

# KIC 005018976

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005018976-01	OBS	No	0.769753	131.914155	129.1	5.665	13.1	7.1	0.65	4484	0.73	762.32
005018976-02	OBS	No	30.422706	146.097086	1987.8	4.035	12.4	7.3	0.65	4484	2.82	5.66
005018976-03	OBS	No	13.835662	143.181962	1036.2	5.000	11.8	-1.0	0.65	4484	2.00	16.19
005018976-04	OBS	No	100.059704	207.750595	659.4	2.500	7.4	-1.0	0.65	4484	1.60	1.16
005018976-06	OBS	No	17.837054	135.754042	1863.2	2.186	9.5	5.9	0.65	4484	2.77	11.54
005018976-07	OBS	No	14.363129	139.123102	461.6	19.201	10.2	5.3	0.65	4484	1.36	15.40

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005018976-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
005018976-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
005018976-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_NOFITS
005018976-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—NO_FITS—CENT_NOFITS
005018976-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV
005018976-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT

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

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

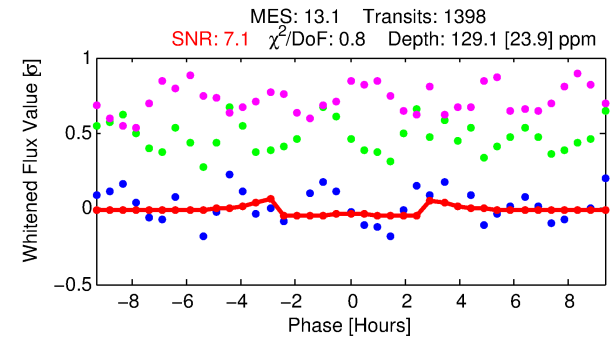
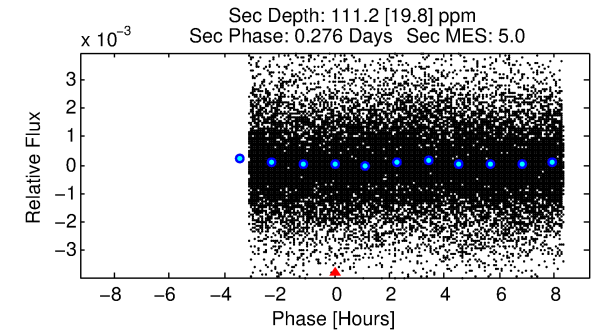
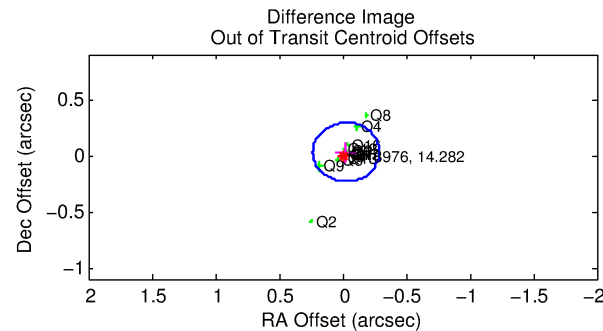
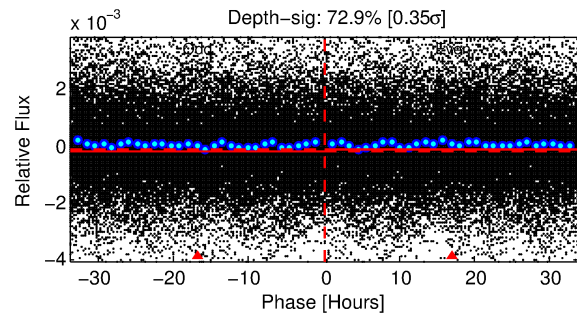
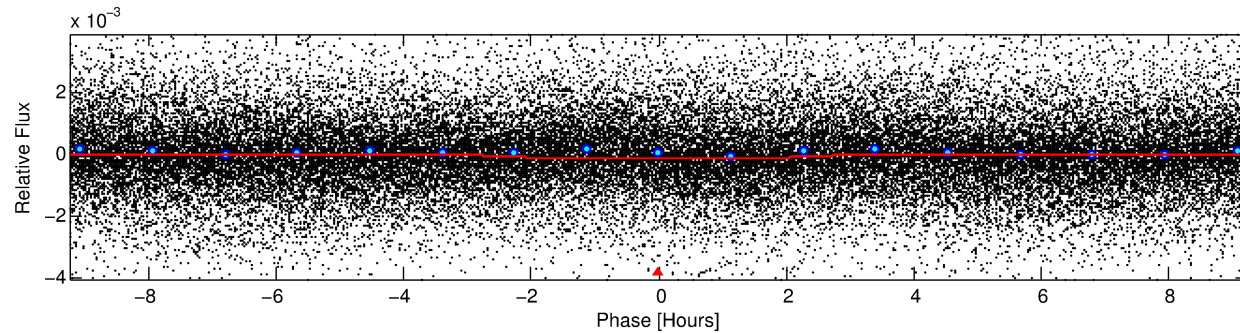
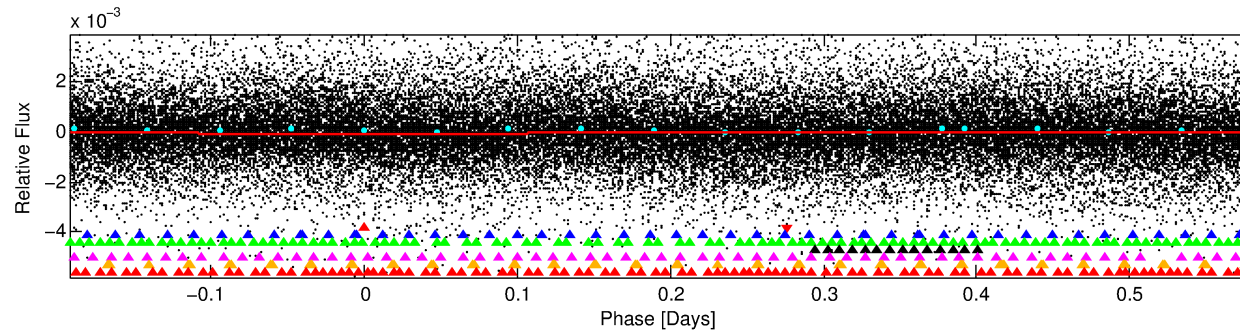
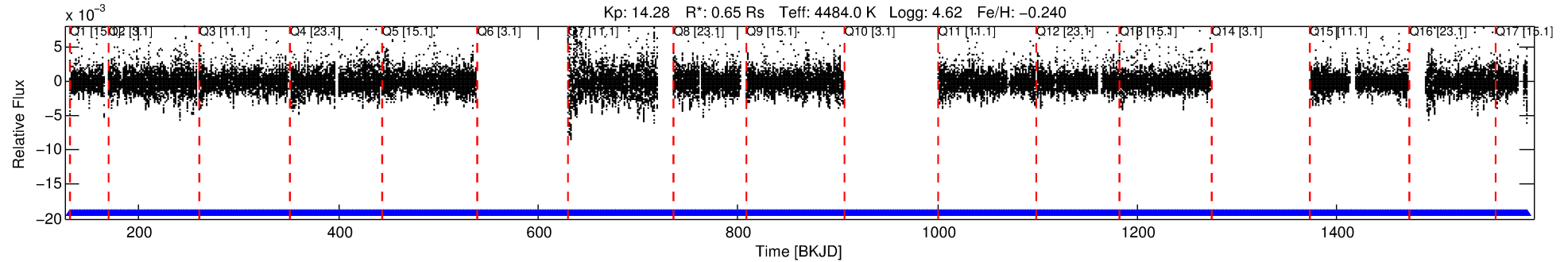
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 005018976-01

No Significant Match Found

# DV One-Page Summary

KIC: 5018976 Candidate: 1 of 7 Period: 0.770 d



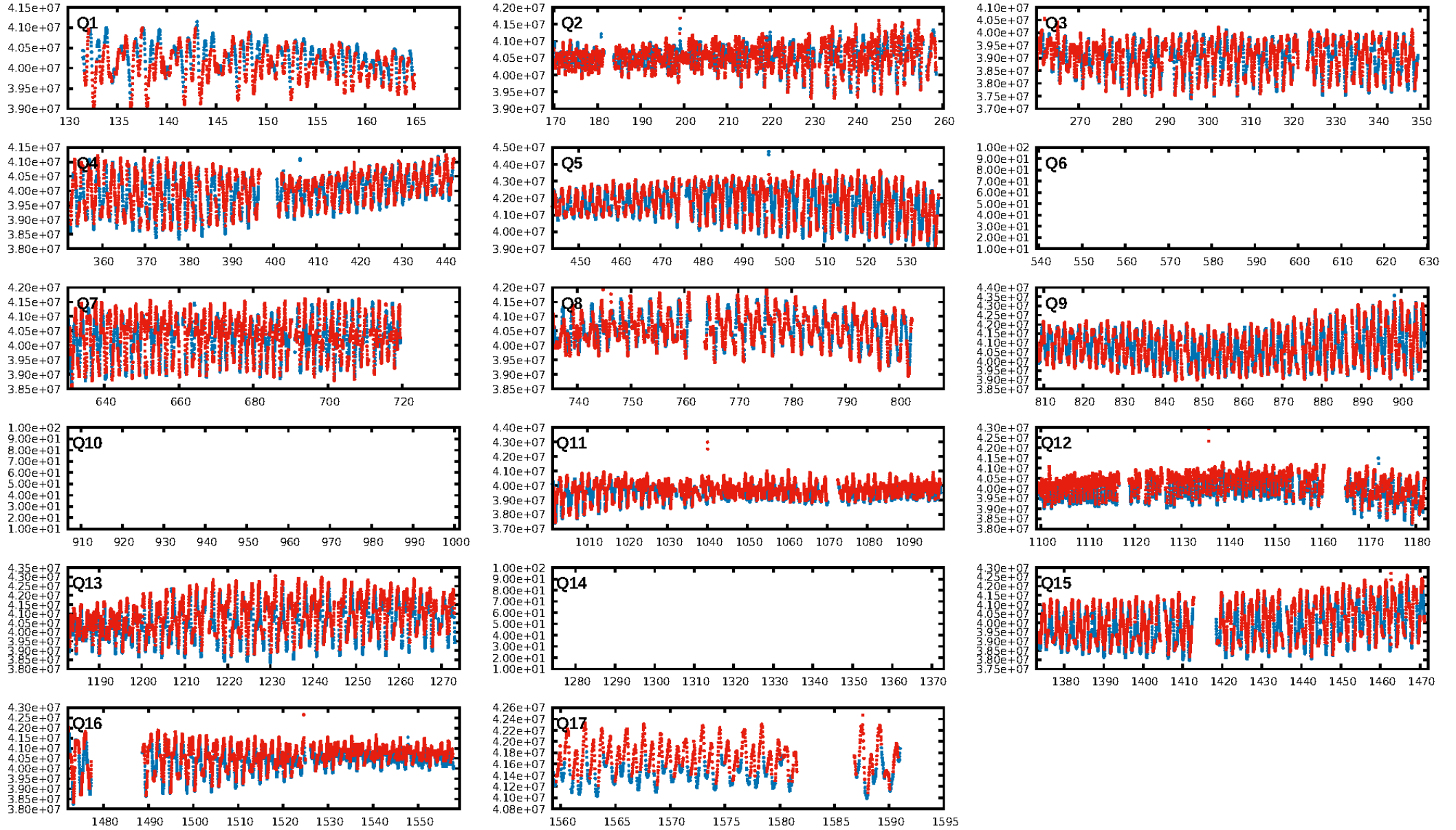
## DV Fit Results:

Period = 0.76975 [0.00001] d  
Epoch = 131.9142 [0.0025] BKJD  
Rp/R\* = 0.0103 [0.0036]  
a/R\* = 1.19 [0.40]  
b = 0.44 [2.13]  
Seff = 762.32 [118.05]  
Teff = 1340 [52] K  
Rp = 0.73 [0.27] Re  
a = 0.0141 [0.0010] AU  
Ag = 22.85 [16.76] [1.30 $\sigma$ ]  
Teffp = 4529 [834] K [3.82 $\sigma$ ]

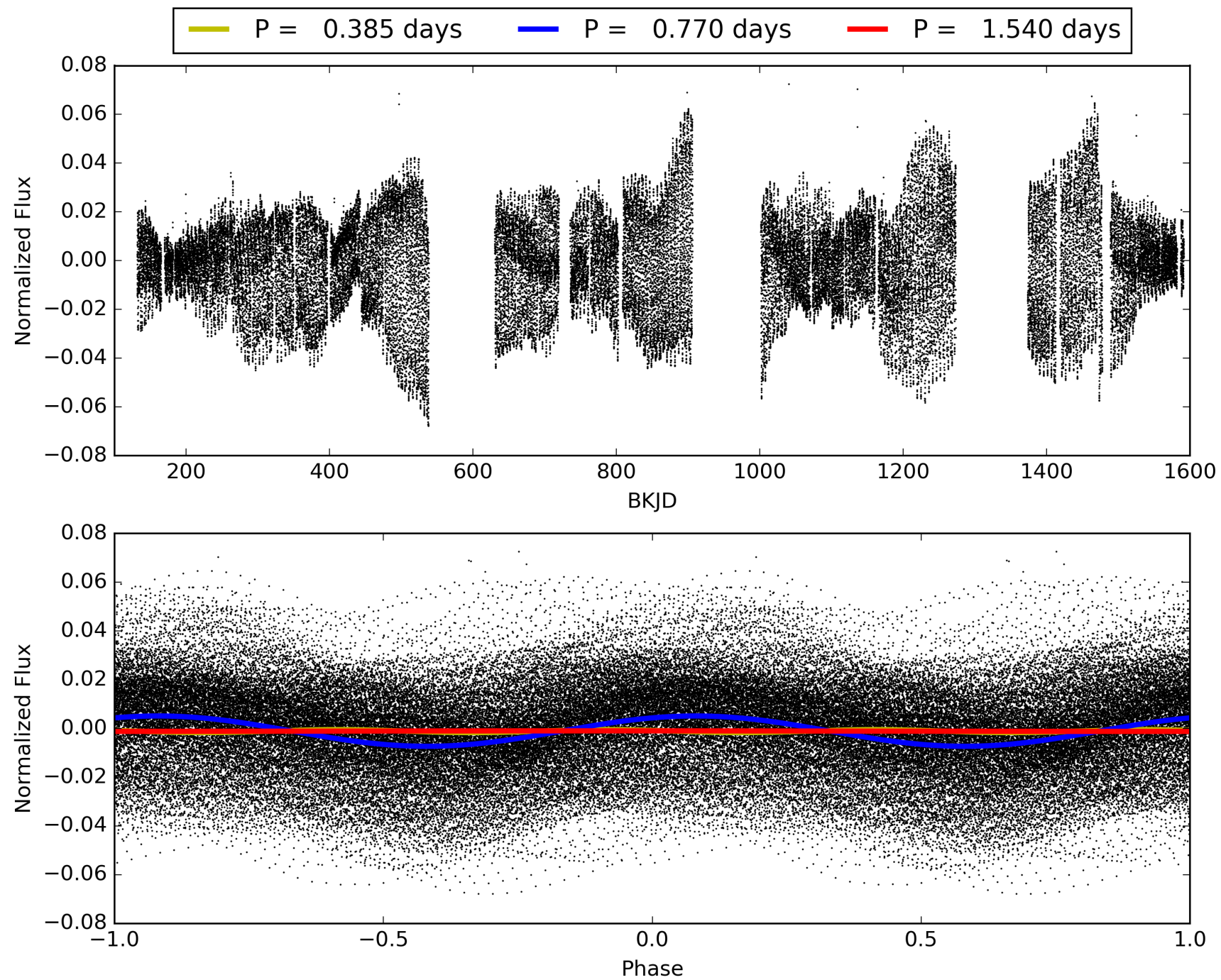
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [41.50 $\sigma$ ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 1.33e-29  
RollingBand-fgt: 1.00 [1319/1319]  
GhostDiagnostic-chr: 2.269  
Centroid-sig: 45.5%  
Centroid-so: 0.217 arcsec [0.78 $\sigma$ ]  
OotOffset-rm: 0.040 arcsec [0.45 $\sigma$ ]  
KicOffset-rm: 0.072 arcsec [0.99 $\sigma$ ]  
OotOffset-st: 1/4/4/5 [14]  
KicOffset-st: 1/4/4/5 [14]  
DiffImageQuality-fgm: 0.07 [1/14]  
DiffImageOverlap-fno: 1.00 [14/14]

# TCE 005018976-01, PDC Light Curves



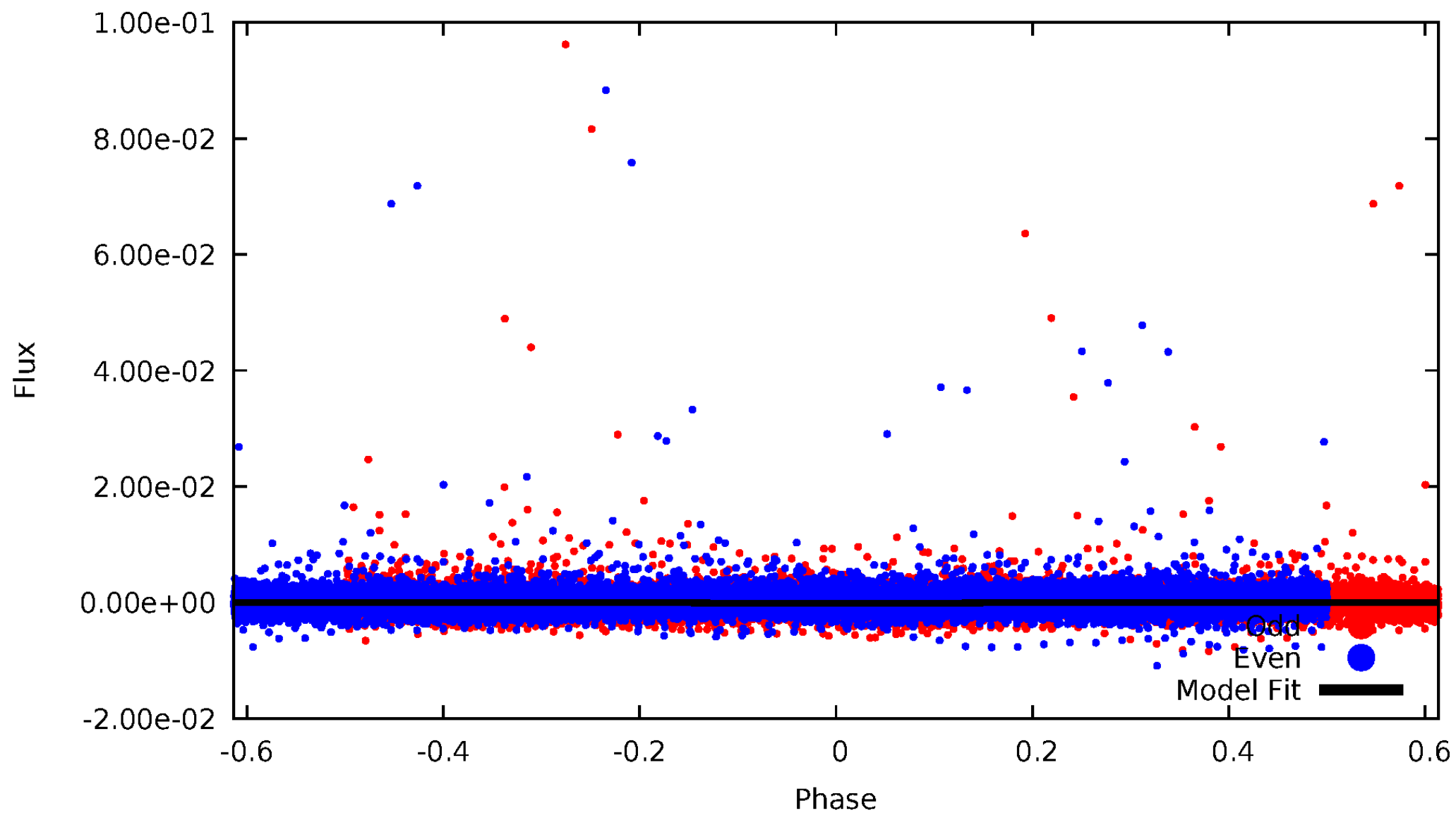
# TCE 005018976-01





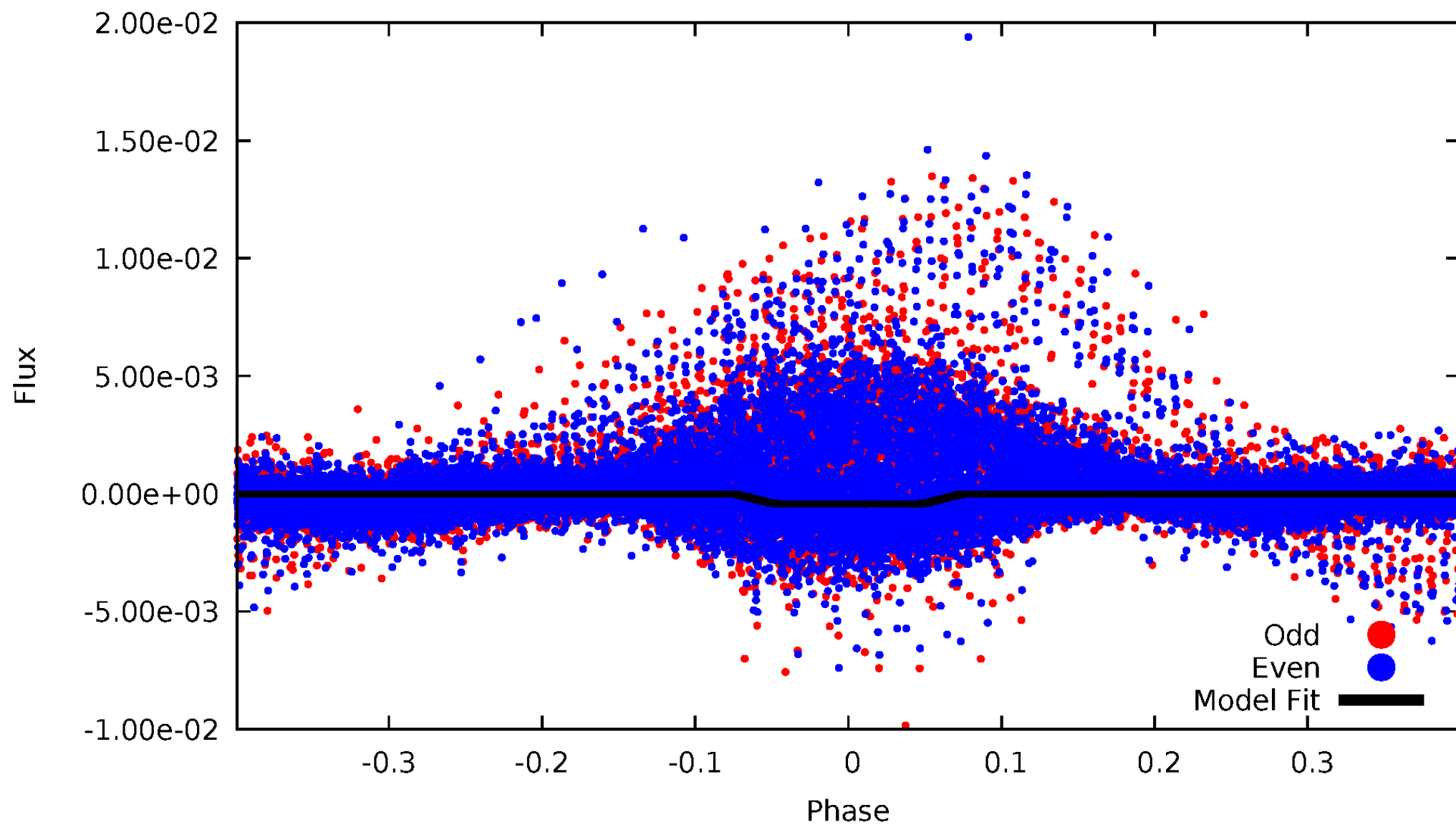
# DV Odd/Even

TCE 005018976-01



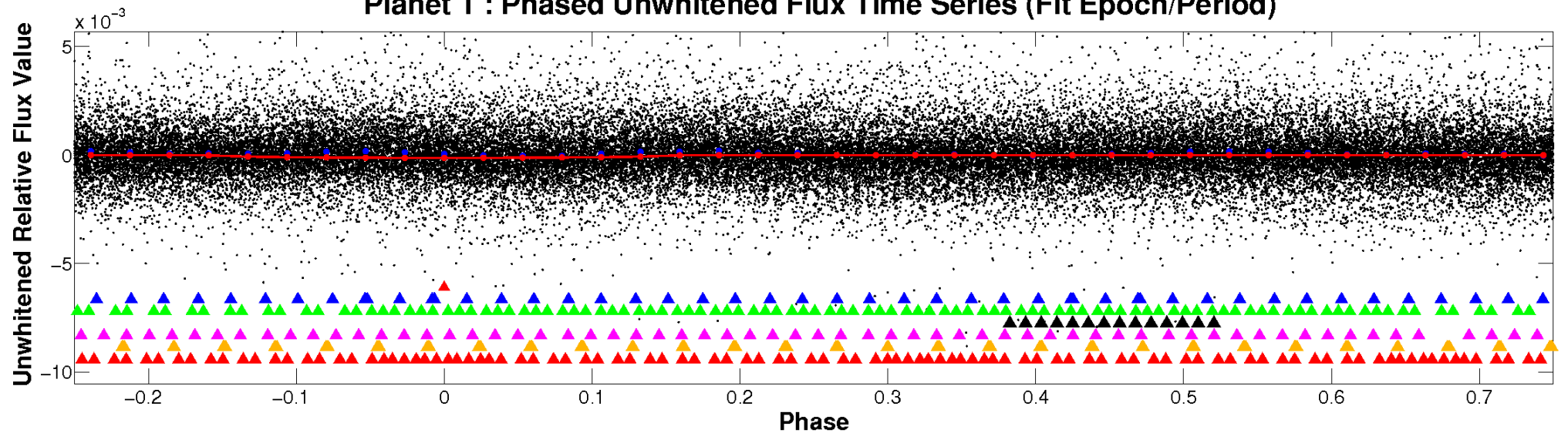
# ALT Odd/Even

TCE 005018976-01

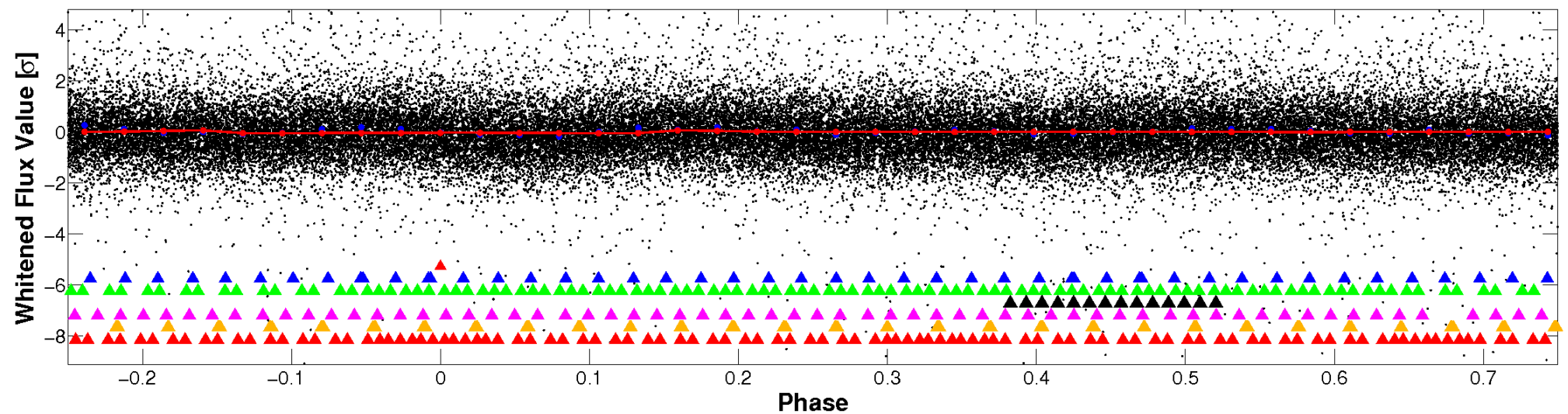


# Non-Whitened Vs. Whitened Light Curve

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

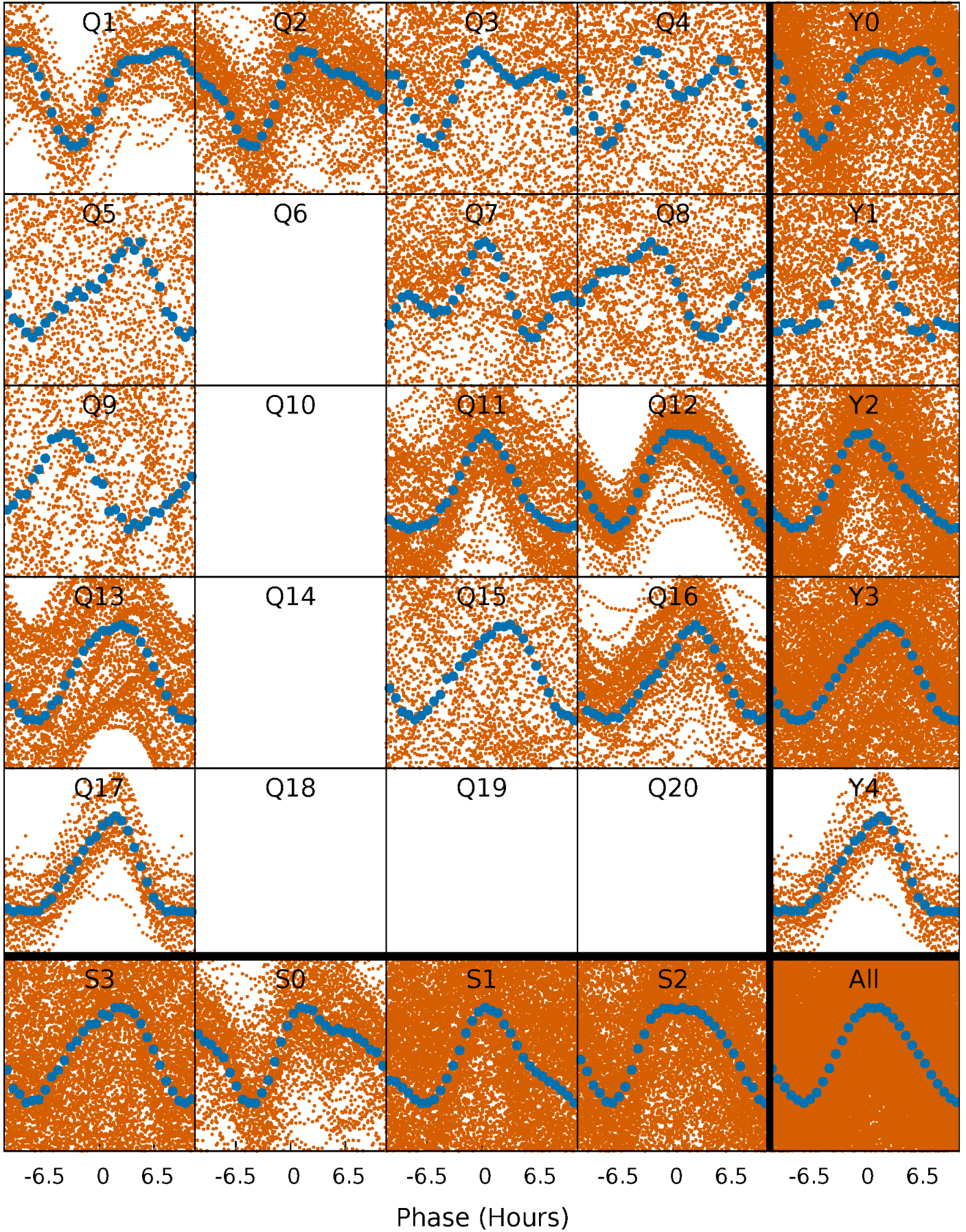


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

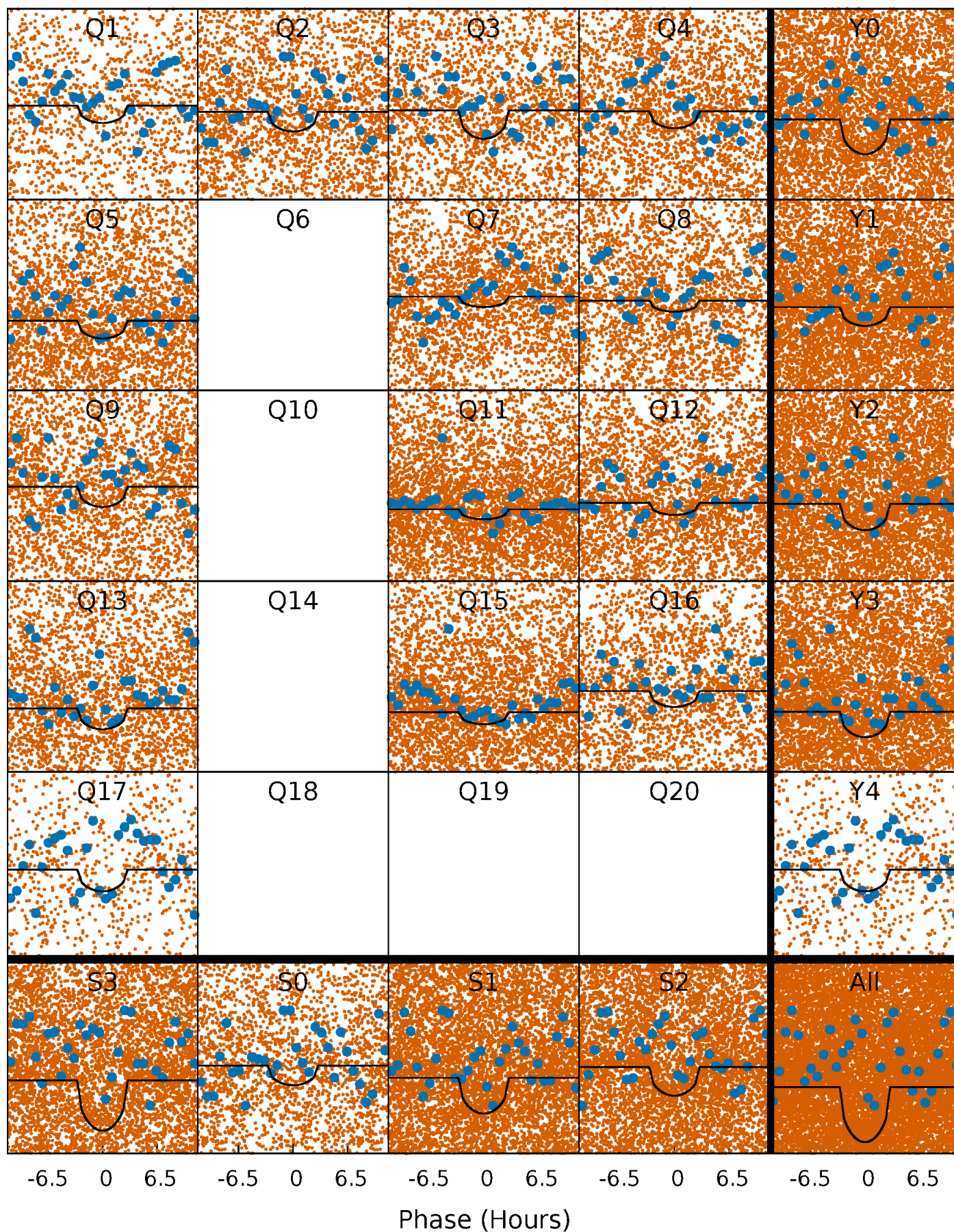
TCE 005018976-01 P= 0.769753 Days  $T_0=131.914155$  (BKJD)





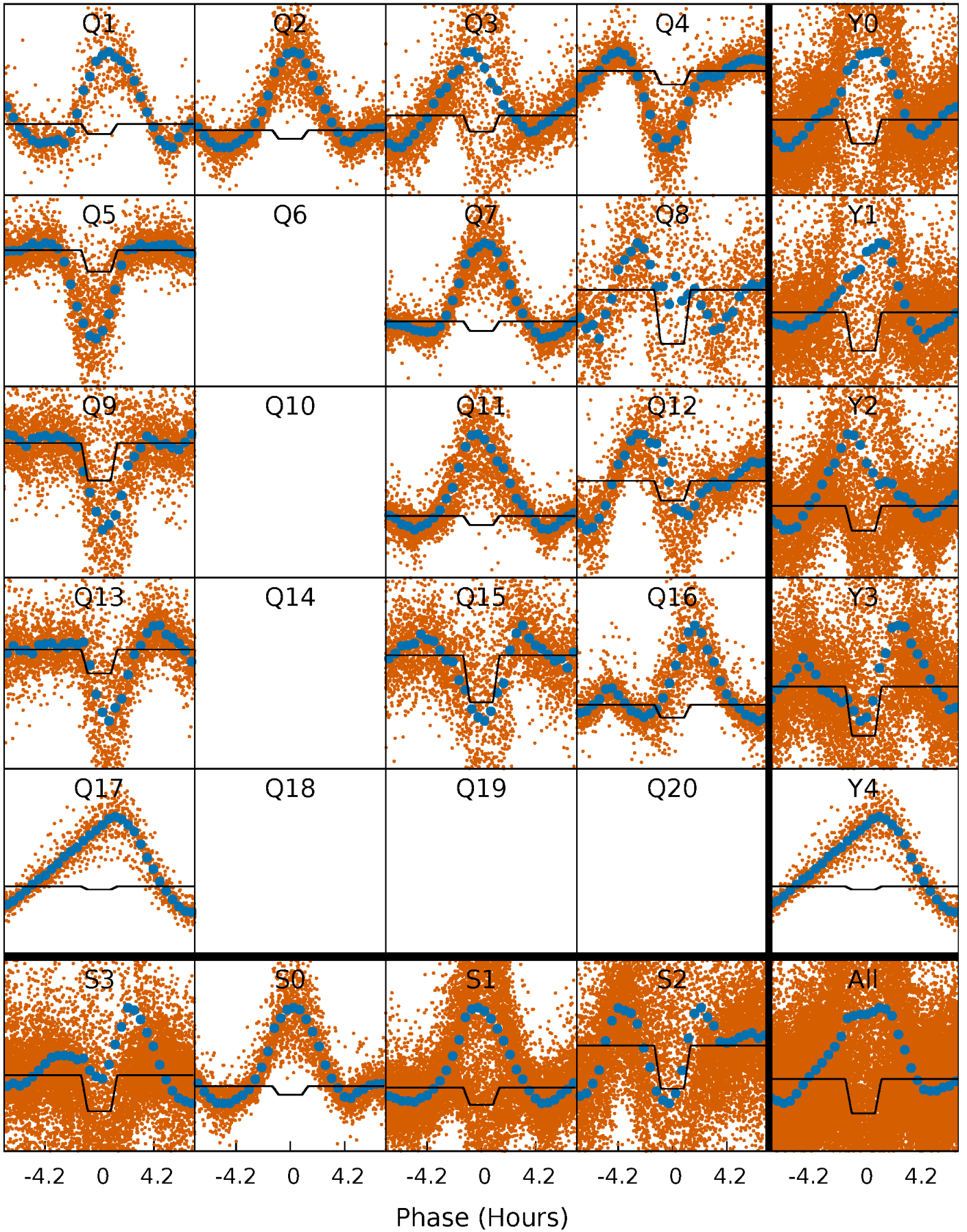
## DV Quarter-Phased Transit Curves

TCE 005018976-01    P= 0.769753 Days     $T_0=131.914155$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

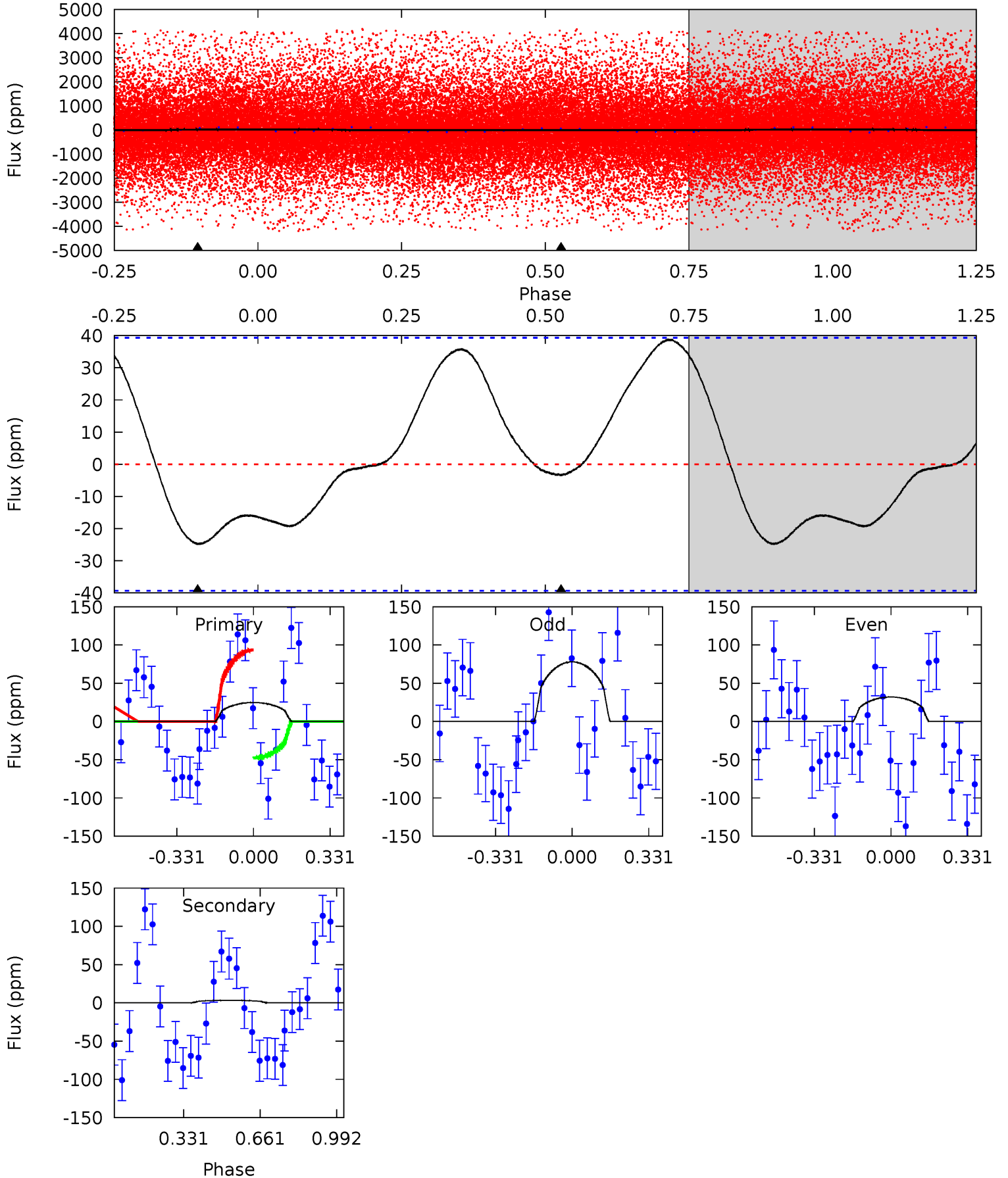
TCE 005018976-01 P= 0.769763 Days  $T_0=131.926977$  (BKJD)



# DV Model-Shift Uniqueness Test

005018976-01,  $P = 0.769753$  Days,  $E = 131.144402$  Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2.72	0.37	0	0	4.31	0.97	0.35	2.72	2.72	0.37	0.37	2.57	4.11	0.61	2.55

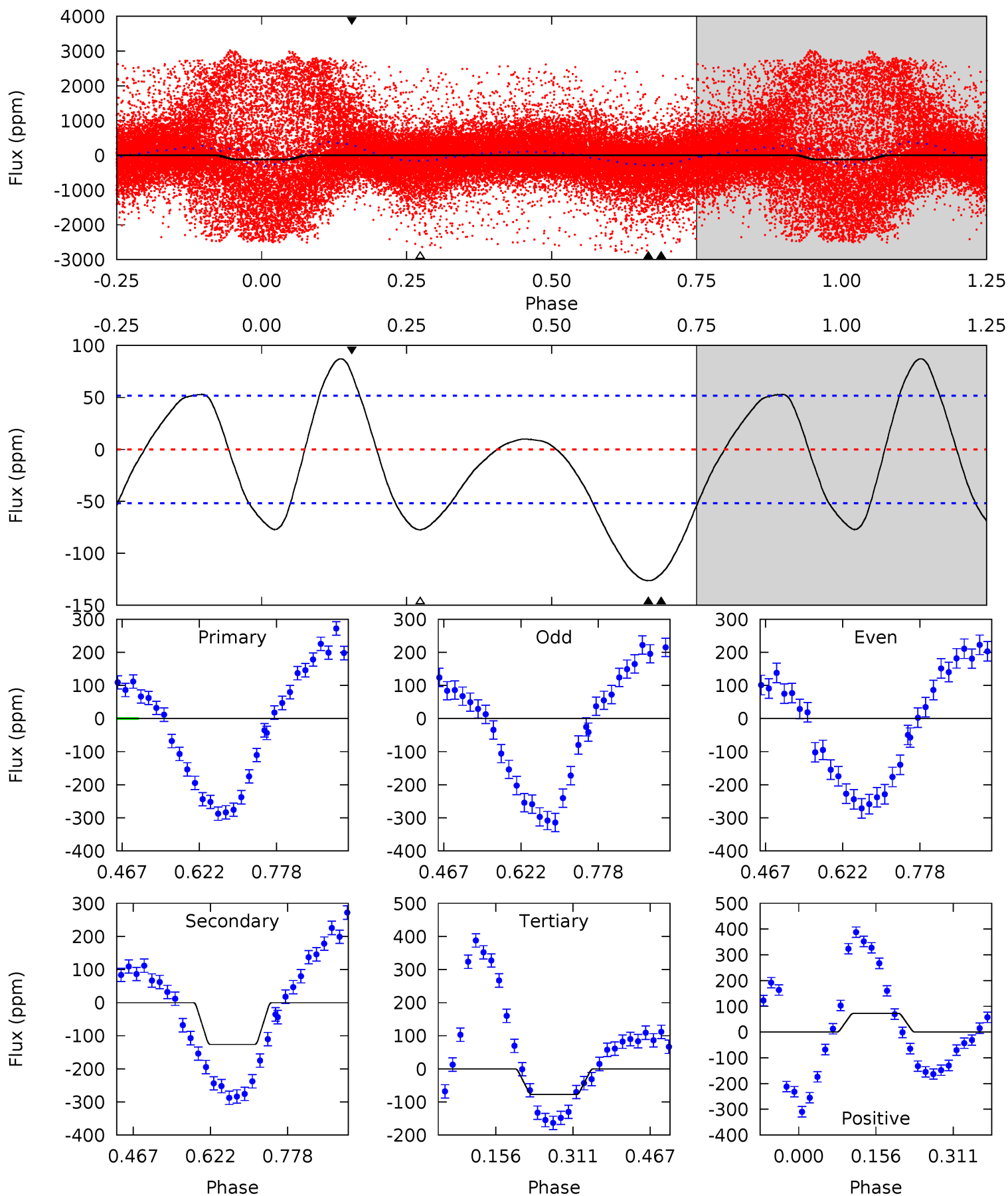




# Alt Model-Shift Uniqueness Test

005018976-01, P = 0.769763 Days, E = 131.157214 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.4	10.9	6.68	6.27	4.47	1.42	4.13	3.67	4.09	4.23	4.65	11.6	6.45	0.41	7.69





### Stellar Parameters For KIC 005018976

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (g \cdot \text{cm}^{-3})$
	$4484^{+134}_{-134}$	$4.617^{+0.052}_{-0.024}$	$-0.240^{+0.300}_{-0.300}$	$0.648^{+0.051}_{-0.056}$	$0.634^{+0.070}_{-0.051}$	$3.280^{+0.749}_{-0.370}$
	+3%/-3%	+1%/-1%	+125%/-125%	+8%/-9%	+11%/-8%	+23%/-11%
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 005018976-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-3 \pm 9$	$0.72^{+0.27}_{-0.24}$	$1862^{+63}_{-61}$	$2410^{+777}_{-5349}$	$0.637^{+2.511}_{-1.962}$
Alt.	$-126 \pm 12$	$1.45^{+0.24}_{-0.27}$	$1863^{+58}_{-65}$	$3597^{+254}_{-207}$	$6.696^{+3.397}_{-1.827}$

$T_{max}$  = 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  $A_{obs} \gg 1.0$

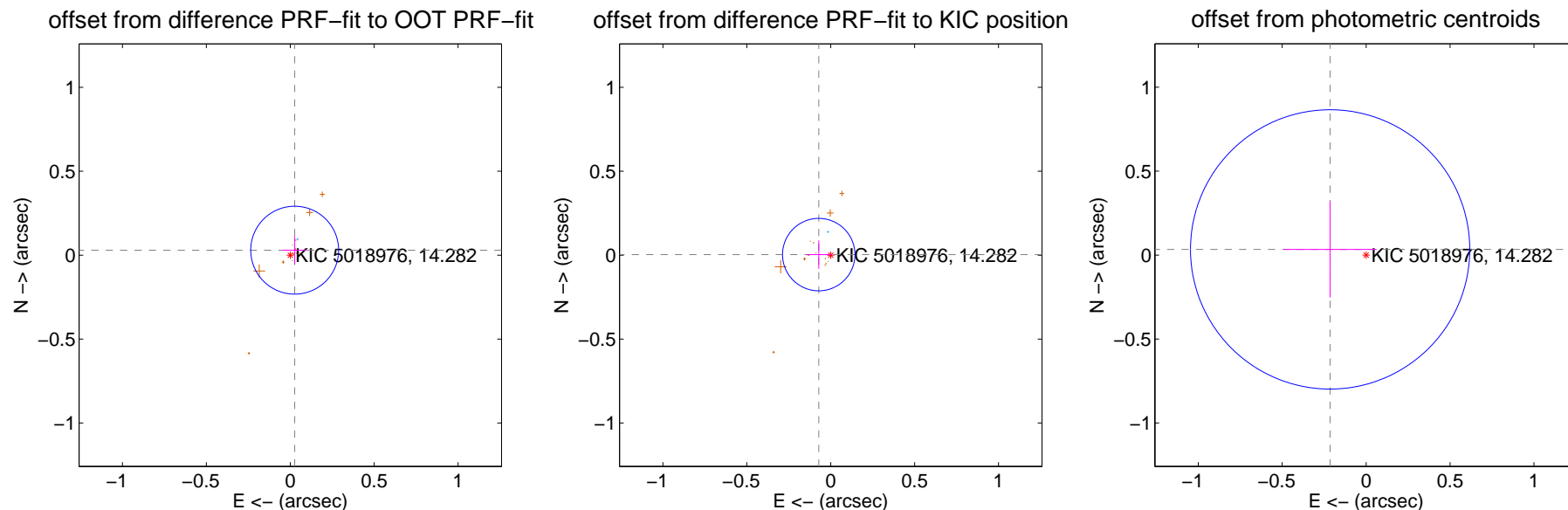
## DV Centroid Data

Supplemental centroid analysis for 005018976-01. Kepler magnitude: 14.28. Transit SNR 7.05

There are 1 quarters with good PRF difference image offsets

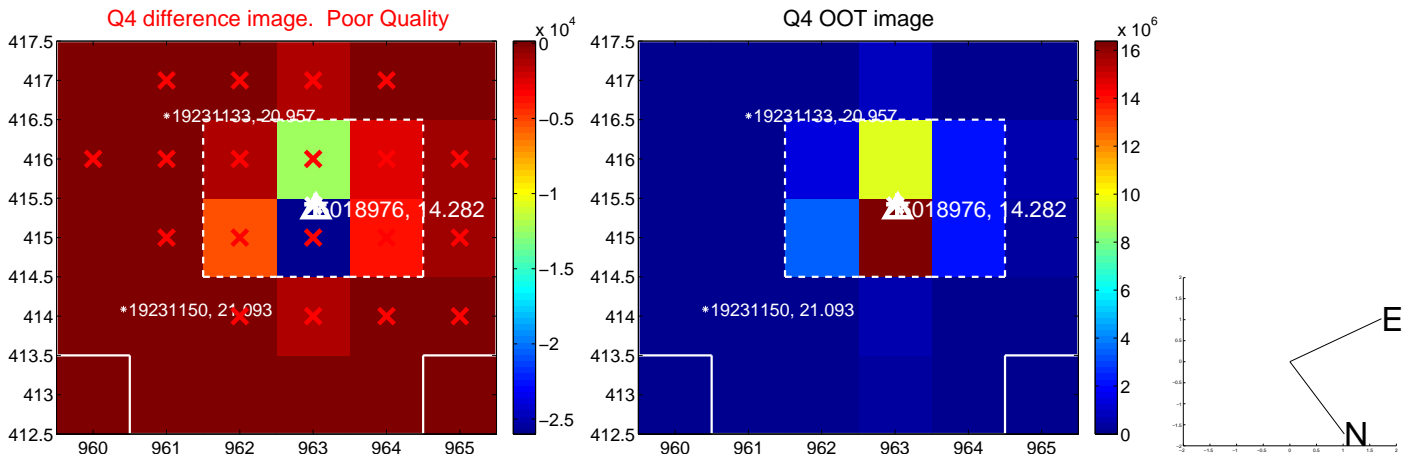
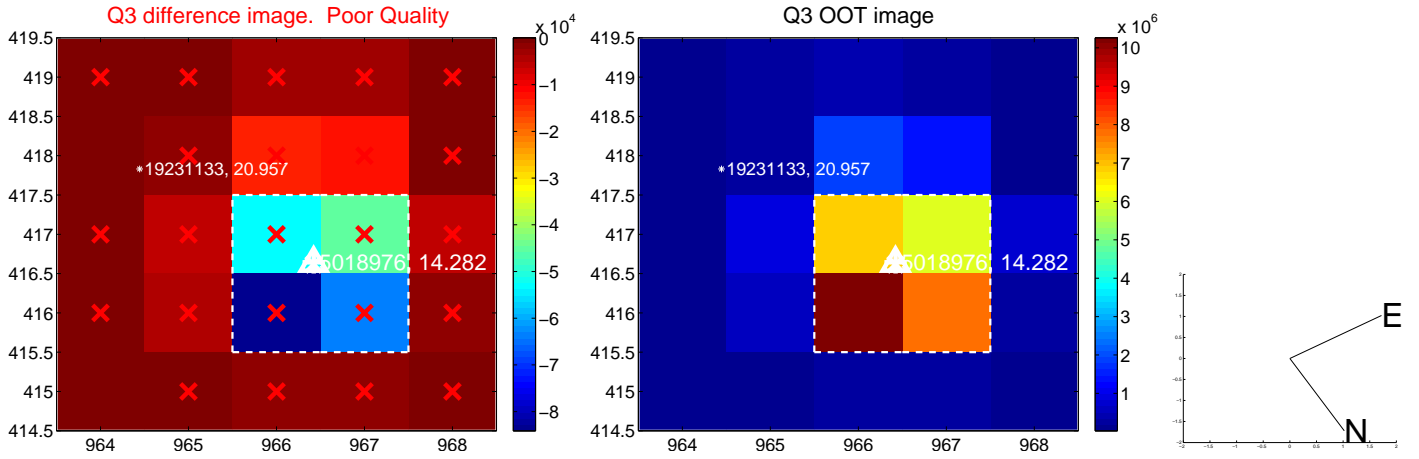
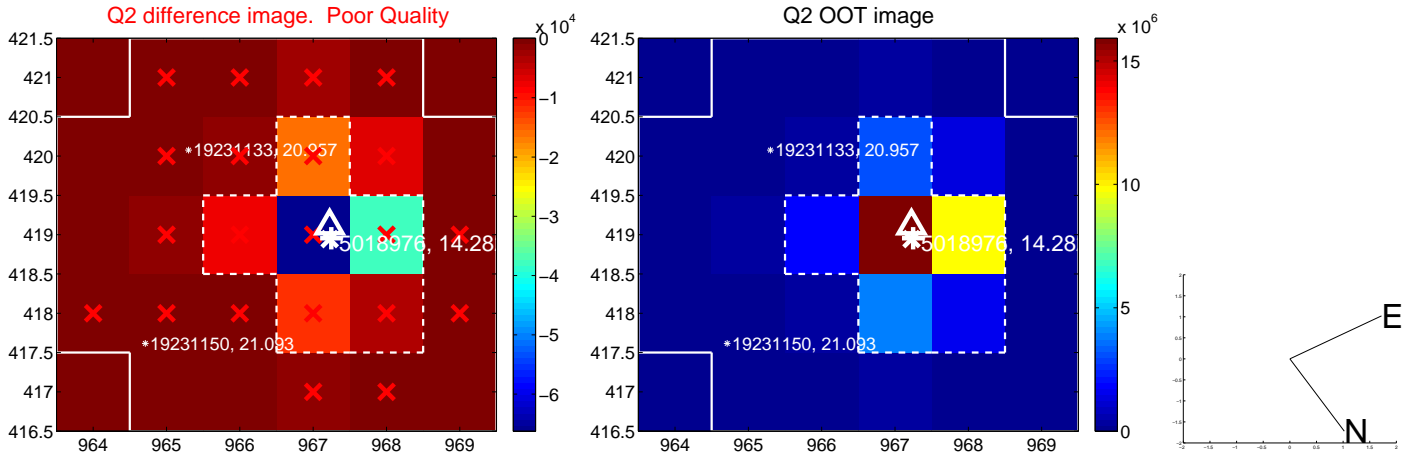
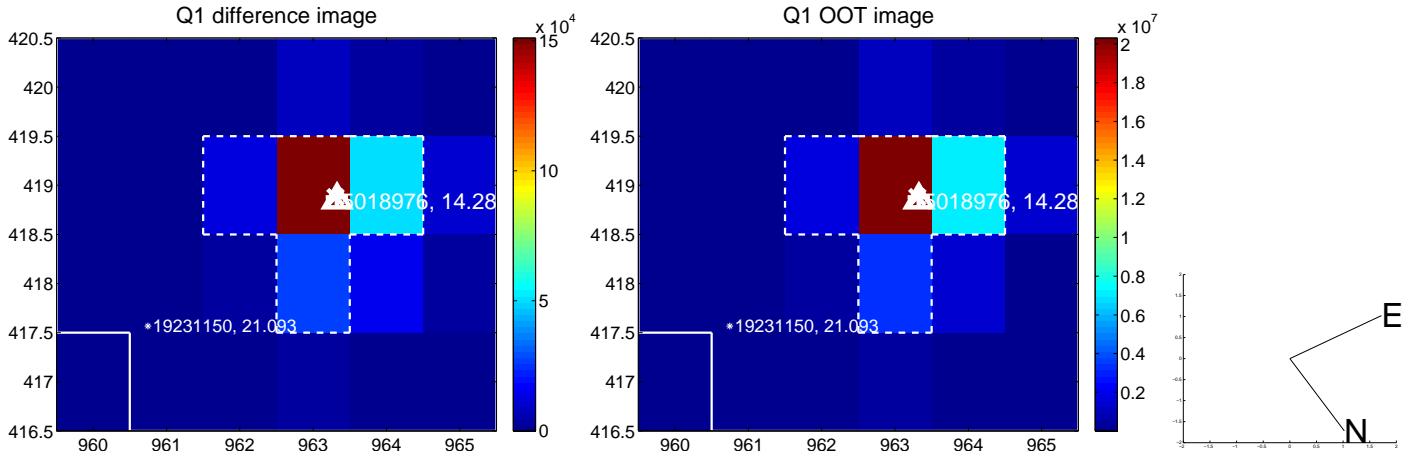
The direct PRF centroid is offset from the target star catalog position by about 0.15 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.040 \pm 0.087$	0.45	$-0.026 \pm 0.072$	$0.030 \pm 0.085$
PRF-fit source offset from KIC position	$0.072 \pm 0.072$	0.99	$0.071 \pm 0.073$	$0.003 \pm 0.084$
photometric centroid source offset	$0.22 \pm 0.28$	0.78	$0.21 \pm 0.28$	$0.03 \pm 0.29$

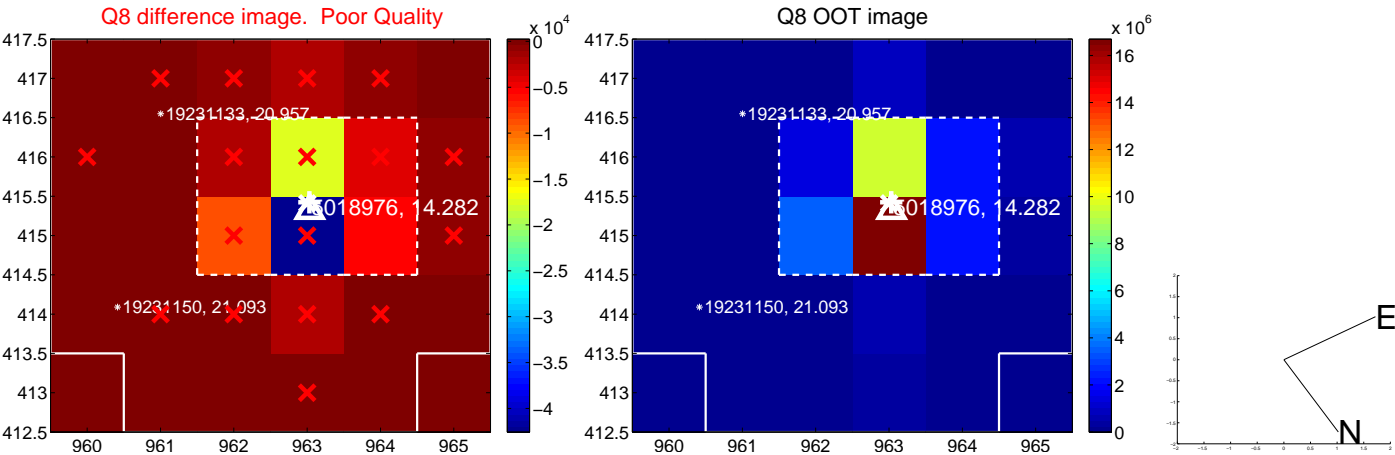
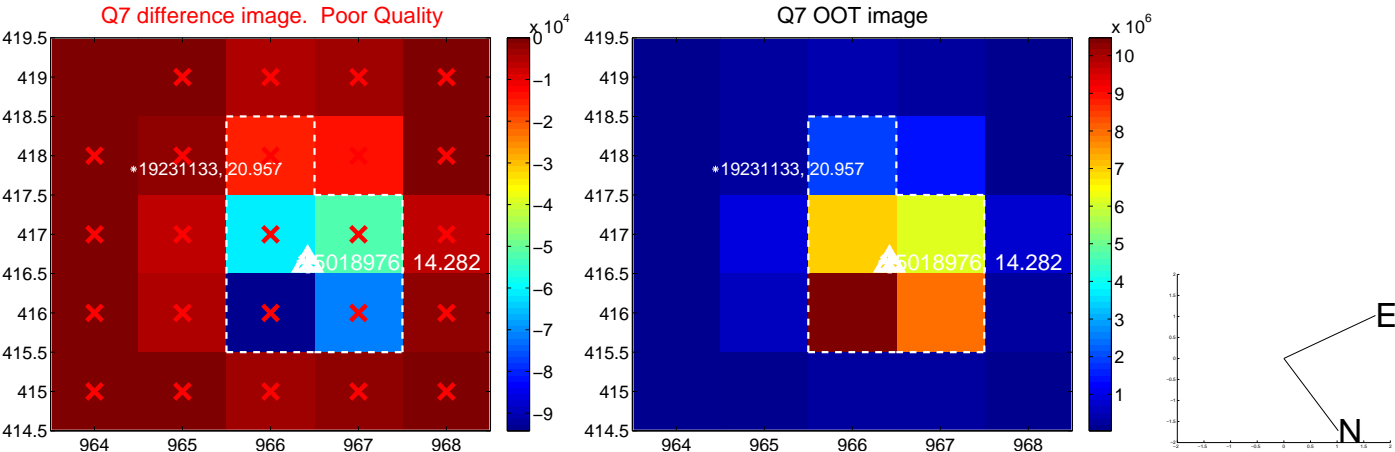
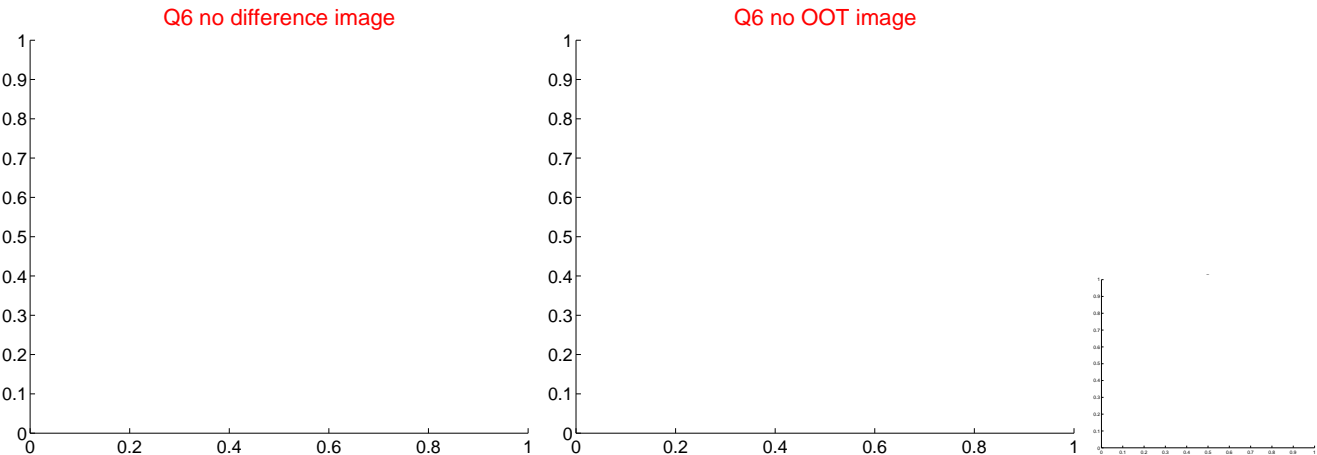
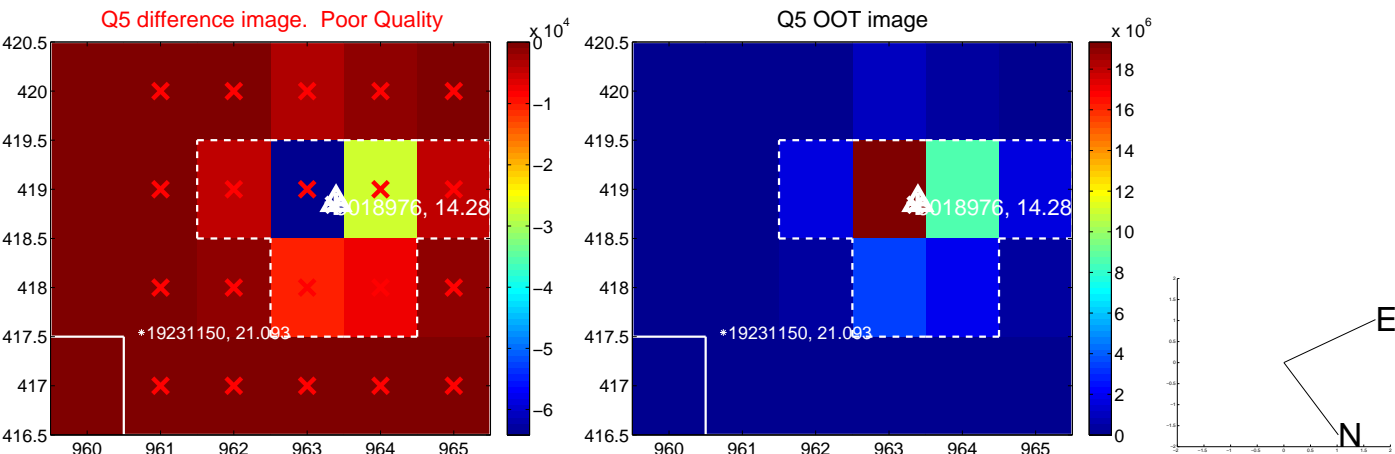


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

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

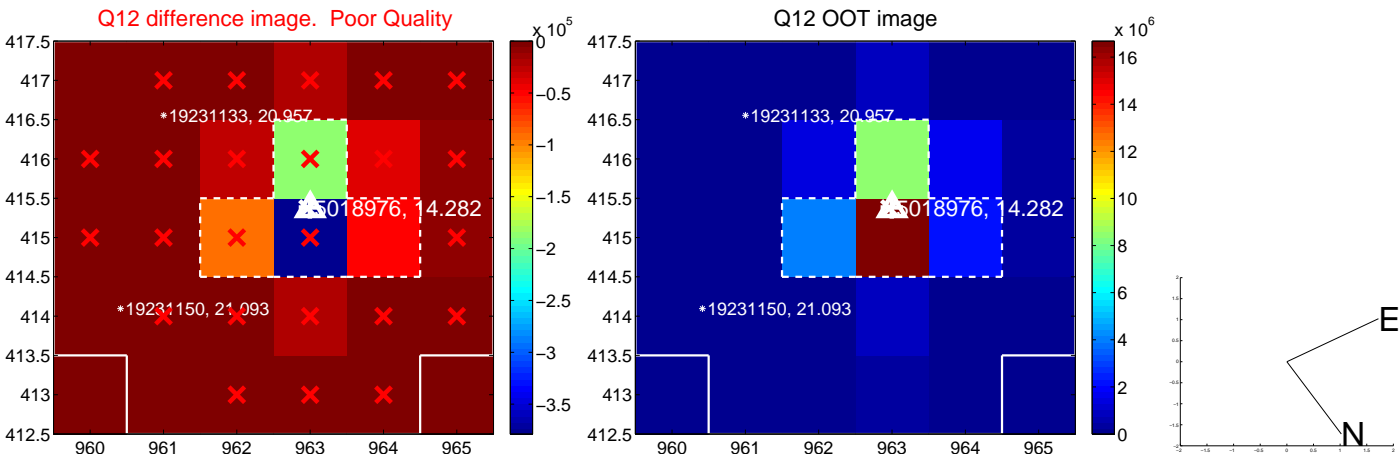
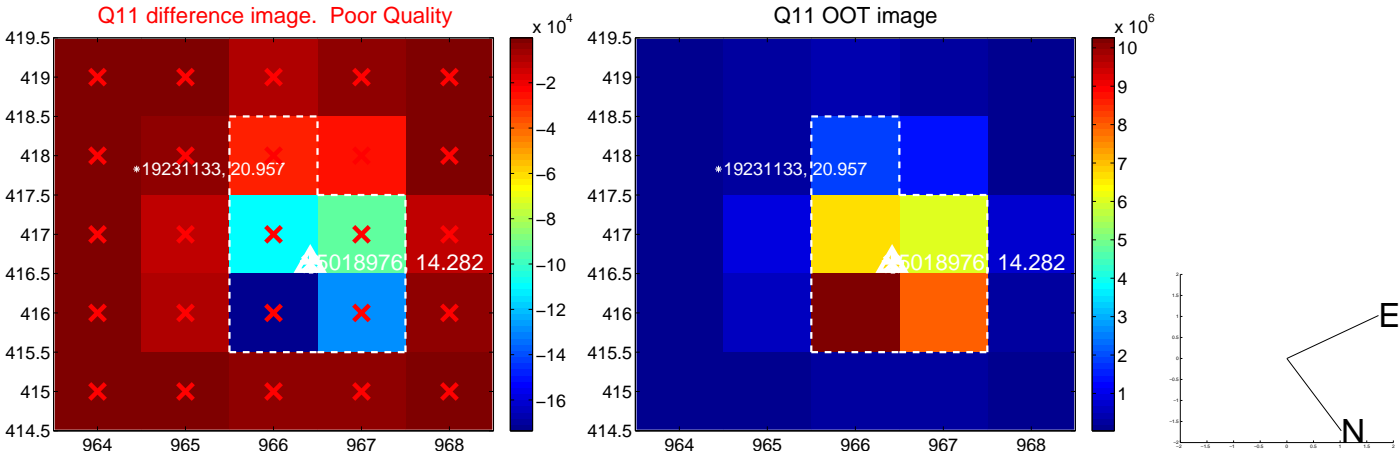
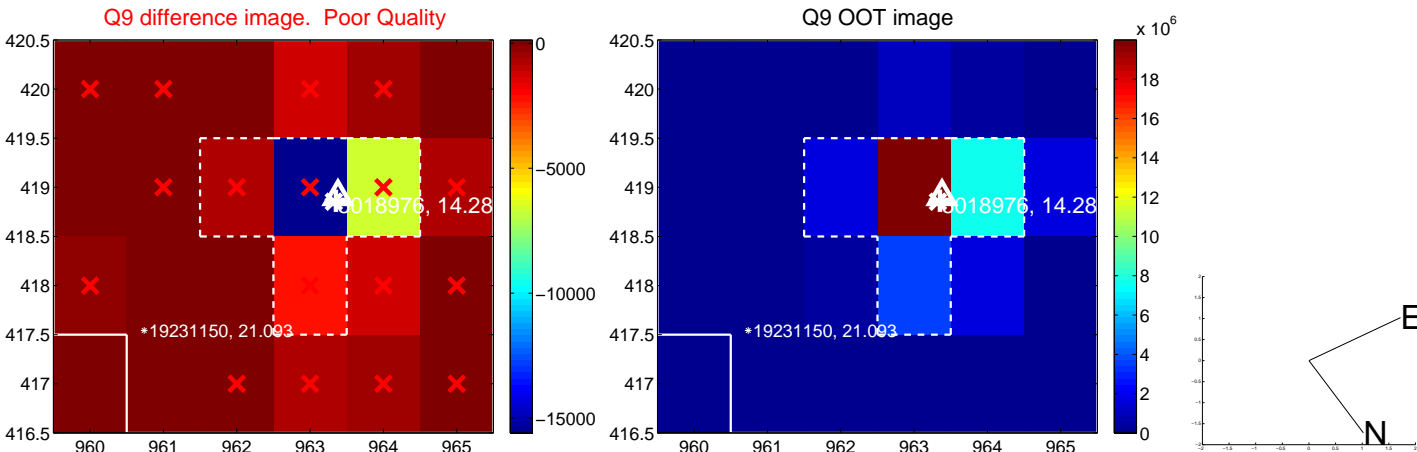


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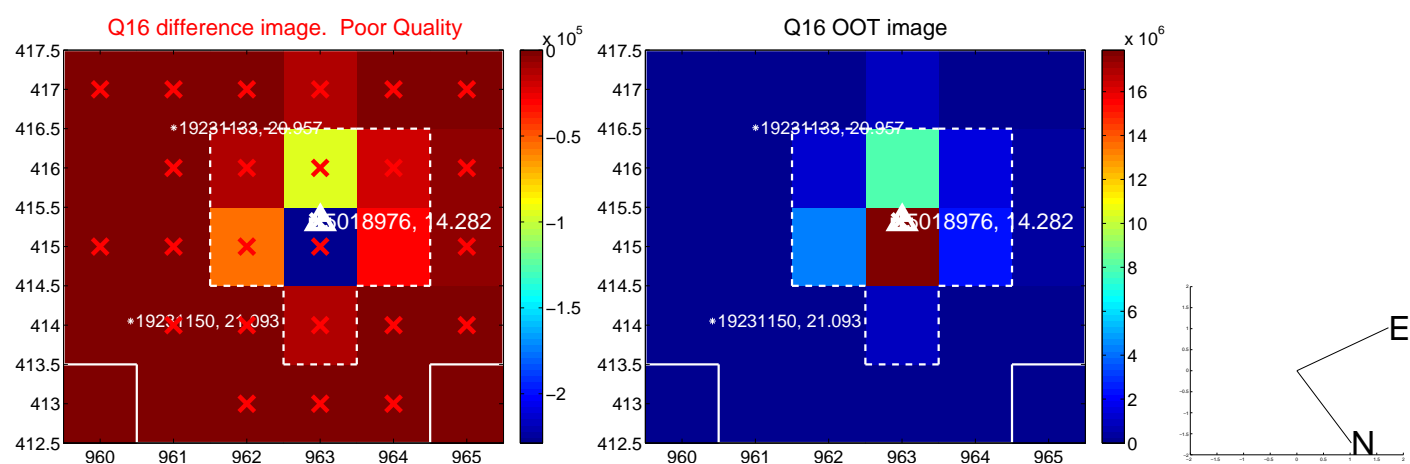
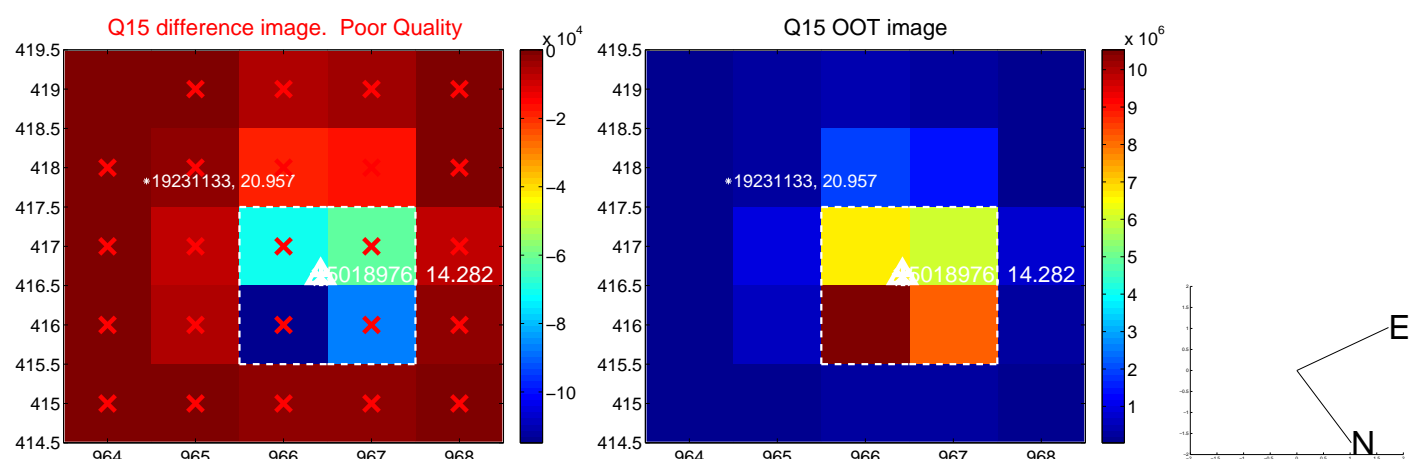
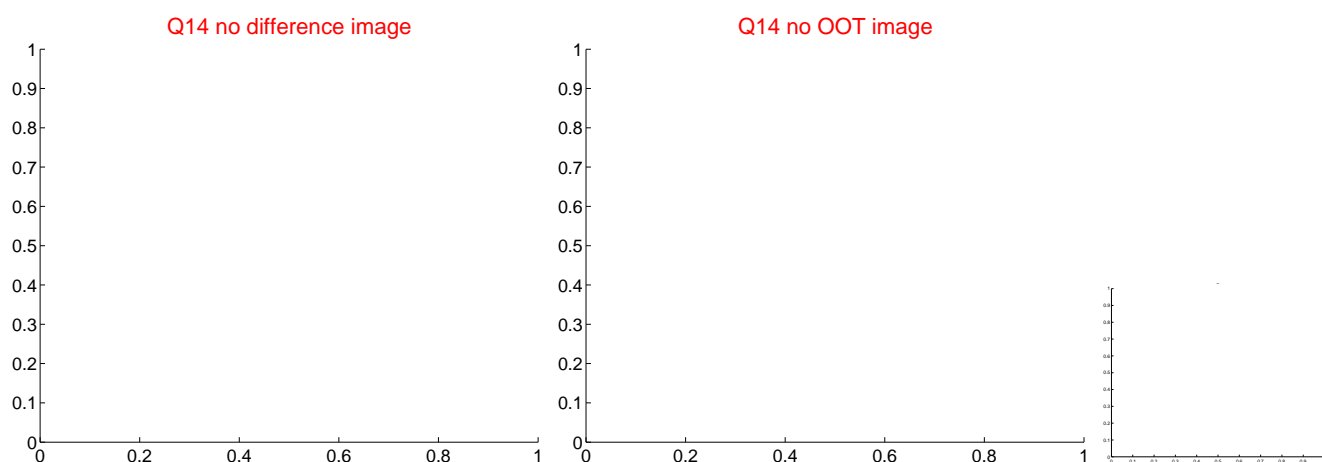
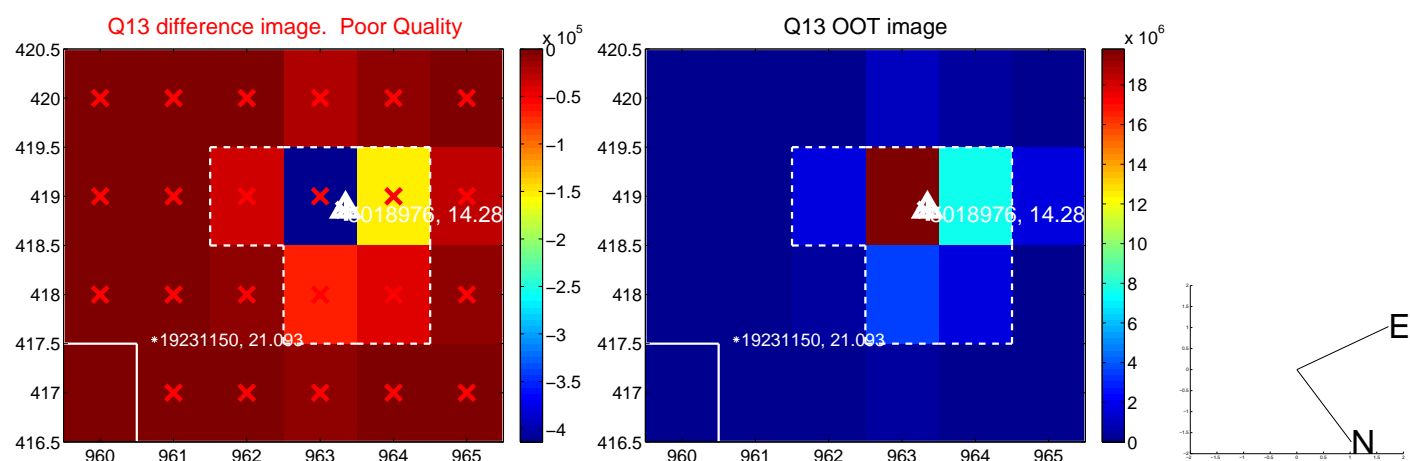




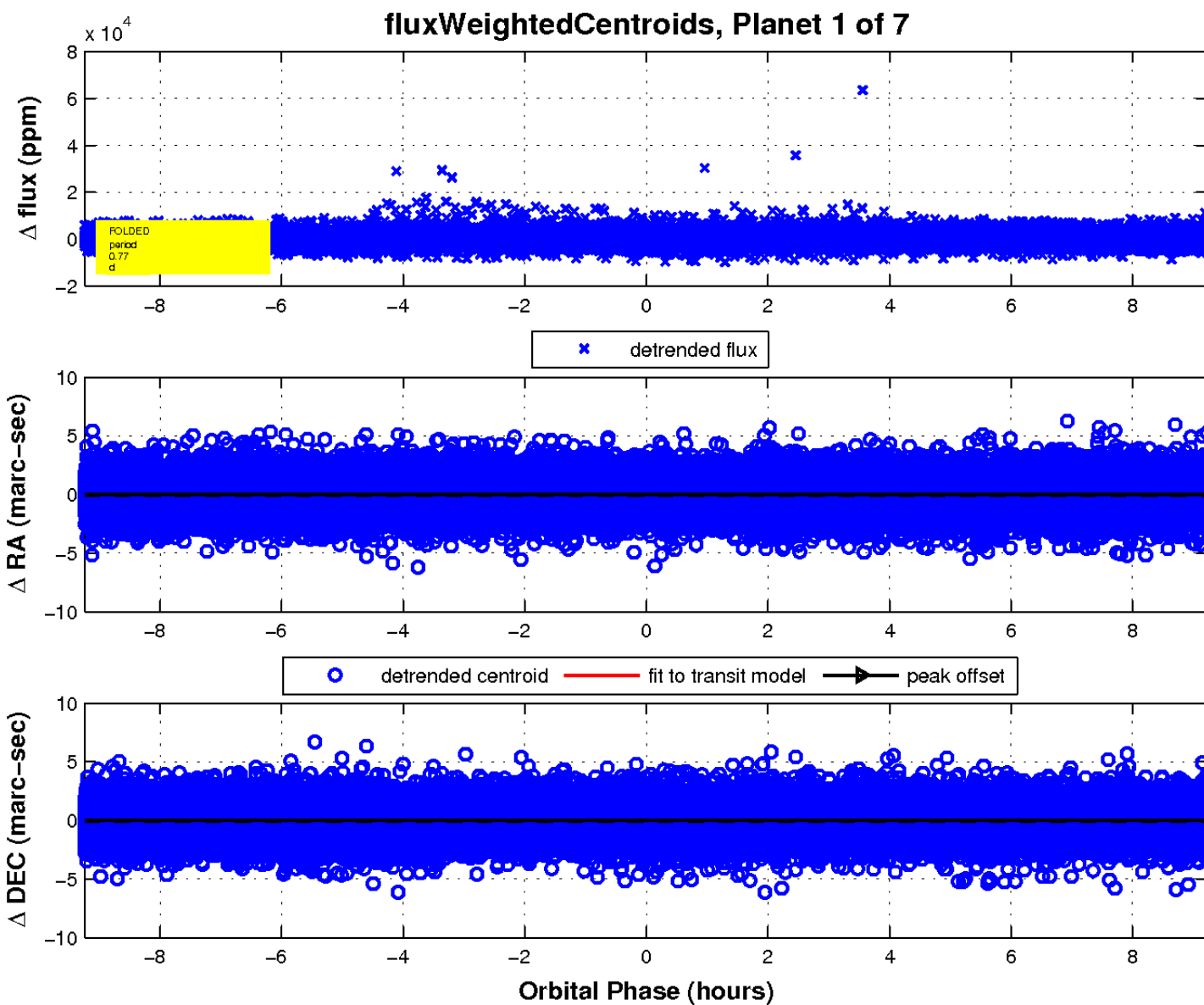
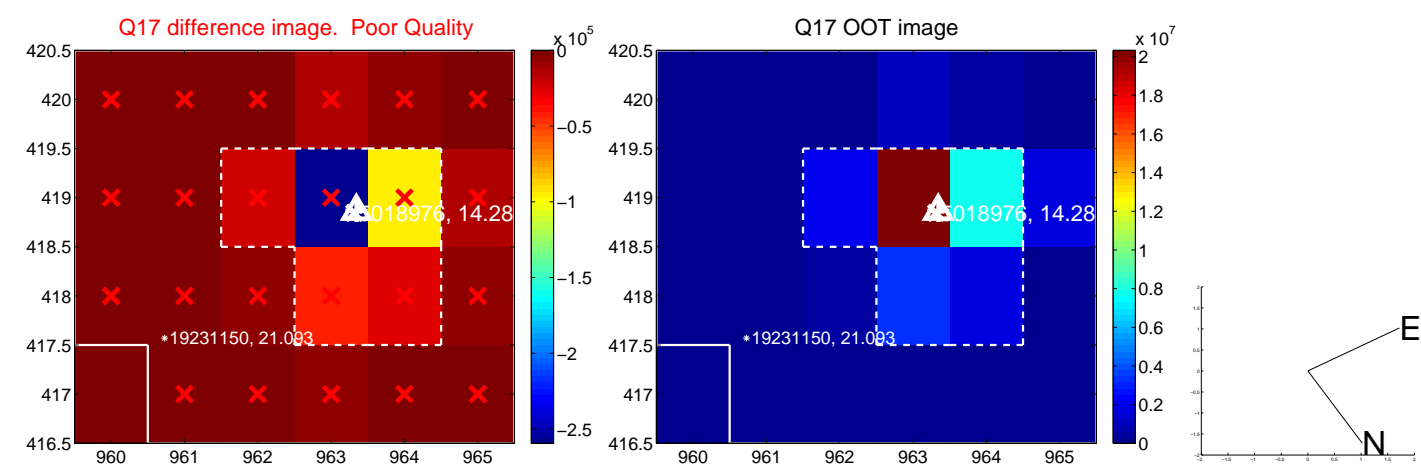
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



# KIC 005018976

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005018976-01	OBS	No	0.769753	131.914155	129.1	5.665	13.1	7.1	0.65	4484	0.73	762.32
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## Robovetter Results

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005018976-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
005018976-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
005018976-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_NOFITS
005018976-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—NO_FITS—CENT_NOFITS
005018976-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV
005018976-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT

**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](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

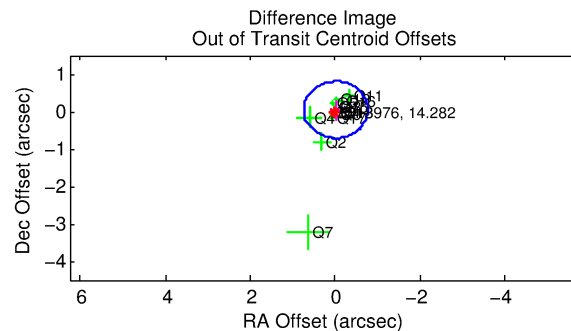
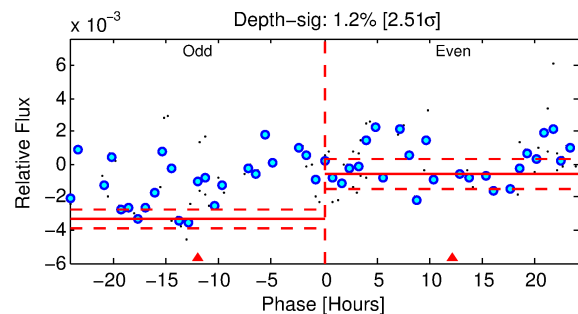
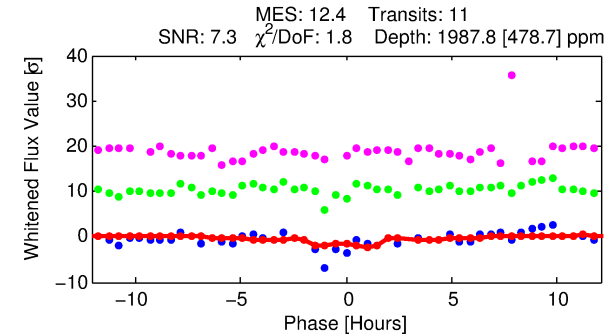
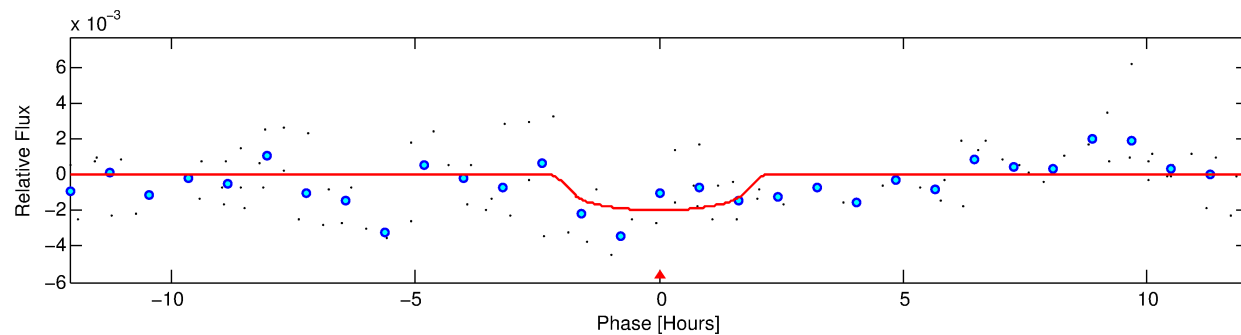
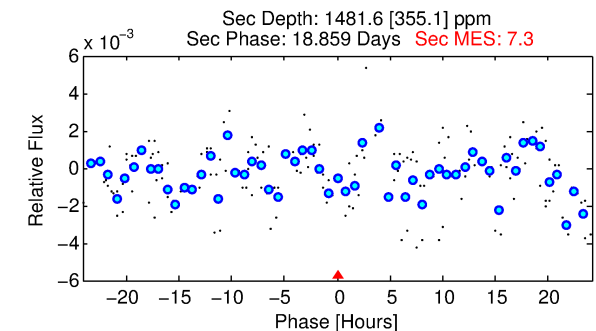
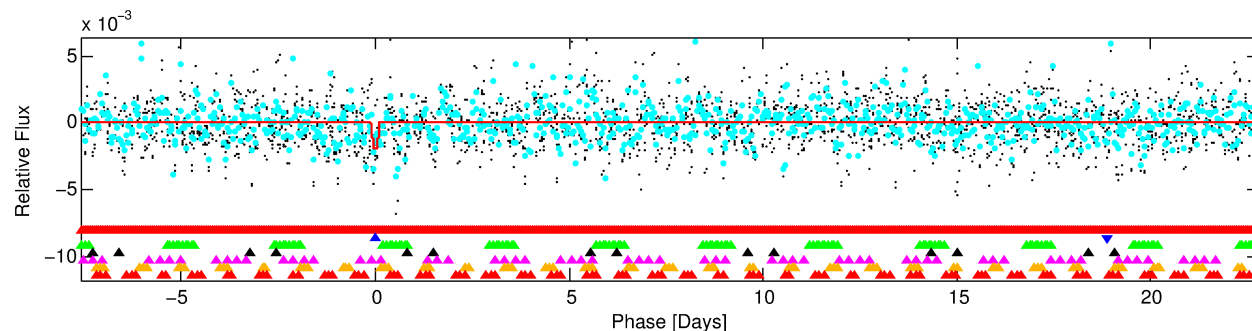
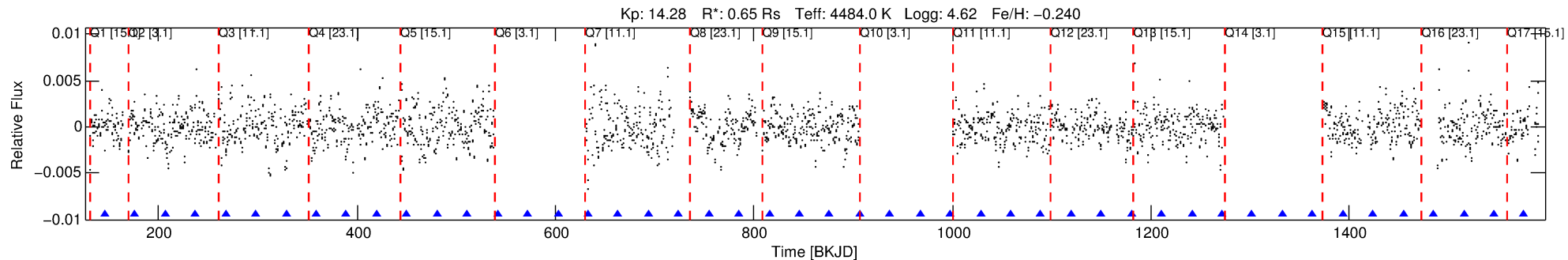
Ephemeris Match Information For 005018976-02

No Significant Match Found



# DV One-Page Summary

KIC: 5018976 Candidate: 2 of 7 Period: 30.423 d



## DV Fit Results:

Period = 30.42271 [0.00075] d  
Epoch = 146.0971 [0.0205] BKJD  
Rp/R\* = 0.0399 [0.1157]  
a/R\* = 56.69 [499.81]  
b = 0.34 [23.83]  
Seff = 5.66 [0.88]  
Teq = 393 [15] K  
Rp = 2.82 [8.19] Re  
a = 0.1639 [0.0115] AU  
Ag = 2748.03 [15947.40] [0.17σ]  
Teffp = 4403 [6389] K [0.63σ]

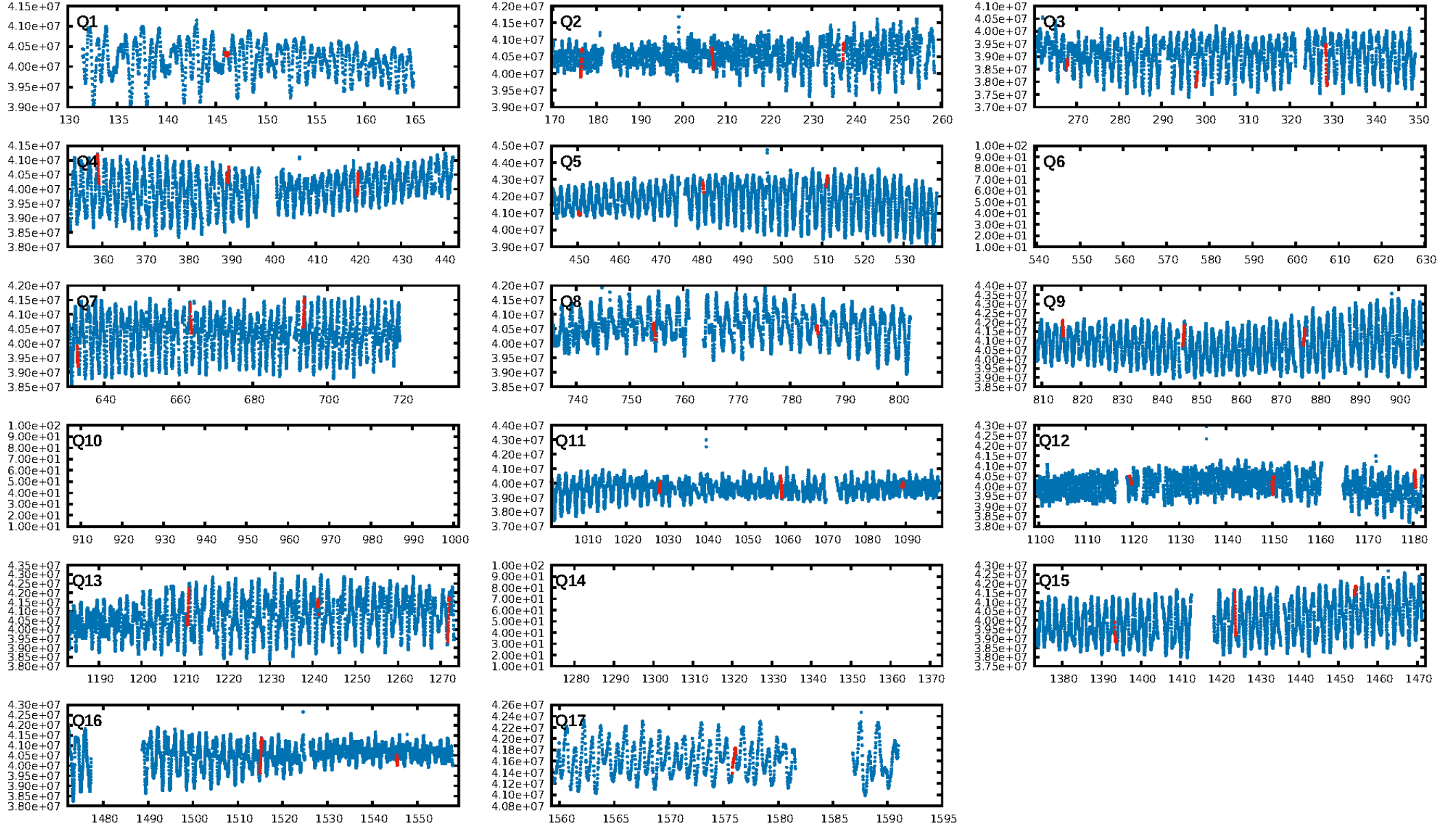
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [40.98σ]  
LongPeriod-sig: 100.0% [352.11σ]  
ModelChiSquare2-sig: 0.0%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 6.02e-21  
RollingBand-fgt: 1.00 [10/10]  
GhostDiagnostic-chr: 57.89  
Centroid-sig: 1.3%  
Centroid-so: 0.301 arcsec [2.29σ]  
OotOffset-rm: 0.053 arcsec [0.21σ]  
OotOffset-st: 1/4/4/5 [14]  
KicOffset-rm: 0.073 arcsec [0.77σ]  
KicOffset-st: 1/4/4/5 [14]  
DiffImageQuality-fgm: 0.29 [4/14]  
DiffImageOverlap-fno: 0.00 [0/14]

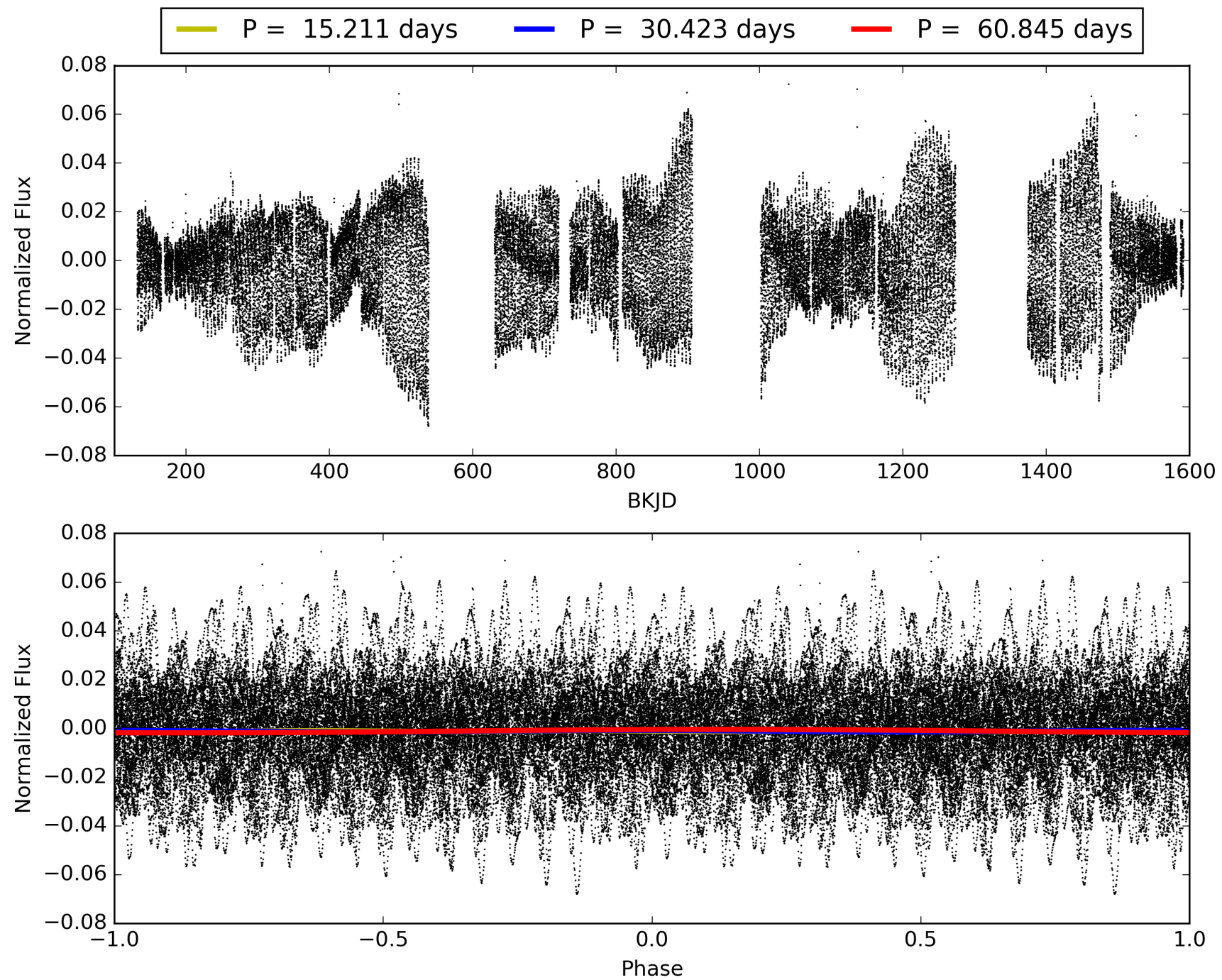
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 04:02:29 Z

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

# TCE 005018976-02, PDC Light Curves

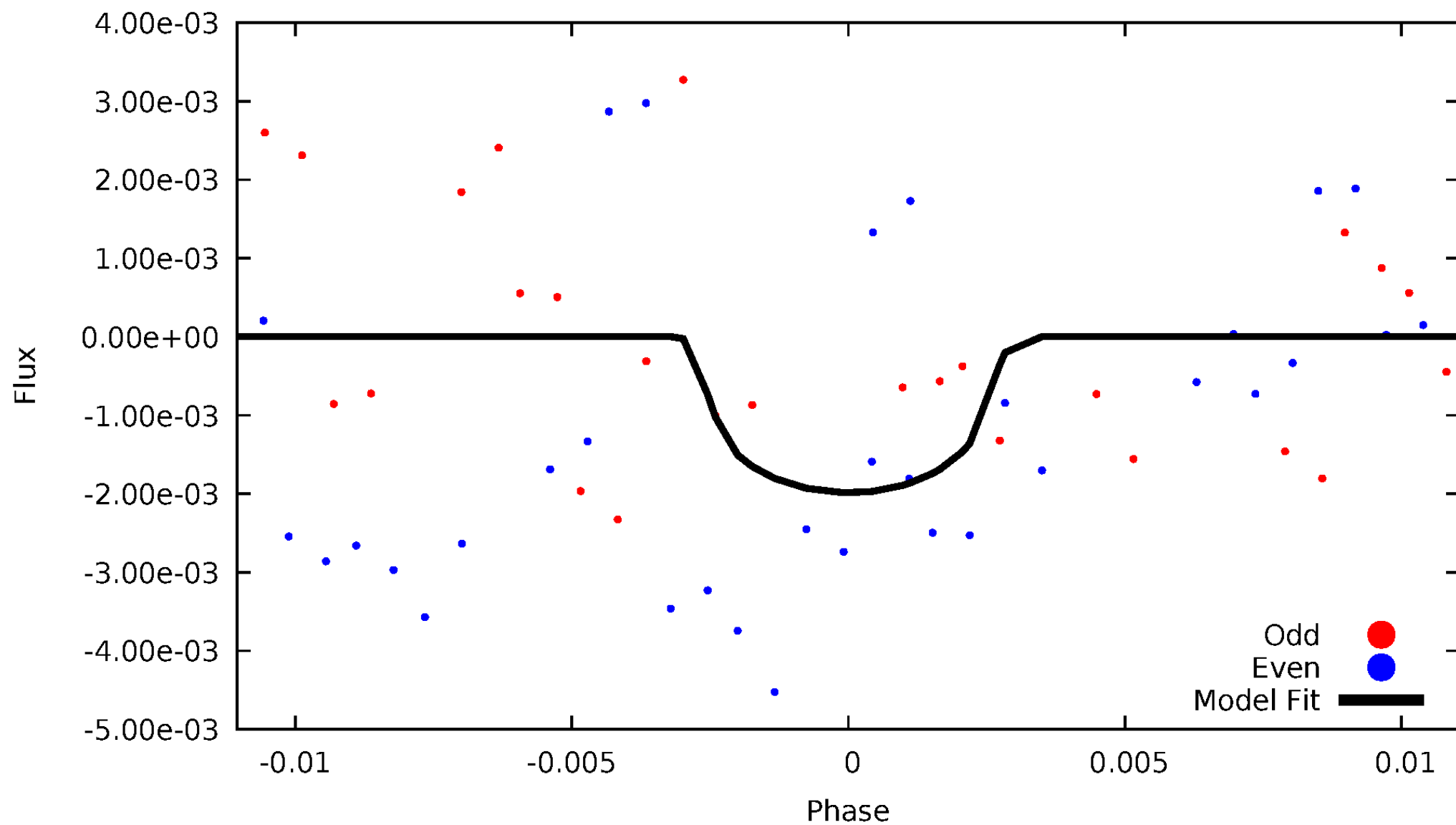


# TCE 005018976-02



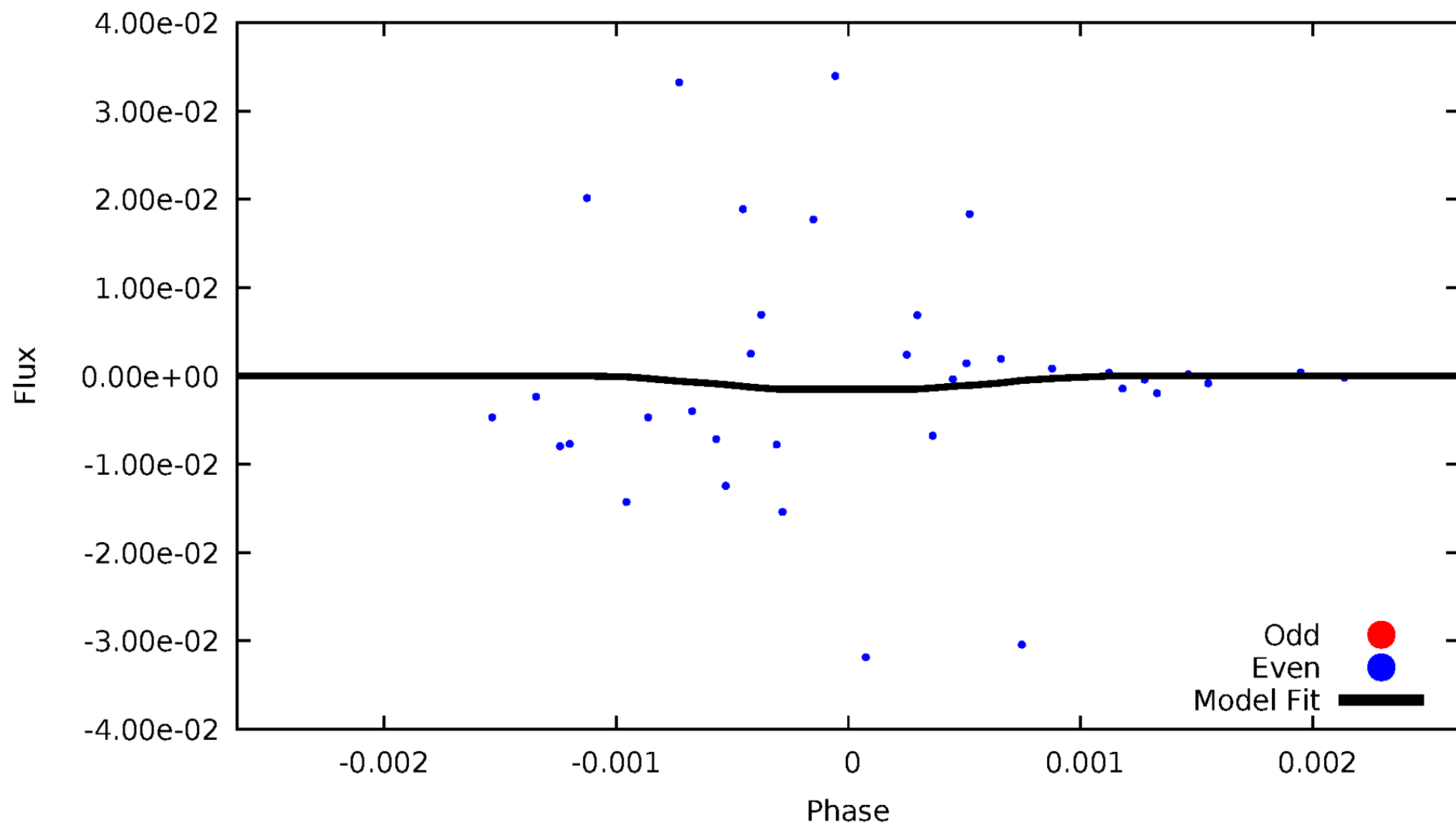
# DV Odd/Even

TCE 005018976-02



# ALT Odd/Even

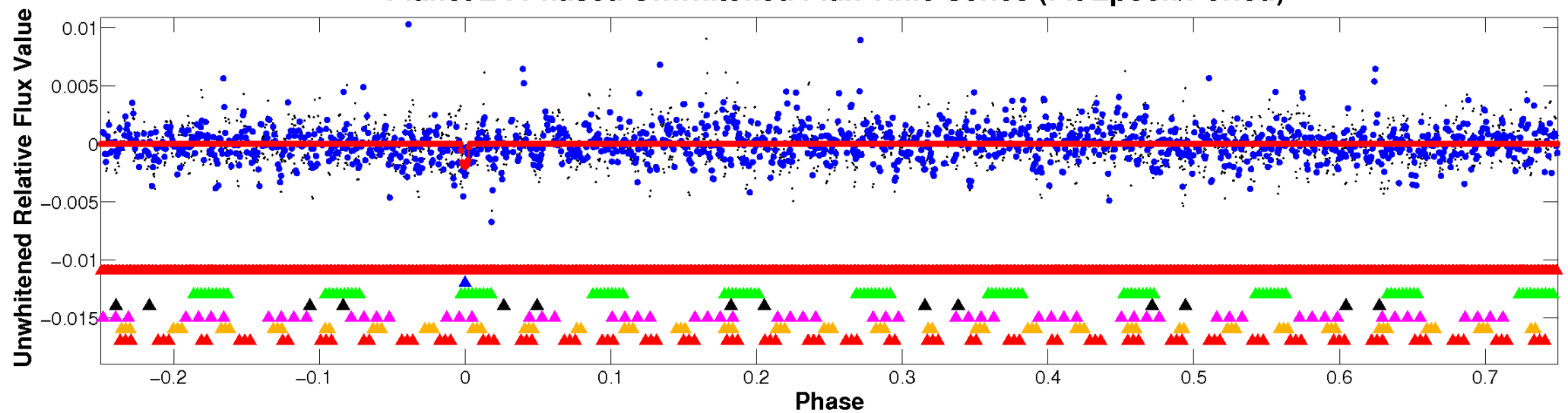
TCE 005018976-02



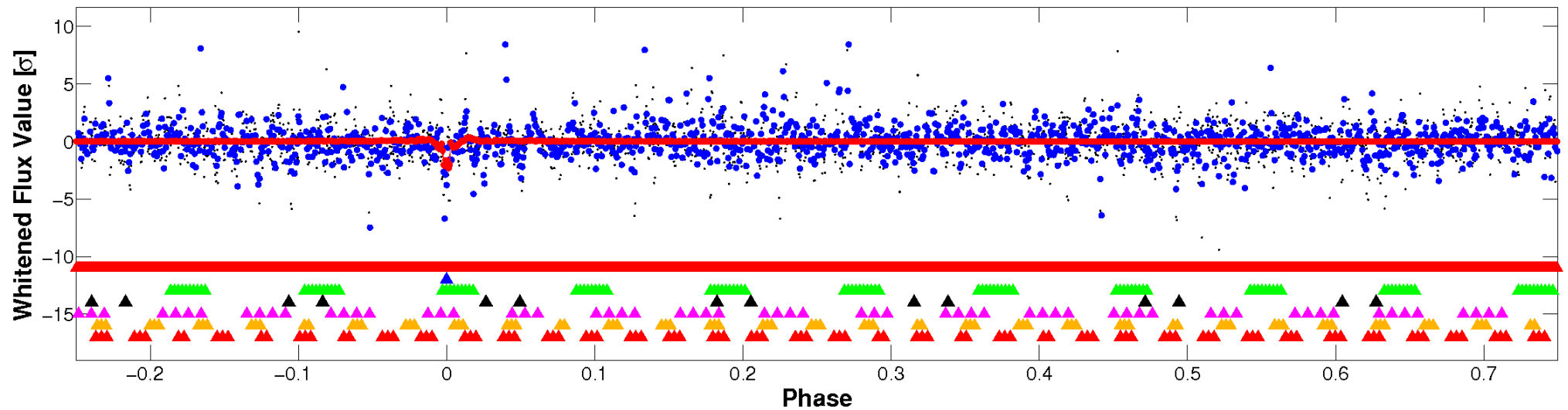


# Non-Whitened Vs. Whitened Light Curve

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

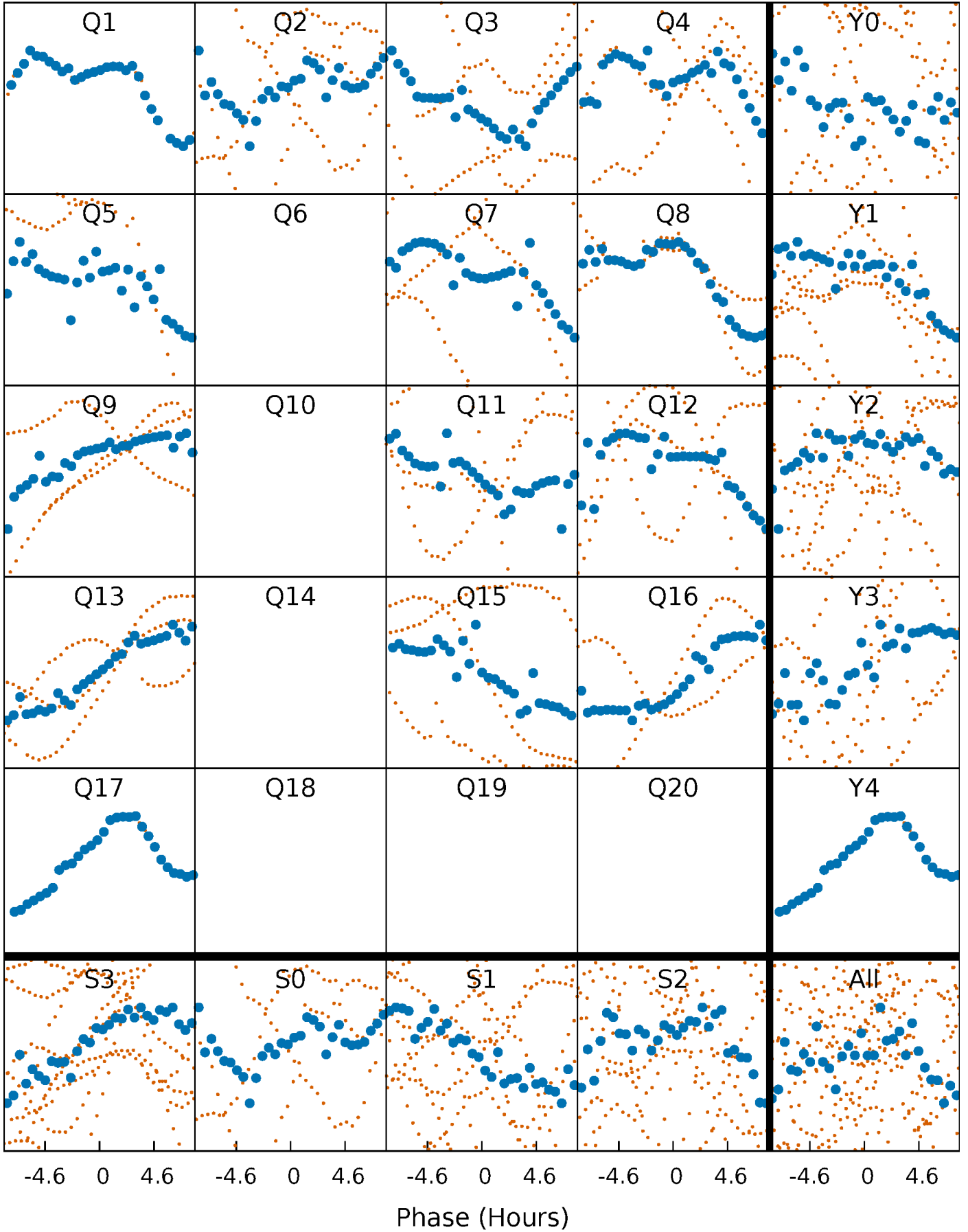


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



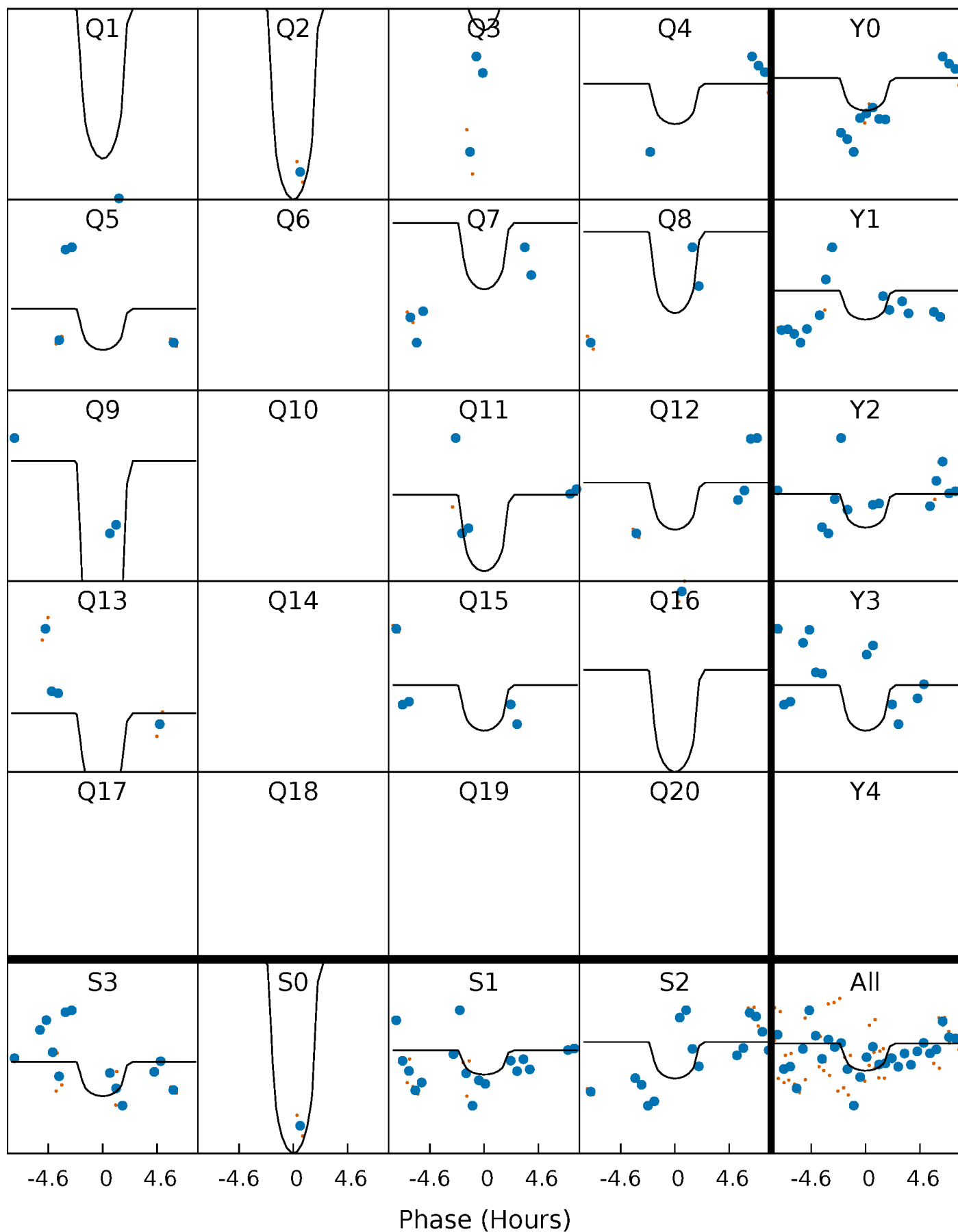
# PDC Quarter-Phased Transit Curves

TCE 005018976-02   P= 30.422706 Days    $T_0=146.097086$  (BKJD)



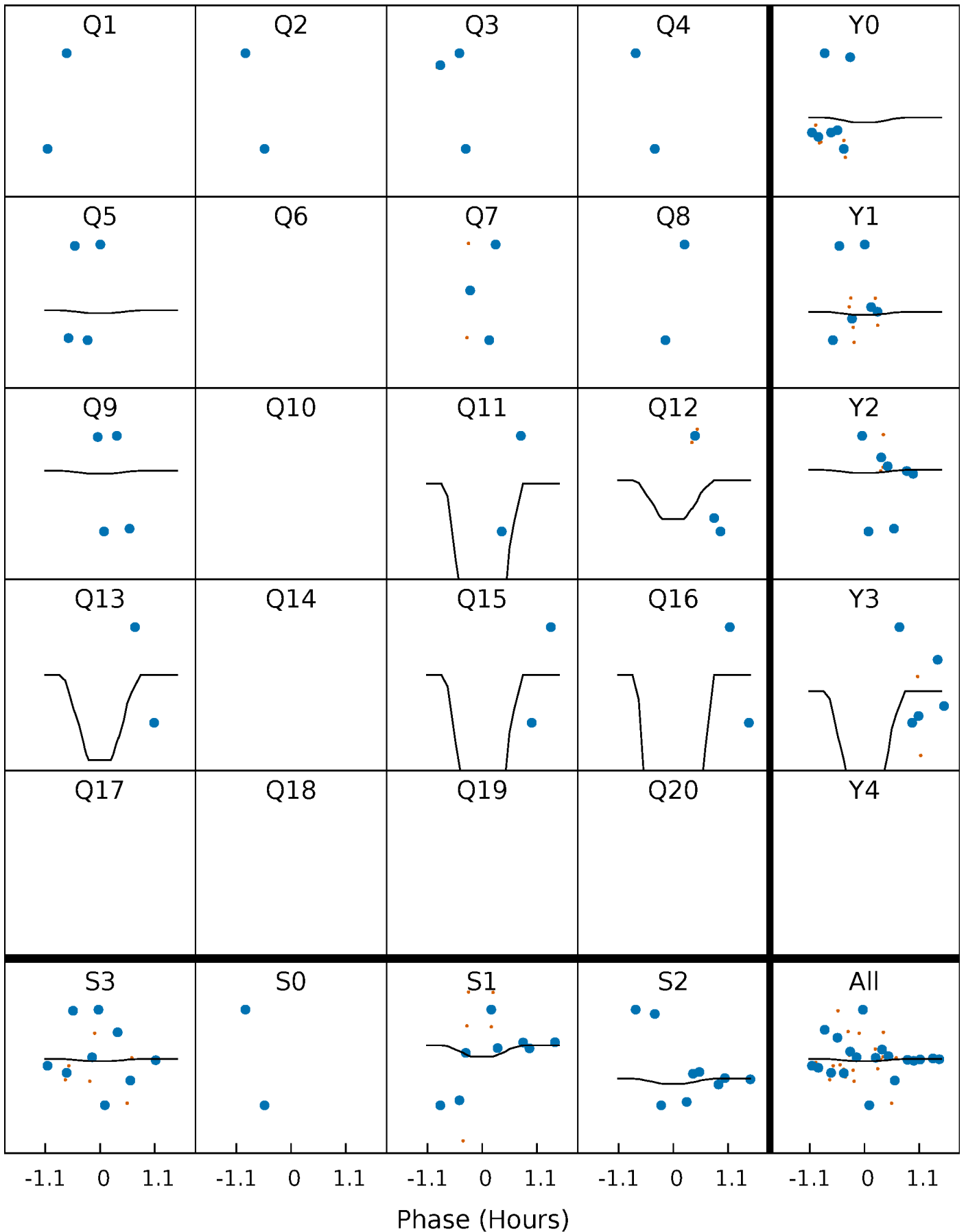
# DV Quarter-Phased Transit Curves

TCE 005018976-02     $P = 30.422706$  Days     $T_0 = 146.097086$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

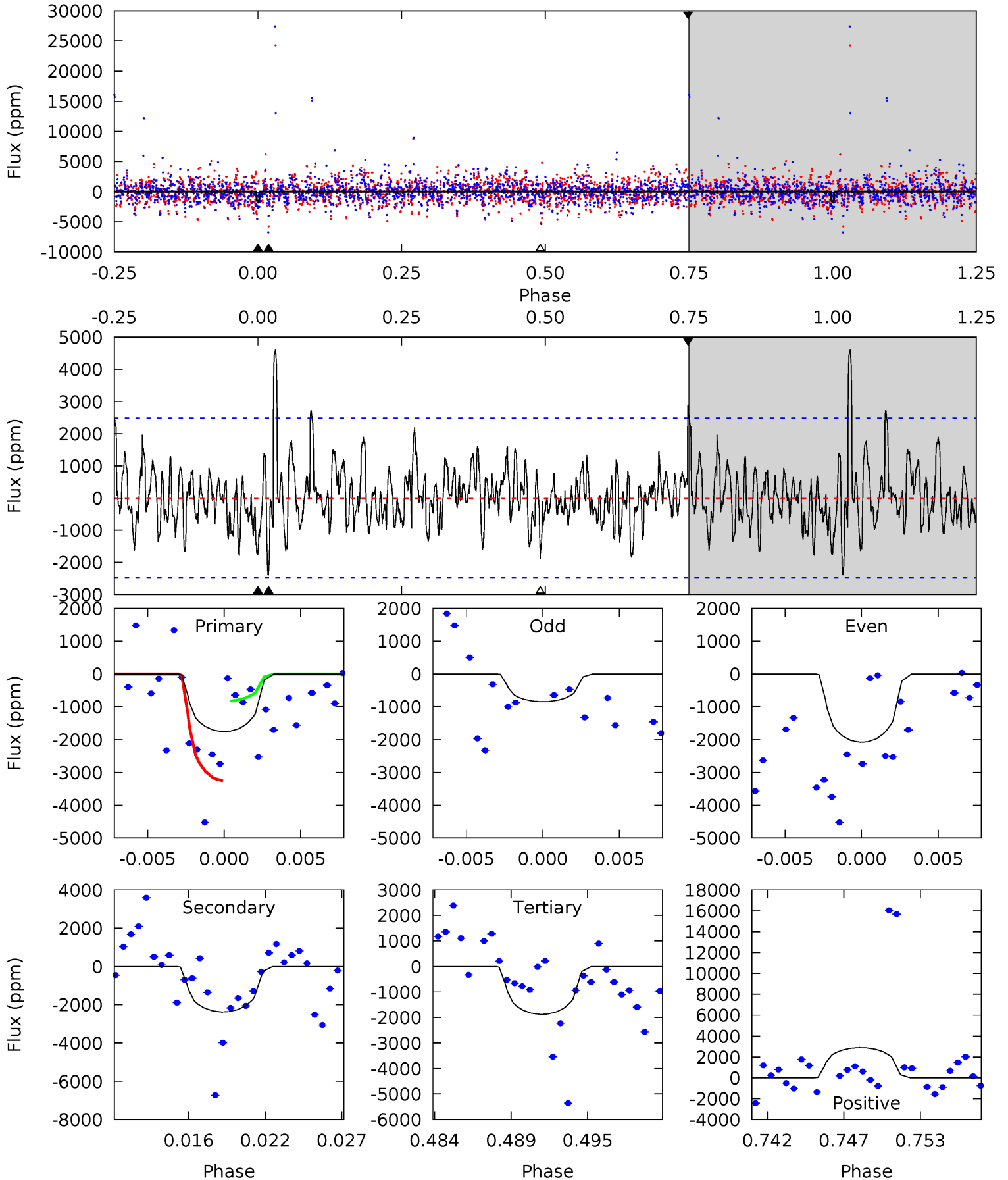
TCE 005018976-02   P= 30.403133 Days    $T_0=146.190096$  (BKJD)



# DV Model-Shift Uniqueness Test

005018976-02,  $P = 30.422706$  Days,  $E = 115.674380$  Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3.65	4.94	3.90	6.01	5.14	2.78	1.62	-0.25	-2.36	1.04	-1.07	1.22	1.13	0.66	2.50

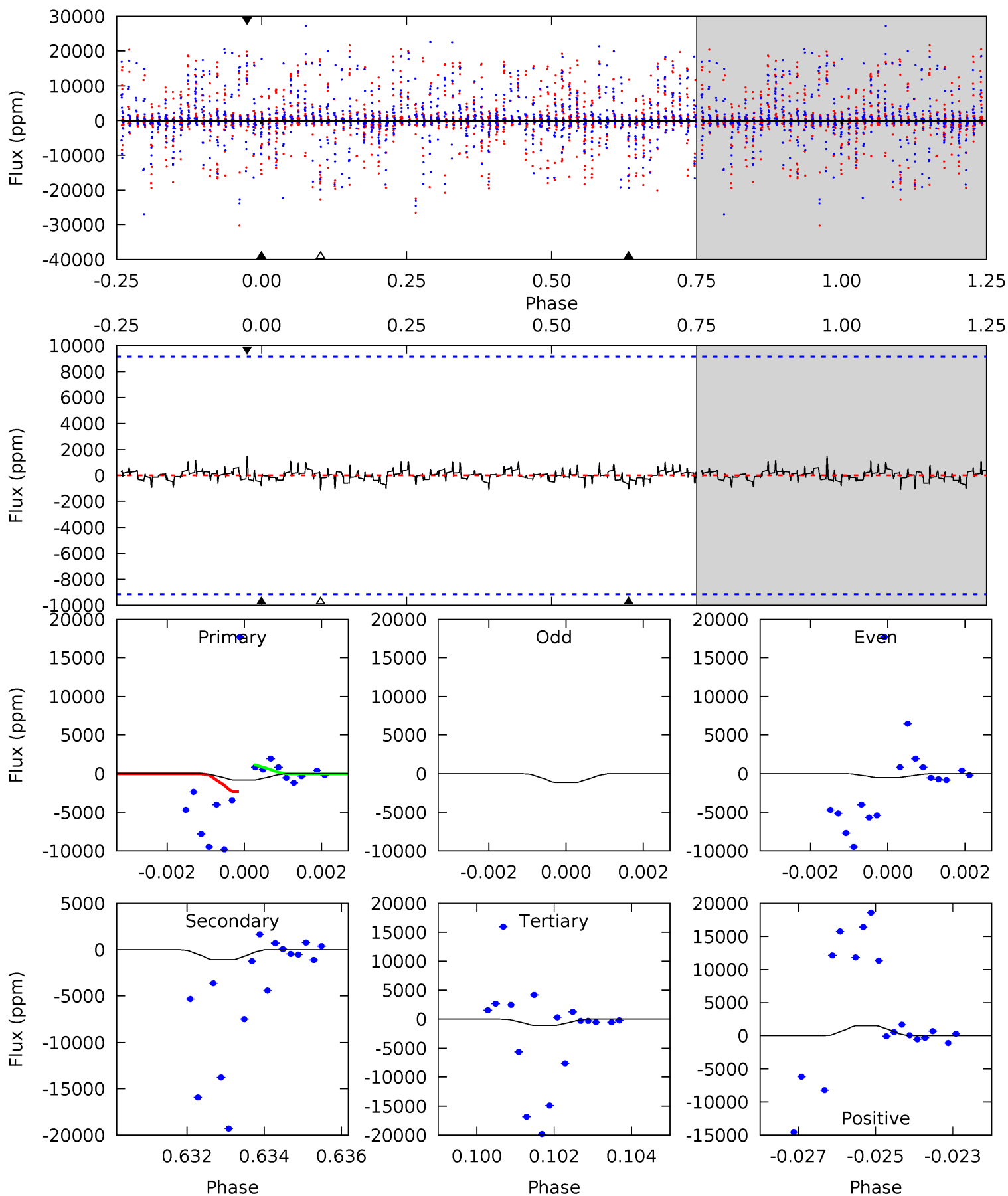




# Alt Model-Shift Uniqueness Test

005018976-02, P = 30.403133 Days, E = 115.786963 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0.47	0.63	0.63	0.87	5.32	3.08	0.23	-0.16	-0.40	0.00	-0.24	0.20	0.50	0.58	0



### Stellar Parameters For KIC 005018976

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (g \cdot \text{cm}^{-3})$
	$4484^{+134}_{-134}$	$4.617^{+0.052}_{-0.024}$	$-0.240^{+0.300}_{-0.300}$	$0.648^{+0.051}_{-0.056}$	$0.634^{+0.070}_{-0.051}$	$3.280^{+0.749}_{-0.370}$
	+3%/-3%	+1%/-1%	+125%/-125%	+8%/-9%	+11%/-8%	+23%/-11%
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 005018976-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-2378 \pm 481$	$6.79^{+6.51}_{-4.63}$	$546^{+18}_{-18}$	$3559^{+1906}_{-680}$	$784^{+6781}_{-585}$
Alt.	$-1087 \pm 1720$	$6.71^{+6.47}_{-4.76}$	$547^{+19}_{-18}$	$2905^{+1628}_{-5689}$	$213^{+2984}_{-359}$

$T_{max}$  = 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  $A_{obs} \gg 1.0$

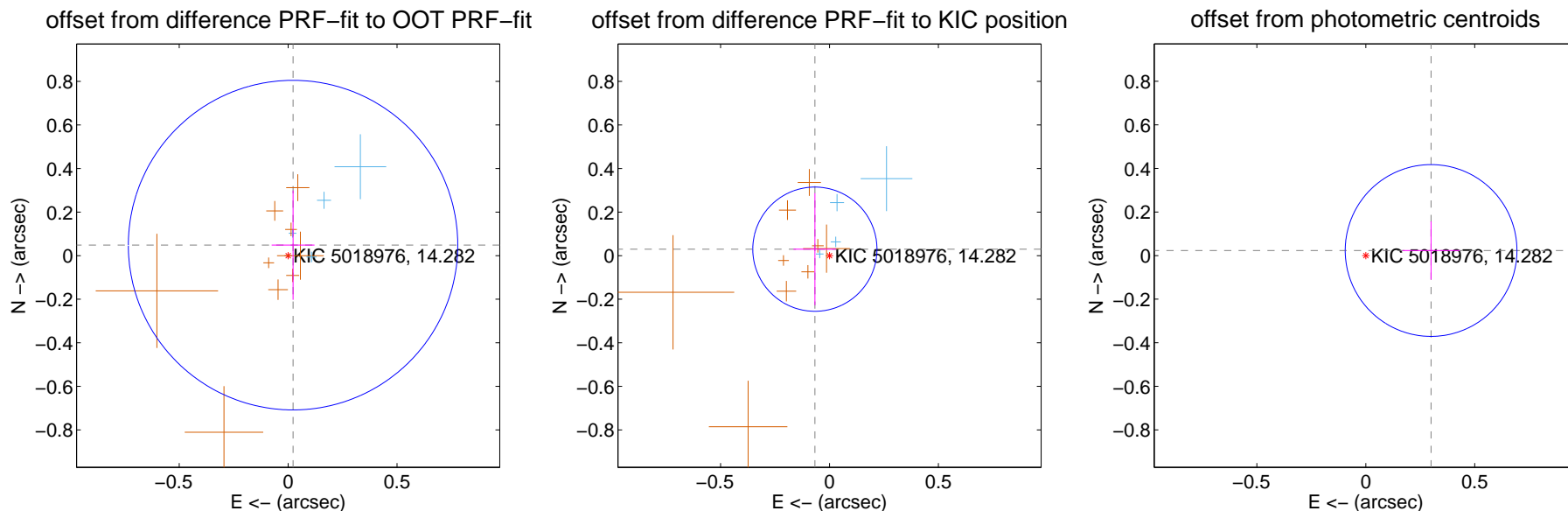
## DV Centroid Data

Supplemental centroid analysis for 005018976-02. Kepler magnitude: 14.28. Transit SNR 7.27

There are 4 quarters with good PRF difference image offsets

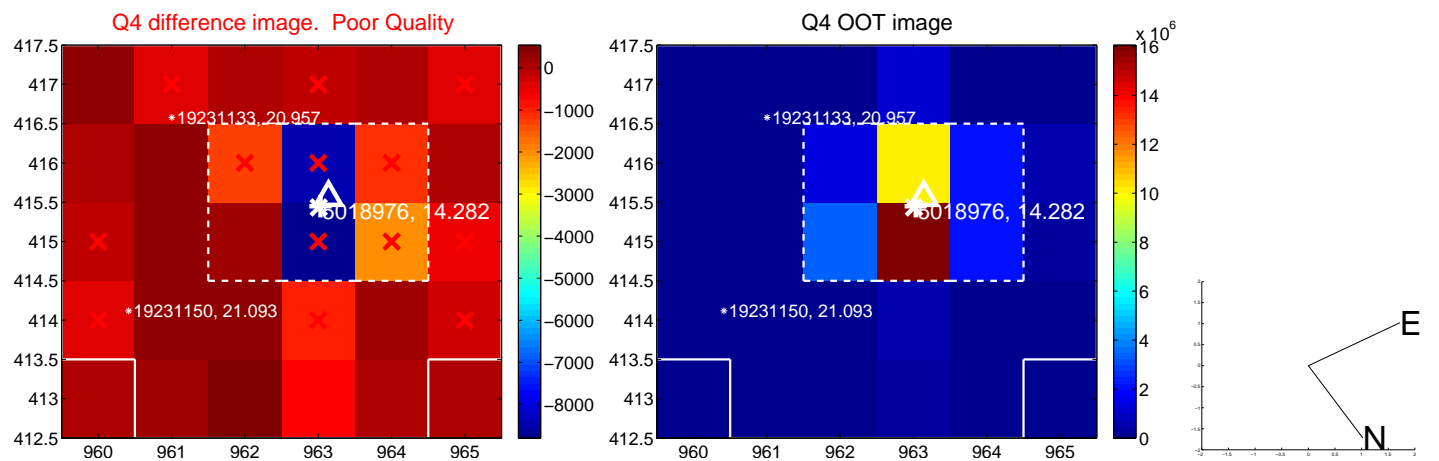
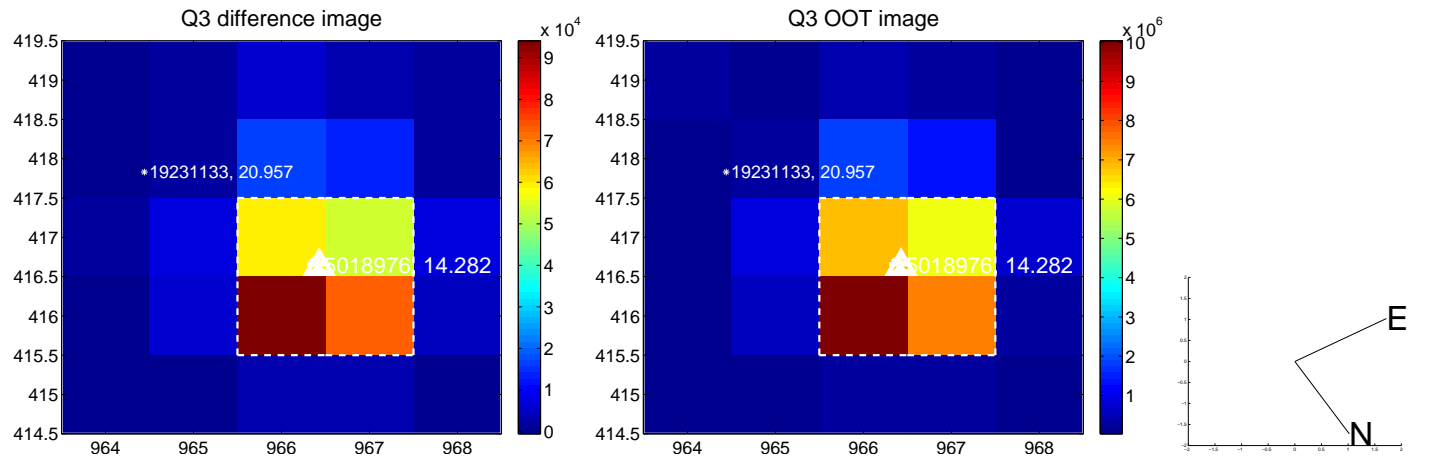
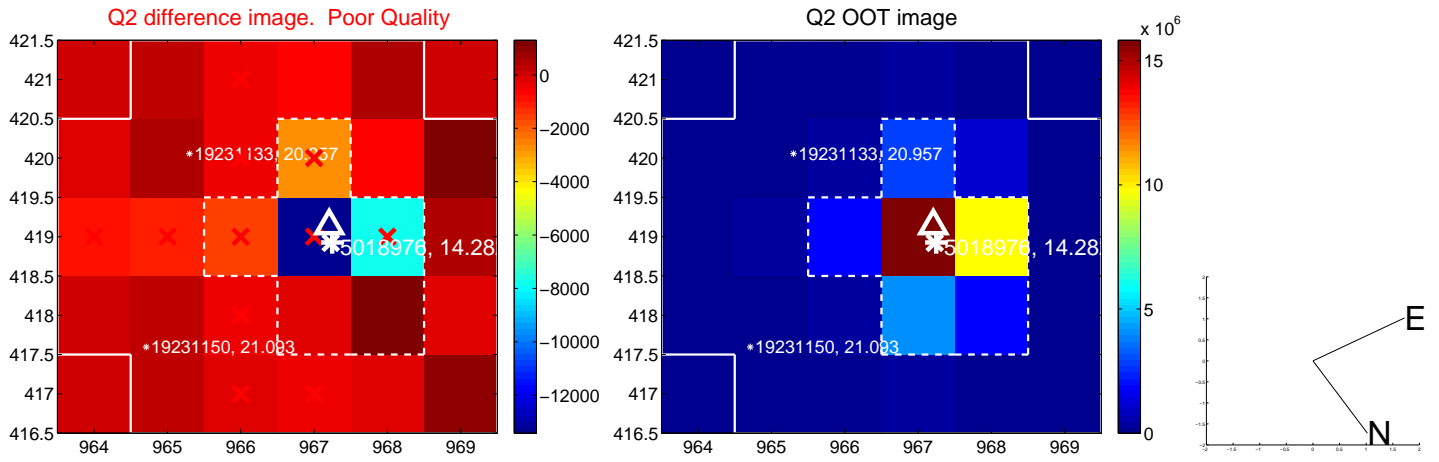
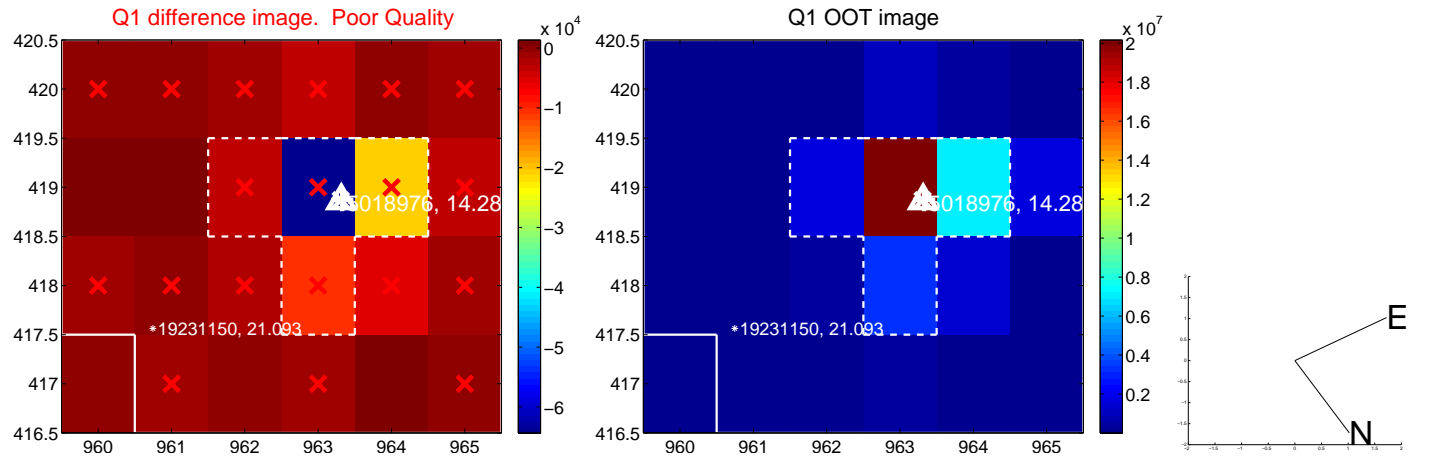
The direct PRF centroid is offset from the target star catalog position by about 0.15 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.053 \pm 0.252$	0.21	$-0.023 \pm 0.098$	$0.048 \pm 0.251$
PRF-fit source offset from KIC position	$0.073 \pm 0.095$	0.77	$0.067 \pm 0.098$	$0.030 \pm 0.257$
photometric centroid source offset	$0.30 \pm 0.13$	2.29	$-0.30 \pm 0.13$	$0.02 \pm 0.13$

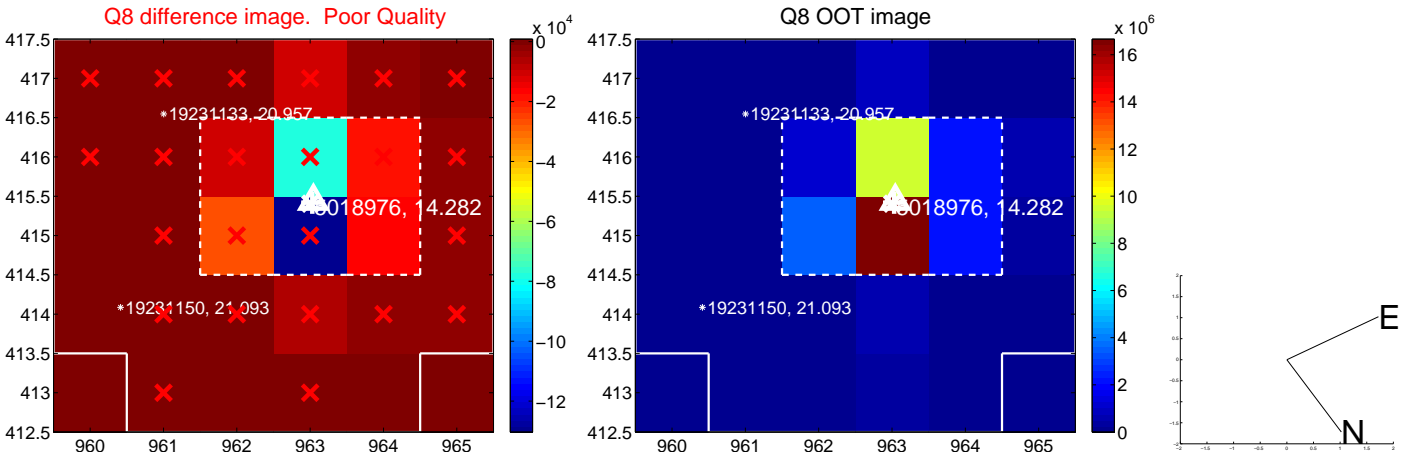
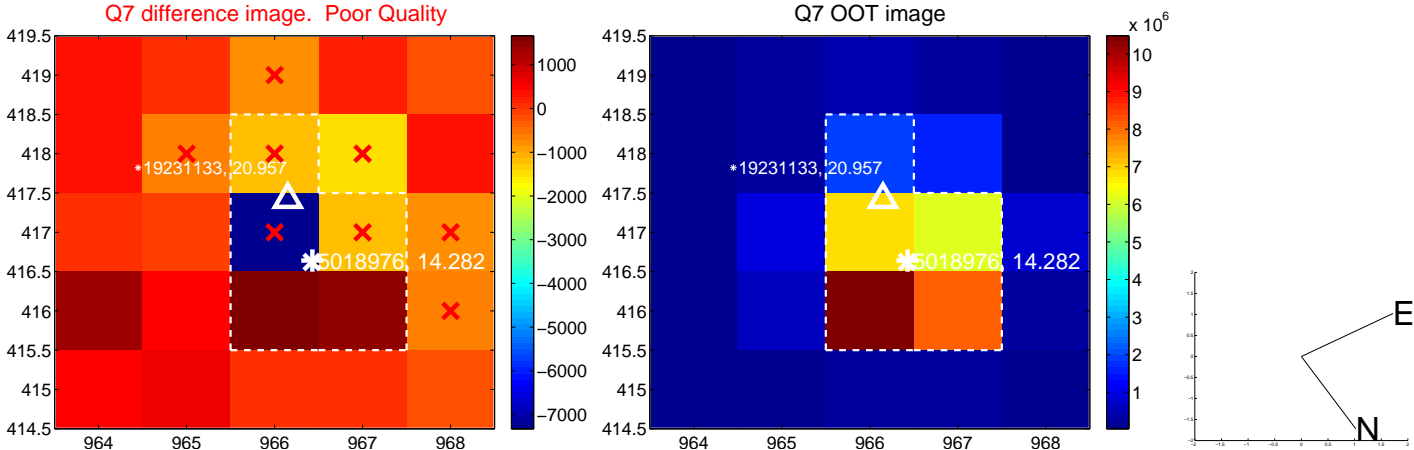
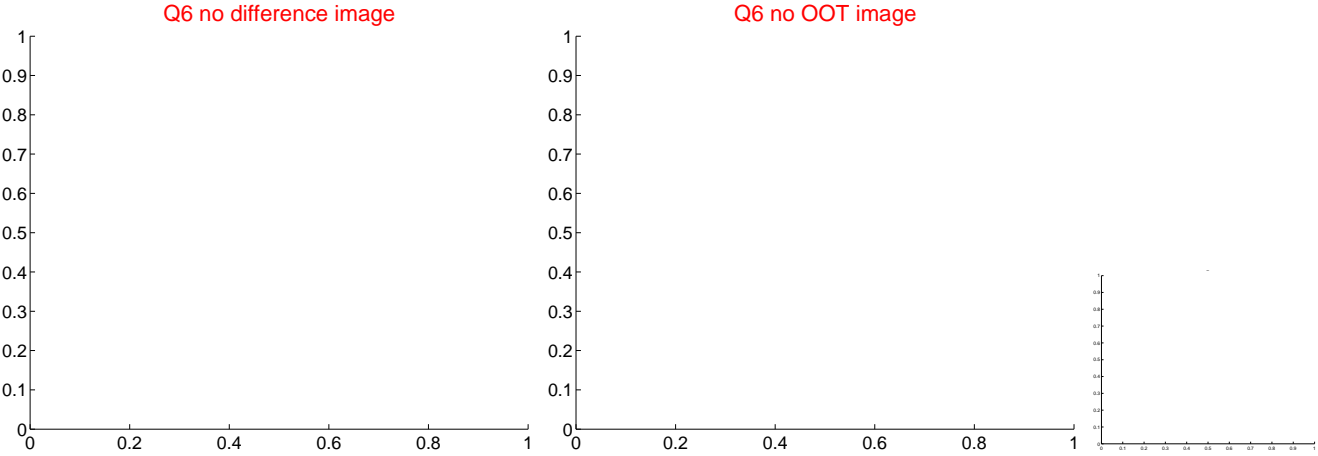
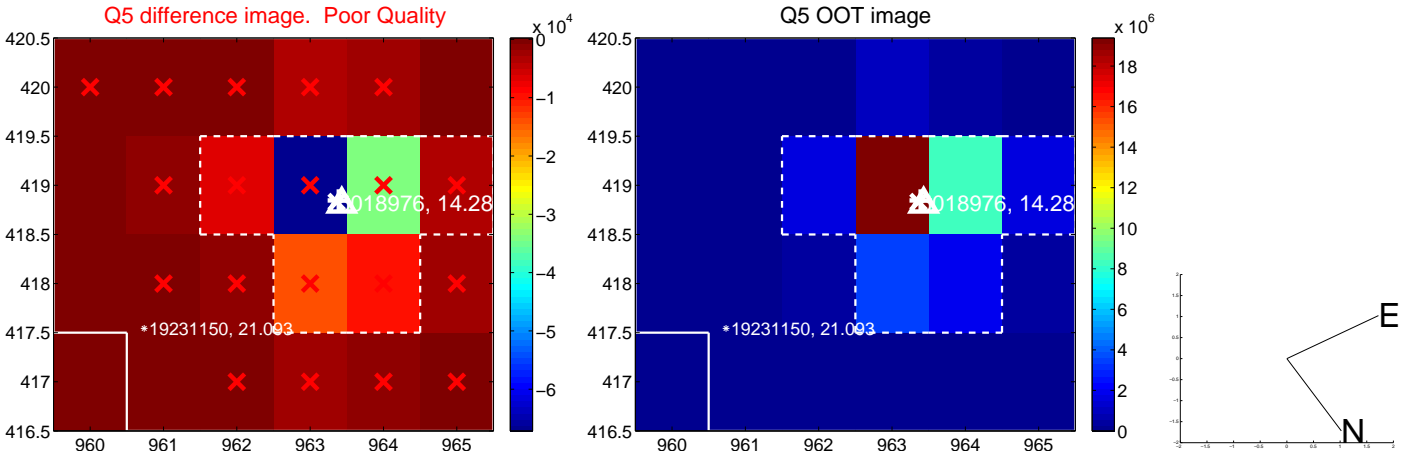


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

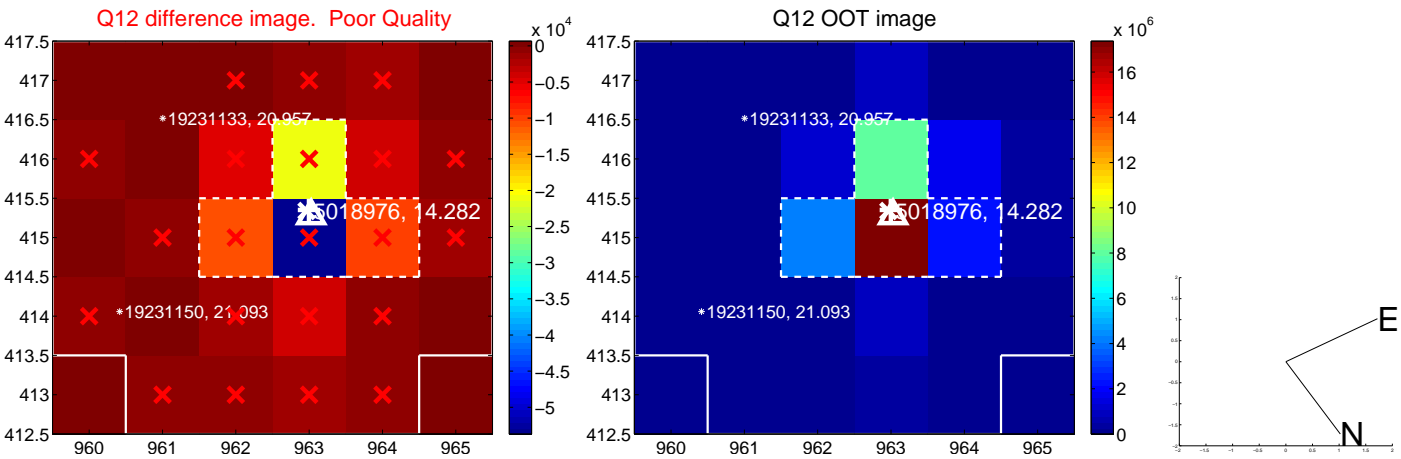
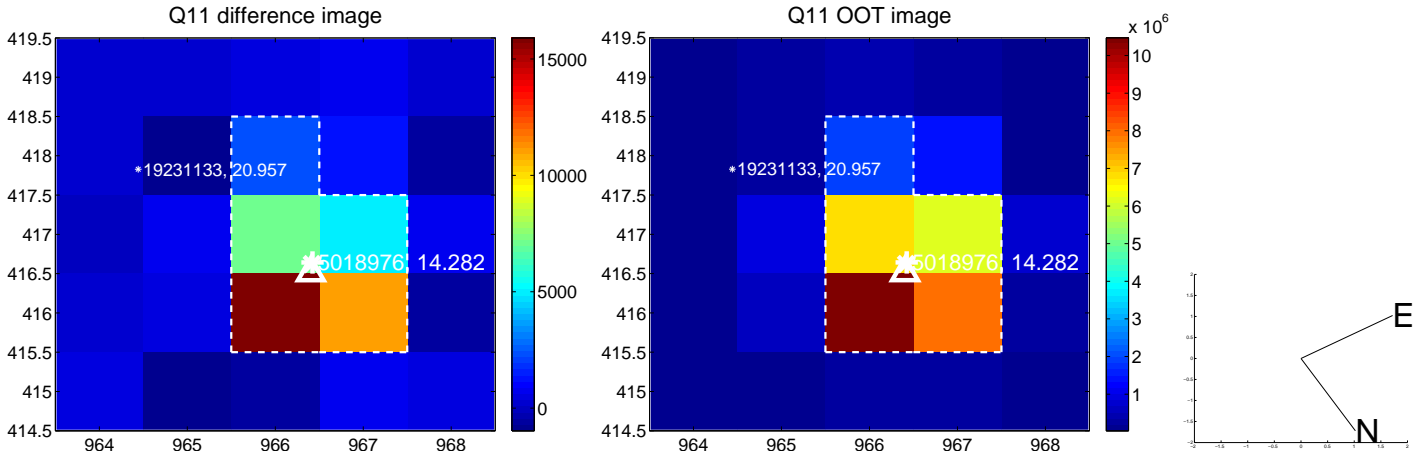
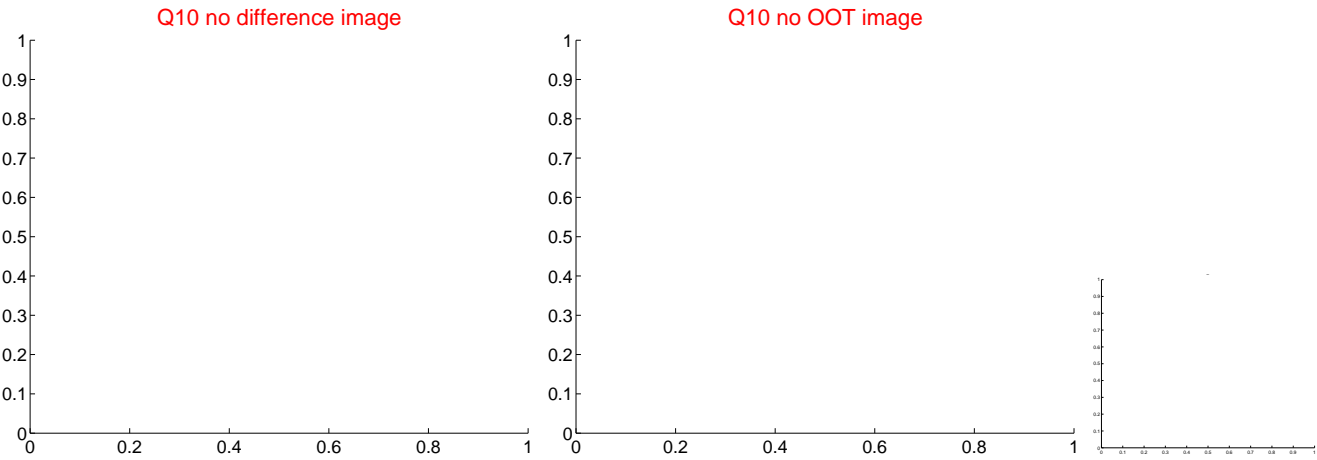
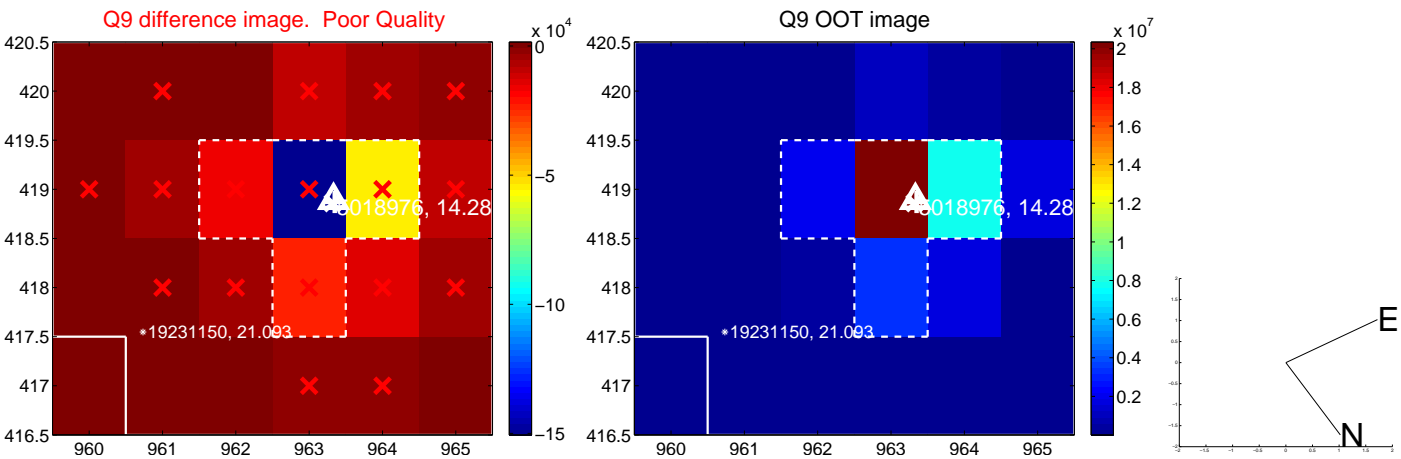


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

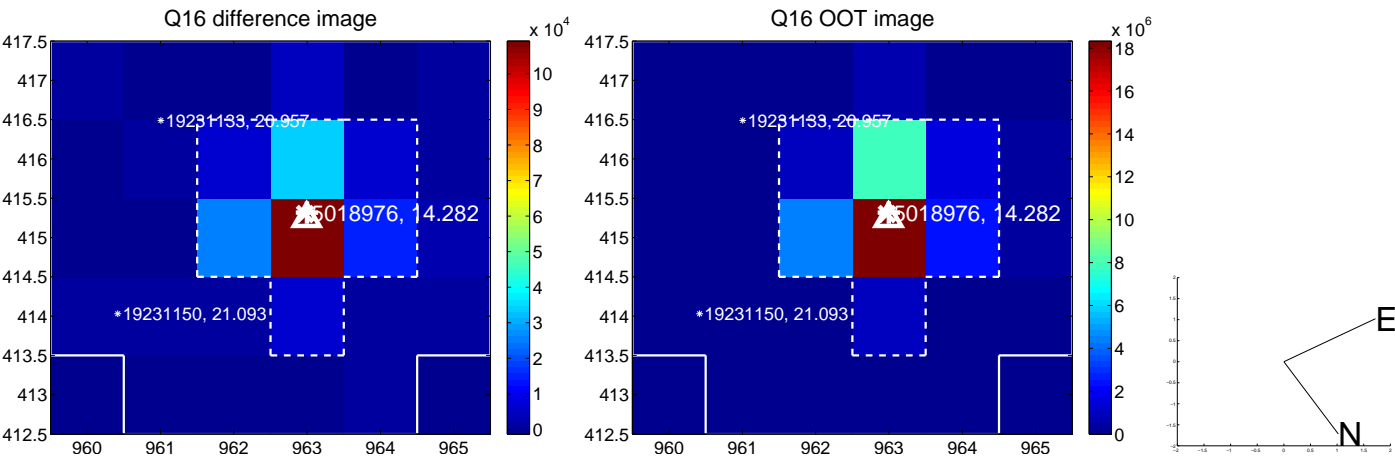
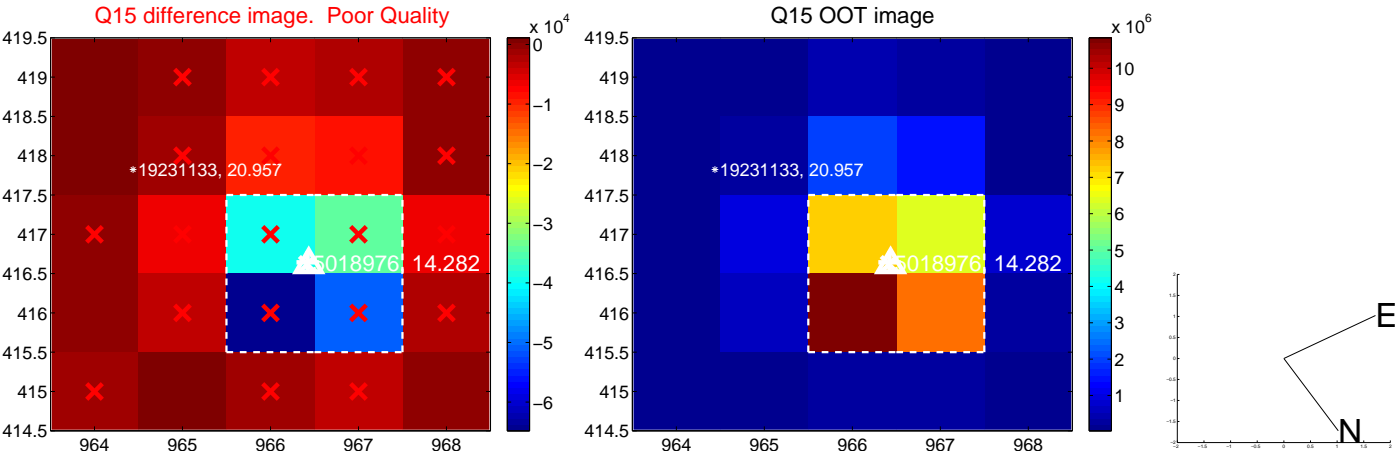
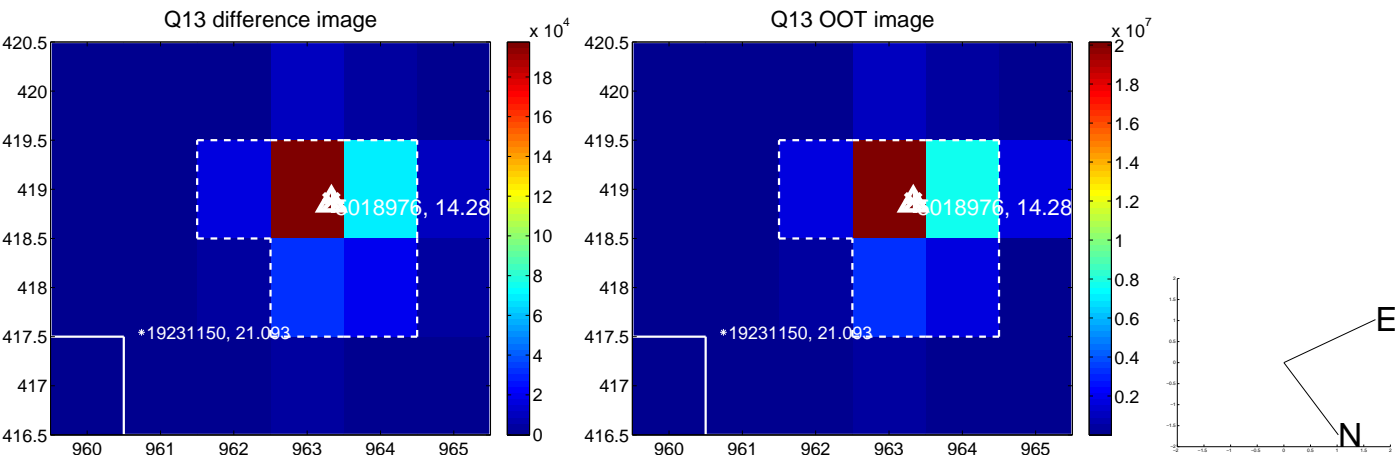




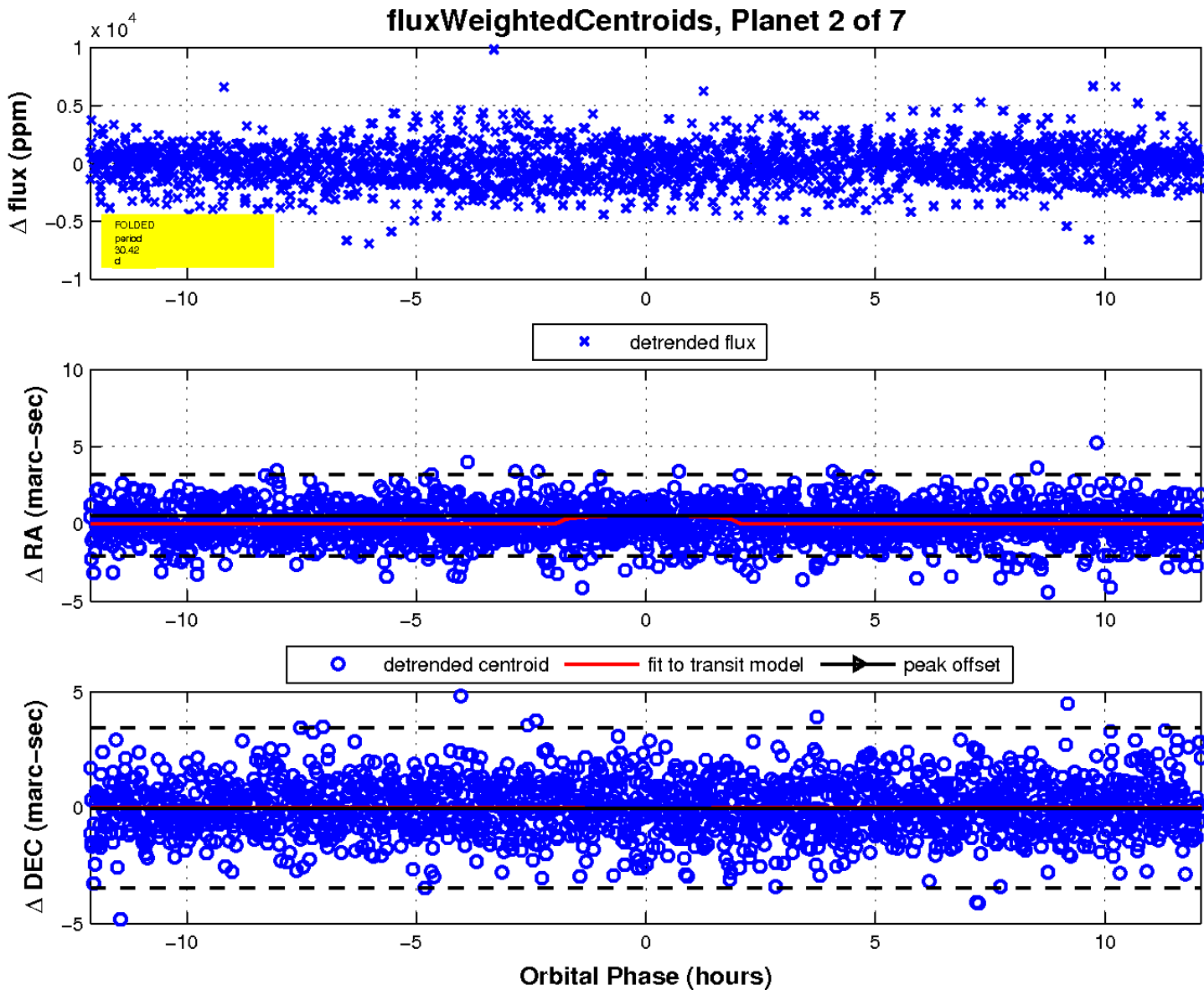
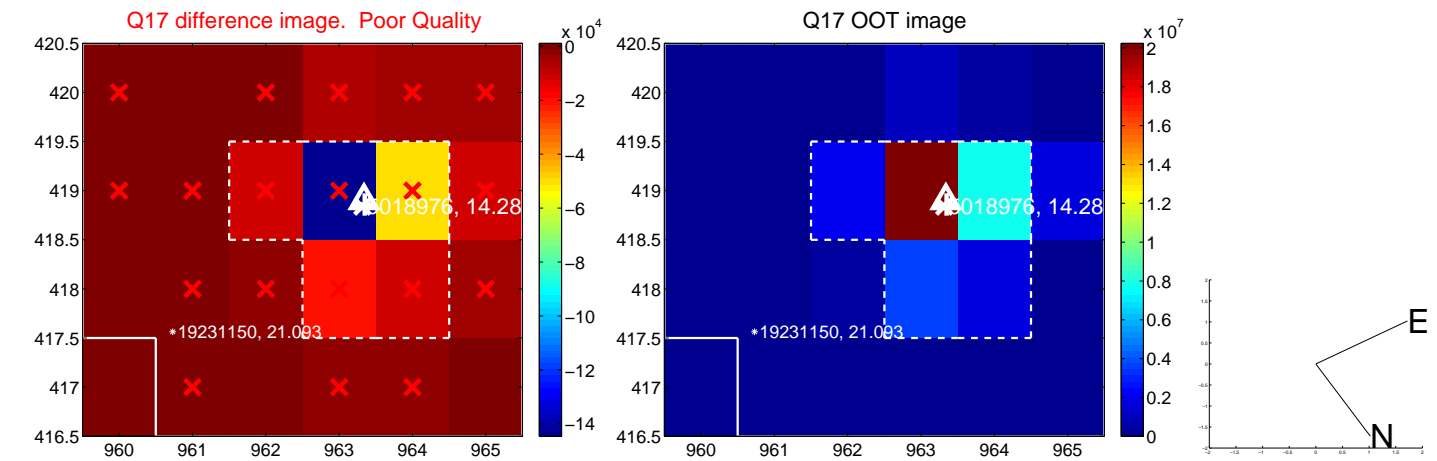
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

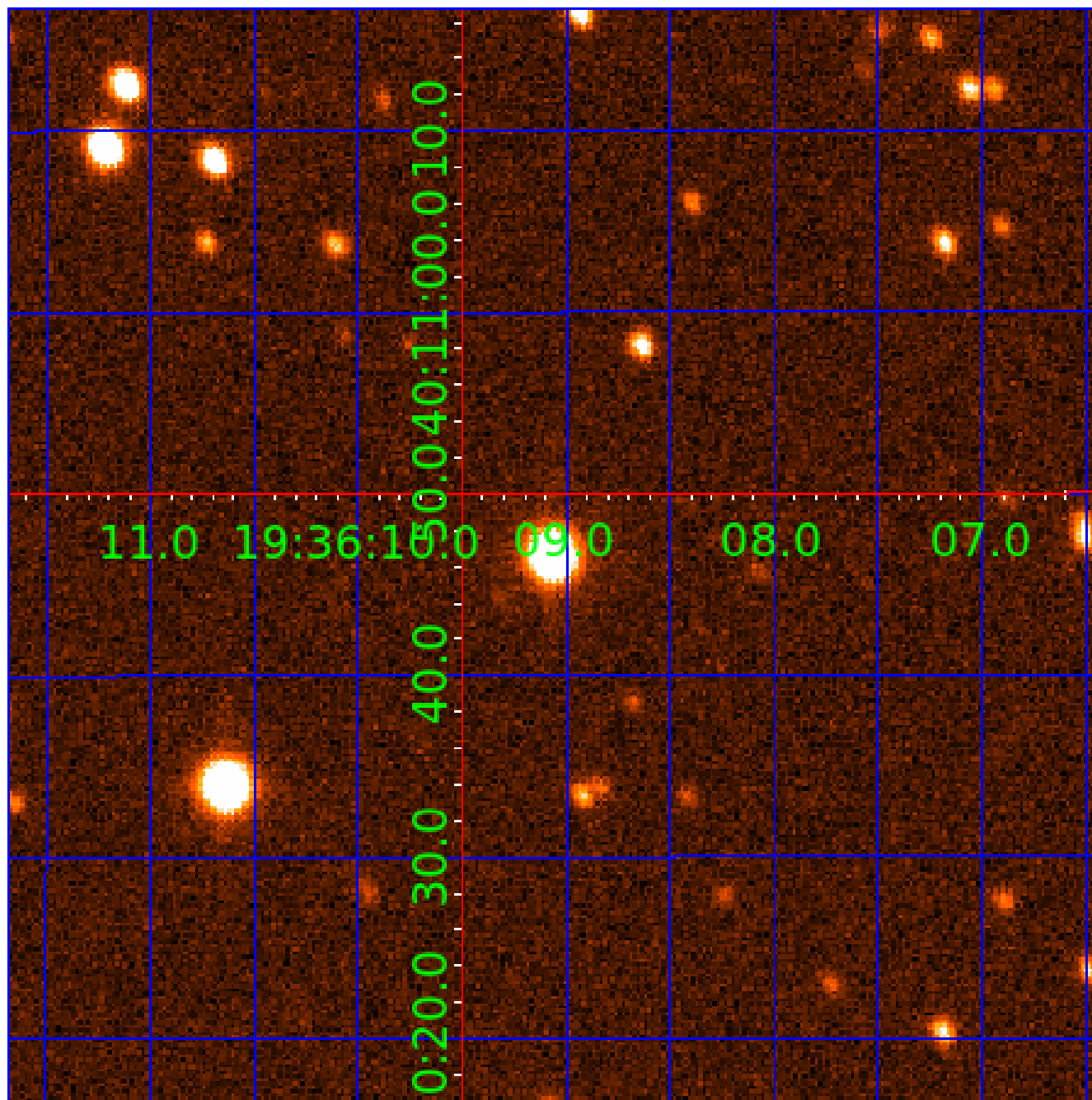


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 005018976

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005018976-01	OBS	No	0.769753	131.914155	129.1	5.665	13.1	7.1	0.65	4484	0.73	762.32
005018976-02	OBS	No	30.422706	146.097086	1987.8	4.035	12.4	7.3	0.65	4484	2.82	5.66
005018976-03	OBS	No	13.835662	143.181962	1036.2	5.000	11.8	-1.0	0.65	4484	2.00	16.19
005018976-04	OBS	No	100.059704	207.750595	659.4	2.500	7.4	-1.0	0.65	4484	1.60	1.16
005018976-06	OBS	No	17.837054	135.754042	1863.2	2.186	9.5	5.9	0.65	4484	2.77	11.54
005018976-07	OBS	No	14.363129	139.123102	461.6	19.201	10.2	5.3	0.65	4484	1.36	15.40

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005018976-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
005018976-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
005018976-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_NOFITS
005018976-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—NO_FITS—CENT_NOFITS
005018976-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV
005018976-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT

**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](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

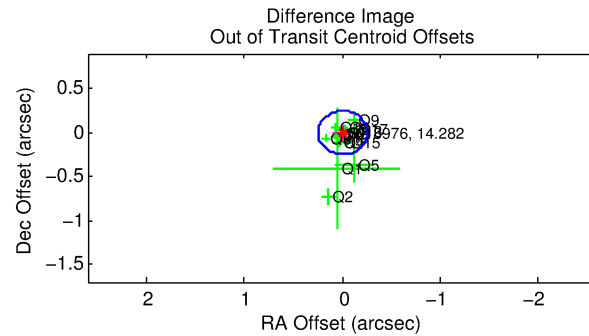
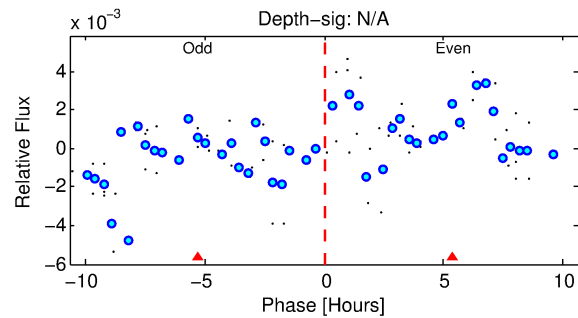
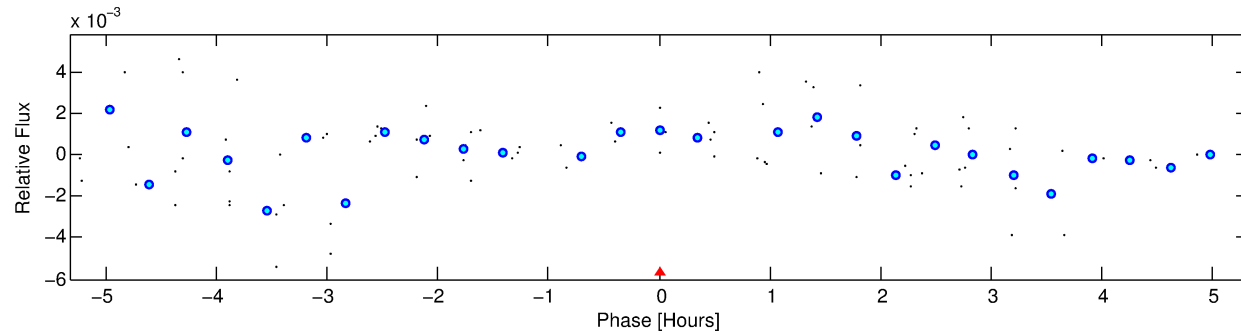
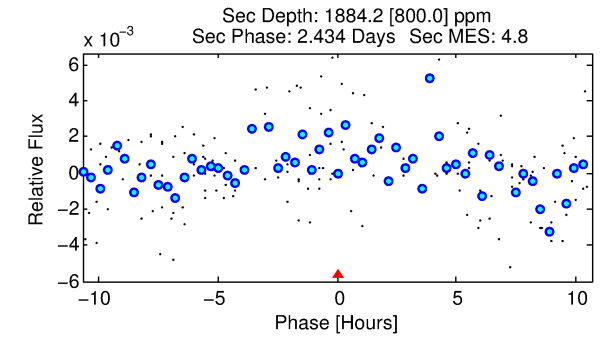
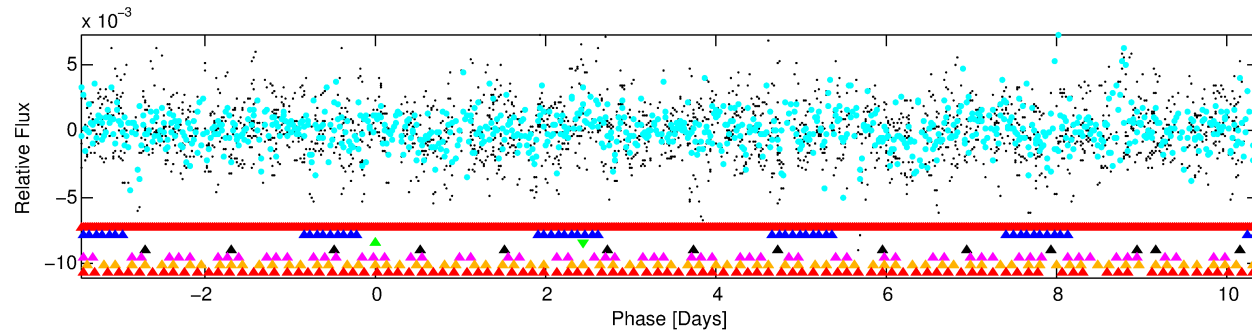
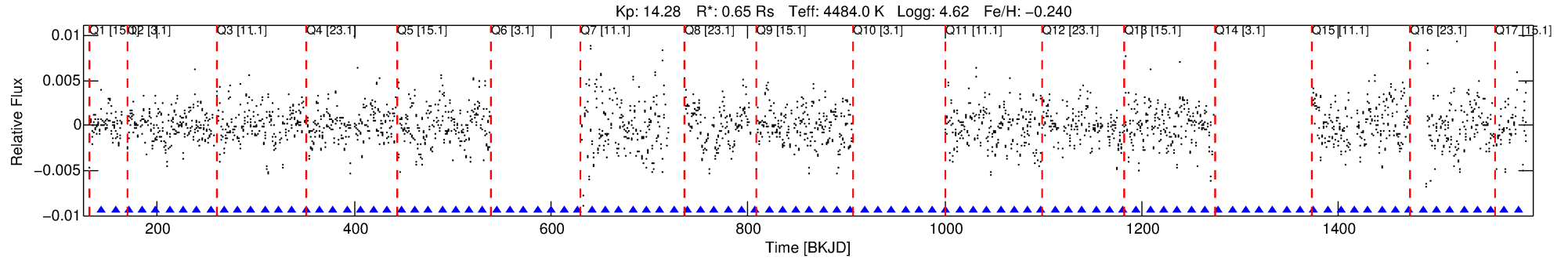
Ephemeris Match Information For 005018976-03

No Significant Match Found



# DV One-Page Summary

KIC: 5018976 Candidate: 3 of 7 Period: 13.836 d



## TPS TCE Results:

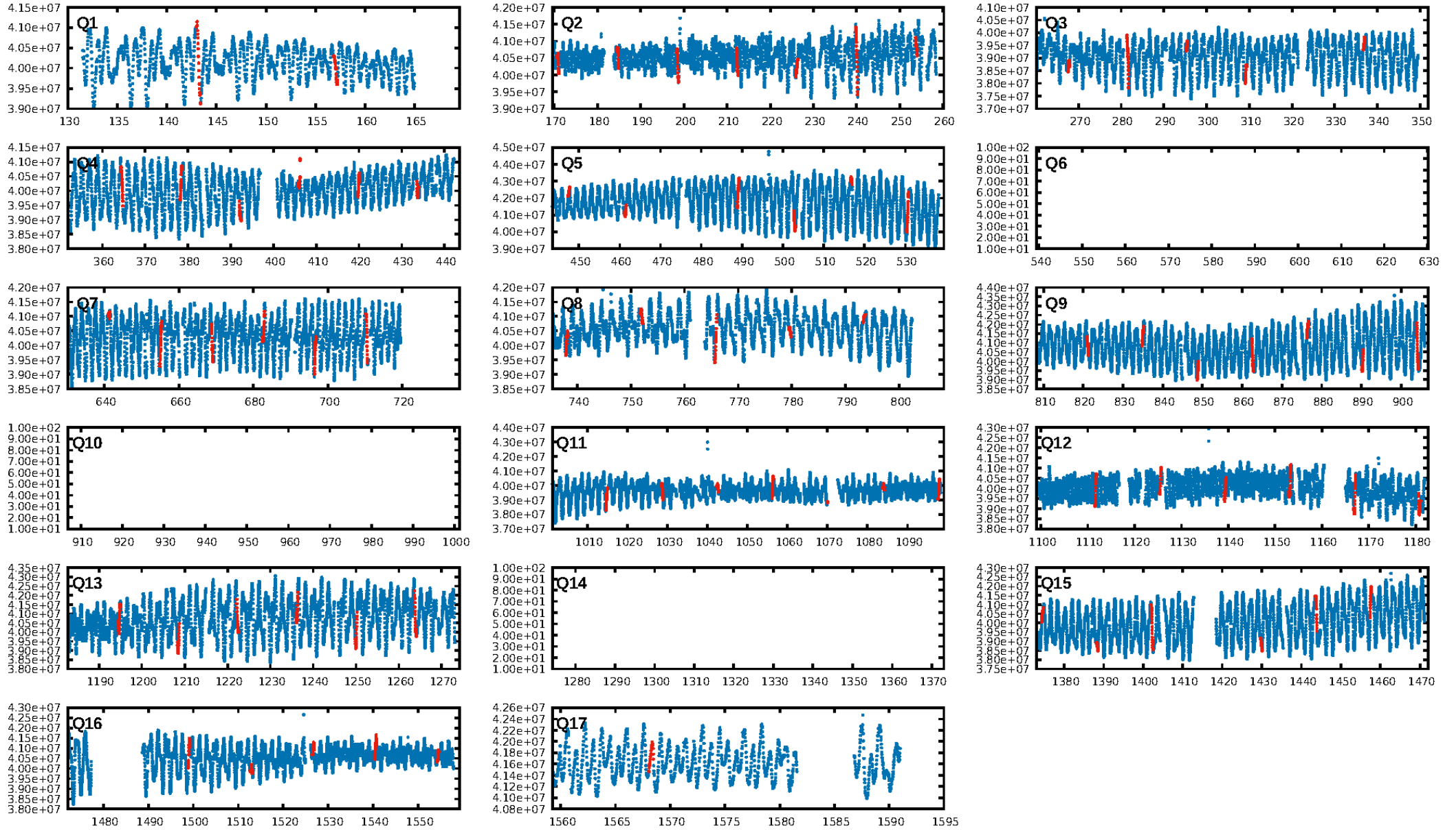
Period = 13.83566 d  
Epoch = 143.1820 BKJD

DV fit results are unavailable

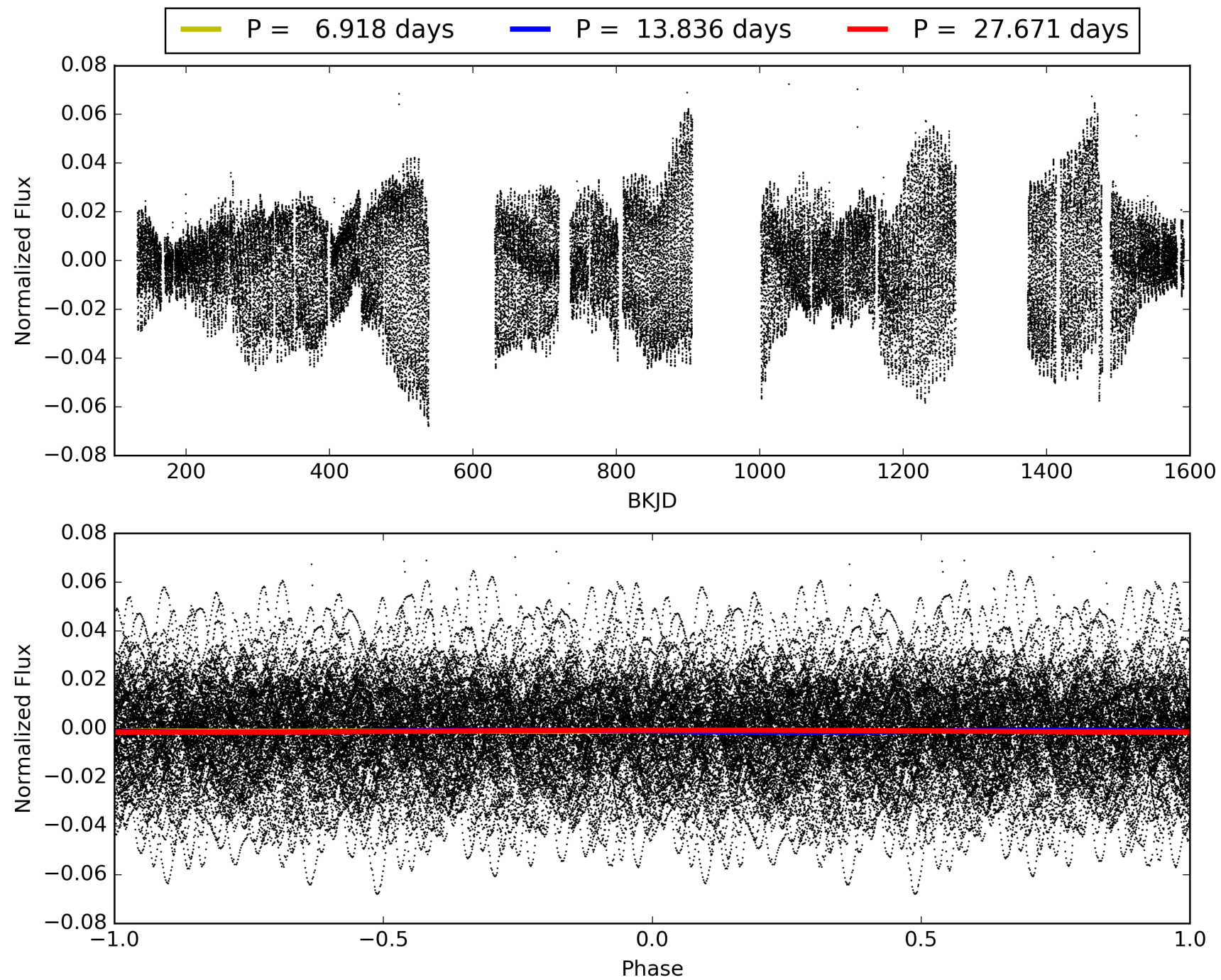
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [41.50σ]  
LongPeriod-sig: 47.7% [0.64σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 7.41e-32  
RollingBand-fgt: 1.00 [10/10]  
GhostDiagnostic-chr: 0.4757  
Centroid-sig: 0.5%  
Centroid-so: 1.208 arcsec [1.88σ]  
OotOffset-rm: 0.004 arcsec [0.04σ]  
KicOffset-rm: 0.080 arcsec [0.96σ]  
OotOffset-st: 1/4/4/5 [14]  
KicOffset-st: 1/4/4/5 [14]  
DiffImageQuality-fgm: 0.57 [8/14]  
DiffImageOverlap-fno: 0.14 [2/14]

# TCE 005018976-03, PDC Light Curves

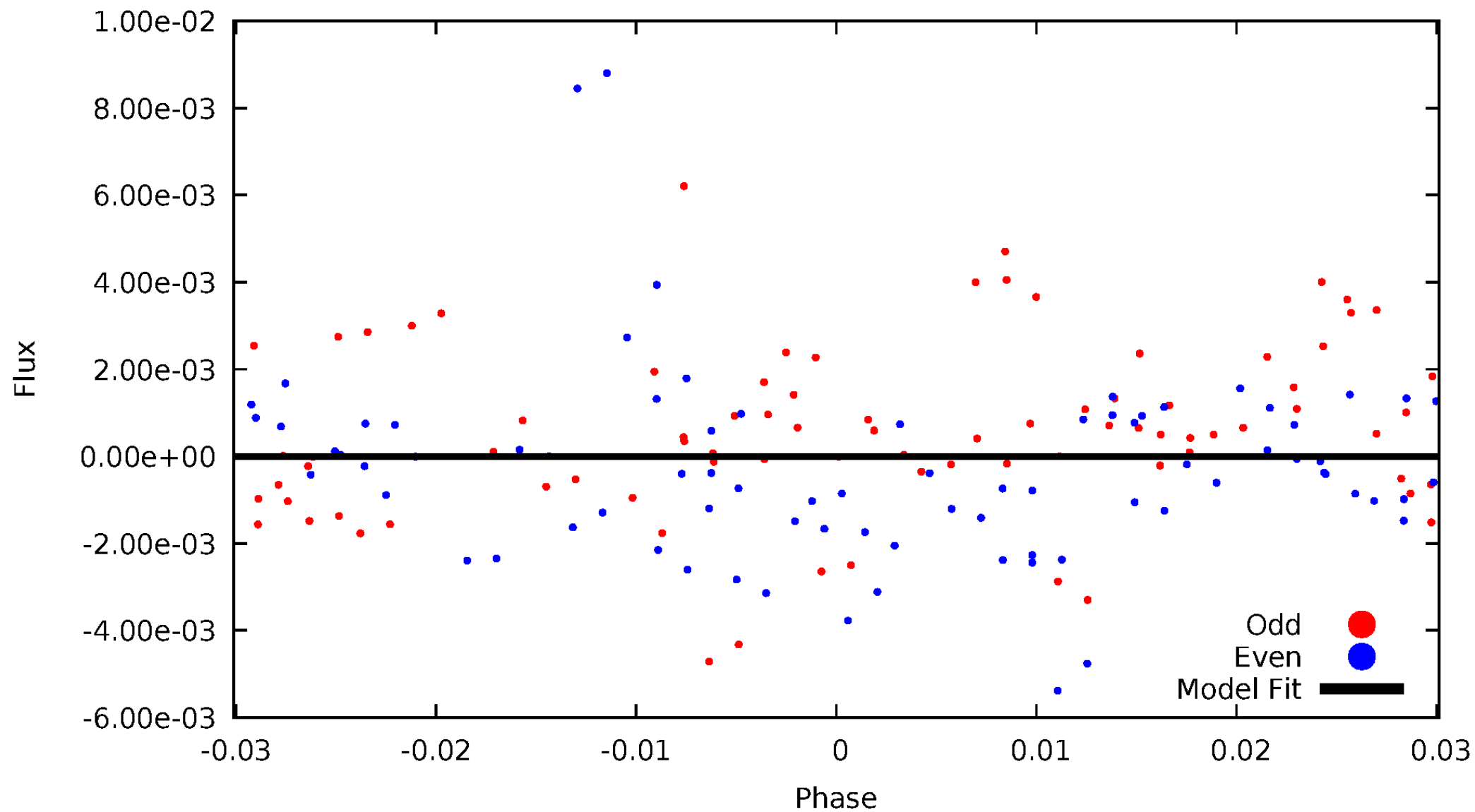


# TCE 005018976-03



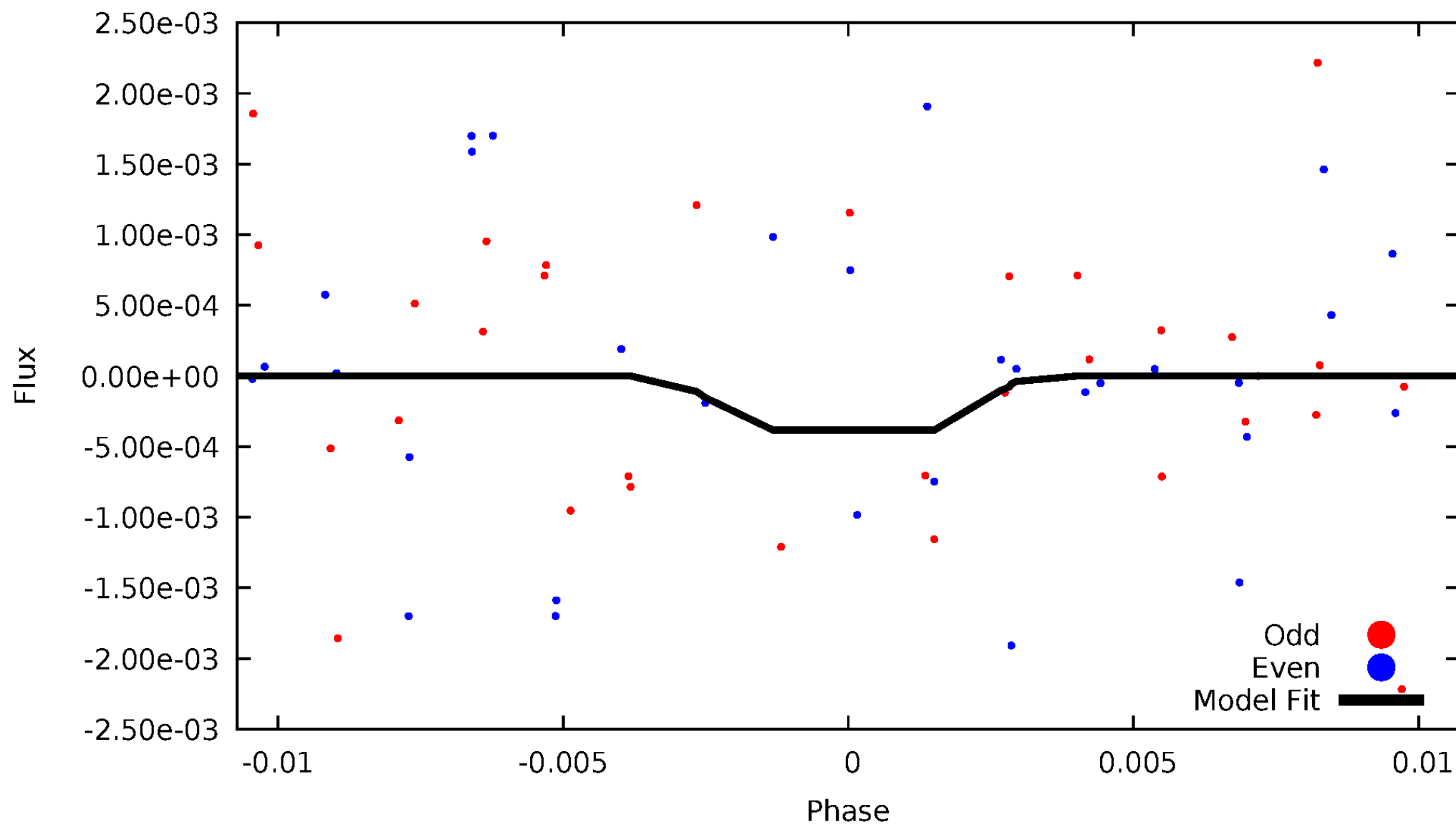
# DV Odd/Even

TCE 005018976-03

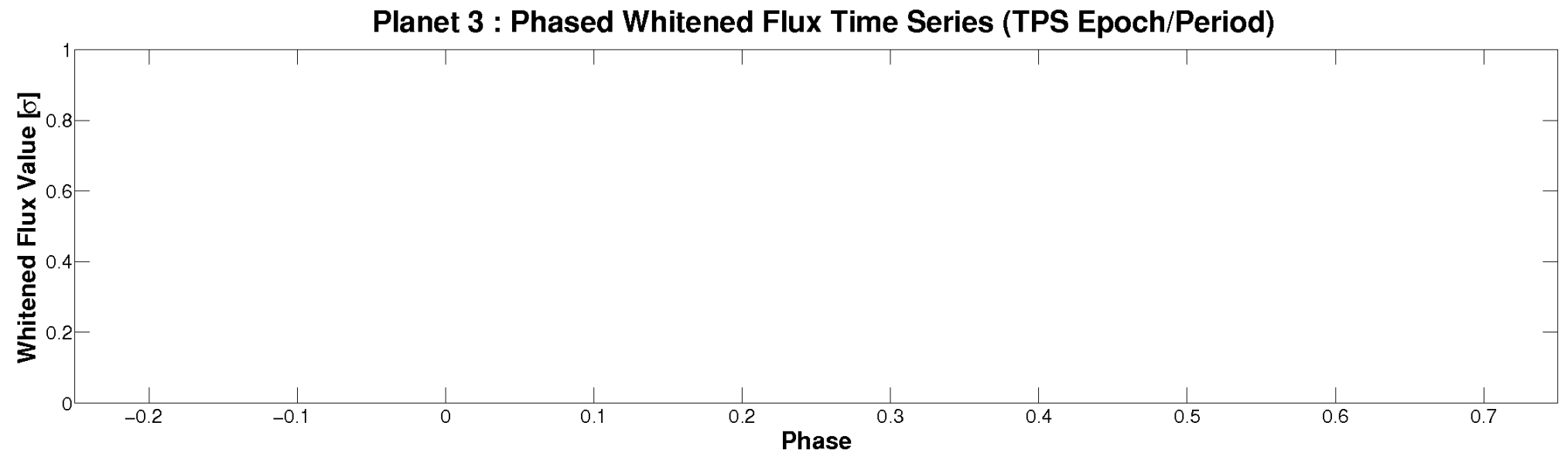
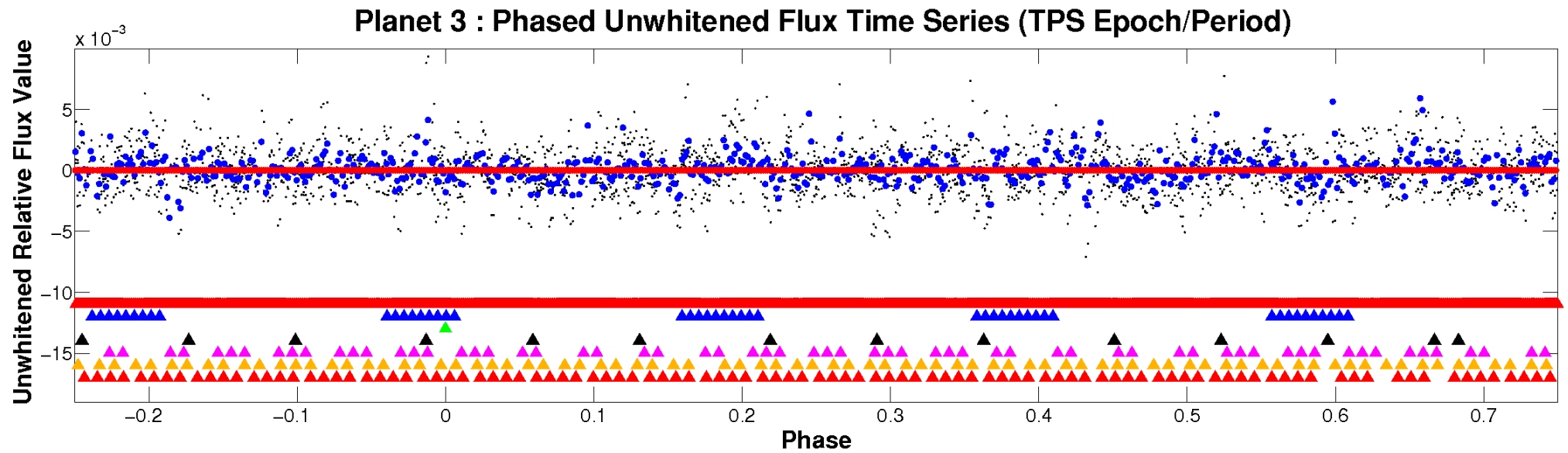


# ALT Odd/Even

TCE 005018976-03



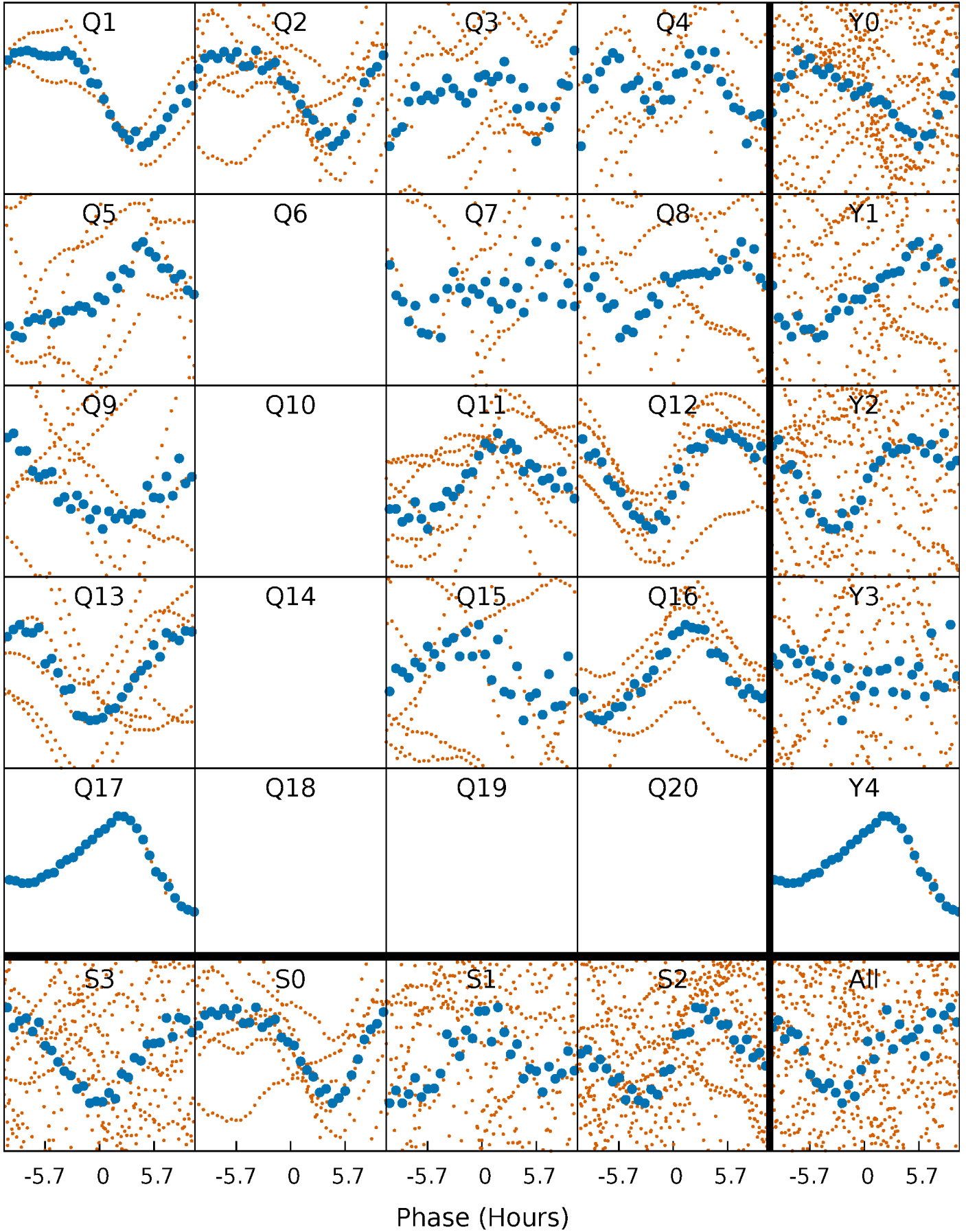
# Non-Whitened Vs. Whitened Light Curve





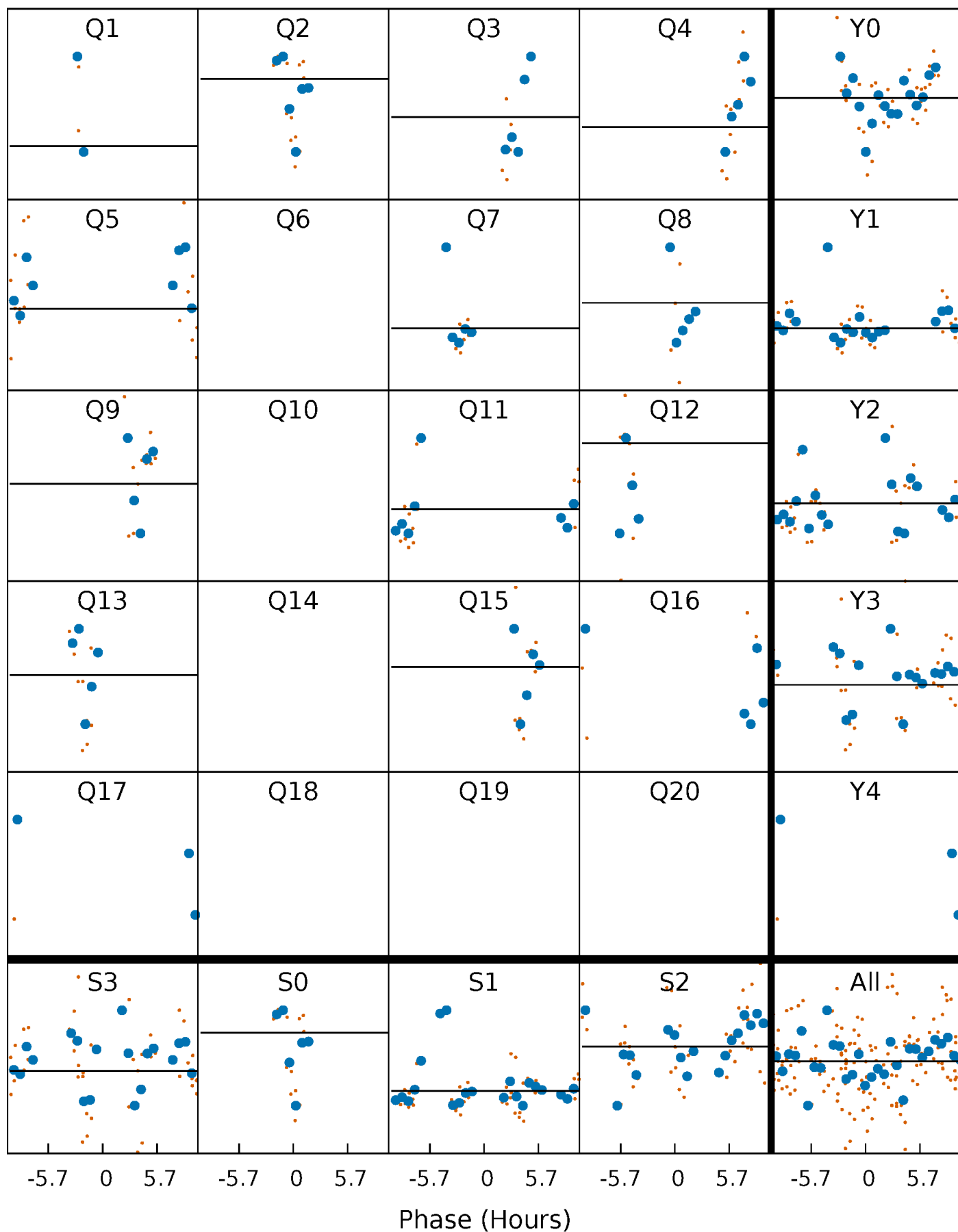
# PDC Quarter-Phased Transit Curves

TCE 005018976-03 P= 13.835662 Days  $T_0=143.181962$  (BKJD)



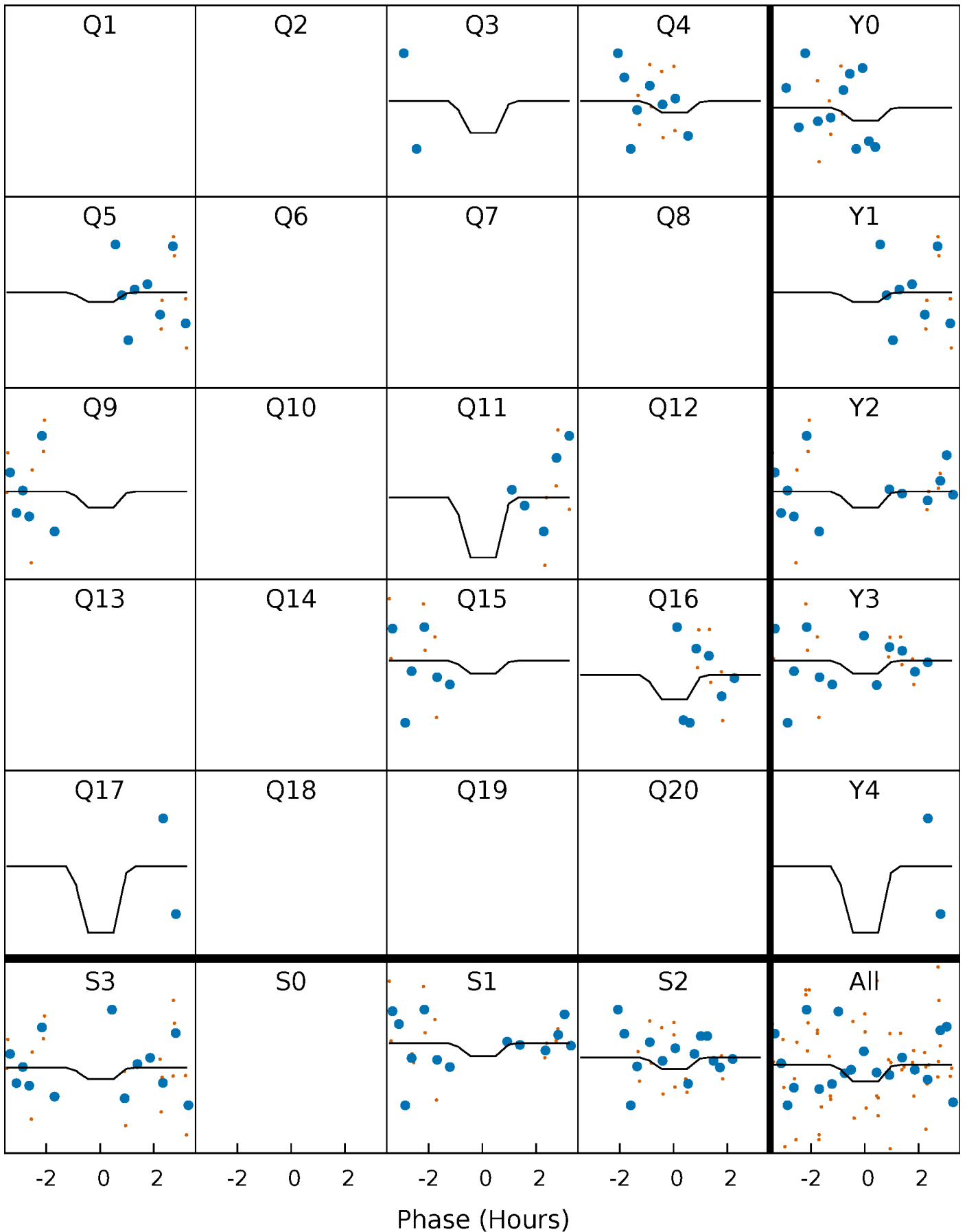
# DV Quarter-Phased Transit Curves

TCE 005018976-03 P= 13.835662 Days  $T_0=143.181962$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

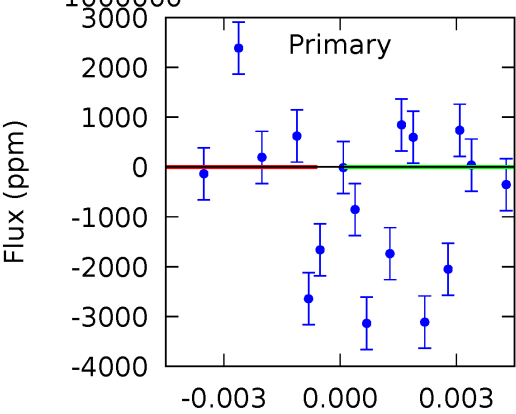
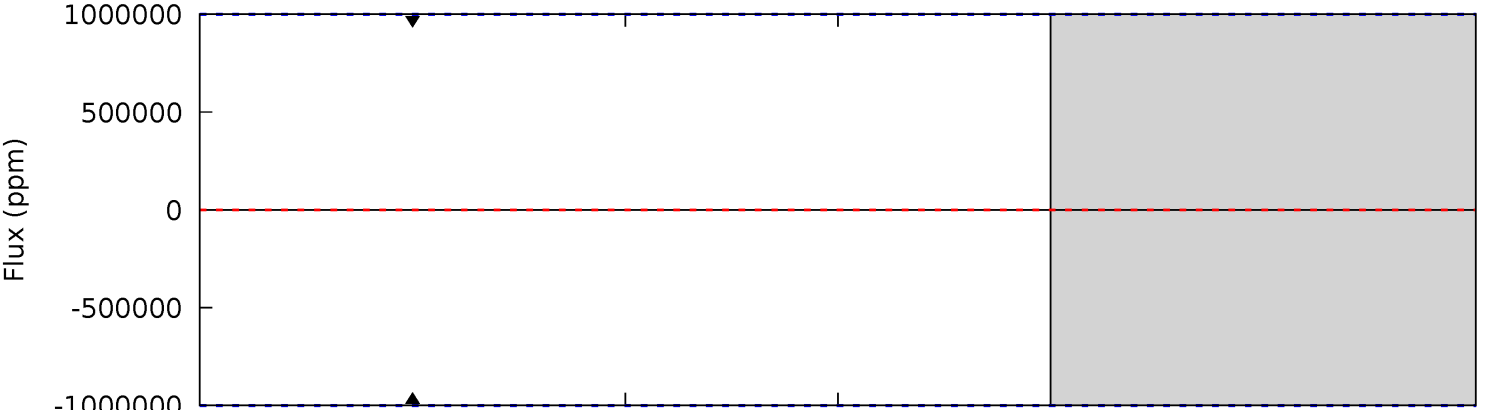
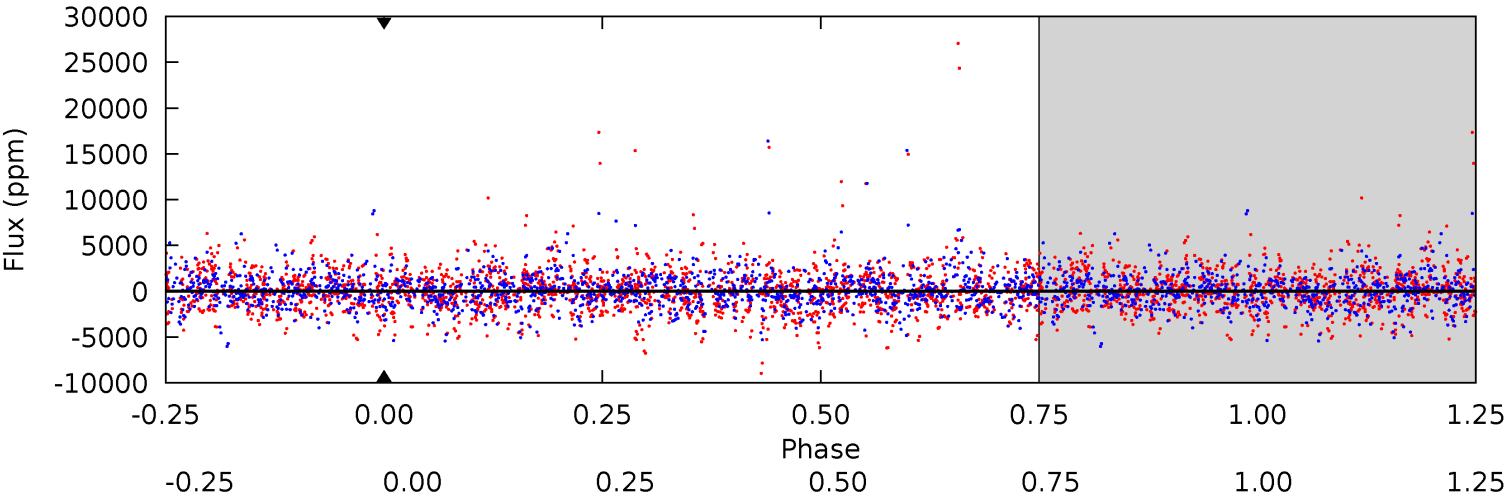
TCE 005018976-03   P= 13.835662 Days    $T_0=143.479593$  (BKJD)



DV Model-Shift Uniqueness Test

005018976-03, P = 13.835662 Days, E = 129.346300 Days

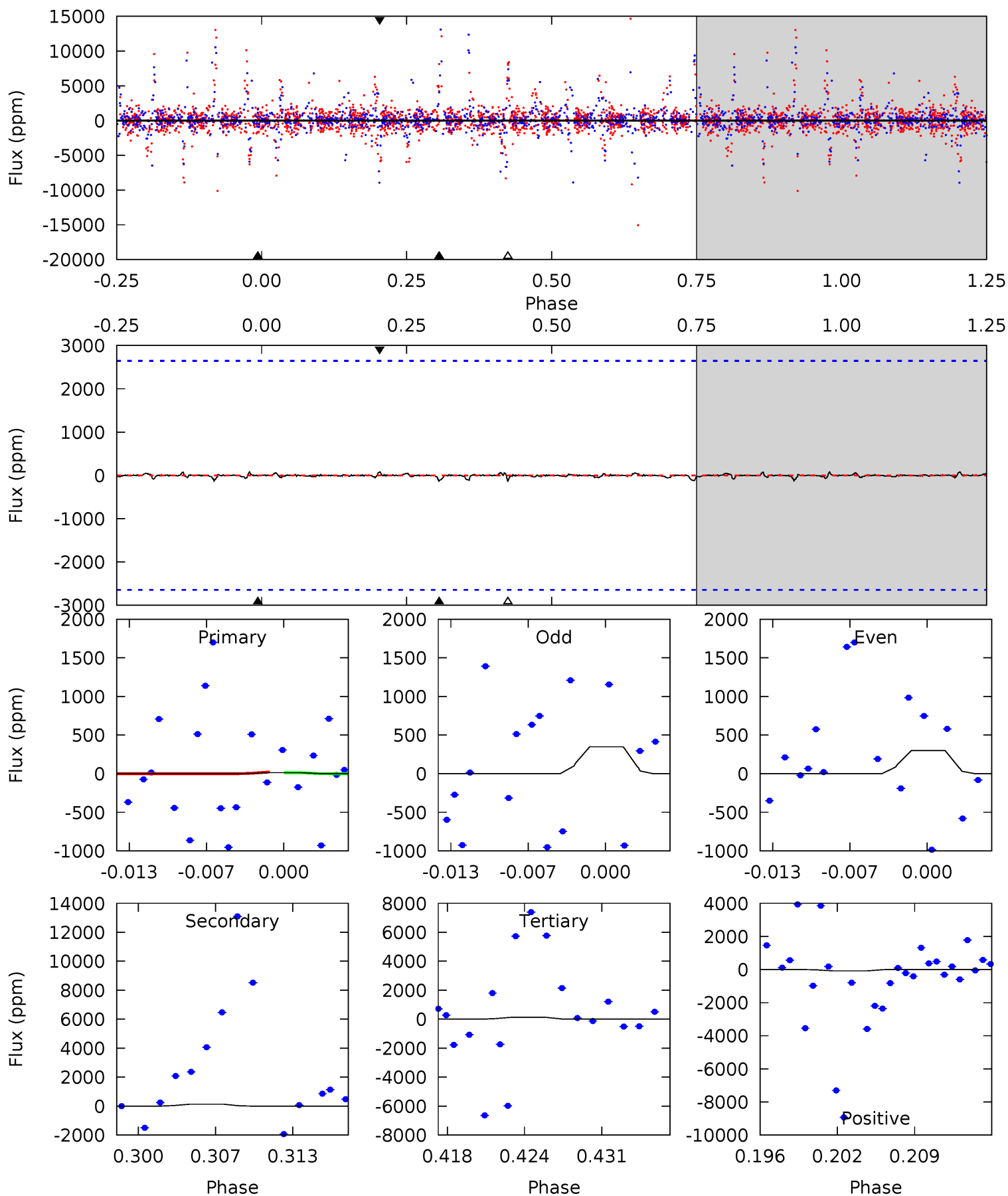
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



# Alt Model-Shift Uniqueness Test

005018976-03, P = 13.835662 Days, E = 129.643931 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0.03	0.26	0.26	0.16	5.11	2.72	0.04	-0.23	-0.13	0.00	0.10	0.02	-1.1E6	0.38	0.01



### Stellar Parameters For KIC 005018976

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (g \cdot \text{cm}^{-3})$
	$4484^{+134}_{-134}$	$4.617^{+0.052}_{-0.024}$	$-0.240^{+0.300}_{-0.300}$	$0.648^{+0.051}_{-0.056}$	$0.634^{+0.070}_{-0.051}$	$3.280^{+0.749}_{-0.370}$
	+3%/-3%	+1%/-1%	+125%/-125%	+8%/-9%	+11%/-8%	+23%/-11%
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 005018976-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$0 \pm 1000000$	$5.18^{+5.73}_{-3.61}$	$711^{+24}_{-24}$	$2900^{+9121}_{-15261}$	$71^{+35681}_{-38626}$
Alt.	$-133 \pm 518$	$5.55^{+5.21}_{-4.01}$	$709^{+26}_{-24}$	$2290^{+1318}_{-5197}$	$12^{+300}_{-88}$

$T_{max}$  = 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

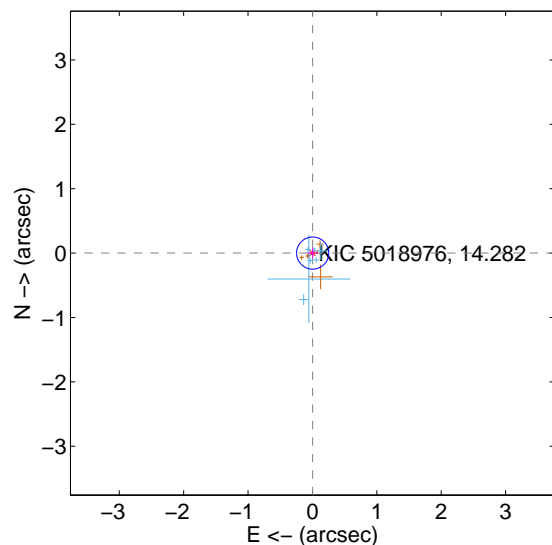
Supplemental centroid analysis for 005018976-03. Kepler magnitude: 14.28. Transit SNR -1.00

There are 8 quarters with good PRF difference image offsets

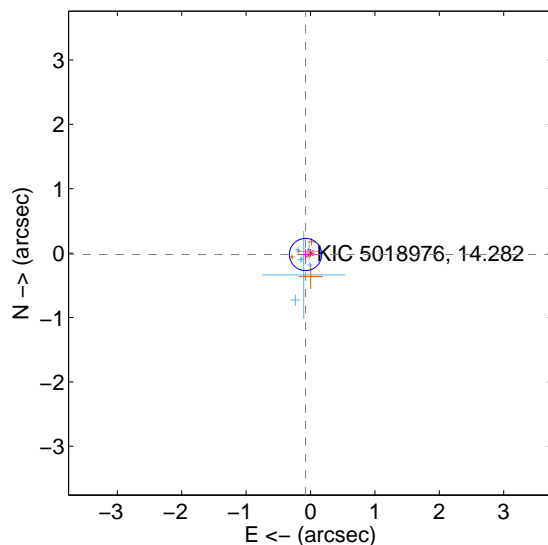
The direct PRF centroid is offset from the target star catalog position by about 0.15 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.004 \pm 0.083$	0.04	$-0.004 \pm 0.083$	$0.000 \pm 0.085$
PRF-fit source offset from KIC position	$0.080 \pm 0.083$	0.96	$0.077 \pm 0.083$	$-0.022 \pm 0.085$
photometric centroid source offset	$1.21 \pm 0.64$	1.88	$0.76 \pm 0.64$	$-0.94 \pm 0.64$

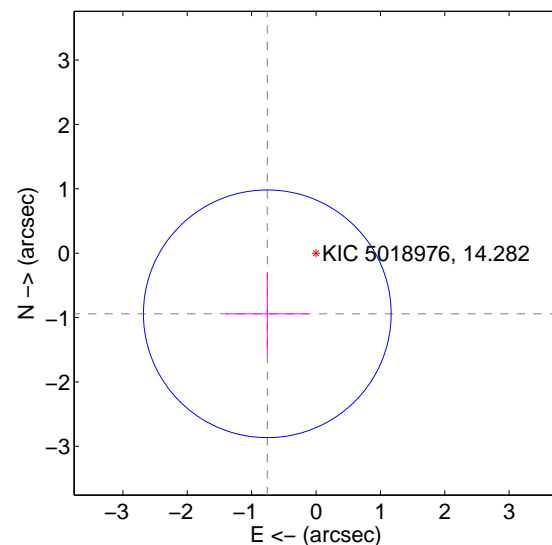
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



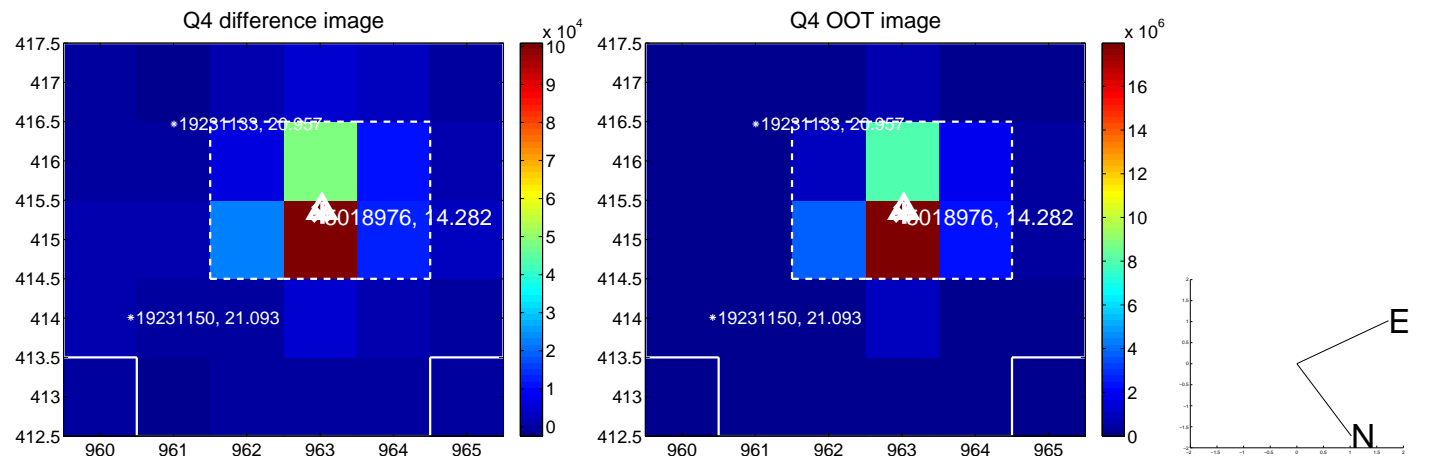
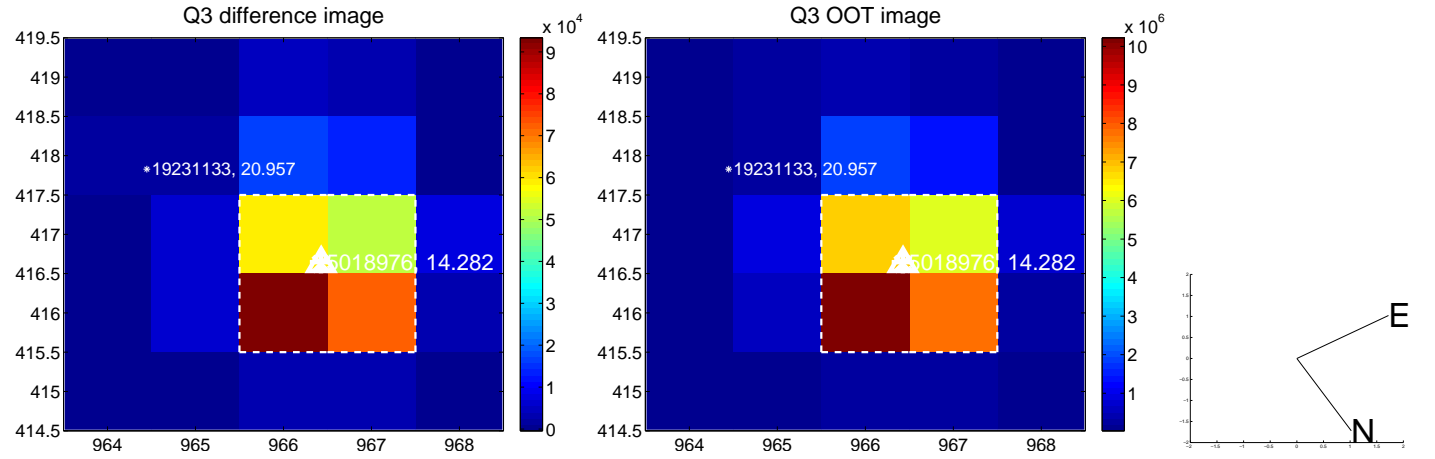
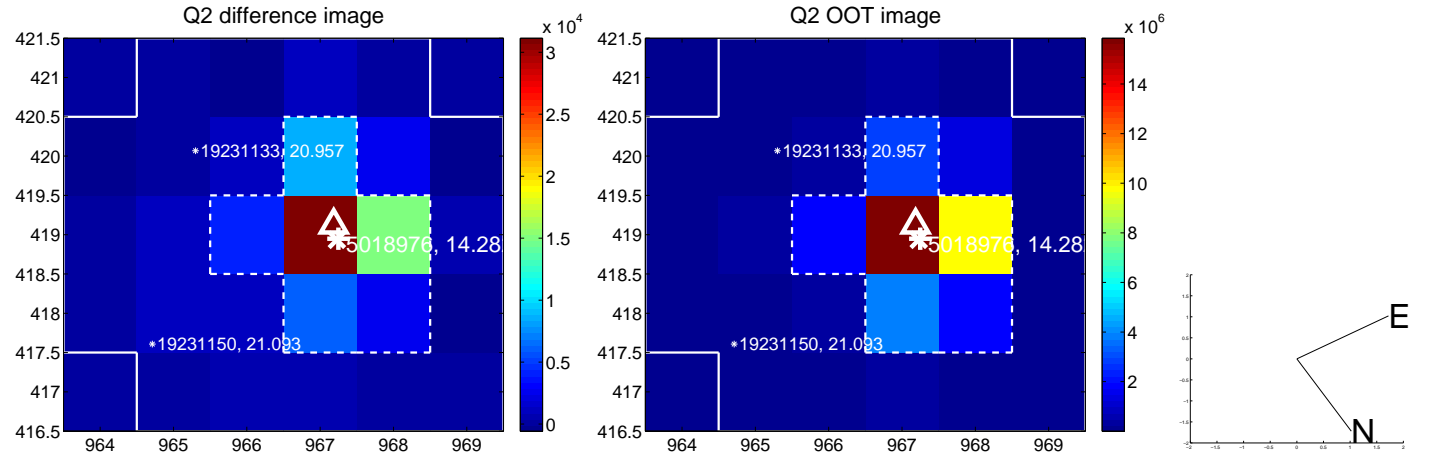
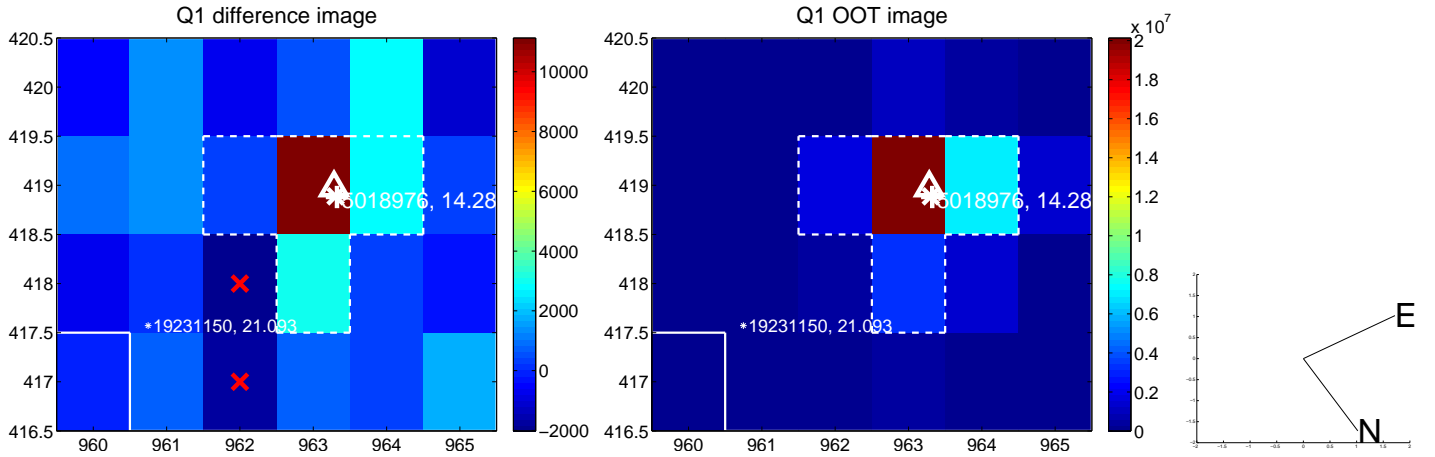
offset from photometric centroids



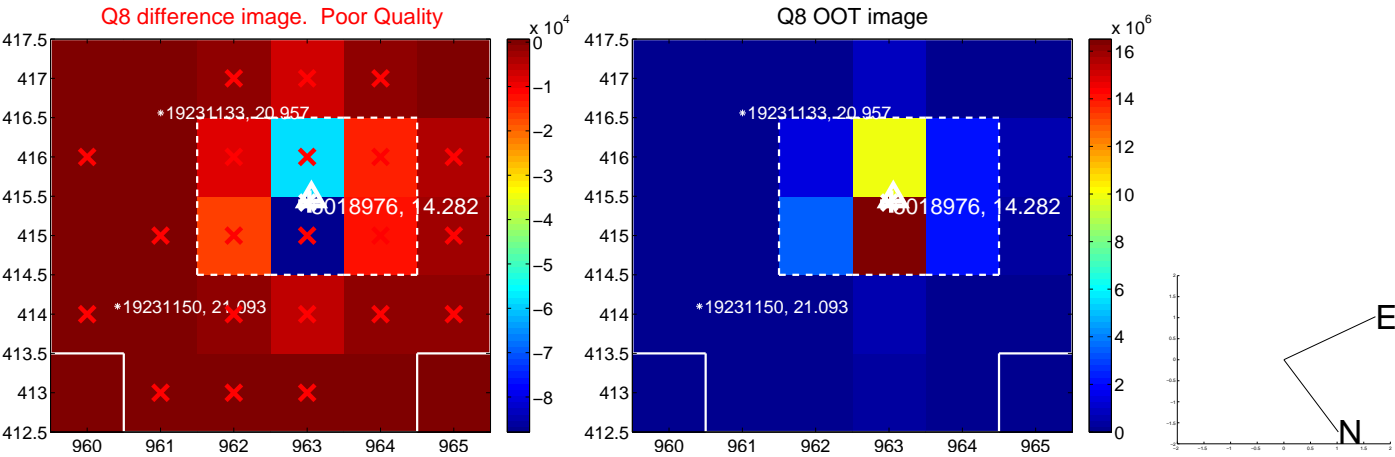
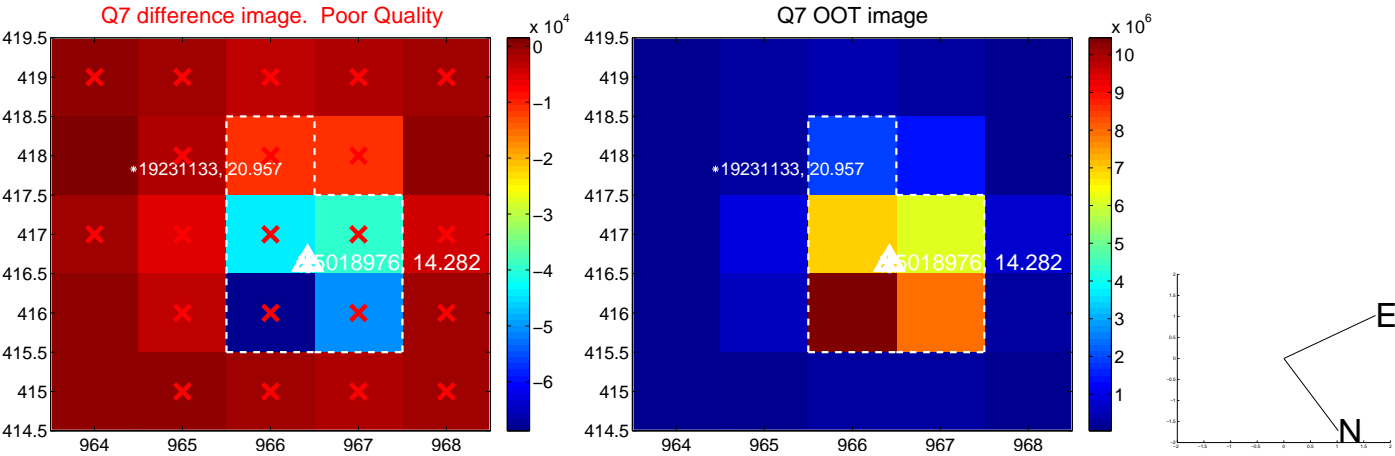
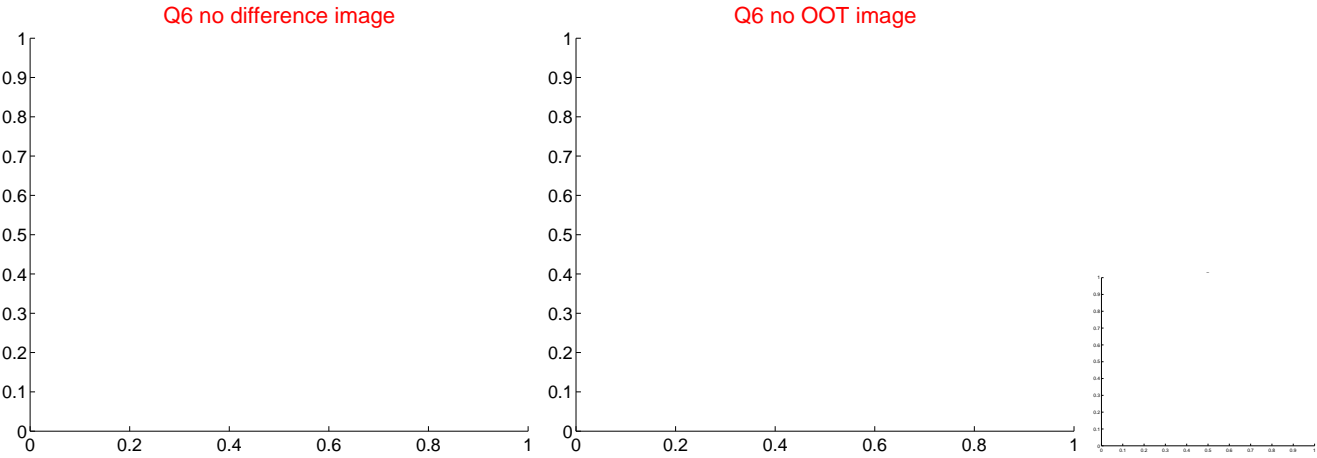
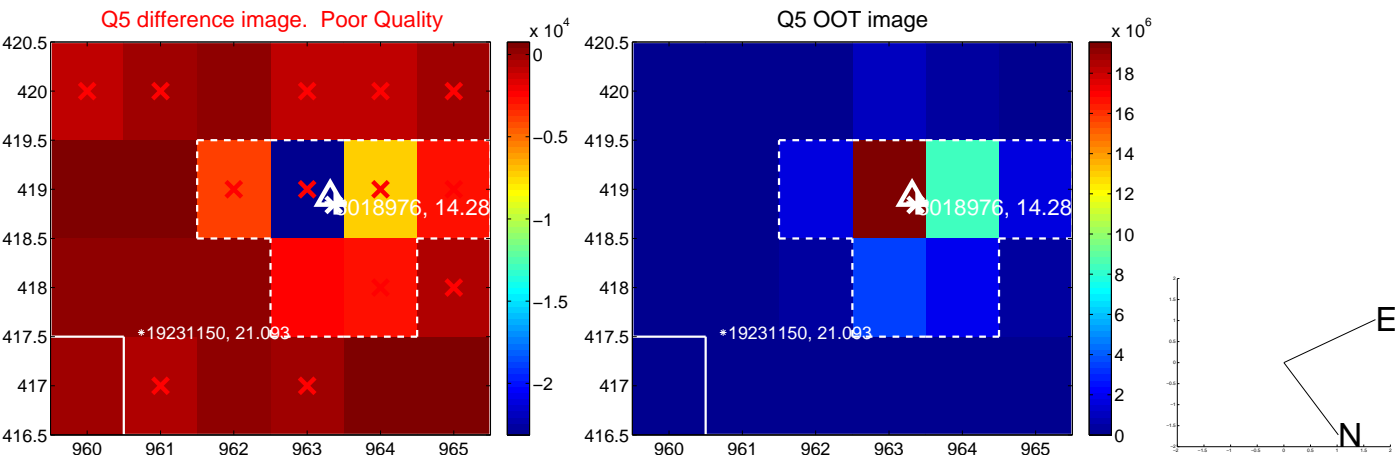
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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



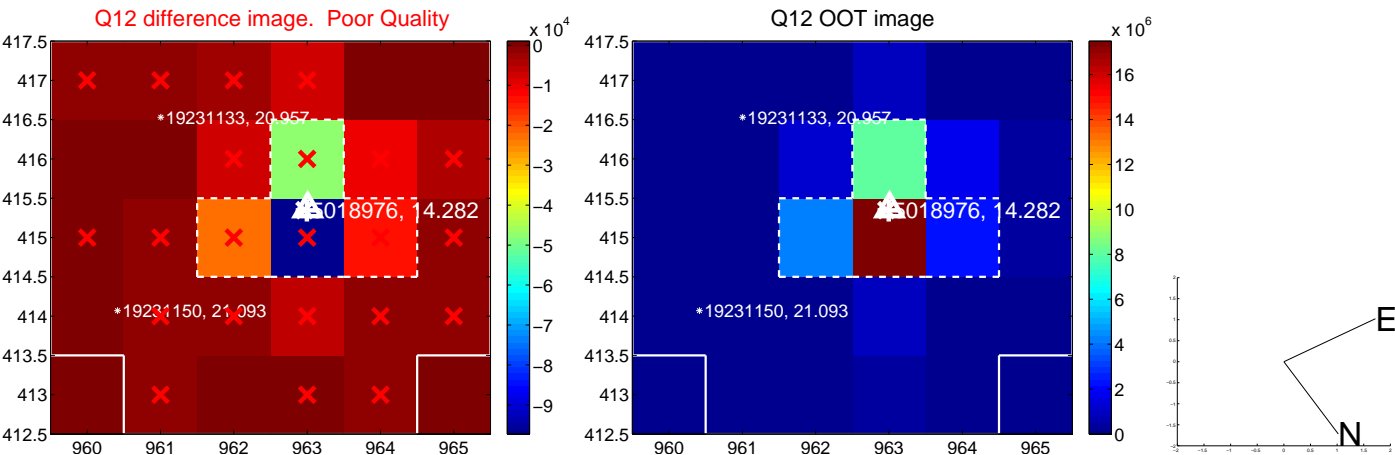
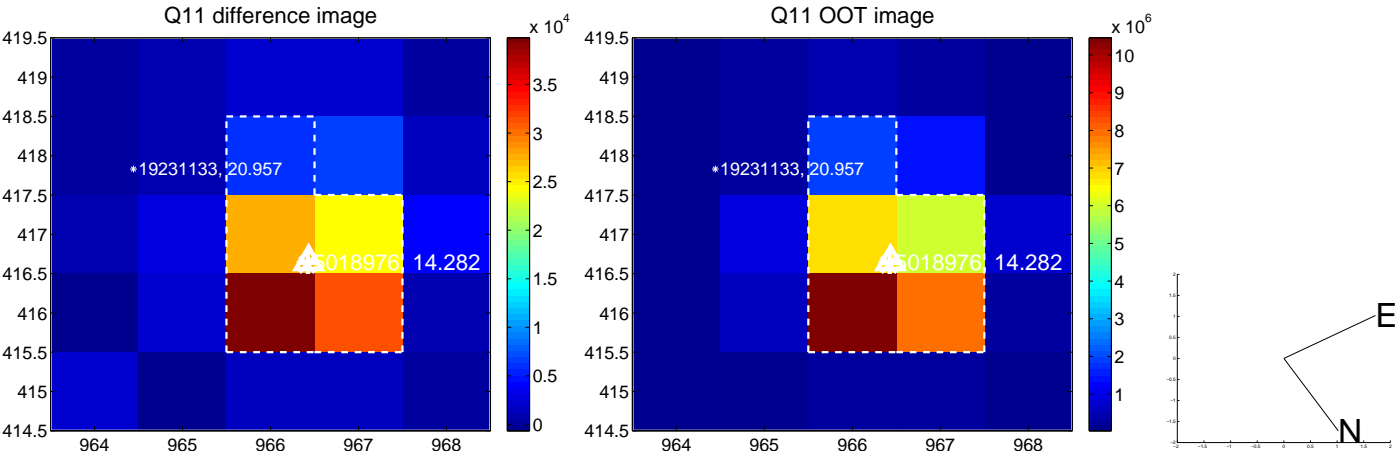
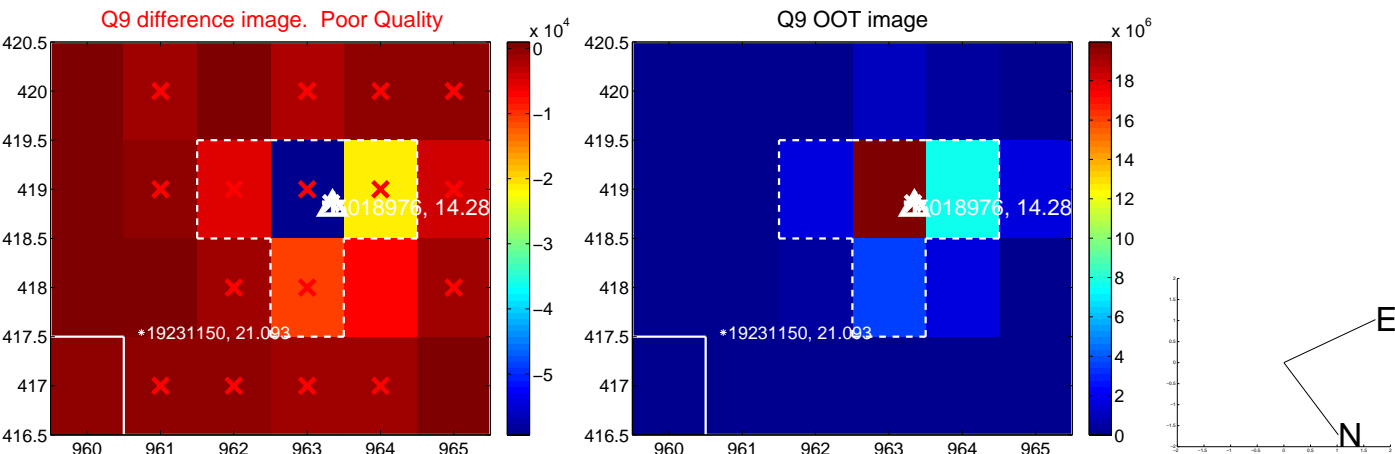
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



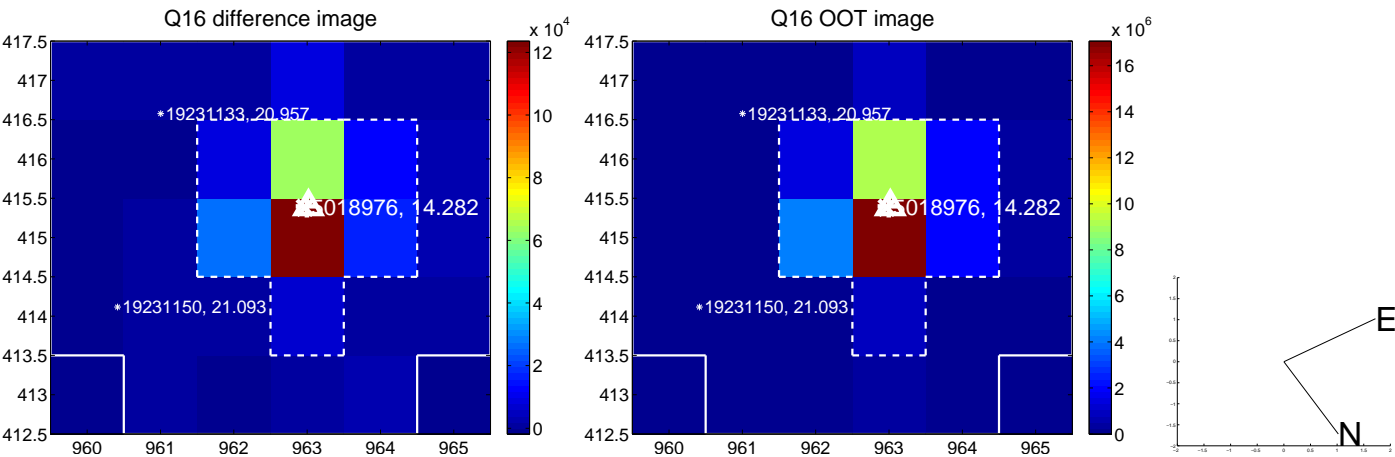
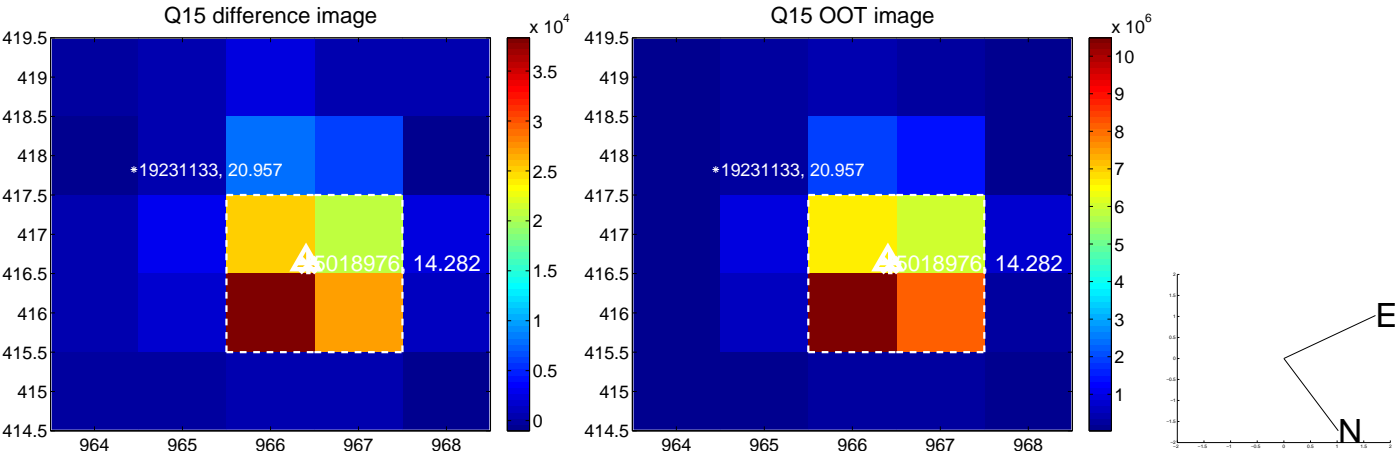
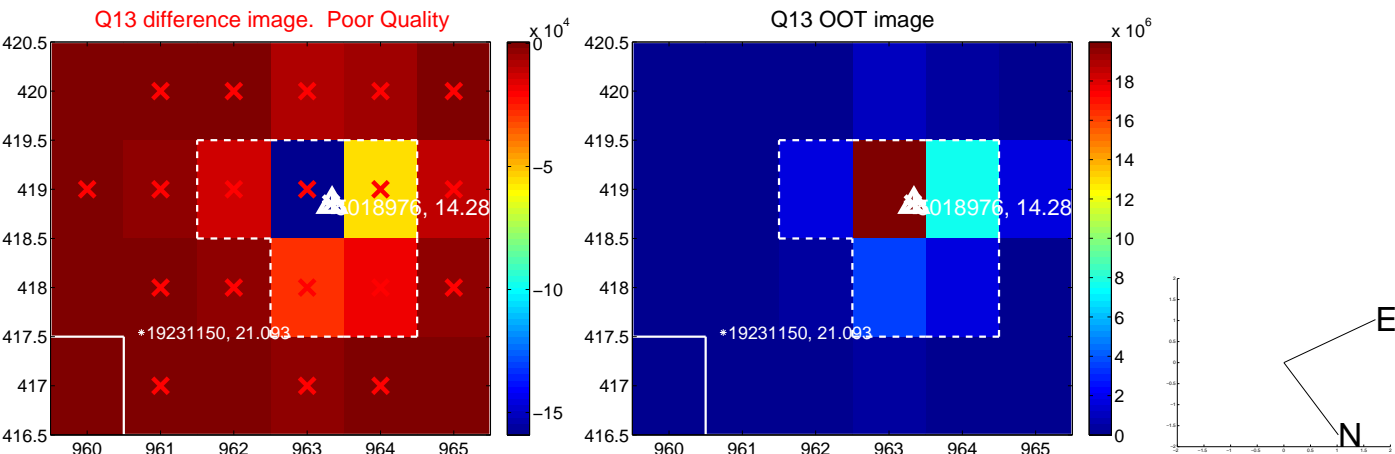
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



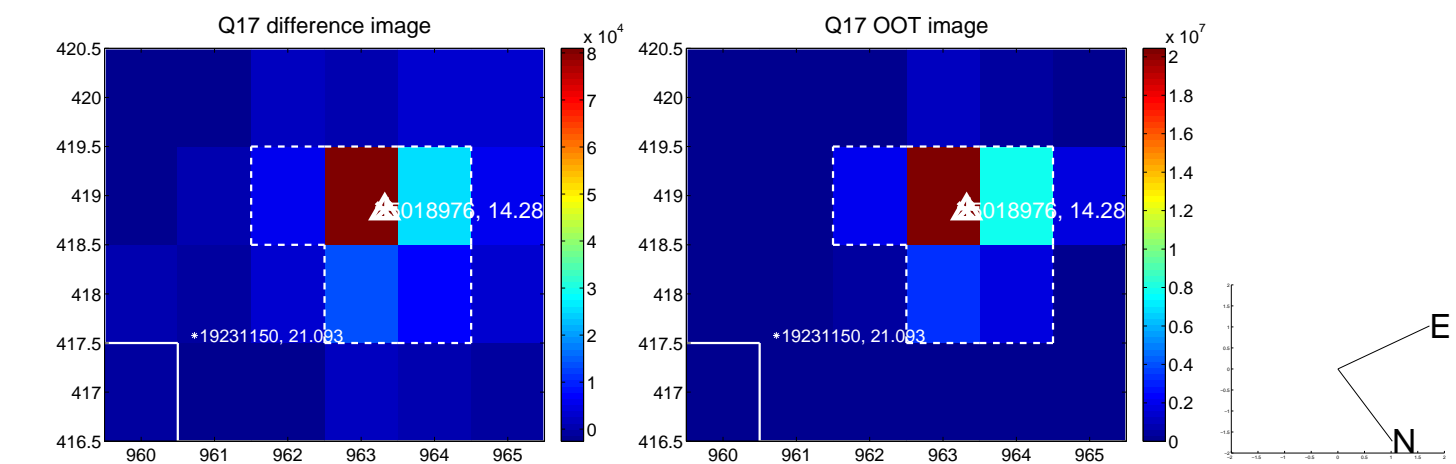
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



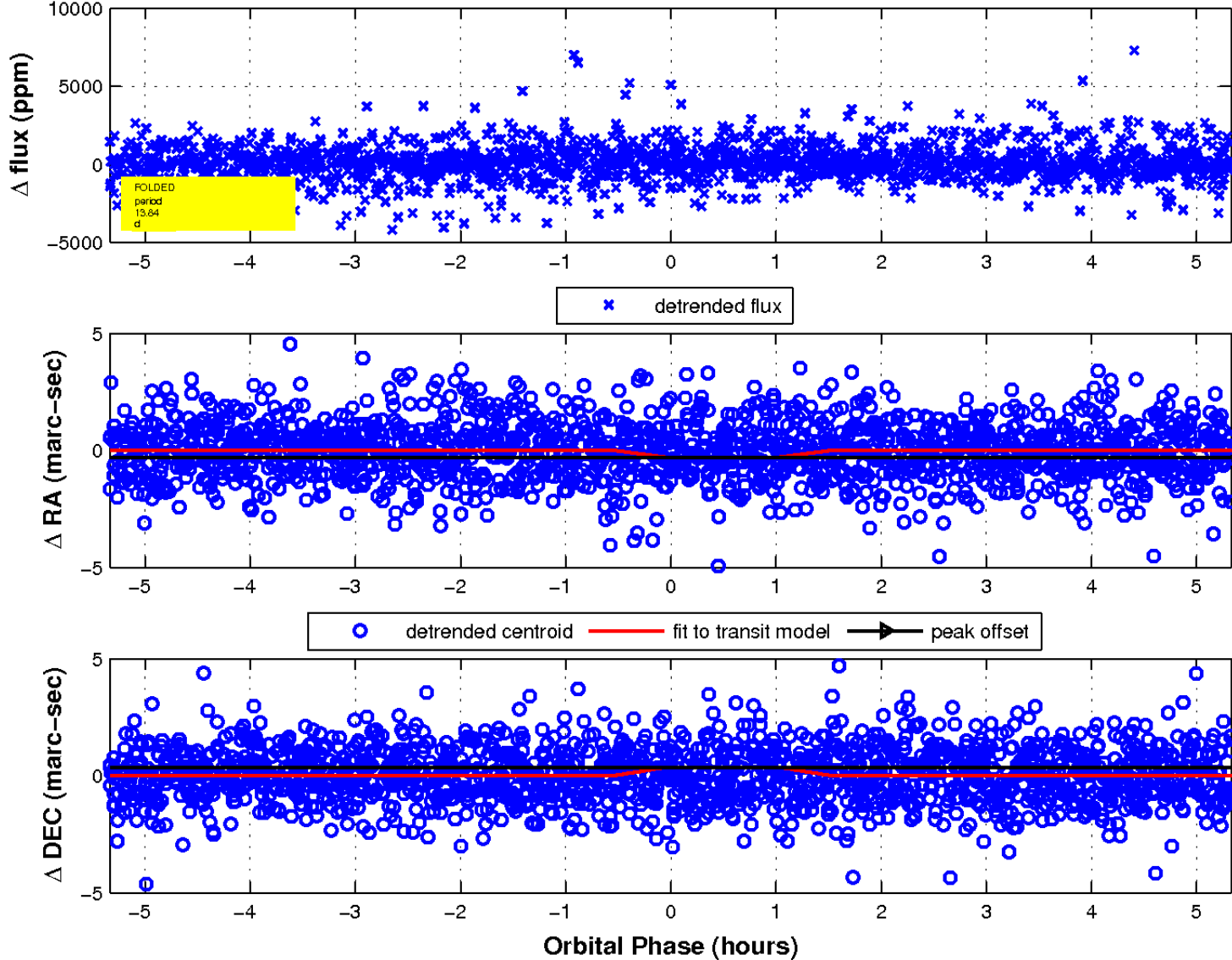
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

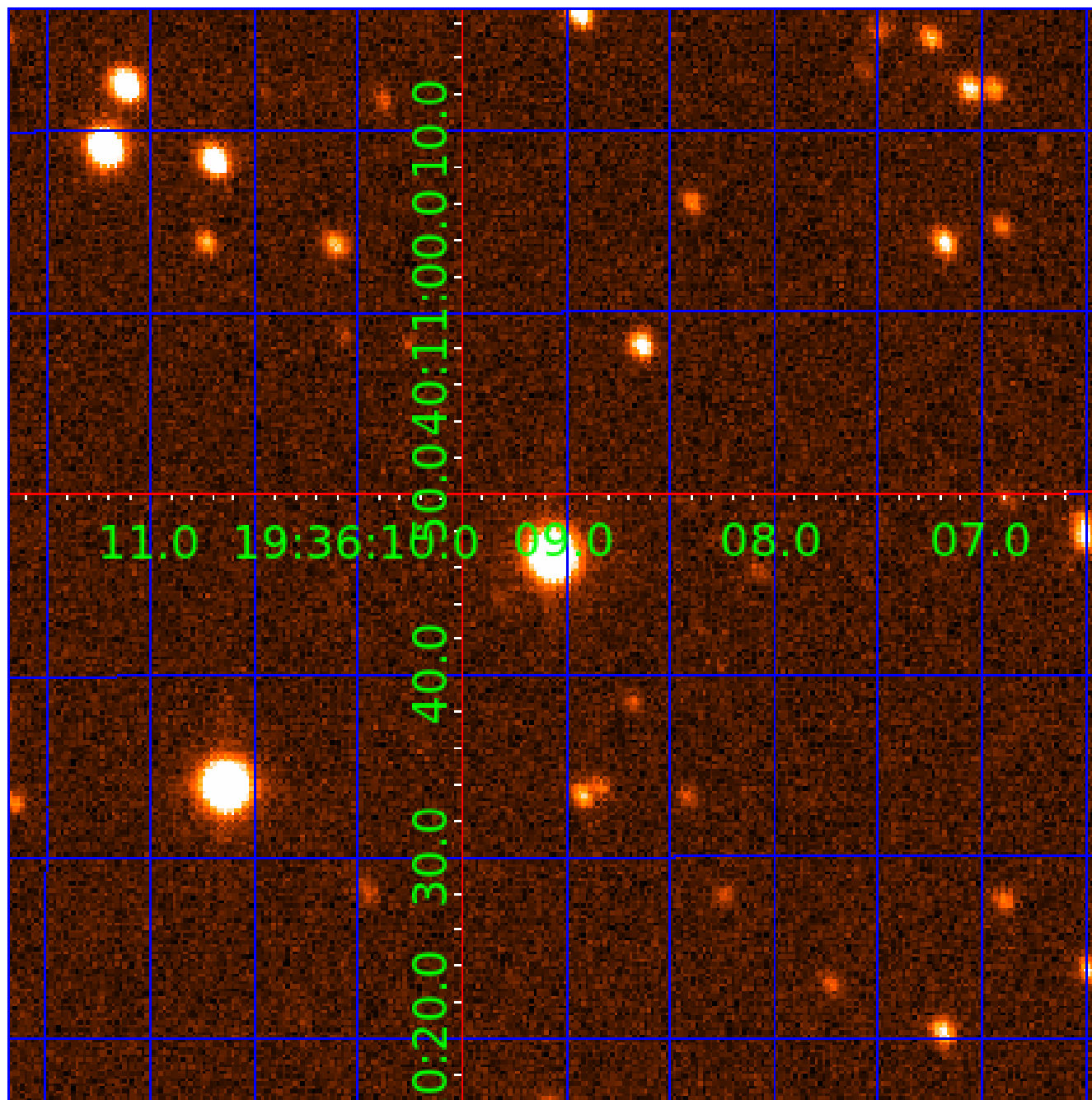


fluxWeightedCentroids, Planet 3 of 7



UKIRT Image

Declination



# KIC 005018976

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005018976-01	OBS	No	0.769753	131.914155	129.1	5.665	13.1	7.1	0.65	4484	0.73	762.32
005018976-02	OBS	No	30.422706	146.097086	1987.8	4.035	12.4	7.3	0.65	4484	2.82	5.66
005018976-03	OBS	No	13.835662	143.181962	1036.2	5.000	11.8	-1.0	0.65	4484	2.00	16.19
005018976-04	OBS	No	100.059704	207.750595	659.4	2.500	7.4	-1.0	0.65	4484	1.60	1.16
005018976-06	OBS	No	17.837054	135.754042	1863.2	2.186	9.5	5.9	0.65	4484	2.77	11.54
005018976-07	OBS	No	14.363129	139.123102	461.6	19.201	10.2	5.3	0.65	4484	1.36	15.40

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005018976-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
005018976-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
005018976-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_NOFITS
005018976-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—NO_FITS—CENT_NOFITS
005018976-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV
005018976-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT

**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](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

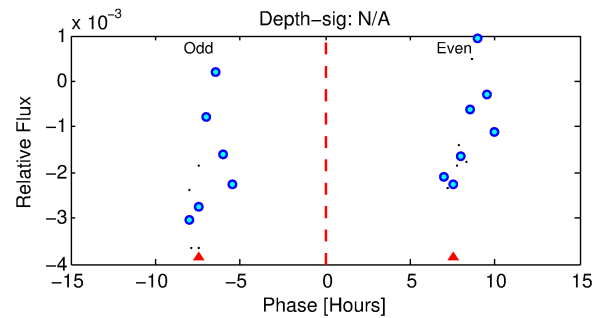
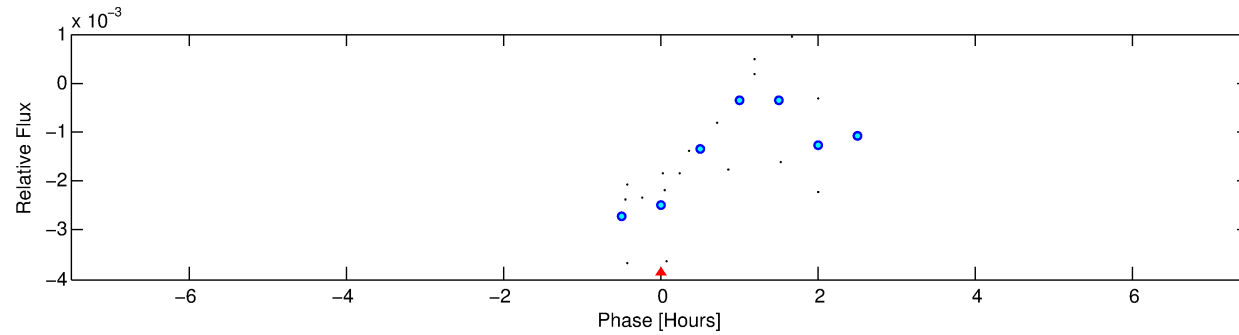
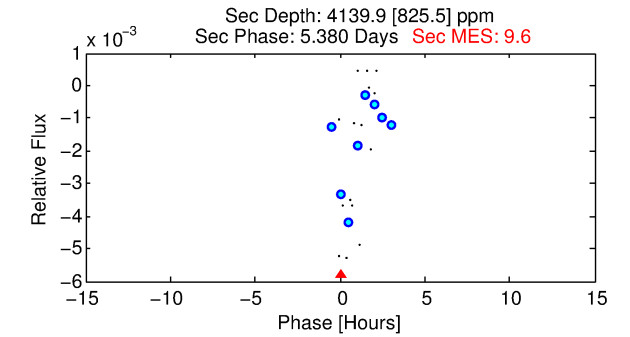
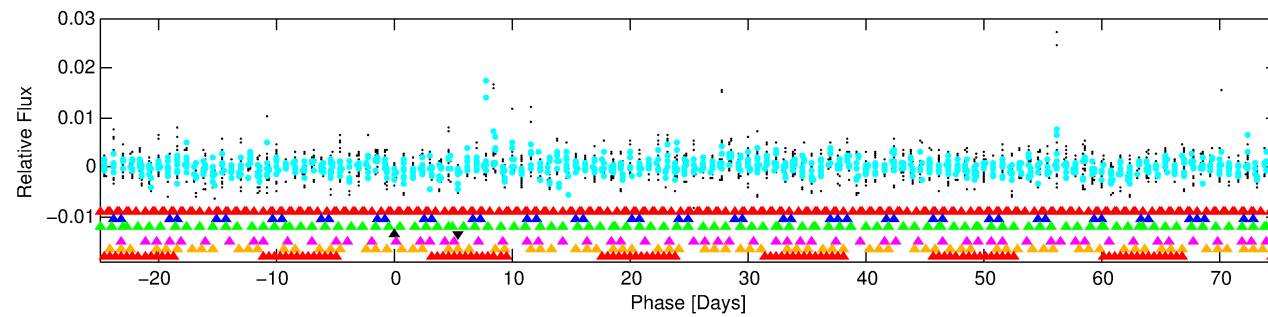
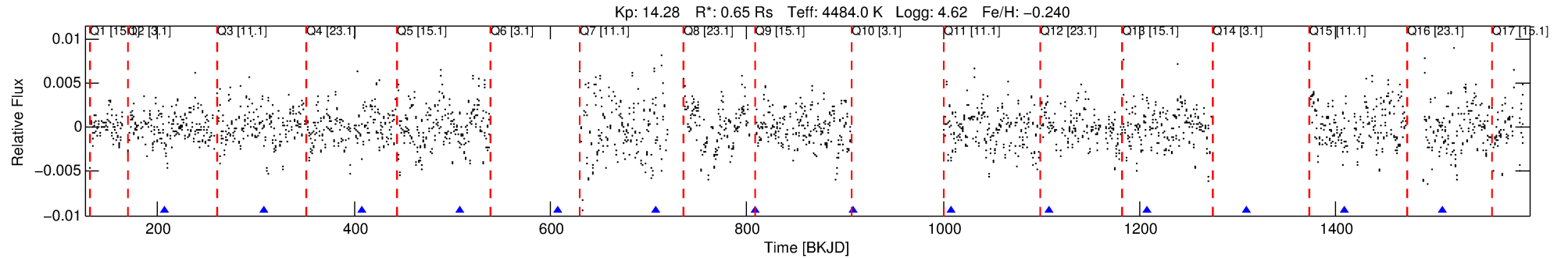
Ephemeris Match Information For 005018976-04

No Significant Match Found



# DV One-Page Summary

KIC: 5018976 Candidate: 4 of 7 Period: 100.060 d



## TPS TCE Results:

Period = 100.05970 d  
Epoch = 207.7506 BKJD

DV fit results are unavailable

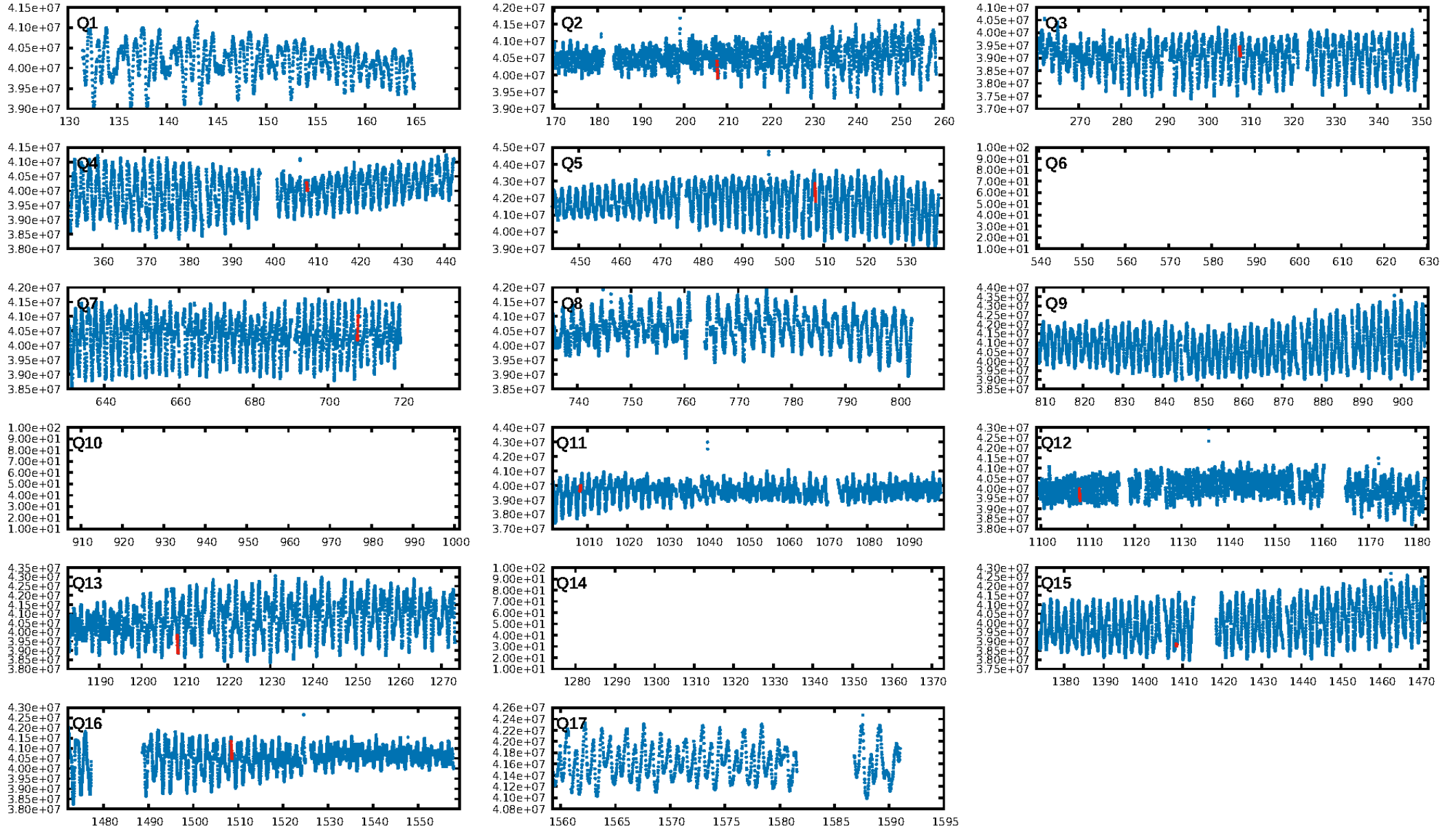
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [352.11 $\sigma$ ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 7.43e-08  
RollingBand-fgt: N/A  
GhostDiagnostic-chr: N/A  
Centroid-sig: N/A  
Centroid-so: N/A  
OotOffset-rm: N/A  
KicOffset-rm: N/A  
OotOffset-st: 0/0/0/0 [0]  
KicOffset-st: 0/0/0/0 [0]  
DiffImageQuality-fgm: N/A  
DiffImageOverlap-fno: N/A

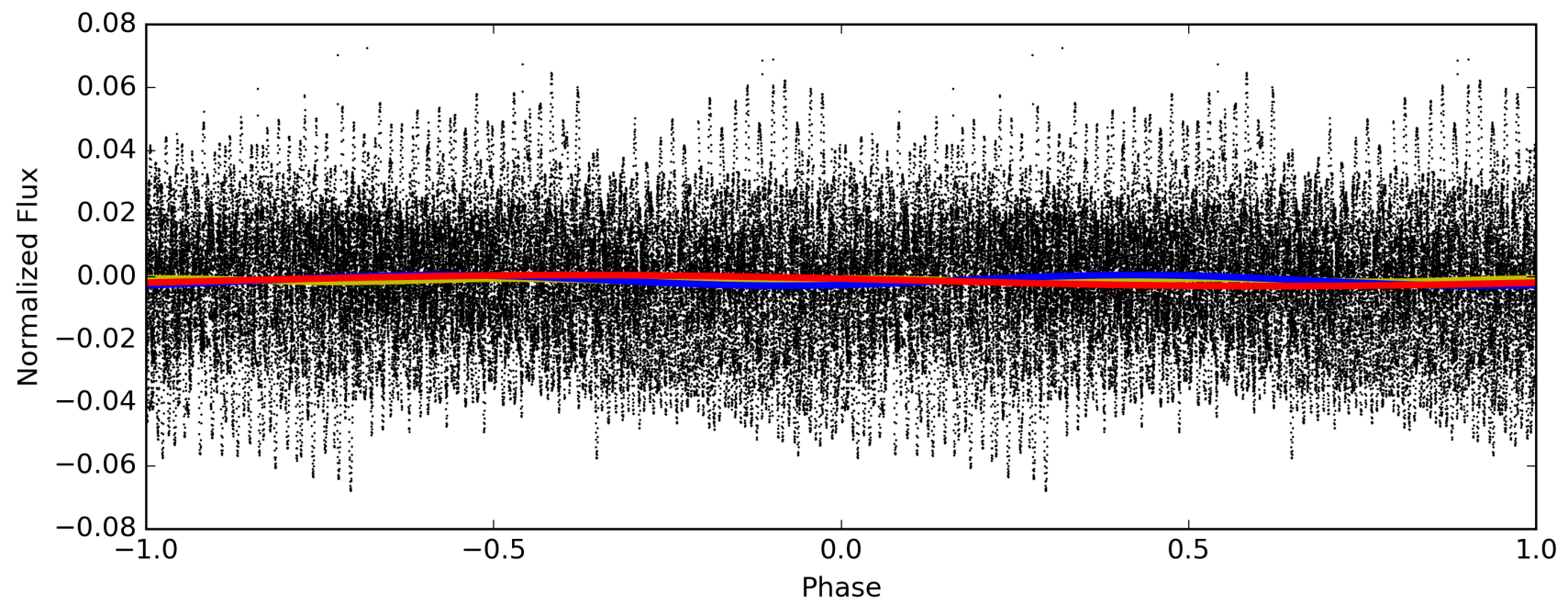
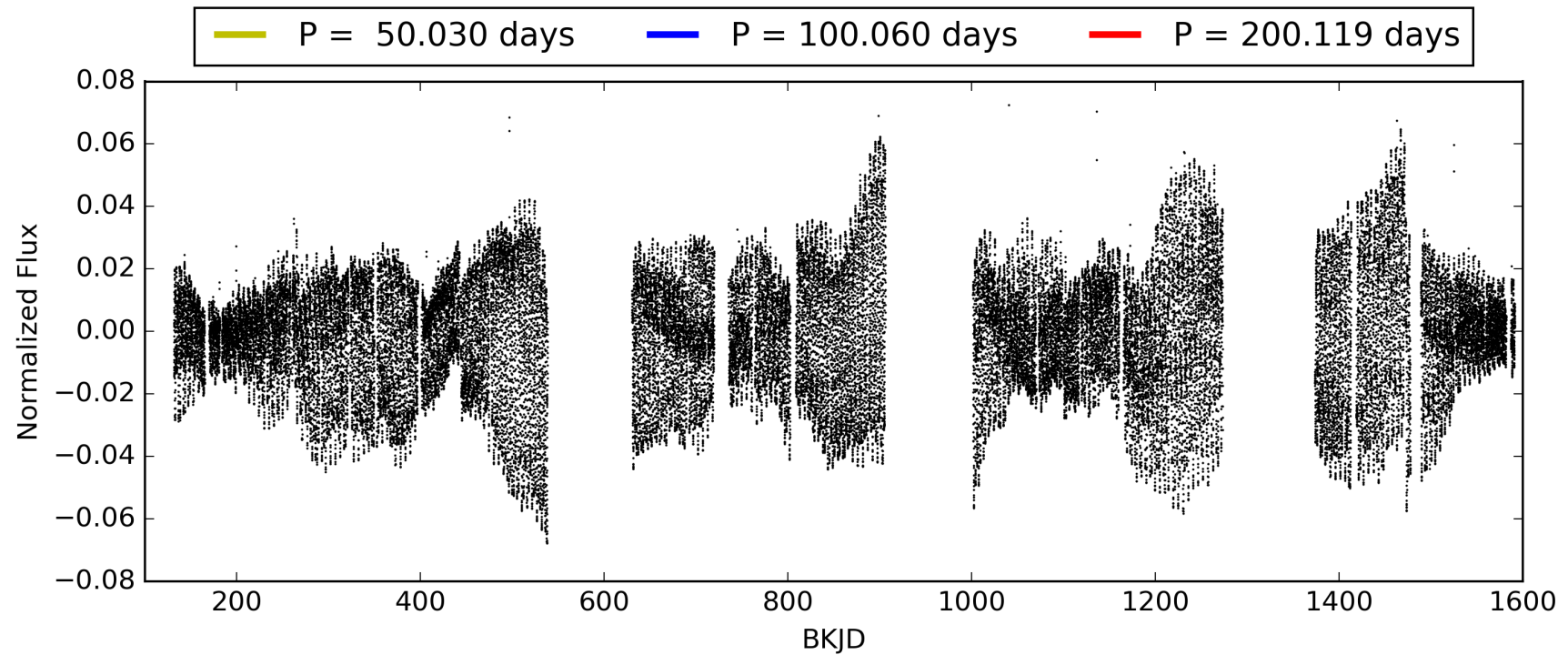
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 04:02:34 Z

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

# TCE 005018976-04, PDC Light Curves

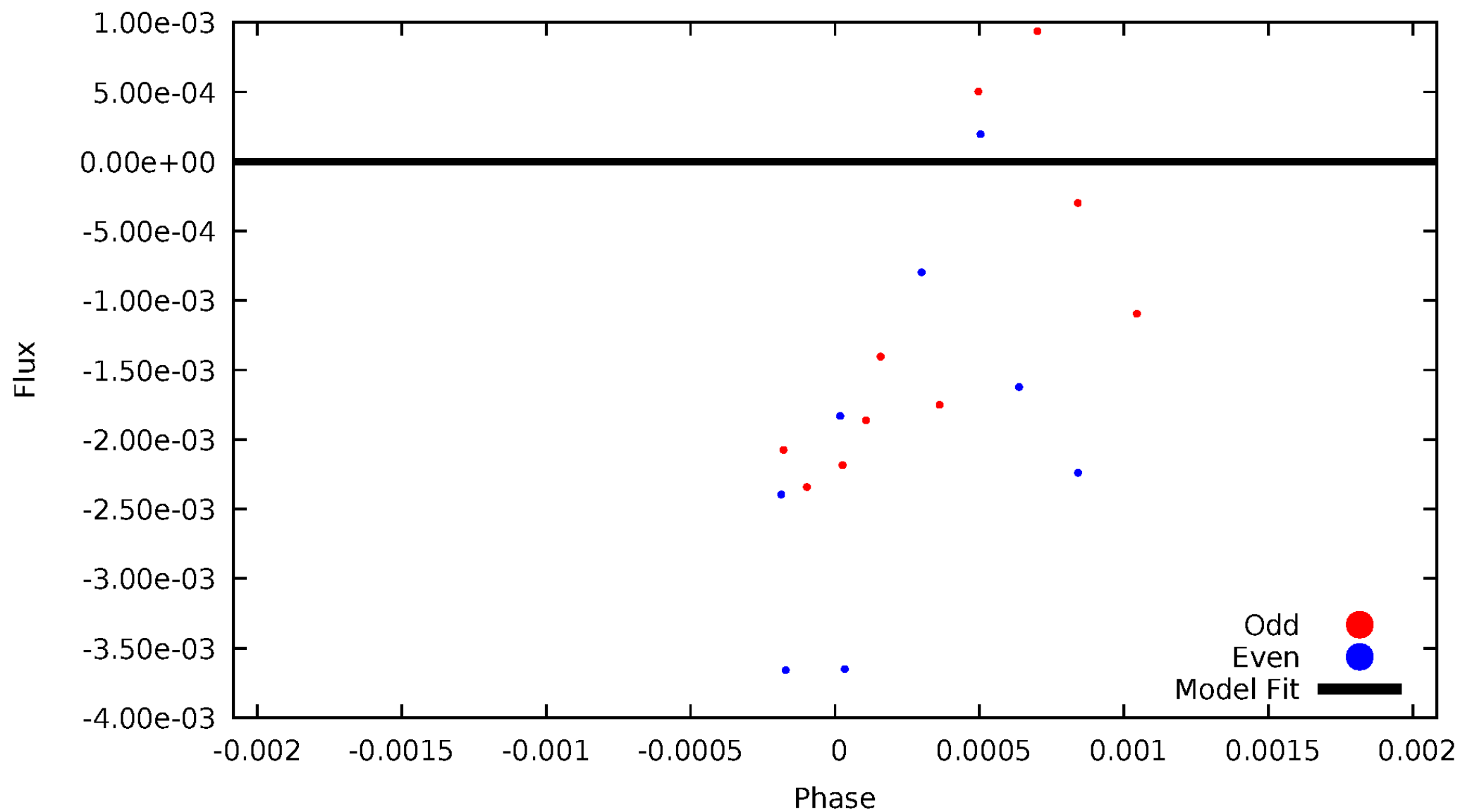


TCE 005018976-04



# DV Odd/Even

TCE 005018976-04



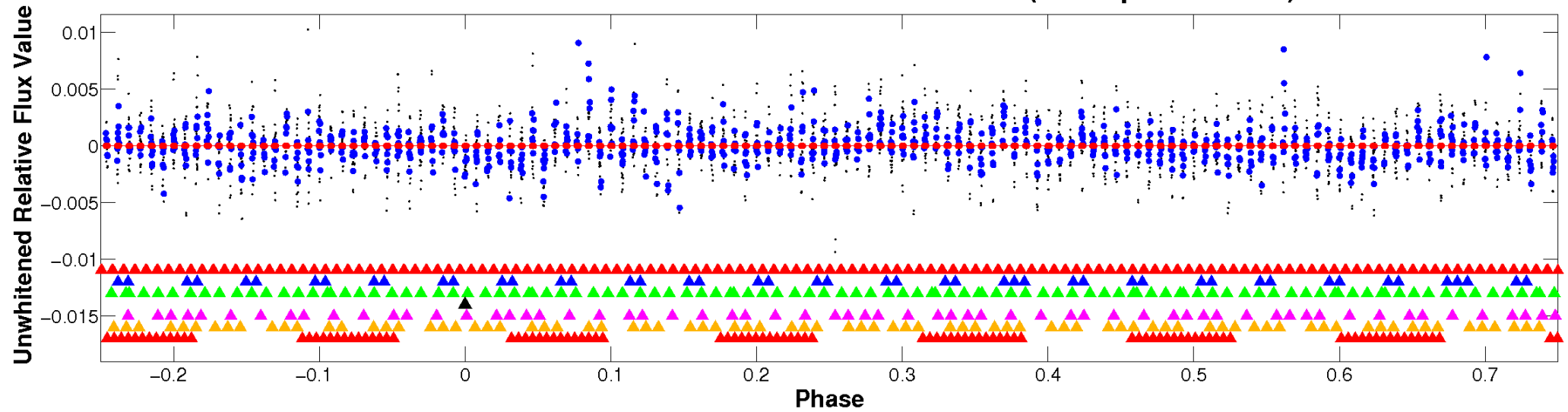


ALT Odd/Even

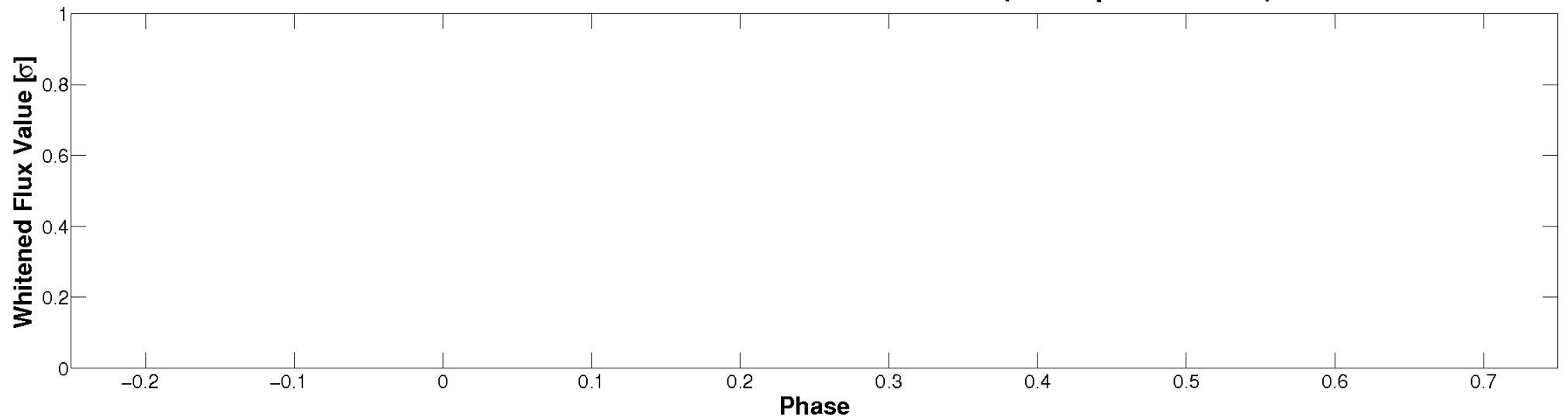
This plot does not exist for this TCE.

# Non-Whitened Vs. Whitened Light Curve

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



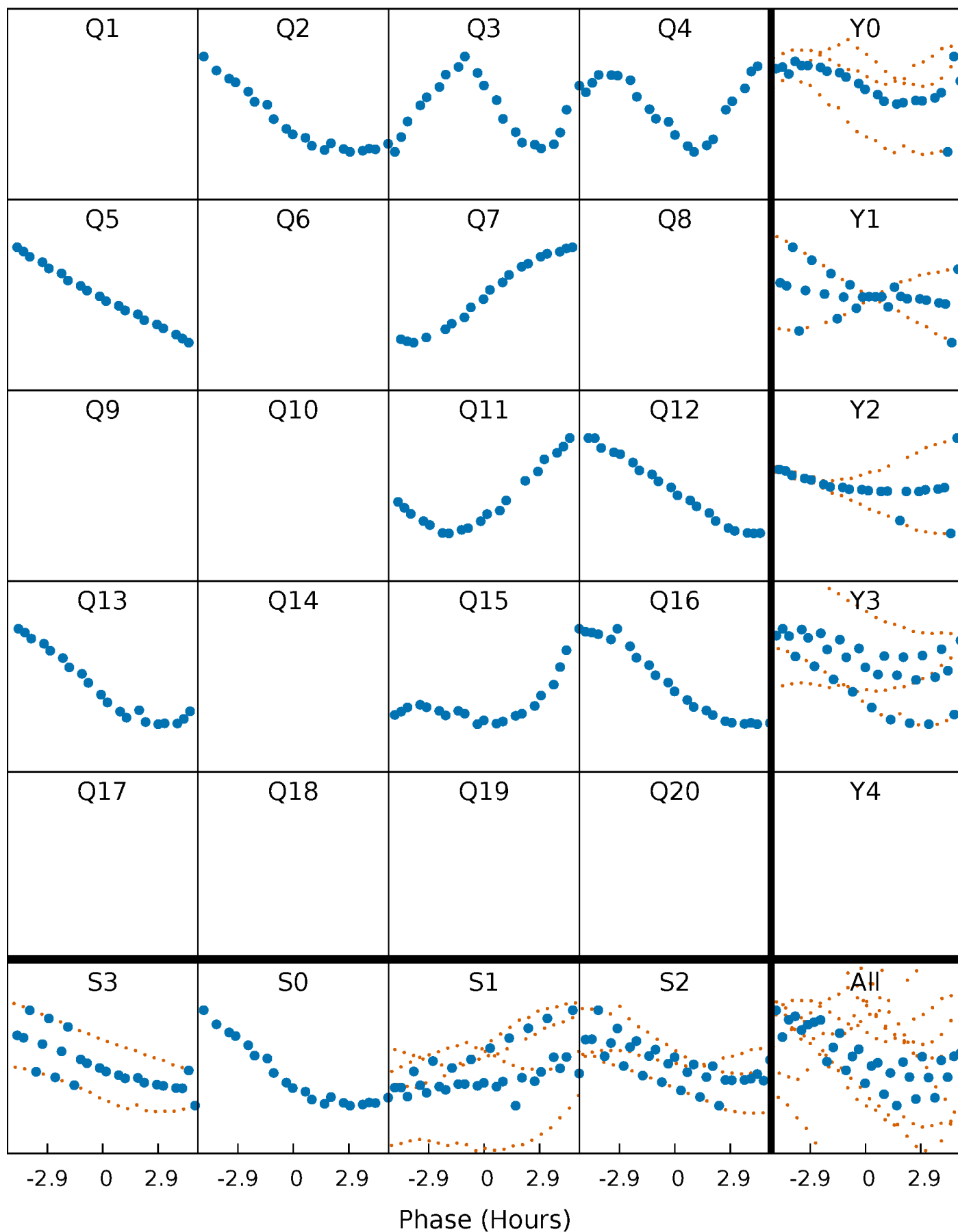
**Planet 4 : Phased Whitened Flux Time Series (TPS Epoch/Period)**





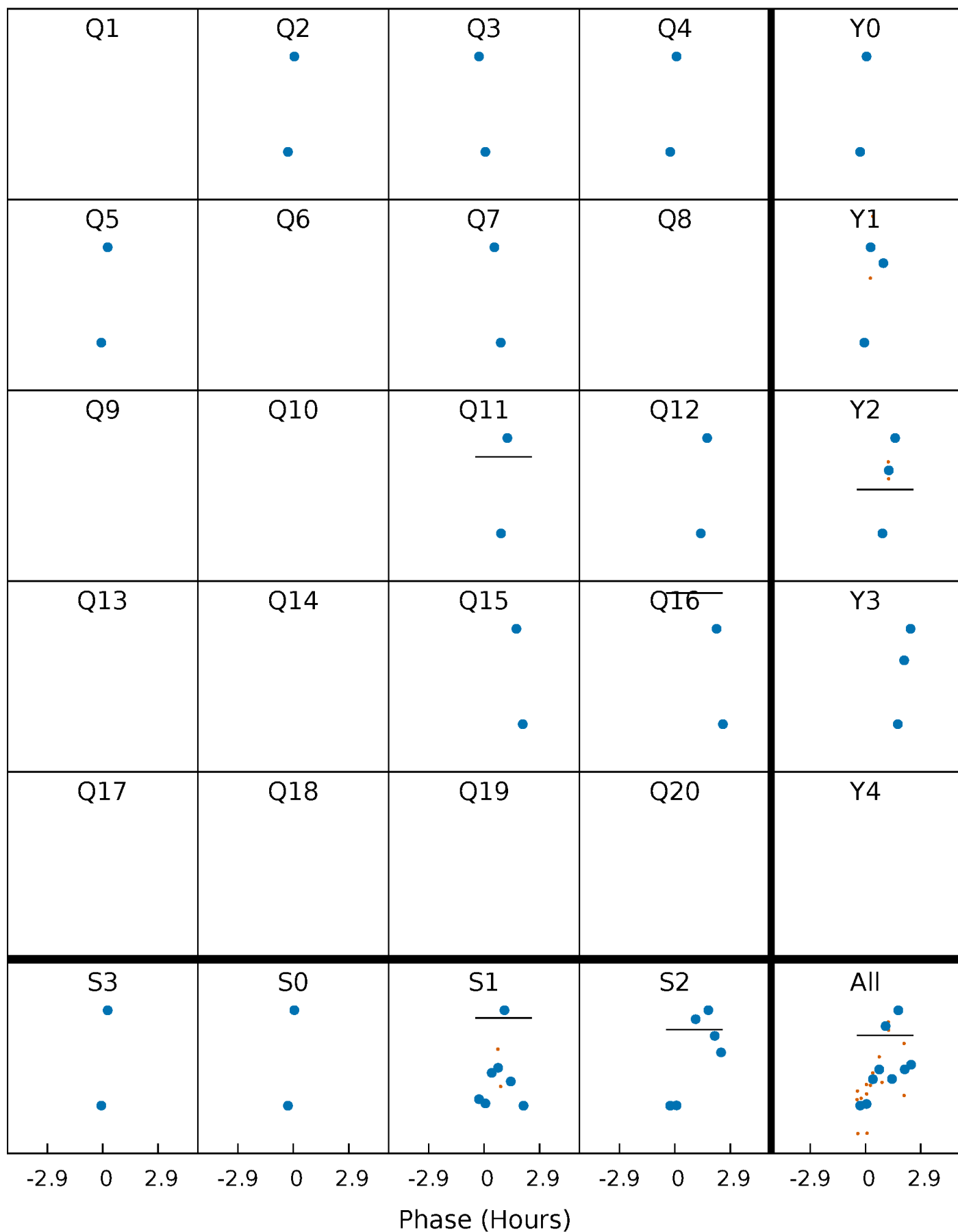
# PDC Quarter-Phased Transit Curves

TCE 005018976-04 P=100.059704 Days  $T_0=207.750595$  (BKJD)



# DV Quarter-Phased Transit Curves

TCE 005018976-04 P=100.059704 Days  $T_0=207.750595$  (BKJD)

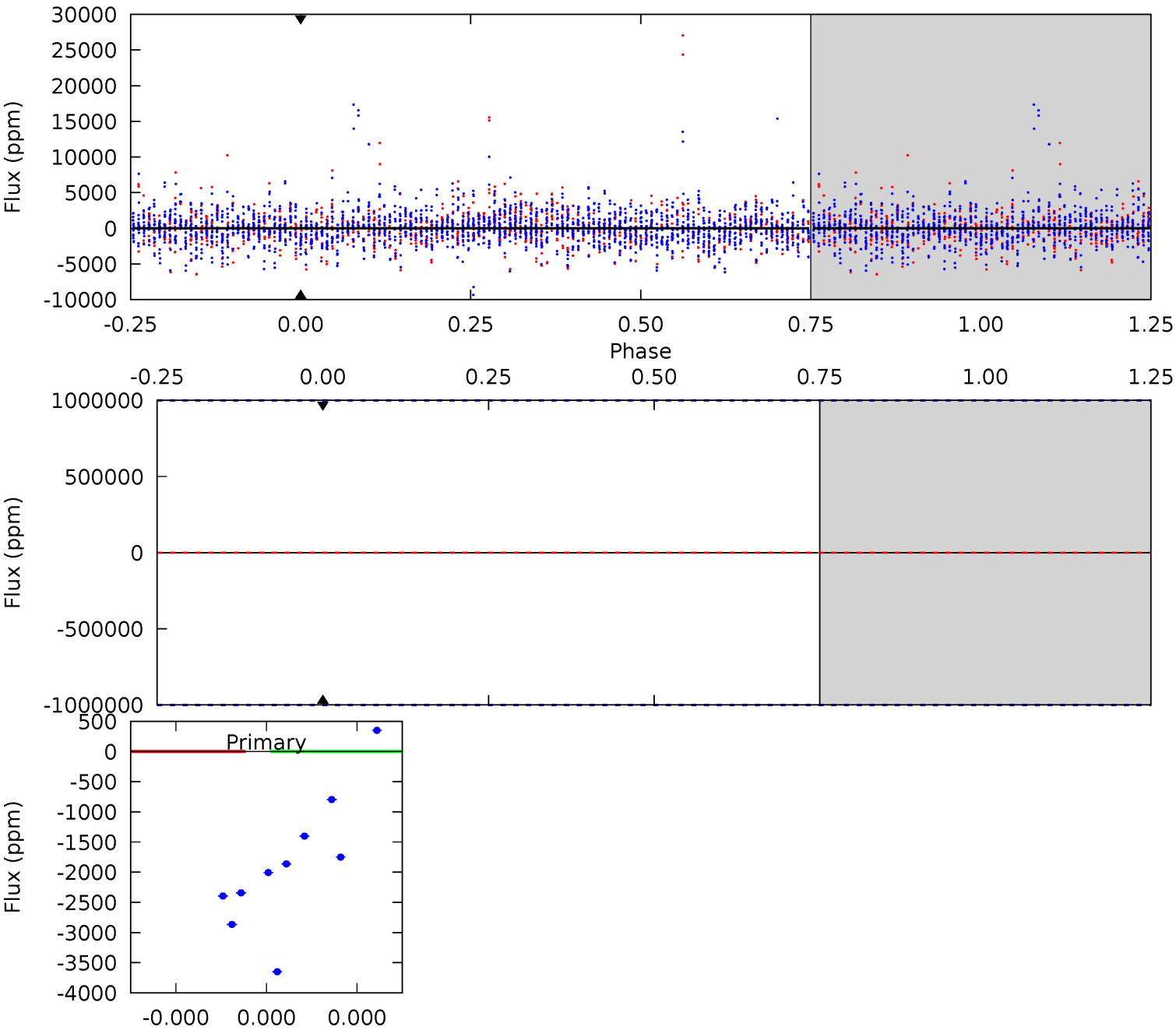


This plot does not exist for this TCE.

# DV Model-Shift Uniqueness Test

005018976-04, P = 100.059704 Days, E = 107.690891 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



## Alt Model-Shift Uniqueness Test

This plot does not exist for this TCE.

### Stellar Parameters For KIC 005018976

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (g \cdot \text{cm}^{-3})$
	$4484^{+134}_{-134}$	$4.617^{+0.052}_{-0.024}$	$-0.240^{+0.300}_{-0.300}$	$0.648^{+0.051}_{-0.056}$	$0.634^{+0.070}_{-0.051}$	$3.280^{+0.749}_{-0.370}$
	+3%/-3%	+1%/-1%	+125%/-125%	+8%/-9%	+11%/-8%	+23%/-11%
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 005018976-04 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$0 \pm 1000000$	$5.16^{+4.91}_{-3.40}$	$368^{+11}_{-12}$	$4330^{+7787}_{-14656}$	$11925^{+506113}_{-361424}$
Alt.	N/A	N/A	N/A	N/A	N/A

$T_{\text{max}}$  = Theoretical Maximum Planetary Temperature

$T_{\text{obs}}$  = Observed Planetary Temperature (Assuming  $A=0.3$ )

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

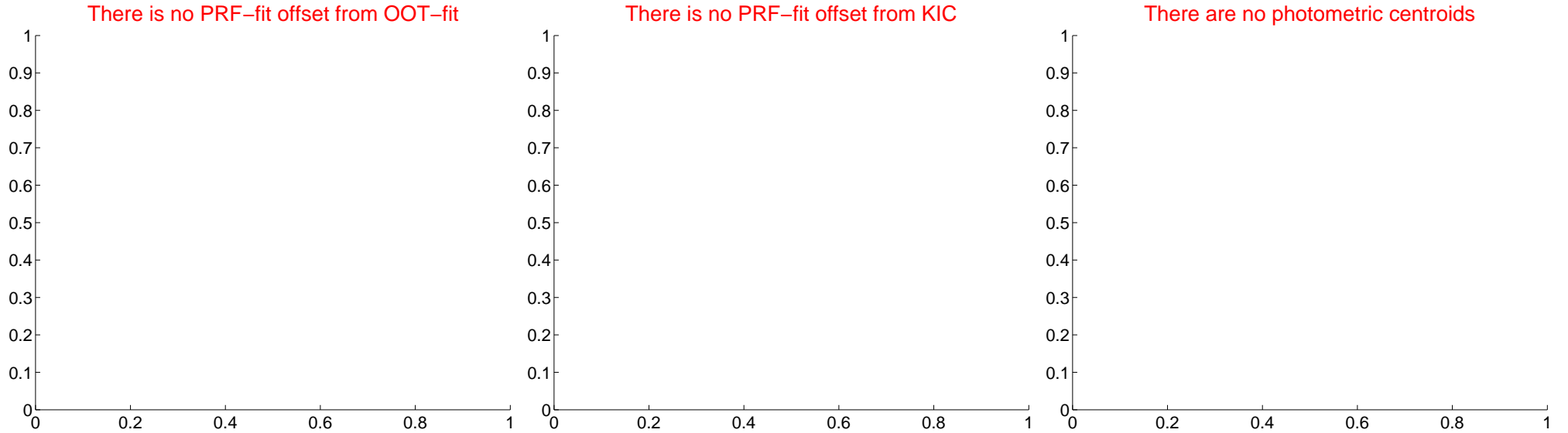
## DV Centroid Data

Supplemental centroid analysis for 005018976-04. Kepler magnitude: 14.28. Transit SNR -1.00

There are 0 quarters with good PRF difference image offsets

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

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	—	—	—	—
PRF-fit source offset from KIC position	—	—	—	—
photometric centroid source offset	—	—	—	—



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

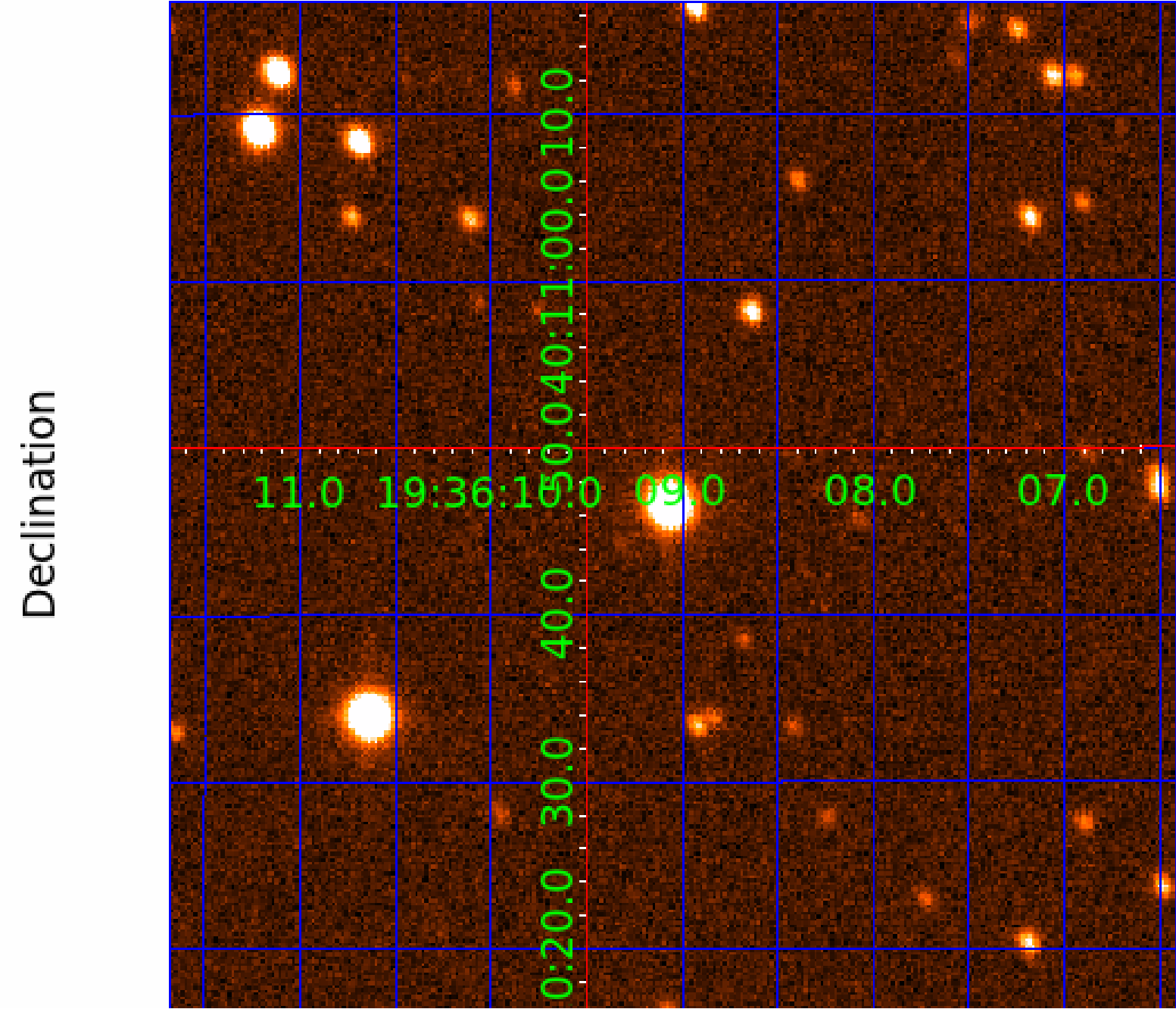


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



folded centroid time series figure for this object.

UKIRT Image



# KIC 005018976

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005018976-01	OBS	No	0.769753	131.914155	129.1	5.665	13.1	7.1	0.65	4484	0.73	762.32
005018976-02	OBS	No	30.422706	146.097086	1987.8	4.035	12.4	7.3	0.65	4484	2.82	5.66
005018976-03	OBS	No	13.835662	143.181962	1036.2	5.000	11.8	-1.0	0.65	4484	2.00	16.19
005018976-04	OBS	No	100.059704	207.750595	659.4	2.500	7.4	-1.0	0.65	4484	1.60	1.16
005018976-06	OBS	No	17.837054	135.754042	1863.2	2.186	9.5	5.9	0.65	4484	2.77	11.54
005018976-07	OBS	No	14.363129	139.123102	461.6	19.201	10.2	5.3	0.65	4484	1.36	15.40

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005018976-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
005018976-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
005018976-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_NOFITS
005018976-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—NO_FITS—CENT_NOFITS
005018976-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV
005018976-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT

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

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

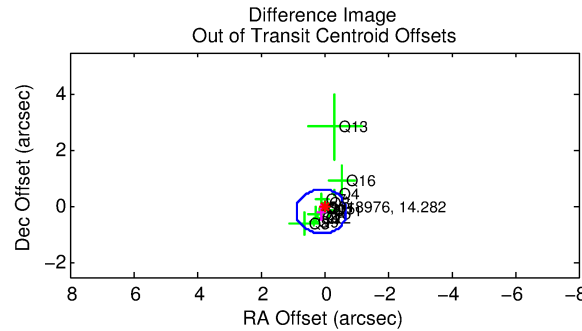
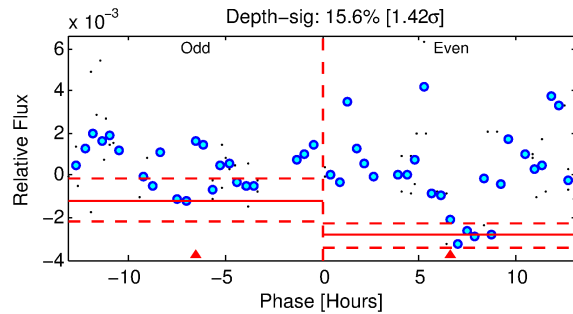
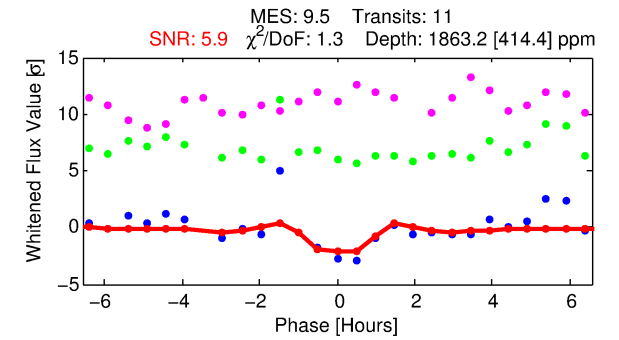
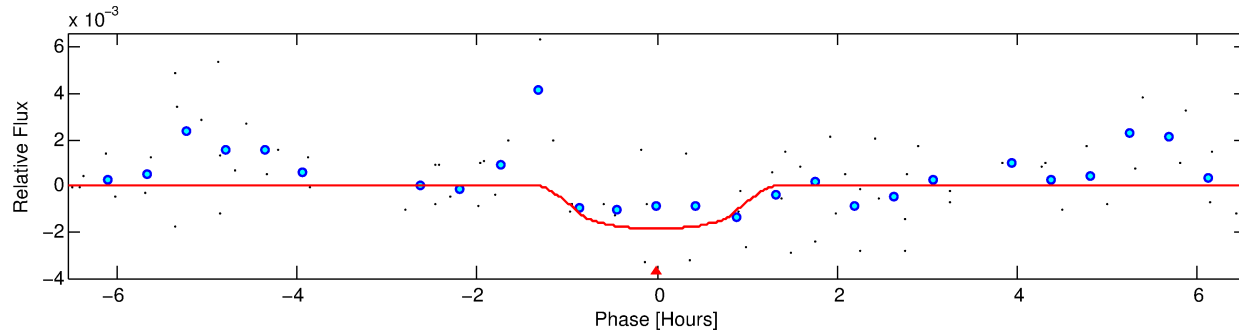
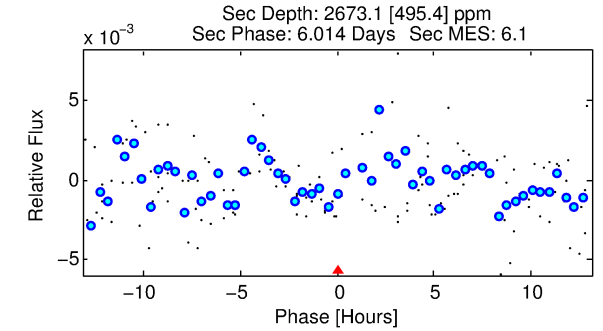
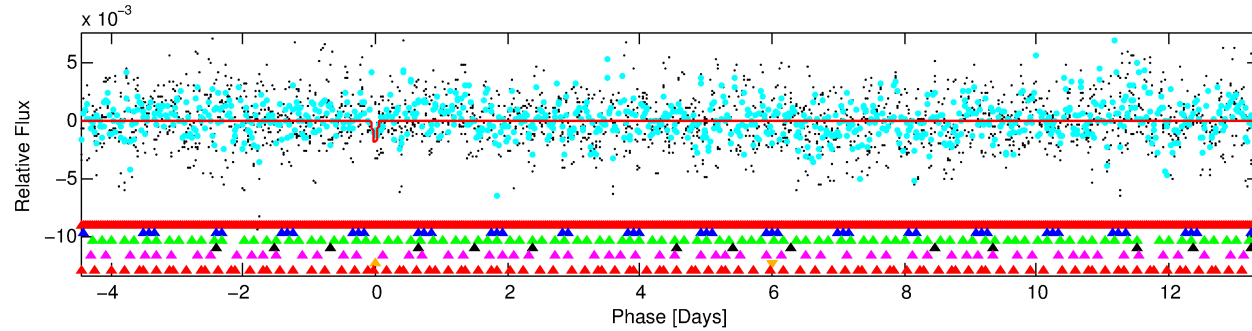
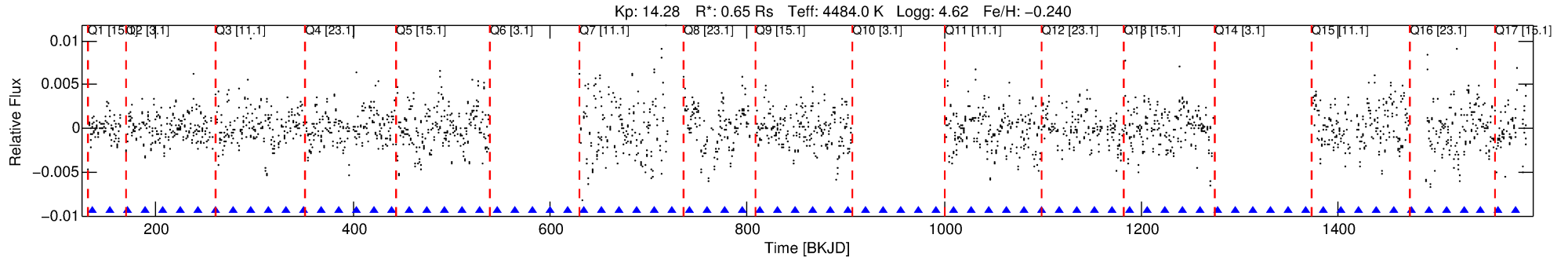
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 005018976-06

No Significant Match Found

# DV One-Page Summary

KIC: 5018976 Candidate: 6 of 7 Period: 17.837 d



## DV Fit Results:

Period = 17.83705 [0.00025] d  
Epoch = 135.7540 [0.0111] BKJD  
Rp/R\* = 0.0391 [0.1640]  
a/R\* = 59.54 [742.30]  
b = 0.41 [26.25]  
Seff = 11.54 [1.79]  
Teq = 470 [18] K  
Rp = 2.77 [11.60] Re  
a = 0.1148 [0.0080] AU  
Ag = 2531.28 [21224.69] [0.12σ]  
Teffp = 5154 [10804] K [0.43σ]

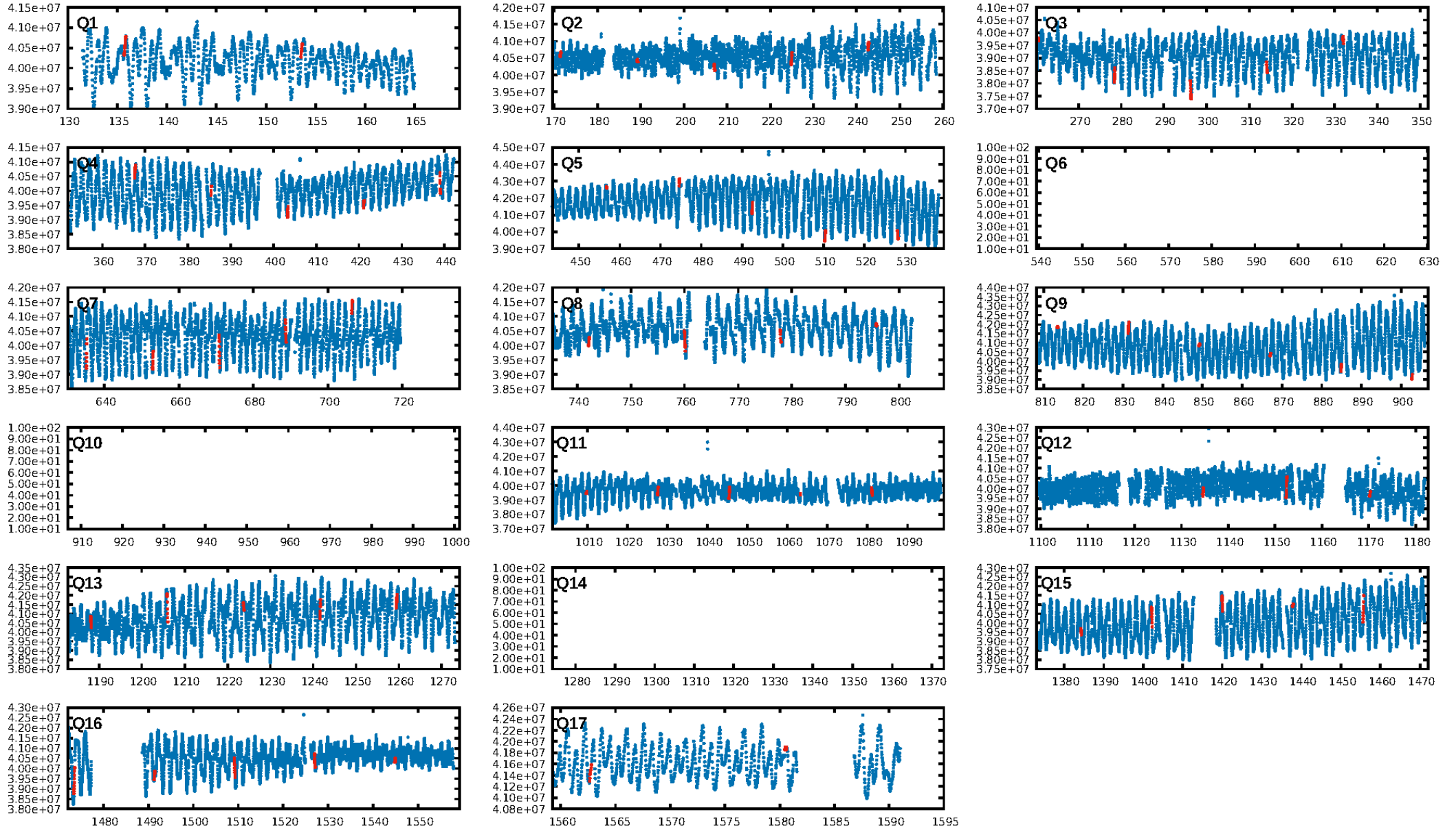
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [4.31σ]  
LongPeriod-sig: 100.0% [52.37σ]  
ModelChiSquare2-sig: 18.1%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 1.32e-19  
RollingBand-fgt: 1.00 [11/11]  
**GhostDiagnostic-chr: 1.184**  
Centroid-sig: 0.0%  
Centroid-so: 0.306 arcsec [2.11σ]  
OotOffset-rm: 0.194 arcsec [0.74σ]  
KicOffset-rm: 0.249 arcsec [1.03σ]  
OotOffset-st: 1/4/4/4 [13]  
KicOffset-st: 1/4/4/4 [13]  
DiffImageQuality-fgm: 0.77 [10/13]  
DiffImageOverlap-fno: 0.00 [0/14]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 04:02:40 Z

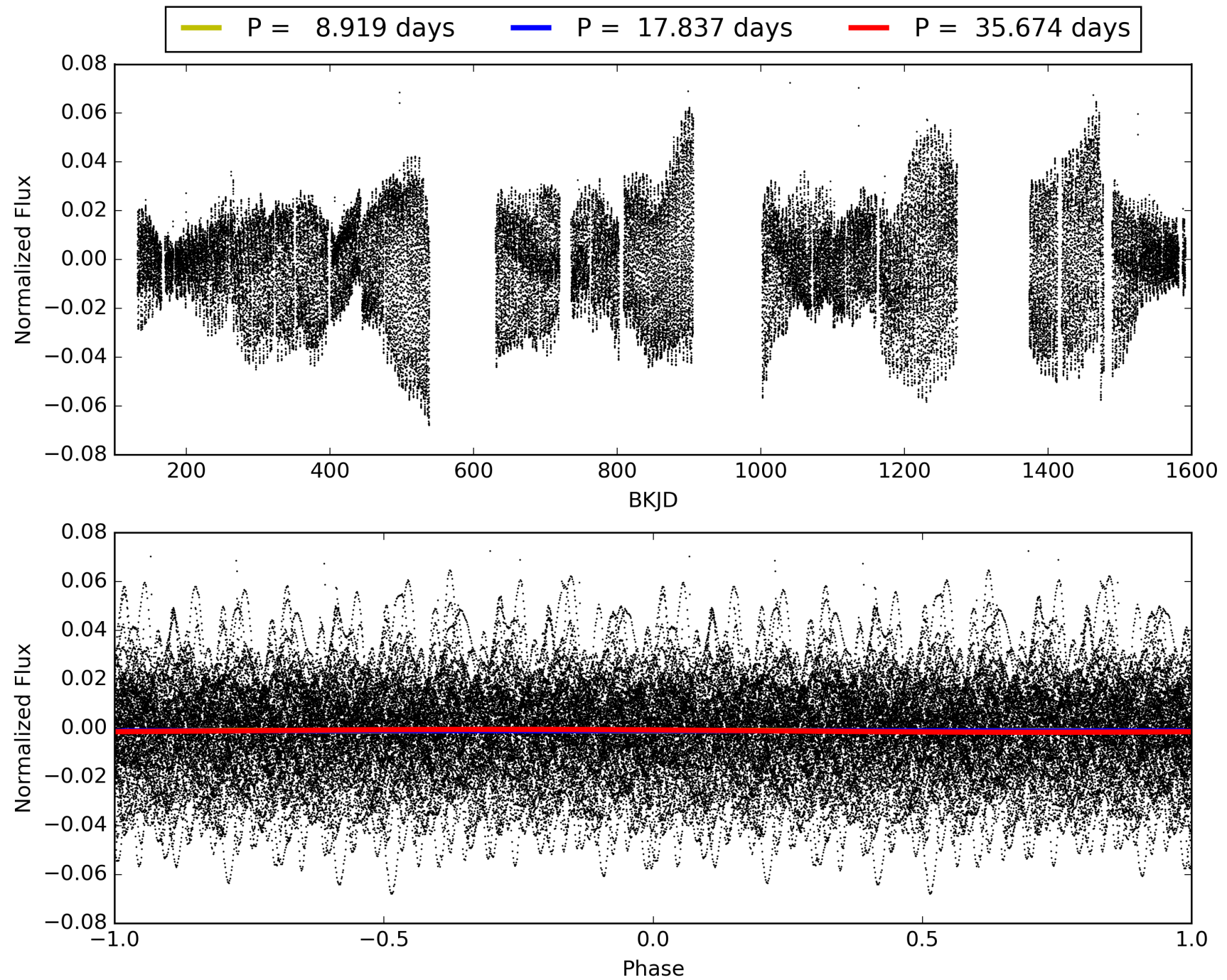
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 005018976-06, PDC Light Curves



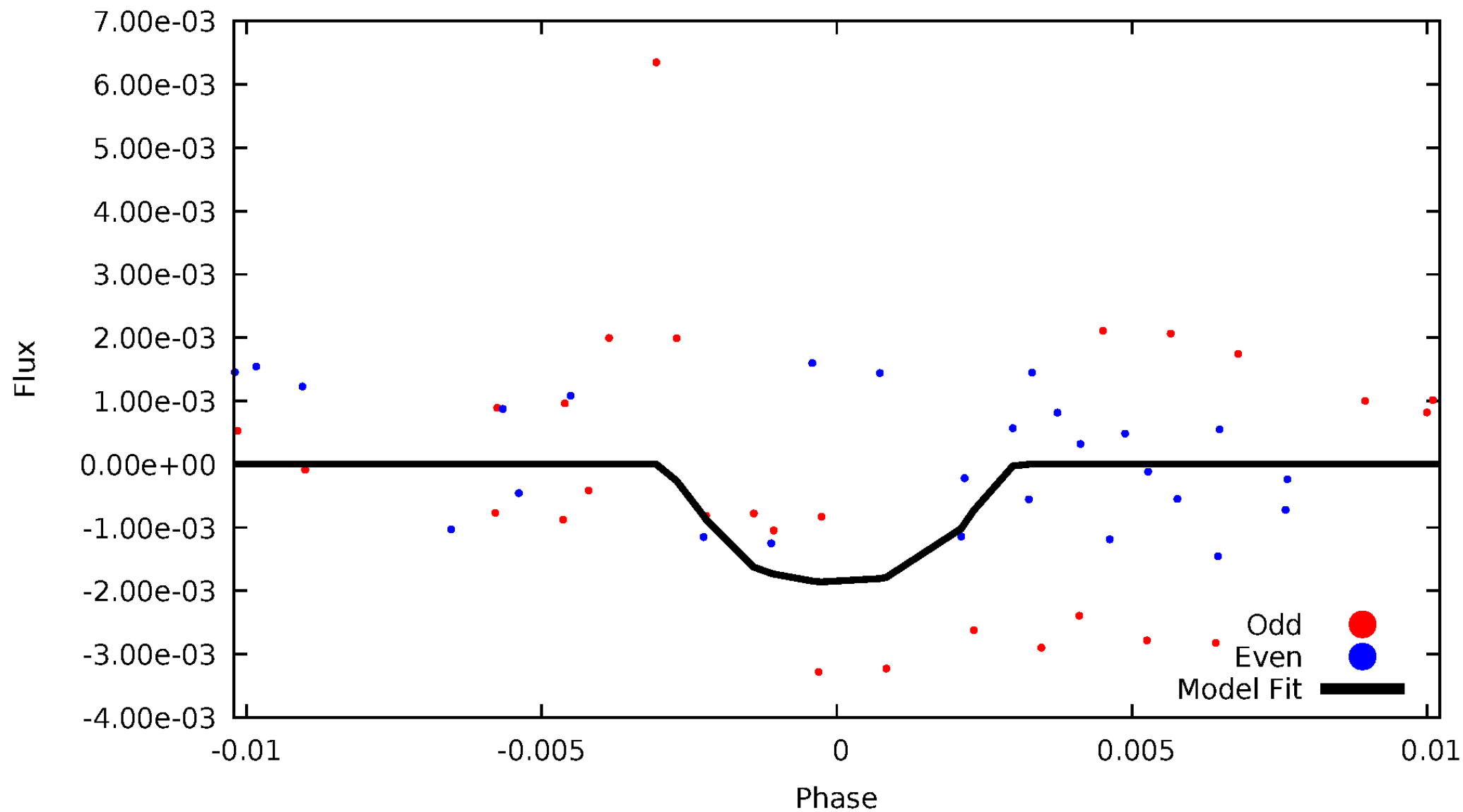


# TCE 005018976-06



# DV Odd/Even

TCE 005018976-06



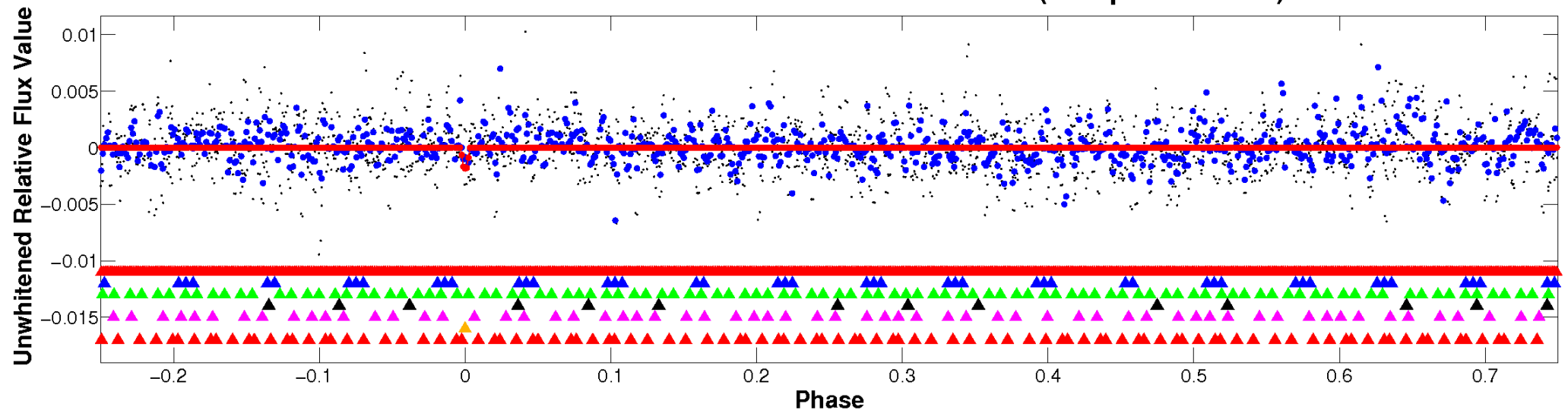


ALT Odd/Even

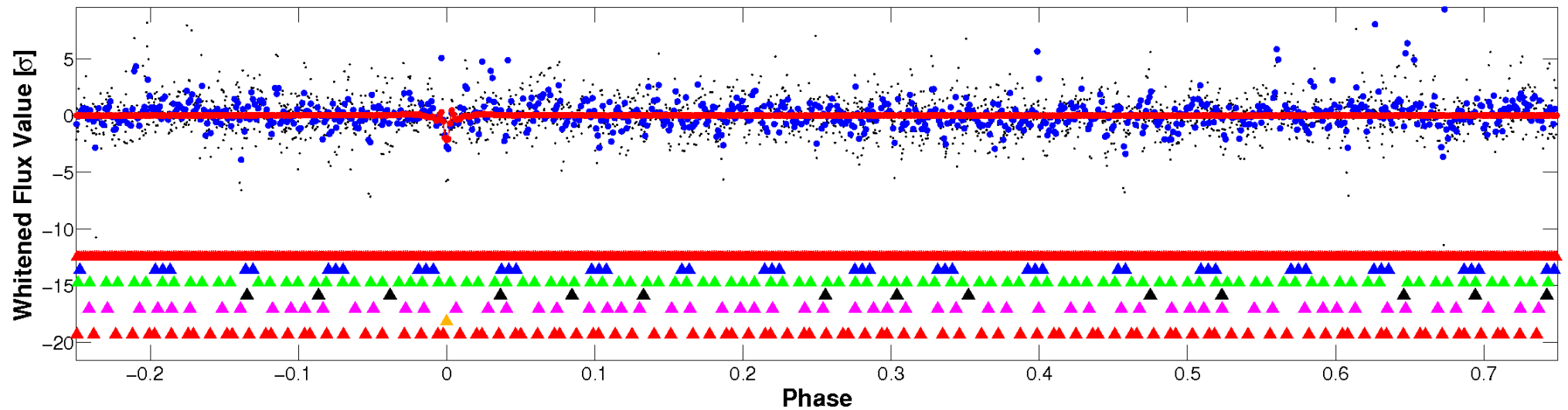
This plot does not exist for this TCE.

# Non-Whitened Vs. Whitened Light Curve

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

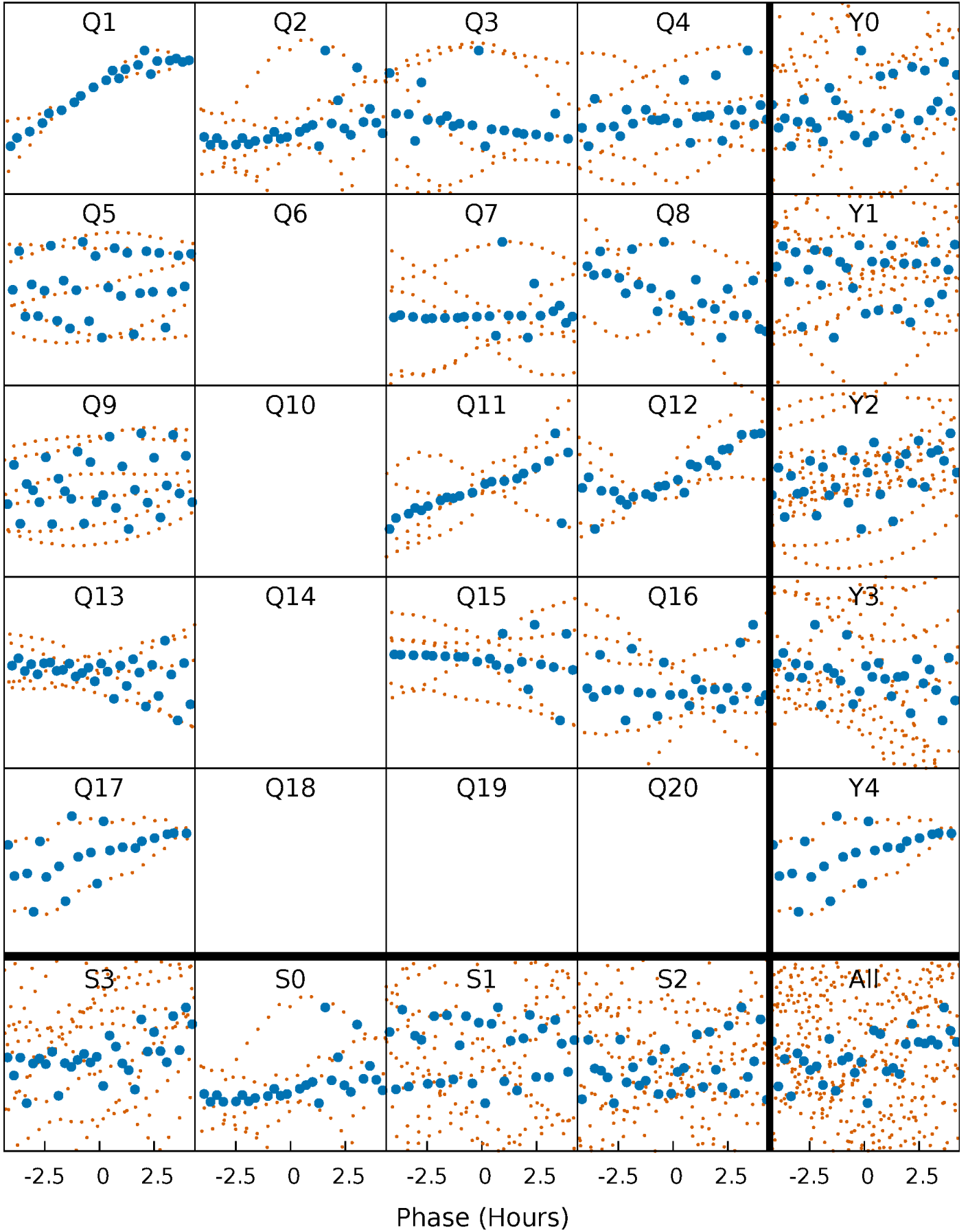


## Planet 6 : Phased Whitened Flux Time Series (Fit Epoch/Period)



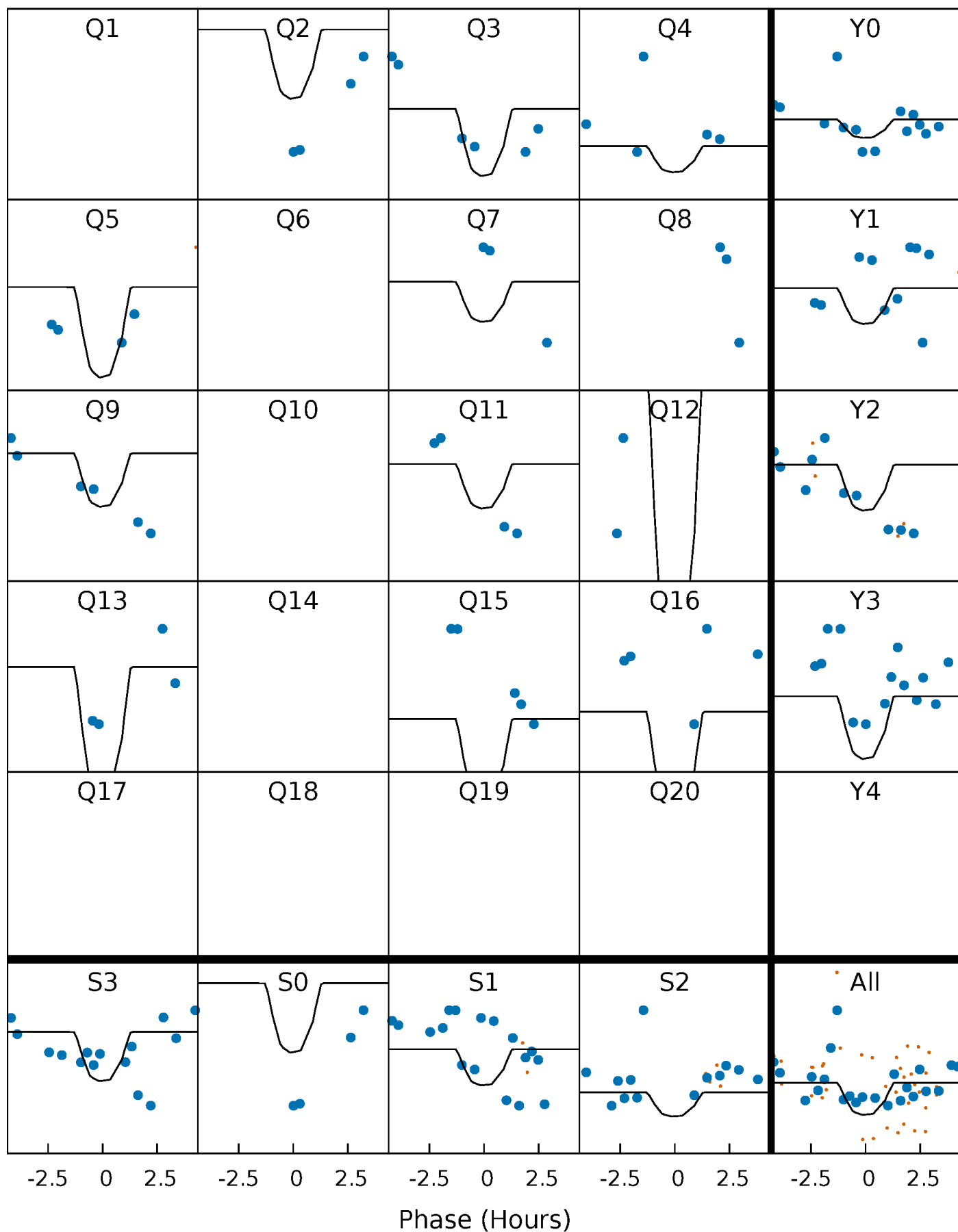
# PDC Quarter-Phased Transit Curves

TCE 005018976-06   P= 17.837054 Days    $T_0=135.754042$  (BKJD)



# DV Quarter-Phased Transit Curves

TCE 005018976-06 P= 17.837054 Days  $T_0=135.754042$  (BKJD)



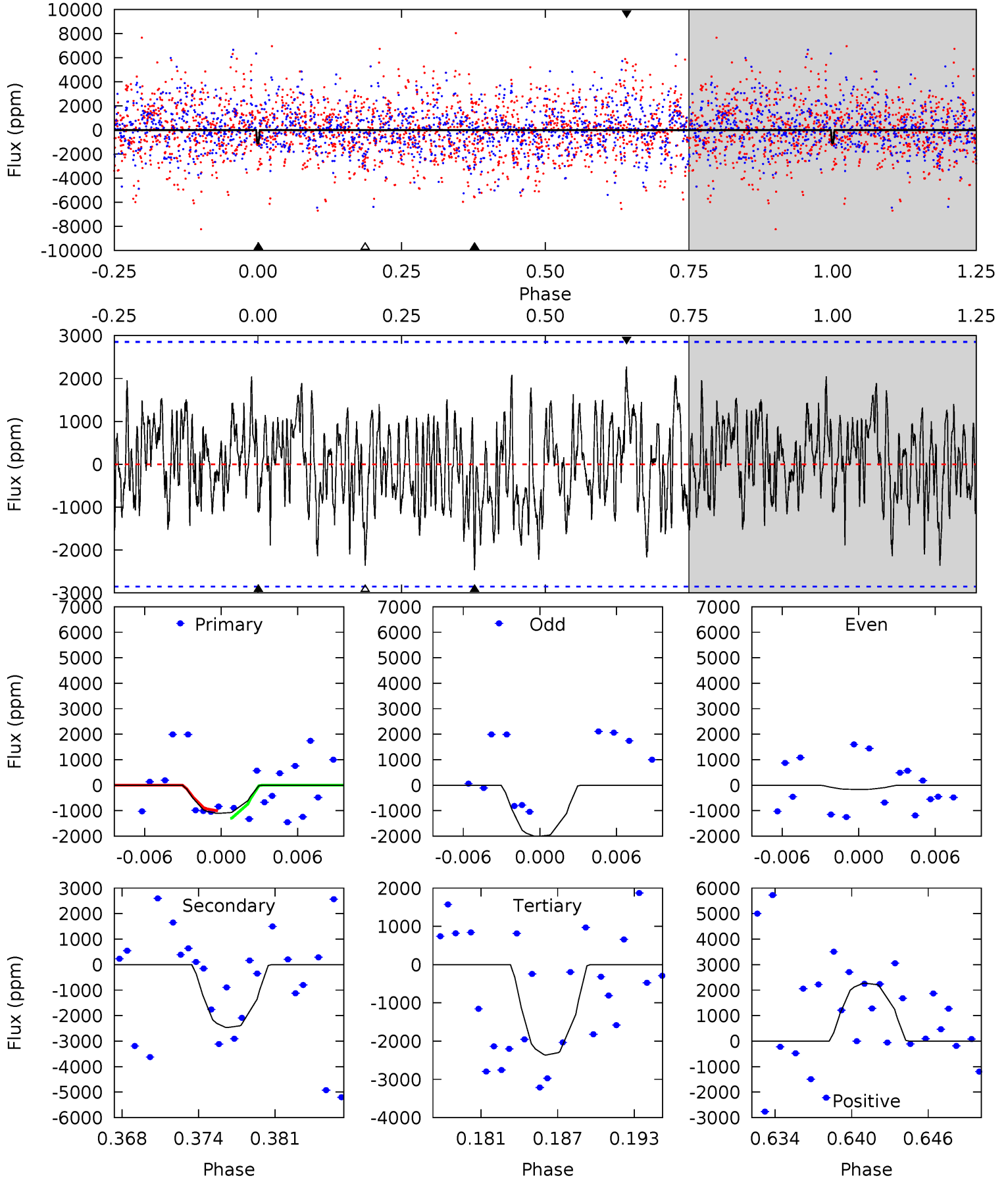
This plot does not exist for this TCE.



# DV Model-Shift Uniqueness Test

005018976-06, P = 17.837054 Days, E = 117.916988 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1.98	4.44	4.25	4.09	5.12	2.75	1.57	-2.27	-2.10	0.19	0.35	1.59	0.88	0.48	0.26



## Alt Model-Shift Uniqueness Test

This plot does not exist for this TCE.

### Stellar Parameters For KIC 005018976

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (g \cdot \text{cm}^{-3})$
	$4484^{+134}_{-134}$	$4.617^{+0.052}_{-0.024}$	$-0.240^{+0.300}_{-0.300}$	$0.648^{+0.051}_{-0.056}$	$0.634^{+0.070}_{-0.051}$	$3.280^{+0.749}_{-0.370}$
	+3%/-3%	+1%/-1%	+125%/-125%	+8%/-9%	+11%/-8%	+23%/-11%
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 005018976-06 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-2469 \pm 557$	$8.82^{+9.38}_{-5.97}$	$654^{+20}_{-24}$	$3251^{+1592}_{-598}$	$230^{+1923}_{-178}$
Alt.	N/A	N/A	N/A	N/A	N/A

$T_{max}$  = 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  $A_{obs} \gg 1.0$

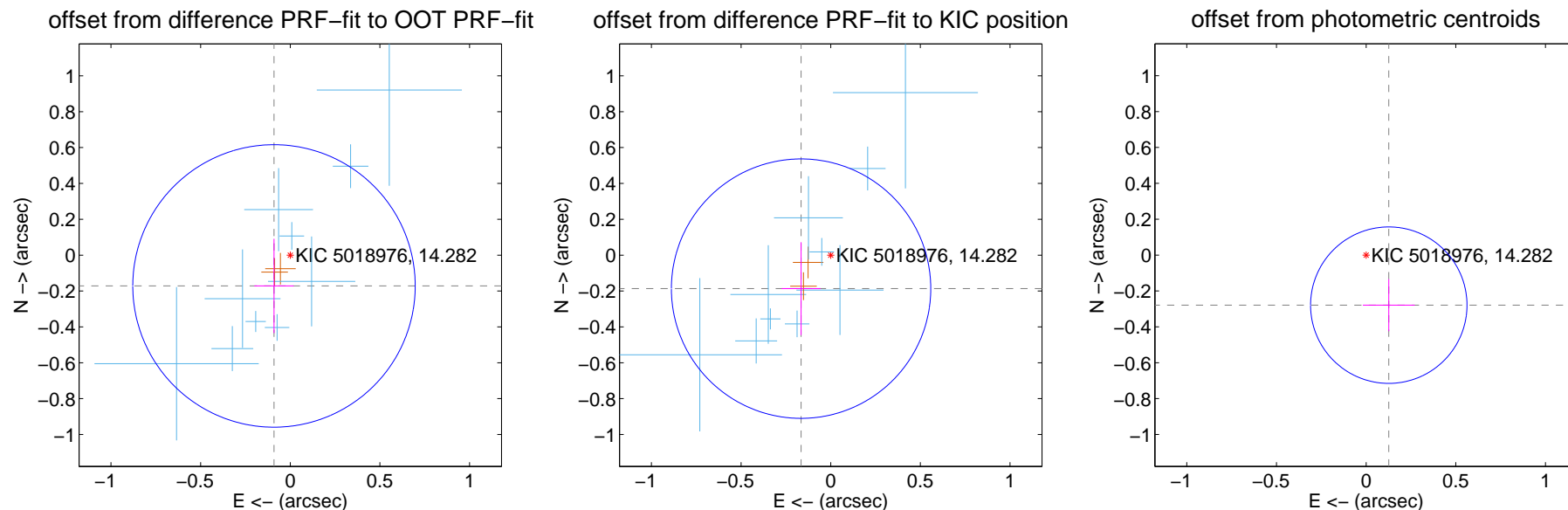
## DV Centroid Data

Supplemental centroid analysis for 005018976-06. Kepler magnitude: 14.28. Transit SNR 5.88

There are 10 quarters with good PRF difference image offsets

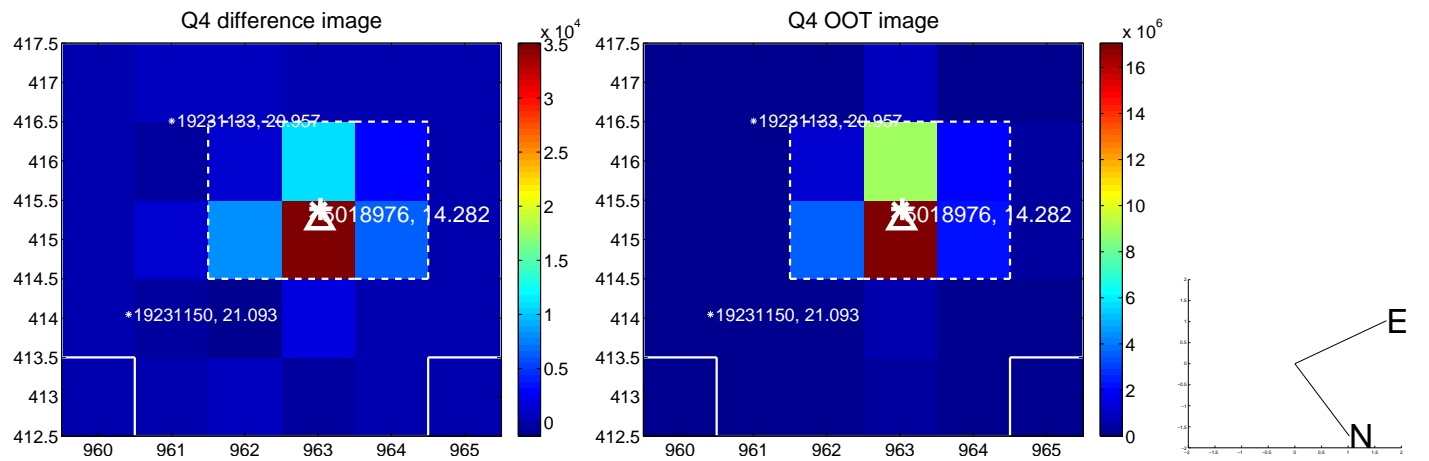
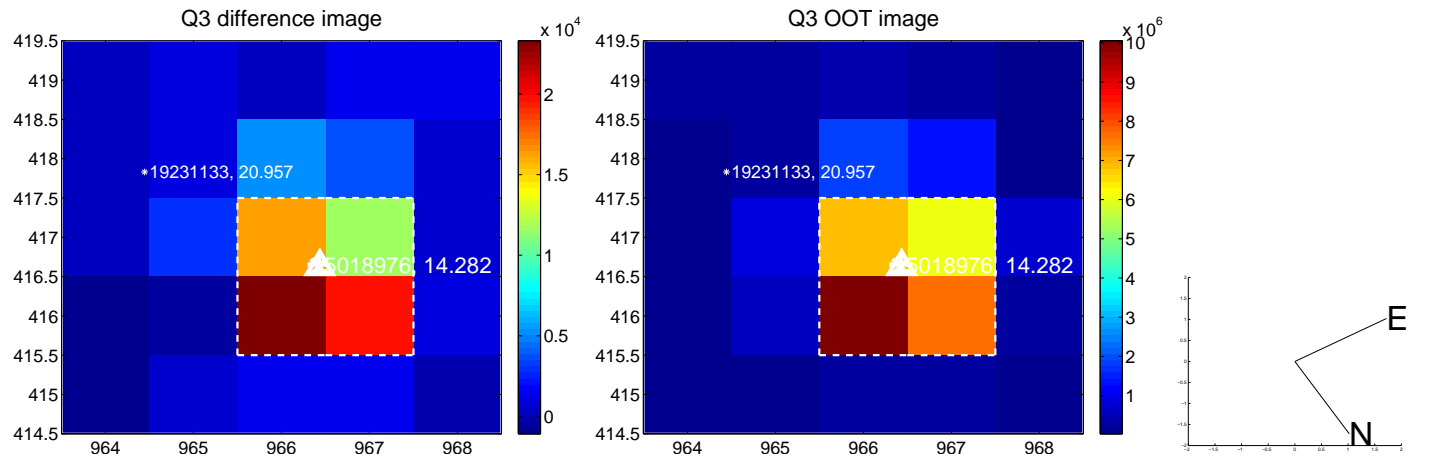
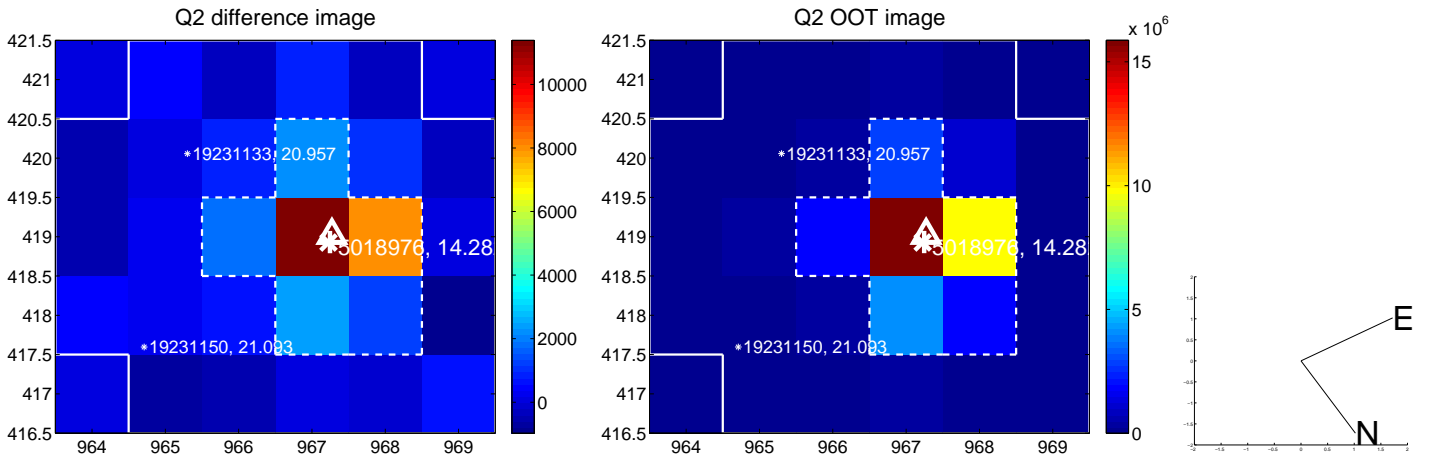
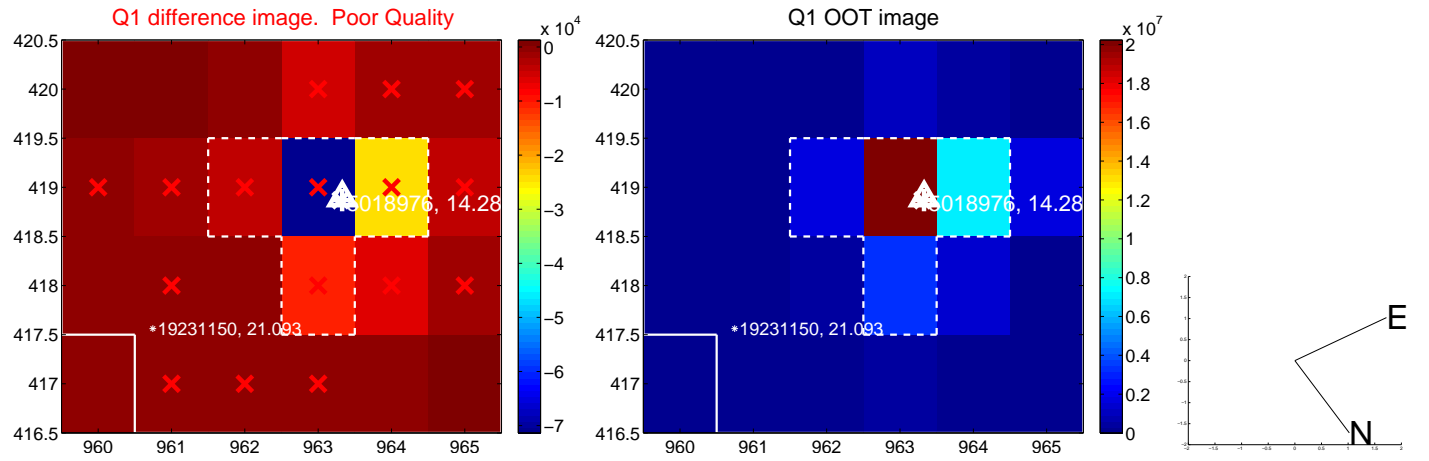
The direct PRF centroid is offset from the target star catalog position by about 0.14 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.194 \pm 0.263$	0.74	$0.091 \pm 0.110$	$-0.172 \pm 0.263$
PRF-fit source offset from KIC position	$0.249 \pm 0.241$	1.03	$0.165 \pm 0.109$	$-0.187 \pm 0.259$
photometric centroid source offset	$0.31 \pm 0.15$	2.11	$-0.13 \pm 0.14$	$-0.28 \pm 0.15$

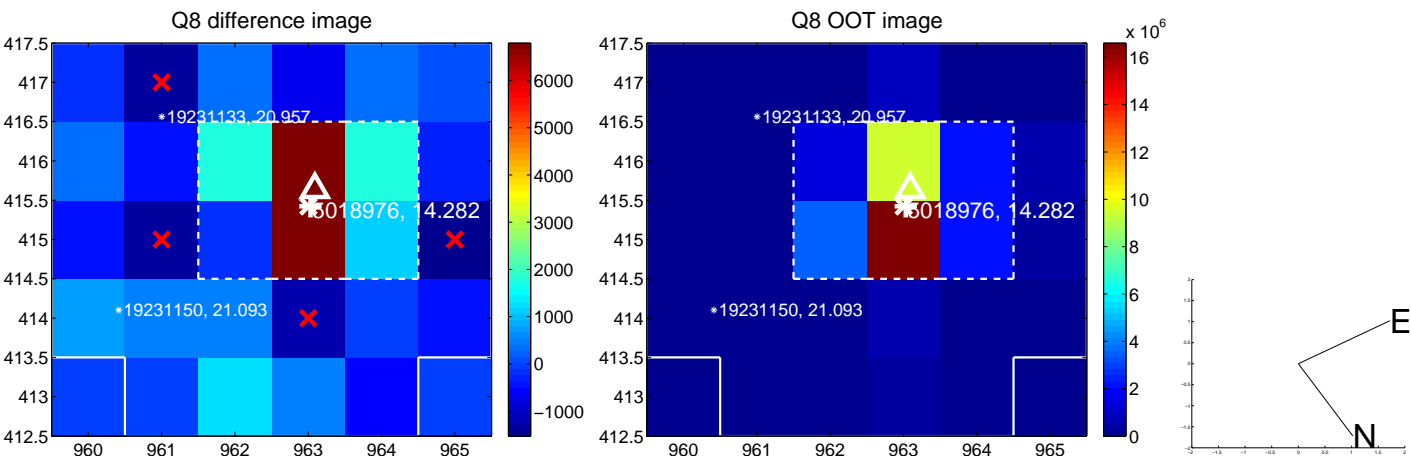
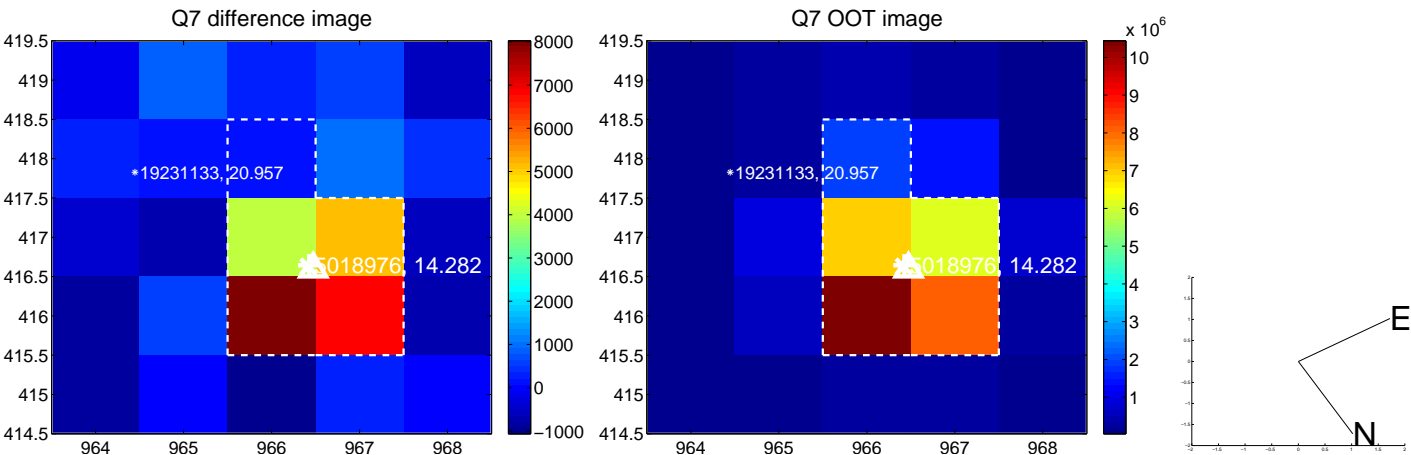
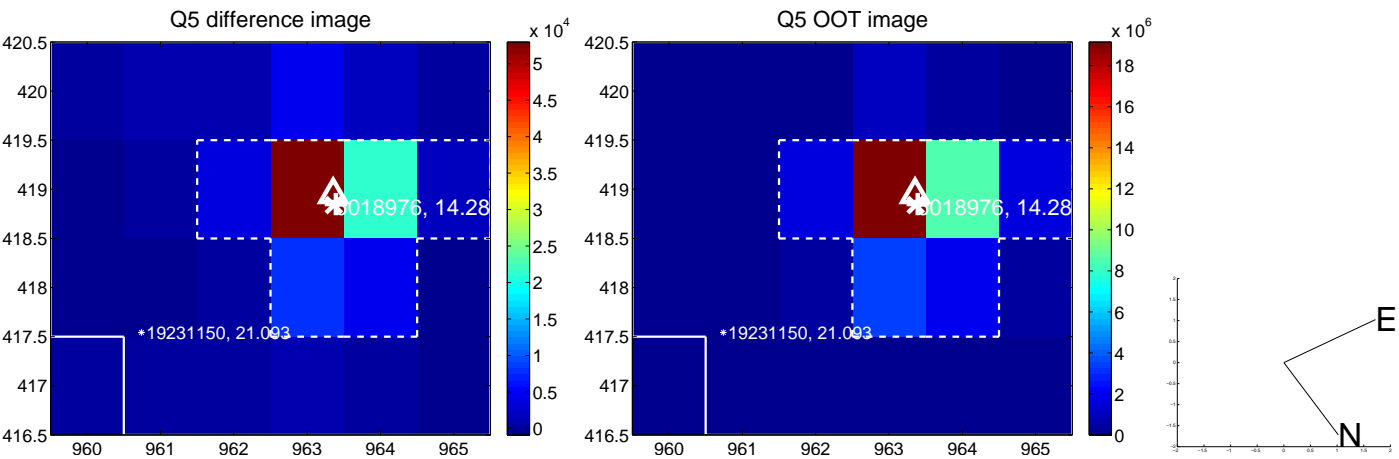


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

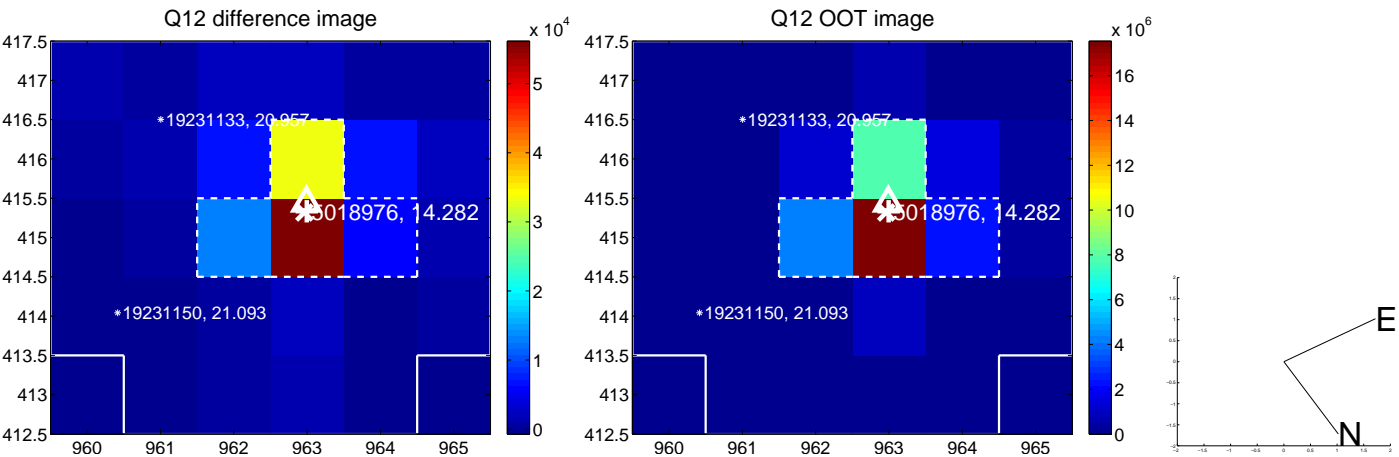
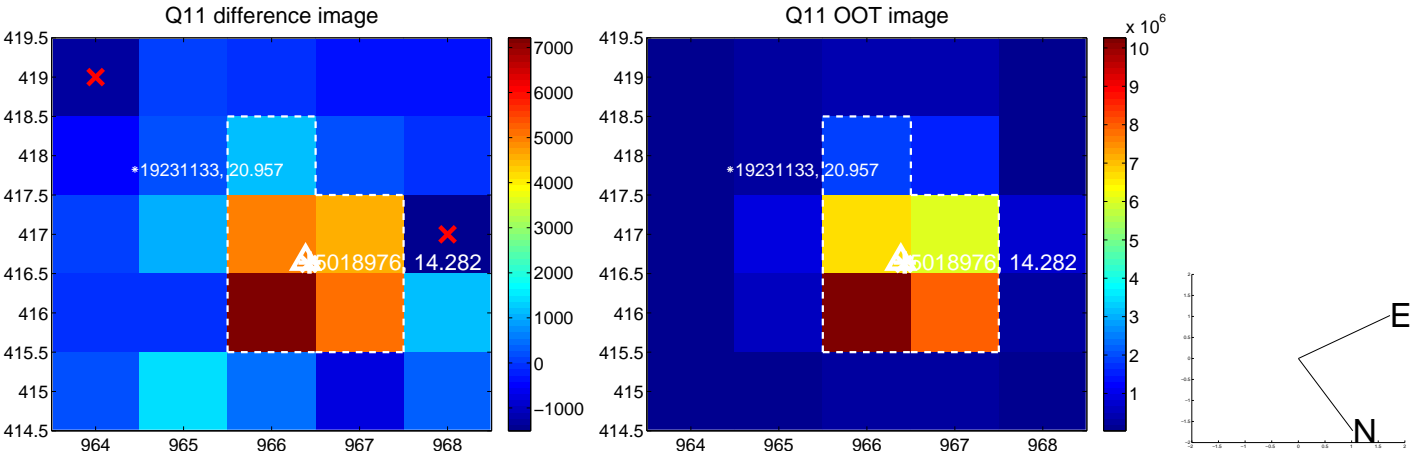
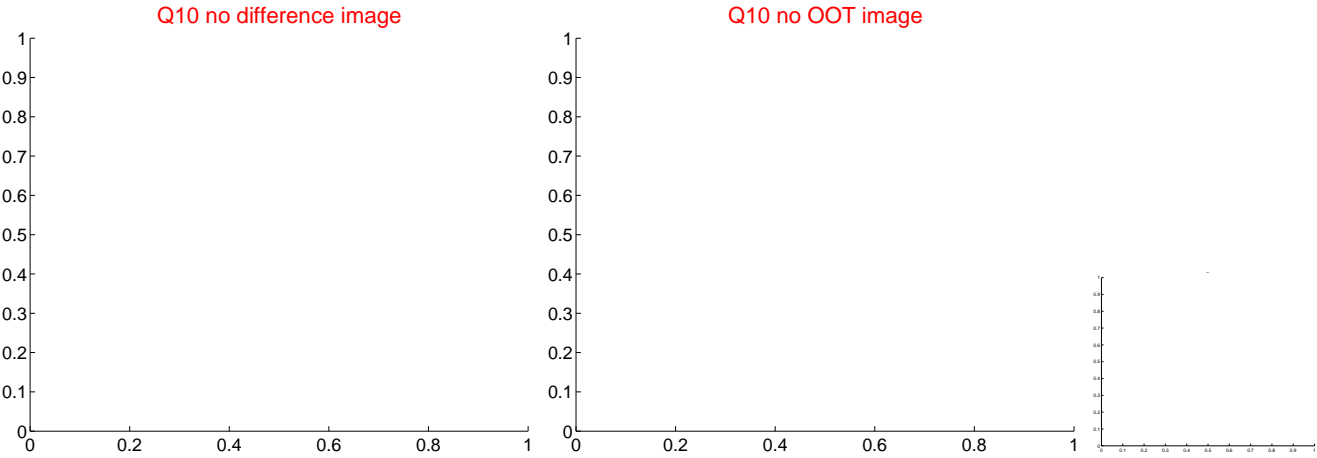
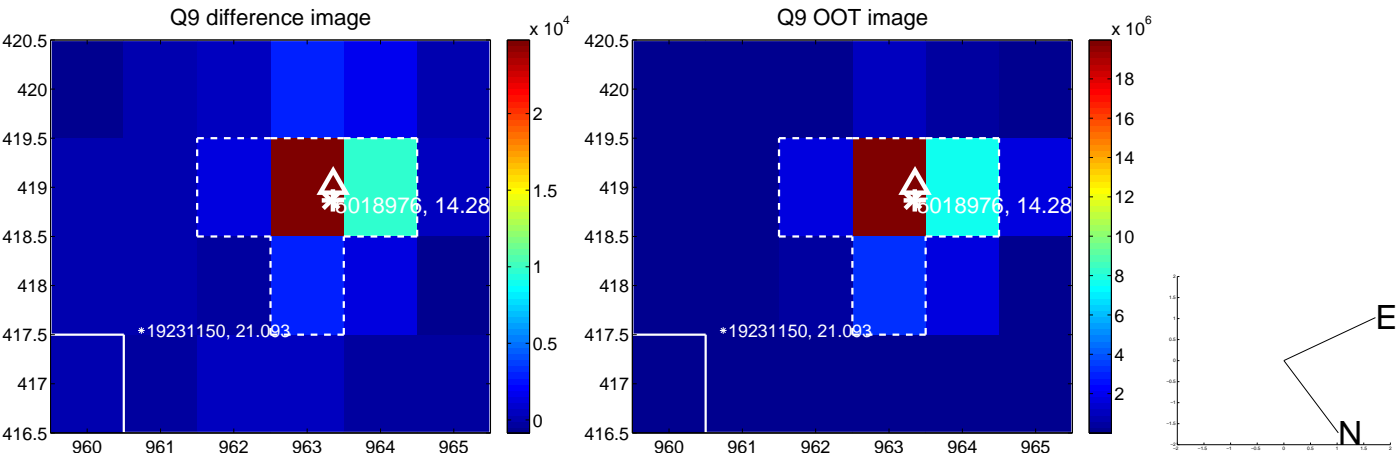
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



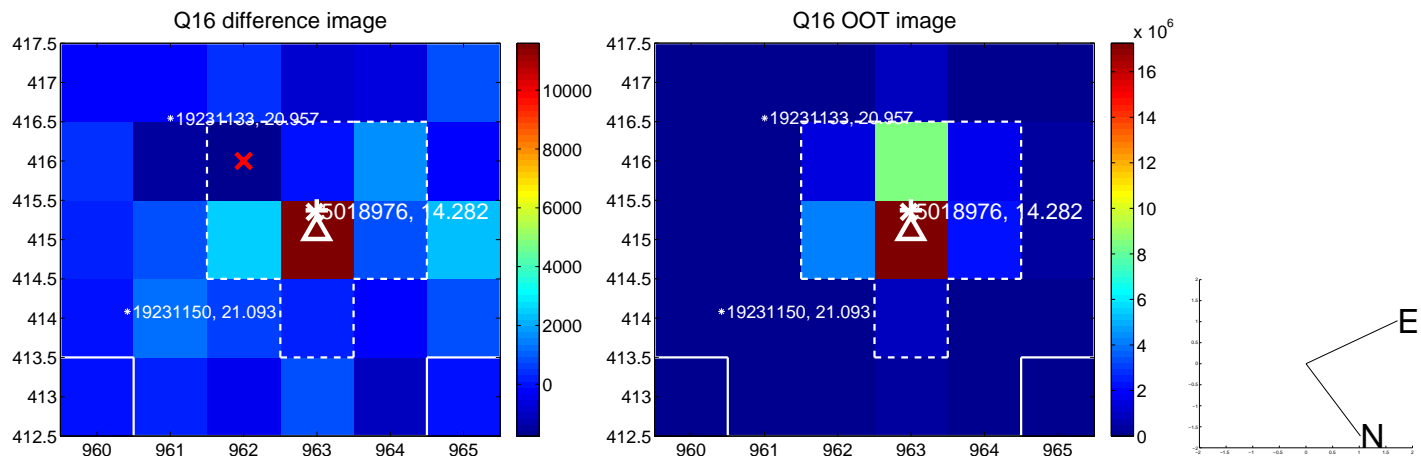
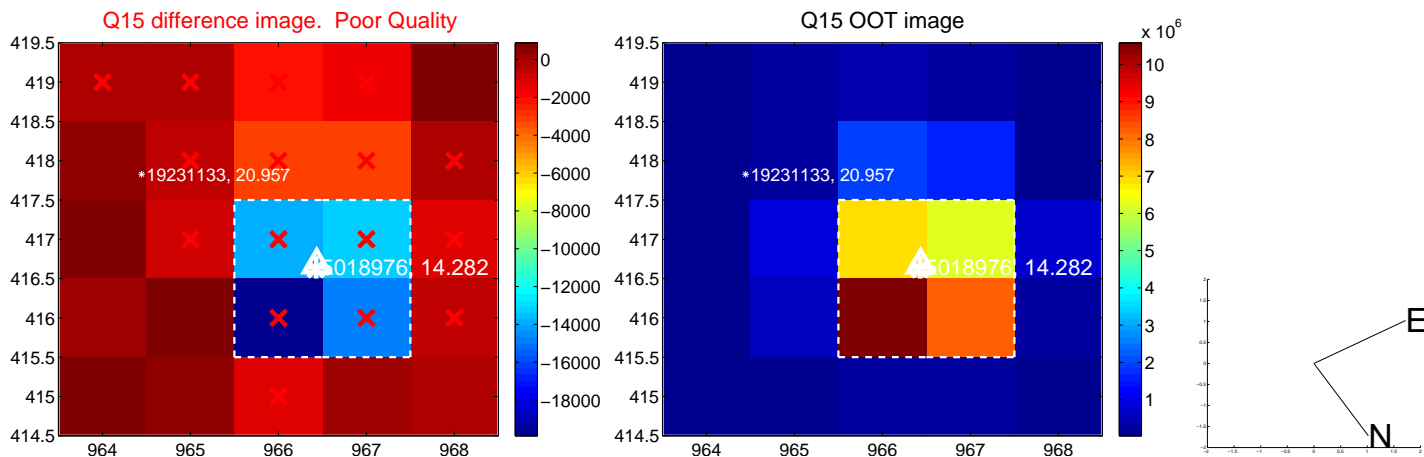
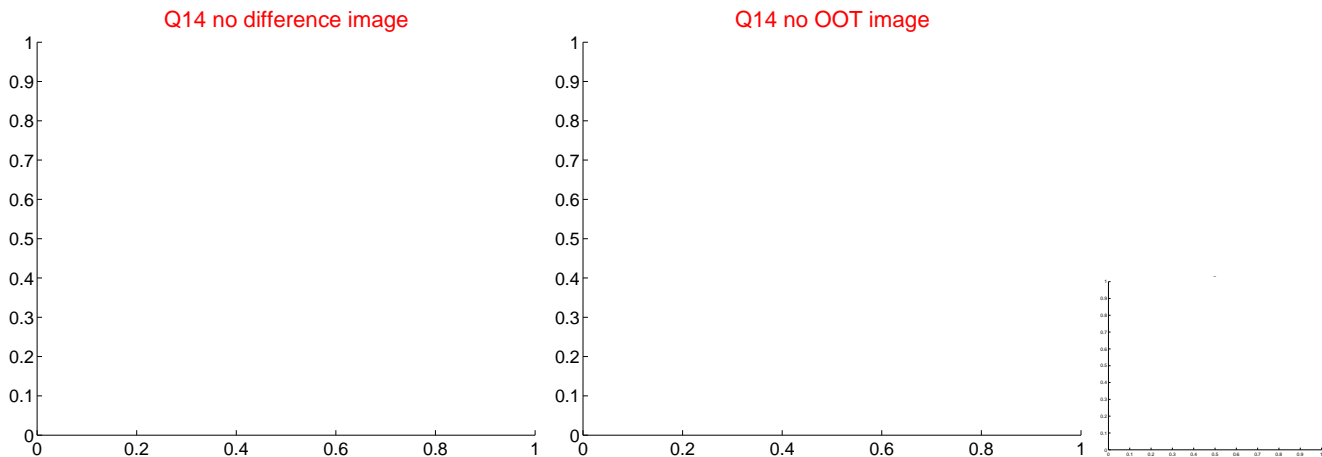
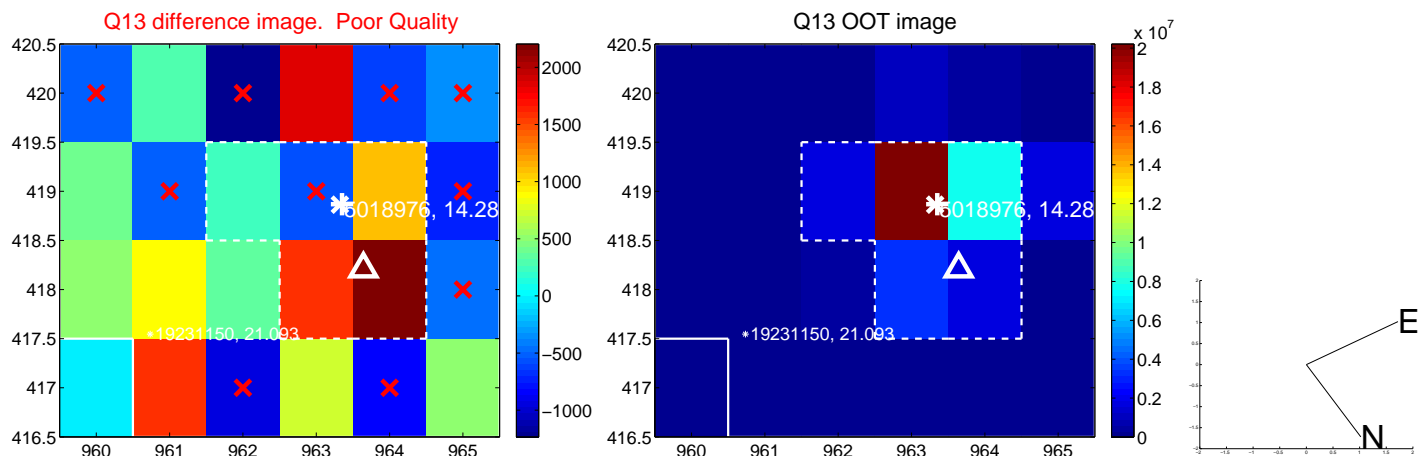
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

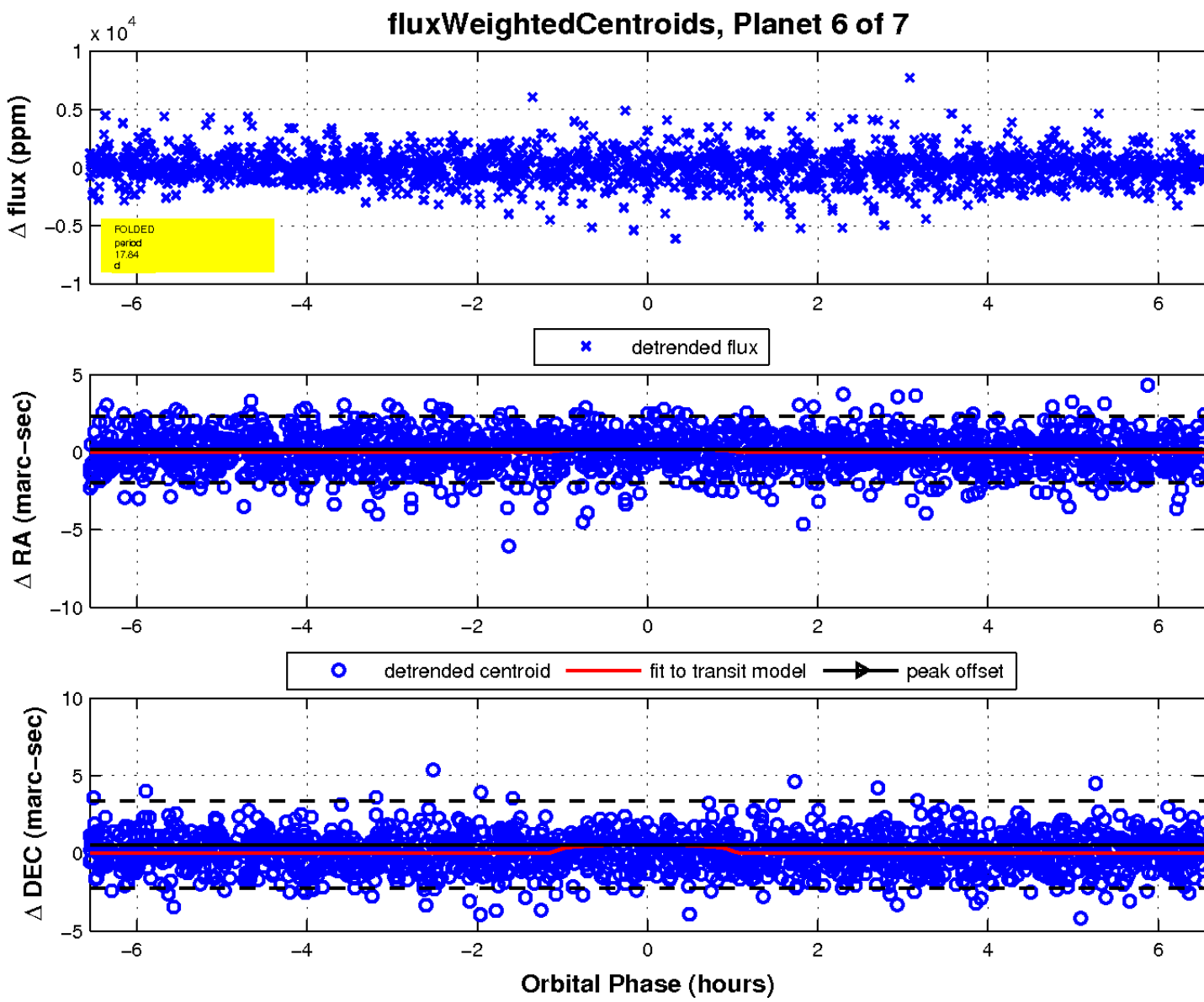
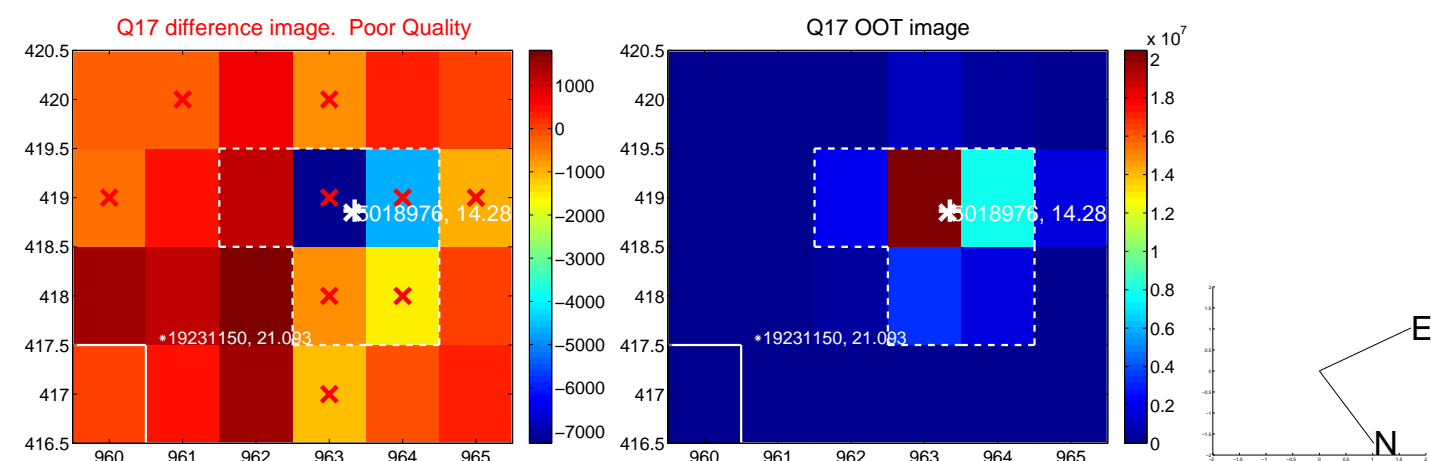


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

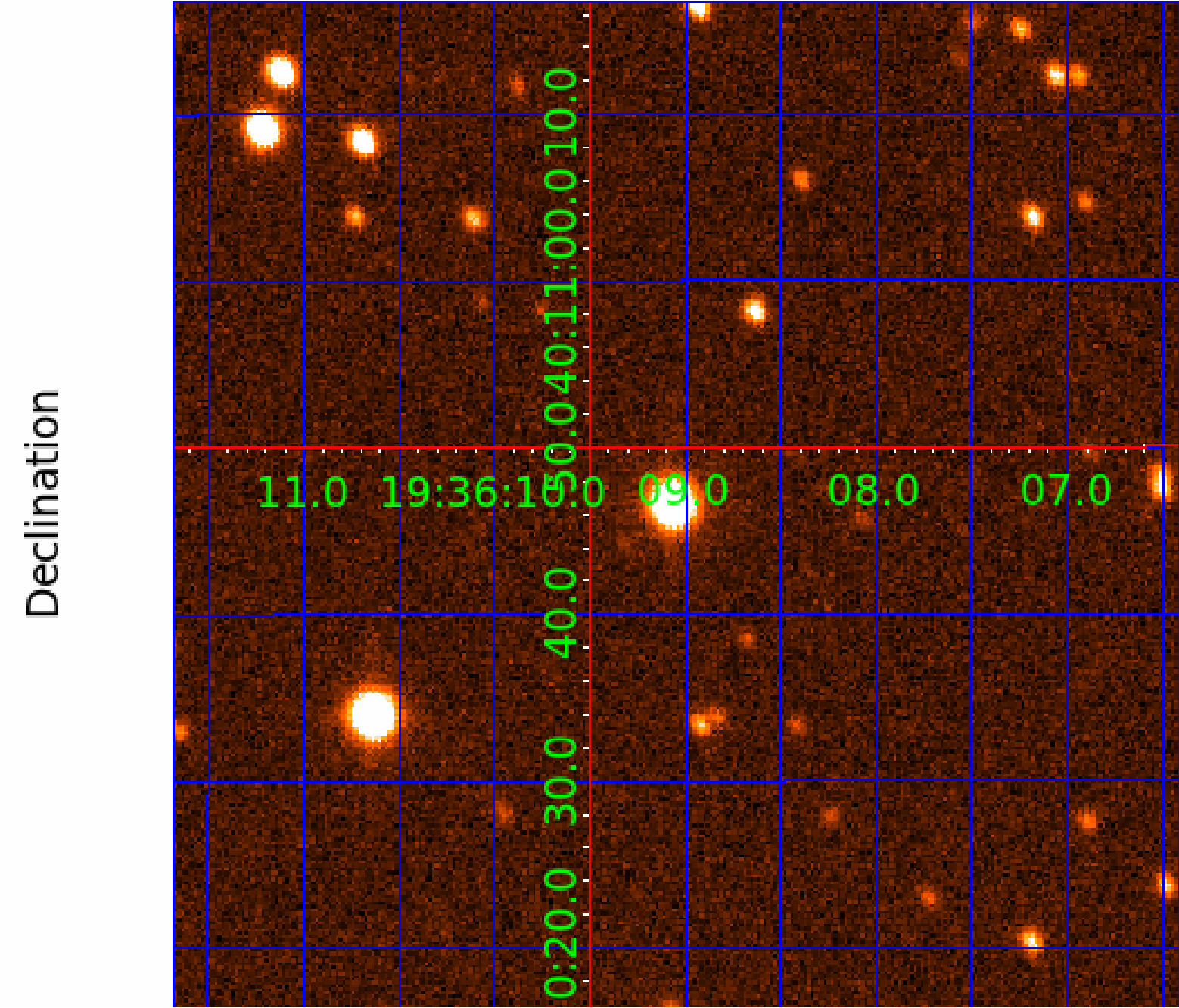




white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image



# KIC 005018976

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005018976-01	OBS	No	0.769753	131.914155	129.1	5.665	13.1	7.1	0.65	4484	0.73	762.32
005018976-02	OBS	No	30.422706	146.097086	1987.8	4.035	12.4	7.3	0.65	4484	2.82	5.66
005018976-03	OBS	No	13.835662	143.181962	1036.2	5.000	11.8	-1.0	0.65	4484	2.00	16.19
005018976-04	OBS	No	100.059704	207.750595	659.4	2.500	7.4	-1.0	0.65	4484	1.60	1.16
005018976-06	OBS	No	17.837054	135.754042	1863.2	2.186	9.5	5.9	0.65	4484	2.77	11.54
005018976-07	OBS	No	14.363129	139.123102	461.6	19.201	10.2	5.3	0.65	4484	1.36	15.40

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005018976-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
005018976-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
005018976-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_NOFITS
005018976-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—NO_FITS—CENT_NOFITS
005018976-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV
005018976-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT

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

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

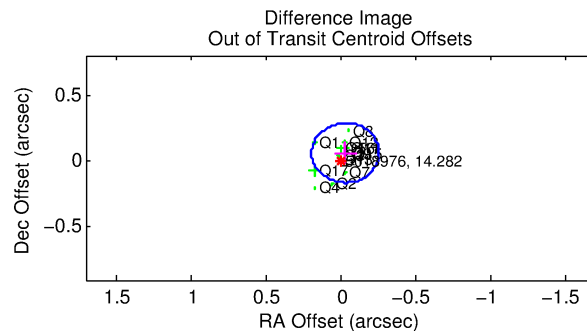
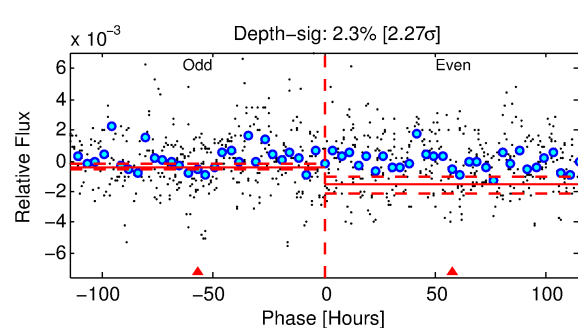
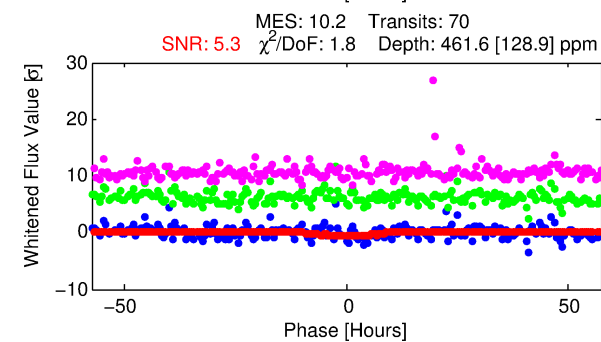
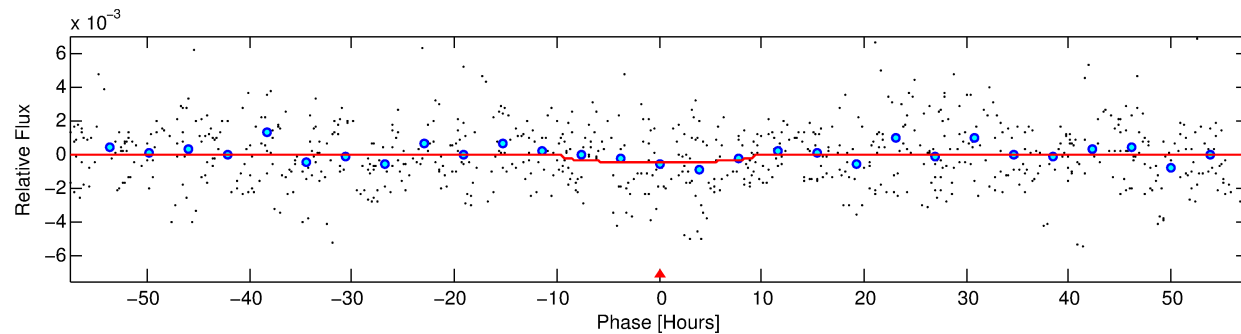
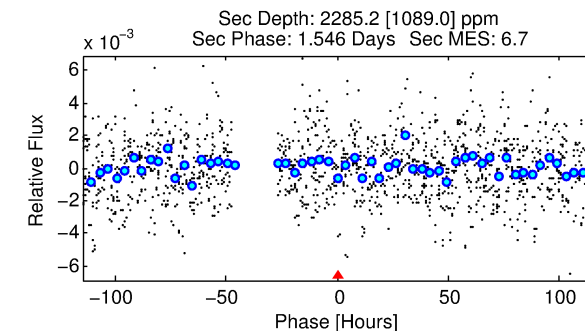
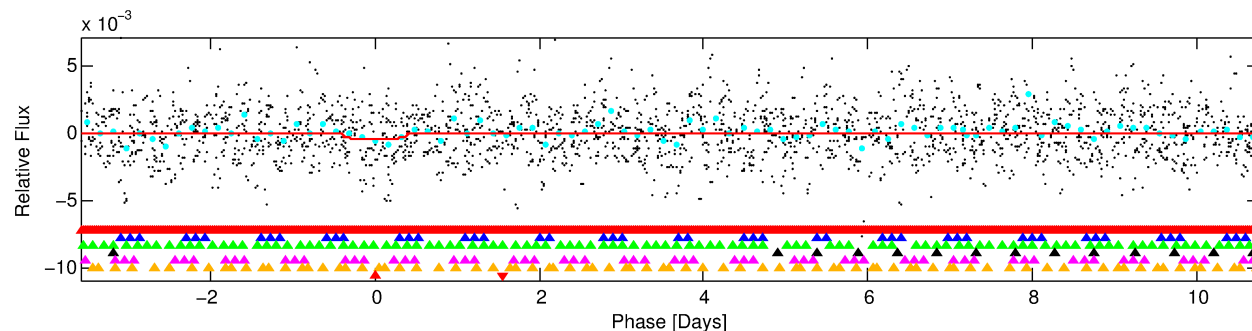
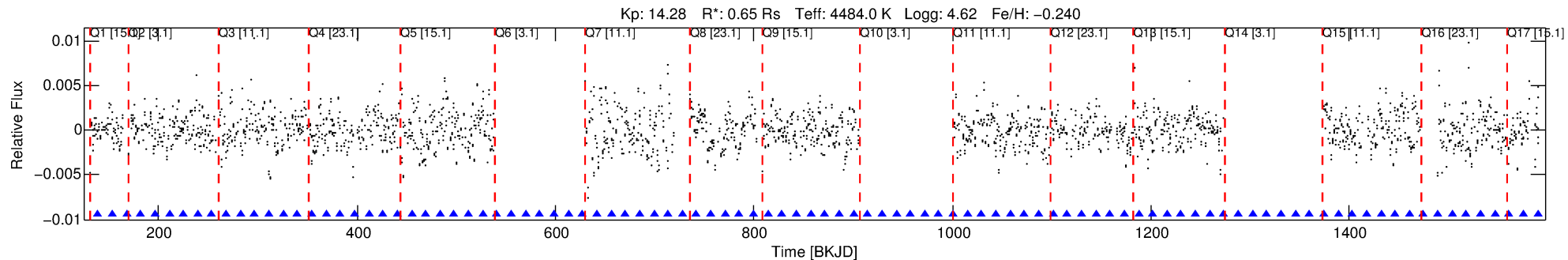
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 005018976-07

No Significant Match Found

# DV One-Page Summary

KIC: 5018976 Candidate: 7 of 7 Period: 14.363 d



## DV Fit Results:

Period = 14.36313 [0.00057] d  
Epoch = 139.1231 [0.0289] BKJD  
Rp/R\* = 0.0192 [0.0342]  
a/R\* = 5.55 [29.50]  
b = 0.33 [14.86]  
Seff = 15.40 [2.39]  
Teq = 505 [20] K  
Rp = 1.36 [2.42] Re  
a = 0.0994 [0.0070] AU  
Ag = 6729.86 [24168.73] [0.28σ]  
Teff = 7074 [6352] K [1.03σ]

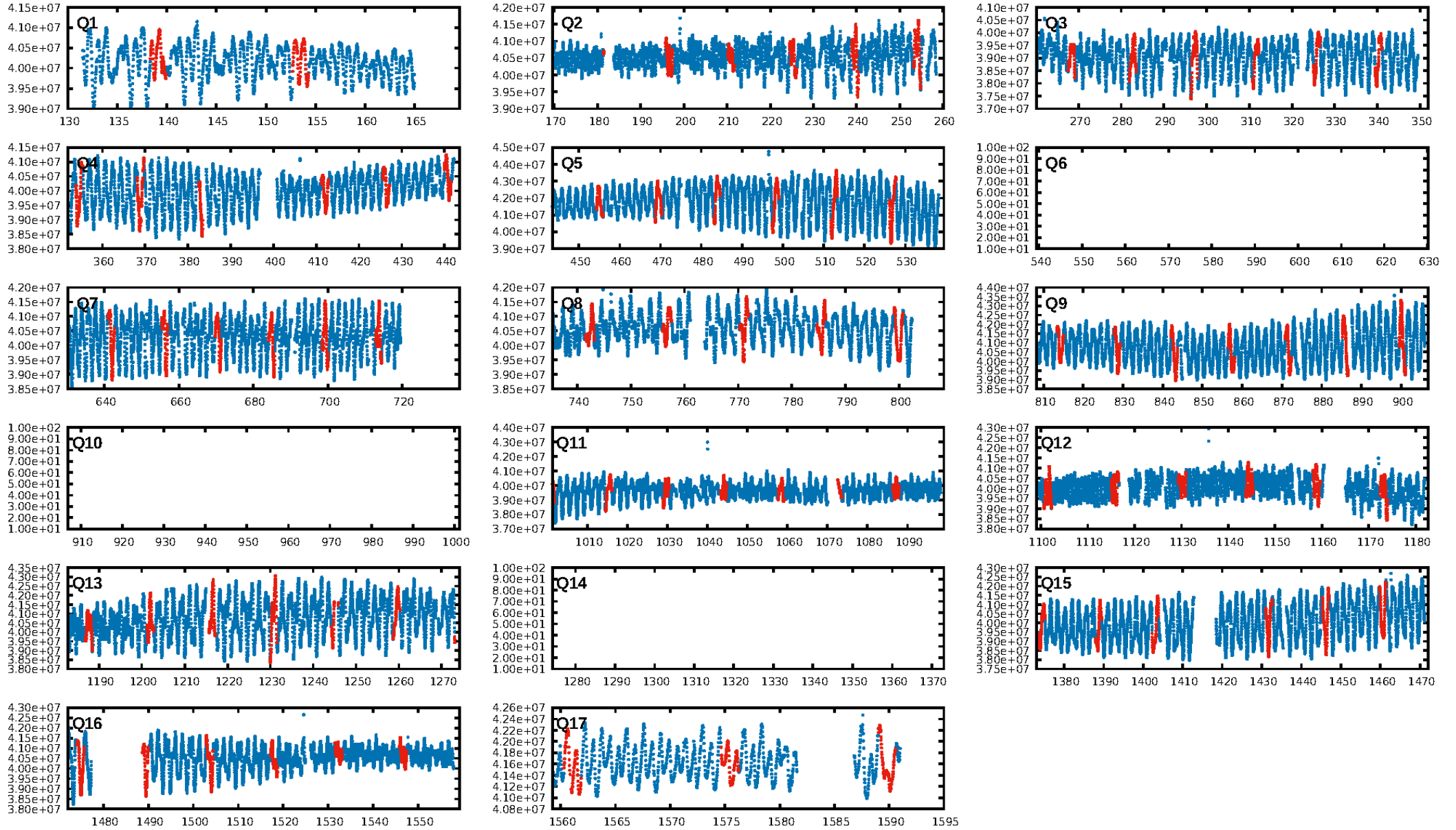
## DV Diagnostic Results:

ShortPeriod-sig: 47.7% [0.64σ]  
LongPeriod-sig: 100.0% [4.31σ]  
ModelChiSquare2-sig: 0.0%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 2.90e-19  
RollingBand-fgt: 1.00 [65/65]  
GhostDiagnostic-chr: 1.052  
Centroid-sig: 39.4%  
Centroid-so: 0.162 arcsec [0.82σ]  
OotOffset-rm: 0.071 arcsec [0.94σ]  
KicOffset-rm: 0.084 arcsec [1.18σ]  
OotOffset-st: 1/4/4/5 [14]  
KicOffset-st: 1/4/4/5 [14]  
DiffImageQuality-fgm: 0.43 [6/14]  
DiffImageOverlap-fno: 0.00 [0/14]

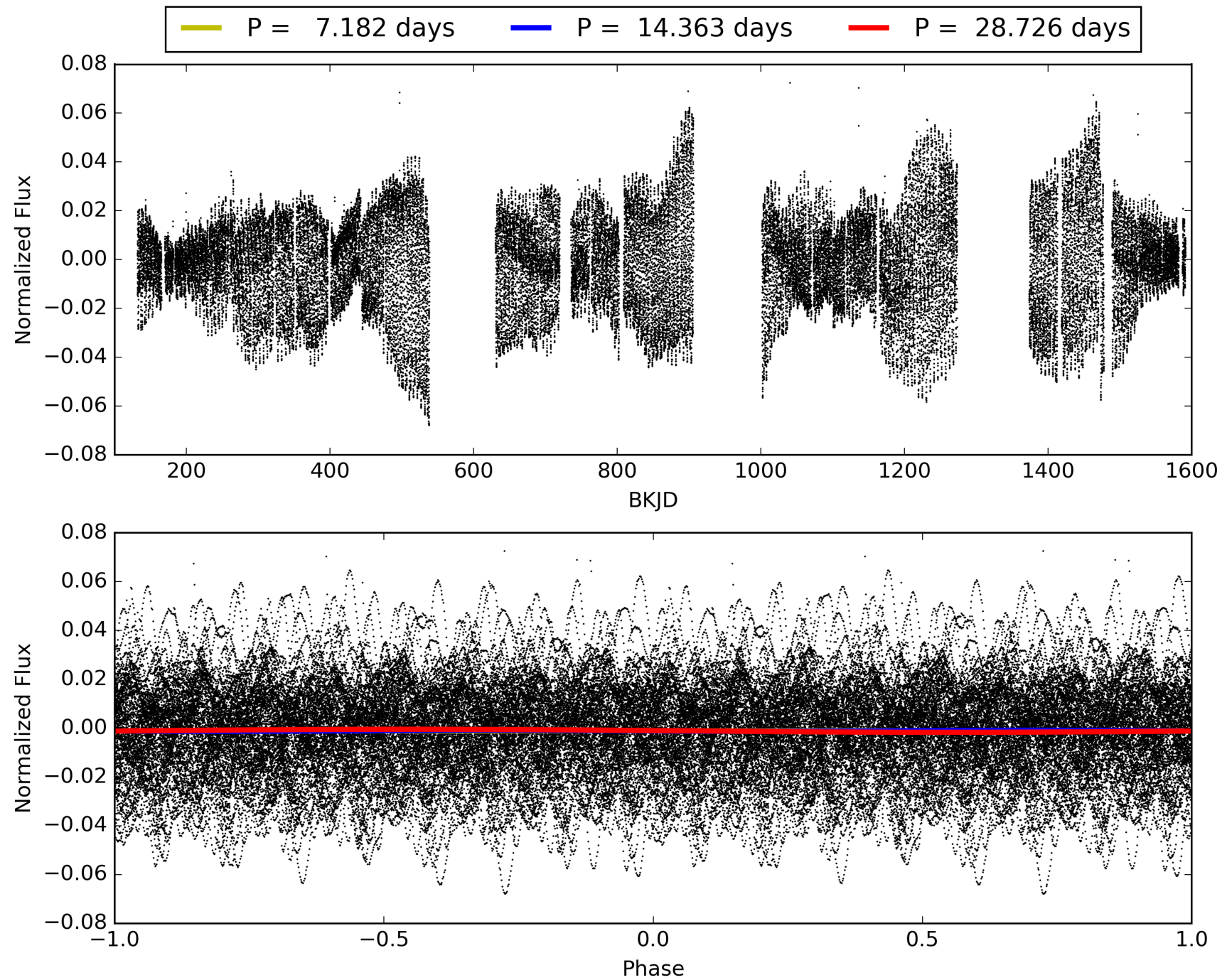
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 04:02:44 Z

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

# TCE 005018976-07, PDC Light Curves



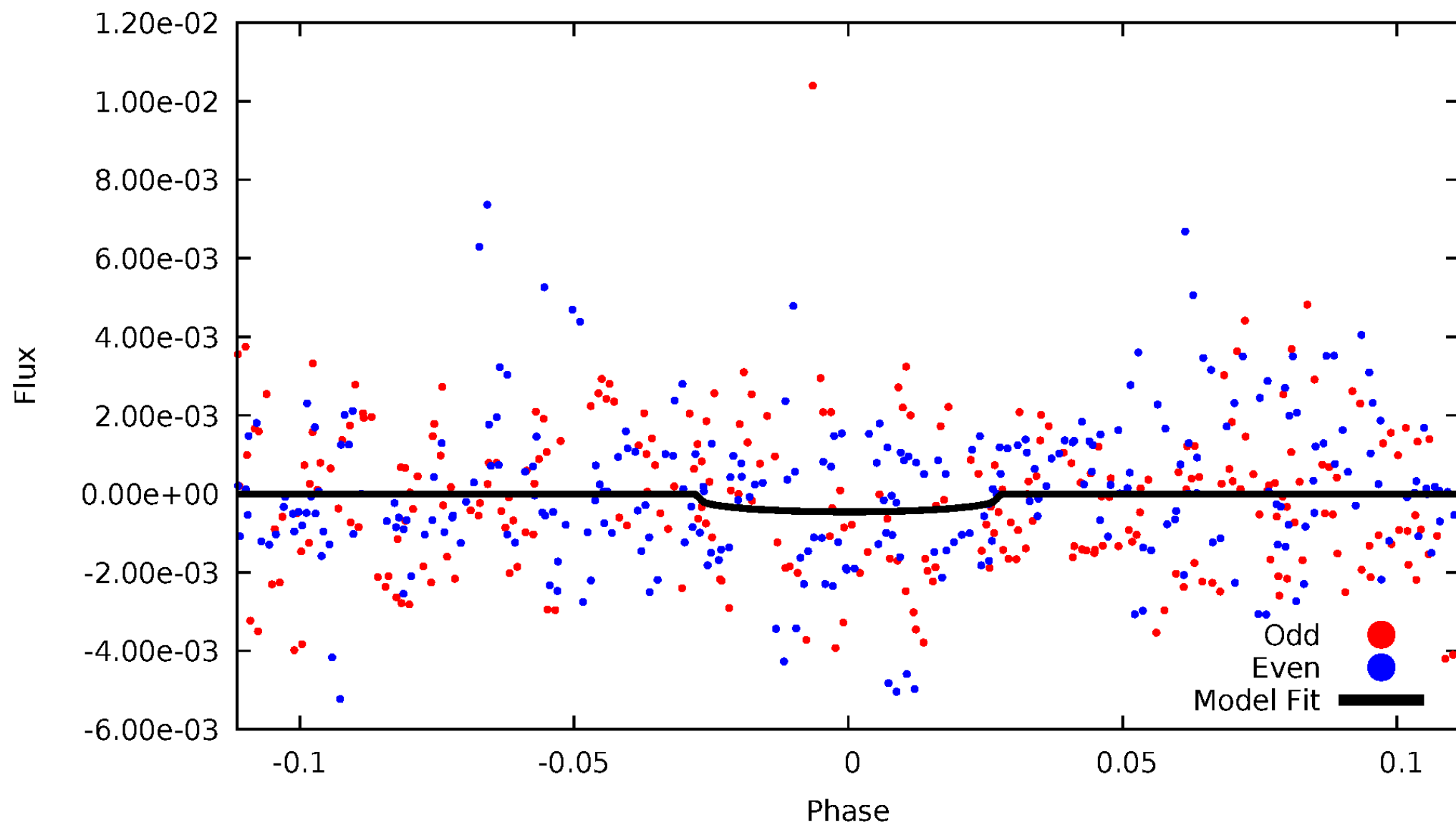
TCE 005018976-07





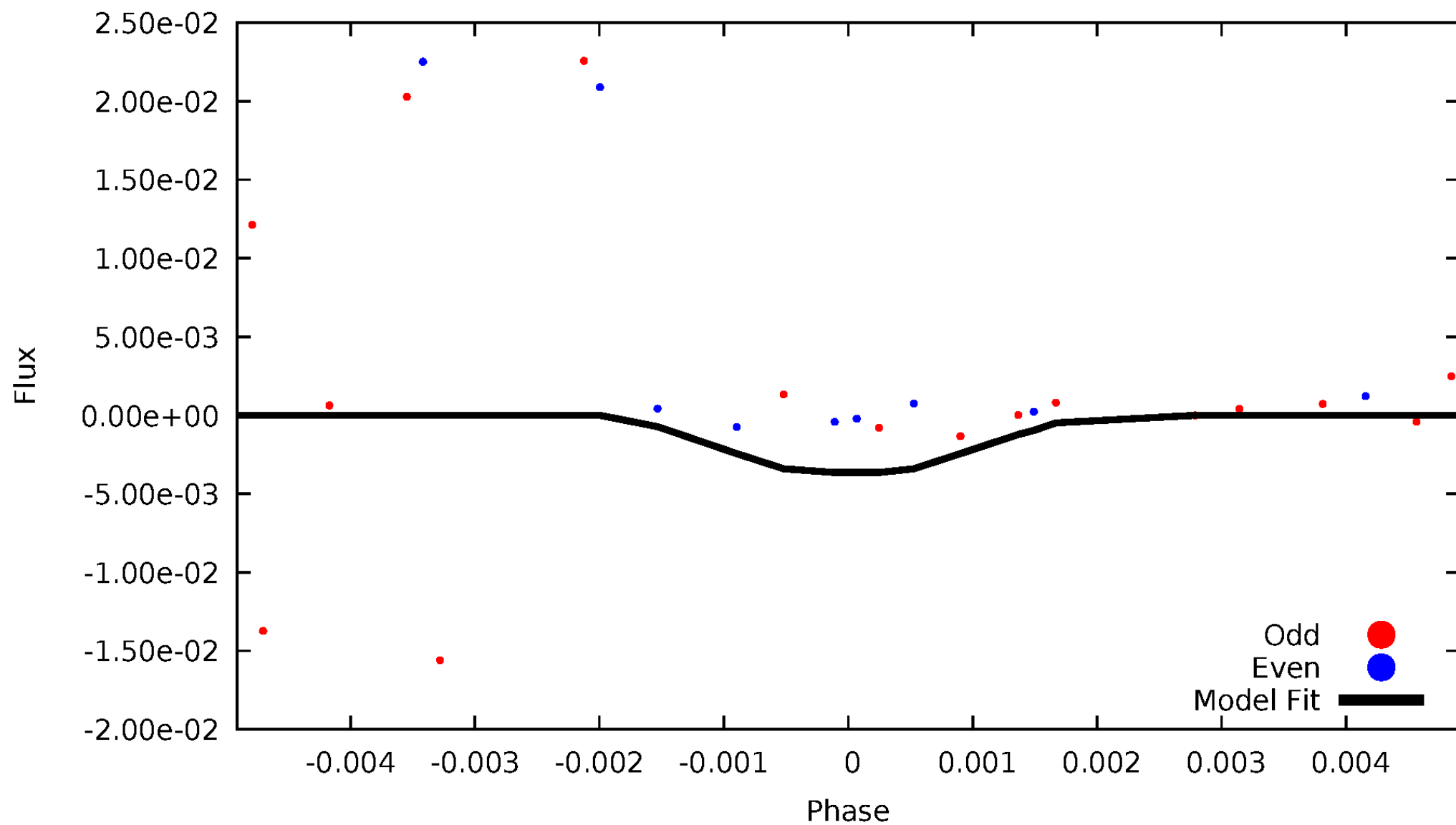
# DV Odd/Even

TCE 005018976-07



# ALT Odd/Even

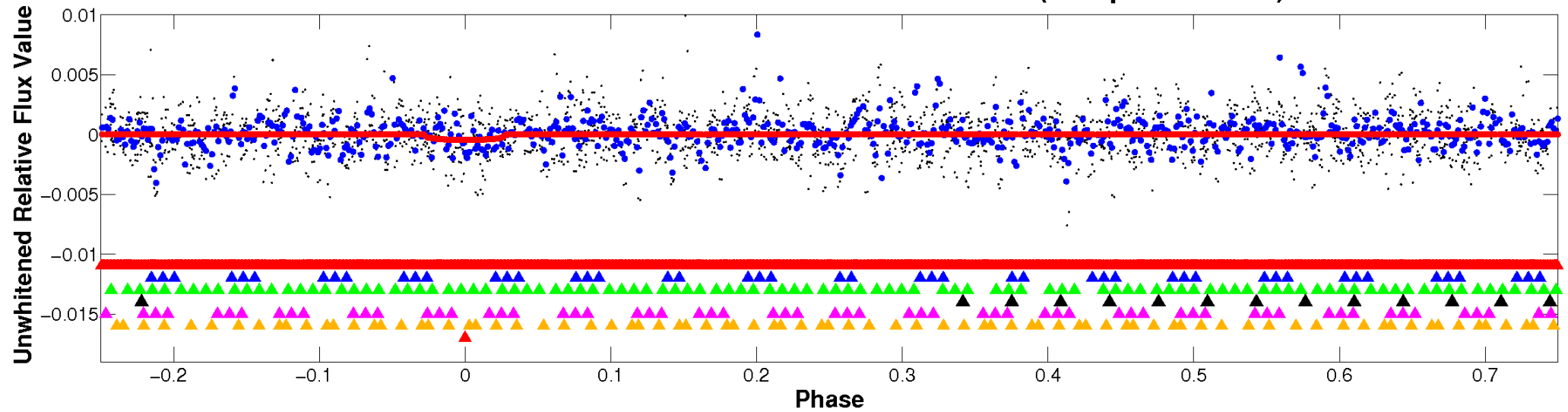
TCE 005018976-07



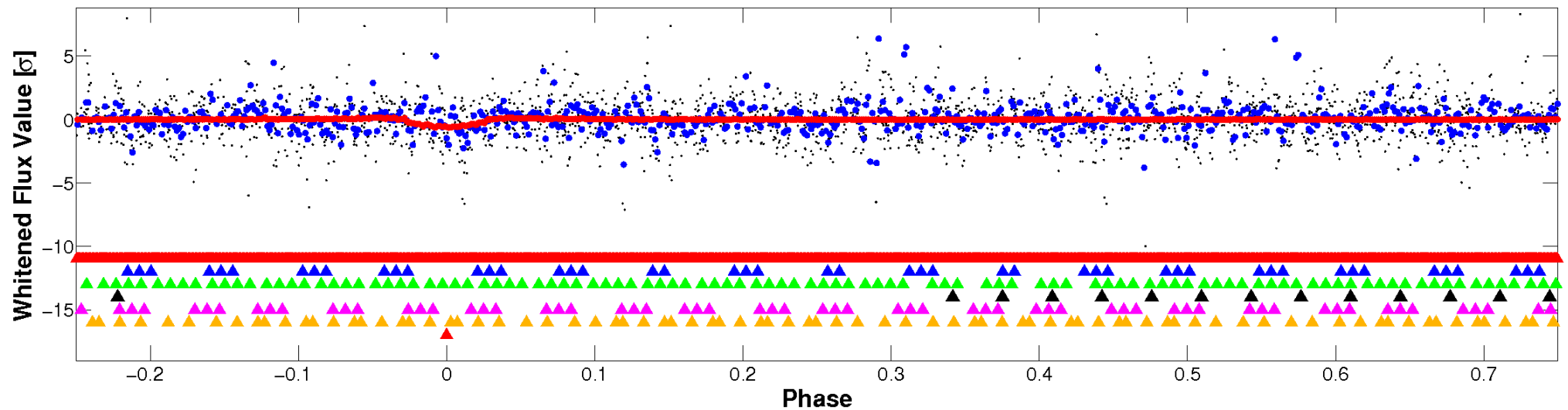


# Non-Whitened Vs. Whitened Light Curve

## Planet 7 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

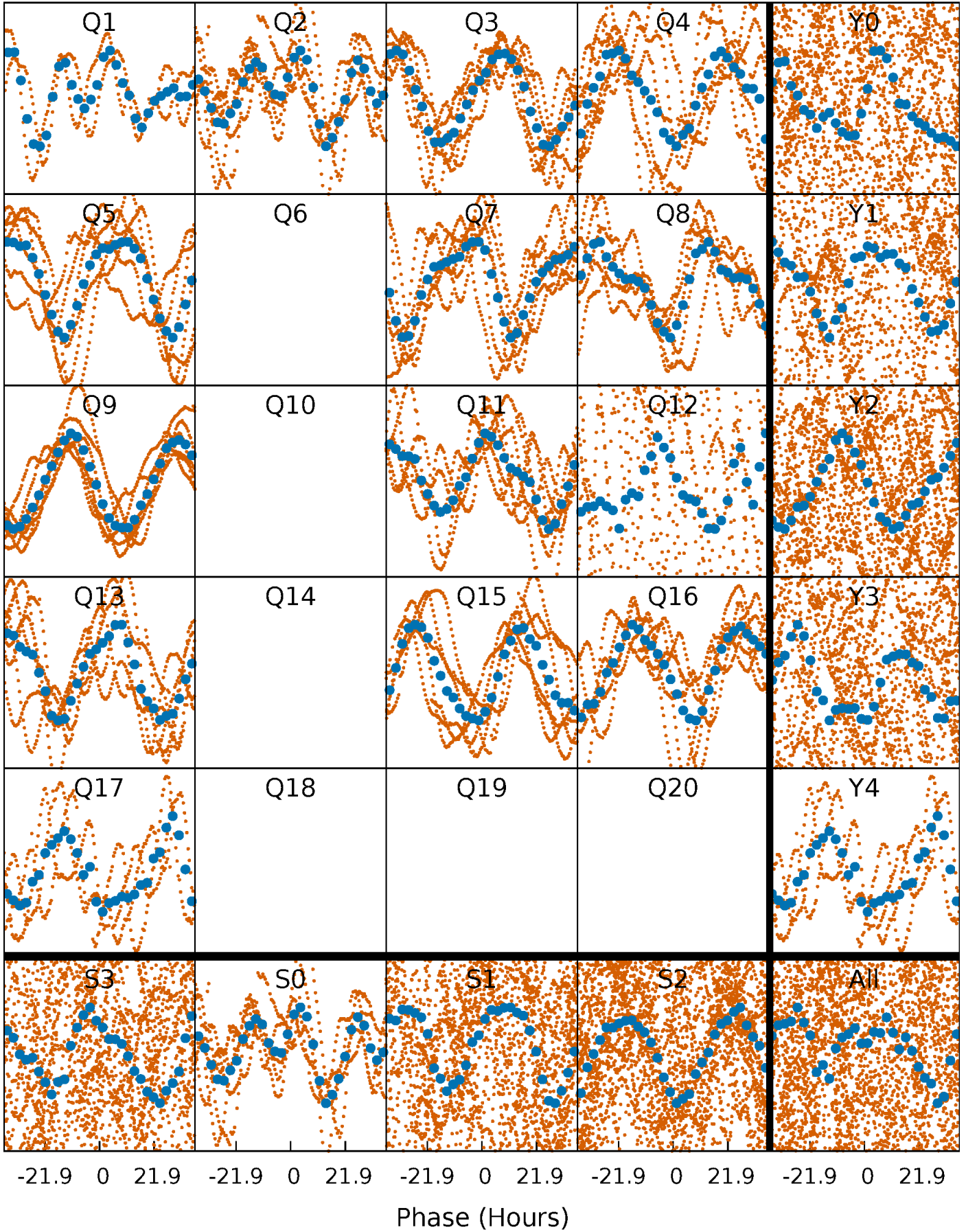


## Planet 7 : Phased Whitened Flux Time Series (Fit Epoch/Period)



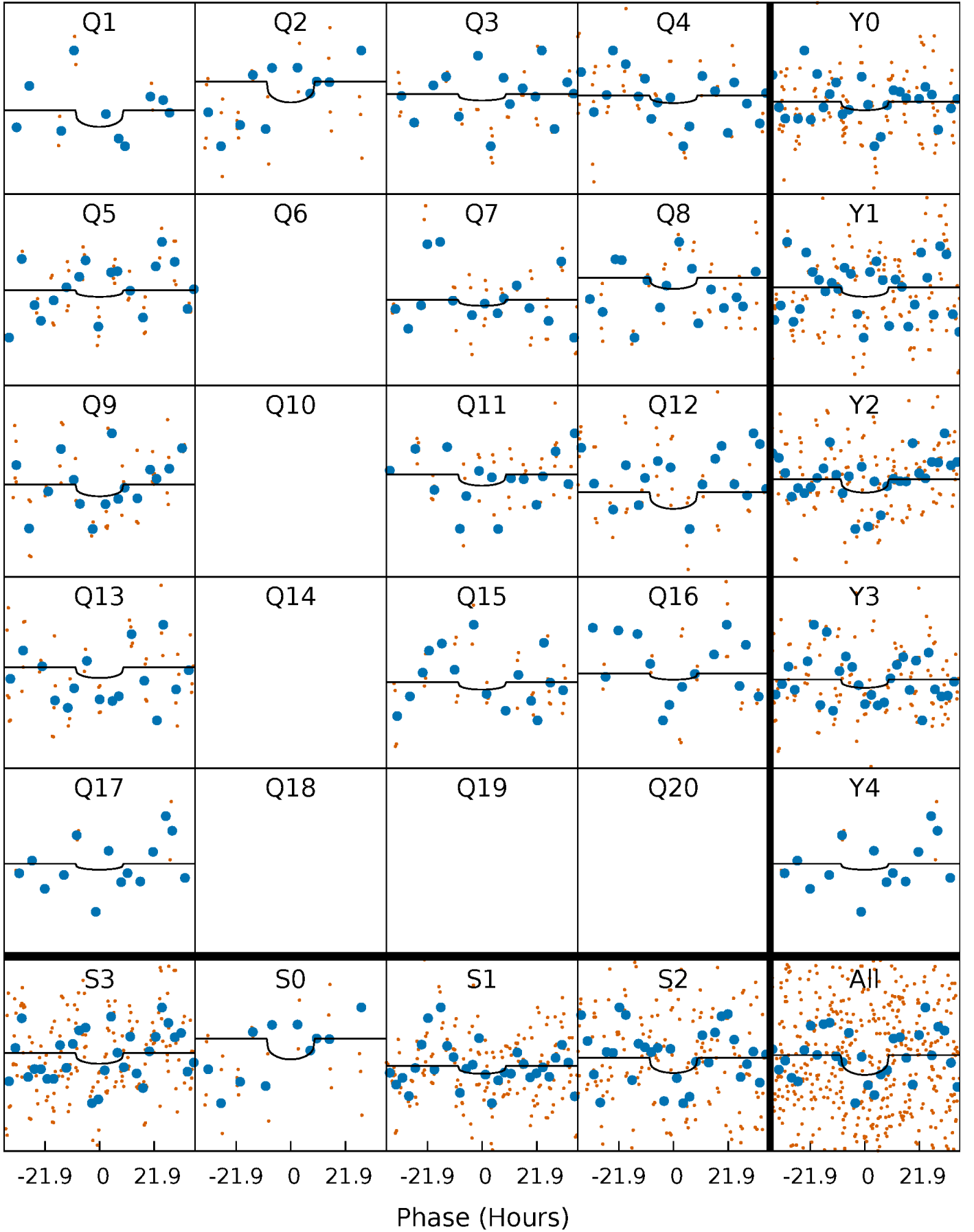
# PDC Quarter-Phased Transit Curves

TCE 005018976-07   P= 14.363129 Days    $T_0=139.123101$  (BKJD)



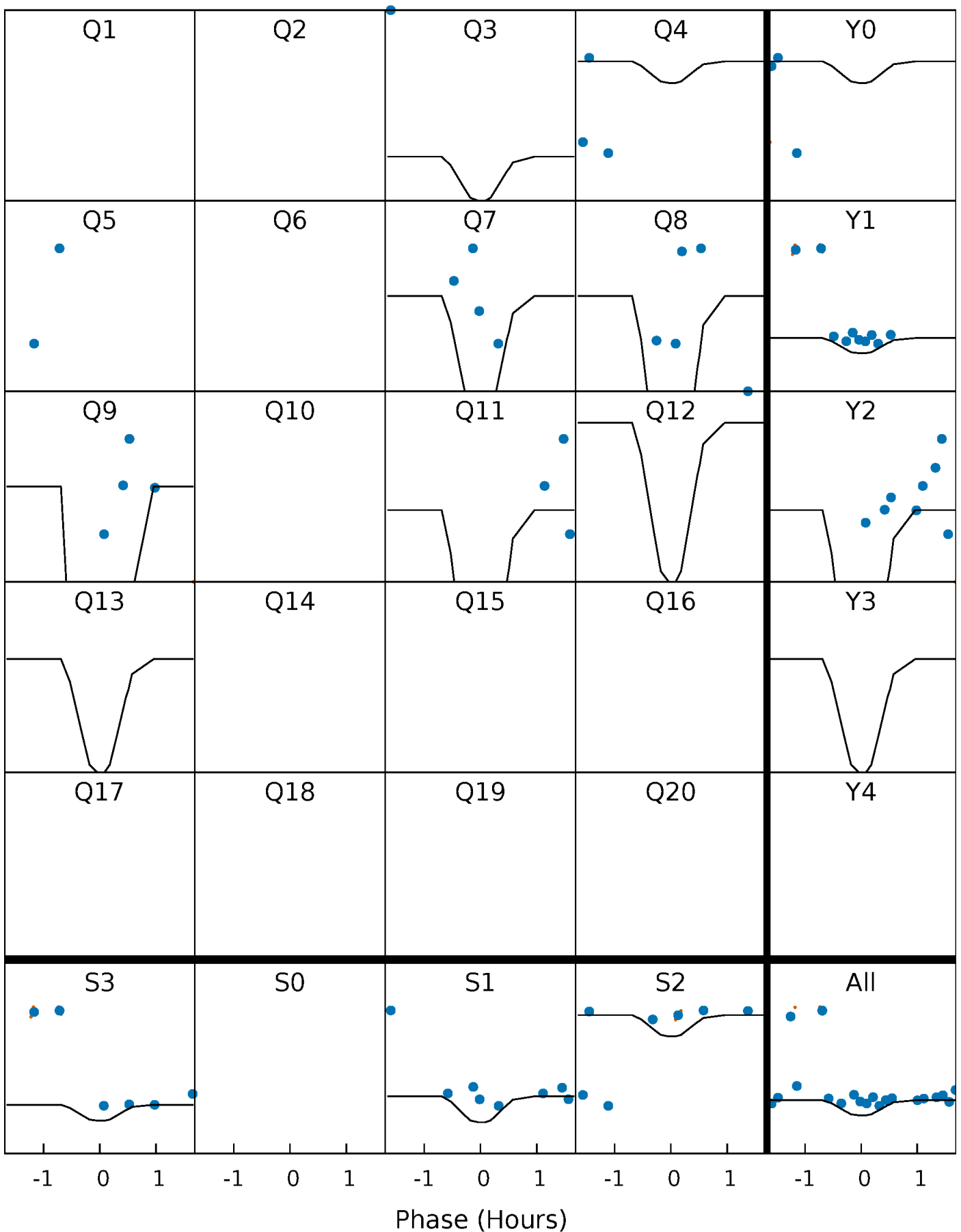
# DV Quarter-Phased Transit Curves

TCE 005018976-07     $P = 14.363129$  Days     $T_0 = 139.123101$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

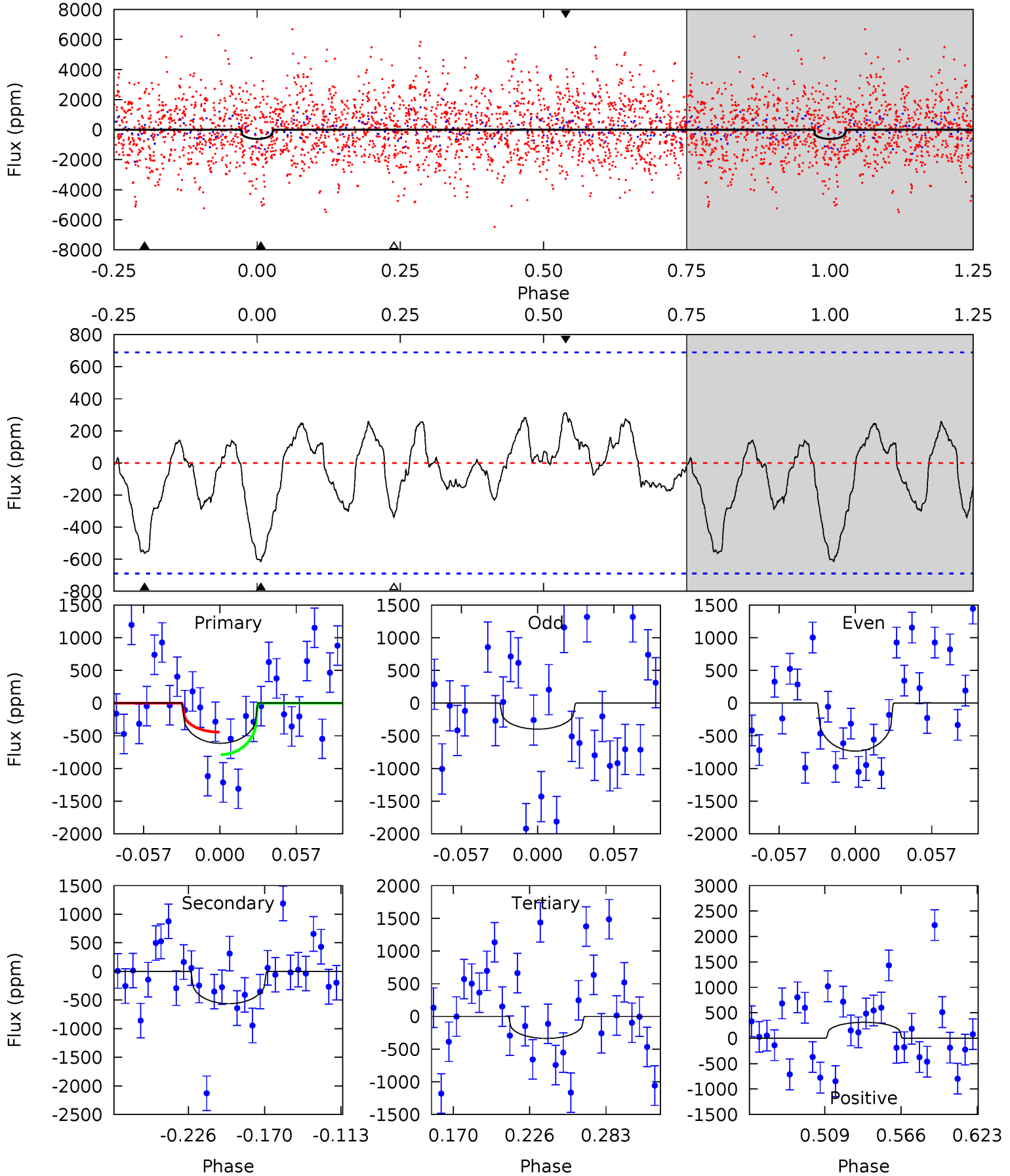
TCE 005018976-07     $P = 14.366088$  Days     $T_0 = 139.335782$  (BKJD)



# DV Model-Shift Uniqueness Test

005018976-07, P = 14.363129 Days, E = 124.759972 Days

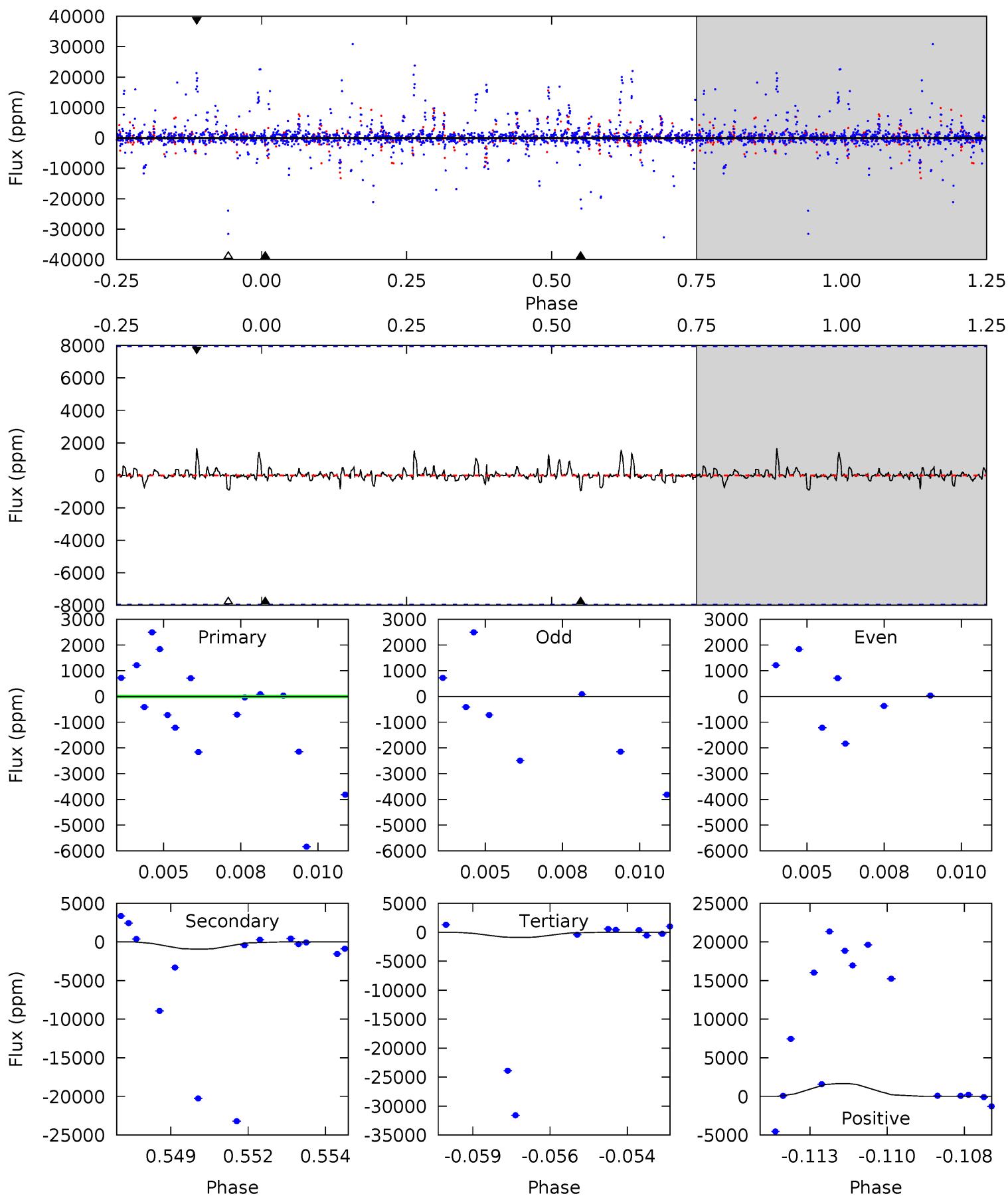
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4.17	3.82	2.29	2.12	4.68	1.91	1.05	1.88	2.05	1.54	1.70	1.01	1.17	0.34	1.19



# Alt Model-Shift Uniqueness Test

005018976-07, P = 14.366088 Days, E = 124.969694 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0.07	0.62	0.59	1.10	5.28	3.02	0.17	-0.52	-1.03	0.03	-0.48	0.01	0.99	0.64	0.04



### Stellar Parameters For KIC 005018976

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (g \cdot \text{cm}^{-3})$
	$4484^{+134}_{-134}$	$4.617^{+0.052}_{-0.024}$	$-0.240^{+0.300}_{-0.300}$	$0.648^{+0.051}_{-0.056}$	$0.634^{+0.070}_{-0.051}$	$3.280^{+0.749}_{-0.370}$
	+3%/-3%	+1%/-1%	+125%/-125%	+8%/-9%	+11%/-8%	+23%/-11%
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 005018976-07 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-563 \pm 147$	$2.07^{+2.21}_{-1.41}$	$702^{+25}_{-24}$	$4064^{+2774}_{-828}$	$696^{+6374}_{-531}$
Alt.	$-933 \pm 1508$	$4.42^{+2.23}_{-2.36}$	$700^{+23}_{-24}$	$3410^{+1164}_{-6532}$	$239^{+968}_{-363}$

$T_{max}$  = 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  $A_{obs} \gg 1.0$

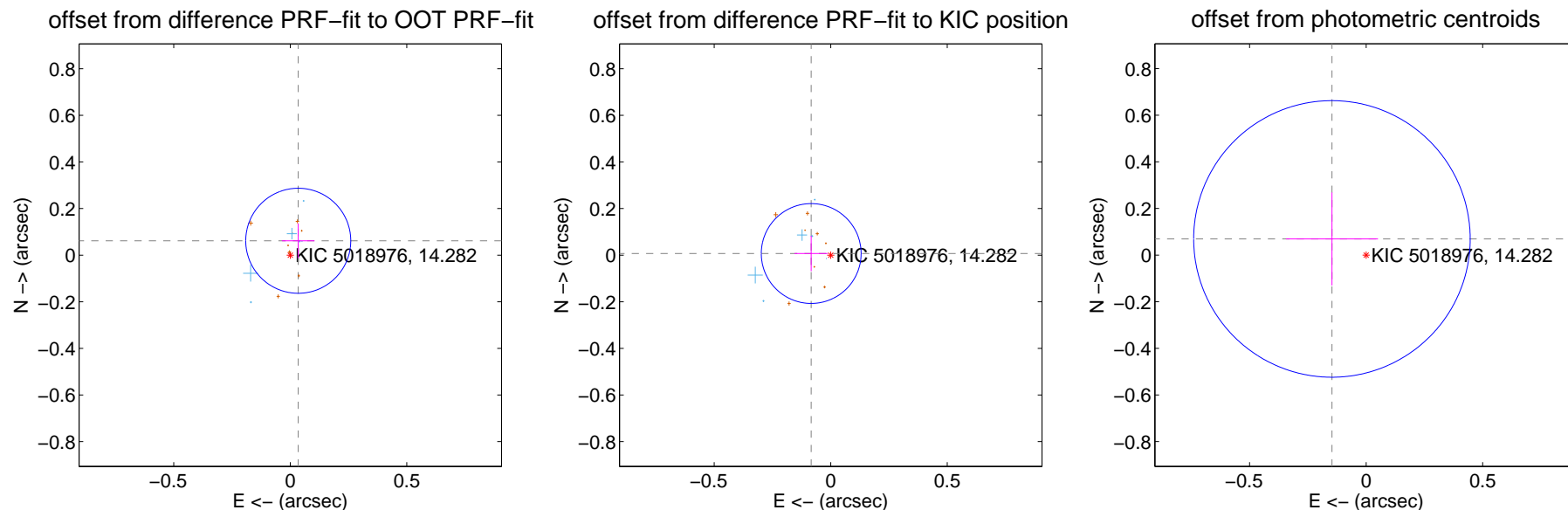
## DV Centroid Data

Supplemental centroid analysis for 005018976-07. Kepler magnitude: 14.28. Transit SNR 5.34

There are 6 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.15 arcsec

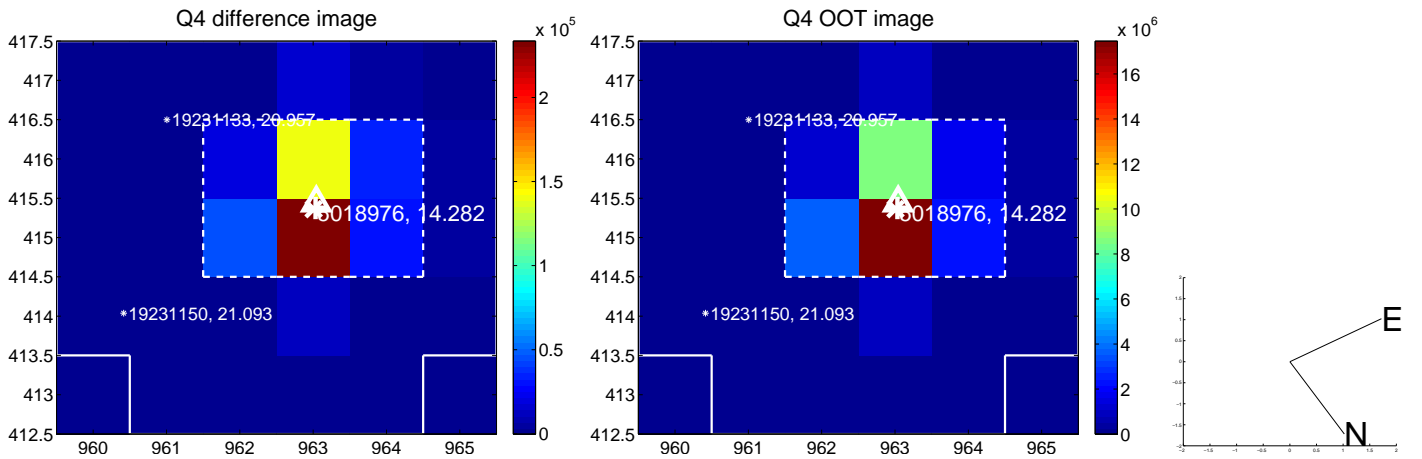
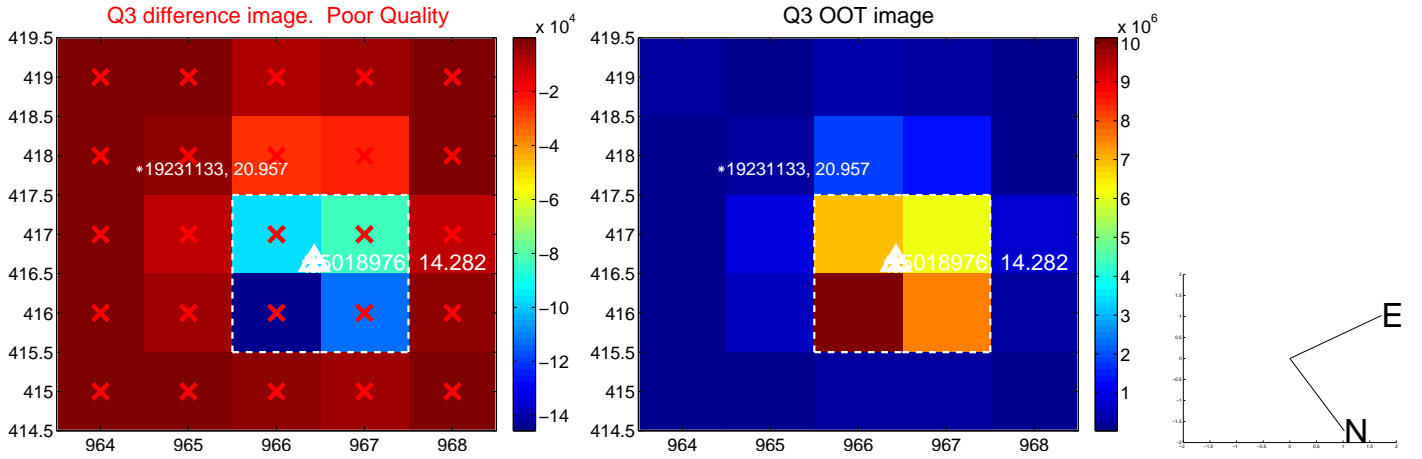
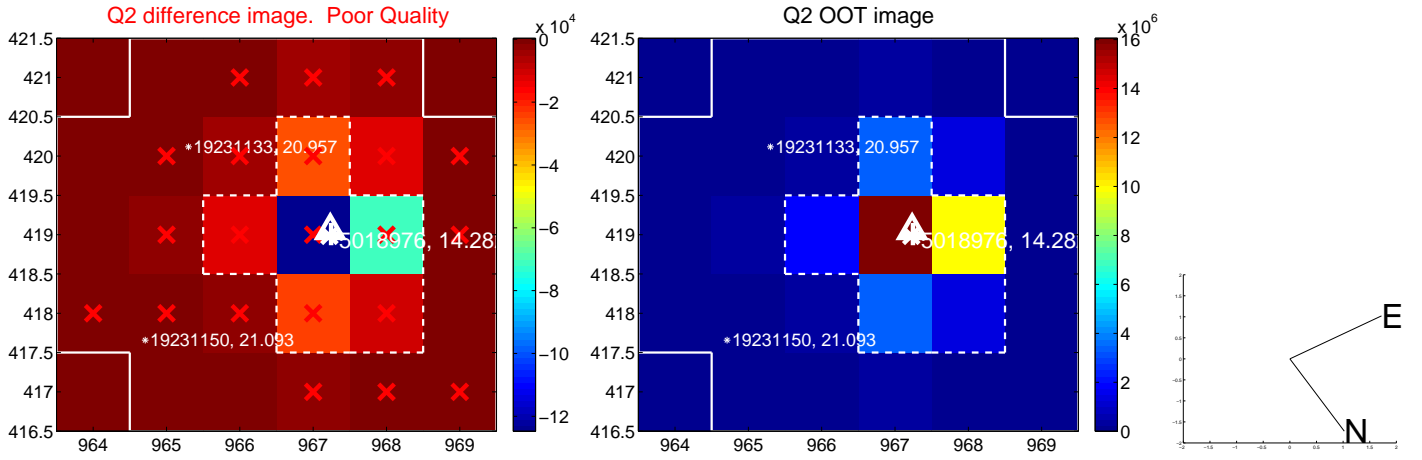
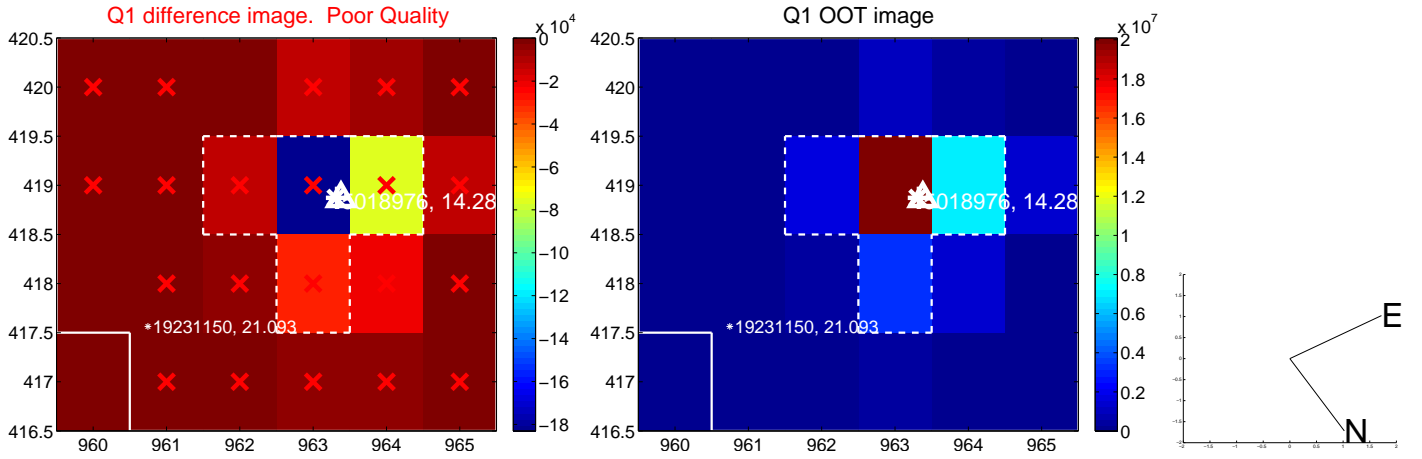
	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.071 \pm 0.075$	0.94	$-0.034 \pm 0.070$	$0.062 \pm 0.074$
PRF-fit source offset from KIC position	$0.084 \pm 0.071$	1.18	$0.084 \pm 0.072$	$0.007 \pm 0.076$
photometric centroid source offset	$0.16 \pm 0.20$	0.82	$0.15 \pm 0.20$	$0.07 \pm 0.20$



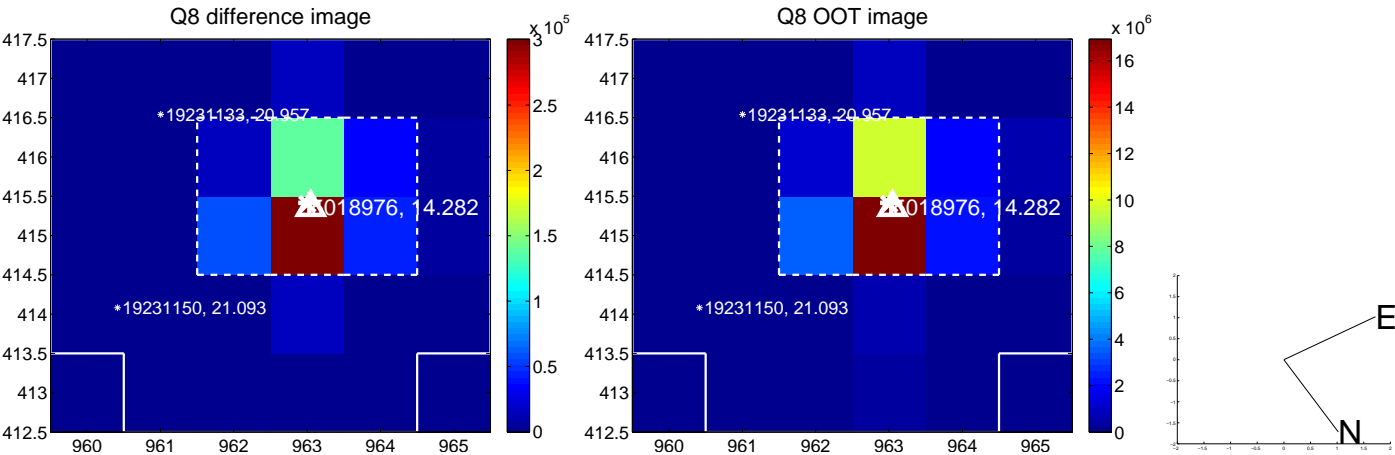
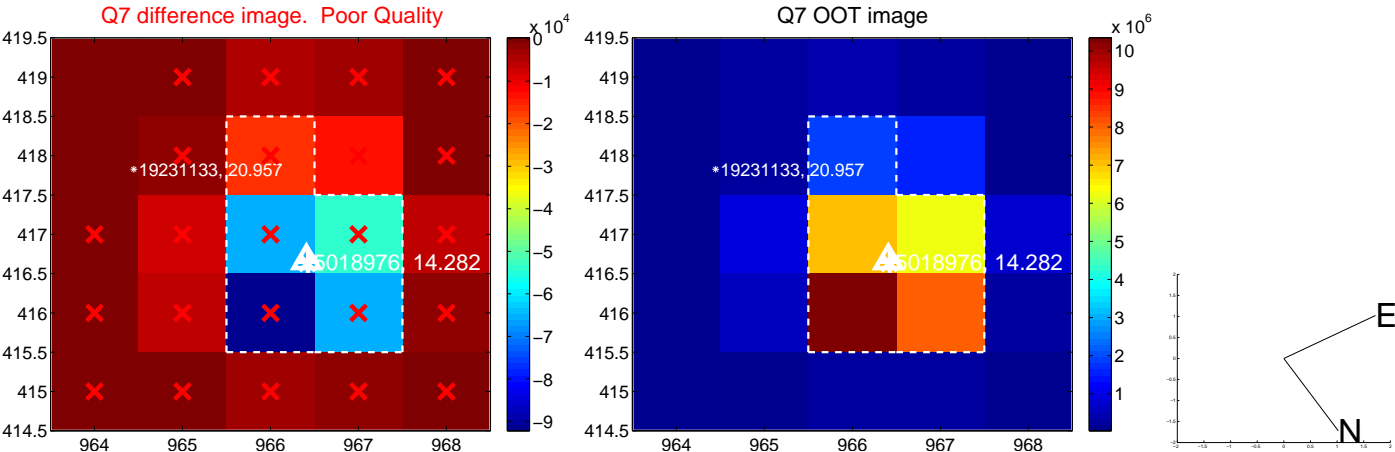
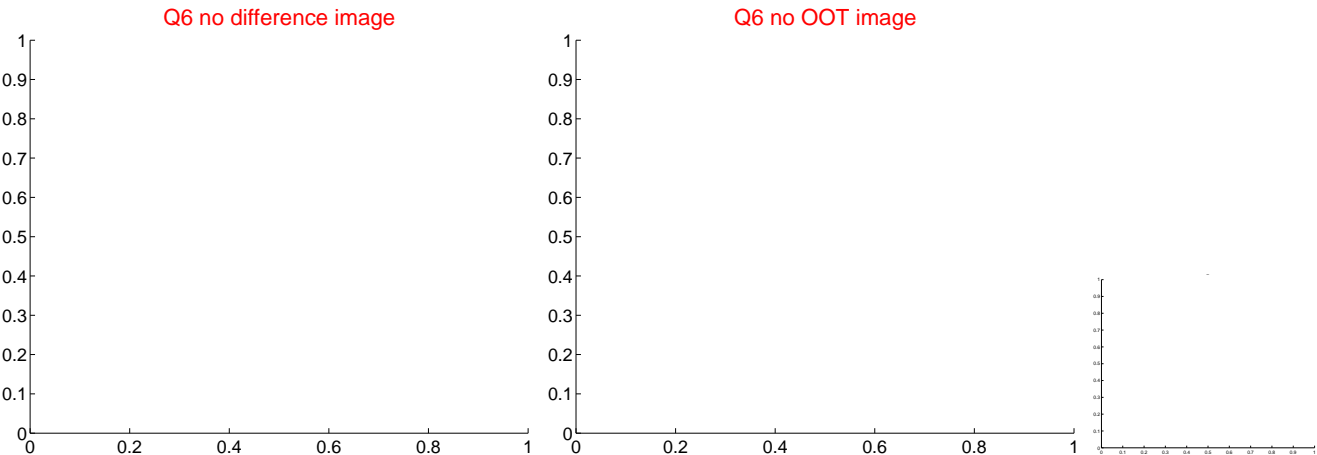
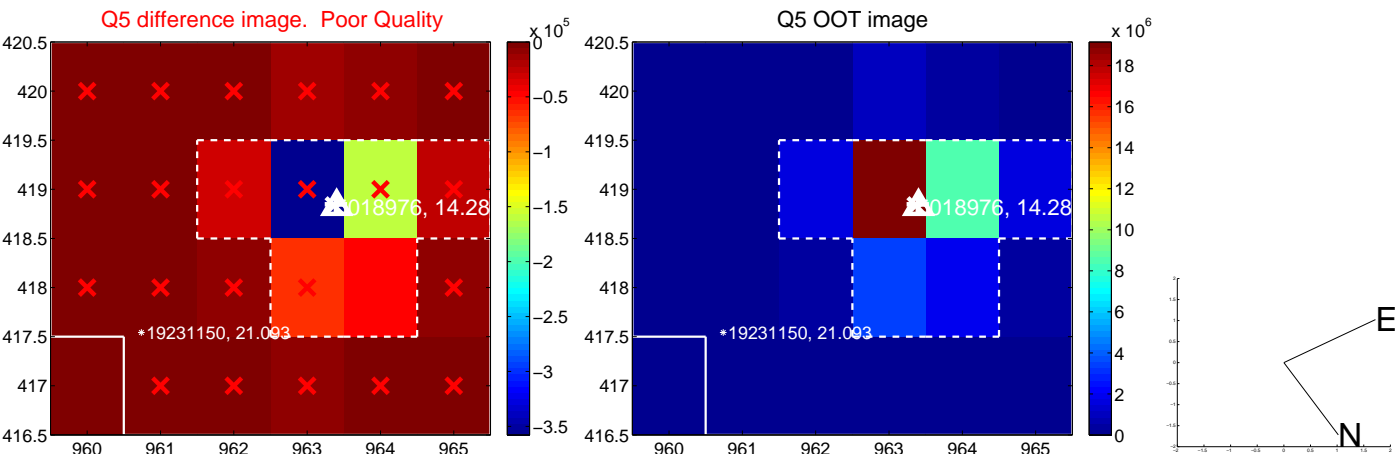
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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



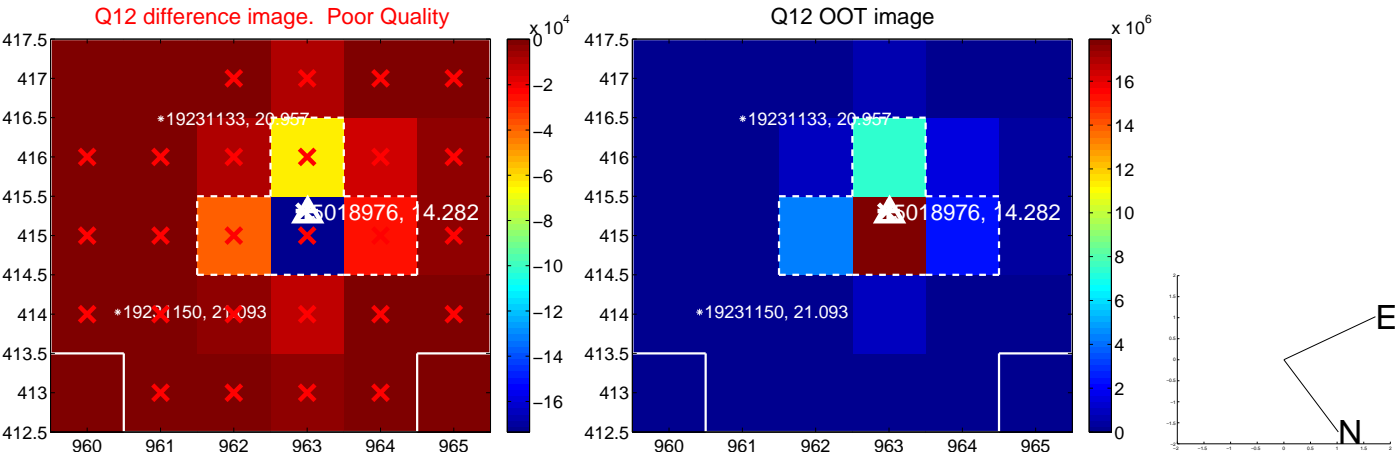
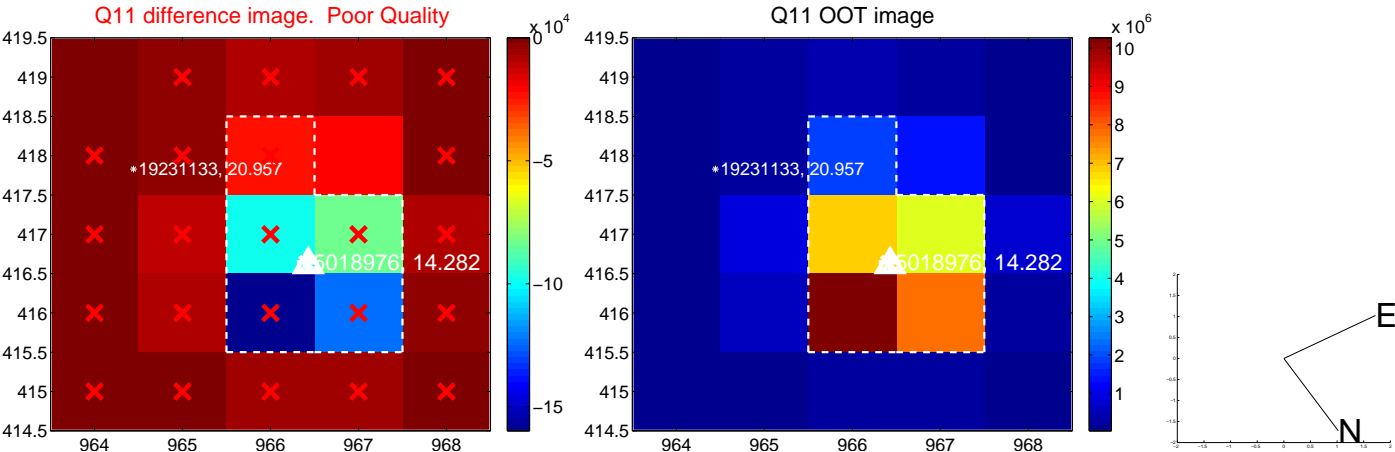
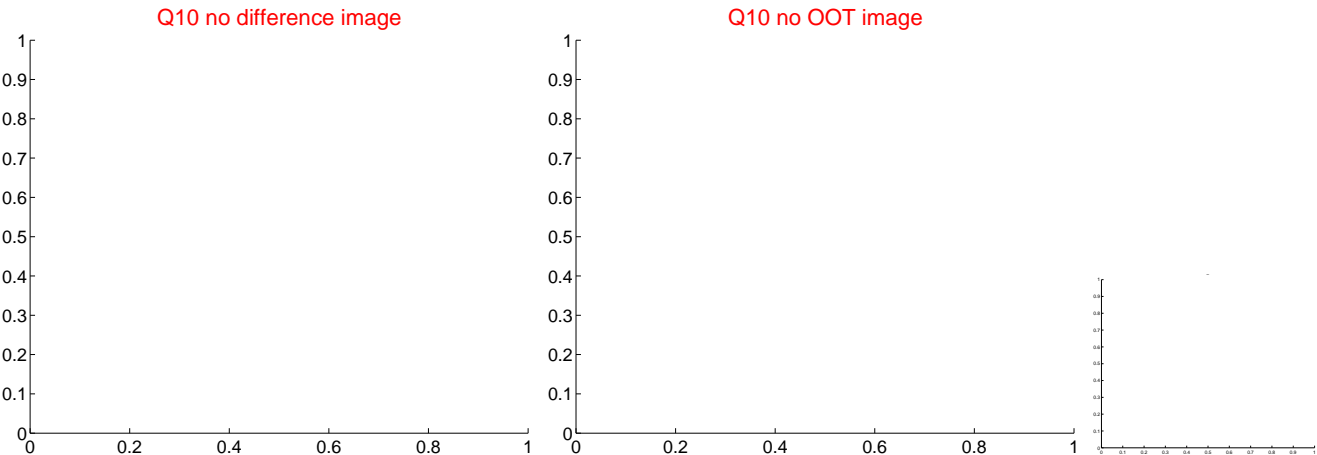
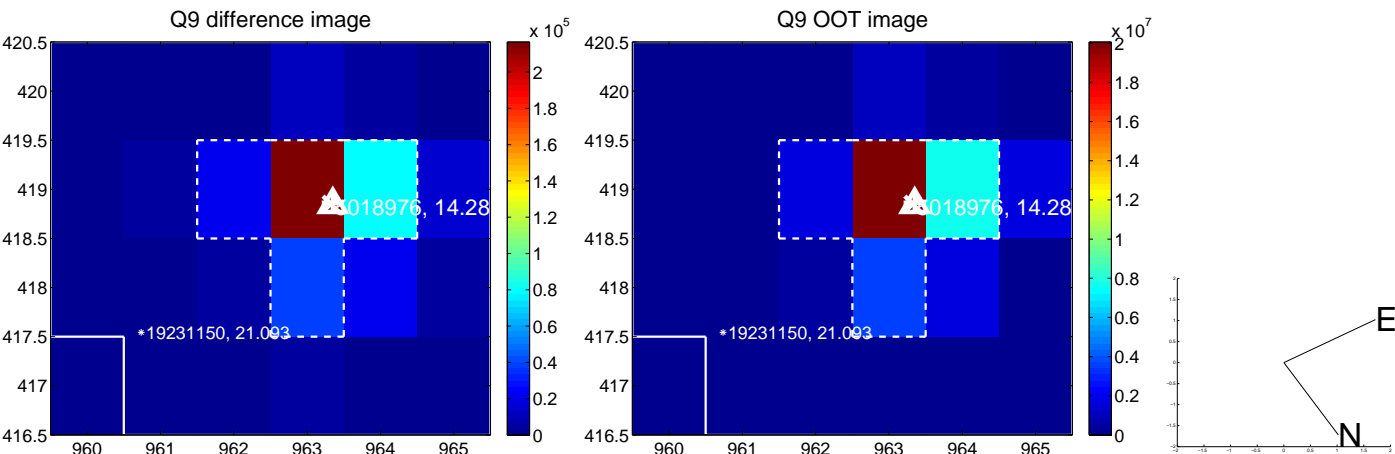
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



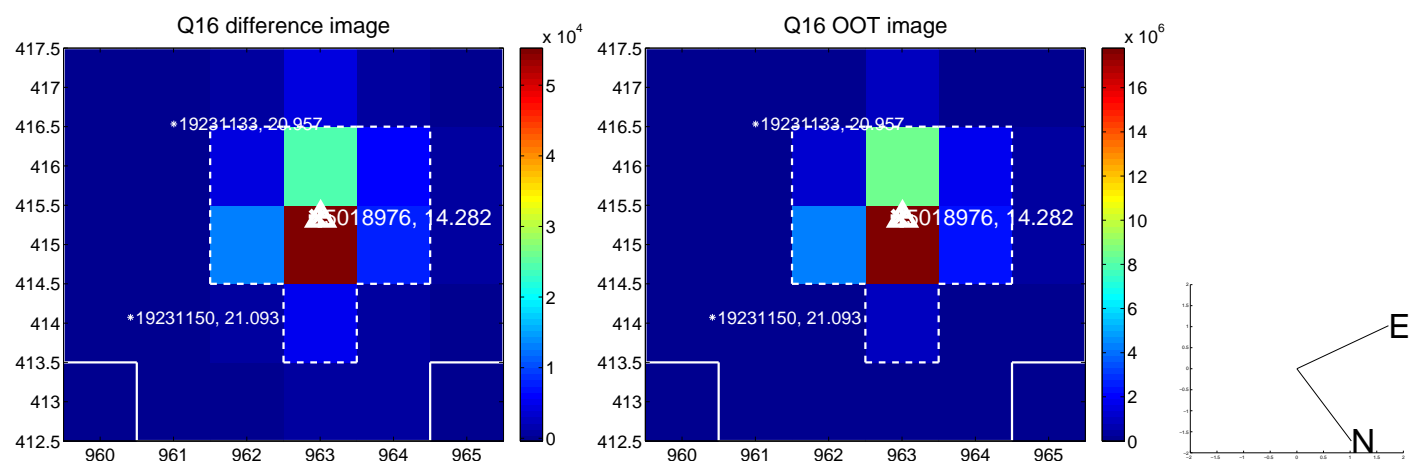
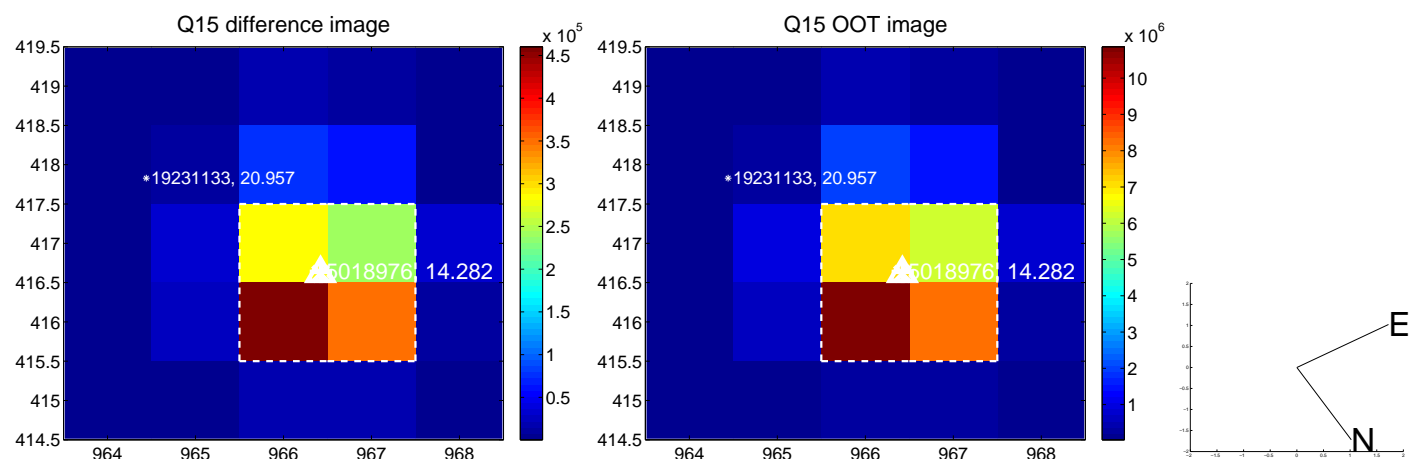
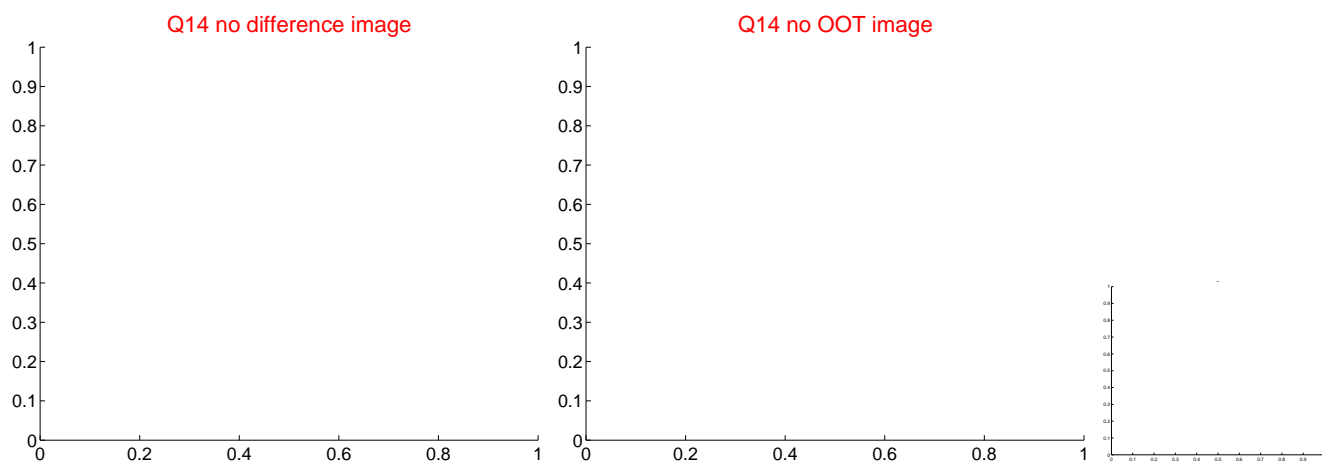
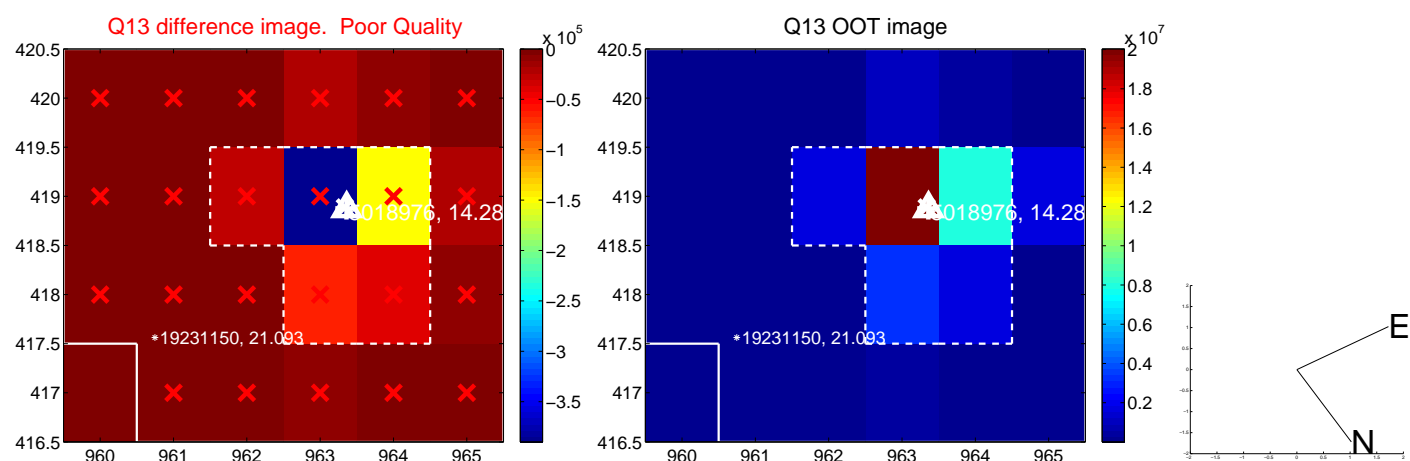
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



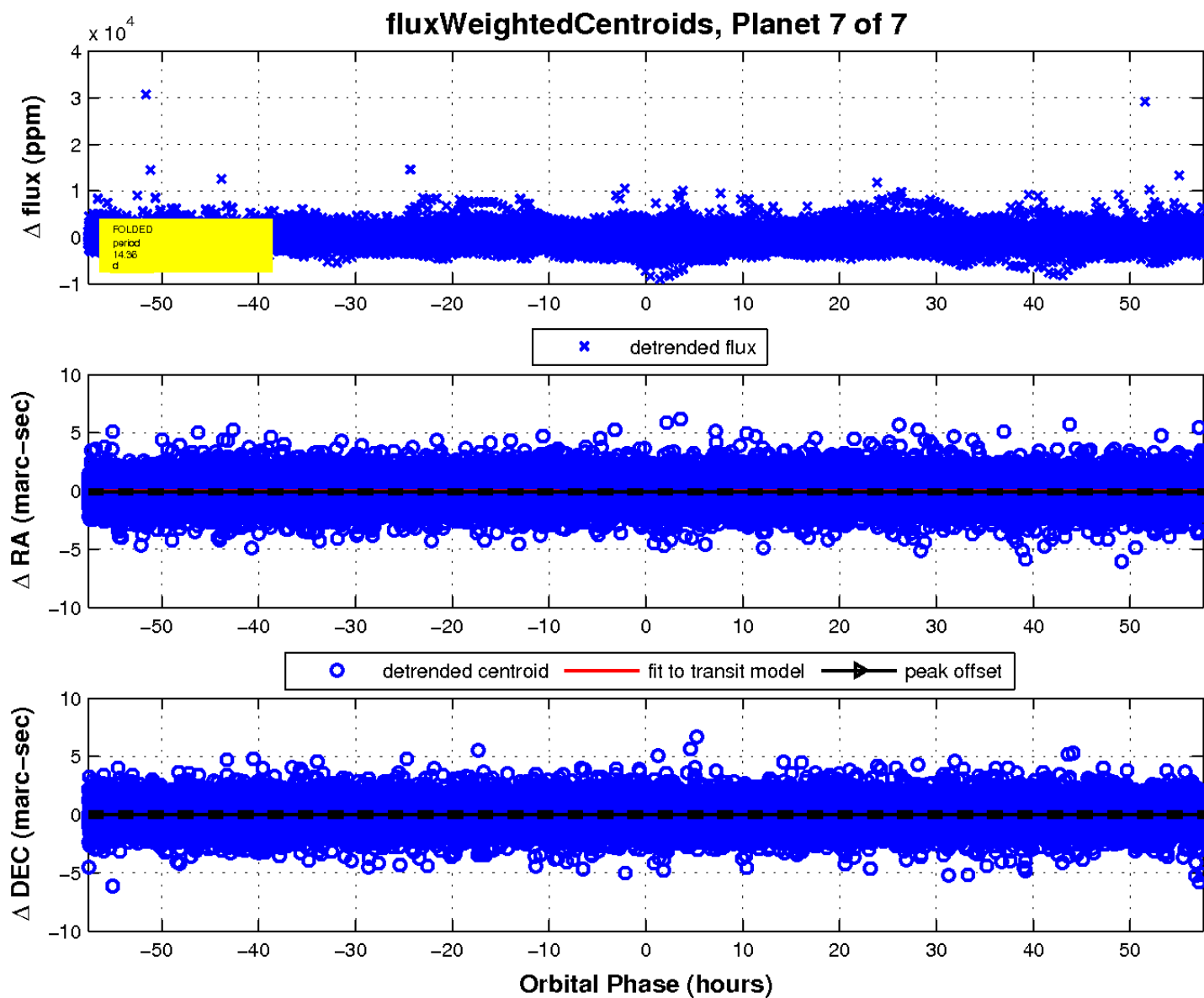
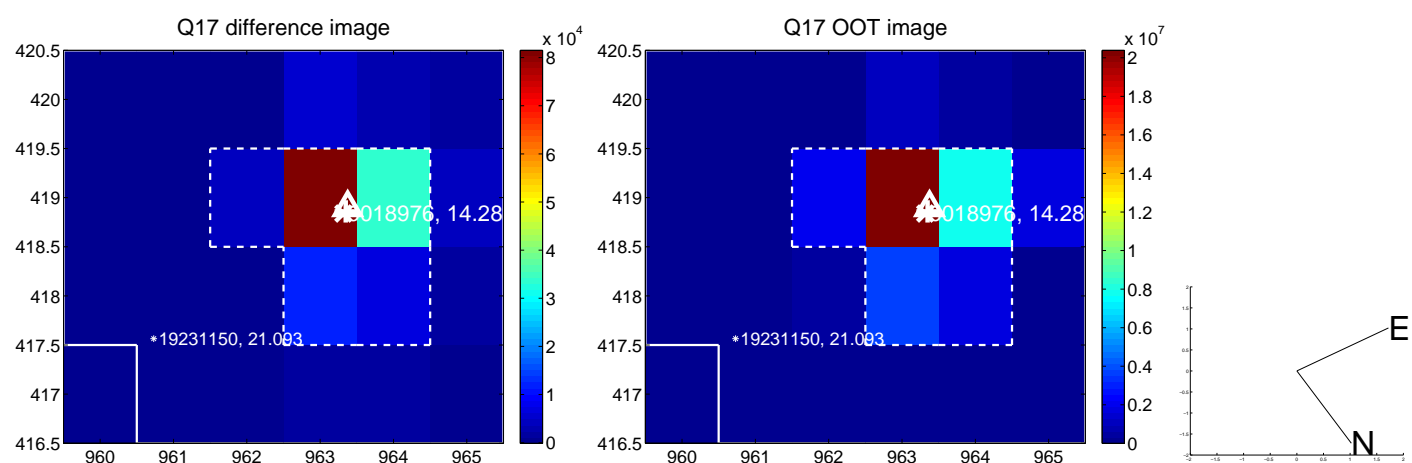
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

