

KIC 011506988

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})
011506988-01	OBS	No	367.926188	339.211121	51.6	4.055	8.5	3.4	1.79	6223	1.48	3.88
011506988-02	OBS	No	348.258177	344.647693	130.8	3.765	8.9	8.6	1.79	6223	2.30	4.18

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011506988-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—CENT_SATURATED
011506988-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—ALL_TRANS_CHASES—CENT_SATURATED

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

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

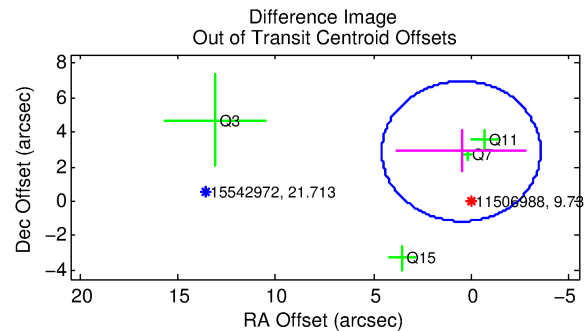
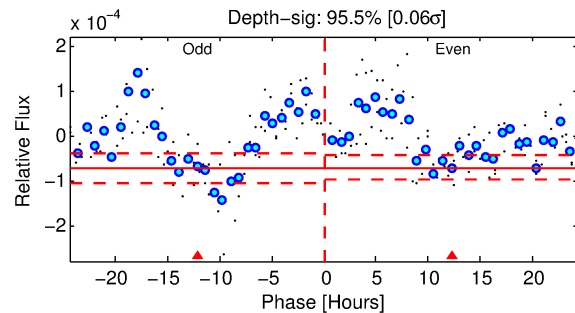
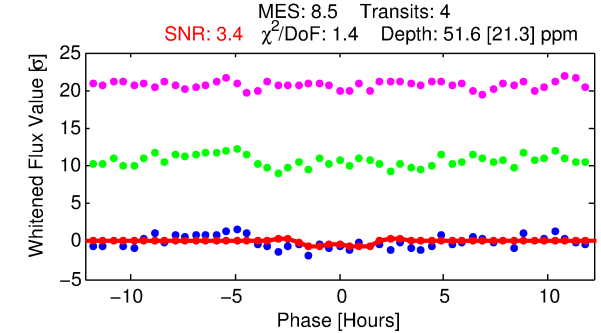
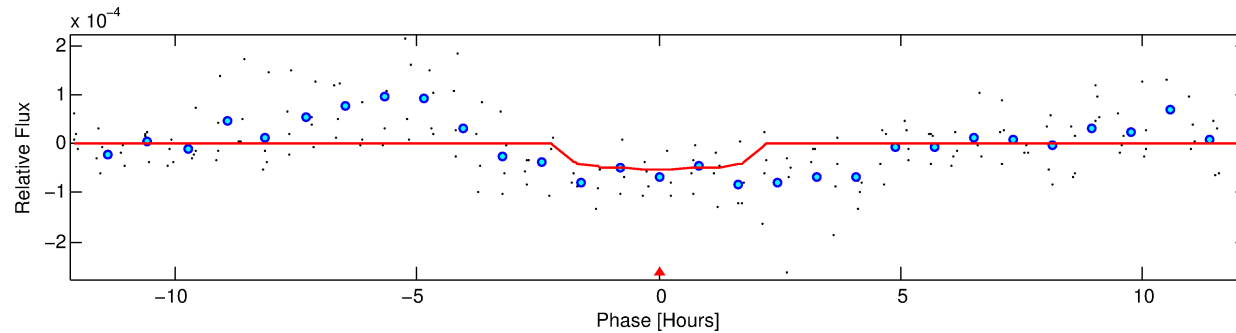
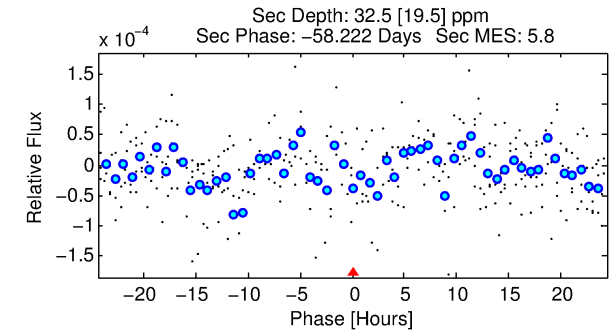
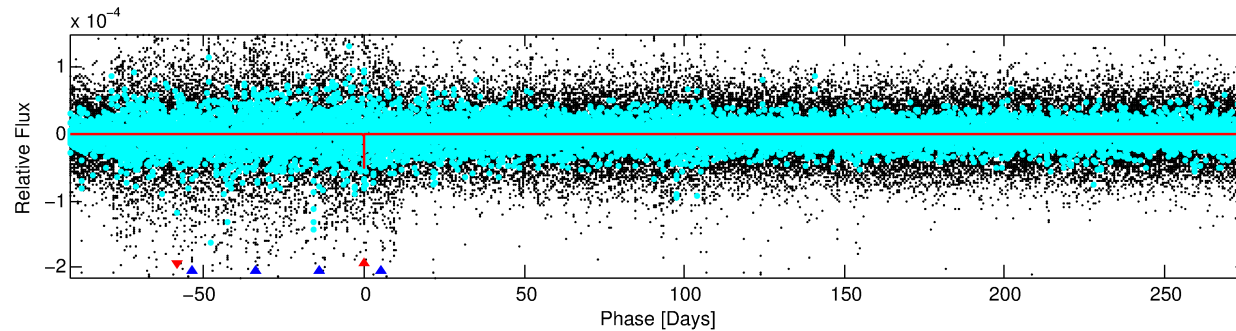
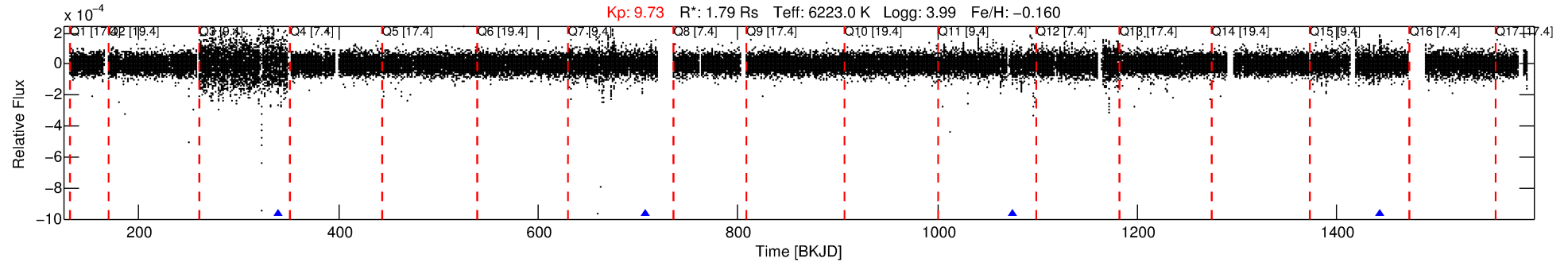
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 011506988-01

No Significant Match Found

DV One-Page Summary

KIC: 11506988 Candidate: 1 of 2 Period: 367.926 d



DV Fit Results:

Period = 367.92619 [0.00864] d
Epoch = 339.2111 [0.0159] BKJD
Rp/R* = 0.0076 [0.0061]
a/R* = 347.52 [1402.61]
b = 0.87 [1.10]
Seff = 3.88 [0.31]
Teq = 358 [7] K
Rp = 1.48 [1.19] Re
a = 1.0554 [0.0534] AU
Ag = 9056.86 [15515.80] [0.58σ]
Teffp = 5399 [2312] K [2.18σ]

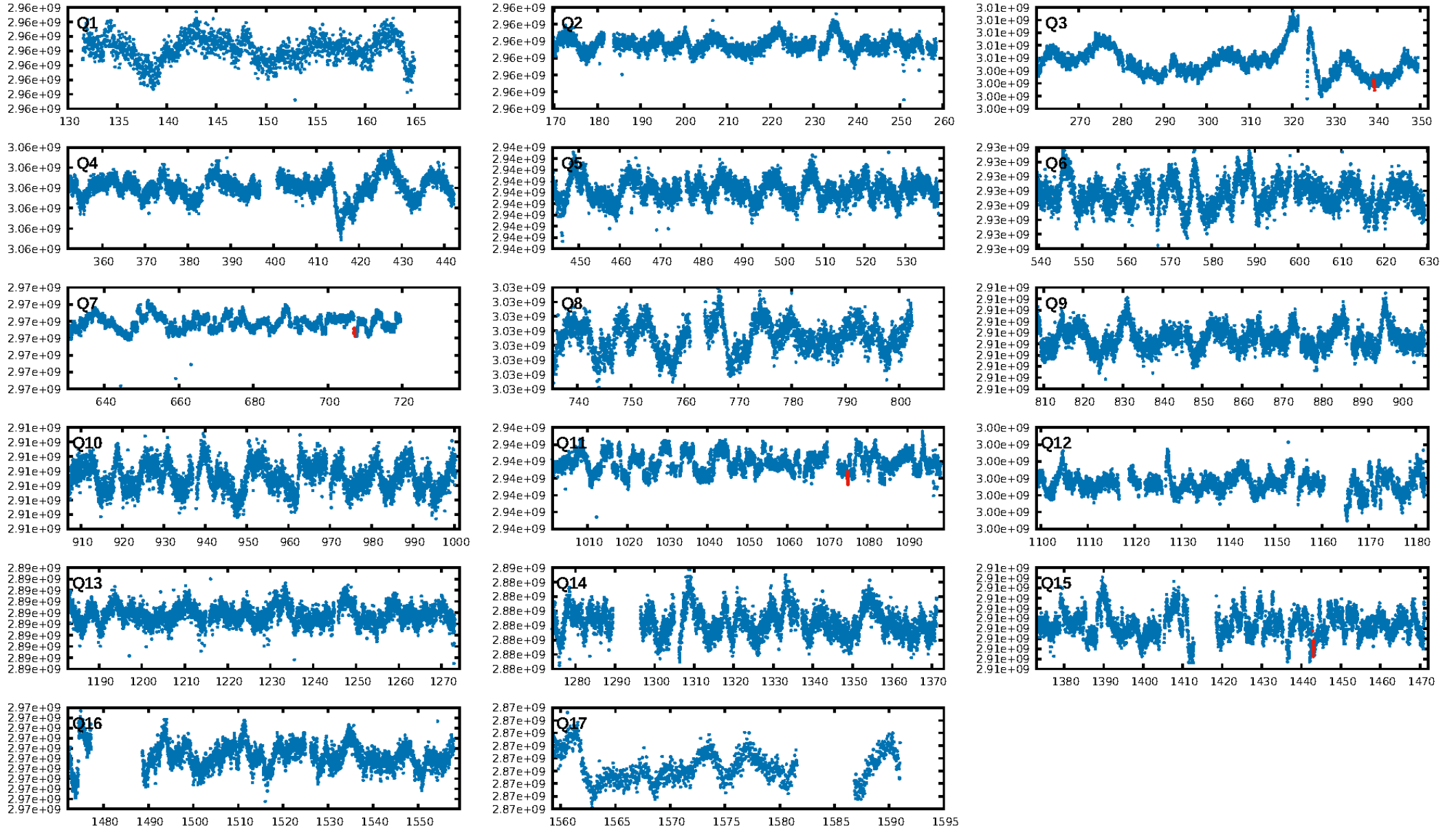
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [85.31σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 97.2%
ModelChiSquareGof-sig: 97.7%
Bootstrap-pfa: 1.07e-11
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: N/A
Centroid-sig: 19.7%
Centroid-so: 3.744 arcsec [1.26σ]
OotOffset-rm: 2.935 arcsec [2.17σ]
OotOffset-st: 0/4/0/0 [4]
KicOffset-rm: 4.430 arcsec [2.36σ]
KicOffset-st: 0/4/0/0 [4]
DiffImageQuality-fgm: 0.00 [0/4]
DiffImageOverlap-fno: 1.00 [4/4]

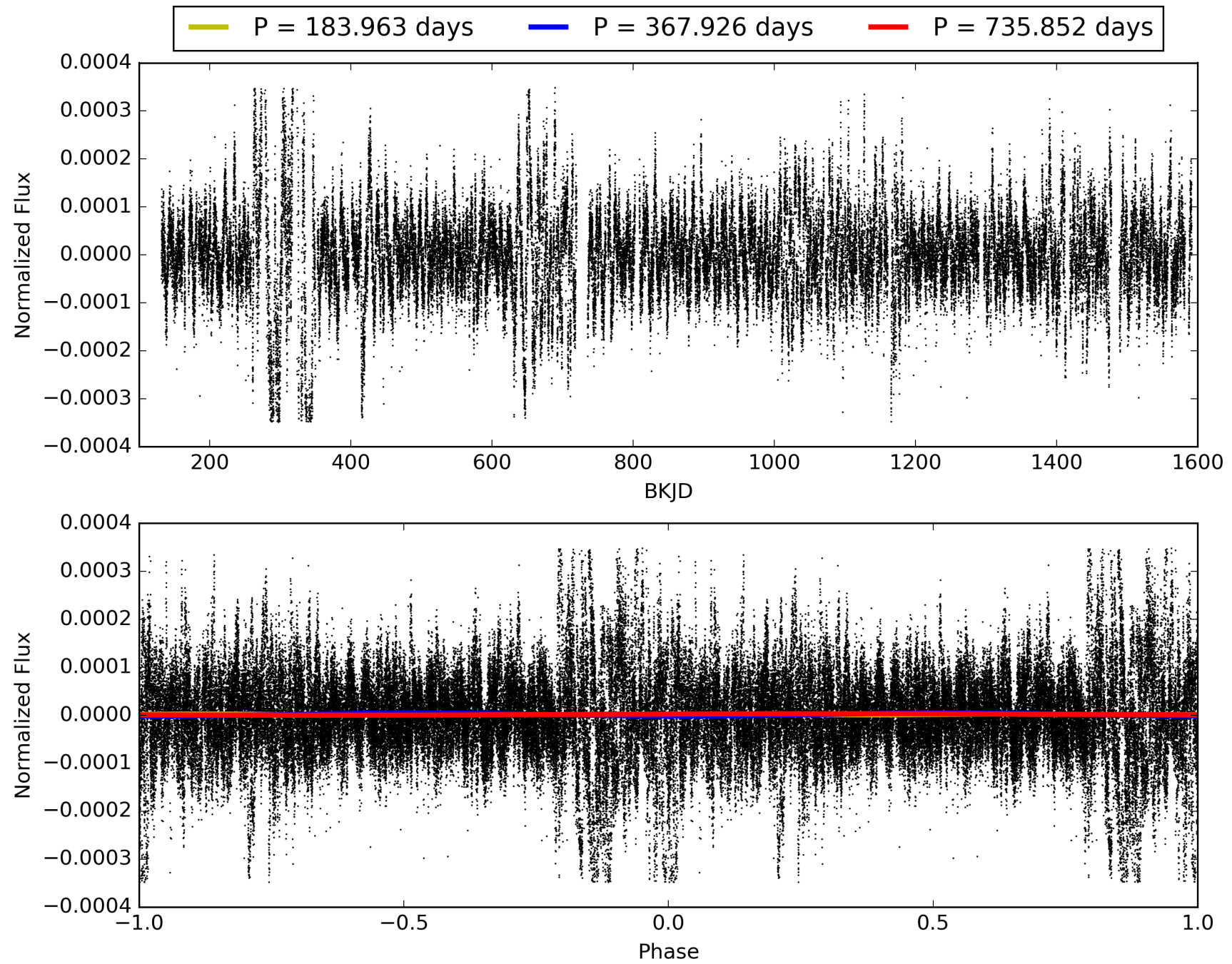
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 011506988-01, PDC Light Curves

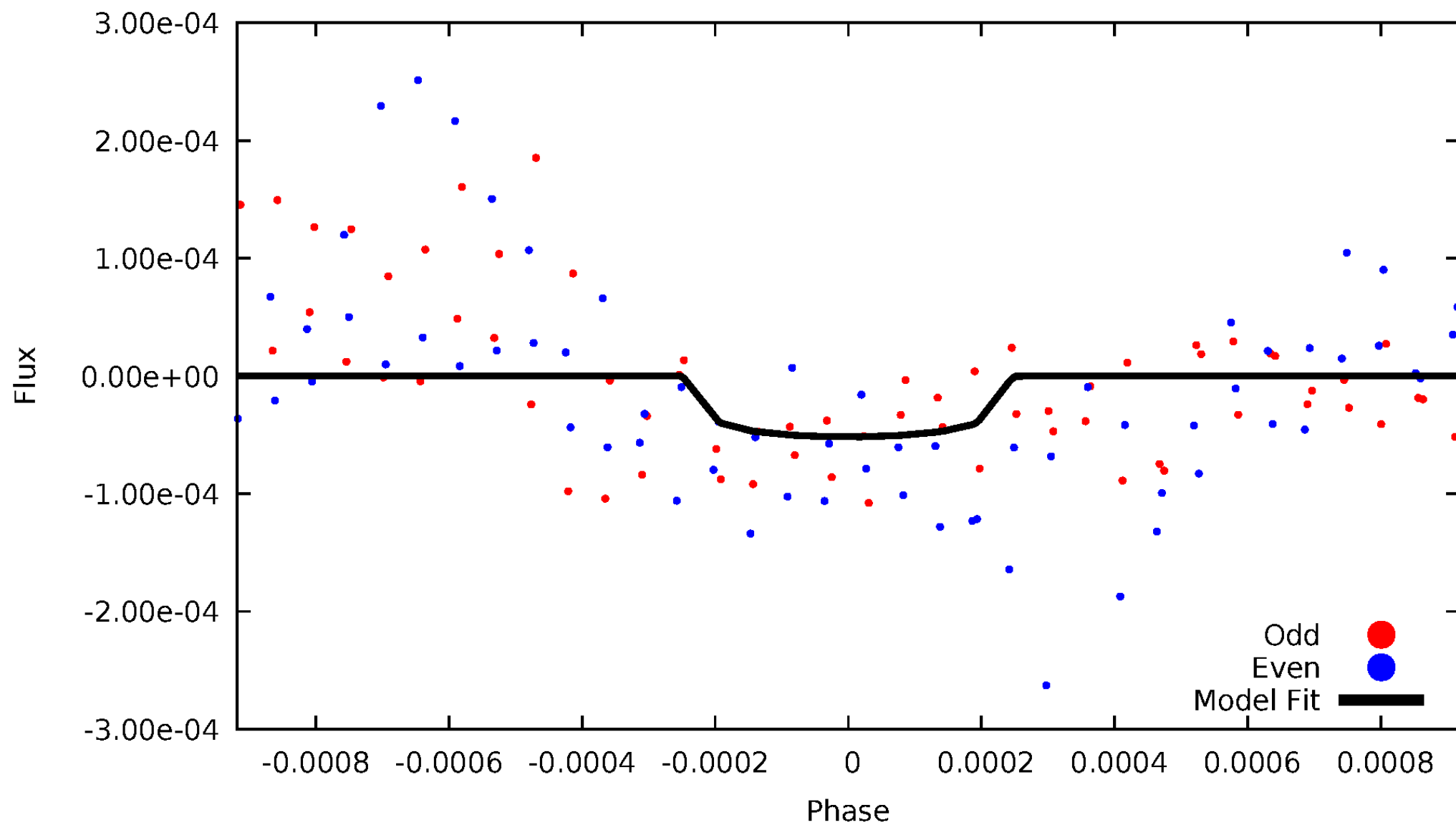


TCE 011506988-01



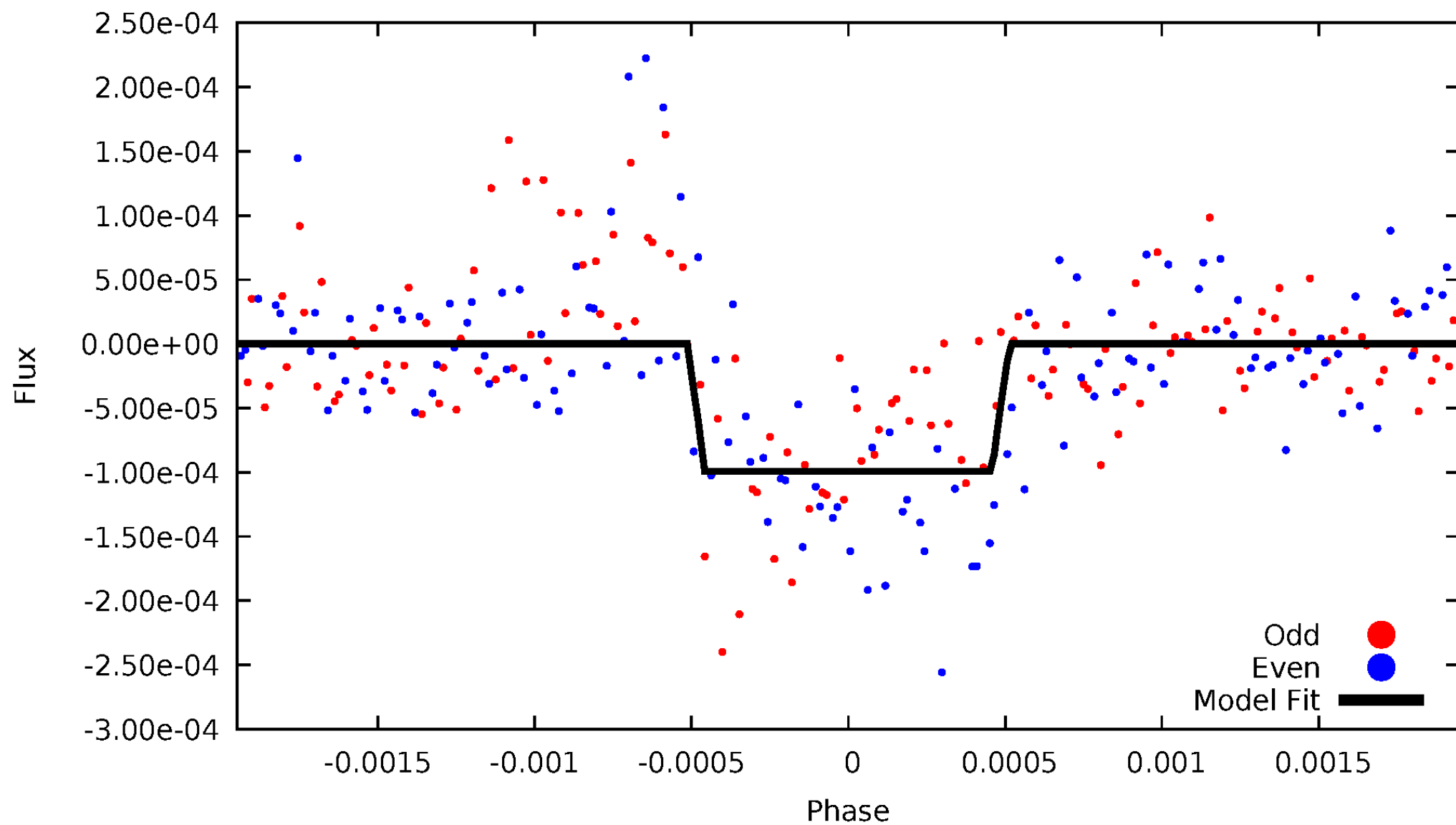
DV Odd/Even

TCE 011506988-01

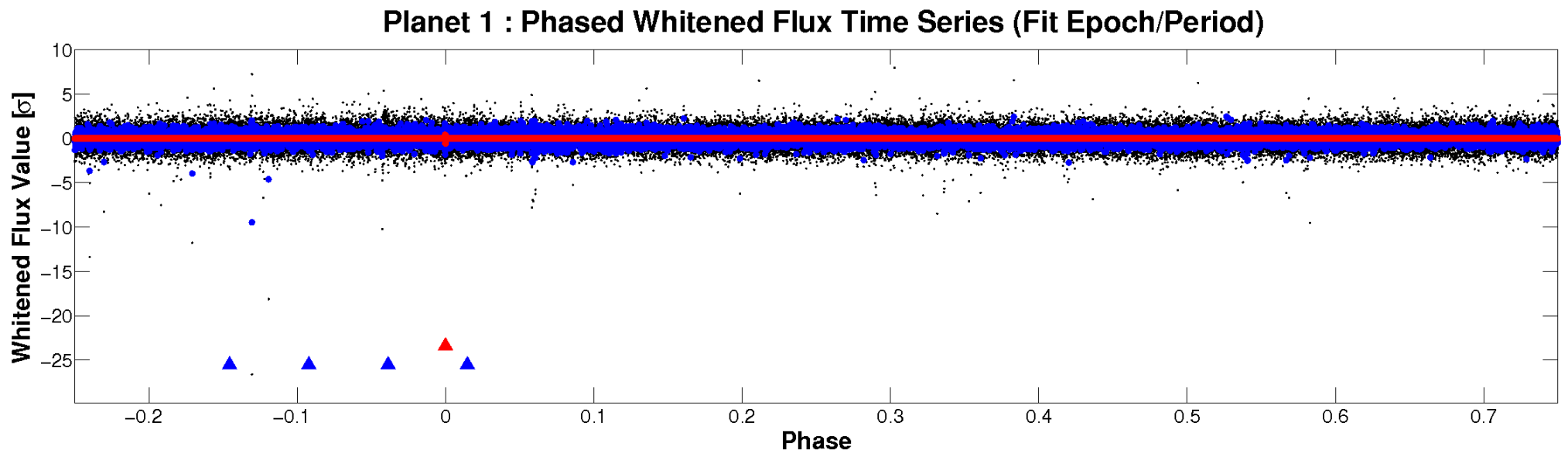
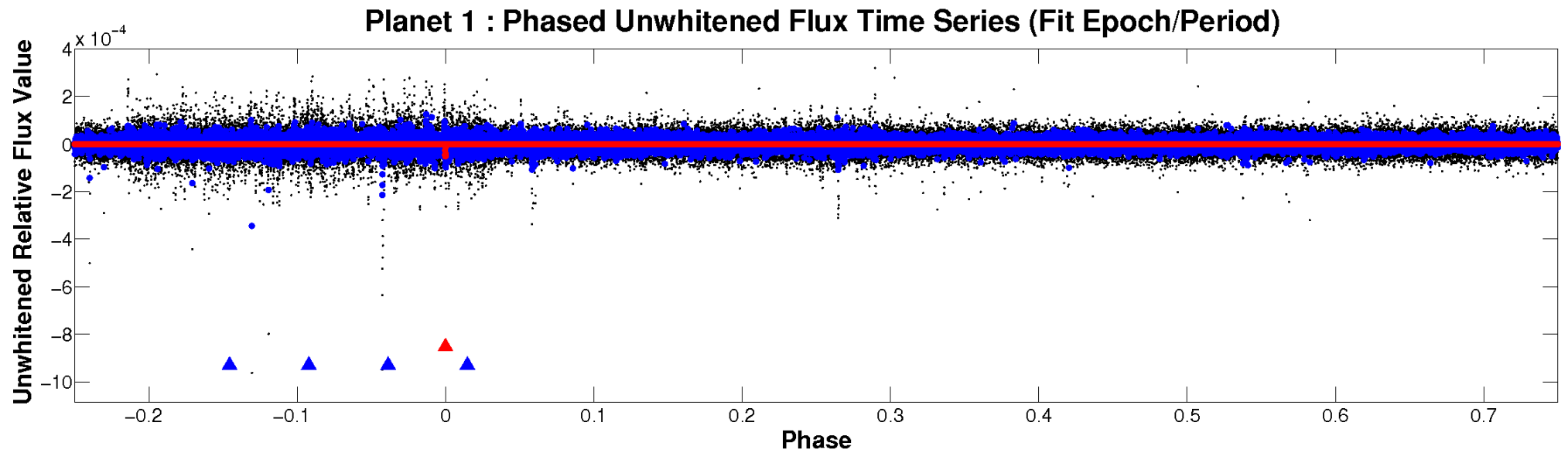


ALT Odd/Even

TCE 011506988-01

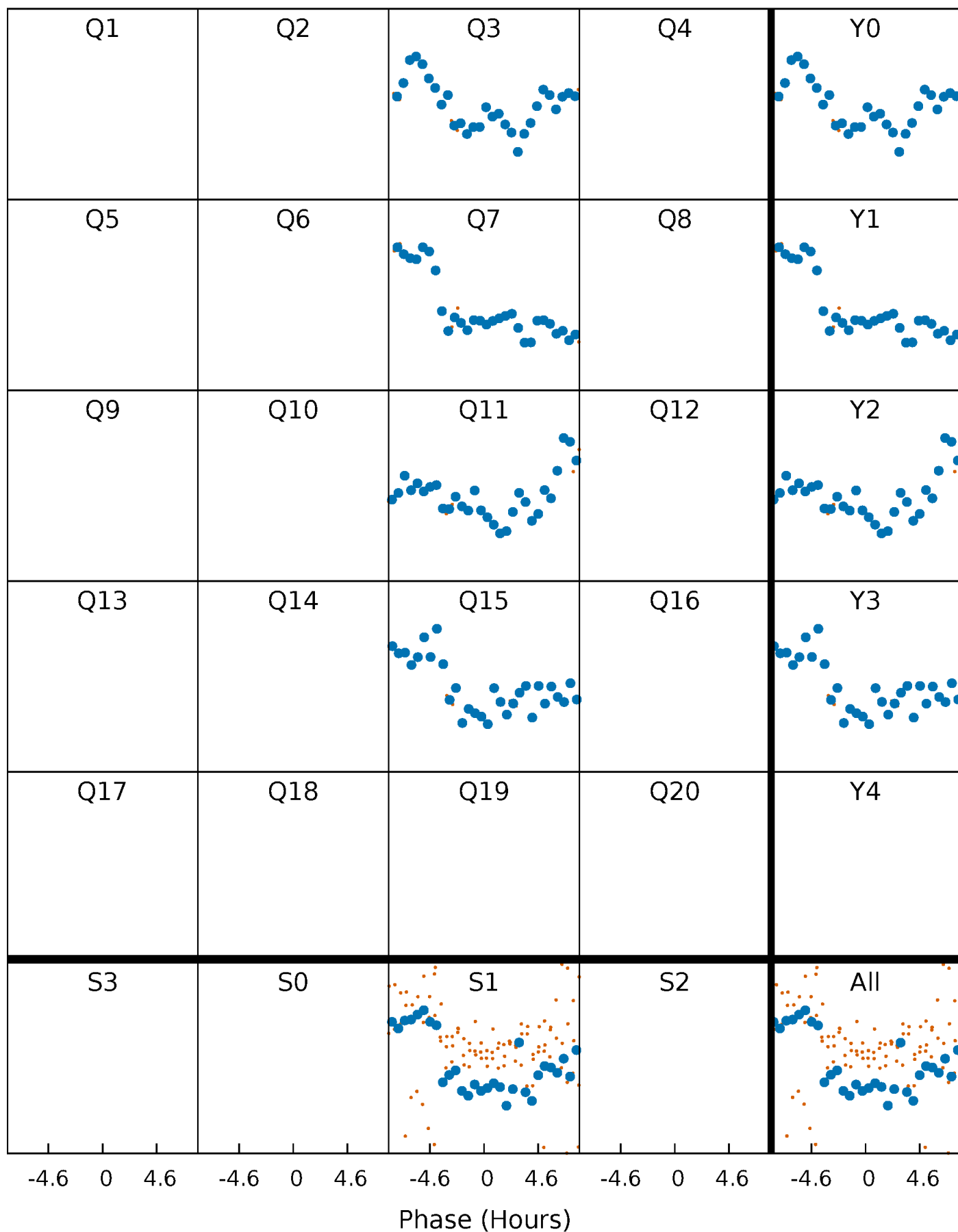


Non-Whitened Vs. Whitened Light Curve



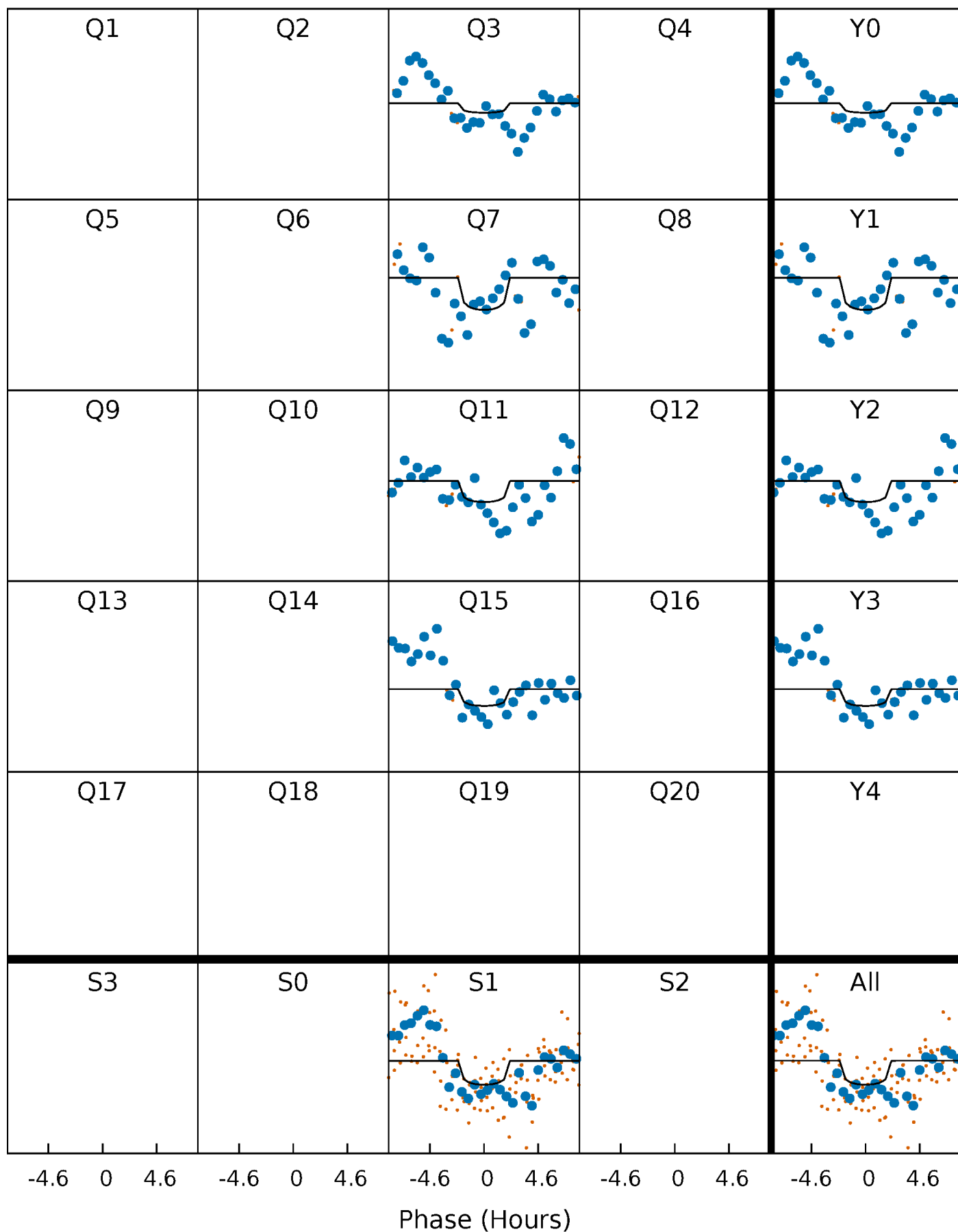
PDC Quarter-Phased Transit Curves

TCE 011506988-01 P=367.926188 Days $T_0=339.211121$ (BKJD)



DV Quarter-Phased Transit Curves

TCE 011506988-01 P=367.926188 Days $T_0=339.211121$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

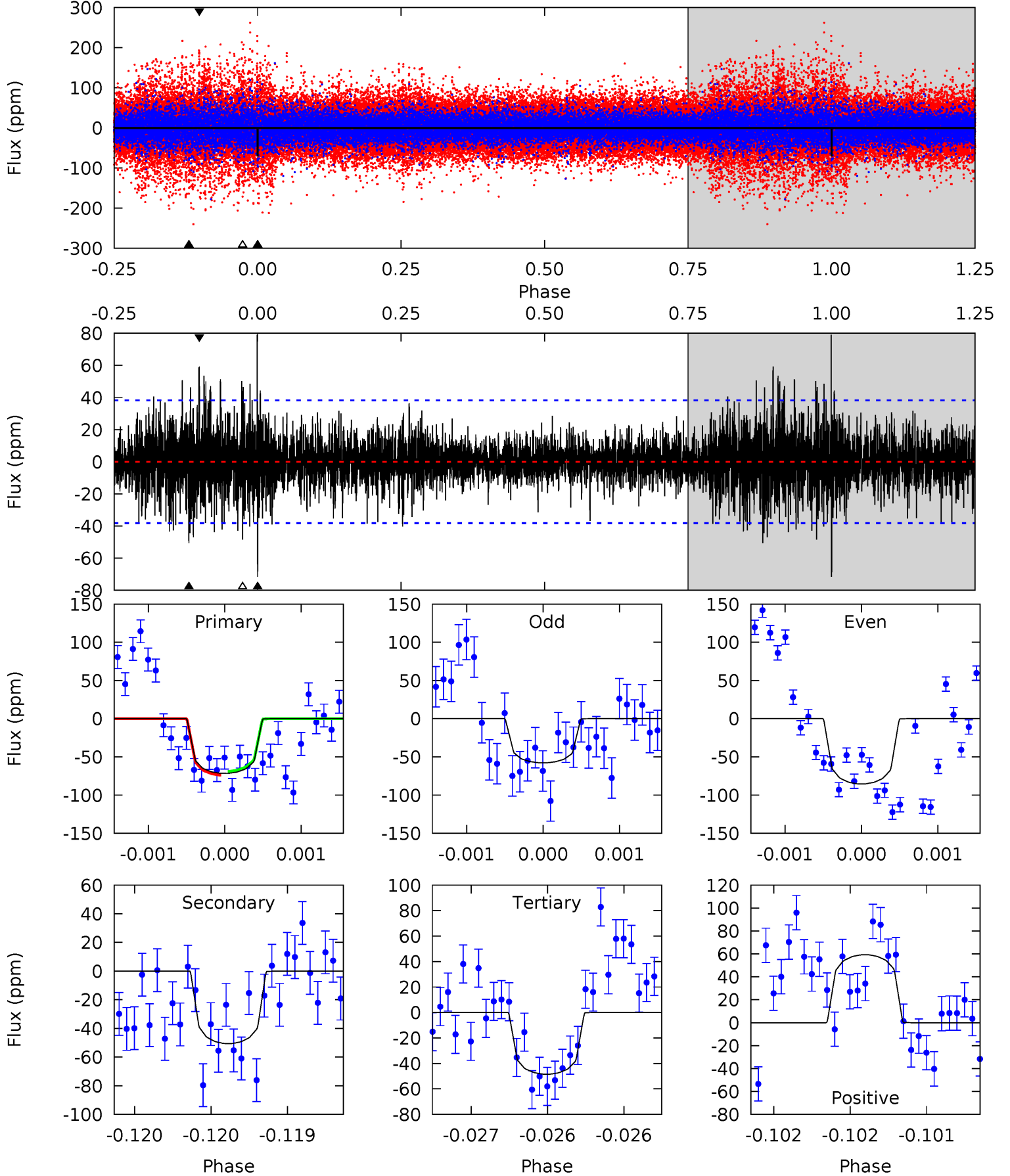
TCE 011506988-01 P=367.940304 Days $T_0=339.210674$ (BKJD)



DV Model-Shift Uniqueness Test

011506988-01, P = 367.926188 Days, E = 339.211121 Days

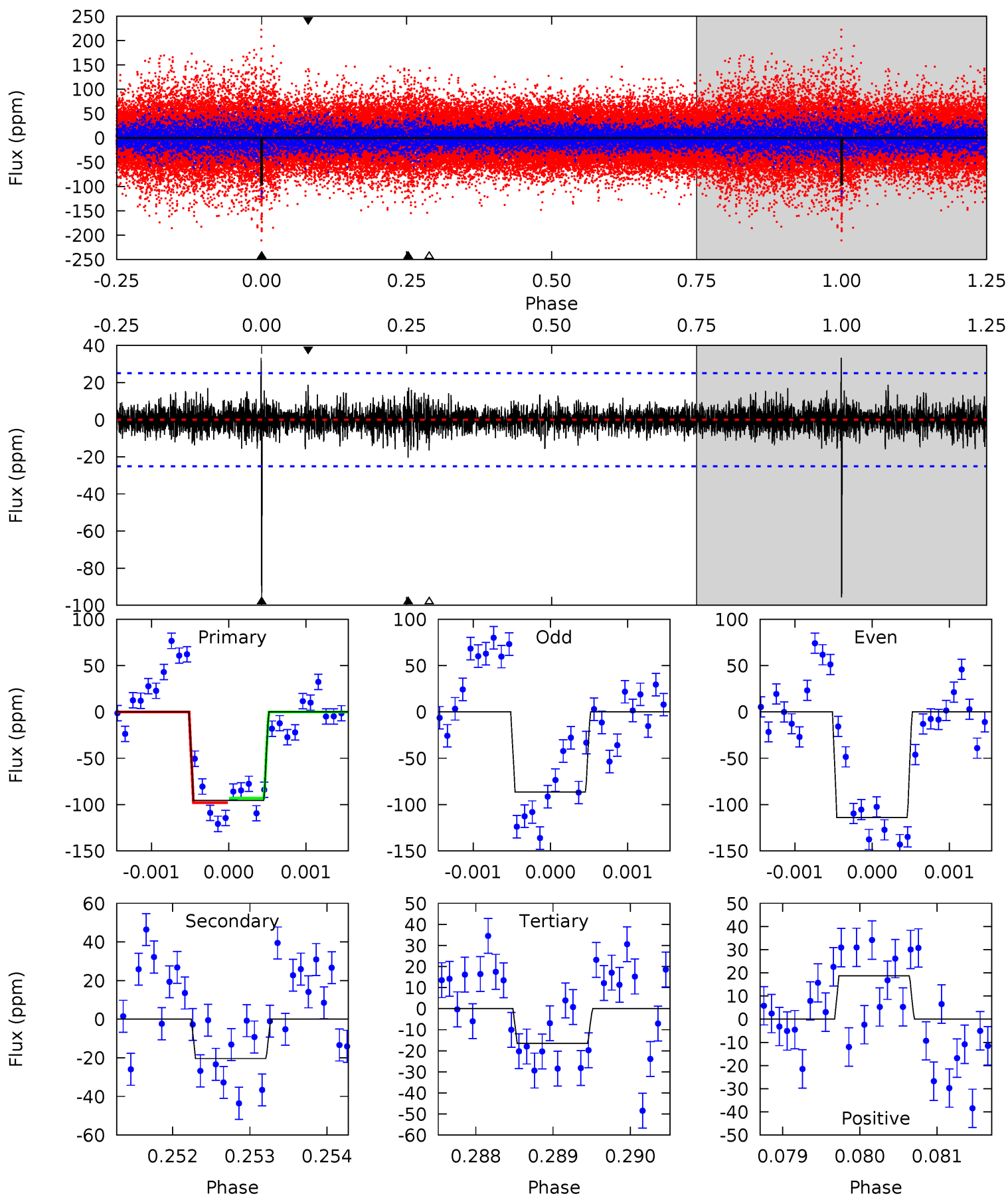
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.4	7.37	7.06	8.63	5.57	3.48	1.68	3.37	1.80	0.32	-1.26	1.96	0.97	0.53	0.36



Alt Model-Shift Uniqueness Test

011506988-01, P = 367.940304 Days, E = 339.210674 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
20.8	4.44	3.59	4.08	5.45	3.29	0.97	17.2	16.7	0.85	0.36	3.01	0.91	0.26	0.55



Stellar Parameters For KIC 011506988

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6223^{+80}_{-74}	$3.994^{+0.025}_{-0.025}$	$-0.160^{+0.150}_{-0.150}$	$1.794^{+0.126}_{-0.095}$	$1.158^{+0.173}_{-0.086}$	$0.282^{+0.031}_{-0.028}$
	+1%/-1%	+1%/-1%	+94%/-94%	+7%/-5%	+15%/-7%	+11%/-10%
Source	SPE72	AST10	SPE72	DSEP		

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

Secondary Eclipse Parameters for KIC 011506988-01 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-51 ± 7	$1.64^{+1.13}_{-0.94}$	501^{+9}_{-8}	5724^{+3806}_{-1137}	11468^{+54024}_{-7389}
Alt.	-20 ± 5	$1.97^{+1.23}_{-1.05}$	500^{+9}_{-8}	4404^{+1689}_{-715}	3406^{+11261}_{-2186}

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 $A_{obs} \gg 1.0$

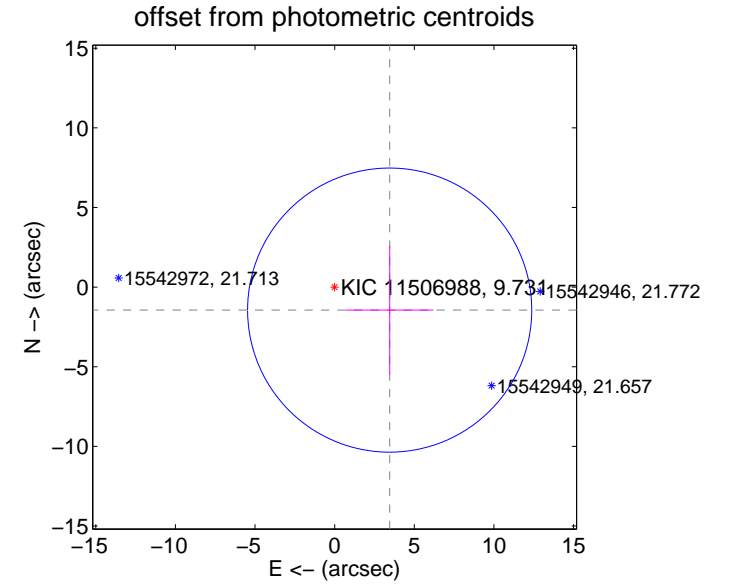
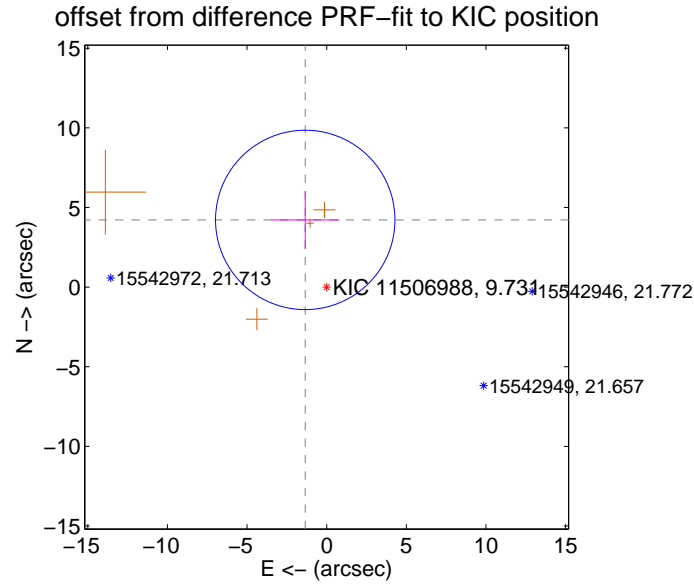
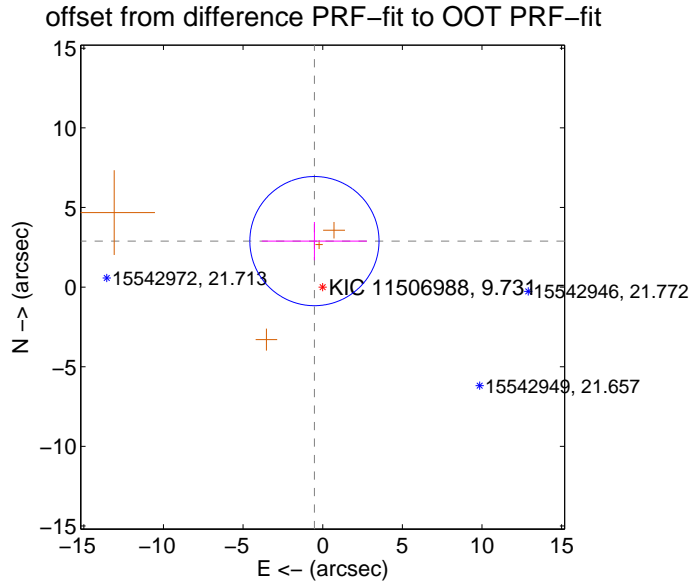
DV Centroid Data

Supplemental centroid analysis for 011506988-01. **Kepler magnitude: 9.73.** Transit SNR 3.44

There are 0 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 1.54 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	2.935 ± 1.352	2.17	0.520 ± 3.304	2.888 ± 1.202
PRF-fit source offset from KIC position	4.430 ± 1.878	2.36	1.348 ± 2.140	4.220 ± 1.807
photometric centroid source offset	3.74 ± 2.97	1.26	-3.45 ± 2.75	-1.45 ± 4.03



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.

Q1 no difference image



Q1 no OOT image



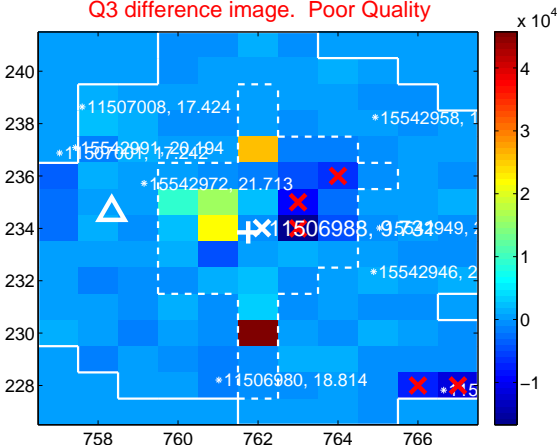
Q2 no difference image



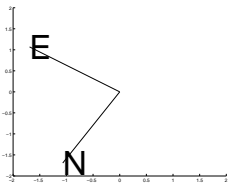
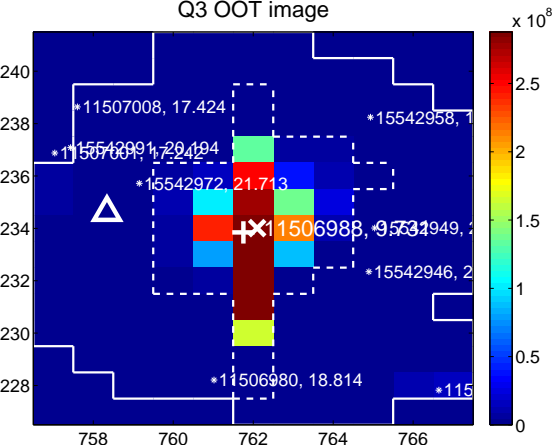
Q2 no OOT image



Q3 difference image. Poor Quality



Q3 OOT image



Q4 no difference image



Q4 no OOT image



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

Q5 no difference image



Q5 no OOT image



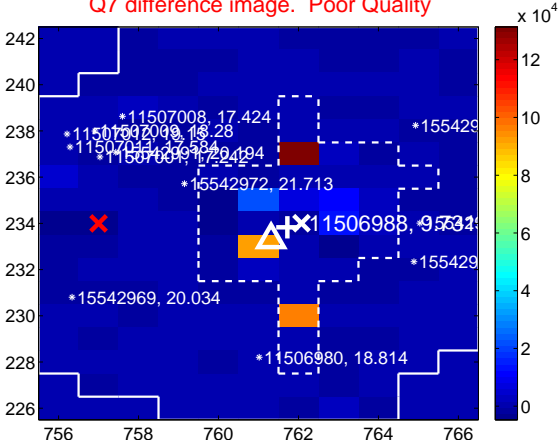
Q6 no difference image



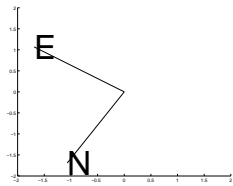
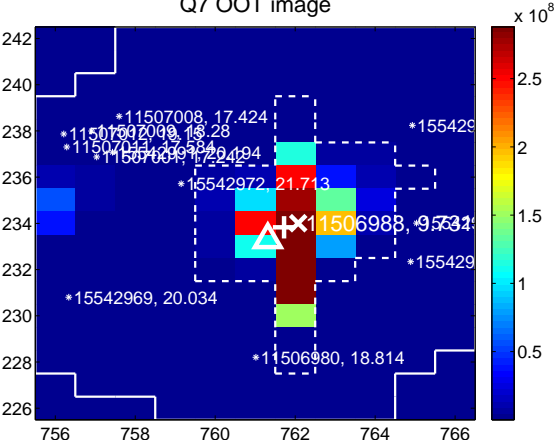
Q6 no OOT image



Q7 difference image. Poor Quality



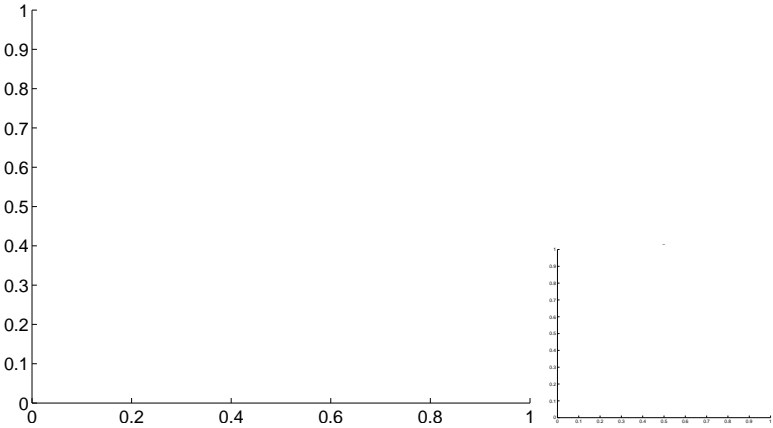
Q7 OOT image



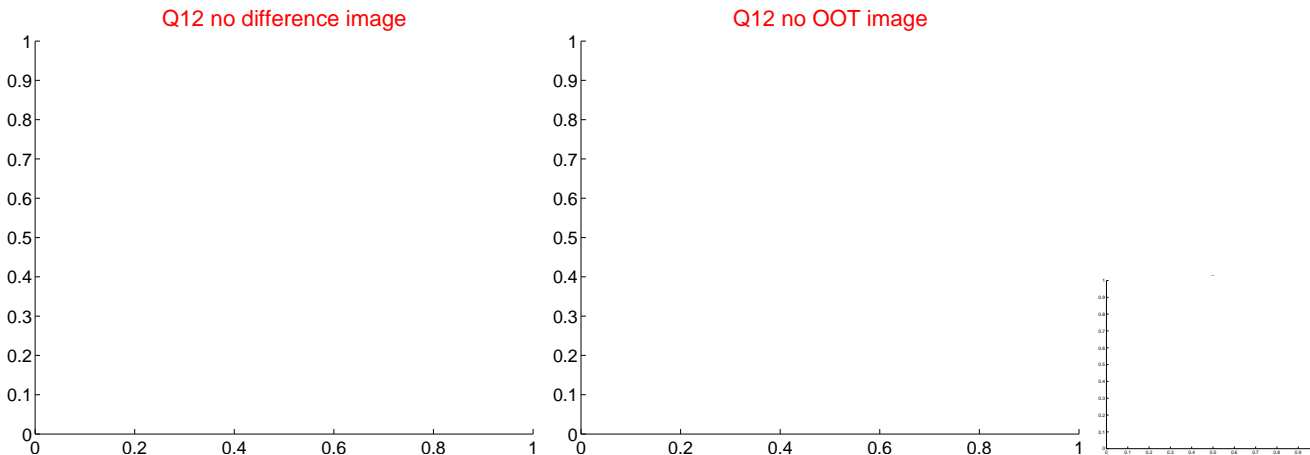
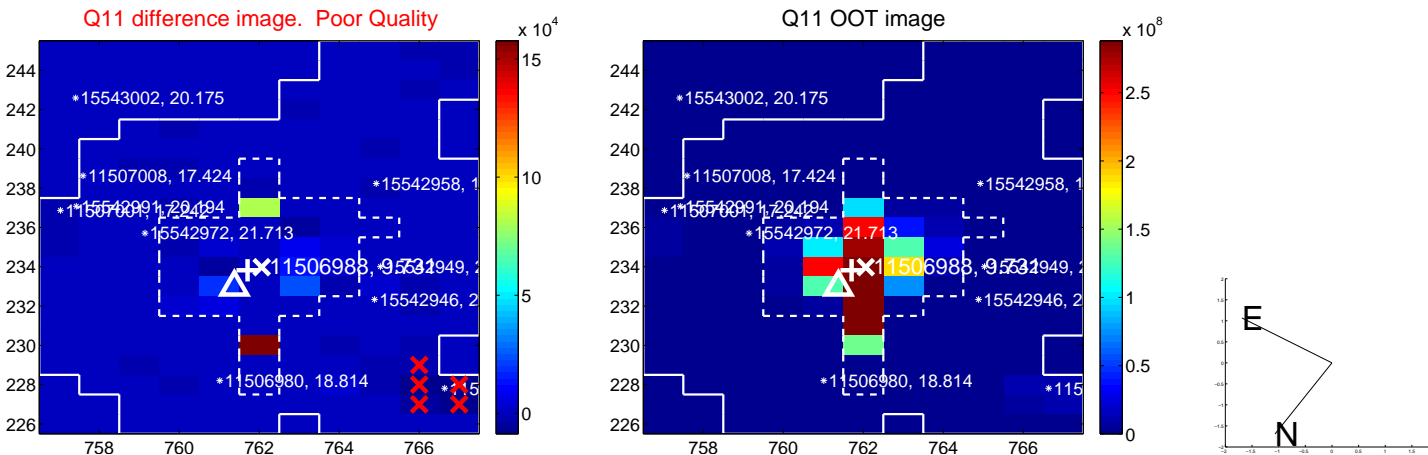
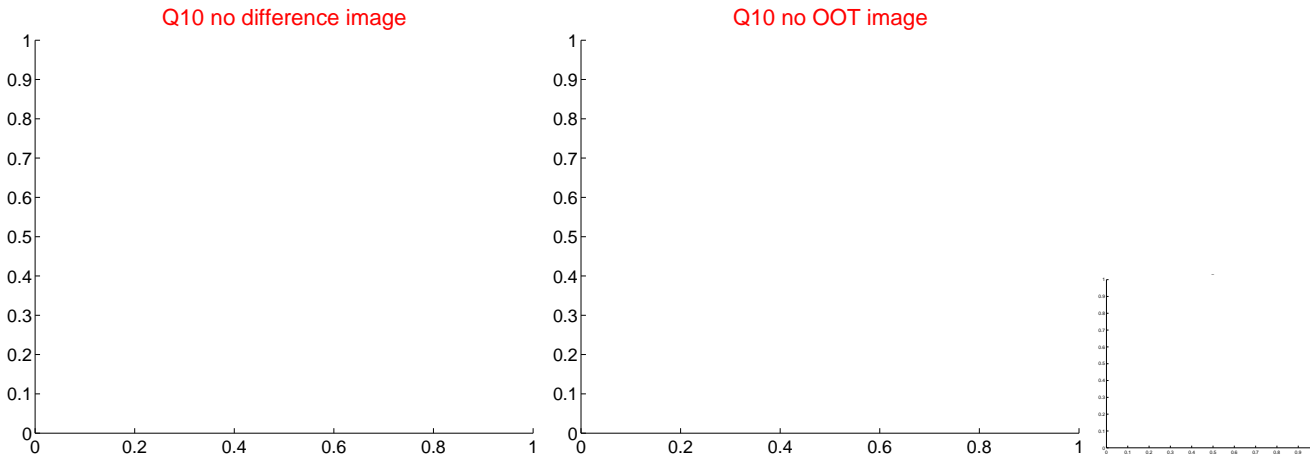
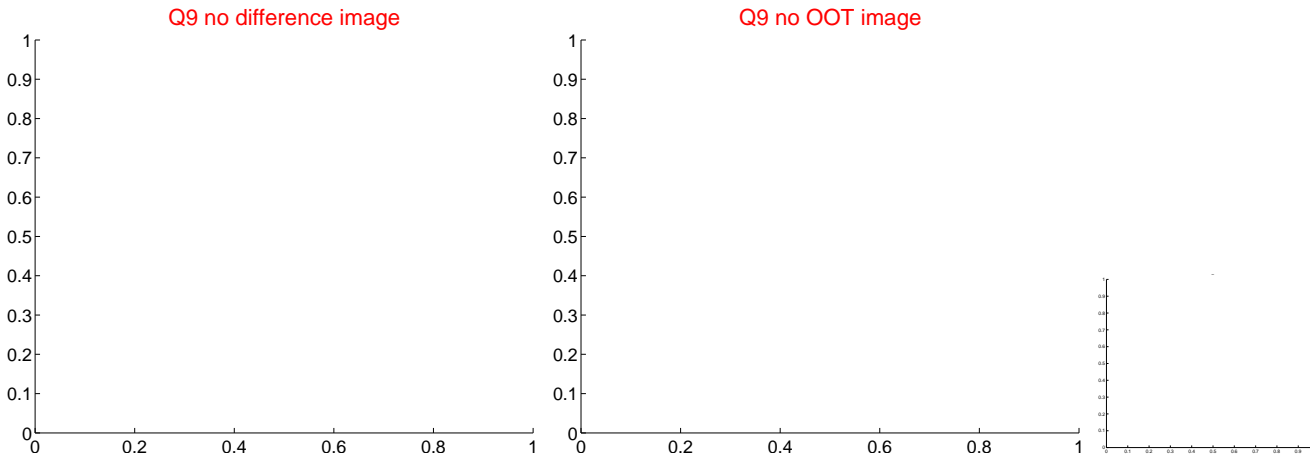
Q8 no difference image



Q8 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.

Q13 no difference image



Q13 no OOT image



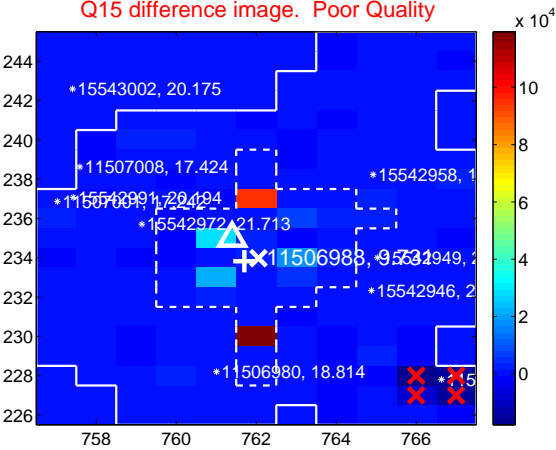
Q14 no difference image



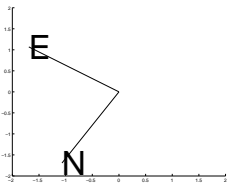
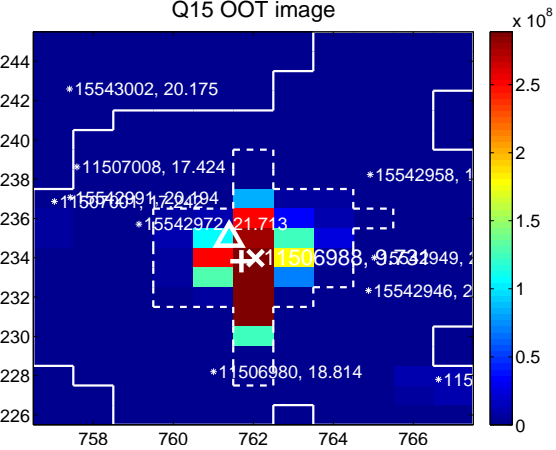
Q14 no OOT image



Q15 difference image. Poor Quality



Q15 OOT image



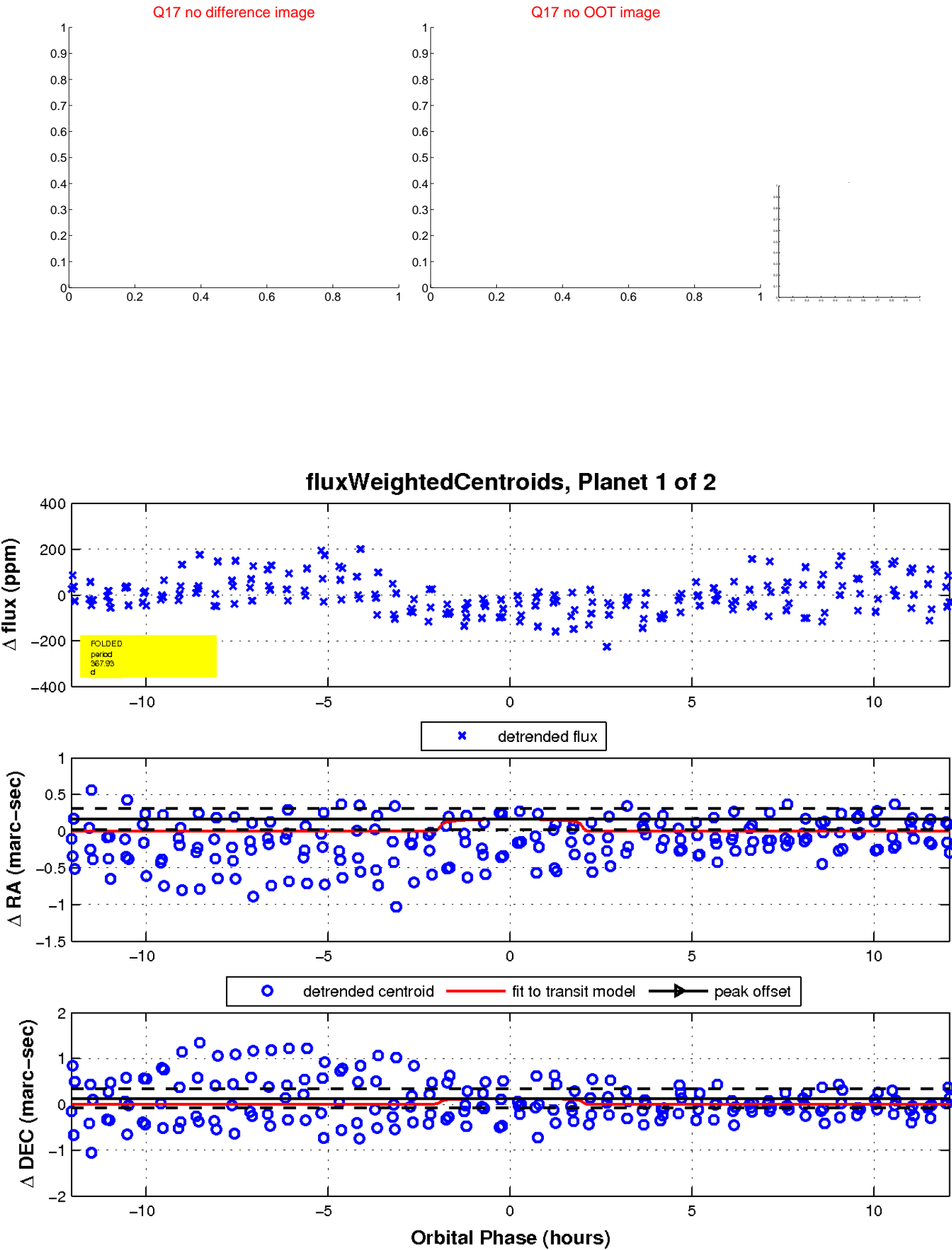
Q16 no difference image



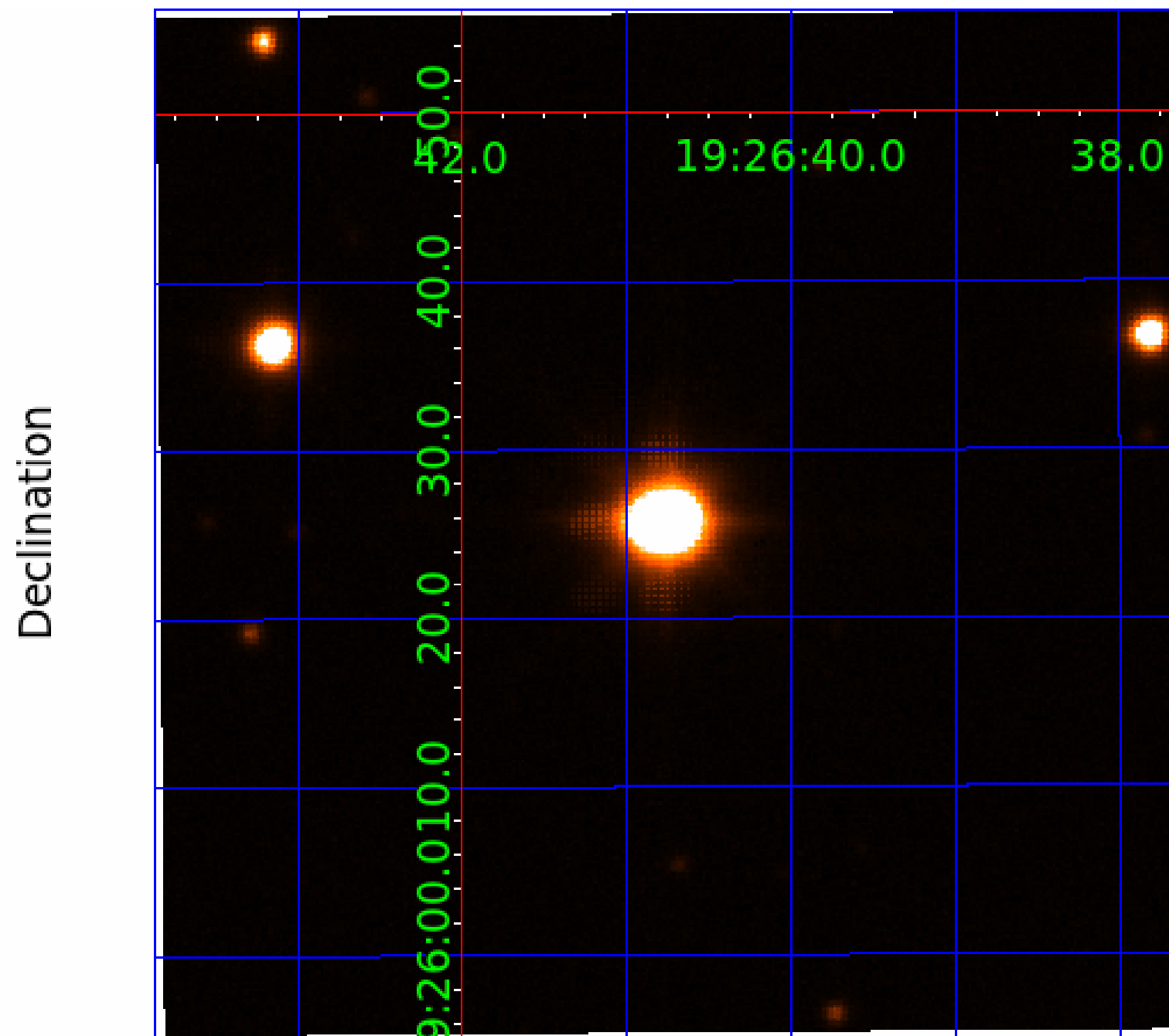
Q16 no OOT image



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



UKIRT Image



KIC 011506988

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})
011506988-01	OBS	No	367.926188	339.211121	51.6	4.055	8.5	3.4	1.79	6223	1.48	3.88
011506988-02	OBS	No	348.258177	344.647693	130.8	3.765	8.9	8.6	1.79	6223	2.30	4.18

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011506988-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—CENT_SATURATED
011506988-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—ALL_TRANS_CHASES—CENT_SATURATED

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

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

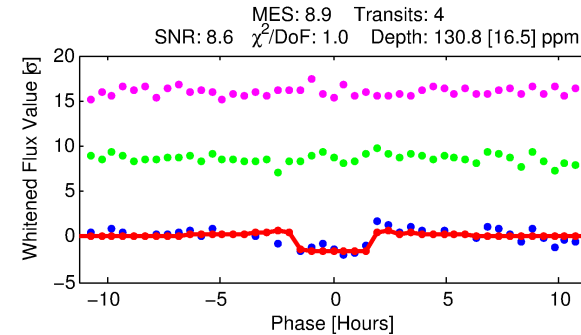
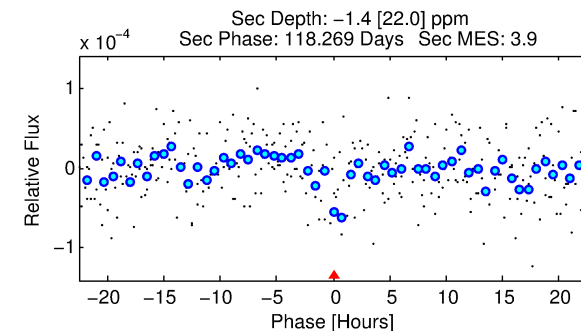
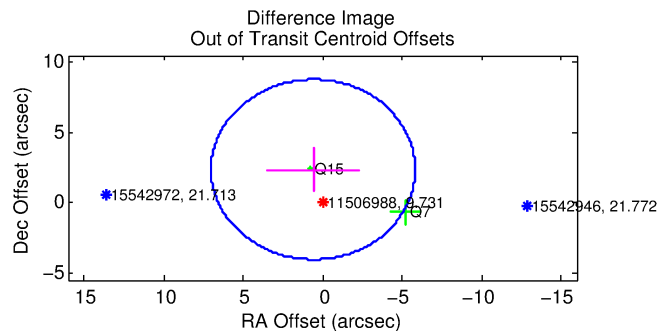
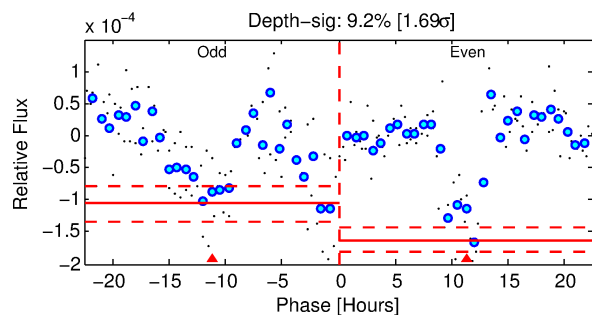
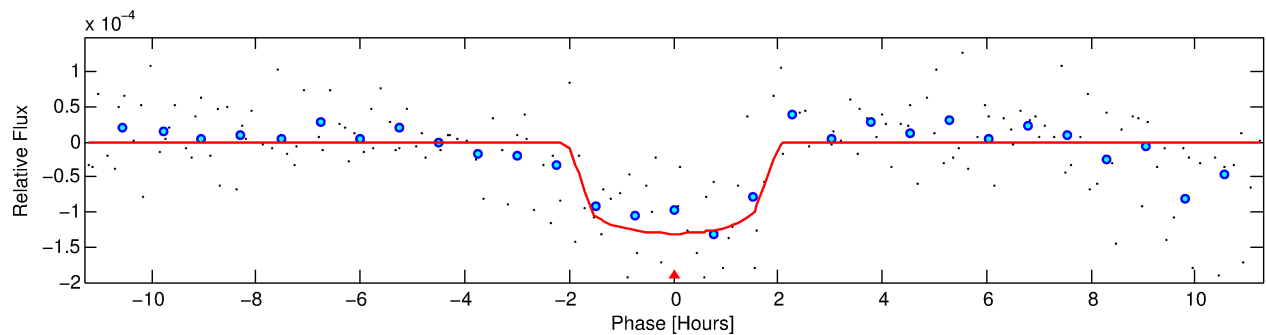
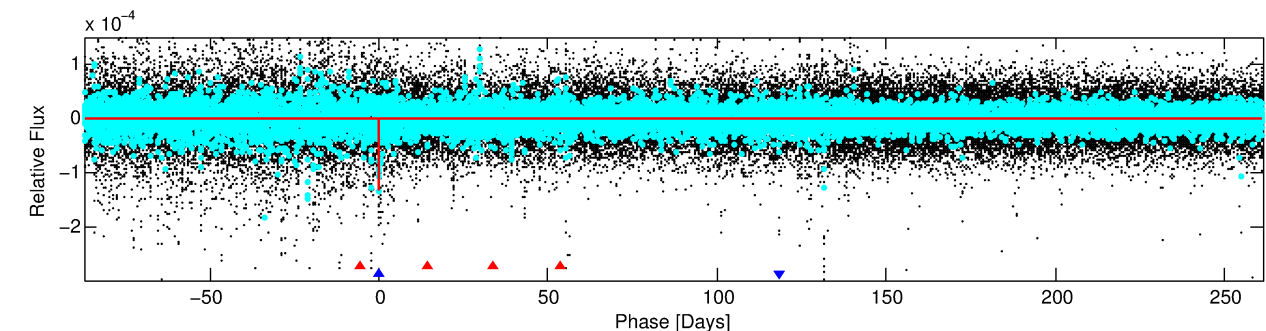
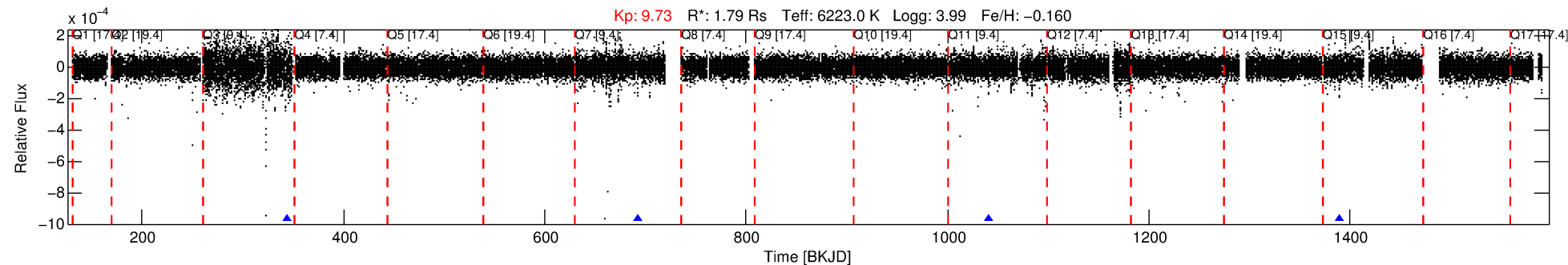
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 011506988-02

No Significant Match Found

DV One-Page Summary

KIC: 11506988 Candidate: 2 of 2 Period: 348.258 d



DV Fit Results:

Period = 348.25818 [0.00309] d
Epoch = 344.6477 [0.0052] BKJD
Rp/R* = 0.0118 [0.0040]
a/R* = 409.25 [705.79]
b = 0.83 [0.66]
Seff = 4.18 [0.33]
Teff = 365 [7] K
Rp = 2.30 [0.80] Re
a = 1.0174 [0.0515] AU
Ag = N/A
Teffp = N/A

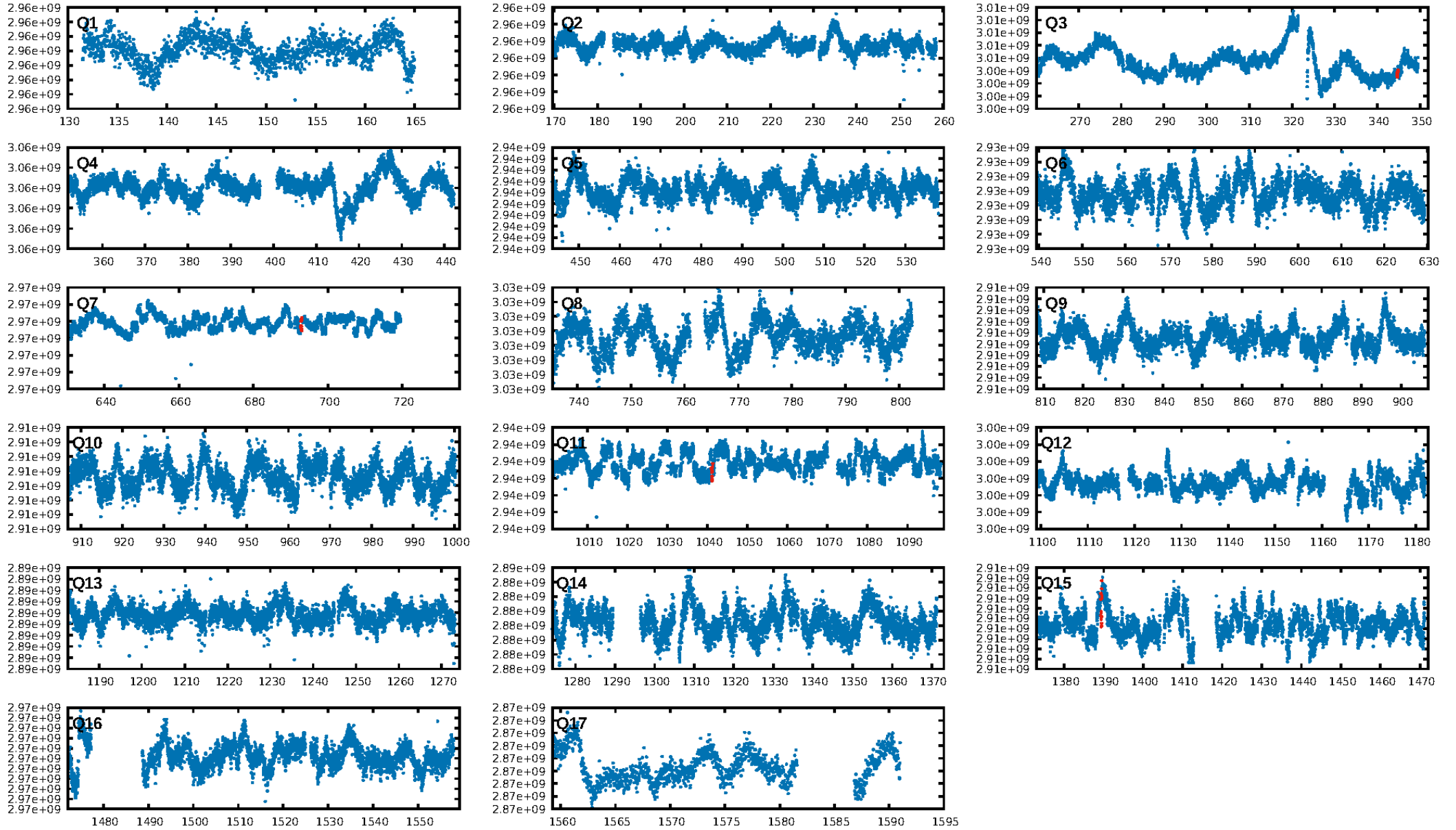
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [85.31 σ]
ModelChiSquare2-sig: 69.1%
ModelChiSquareGof-sig: 78.5%
Bootstrap-pfa: 2.81e-10
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: N/A
Centroid-sig: 70.4%
Centroid-so: 1.730 arcsec [1.24 σ]
OotOffset-rm: 2.437 arcsec [1.14 σ]
KicOffset-rm: 3.885 arcsec [3.16 σ]
OotOffset-st: 0/2/0/0 [2]
KicOffset-st: 0/2/0/0 [2]
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DiffImageOverlap-fno: 1.00 [3/3]

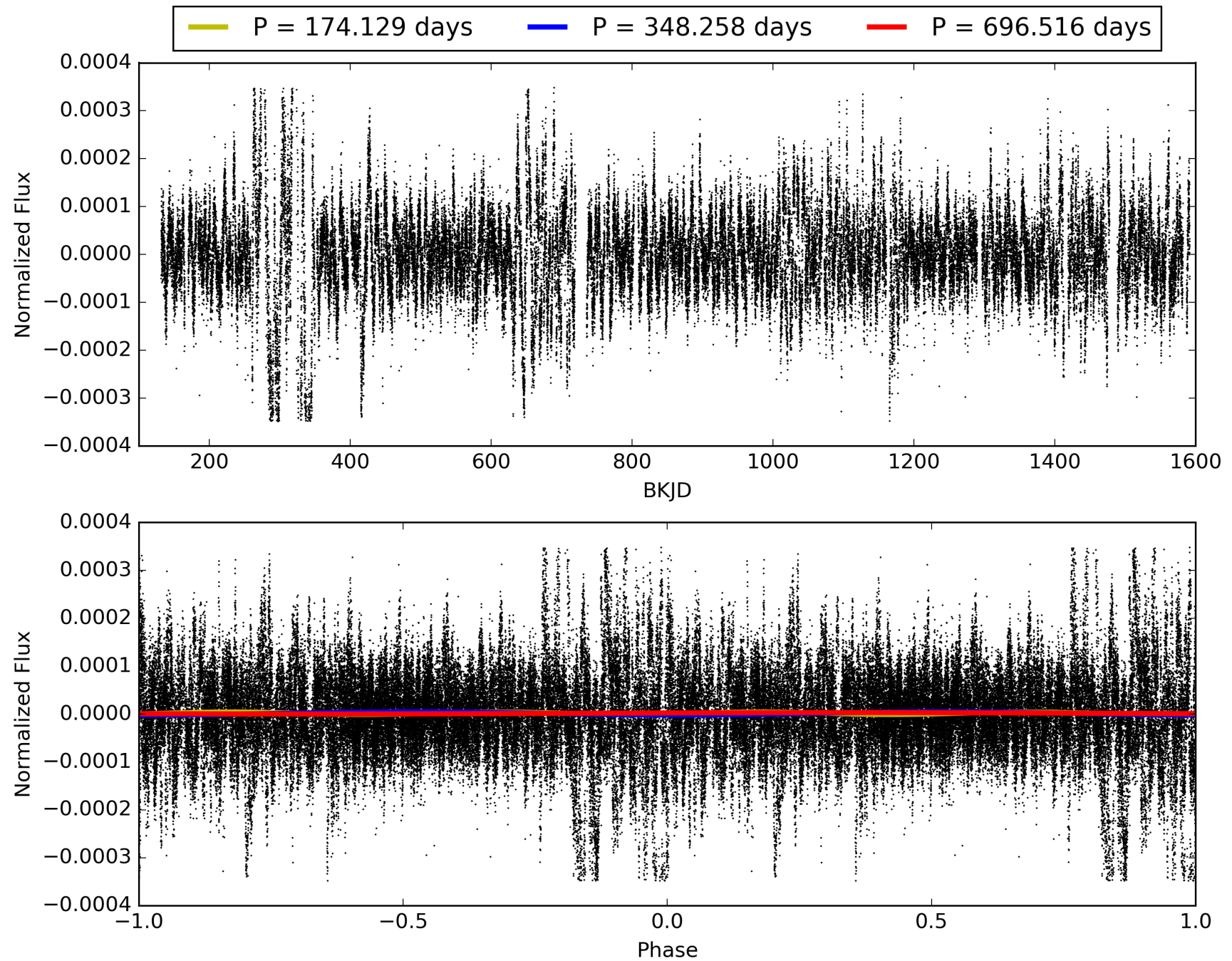
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 01:44:41 Z

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

TCE 011506988-02, PDC Light Curves

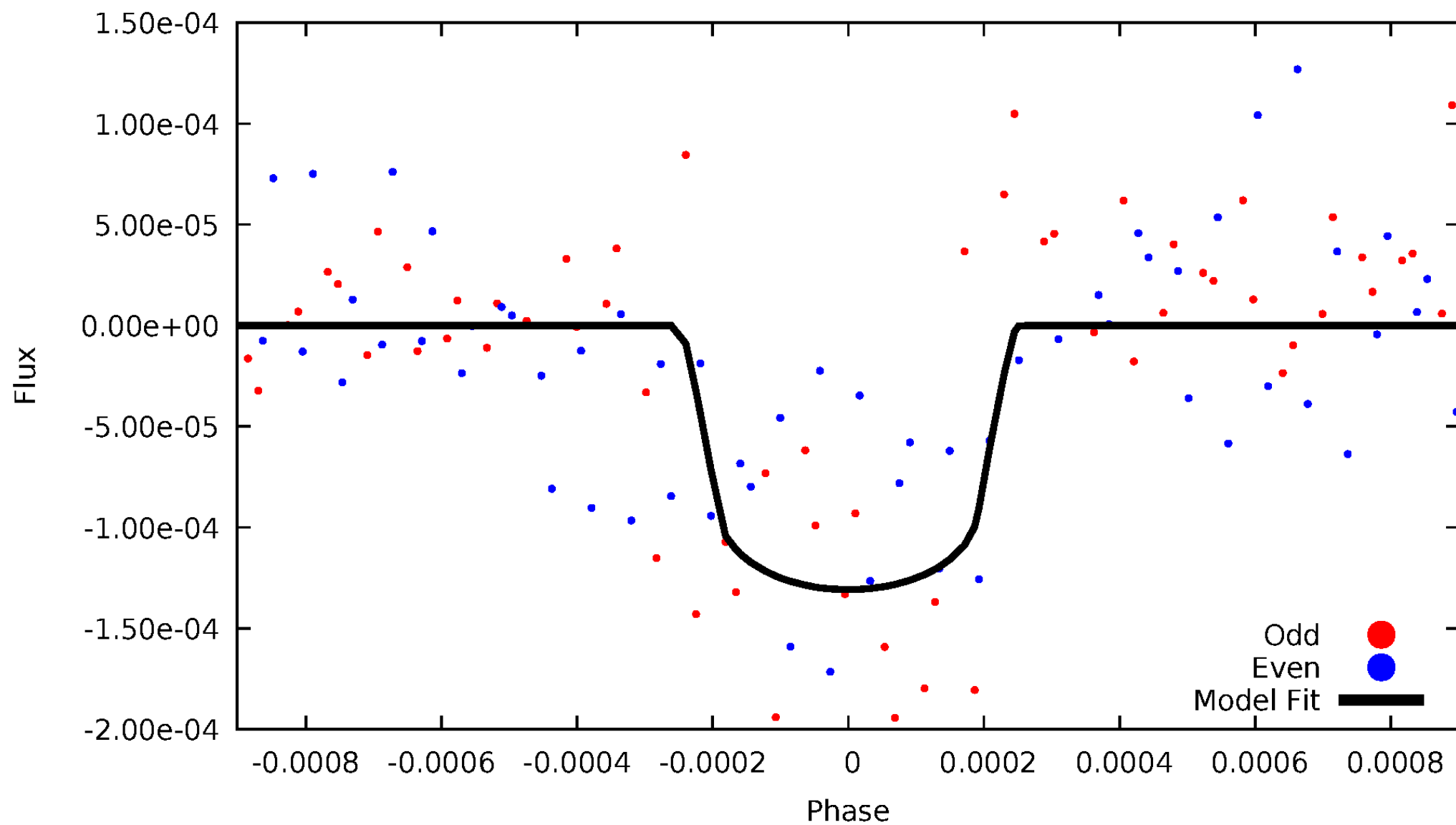


TCE 011506988-02



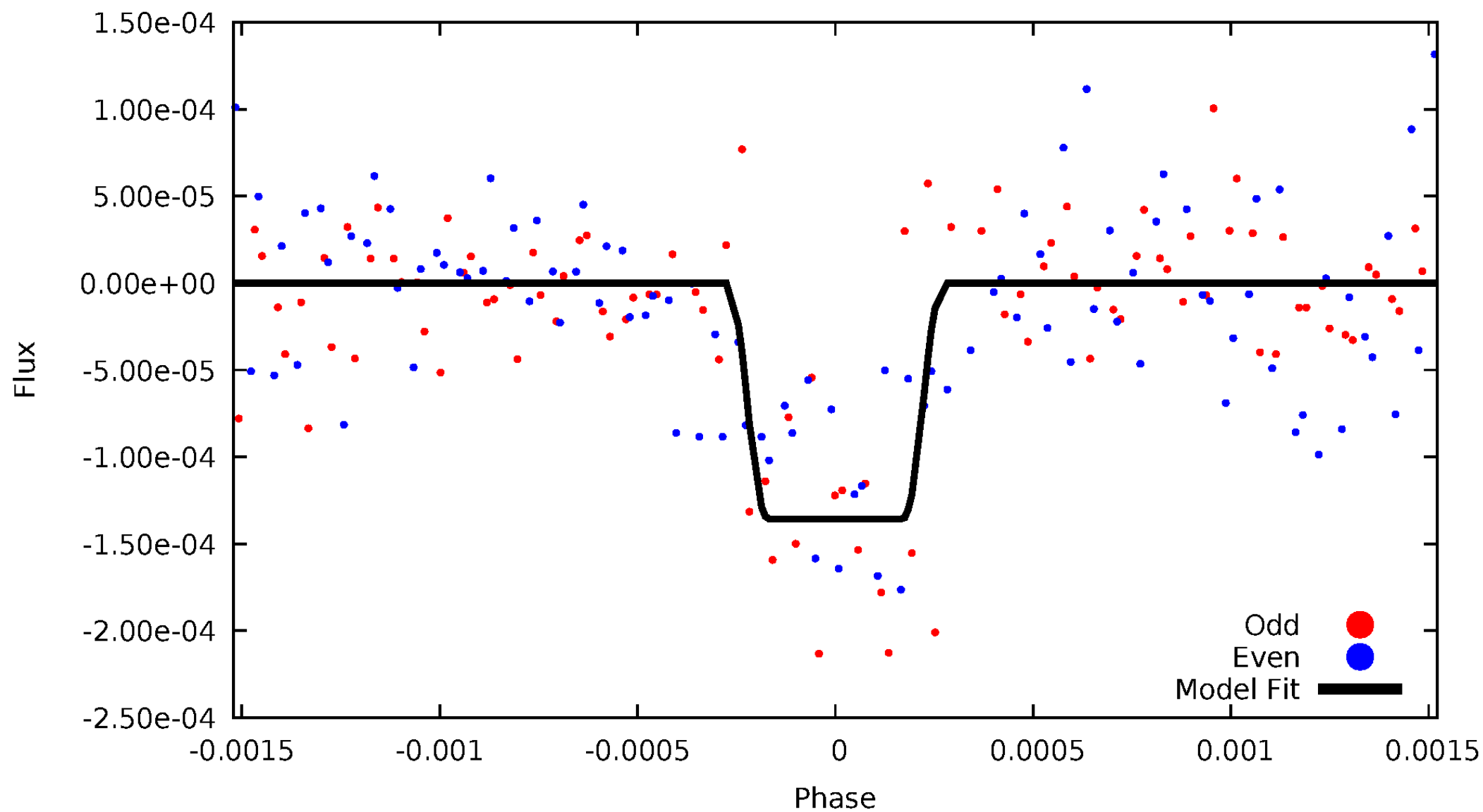
DV Odd/Even

TCE 011506988-02



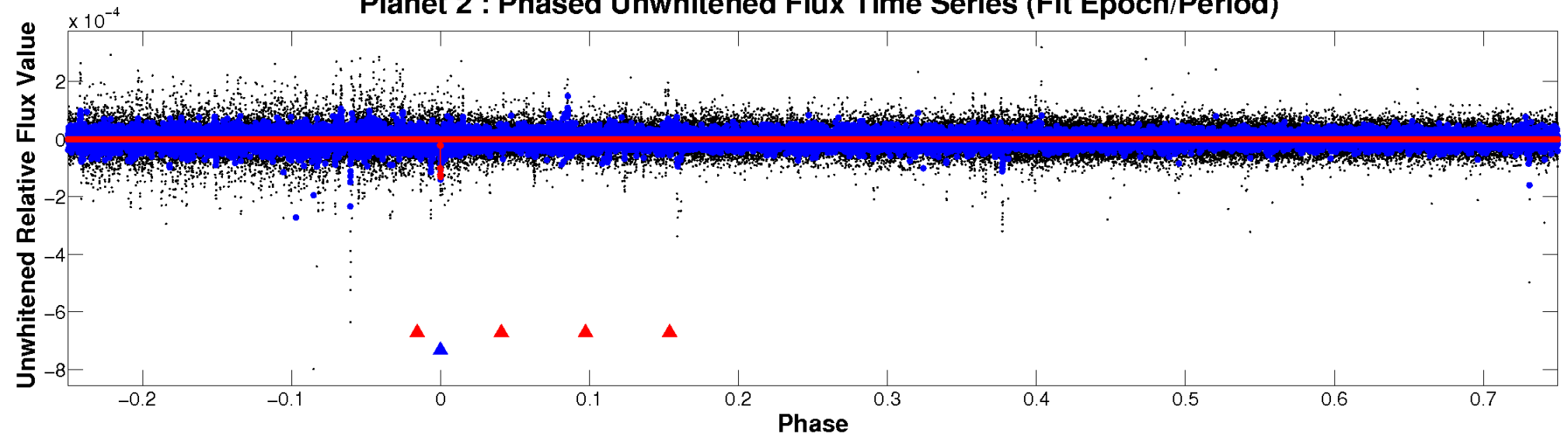
ALT Odd/Even

TCE 011506988-02

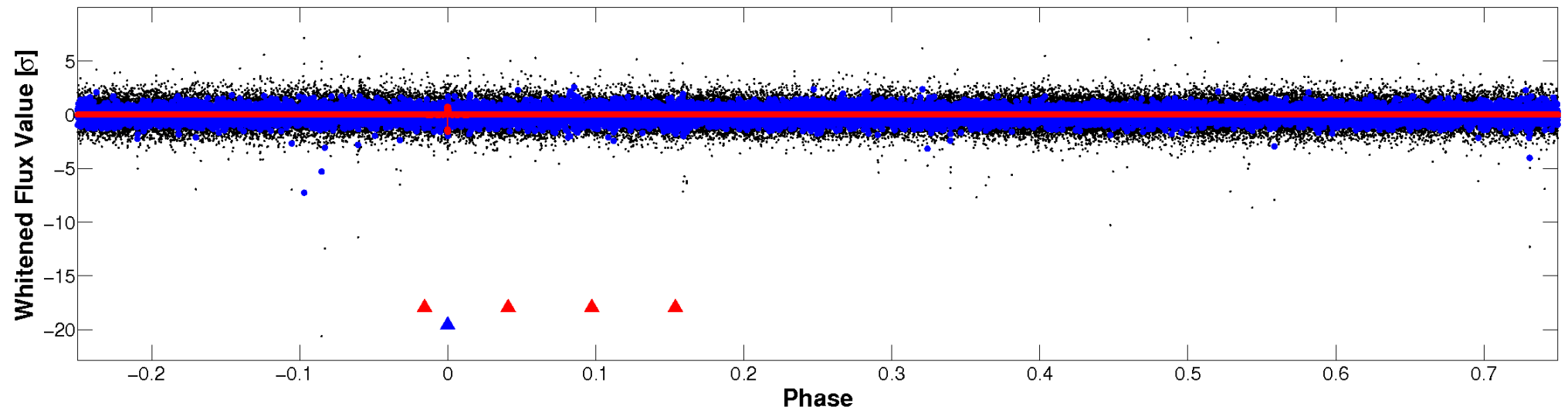


Non-Whitened Vs. Whitened Light Curve

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

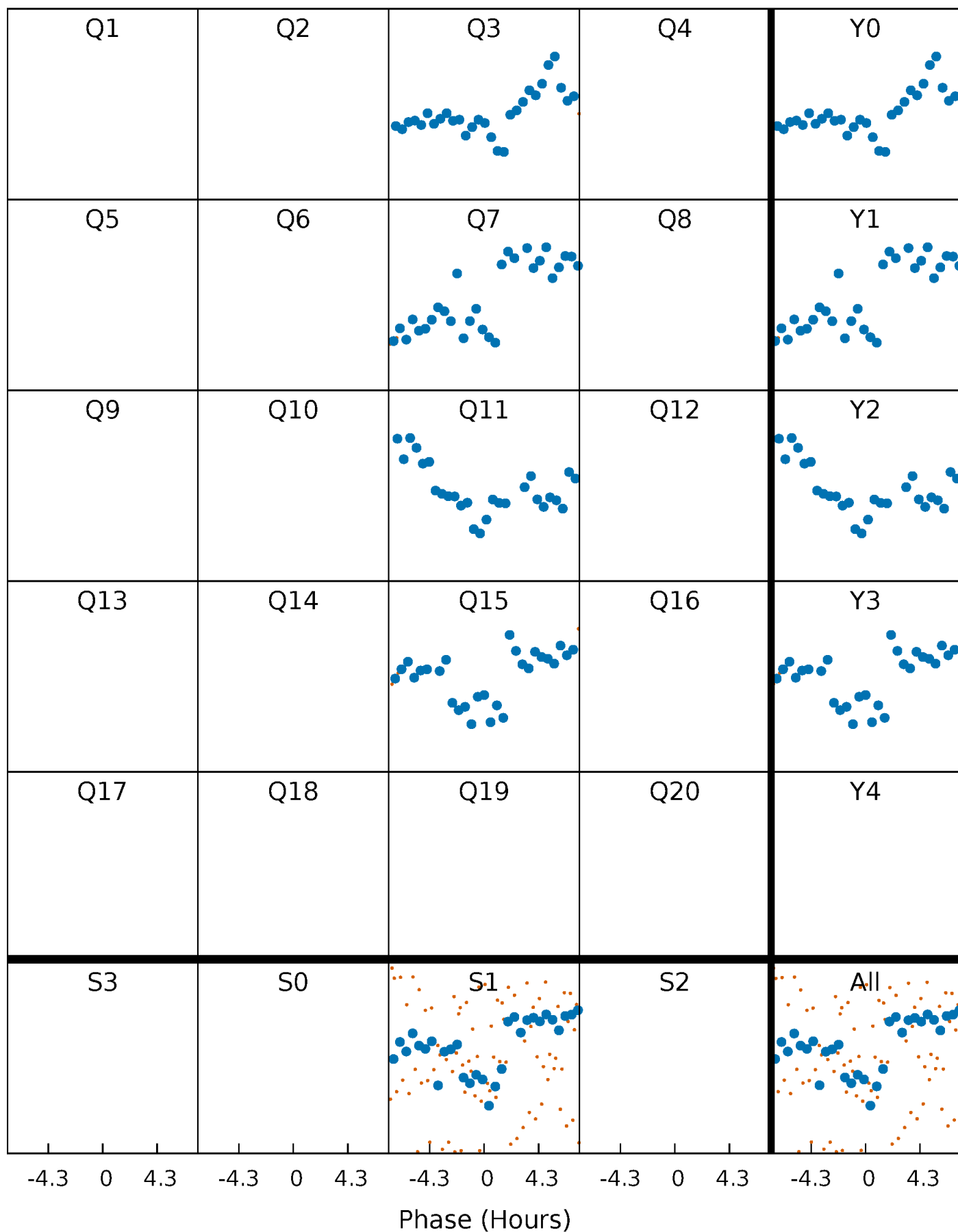


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



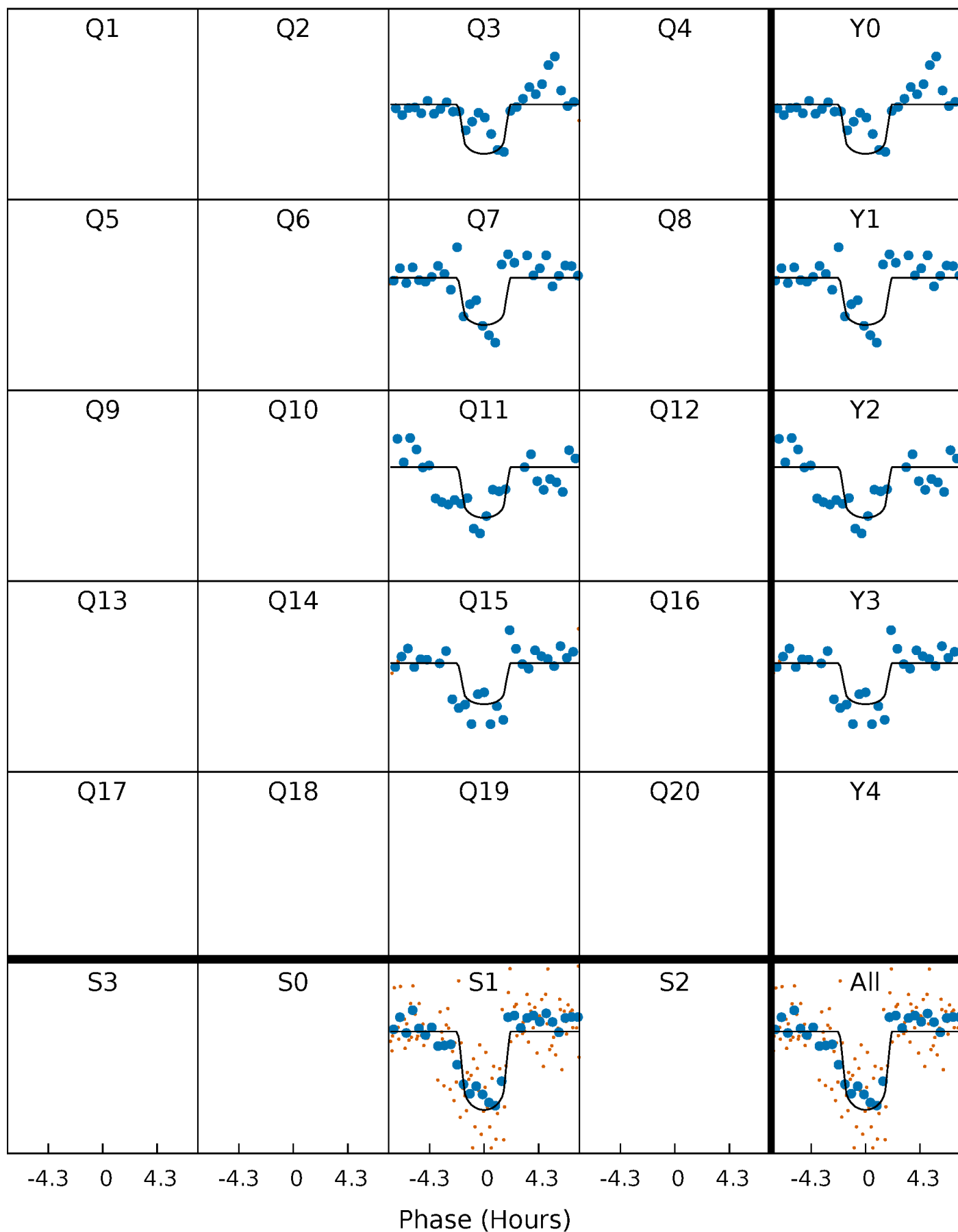
PDC Quarter-Phased Transit Curves

TCE 011506988-02 $P=348.258177$ Days $T_0=344.647693$ (BKJD)



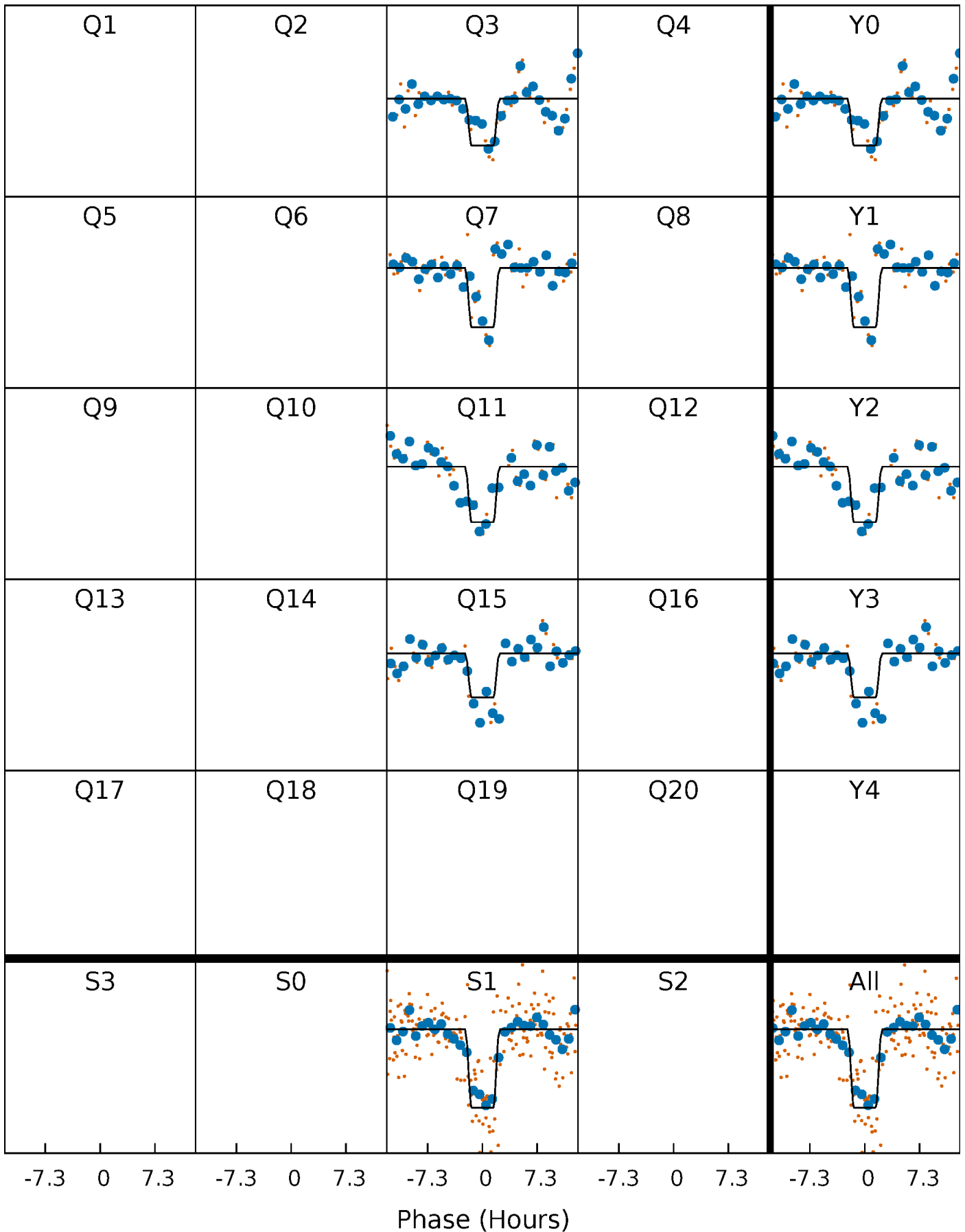
DV Quarter-Phased Transit Curves

TCE 011506988-02 $P=348.258177$ Days $T_0=344.647693$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

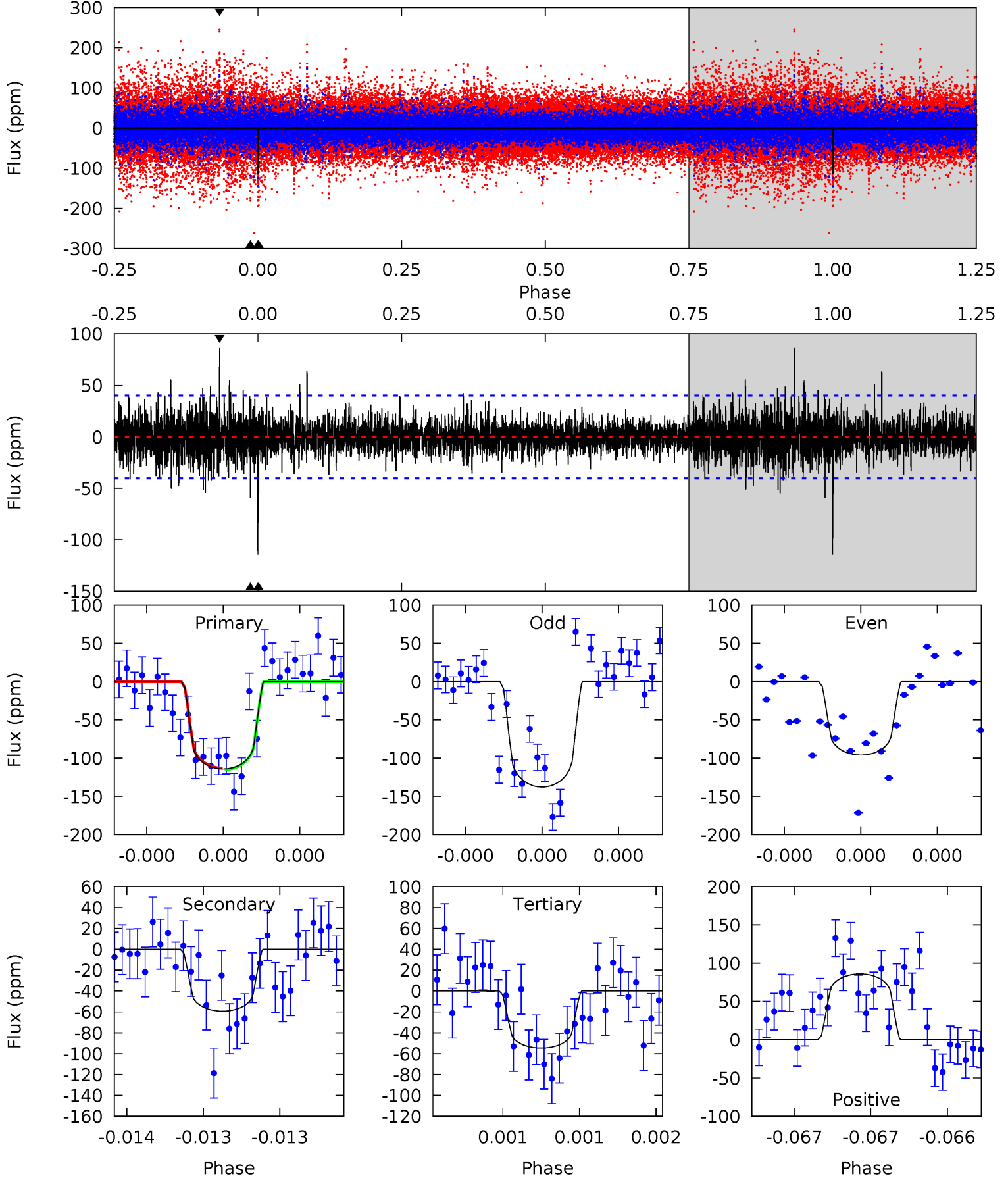
TCE 011506988-02 $P=348.247410$ Days $T_0=344.657058$ (BKJD)



DV Model-Shift Uniqueness Test

011506988-02, P = 348.258177 Days, E = 344.647693 Days

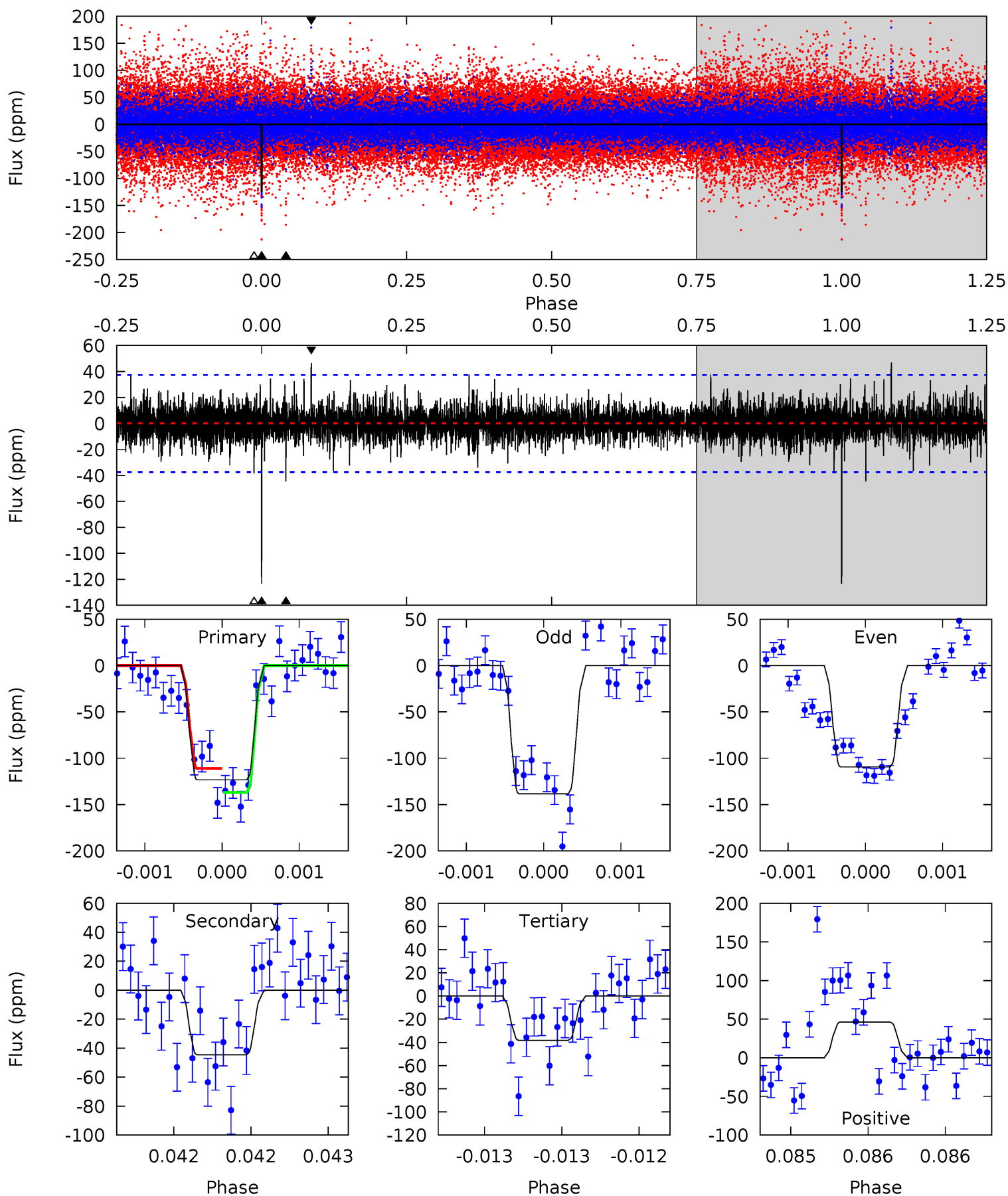
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
15.9	8.24	7.61	11.9	5.58	3.49	1.65	8.26	3.92	0.63	-3.70	2.73	1.03	0.43	0.12



Alt Model-Shift Uniqueness Test

011506988-02, P = 348.247410 Days, E = 344.657058 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
18.3	6.62	5.68	6.90	5.57	3.47	1.26	12.7	11.4	0.94	-0.27	2.14	1.09	0.27	1.93



Stellar Parameters For KIC 011506988

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6223^{+80}_{-74}	$3.994^{+0.025}_{-0.025}$	$-0.160^{+0.150}_{-0.150}$	$1.794^{+0.126}_{-0.095}$	$1.158^{+0.173}_{-0.086}$	$0.282^{+0.031}_{-0.028}$
	+1%/-1%	+1%/-1%	+94%/-94%	+7%/-5%	+15%/-7%	+11%/-10%
Source	SPE72	AST10	SPE72	DSEP		

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

Secondary Eclipse Parameters for KIC 011506988-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-59 ± 7	$2.28^{+0.81}_{-0.81}$	509^{+9}_{-8}	5143^{+1148}_{-616}	6554^{+9025}_{-3045}
Alt.	-45 ± 7	$2.32^{+0.75}_{-0.85}$	510^{+9}_{-8}	4804^{+1038}_{-537}	4764^{+7059}_{-2160}

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

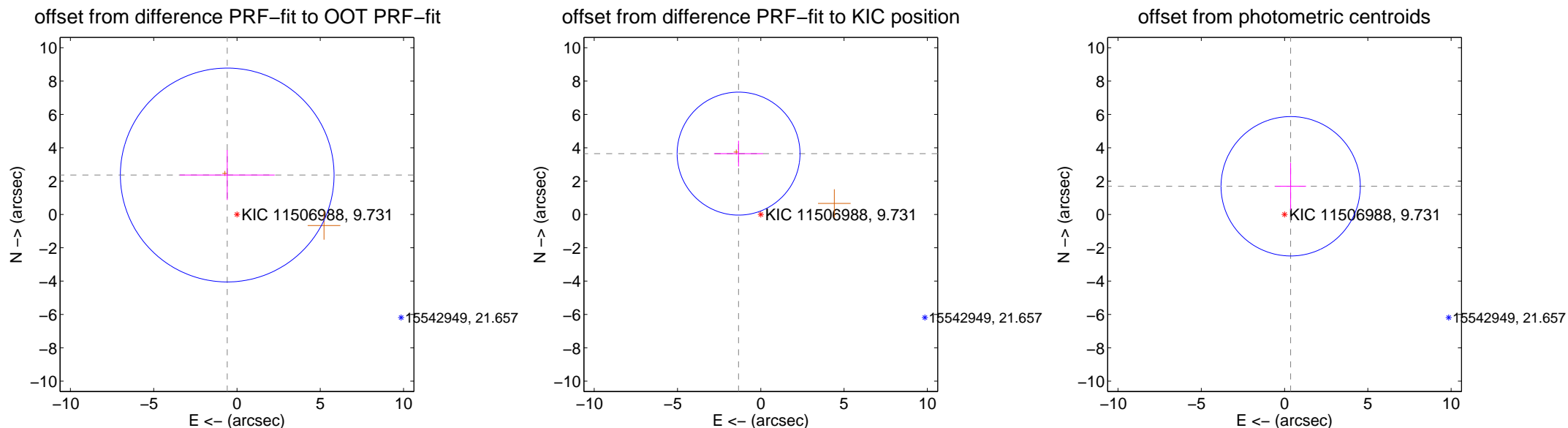
DV Centroid Data

Supplemental centroid analysis for 011506988-02. **Kepler magnitude: 9.73.** Transit SNR 8.59

There are 0 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 1.48 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	2.437 ± 2.138	1.14	0.587 ± 2.850	2.365 ± 1.497
PRF-fit source offset from KIC position	3.885 ± 1.230	3.16	1.333 ± 1.473	3.649 ± 0.773
photometric centroid source offset	1.73 ± 1.39	1.24	-0.37 ± 0.92	1.69 ± 1.41



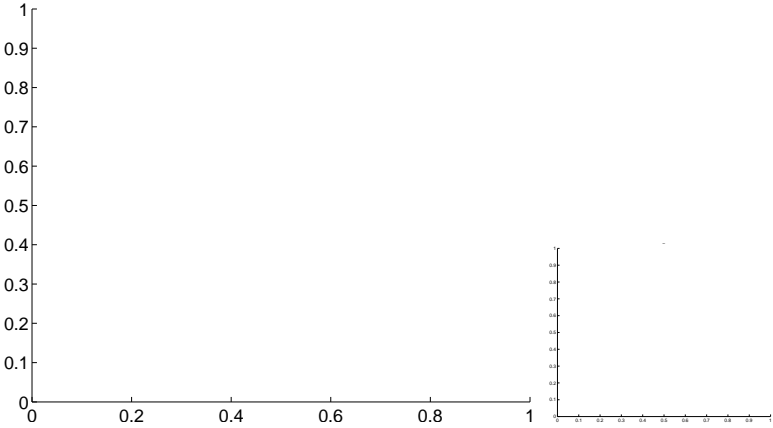
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

Q1 no difference image



Q1 no OOT image



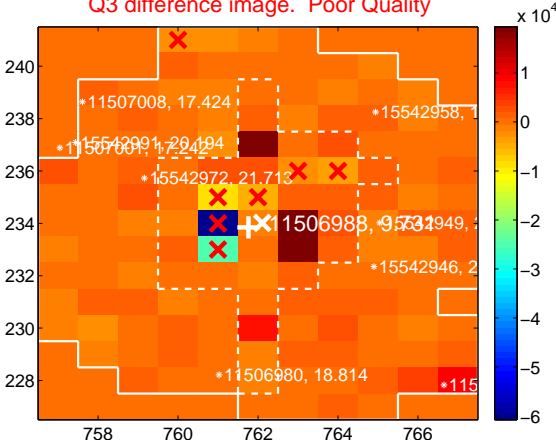
Q2 no difference image



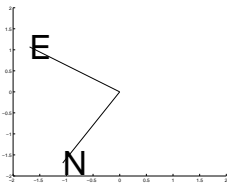
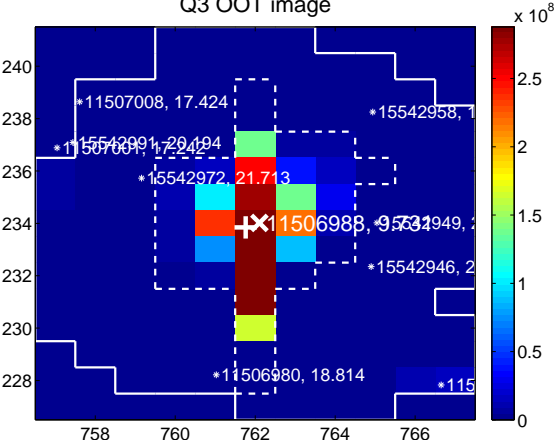
Q2 no OOT image



Q3 difference image. Poor Quality



Q3 OOT image



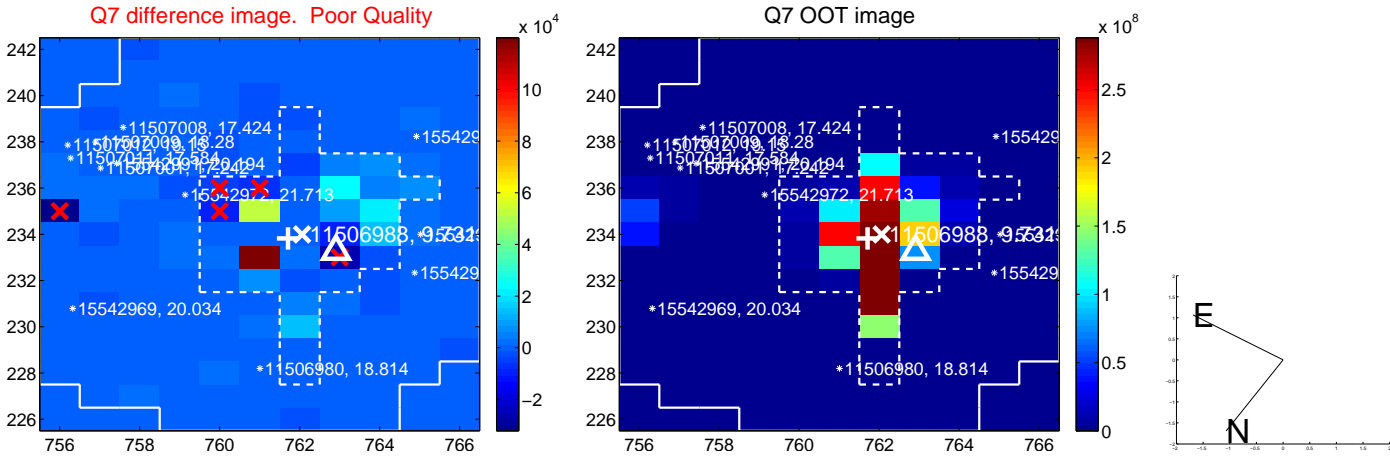
Q4 no difference image



Q4 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.



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

Q13 no difference image



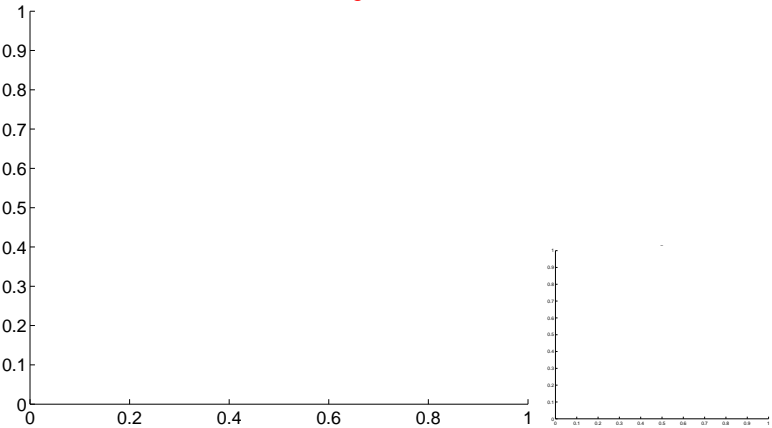
Q13 no OOT image



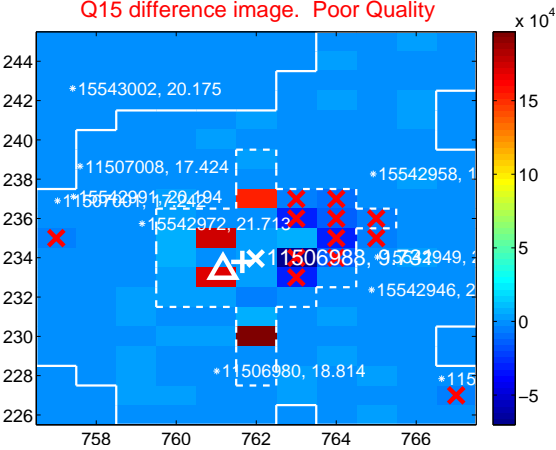
Q14 no difference image



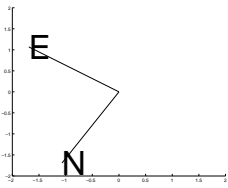
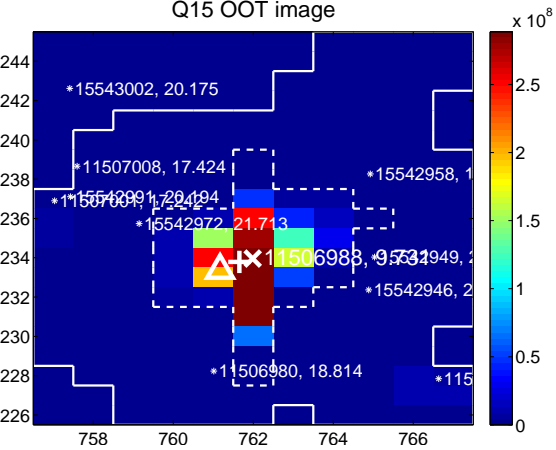
Q14 no OOT image



Q15 difference image. Poor Quality



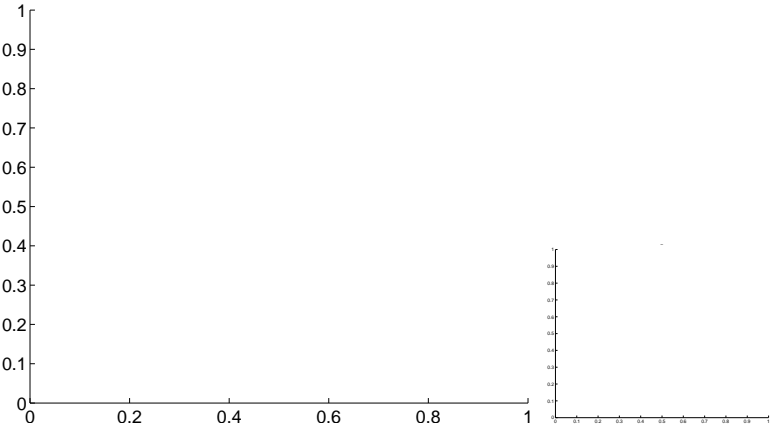
Q15 OOT image



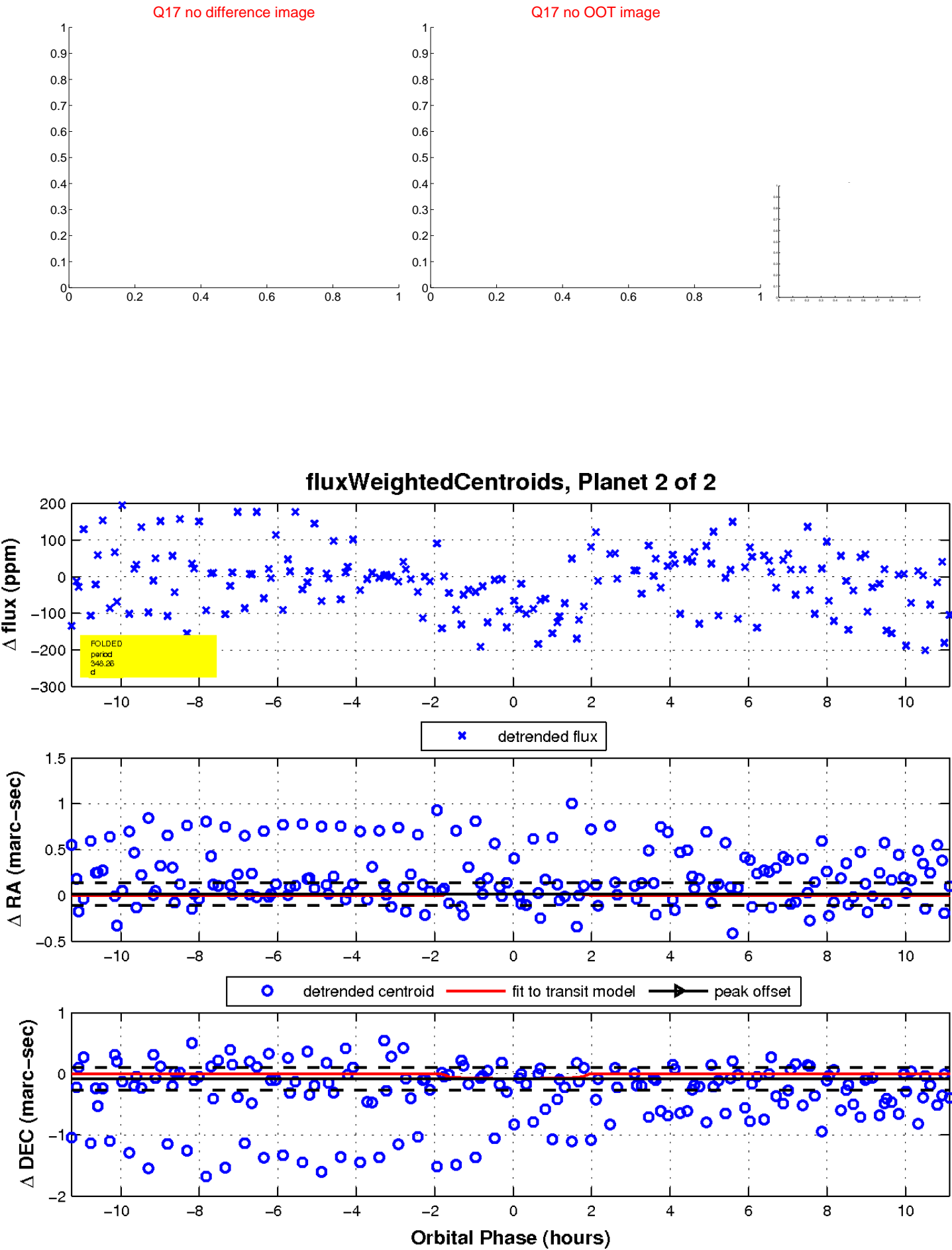
Q16 no difference image



Q16 no OOT image



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



UKIRT Image

