

KIC 005024177

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})
005024177-01	OBS	4286.01	0.787107	131.747637	71.9	1.999	12.4	12.2	0.79	6112	0.78	3582.89
005024177-02	OBS	No	0.787078	132.170834	12.7	3.451	10.5	3.0	0.79	6112	0.28	3583.05

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005024177-01	OBS	FP	0.00	0	1	1	1	MOD_SEC_DV—MOD_SEC_ALT—HAS_SEC_TCE—CENT_RESOLVED_OFFSET—EPHEM_MATCH
005024177-02	OBS	FP	0.00	1	1	1	0	IS_SEC_TCE—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.

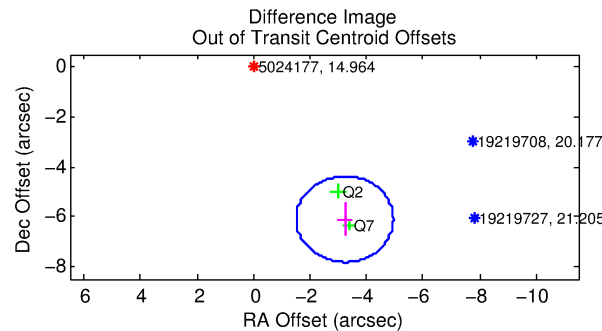
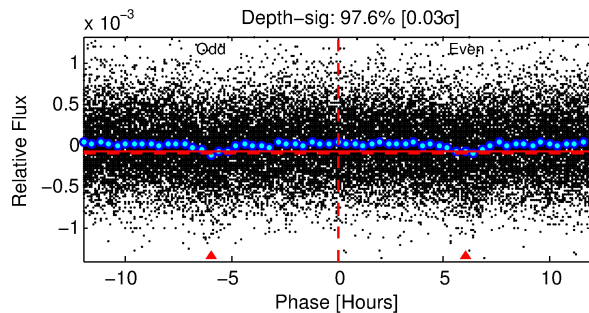
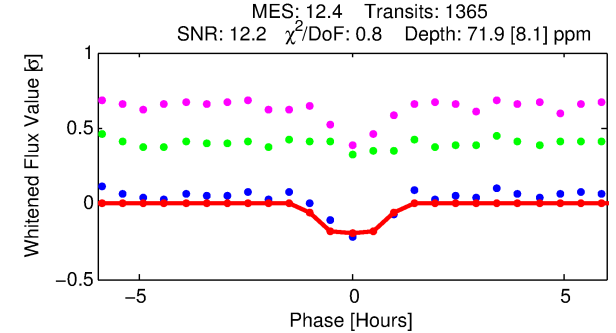
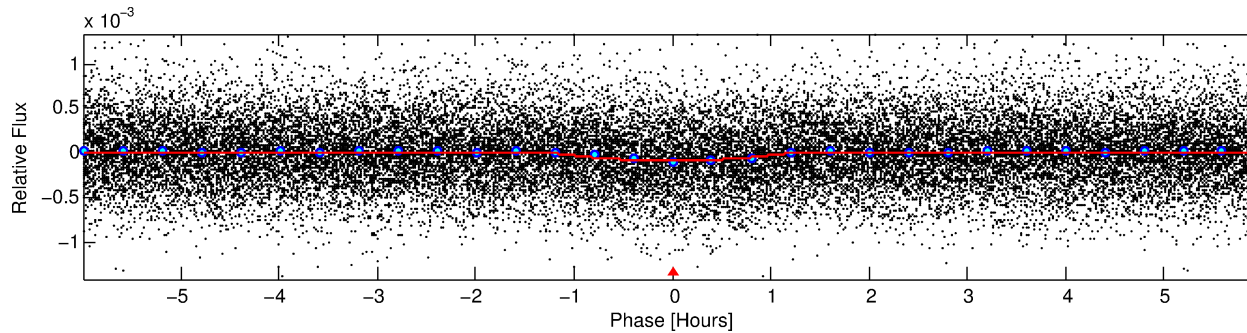
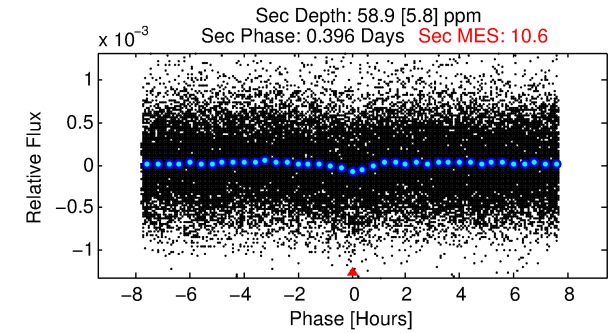
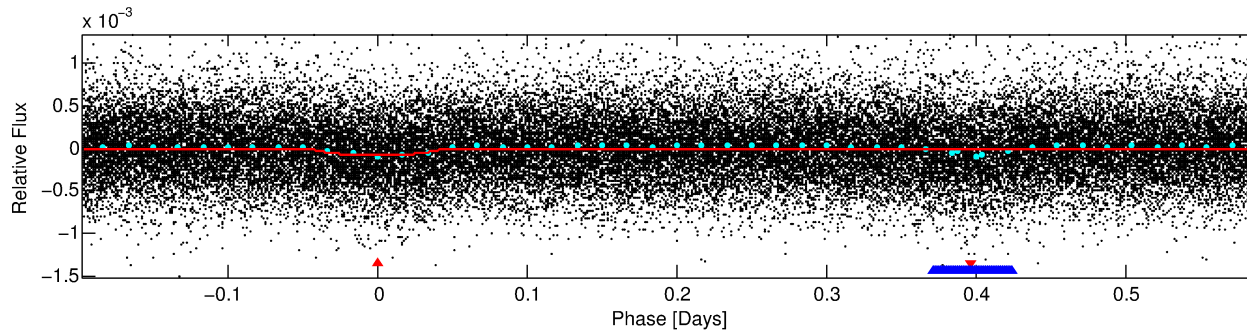
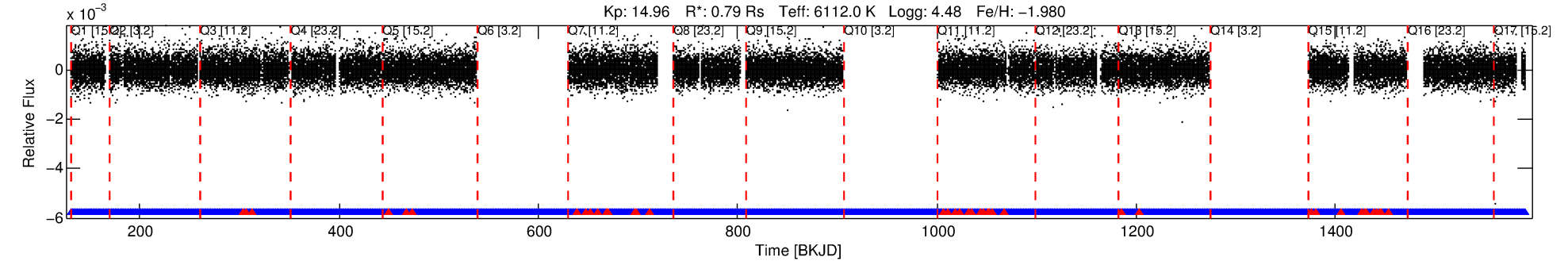
Ephemeris Match Information For 005024177-01

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
005024177-01	5024177	6493.01	5024126	1:1	20.5	3	-4	15.63	14.97	10.14	Direct-PRF	0	2.03	0.89

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: 5024177 Candidate: 1 of 2 Period: 0.787 d
KOI: K04286.01 Corr: 0.799



DV Fit Results:

Period = 0.78711 [0.00001] d
Epoch = 131.7476 [0.0023] BKJD
Rp/R* = 0.0091 [0.0043]
a/R* = 1.66 [2.90]
b = 0.90 [0.58]
Seff = 3582.88 [1000.23]
Teq = 1973 [138] K
Rp = 0.78 [0.38] Re
a = 0.0147 [0.0021] AU
Ag = 11.53 [11.34] [0.93σ]
Teffp = 5620 [1350] K [2.69σ]

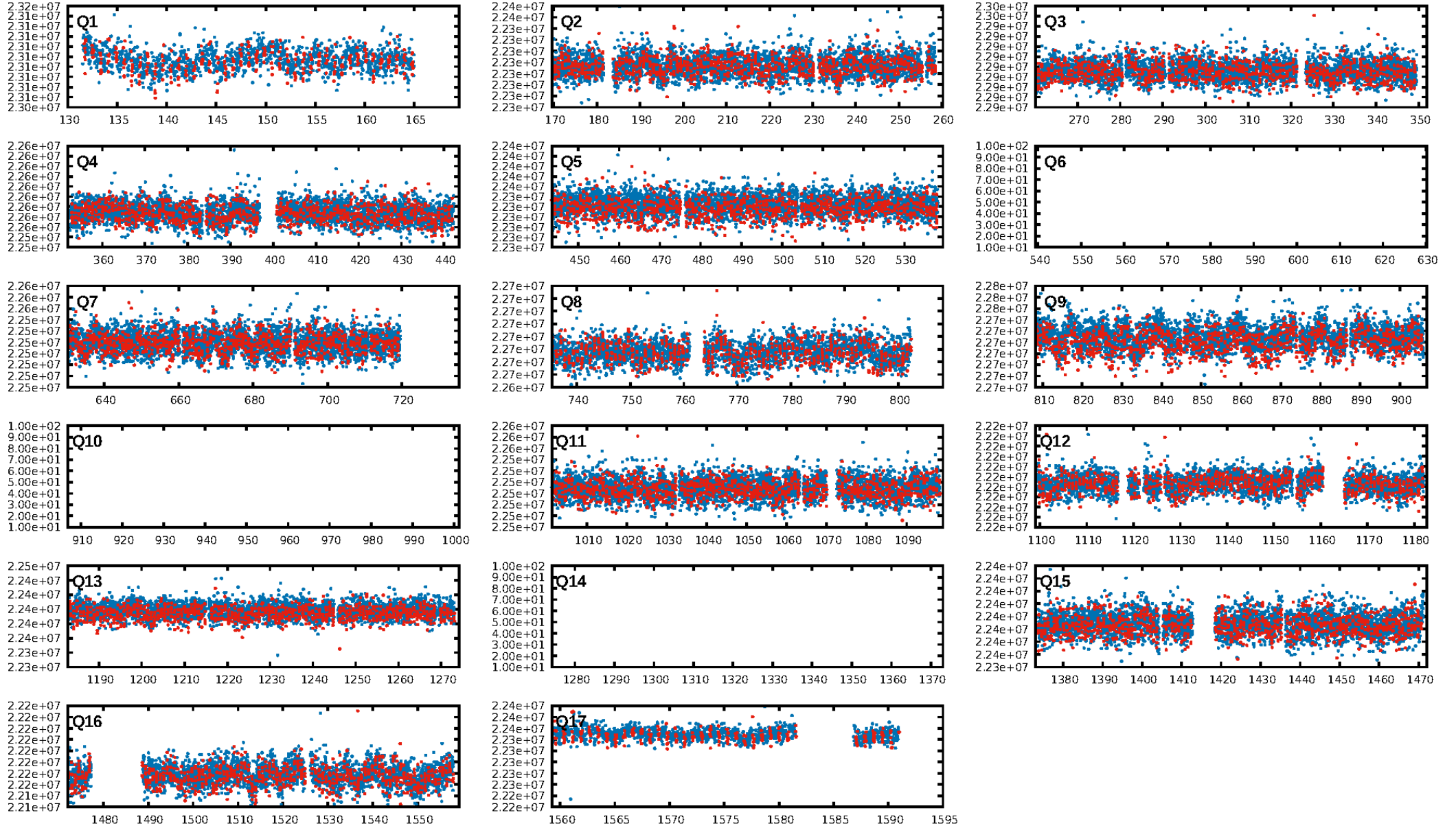
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 1.48e-49
RollingBand-fgt: 0.97 [1246/1287]
GhostDiagnostic-chr: -0.3797
Centroid-sig: 0.0%
Centroid-so: 19.504 arcsec [18.26σ]
OotOffset-rm: 6.909 arcsec [12.04σ]
KicOffset-rm: 6.882 arcsec [13.36σ]
OotOffset-st: 1/1/0/0 [2]
KicOffset-st: 1/1/0/0 [2]
DiffImageQuality-fgm: 1.00 [2/2]
DiffImageOverlap-fno: 1.00 [14/14]

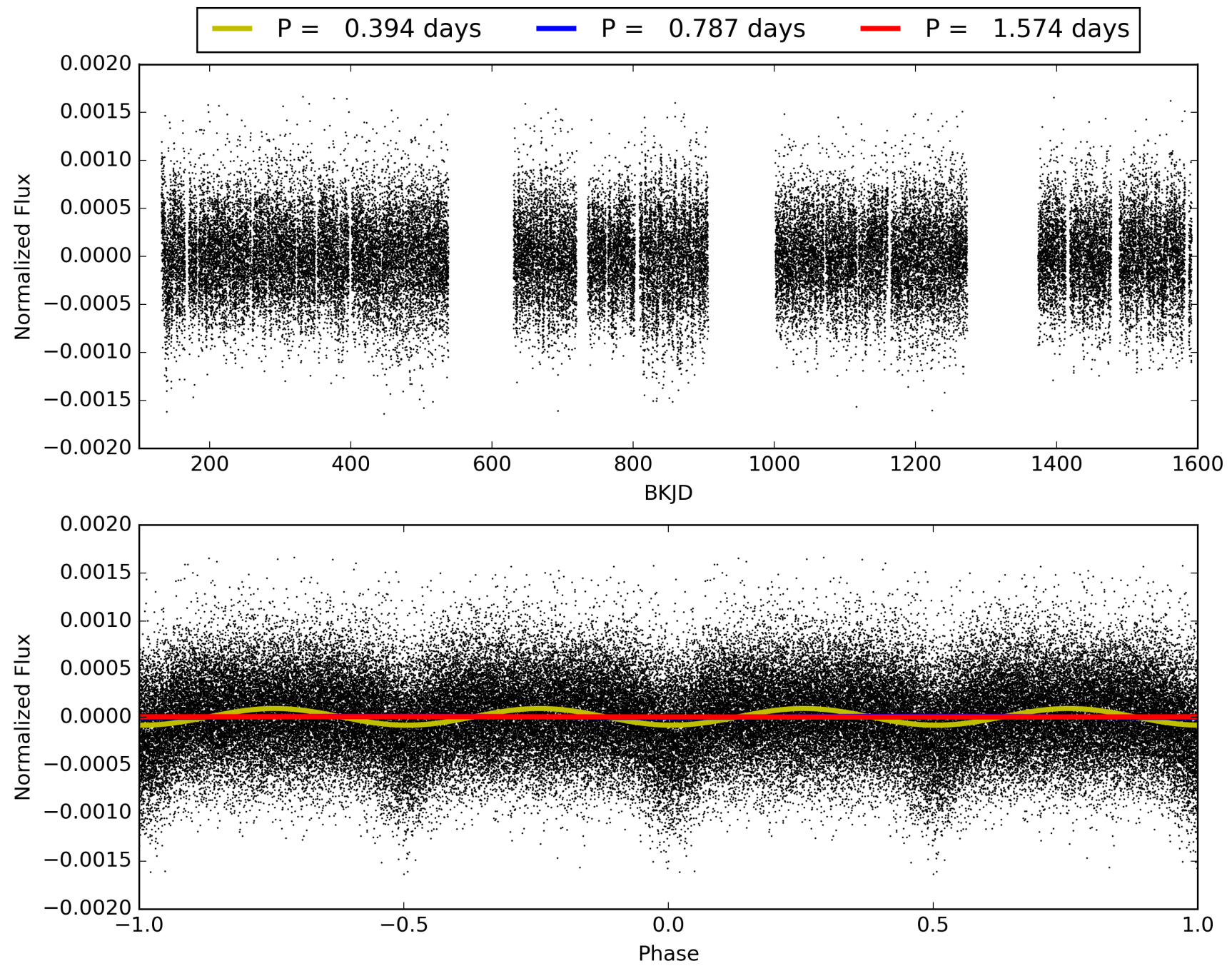
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 14:33:35 Z

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

TCE 005024177-01, PDC Light Curves

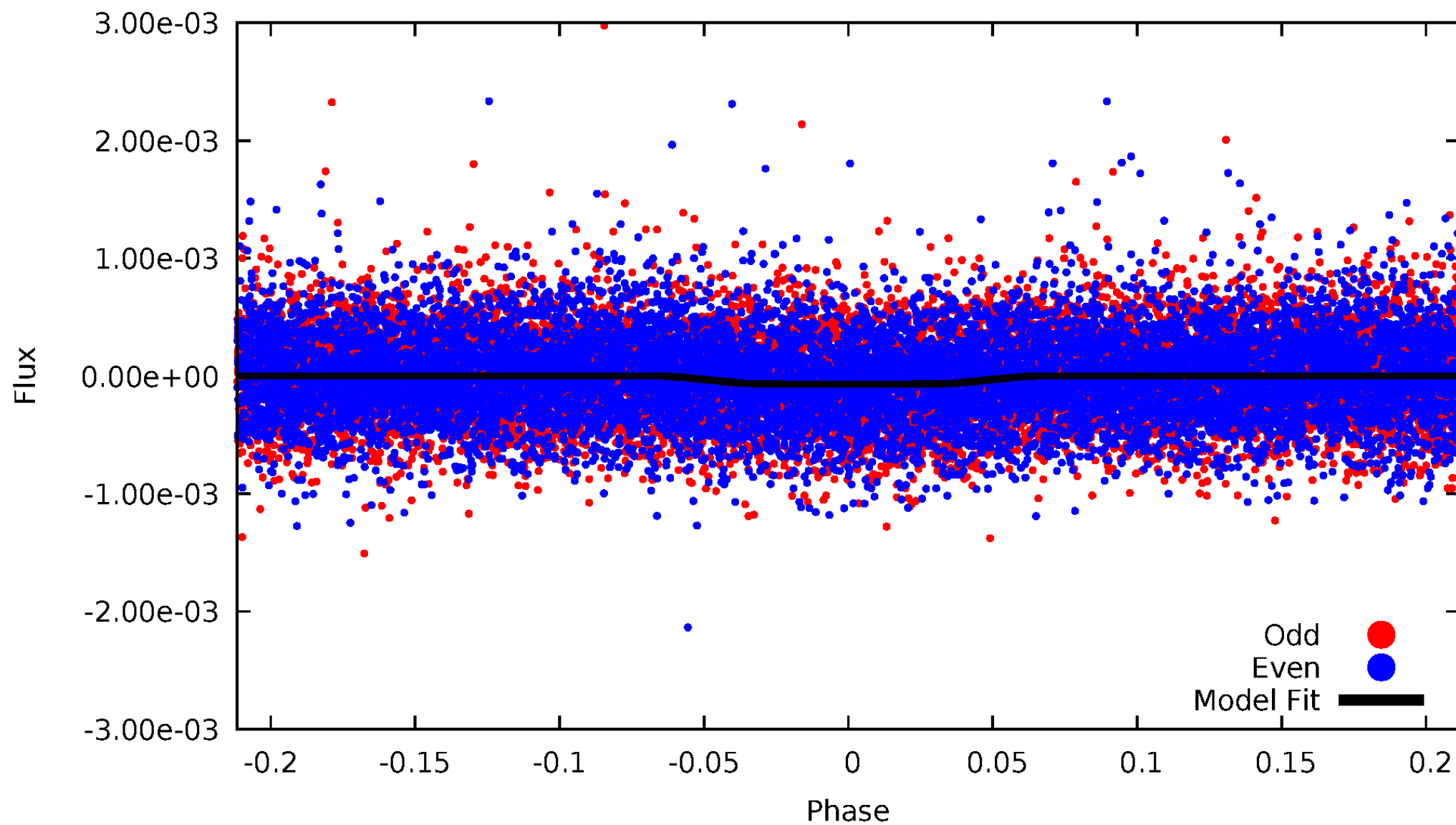


TCE 005024177-01



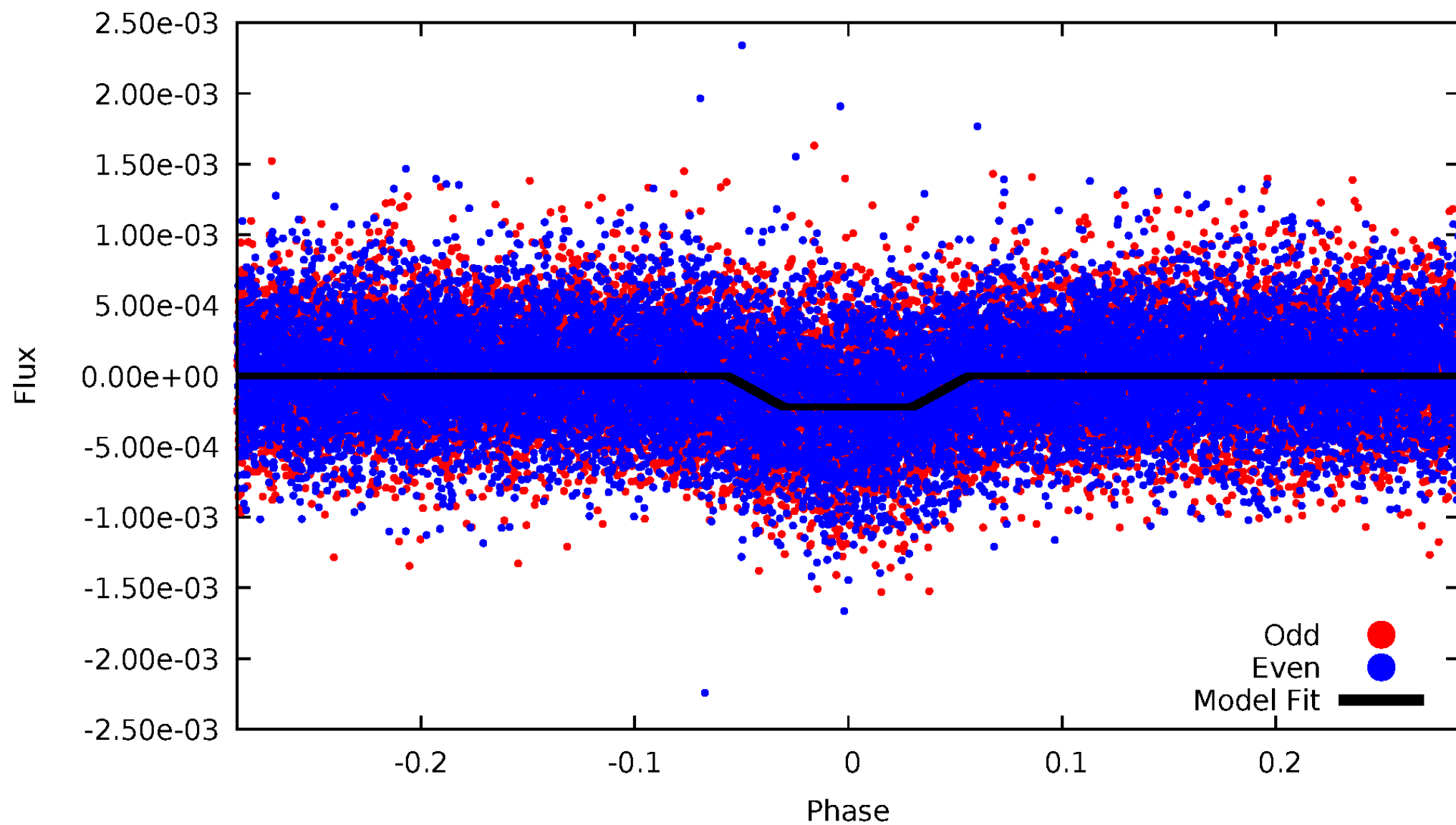
DV Odd/Even

TCE 005024177-01



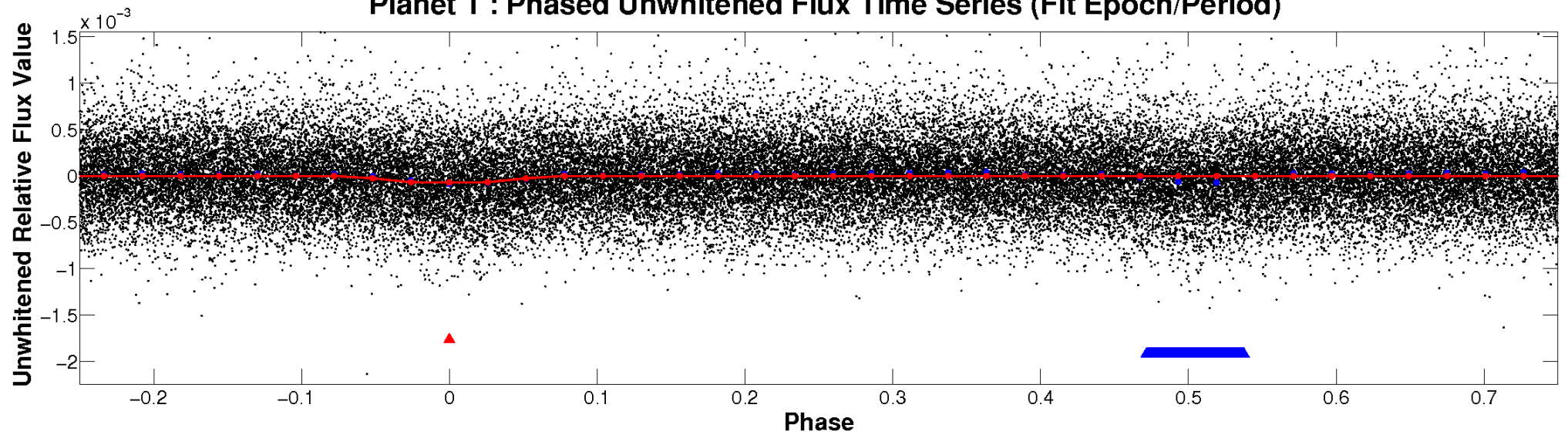
ALT Odd/Even

TCE 005024177-01

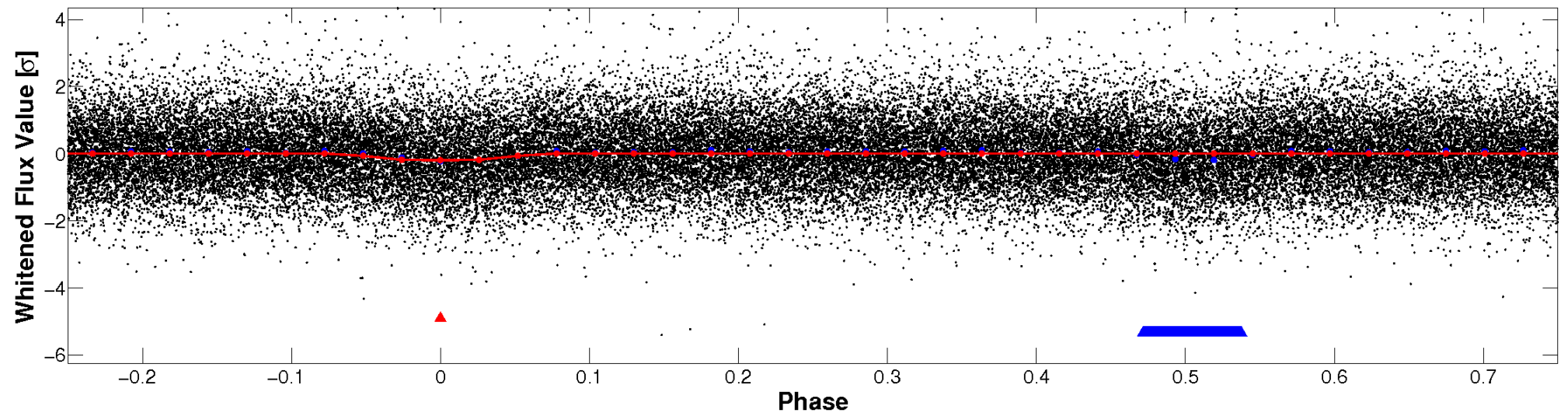


Non-Whitened Vs. Whitened Light Curve

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

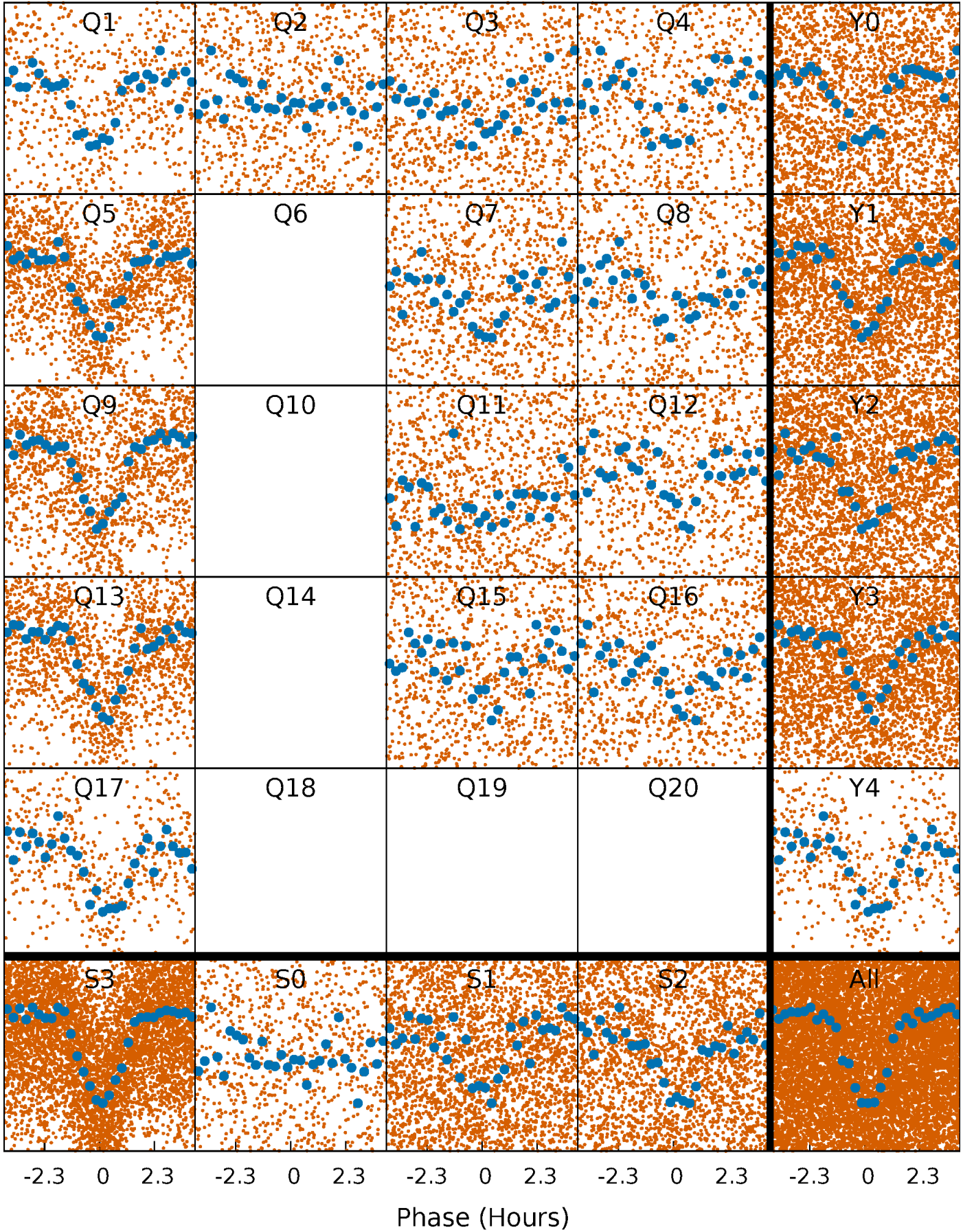


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



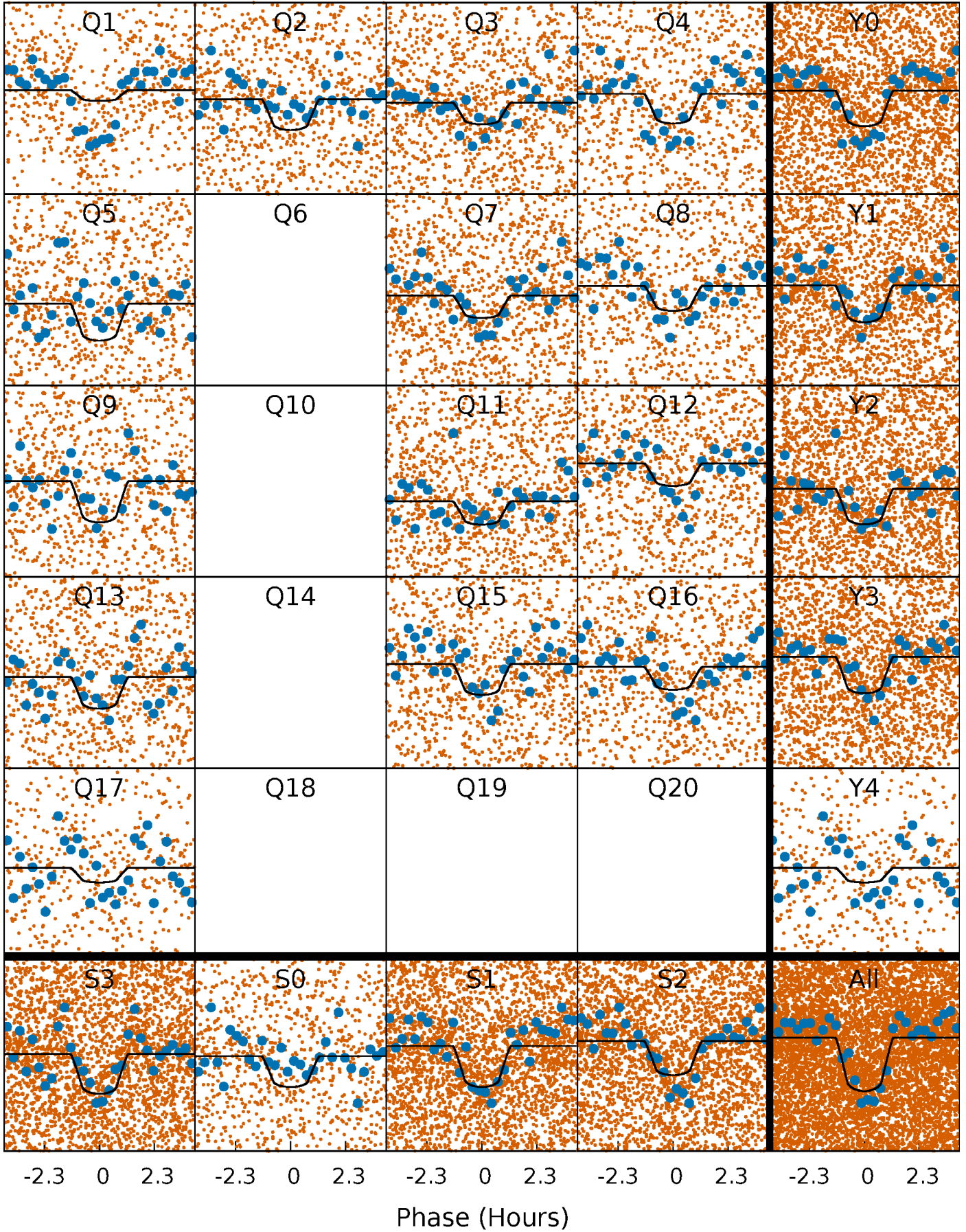
PDC Quarter-Phased Transit Curves

TCE 005024177-01 P= 0.787107 Days $T_0=131.747637$ (BKJD)



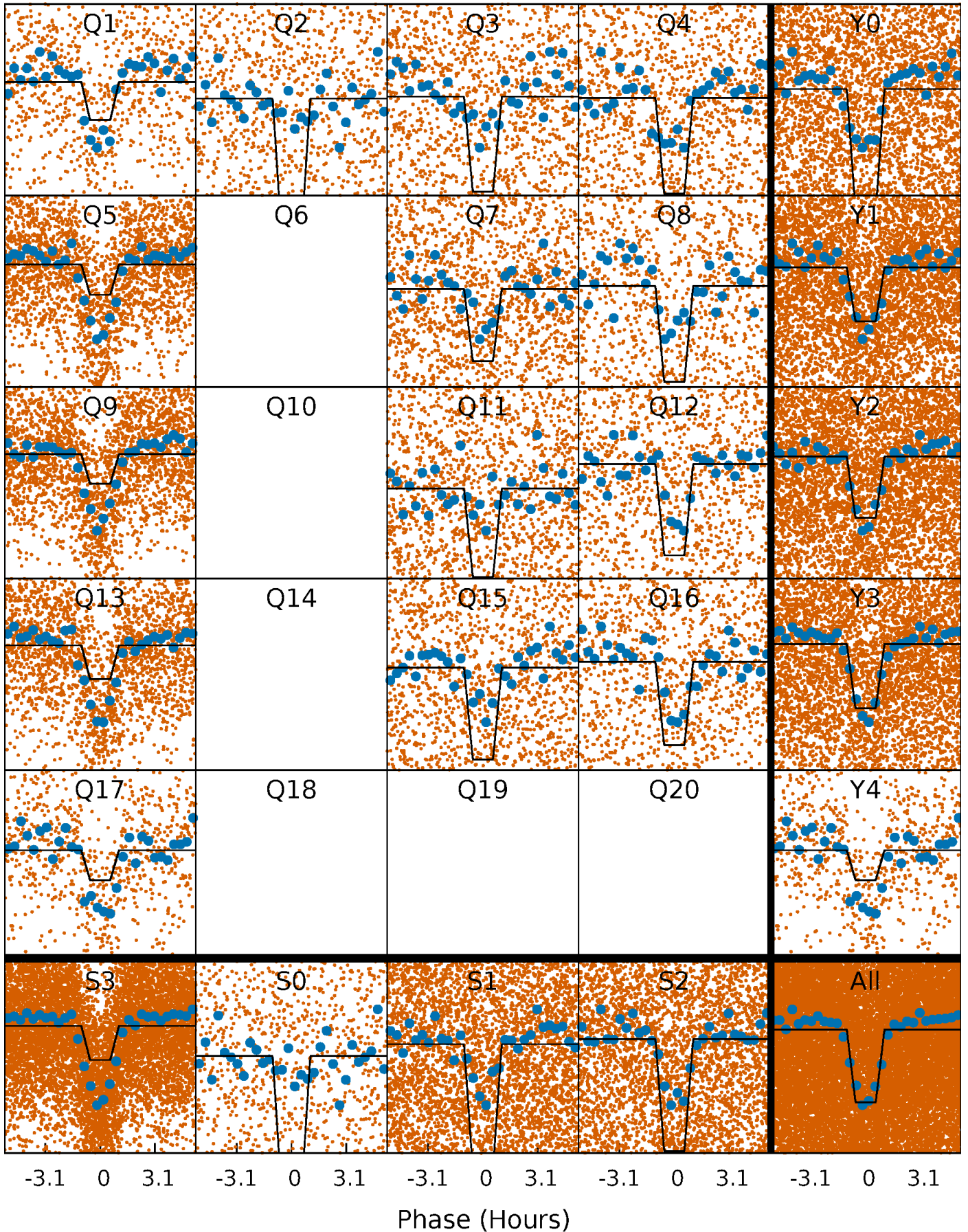
DV Quarter-Phased Transit Curves

TCE 005024177-01 P= 0.787107 Days $T_0=131.747637$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

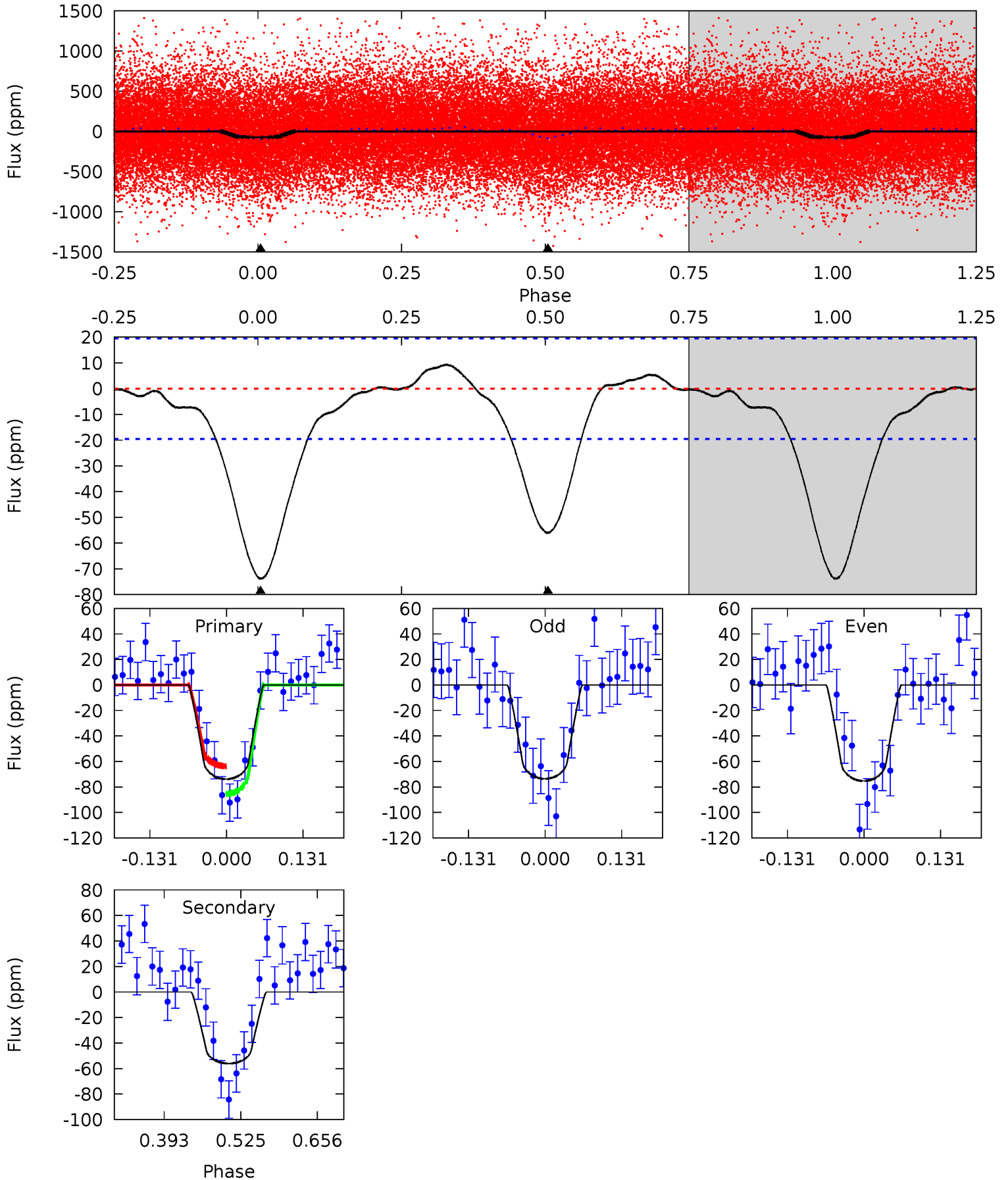
TCE 005024177-01 P= 0.787116 Days $T_0=131.743629$ (BKJD)



DV Model-Shift Uniqueness Test

005024177-01, P = 0.787107 Days, E = 130.960530 Days

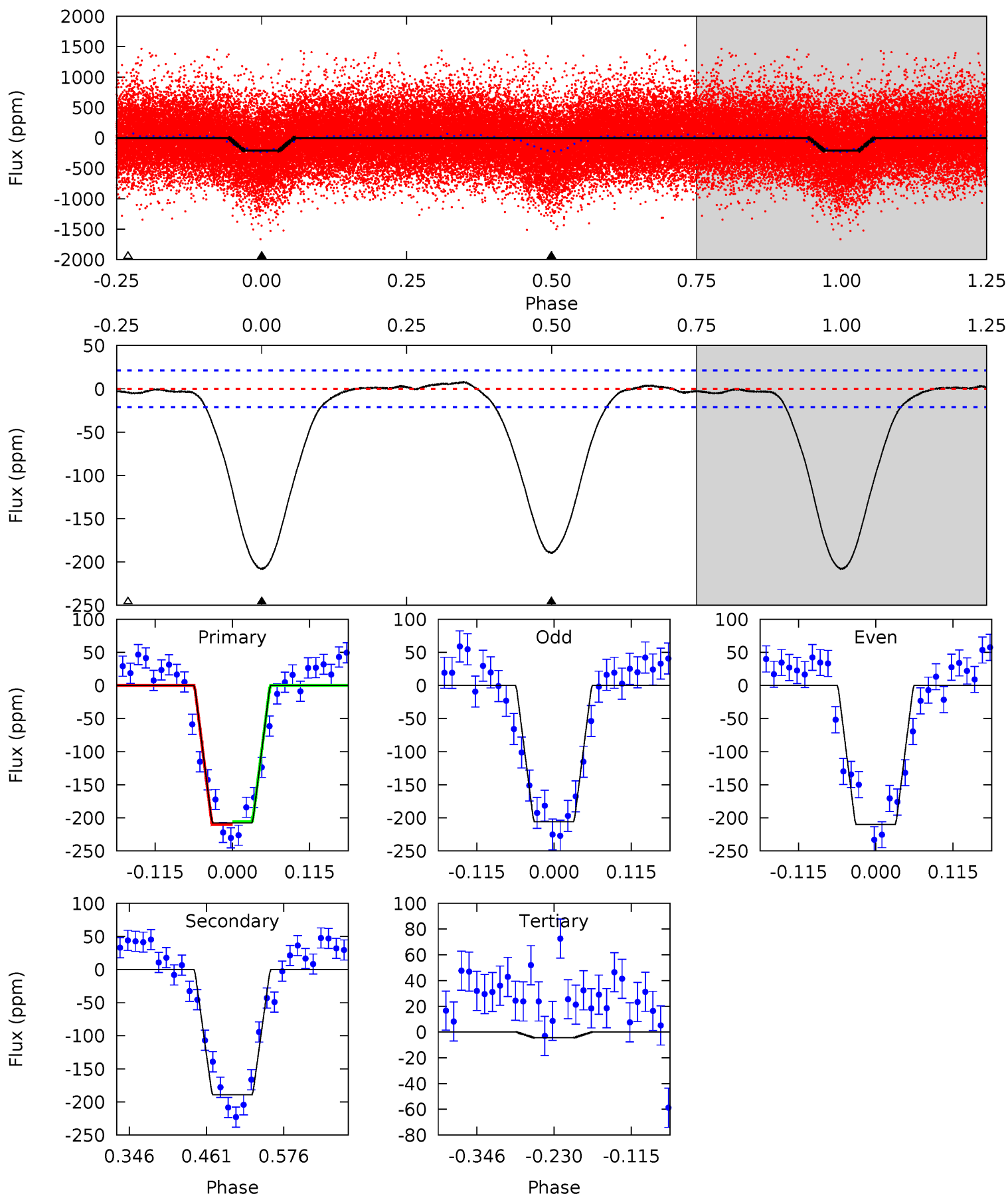
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
17.1	12.9	0	0	4.51	1.51	1.00	17.1	17.1	12.9	12.9	0.19	1.05	0.11	2.51



Alt Model-Shift Uniqueness Test

005024177-01, P = 0.787116 Days, E = 130.956513 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
44.5	40.5	0.93	0	4.54	1.58	0.79	43.5	44.5	39.6	40.5	0.44	1.03	0.03	0.47



Stellar Parameters For KIC 005024177

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6112^{+201}_{-201}	$4.481^{+0.150}_{-0.100}$	$-1.980^{+0.250}_{-0.050}$	$0.787^{+0.093}_{-0.103}$	$0.684^{+0.069}_{-0.017}$	$1.978^{+1.208}_{-0.535}$
	+3%/-3%	+3%/-2%	+13%/-3%	+12%/-13%	+10%/-2%	+61%/-27%
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 005024177-01 / KOI 4286.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-56 ± 4	$0.77^{+0.39}_{-0.34}$	2739^{+131}_{-156}	5525^{+1974}_{-891}	11^{+25}_{-6}
Alt.	-189 ± 5	$1.28^{+0.38}_{-0.37}$	2749^{+136}_{-147}	5840^{+1136}_{-670}	14^{+14}_{-5}

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 $A_{obs} \gg 1.0$

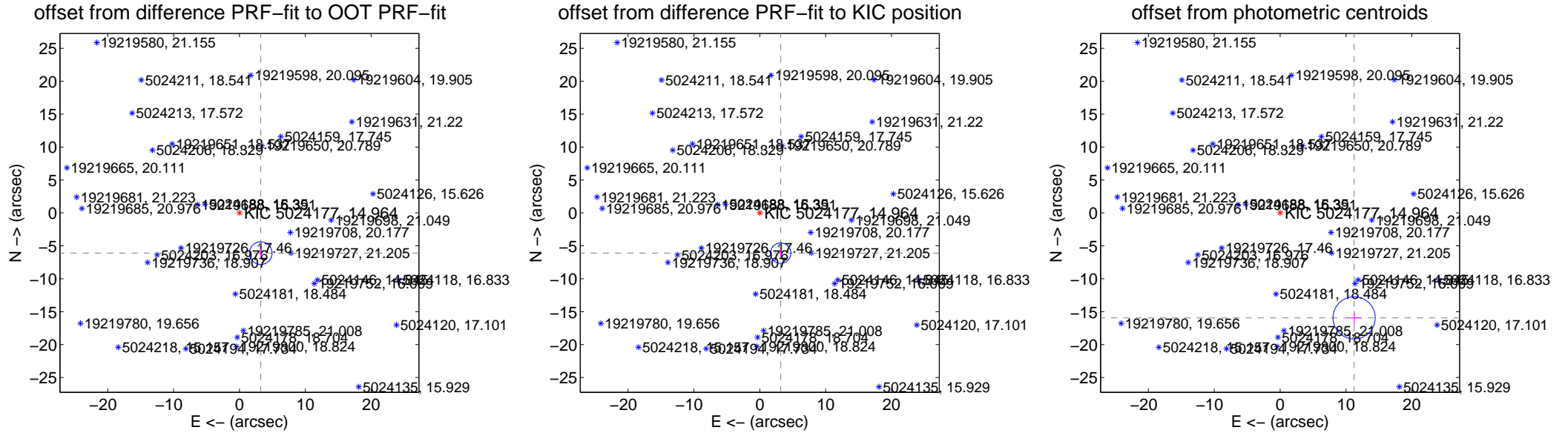
DV Centroid Data

Supplemental centroid analysis for 005024177-01. Kepler magnitude: 14.96. Transit SNR 12.22

There are 2 quarters with good PRF difference image offsets

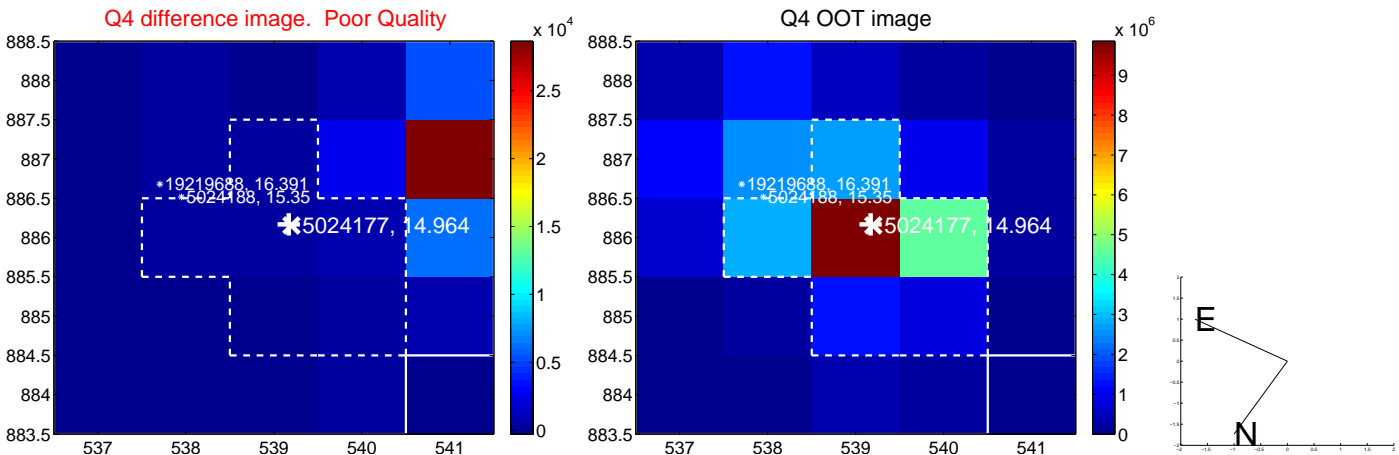
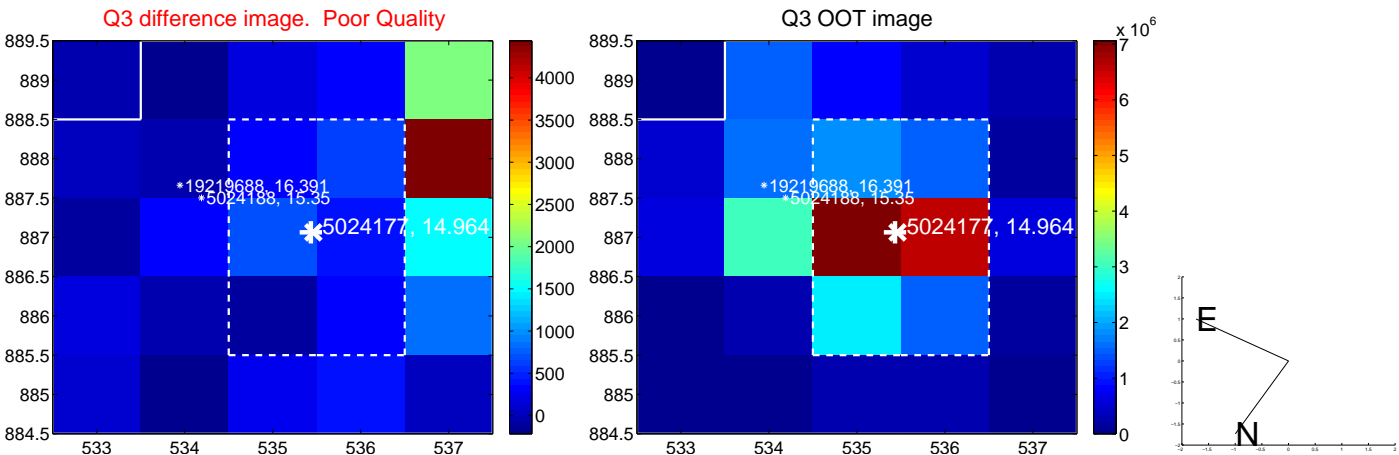
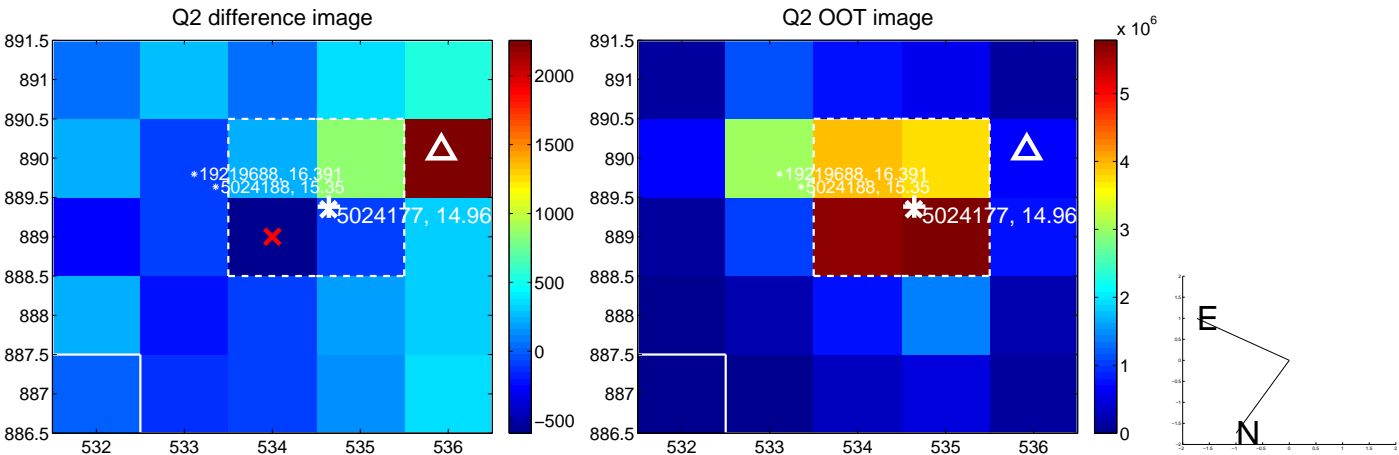
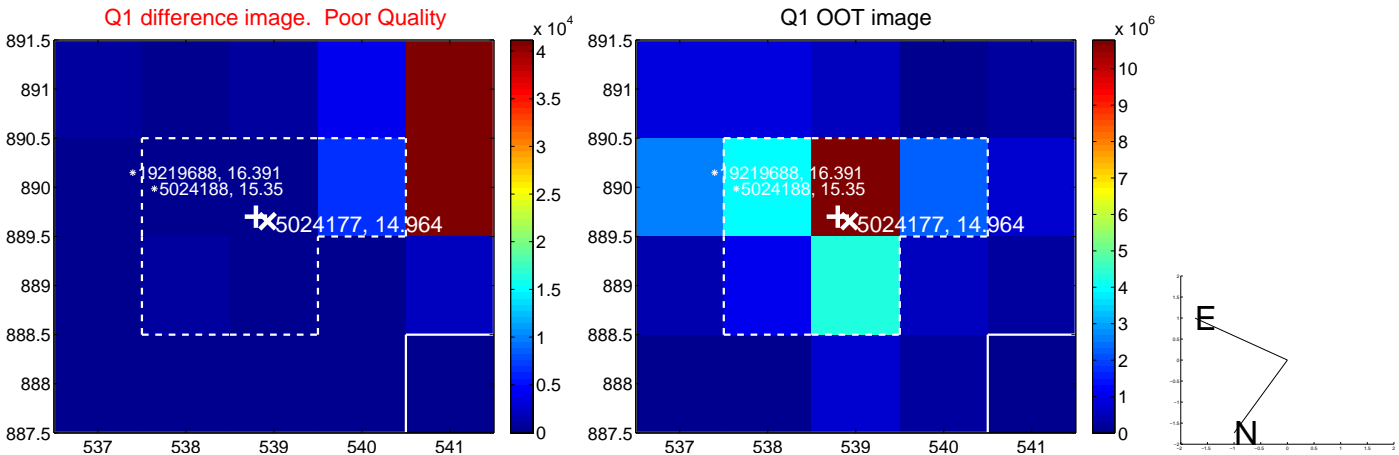
The direct PRF centroid is offset from the target star catalog position by about 0.06 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	6.909 ± 0.574	12.04	-3.229 ± 0.245	-6.108 ± 0.636
PRF-fit source offset from KIC position	6.882 ± 0.515	13.36	-3.174 ± 0.244	-6.106 ± 0.566
photometric centroid source offset	19.50 ± 1.07	18.26	-11.24 ± 1.11	-15.94 ± 1.05

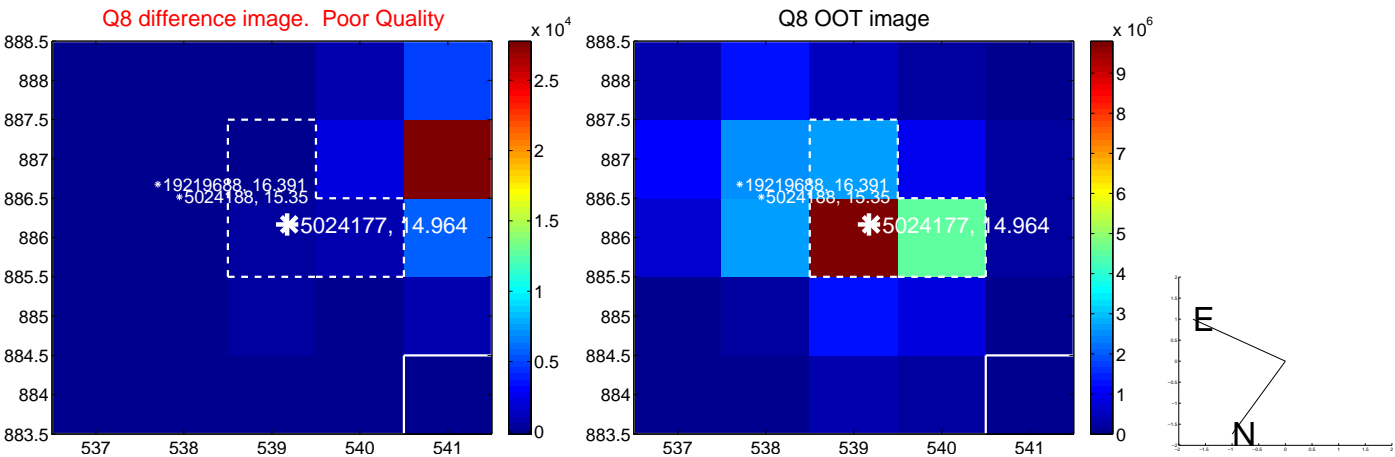
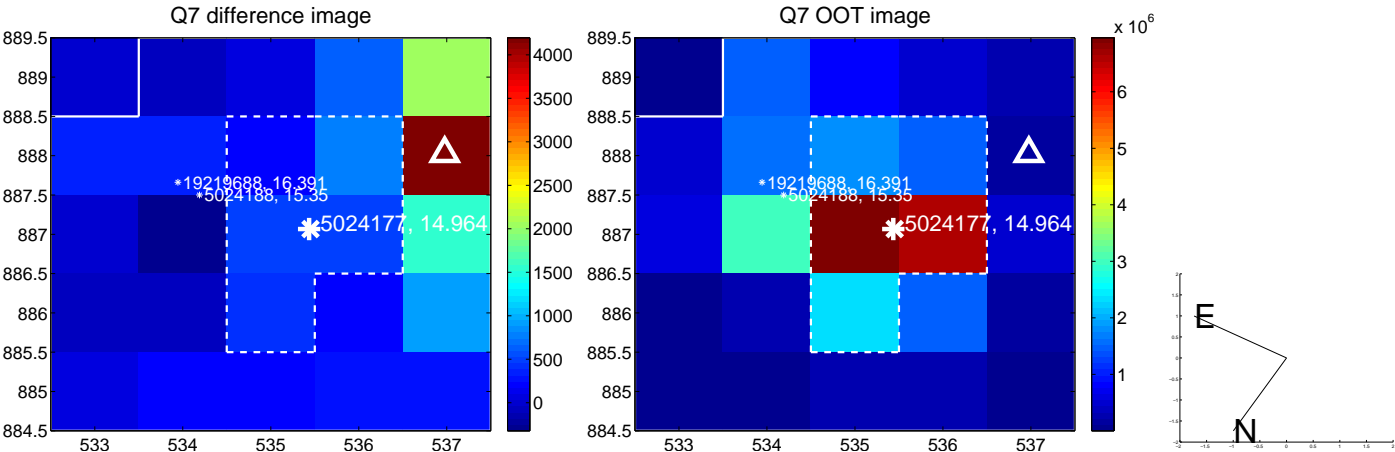
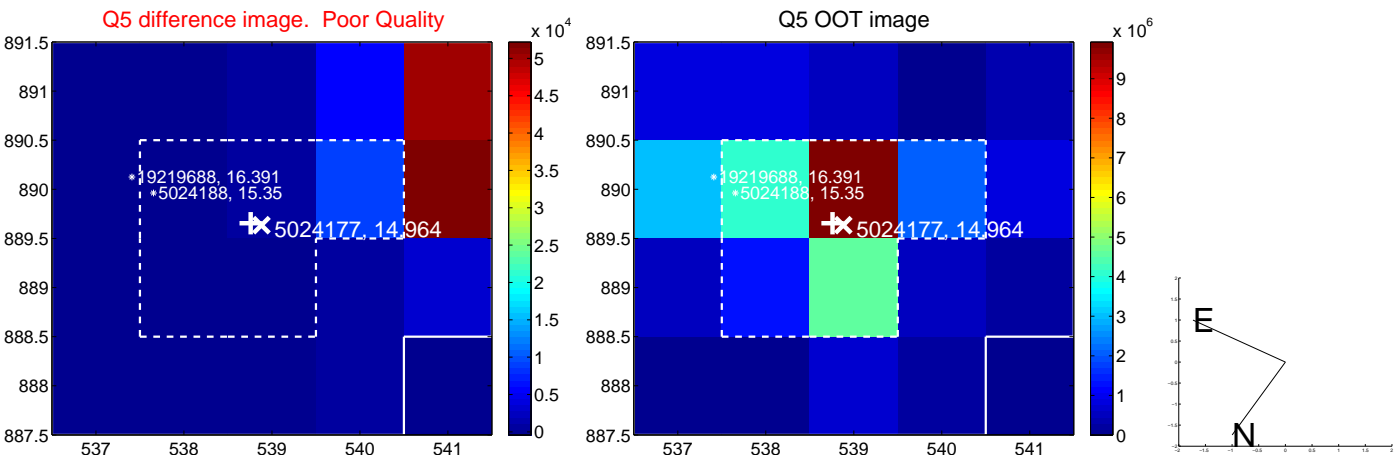


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

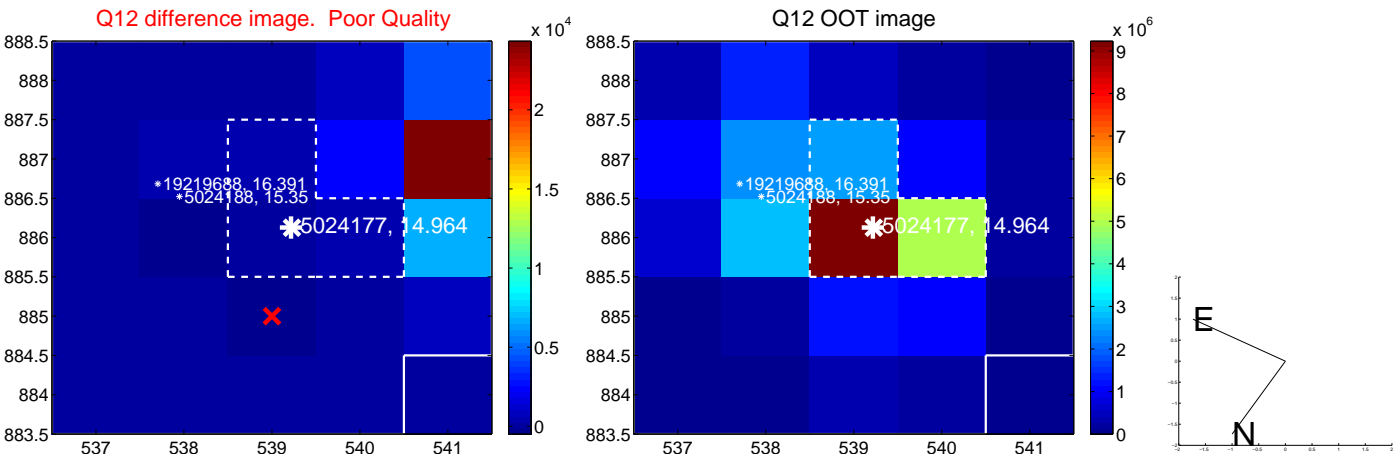
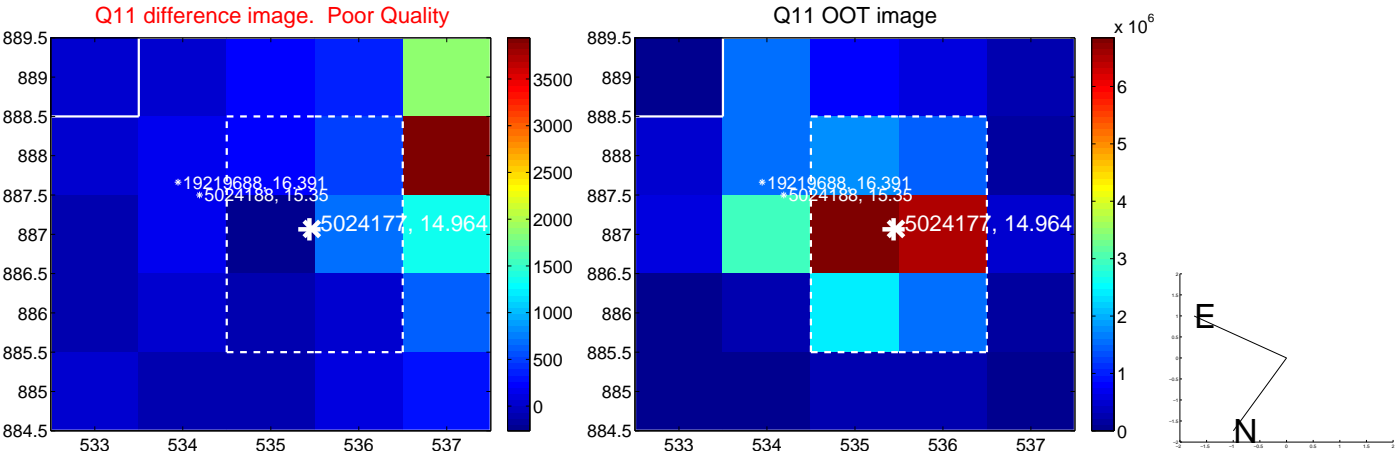
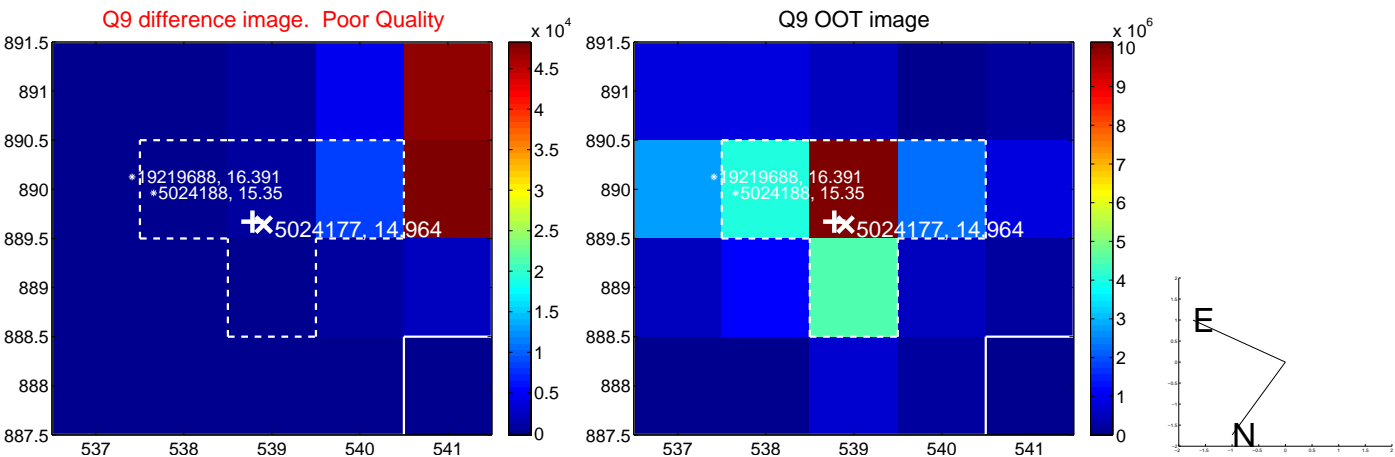
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



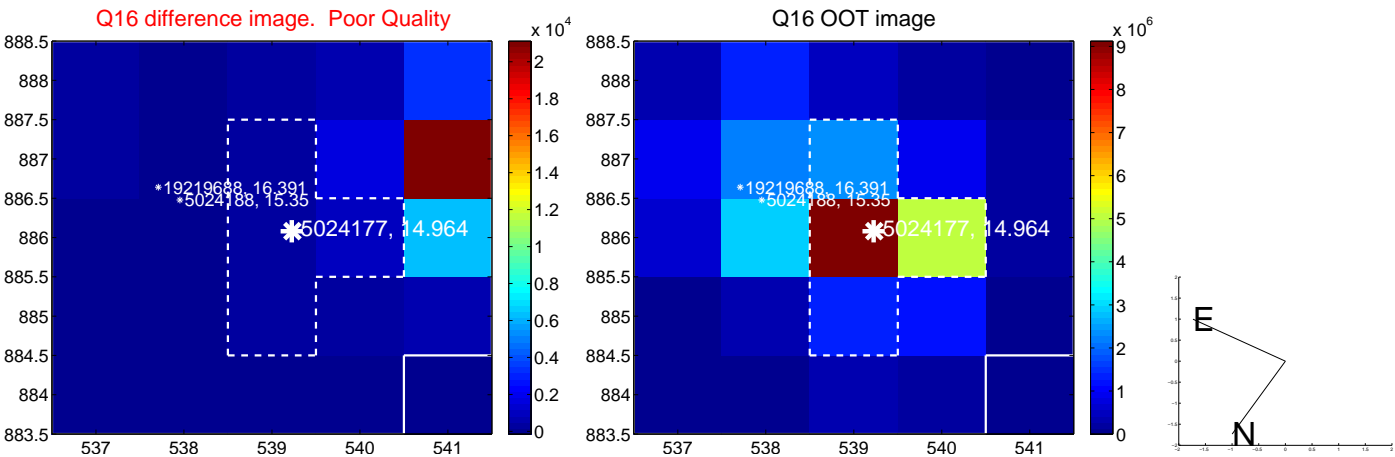
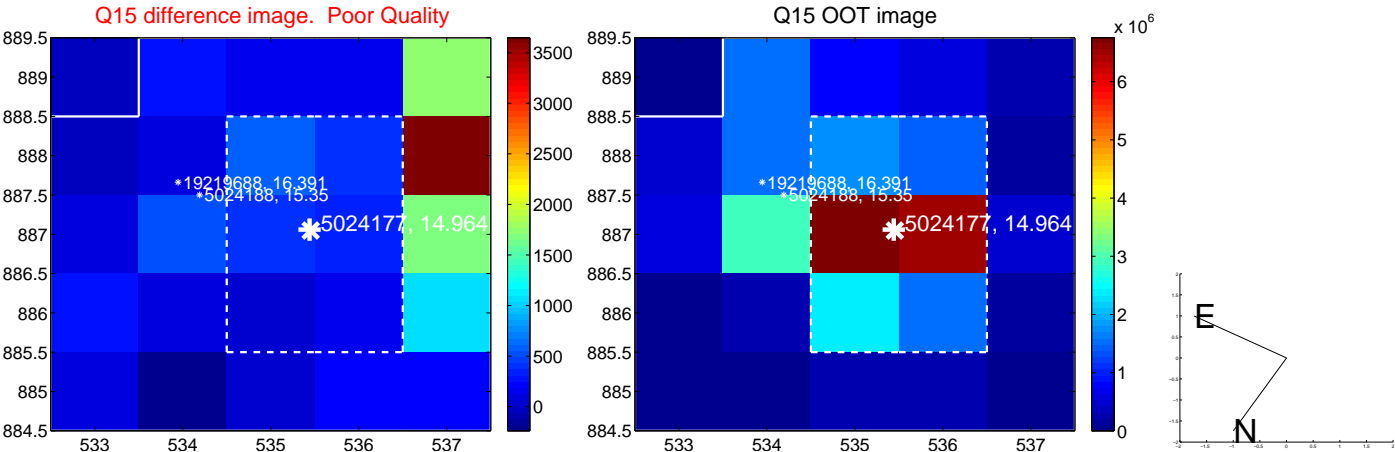
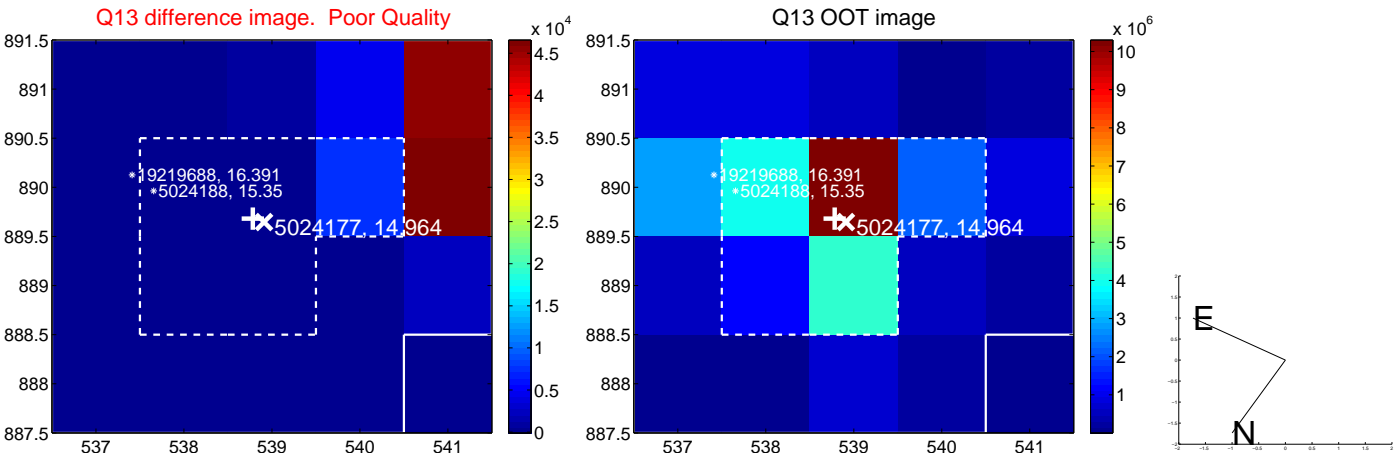
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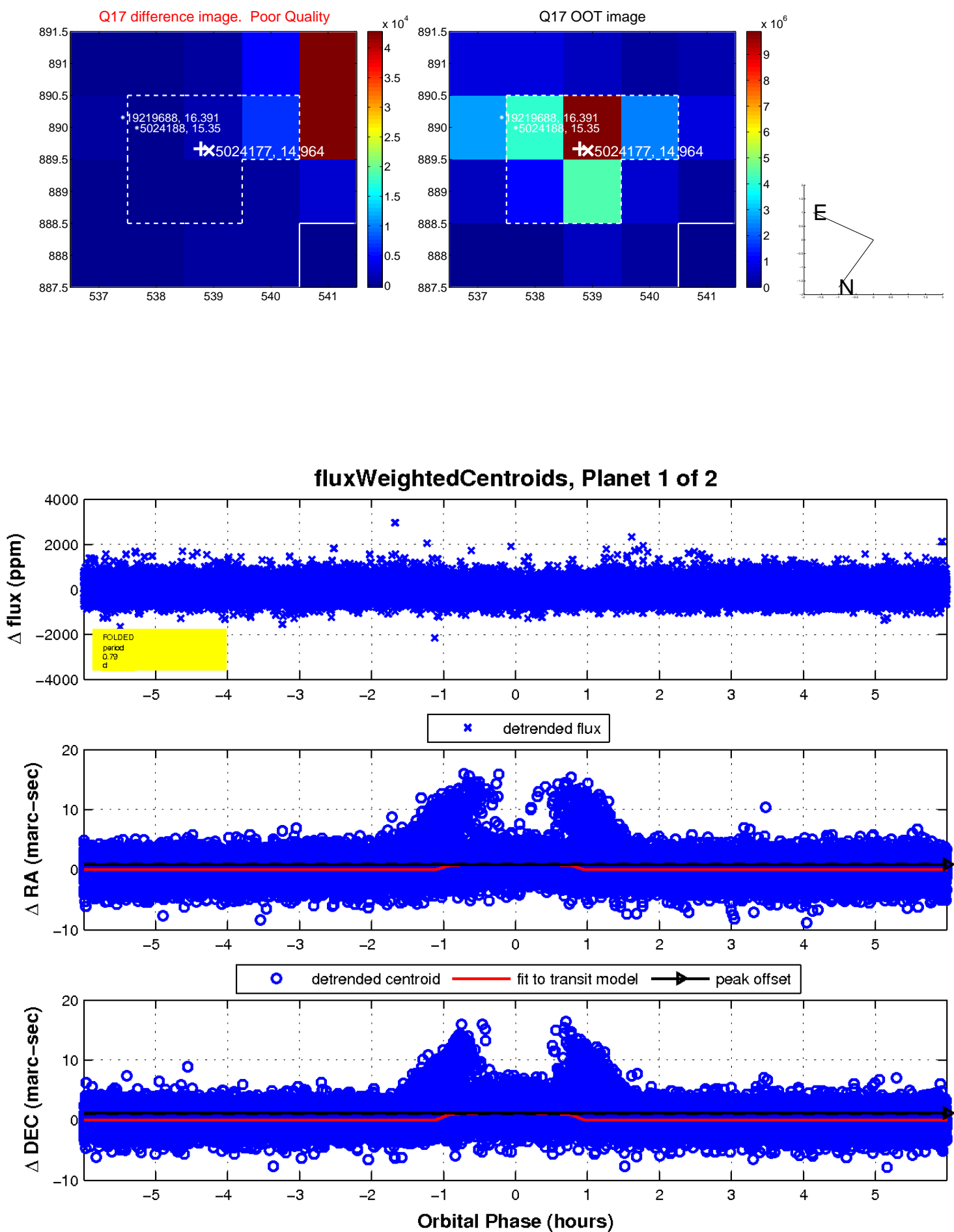
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white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

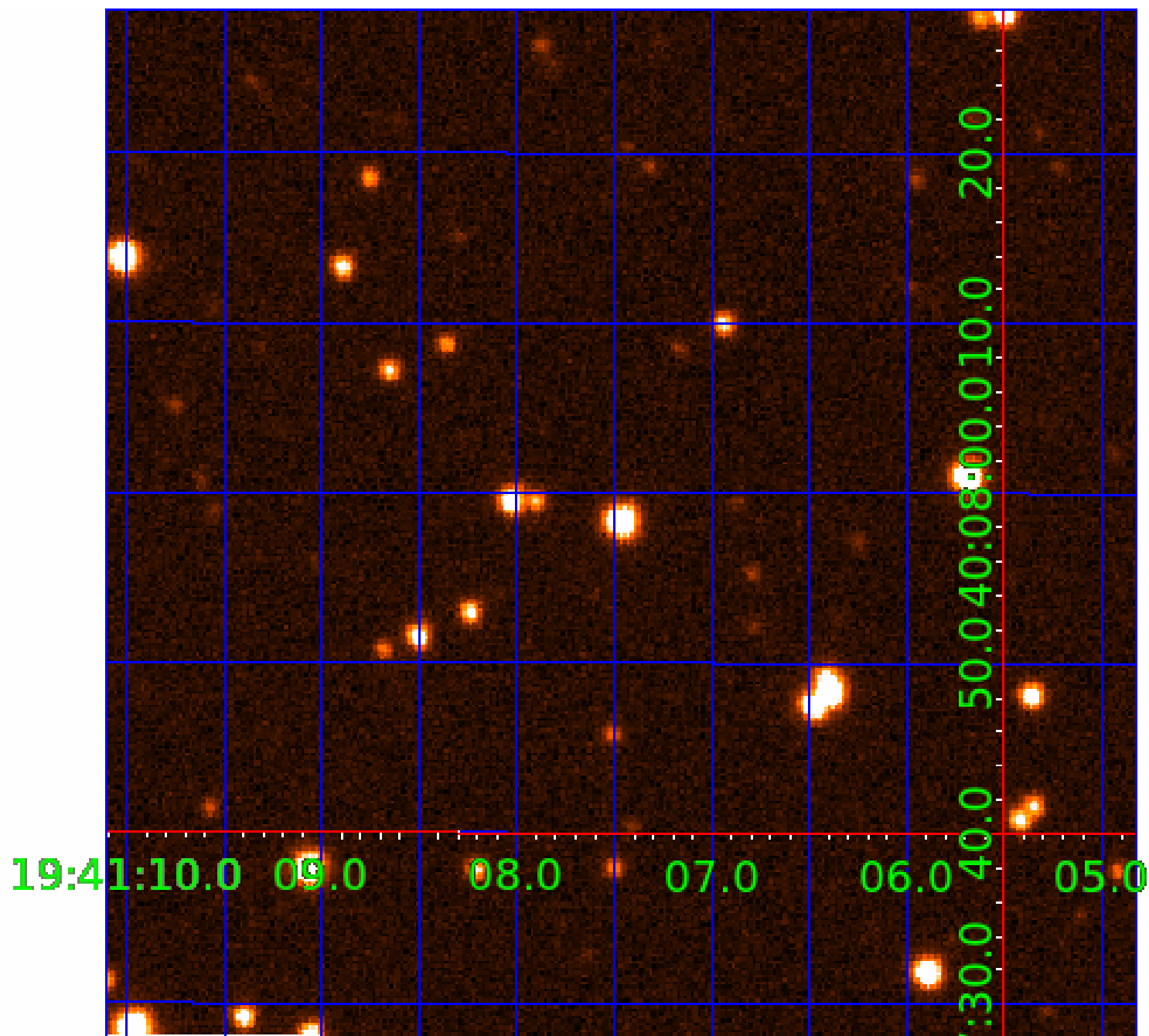


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 005024177

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})
005024177-01	OBS	4286.01	0.787107	131.747637	71.9	1.999	12.4	12.2	0.79	6112	0.78	3582.89
005024177-02	OBS	No	0.787078	132.170834	12.7	3.451	10.5	3.0	0.79	6112	0.28	3583.05

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005024177-01	OBS	FP	0.00	0	1	1	1	MOD_SEC_DV—MOD_SEC_ALT—HAS_SEC_TCE—CENT_RESOLVED_OFFSET—EPHEM_MATCH
005024177-02	OBS	FP	0.00	1	1	1	0	IS_SEC_TCE—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.

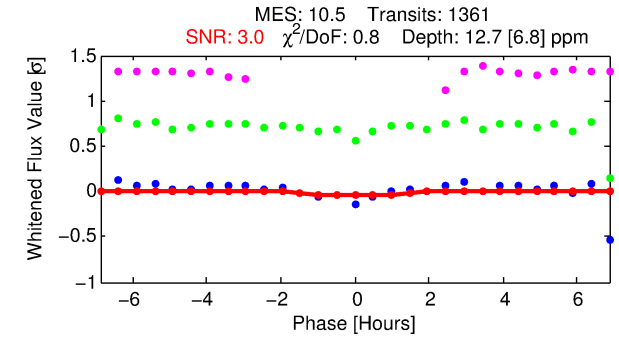
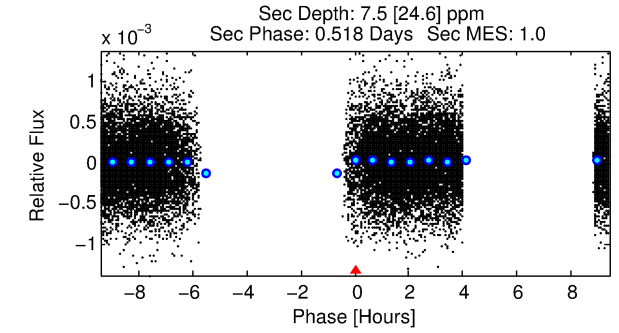
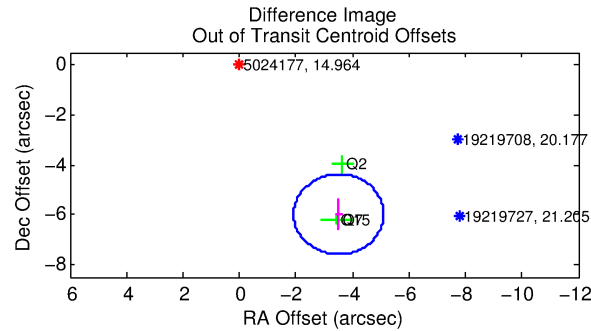
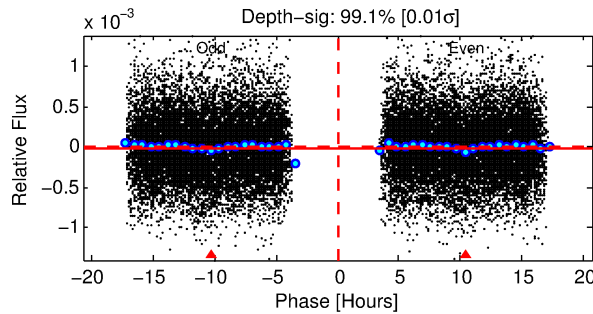
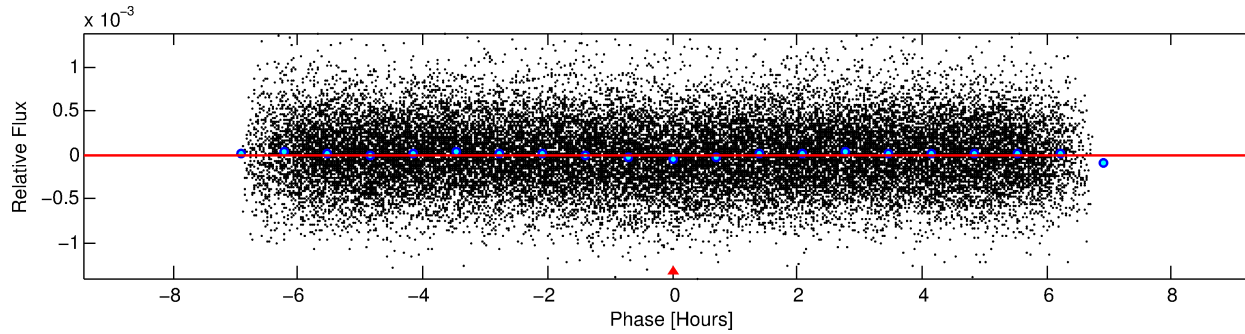
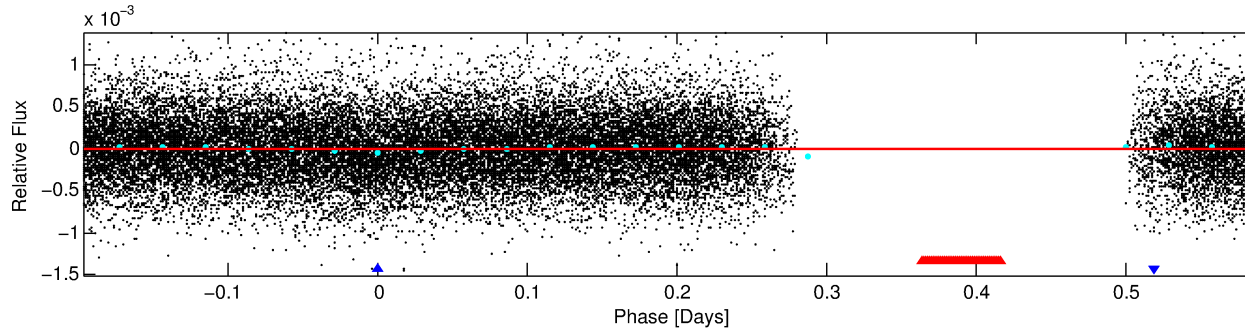
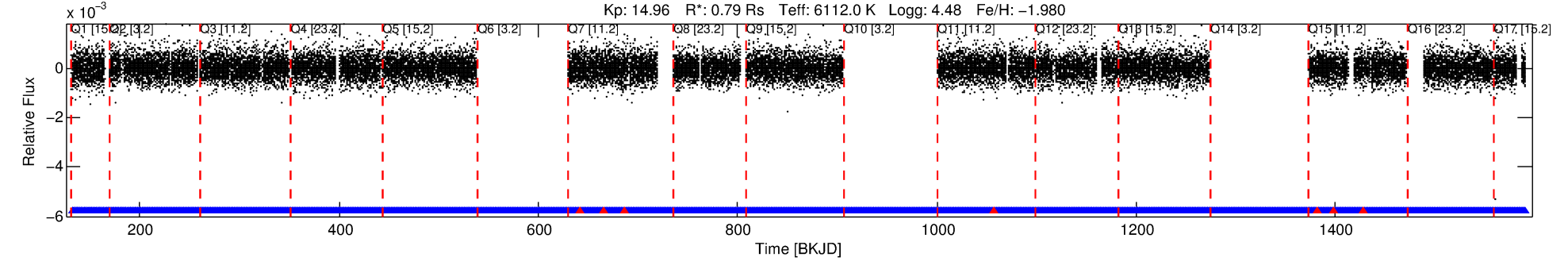
Ephemeris Match Information For 005024177-02

No Significant Match Found

DV One-Page Summary

KIC: 5024177 Candidate: 2 of 2 Period: 0.787 d
KOI: K04286 Corr: No Ephemeris Match

Kp: 14.96 R*: 0.79 Rs Teff: 6112.0 K Logg: 4.48 Fe/H: -1.980



DV Fit Results:

Period = 0.78708 [0.00004] d
Epoch = 132.1708 [0.0143] BKJD
Rp/R* = 0.0033 [0.0109]
a/R* = 1.85 [23.18]
b = 0.00 [8574.20]
Seff = 3583.06 [1000.28]
Teq = 1973 [138] K
Rp = 0.28 [0.94] Re
a = 0.0147 [0.0021] AU
Ag = 11.21 [82.98] [0.12σ]
Teffp = 5582 [10322] K [0.35σ]

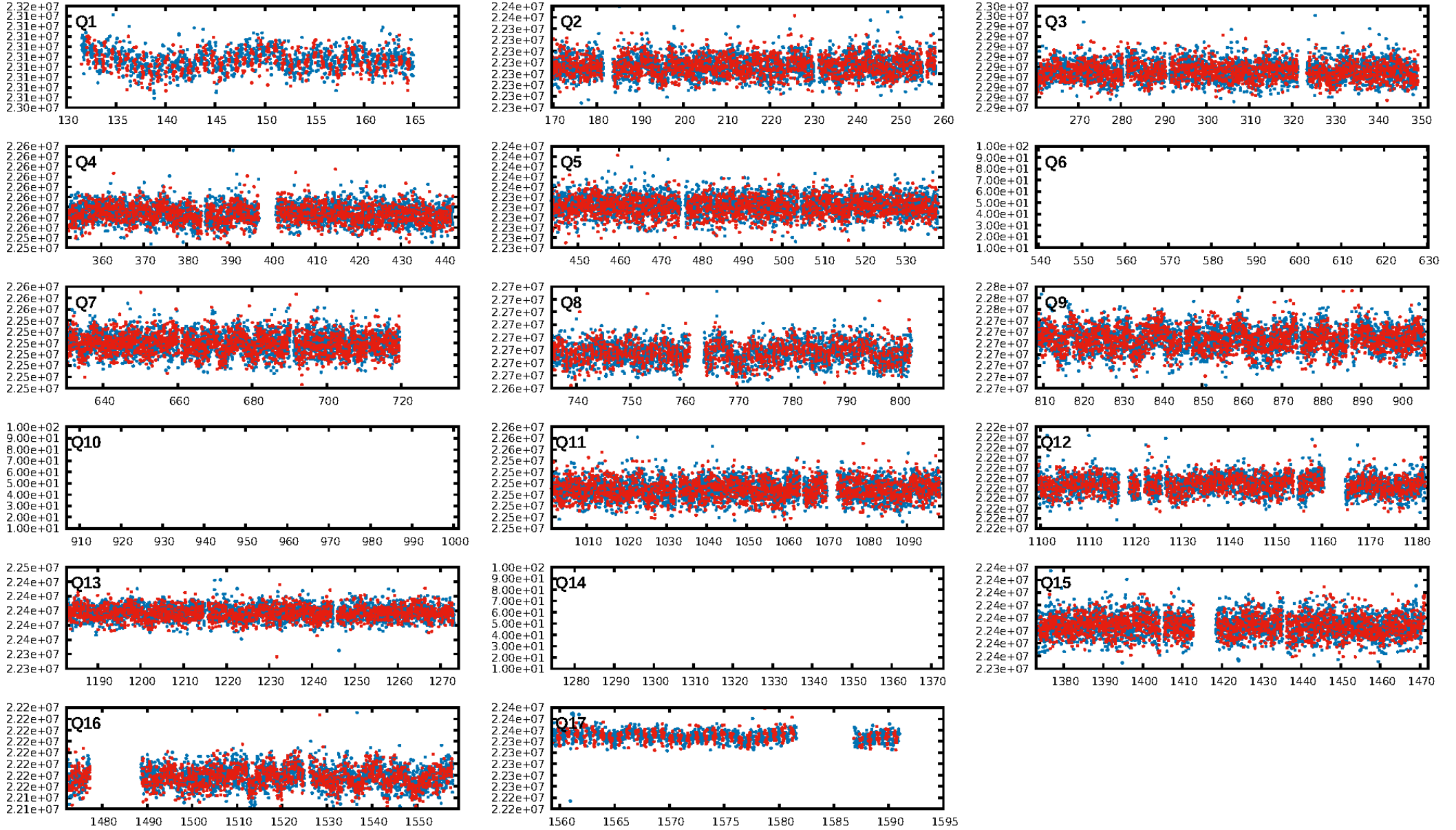
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.0% [0.00σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 2.24e-38
RollingBand-fgt: 0.99 [1279/1286]
GhostDiagnostic-chr: -0.2961
Centroid-sig: 0.0%
Centroid-so: 56.999 arcsec [12.32σ]
OotOffset-rm: 6.939 arcsec [13.02σ]
KicOffset-rm: 6.919 arcsec [10.13σ]
OotOffset-st: 1/2/0/0 [3]
KicOffset-st: 1/2/0/0 [3]
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DiffImageOverlap-fno: 0.43 [6/14]

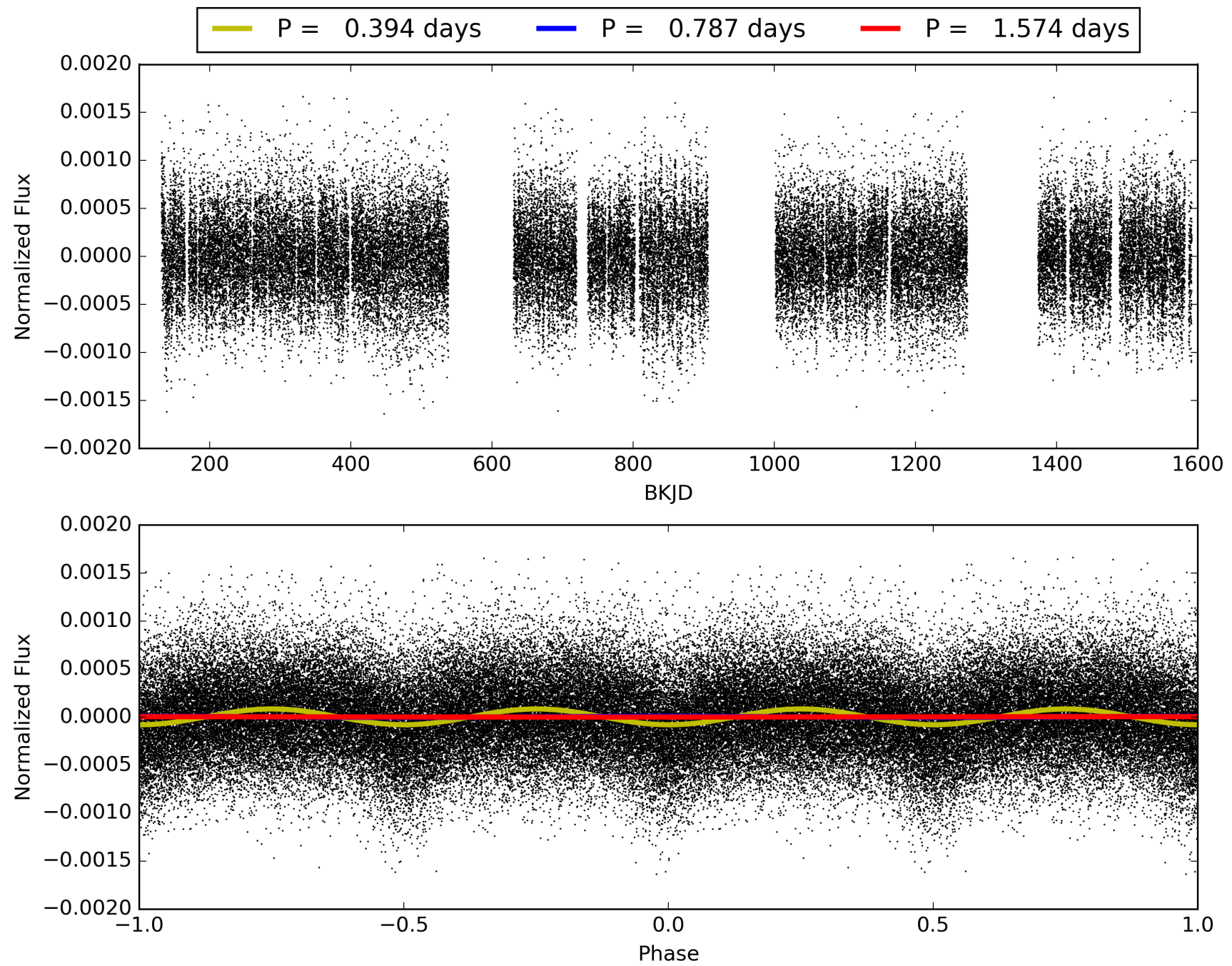
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 14:33:46 Z

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

TCE 005024177-02, PDC Light Curves

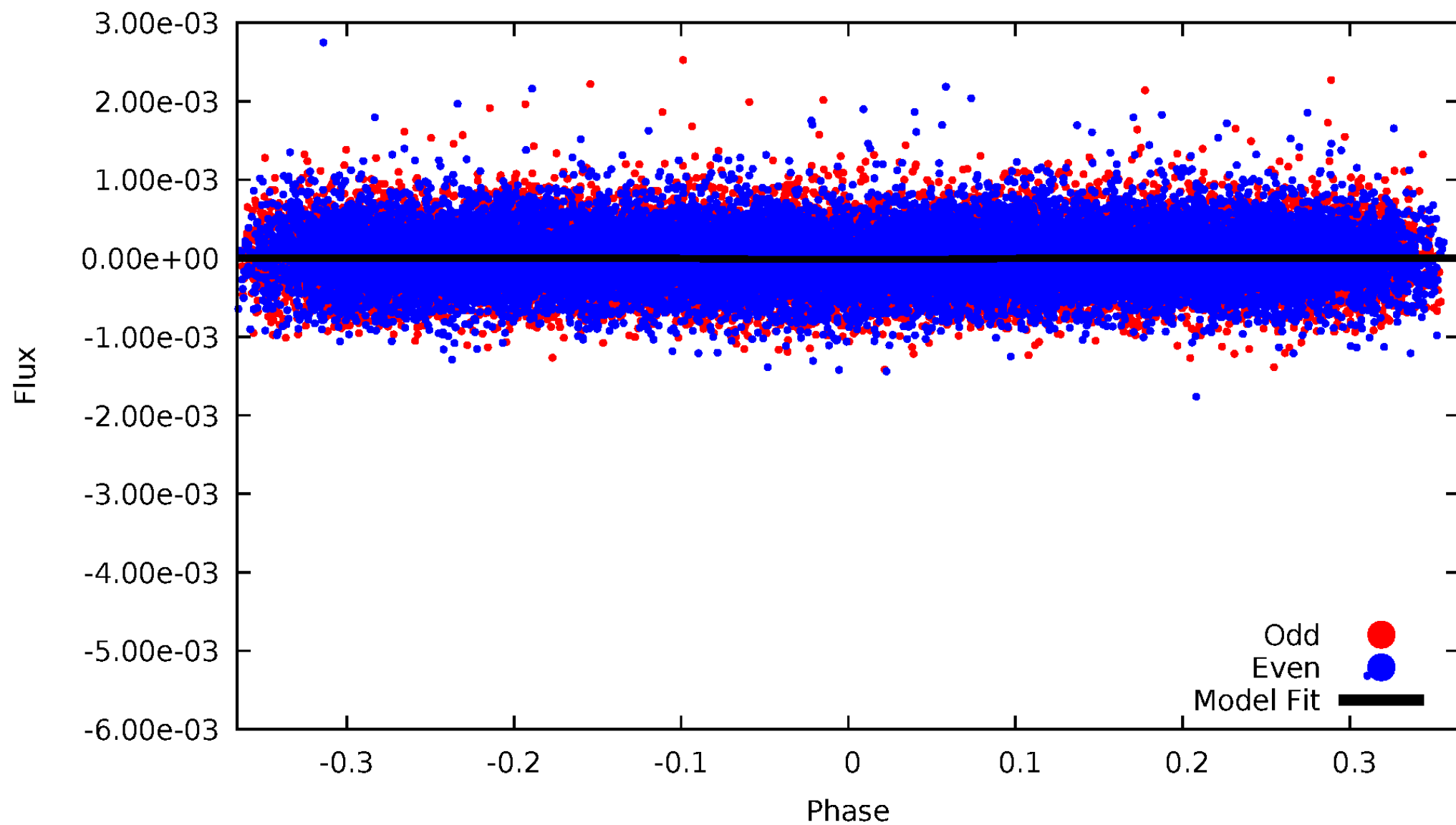


TCE 005024177-02



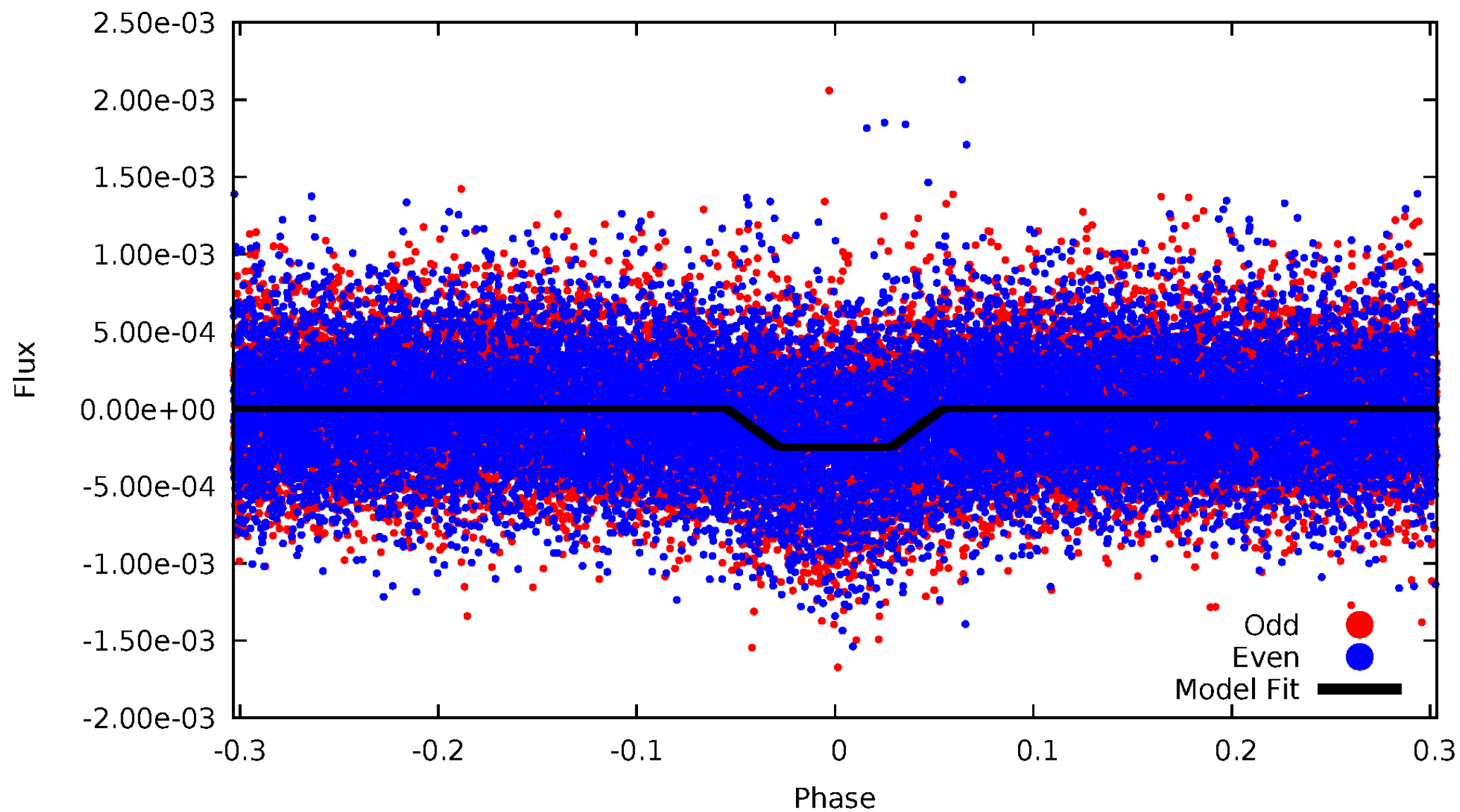
DV Odd/Even

TCE 005024177-02



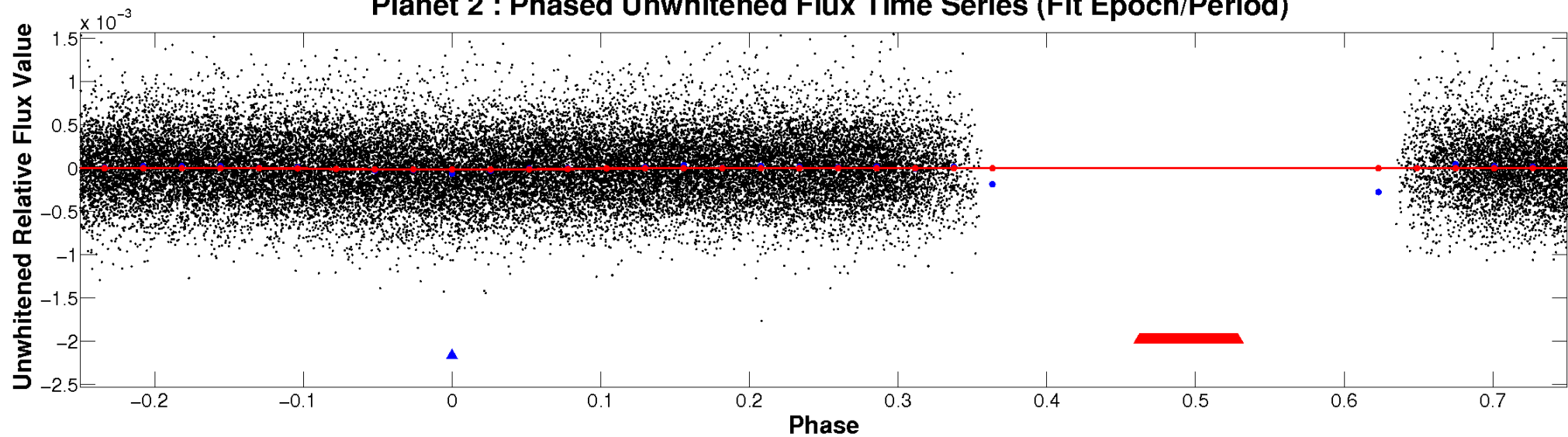
ALT Odd/Even

TCE 005024177-02

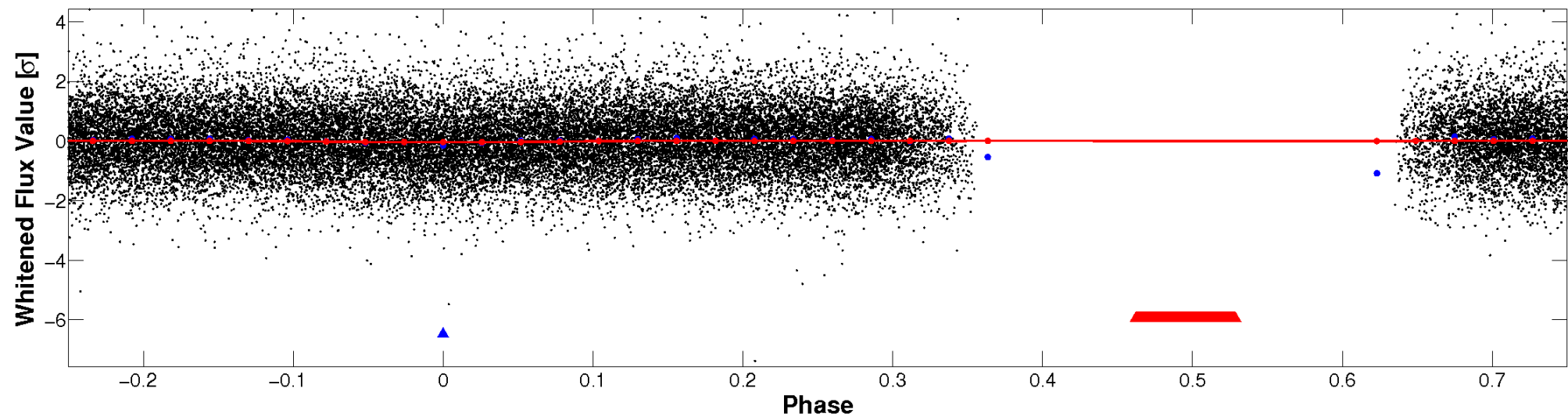


Non-Whitened Vs. Whitened Light Curve

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

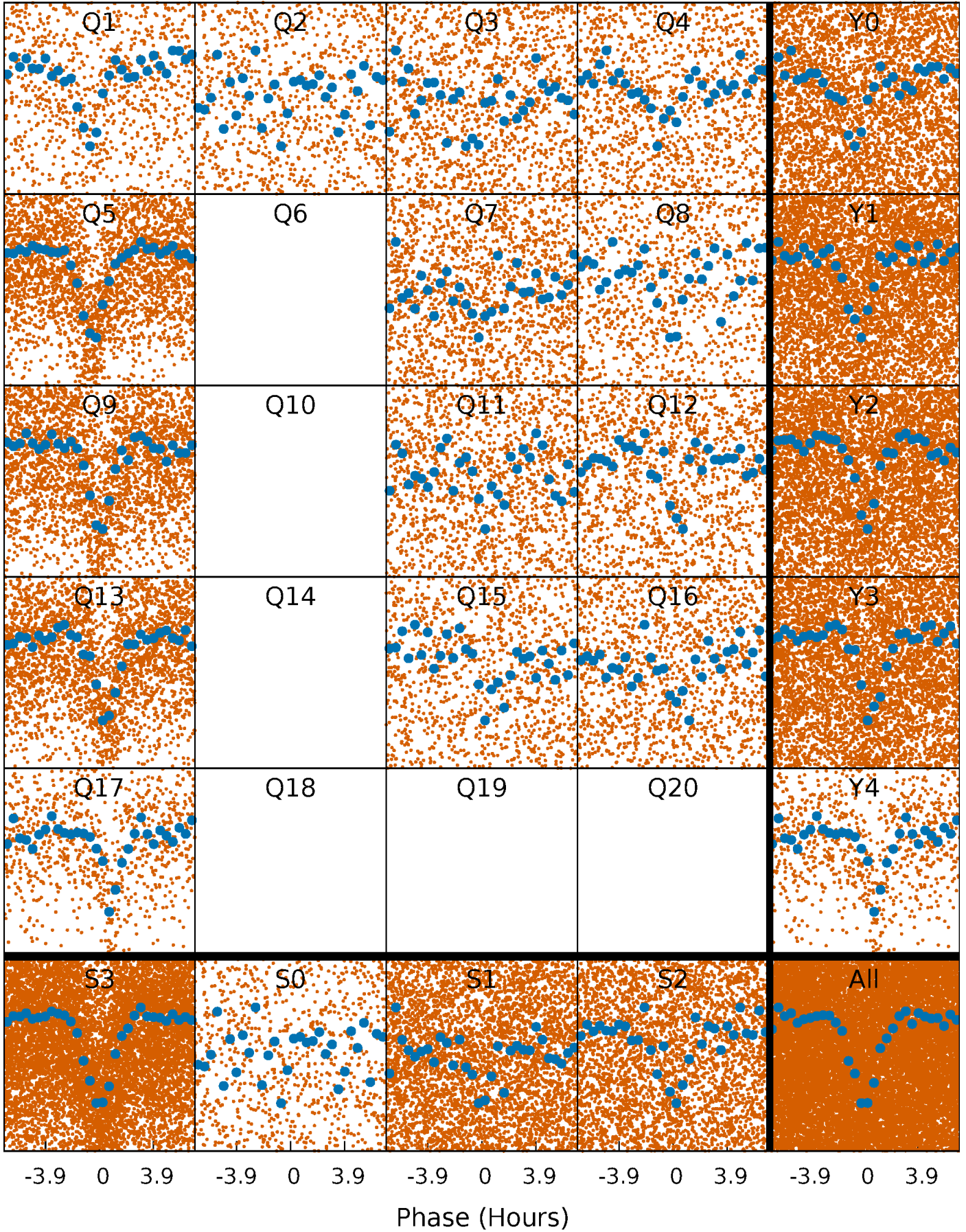


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



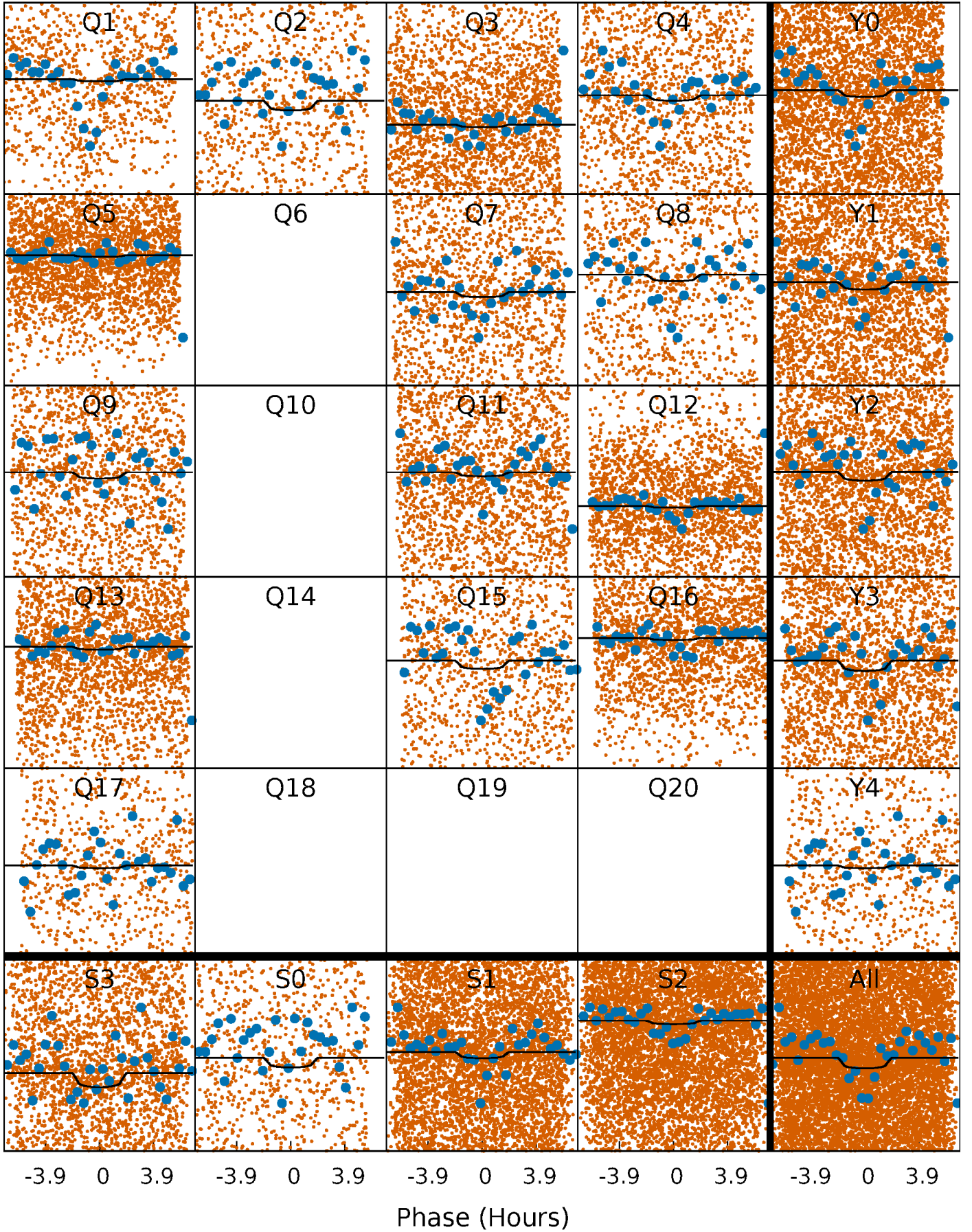
PDC Quarter-Phased Transit Curves

TCE 005024177-02 P= 0.787078 Days $T_0=132.170834$ (BKJD)



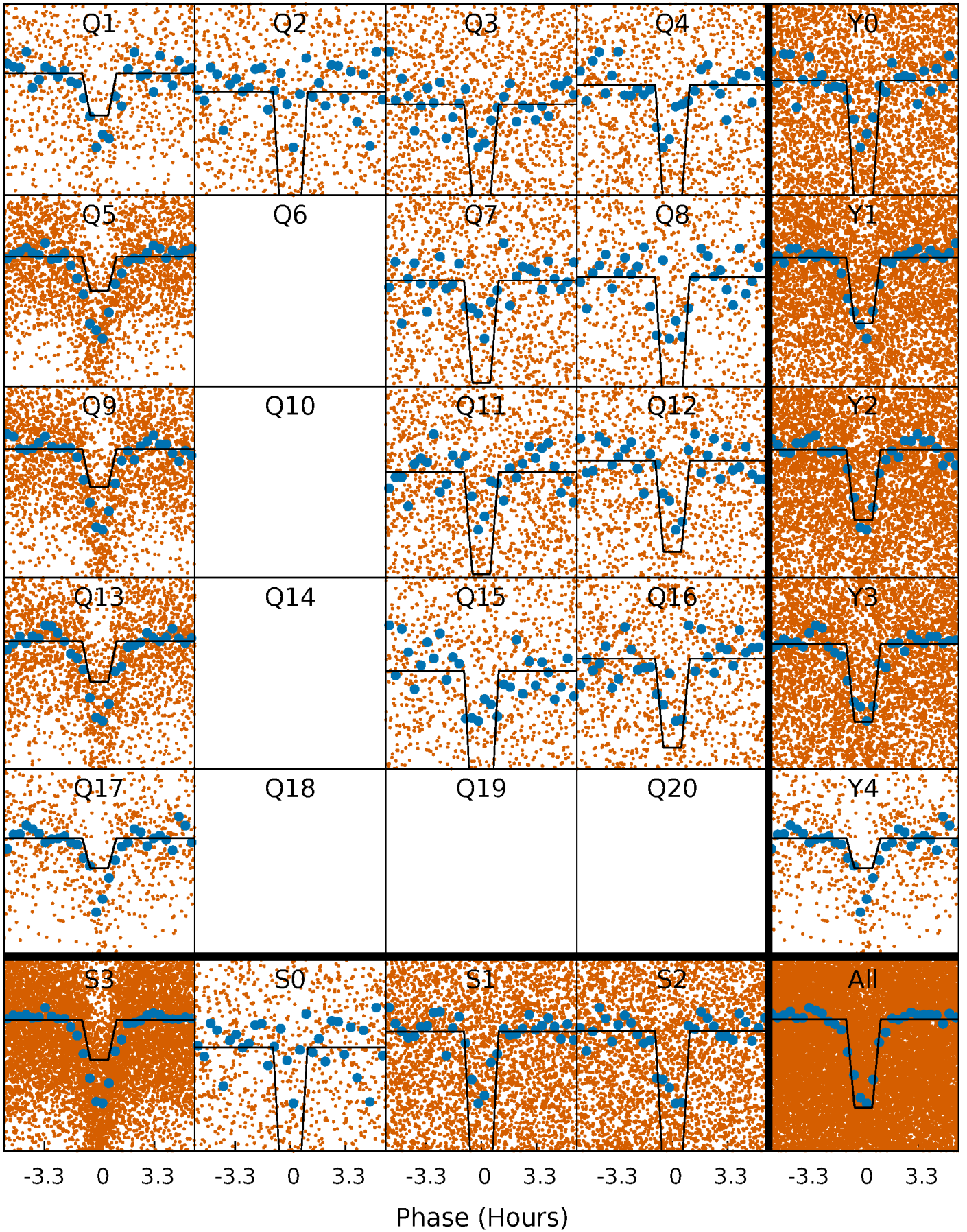
DV Quarter-Phased Transit Curves

TCE 005024177-02 P= 0.787078 Days $T_0=132.170834$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

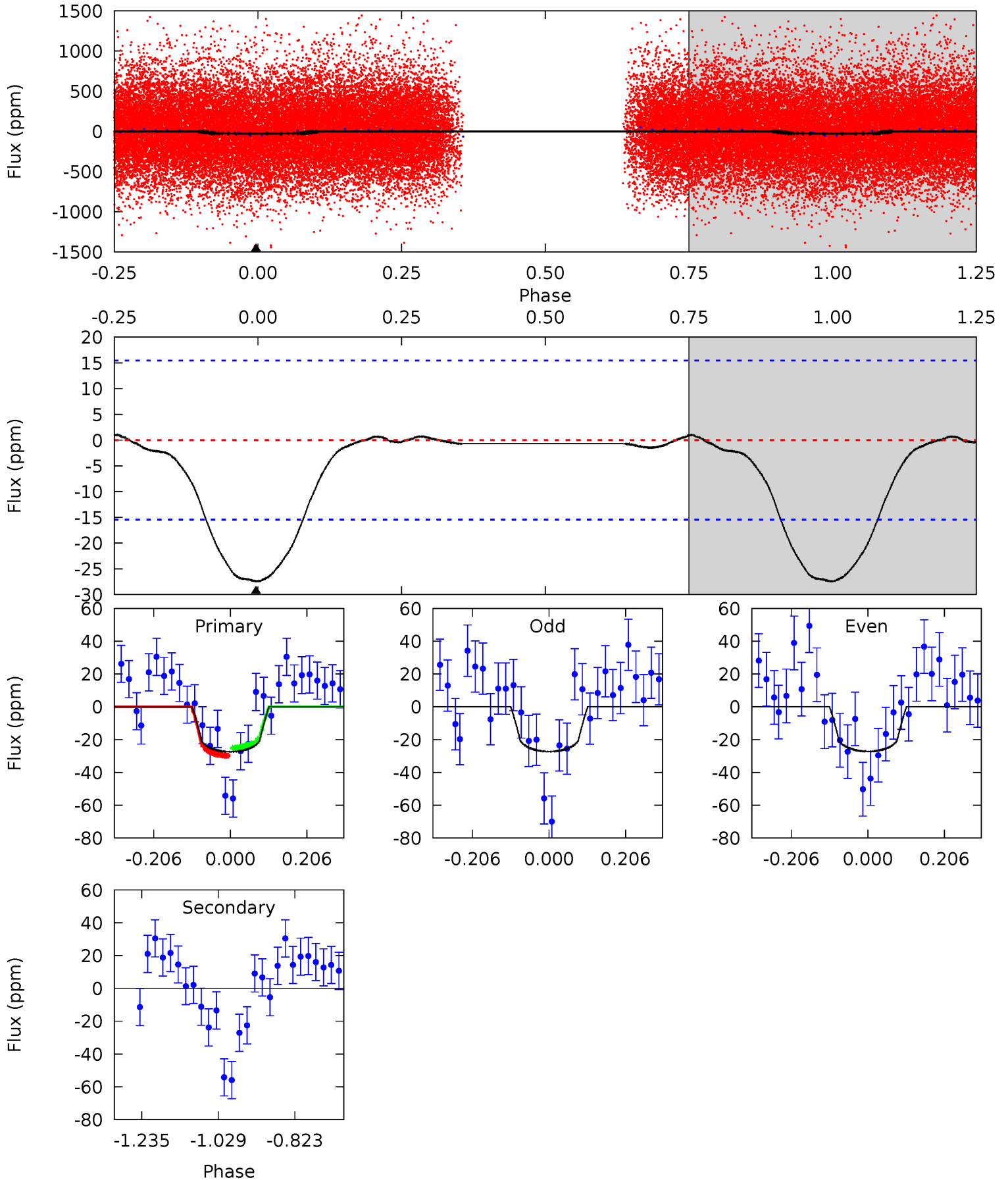
TCE 005024177-02 P= 0.787117 Days $T_0=132.136181$ (BKJD)



DV Model-Shift Uniqueness Test

005024177-02, P = 0.787078 Days, E = 131.383756 Days

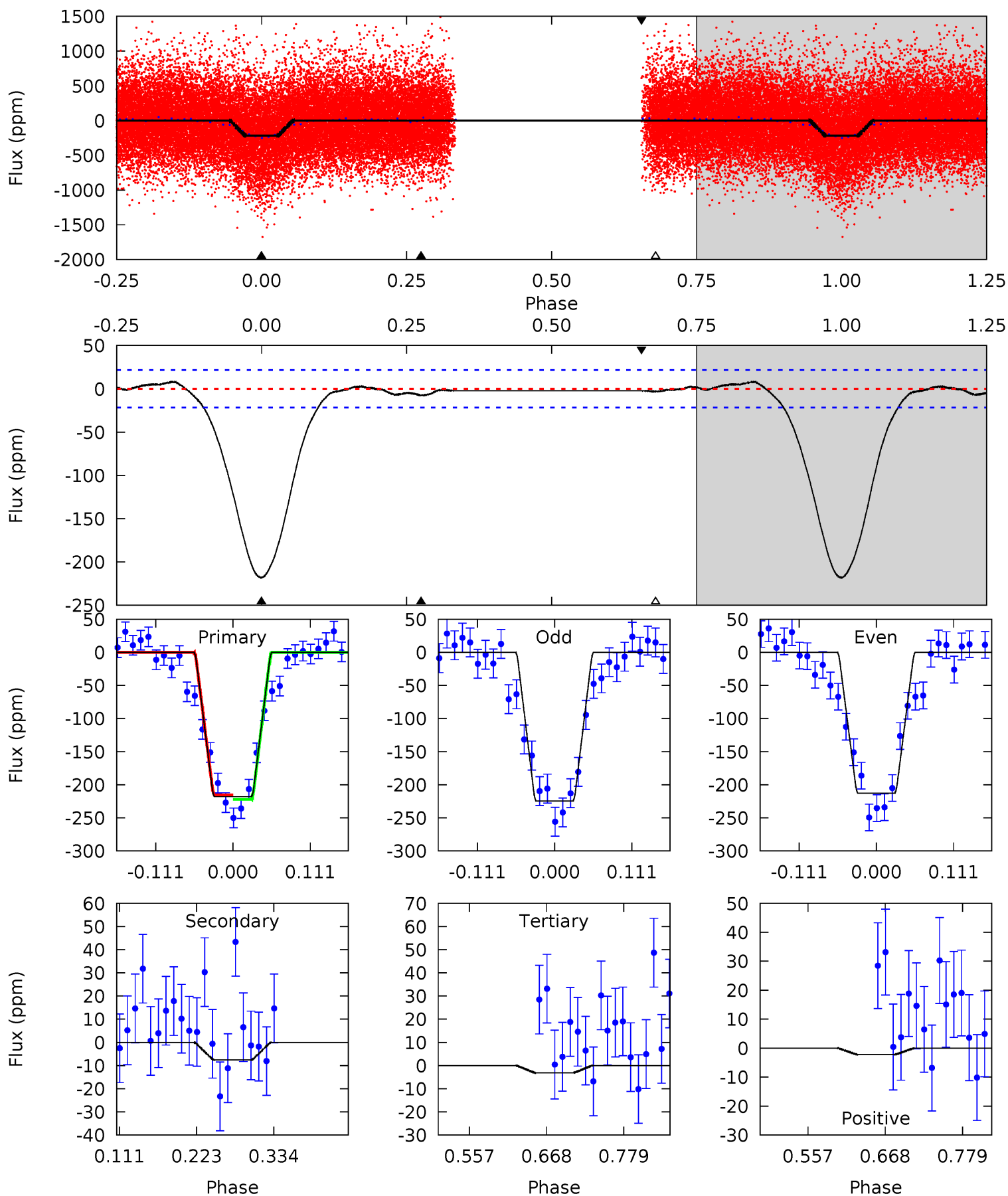
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.84	0	0	0	4.41	1.27	0.20	7.84	7.84	0	0	0.01	1.08	0.04	0.68



Alt Model-Shift Uniqueness Test

005024177-02, P = 0.787117 Days, E = 131.349064 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
45.6	1.58	0.66	-0.46	4.54	1.59	0.82	45.0	46.1	0.92	2.04	1.25	1.06	0.04	0.69



Stellar Parameters For KIC 005024177

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6112^{+201}_{-201}	$4.481^{+0.150}_{-0.100}$	$-1.980^{+0.250}_{-0.050}$	$0.787^{+0.093}_{-0.103}$	$0.684^{+0.069}_{-0.017}$	$1.978^{+1.208}_{-0.535}$
	+3%/-3%	+3%/-2%	+13%/-3%	+12%/-13%	+10%/-2%	+61%/-27%
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 005024177-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	0 ± 4	$0.78^{+0.73}_{-0.55}$	2735^{+136}_{-134}	-2960^{+6467}_{-846}	$-0.010^{+1.302}_{-1.308}$
Alt.	-8 ± 5	$1.46^{+0.83}_{-0.85}$	2741^{+147}_{-141}	2552^{+1310}_{-5344}	$0.406^{+1.670}_{-0.305}$

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 $A_{obs} \gg 1.0$

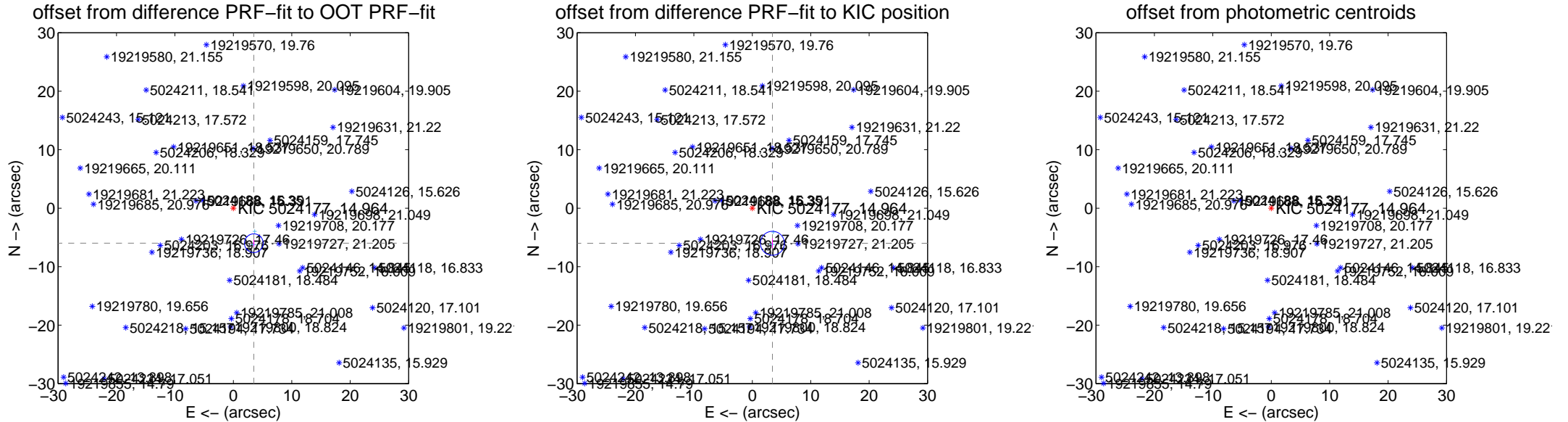
DV Centroid Data

Supplemental centroid analysis for 005024177-02. Kepler magnitude: 14.96. Transit SNR 2.99

There are 3 quarters with good PRF difference image offsets

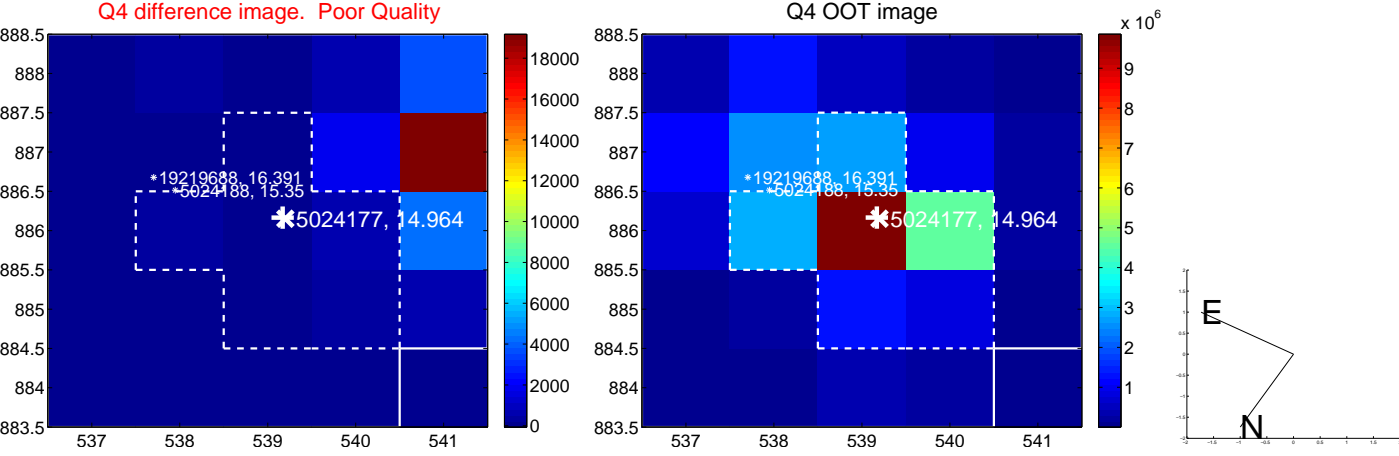
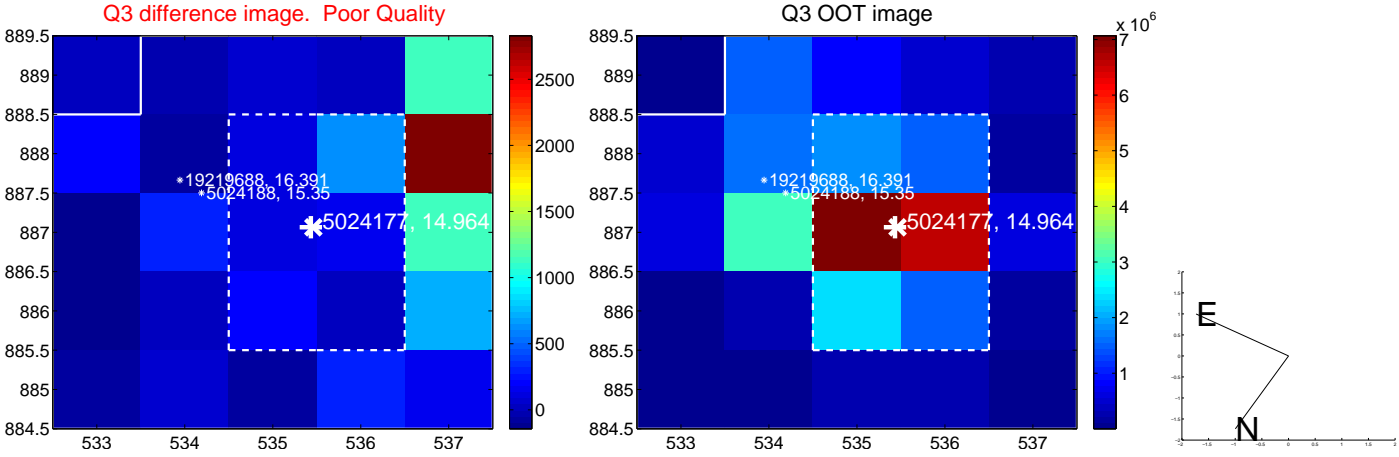
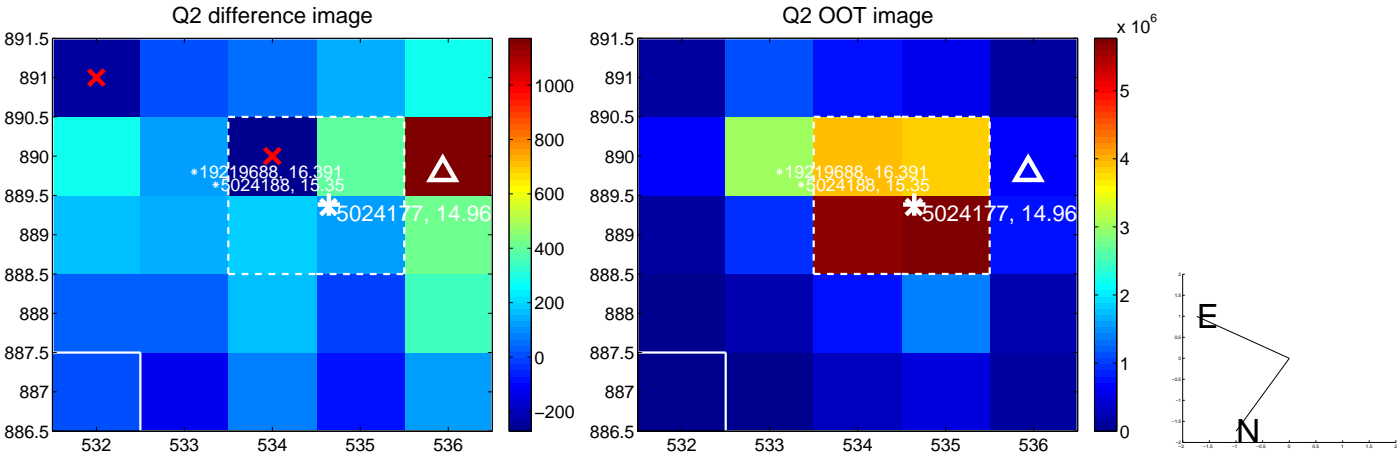
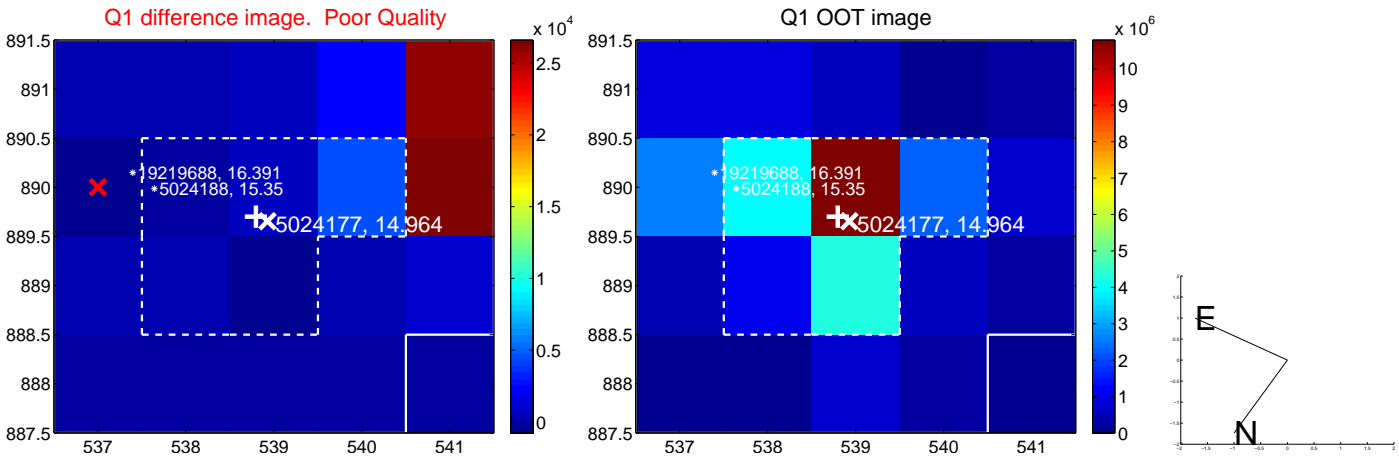
The direct PRF centroid is offset from the target star catalog position by about 0.07 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	6.939 ± 0.533	13.02	-3.505 ± 0.105	-5.988 ± 0.614
PRF-fit source offset from KIC position	6.919 ± 0.683	10.13	-3.444 ± 0.108	-6.001 ± 0.836
photometric centroid source offset	57.00 ± 4.63	12.32	-37.71 ± 4.77	-42.75 ± 4.52

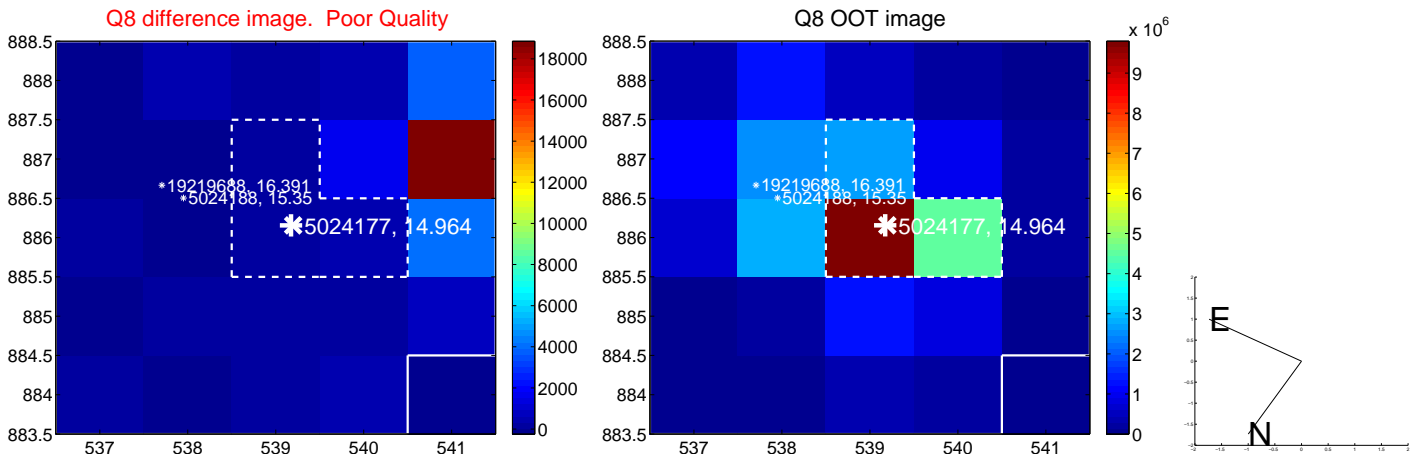
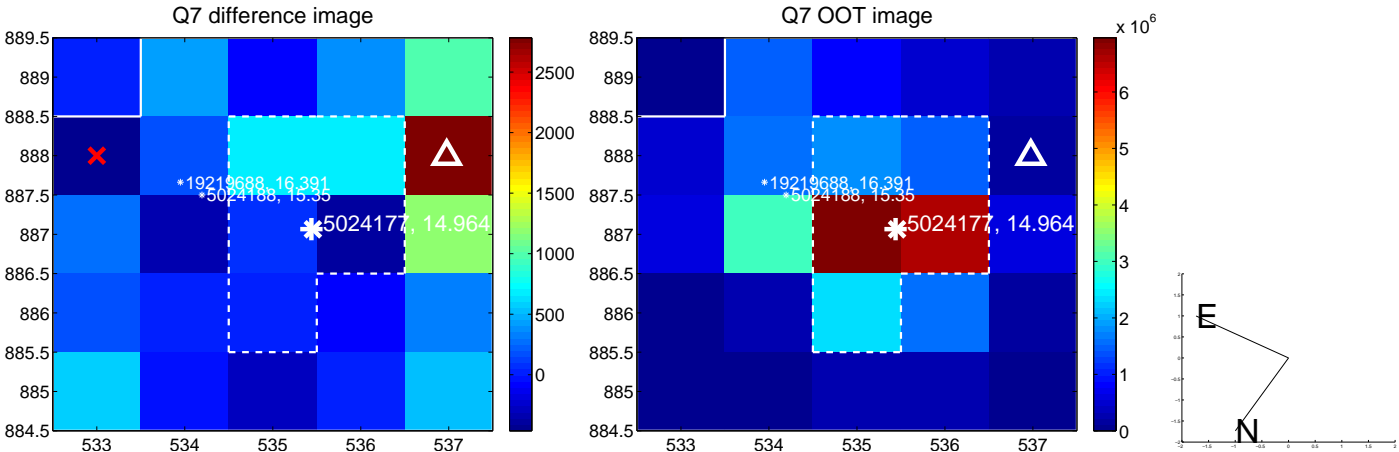
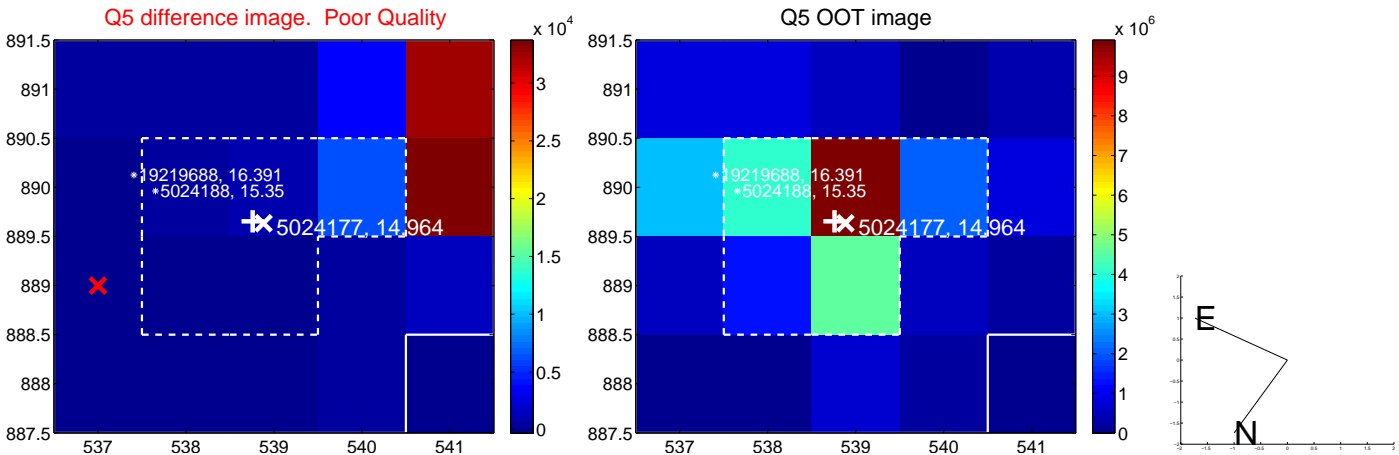


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

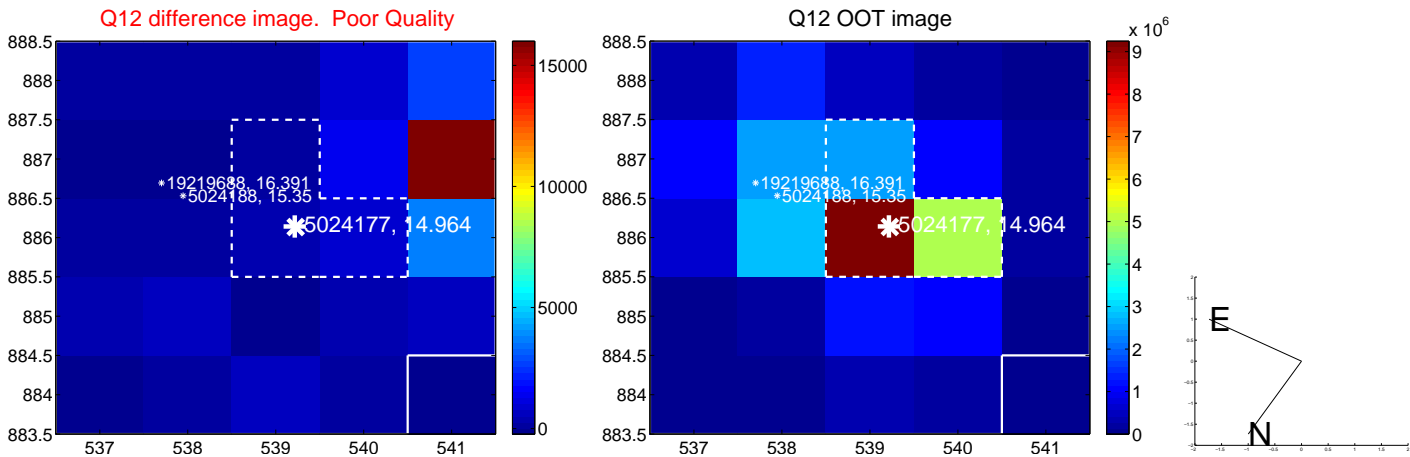
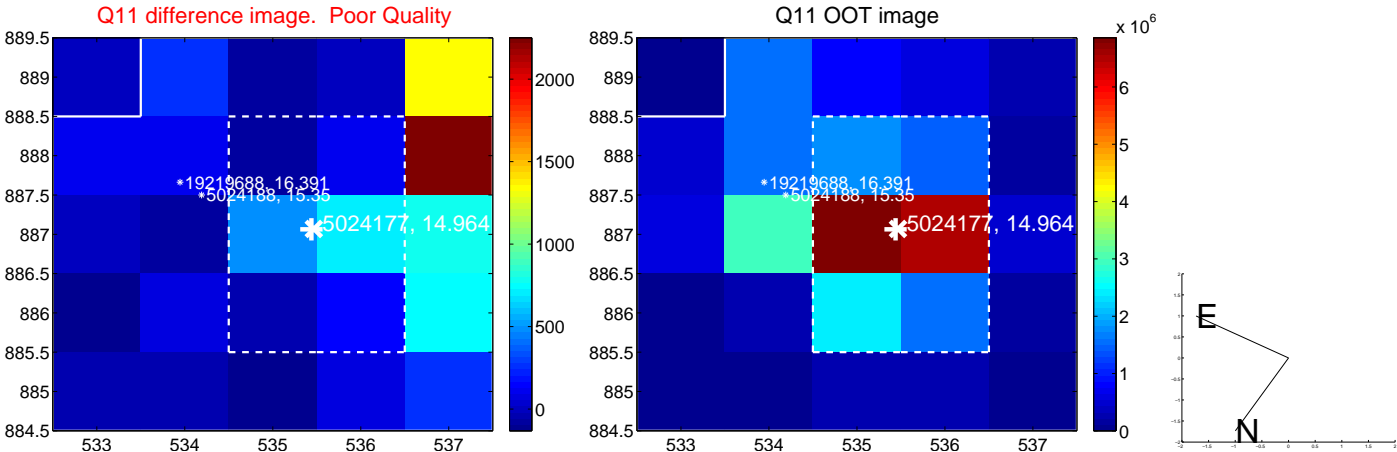
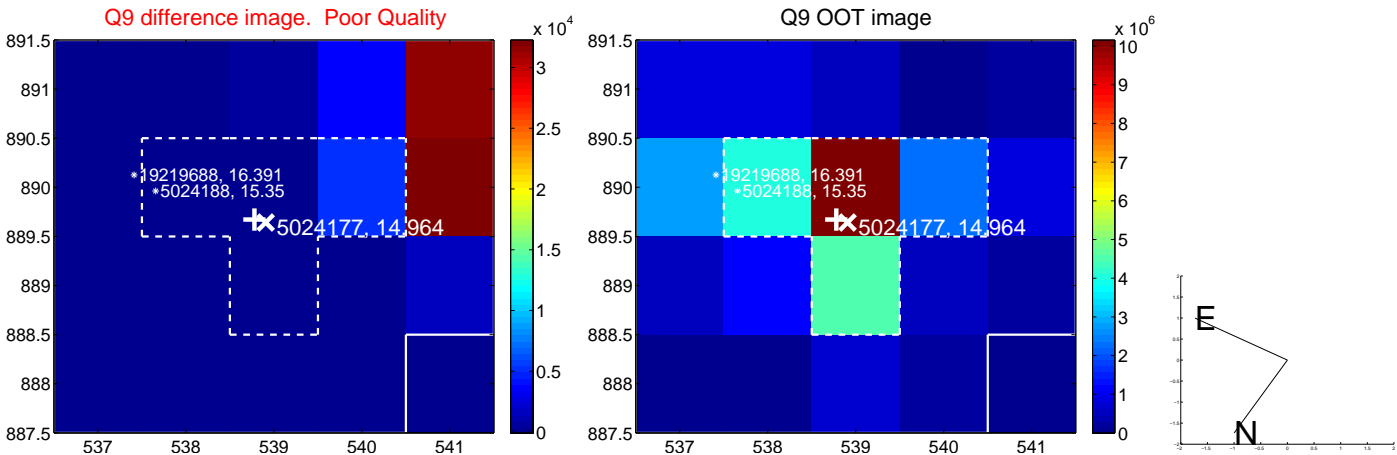
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



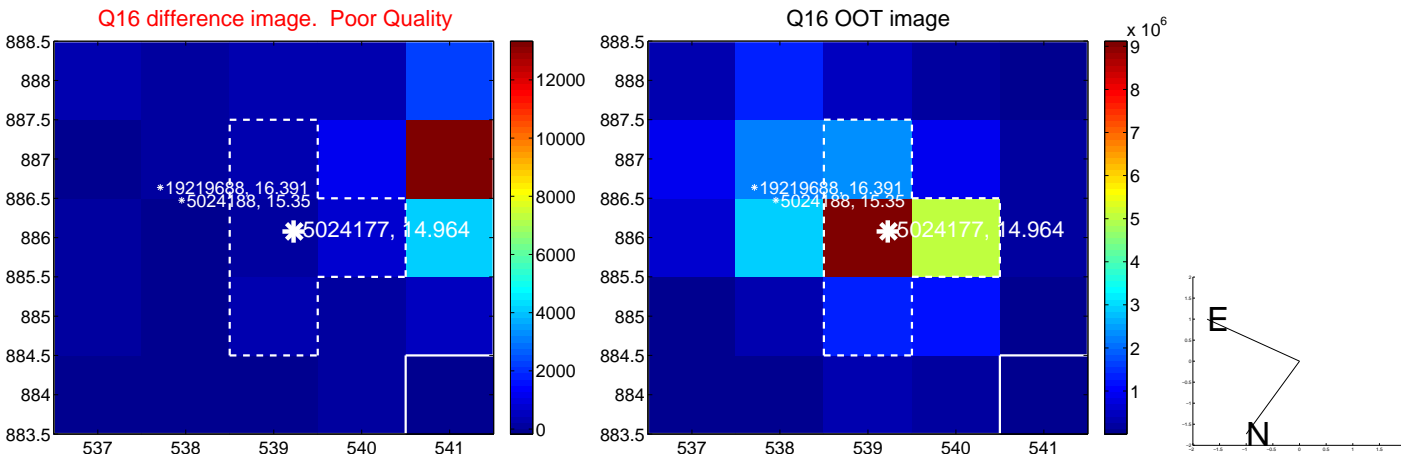
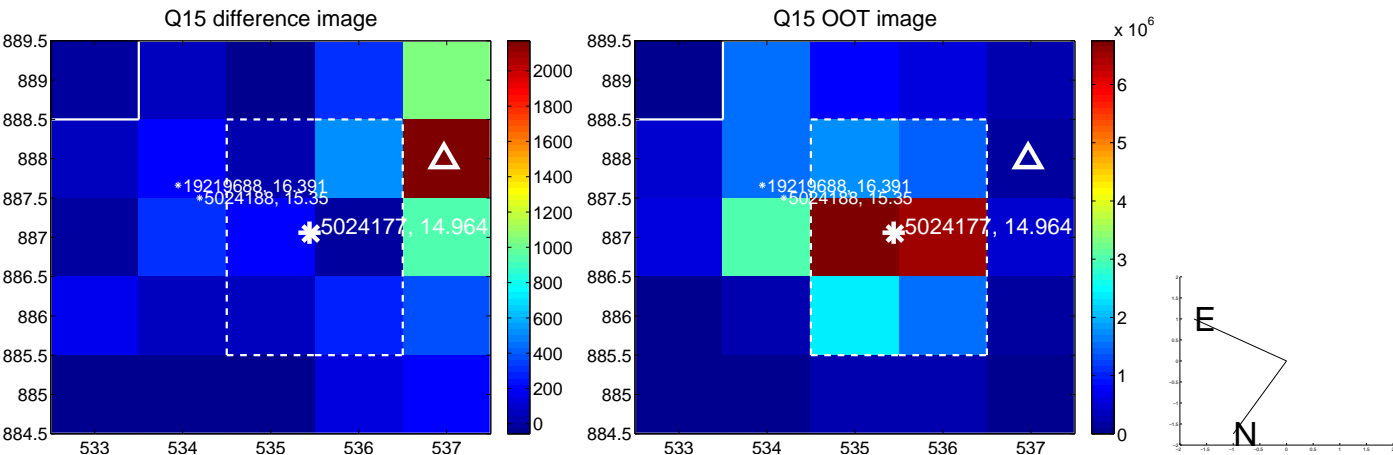
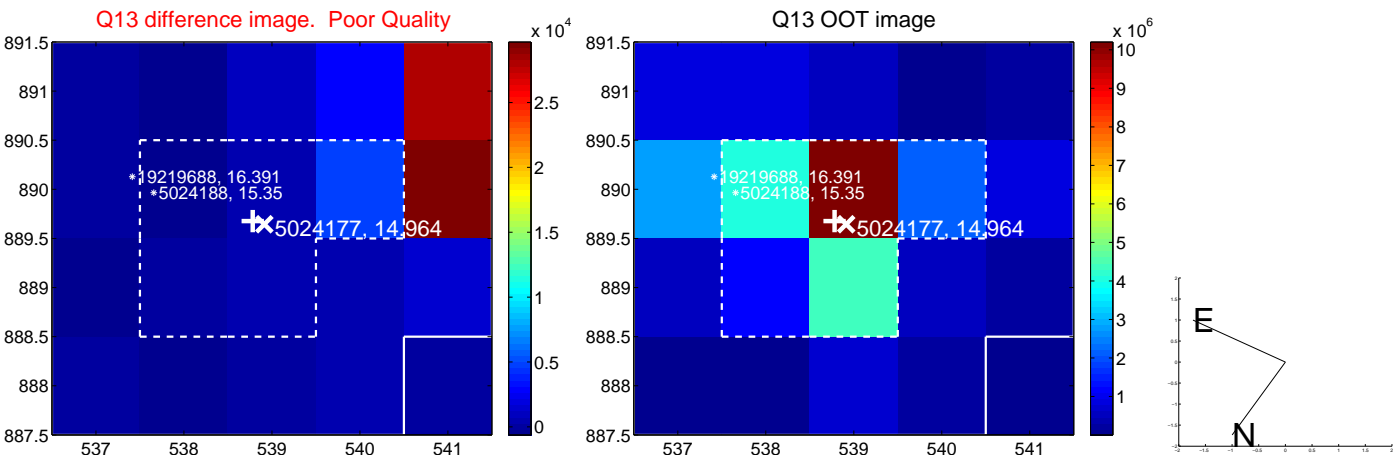
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



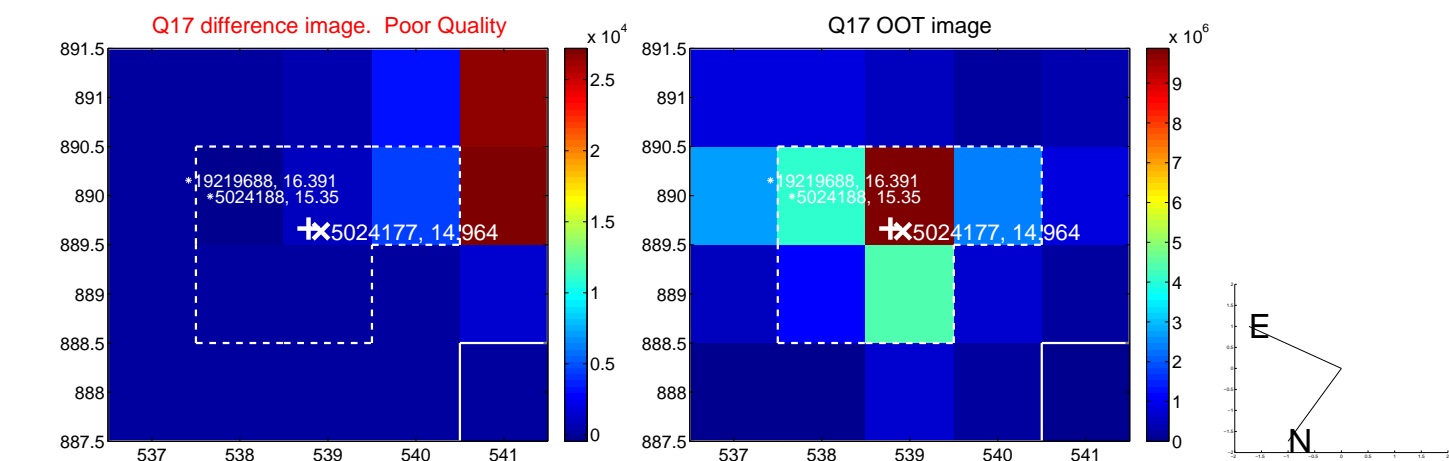
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



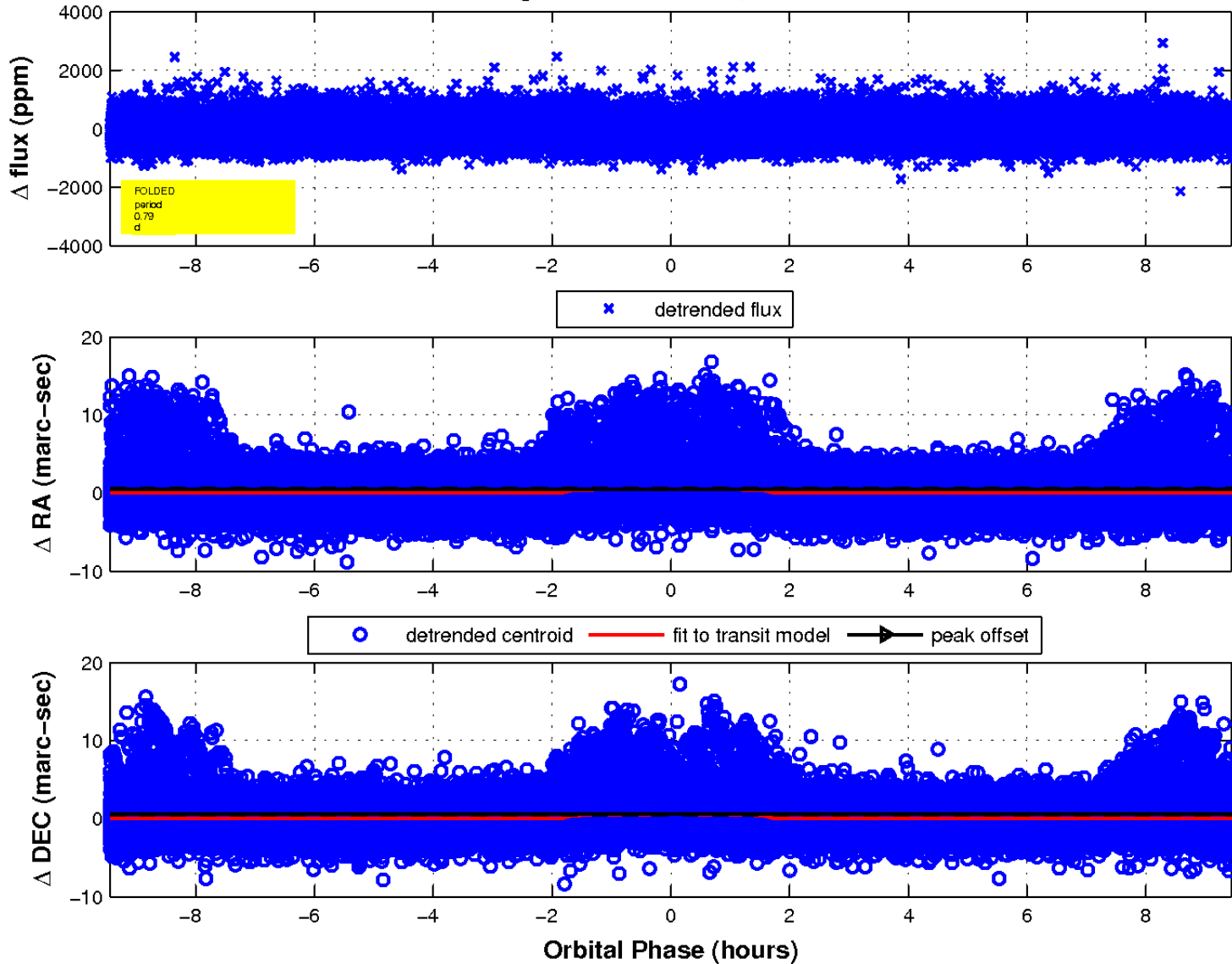
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 2 of 2



UKIRT Image

Declination

