

KIC 005471158

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})
005471158-01	OBS	3504.01	12.425302	141.549336	389.1	24.027	19.3	24.1	0.89	5713	2.30	68.52
005471158-02	OBS	No	12.425397	133.981970	349.0	27.203	18.8	25.0	0.89	5713	2.22	68.52

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005471158-01	OBS	FP	0.00	1	0	1	1	LPP_DV—LPP_ALT—CENT_RESOLVED_OFFSET—HALO_GHOST—EPHEM_MATCH
005471158-02	OBS	FP	0.00	1	0	1	1	LPP_DV—SAME_NTL_PERIOD—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 005471158-01

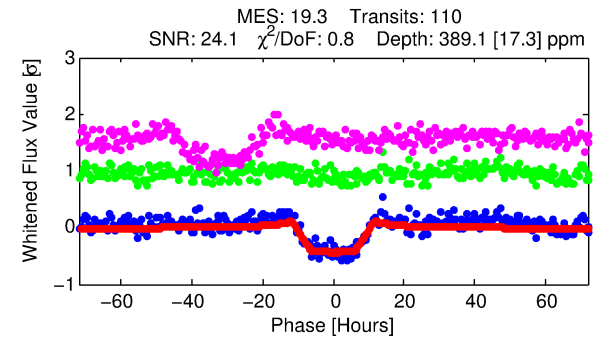
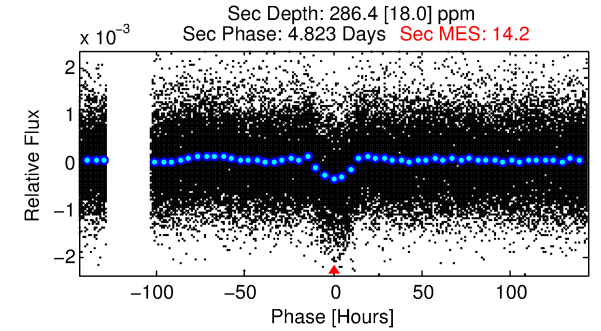
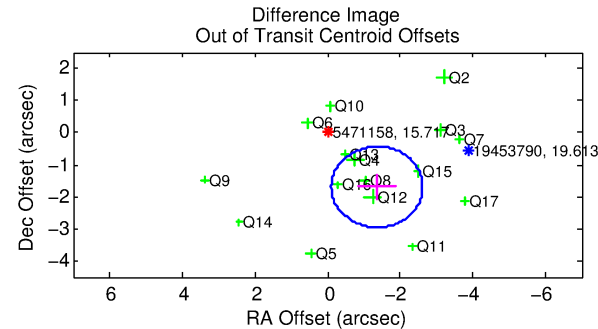
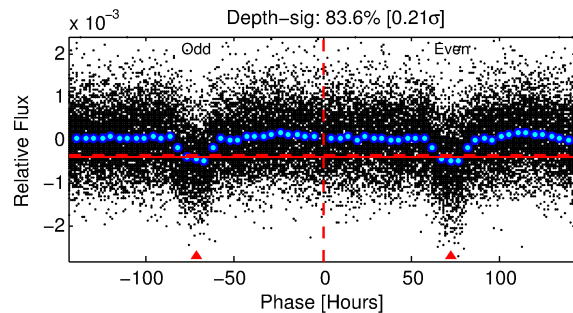
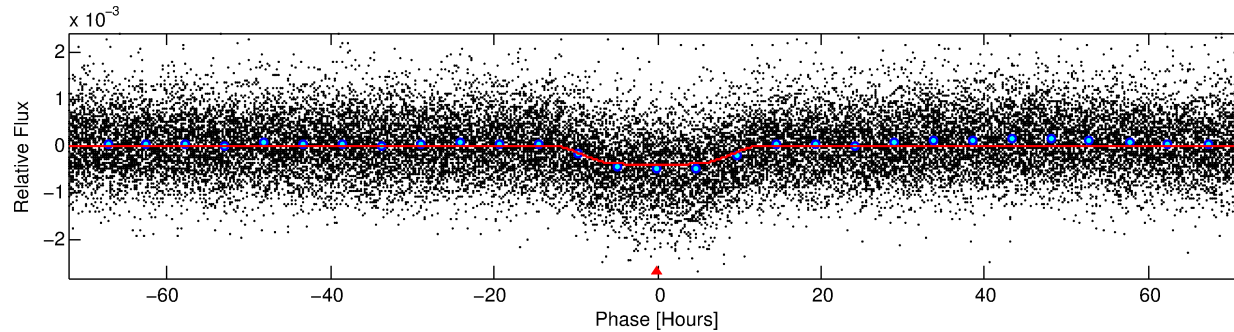
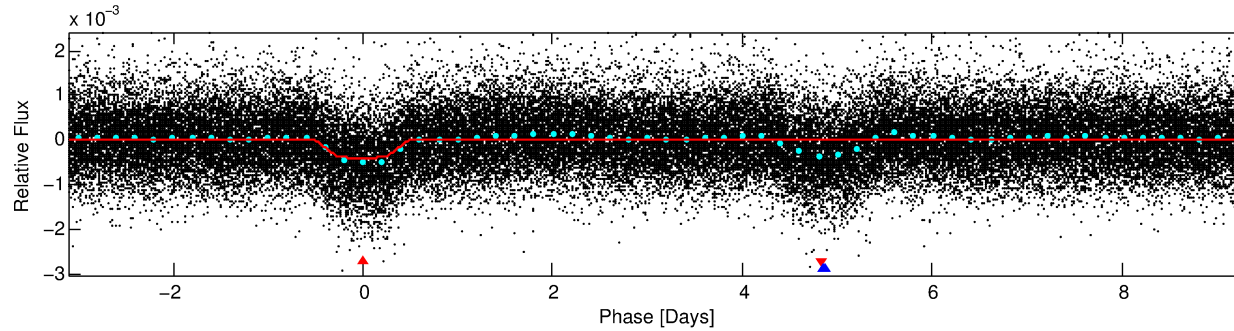
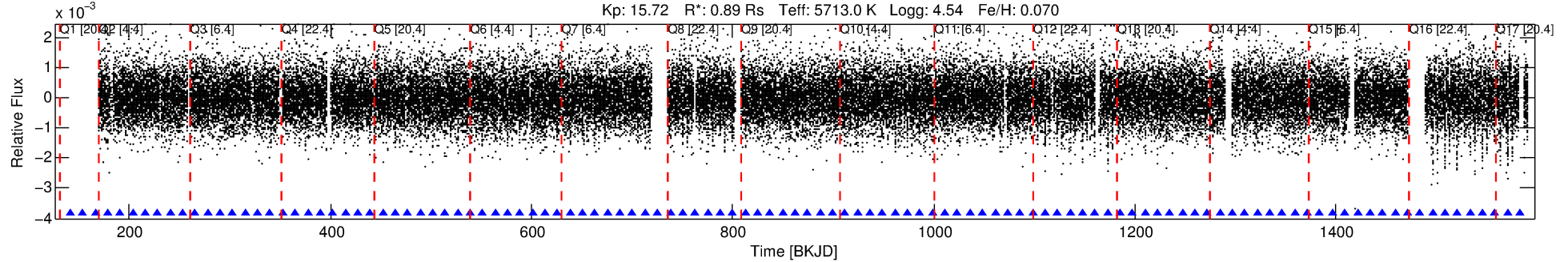
TCE (1)	KIC	Parent (2)	Parent KIC	$P_1:P_2$	Dist ($''$)	Δ Row	Δ Col	m_2	m_1	D_2/D_1	Mechanism	Flag	σ_P	σ_T
005471158-01	5471158	V380-Cyg-pri	5385723	1:1	207.3	27	-44	5.77	15.72	372.58	Direct-PRF	0	1.20	0.24

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: 5471158 Candidate: 1 of 2 Period: 12.425 d
KOI: K03504.01 Corr: 0.900

Kp: 15.72 R*: 0.89 Rs Teff: 5713.0 K Logg: 4.54 Fe/H: 0.070



DV Fit Results:

Period = 12.42530 [0.00029] d
Epoch = 141.5493 [0.0180] BKJD
Rp/R* = 0.0236 [0.0007]
a/R* = 1.70 [0.09]
b = 0.96 [0.01]
Seff = 68.52 [27.46]
Teq = 734 [74] K
Rp = 2.30 [0.68] Re
a = 0.1054 [0.0265] AU
Ag = 330.46 [125.76] [2.62σ]
Teff = 4836 [215] K [18.05σ]

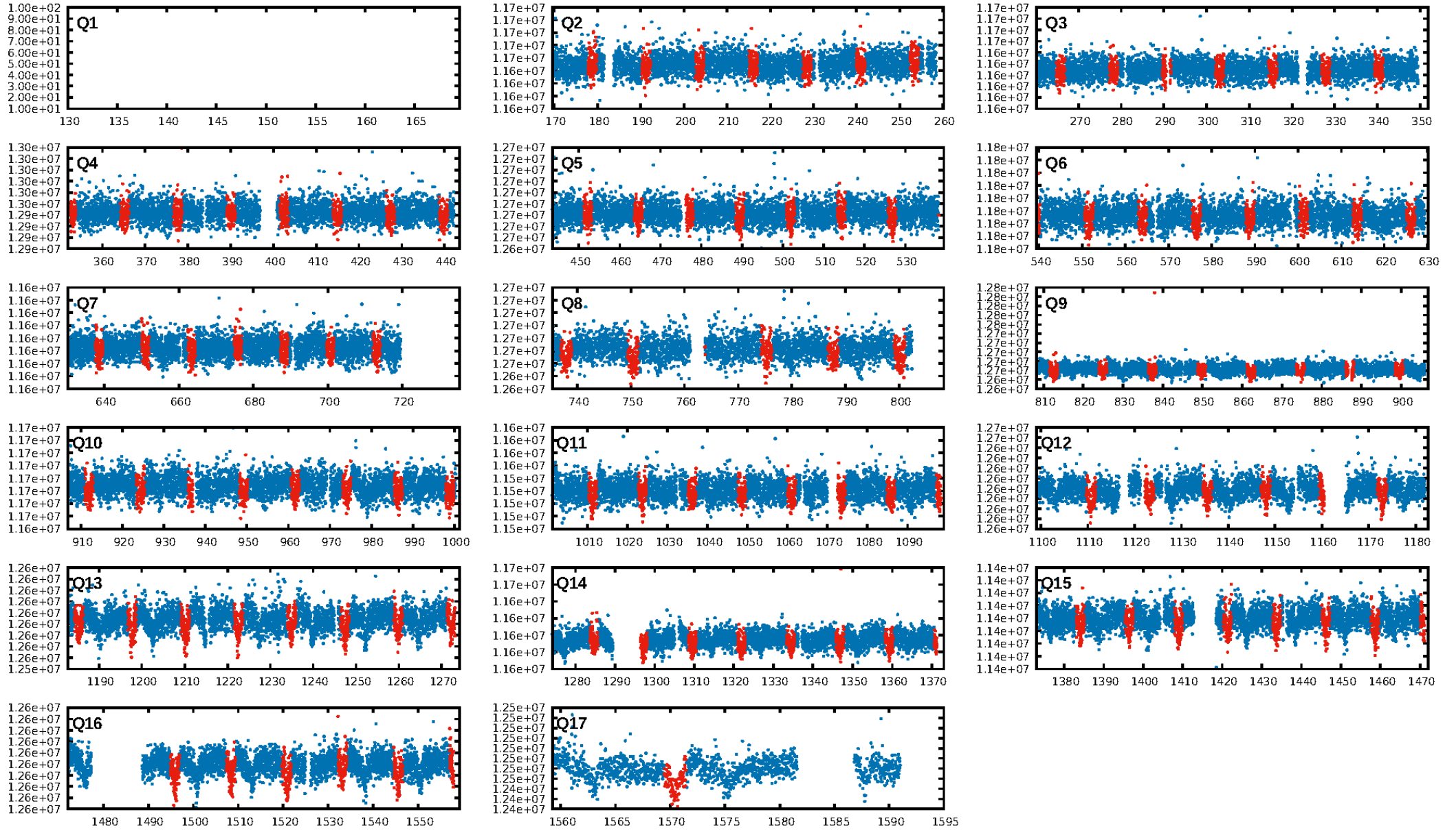
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.0% [0.00σ]
ModelChiSquare2-sig: 12.4%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 3.23e-90
RollingBand-fgt: 1.00 [109/109]
GhostDiagnostic-chr: -0.04842
Centroid-sig: 0.0%
Centroid-so: 1.211 arcsec [2.30σ]
OotOffset-rm: 2.176 arcsec [5.19σ]
KicOffset-rm: 2.125 arcsec [5.14σ]
OotOffset-st: 4/4/4/4 [16]
KicOffset-st: 4/4/4/4 [16]
DiffImageQuality-fgm: 0.19 [3/16]
DiffImageOverlap-fno: 1.00 [16/16]

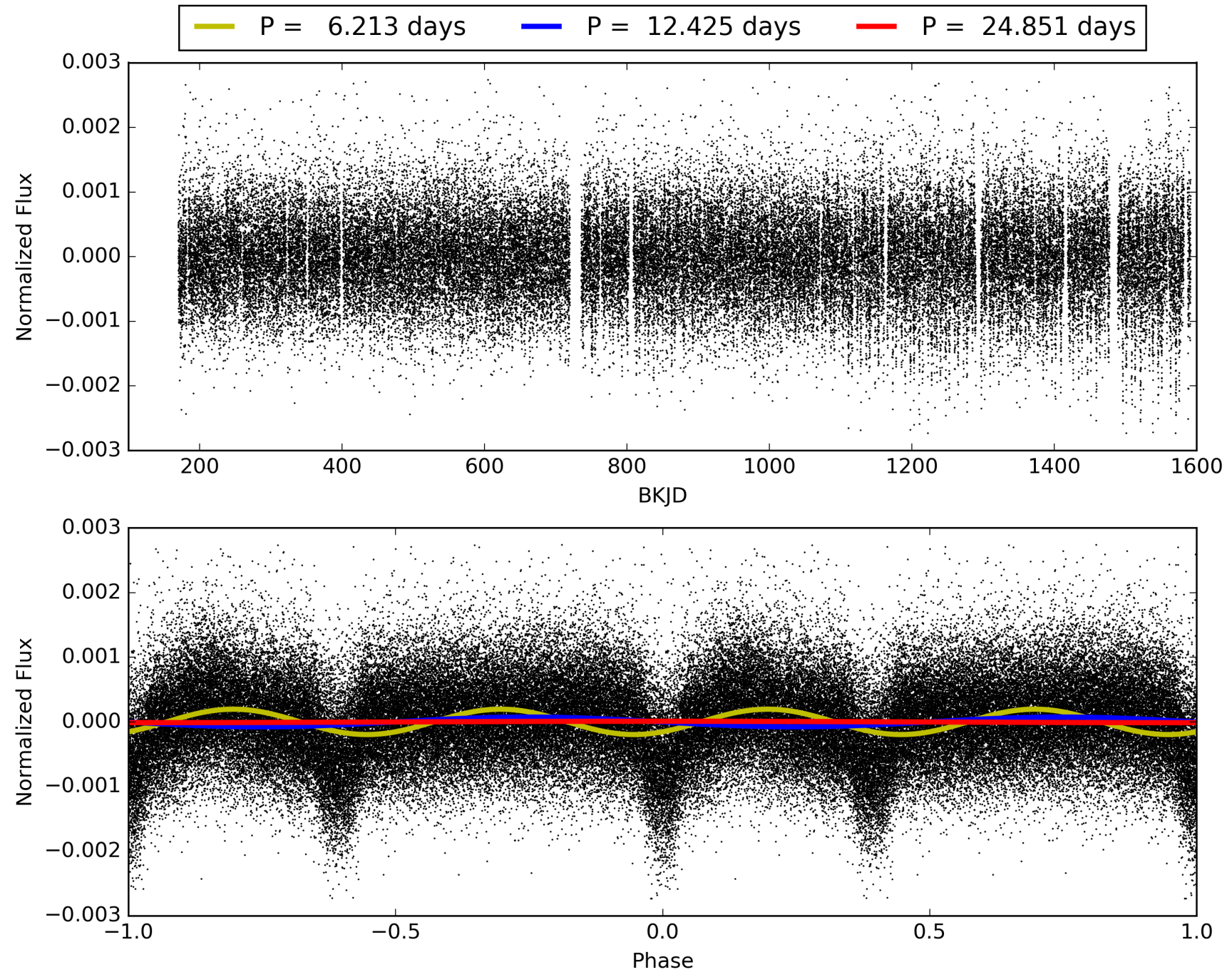
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 17:40:45 Z

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

TCE 005471158-01, PDC Light Curves

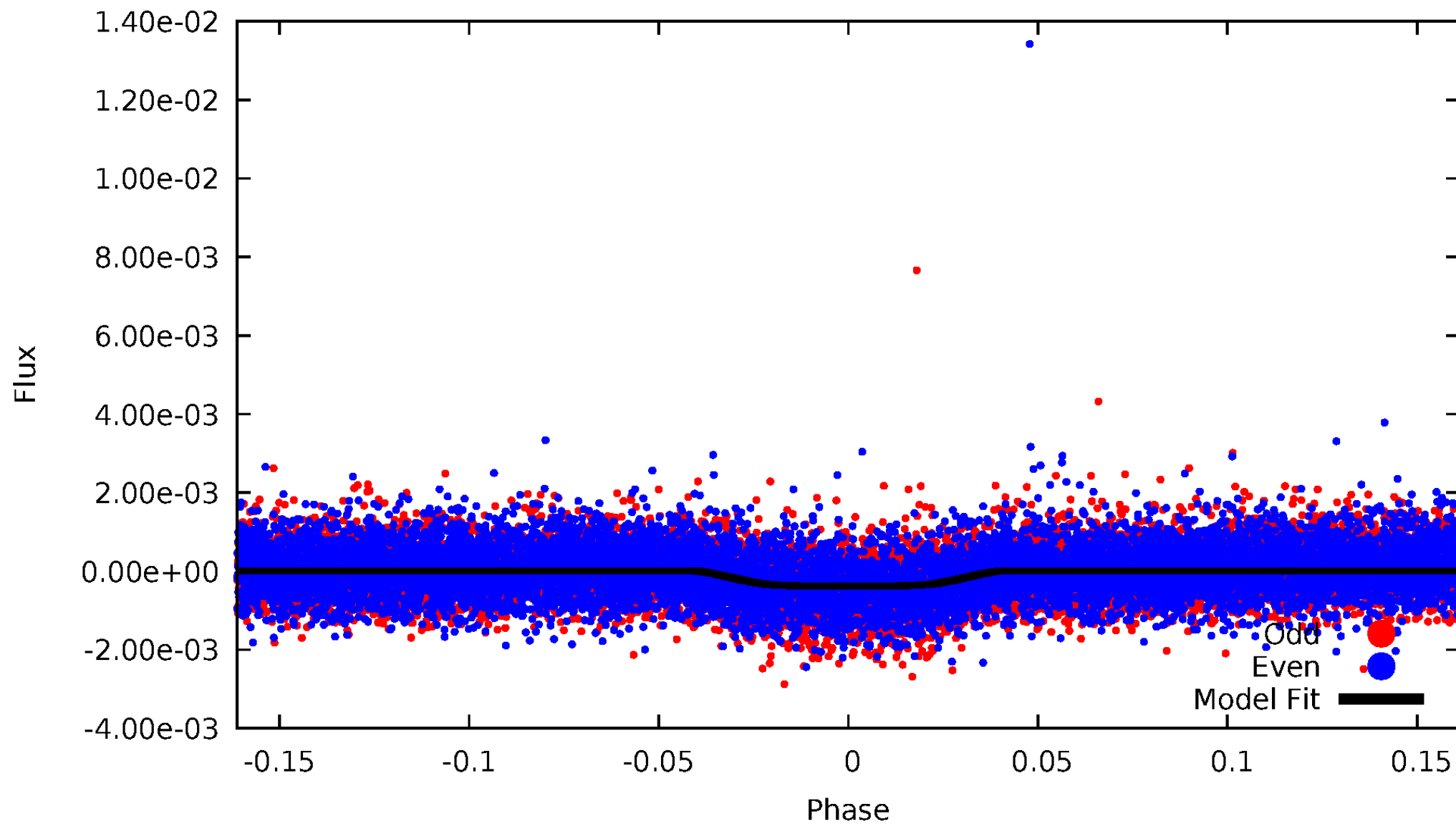


TCE 005471158-01



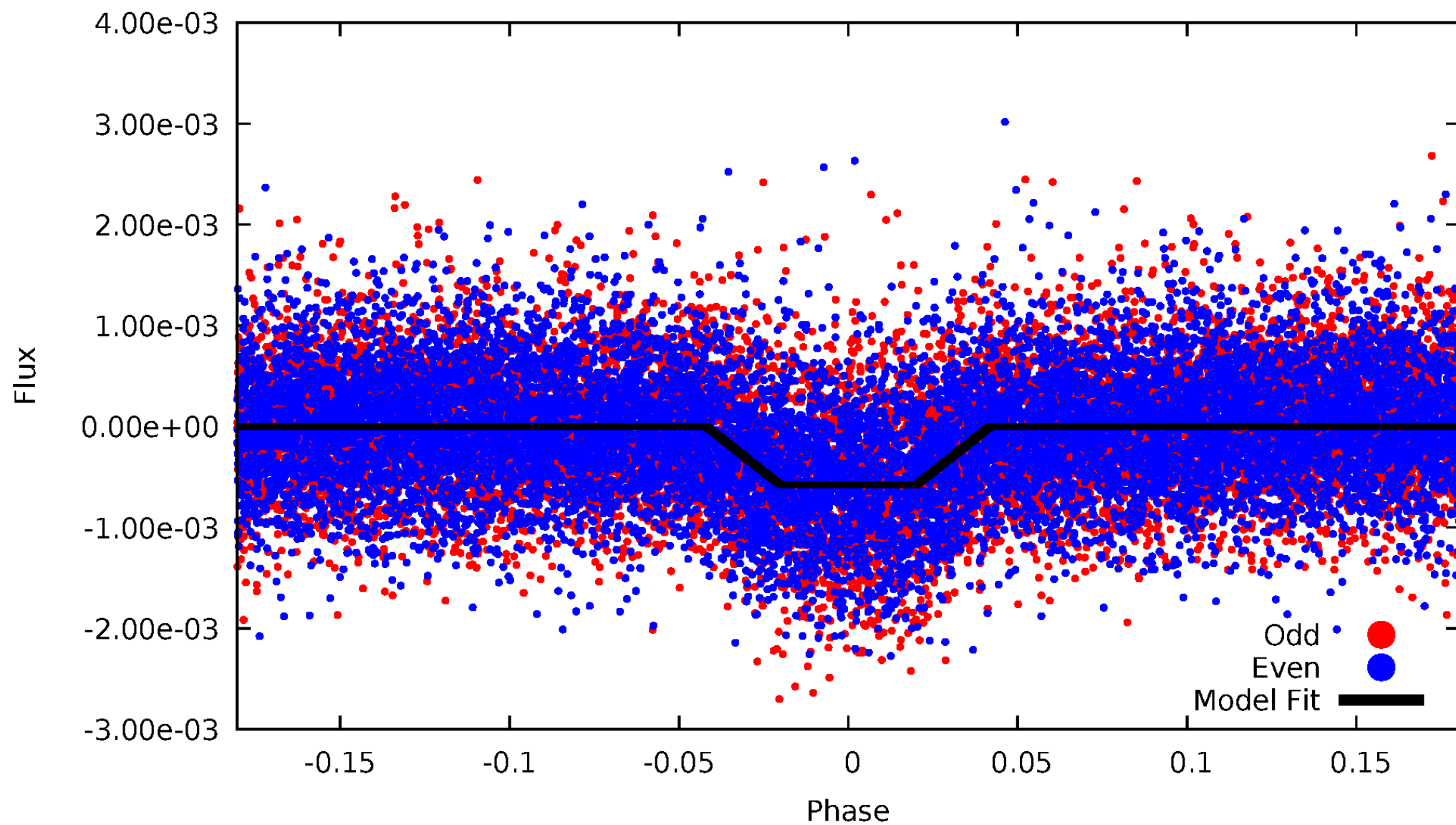
DV Odd/Even

TCE 005471158-01



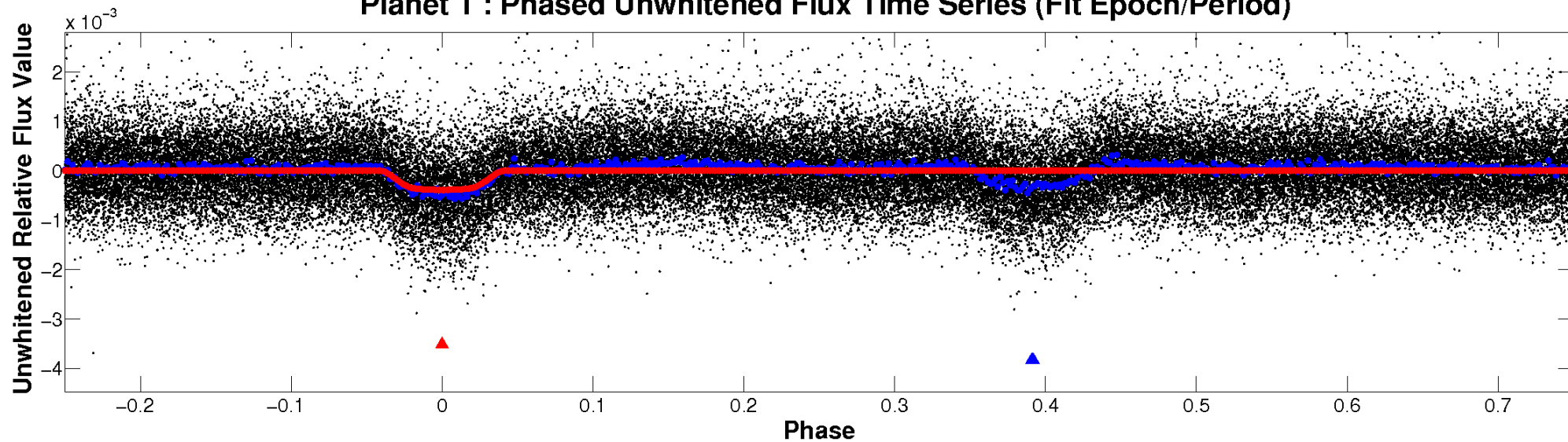
ALT Odd/Even

TCE 005471158-01

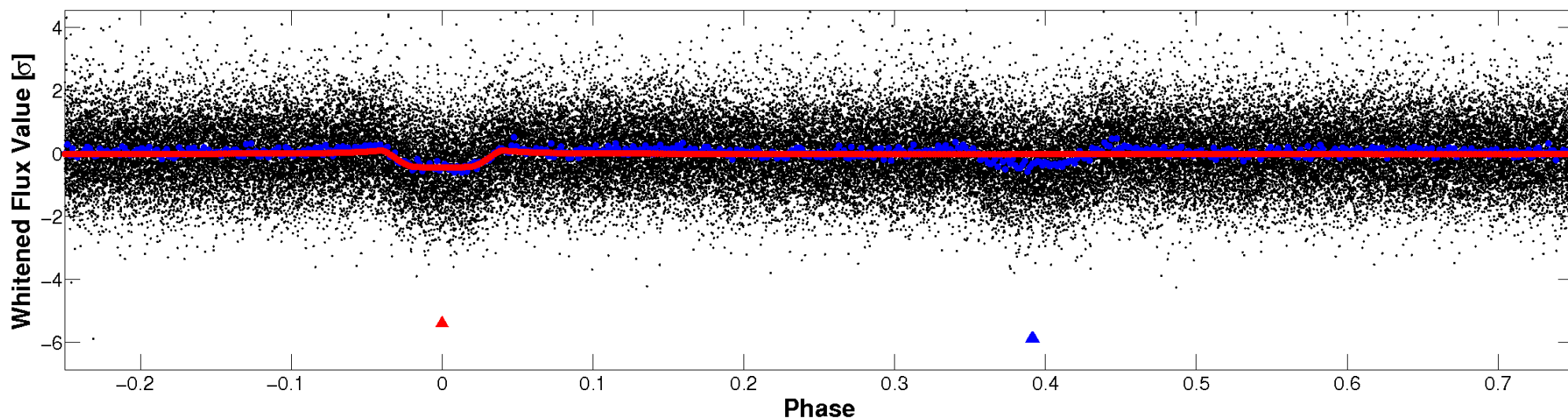


Non-Whitened Vs. Whitened Light Curve

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

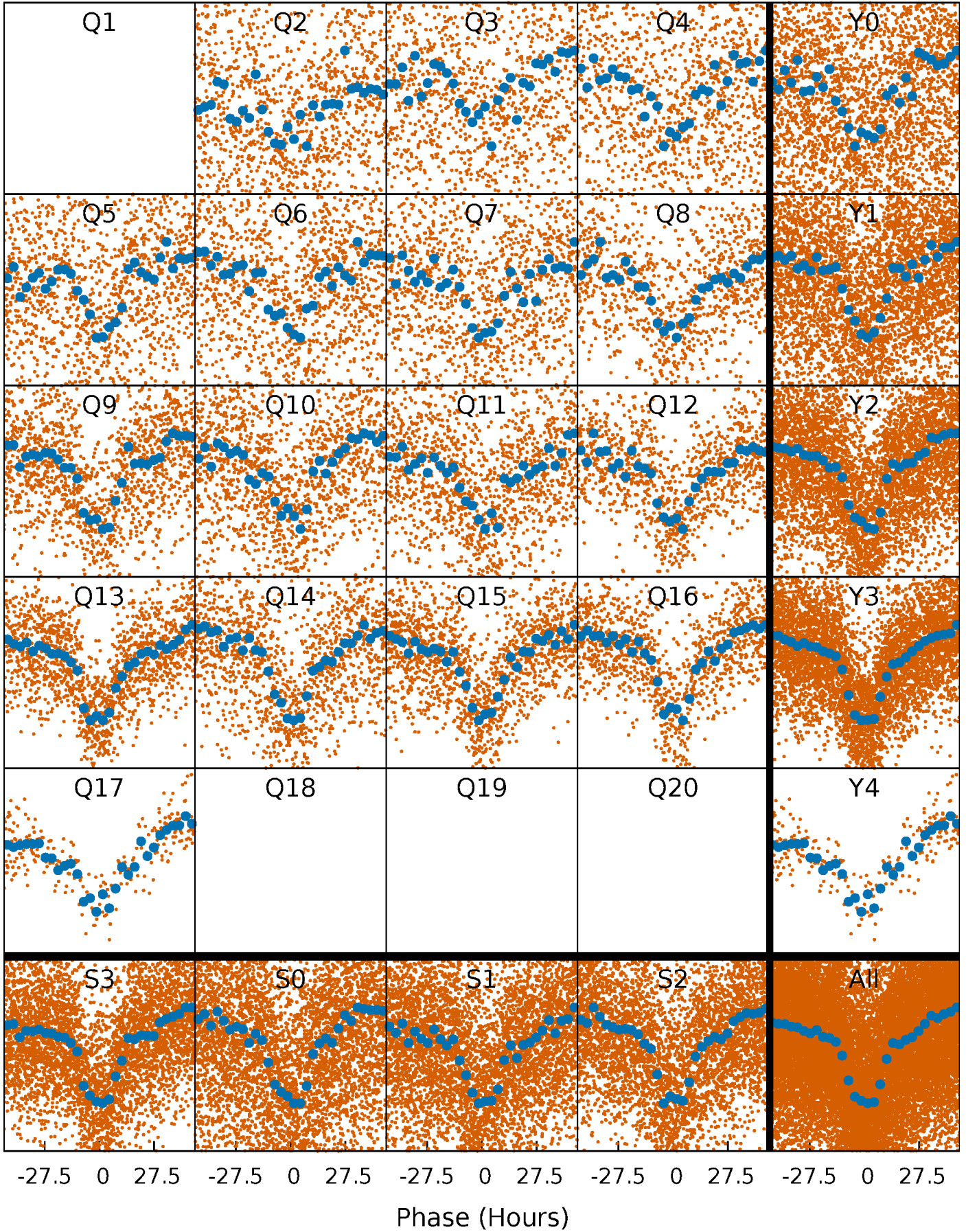


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



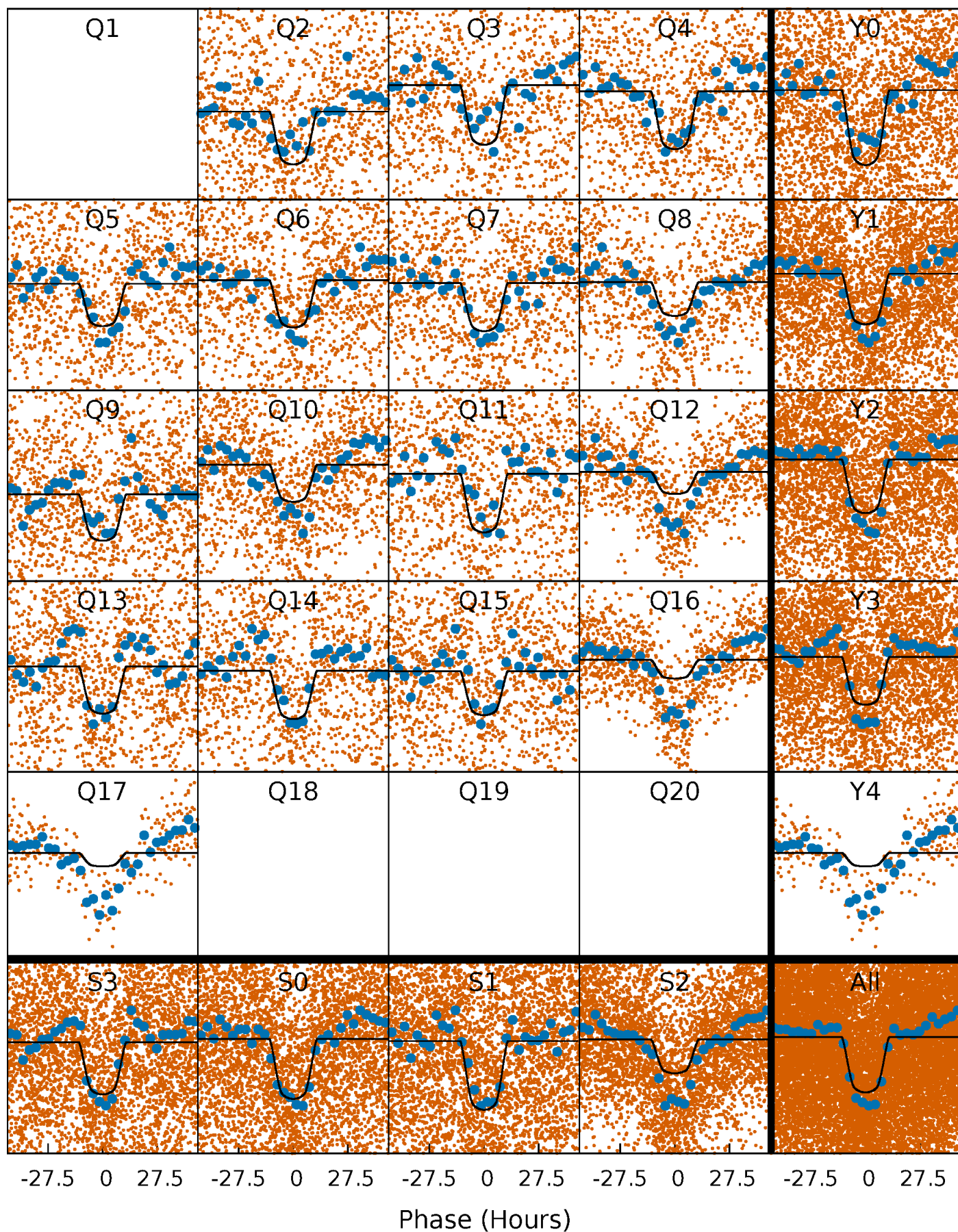
PDC Quarter-Phased Transit Curves

TCE 005471158-01 P= 12.425302 Days $T_0=141.549336$ (BKJD)



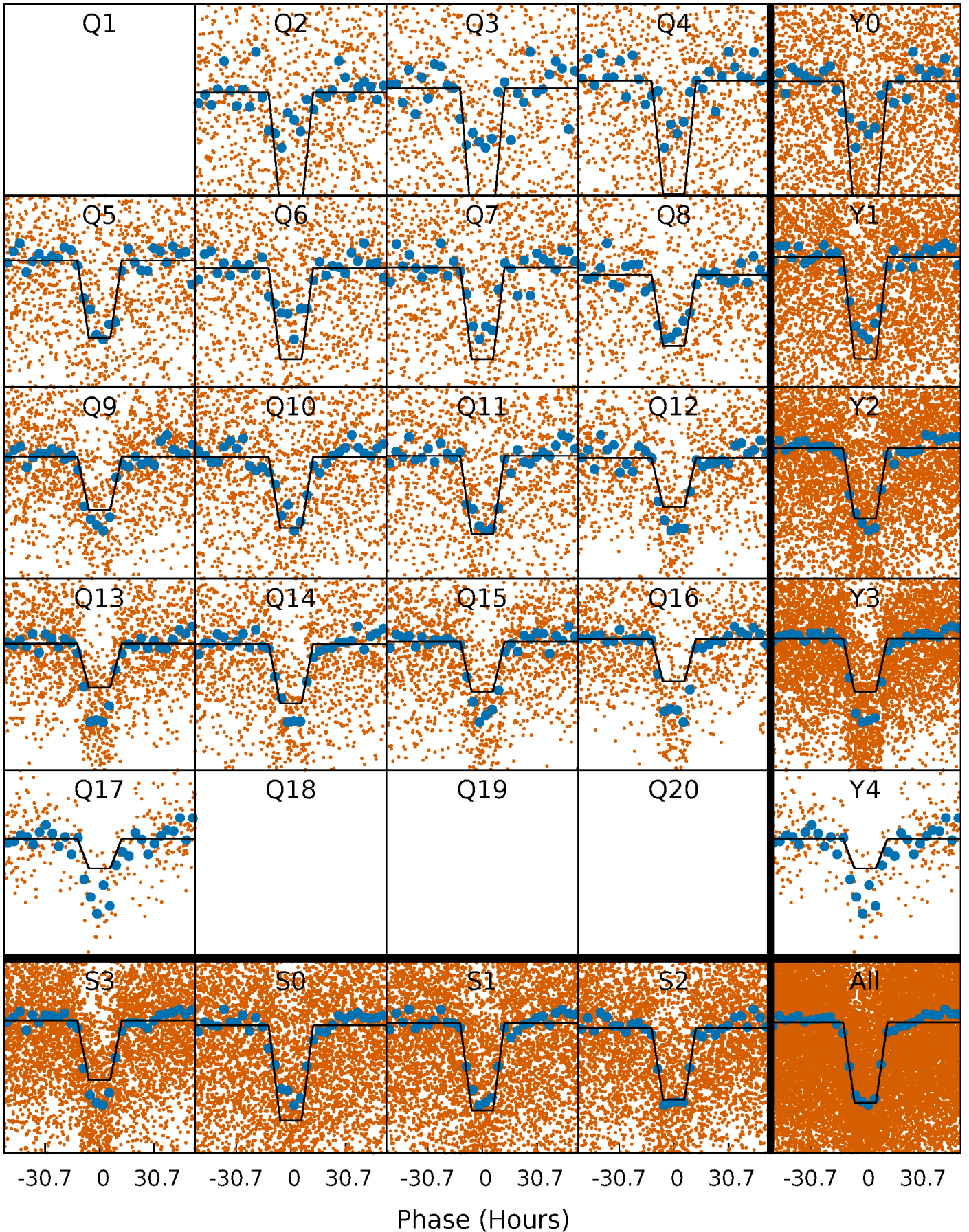
DV Quarter-Phased Transit Curves

TCE 005471158-01 P= 12.425302 Days $T_0=141.549336$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

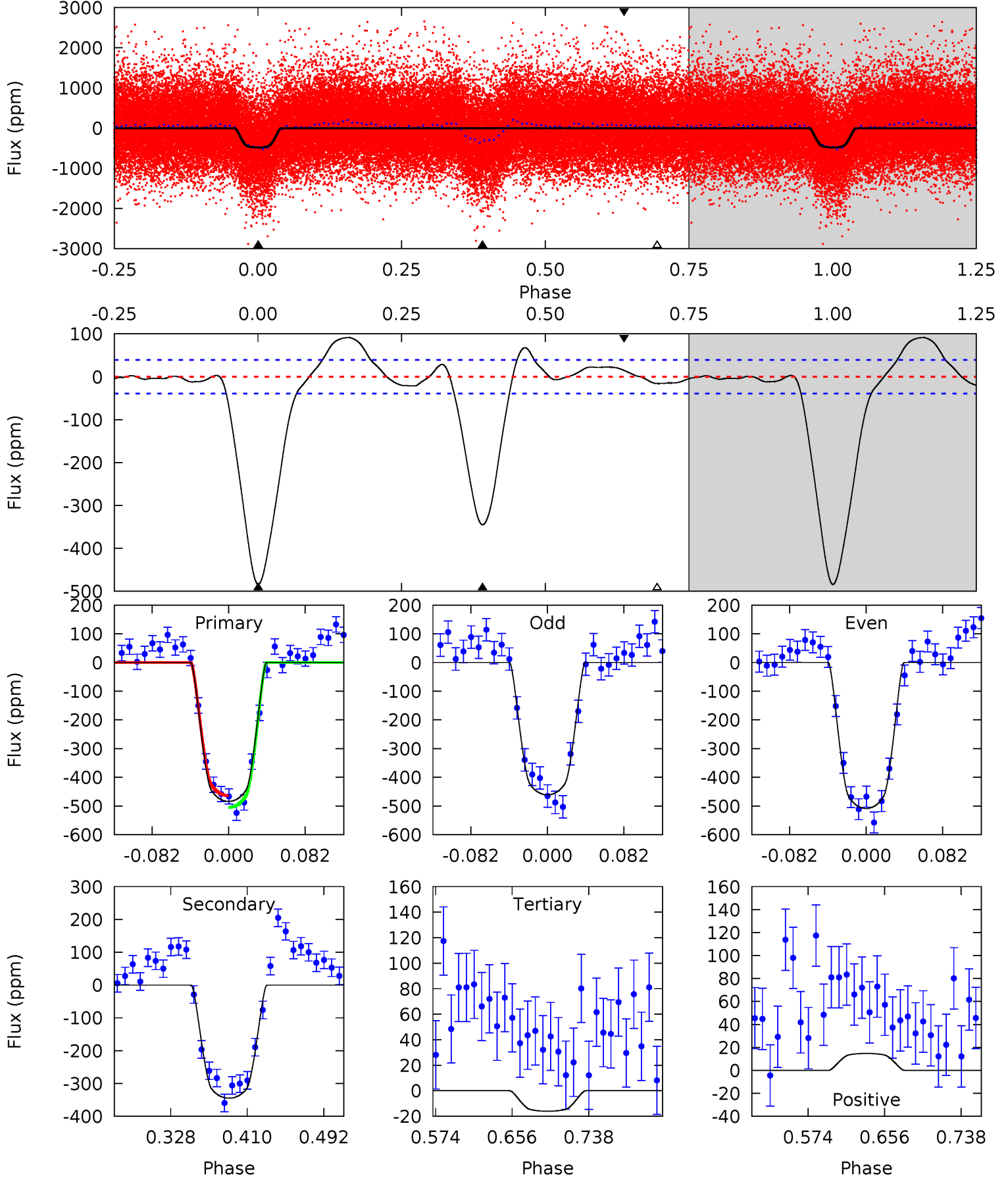
TCE 005471158-01 P= 12.424613 Days $T_0=141.609326$ (BKJD)



DV Model-Shift Uniqueness Test

005471158-01, P = 12.425302 Days, E = 141.549336 Days

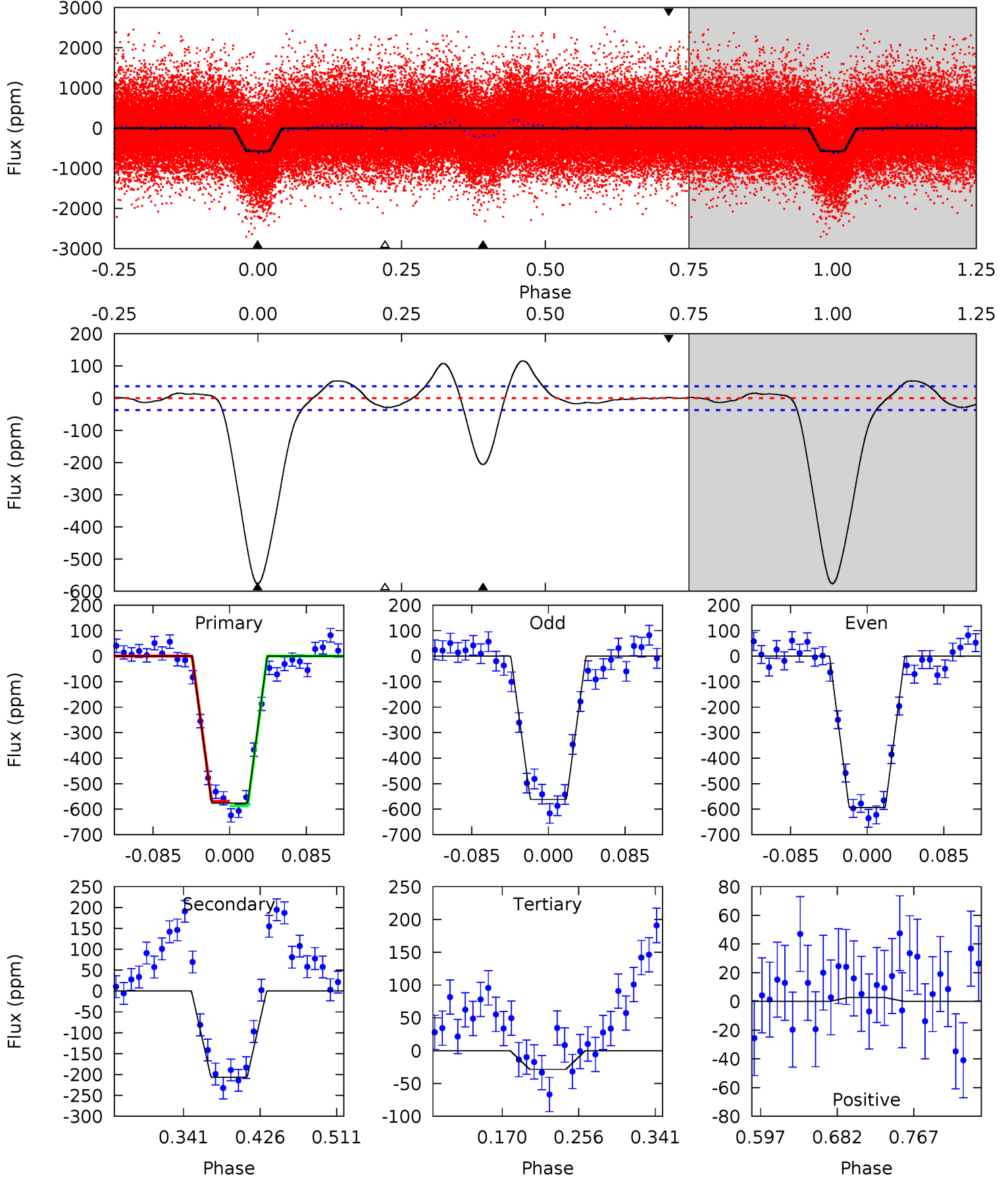
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
57.1	40.7	1.89	1.74	4.61	1.74	3.35	55.2	55.3	38.8	38.9	2.81	1.24	0.16	2.38



Alt Model-Shift Uniqueness Test

005471158-01, P = 12.424613 Days, E = 141.609326 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
71.4	25.6	3.52	0.34	4.60	1.72	2.76	67.9	71.1	22.0	25.2	2.01	1.10	0.17	1.16



Stellar Parameters For KIC 005471158

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5713^{+200}_{-220}	$4.541^{+0.036}_{-0.204}$	$0.070^{+0.250}_{-0.300}$	$0.893^{+0.264}_{-0.088}$	$1.010^{+0.110}_{-0.134}$	$2.000^{+0.414}_{-1.066}$
	+4%/-4%	+1%/-4%	+357%/-429%	+30%/-10%	+11%/-13%	+21%/-53%
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 005471158-01 / KOI 3504.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-345 ± 8	$2.40^{+0.39}_{-0.21}$	1055^{+77}_{-55}	5131^{+185}_{-191}	357^{+65}_{-81}
Alt.	-206 ± 8	$2.45^{+0.36}_{-0.22}$	1053^{+74}_{-53}	4579^{+144}_{-159}	207^{+38}_{-50}

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

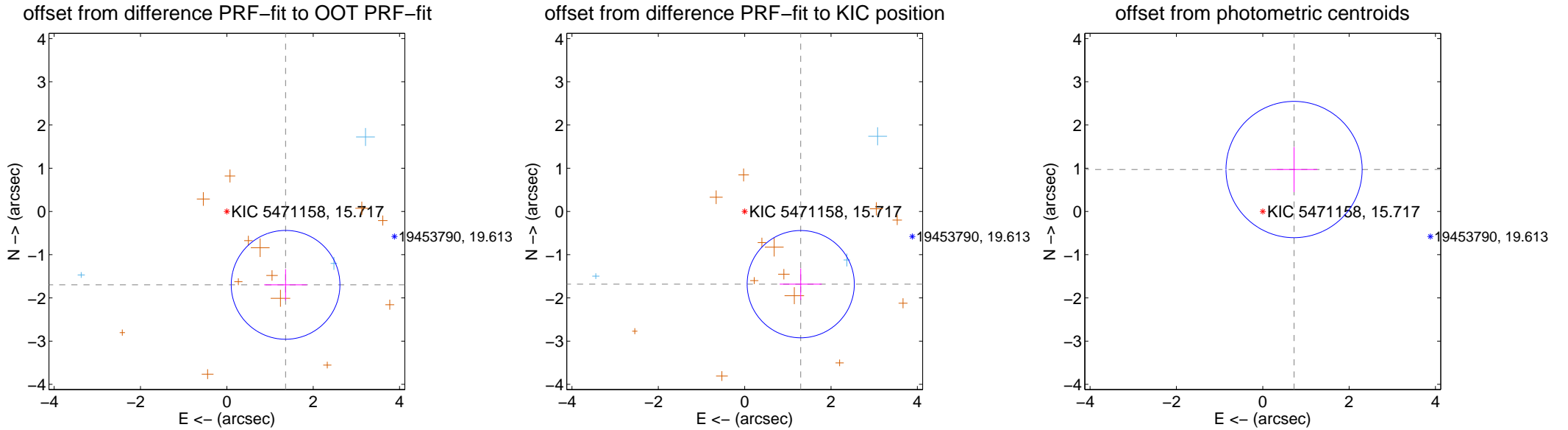
DV Centroid Data

Supplemental centroid analysis for 005471158-01. Kepler magnitude: 15.72. Transit SNR 24.12

There are 3 quarters with good PRF difference image offsets

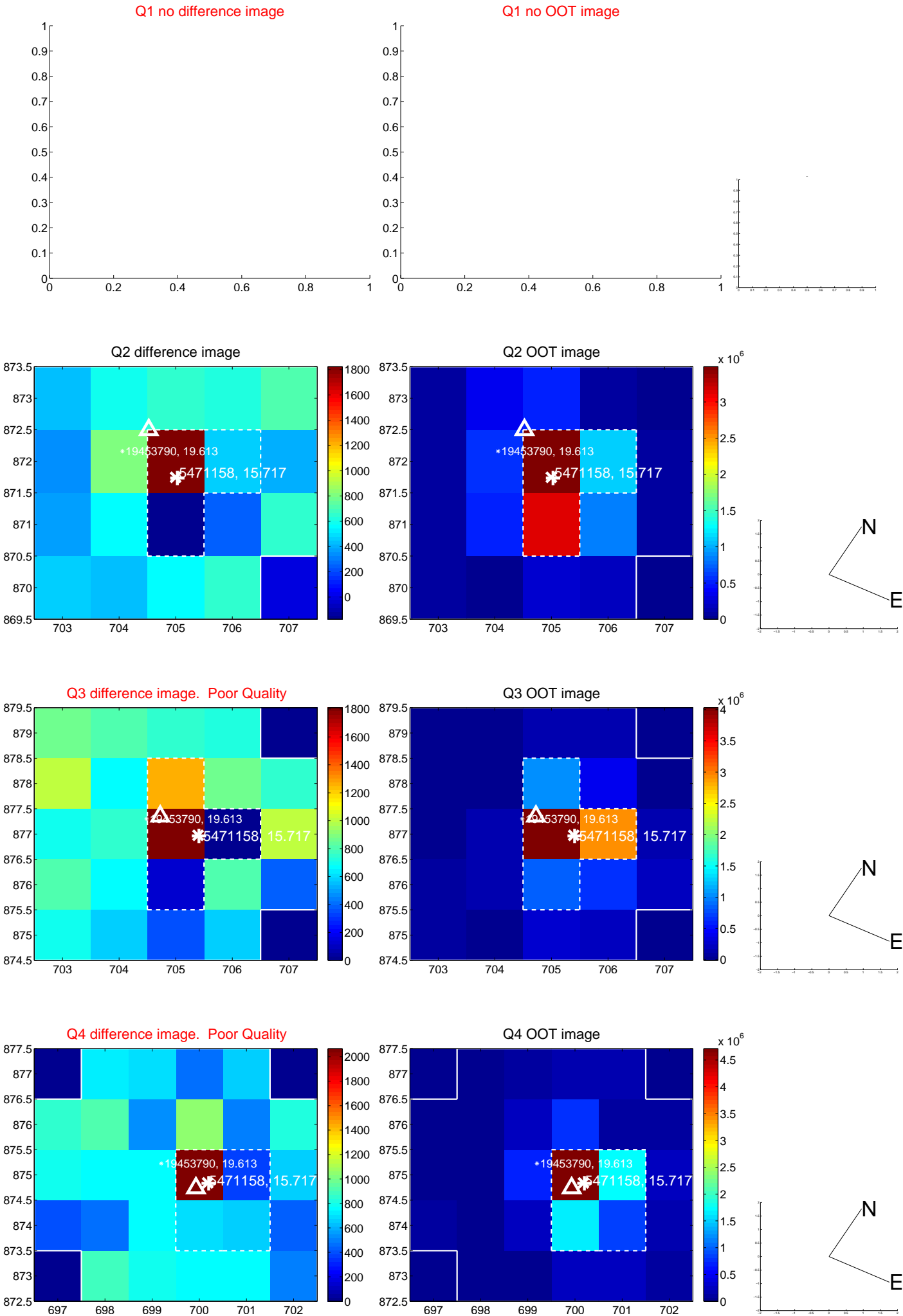
The direct PRF centroid is offset from the target star catalog position by about 0.11 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	2.176 ± 0.420	5.19	-1.360 ± 0.496	-1.698 ± 0.363
PRF-fit source offset from KIC position	2.125 ± 0.414	5.14	-1.298 ± 0.487	-1.682 ± 0.363
photometric centroid source offset	1.21 ± 0.53	2.30	-0.73 ± 0.54	0.97 ± 0.52

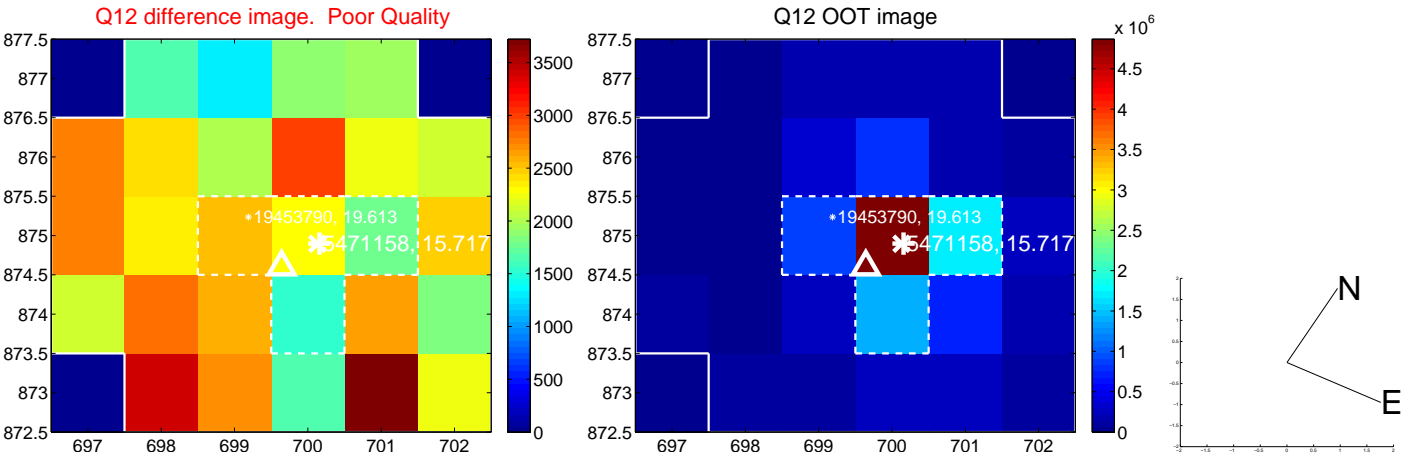
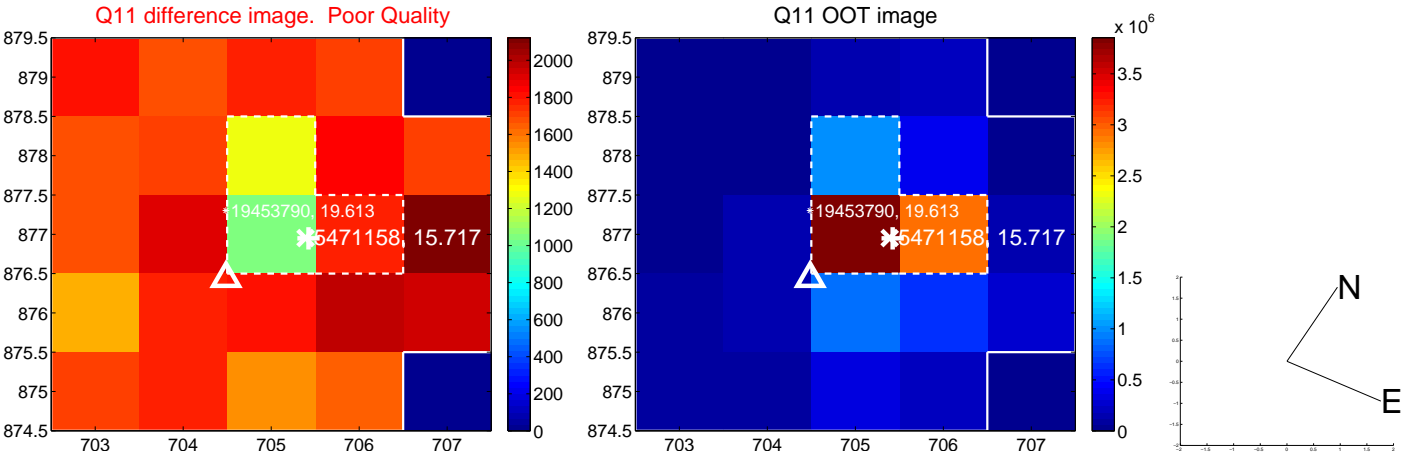
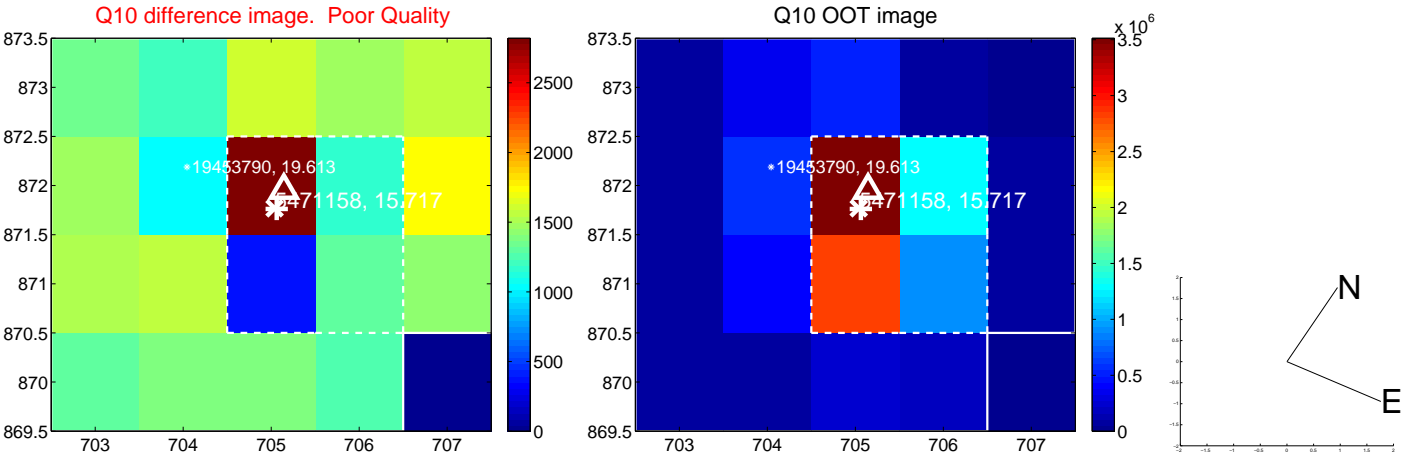
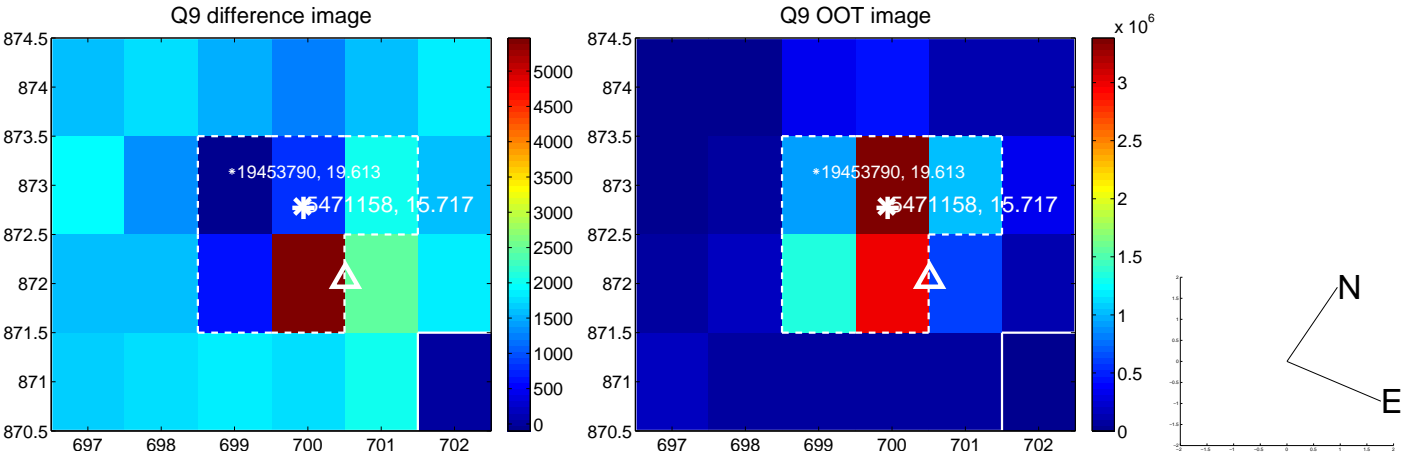


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

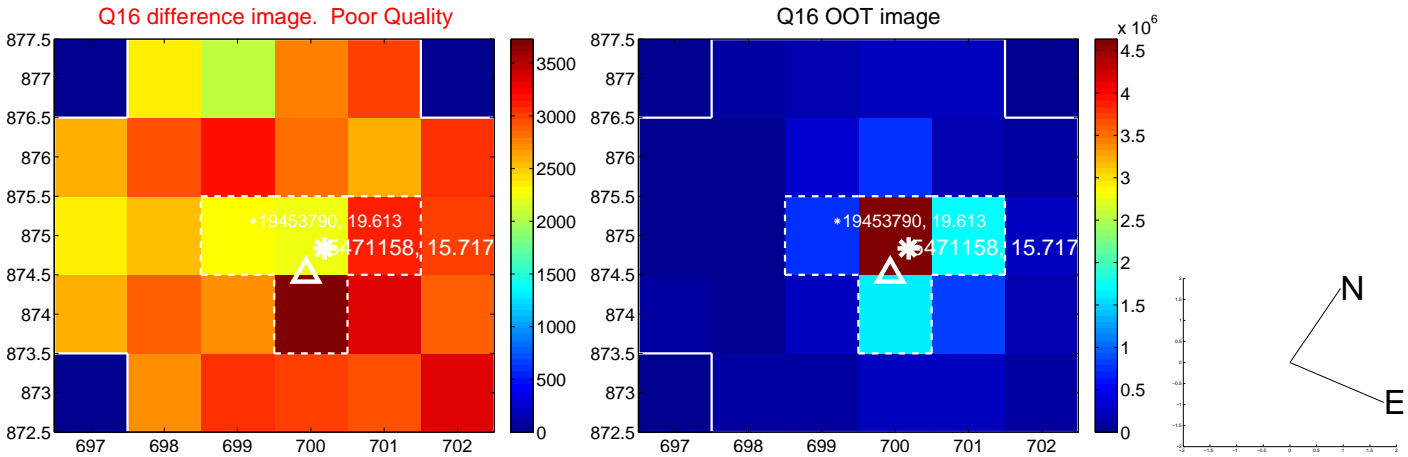
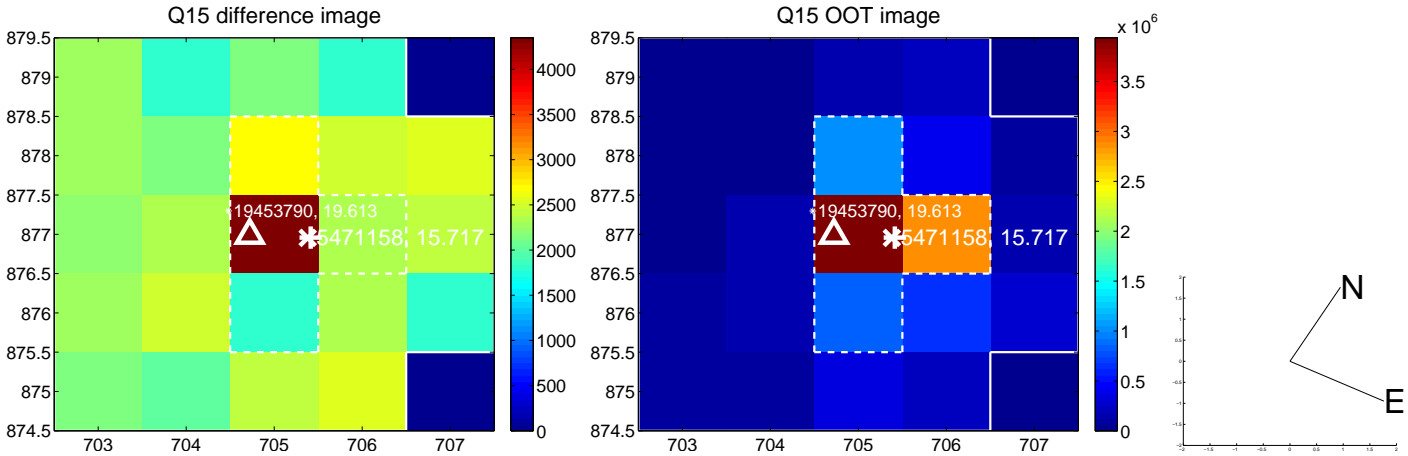
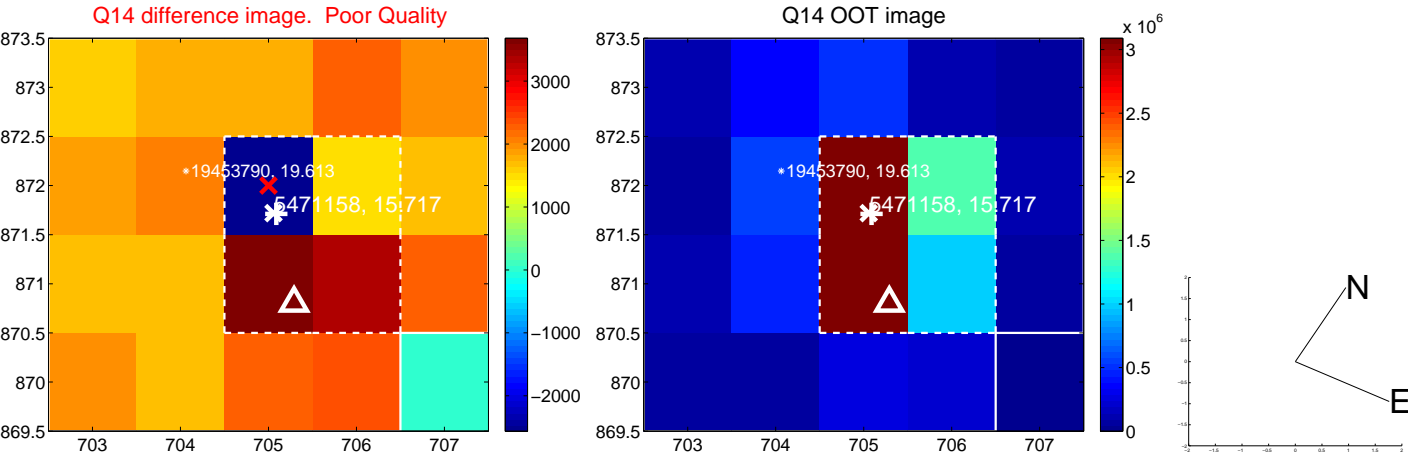
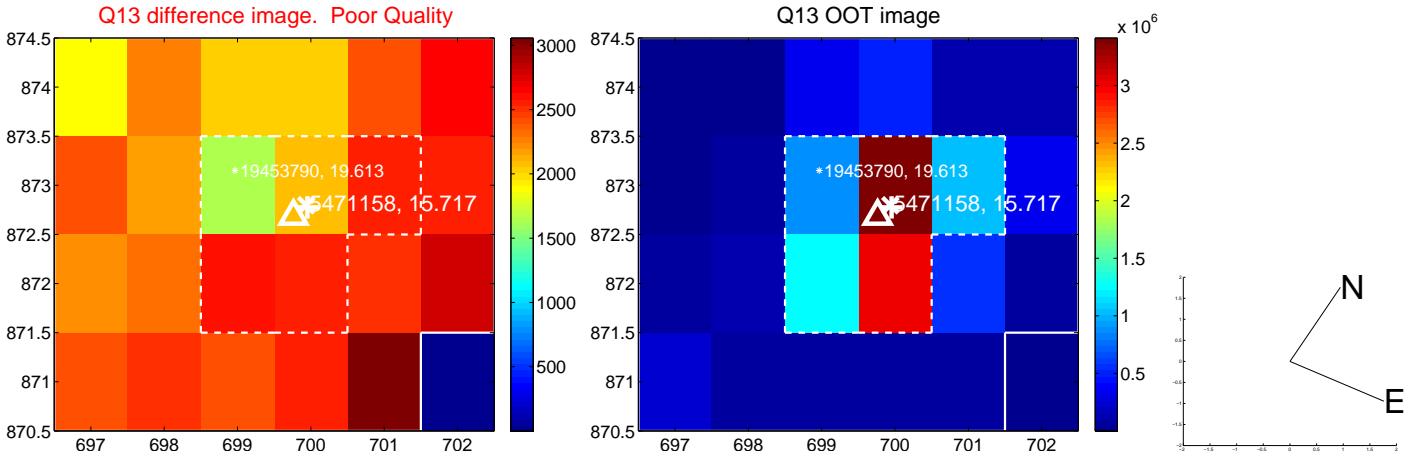
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



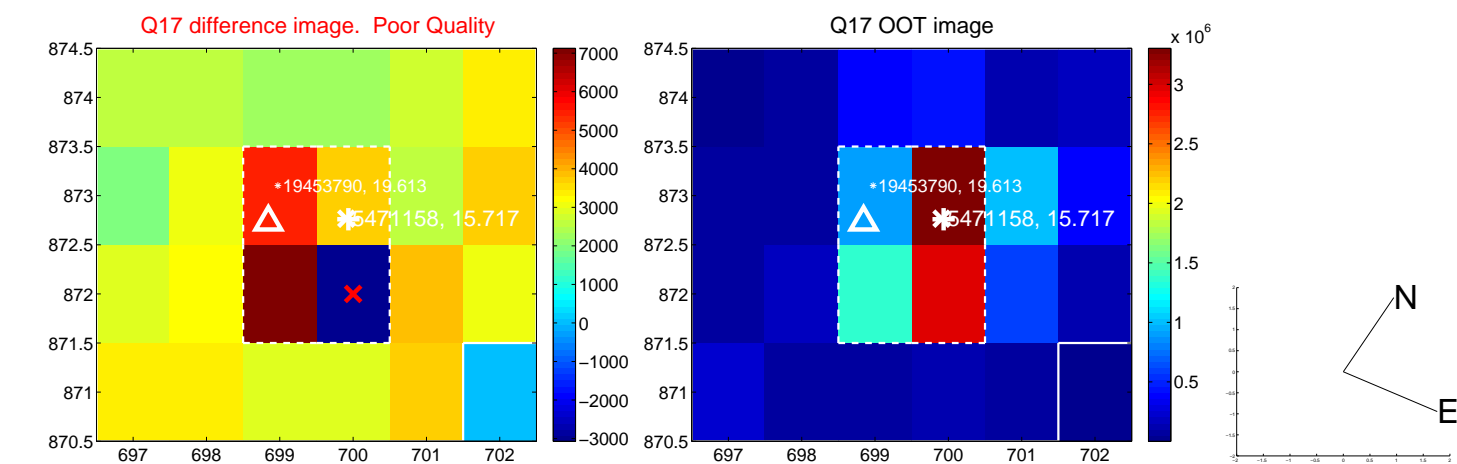
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



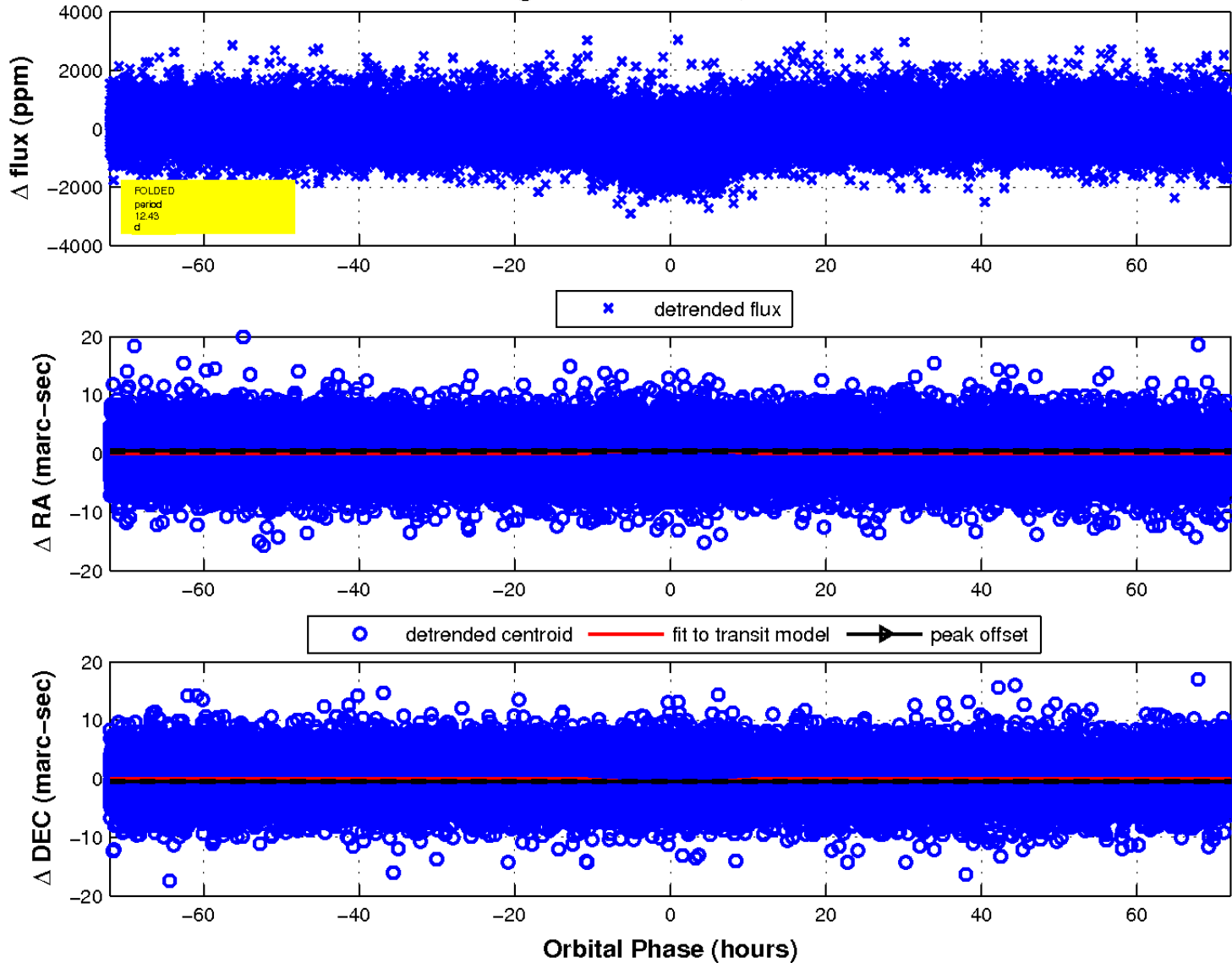
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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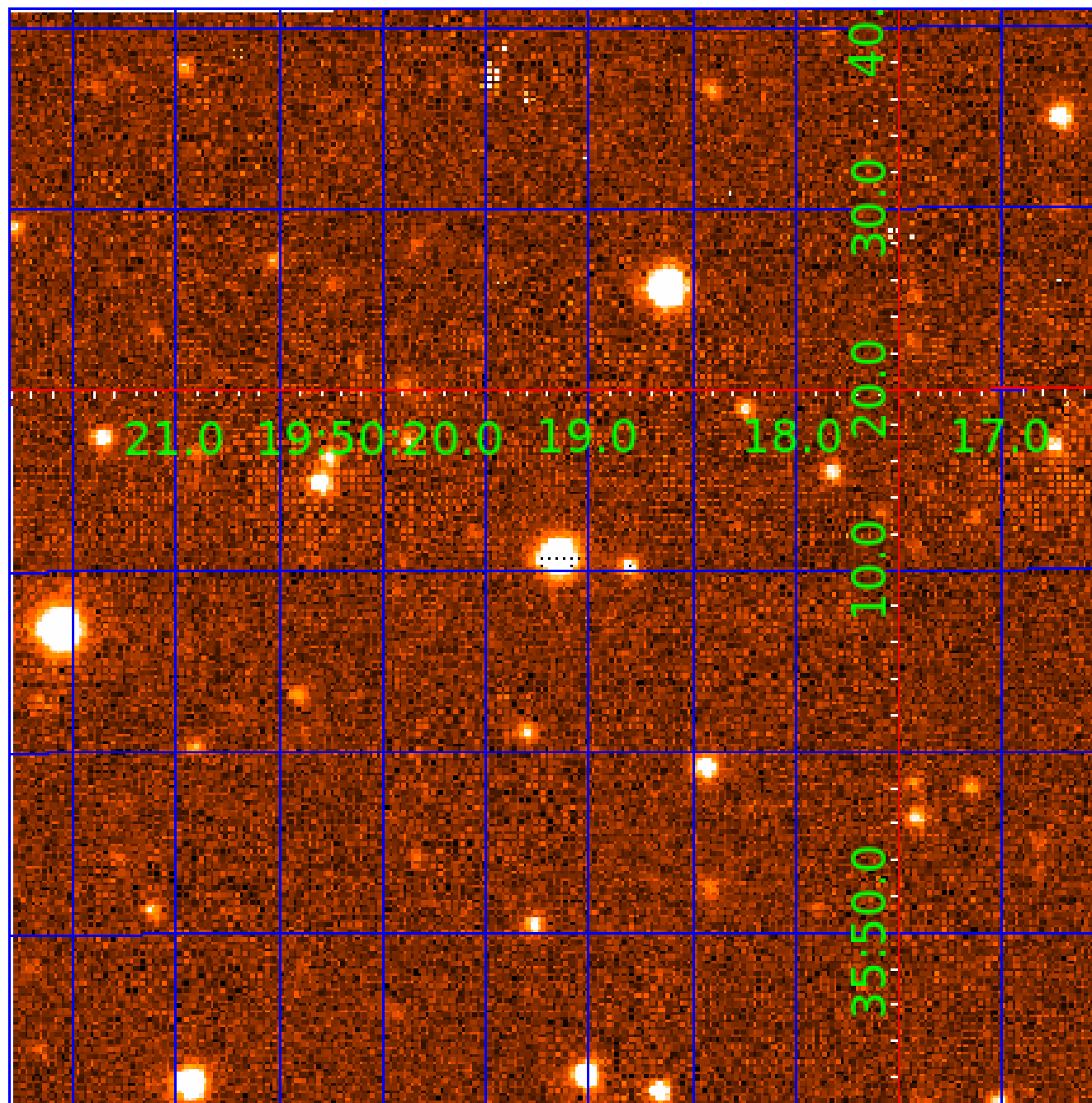


fluxWeightedCentroids, Planet 1 of 2



UKIRT Image

Declination



KIC 005471158

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})
005471158-01	OBS	3504.01	12.425302	141.549336	389.1	24.027	19.3	24.1	0.89	5713	2.30	68.52
005471158-02	OBS	No	12.425397	133.981970	349.0	27.203	18.8	25.0	0.89	5713	2.22	68.52

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005471158-01	OBS	FP	0.00	1	0	1	1	LPP_DV—LPP_ALT—CENT_RESOLVED_OFFSET—HALO_GHOST—EPHEM_MATCH
005471158-02	OBS	FP	0.00	1	0	1	1	LPP_DV—SAME_NTL_PERIOD—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 005471158-02

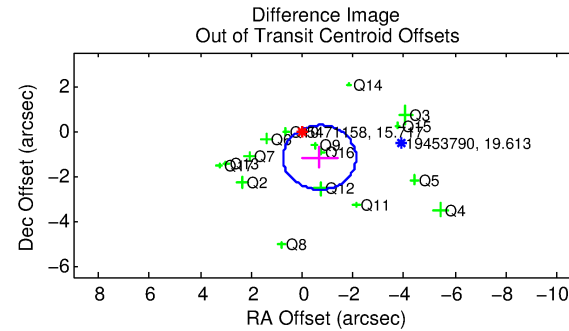
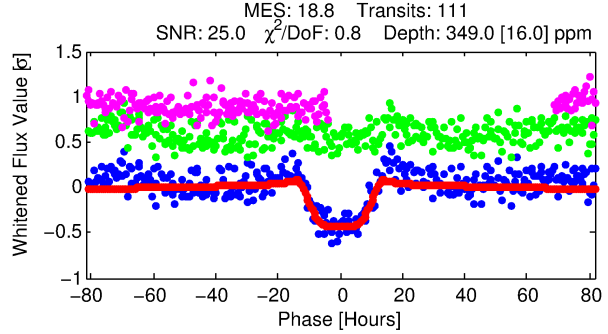
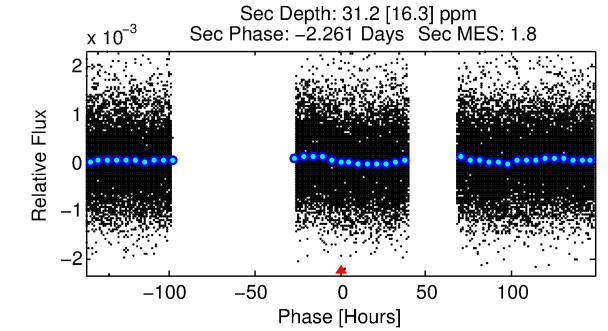
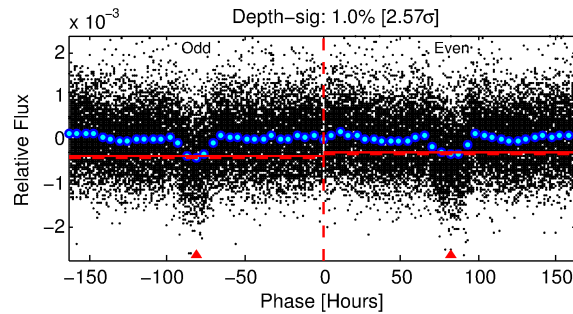
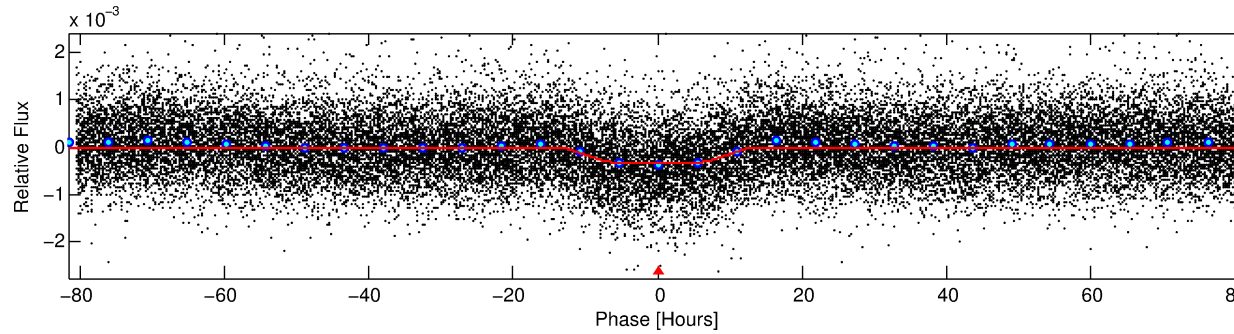
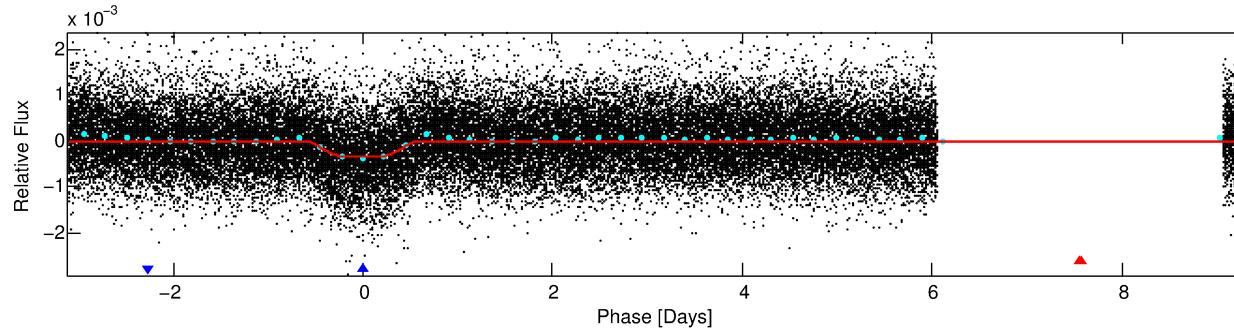
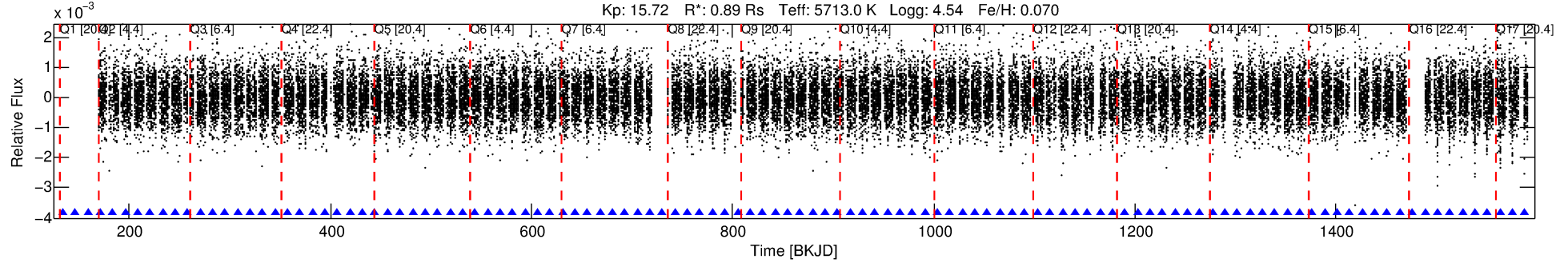
TCE (1)	KIC	Parent (2)	Parent KIC	$P_1:P_2$	Dist ($''$)	Δ Row	Δ Col	m_2	m_1	D_2/D_1	Mechanism	Flag	σ_P	σ_T
005471158-02	5471158	V380-Cyg-sec	5385723	1:1	207.3	27	-44	5.77	15.72	369.73	Direct-PRF	0	0.25	1.04

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: 5471158 Candidate: 2 of 2 Period: 12.425 d
KOI: K03504 Corr: No Ephemeris Match

Kp: 15.72 R*: 0.89 Rs Teff: 5713.0 K Logg: 4.54 Fe/H: 0.070



DV Fit Results:

Period = 12.42540 [0.00035] d
Epoch = 133.9820 [0.0221] BKJD
Rp/R* = 0.0227 [0.0007]
a/R* = 1.52 [0.07]
b = 0.97 [0.01]
Seff = 68.52 [27.46]
Teq = 734 [74] K
Rp = 2.22 [0.66] Re
a = 0.1054 [0.0265] AU
Ag = 38.86 [25.03] [1.51σ]
Teffp = 2832 [389] K [5.30σ]

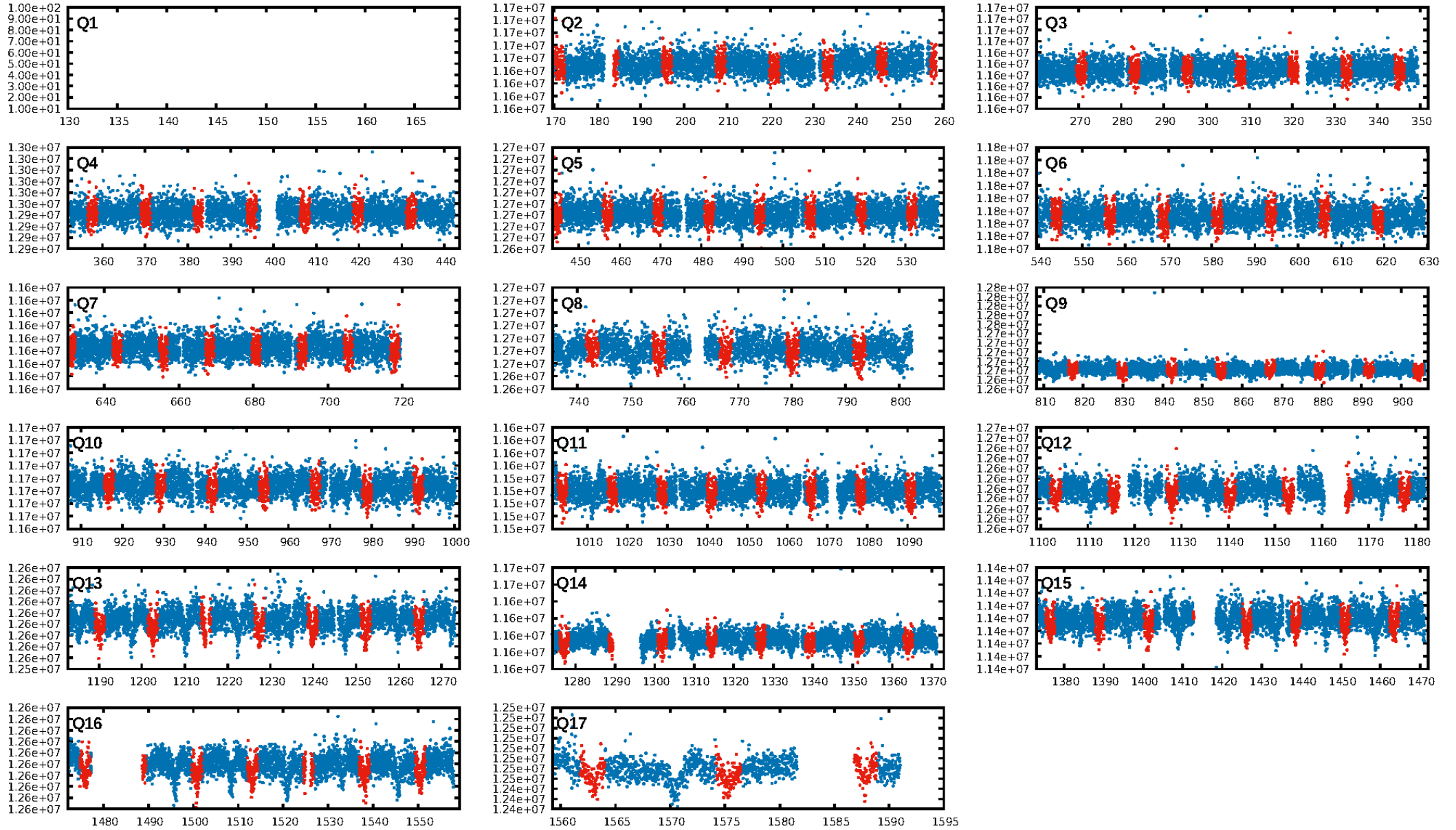
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 2.8%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 6.14e-86
RollingBand-fgt: 1.00 [108/108]
GhostDiagnostic-chr: 0.08079
Centroid-sig: 0.0%
Centroid-so: 1.527 arcsec [2.70σ]
OotOffset-rm: 1.365 arcsec [2.86σ]
KicOffset-rm: 1.328 arcsec [2.66σ]
OotOffset-st: 4/4/4/4 [16]
KicOffset-st: 4/4/4/4 [16]
DiffImageQuality-fgm: 0.19 [3/16]
DiffImageOverlap-fno: 1.00 [16/16]

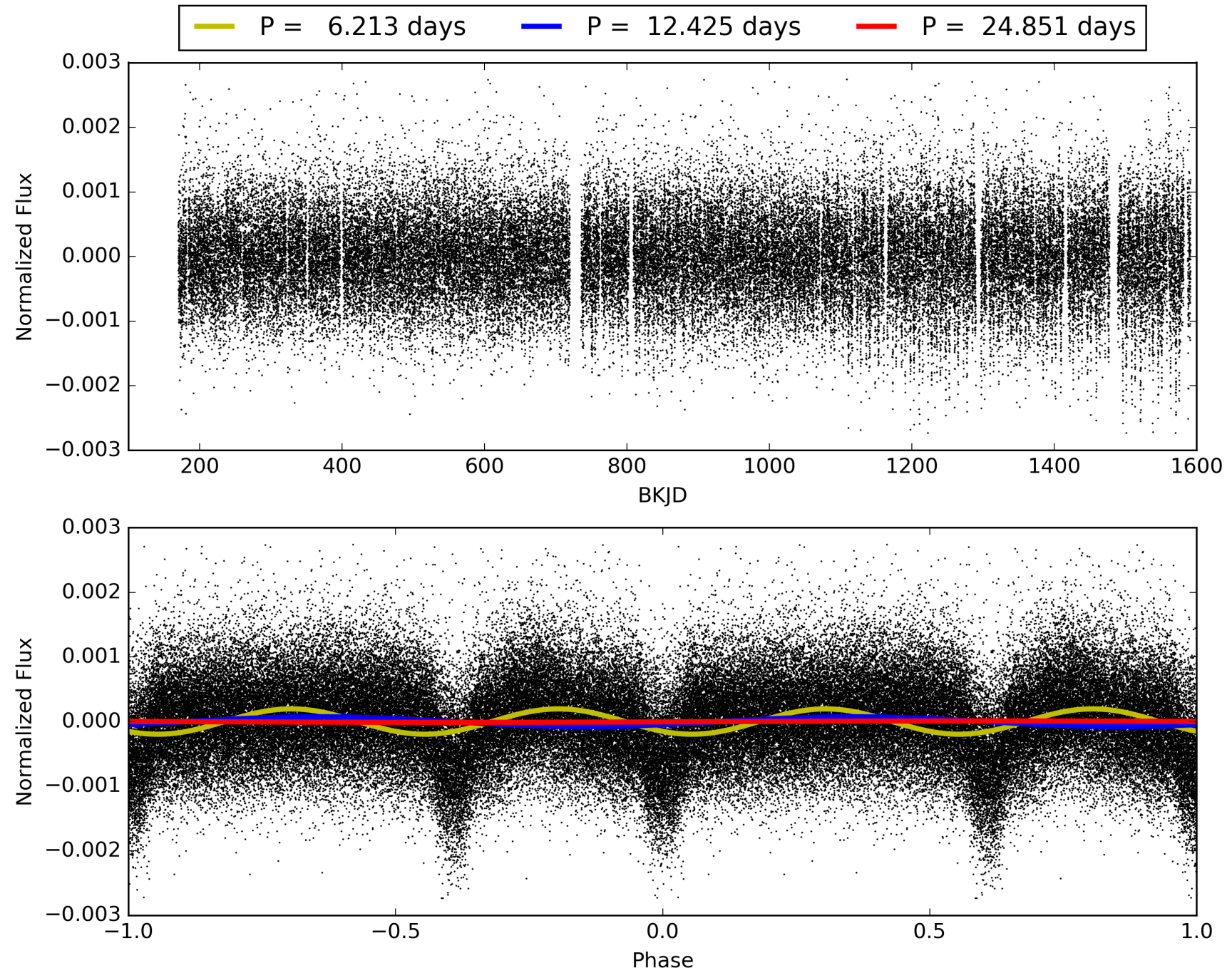
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 17:40:55 Z

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

TCE 005471158-02, PDC Light Curves

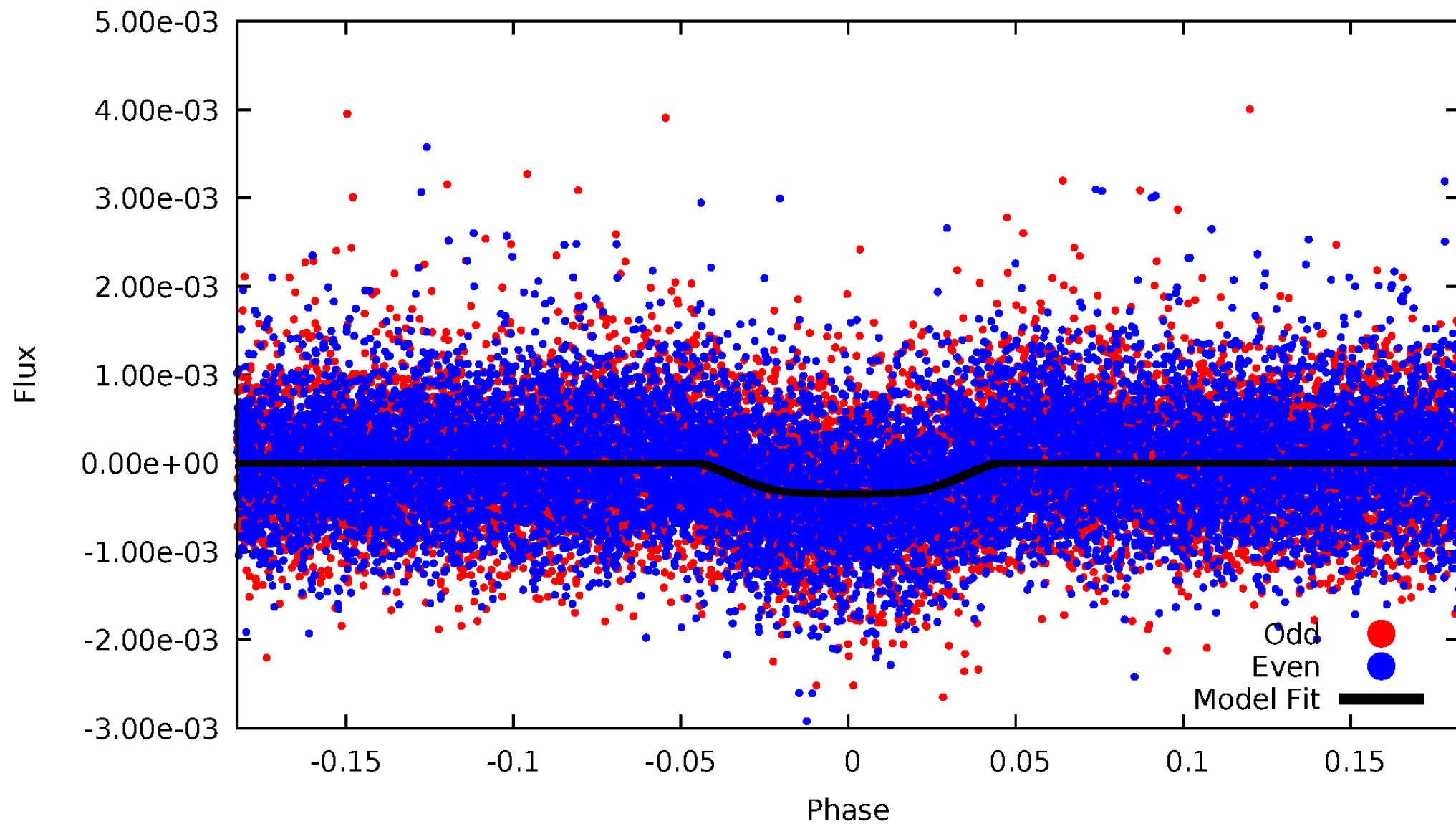


TCE 005471158-02



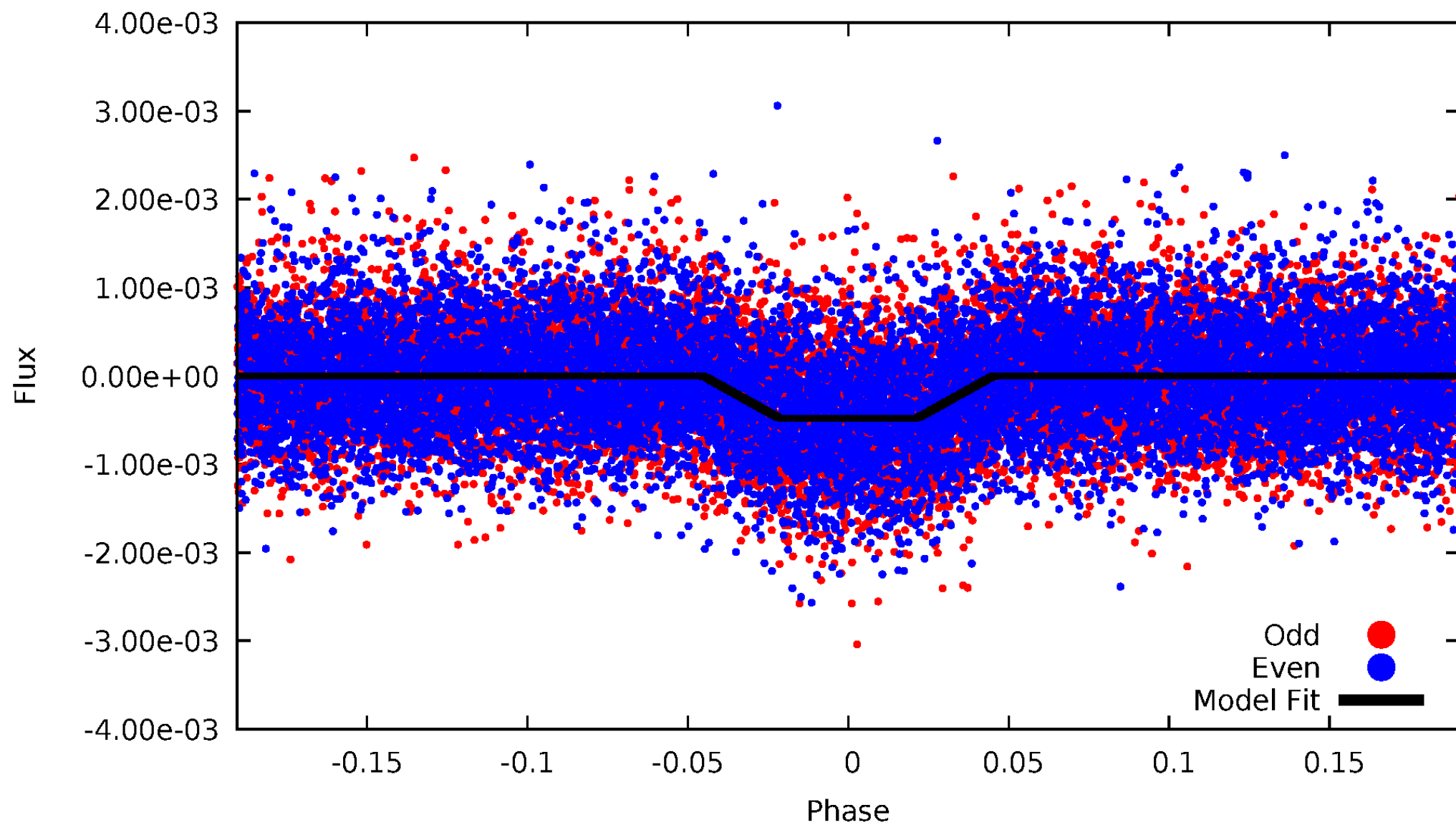
DV Odd/Even

TCE 005471158-02



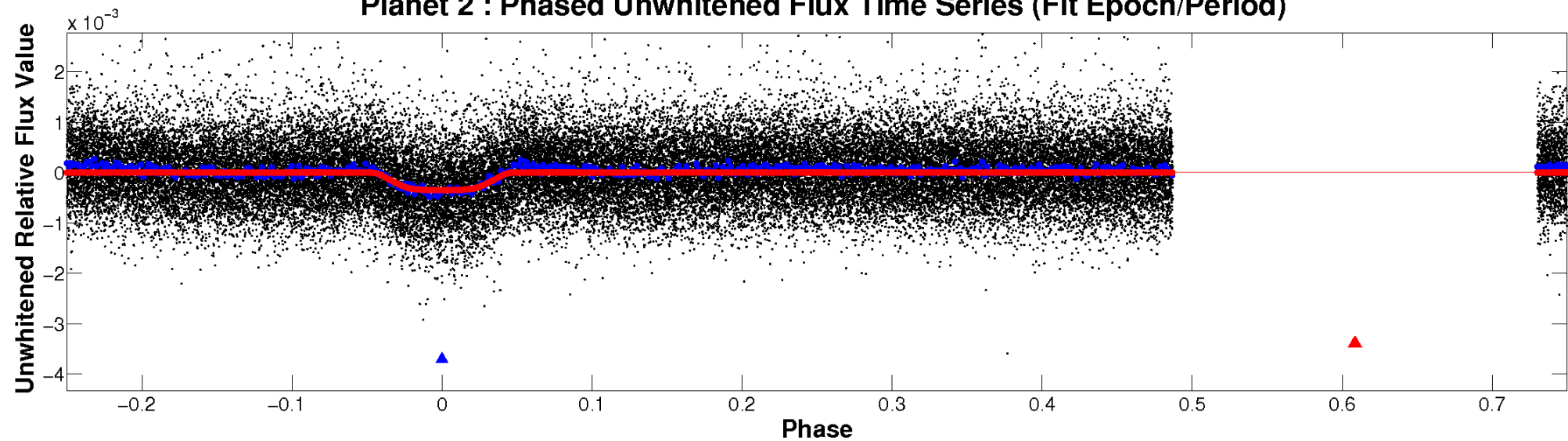
ALT Odd/Even

TCE 005471158-02

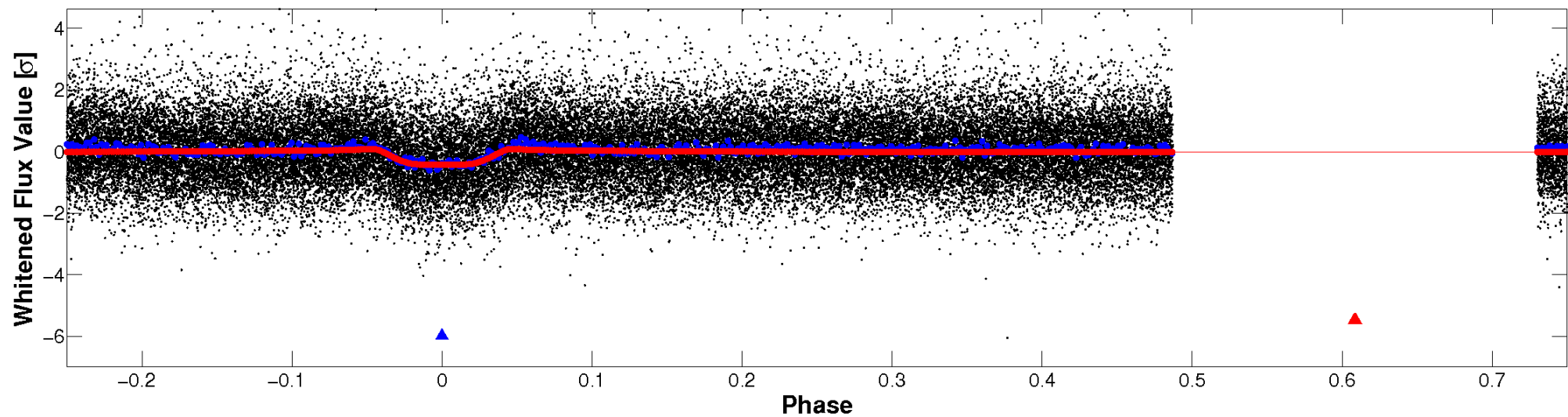


Non-Whitened Vs. Whitened Light Curve

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

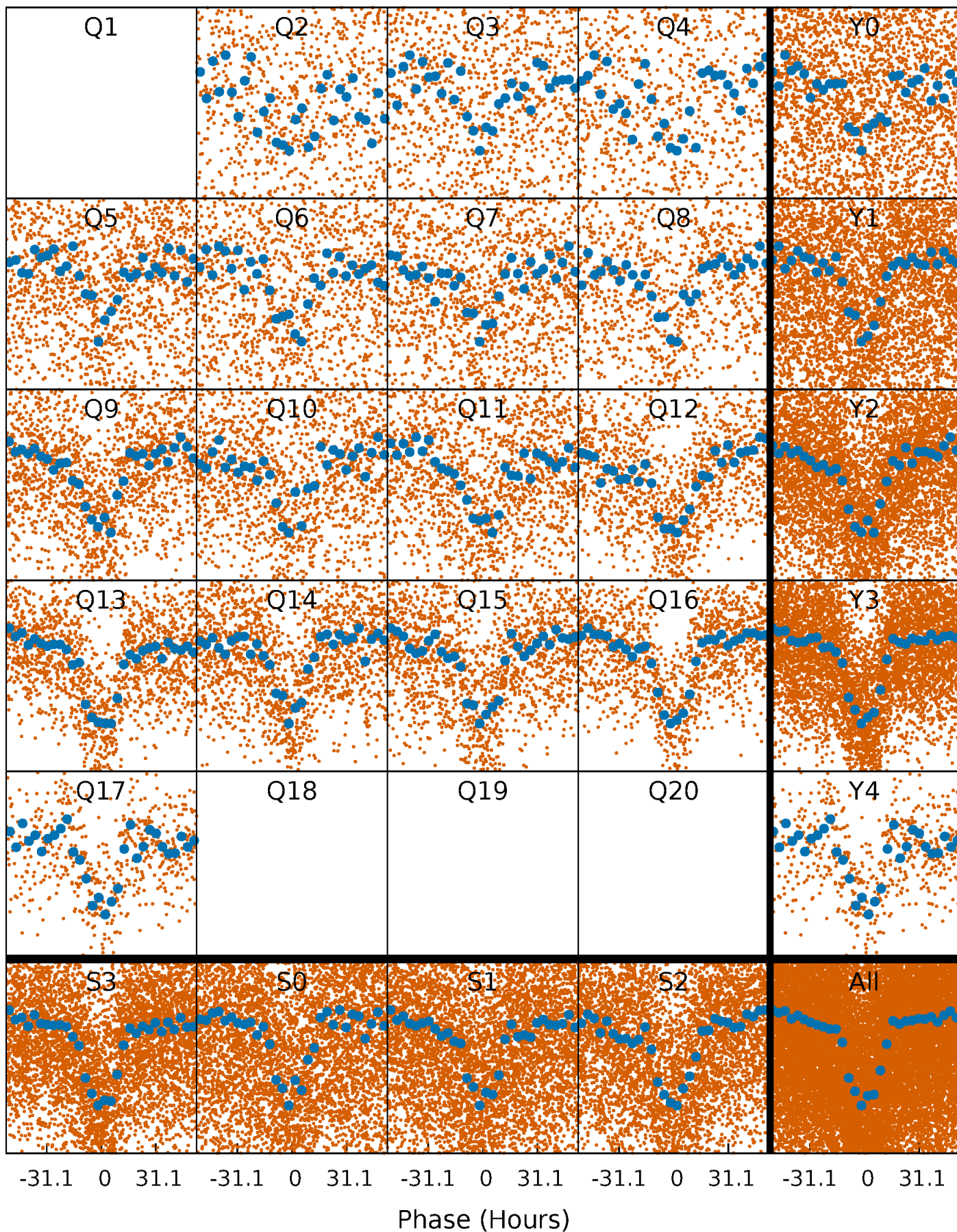


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



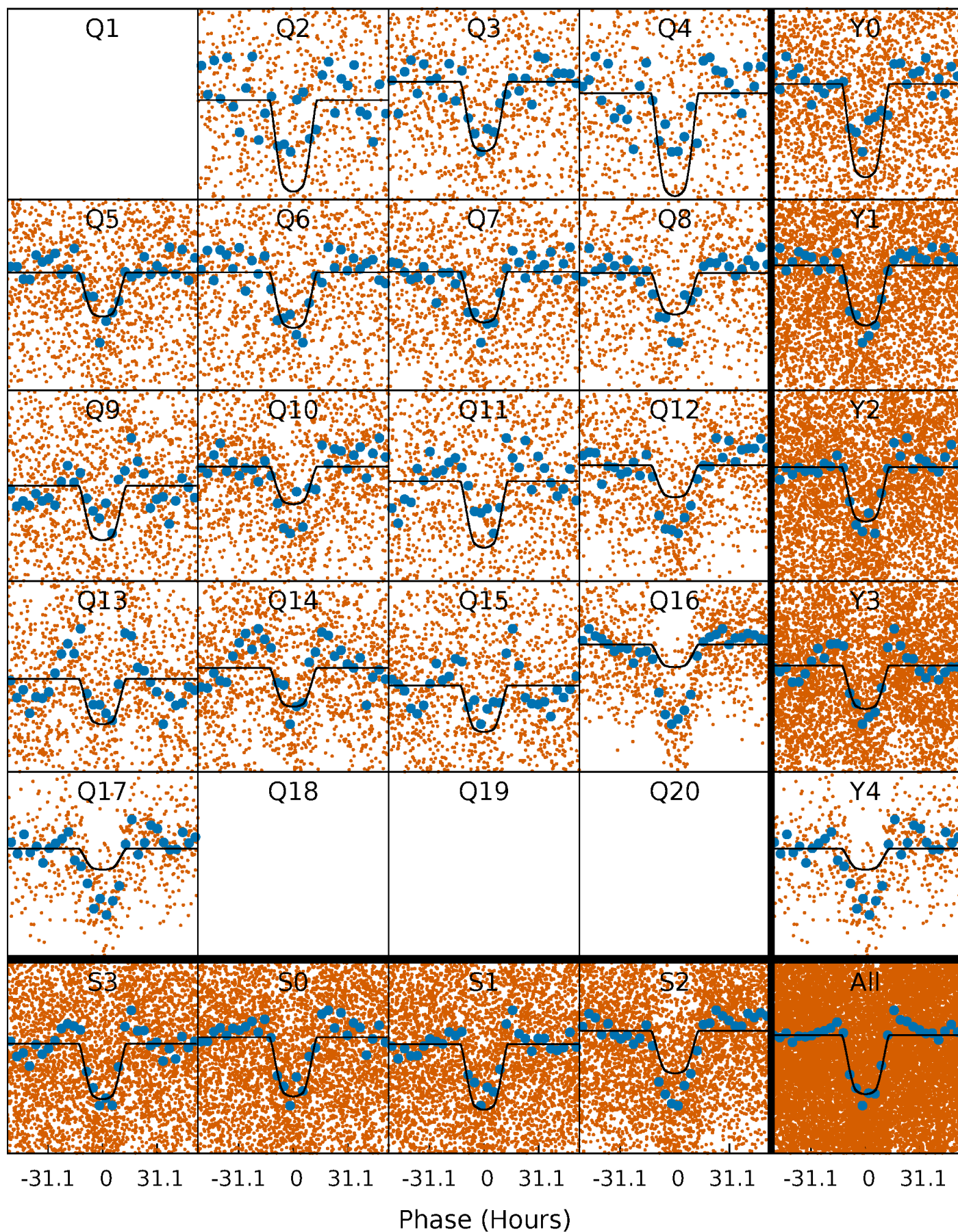
PDC Quarter-Phased Transit Curves

TCE 005471158-02 P= 12.425397 Days $T_0=133.981970$ (BKJD)



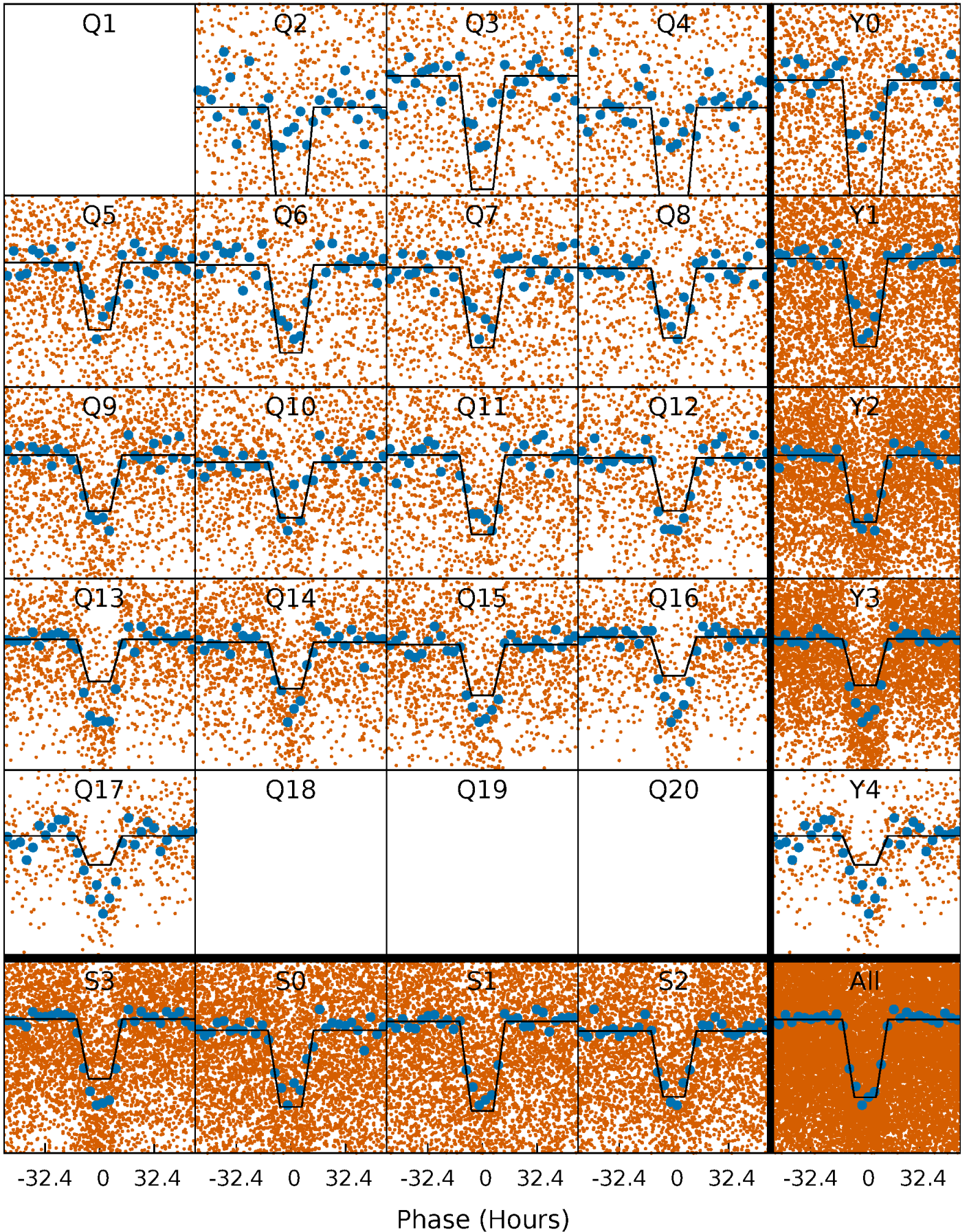
DV Quarter-Phased Transit Curves

TCE 005471158-02 P= 12.425397 Days $T_0=133.981970$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

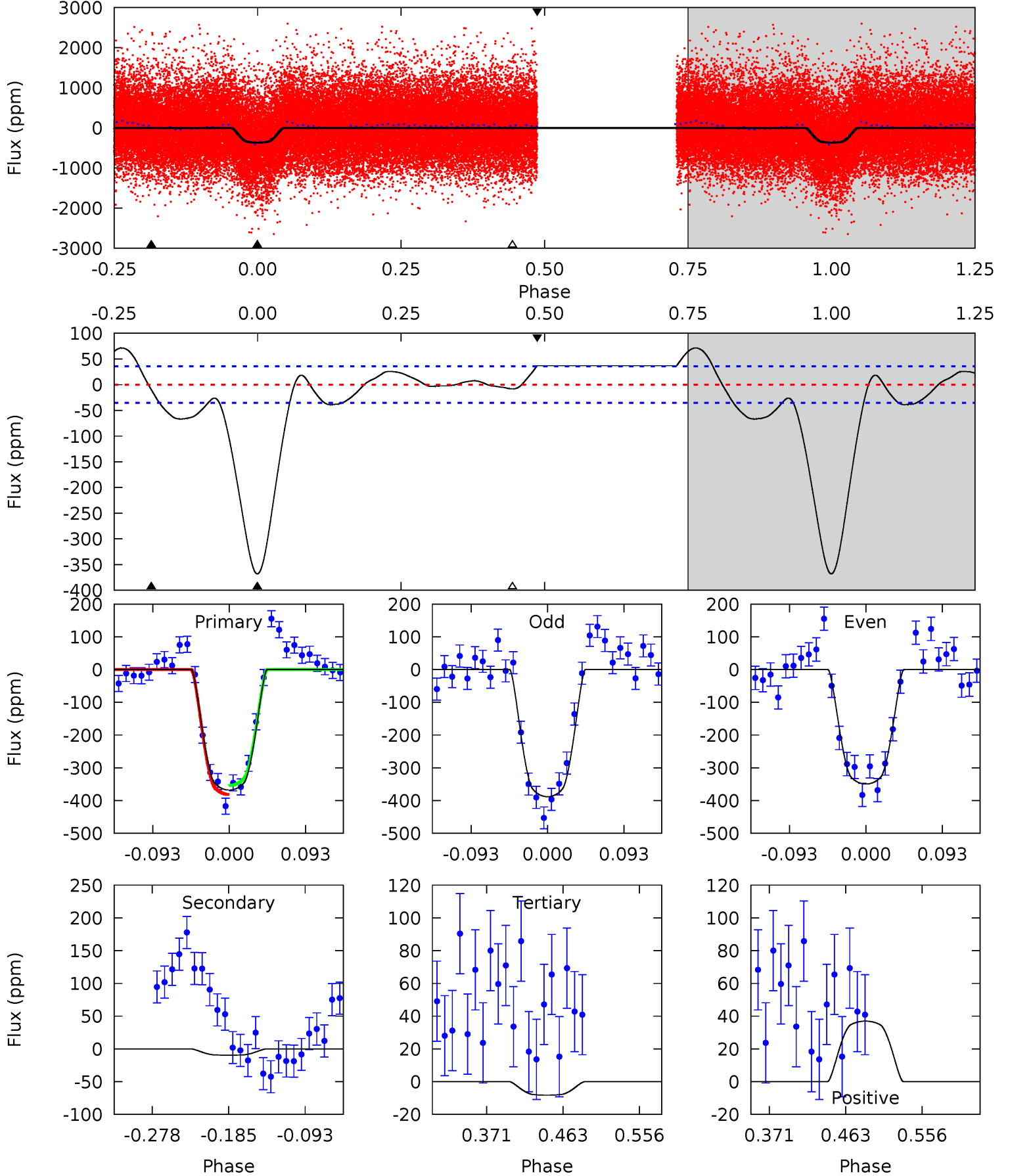
TCE 005471158-02 P= 12.425003 Days $T_0=134.013347$ (BKJD)



DV Model-Shift Uniqueness Test

005471158-02, P = 12.425397 Days, E = 133.981970 Days

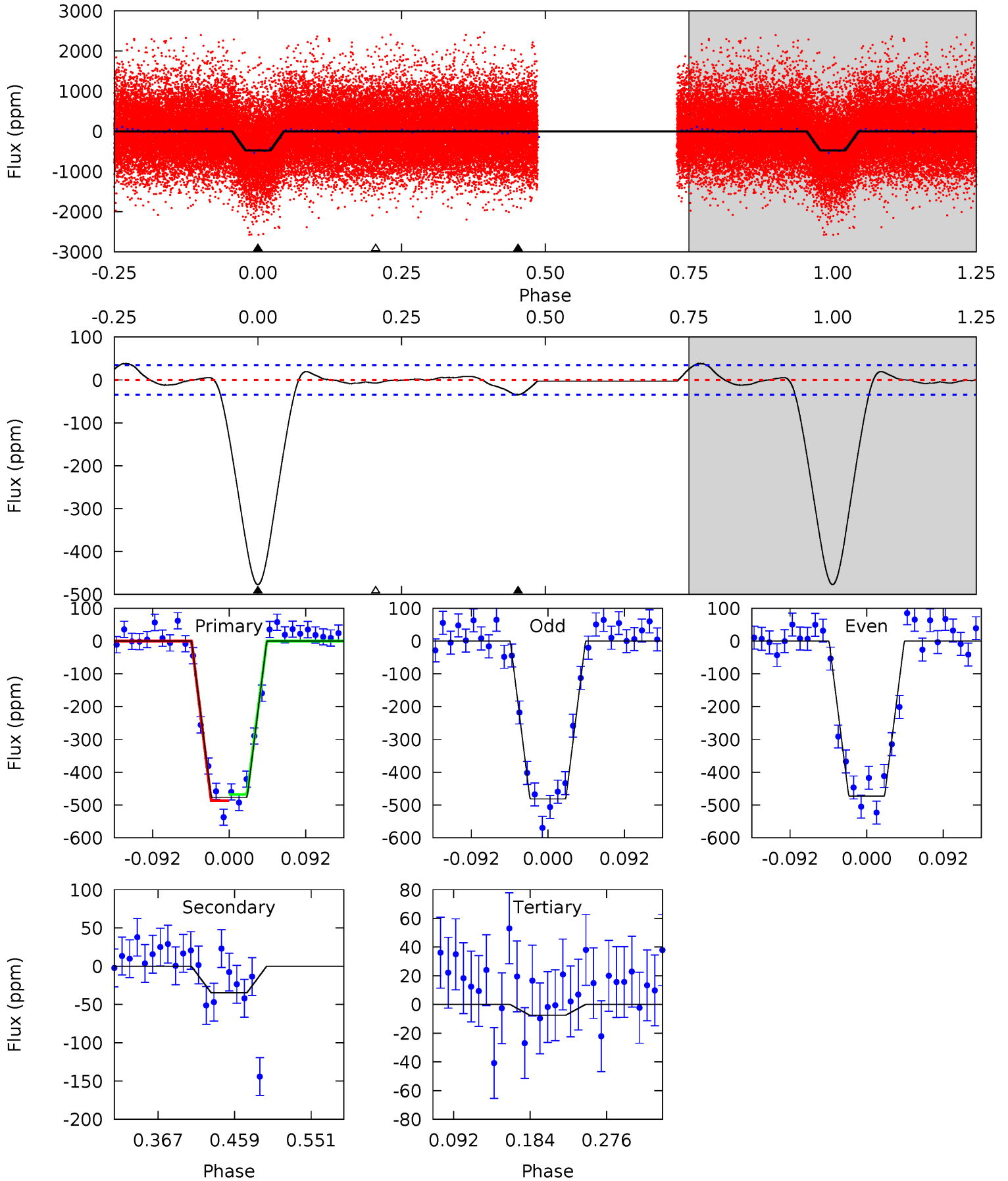
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
47.4	1.24	1.06	4.76	4.58	1.68	2.66	46.4	42.7	0.18	-3.52	2.50	1.39	0.16	1.77



Alt Model-Shift Uniqueness Test

005471158-02, P = 12.425003 Days, E = 134.013347 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
62.5	4.53	0.98	0	4.58	1.69	1.55	61.5	62.5	3.55	4.53	0.57	1.17	0.07	1.24



Stellar Parameters For KIC 005471158

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5713^{+200}_{-220}	$4.541^{+0.036}_{-0.204}$	$0.070^{+0.250}_{-0.300}$	$0.893^{+0.264}_{-0.088}$	$1.010^{+0.110}_{-0.134}$	$2.000^{+0.414}_{-1.066}$
	+4%/-4%	+1%/-4%	+357%/-429%	+30%/-10%	+11%/-13%	+21%/-53%
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 005471158-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-10 ± 8	$2.31^{+0.35}_{-0.22}$	1051^{+75}_{-53}	2784^{+296}_{-627}	$9.455^{+10.160}_{-7.974}$
Alt.	-35 ± 8	$2.21^{+0.35}_{-0.20}$	1053^{+74}_{-51}	3446^{+146}_{-153}	41^{+13}_{-12}

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 $A_{obs} \gg 1.0$

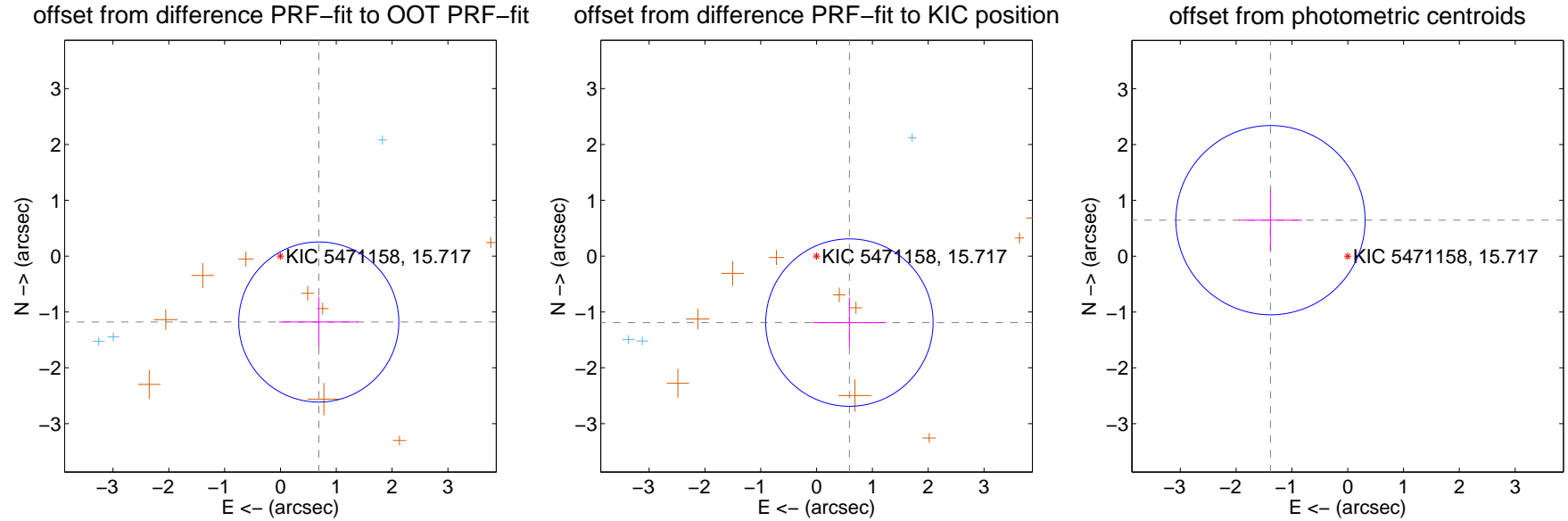
DV Centroid Data

Supplemental centroid analysis for 005471158-02. Kepler magnitude: 15.72. Transit SNR 24.96

There are 3 quarters with good PRF difference image offsets

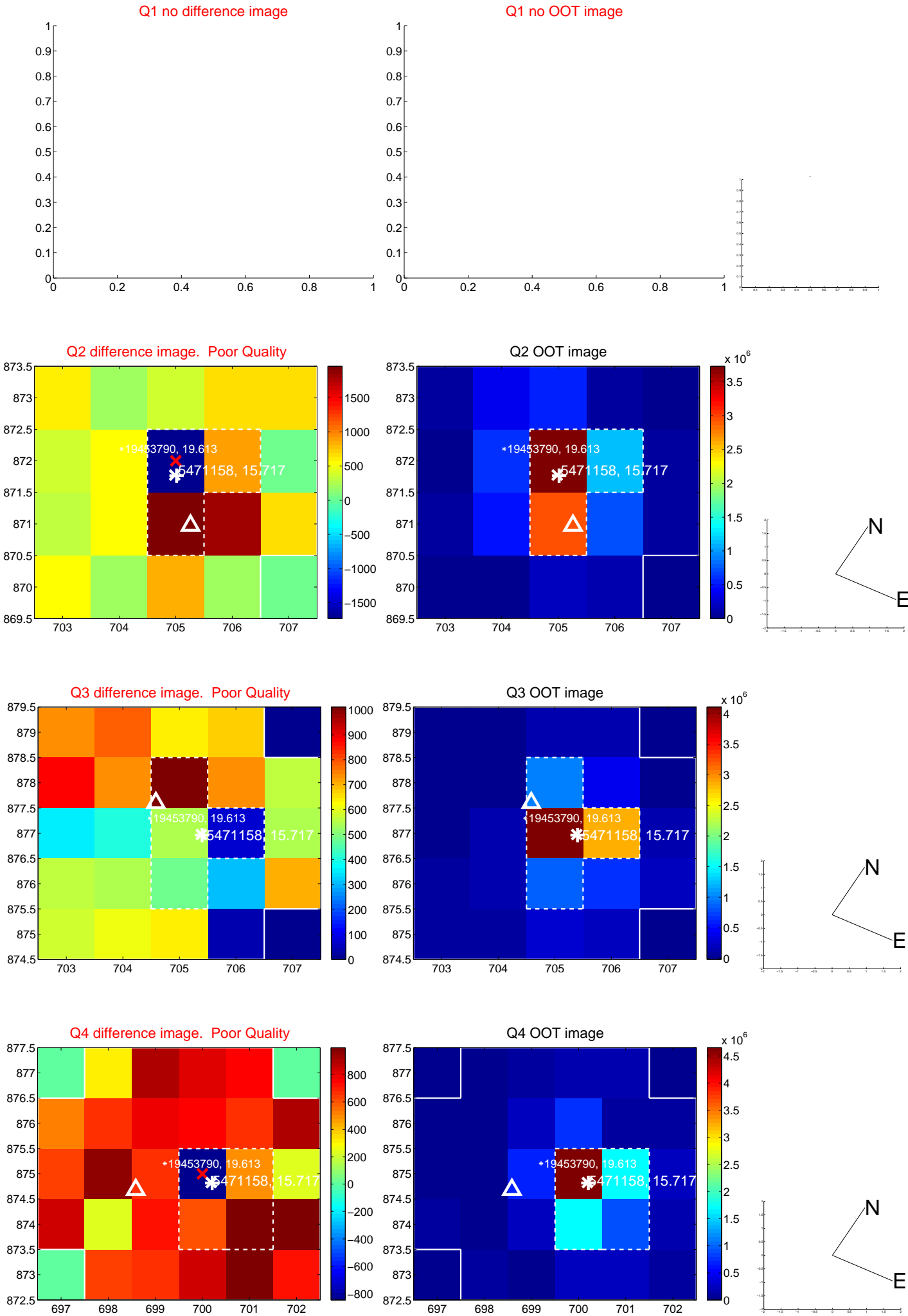
The direct PRF centroid is offset from the target star catalog position by about 0.12 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.365 ± 0.478	2.86	-0.687 ± 0.711	-1.180 ± 0.451
PRF-fit source offset from KIC position	1.328 ± 0.500	2.66	-0.588 ± 0.659	-1.190 ± 0.452
photometric centroid source offset	1.53 ± 0.57	2.70	1.38 ± 0.57	0.65 ± 0.55

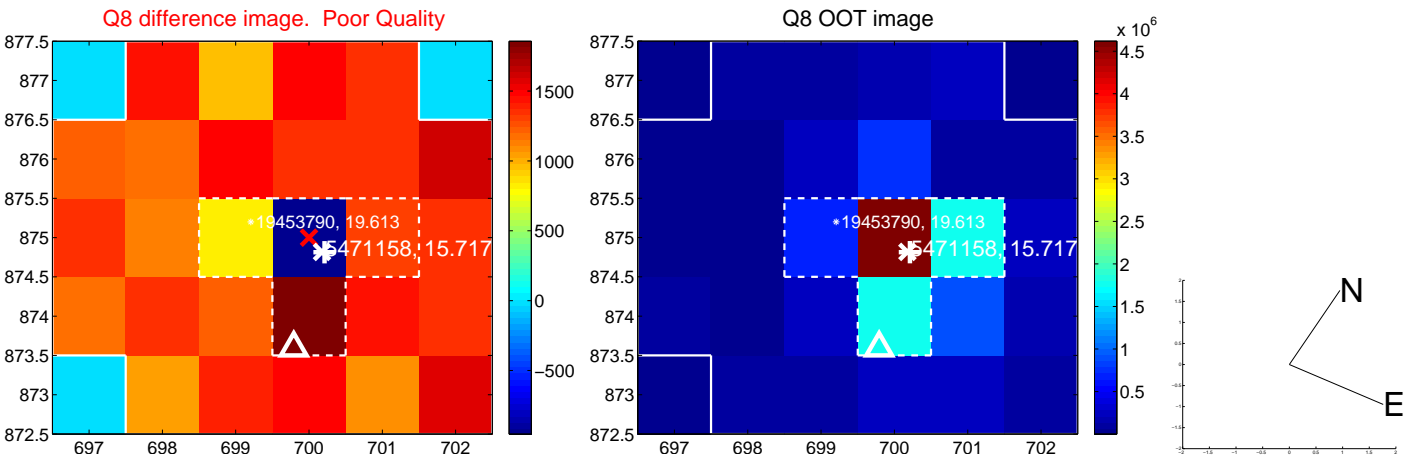
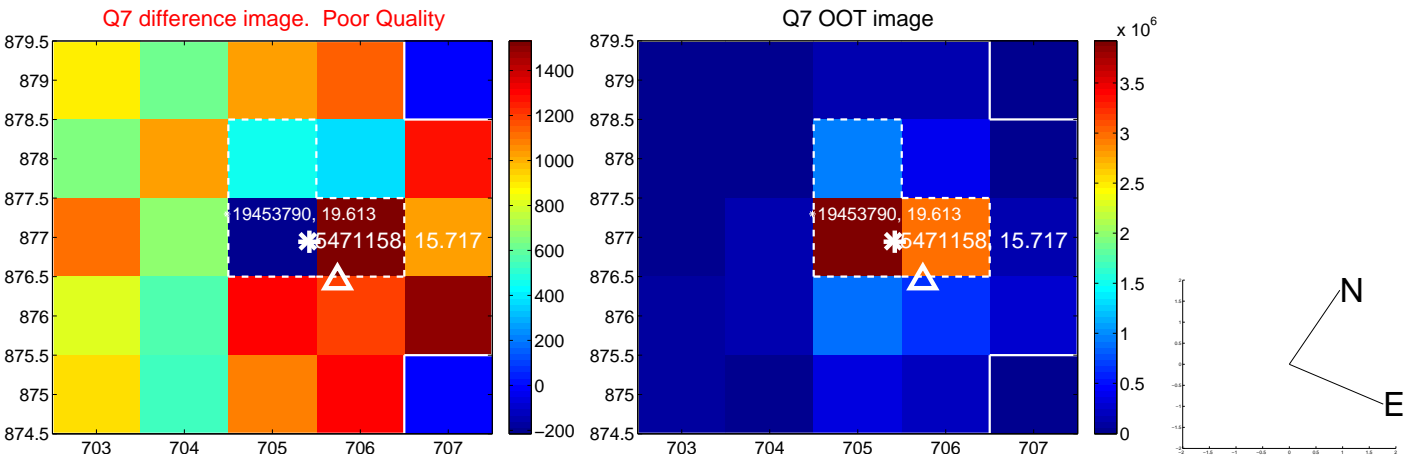
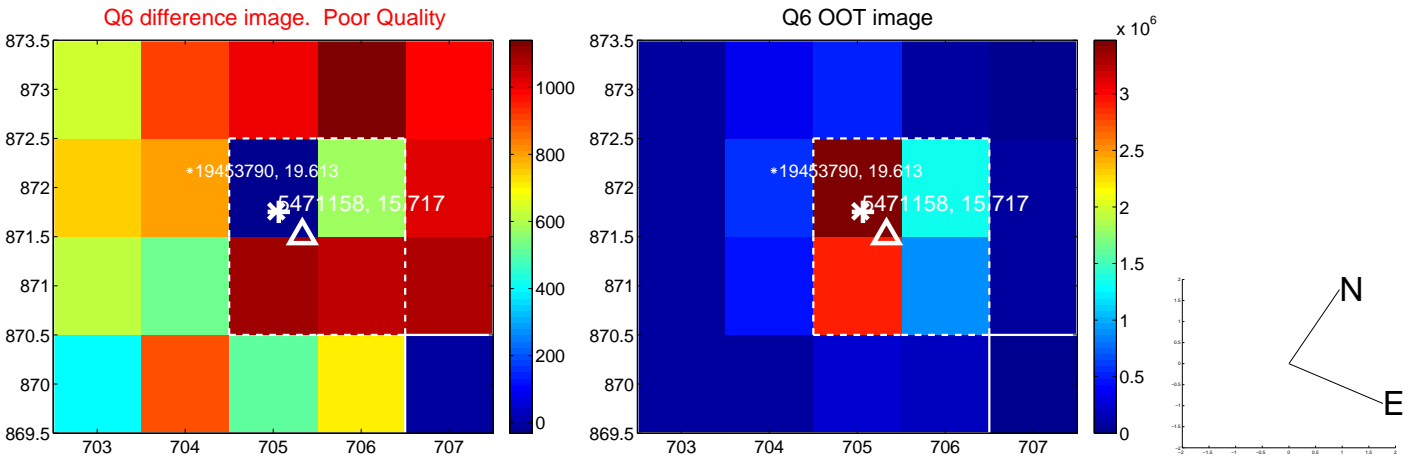
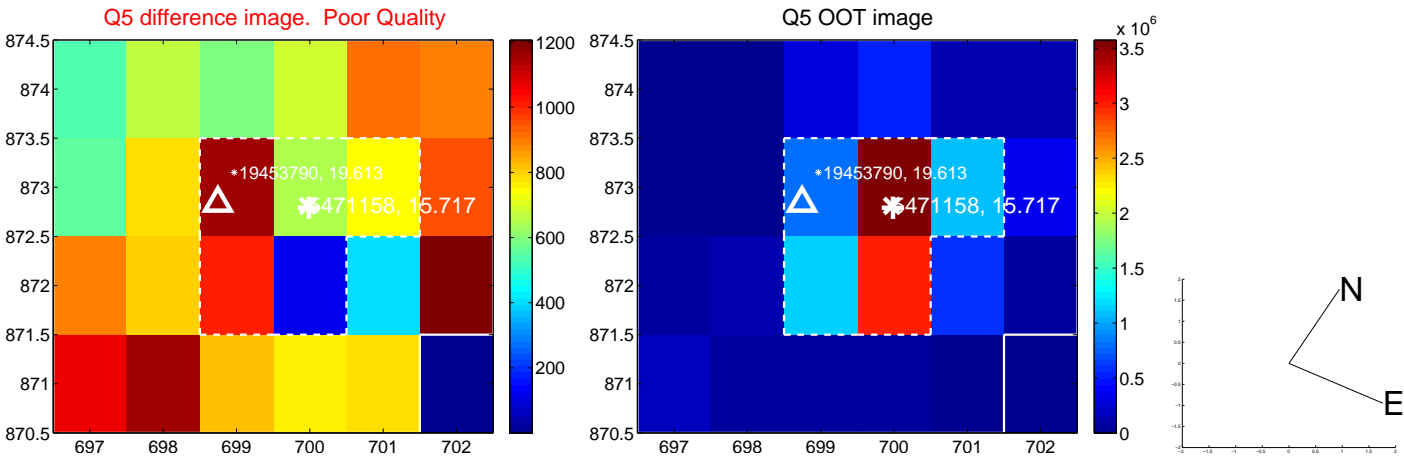


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

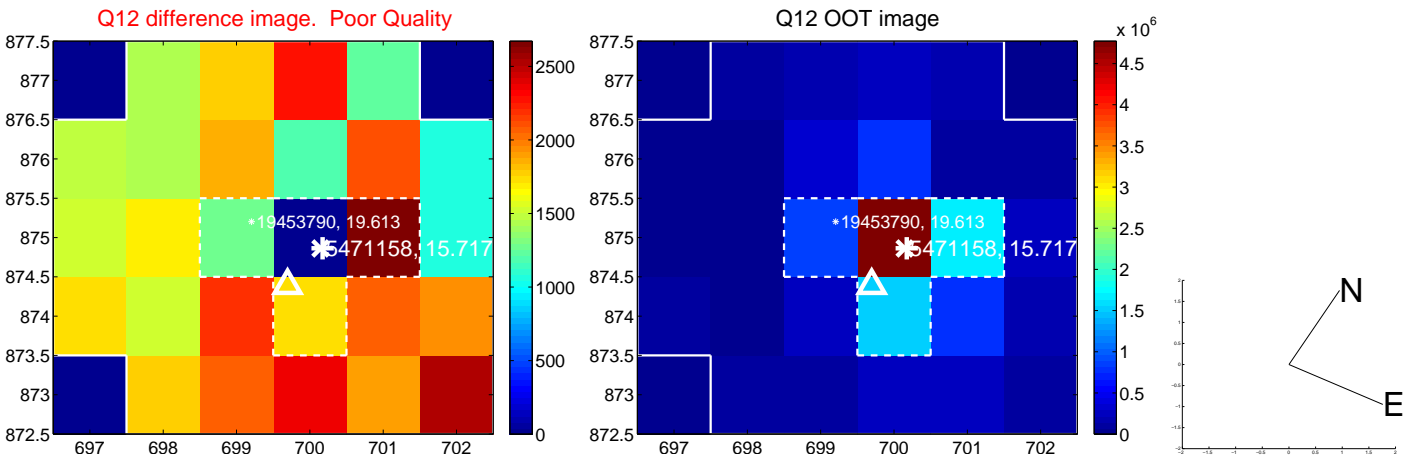
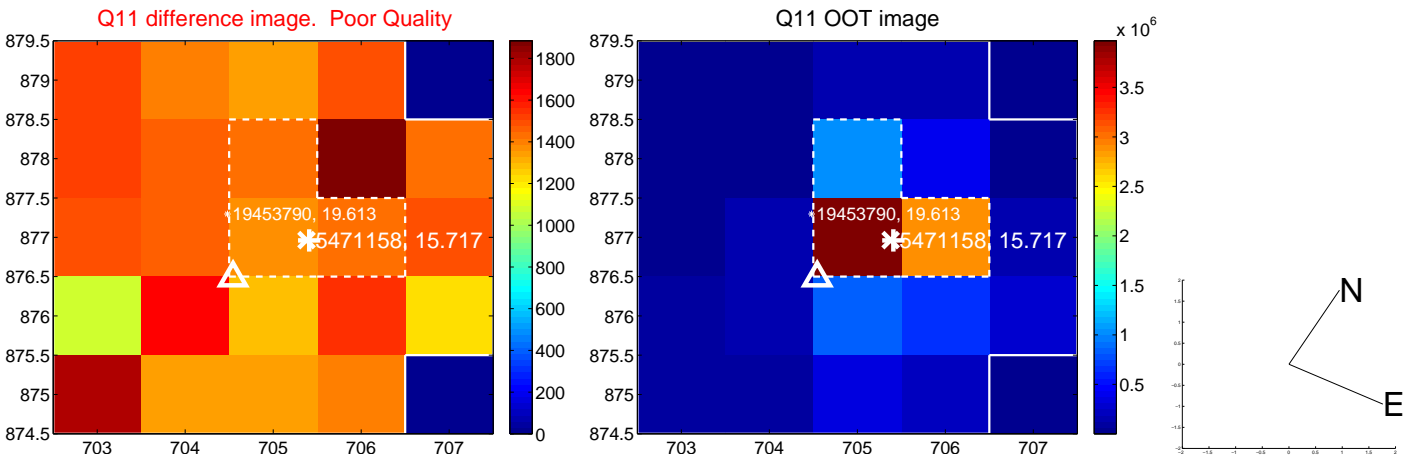
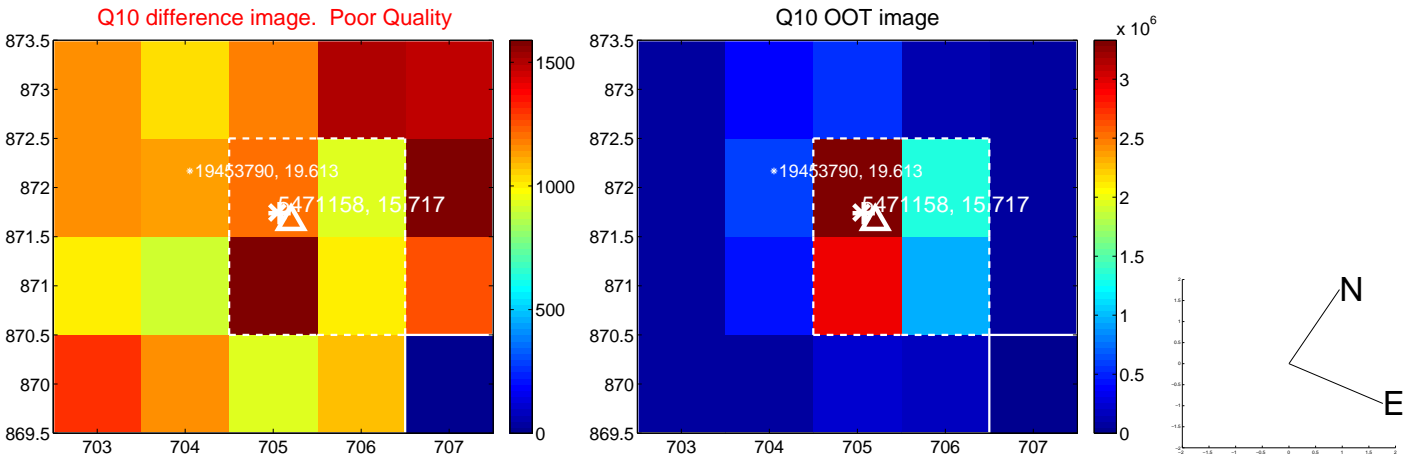
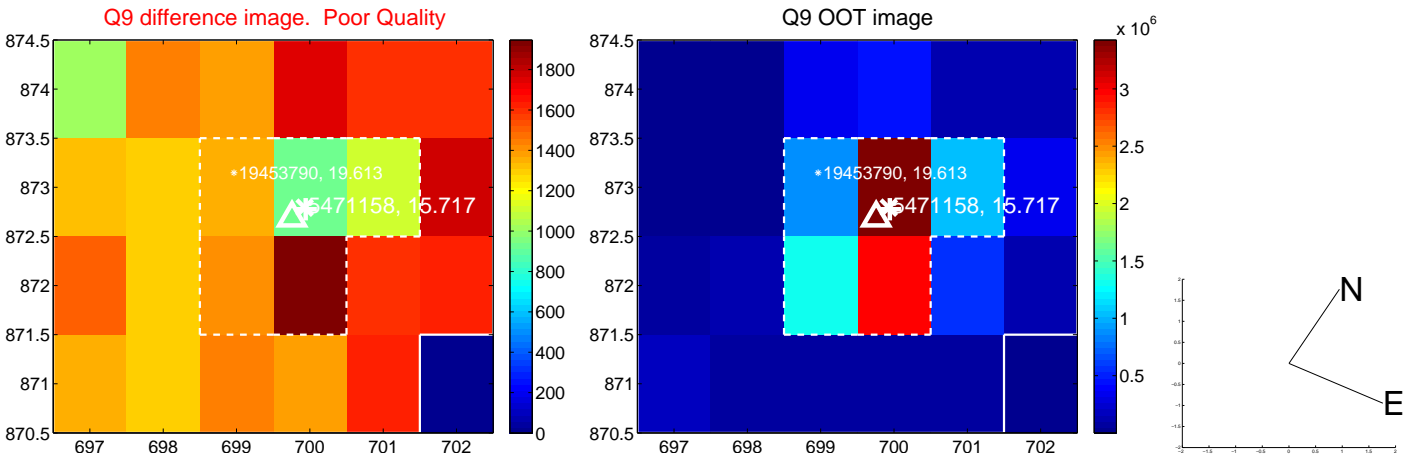
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



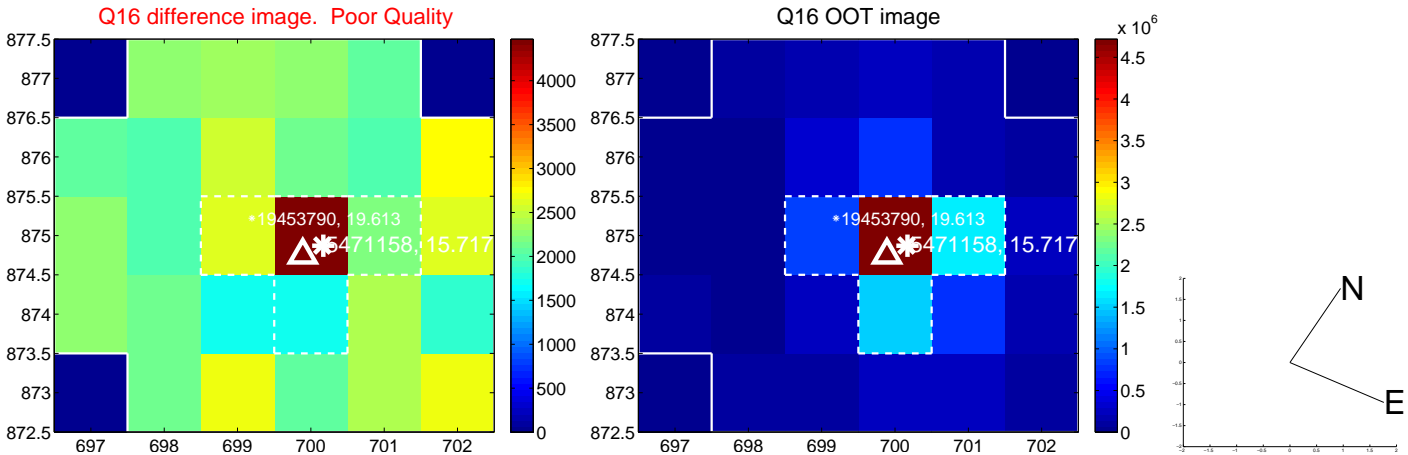
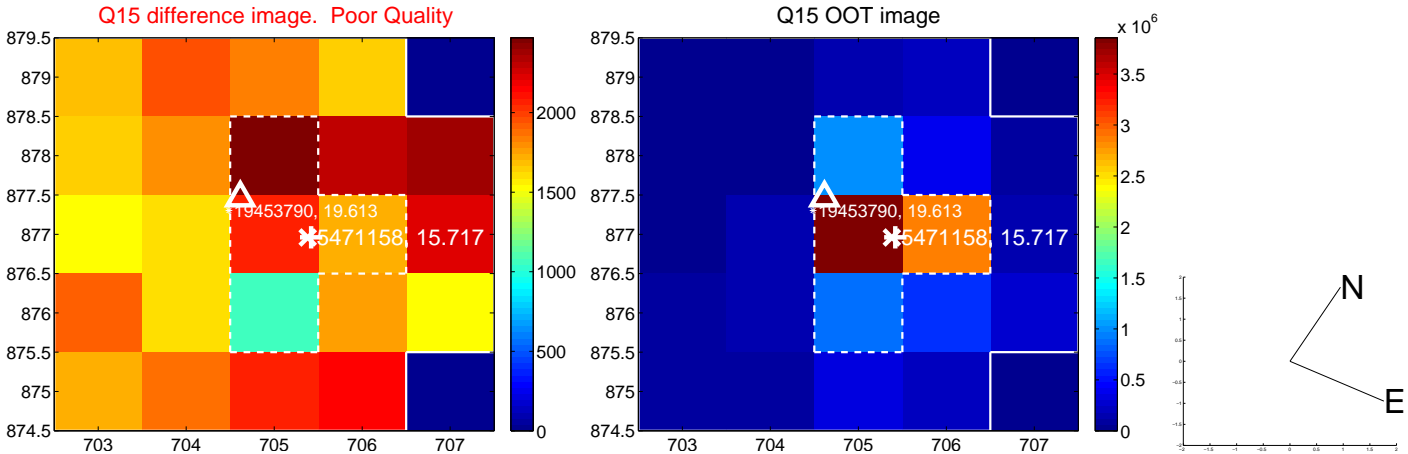
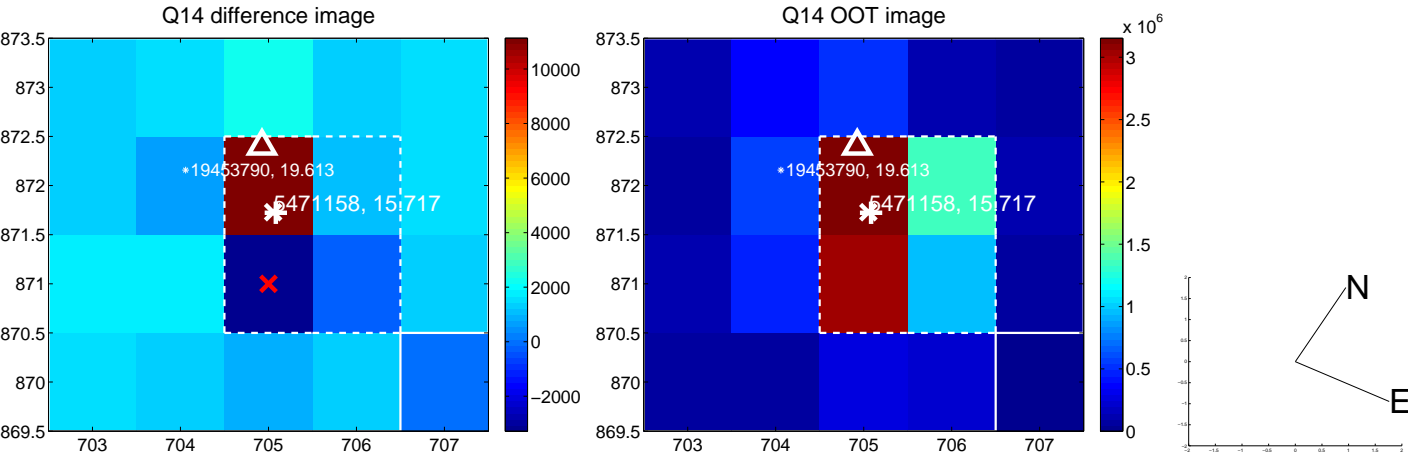
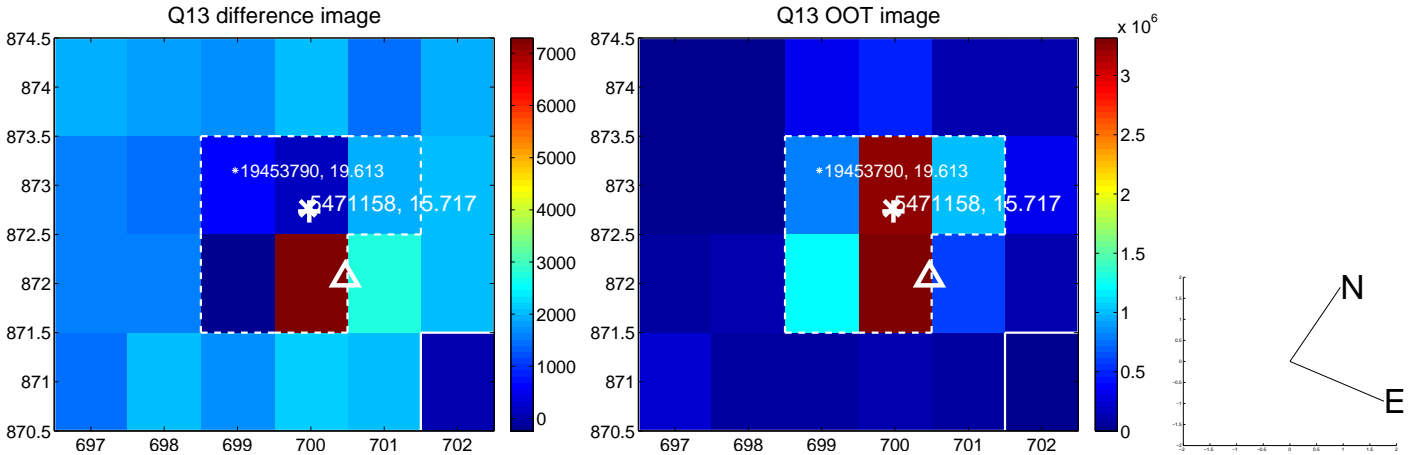
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



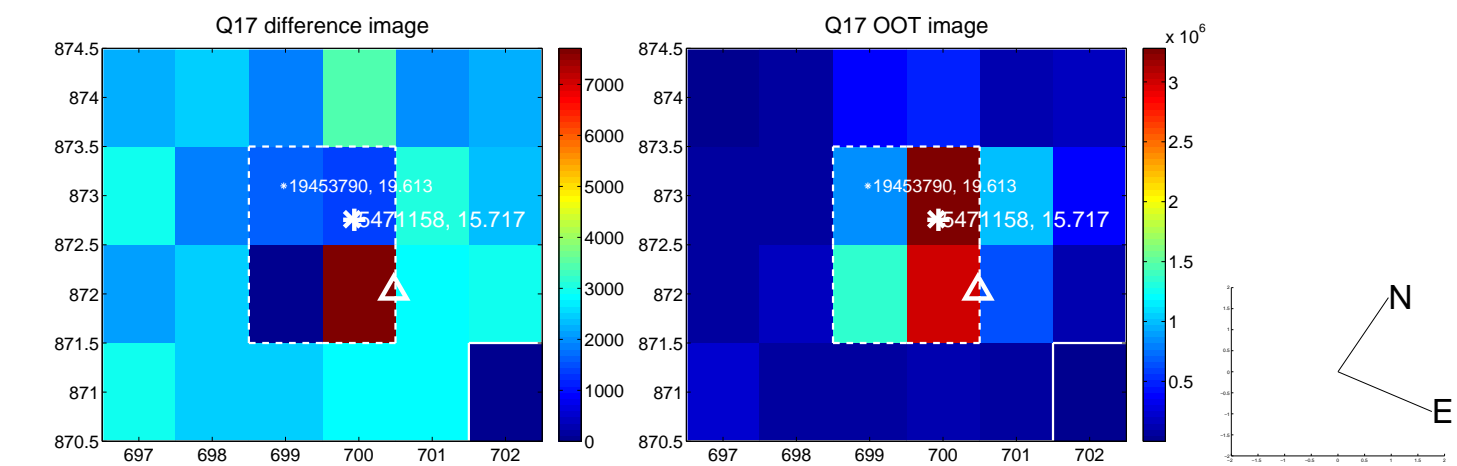
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



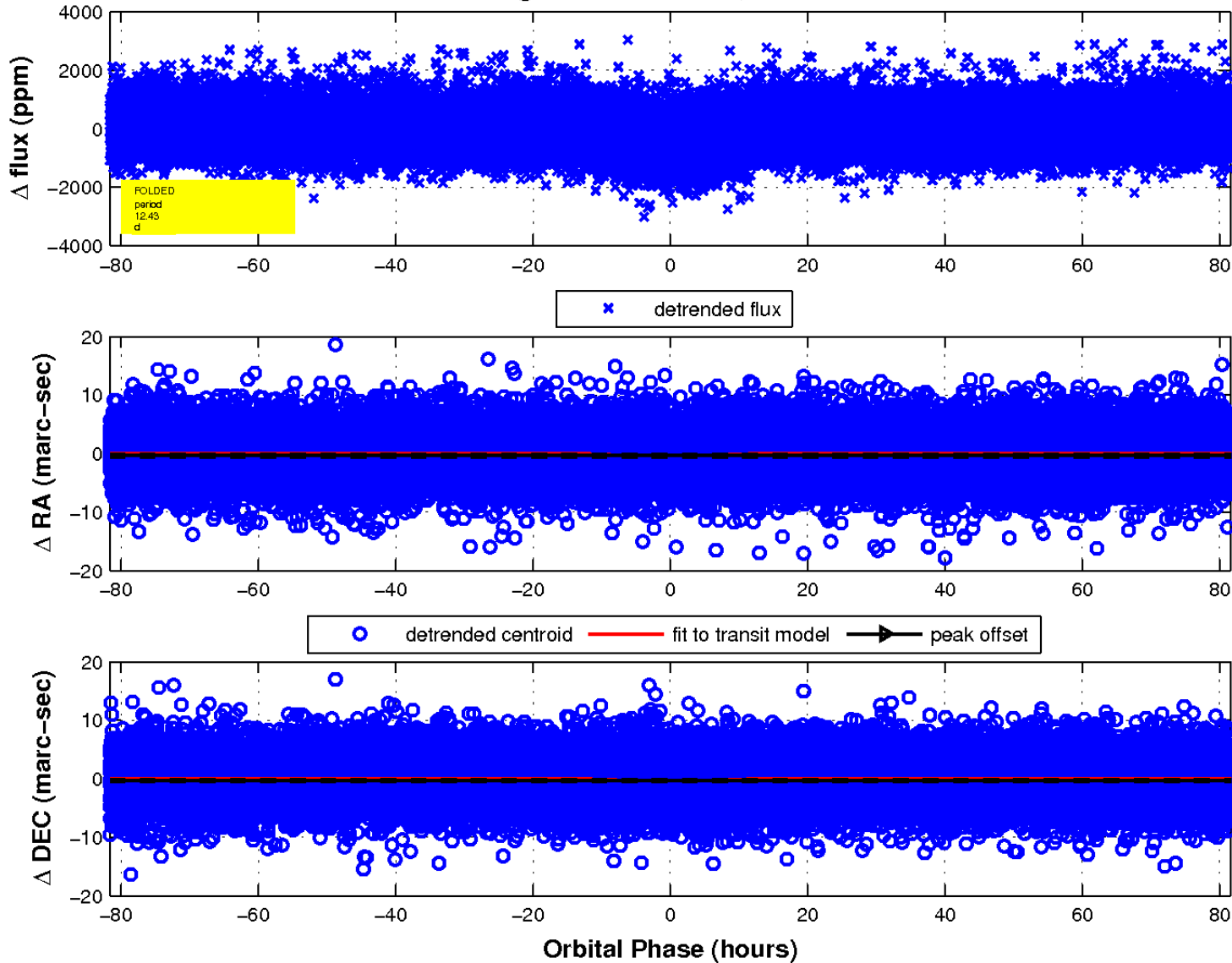
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 2 of 2



UKIRT Image

Declination

