

KIC 005193400

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})
005193400-01	OBS	1580.01	21.378211	147.208888	414.1	16.774	21.9	22.5	1.13	6218	2.39	66.05
005193400-02	OBS	No	21.379616	136.312902	187.5	8.999	8.5	8.5	1.13	6218	1.70	66.04

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005193400-01	OBS	FP	0.00	0	1	1	1	MOD_SEC_DV—HAS_SEC_TCE—CENT_RESOLVED_OFFSET—EPHEM_MATCH
005193400-02	OBS	FP	0.00	1	1	1	1	IS_SEC_TCE—CENT_RESOLVED_OFFSET—HALO_GHOST—EPHEM_MATCH

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

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

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

Ephemeris Match Information For 005193400-01

TCE (1)	KIC	Parent (2)	Parent KIC	$P_1:P_2$	Dist ($''$)	Δ Row	Δ Col	m_2	m_1	D_2/D_1	Mechanism	Flag	σ_P	σ_T
005193400-01	5193400	005193384-01	5193384	1:1	16.6	4	2	19.07	15.69	735.93	Direct-PRF	0	1.07	0.94

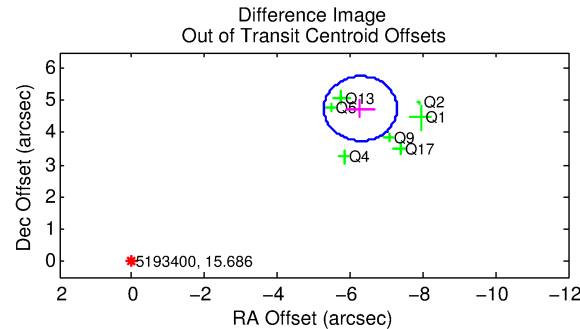
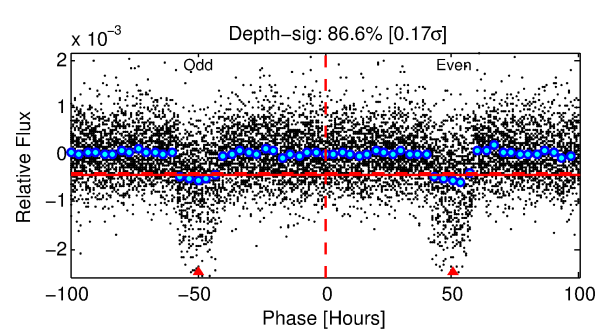
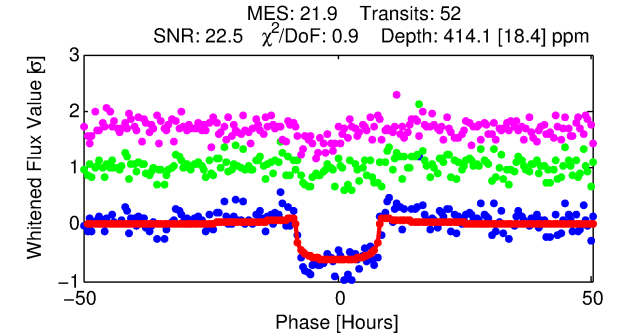
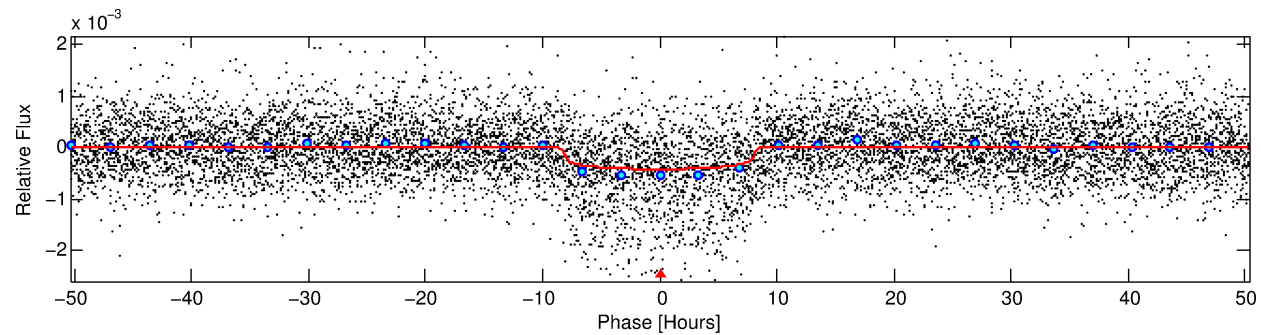
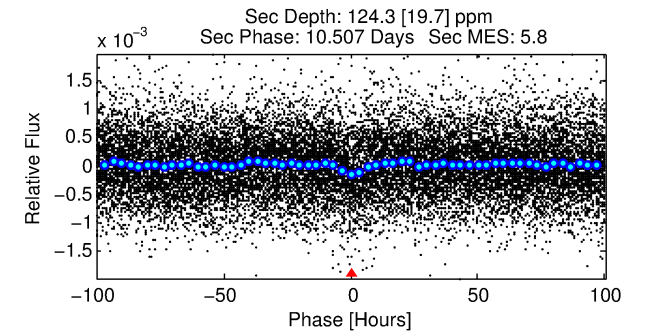
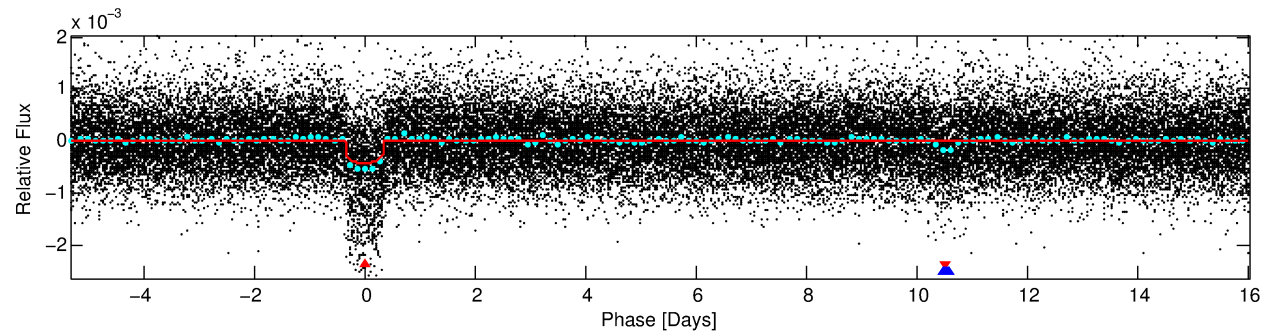
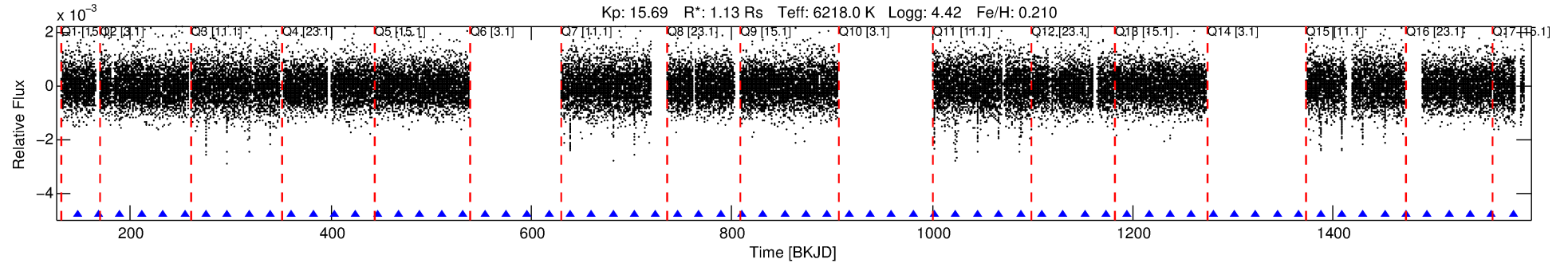
Notes: $P_1:P_2$ is the period ratio. Dist is the distance in arcseconds. Δ Row and Δ Col are the number of pixels apart in row and column. m_2 and m_1 are the magnitudes of the parent and child. D_2/D_1 is the parent's transit depth divided by the child's. σ_P and σ_T are the significance of the match in period and epoch. For a match to be considered significant $\sigma_P < 5.0$ and $\sigma_T < 5.0$. Matches which have σ_P and σ_T very close to this cutoff should receive extra scrutiny, especially if the period ratio is very large.

DV One-Page Summary

KIC: 5193400 Candidate: 1 of 2 Period: 21.378 d

KOI: K01580.01 Corr: 0.921

Kp: 15.69 R*: 1.13 Rs Teff: 6218.0 K Logg: 4.42 Fe/H: 0.210



DV Fit Results:

Period = 21.37821 [0.00025] d
Epoch = 147.2089 [0.0094] BKJD
Rp/R* = 0.0194 [0.0038]
a/R* = 8.26 [7.64]
b = 0.57 [1.12]
Seff = 66.05 [25.90]
Teq = 727 [71] K
Rp = 2.39 [0.85] Re
a = 0.1611 [0.0396] AU
Ag = 310.88 [171.29] [1.81σ]
Teff = 4719 [536] K [7.39σ]

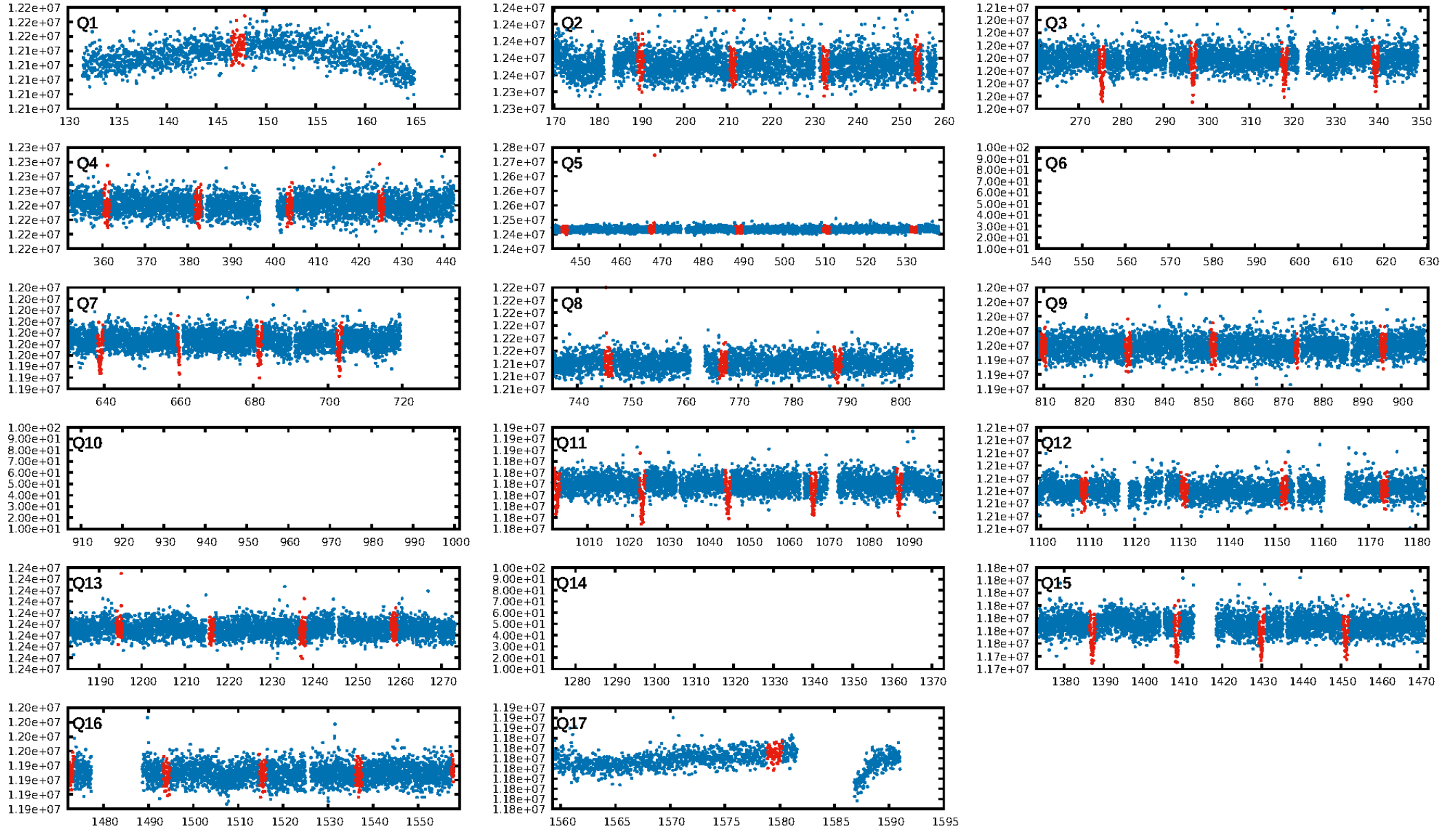
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.1% [0.00σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 3.73e-103
RollingBand-fgt: 1.00 [50/50]
GhostDiagnostic-chr: -0.4538
Centroid-sig: 0.0%
Centroid-so: 12.341 arcsec [17.58σ]
OotOffset-rm: 7.875 arcsec [23.46σ]
KicOffset-rm: 7.550 arcsec [25.54σ]
OotOffset-st: 1/0/1/5 [7]
KicOffset-st: 1/0/1/5 [7]
DiffImageQuality-fgm: 1.00 [7/7]
DiffImageOverlap-fno: 1.00 [14/14]

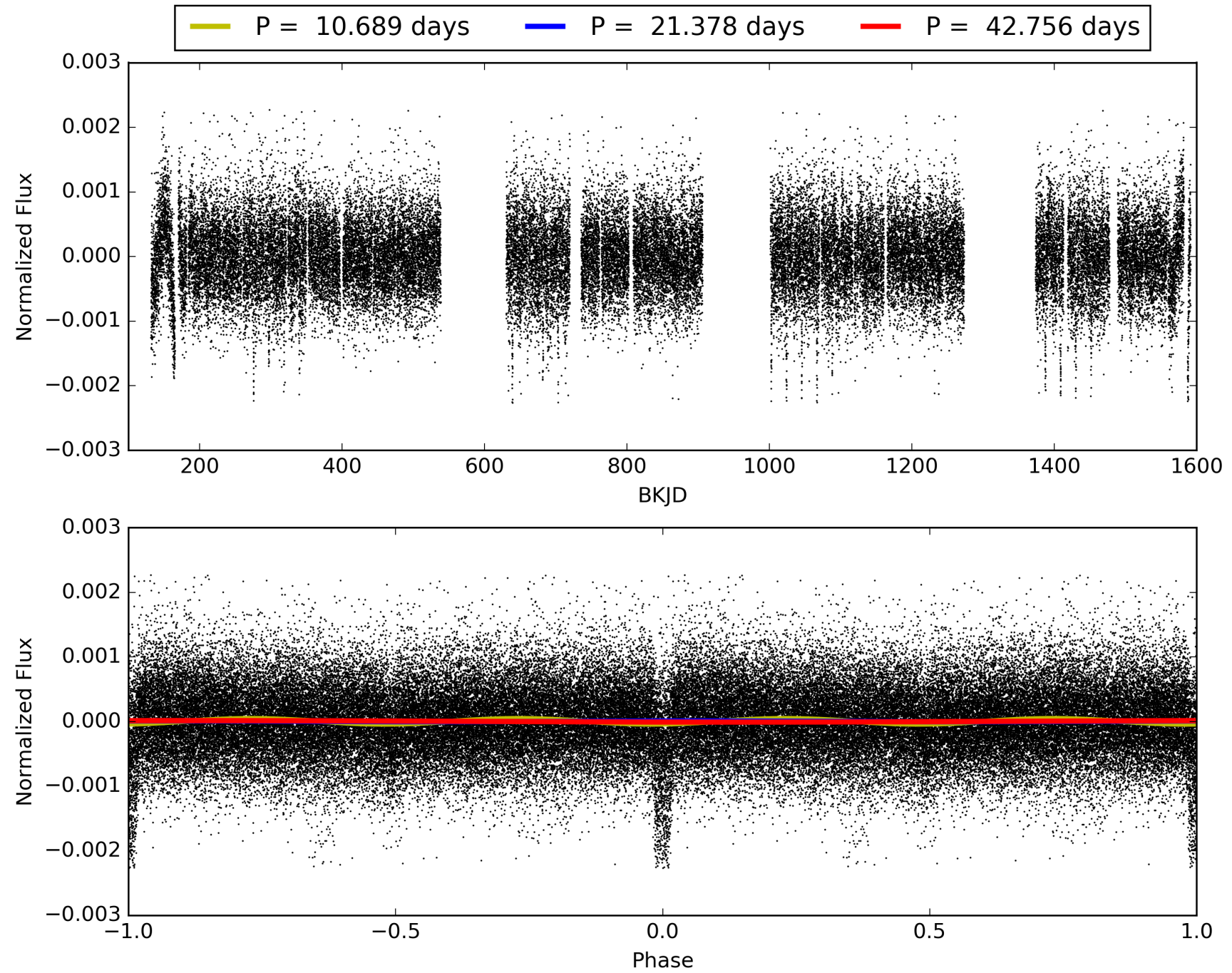
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 005193400-01, PDC Light Curves

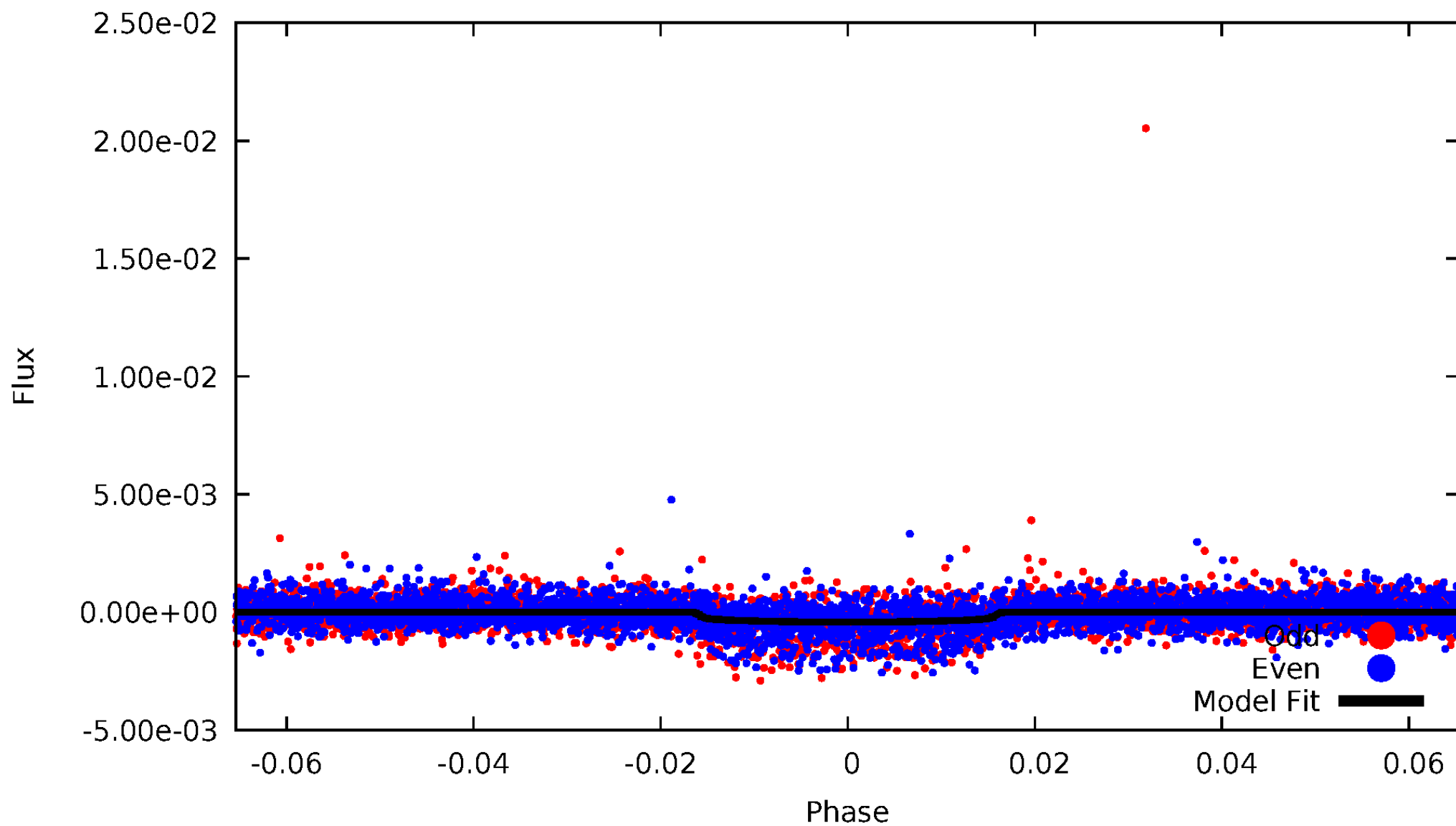


TCE 005193400-01



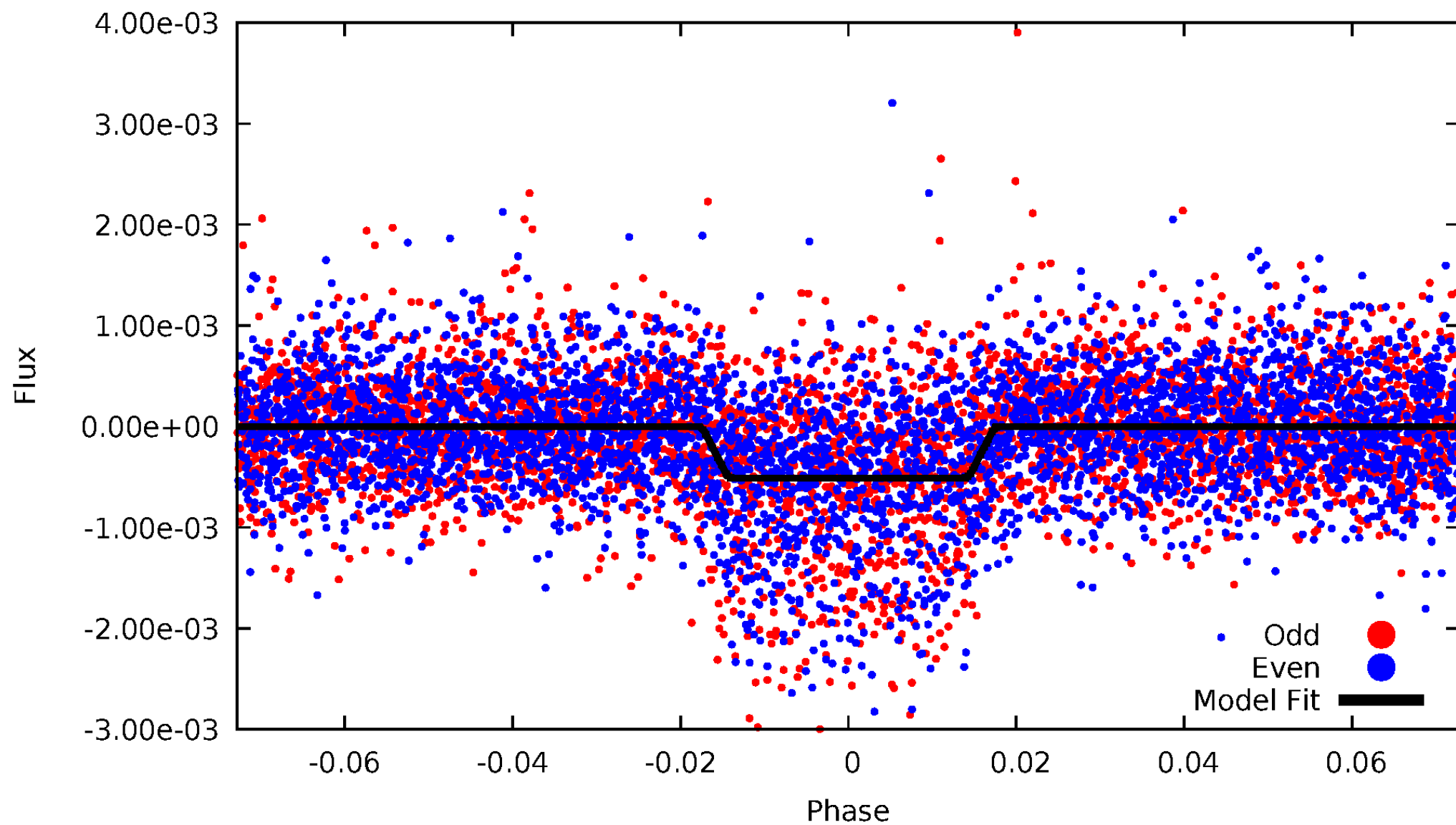
DV Odd/Even

TCE 005193400-01

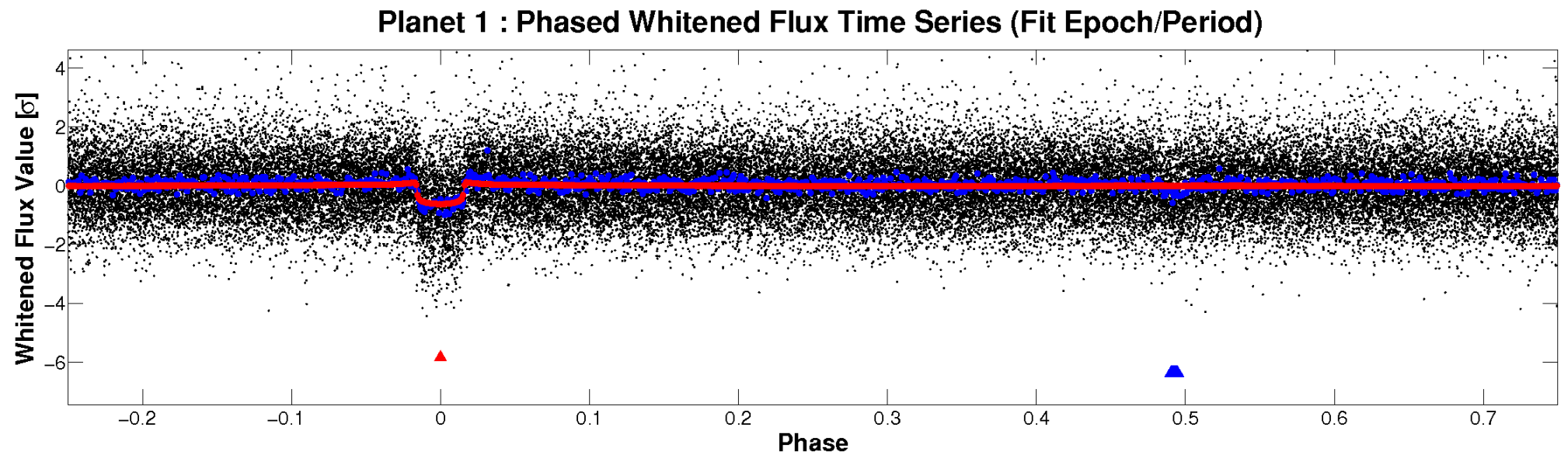
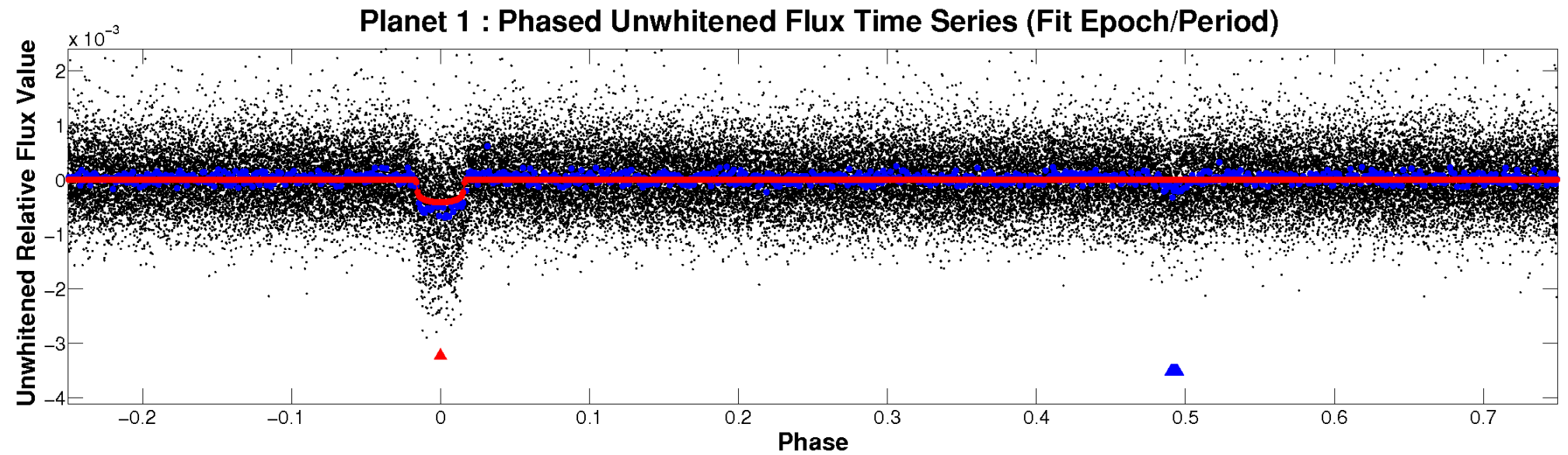


ALT Odd/Even

TCE 005193400-01

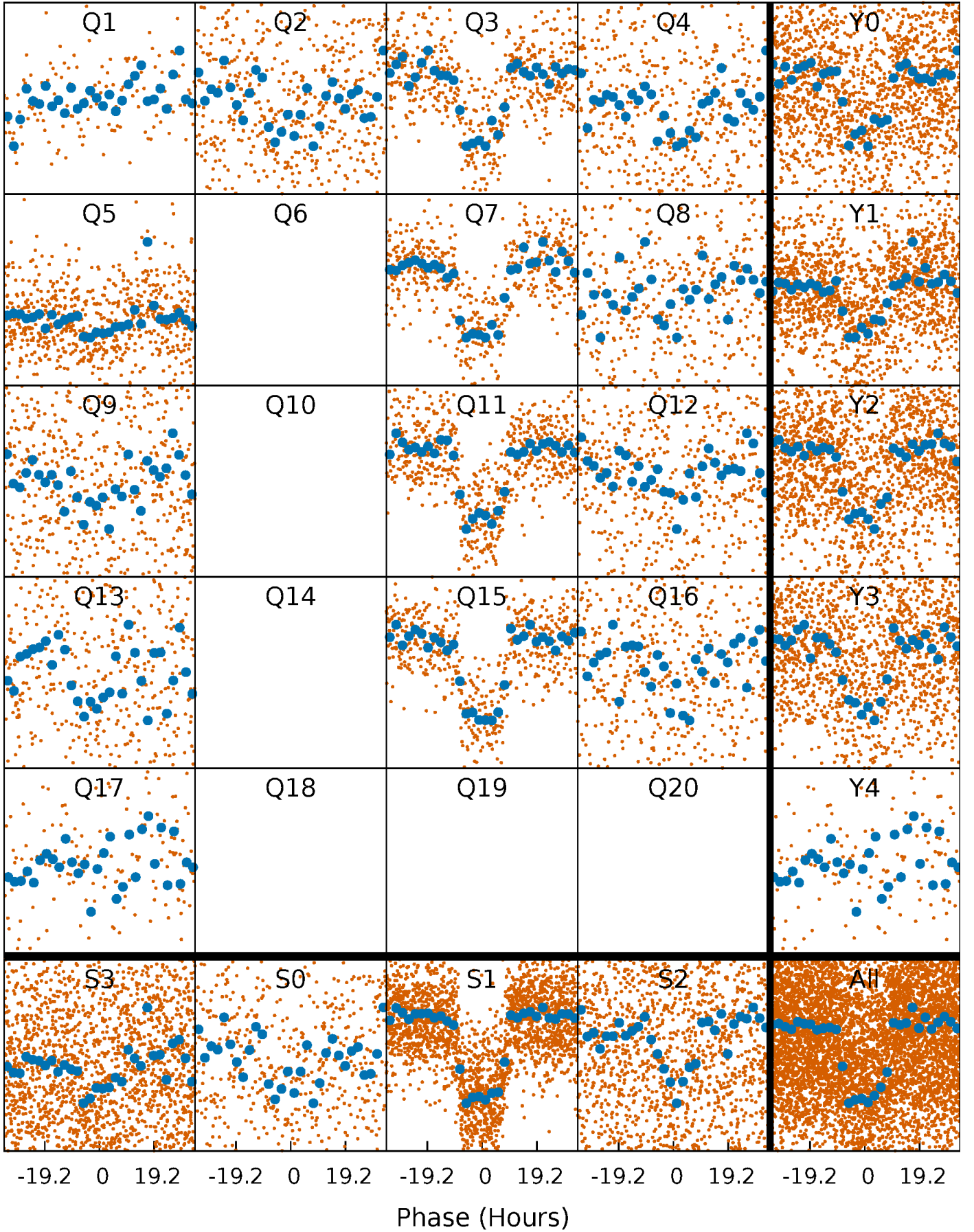


Non-Whitened Vs. Whitened Light Curve



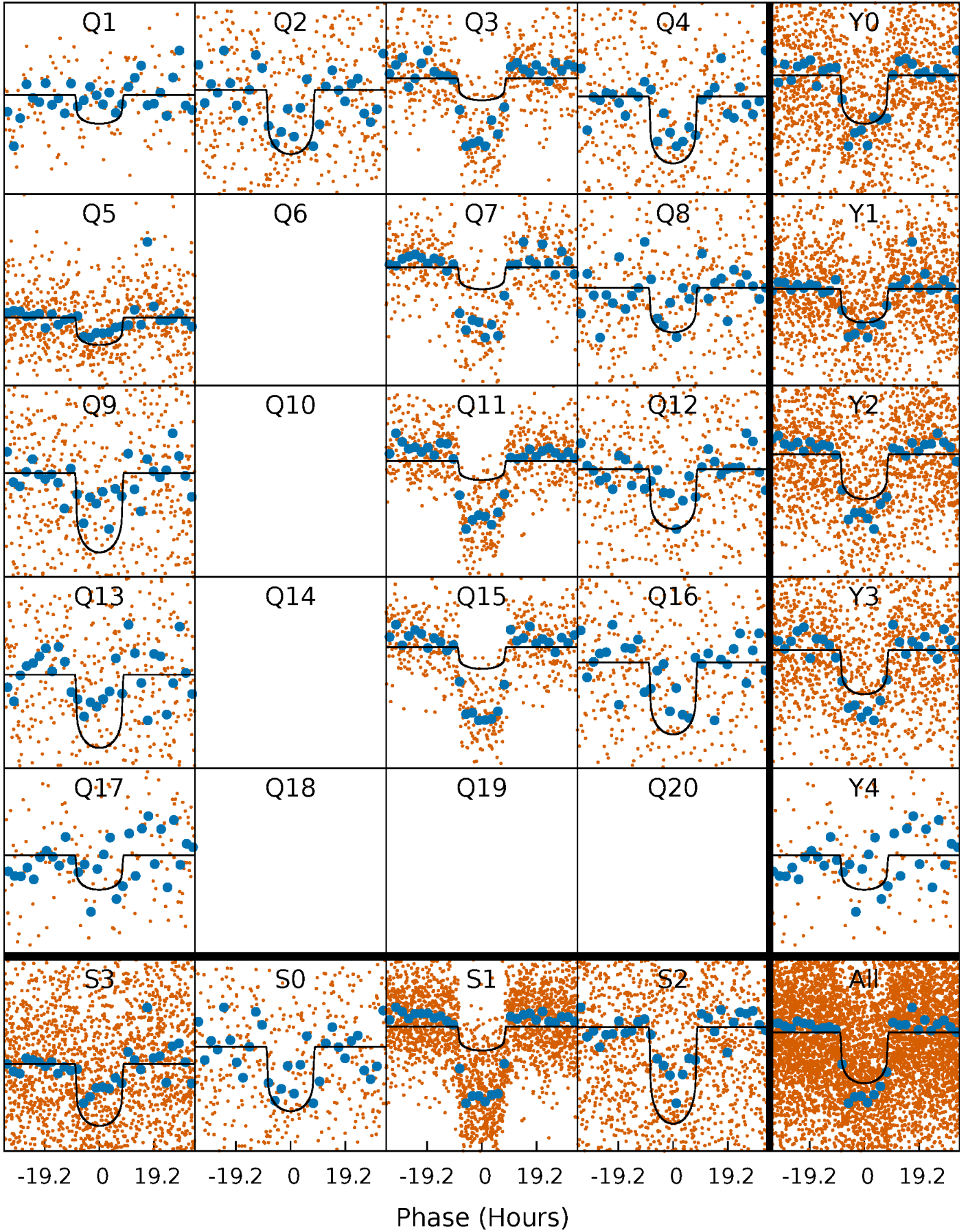
PDC Quarter-Phased Transit Curves

TCE 005193400-01 $P = 21.378211$ Days $T_0 = 147.208888$ (BKJD)



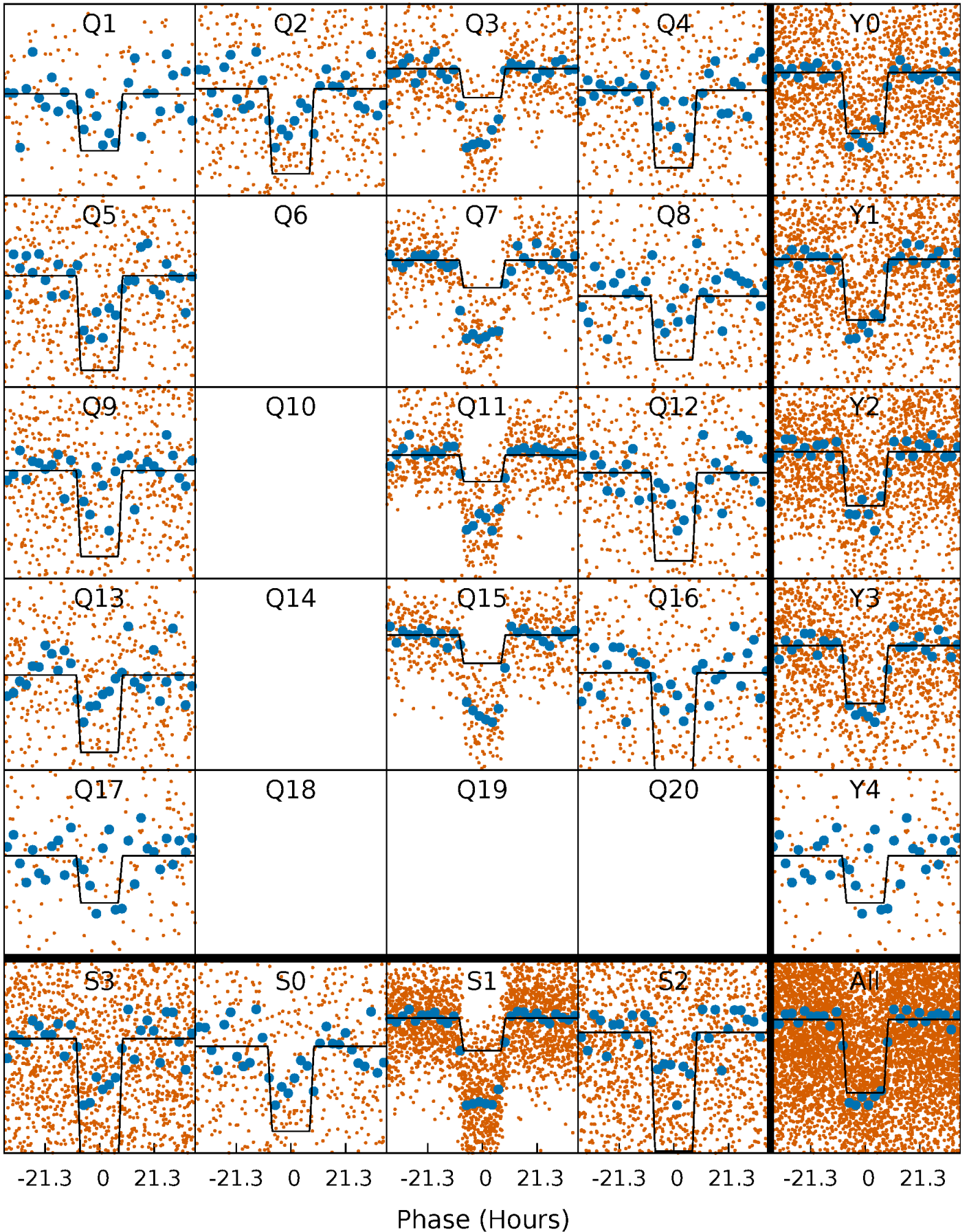
DV Quarter-Phased Transit Curves

TCE 005193400-01 P= 21.378211 Days $T_0=147.208888$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

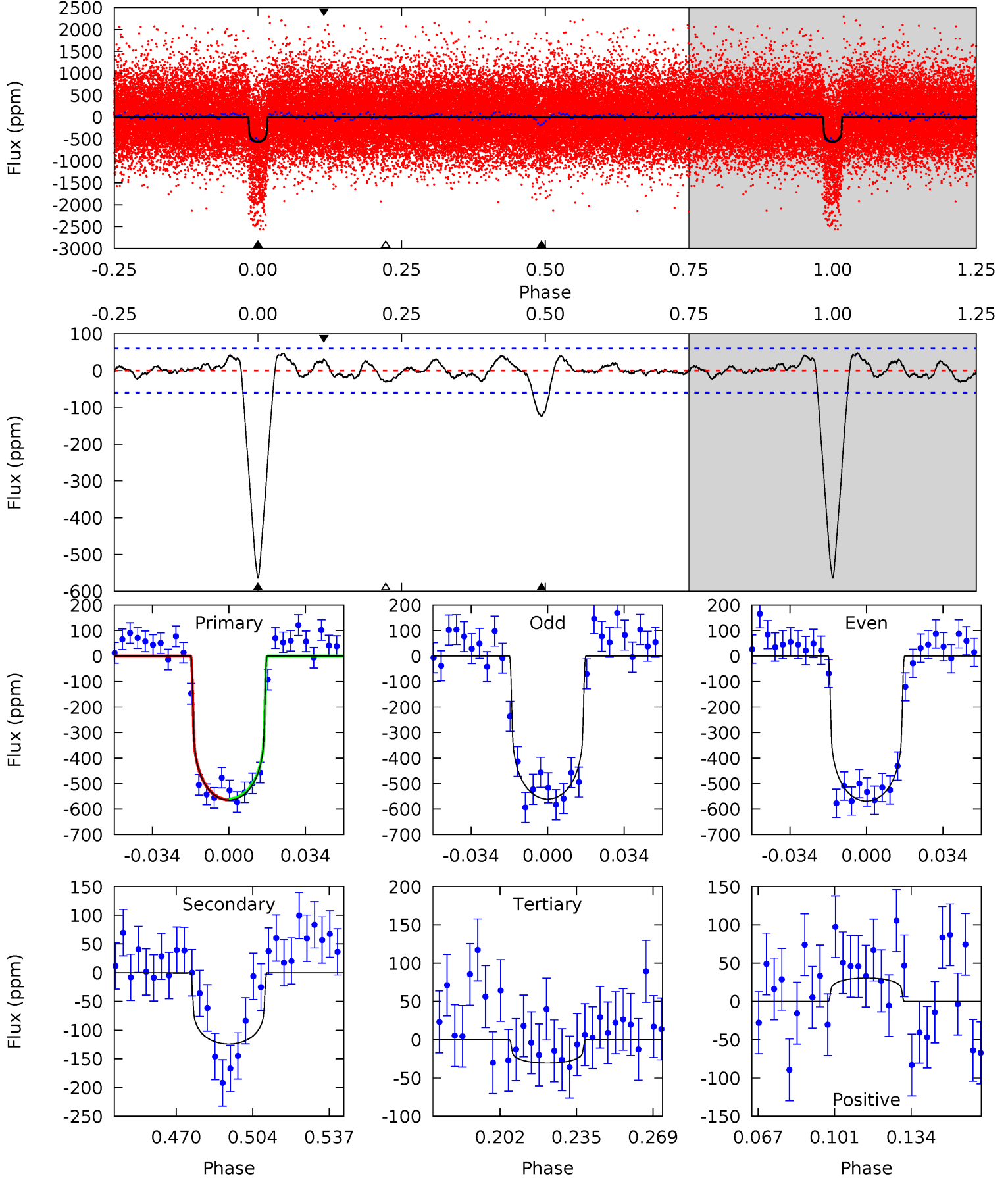
TCE 005193400-01 P= 21.377190 Days $T_0=147.247027$ (BKJD)



DV Model-Shift Uniqueness Test

005193400-01, P = 21.378211 Days, E = 125.830677 Days

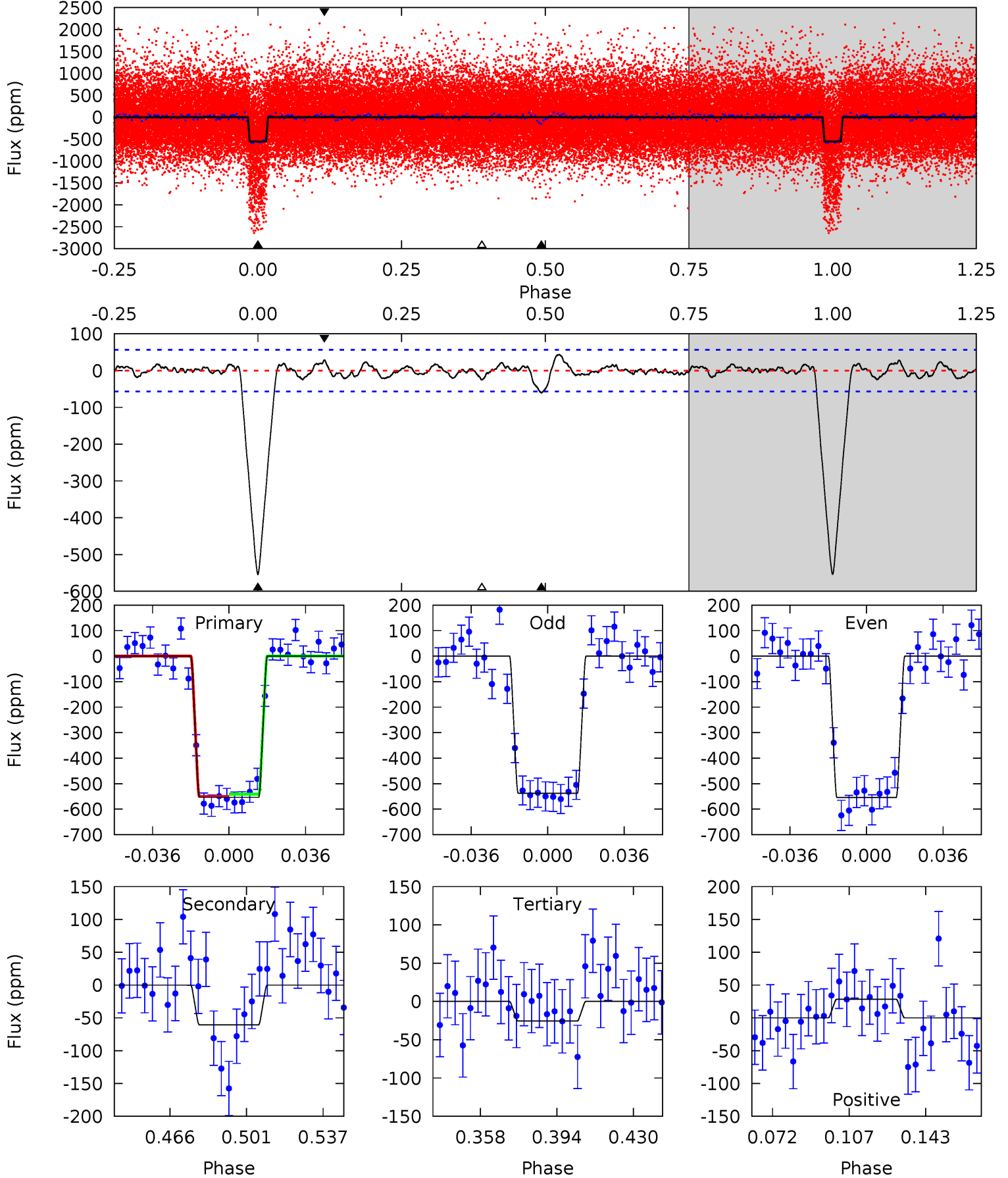
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
45.3	9.96	2.45	2.46	4.79	2.12	1.28	42.8	42.8	7.51	7.50	0.31	2.05	0.08	0.14



Alt Model-Shift Uniqueness Test

005193400-01, P = 21.377190 Days, E = 125.869837 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
46.6	5.09	2.15	2.40	4.78	2.10	0.90	44.5	44.2	2.95	2.70	0.71	2.02	0.07	0.39



Stellar Parameters For KIC 005193400

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6218^{+174}_{-261}	$4.417^{+0.048}_{-0.192}$	$0.210^{+0.150}_{-0.300}$	$1.131^{+0.334}_{-0.119}$	$1.219^{+0.143}_{-0.172}$	$1.187^{+0.310}_{-0.592}$
	+3%/-4%	+1%/-4%	+71%/-143%	+30%/-11%	+12%/-14%	+26%/-50%
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 005193400-01 / KOI 1580.01

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-124 ± 12	$2.48^{+0.60}_{-0.50}$	1035^{+64}_{-52}	4808^{+524}_{-369}	276^{+169}_{-92}
Alt.	-61 ± 12	$2.94^{+0.58}_{-0.53}$	1037^{+72}_{-53}	3950^{+317}_{-282}	98^{+50}_{-36}

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 $A_{obs} \gg 1.0$

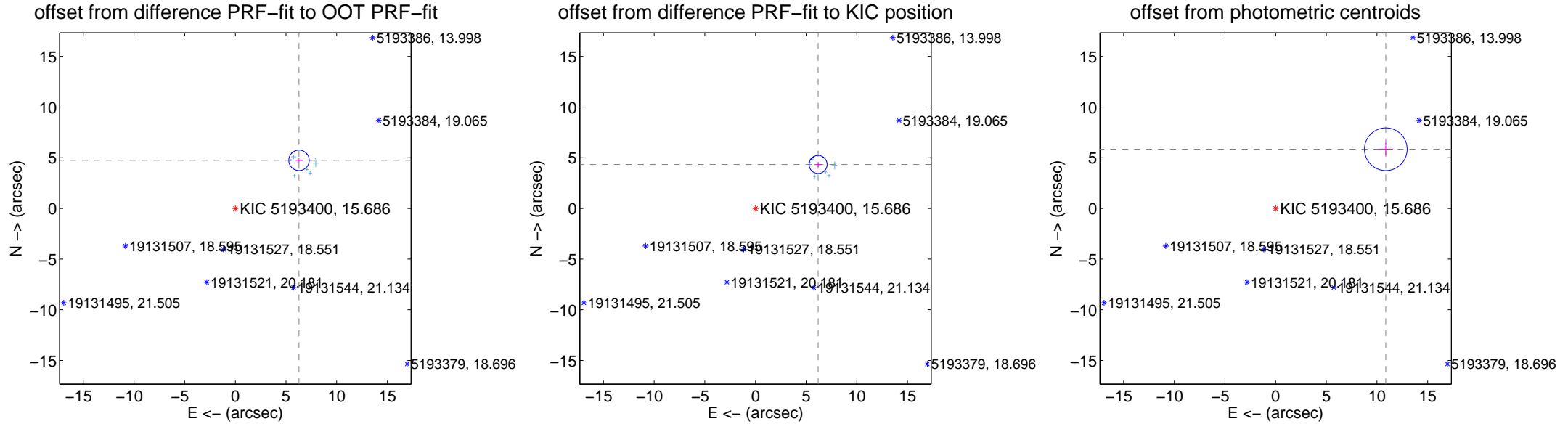
DV Centroid Data

Supplemental centroid analysis for 005193400-01. Kepler magnitude: 15.69. Transit SNR 22.54

There are 7 quarters with good PRF difference image offsets

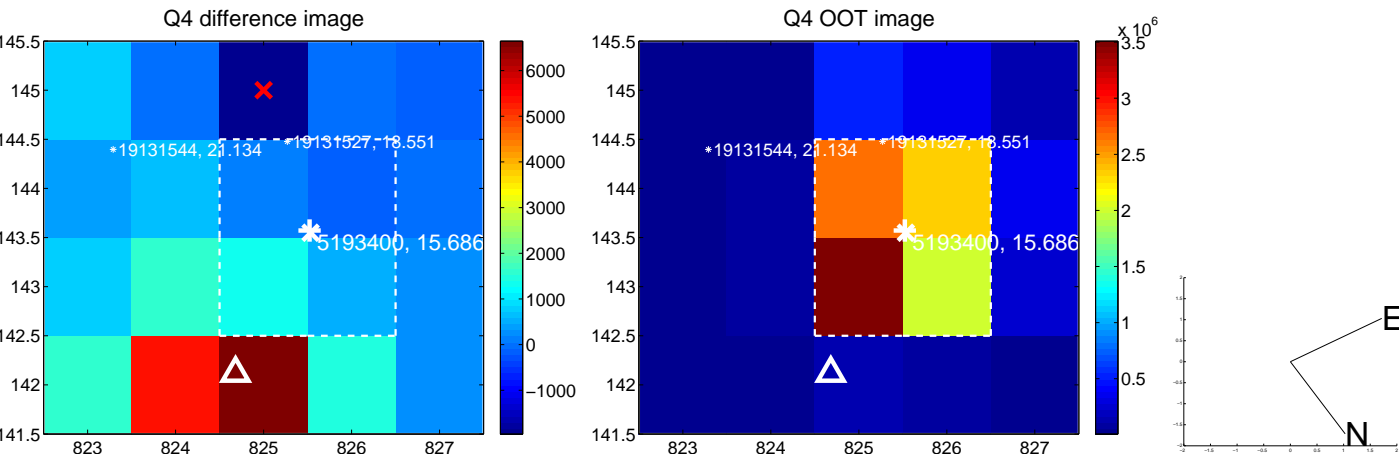
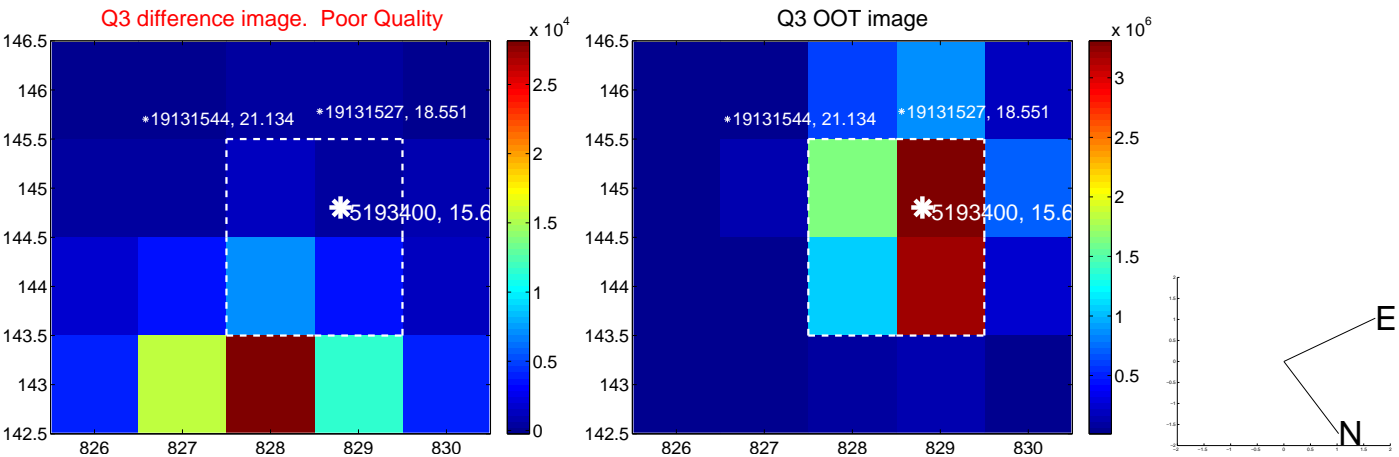
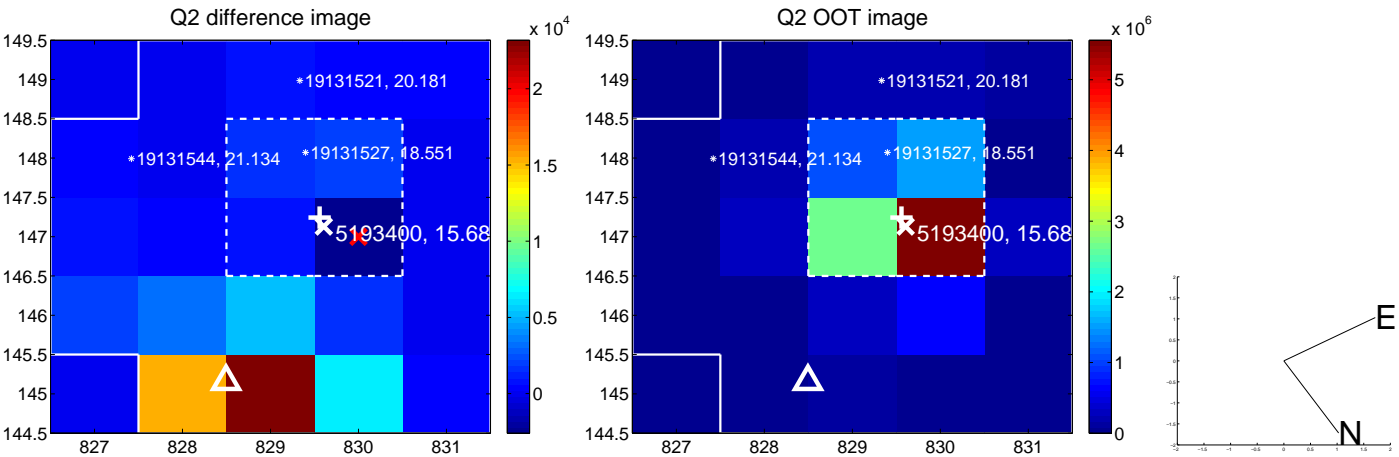
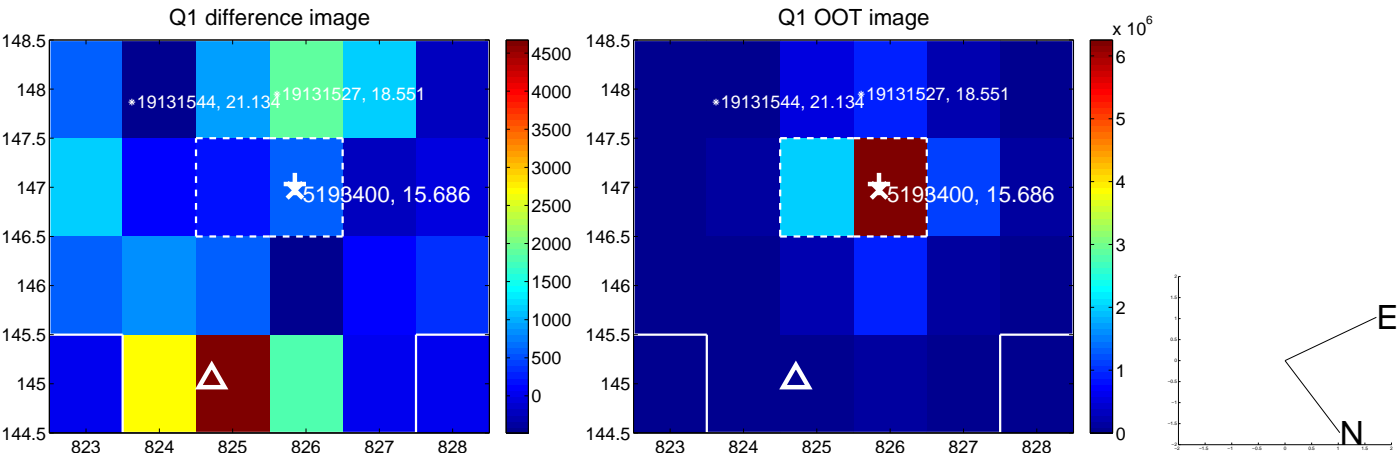
The direct PRF centroid is offset from the target star catalog position by about 0.29 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	7.875 ± 0.336	23.46	-6.283 ± 0.378	4.746 ± 0.239
PRF-fit source offset from KIC position	7.550 ± 0.296	25.54	-6.180 ± 0.346	4.338 ± 0.257
photometric centroid source offset	12.34 ± 0.70	17.58	-10.87 ± 0.72	5.84 ± 0.63

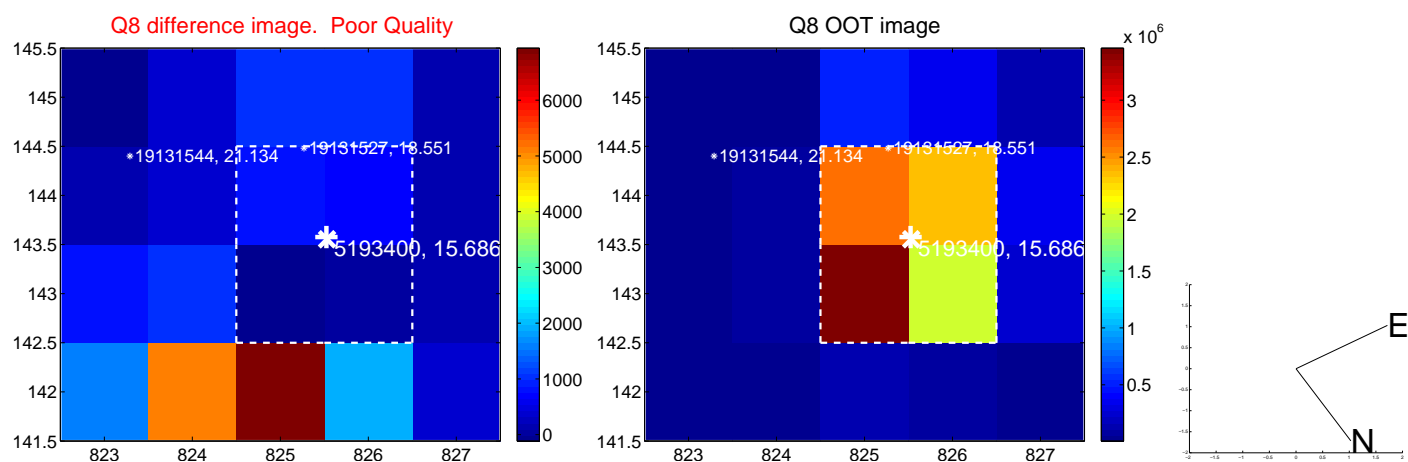
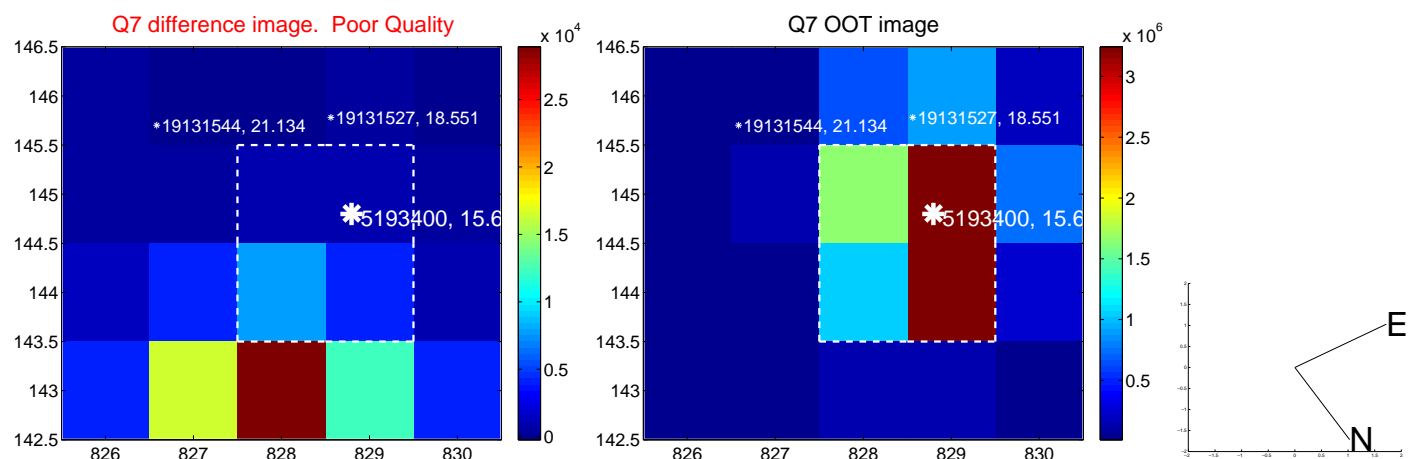
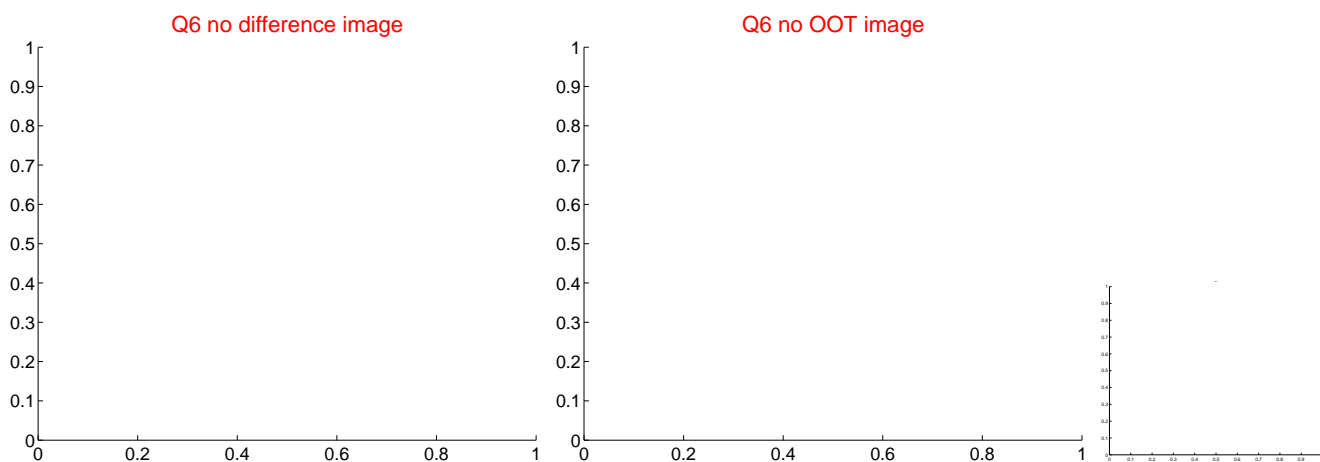
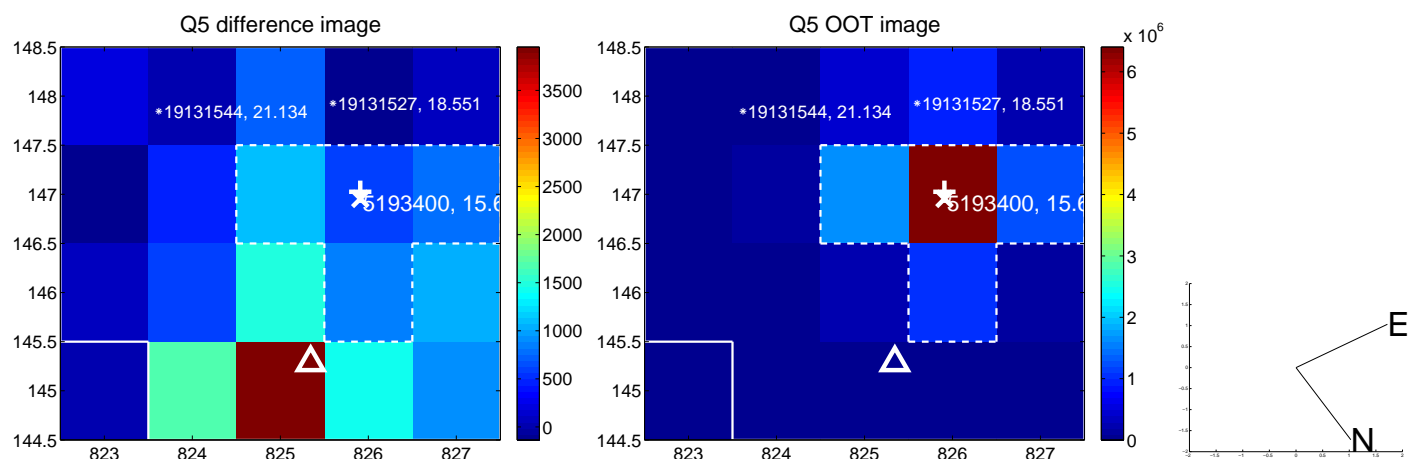


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ . Red *: target star. Blue *: Other stars. Text next to a star gives its KIC ID and kepmag. KIC IDs > 15,000 are from the UKIRT catalog.

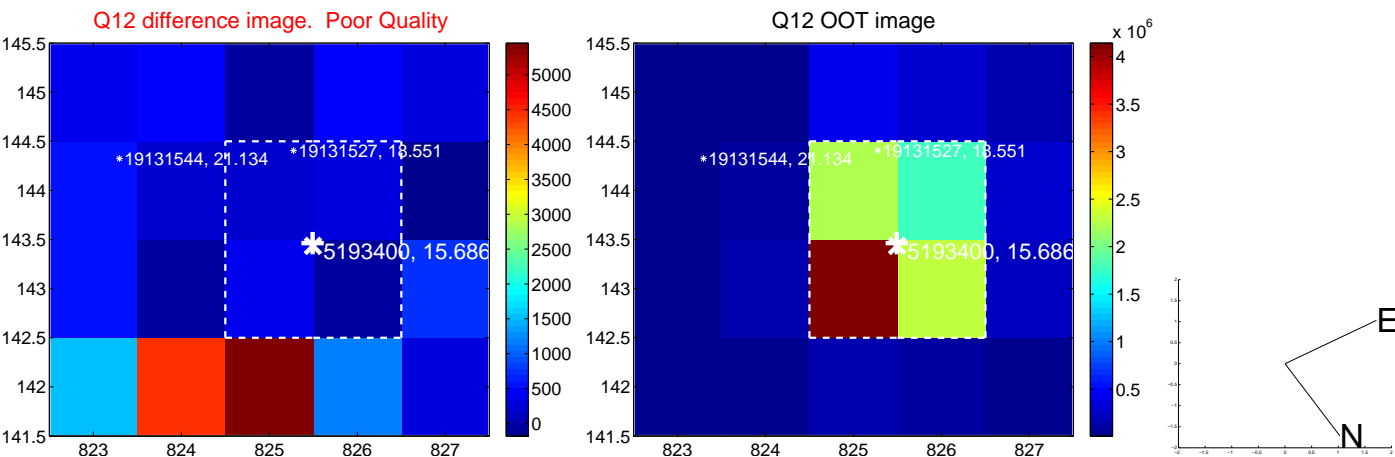
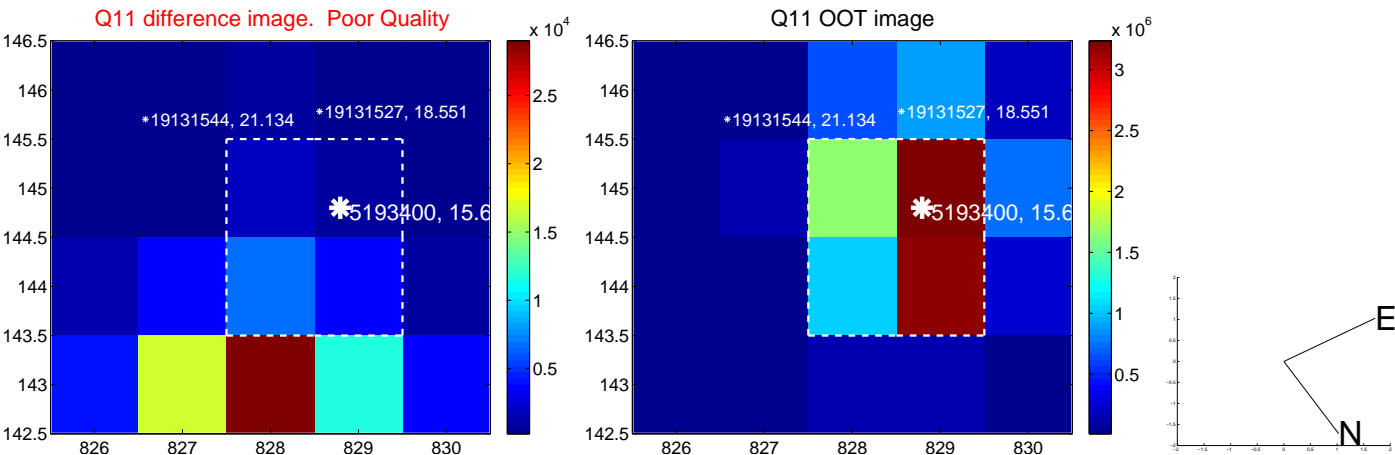
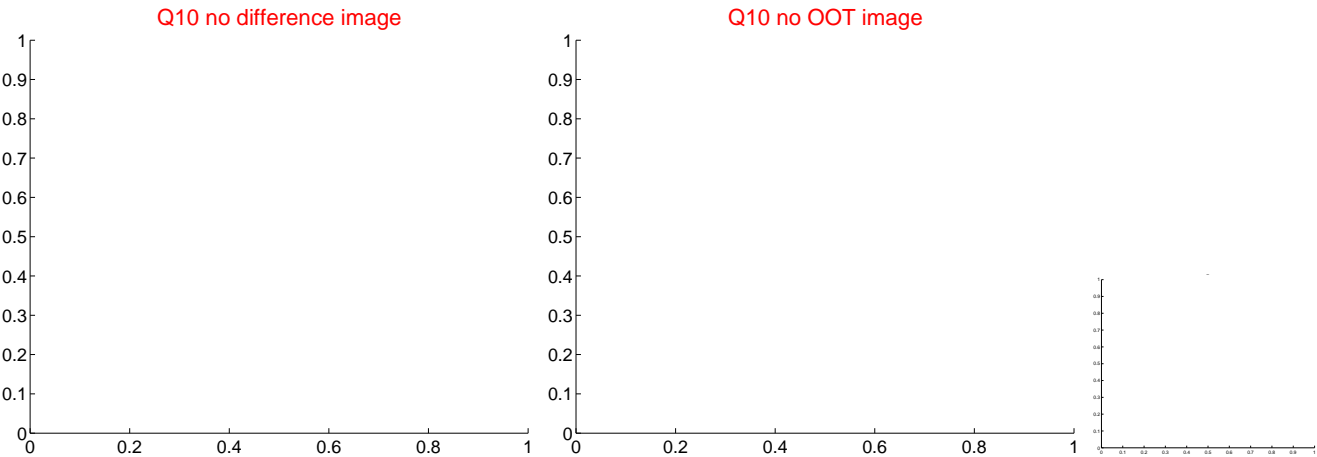
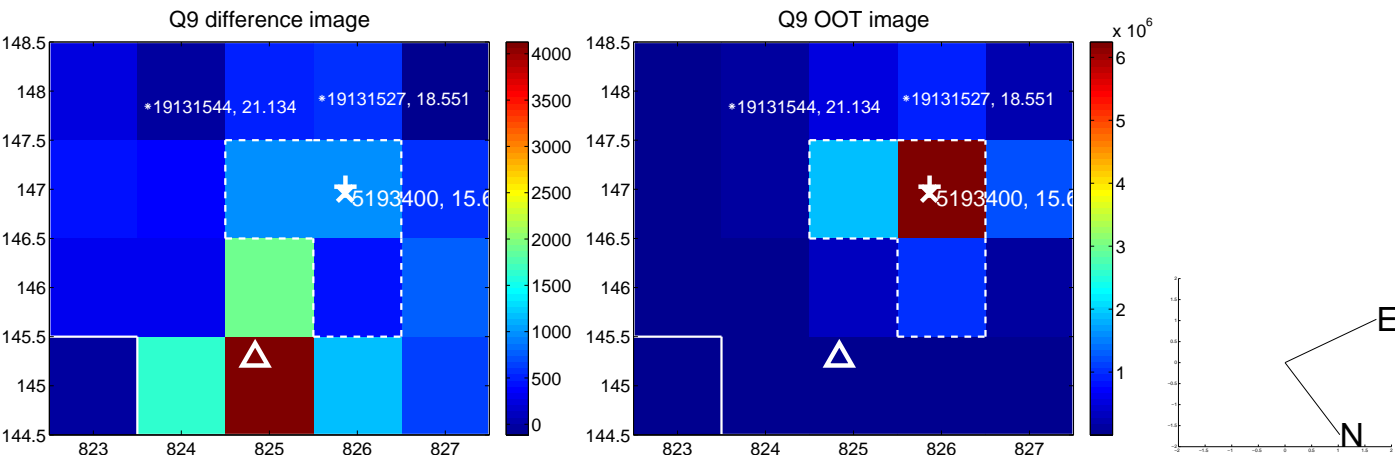
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



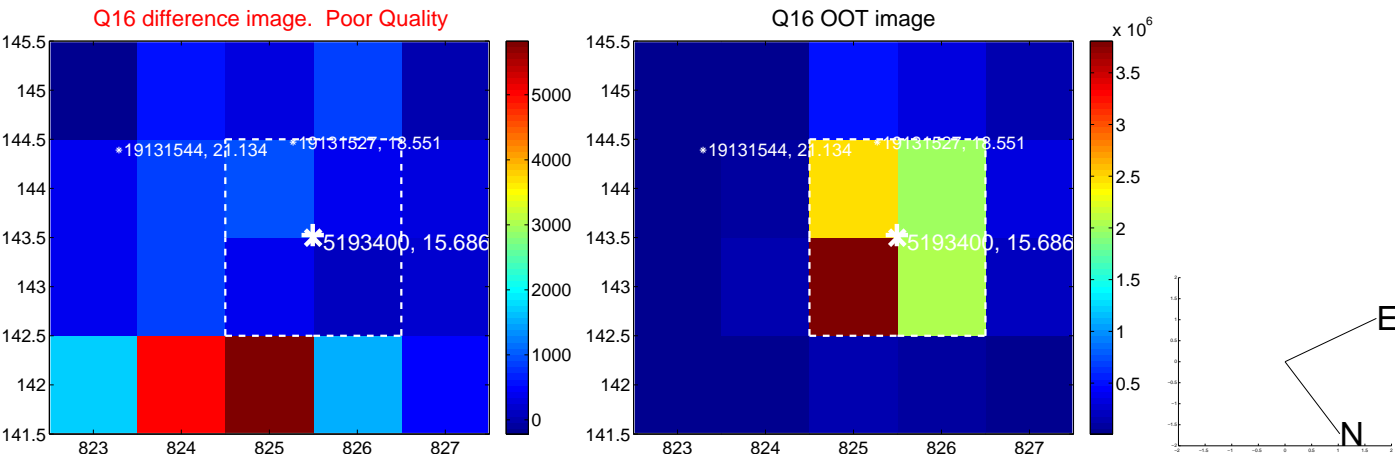
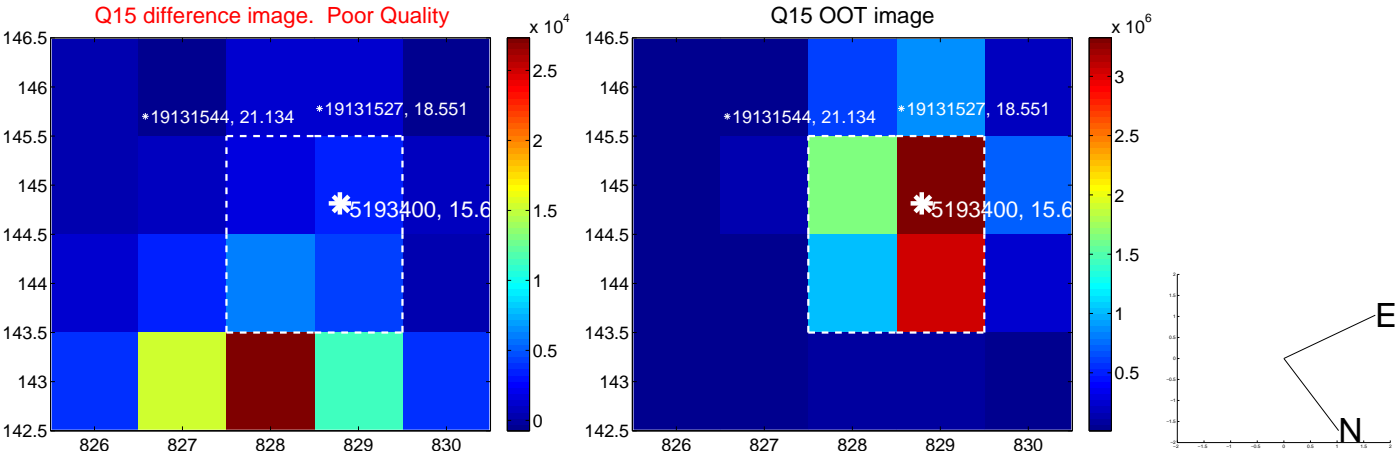
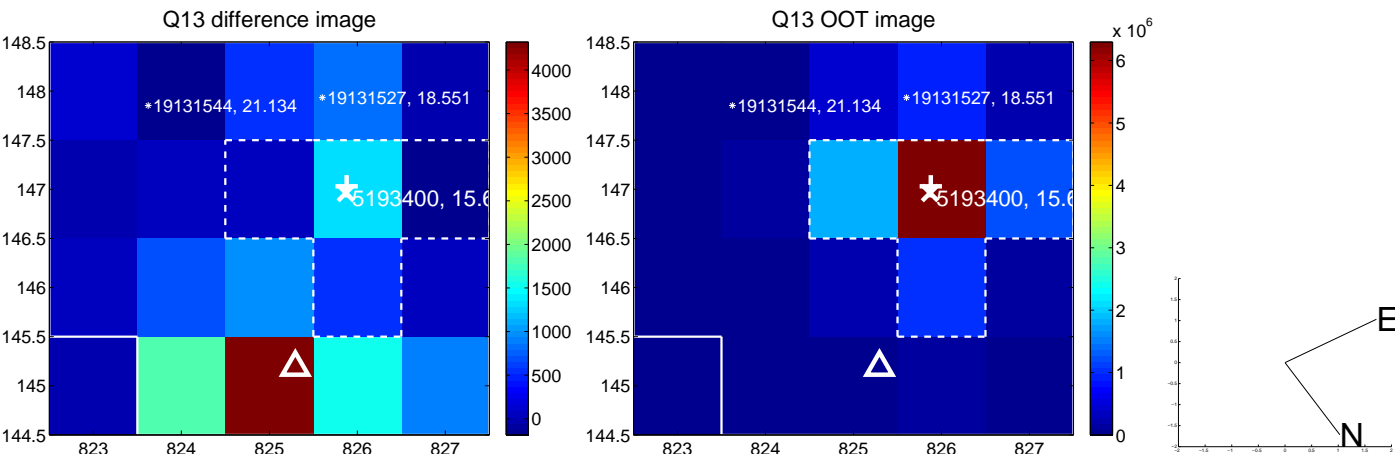
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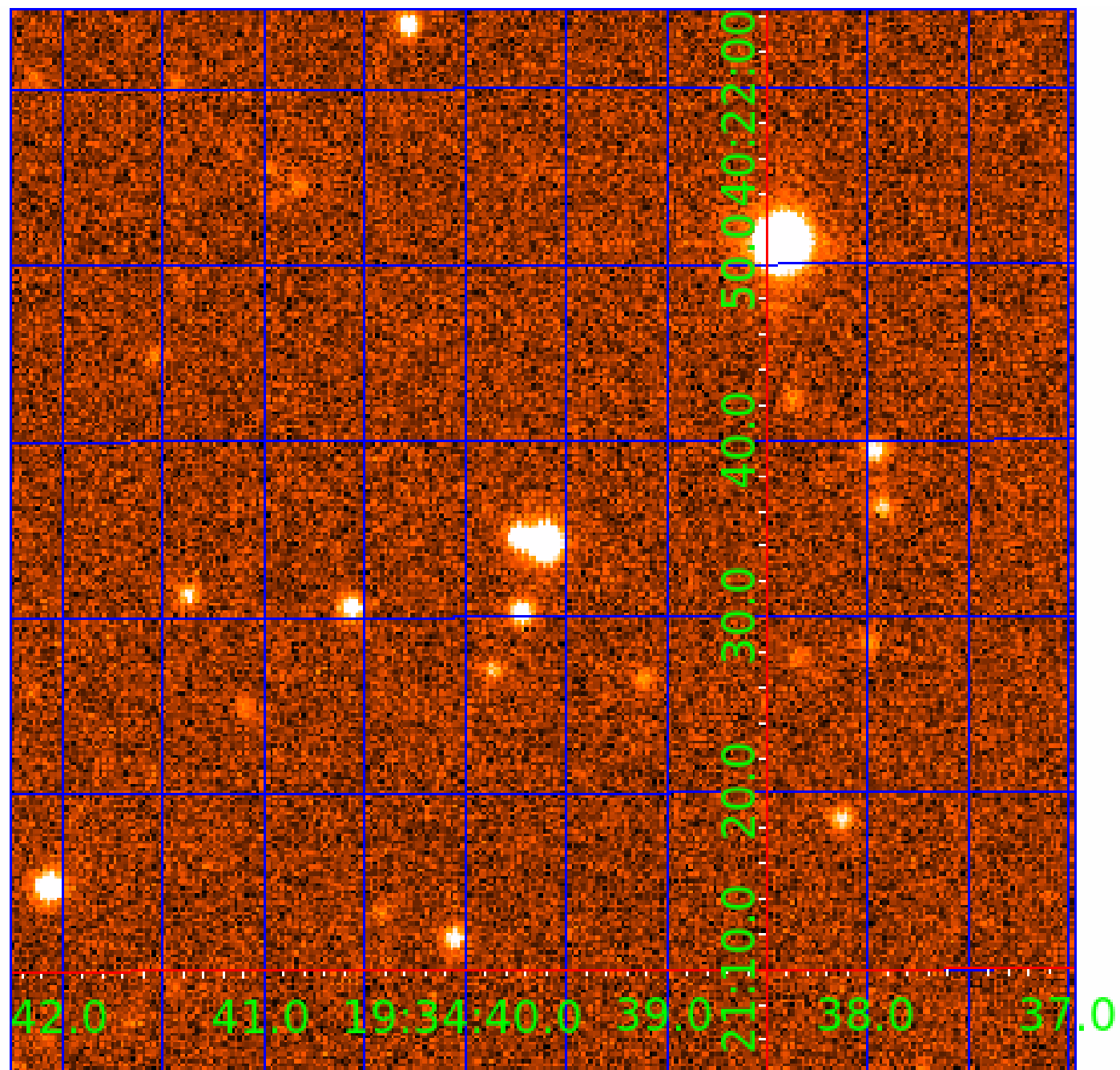


white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 005193400

Q1-17 DR25 TCE Parameters

TCE	Run Type	KOI?	Period (Days)	Epoch (BKJD)	Depth (ppm)	Duration (Hours)	MES	SNR	R_{\star} (R_{\odot})	T_{\star} (K)	R_p (R_{\oplus})	S_p (S_{\oplus})
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005193400-02	OBS	No	21.379616	136.312902	187.5	8.999	8.5	8.5	1.13	6218	1.70	66.04

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005193400-01	OBS	FP	0.00	0	1	1	1	MOD_SEC_DV—HAS_SEC_TCE—CENT_RESOLVED_OFFSET—EPHEM_MATCH
005193400-02	OBS	FP	0.00	1	1	1	1	IS_SEC_TCE—CENT_RESOLVED_OFFSET—HALO_GHOST—EPHEM_MATCH

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

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

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

Ephemeris Match Information For 005193400-02

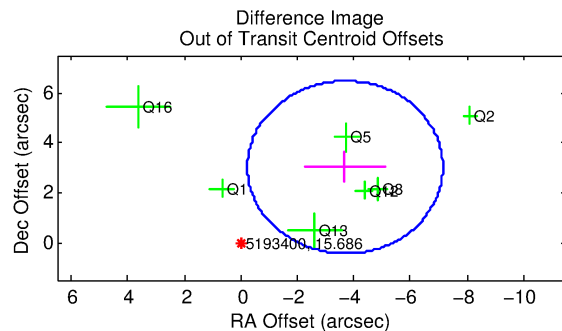
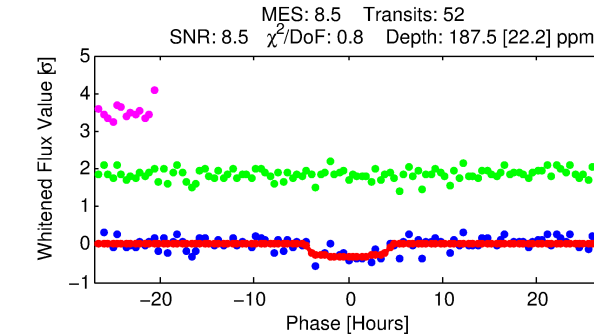
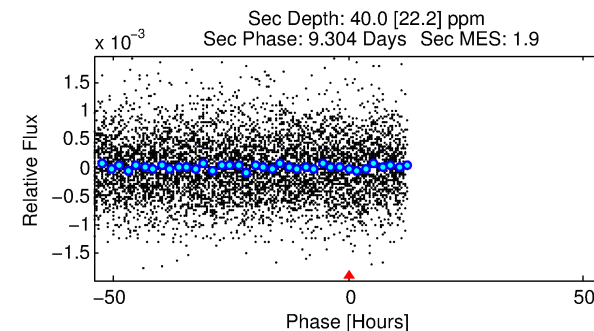
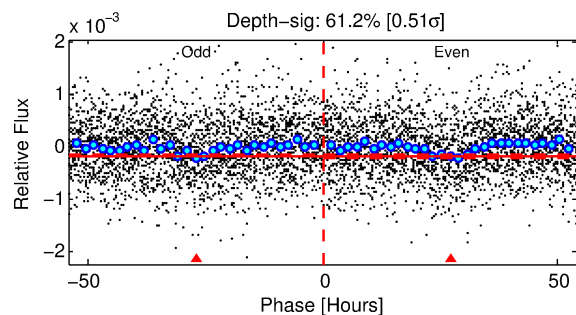
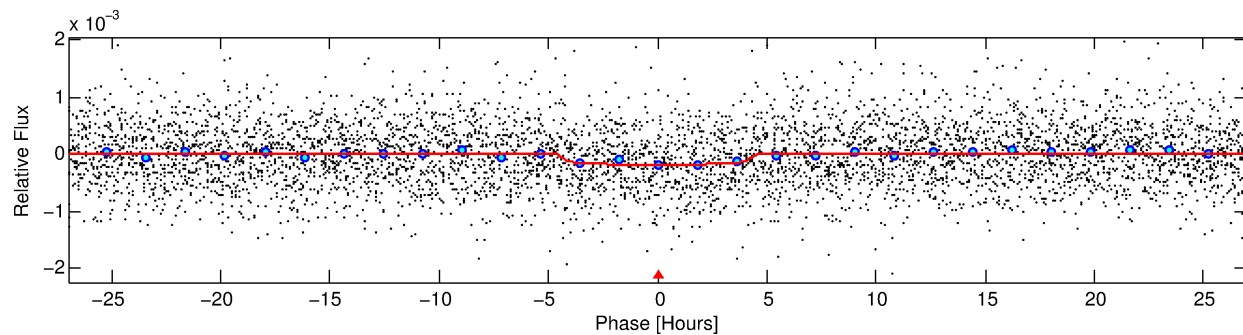
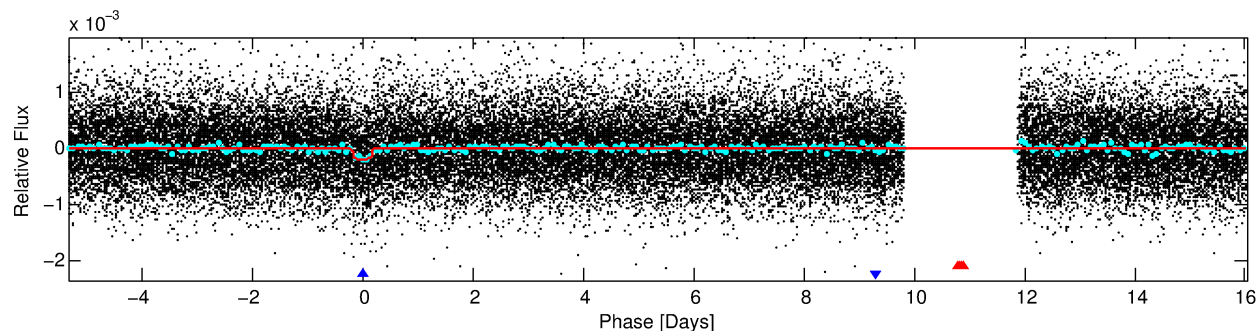
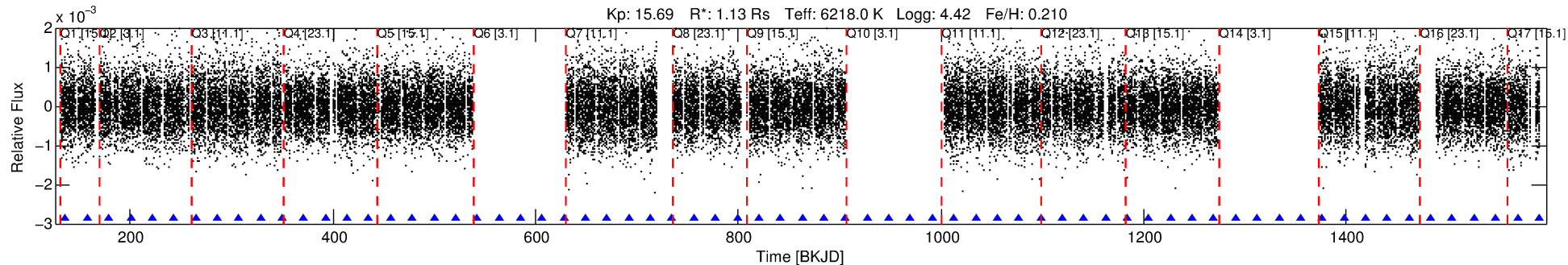
TCE (1)	KIC	Parent (2)	Parent KIC	$P_1:P_2$	Dist ($''$)	Δ Row	Δ Col	m_2	m_1	D_2/D_1	Mechanism	Flag	σ_P	σ_T
005193400-02	5193400	3637.01	5193384	1:1	16.6	4	2	19.07	15.69	1660.20	Direct-PRF	0	3.07	3.99

Notes: $P_1:P_2$ is the period ratio. Dist is the distance in arcseconds. Δ Row and Δ Col are the number of pixels apart in row and column. m_2 and m_1 are the magnitudes of the parent and child. D_2/D_1 is the parent's transit depth divided by the child's. σ_P and σ_T are the significance of the match in period and epoch. For a match to be considered significant $\sigma_P < 5.0$ and $\sigma_T < 5.0$. Matches which have σ_P and σ_T very close to this cutoff should receive extra scrutiny, especially if the period ratio is very large.

DV One-Page Summary

KIC: 5193400 Candidate: 2 of 2 Period: 21.380 d
KOI: K01580 Corr: No Ephemeris Match

Kp: 15.69 R*: 1.13 Rs Teff: 6218.0 K Logg: 4.42 Fe/H: 0.210



DV Fit Results:

Period = 21.37962 [0.00043] d
Epoch = 136.3129 [0.0164] BKJD
Rp/R* = 0.0138 [0.0077]
a/R* = 11.74 [32.29]
b = 0.78 [1.39]
Seff = 66.04 [25.90]
Teff = 727 [71] K
Rp = 1.70 [1.08] Re
a = 0.1611 [0.0396] AU
Ag = 197.38 [256.74] [0.76σ]
Teffp = 4213 [1330] K [2.62σ]

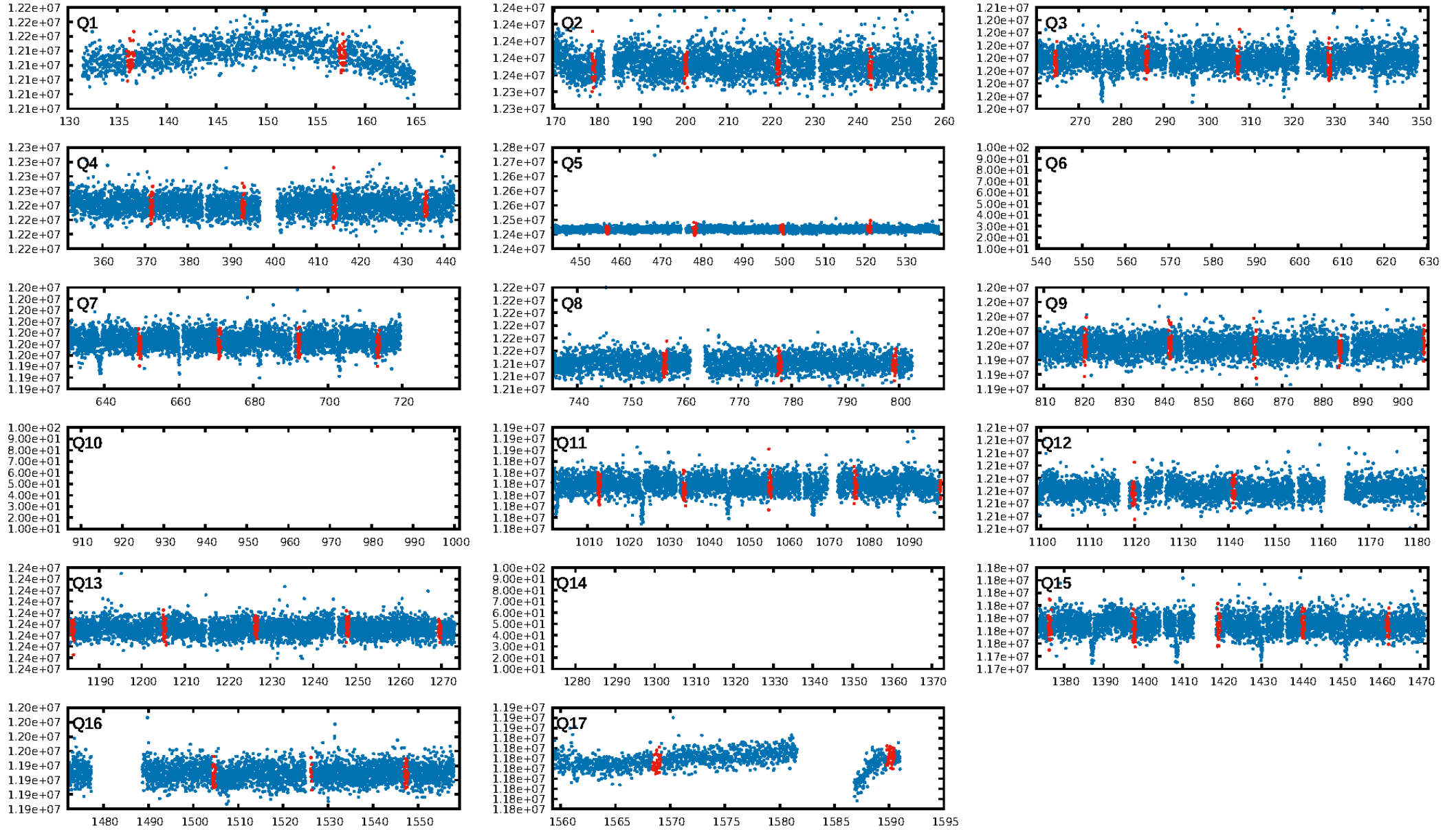
DV Diagnostic Results:

ShortPeriod-sig: 0.1% [0.00σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 86.8%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 1.90e-17
RollingBand-fgt: 1.00 [48/48]
GhostDiagnostic-chr: 0.1451
Centroid-sig: 0.0%
Centroid-so: 12.240 arcsec [6.41σ]
OotOffset-rm: 4.766 arcsec [4.14σ]
KicOffset-rm: 4.625 arcsec [4.03σ]
OotOffset-st: 1/0/3/3 [7]
KicOffset-st: 1/0/3/3 [7]
DiffImageQuality-fgm: 0.57 [4/7]
DiffImageOverlap-fno: 1.00 [14/14]

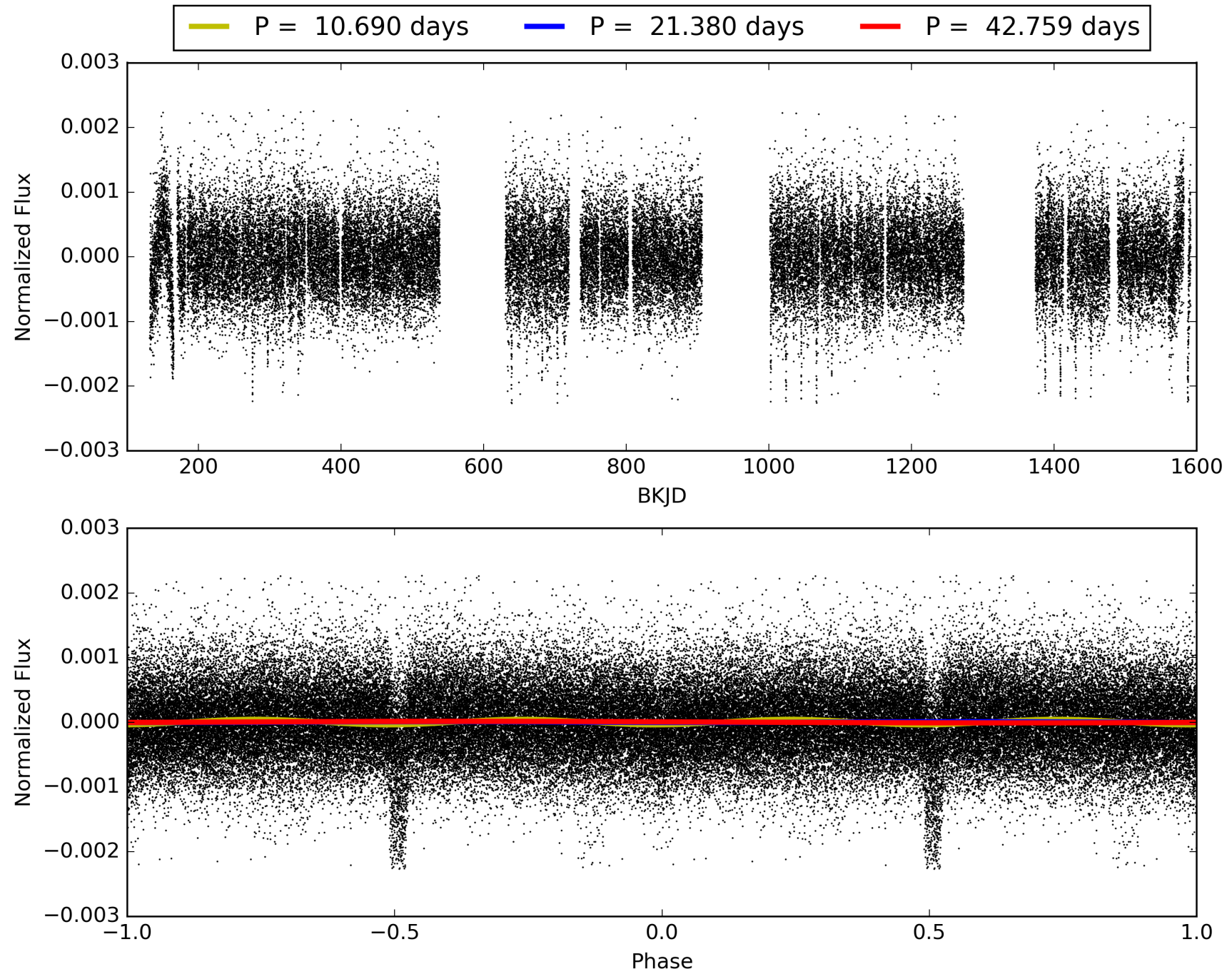
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 08:29:26 Z

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TCE 005193400-02, PDC Light Curves

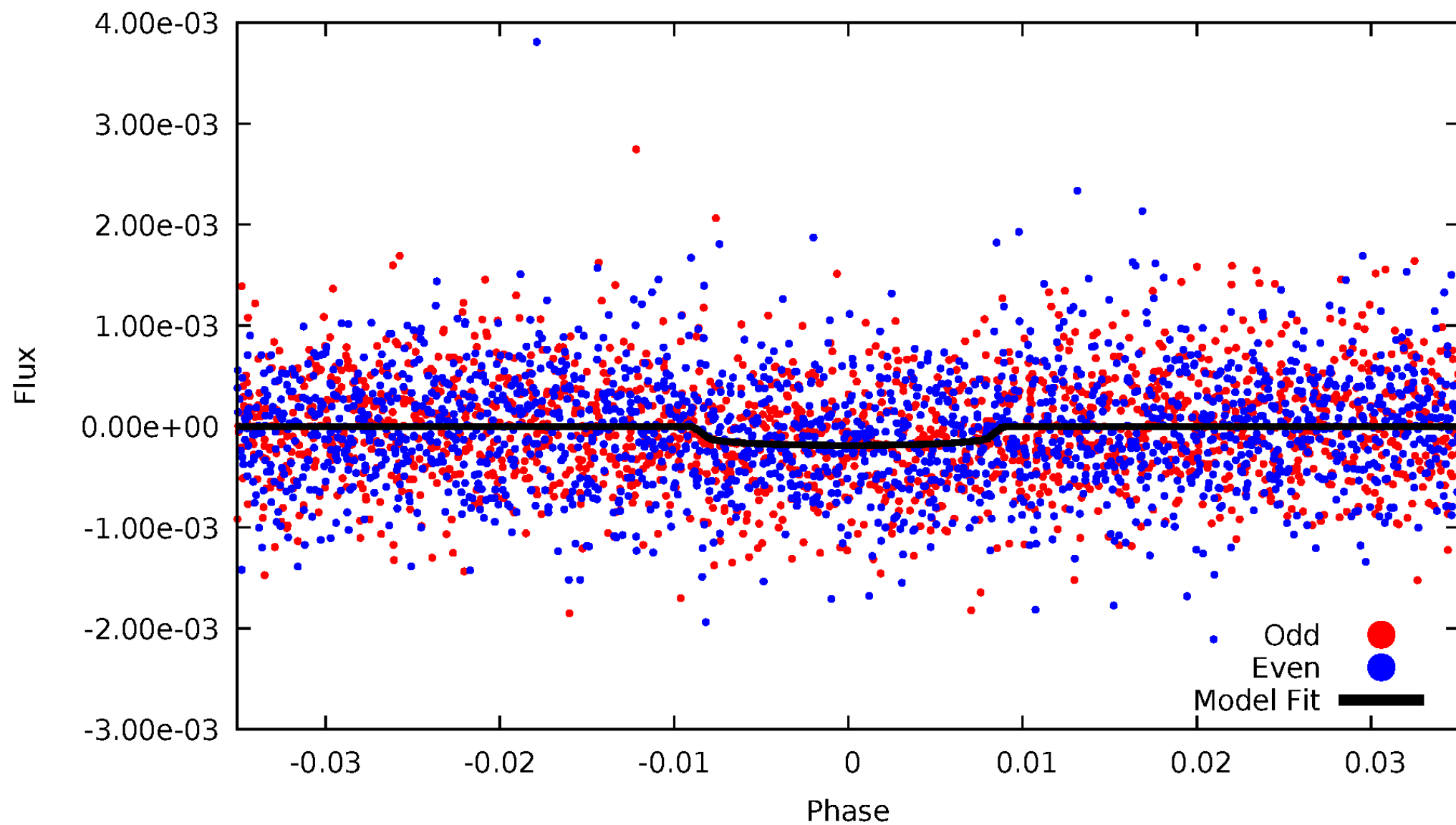


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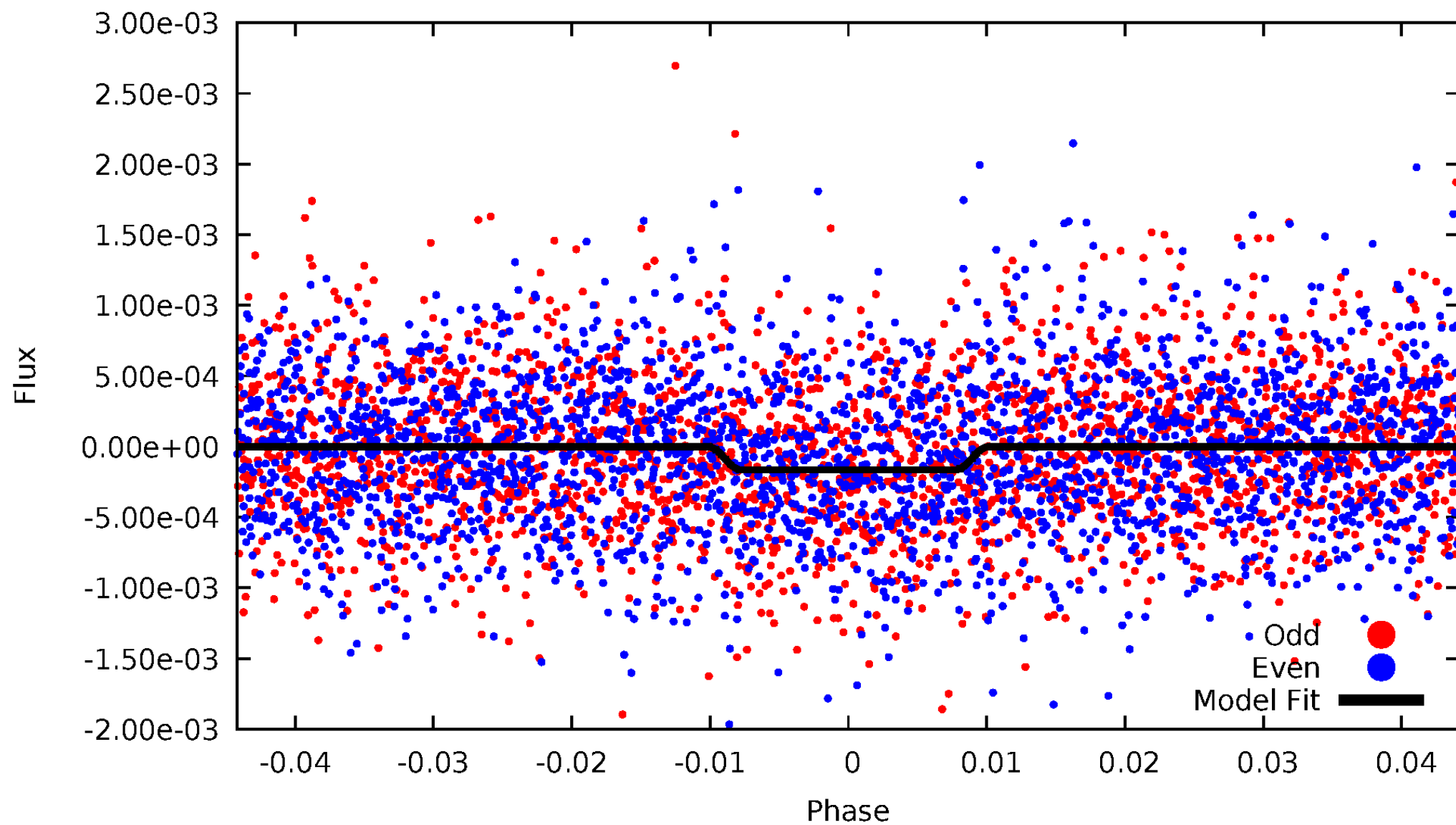
DV Odd/Even

TCE 005193400-02



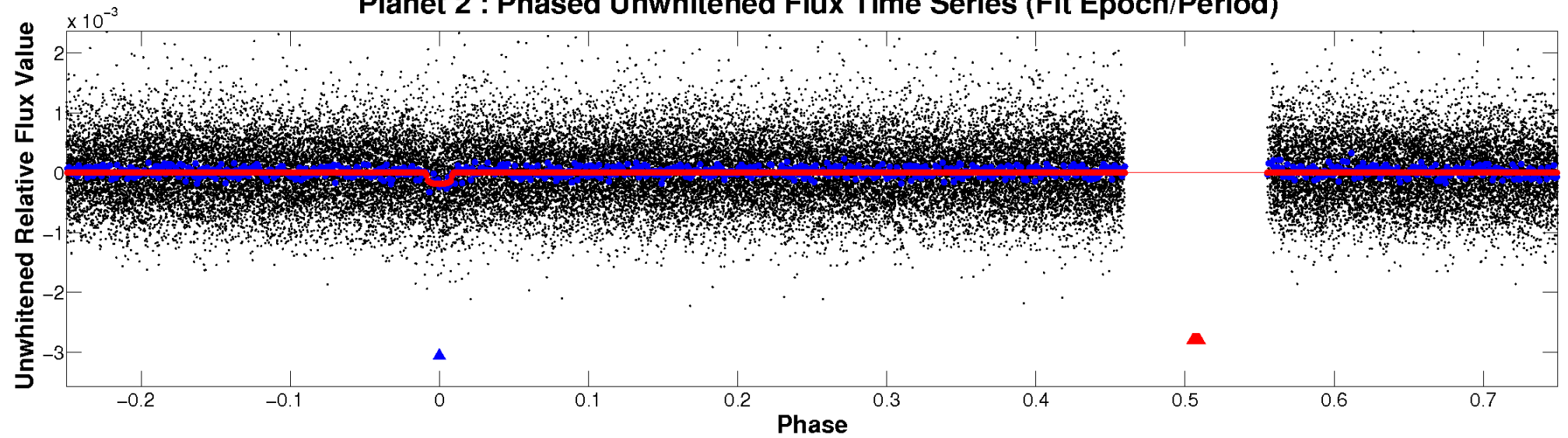
ALT Odd/Even

TCE 005193400-02

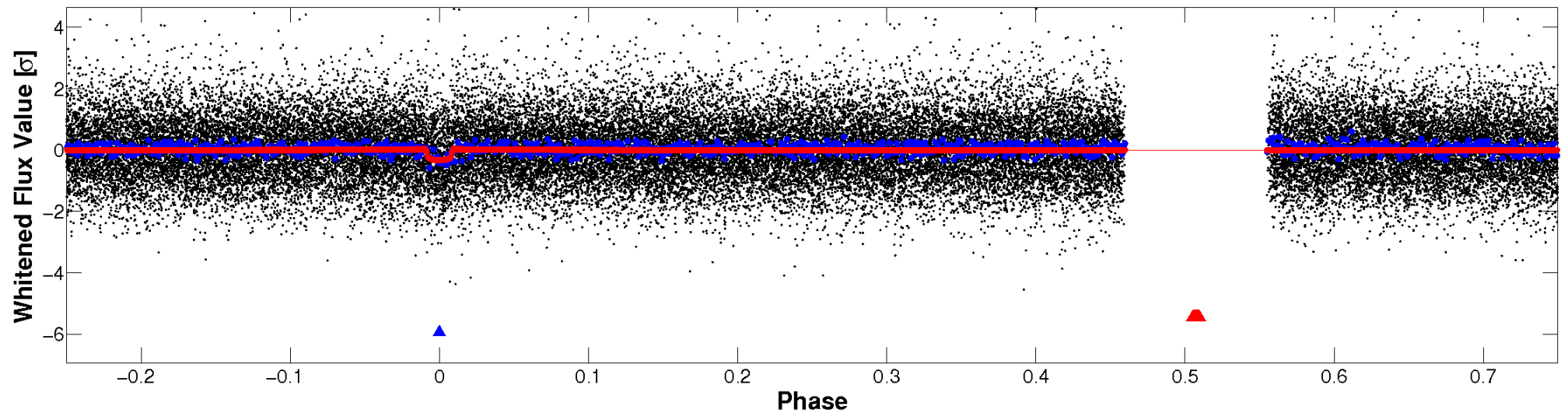


Non-Whitened Vs. Whitened Light Curve

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

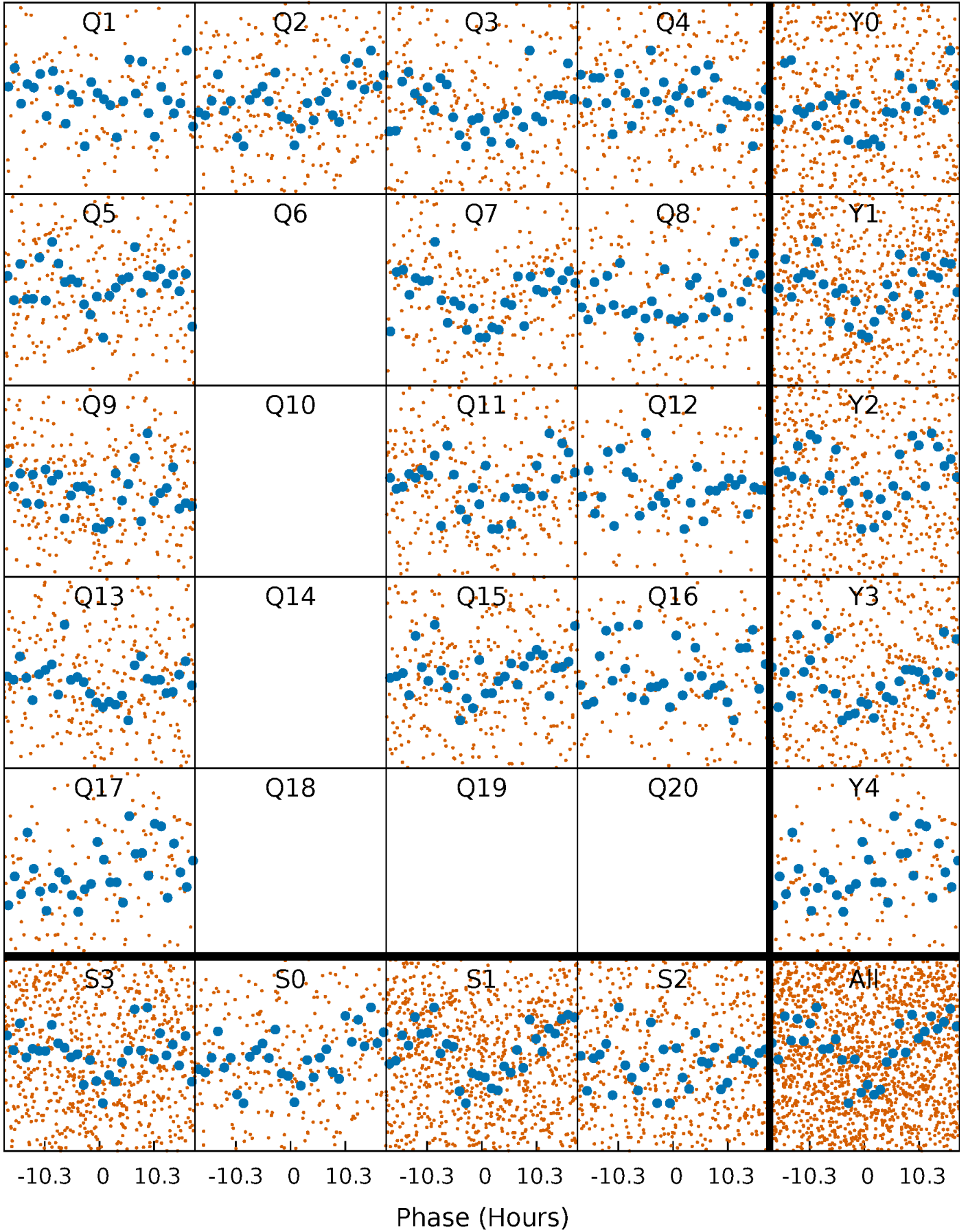


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



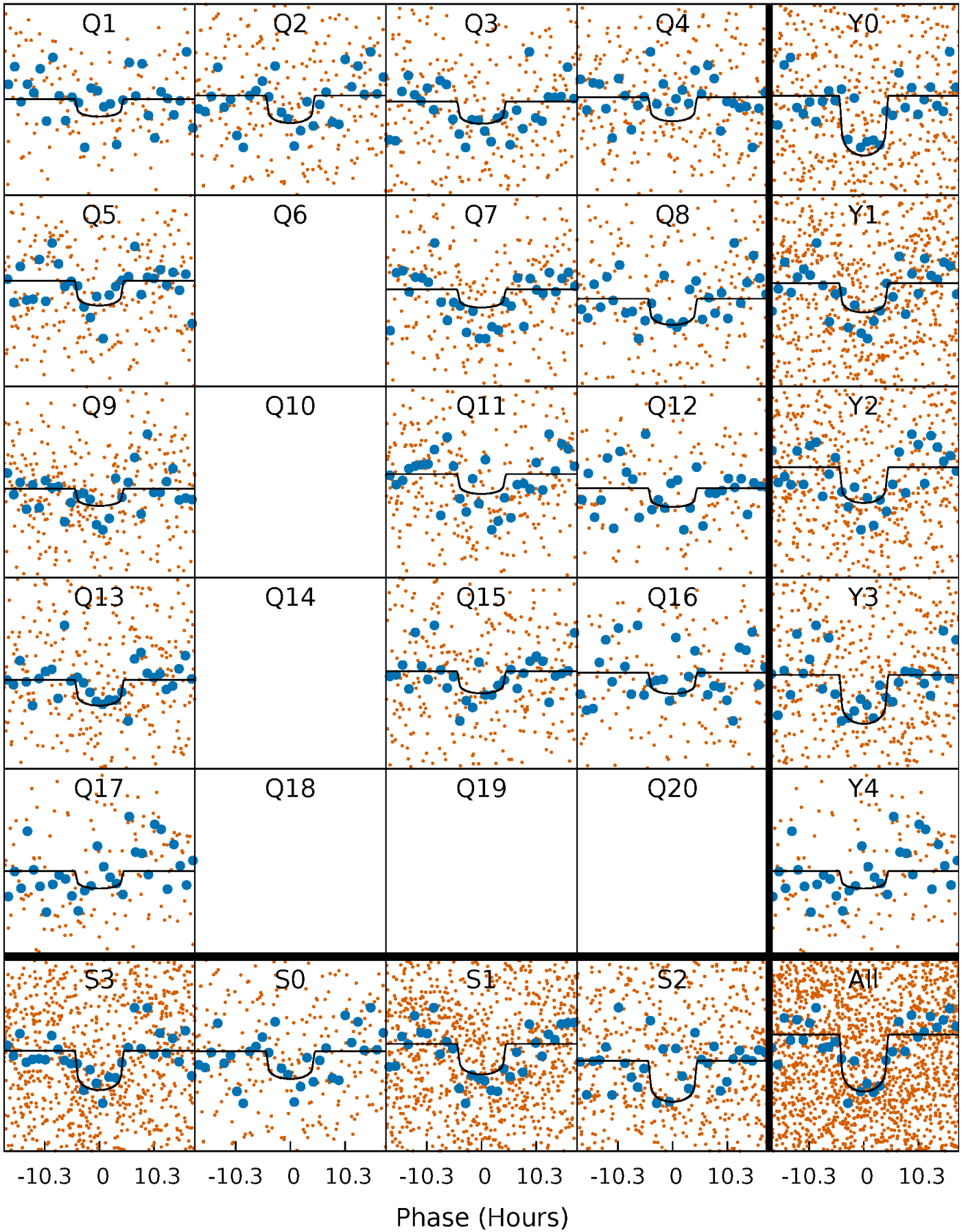
PDC Quarter-Phased Transit Curves

TCE 005193400-02 $P = 21.379616$ Days $T_0 = 136.312902$ (BKJD)



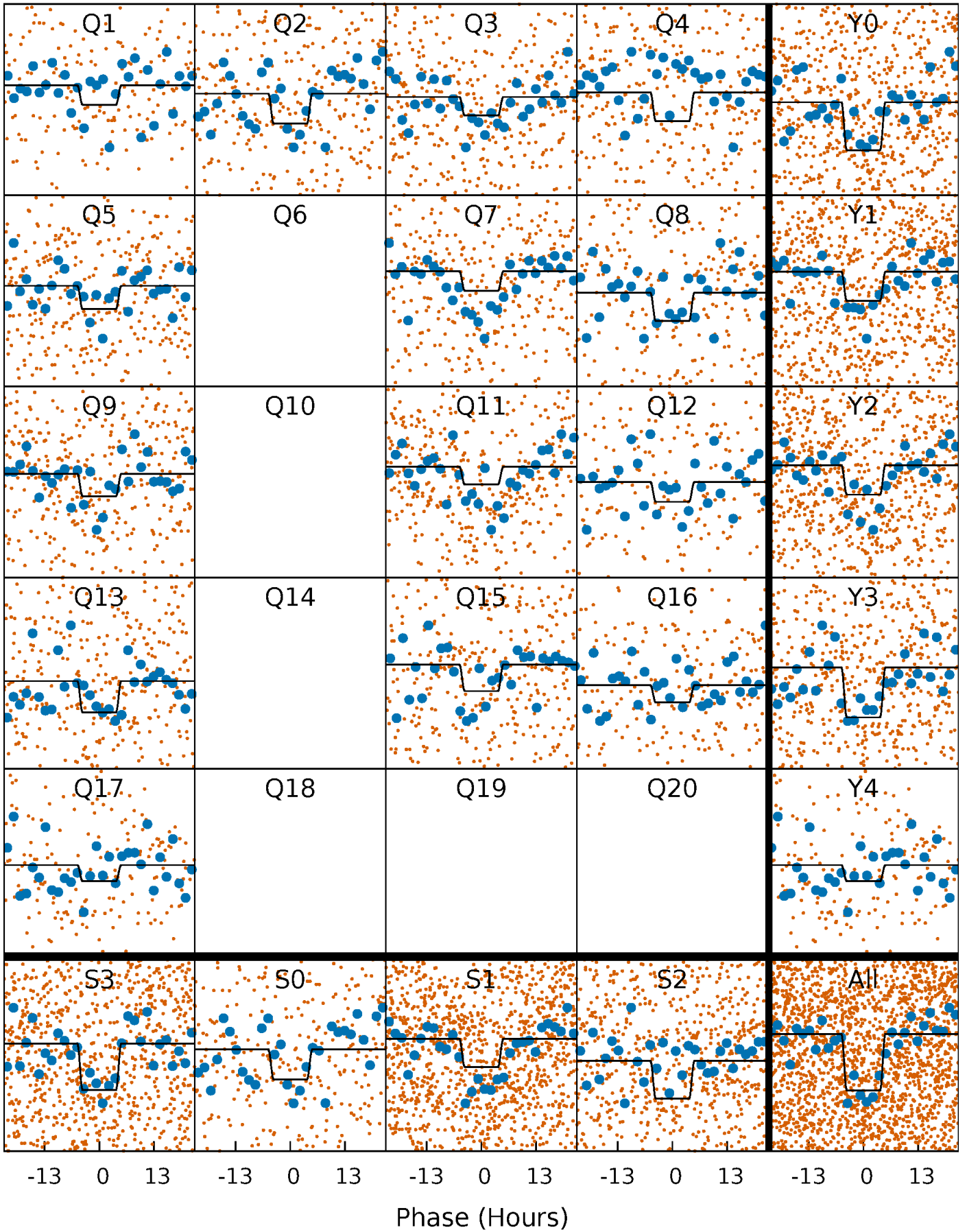
DV Quarter-Phased Transit Curves

TCE 005193400-02 P= 21.379616 Days $T_0=136.312902$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

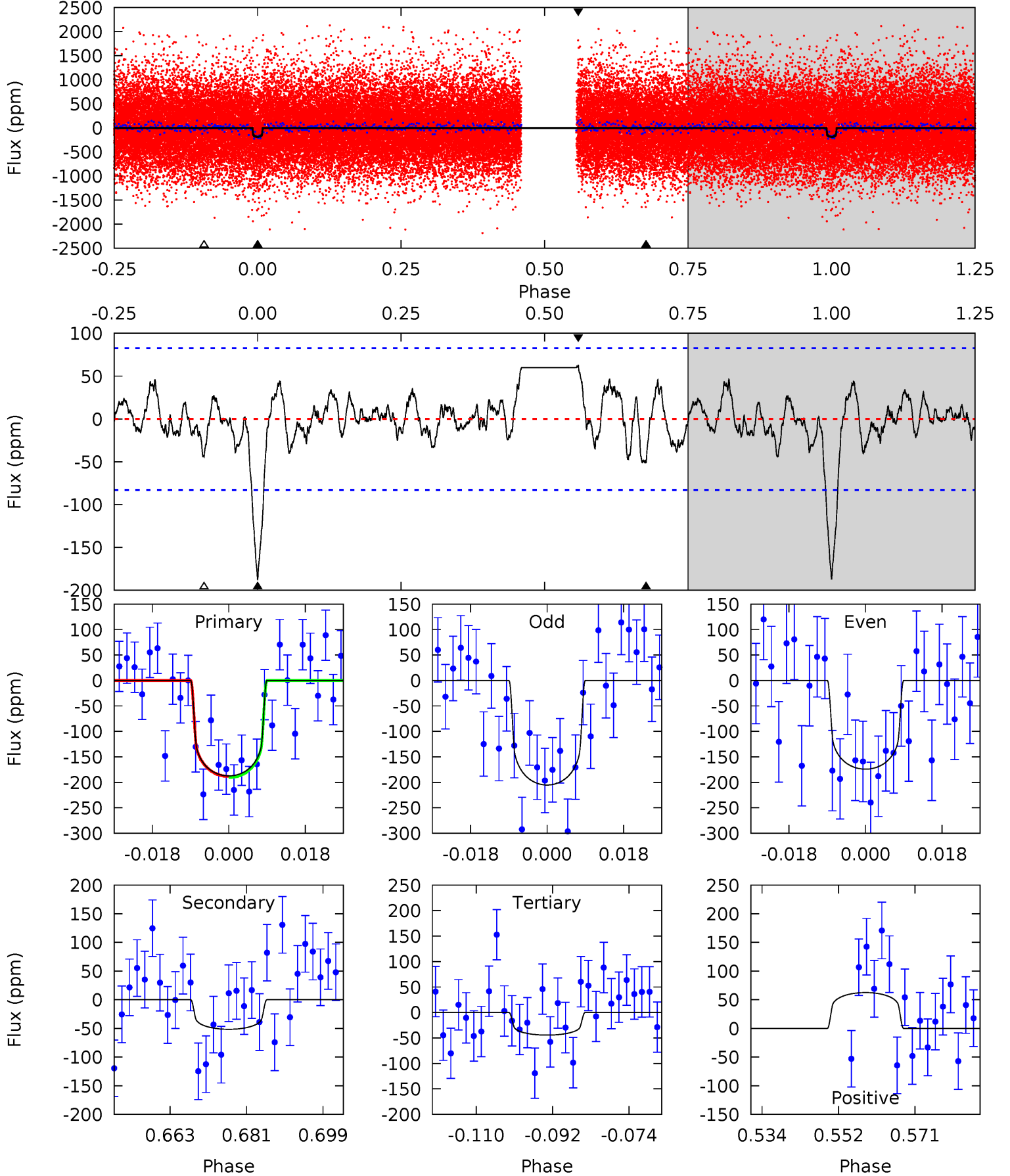
TCE 005193400-02 P= 21.379421 Days $T_0=136.328088$ (BKJD)



DV Model-Shift Uniqueness Test

005193400-02, P = 21.379616 Days, E = 114.933286 Days

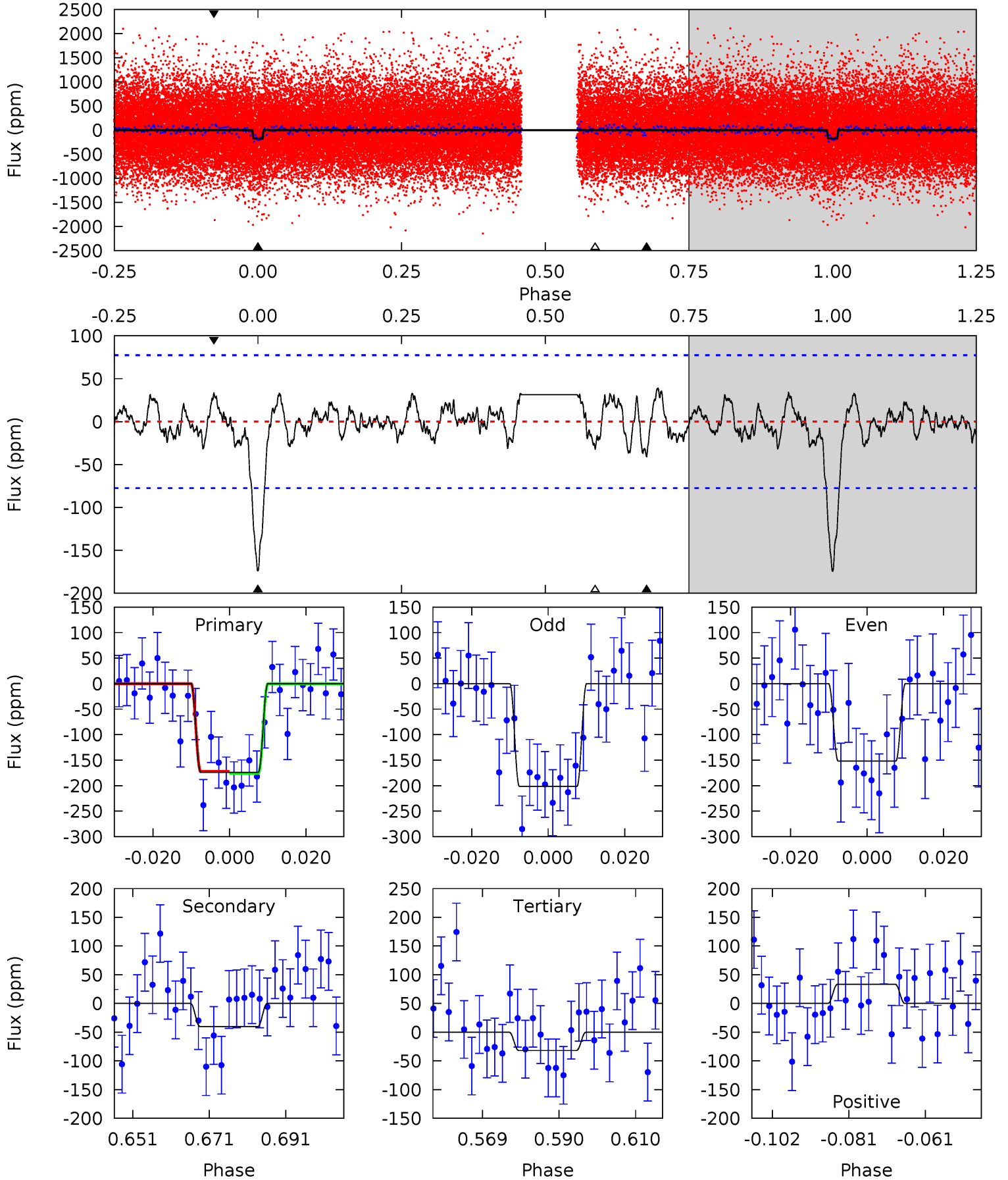
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.1	3.05	2.63	3.70	4.91	2.36	1.19	8.47	7.39	0.43	-0.65	0.92	1.10	0.25	0.07



Alt Model-Shift Uniqueness Test

005193400-02, P = 21.379421 Days, E = 114.948667 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.0	2.54	2.02	2.11	4.89	2.32	0.97	8.96	8.86	0.53	0.43	1.56	1.17	0.18	0.11



Stellar Parameters For KIC 005193400

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6218^{+174}_{-261}	$4.417^{+0.048}_{-0.192}$	$0.210^{+0.150}_{-0.300}$	$1.131^{+0.334}_{-0.119}$	$1.219^{+0.143}_{-0.172}$	$1.187^{+0.310}_{-0.592}$
	+3%/-4%	+1%/-4%	+71%/-143%	+30%/-11%	+12%/-14%	+26%/-50%
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 005193400-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-52 ± 17	$1.84^{+1.05}_{-0.94}$	1035^{+64}_{-51}	4536^{+1621}_{-728}	211^{+646}_{-132}
Alt.	-40 ± 16	$1.67^{+1.05}_{-0.87}$	1035^{+72}_{-50}	4455^{+1842}_{-767}	186^{+726}_{-123}

T_{max} = Theoretical Maximum Planetary Temperature

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

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

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

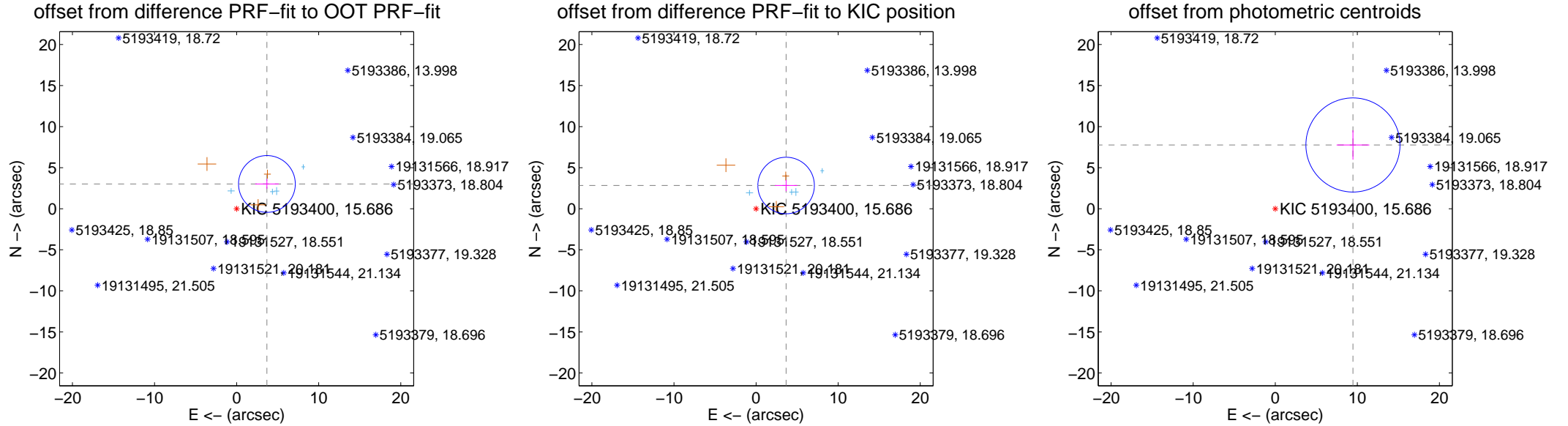
DV Centroid Data

Supplemental centroid analysis for 005193400-02. Kepler magnitude: 15.69. Transit SNR 8.45

There are 4 quarters with good PRF difference image offsets

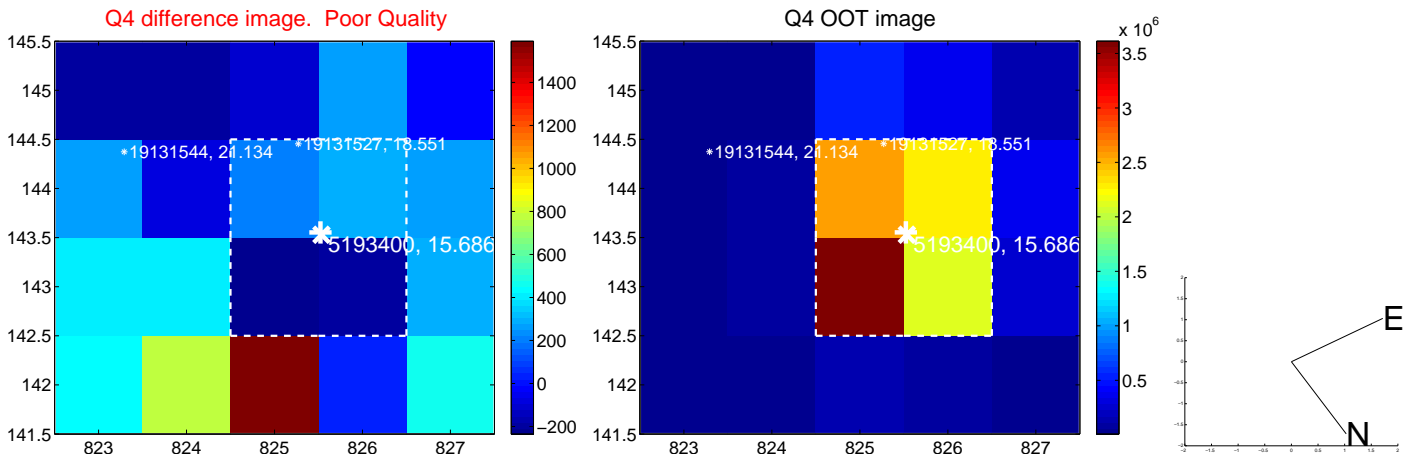
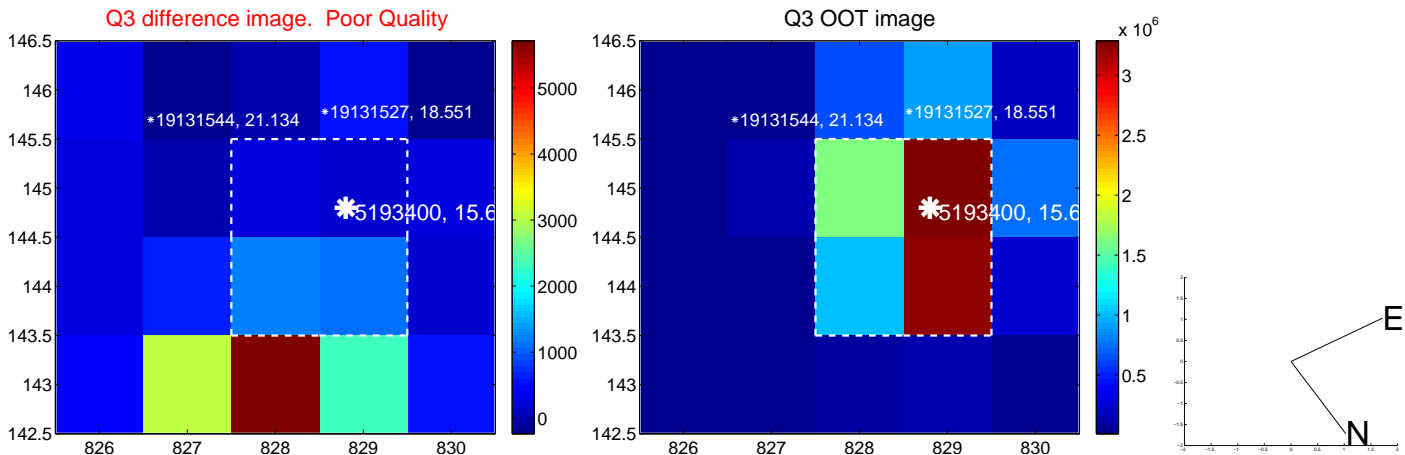
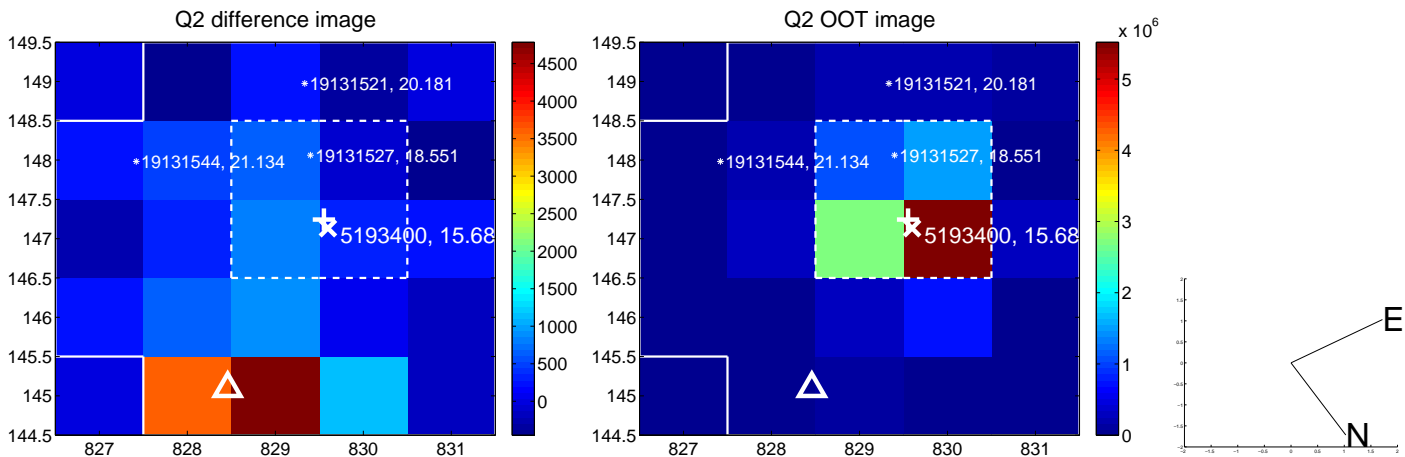
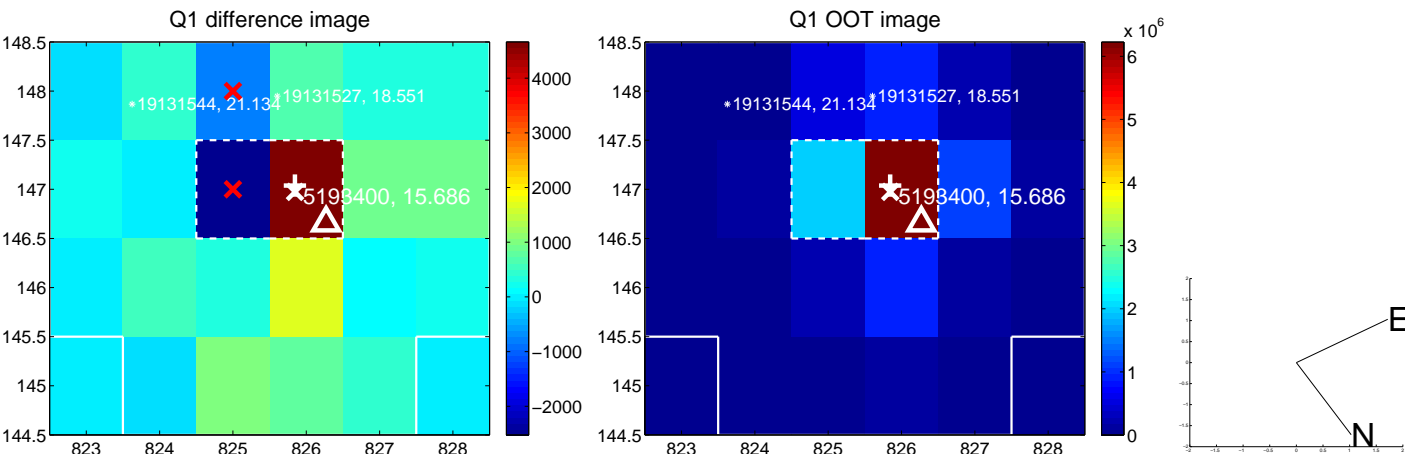
The direct PRF centroid is offset from the target star catalog position by about 0.15 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	4.766 ± 1.152	4.14	-3.691 ± 1.430	3.016 ± 0.590
PRF-fit source offset from KIC position	4.625 ± 1.147	4.03	-3.660 ± 1.354	2.828 ± 0.691
photometric centroid source offset	12.24 ± 1.91	6.41	-9.46 ± 1.99	7.76 ± 1.79

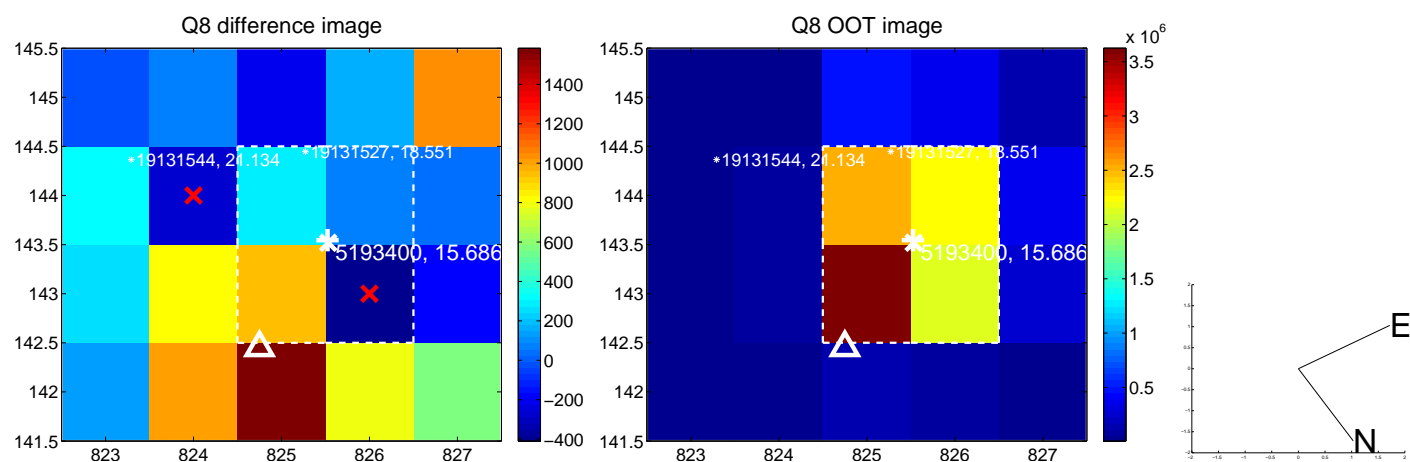
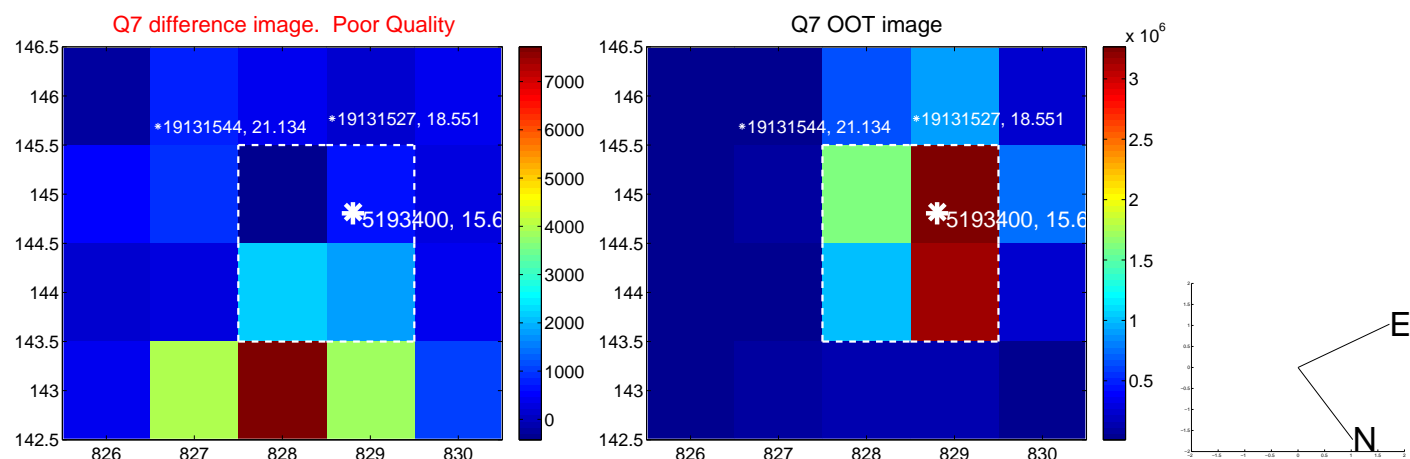
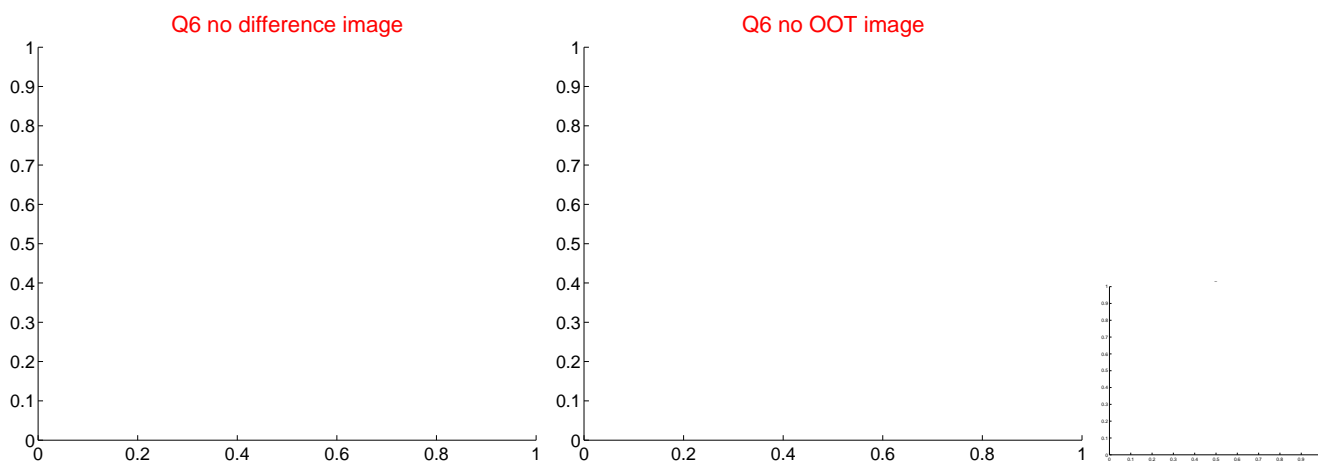
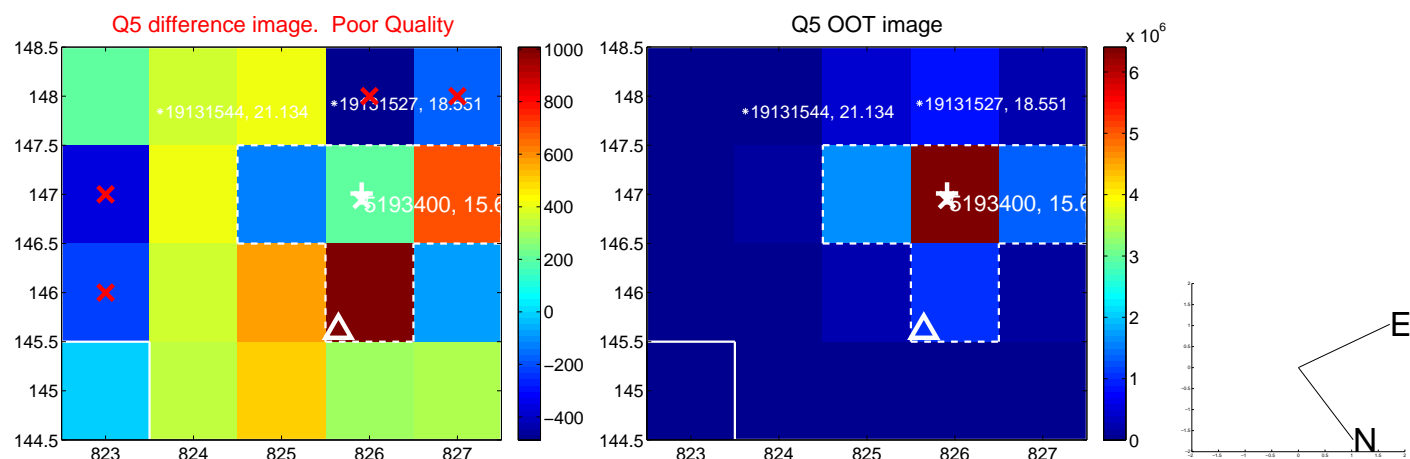


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

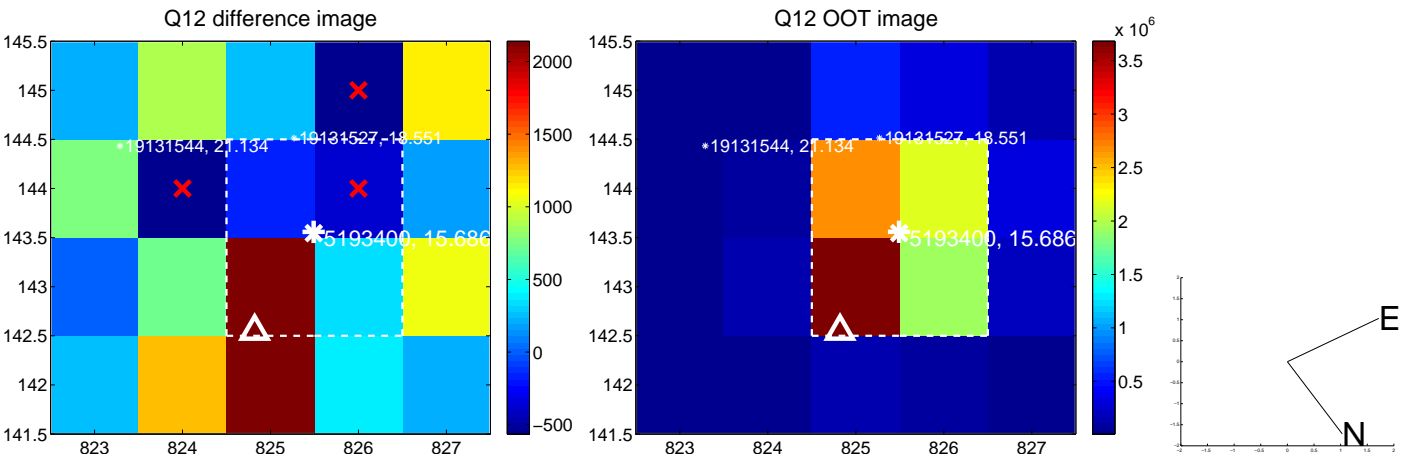
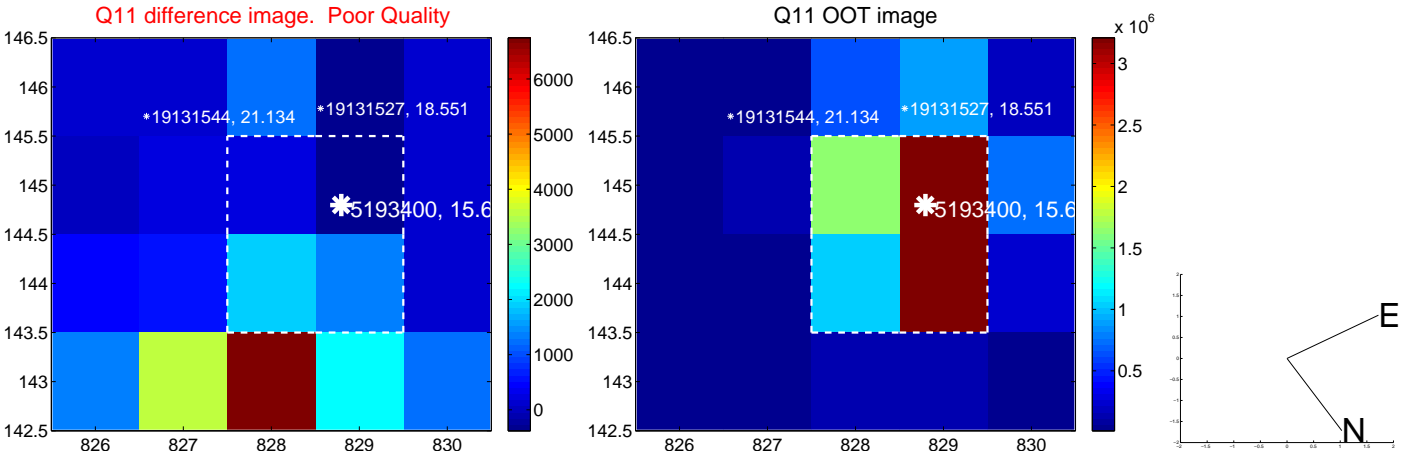
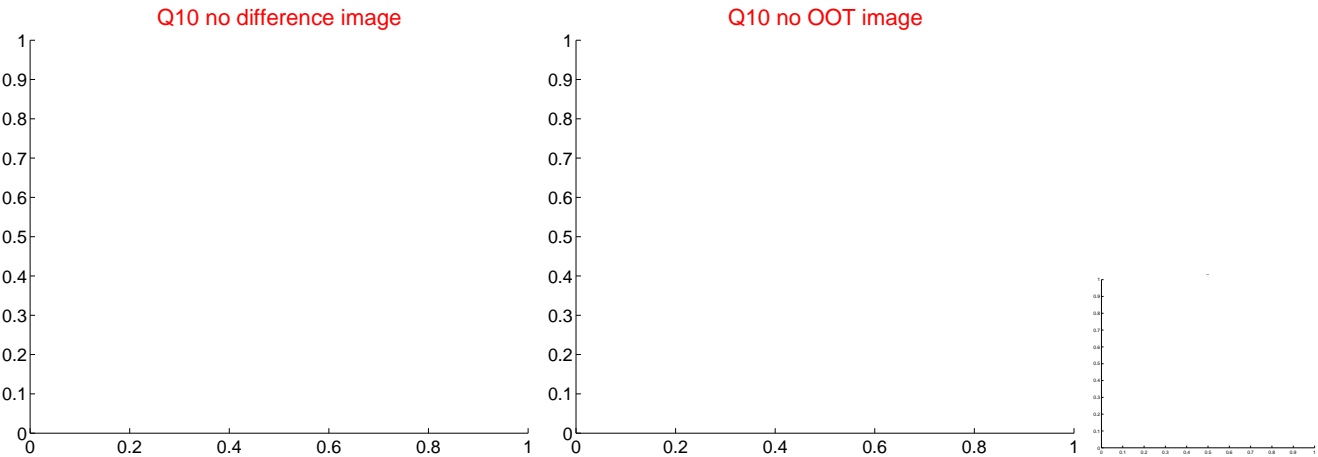
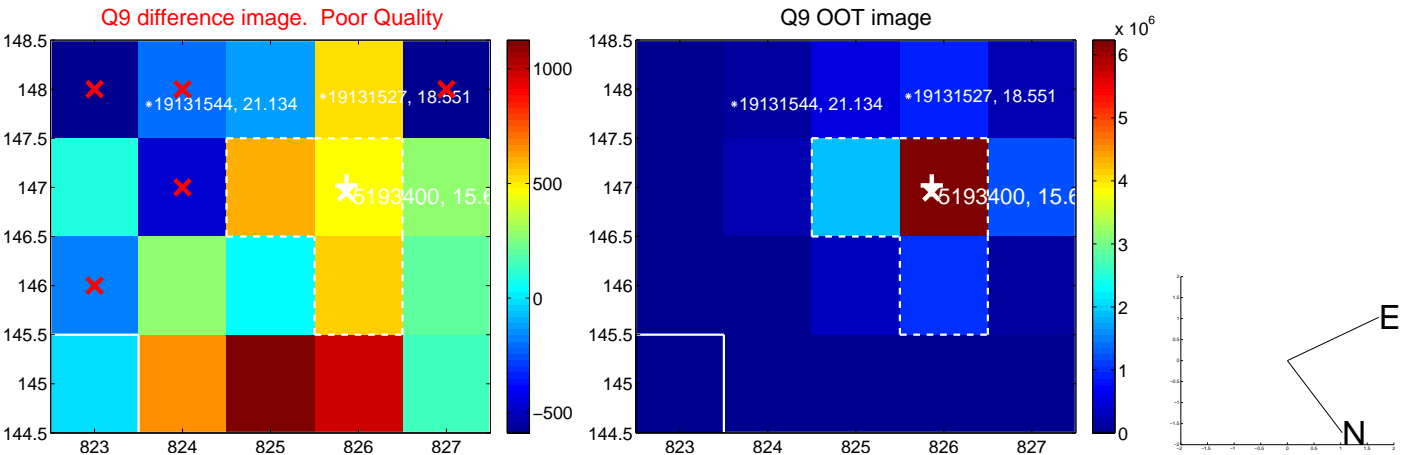
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



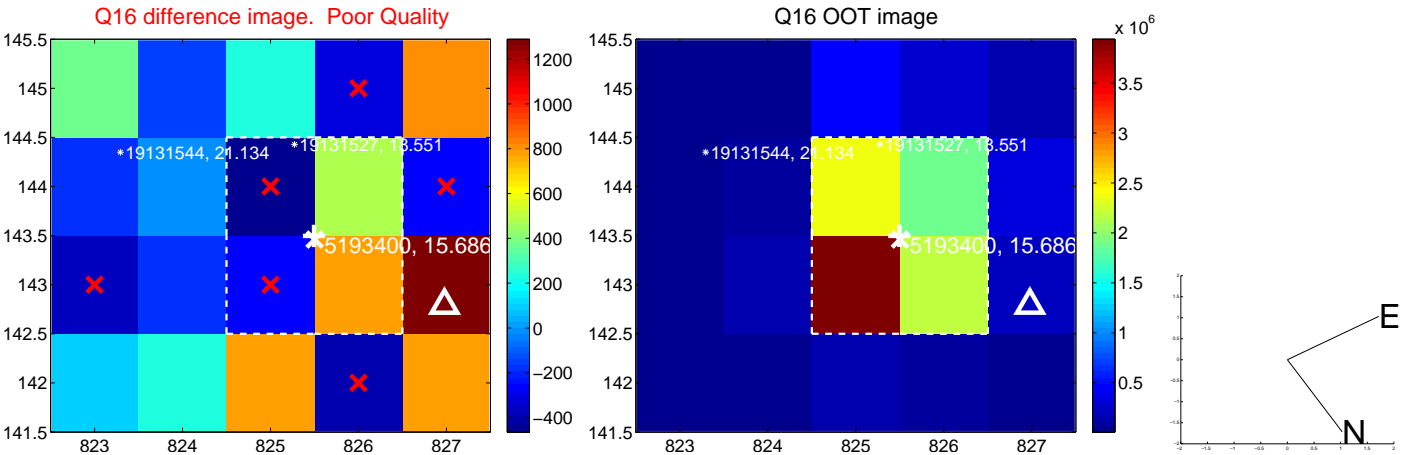
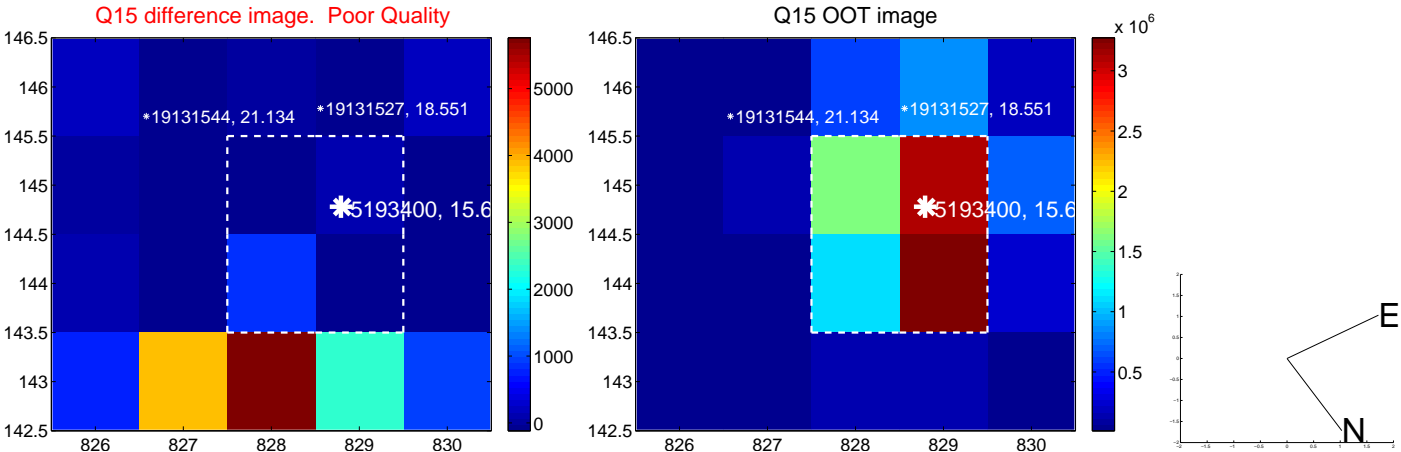
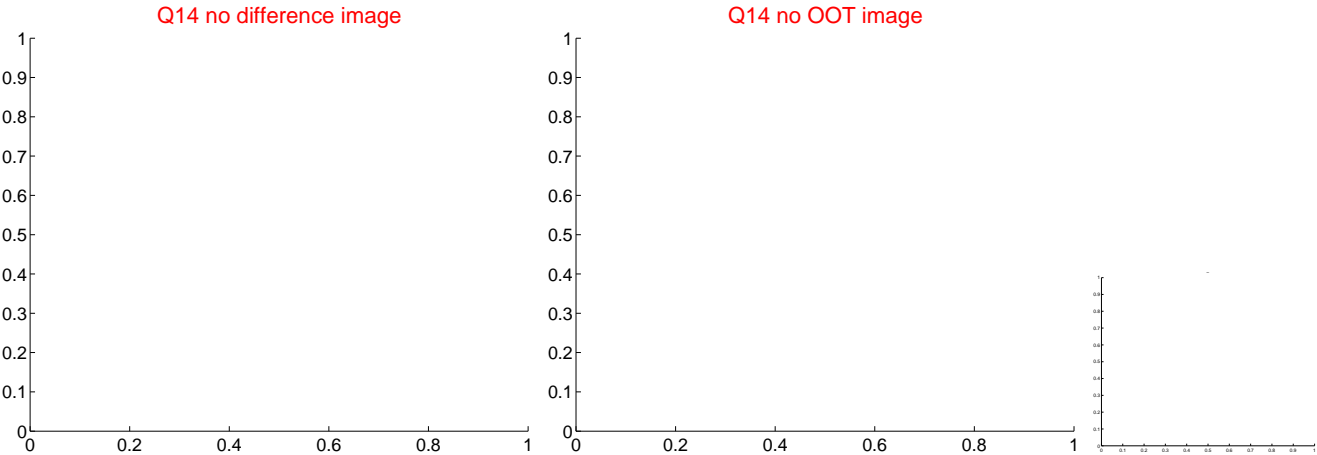
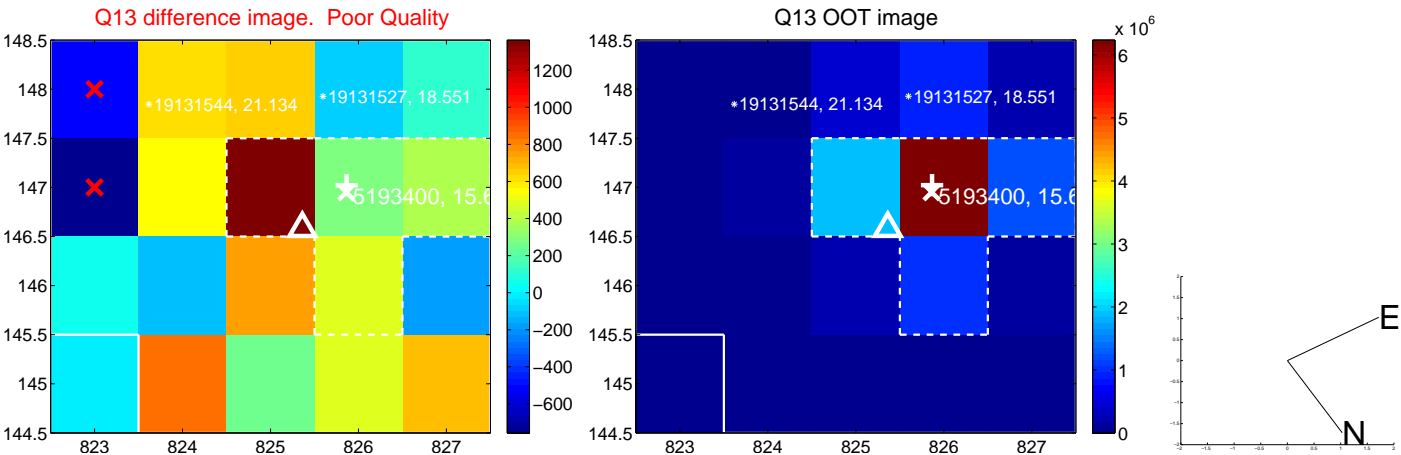
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



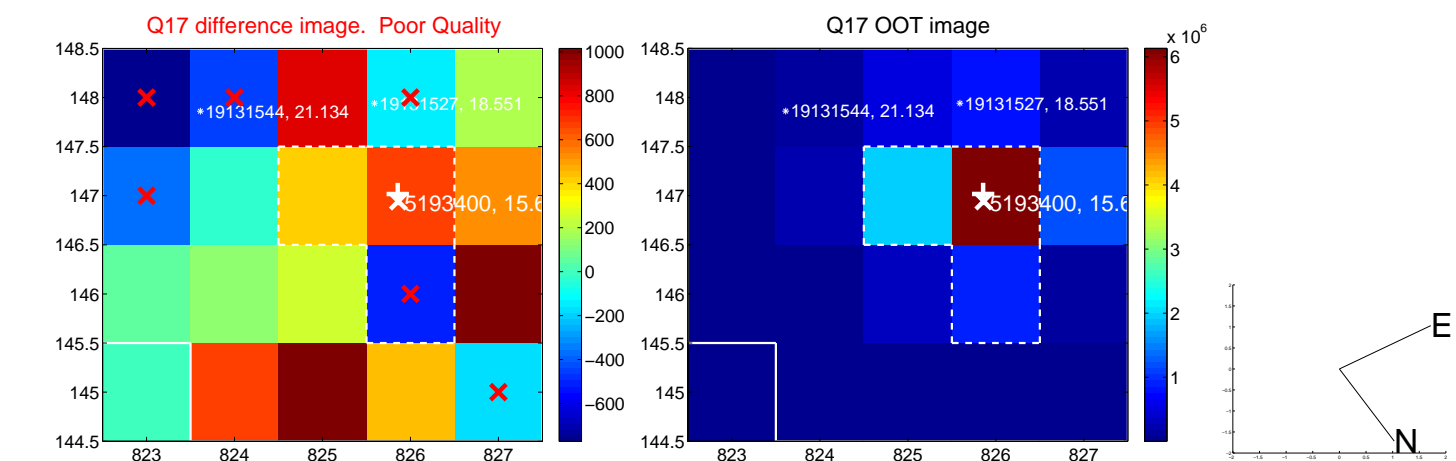
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



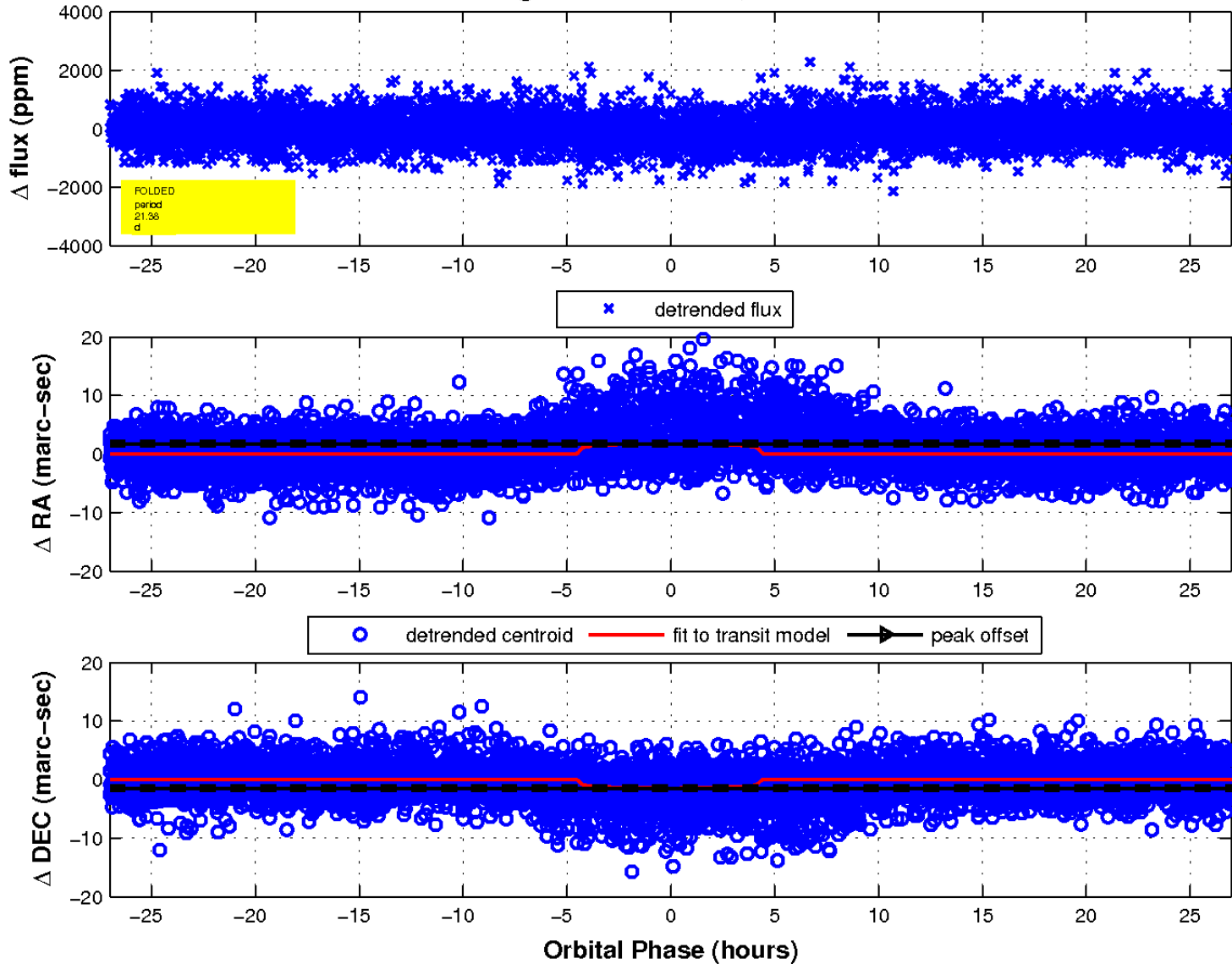
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 2 of 2



UKIRT Image

Declination

