

KIC 009025922

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})
009025922-01	OBS	0043.01	11.320270	131.804737	2673.3	4.487	173.0	79.5	1.00	5780	6.08	102.67
009025922-02	OBS	No	11.320329	140.136924	857.7	5.932	31.7	31.7	1.00	5780	4.21	102.67

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009025922-01	OBS	FP	0.00	0	1	1	1	MOD_SEC_DV—MOD_SEC_ALT—MOD_ODDEVEN_DV—MOD_ODDEVEN_ALT—HAS_SEC_TCE—CENT_RESOLVED_OFFSET—EPHEM_MATCH
009025922-02	OBS	FP	0.00	1	1	1	1	IS_SEC_TCE—CENT_RESOLVED_OFFSET—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 009025922-01

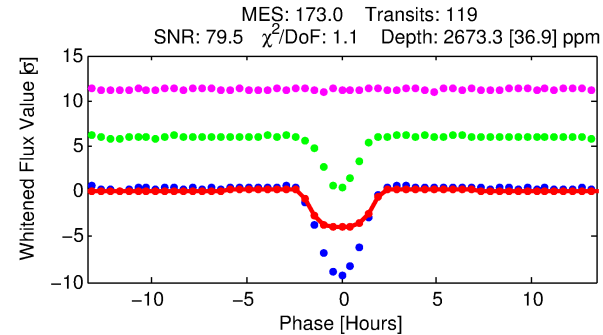
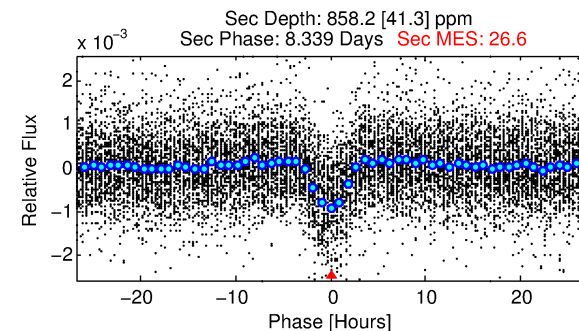
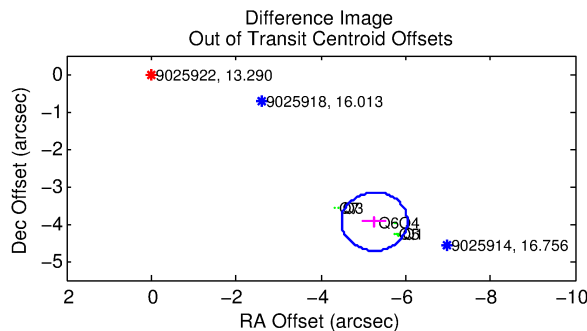
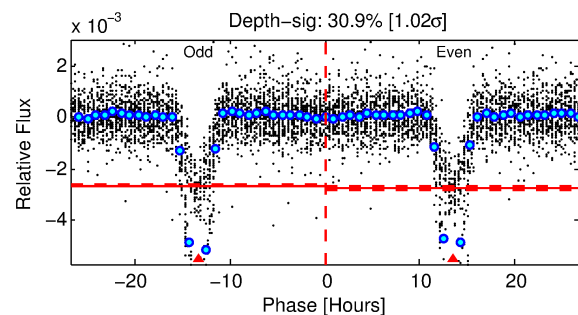
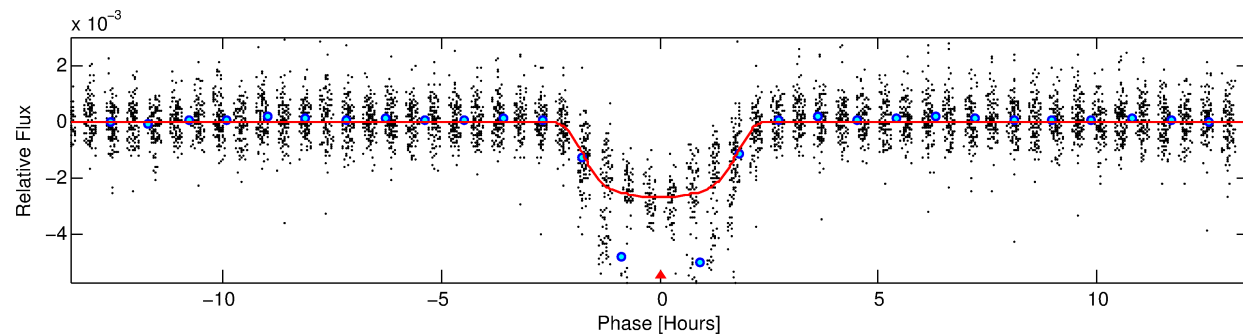
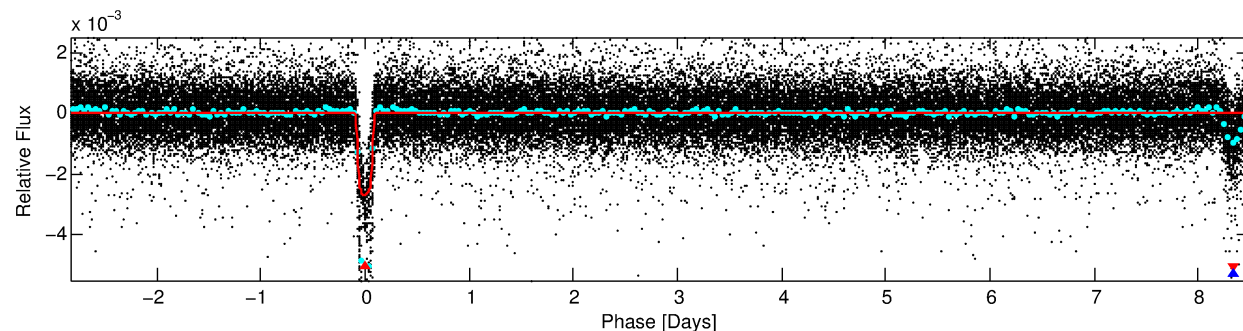
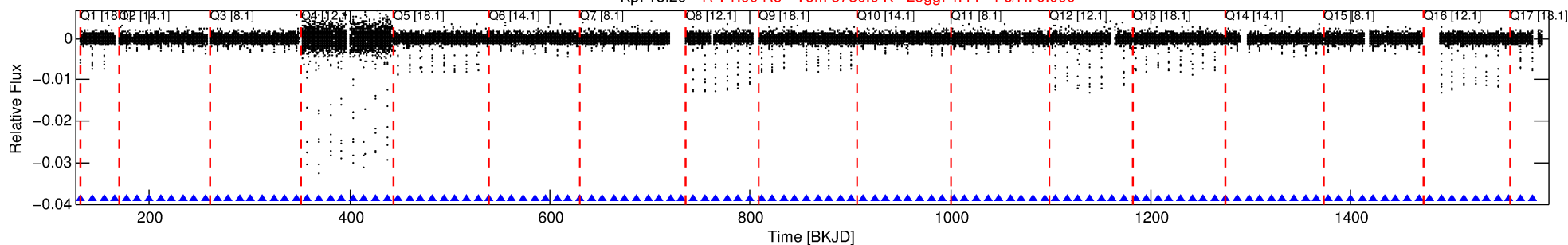
TCE (1)	KIC	Parent (2)	Parent KIC	$P_1:P_2$	Dist ($''$)	Δ Row	Δ Col	m_2	m_1	D_2/D_1	Mechanism	Flag	σ_P	σ_T
009025922-01	9025922	3596.01	9025914	1:1	8.4	2	1	16.76	13.29	133.68	Direct-PRF	0	0.09	0.08

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: 9025922 Candidate: 1 of 2 Period: 11.320 d
KOI: K00043.01 Corr: 0.969

Kp: 13.29 R*: 1.00 Rs Teff: 5780.0 K Logg: 4.44 Fe/H: 0.000



DV Fit Results:

Period = 11.32027 [0.00002] d
Epoch = 131.8047 [0.0013] BKJD
Rp/R* = 0.0557 [0.0009]
a/R* = 11.13 [0.65]
b = 0.88 [0.01]
Seff = 102.67 [0.00]
Teq = 812 [0] K
Rp = 6.08 [0.10] Re
a = 0.0987 [0.0000] AU
Ag = 124.37 [7.29] [16.91σ]
Teffp = 4191 [61] K [54.99σ]

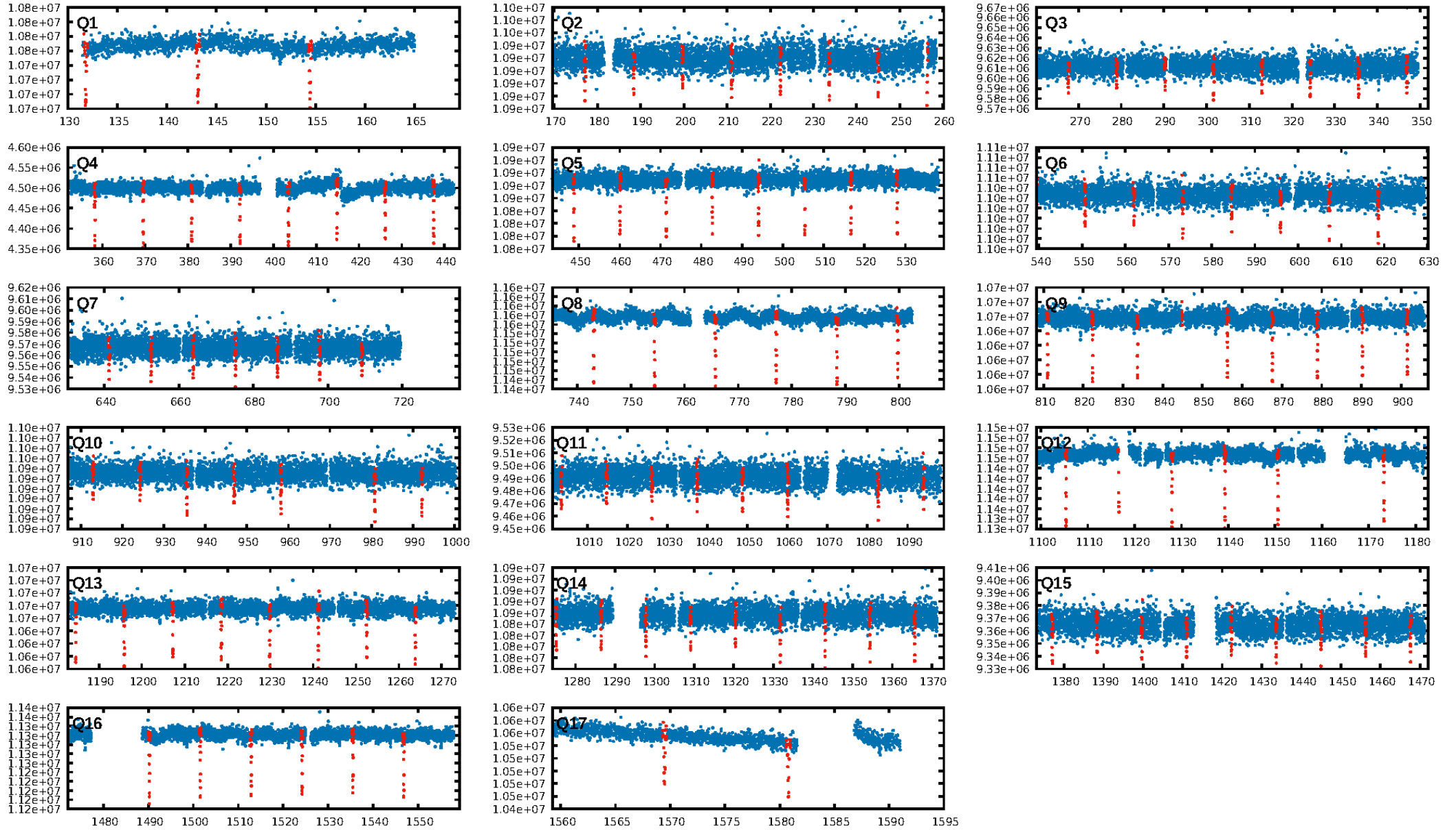
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.0% [0.00σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 1.00 [114/114]
GhostDiagnostic-chr: -0.6223
Centroid-sig: 0.0%
Centroid-so: 44.760 arcsec [462.32σ]
OotOffset-rm: 6.574 arcsec [25.34σ]
KicOffset-rm: 8.406 arcsec [122.86σ]
OotOffset-st: 1/2/1/2 [6]
KicOffset-st: 1/2/1/2 [6]
DiffImageQuality-fgm: 1.00 [6/6]
DiffImageOverlap-fno: 1.00 [17/17]

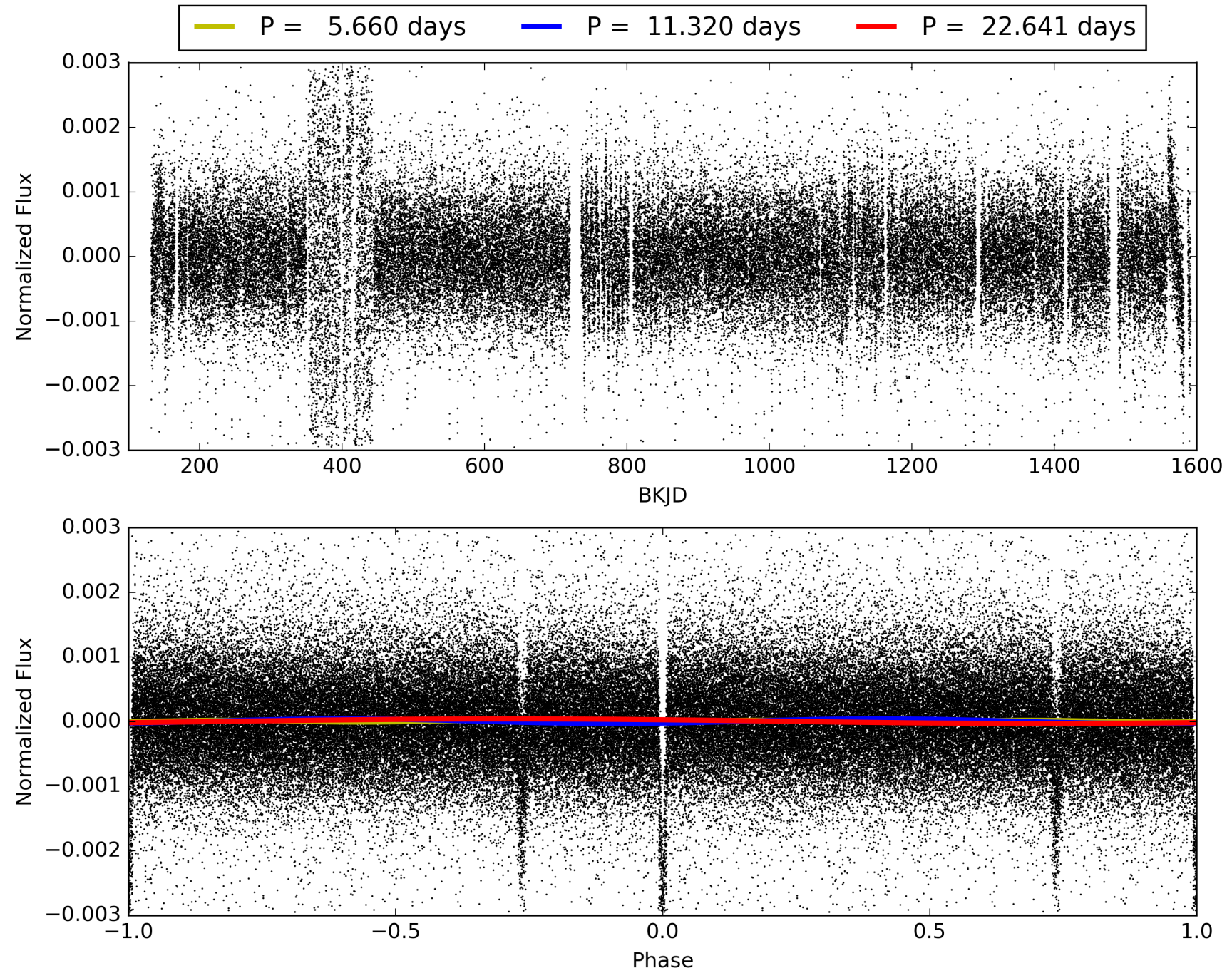
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 04:05:30 Z

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

TCE 009025922-01, PDC Light Curves

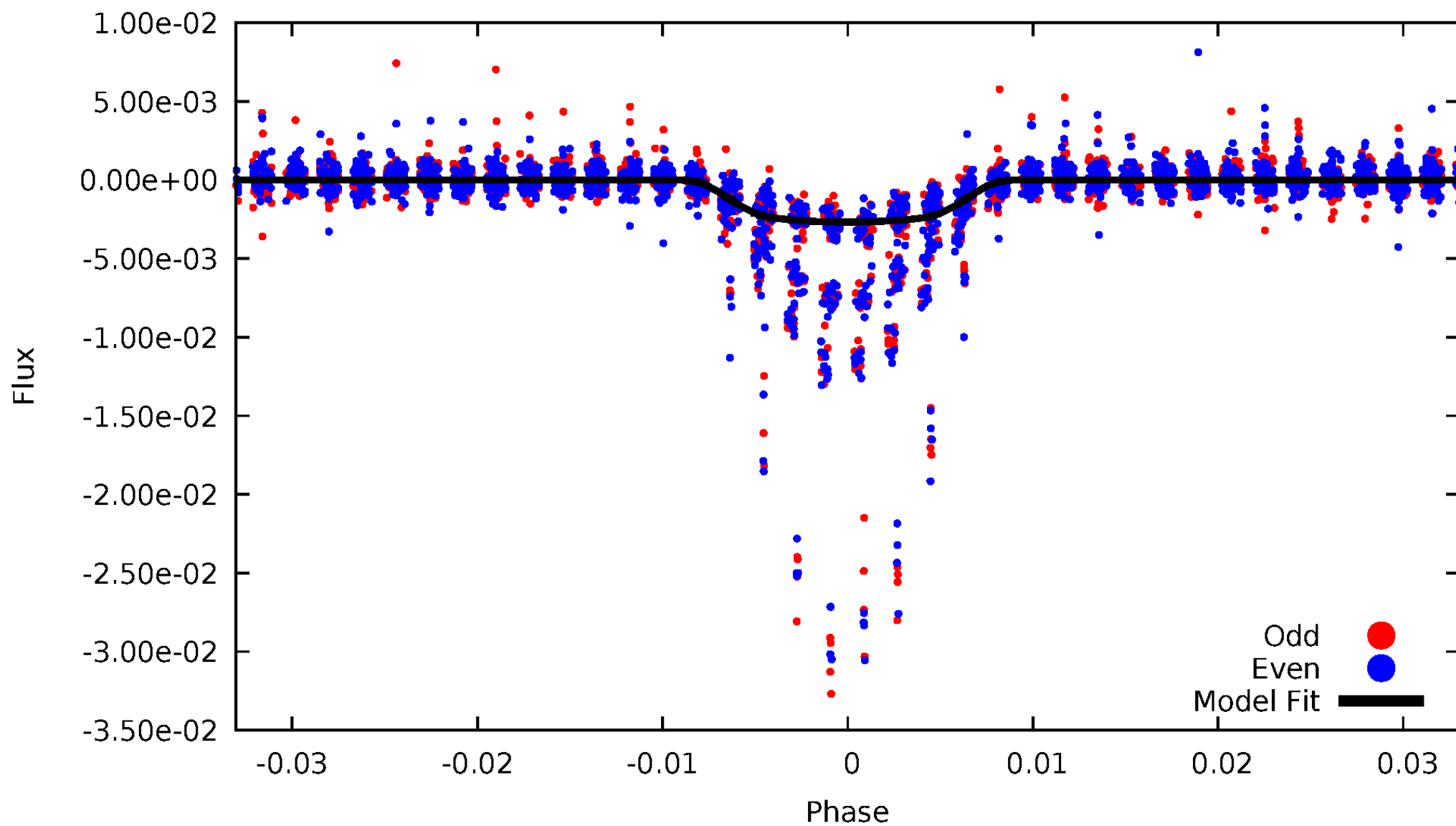


TCE 009025922-01



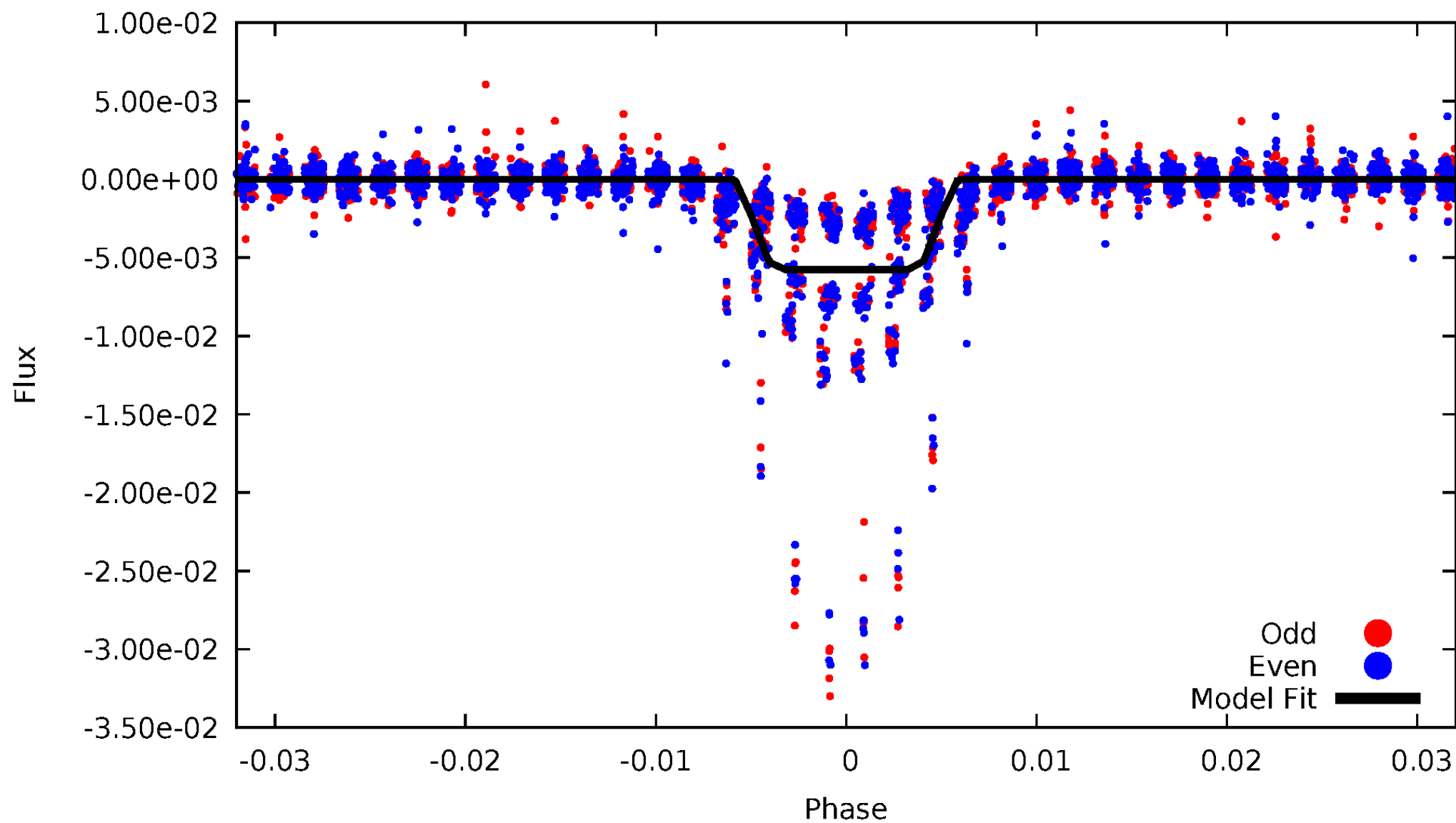
DV Odd/Even

TCE 009025922-01



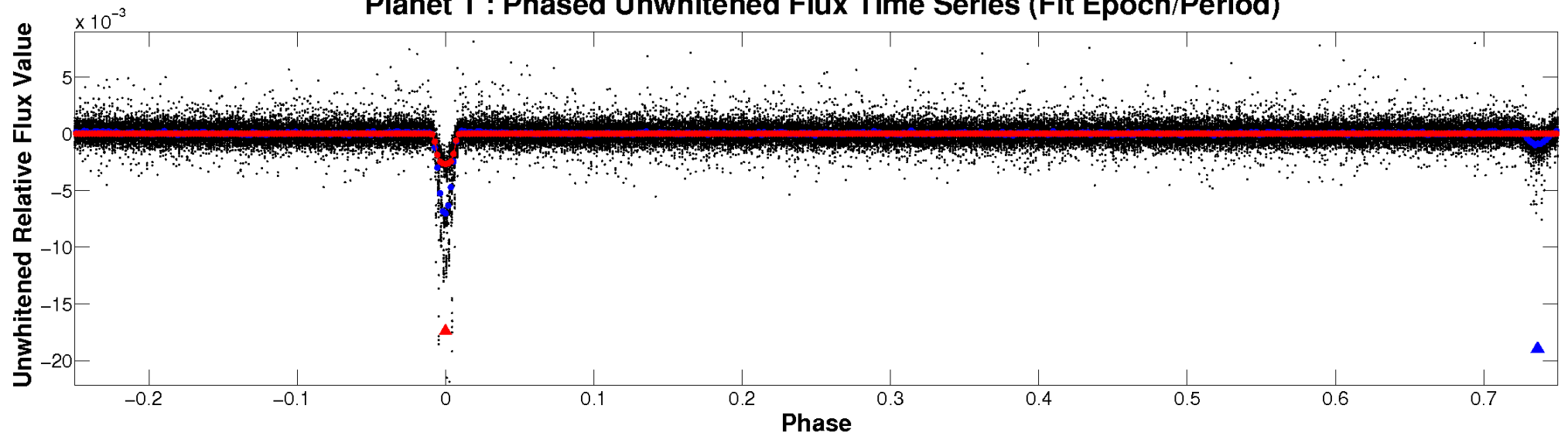
ALT Odd/Even

TCE 009025922-01

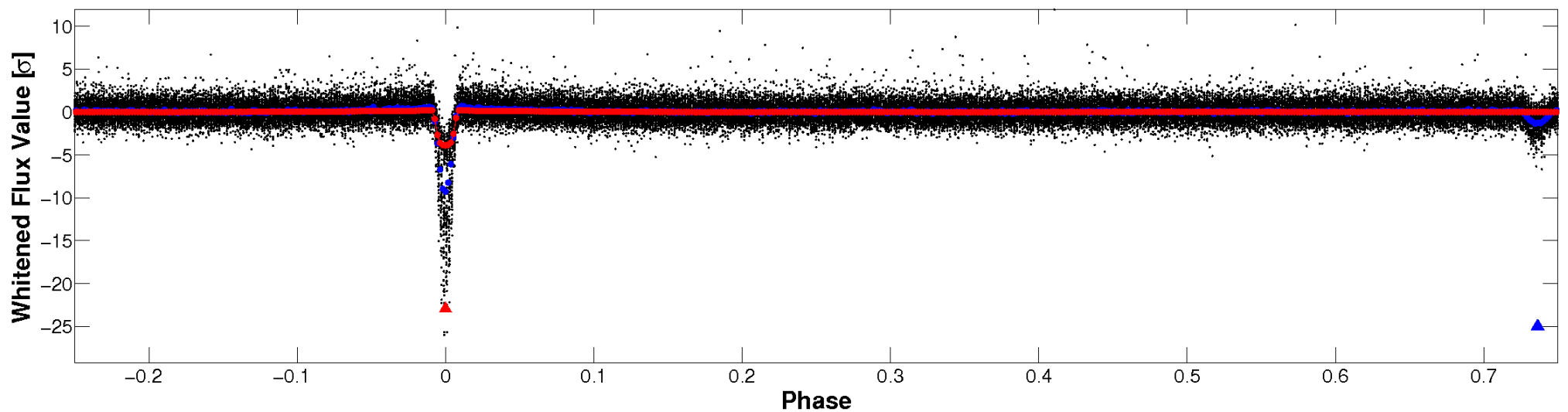


Non-Whitened Vs. Whitened Light Curve

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

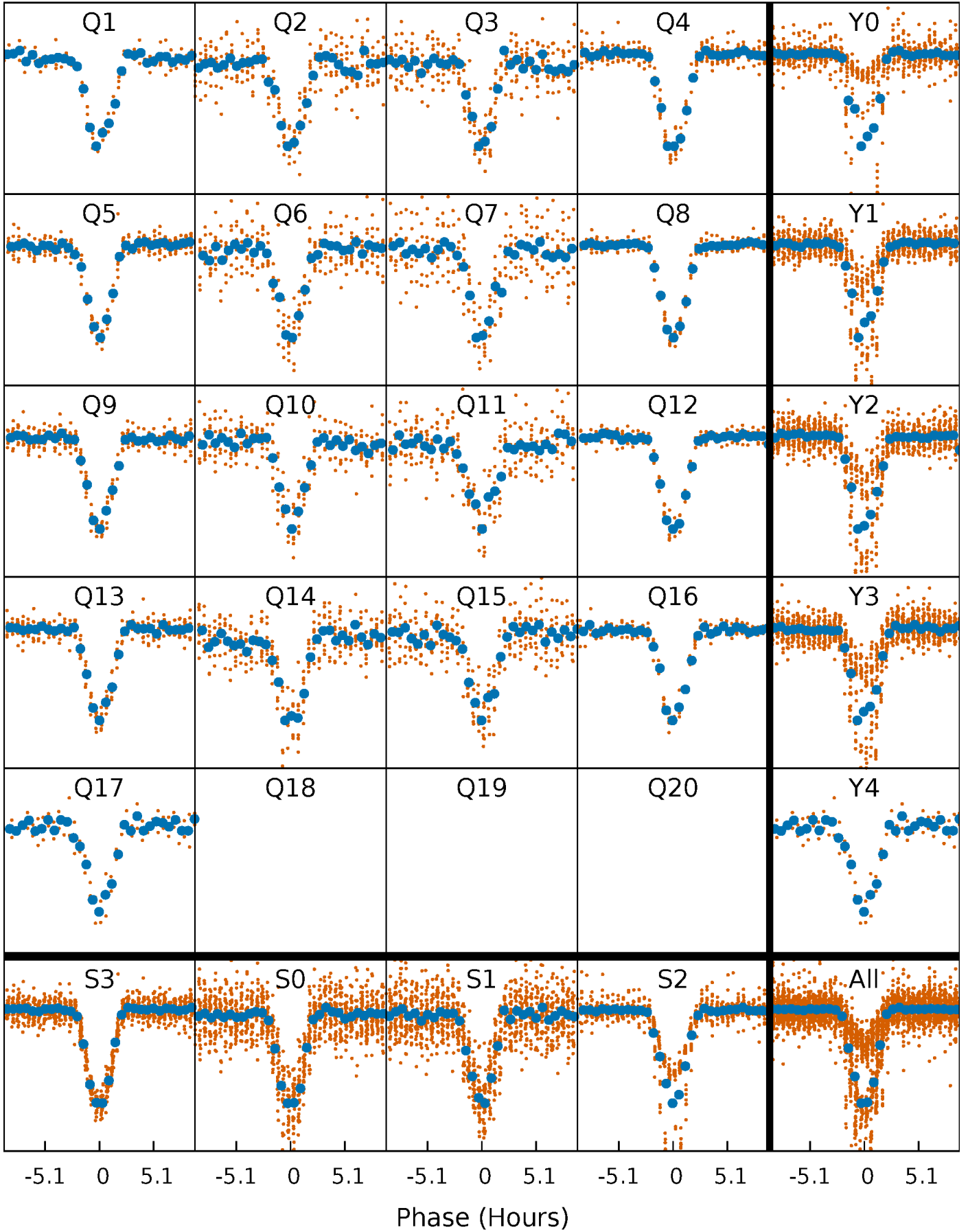


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



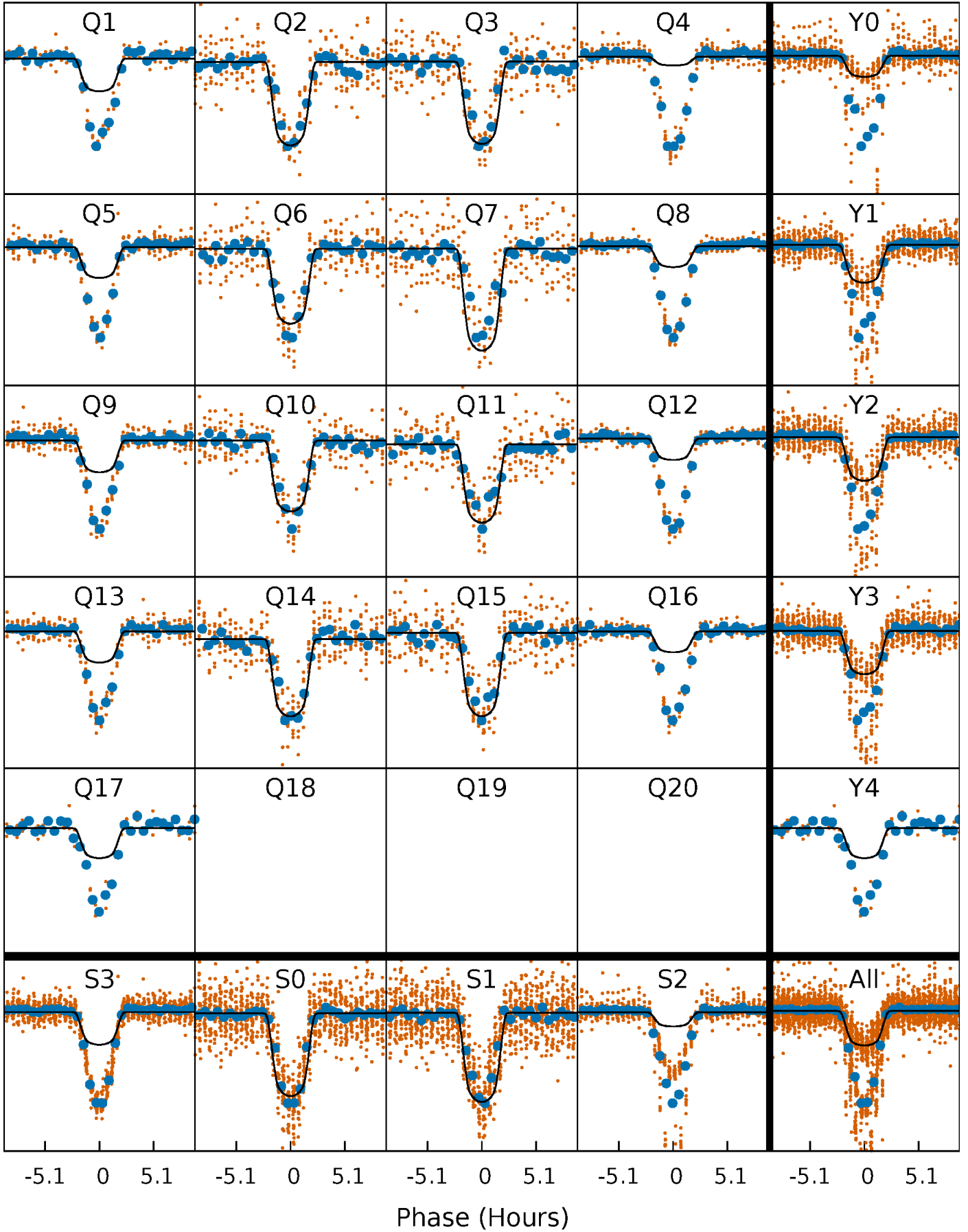
PDC Quarter-Phased Transit Curves

TCE 009025922-01 P= 11.320270 Days $T_0=131.804737$ (BKJD)



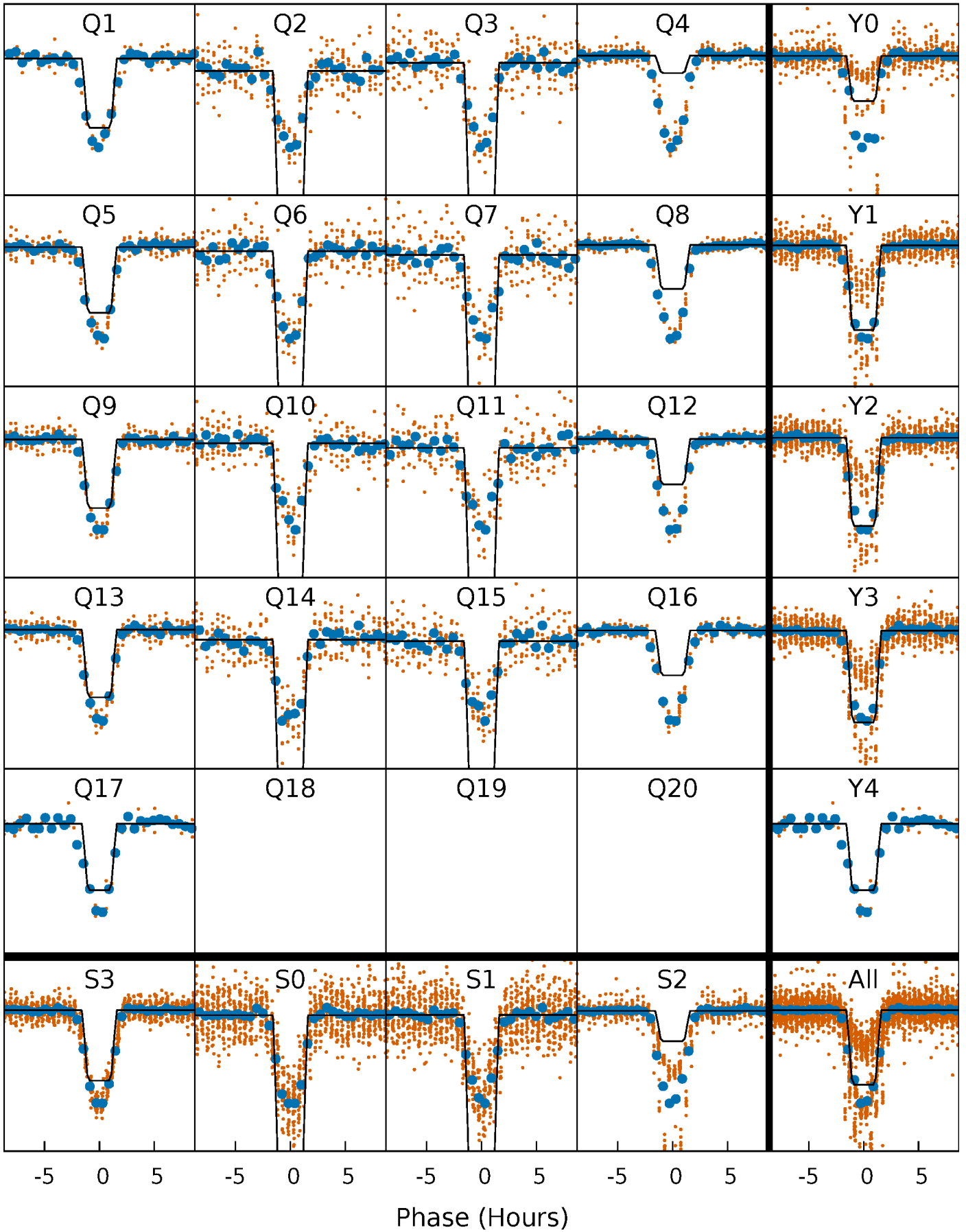
DV Quarter-Phased Transit Curves

TCE 009025922-01 P= 11.320270 Days $T_0=131.804737$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

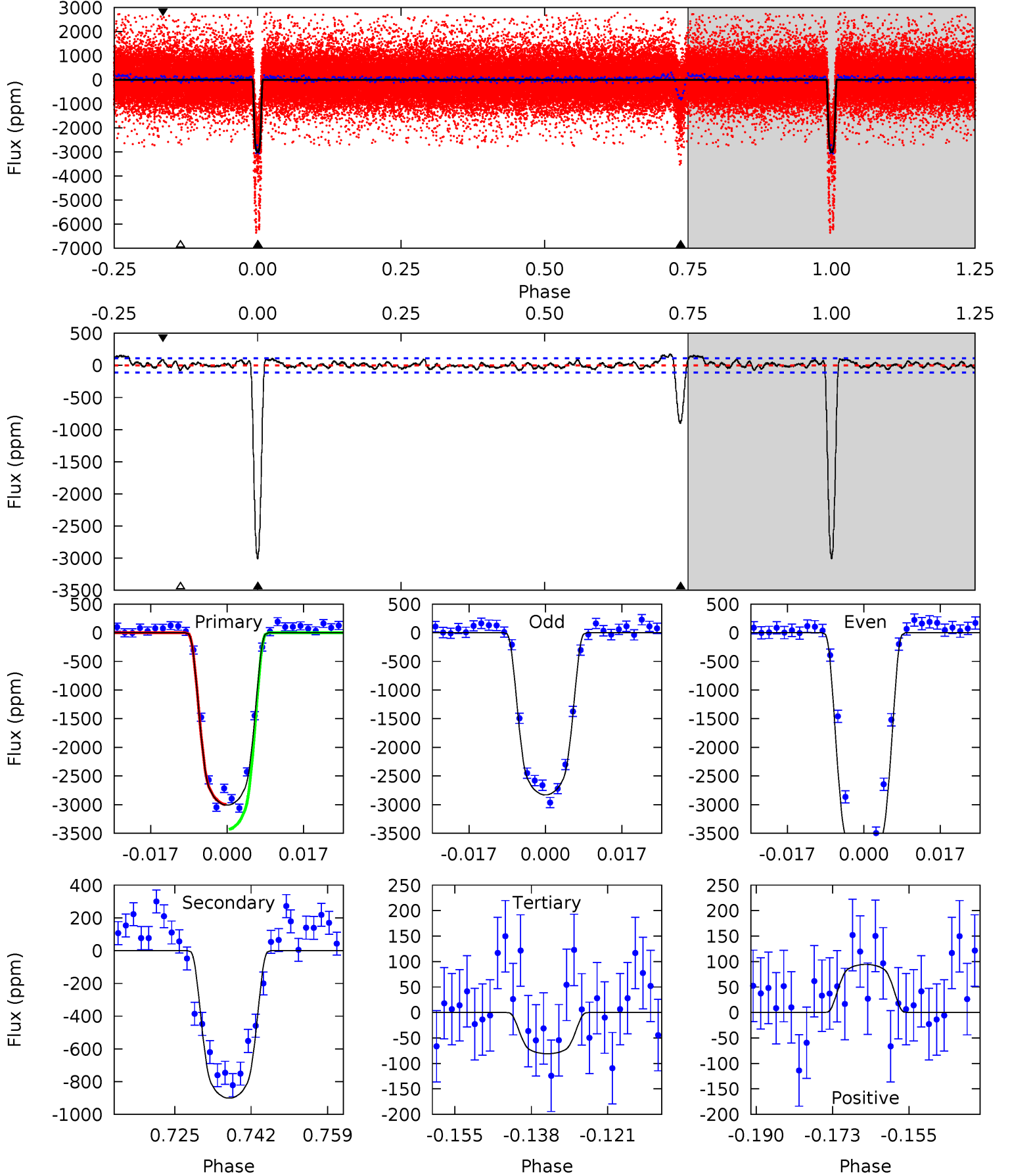
TCE 009025922-01 P= 11.320268 Days $T_0=131.804255$ (BKJD)



DV Model-Shift Uniqueness Test

009025922-01, P = 11.320270 Days, E = 120.484467 Days

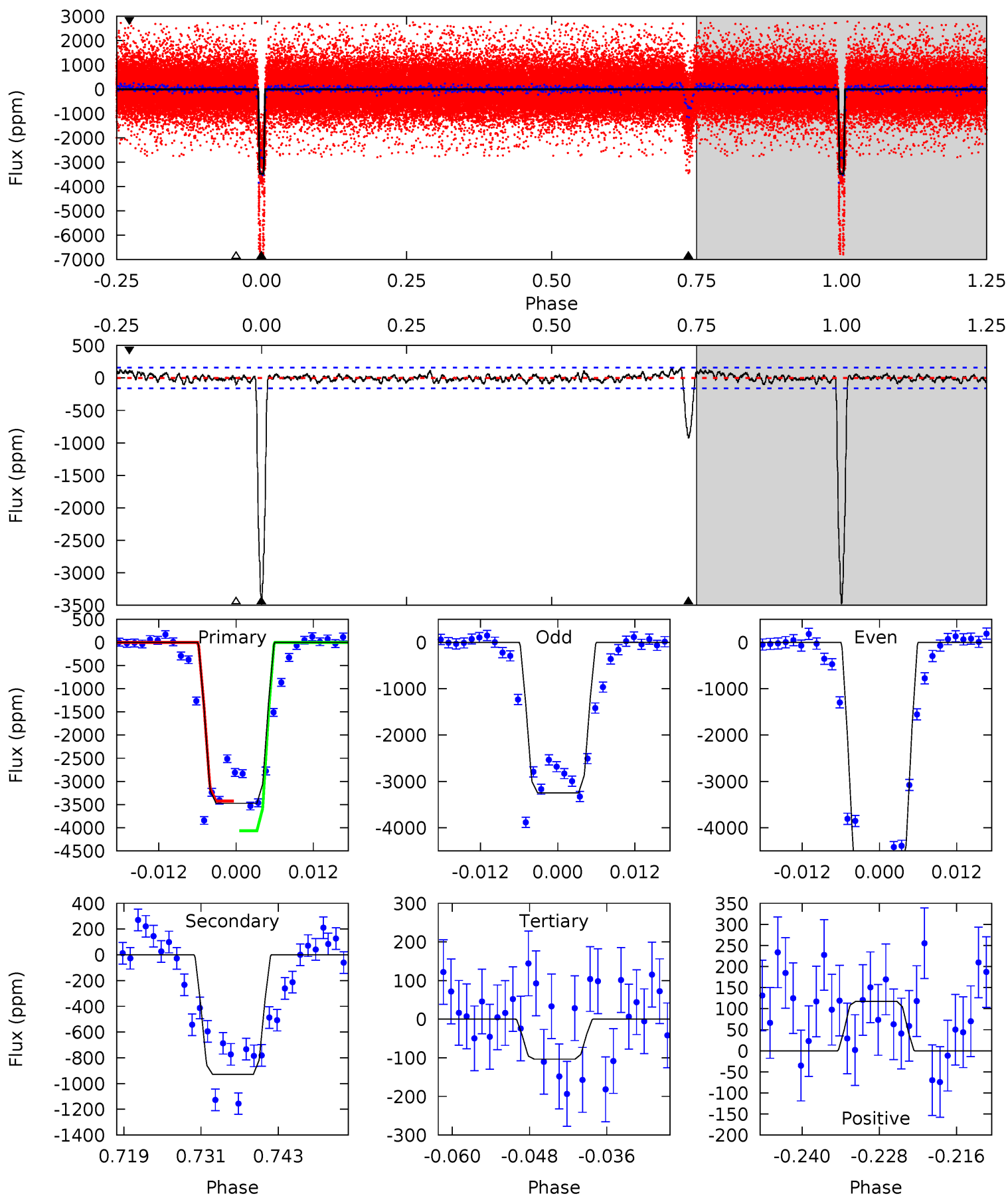
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
134.2	40.2	3.61	4.21	4.92	2.38	1.98	130.6	130.0	36.6	36.0	25.7	1.94	0.06	9.57



Alt Model-Shift Uniqueness Test

009025922-01, P = 11.320268 Days, E = 120.483987 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
109.1	29.2	3.26	3.70	4.99	2.51	1.35	105.9	105.4	25.9	25.5	26.7	1.94	0.04	9.84



Stellar Parameters For KIC 009025922

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5780^{+1}_{-1}	$4.438^{+1.000}_{-1.000}$	$0.000^{+1.000}_{-1.000}$	$1.000^{+1.000}_{-1.000}$	$-1.000^{+1.000}_{-1.000}$	$-1.000^{+1.000}_{-1.000}$
	+0%/-0%	+23%/-23%	+inf%/-inf%	+100%/-100%	+100%/-100%	+100%/-100%
Source	Solar	Solar	Solar	Solar		

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

Secondary Eclipse Parameters for KIC 009025922-01 / KOI 0043.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-900 ± 22	$6.09^{+0.45}_{-0.41}$	1137^{+51}_{-52}	4446^{+120}_{-132}	130^{+18}_{-15}
Alt.	-928 ± 32	$8.32^{+0.53}_{-0.58}$	1133^{+55}_{-52}	3983^{+109}_{-112}	72^{+10}_{-8}

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 $A_{obs} \gg 1.0$

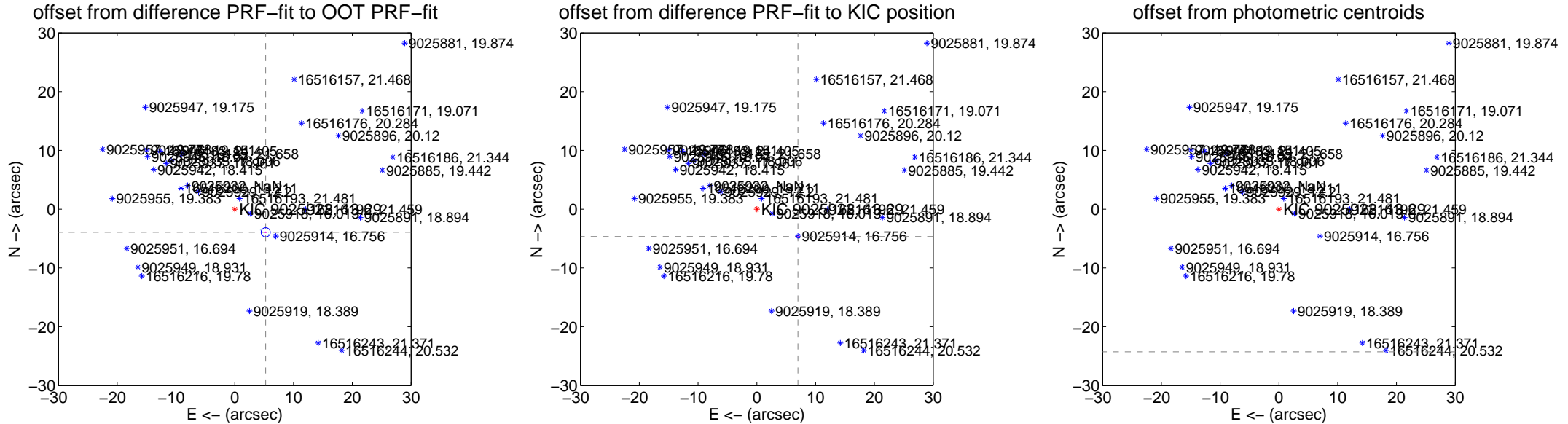
DV Centroid Data

Supplemental centroid analysis for 009025922-01. Kepler magnitude: 13.29. Transit SNR 79.52

There are 6 quarters with good PRF difference image offsets

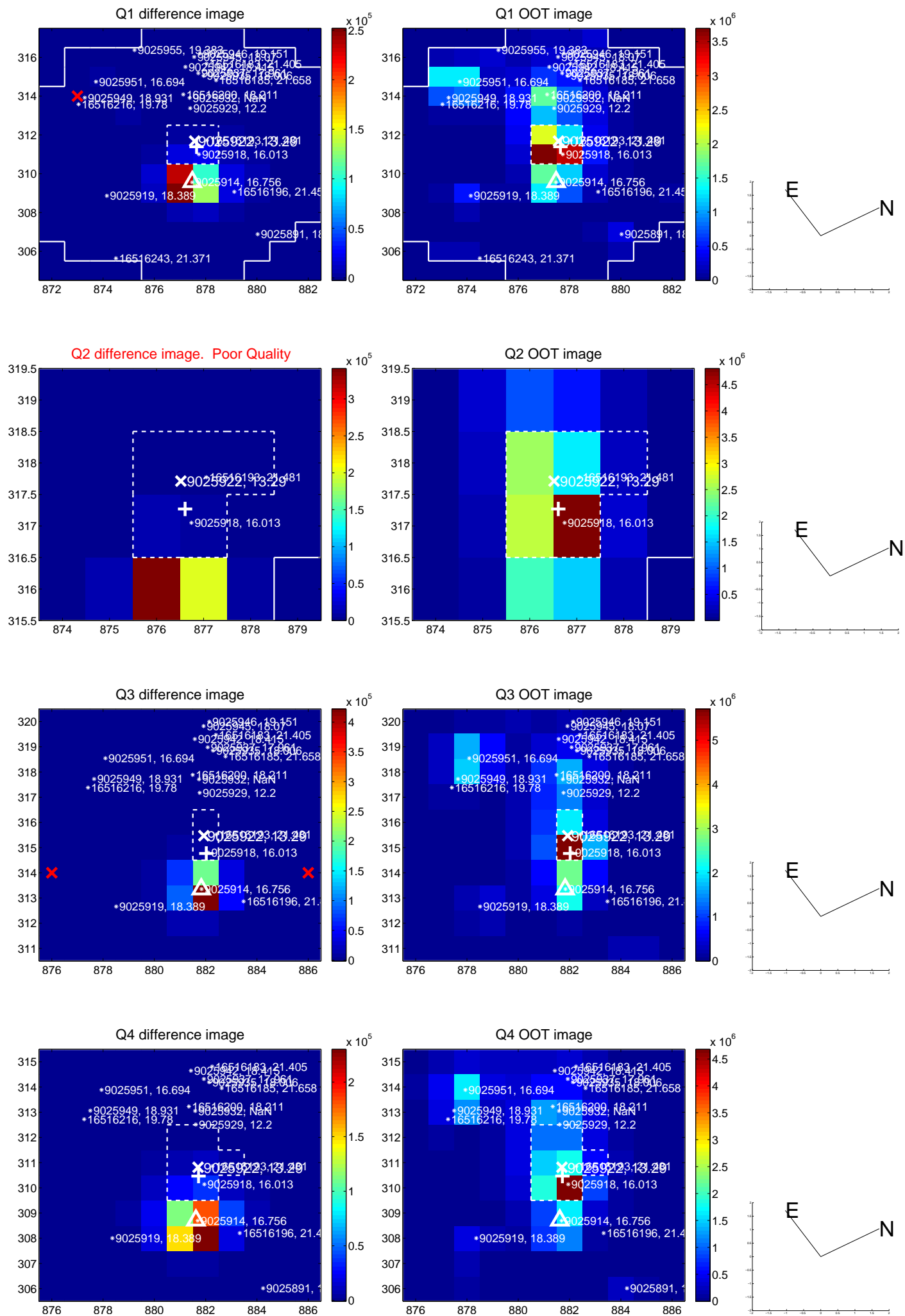
The OOT PRF centroid is offset from the target star catalog position by about 2.89 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	6.574 ± 0.259	25.34	-5.264 ± 0.249	-3.939 ± 0.125
PRF-fit source offset from KIC position	8.406 ± 0.068	122.86	-6.995 ± 0.068	-4.662 ± 0.069
photometric centroid source offset	44.76 ± 0.10	462.32	-37.61 ± 0.10	-24.28 ± 0.09

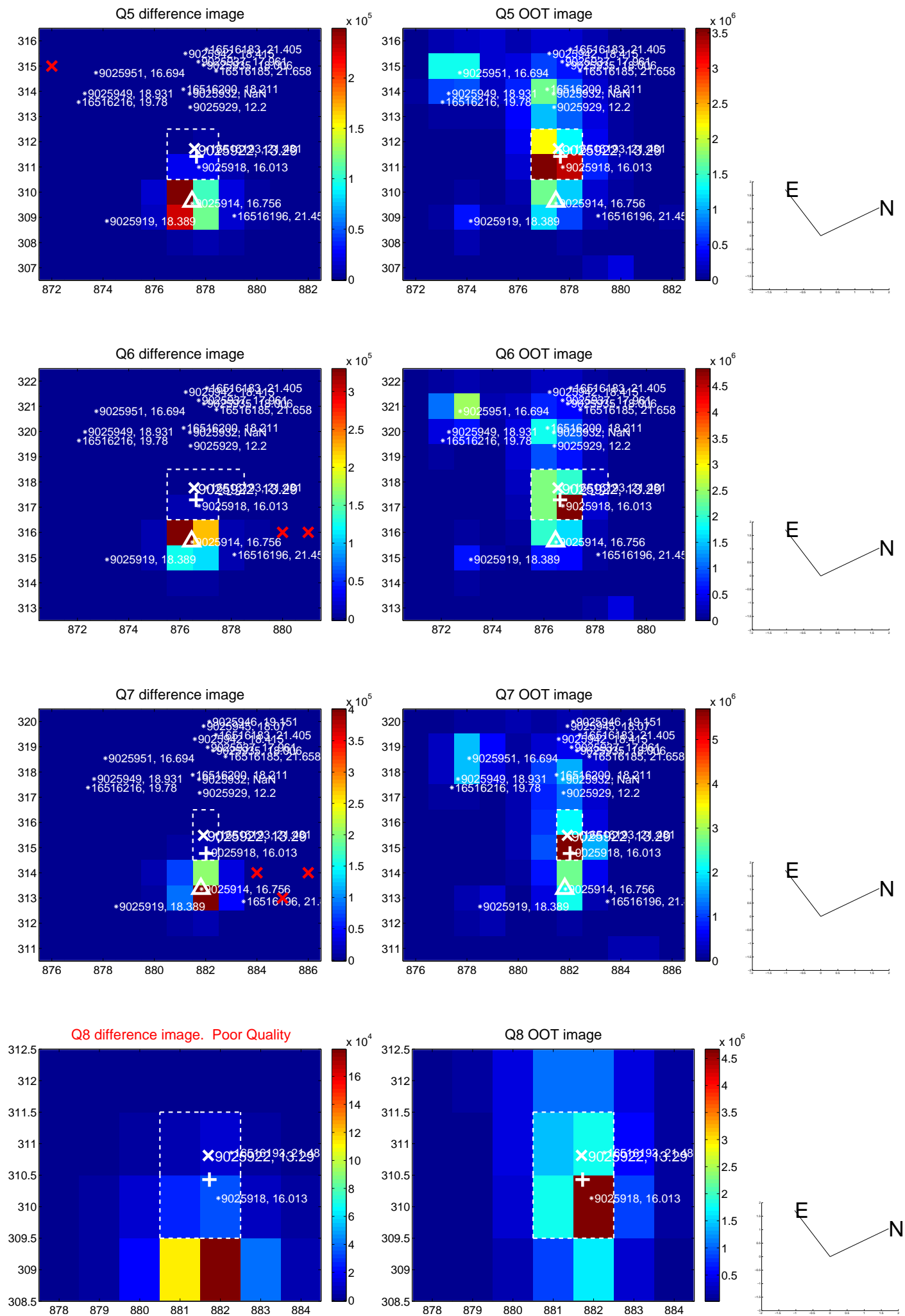


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

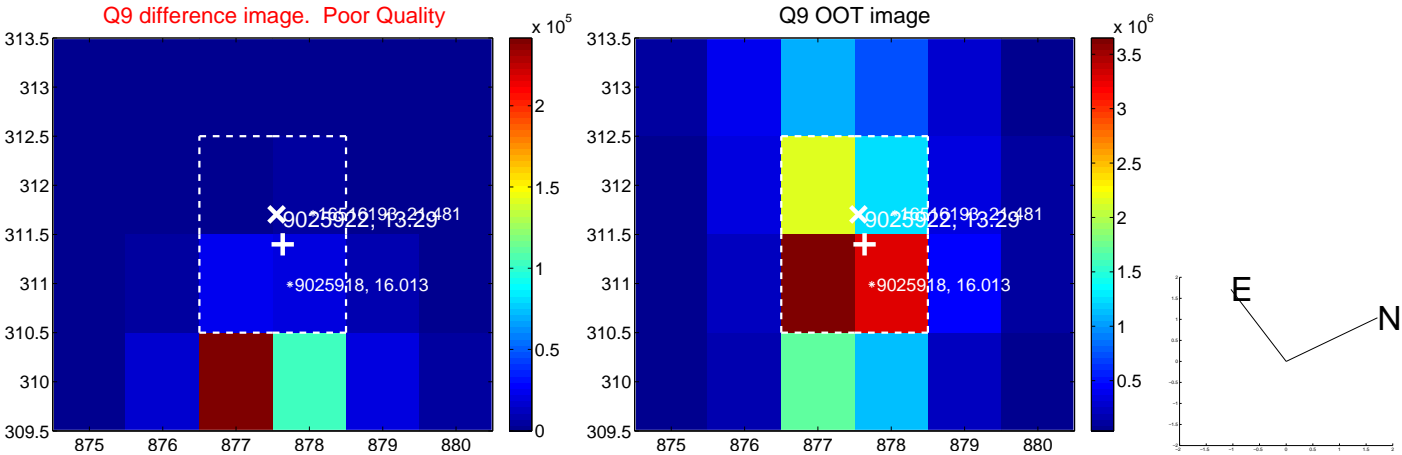
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



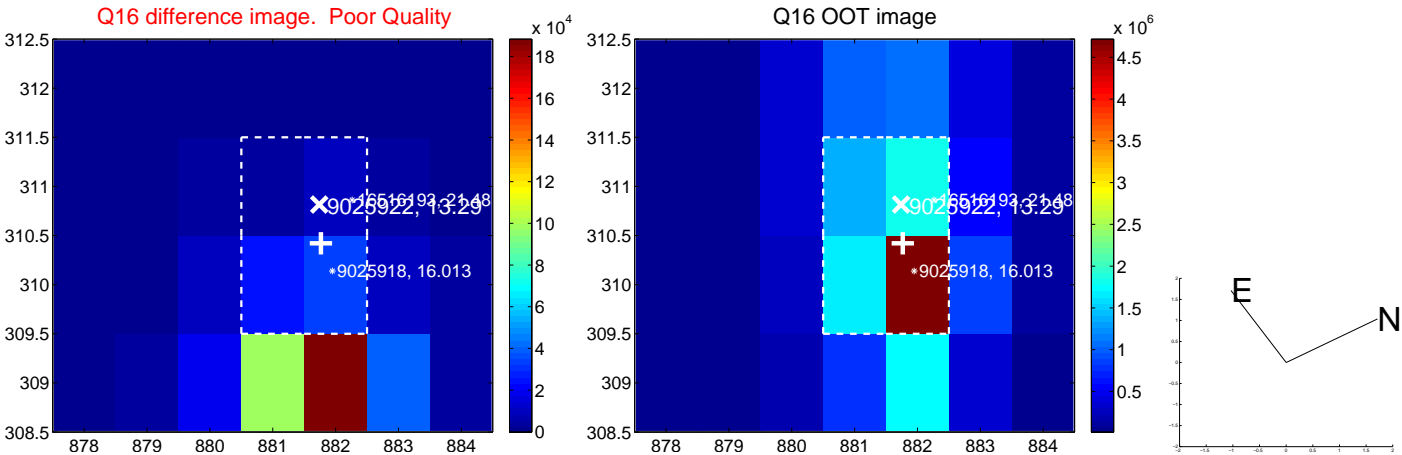
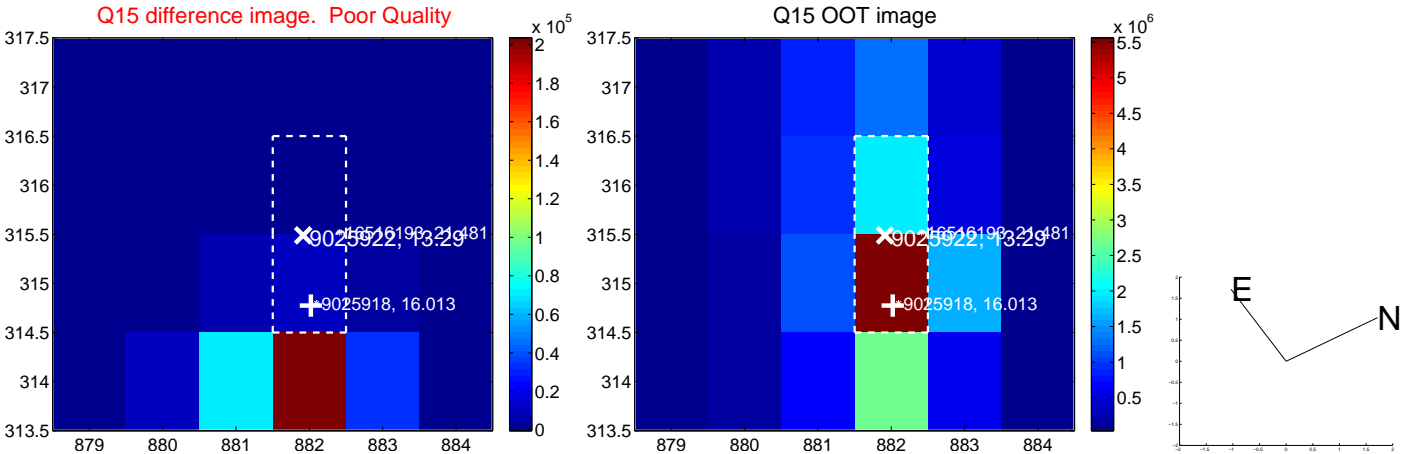
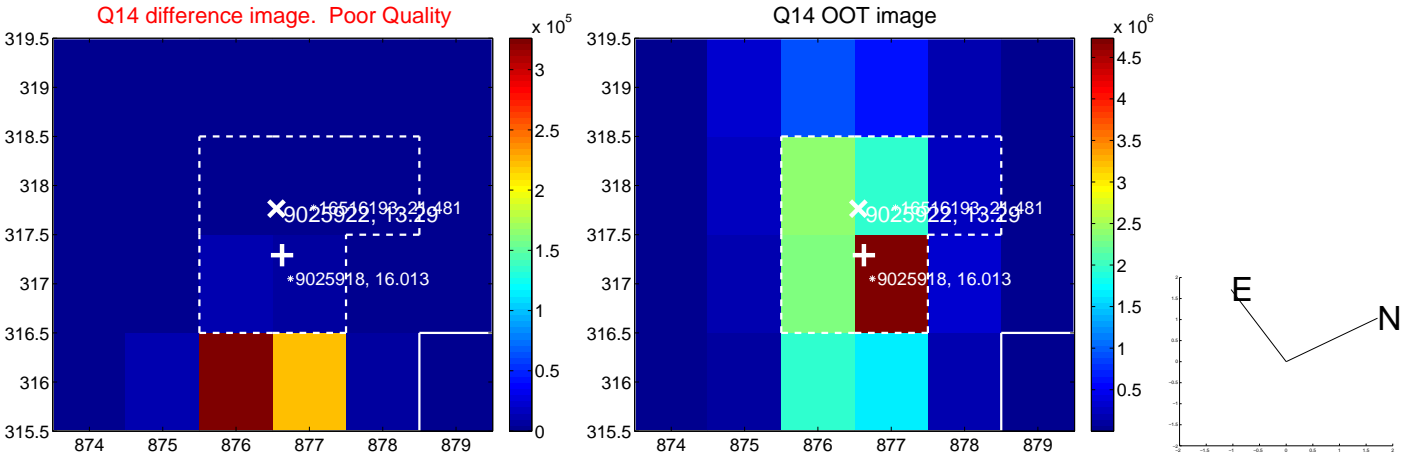
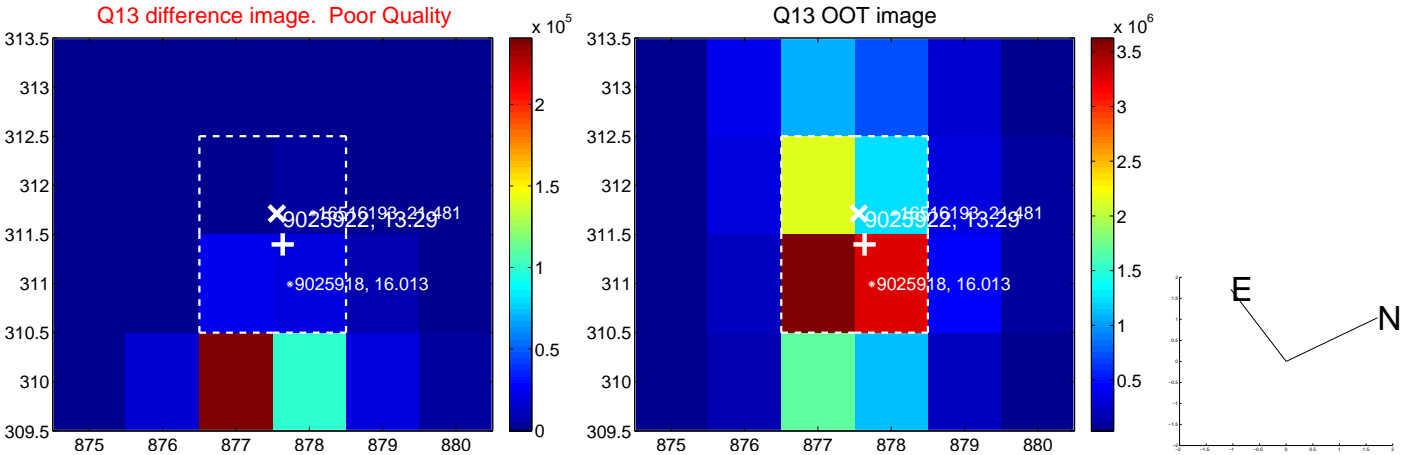
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



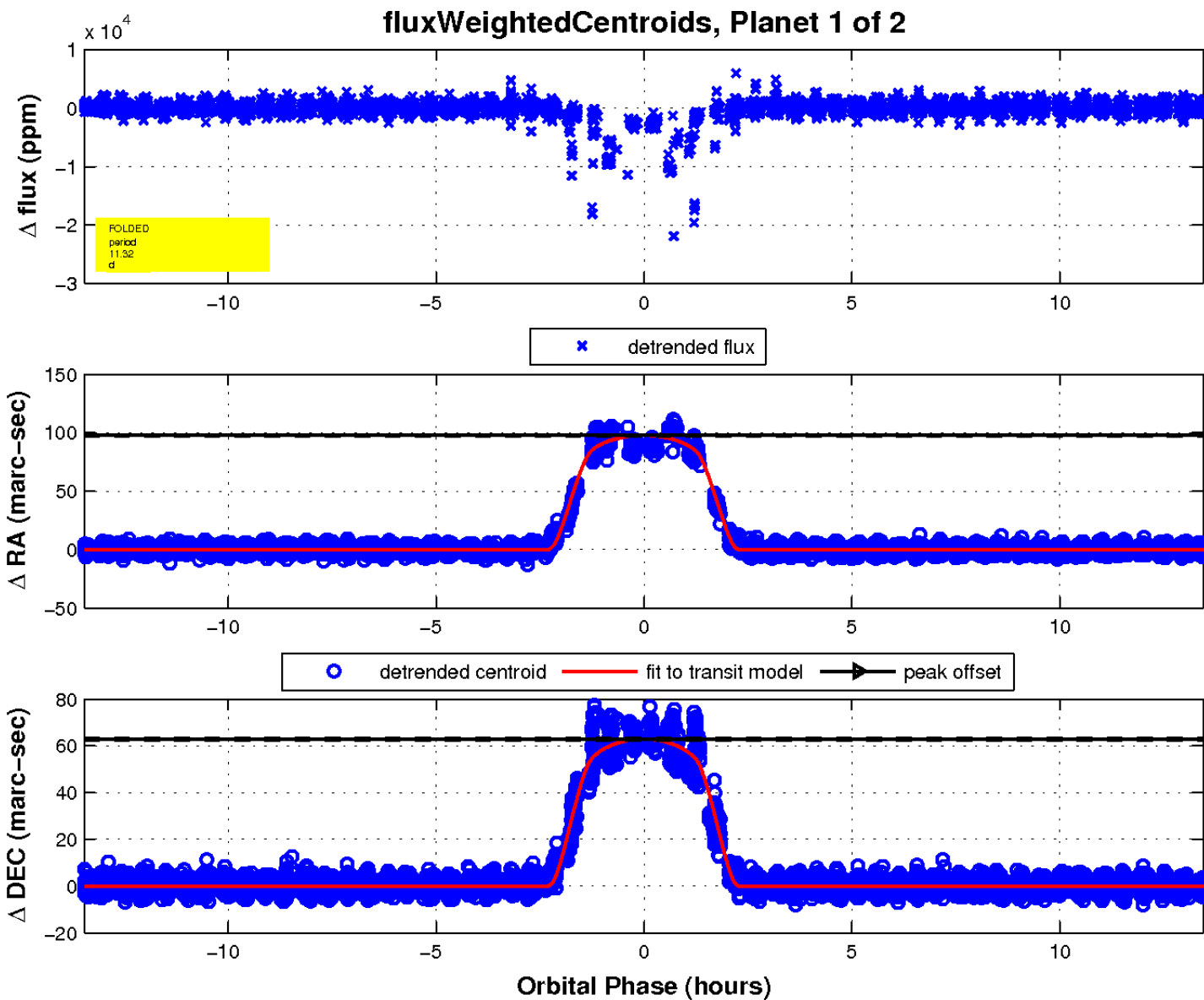
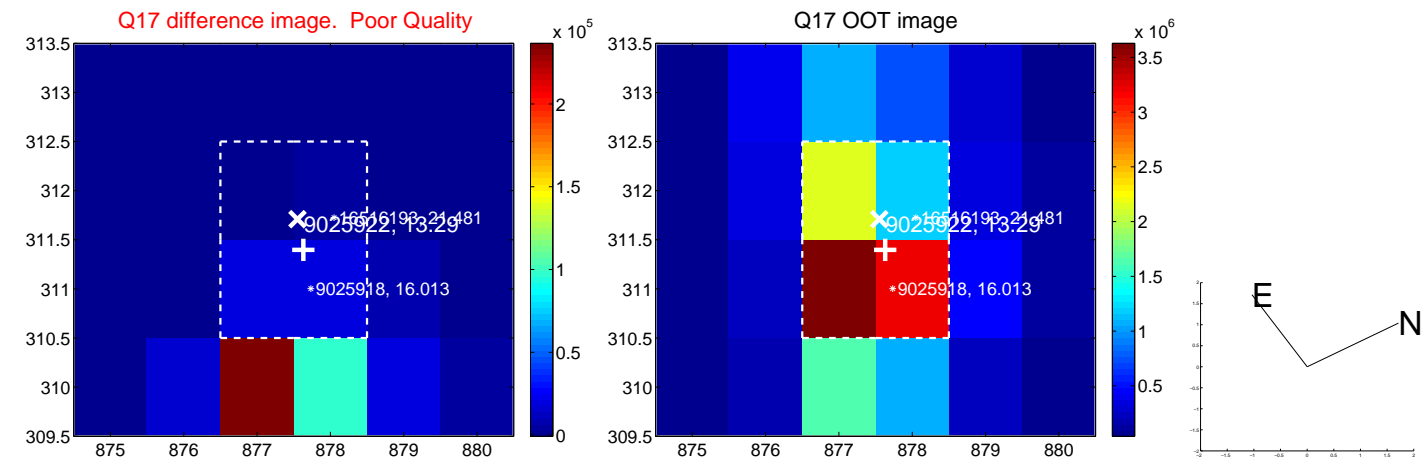
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

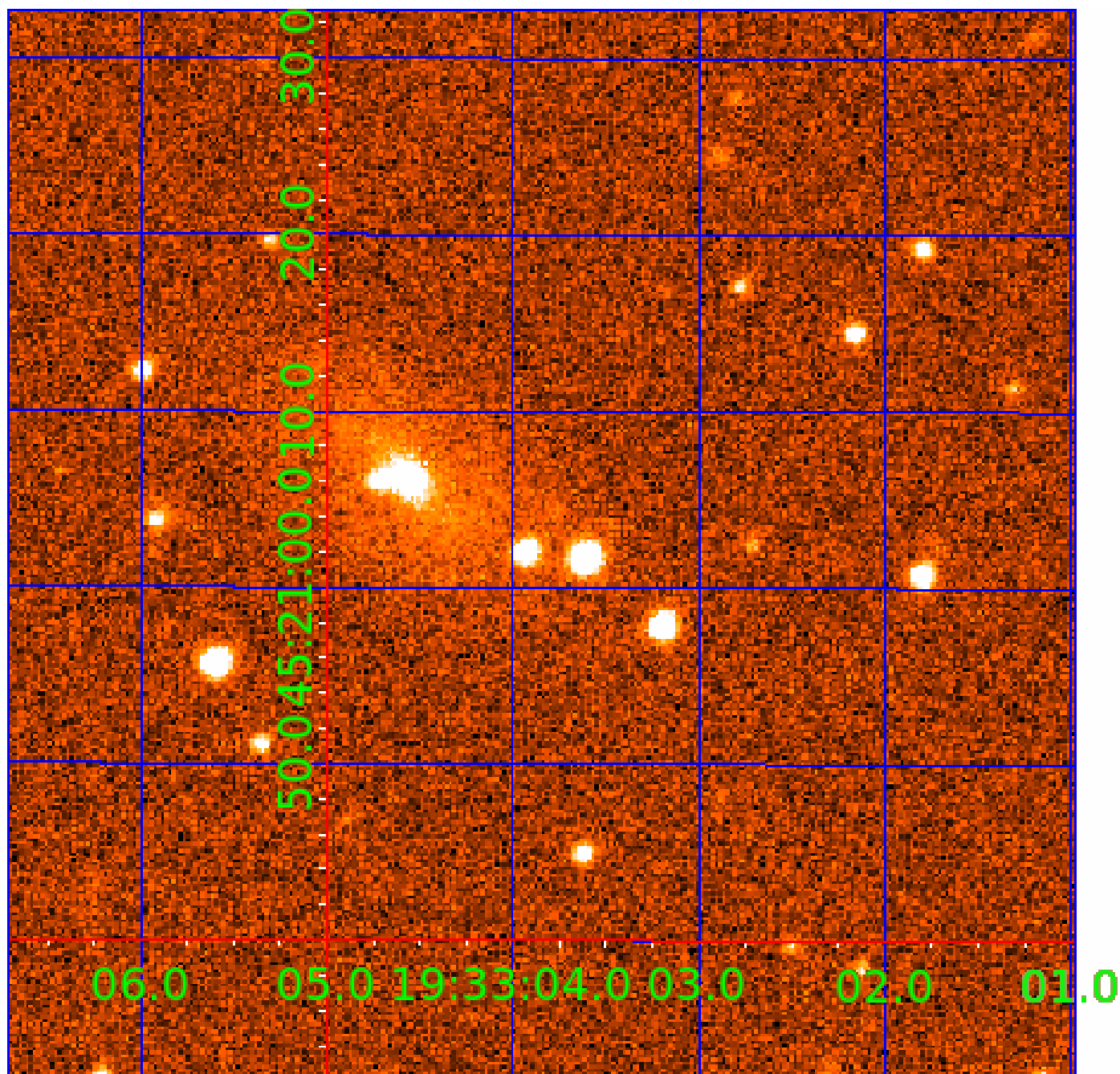


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009025922

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})
009025922-01	OBS	0043.01	11.320270	131.804737	2673.3	4.487	173.0	79.5	1.00	5780	6.08	102.67
009025922-02	OBS	No	11.320329	140.136924	857.7	5.932	31.7	31.7	1.00	5780	4.21	102.67

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009025922-01	OBS	FP	0.00	0	1	1	1	MOD_SEC_DV—MOD_SEC_ALT—MOD_ODDEVEN_DV—MOD_ODDEVEN_ALT—HAS_SEC_TCE—CENT_RESOLVED_OFFSET—EPHEM_MATCH
009025922-02	OBS	FP	0.00	1	1	1	1	IS_SEC_TCE—CENT_RESOLVED_OFFSET—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 009025922-02

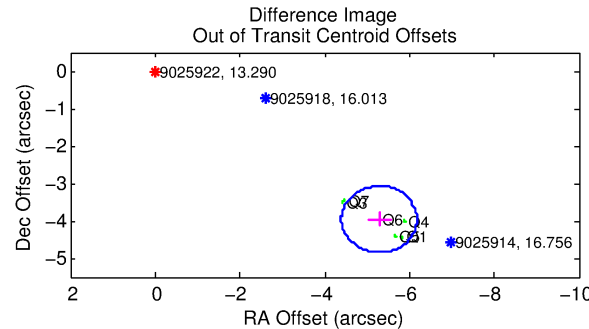
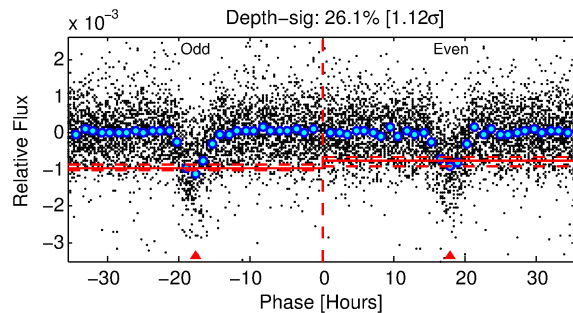
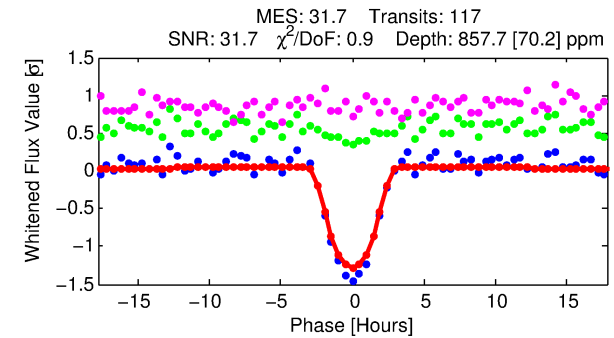
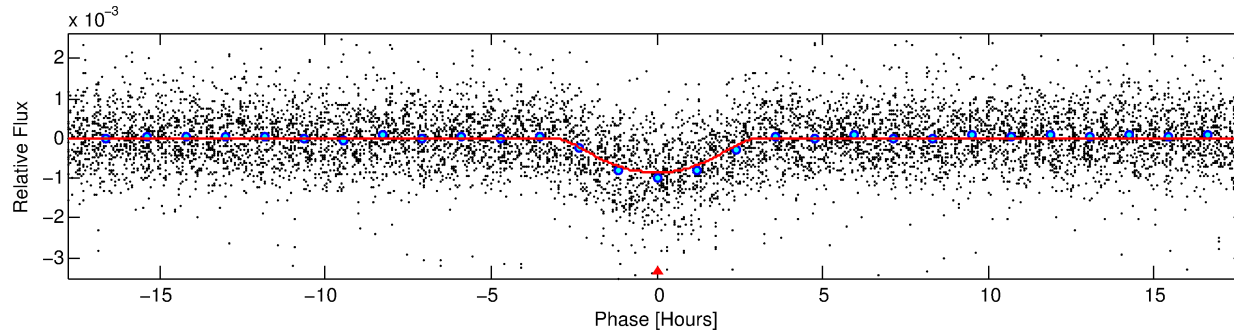
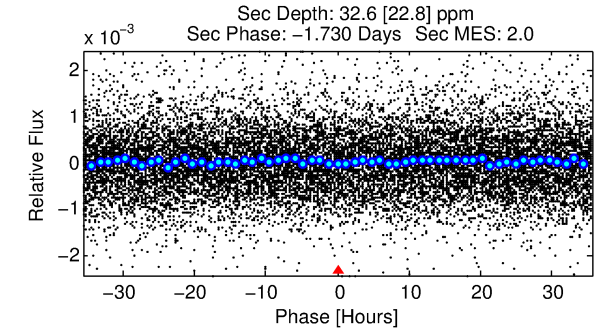
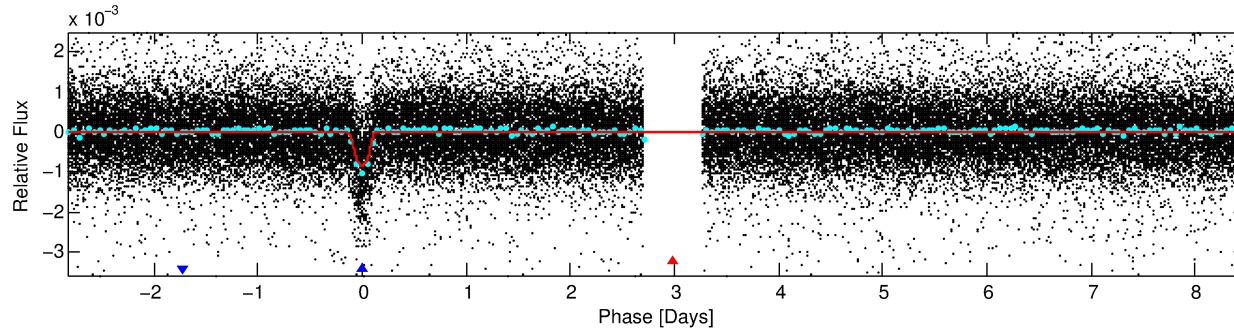
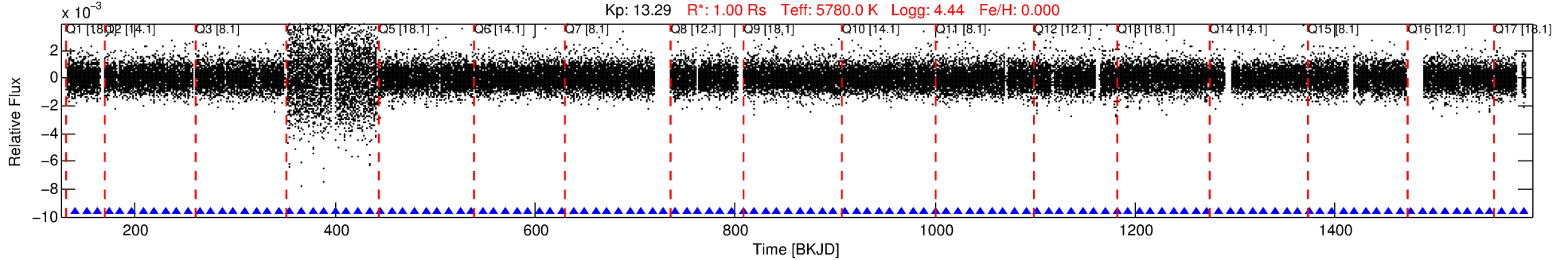
TCE (1)	KIC	Parent (2)	Parent KIC	$P_1:P_2$	Dist (″)	Δ Row	Δ Col	m_2	m_1	D_2/D_1	Mechanism	Flag	σ_P	σ_T
009025922-02	9025922	009025914-02	9025914	1:1	8.4	2	1	16.76	13.29	43.60	Direct-PRF	0	0.13	0.08

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: 9025922 Candidate: 2 of 2 Period: 11.320 d
KOI: K00043 Corr: No Ephemeris Match

Kp: 13.29 R*: 1.00 Rs Teff: 5780.0 K Logg: 4.44 Fe/H: 0.000



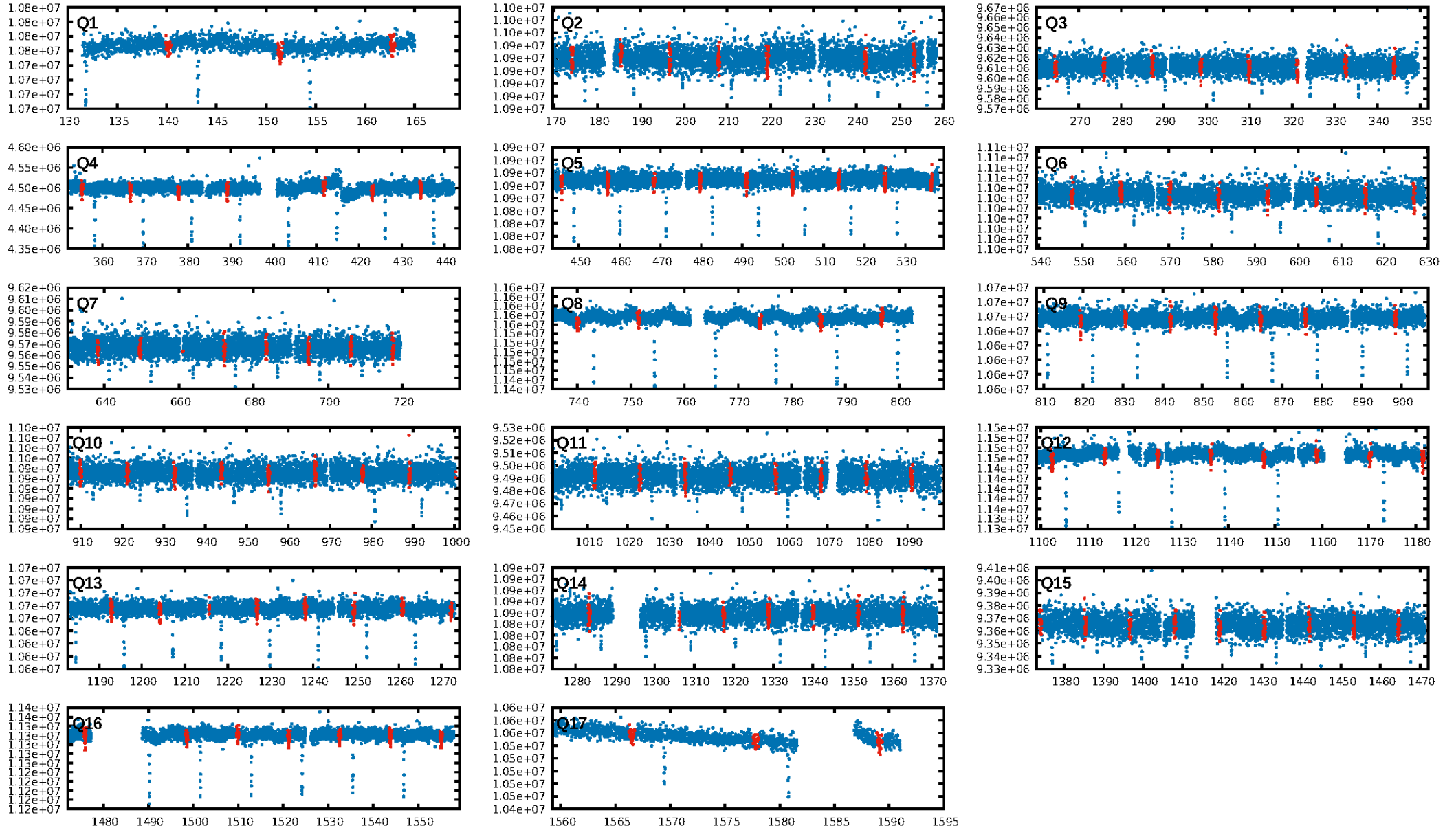
DV Fit Results:

Period = 11.32033 [0.00006] d
Epoch = 140.1369 [0.0046] BKJD
Rp/R* = 0.0385 [0.0104]
a/R* = 5.32 [0.73]
b = 0.97 [0.02]
Seff = 102.67 [0.00]
Teq = 812 [0] K
Rp = 4.21 [1.13] Re
a = 0.0987 [0.0000] AU
Ag = 9.87 [8.71] [1.02σ]
Teffp = 2224 [491] K [2.88σ]

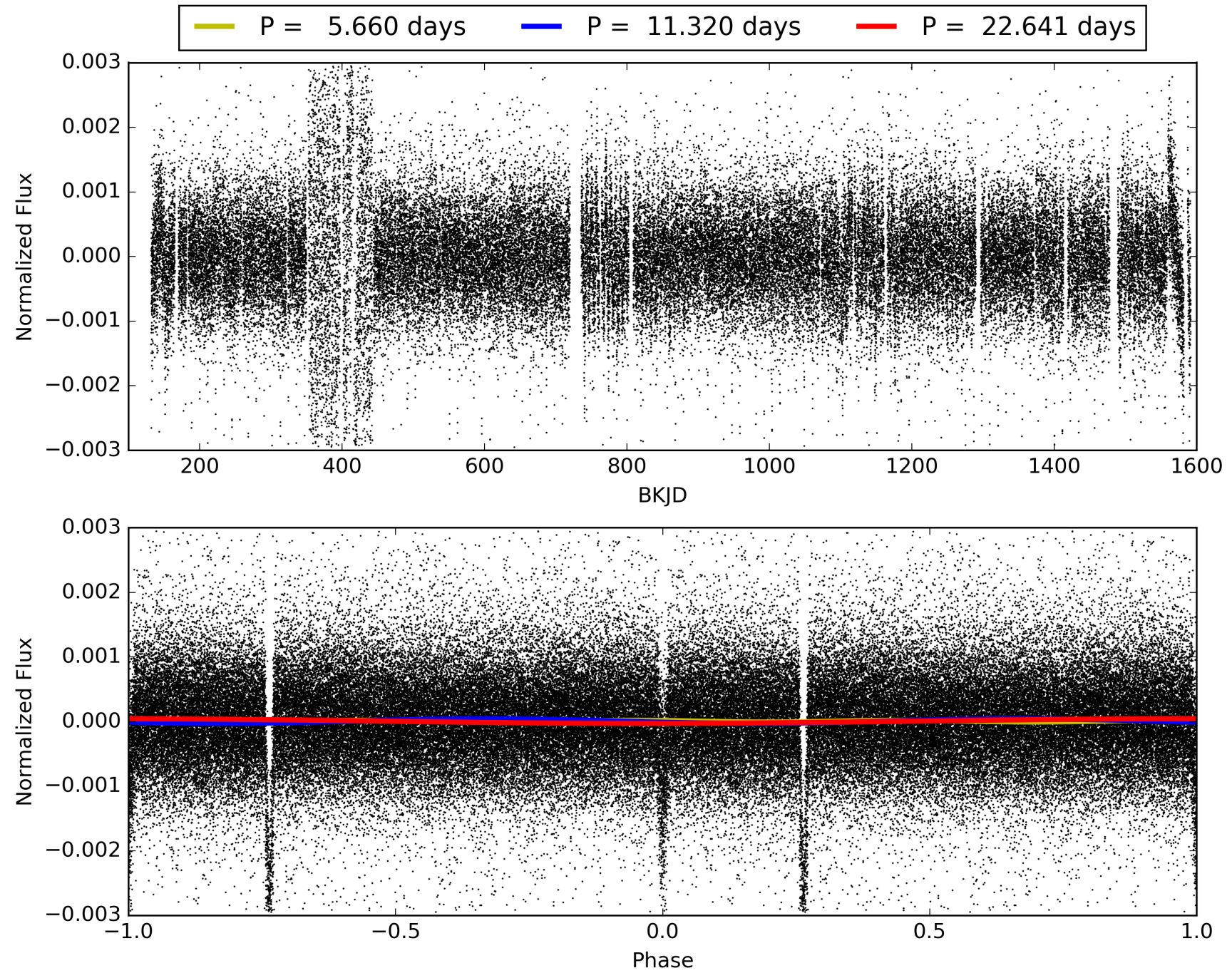
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 8.34e-212
RollingBand-fgt: 1.00 [111/111]
GhostDiagnostic-chr: -0.3986
Centroid-sig: 0.0%
Centroid-so: 24.310 arcsec [77.39σ]
OotOffset-rm: 6.603 arcsec [22.29σ]
KicOffset-rm: 8.452 arcsec [116.62σ]
OotOffset-st: 1/2/1/2 [6]
KicOffset-st: 1/2/1/2 [6]
DiffImageQuality-fgm: 1.00 [6/6]
DiffImageOverlap-fno: 1.00 [17/17]

TCE 009025922-02, PDC Light Curves

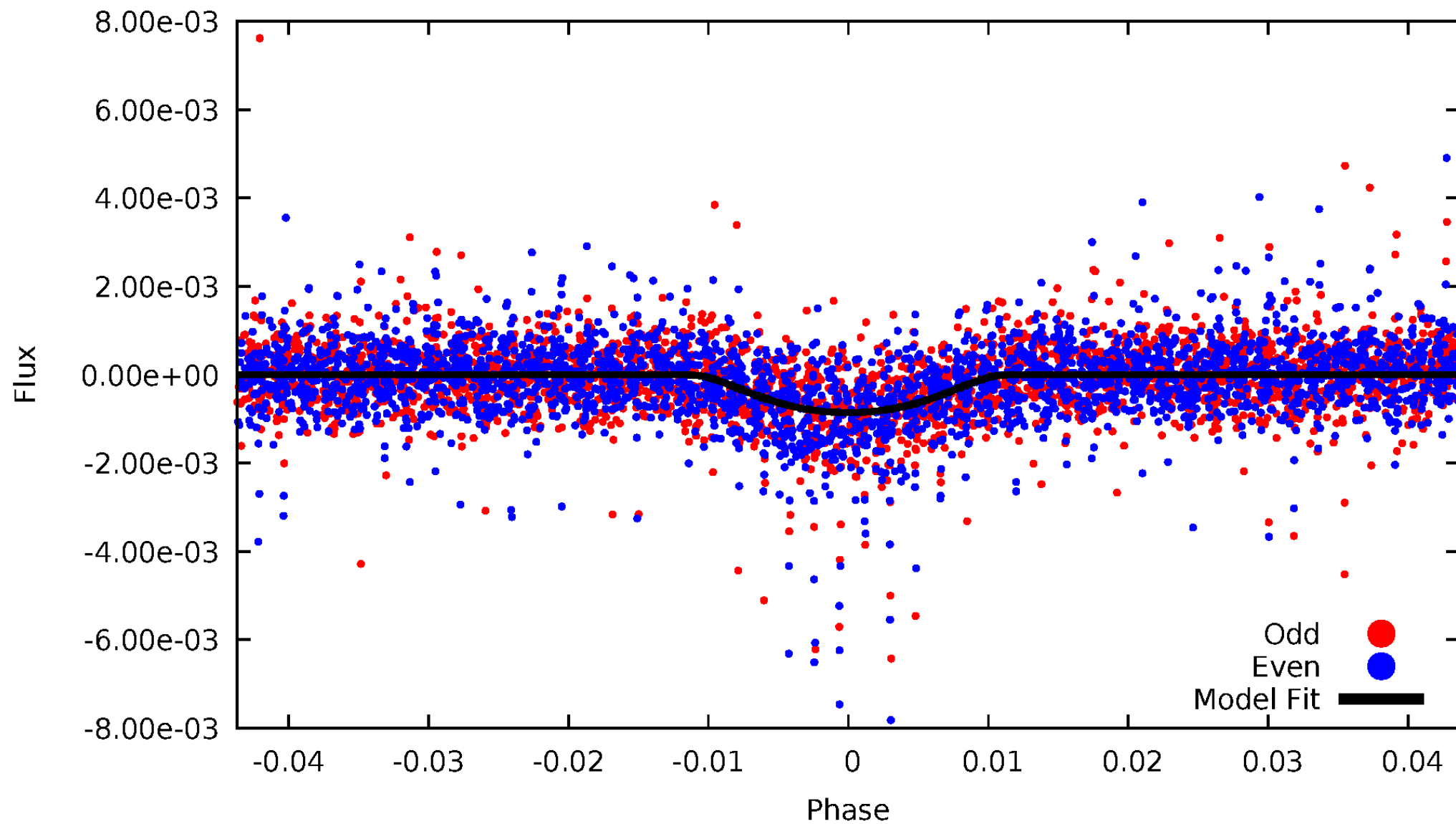


TCE 009025922-02



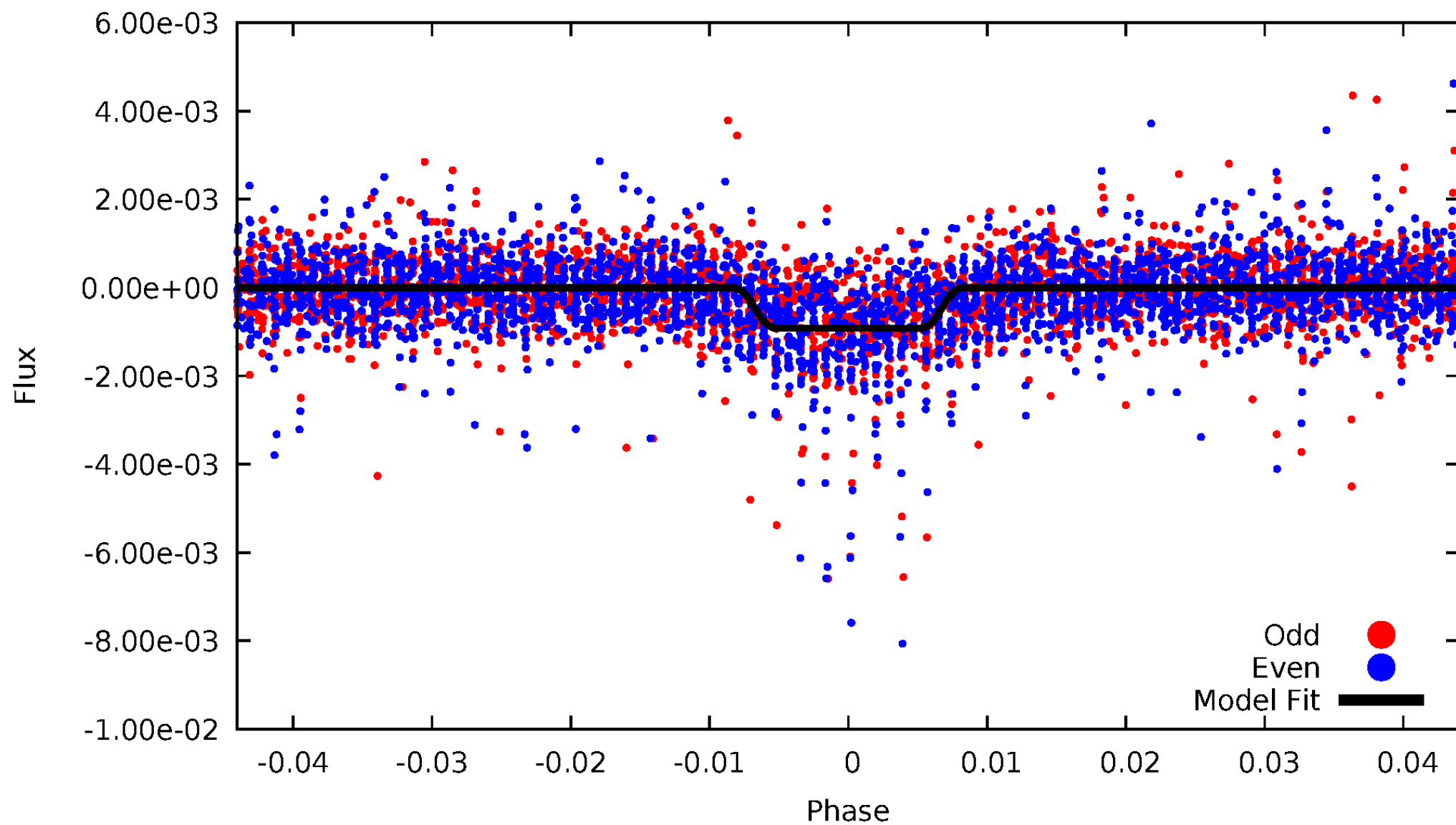
DV Odd/Even

TCE 009025922-02



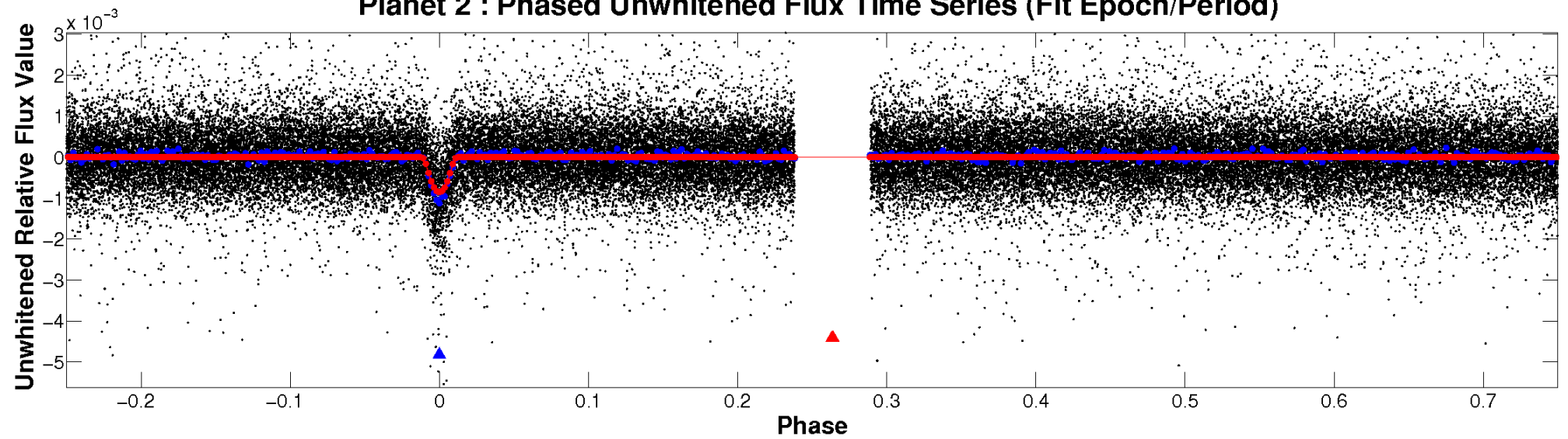
ALT Odd/Even

TCE 009025922-02

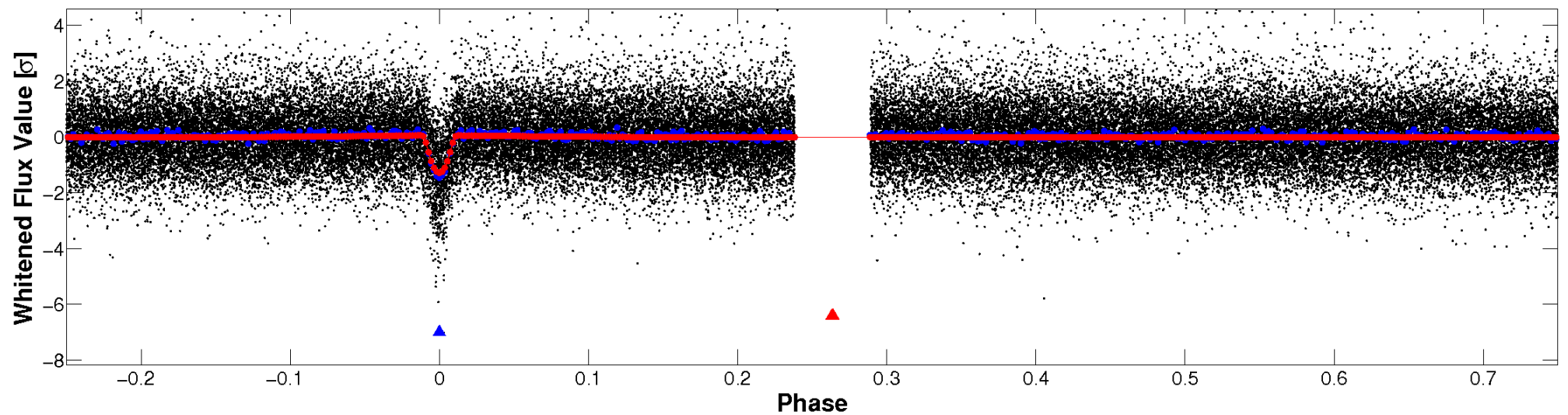


Non-Whitened Vs. Whitened Light Curve

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

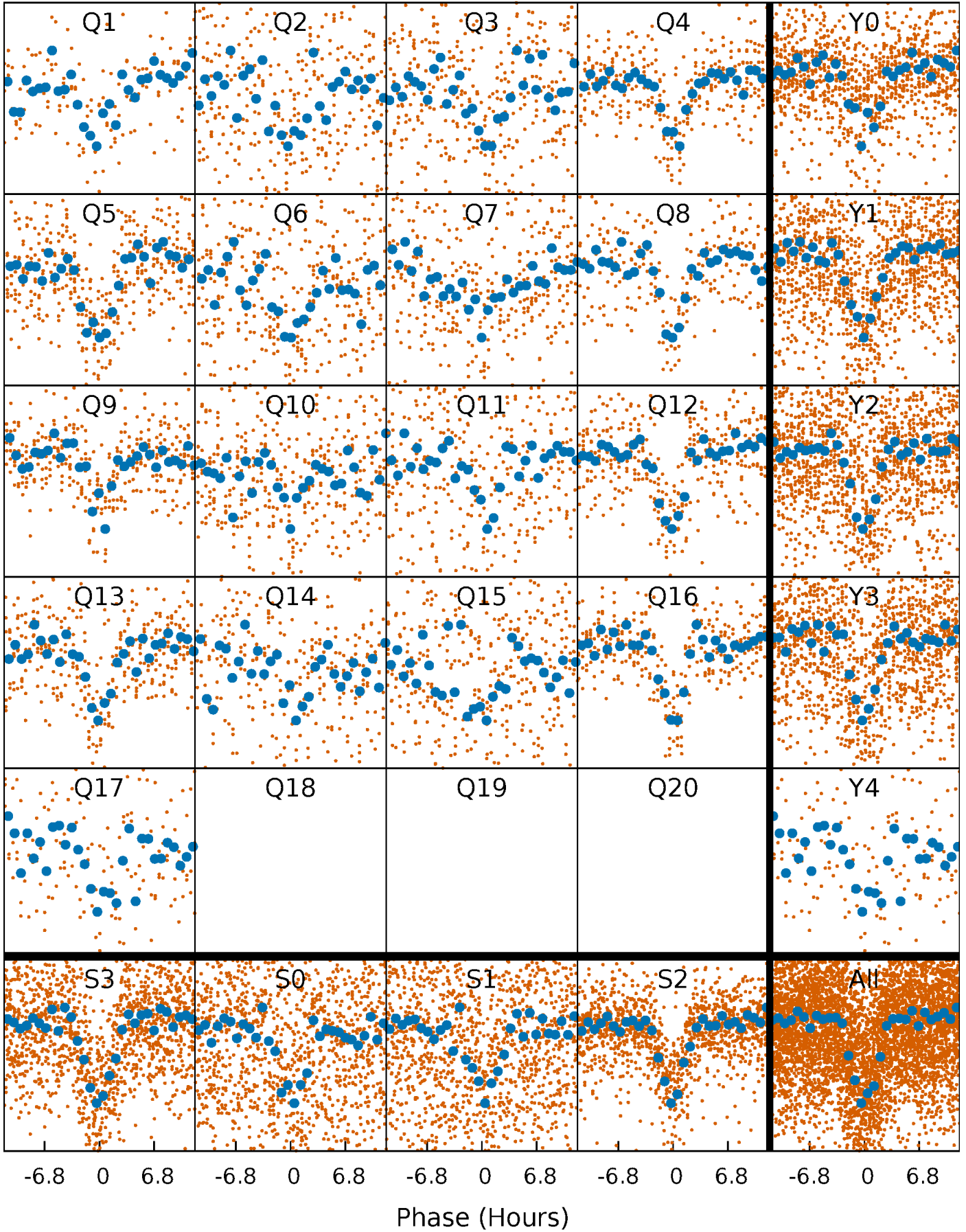


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



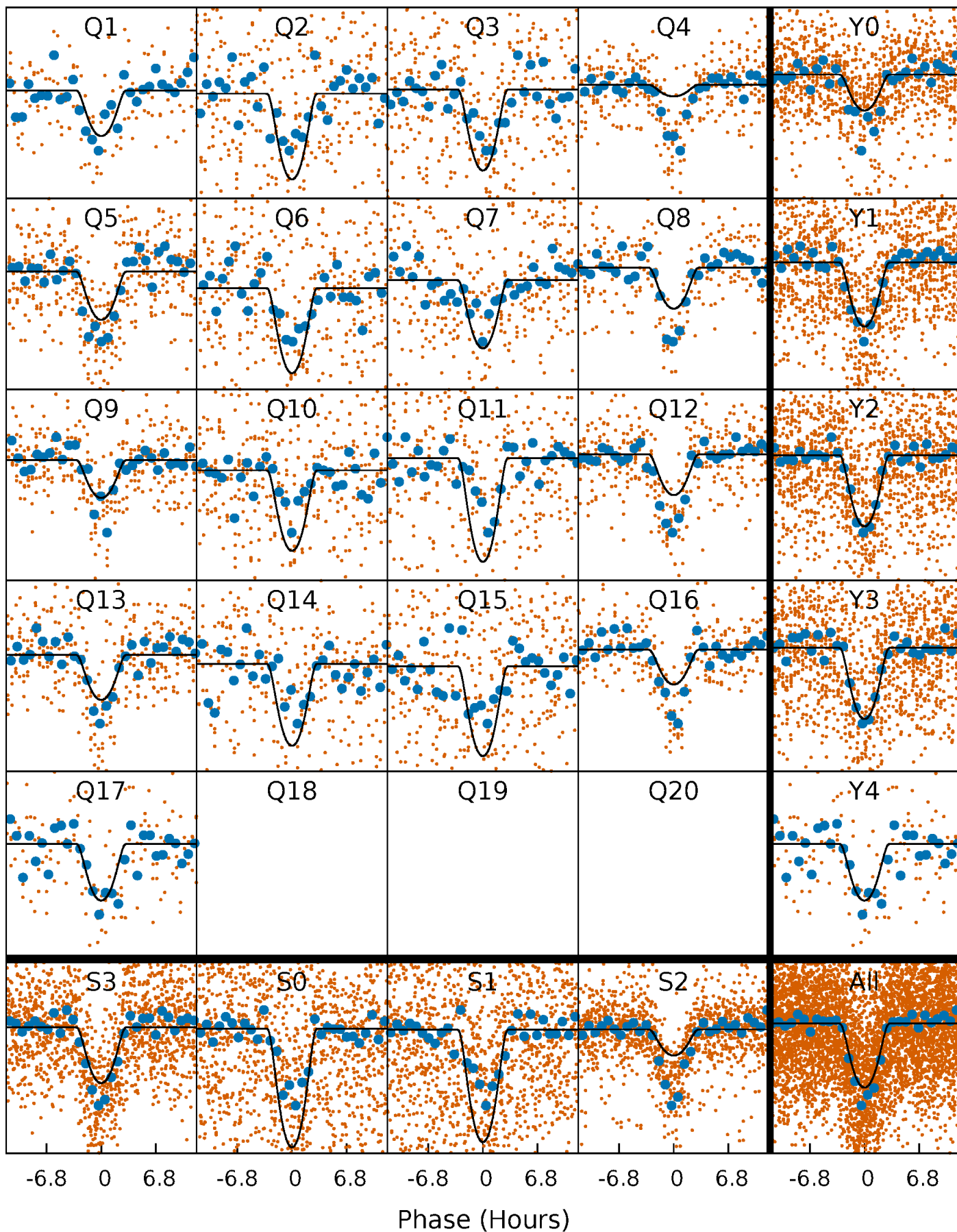
PDC Quarter-Phased Transit Curves

TCE 009025922-02 P= 11.320329 Days $T_0=140.136924$ (BKJD)



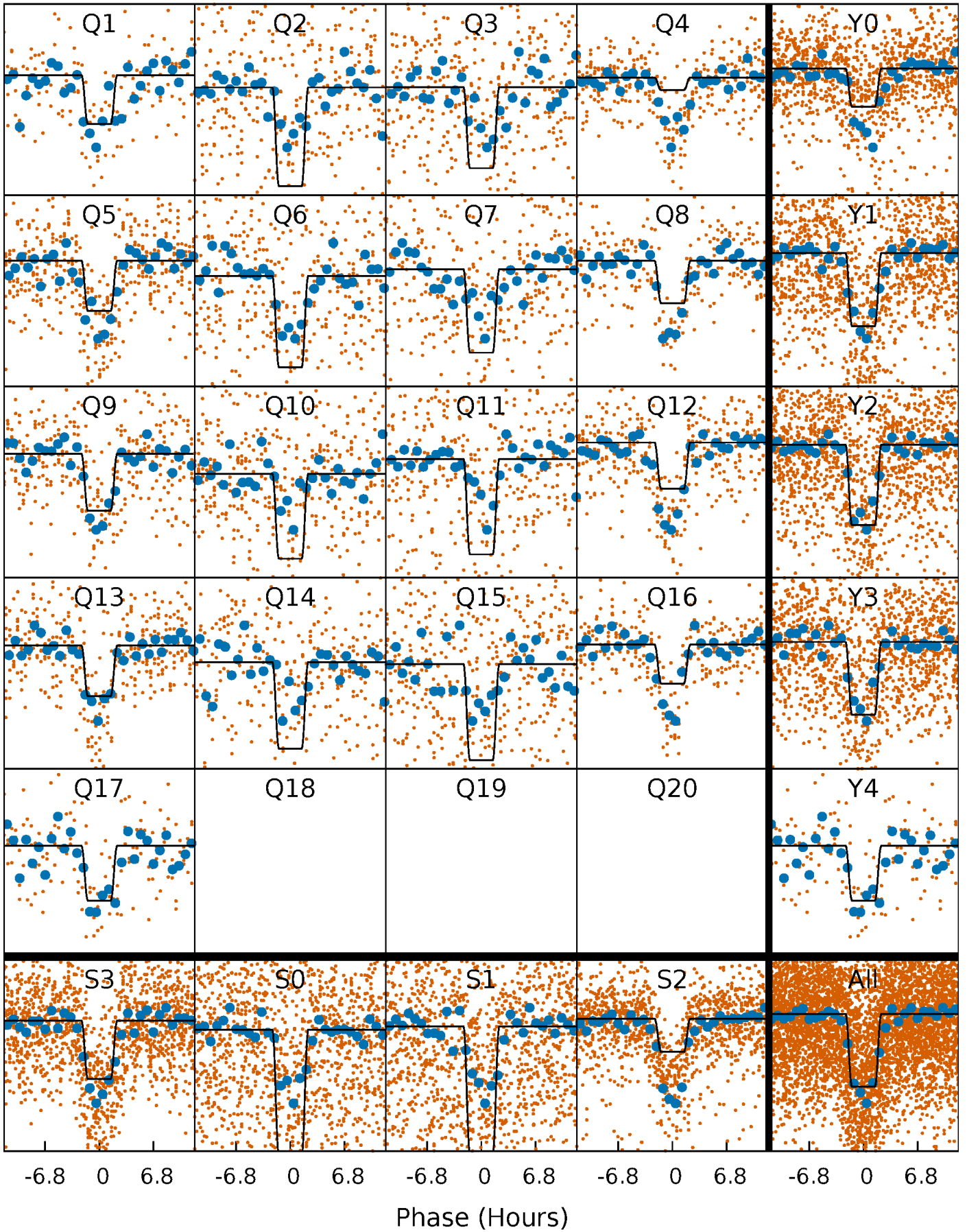
DV Quarter-Phased Transit Curves

TCE 009025922-02 P= 11.320329 Days $T_0=140.136924$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

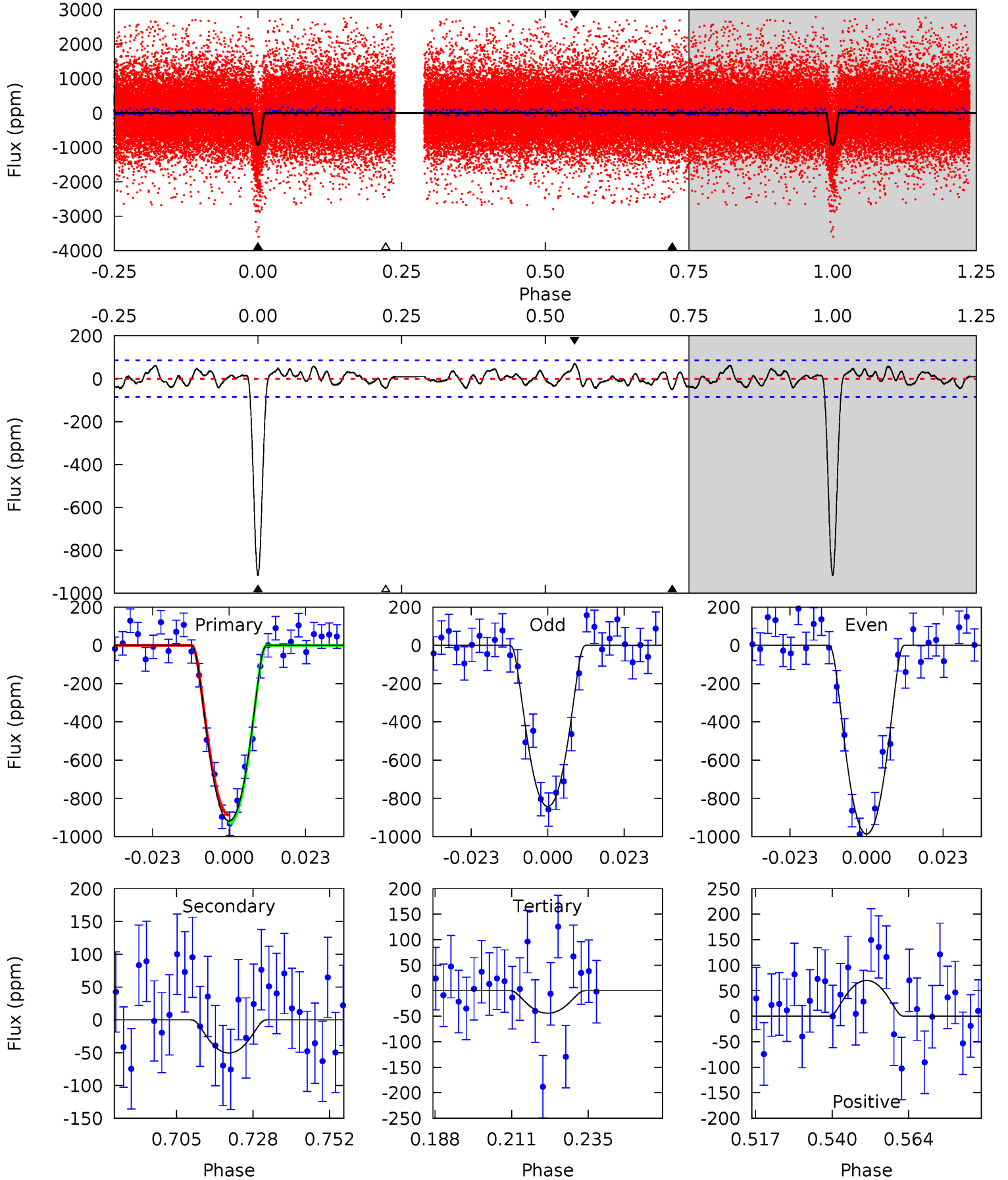
TCE 009025922-02 P= 11.320516 Days $T_0=140.123257$ (BKJD)



DV Model-Shift Uniqueness Test

009025922-02, $P = 11.320329$ Days, $E = 128.816595$ Days

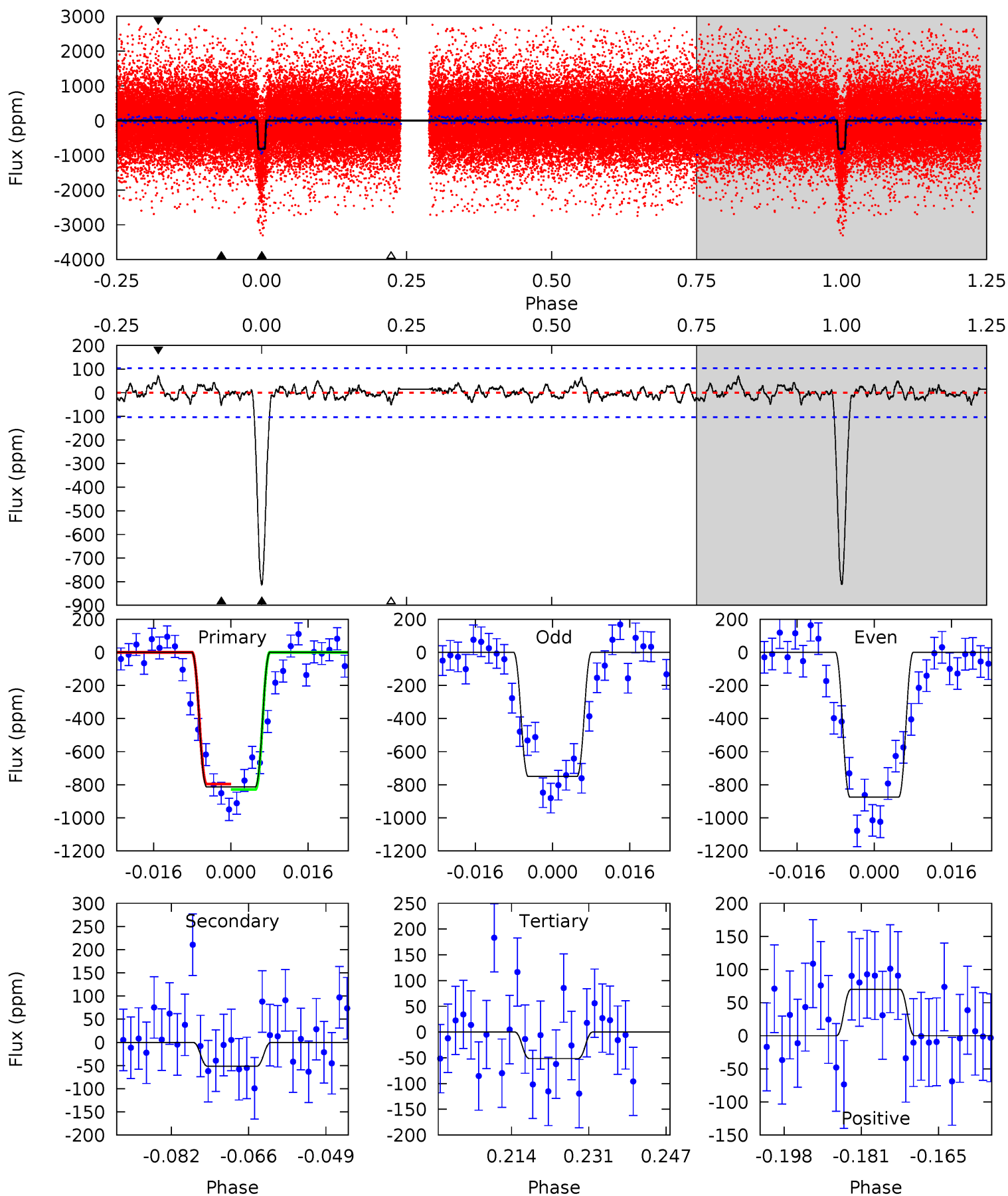
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
52.3	2.87	2.52	3.99	4.86	2.27	1.38	49.8	48.3	0.36	-1.12	4.13	1.24	0.07	1.27



Alt Model-Shift Uniqueness Test

009025922-02, P = 11.320516 Days, E = 128.802741 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
38.6	2.46	2.45	3.34	4.93	2.40	0.96	36.2	35.3	0.01	-0.88	2.97	1.30	0.08	0.77



Stellar Parameters For KIC 009025922

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5780^{+1}_{-1}	$4.438^{+1.000}_{-1.000}$	$0.000^{+1.000}_{-1.000}$	$1.000^{+1.000}_{-1.000}$	$-1.000^{+1.000}_{-1.000}$	$-1.000^{+1.000}_{-1.000}$
	+0%/-0%	+23%/-23%	+inf%/-inf%	+100%/-100%	+100%/-100%	+100%/-100%
Source	Solar	Solar	Solar	Solar		

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

Secondary Eclipse Parameters for KIC 009025922-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-50 ± 18	$4.19^{+1.25}_{-1.15}$	1135^{+55}_{-53}	3088^{+364}_{-280}	15^{+16}_{-7}
Alt.	-52 ± 21	$3.33^{+1.13}_{-1.20}$	1135^{+53}_{-53}	3342^{+552}_{-378}	25^{+39}_{-14}

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

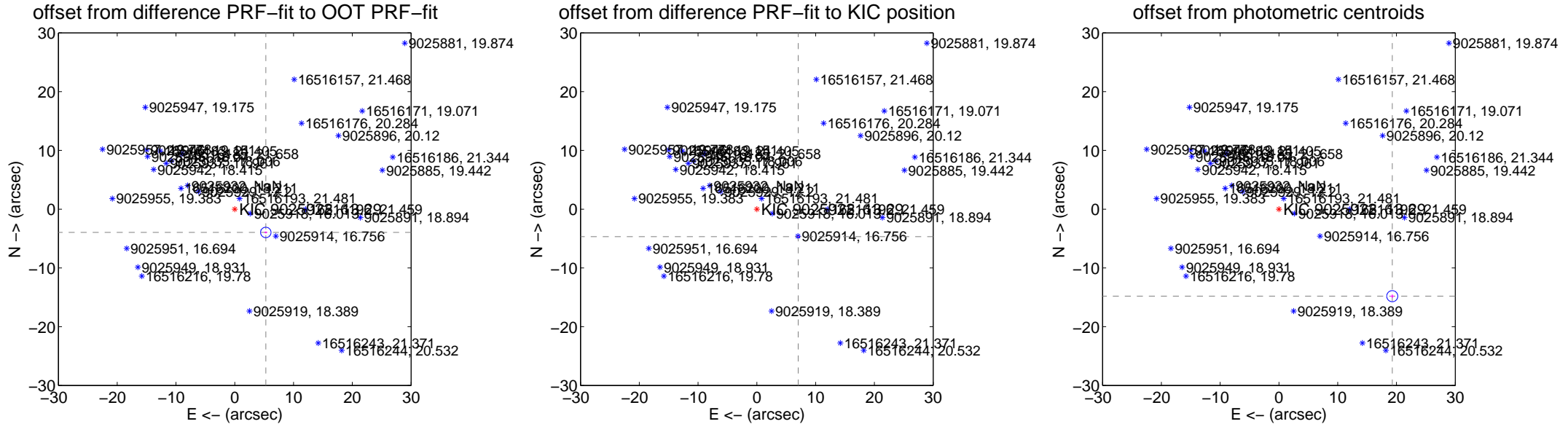
DV Centroid Data

Supplemental centroid analysis for 009025922-02. Kepler magnitude: 13.29. Transit SNR 31.66

There are 6 quarters with good PRF difference image offsets

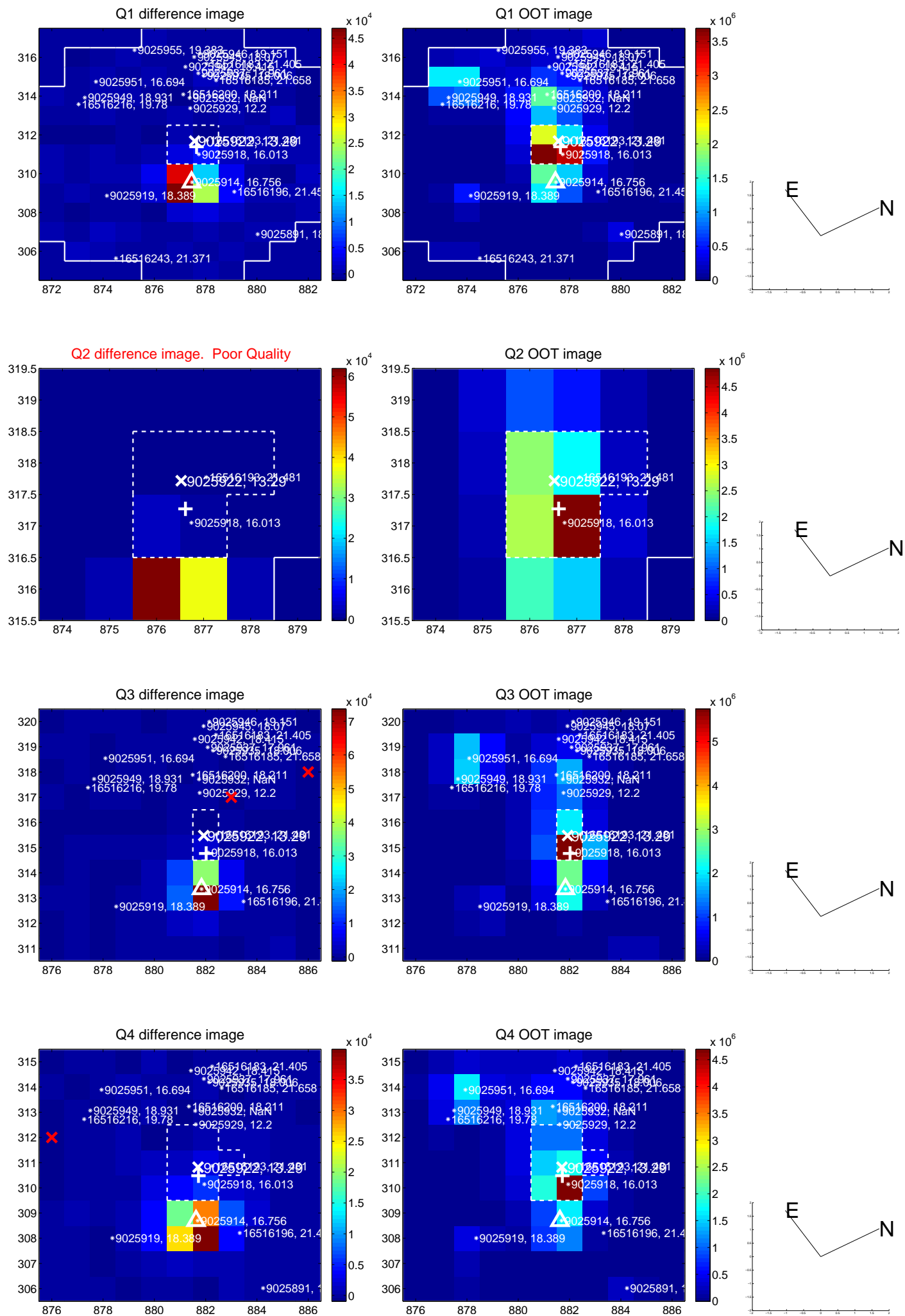
The OOT PRF centroid is offset from the target star catalog position by about 2.87 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	6.603 ± 0.296	22.29	-5.283 ± 0.262	-3.961 ± 0.169
PRF-fit source offset from KIC position	8.452 ± 0.072	116.62	-7.039 ± 0.072	-4.678 ± 0.073
photometric centroid source offset	24.31 ± 0.31	77.39	-19.28 ± 0.32	-14.81 ± 0.31

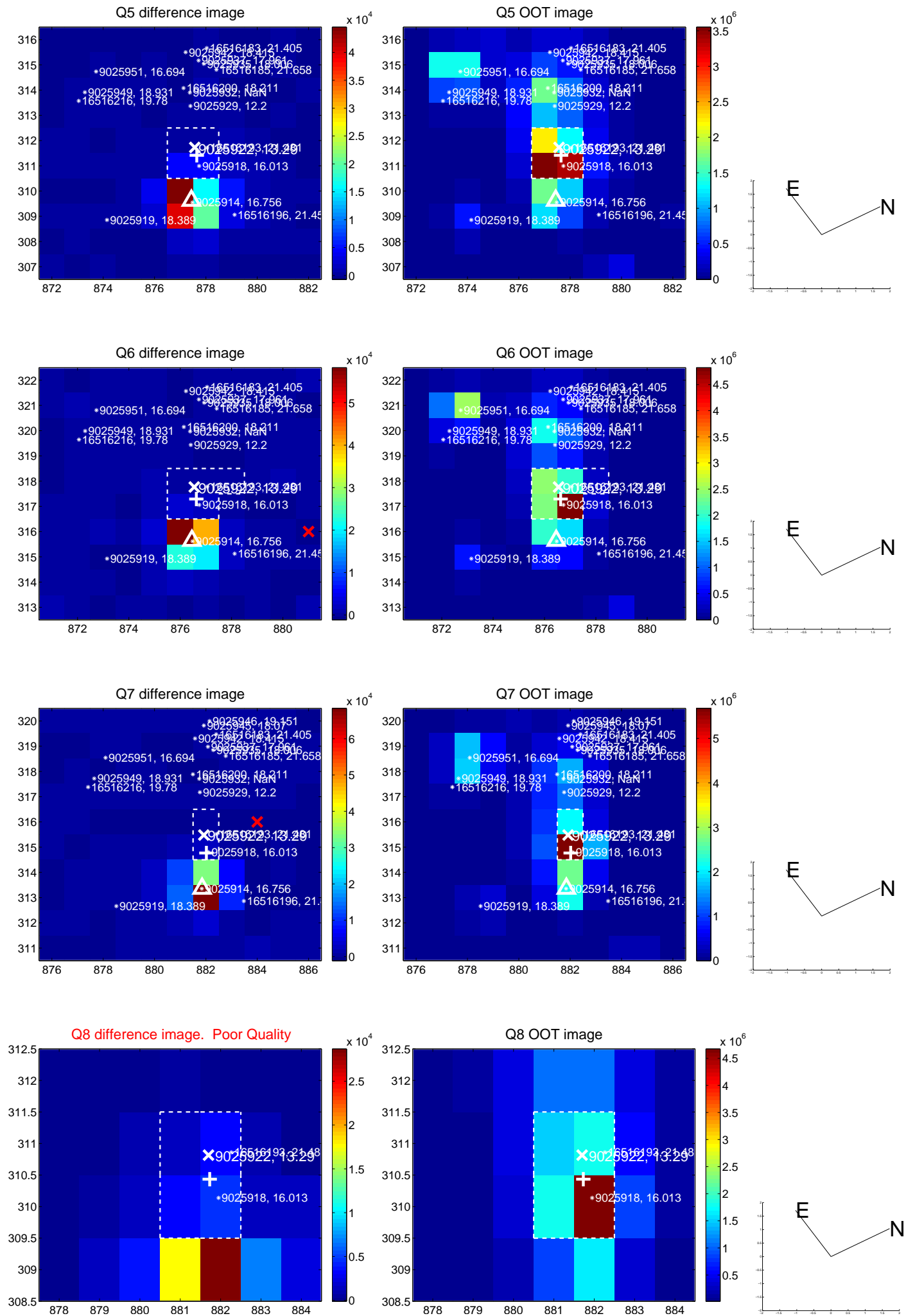


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

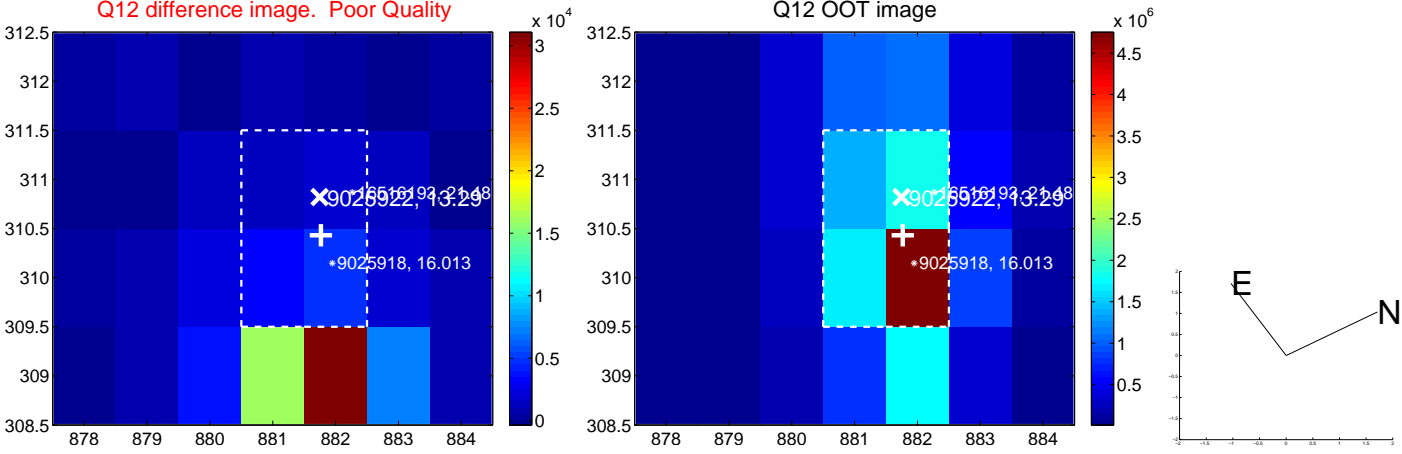
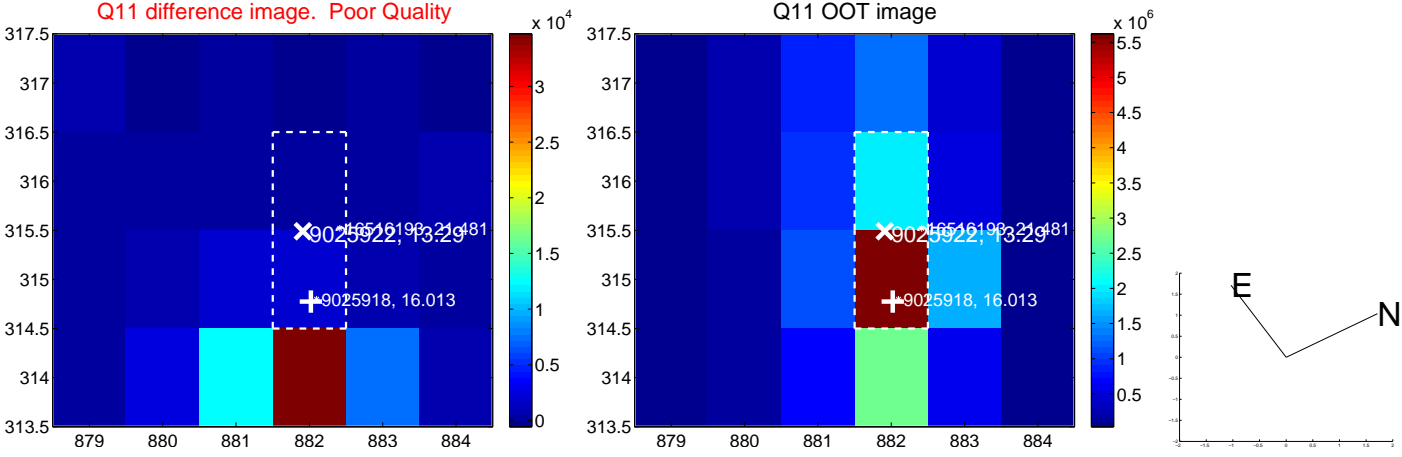
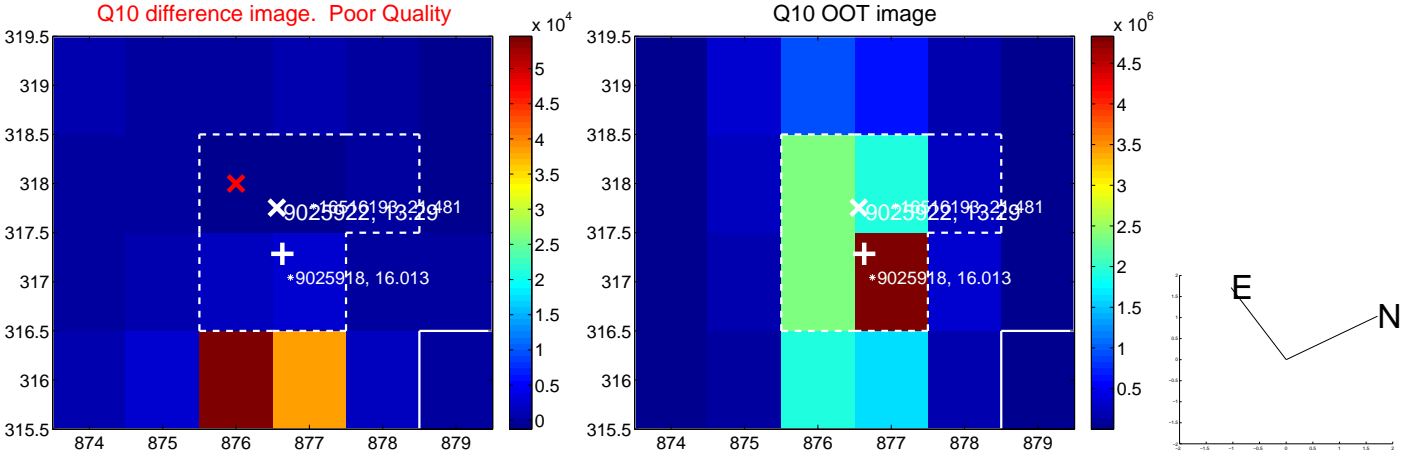
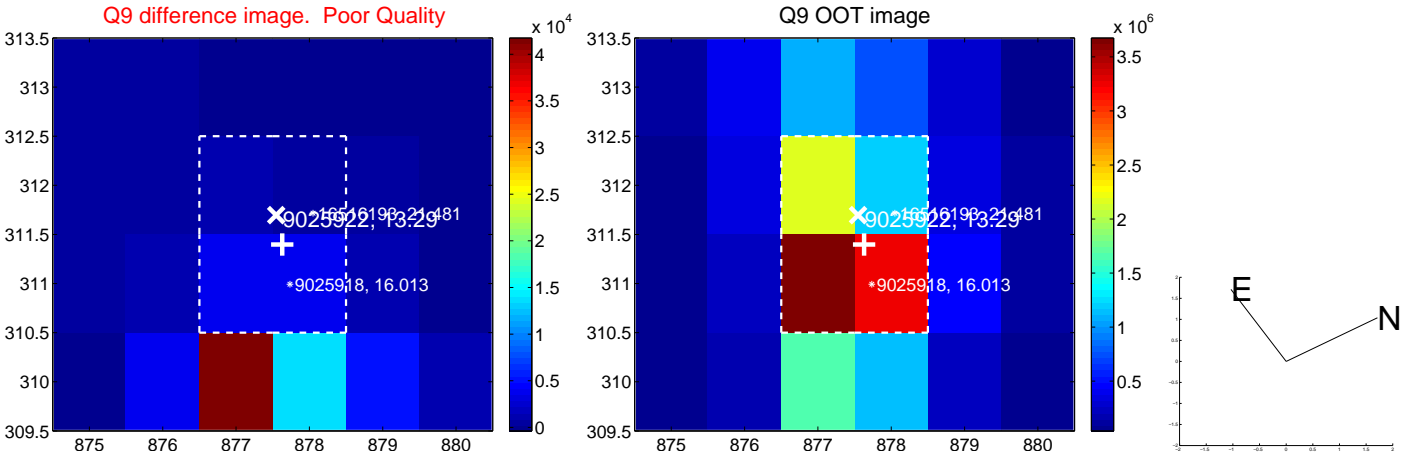
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



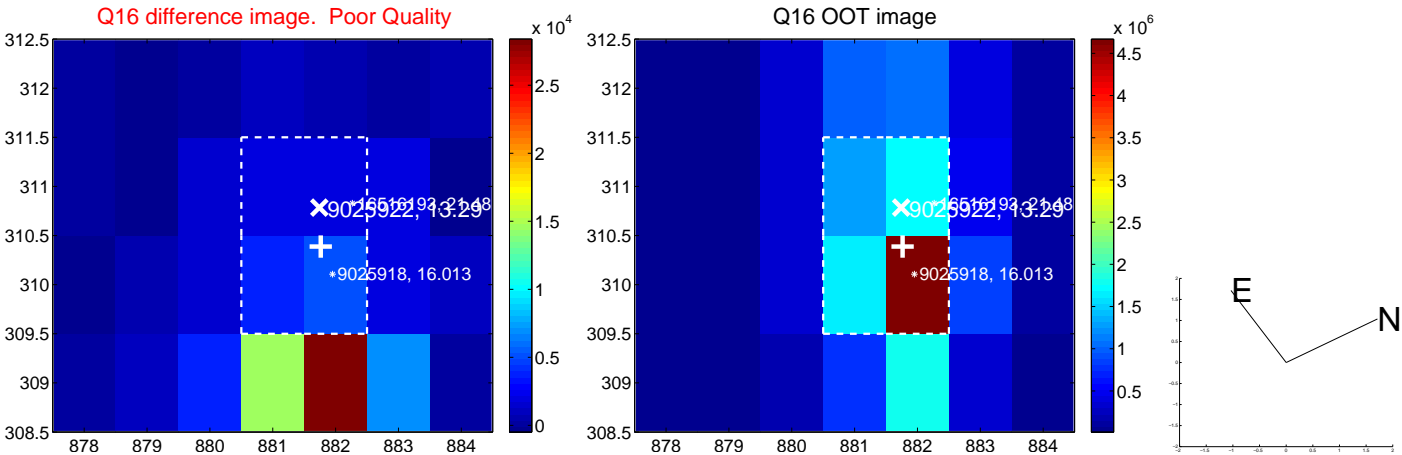
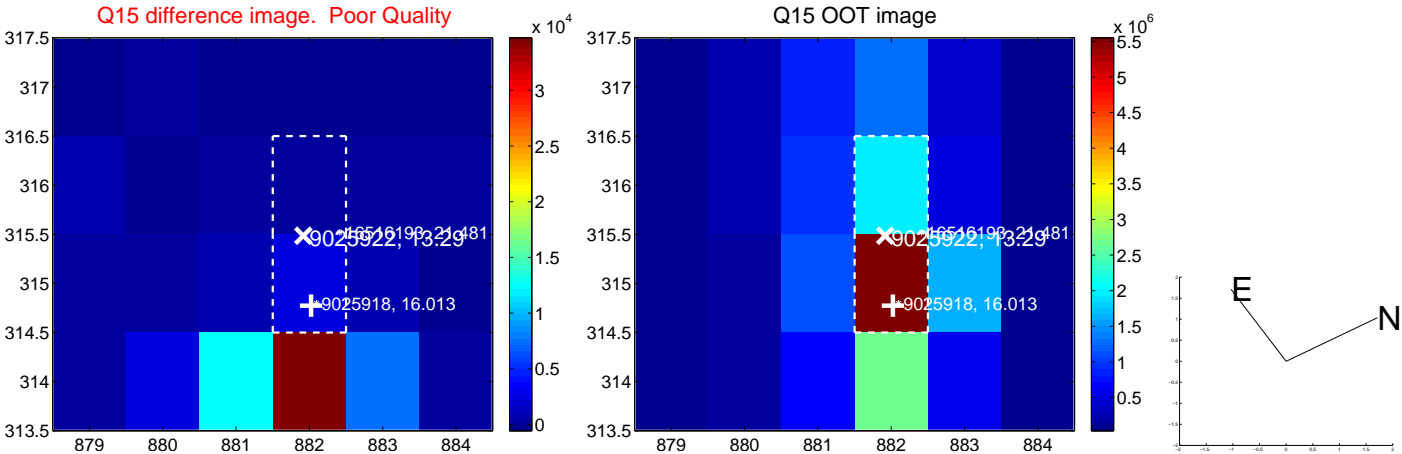
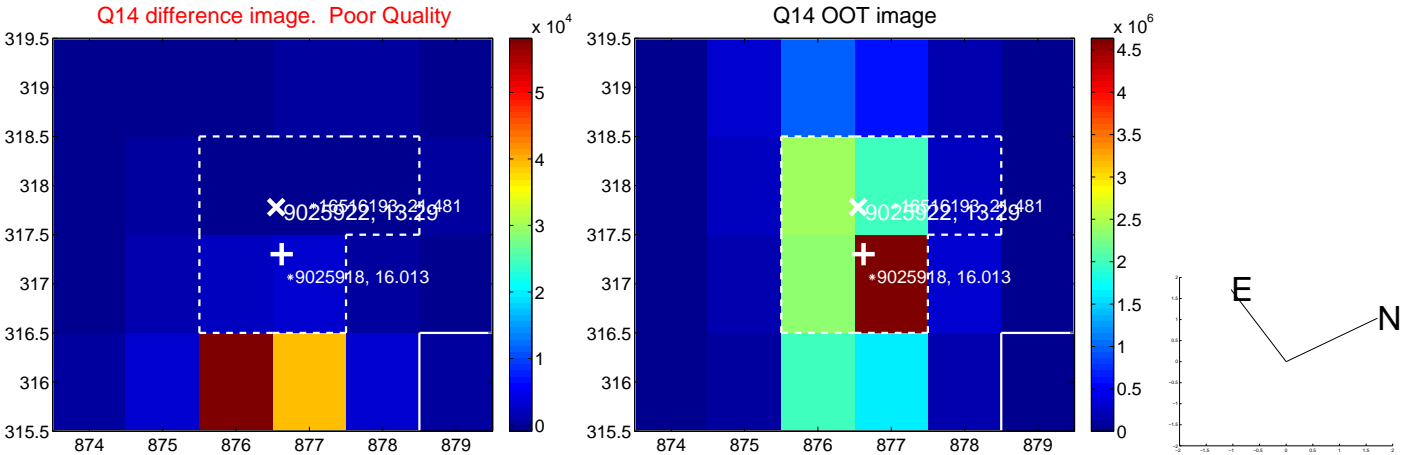
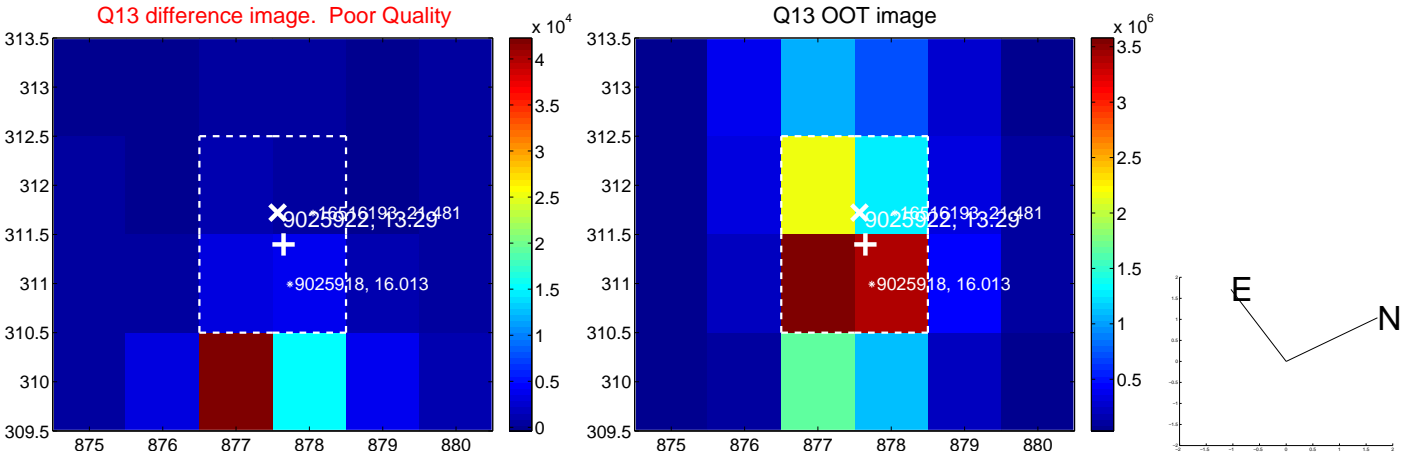
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



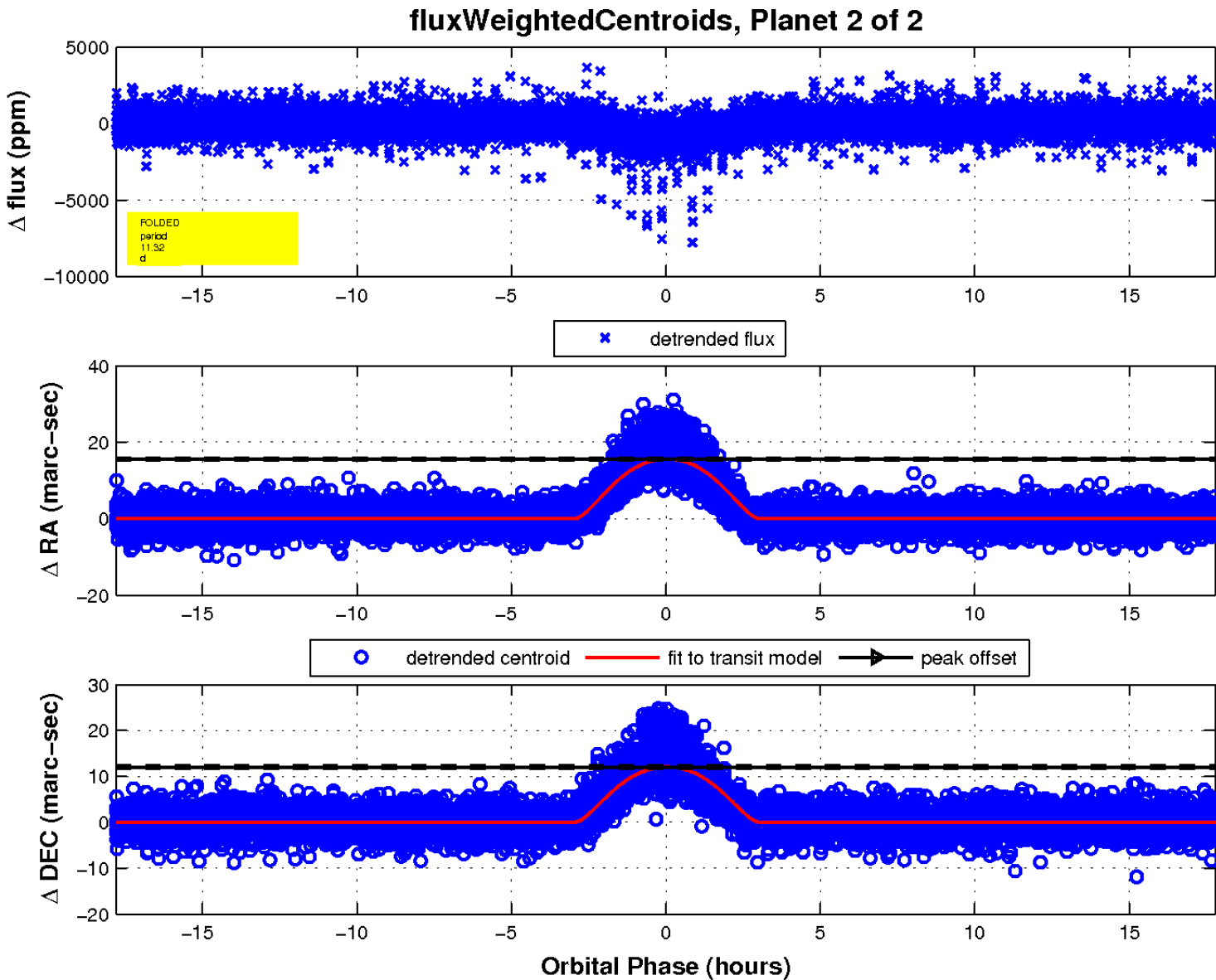
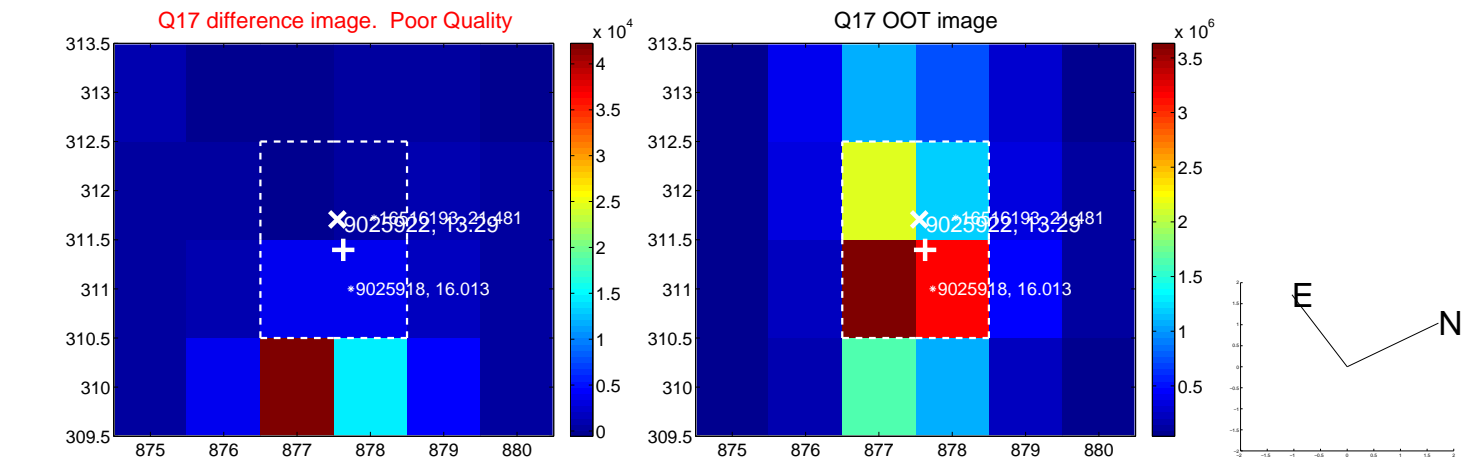
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image

Declination

