

KIC 005130369

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})
005130369-01	OBS	0140.01	19.978656	137.171949	705.5	10.367	128.6	70.7	1.90	9651	5.93	789.77
005130369-02	OBS	No	19.978247	146.403854	92.2	10.246	11.9	11.8	1.90	9651	2.08	789.79

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005130369-01	OBS	FP	0.00	0	1	1	1	MOD_SEC_DV—MOD_SEC_ALT—HAS_SEC_TCE—SEASONAL_DEPTH_DV—SEASONAL_DEPTH_ALT—CENT_RESOLVED_OFFSET—HALO_GHOST—EPHEM_MATCH
005130369-02	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 005130369-01

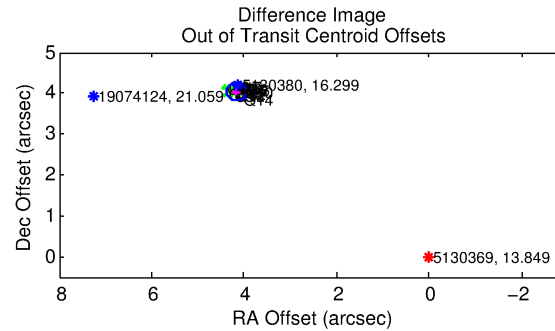
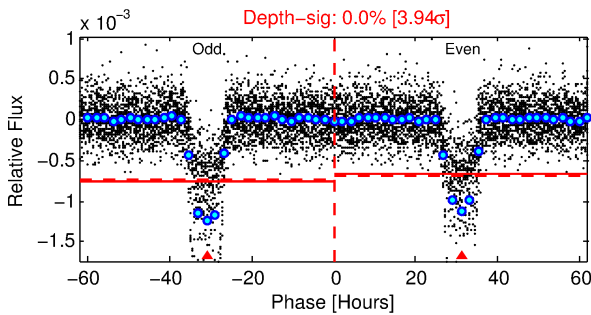
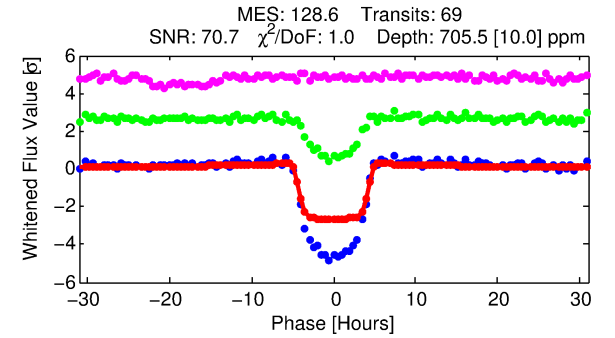
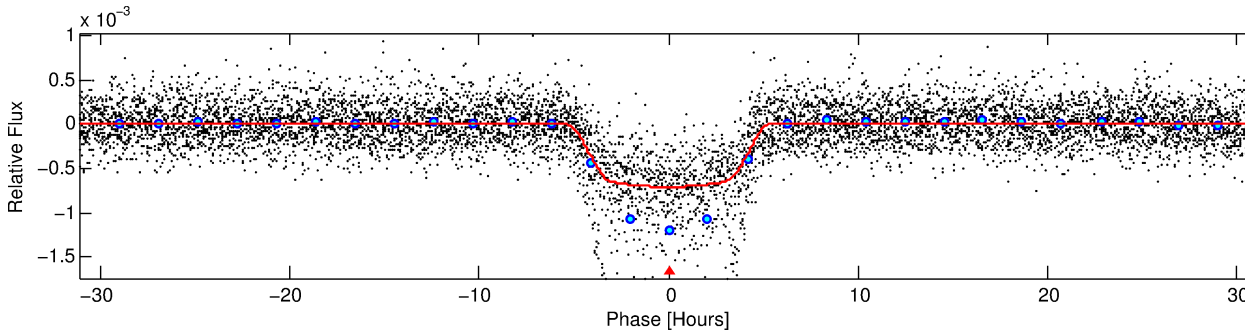
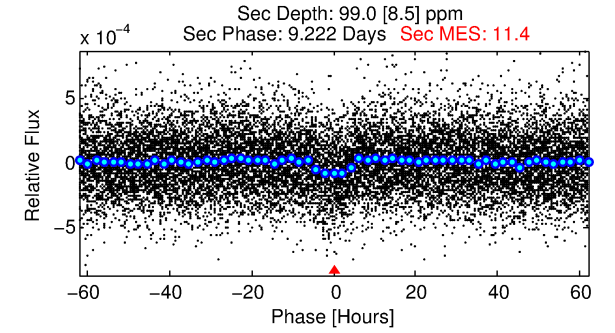
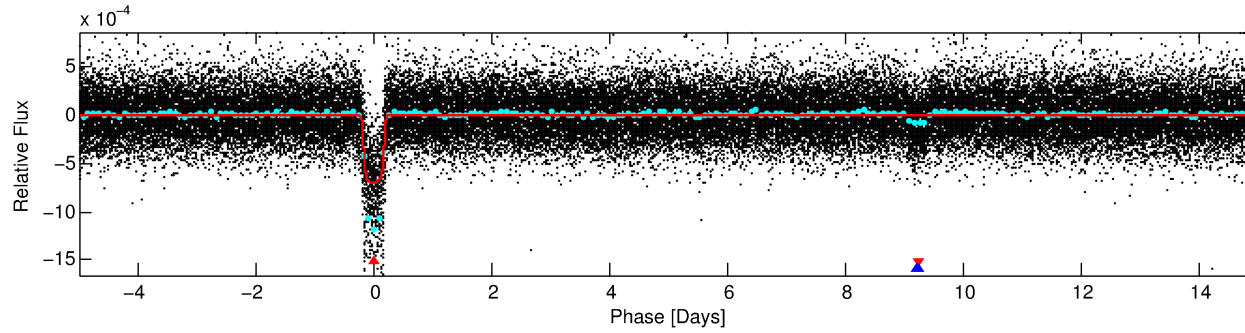
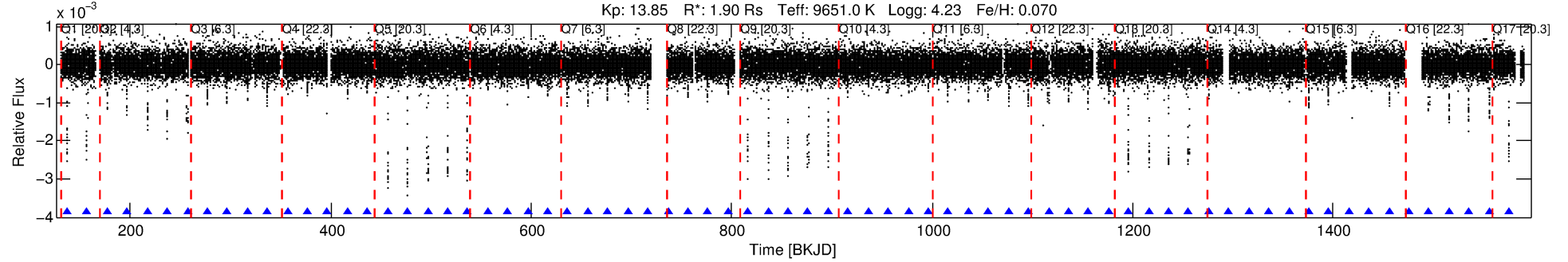
TCE (1)	KIC	Parent (2)	Parent KIC	$P_1:P_2$	Dist ($''$)	Δ Row	Δ Col	m_2	m_1	D_2/D_1	Mechanism	Flag	σ_P	σ_T
005130369-01	5130369	3707.01	5130380	1:1	5.9	0	1	16.30	13.85	63.23	Direct-PRF	0	0.71	0.67

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: 5130369 Candidate: 1 of 2 Period: 19.979 d
KOI: K00140.01 Corr: 0.995

Kp: 13.85 R*: 1.90 Rs Teff: 9651.0 K Logg: 4.23 Fe/H: 0.070



DV Fit Results:

Period = 19.97866 [0.00007] d
Epoch = 137.1719 [0.0026] BKJD
Rp/R* = 0.0287 [0.0003]
a/R* = 6.39 [0.25]
b = 0.93 [0.01]
Seff = 789.77 [391.95]
Teq = 1352 [168] K
Rp = 5.93 [2.52] Re
a = 0.1880 [0.0629] AU
Ag = 54.67 [25.44] [2.11σ]
Teffp = 5683 [302] K [12.55σ]

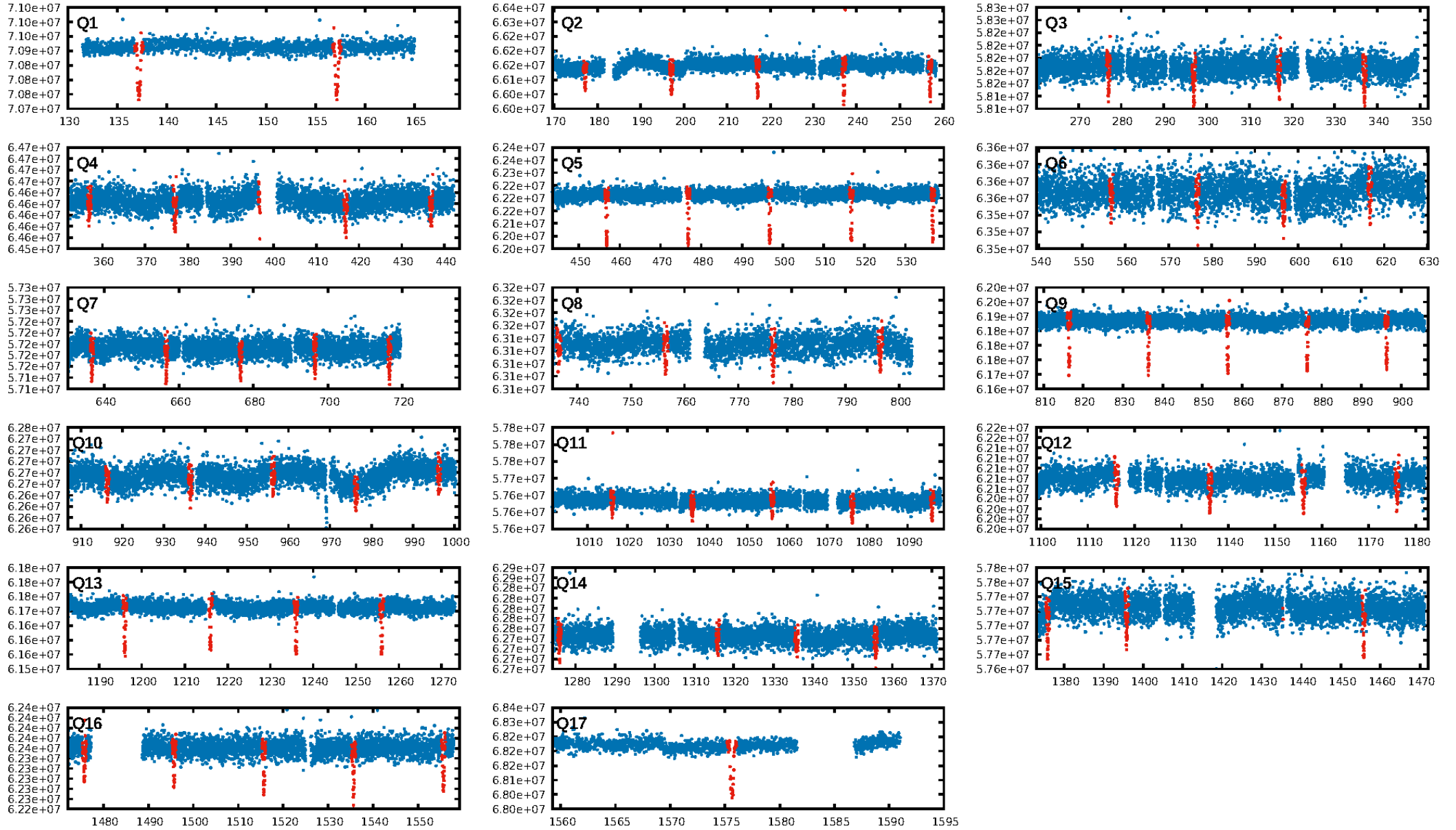
DV Diagnostic Results:

ShortPeriod-sig: 0.1% [0.00σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 1.00 [66/66]
GhostDiagnostic-chr: -0.1397
Centroid-sig: 0.0%
Centroid-so: 19.755 arcsec [146.13σ]
OotOffset-rm: 5.801 arcsec [79.37σ]
KicOffset-rm: 5.860 arcsec [82.49σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 1.00 [17/17]
DiffImageOverlap-fno: 1.00 [17/17]

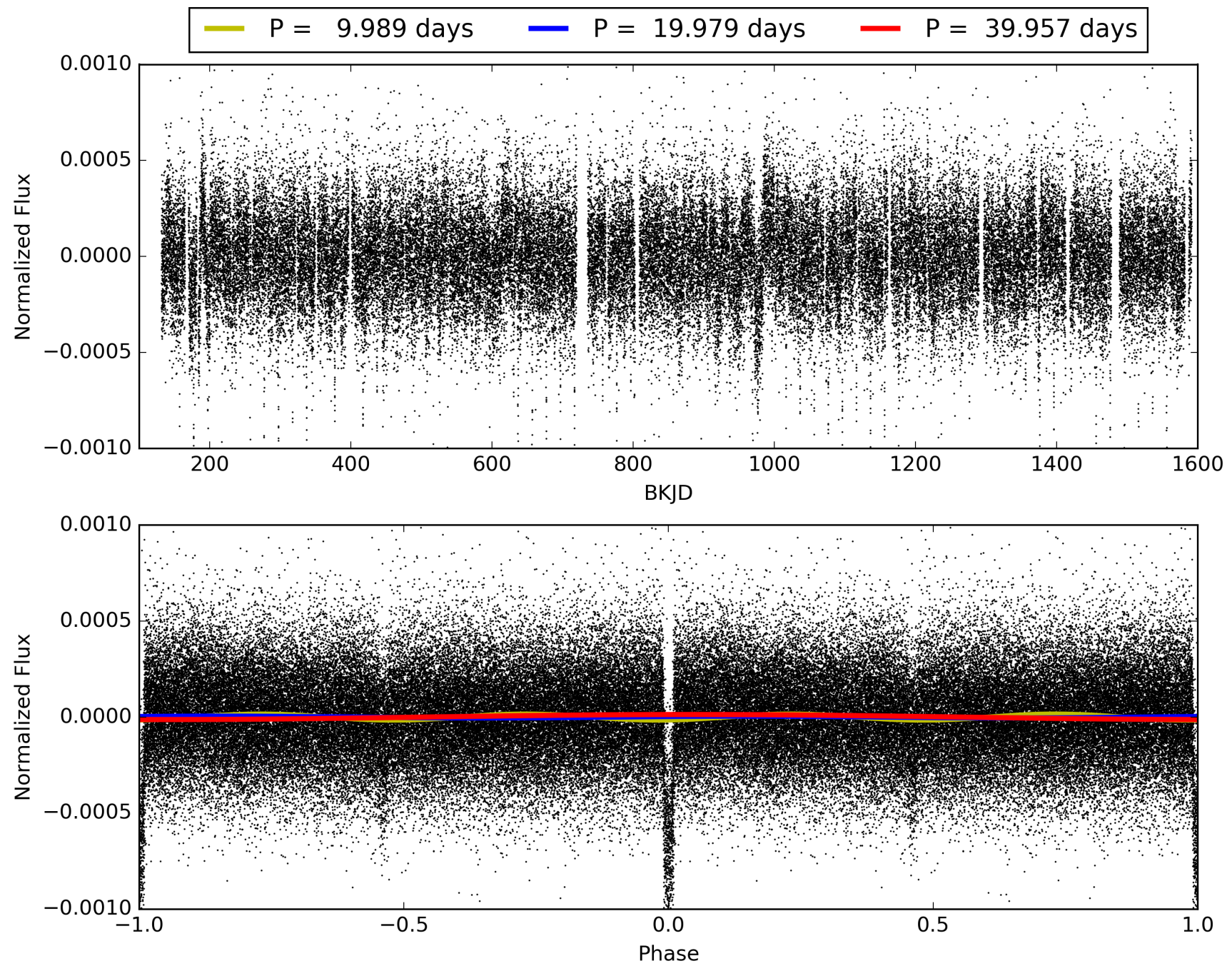
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 15:52:54 Z

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

TCE 005130369-01, PDC Light Curves

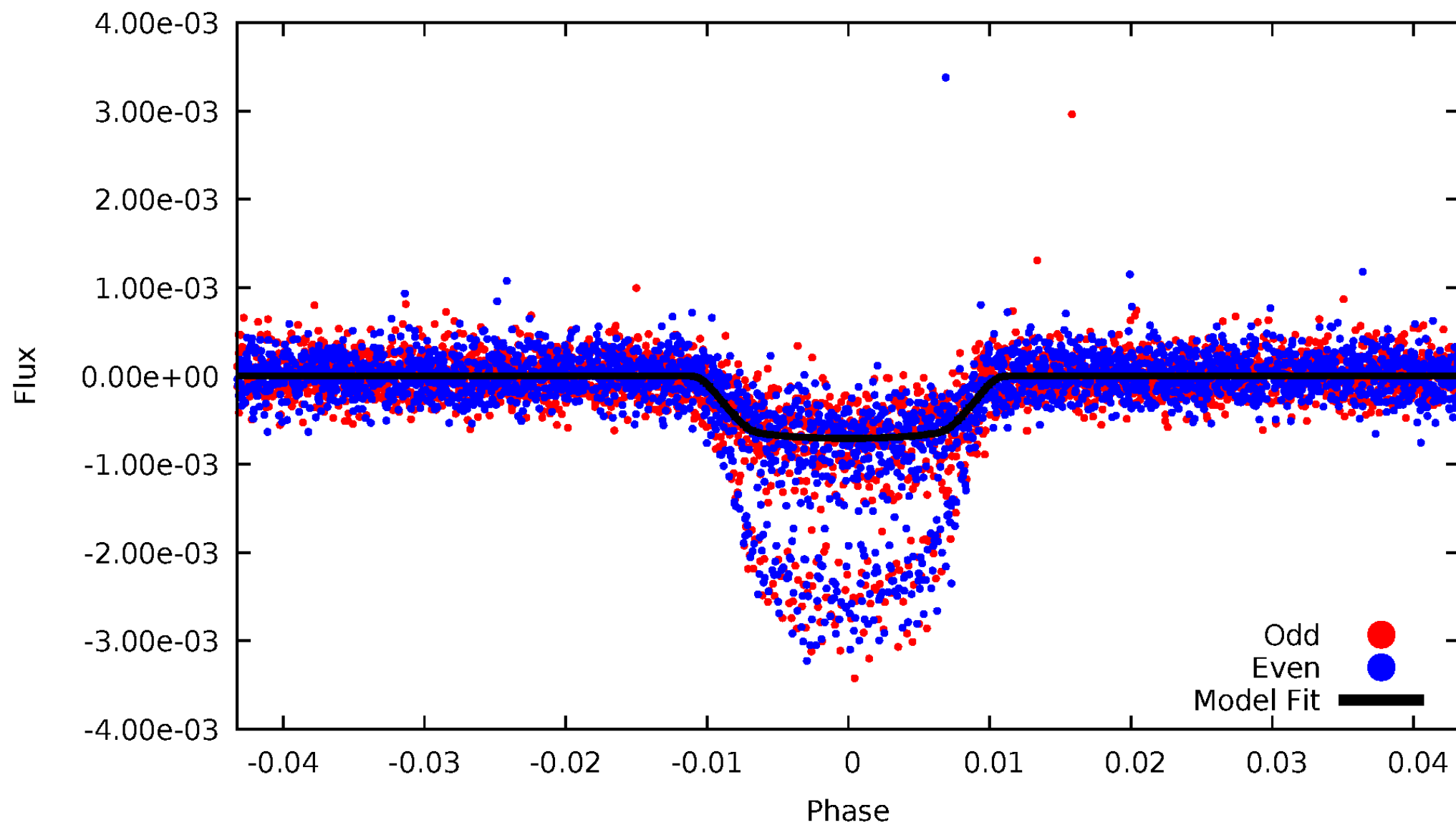


TCE 005130369-01



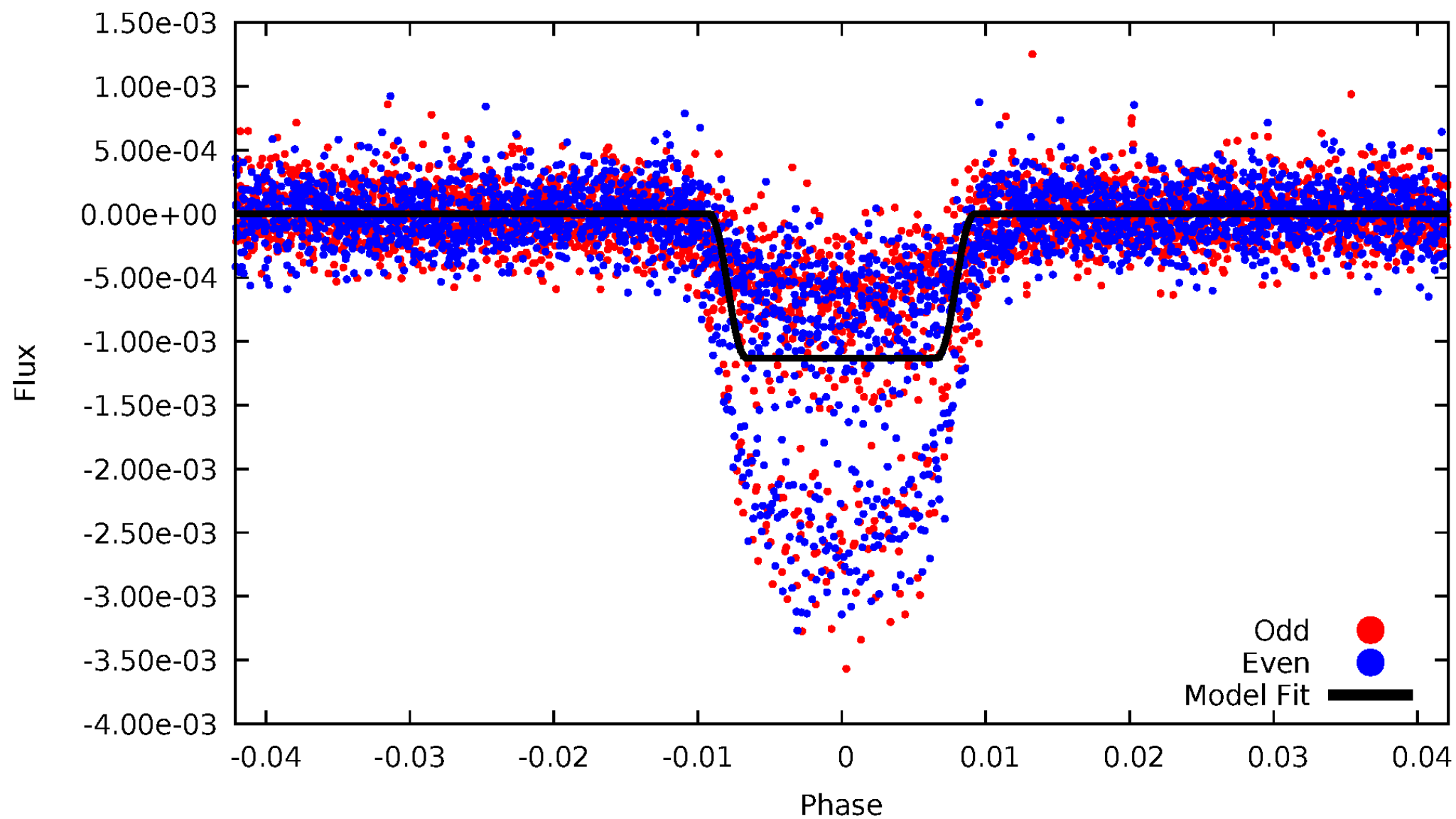
DV Odd/Even

TCE 005130369-01



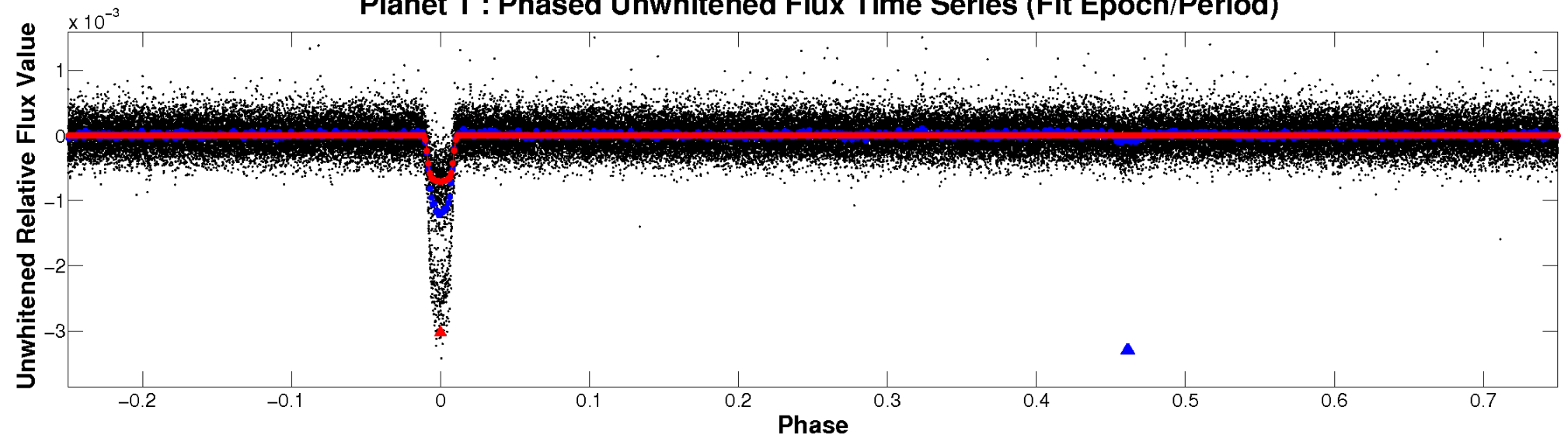
ALT Odd/Even

TCE 005130369-01

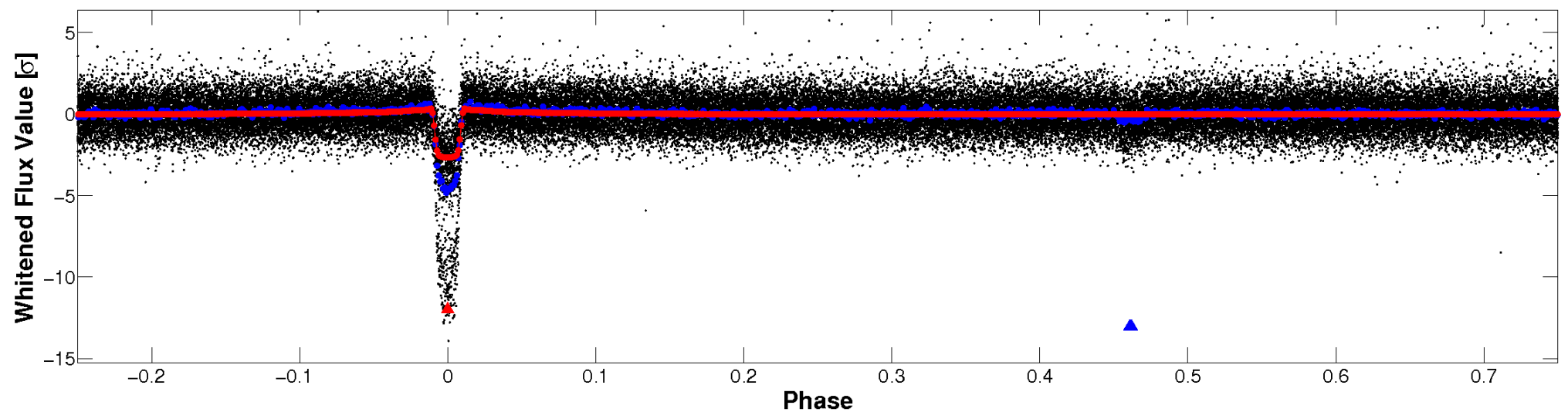


Non-Whitened Vs. Whitened Light Curve

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

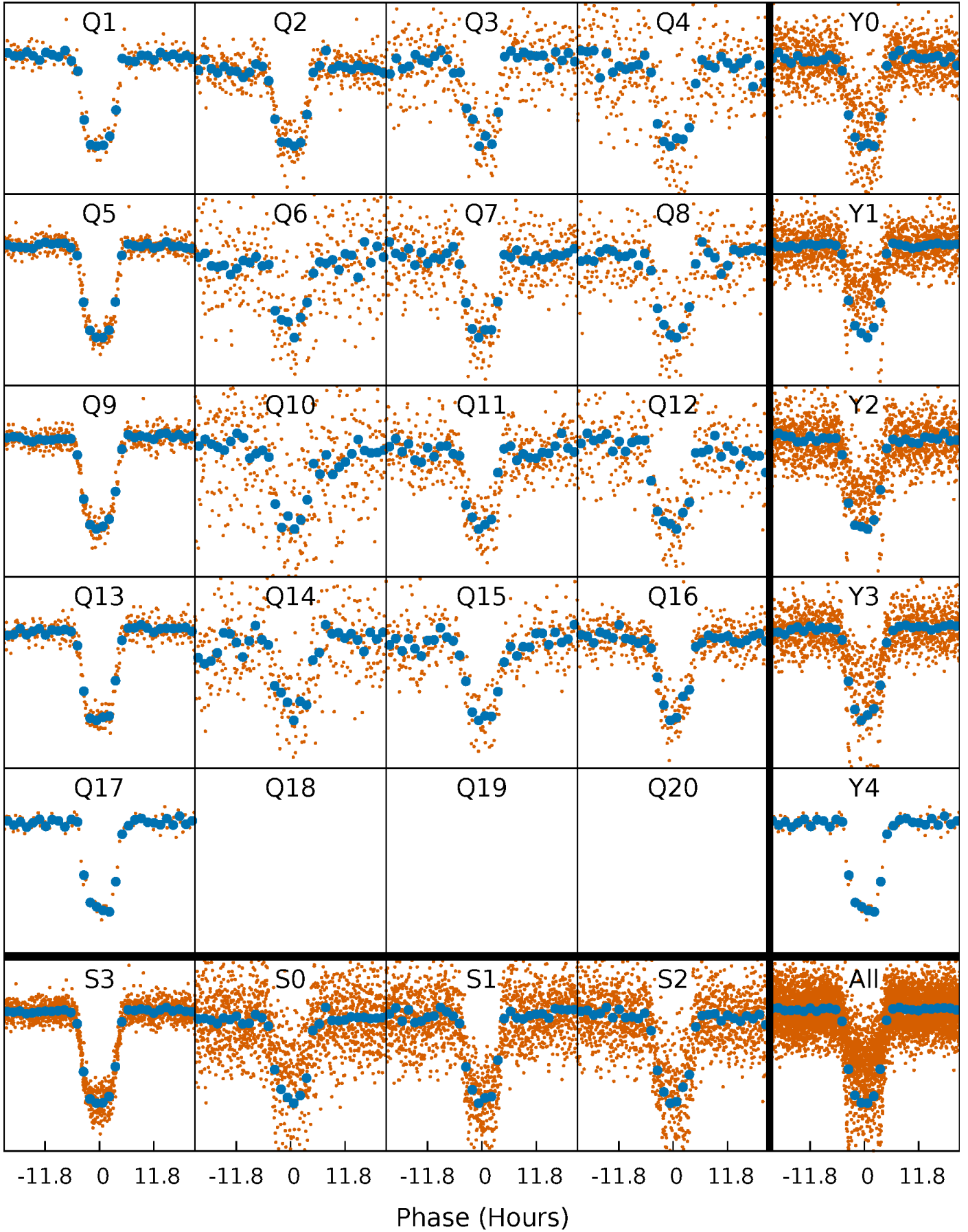


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



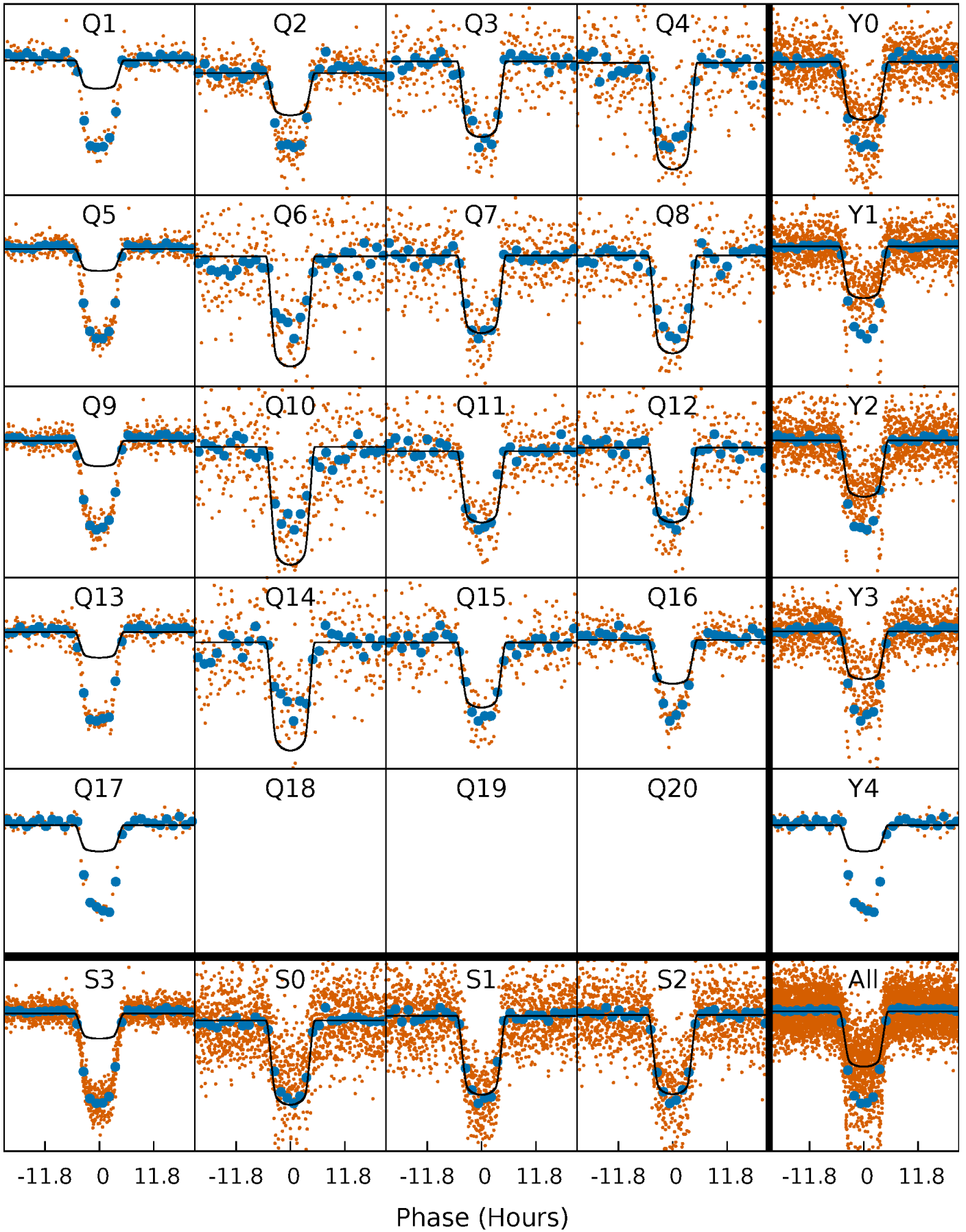
PDC Quarter-Phased Transit Curves

TCE 005130369-01 P= 19.978656 Days $T_0=137.171949$ (BKJD)



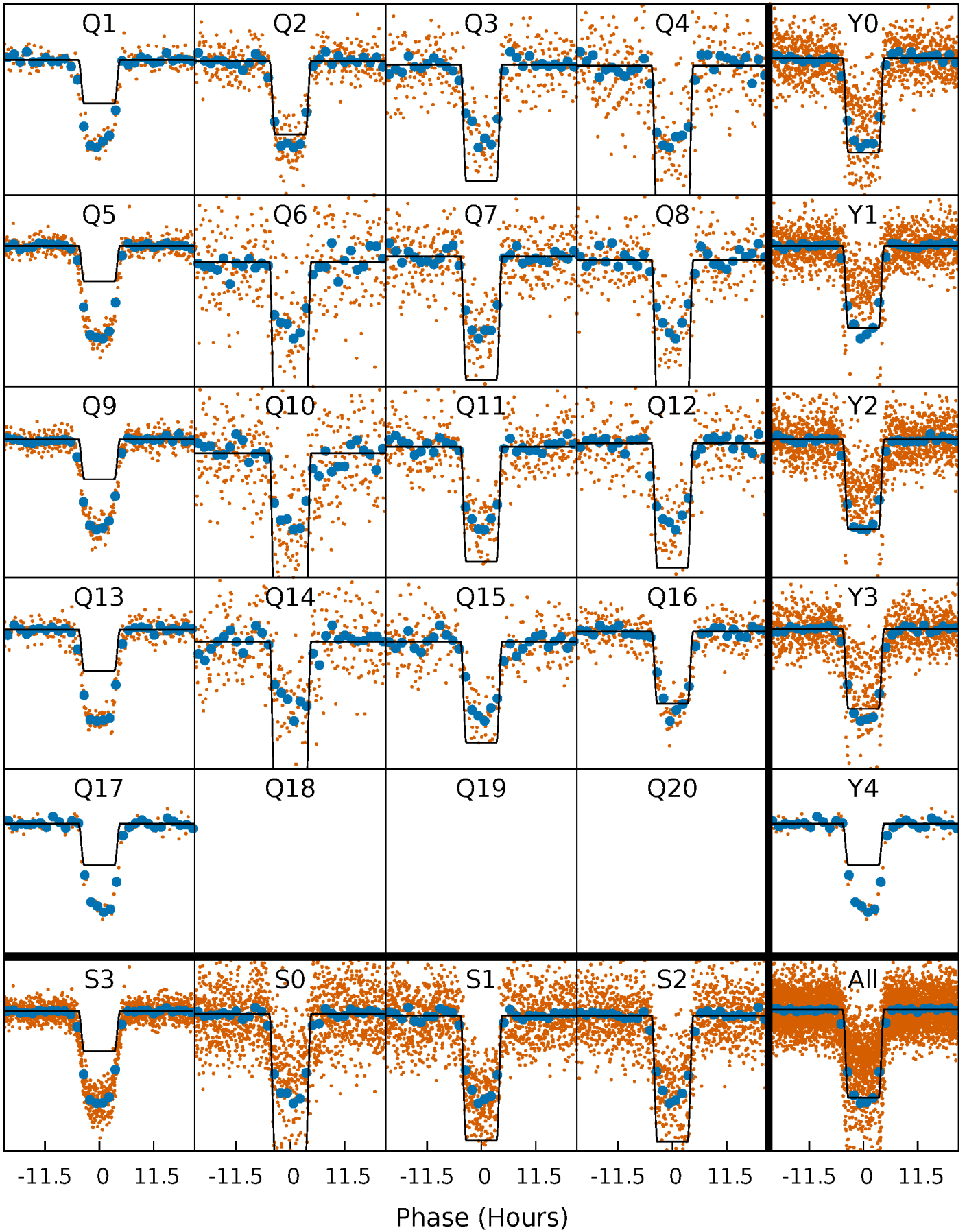
DV Quarter-Phased Transit Curves

TCE 005130369-01 P= 19.978656 Days $T_0=137.171949$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

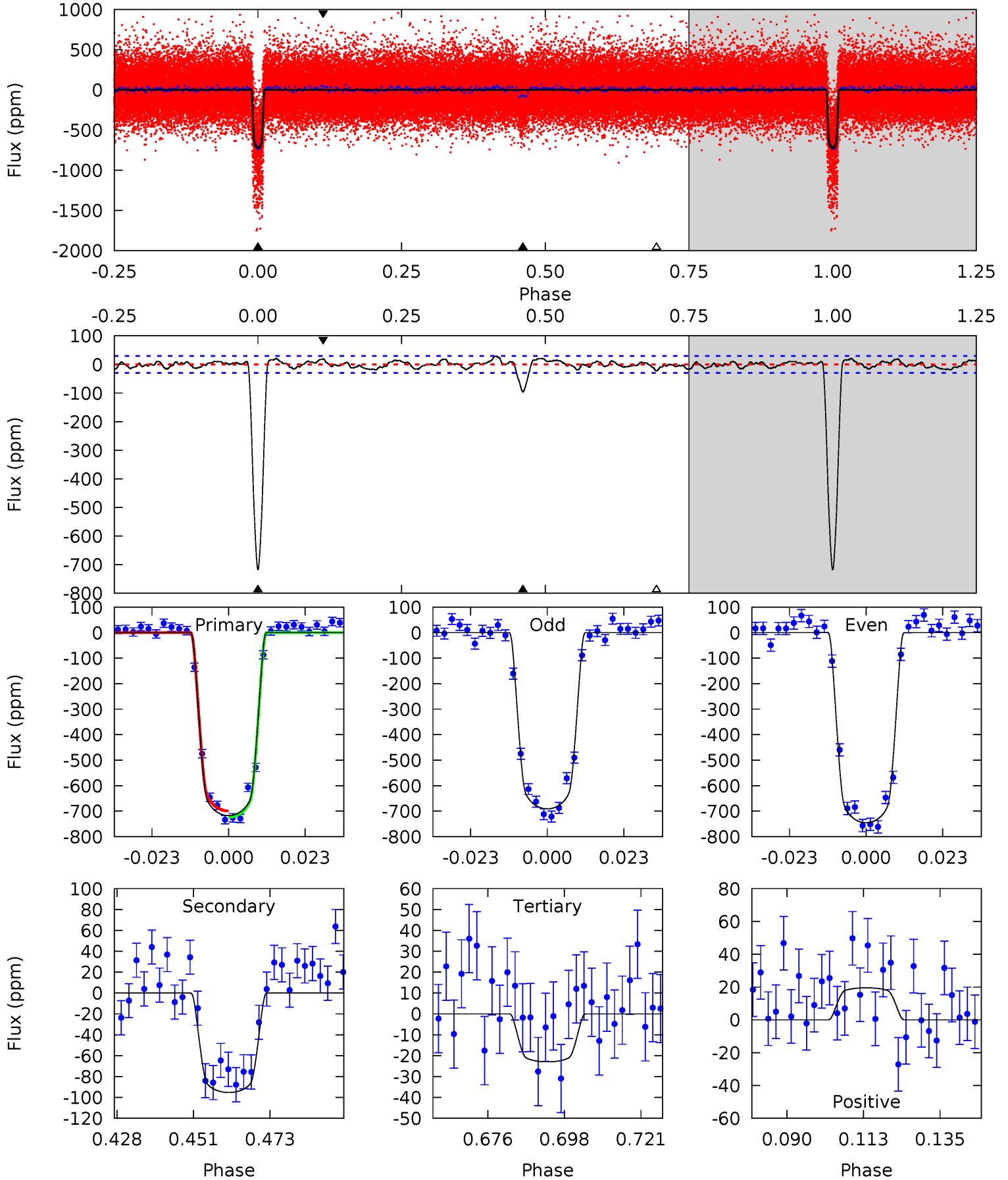
TCE 005130369-01 P= 19.978440 Days $T_0=137.178244$ (BKJD)



DV Model-Shift Uniqueness Test

005130369-01, P = 19.978656 Days, E = 117.193293 Days

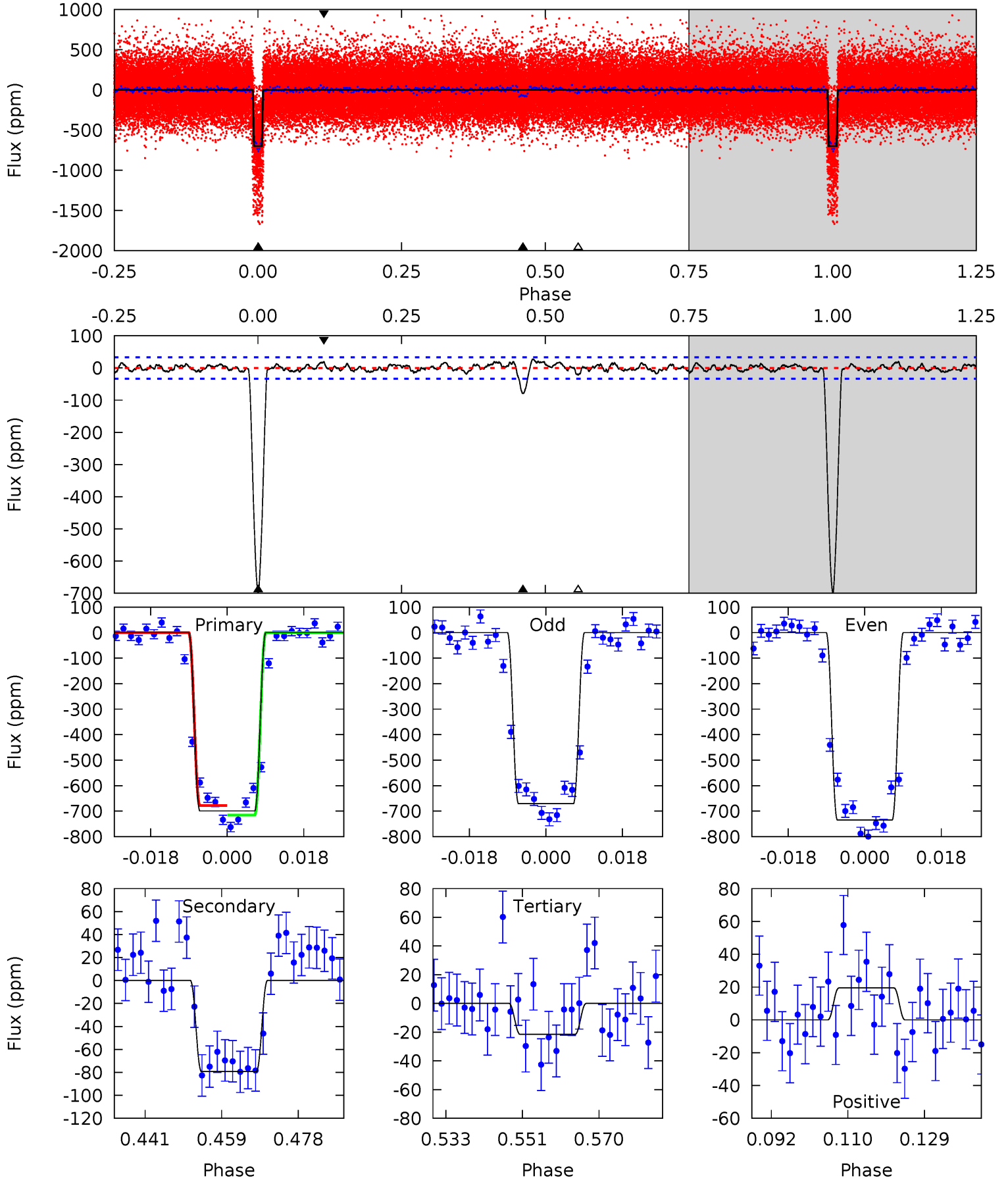
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
117.9	15.7	3.78	3.21	4.87	2.28	1.60	114.1	114.7	11.9	12.4	4.49	1.50	0.04	1.99



Alt Model-Shift Uniqueness Test

005130369-01, P = 19.978440 Days, E = 117.199804 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
102.3	11.6	3.15	2.85	4.91	2.36	1.23	99.1	99.4	8.46	8.76	4.64	1.52	0.04	0



Stellar Parameters For KIC 005130369

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	9651^{+272}_{-467}	$4.229^{+0.126}_{-0.234}$	$0.070^{+0.150}_{-0.600}$	$1.895^{+0.803}_{-0.432}$	$2.219^{+0.396}_{-0.544}$	$0.460^{+0.340}_{-0.257}$
	+3%/-5%	+3%/-6%	+214%/-857%	+42%/-23%	+18%/-25%	+74%/-56%
Source	KIC0	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 005130369-01 / KOI 0140.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-95 ± 6	$6.08^{+1.26}_{-0.80}$	1914^{+164}_{-135}	5263^{+137}_{-161}	48^{+16}_{-13}
Alt.	-79 ± 7	$7.00^{+1.48}_{-0.86}$	1903^{+187}_{-133}	4726^{+134}_{-141}	30^{+9}_{-9}

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

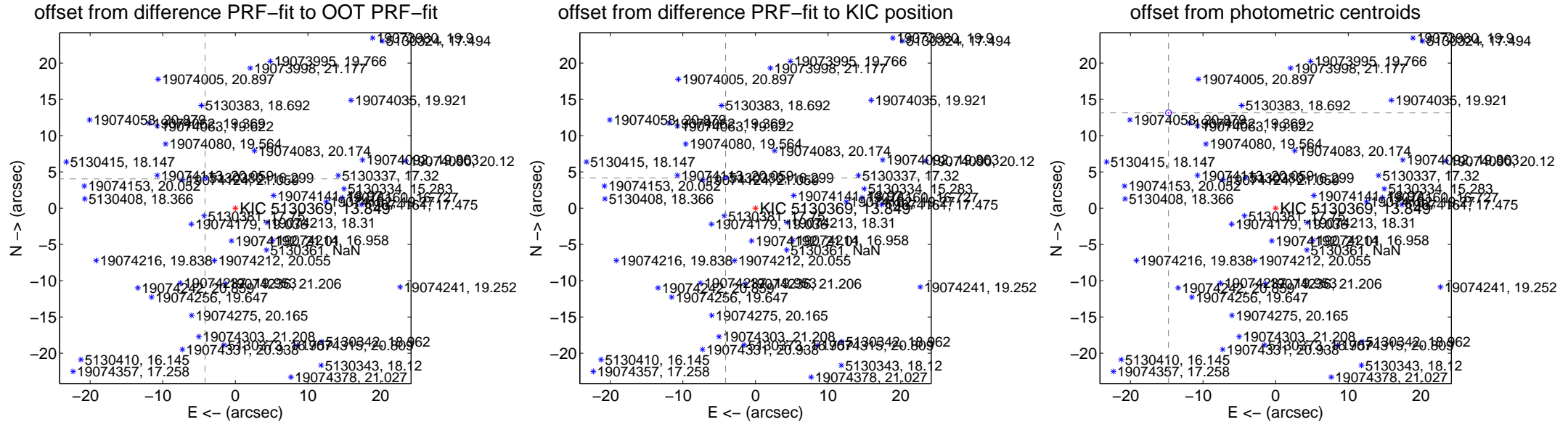
DV Centroid Data

Supplemental centroid analysis for 005130369-01. Kepler magnitude: 13.85. Transit SNR 70.66

There are 17 quarters with good PRF difference image offsets

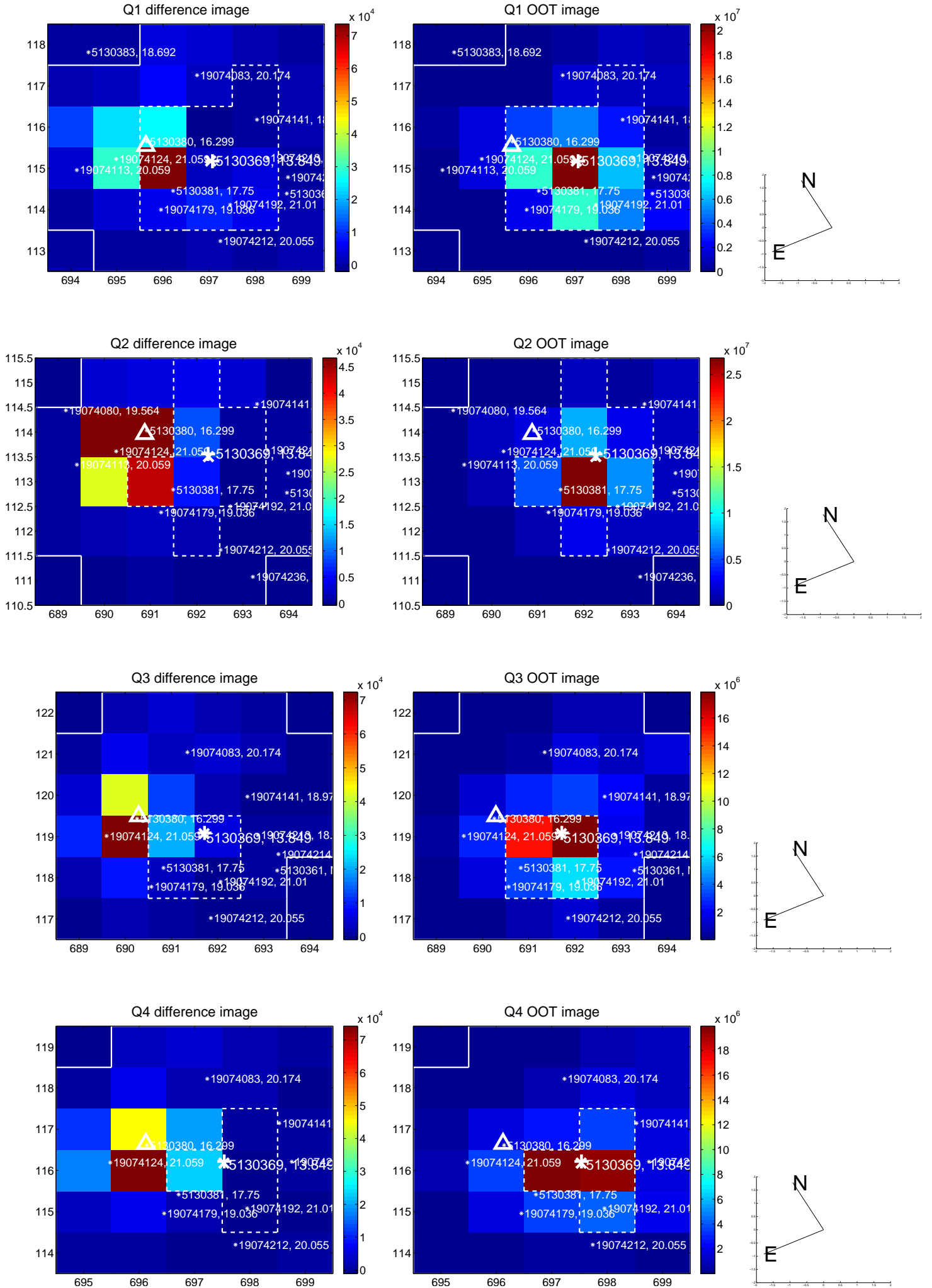
The direct PRF centroid is offset from the target star catalog position by about 0.26 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	5.801 ± 0.073	79.37	4.171 ± 0.073	4.031 ± 0.070
PRF-fit source offset from KIC position	5.860 ± 0.071	82.49	4.111 ± 0.070	4.175 ± 0.072
photometric centroid source offset	19.75 ± 0.14	146.13	14.75 ± 0.14	13.14 ± 0.14

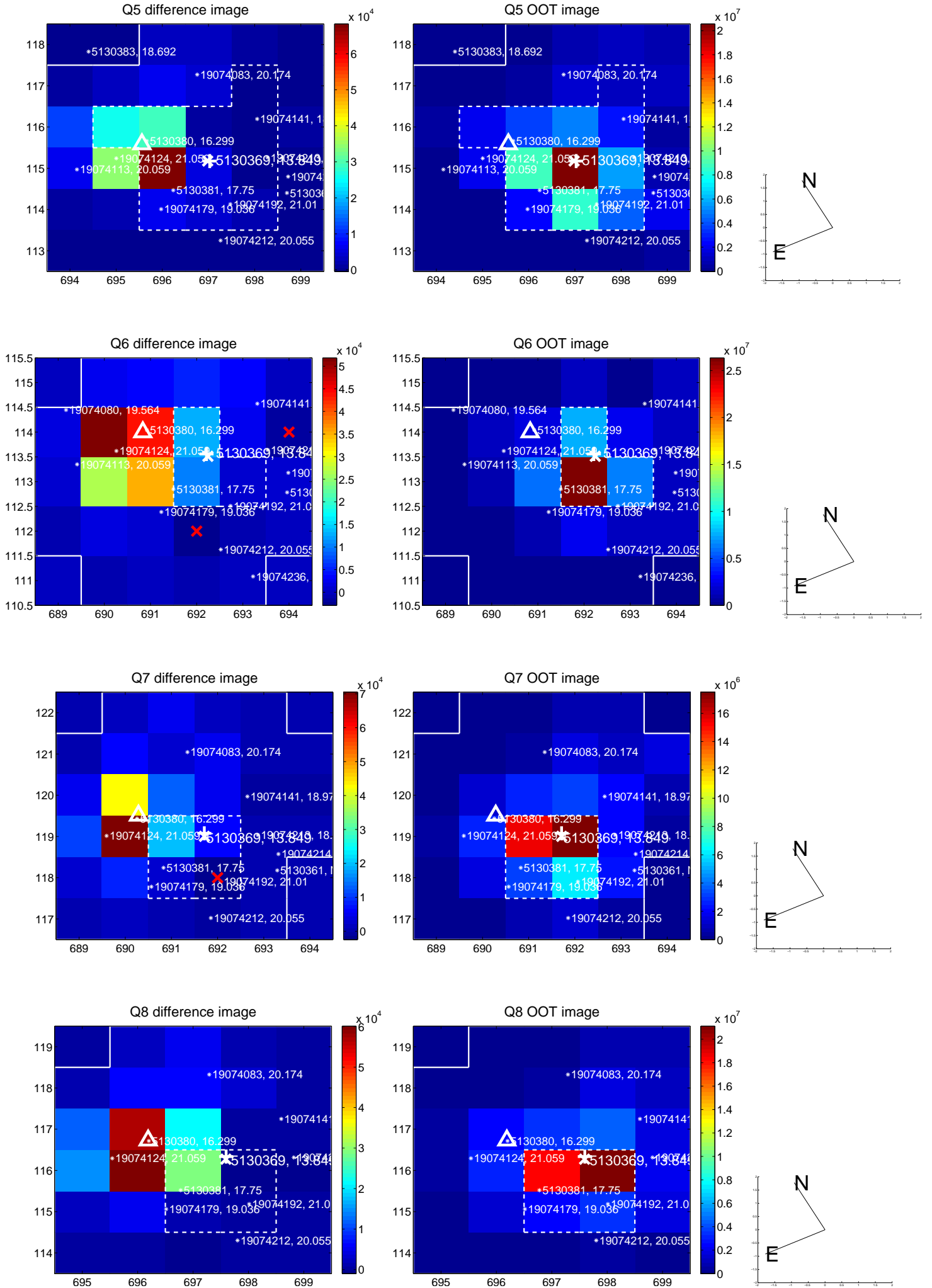


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

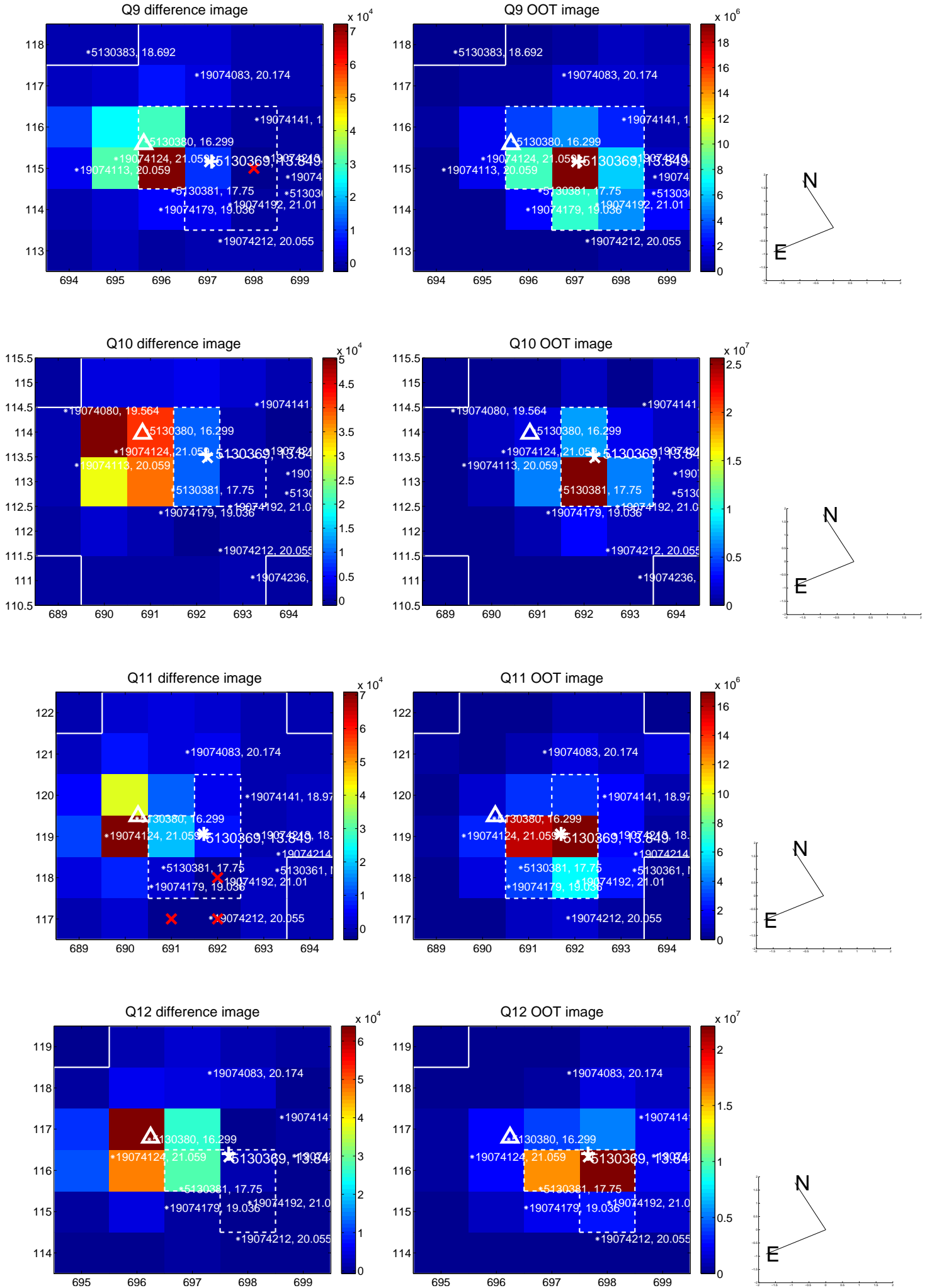
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



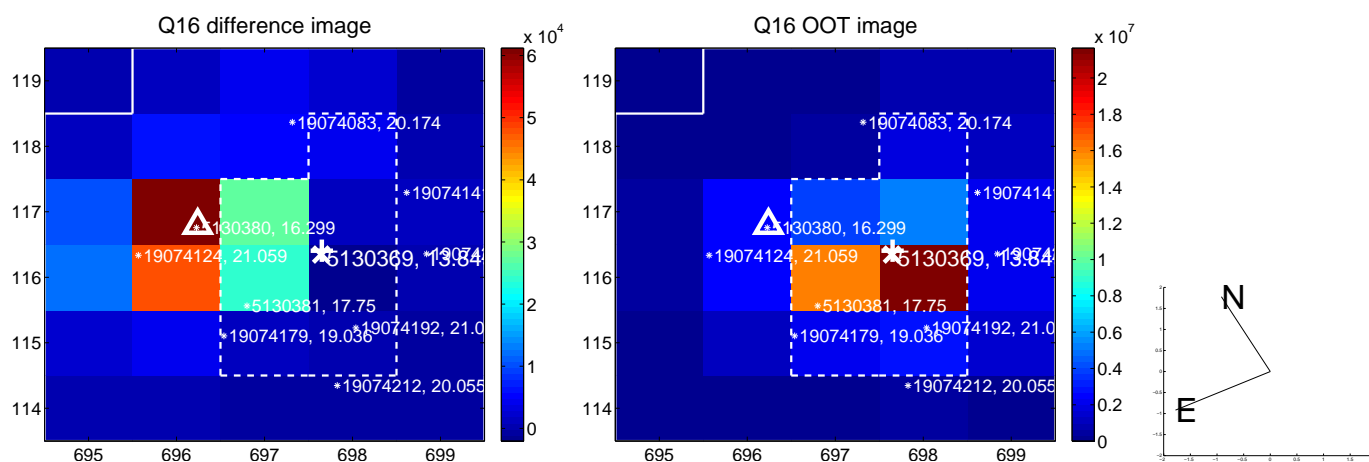
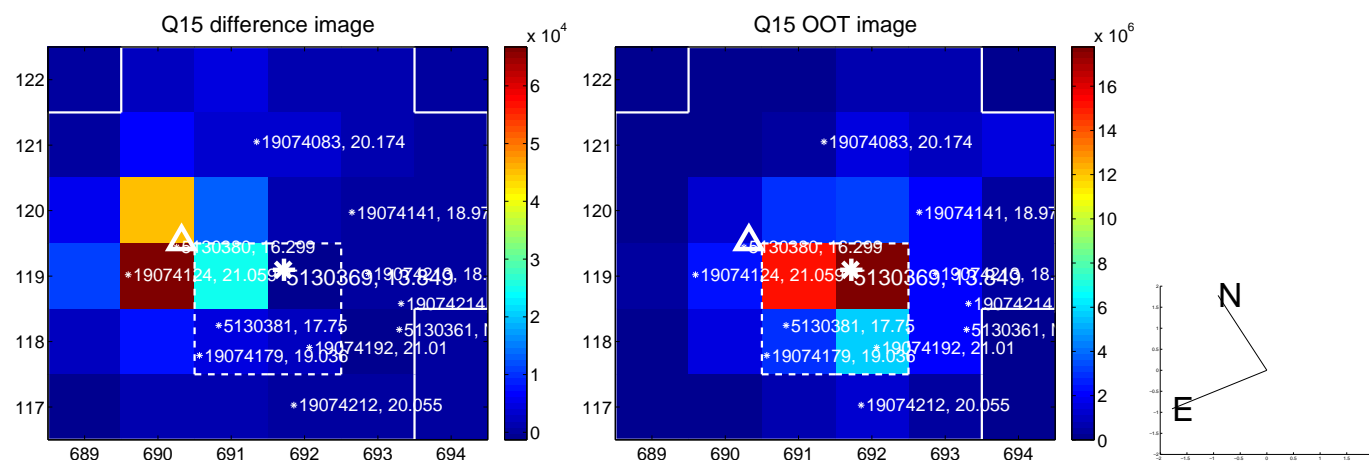
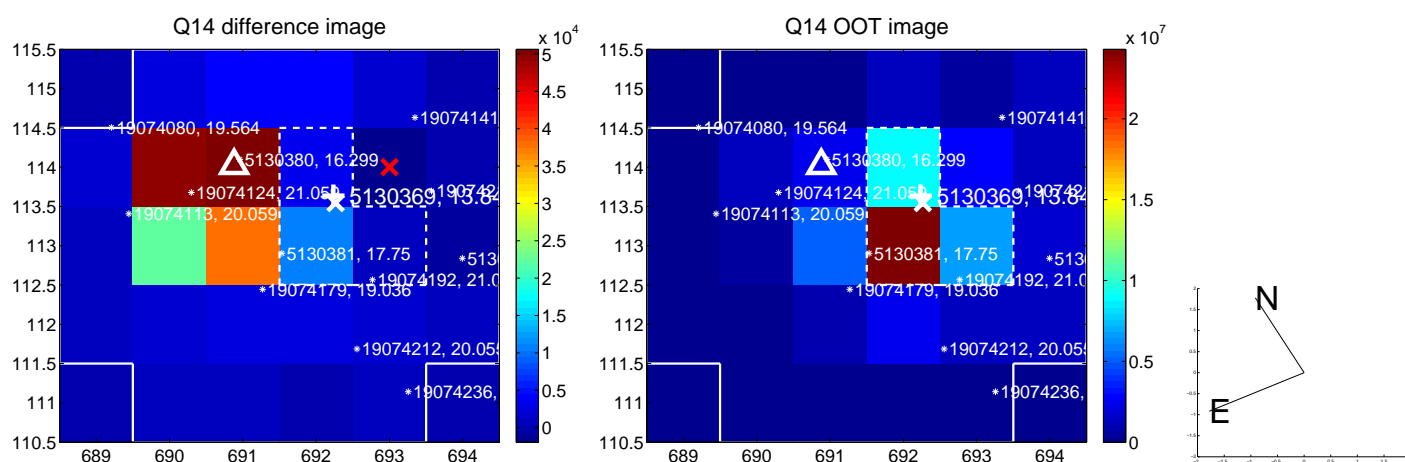
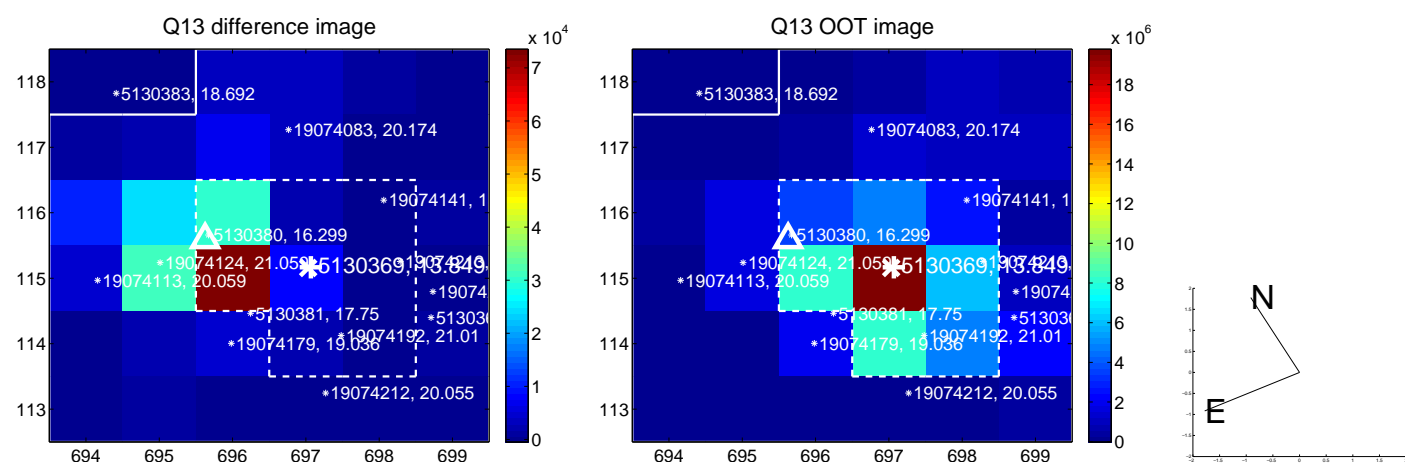
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



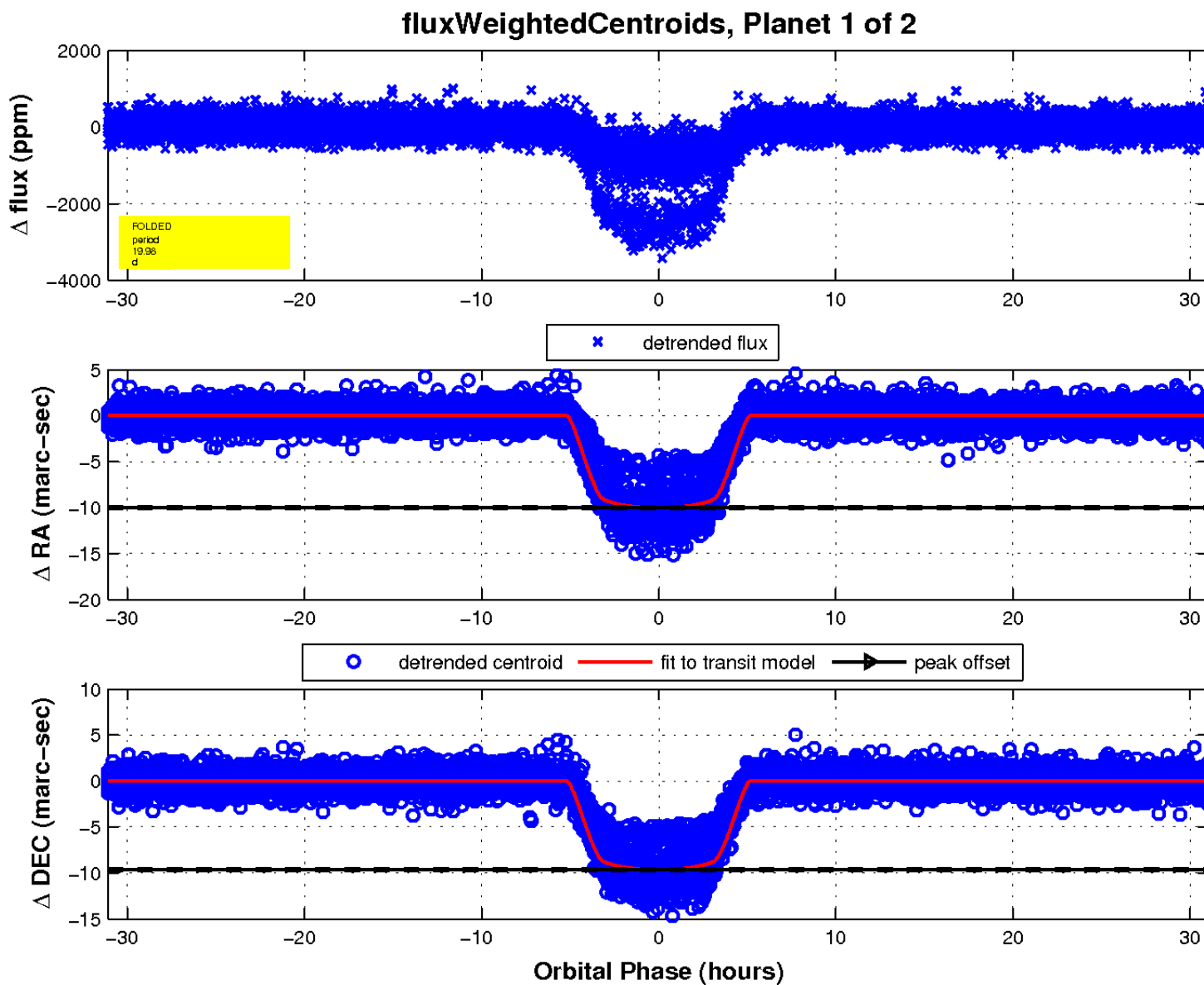
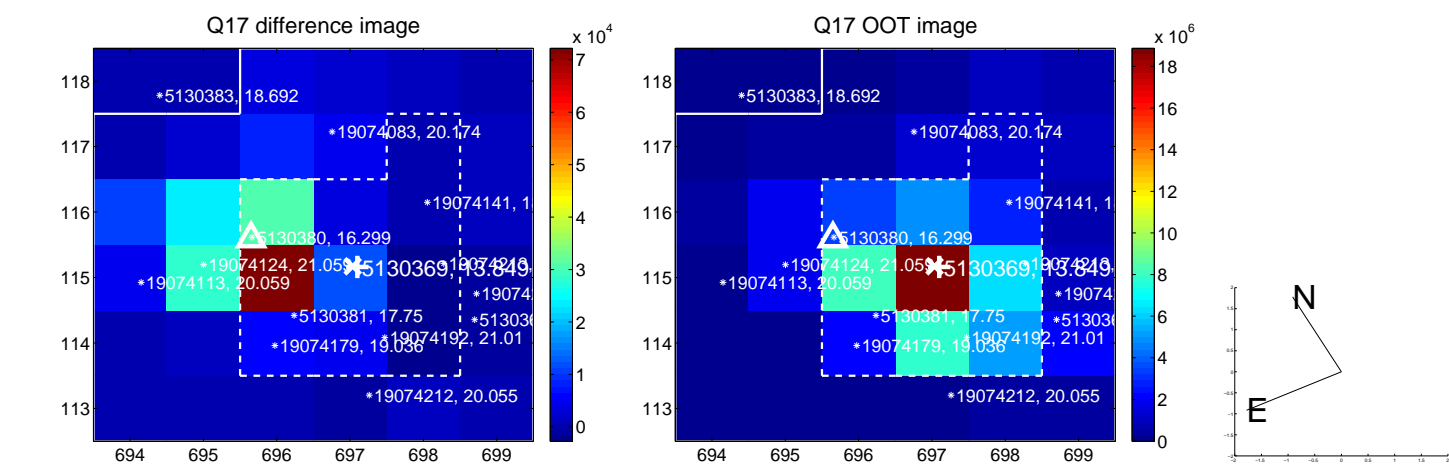
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

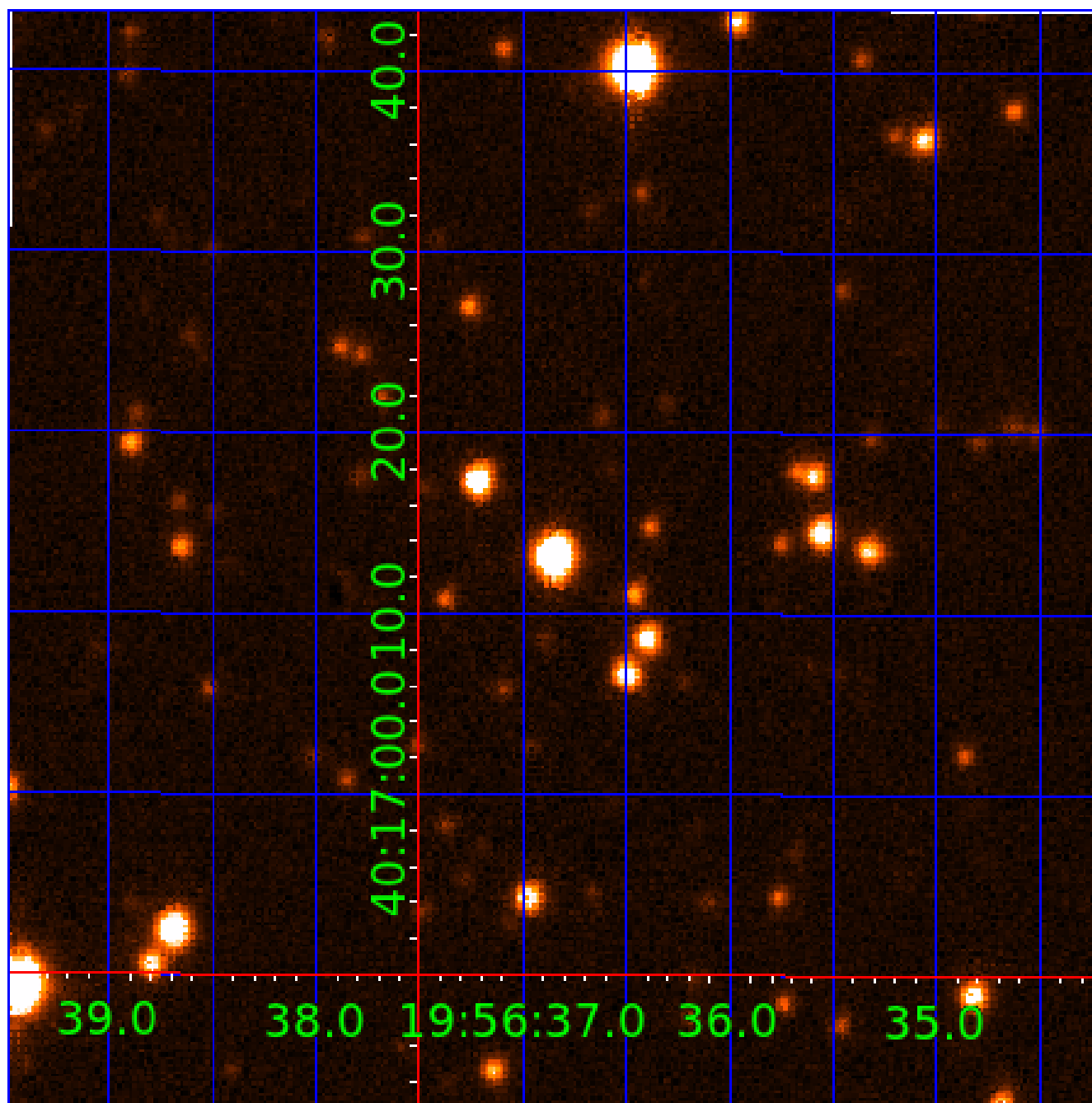


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 005130369

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})
005130369-01	OBS	0140.01	19.978656	137.171949	705.5	10.367	128.6	70.7	1.90	9651	5.93	789.77
005130369-02	OBS	No	19.978247	146.403854	92.2	10.246	11.9	11.8	1.90	9651	2.08	789.79

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005130369-01	OBS	FP	0.00	0	1	1	1	MOD_SEC_DV—MOD_SEC_ALT—HAS_SEC_TCE—SEASONAL_DEPTH_DV—SEASONAL_DEPTH_ALT—CENT_RESOLVED_OFFSET—HALO_GHOST—EPHEM_MATCH
005130369-02	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 005130369-02

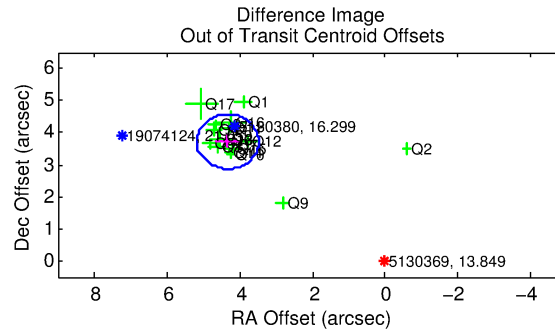
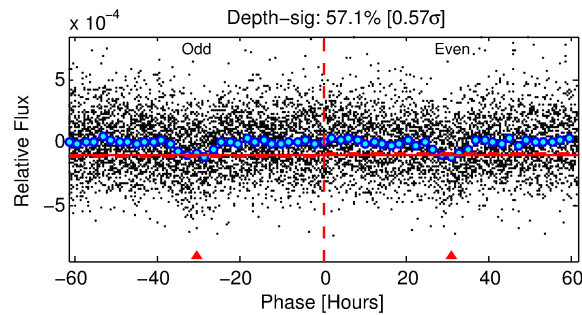
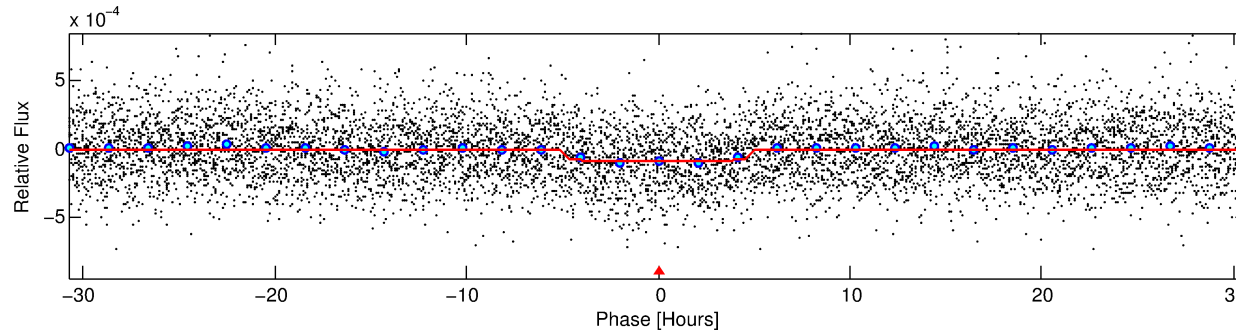
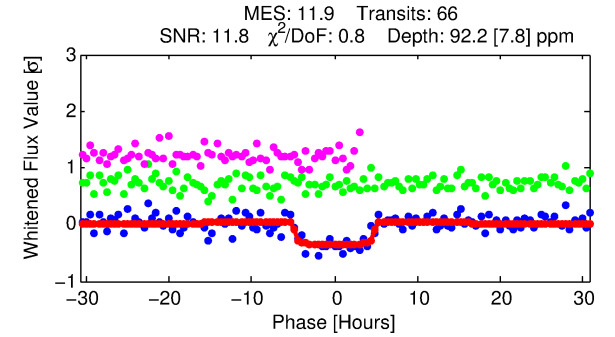
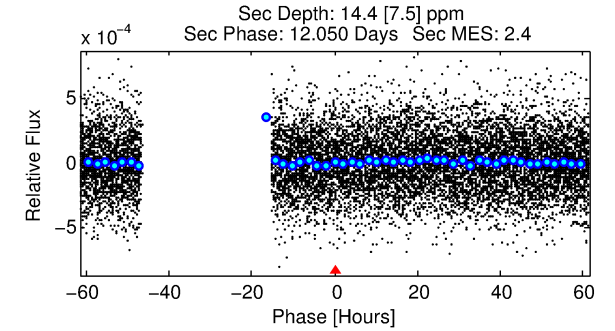
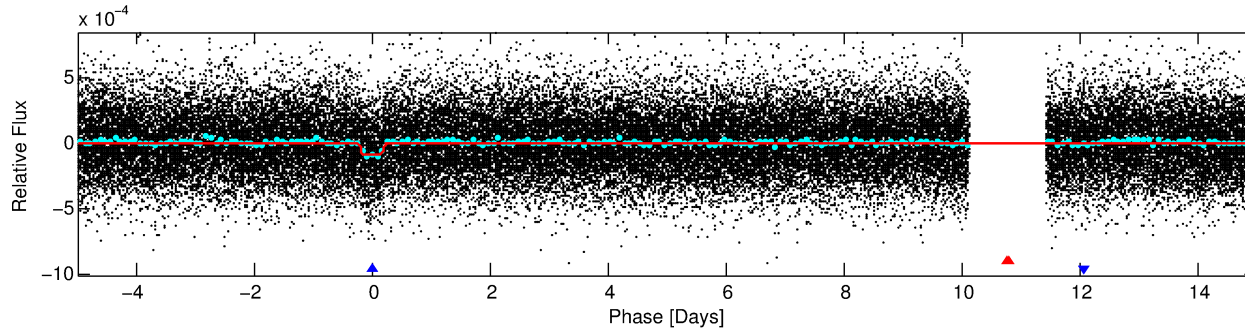
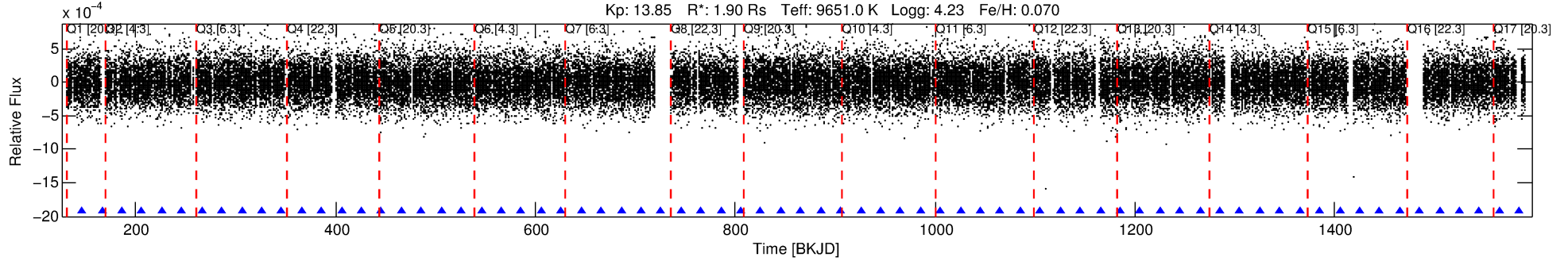
TCE (1)	KIC	Parent (2)	Parent KIC	$P_1:P_2$	Dist ($''$)	Δ Row	Δ Col	m_2	m_1	D_2/D_1	Mechanism	Flag	σ_P	σ_T
005130369-02	5130369	005130380-02	5130380	1:1	5.9	0	1	16.30	13.85	37.25	Direct-PRF	0	0.74	0.88

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: 5130369 Candidate: 2 of 2 Period: 19.978 d
KOI: K00140 Corr: No Ephemeris Match

Kp: 13.85 R*: 1.90 Rs Teff: 9651.0 K Logg: 4.23 Fe/H: 0.070



DV Fit Results:

Period = 19.97825 [0.00030] d
Epoch = 146.4039 [0.0121] BKJD
Rp/R* = 0.0101 [0.0012]
a/R* = 7.02 [5.58]
b = 0.90 [0.18]
Seff = 789.79 [391.96]
Teq = 1352 [168] K
Rp = 2.08 [0.91] Re
a = 0.1880 [0.0629] AU
Ag = 64.53 [47.03] [1.35σ]
Teff = 5924 [888] K [5.06σ]

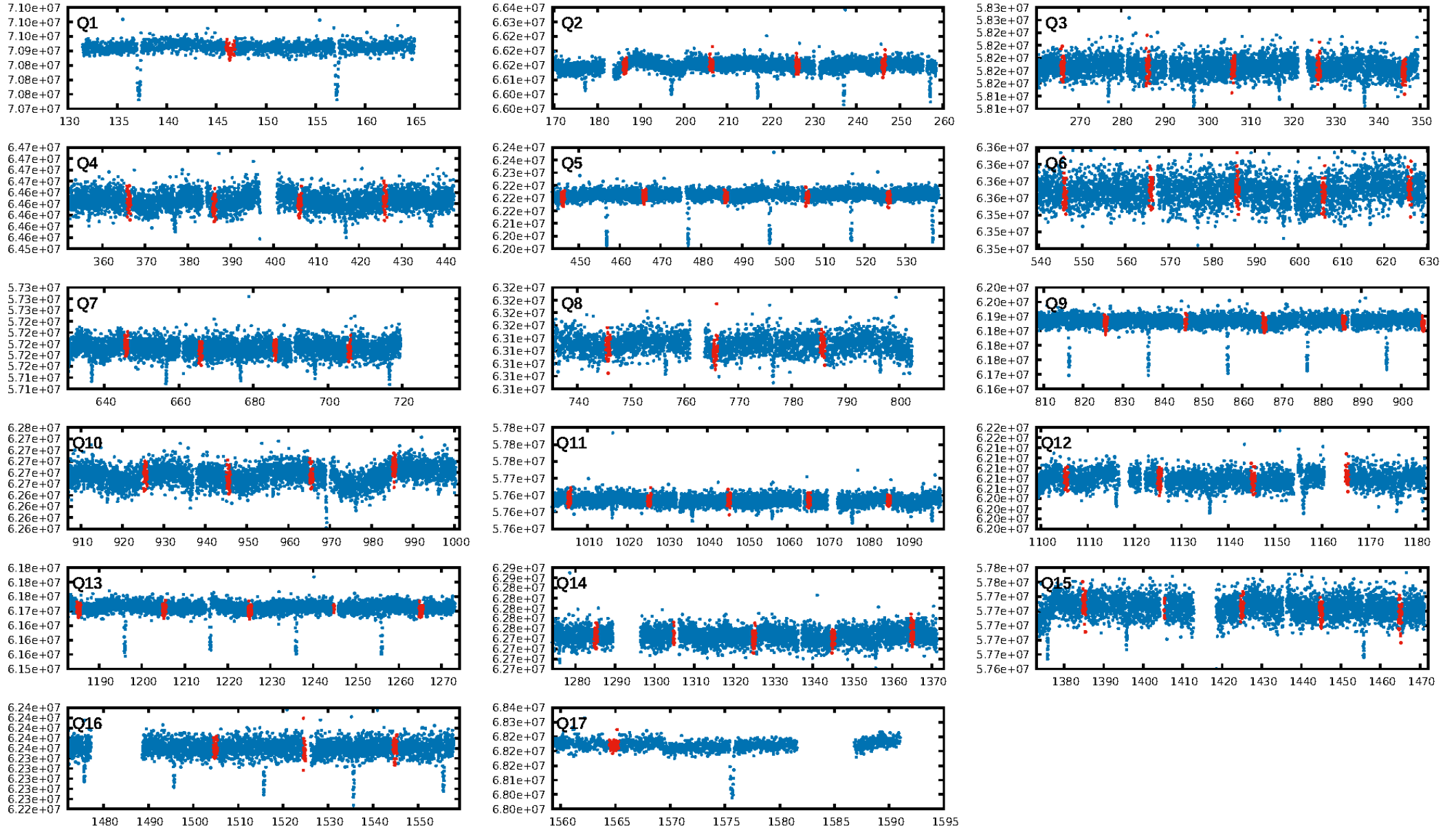
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.1% [0.00σ]
ModelChiSquare2-sig: 1.3%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 2.10e-32
RollingBand-fgt: 1.00 [64/64]
GhostDiagnostic-chr: 0.1461
Centroid-sig: 0.0%
Centroid-so: 10.147 arcsec [10.35σ]
OotOffset-rm: 5.708 arcsec [20.14σ]
KicOffset-rm: 5.785 arcsec [21.43σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 0.88 [15/17]
DiffImageOverlap-fno: 1.00 [17/17]

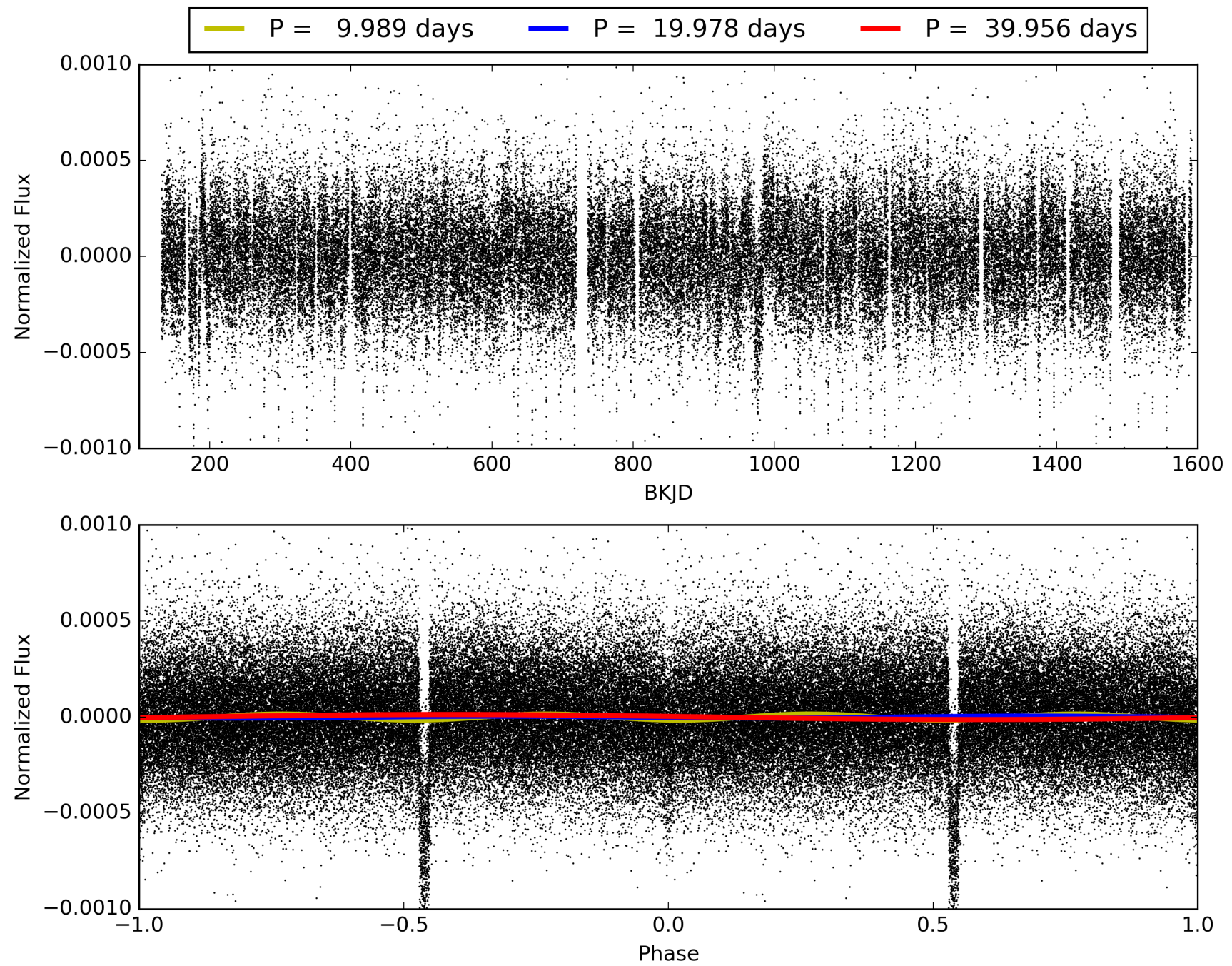
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 005130369-02, PDC Light Curves

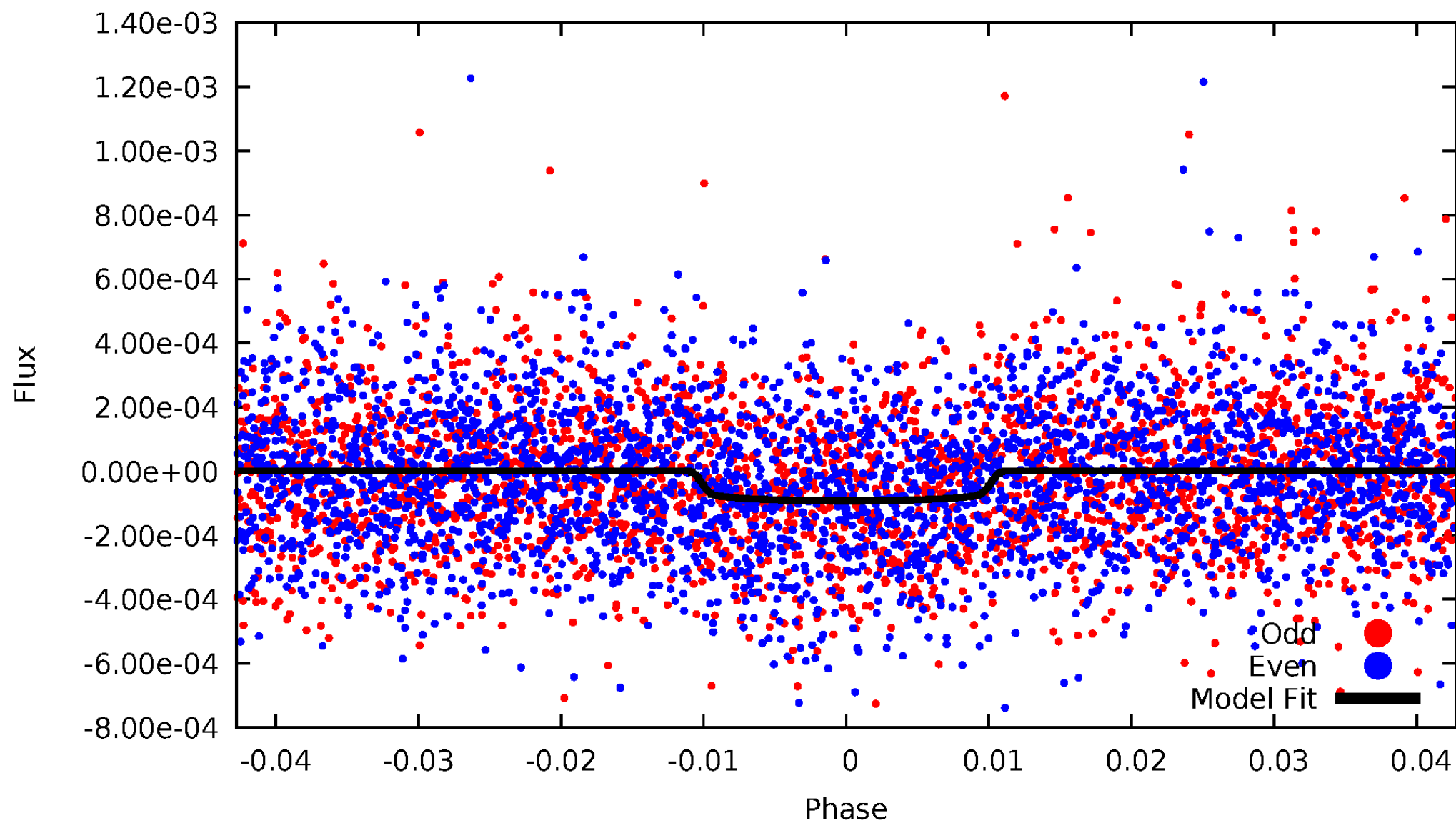


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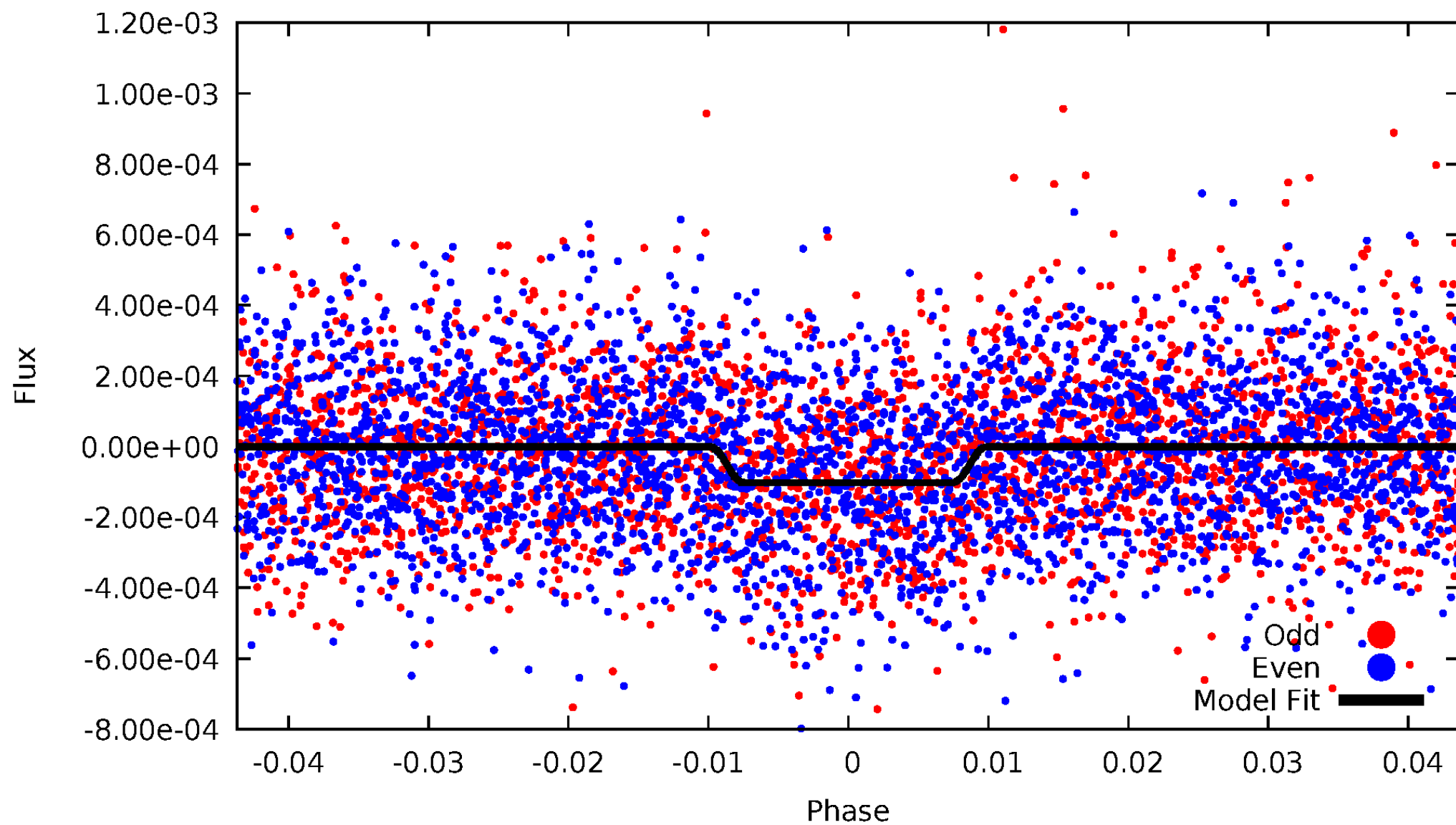
DV Odd/Even

TCE 005130369-02



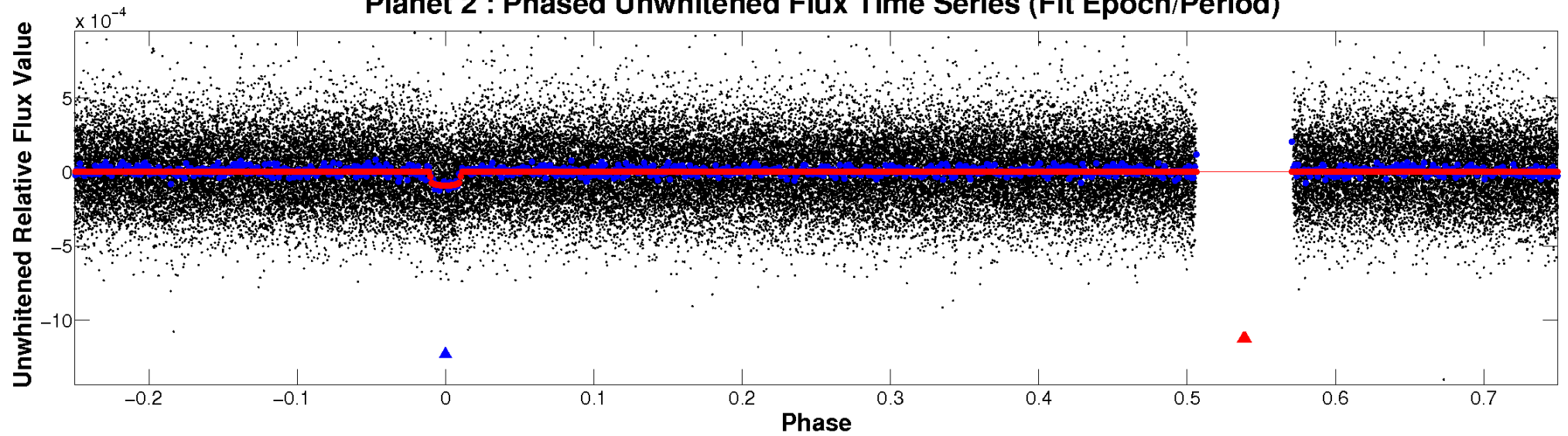
ALT Odd/Even

TCE 005130369-02

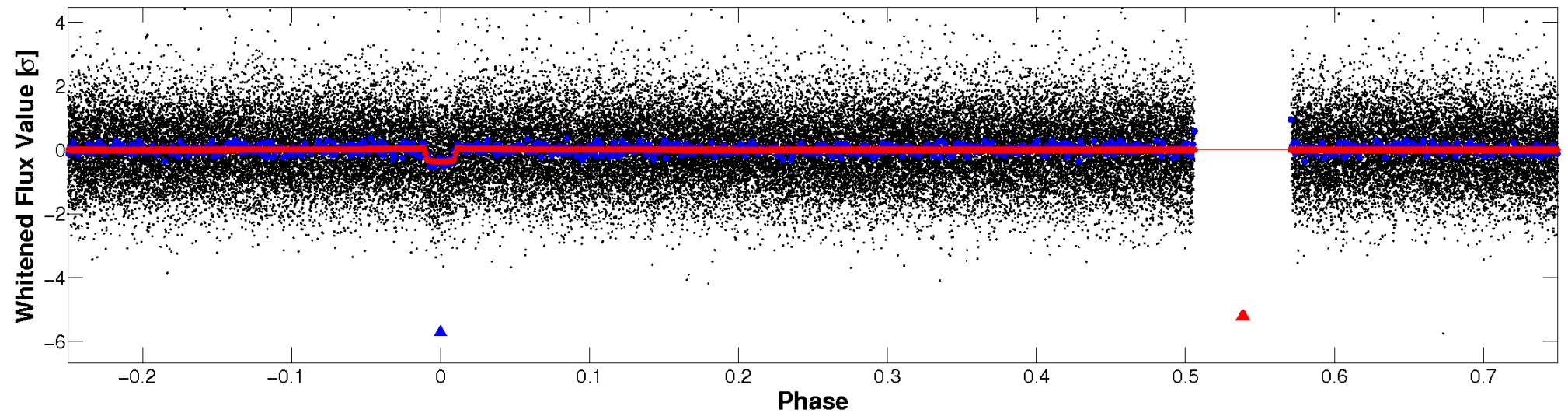


Non-Whitened Vs. Whitened Light Curve

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

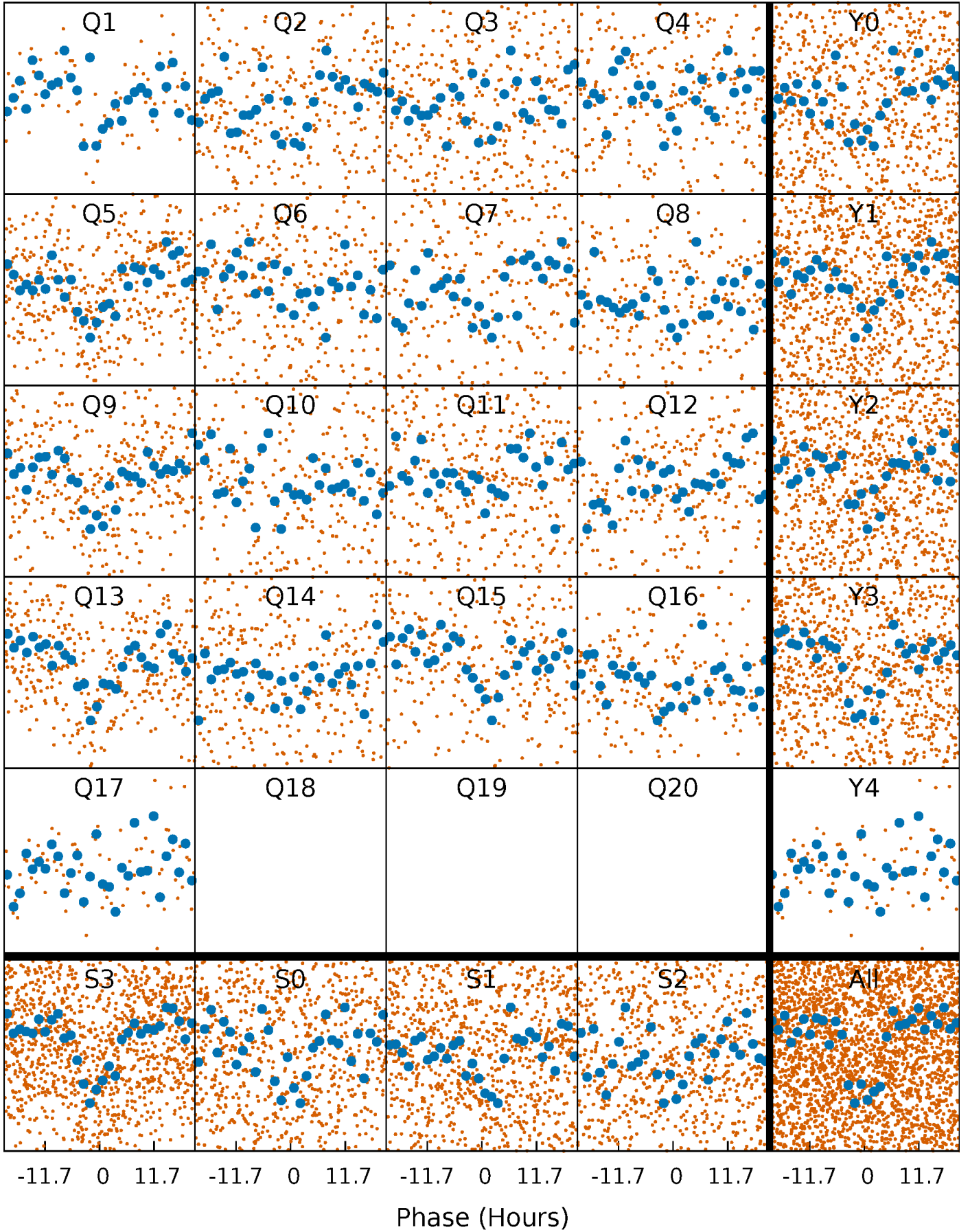


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



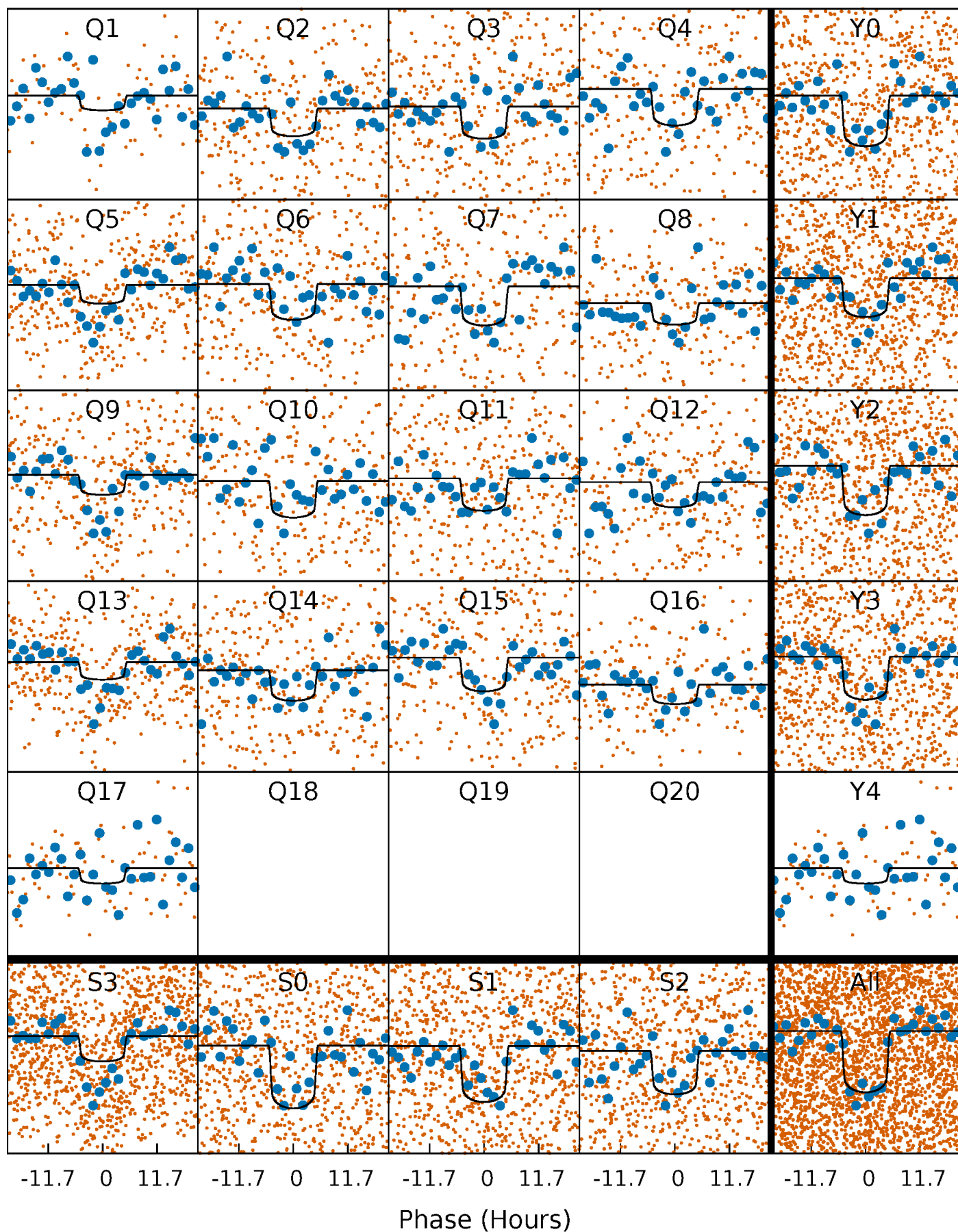
PDC Quarter-Phased Transit Curves

TCE 005130369-02 P= 19.978247 Days $T_0=146.403854$ (BKJD)



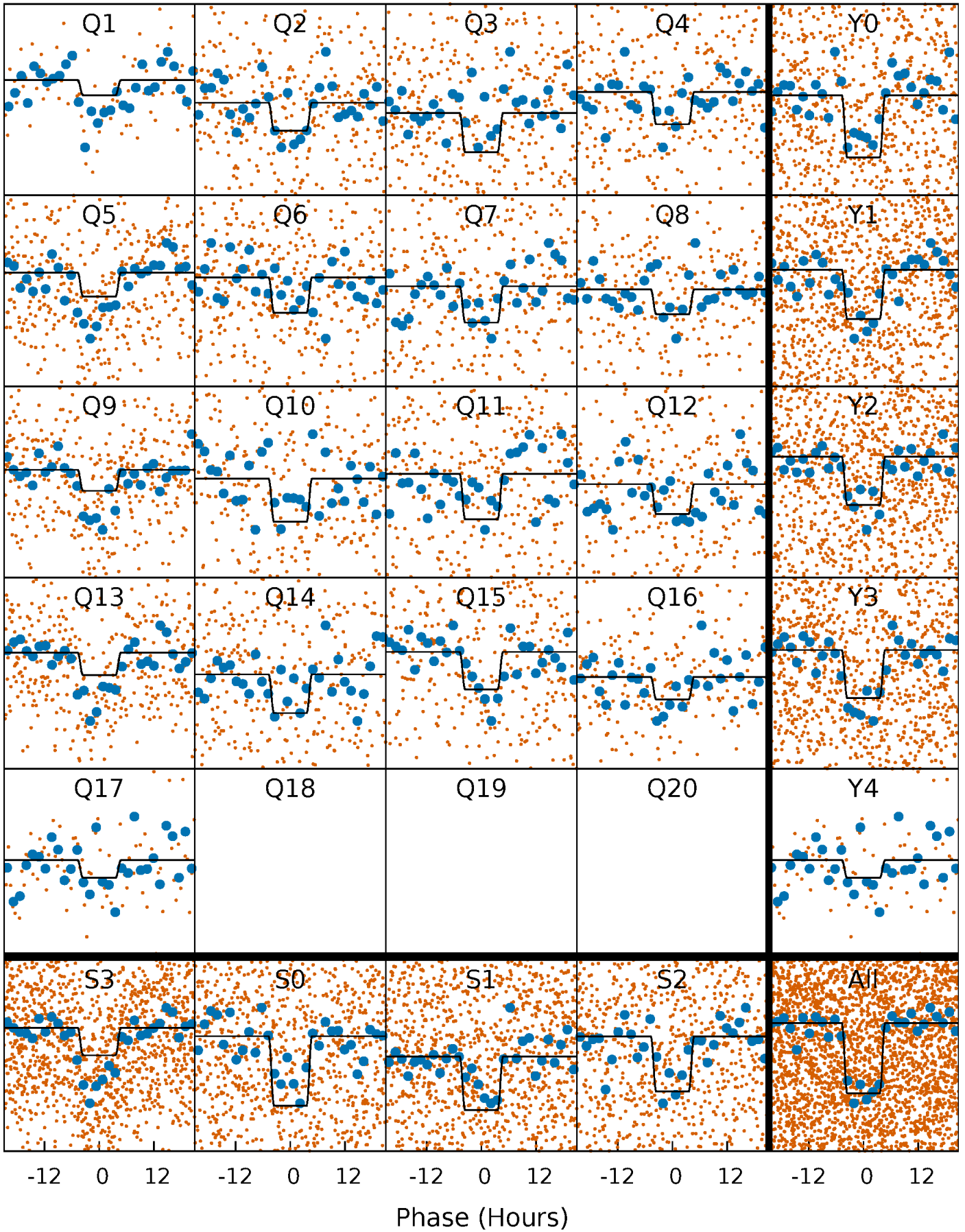
DV Quarter-Phased Transit Curves

TCE 005130369-02 P= 19.978247 Days $T_0=146.403854$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

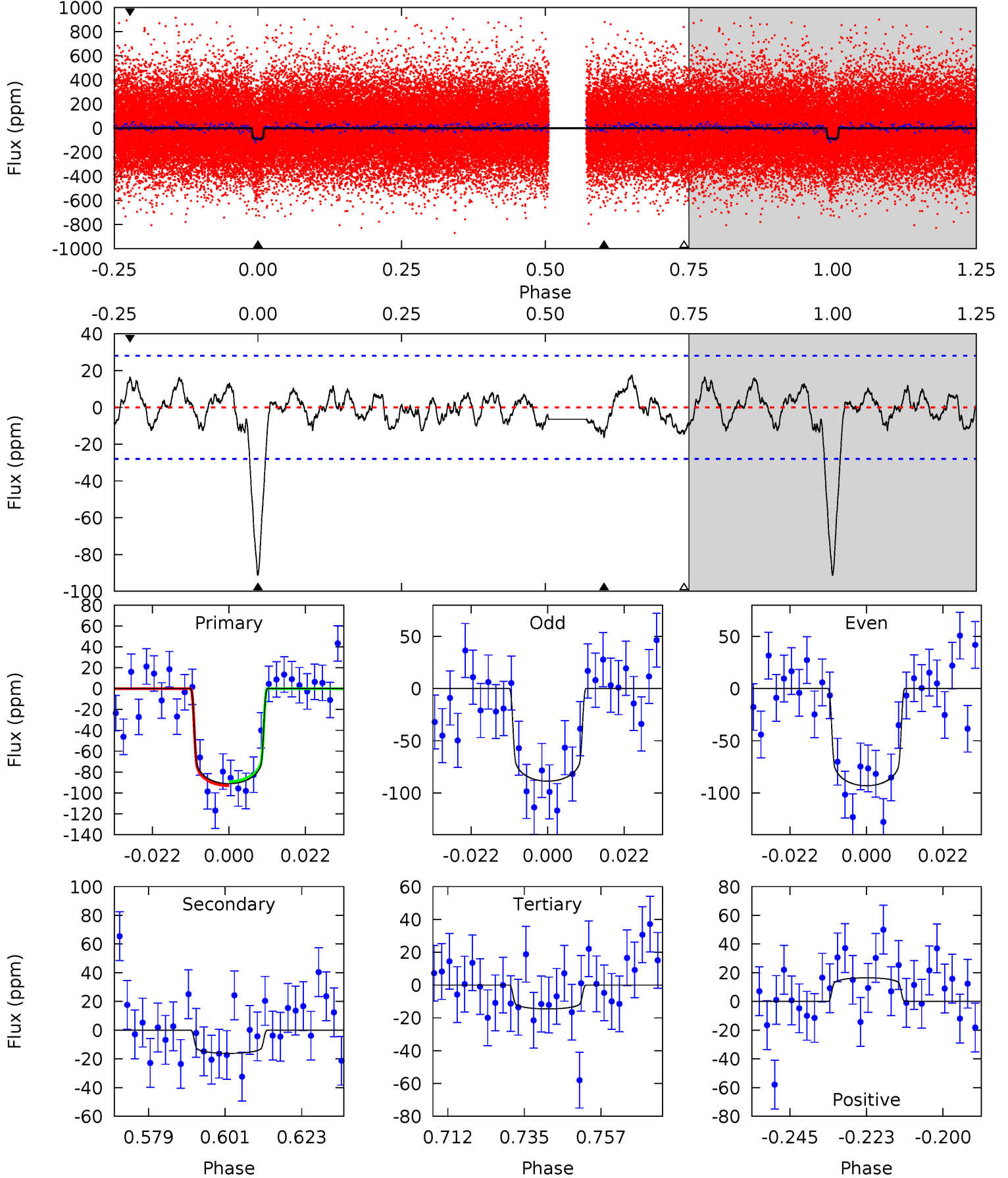
TCE 005130369-02 P= 19.978164 Days $T_0=146.407833$ (BKJD)



DV Model-Shift Uniqueness Test

005130369-02, P = 19.978247 Days, E = 126.425607 Days

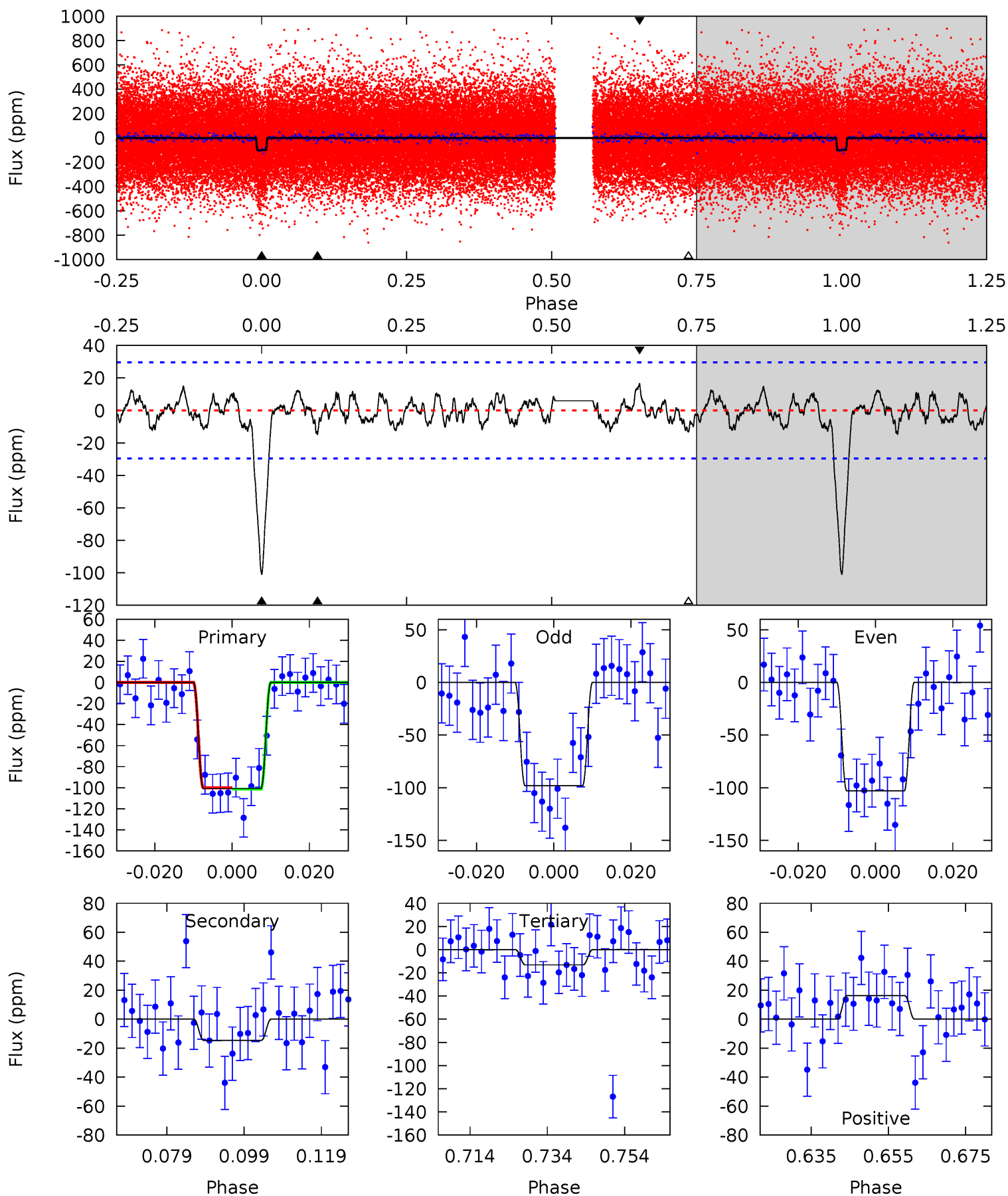
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
15.8	2.81	2.53	2.87	4.87	2.29	1.19	13.3	13.0	0.28	-0.06	0.38	1.07	0.16	0.33



Alt Model-Shift Uniqueness Test

005130369-02, P = 19.978164 Days, E = 126.429669 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
16.7	2.42	2.18	2.69	4.89	2.33	1.02	14.5	14.0	0.24	-0.27	0.41	1.27	0.14	0.11



Stellar Parameters For KIC 005130369

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	9651^{+272}_{-467}	$4.229^{+0.126}_{-0.234}$	$0.070^{+0.150}_{-0.600}$	$1.895^{+0.803}_{-0.432}$	$2.219^{+0.396}_{-0.544}$	$0.460^{+0.340}_{-0.257}$
	+3%/-5%	+3%/-6%	+214%/-857%	+42%/-23%	+18%/-25%	+74%/-56%
Source	KIC0	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 005130369-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-16 ± 6	$2.16^{+0.52}_{-0.40}$	1915^{+167}_{-134}	5600^{+614}_{-560}	63^{+42}_{-29}
Alt.	-15 ± 6	$2.15^{+0.53}_{-0.41}$	1914^{+185}_{-141}	5488^{+606}_{-670}	57^{+40}_{-27}

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 $A_{obs} \gg 1.0$

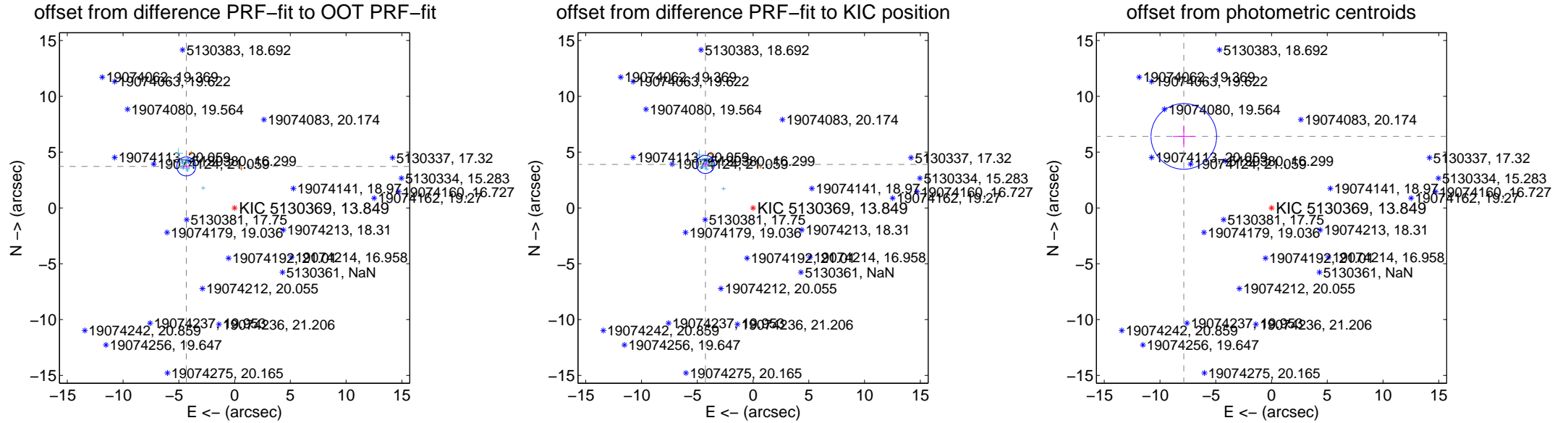
DV Centroid Data

Supplemental centroid analysis for 005130369-02. Kepler magnitude: 13.85. Transit SNR 11.79

There are 15 quarters with good PRF difference image offsets

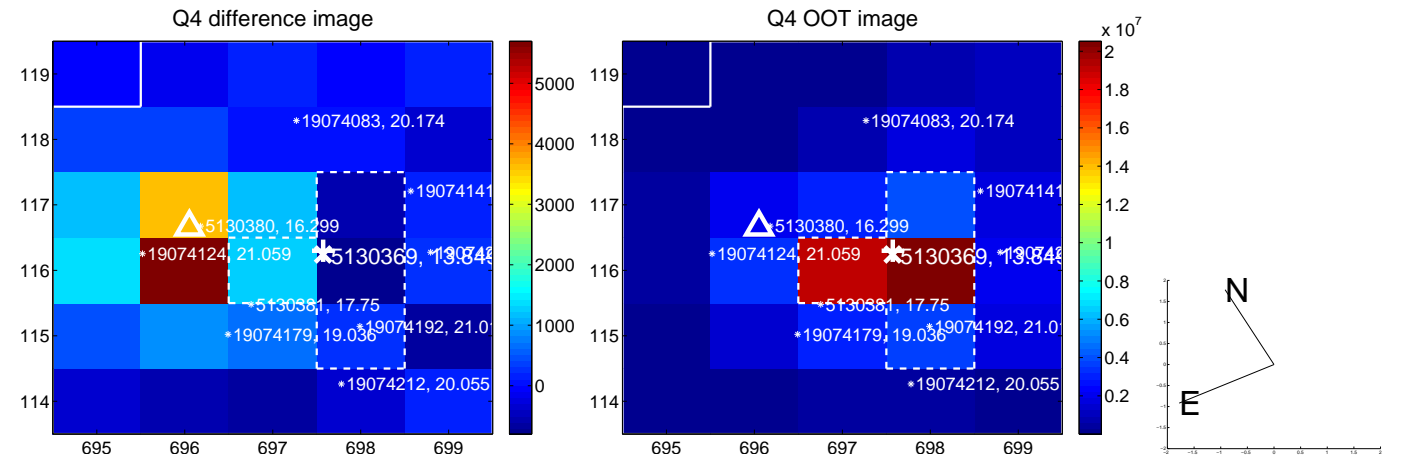
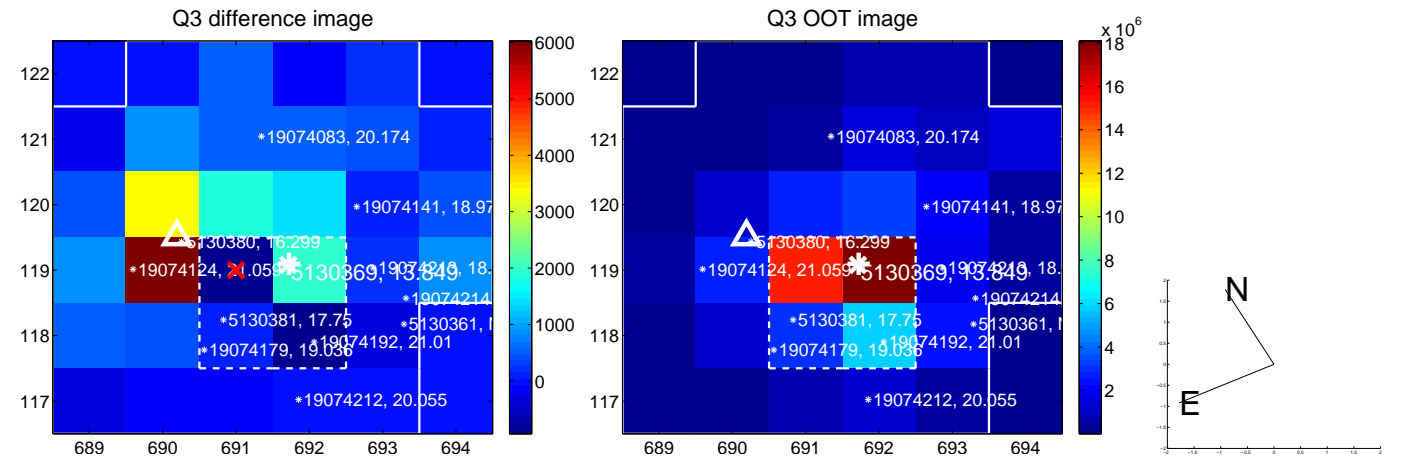
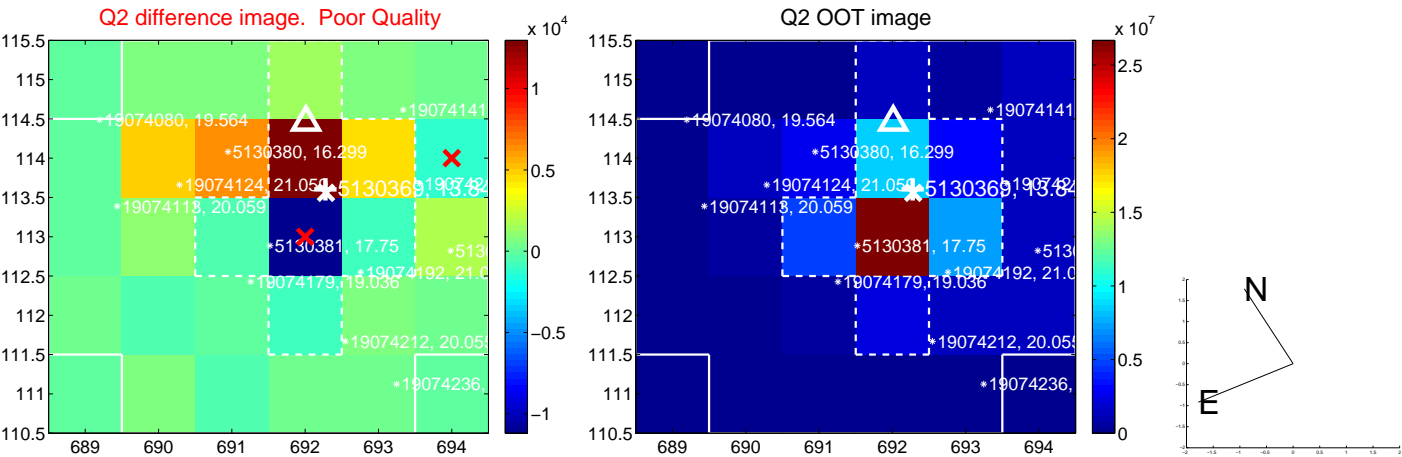
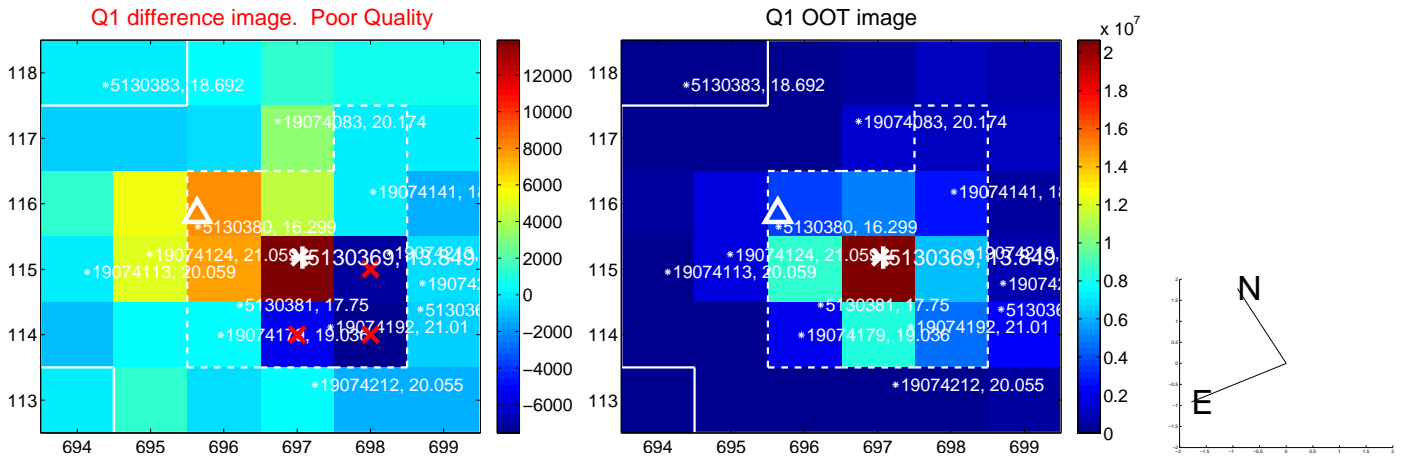
The direct PRF centroid is offset from the target star catalog position by about 0.26 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	5.708 ± 0.283	20.14	4.330 ± 0.301	3.719 ± 0.168
PRF-fit source offset from KIC position	5.785 ± 0.270	21.43	4.273 ± 0.292	3.901 ± 0.168
photometric centroid source offset	10.15 ± 0.98	10.35	7.87 ± 0.98	6.41 ± 0.98

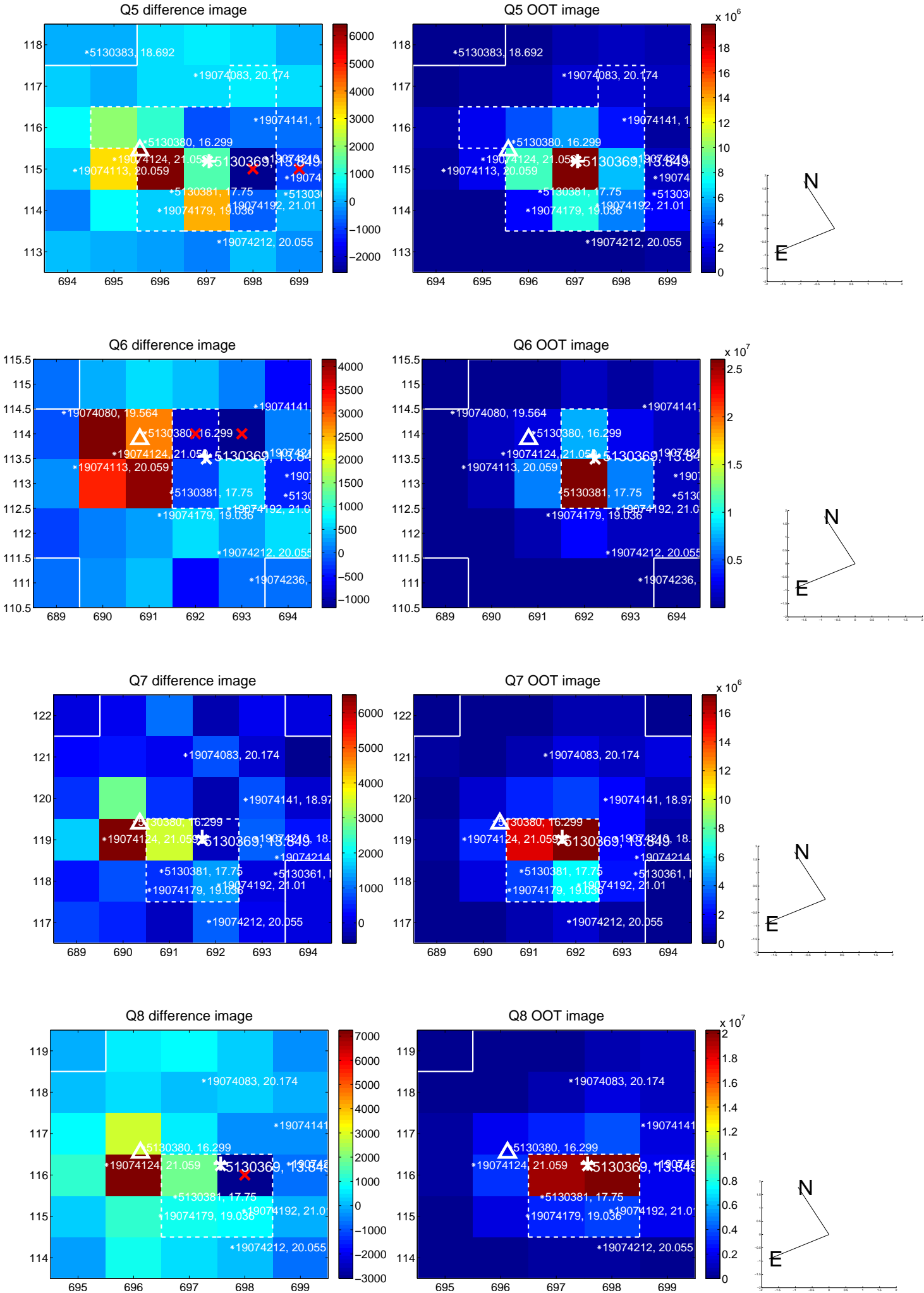


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

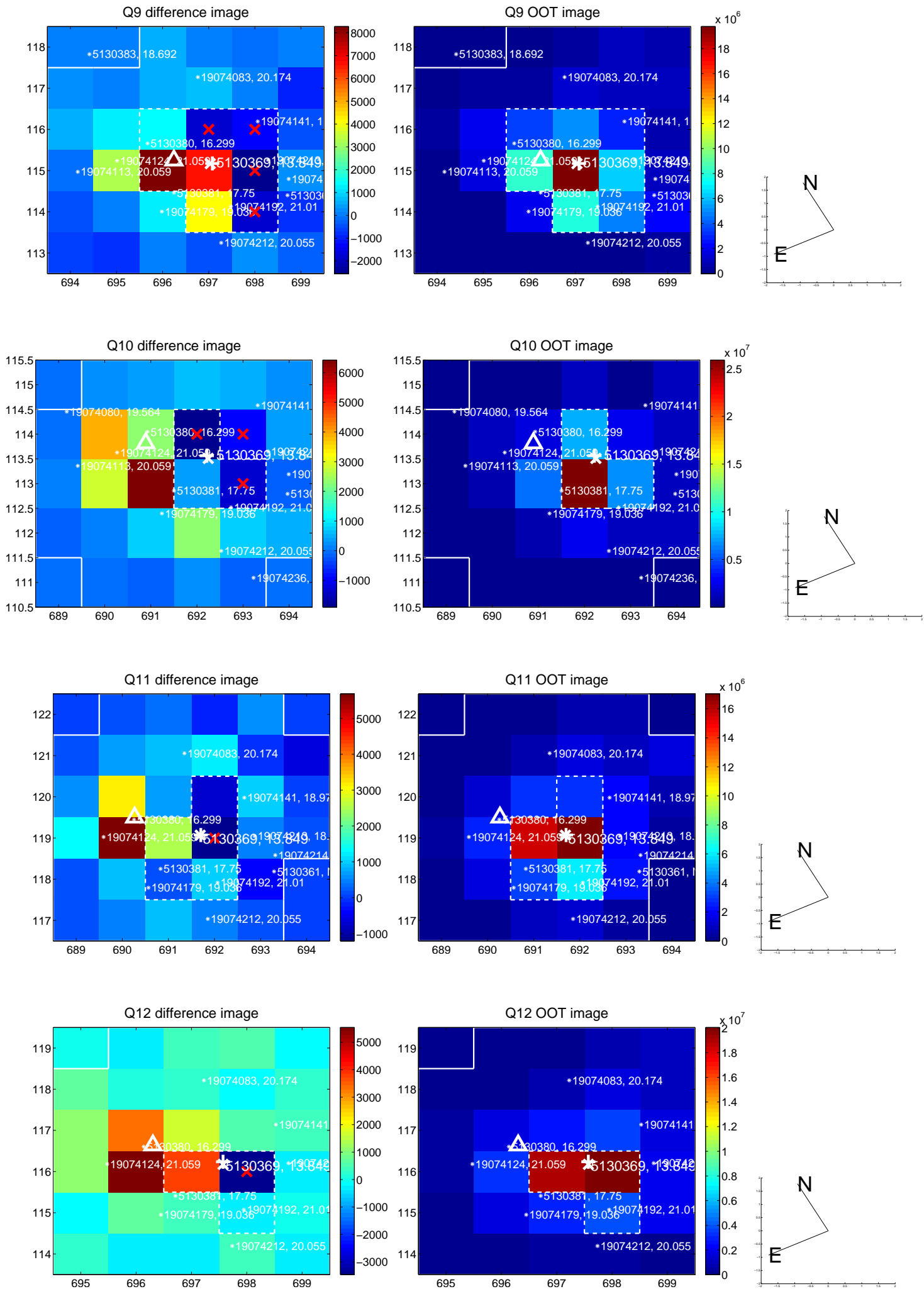
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



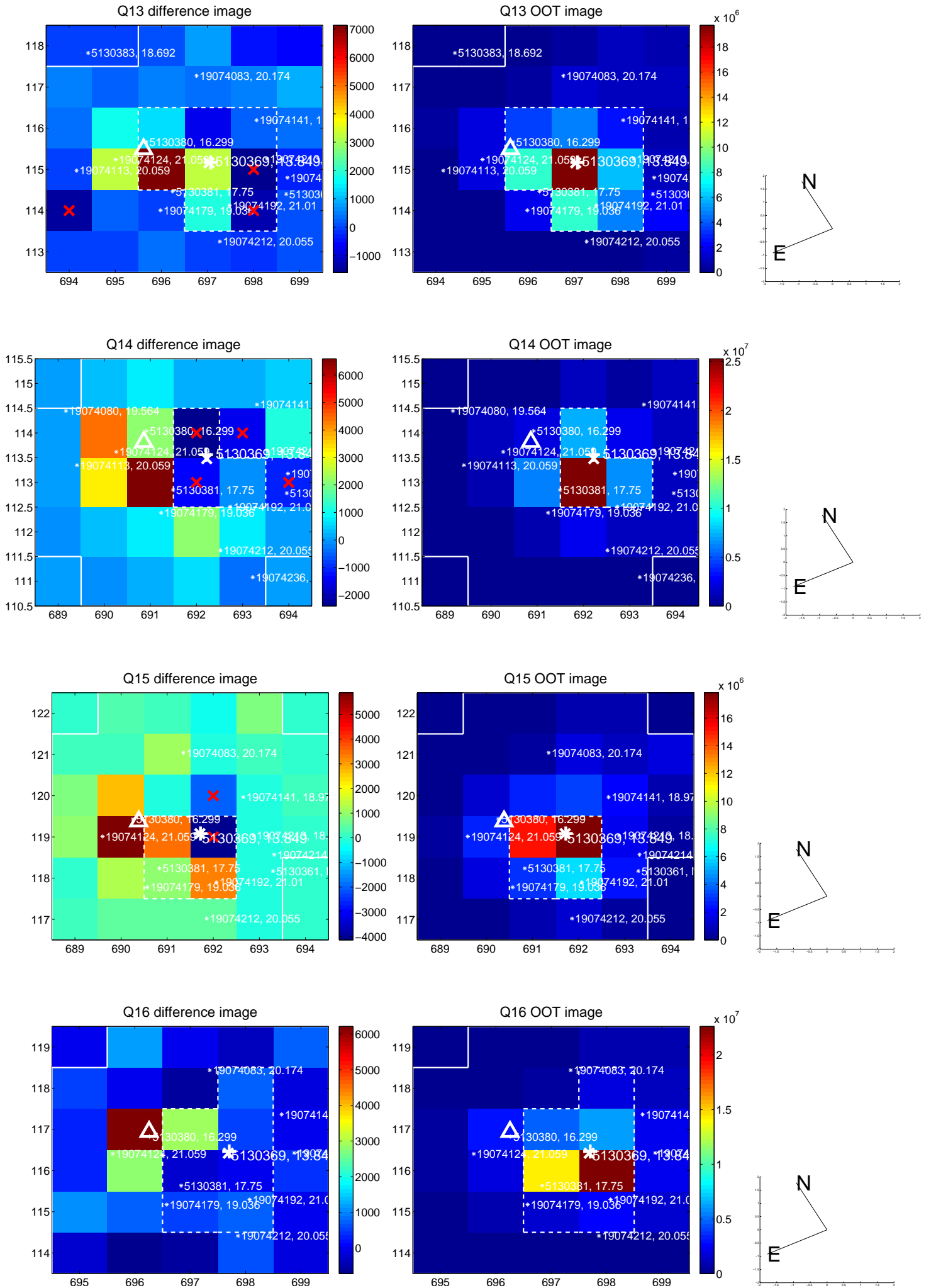
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



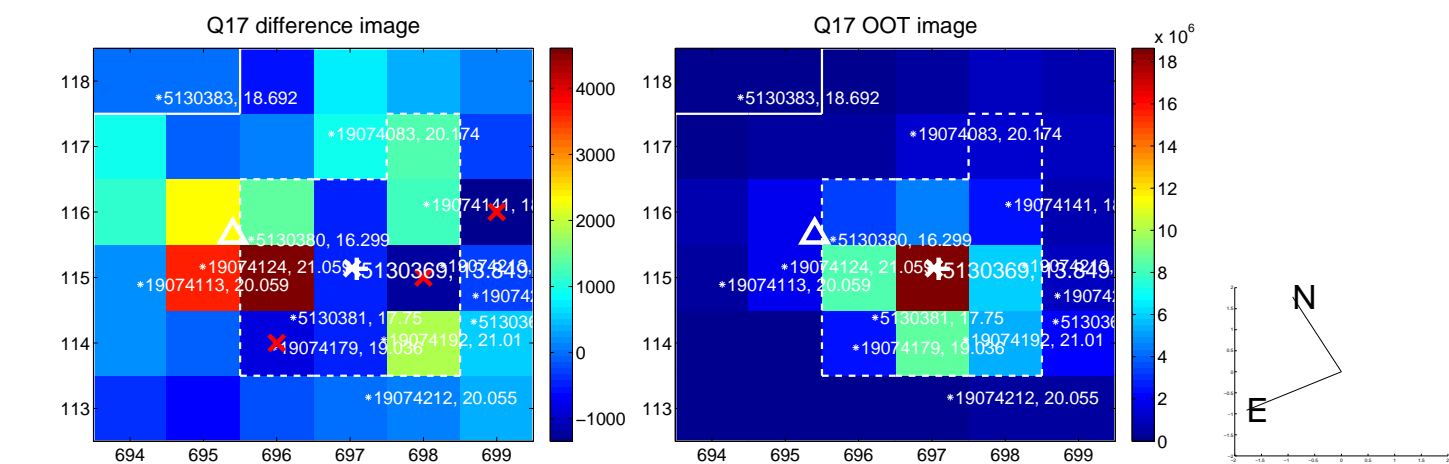
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



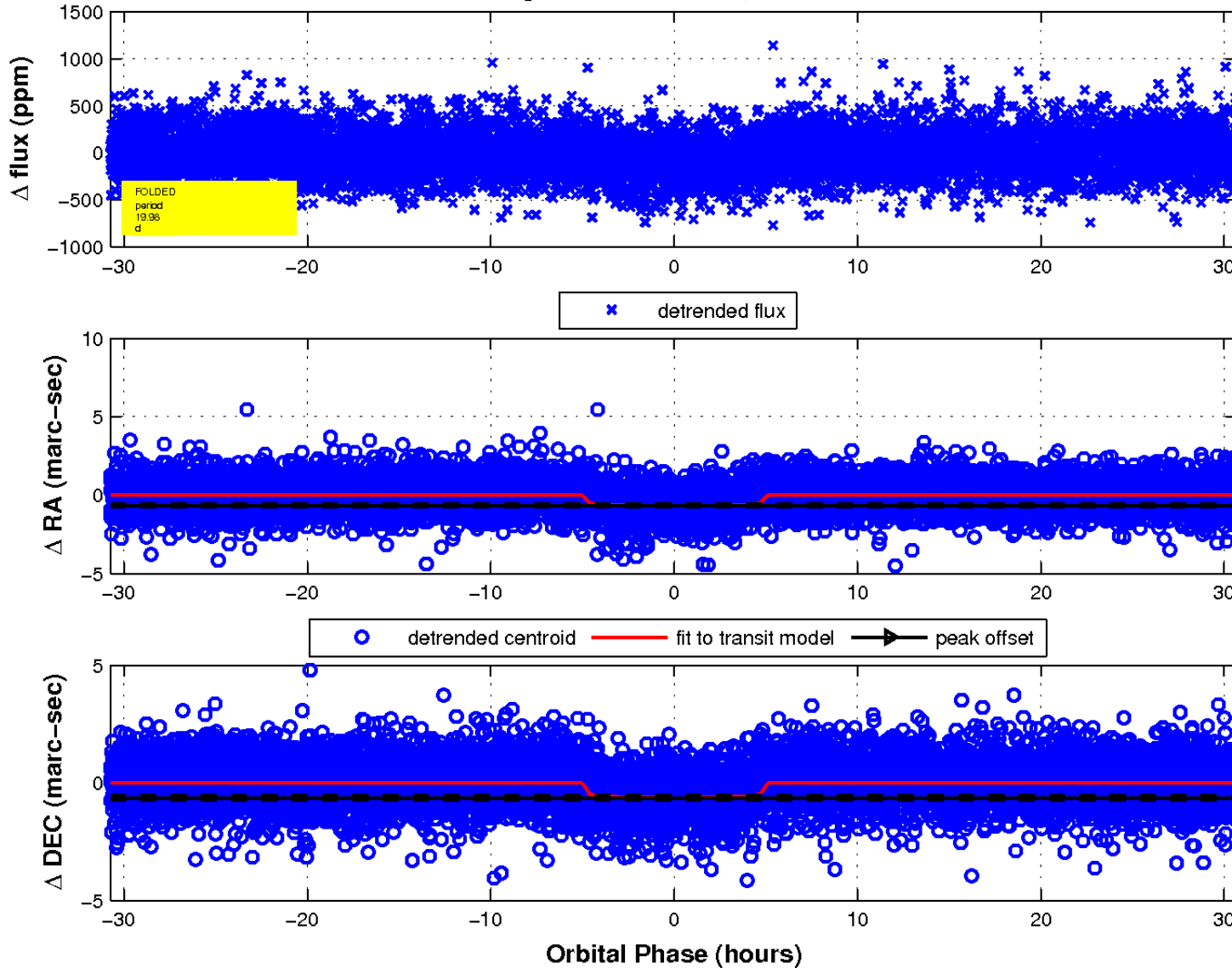
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 2 of 2



UKIRT Image

Declination

