

KIC 004750889

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})
004750889-01	OBS	No	369.591241	144.563892	1601.6	7.240	17.6	13.7	2.73	5193	13.65	5.52
004750889-02	OBS	No	288.209376	140.757793	848.2	7.801	15.4	6.0	2.73	5193	9.28	7.69
004750889-03	OBS	No	386.083560	480.431524	995.6	4.435	14.4	9.3	2.73	5193	9.69	5.21
004750889-04	OBS	No	279.159932	253.198949	673.7	5.142	15.7	6.5	2.73	5193	8.17	8.02
004750889-05	OBS	No	568.625031	243.869893	753.1	10.536	11.5	6.1	2.73	5193	7.84	3.11
004750889-06	OBS	No	291.740703	258.626984	709.9	5.718	10.6	6.1	2.73	5193	7.93	7.57

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004750889-01	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS—HALO_GHOST
004750889-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS
004750889-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
004750889-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
004750889-05	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—HALO_GHOST
004750889-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—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.

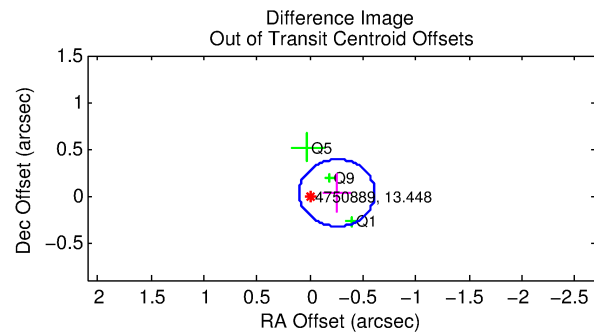
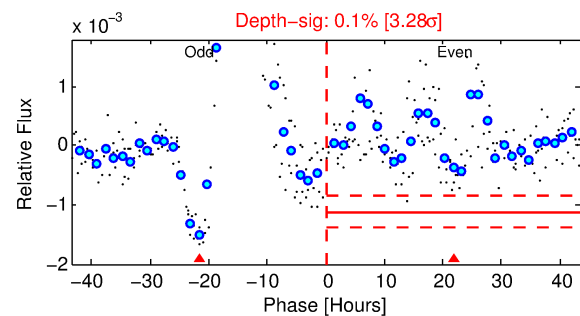
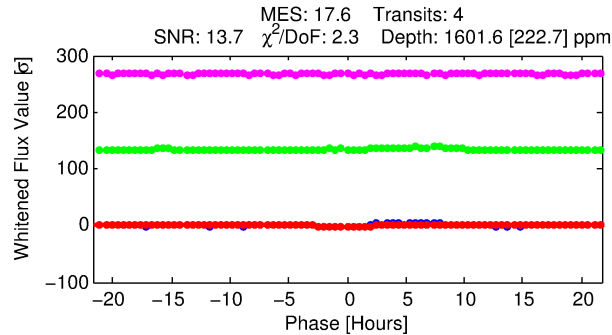
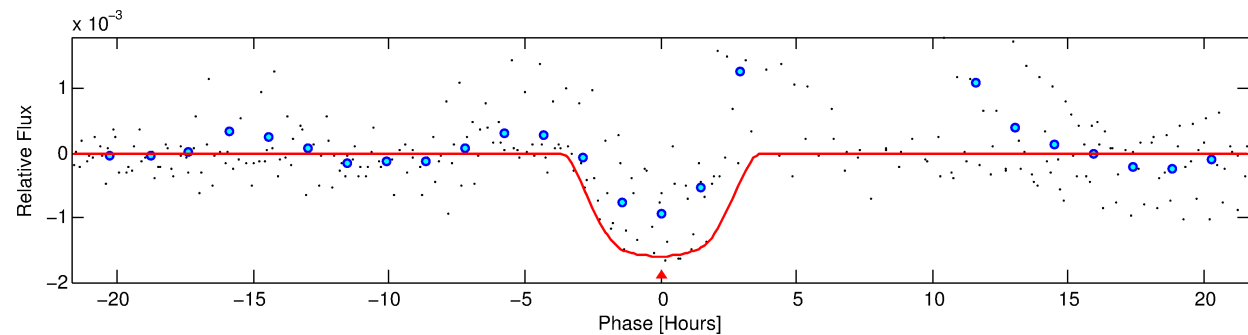
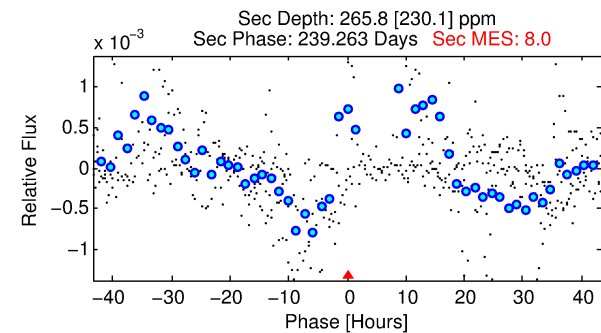
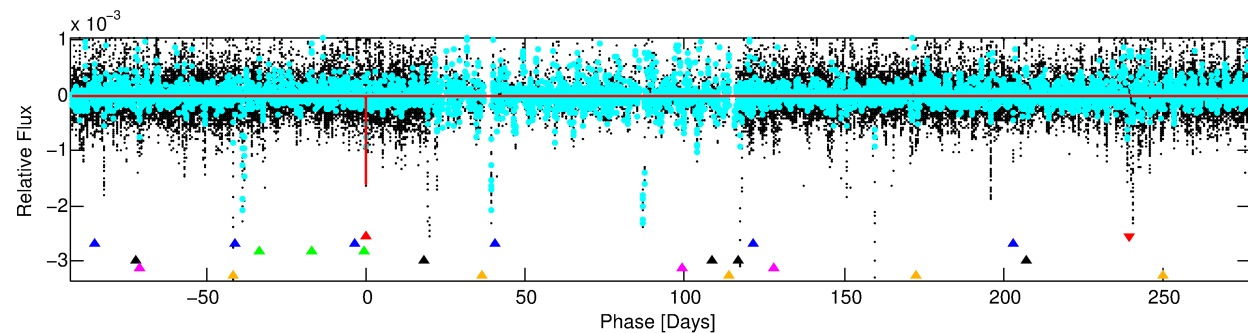
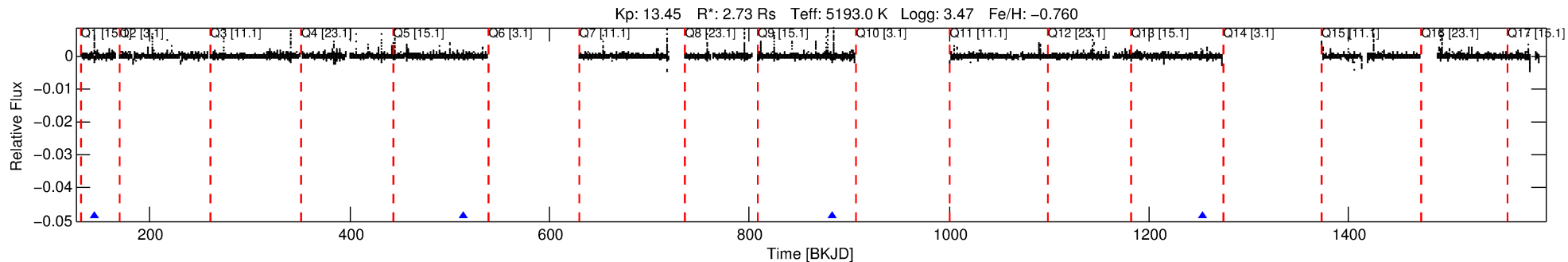
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004750889-01

No Significant Match Found

DV One-Page Summary

KIC: 4750889 Candidate: 1 of 6 Period: 369.591 d



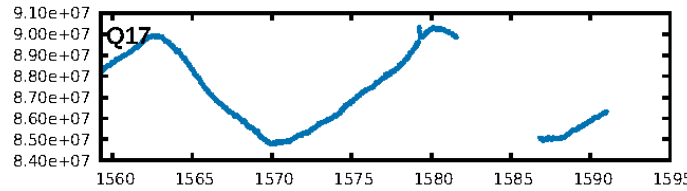
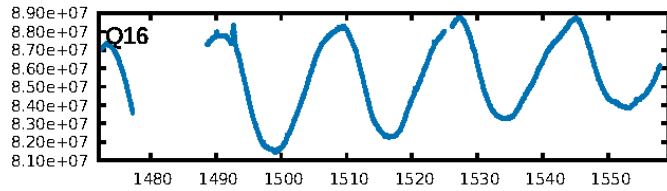
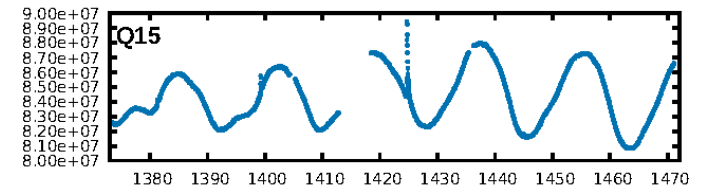
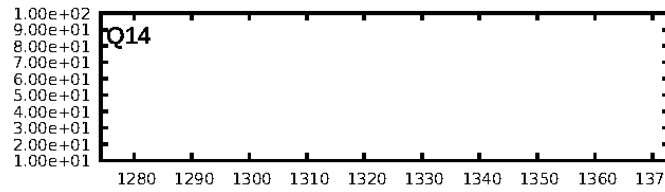
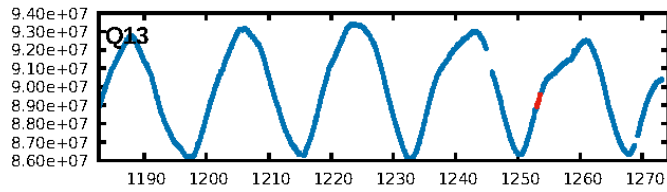
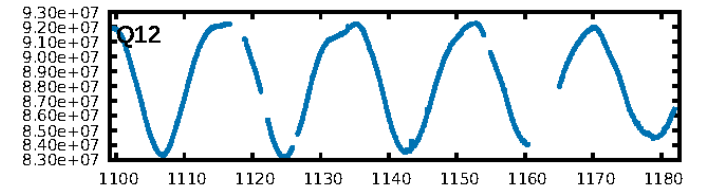
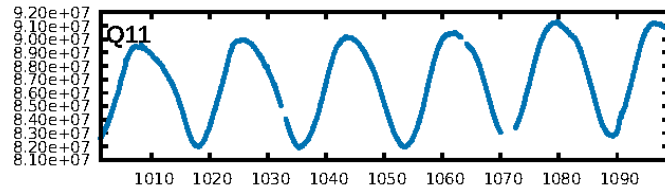
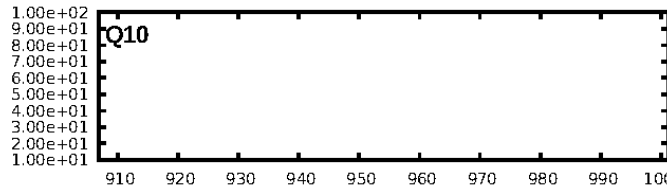
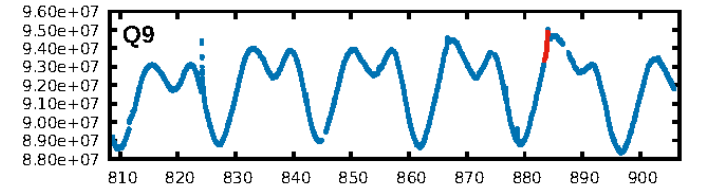
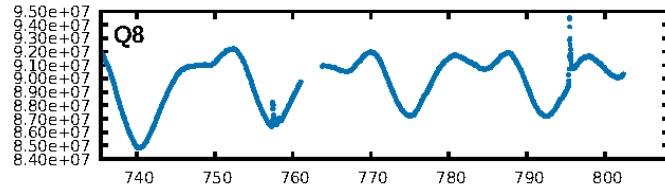
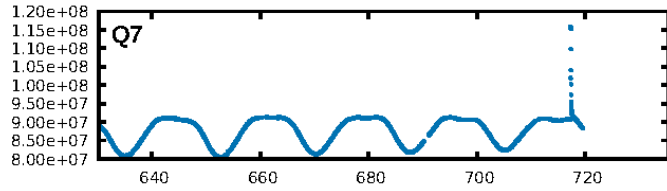
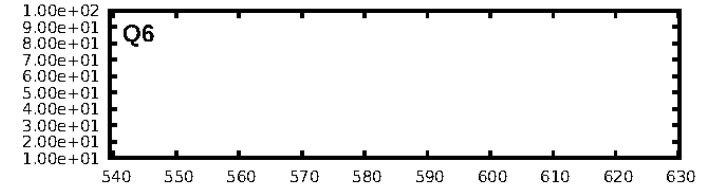
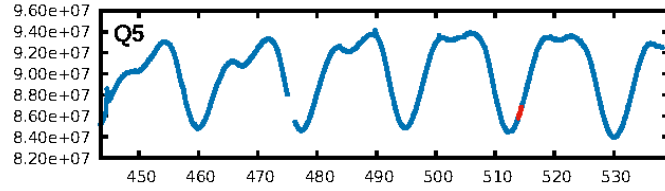
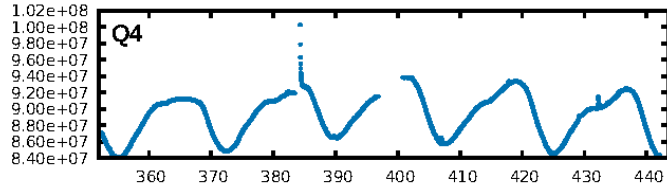
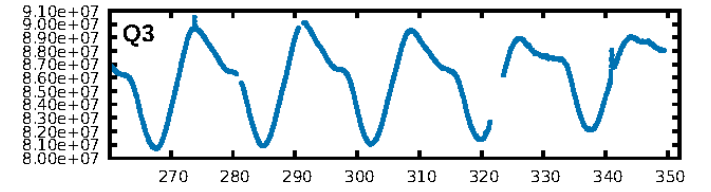
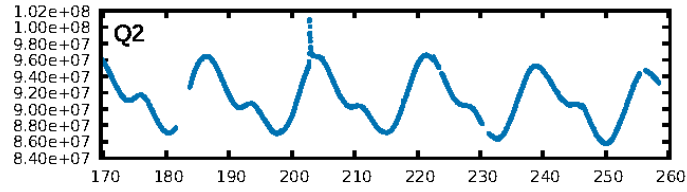
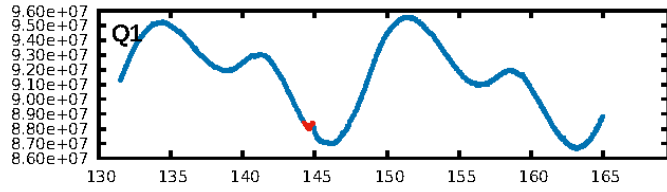
DV Fit Results:

Period = 369.59124 [0.00474] d
Epoch = 144.5639 [0.0091] BKJD
Rp/R* = 0.0458 [0.0038]
a/R* = 184.66 [22.33]
b = 0.93 [0.02]
Seff = 5.52 [10.83]
Teff = 391 [192] K
Rp = 13.65 [10.25] Re
a = 0.9386 [1.0031] AU
Ag = 691.57 [1483.42] [0.47 σ]
Teffp = 3099 [694] K [3.76 σ]

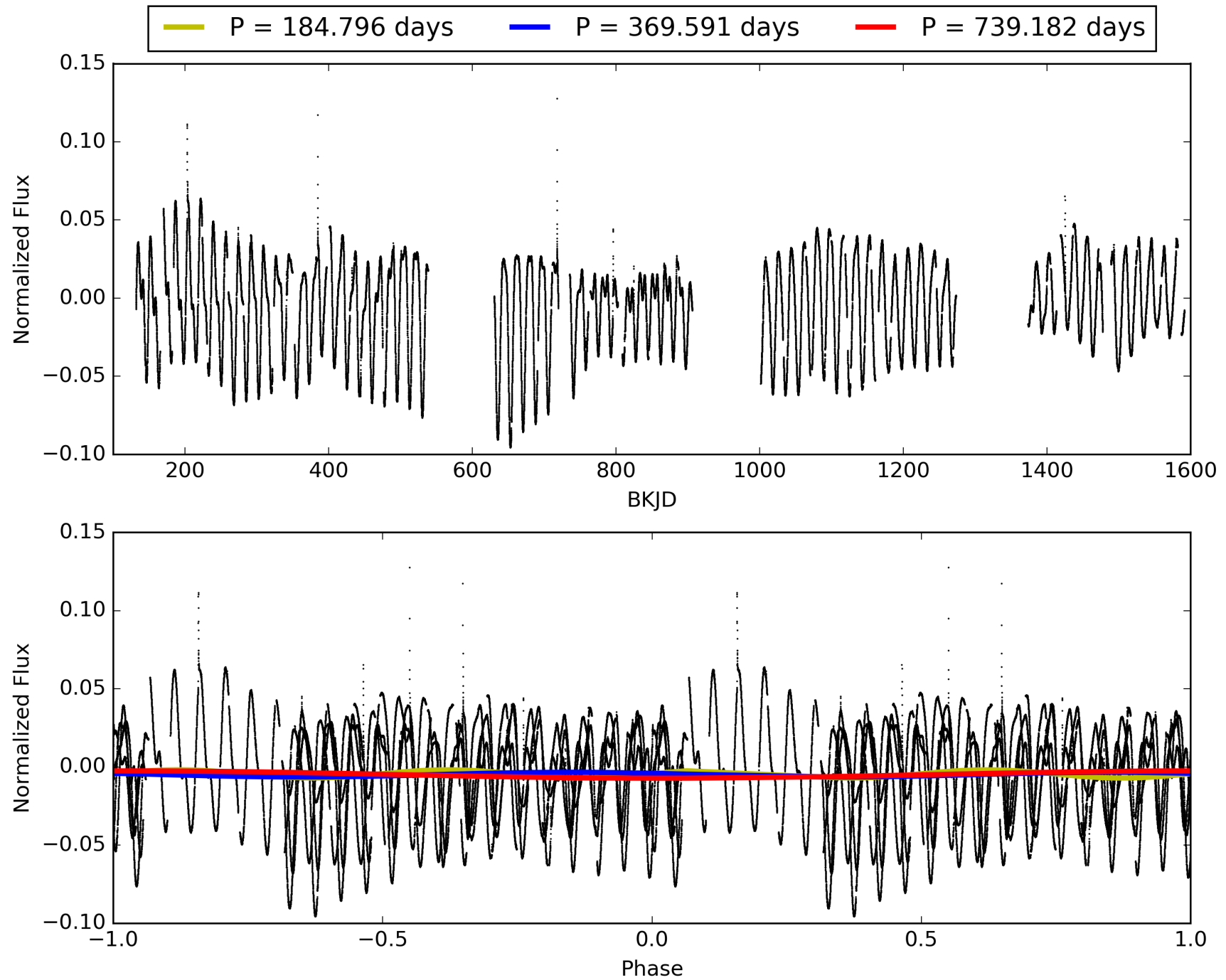
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [202.53 σ]
LongPeriod-sig: 100.0% [46.62 σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 0.1%
Bootstrap-pfa: 1.56e-17
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 0.08522
Centroid-sig: 78.2%
Centroid-so: 0.285 arcsec [0.59 σ]
OotOffset-rm: 0.259 arcsec [2.18 σ]
KicOffset-rm: 0.323 arcsec [1.79 σ]
OotOffset-st: 0/0/0/3 [3]
KicOffset-st: 0/0/0/3 [3]
DiffImageQuality-fgm: 1.00 [3/3]
DiffImageOverlap-fno: 1.00 [4/4]

TCE 004750889-01, PDC Light Curves

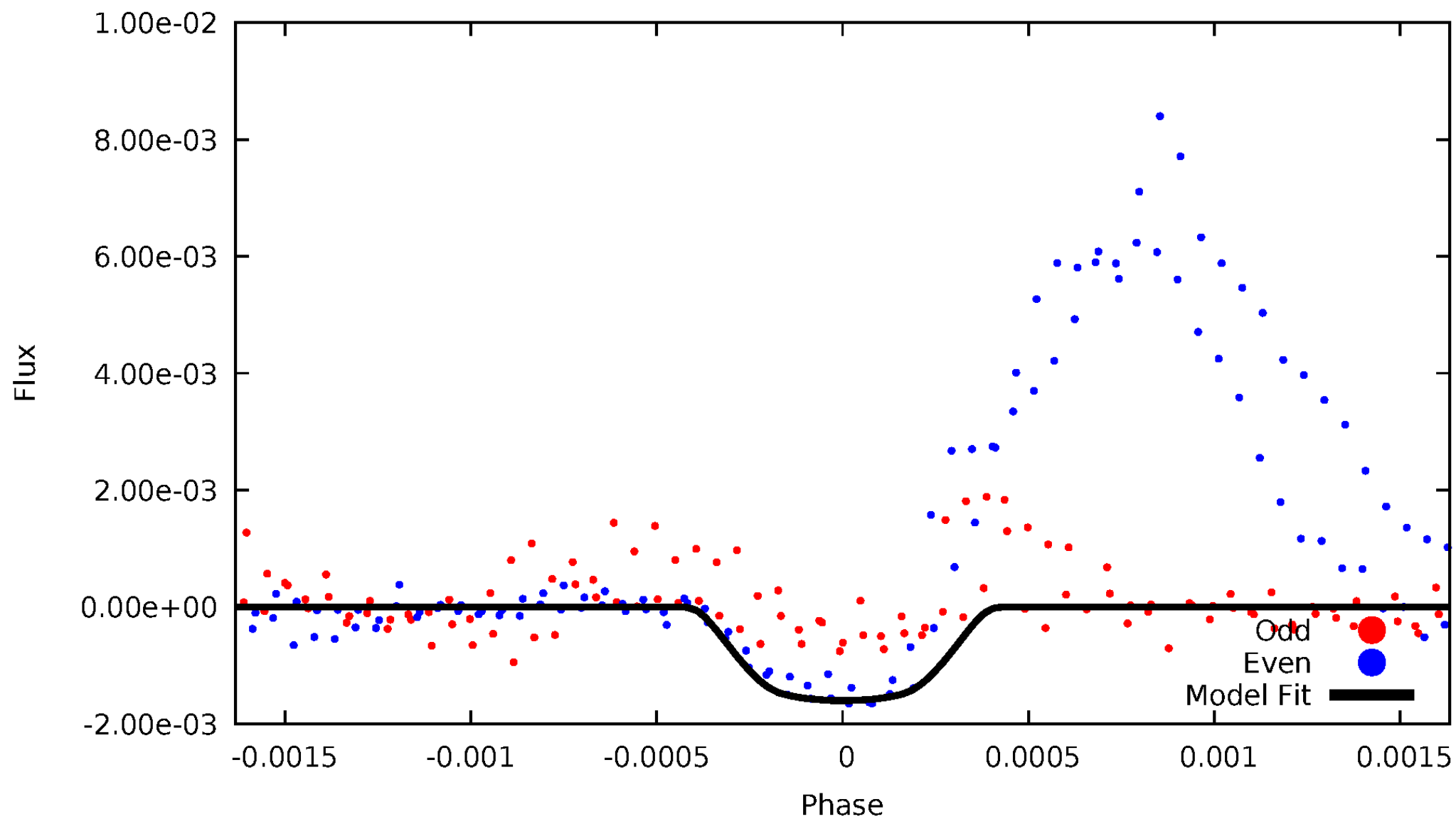


TCE 004750889-01



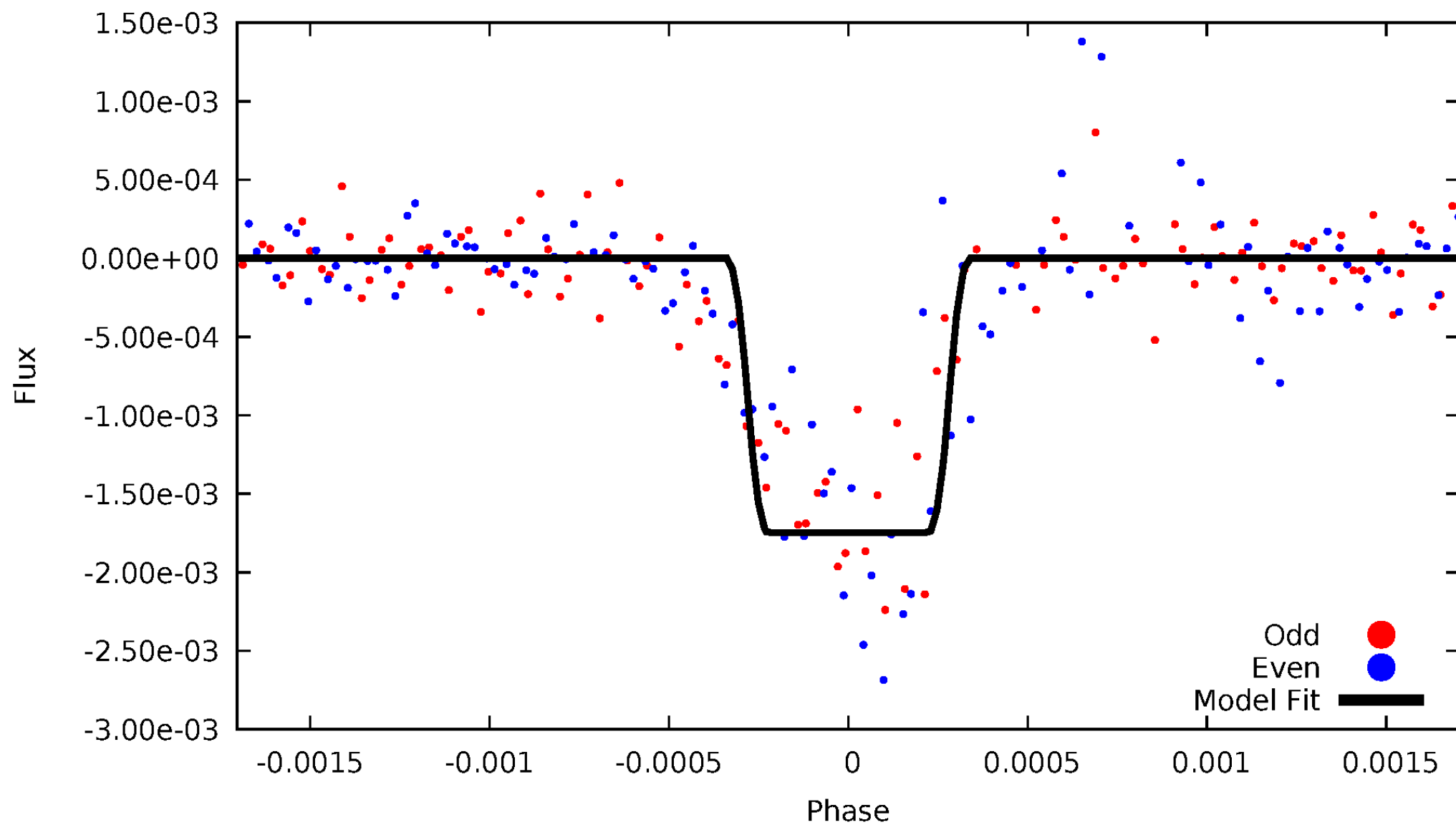
DV Odd/Even

TCE 004750889-01



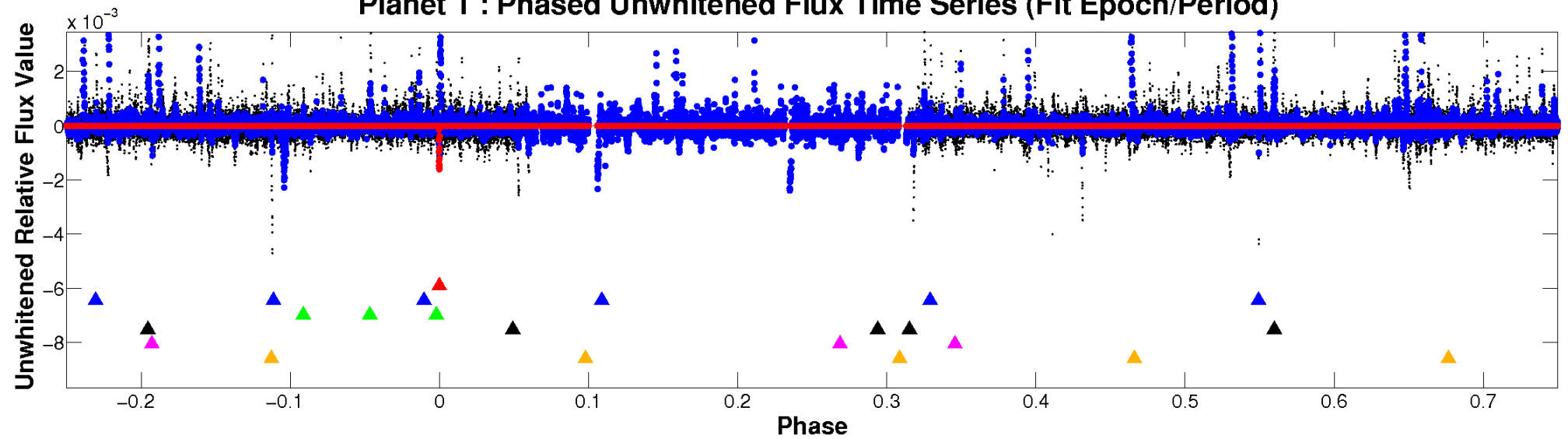
ALT Odd/Even

TCE 004750889-01

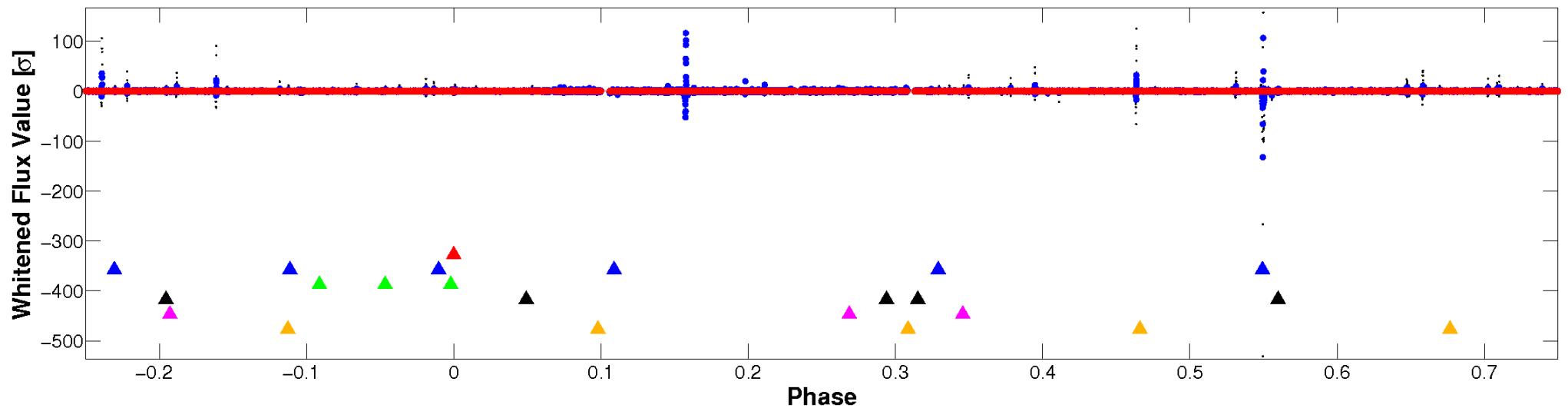


Non-Whitened Vs. Whitened Light Curve

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

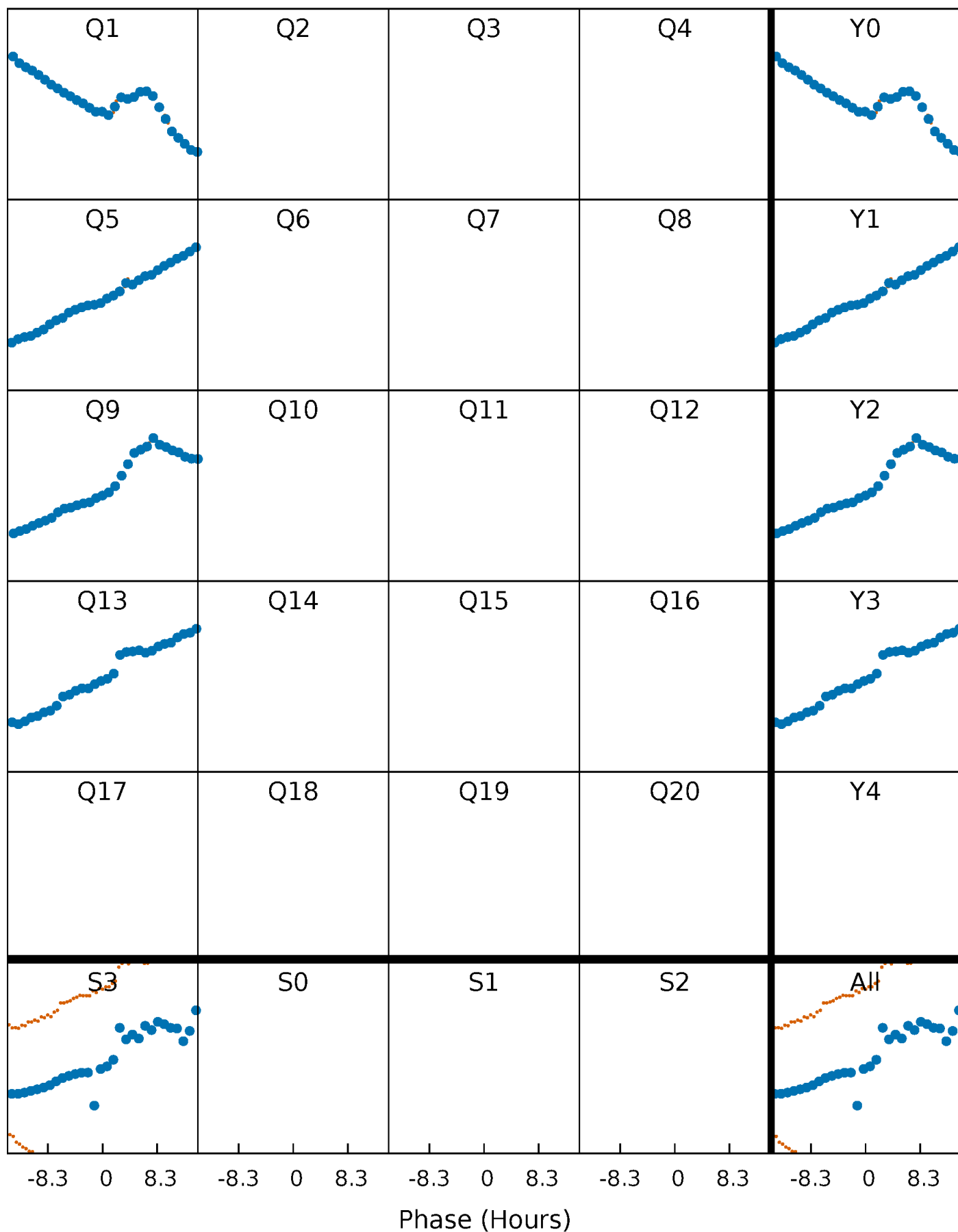


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



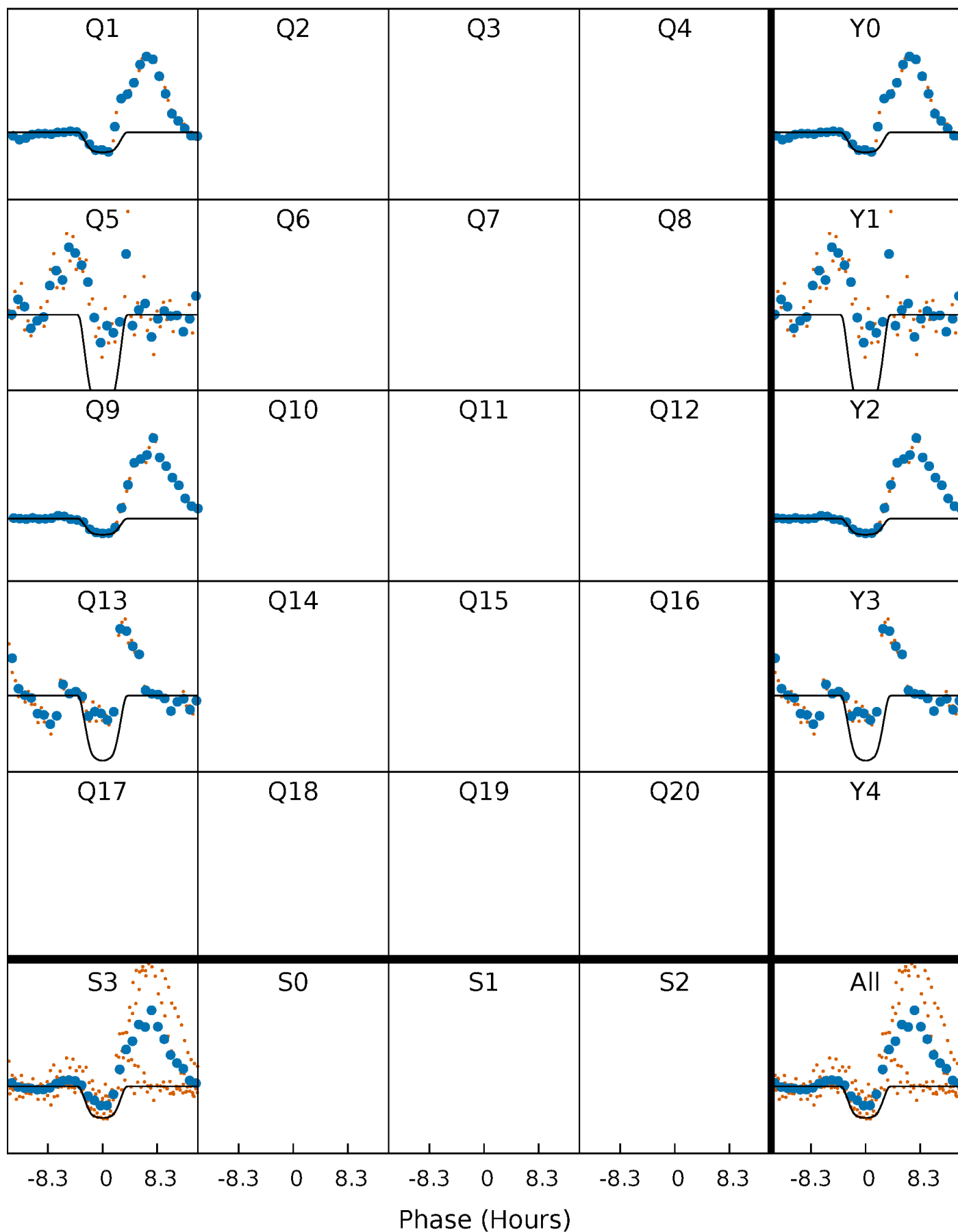
PDC Quarter-Phased Transit Curves

TCE 004750889-01 P=369.591242 Days $T_0=144.563892$ (BKJD)



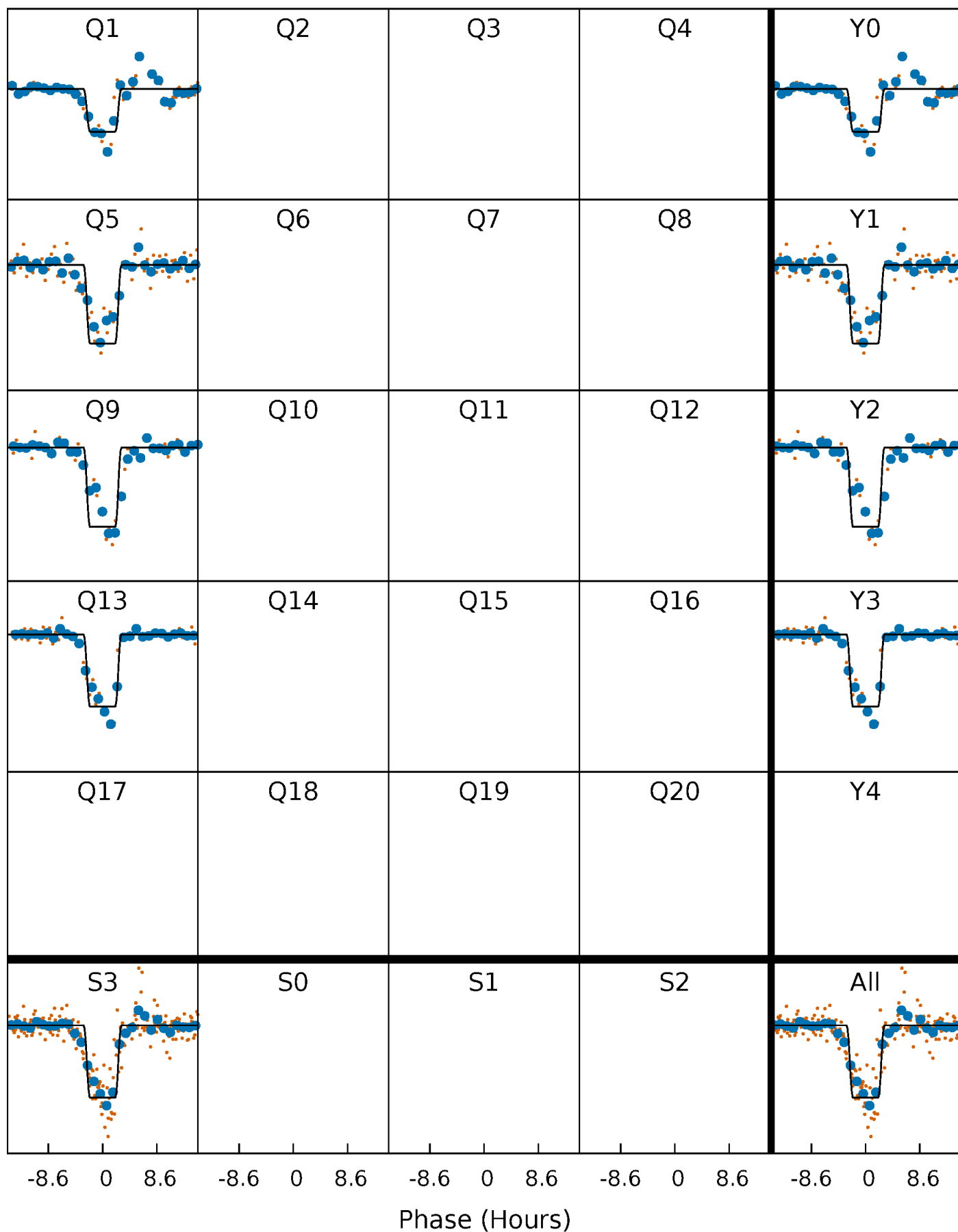
DV Quarter-Phased Transit Curves

TCE 004750889-01 P=369.591242 Days $T_0=144.563892$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

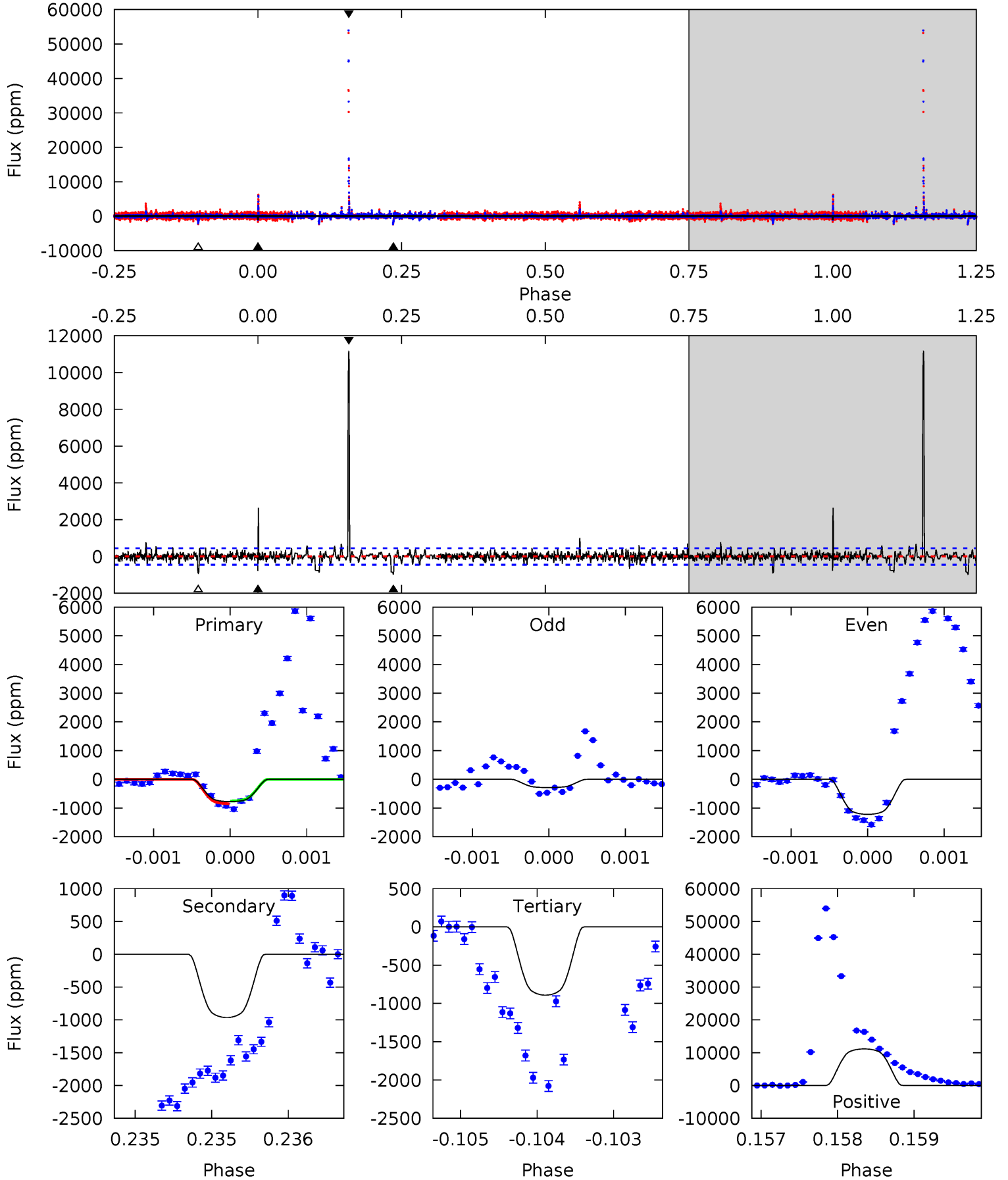
TCE 004750889-01 P=369.588611 Days $T_0=144.574867$ (BKJD)



DV Model-Shift Uniqueness Test

004750889-01, P = 369.591242 Days, E = 144.563892 Days

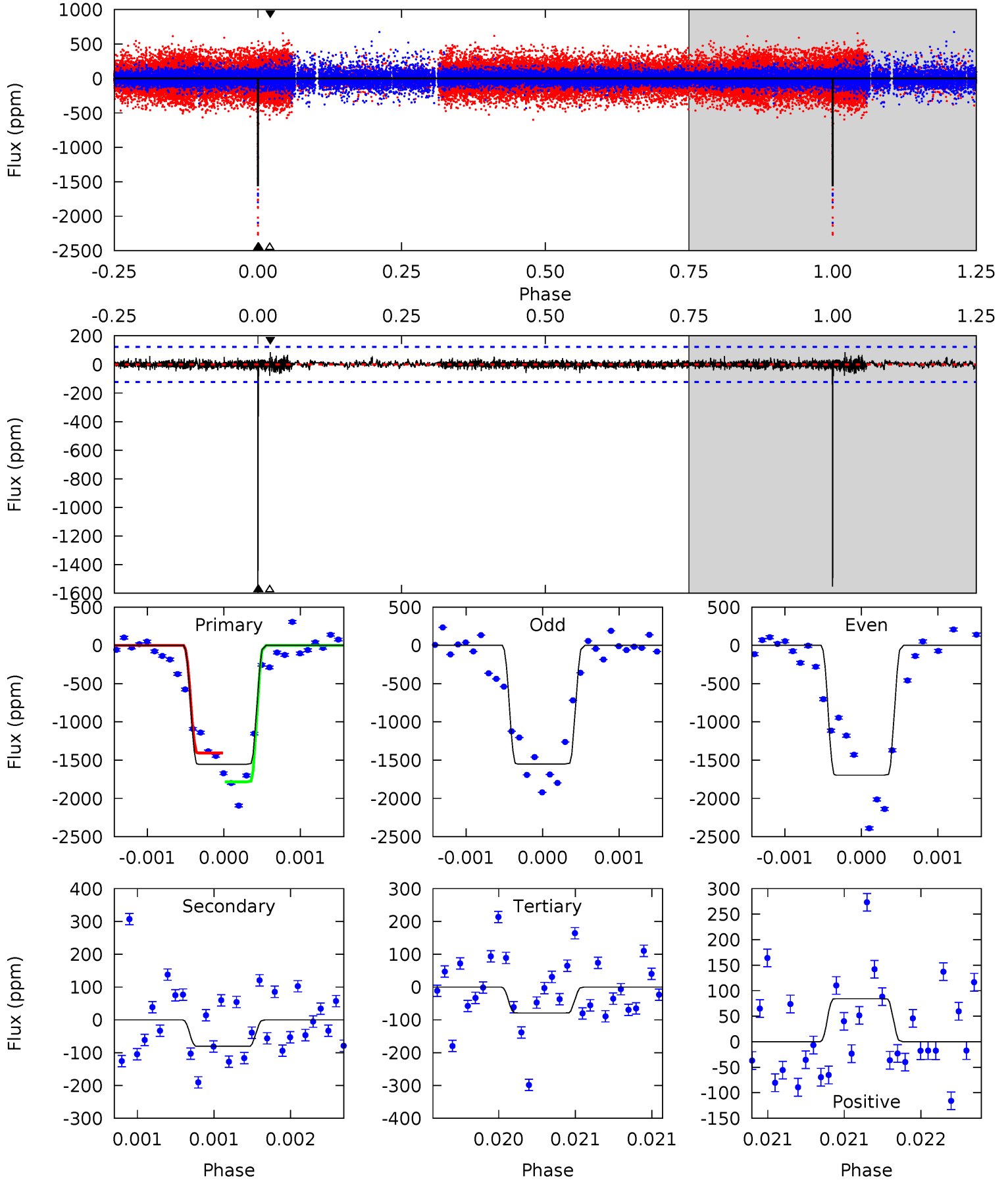
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.53	11.8	10.9	136.4	5.48	3.33	3.87	-1.38	-126.8	0.89	-124.6	5.21	1.08	0.92	0.52



Alt Model-Shift Uniqueness Test

004750889-01, P = 369.588611 Days, E = 144.574867 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
70.2	3.64	3.58	3.80	5.53	3.41	0.58	66.6	66.4	0.06	-0.16	3.43	0.98	0.05	8.36



Stellar Parameters For KIC 004750889

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5193^{+121}_{-212}	$3.472^{+1.232}_{-0.308}$	$-0.760^{+0.300}_{-0.400}$	$2.732^{+1.669}_{-2.040}$	$0.807^{+0.209}_{-0.209}$	$0.056^{+4.495}_{-0.036}$
	+2%/-4%	+35%/-9%	+39%/-53%	+61%/-75%	+26%/-26%	+8064%/-65%
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 004750889-01 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-964 ± 82	$12.44^{+4.83}_{-5.39}$	519^{+84}_{-122}	4425^{+185}_{-205}	2922^{+5880}_{-1319}
Alt.	-81 ± 22	$11.50^{+4.05}_{-4.94}$	519^{+79}_{-123}	3023^{+151}_{-159}	300^{+645}_{-151}

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

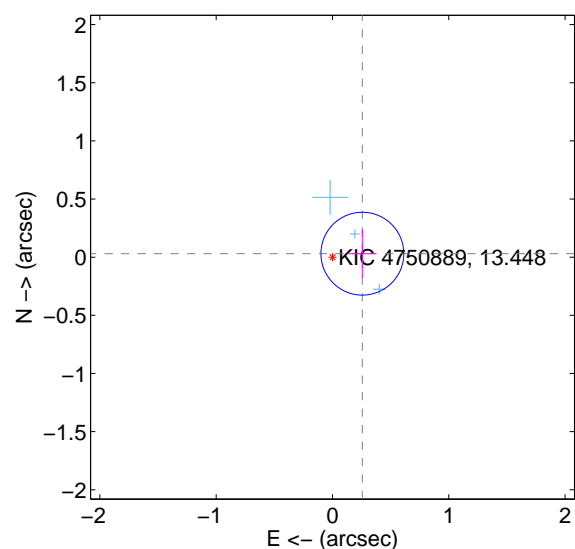
Supplemental centroid analysis for 004750889-01. Kepler magnitude: 13.45. Transit SNR 13.66

There are 3 quarters with good PRF difference image offsets

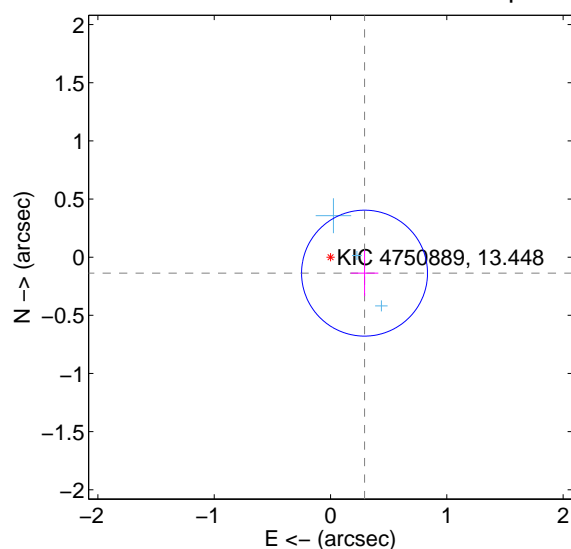
The direct PRF centroid is offset from the target star catalog position by about 0.19 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.259 ± 0.119	2.18	-0.257 ± 0.117	0.030 ± 0.207
PRF-fit source offset from KIC position	0.323 ± 0.180	1.79	-0.292 ± 0.118	-0.137 ± 0.198
photometric centroid source offset	0.28 ± 0.48	0.59	0.18 ± 0.56	-0.22 ± 0.42

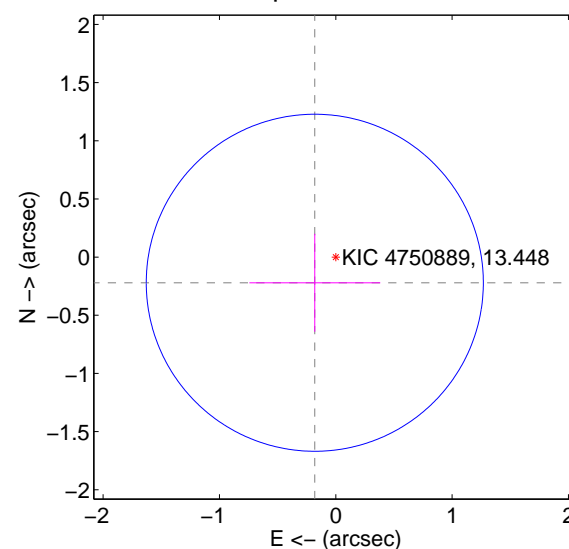
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

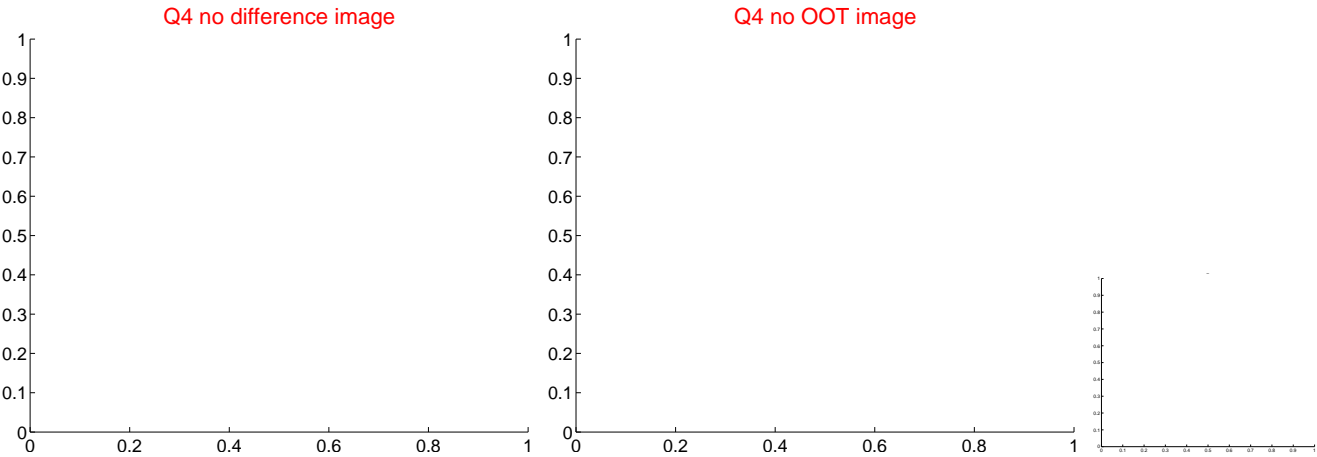
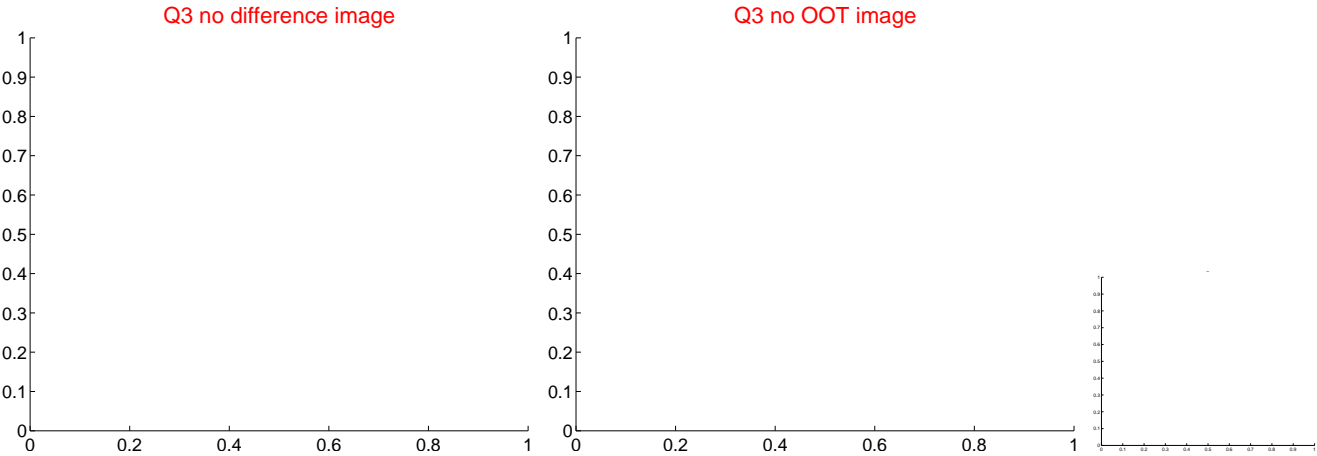
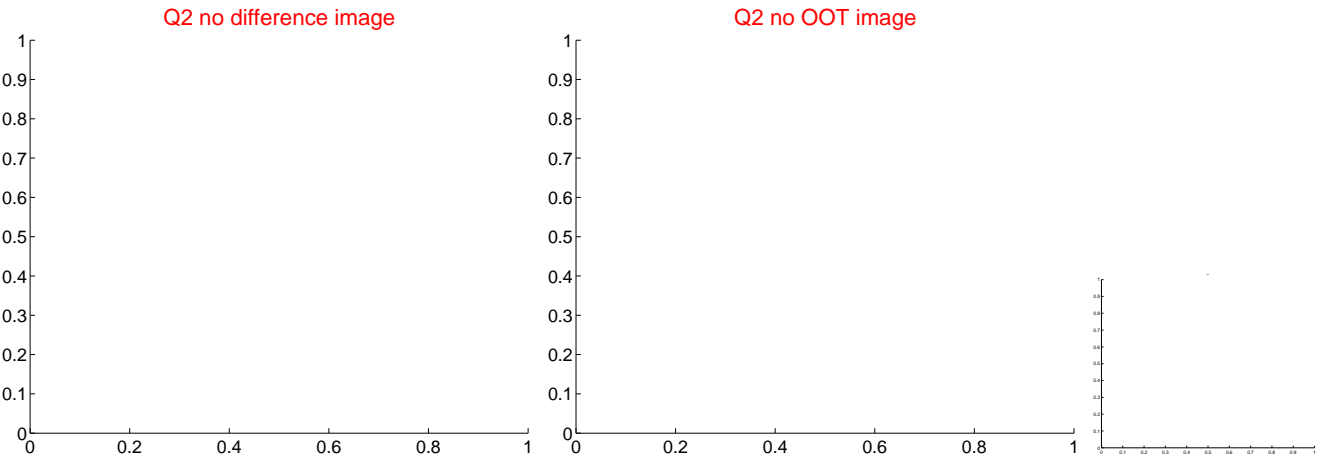
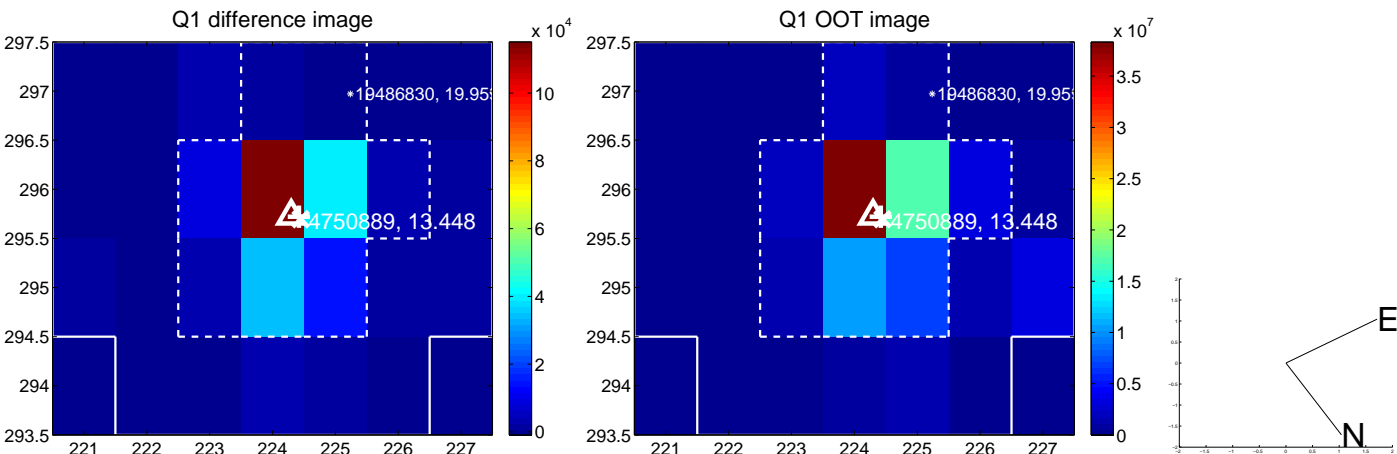


offset from photometric centroids

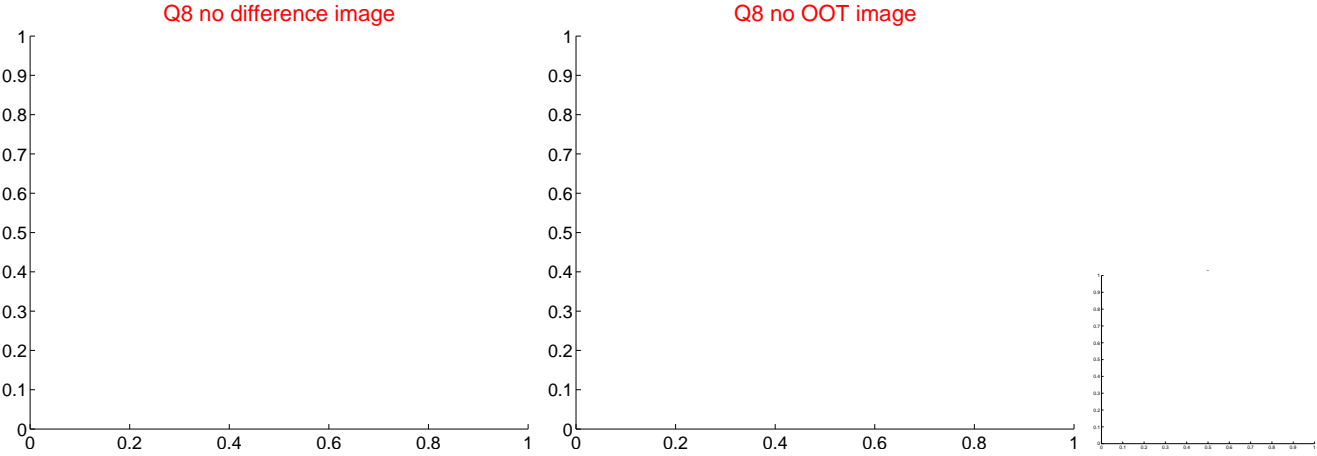
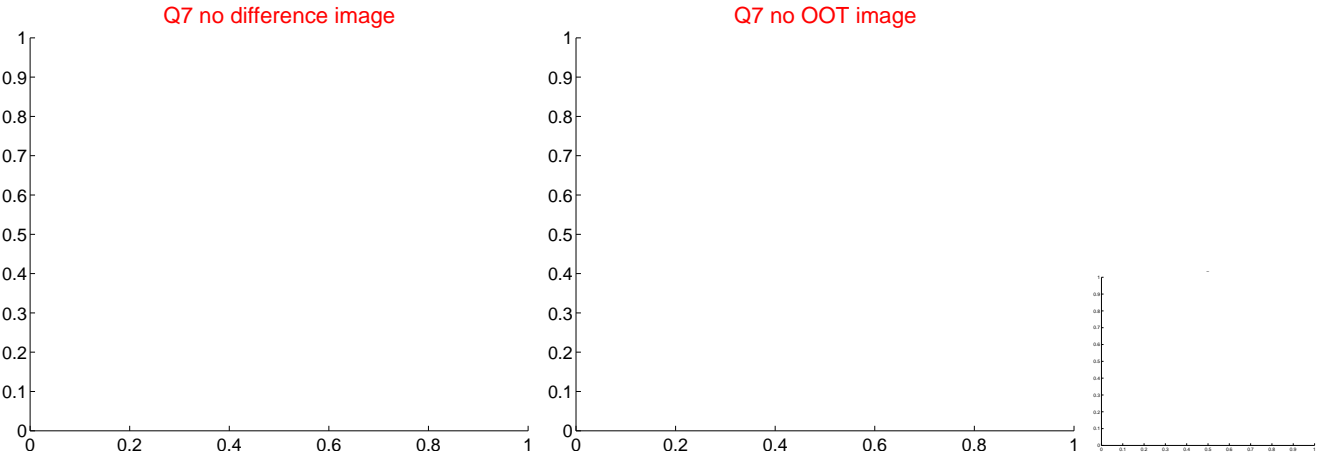
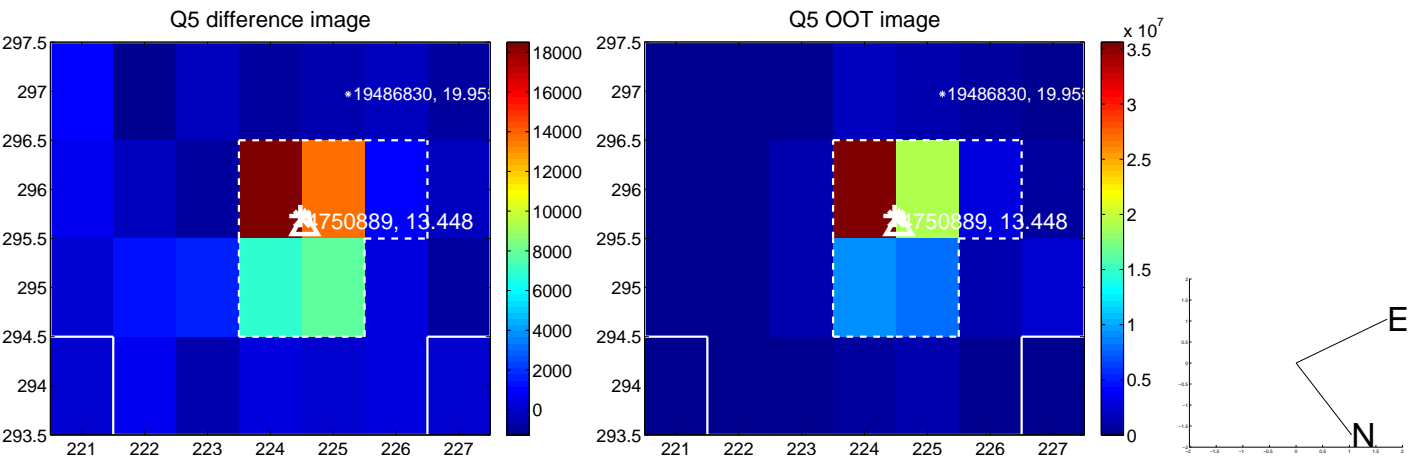


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

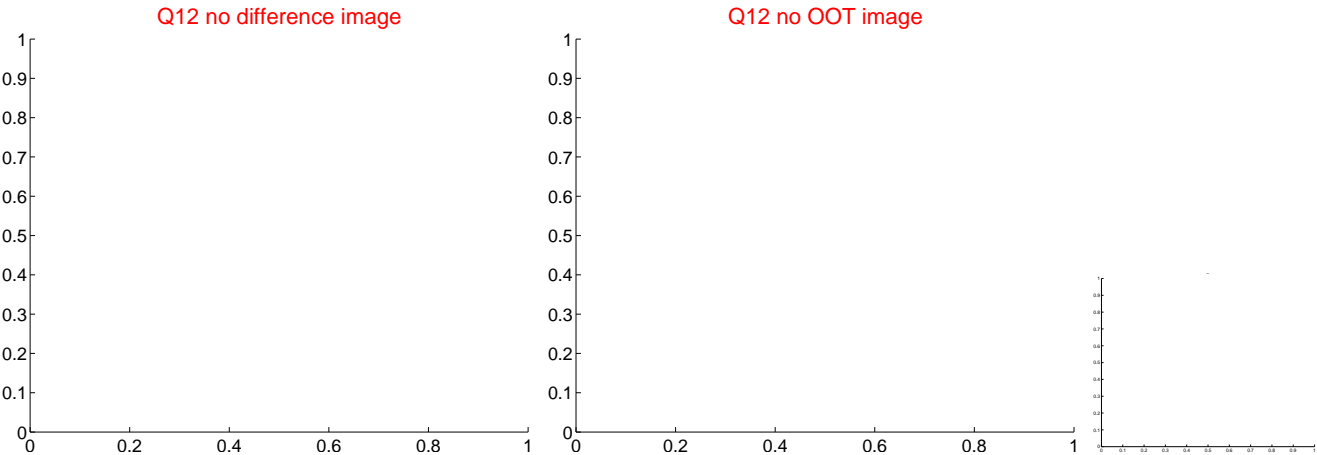
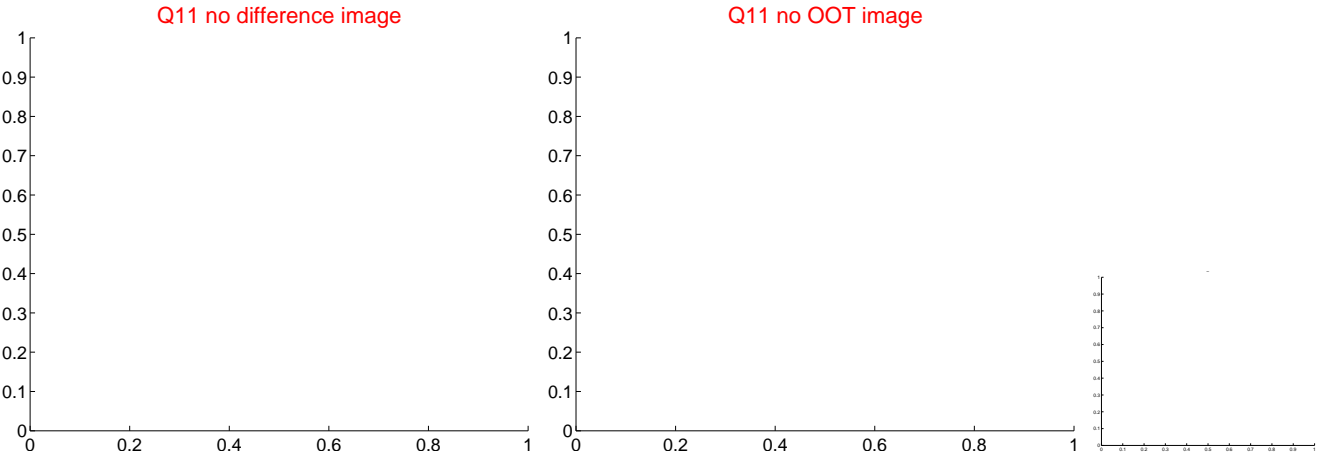
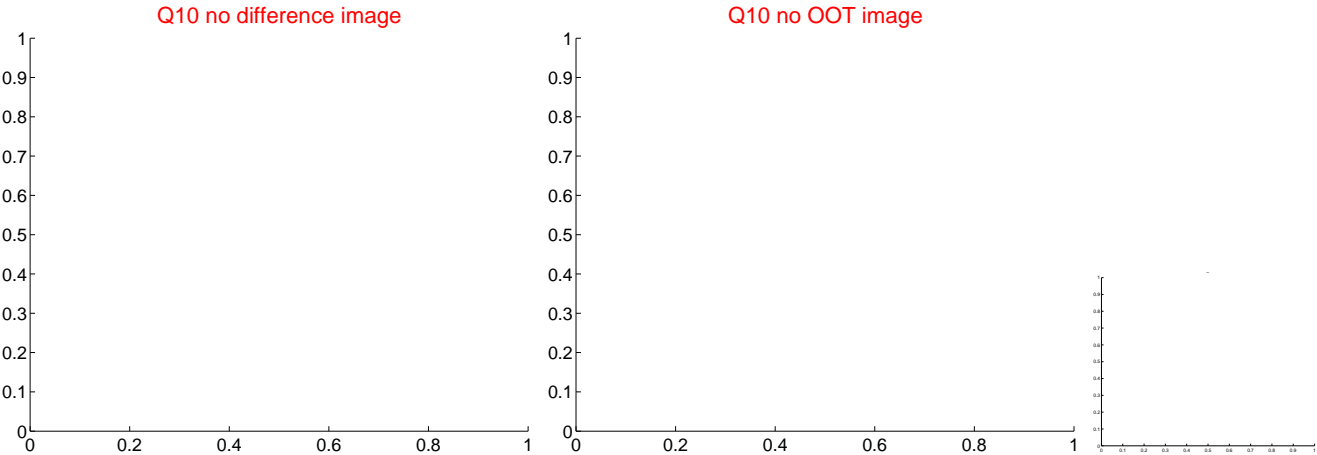
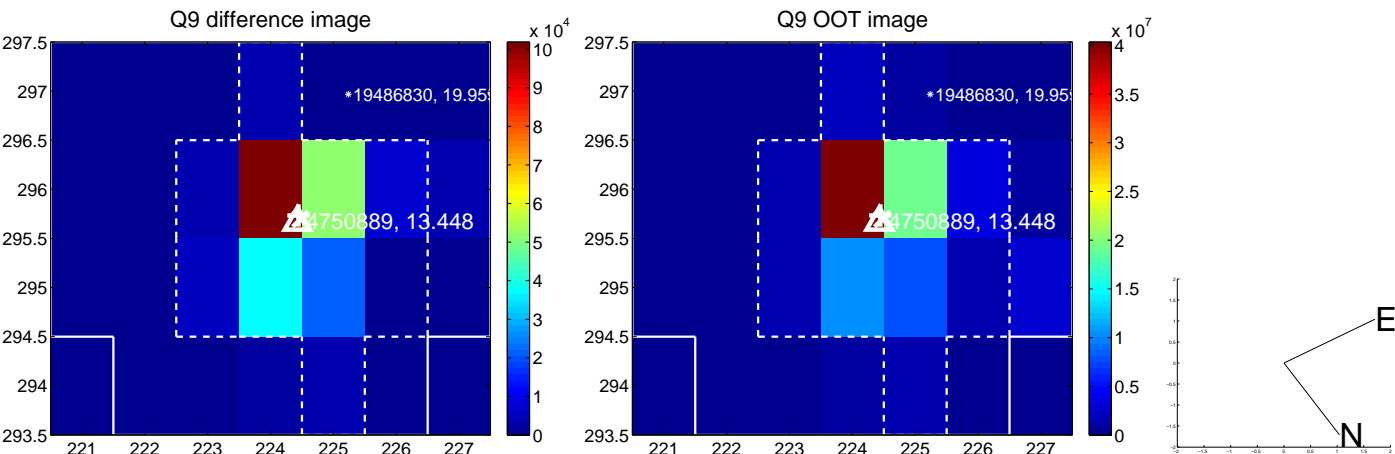
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



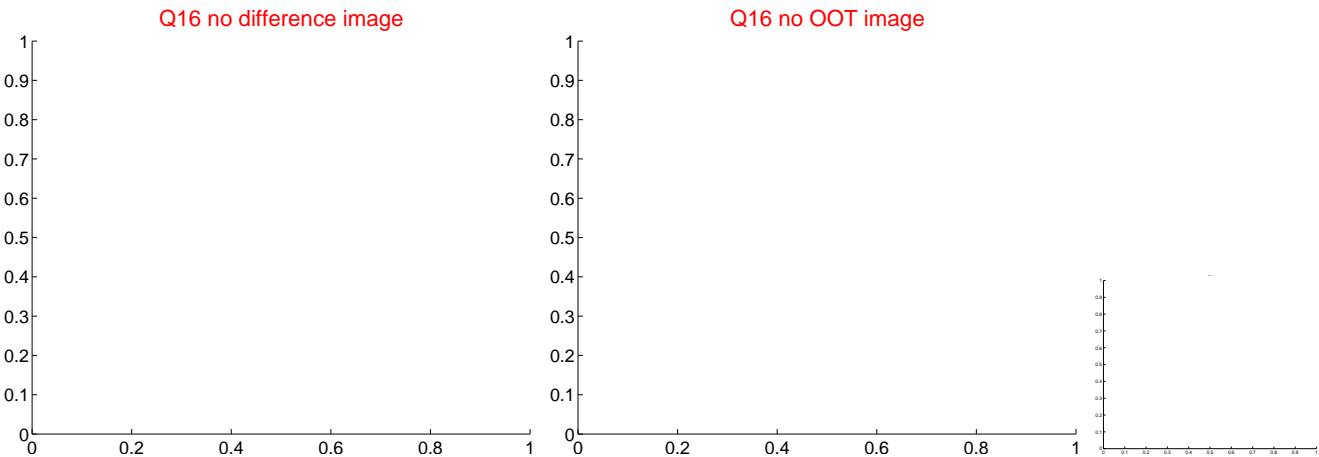
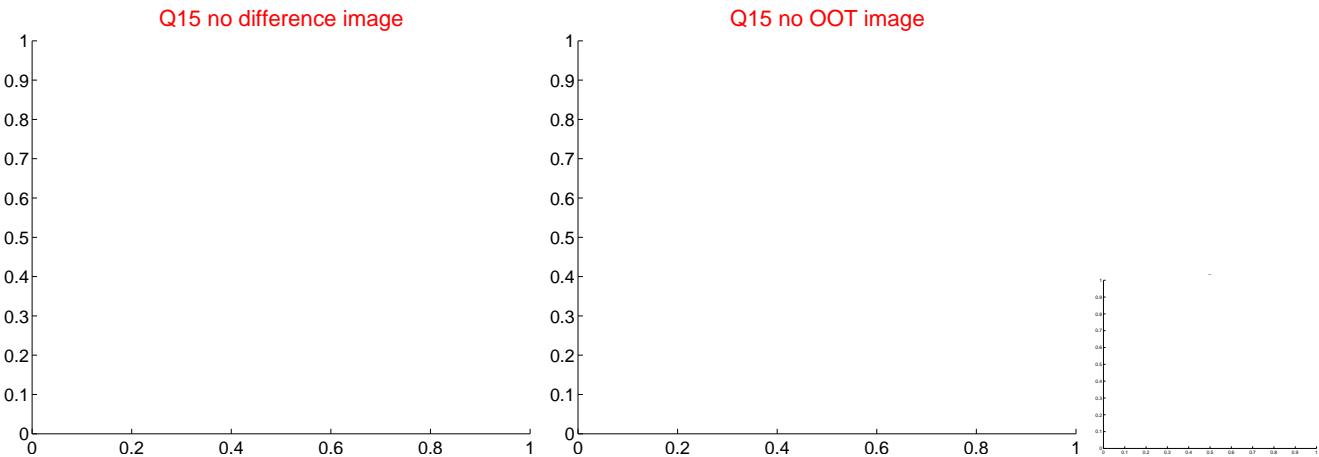
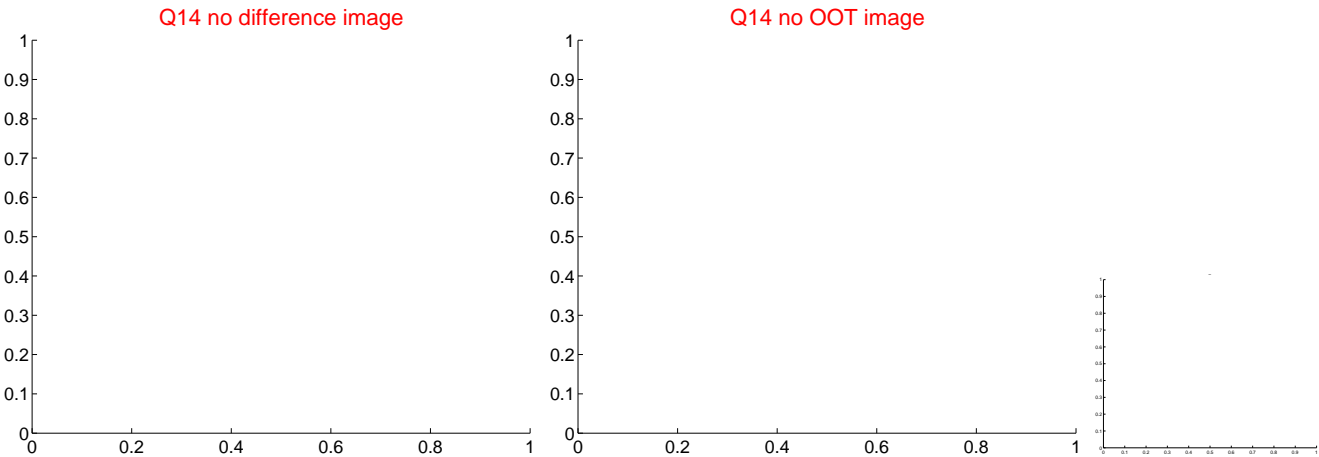
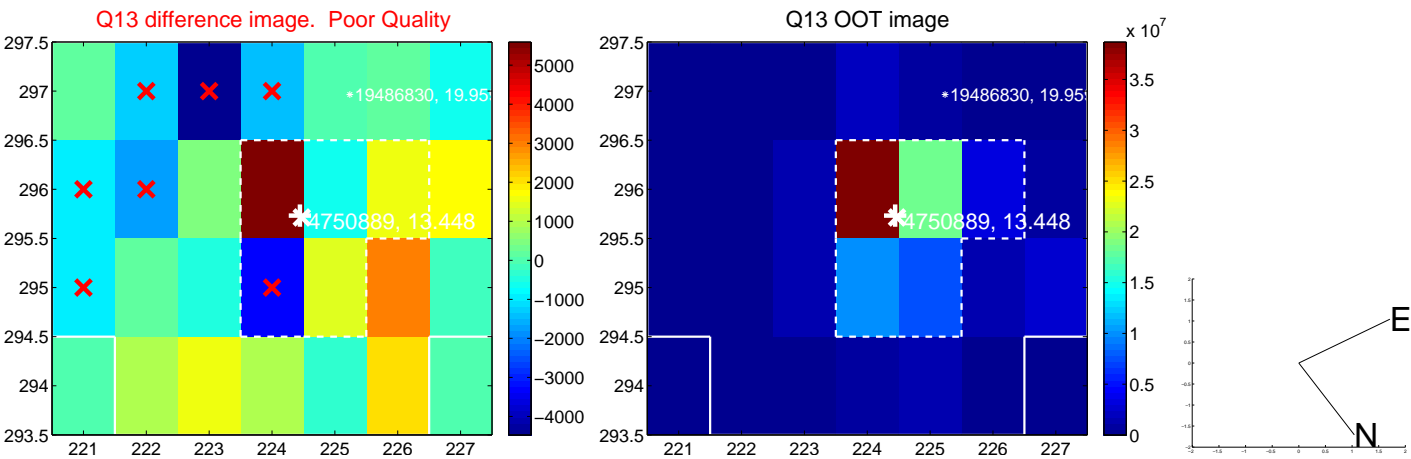
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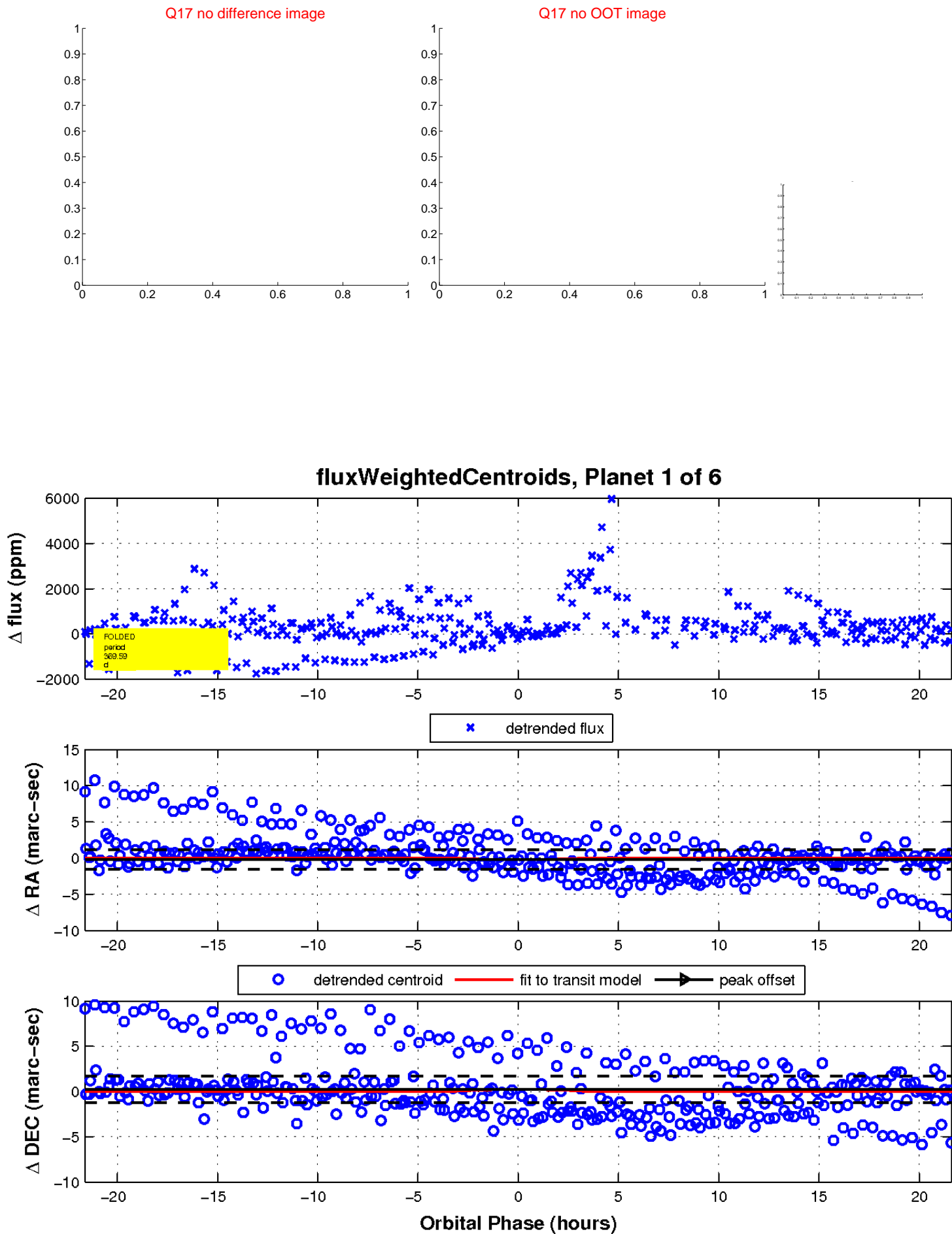
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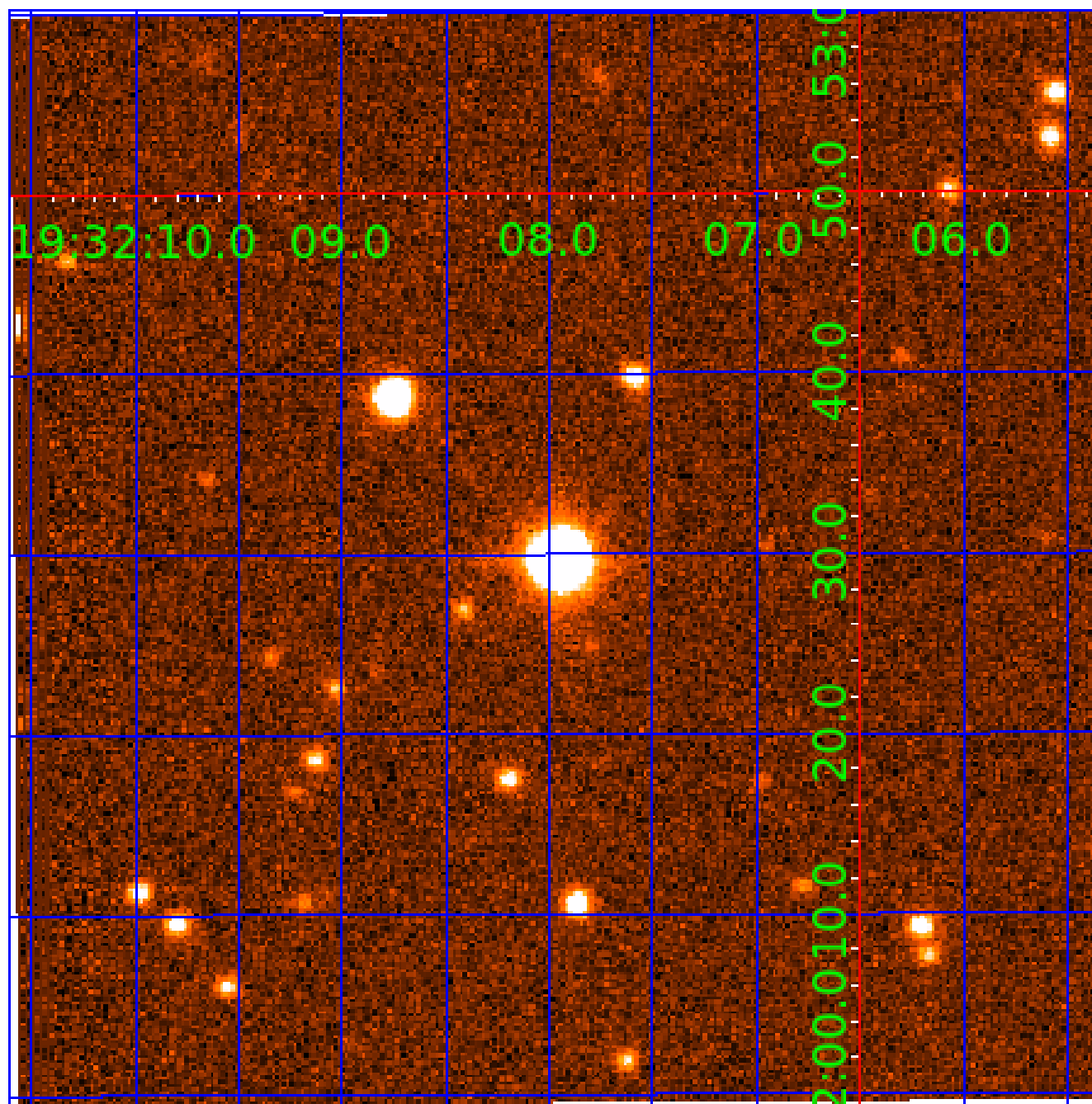


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 004750889

Q1-17 DR25 TCE Parameters

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004750889-01	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS—HALO_GHOST
004750889-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS
004750889-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
004750889-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
004750889-05	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—HALO_GHOST
004750889-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—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.

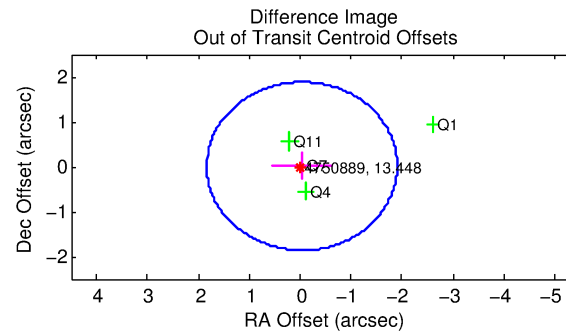
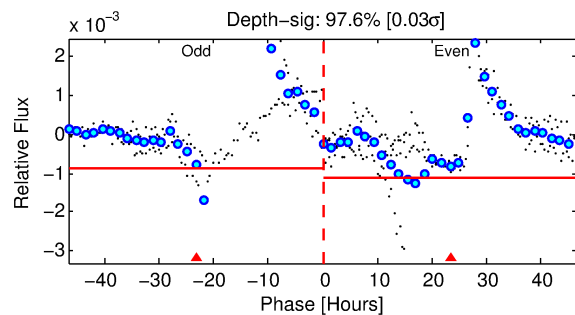
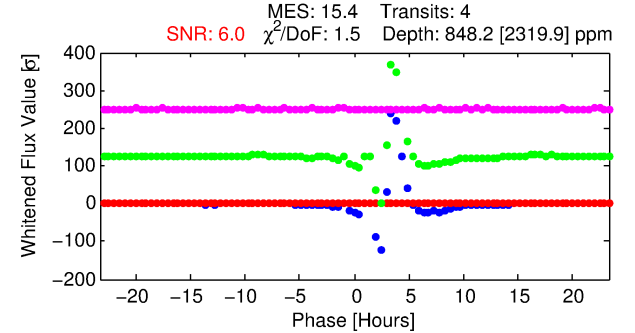
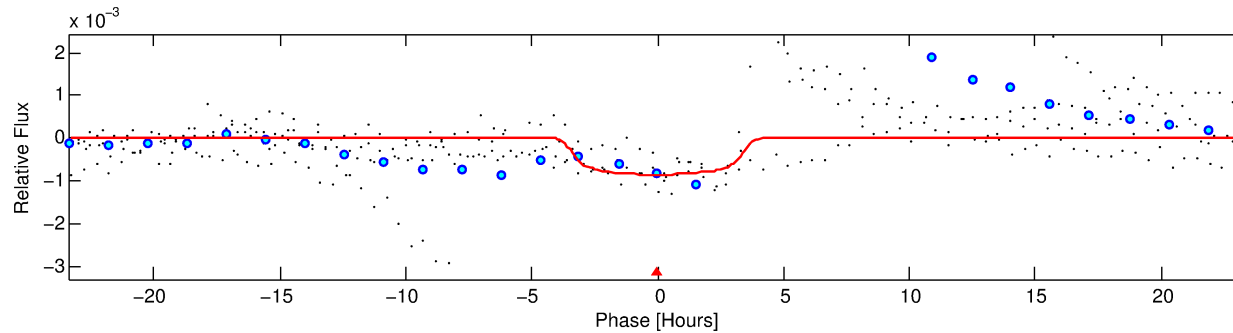
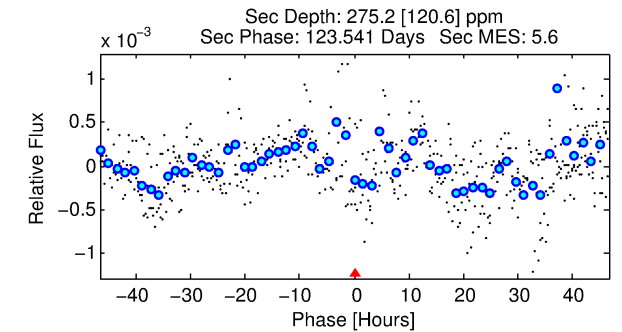
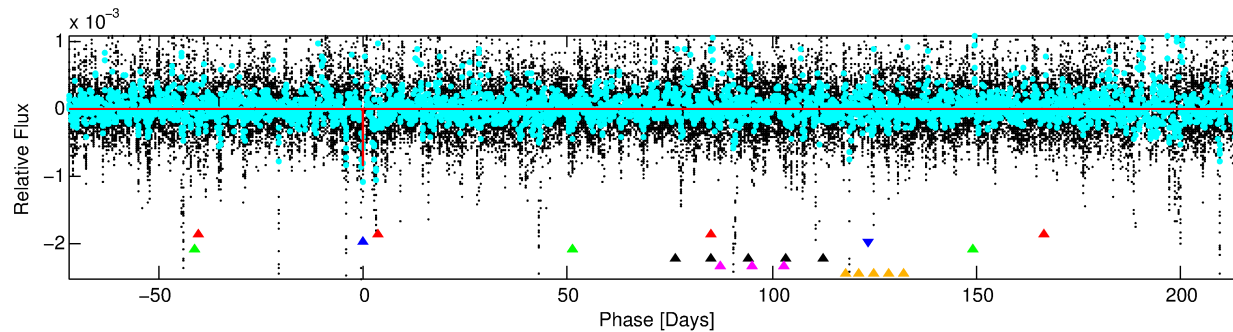
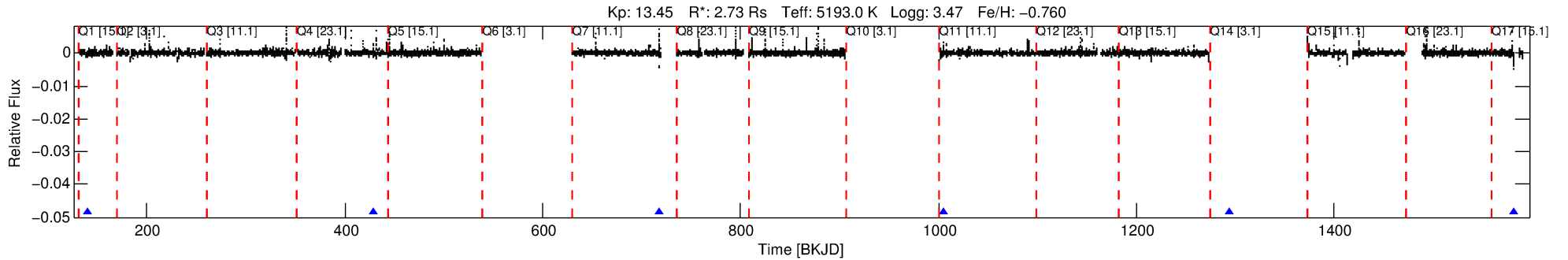
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004750889-02

No Significant Match Found

DV One-Page Summary

KIC: 4750889 Candidate: 2 of 6 Period: 288.209 d



DV Fit Results:

Period = 288.20938 [0.07366] d
Epoch = 140.7578 [0.1385] BKJD
Rp/R* = 0.0311 [0.0587]
a/R* = 154.46 [694.52]
b = 0.87 [1.23]
Seff = 7.69 [15.09]
Teq = 425 [208] K
Rp = 9.28 [18.82] Re
a = 0.7952 [0.8498] AU
Ag = 1111.22 [4744.34] [0.23 σ]
Teffp = 3791 [3600] K [0.93 σ]

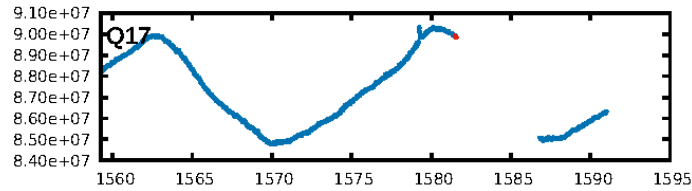
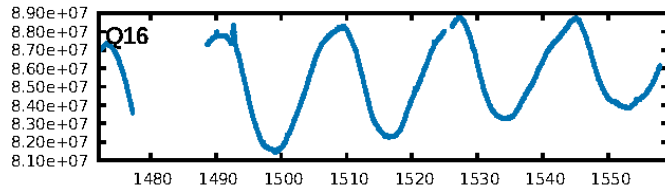
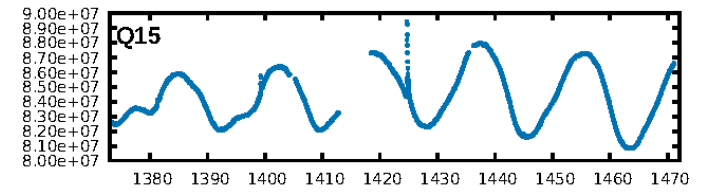
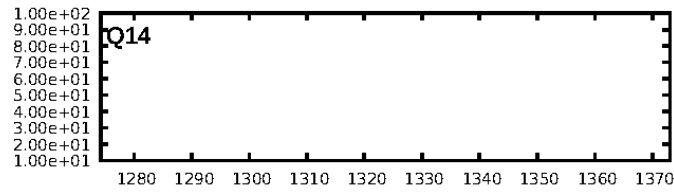
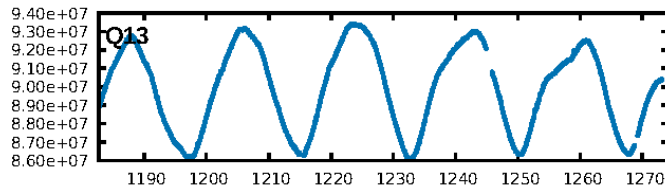
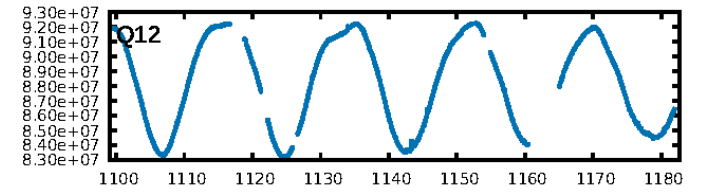
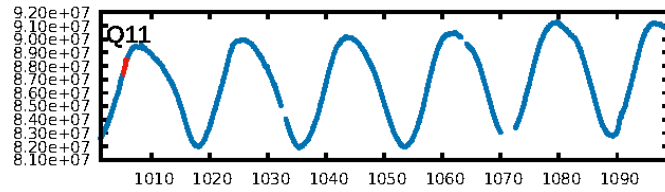
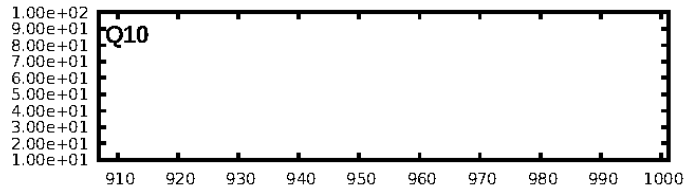
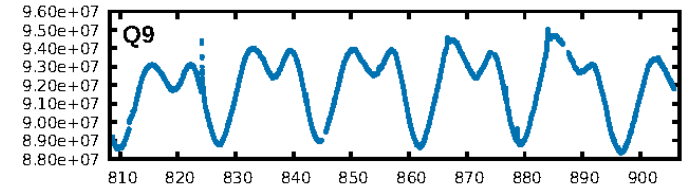
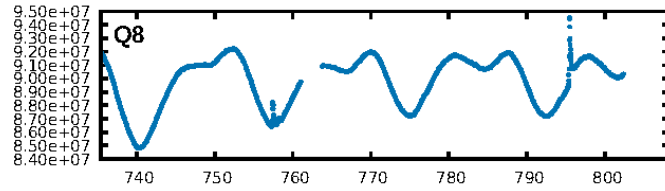
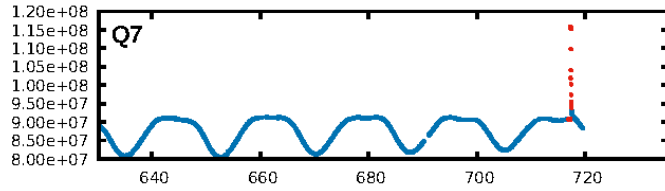
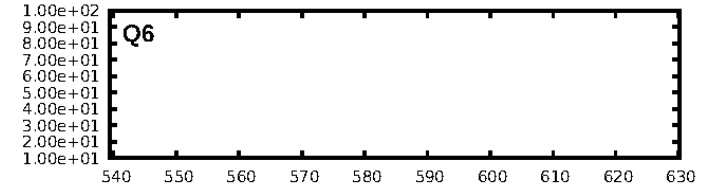
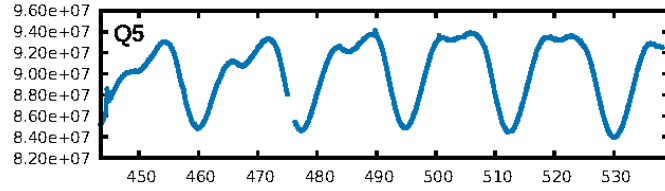
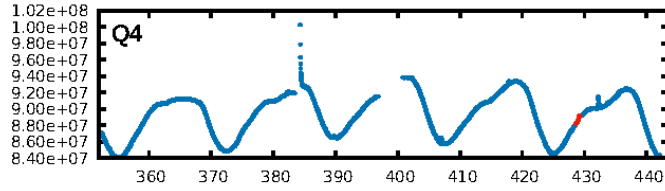
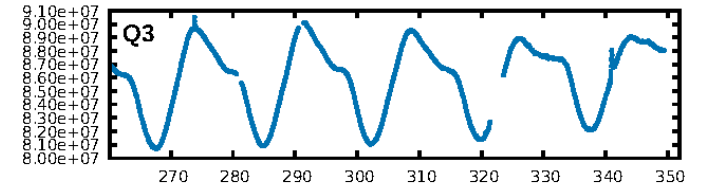
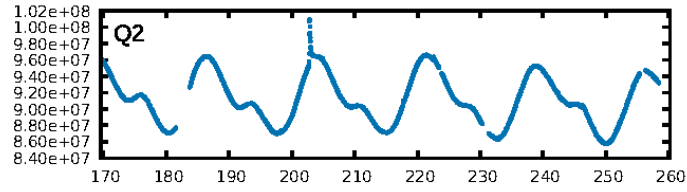
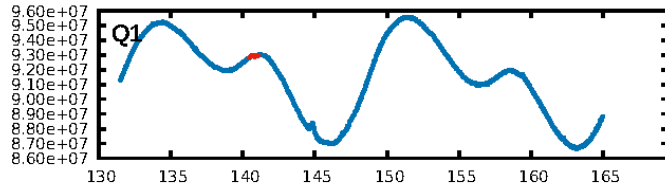
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [23.24 σ]
LongPeriod-sig: 100.0% [8.76 σ]
ModelChiSquare2-sig: 7.2%
ModelChiSquareGof-sig: 46.2%
Bootstrap-pfa: 1.75e-16
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 0.7749
Centroid-sig: 0.3%
Centroid-so: 1.230 arcsec [2.17 σ]
OotOffset-rm: 0.037 arcsec [0.06 σ]
KicOffset-rm: 0.232 arcsec [1.07 σ]
OotOffset-st: 0/2/1/1 [4]
KicOffset-st: 0/2/1/1 [4]
DiffImageQuality-fgm: 0.75 [3/4]
DiffImageOverlap-fno: 1.00 [4/4]

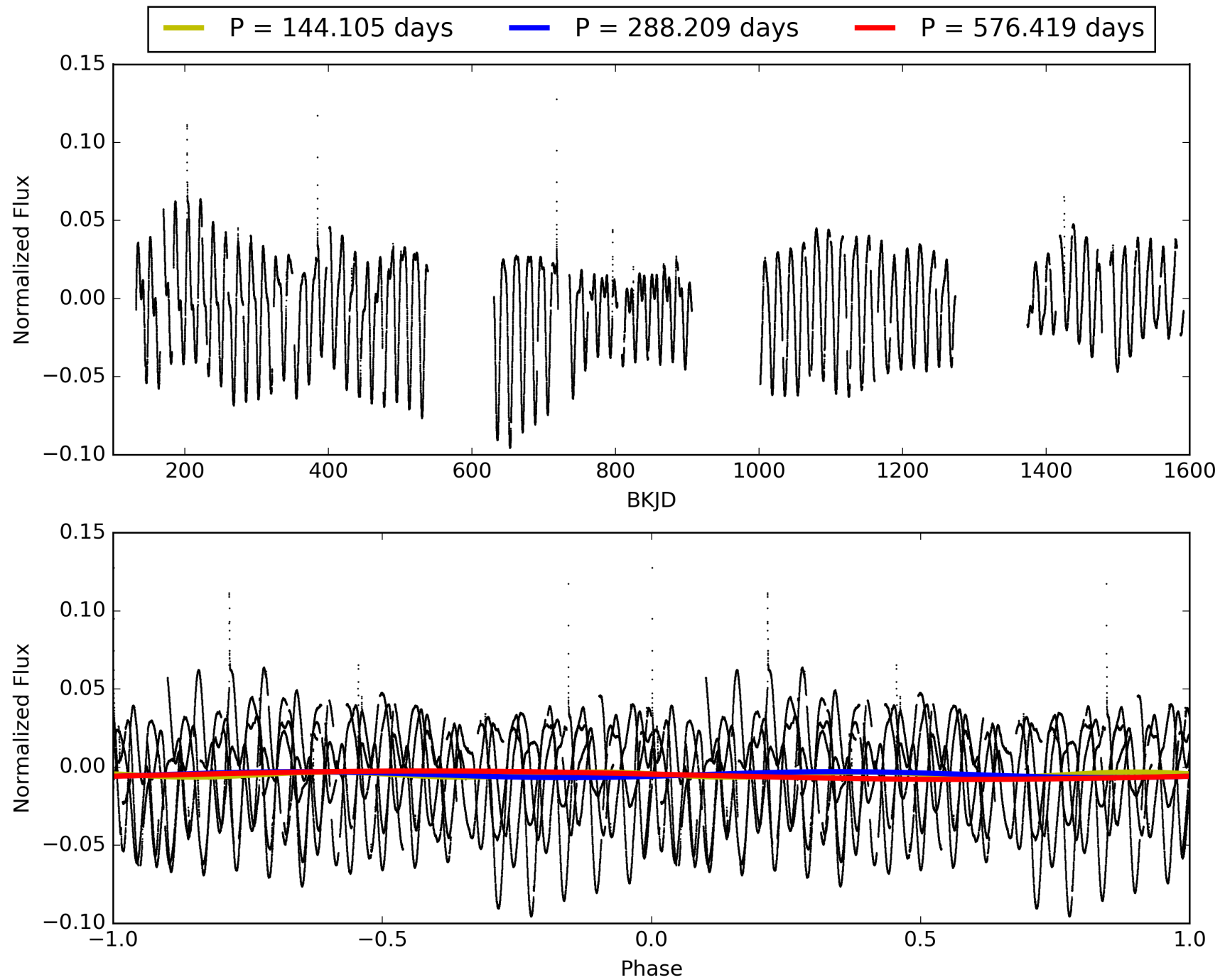
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 11:13:47 Z

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

TCE 004750889-02, PDC Light Curves

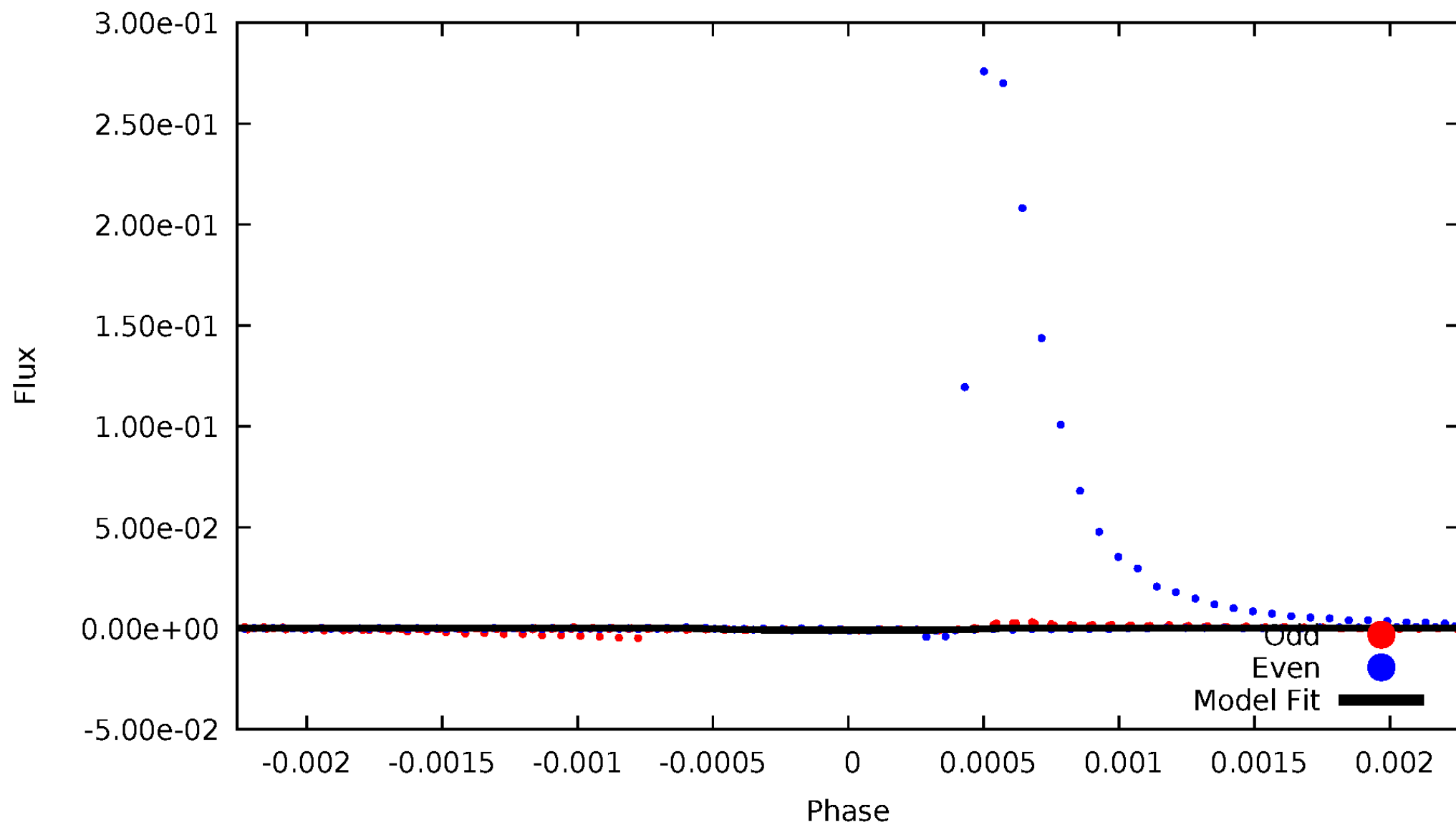


TCE 004750889-02



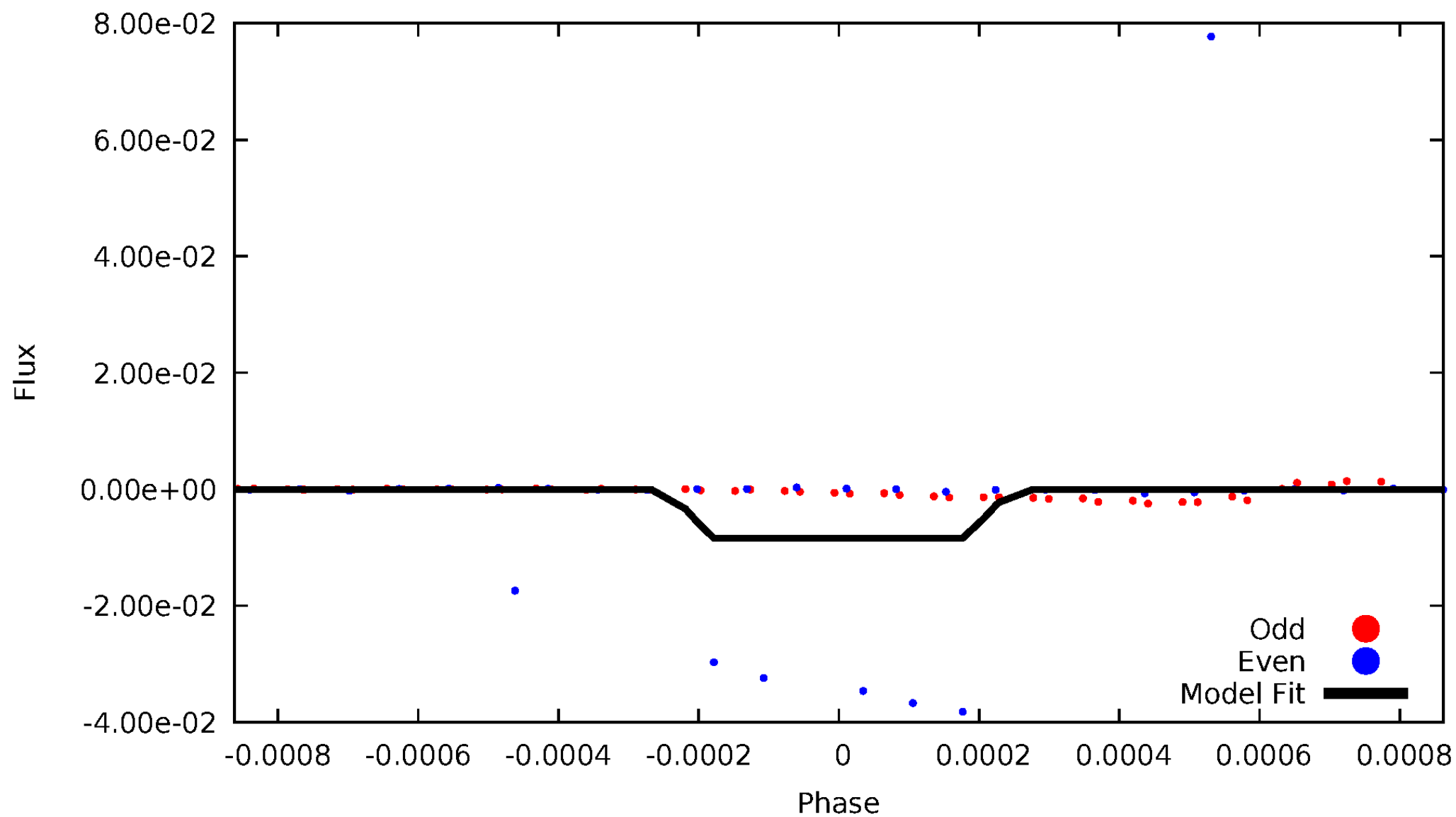
DV Odd/Even

TCE 004750889-02



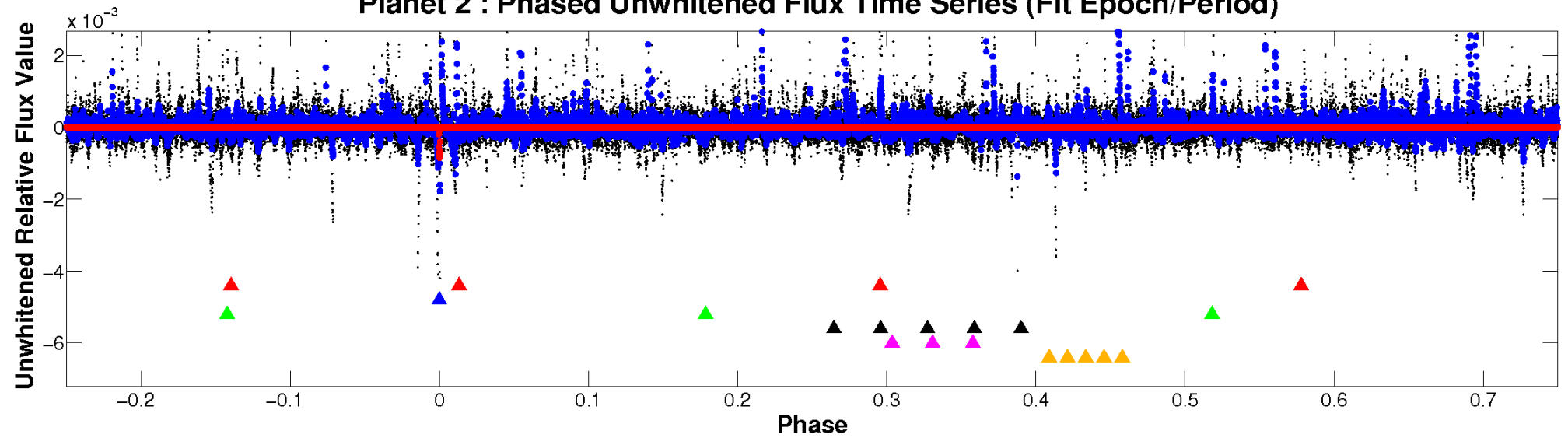
ALT Odd/Even

TCE 004750889-02

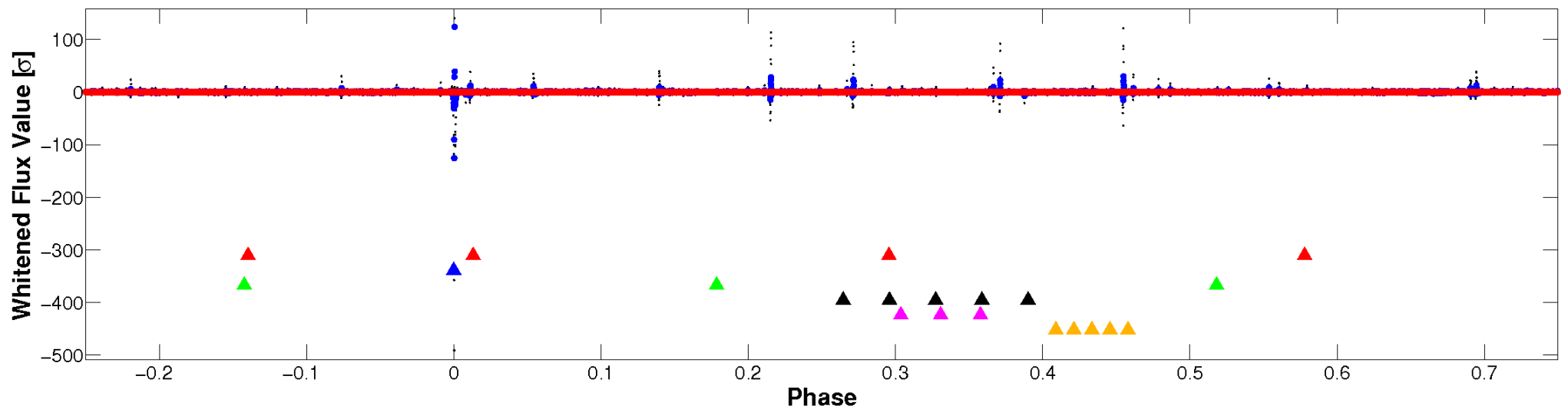


Non-Whitened Vs. Whitened Light Curve

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

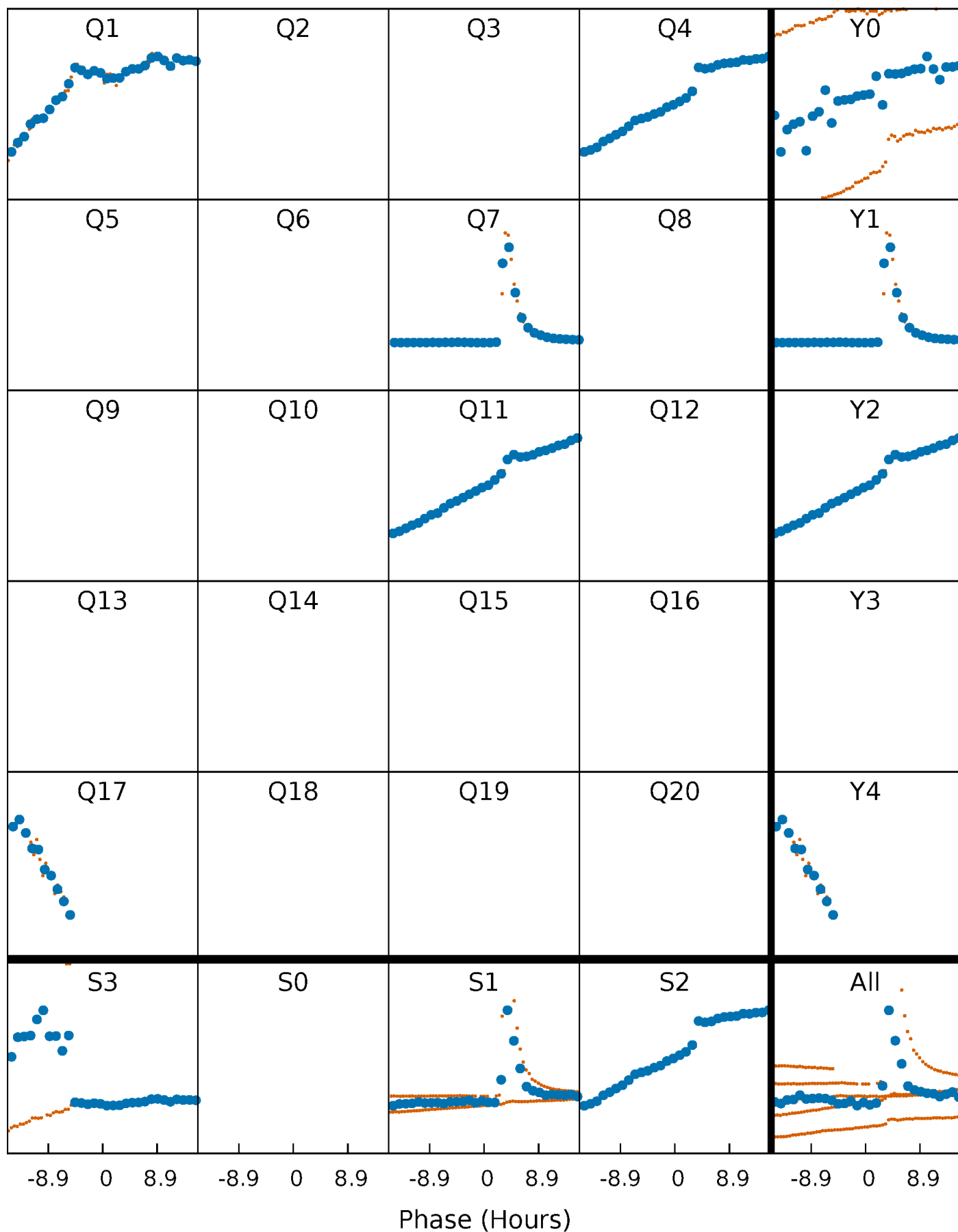


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



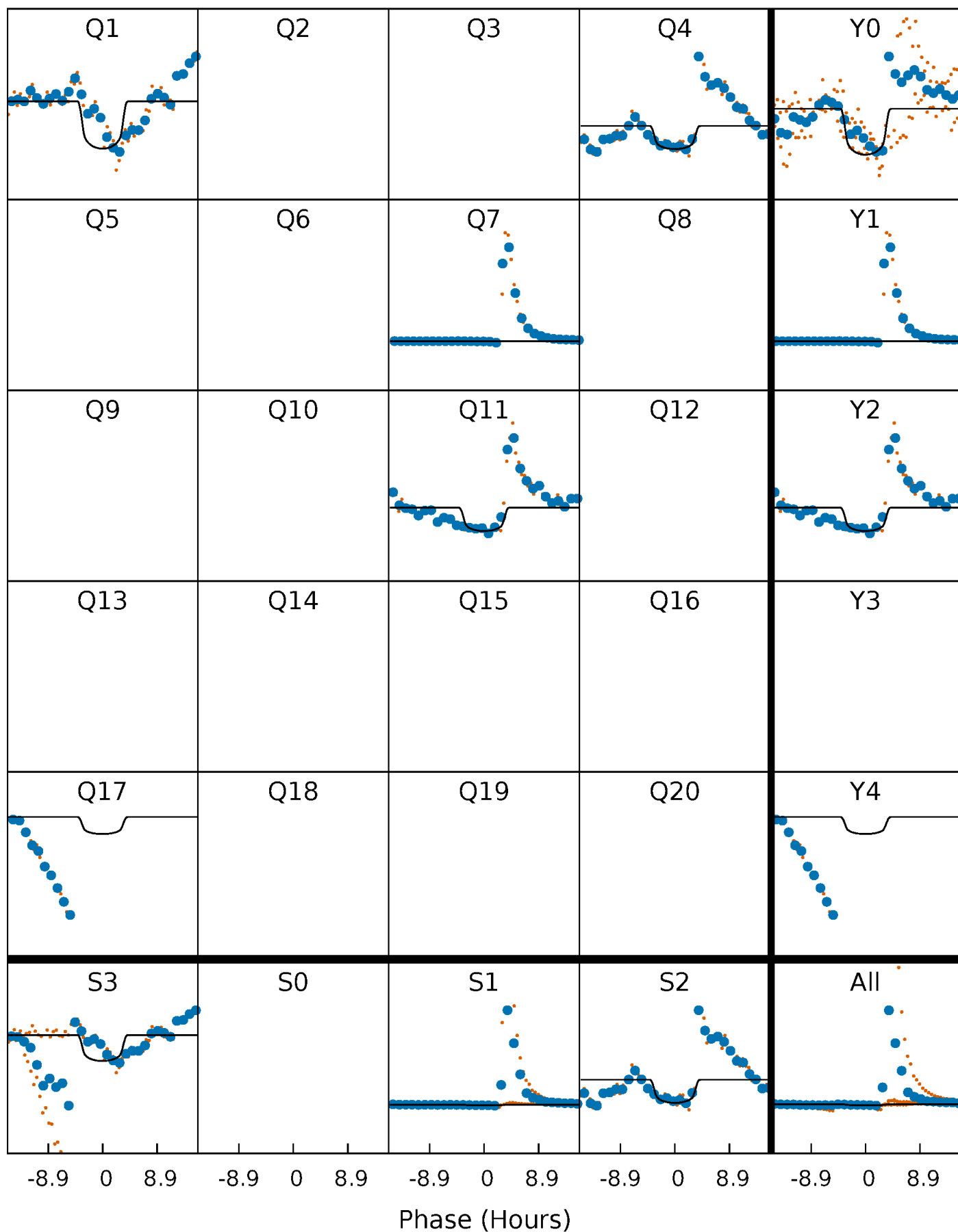
PDC Quarter-Phased Transit Curves

TCE 004750889-02 $P=288.209376$ Days $T_0=140.757793$ (BKJD)



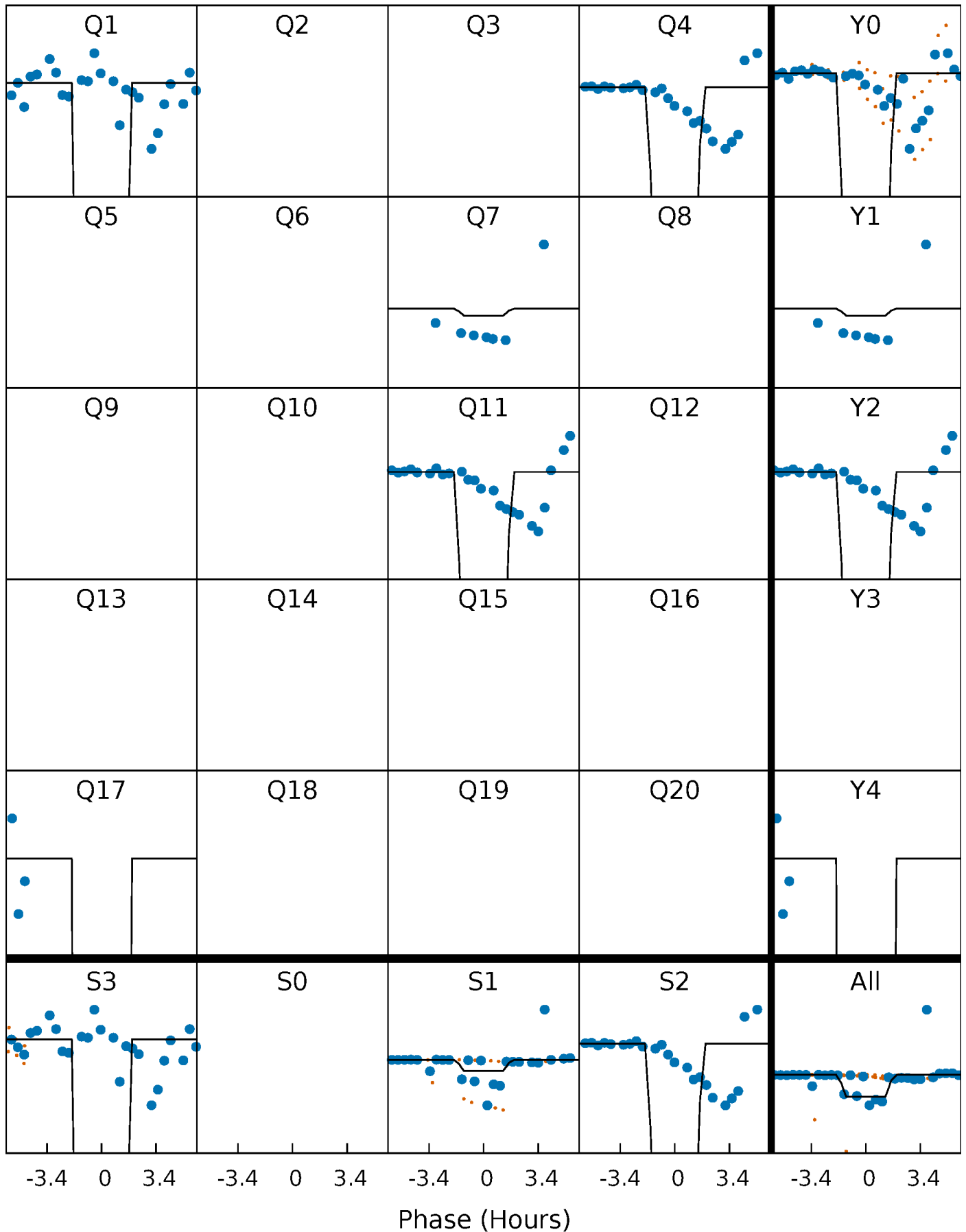
DV Quarter-Phased Transit Curves

TCE 004750889-02 $P=288.209376$ Days $T_0=140.757793$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

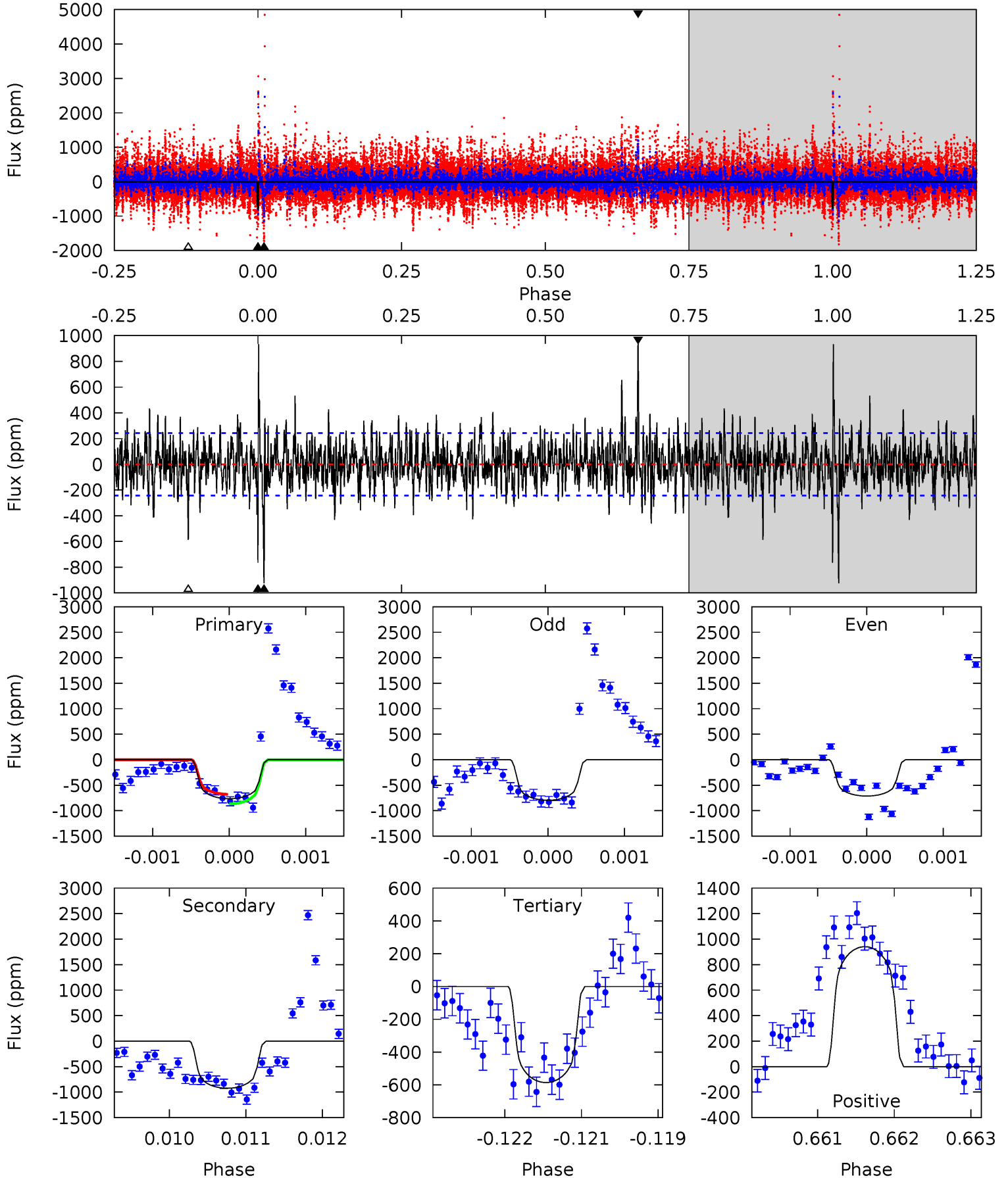
TCE 004750889-02 P=288.211054 Days $T_0=140.725272$ (BKJD)



DV Model-Shift Uniqueness Test

004750889-02, P = 288.209376 Days, E = 140.757793 Days

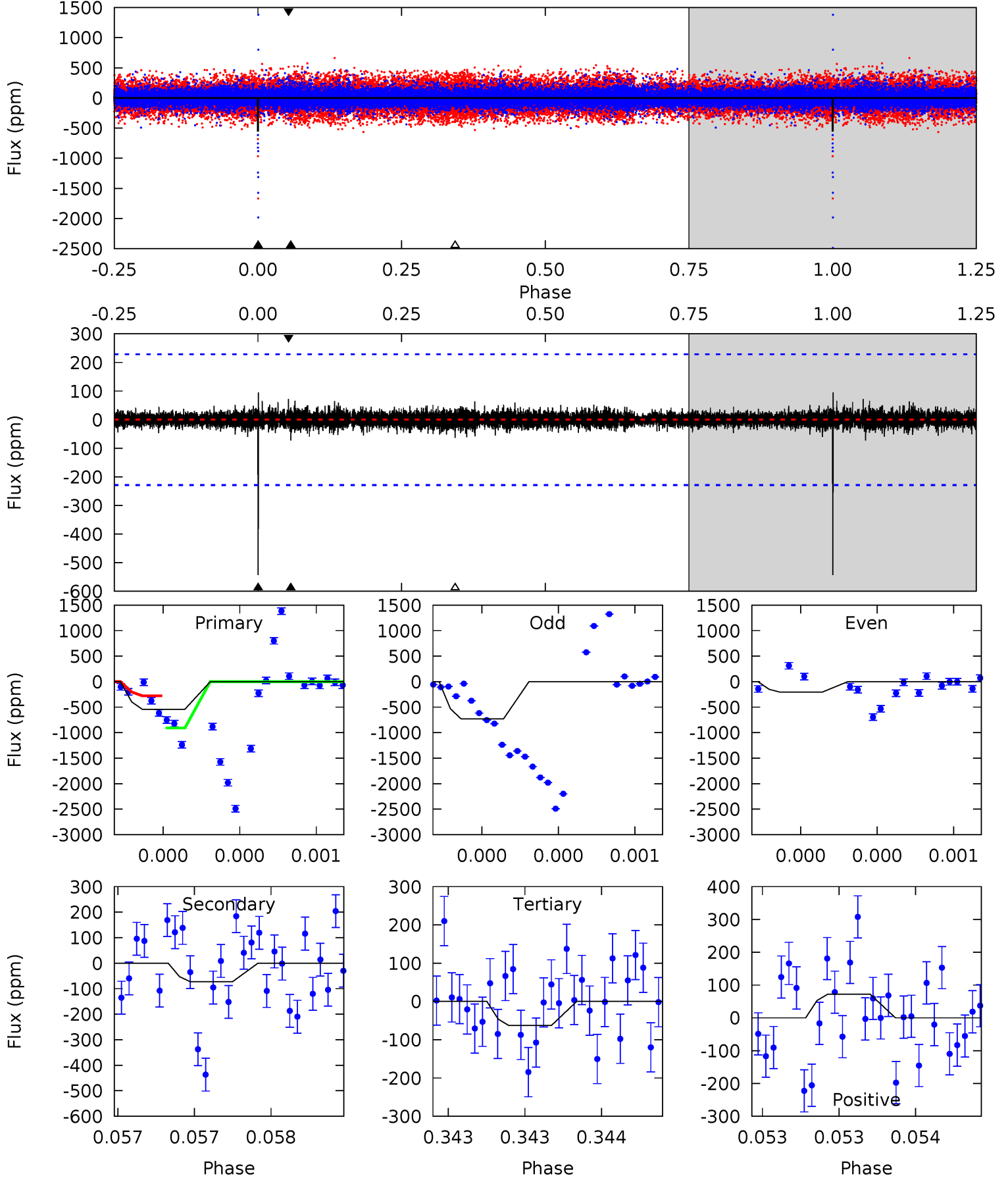
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
17.1	20.7	13.1	21.0	5.42	3.24	3.19	3.99	-3.94	7.56	-0.37	0.71	-6.63	0.50	2.09



Alt Model-Shift Uniqueness Test

004750889-02, P = 288.211054 Days, E = 140.725272 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.2	1.76	1.54	1.76	5.58	3.49	0.34	11.7	11.5	0.23	0.01	5.65	12.3	0.15	7.53



Stellar Parameters For KIC 004750889

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5193^{+121}_{-212}	$3.472^{+1.232}_{-0.308}$	$-0.760^{+0.300}_{-0.400}$	$2.732^{+1.669}_{-2.040}$	$0.807^{+0.209}_{-0.209}$	$0.056^{+4.495}_{-0.036}$
	+2%/-4%	+35%/-9%	+39%/-53%	+61%/-75%	+26%/-26%	+8064%/-65%
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 004750889-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-924 ± 45	$12.72^{+15.64}_{-9.03}$	566^{+95}_{-127}	4184^{+2522}_{-843}	1950^{+22300}_{-1554}
Alt.	-72 ± 41	$23.27^{+20.24}_{-14.45}$	565^{+92}_{-137}	2395^{+548}_{-316}	41^{+339}_{-32}

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 $A_{obs} \gg 1.0$

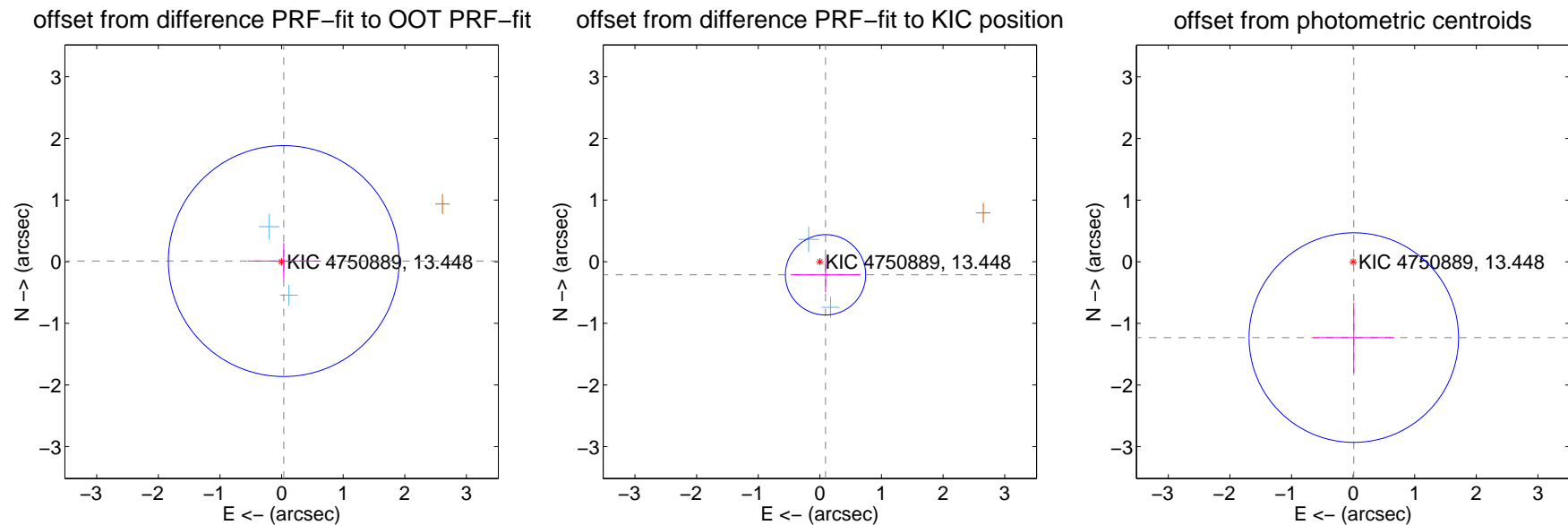
DV Centroid Data

Supplemental centroid analysis for 004750889-02. Kepler magnitude: 13.45. Transit SNR 6.01

There are 3 quarters with good PRF difference image offsets

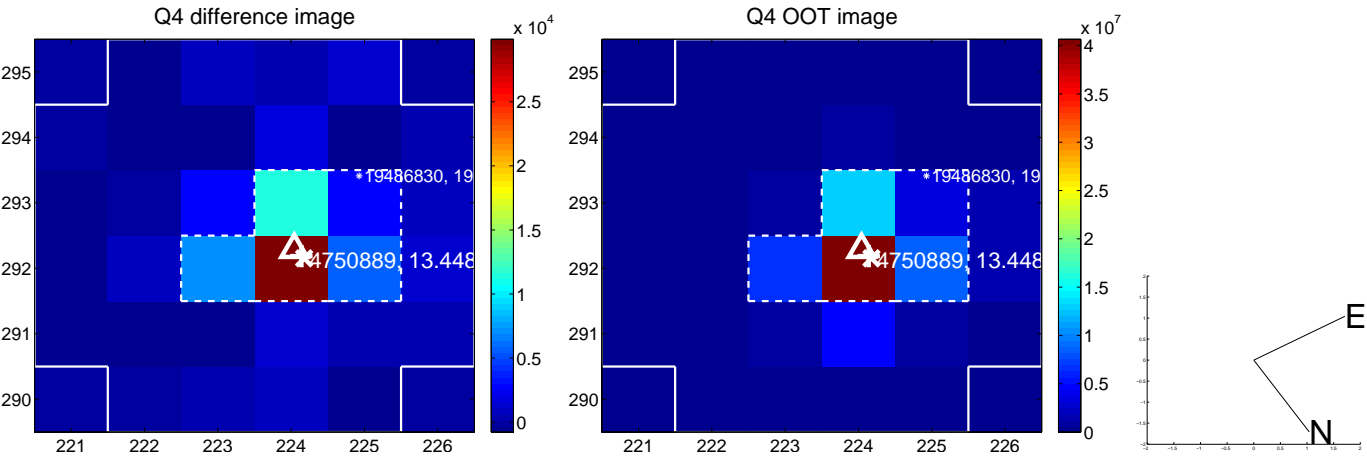
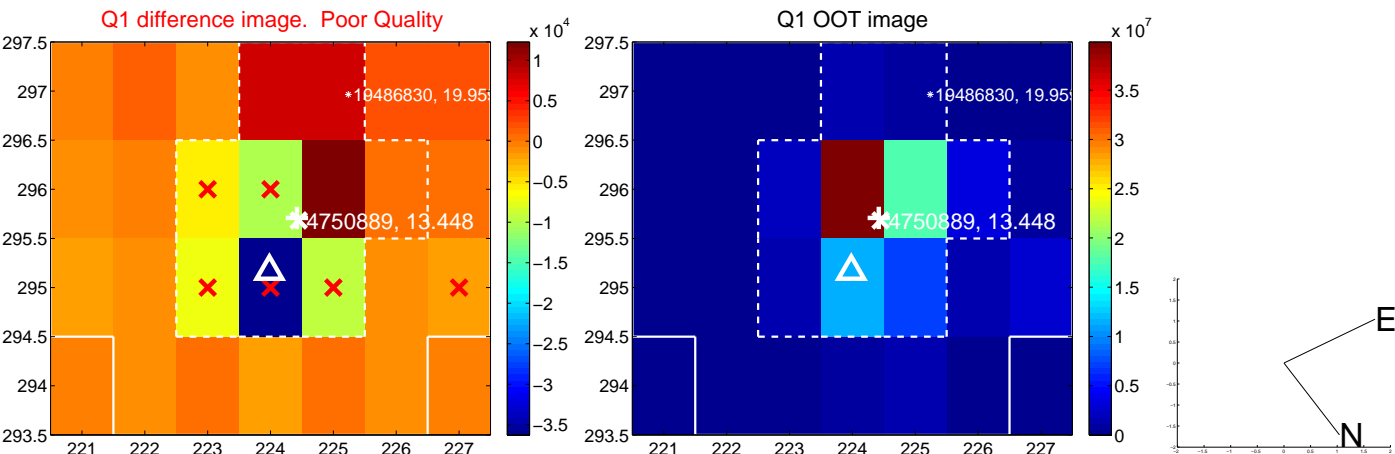
The direct PRF centroid is offset from the target star catalog position by about 0.21 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.037 ± 0.624	0.06	-0.035 ± 0.582	0.010 ± 0.293
PRF-fit source offset from KIC position	0.232 ± 0.217	1.07	-0.092 ± 0.567	-0.212 ± 0.289
photometric centroid source offset	1.23 ± 0.57	2.17	-0.01 ± 0.66	-1.23 ± 0.57



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.

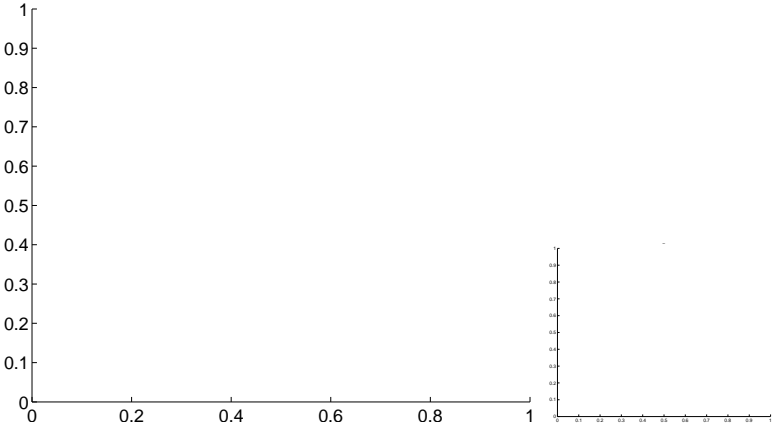


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

Q5 no difference image



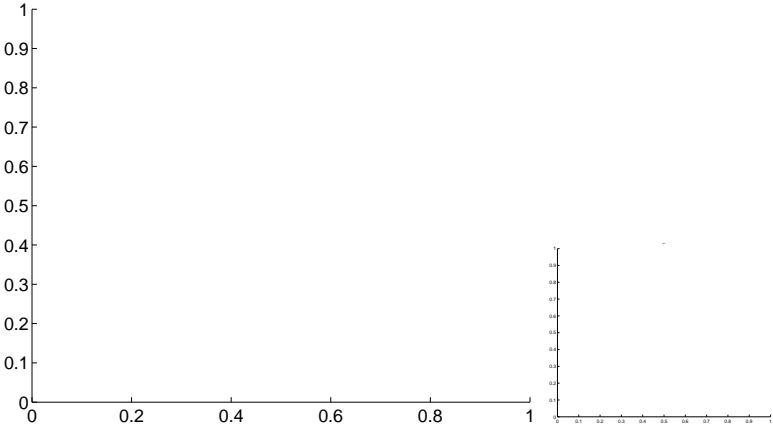
Q5 no OOT image



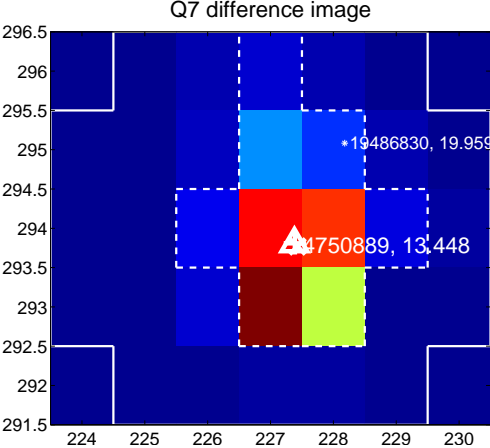
Q6 no difference image



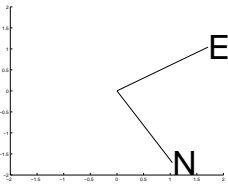
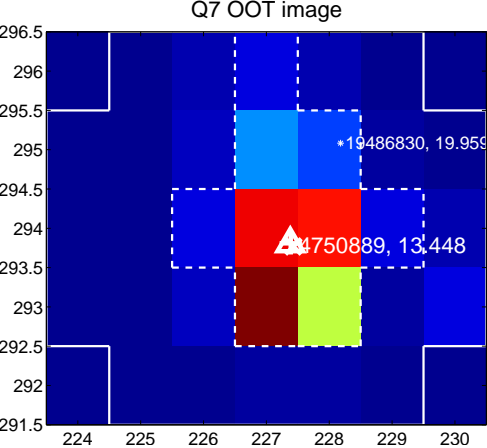
Q6 no OOT image



Q7 difference image



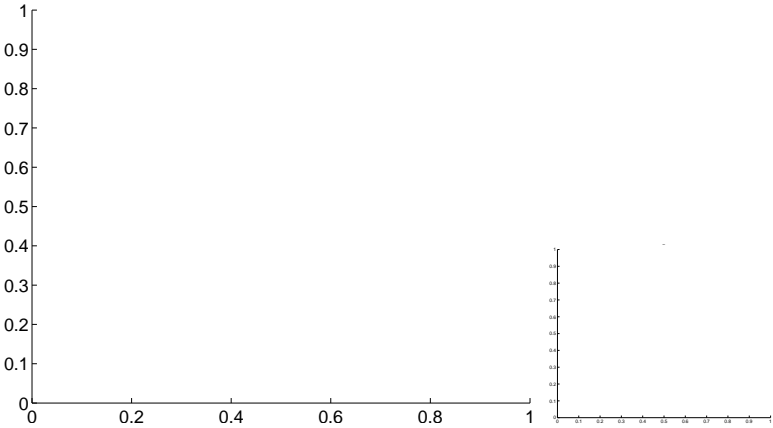
Q7 OOT image



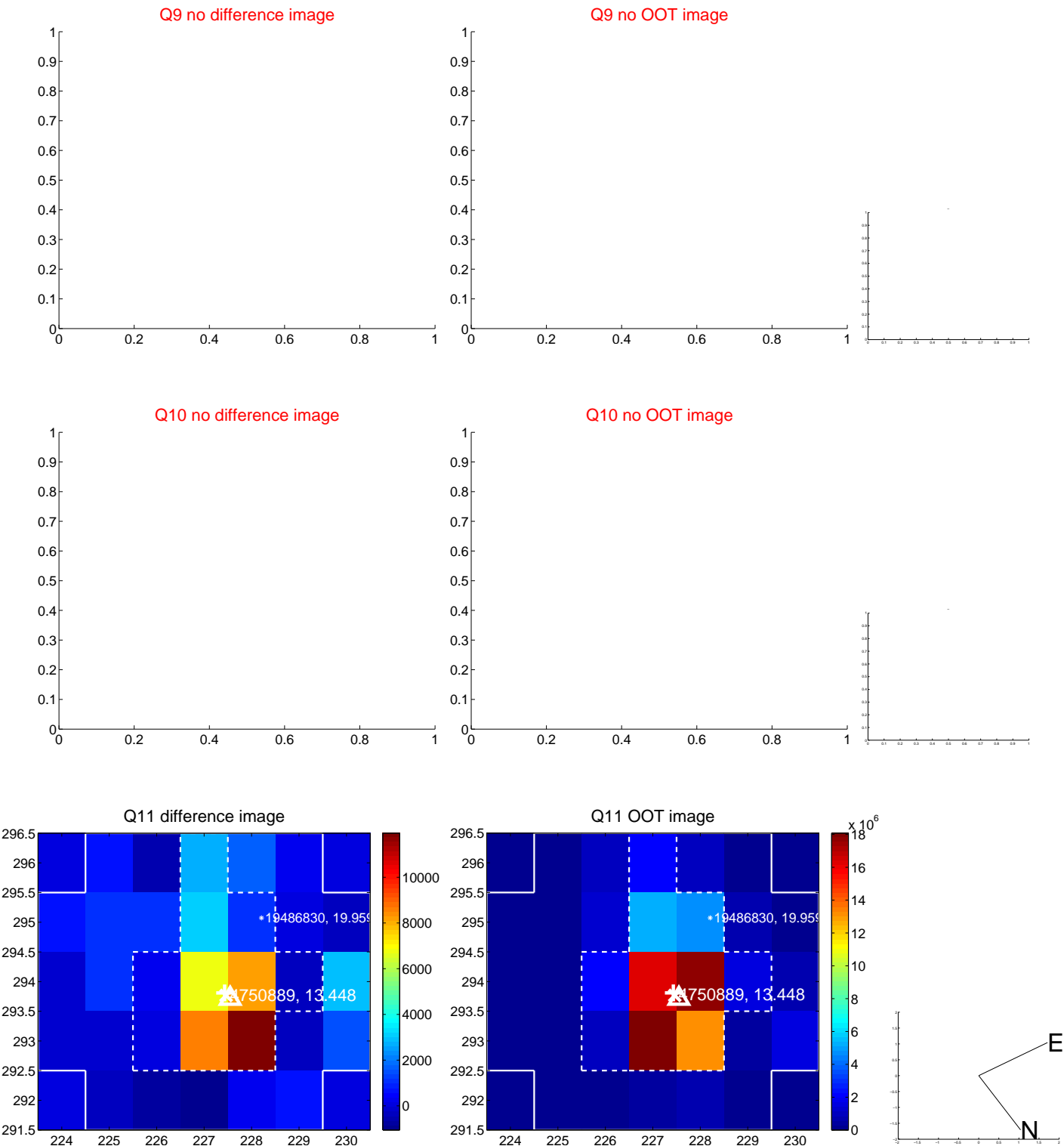
Q8 no difference image



Q8 no OOT image



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

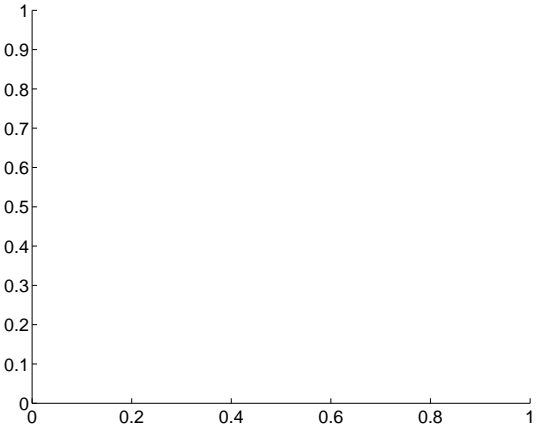


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

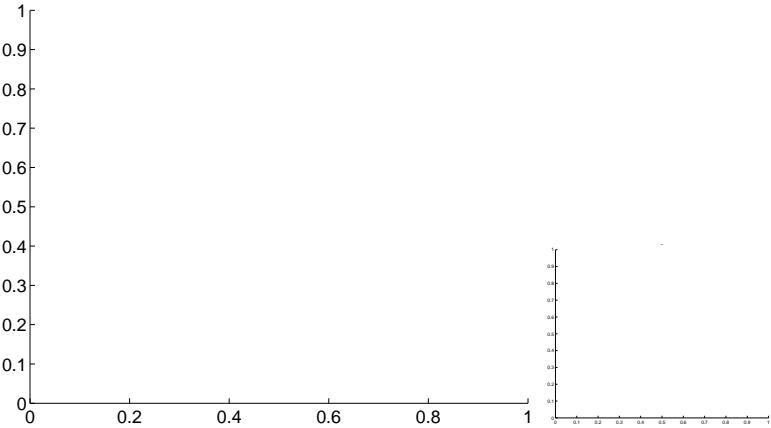


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

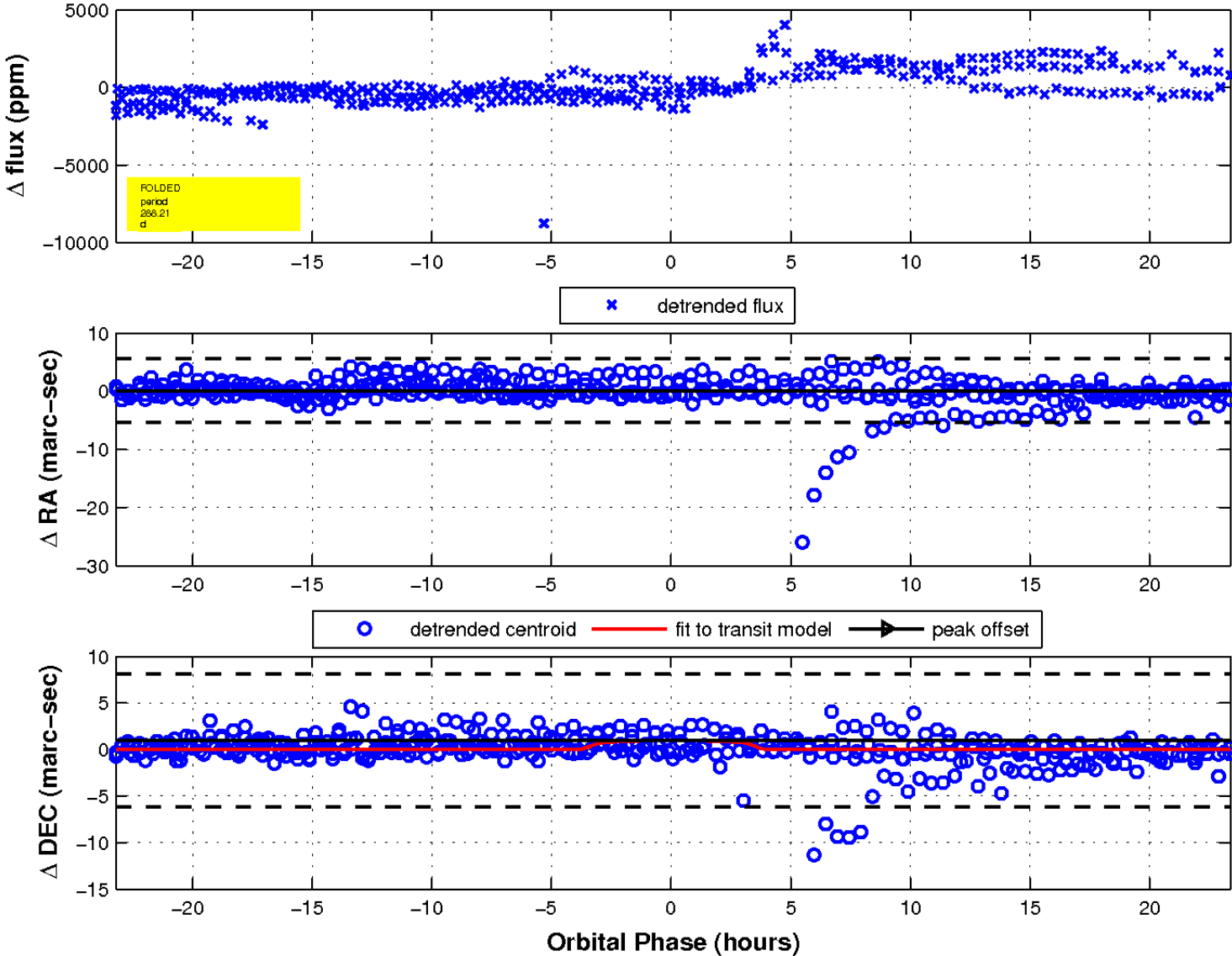
Q17 no difference image



Q17 no OOT image

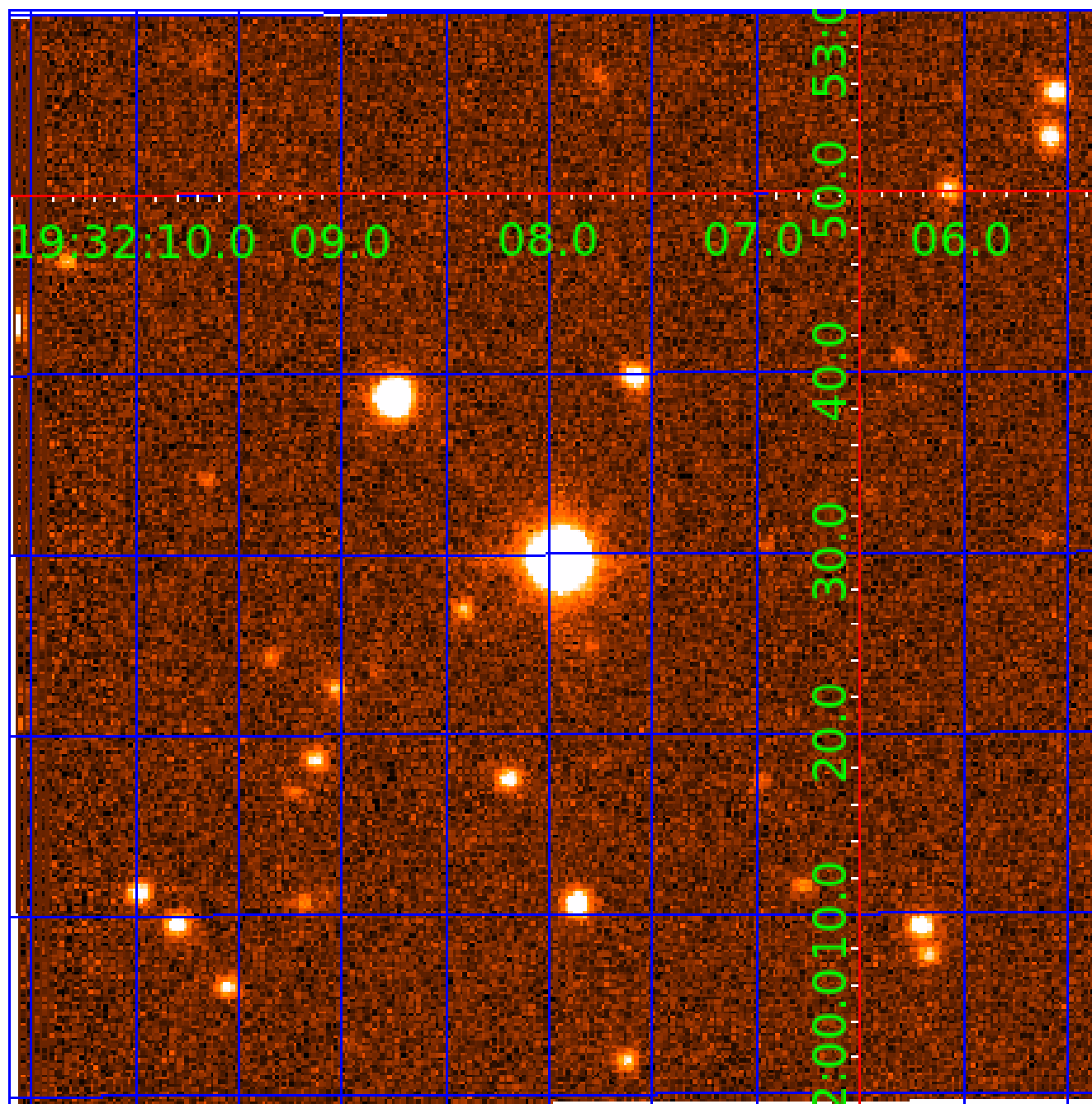


fluxWeightedCentroids, Planet 2 of 6



UKIRT Image

Declination



KIC 004750889

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})
004750889-01	OBS	No	369.591241	144.563892	1601.6	7.240	17.6	13.7	2.73	5193	13.65	5.52
004750889-02	OBS	No	288.209376	140.757793	848.2	7.801	15.4	6.0	2.73	5193	9.28	7.69
004750889-03	OBS	No	386.083560	480.431524	995.6	4.435	14.4	9.3	2.73	5193	9.69	5.21
004750889-04	OBS	No	279.159932	253.198949	673.7	5.142	15.7	6.5	2.73	5193	8.17	8.02
004750889-05	OBS	No	568.625031	243.869893	753.1	10.536	11.5	6.1	2.73	5193	7.84	3.11
004750889-06	OBS	No	291.740703	258.626984	709.9	5.718	10.6	6.1	2.73	5193	7.93	7.57

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004750889-01	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS—HALO_GHOST
004750889-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS
004750889-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
004750889-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
004750889-05	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—HALO_GHOST
004750889-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—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.

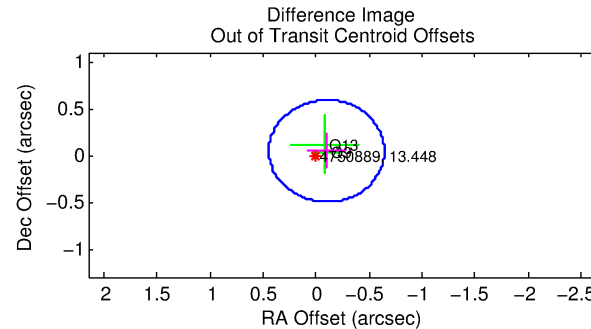
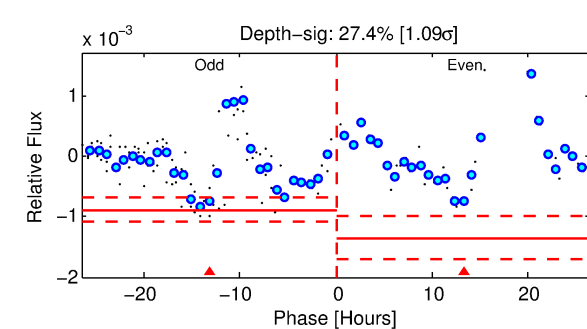
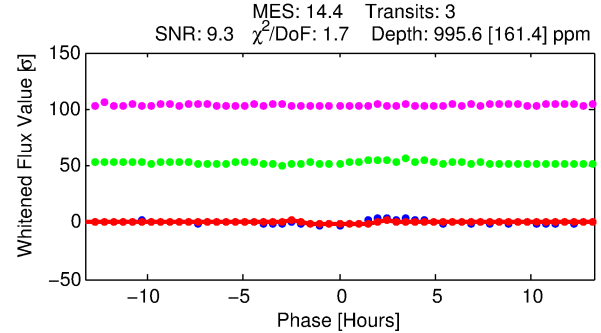
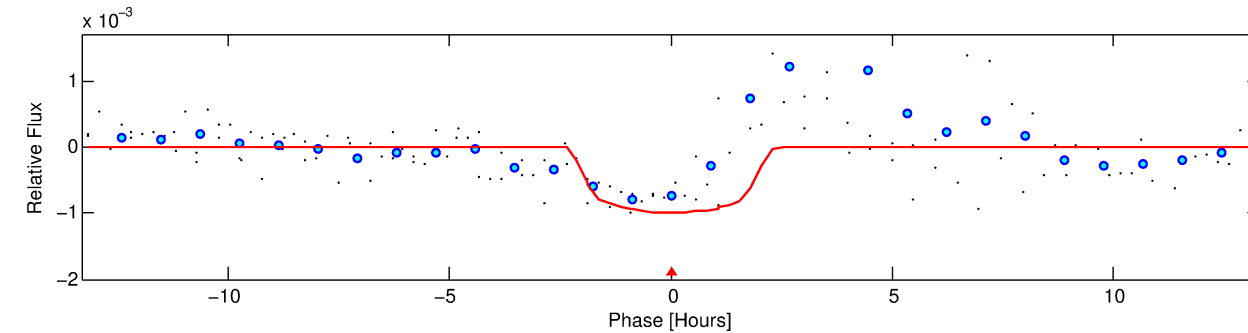
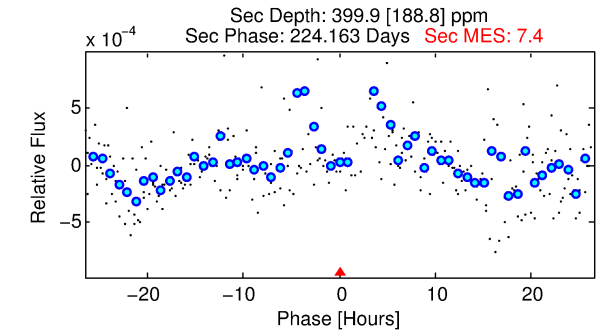
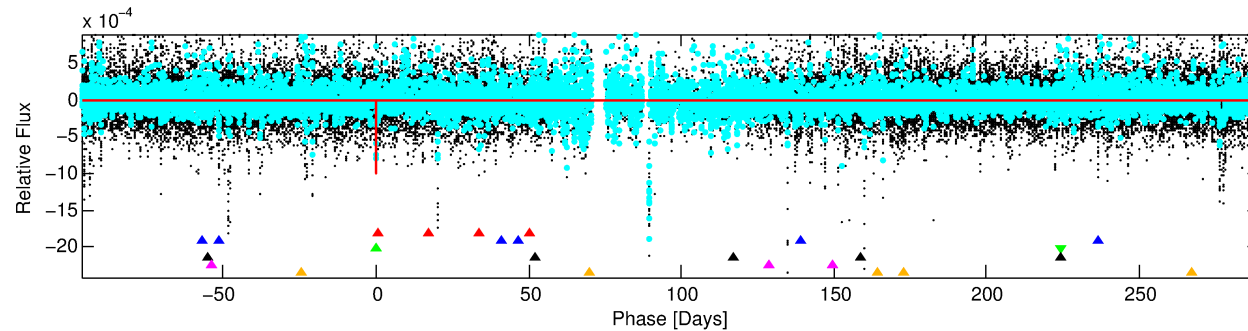
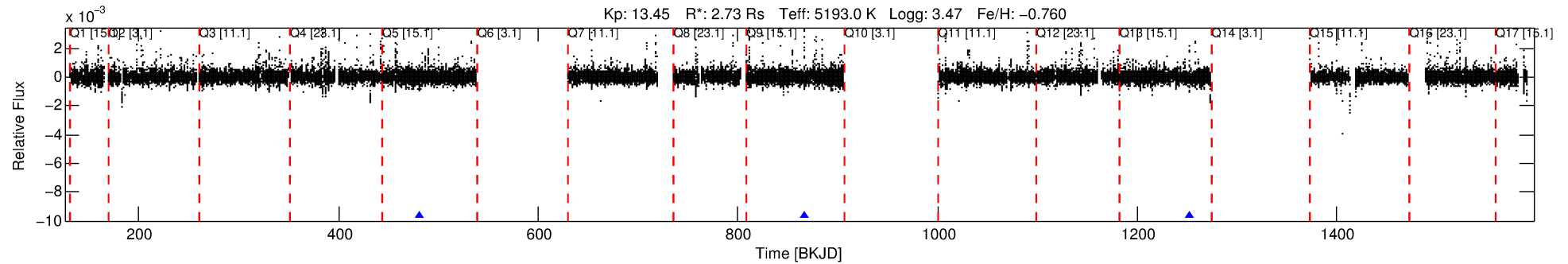
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004750889-03

No Significant Match Found

DV One-Page Summary

KIC: 4750889 Candidate: 3 of 6 Period: 386.084 d



DV Fit Results:

Period = 386.08356 [0.00555] d
Epoch = 480.4315 [0.0083] BKJD
Rp/R* = 0.0325 [0.0128]
a/R* = 417.98 [658.42]
b = 0.82 [0.64]
Seff = 5.21 [10.22]
Teq = 385 [189] K
Rp = 9.69 [8.18] Re
a = 0.9664 [1.0327] AU
Ag = 2188.80 [4729.08] [0.46 σ]
Teffp = 4074 [950] K [3.81 σ]

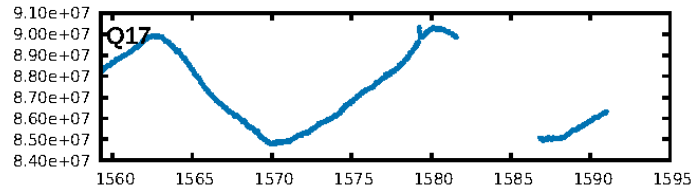
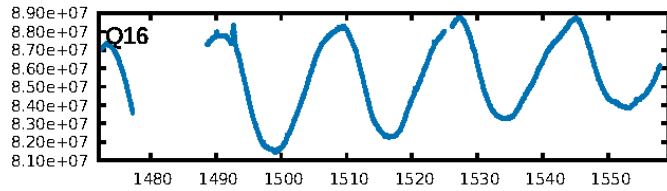
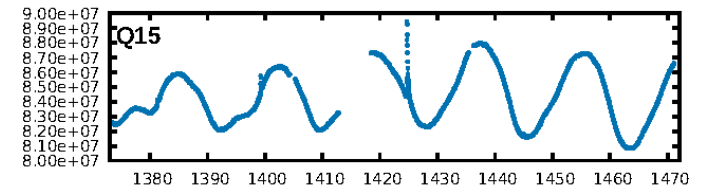
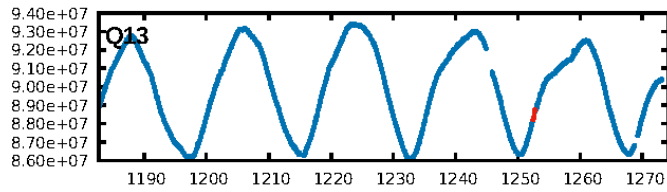
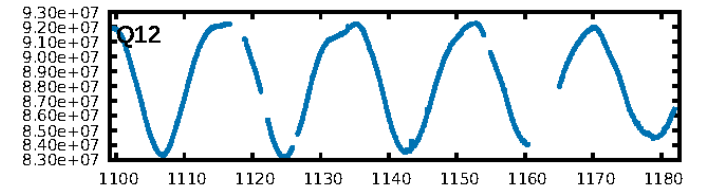
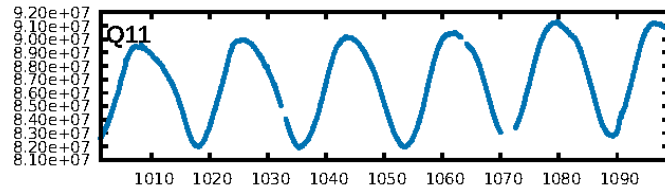
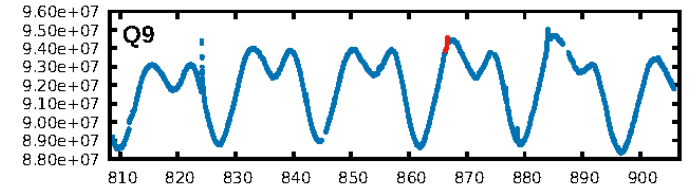
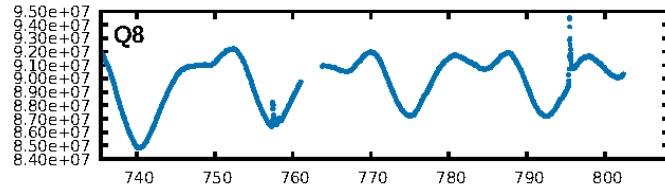
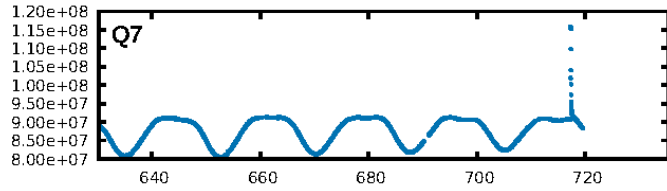
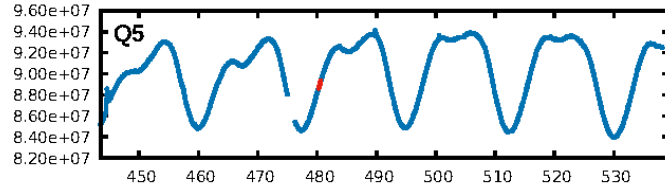
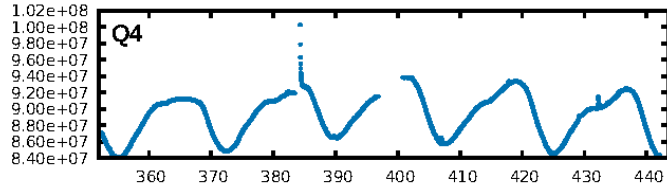
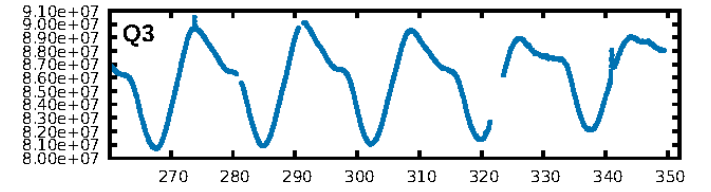
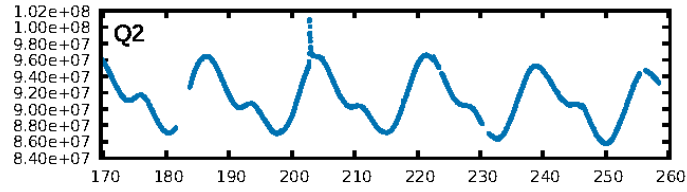
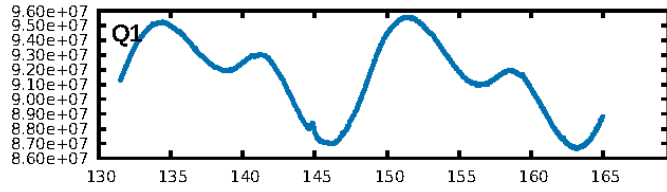
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [46.62 σ]
LongPeriod-sig: 100.0% [383.26 σ]
ModelChiSquare2-sig: 30.0%
ModelChiSquareGof-sig: 84.4%
Bootstrap-pfa: 9.54e-13
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 4.078
Centroid-sig: 37.3%
Centroid-so: 0.730 arcsec [0.86 σ]
OotOffset-rm: 0.108 arcsec [0.60 σ]
OotOffset-st: 0/0/0/2 [2]
KicOffset-rm: 0.211 arcsec [1.17 σ]
KicOffset-st: 0/0/0/2 [2]
DiffImageQuality-fgm: 0.50 [1/2]
DiffImageOverlap-fno: 1.00 [3/3]

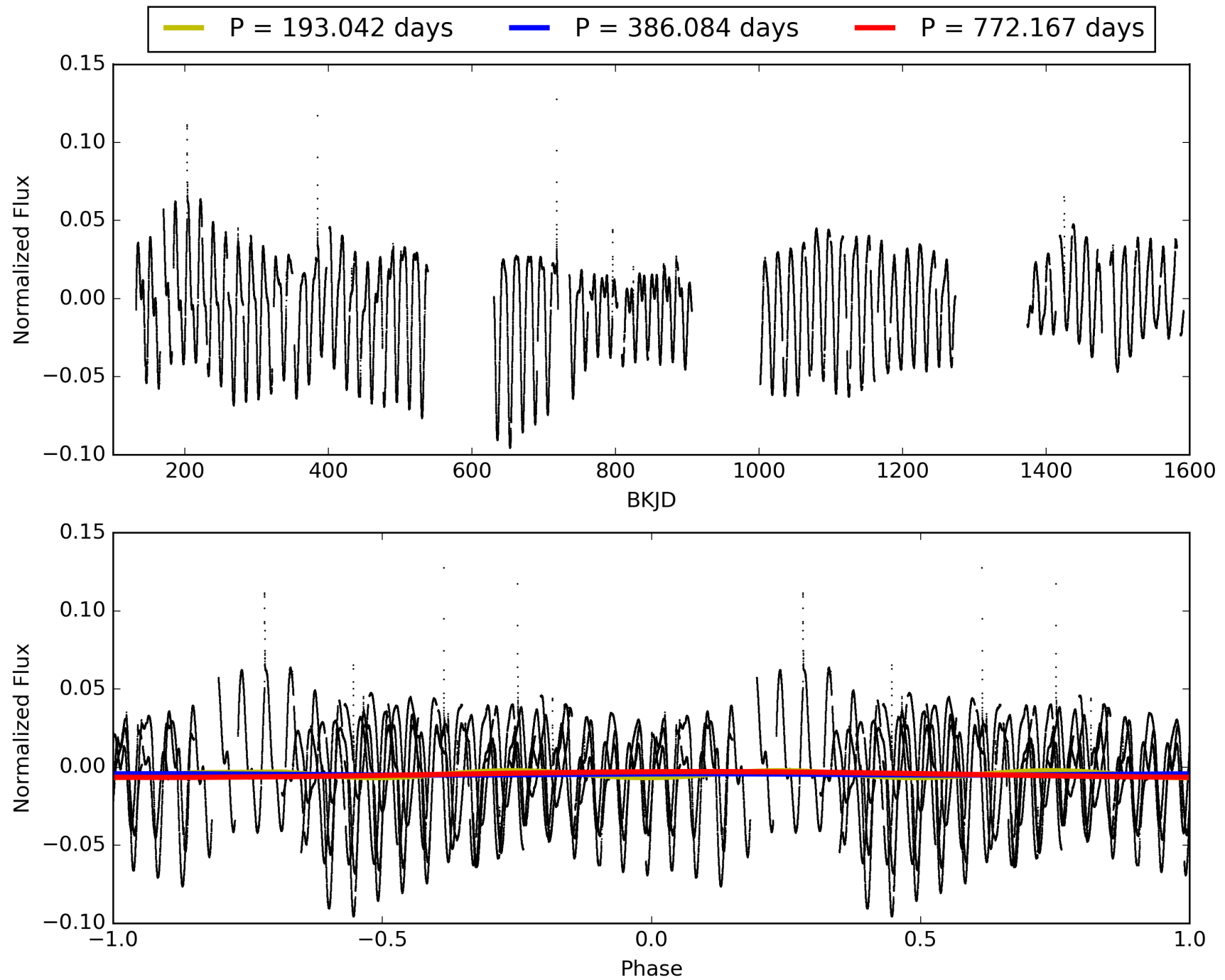
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 11:13:59 Z

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

TCE 004750889-03, PDC Light Curves

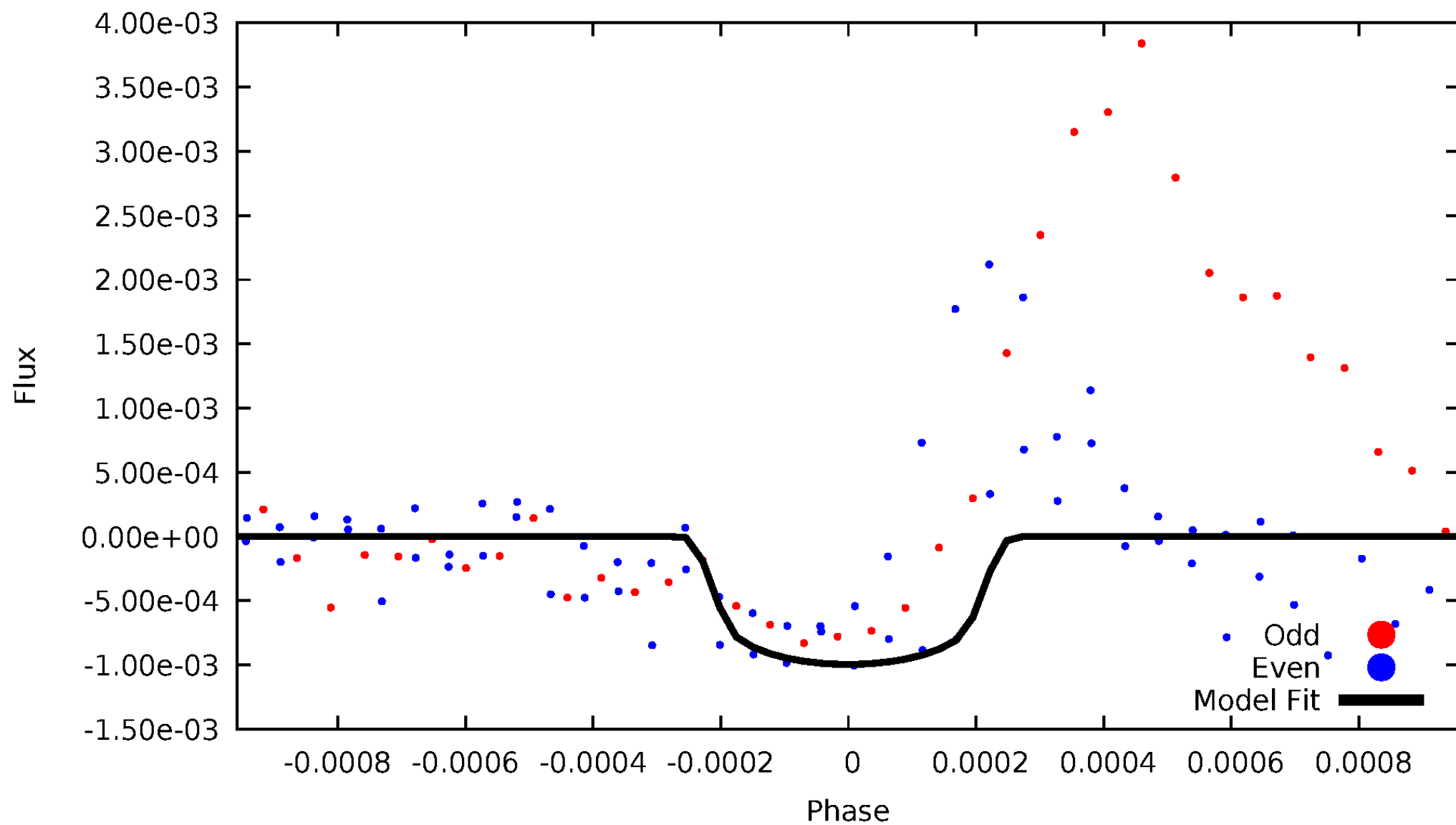


TCE 004750889-03



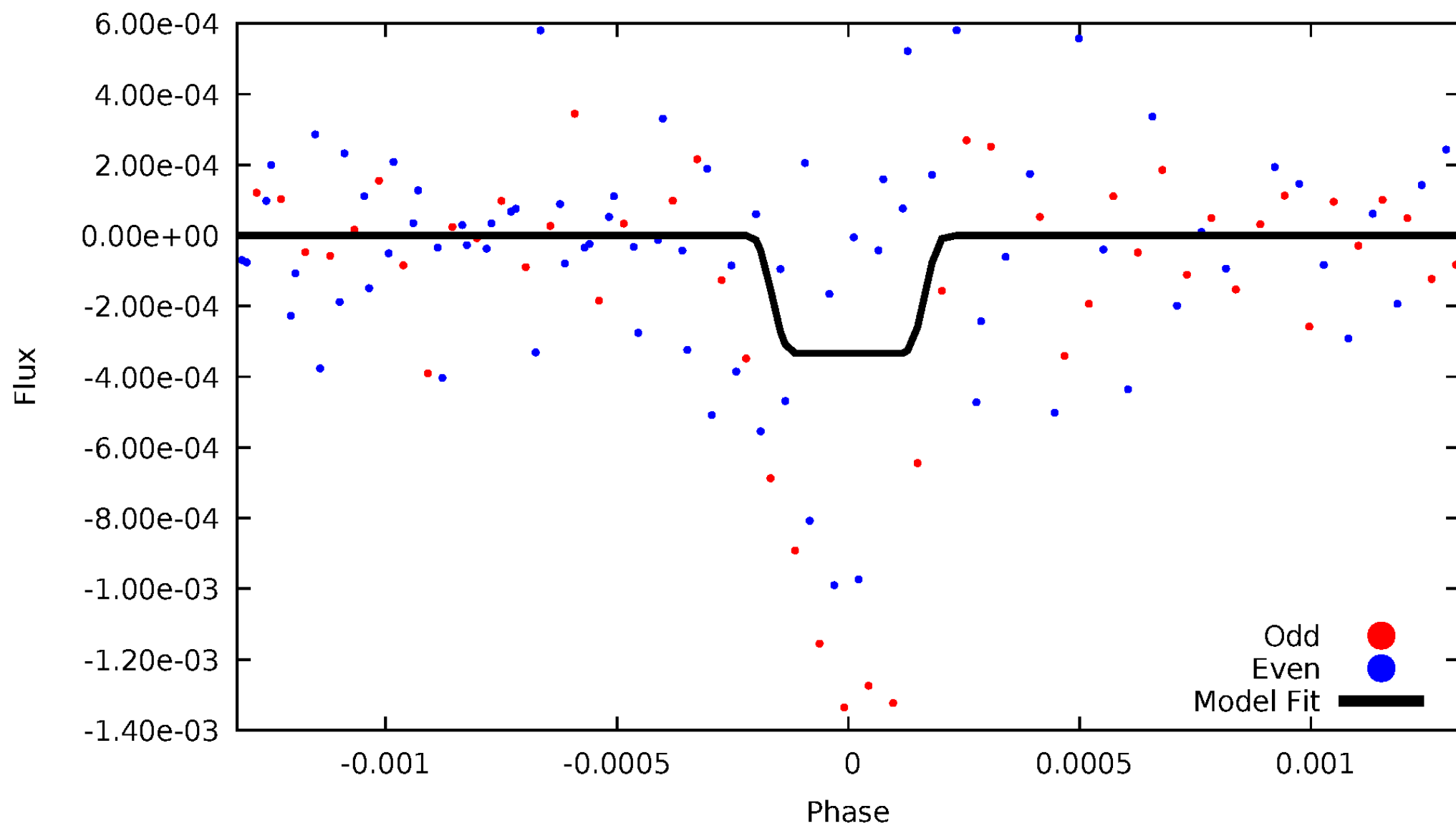
DV Odd/Even

TCE 004750889-03



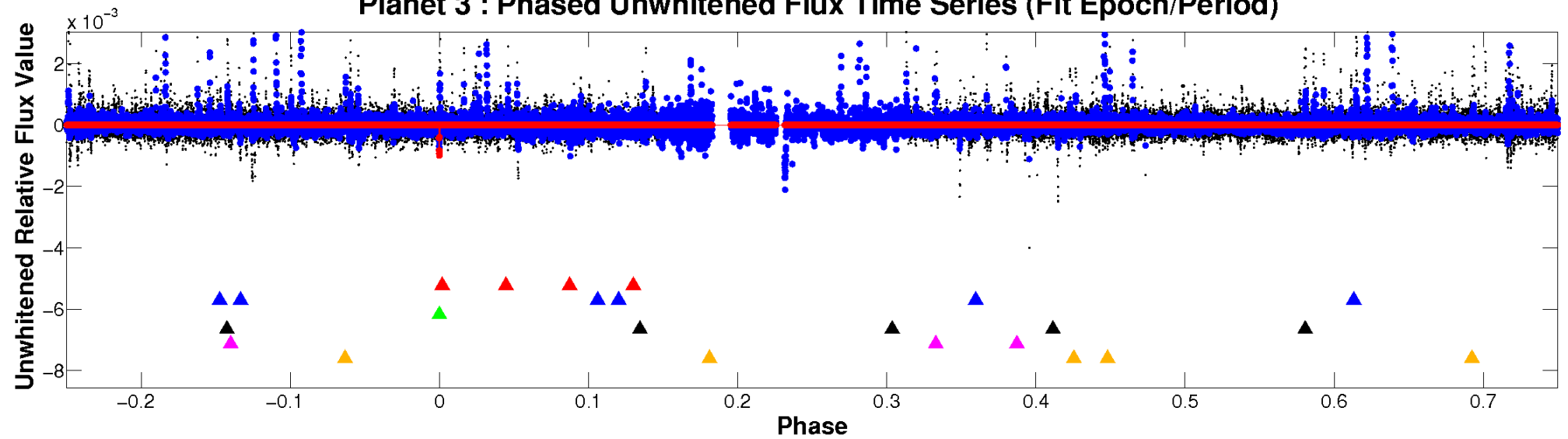
ALT Odd/Even

TCE 004750889-03

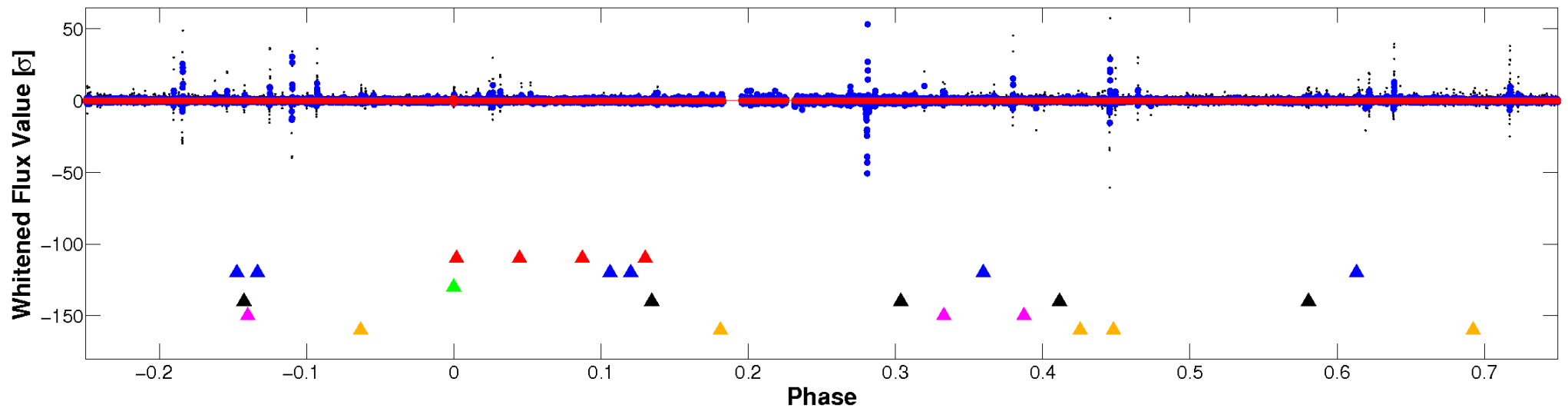


Non-Whitened Vs. Whitened Light Curve

Planet 3 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

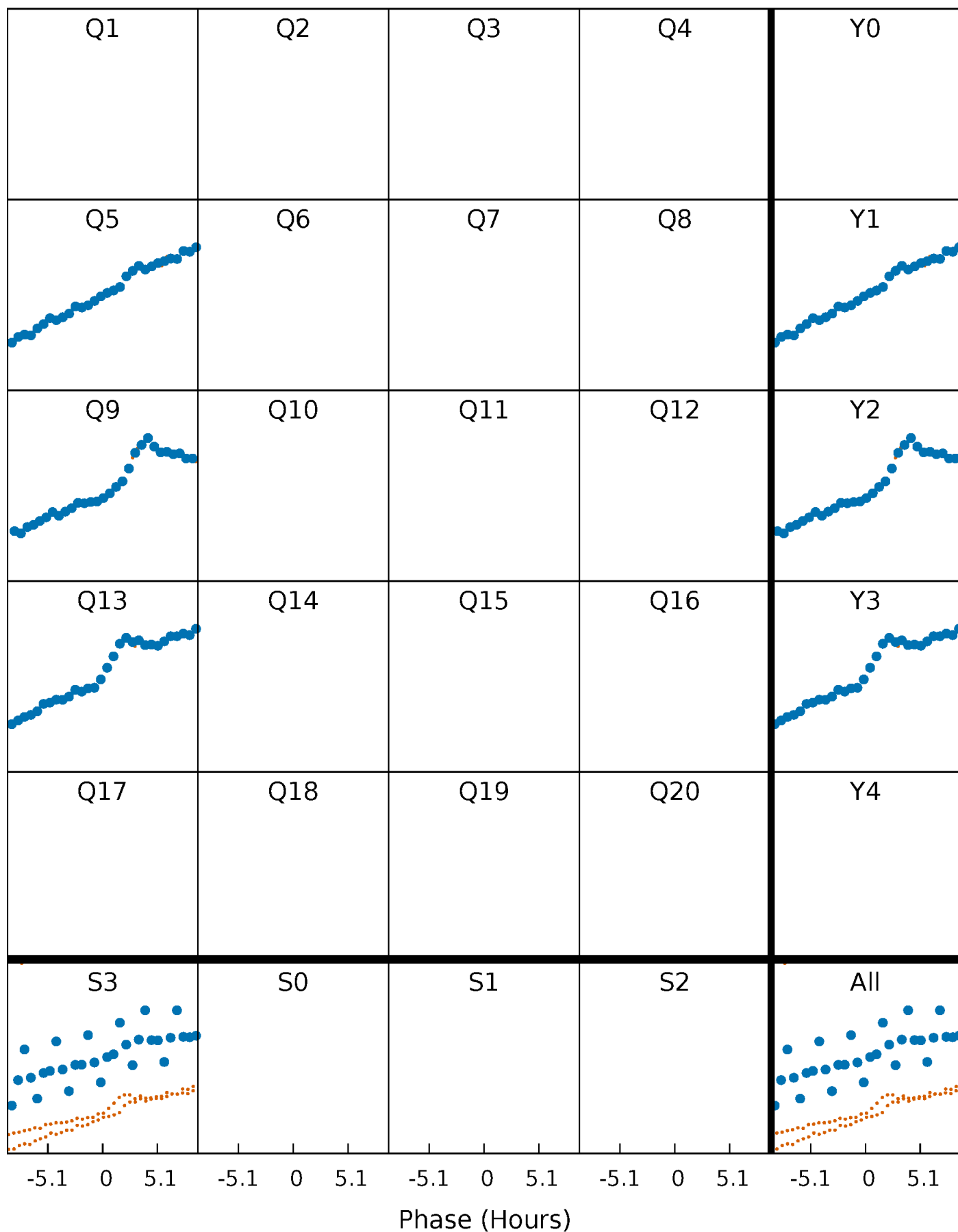


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



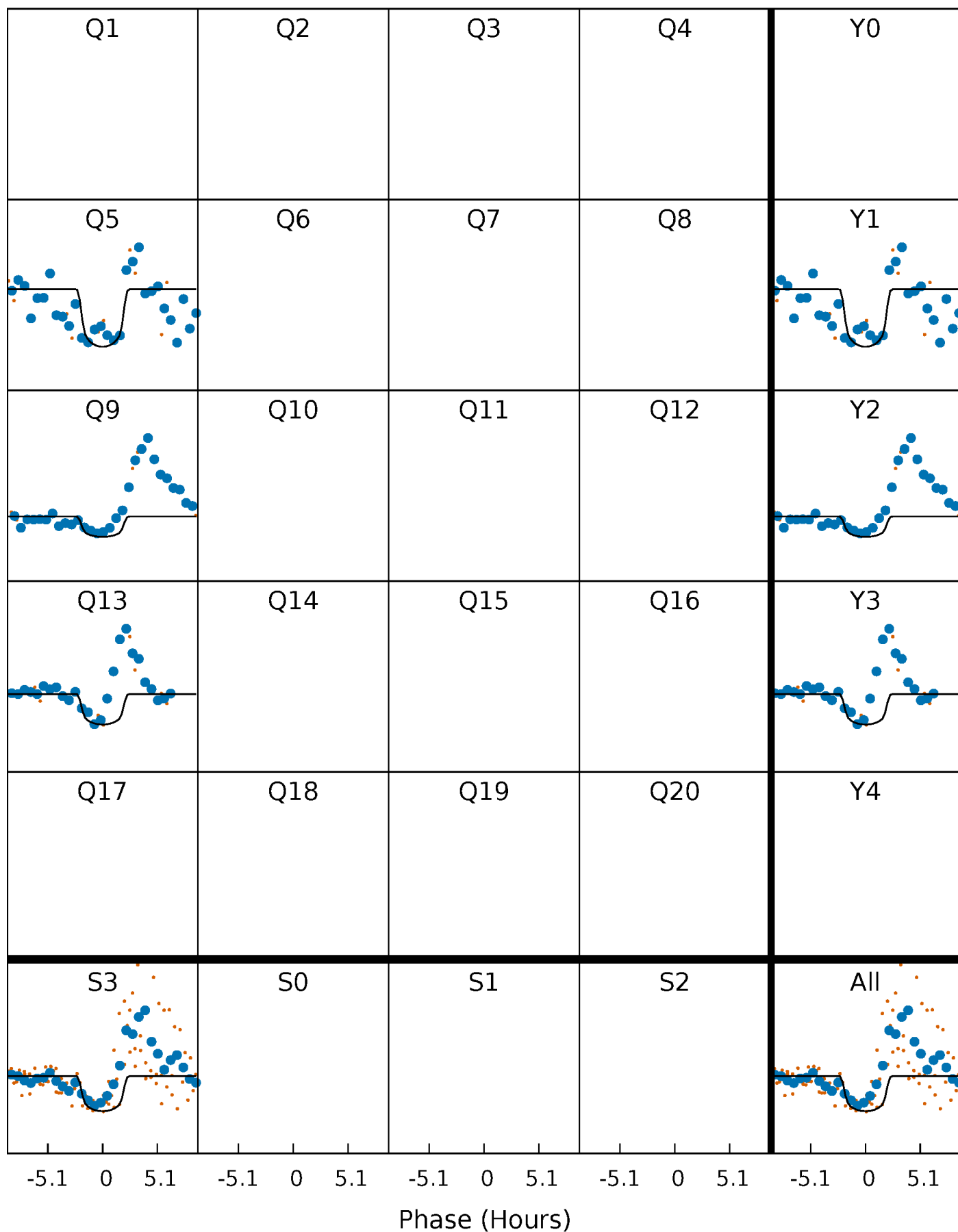
PDC Quarter-Phased Transit Curves

TCE 004750889-03 $P=386.083560$ Days $T_0=480.431524$ (BKJD)



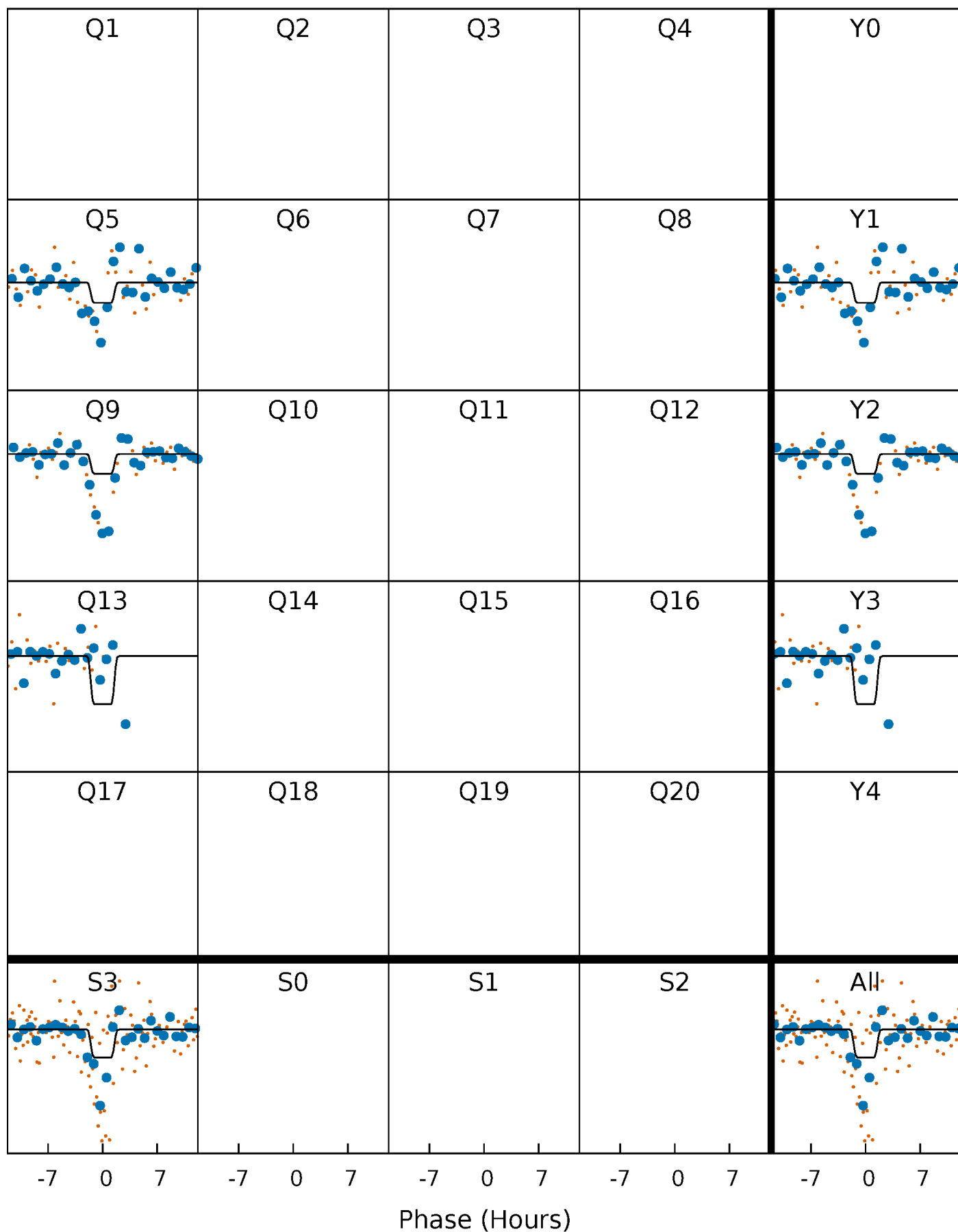
DV Quarter-Phased Transit Curves

TCE 004750889-03 $P=386.083560$ Days $T_0=480.431524$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

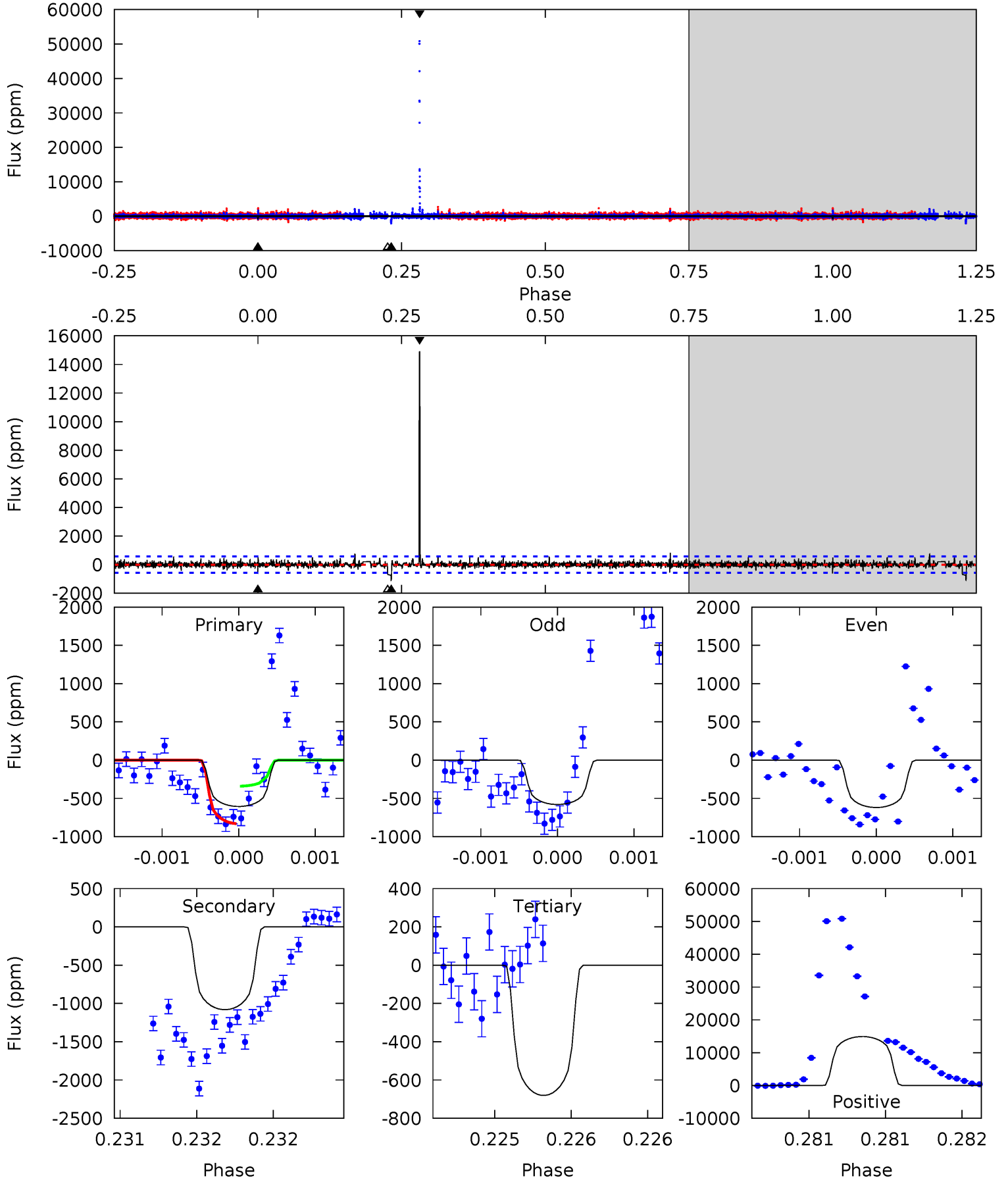
TCE 004750889-03 $P=386.064871$ Days $T_0=480.488182$ (BKJD)



DV Model-Shift Uniqueness Test

004750889-03, P = 386.083560 Days, E = 94.347964 Days

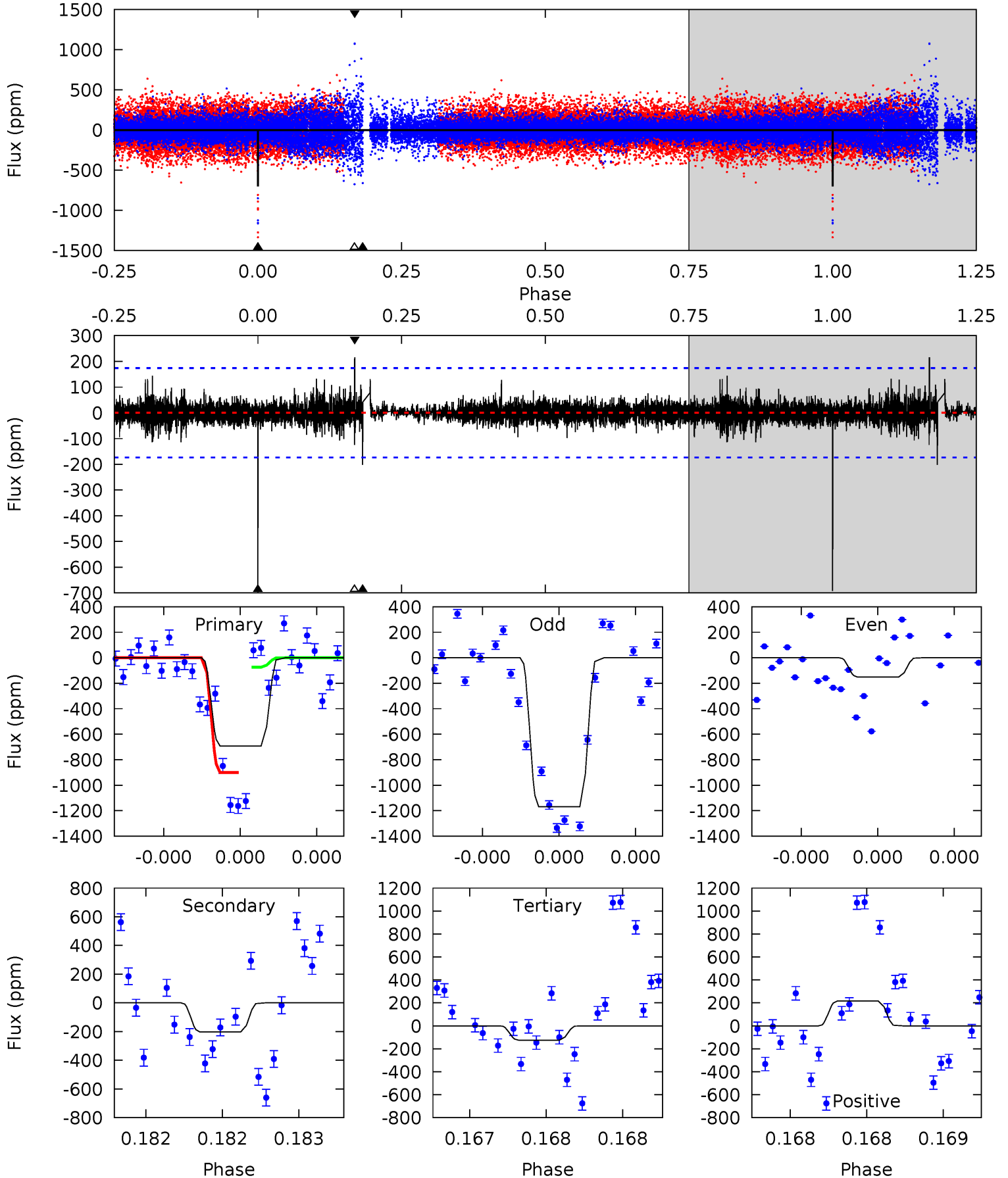
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.89	10.5	6.62	145.2	5.56	3.47	2.89	-0.73	-139.3	3.90	-134.6	0.15	0.88	0.93	2.14



Alt Model-Shift Uniqueness Test

004750889-03, P = 386.064871 Days, E = 94.423311 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
22.3	6.51	4.01	6.95	5.60	3.52	0.75	18.3	15.4	2.50	-0.44	17.5	1.23	0.24	11.9



Stellar Parameters For KIC 004750889

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5193^{+121}_{-212}	$3.472^{+1.232}_{-0.308}$	$-0.760^{+0.300}_{-0.400}$	$2.732^{+1.669}_{-2.040}$	$0.807^{+0.209}_{-0.209}$	$0.056^{+4.495}_{-0.036}$
	+2%/-4%	+35%/-9%	+39%/-53%	+61%/-75%	+26%/-26%	+8064%/-65%
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 004750889-03 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-1081 \pm 103	$7.81^{+5.46}_{-3.90}$	506^{+95}_{-110}	5266^{+1336}_{-728}	8869^{+28432}_{-5693}
Alt.	-202 \pm 31	$5.09^{+4.39}_{-3.14}$	515^{+85}_{-107}	4454^{+2001}_{-675}	4059^{+23247}_{-2885}

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

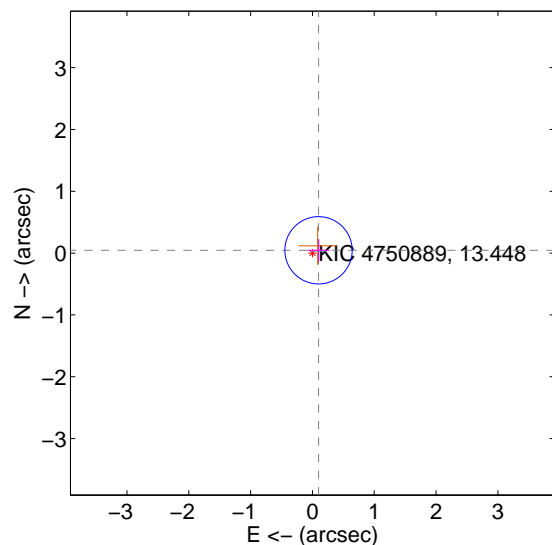
Supplemental centroid analysis for 004750889-03. Kepler magnitude: 13.45. Transit SNR 9.35

There are 1 quarters with good PRF difference image offsets

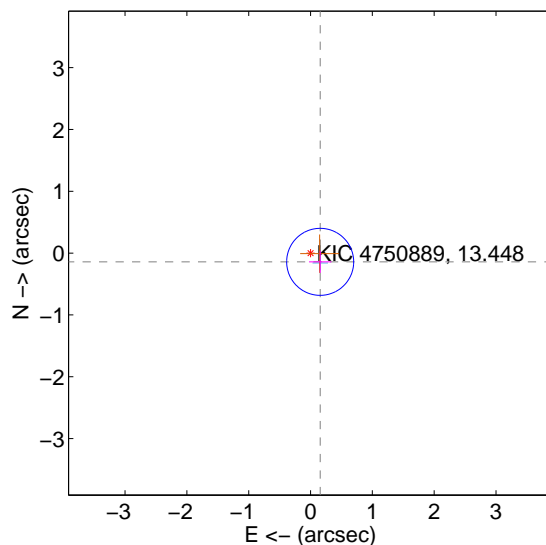
The direct PRF centroid is offset from the target star catalog position by about 0.14 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.108 ± 0.181	0.60	-0.098 ± 0.182	0.046 ± 0.179
PRF-fit source offset from KIC position	0.211 ± 0.181	1.17	-0.156 ± 0.182	-0.141 ± 0.179
photometric centroid source offset	0.73 ± 0.84	0.86	-0.73 ± 0.84	-0.02 ± 0.75

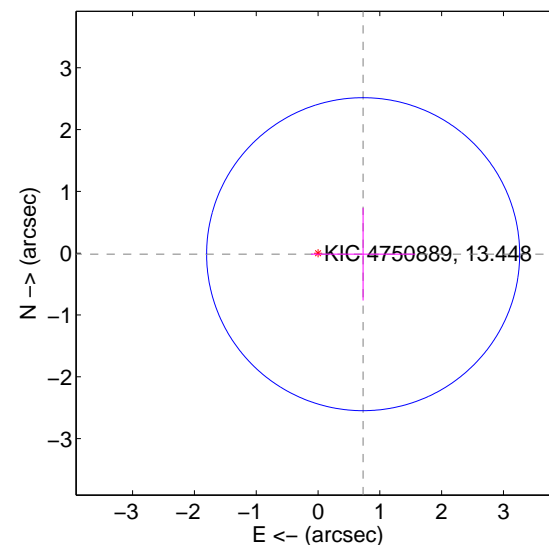
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



offset from photometric centroids

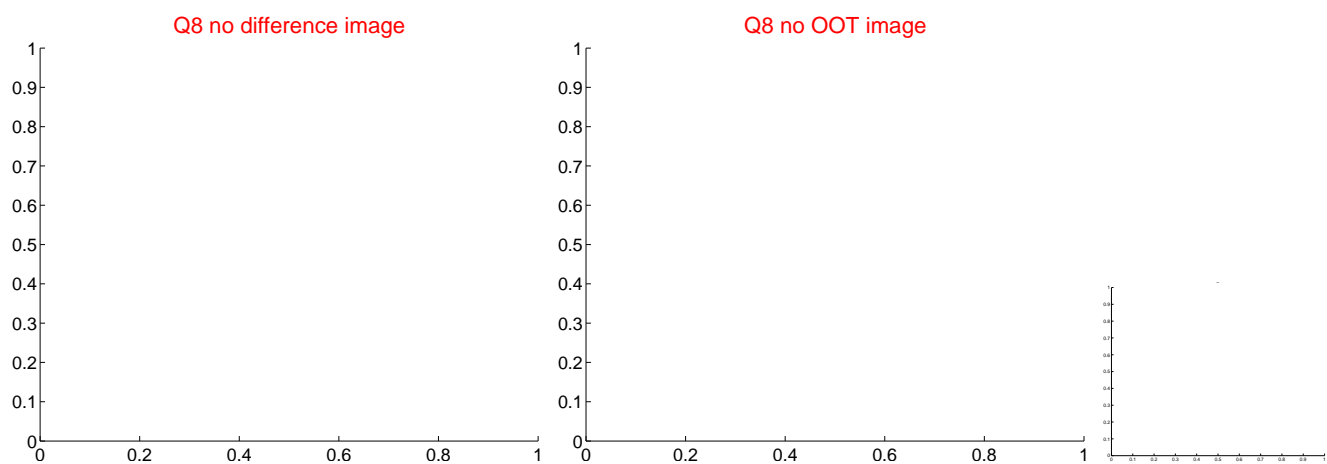
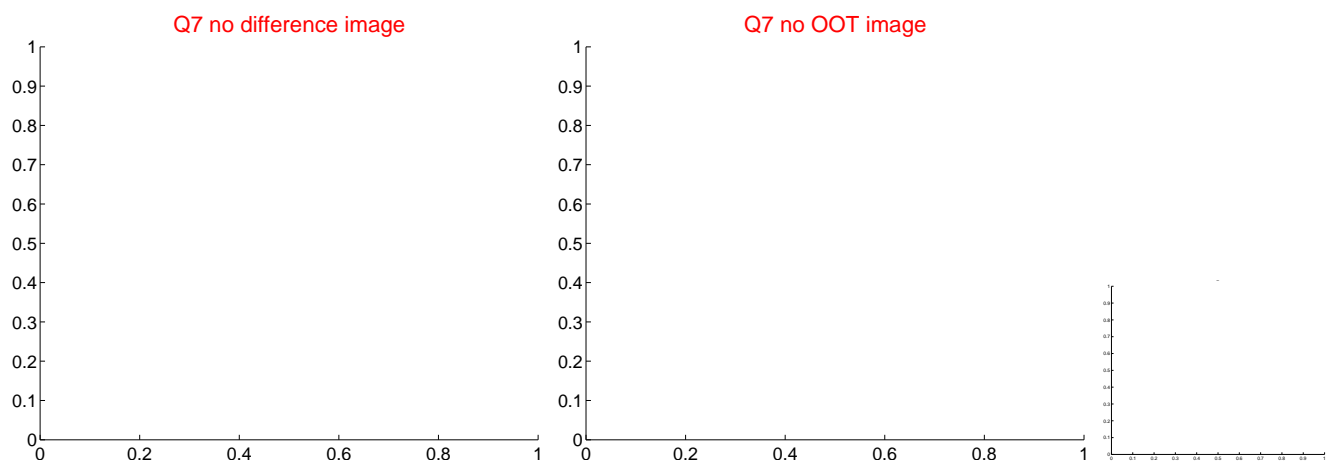
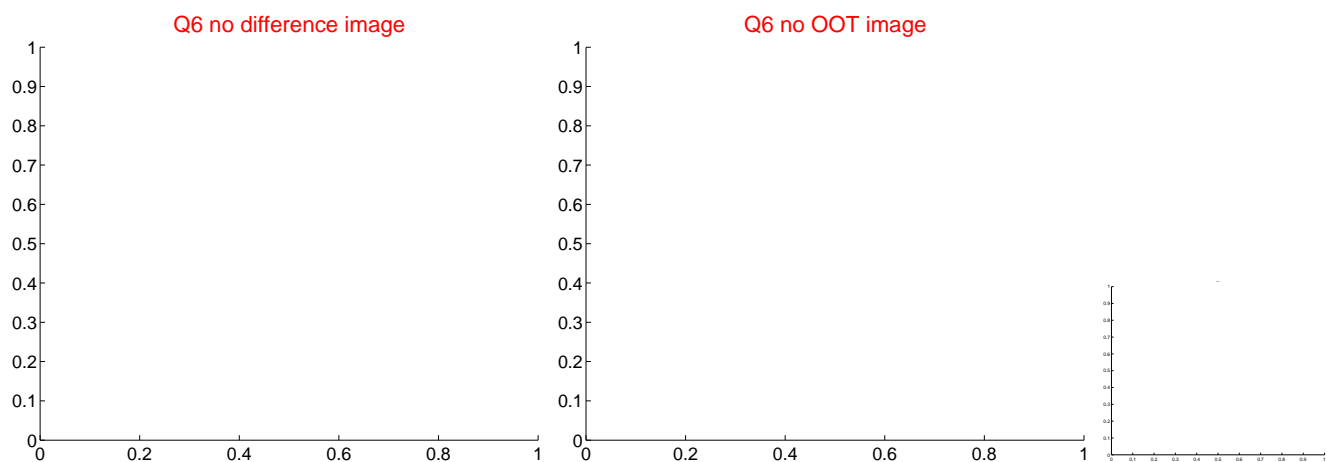
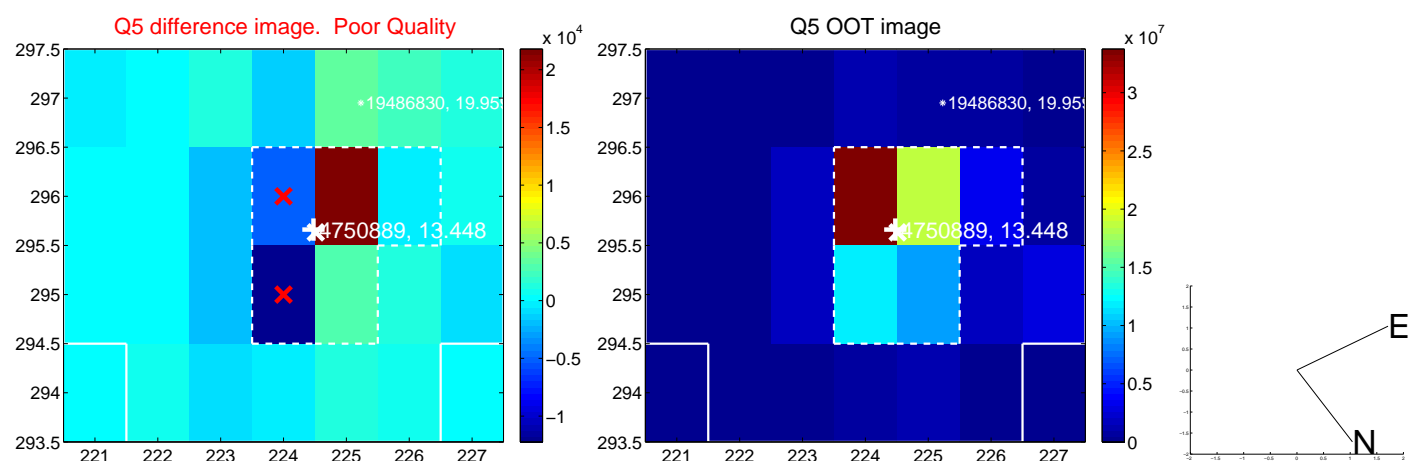


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

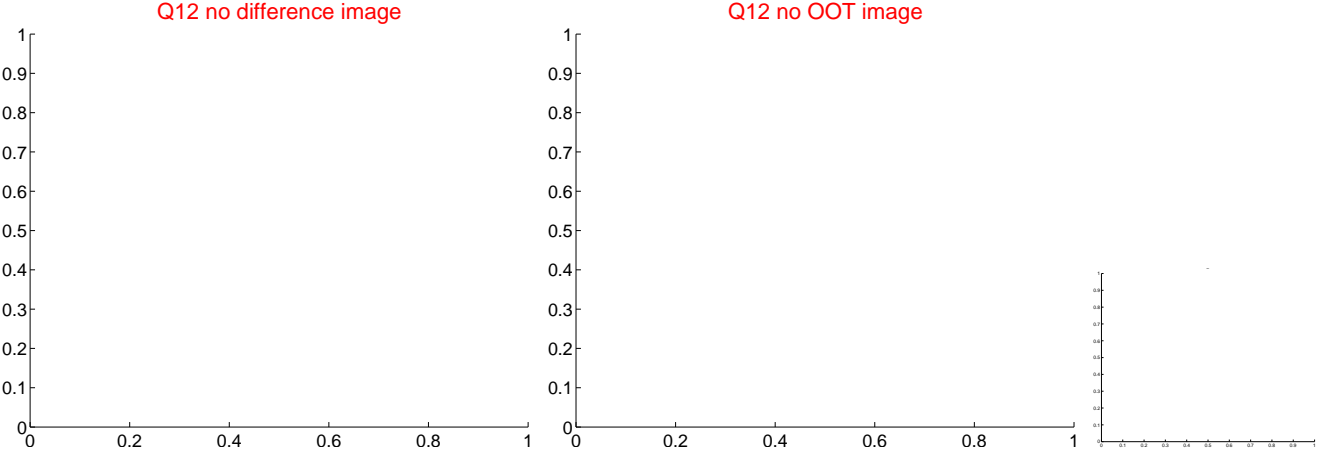
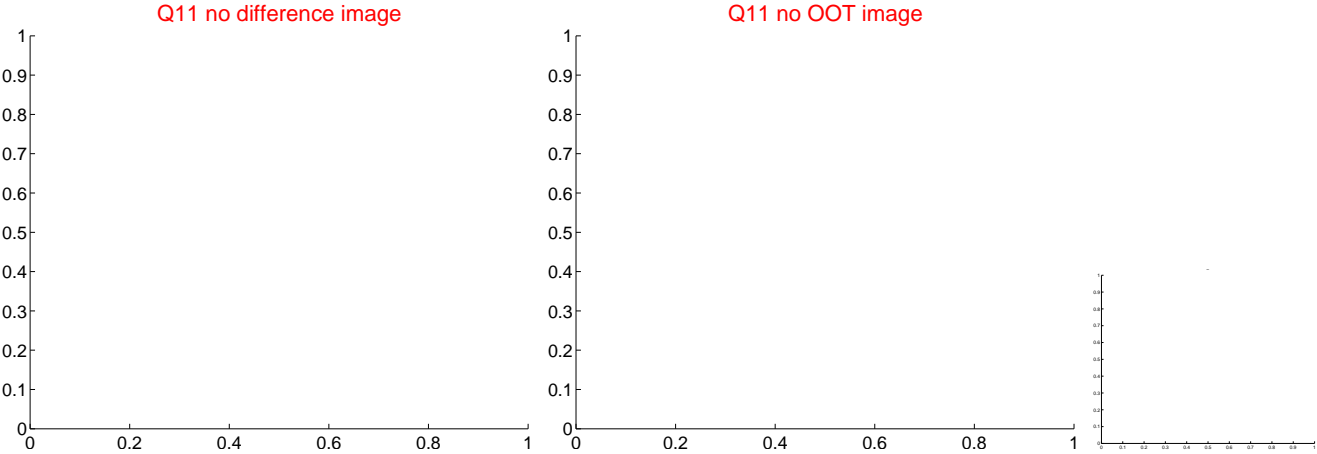
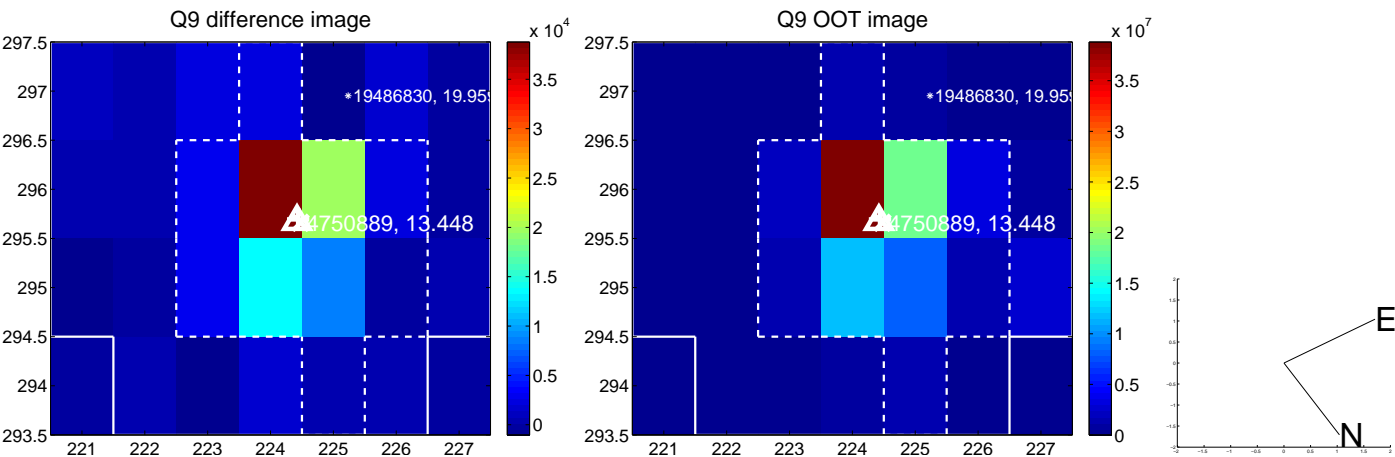
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



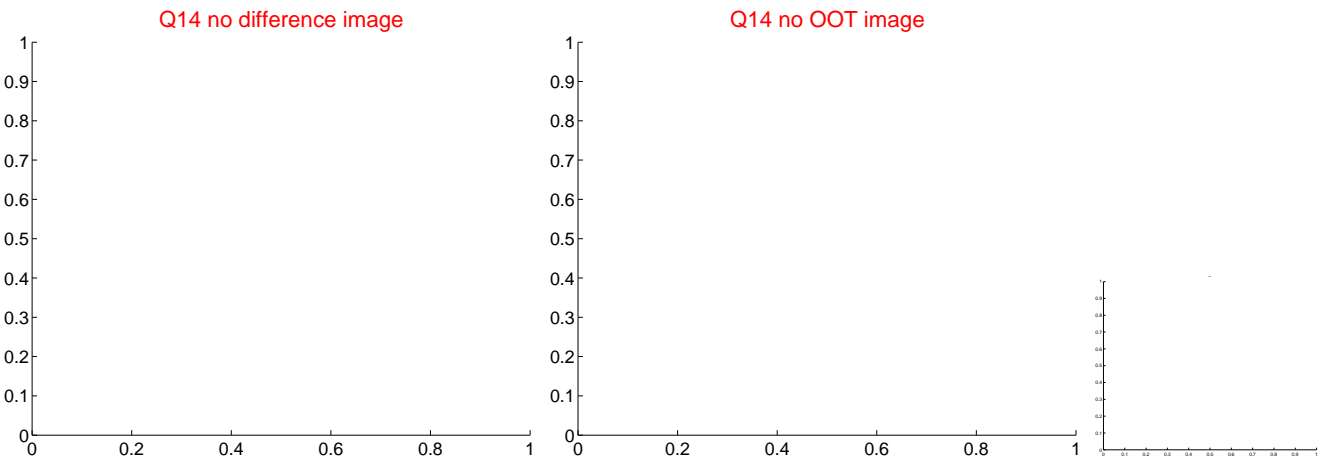
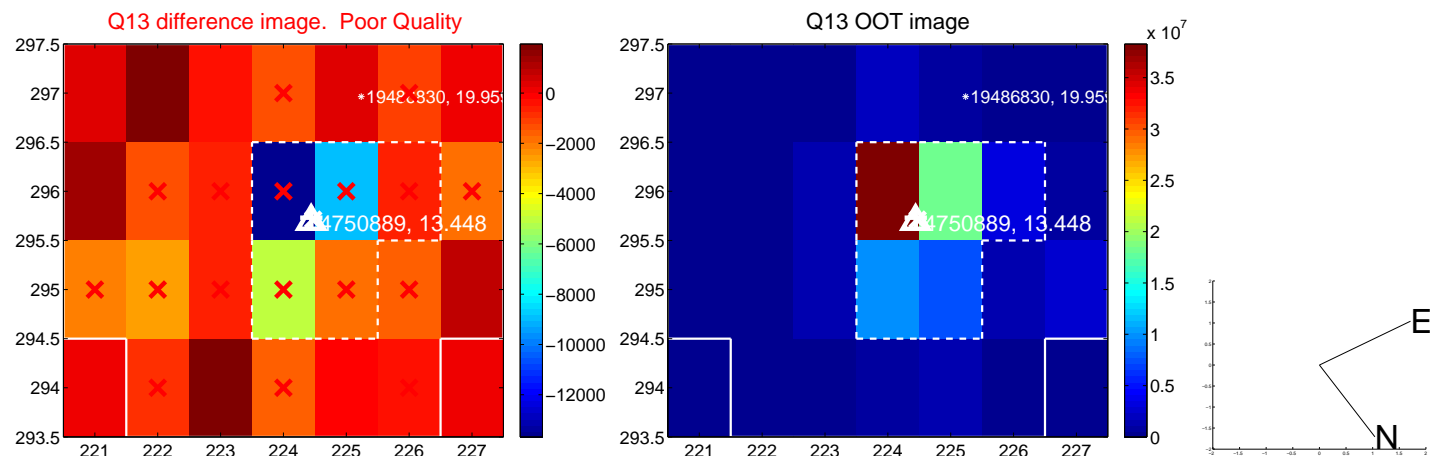
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value



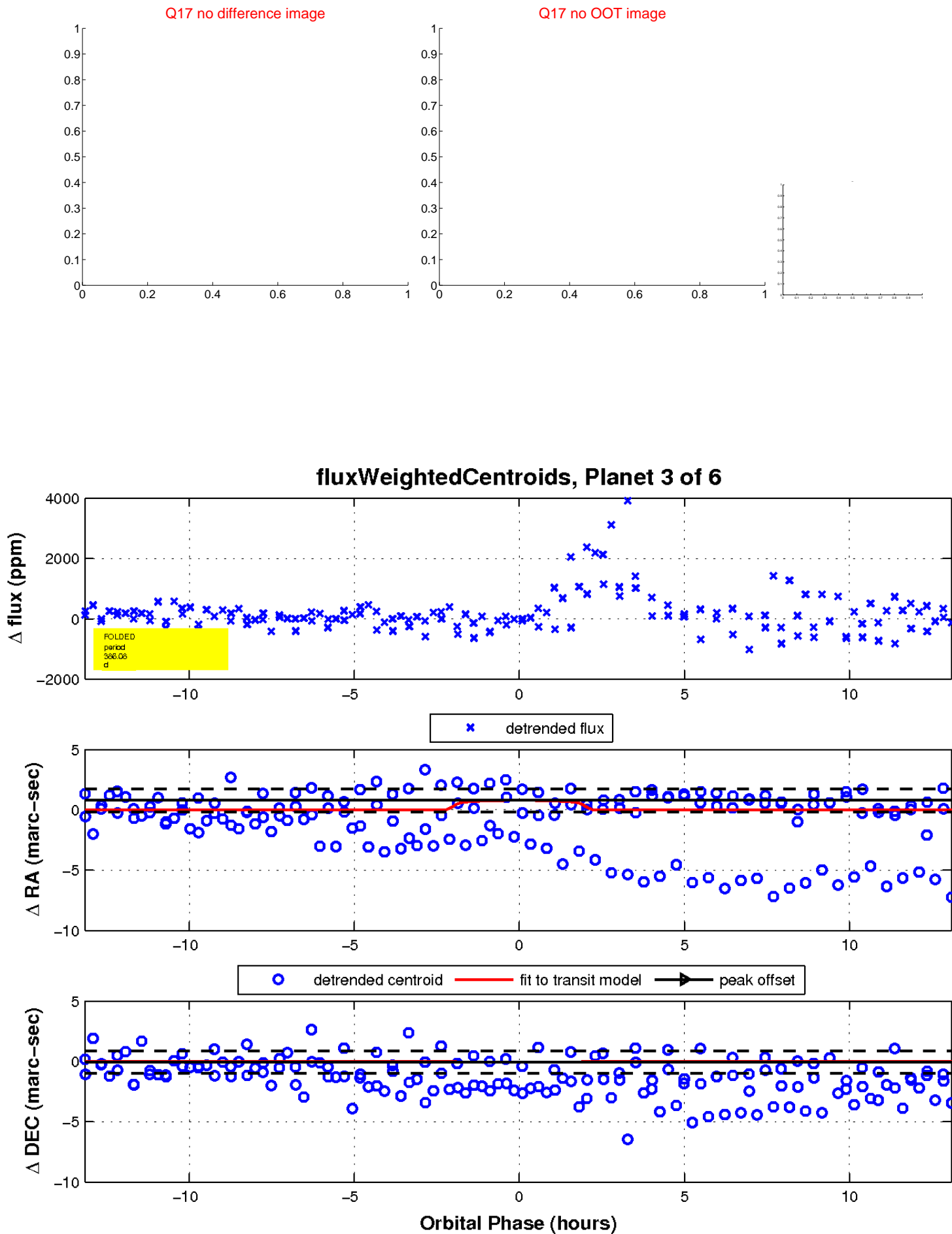
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

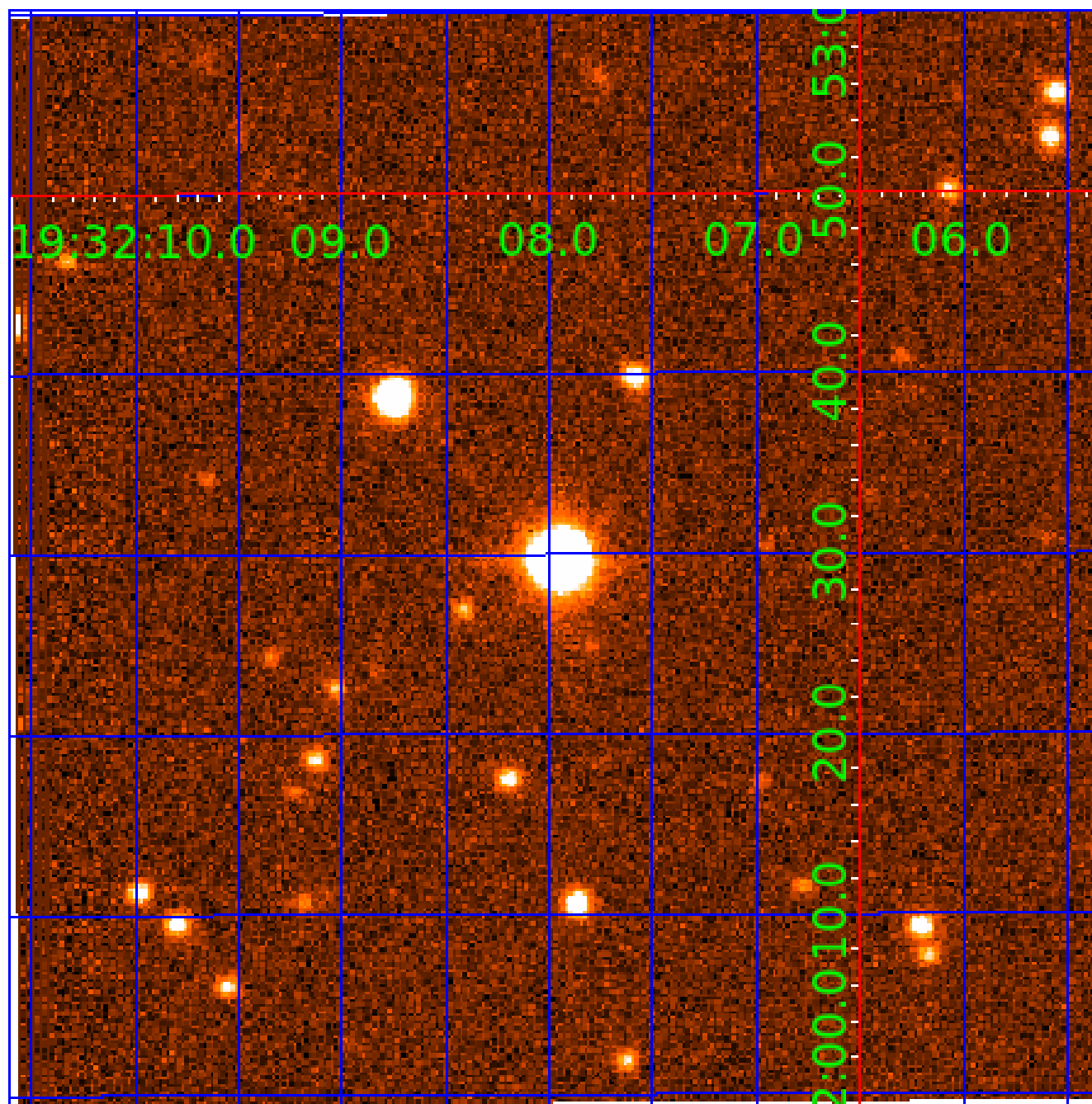


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 004750889

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})
004750889-01	OBS	No	369.591241	144.563892	1601.6	7.240	17.6	13.7	2.73	5193	13.65	5.52
004750889-02	OBS	No	288.209376	140.757793	848.2	7.801	15.4	6.0	2.73	5193	9.28	7.69
004750889-03	OBS	No	386.083560	480.431524	995.6	4.435	14.4	9.3	2.73	5193	9.69	5.21
004750889-04	OBS	No	279.159932	253.198949	673.7	5.142	15.7	6.5	2.73	5193	8.17	8.02
004750889-05	OBS	No	568.625031	243.869893	753.1	10.536	11.5	6.1	2.73	5193	7.84	3.11
004750889-06	OBS	No	291.740703	258.626984	709.9	5.718	10.6	6.1	2.73	5193	7.93	7.57

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004750889-01	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS—HALO_GHOST
004750889-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS
004750889-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
004750889-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
004750889-05	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—HALO_GHOST
004750889-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—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.

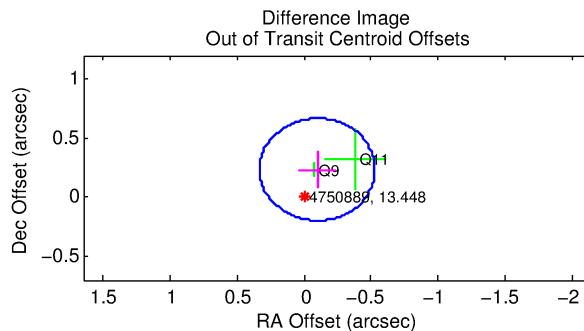
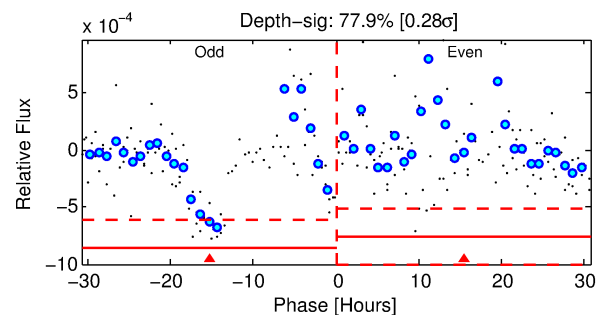
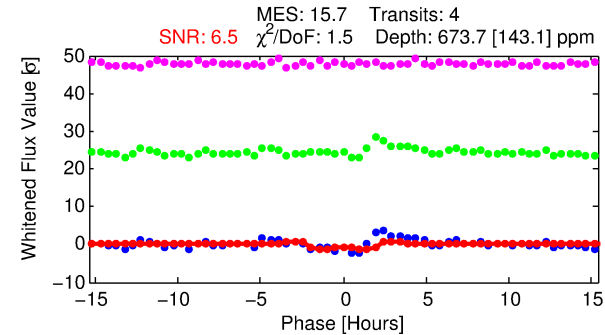
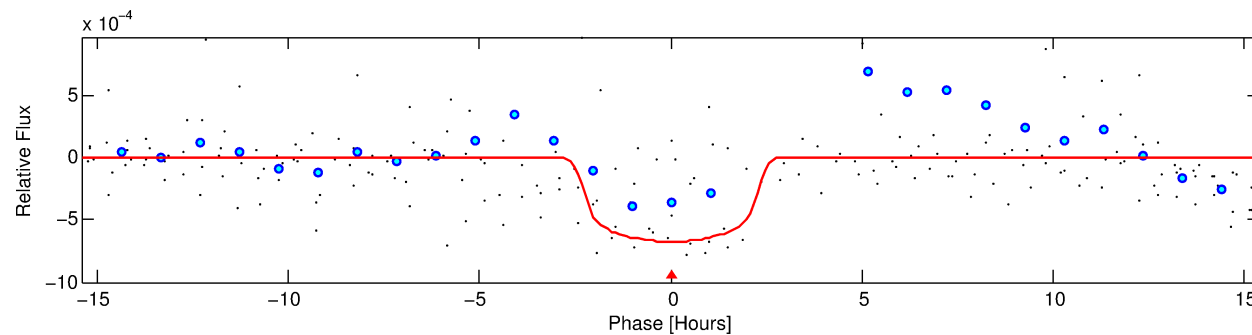
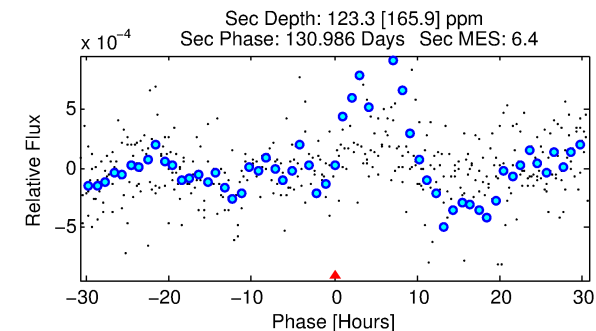
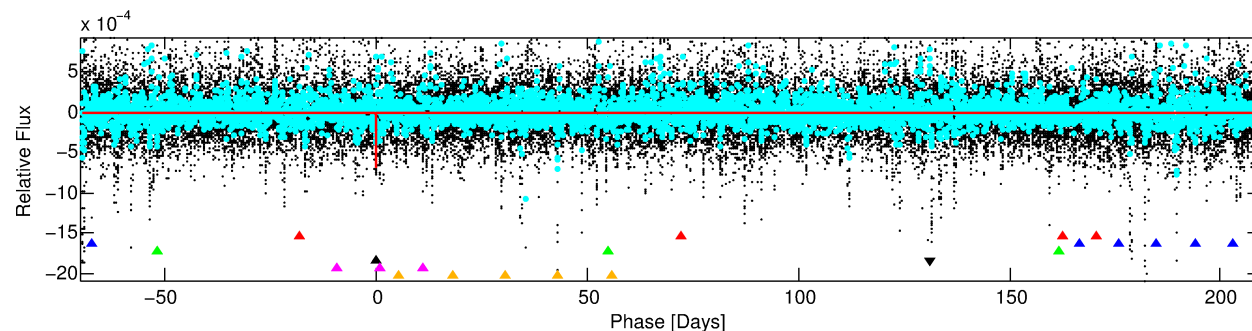
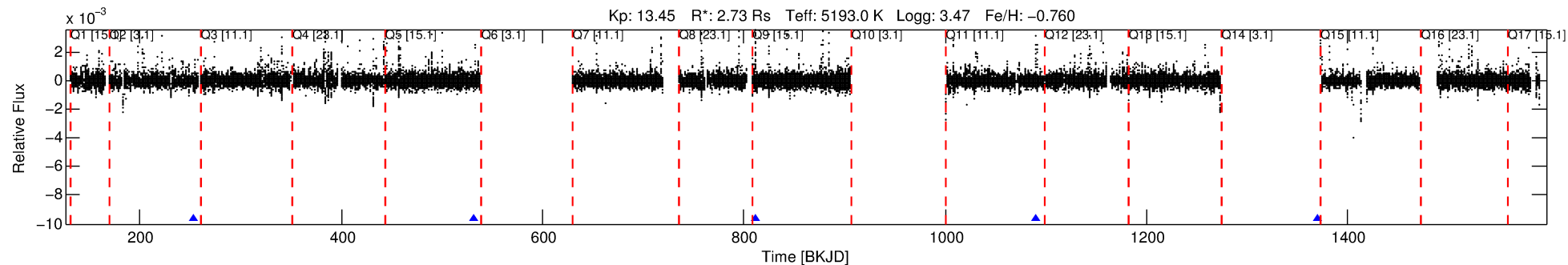
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004750889-04

No Significant Match Found

DV One-Page Summary

KIC: 4750889 Candidate: 4 of 6 Period: 279.160 d



DV Fit Results:

Period = 279.15993 [0.00490] d
Epoch = 253.1989 [0.0094] BKJD
Rp/R* = 0.0274 [0.0084]
a/R* = 234.23 [260.83]
b = 0.86 [0.35]
Seff = 8.02 [15.75]
Teq = 429 [211] K
Rp = 8.17 [6.59] Re
a = 0.7785 [0.8319] AU
Ag = 615.83 [1509.18] [0.41 σ]
Teffp = 3305 [1228] K [2.31 σ]

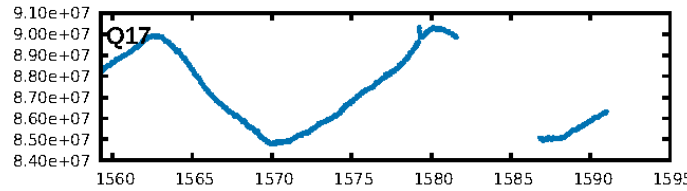
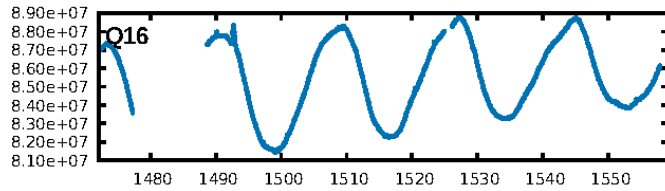
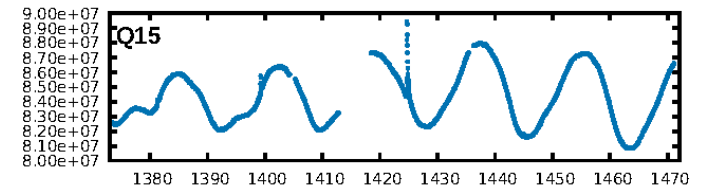
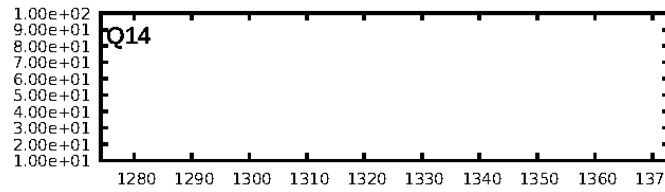
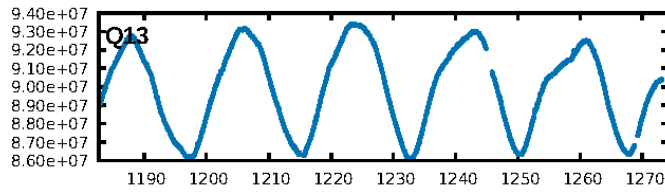
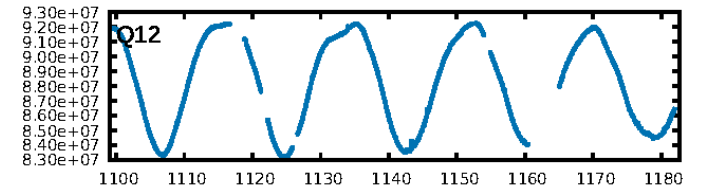
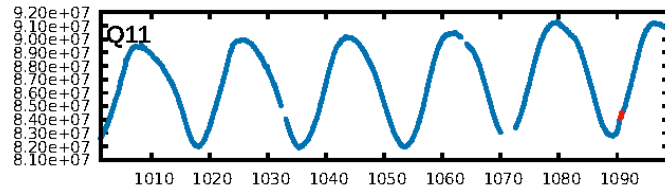
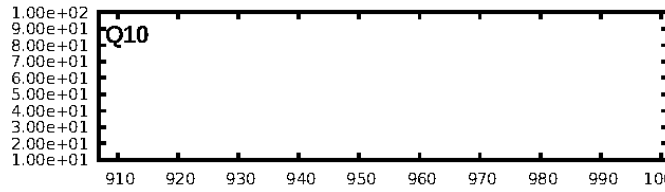
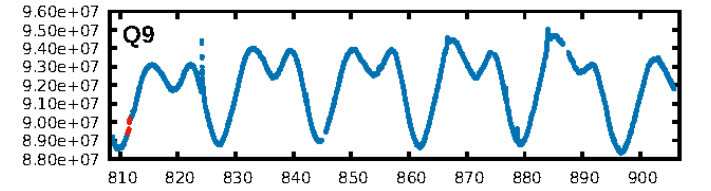
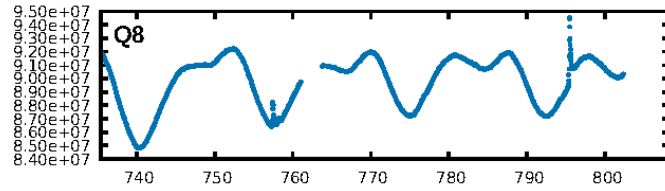
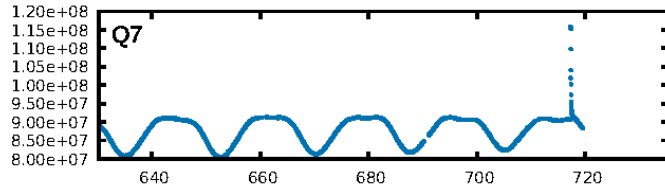
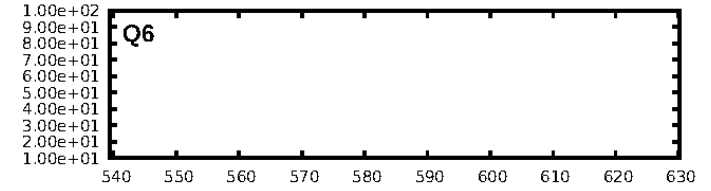
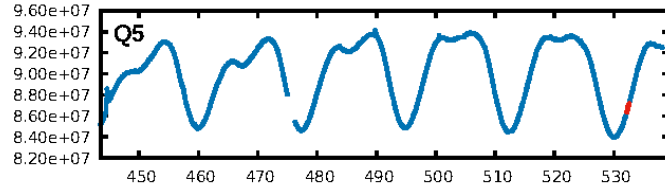
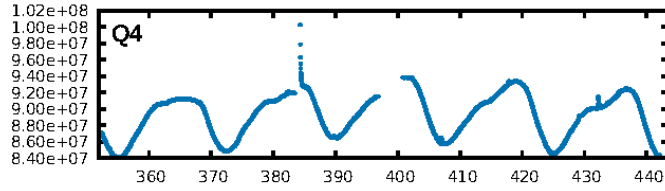
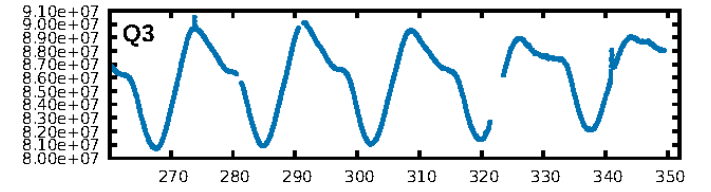
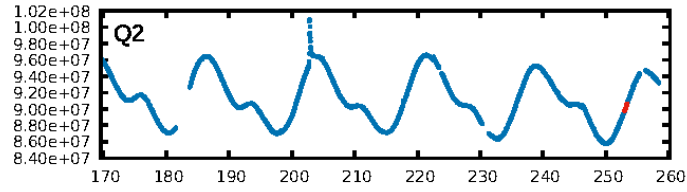
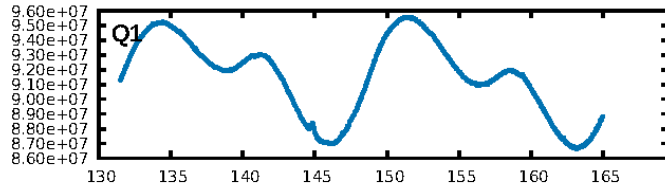
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [23.24 σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 49.2%
Bootstrap-pfa: 6.78e-16
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: 0.864
Centroid-sig: 0.0%
Centroid-so: 2.228 arcsec [2.40 σ]
OotOffset-rm: 0.254 arcsec [1.76 σ]
KicOffset-rm: 0.163 arcsec [0.84 σ]
OotOffset-st: 0/1/0/1 [2]
KicOffset-st: 0/1/0/1 [2]
DiffImageQuality-fgm: 0.50 [1/2]
DiffImageOverlap-fno: 1.00 [4/4]

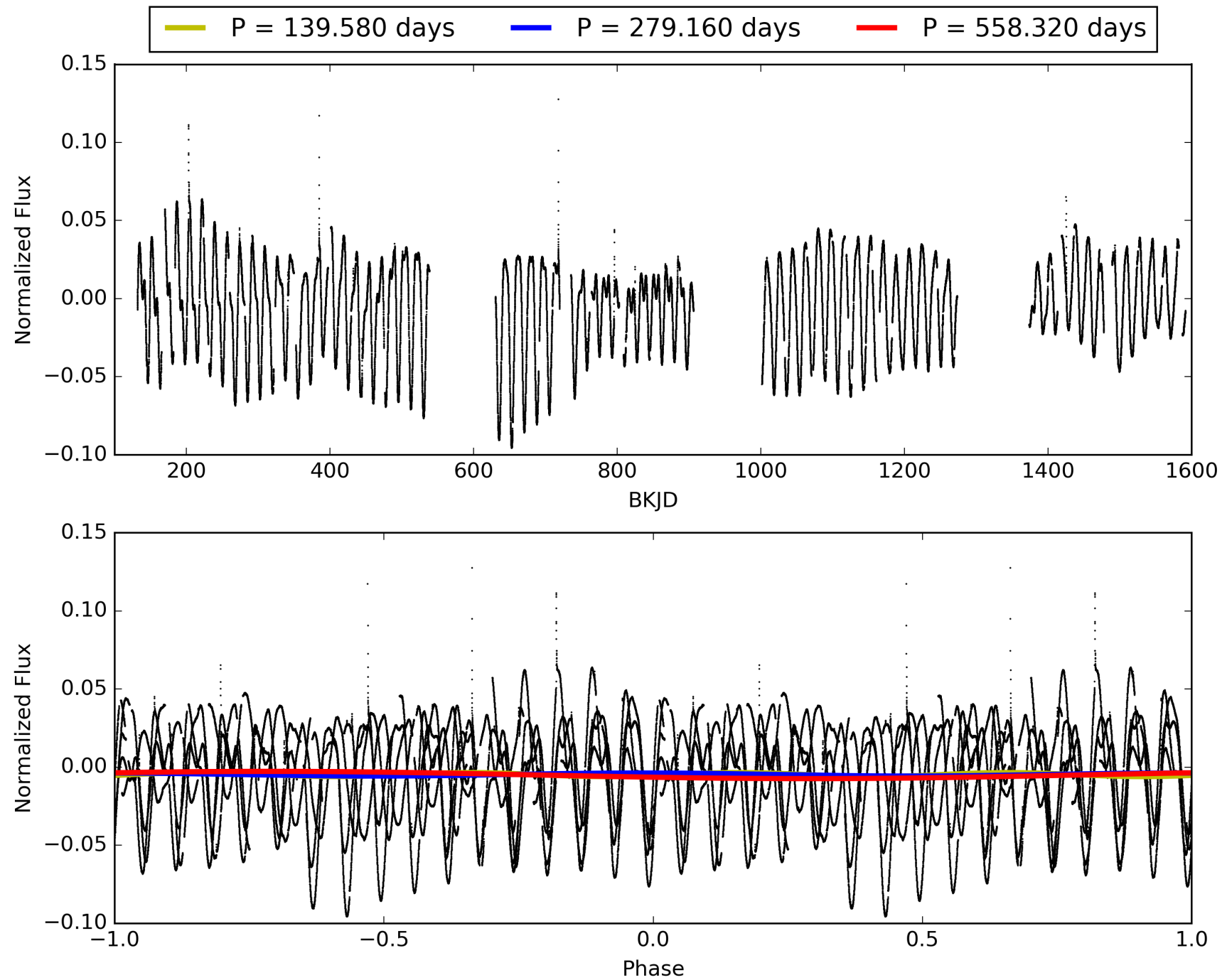
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 11:14:09 Z

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

TCE 004750889-04, PDC Light Curves

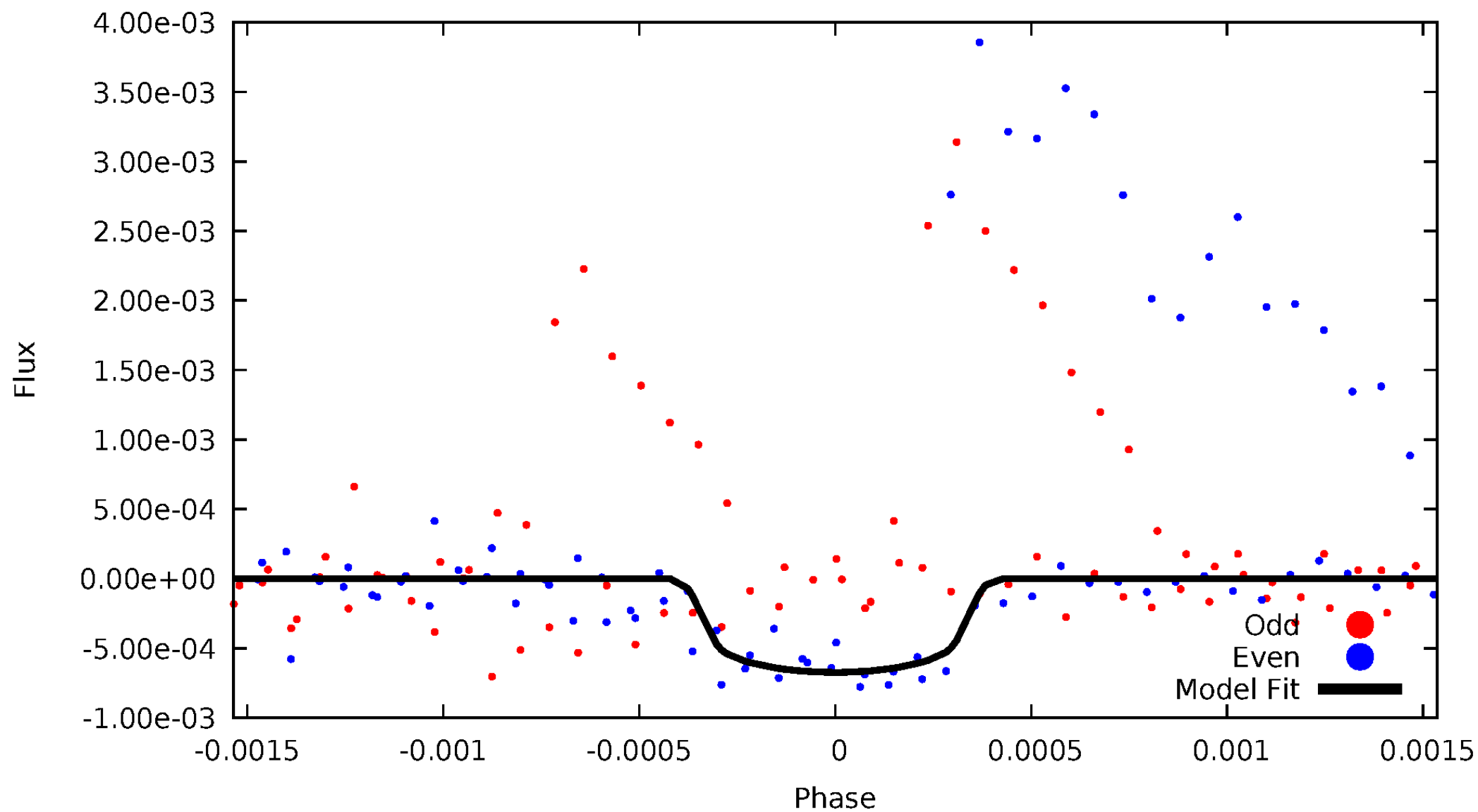


TCE 004750889-04



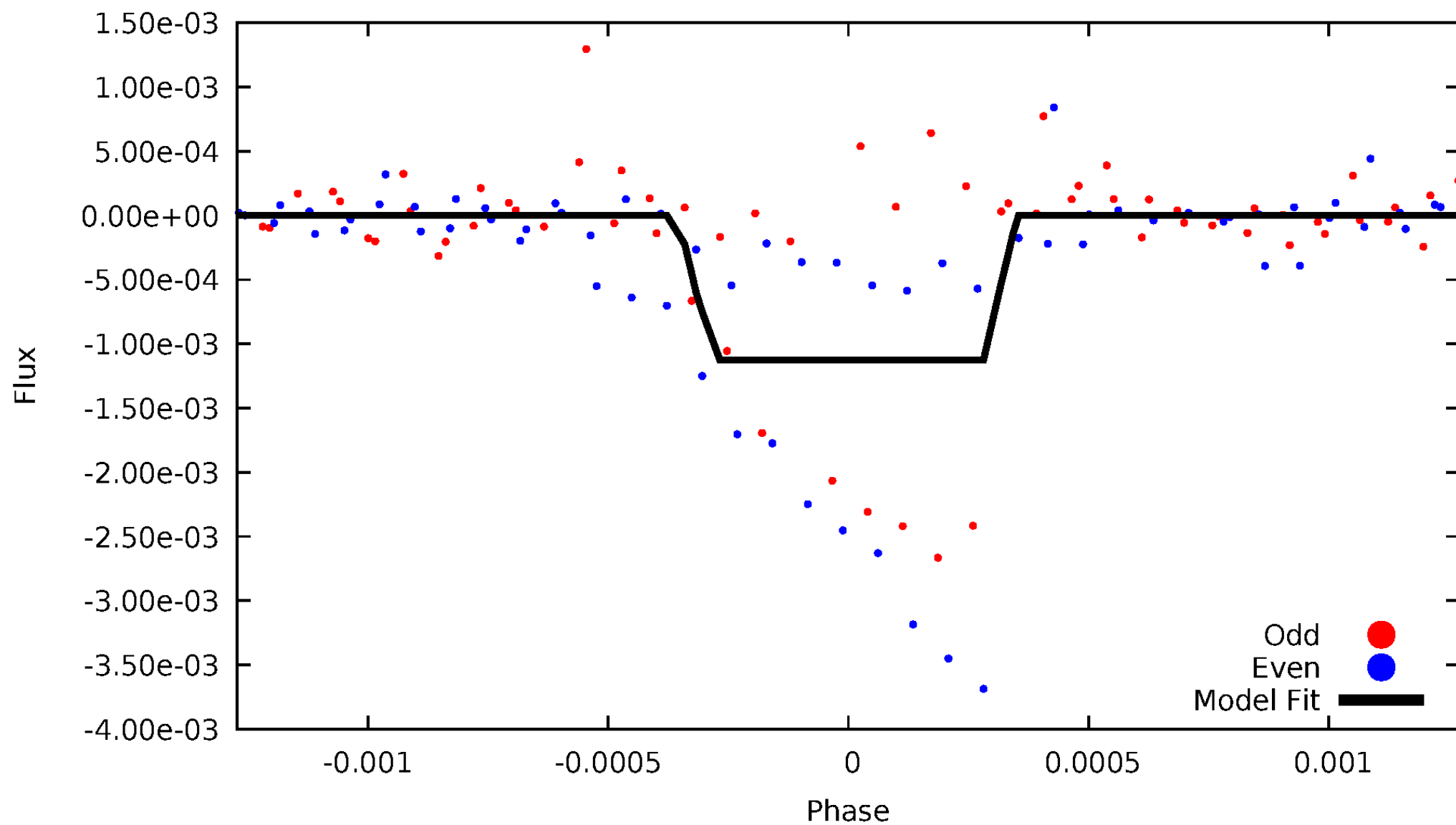
DV Odd/Even

TCE 004750889-04



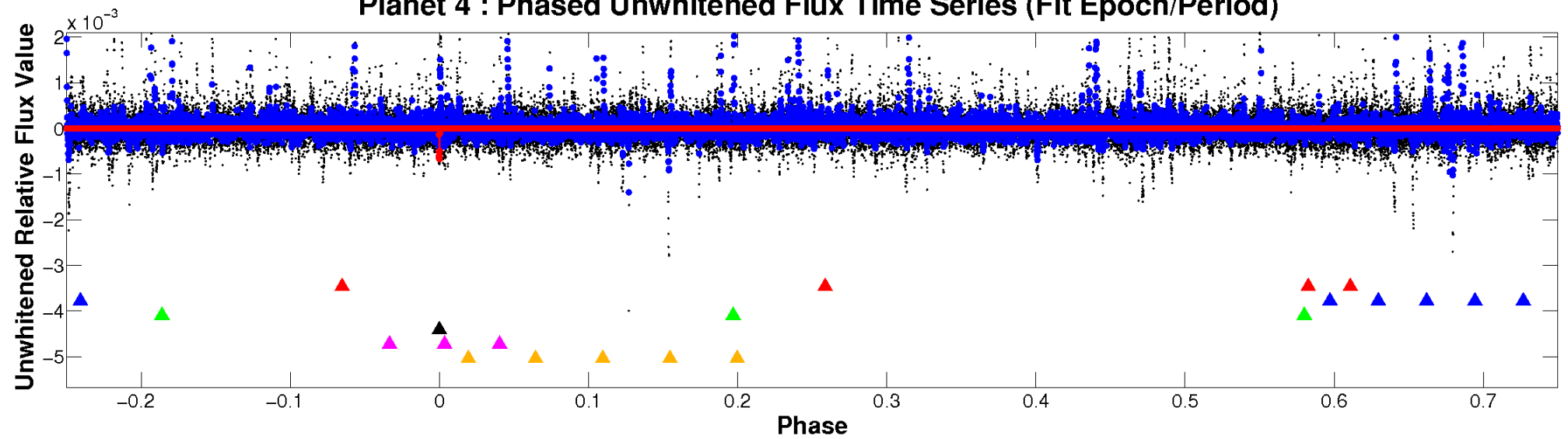
ALT Odd/Even

TCE 004750889-04

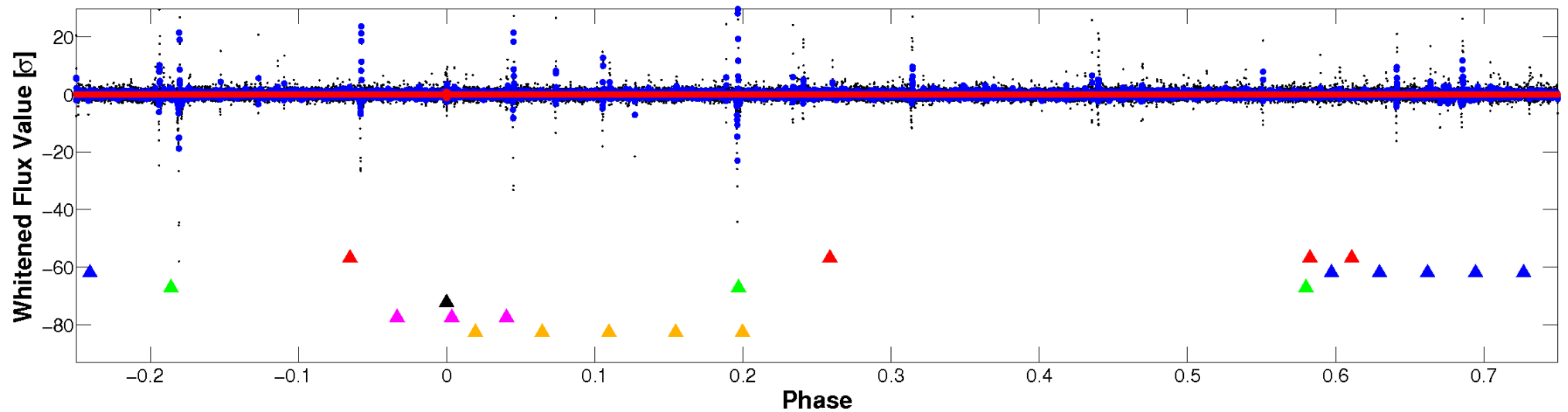


Non-Whitened Vs. Whitened Light Curve

Planet 4 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

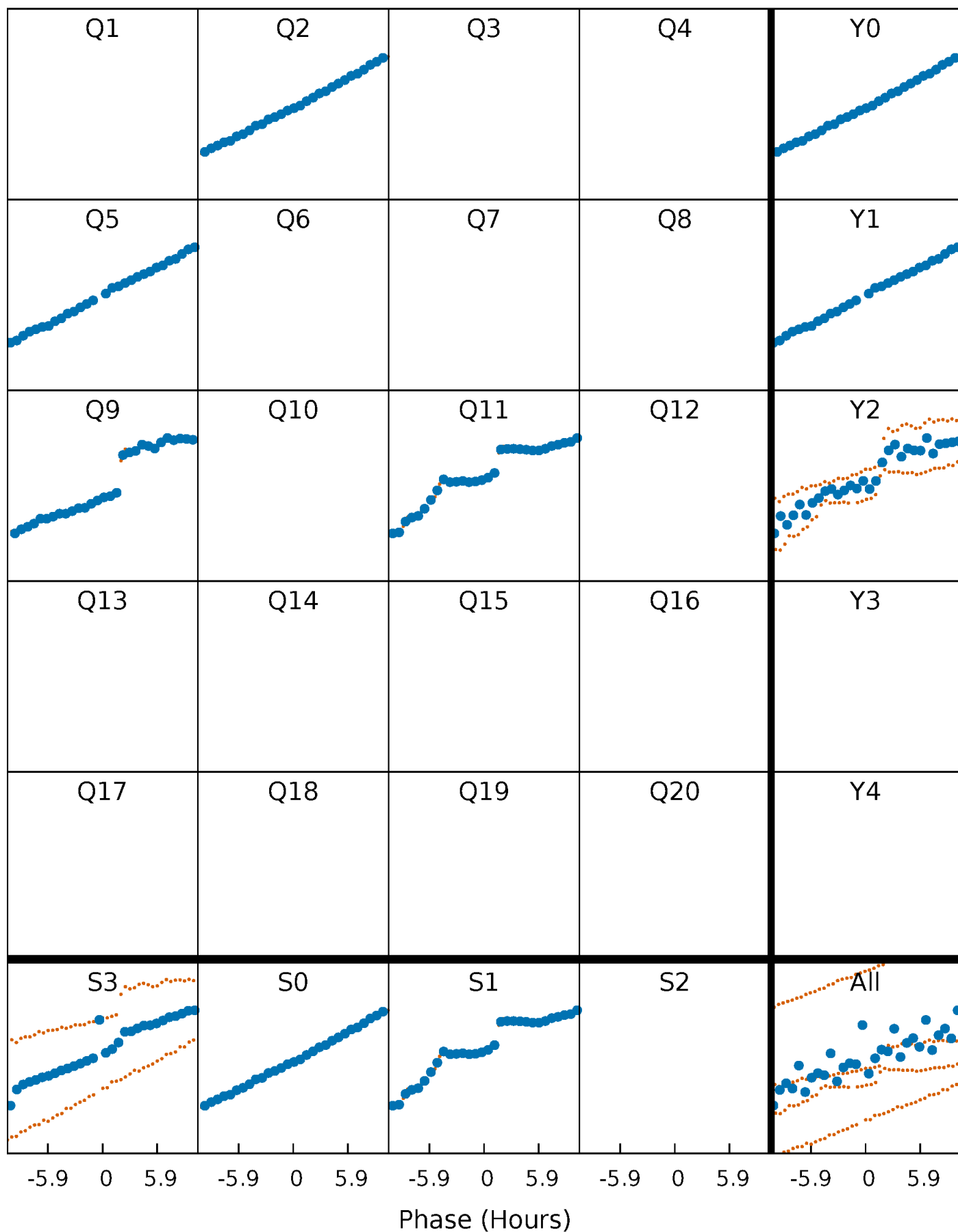


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



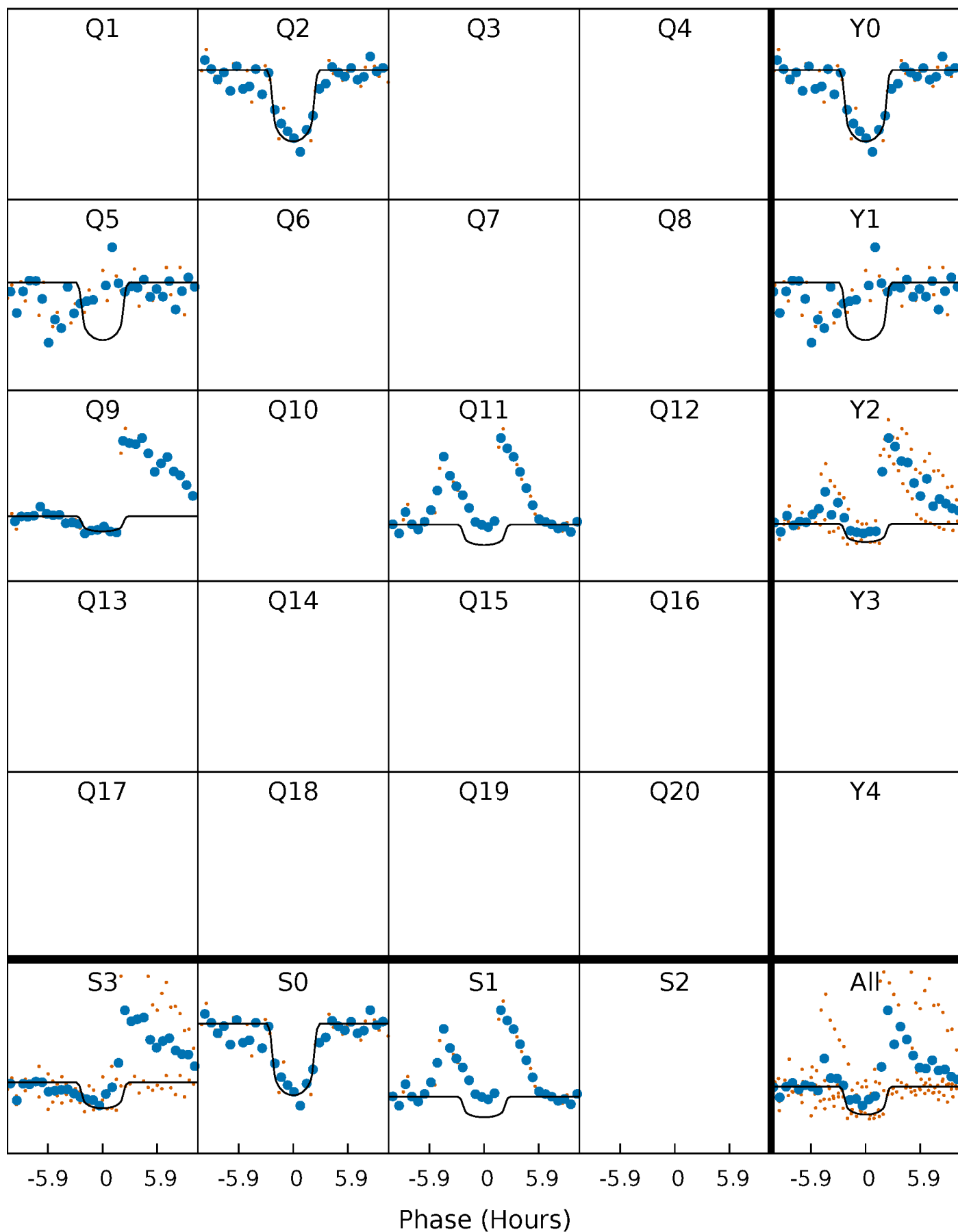
PDC Quarter-Phased Transit Curves

TCE 004750889-04 $P=279.159932$ Days $T_0=253.198949$ (BKJD)



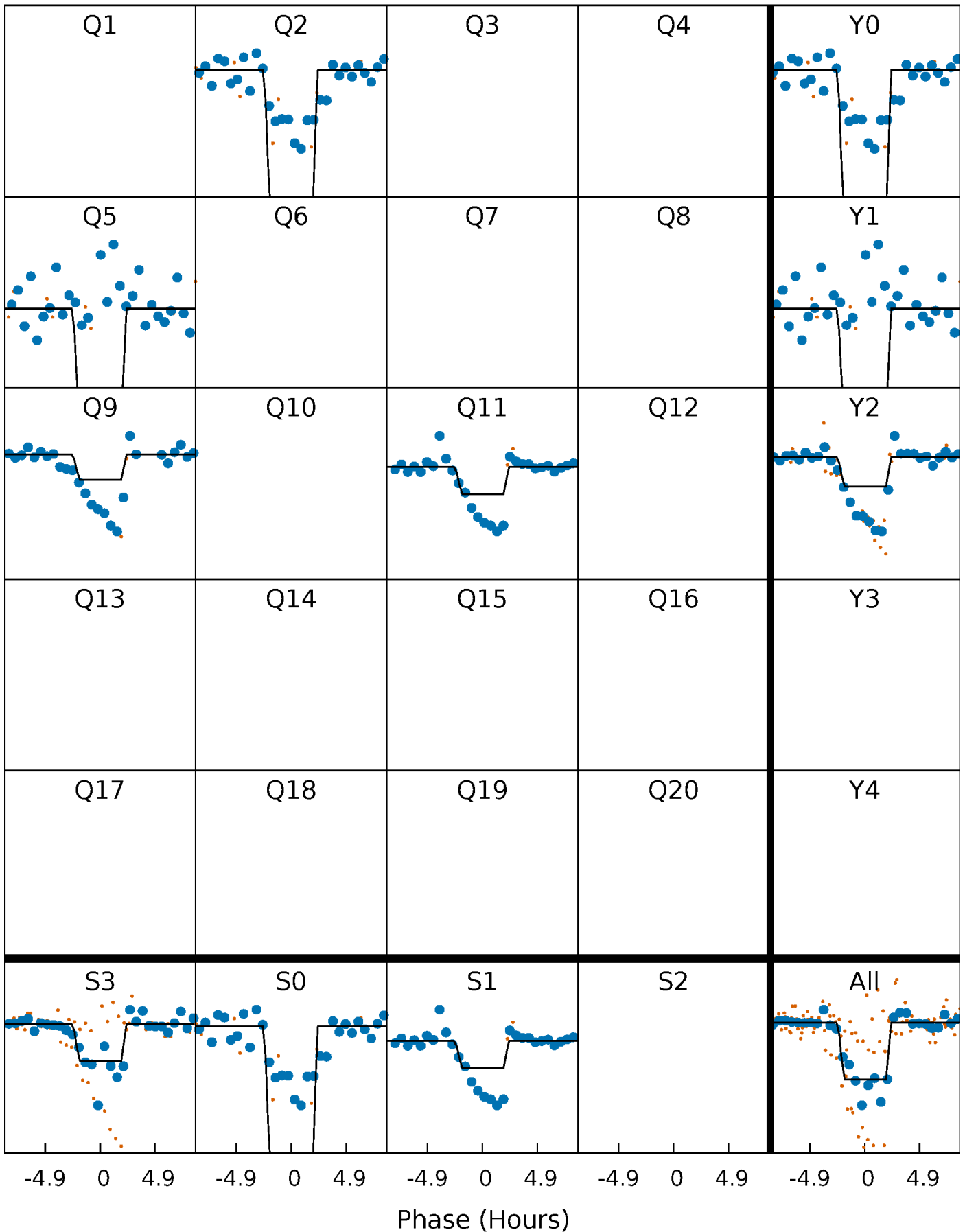
DV Quarter-Phased Transit Curves

TCE 004750889-04 $P=279.159932$ Days $T_0=253.198949$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

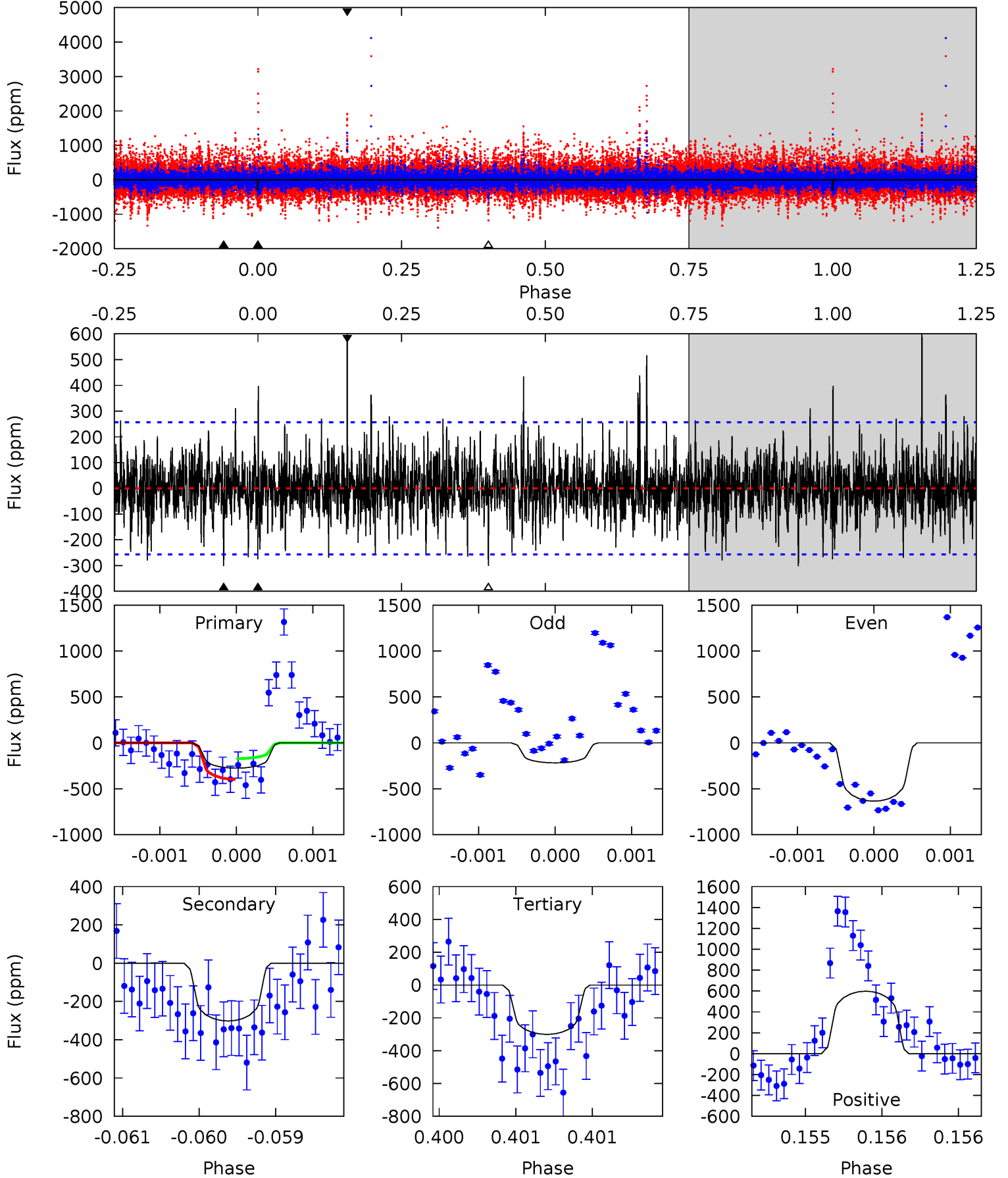
TCE 004750889-04 $P=279.149674$ Days $T_0=253.202806$ (BKJD)



DV Model-Shift Uniqueness Test

004750889-04, P = 279.159932 Days, E = 253.198949 Days

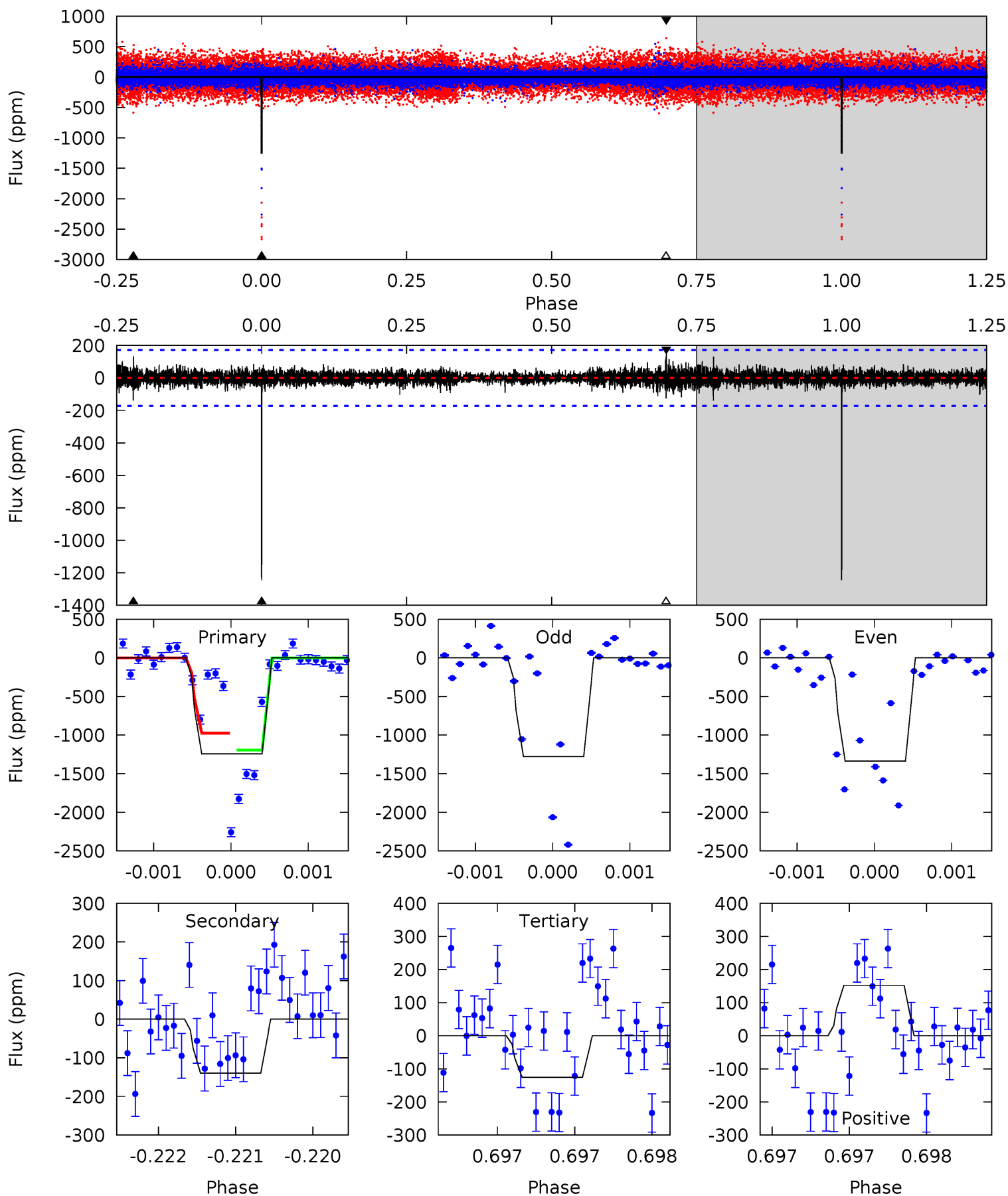
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.89	6.46	6.44	12.8	5.50	3.37	1.80	-0.54	-6.91	0.02	-6.34	2.32	0.33	0.66	2.44



Alt Model-Shift Uniqueness Test

004750889-04, P = 279.149674 Days, E = 253.202806 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
40.0	4.50	4.05	4.90	5.52	3.40	0.75	36.0	35.1	0.45	-0.40	1.06	0.99	0.11	3.21



Stellar Parameters For KIC 004750889

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5193^{+121}_{-212}	$3.472^{+1.232}_{-0.308}$	$-0.760^{+0.300}_{-0.400}$	$2.732^{+1.669}_{-2.040}$	$0.807^{+0.209}_{-0.209}$	$0.056^{+4.495}_{-0.036}$
	+2%/-4%	+35%/-9%	+39%/-53%	+61%/-75%	+26%/-26%	+8064%/-65%
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 004750889-04 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-302 ± 47	$6.95^{+4.58}_{-3.17}$	571^{+100}_{-127}	4312^{+653}_{-447}	2112^{+4491}_{-1341}
Alt.	-140 ± 31	$8.92^{+4.52}_{-4.20}$	573^{+98}_{-132}	3476^{+401}_{-253}	565^{+1407}_{-317}

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 $A_{obs} \gg 1.0$

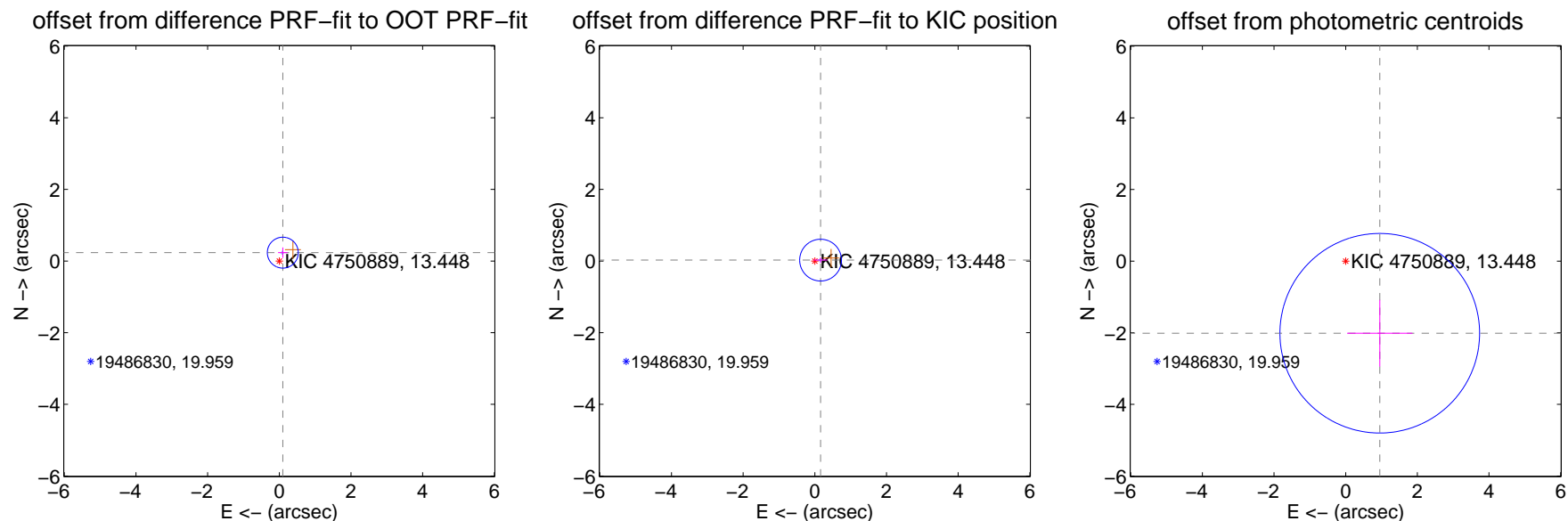
DV Centroid Data

Supplemental centroid analysis for 004750889-04. Kepler magnitude: 13.45. Transit SNR 6.49

There are 1 quarters with good PRF difference image offsets

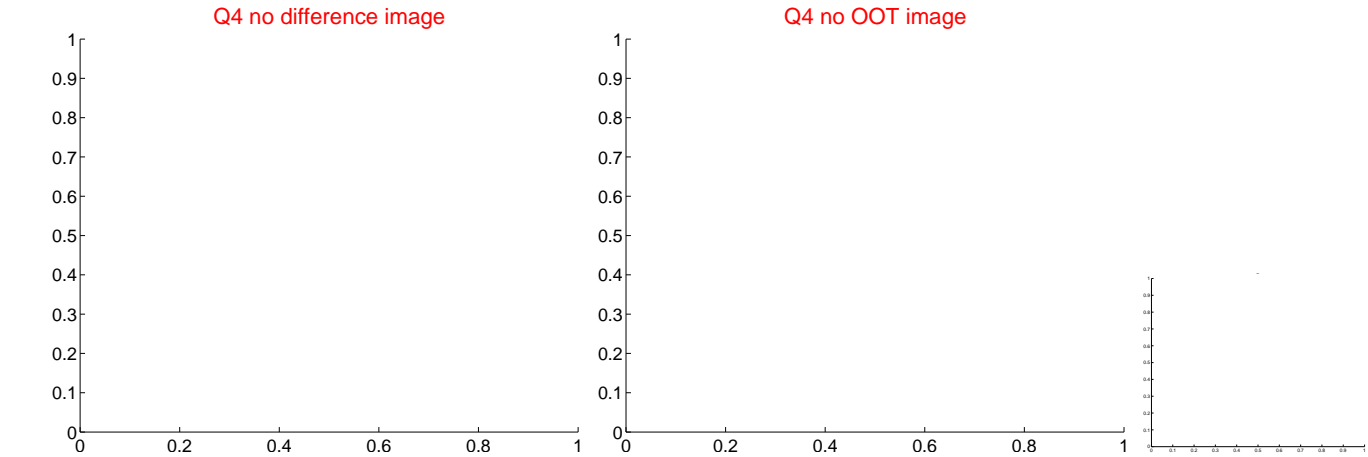
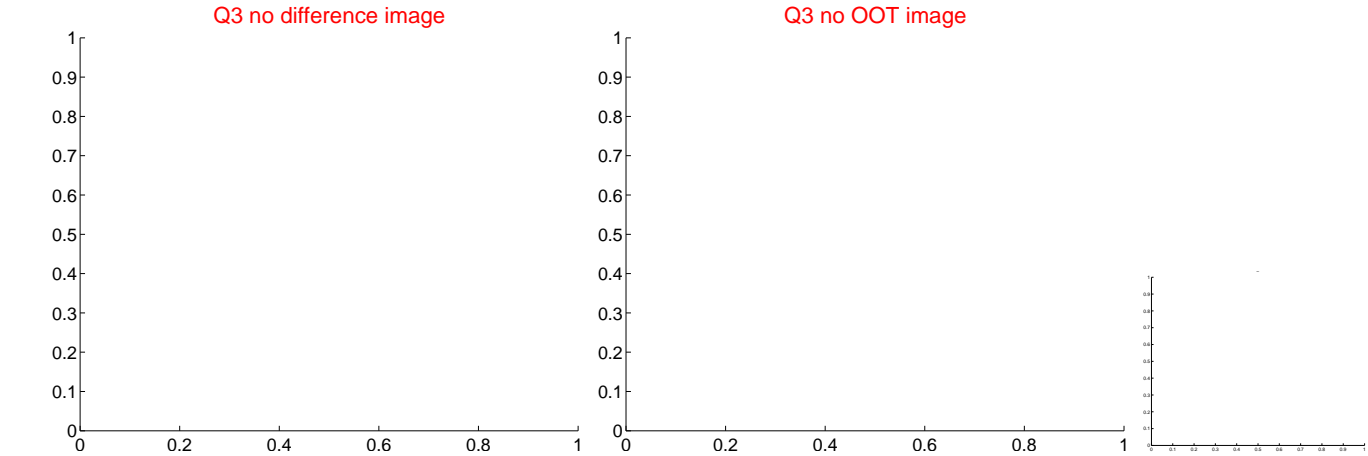
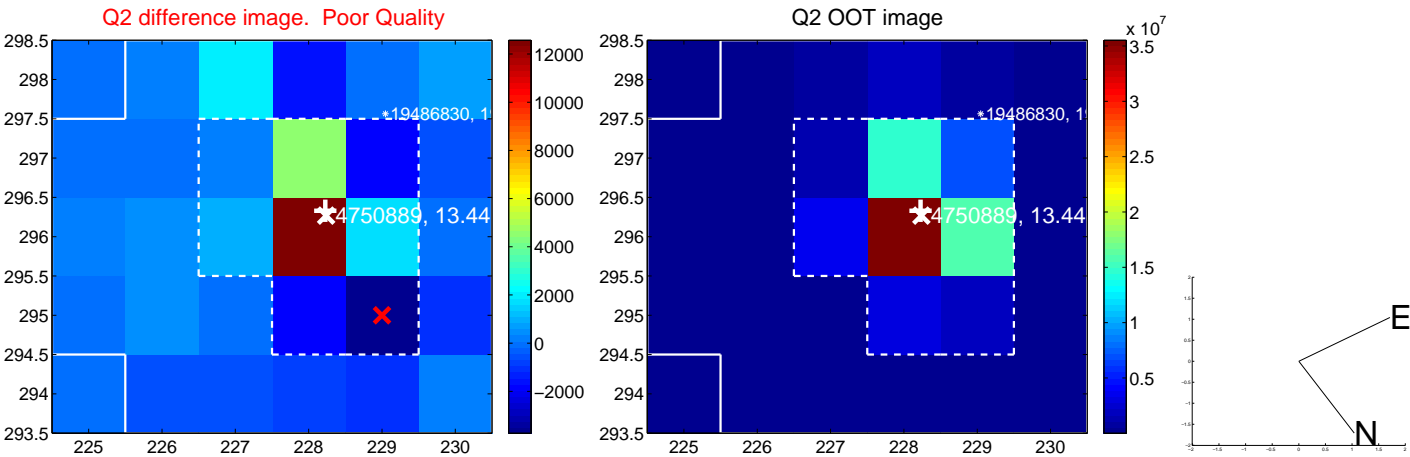
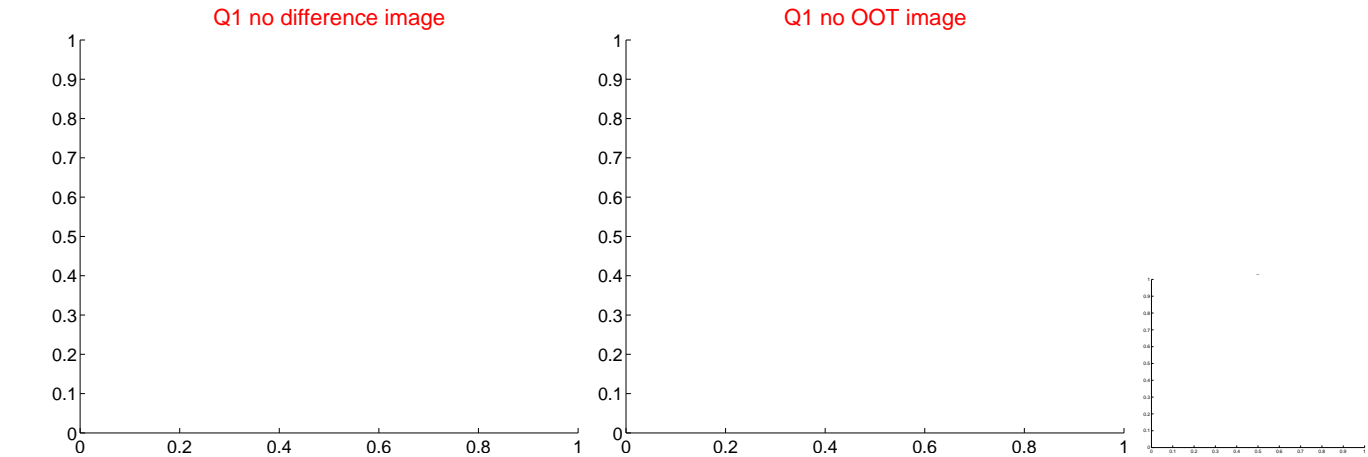
The direct PRF centroid is offset from the target star catalog position by about 0.24 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.254 ± 0.144	1.76	-0.098 ± 0.132	0.234 ± 0.146
PRF-fit source offset from KIC position	0.163 ± 0.194	0.84	-0.161 ± 0.191	0.026 ± 0.075
photometric centroid source offset	2.23 ± 0.93	2.40	-0.95 ± 0.91	-2.01 ± 0.93

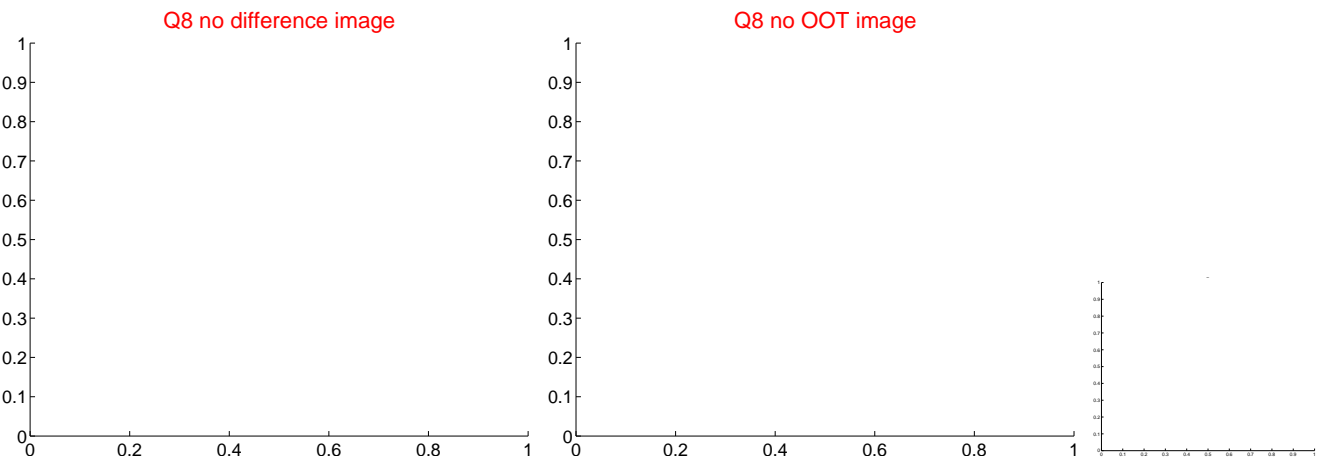
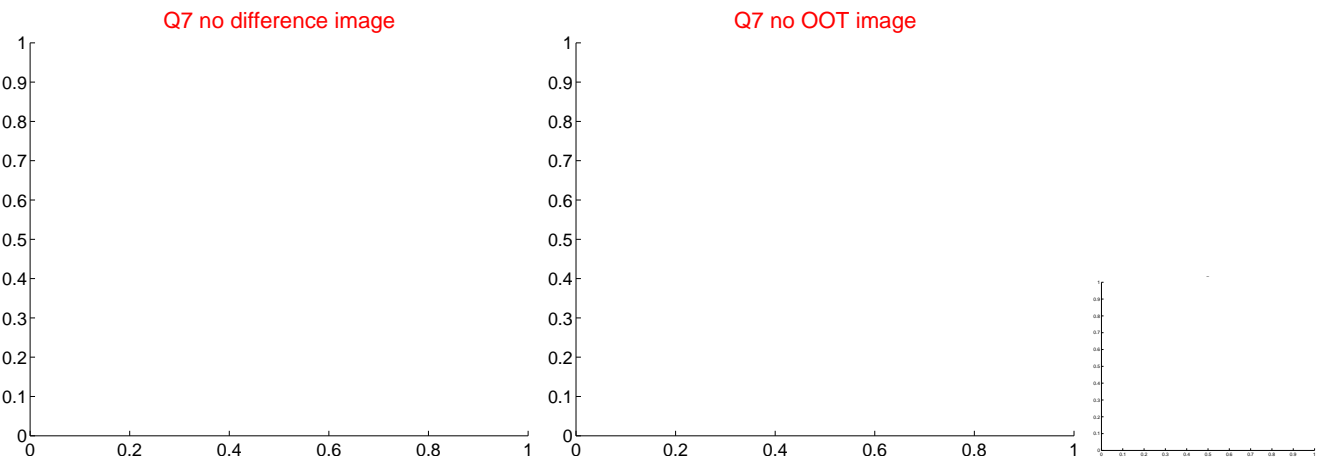
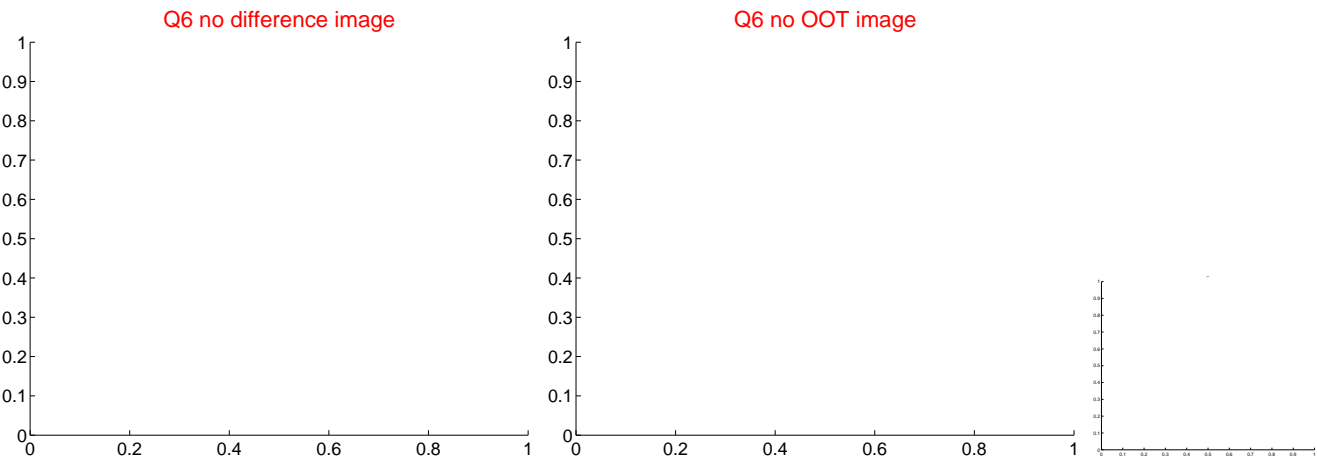
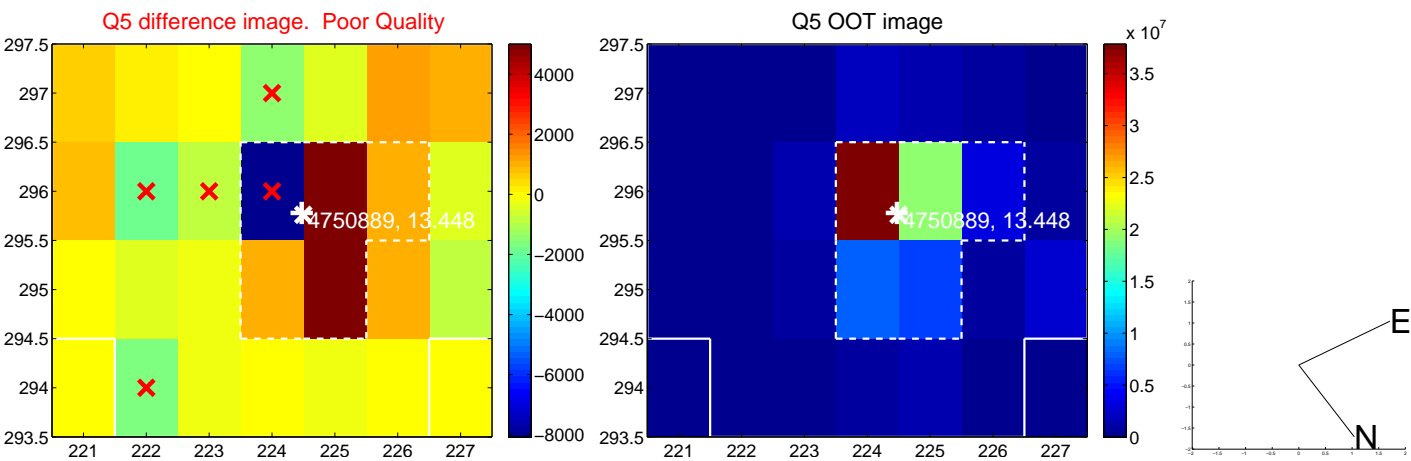


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

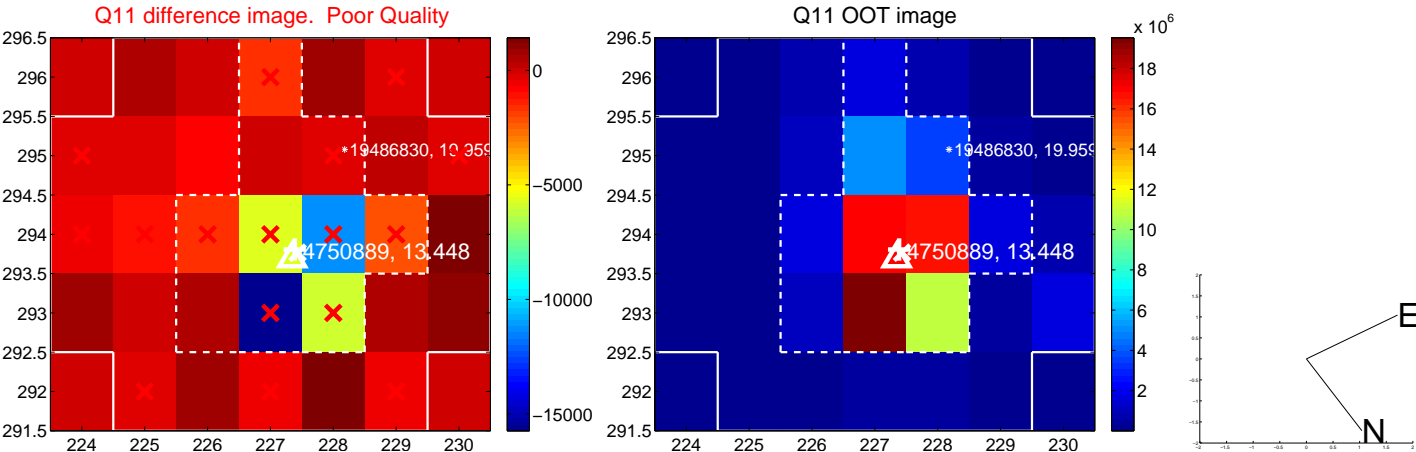
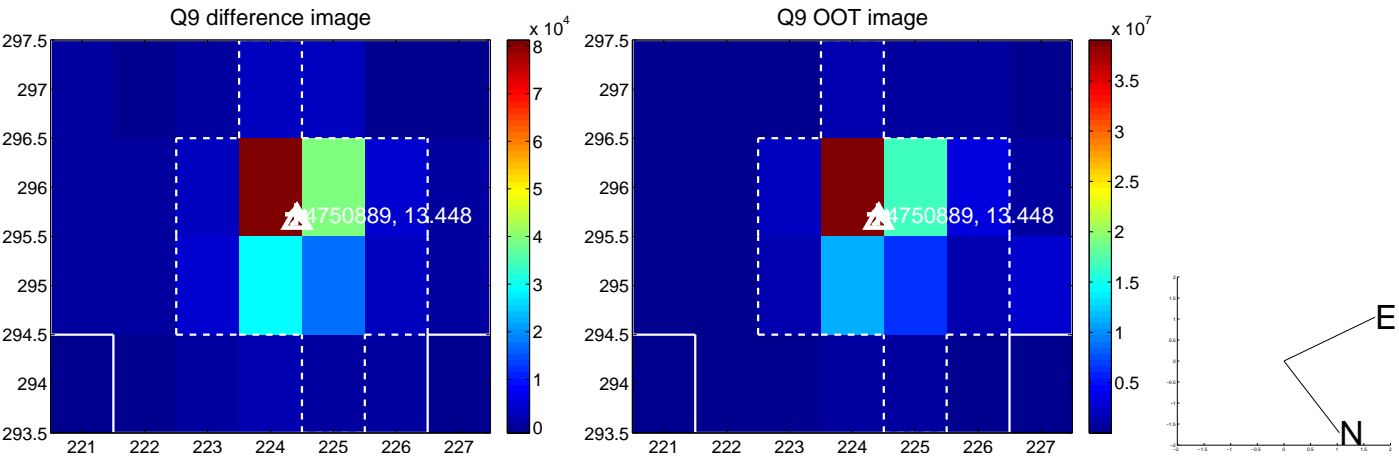
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.



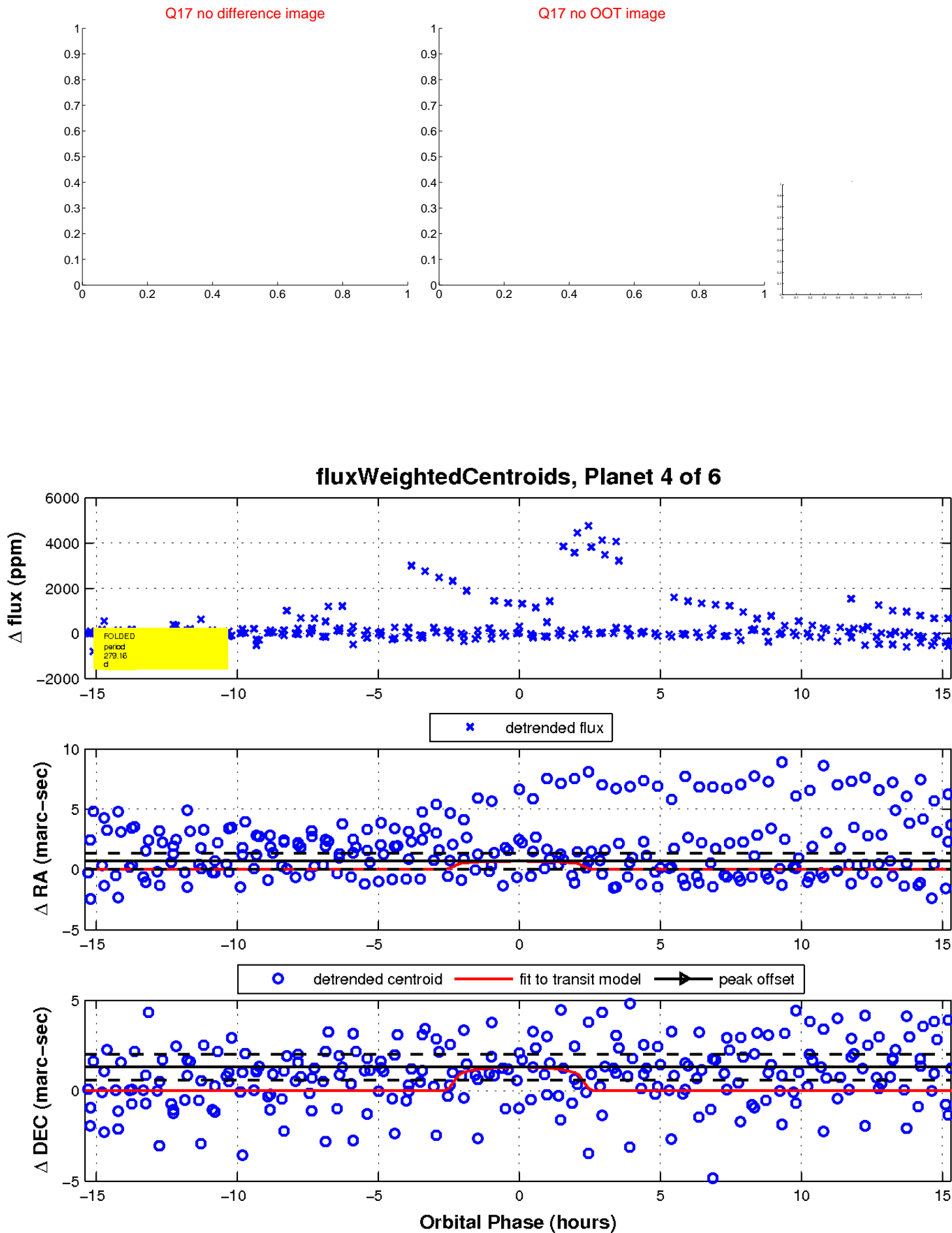
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

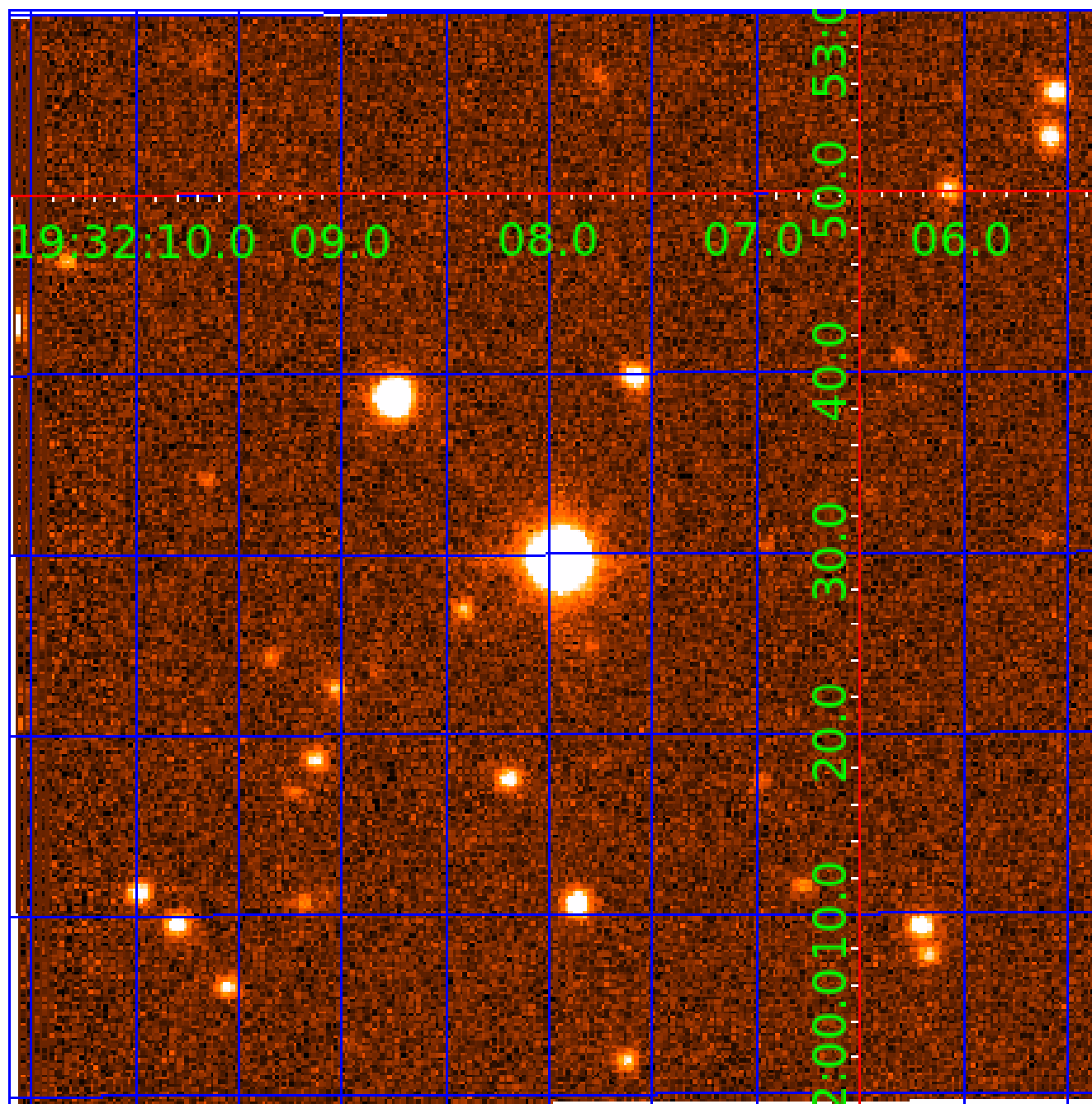


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 004750889

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})
004750889-01	OBS	No	369.591241	144.563892	1601.6	7.240	17.6	13.7	2.73	5193	13.65	5.52
004750889-02	OBS	No	288.209376	140.757793	848.2	7.801	15.4	6.0	2.73	5193	9.28	7.69
004750889-03	OBS	No	386.083560	480.431524	995.6	4.435	14.4	9.3	2.73	5193	9.69	5.21
004750889-04	OBS	No	279.159932	253.198949	673.7	5.142	15.7	6.5	2.73	5193	8.17	8.02
004750889-05	OBS	No	568.625031	243.869893	753.1	10.536	11.5	6.1	2.73	5193	7.84	3.11
004750889-06	OBS	No	291.740703	258.626984	709.9	5.718	10.6	6.1	2.73	5193	7.93	7.57

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004750889-01	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS—HALO_GHOST
004750889-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS
004750889-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
004750889-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
004750889-05	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—HALO_GHOST
004750889-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—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.

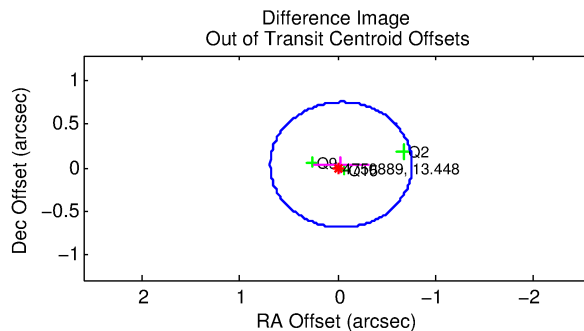
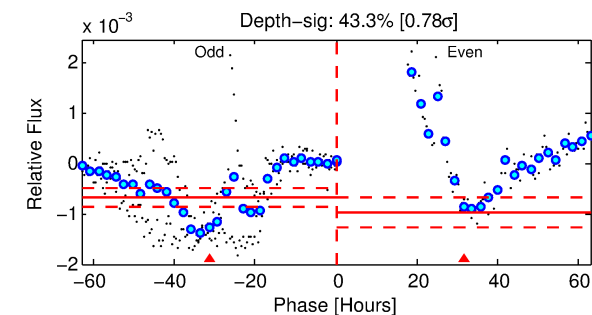
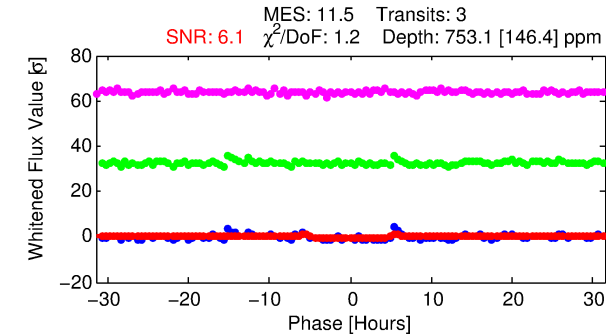
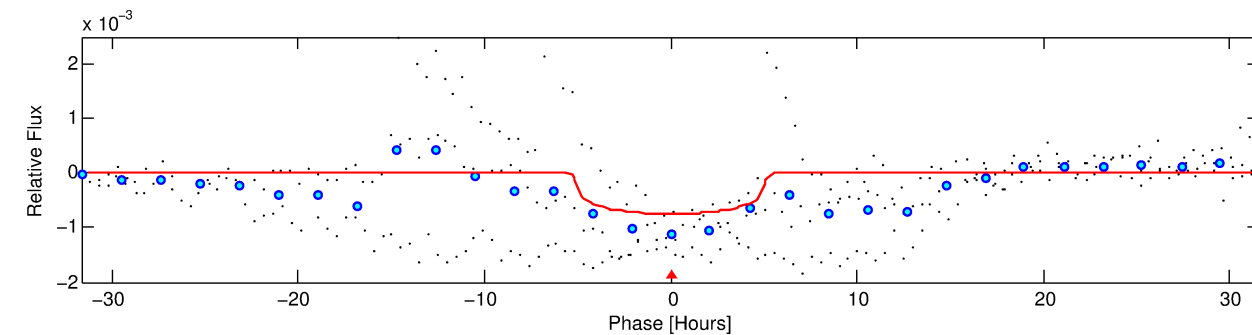
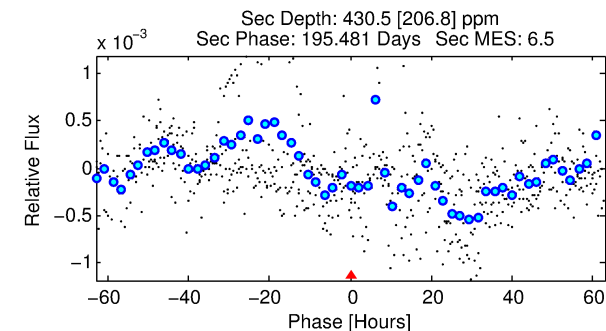
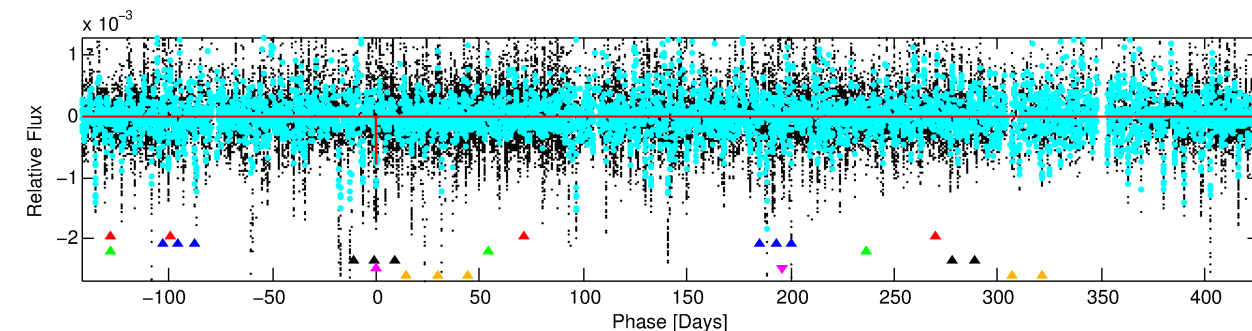
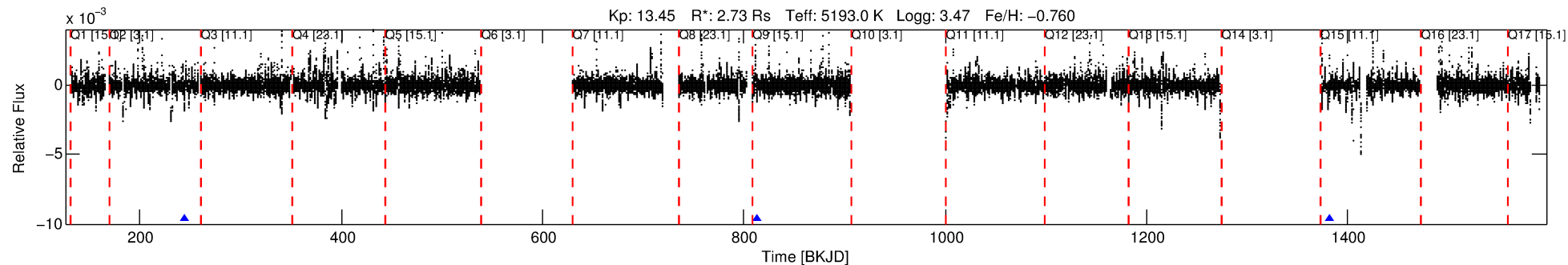
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004750889-05

No Significant Match Found

DV One-Page Summary

KIC: 4750889 Candidate: 5 of 6 Period: 568.625 d



DV Fit Results:

Period = 568.62503 [0.00664] d
Epoch = 243.8699 [0.0092] BKJD
Rp/R* = 0.0263 [0.0095]
a/R* = 333.27 [454.58]
b = 0.63 [1.32]
Seff = 3.11 [6.10]
Teq = 339 [166] K
Rp = 7.84 [6.51] Re
a = 1.2509 [1.3368] AU
Ag = 6022.43 [12887.45] [0.47 σ]
Teffp = 4611 [1019] K [4.14 σ]

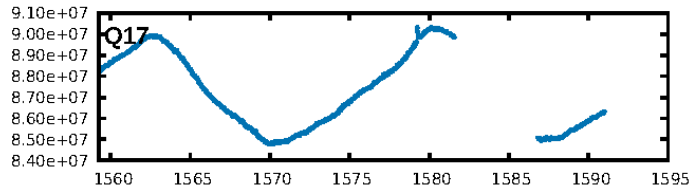
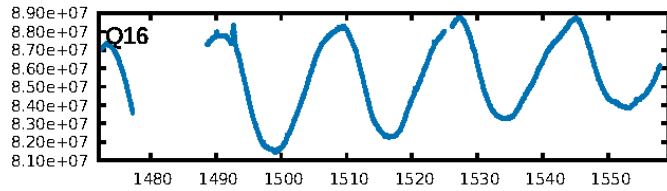
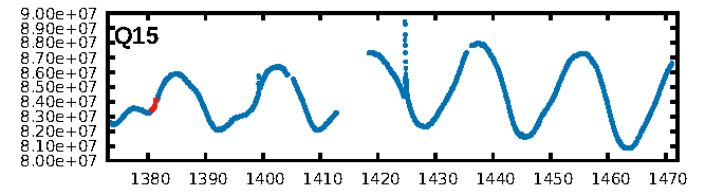
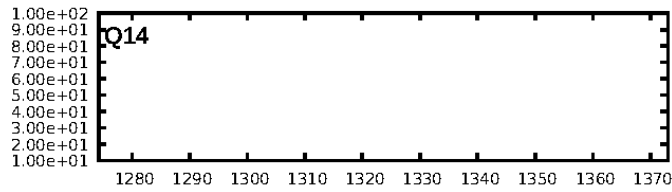
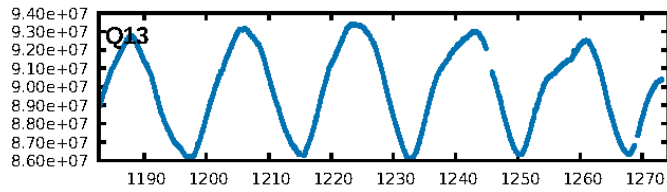
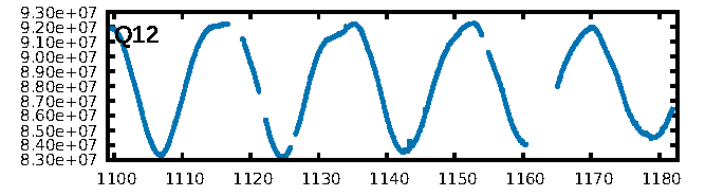
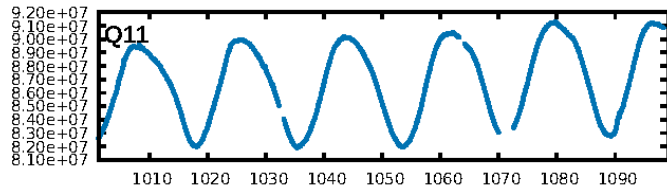
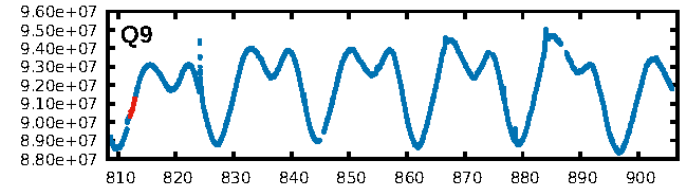
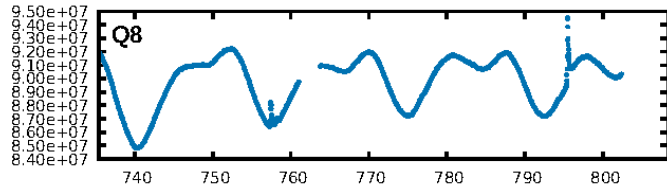
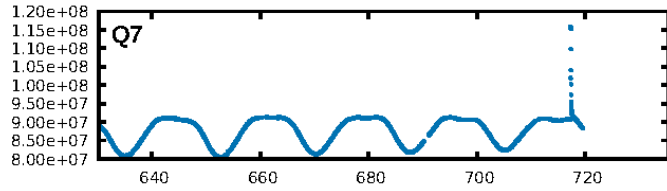
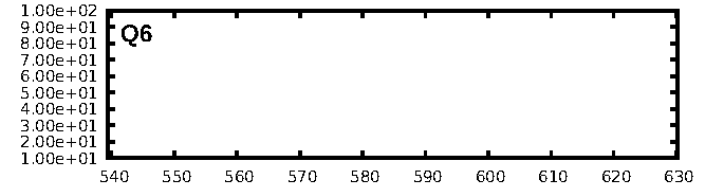
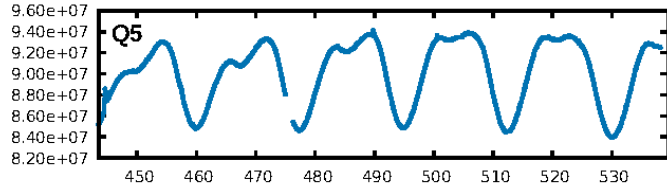
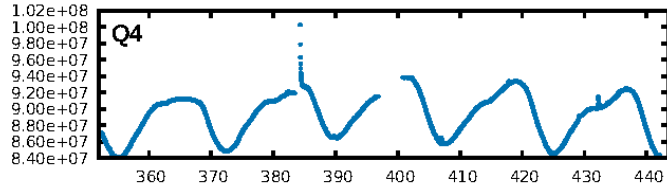
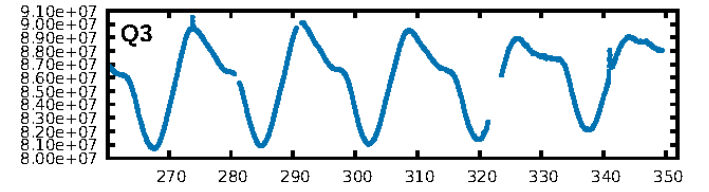
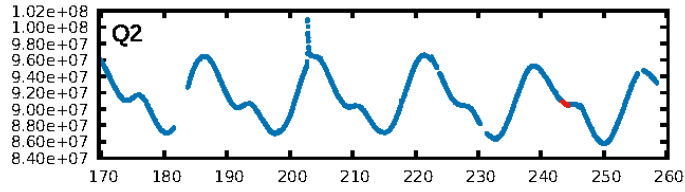
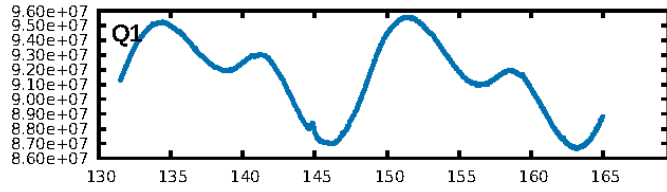
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [383.26 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 0.5%
ModelChiSquareGof-sig: 99.2%
Bootstrap-pfa: 2.00e-09
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 0.1265
Centroid-sig: 7.4%
Centroid-so: 0.920 arcsec [1.17 σ]
OotOffset-rm: 0.049 arcsec [0.20 σ]
OotOffset-st: 1/1/0/1 [3]
KicOffset-rm: 0.160 arcsec [1.70 σ]
KicOffset-st: 1/1/0/1 [3]
DiffImageQuality-fgm: 1.00 [3/3]
DiffImageOverlap-fno: 1.00 [3/3]

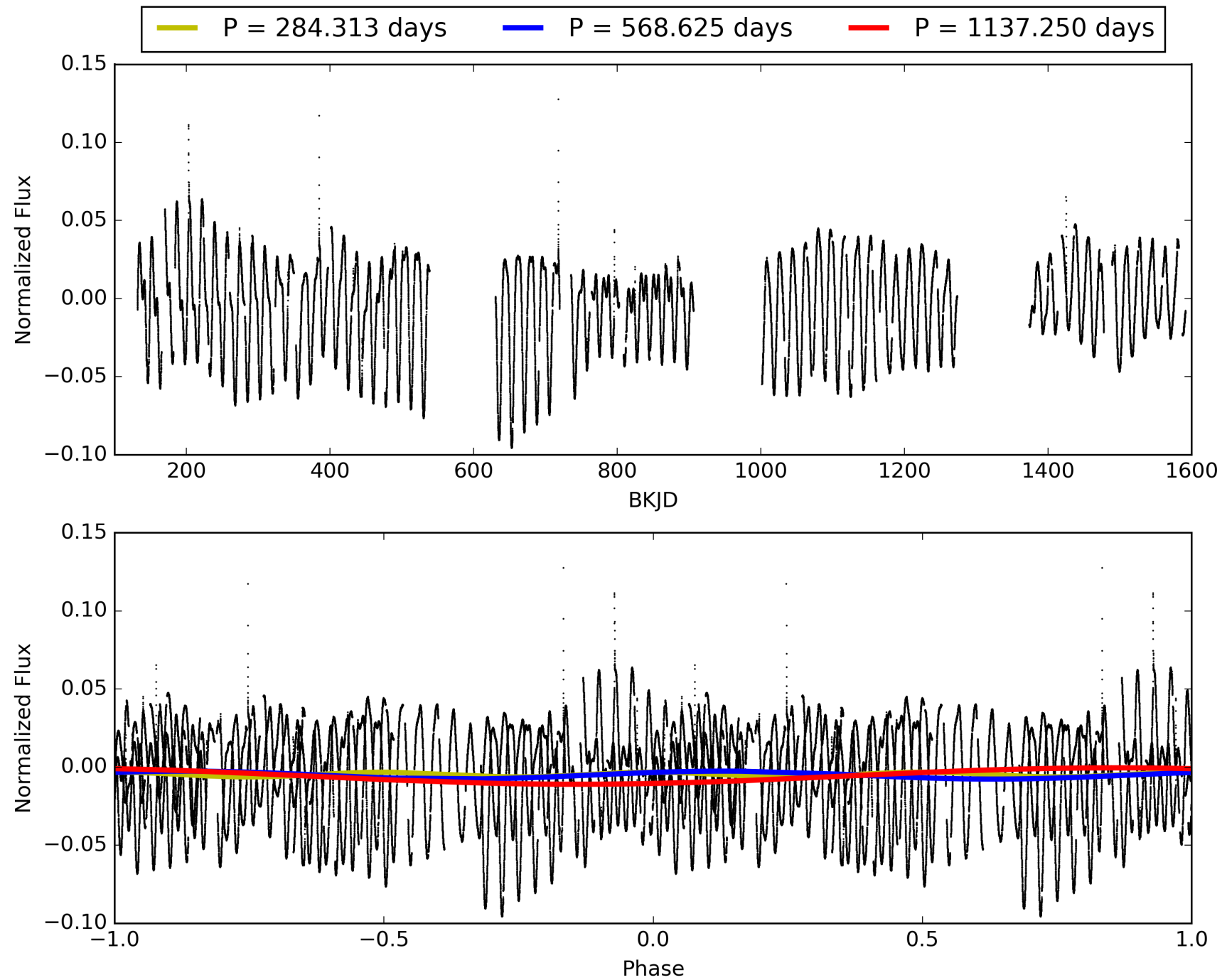
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 11:14:19 Z

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

TCE 004750889-05, PDC Light Curves

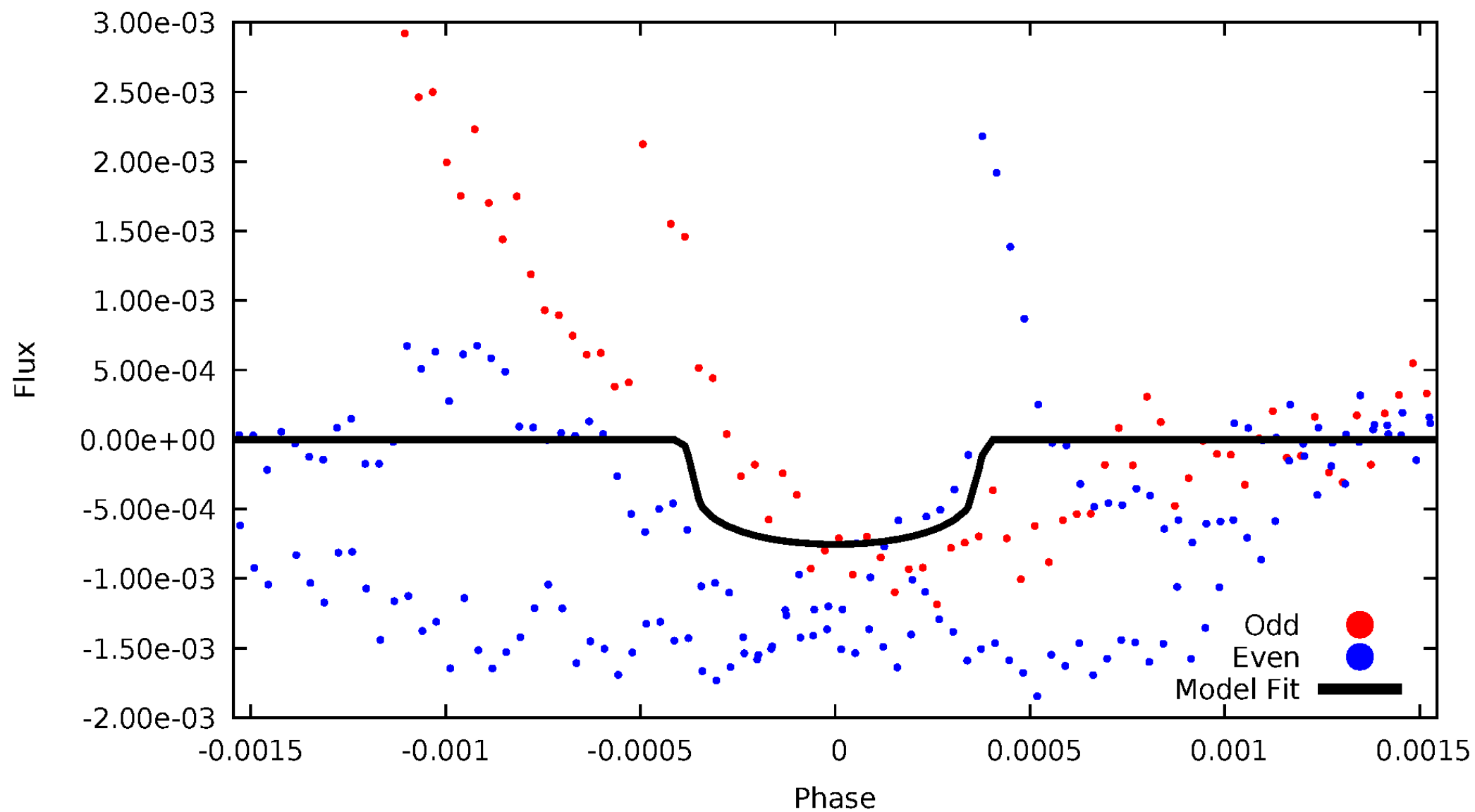


TCE 004750889-05



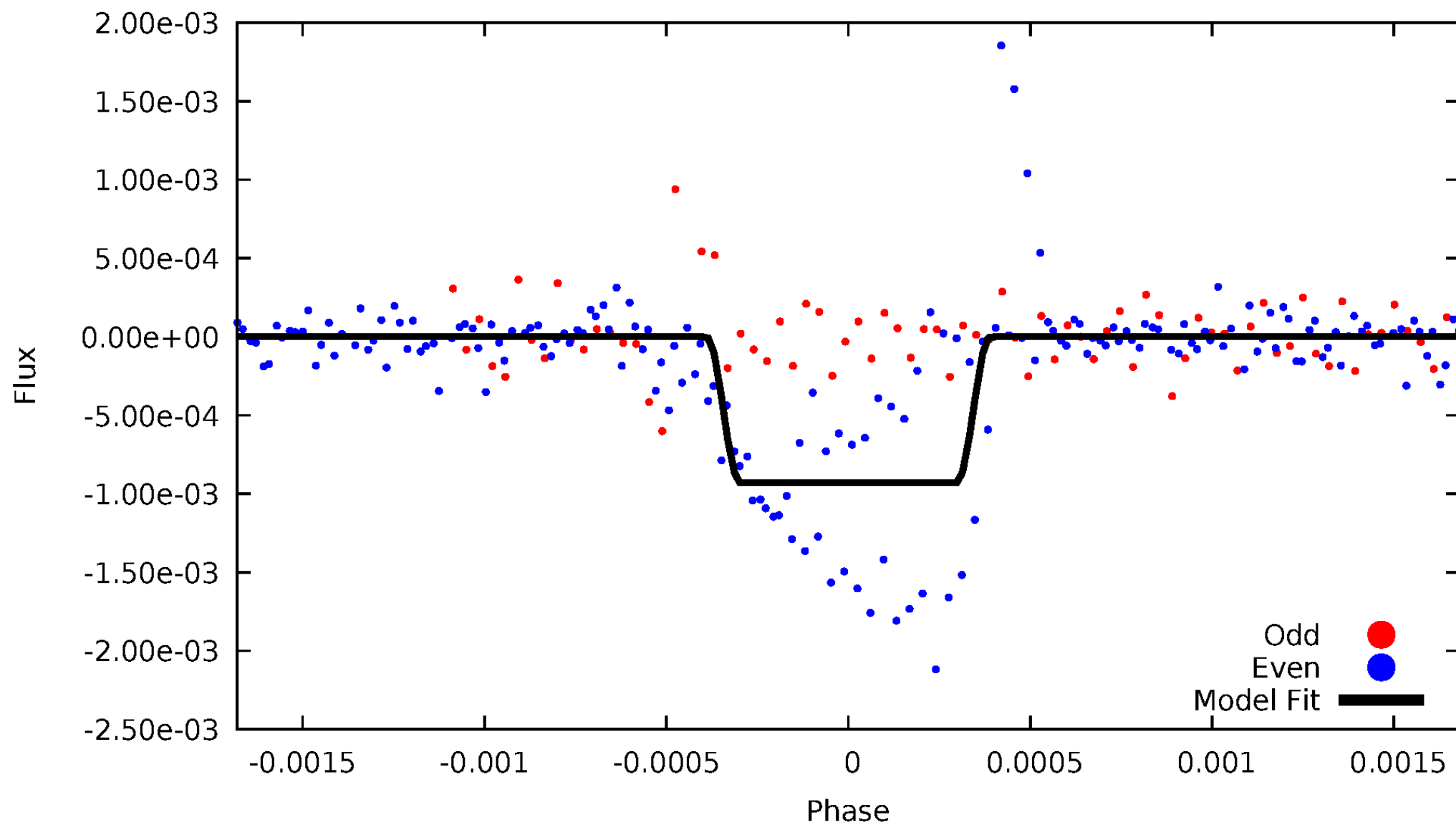
DV Odd/Even

TCE 004750889-05



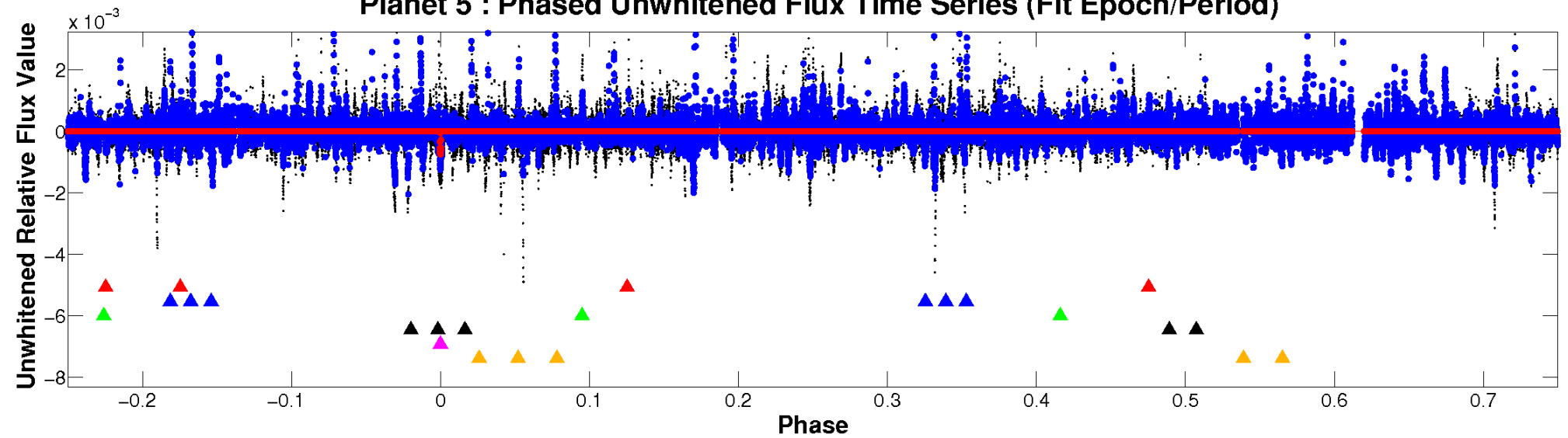
ALT Odd/Even

TCE 004750889-05

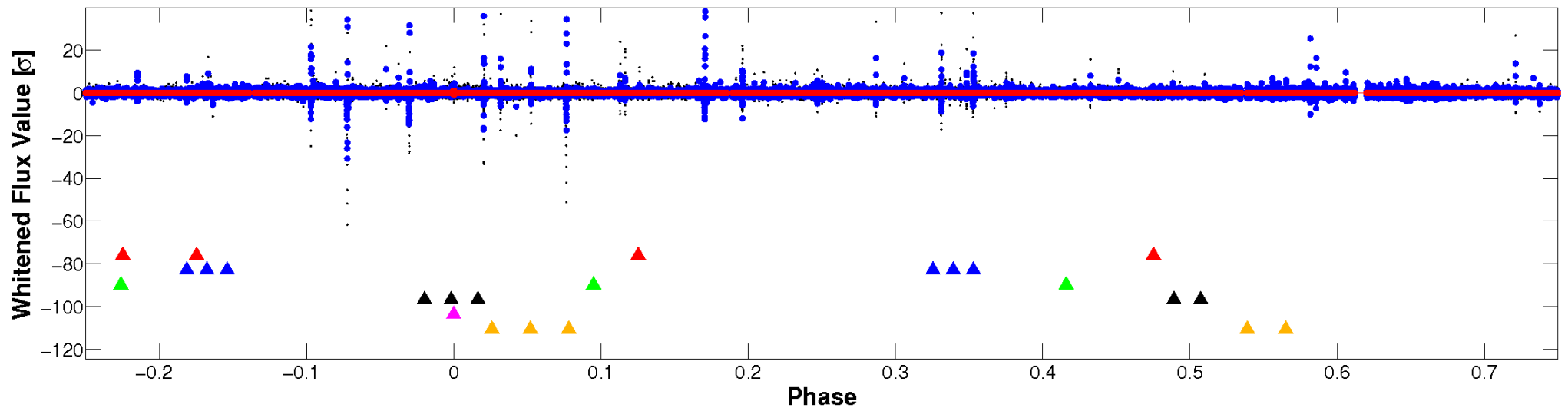


Non-Whitened Vs. Whitened Light Curve

Planet 5 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

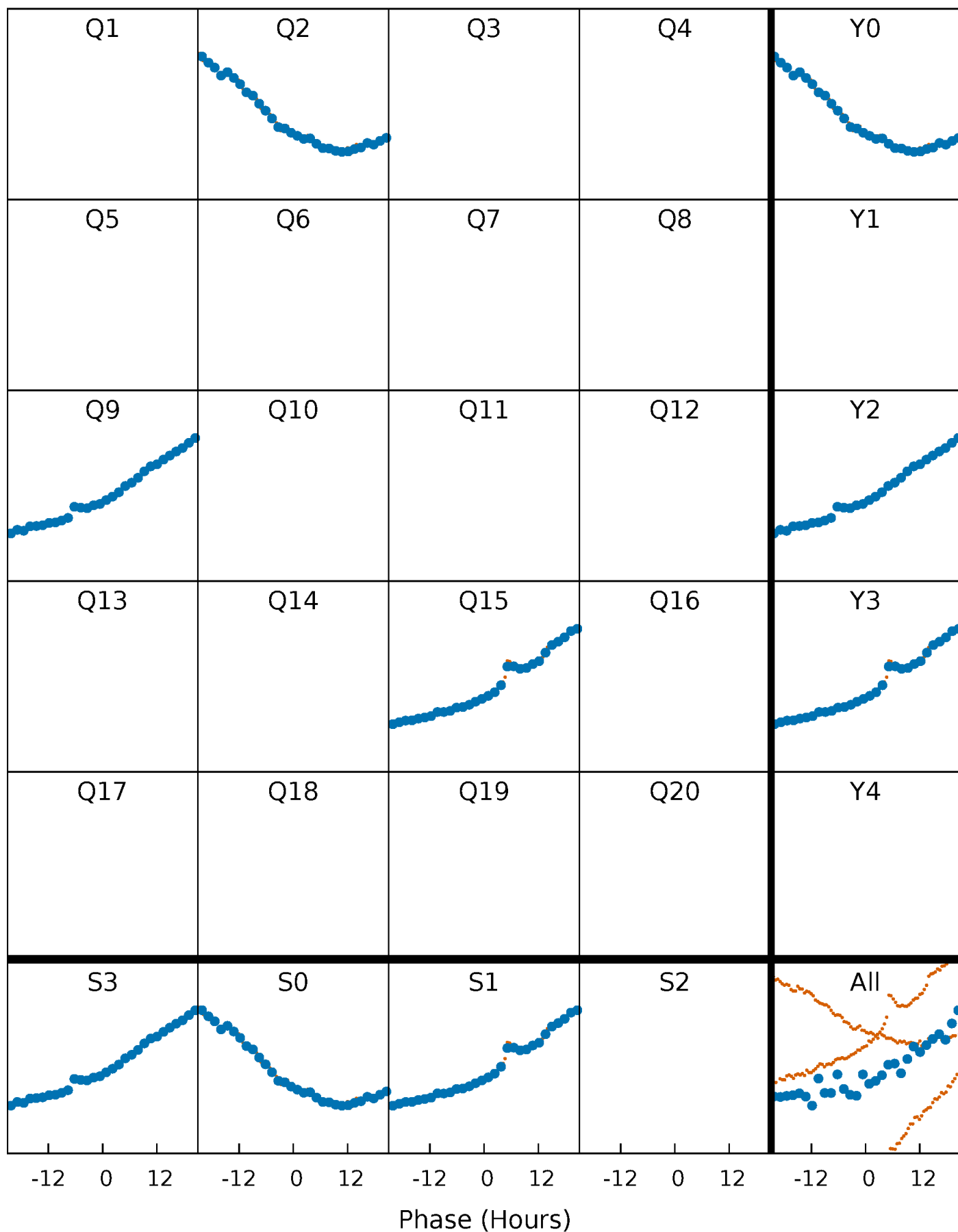


Planet 5 : Phased Whitened Flux Time Series (Fit Epoch/Period)



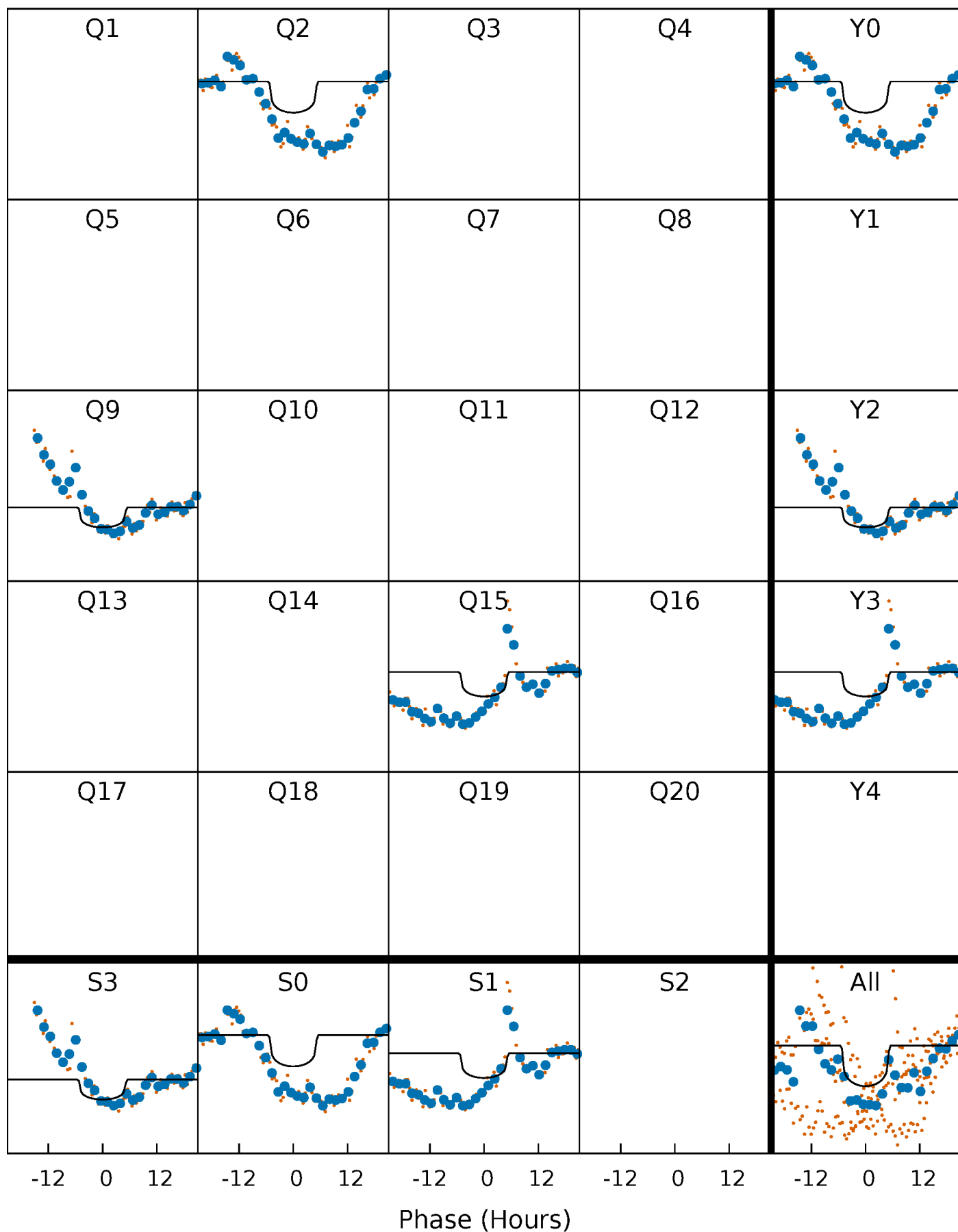
PDC Quarter-Phased Transit Curves

TCE 004750889-05 $P=568.625031$ Days $T_0=243.869893$ (BKJD)



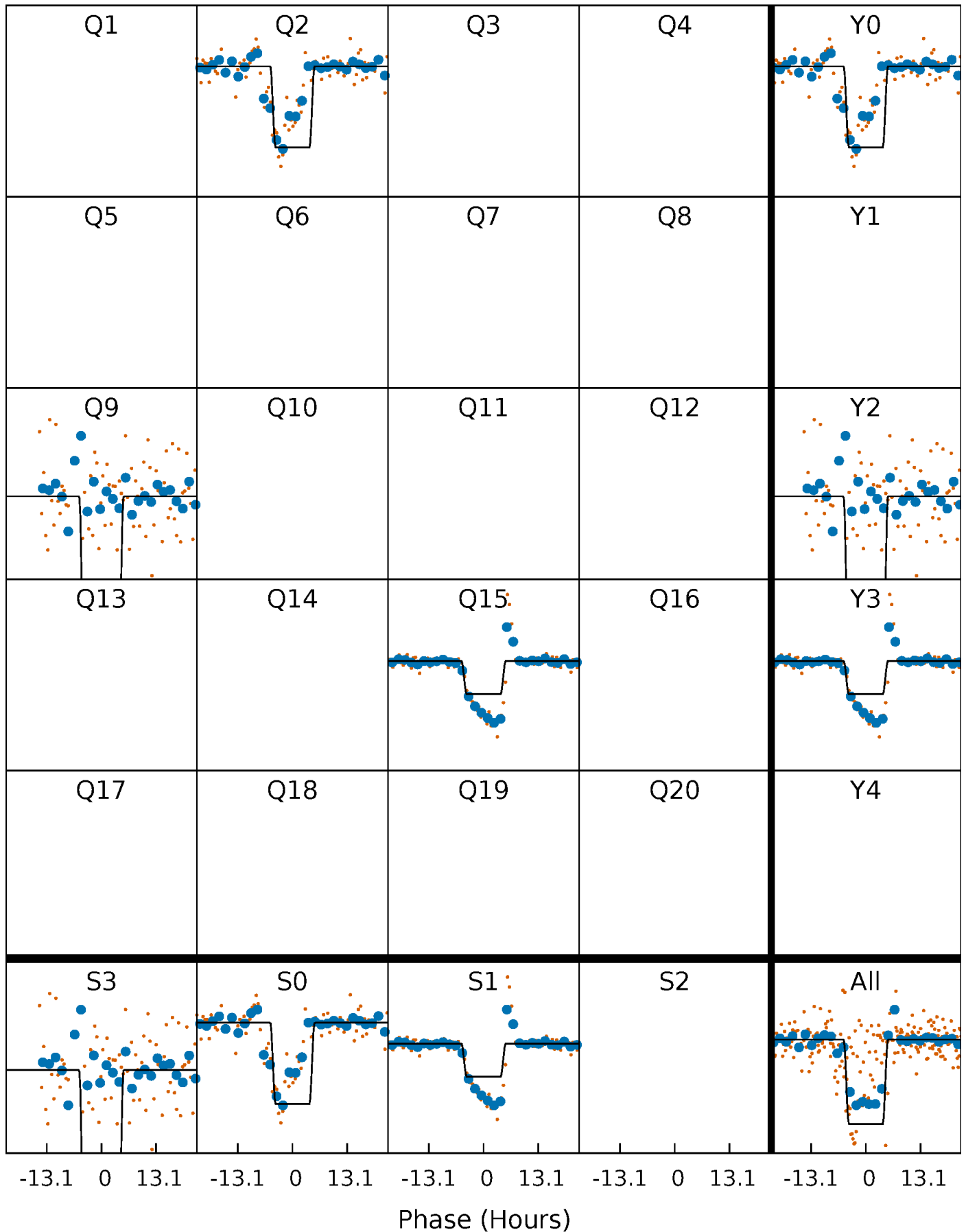
DV Quarter-Phased Transit Curves

TCE 004750889-05 $P=568.625031$ Days $T_0=243.869893$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

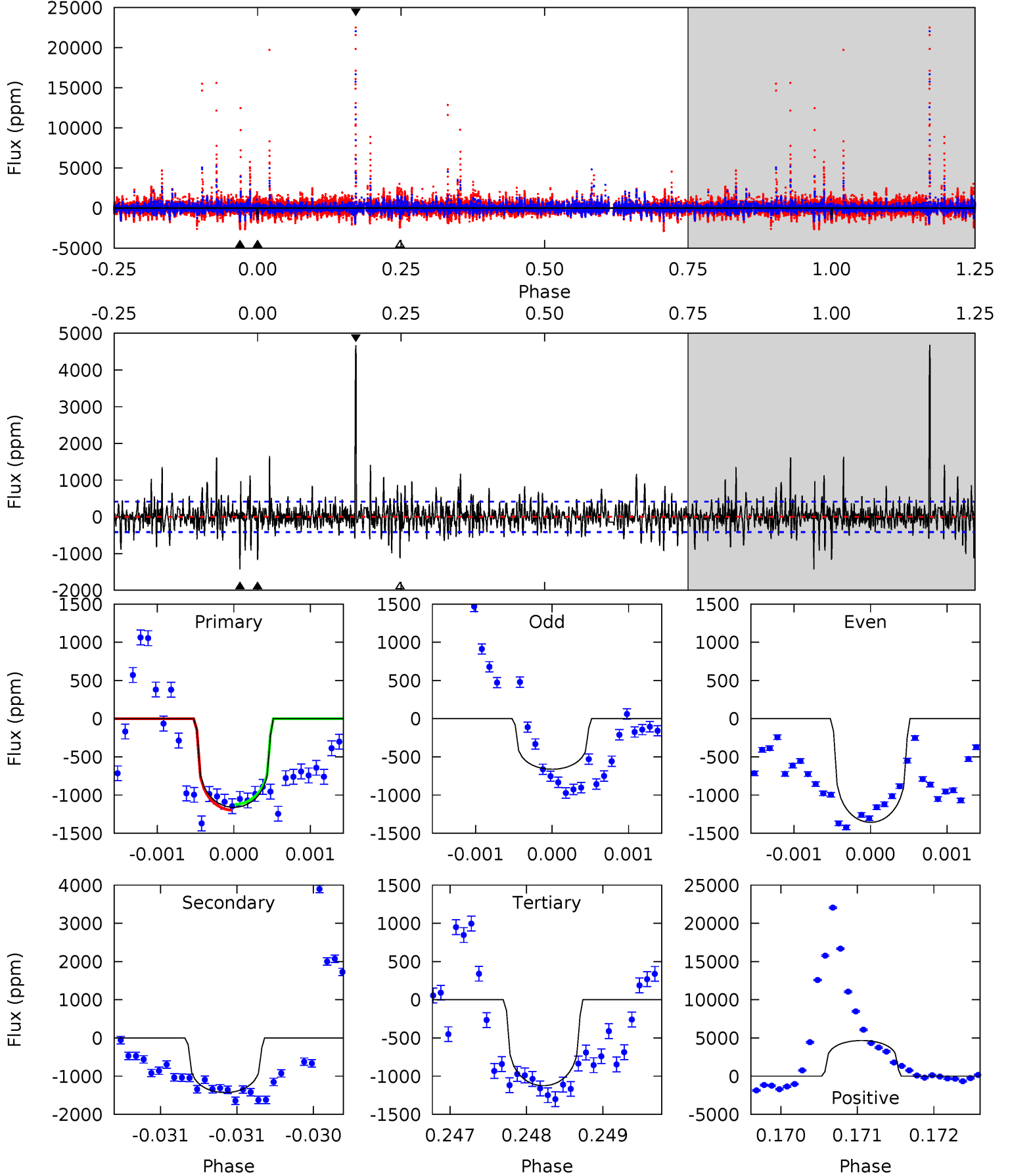
TCE 004750889-05 $P=568.611485$ Days $T_0=243.873000$ (BKJD)



DV Model-Shift Uniqueness Test

004750889-05, P = 568.625031 Days, E = 243.869893 Days

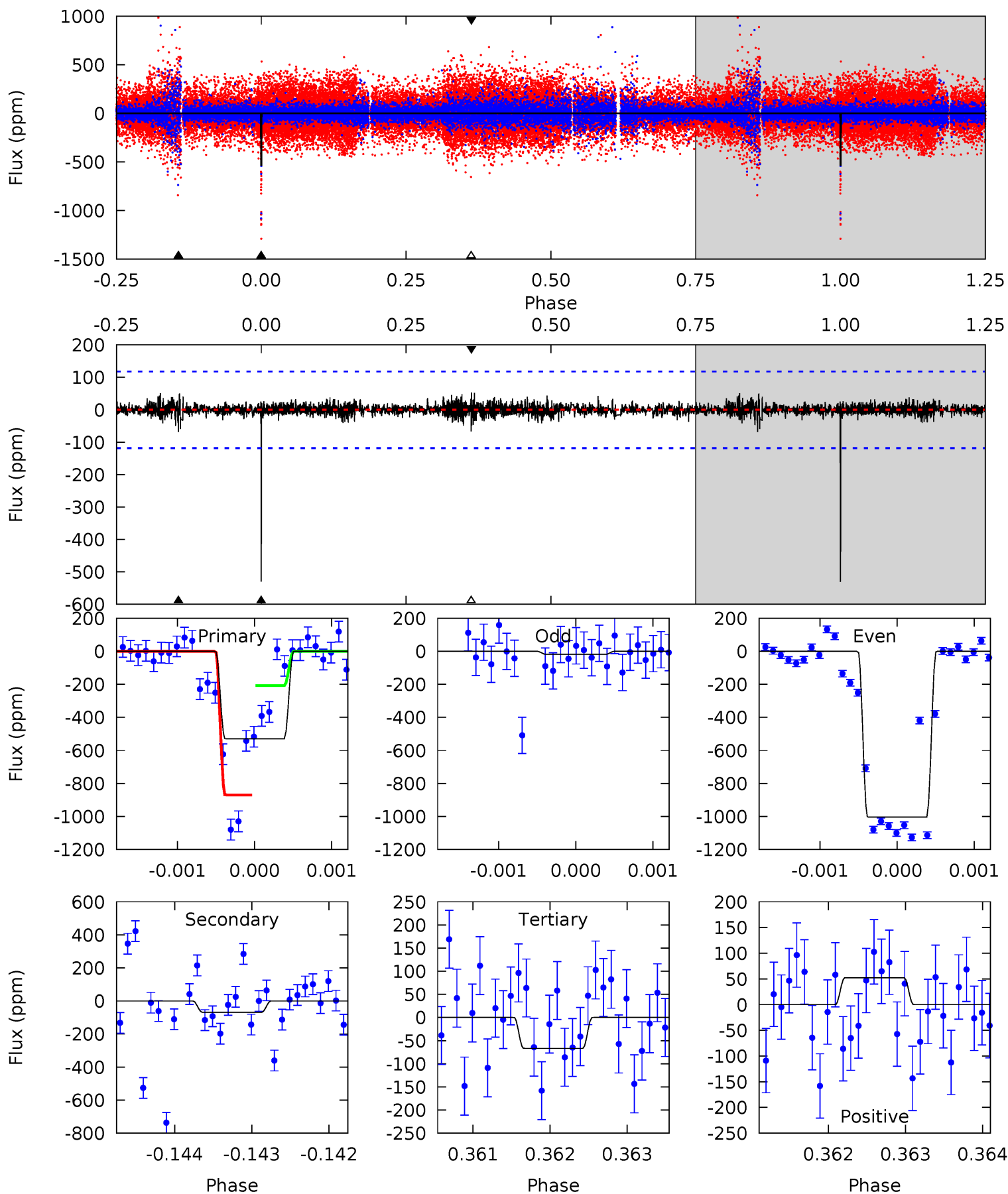
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
15.4	19.0	14.9	62.0	5.49	3.36	3.93	0.48	-46.6	4.04	-43.1	2.40	0.94	0.77	0.52



Alt Model-Shift Uniqueness Test

004750889-05, P = 568.611485 Days, E = 243.873000 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
24.7	3.19	3.11	2.44	5.50	3.36	0.48	21.6	22.2	0.08	0.75	27.1	1.23	0.09	0



Stellar Parameters For KIC 004750889

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5193^{+121}_{-212}	$3.472^{+1.232}_{-0.308}$	$-0.760^{+0.300}_{-0.400}$	$2.732^{+1.669}_{-2.040}$	$0.807^{+0.209}_{-0.209}$	$0.056^{+4.495}_{-0.036}$
	+2%/-4%	+35%/-9%	+39%/-53%	+61%/-75%	+26%/-26%	+8064%/-65%
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 004750889-05 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-1428 ± 75	$6.58^{+4.71}_{-3.27}$	454^{+76}_{-107}	6124^{+1704}_{-821}	28193^{+81223}_{-18138}
Alt.	-69 ± 21	$7.90^{+4.56}_{-3.86}$	453^{+71}_{-101}	3224^{+459}_{-302}	887^{+2518}_{-541}

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

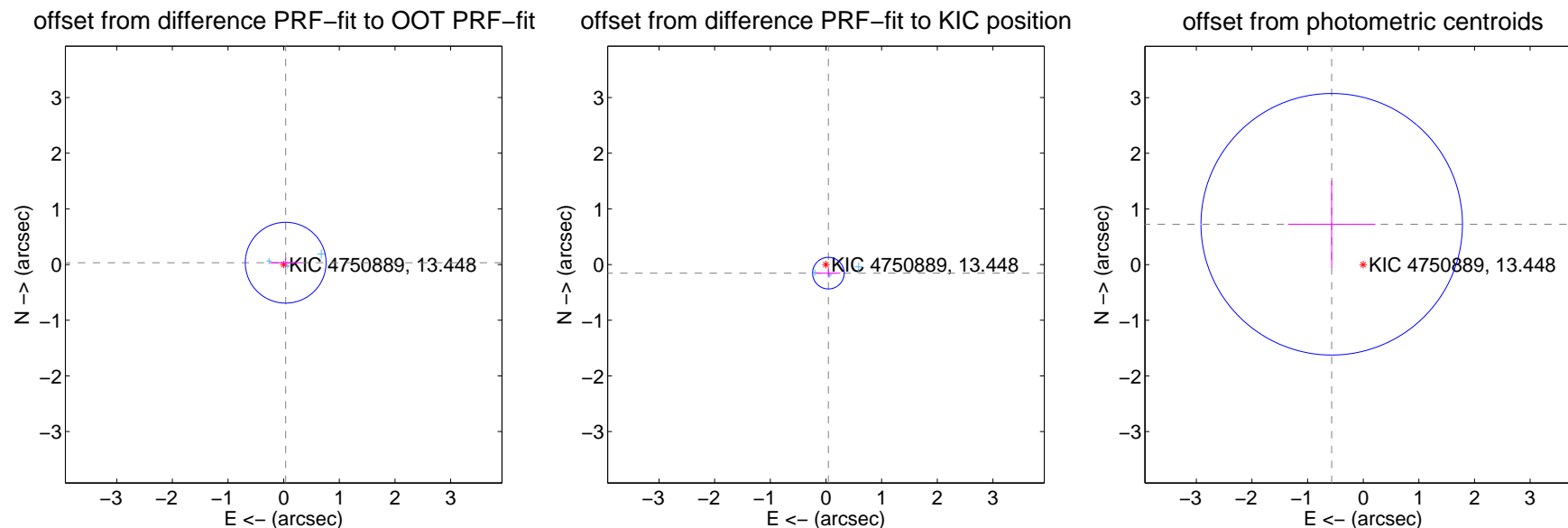
DV Centroid Data

Supplemental centroid analysis for 004750889-05. Kepler magnitude: 13.45. Transit SNR 6.15

There are 3 quarters with good PRF difference image offsets

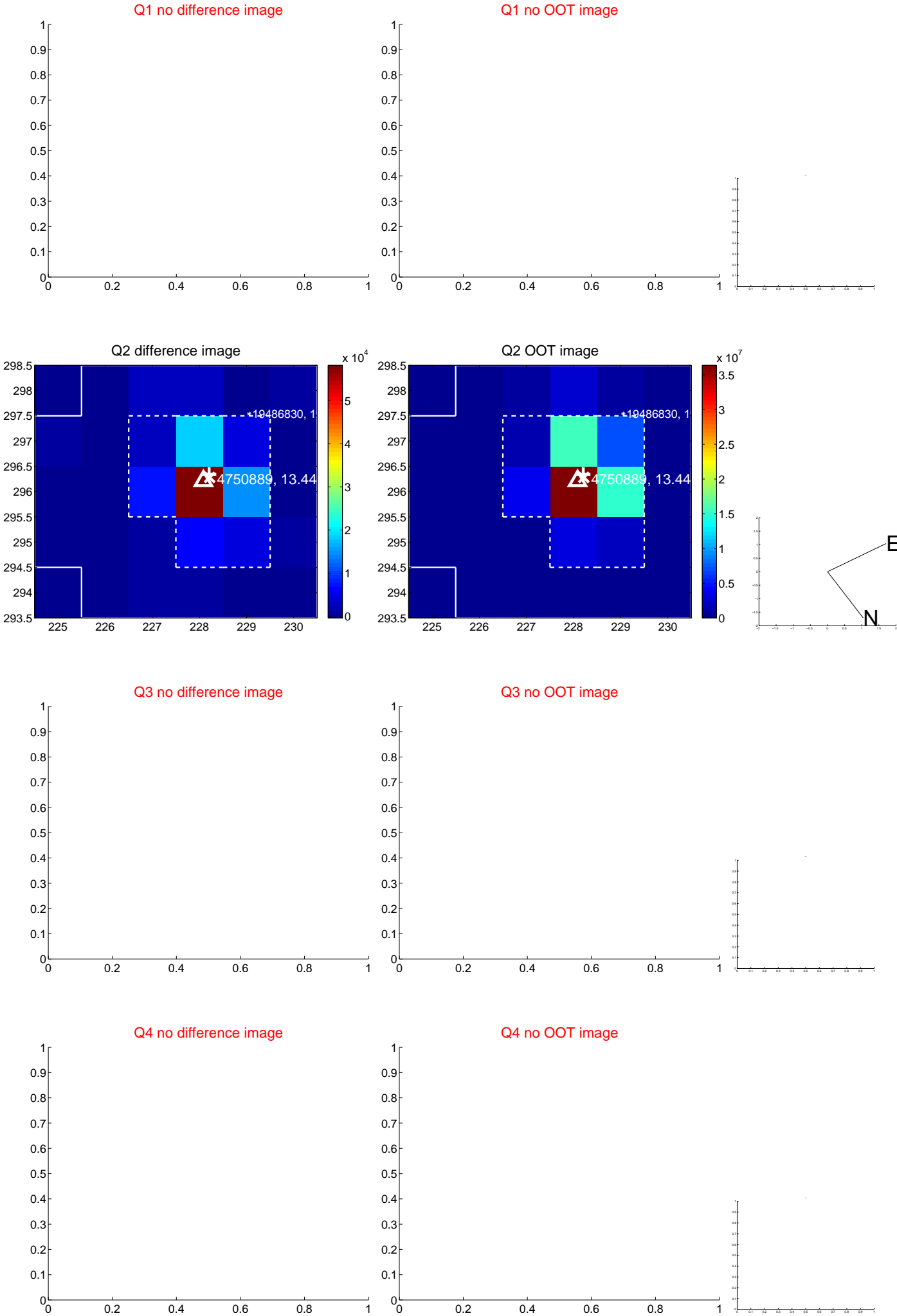
The direct PRF centroid is offset from the target star catalog position by about 0.16 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.049 ± 0.242	0.20	-0.036 ± 0.284	0.033 ± 0.081
PRF-fit source offset from KIC position	0.160 ± 0.095	1.70	-0.043 ± 0.217	-0.154 ± 0.077
photometric centroid source offset	0.92 ± 0.78	1.17	0.57 ± 0.78	0.72 ± 0.78



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.

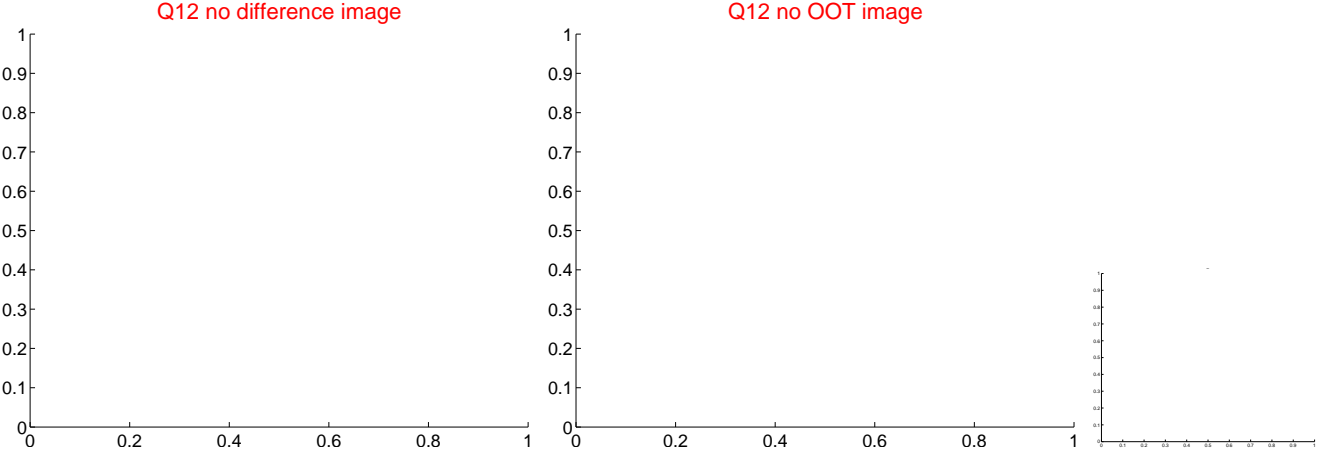
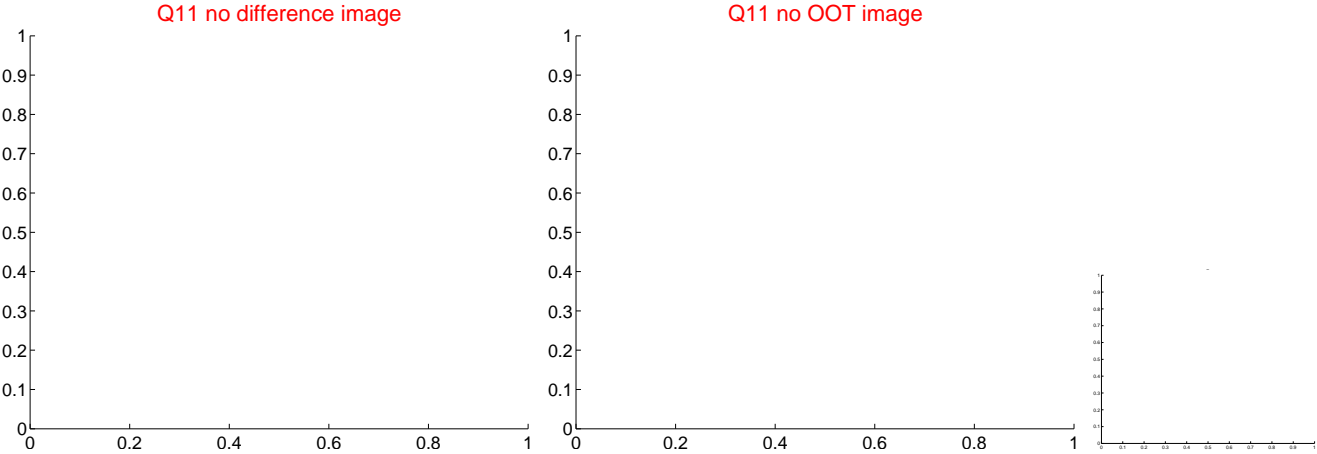
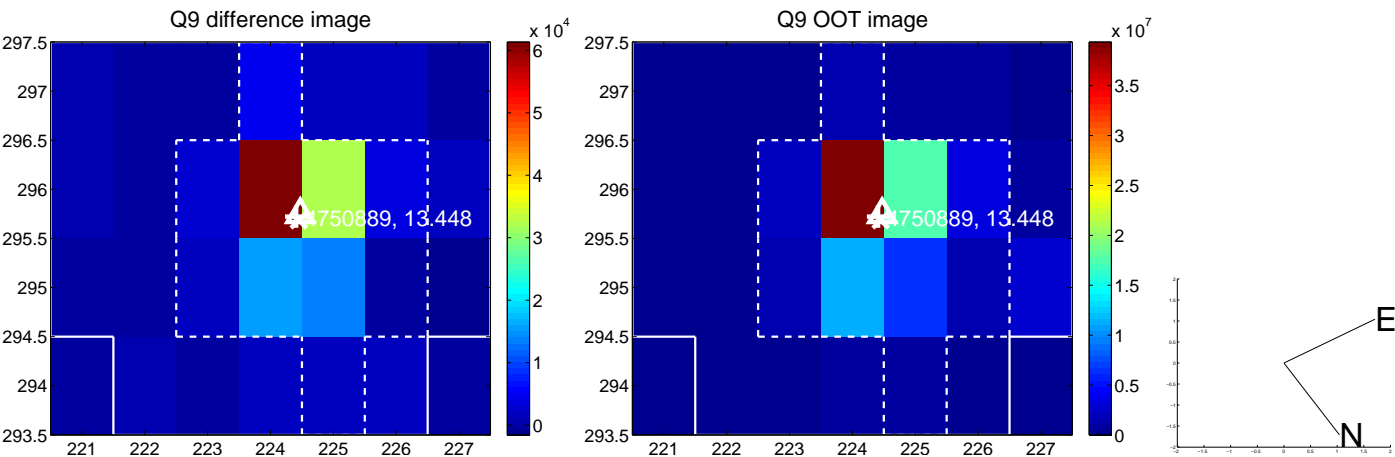
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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.

Q13 no difference image



Q13 no OOT image



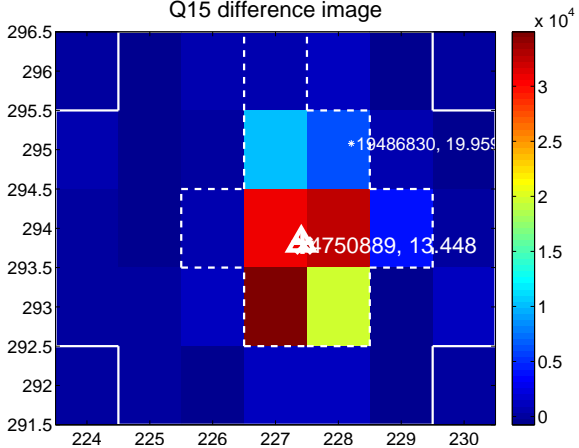
Q14 no difference image



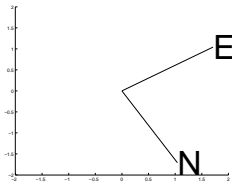
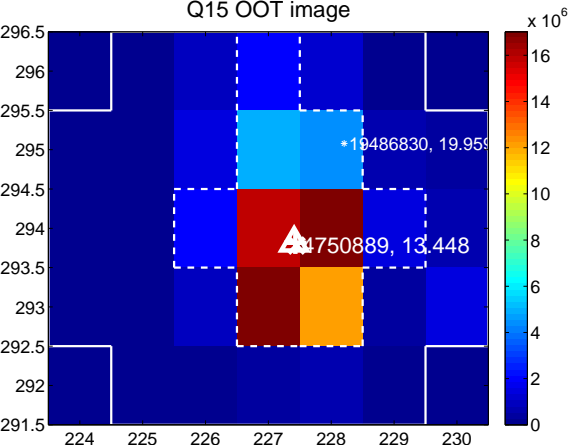
Q14 no OOT image



Q15 difference image



Q15 OOT image



Q16 no difference image



Q16 no OOT image



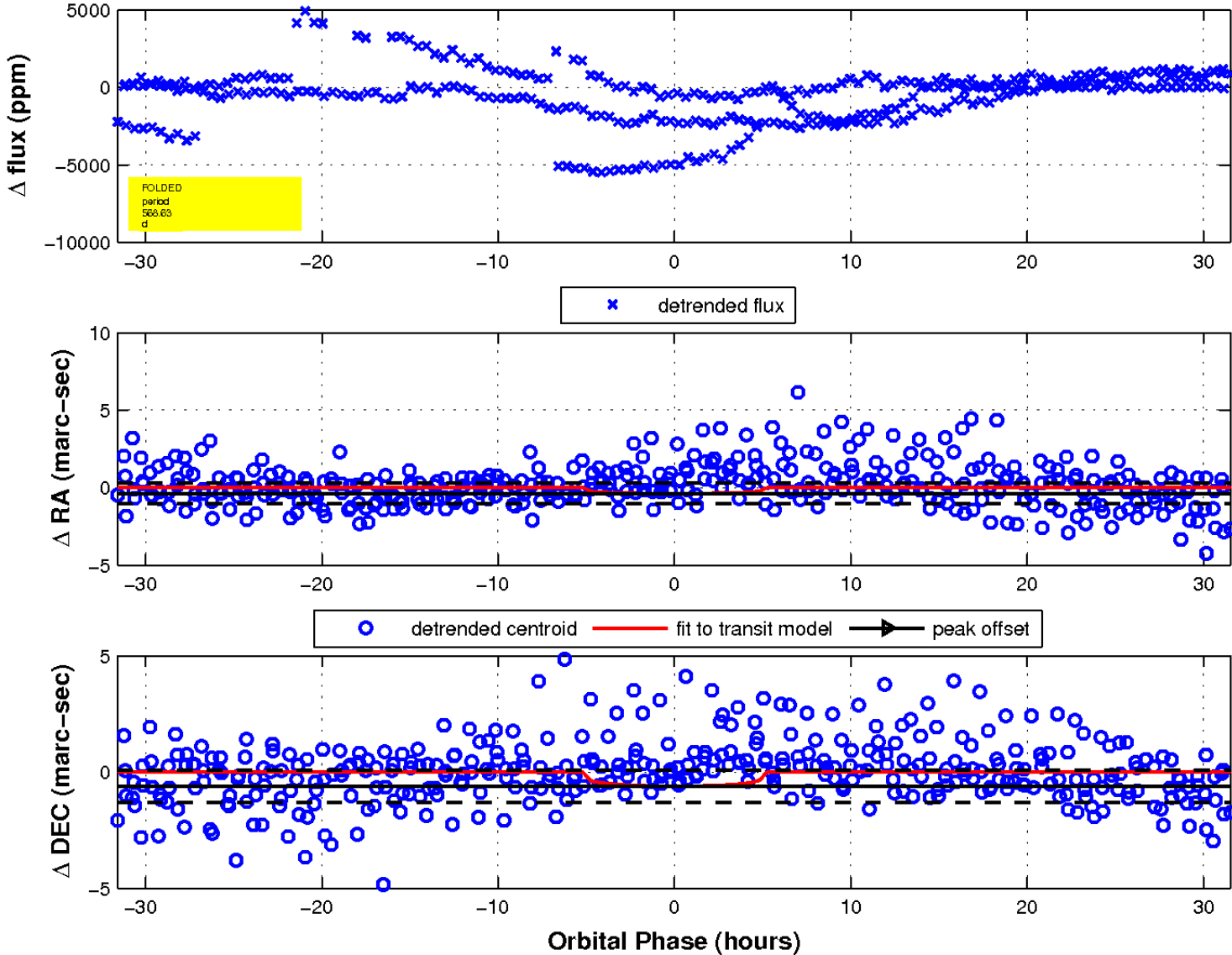
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

Q17 no difference image

Q17 no OOT image

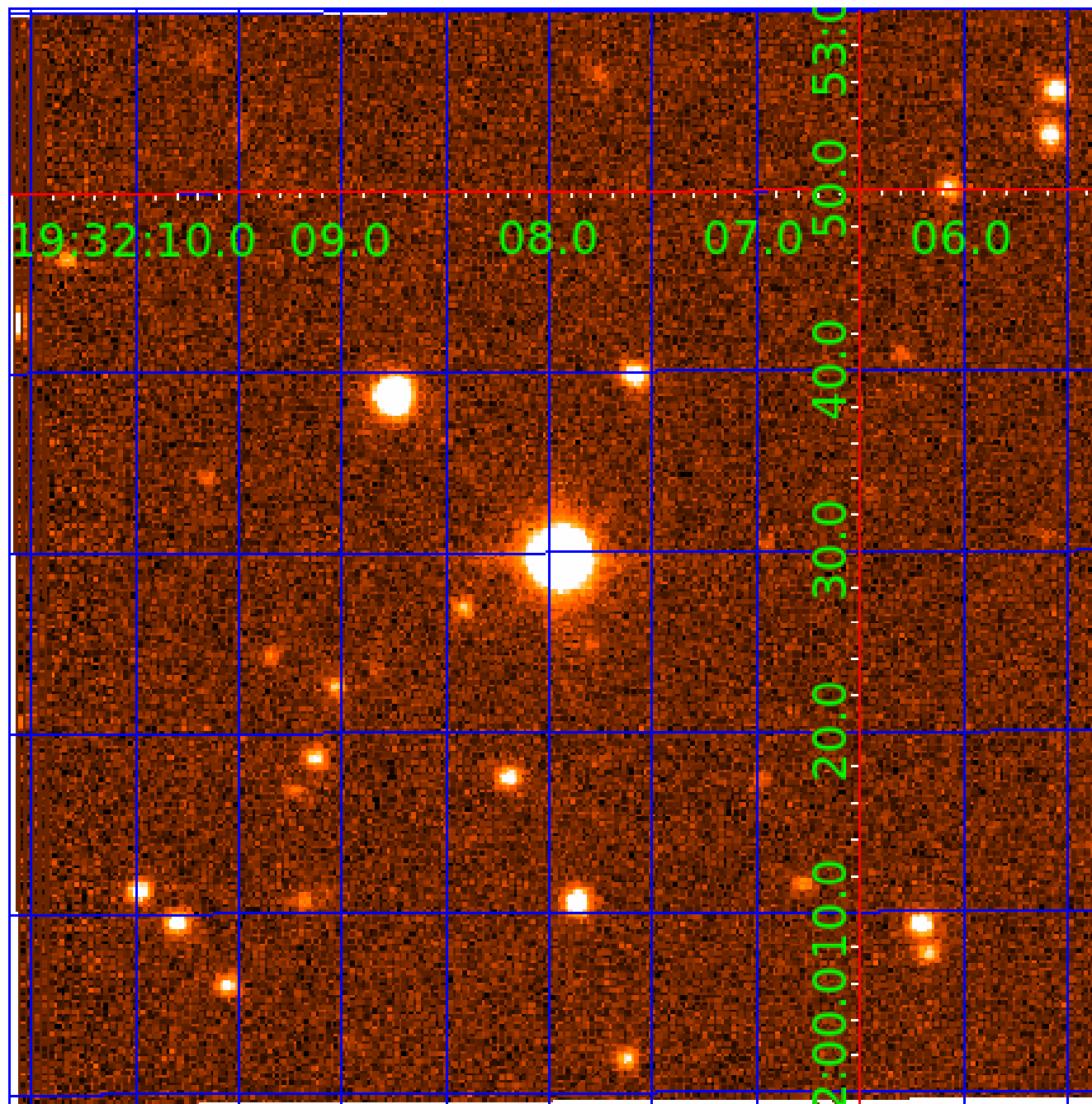


fluxWeightedCentroids, Planet 5 of 6



UKIRT Image

Declination



KIC 004750889

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})
004750889-01	OBS	No	369.591241	144.563892	1601.6	7.240	17.6	13.7	2.73	5193	13.65	5.52
004750889-02	OBS	No	288.209376	140.757793	848.2	7.801	15.4	6.0	2.73	5193	9.28	7.69
004750889-03	OBS	No	386.083560	480.431524	995.6	4.435	14.4	9.3	2.73	5193	9.69	5.21
004750889-04	OBS	No	279.159932	253.198949	673.7	5.142	15.7	6.5	2.73	5193	8.17	8.02
004750889-05	OBS	No	568.625031	243.869893	753.1	10.536	11.5	6.1	2.73	5193	7.84	3.11
004750889-06	OBS	No	291.740703	258.626984	709.9	5.718	10.6	6.1	2.73	5193	7.93	7.57

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004750889-01	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS—HALO_GHOST
004750889-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS
004750889-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
004750889-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
004750889-05	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—HALO_GHOST
004750889-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—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.

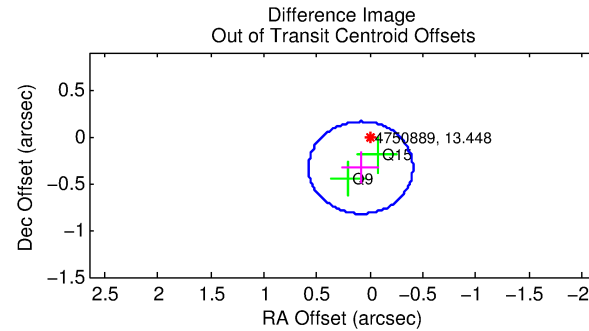
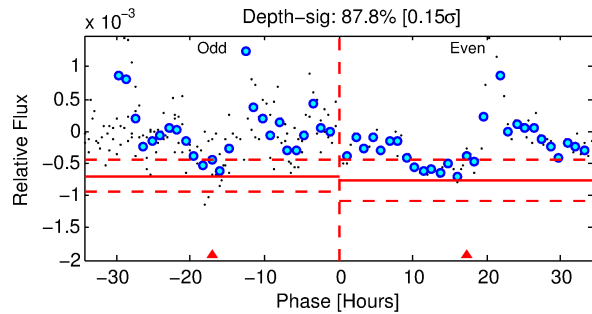
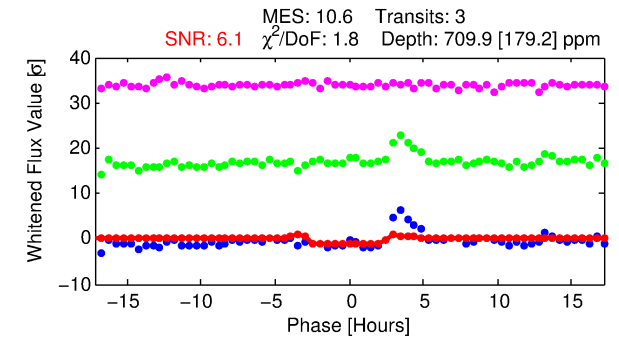
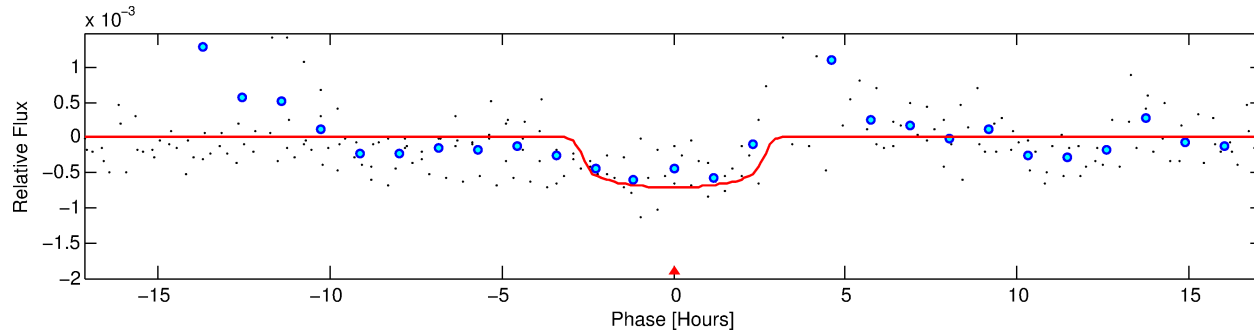
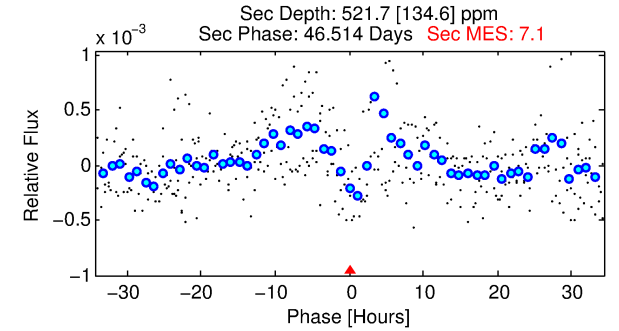
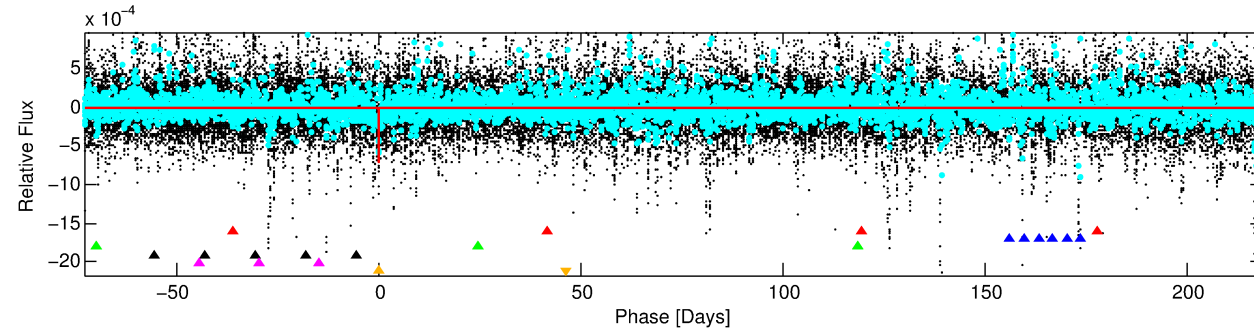
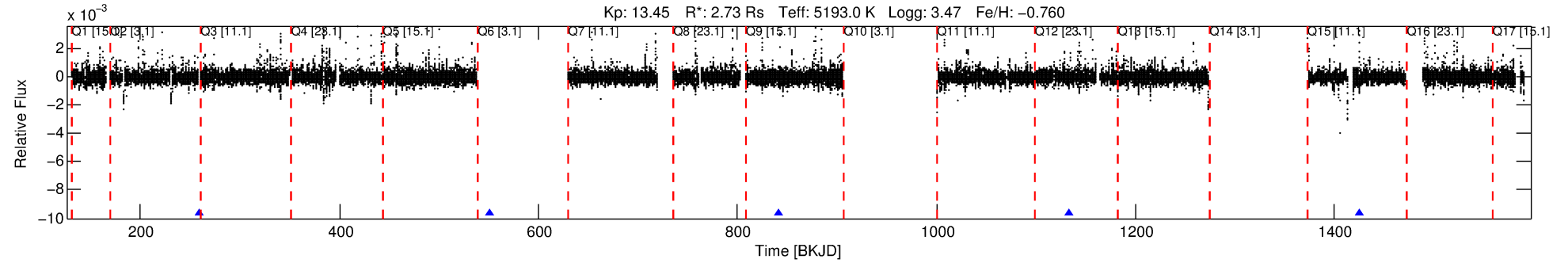
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004750889-06

No Significant Match Found

DV One-Page Summary

KIC: 4750889 Candidate: 6 of 6 Period: 291.741 d



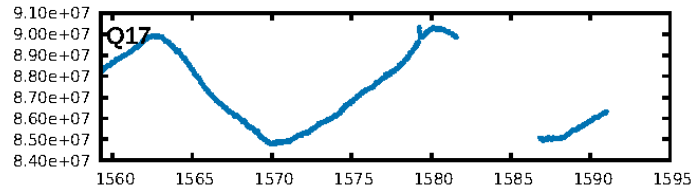
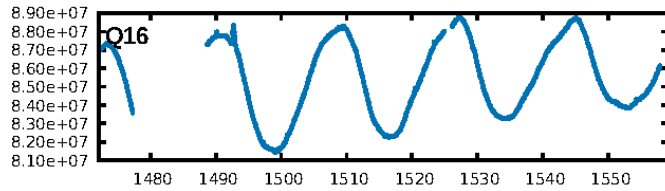
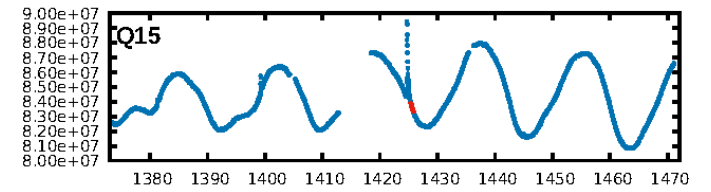
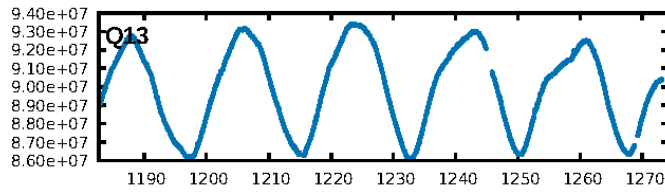
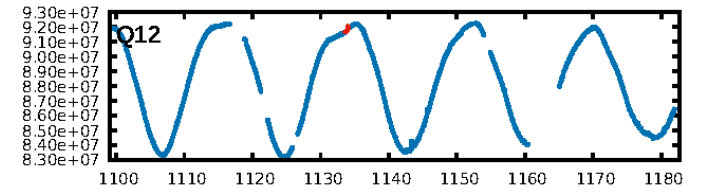
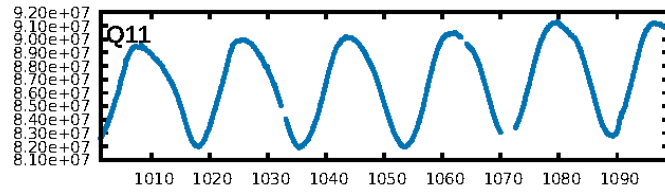
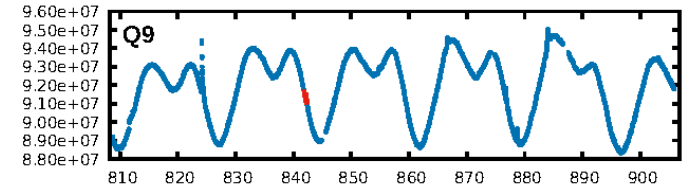
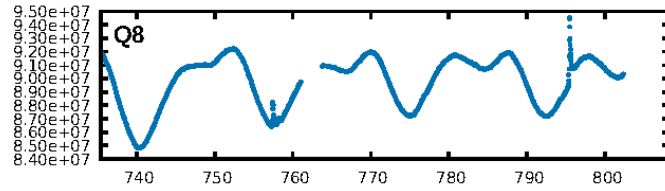
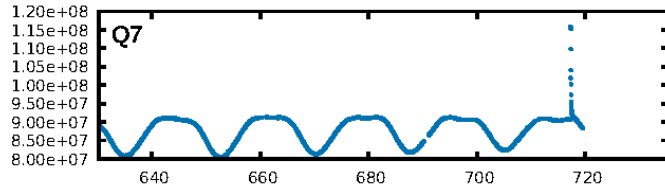
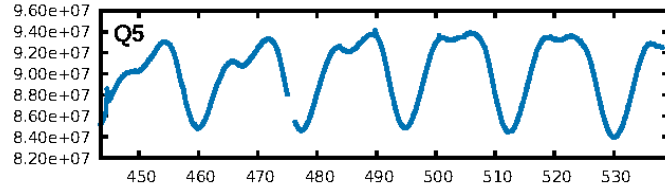
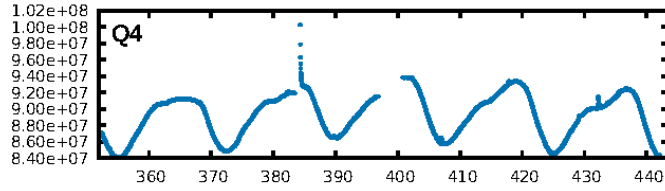
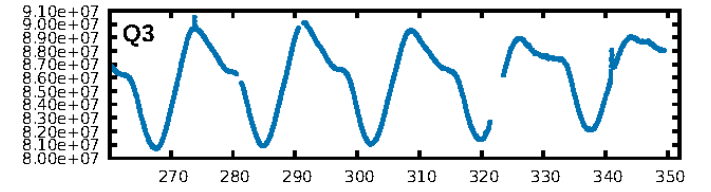
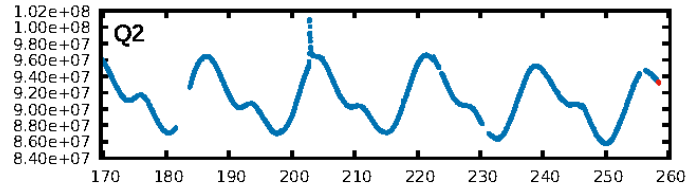
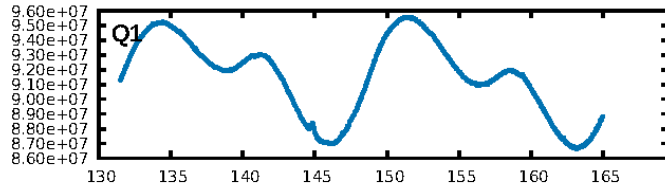
DV Fit Results:

Period = 291.74070 [0.01003] d
Epoch = 258.6270 [0.0316] BKJD
Rp/R* = 0.0266 [0.0171]
a/R* = 270.90 [712.18]
b = 0.76 [1.51]
Seff = 7.57 [14.85]
Teq = 423 [207] K
Rp = 7.93 [7.82] Re
a = 0.8017 [0.8567] AU
Ag = 2935.71 [6917.86] [0.42σ]
Teffp = 4813 [1594] K [2.73σ]

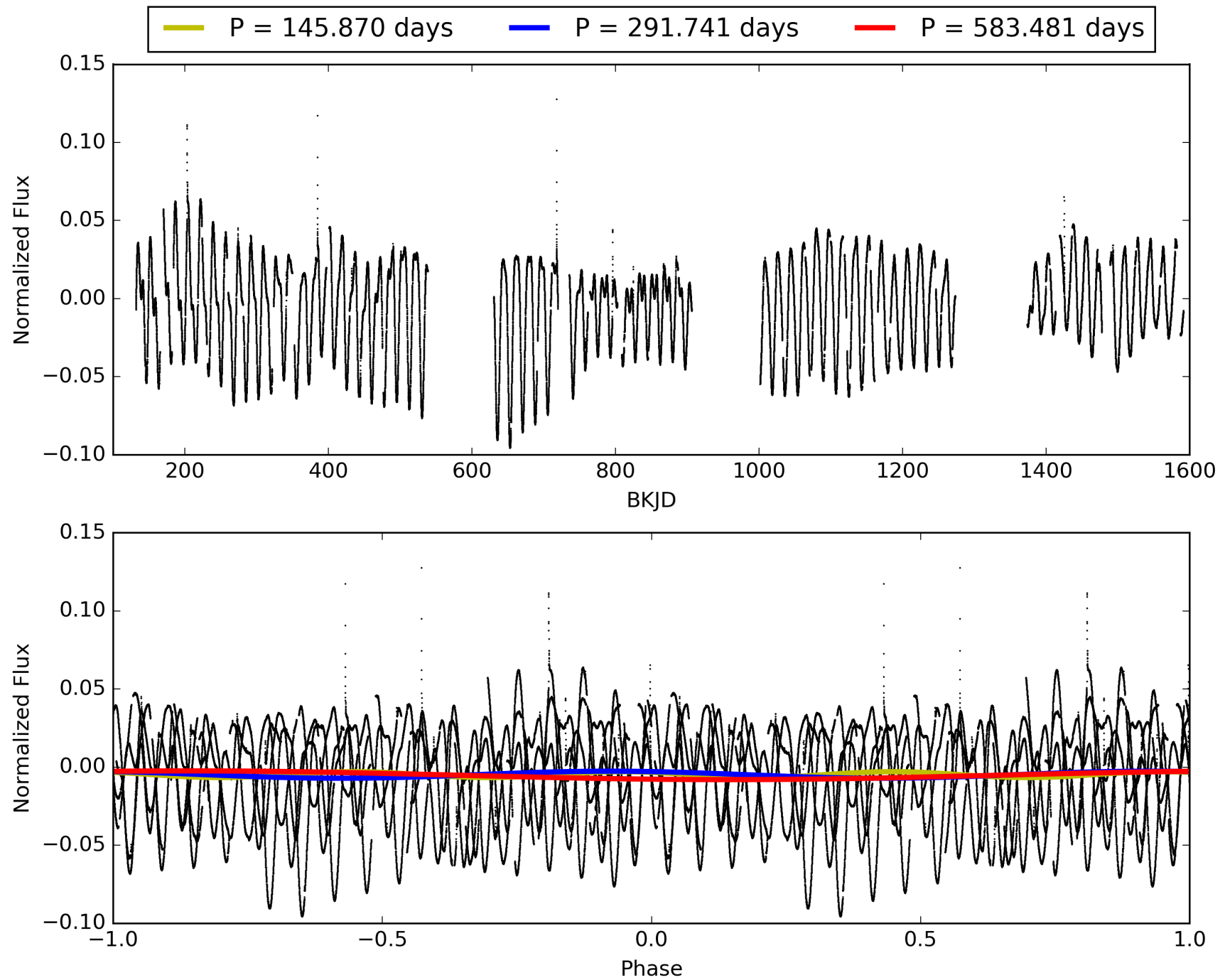
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [8.76σ]
LongPeriod-sig: 100.0% [202.53σ]
ModelChiSquare2-sig: 50.2%
ModelChiSquareGof-sig: 56.4%
Bootstrap-pfa: 1.35e-09
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: -0.8269
Centroid-sig: 55.3%
Centroid-so: 0.740 arcsec [0.78σ]
OotOffset-rm: 0.344 arcsec [2.09σ]
KicOffset-rm: 0.526 arcsec [2.93σ]
OotOffset-st: 0/1/0/1 [2]
KicOffset-st: 0/1/0/1 [2]
DiffImageQuality-fgm: 1.00 [2/2]
DiffImageOverlap-fno: 1.00 [2/2]

TCE 004750889-06, PDC Light Curves

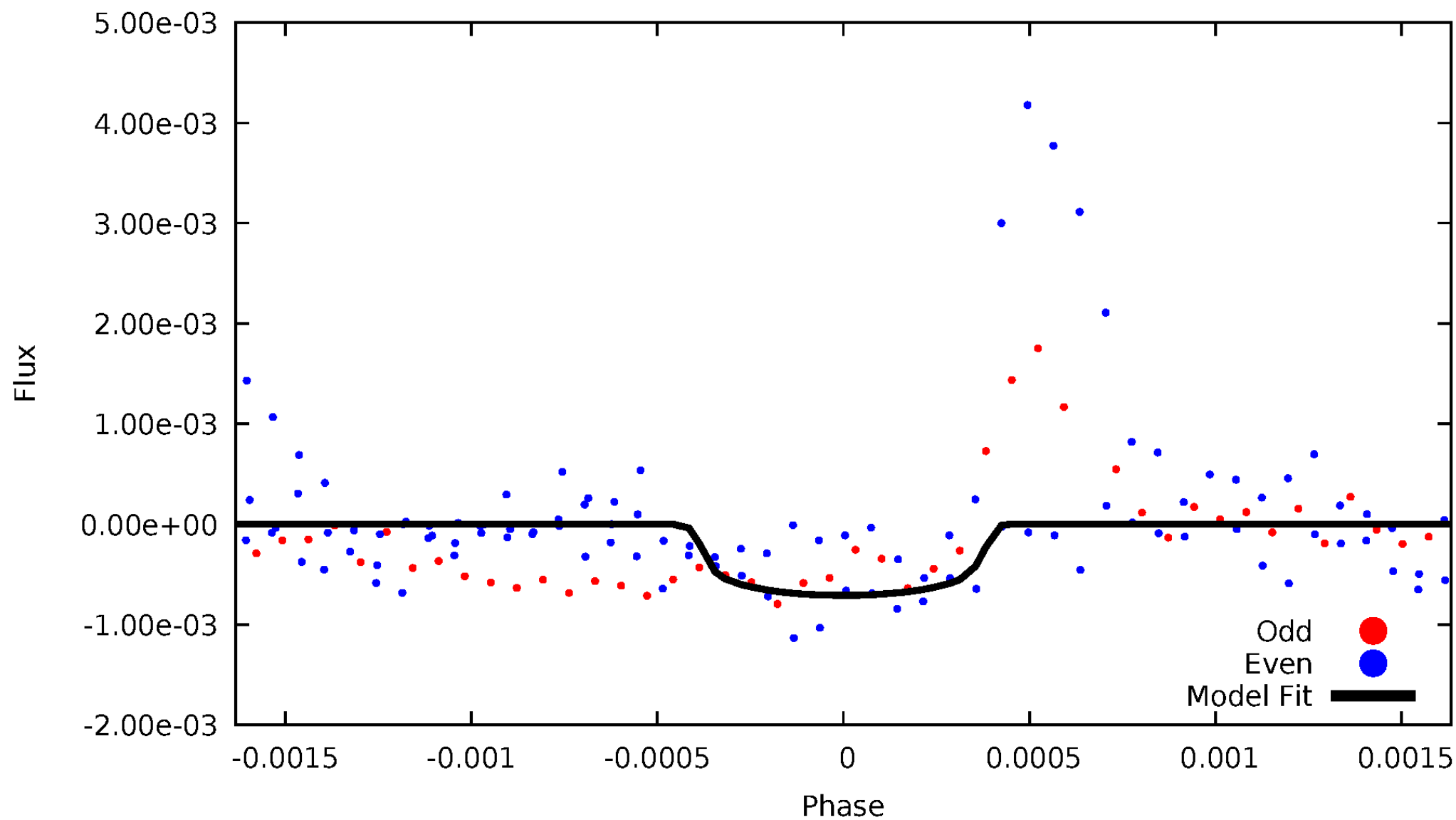


TCE 004750889-06



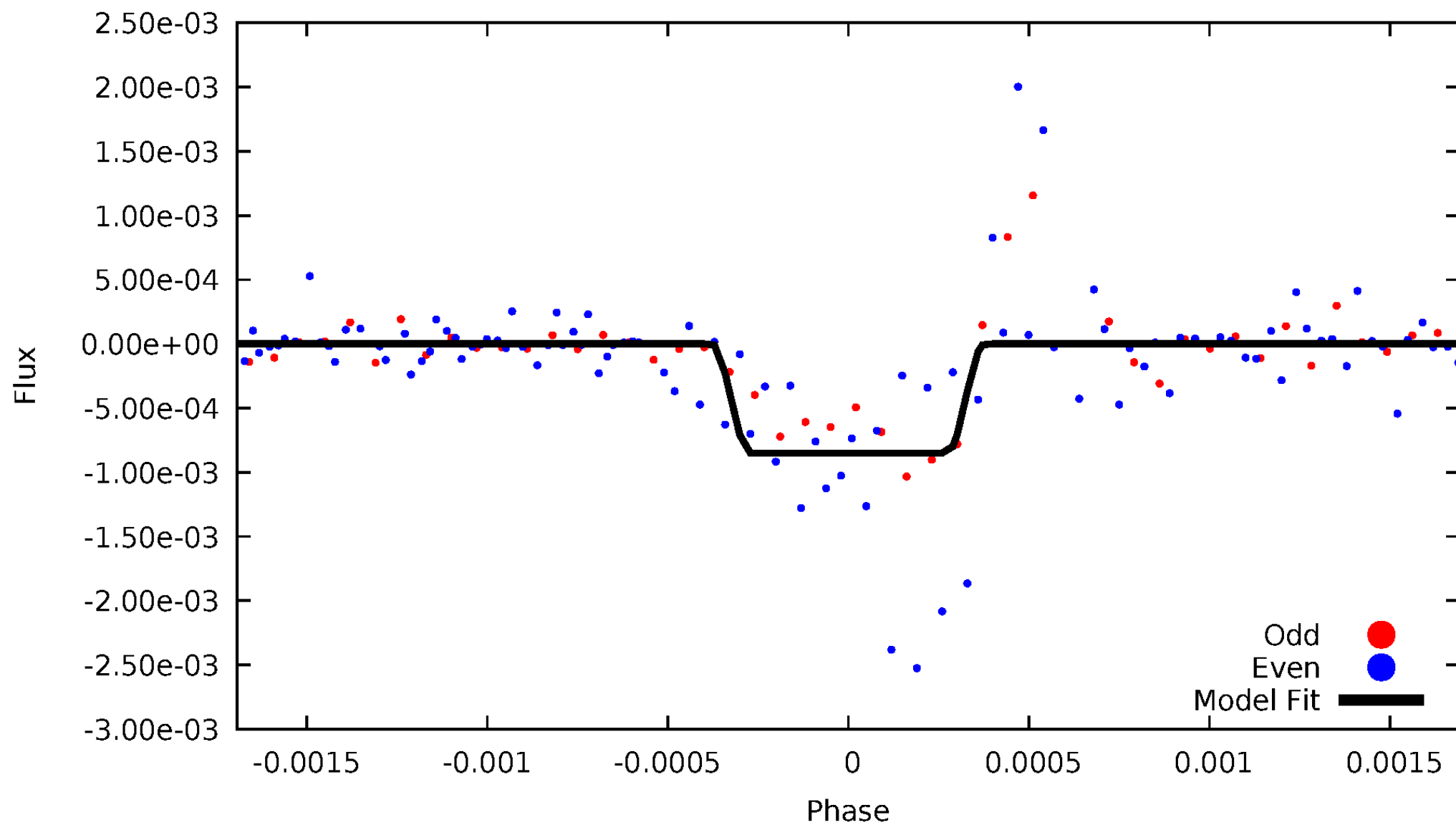
DV Odd/Even

TCE 004750889-06



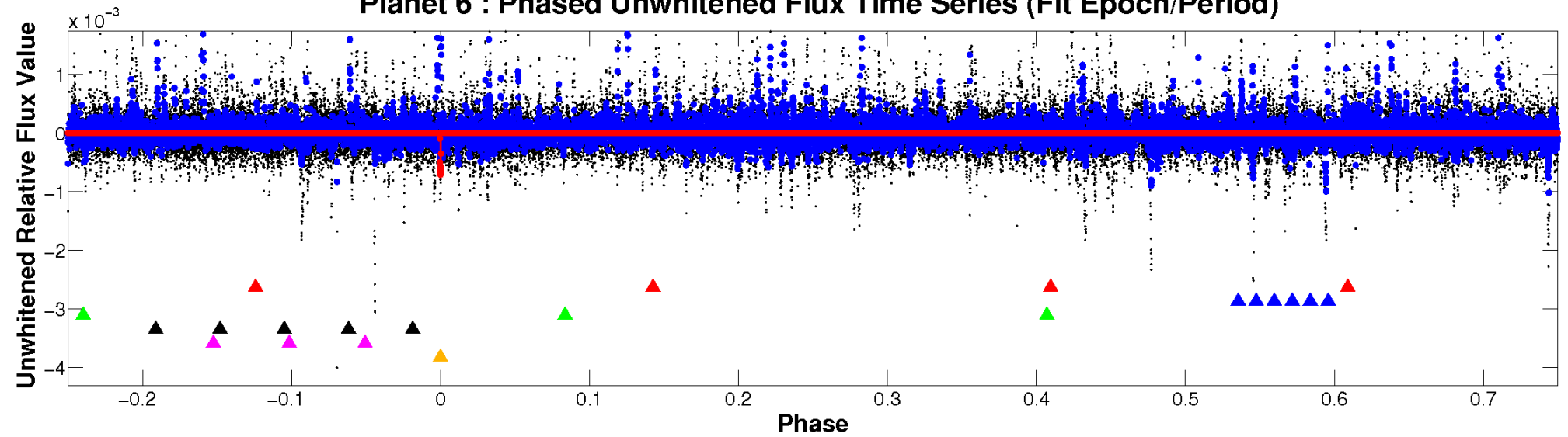
ALT Odd/Even

TCE 004750889-06

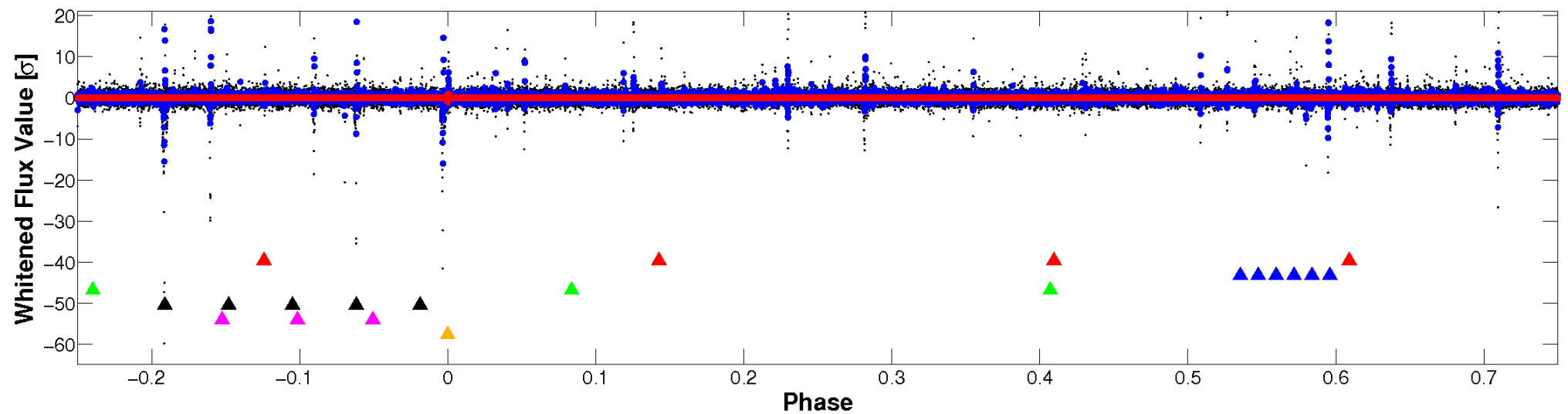


Non-Whitened Vs. Whitened Light Curve

Planet 6 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

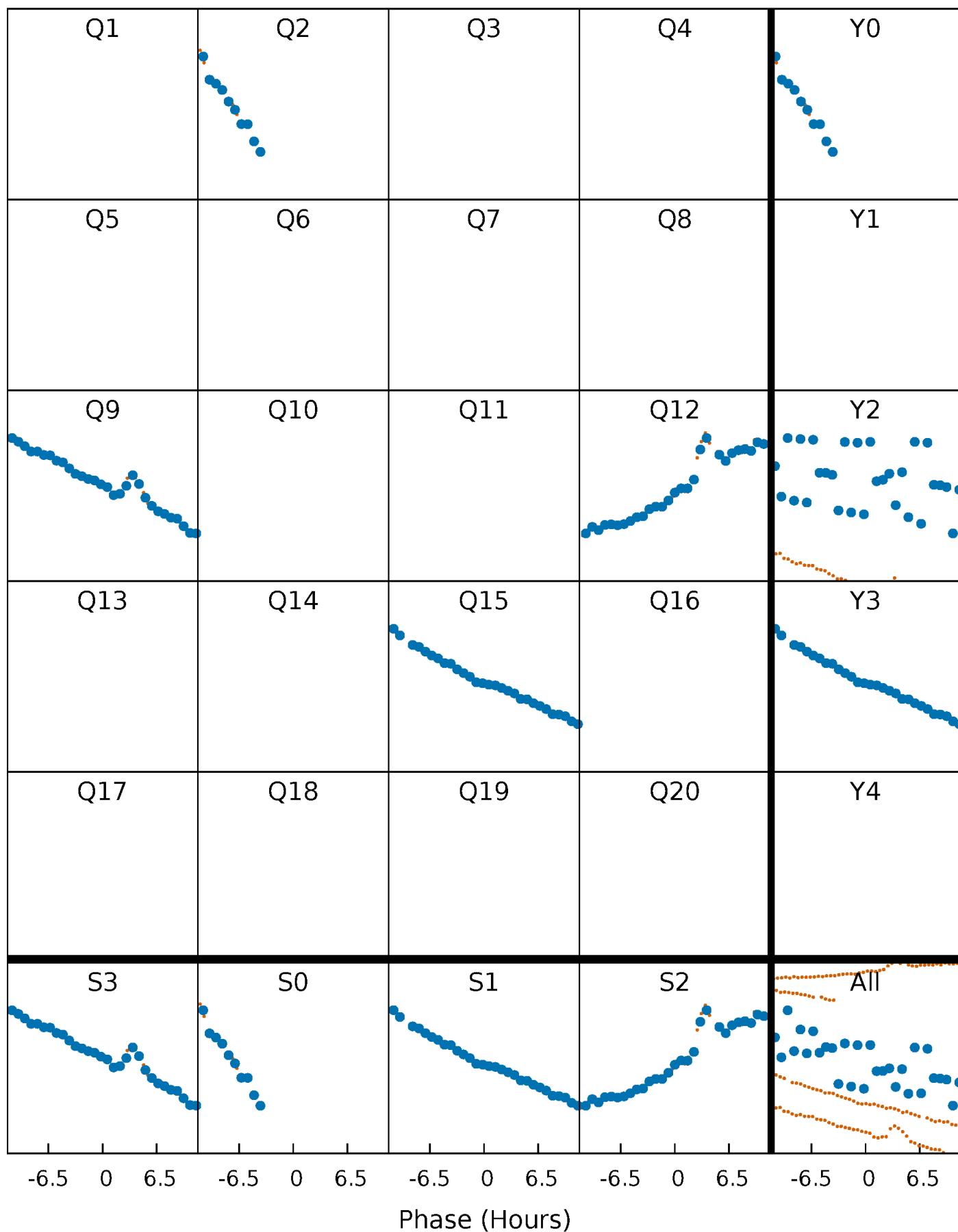


Planet 6 : Phased Whitened Flux Time Series (Fit Epoch/Period)



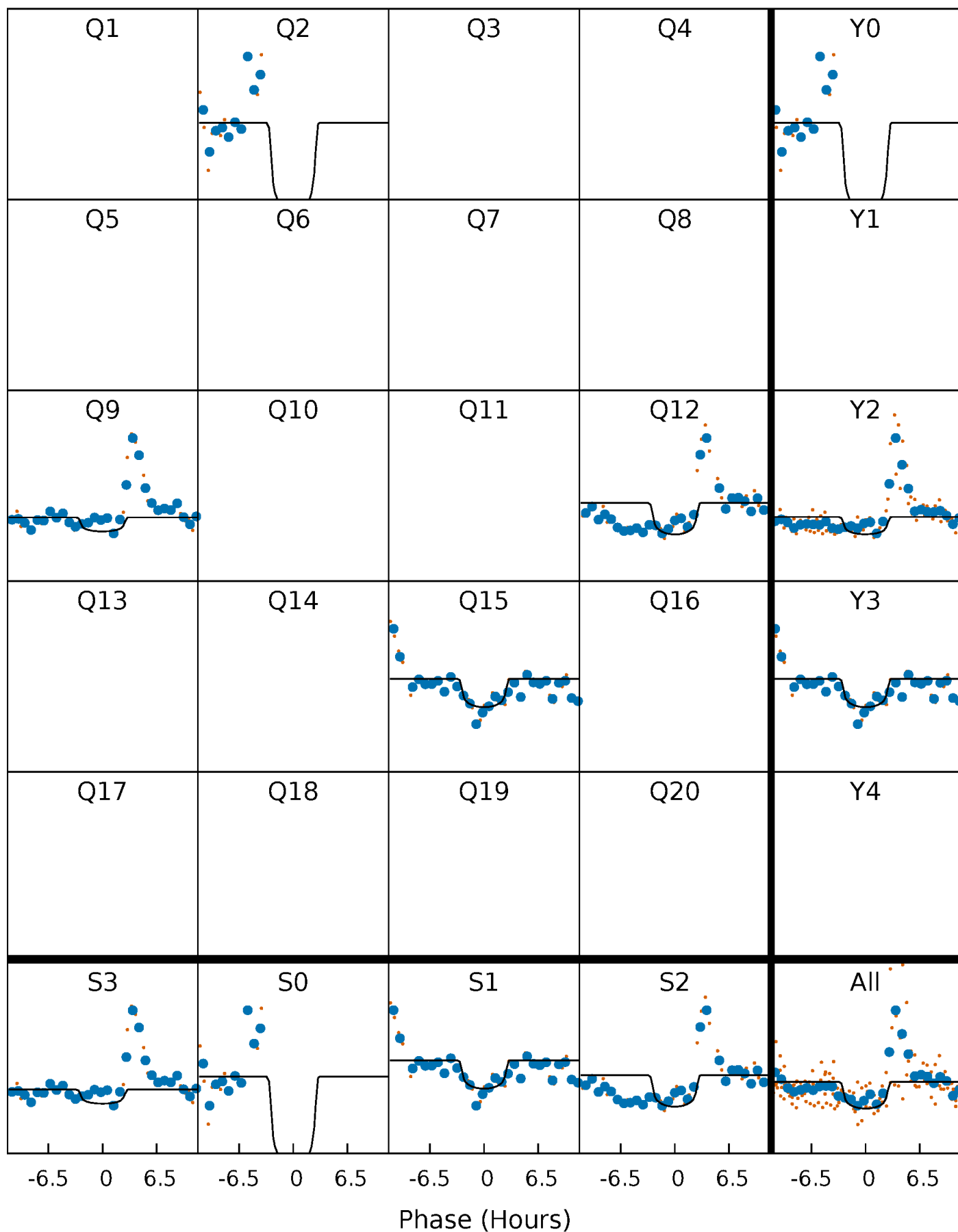
PDC Quarter-Phased Transit Curves

TCE 004750889-06 P=291.740703 Days $T_0=258.626984$ (BKJD)



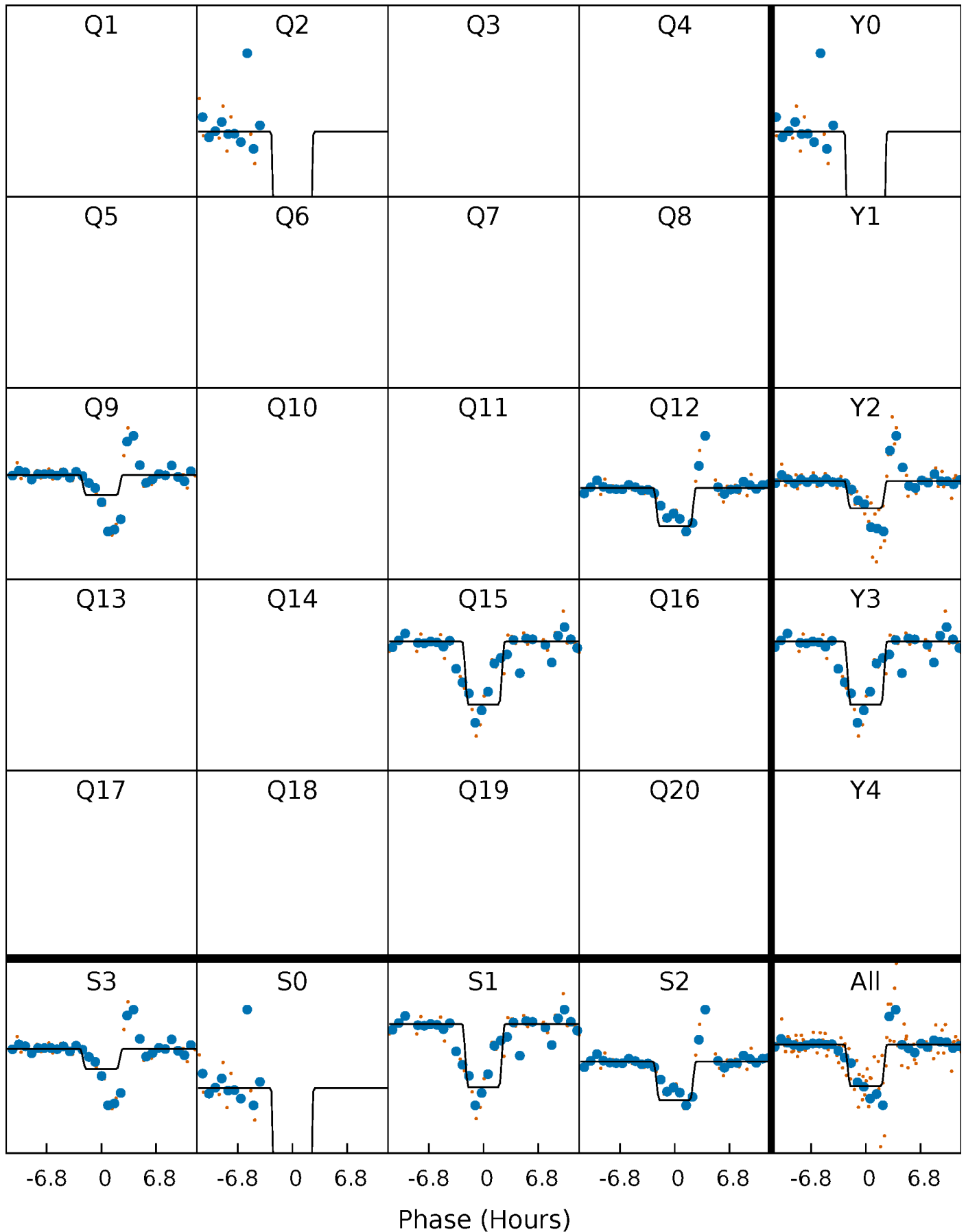
DV Quarter-Phased Transit Curves

TCE 004750889-06 $P=291.740703$ Days $T_0=258.626984$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

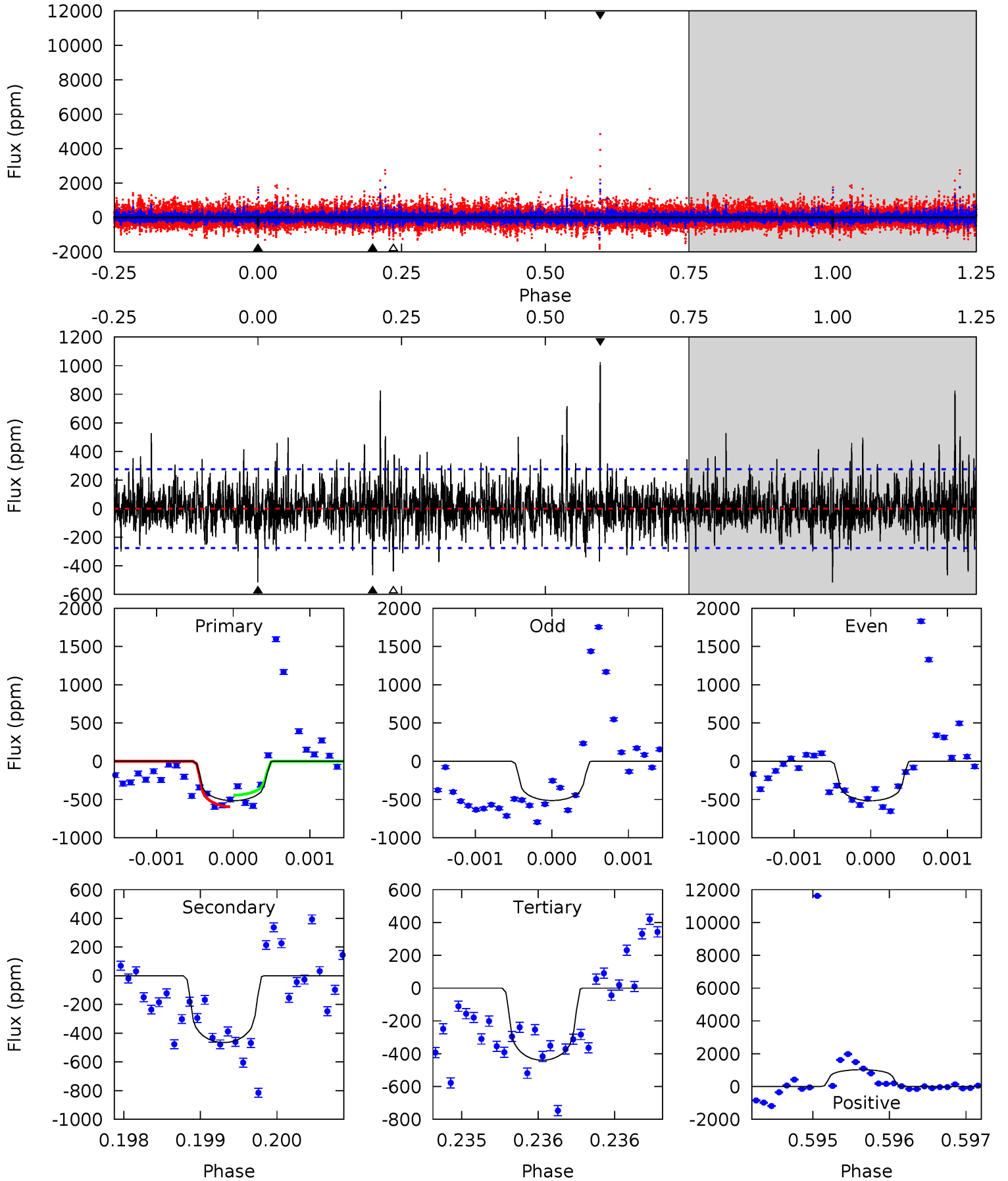
TCE 004750889-06 P=291.736747 Days $T_0=258.642236$ (BKJD)



DV Model-Shift Uniqueness Test

004750889-06, P = 291.740703 Days, E = 258.626984 Days

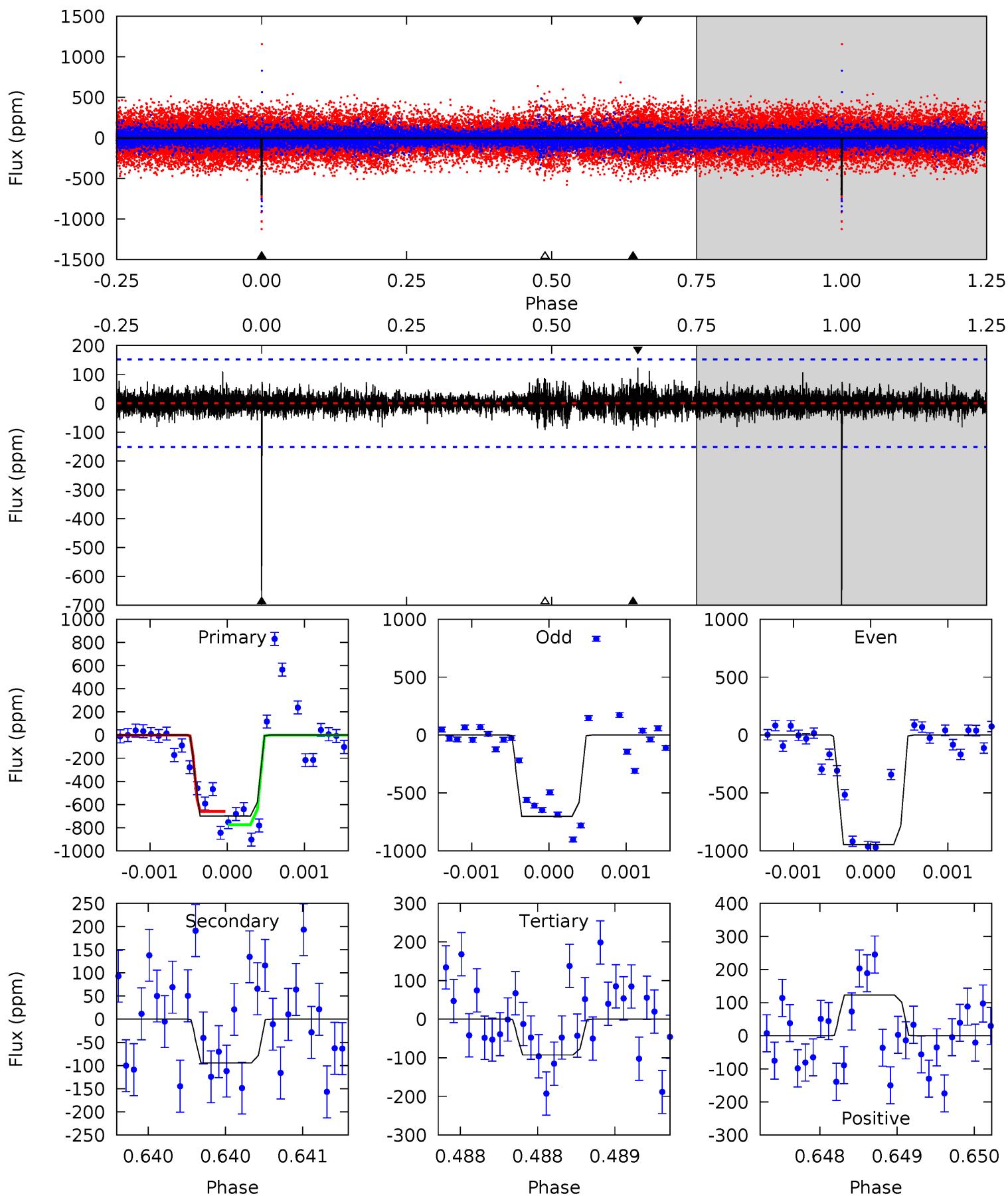
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.3	9.26	8.76	20.4	5.48	3.33	2.30	1.50	-10.2	0.50	-11.2	0.02	1.00	0.67	1.56



Alt Model-Shift Uniqueness Test

004750889-06, P = 291.736747 Days, E = 258.642236 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
25.3	3.42	3.35	4.44	5.50	3.36	0.73	21.9	20.8	0.07	-1.02	4.51	1.26	0.15	2.07



Stellar Parameters For KIC 004750889

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5193^{+121}_{-212}	$3.472^{+1.232}_{-0.308}$	$-0.760^{+0.300}_{-0.400}$	$2.732^{+1.669}_{-2.040}$	$0.807^{+0.209}_{-0.209}$	$0.056^{+4.495}_{-0.036}$
	+2%/-4%	+35%/-9%	+39%/-53%	+61%/-75%	+26%/-26%	+8064%/-65%
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 004750889-06 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-465 ± 50	$7.39^{+6.81}_{-4.52}$	565^{+93}_{-121}	4536^{+1924}_{-685}	3081^{+17112}_{-2286}
Alt.	-95 ± 28	$7.23^{+6.75}_{-4.25}$	558^{+99}_{-130}	3422^{+897}_{-444}	626^{+2863}_{-458}

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

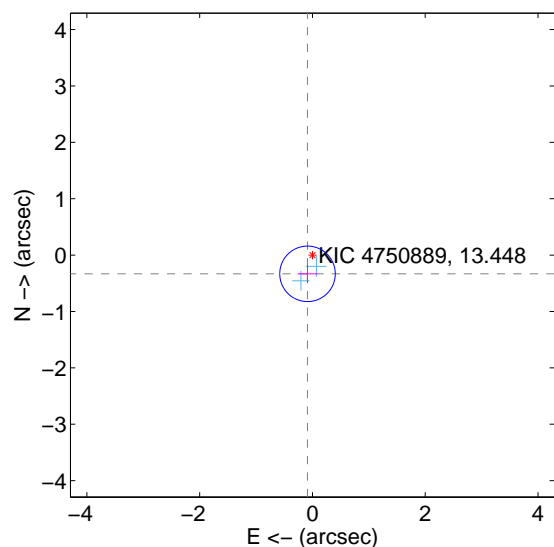
Supplemental centroid analysis for 004750889-06. Kepler magnitude: 13.45. Transit SNR 6.13

There are 2 quarters with good PRF difference image offsets

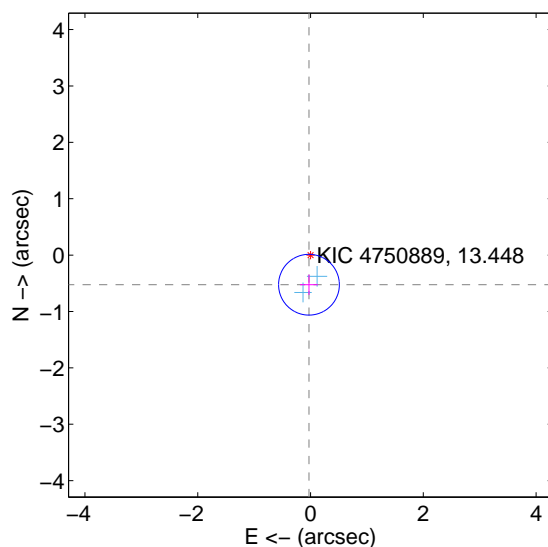
The direct PRF centroid is offset from the target star catalog position by about 0.18 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.344 ± 0.164	2.09	0.087 ± 0.171	-0.332 ± 0.164
PRF-fit source offset from KIC position	0.526 ± 0.180	2.93	0.028 ± 0.159	-0.525 ± 0.180
photometric centroid source offset	0.74 ± 0.95	0.78	0.59 ± 0.95	-0.45 ± 0.94

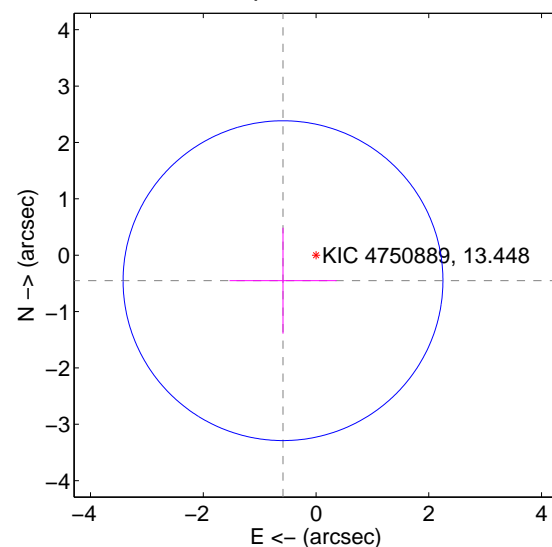
offset from difference PRF-fit to OOT PRF-fit



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.

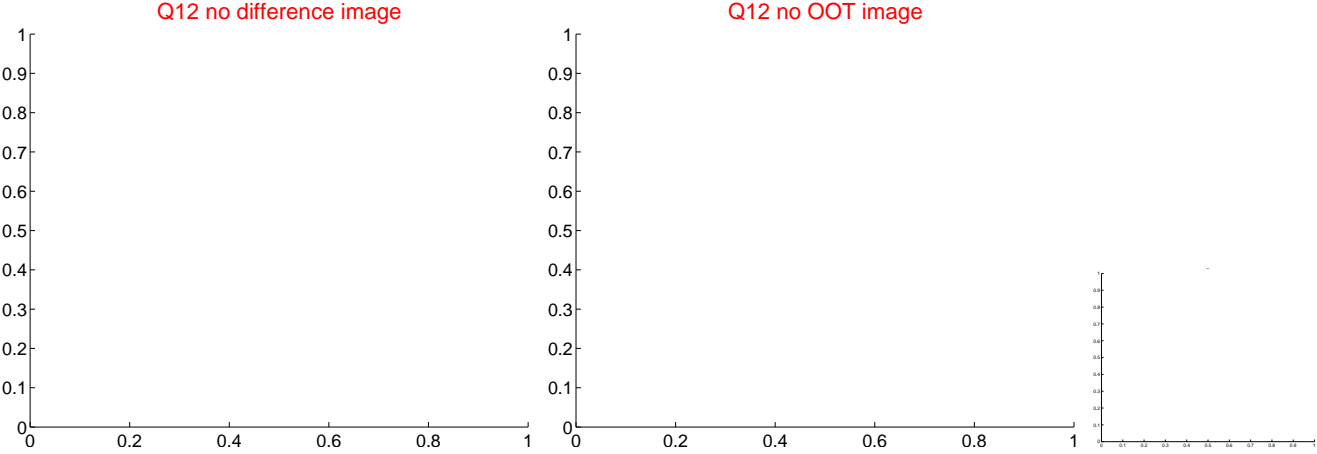
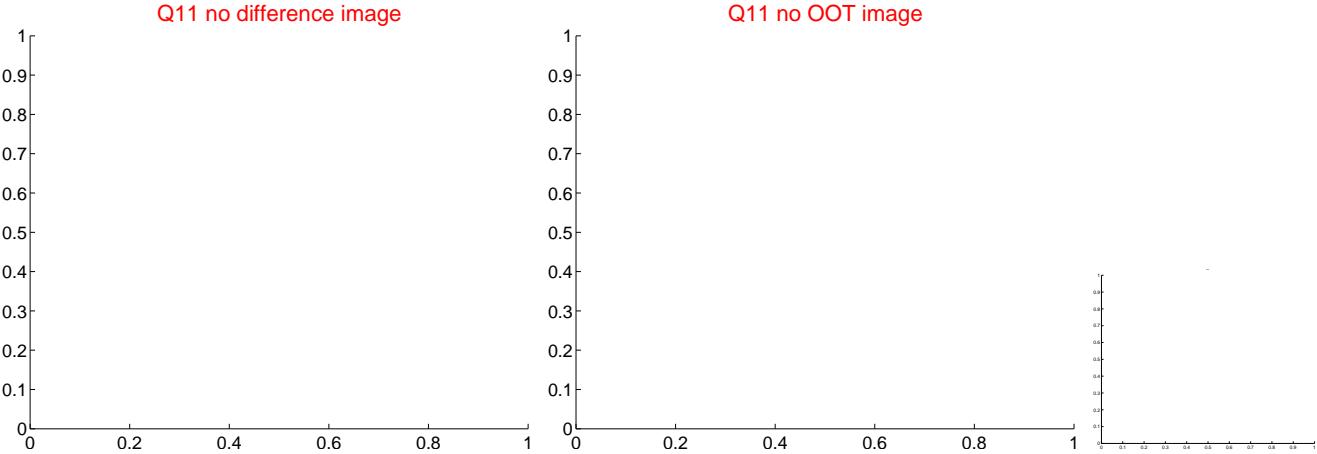
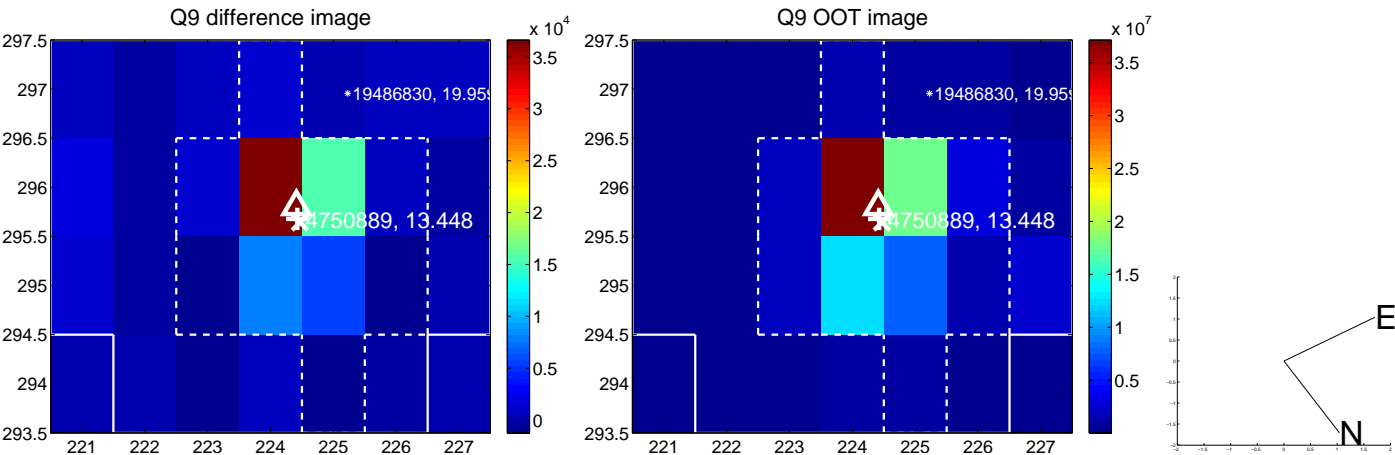
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



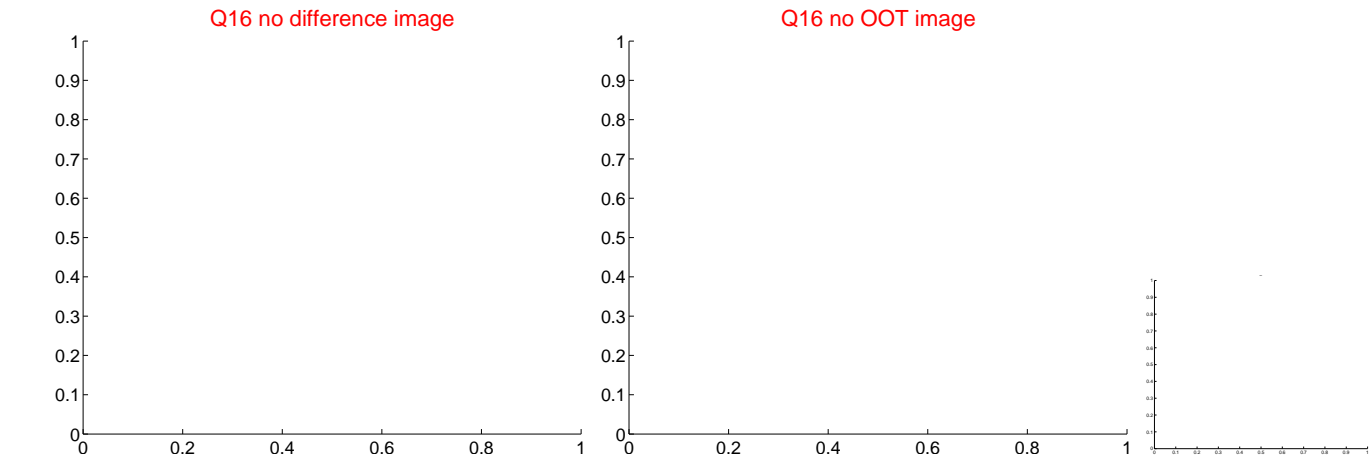
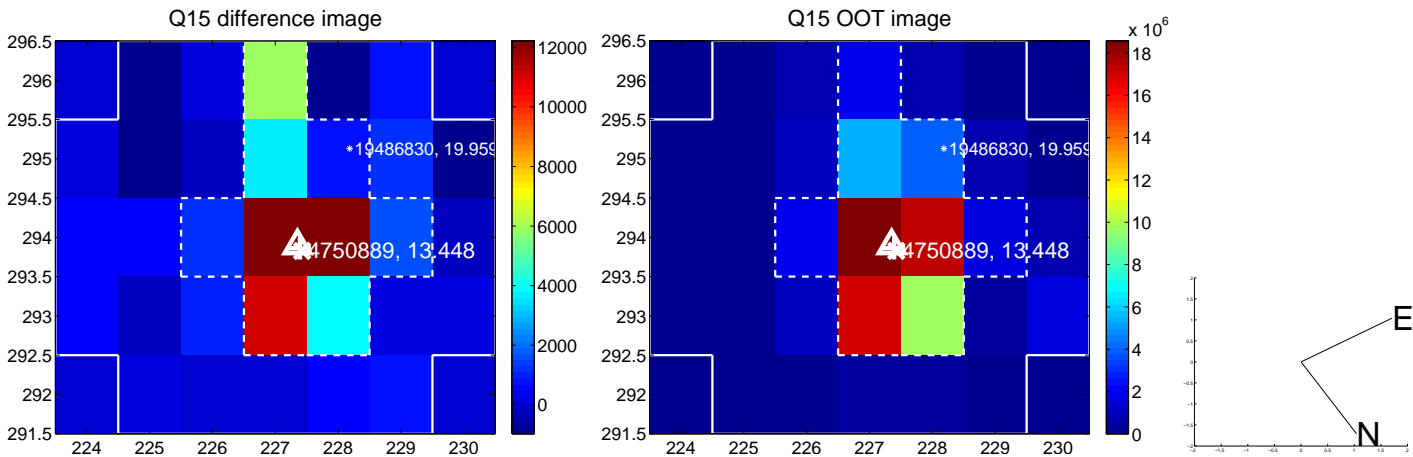
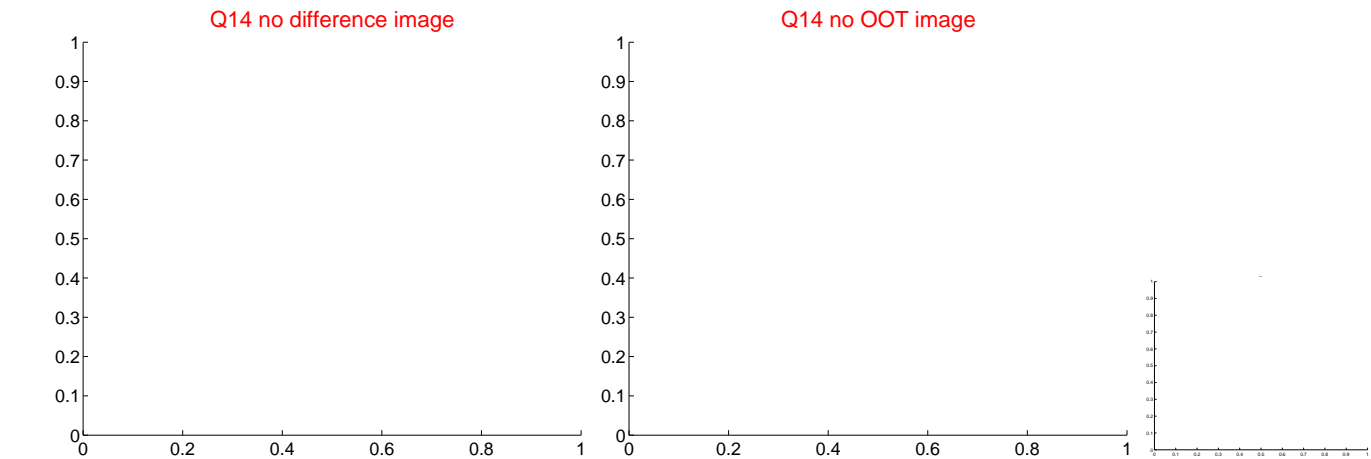
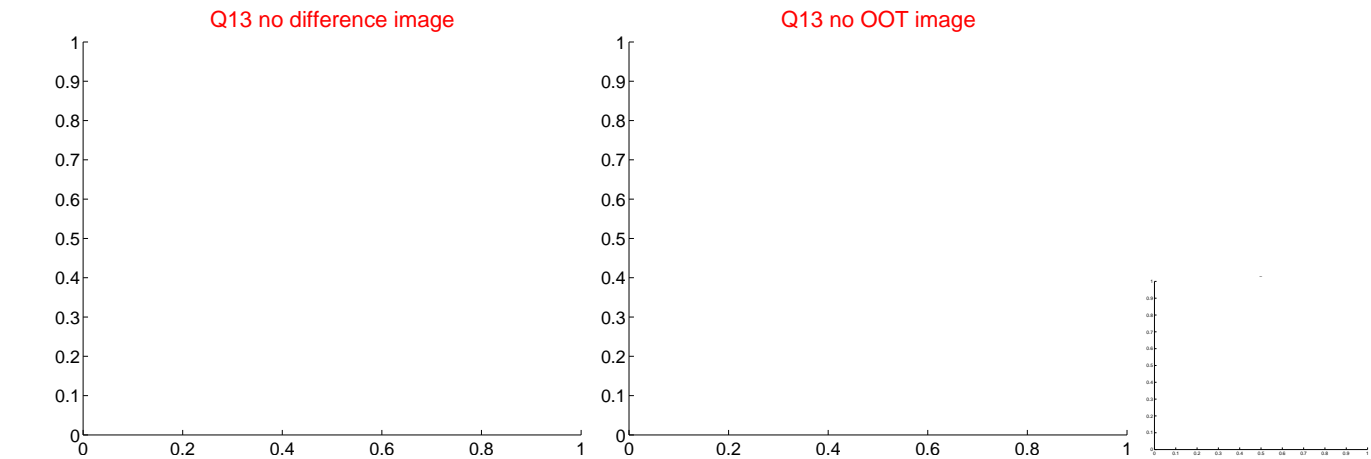
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



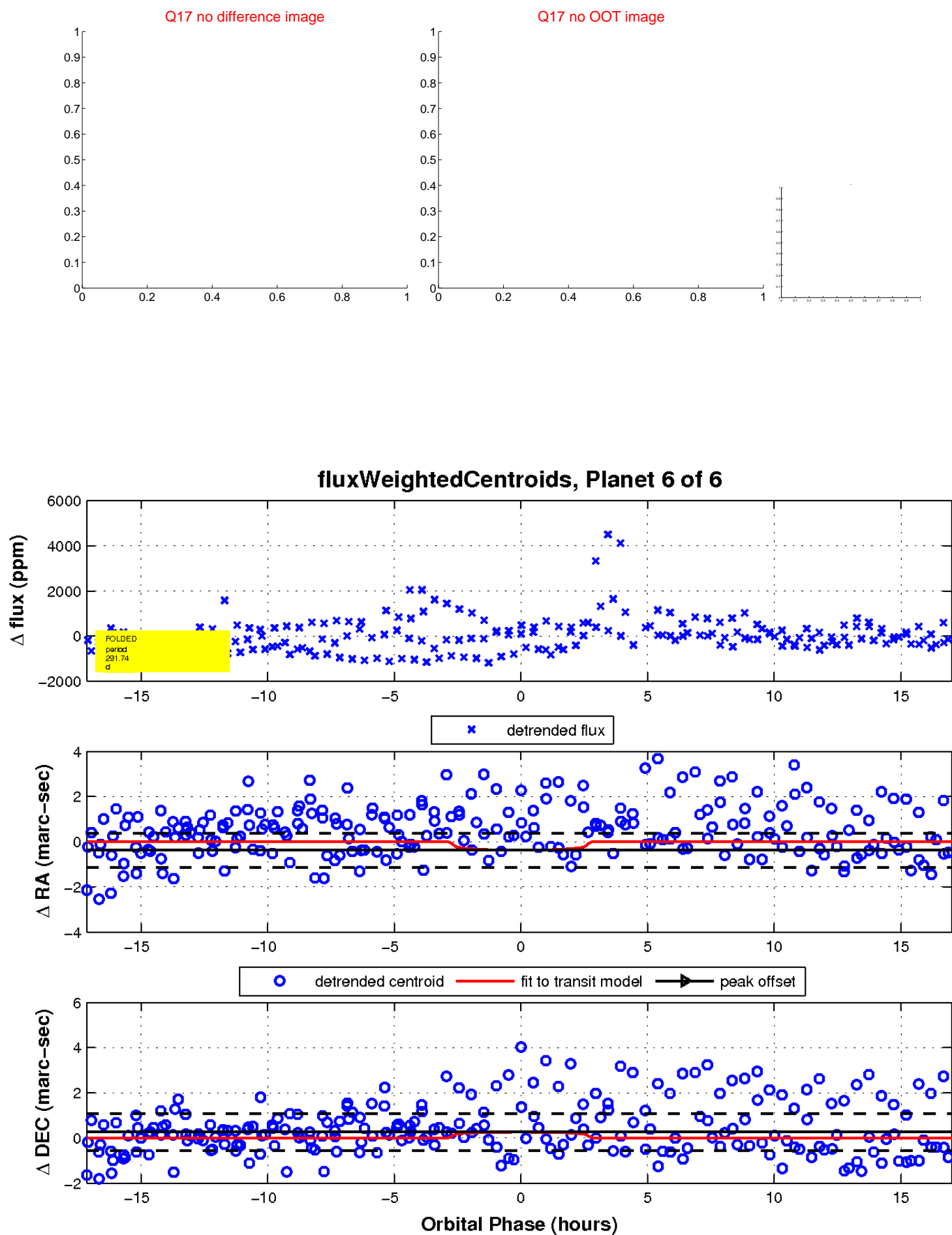
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



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



UKIRT Image

Declination

