

KIC 010529091

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})
010529091-01	OBS	No	537.060304	210.840113	44.6	9.159	8.6	2.6	3.29	8090	2.49	15.29
010529091-02	OBS	No	1.401910	132.356894	2.1	3.801	8.5	2.3	3.29	8090	0.54	42530.59

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010529091-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
010529091-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—CENT_SATURATED

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

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

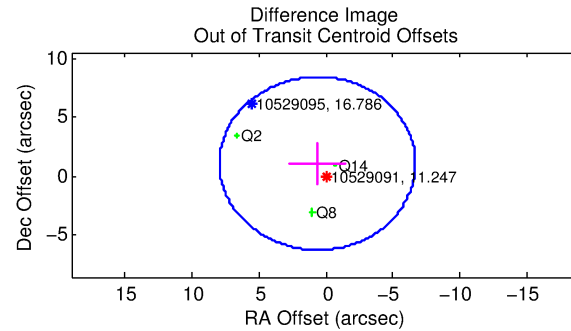
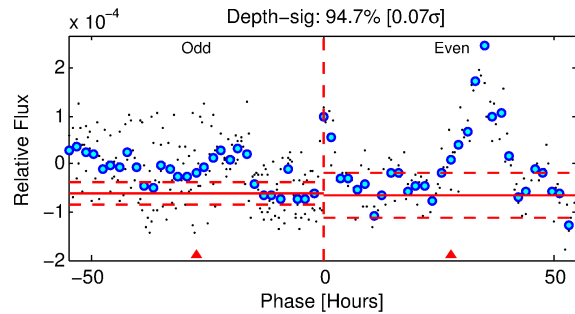
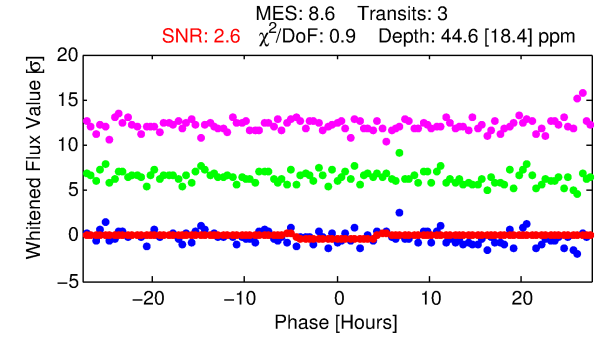
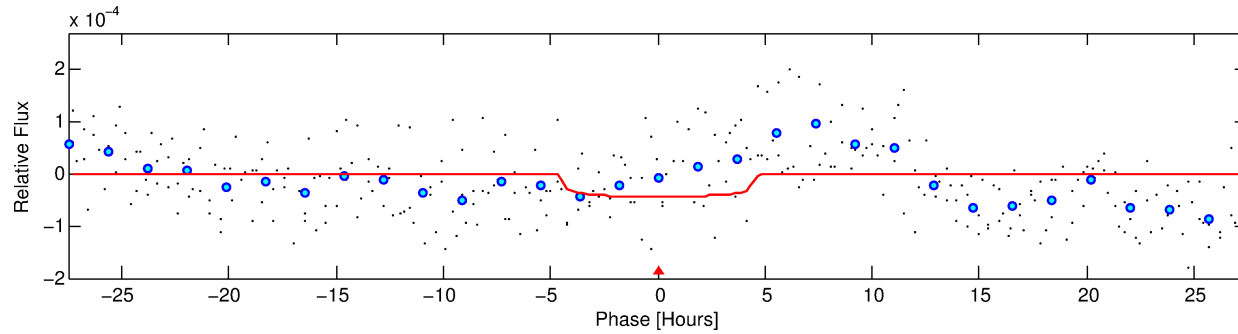
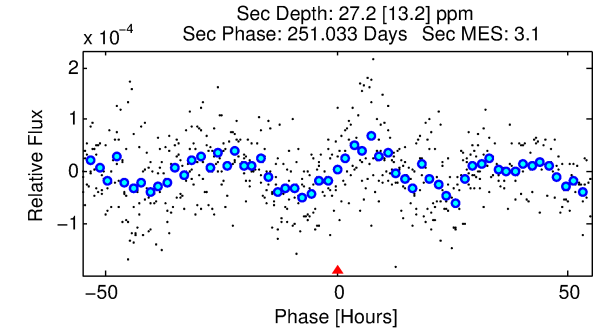
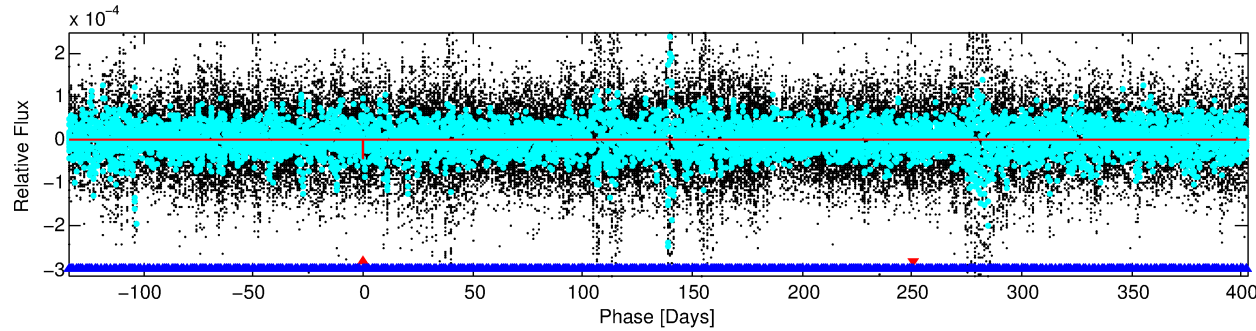
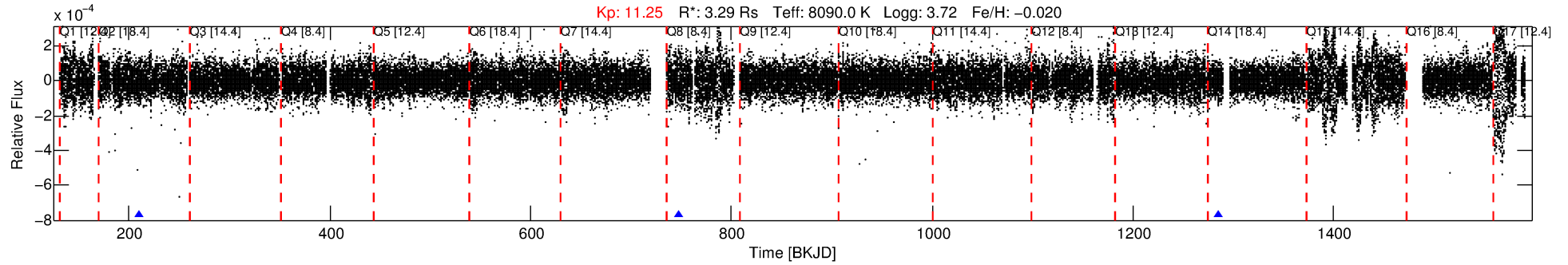
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 010529091-01

No Significant Match Found

DV One-Page Summary

KIC: 10529091 Candidate: 1 of 2 Period: 537.060 d



DV Fit Results:

Period = 537.06030 [0.01869] d
Epoch = 210.8401 [0.0204] BKJD
Rp/R* = 0.0069 [0.0046]
a/R* = 235.22 [853.51]
b = 0.86 [1.12]
Teff = 15.29 [11.62]
Teq = 504 [96] K
Rp = 2.49 [2.01] Re
a = 1.6495 [0.7531] AU
Ag = 6562.56 [10459.56] [0.63σ]
Teffp = 7016 [2491] K [2.61σ]

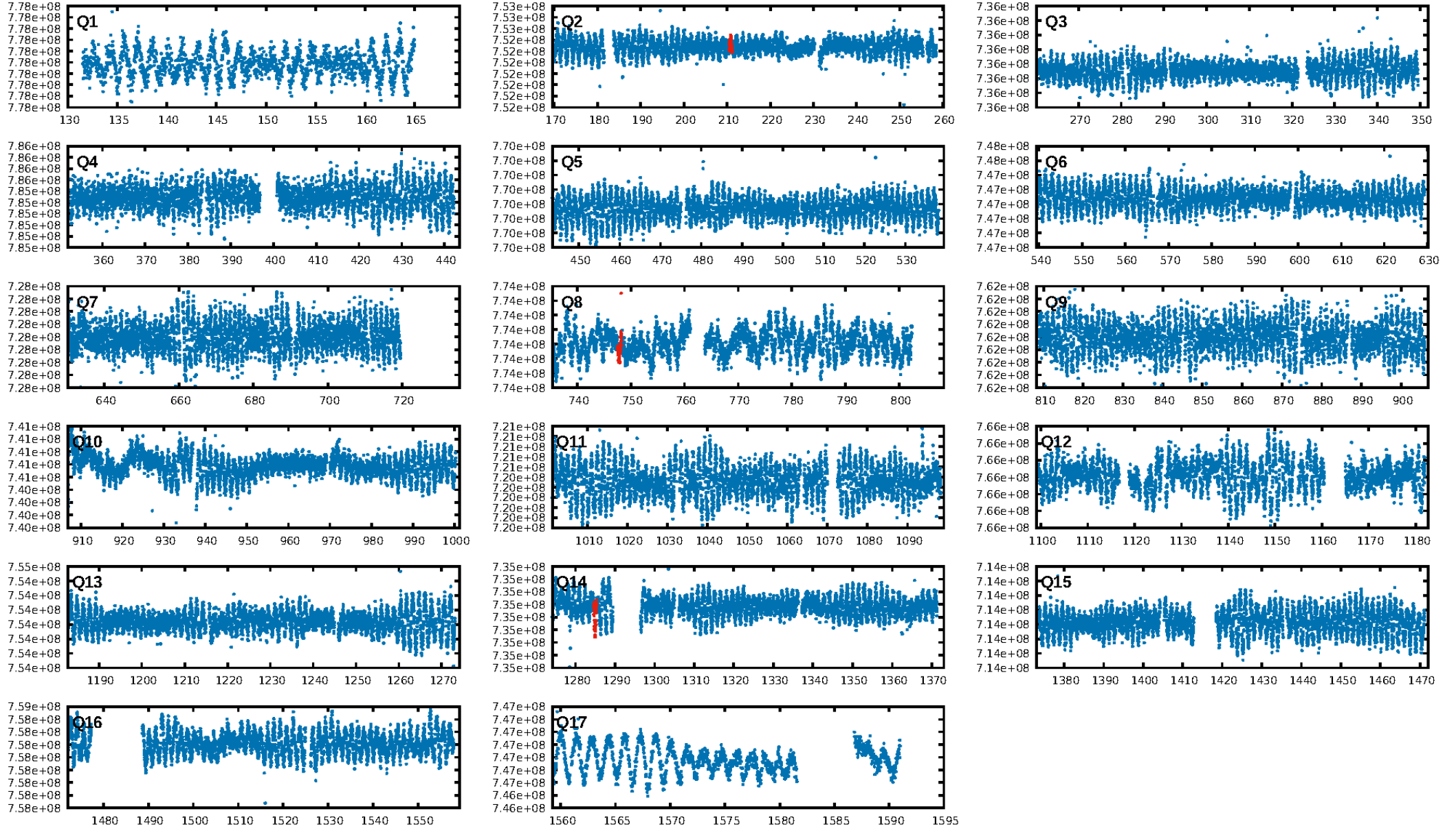
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [1296.34σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 0.5%
ModelChiSquareGof-sig: 97.3%
Bootstrap-pfa: 1.42e-15
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: -1.798
Centroid-sig: 1.6%
Centroid-so: 5.283 arcsec [1.48σ]
OotOffset-rm: 1.266 arcsec [0.52σ]
KicOffset-rm: 1.284 arcsec [0.62σ]
OotOffset-st: 2/0/1/0 [3]
KicOffset-st: 2/0/1/0 [3]
DiffImageQuality-fgm: 0.67 [2/3]
DiffImageOverlap-fno: 0.00 [0/3]

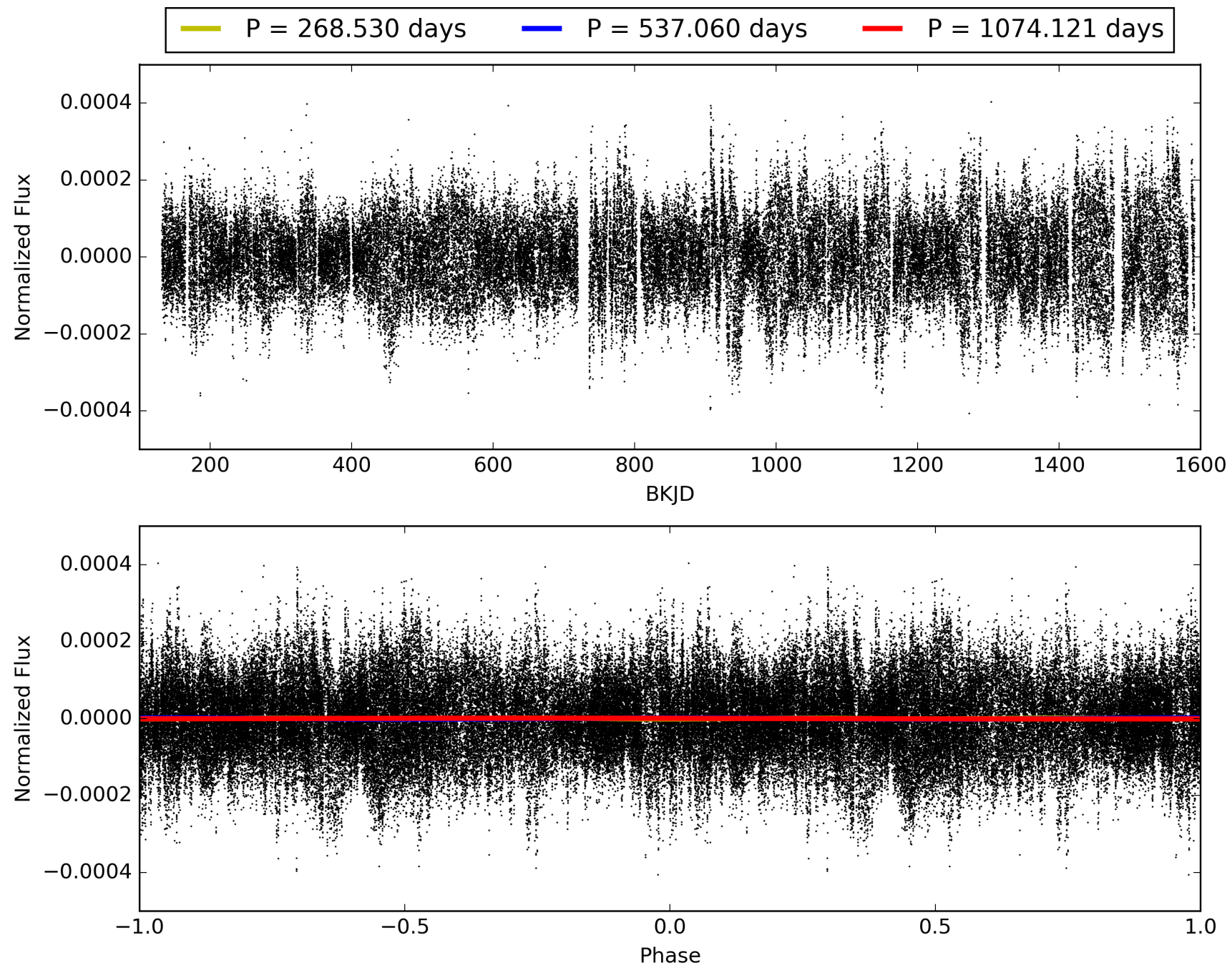
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 07:20:50 Z

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

TCE 010529091-01, PDC Light Curves

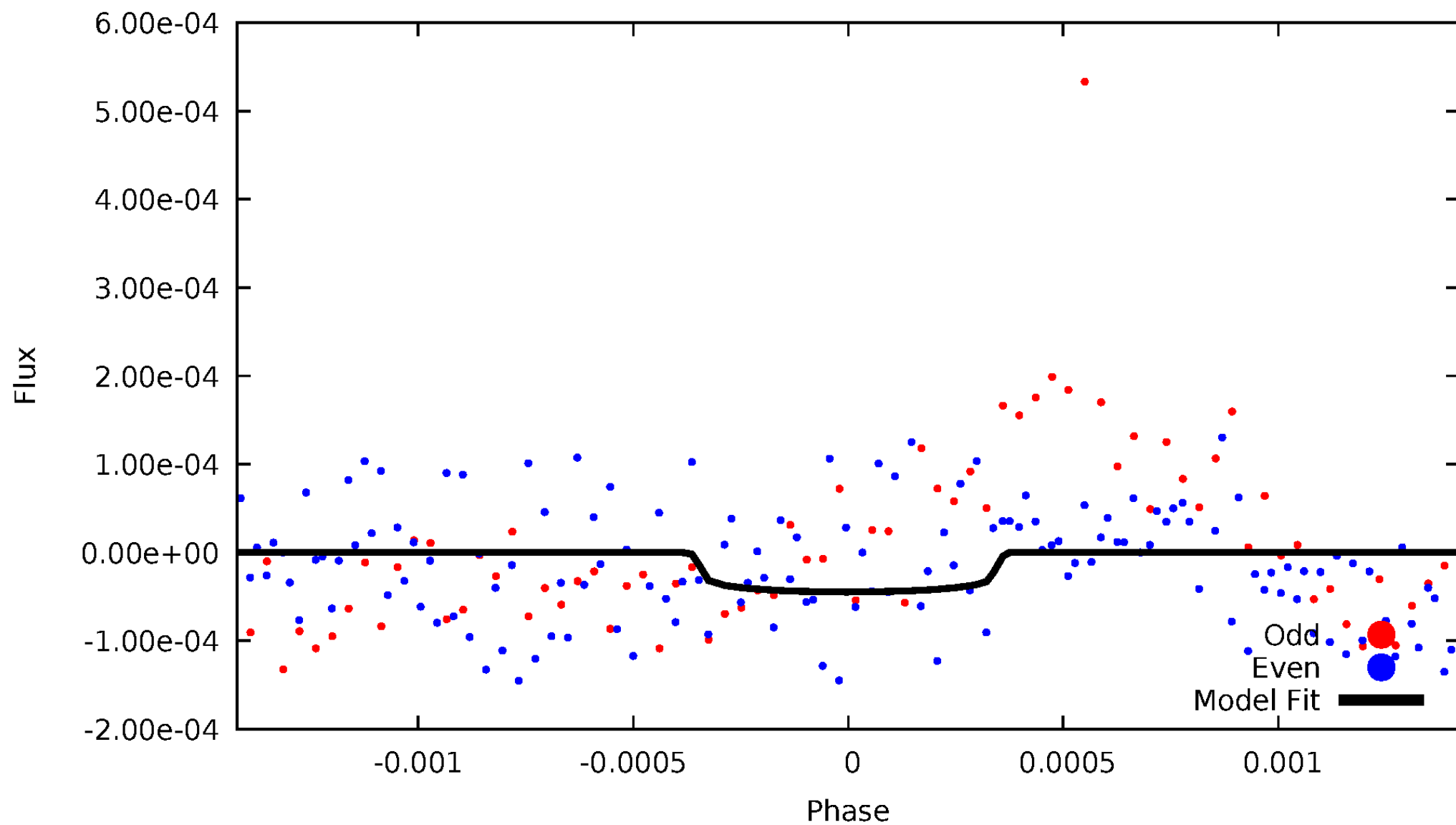


TCE 010529091-01



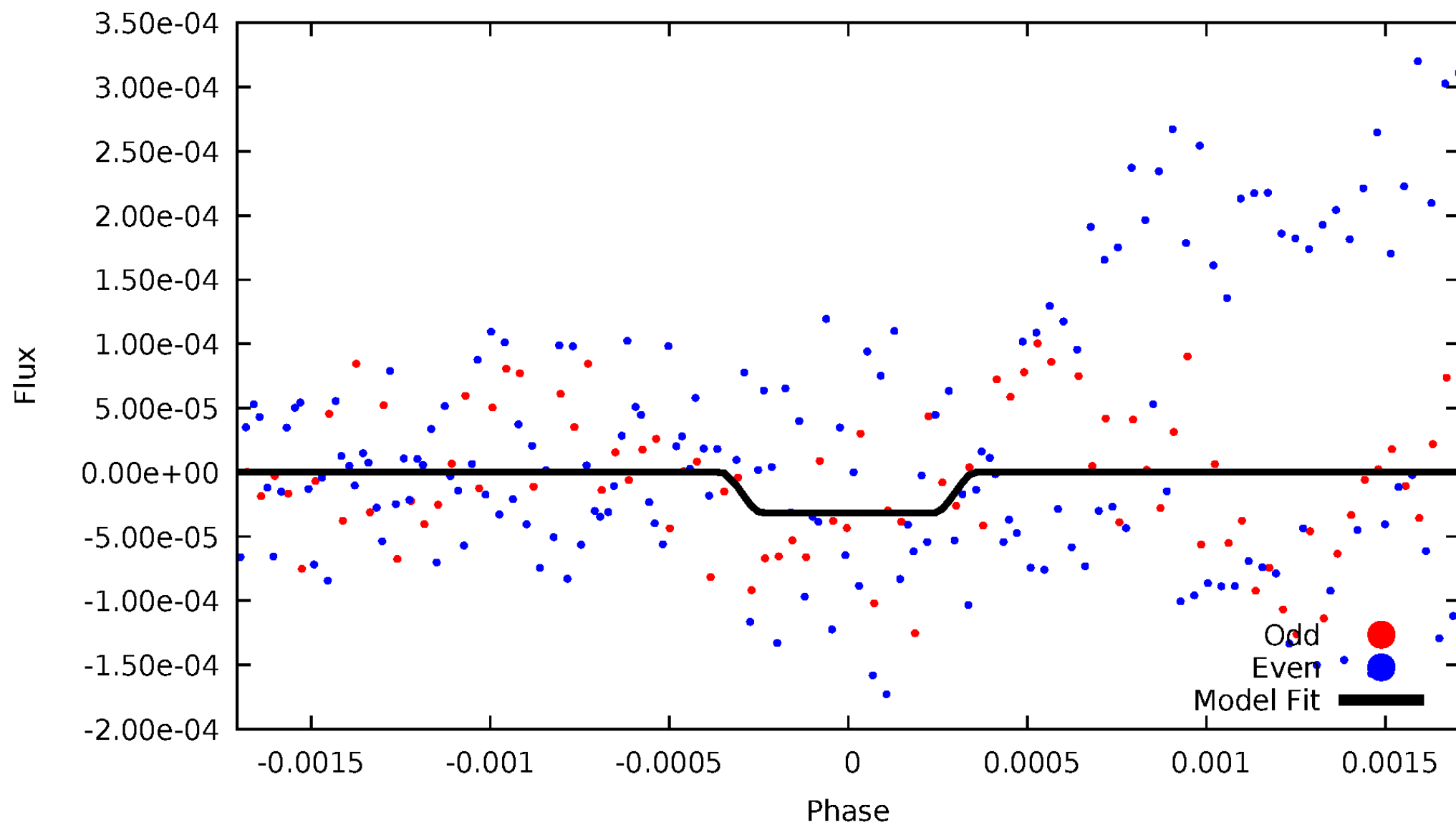
DV Odd/Even

TCE 010529091-01



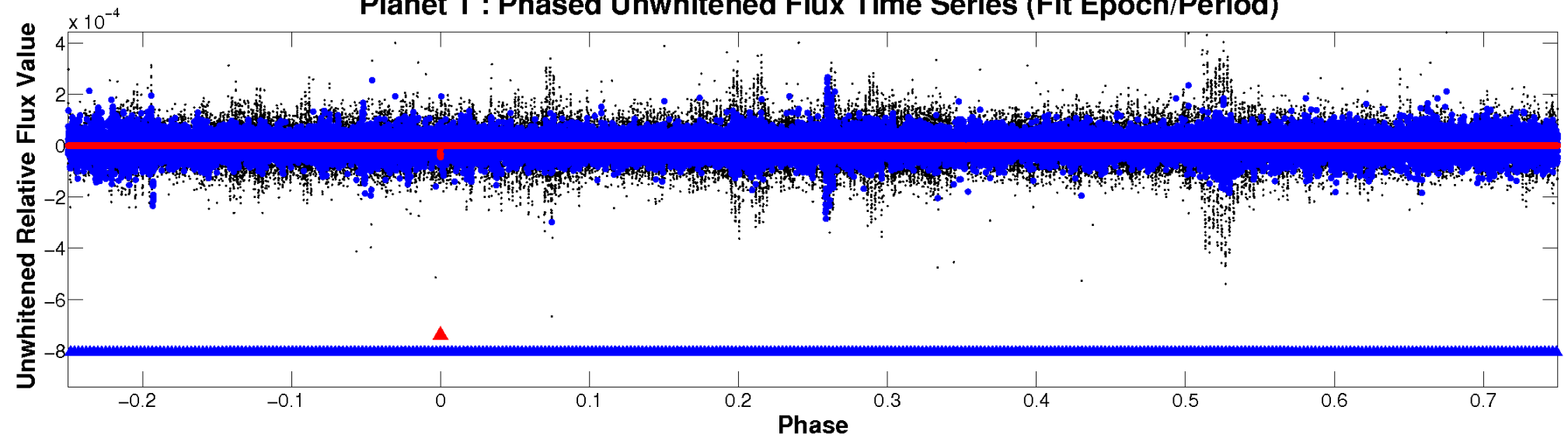
ALT Odd/Even

TCE 010529091-01

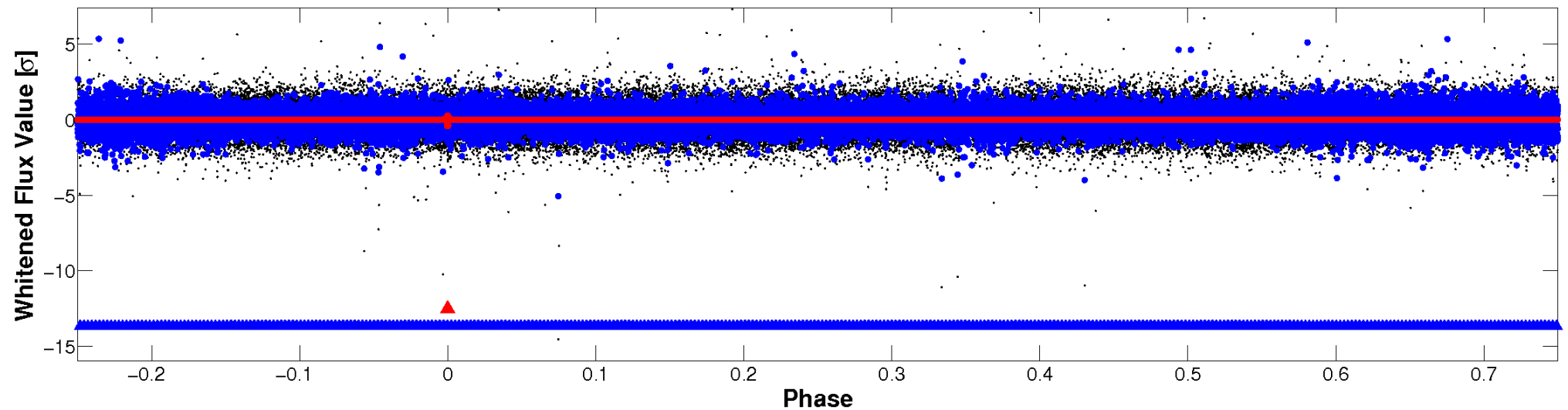


Non-Whitened Vs. Whitened Light Curve

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

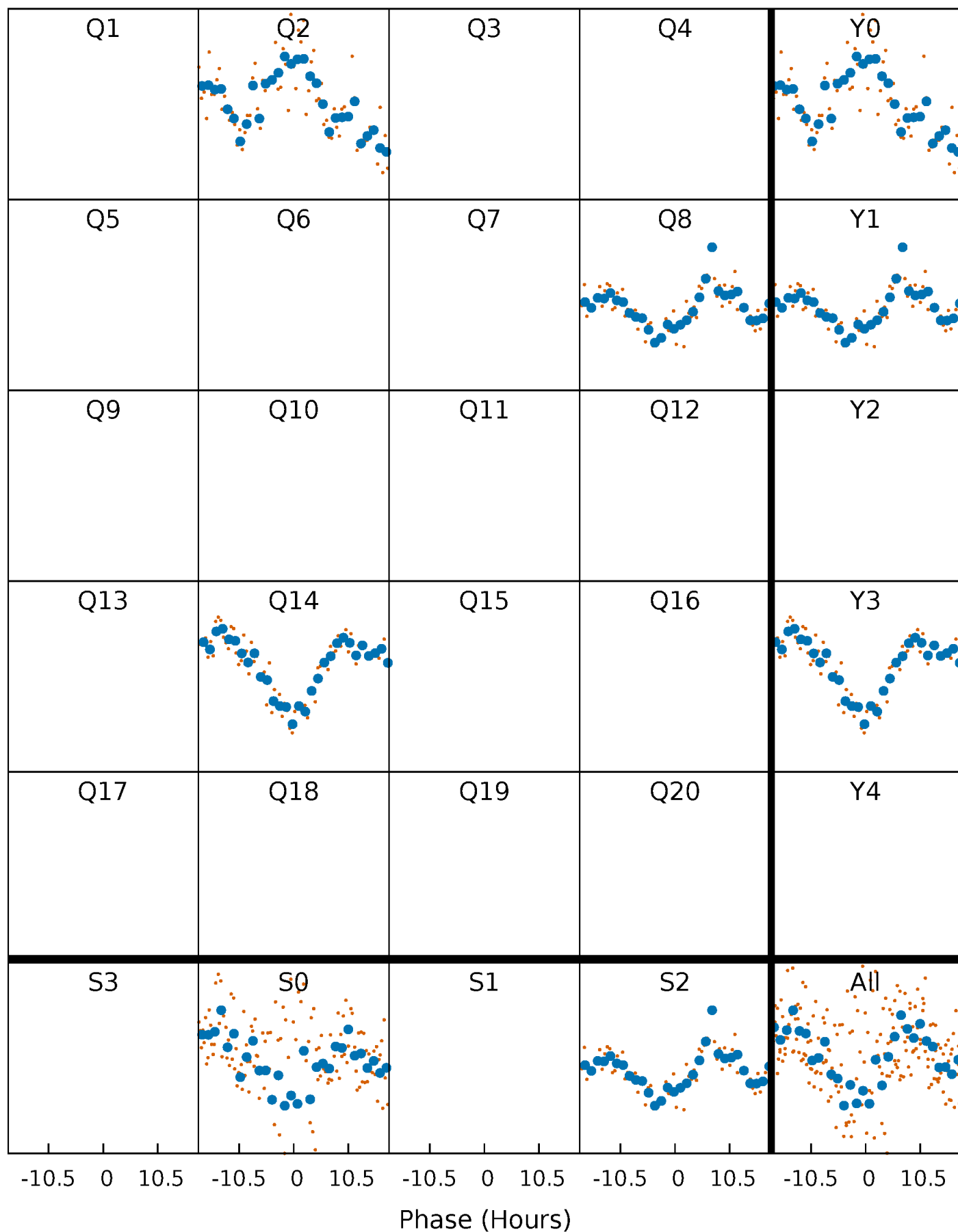


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



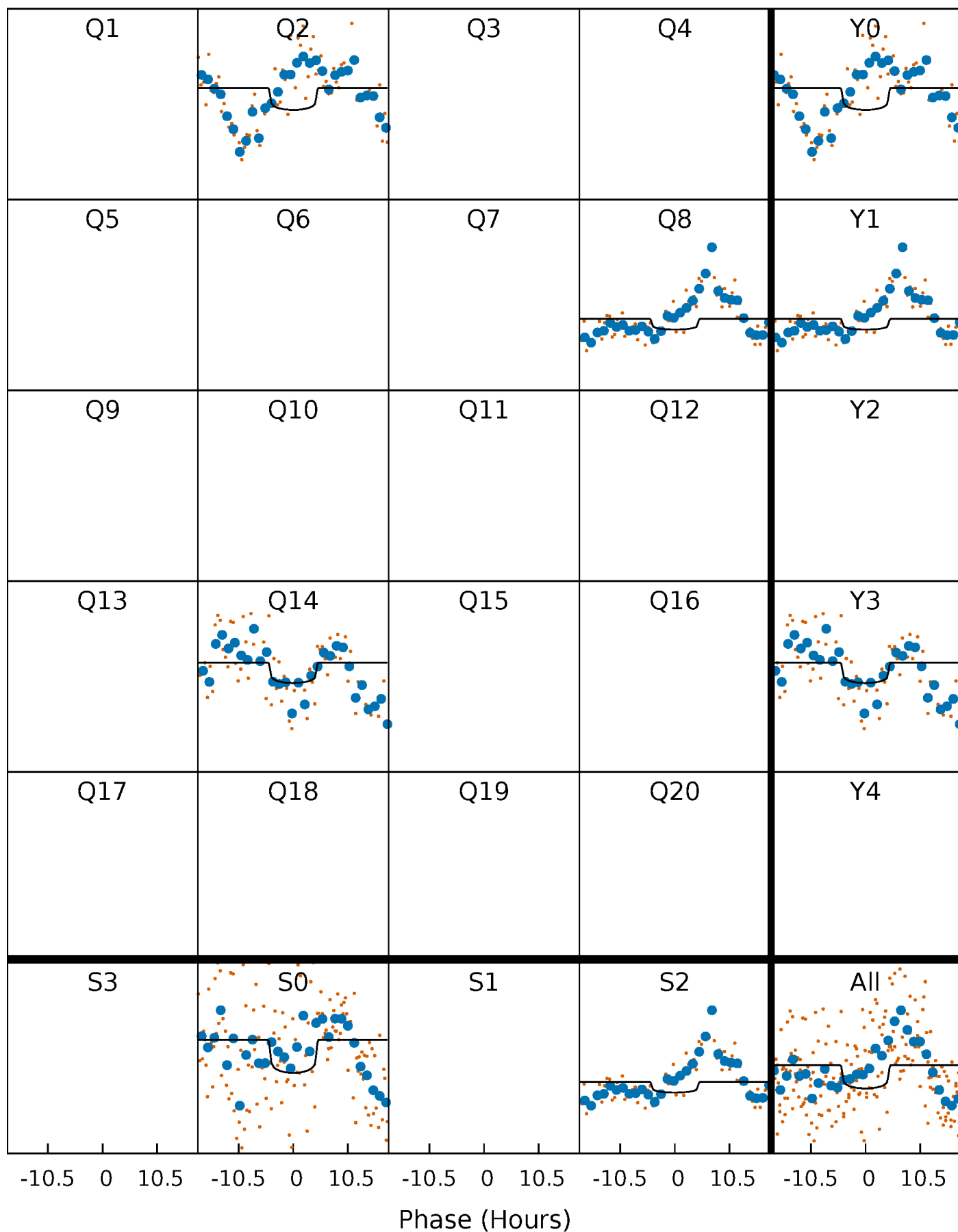
PDC Quarter-Phased Transit Curves

TCE 010529091-01 P=537.060304 Days $T_0=210.840113$ (BKJD)



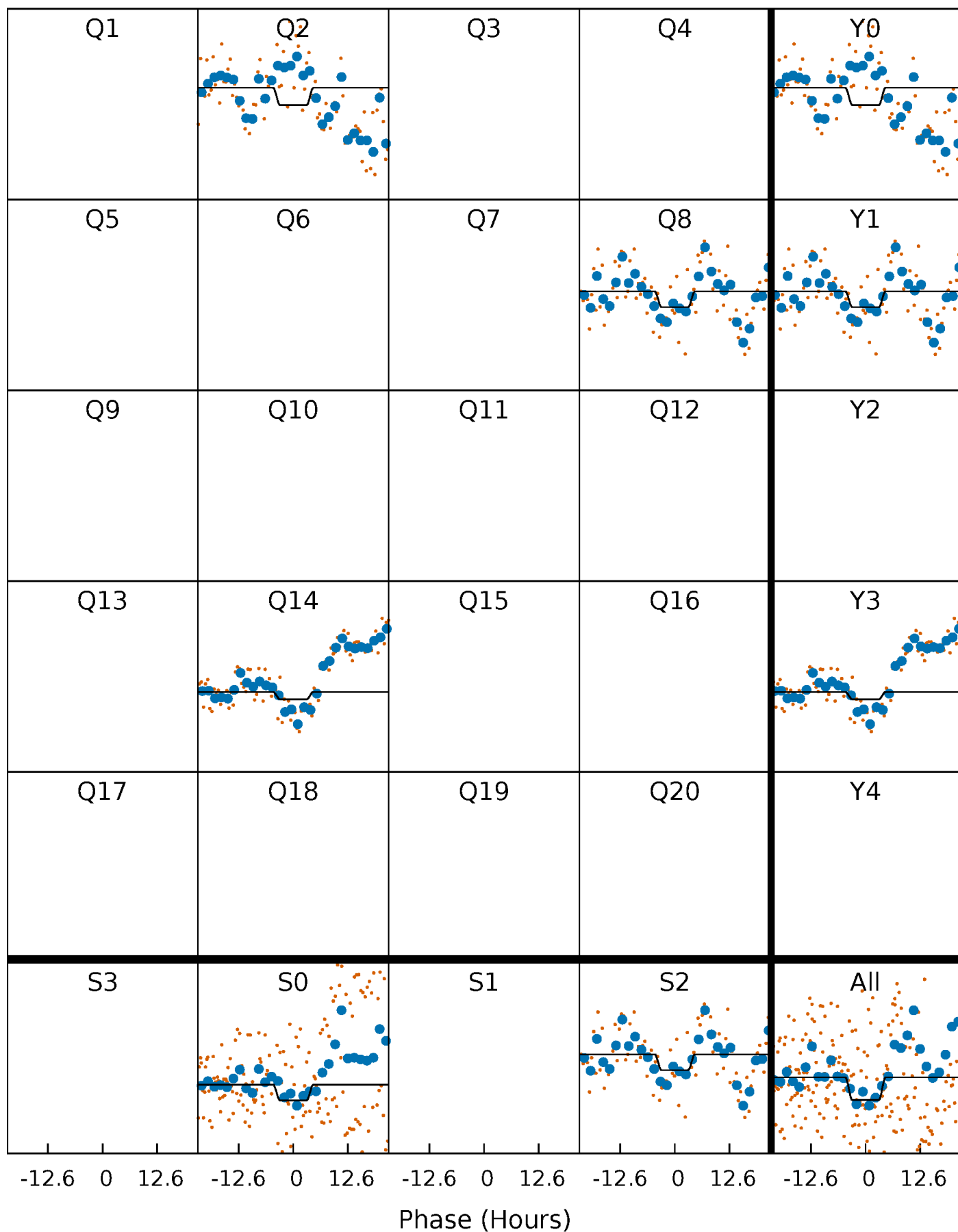
DV Quarter-Phased Transit Curves

TCE 010529091-01 P=537.060304 Days $T_0=210.840113$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

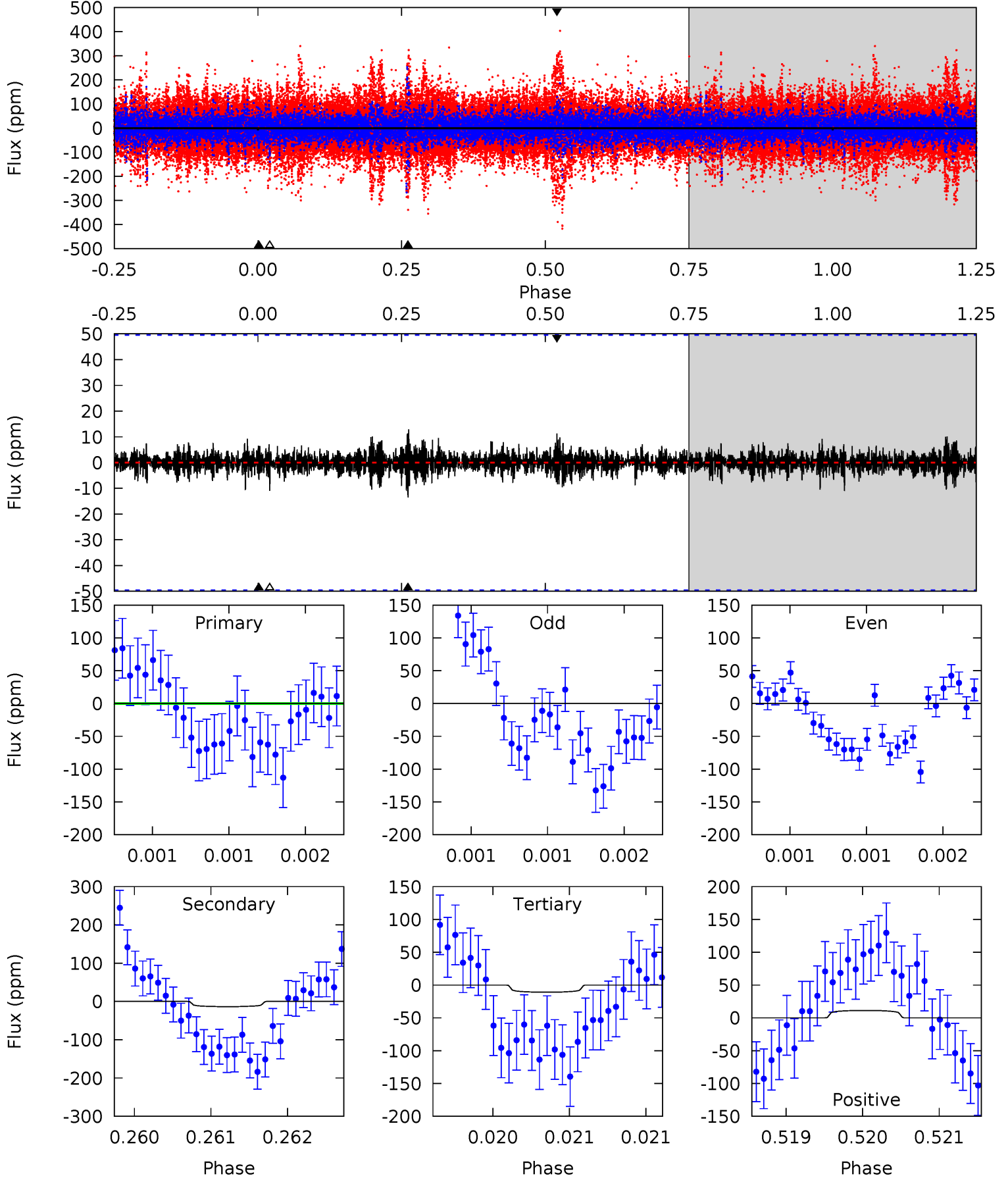
TCE 010529091-01 P=537.021201 Days $T_0=210.849767$ (BKJD)



DV Model-Shift Uniqueness Test

010529091-01, P = 537.060304 Days, E = 210.840113 Days

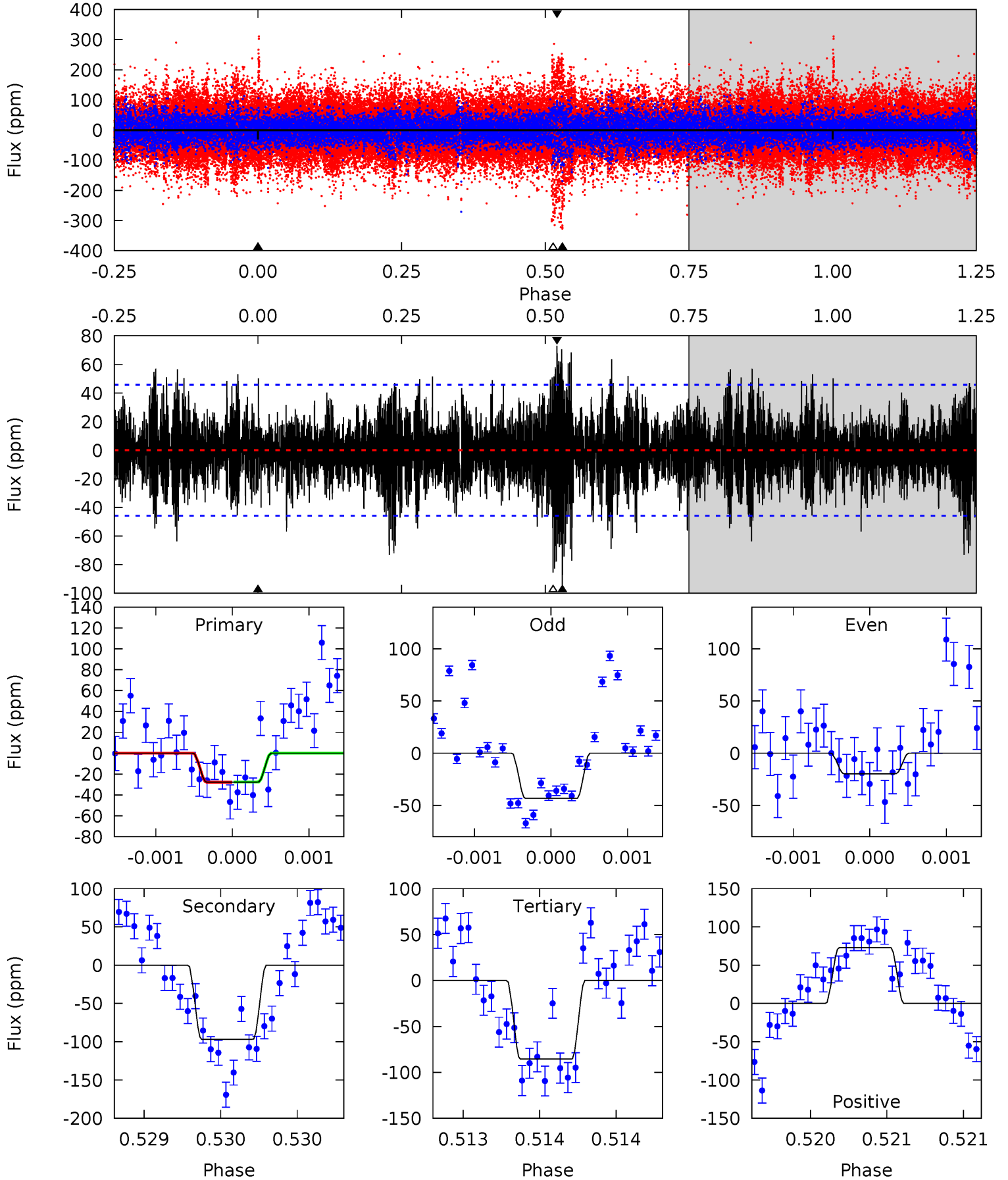
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0.69	1.50	1.21	1.26	5.50	3.37	0.32	-0.52	-0.56	0.29	0.24	0.30	-0.87	0.49	0.65



Alt Model-Shift Uniqueness Test

010529091-01, P = 537.021201 Days, E = 210.849767 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3.33	11.7	10.3	8.78	5.51	3.39	2.38	-6.96	-5.45	1.36	2.88	1.32	0.67	0.43	0.02



Stellar Parameters For KIC 010529091

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	8090^{+224}_{-336}	$3.720^{+0.440}_{-0.110}$	$-0.020^{+0.250}_{-0.400}$	$3.292^{+0.817}_{-1.517}$	$2.075^{+0.335}_{-0.503}$	$0.082^{+0.313}_{-0.033}$
	+3%/-4%	+12%/-3%	+1250%/-2000%	+25%/-46%	+16%/-24%	+383%/-40%
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 010529091-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-14 ± 9	$2.39^{+1.67}_{-1.31}$	678^{+54}_{-74}	5355^{+2875}_{-1305}	2984^{+15882}_{-2292}
Alt.	-97 ± 8	$2.01^{+1.52}_{-1.19}$	680^{+55}_{-77}	11016^{+17279}_{-3369}	$35996^{+179332}_{-24274}$

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 $A_{obs} \gg 1.0$

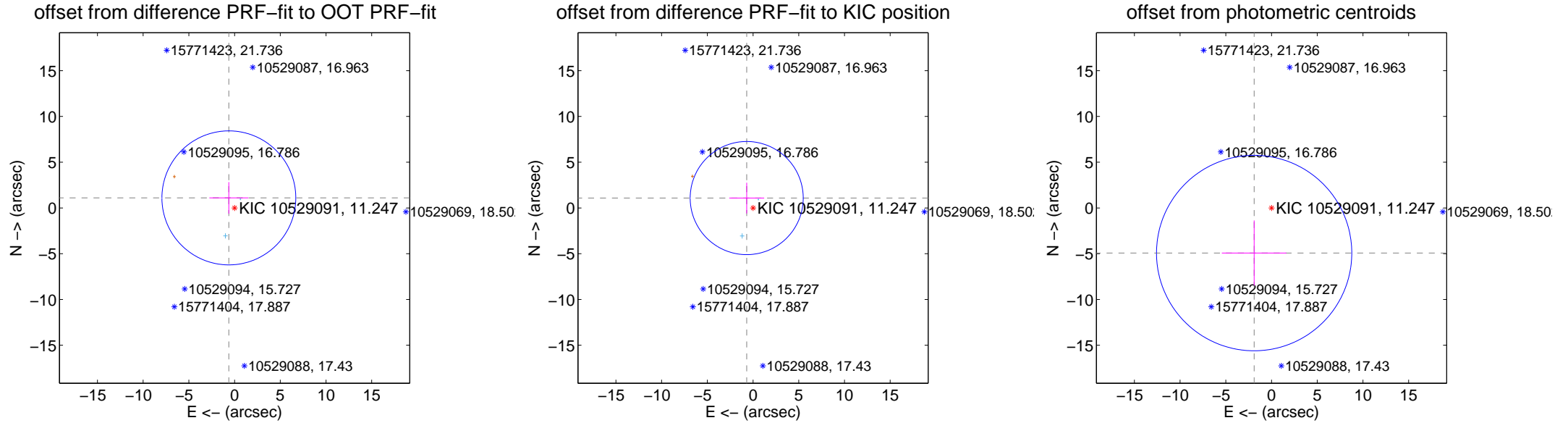
DV Centroid Data

Supplemental centroid analysis for 010529091-01. **Kepler magnitude: 11.25.** Transit SNR 2.57

There are 2 quarters with good PRF difference image offsets

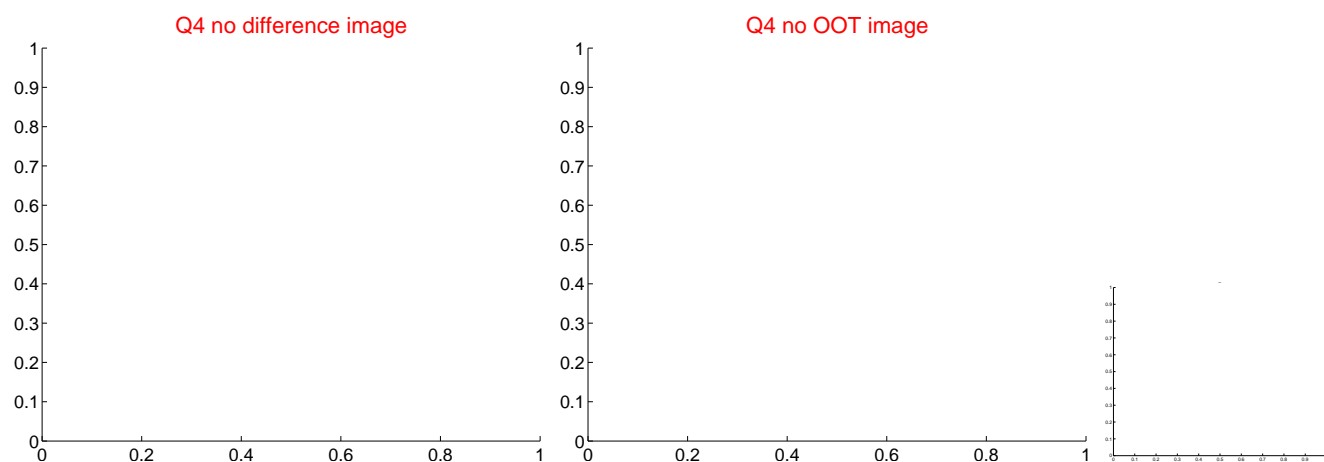
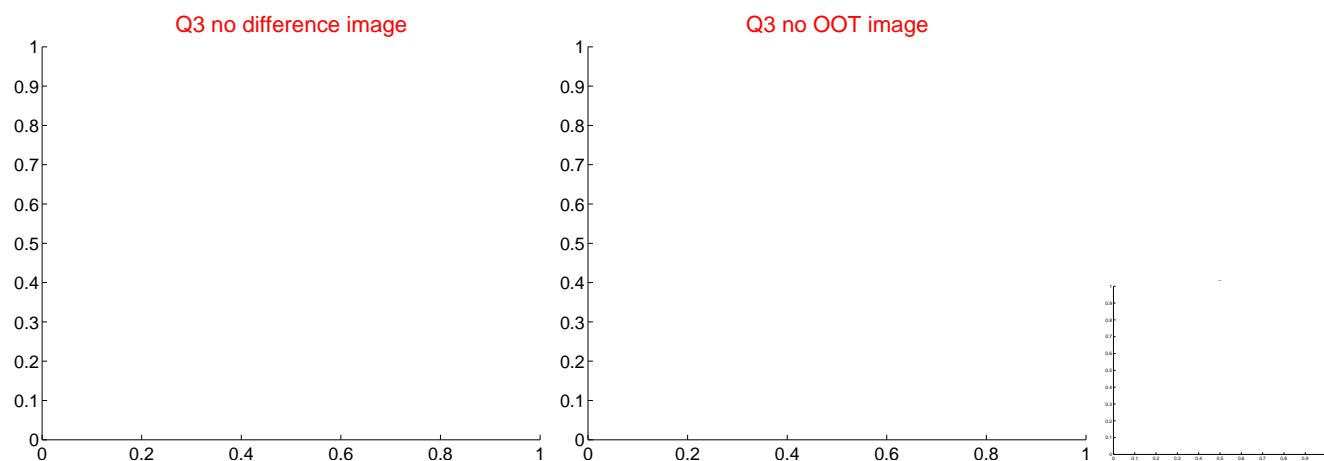
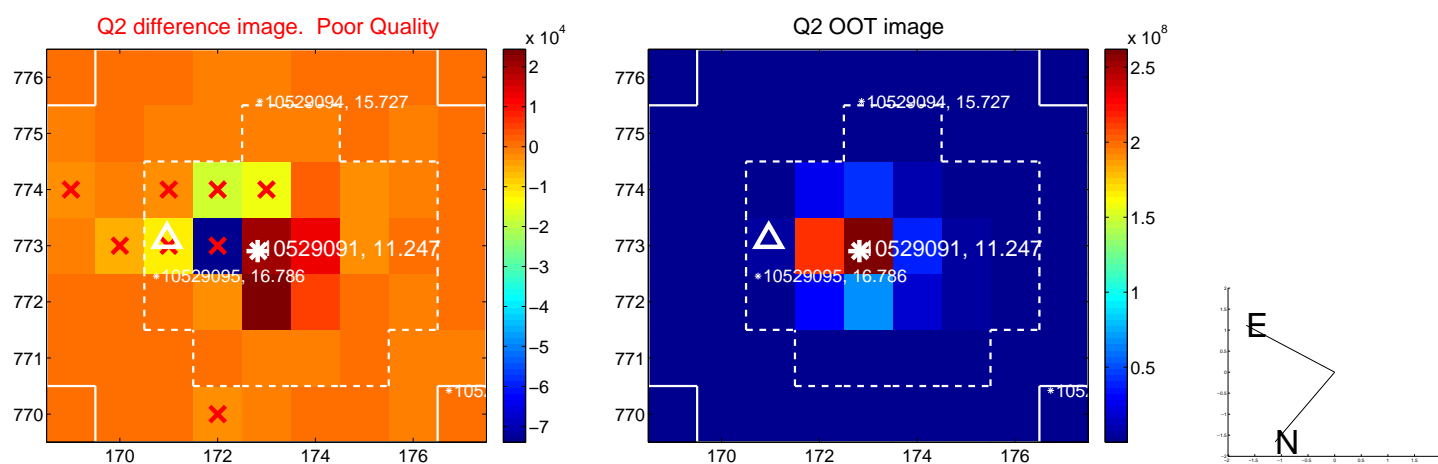
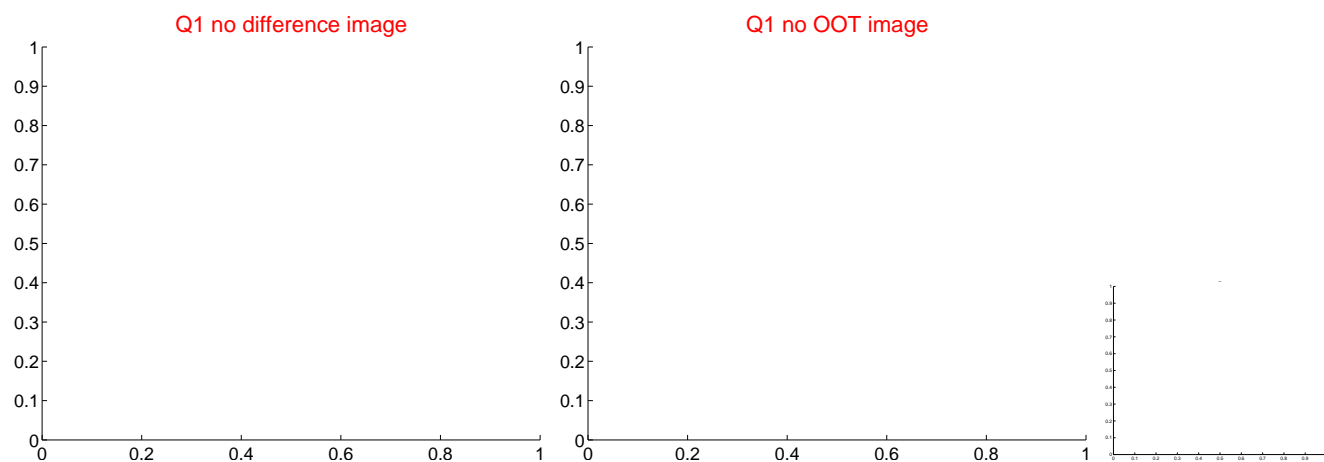
The direct PRF centroid is offset from the target star catalog position by about 0.07 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.266 ± 2.441	0.52	0.626 ± 2.135	1.100 ± 1.720
PRF-fit source offset from KIC position	1.284 ± 2.061	0.62	0.694 ± 1.911	1.080 ± 1.679
photometric centroid source offset	5.28 ± 3.56	1.48	1.90 ± 3.53	-4.93 ± 3.56

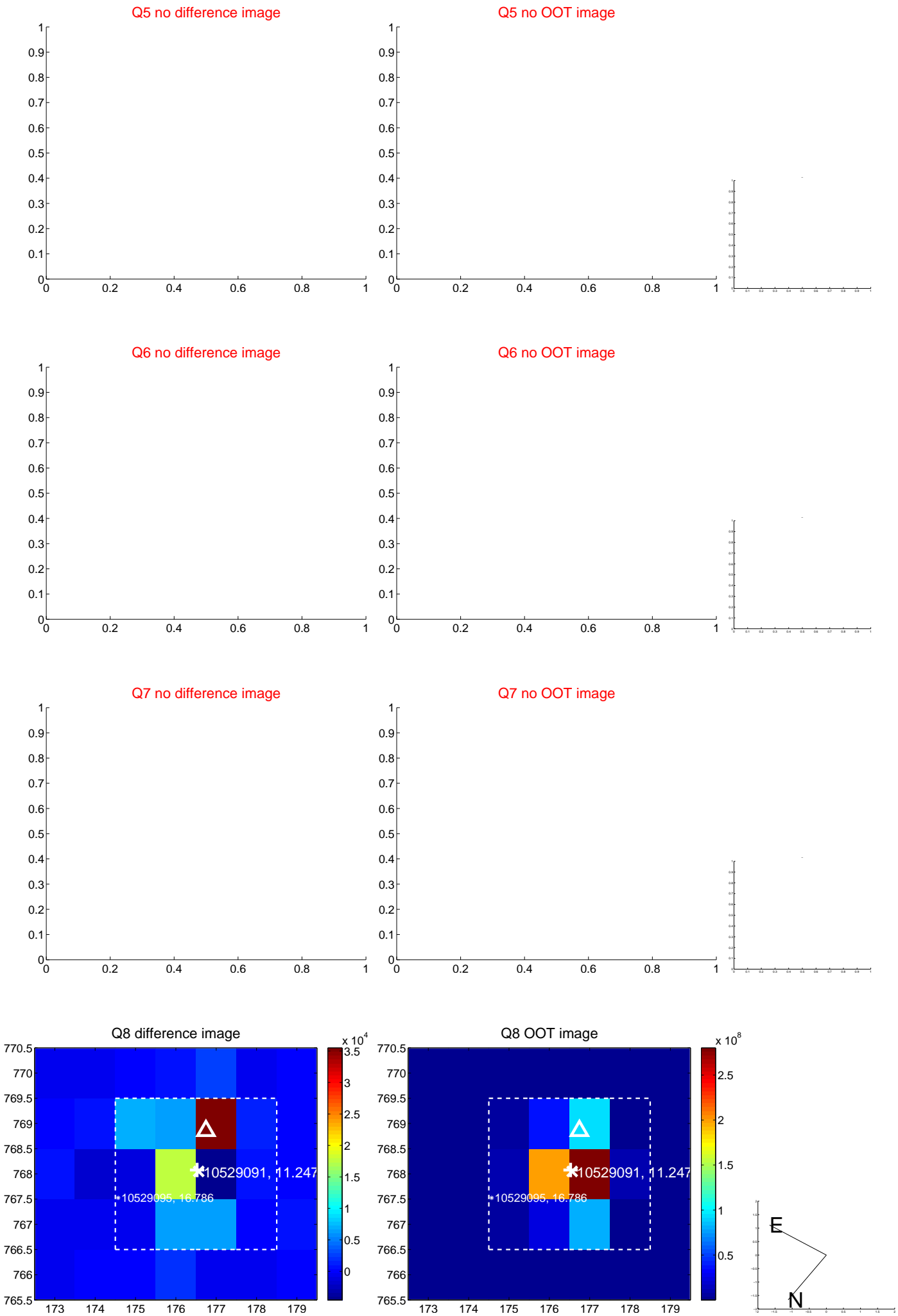


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

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



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

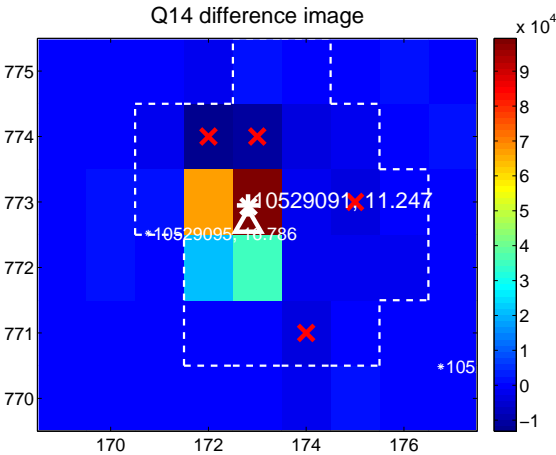
Q13 no difference image



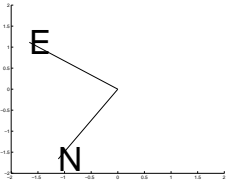
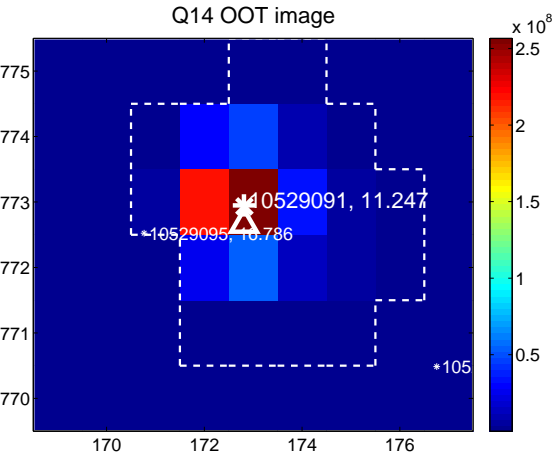
Q13 no OOT image



Q14 difference image



Q14 OOT image



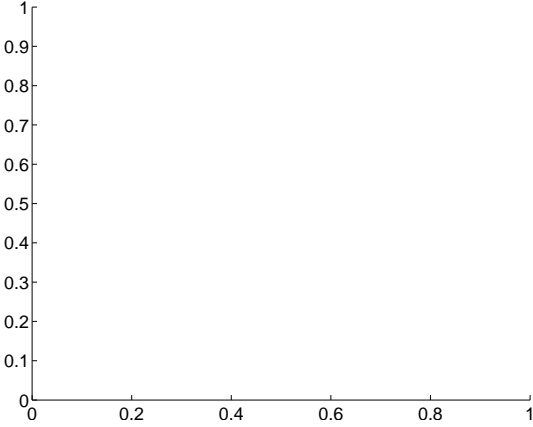
Q15 no difference image



Q15 no OOT image



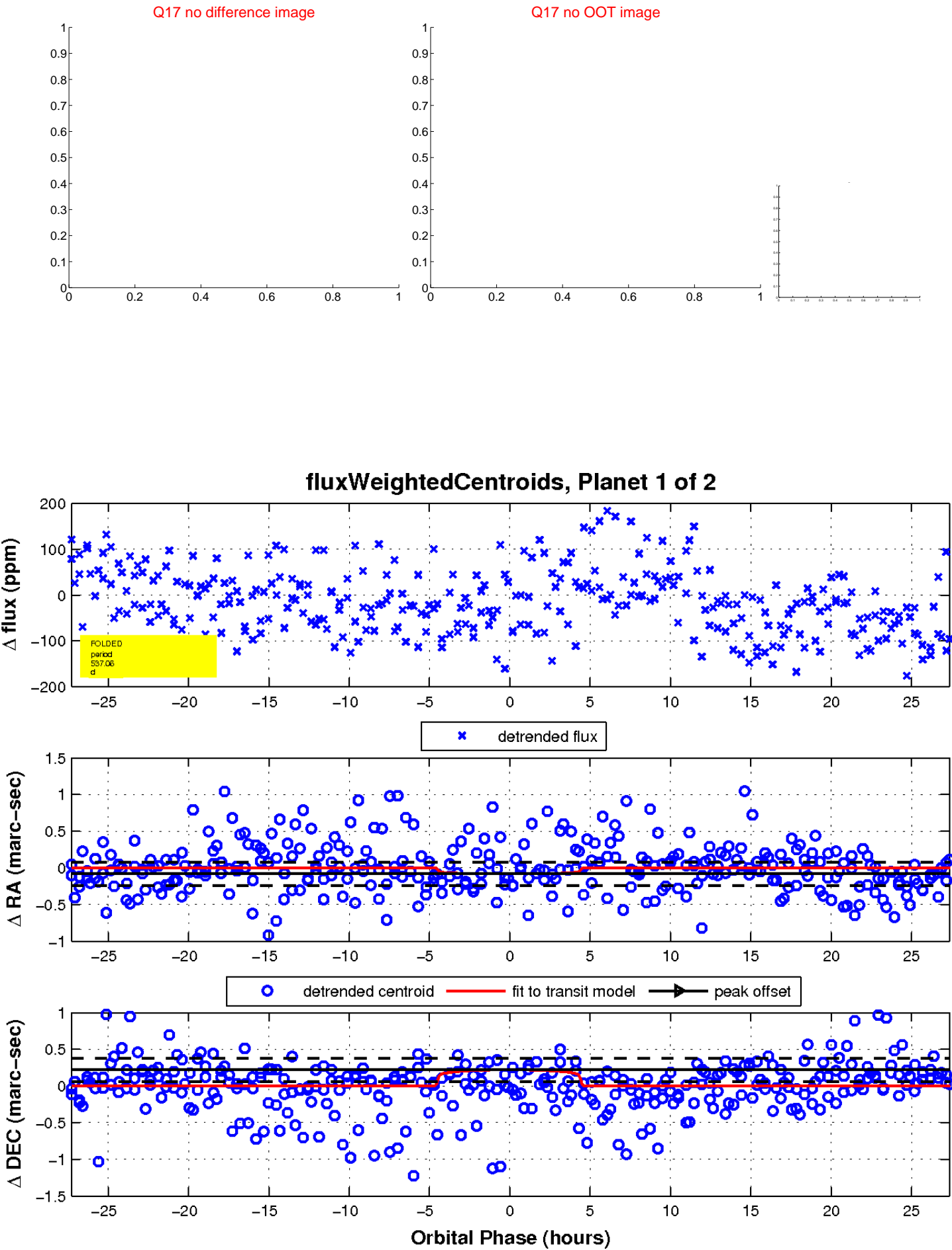
Q16 no difference image



Q16 no OOT image

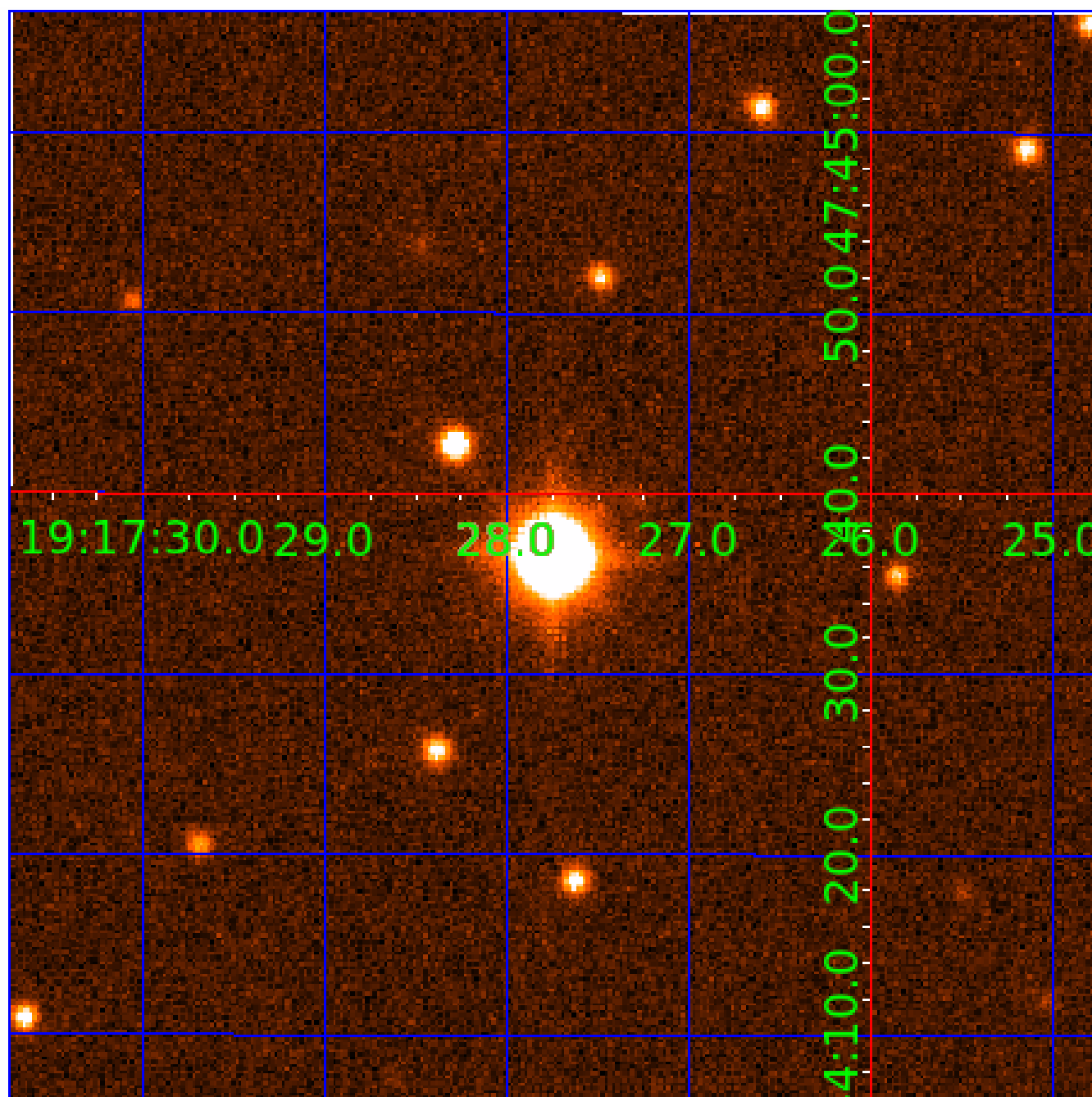


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 010529091

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})
010529091-01	OBS	No	537.060304	210.840113	44.6	9.159	8.6	2.6	3.29	8090	2.49	15.29
010529091-02	OBS	No	1.401910	132.356894	2.1	3.801	8.5	2.3	3.29	8090	0.54	42530.59

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010529091-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
010529091-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—CENT_SATURATED

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

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

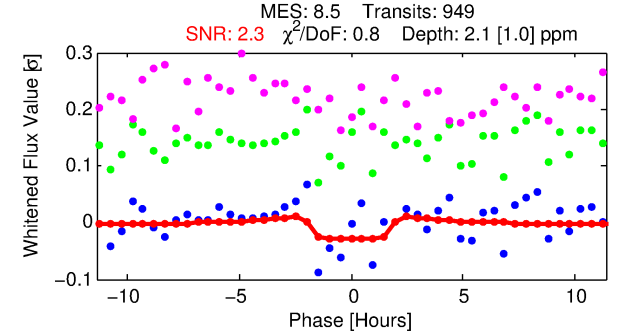
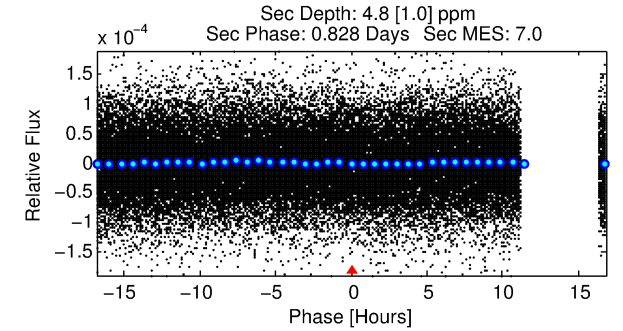
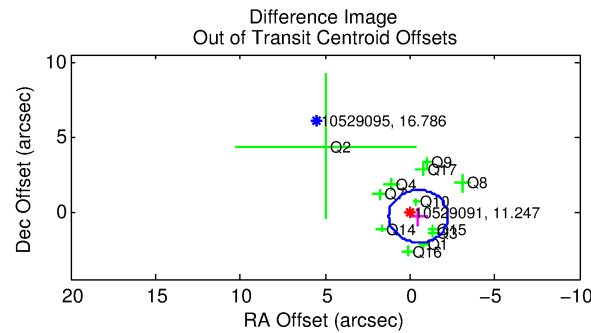
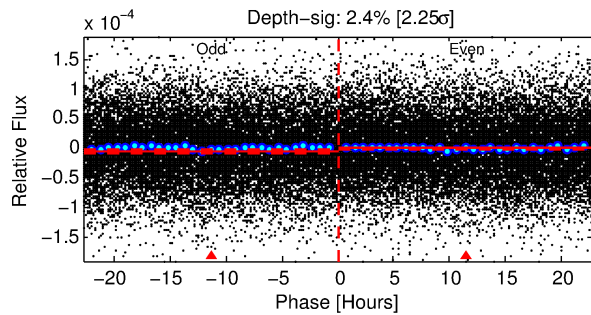
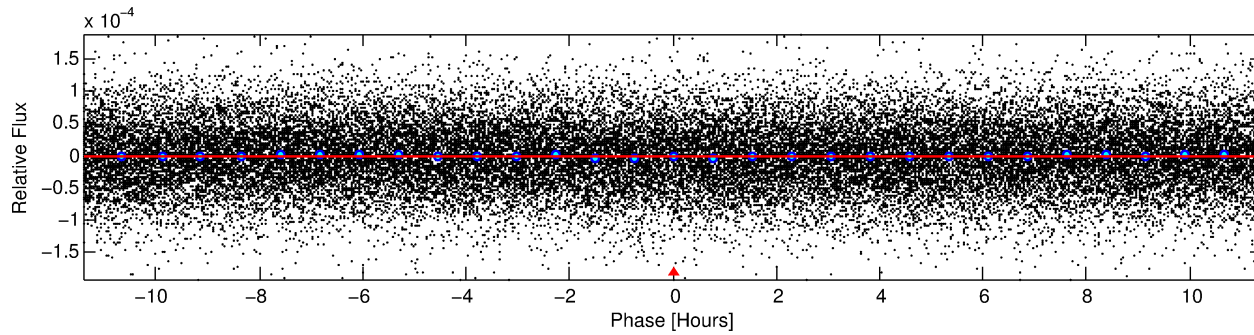
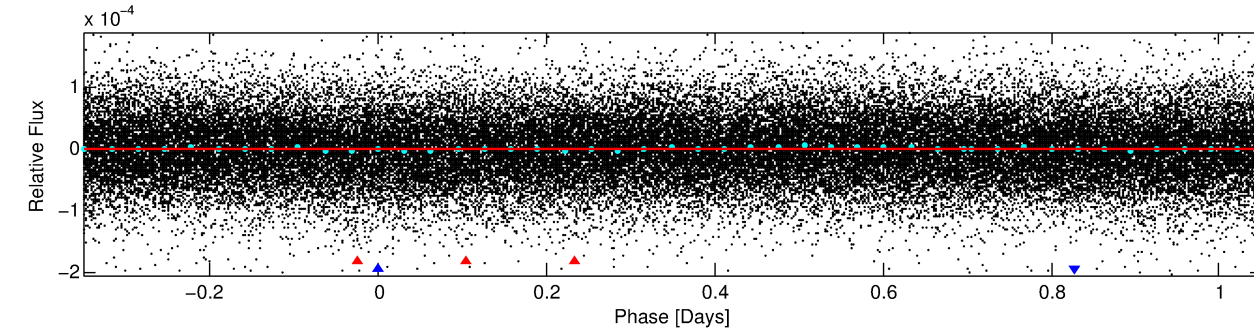
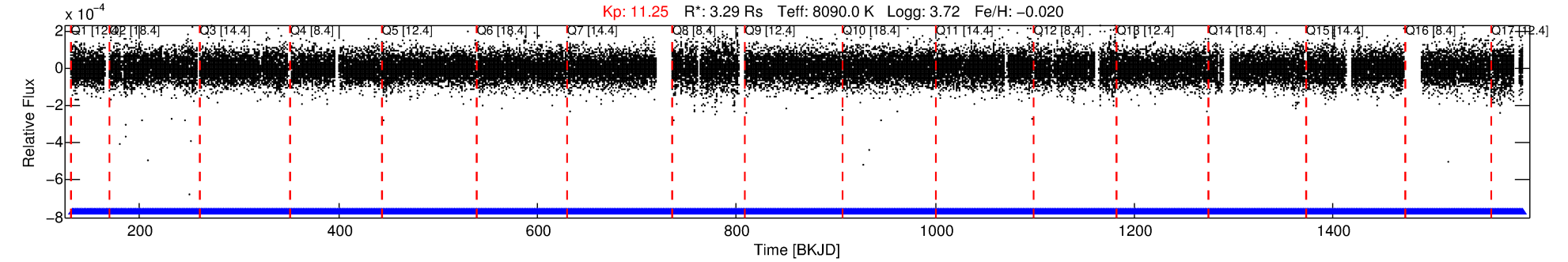
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 010529091-02

No Significant Match Found

DV One-Page Summary

KIC: 10529091 Candidate: 2 of 2 Period: 1.402 d



DV Fit Results:

Period = 1.40191 [0.00005] d
Epoch = 132.3569 [0.0143] BKJD
Rp/R* = 0.0015 [0.0004]
a/R* = 1.73 [1.07]
b = 0.85 [0.30]
Seff = 42530.59 [32339.36]
Teq = 3662 [696] K
Rp = 0.53 [0.29] Re
a = 0.0313 [0.0143] AU
Ag = 9.10 [8.69] [0.93 σ]
Teffp = 9832 [1537] K [3.66 σ]

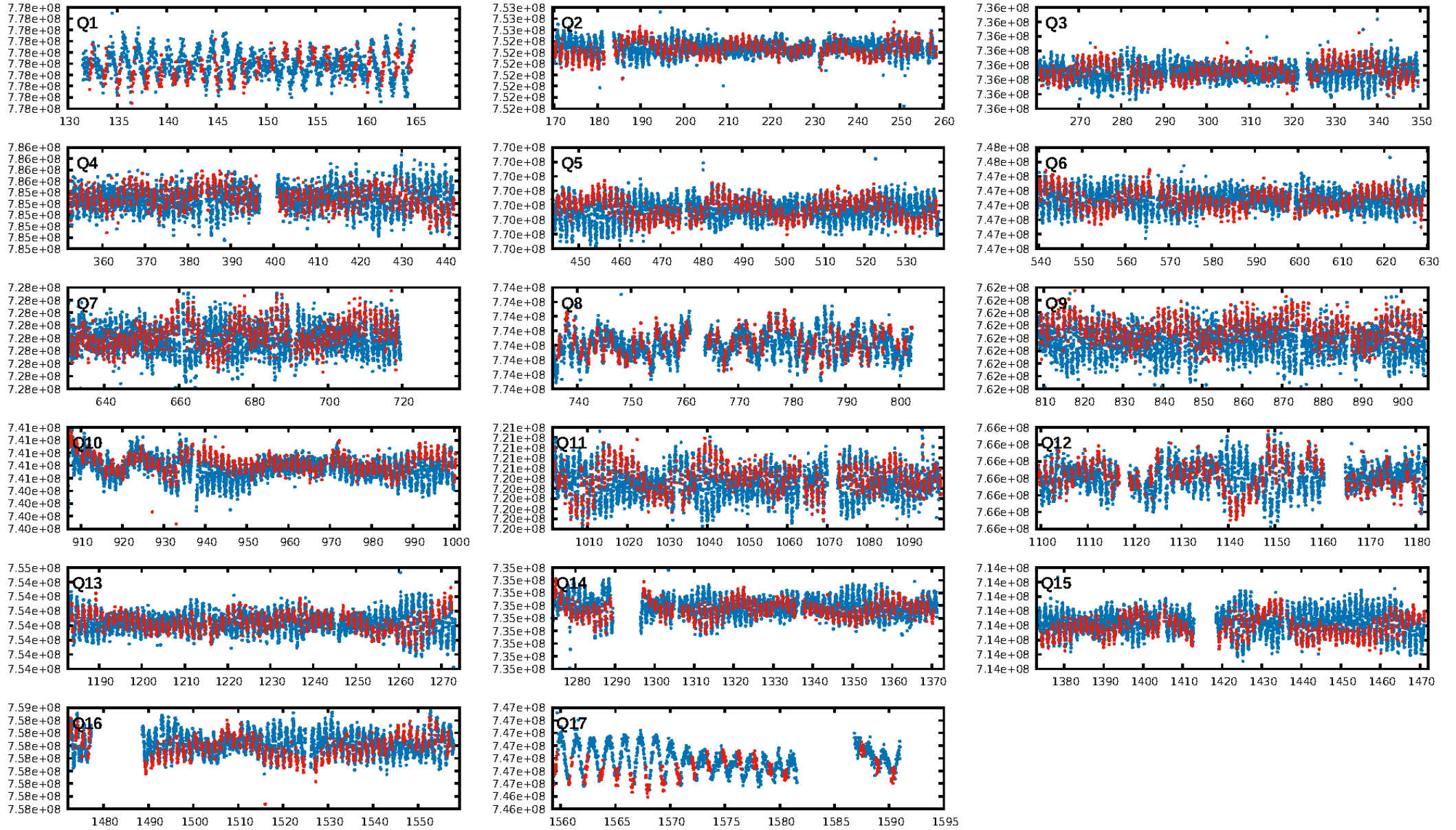
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [1296.34 σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 2.13e-16
RollingBand-fgt: 1.00 [906/906]
GhostDiagnostic-chr: N/A
Centroid-sig: N/A
Centroid-so: N/A
OotOffset-rm: 0.591 arcsec [1.01 σ]
KicOffset-rm: 0.645 arcsec [0.91 σ]
OotOffset-st: 3/3/3/3 [12]
KicOffset-st: 3/3/3/3 [12]
DiffImageQuality-fgm: 0.33 [4/12]
DiffImageOverlap-fno: 1.00 [17/17]

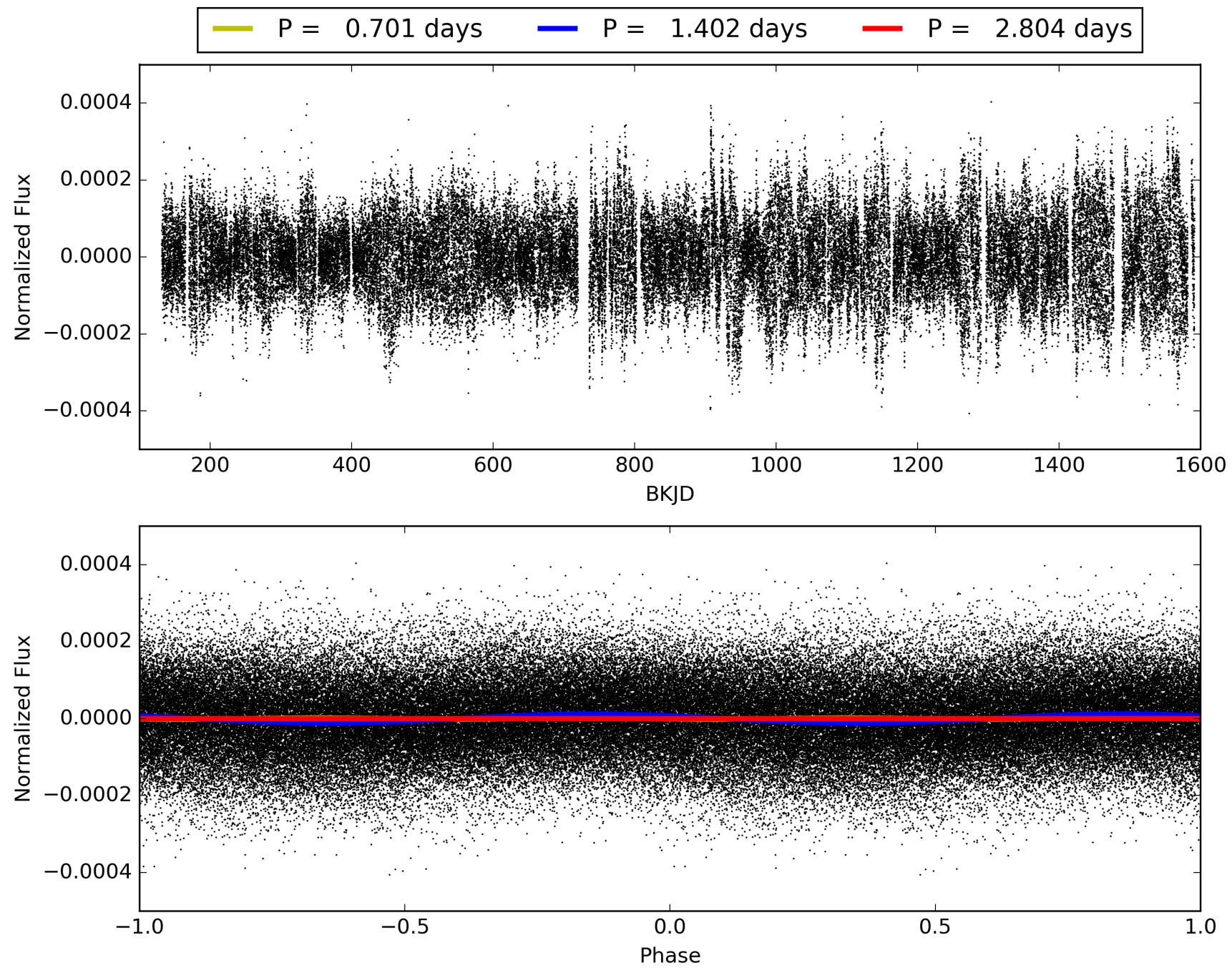
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 07:20:57 Z

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

TCE 010529091-02, PDC Light Curves

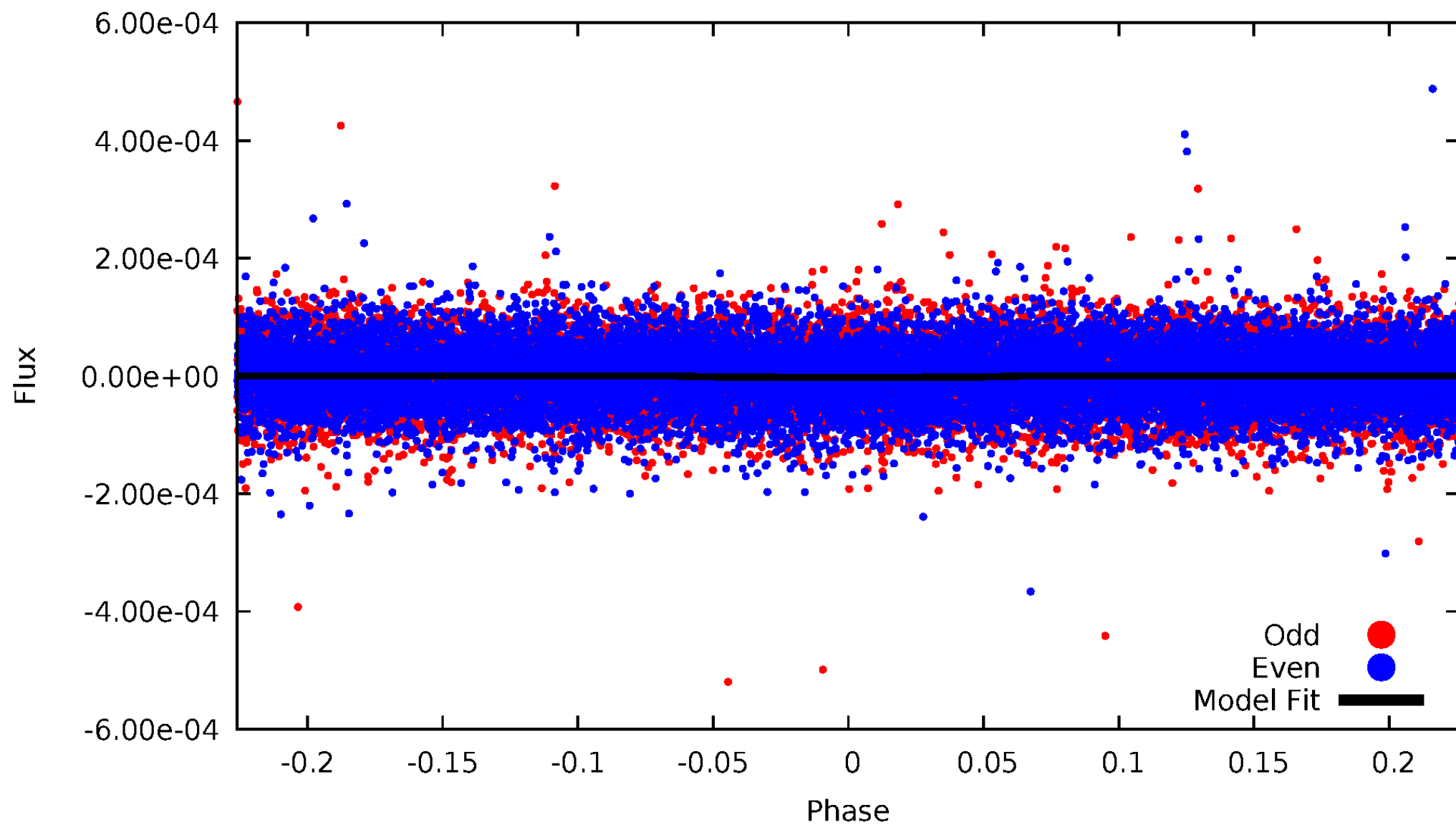


TCE 010529091-02



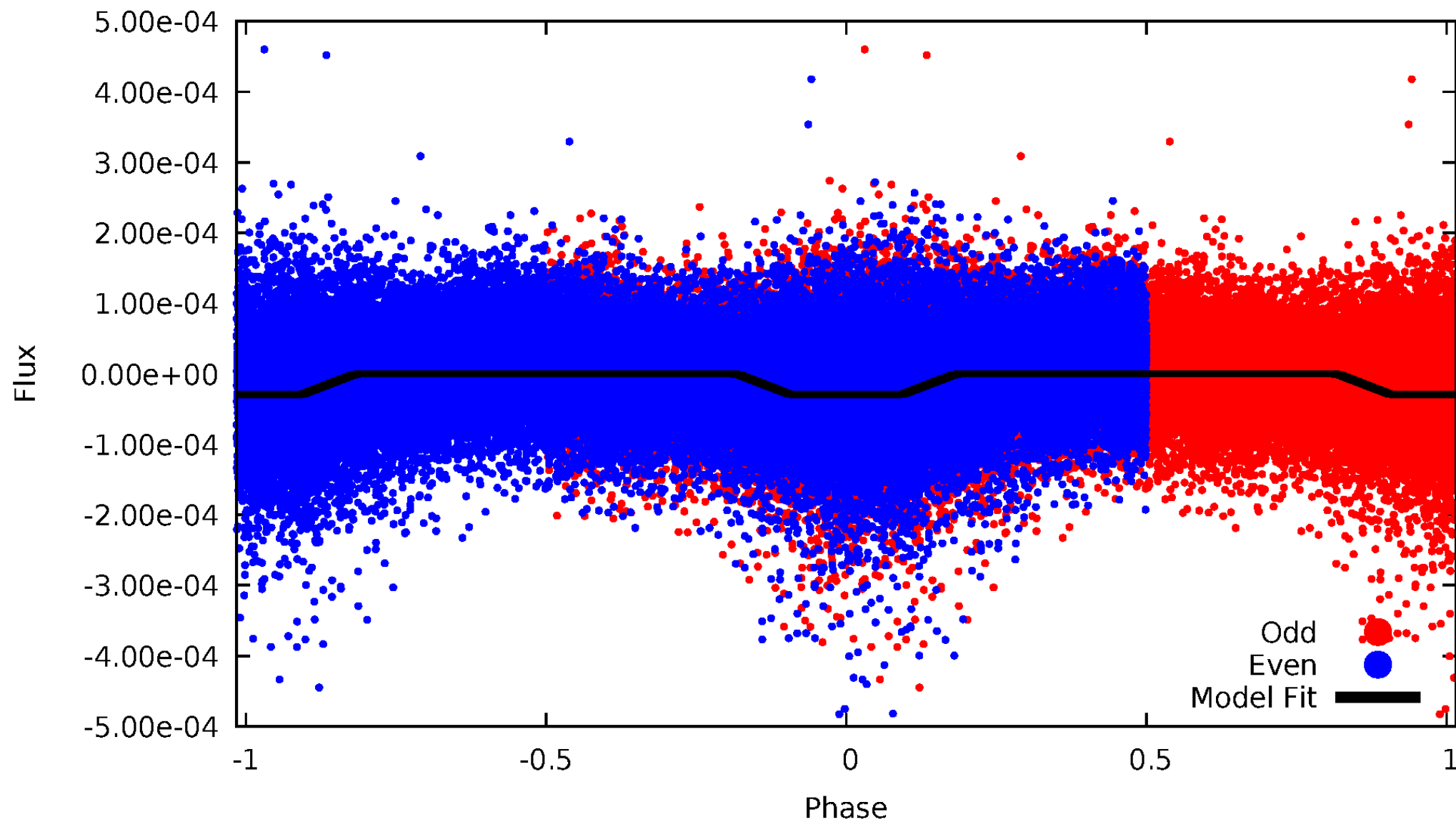
DV Odd/Even

TCE 010529091-02



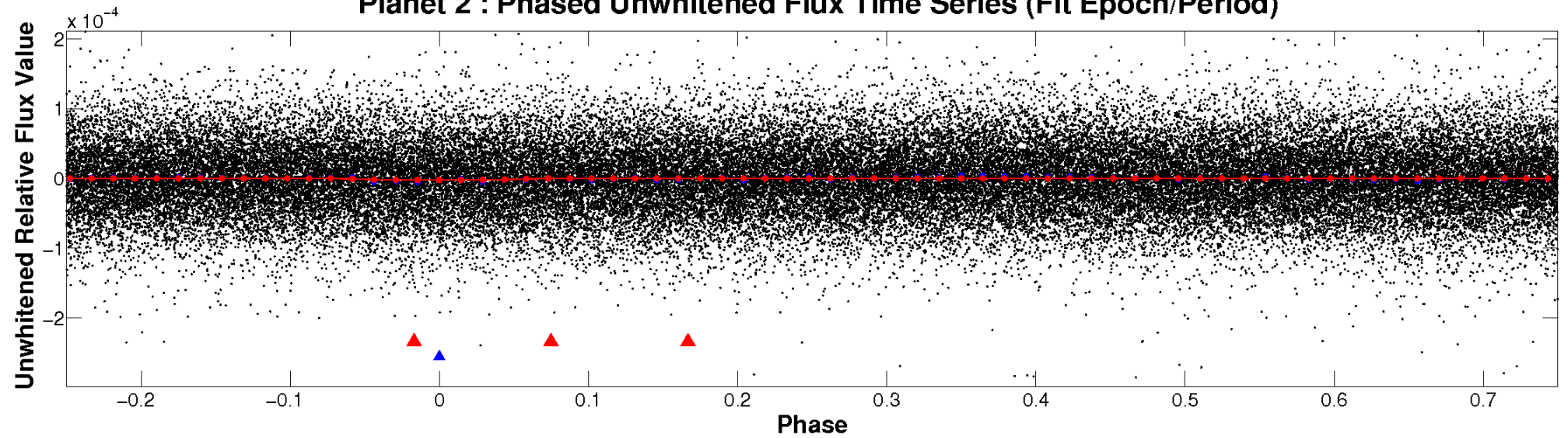
ALT Odd/Even

TCE 010529091-02

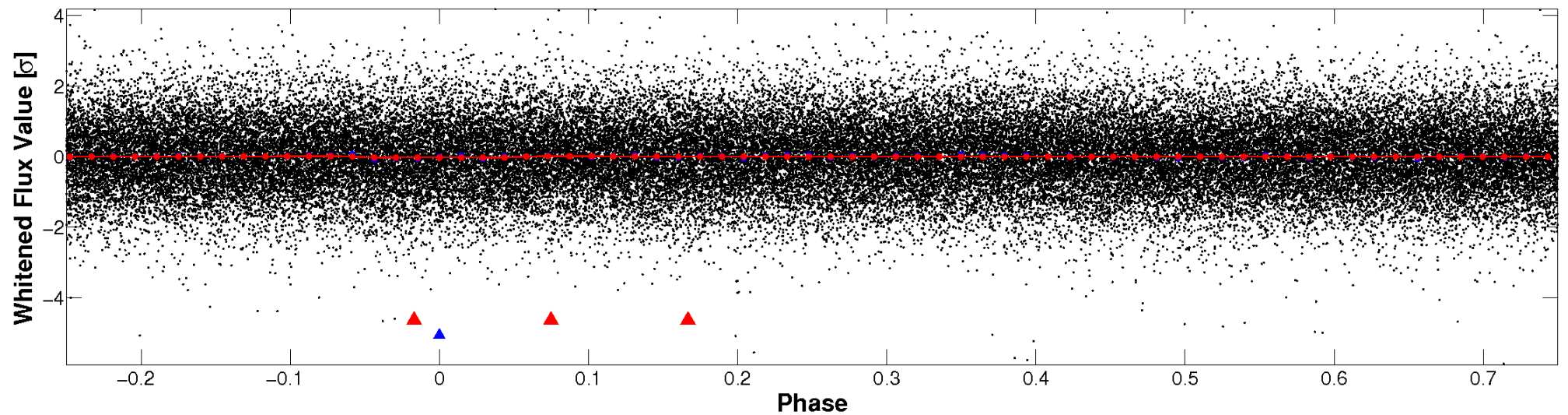


Non-Whitened Vs. Whitened Light Curve

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

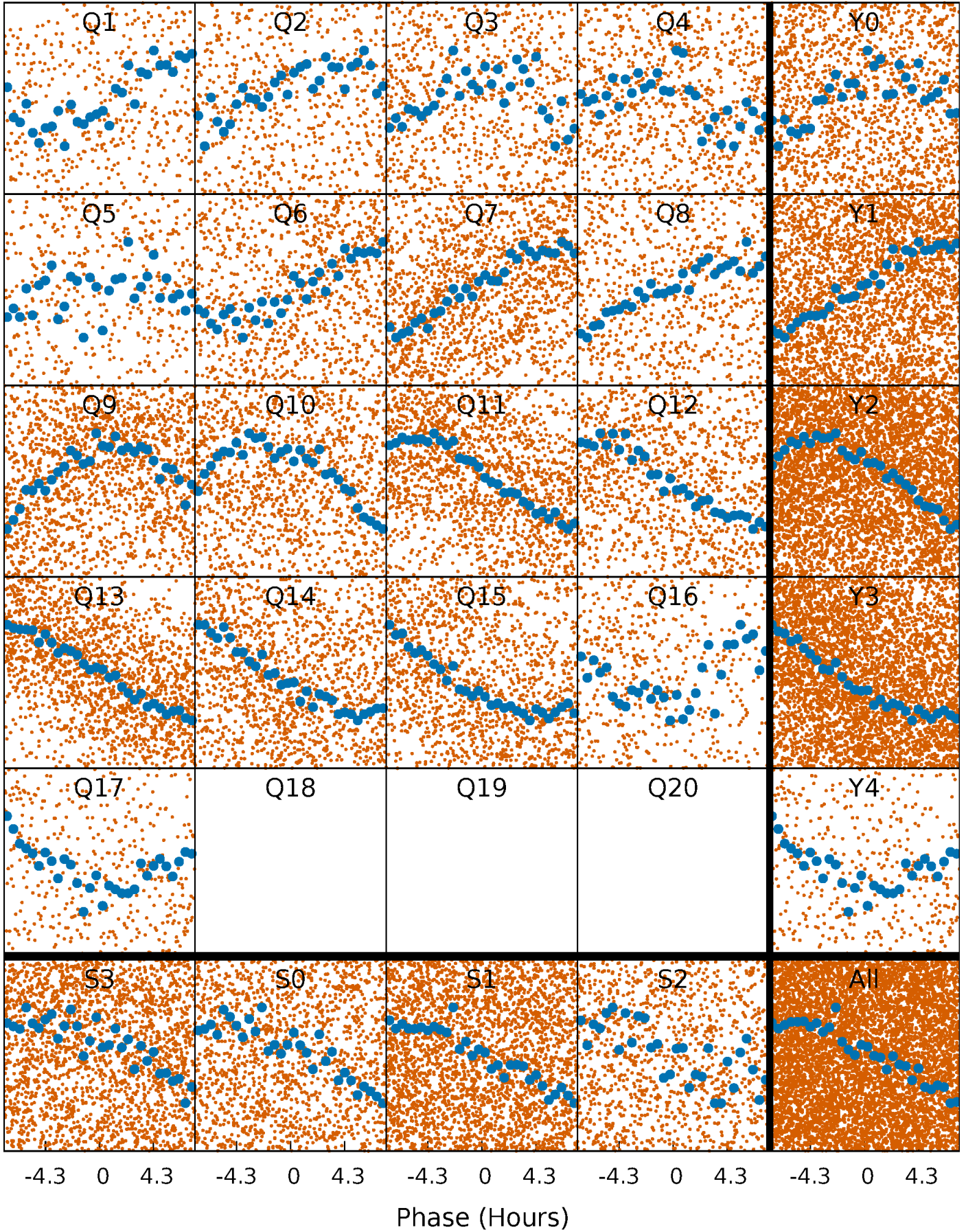


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



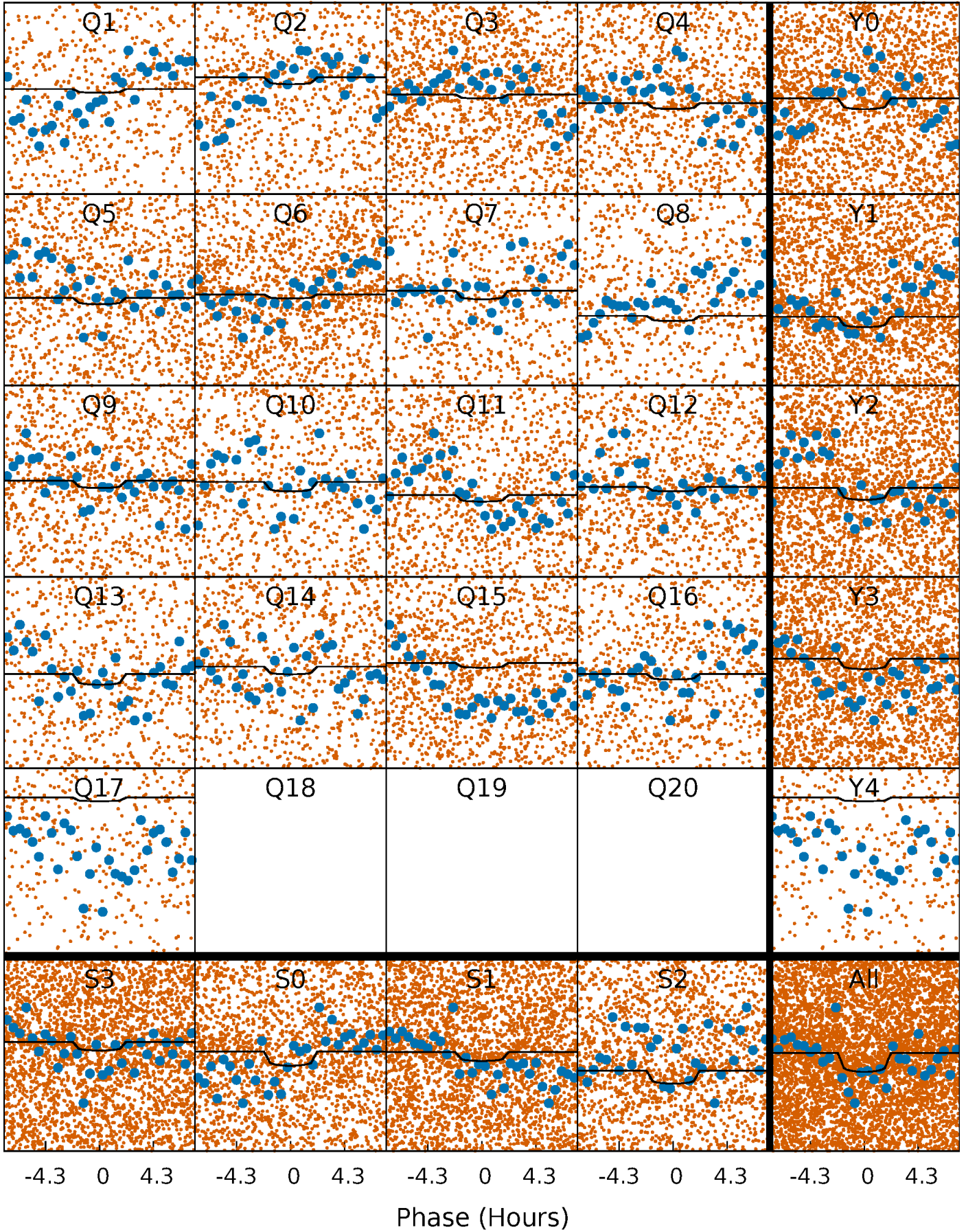
PDC Quarter-Phased Transit Curves

TCE 010529091-02 P= 1.401910 Days $T_0=132.356894$ (BKJD)



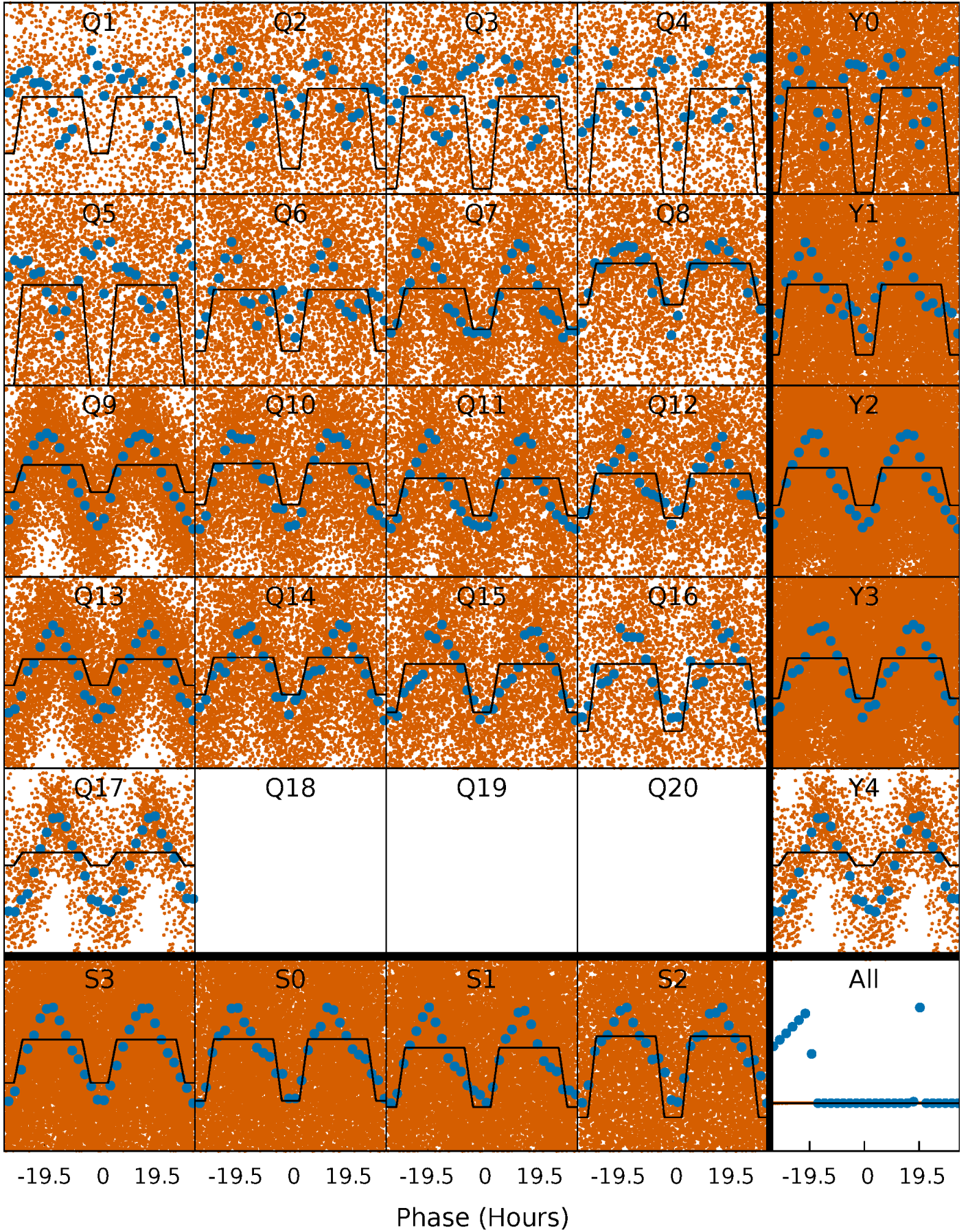
DV Quarter-Phased Transit Curves

TCE 010529091-02 P= 1.401910 Days $T_0=132.356894$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

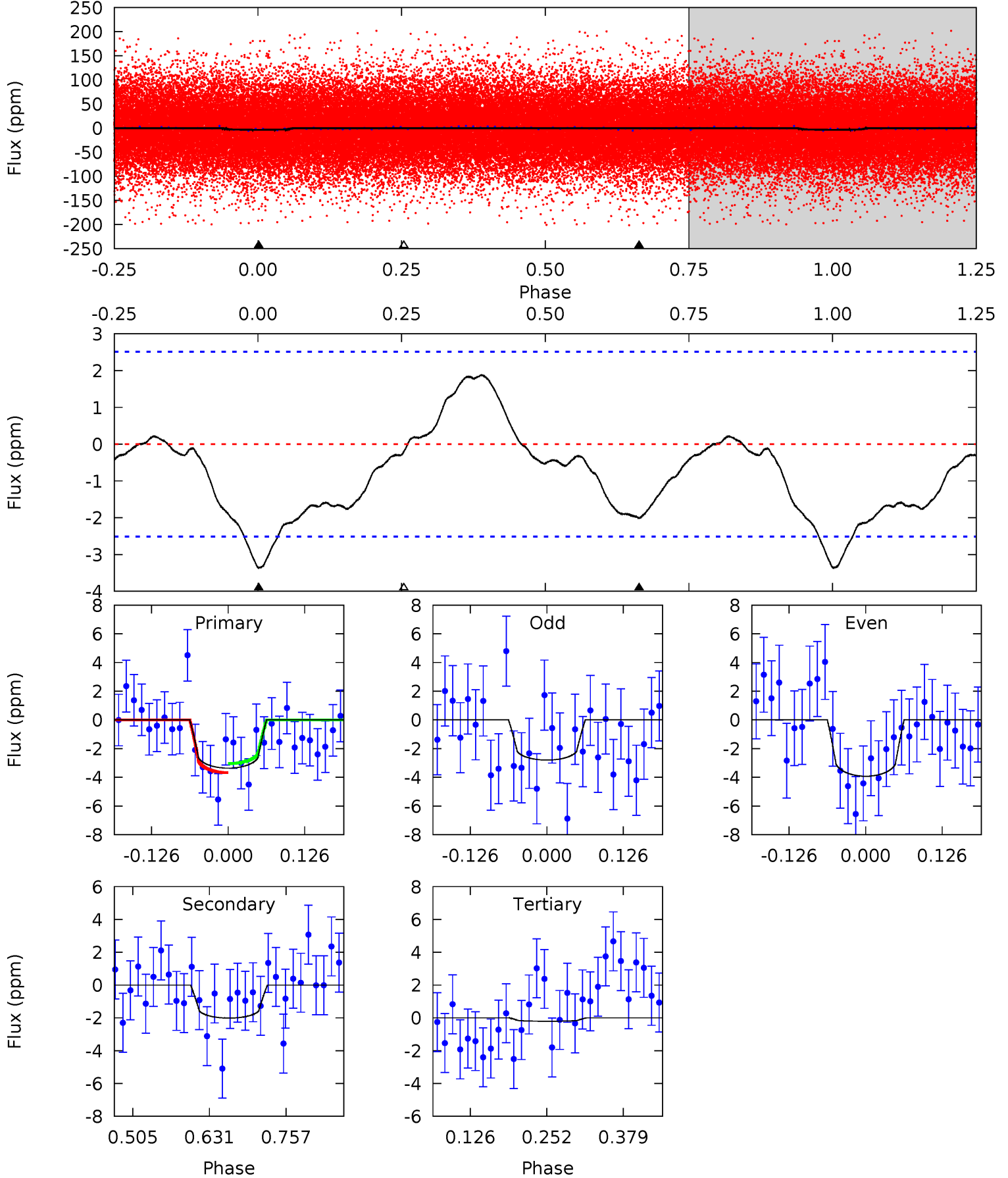
TCE 010529091-02 $P = 1.400081$ Days $T_0 = 132.760135$ (BKJD)



DV Model-Shift Uniqueness Test

010529091-02, P = 1.401910 Days, E = 130.954984 Days

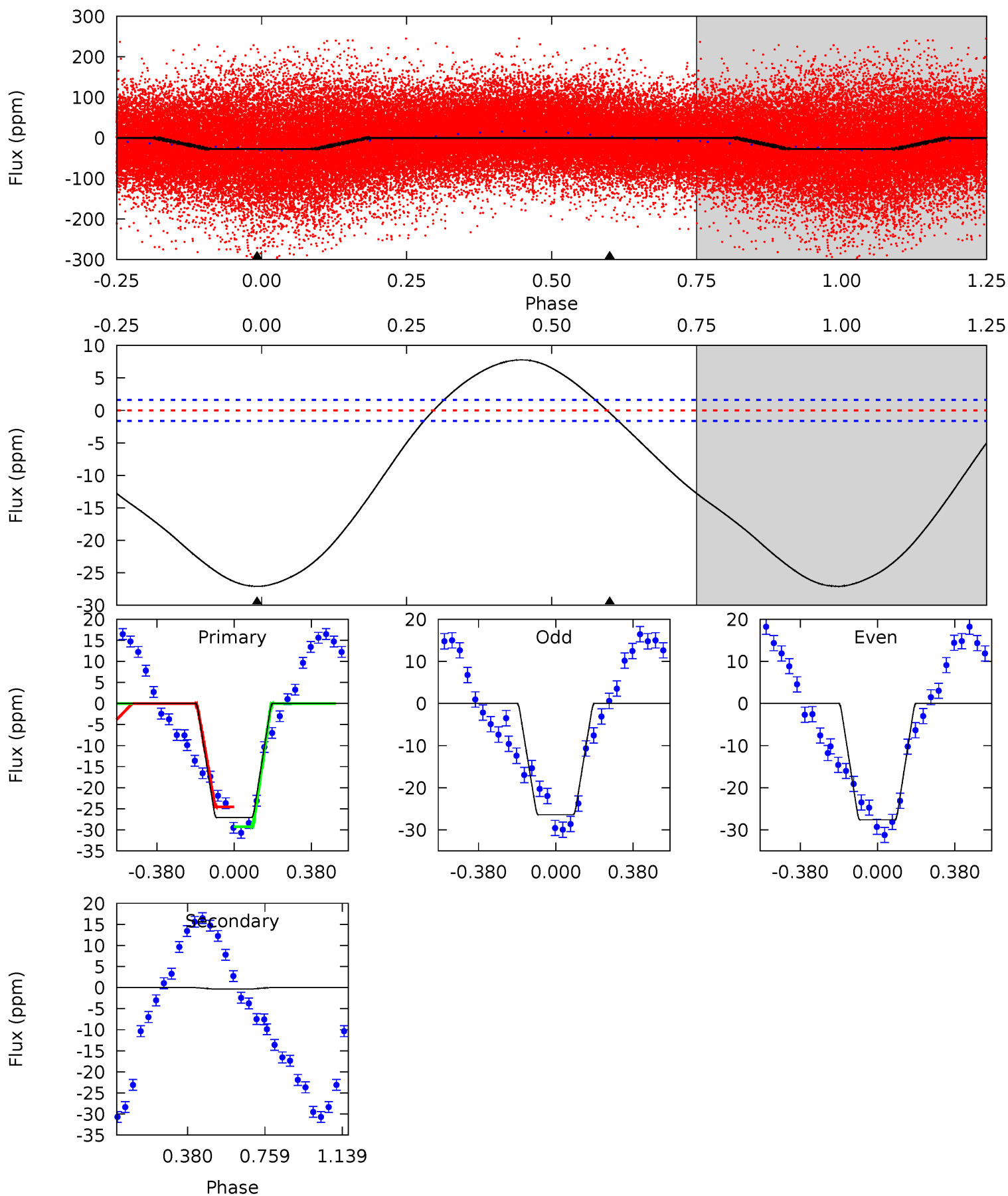
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.04	3.62	0.37	0	4.52	1.53	1.77	5.67	6.04	3.25	3.62	1.01	1.14	0.36	0.57



Alt Model-Shift Uniqueness Test

010529091-02, P = 1.400081 Days, E = 131.360054 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
71.8	0.95	0	0	4.28	0.88	7.51	71.8	71.8	0.95	0.95	1.62	1.02	0.22	6.22



Stellar Parameters For KIC 010529091

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	8090^{+224}_{-336}	$3.720^{+0.440}_{-0.110}$	$-0.020^{+0.250}_{-0.400}$	$3.292^{+0.817}_{-1.517}$	$2.075^{+0.335}_{-0.503}$	$0.082^{+0.313}_{-0.033}$
	+3%/-4%	+12%/-3%	+1250%/-2000%	+25%/-46%	+16%/-24%	+383%/-40%
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 010529091-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-2 ± 1	$0.50^{+0.18}_{-0.16}$	4980^{+361}_{-588}	7549^{+2092}_{-1263}	$4.342^{+5.594}_{-2.171}$
Alt.	-0 ± 0	$1.83^{+0.36}_{-0.44}$	4954^{+393}_{-588}	-4044^{+498}_{-307}	$0.057^{+0.081}_{-0.060}$

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 $A_{obs} \gg 1.0$

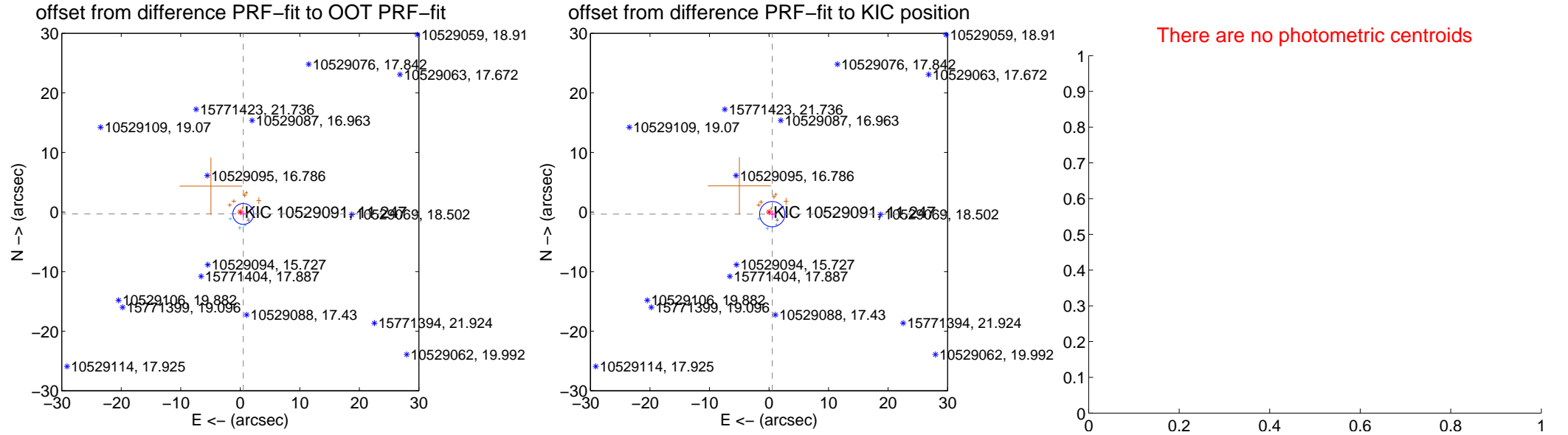
DV Centroid Data

Supplemental centroid analysis for 010529091-02. **Kepler magnitude: 11.25**. Transit SNR 2.32

There are 4 quarters with good PRF difference image offsets

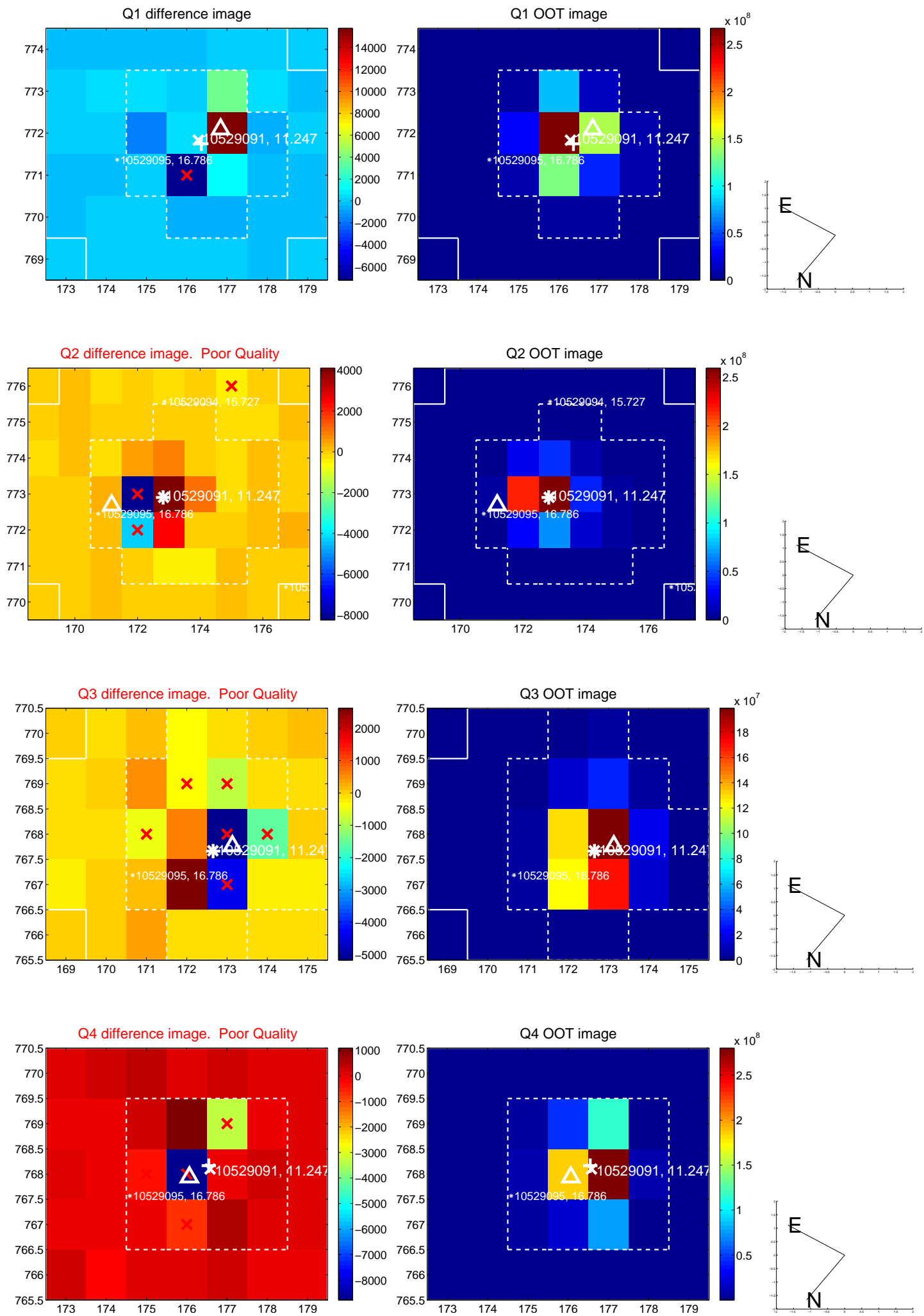
The direct PRF centroid is offset from the target star catalog position by about 0.27 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.591 ± 0.584	1.01	-0.498 ± 0.535	-0.318 ± 0.562
PRF-fit source offset from KIC position	0.645 ± 0.708	0.91	-0.540 ± 0.594	-0.353 ± 0.627
photometric centroid source offset	—	—	—	—

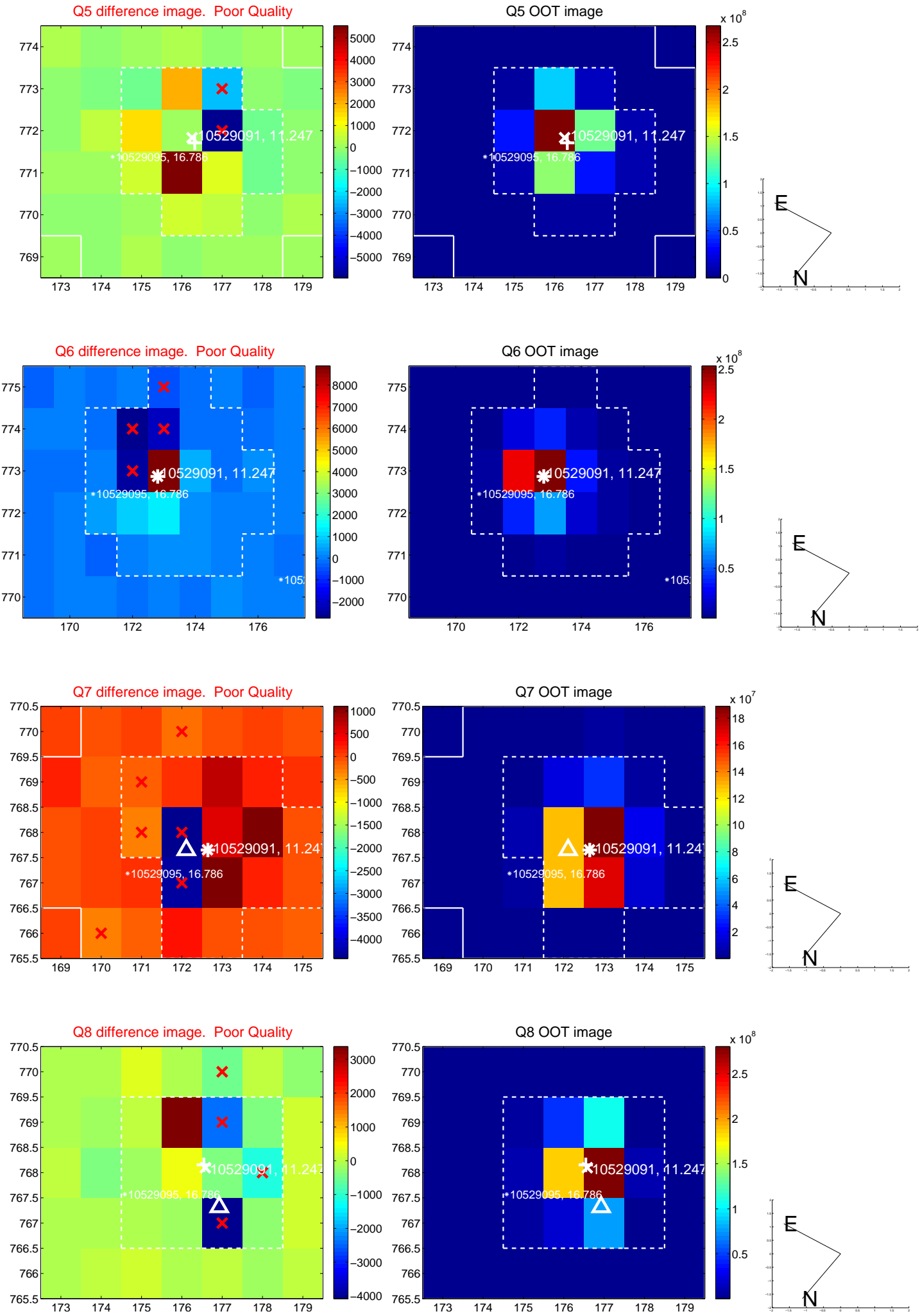


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

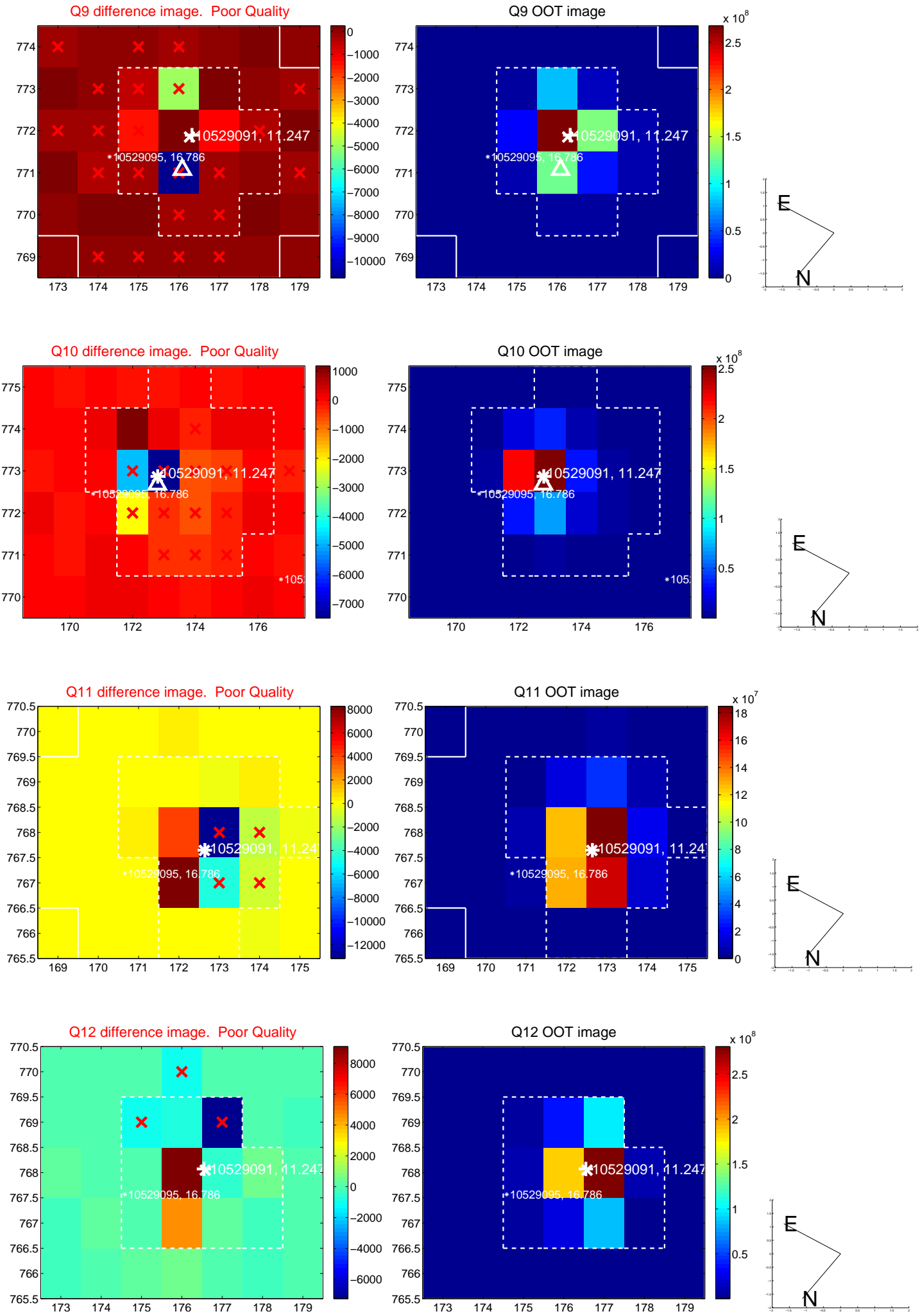
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



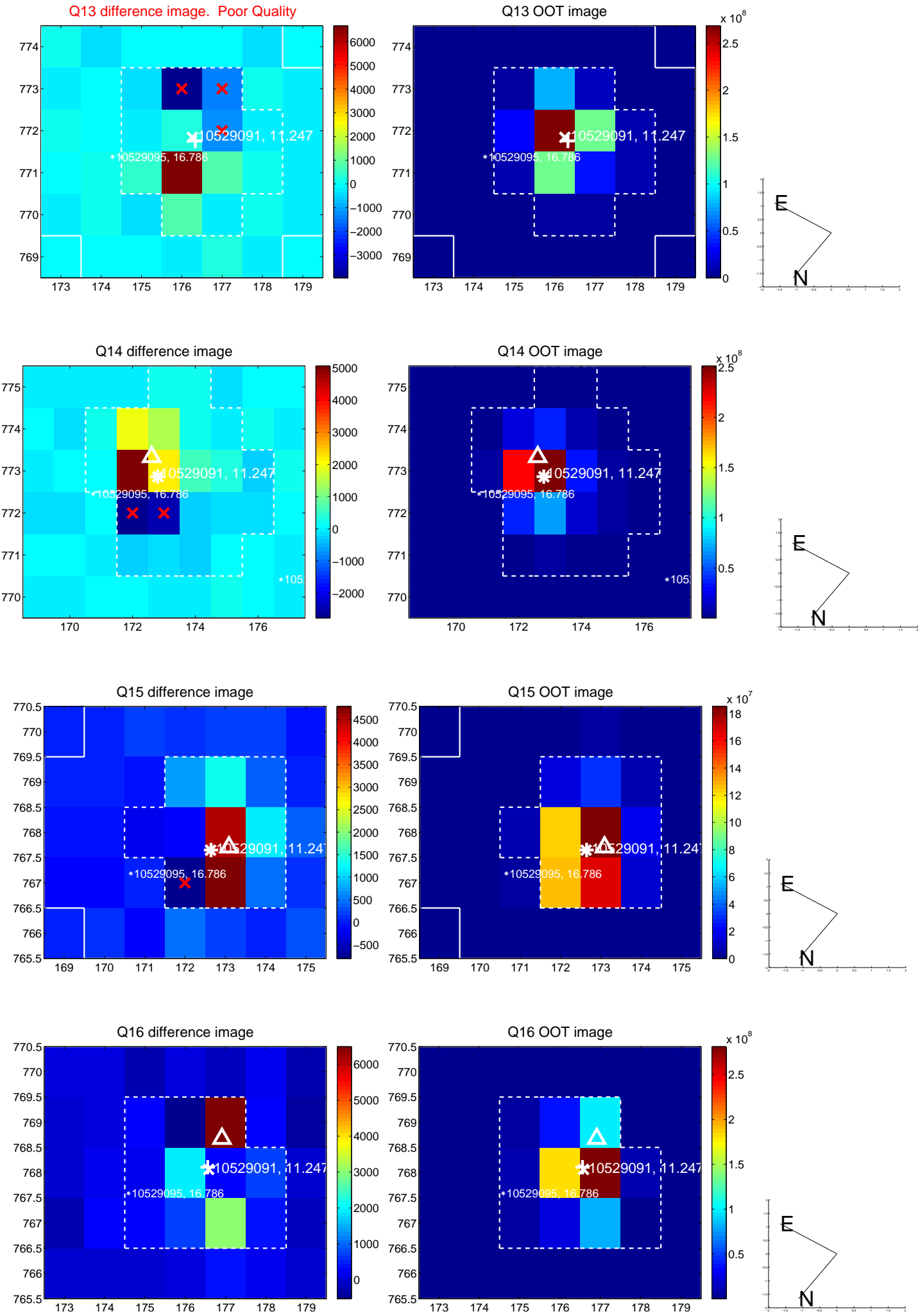
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



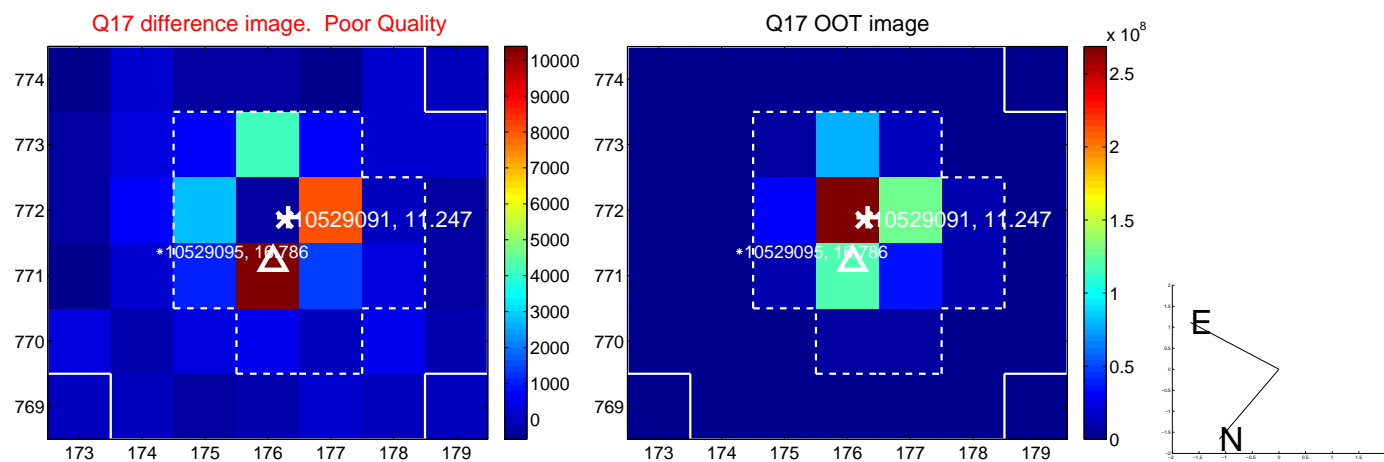
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



folded centroid time series figure for this object.



UKIRT Image

Declination

