

KIC 006231538

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})
006231538-01	OBS	No	0.955319	131.872652	96.3	3.392	9.9	8.0	2.79	6810	3.18	32065.86
006231538-02	OBS	No	0.620151	131.557691	86.9	5.254	8.0	7.8	2.79	6810	2.75	57048.55

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006231538-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT
006231538-02	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—LPP_ALT—CENT_FEW_DIFFS

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

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

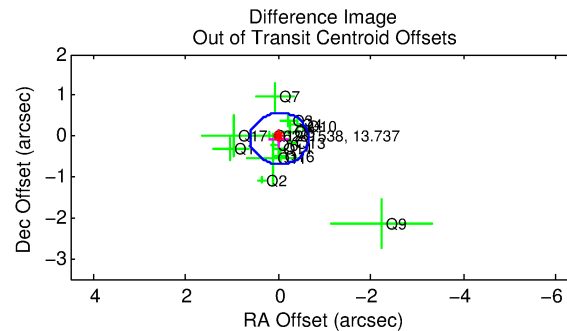
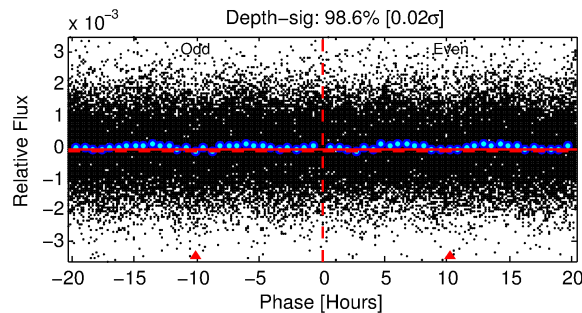
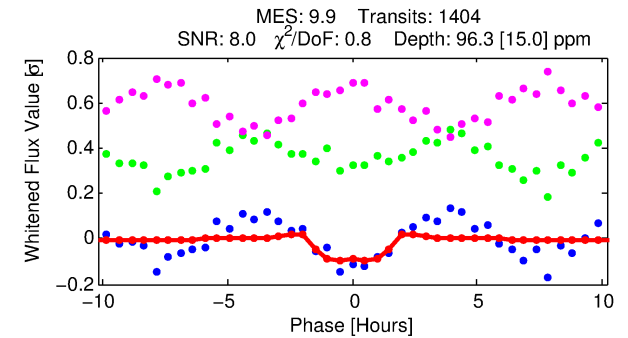
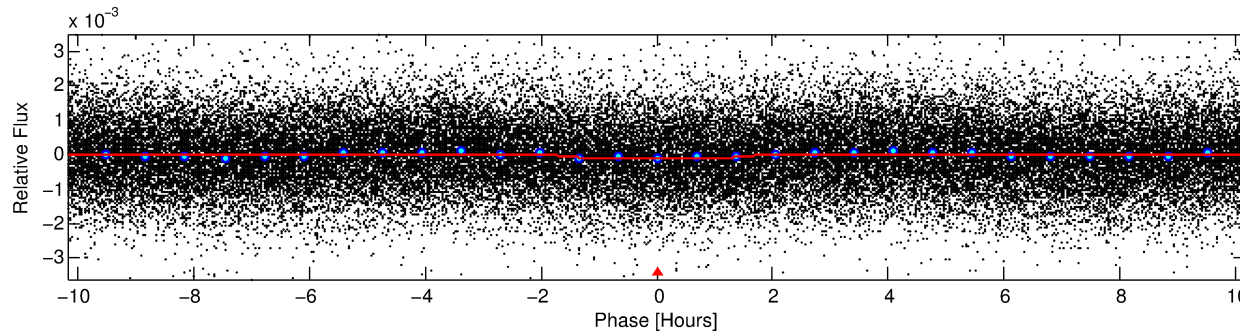
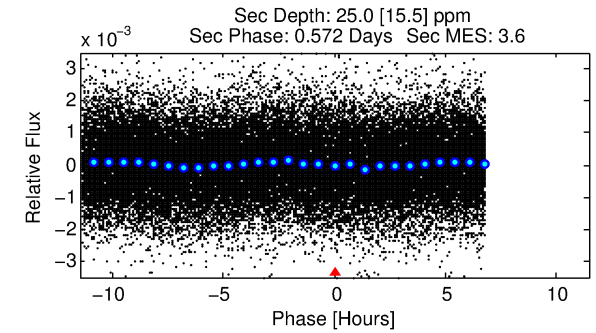
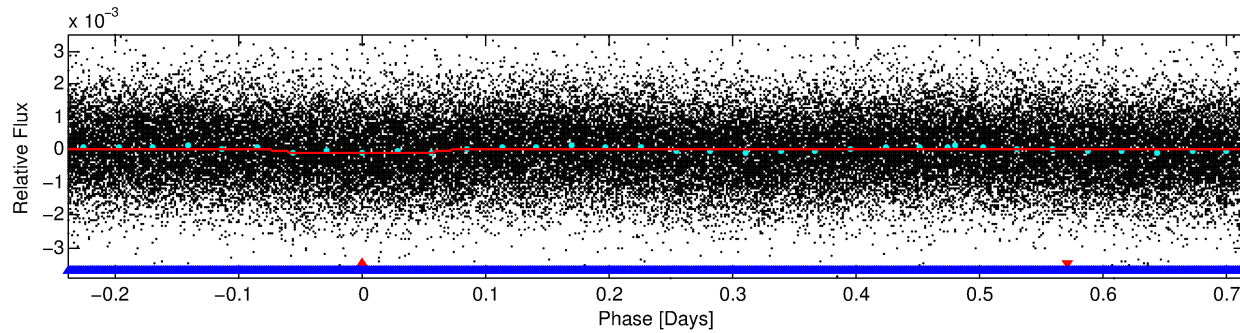
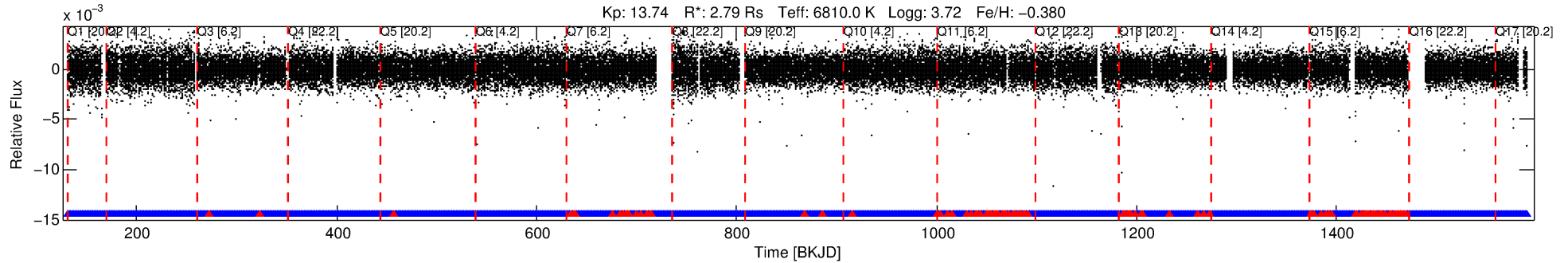
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 006231538-01

No Significant Match Found

DV One-Page Summary

KIC: 6231538 Candidate: 1 of 2 Period: 0.955 d



DV Fit Results:

Period = 0.95532 [0.00001] d
Epoch = 131.8727 [0.0044] BKJD
 R_p/R^* = 0.0105 [0.0062]
 a/R^* = 1.36 [2.24]
 b = 0.90 [0.76]
 S_{eff} = 32065.86 [29526.50]
 T_{eq} = 3412 [785] K
 R_p = 3.18 [2.58] R_e
 a = 0.0216 [0.0119] AU
 A_g = 0.64 [1.02] [-0.36σ]
 T_{eff} = 4710 [1583] K [0.73σ]

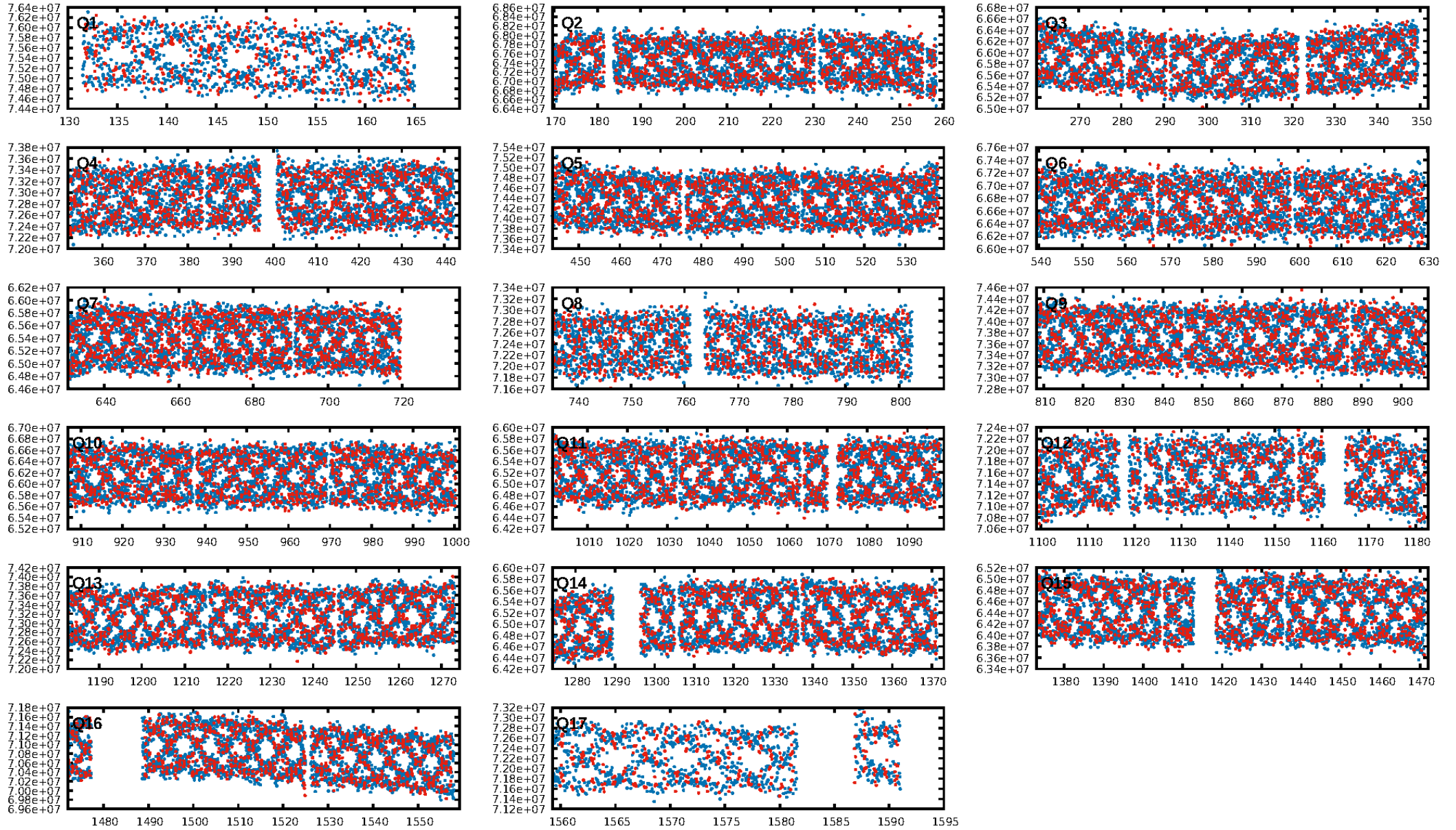
DV Diagnostic Results:

ShortPeriod-sig: 80.2% [1.29σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 0.92 [1237/1341]
GhostDiagnostic-chr: 1.429
Centroid-sig: 48.8%
Centroid-so: 0.144 arcsec [0.36σ]
OotOffset-rm: 0.067 arcsec [0.32σ]
OotOffset-st: 4/3/4/5 [16]
KicOffset-rm: 0.120 arcsec [0.67σ]
KicOffset-st: 4/3/4/5 [16]
DiffImageQuality-fgm: 1.00 [16/16]
DiffImageOverlap-fno: 0.00 [0/17]

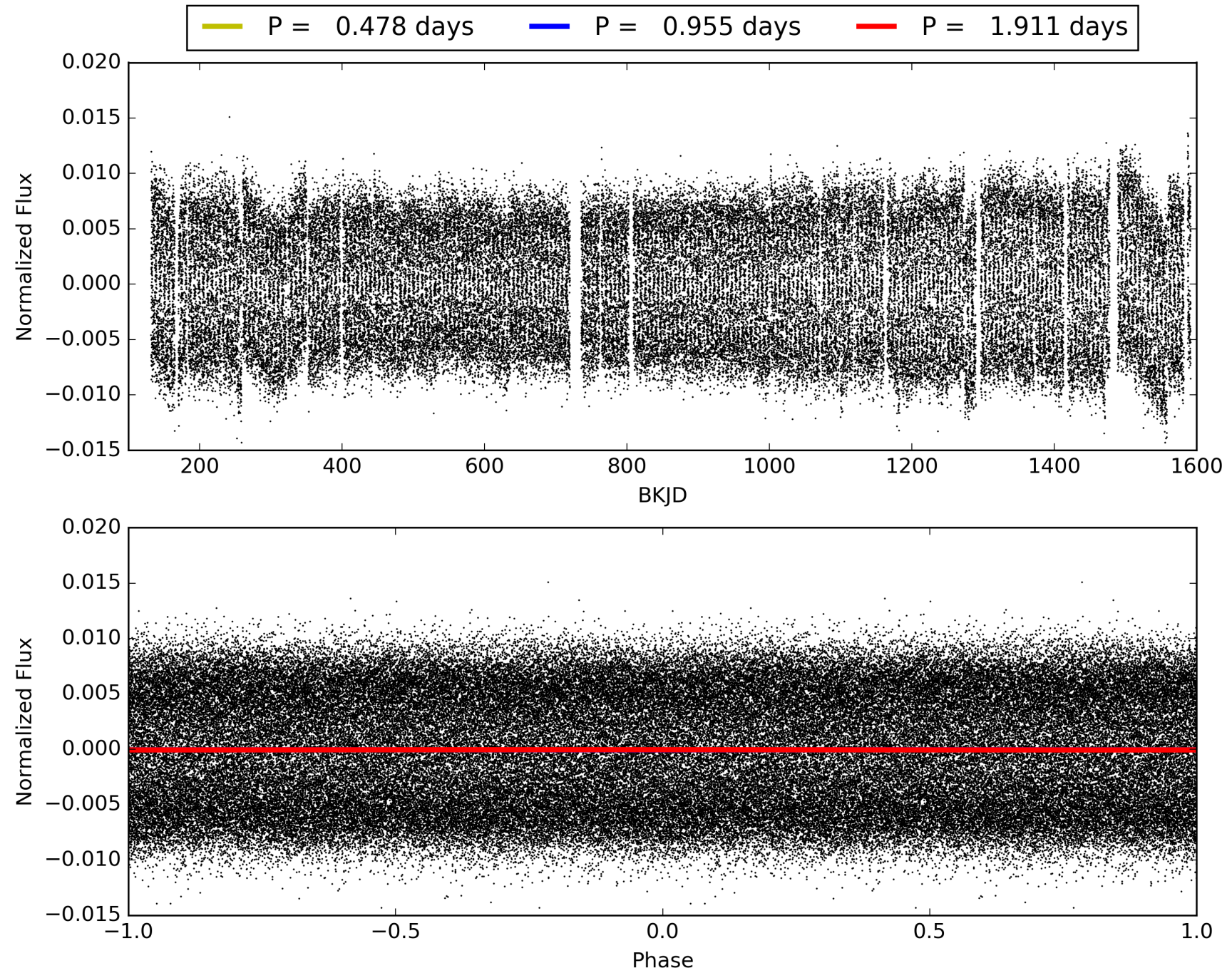
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 13:19:35 Z

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

TCE 006231538-01, PDC Light Curves

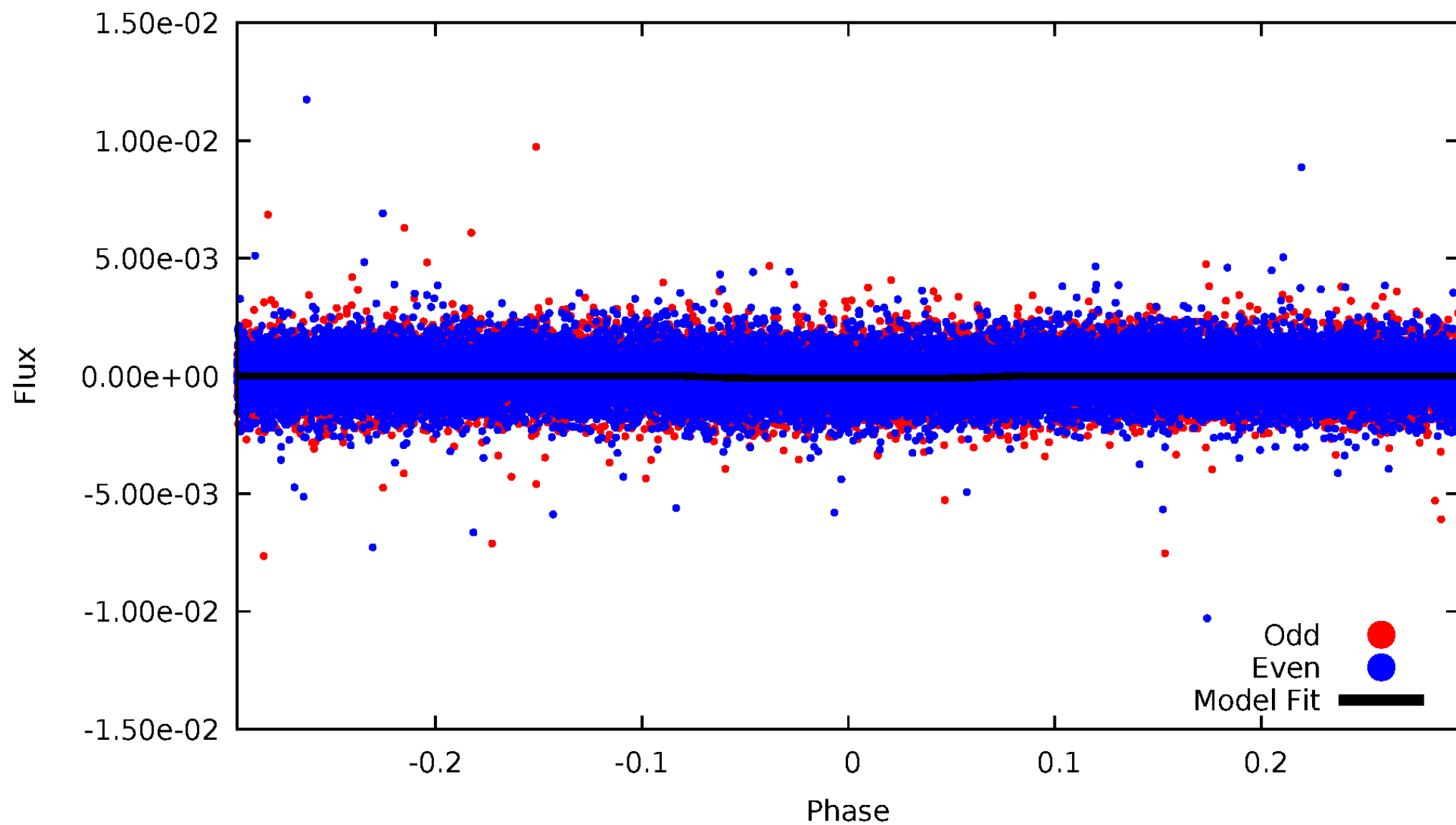


TCE 006231538-01



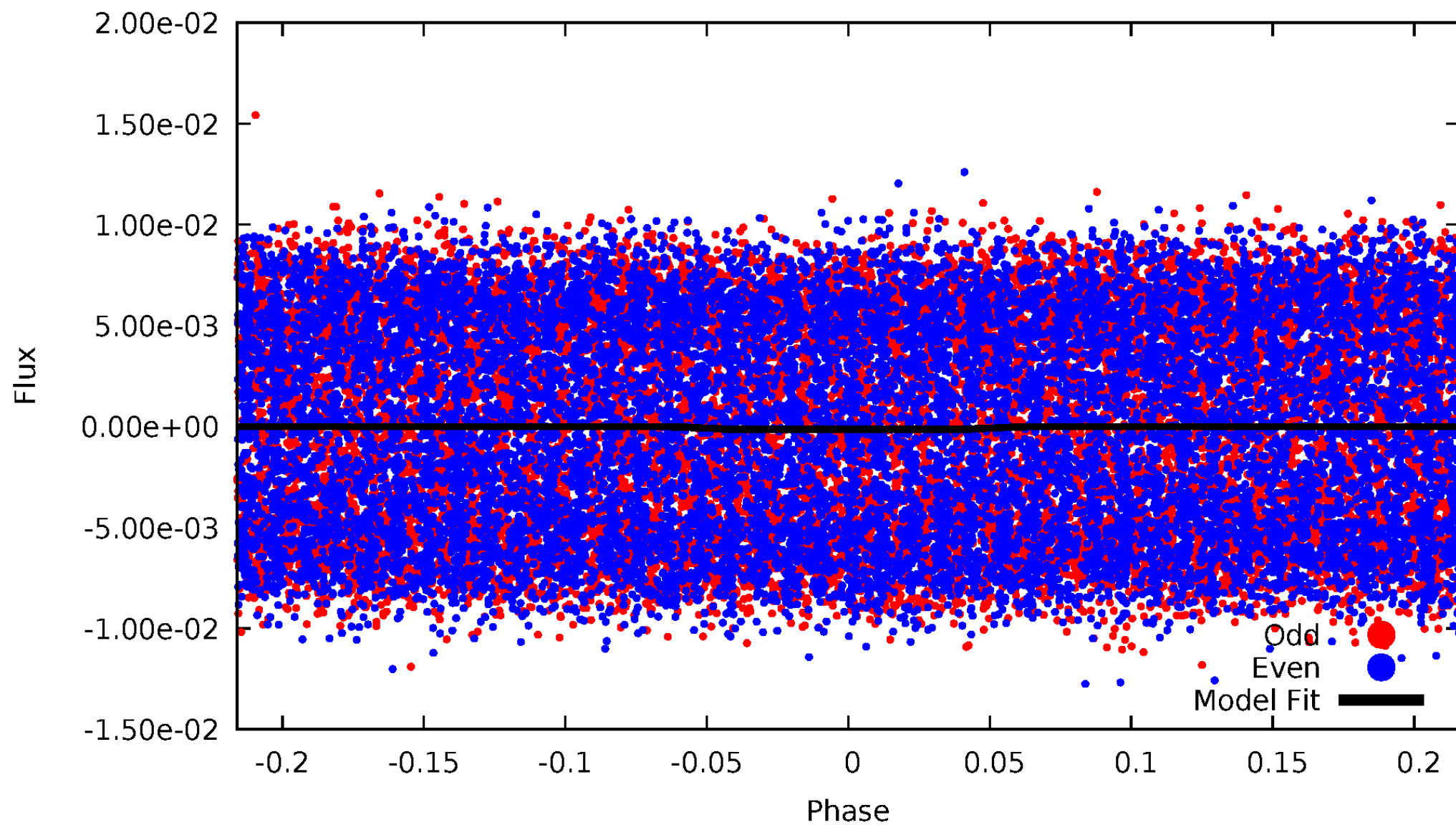
DV Odd/Even

TCE 006231538-01



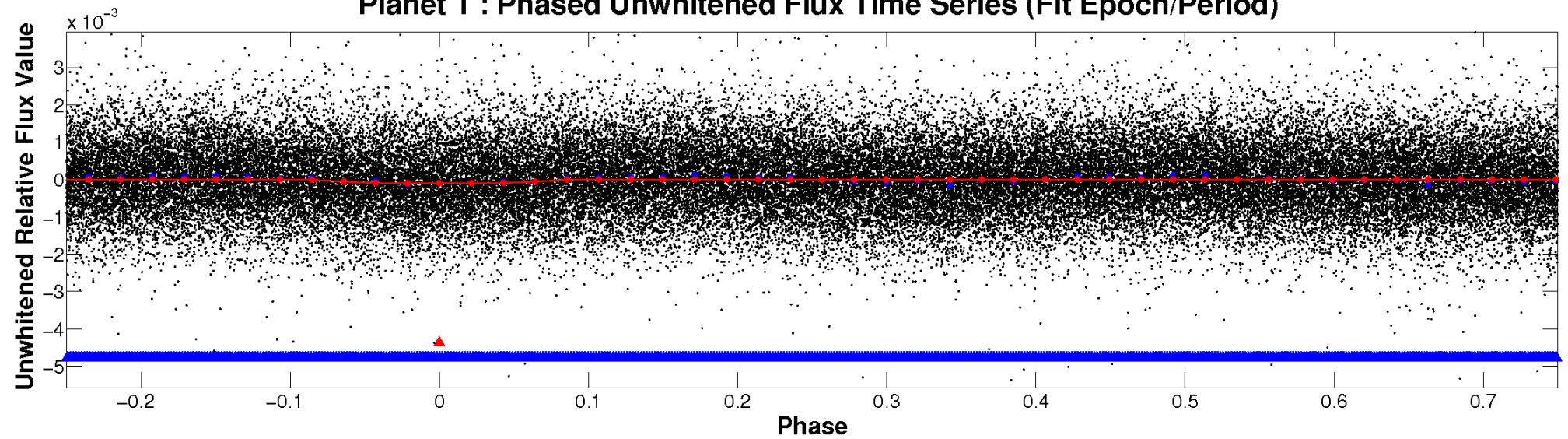
ALT Odd/Even

TCE 006231538-01

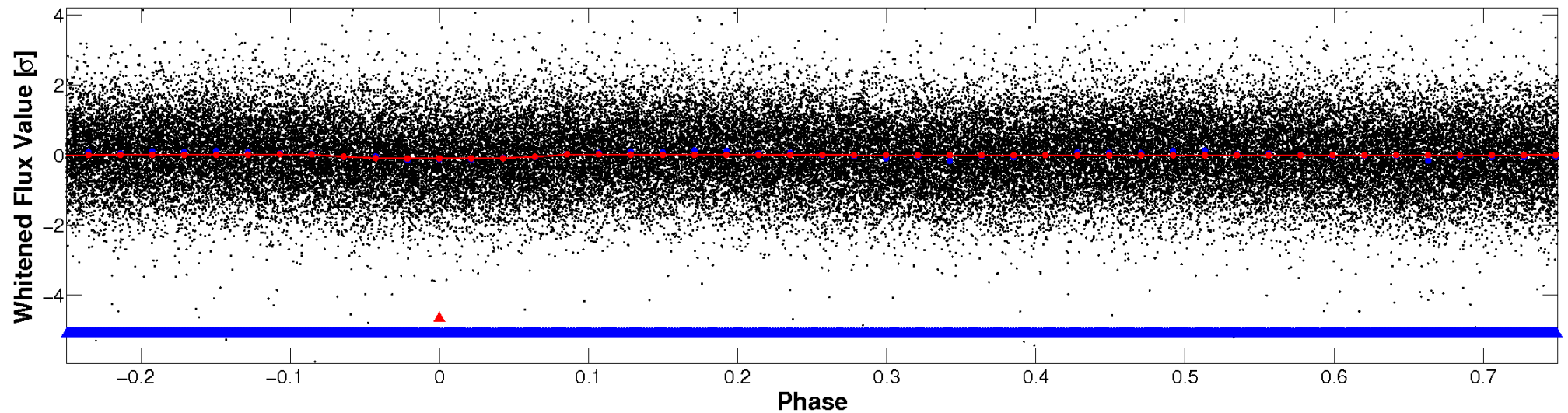


Non-Whitened Vs. Whitened Light Curve

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

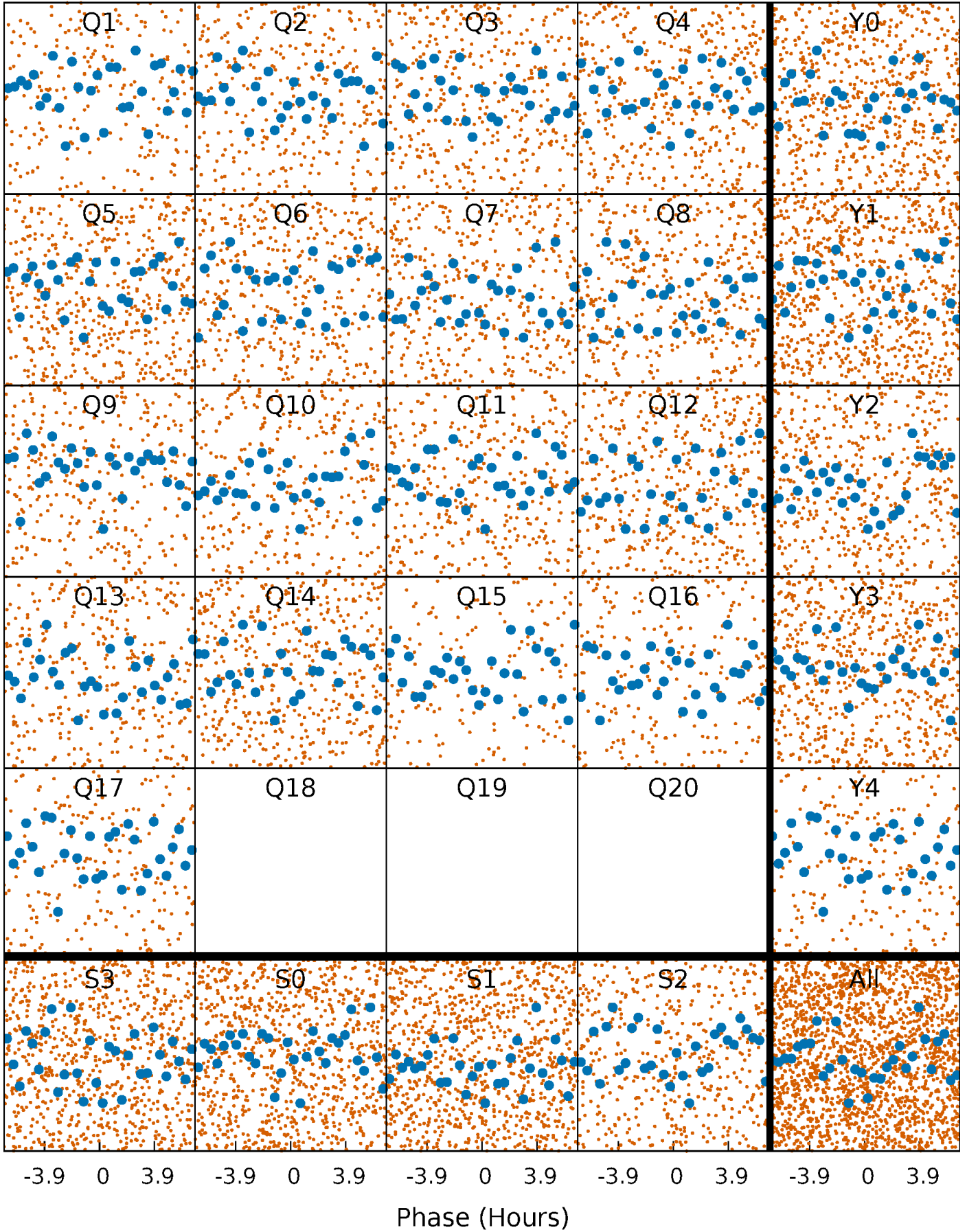


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



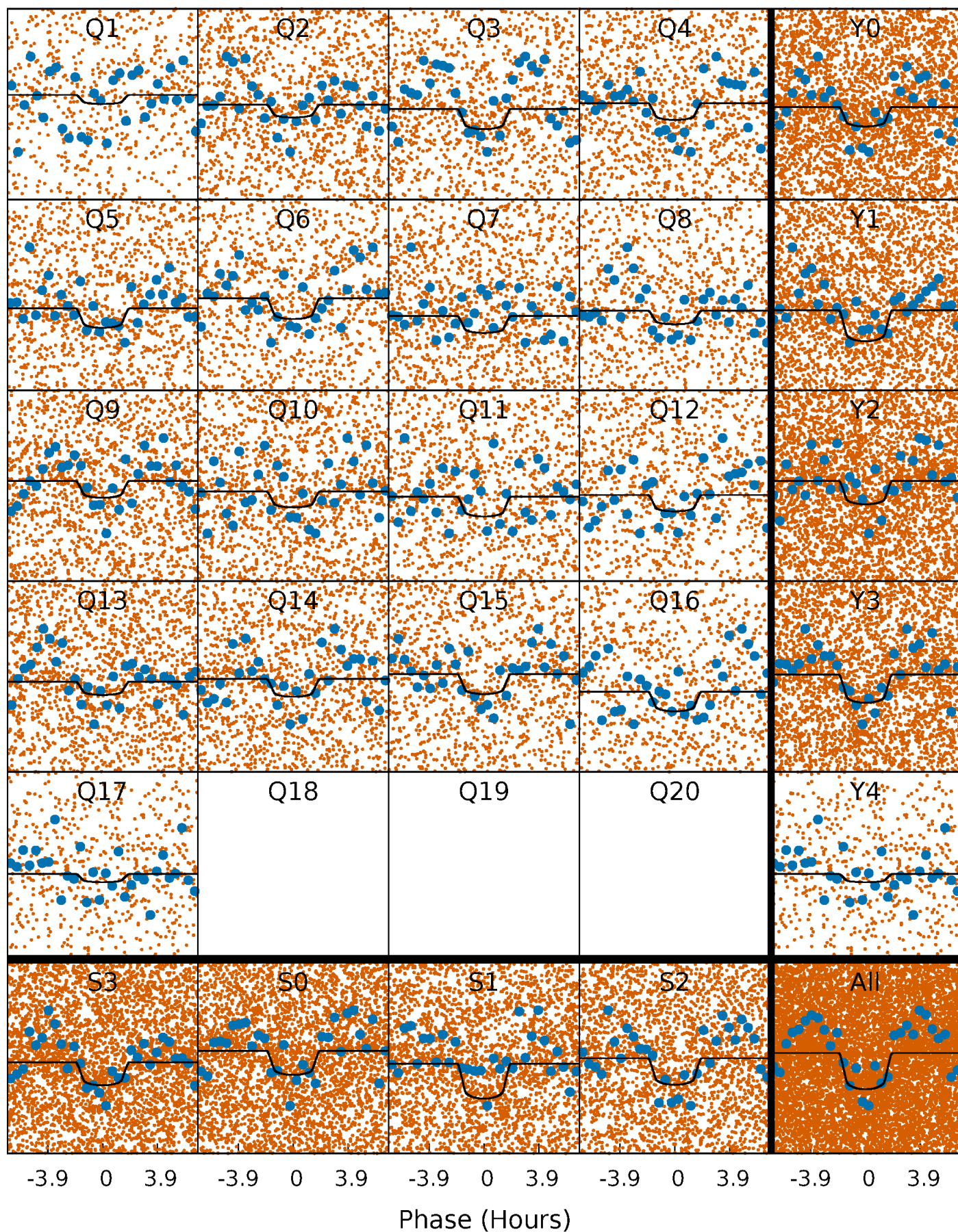
PDC Quarter-Phased Transit Curves

TCE 006231538-01 P= 0.955319 Days $T_0=131.872652$ (BKJD)



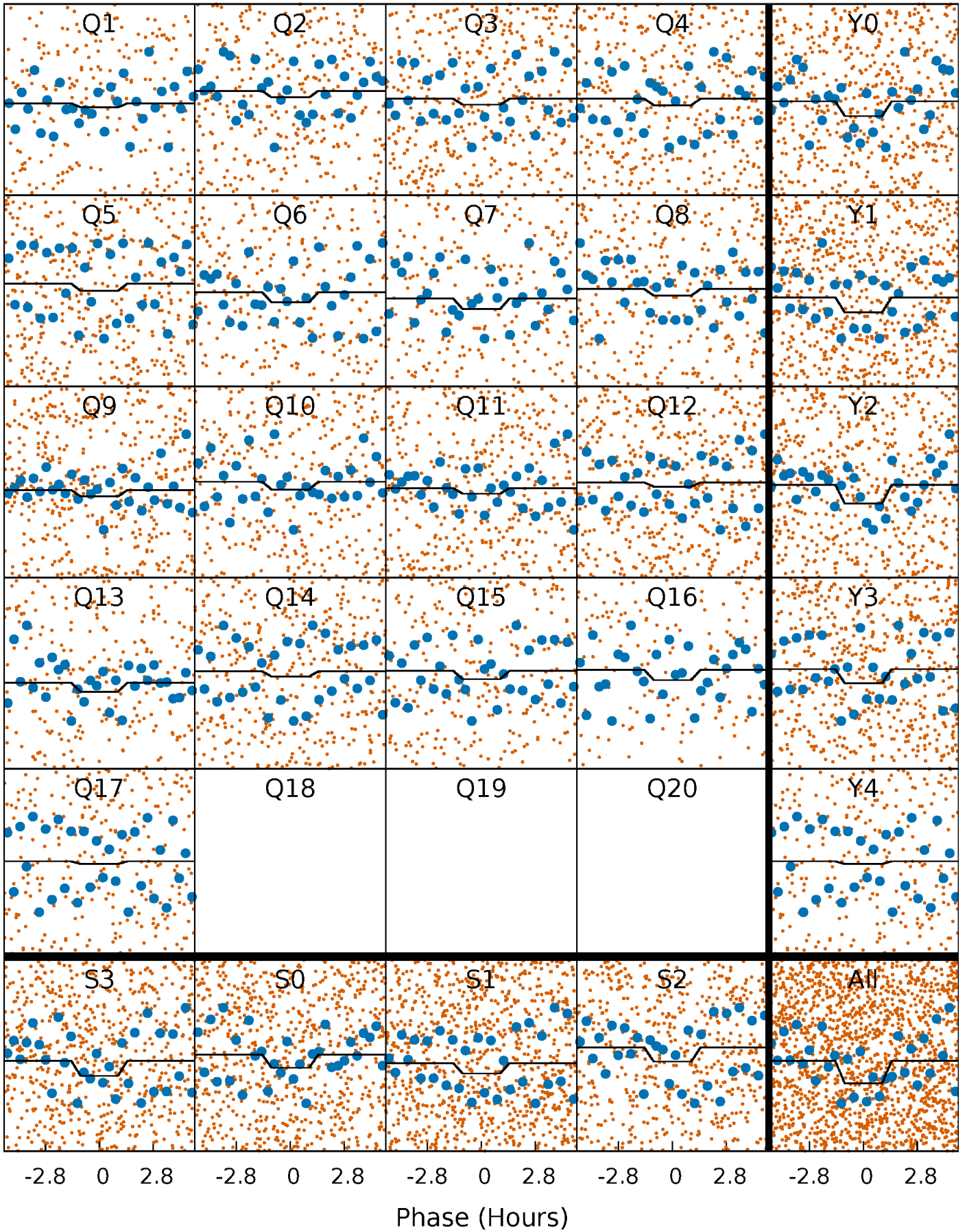
DV Quarter-Phased Transit Curves

TCE 006231538-01 P= 0.955319 Days $T_0=131.872652$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

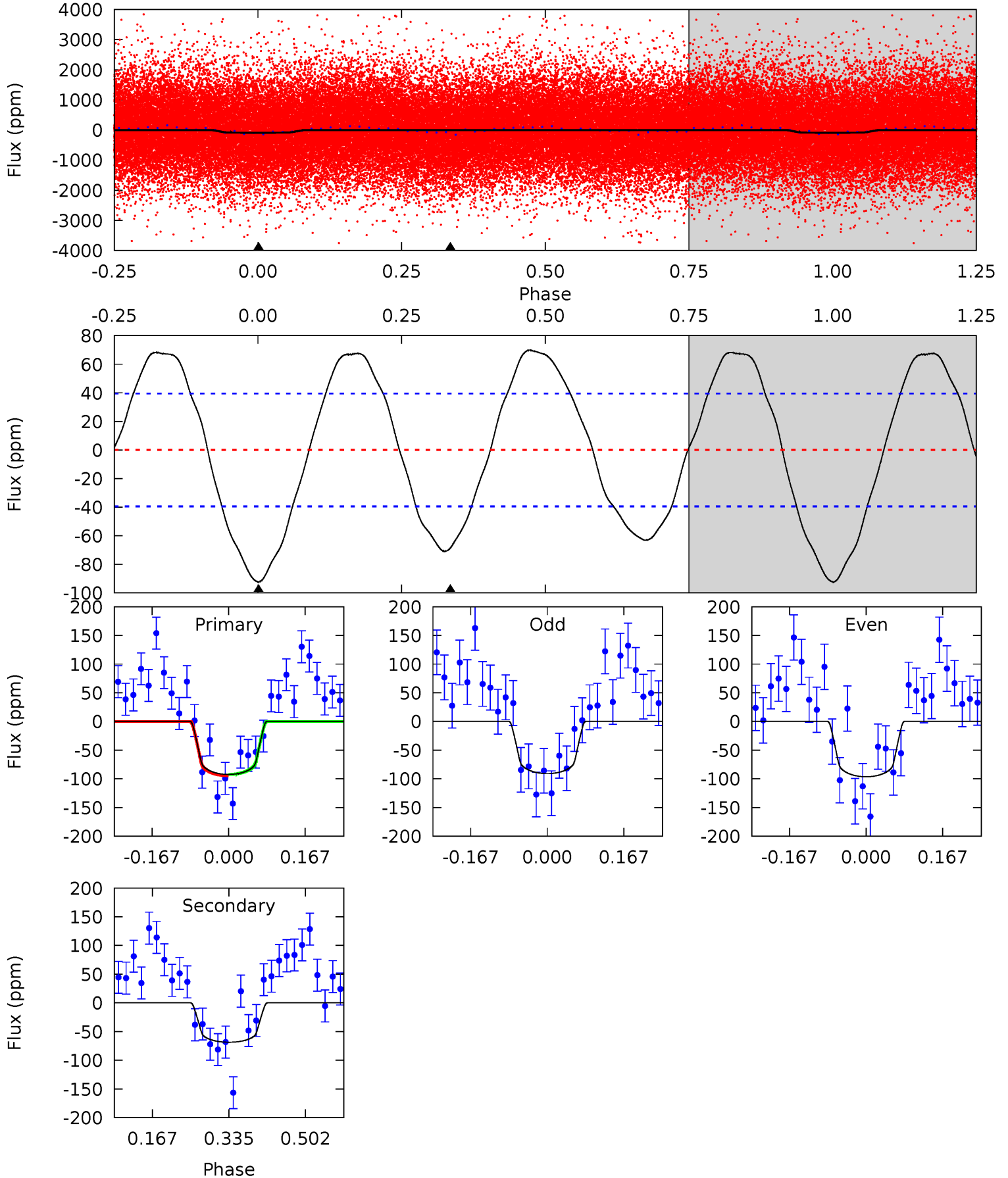
TCE 006231538-01 P= 0.955326 Days $T_0=131.866684$ (BKJD)



DV Model-Shift Uniqueness Test

006231538-01, P = 0.955319 Days, E = 130.917333 Days

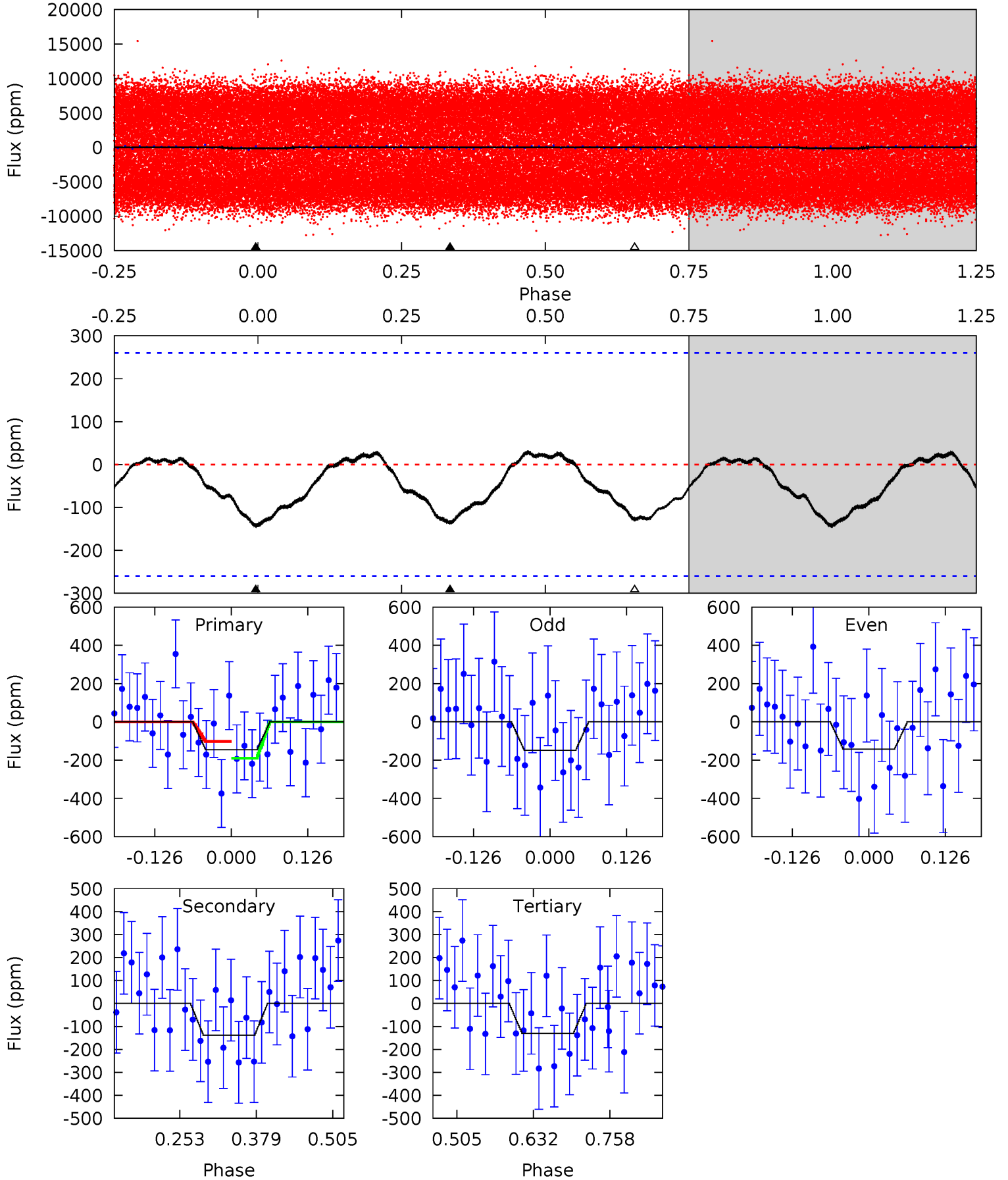
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.4	7.75	0	0	4.46	1.38	5.15	10.4	10.4	7.75	7.75	0.31	0.93	0.43	0.13



Alt Model-Shift Uniqueness Test

006231538-01, P = 0.955326 Days, E = 130.911358 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2.53	2.40	2.27	0	4.52	1.53	0.88	0.26	2.53	0.13	2.40	0.05	0.99	0.17	0.76



Stellar Parameters For KIC 006231538

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6810^{+217}_{-326}	$3.716^{+0.535}_{-0.094}$	$-0.380^{+0.300}_{-0.300}$	$2.787^{+0.483}_{-1.546}$	$1.471^{+0.208}_{-0.386}$	$0.096^{+0.581}_{-0.027}$
	+3%/-5%	+14%/-3%	+79%/-79%	+17%/-55%	+14%/-26%	+607%/-28%
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 006231538-01 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-69 ± 9	$2.95^{+1.83}_{-1.39}$	4605^{+361}_{-592}	5579^{+2617}_{-1130}	$2.066^{+5.545}_{-1.284}$
Alt.	-138 ± 58	$3.13^{+1.95}_{-1.53}$	4553^{+397}_{-638}	6391^{+3604}_{-1559}	$3.395^{+10.298}_{-2.309}$

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

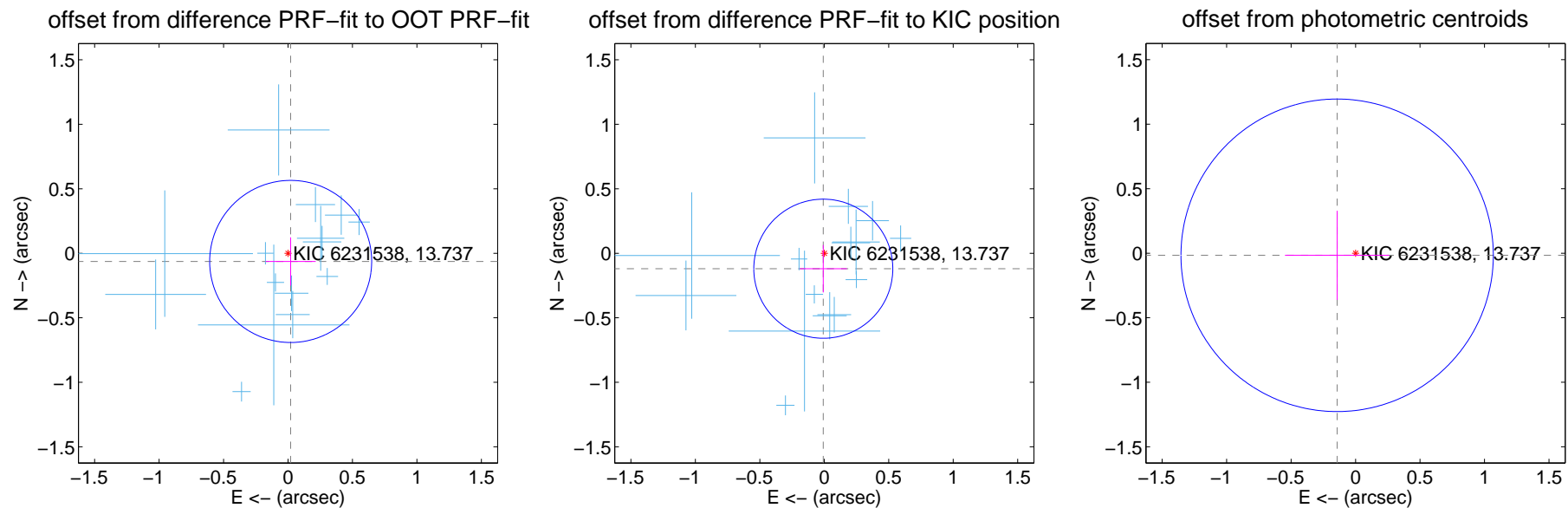
DV Centroid Data

Supplemental centroid analysis for 006231538-01. Kepler magnitude: 13.74. Transit SNR 8.04

There are 16 quarters with good PRF difference image offsets

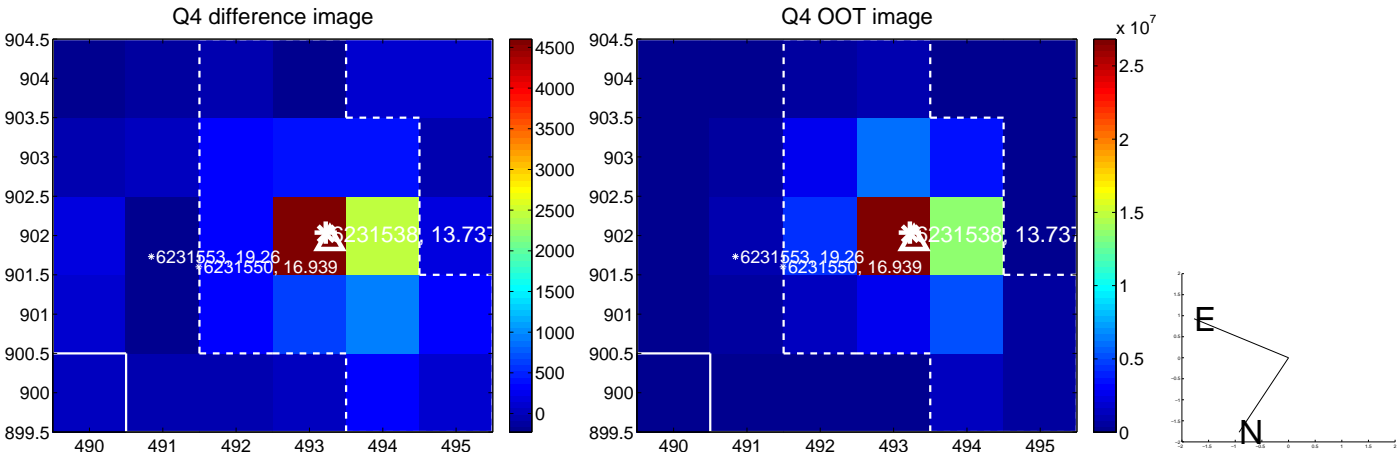
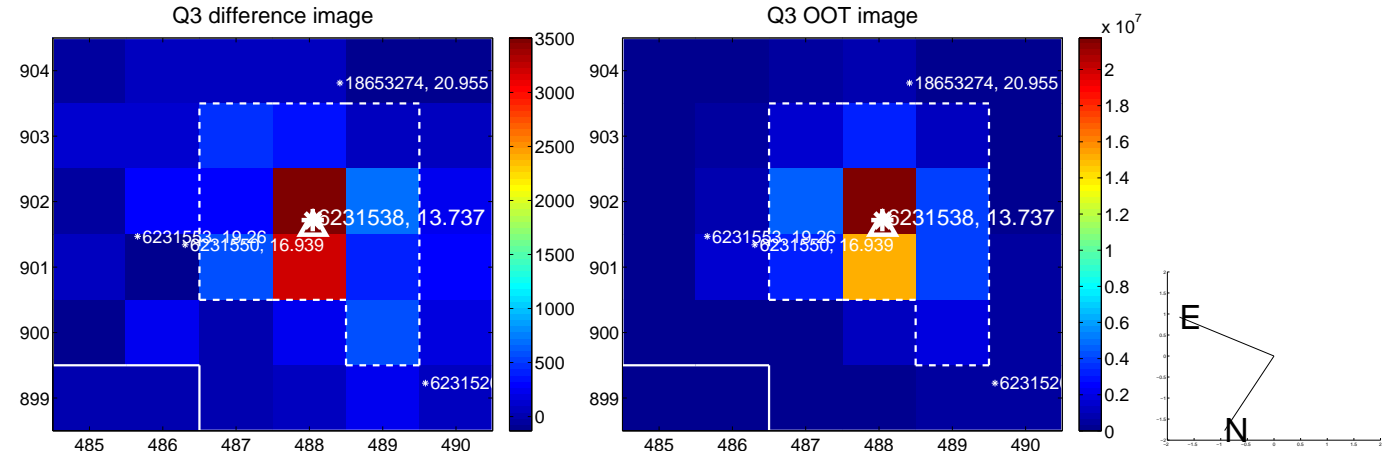
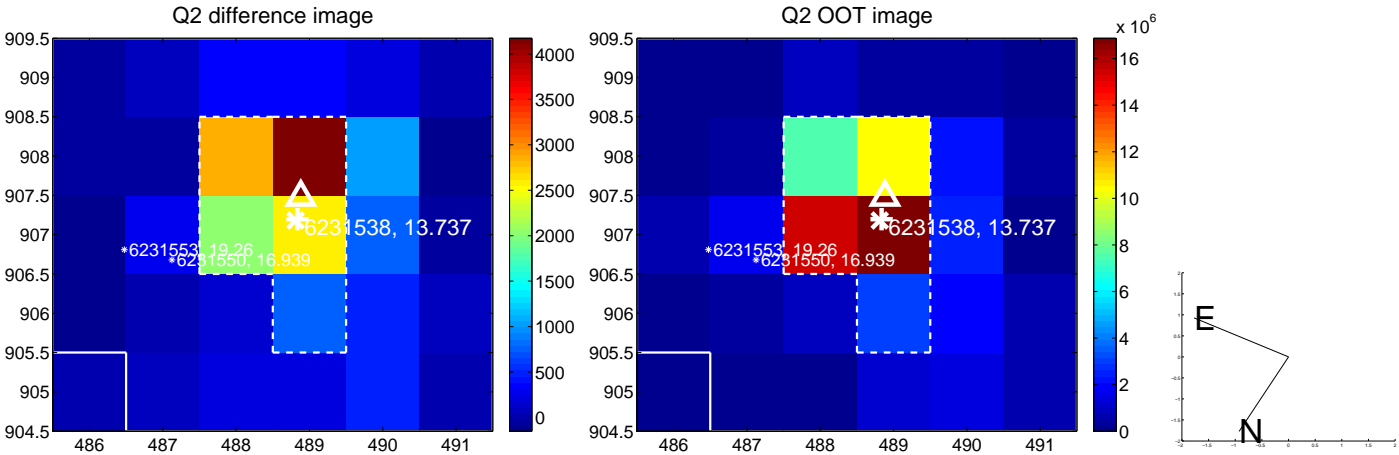
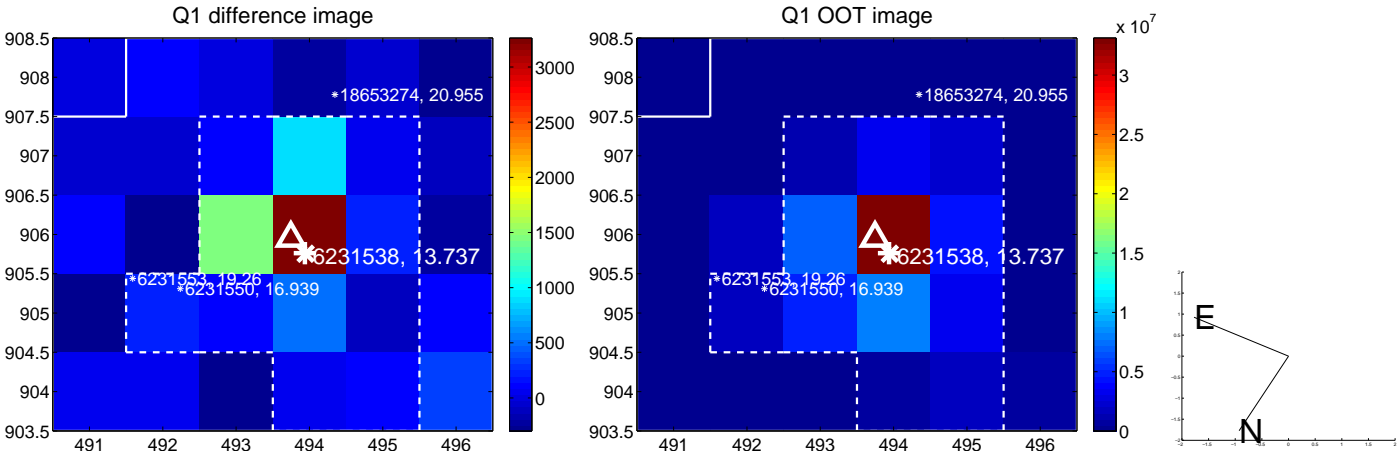
The direct PRF centroid is offset from the target star catalog position by about 0.07 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.067 ± 0.209	0.32	-0.021 ± 0.194	-0.063 ± 0.187
PRF-fit source offset from KIC position	0.120 ± 0.180	0.67	0.008 ± 0.183	-0.120 ± 0.184
photometric centroid source offset	0.14 ± 0.40	0.36	0.14 ± 0.40	-0.02 ± 0.35

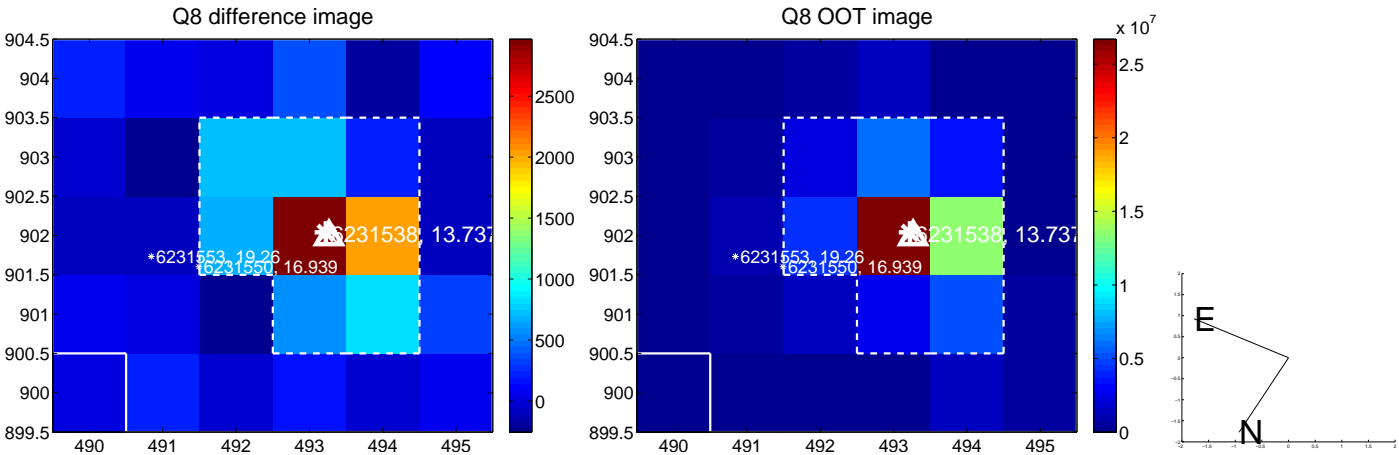
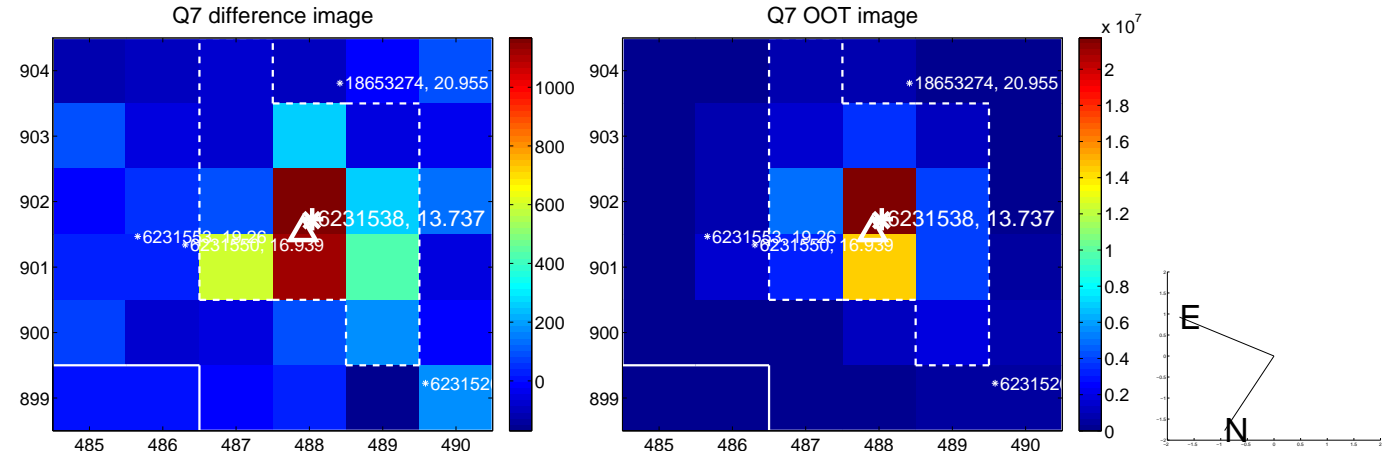
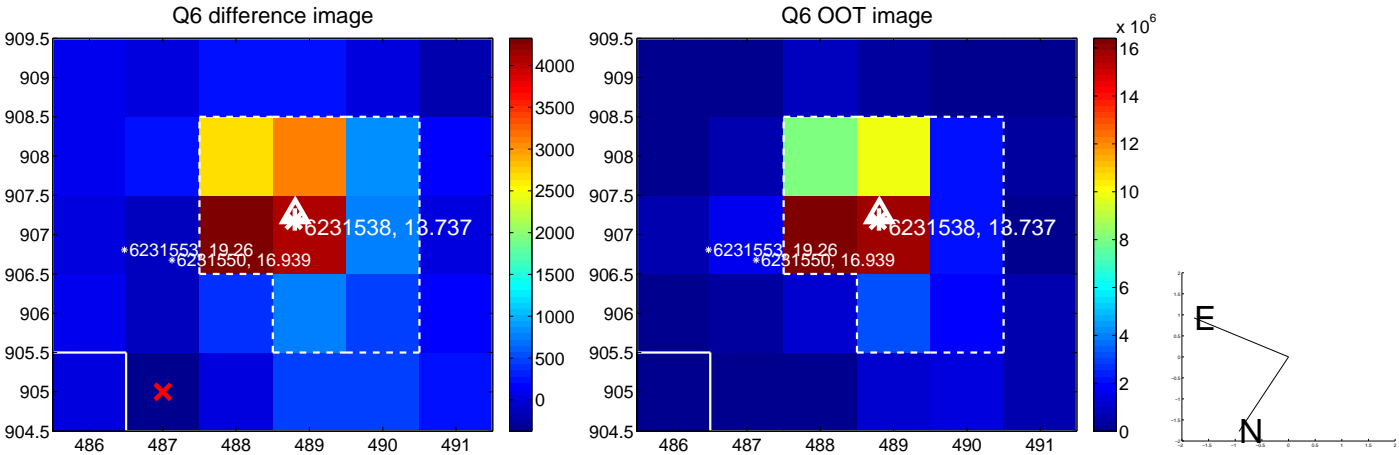
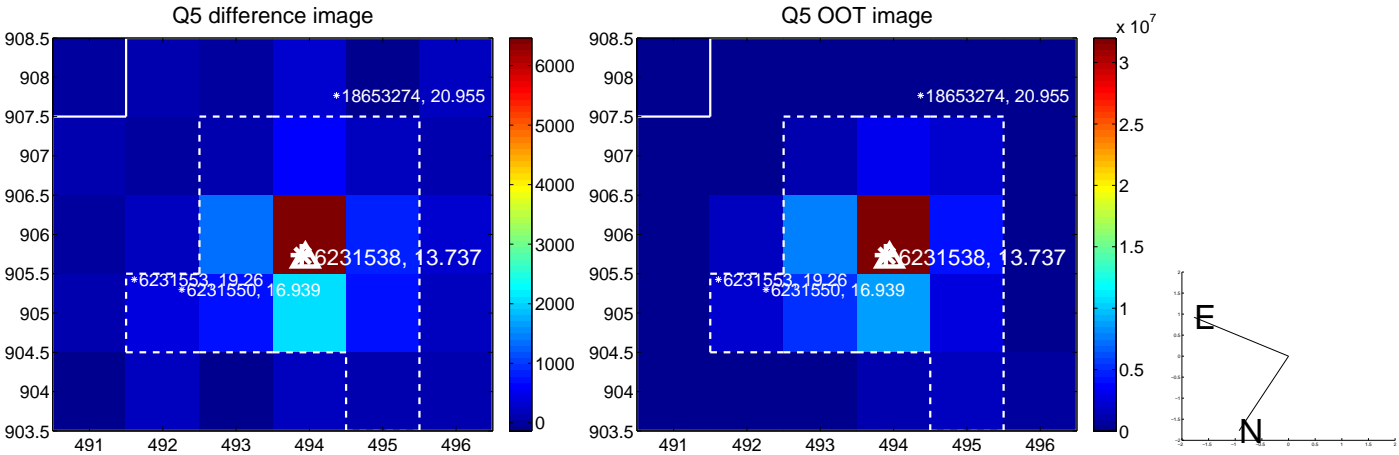


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

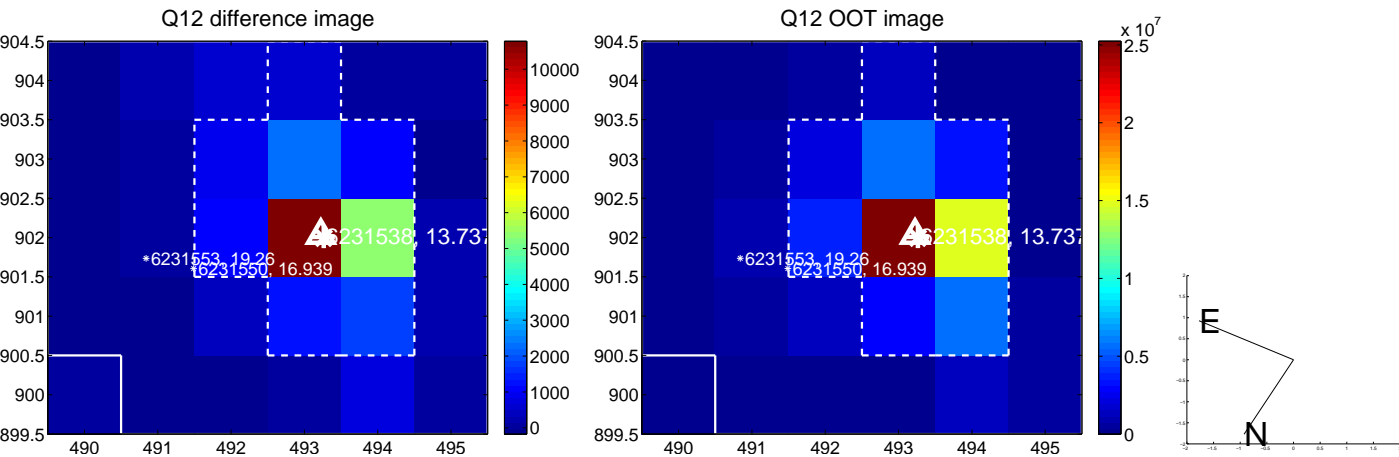
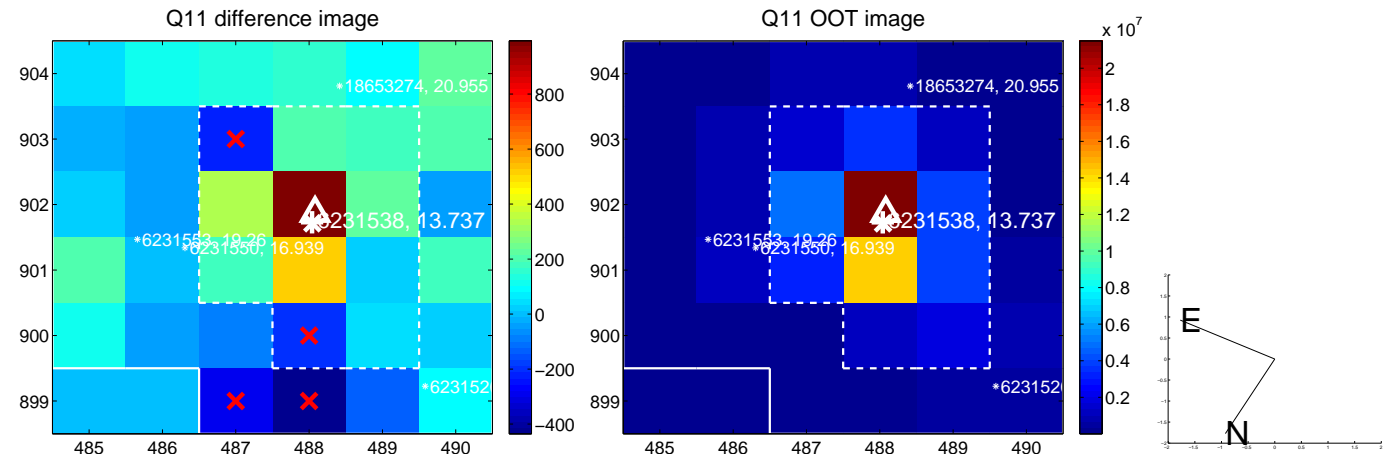
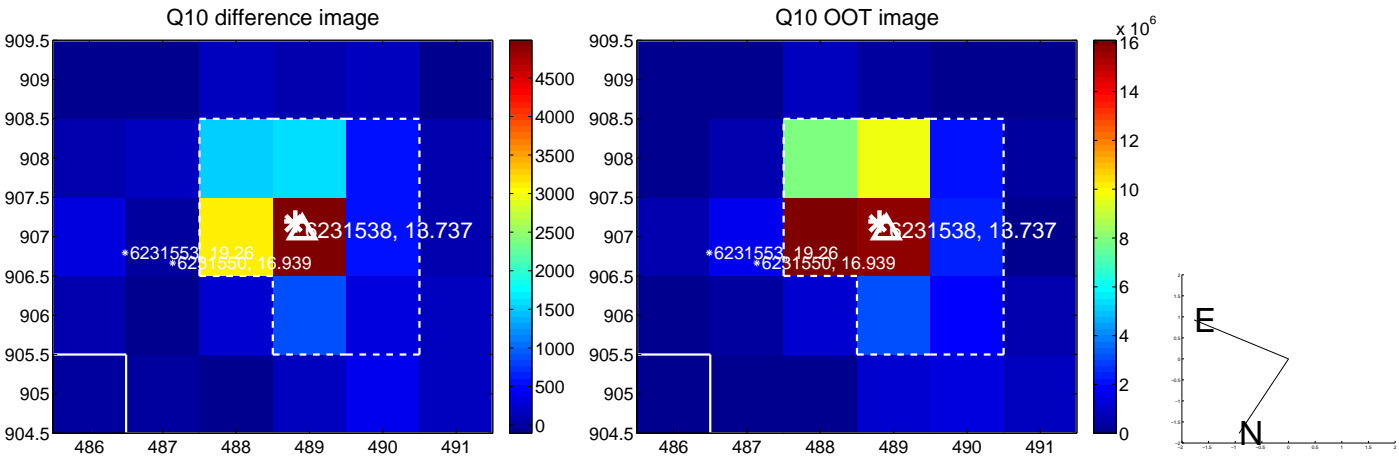
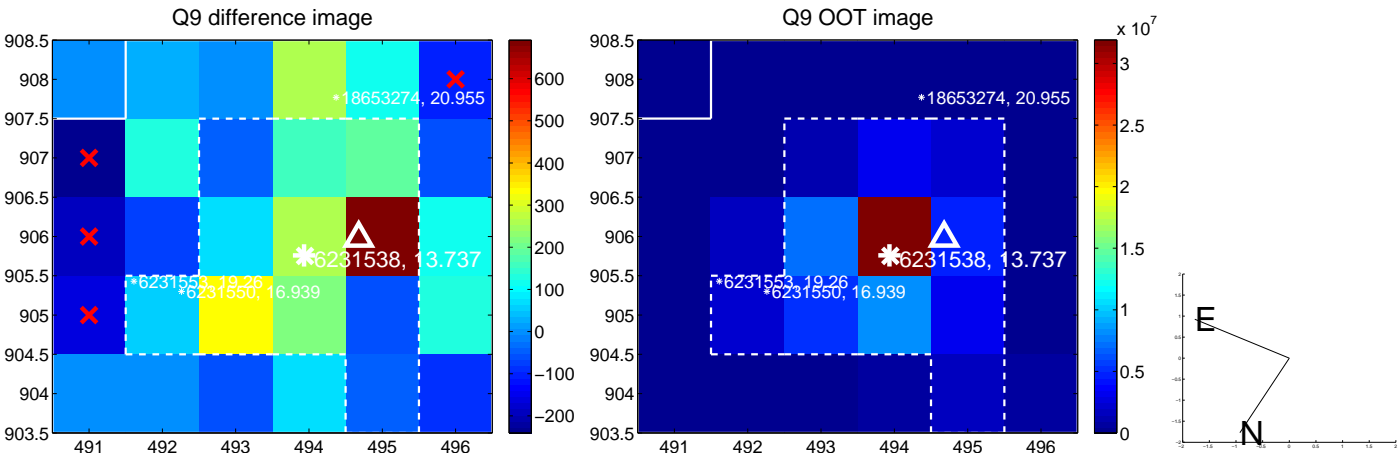
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



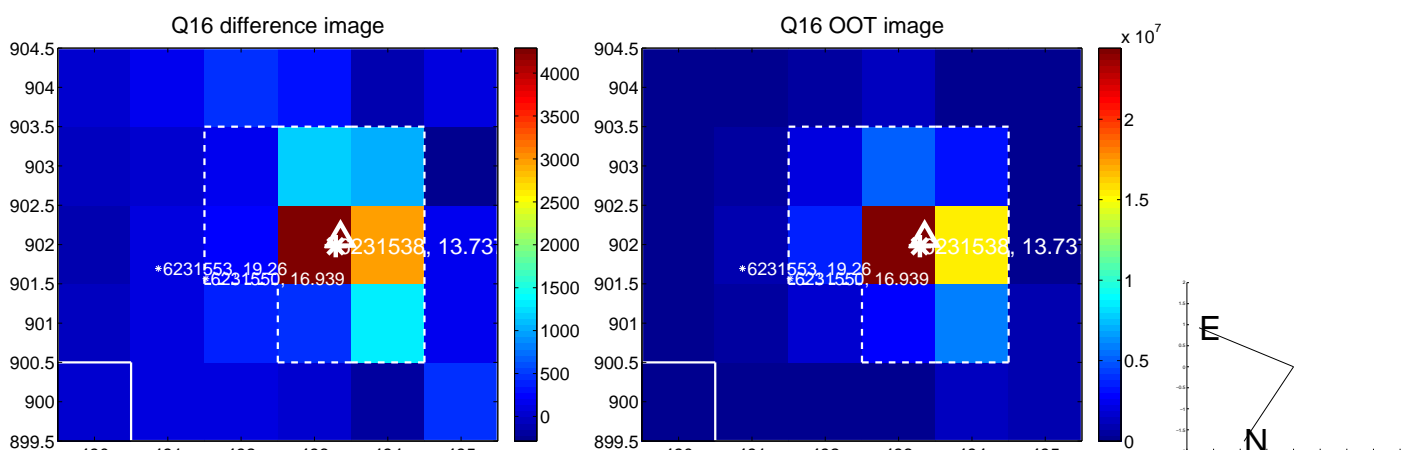
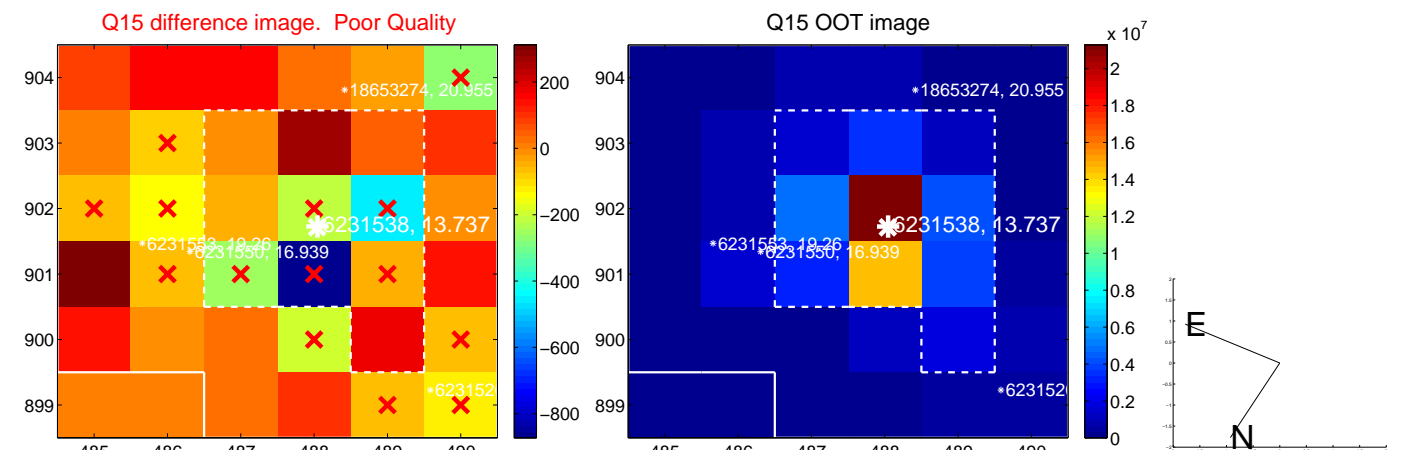
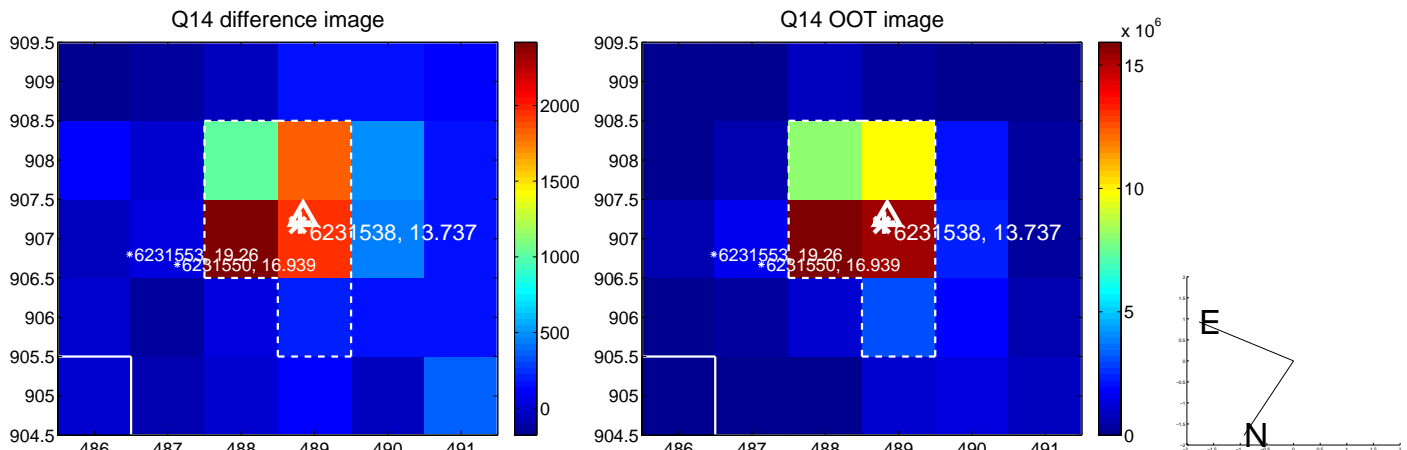
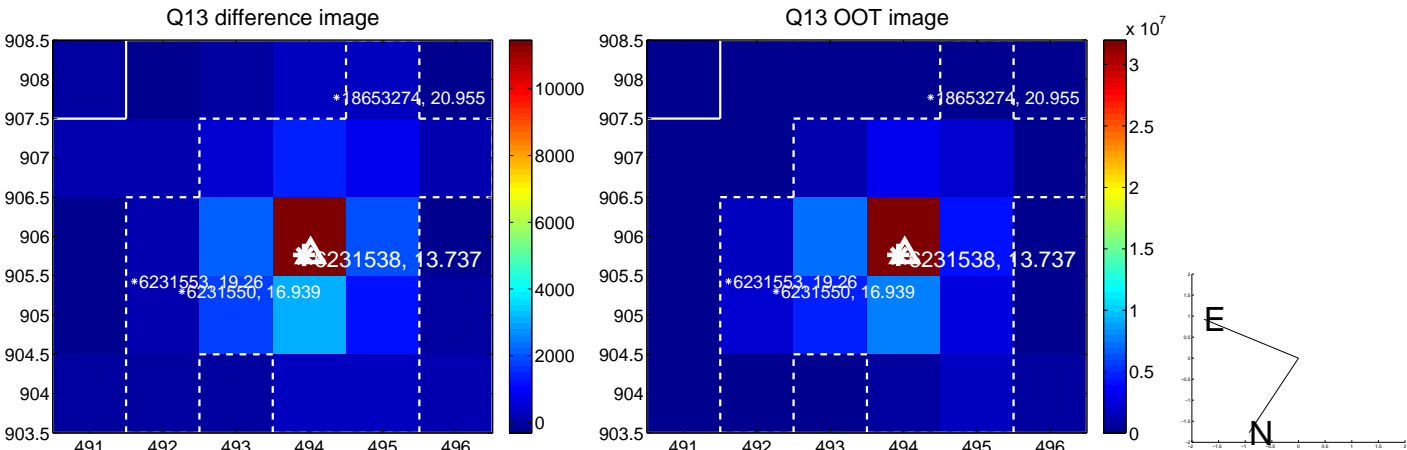
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



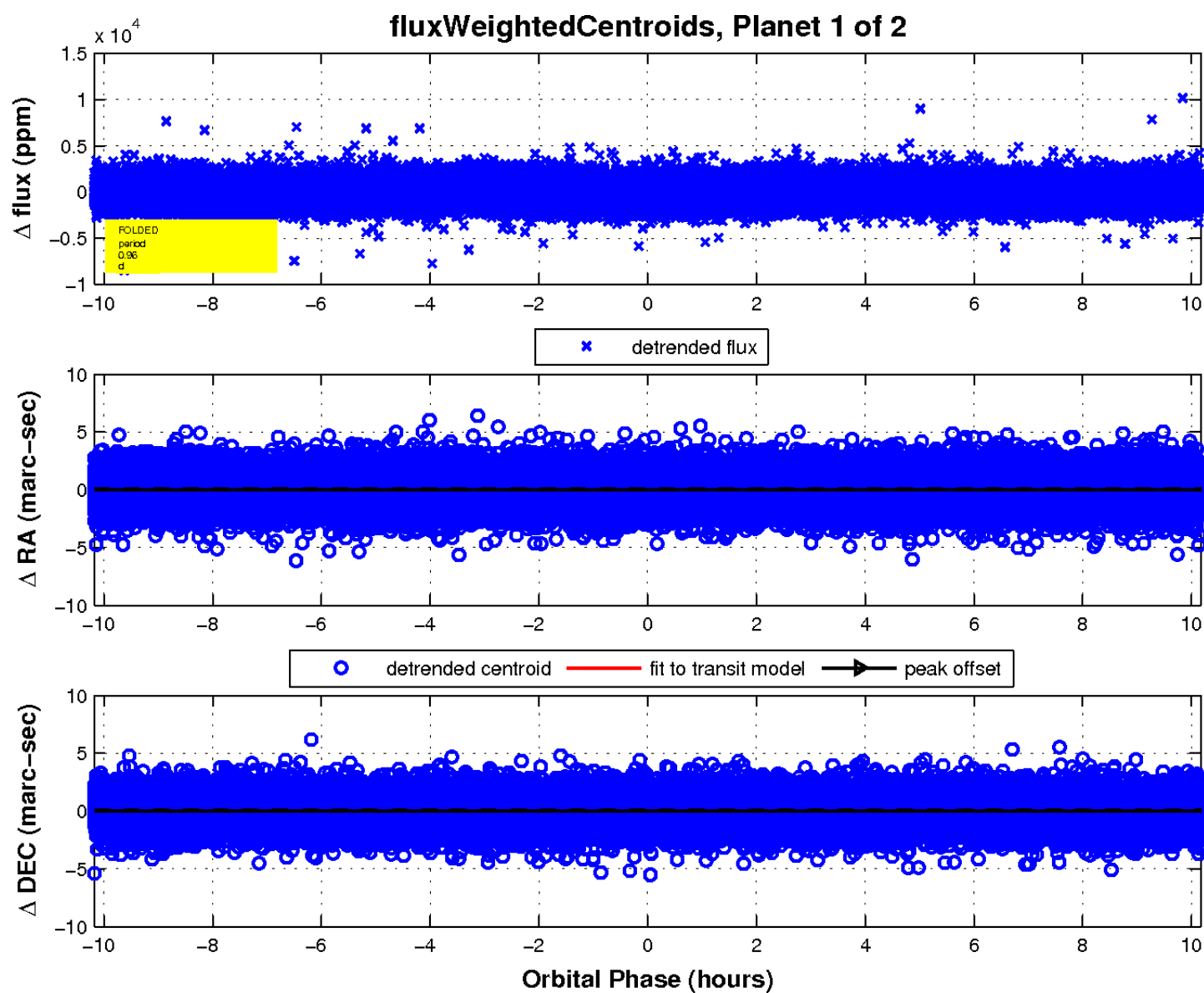
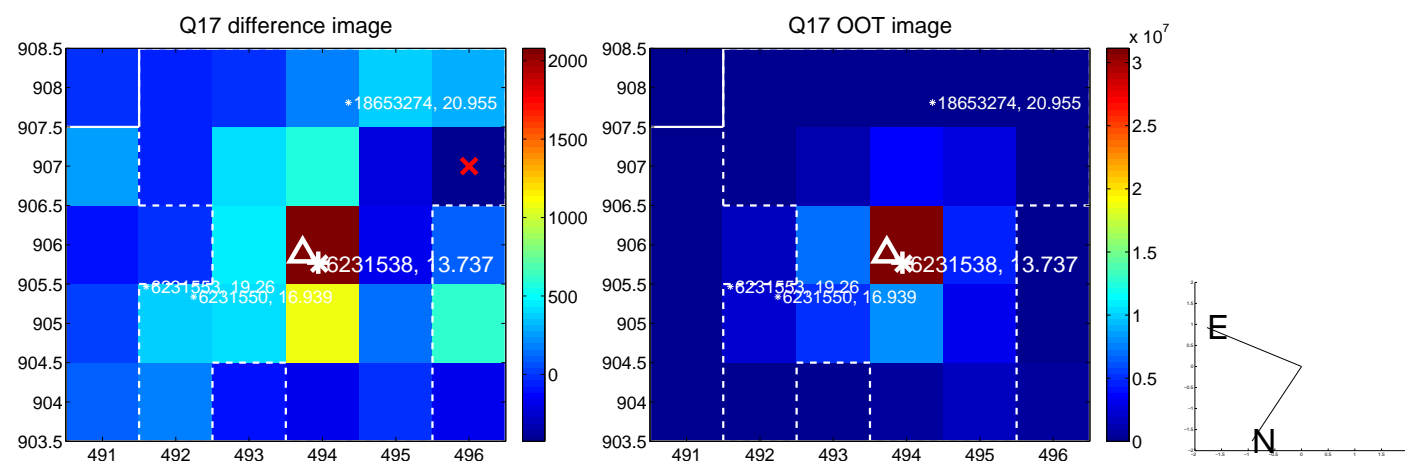
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

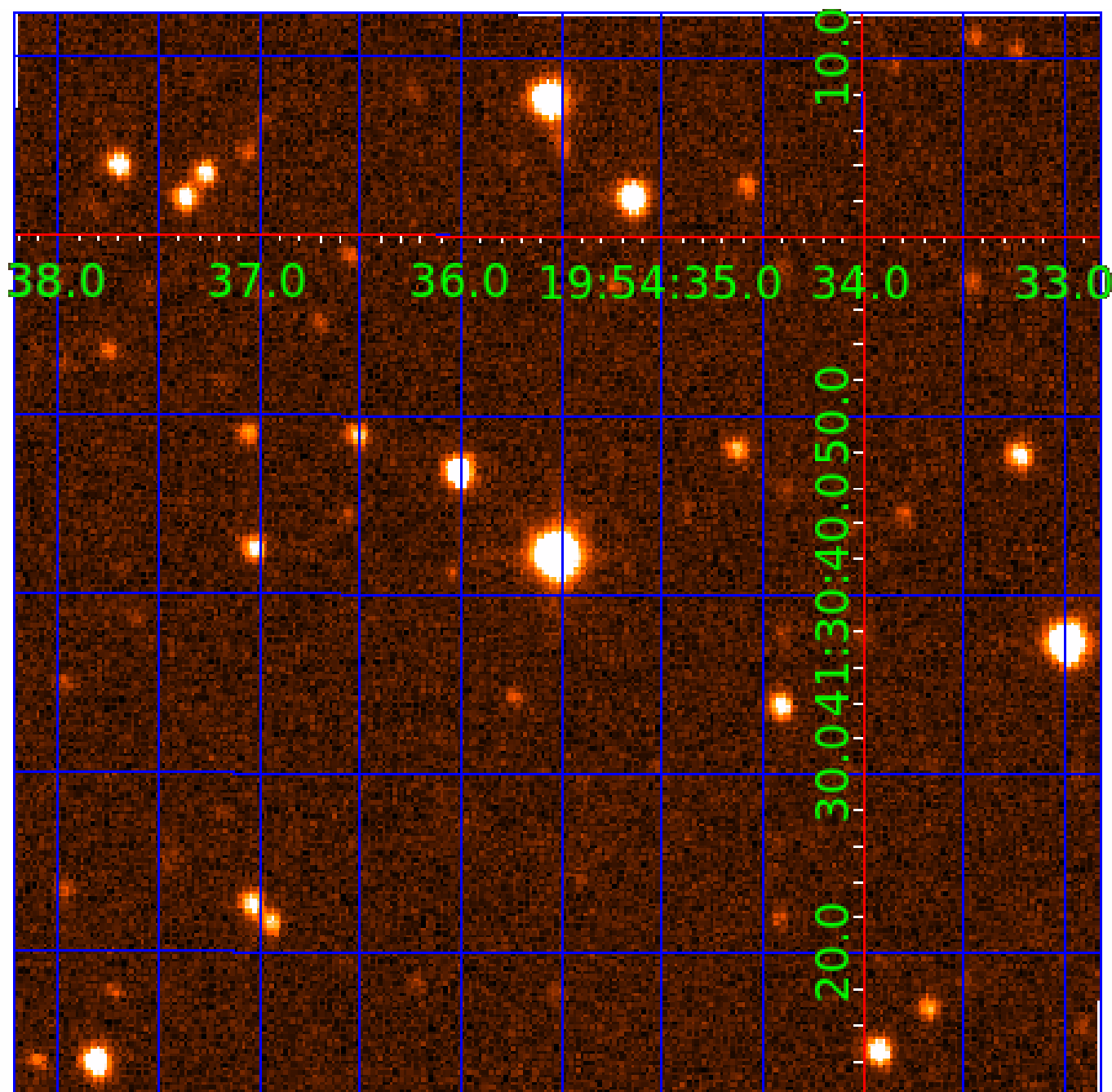


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 006231538

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})
006231538-01	OBS	No	0.955319	131.872652	96.3	3.392	9.9	8.0	2.79	6810	3.18	32065.86
006231538-02	OBS	No	0.620151	131.557691	86.9	5.254	8.0	7.8	2.79	6810	2.75	57048.55

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006231538-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT
006231538-02	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—LPP_ALT—CENT_FEW_DIFFS

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

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

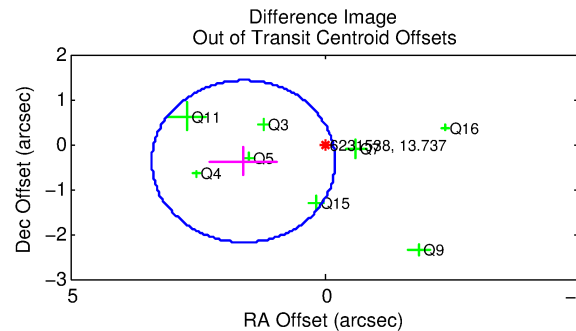
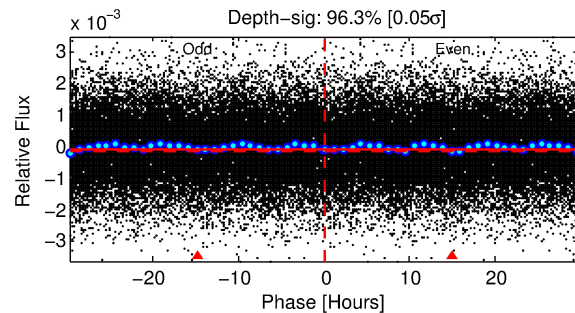
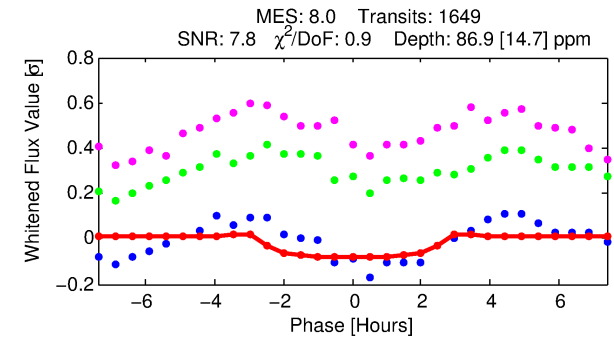
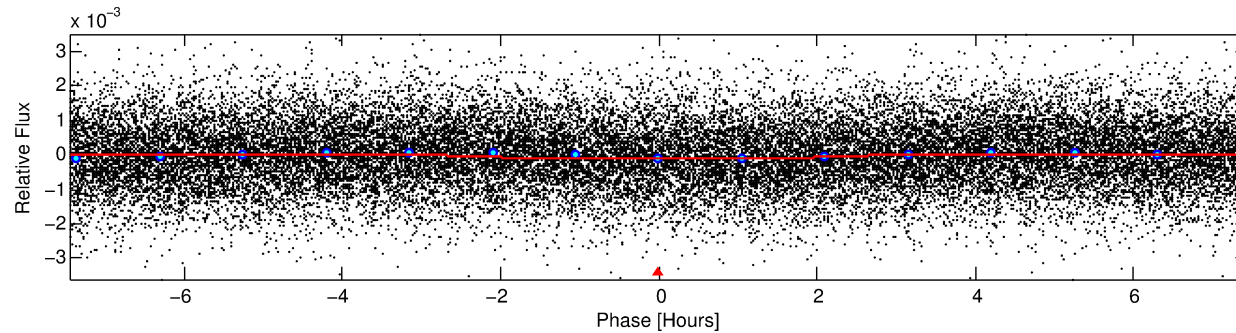
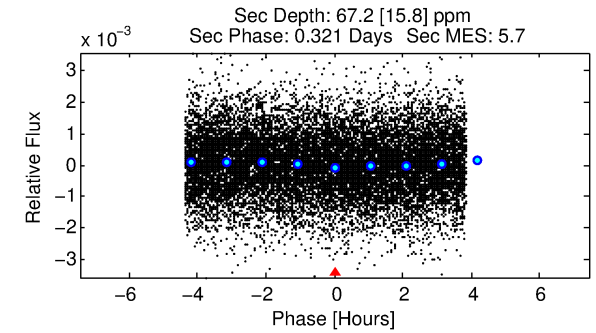
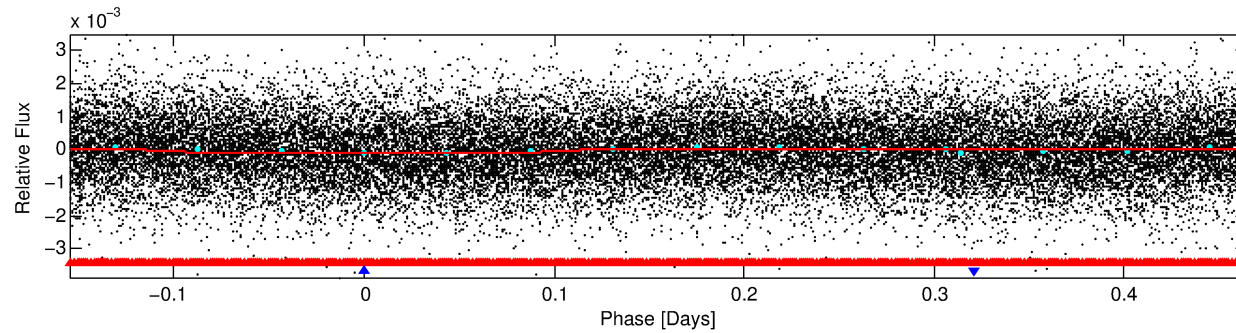
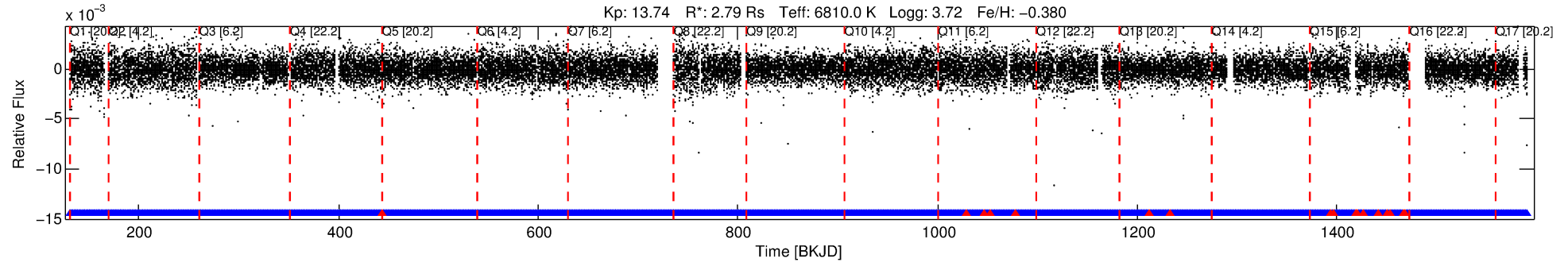
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 006231538-02

No Significant Match Found

DV One-Page Summary

KIC: 6231538 Candidate: 2 of 2 Period: 0.620 d



DV Fit Results:

Period = 0.62015 [0.00001] d
Epoch = 131.5577 [0.0061] BKJD
Rp/R* = 0.0090 [0.0125]
a/R* = 1.08 [1.23]
b = 0.64 [7.35]
Seff = 57048.55 [52530.75]
Teq = 3941 [907] K
Rp = 2.75 [4.09] Re
a = 0.0162 [0.0090] AU
Ag = 1.28 [3.74] [0.08σ]
Teffp = 6484 [4506] K [0.55σ]

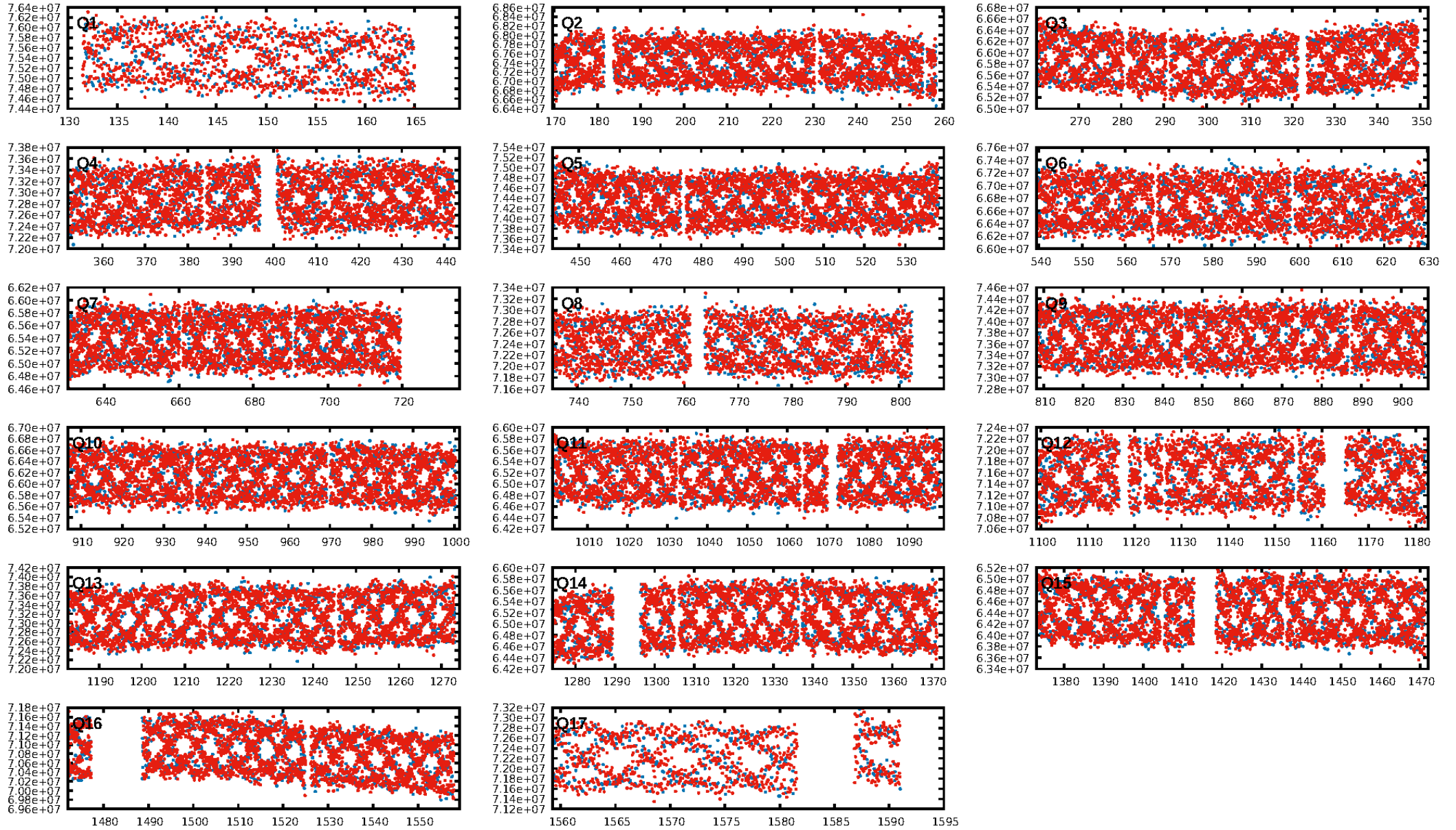
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 80.2% [1.29σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 0.99 [1555/1573]
GhostDiagnostic-chr: 3.951
Centroid-sig: 31.2%
Centroid-so: 0.497 arcsec [1.68σ]
OotOffset-rm: 1.639 arcsec [2.73σ]
OotOffset-st: 0/4/2/2 [8]
KicOffset-rm: 1.676 arcsec [2.83σ]
KicOffset-st: 0/4/2/2 [8]
DiffImageQuality-fgm: 0.38 [3/8]
DiffImageOverlap-fno: 1.00 [17/17]

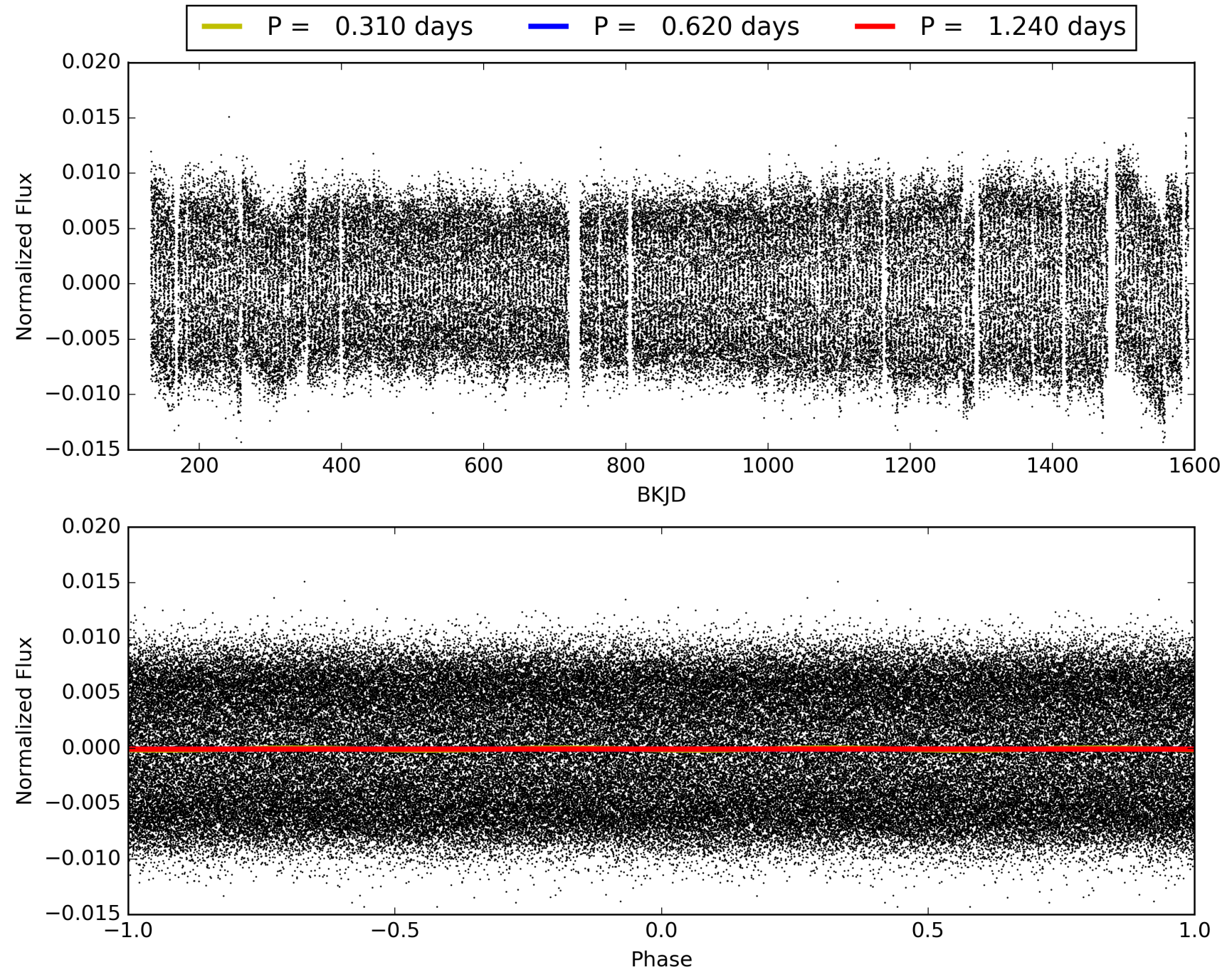
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 13:19:50 Z

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

TCE 006231538-02, PDC Light Curves

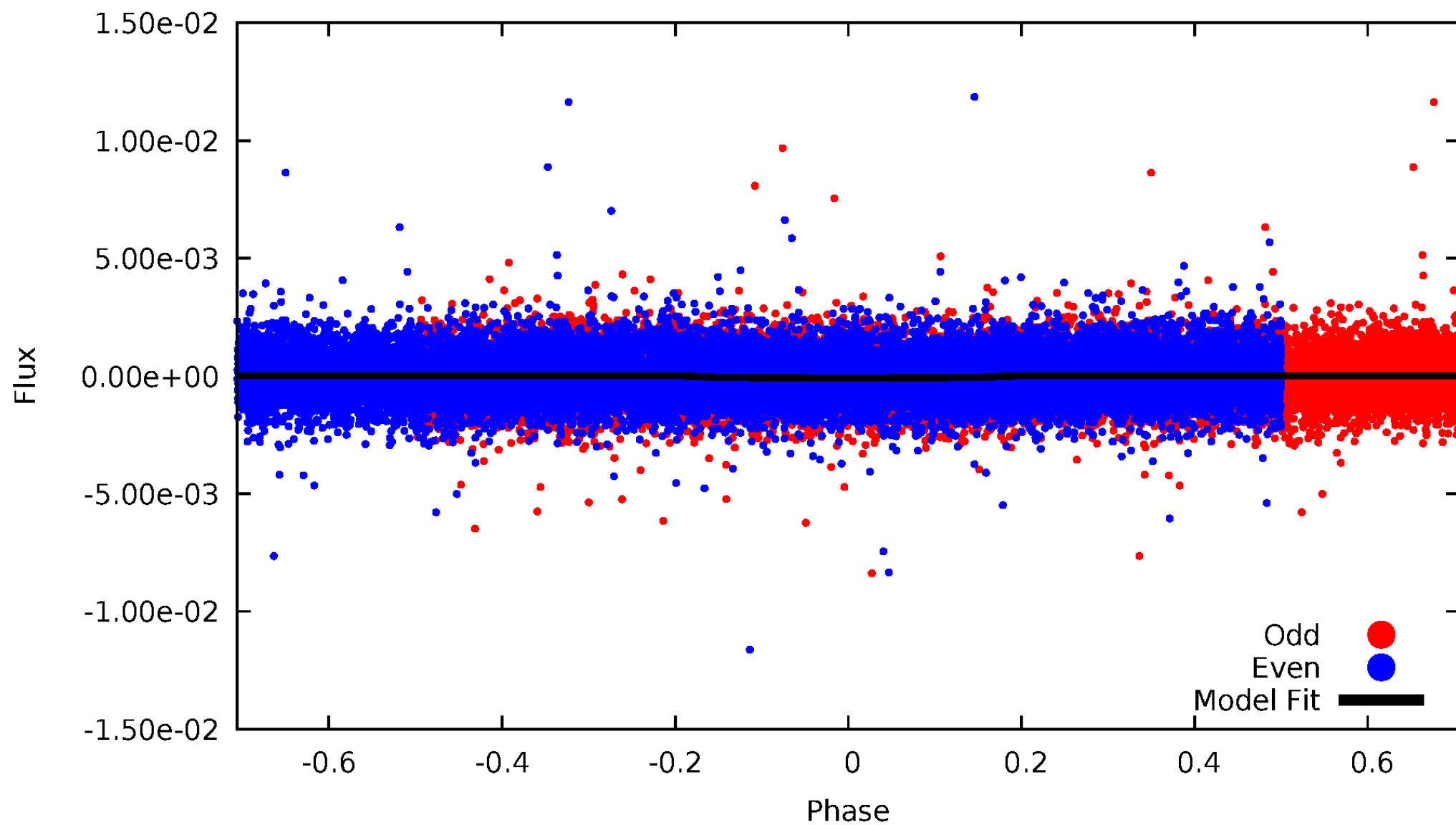


TCE 006231538-02



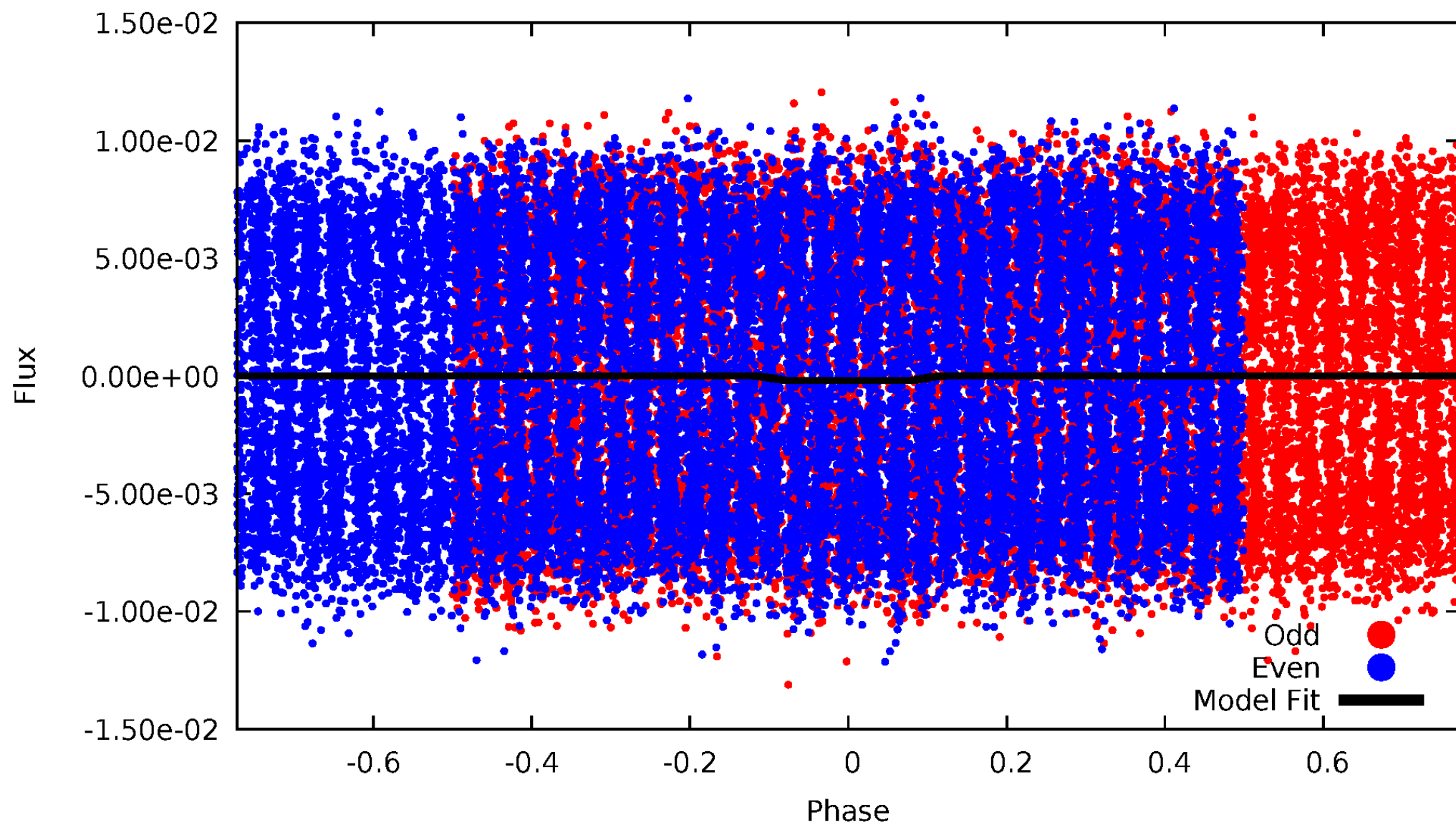
DV Odd/Even

TCE 006231538-02



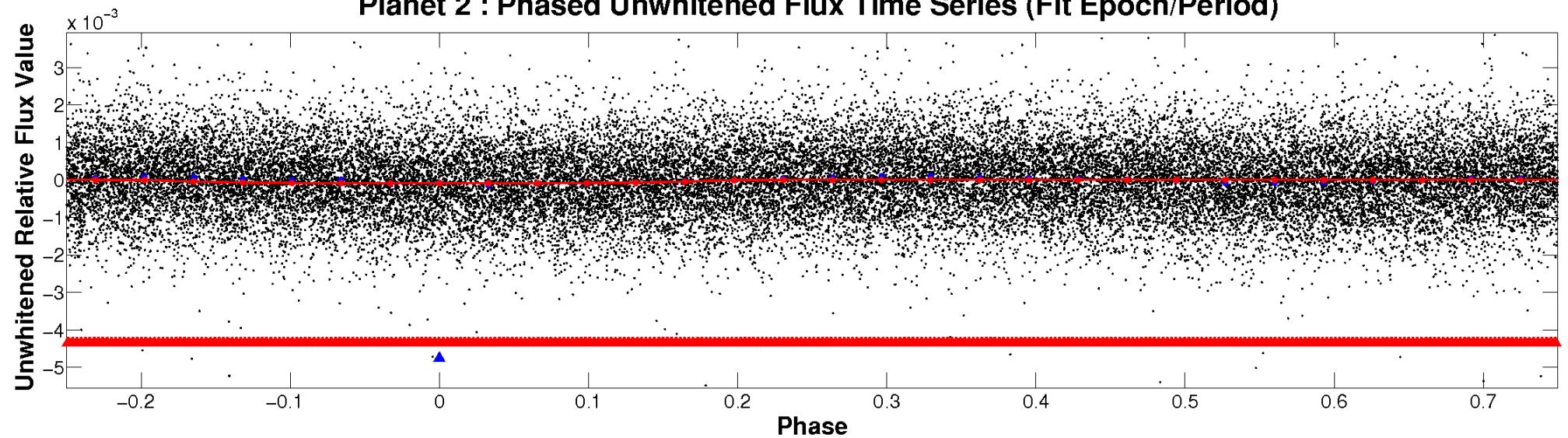
ALT Odd/Even

TCE 006231538-02

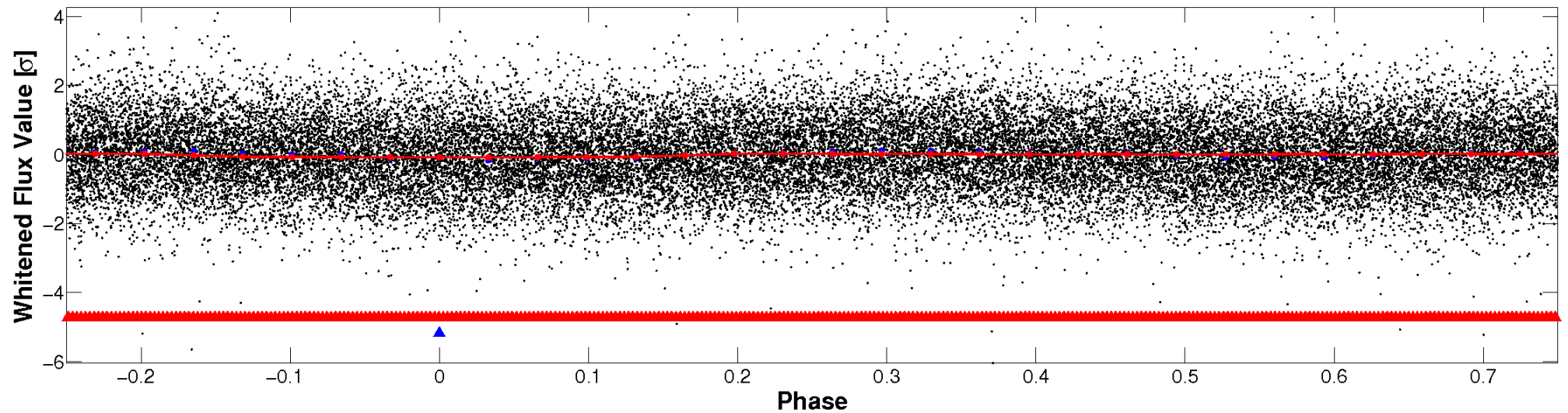


Non-Whitened Vs. Whitened Light Curve

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

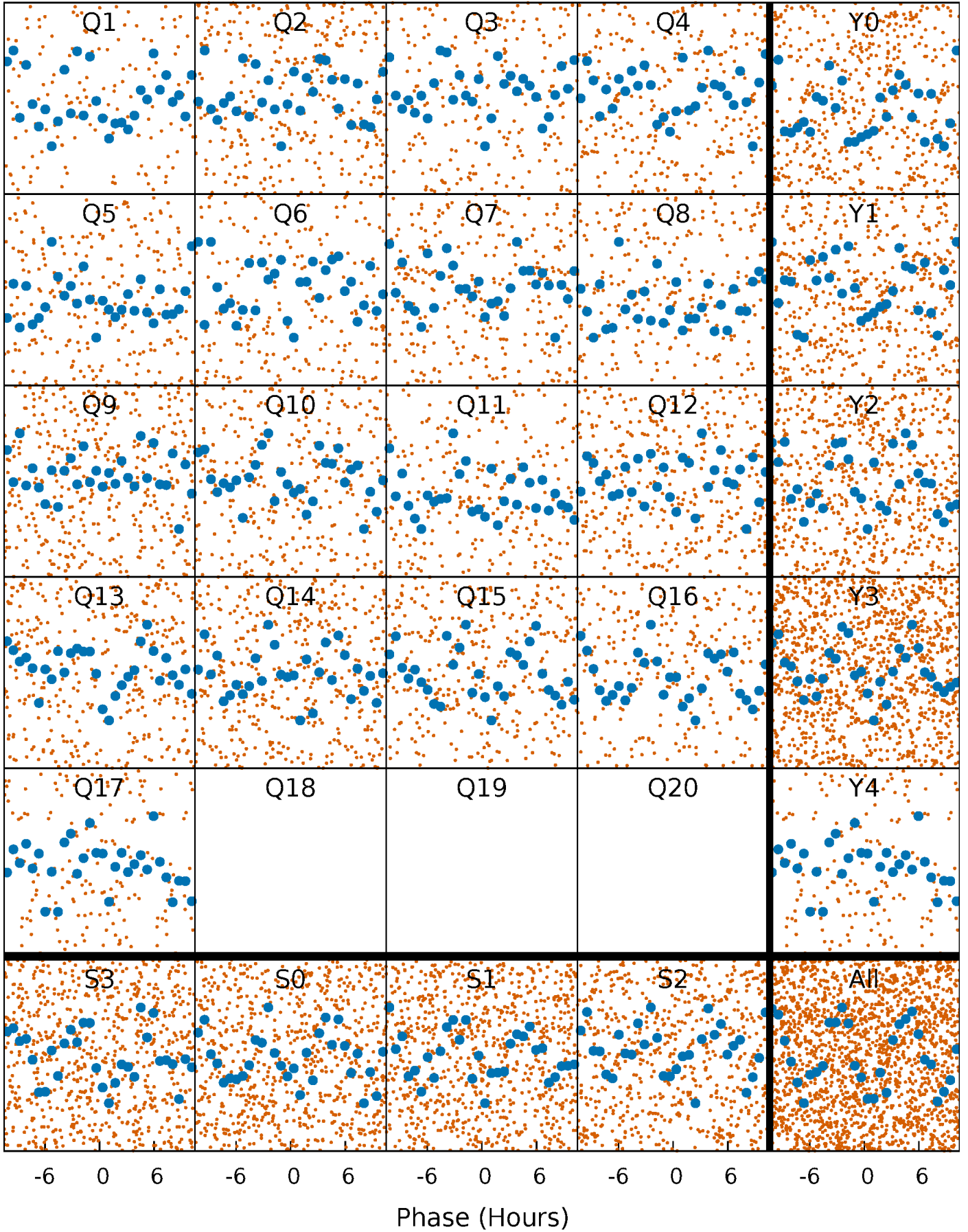


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



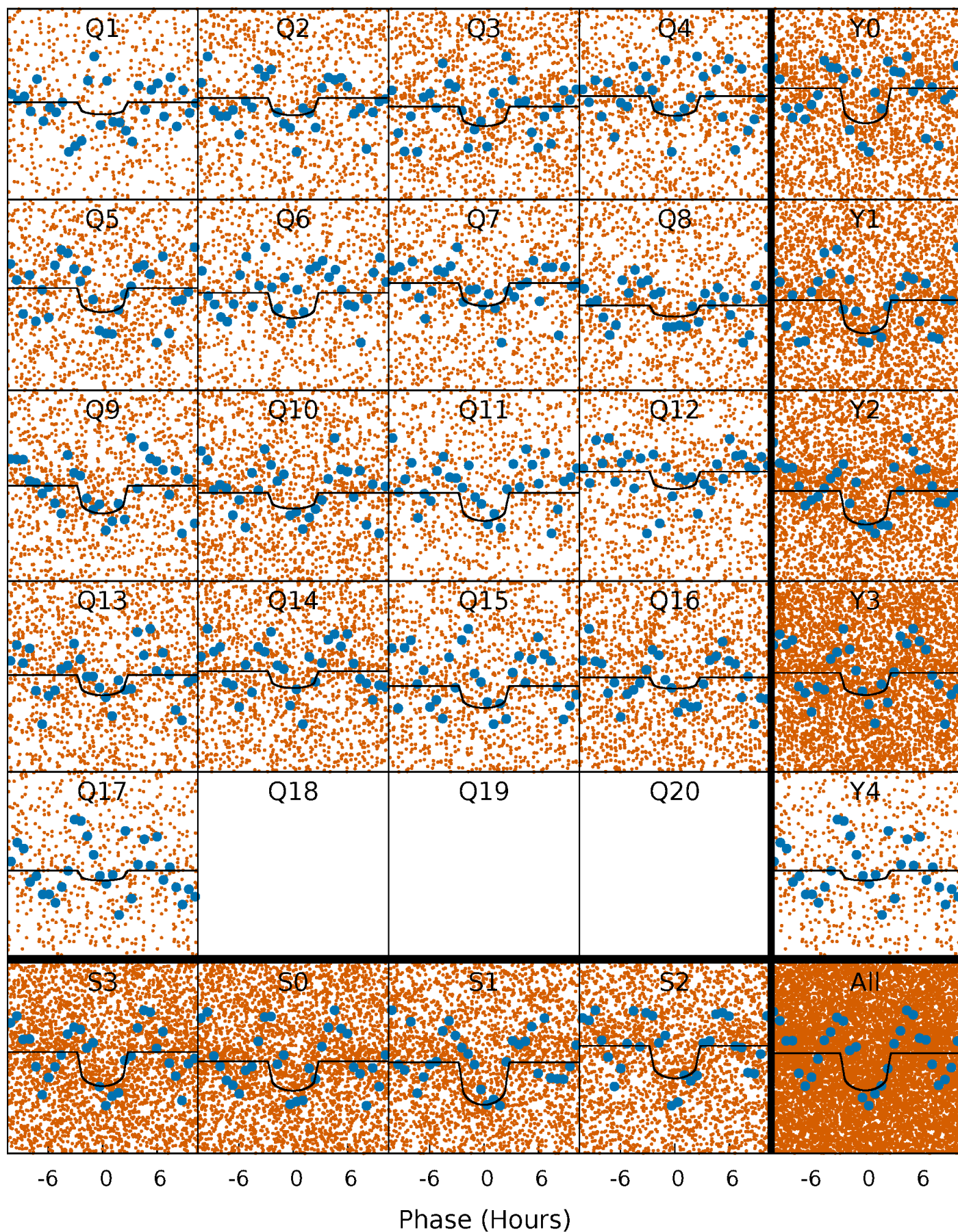
PDC Quarter-Phased Transit Curves

TCE 006231538-02 P= 0.620151 Days $T_0=131.557691$ (BKJD)



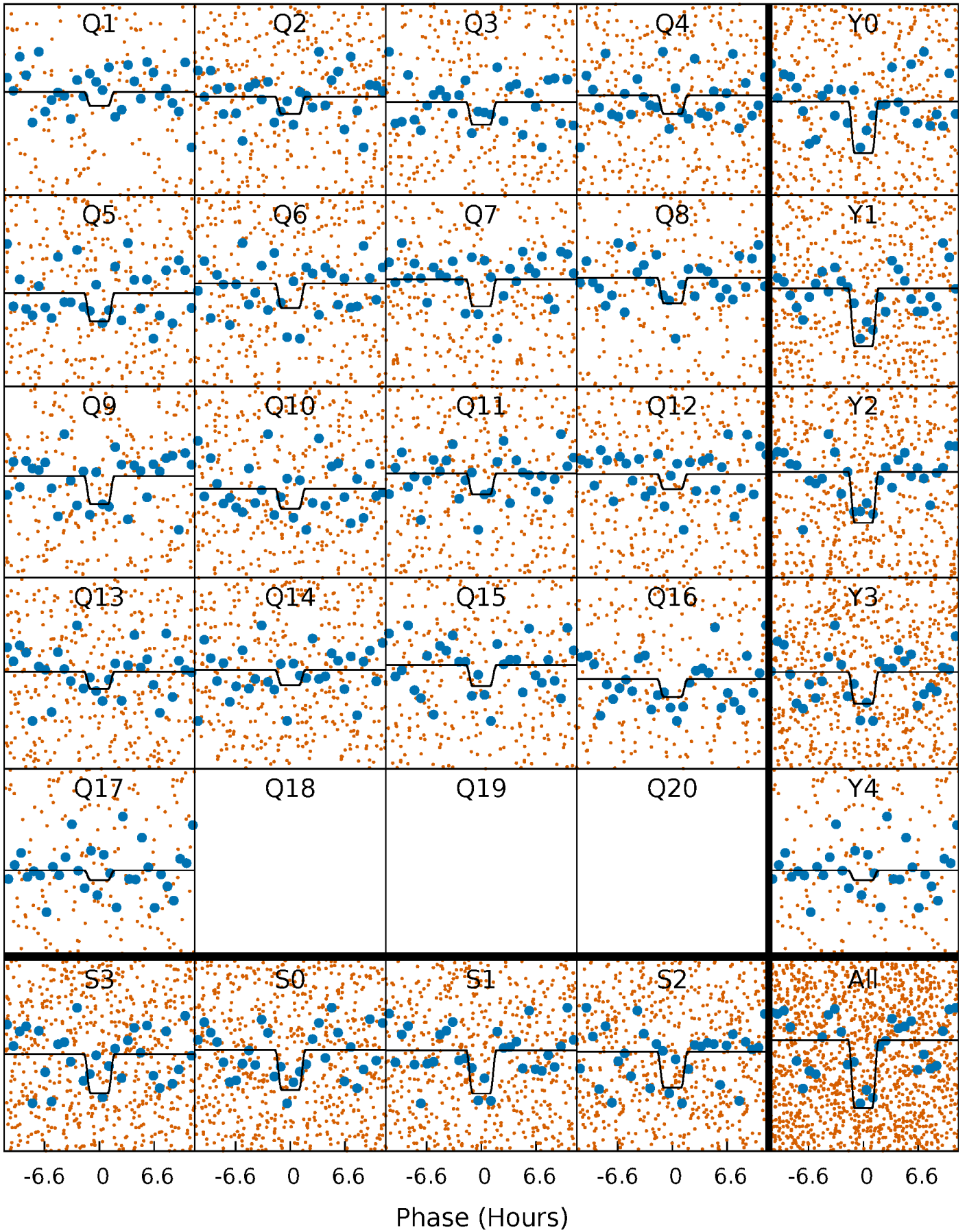
DV Quarter-Phased Transit Curves

TCE 006231538-02 P= 0.620151 Days $T_0=131.557691$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

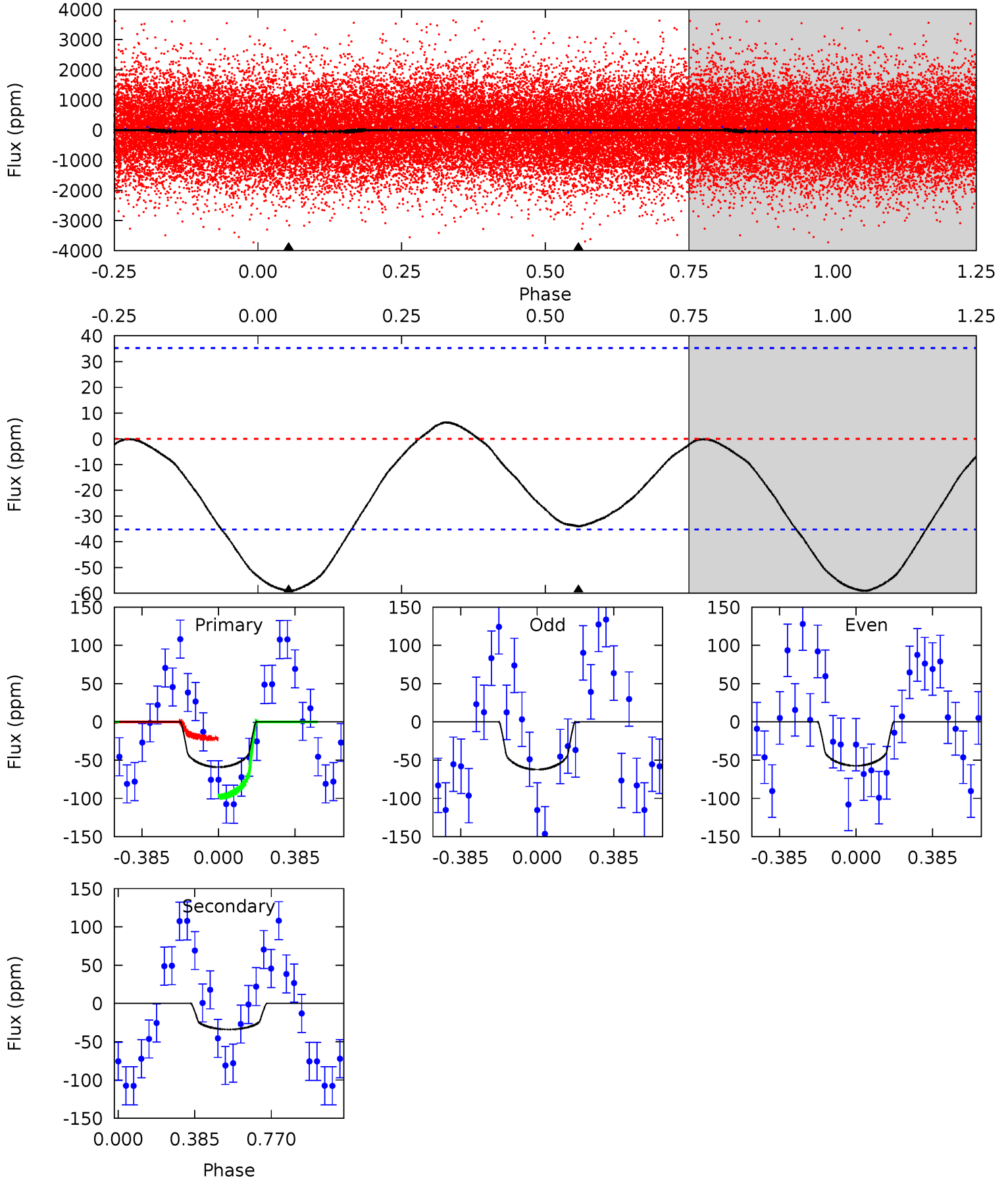
TCE 006231538-02 P= 0.620179 Days $T_0=131.547262$ (BKJD)



DV Model-Shift Uniqueness Test

006231538-02, P = 0.620151 Days, E = 130.937540 Days

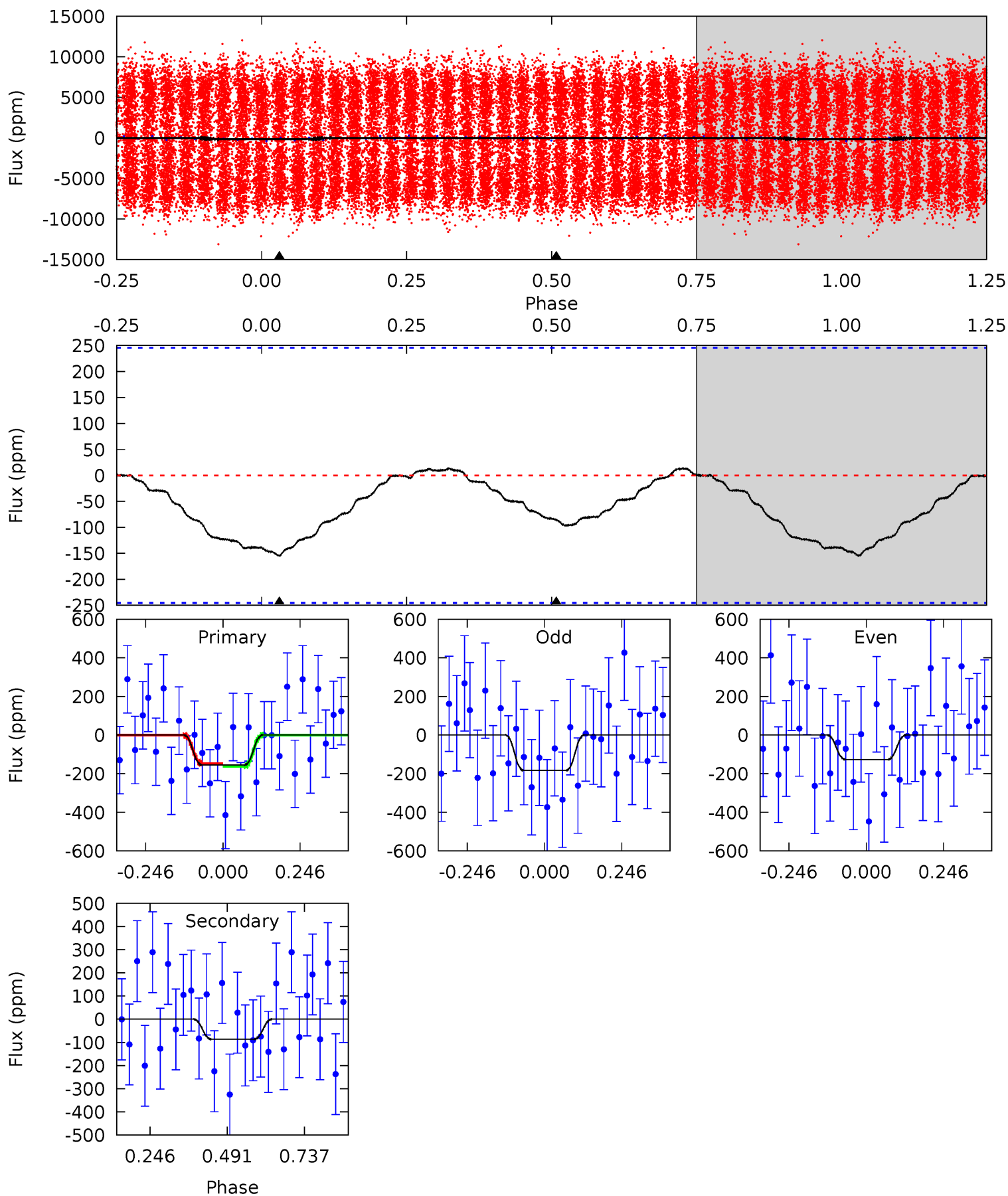
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.17	4.12	0	0	4.27	0.87	0.45	7.17	7.17	4.12	4.12	0.30	0.78	0.10	4.78



Alt Model-Shift Uniqueness Test

006231538-02, P = 0.620179 Days, E = 130.927083 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2.76	1.54	0	0	4.37	1.16	0.17	2.76	2.76	1.54	1.54	0.51	-0.08	0.08	0.12



Stellar Parameters For KIC 006231538

	$T_{\text{eff}} (K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6810^{+217}_{-326}	$3.716^{+0.535}_{-0.094}$	$-0.380^{+0.300}_{-0.300}$	$2.787^{+0.483}_{-1.546}$	$1.471^{+0.208}_{-0.386}$	$0.096^{+0.581}_{-0.027}$
	+3%/-5%	+14%/-3%	+79%/-79%	+17%/-55%	+14%/-26%	+607%/-28%
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 006231538-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-34 ± 8	$3.33^{+3.49}_{-2.29}$	5282^{+433}_{-733}	3707^{+4430}_{-7887}	$0.426^{+4.022}_{-0.318}$
Alt.	-87 ± 56	$4.34^{+3.30}_{-2.61}$	5293^{+446}_{-762}	4407^{+3910}_{-8522}	$0.625^{+3.538}_{-0.497}$

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 $A_{obs} \gg 1.0$

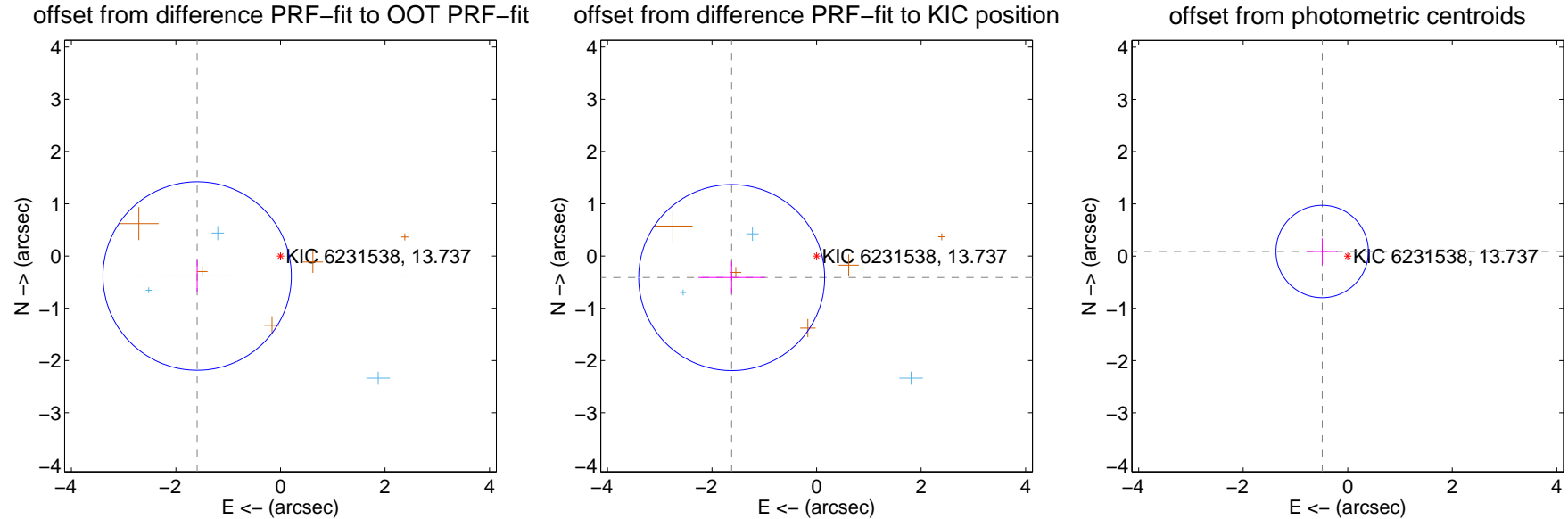
DV Centroid Data

Supplemental centroid analysis for 006231538-02. Kepler magnitude: 13.74. Transit SNR 7.83

There are 3 quarters with good PRF difference image offsets

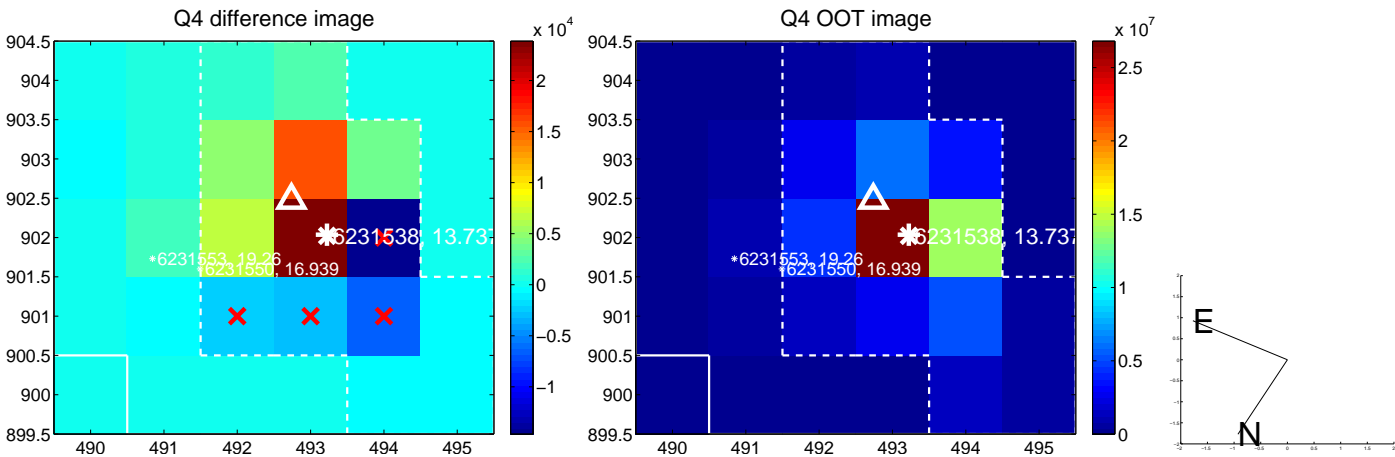
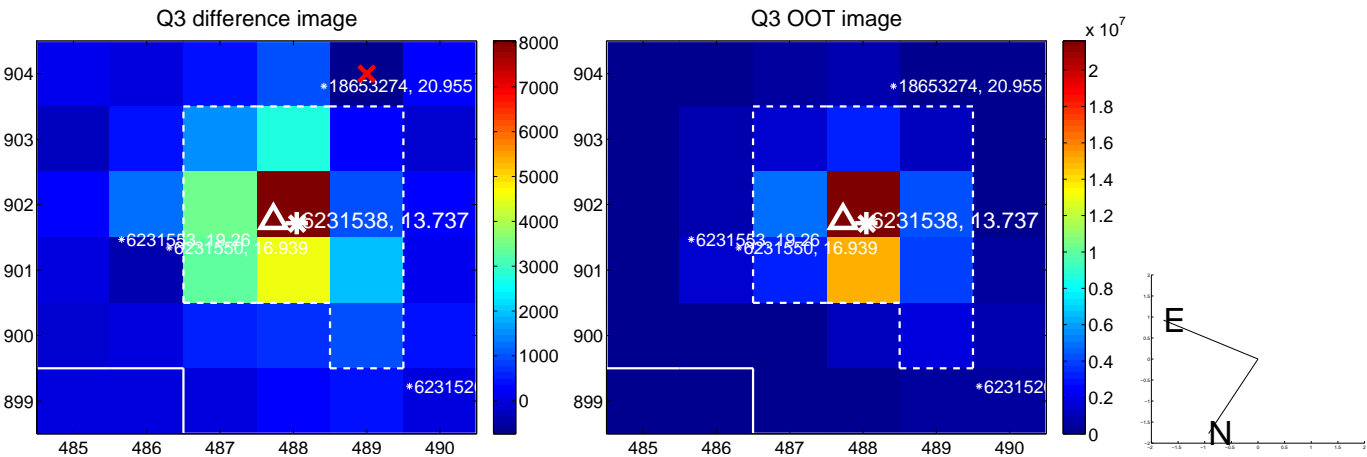
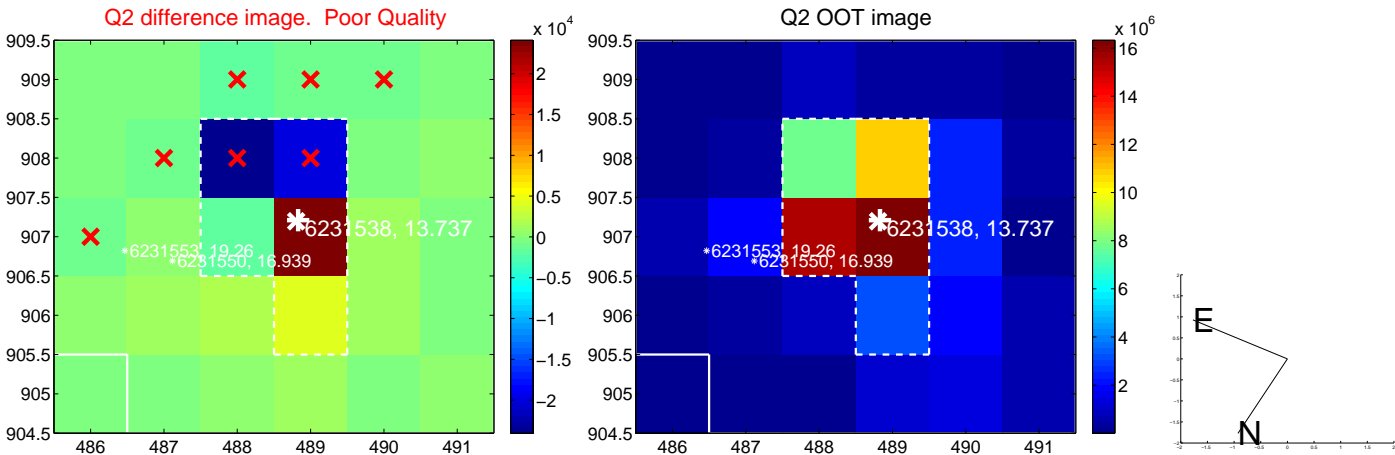
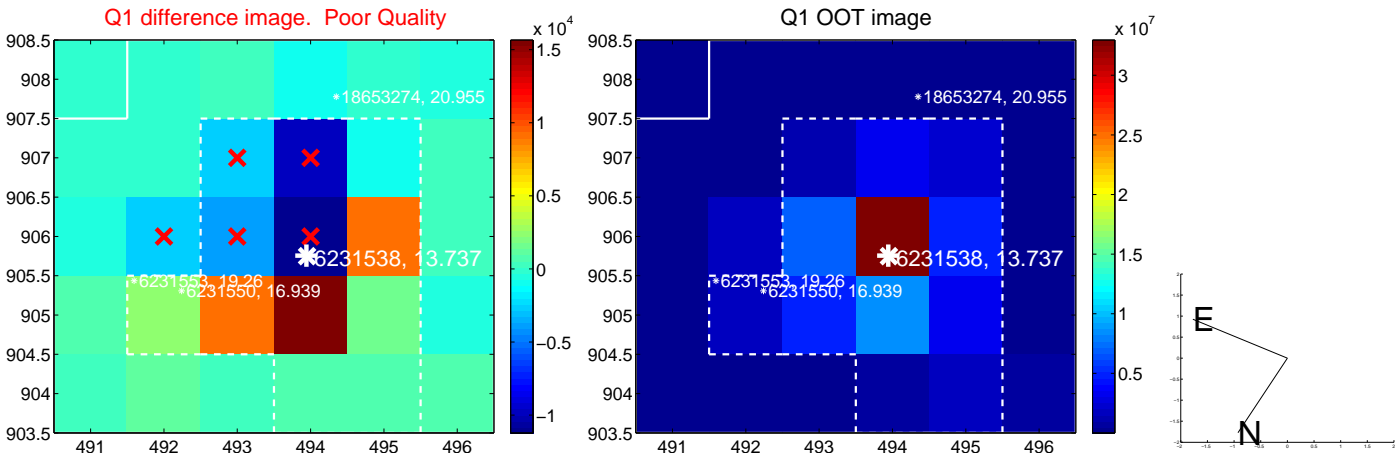
The direct PRF centroid is offset from the target star catalog position by about 0.02 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.639 ± 0.601	2.73	1.594 ± 0.654	-0.383 ± 0.312
PRF-fit source offset from KIC position	1.676 ± 0.593	2.83	1.625 ± 0.638	-0.412 ± 0.307
photometric centroid source offset	0.50 ± 0.29	1.68	0.49 ± 0.30	0.09 ± 0.25

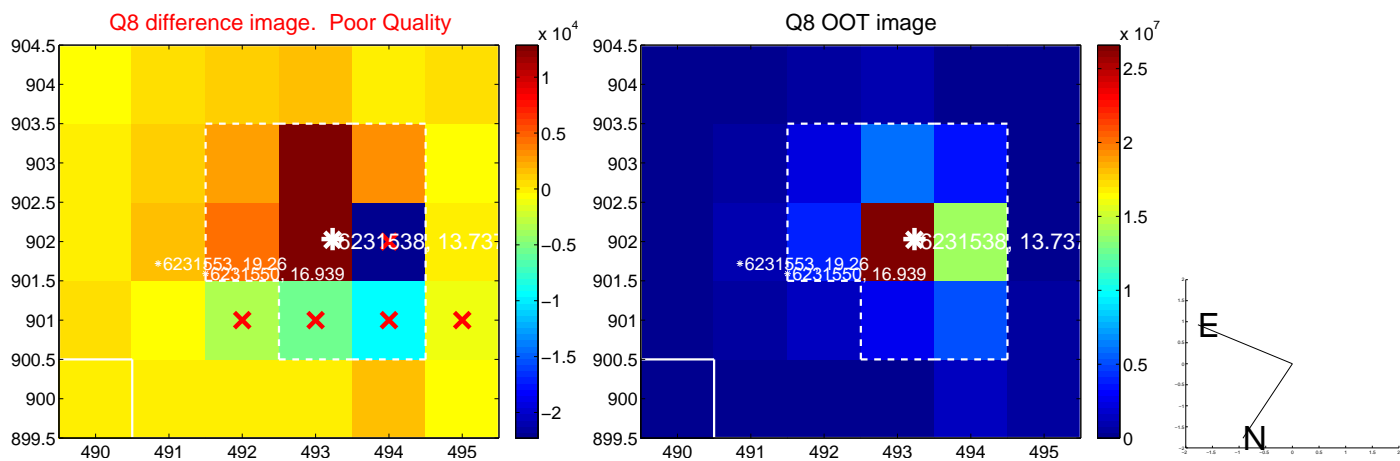
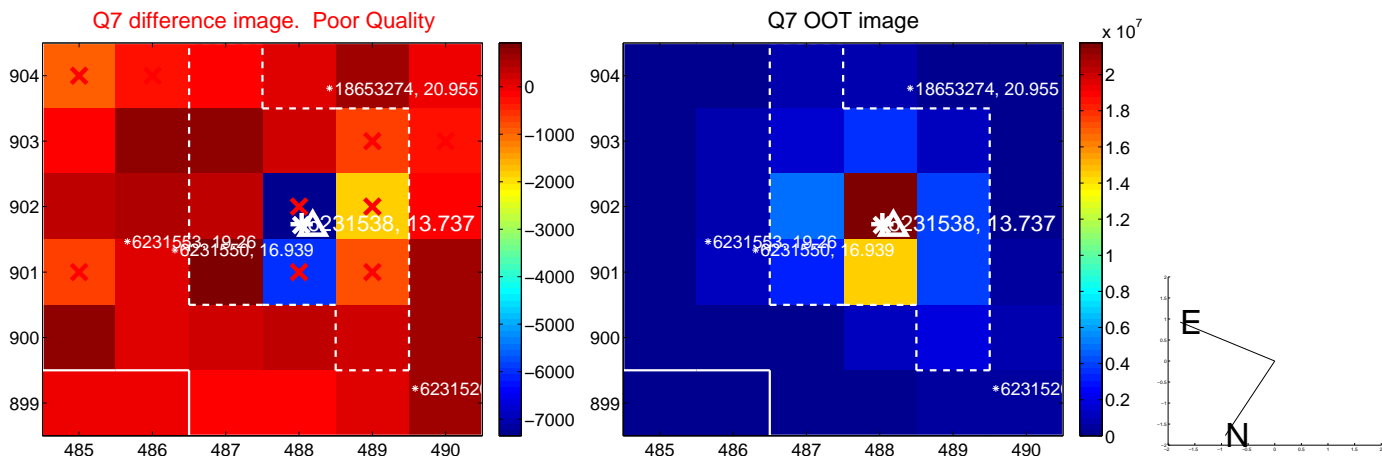
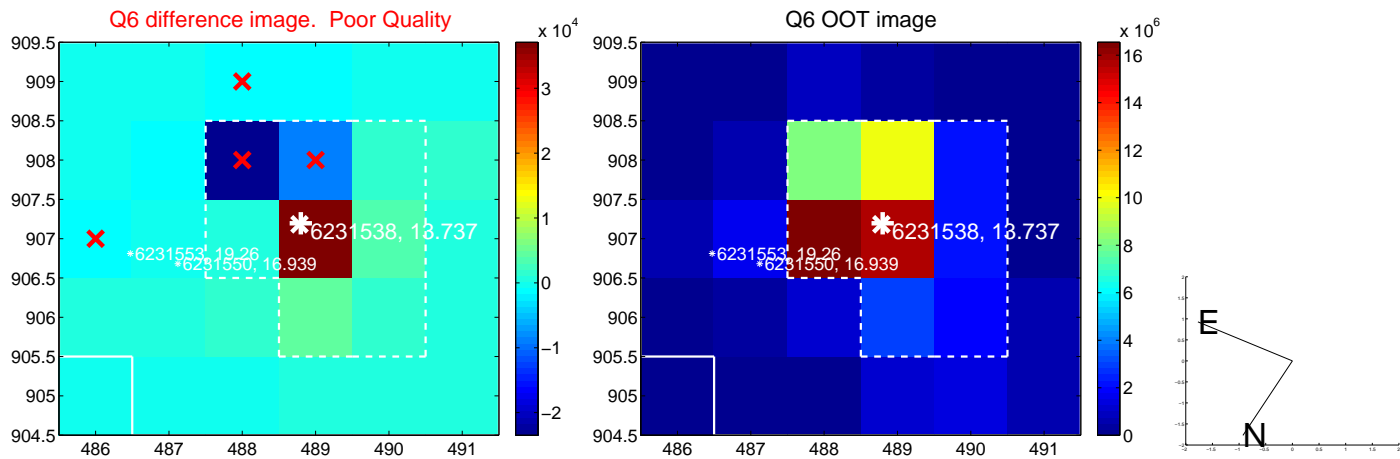
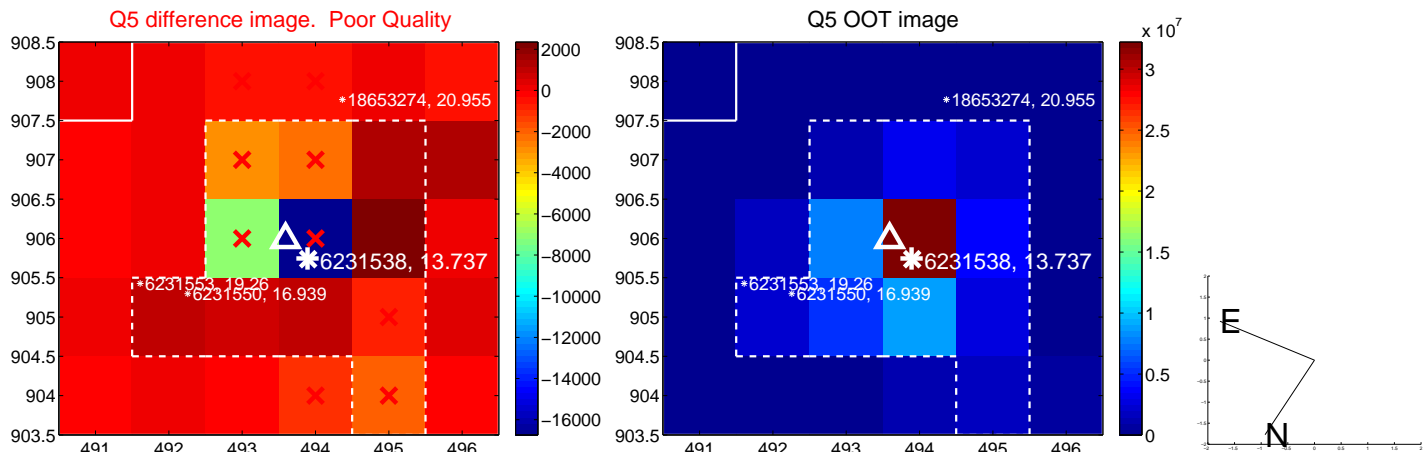


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

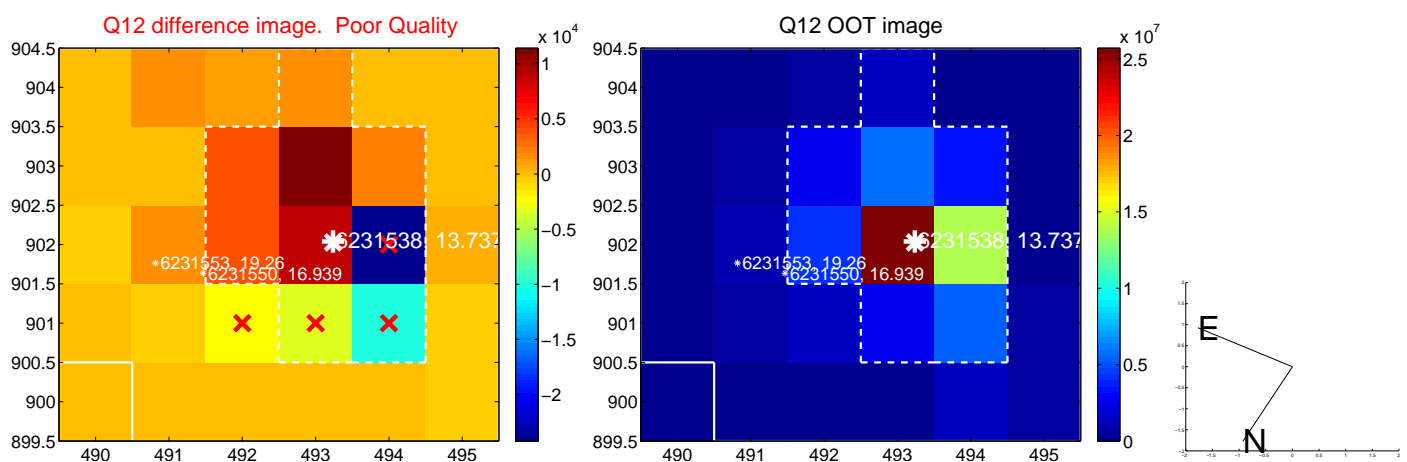
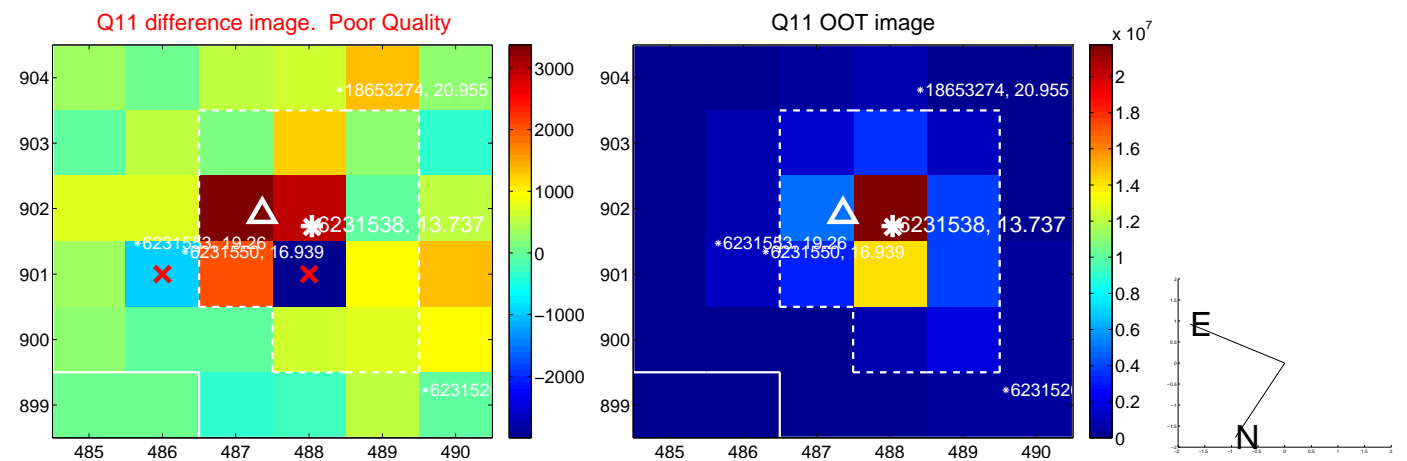
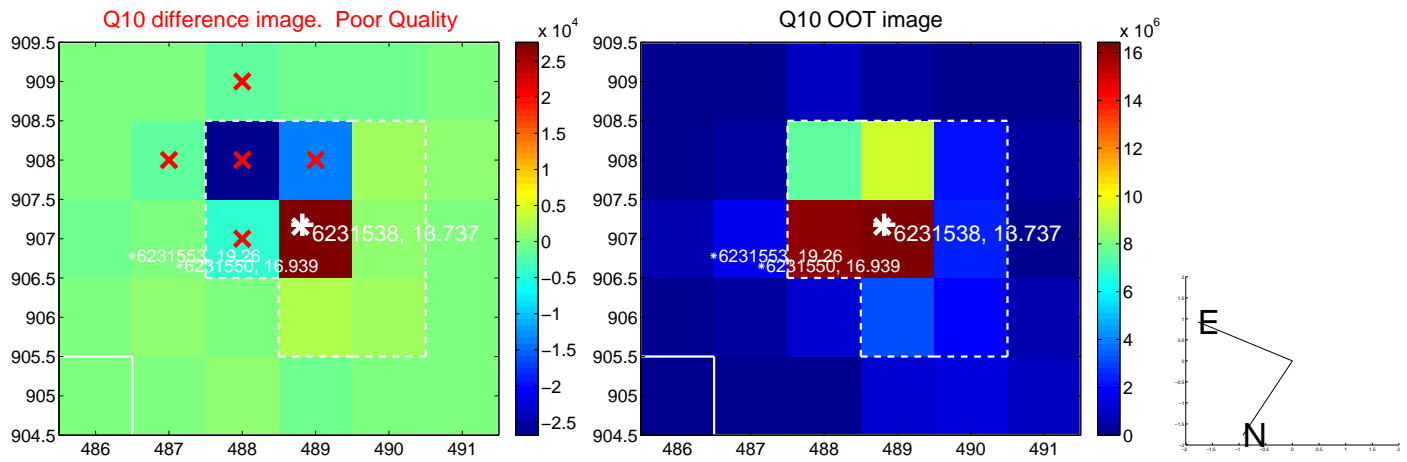
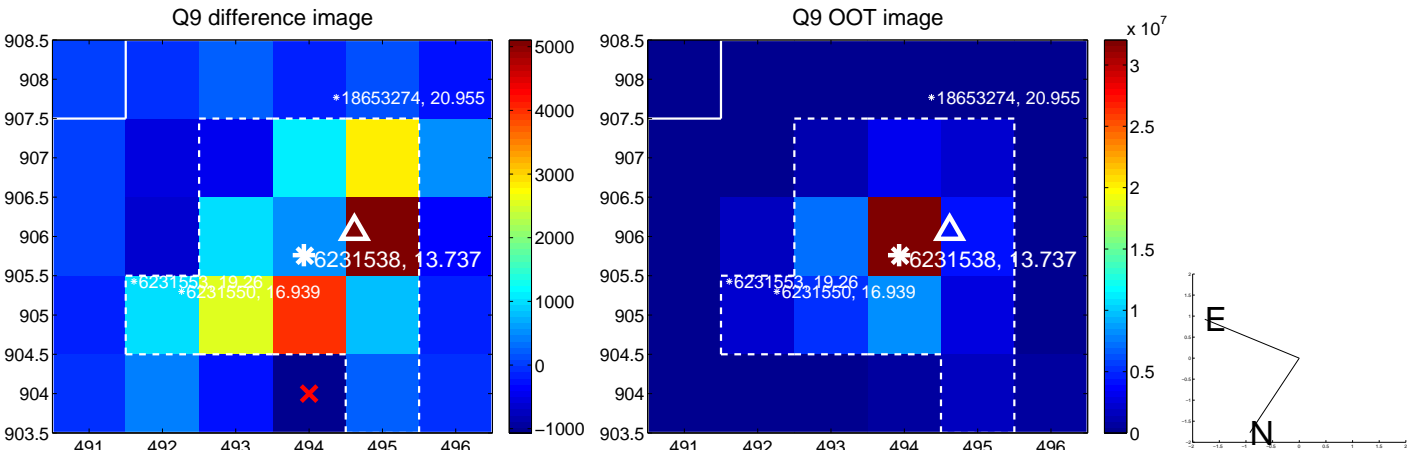
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



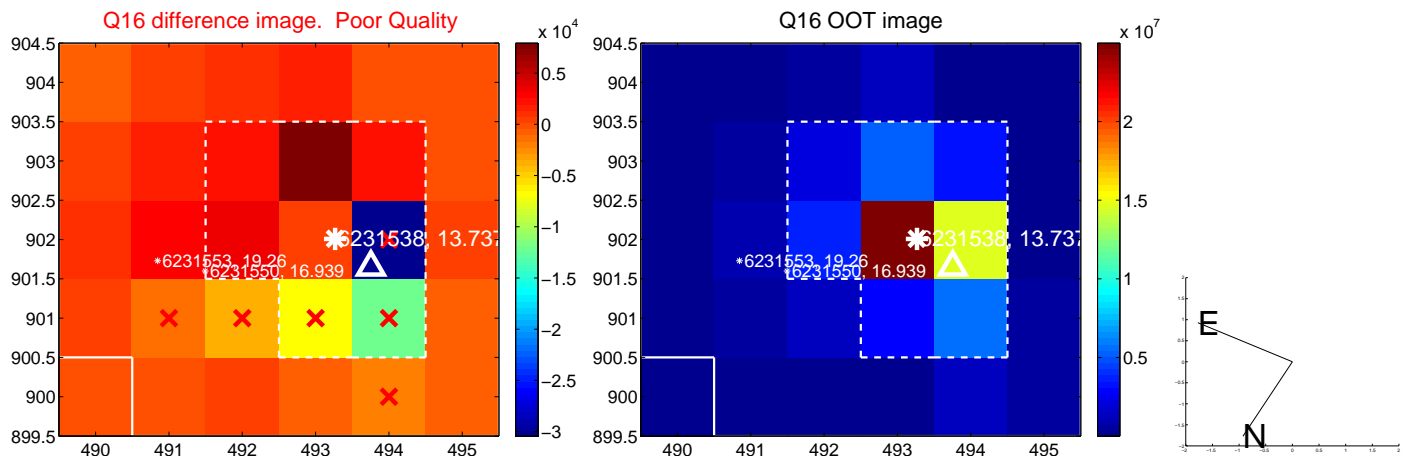
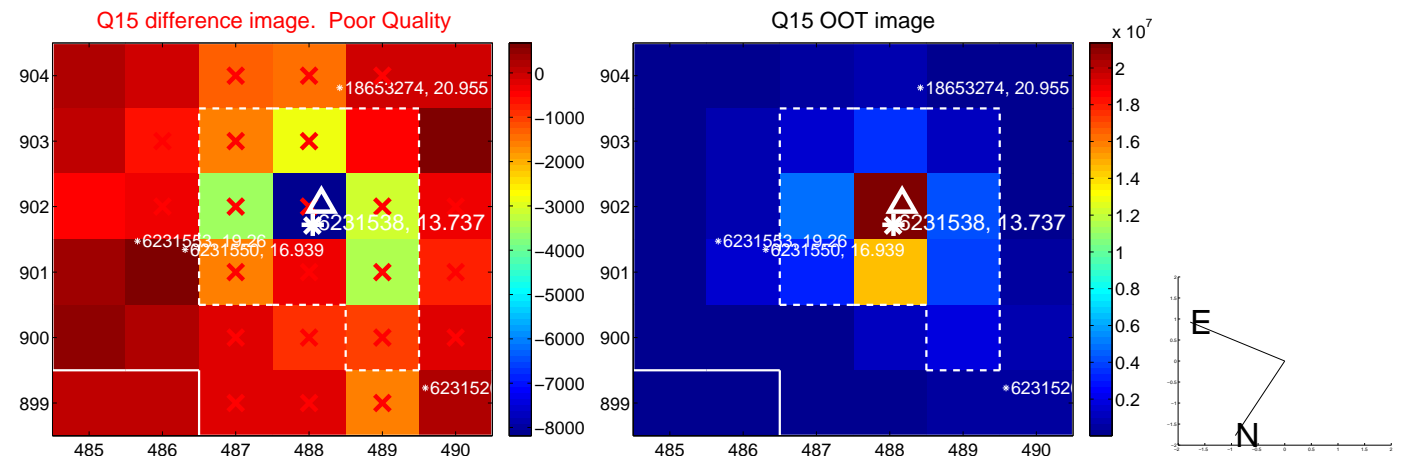
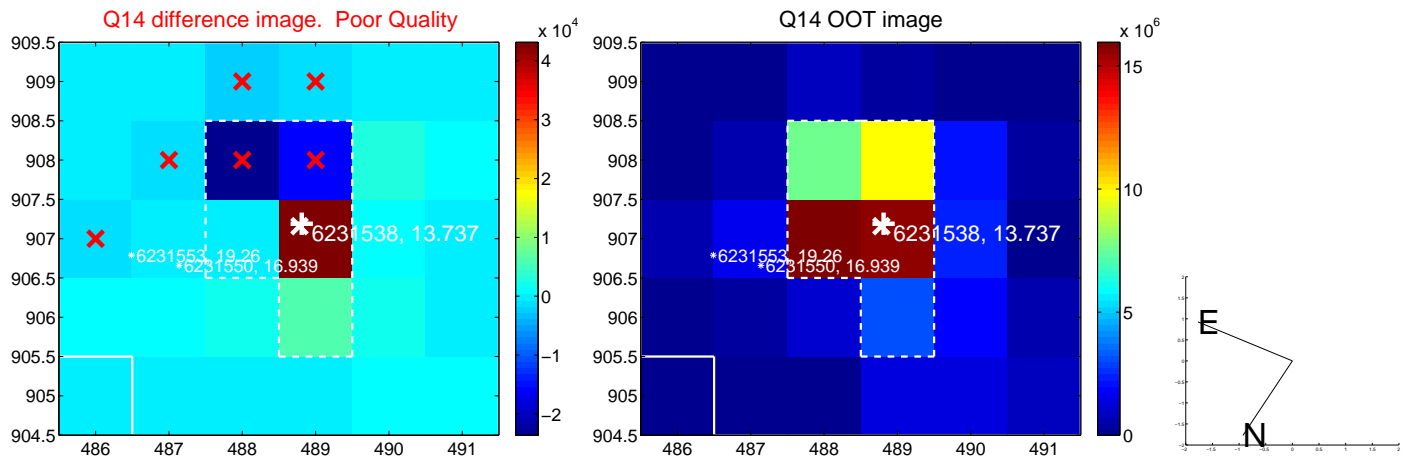
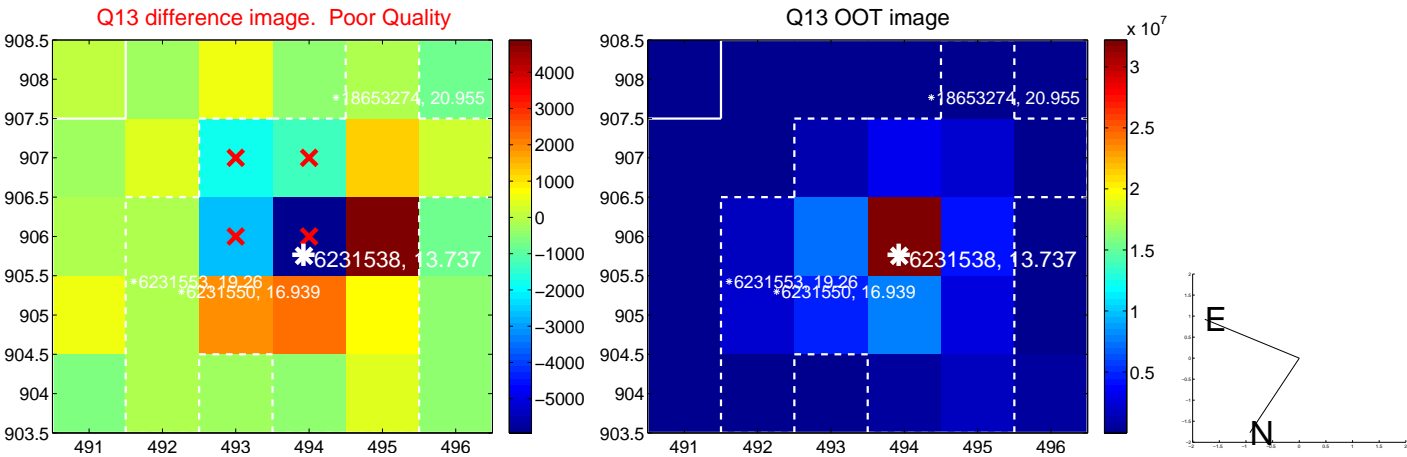
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



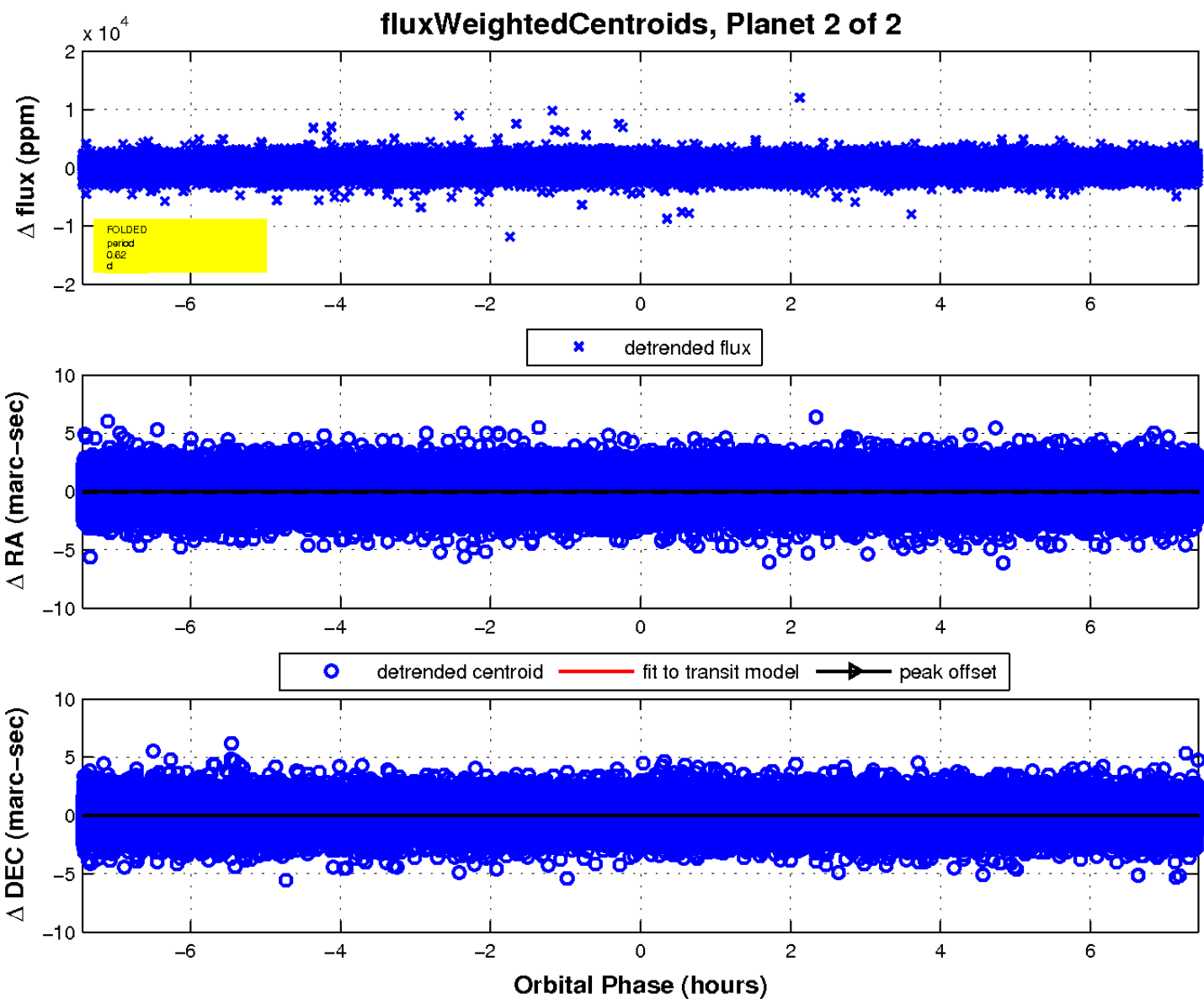
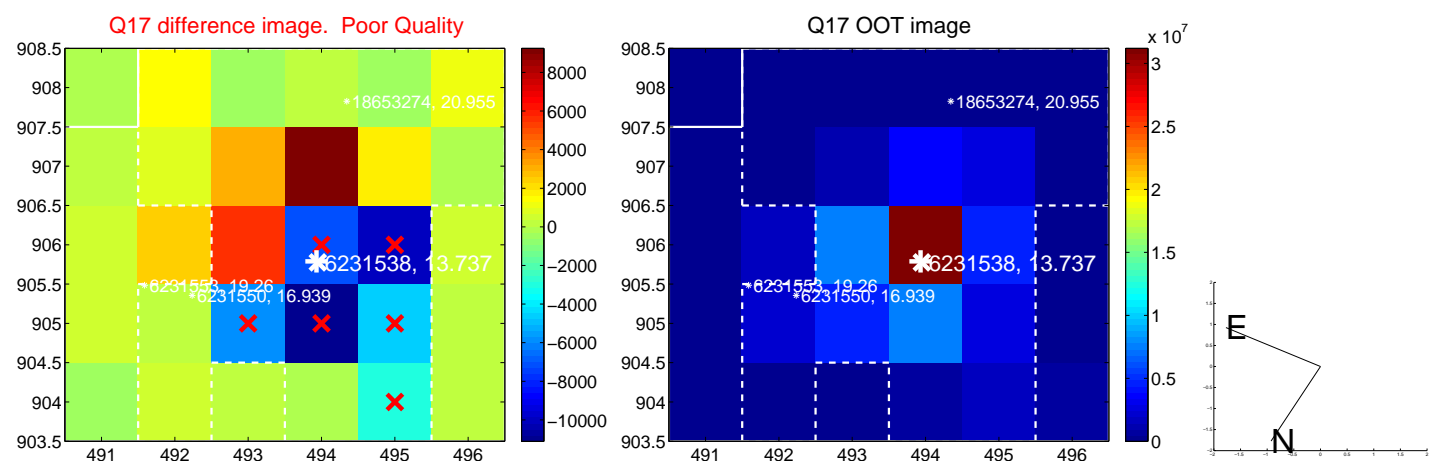
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image

Declination

