

KIC 004909697

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})
004909697-01	OBS	No	0.577683	131.739541	88.3	2.348	12.7	14.5	2.39	8035	2.61	76176.31
004909697-02	OBS	No	0.577650	132.040439	38.6	3.685	10.1	7.2	2.39	8035	1.61	76182.16

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004909697-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—CENT_SATURATED
004909697-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—SAME_NTL_PERIOD—CENT_SATURATED

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

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

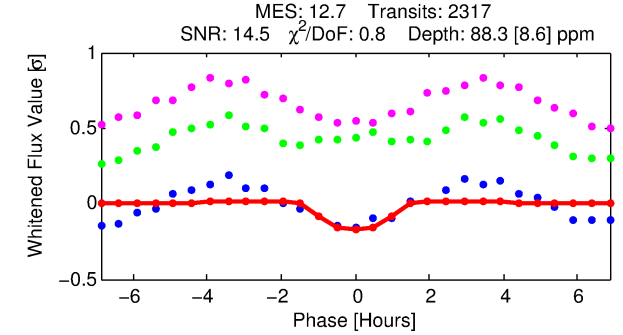
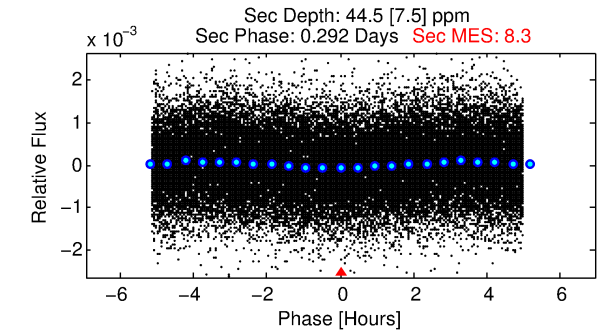
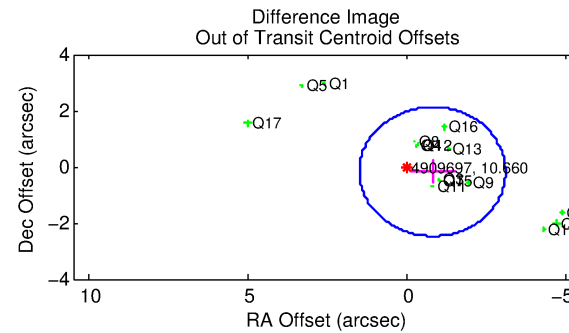
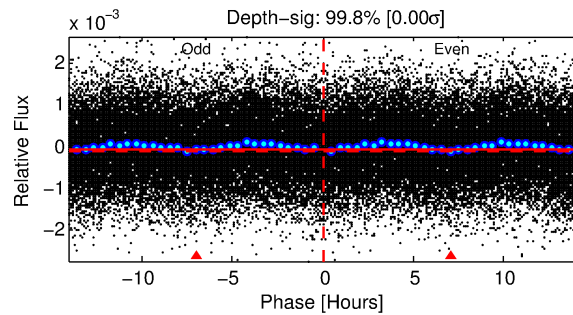
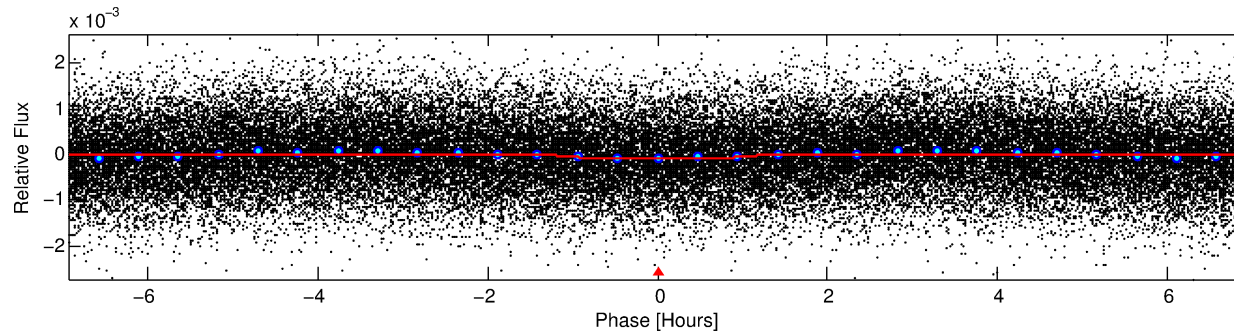
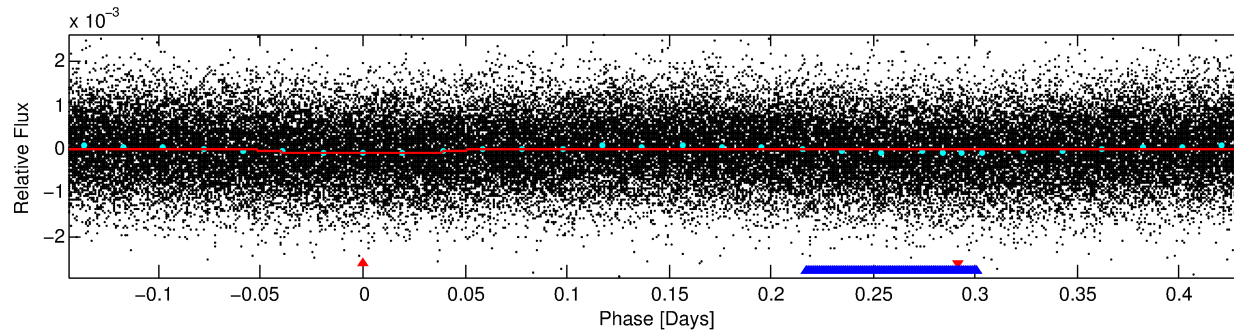
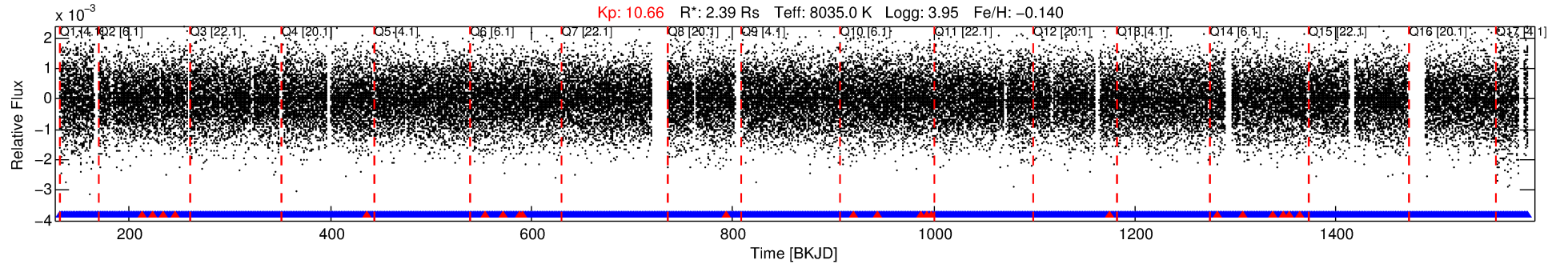
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004909697-01

No Significant Match Found

DV One-Page Summary

KIC: 4909697 Candidate: 1 of 2 Period: 0.578 d



DV Fit Results:

Period = 0.57768 [0.00001] d
Epoch = 131.7395 [0.0023] BKJD
 $R_p/R^* = 0.0100$ [0.0051]
 $a/R^* = 1.28$ [1.53]
 $b = 0.90$ [0.67]
 $\text{Seff} = 76176.31$ [37175.72]
 $T_{\text{eq}} = 4236$ [517] K
 $R_p = 2.61$ [1.59] R_e
 $a = 0.0167$ [0.0051] AU
 $A_g = 1.00$ [1.12] [0.00 σ]
 $T_{\text{eff}} = 6553$ [1696] K [1.31 σ]

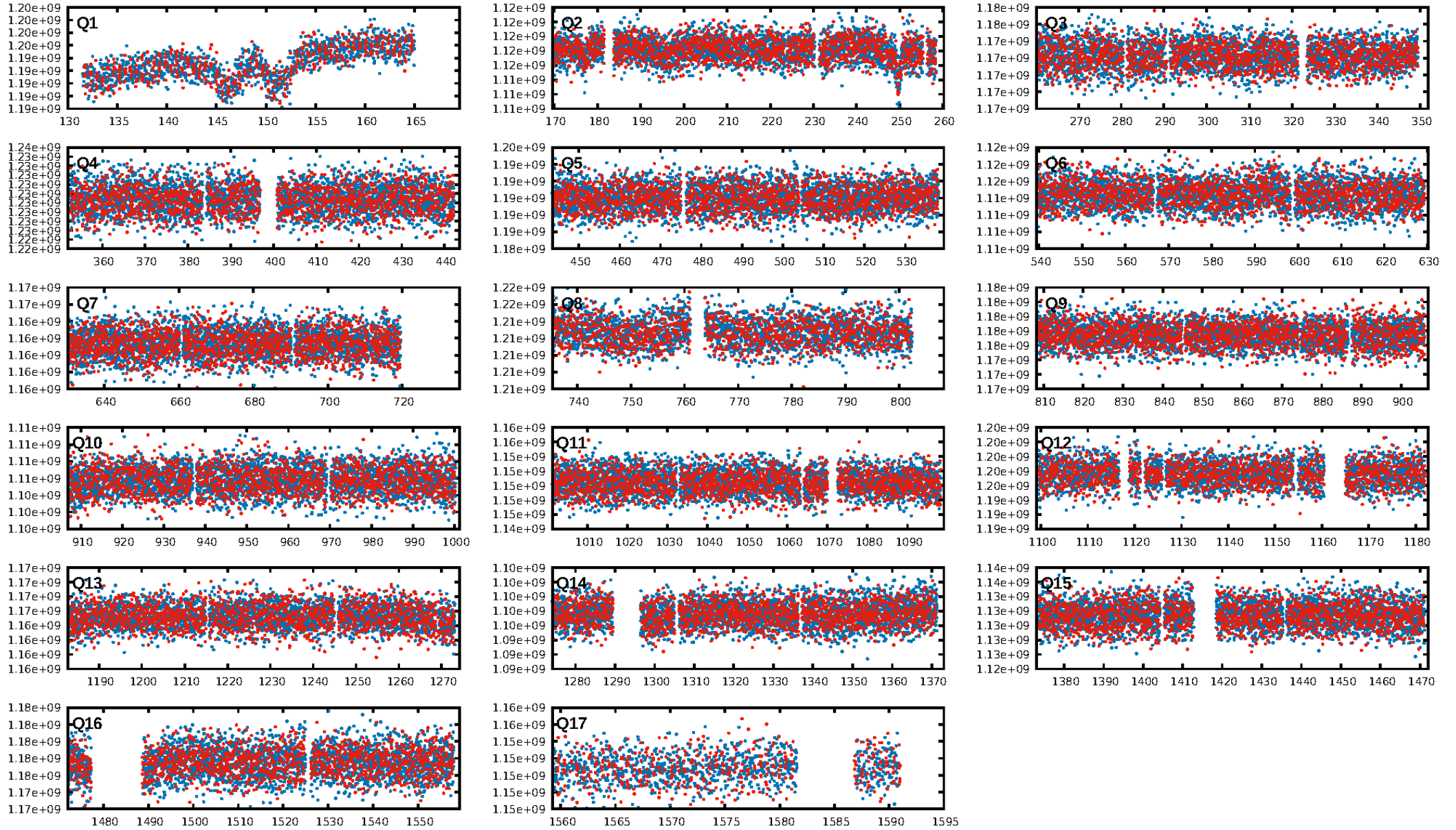
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 0.99 [2188/2212]
GhostDiagnostic-chr: 1.634
Centroid-sig: 0.1%
Centroid-so: 0.422 arcsec [1.94 σ]
OotOffset-rm: 0.819 arcsec [1.07 σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-rm: 1.255 arcsec [1.76 σ]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 0.35 [6/17]
DiffImageOverlap-fno: 0.00 [0/17]

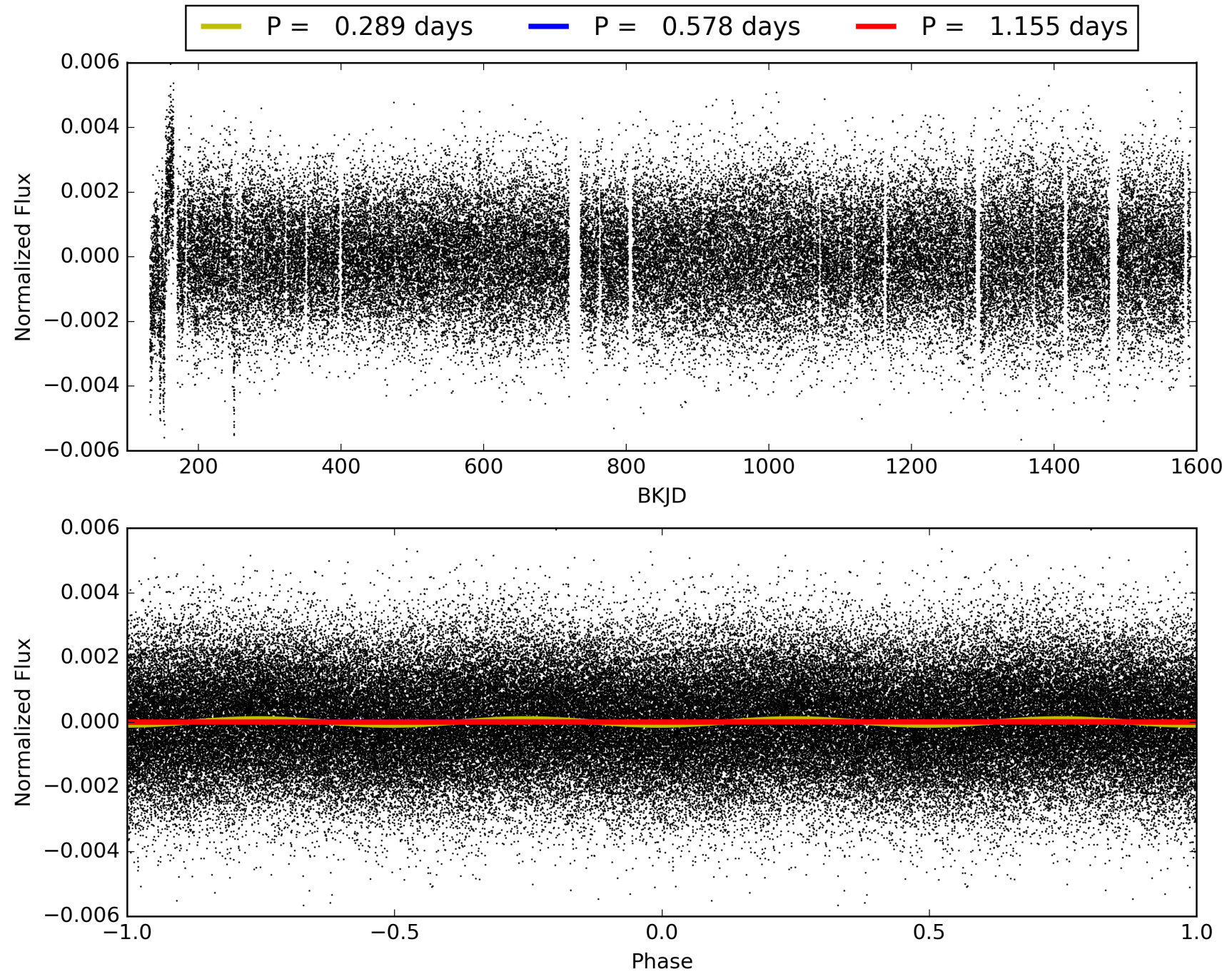
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 01:12:23 Z

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

TCE 004909697-01, PDC Light Curves

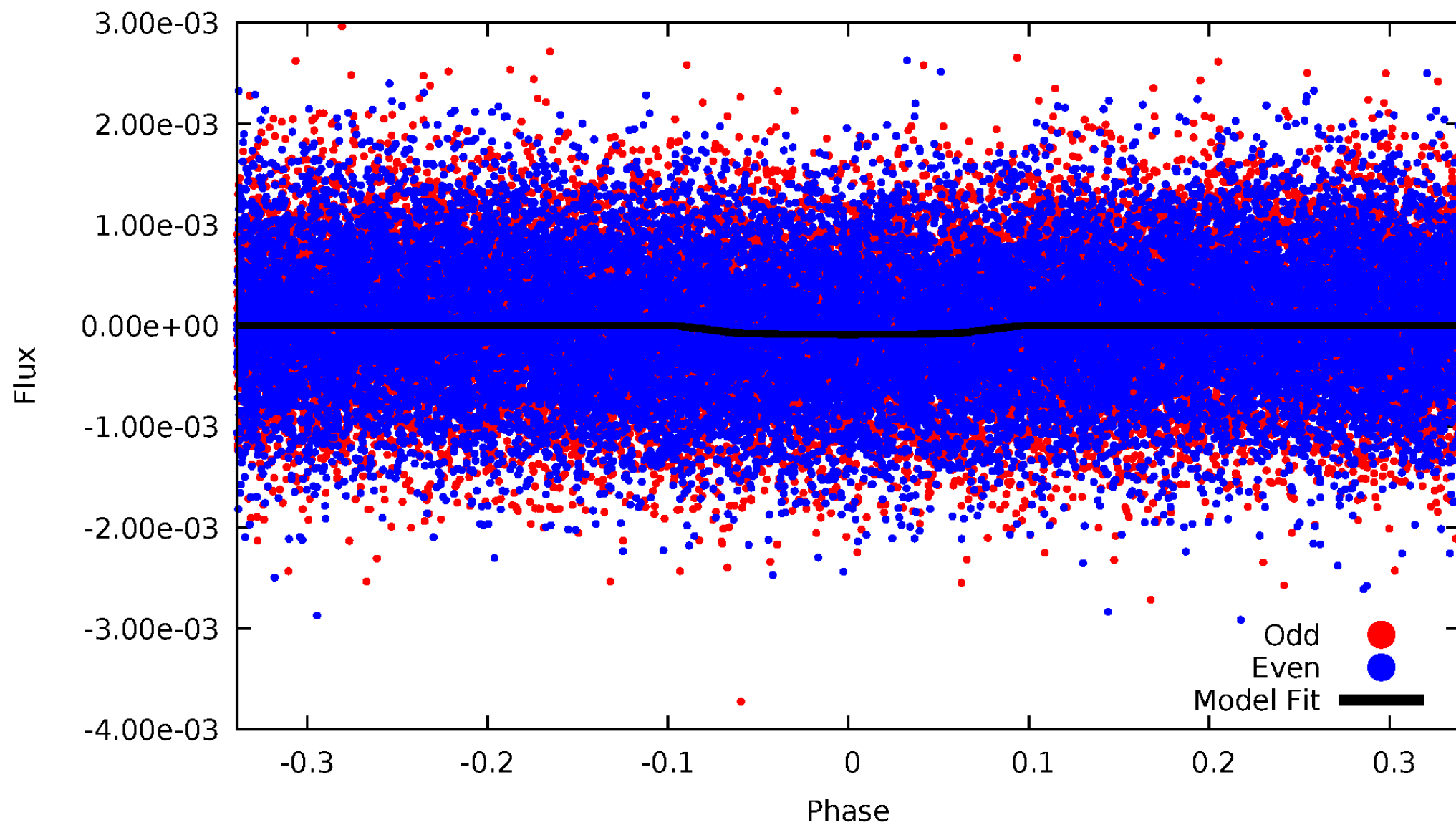


TCE 004909697-01



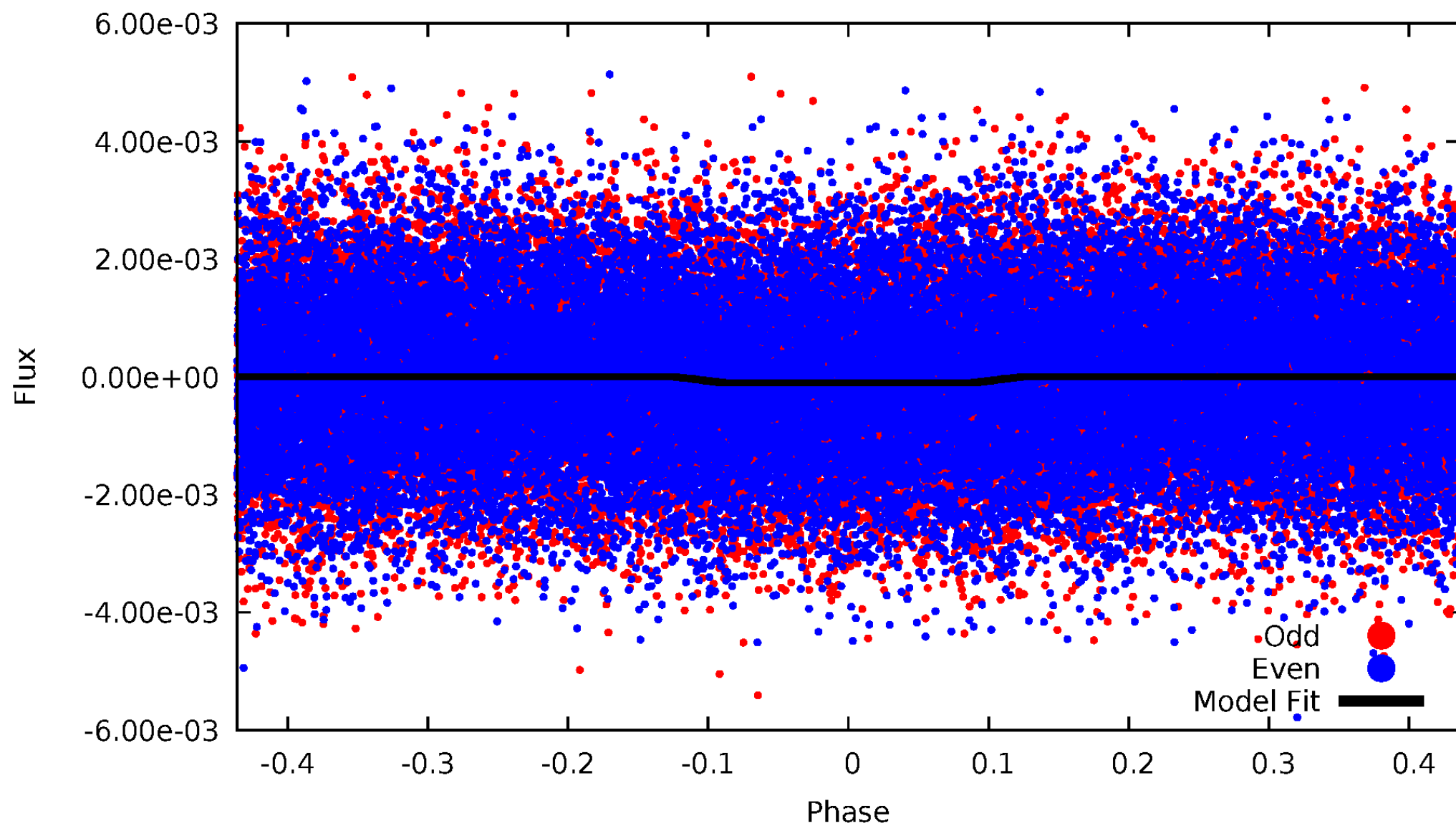
DV Odd/Even

TCE 004909697-01



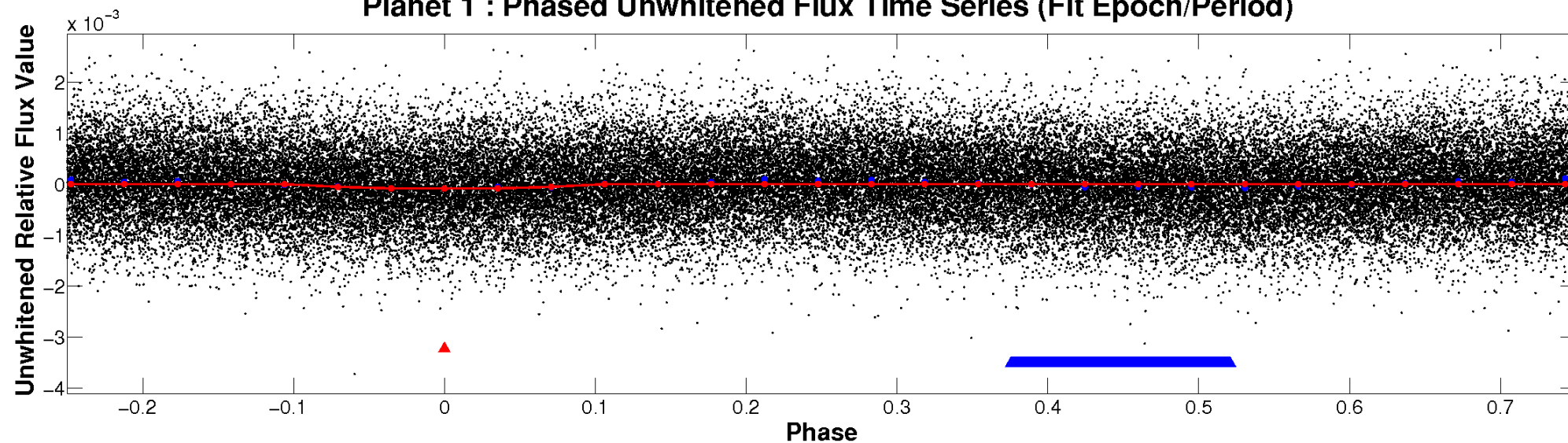
ALT Odd/Even

TCE 004909697-01

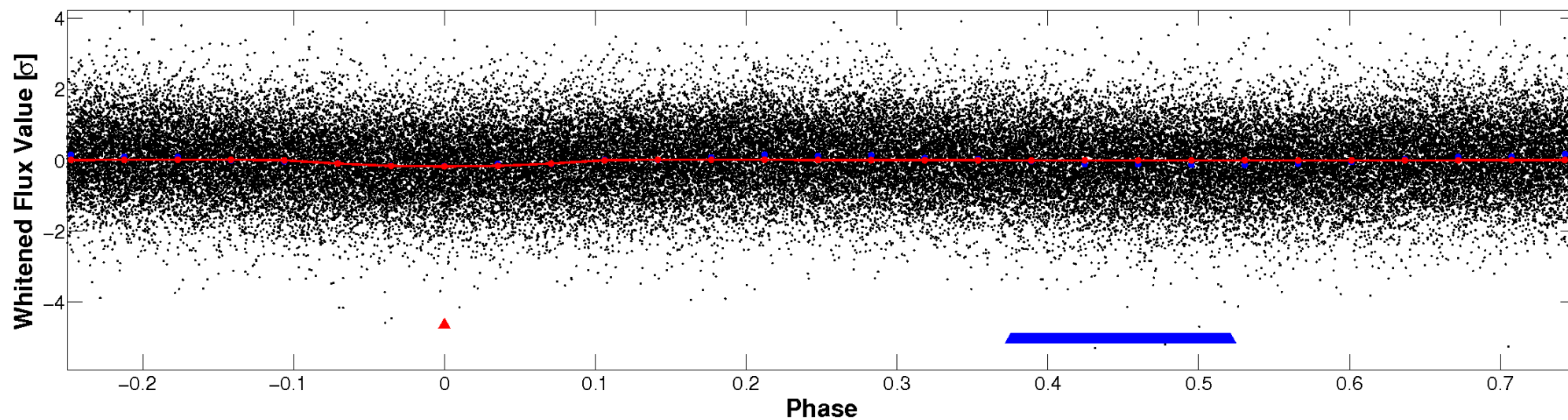


Non-Whitened Vs. Whitened Light Curve

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

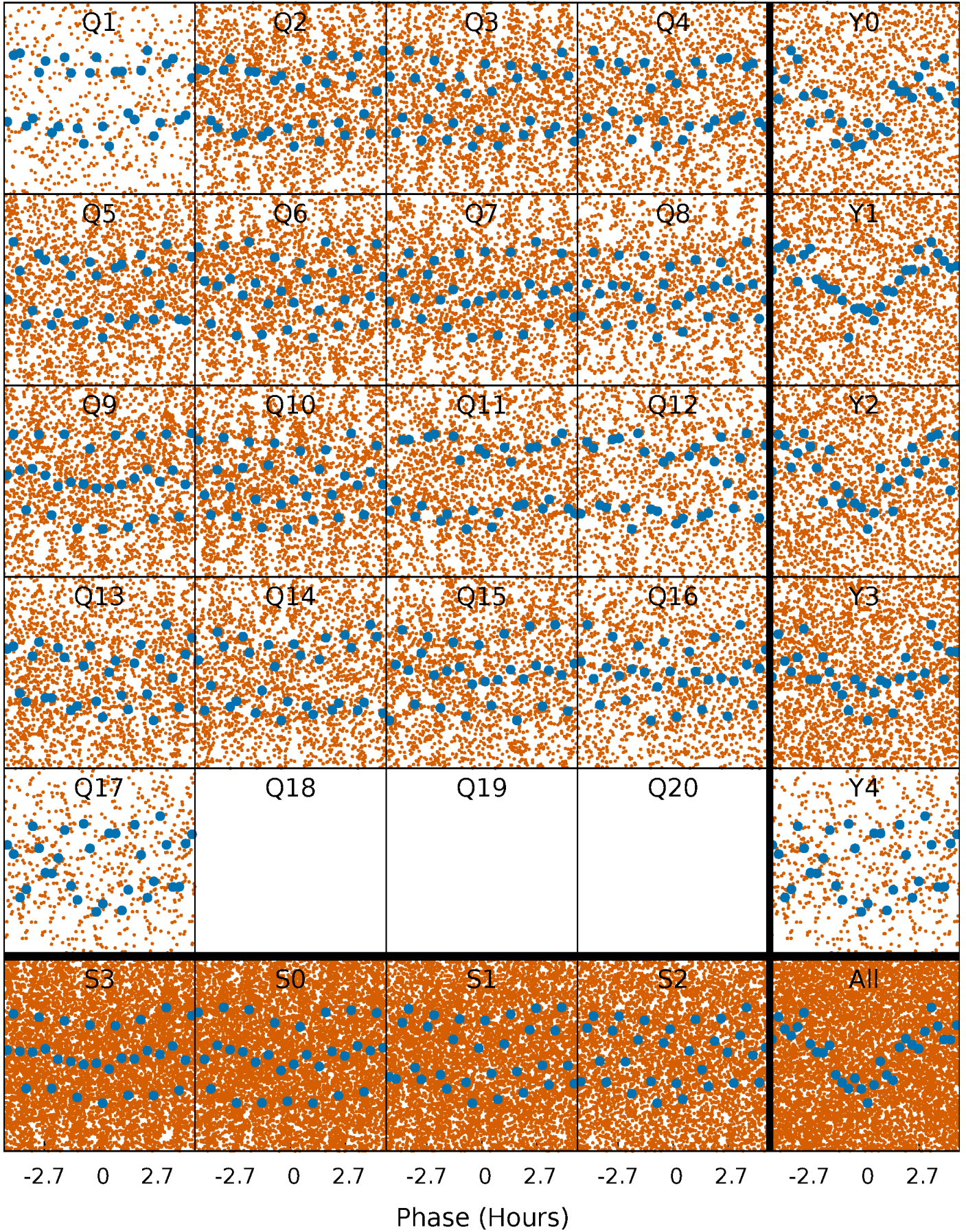


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



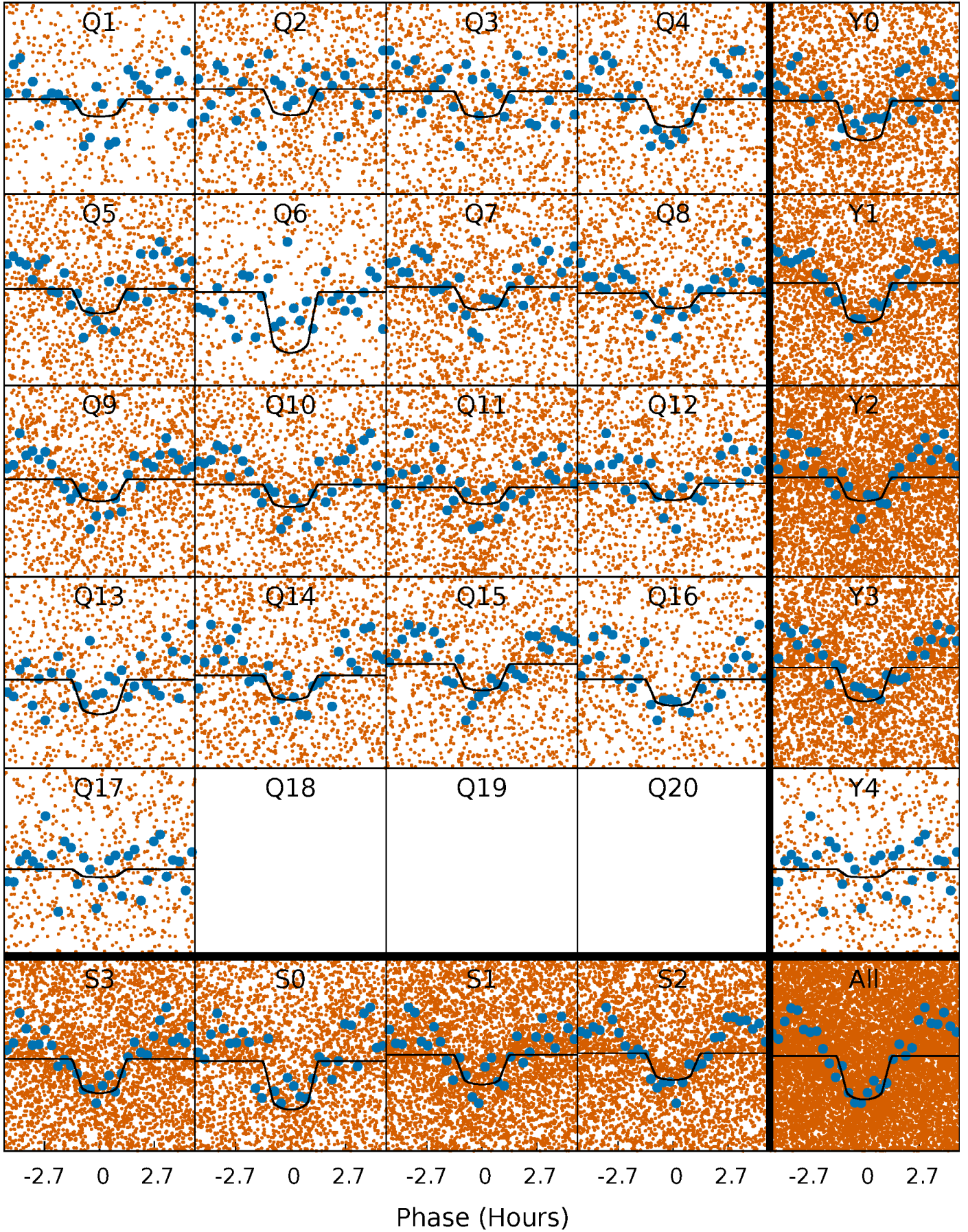
PDC Quarter-Phased Transit Curves

TCE 004909697-01 P= 0.577683 Days $T_0=131.739541$ (BKJD)



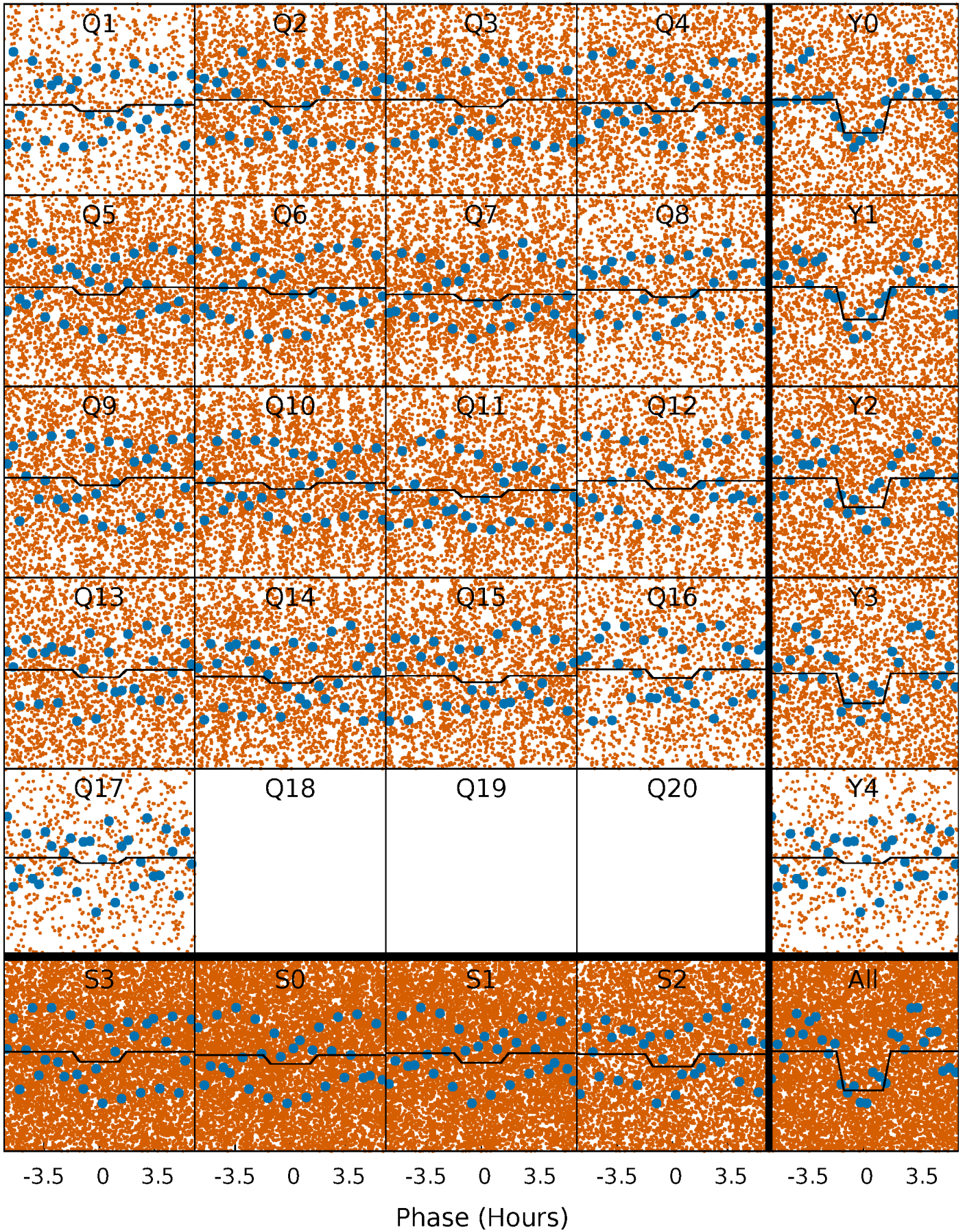
DV Quarter-Phased Transit Curves

TCE 004909697-01 P= 0.577683 Days $T_0=131.739541$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

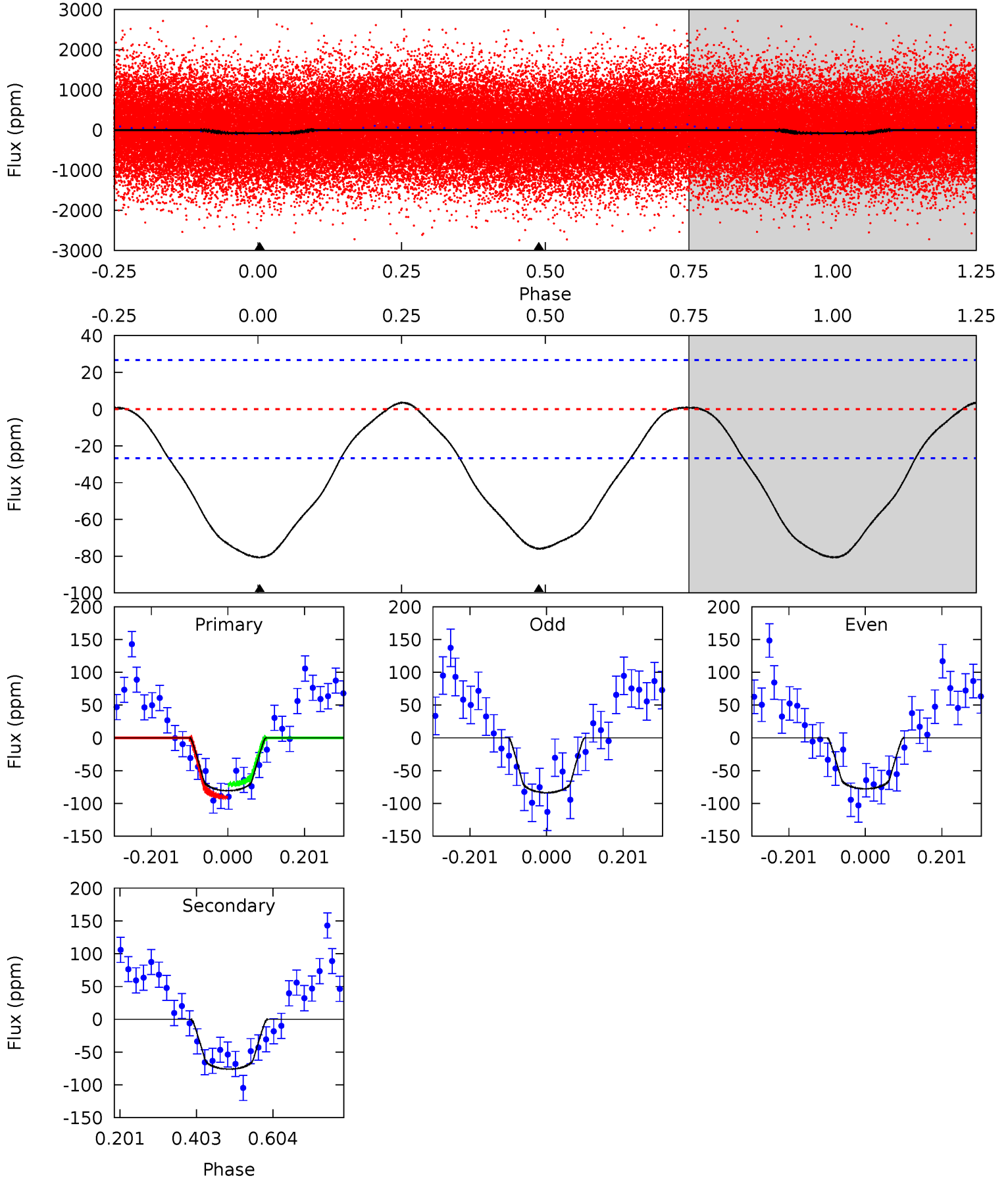
TCE 004909697-01 P= 0.577685 Days $T_0=131.739777$ (BKJD)



DV Model-Shift Uniqueness Test

004909697-01, P = 0.577683 Days, E = 131.161858 Days

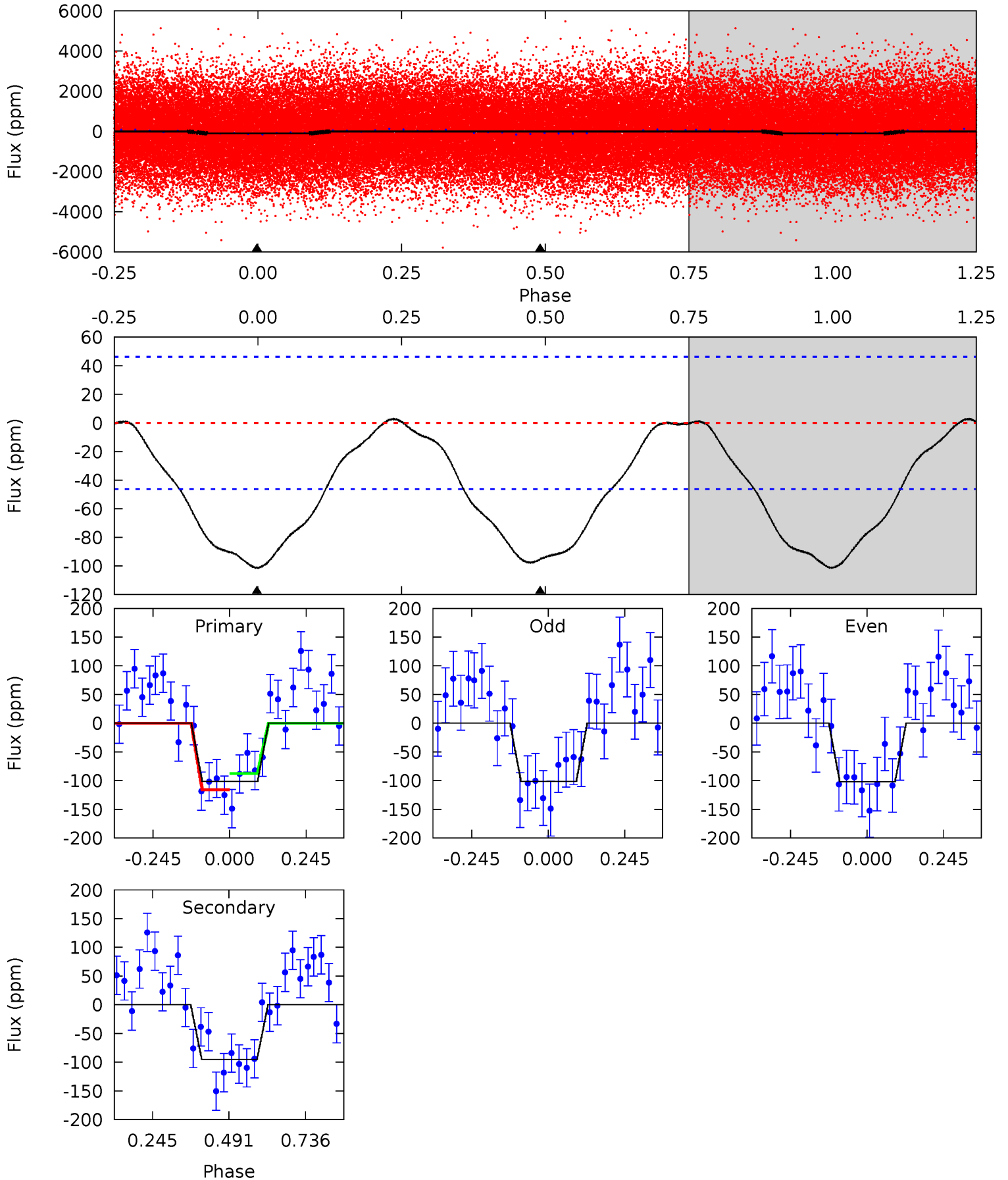
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.3	12.6	0	0	4.42	1.28	0.42	13.3	13.3	12.6	12.6	0.49	0.93	0.04	1.63



Alt Model-Shift Uniqueness Test

004909697-01, P = 0.577685 Days, E = 131.162092 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.62	9.03	0	0	4.37	1.16	0.14	9.62	9.62	9.03	9.03	0.02	1.01	0.03	1.32



Stellar Parameters For KIC 004909697

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	8035^{+223}_{-334}	$3.953^{+0.259}_{-0.129}$	$-0.140^{+0.200}_{-0.350}$	$2.387^{+0.410}_{-0.820}$	$1.865^{+0.096}_{-0.385}$	$0.193^{+0.329}_{-0.068}$
	+3%/-4%	+7%/-3%	+143%/-250%	+17%/-34%	+5%/-21%	+170%/-35%
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 004909697-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-76 ± 6	$2.51^{+1.36}_{-1.11}$	5878^{+363}_{-516}	6970^{+3712}_{-1686}	$1.796^{+4.329}_{-1.048}$
Alt.	-95 ± 11	$2.44^{+1.34}_{-1.22}$	5831^{+367}_{-497}	7549^{+4399}_{-1733}	$2.387^{+6.546}_{-1.380}$

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 $A_{obs} \gg 1.0$

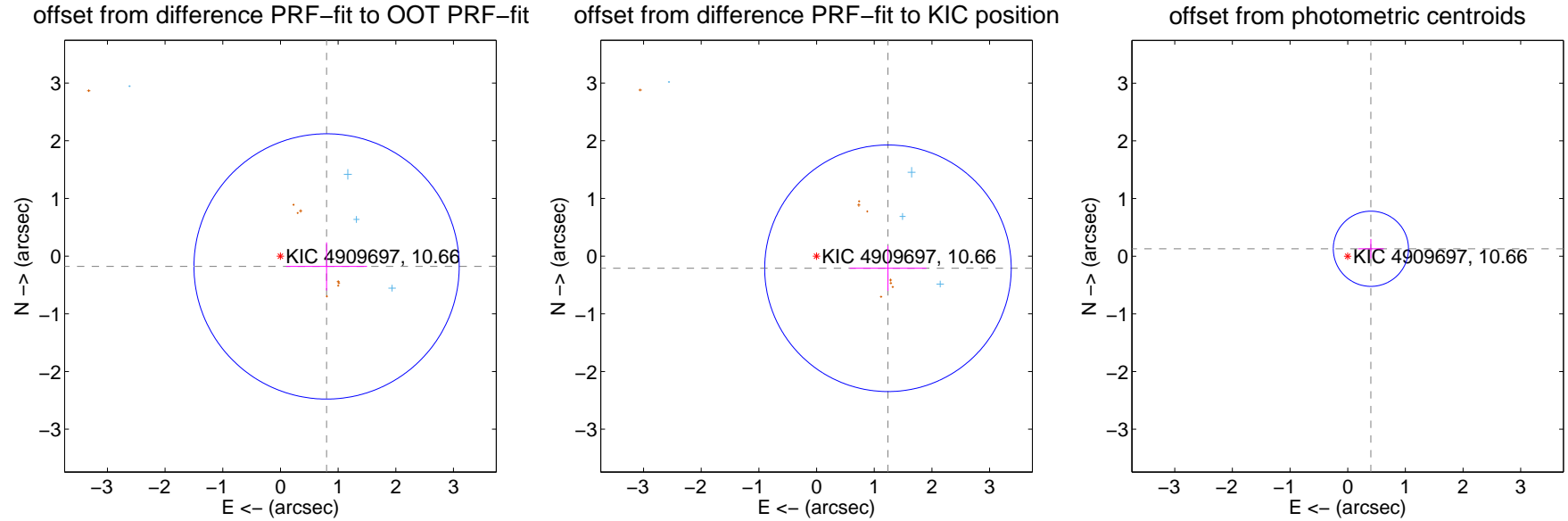
DV Centroid Data

Supplemental centroid analysis for 004909697-01. **Kepler magnitude: 10.66.** Transit SNR 14.49

There are 6 quarters with good PRF difference image offsets

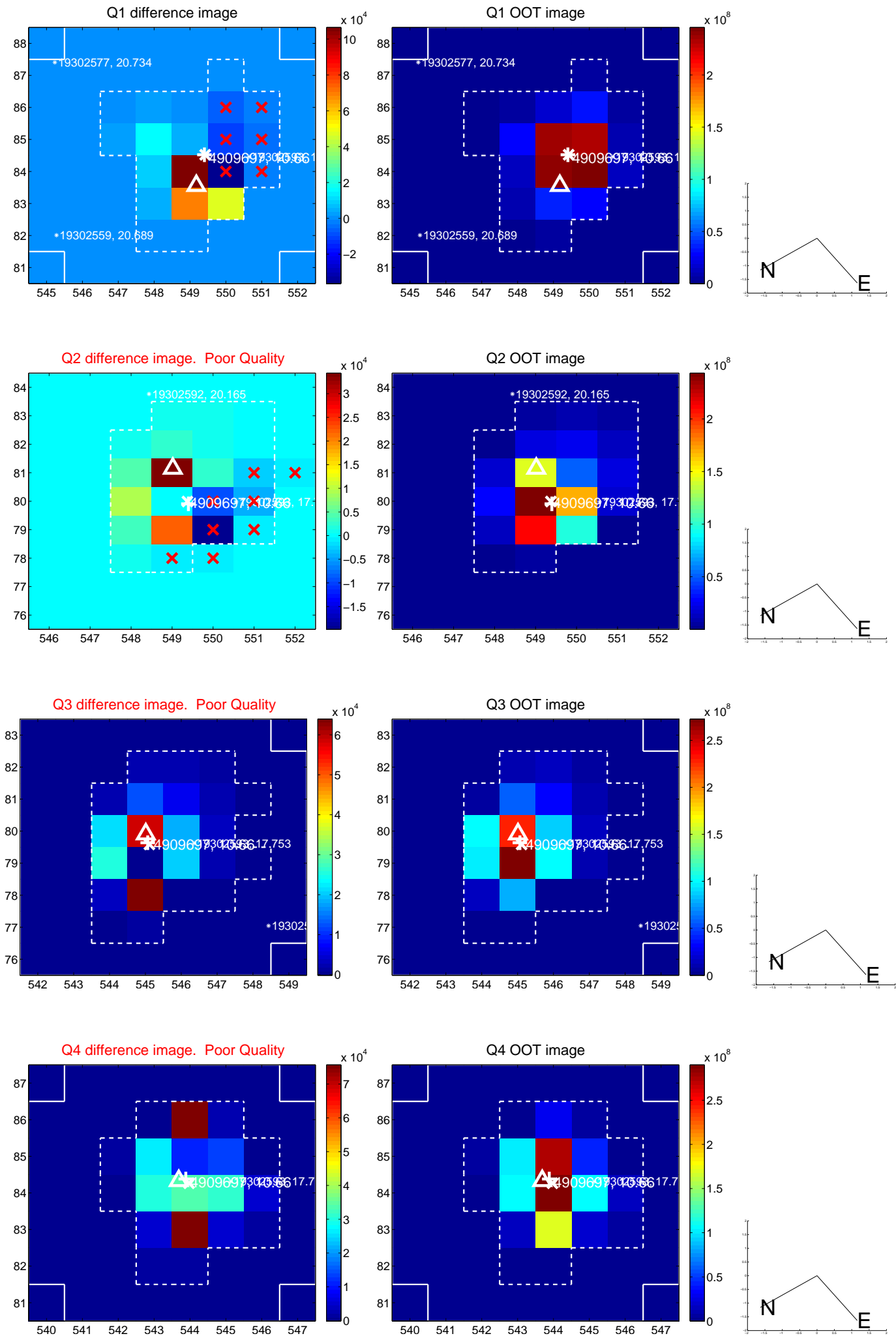
The direct PRF centroid is offset from the target star catalog position by about 0.21 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.819 ± 0.766	1.07	-0.800 ± 0.701	-0.179 ± 0.418
PRF-fit source offset from KIC position	1.255 ± 0.712	1.76	-1.238 ± 0.665	-0.211 ± 0.388
photometric centroid source offset	0.42 ± 0.22	1.94	-0.40 ± 0.22	0.13 ± 0.17

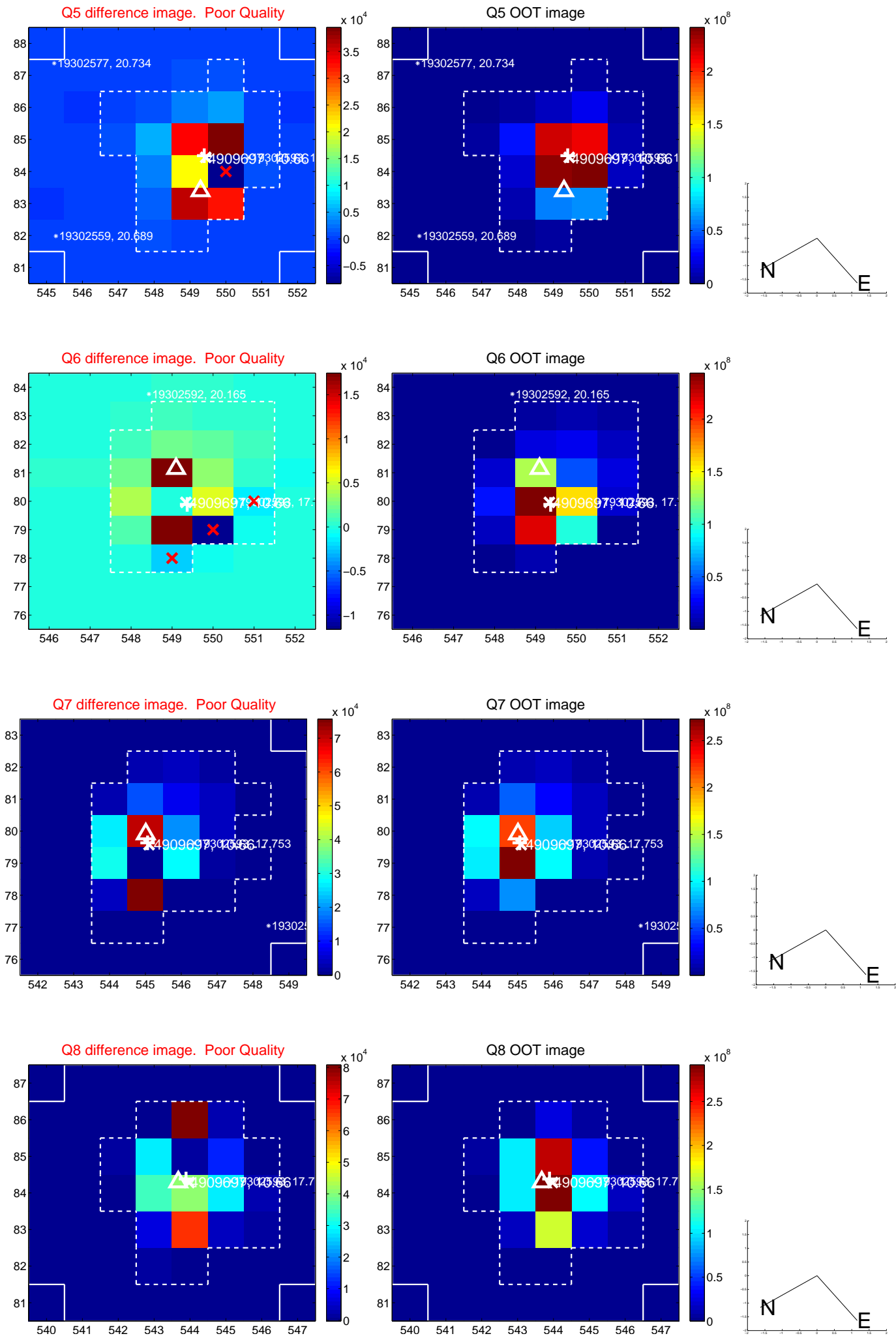


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

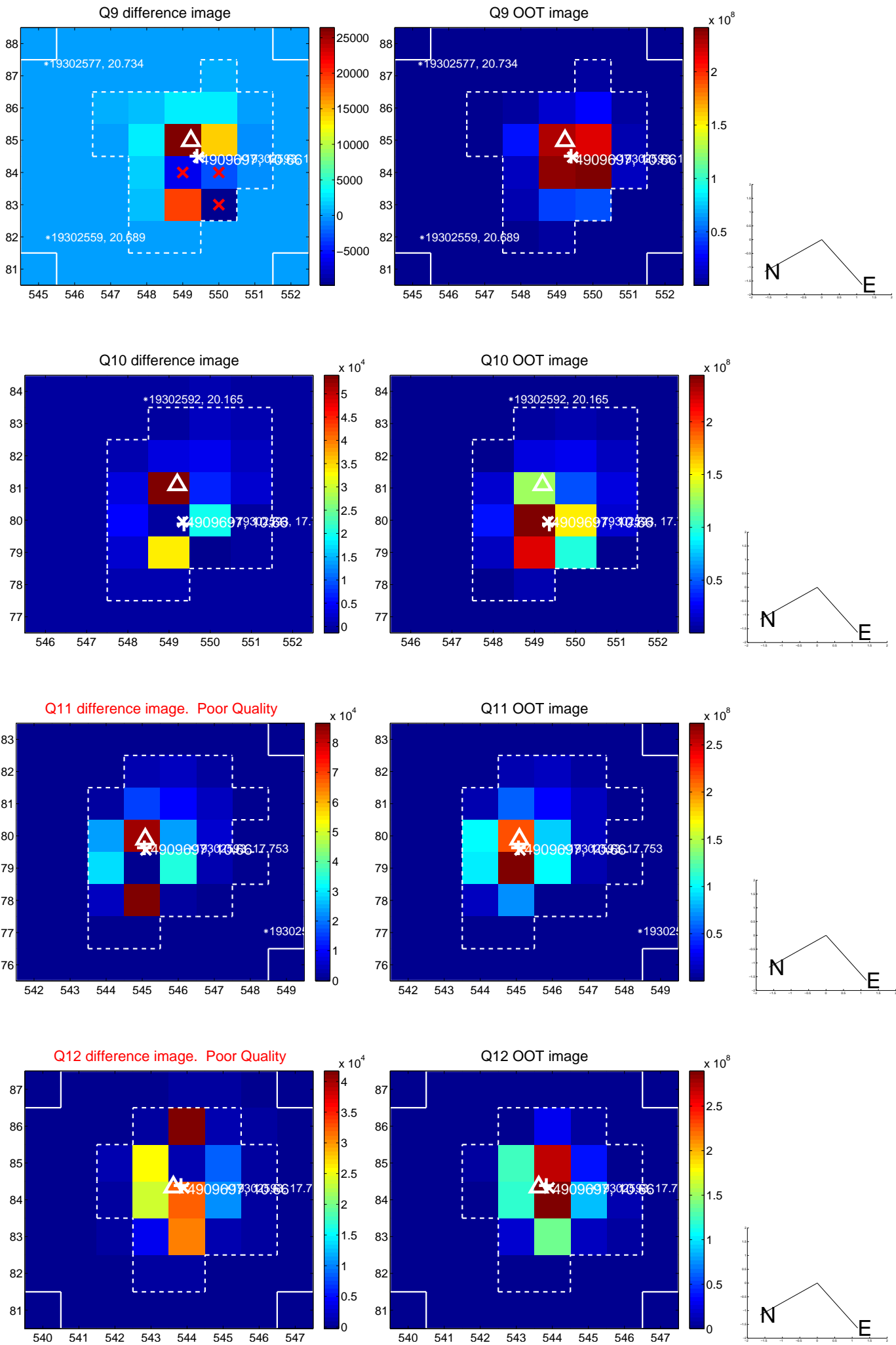
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



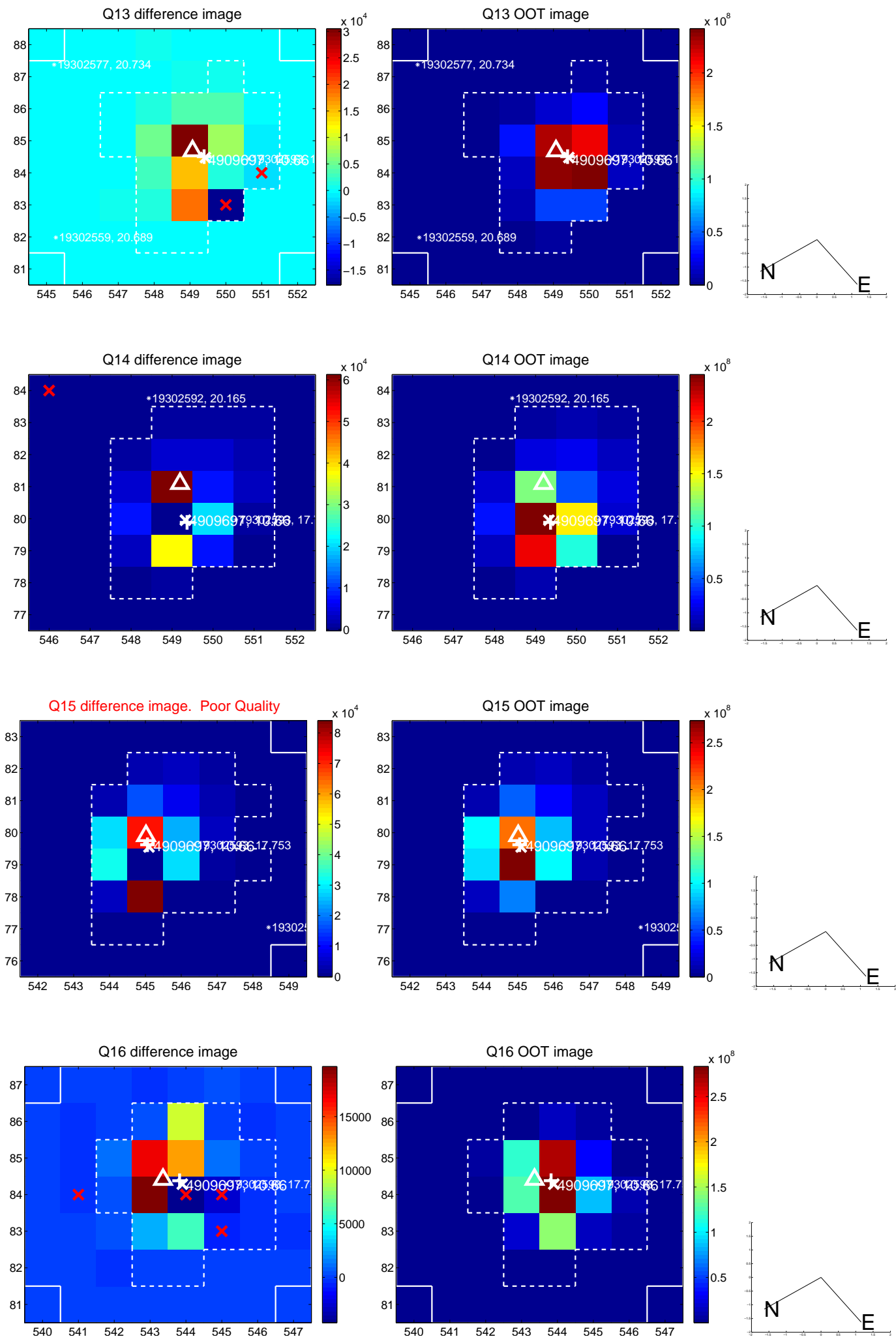
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



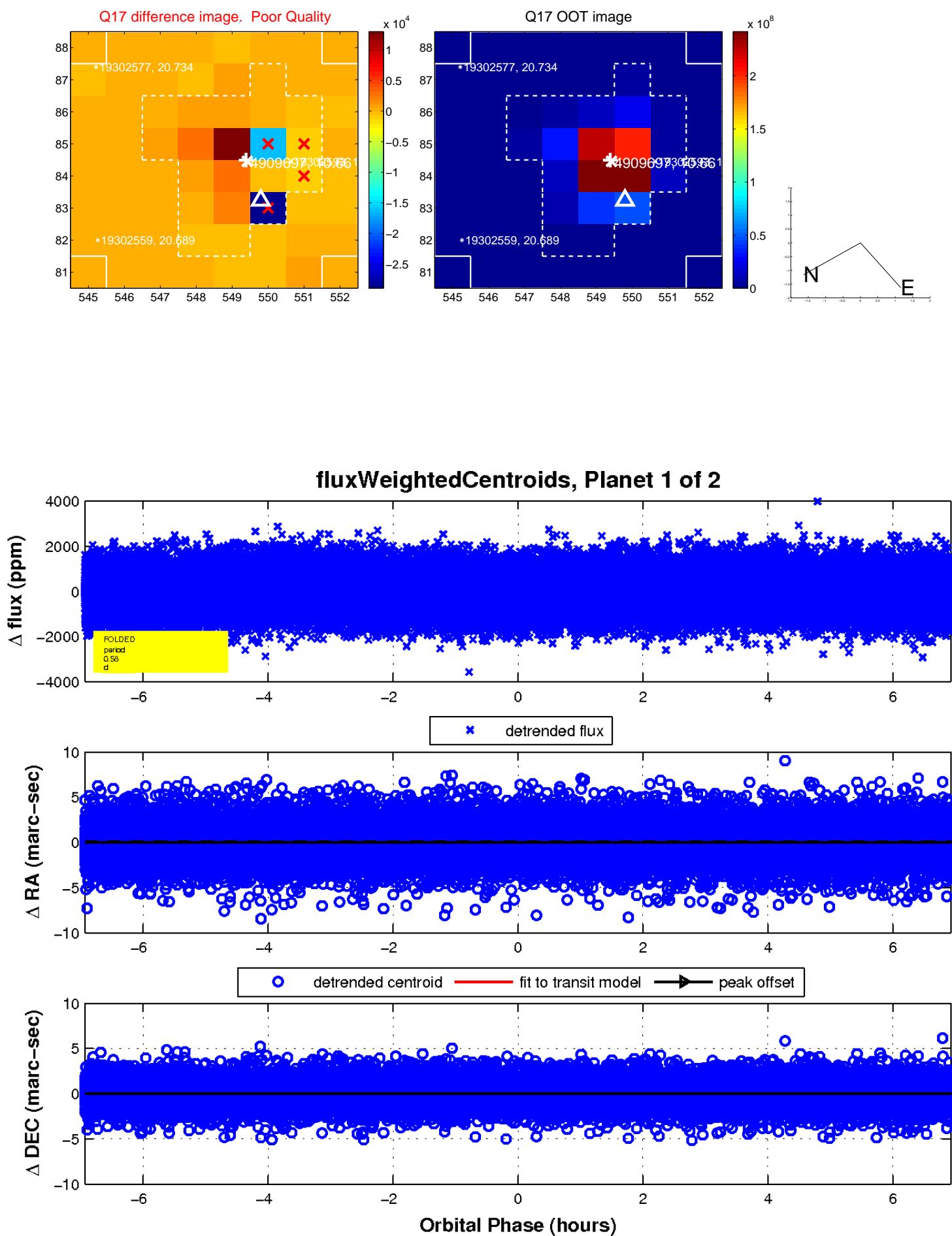
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



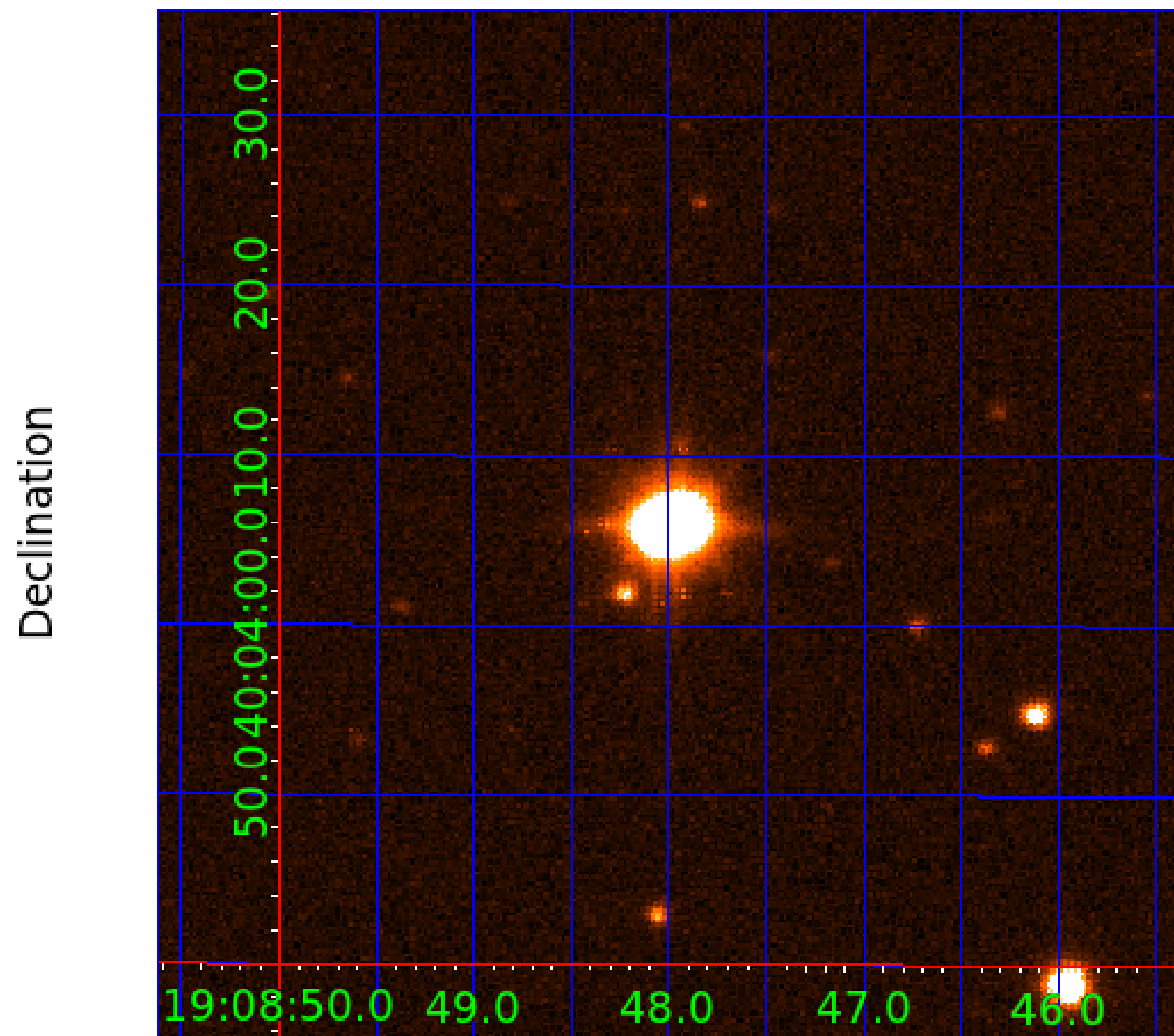
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image



KIC 004909697

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})
004909697-01	OBS	No	0.577683	131.739541	88.3	2.348	12.7	14.5	2.39	8035	2.61	76176.31
004909697-02	OBS	No	0.577650	132.040439	38.6	3.685	10.1	7.2	2.39	8035	1.61	76182.16

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004909697-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—CENT_SATURATED
004909697-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—SAME_NTL_PERIOD—CENT_SATURATED

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

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

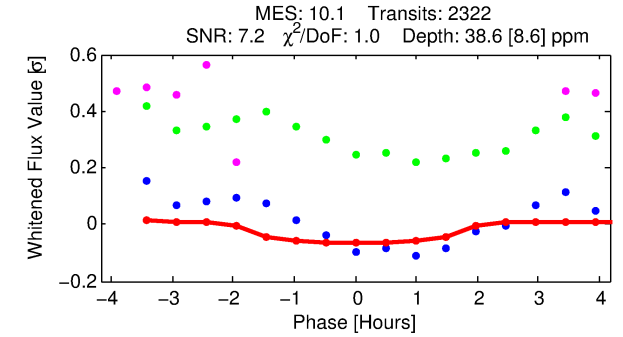
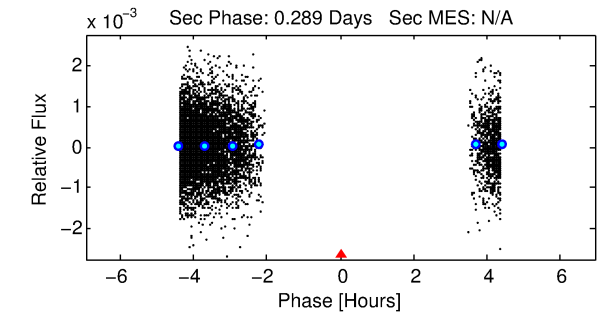
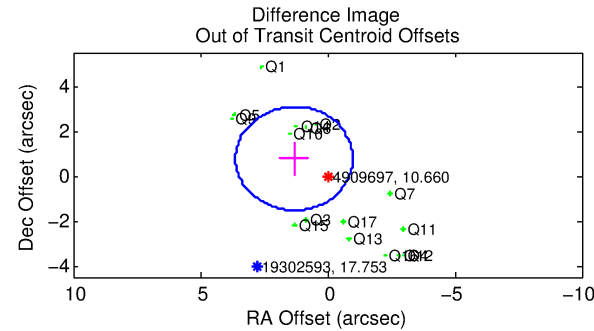
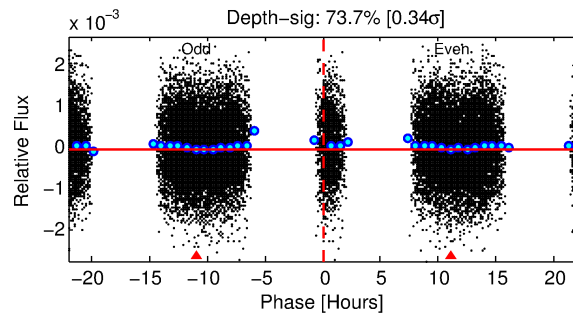
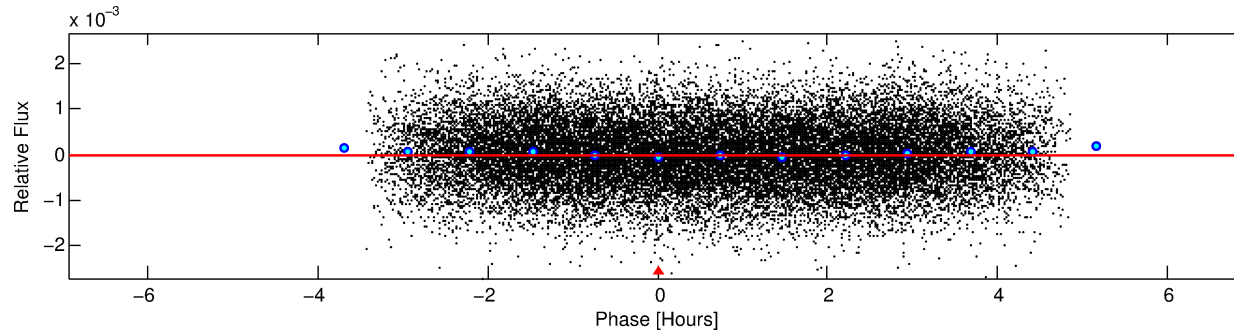
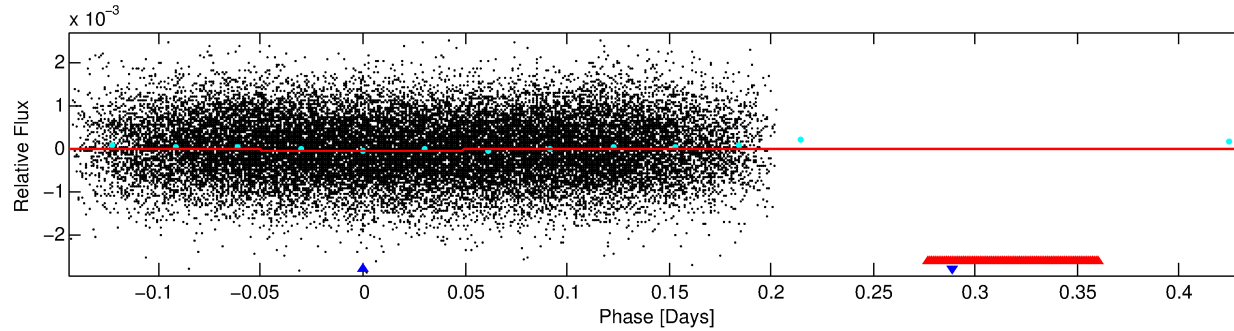
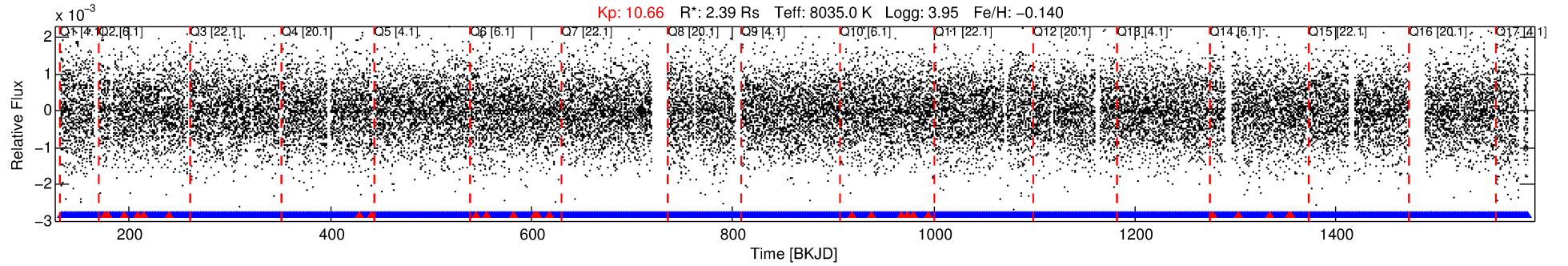
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004909697-02

No Significant Match Found

DV One-Page Summary

KIC: 4909697 Candidate: 2 of 2 Period: 0.578 d



DV Fit Results:

Period = 0.57765 [0.00002] d
Epoch = 132.0404 [0.0067] BKJD
 $R_p/R^* = 0.0062$ [0.0090]
 $a/R^* = 1.18$ [2.82]
 $b = 0.74$ [5.26]
 $\text{Seff} = 76182.16$ [37178.58]
 $T_{\text{eq}} = 4236$ [517] K
 $R_p = 1.61$ [2.41] R_{\oplus}
 $a = 0.0167$ [0.0051] AU

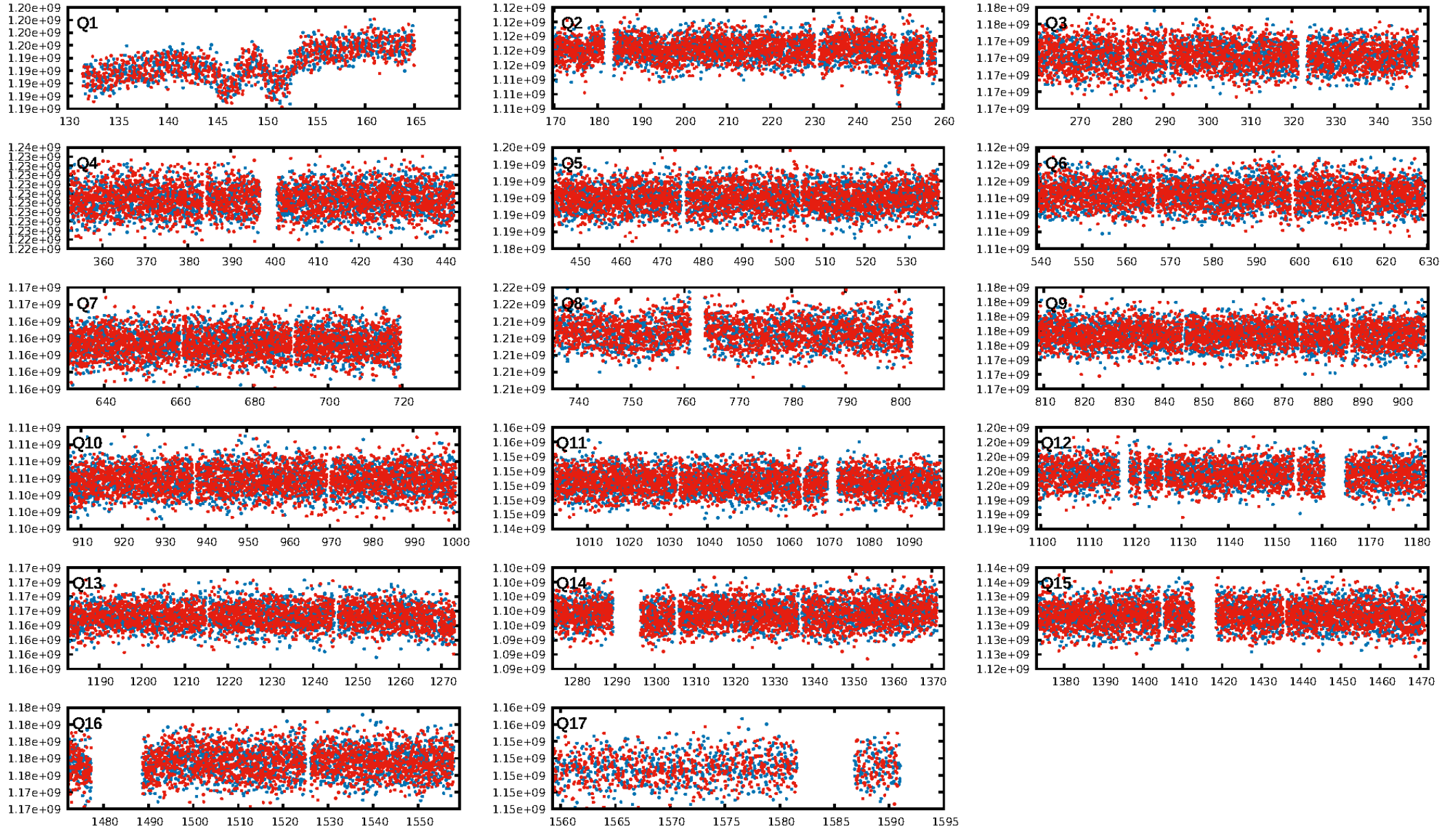
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.0% [0.00 σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 0.99 [2190/2217]
GhostDiagnostic-chr: 1.474
Centroid-sig: 13.5%
Centroid-so: 0.336 arcsec [0.84 σ]
OotOffset-rm: 1.524 arcsec [1.98 σ]
KicOffset-rm: 1.768 arcsec [2.20 σ]
OotOffset-st: 4/4/3/5 [16]
KicOffset-st: 4/4/3/5 [16]
DiffImageQuality-fgm: 0.69 [11/16]
DiffImageOverlap-fno: 0.00 [0/17]

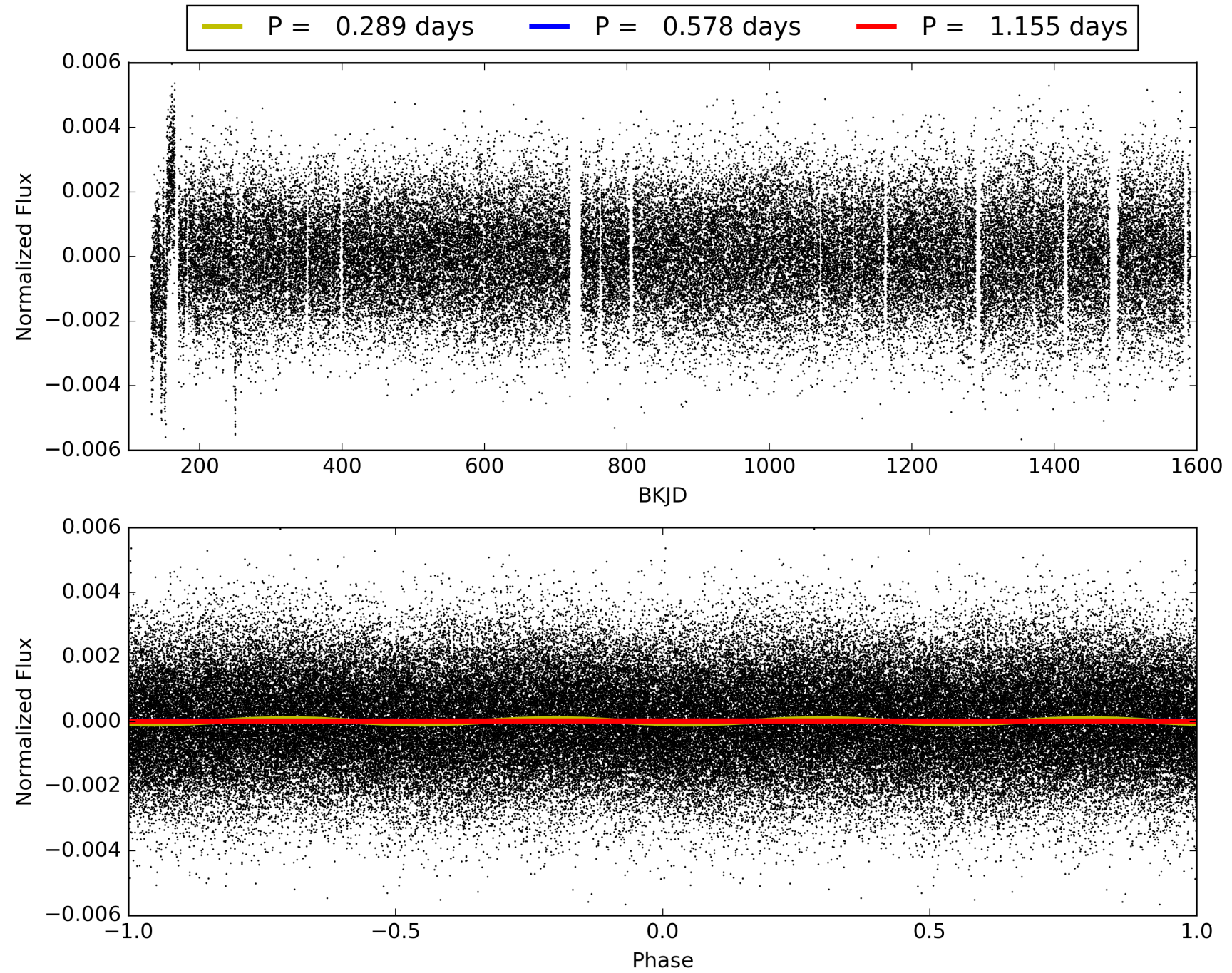
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 01:12:37 Z

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

TCE 004909697-02, PDC Light Curves

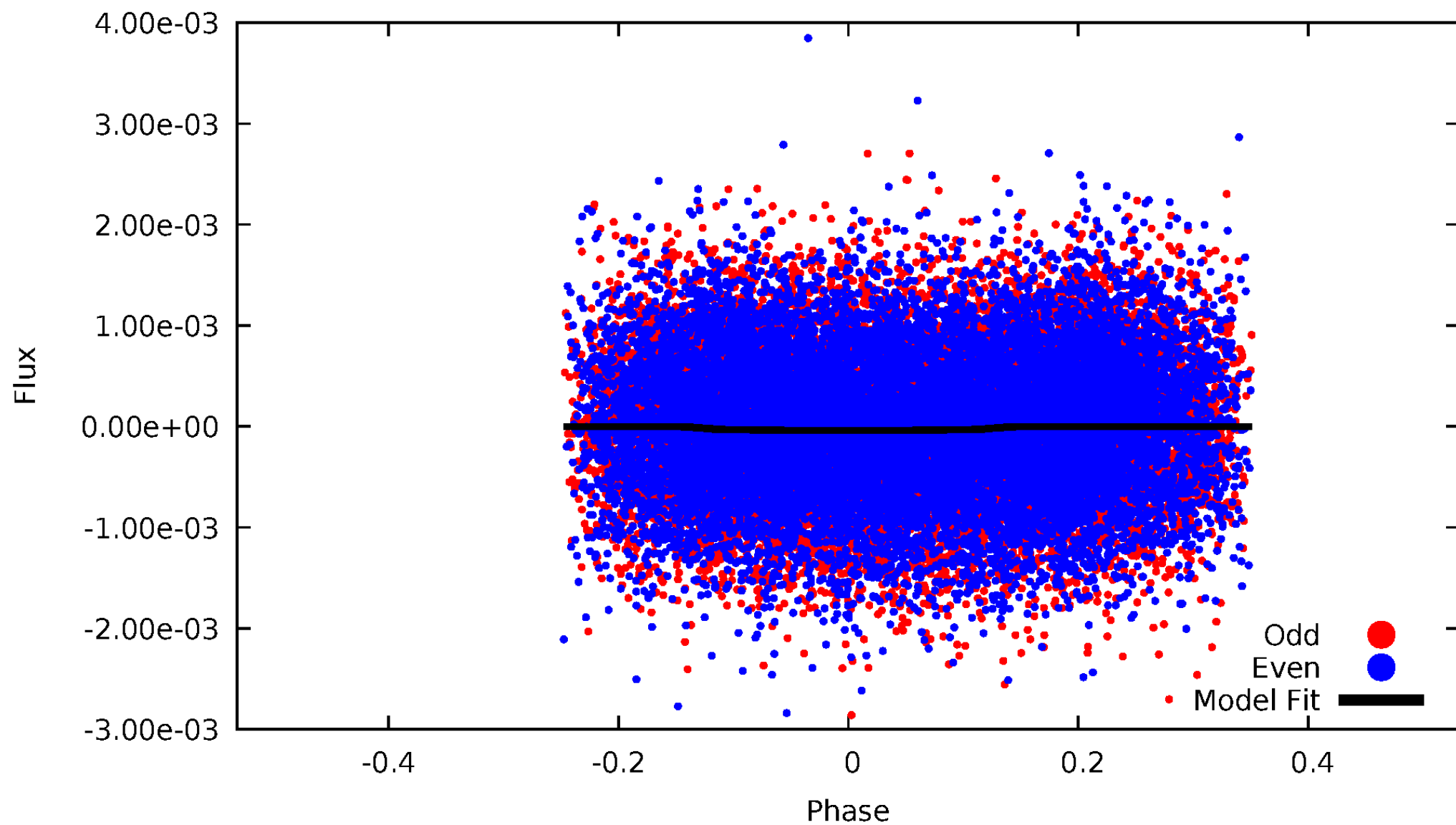


TCE 004909697-02



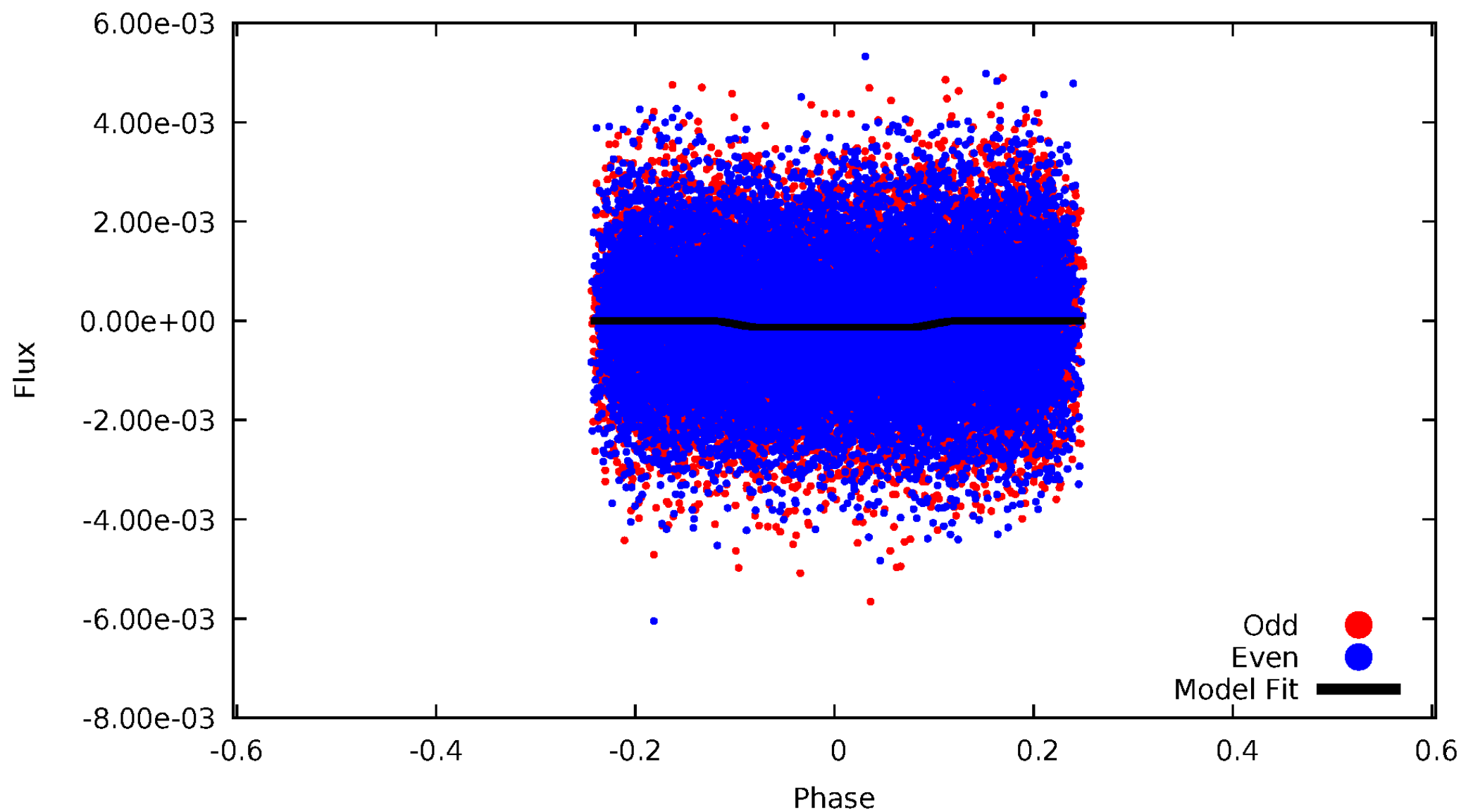
DV Odd/Even

TCE 004909697-02



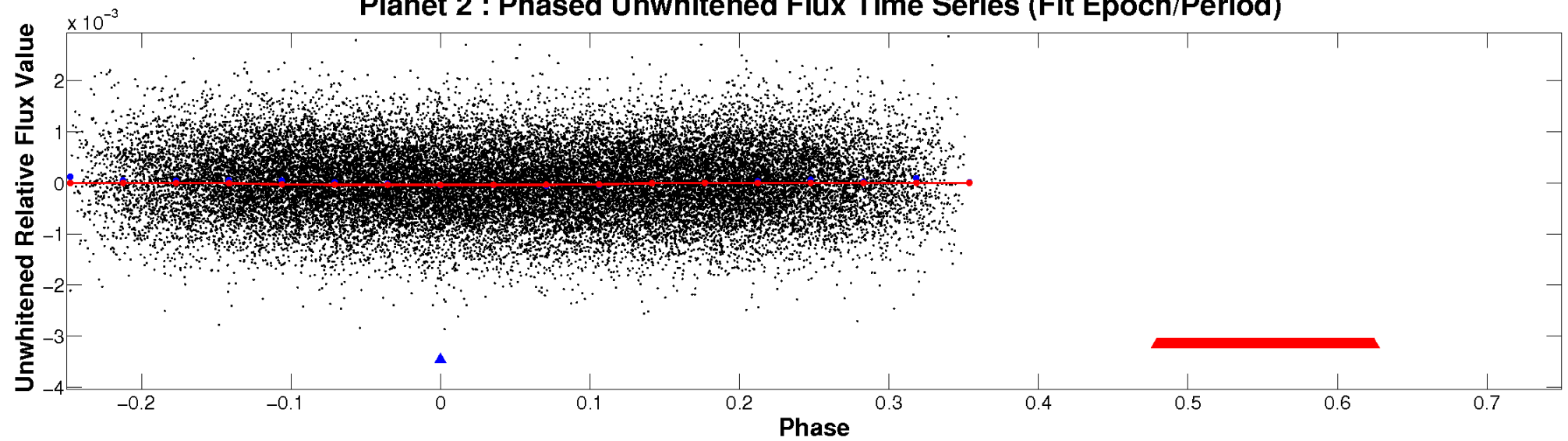
ALT Odd/Even

TCE 004909697-02

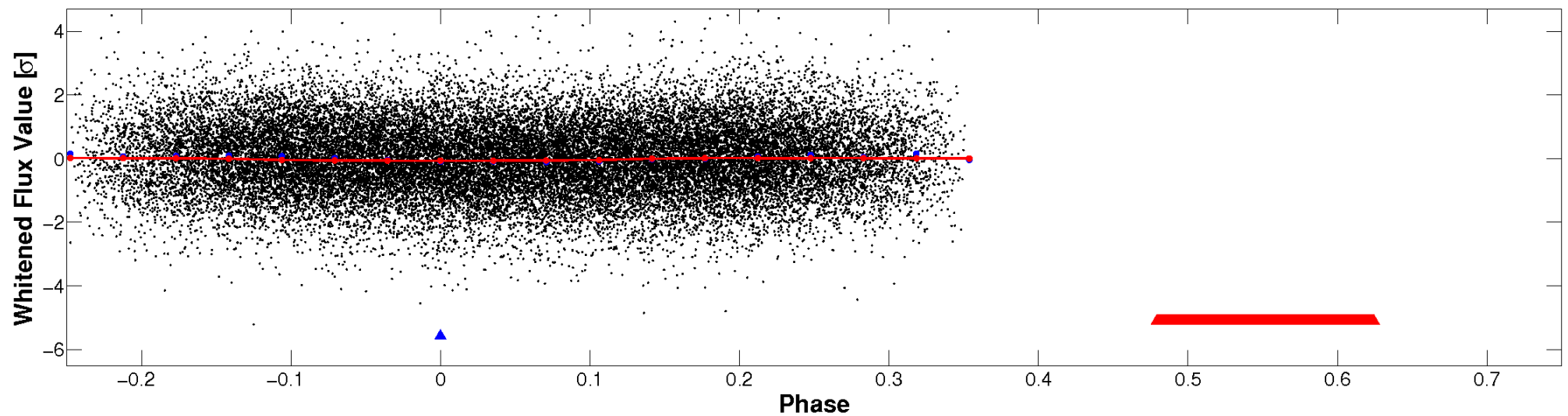


Non-Whitened Vs. Whitened Light Curve

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

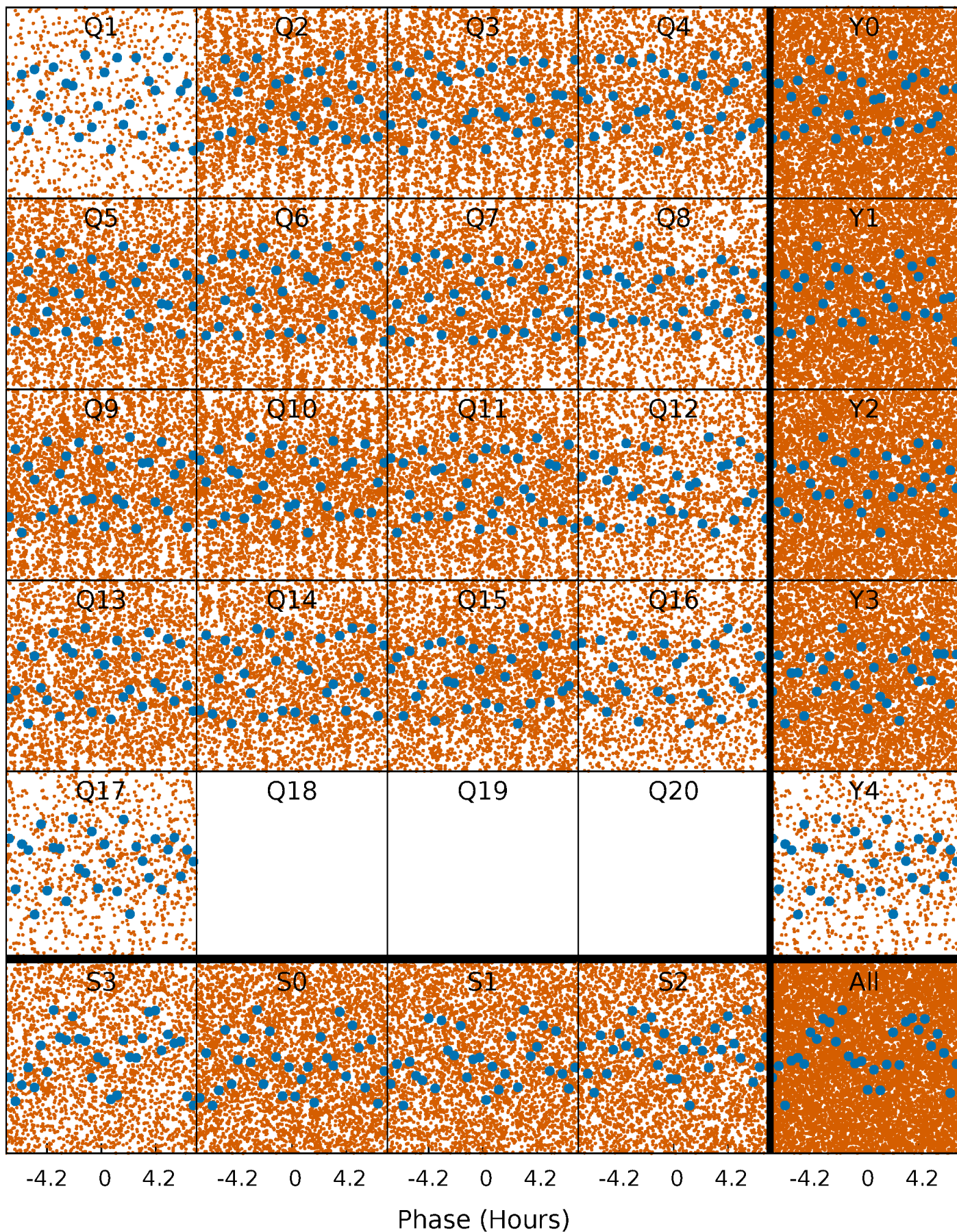


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



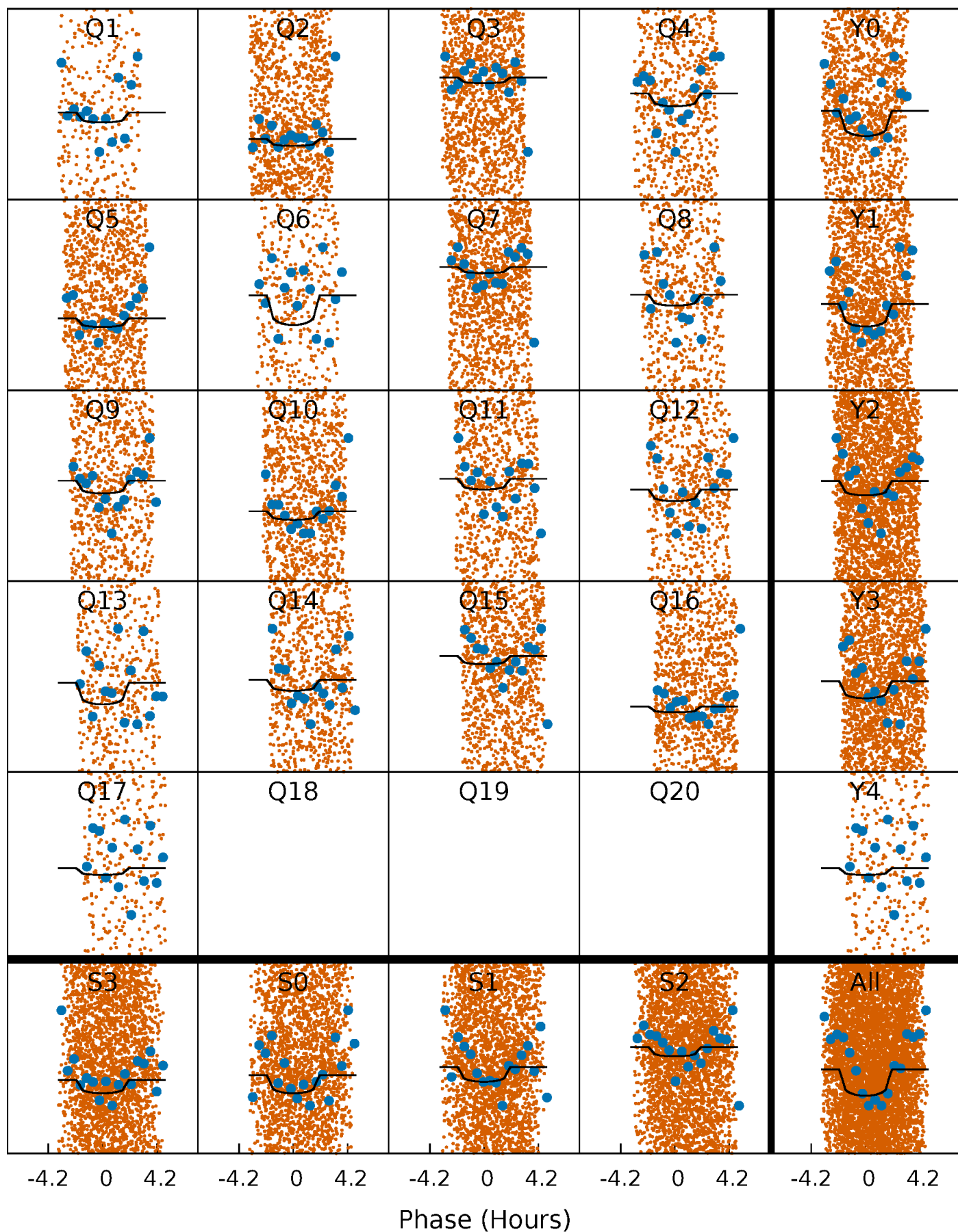
PDC Quarter-Phased Transit Curves

TCE 004909697-02 P= 0.577650 Days $T_0=132.040439$ (BKJD)



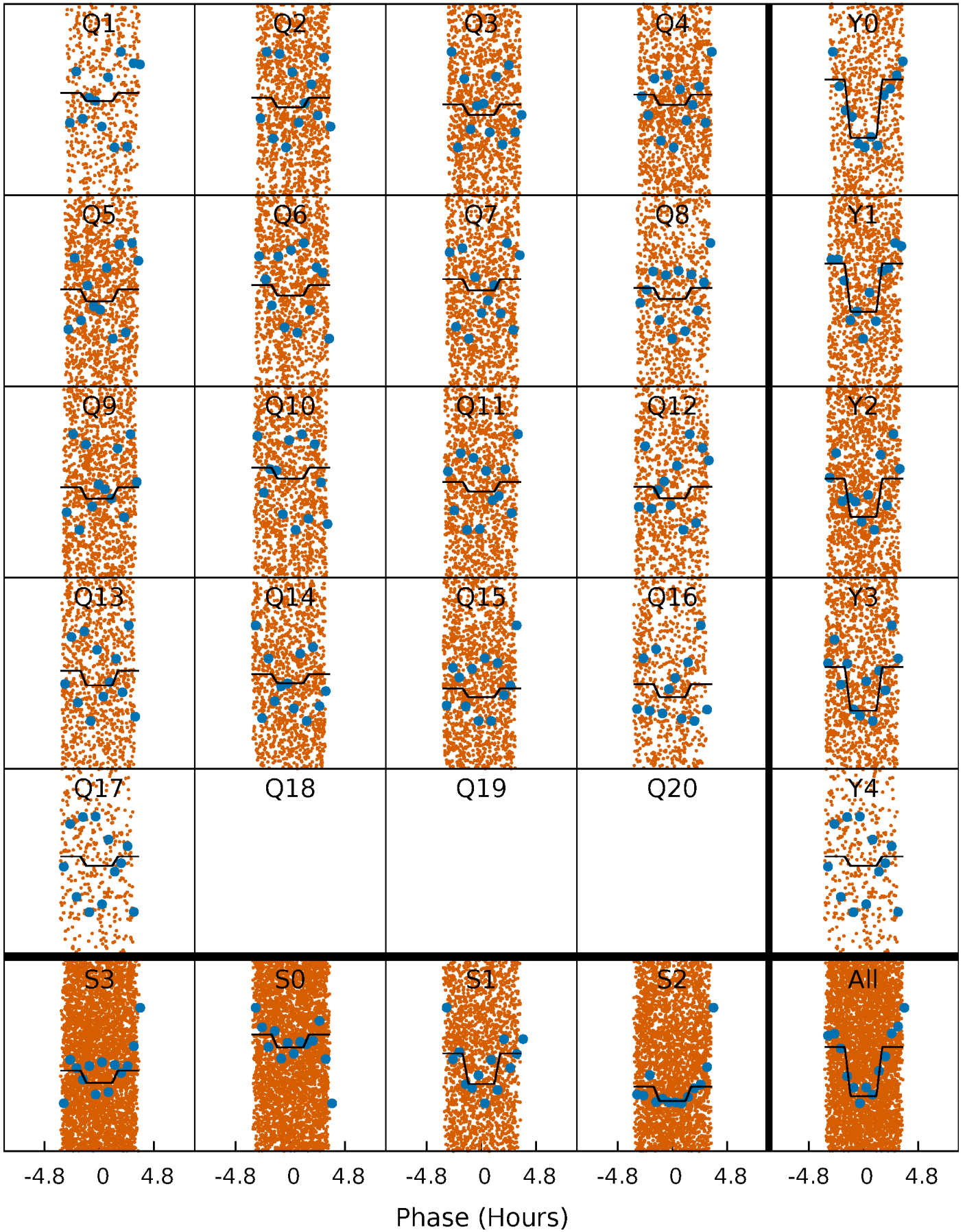
DV Quarter-Phased Transit Curves

TCE 004909697-02 $P = 0.577650$ Days $T_0 = 132.040439$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

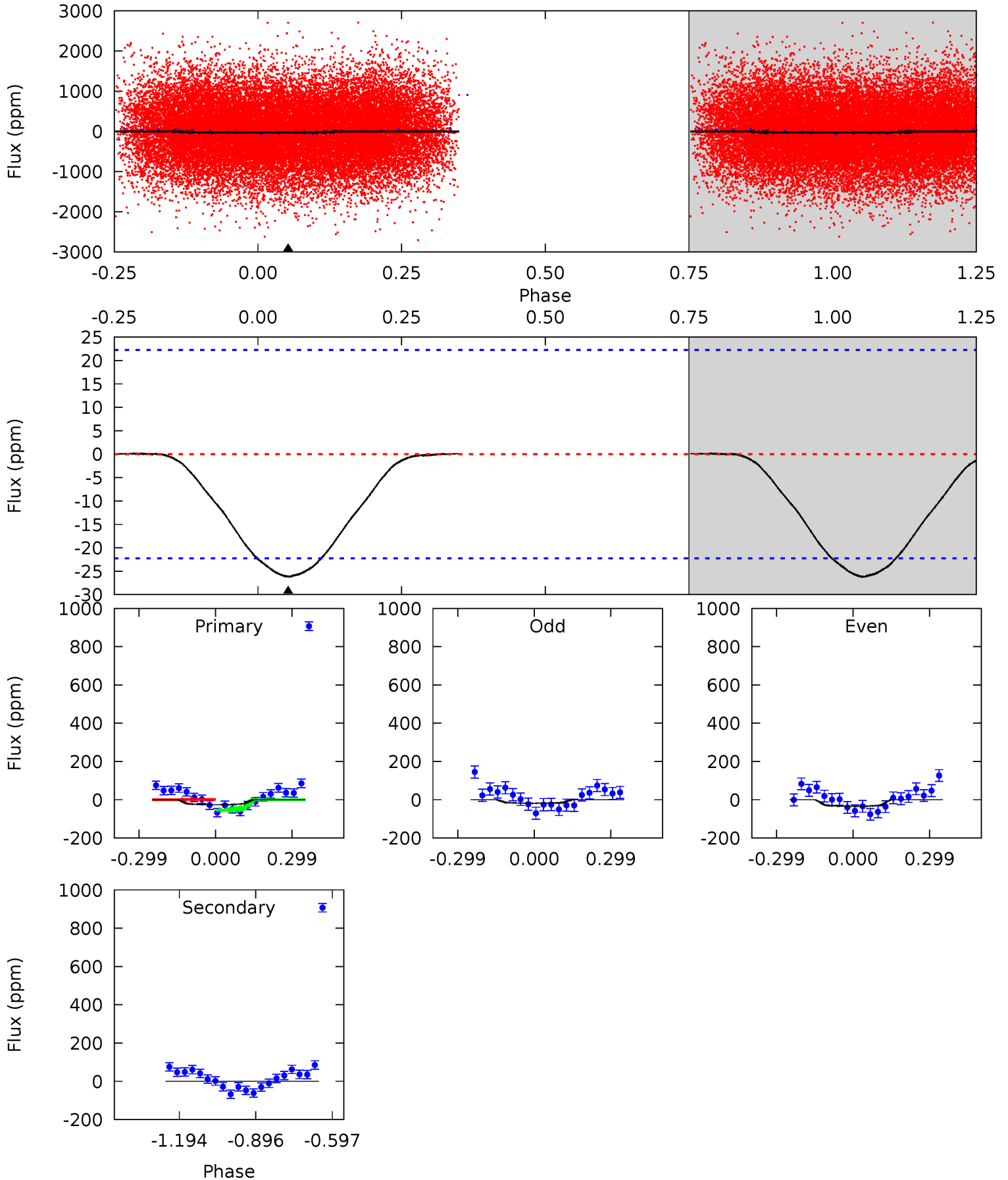
TCE 004909697-02 $P = 0.577692$ Days $T_0 = 132.015454$ (BKJD)



DV Model-Shift Uniqueness Test

004909697-02, P = 0.577650 Days, E = 131.462789 Days

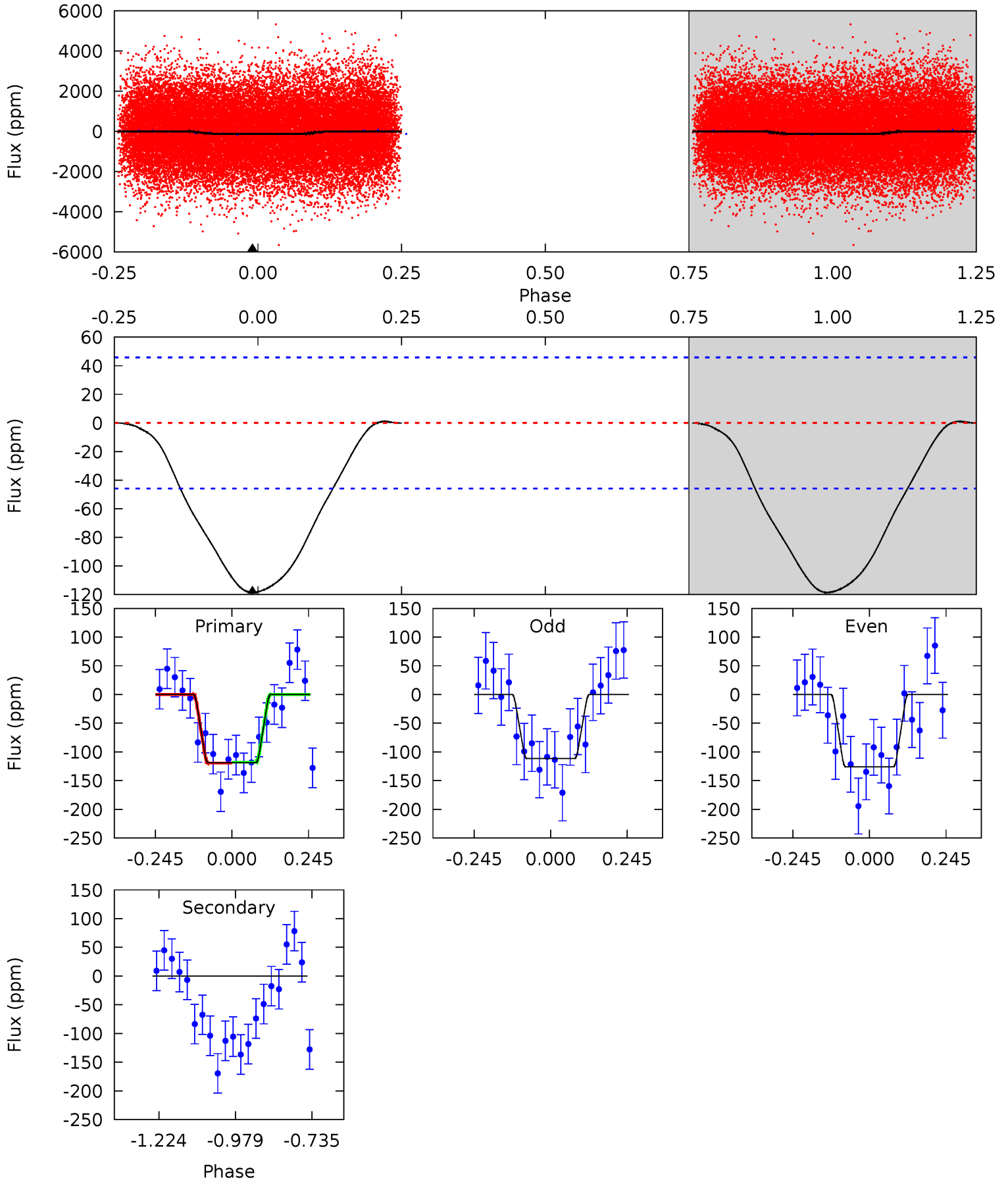
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.10	0	0	0	4.33	1.04	0.03	5.10	5.10	0	0	1.60	1.05	0.00	5.16



Alt Model-Shift Uniqueness Test

004909697-02, P = 0.577692 Days, E = 131.437762 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.3	0	0	0	4.37	1.16	0.10	11.3	11.3	0	0	0.69	1.01	0.01	0.07



Stellar Parameters For KIC 004909697

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	8035^{+223}_{-334}	$3.953^{+0.259}_{-0.129}$	$-0.140^{+0.200}_{-0.350}$	$2.387^{+0.410}_{-0.820}$	$1.865^{+0.096}_{-0.385}$	$0.193^{+0.329}_{-0.068}$
	+3%/-4%	+7%/-3%	+143%/-250%	+17%/-34%	+5%/-21%	+170%/-35%
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 004909697-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	0 ± 5	$2.20^{+2.01}_{-1.40}$	5865^{+370}_{-519}	-4743^{+7921}_{-667}	$0.003^{+0.338}_{-0.223}$
Alt.	0 ± 10	$3.17^{+2.15}_{-1.92}$	5851^{+373}_{-466}	-4783^{+1122}_{-665}	$-0.001^{+0.216}_{-0.250}$

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 $A_{obs} \gg 1.0$

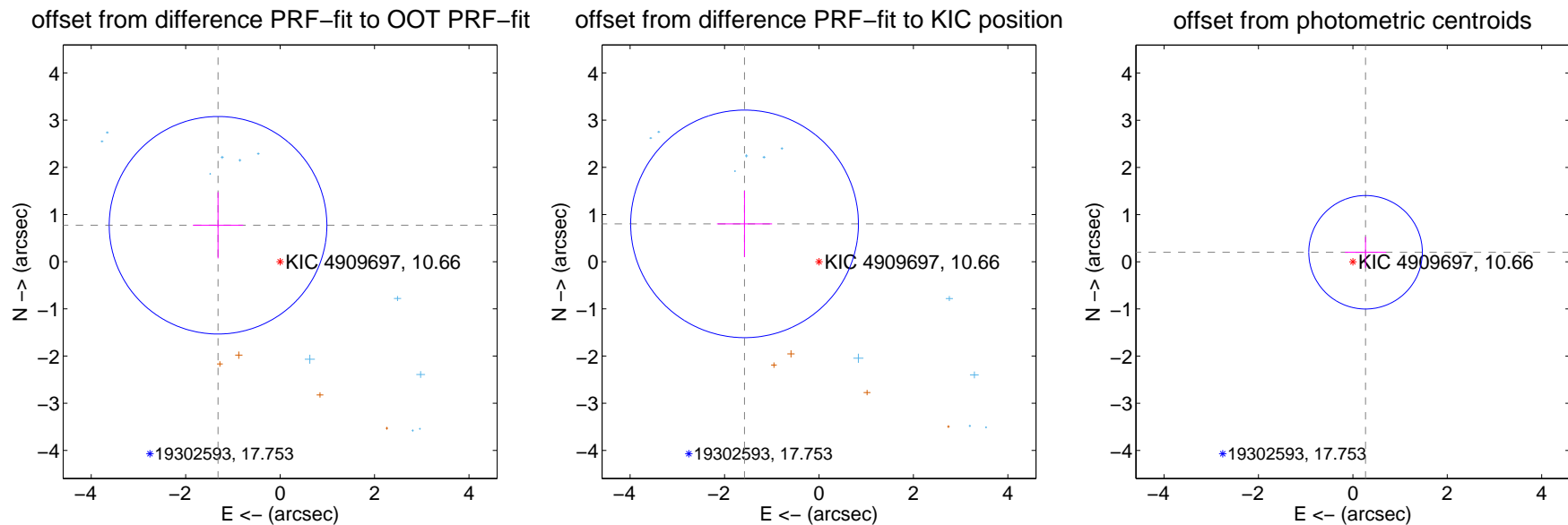
DV Centroid Data

Supplemental centroid analysis for 004909697-02. **Kepler magnitude: 10.66.** Transit SNR 7.20

There are 11 quarters with good PRF difference image offsets

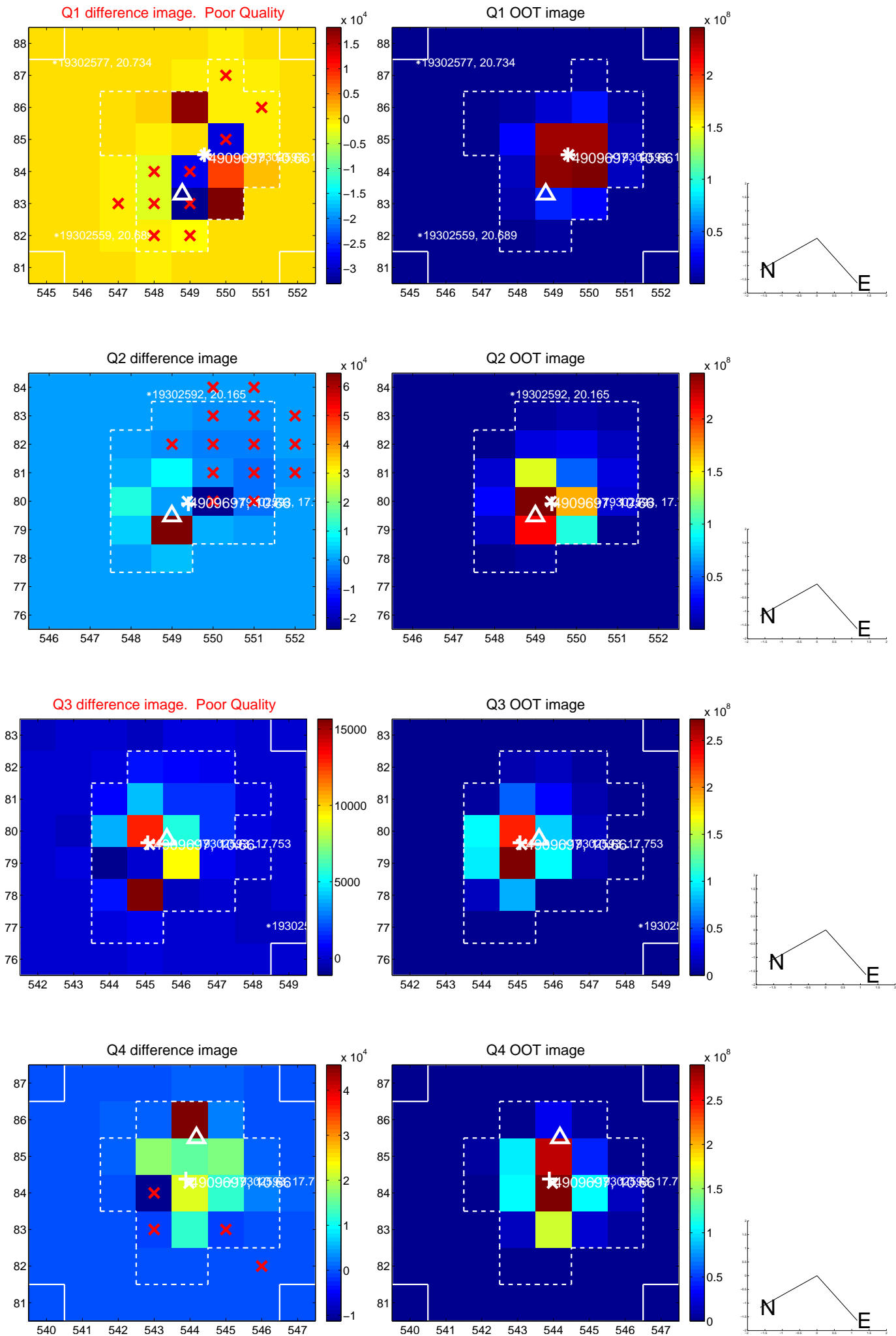
The direct PRF centroid is offset from the target star catalog position by about 0.21 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.524 ± 0.768	1.98	1.314 ± 0.533	0.772 ± 0.700
PRF-fit source offset from KIC position	1.768 ± 0.804	2.20	1.576 ± 0.583	0.801 ± 0.702
photometric centroid source offset	0.34 ± 0.40	0.84	-0.27 ± 0.44	0.20 ± 0.33

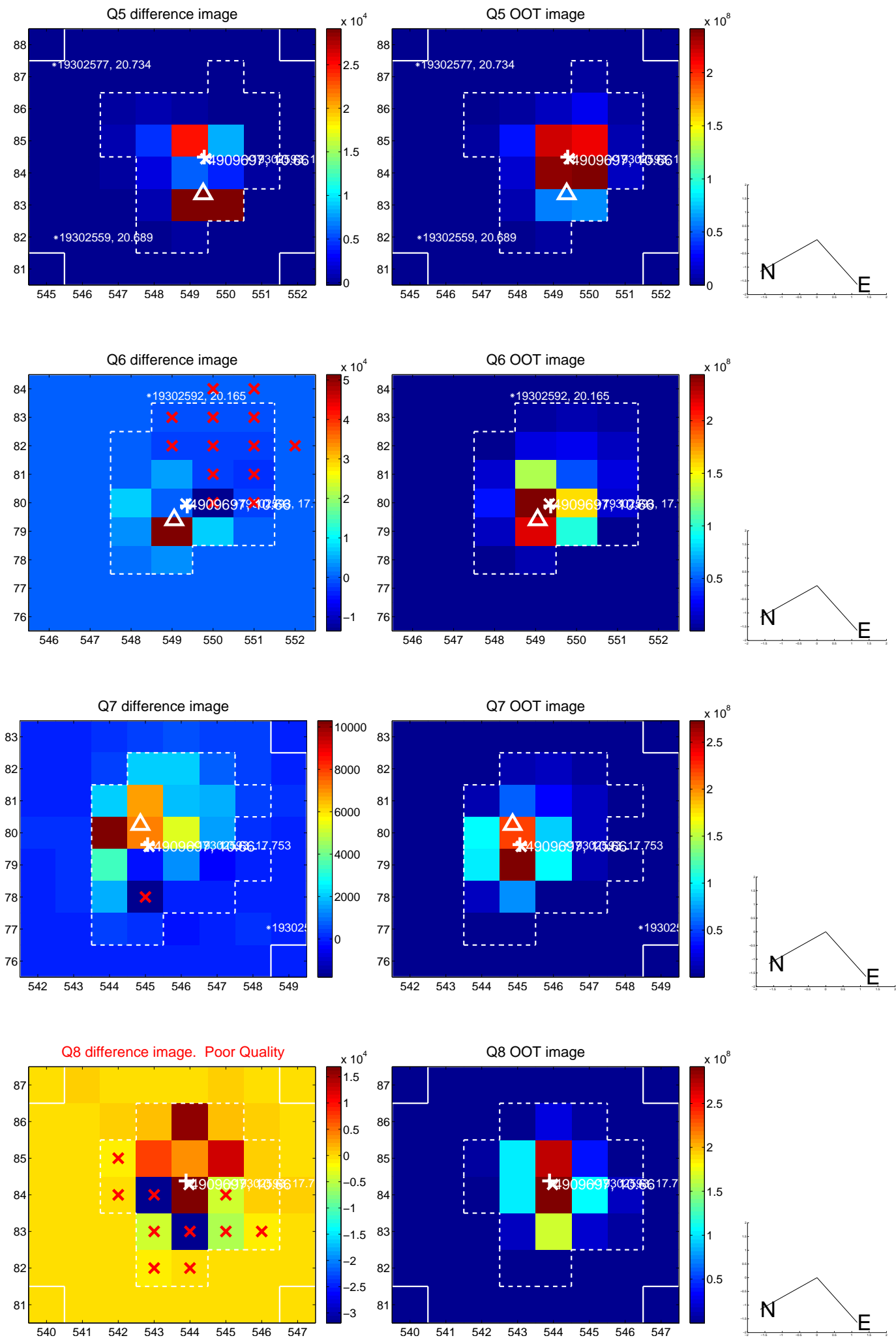


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

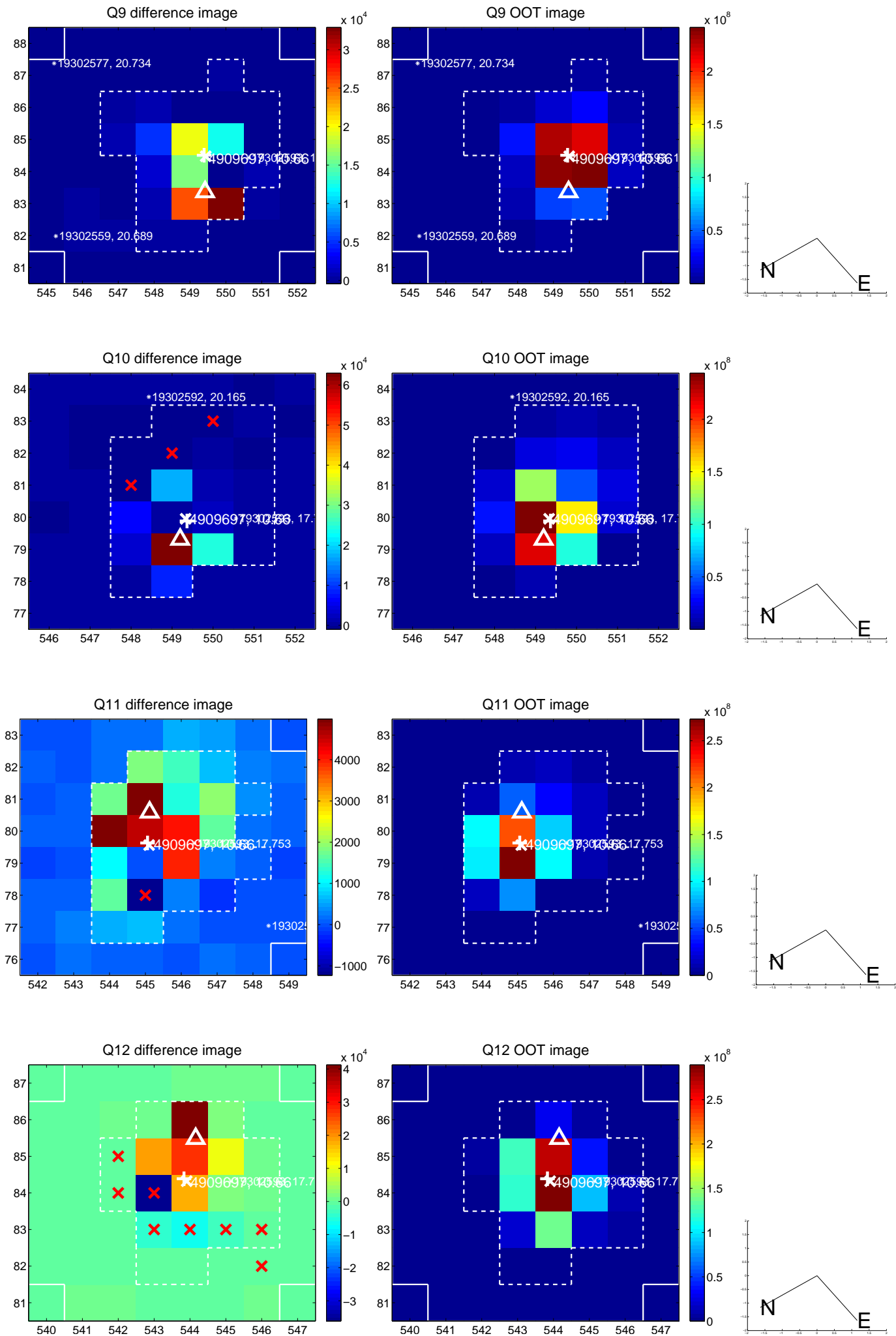
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



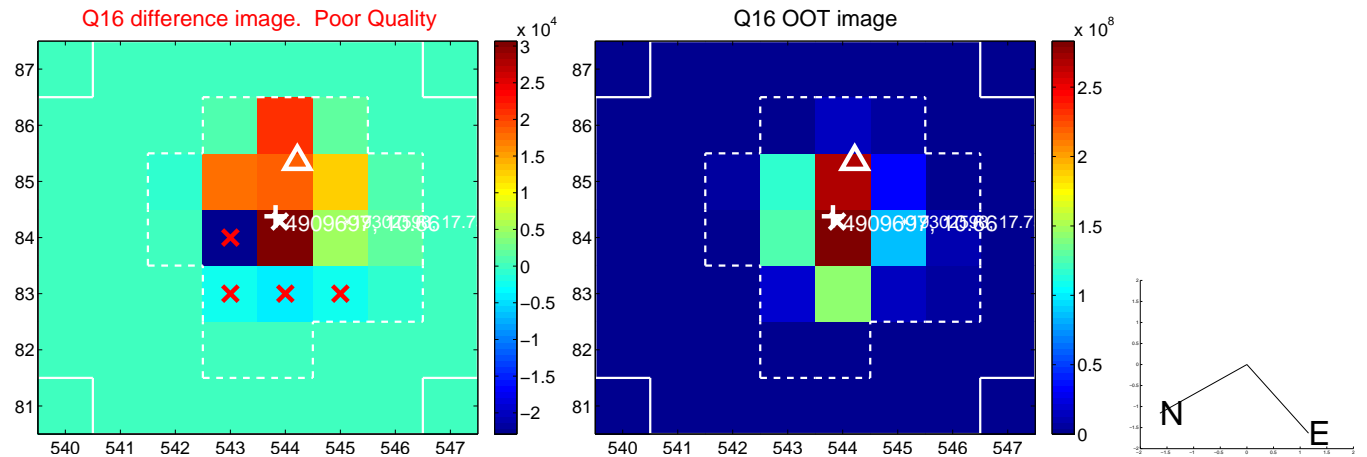
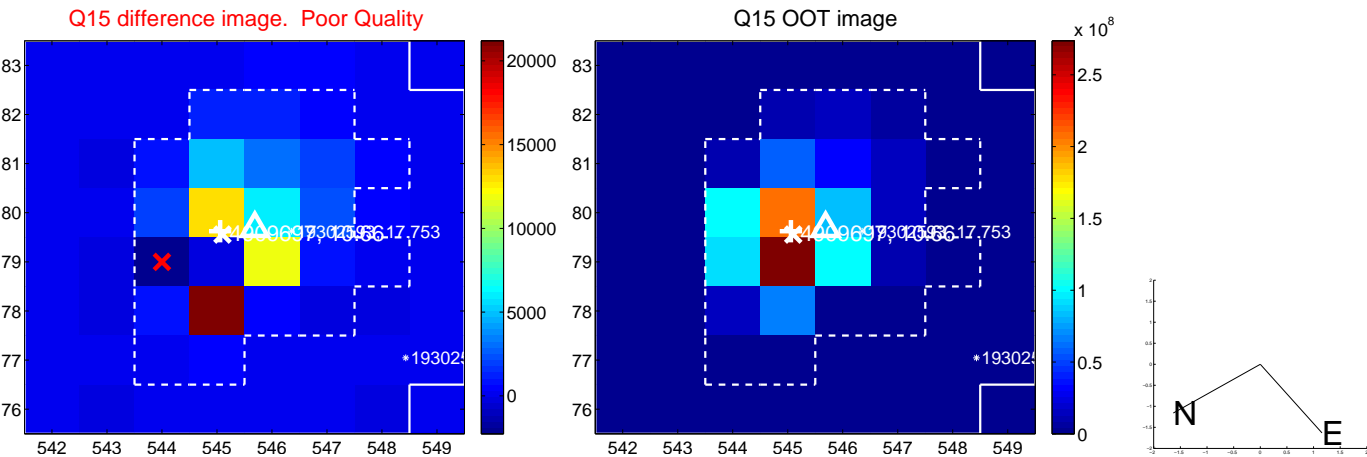
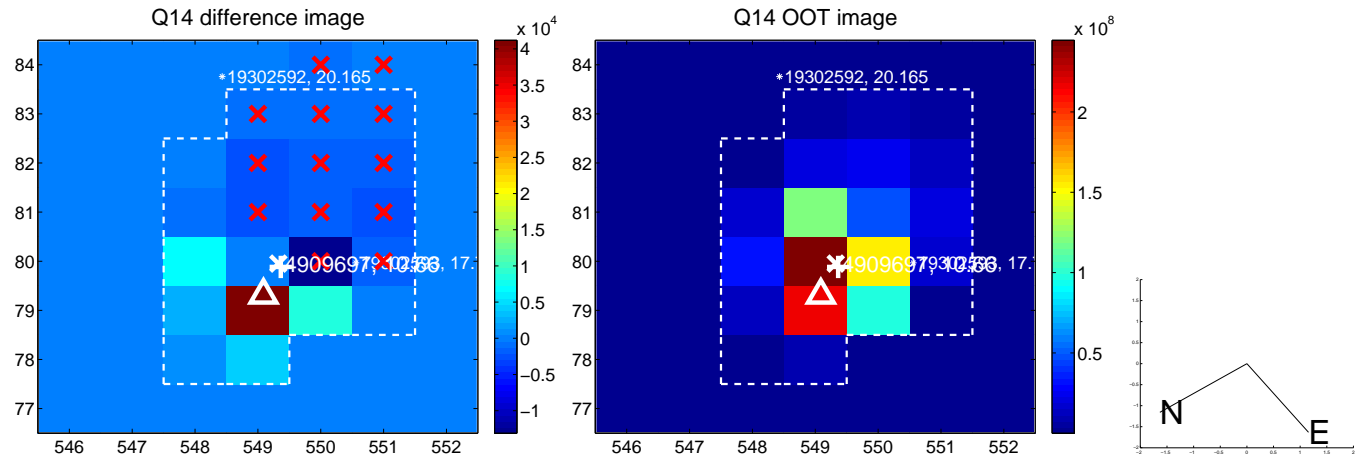
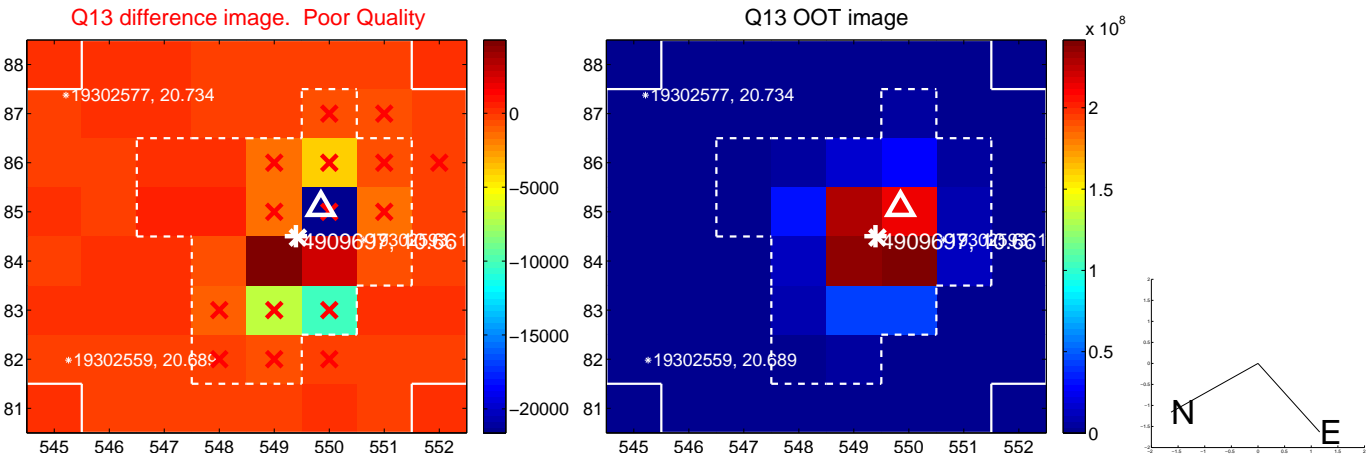
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



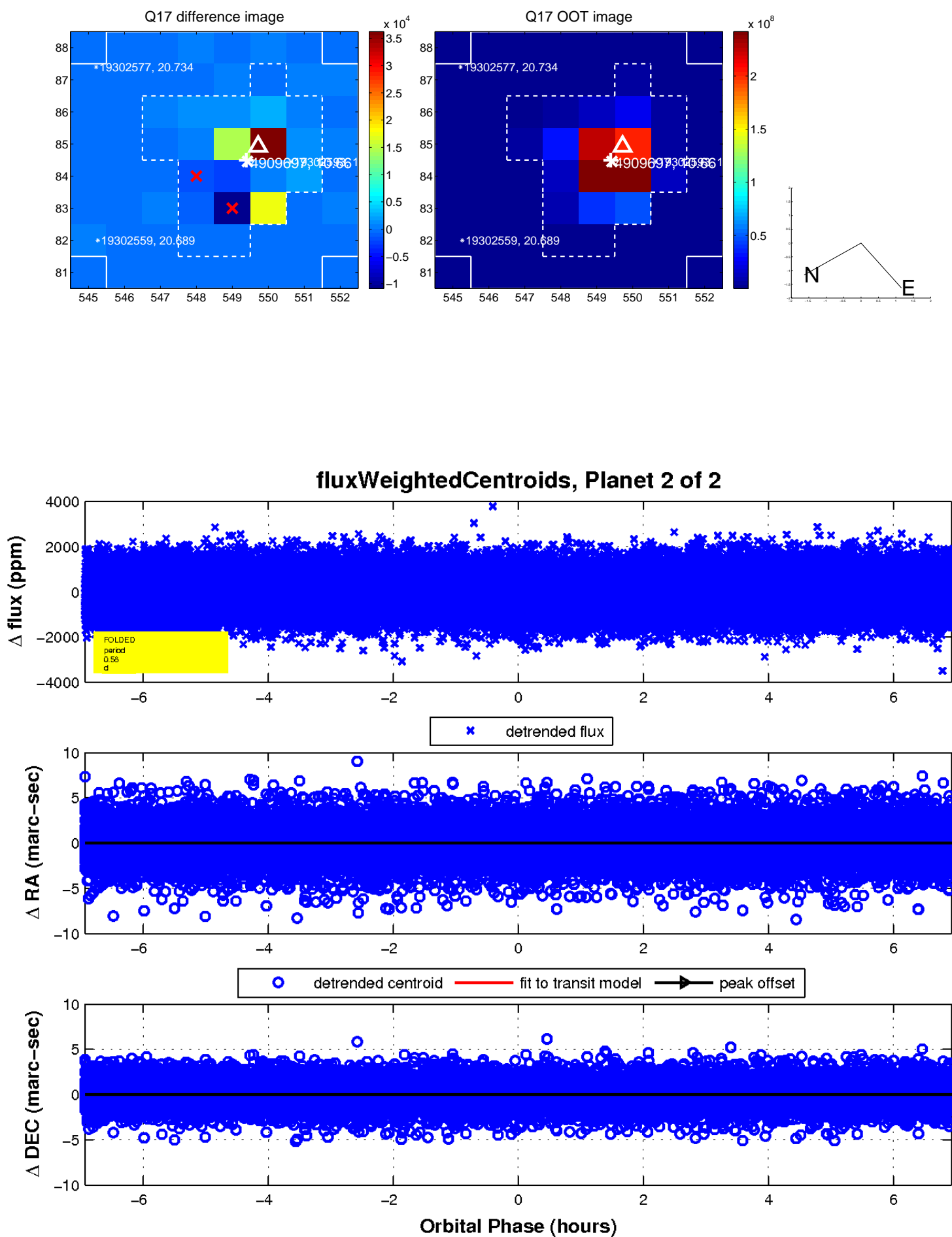
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

