

KIC 004157052

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})
004157052-01	OBS	4468.01	0.791753	131.533327	59.9	1.284	9.7	10.2	3.07	6218	2.81	32369.56
004157052-02	OBS	No	0.791771	131.916319	68.7	1.104	8.5	11.2	3.07	6218	3.03	32368.57

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004157052-01	OBS	FP	0.00	1	0	1	0	MOD_NONUNIQ_ALT—CENT_RESOLVED_OFFSET—HALO_GHOST
004157052-02	OBS	FP	0.00	1	0	1	0	LPP_DV—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD—CENT_RESOLVED_OFFSET

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 004157052-01

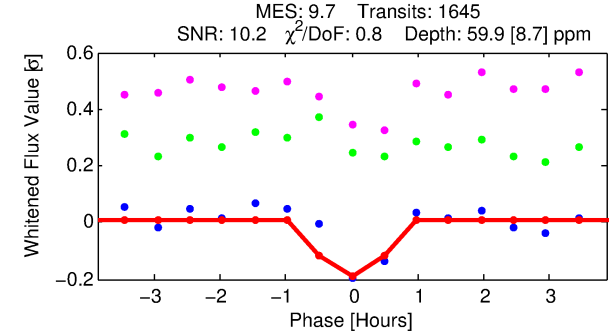
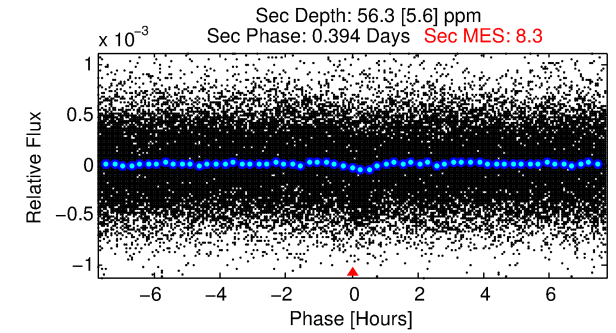
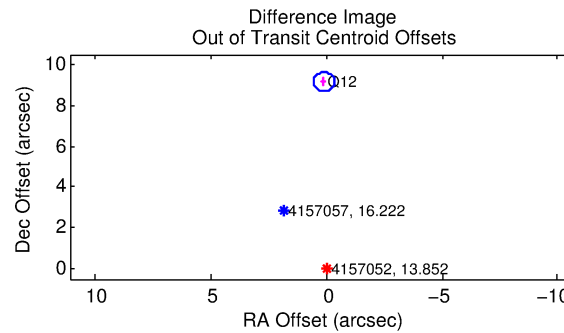
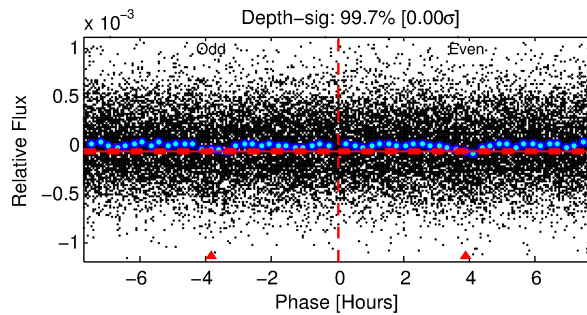
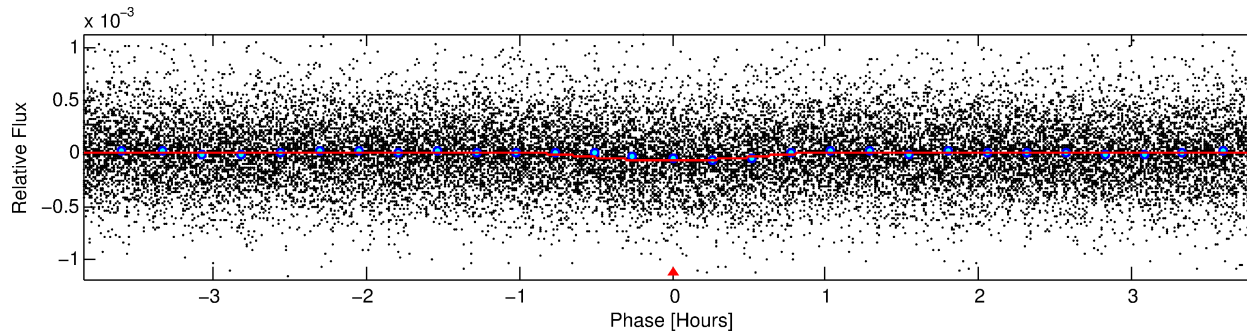
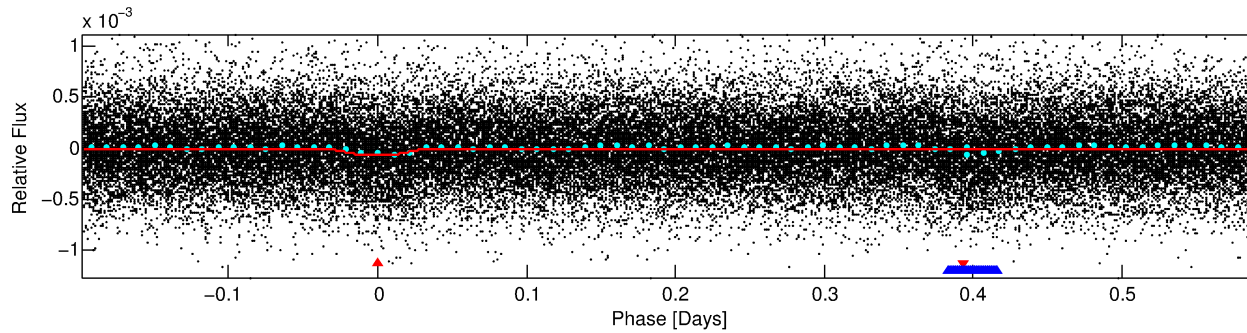
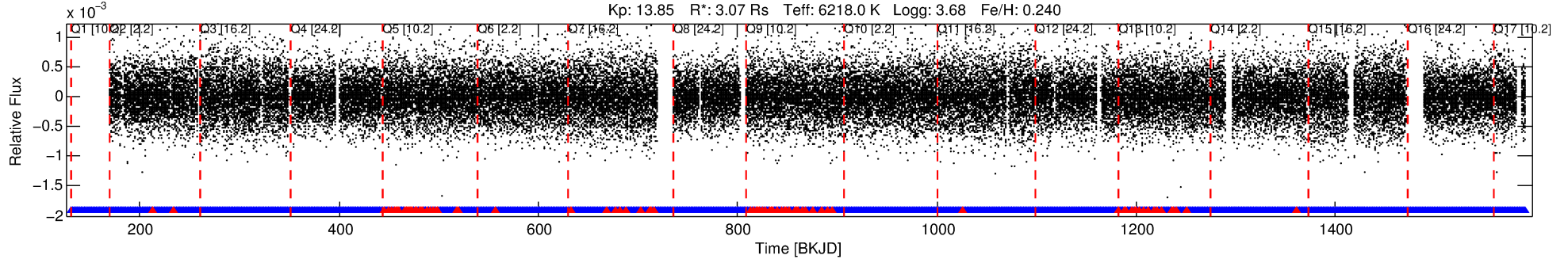
No Significant Match Found

DV One-Page Summary

KIC: 4157052 Candidate: 1 of 2 Period: 0.792 d

KOI: K04468 Corr: No Ephemeris Match

Kp: 13.85 R*: 3.07 Rs Teff: 6218.0 K Logg: 3.68 Fe/H: 0.240



DV Fit Results:

Period = 0.79175 [0.00001] d
Epoch = 131.5333 [0.0020] BKJD
Rp/R* = 0.0084 [0.0044]
a/R* = 2.34 [5.31]
b = 0.90 [0.60]
Seff = 32369.56 [29662.30]
Teq = 3420 [784] K
Rp = 2.81 [2.17] Re
a = 0.0197 [0.0110] AU
Ag = 1.53 [2.14] [0.25σ]
Teffp = 5884 [1579] K [1.40σ]

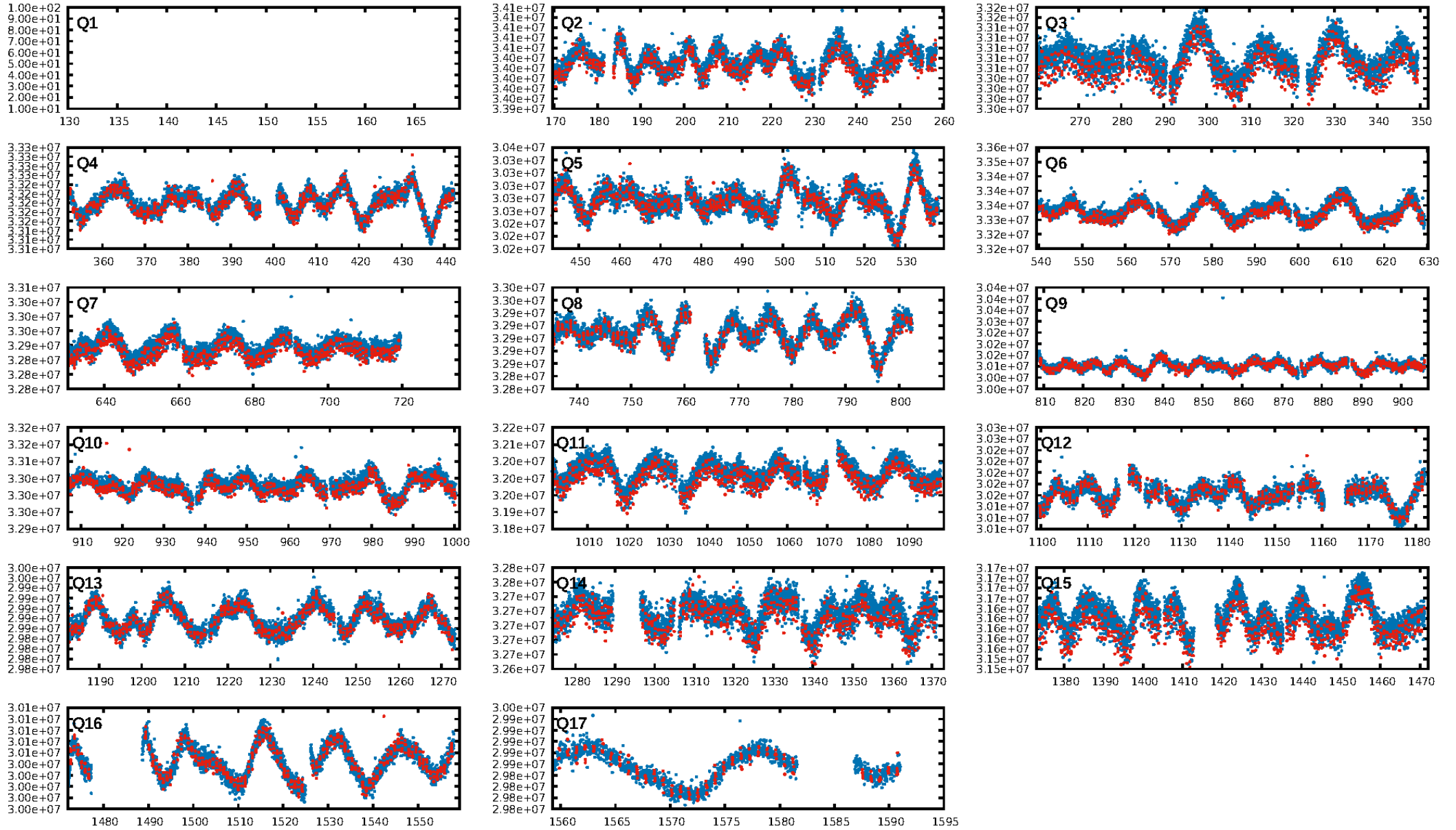
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.0% [0.00σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 3.15e-23
RollingBand-fgt: 0.95 [1525/1612]
GhostDiagnostic-chr: -0.1403
Centroid-sig: 0.0%
Centroid-so: 24.495 arcsec [16.55σ]
OotOffset-rm: 9.161 arcsec [60.18σ]
KicOffset-rm: 8.371 arcsec [54.99σ]
OotOffset-st: 0/0/1/0 [1]
KicOffset-st: 0/0/1/0 [1]
DiffImageQuality-fgm: 1.00 [1/1]
DiffImageOverlap-fno: 1.00 [16/16]

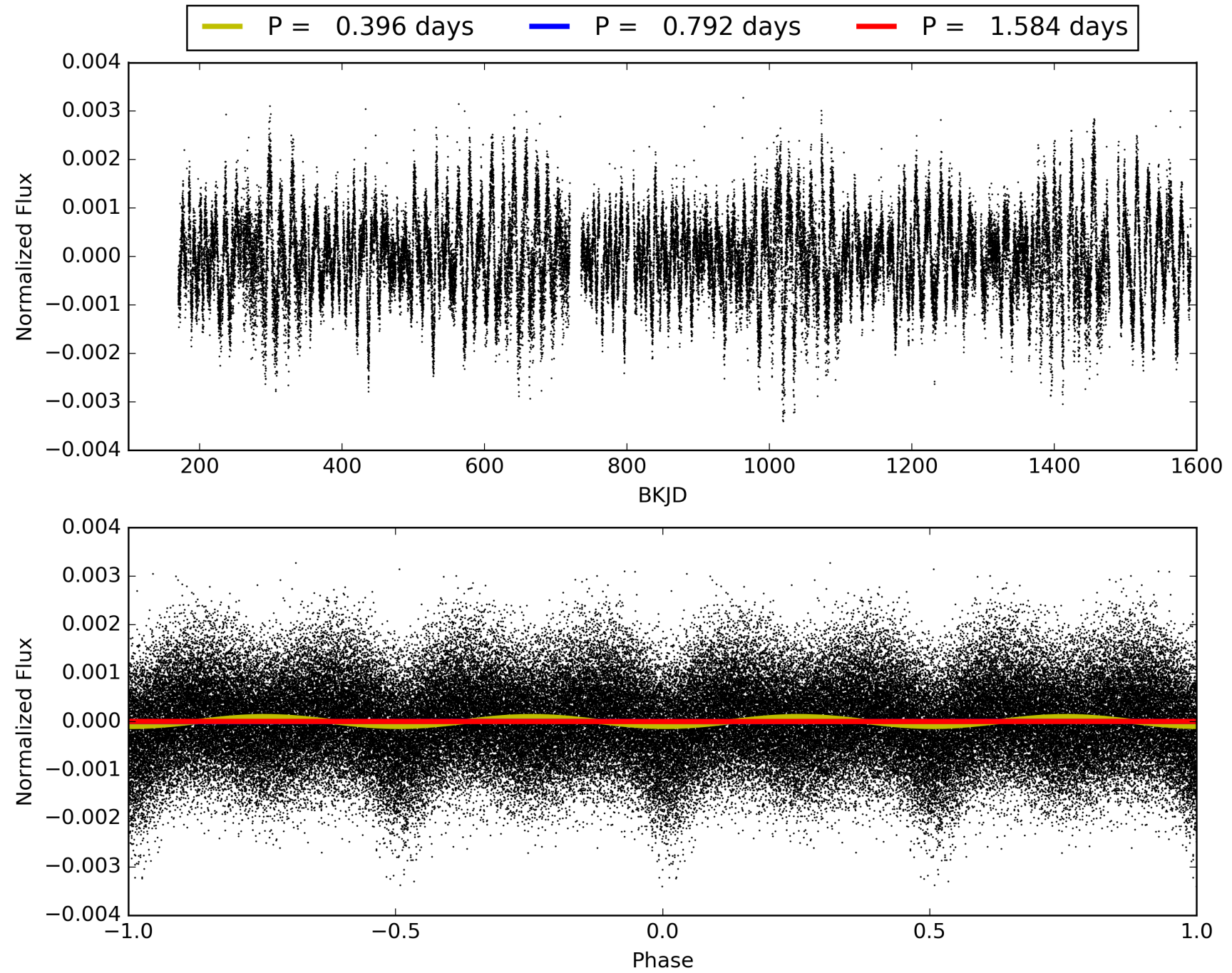
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 10:02:48 Z

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

TCE 004157052-01, PDC Light Curves

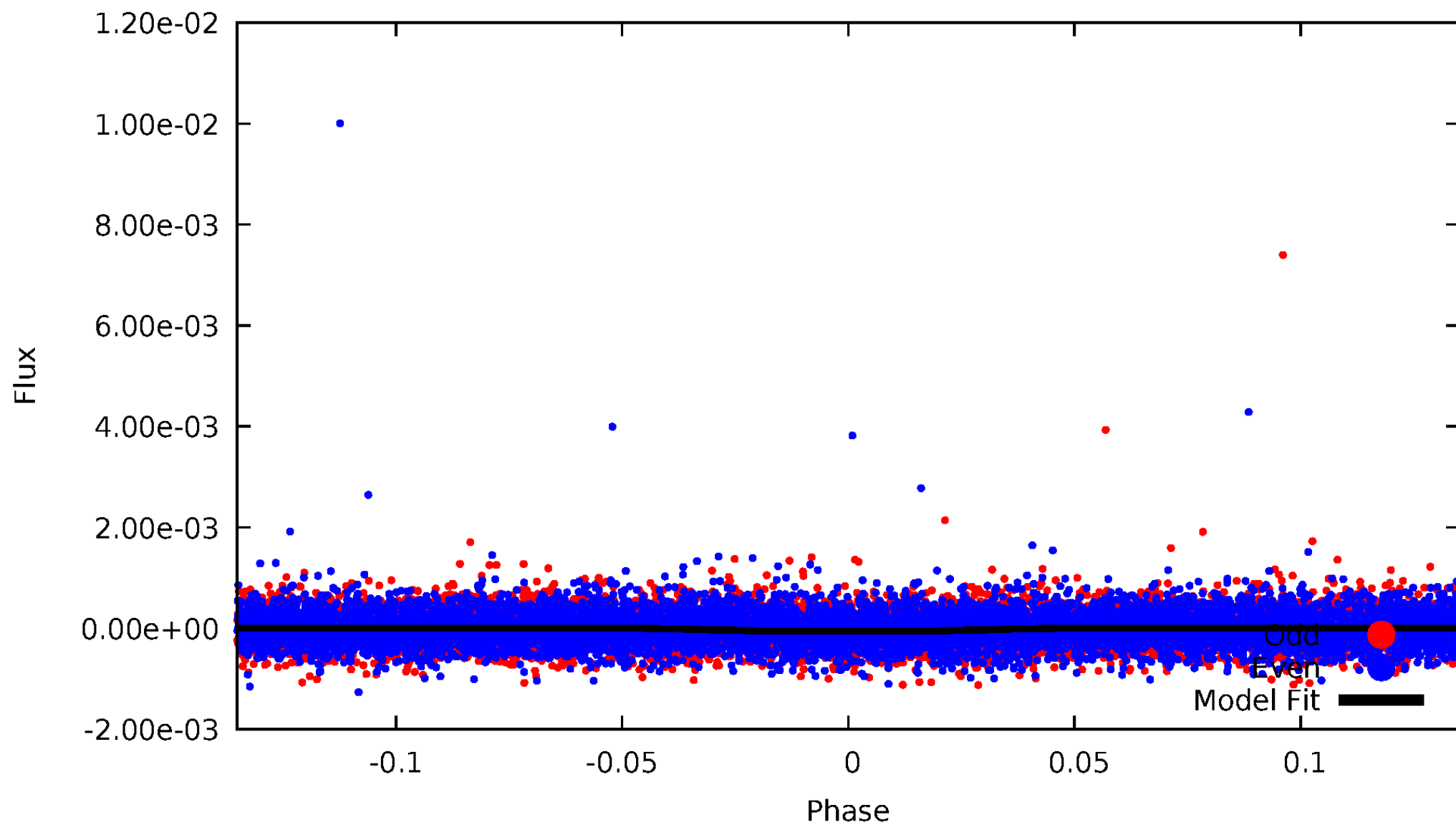


TCE 004157052-01



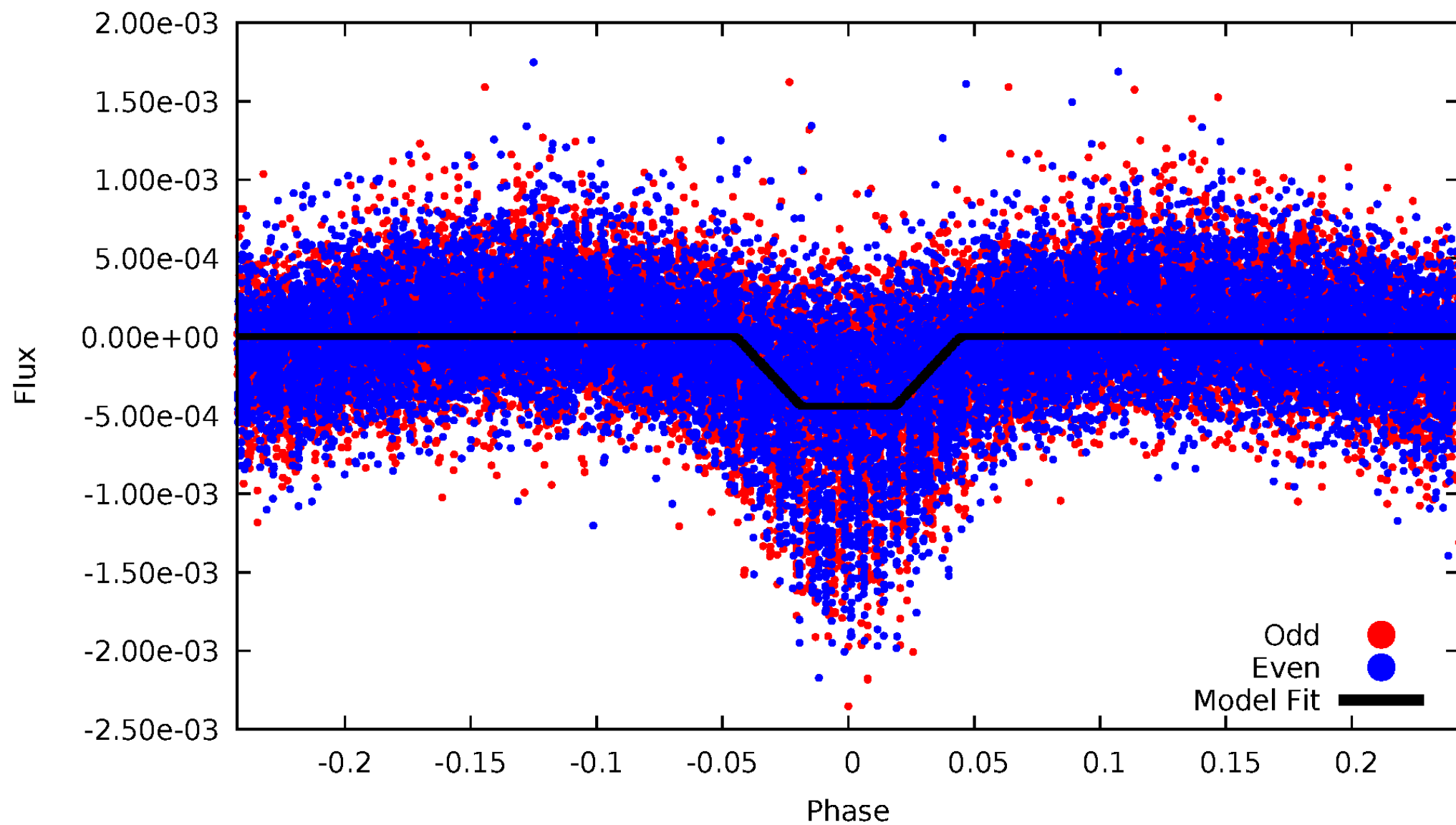
DV Odd/Even

TCE 004157052-01



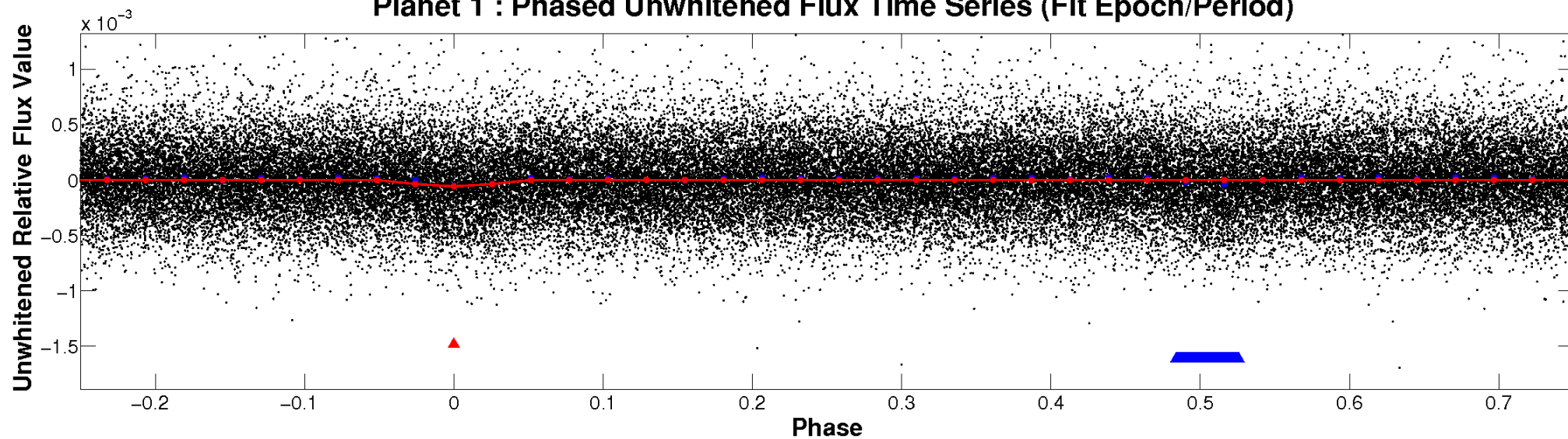
ALT Odd/Even

TCE 004157052-01

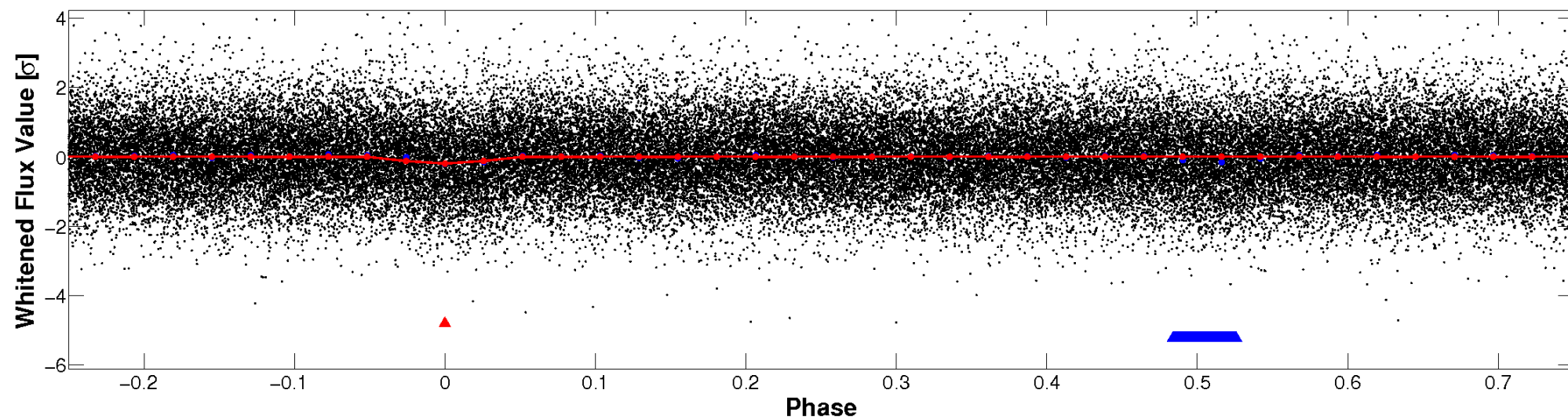


Non-Whitened Vs. Whitened Light Curve

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

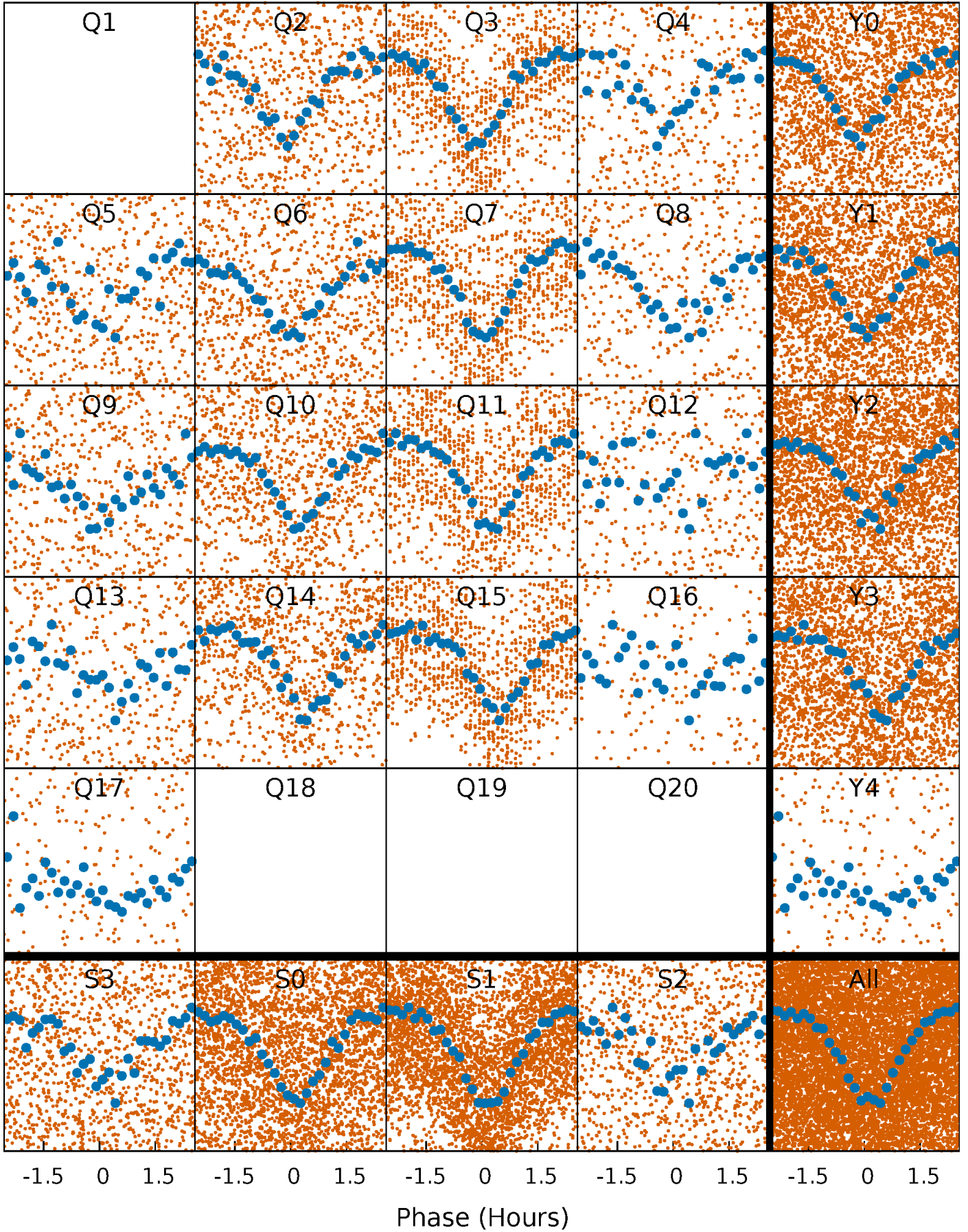


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



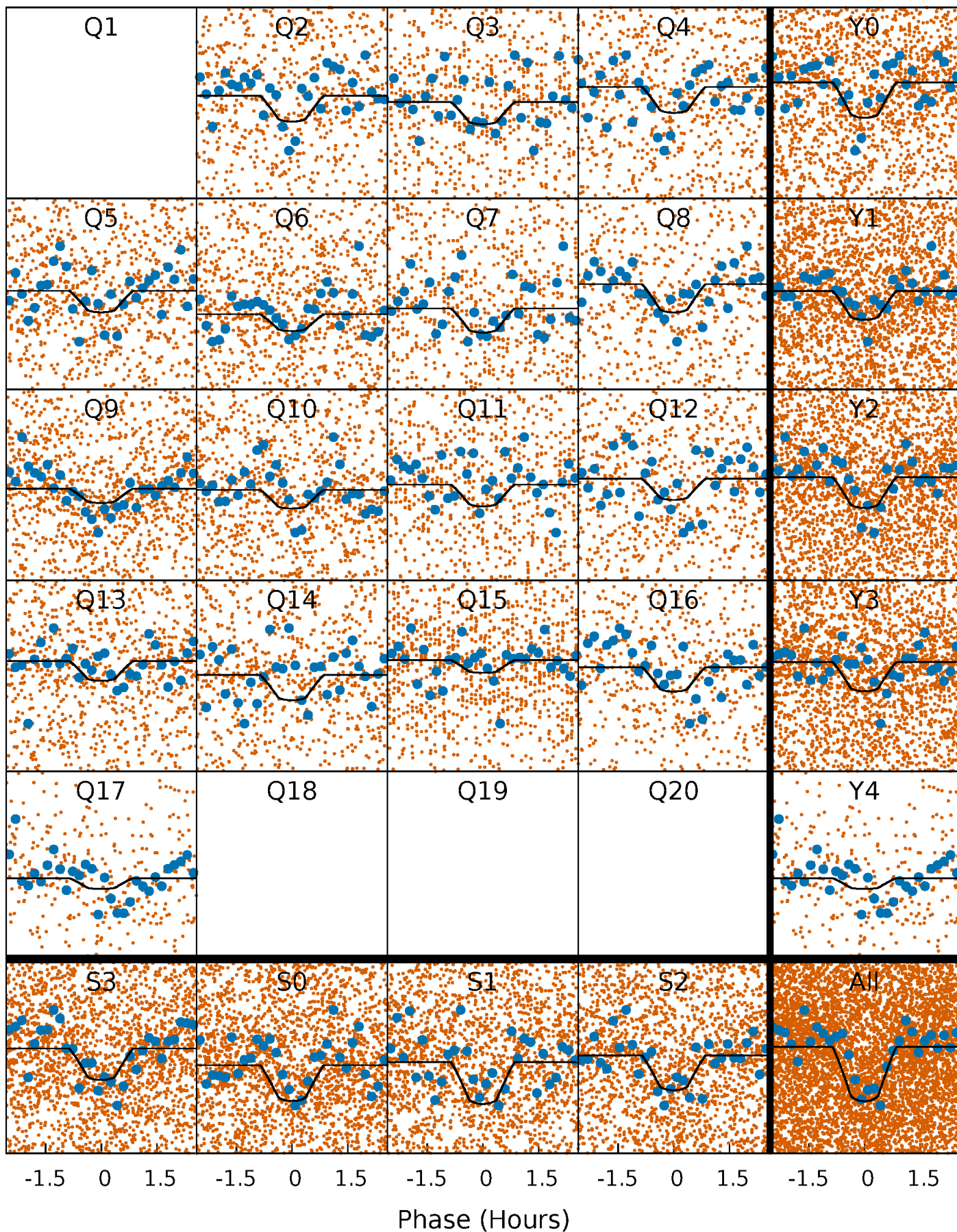
PDC Quarter-Phased Transit Curves

TCE 004157052-01 P= 0.791753 Days $T_0=131.533327$ (BKJD)



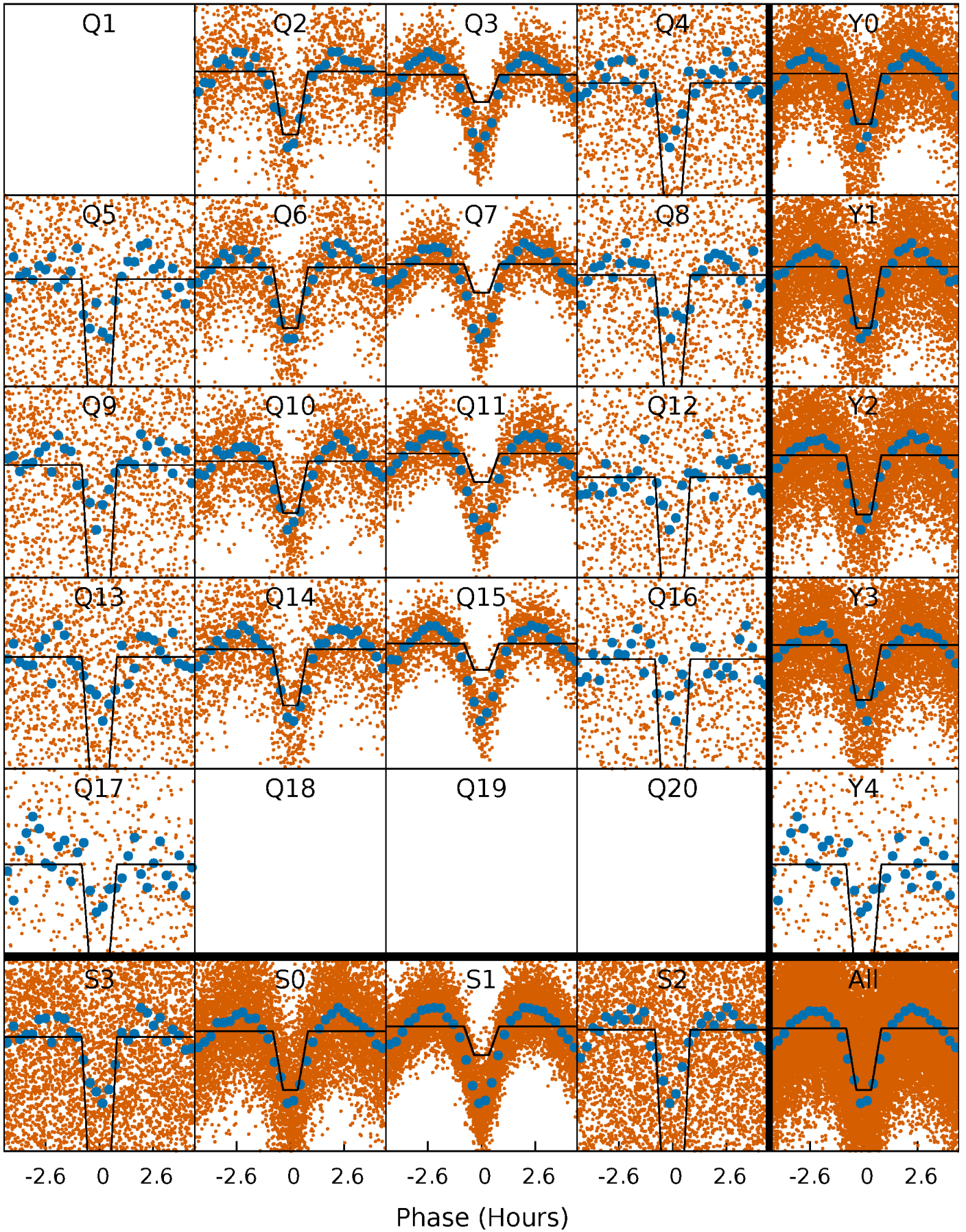
DV Quarter-Phased Transit Curves

TCE 004157052-01 P= 0.791753 Days $T_0=131.533327$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

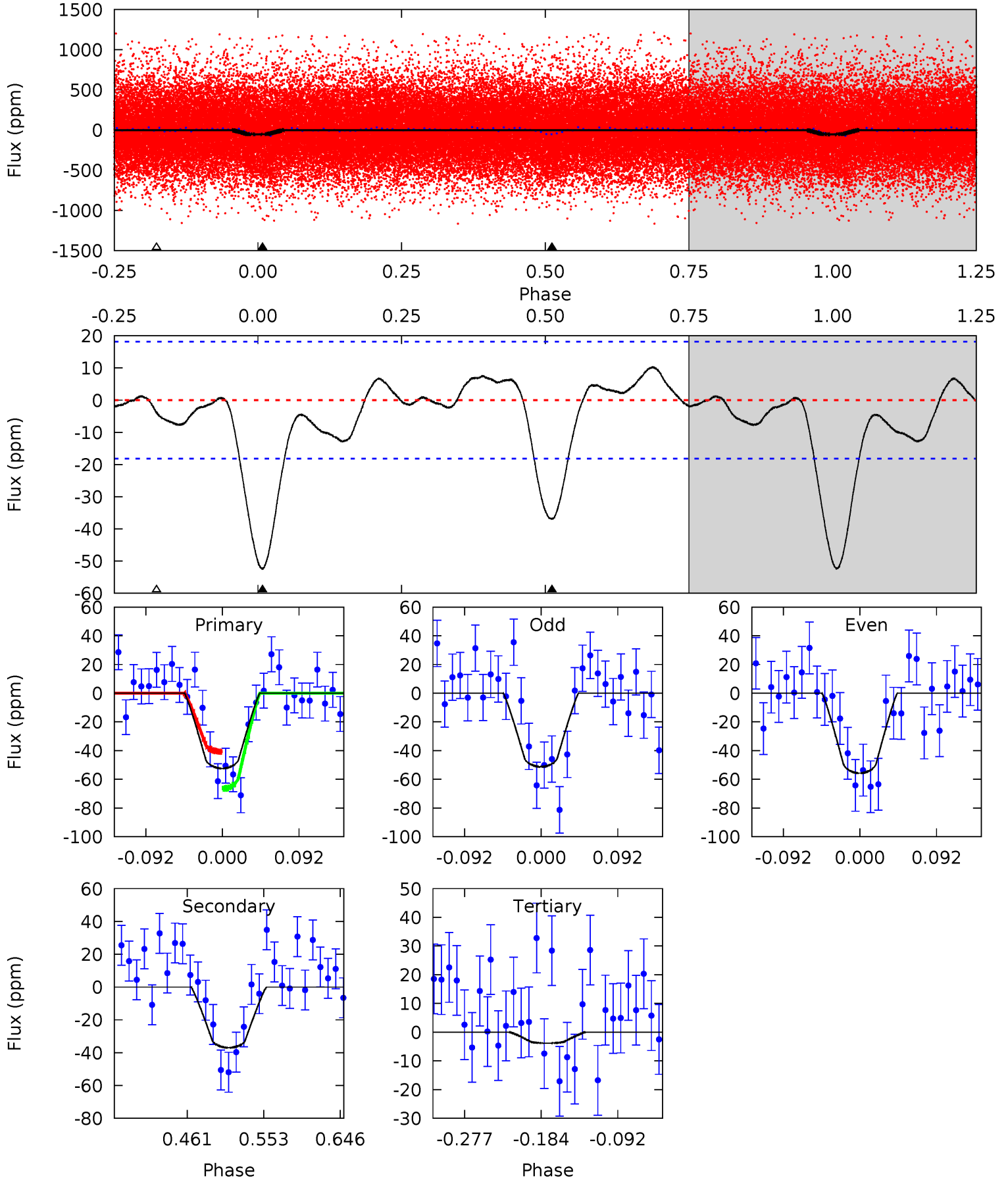
TCE 004157052-01 P= 0.791767 Days $T_0=131.526504$ (BKJD)



DV Model-Shift Uniqueness Test

004157052-01, P = 0.791753 Days, E = 131.533327 Days

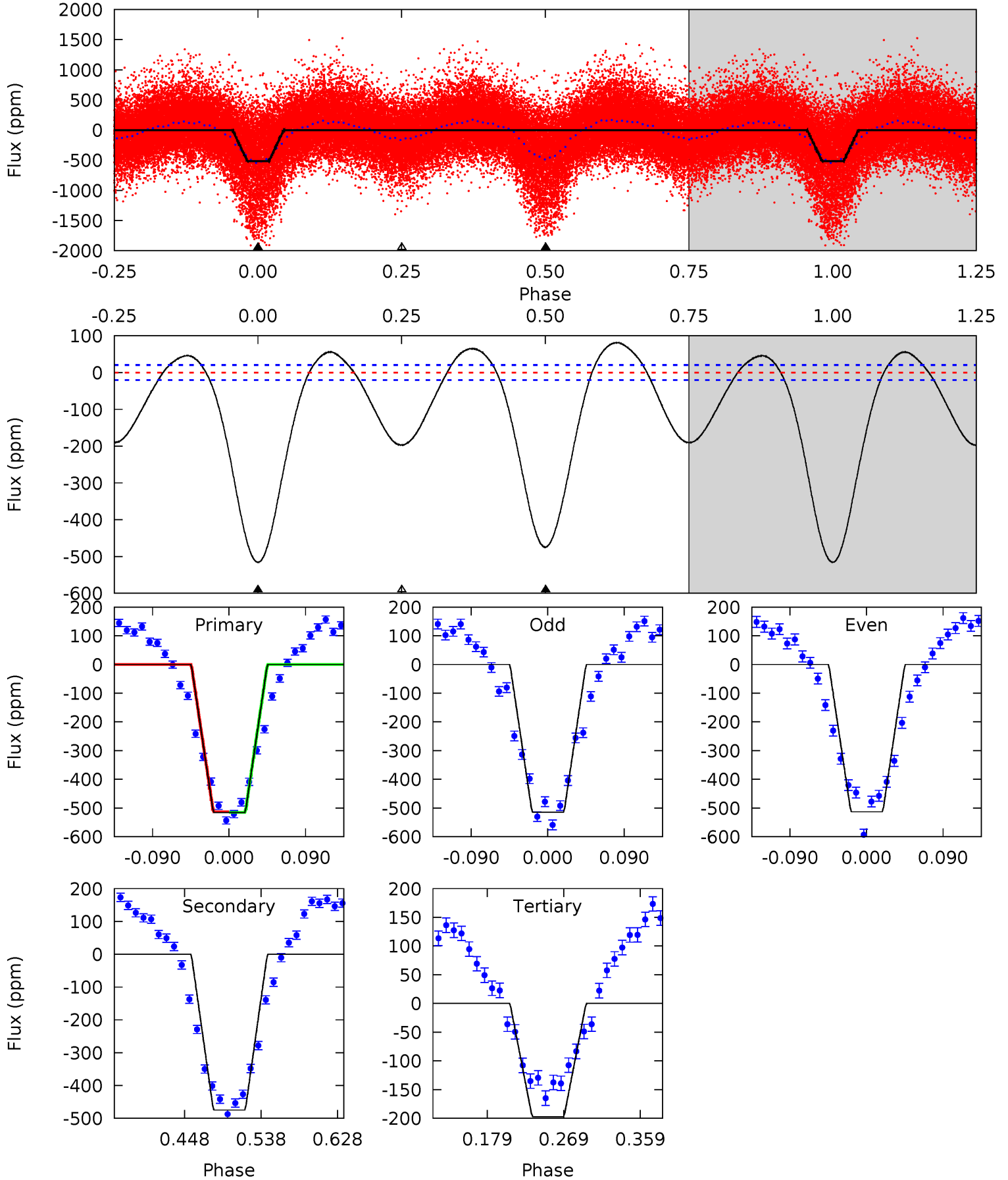
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.2	9.32	0.97	0	4.58	1.68	1.41	12.2	13.2	8.35	9.32	0.56	0.84	0.16	3.25



Alt Model-Shift Uniqueness Test

004157052-01, P = 0.791767 Days, E = 131.526504 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
116.4	107.1	44.5	0	4.59	1.70	20.5	71.9	116.4	62.6	107.1	0.20	1.21	0.14	0.24



Stellar Parameters For KIC 004157052

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6218^{+196}_{-239}	$3.678^{+0.535}_{-0.094}$	$0.240^{+0.150}_{-0.300}$	$3.070^{+0.433}_{-1.733}$	$1.639^{+0.191}_{-0.447}$	$0.080^{+0.562}_{-0.025}$
	+3%/-4%	+15%/-3%	+62%/-125%	+14%/-56%	+12%/-27%	+705%/-32%
Source	PHO54	PHO54	PHO54	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

Secondary Eclipse Parameters for KIC 004157052-01 / KOI 4468.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-37 ± 4	$2.48^{+1.56}_{-1.22}$	4638^{+326}_{-671}	4995^{+2062}_{-1276}	$1.296^{+3.527}_{-0.815}$
Alt.	-475 ± 4	$6.52^{+1.90}_{-2.18}$	4653^{+330}_{-640}	6129^{+928}_{-679}	$2.450^{+2.800}_{-0.977}$

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 $A_{obs} \gg 1.0$

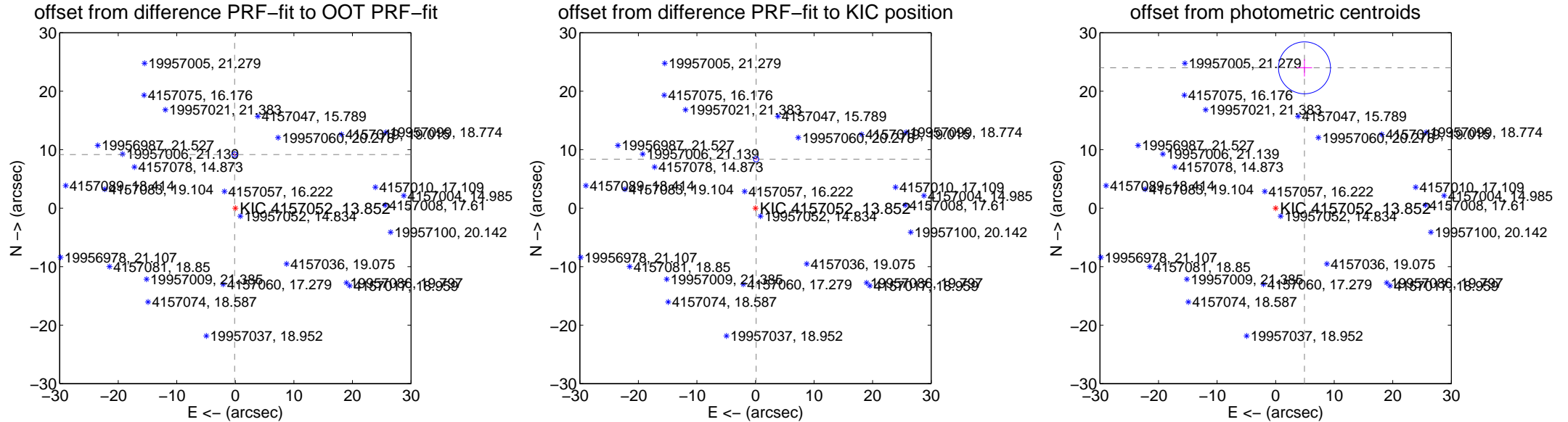
DV Centroid Data

Supplemental centroid analysis for 004157052-01. Kepler magnitude: 13.85. Transit SNR 10.18

There are 1 quarters with good PRF difference image offsets

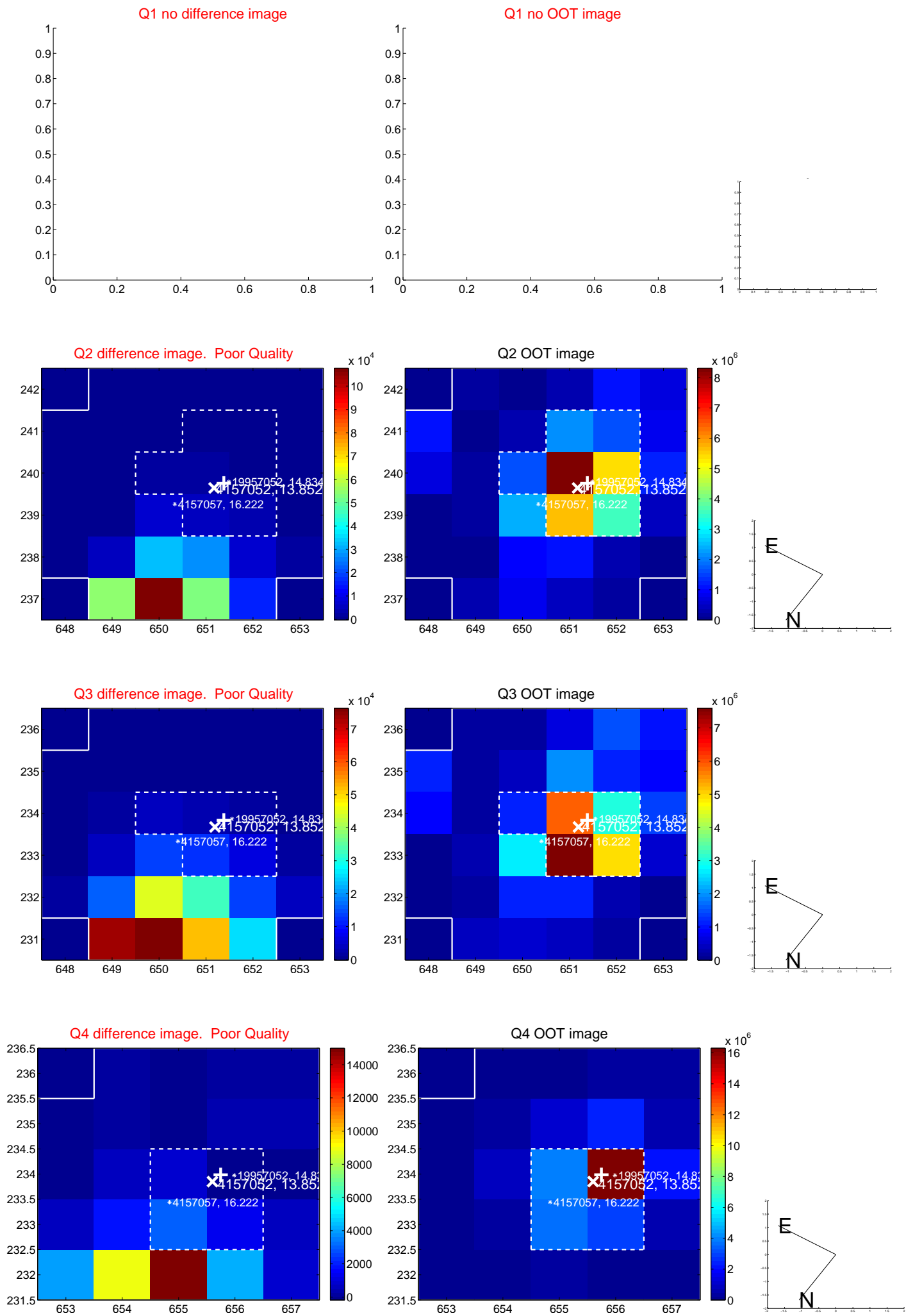
The direct PRF centroid is offset from the target star catalog position by about 0.82 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	9.161 ± 0.152	60.18	0.127 ± 0.099	9.160 ± 0.152
PRF-fit source offset from KIC position	8.371 ± 0.152	54.99	-0.108 ± 0.099	8.371 ± 0.152
photometric centroid source offset	24.50 ± 1.48	16.55	-4.92 ± 1.30	24.00 ± 1.49

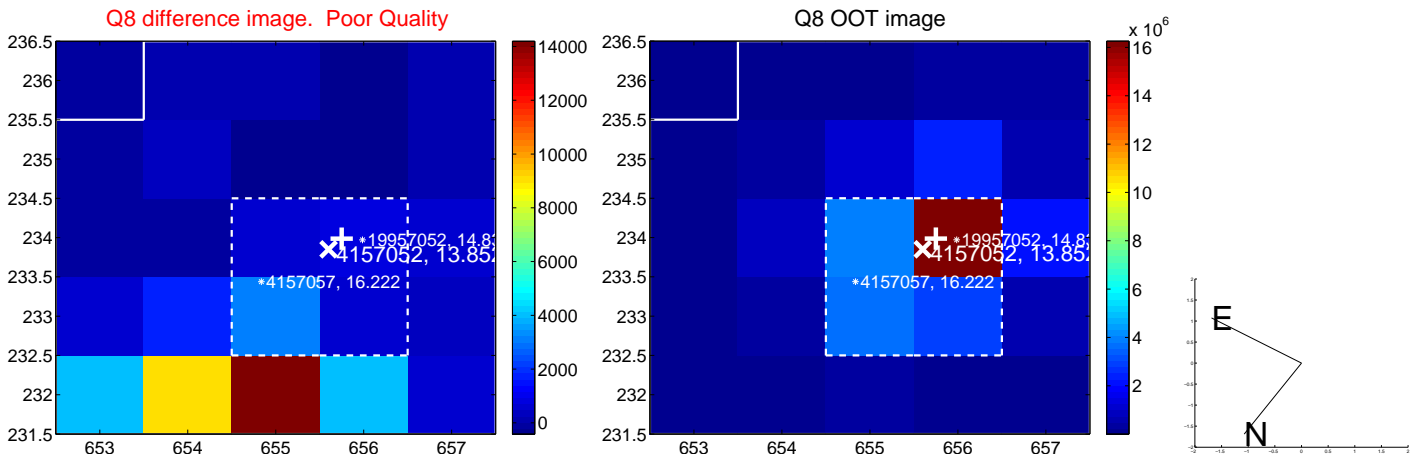
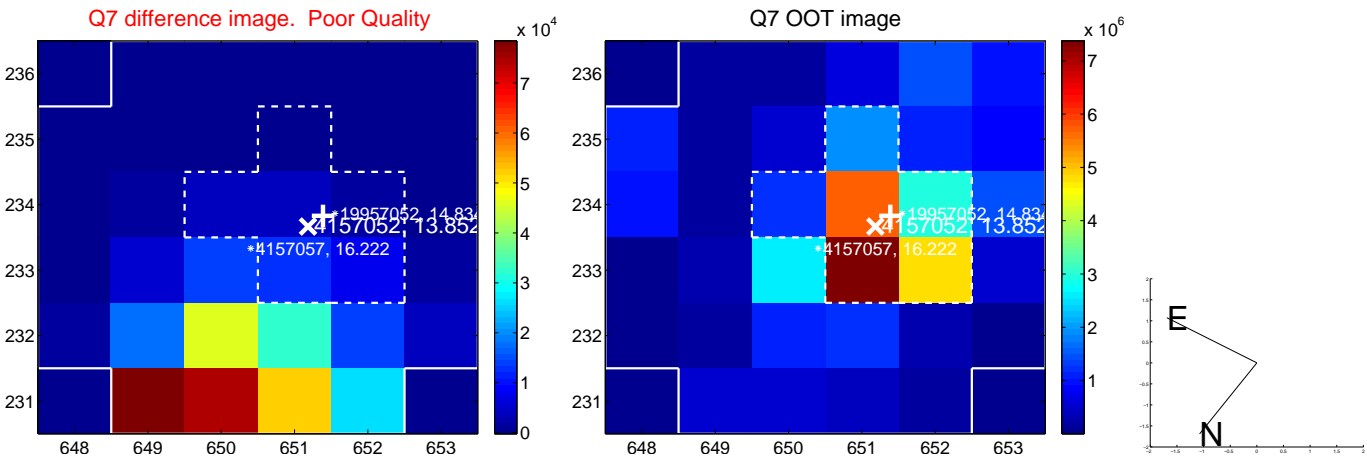
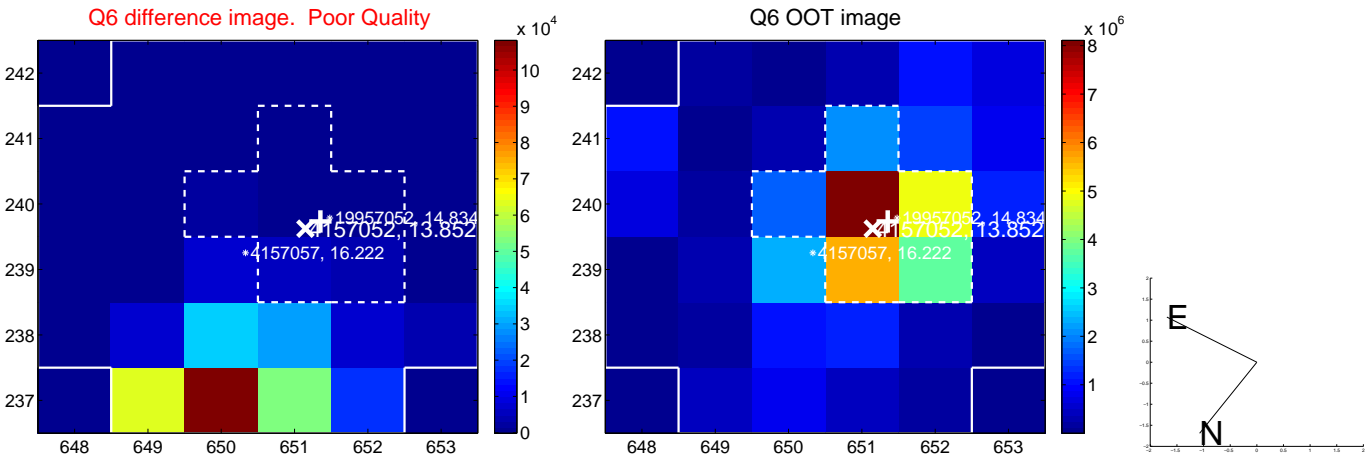
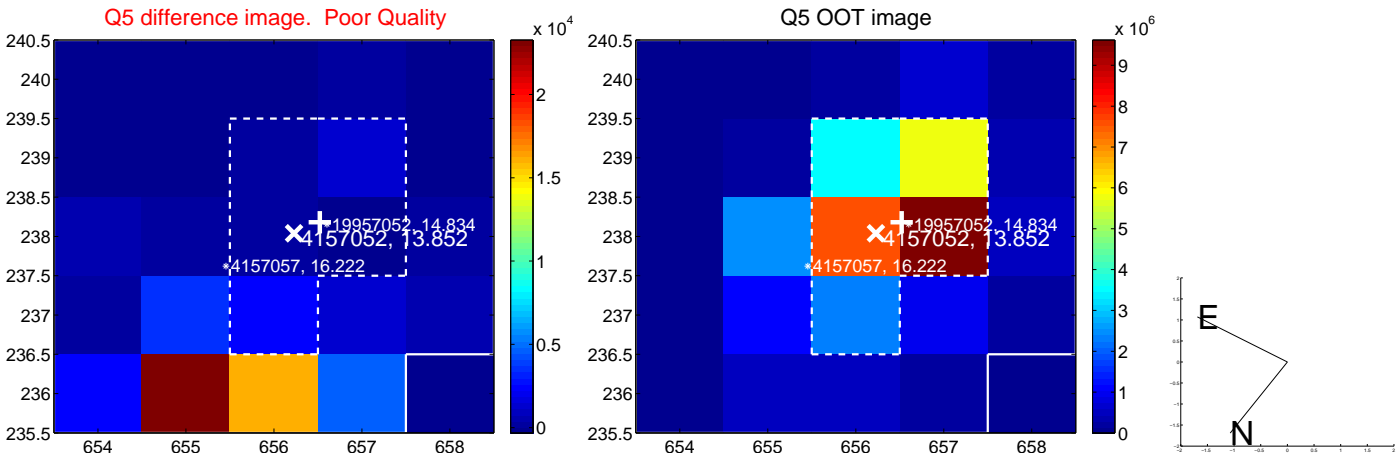


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

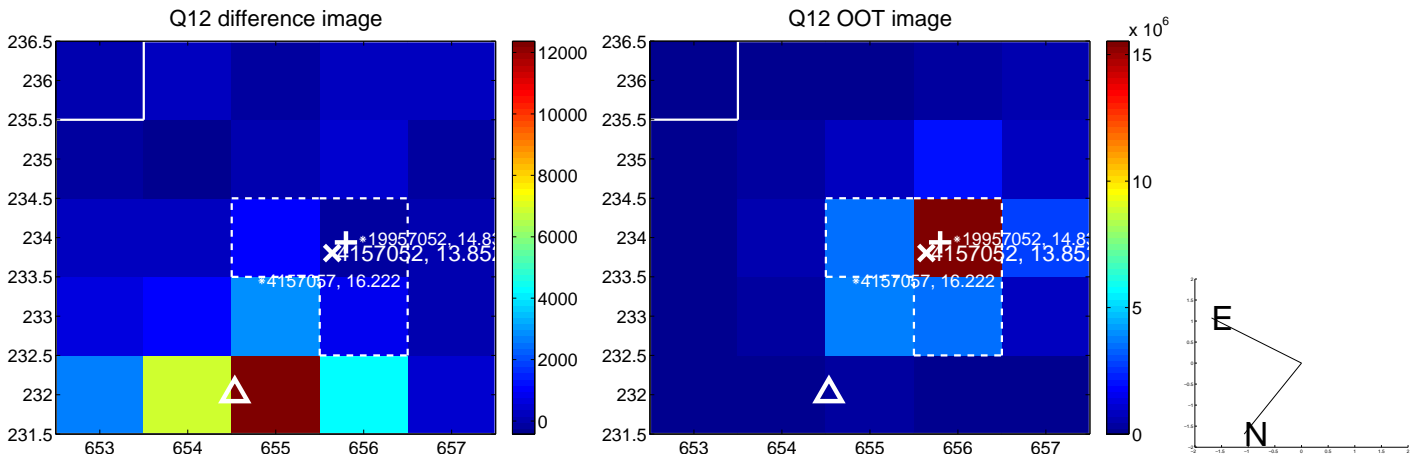
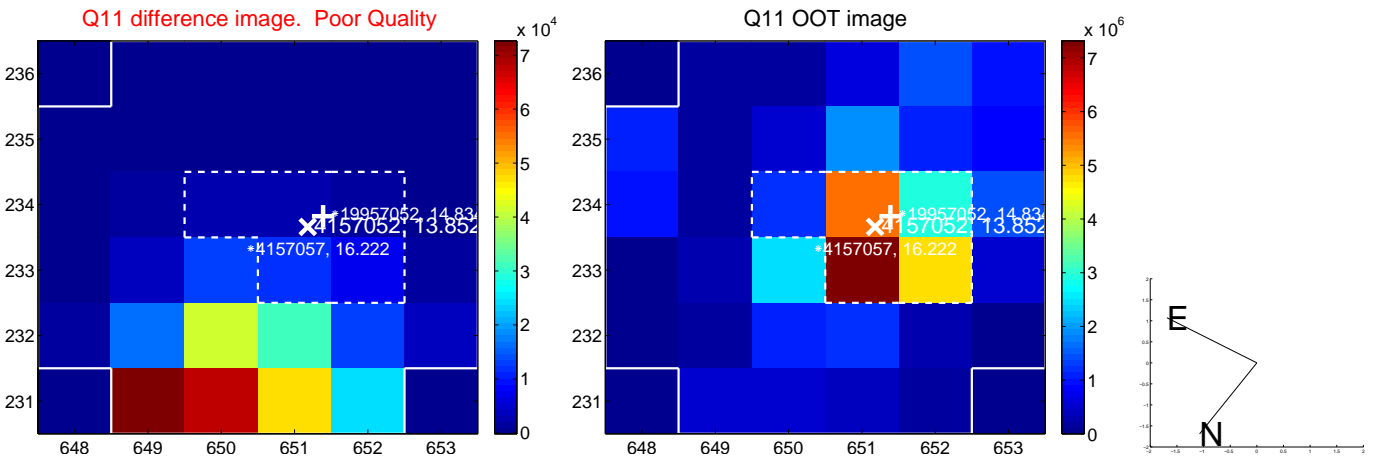
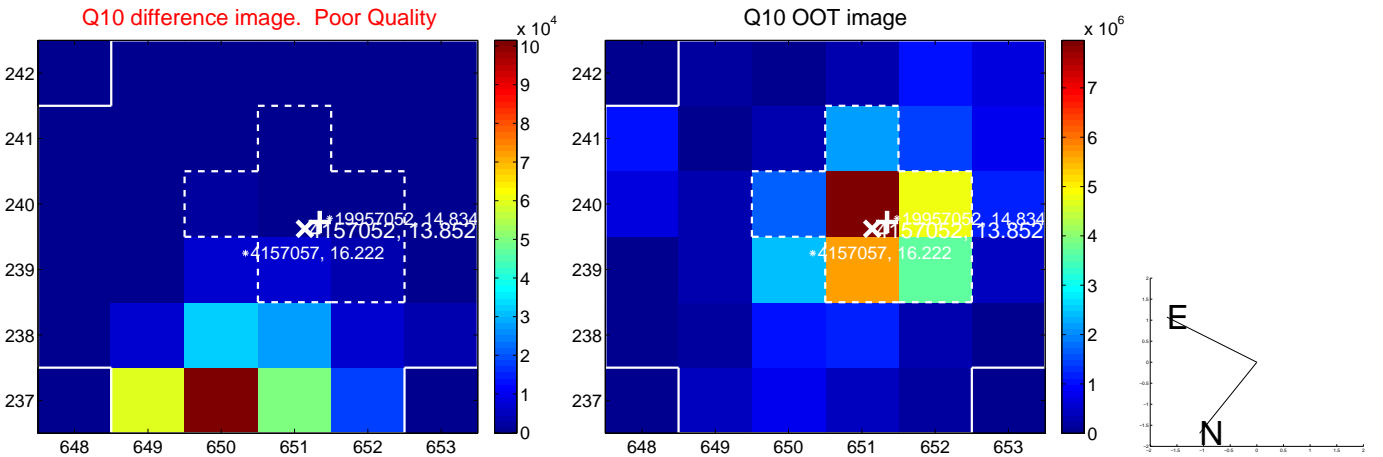
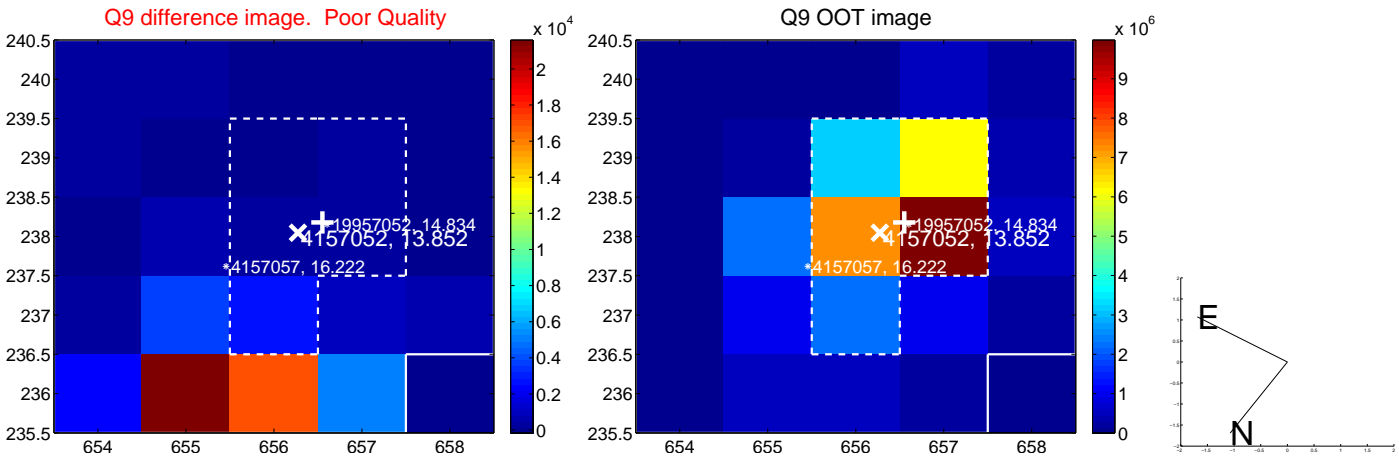
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



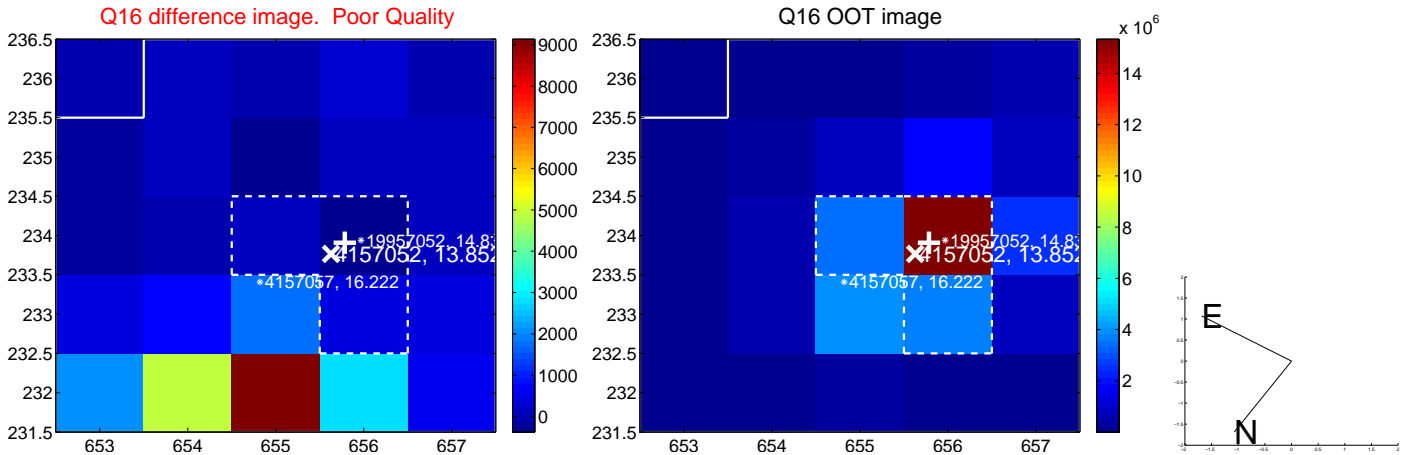
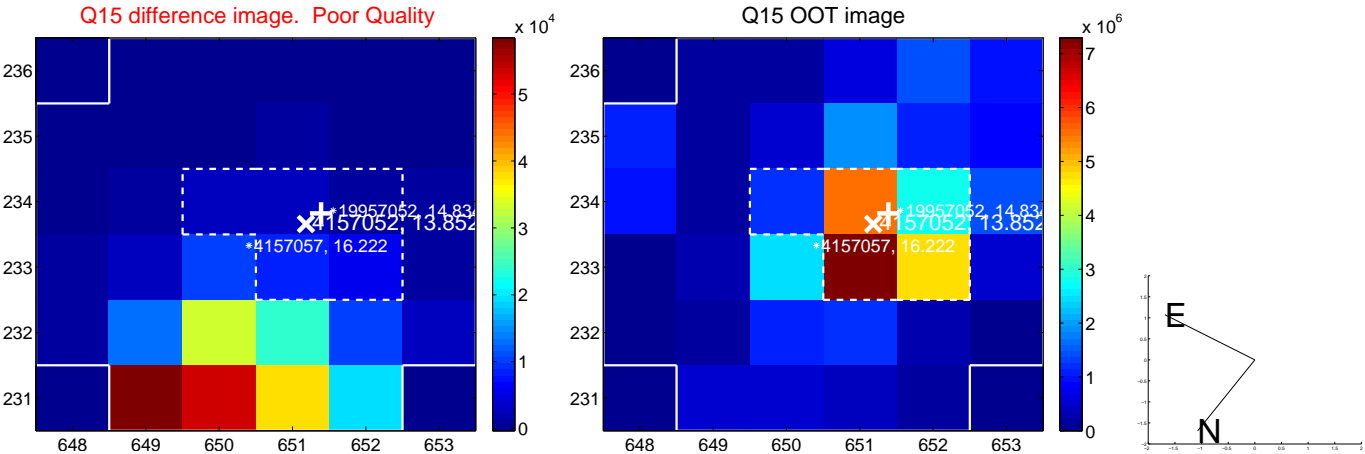
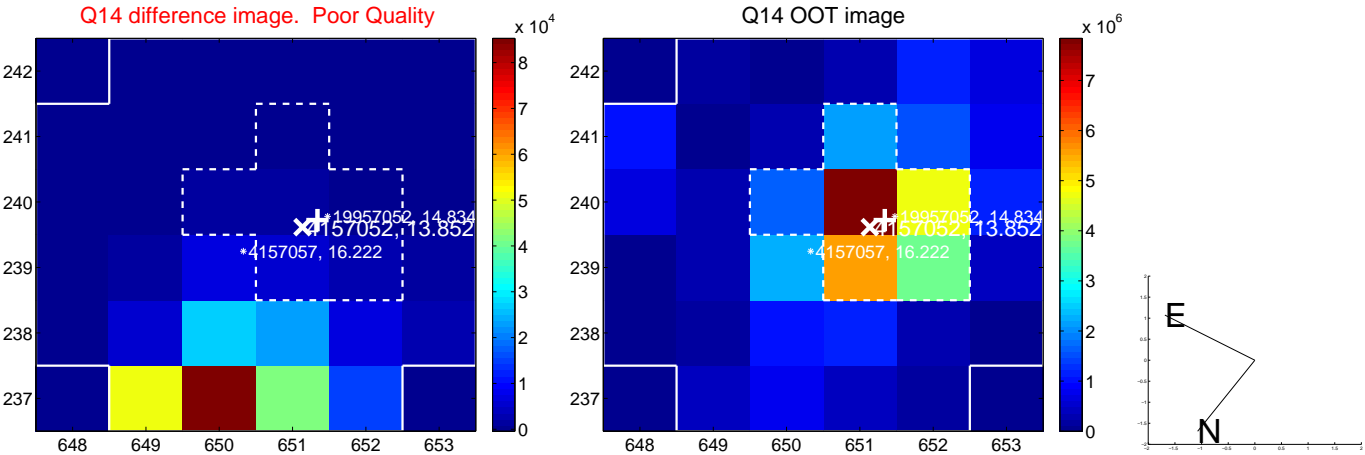
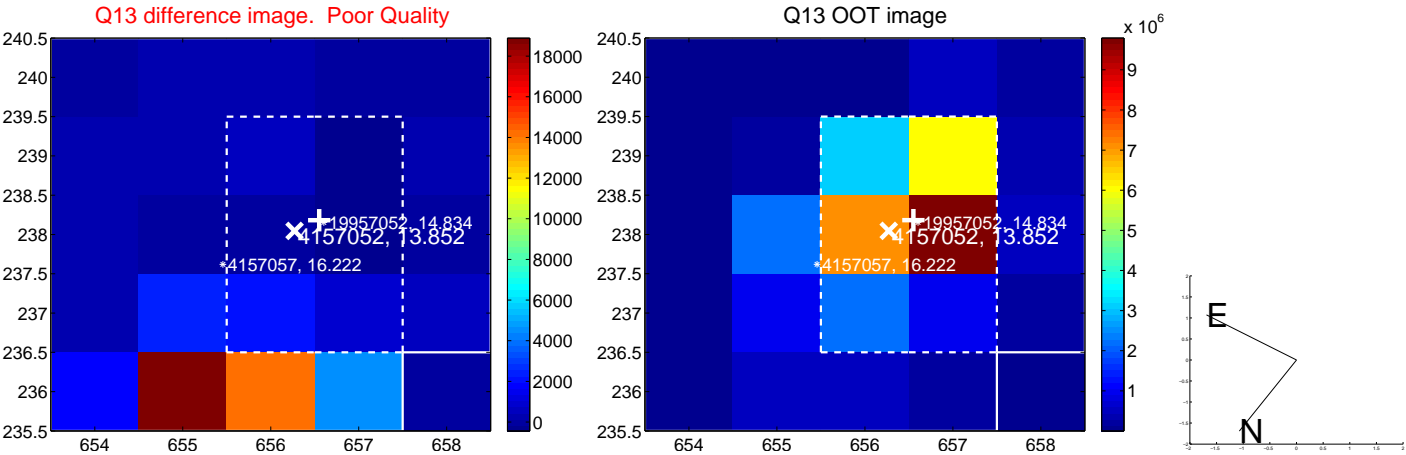
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



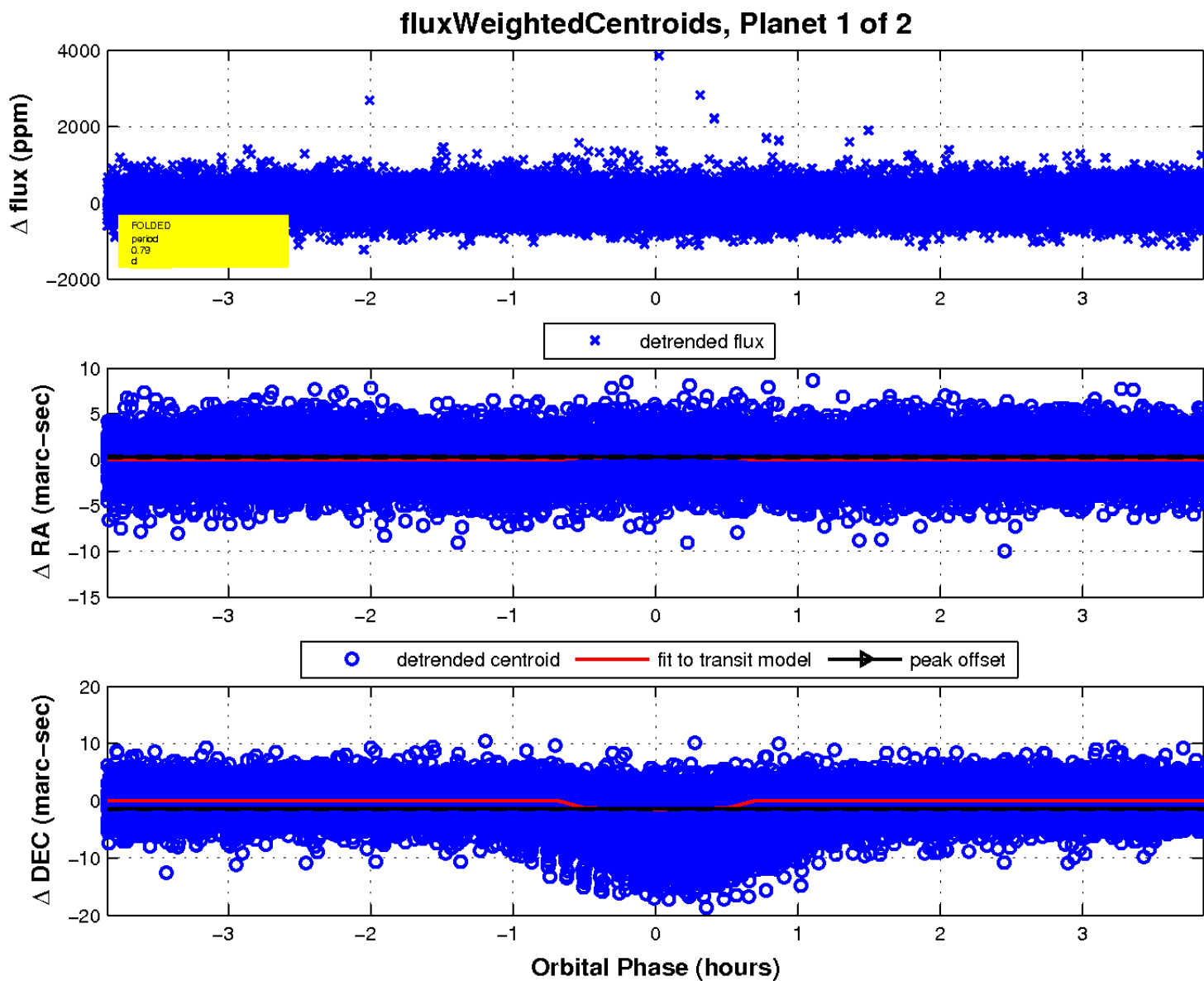
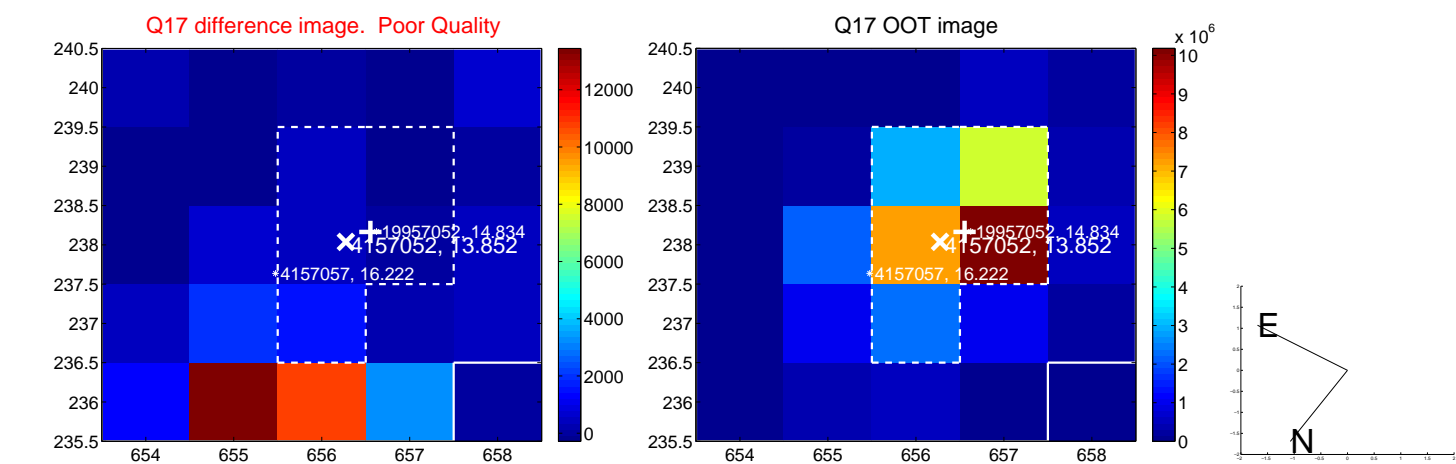
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

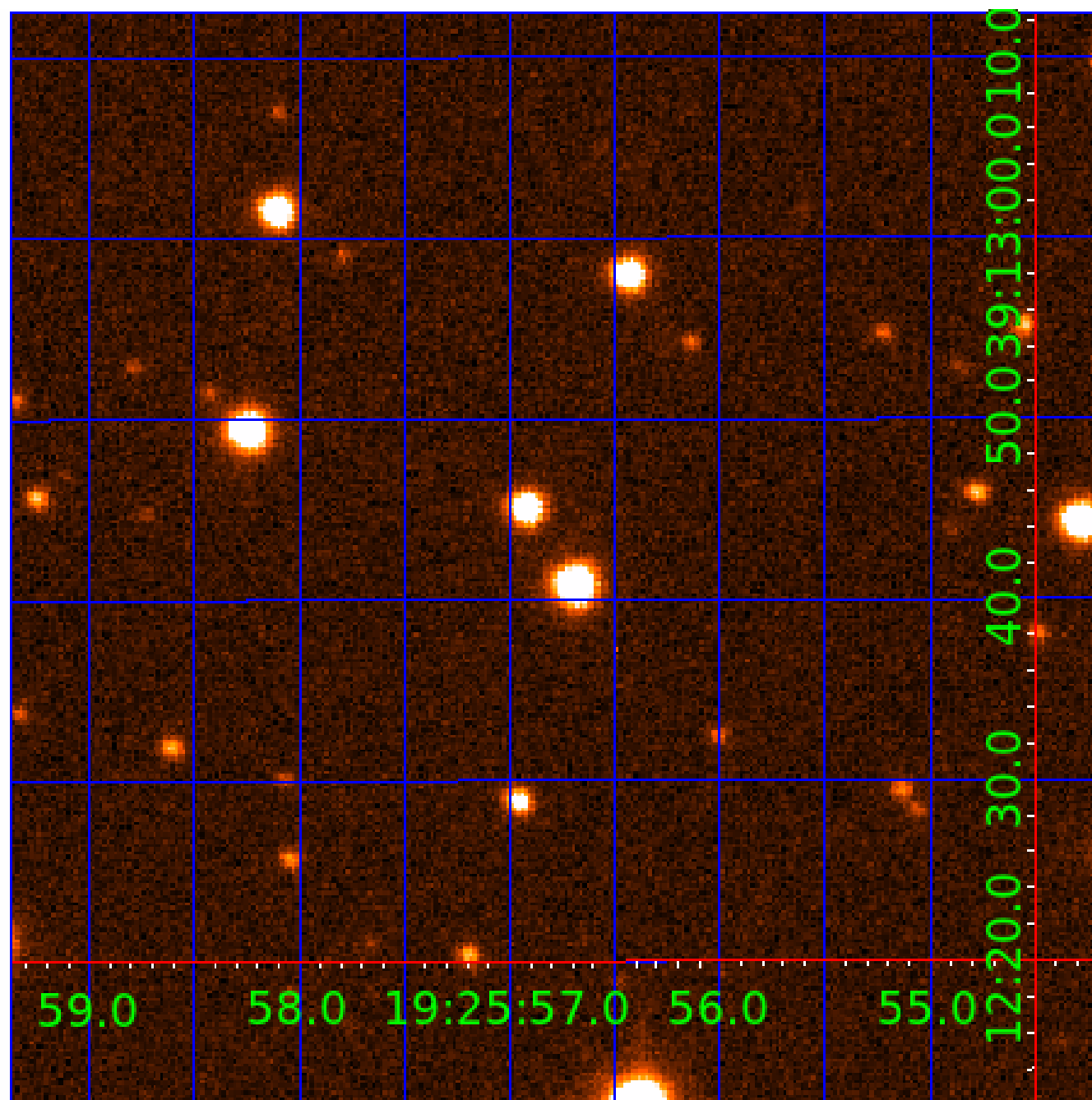


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 004157052

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})
004157052-01	OBS	4468.01	0.791753	131.533327	59.9	1.284	9.7	10.2	3.07	6218	2.81	32369.56
004157052-02	OBS	No	0.791771	131.916319	68.7	1.104	8.5	11.2	3.07	6218	3.03	32368.57

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004157052-01	OBS	FP	0.00	1	0	1	0	MOD_NONUNIQ_ALT—CENT_RESOLVED_OFFSET—HALO_GHOST
004157052-02	OBS	FP	0.00	1	0	1	0	LPP_DV—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD—CENT_RESOLVED_OFFSET

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.

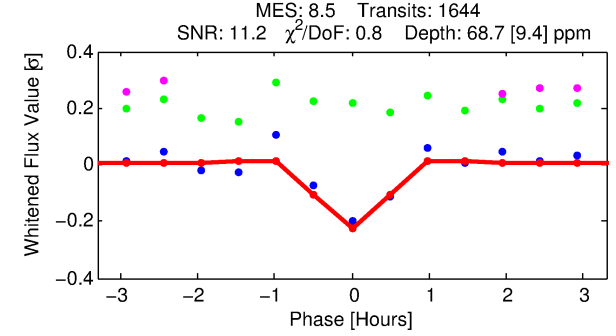
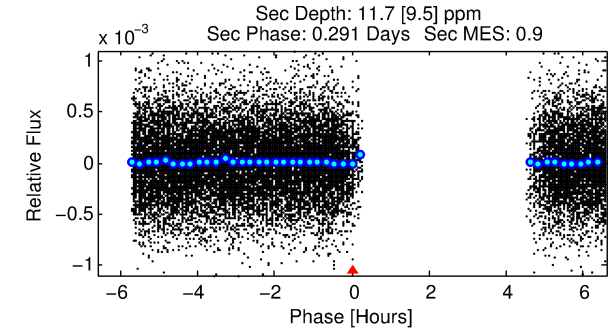
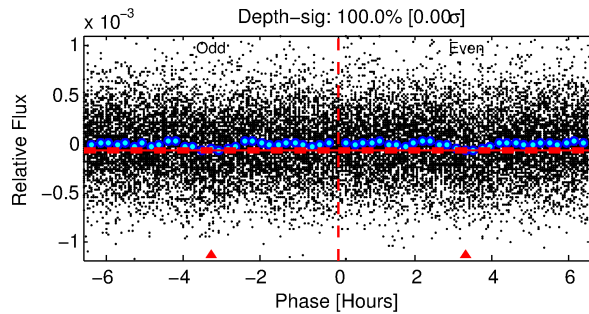
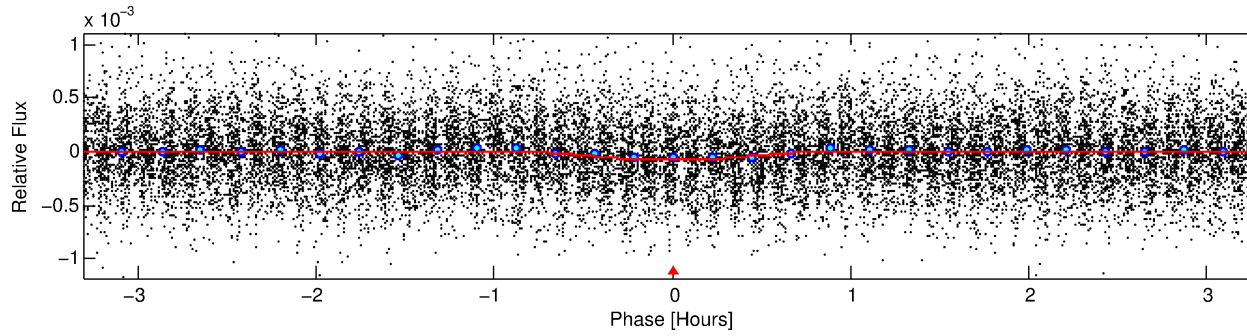
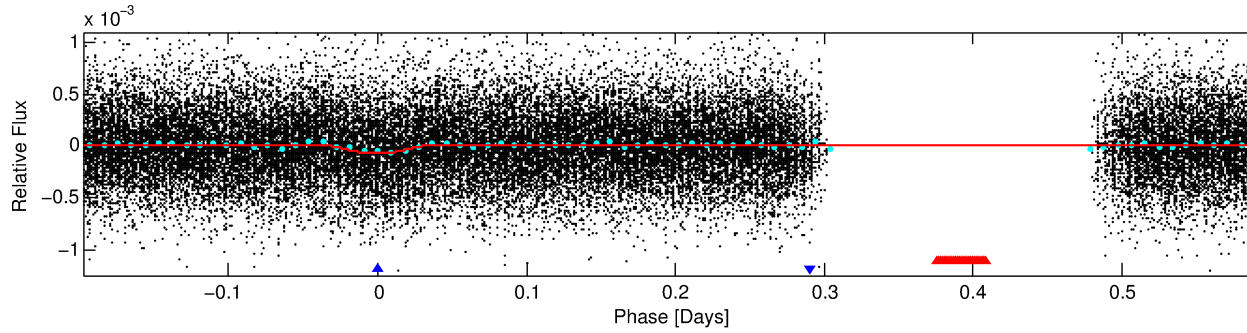
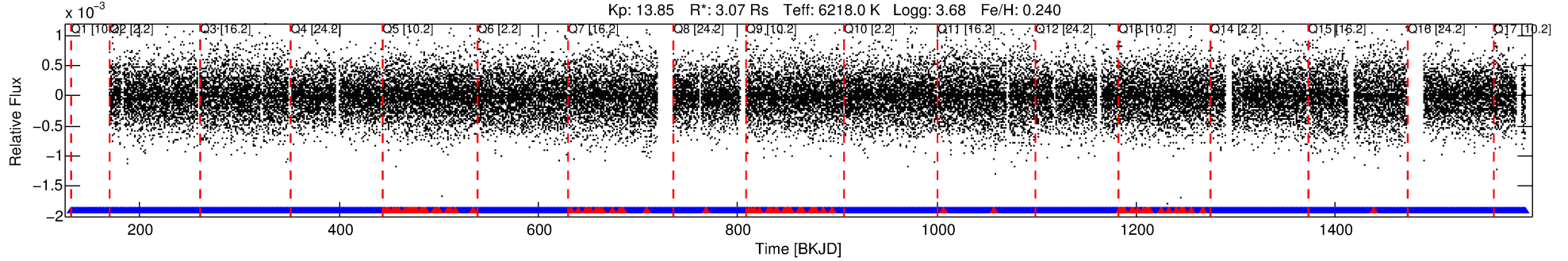
Ephemeris Match Information For 004157052-02

No Significant Match Found

DV One-Page Summary

KIC: 4157052 Candidate: 2 of 2 Period: 0.792 d
KOI: K04468 Corr: No Ephemeris Match

Kp: 13.85 R*: 3.07 Rs Teff: 6218.0 K Logg: 3.68 Fe/H: 0.240



DV Fit Results:

Period = 0.79177 [0.00001] d
Epoch = 131.9163 [0.0017] BKJD
Rp/R* = 0.0090 [0.0043]
a/R* = 2.61 [5.57]
b = 0.91 [0.51]
Seff = 32368.57 [29661.39]
Teq = 3420 [784] K
Rp = 3.03 [2.23] Re
a = 0.0197 [0.0110] AU
Ag = 0.27 [0.42] [-1.73σ]
Teffp = 3821 [1204] K [0.28σ]

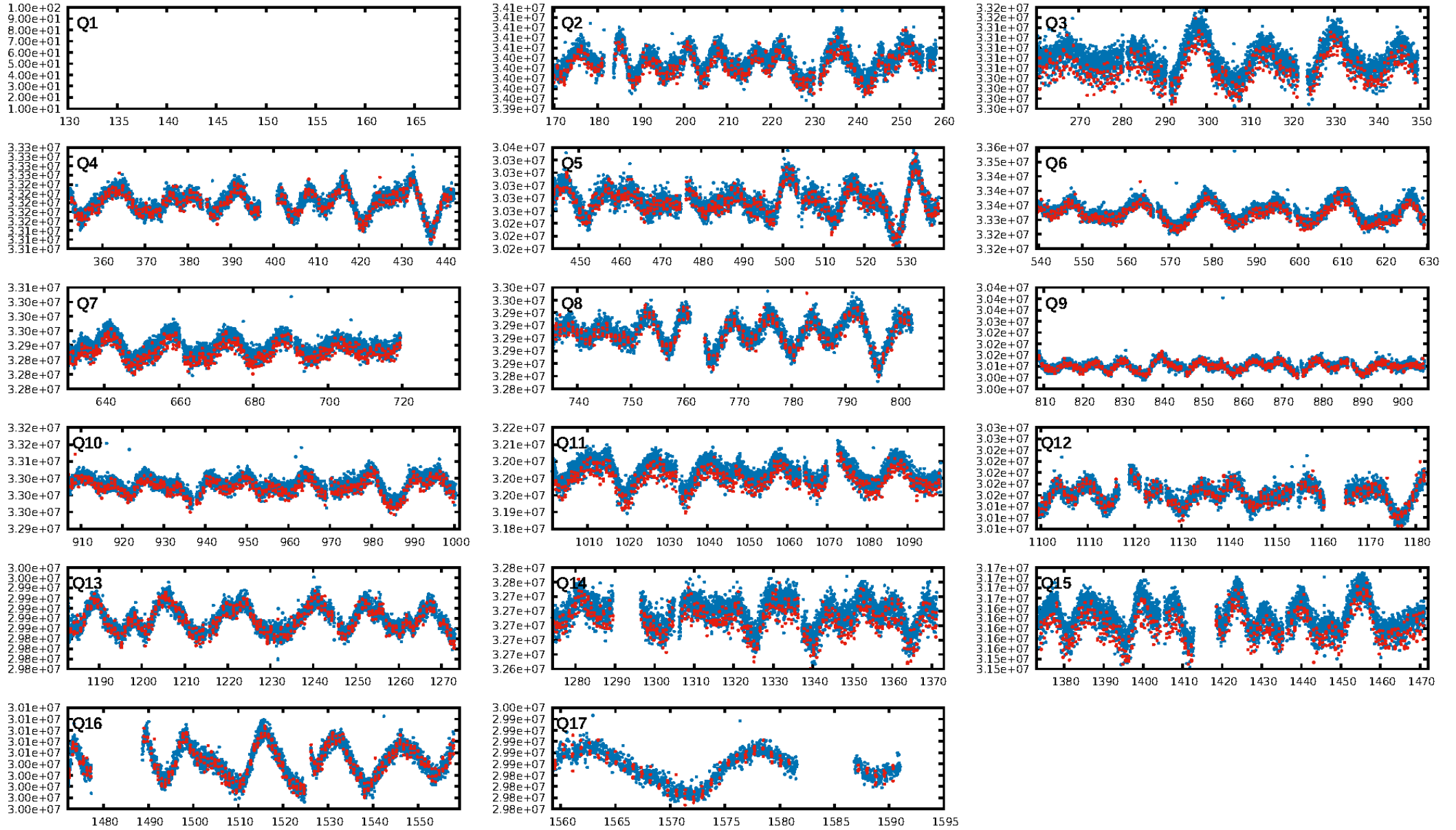
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 1.12e-18
RollingBand-fgt: 0.94 [1515/1611]
GhostDiagnostic-chr: -0.2952
Centroid-sig: 0.0%
Centroid-so: 26.997 arcsec [19.54σ]
OotOffset-rm: N/A
KicOffset-rm: N/A
OotOffset-st: 0/0/0/0 [0]
KicOffset-st: 0/0/0/0 [0]
DiffImageQuality-fgm: N/A
DiffImageOverlap-fno: 1.00 [16/16]

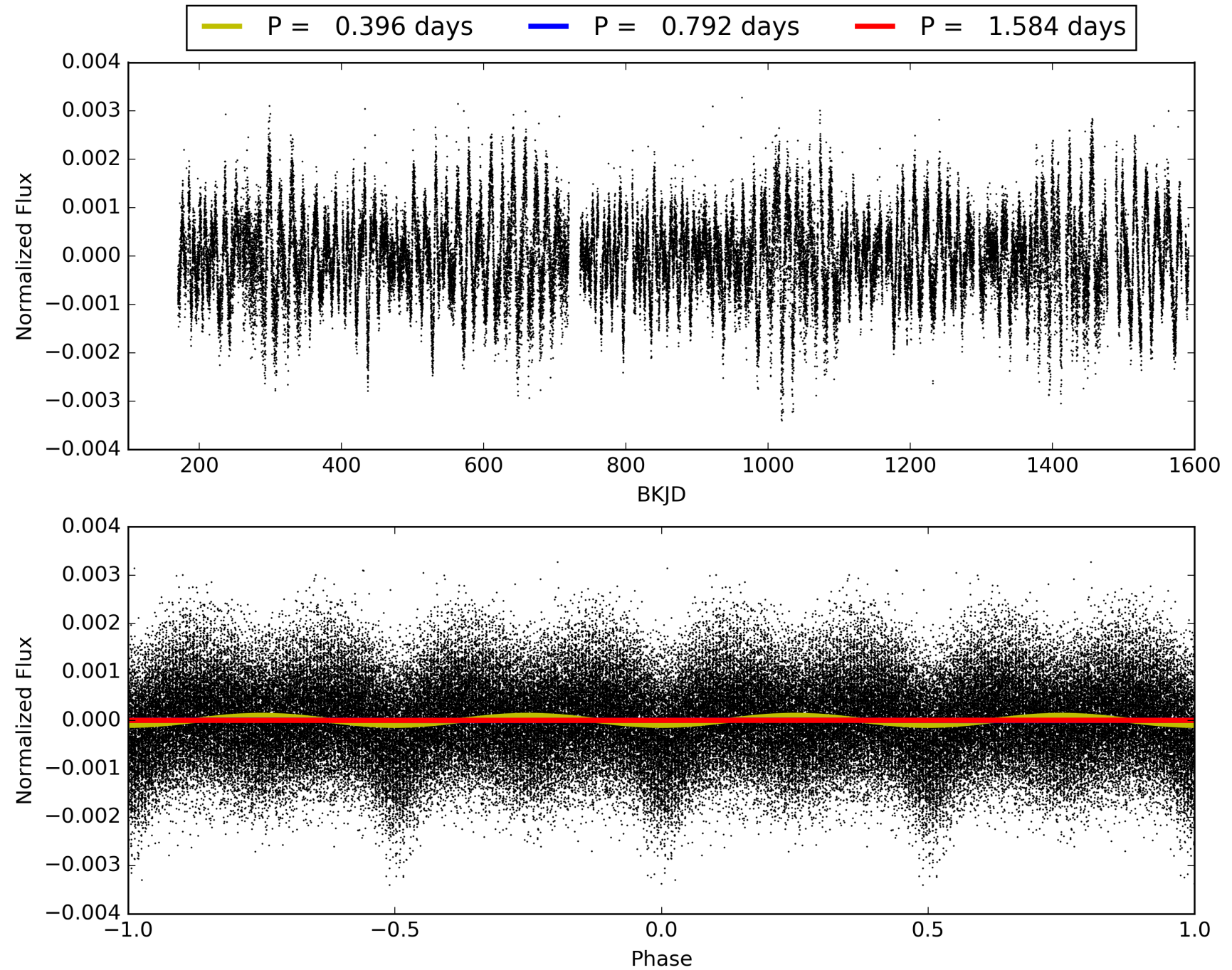
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 10:02:57 Z

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

TCE 004157052-02, PDC Light Curves

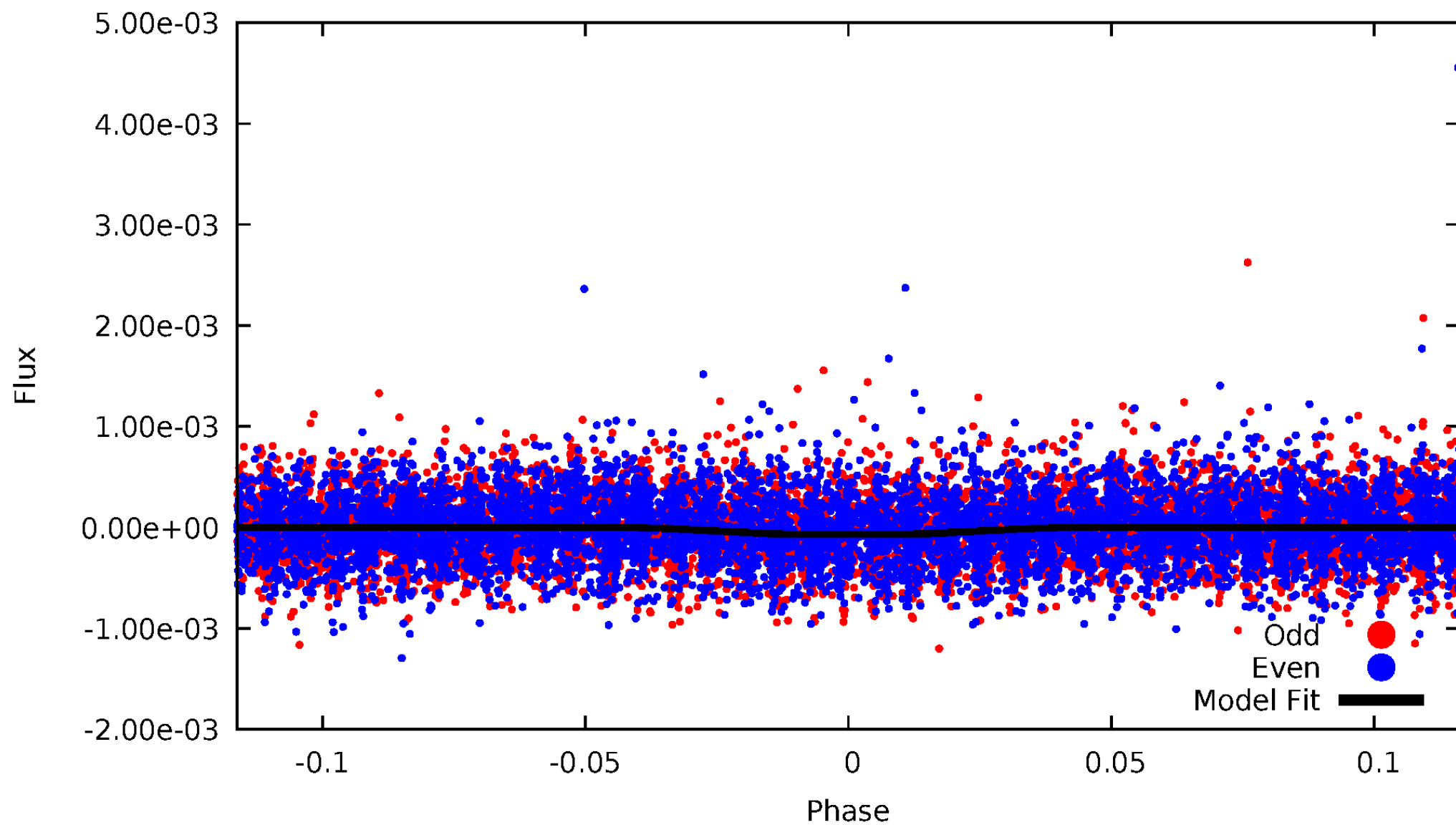


TCE 004157052-02



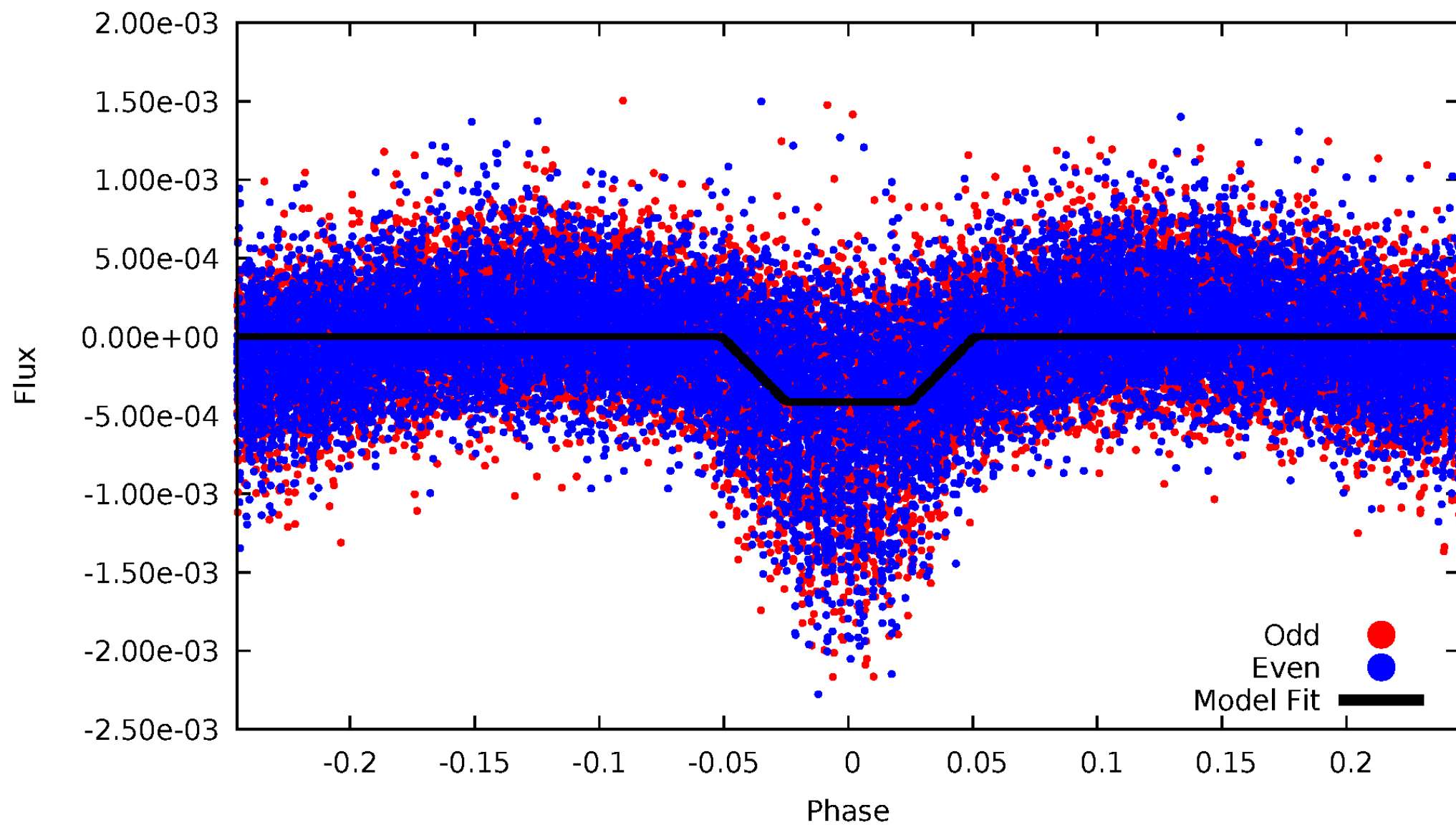
DV Odd/Even

TCE 004157052-02



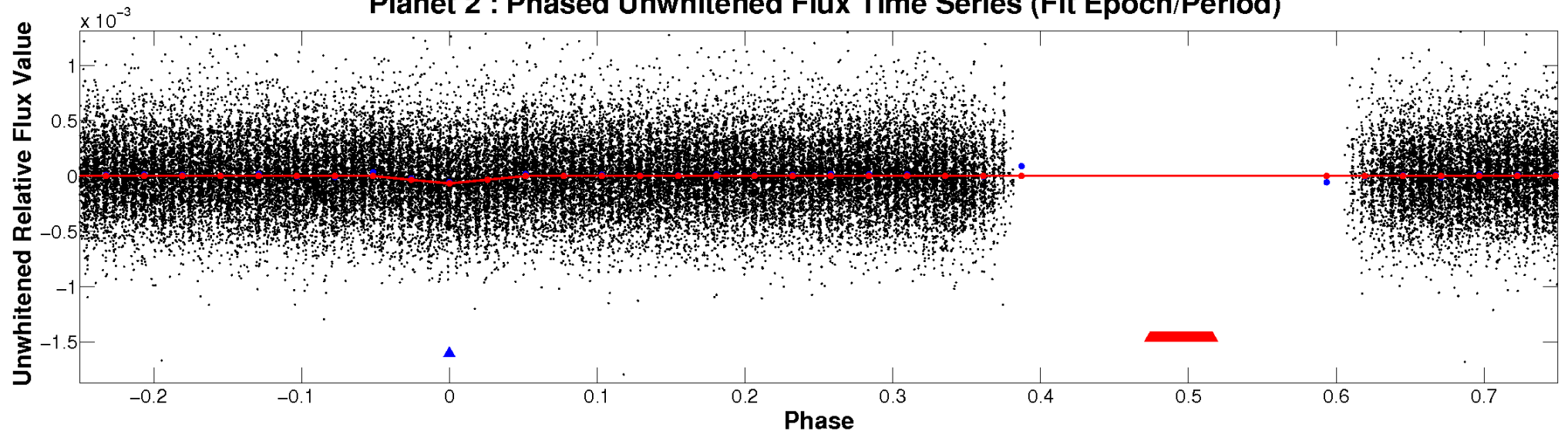
ALT Odd/Even

TCE 004157052-02

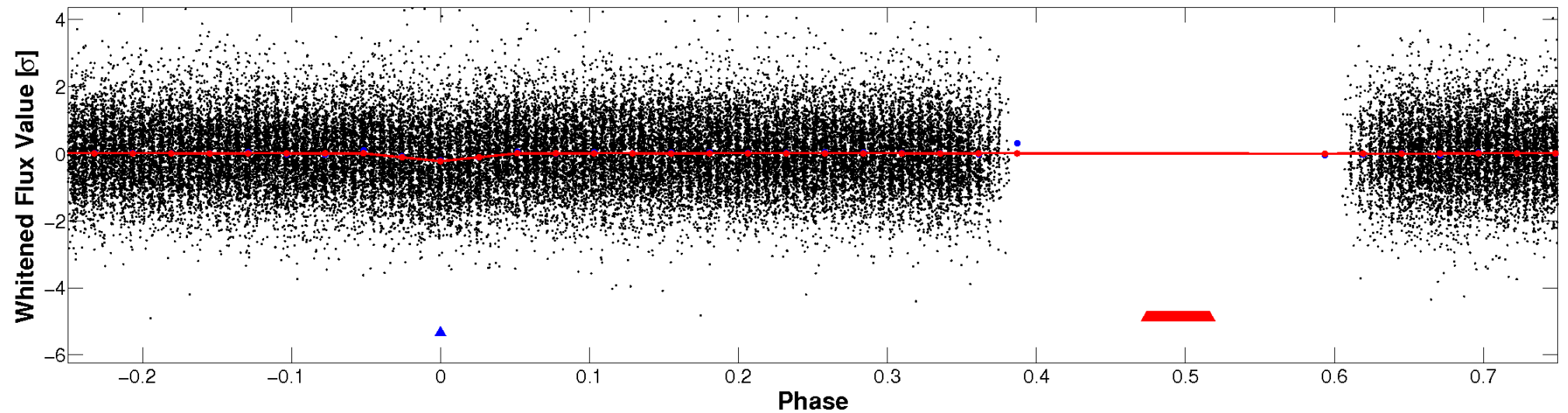


Non-Whitened Vs. Whitened Light Curve

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

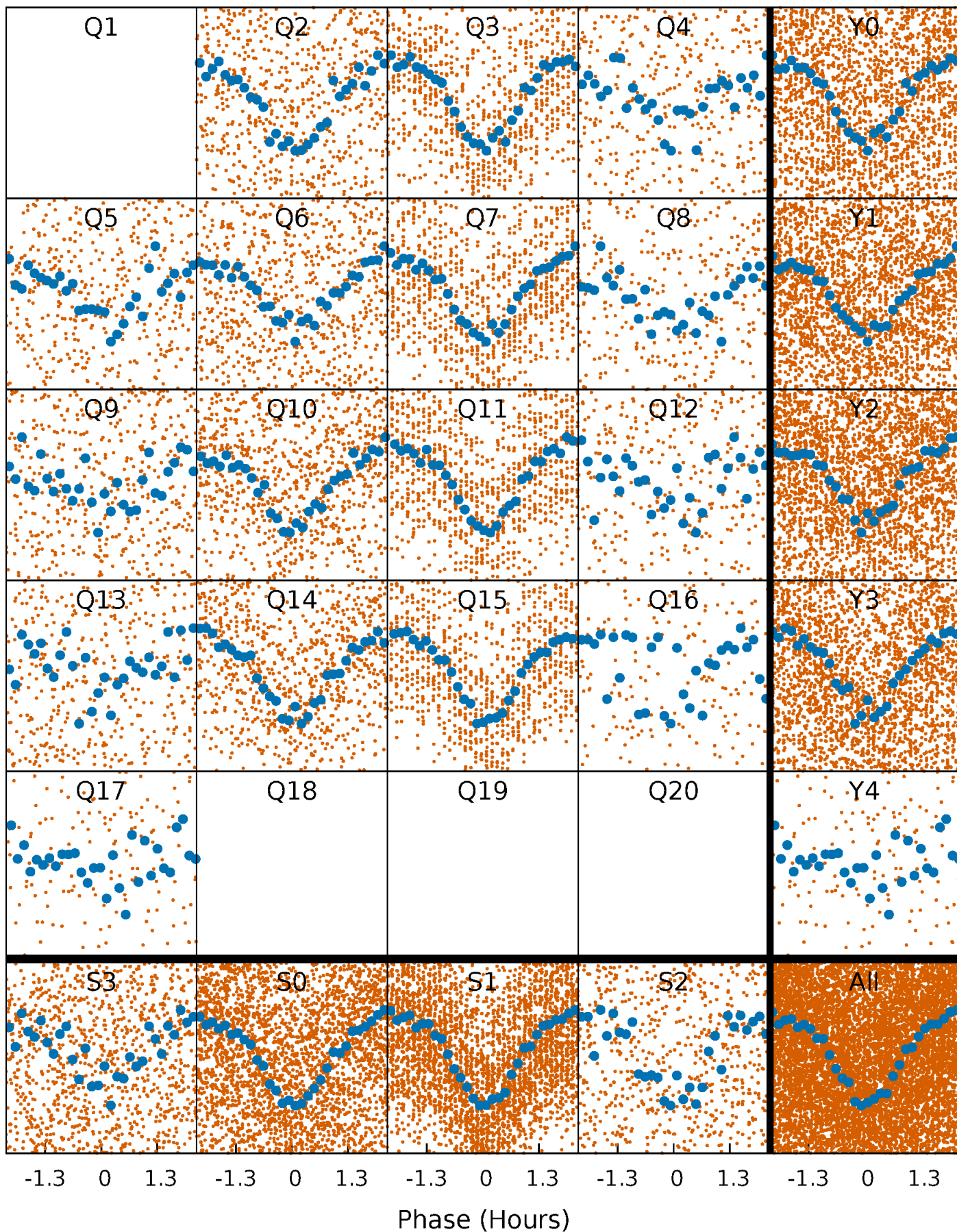


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



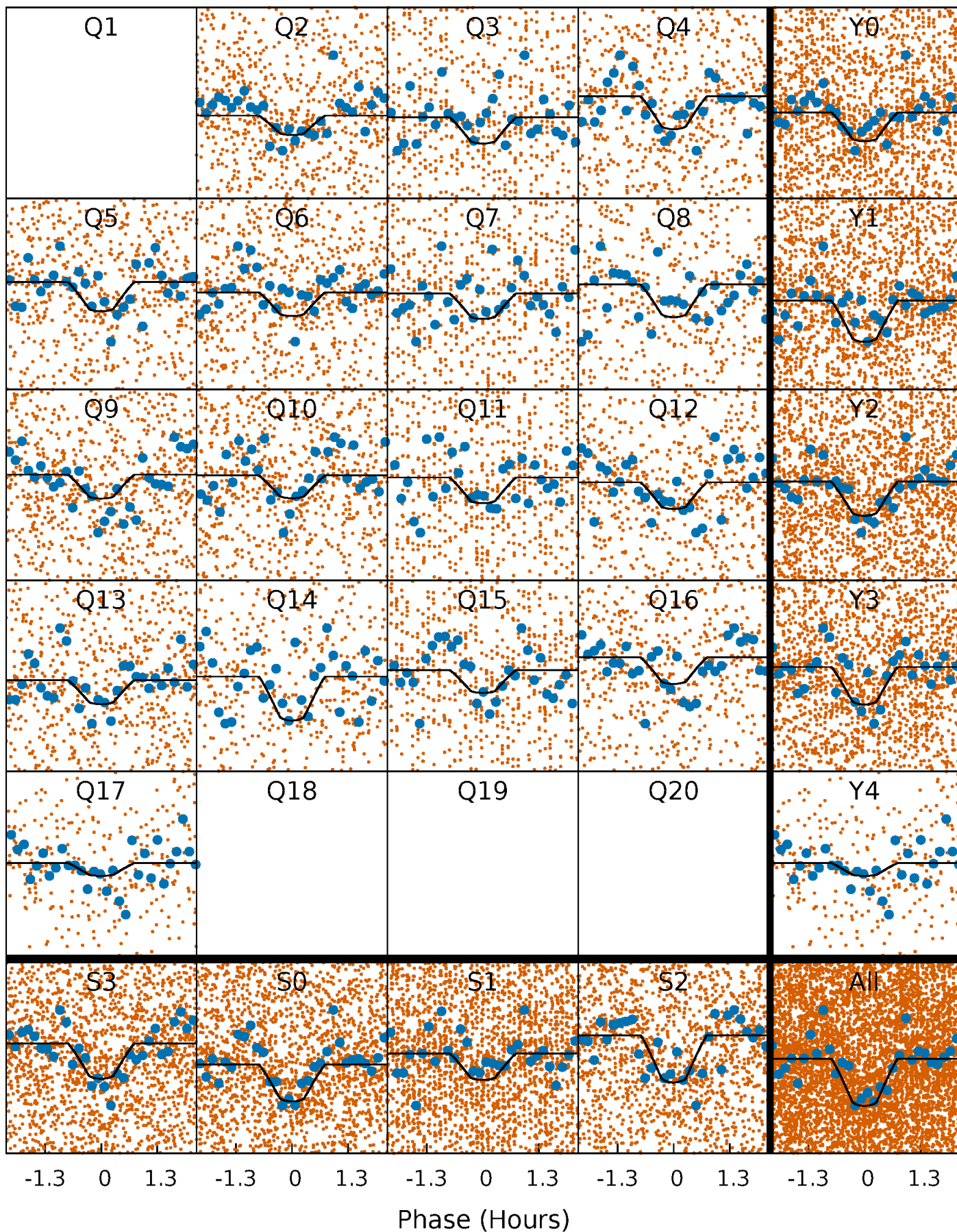
PDC Quarter-Phased Transit Curves

TCE 004157052-02 P= 0.791771 Days $T_0=131.916319$ (BKJD)



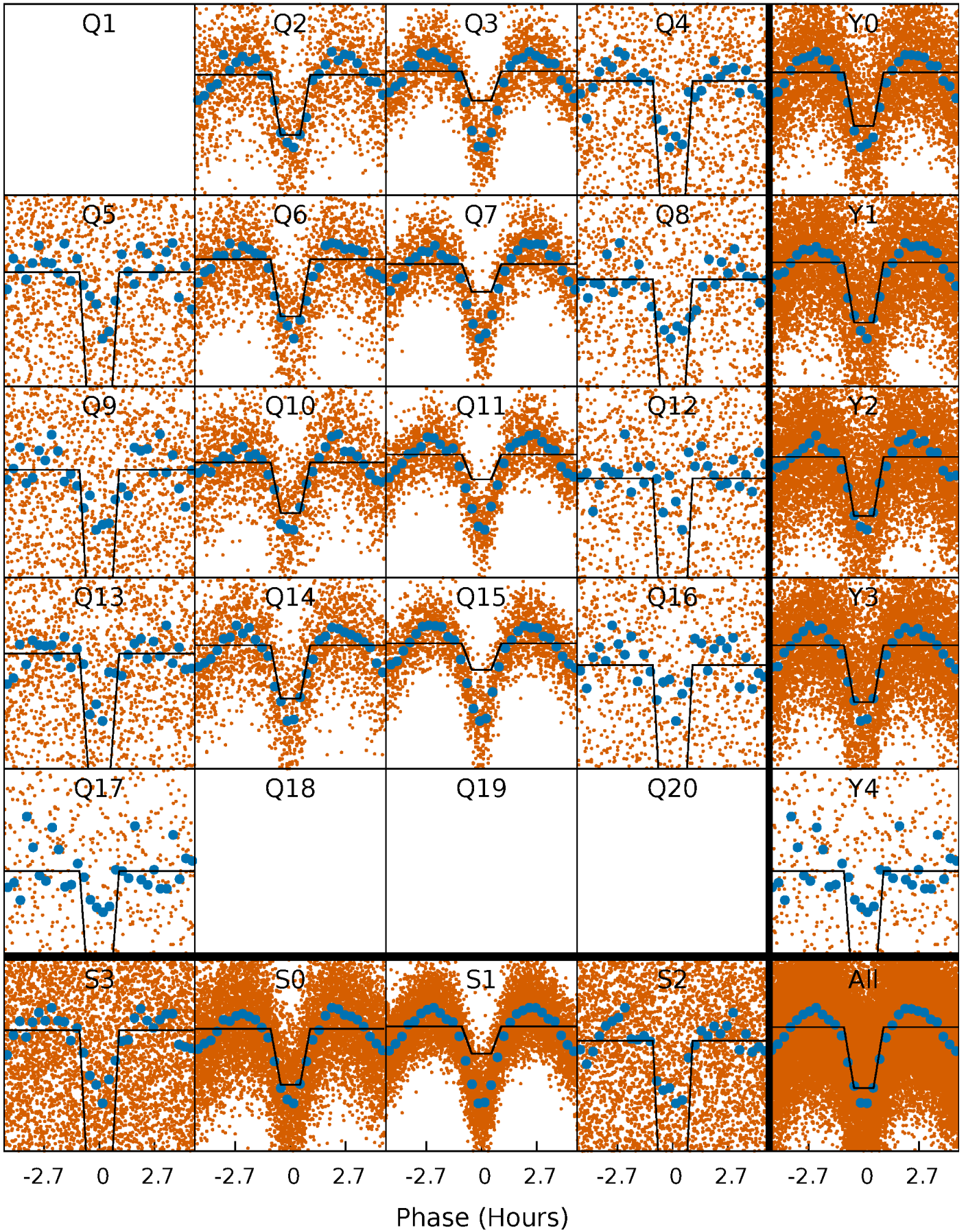
DV Quarter-Phased Transit Curves

TCE 004157052-02 P= 0.791771 Days $T_0=131.916319$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

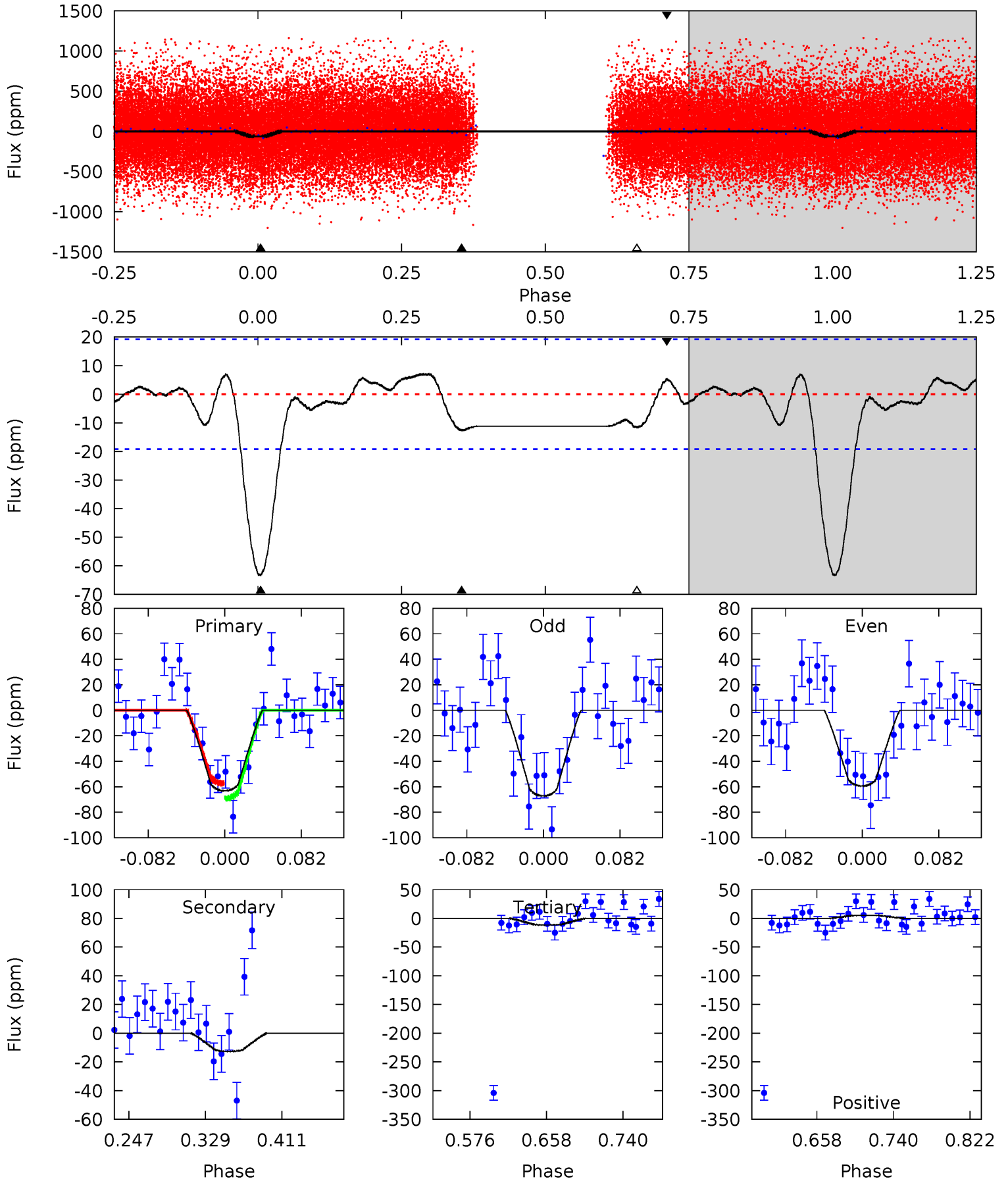
TCE 004157052-02 $P = 0.791774$ Days $T_0 = 131.916646$ (BKJD)



DV Model-Shift Uniqueness Test

004157052-02, P = 0.791771 Days, E = 131.916319 Days

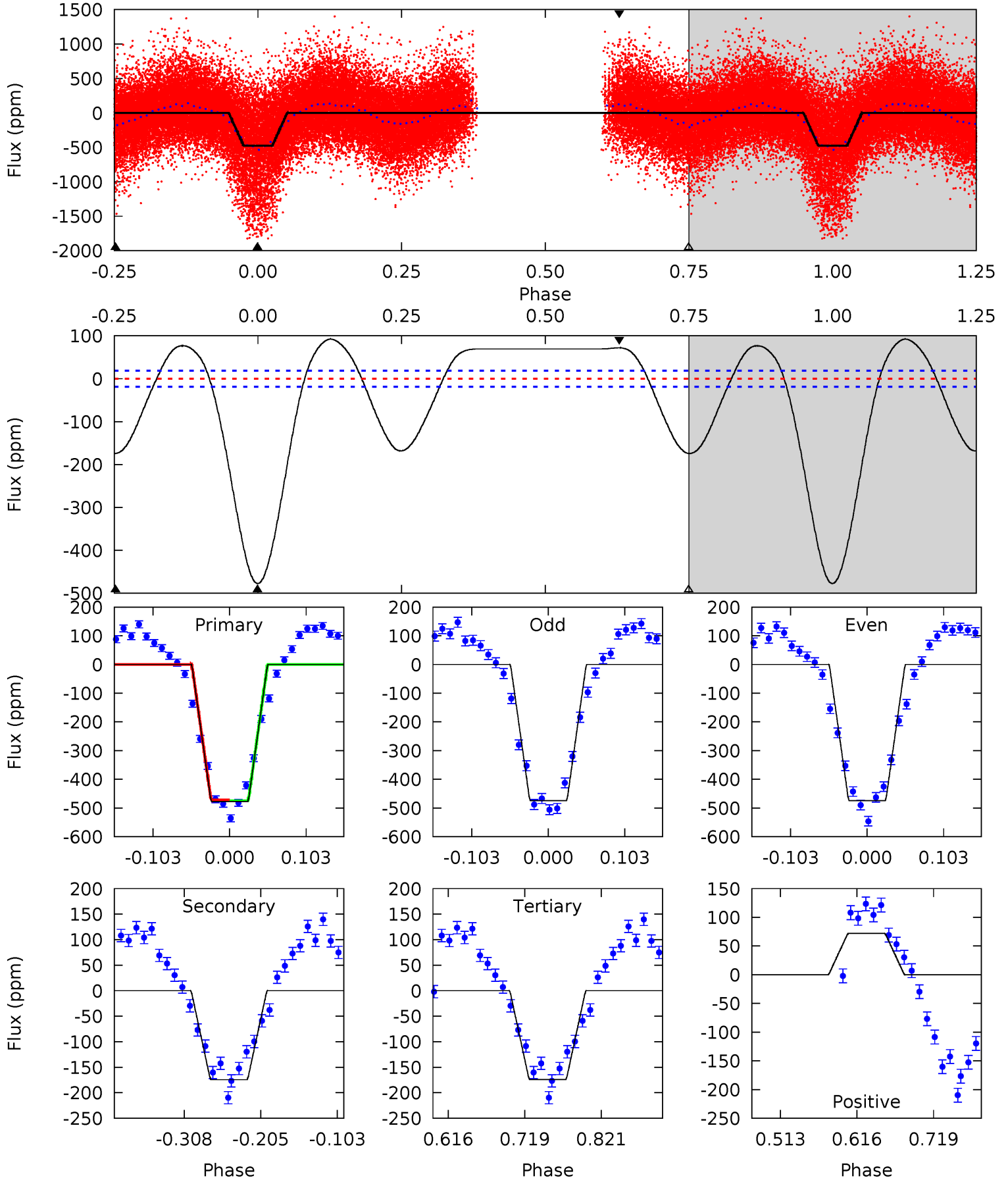
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
15.2	3.05	2.78	1.28	4.61	1.74	1.16	12.4	13.9	0.27	1.77	0.94	0.86	0.10	1.43



Alt Model-Shift Uniqueness Test

004157052-02, P = 0.791774 Days, E = 131.916646 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
115.7	42.2	42.2	17.5	4.56	1.63	22.1	73.5	98.2	0.04	24.8	0.01	1.24	0.16	0.35



Stellar Parameters For KIC 004157052

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6218^{+196}_{-239}	$3.678^{+0.535}_{-0.094}$	$0.240^{+0.150}_{-0.300}$	$3.070^{+0.433}_{-1.733}$	$1.639^{+0.191}_{-0.447}$	$0.080^{+0.562}_{-0.025}$
	+3%/-4%	+15%/-3%	+62%/-125%	+14%/-56%	+12%/-27%	+705%/-32%
Source	PHO54	PHO54	PHO54	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

Secondary Eclipse Parameters for KIC 004157052-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-13 ± 4	$2.61^{+1.53}_{-1.26}$	4625^{+347}_{-634}	3236^{+1588}_{-6942}	$0.385^{+0.959}_{-0.244}$
Alt.	-174 ± 4	$6.26^{+1.87}_{-1.95}$	4674^{+317}_{-636}	4697^{+686}_{-572}	$0.963^{+0.997}_{-0.380}$

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 $A_{obs} \gg 1.0$

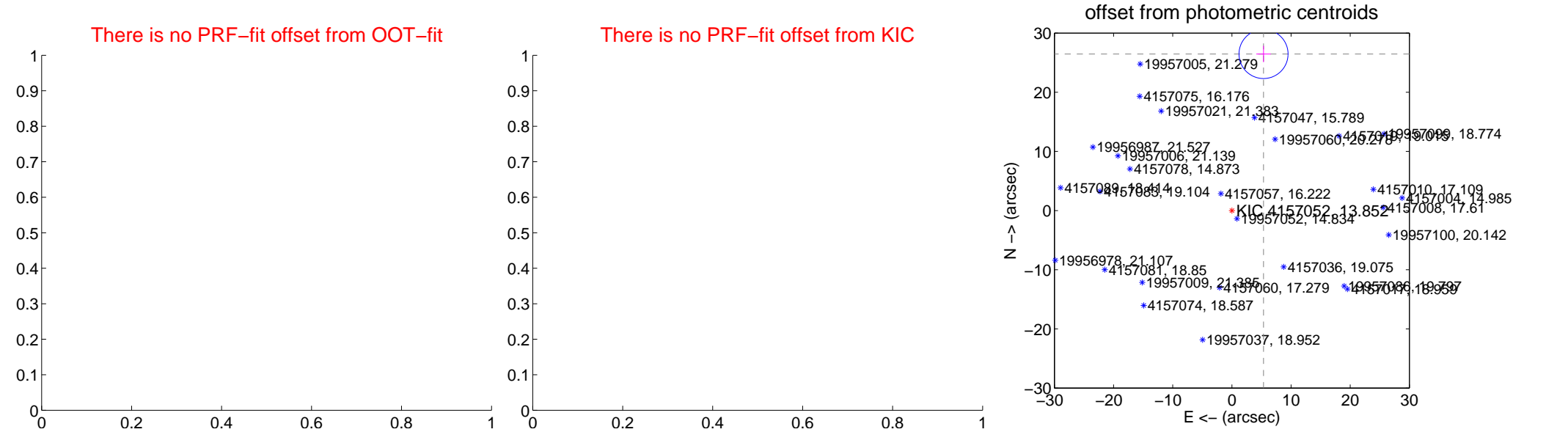
DV Centroid Data

Supplemental centroid analysis for 004157052-02. Kepler magnitude: 13.85. Transit SNR 11.23

There are 0 quarters with good PRF difference image offsets

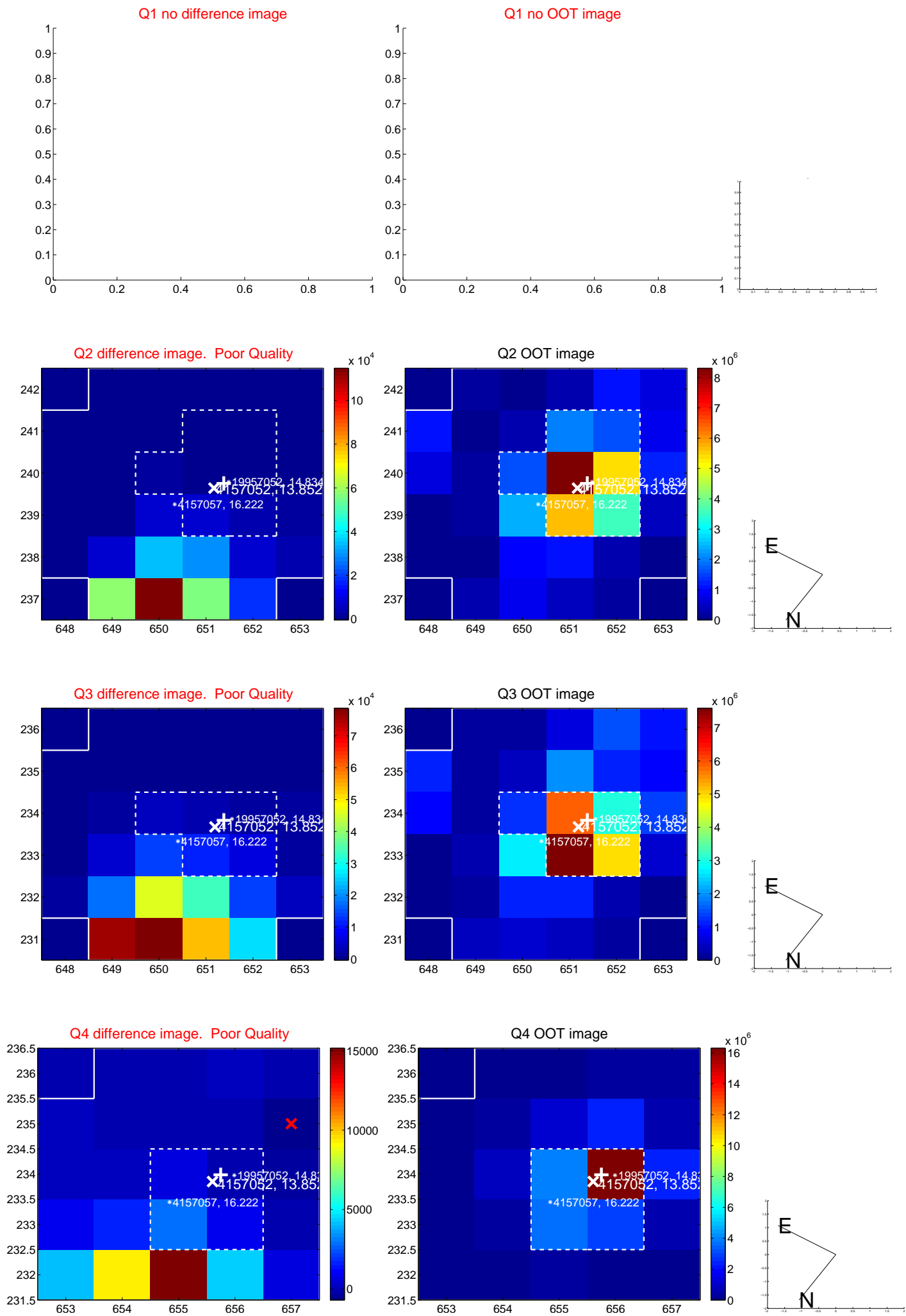
The direct PRF centroid is offset from the target star catalog position by about NaN arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	—	—	—	—
PRF-fit source offset from KIC position	—	—	—	—
photometric centroid source offset	27.00 ± 1.38	19.54	-5.35 ± 1.23	26.46 ± 1.39

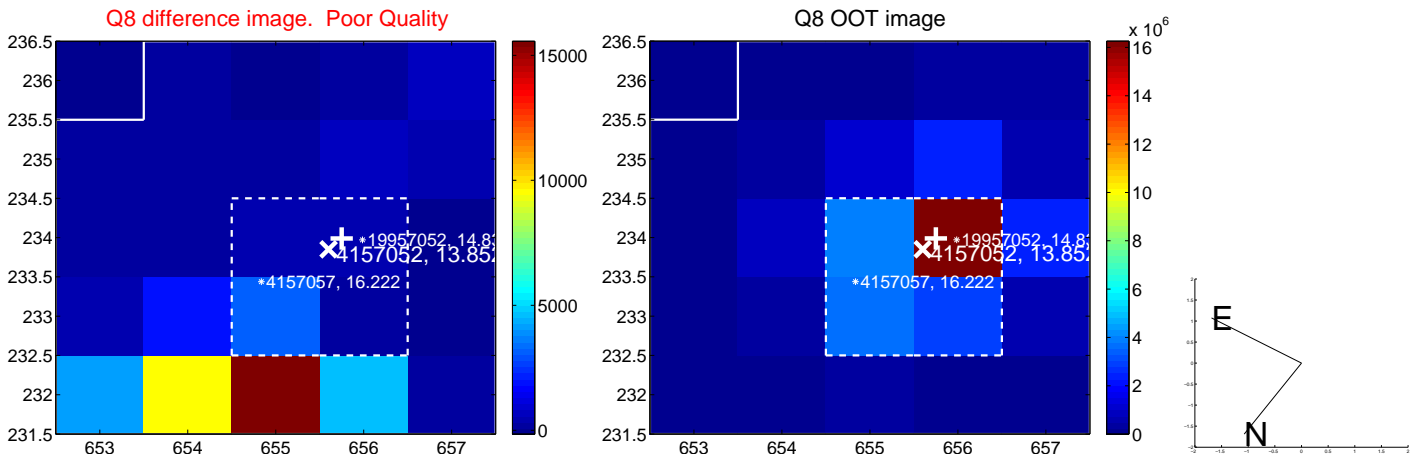
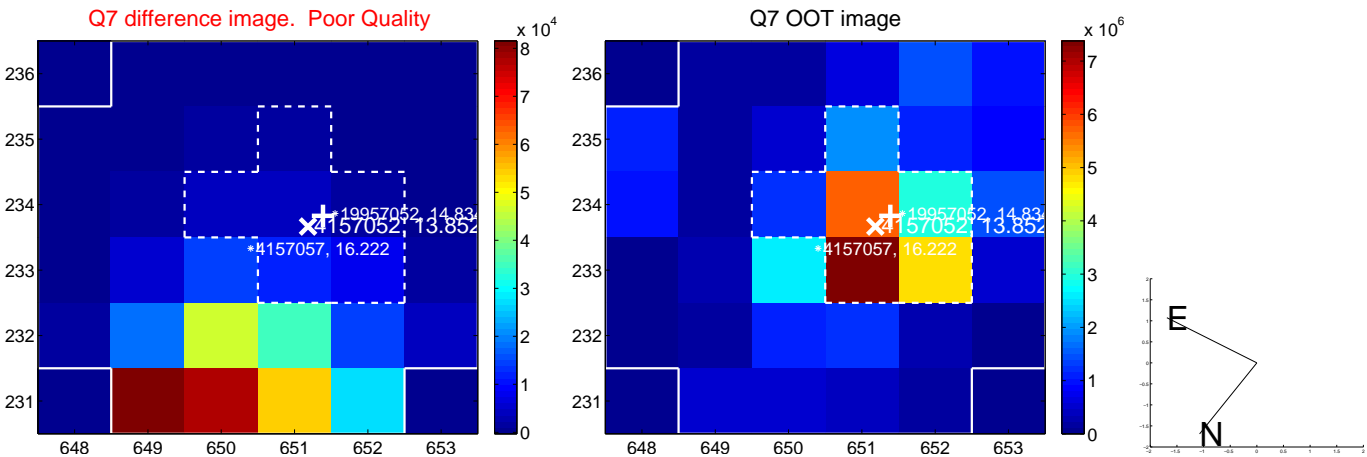
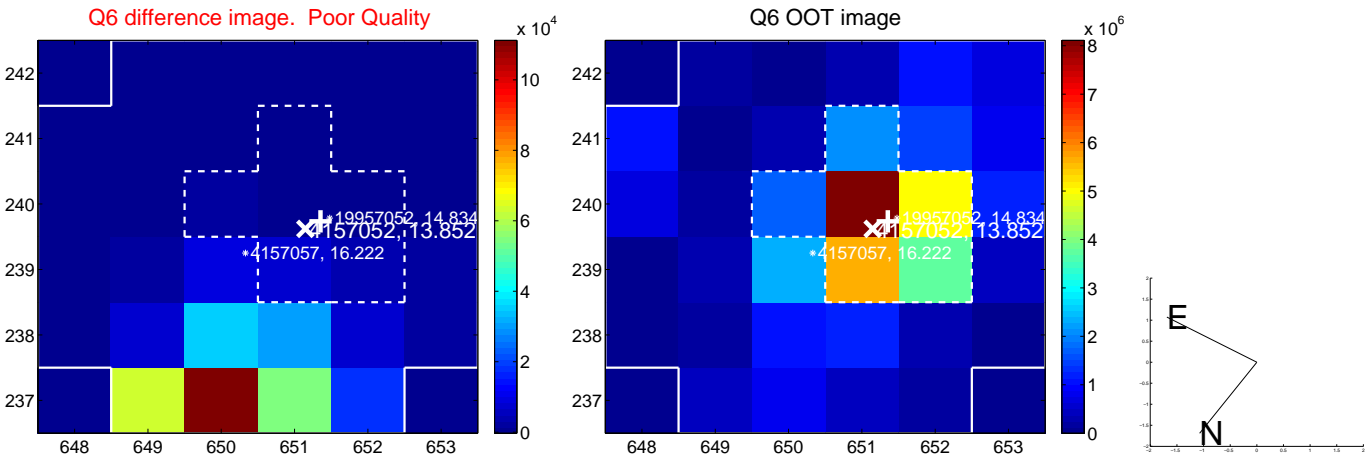
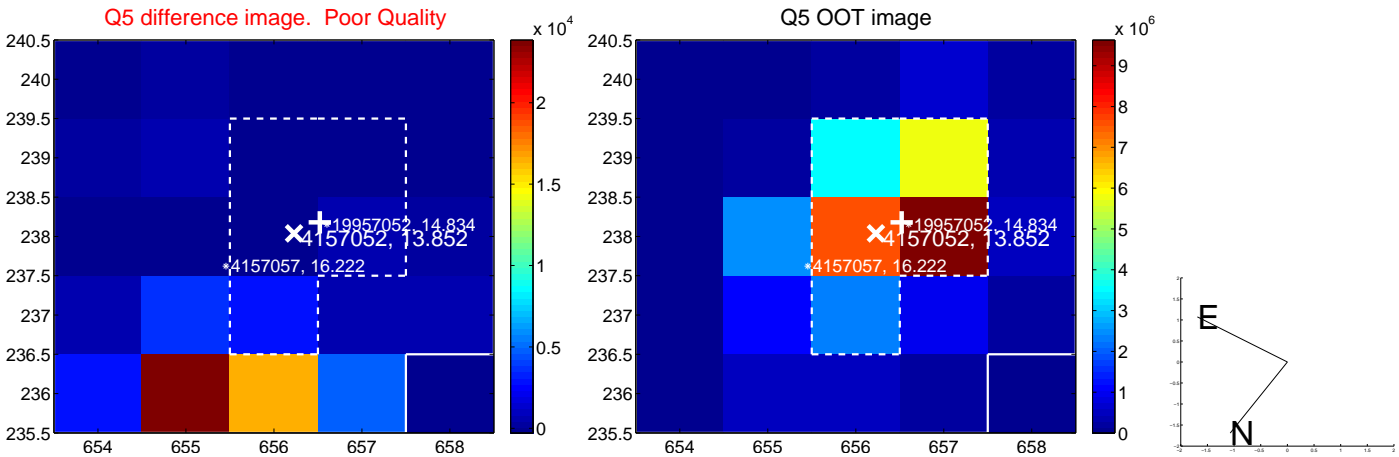


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

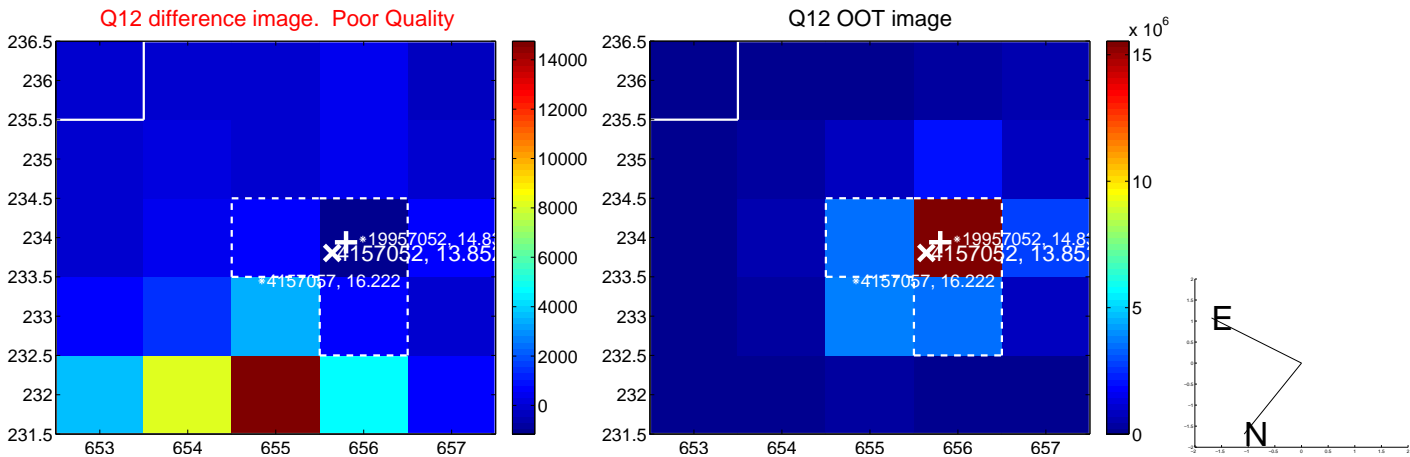
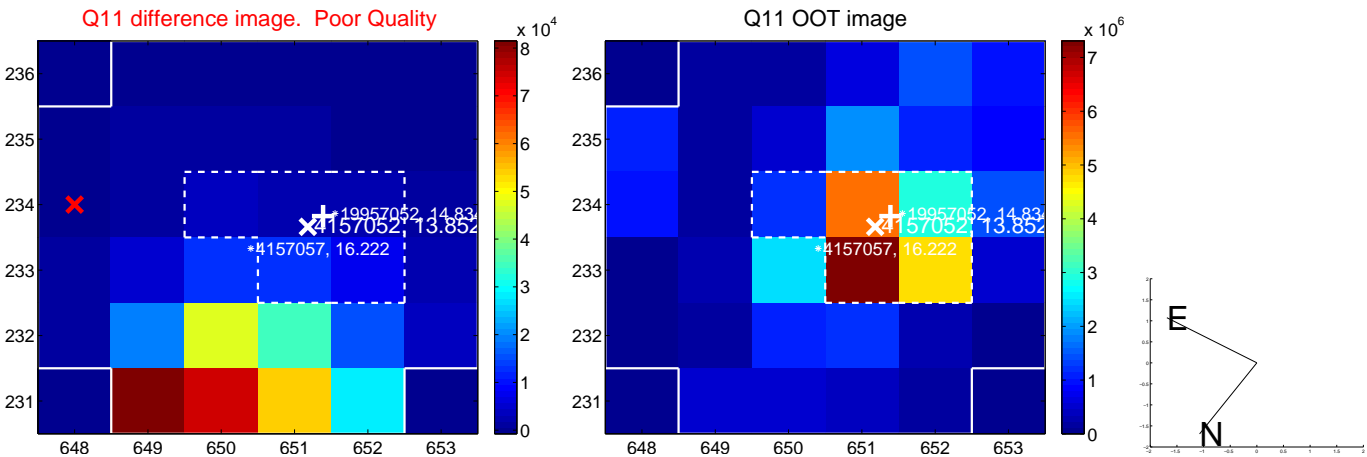
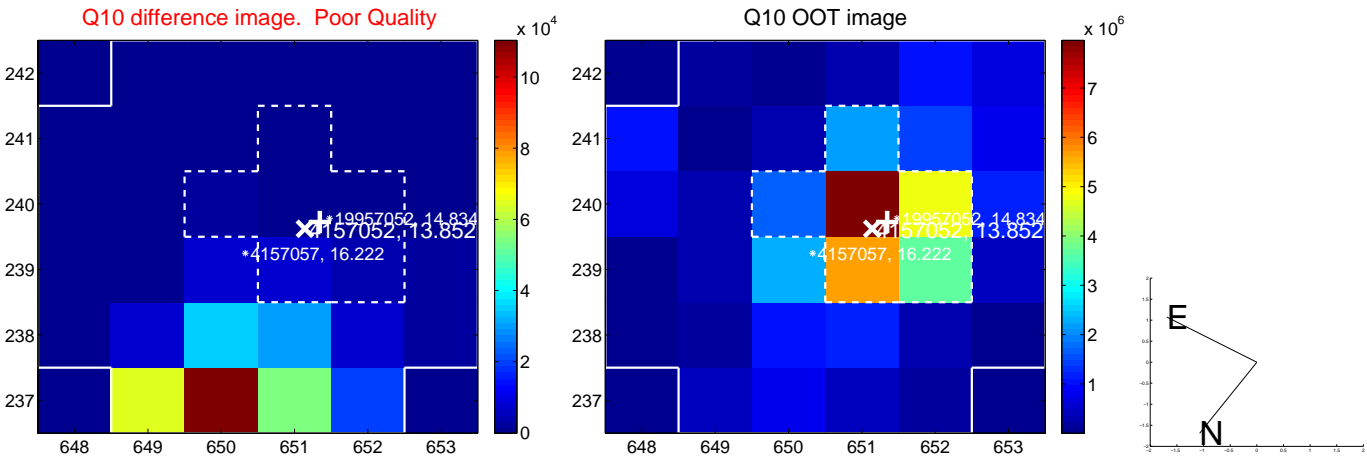
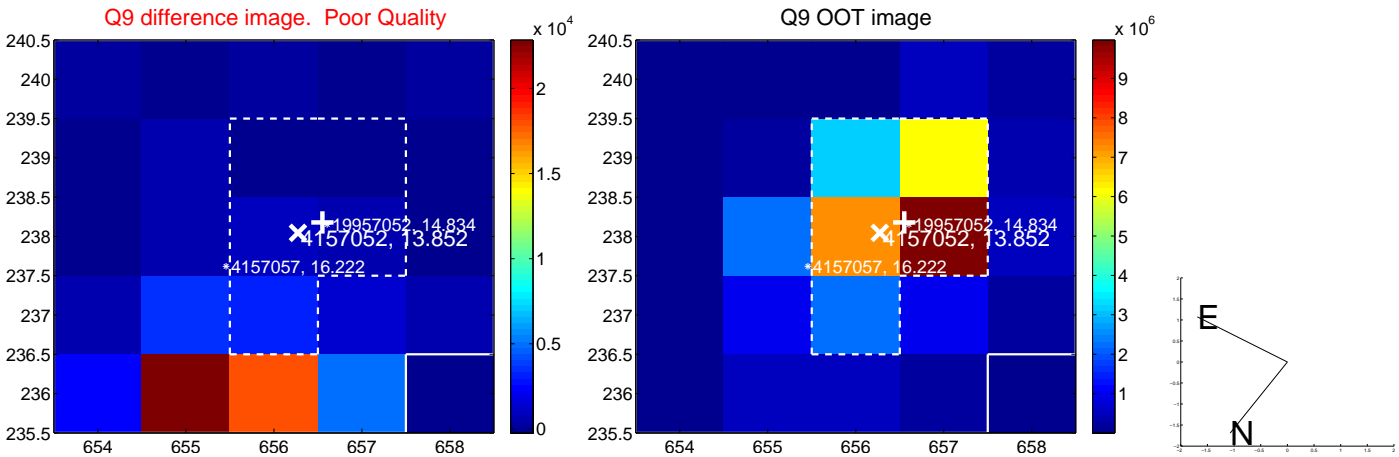
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



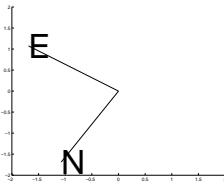
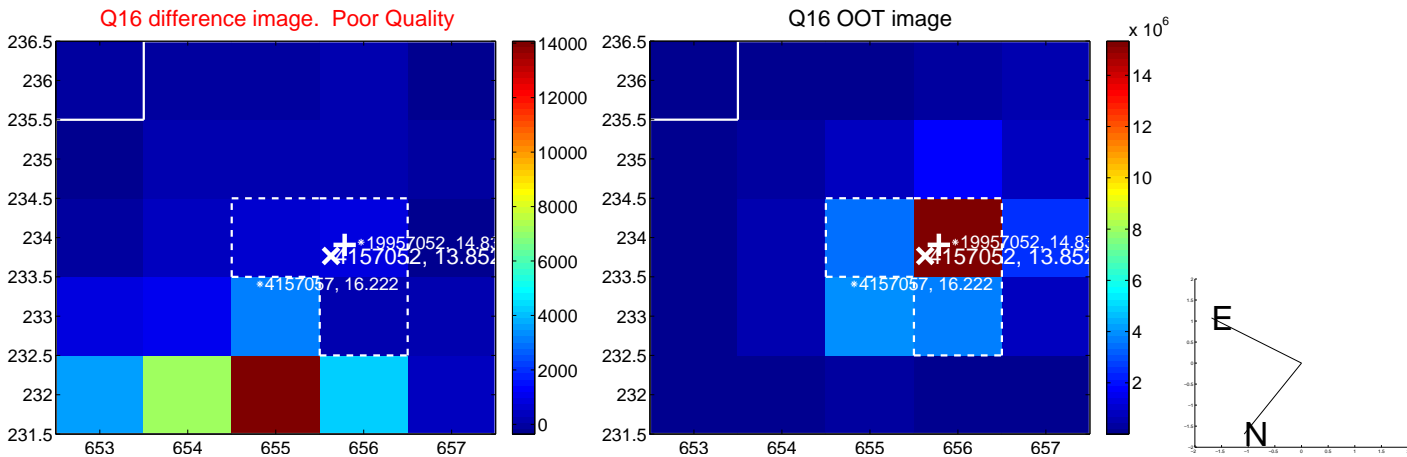
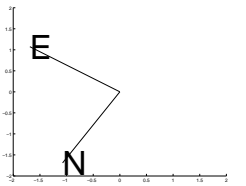
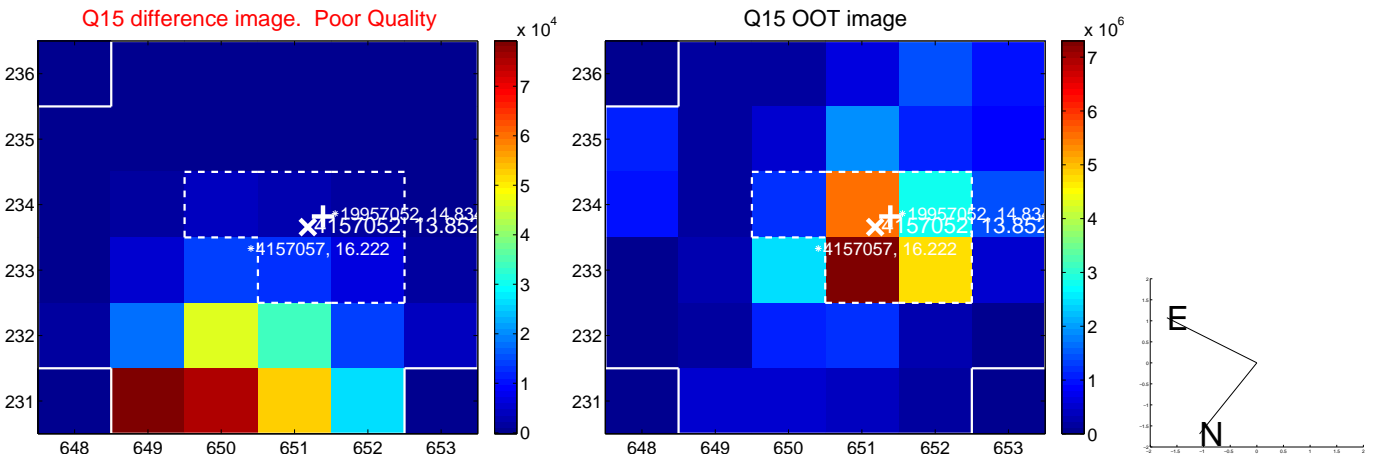
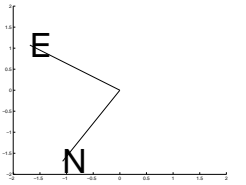
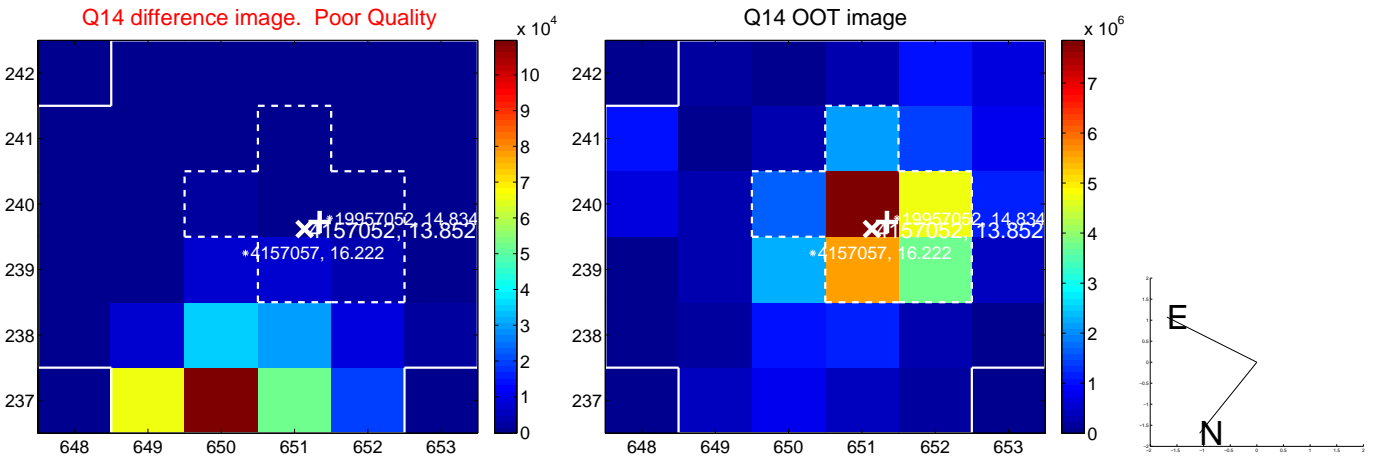
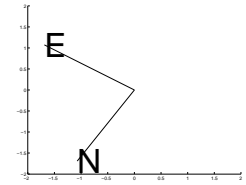
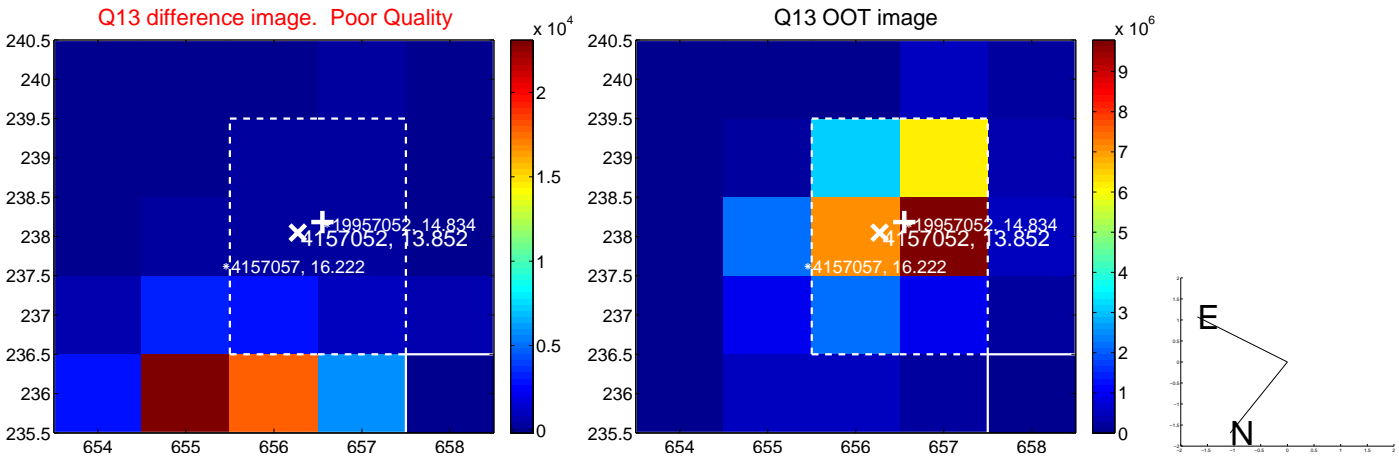
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



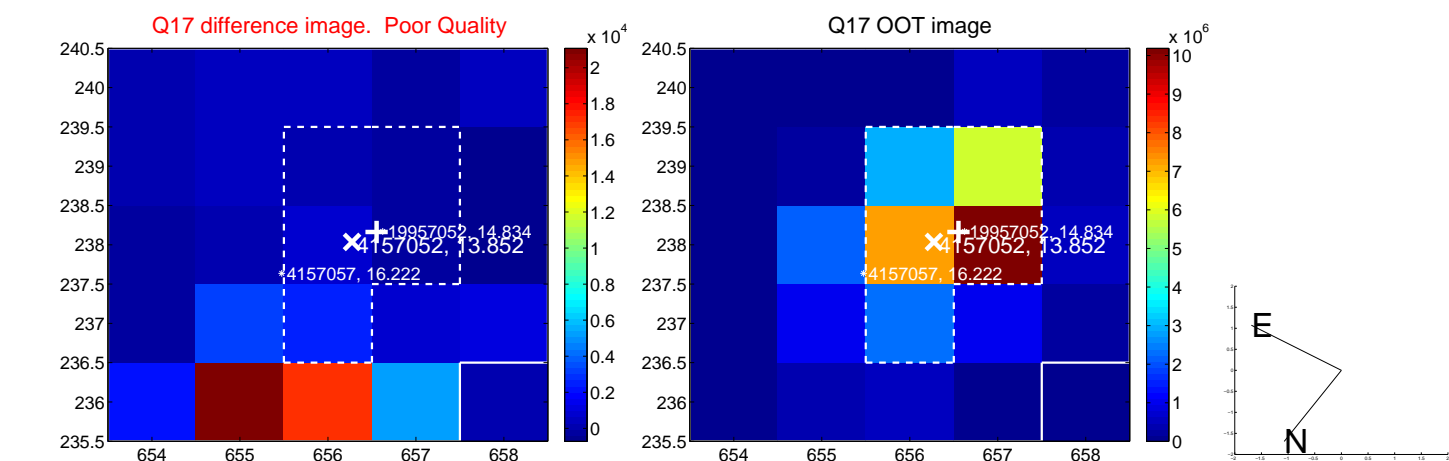
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



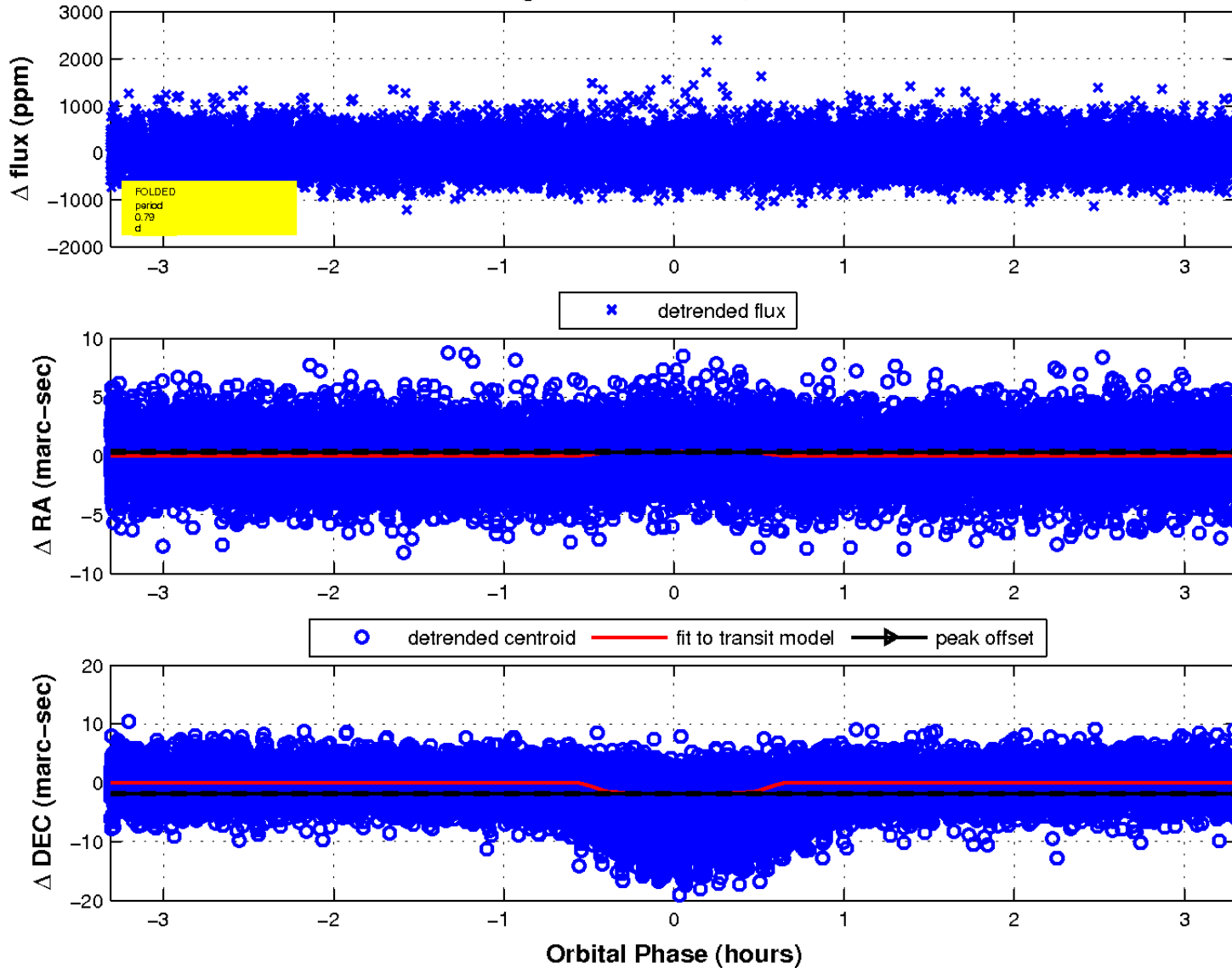
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 2 of 2



UKIRT Image

Declination

