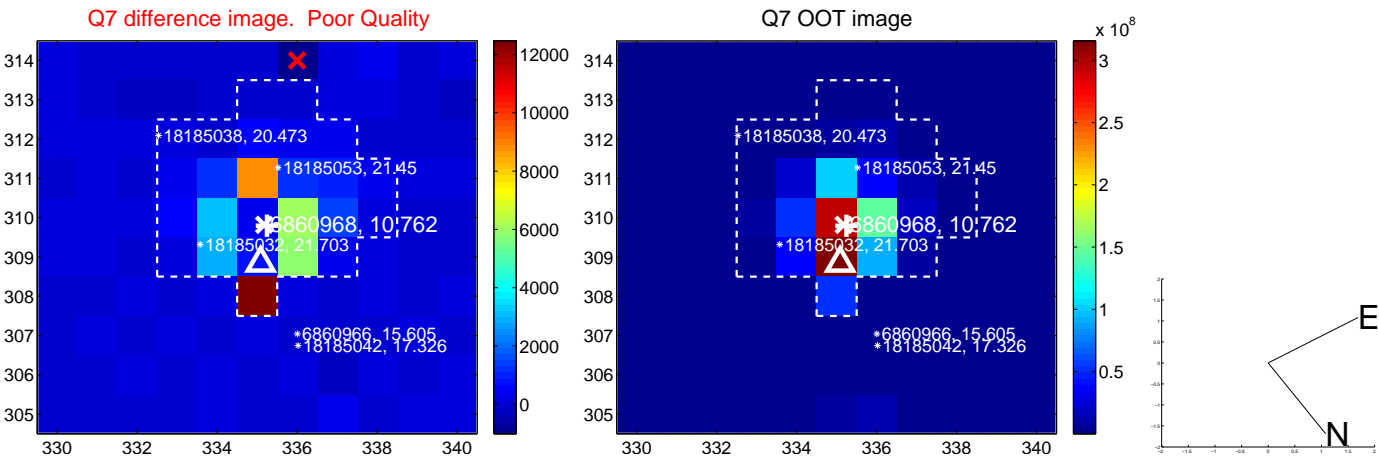
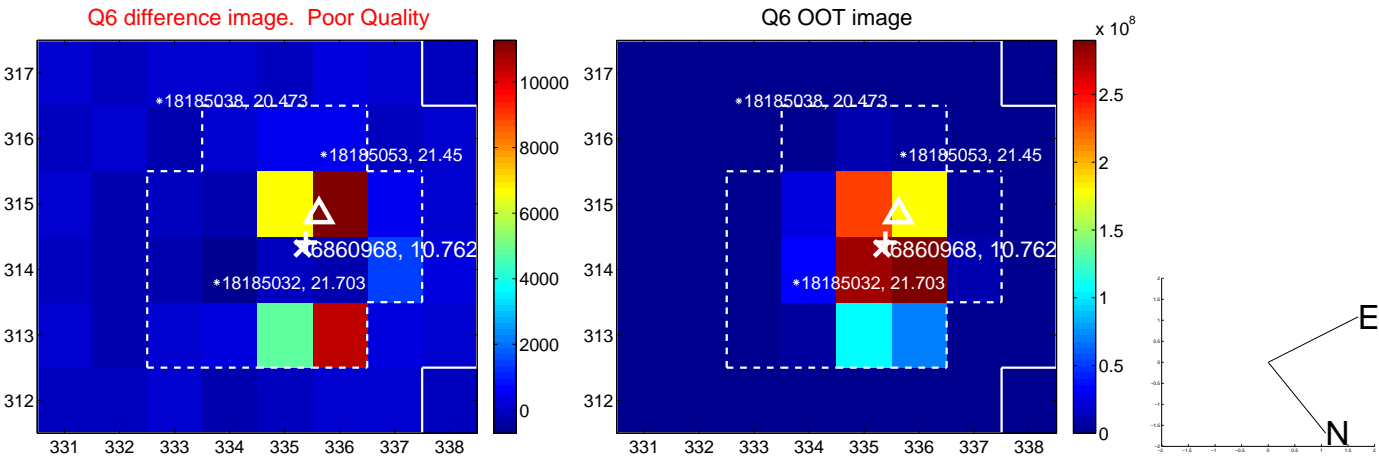
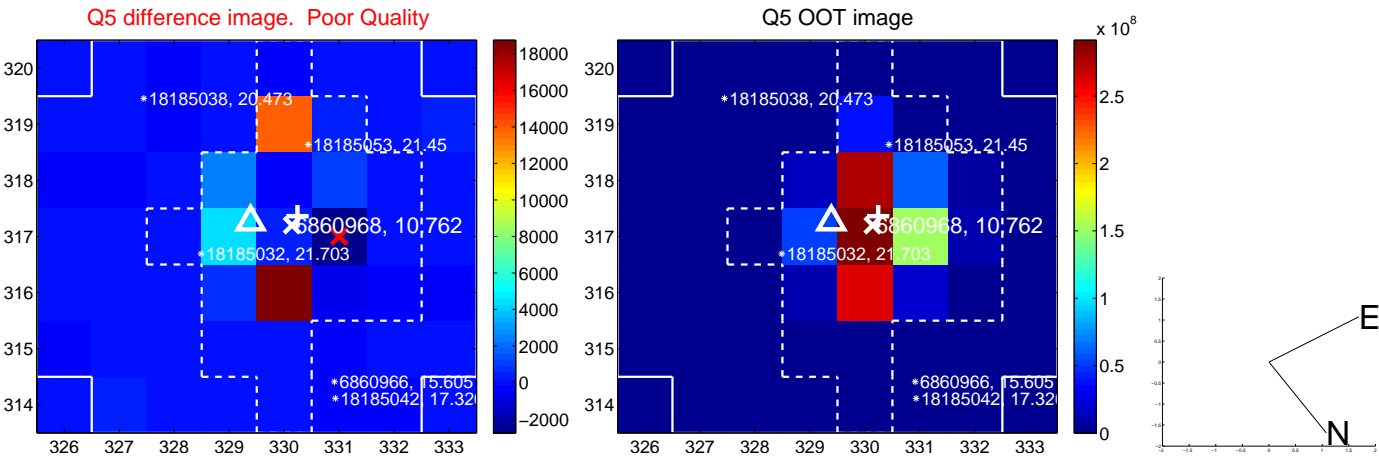


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

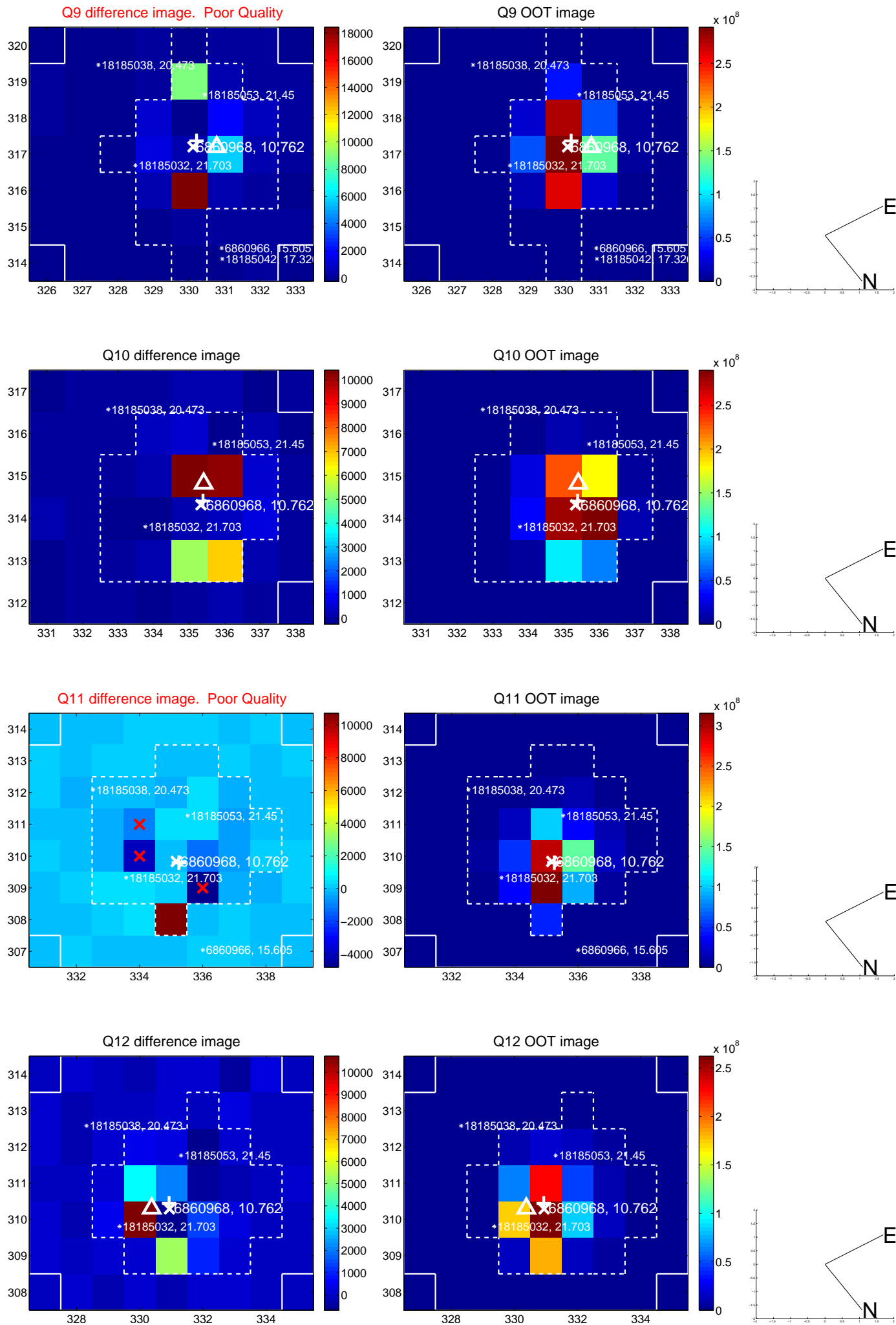
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



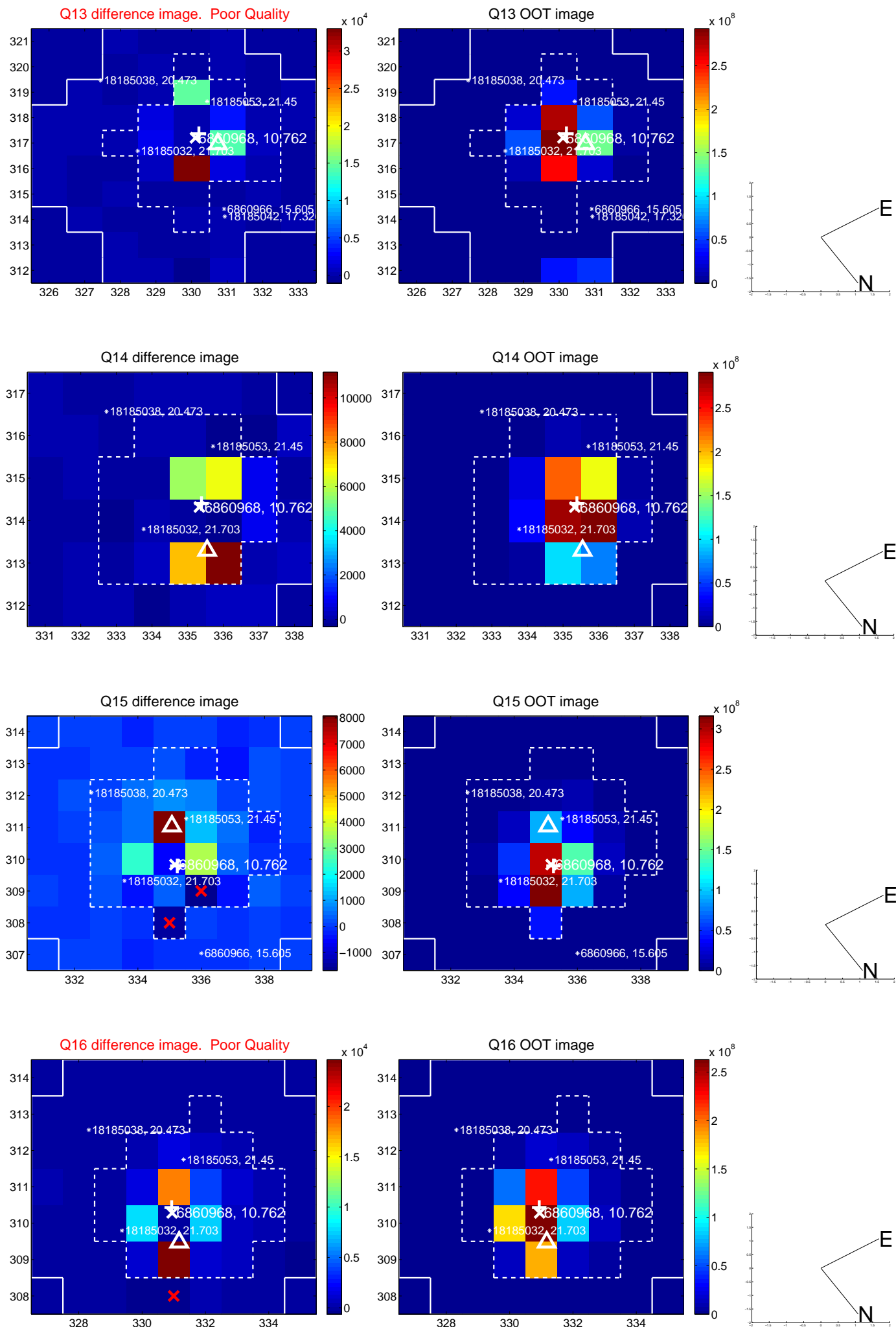
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



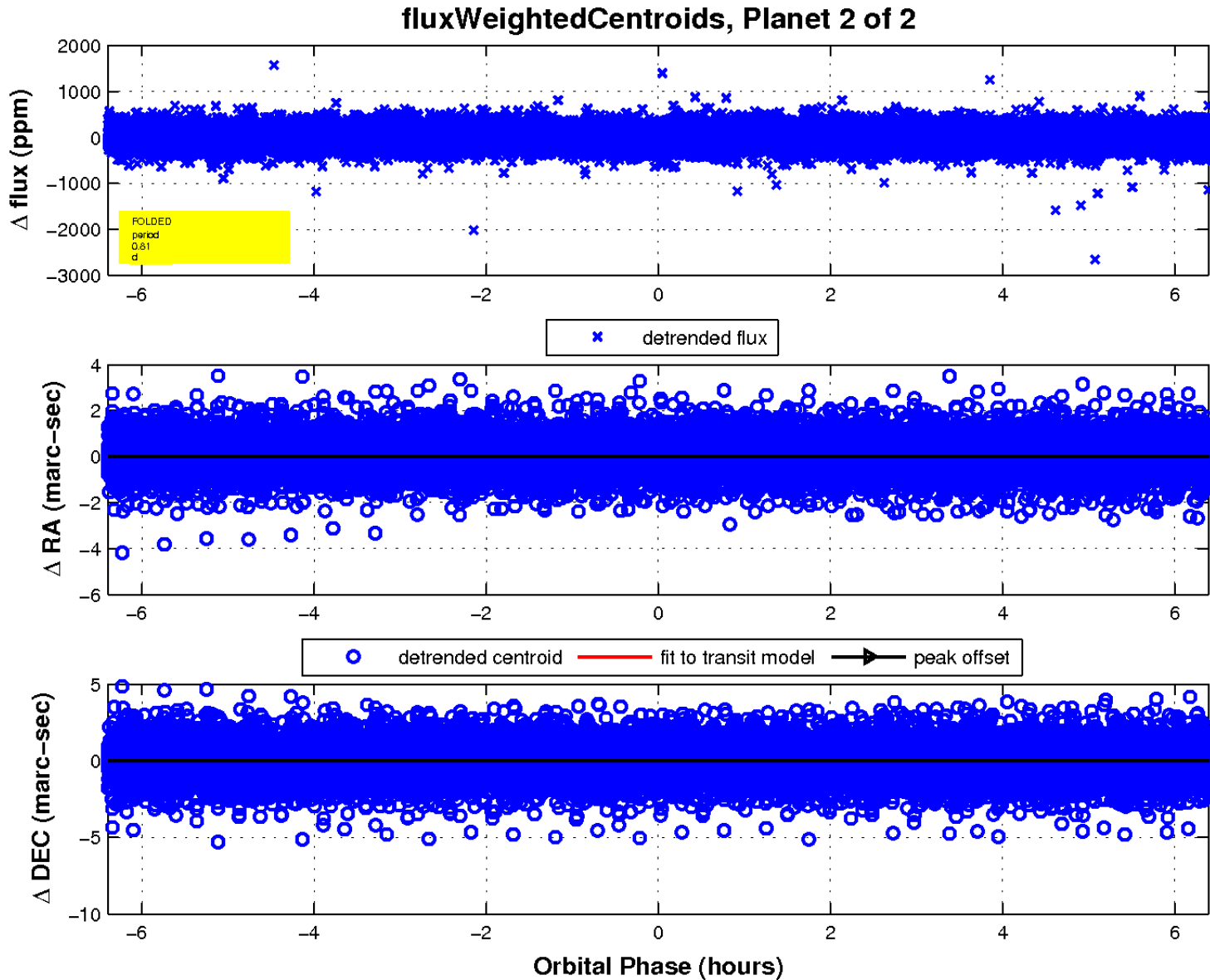
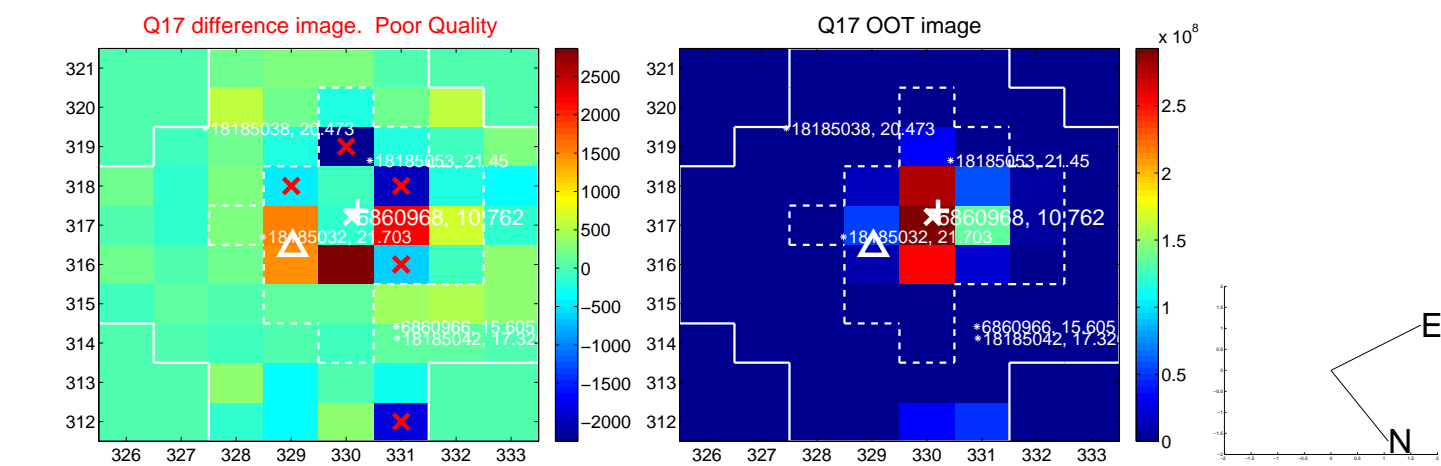
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image

Declination

