

KIC 006235404

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})
006235404-01	OBS	No	0.982754	131.965305	1.4	6.441	8.0	1.0	1.85	7171	0.22	15503.21
006235404-02	OBS	No	40.390084	159.150430	106.8	7.859	10.0	9.0	1.85	7171	2.11	109.31

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006235404-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT
006235404-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—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.

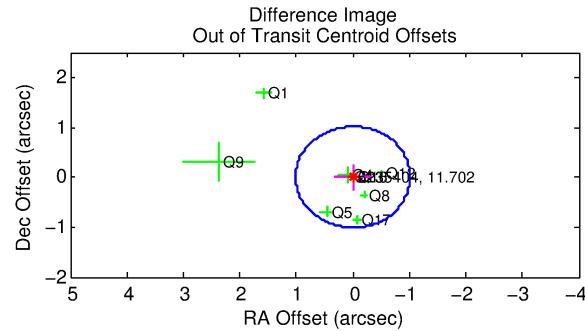
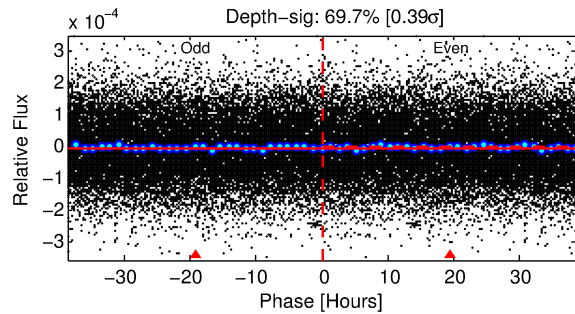
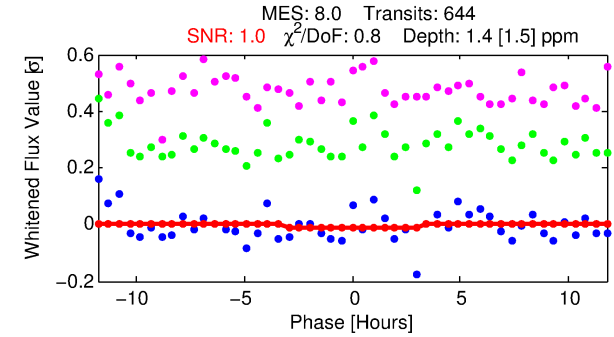
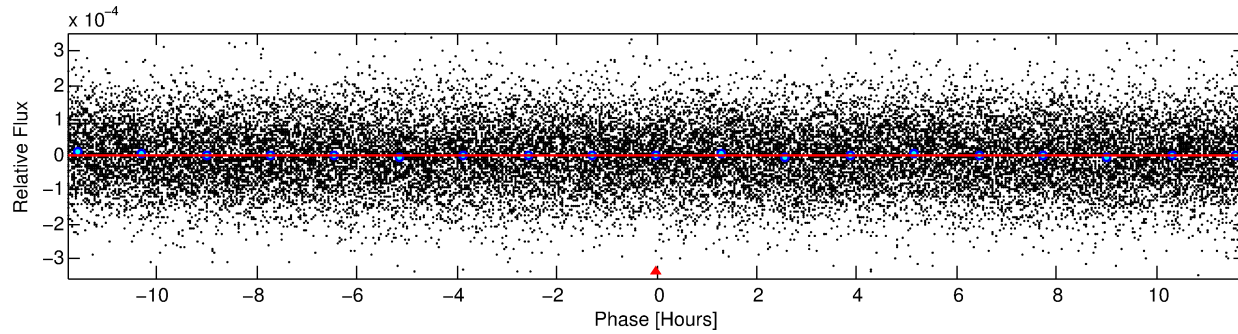
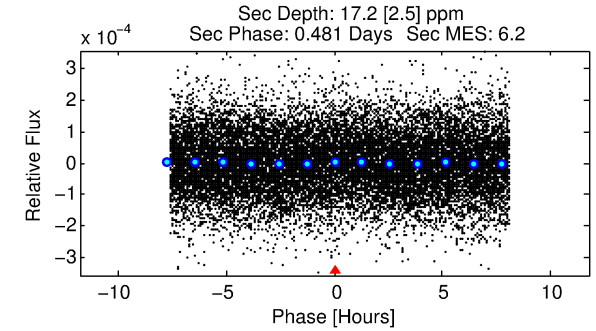
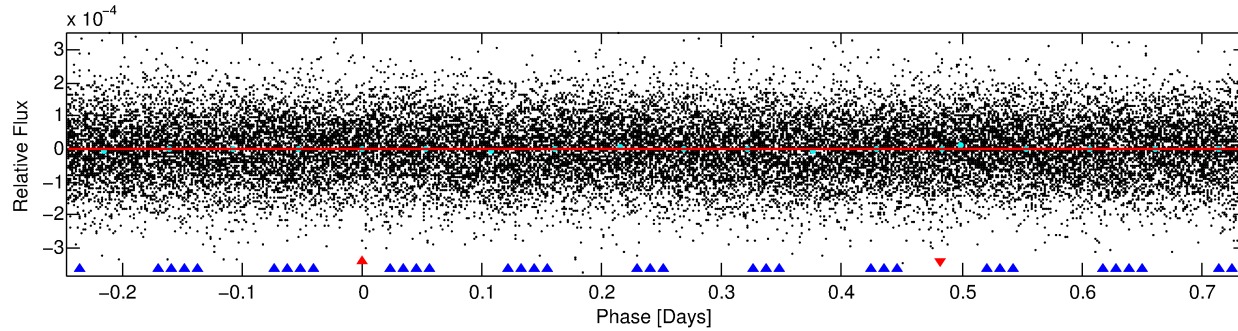
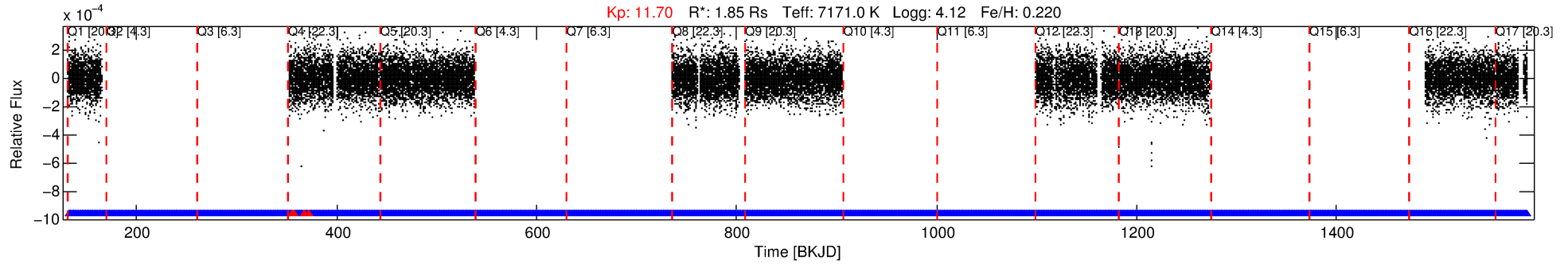
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 006235404-01

No Significant Match Found

DV One-Page Summary

KIC: 6235404 Candidate: 1 of 2 Period: 0.983 d



DV Fit Results:

Period = 0.98275 [0.00016] d
Epoch = 131.9653 [0.0520] BKJD
 R_p/R^* = 0.0011 [0.0037]
 a/R^* = 1.30 [10.55]
 b = 0.29 [62.52]
 S_{eff} = 15503.21 [6217.69]
 T_{eq} = 2845 [285] K
 R_p = 0.22 [0.76] R_e
 a = 0.0228 [0.0058] AU
 A_g = 100.73 [685.98] [0.15σ]
 T_{effp} = 13937 [23704] K [0.47σ]

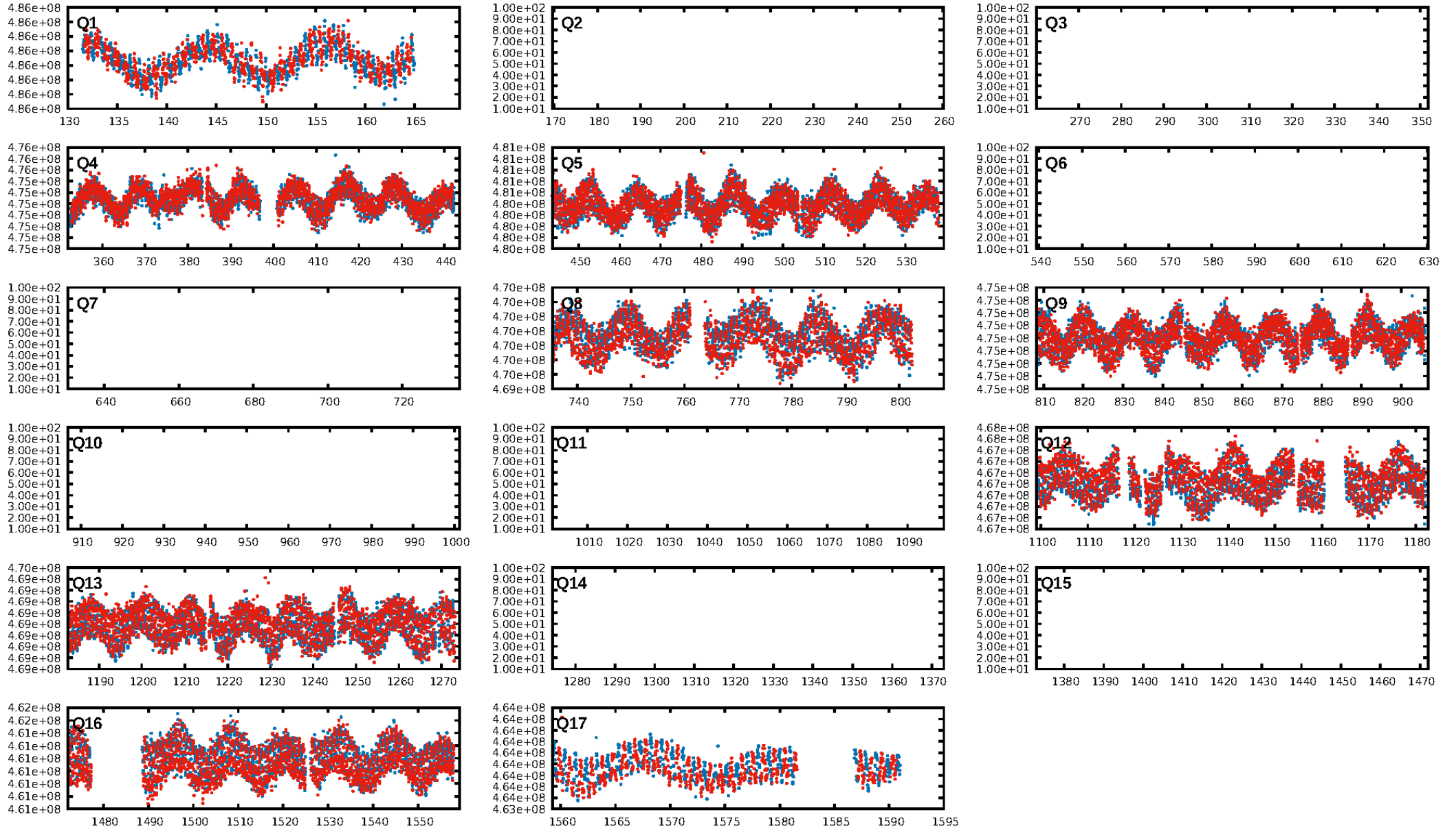
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [93.08σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 1.42e-07
RollingBand-fgt: 0.99 [578/583]
GhostDiagnostic-chr: N/A
Centroid-sig: N/A
Centroid-so: N/A
OotOffset-rm: 0.003 arcsec [0.01σ]
KicOffset-rm: 0.392 arcsec [1.34σ]
OotOffset-st: 0/0/4/5 [9]
KicOffset-st: 0/0/4/5 [9]
DiffImageQuality-fgm: 0.44 [4/9]
DiffImageOverlap-fno: 1.00 [9/9]

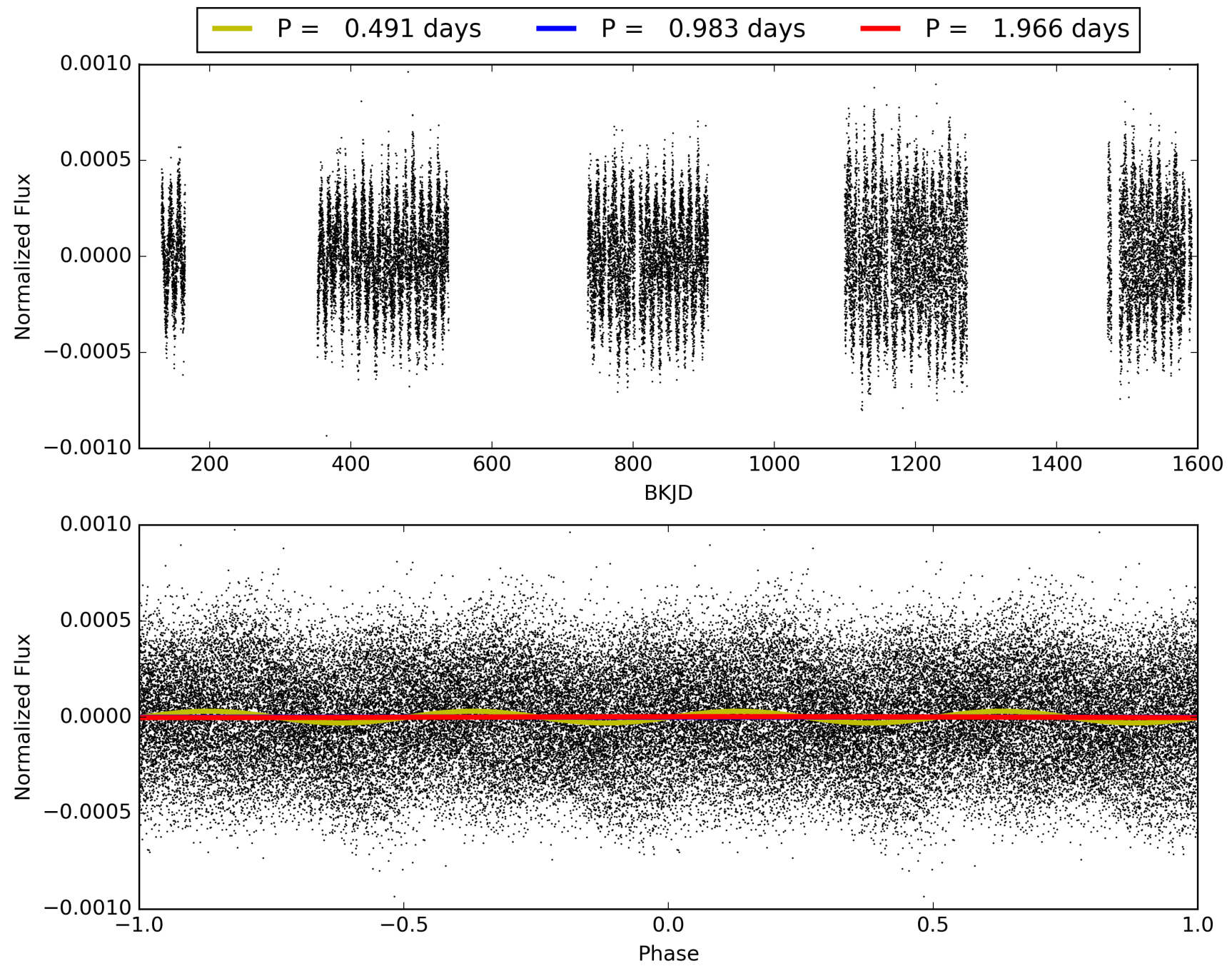
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 15:16:14 Z

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

TCE 006235404-01, PDC Light Curves

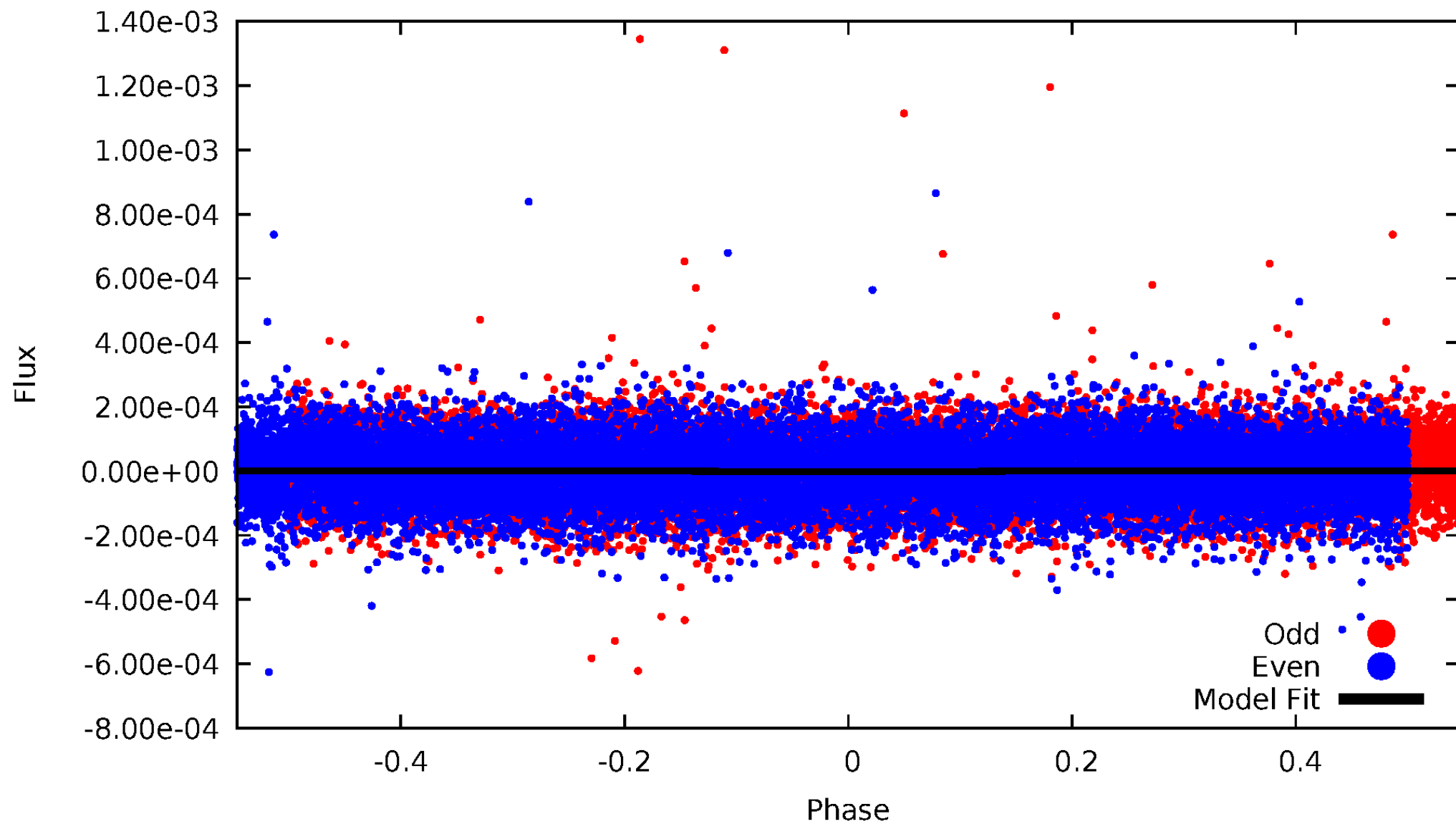


TCE 006235404-01



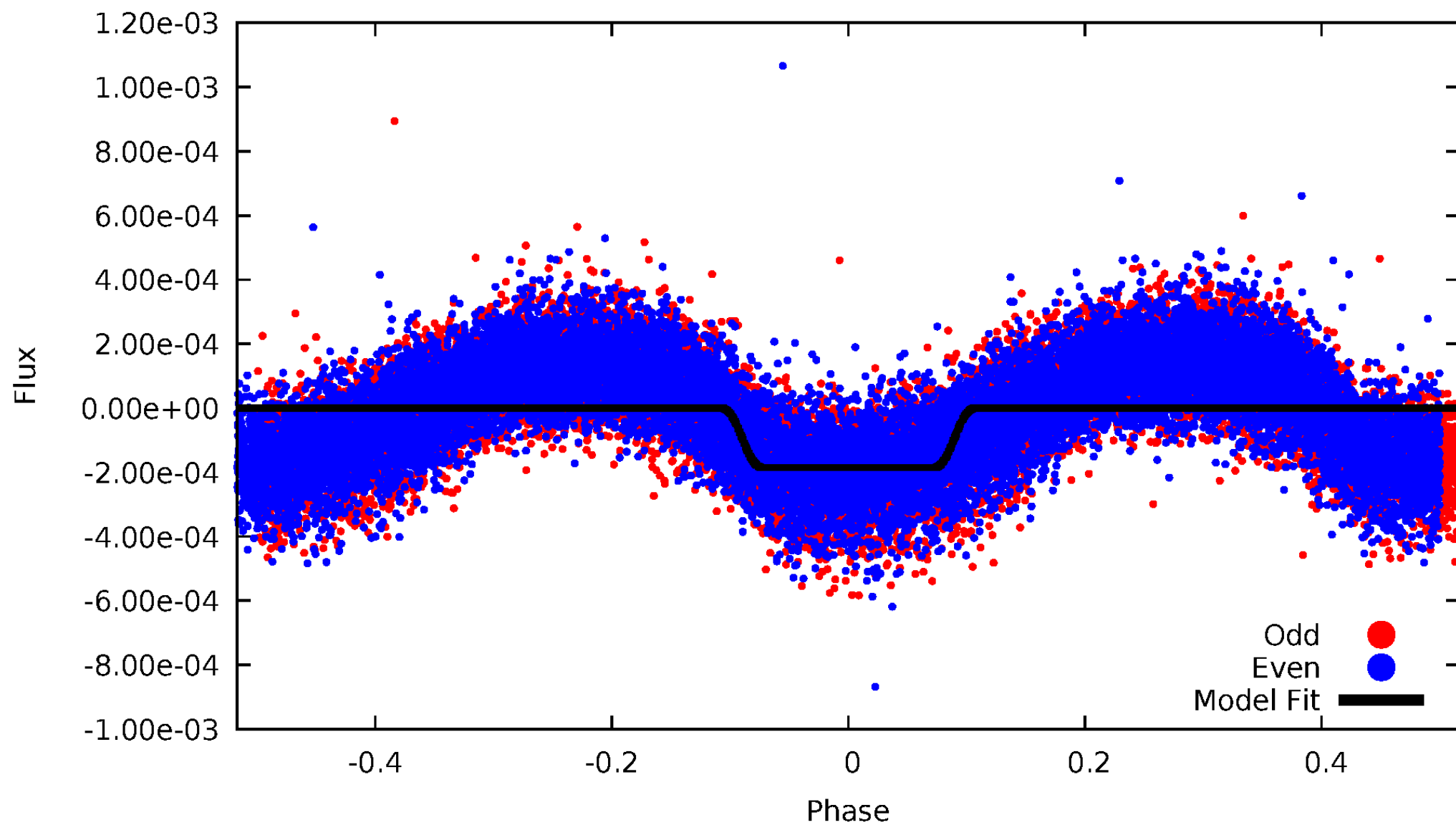
DV Odd/Even

TCE 006235404-01



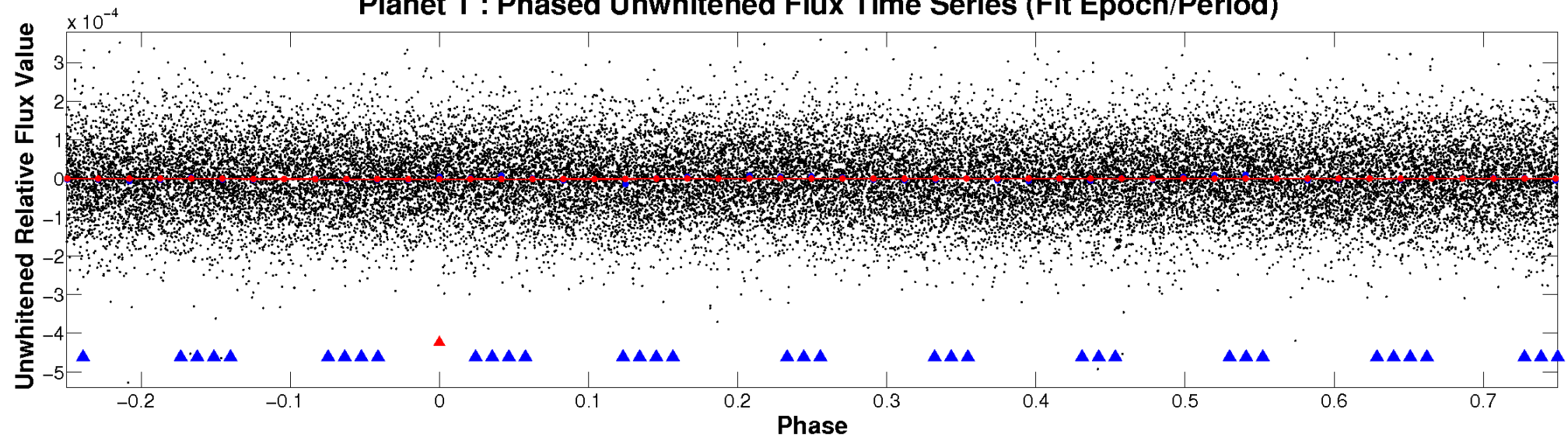
ALT Odd/Even

TCE 006235404-01

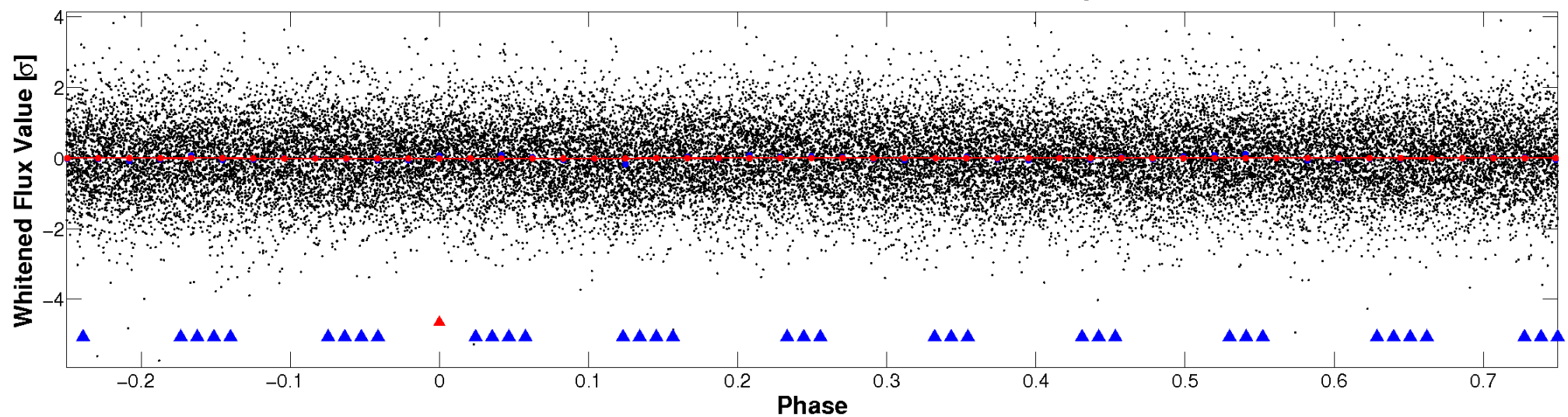


Non-Whitened Vs. Whitened Light Curve

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

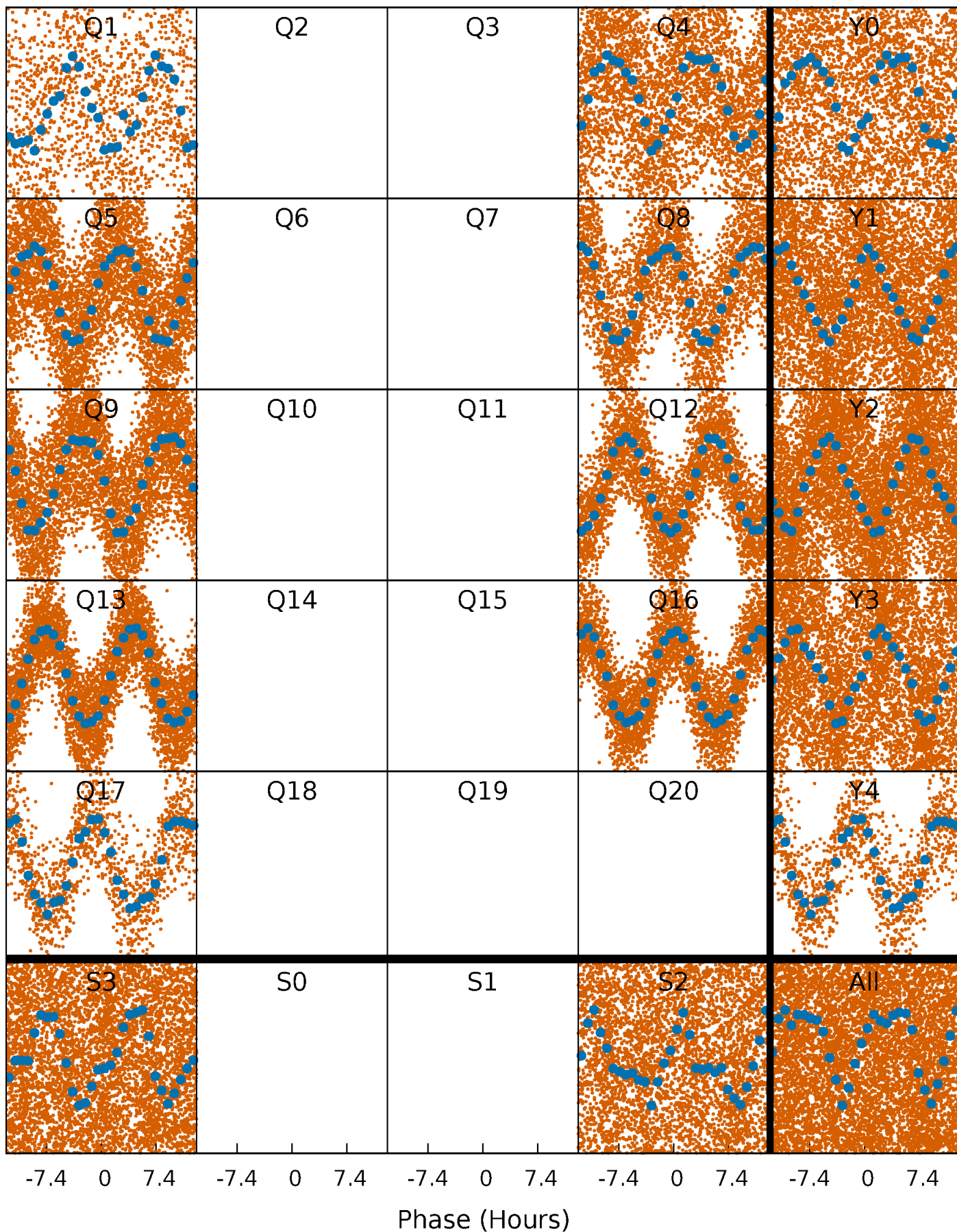


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



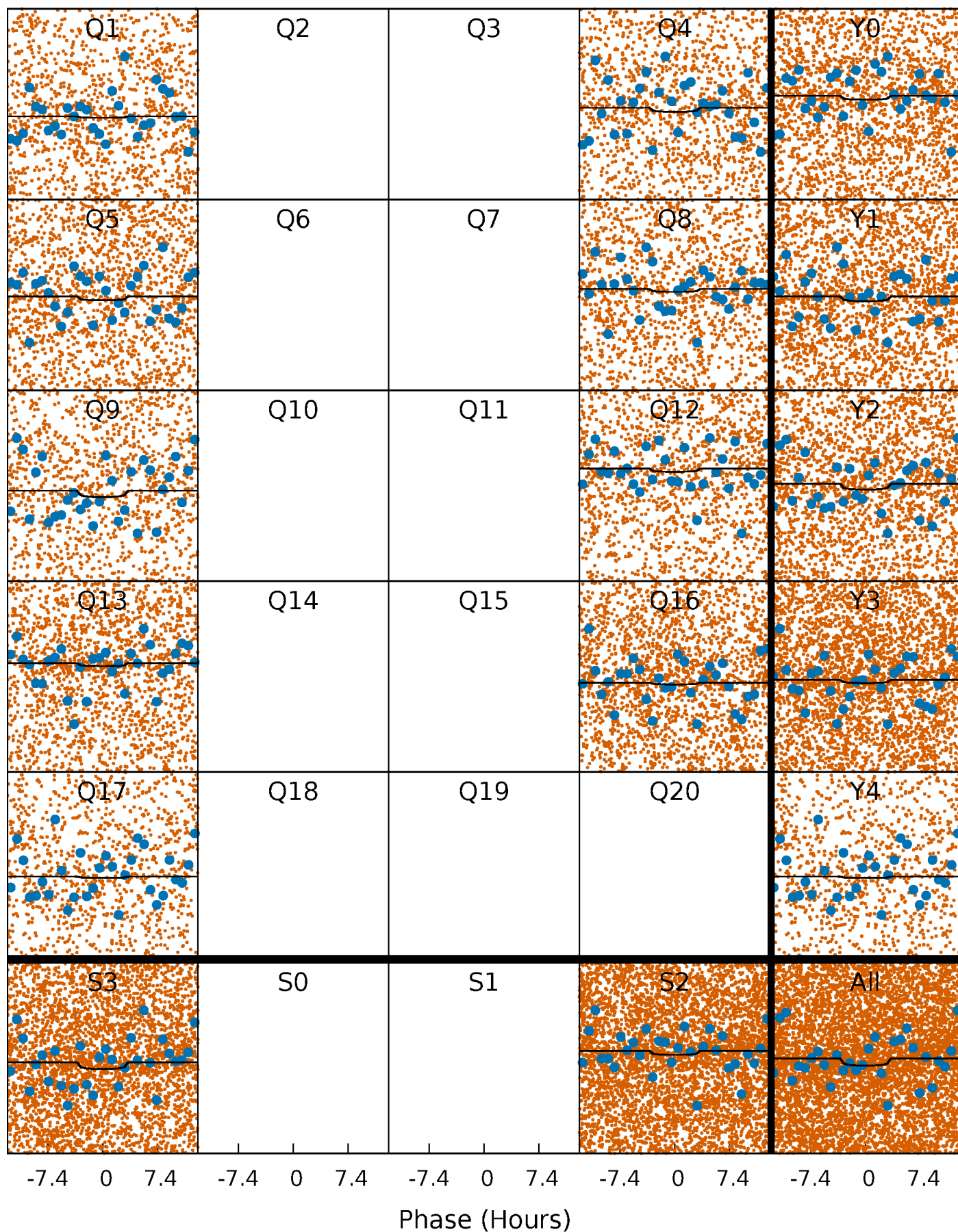
PDC Quarter-Phased Transit Curves

TCE 006235404-01 P= 0.982754 Days $T_0=131.965305$ (BKJD)



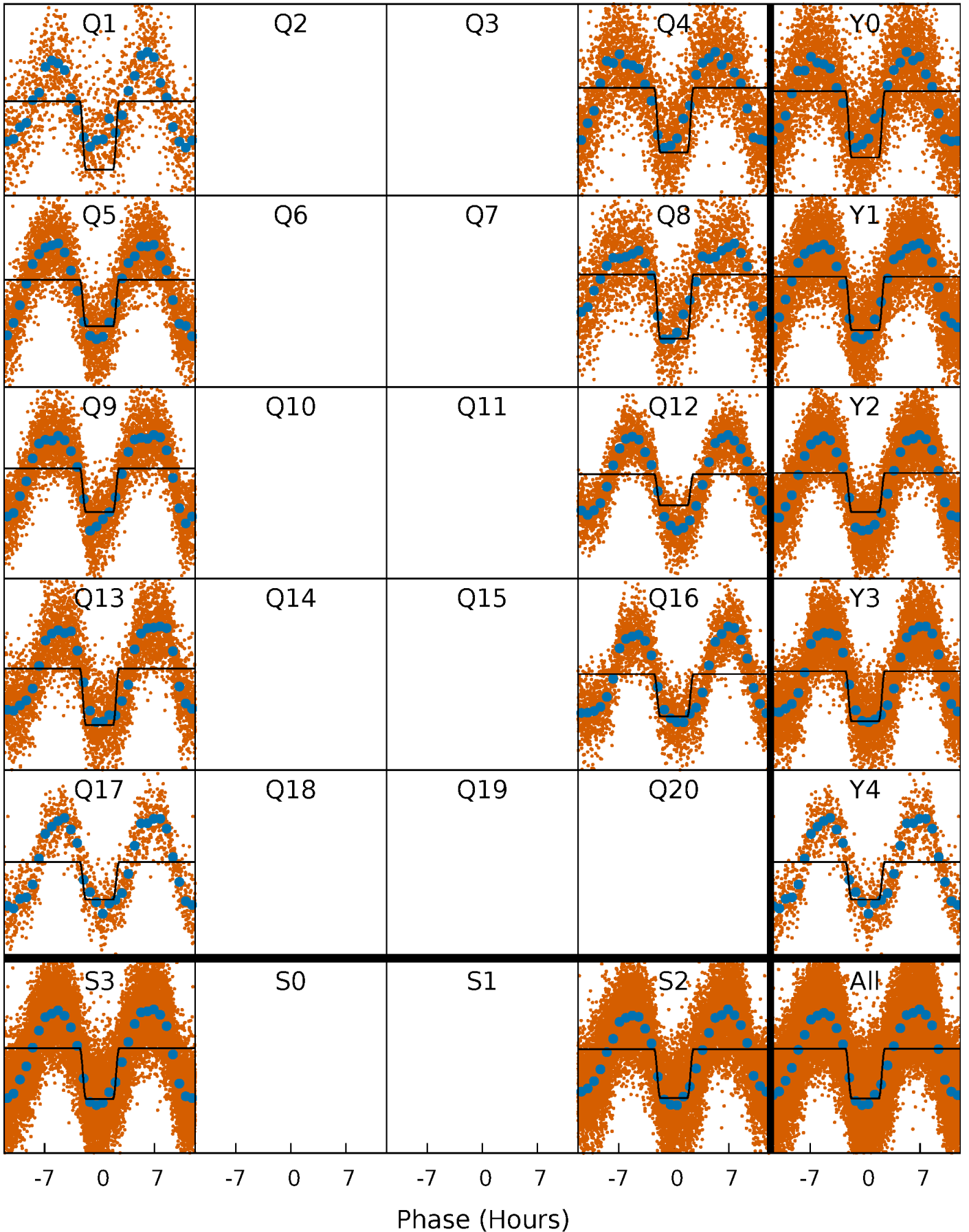
DV Quarter-Phased Transit Curves

TCE 006235404-01 P= 0.982754 Days $T_0=131.965305$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

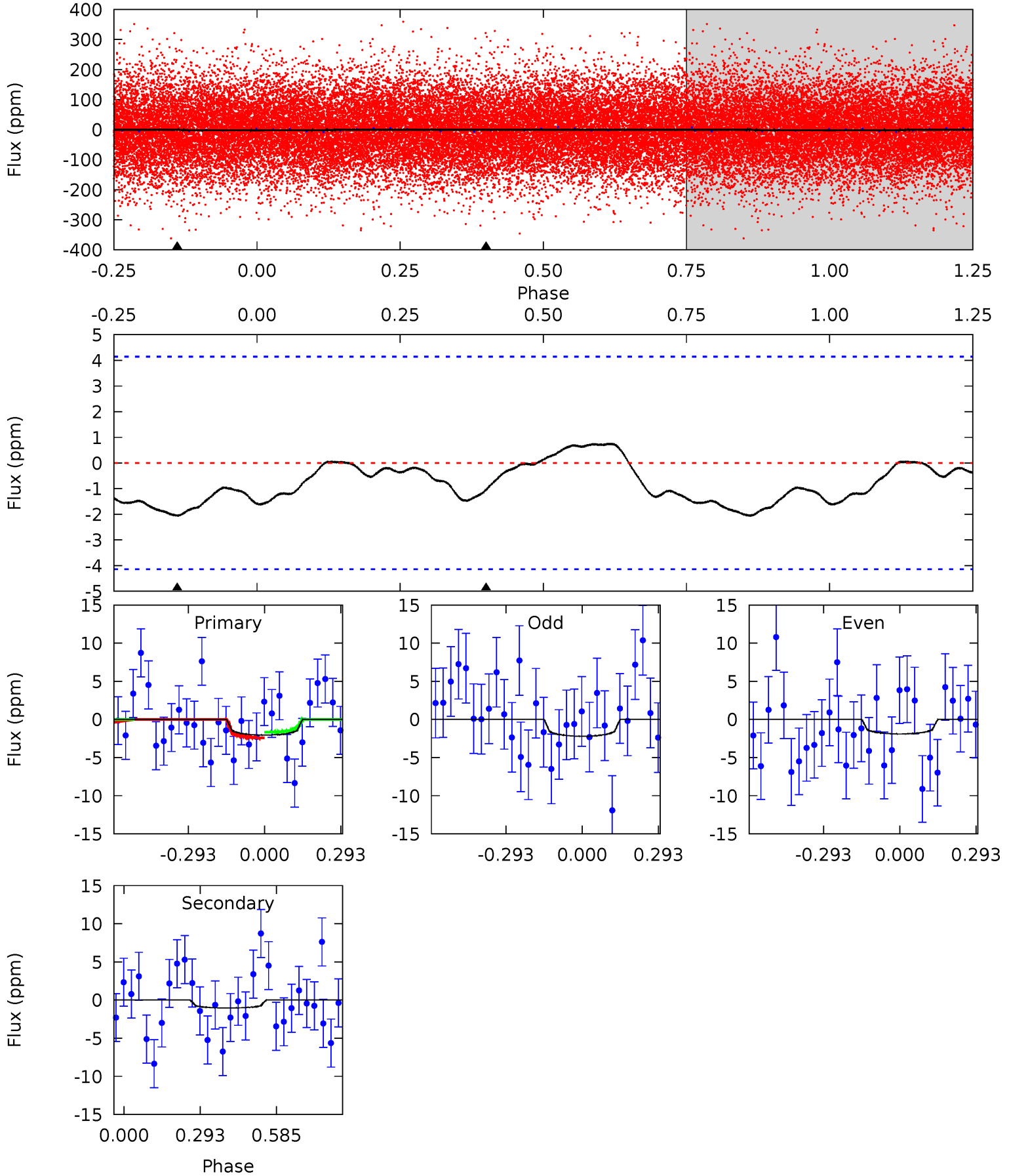
TCE 006235404-01 P= 0.982134 Days $T_0=132.056637$ (BKJD)



DV Model-Shift Uniqueness Test

006235404-01, P = 0.982754 Days, E = 130.982551 Days

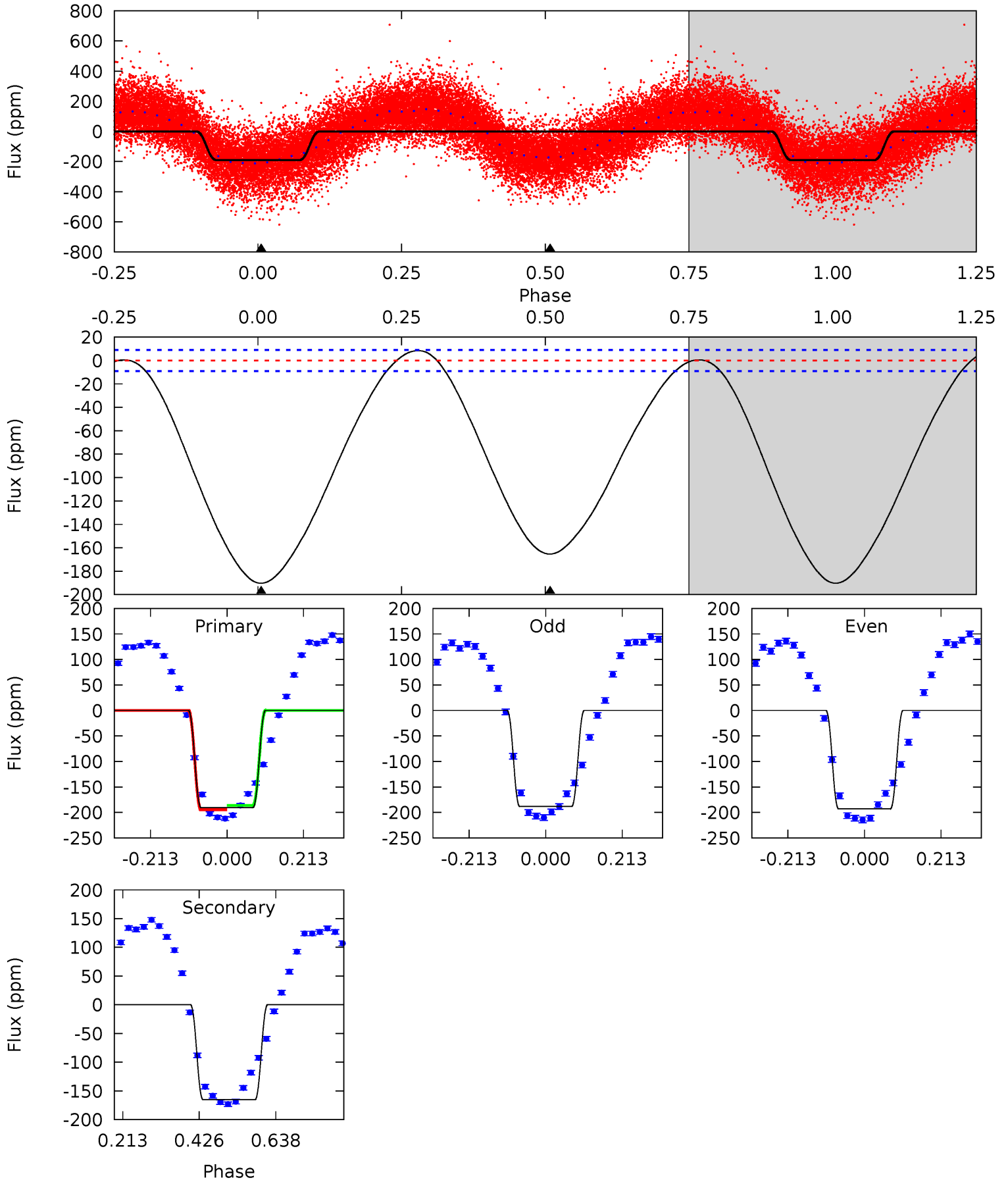
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2.15	1.09	0	0	4.33	1.05	0.34	2.15	2.15	1.09	1.09	0.16	0.62	0.27	0.39



Alt Model-Shift Uniqueness Test

006235404-01, P = 0.982134 Days, E = 131.074503 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
92.4	80.3	0	0	4.40	1.25	2.72	92.4	92.4	80.3	80.3	1.09	1.03	0.04	2.11



Stellar Parameters For KIC 006235404

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	7171^{+197}_{-338}	$4.121^{+0.108}_{-0.186}$	$0.220^{+0.150}_{-0.350}$	$1.848^{+0.580}_{-0.312}$	$1.646^{+0.192}_{-0.235}$	$0.367^{+0.191}_{-0.190}$
	+3%/-5%	+3%/-5%	+68%/-159%	+31%/-17%	+12%/-14%	+52%/-52%
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 006235404-01 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-1 ± 1	$0.65^{+0.63}_{-0.43}$	3994^{+312}_{-273}	3711^{+2771}_{-7353}	$0.584^{+4.845}_{-0.549}$
Alt.	-165 ± 2	$2.78^{+1.01}_{-0.76}$	3986^{+292}_{-236}	6793^{+1438}_{-925}	$6.118^{+5.269}_{-2.834}$

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

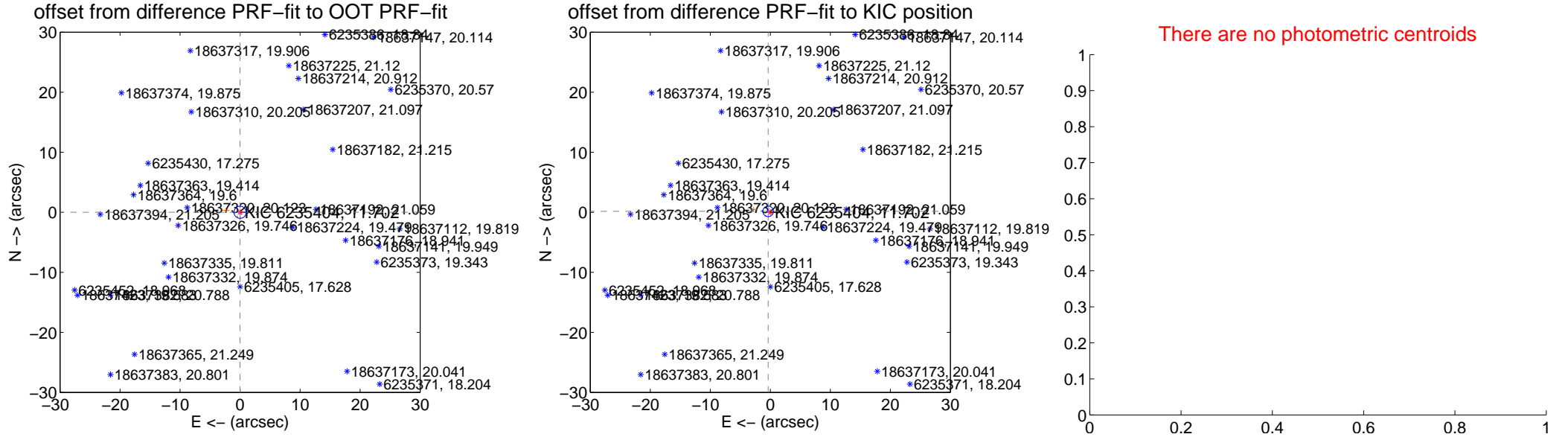
DV Centroid Data

Supplemental centroid analysis for 006235404-01. **Kepler magnitude: 11.70.** Transit SNR 0.95

There are 4 quarters with good PRF difference image offsets

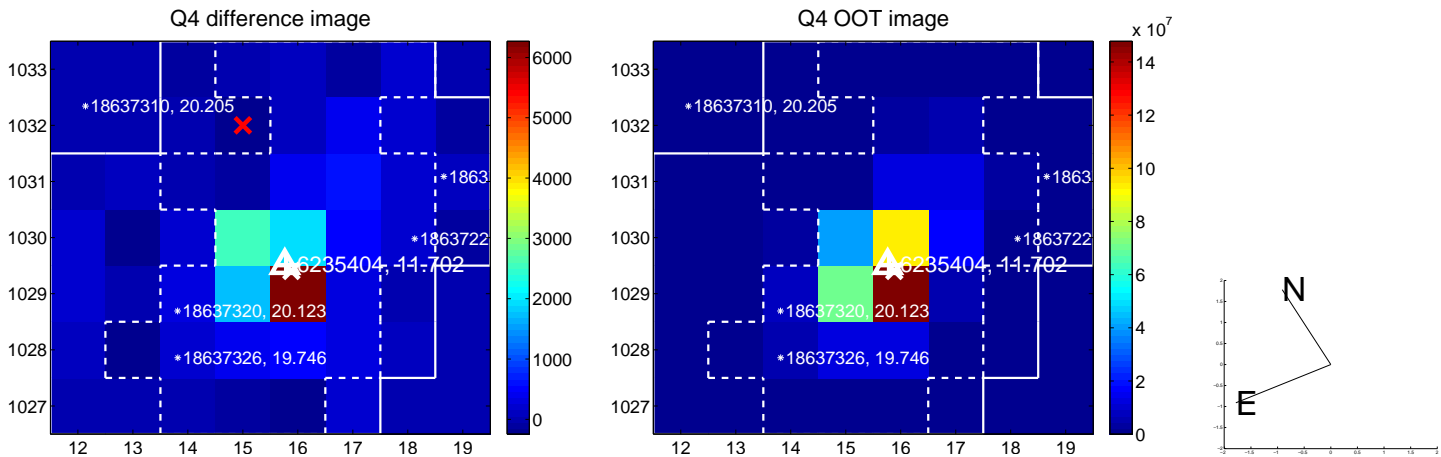
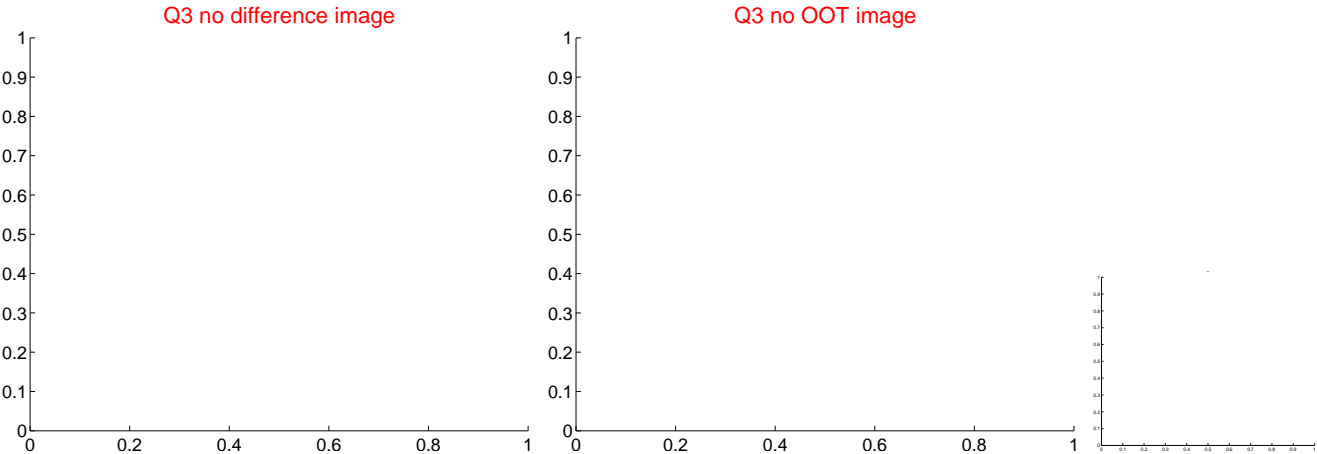
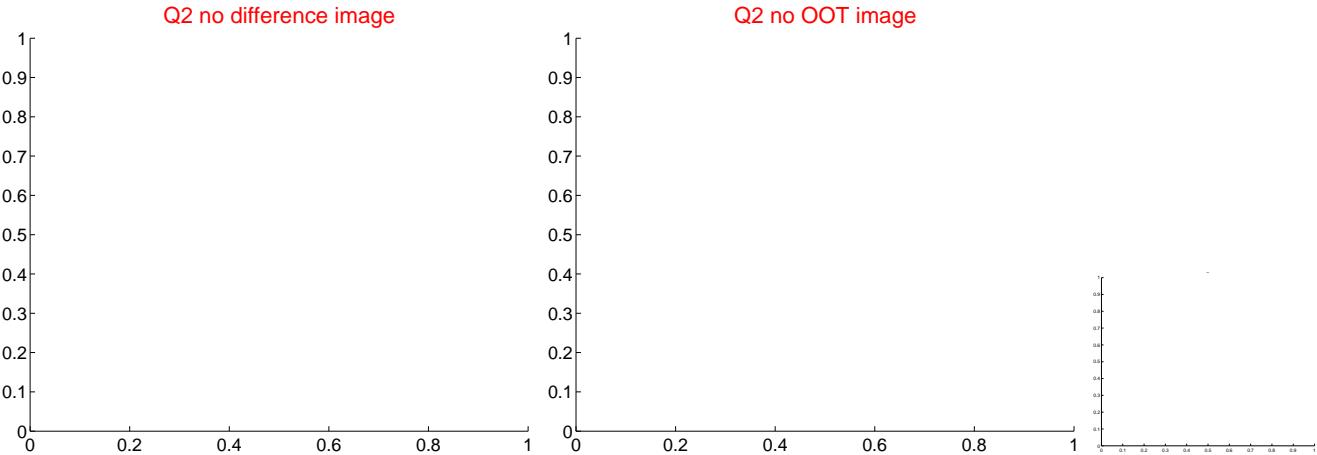
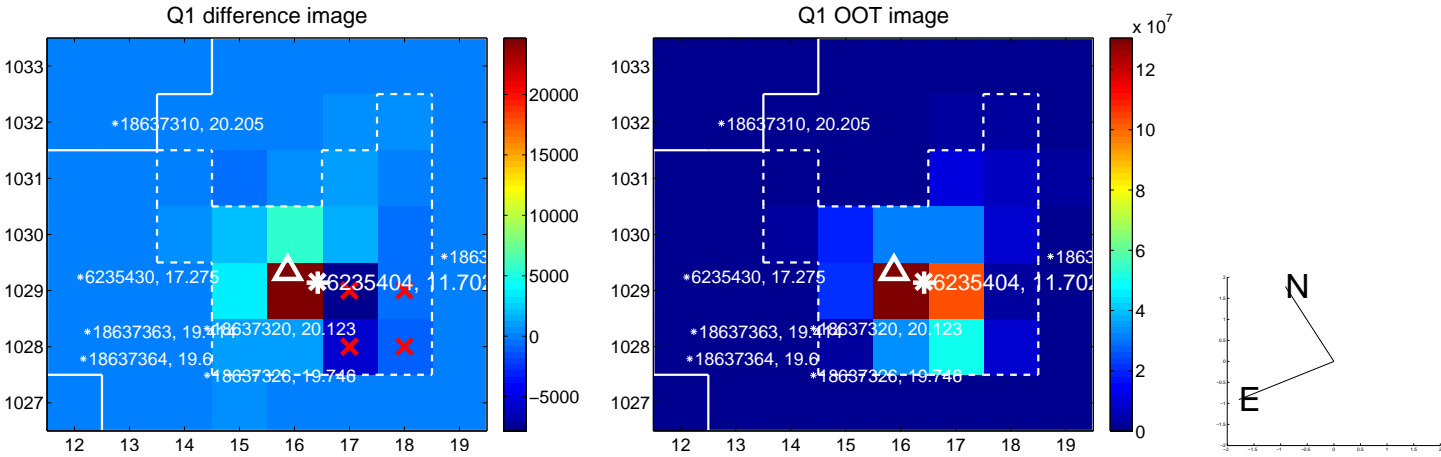
The direct PRF centroid is offset from the target star catalog position by about 0.42 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.003 ± 0.338	0.01	0.003 ± 0.313	0.001 ± 0.249
PRF-fit source offset from KIC position	0.392 ± 0.293	1.34	0.358 ± 0.272	0.160 ± 0.218
photometric centroid source offset	—	—	—	—

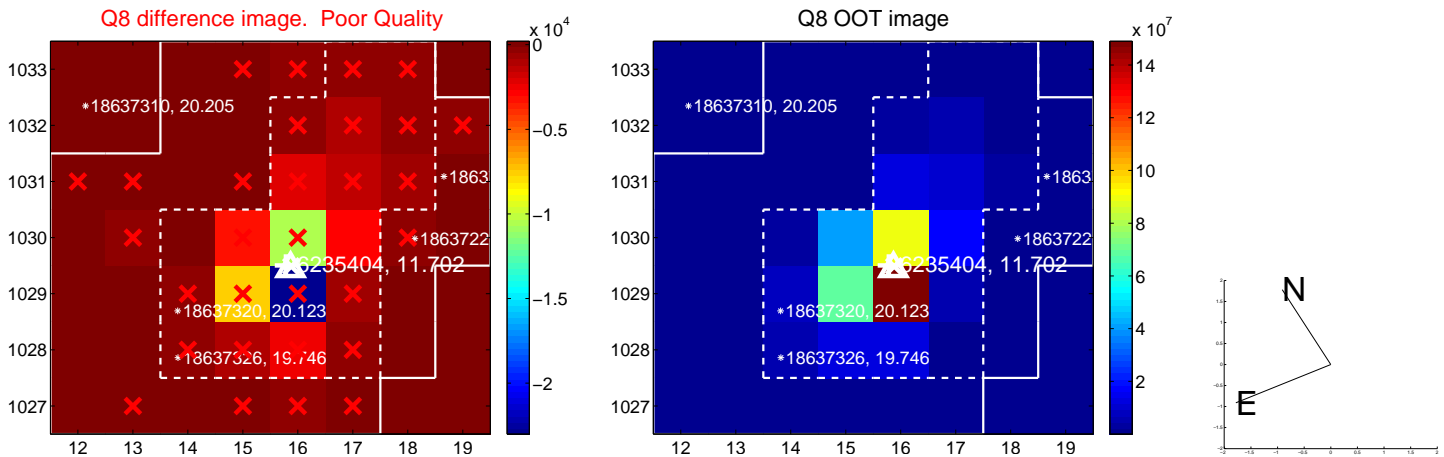
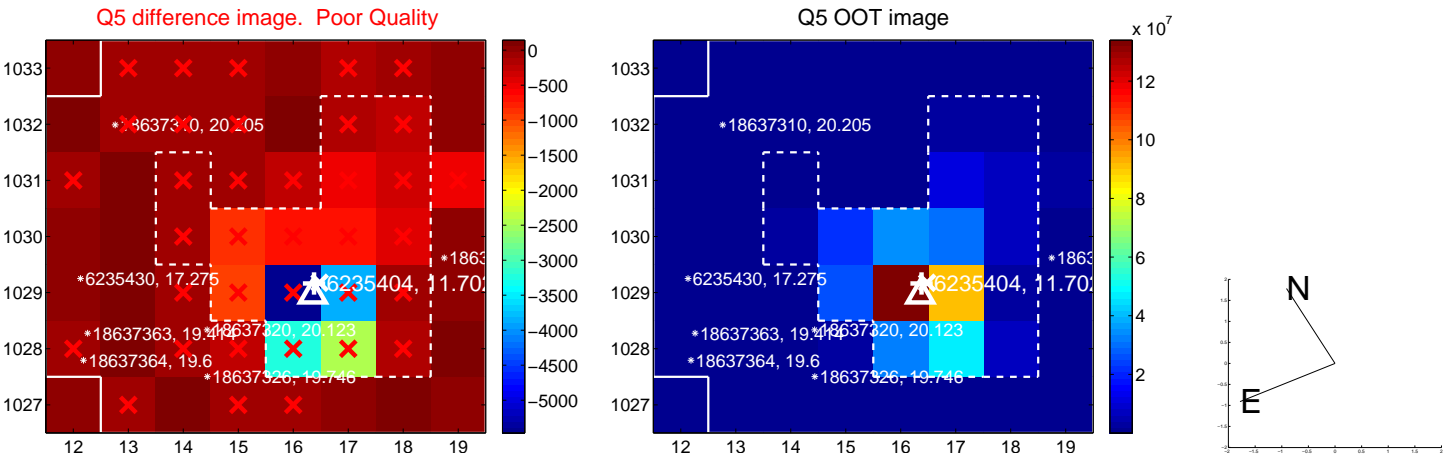


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

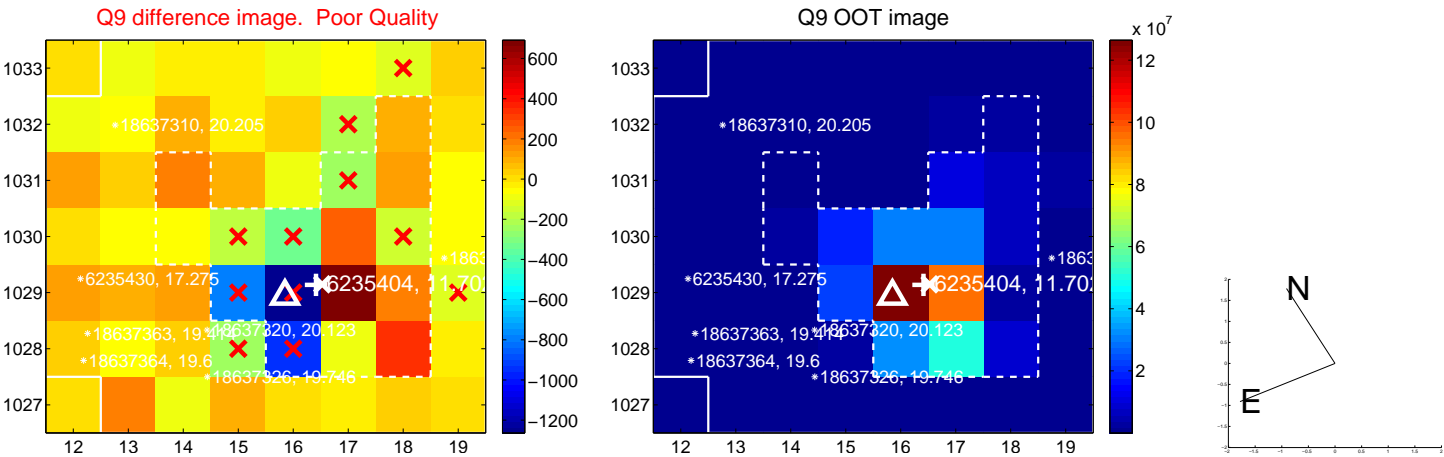
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



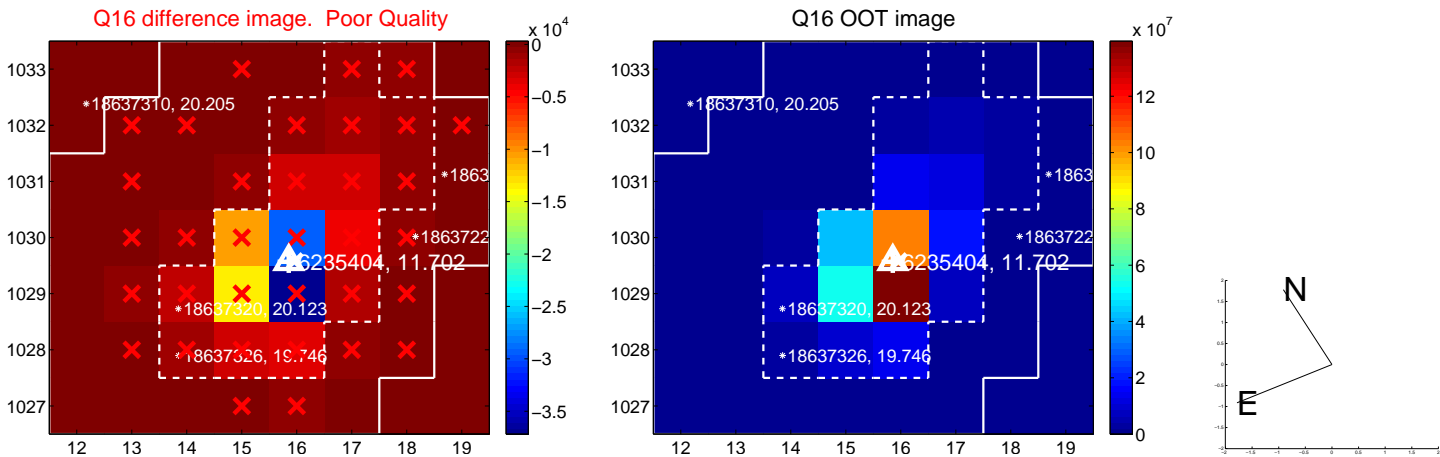
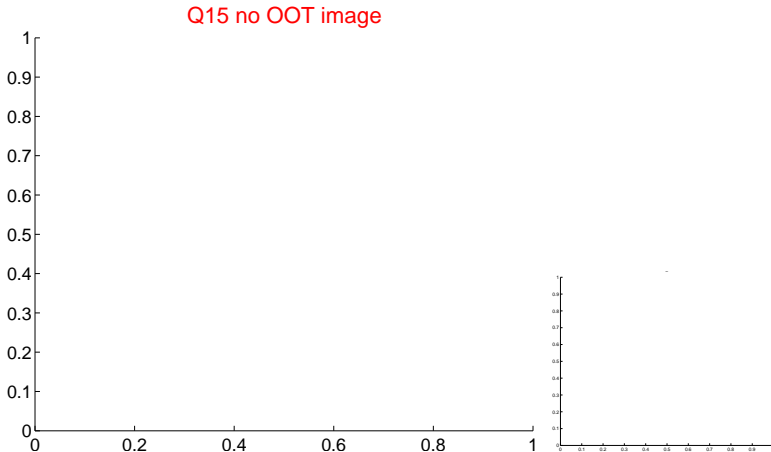
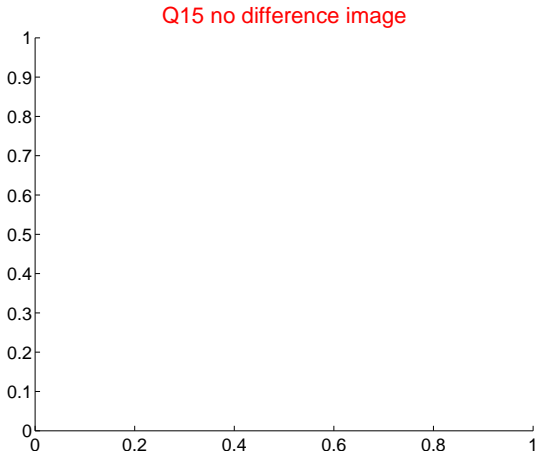
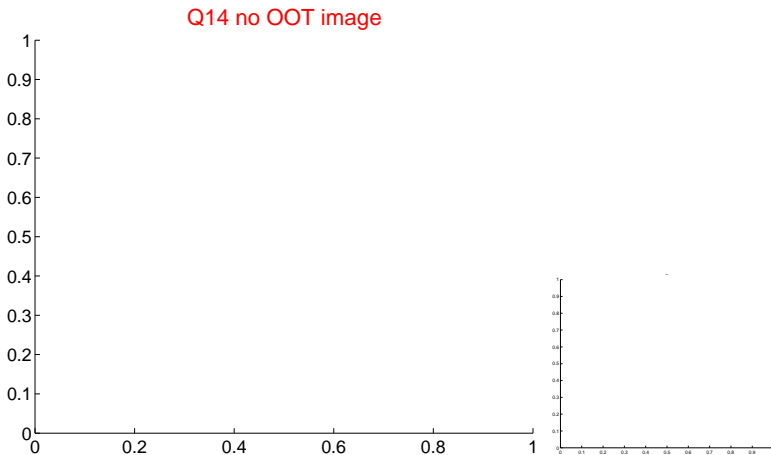
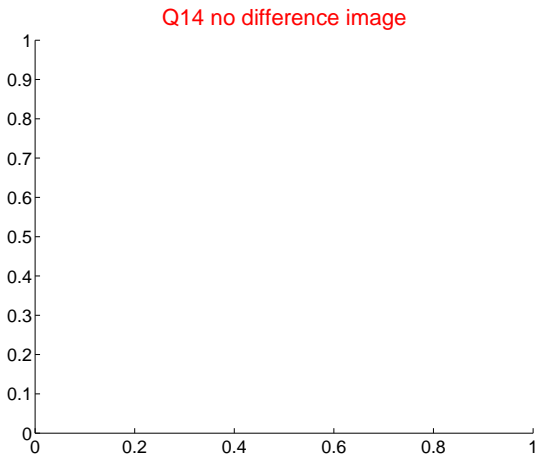
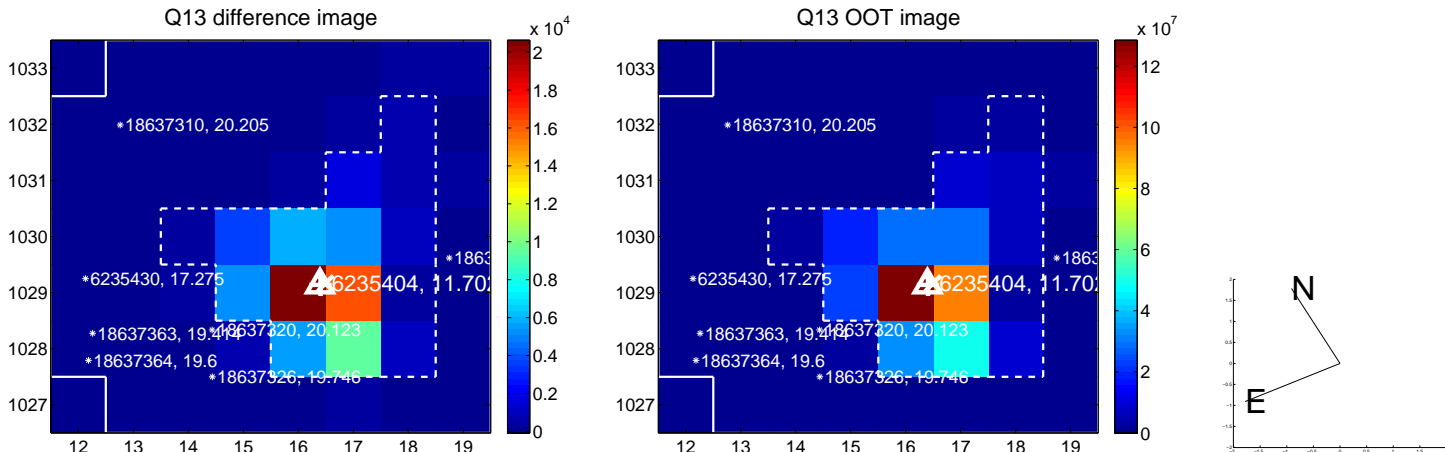
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



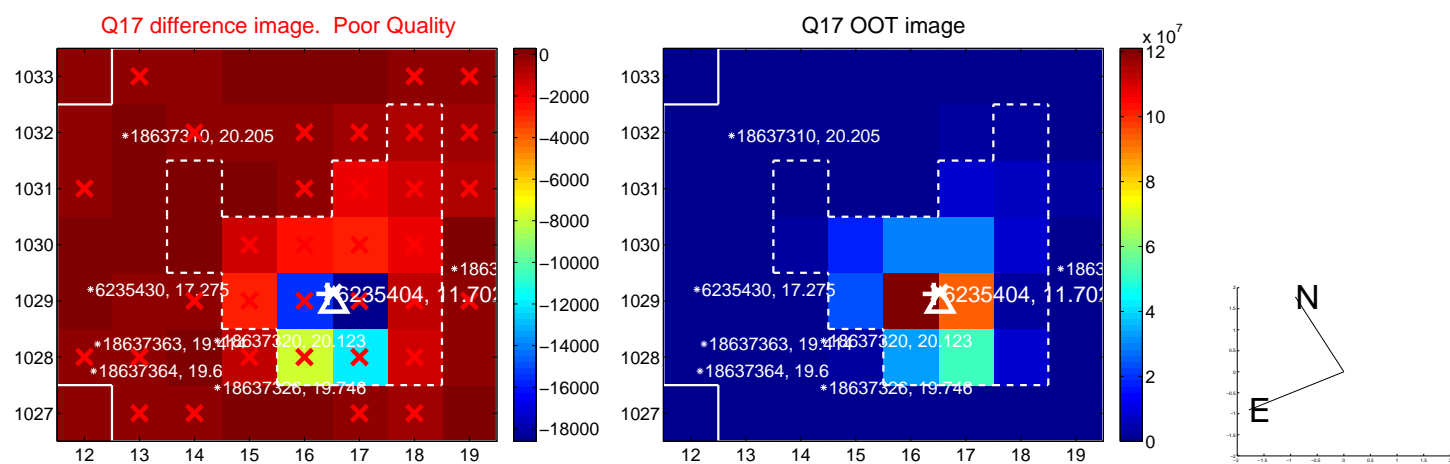
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

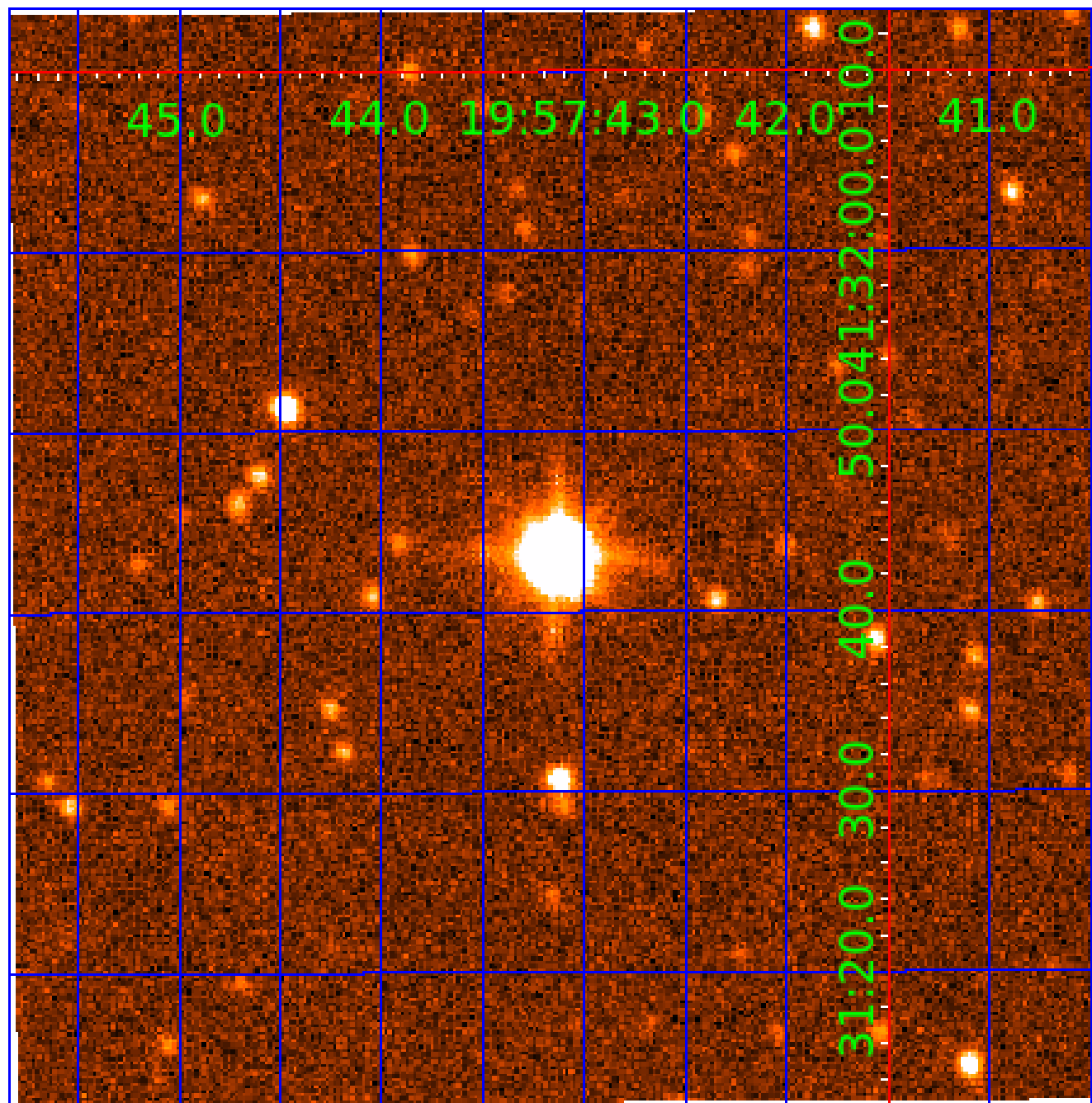


folded centroid time series figure for this object.



UKIRT Image

Declination



KIC 006235404

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})
006235404-01	OBS	No	0.982754	131.965305	1.4	6.441	8.0	1.0	1.85	7171	0.22	15503.21
006235404-02	OBS	No	40.390084	159.150430	106.8	7.859	10.0	9.0	1.85	7171	2.11	109.31

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006235404-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT
006235404-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—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.

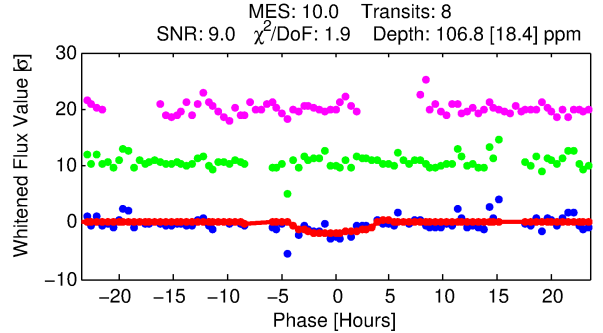
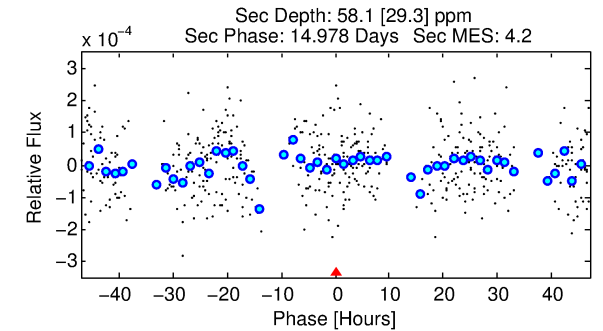
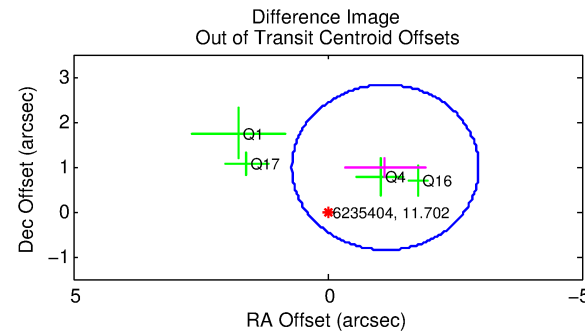
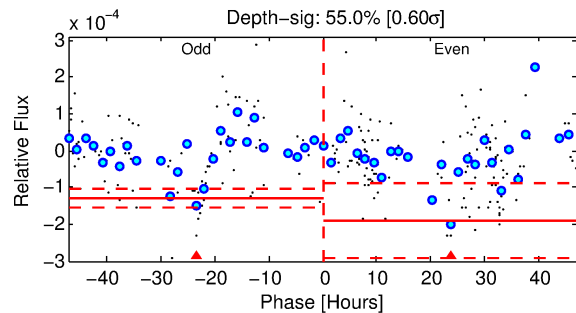
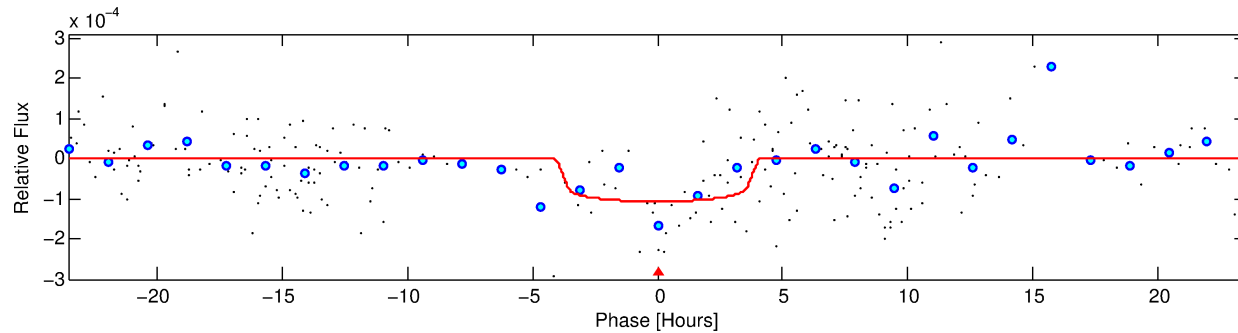
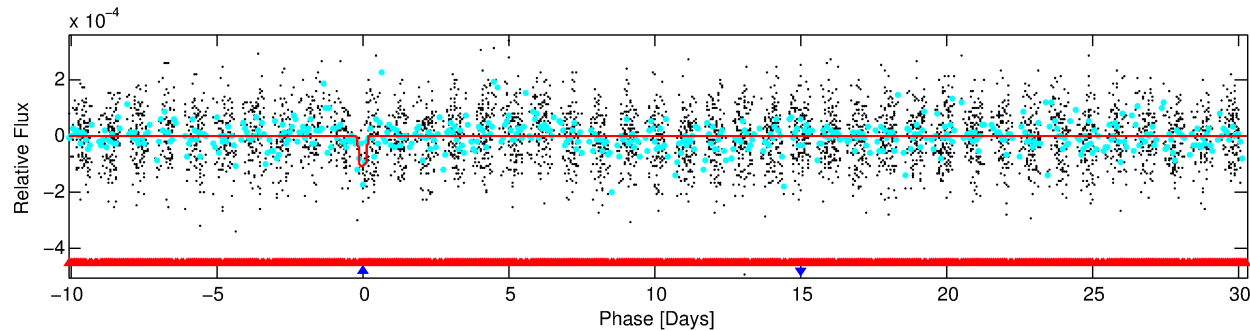
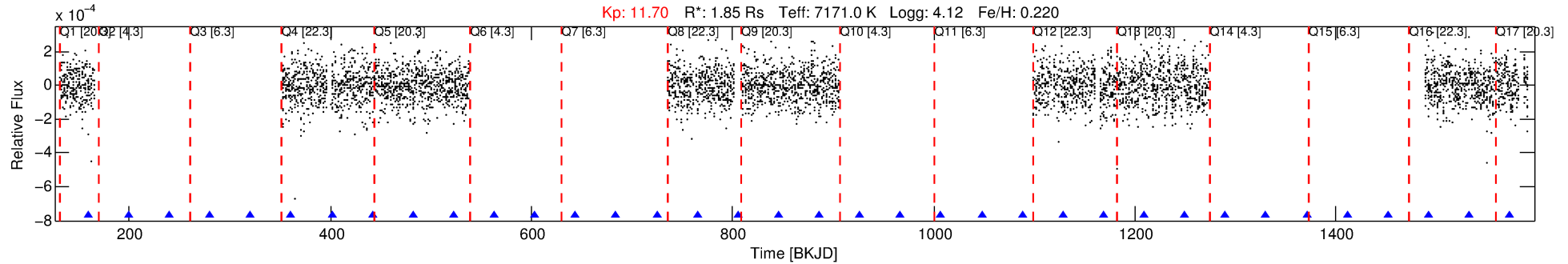
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 006235404-02

No Significant Match Found

DV One-Page Summary

KIC: 6235404 Candidate: 2 of 2 Period: 40.390 d



DV Fit Results:

Period = 40.39008 [0.00159] d
Epoch = 159.1504 [0.0189] BKJD
Rp/R* = 0.0105 [0.0043]
a/R* = 23.84 [57.79]
b = 0.81 [1.05]
Seff = 109.31 [43.84]
Teq = 824 [83] K
Rp = 2.11 [1.08] Re
a = 0.2721 [0.0689] AU
Ag = 530.87 [541.53] [0.98 σ]
Teffp = 6119 [1492] K [3.54 σ]

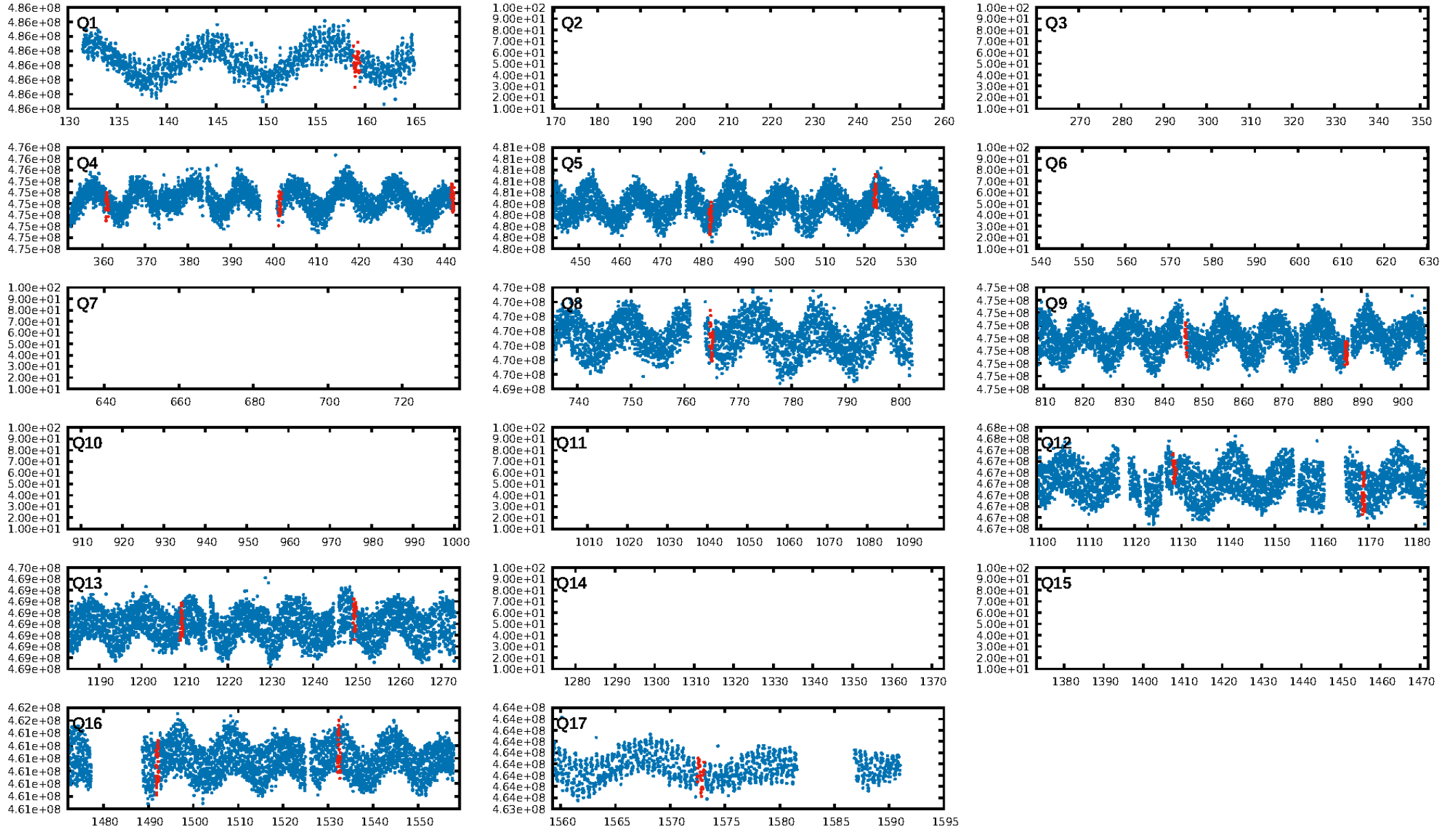
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [93.08 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 0.5%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 3.85e-10
RollingBand-fgt: 1.00 [7/7]
GhostDiagnostic-chr: -0.903
Centroid-sig: 40.1%
Centroid-so: 0.427 arcsec [0.51 σ]
OotOffset-rm: 1.502 arcsec [2.45 σ]
OotOffset-st: 0/0/2/2 [4]
KicOffset-rm: **1.438 arcsec [3.07 σ]**
KicOffset-st: 0/0/2/2 [4]
DiffImageQuality-fgm: 0.25 [1/4]
DiffImageOverlap-fno: 0.00 [0/7]

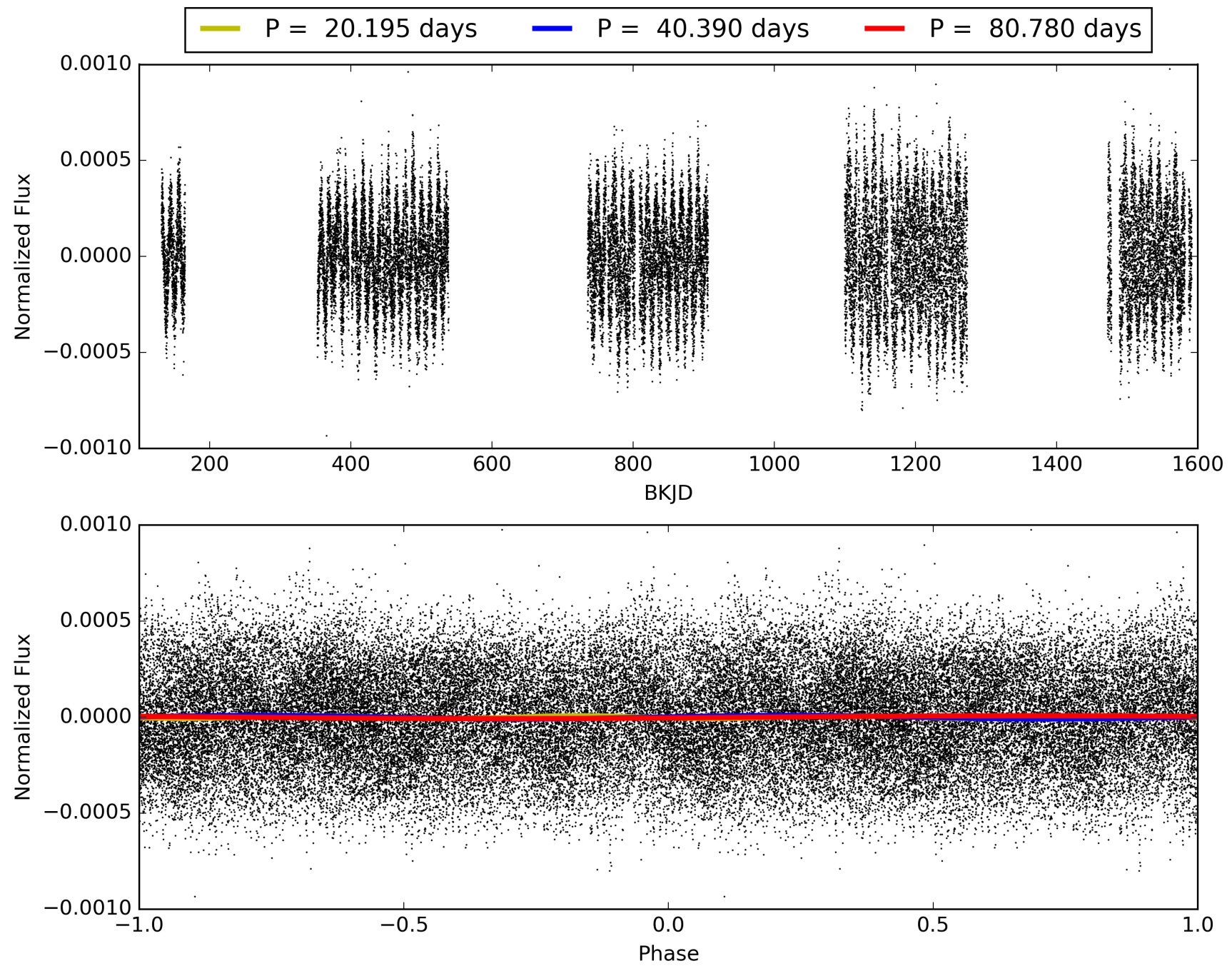
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 15:16:21 Z

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

TCE 006235404-02, PDC Light Curves

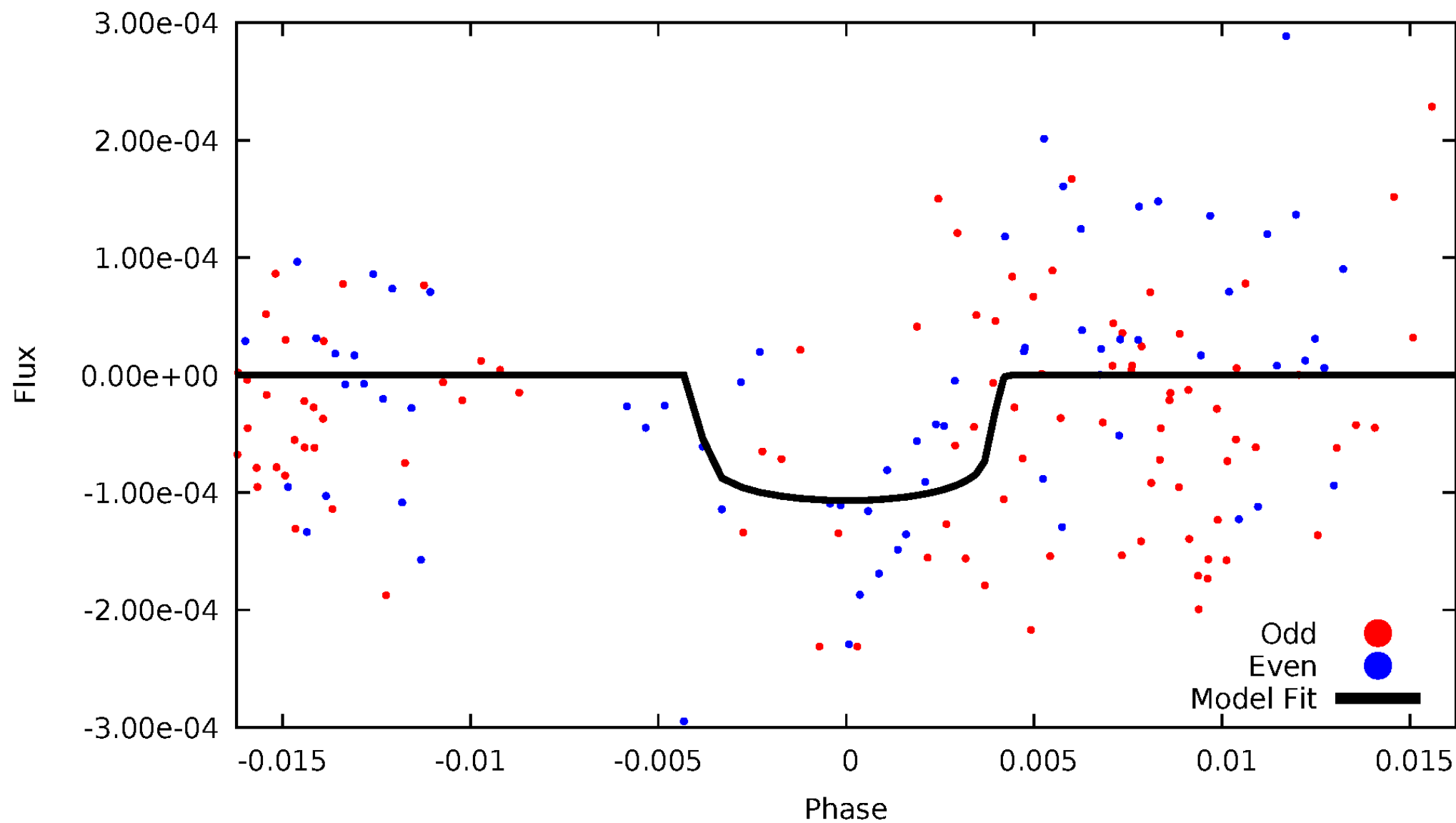


TCE 006235404-02



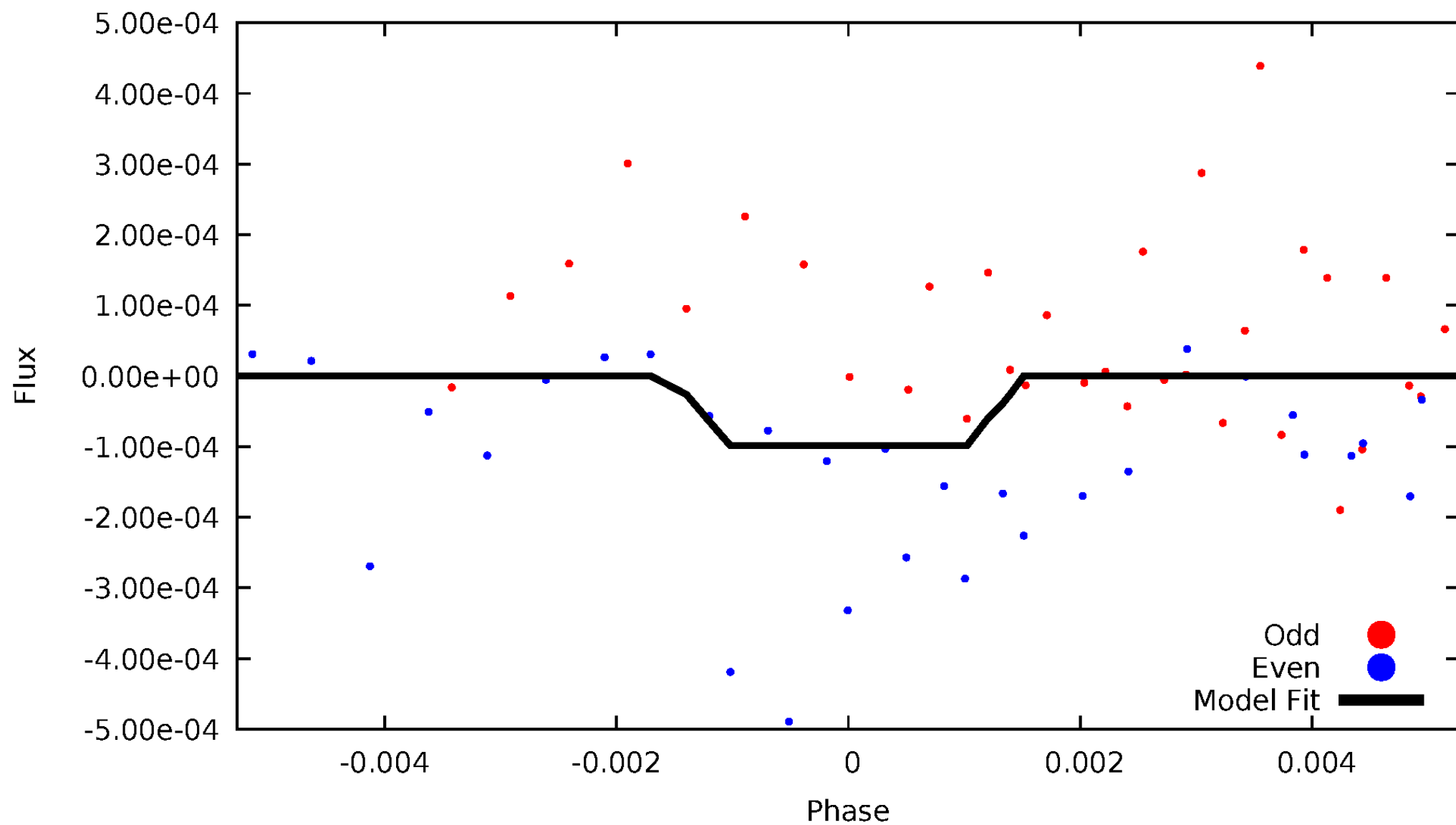
DV Odd/Even

TCE 006235404-02



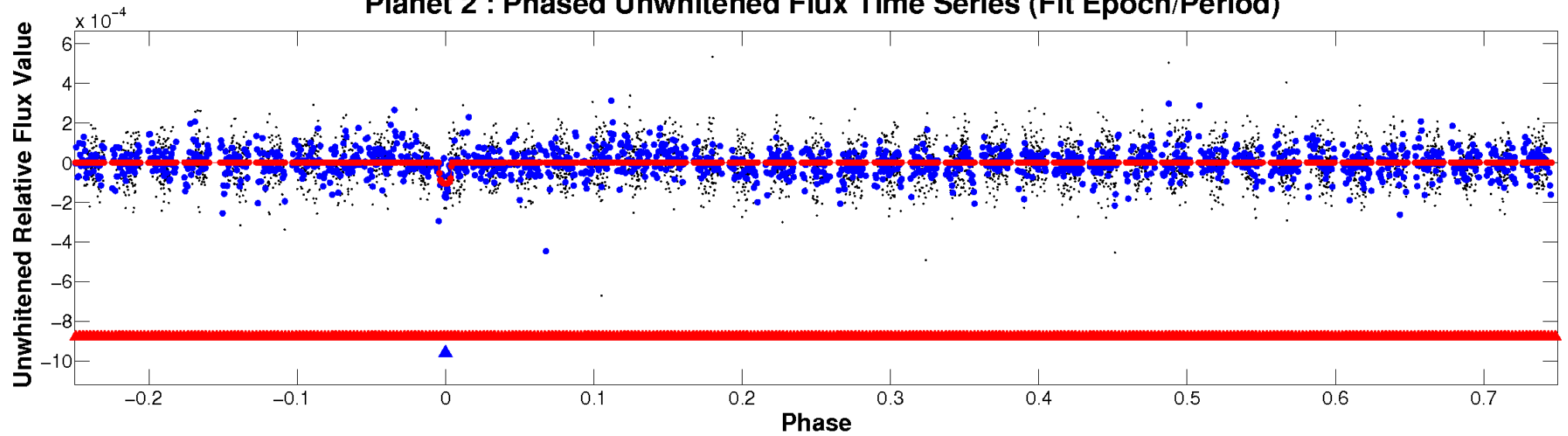
ALT Odd/Even

TCE 006235404-02

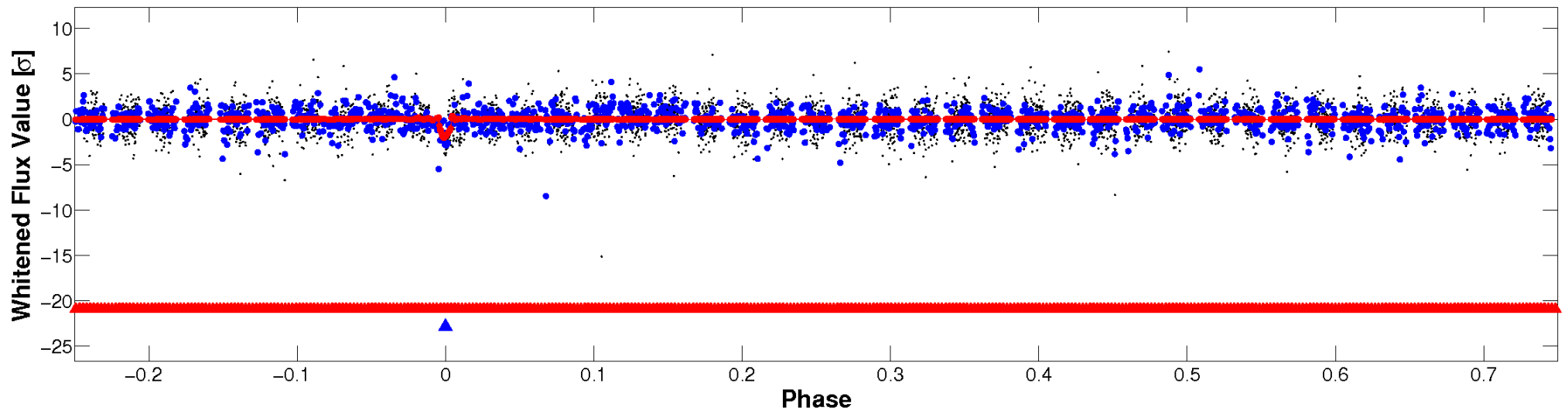


Non-Whitened Vs. Whitened Light Curve

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

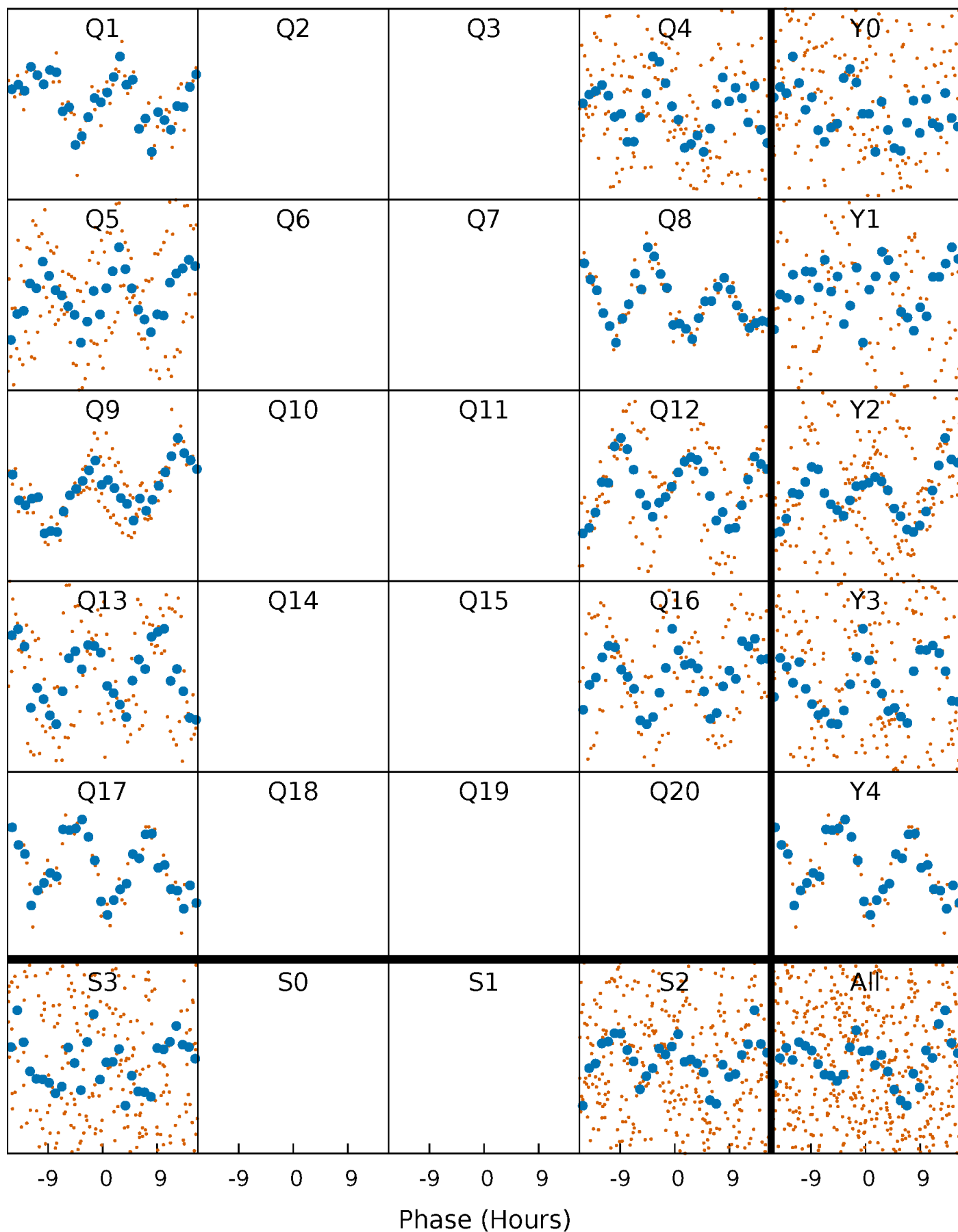


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



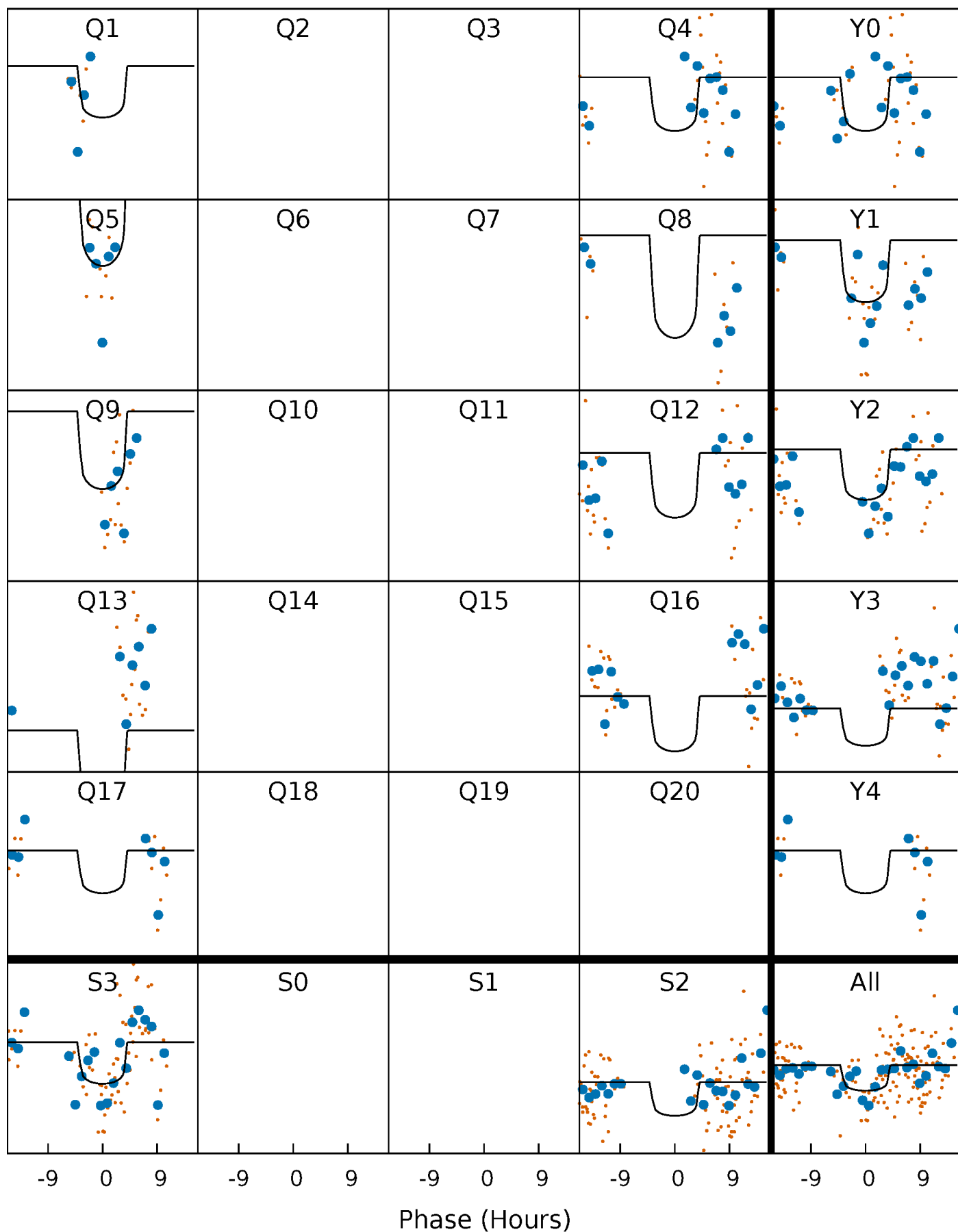
PDC Quarter-Phased Transit Curves

TCE 006235404-02 $P = 40.390084$ Days $T_0 = 159.150430$ (BKJD)



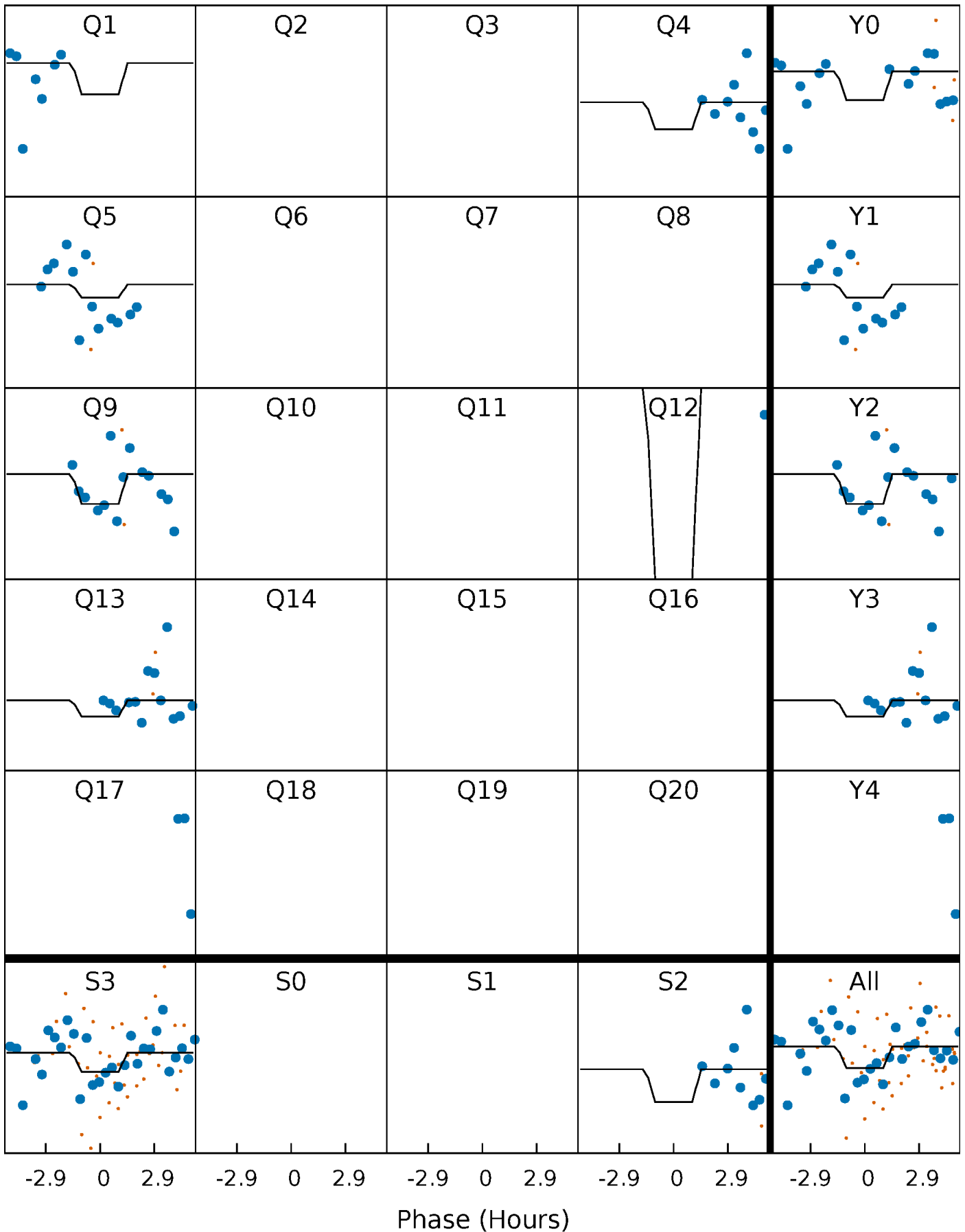
DV Quarter-Phased Transit Curves

TCE 006235404-02 P= 40.390084 Days $T_0=159.150430$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

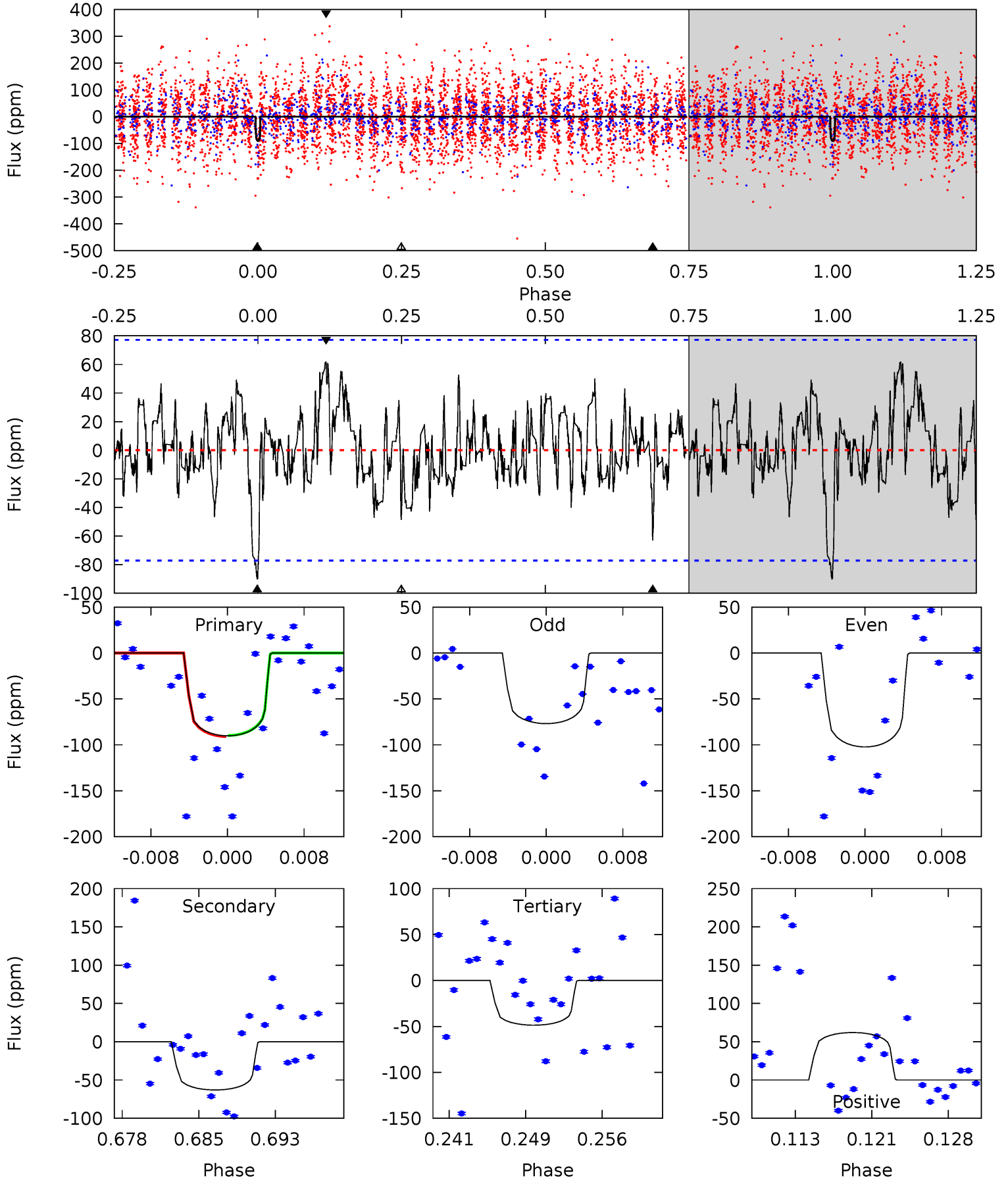
TCE 006235404-02 $P = 40.394024$ Days $T_0 = 159.142540$ (BKJD)



DV Model-Shift Uniqueness Test

006235404-02, P = 40.390084 Days, E = 118.760346 Days

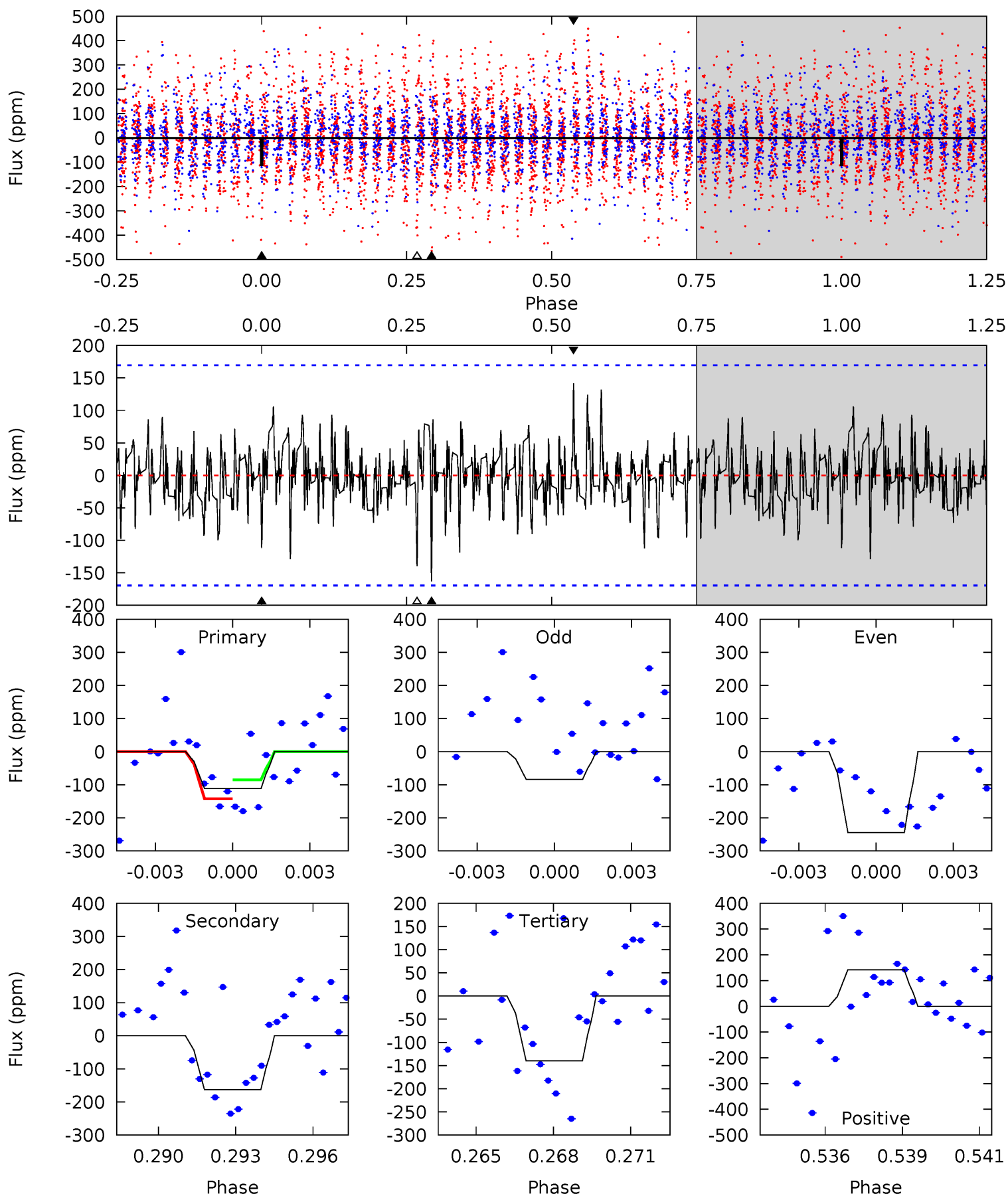
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.94	4.15	3.21	4.09	5.08	2.67	1.33	2.74	1.86	0.95	0.07	0.84	0.61	0.41	0.04



Alt Model-Shift Uniqueness Test

006235404-02, P = 40.394024 Days, E = 118.748516 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3.47	5.06	4.34	4.40	5.27	2.99	1.15	-0.86	-0.93	0.72	0.66	2.42	1.12	0.47	0.88



Stellar Parameters For KIC 006235404

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	7171^{+197}_{-338}	$4.121^{+0.108}_{-0.186}$	$0.220^{+0.150}_{-0.350}$	$1.848^{+0.580}_{-0.312}$	$1.646^{+0.192}_{-0.235}$	$0.367^{+0.191}_{-0.190}$
	+3%/-5%	+3%/-5%	+68%/-159%	+31%/-17%	+12%/-14%	+52%/-52%
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 006235404-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-63 ± 15	$2.15^{+0.99}_{-0.90}$	1154^{+83}_{-74}	6099^{+2156}_{-936}	536^{+1031}_{-285}
Alt.	-163 ± 32	$2.04^{+0.89}_{-0.93}$	1161^{+79}_{-80}	8208^{+4648}_{-1565}	1525^{+3891}_{-805}

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

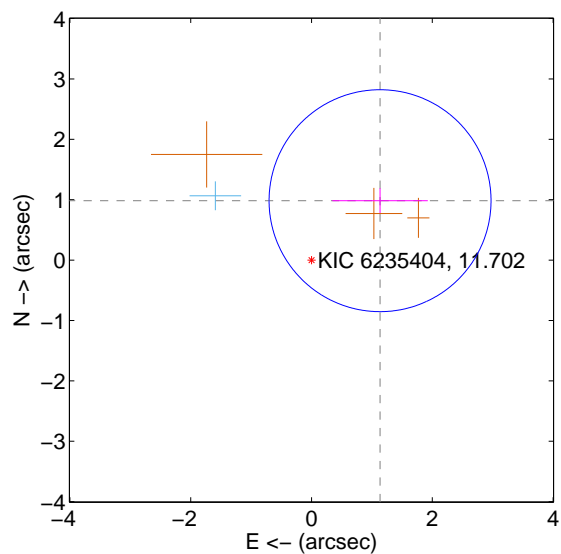
Supplemental centroid analysis for 006235404-02. **Kepler magnitude: 11.70.** Transit SNR 8.95

There are 1 quarters with good PRF difference image offsets

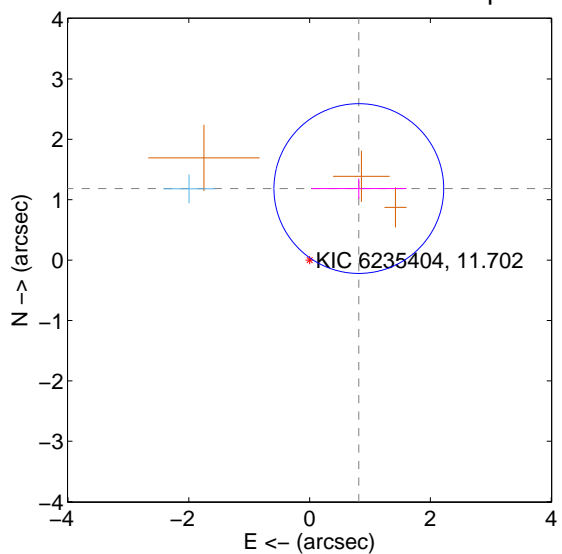
The direct PRF centroid is offset from the target star catalog position by about 0.42 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.502 ± 0.612	2.45	-1.135 ± 0.791	0.984 ± 0.206
PRF-fit source offset from KIC position	1.438 ± 0.468	3.07	-0.815 ± 0.791	1.185 ± 0.165
photometric centroid source offset	0.43 ± 0.84	0.51	-0.26 ± 0.94	-0.34 ± 0.77

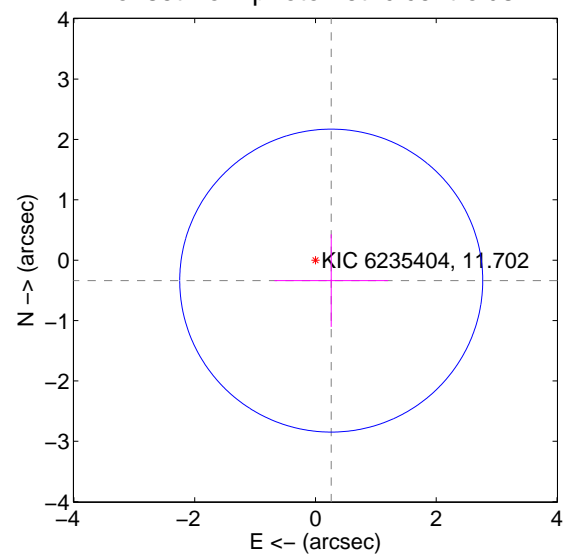
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

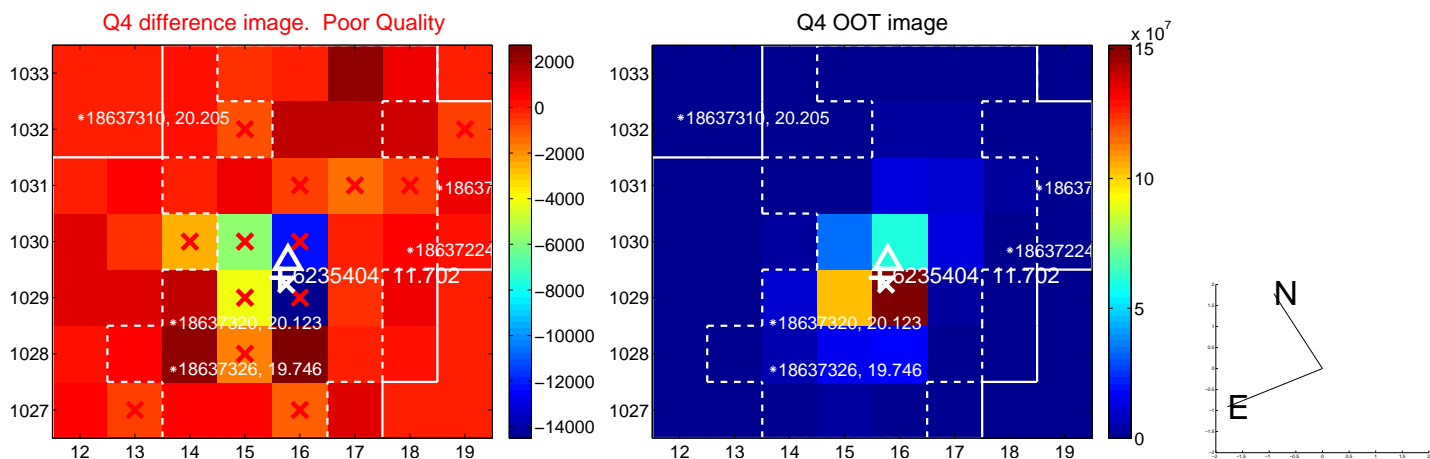
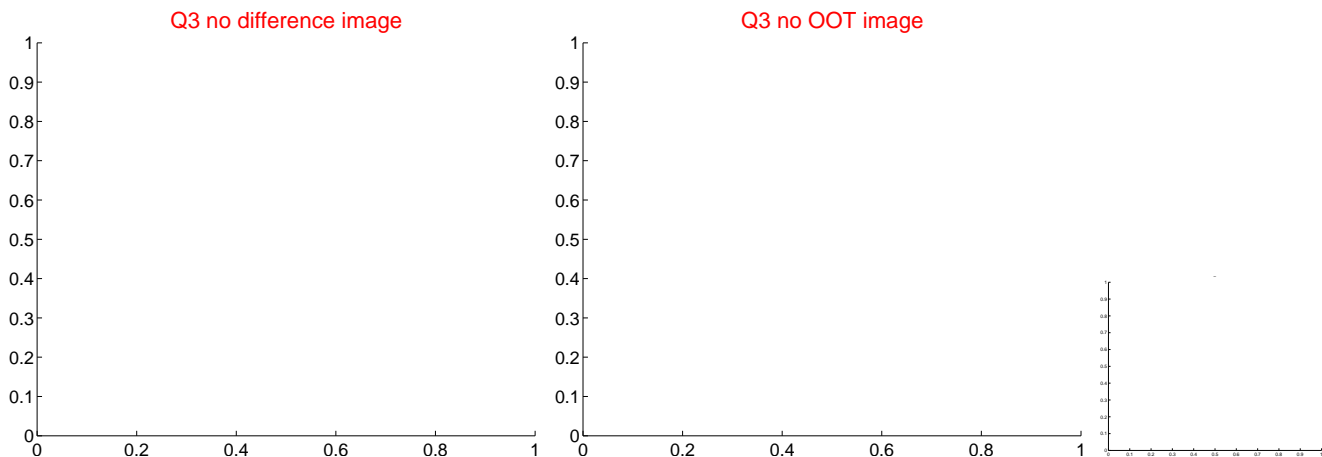
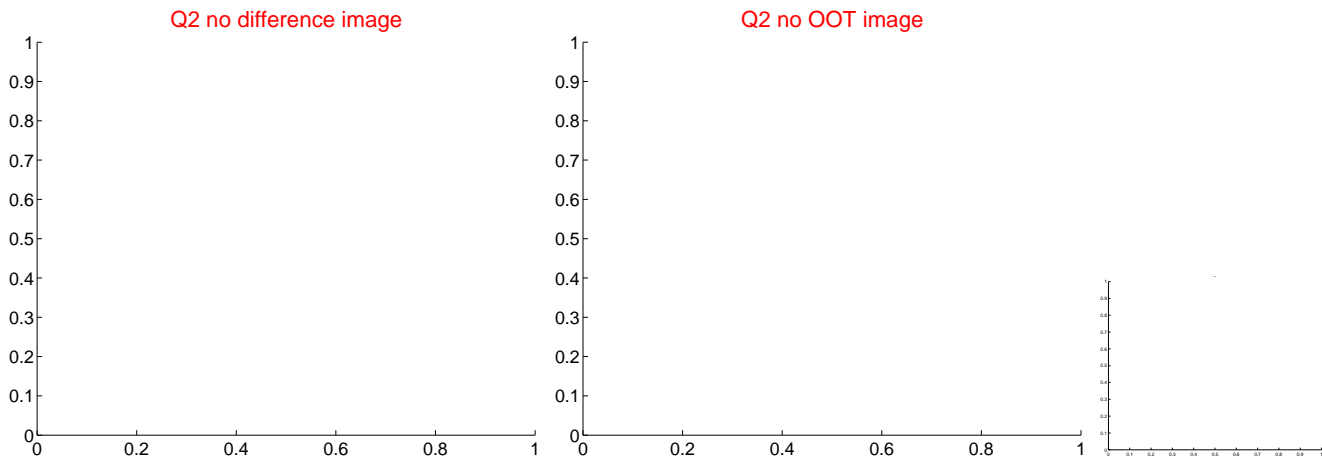
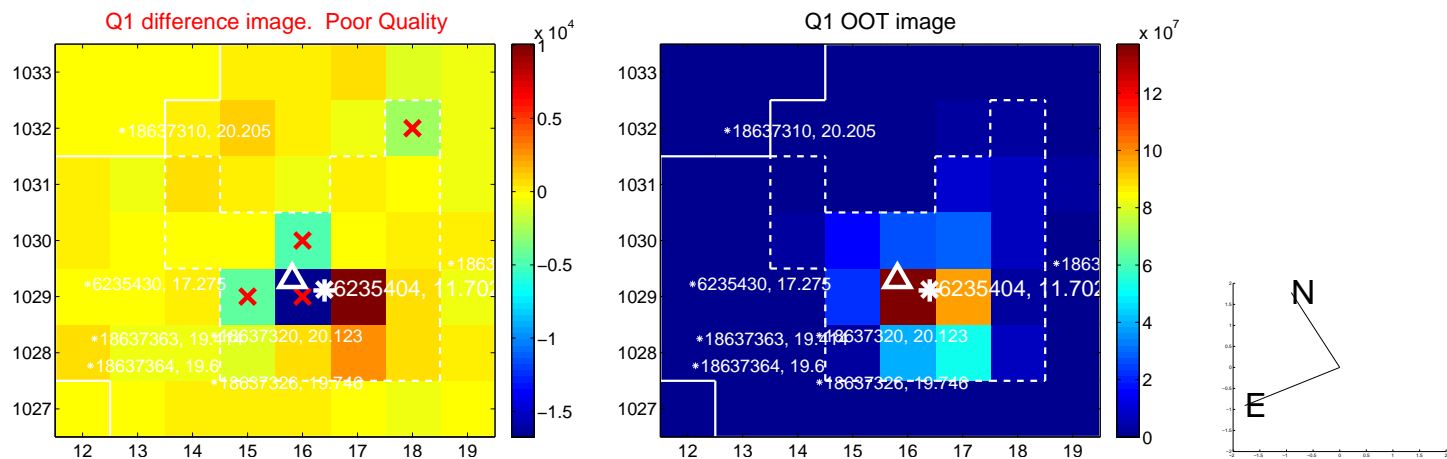


offset from photometric centroids

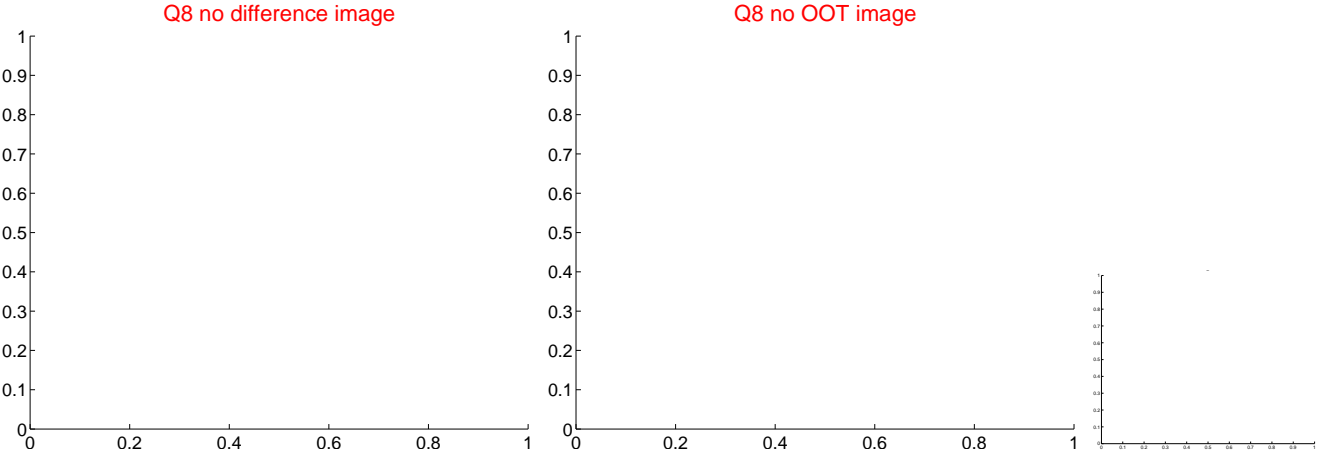
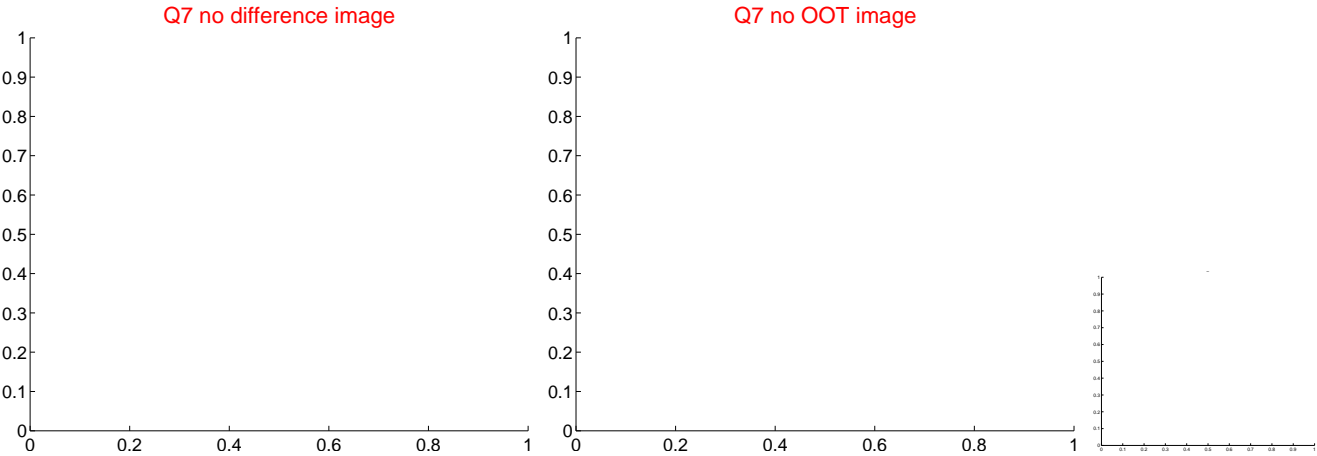
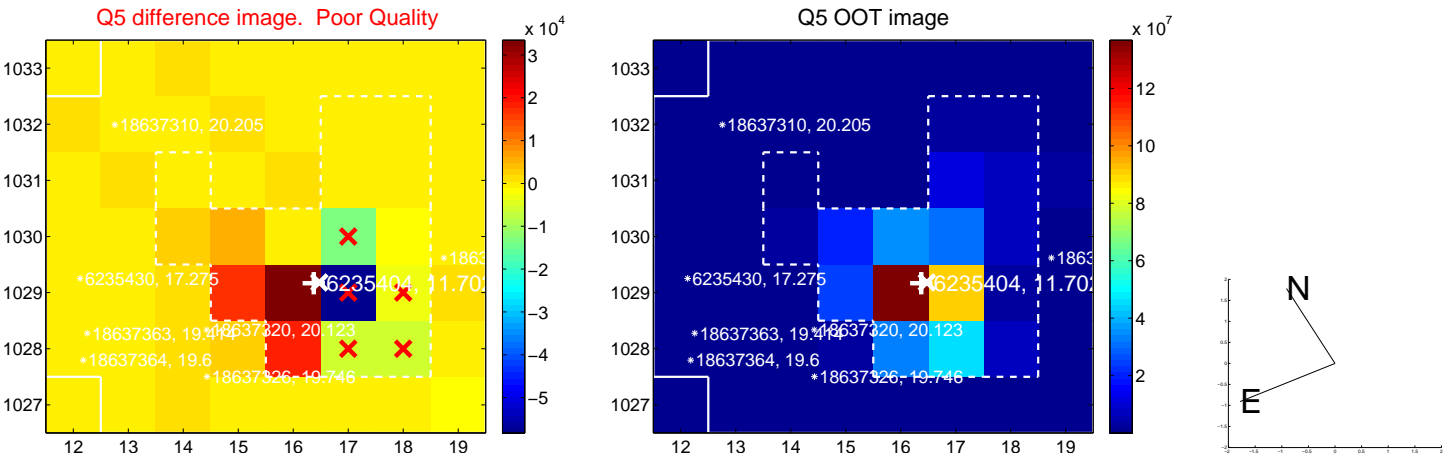


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

Q9 no difference image



Q9 no OOT image



Q10 no difference image



Q10 no OOT image



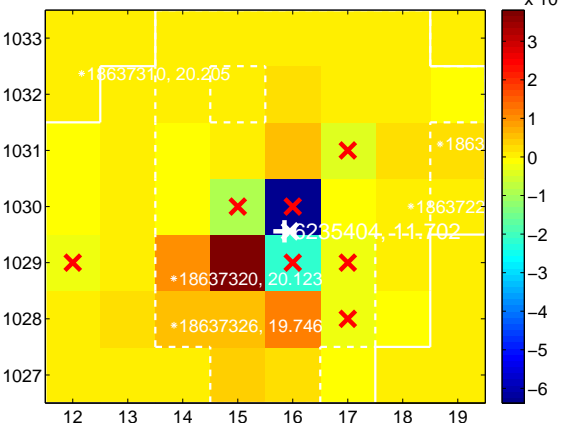
Q11 no difference image



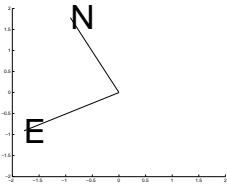
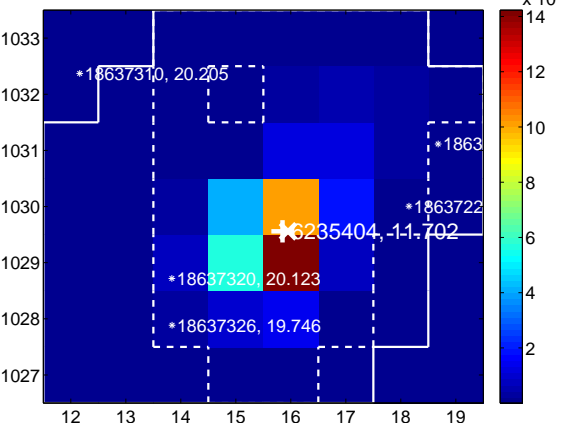
Q11 no OOT image



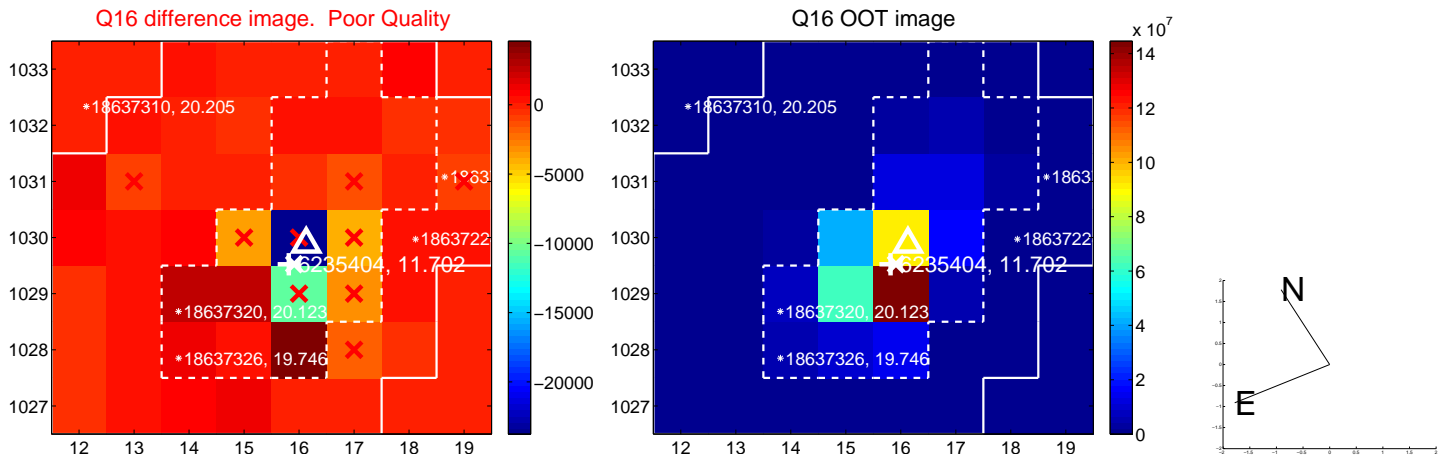
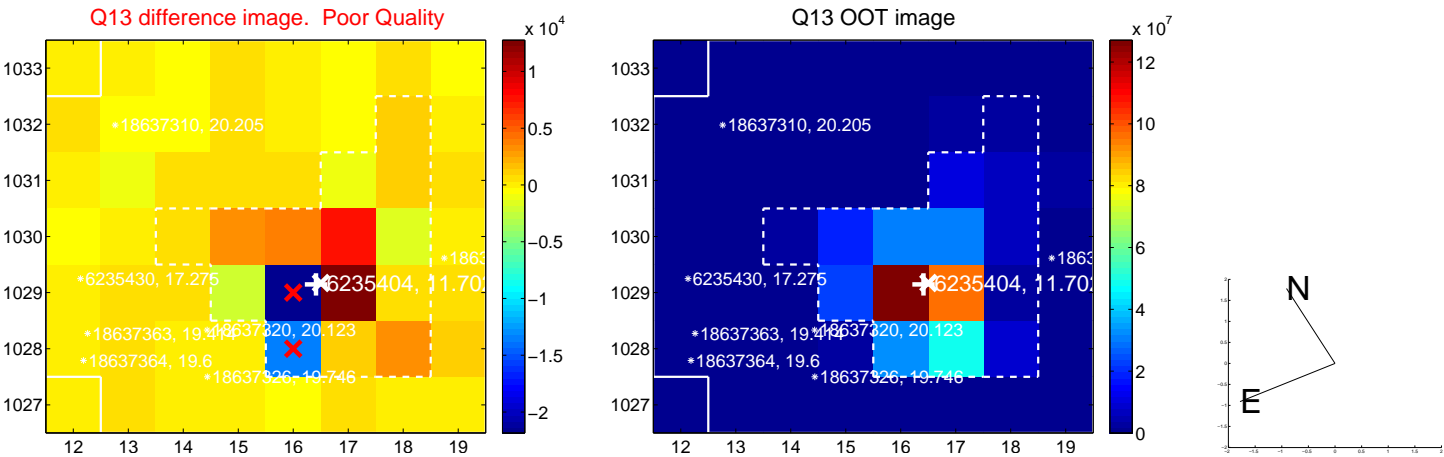
Q12 difference image. Poor Quality



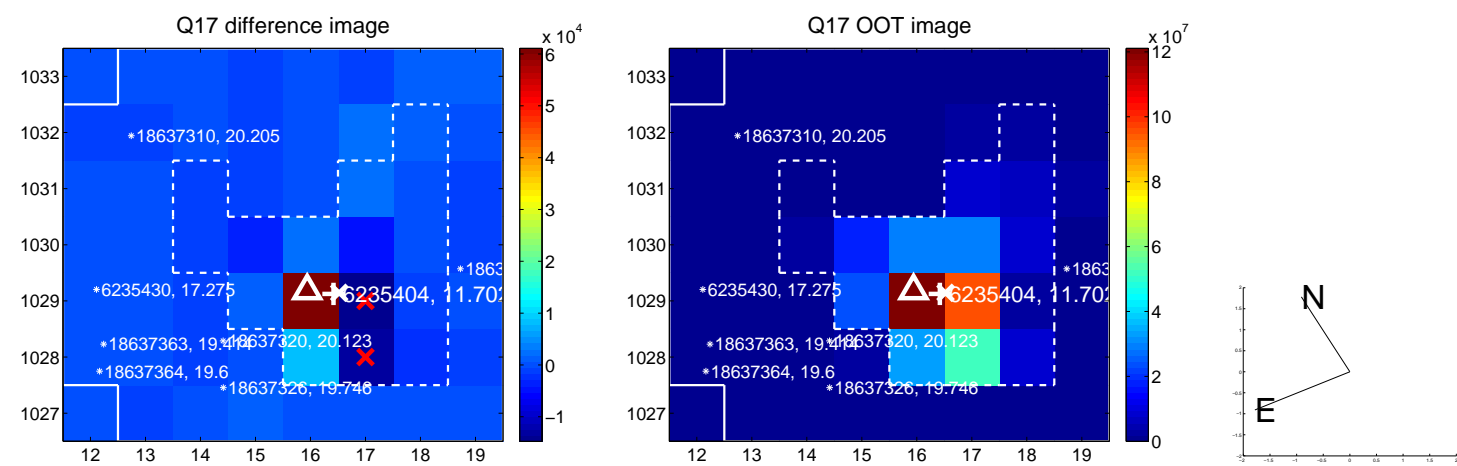
Q12 OOT image



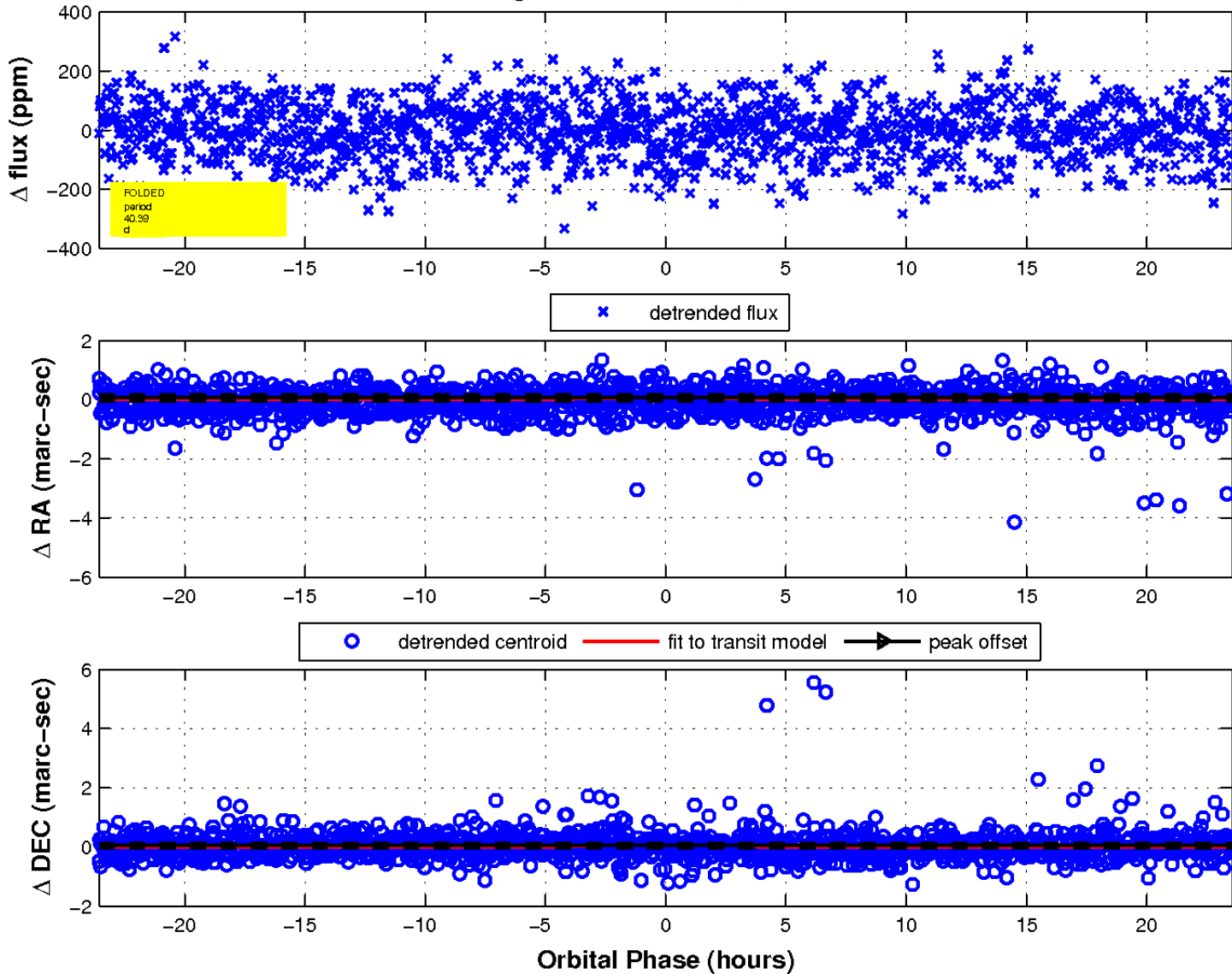
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 2 of 2



UKIRT Image

Declination

