

KIC 008935140

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})
008935140-01	OBS	No	389.365516	245.390677	2428.0	4.417	12.6	7.2	0.75	4532	3.51	0.23
008935140-02	OBS	No	622.271990	215.017140	2225.5	5.144	12.0	7.2	0.75	4532	3.63	0.12

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008935140-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS
008935140-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS

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

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

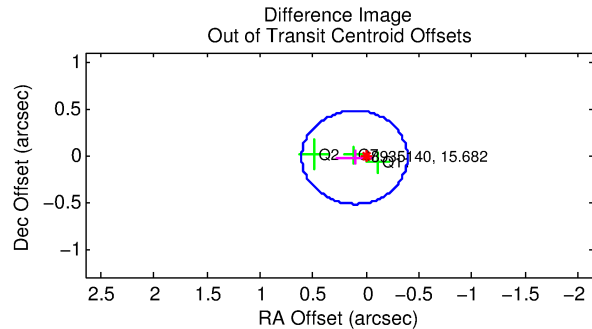
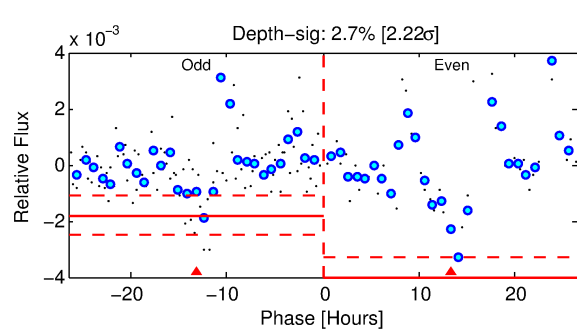
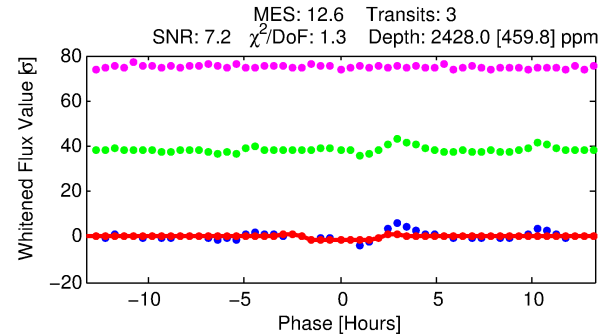
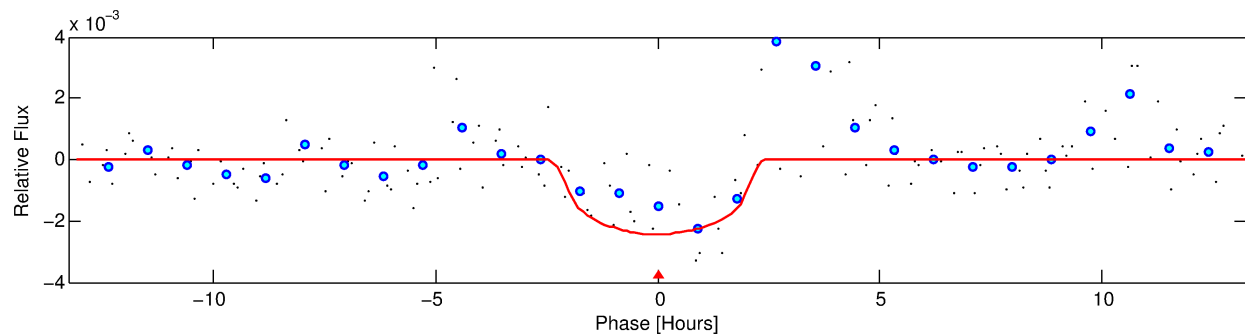
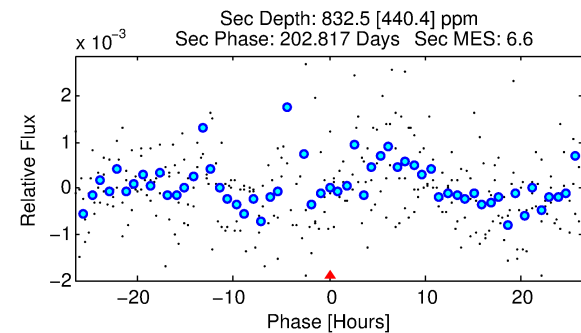
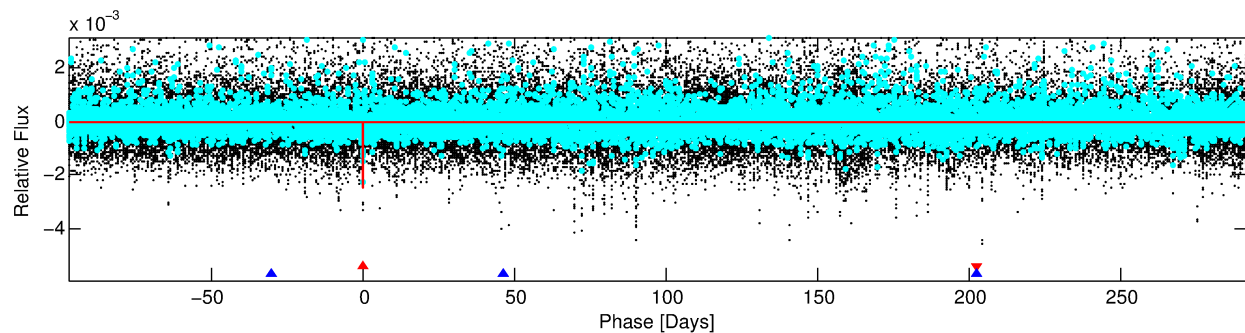
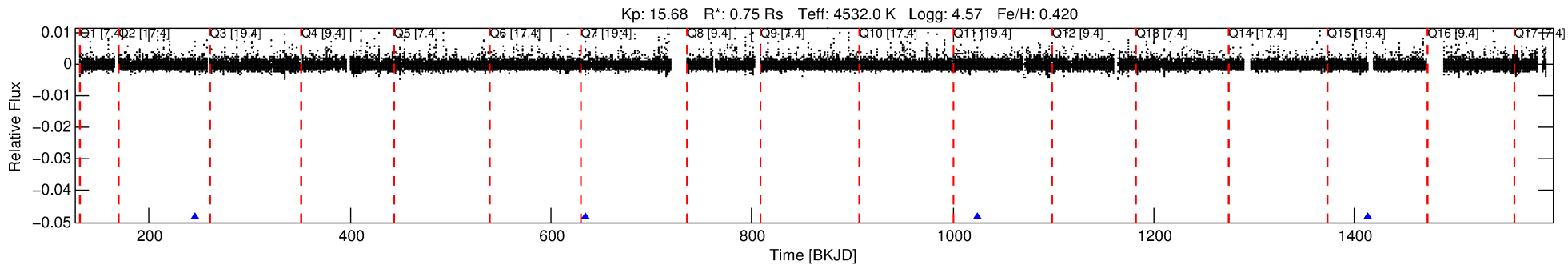
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008935140-01

No Significant Match Found

DV One-Page Summary

KIC: 8935140 Candidate: 1 of 2 Period: 389.366 d



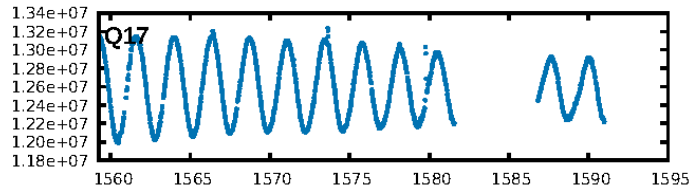
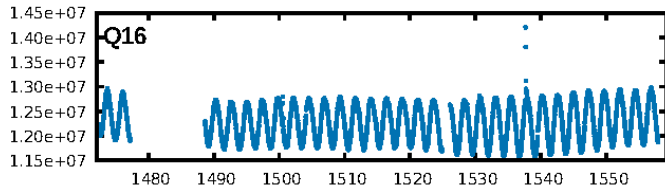
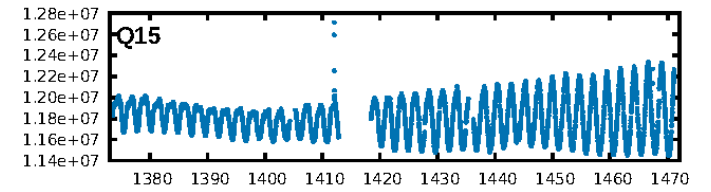
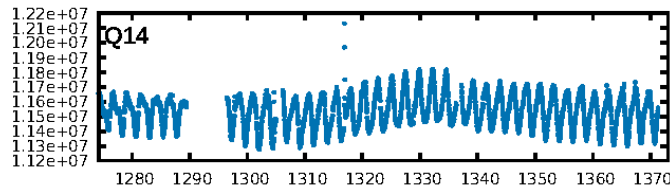
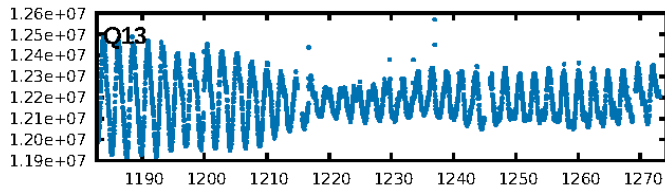
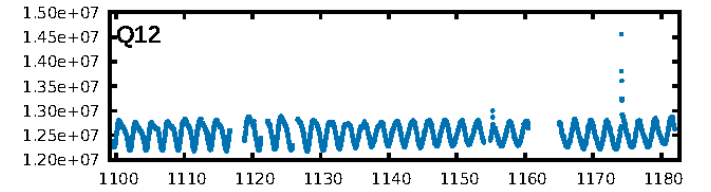
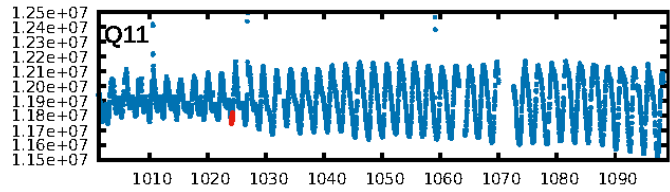
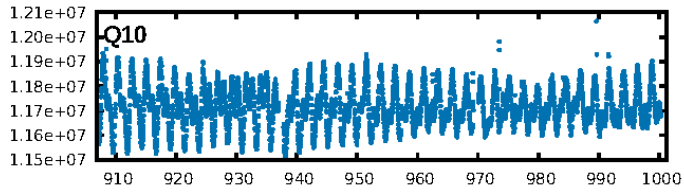
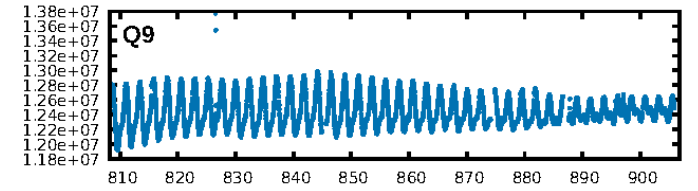
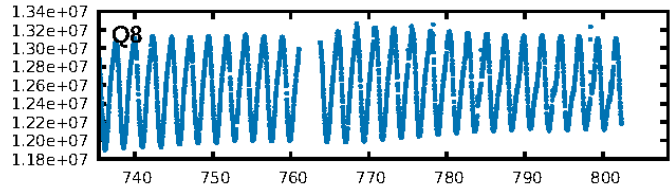
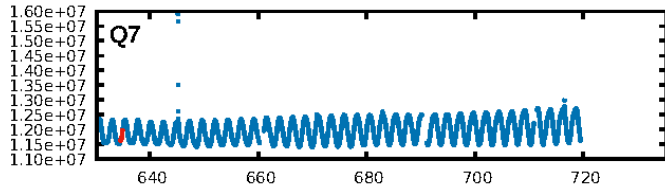
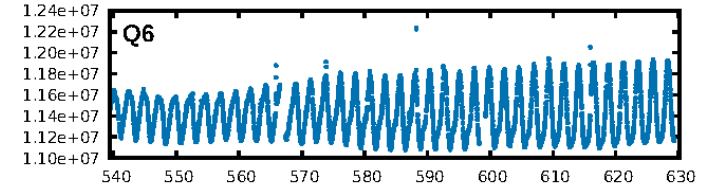
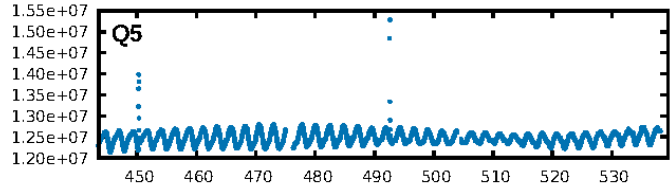
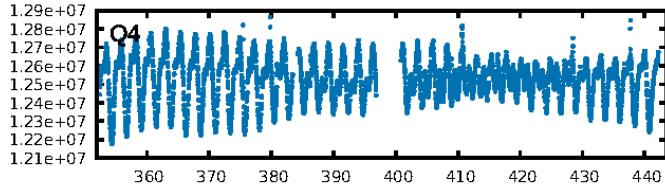
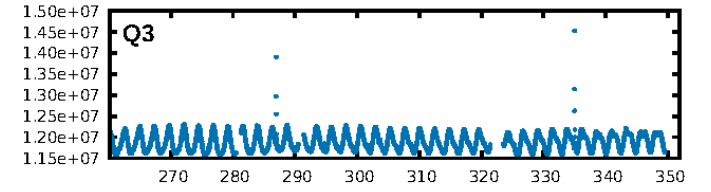
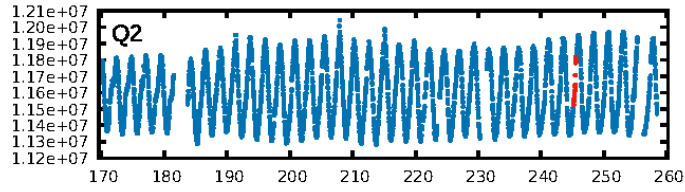
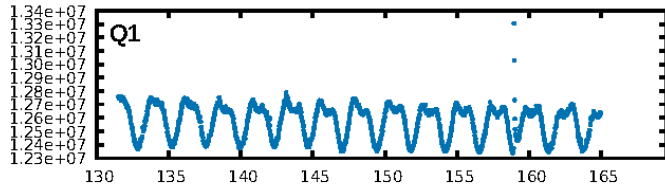
DV Fit Results:

Period = 389.36552 [0.00757] d
Epoch = 245.3907 [0.0095] BKJD
Rp/R* = 0.0430 [0.0745]
a/R* = 700.01 [3366.53]
b = 0.08 [58.20]
Seff = 0.23 [0.04]
Teq = 177 [7] K
Rp = 3.51 [6.09] Re
a = 0.9525 [0.0602] AU
Ag = 33784.95 [118622.51] [0.28σ]
Teffp = 3714 [3261] K [1.08σ]

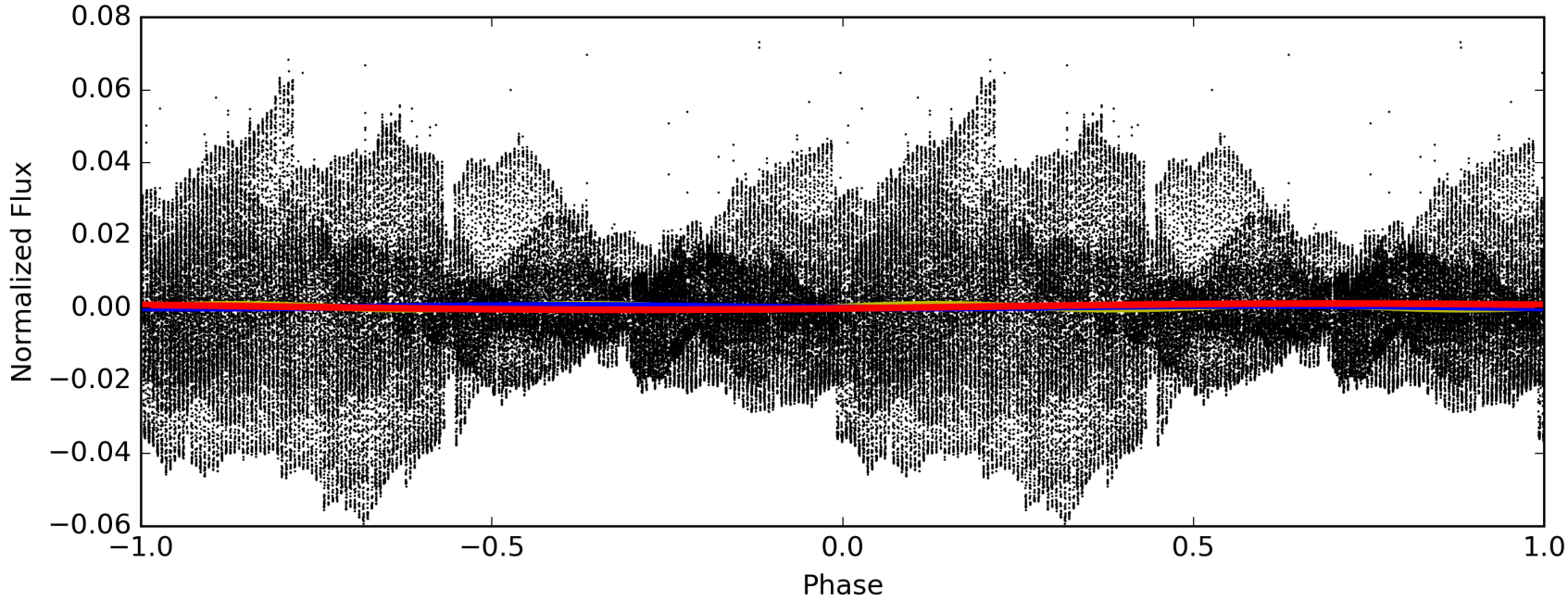
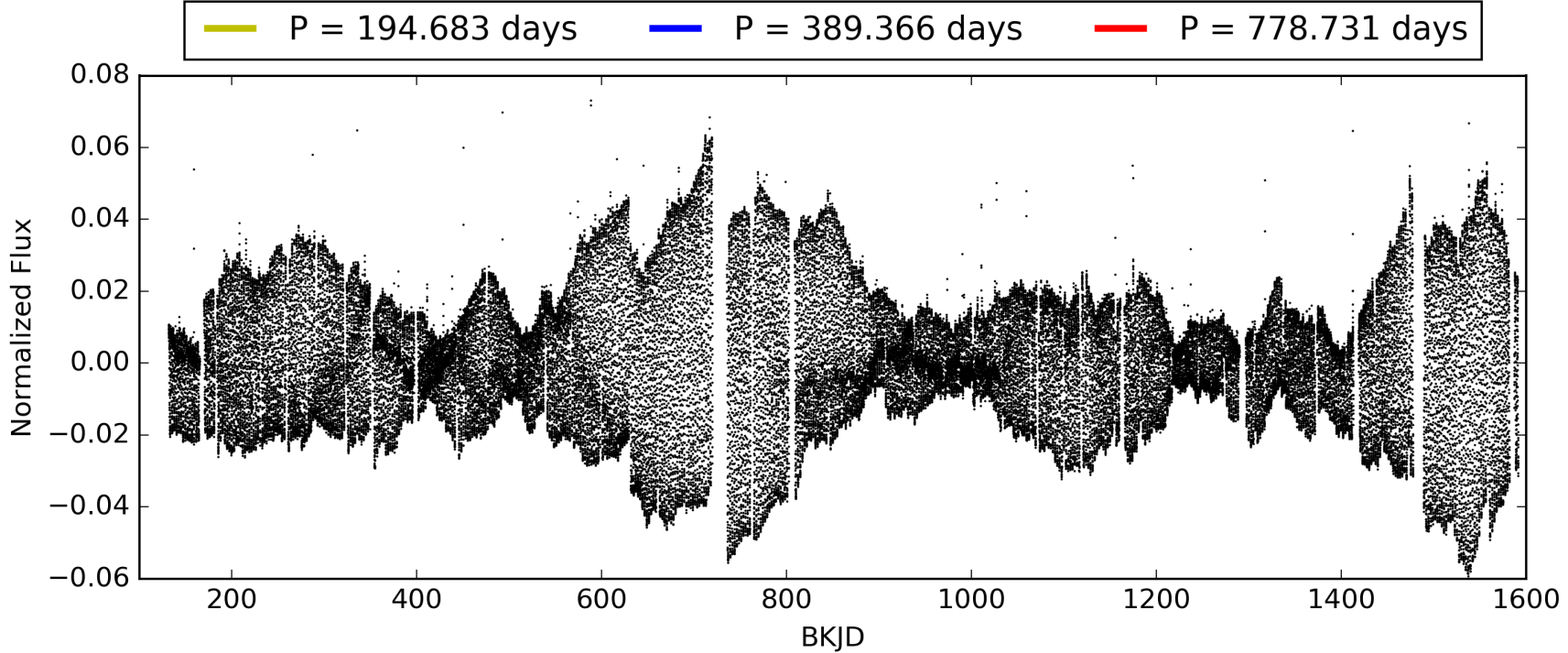
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [824.37σ]
ModelChiSquare2-sig: 0.7%
ModelChiSquareGof-sig: 51.3%
Bootstrap-pfa: 2.24e-11
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 1.397
Centroid-sig: 34.9%
Centroid-so: 0.605 arcsec [0.77σ]
OotOffset-rm: 0.110 arcsec [0.67σ]
KicOffset-rm: 0.075 arcsec [0.54σ]
OotOffset-st: 1/2/0/0 [3]
KicOffset-st: 1/2/0/0 [3]
DiffImageQuality-fgm: 1.00 [3/3]
DiffImageOverlap-fno: 1.00 [3/3]

TCE 008935140-01, PDC Light Curves

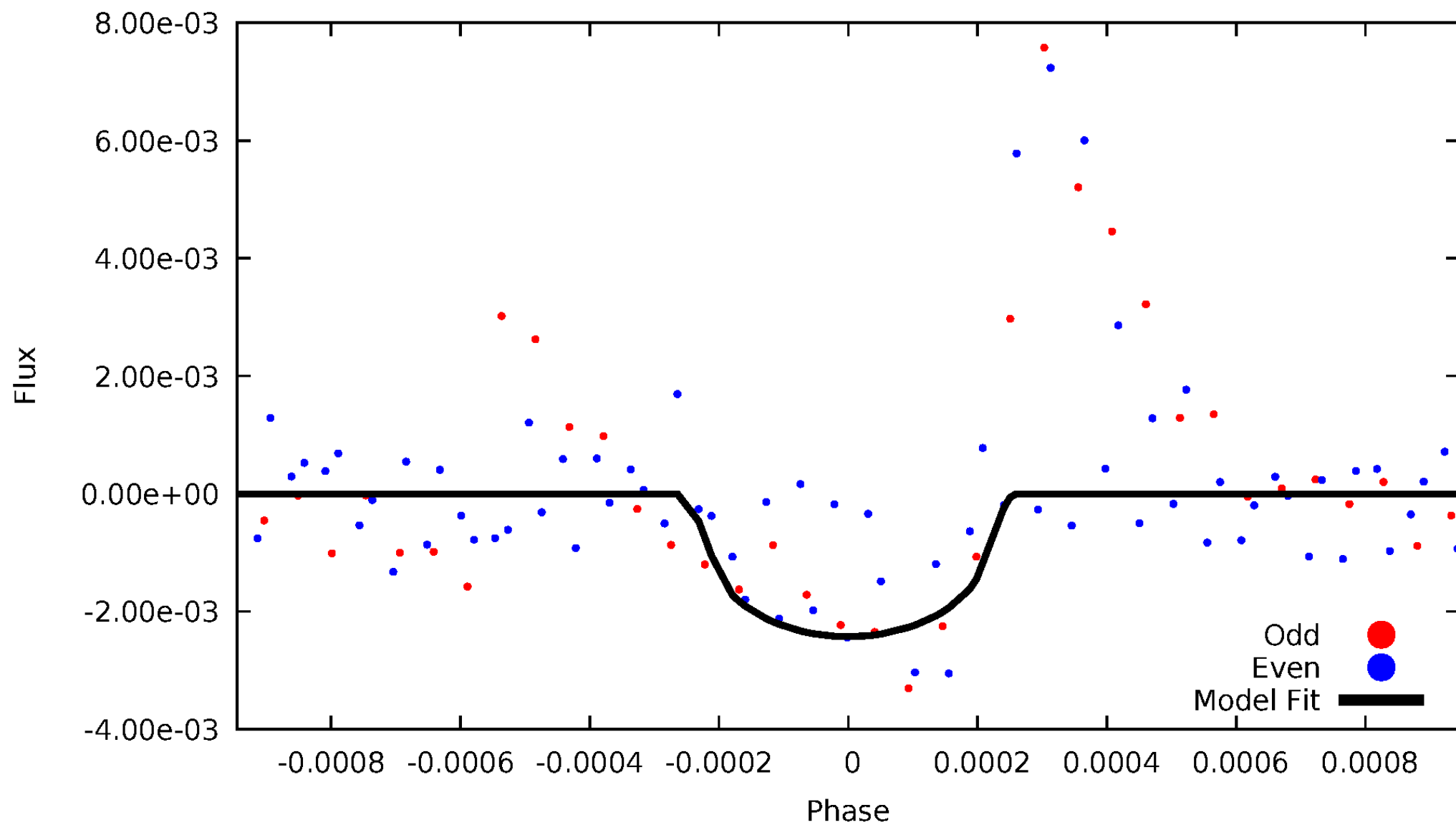


TCE 008935140-01



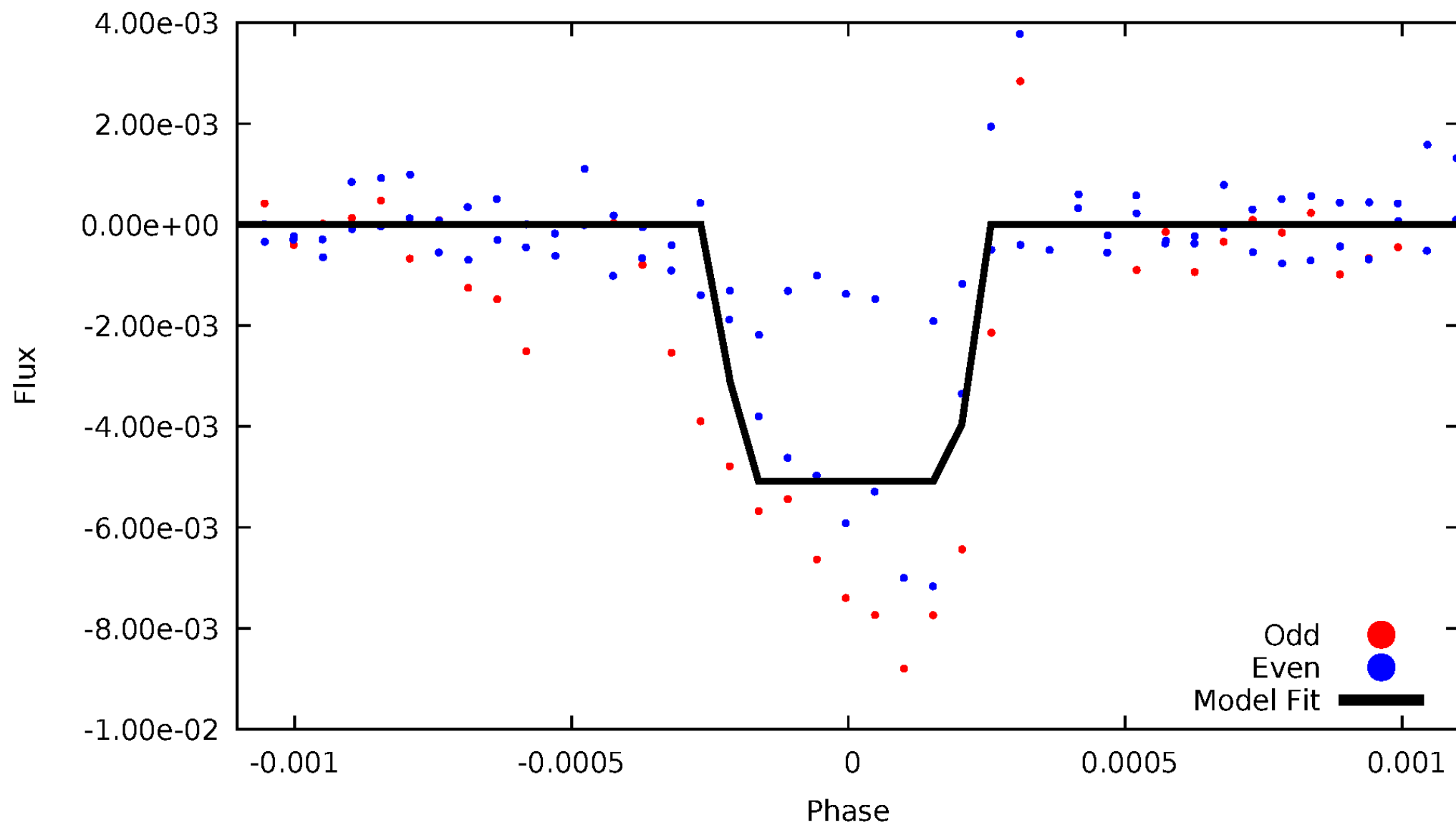
DV Odd/Even

TCE 008935140-01



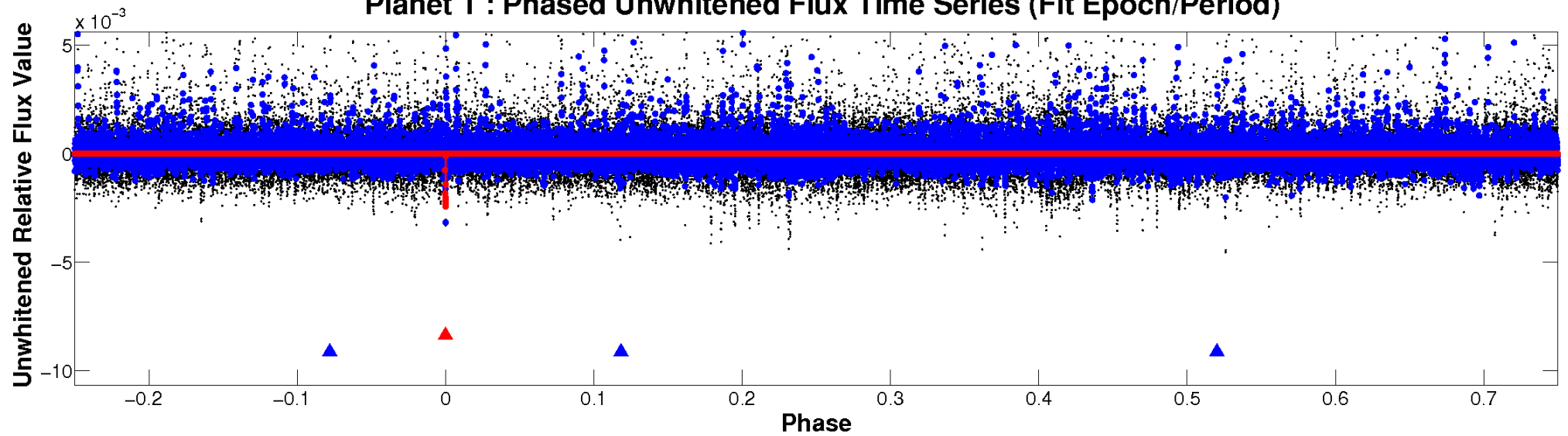
ALT Odd/Even

TCE 008935140-01

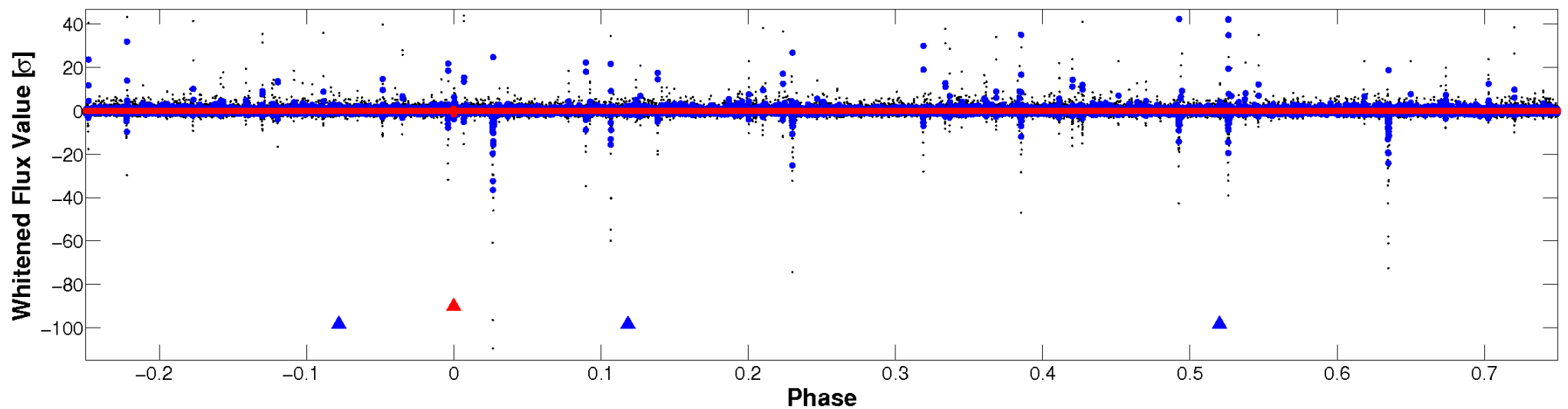


Non-Whitened Vs. Whitened Light Curve

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

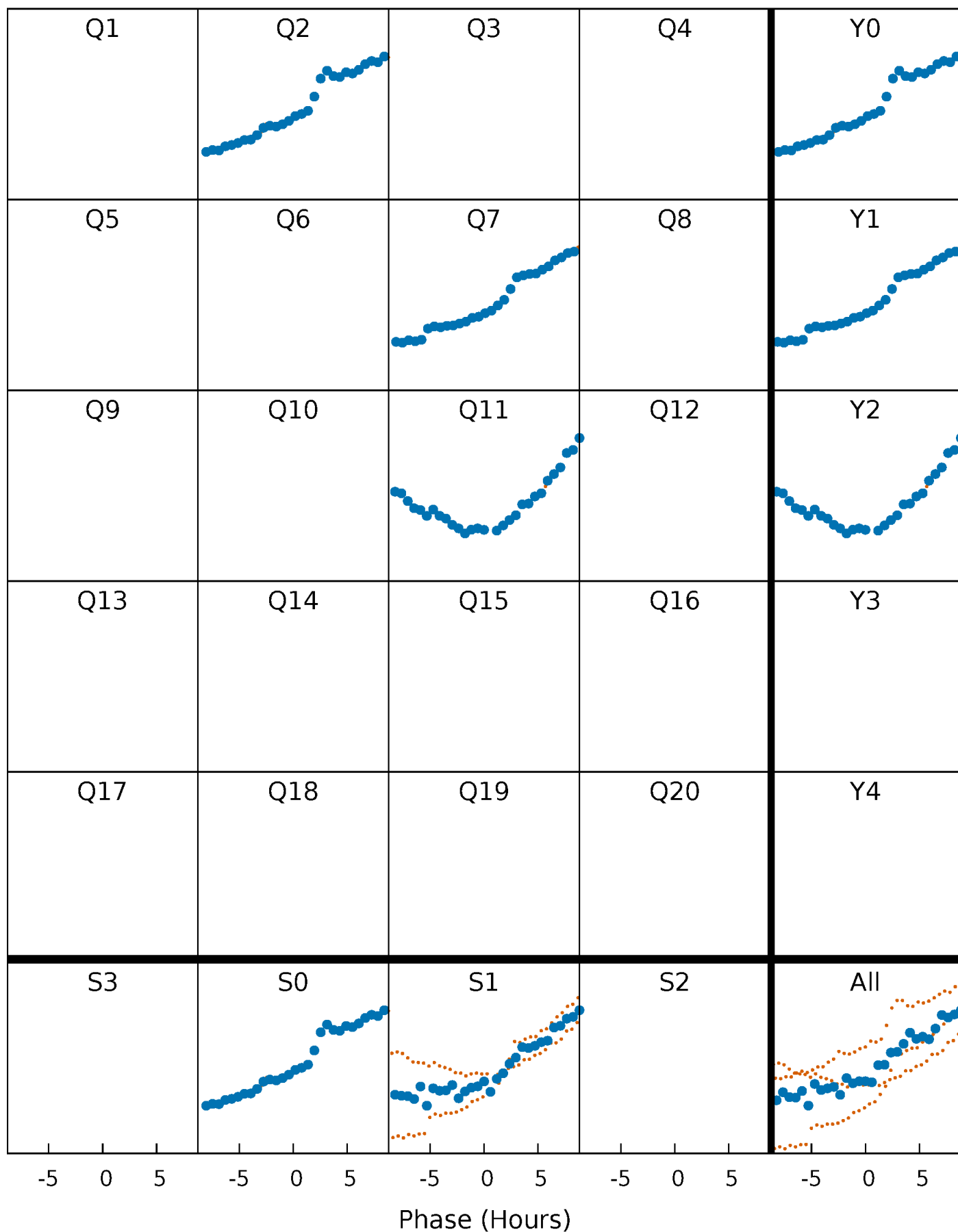


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



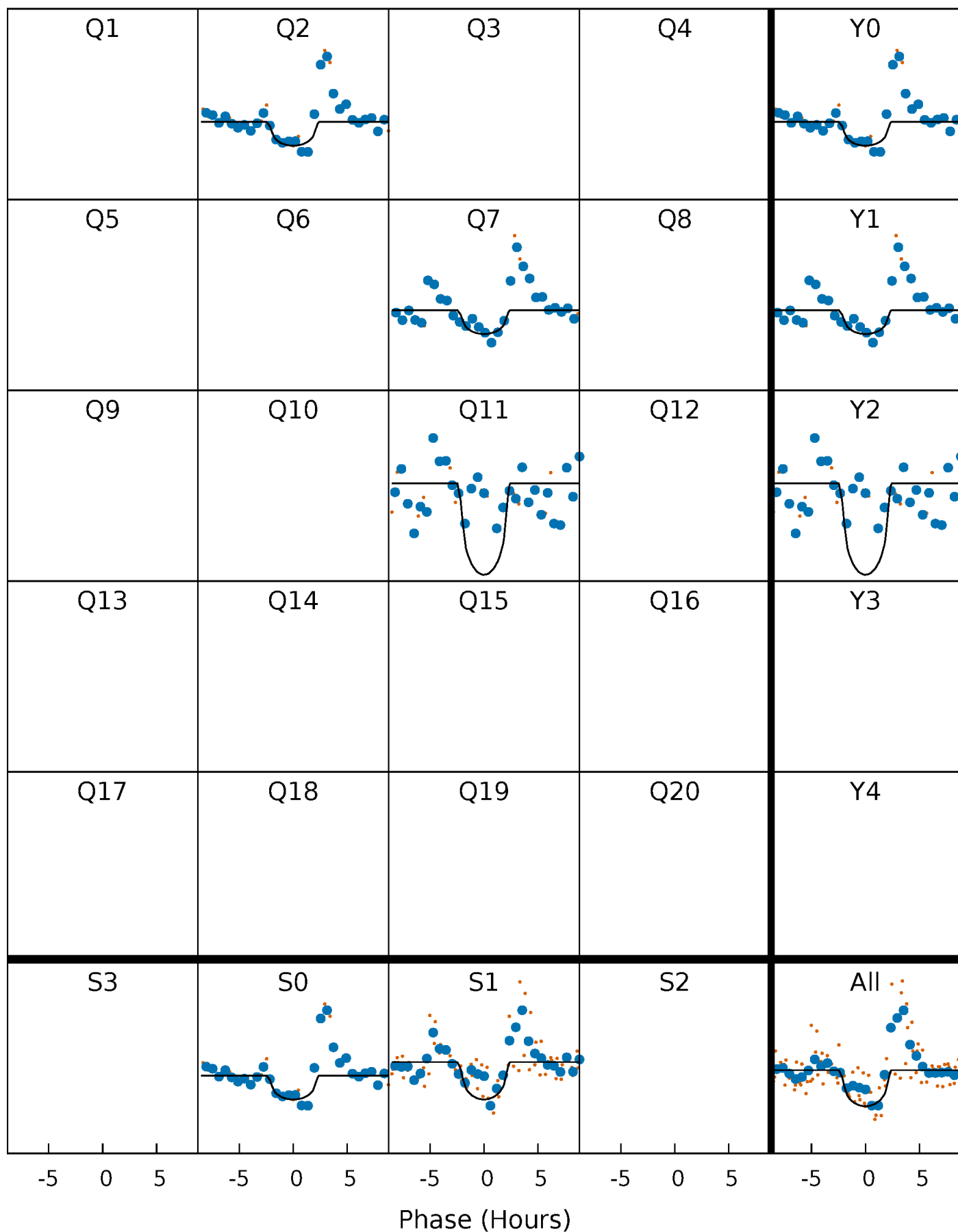
PDC Quarter-Phased Transit Curves

TCE 008935140-01 $P=389.365516$ Days $T_0=245.390677$ (BKJD)



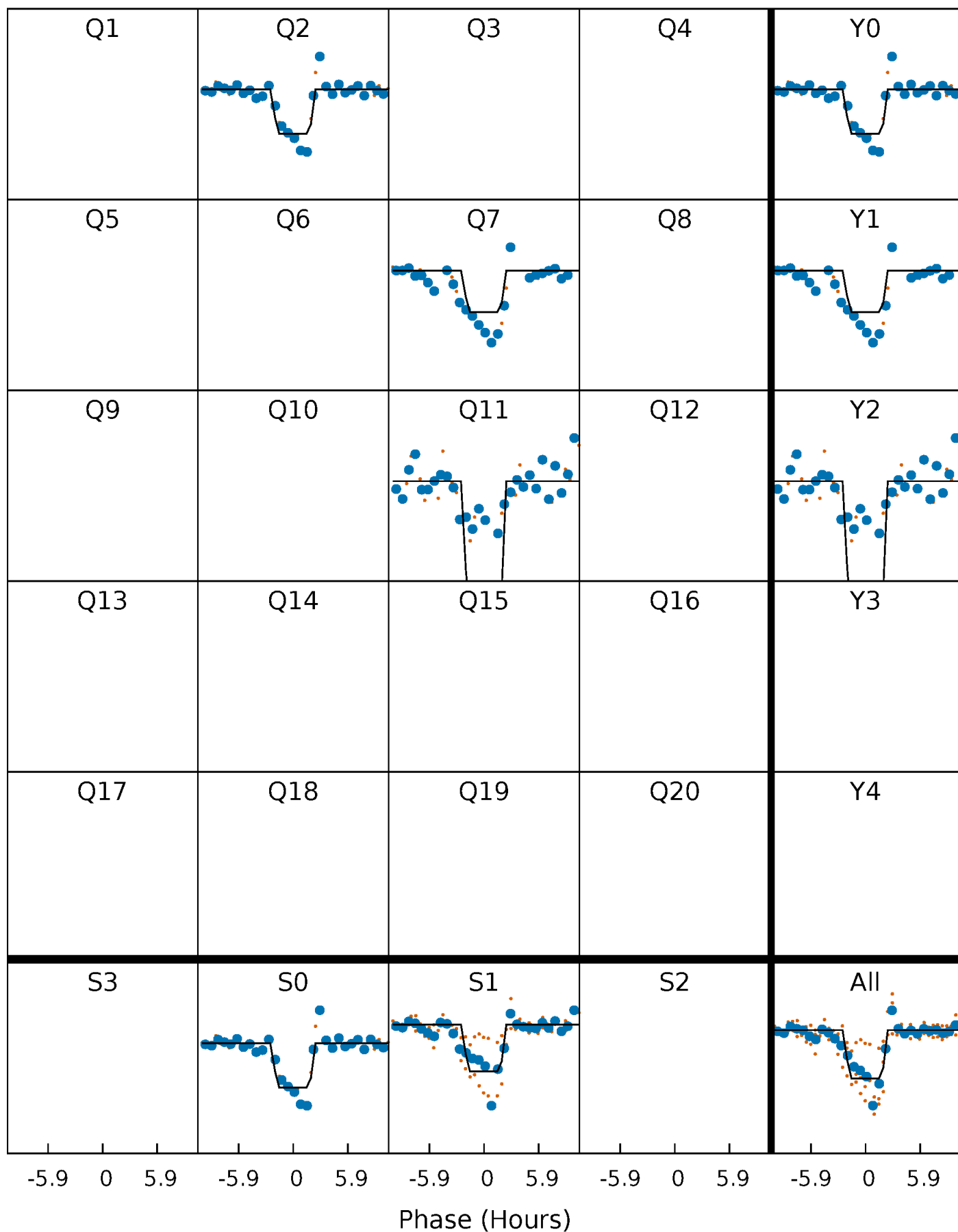
DV Quarter-Phased Transit Curves

TCE 008935140-01 P=389.365516 Days $T_0=245.390677$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

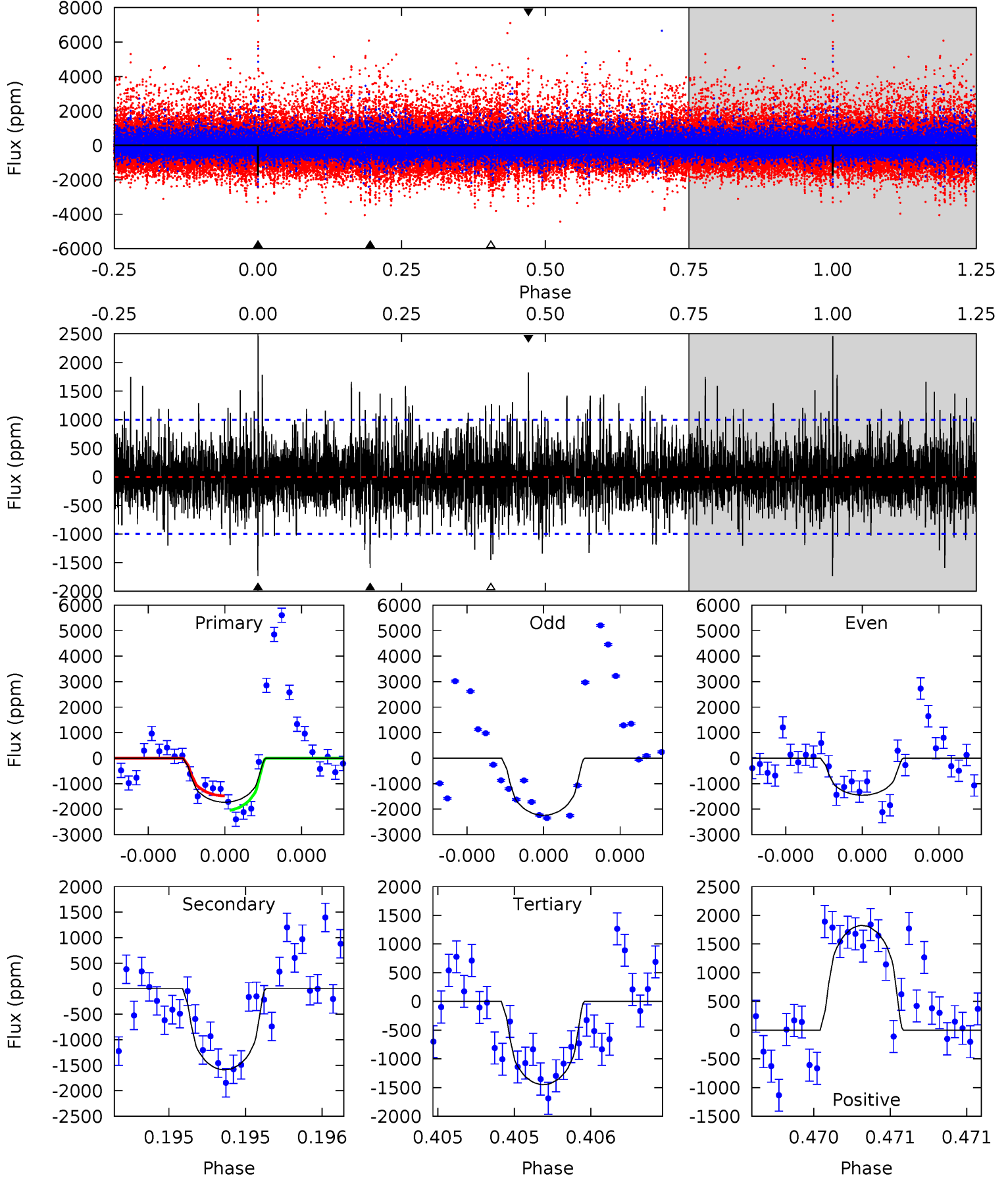
TCE 008935140-01 P=389.361486 Days $T_0=245.391811$ (BKJD)



DV Model-Shift Uniqueness Test

008935140-01, P = 389.365516 Days, E = 245.390677 Days

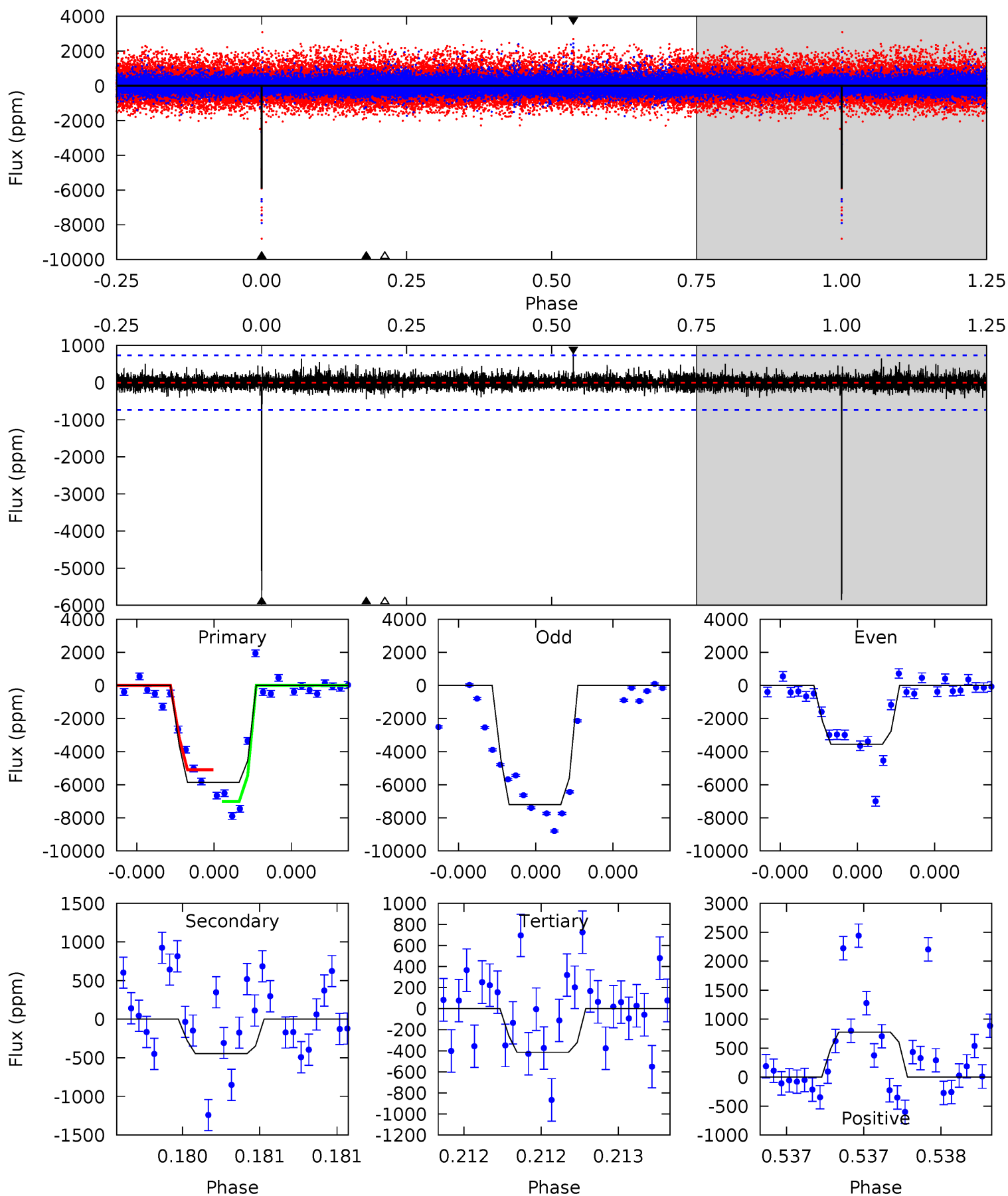
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.69	8.91	8.11	10.2	5.58	3.49	2.12	1.57	-0.53	0.79	-1.31	1.67	0.75	0.59	1.58



Alt Model-Shift Uniqueness Test

008935140-01, P = 389.361486 Days, E = 245.391811 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
44.5	3.39	3.14	5.90	5.58	3.50	0.78	41.4	38.6	0.25	-2.51	15.2	0.88	0.12	0



Stellar Parameters For KIC 008935140

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	4532^{+150}_{-150}	$4.571^{+0.049}_{-0.021}$	$0.420^{+0.050}_{-0.300}$	$0.748^{+0.031}_{-0.057}$	$0.760^{+0.036}_{-0.052}$	$2.560^{+0.547}_{-0.219}$
	+3%/-3%	+1%/-0%	+12%/-71%	+4%/-8%	+5%/-7%	+21%/-9%
Source	PHO1	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 008935140-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-1590 ± 179	$5.41^{+4.82}_{-3.61}$	246^{+9}_{-9}	3749^{+2189}_{-677}	$27328^{+232253}_{-19939}$
Alt.	-446 ± 132	$6.79^{+5.32}_{-4.35}$	246^{+9}_{-9}	2897^{+1063}_{-435}	4751^{+30931}_{-3417}

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 $A_{obs} \gg 1.0$

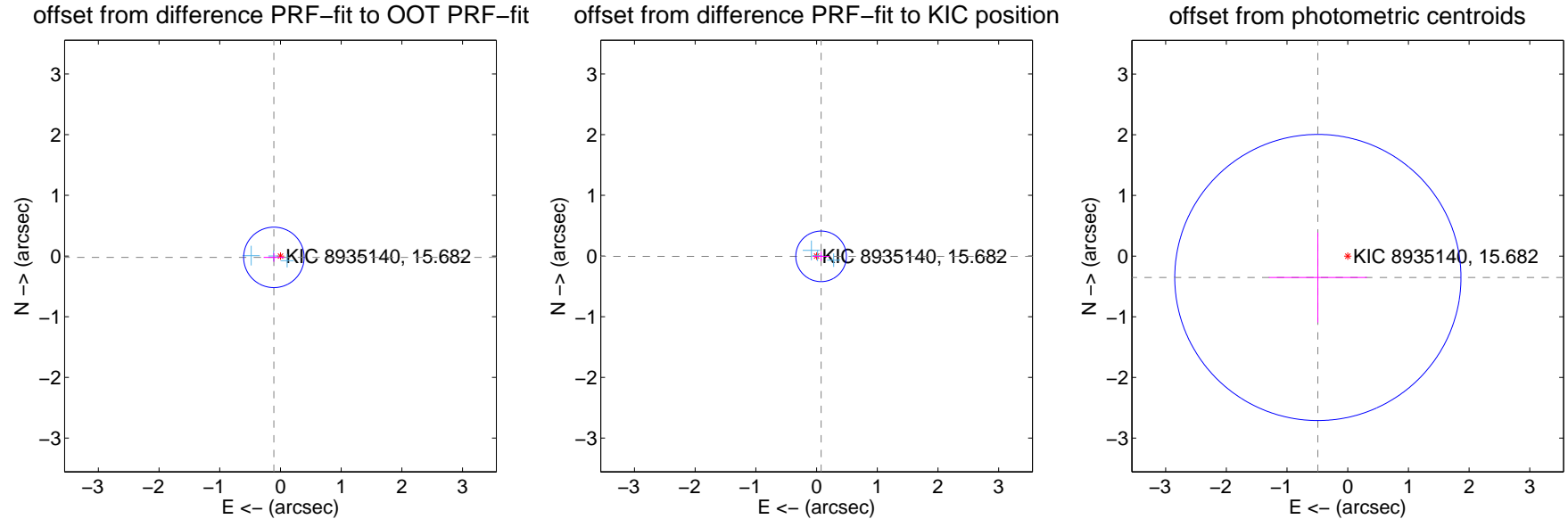
DV Centroid Data

Supplemental centroid analysis for 008935140-01. Kepler magnitude: 15.68. Transit SNR 7.22

There are 3 quarters with good PRF difference image offsets

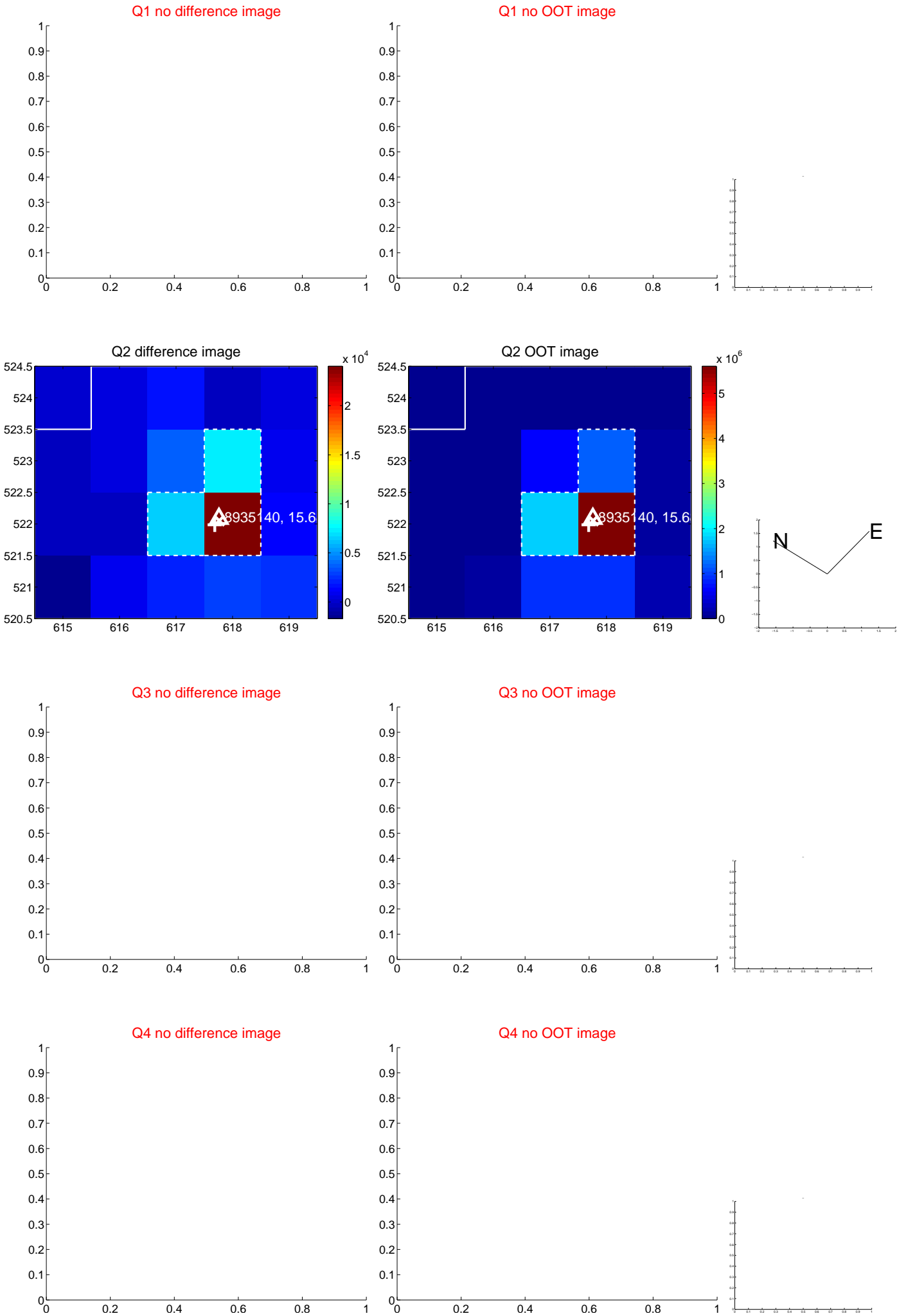
The direct PRF centroid is offset from the target star catalog position by about 0.17 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.110 ± 0.166	0.67	0.108 ± 0.169	-0.022 ± 0.073
PRF-fit source offset from KIC position	0.075 ± 0.139	0.54	-0.075 ± 0.139	-0.005 ± 0.078
photometric centroid source offset	0.61 ± 0.79	0.77	0.49 ± 0.81	-0.35 ± 0.74

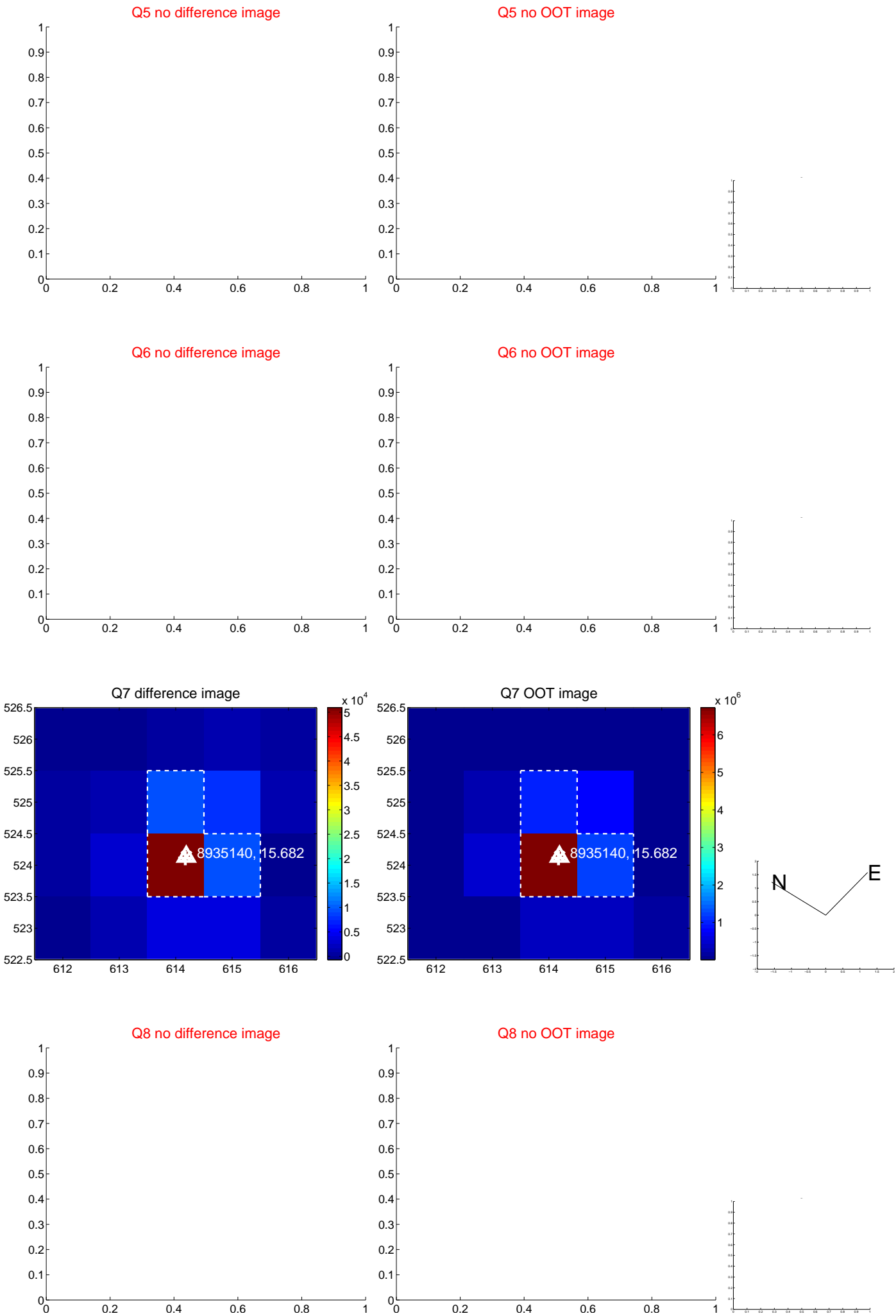


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

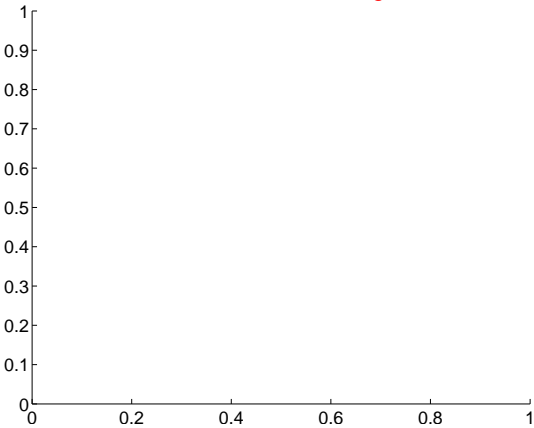


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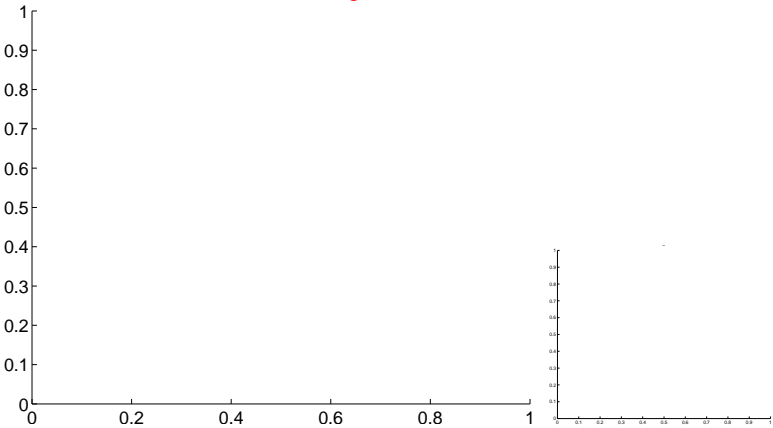


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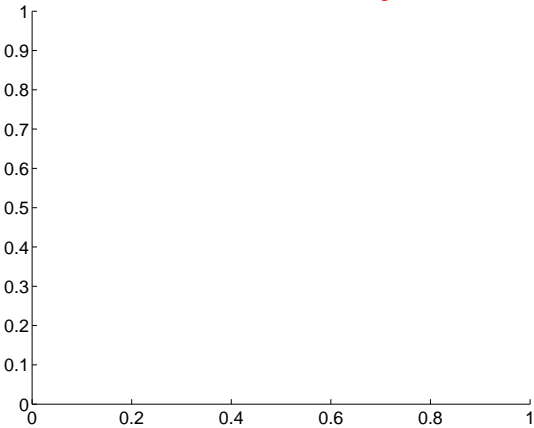
Q9 no difference image



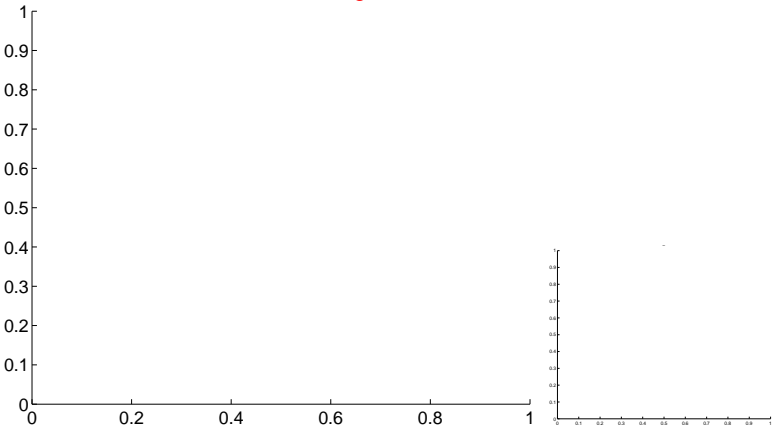
Q9 no OOT image



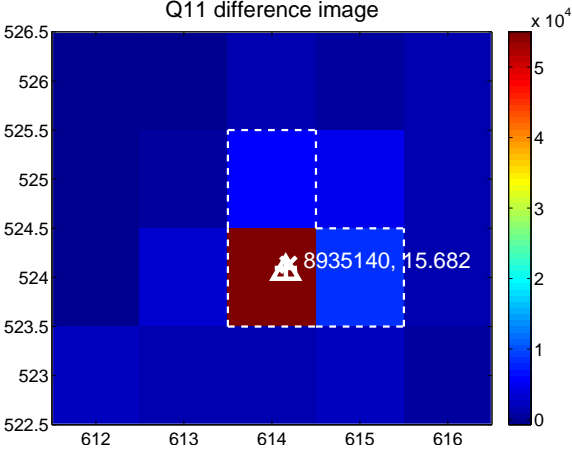
Q10 no difference image



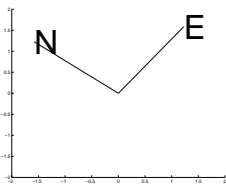
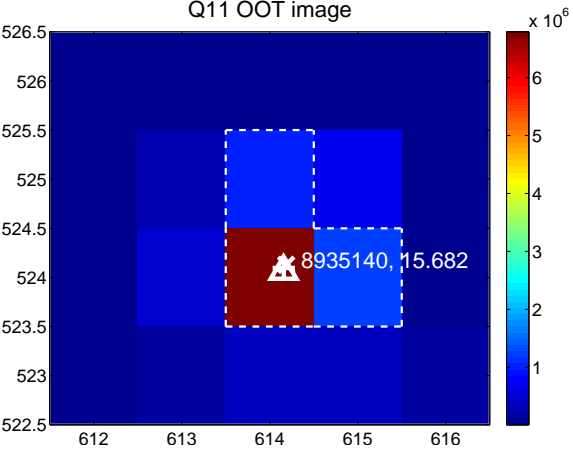
Q10 no OOT image



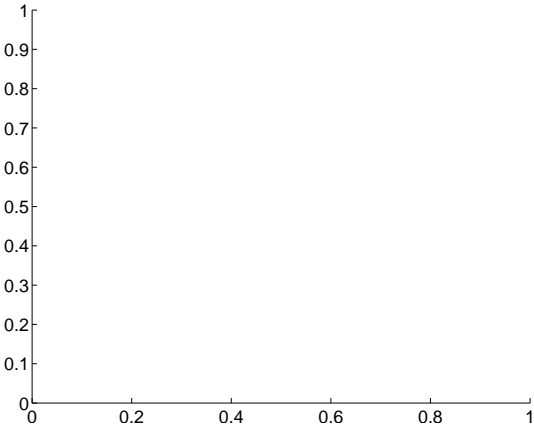
Q11 difference image



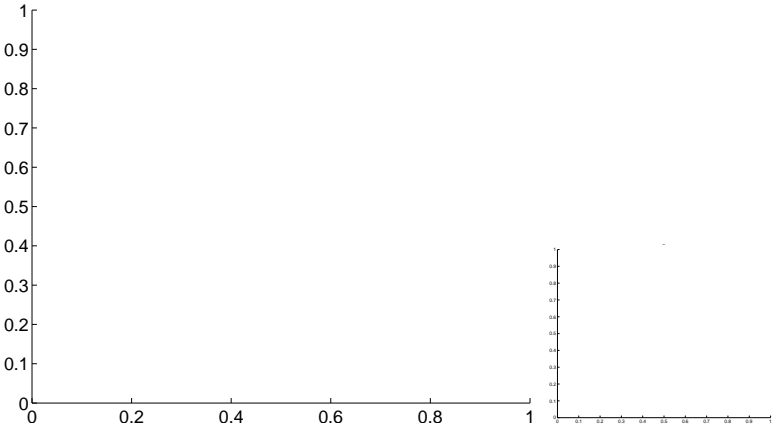
Q11 OOT image



Q12 no difference image



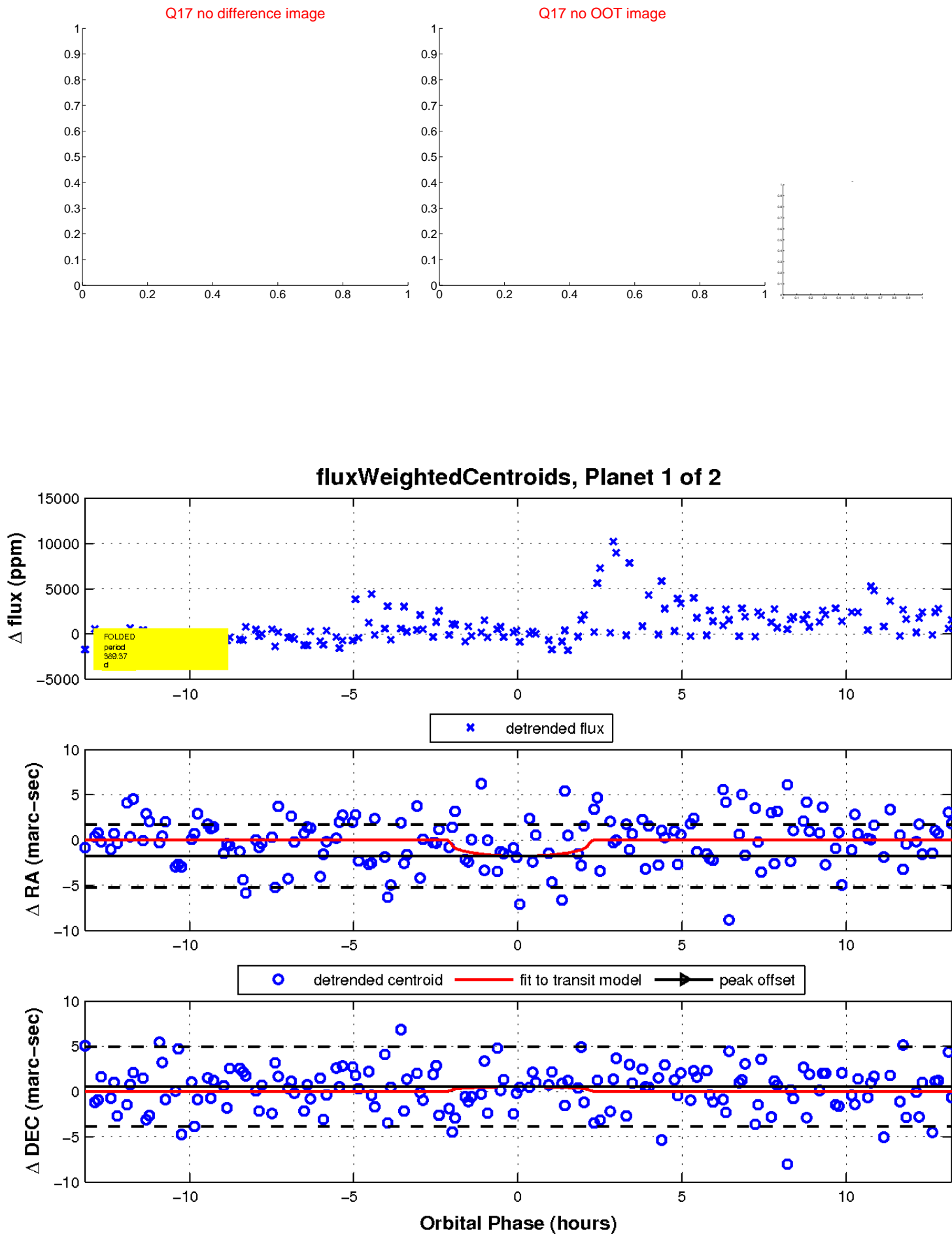
Q12 no OOT image



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

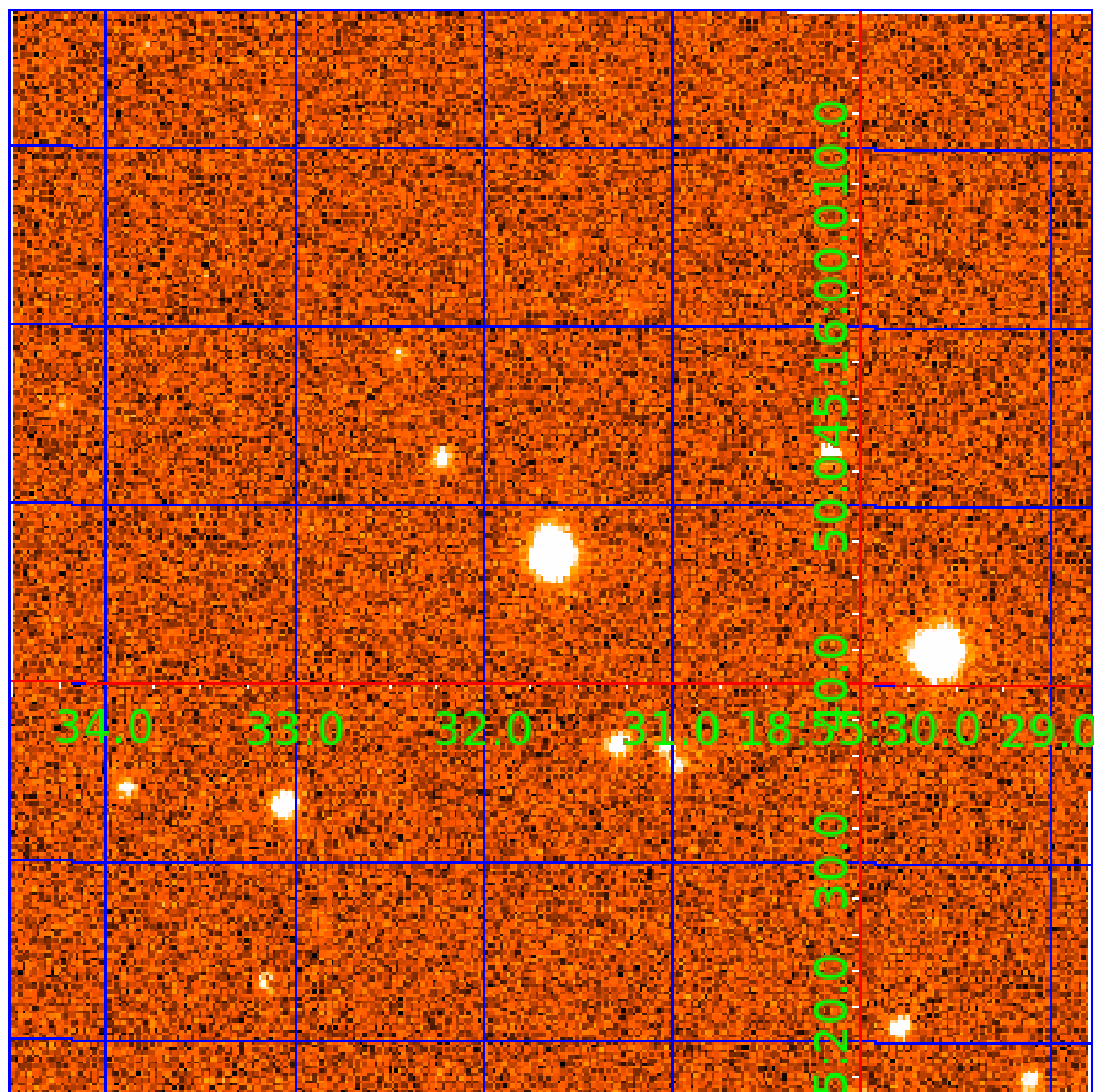


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 008935140

Q1-17 DR25 TCE Parameters

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008935140-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS

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

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

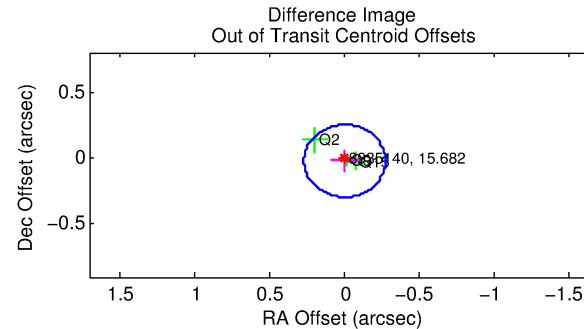
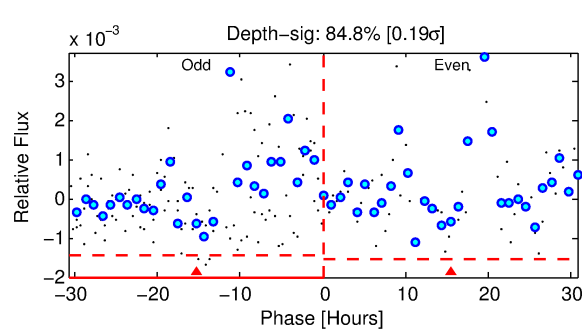
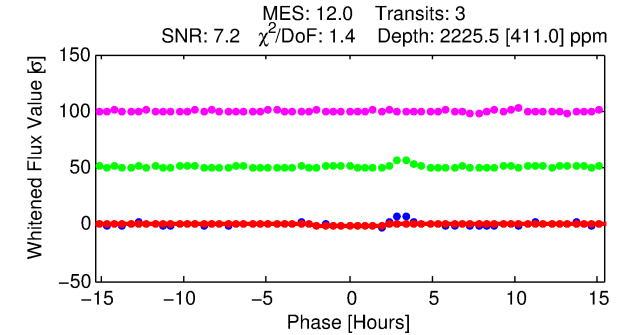
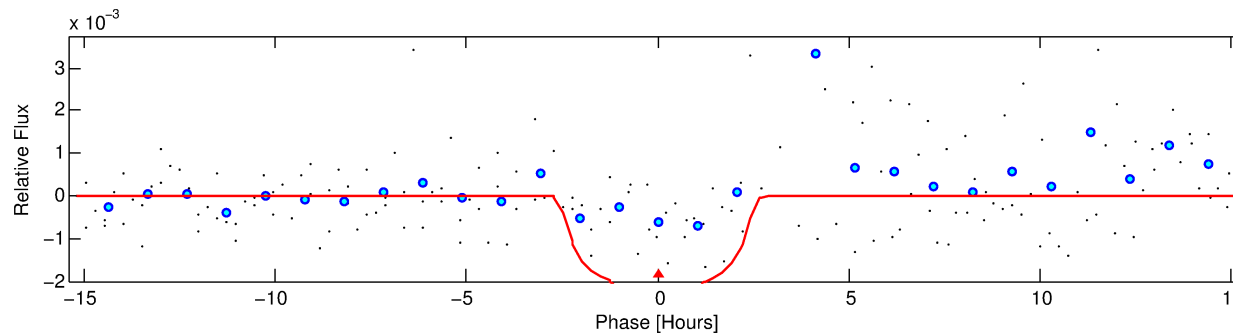
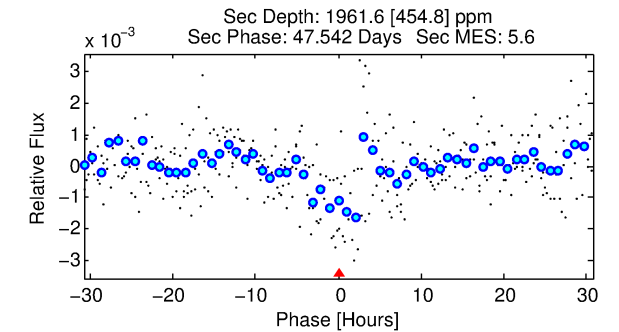
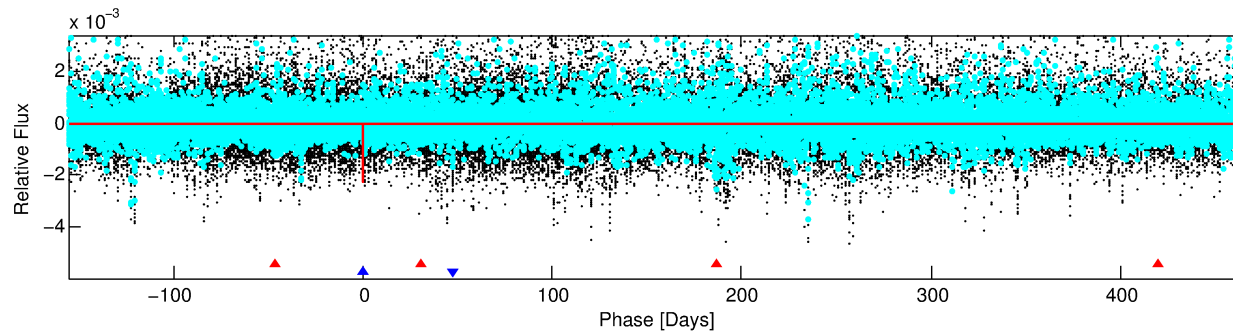
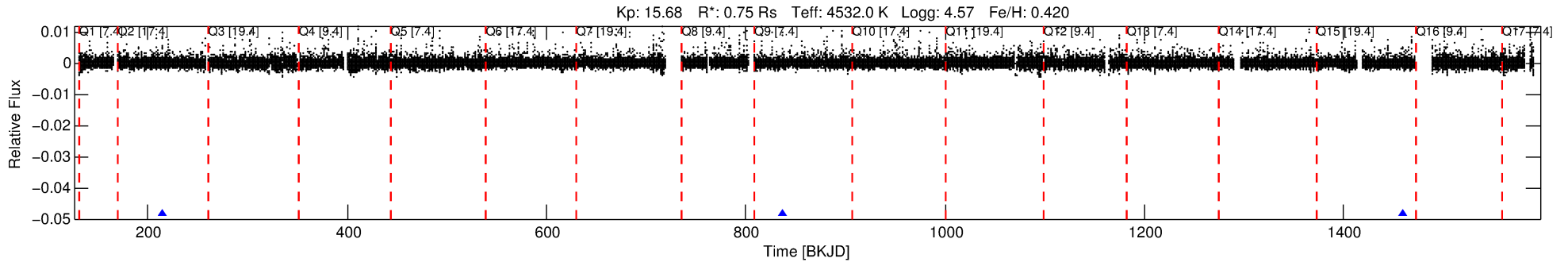
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008935140-02

No Significant Match Found

DV One-Page Summary

KIC: 8935140 Candidate: 2 of 2 Period: 622.272 d



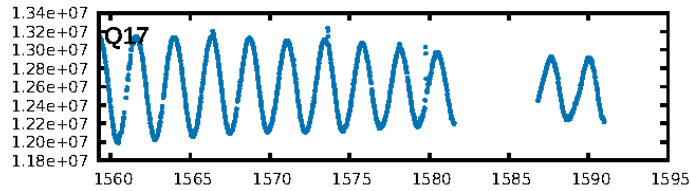
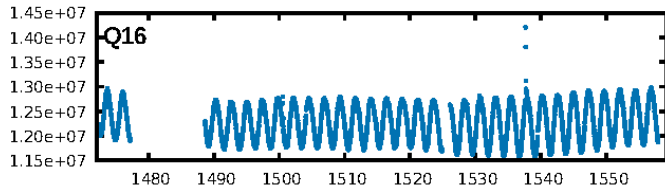
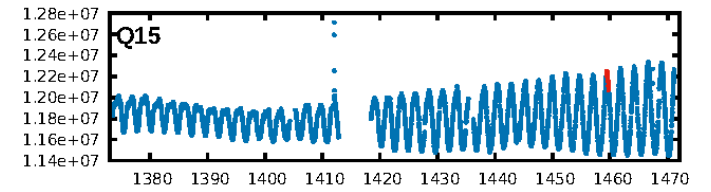
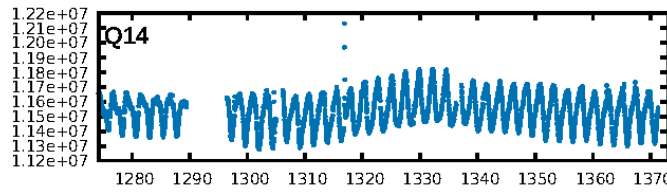
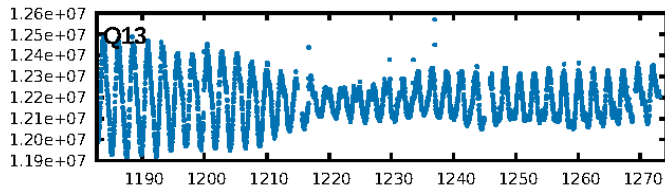
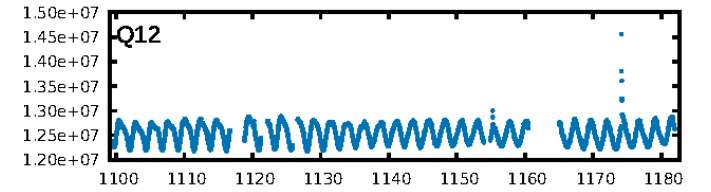
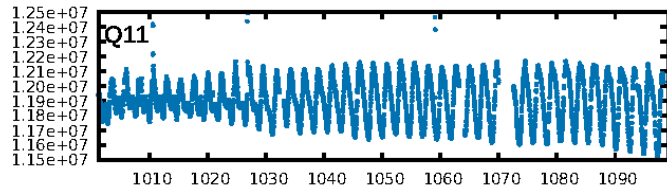
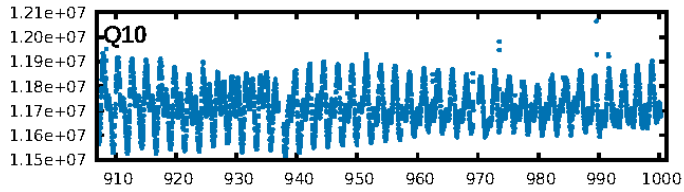
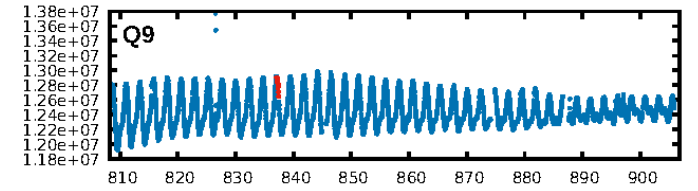
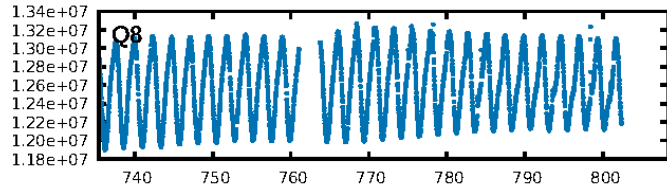
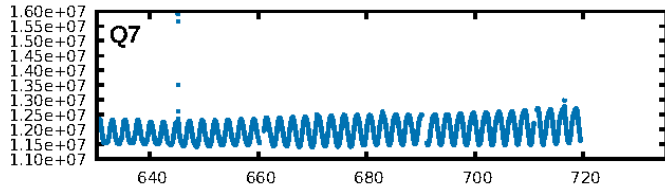
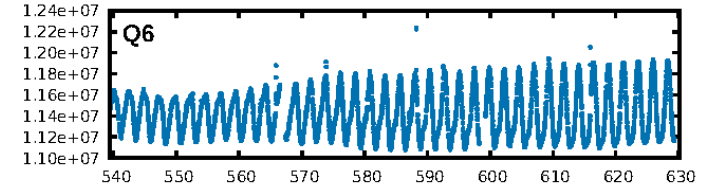
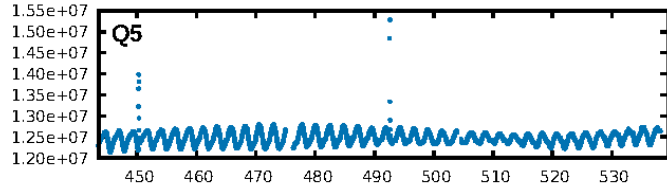
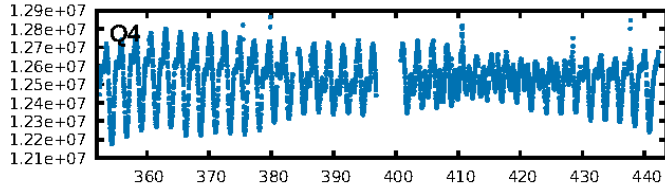
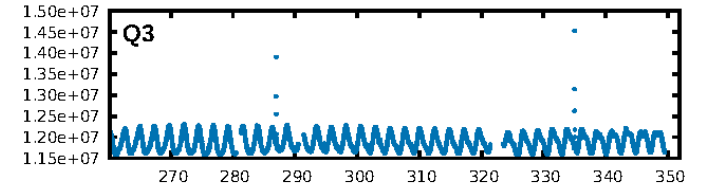
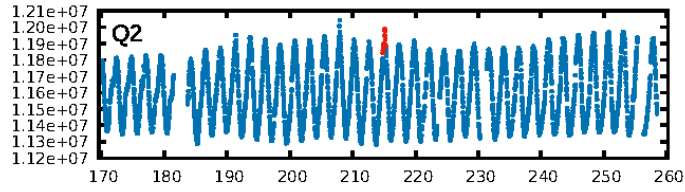
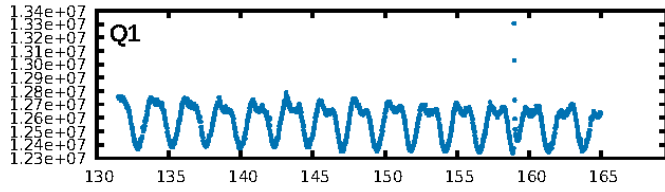
DV Fit Results:

Period = 622.27199 [0.00780] d
Epoch = 215.0171 [0.0103] BKJD
Rp/R* = 0.0445 [0.0376]
a/R* = 787.66 [1911.36]
b = 0.60 [2.61]
Seff = 0.12 [0.02]
Teq = 152 [6] K
Rp = 3.63 [3.08] Re
a = 1.3020 [0.0823] AU
Ag = 138832.21 [237172.99] [0.59σ]
Teffp = 4523 [1935] K [2.26σ]

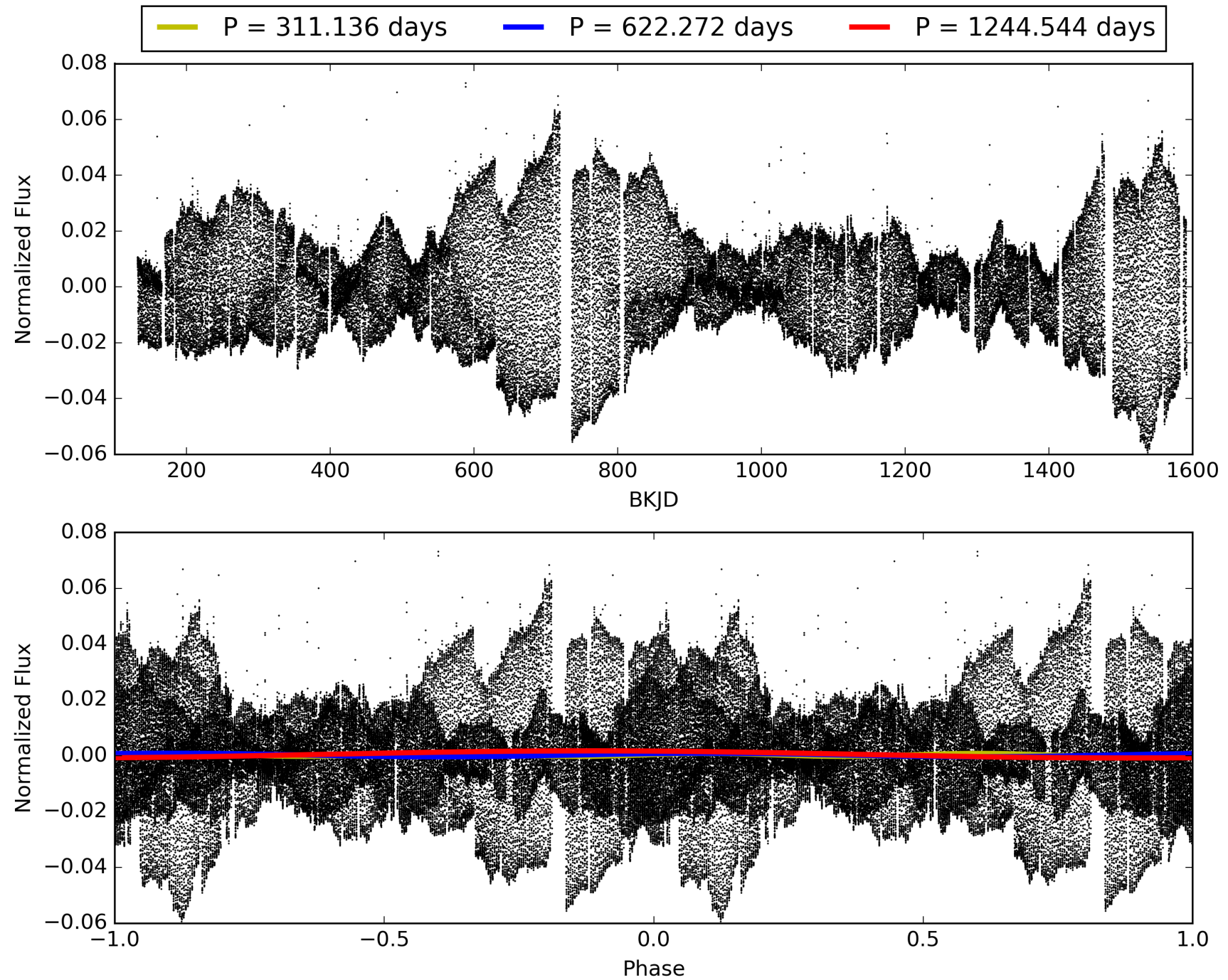
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [824.37σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 42.3%
ModelChiSquareGof-sig: 70.9%
Bootstrap-pfa: 3.94e-10
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 1.02
Centroid-sig: 52.1%
Centroid-so: 0.816 arcsec [1.06σ]
OotOffset-rm: 0.023 arcsec [0.25σ]
KicOffset-rm: 0.294 arcsec [3.41σ]
OotOffset-st: 1/1/0/1 [3]
KicOffset-st: 1/1/0/1 [3]
DiffImageQuality-fgm: 0.00 [0/3]
DiffImageOverlap-fno: 1.00 [3/3]

TCE 008935140-02, PDC Light Curves

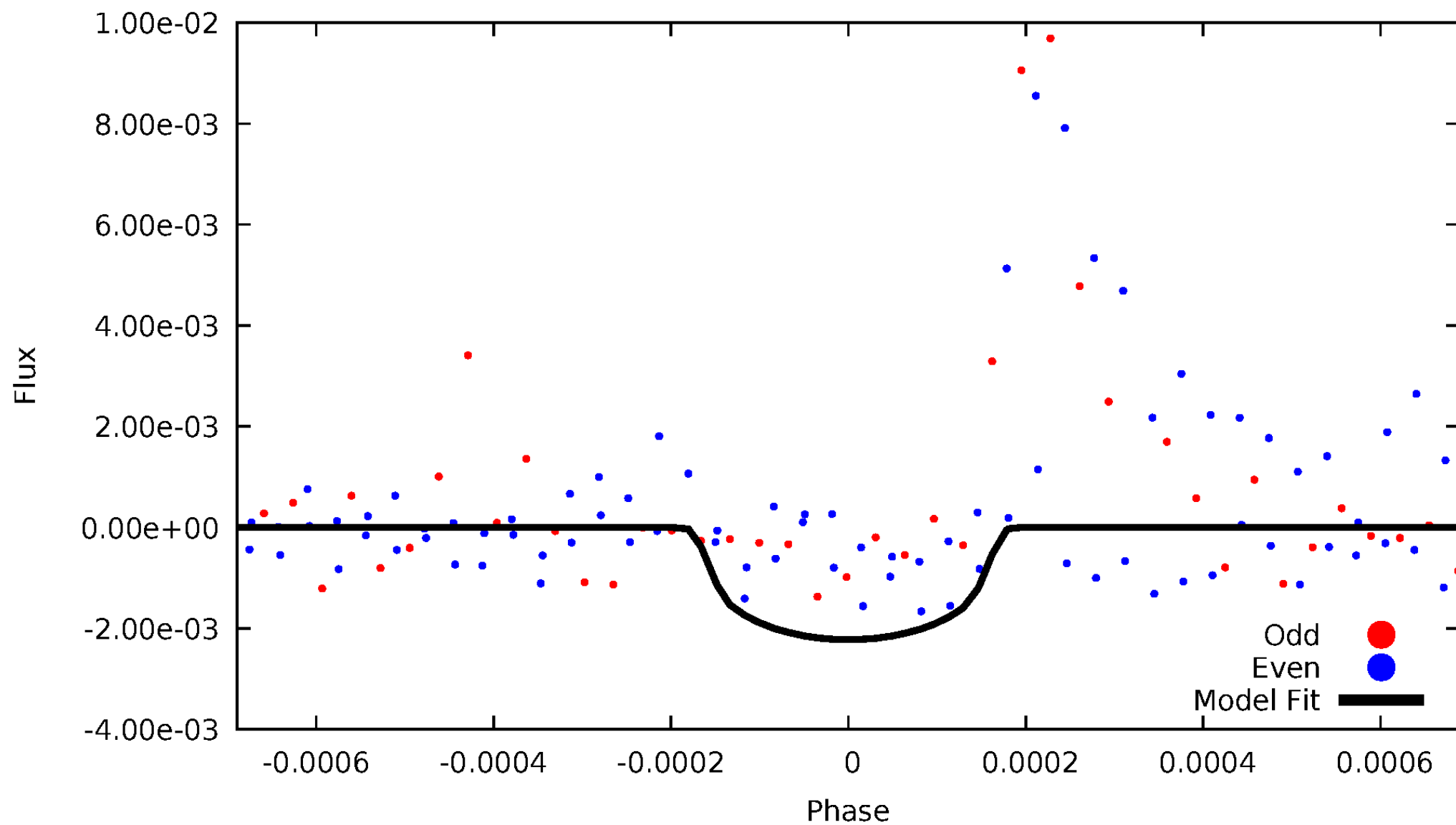


TCE 008935140-02



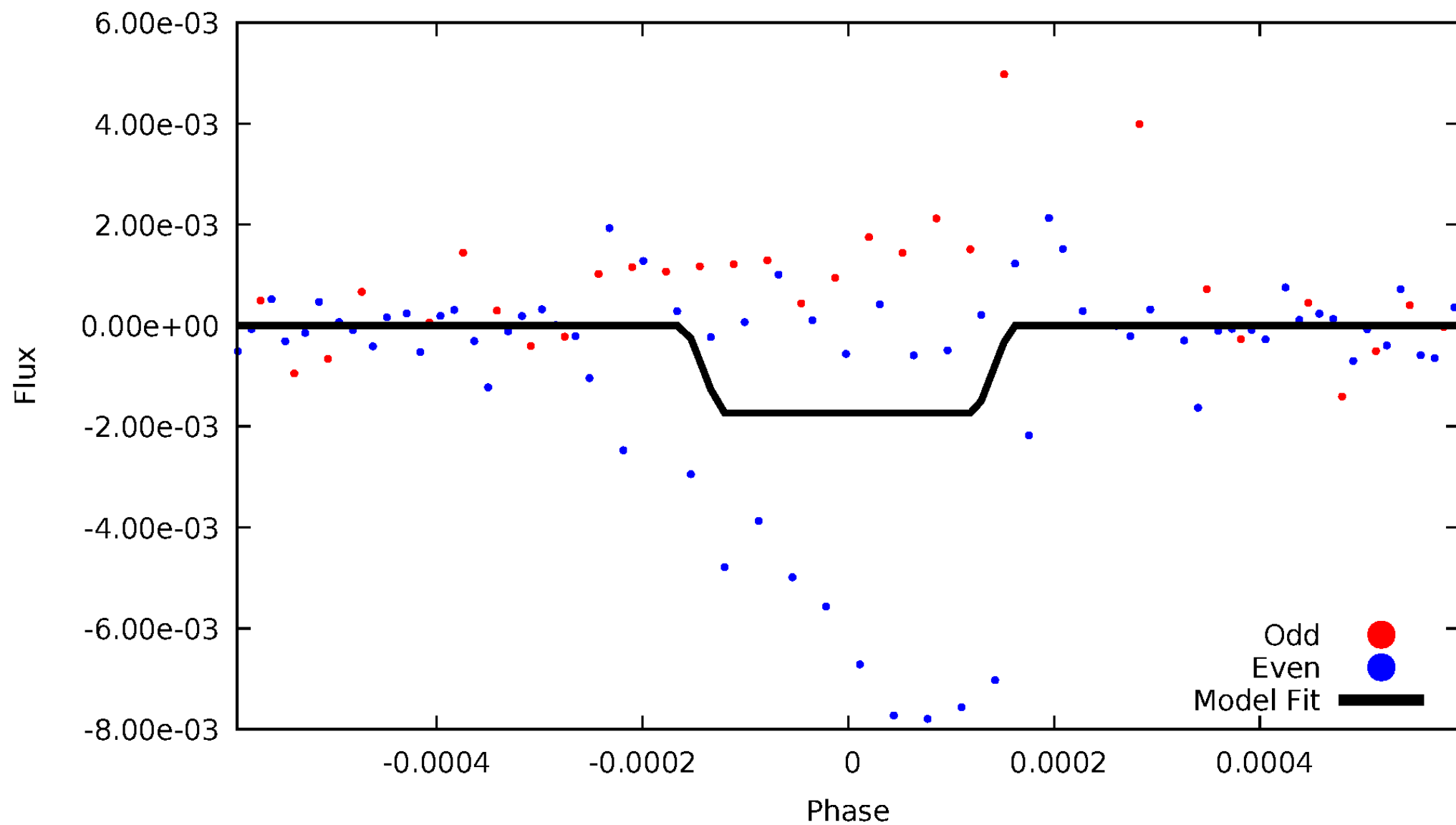
DV Odd/Even

TCE 008935140-02



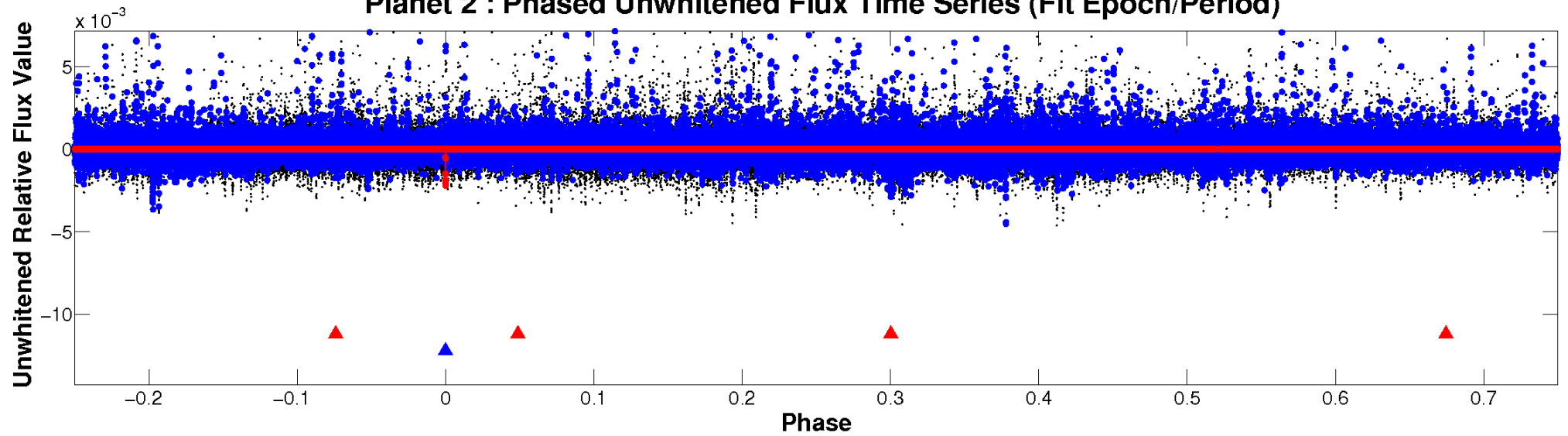
ALT Odd/Even

TCE 008935140-02

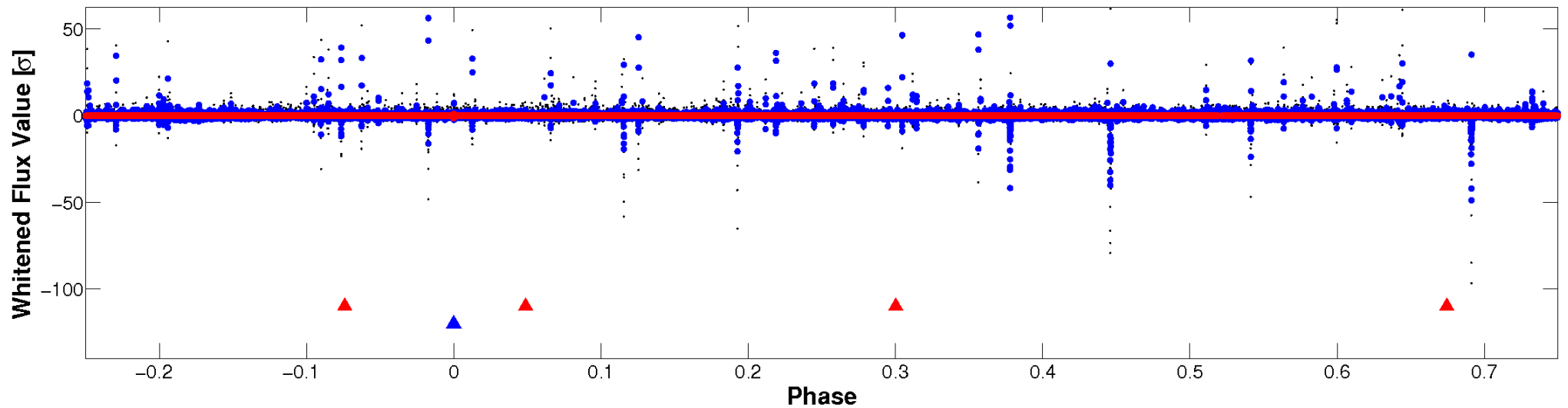


Non-Whitened Vs. Whitened Light Curve

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

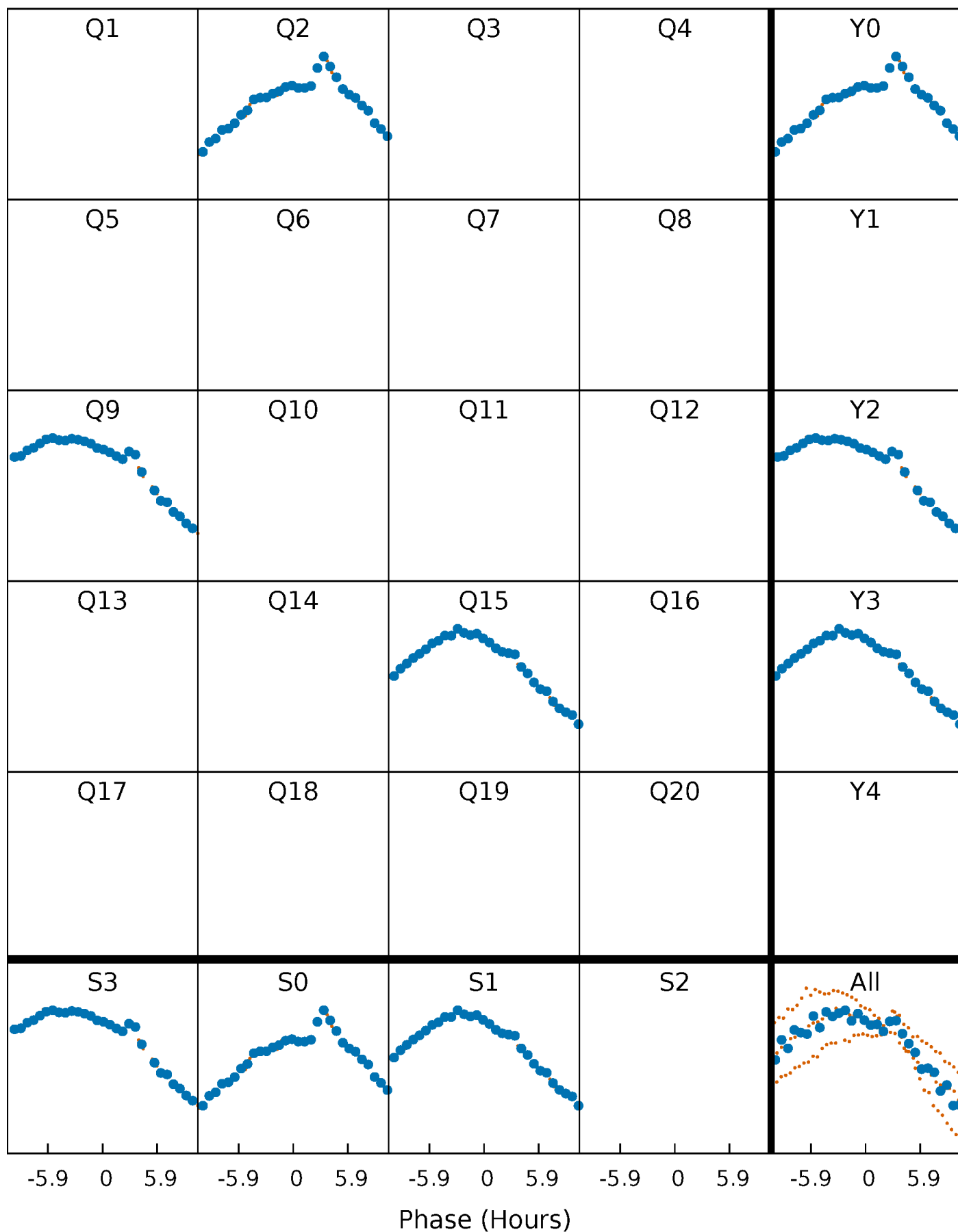


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



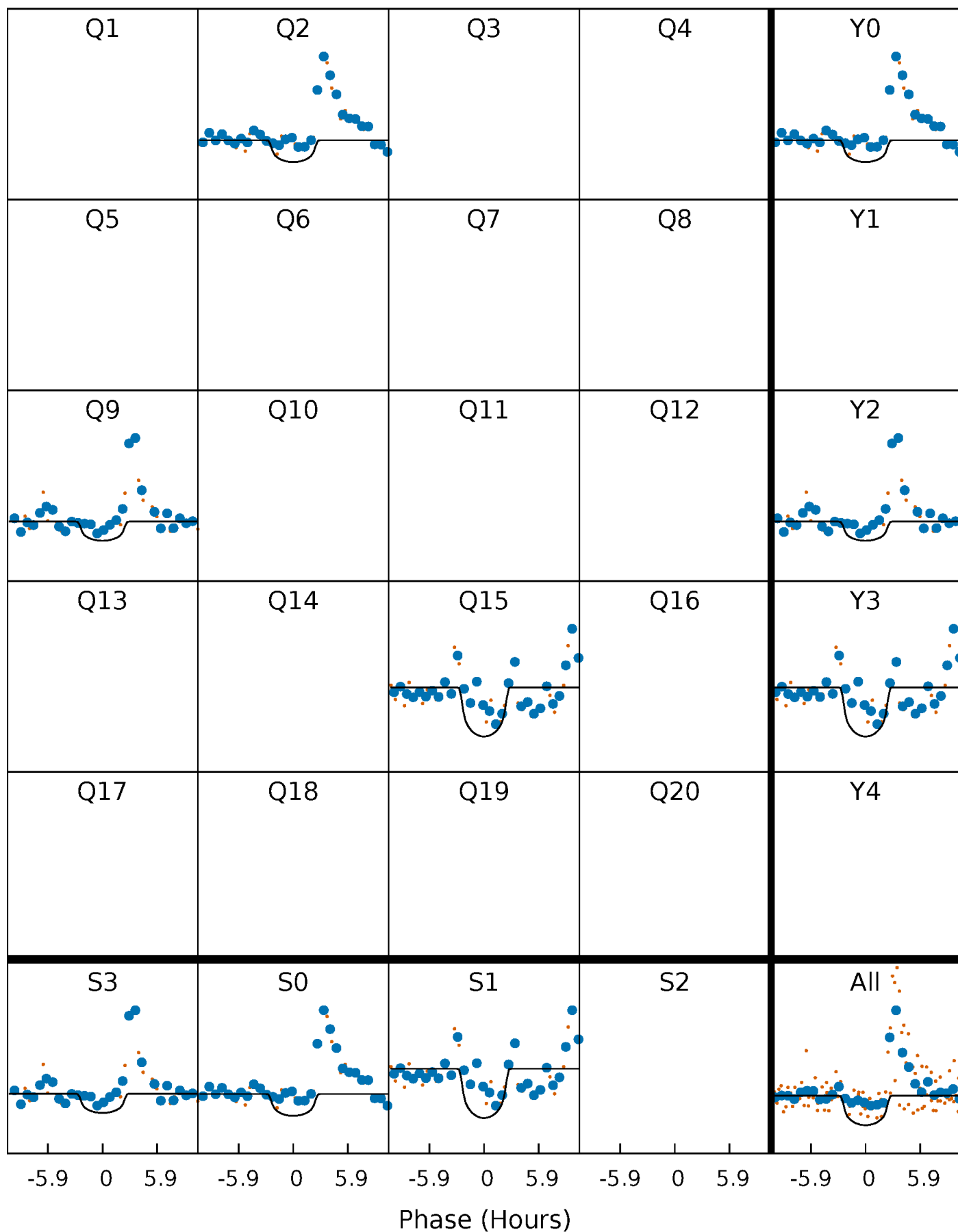
PDC Quarter-Phased Transit Curves

TCE 008935140-02 P=622.271990 Days $T_0=215.017140$ (BKJD)



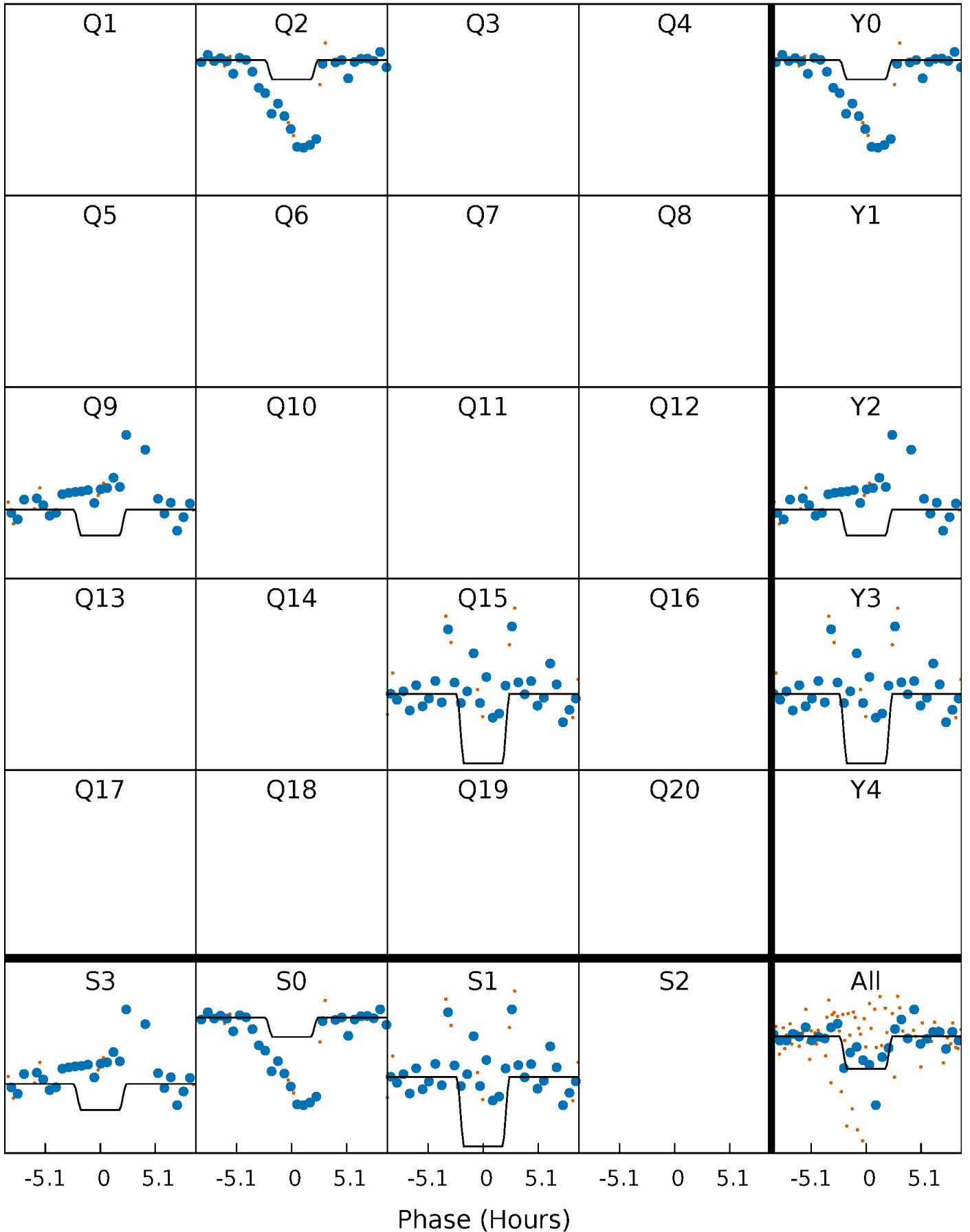
DV Quarter-Phased Transit Curves

TCE 008935140-02 P=622.271990 Days $T_0=215.017140$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

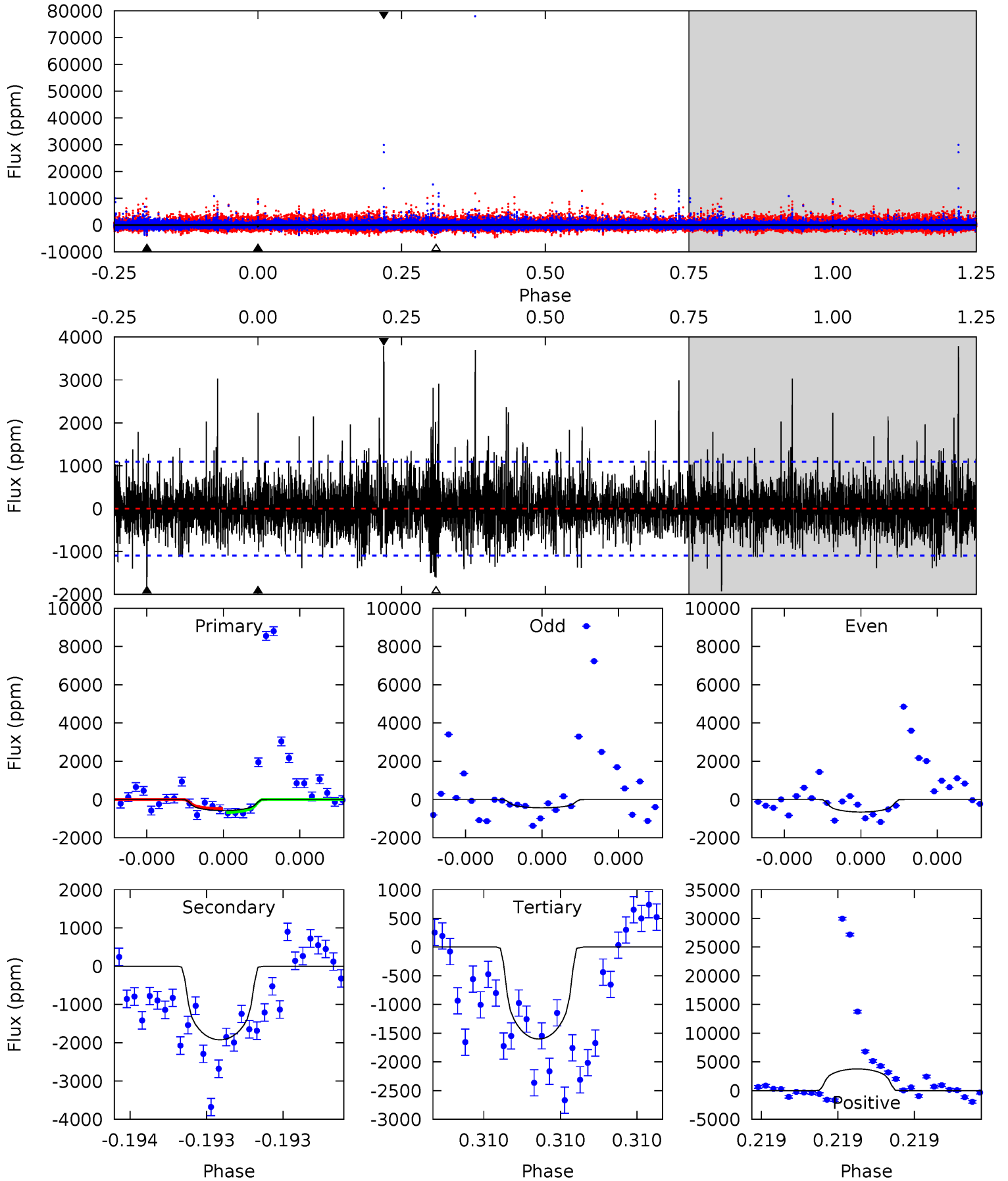
TCE 008935140-02 P=622.276825 Days $T_0=215.019079$ (BKJD)



DV Model-Shift Uniqueness Test

008935140-02, P = 622.271990 Days, E = 215.017140 Days

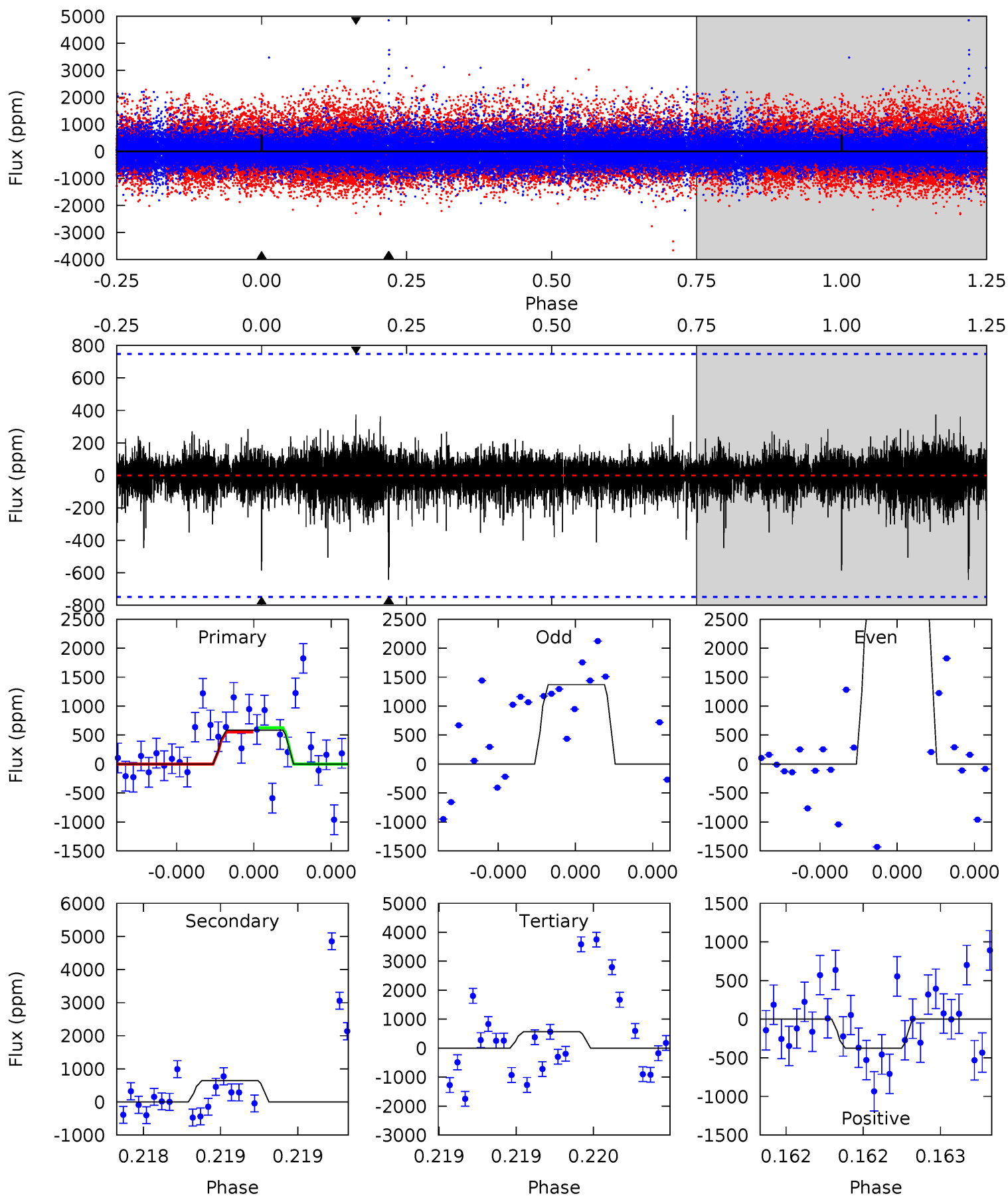
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2.98	9.91	8.25	19.5	5.63	3.57	2.37	-5.28	-16.5	1.66	-9.57	0.25	1.33	0.66	0.54



Alt Model-Shift Uniqueness Test

008935140-02, P = 622.276825 Days, E = 215.019079 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4.43	4.85	4.26	2.83	5.65	3.60	0.53	0.17	1.60	0.59	2.02	7.07	514.0	0.37	0.27



Stellar Parameters For KIC 008935140

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	4532^{+150}_{-150}	$4.571^{+0.049}_{-0.021}$	$0.420^{+0.050}_{-0.300}$	$0.748^{+0.031}_{-0.057}$	$0.760^{+0.036}_{-0.052}$	$2.560^{+0.547}_{-0.219}$
	+3%/-3%	+1%/-0%	+12%/-71%	+4%/-8%	+5%/-7%	+21%/-9%
Source	PHO1	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 008935140-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-1923 ± 194	$4.18^{+2.75}_{-2.66}$	210^{+8}_{-7}	4260^{+2370}_{-719}	$104895^{+706015}_{-68540}$
Alt.	-642 ± 132	$3.74^{+2.89}_{-2.33}$	210^{+8}_{-7}	3641^{+1651}_{-590}	$41910^{+253068}_{-28515}$

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

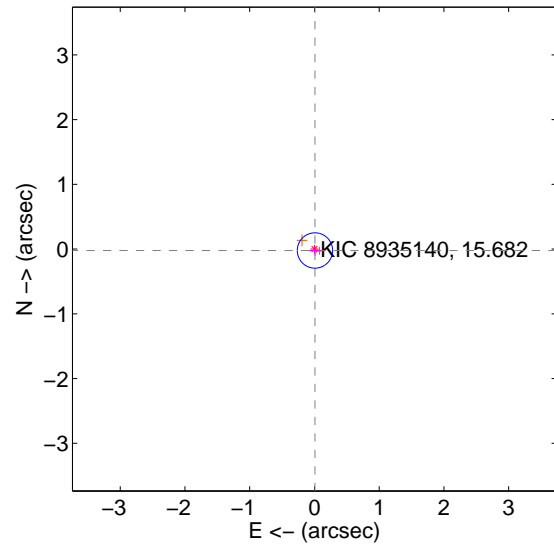
Supplemental centroid analysis for 008935140-02. Kepler magnitude: 15.68. Transit SNR 7.23

There are 0 quarters with good PRF difference image offsets

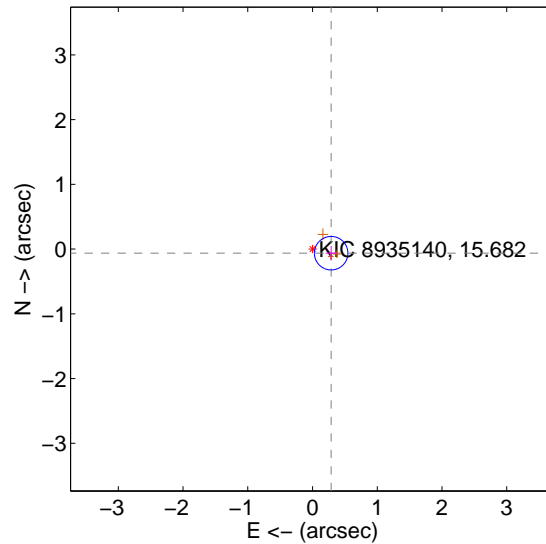
The direct PRF centroid is offset from the target star catalog position by about 0.30 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.023 ± 0.091	0.25	-0.008 ± 0.095	-0.022 ± 0.079
PRF-fit source offset from KIC position	0.294 ± 0.086	3.41	-0.288 ± 0.085	-0.063 ± 0.112
photometric centroid source offset	0.82 ± 0.77	1.06	-0.81 ± 0.77	0.08 ± 0.77

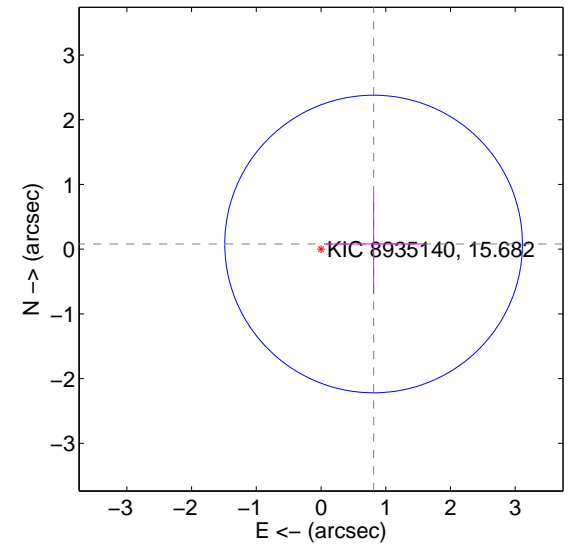
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

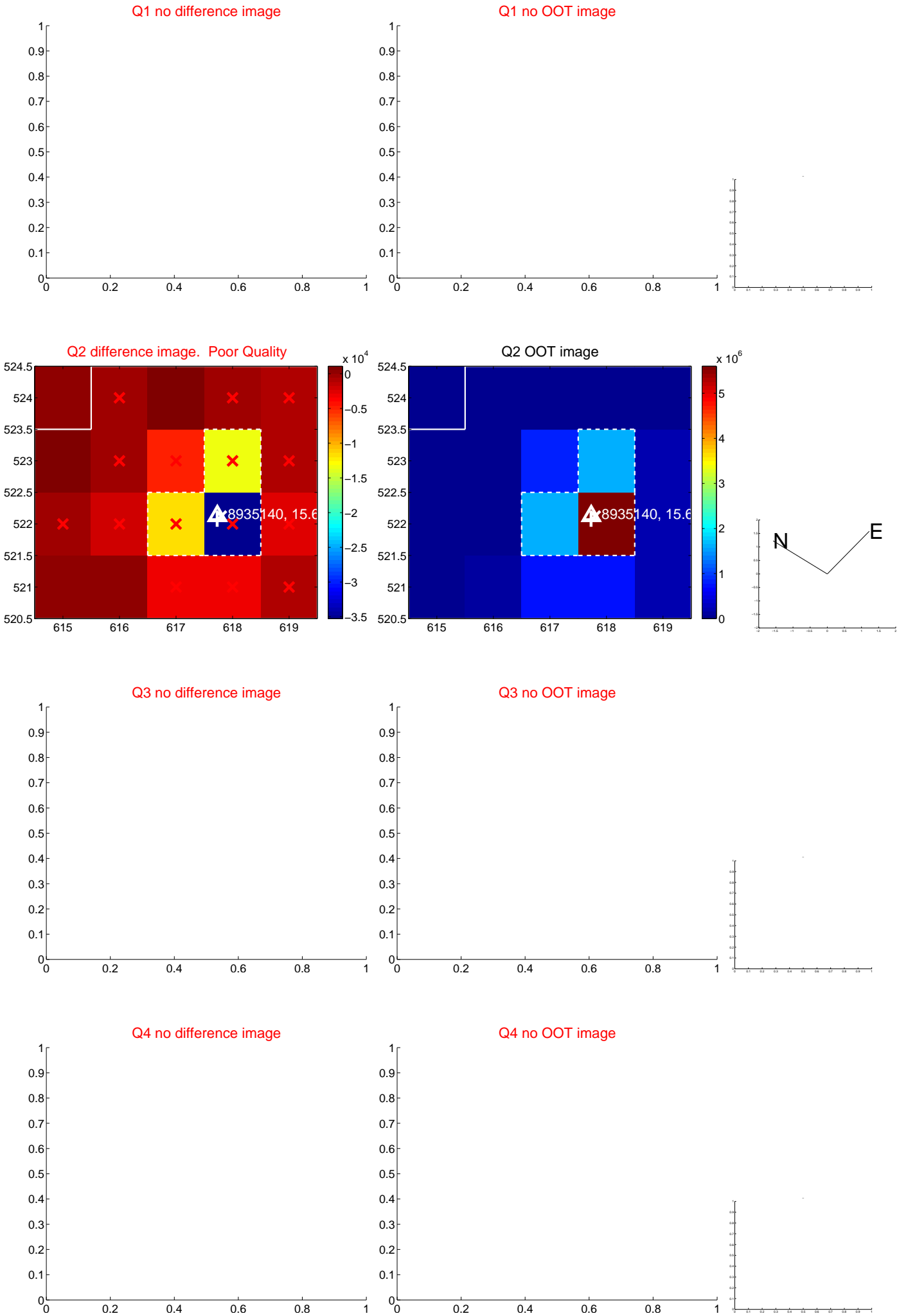


offset from photometric centroids

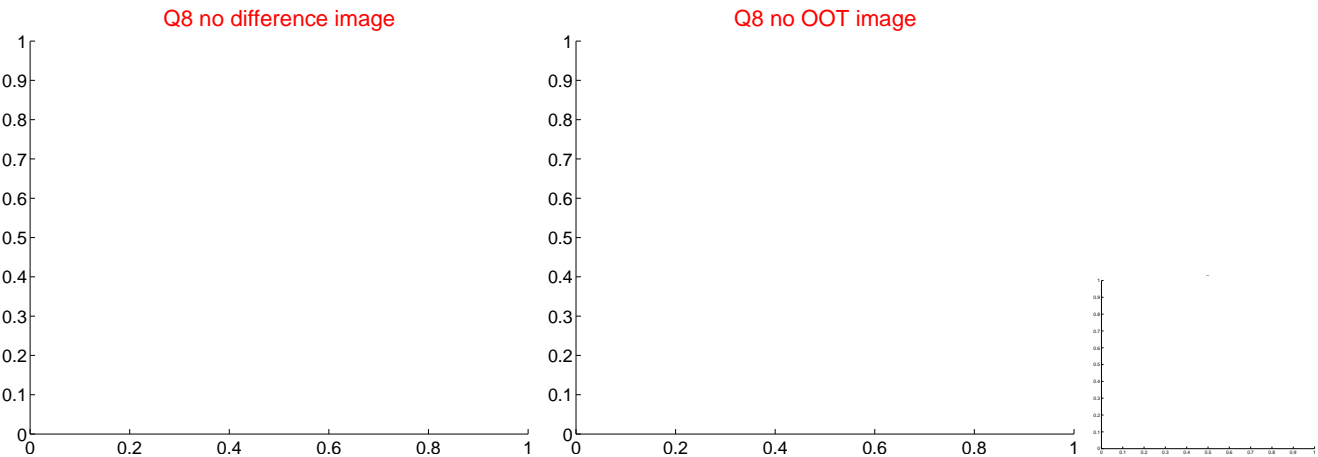
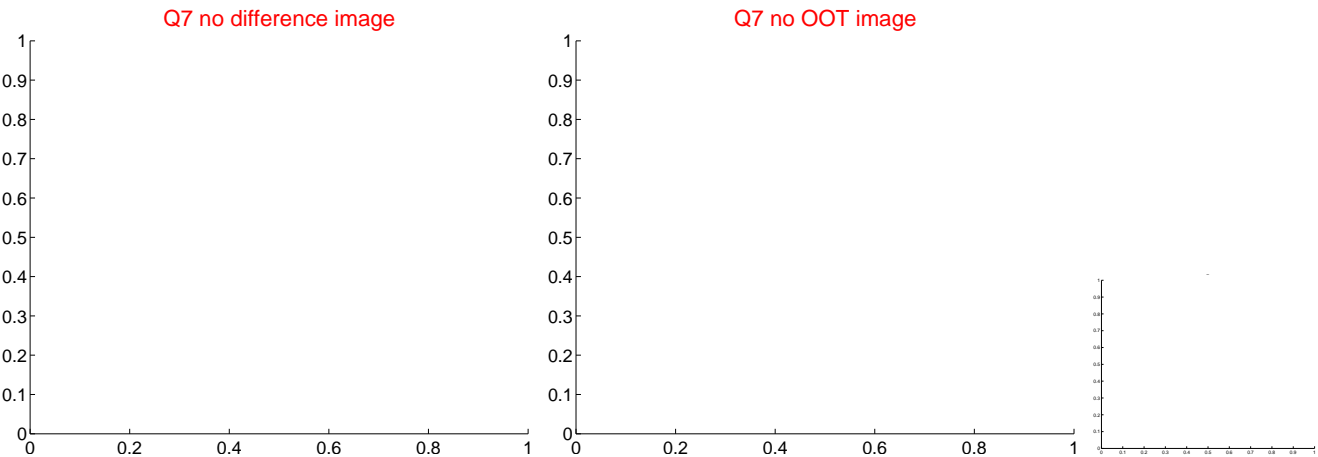
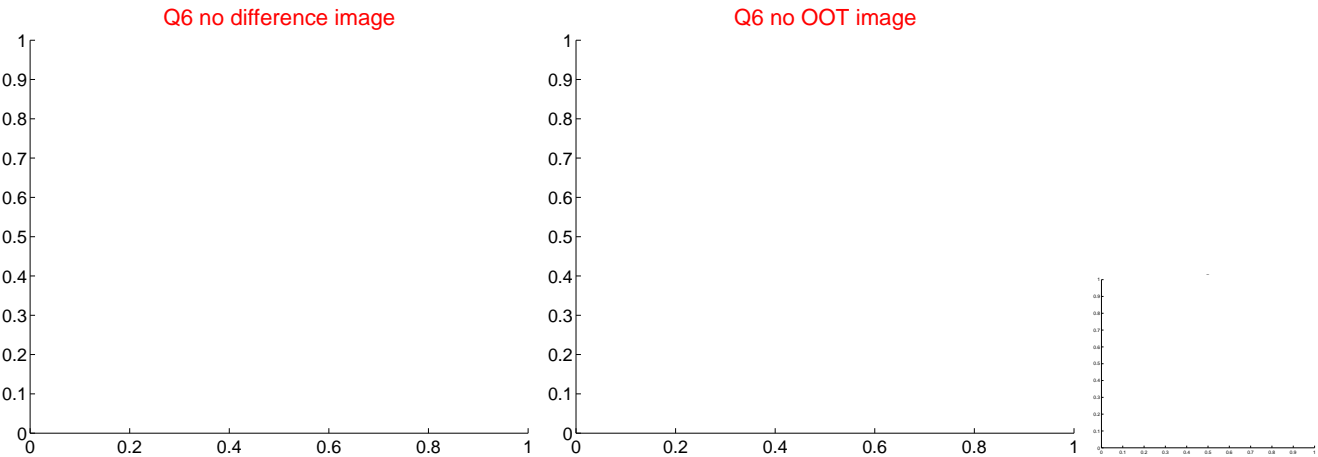
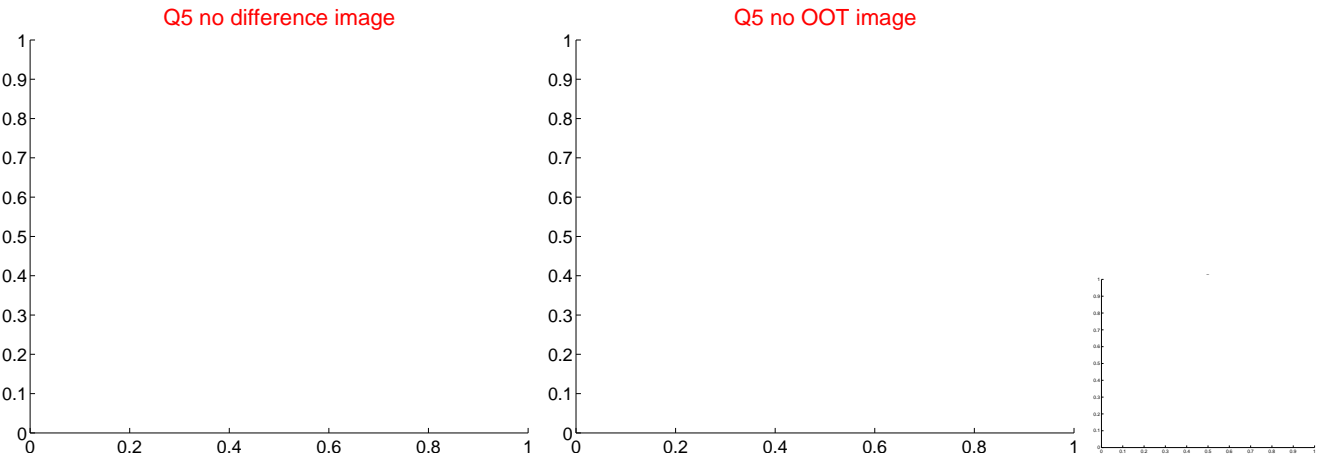


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

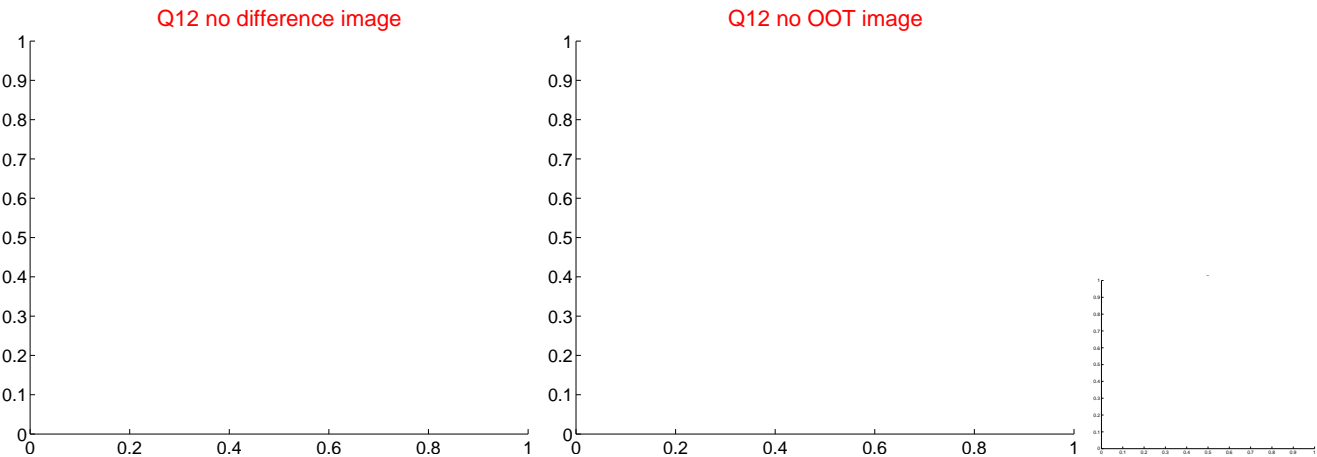
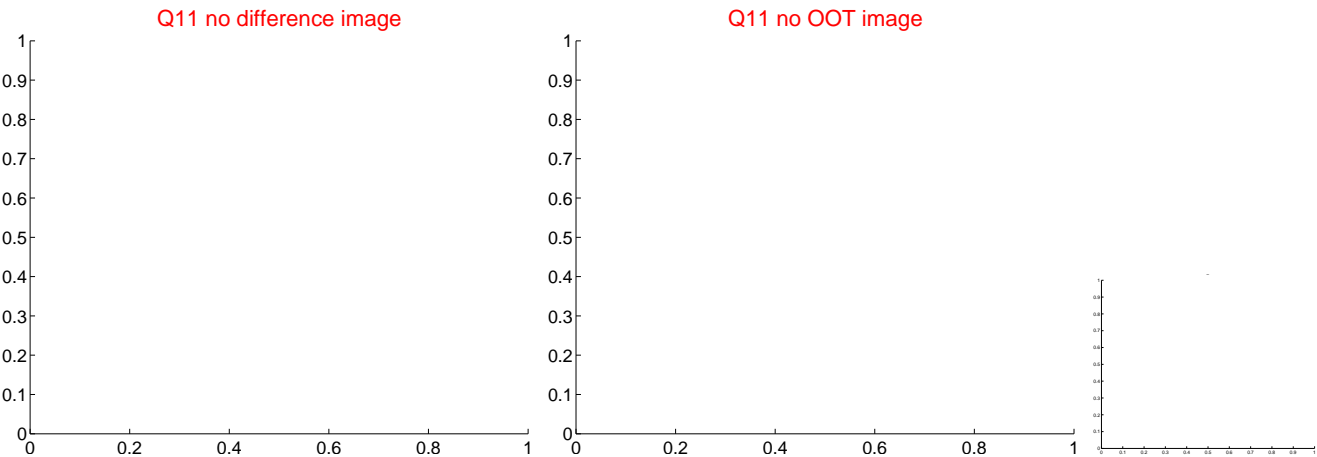
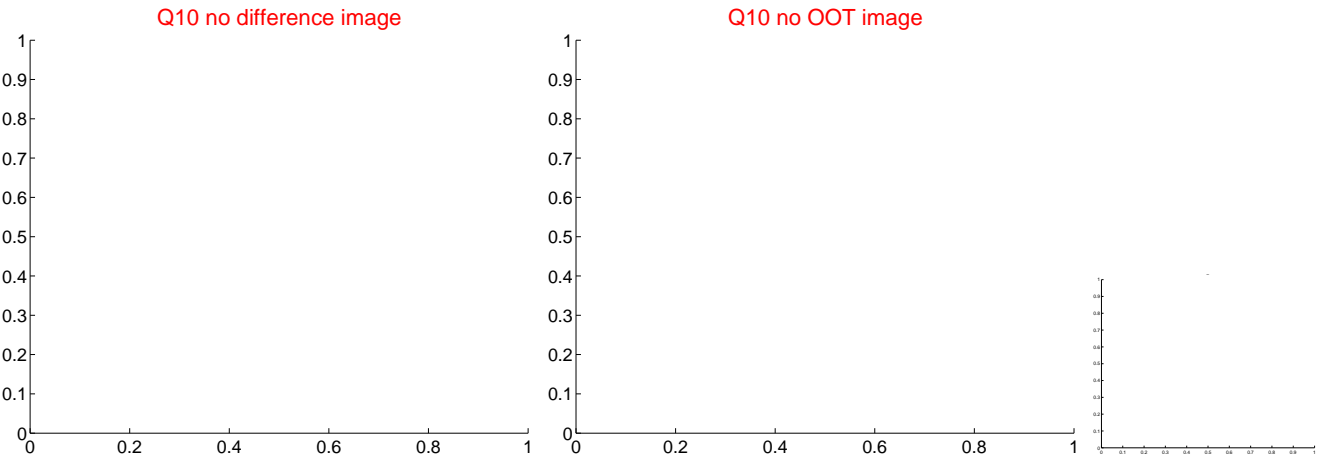
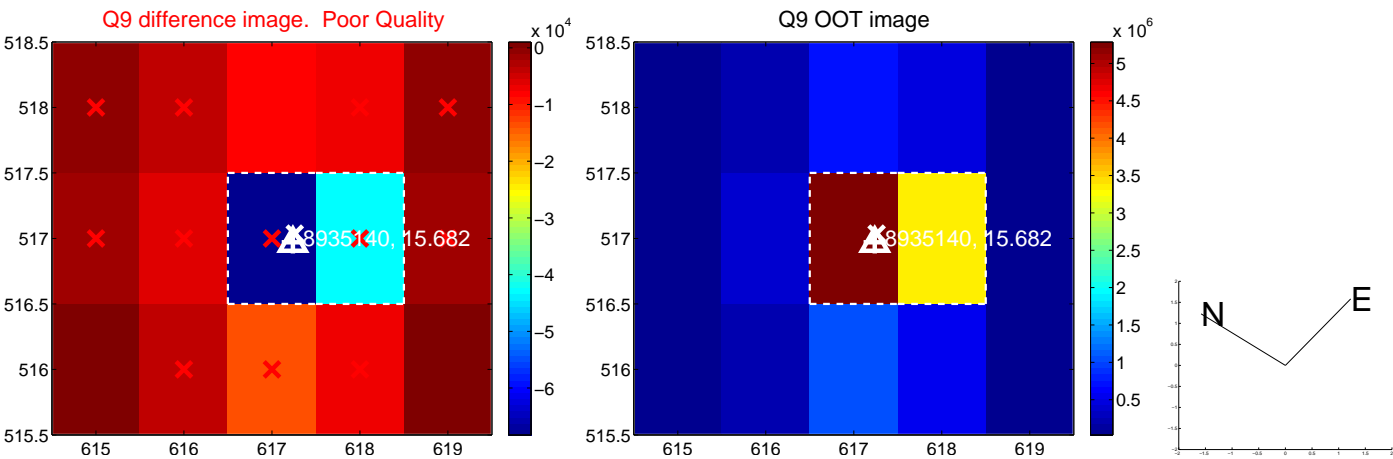
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



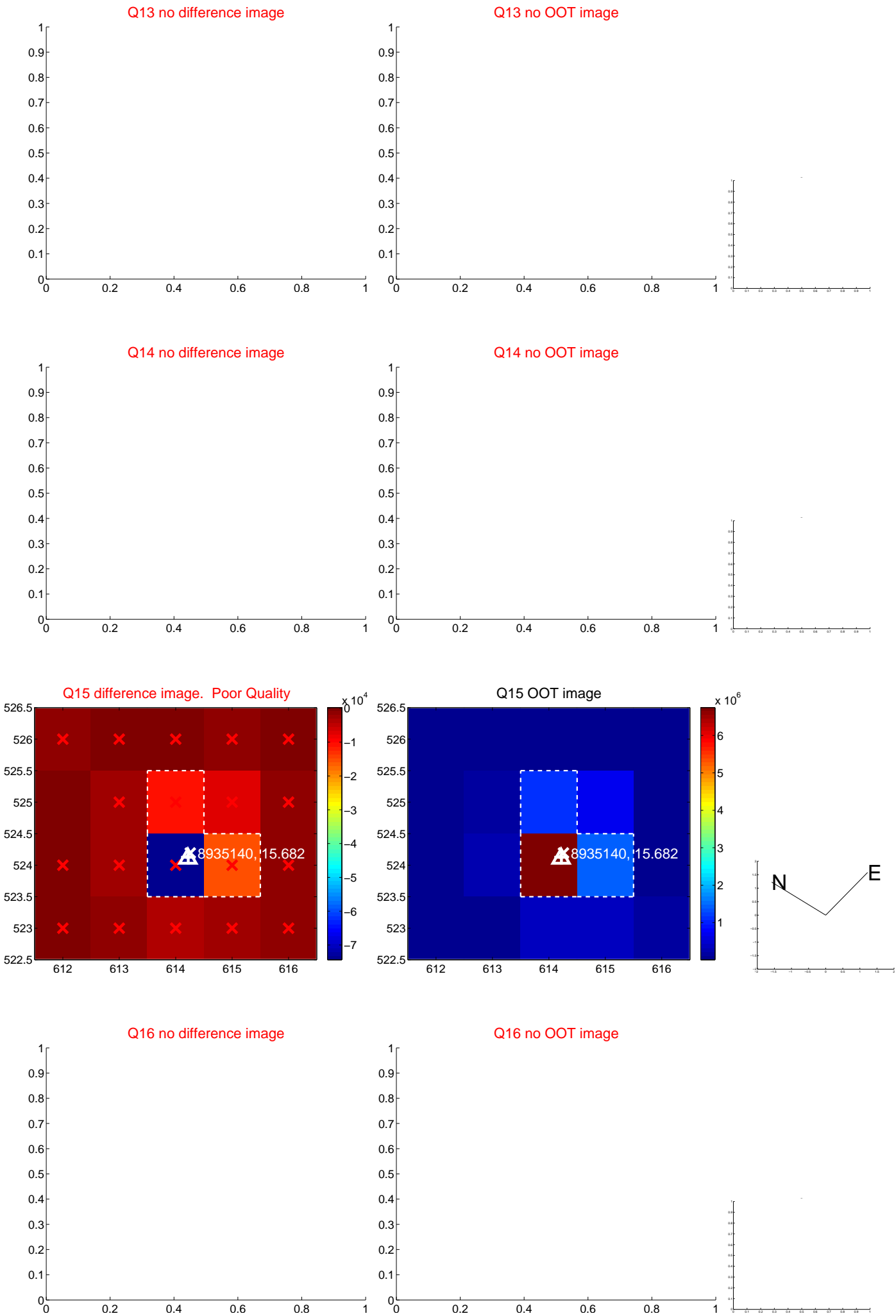
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



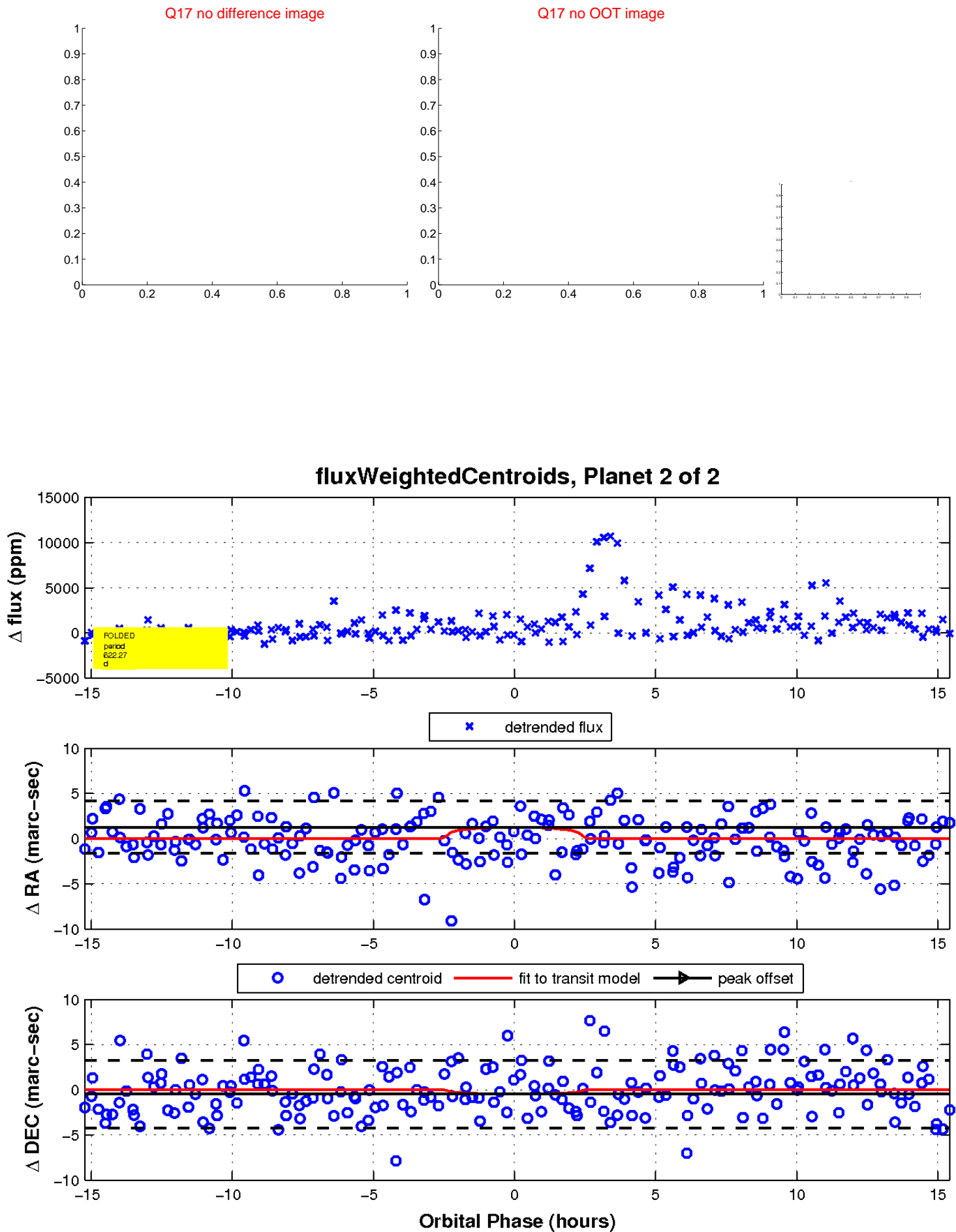
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



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



UKIRT Image

Declination

