

# KIC 011958955

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
011958955-01	OBS	No	609.990552	172.502121	700.4	10.032	15.6	6.0	0.77	4981	2.21	0.20
011958955-02	OBS	No	619.391847	206.185446	822.8	4.390	11.6	6.9	0.77	4981	2.33	0.19
011958955-03	OBS	No	624.344901	150.726038	635.1	17.271	10.7	4.9	0.77	4981	2.23	0.19
011958955-04	OBS	No	384.839018	318.703990	901.3	4.616	10.8	7.5	0.77	4981	2.50	0.36
011958955-05	OBS	No	446.767859	373.700685	1422.8	19.154	9.7	8.2	0.77	4981	3.39	0.30
011958955-06	OBS	No	346.443665	437.536963	1099.5	3.840	9.3	8.6	0.77	4981	2.85	0.41
011958955-07	OBS	No	351.630210	432.911970	948.3	3.220	9.1	7.4	0.77	4981	2.67	0.41
011958955-08	OBS	No	254.737256	211.434970	813.1	20.113	9.5	6.3	0.77	4981	2.23	0.63
011958955-09	OBS	No	413.479898	380.401971	780.1	5.000	9.2	-1.0	0.77	4981	2.07	0.33

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011958955-01	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
011958955-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_UNCERTAIN
011958955-03	OBS	FP	0.00	1	0	1	0	ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS—HALO_GHOST
011958955-04	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_TER_DV—CENT_KIC_POS—HALO_GHOST
011958955-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
011958955-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_KIC_POS
011958955-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_KIC_POS
011958955-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
011958955-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_NOFITS

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

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

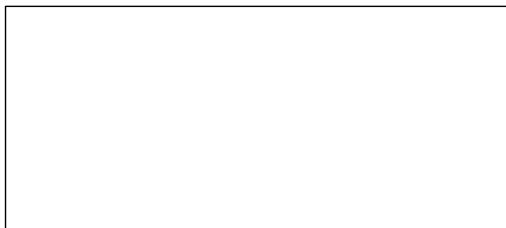
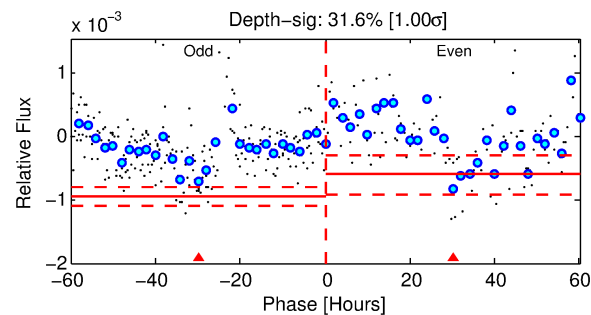
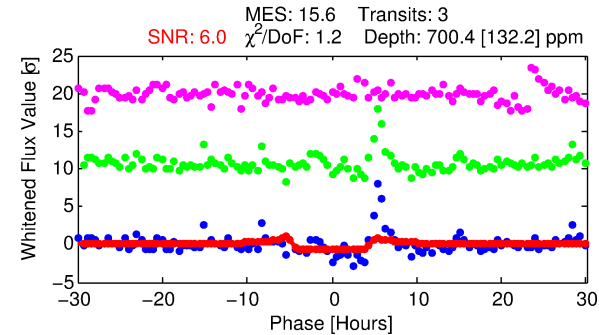
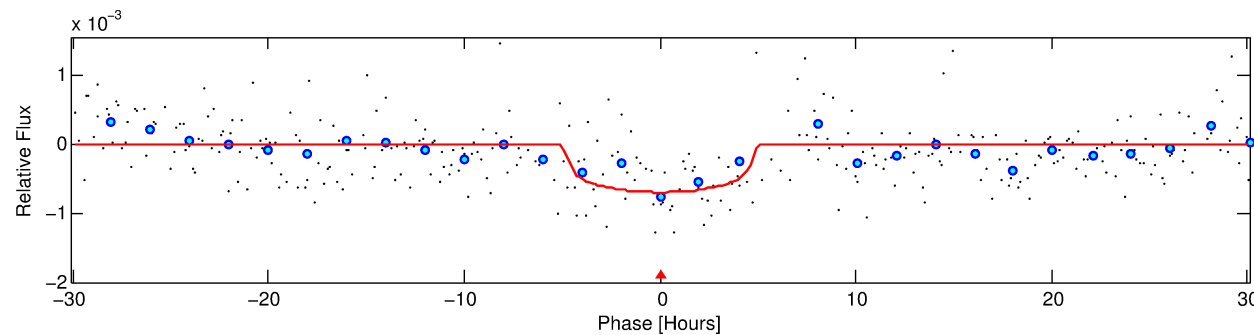
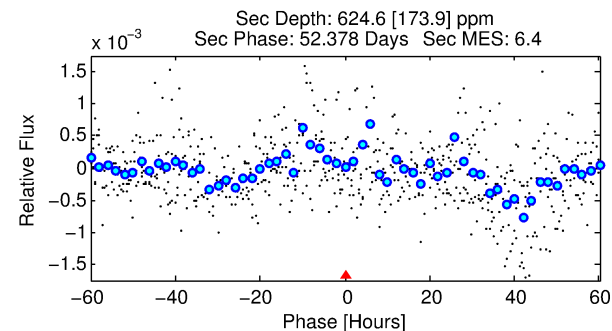
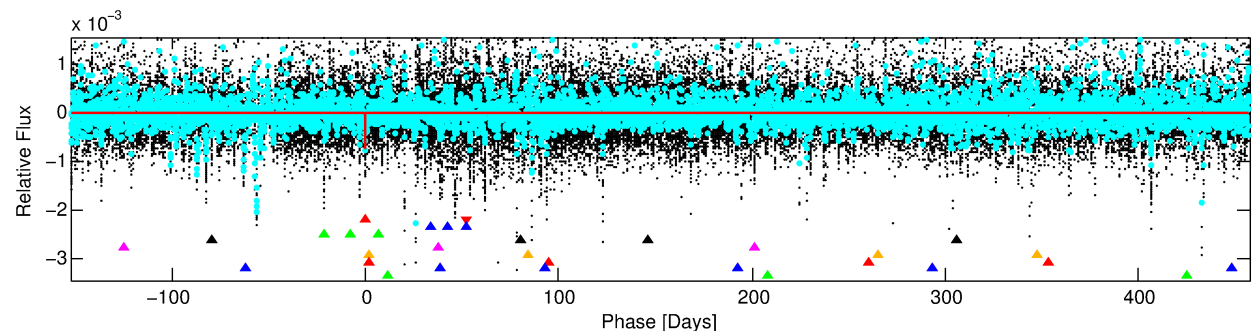
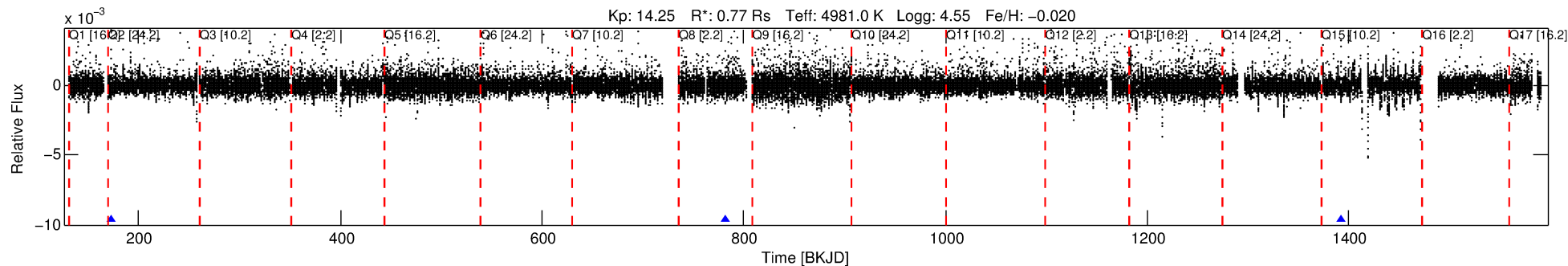
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 011958955-01

No Significant Match Found

# DV One-Page Summary

KIC: 11958955 Candidate: 1 of 9 Period: 609.991 d



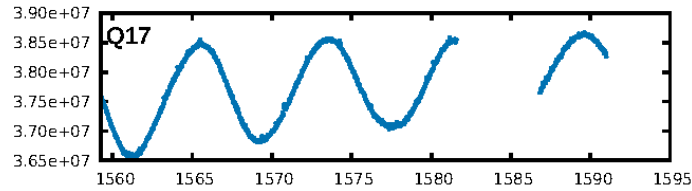
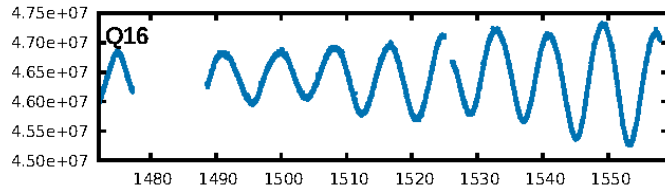
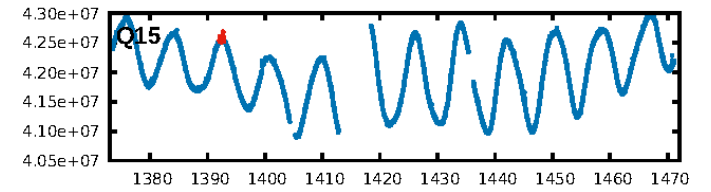
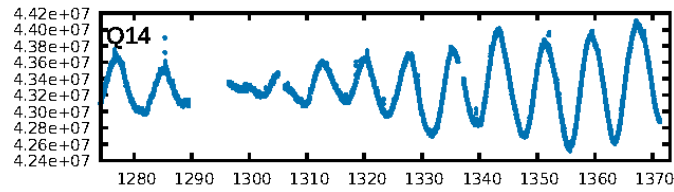
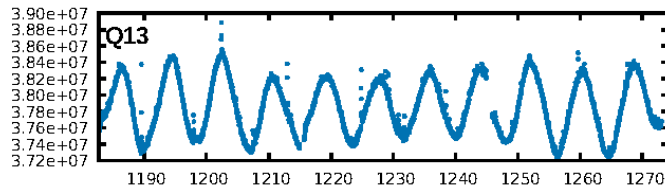
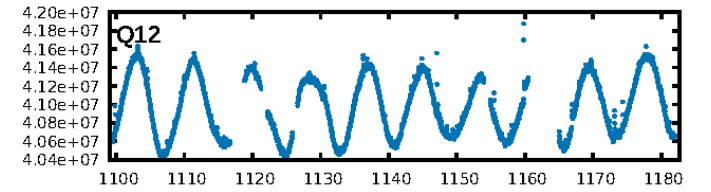
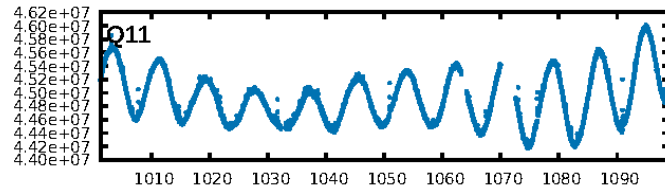
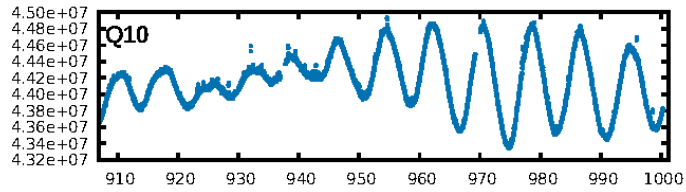
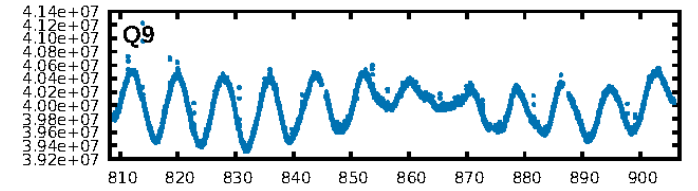
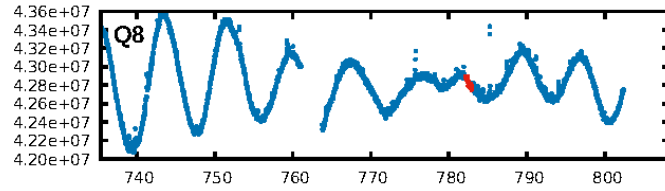
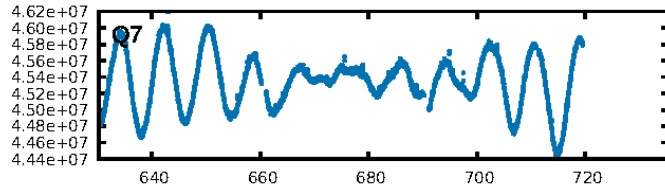
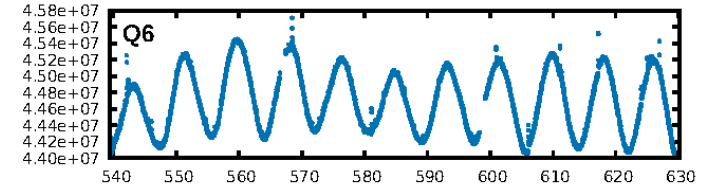
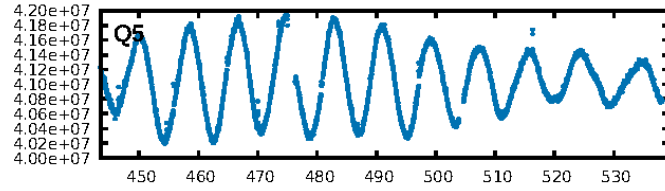
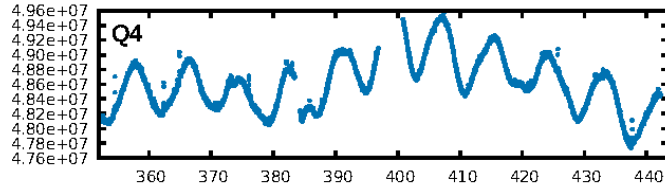
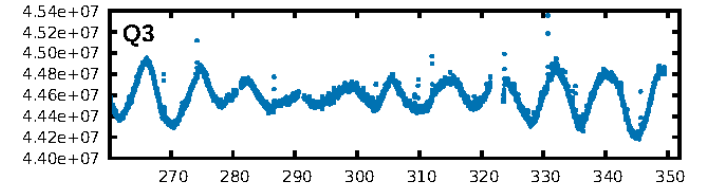
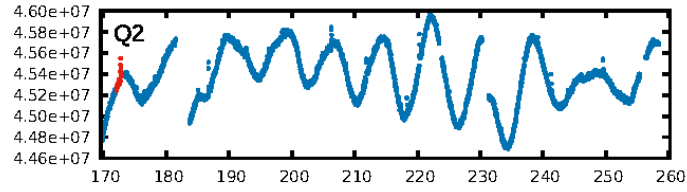
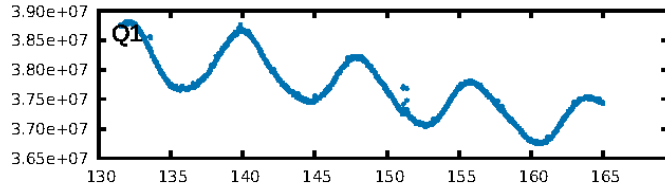
## DV Fit Results:

Period = 609.99055 [0.00997] d  
Epoch = 172.5021 [0.0143] BKJD  
Rp/R\* = 0.0264 [0.0117]  
a/R\* = 325.24 [487.26]  
b = 0.75 [0.88]  
Seff = 0.20 [0.03]  
Teq = 170 [7] K  
Rp = 2.21 [1.00] Re  
a = 1.2886 [0.1001] AU  
Ag = 116537.17 [108854.21] [1.07 $\sigma$ ]  
Teffp = 4843 [1132] K [4.13 $\sigma$ ]

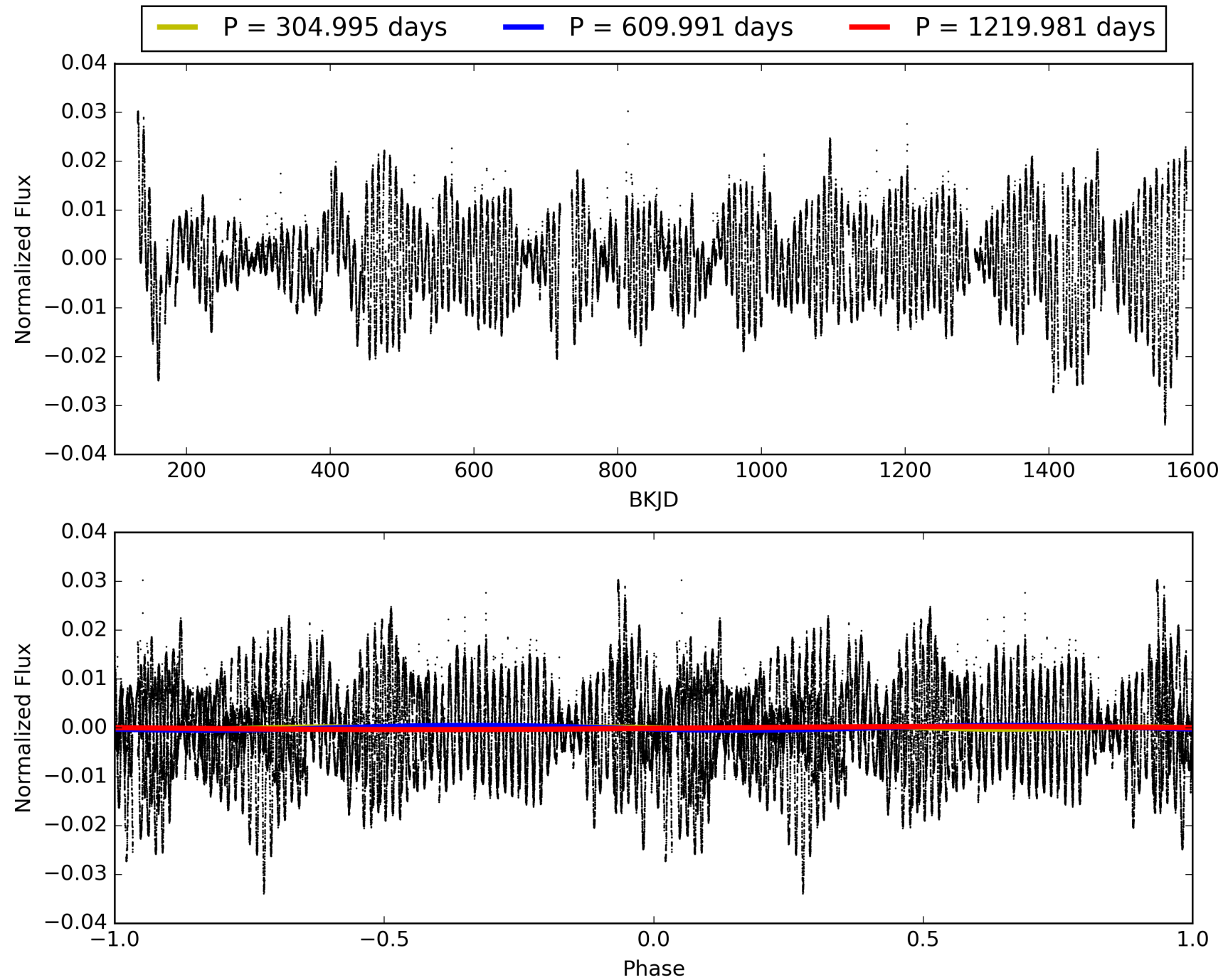
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [181.18 $\sigma$ ]  
LongPeriod-sig: 100.0% [20.60 $\sigma$ ]  
ModelChiSquare2-sig: 2.5%  
ModelChiSquareGof-sig: 56.0%  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: 1.006  
Centroid-sig: 2.2%  
Centroid-so: 2.172 arcsec [1.09 $\sigma$ ]  
OotOffset-rm: N/A  
KicOffset-rm: N/A  
OotOffset-st: 0/0/0 [0]  
KicOffset-st: 0/0/0 [0]  
DiffImageQuality-fgm: N/A  
DiffImageOverlap-fno: 1.00 [3/3]

# TCE 011958955-01, PDC Light Curves



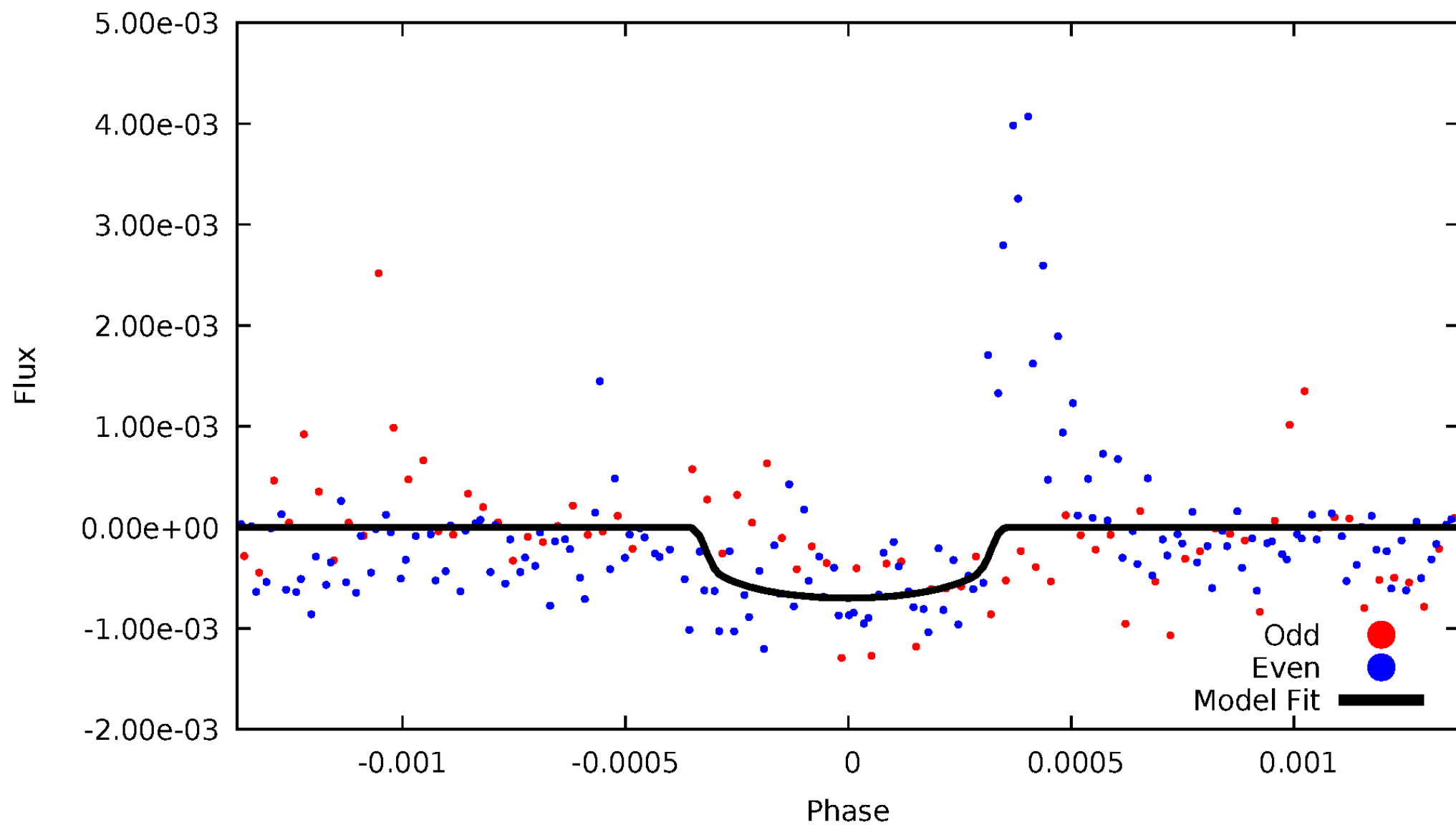
# TCE 011958955-01





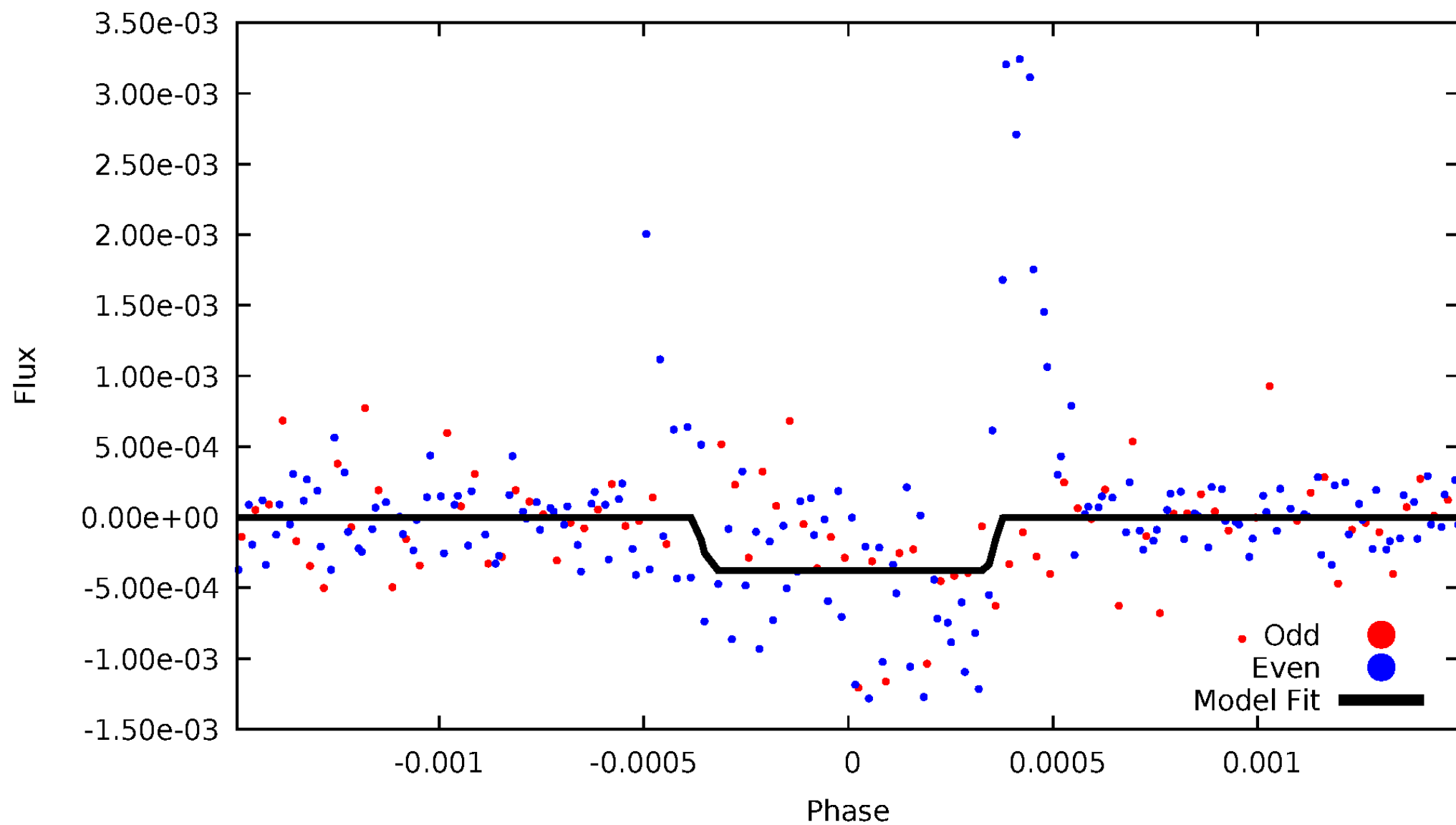
# DV Odd/Even

TCE 011958955-01

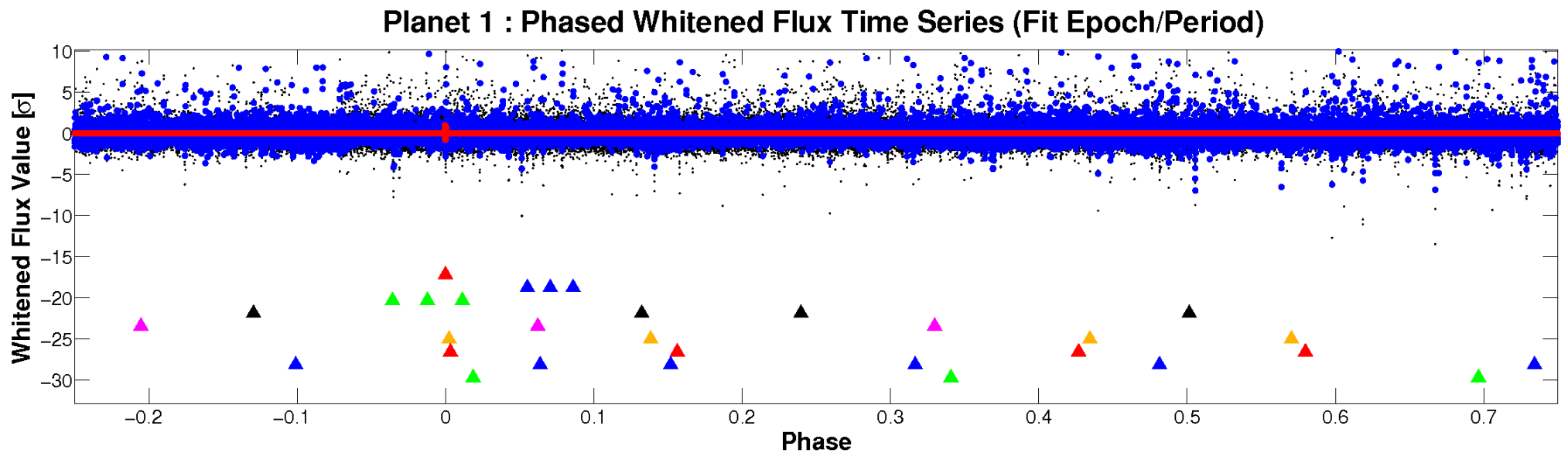
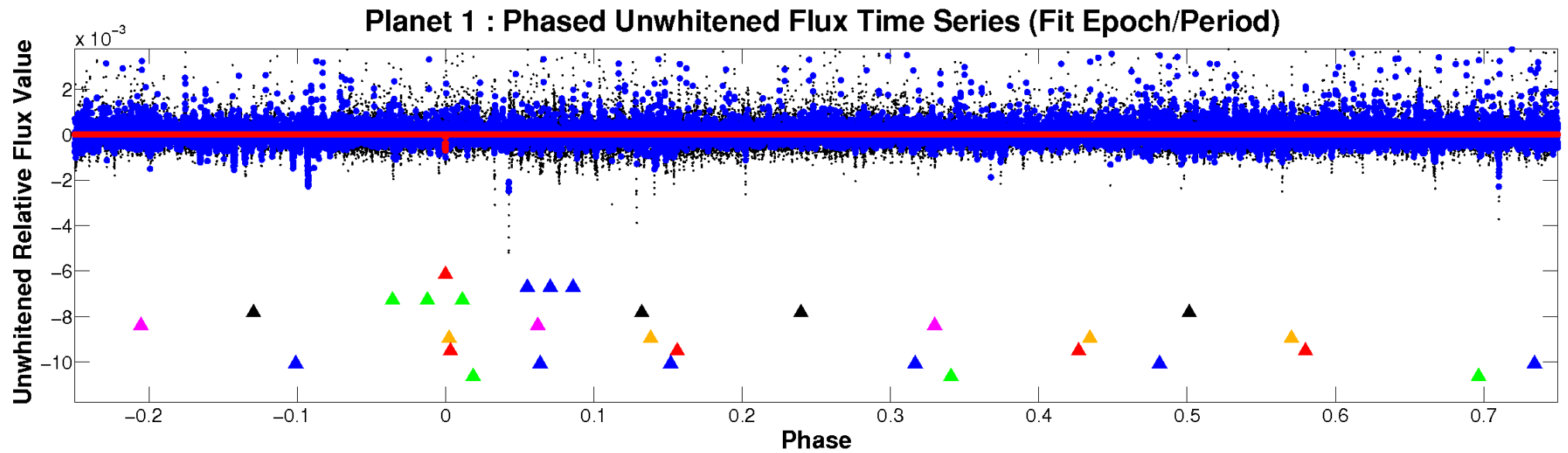


# ALT Odd/Even

TCE 011958955-01

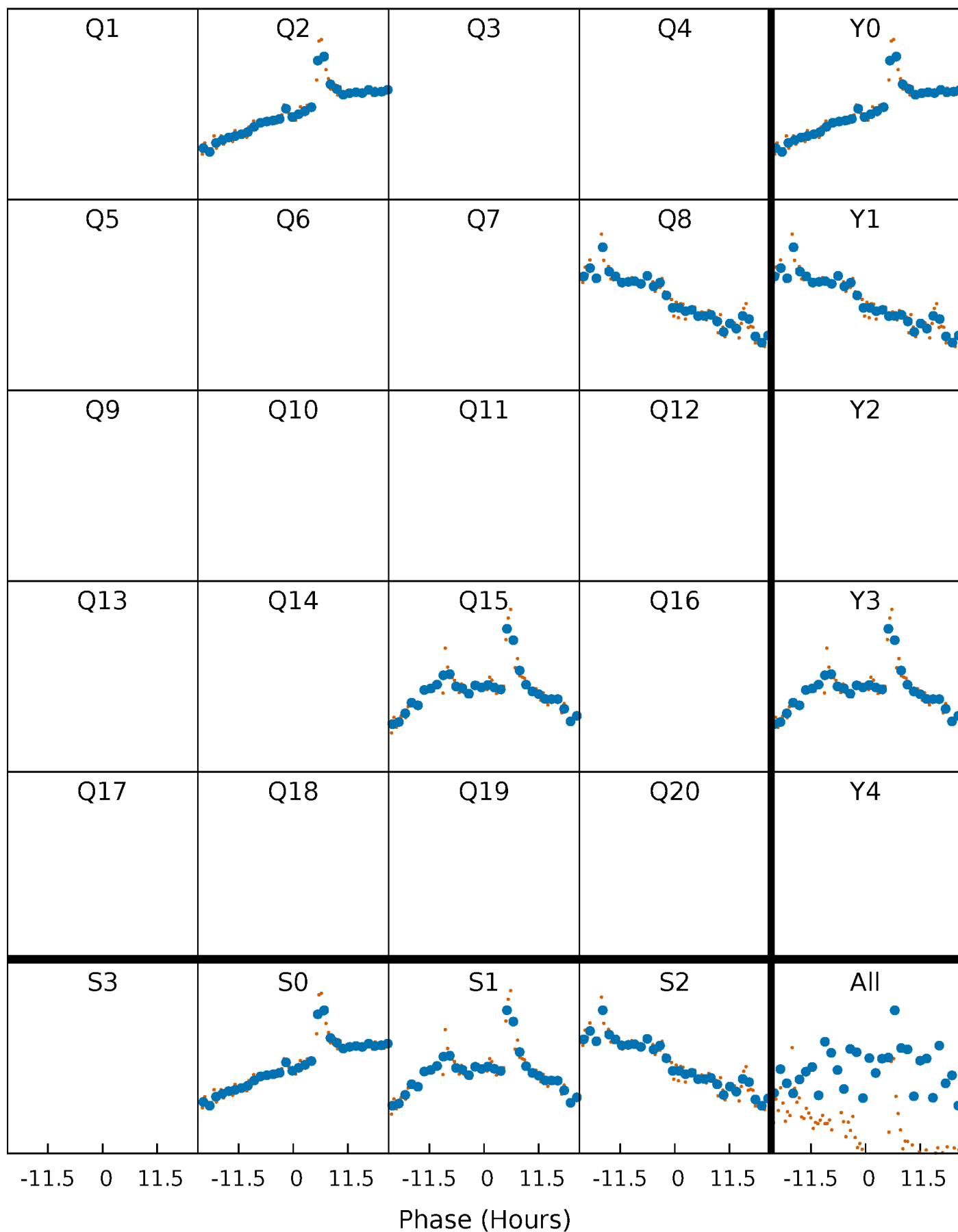


# Non-Whitened Vs. Whitened Light Curve



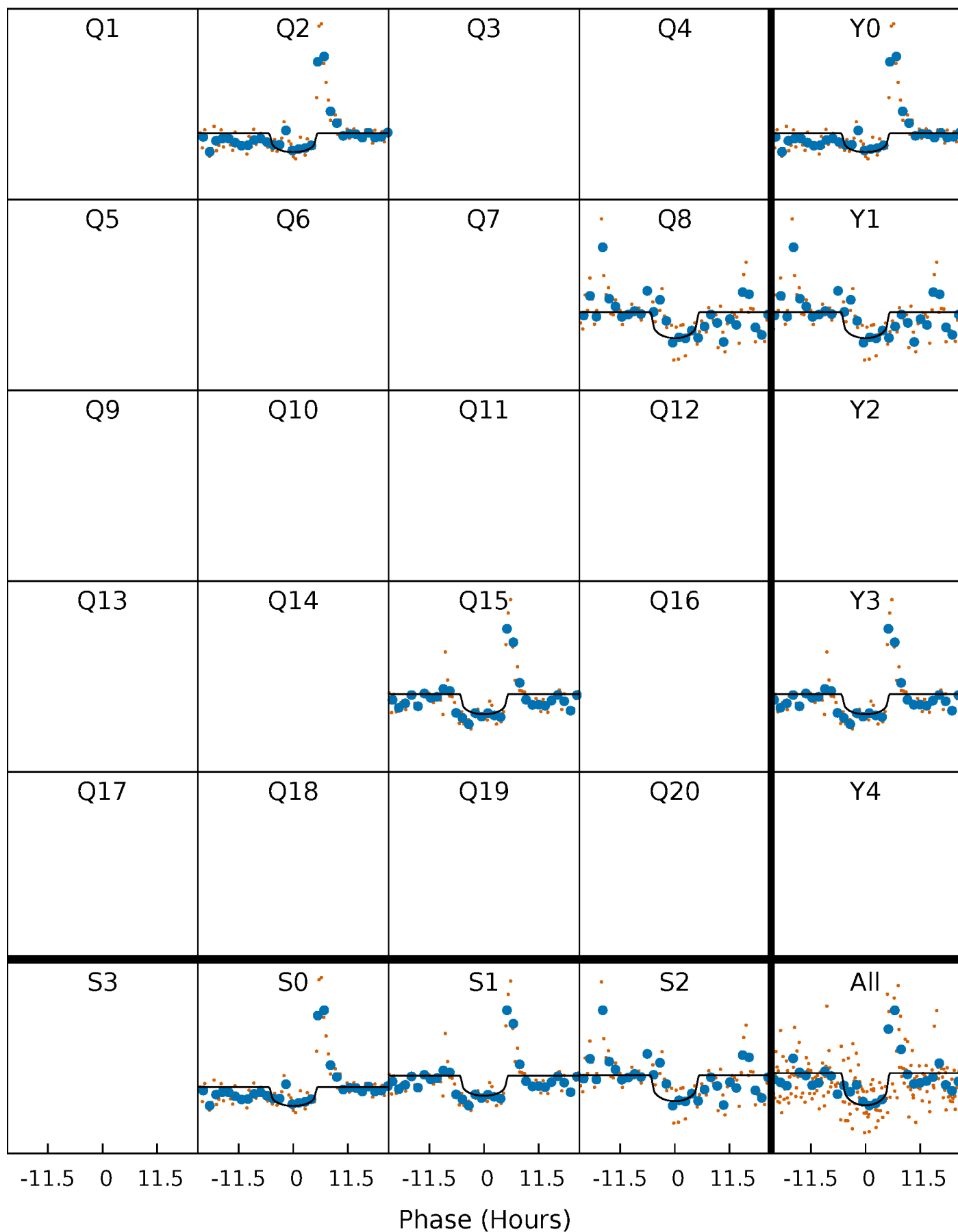
# PDC Quarter-Phased Transit Curves

TCE 011958955-01 P=609.990552 Days  $T_0=172.502121$  (BKJD)



# DV Quarter-Phased Transit Curves

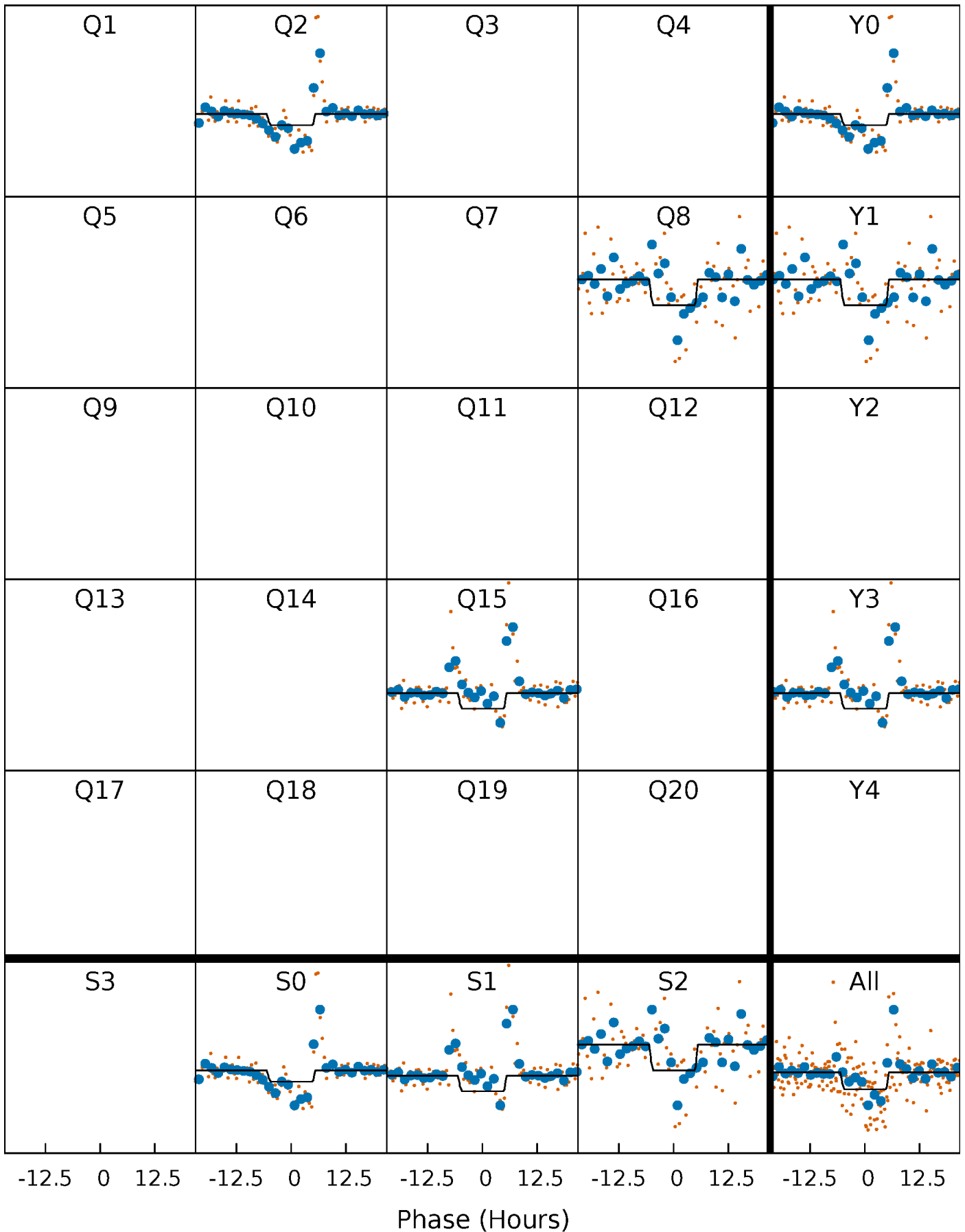
TCE 011958955-01 P=609.990552 Days  $T_0=172.502121$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

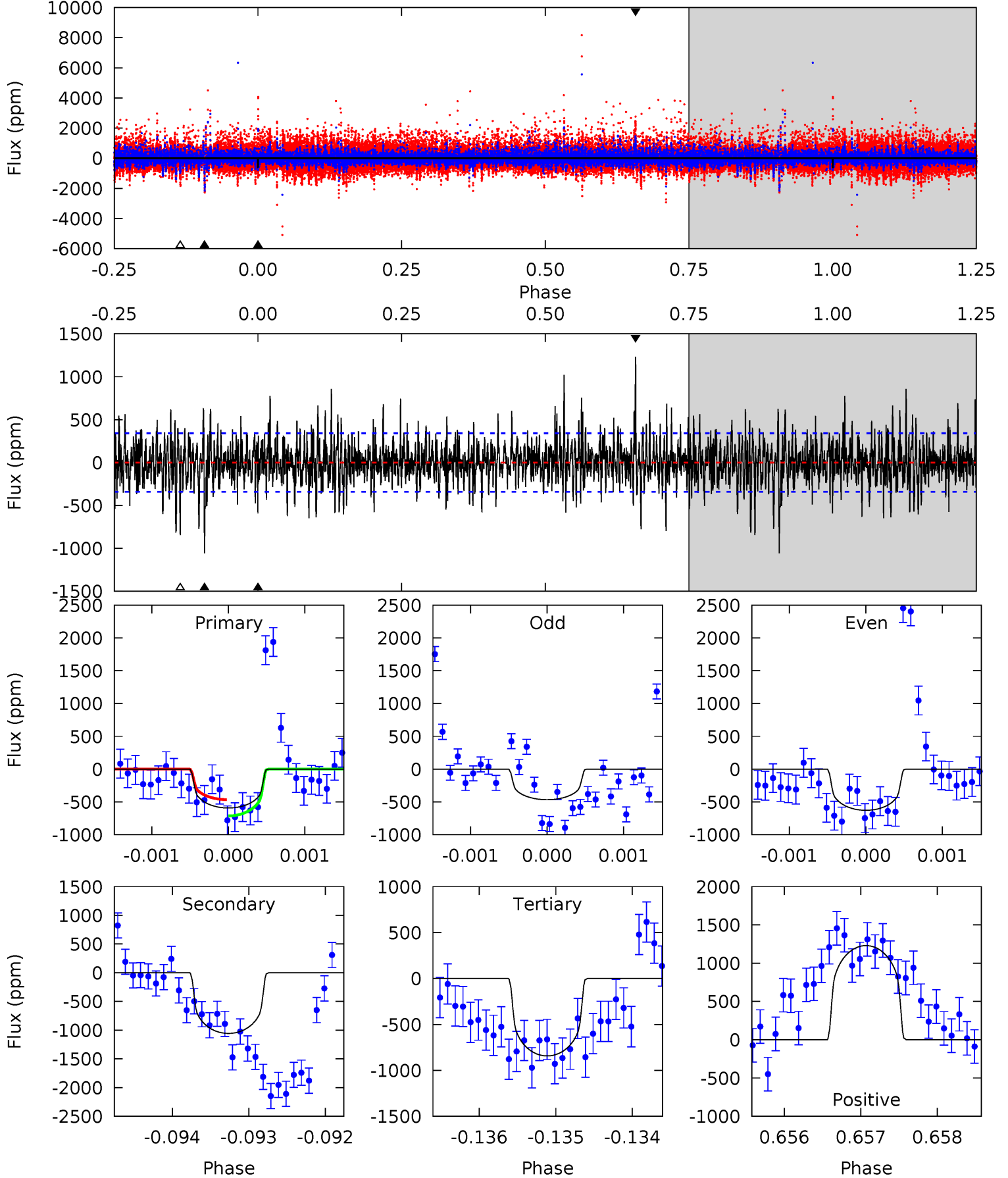
TCE 011958955-01 P=609.975822 Days  $T_0=172.492673$  (BKJD)



# DV Model-Shift Uniqueness Test

011958955-01, P = 609.990552 Days, E = 172.502121 Days

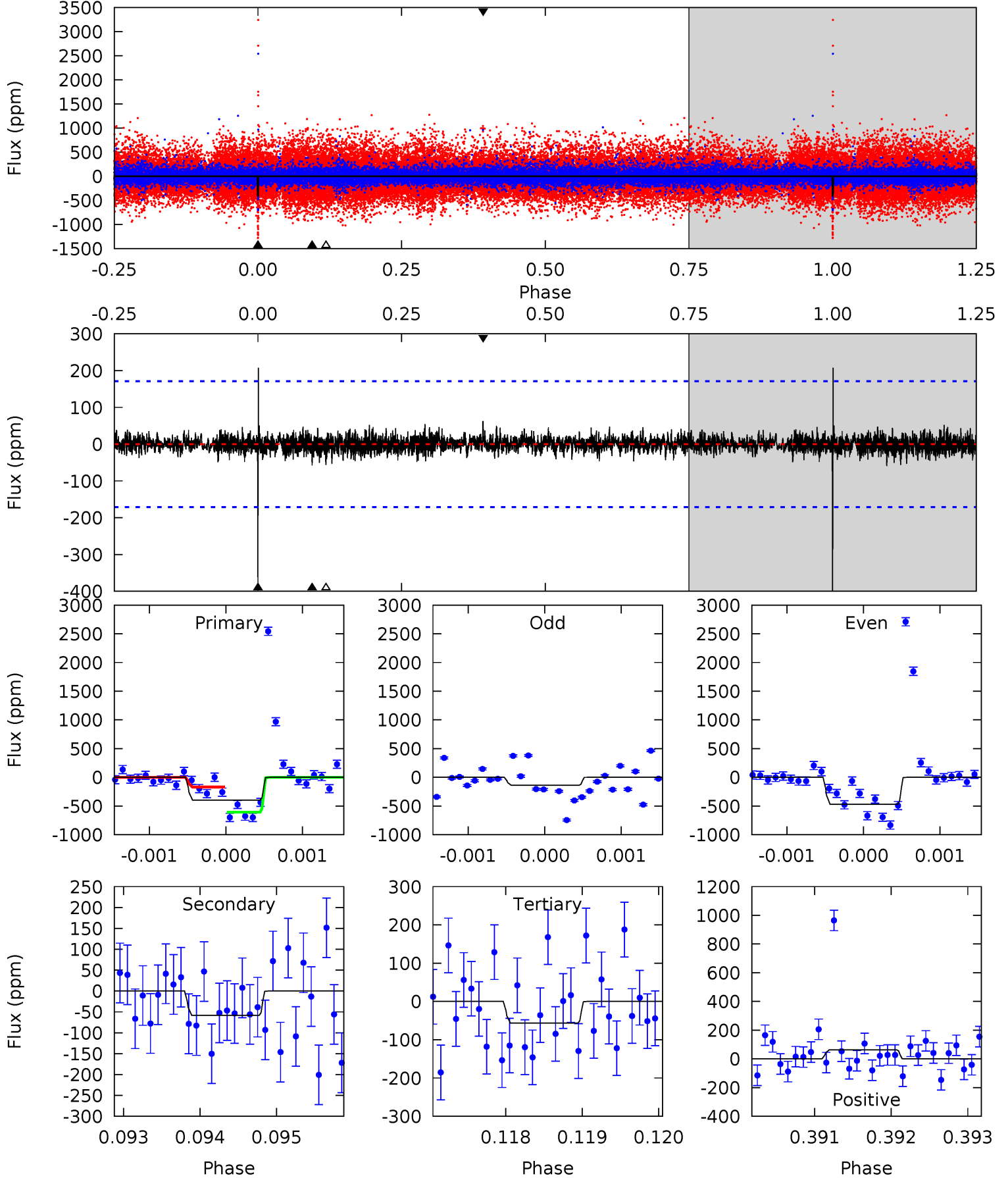
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.61	17.1	13.7	19.9	5.51	3.39	3.29	-4.04	-10.3	3.47	-2.81	1.01	1.23	0.54	2.00



# Alt Model-Shift Uniqueness Test

011958955-01, P = 609.975822 Days, E = 172.492673 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
12.8	1.87	1.82	2.01	5.51	3.38	0.44	11.0	10.8	0.05	-0.14	4.69	1.56	0.34	7.07



### Stellar Parameters For KIC 011958955

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$4981^{+151}_{-136}$	$4.553^{+0.060}_{-0.050}$	$-0.020^{+0.250}_{-0.300}$	$0.767^{+0.065}_{-0.072}$	$0.768^{+0.078}_{-0.064}$	$2.395^{+0.557}_{-0.411}$
	+3%/-3%	+1%/-1%	+1250%/-1500%	+8%/-9%	+10%/-8%	+23%/-17%
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 011958955-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-1057 \pm 62$	$2.17^{+1.06}_{-0.92}$	$236^{+8}_{-8}$	$5509^{+1812}_{-882}$	$208606^{+408425}_{-116016}$
Alt.	$-58 \pm 31$	$1.67^{+0.93}_{-0.88}$	$237^{+9}_{-8}$	$3510^{+1091}_{-554}$	$19425^{+70574}_{-13437}$

$T_{max}$  = 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

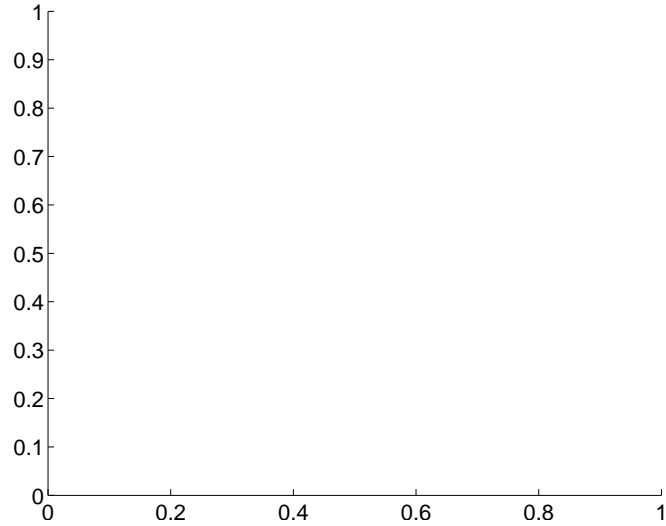
Supplemental centroid analysis for 011958955-01. Kepler magnitude: 14.25. Transit SNR 6.03

There are 0 quarters with good PRF difference image offsets

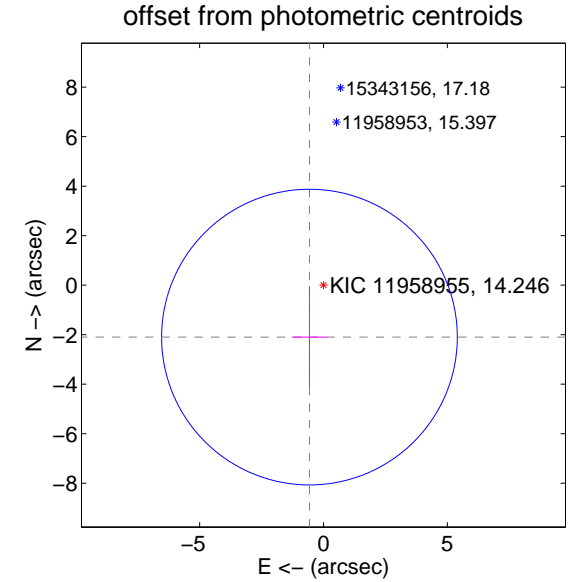
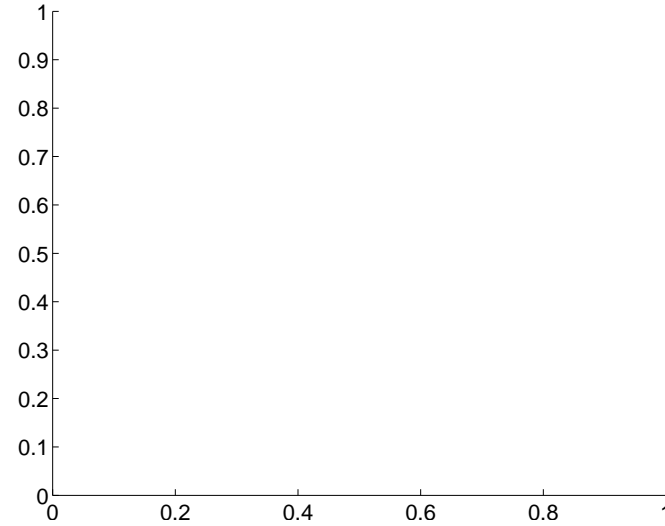
The direct PRF centroid is offset from the target star catalog position by about NaN arcsec

	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	$2.17 \pm 1.99$	1.09	$0.57 \pm 0.71$	$-2.10 \pm 2.05$

There is no PRF-fit offset from OOT-fit



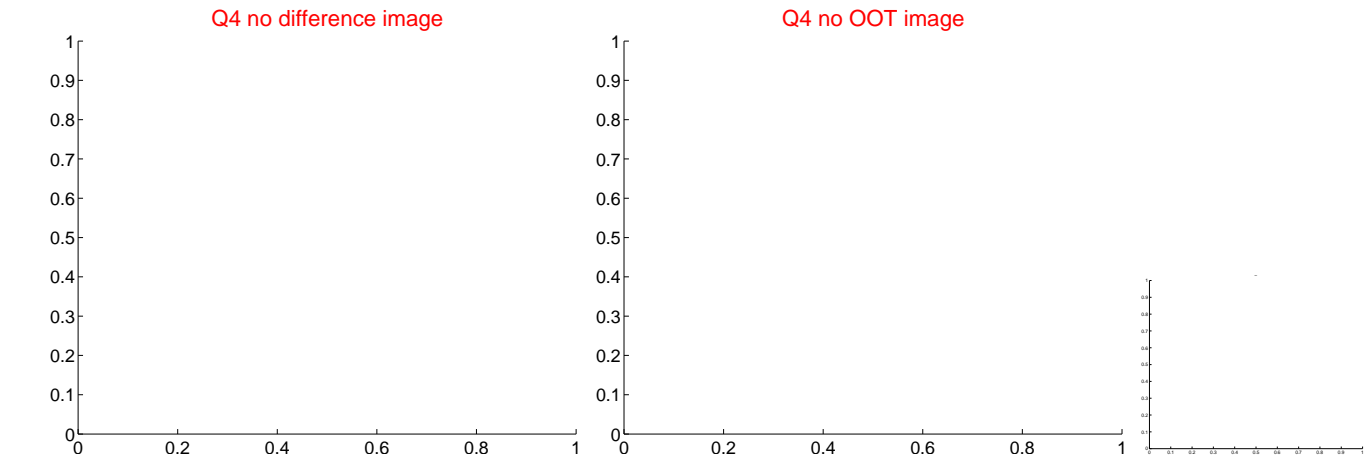
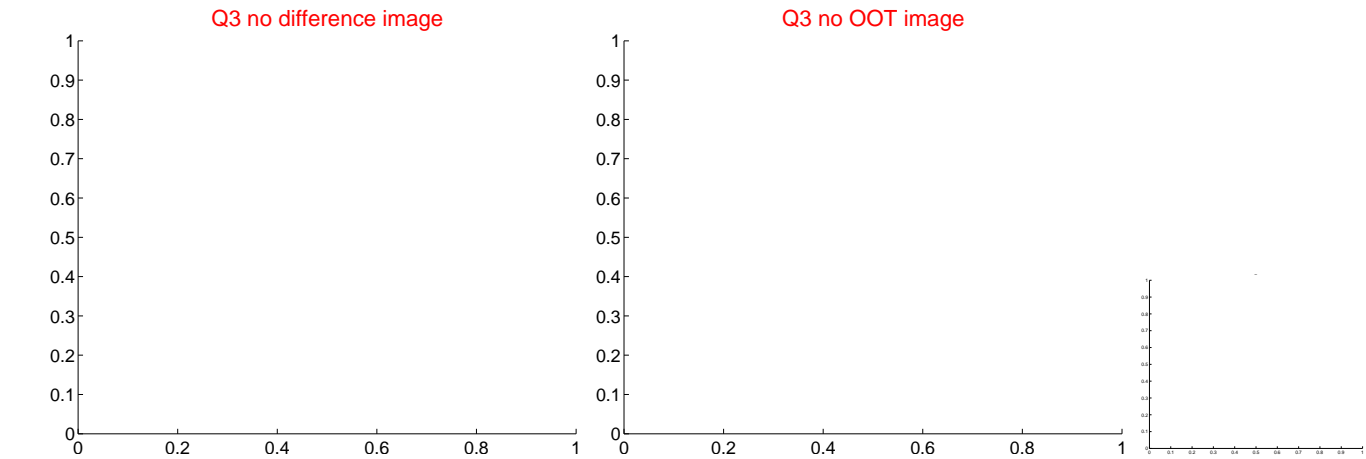
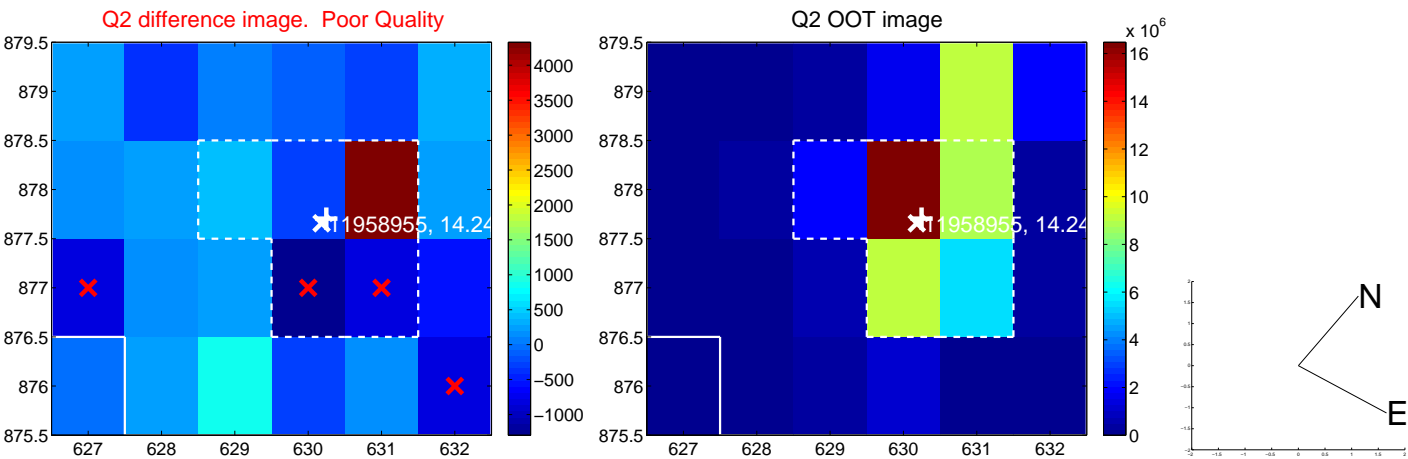
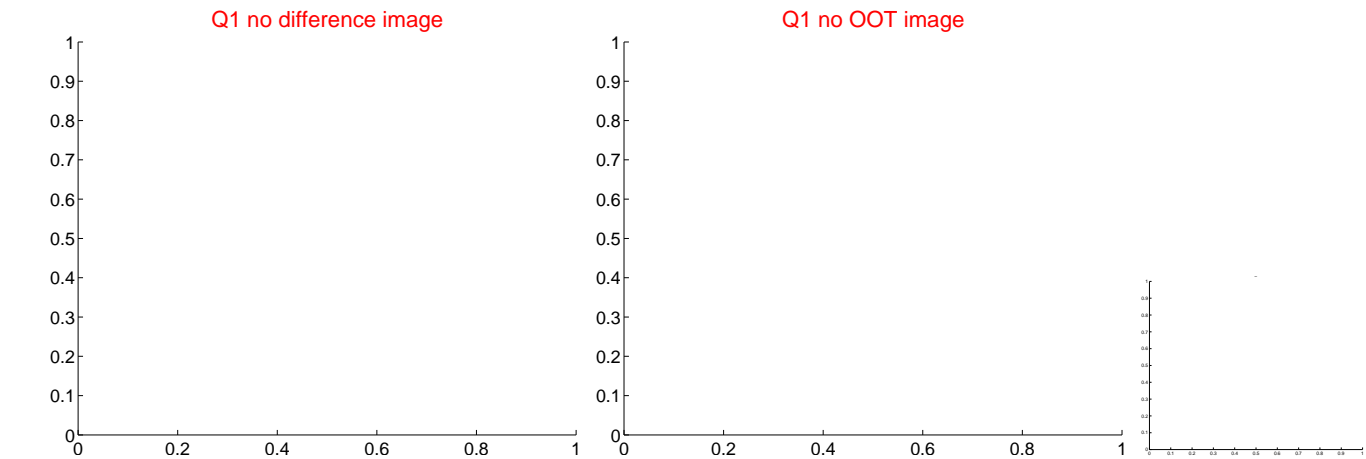
There is no PRF-fit offset from KIC



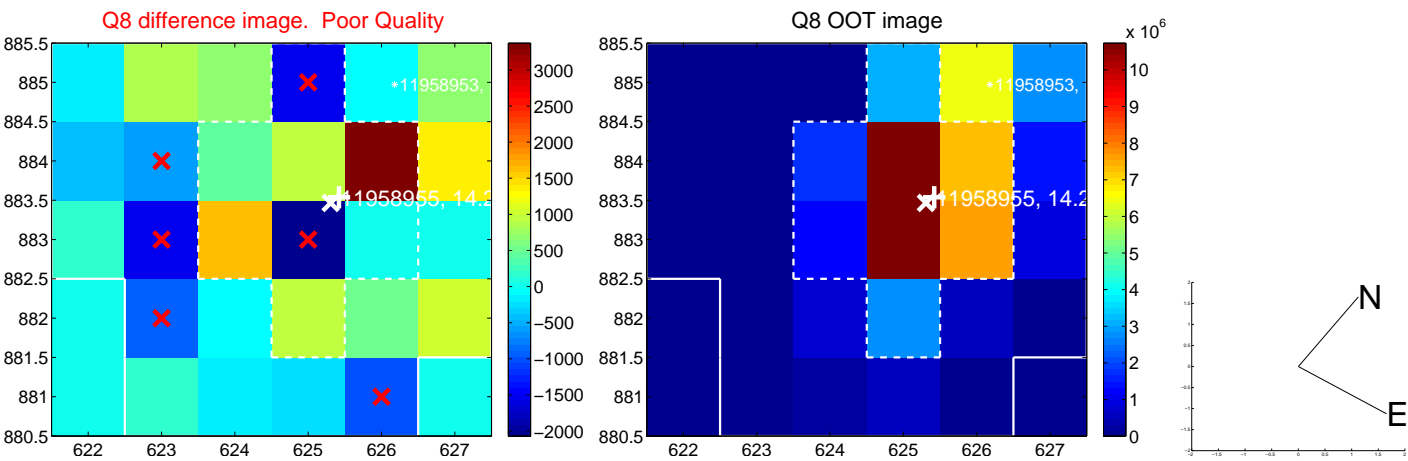
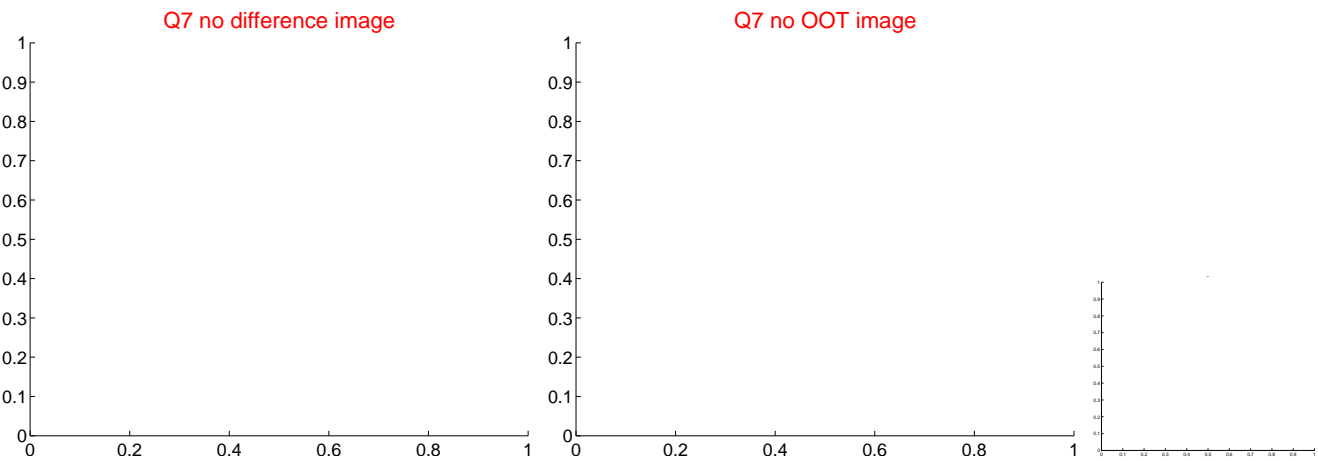
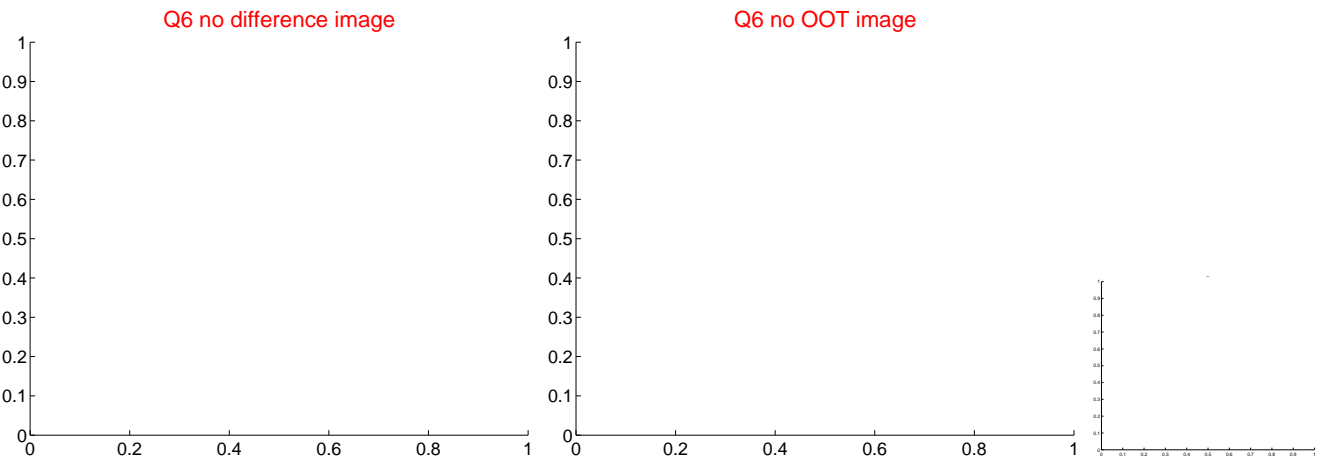
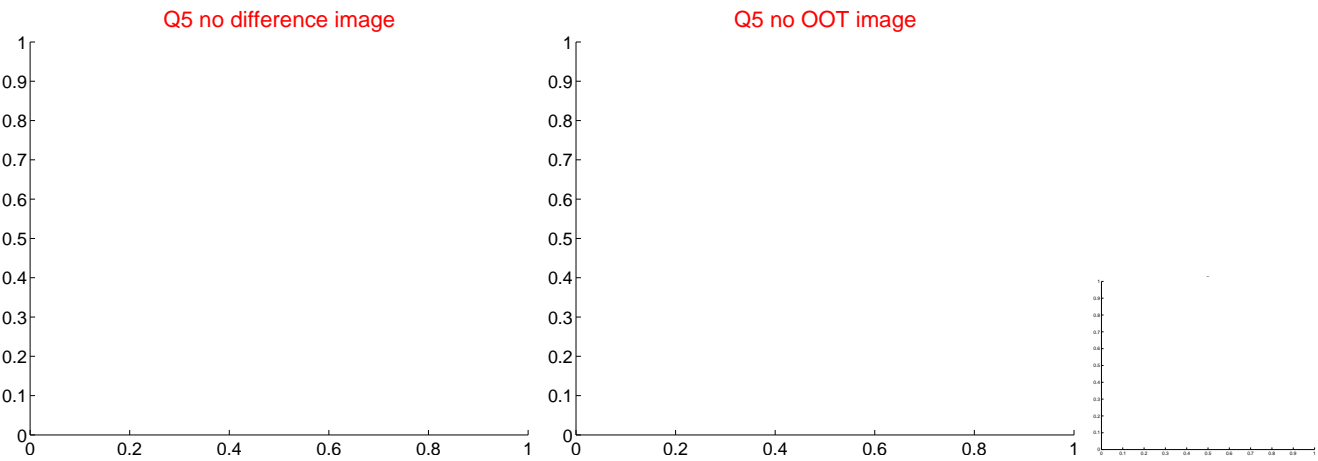
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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



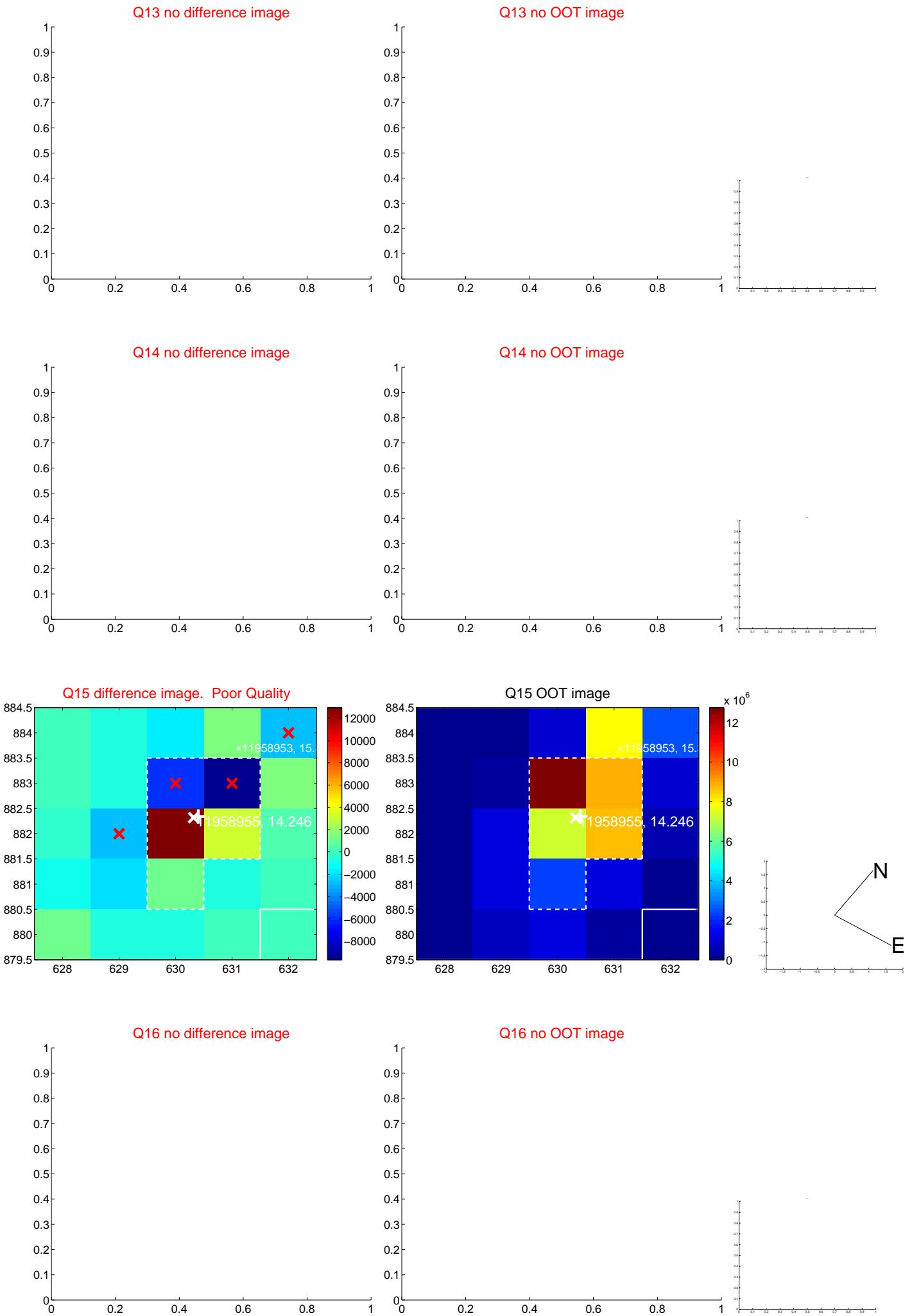
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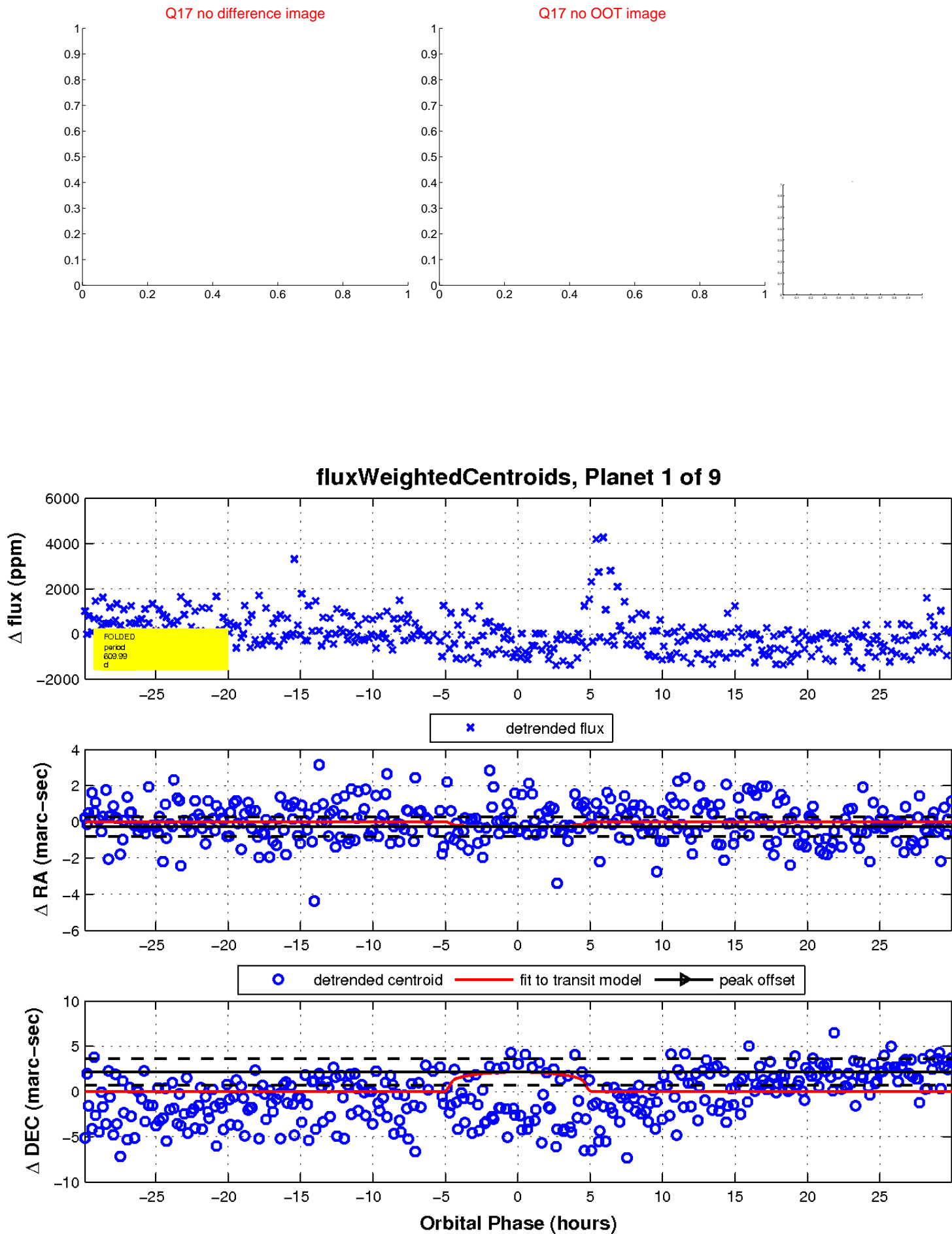
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white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



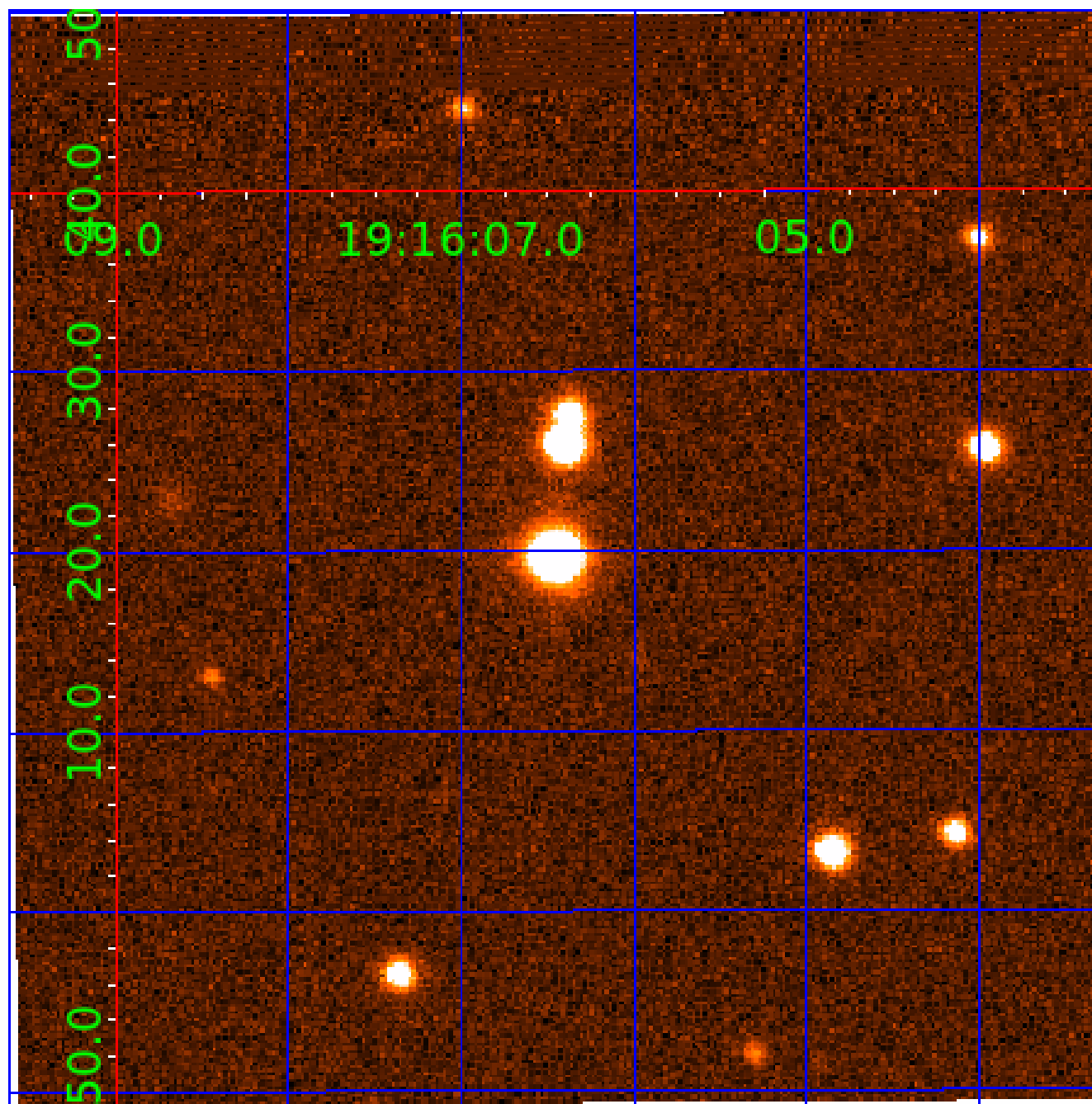
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UKIRT Image

Declination



# KIC 011958955

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TCE	Run Type	Disp	Score	N	S	C	E	Comments
011958955-01	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
011958955-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_UNCERTAIN
011958955-03	OBS	FP	0.00	1	0	1	0	ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS—HALO_GHOST
011958955-04	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_TER_DV—CENT_KIC_POS—HALO_GHOST
011958955-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
011958955-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_KIC_POS
011958955-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_KIC_POS
011958955-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
011958955-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_NOFITS

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

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

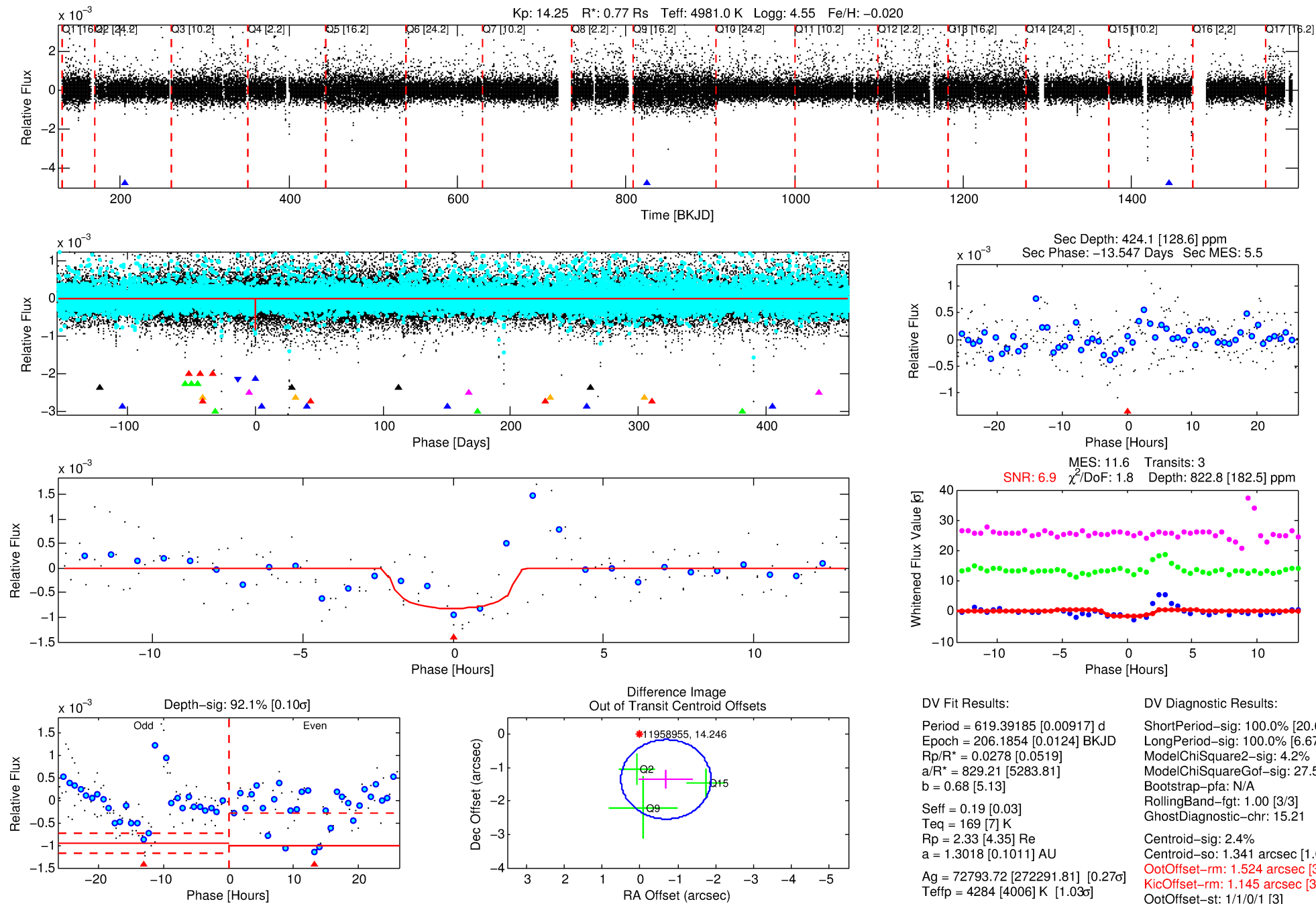
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 011958955-02

No Significant Match Found

# DV One-Page Summary

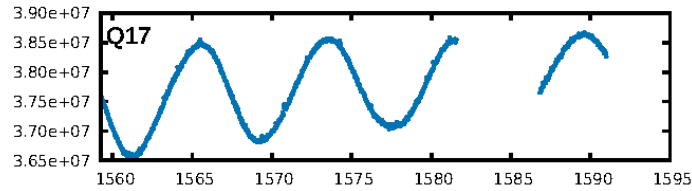
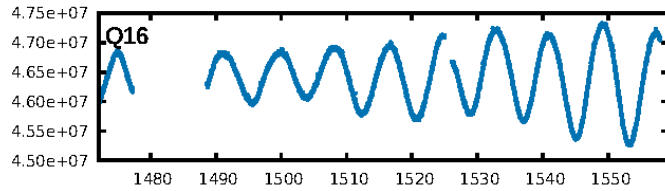
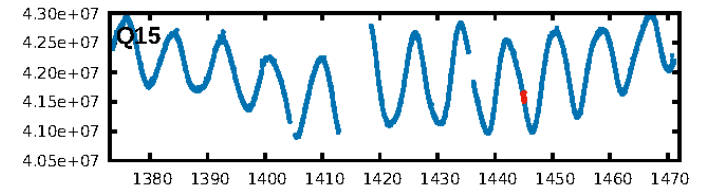
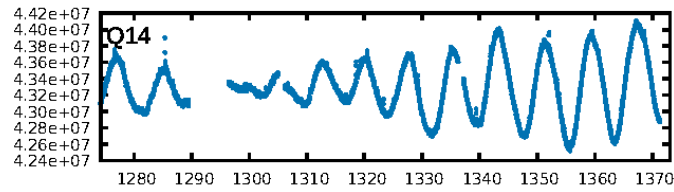
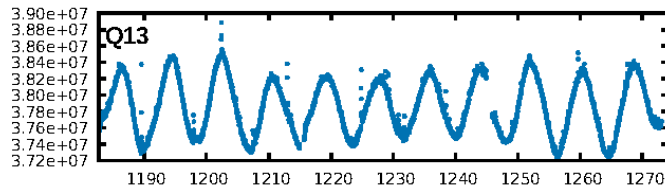
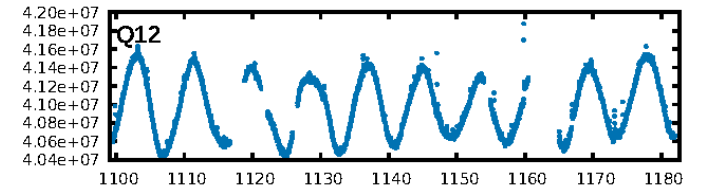
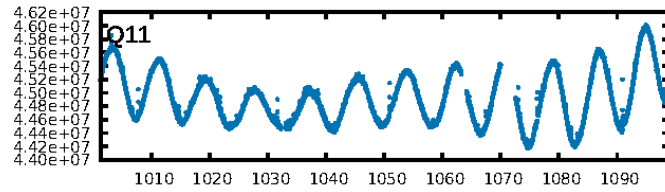
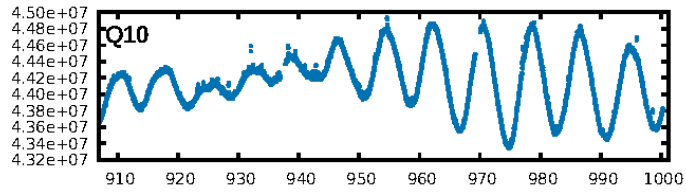
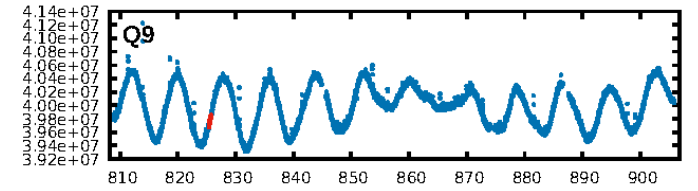
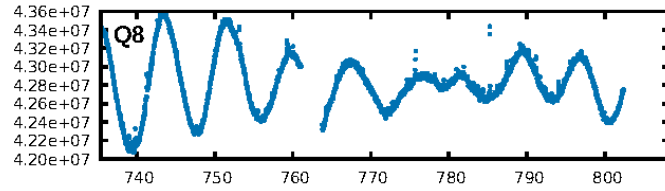
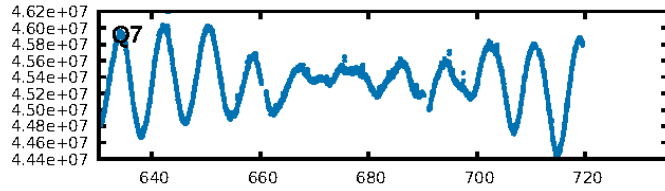
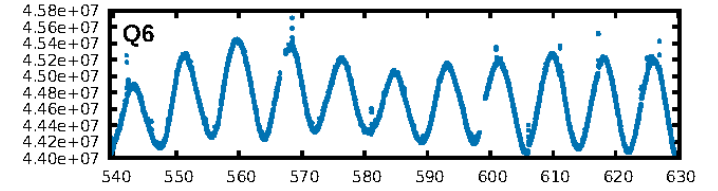
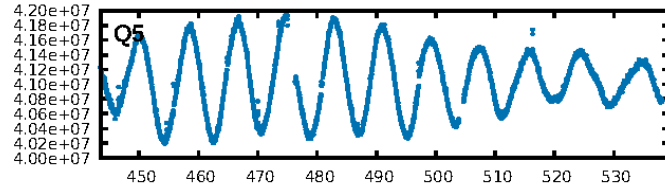
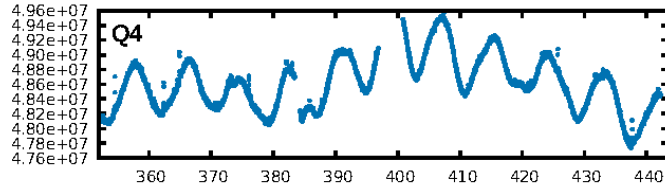
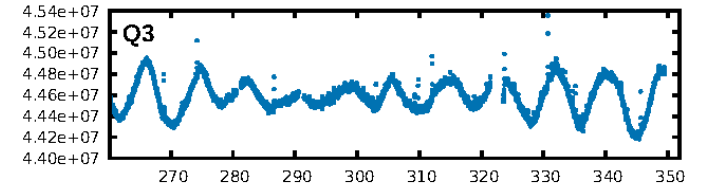
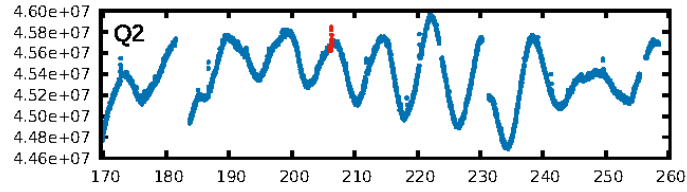
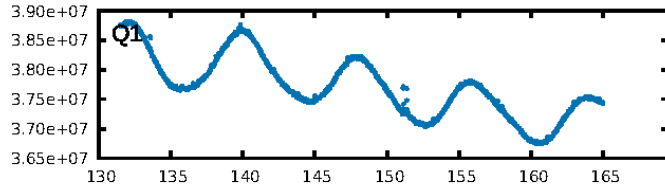
KIC: 11958955 Candidate: 2 of 9 Period: 619.392 d



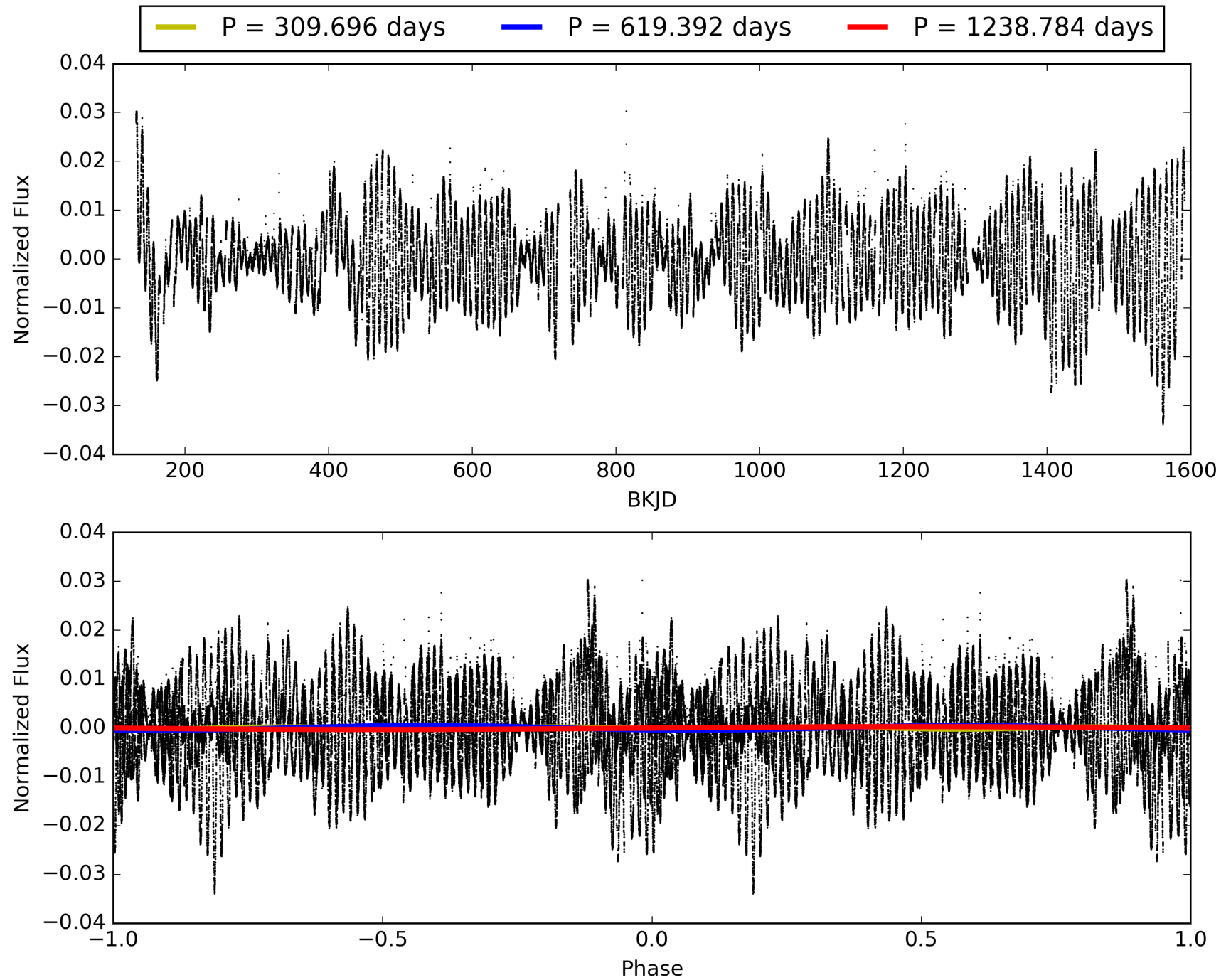
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 05:48:11 Z

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

# TCE 011958955-02, PDC Light Curves

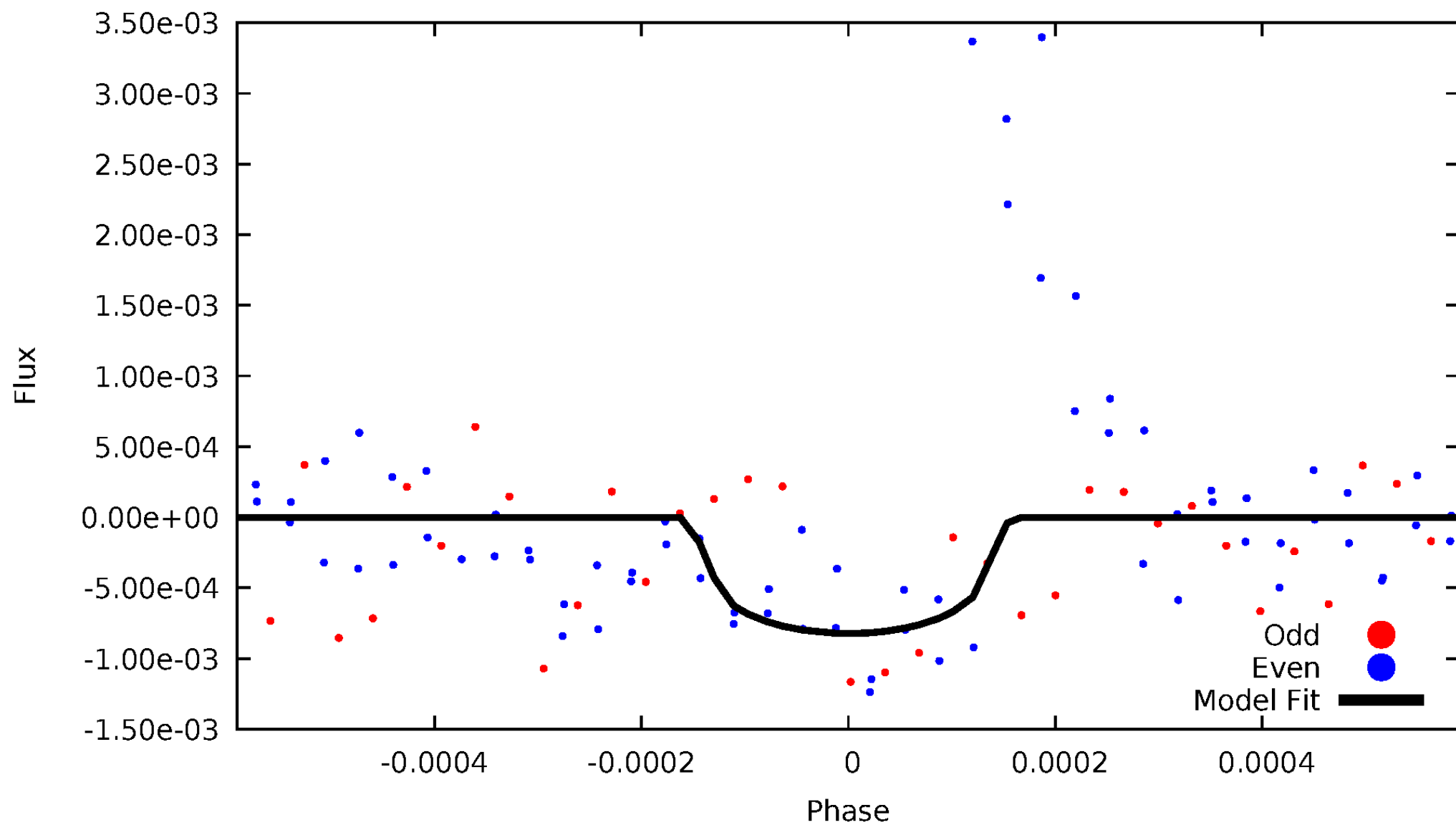


# TCE 011958955-02



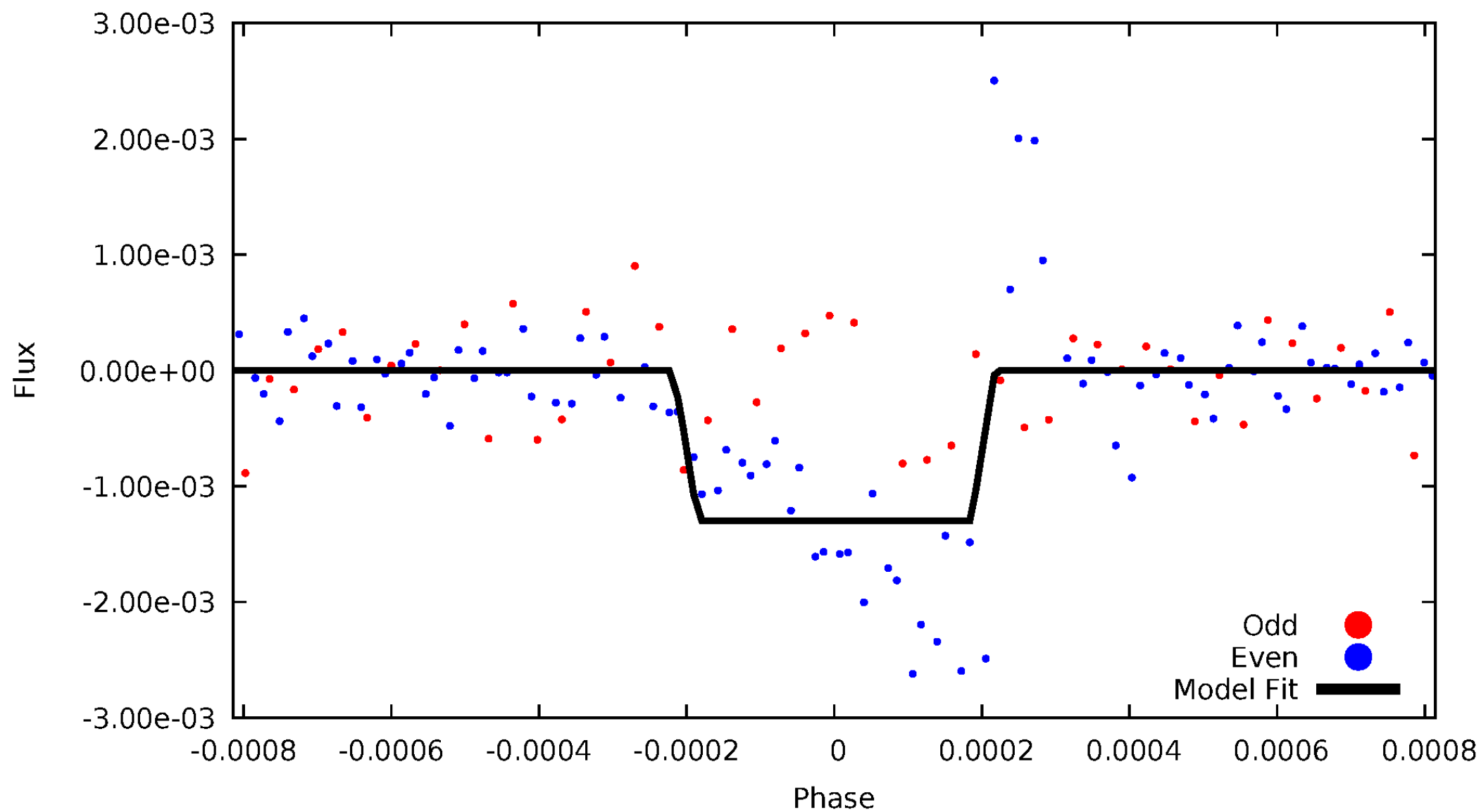
# DV Odd/Even

TCE 011958955-02



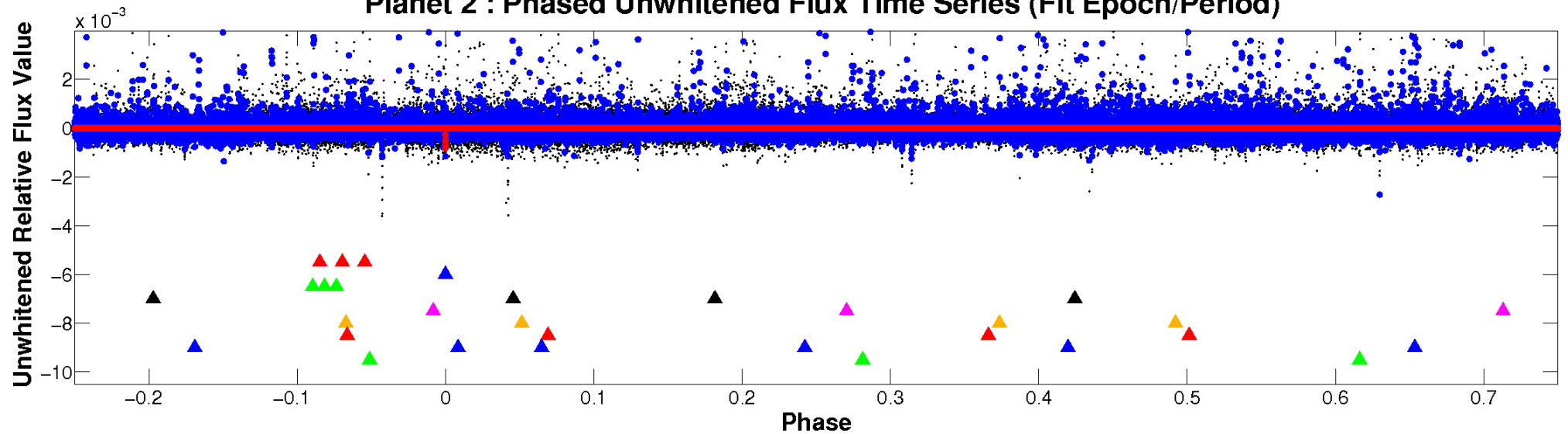
# ALT Odd/Even

TCE 011958955-02

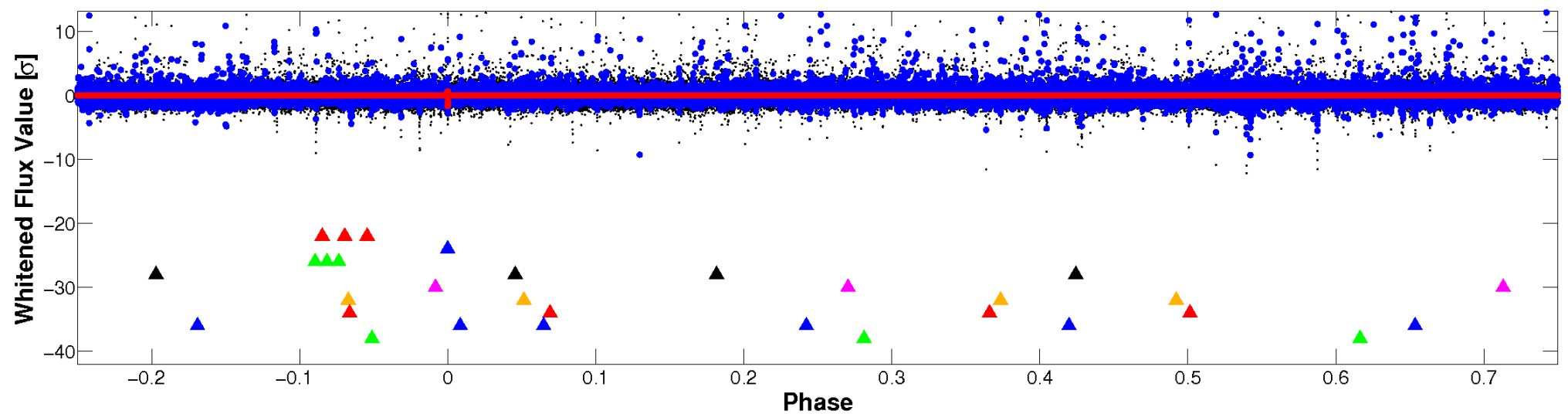


# Non-Whitened Vs. Whitened Light Curve

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



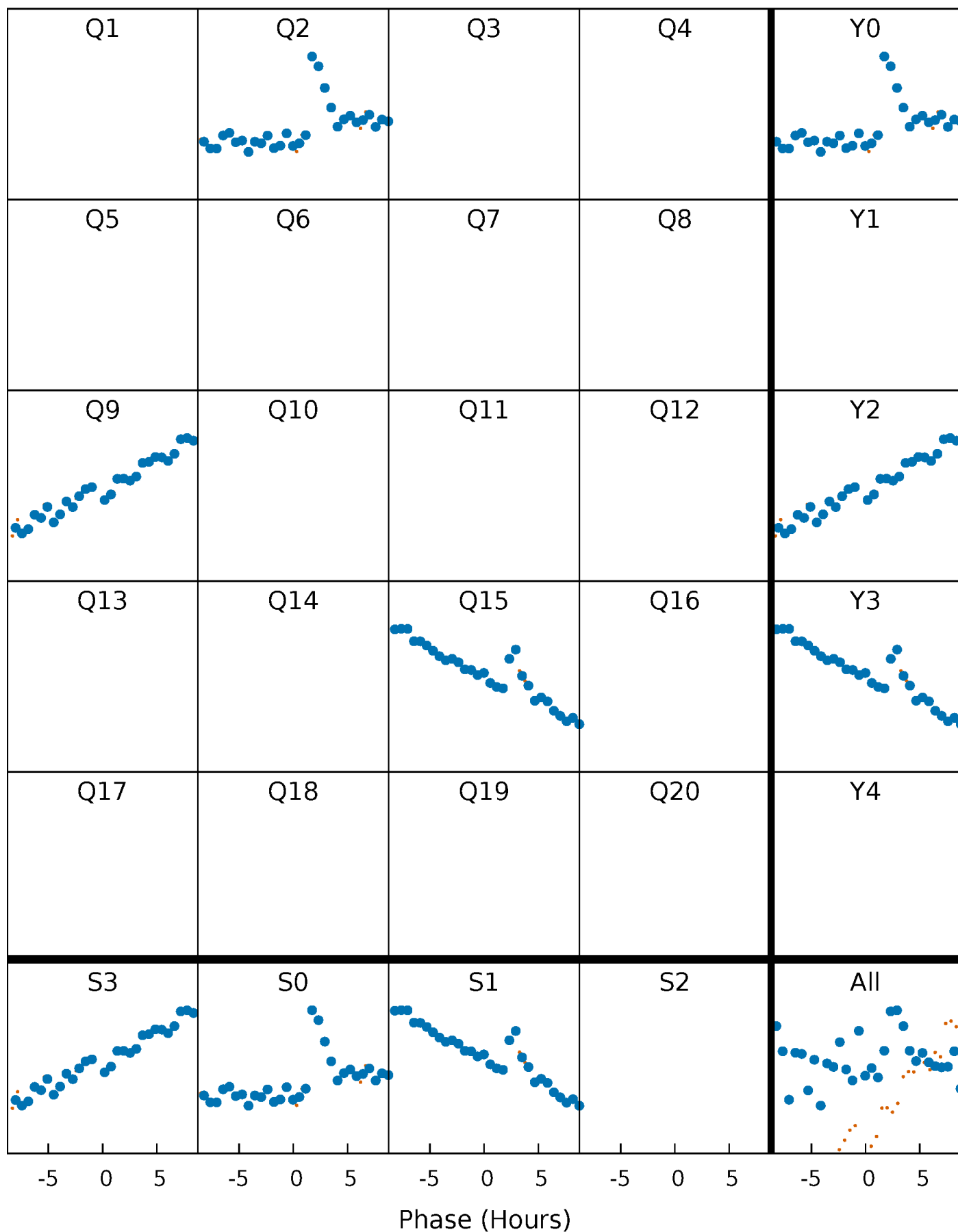
**Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)**





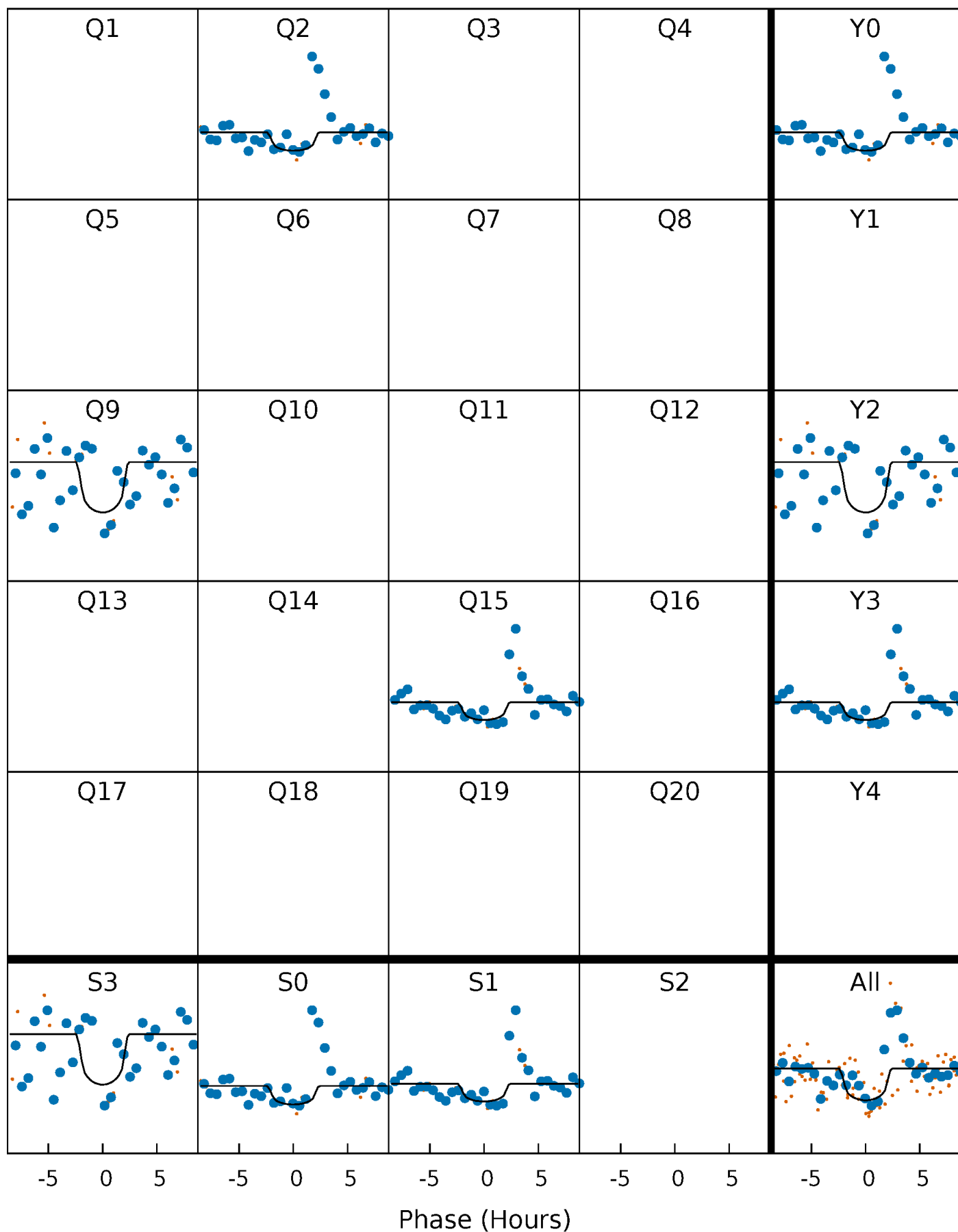
# PDC Quarter-Phased Transit Curves

TCE 011958955-02 P=619.391847 Days  $T_0=206.185446$  (BKJD)



# DV Quarter-Phased Transit Curves

TCE 011958955-02 P=619.391847 Days  $T_0=206.185446$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

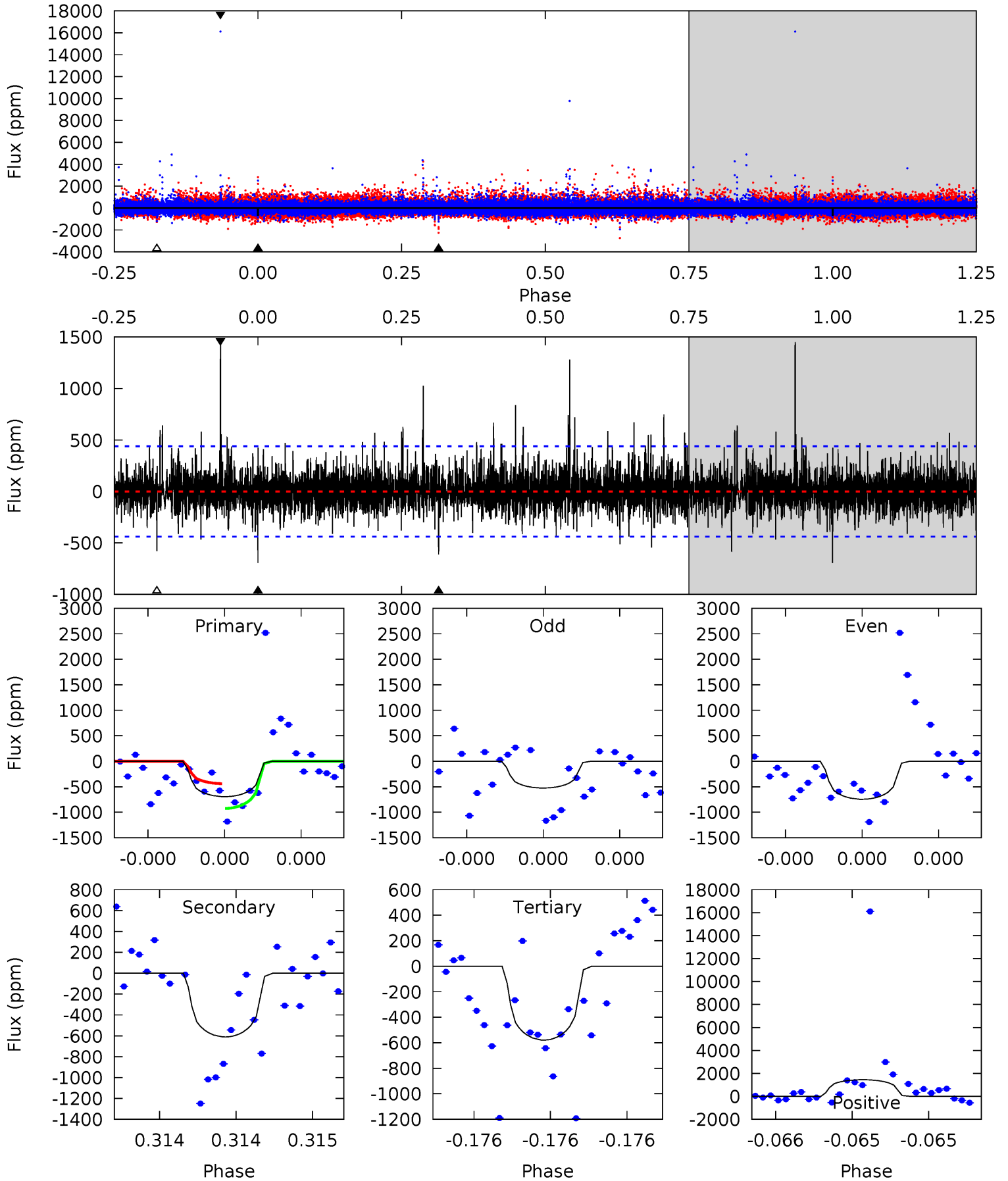
TCE 011958955-02 P=619.395693 Days  $T_0=206.125511$  (BKJD)



# DV Model-Shift Uniqueness Test

011958955-02, P = 619.391847 Days, E = 206.185446 Days

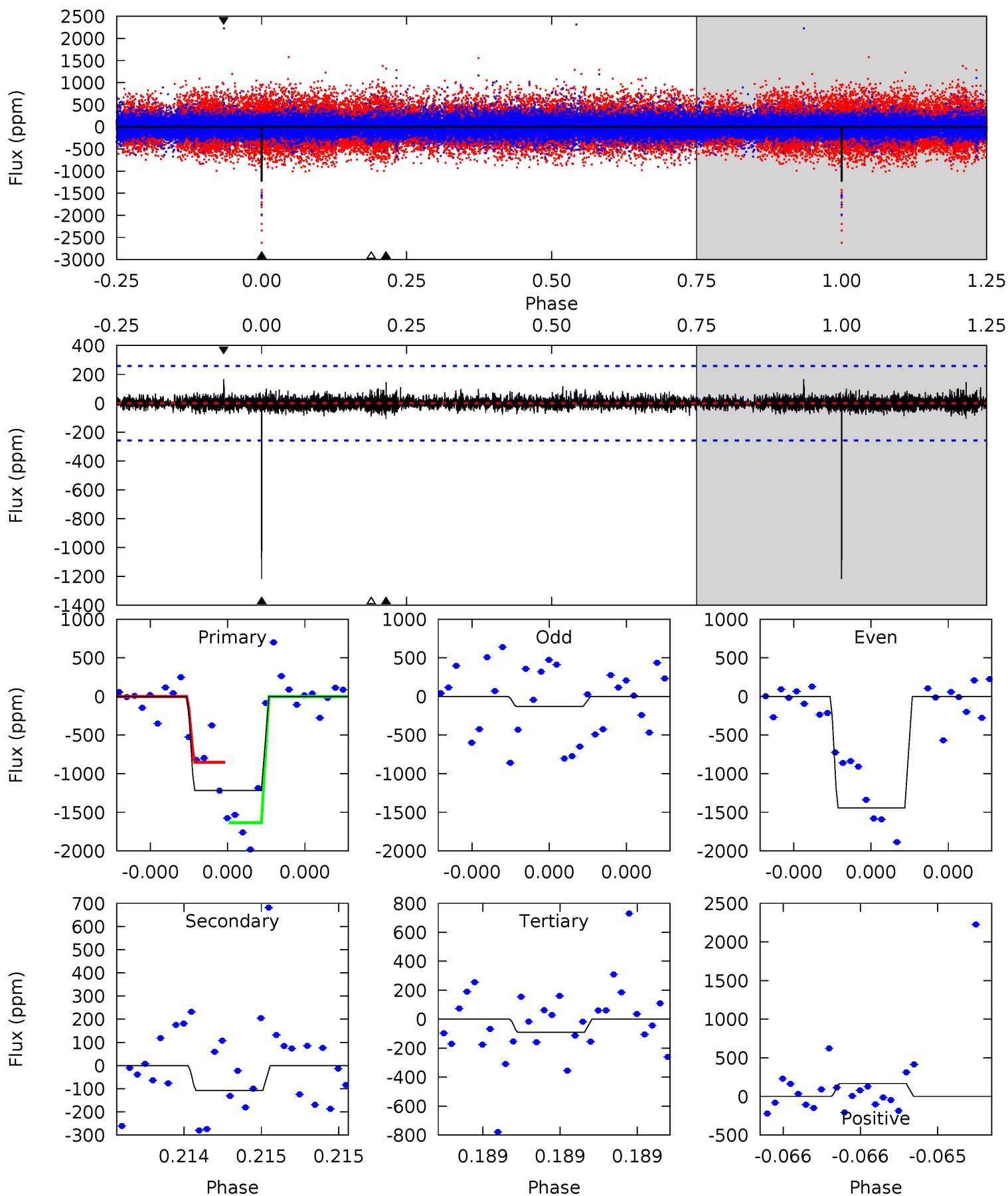
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.97	7.89	7.48	18.7	5.66	3.62	1.73	1.49	-9.75	0.41	-10.8	1.00	1.05	0.68	3.15



# Alt Model-Shift Uniqueness Test

011958955-02, P = 619.395693 Days, E = 206.125511 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
26.5	2.35	1.98	3.63	5.60	3.53	0.50	24.5	22.8	0.38	-1.28	14.4	0.81	0.12	0



### Stellar Parameters For KIC 011958955

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$4981^{+151}_{-136}$	$4.553^{+0.060}_{-0.050}$	$-0.020^{+0.250}_{-0.300}$	$0.767^{+0.065}_{-0.072}$	$0.768^{+0.078}_{-0.064}$	$2.395^{+0.557}_{-0.411}$
	+3%/-3%	+1%/-1%	+1250%/-1500%	+8%/-9%	+10%/-8%	+23%/-17%
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 011958955-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-611 \pm 77$	$4.22^{+3.63}_{-2.84}$	$236^{+8}_{-8}$	$3797^{+2174}_{-668}$	$31269^{+278809}_{-22010}$
Alt.	$-108 \pm 46$	$4.48^{+3.64}_{-2.88}$	$236^{+8}_{-8}$	$2837^{+1141}_{-432}$	$4393^{+35170}_{-3201}$

$T_{max}$  = 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

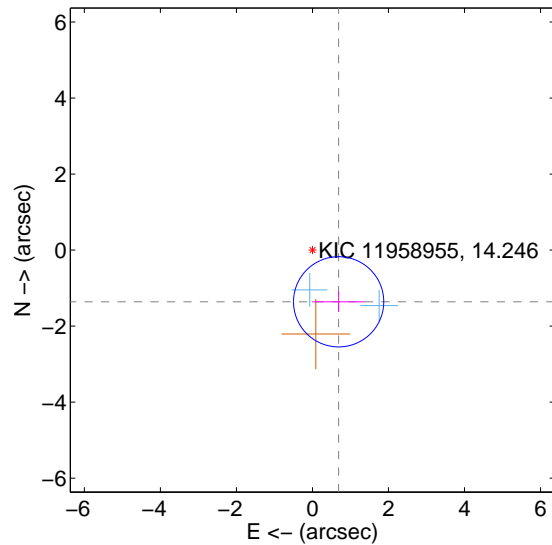
Supplemental centroid analysis for 011958955-02. Kepler magnitude: 14.25. Transit SNR 6.88

There are 2 quarters with good PRF difference image offsets

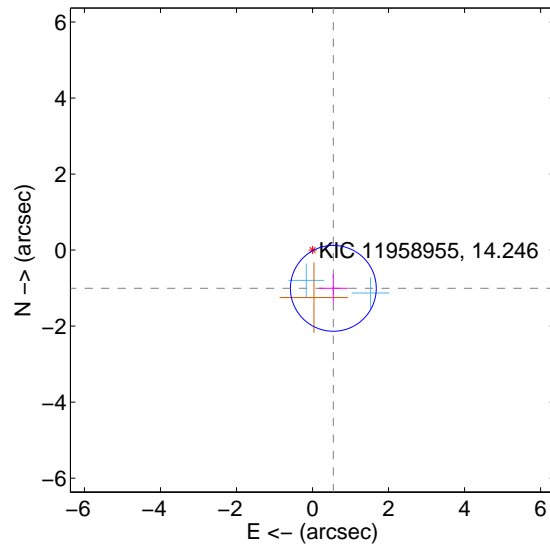
The direct PRF centroid is offset from the target star catalog position by about 0.40 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.524 \pm 0.396$	3.85	$-0.689 \pm 0.695$	$-1.360 \pm 0.269$
PRF-fit source offset from KIC position	$1.145 \pm 0.376$	3.04	$-0.547 \pm 0.383$	$-1.006 \pm 0.374$
photometric centroid source offset	$1.34 \pm 1.32$	1.01	$0.77 \pm 0.84$	$-1.10 \pm 1.50$

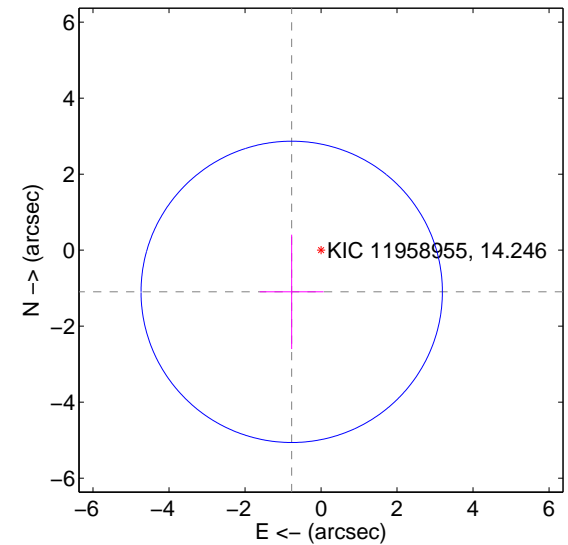
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

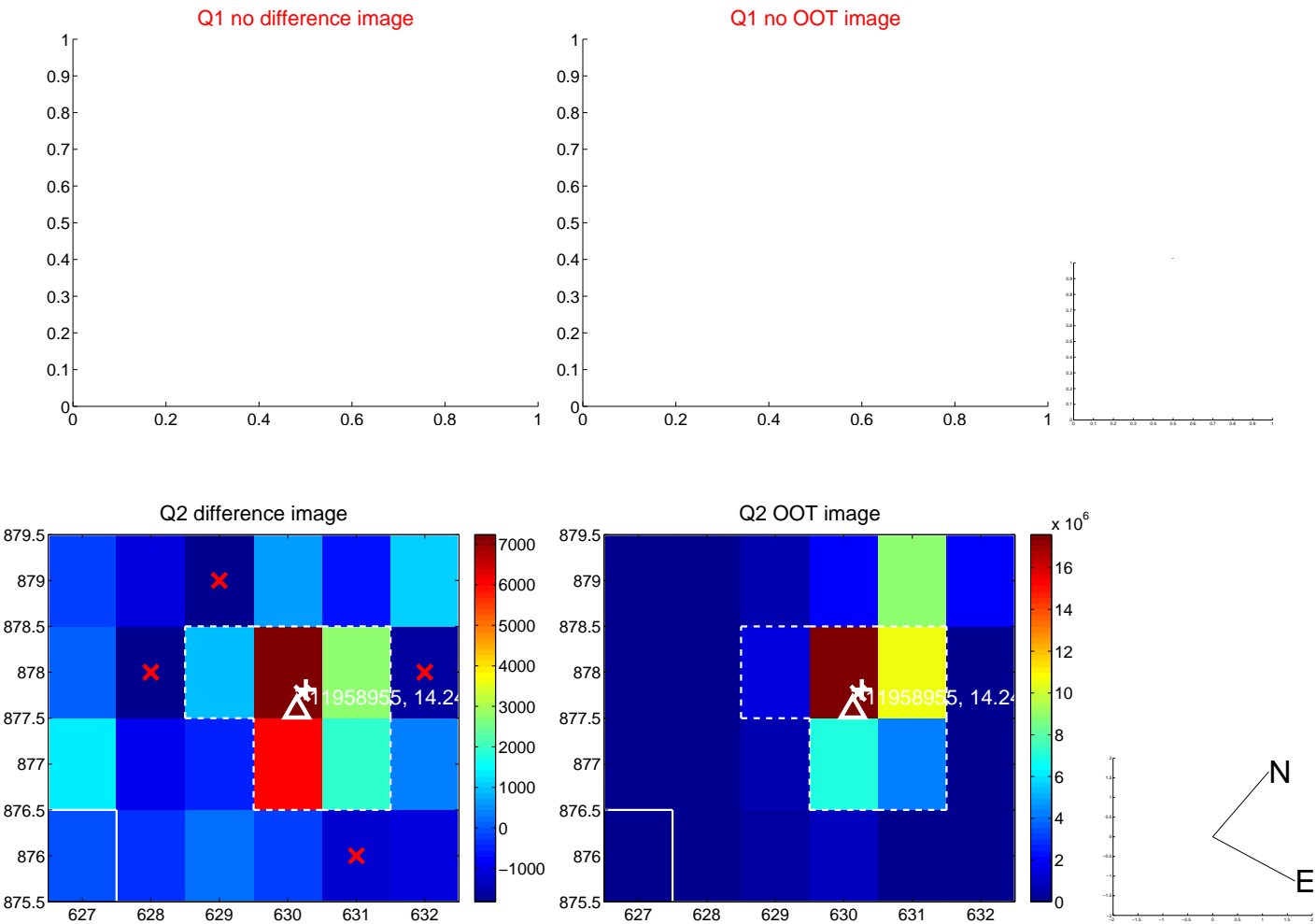


offset from photometric centroids



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.

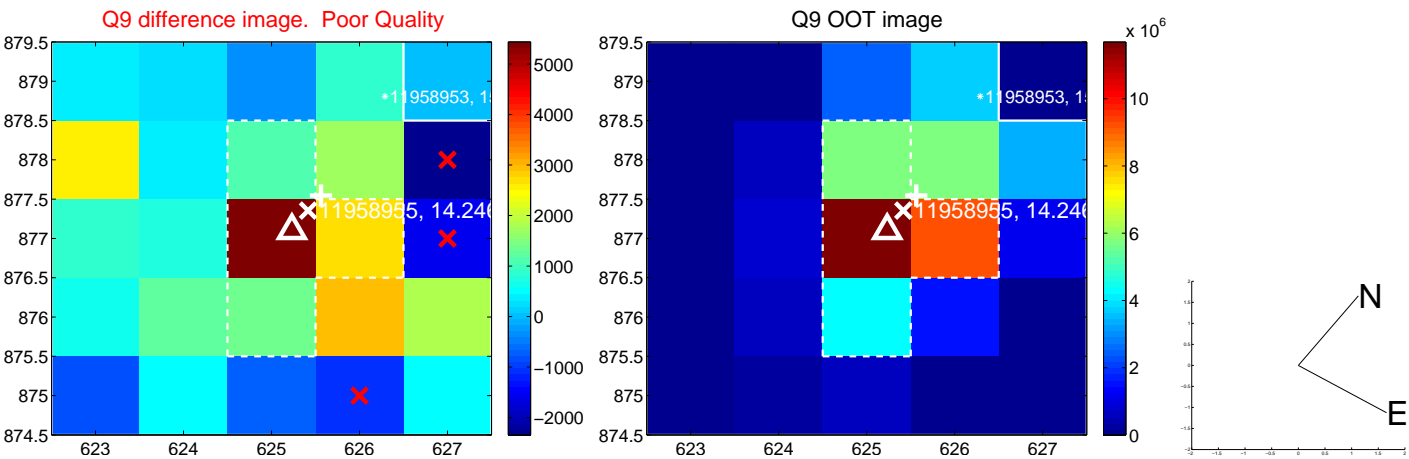




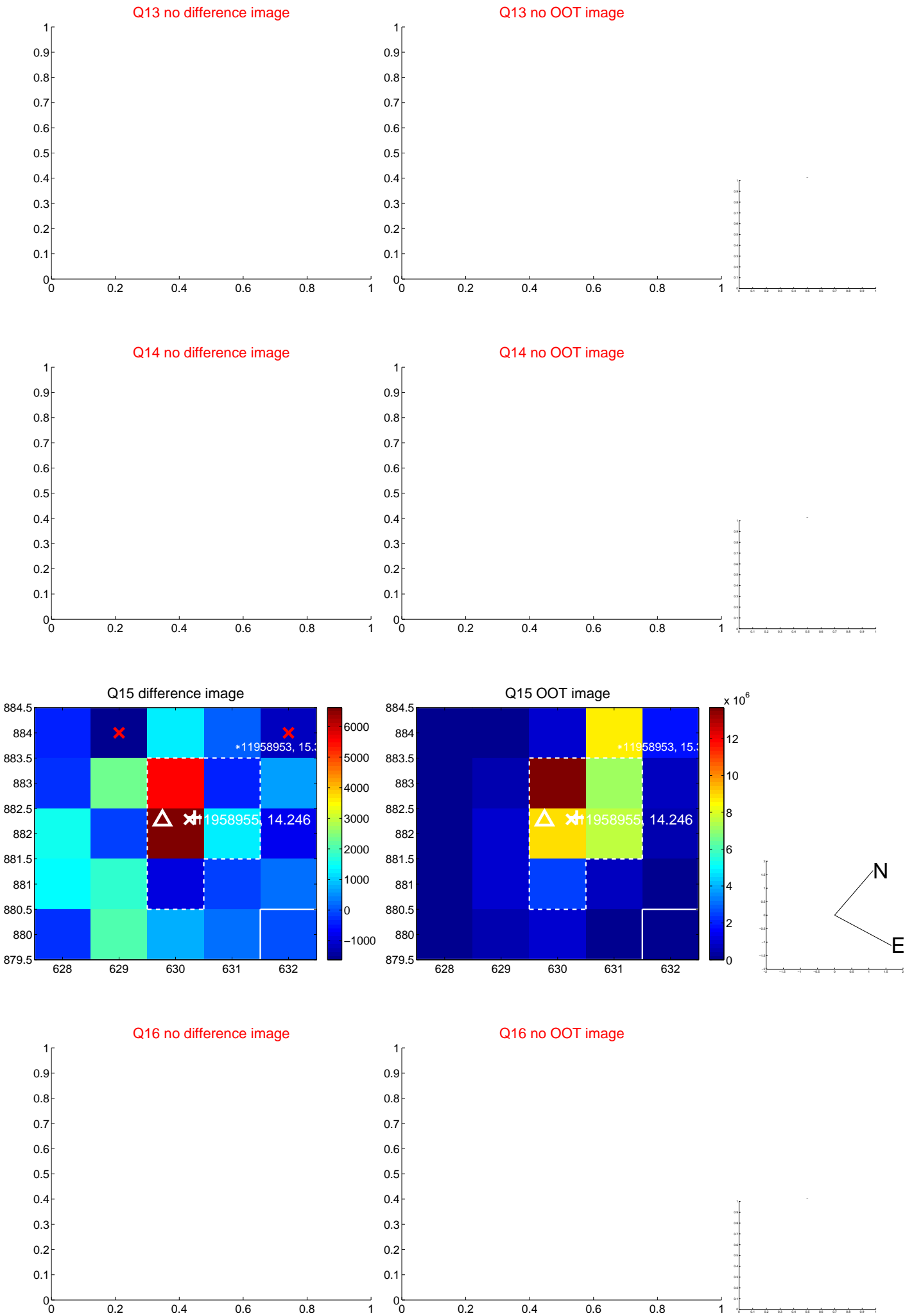
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



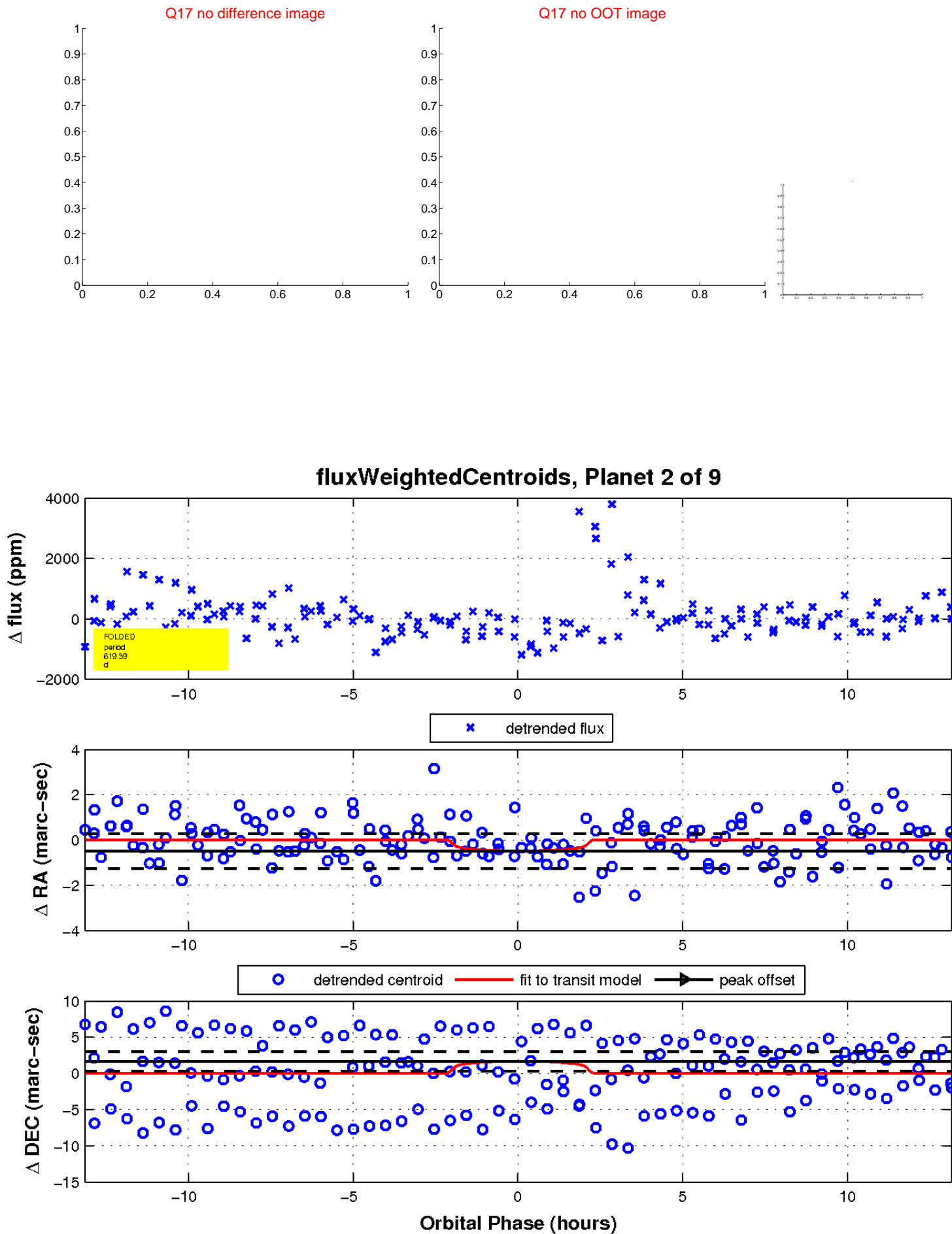
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

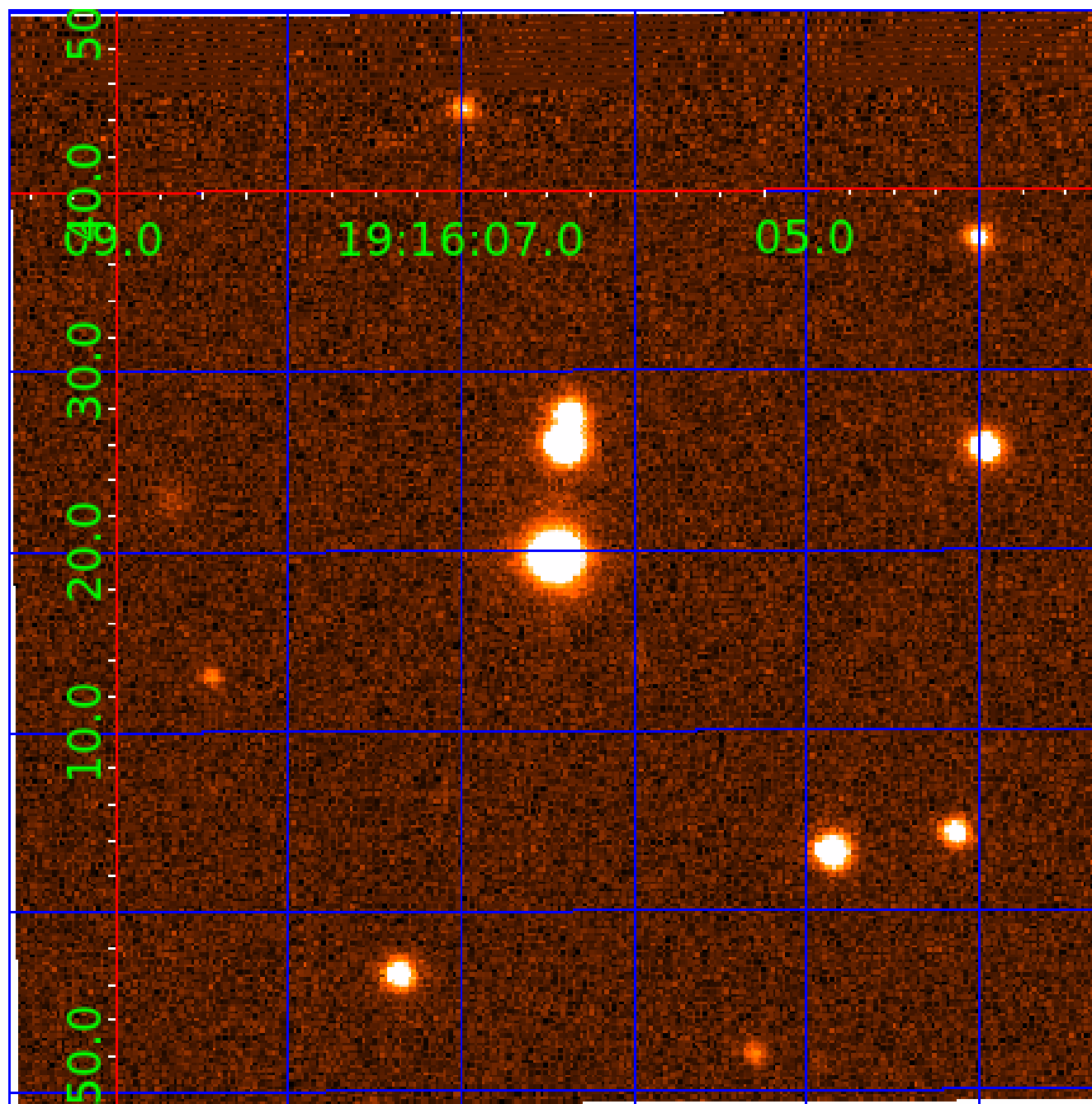


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 011958955

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
011958955-01	OBS	No	609.990552	172.502121	700.4	10.032	15.6	6.0	0.77	4981	2.21	0.20
011958955-02	OBS	No	619.391847	206.185446	822.8	4.390	11.6	6.9	0.77	4981	2.33	0.19
011958955-03	OBS	No	624.344901	150.726038	635.1	17.271	10.7	4.9	0.77	4981	2.23	0.19
011958955-04	OBS	No	384.839018	318.703990	901.3	4.616	10.8	7.5	0.77	4981	2.50	0.36
011958955-05	OBS	No	446.767859	373.700685	1422.8	19.154	9.7	8.2	0.77	4981	3.39	0.30
011958955-06	OBS	No	346.443665	437.536963	1099.5	3.840	9.3	8.6	0.77	4981	2.85	0.41
011958955-07	OBS	No	351.630210	432.911970	948.3	3.220	9.1	7.4	0.77	4981	2.67	0.41
011958955-08	OBS	No	254.737256	211.434970	813.1	20.113	9.5	6.3	0.77	4981	2.23	0.63
011958955-09	OBS	No	413.479898	380.401971	780.1	5.000	9.2	-1.0	0.77	4981	2.07	0.33

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011958955-01	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
011958955-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_UNCERTAIN
011958955-03	OBS	FP	0.00	1	0	1	0	ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS—HALO_GHOST
011958955-04	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_TER_DV—CENT_KIC_POS—HALO_GHOST
011958955-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
011958955-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_KIC_POS
011958955-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_KIC_POS
011958955-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
011958955-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_NOFITS

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

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

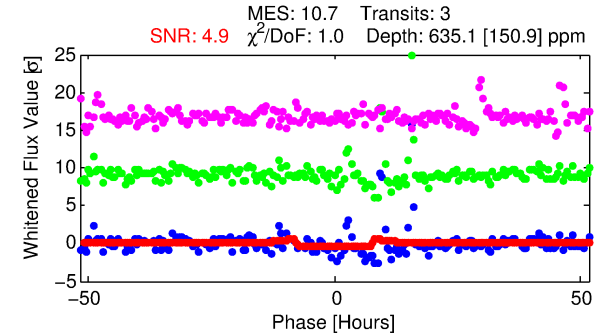
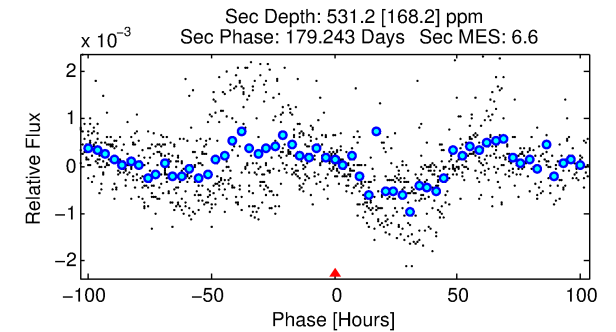
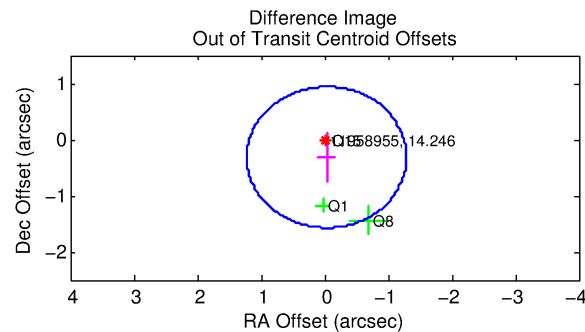
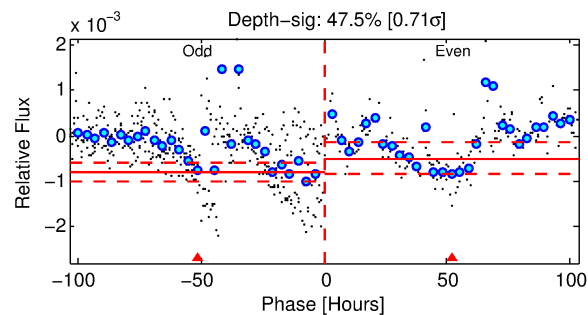
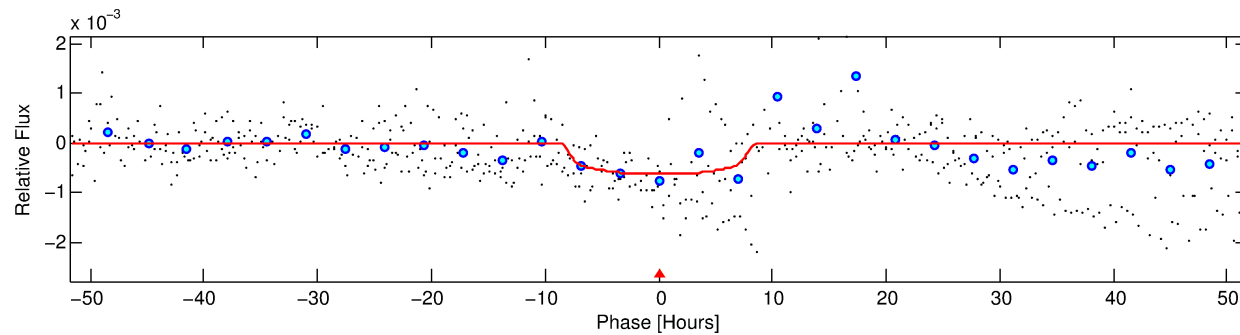
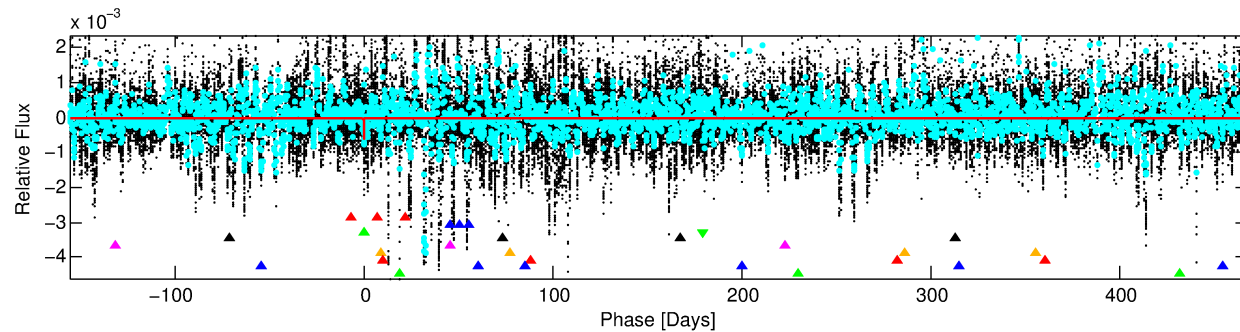
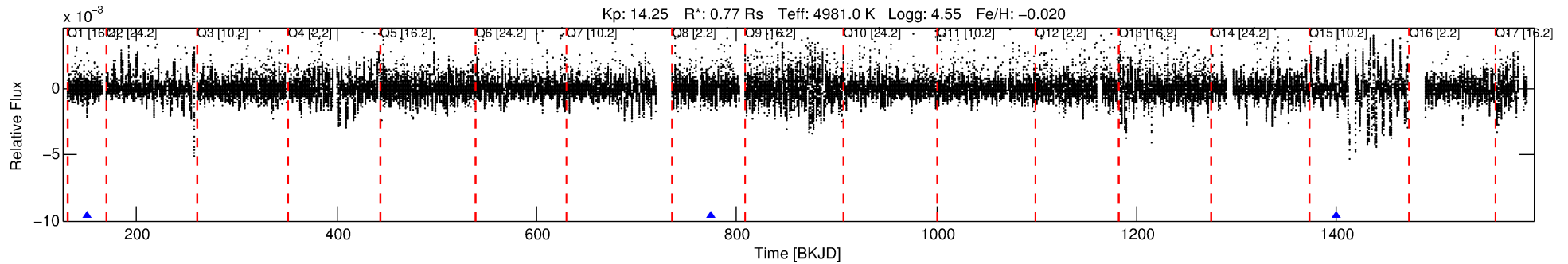
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 011958955-03

No Significant Match Found

# DV One-Page Summary

KIC: 11958955 Candidate: 3 of 9 Period: 624.345 d



## DV Fit Results:

Period = 624.34490 [0.01866] d  
Epoch = 150.7260 [0.0280] BKJD  
Rp/R\* = 0.0266 [0.0053]  
a/R\* = 162.05 [86.99]  
b = 0.84 [0.19]  
Seff = 0.19 [0.03]  
Teq = 168 [7] K  
Rp = 2.23 [0.49] Re  
a = 1.3087 [0.1017] AU  
Ag = 100754.46 [52202.61] [1.93 $\sigma$ ]  
Teffp = 4634 [603] K [7.41 $\sigma$ ]

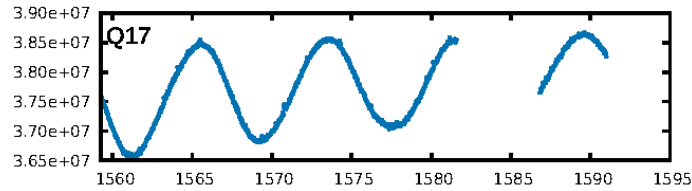
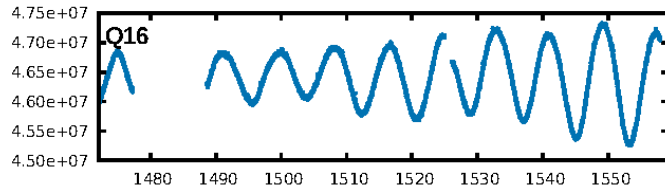
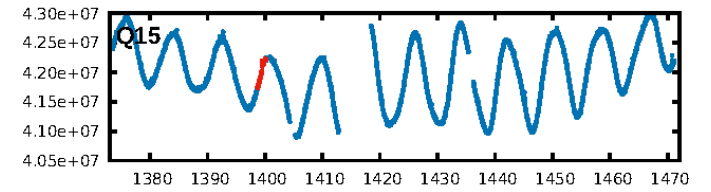
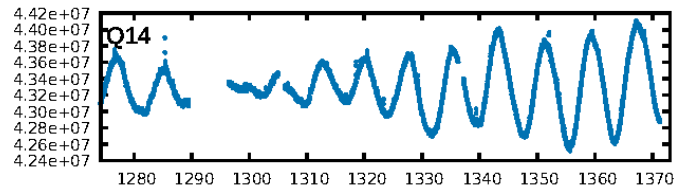
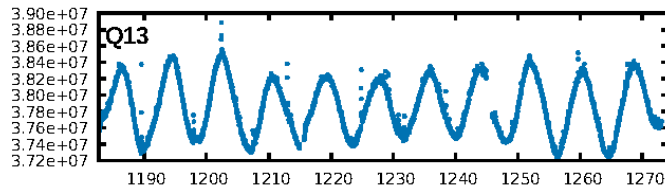
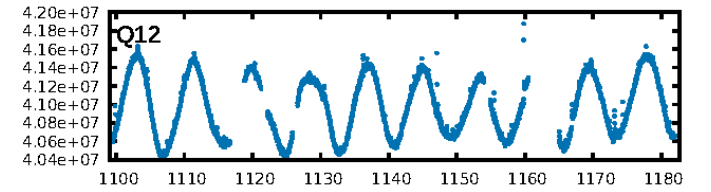
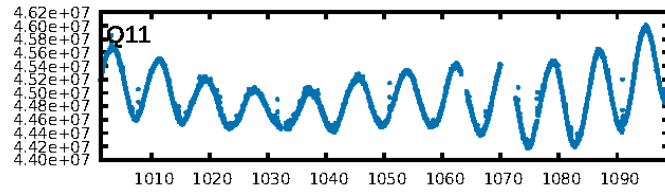
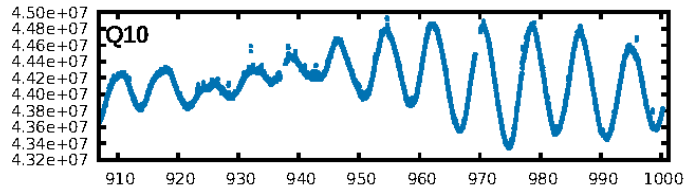
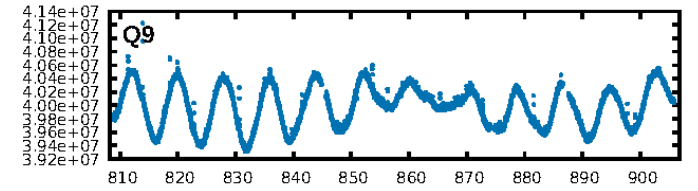
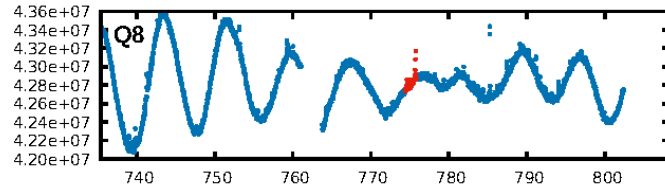
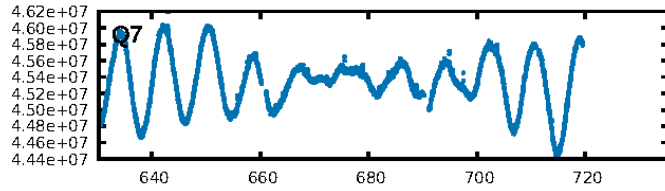
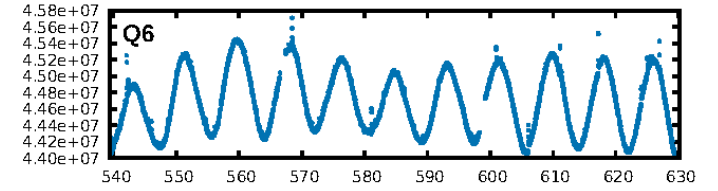
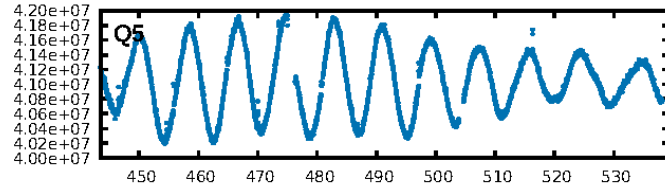
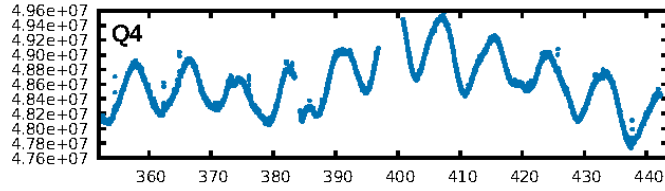
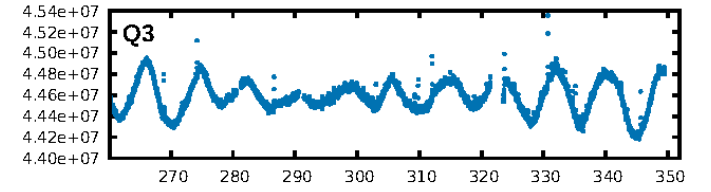
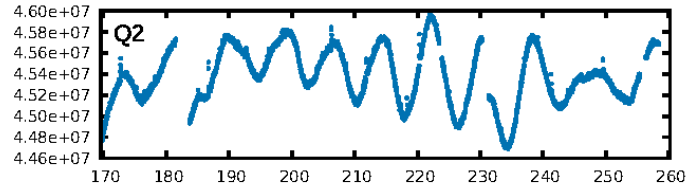
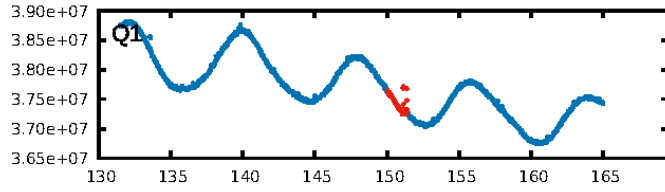
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [6.67 $\sigma$ ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 91.5%  
ModelChiSquareGof-sig: 99.7%  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [2/2]  
GhostDiagnostic-chr: 0.1376  
Centroid-sig: 56.7%  
Centroid-so: 0.648 arcsec [0.76 $\sigma$ ]  
OotOffset-rm: 0.316 arcsec [0.76 $\sigma$ ]  
OotOffset-st: 0/1/1/1 [3]  
KicOffset-rm: 0.213 arcsec [0.76 $\sigma$ ]  
KicOffset-st: 0/1/1/1 [3]  
DiffImageQuality-fgm: 0.67 [2/3]  
DiffImageOverlap-fno: 1.00 [3/3]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 05:48:21 Z

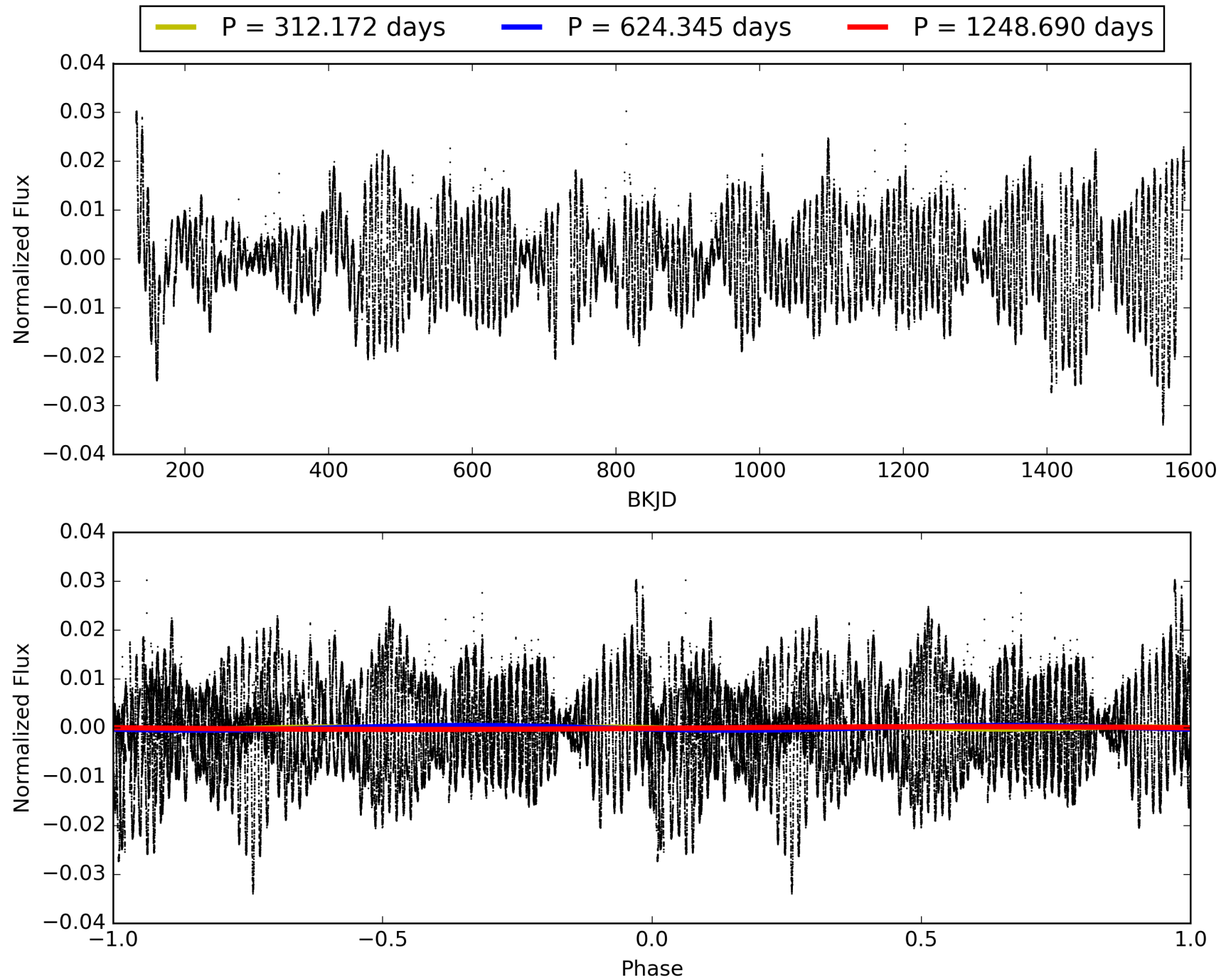
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 011958955-03, PDC Light Curves



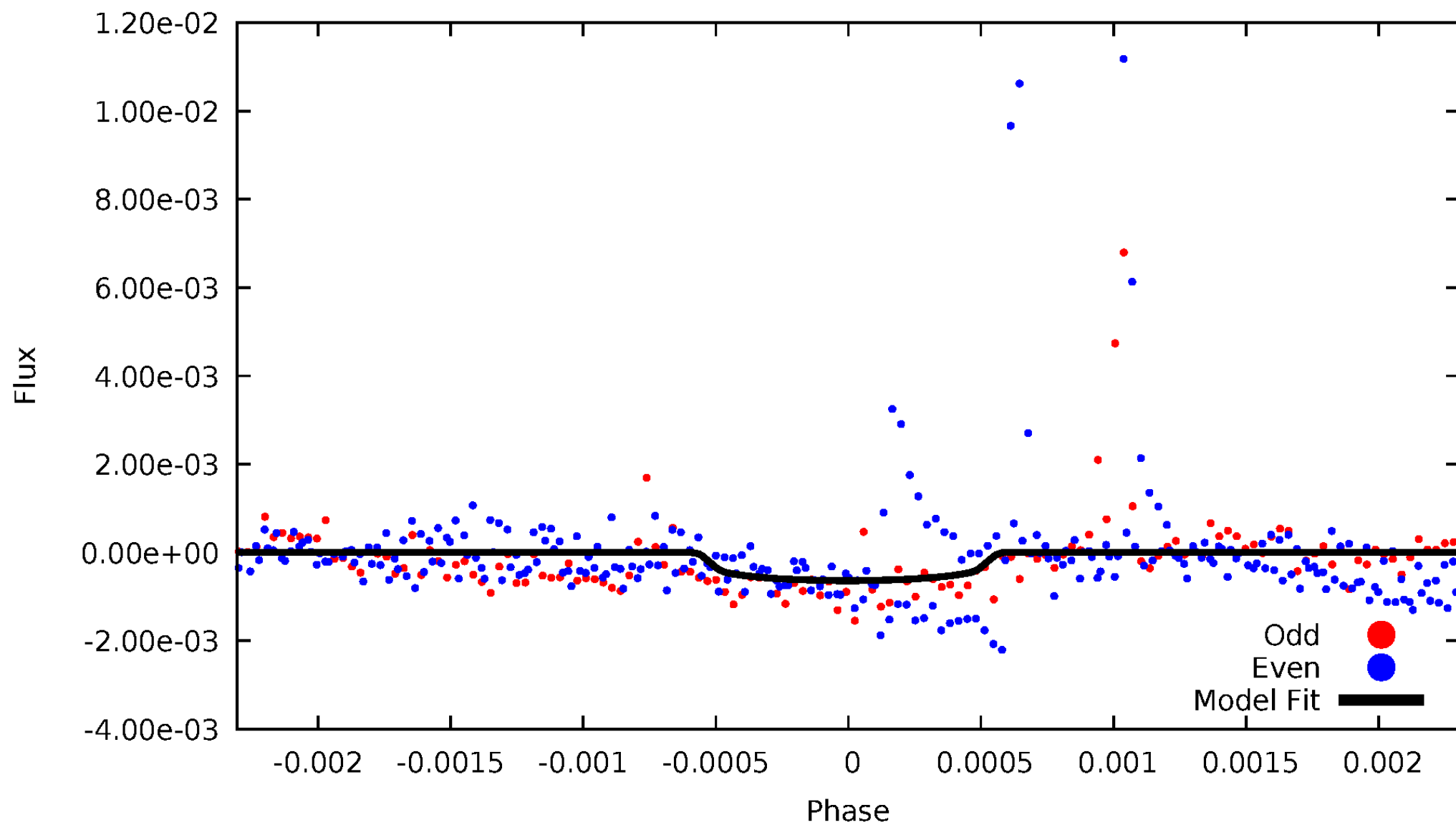


# TCE 011958955-03



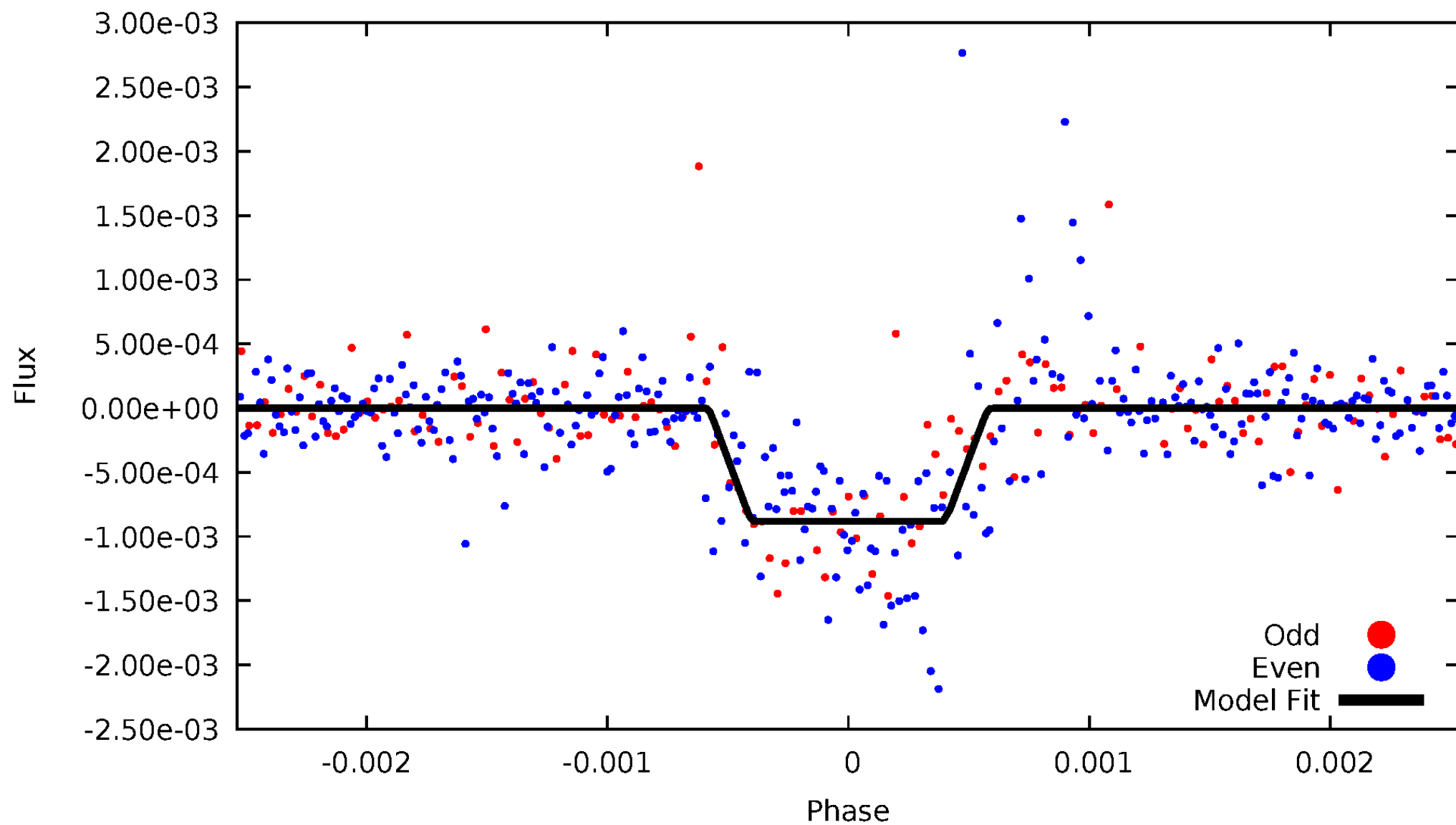
# DV Odd/Even

TCE 011958955-03

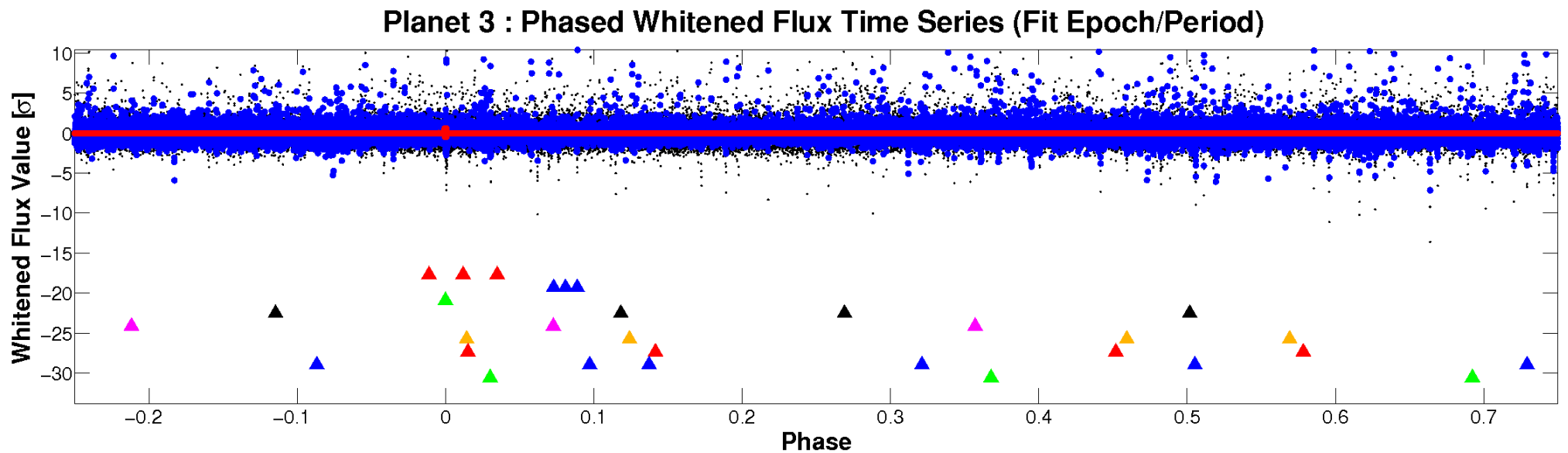
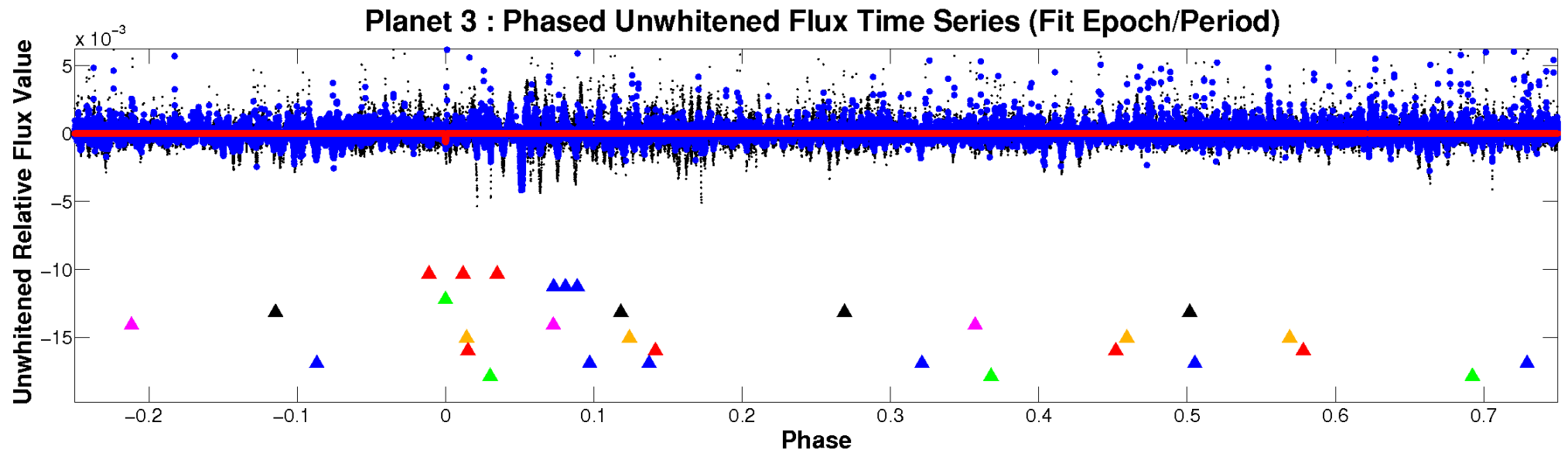


# ALT Odd/Even

TCE 011958955-03

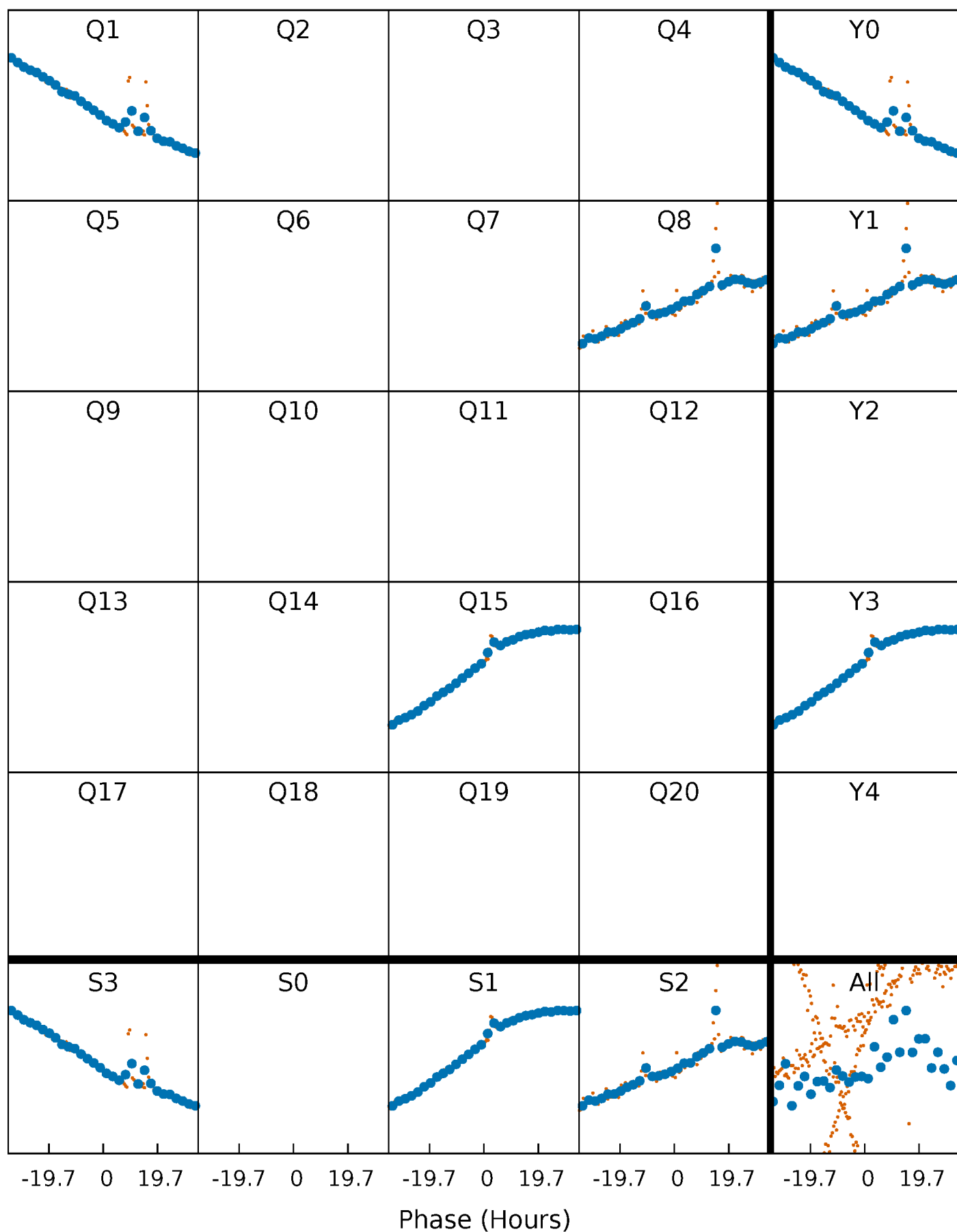


# Non-Whitened Vs. Whitened Light Curve



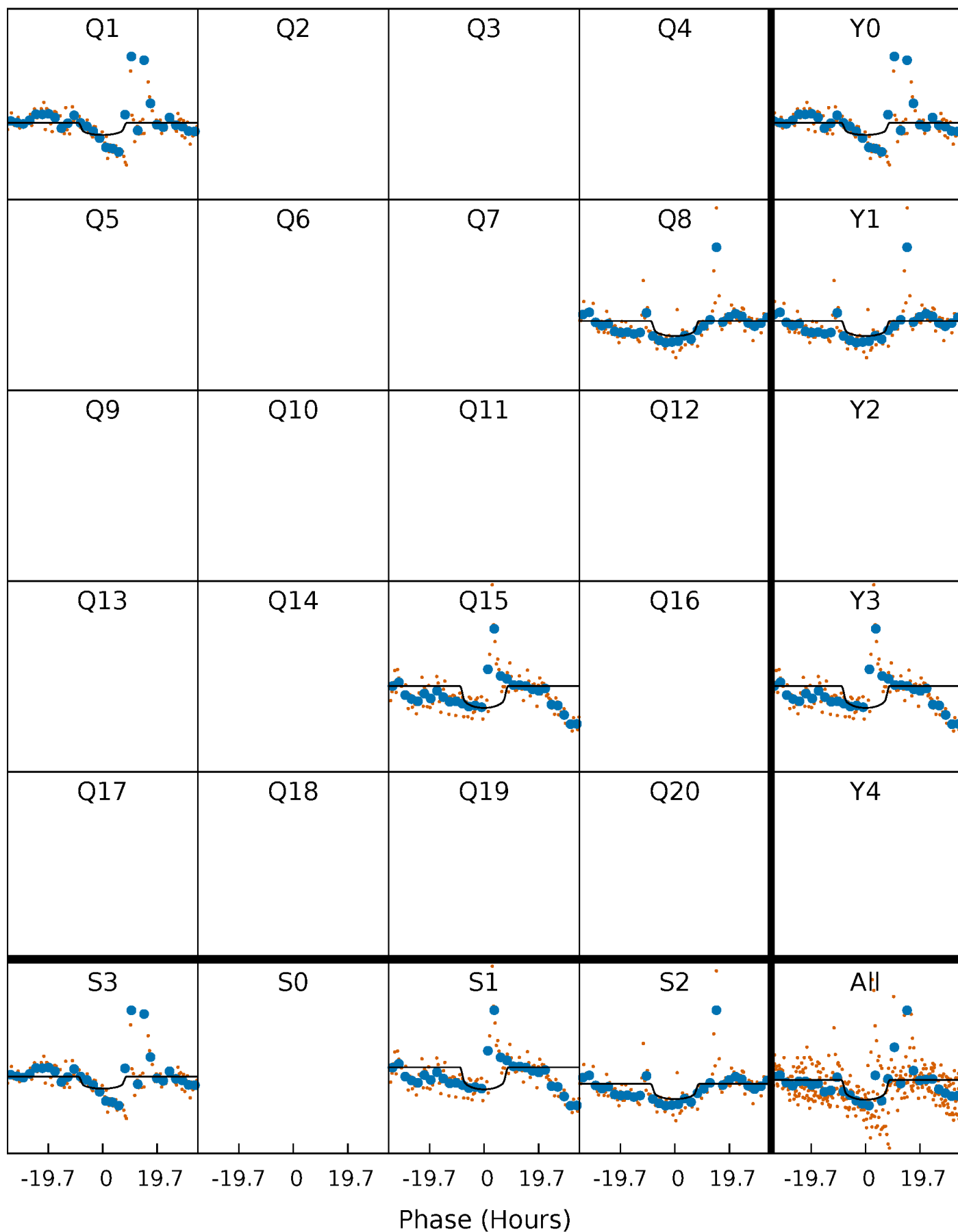
# PDC Quarter-Phased Transit Curves

TCE 011958955-03 P=624.344901 Days  $T_0=150.726038$  (BKJD)



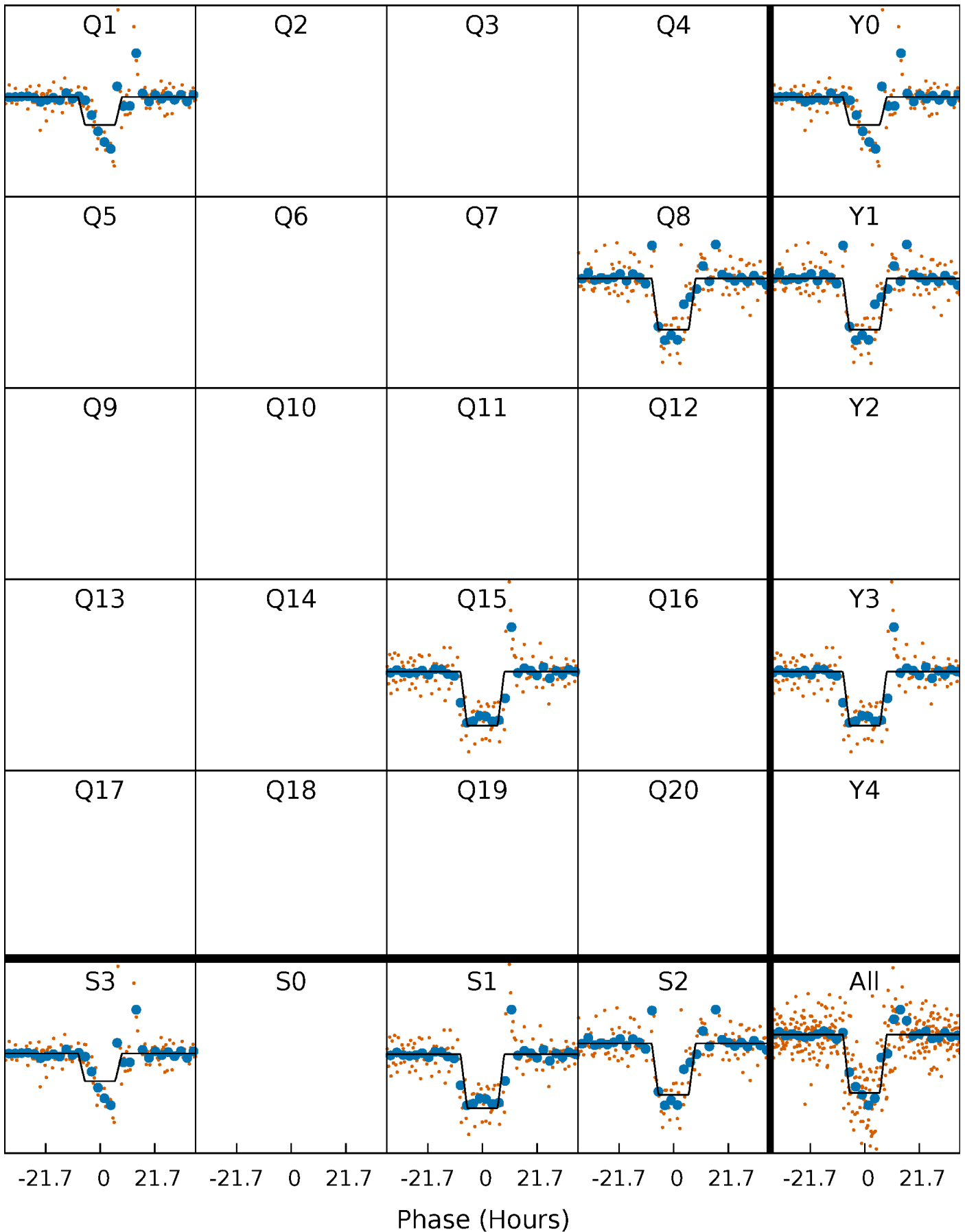
# DV Quarter-Phased Transit Curves

TCE 011958955-03 P=624.344901 Days  $T_0=150.726038$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

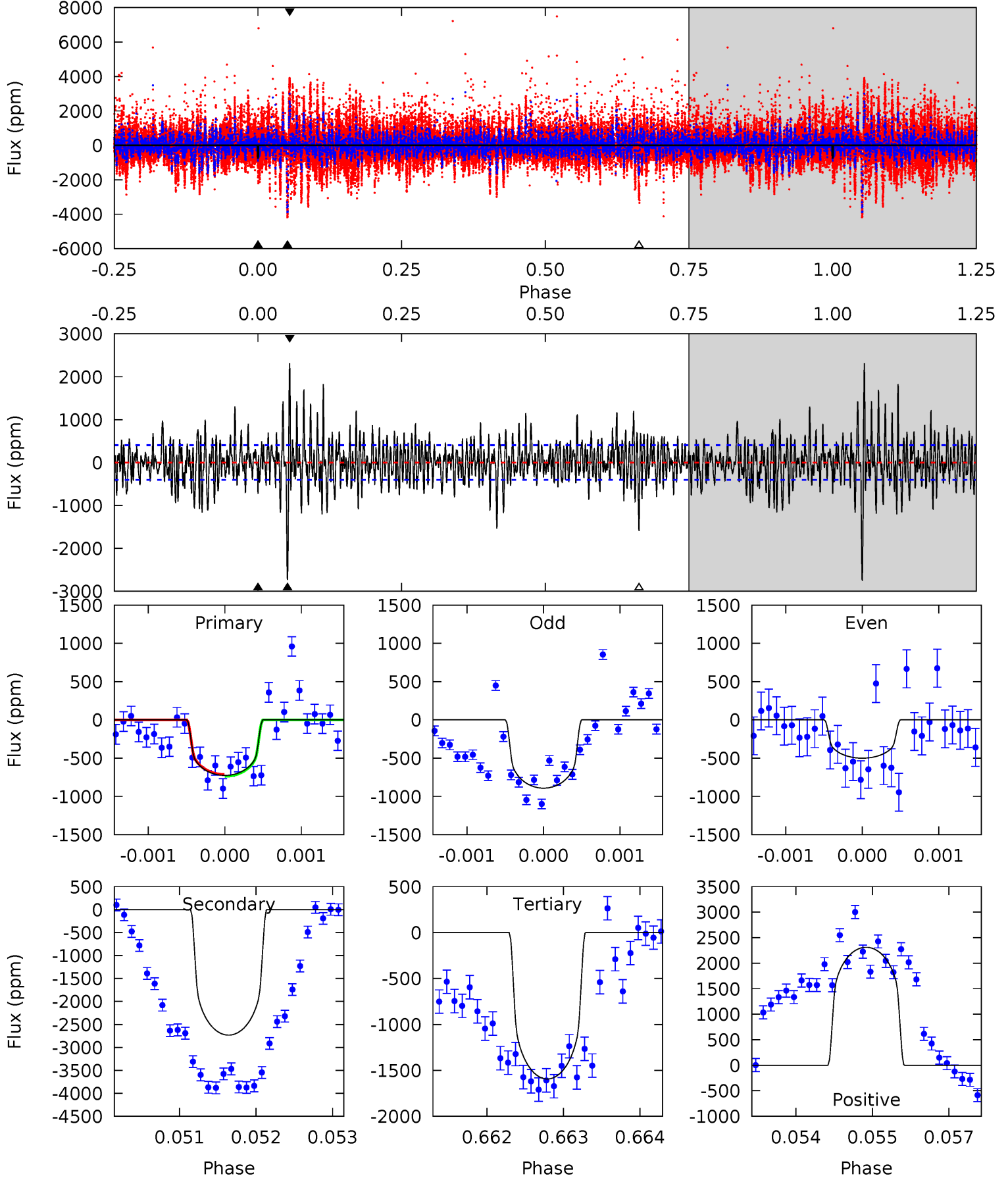
TCE 011958955-03     $P=624.129468$  Days     $T_0=150.854182$  (BKJD)



# DV Model-Shift Uniqueness Test

011958955-03, P = 624.344901 Days, E = 150.726038 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
9.70	36.6	21.3	30.9	5.42	3.24	5.70	-11.6	-21.2	15.2	5.64	2.32	0.71	0.46	0.15

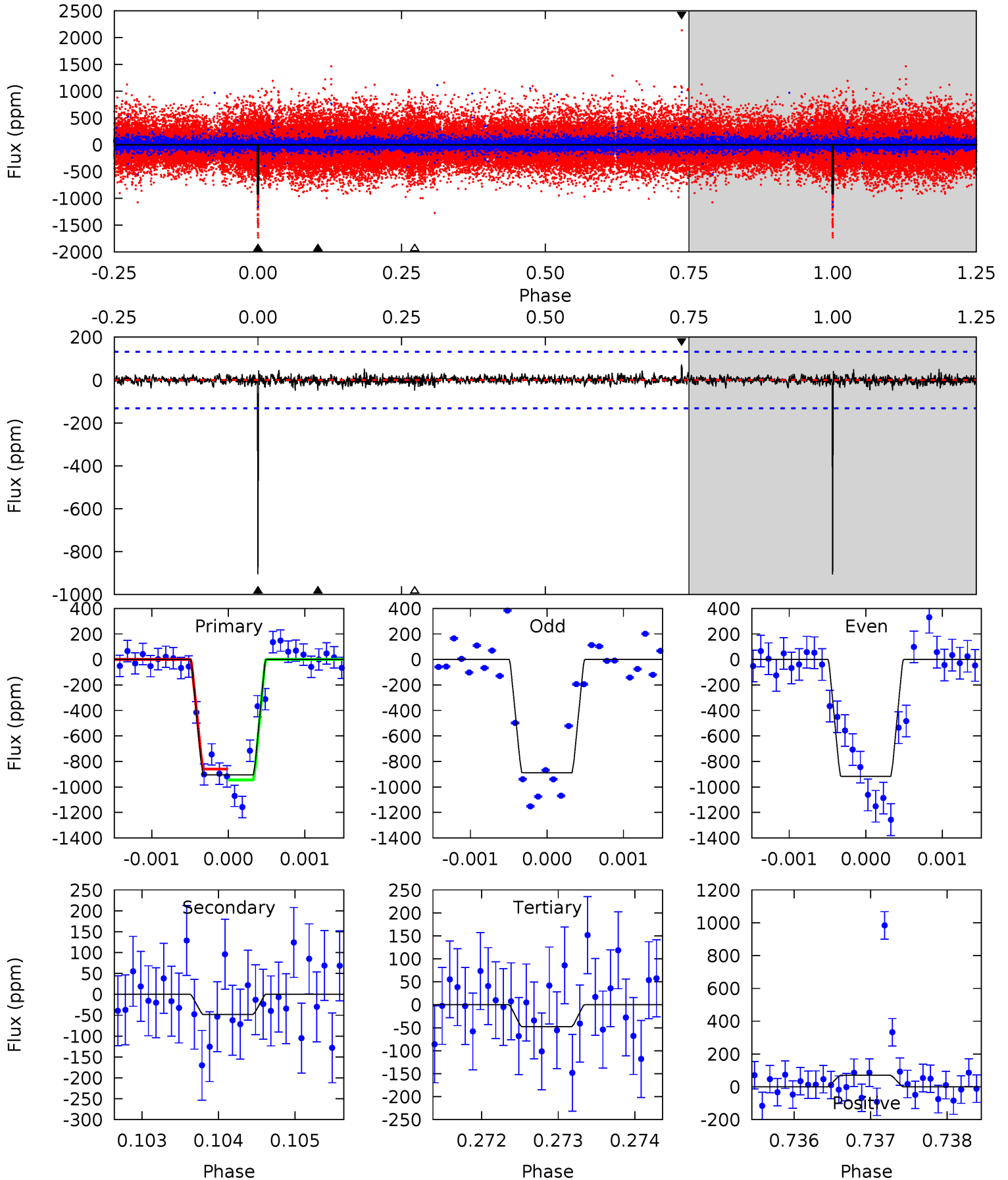




# Alt Model-Shift Uniqueness Test

011958955-03, P = 624.129468 Days, E = 150.854182 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
37.3	1.98	1.96	2.89	5.42	3.24	0.46	35.3	34.4	0.02	-0.90	0.56	1.03	0.07	1.76



### Stellar Parameters For KIC 011958955

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$4981^{+151}_{-136}$	$4.553^{+0.060}_{-0.050}$	$-0.020^{+0.250}_{-0.300}$	$0.767^{+0.065}_{-0.072}$	$0.768^{+0.078}_{-0.064}$	$2.395^{+0.557}_{-0.411}$
	+3%/-3%	+1%/-1%	+1250%/-1500%	+8%/-9%	+10%/-8%	+23%/-17%
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 011958955-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-2733 \pm 75$	$2.23^{+0.48}_{-0.44}$	$235^{+9}_{-8}$	$6924^{+910}_{-661}$	$523407^{+276649}_{-160862}$
Alt.	$-48 \pm 24$	$2.50^{+0.45}_{-0.46}$	$234^{+9}_{-8}$	$3024^{+259}_{-299}$	$7388^{+5495}_{-4010}$

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

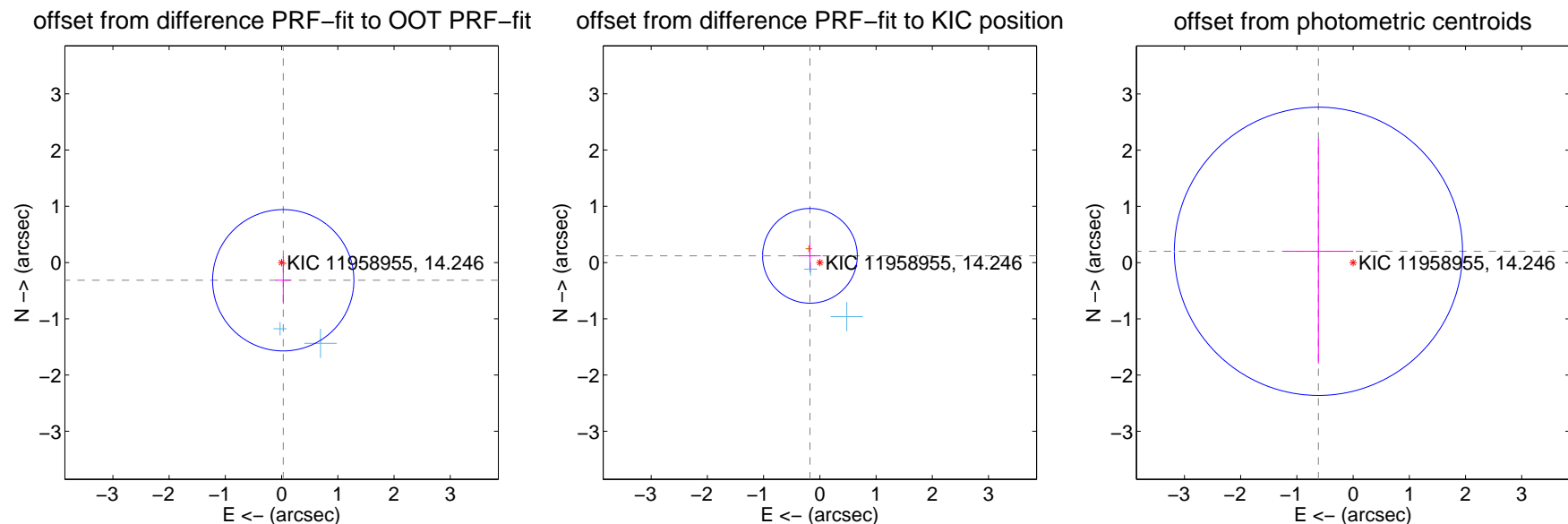
## DV Centroid Data

Supplemental centroid analysis for 011958955-03. Kepler magnitude: 14.25. Transit SNR 4.86

There are 2 quarters with good PRF difference image offsets

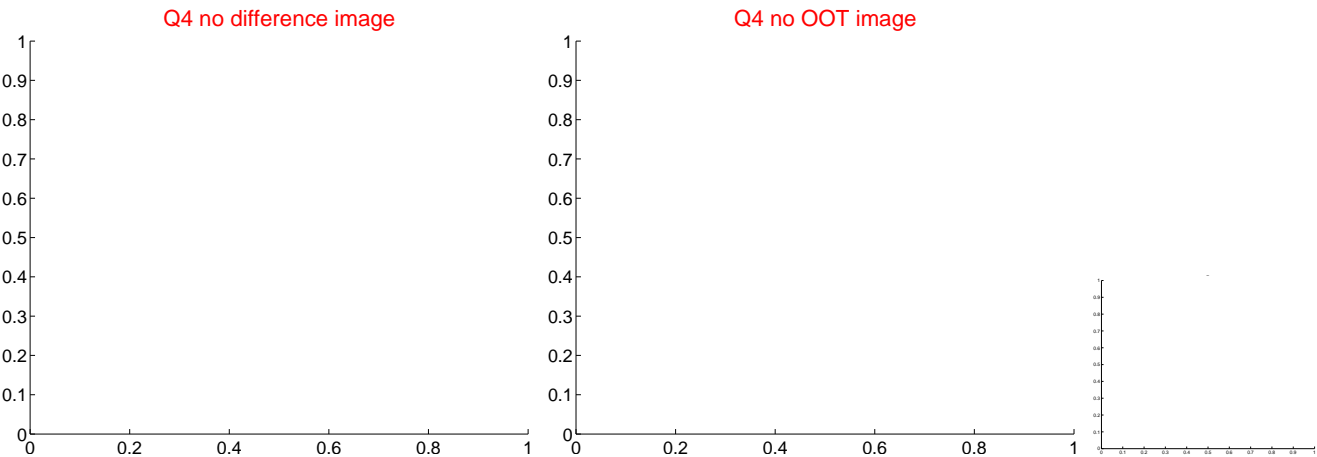
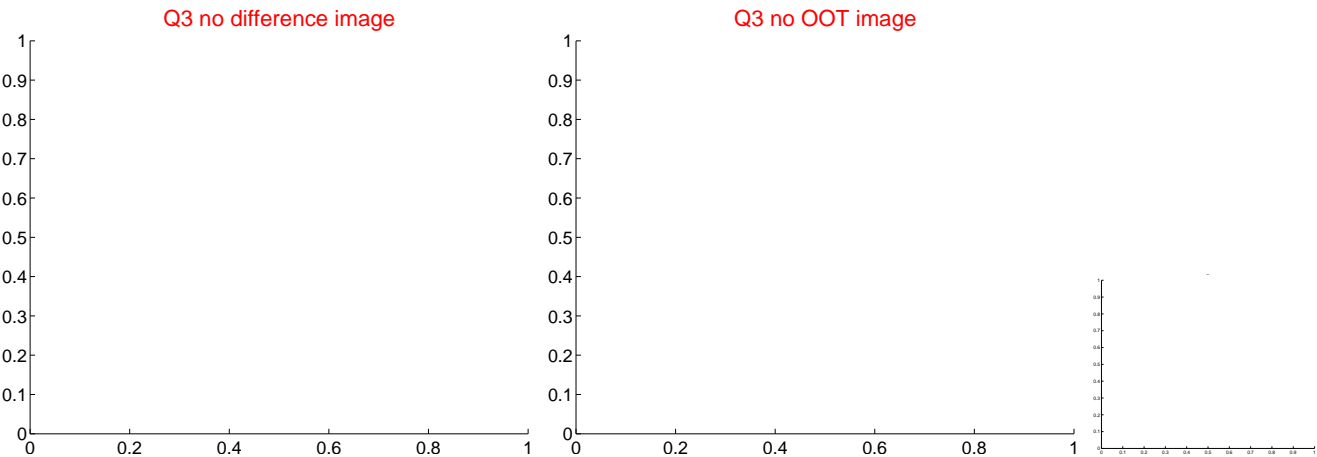
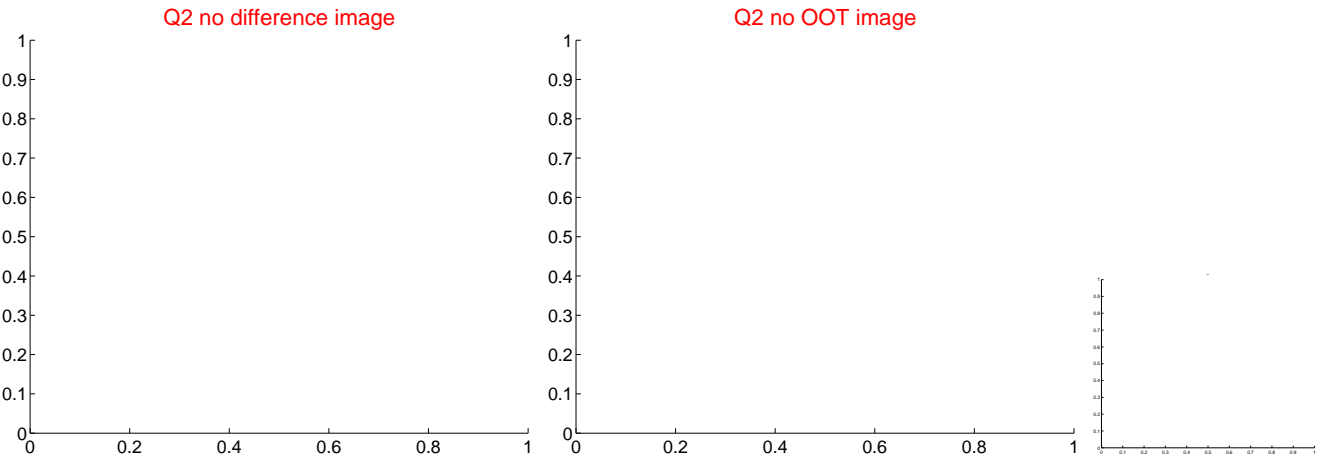
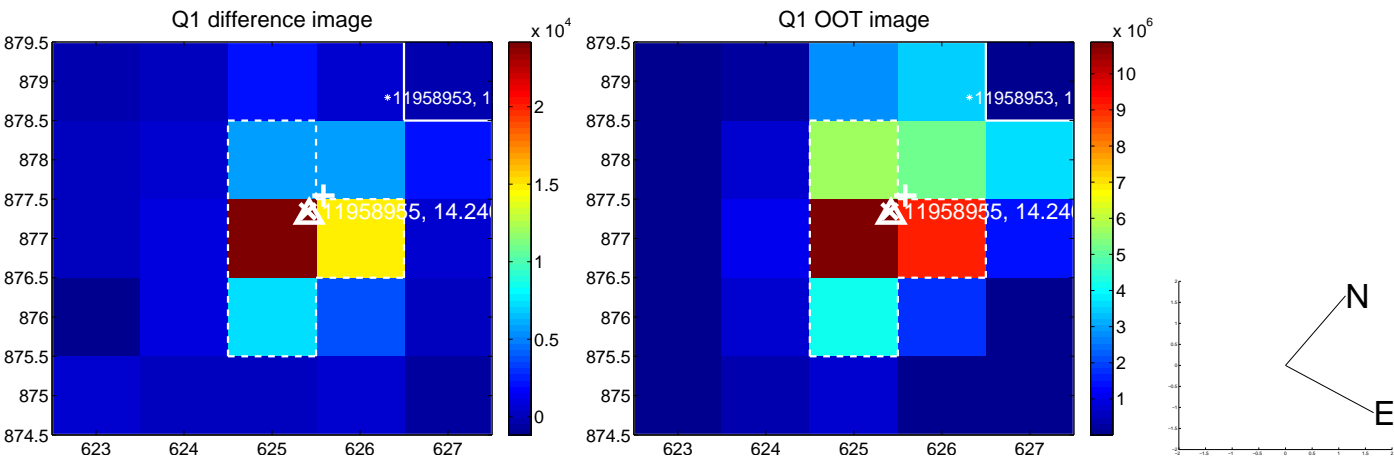
The direct PRF centroid is offset from the target star catalog position by about 0.35 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.316 \pm 0.419$	0.76	$-0.030 \pm 0.134$	$-0.315 \pm 0.420$
PRF-fit source offset from KIC position	$0.213 \pm 0.281$	0.76	$0.176 \pm 0.194$	$0.119 \pm 0.232$
photometric centroid source offset	$0.65 \pm 0.85$	0.76	$0.62 \pm 0.62$	$0.20 \pm 2.00$

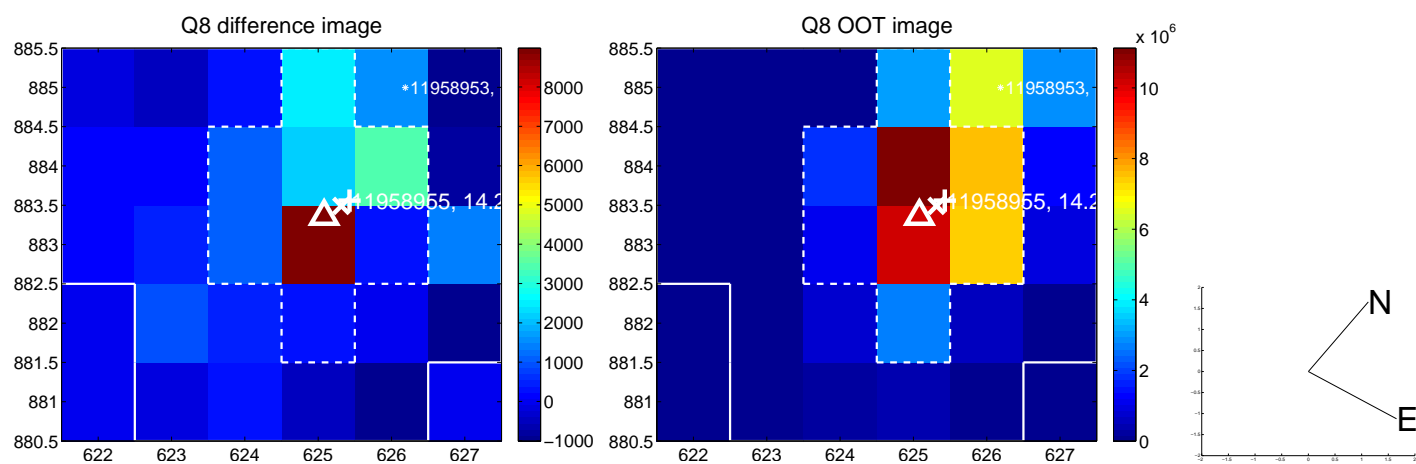
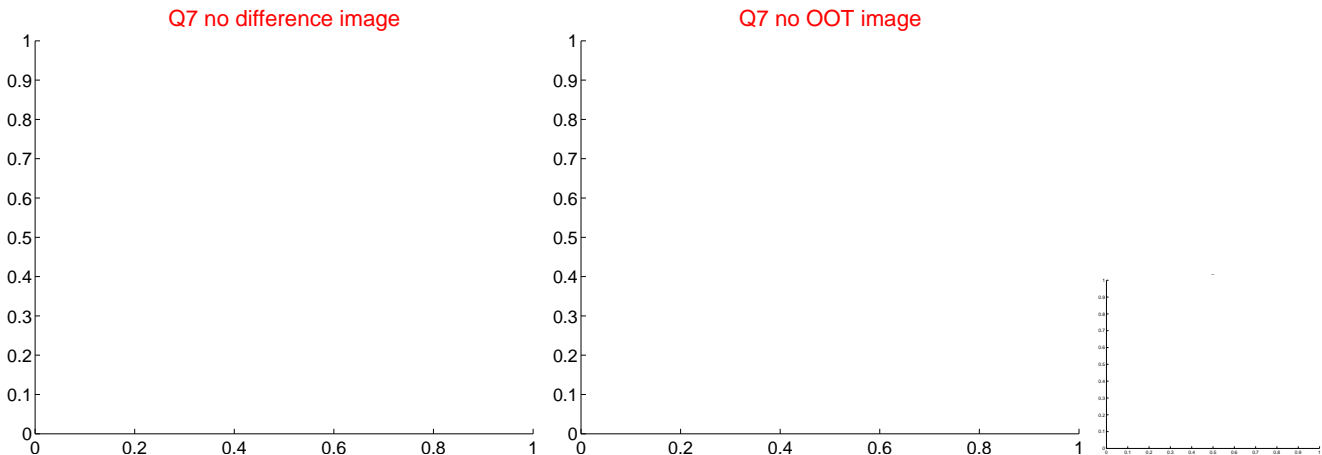
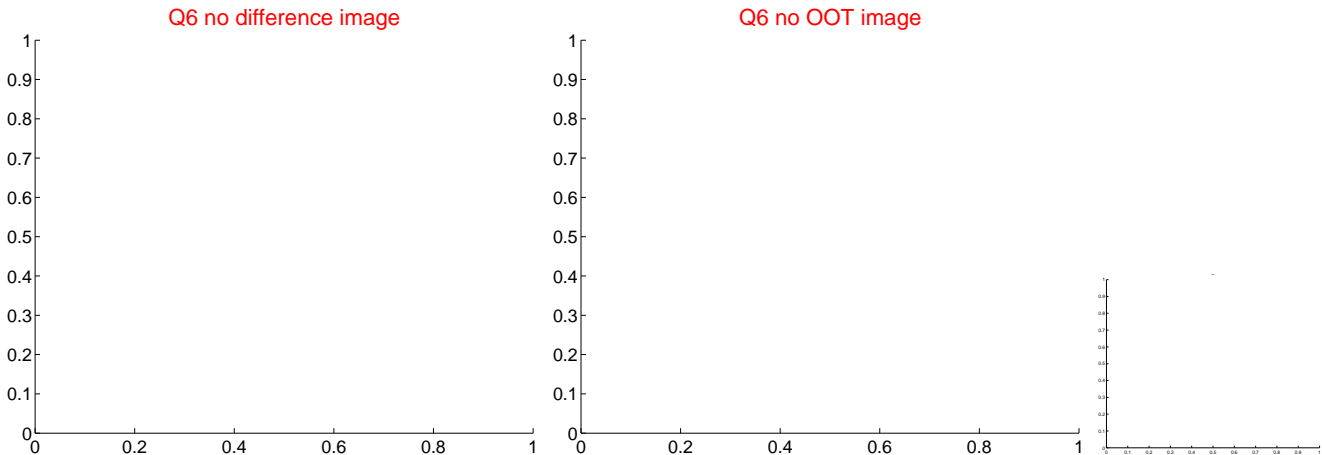
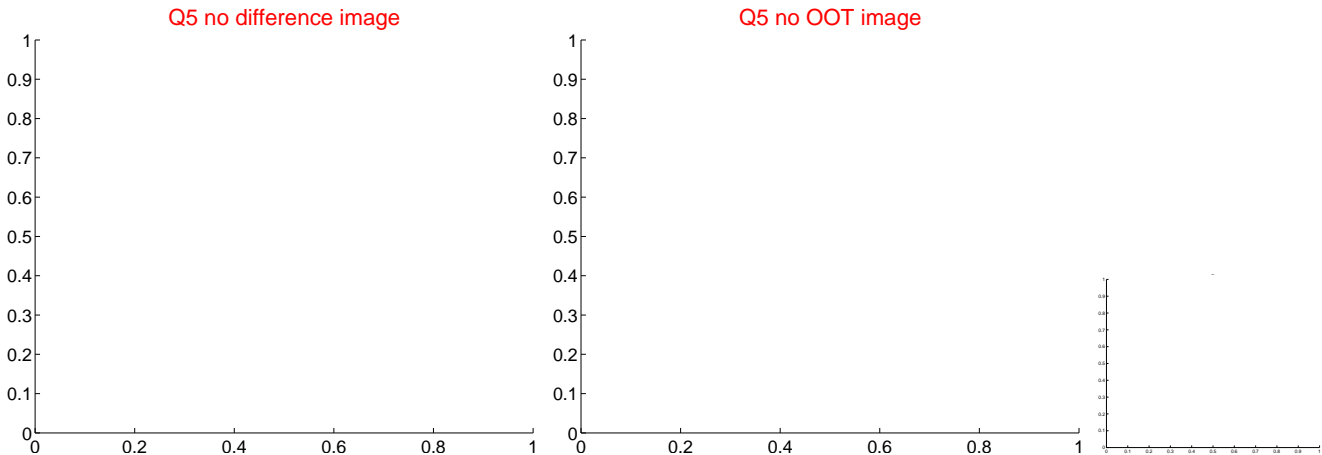


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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



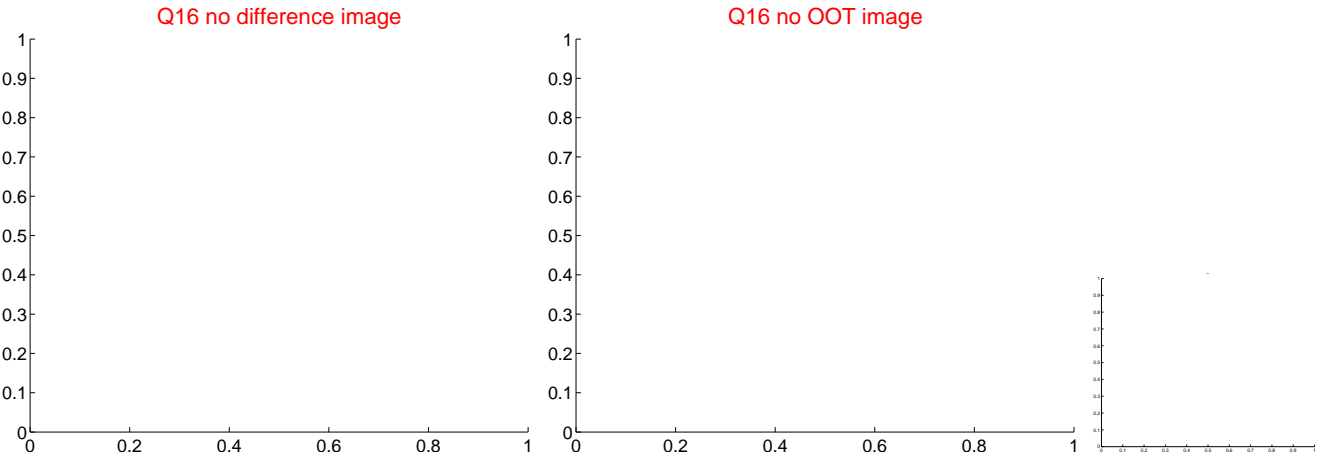
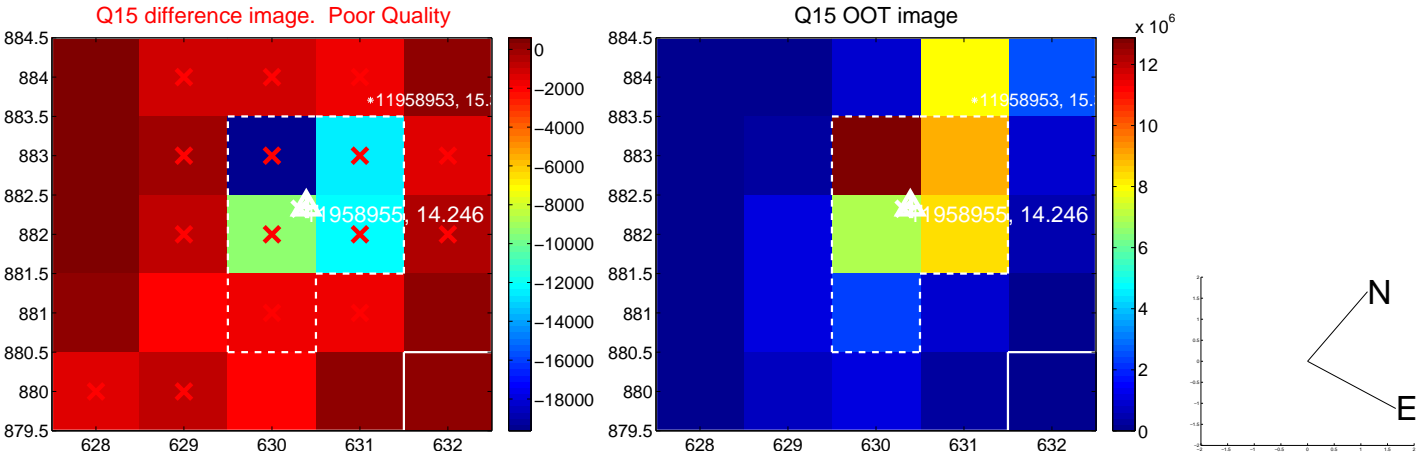
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value



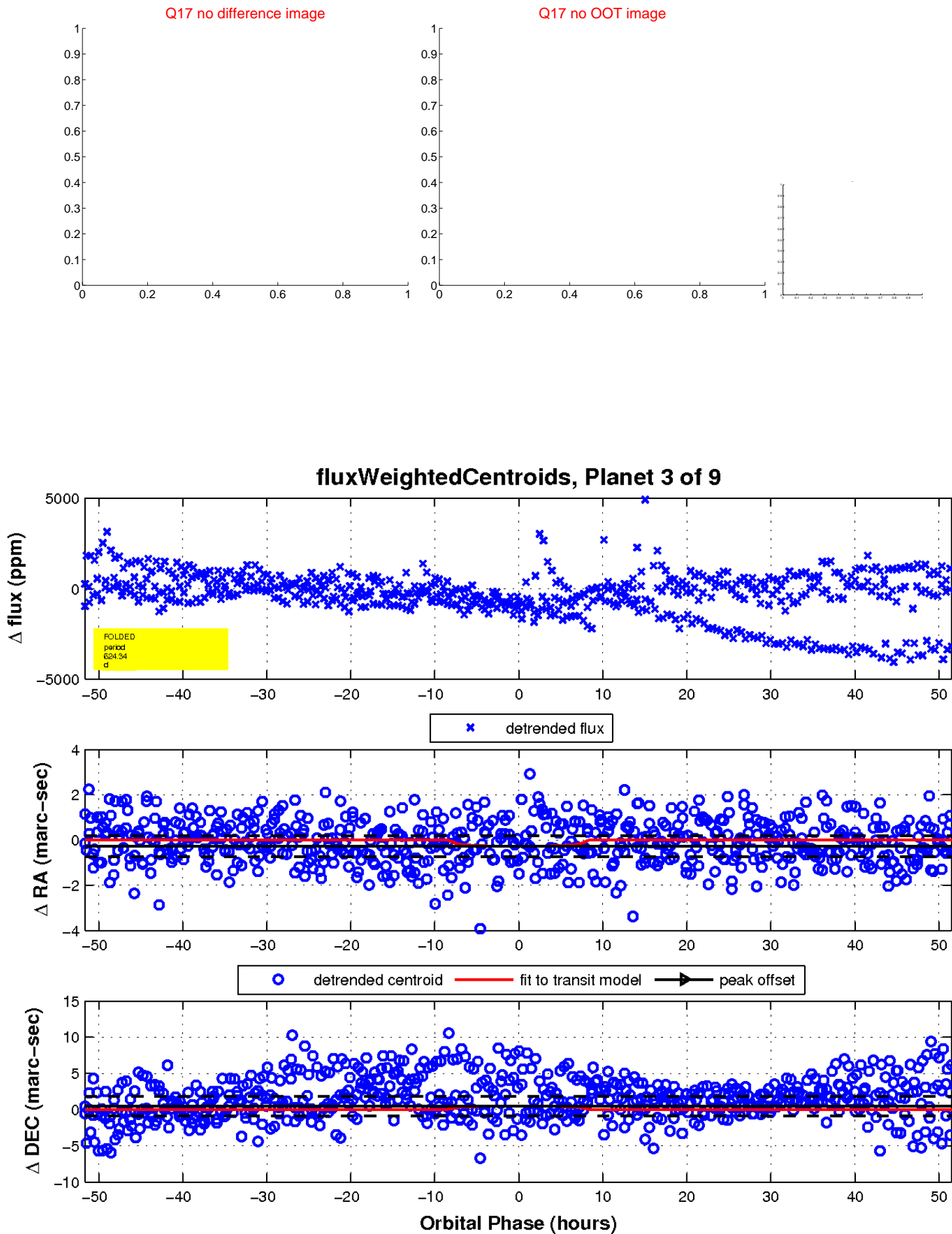
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



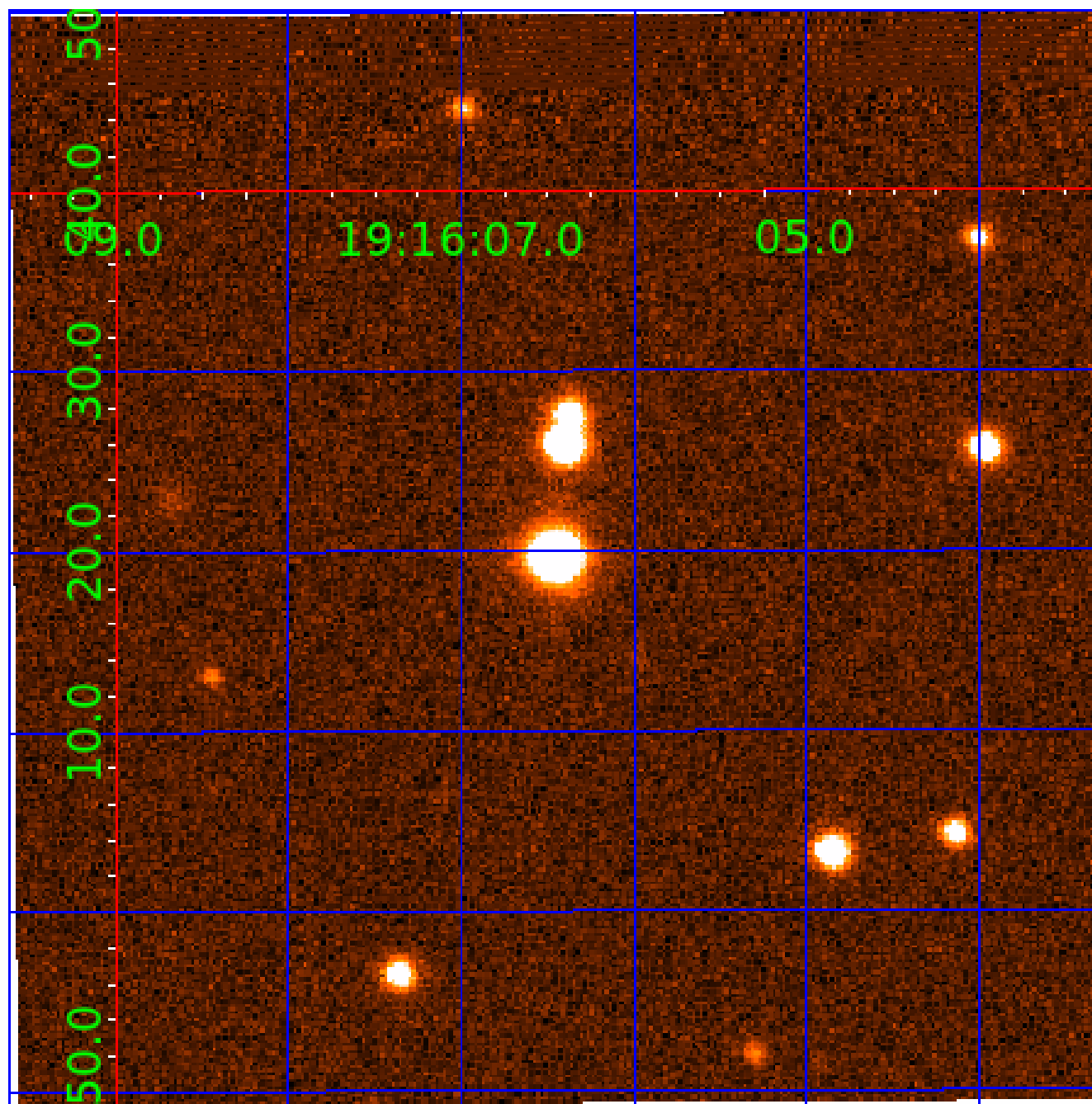
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.





UKIRT Image

Declination



# KIC 011958955

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
011958955-01	OBS	No	609.990552	172.502121	700.4	10.032	15.6	6.0	0.77	4981	2.21	0.20
011958955-02	OBS	No	619.391847	206.185446	822.8	4.390	11.6	6.9	0.77	4981	2.33	0.19
011958955-03	OBS	No	624.344901	150.726038	635.1	17.271	10.7	4.9	0.77	4981	2.23	0.19
011958955-04	OBS	No	384.839018	318.703990	901.3	4.616	10.8	7.5	0.77	4981	2.50	0.36
011958955-05	OBS	No	446.767859	373.700685	1422.8	19.154	9.7	8.2	0.77	4981	3.39	0.30
011958955-06	OBS	No	346.443665	437.536963	1099.5	3.840	9.3	8.6	0.77	4981	2.85	0.41
011958955-07	OBS	No	351.630210	432.911970	948.3	3.220	9.1	7.4	0.77	4981	2.67	0.41
011958955-08	OBS	No	254.737256	211.434970	813.1	20.113	9.5	6.3	0.77	4981	2.23	0.63
011958955-09	OBS	No	413.479898	380.401971	780.1	5.000	9.2	-1.0	0.77	4981	2.07	0.33

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011958955-01	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
011958955-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_UNCERTAIN
011958955-03	OBS	FP	0.00	1	0	1	0	ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS—HALO_GHOST
011958955-04	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_TER_DV—CENT_KIC_POS—HALO_GHOST
011958955-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
011958955-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_KIC_POS
011958955-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_KIC_POS
011958955-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
011958955-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_NOFITS

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

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

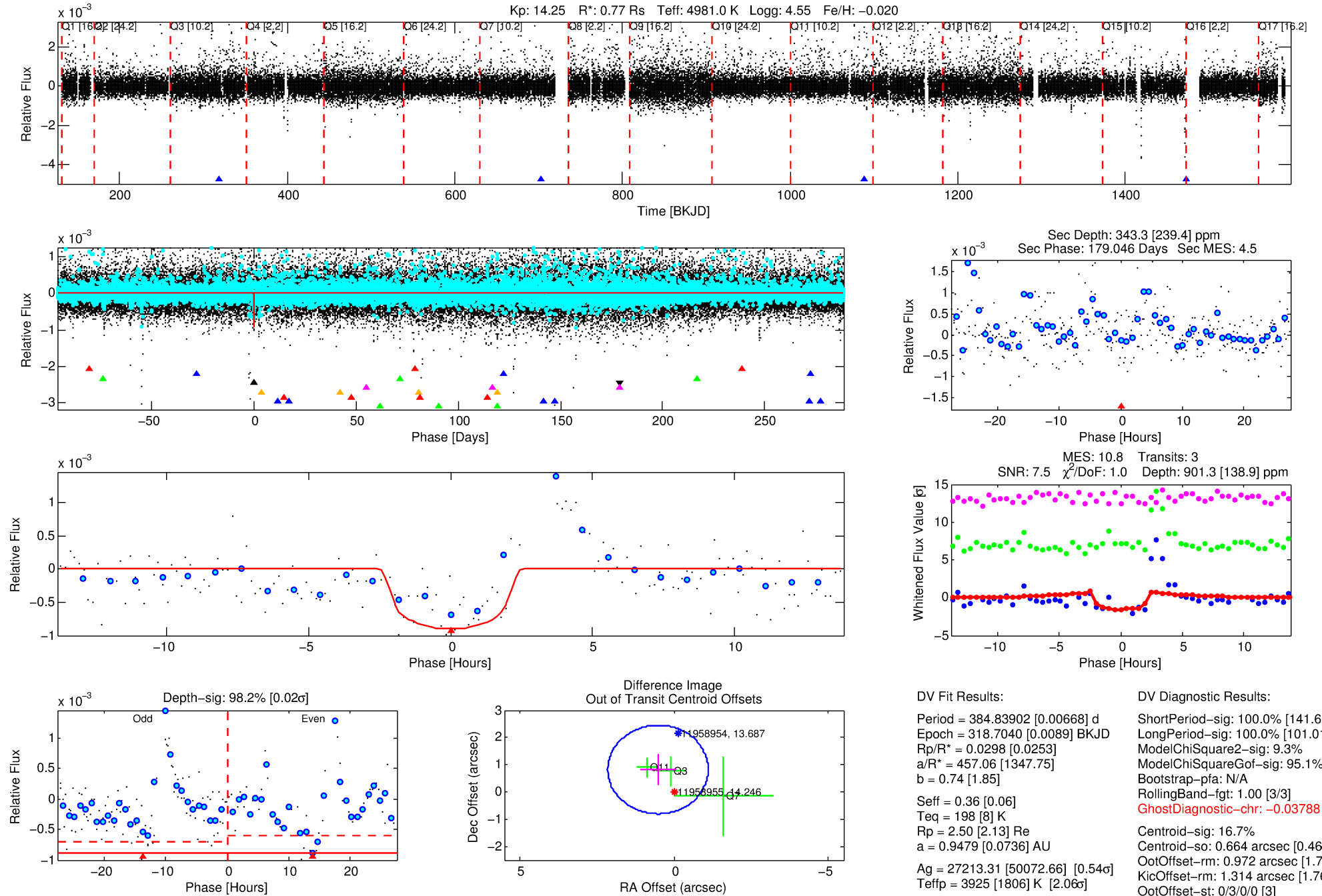
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 011958955-04

No Significant Match Found

# DV One-Page Summary

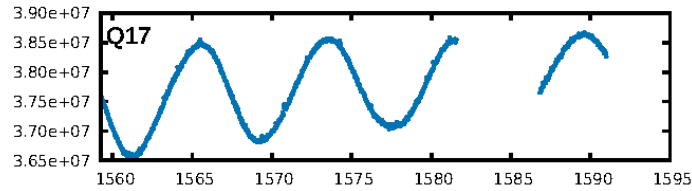
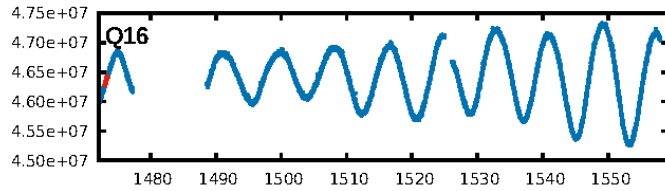
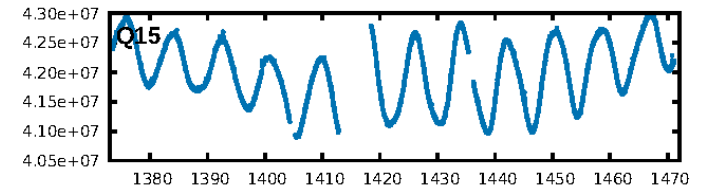
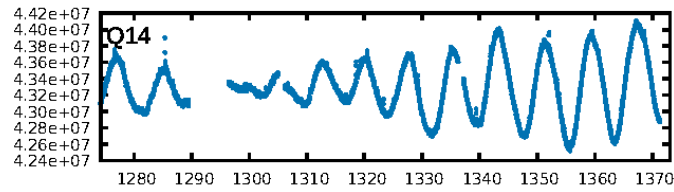
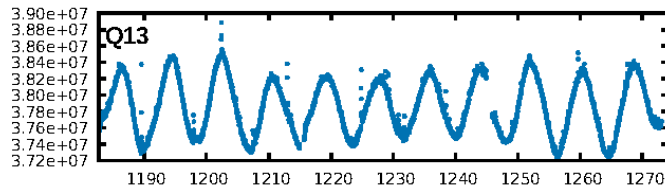
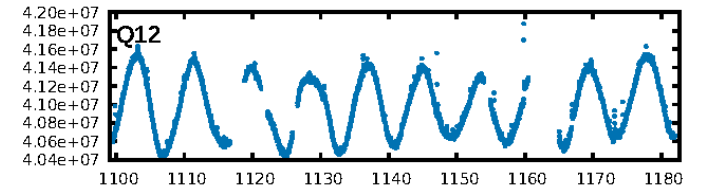
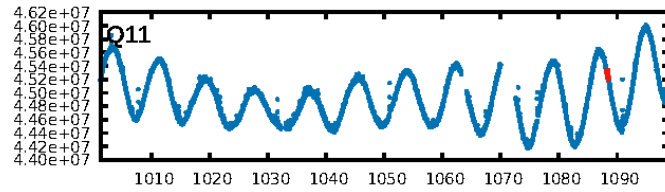
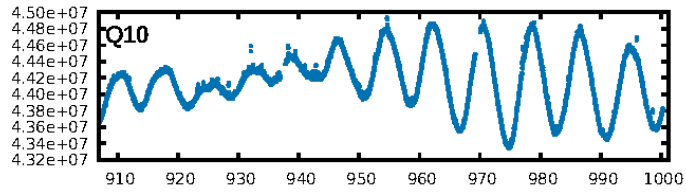
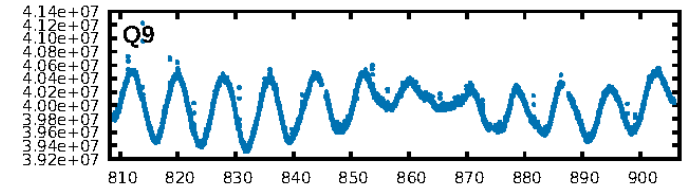
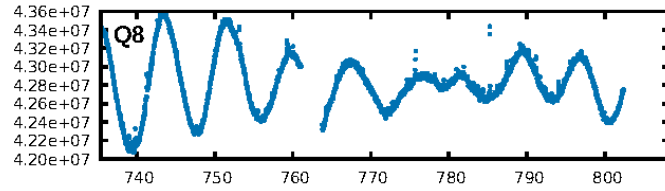
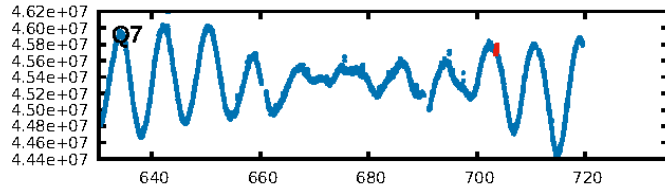
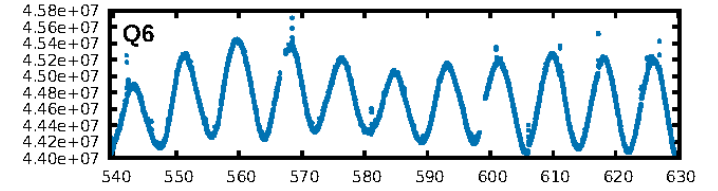
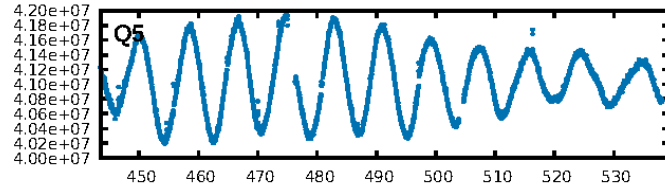
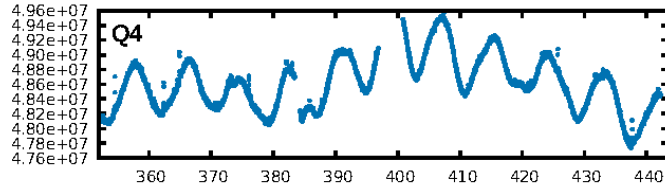
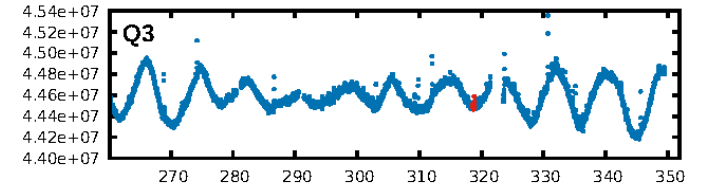
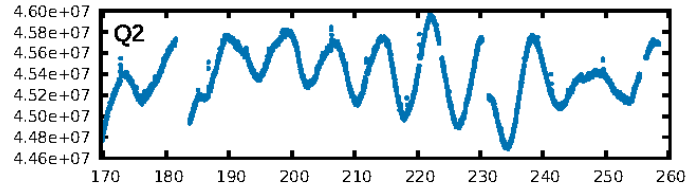
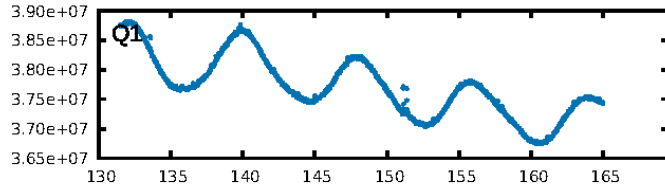
KIC: 11958955 Candidate: 4 of 9 Period: 384.839 d



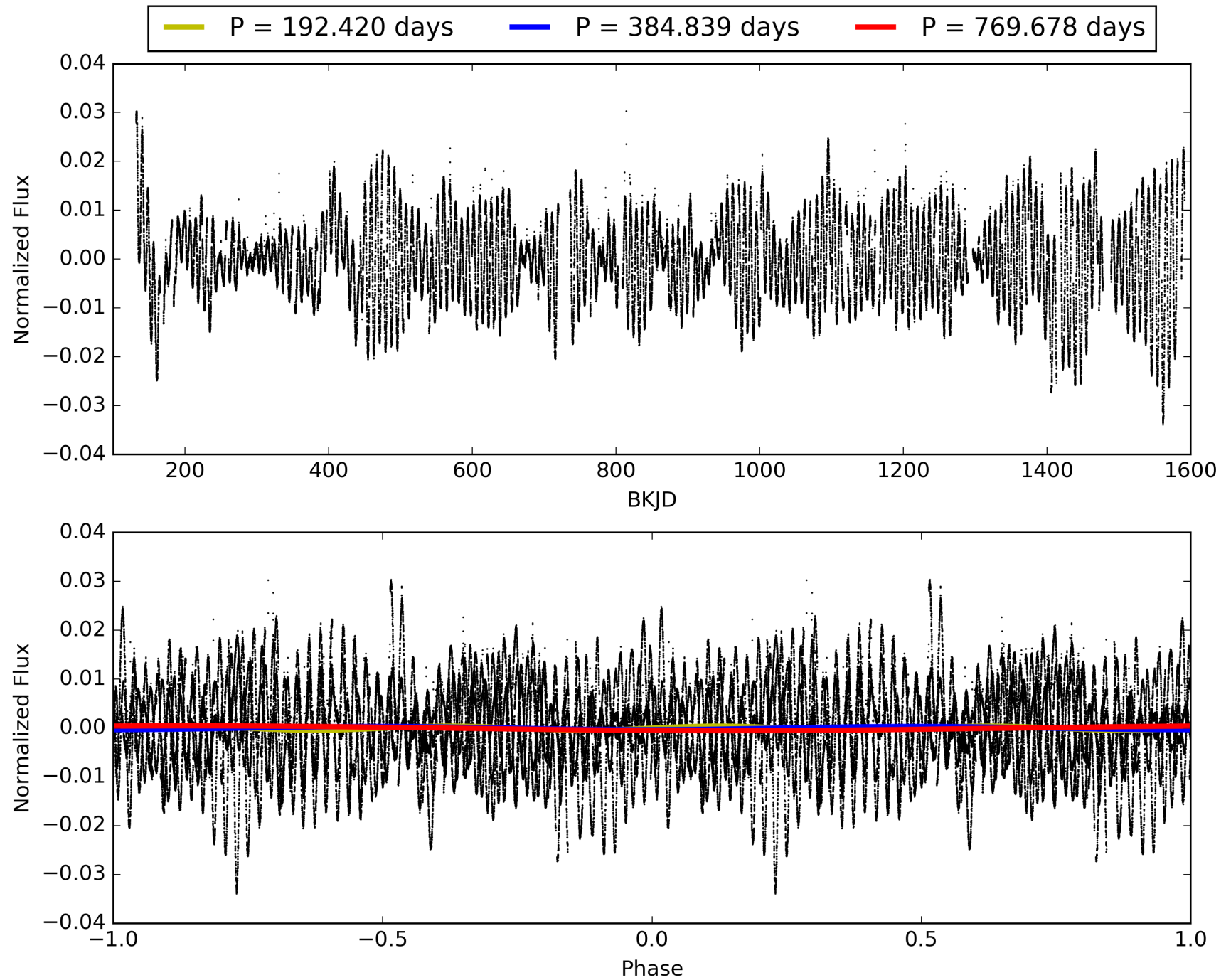
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 05:48:35 Z

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

# TCE 011958955-04, PDC Light Curves

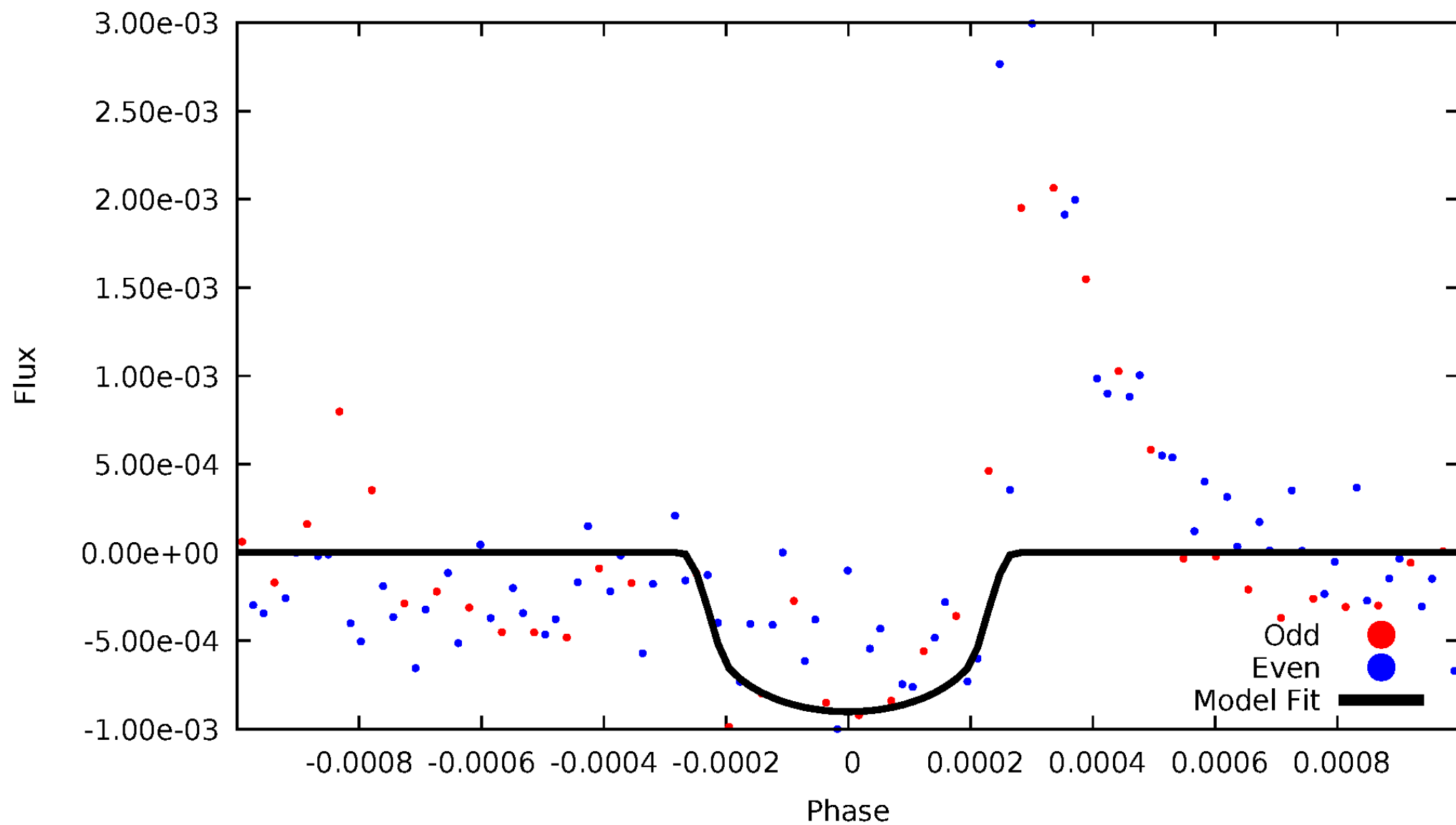


# TCE 011958955-04



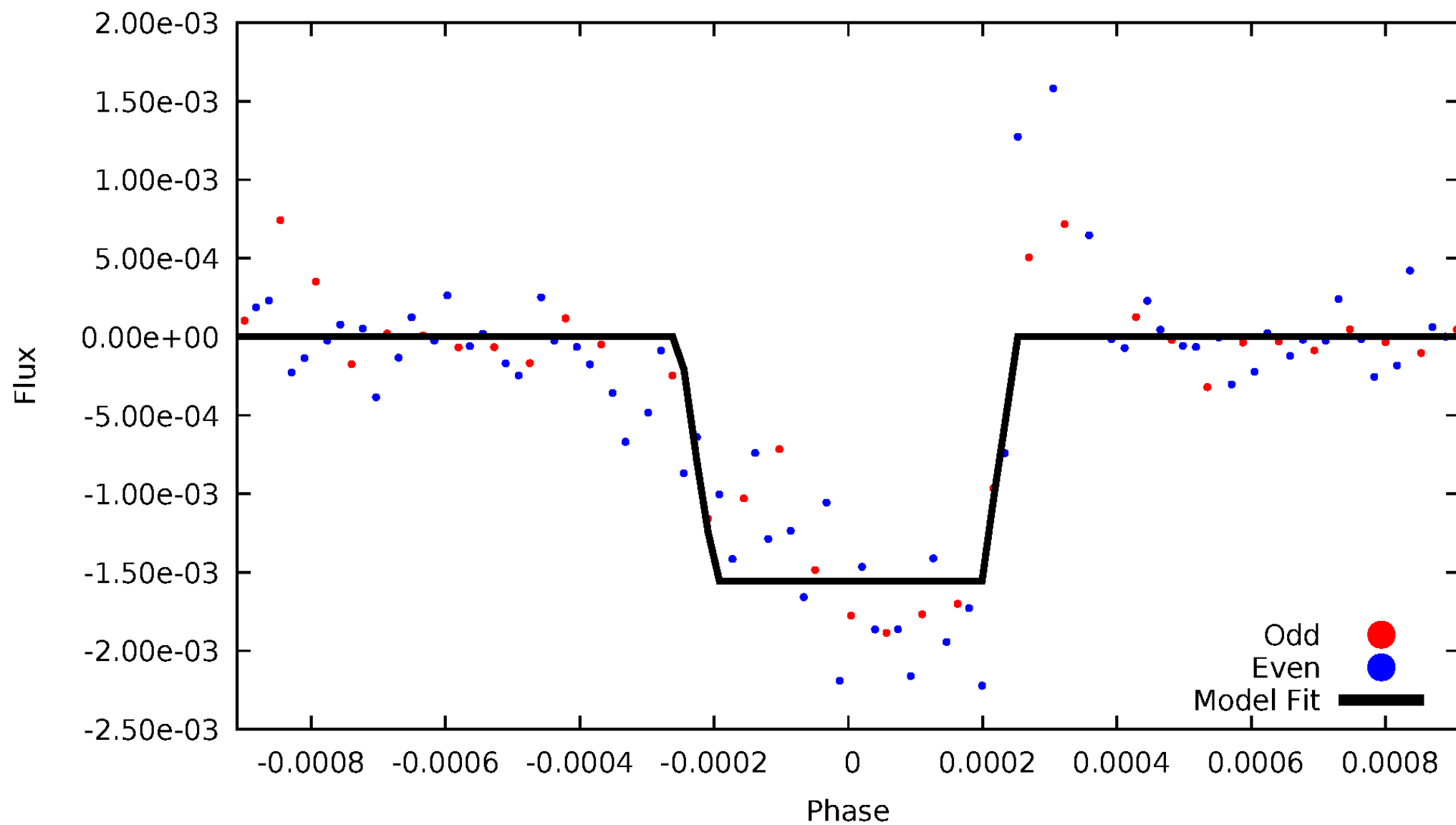
# DV Odd/Even

TCE 011958955-04



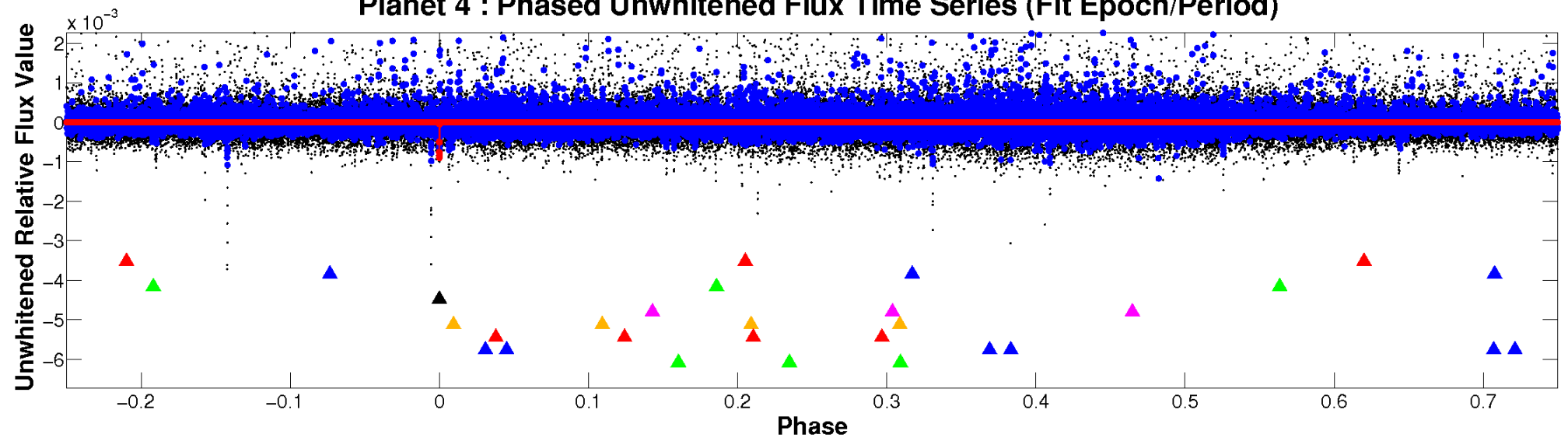
# ALT Odd/Even

TCE 011958955-04

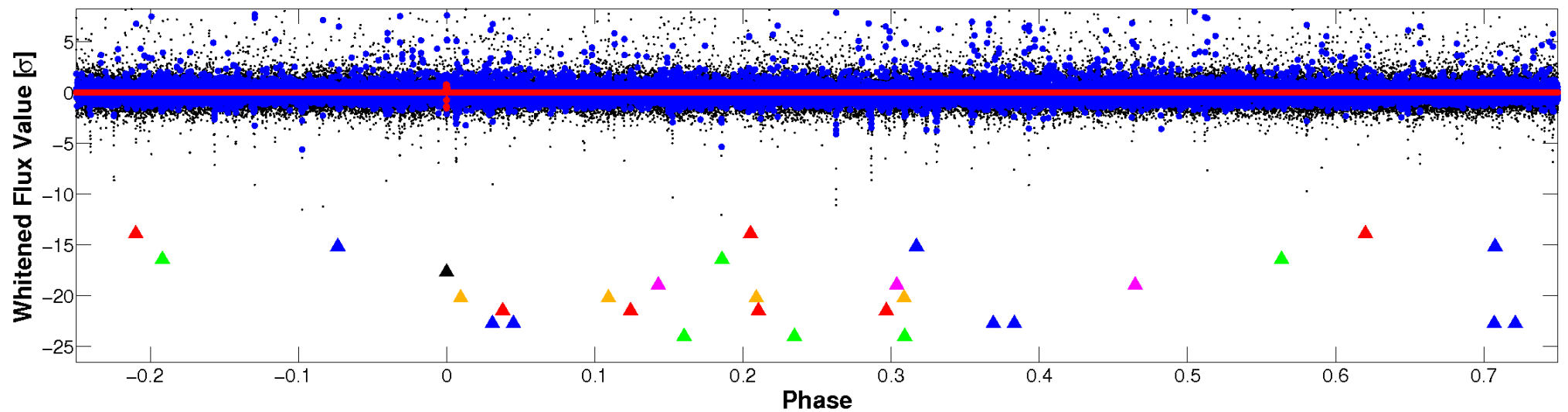


# Non-Whitened Vs. Whitened Light Curve

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



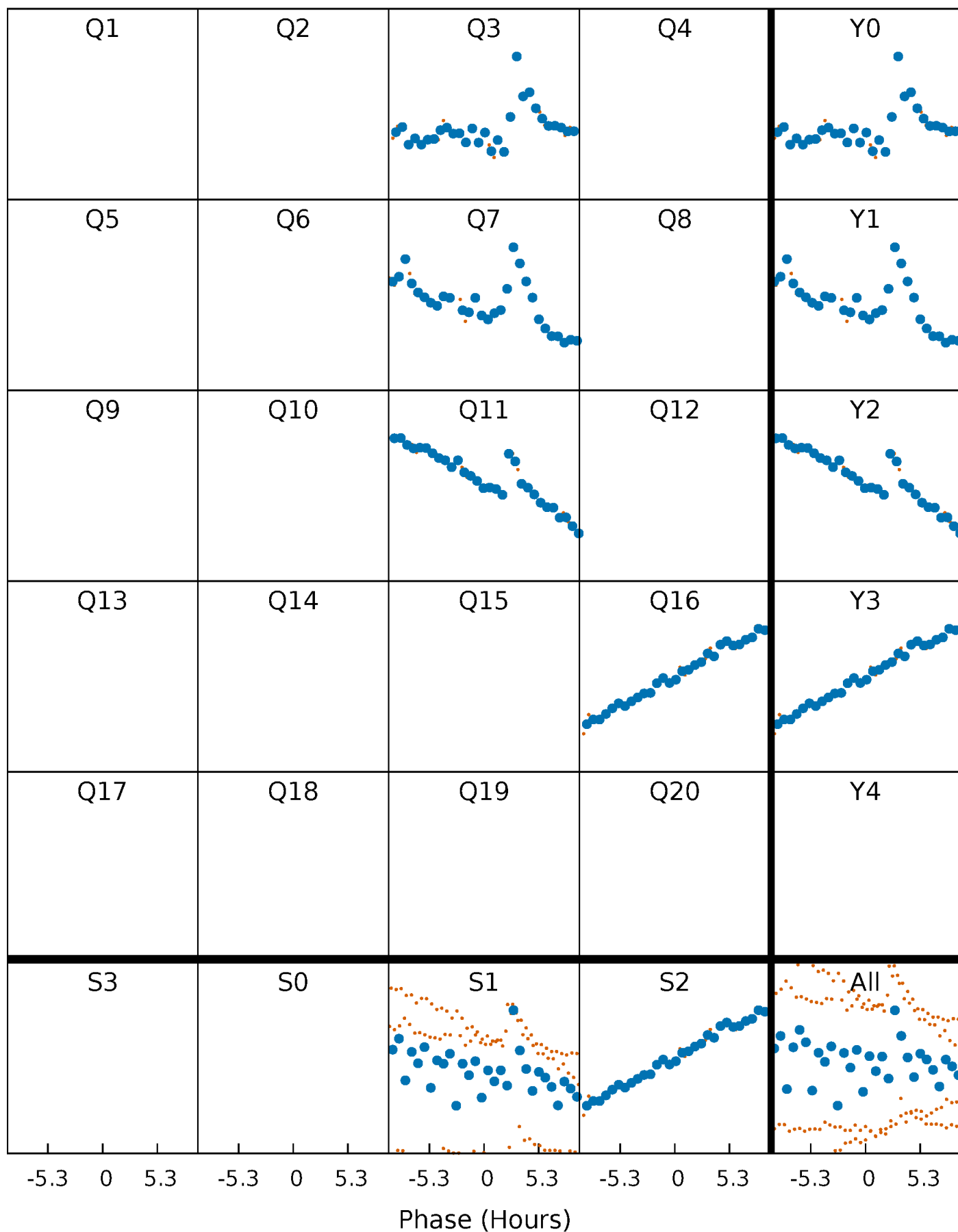
## Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)





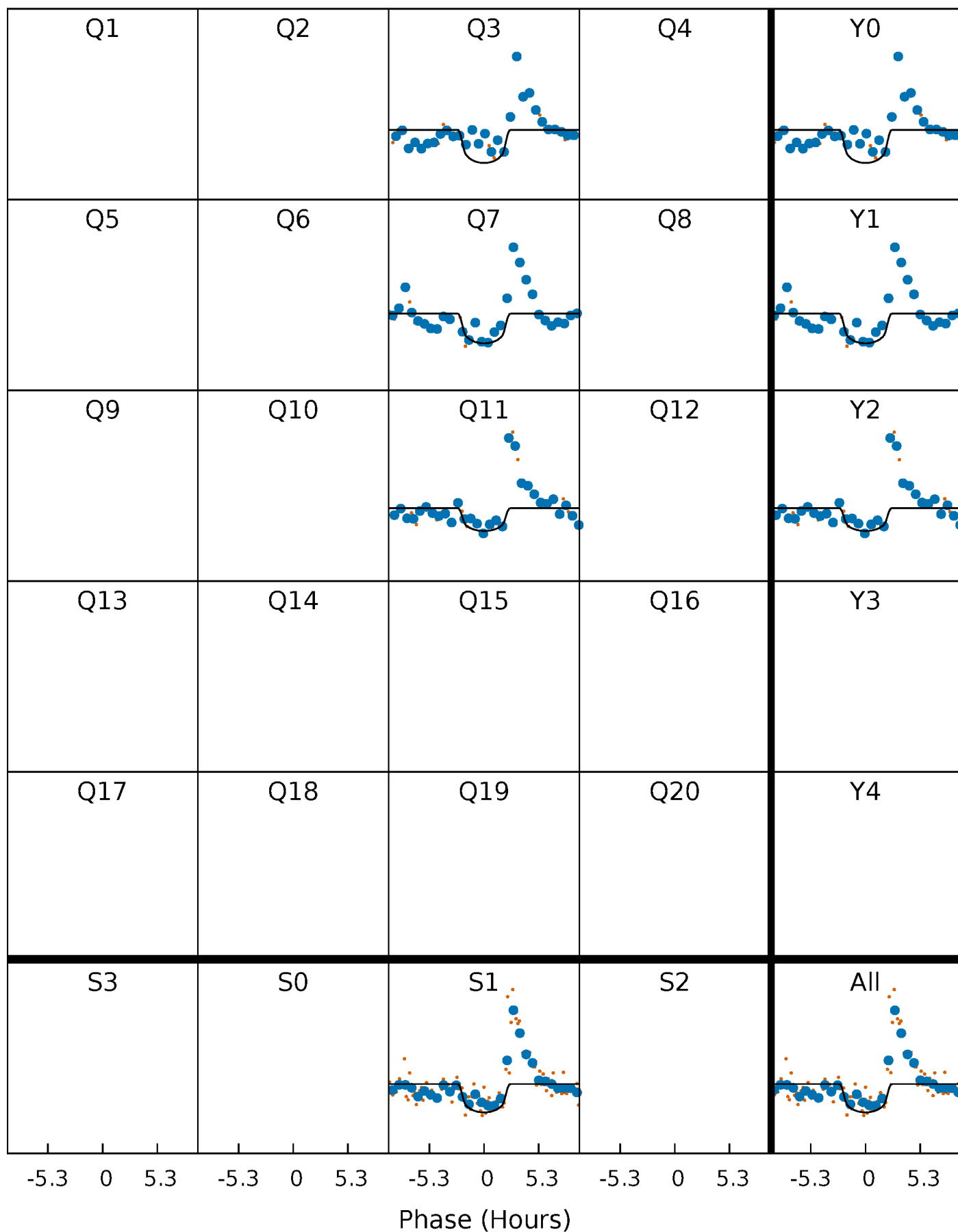
# PDC Quarter-Phased Transit Curves

TCE 011958955-04     $P=384.839018$  Days     $T_0=318.703990$  (BKJD)



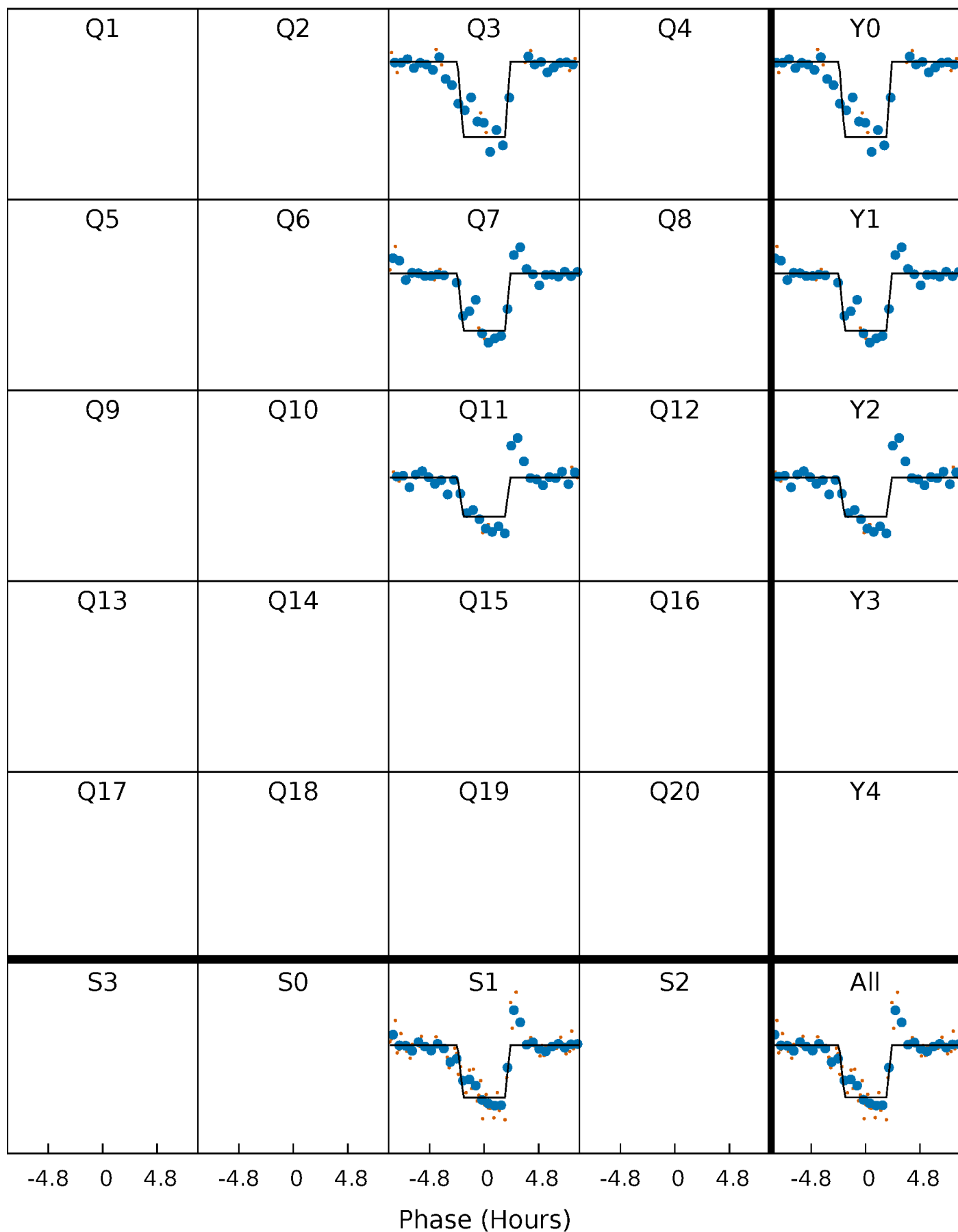
# DV Quarter-Phased Transit Curves

TCE 011958955-04     $P=384.839018$  Days     $T_0=318.703990$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

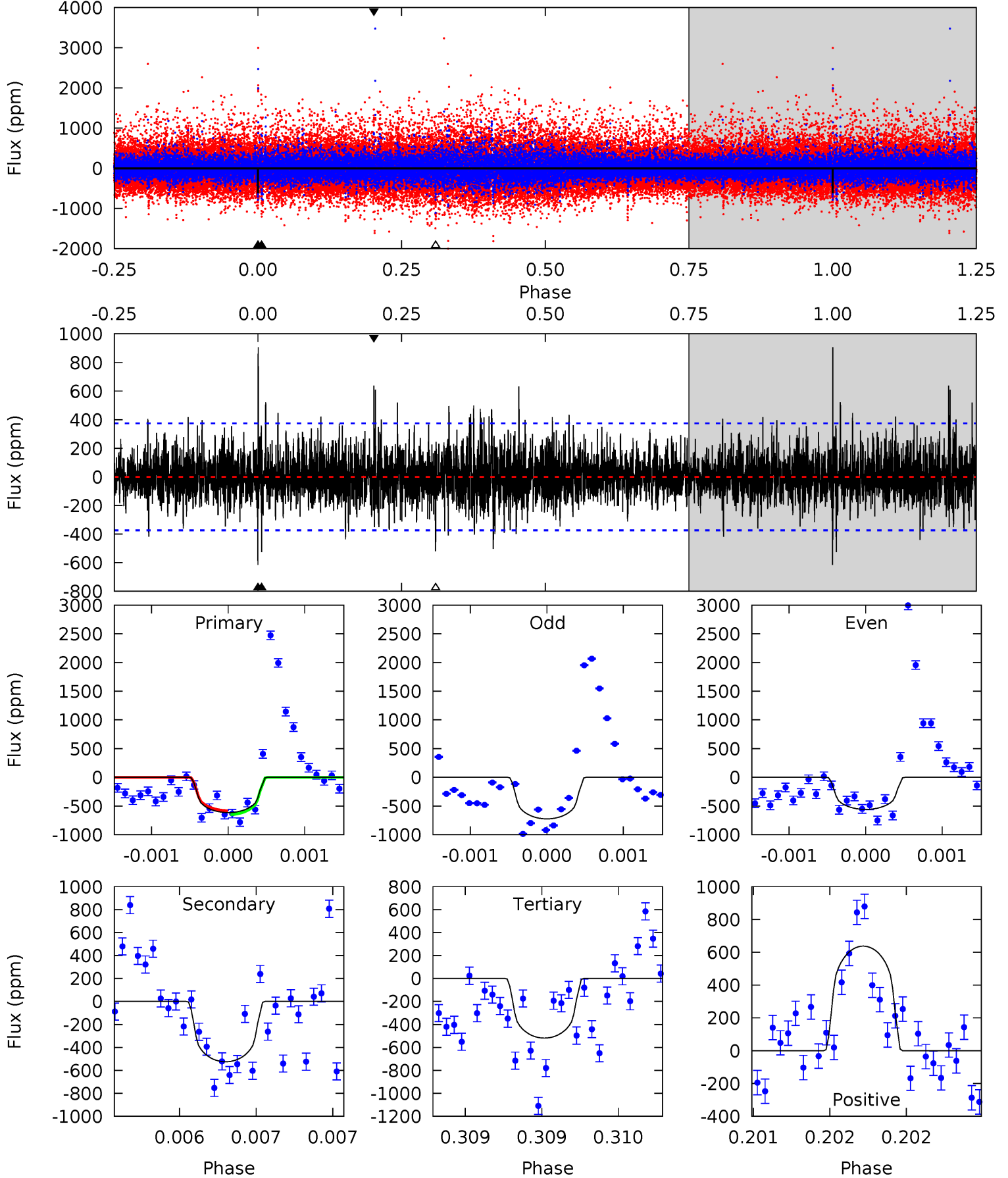
TCE 011958955-04 P=384.832047 Days  $T_0=318.716172$  (BKJD)



# DV Model-Shift Uniqueness Test

011958955-04, P = 384.839018 Days, E = 318.703990 Days

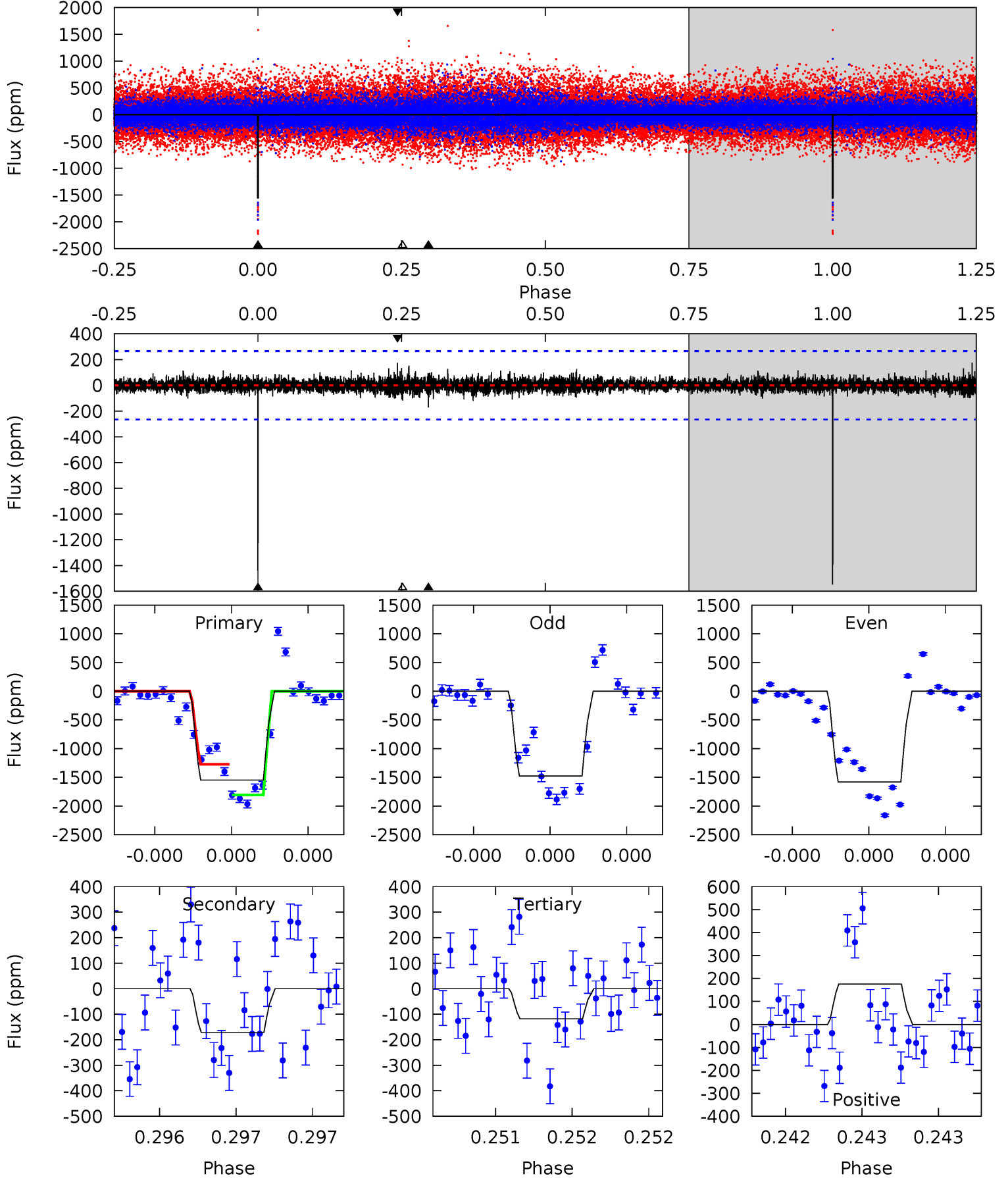
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.13	7.80	7.71	9.47	5.56	3.46	1.75	1.43	-0.34	0.10	-1.67	1.02	0.91	0.60	0.51



# Alt Model-Shift Uniqueness Test

011958955-04, P = 384.832047 Days, E = 318.716172 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
32.6	3.61	2.48	3.69	5.58	3.49	0.58	30.1	28.9	1.13	-0.08	1.05	1.05	0.10	5.49



### Stellar Parameters For KIC 011958955

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$4981^{+151}_{-136}$	$4.553^{+0.060}_{-0.050}$	$-0.020^{+0.250}_{-0.300}$	$0.767^{+0.065}_{-0.072}$	$0.768^{+0.078}_{-0.064}$	$2.395^{+0.557}_{-0.411}$
	+3%/-3%	+1%/-1%	+1250%/-1500%	+8%/-9%	+10%/-8%	+23%/-17%
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 011958955-04 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-525 \pm 67$	$2.74^{+2.03}_{-1.66}$	$276^{+10}_{-10}$	$4312^{+2207}_{-767}$	$35352^{+182561}_{-23831}$
Alt.	$-172 \pm 47$	$3.44^{+2.10}_{-1.93}$	$275^{+11}_{-10}$	$3315^{+1021}_{-466}$	$6949^{+28540}_{-4432}$

$T_{max}$  = 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

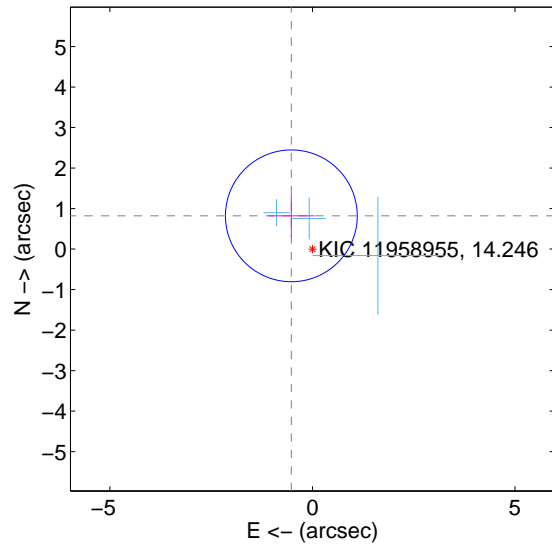
Supplemental centroid analysis for 011958955-04. Kepler magnitude: 14.25. Transit SNR 7.50

There are 3 quarters with good PRF difference image offsets

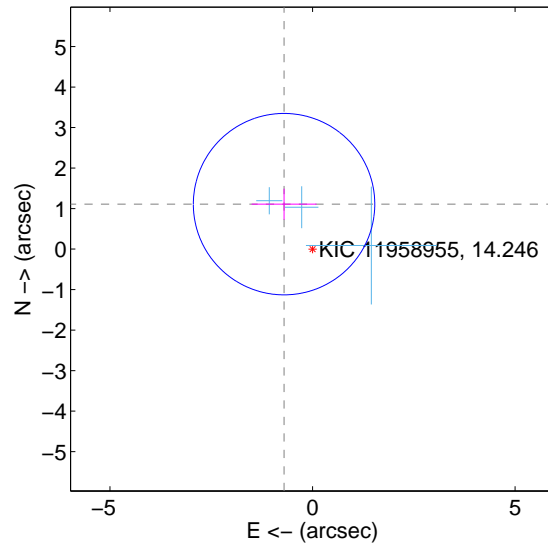
The direct PRF centroid is offset from the target star catalog position by about 0.35 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.972 \pm 0.542$	1.79	$0.520 \pm 0.570$	$0.821 \pm 0.531$
PRF-fit source offset from KIC position	$1.314 \pm 0.746$	1.76	$0.703 \pm 0.801$	$1.110 \pm 0.382$
photometric centroid source offset	$0.66 \pm 1.44$	0.46	$0.28 \pm 0.73$	$-0.60 \pm 1.55$

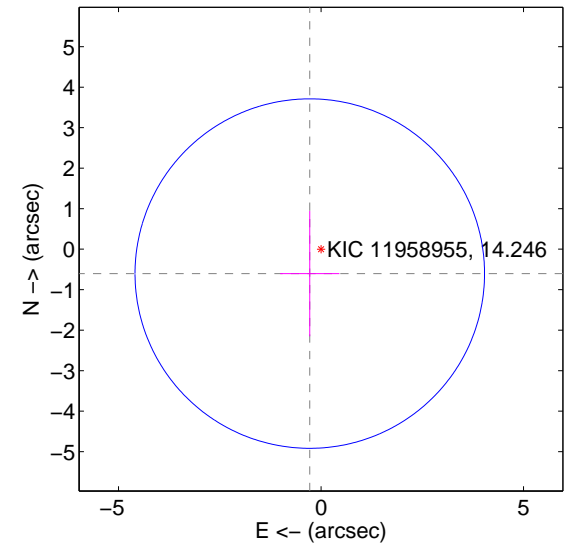
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

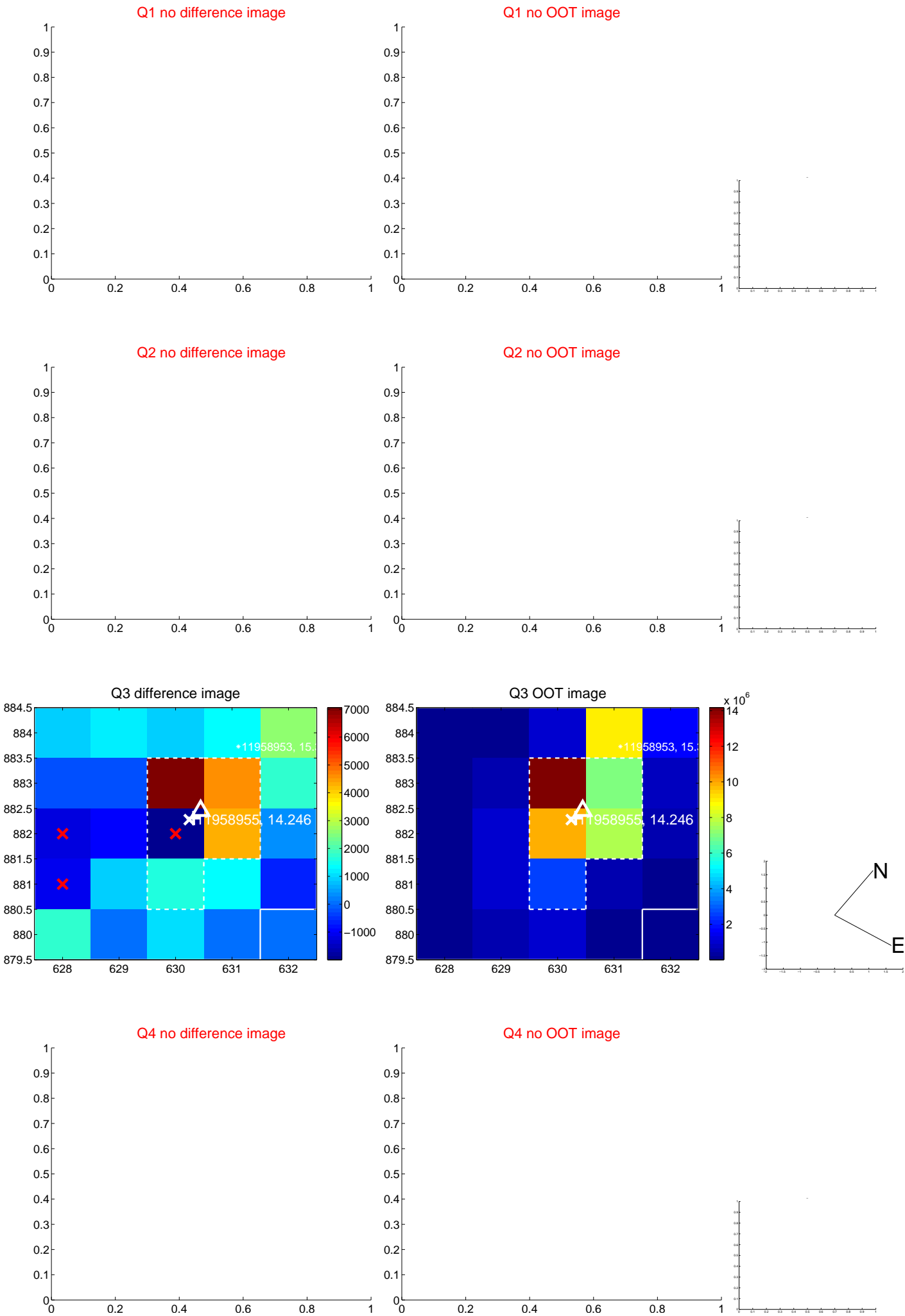


offset from photometric centroids



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.

Q5 no difference image



Q5 no OOT image



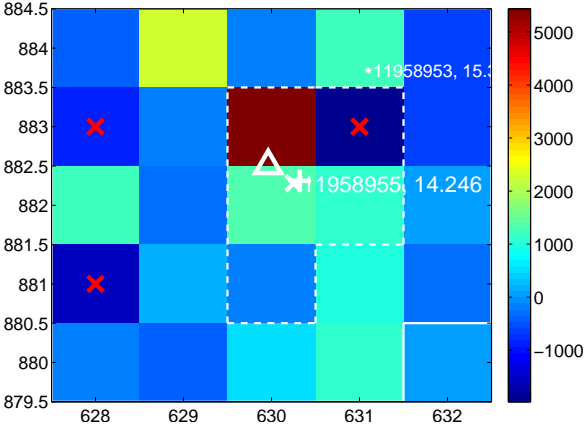
Q6 no difference image



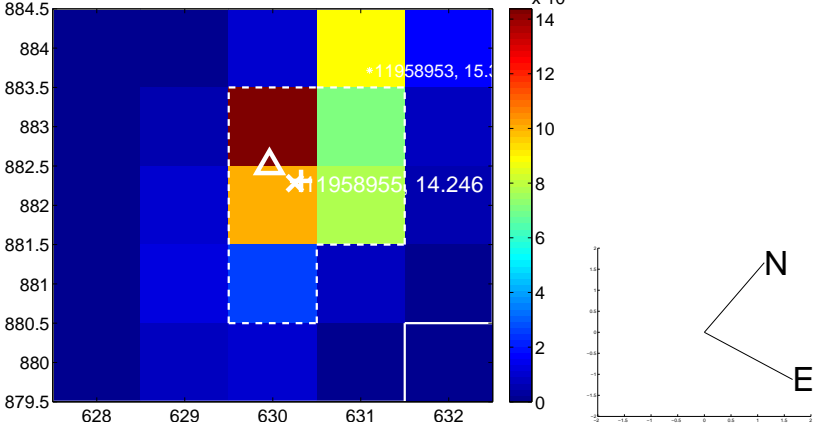
Q6 no OOT image



Q7 difference image



Q7 OOT image



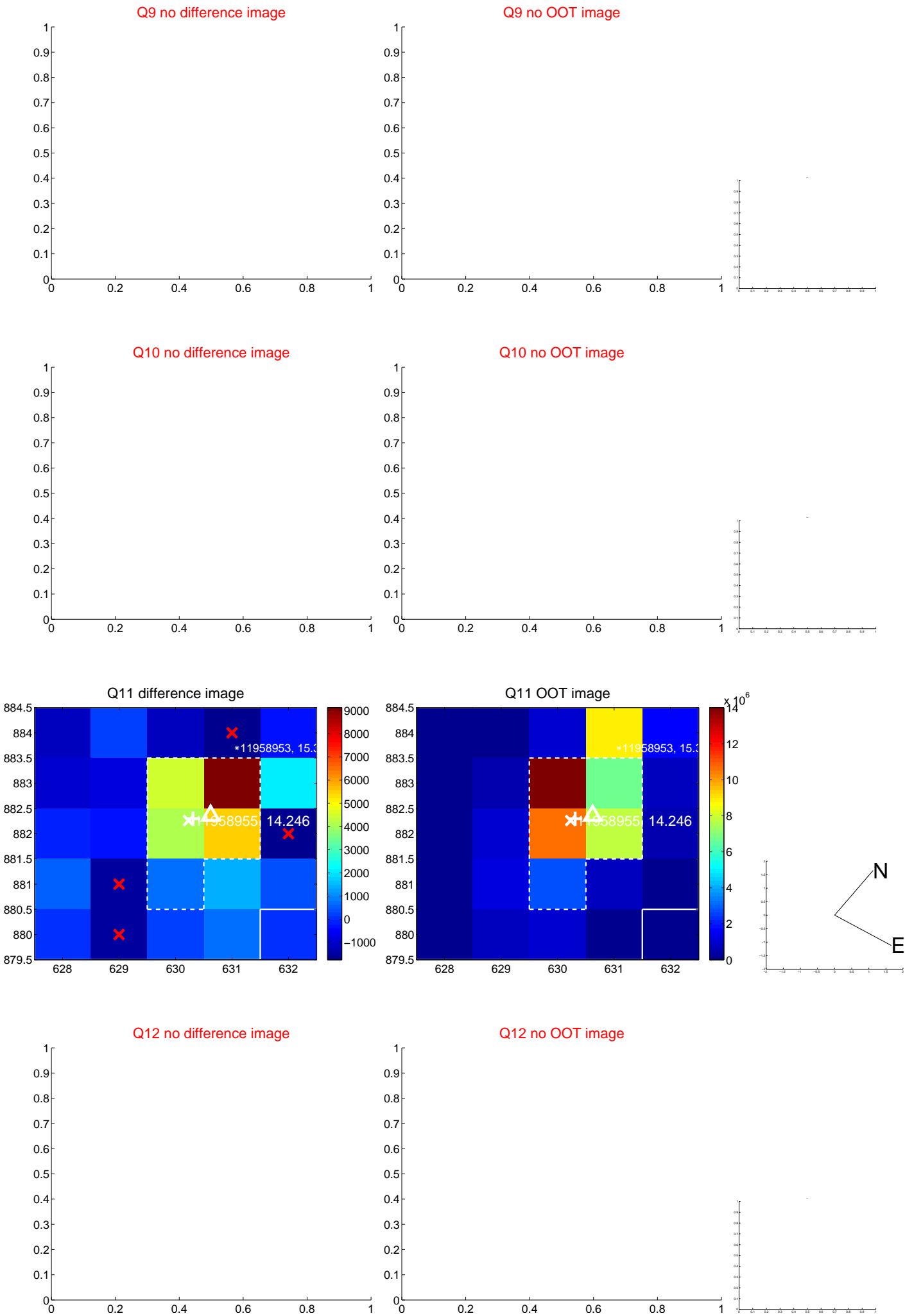
Q8 no difference image



Q8 no OOT image



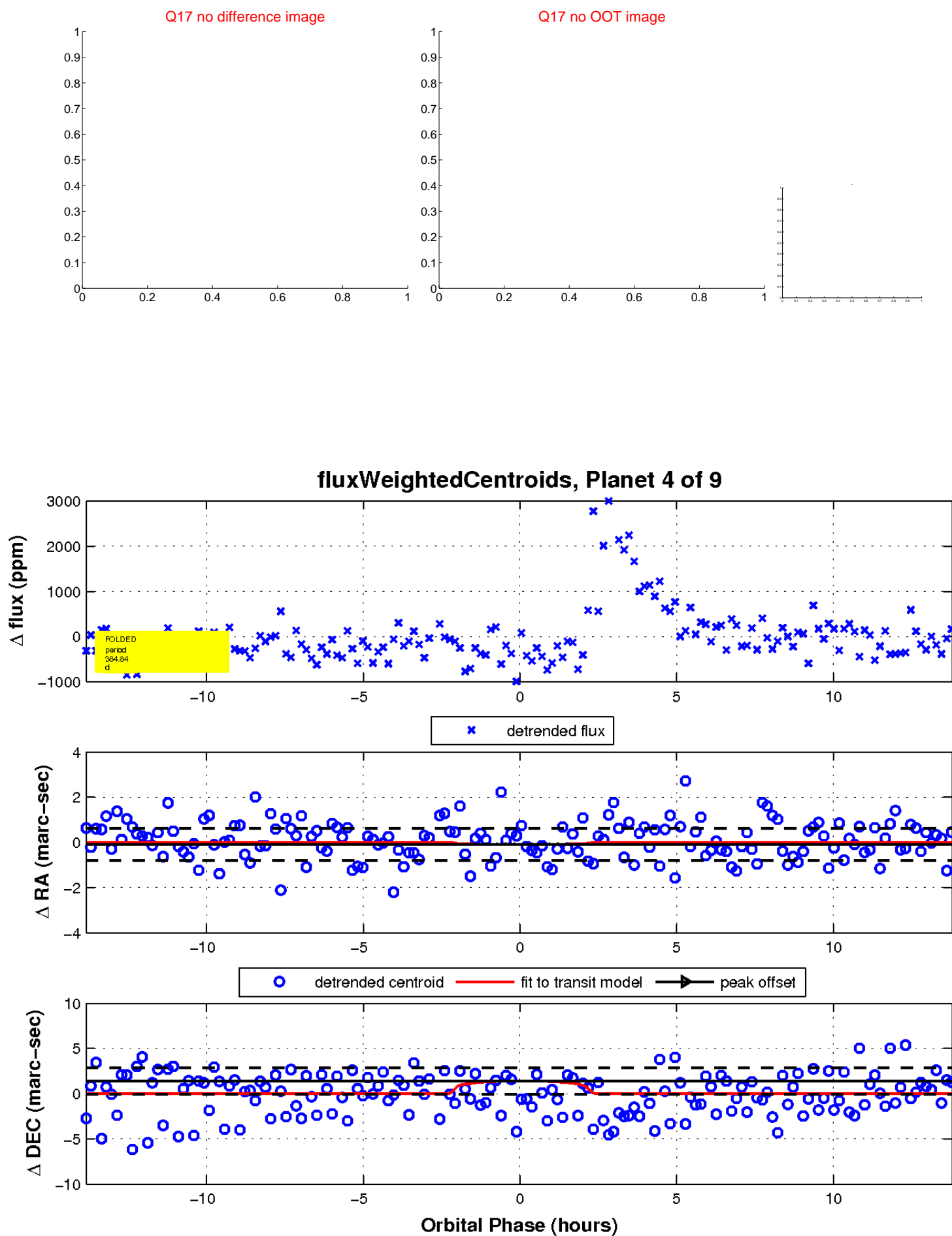
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

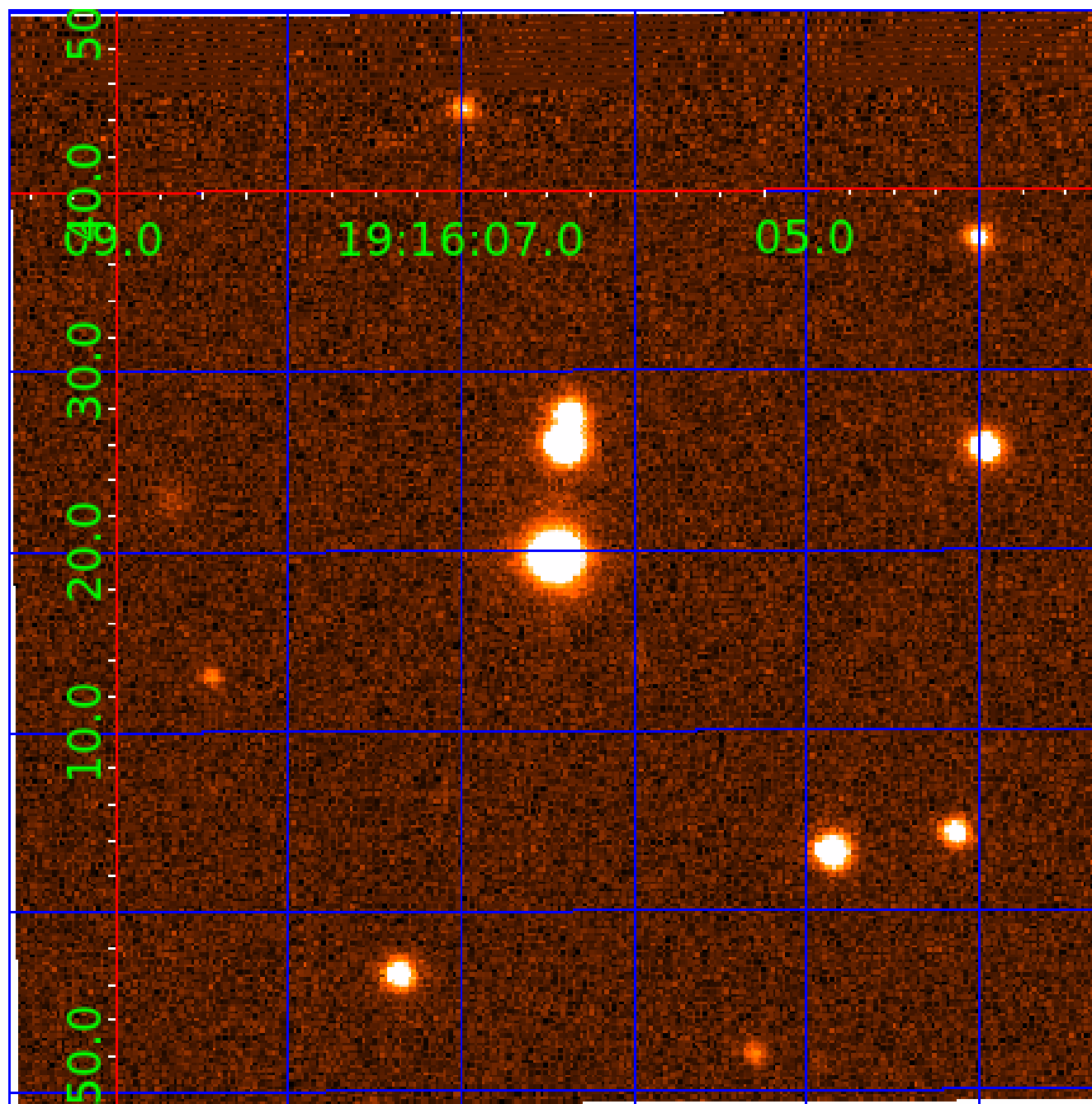


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 011958955

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
011958955-01	OBS	No	609.990552	172.502121	700.4	10.032	15.6	6.0	0.77	4981	2.21	0.20
011958955-02	OBS	No	619.391847	206.185446	822.8	4.390	11.6	6.9	0.77	4981	2.33	0.19
011958955-03	OBS	No	624.344901	150.726038	635.1	17.271	10.7	4.9	0.77	4981	2.23	0.19
011958955-04	OBS	No	384.839018	318.703990	901.3	4.616	10.8	7.5	0.77	4981	2.50	0.36
011958955-05	OBS	No	446.767859	373.700685	1422.8	19.154	9.7	8.2	0.77	4981	3.39	0.30
011958955-06	OBS	No	346.443665	437.536963	1099.5	3.840	9.3	8.6	0.77	4981	2.85	0.41
011958955-07	OBS	No	351.630210	432.911970	948.3	3.220	9.1	7.4	0.77	4981	2.67	0.41
011958955-08	OBS	No	254.737256	211.434970	813.1	20.113	9.5	6.3	0.77	4981	2.23	0.63
011958955-09	OBS	No	413.479898	380.401971	780.1	5.000	9.2	-1.0	0.77	4981	2.07	0.33

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011958955-01	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
011958955-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_UNCERTAIN
011958955-03	OBS	FP	0.00	1	0	1	0	ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS—HALO_GHOST
011958955-04	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_TER_DV—CENT_KIC_POS—HALO_GHOST
011958955-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
011958955-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_KIC_POS
011958955-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_KIC_POS
011958955-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
011958955-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_NOFITS

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

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

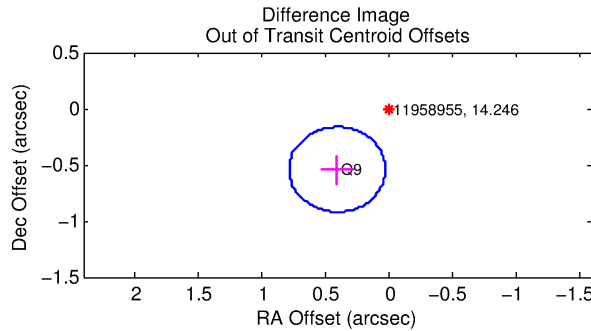
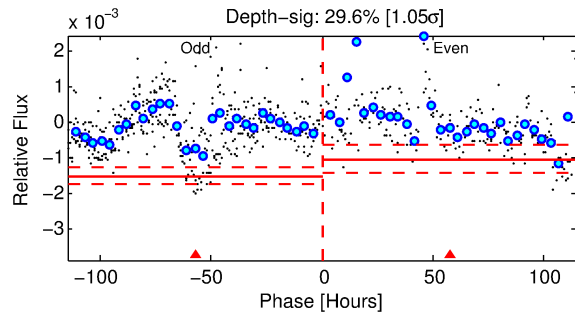
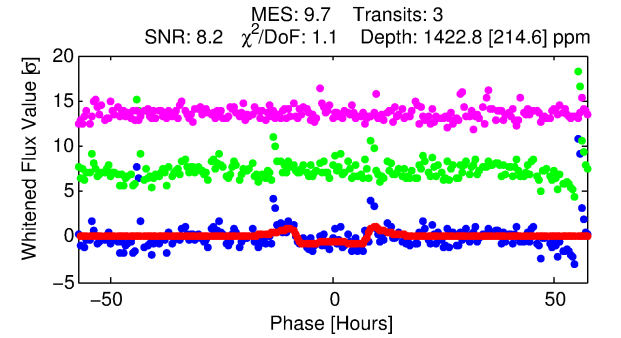
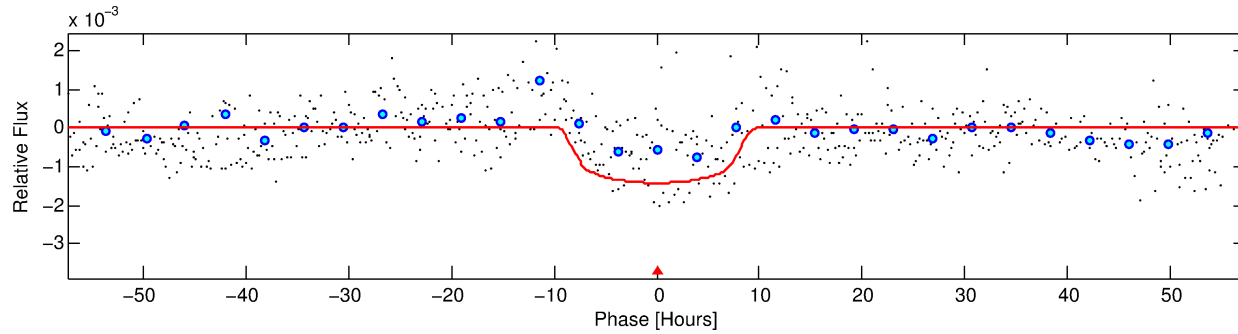
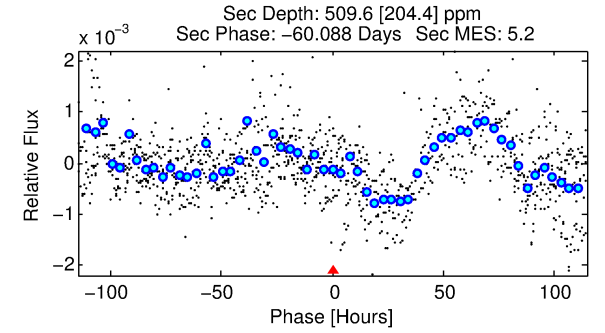
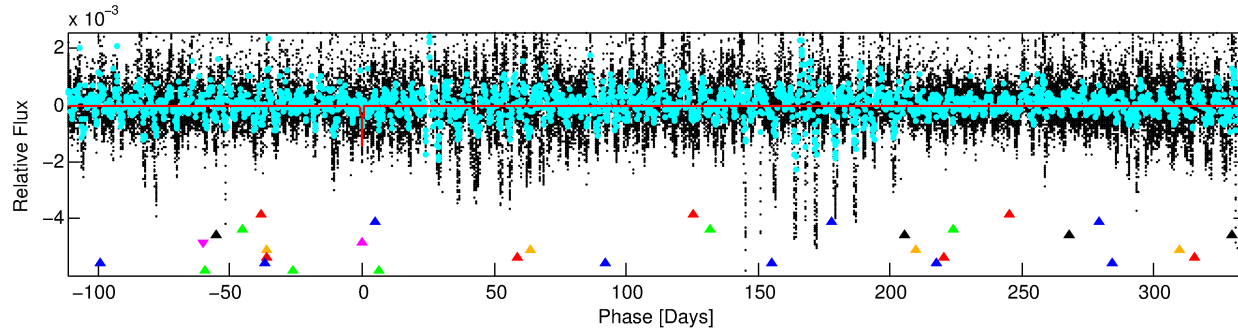
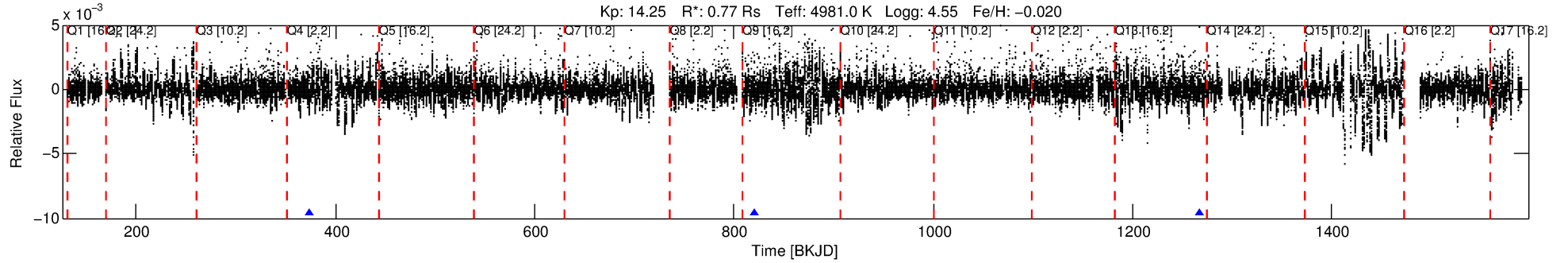
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 011958955-05

No Significant Match Found

# DV One-Page Summary

KIC: 11958955 Candidate: 5 of 9 Period: 446.768 d



## DV Fit Results:

Period = 446.76786 [0.01426] d  
Epoch = 373.7007 [0.0170] BKJD  
Rp/R\* = 0.0405 [0.0041]  
a/R\* = 104.02 [21.90]  
b = 0.86 [0.06]  
Seff = 0.30 [0.05]  
Teq = 188 [8] K  
Rp = 3.39 [0.47] Re  
a = 1.0470 [0.0814] AU  
Ag = 26729.06 [12379.95] [2.16σ]  
Teffp = 3718 [433] K [8.15σ]

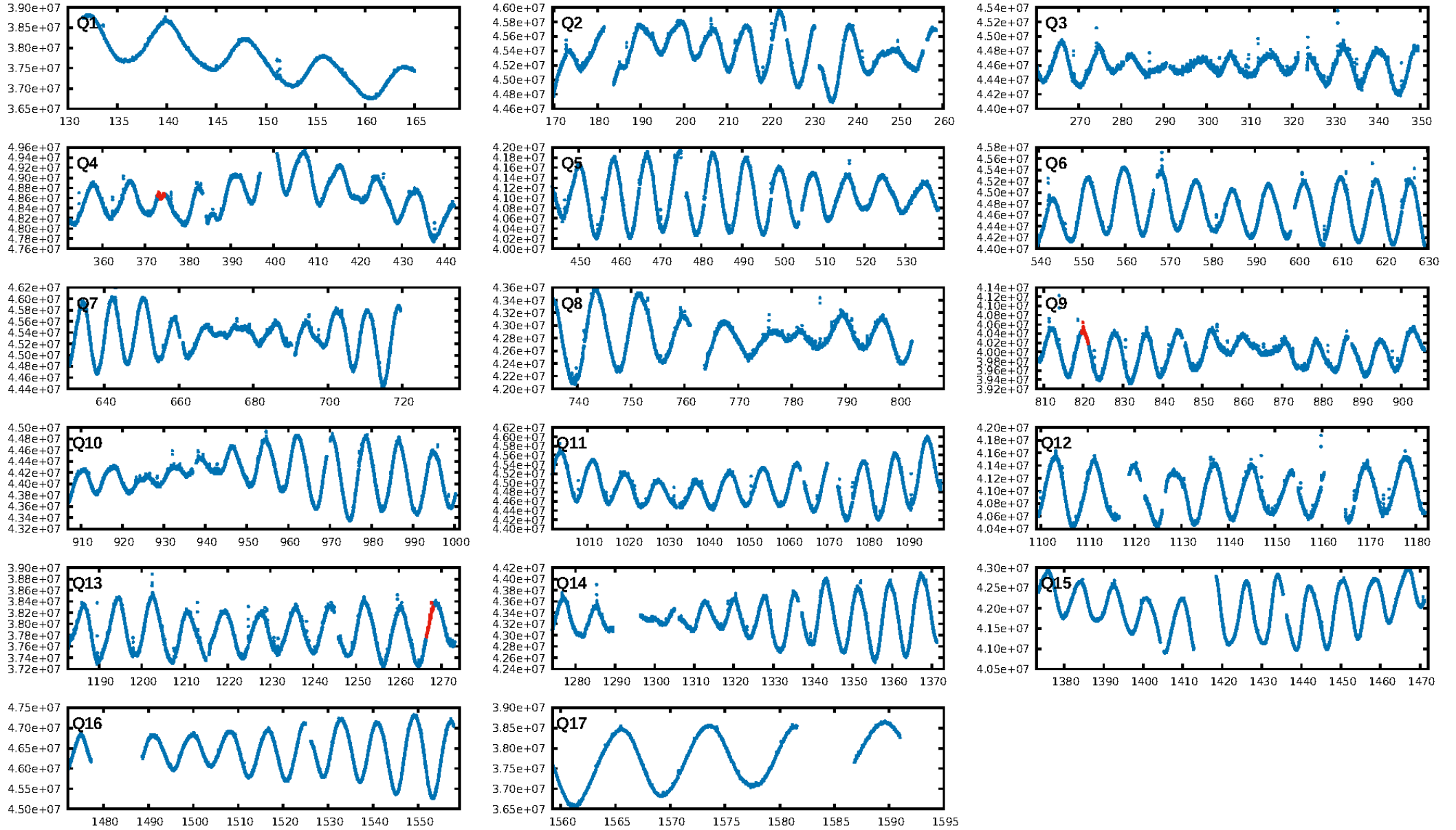
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [40.36σ]  
LongPeriod-sig: 100.0% [181.18σ]  
ModelChiSquare2-sig: 20.4%  
ModelChiSquareGoF-sig: 99.9%  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: 0.4494  
Centroid-sig: 59.3%  
Centroid-so: 0.413 arcsec [0.40σ]  
OotOffset-rm: 0.676 arcsec [5.36σ]  
KicOffset-rm: 0.629 arcsec [4.97σ]  
OotOffset-st: 0/0/0/1 [1]  
KicOffset-st: 0/0/0/1 [1]  
DiffImageQuality-fgm: 0.00 [0/1]  
DiffImageOverlap-fno: 1.00 [1/1]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 05:48:43 Z

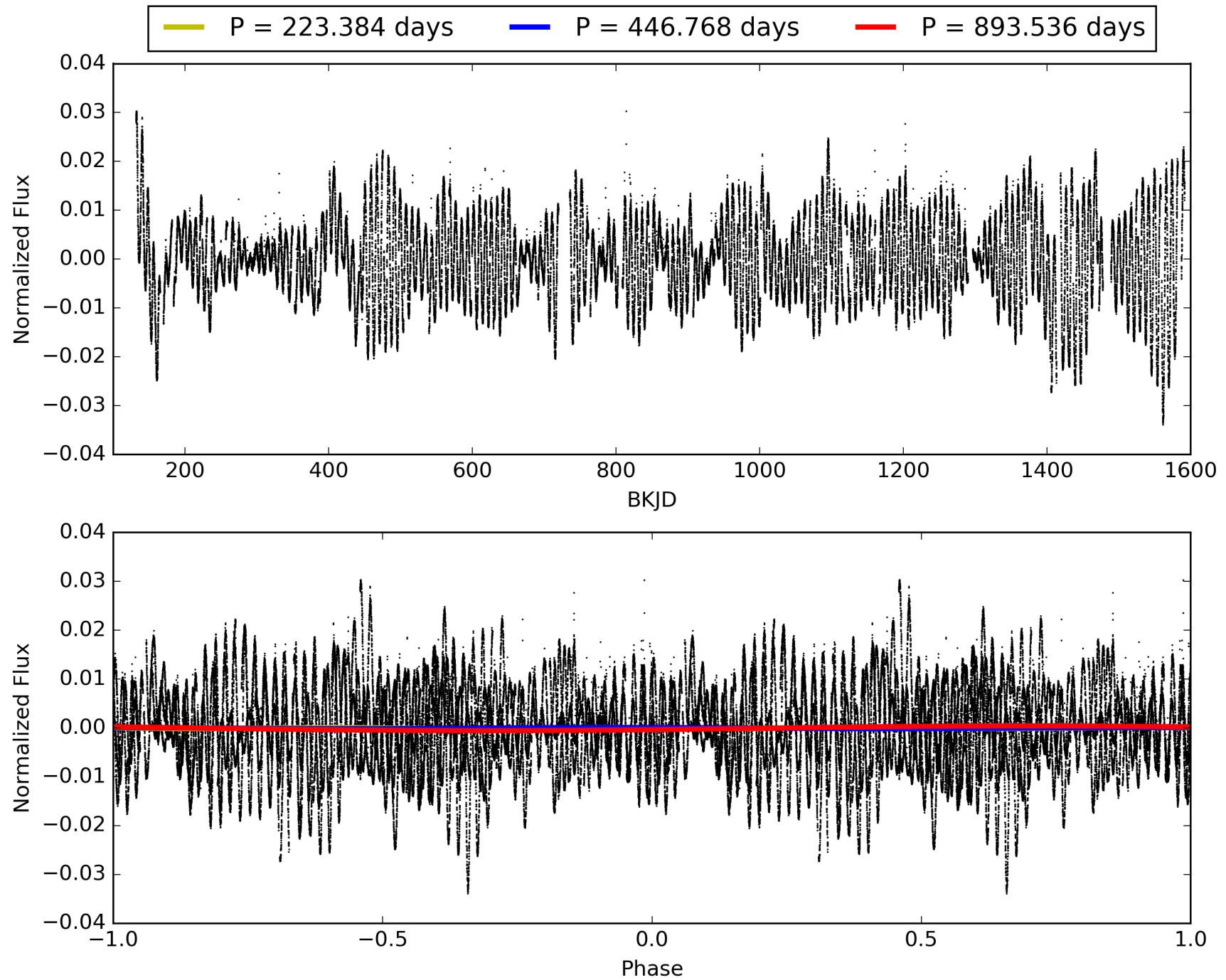
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 011958955-05, PDC Light Curves



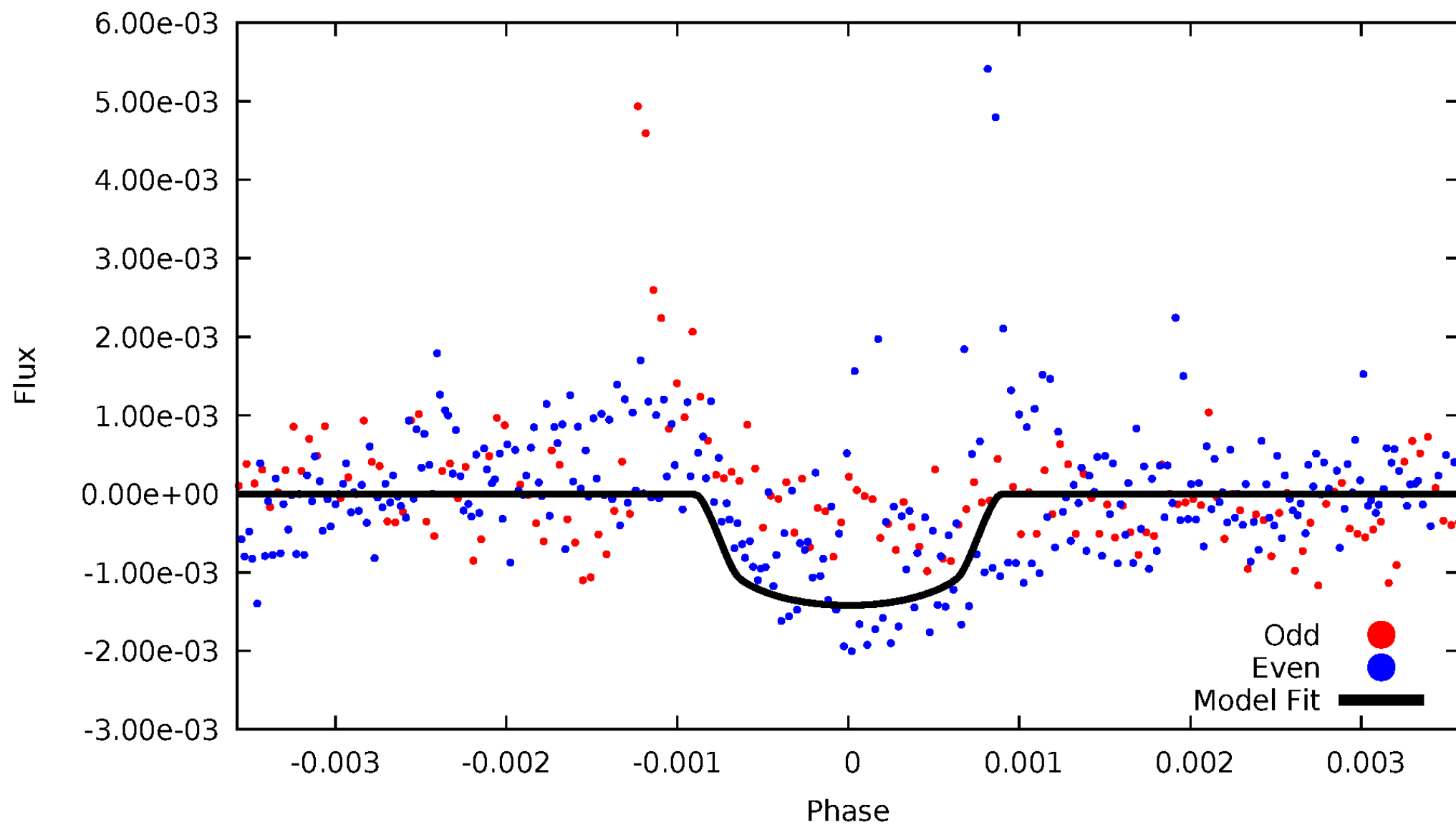


# TCE 011958955-05



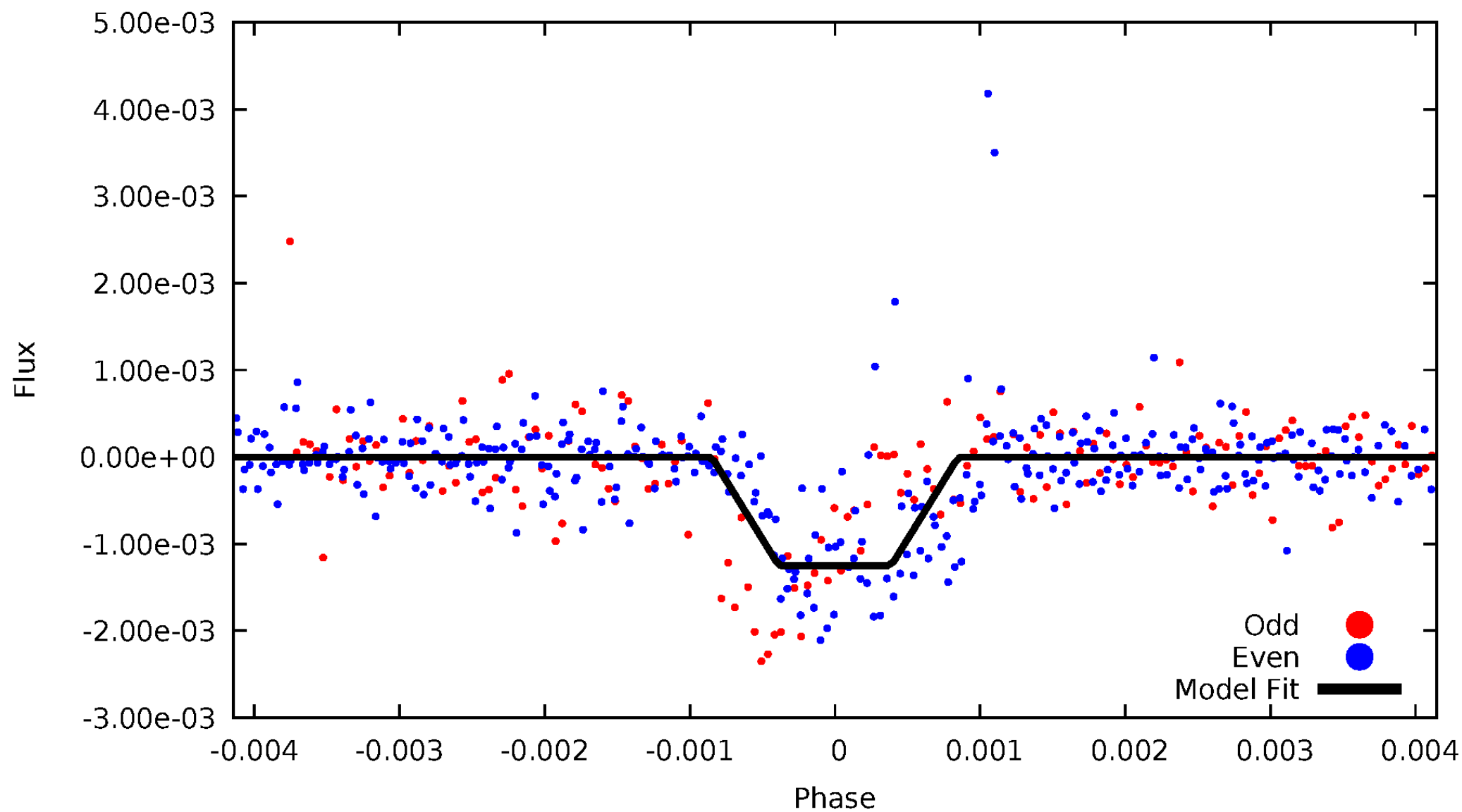
# DV Odd/Even

TCE 011958955-05



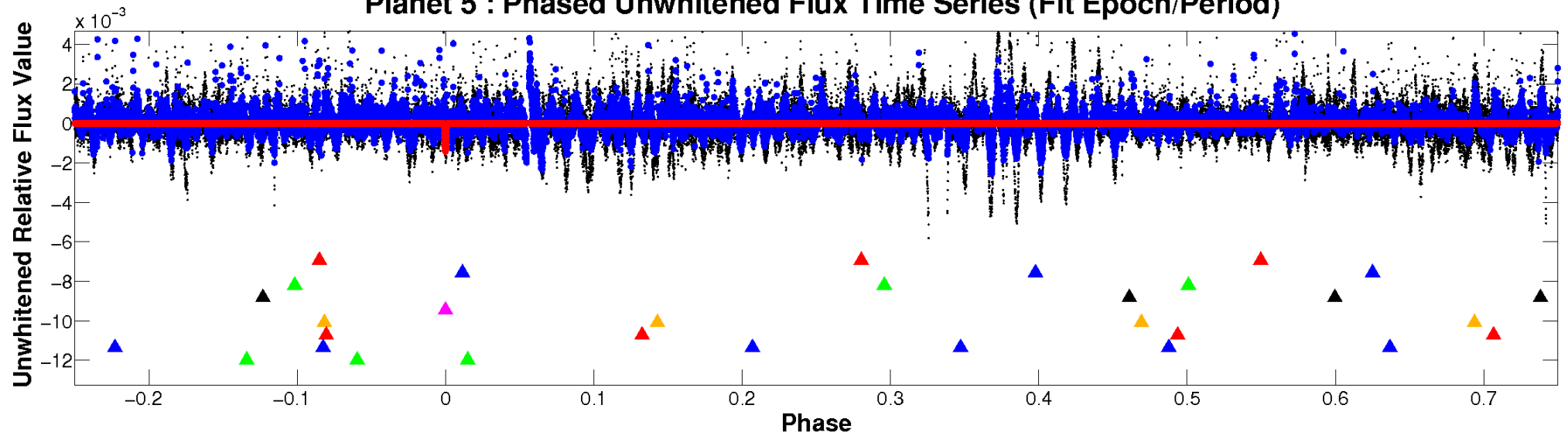
# ALT Odd/Even

TCE 011958955-05

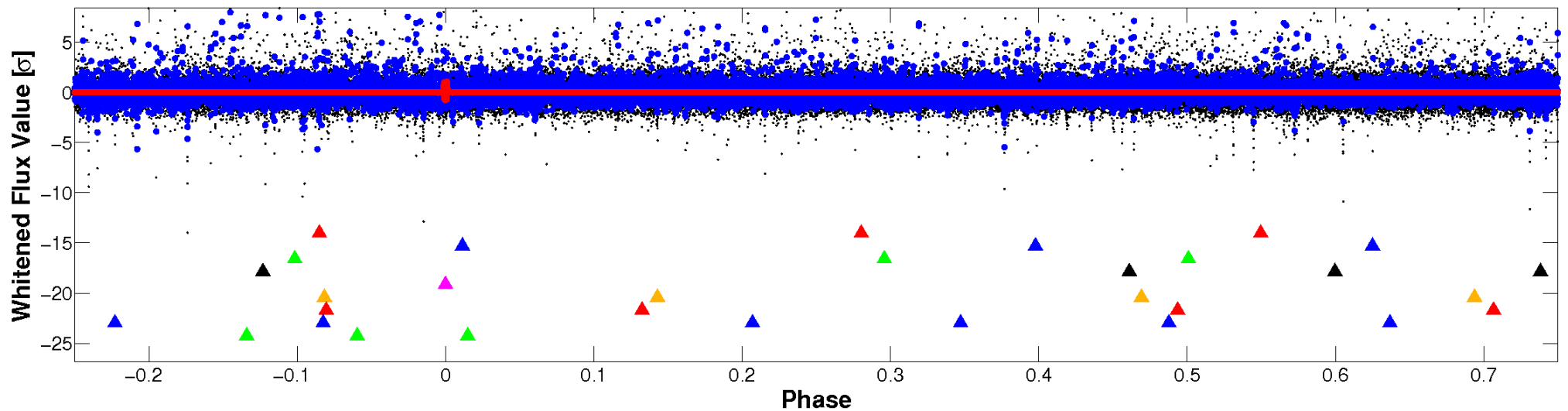


# Non-Whitened Vs. Whitened Light Curve

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

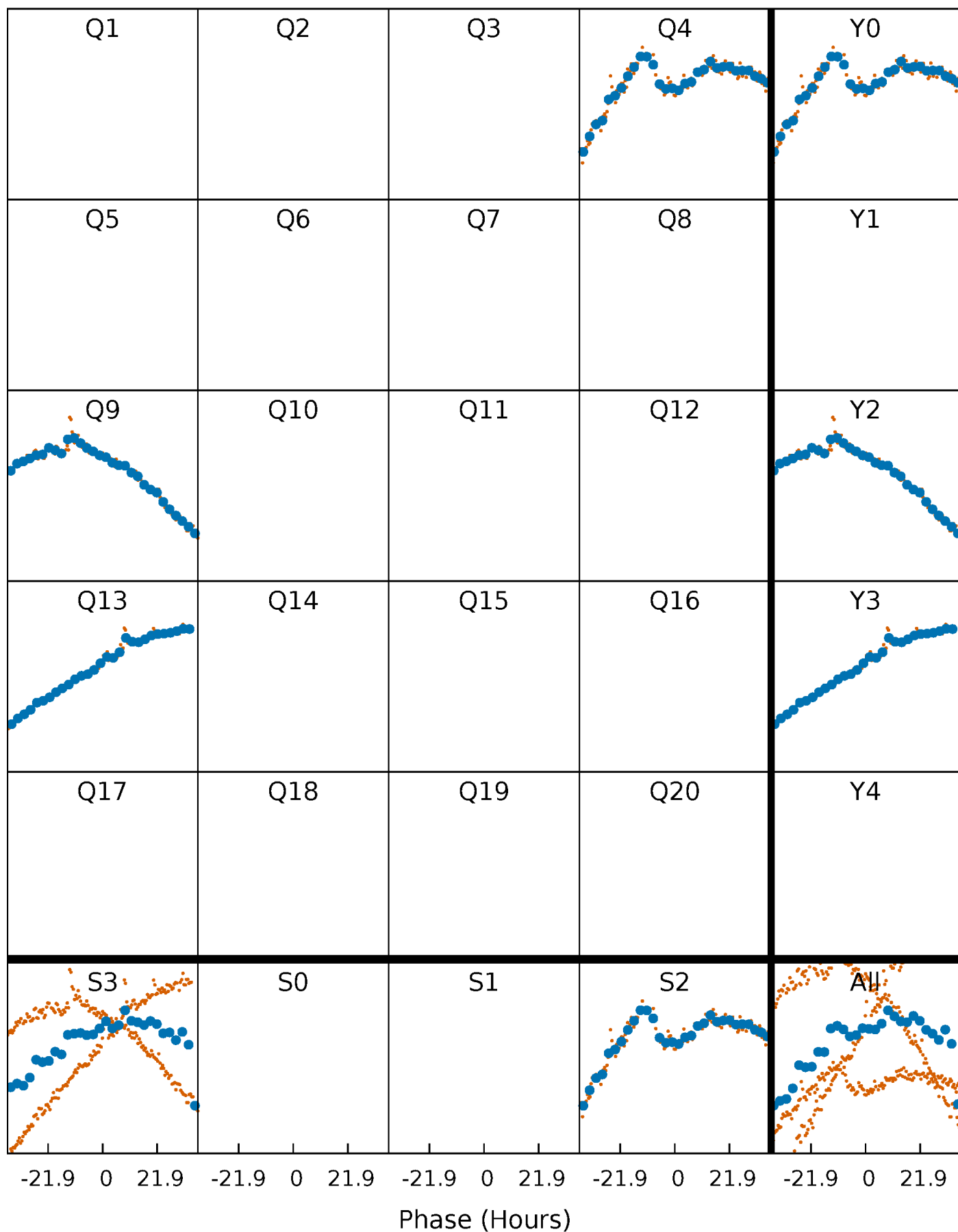


Planet 5 : Phased Whitened Flux Time Series (Fit Epoch/Period)



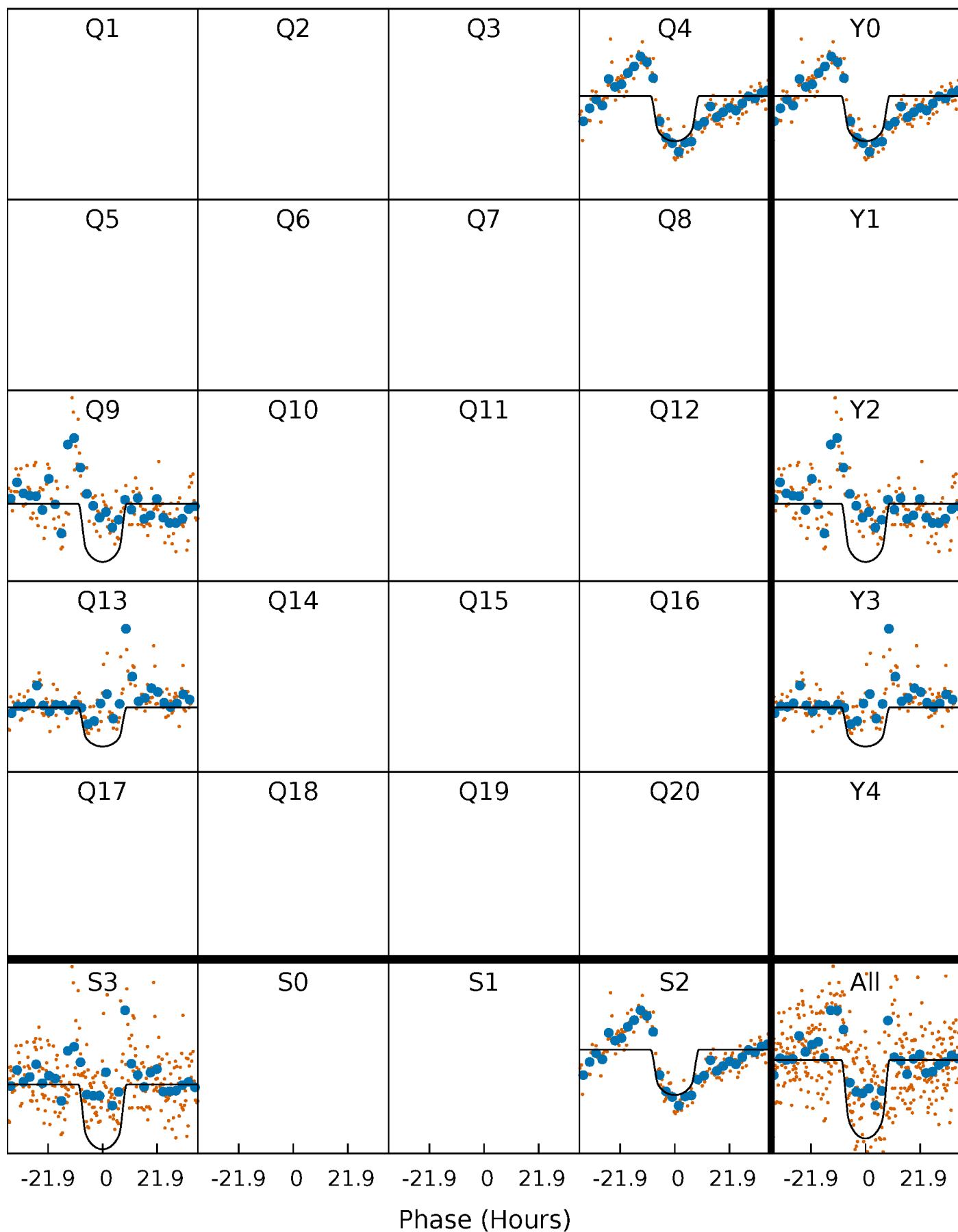
# PDC Quarter-Phased Transit Curves

TCE 011958955-05     $P=446.767859$  Days     $T_0=373.700685$  (BKJD)



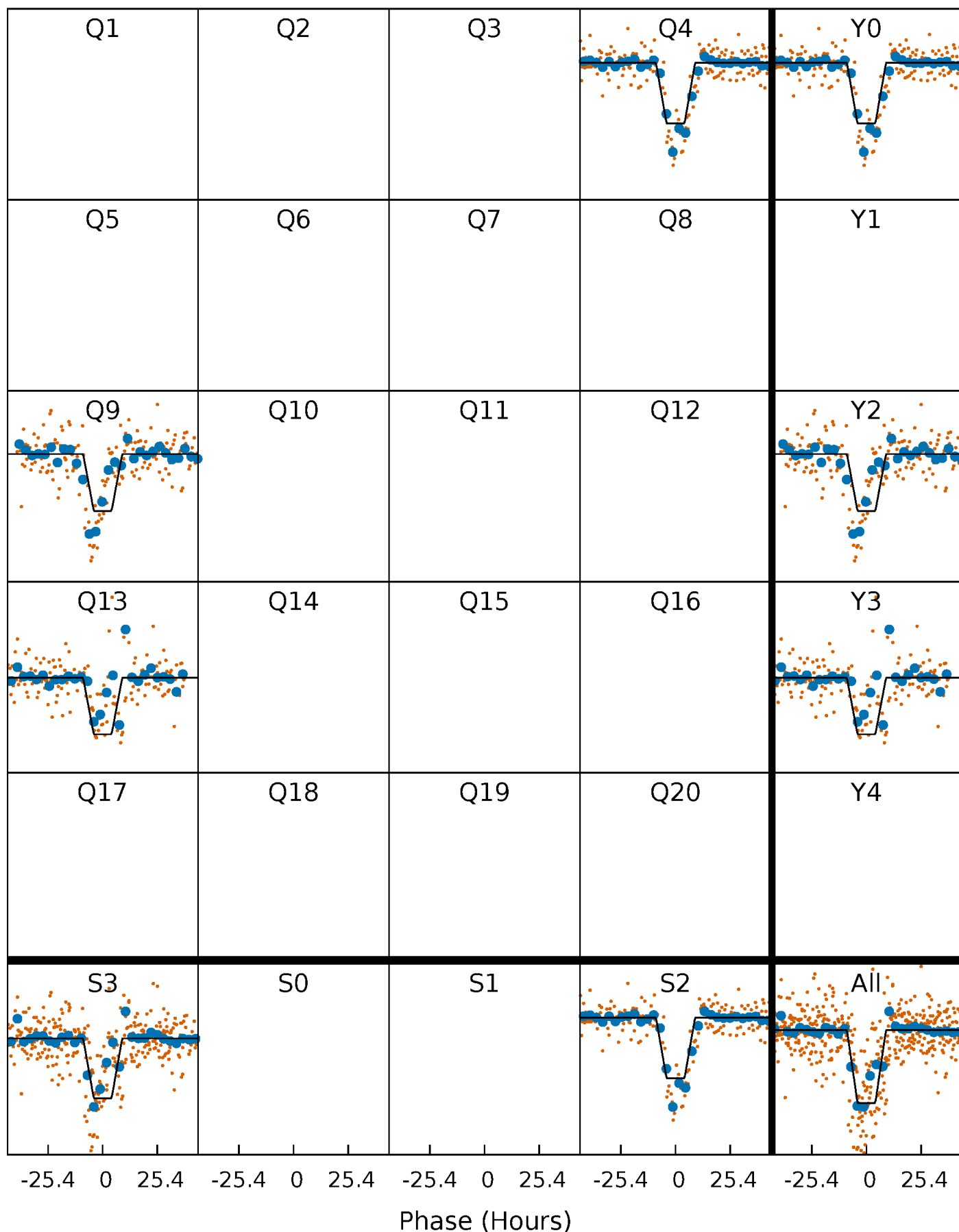
# DV Quarter-Phased Transit Curves

TCE 011958955-05     $P=446.767859$  Days     $T_0=373.700685$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

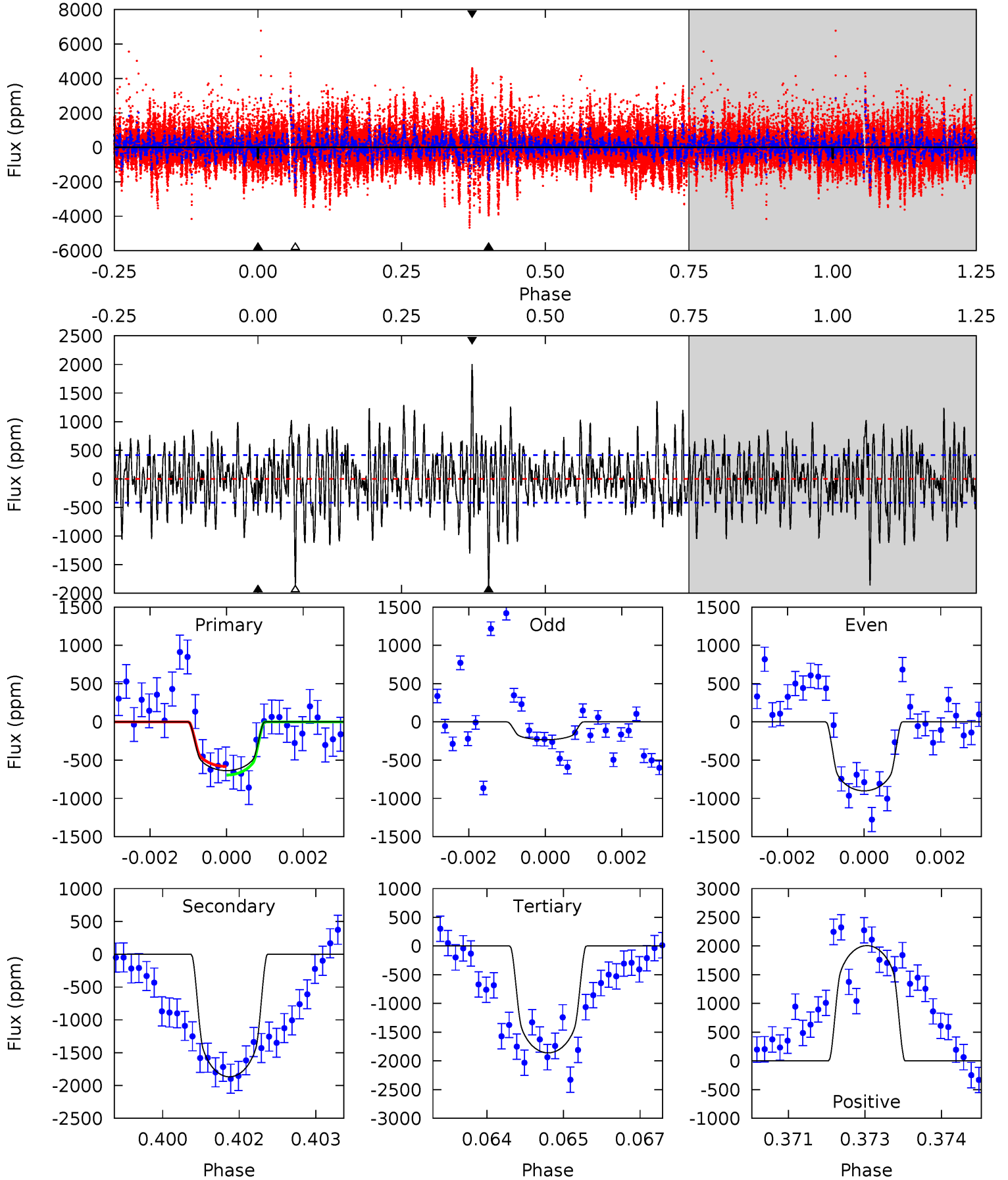
TCE 011958955-05     $P=446.779789$  Days     $T_0=373.569862$  (BKJD)



# DV Model-Shift Uniqueness Test

011958955-05, P = 446.767859 Days, E = 373.700685 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
8.18	24.0	23.9	25.8	5.34	3.12	5.47	-15.7	-17.6	0.09	-1.79	3.84	2.64	0.52	0.71

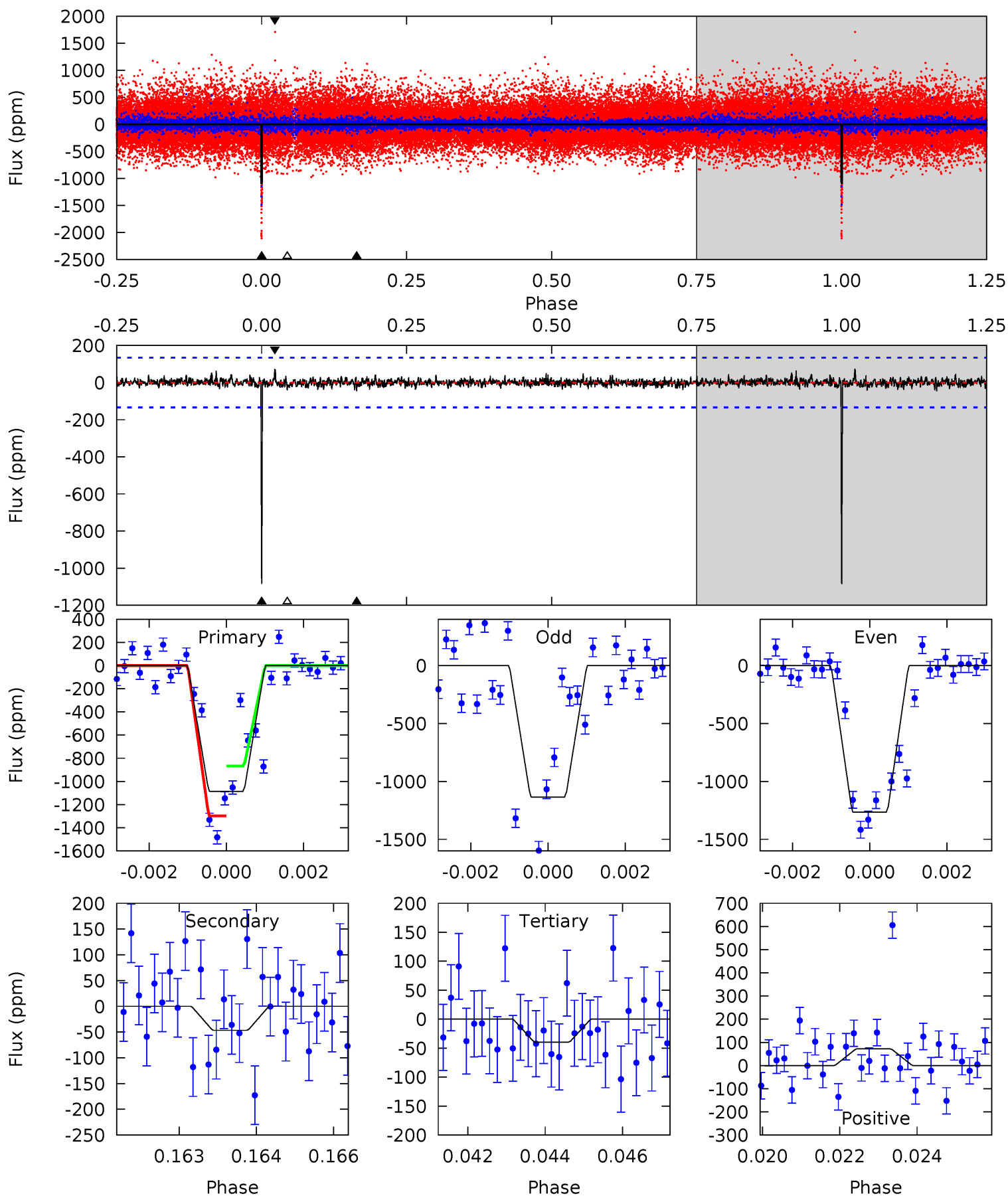




# Alt Model-Shift Uniqueness Test

011958955-05, P = 446.779789 Days, E = 373.569862 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
43.4	1.87	1.59	2.88	5.36	3.14	0.49	41.8	40.5	0.28	-1.01	2.54	0.96	0.06	8.63



### Stellar Parameters For KIC 011958955

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$4981^{+151}_{-136}$	$4.553^{+0.060}_{-0.050}$	$-0.020^{+0.250}_{-0.300}$	$0.767^{+0.065}_{-0.072}$	$0.768^{+0.078}_{-0.064}$	$2.395^{+0.557}_{-0.411}$
	+3%/-3%	+1%/-1%	+1250%/-1500%	+8%/-9%	+10%/-8%	+23%/-17%
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 011958955-05 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-1868 \pm 78$	$3.42^{+0.38}_{-0.43}$	$263^{+9}_{-9}$	$5134^{+293}_{-264}$	$98183^{+27622}_{-18905}$
Alt.	$-47 \pm 25$	$2.95^{+0.37}_{-0.35}$	$262^{+10}_{-10}$	$2854^{+212}_{-278}$	$3136^{+2021}_{-1762}$

$T_{\text{max}}$  = 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

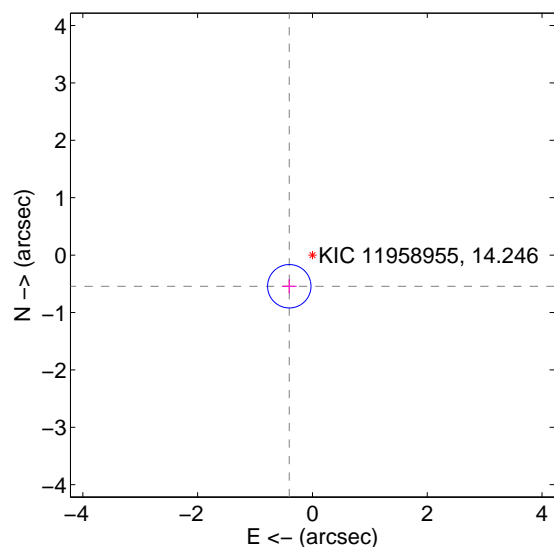
Supplemental centroid analysis for 011958955-05. Kepler magnitude: 14.25. Transit SNR 8.22

There are 0 quarters with good PRF difference image offsets

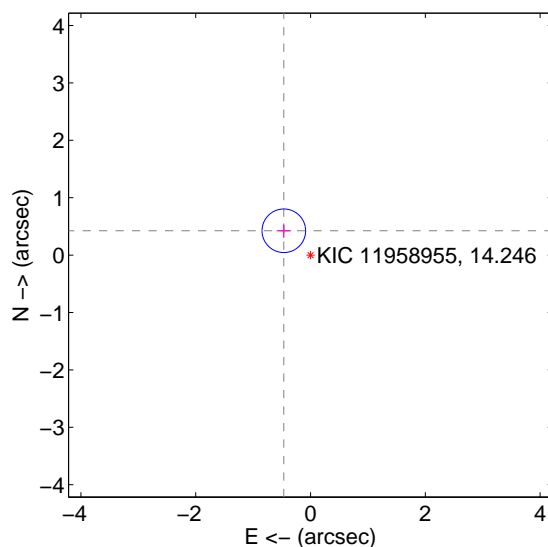
The direct PRF centroid is offset from the target star catalog position by about 0.97 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.676 \pm 0.126$	5.36	$0.403 \pm 0.128$	$-0.543 \pm 0.125$
PRF-fit source offset from KIC position	$0.629 \pm 0.127$	4.97	$0.465 \pm 0.128$	$0.424 \pm 0.125$
photometric centroid source offset	$0.41 \pm 1.03$	0.40	$0.11 \pm 0.33$	$0.40 \pm 1.07$

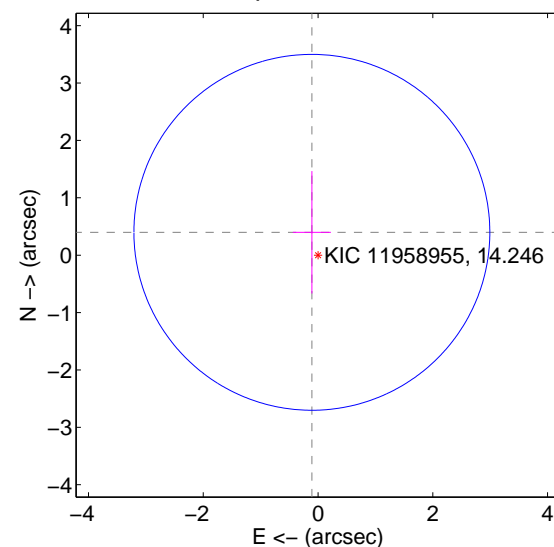
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



offset from photometric centroids

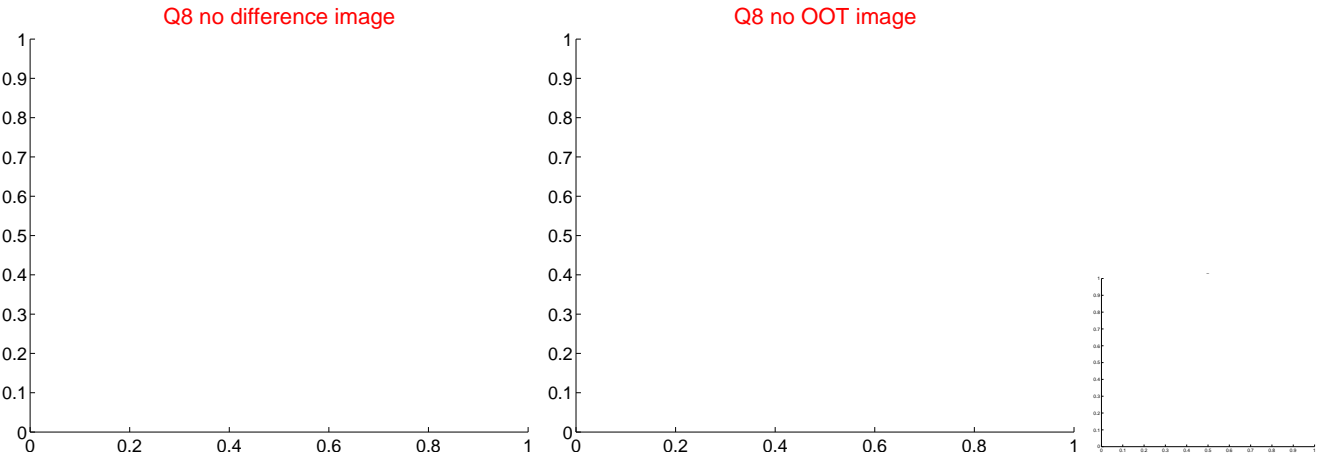
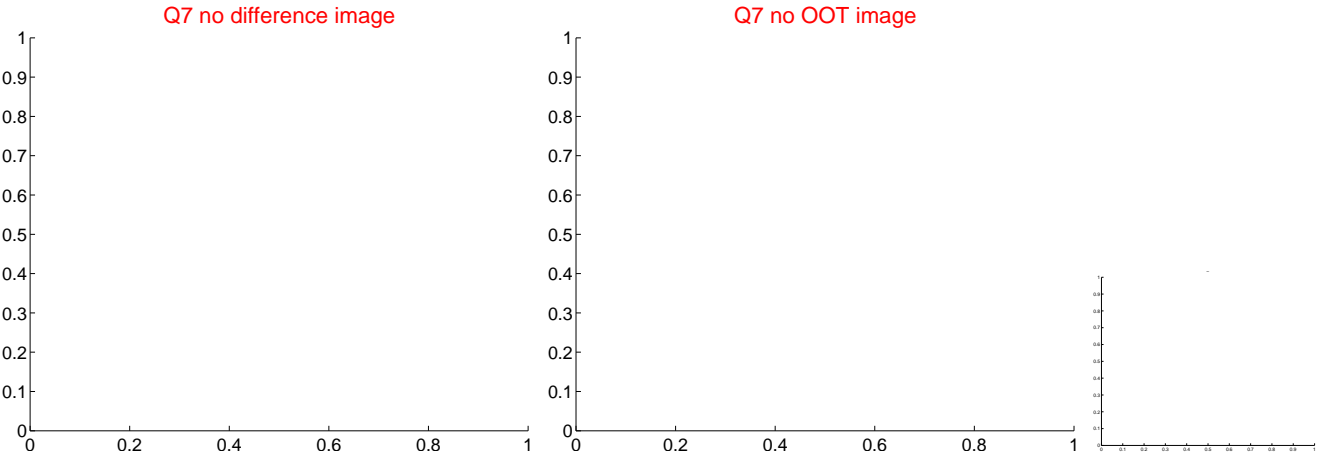
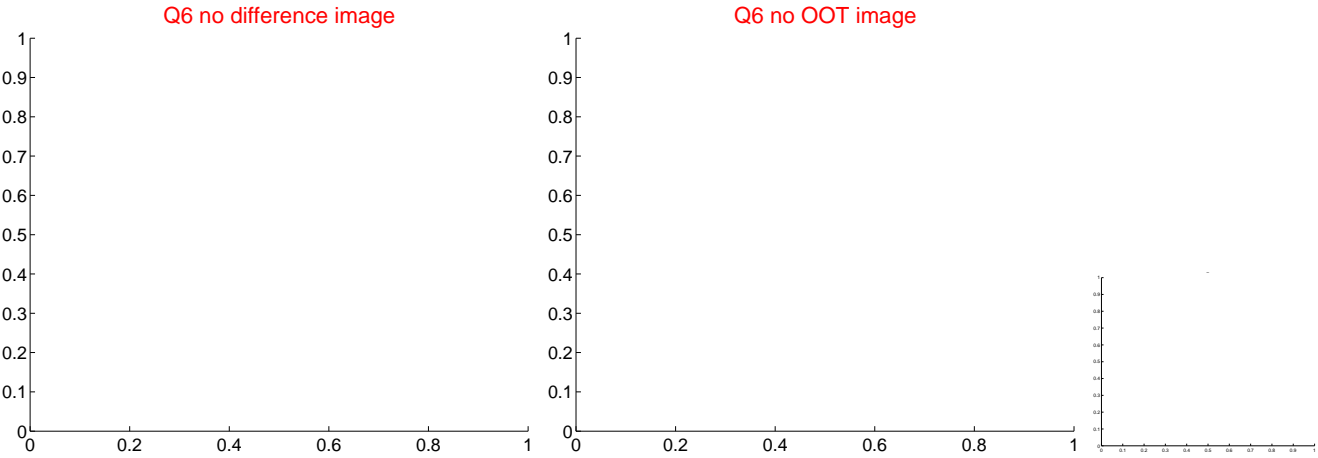
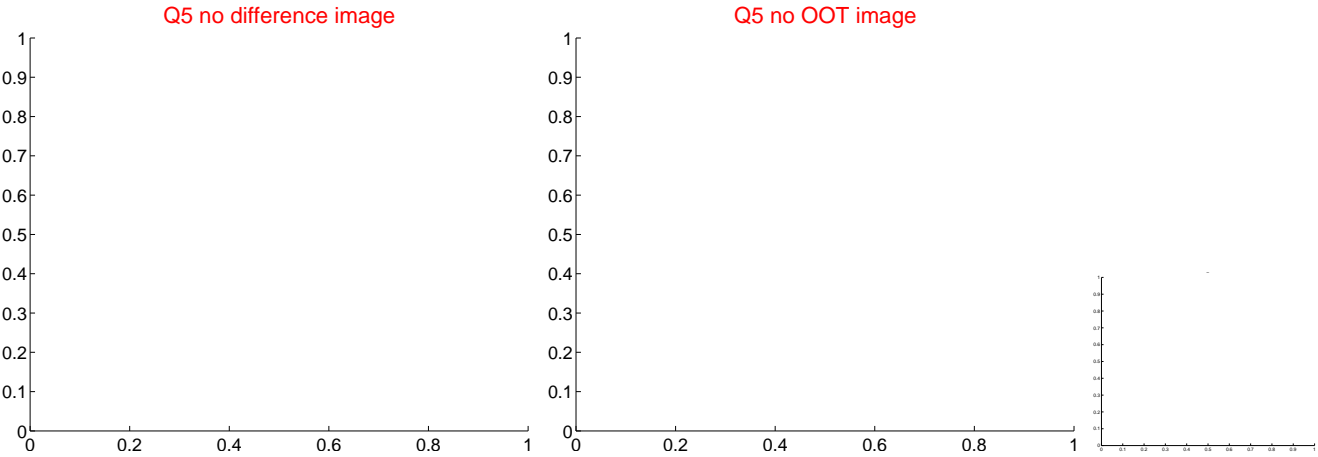


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

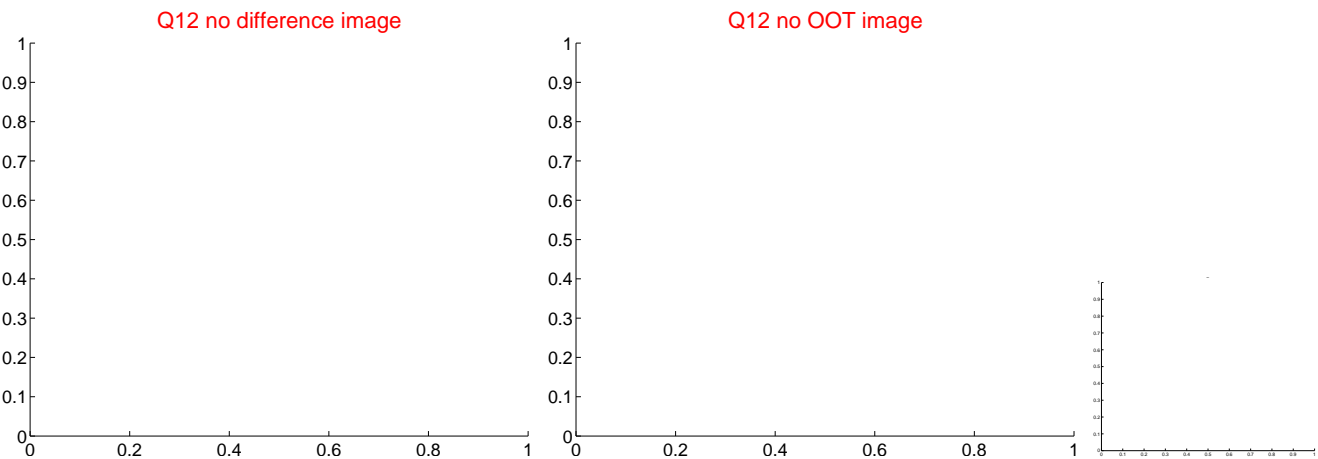
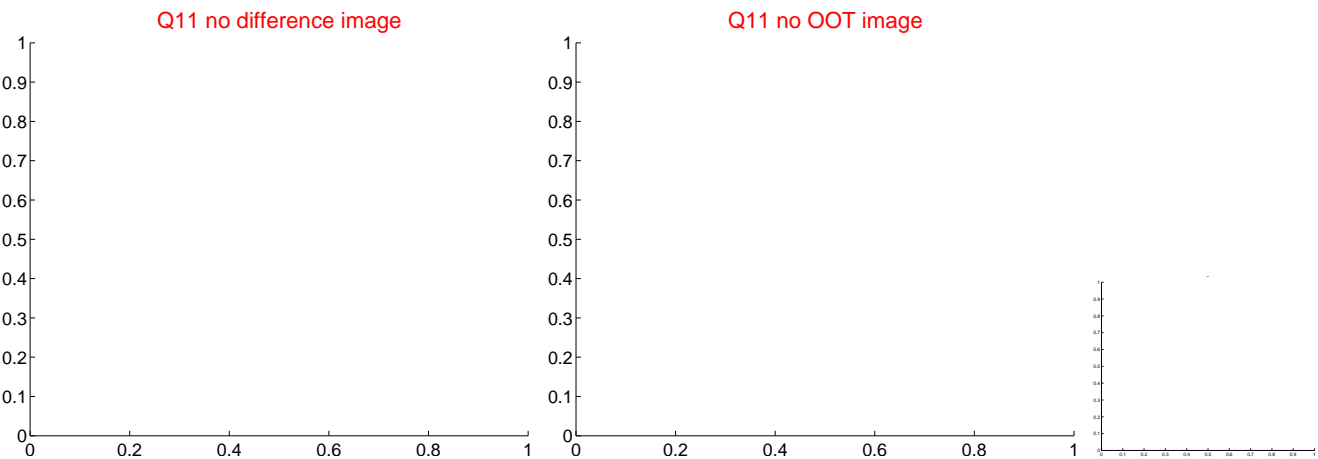
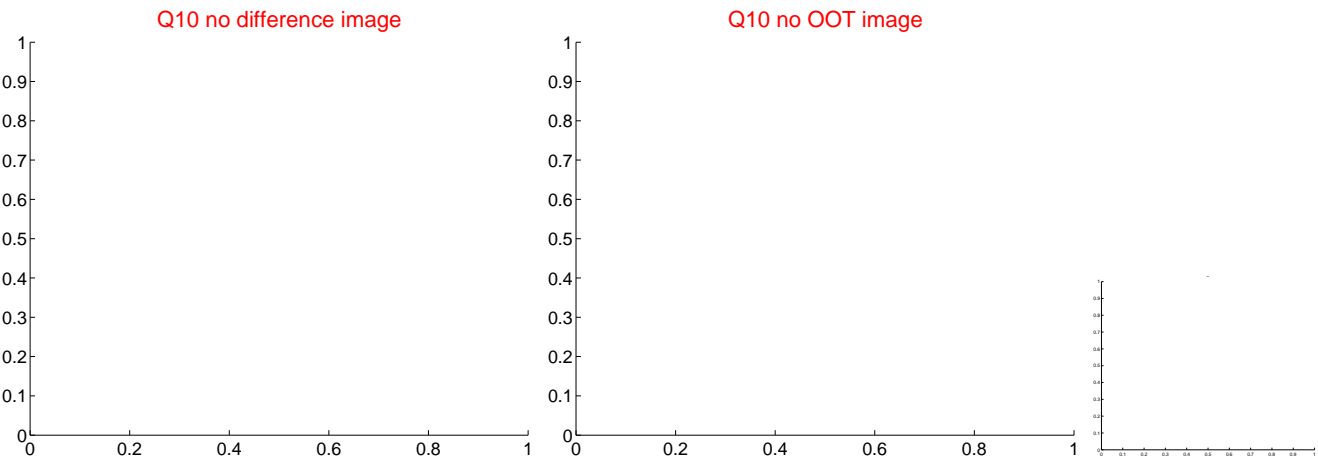
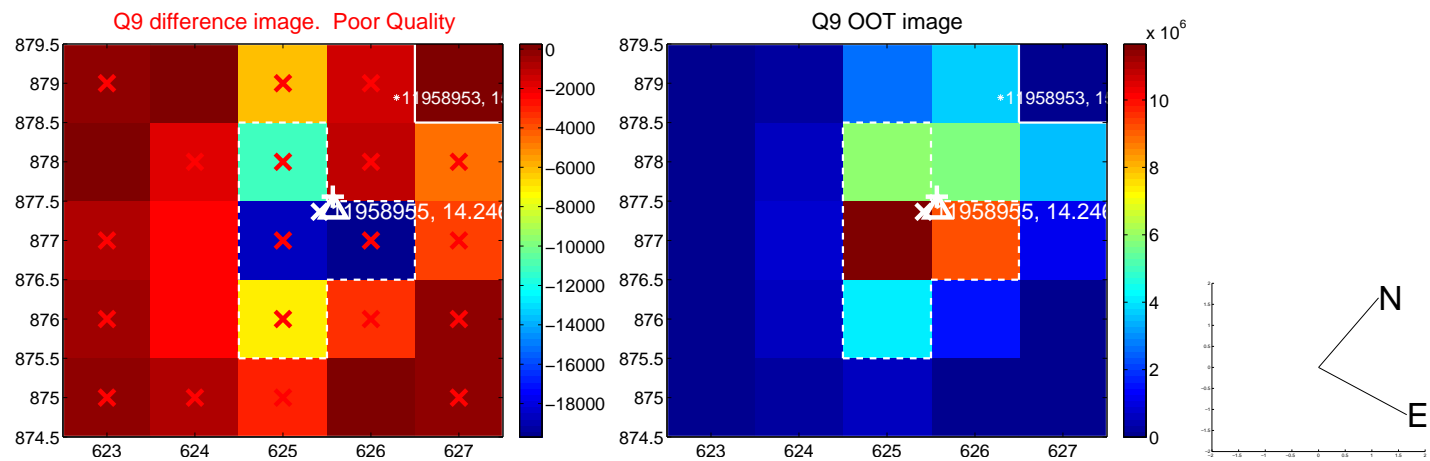
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



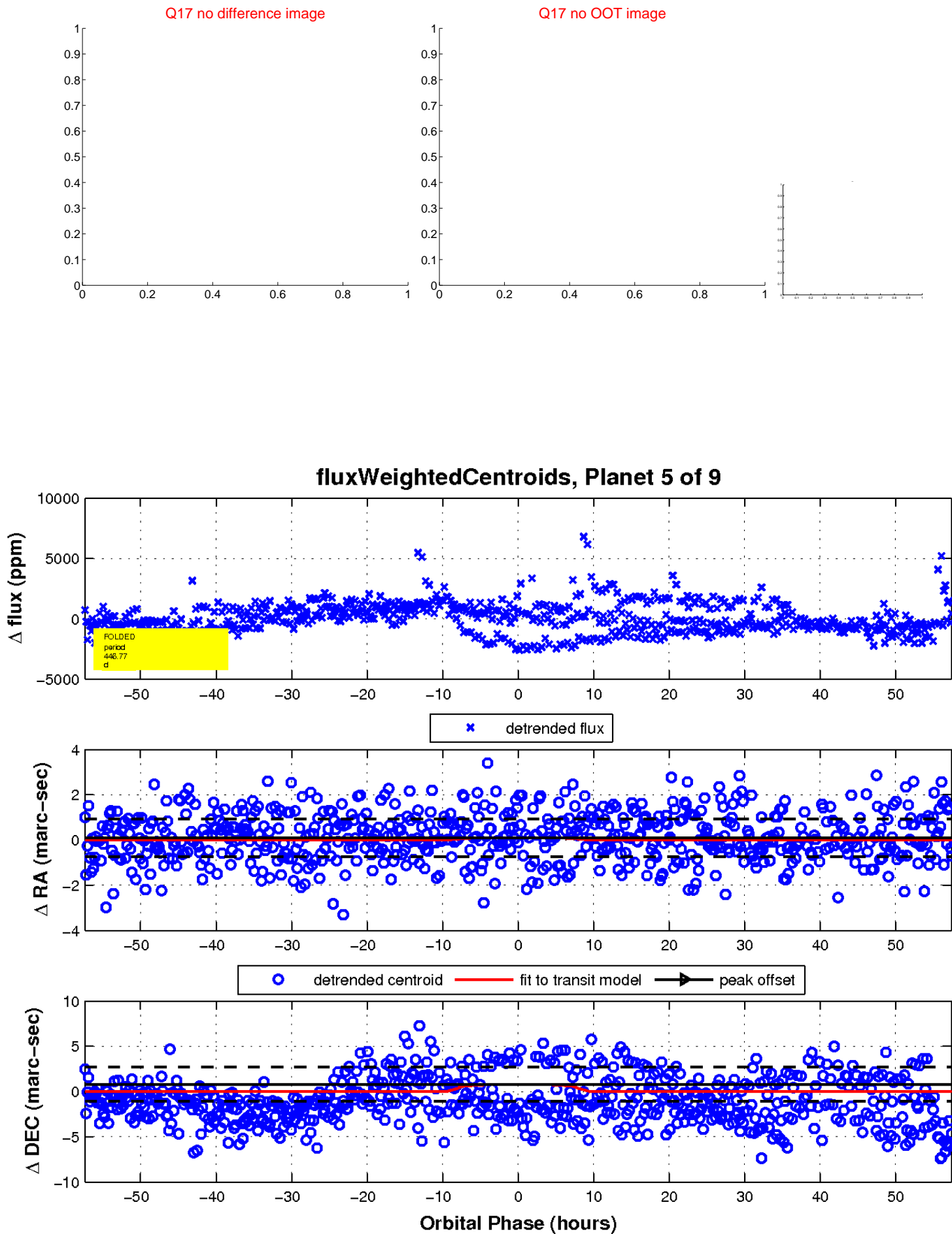
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



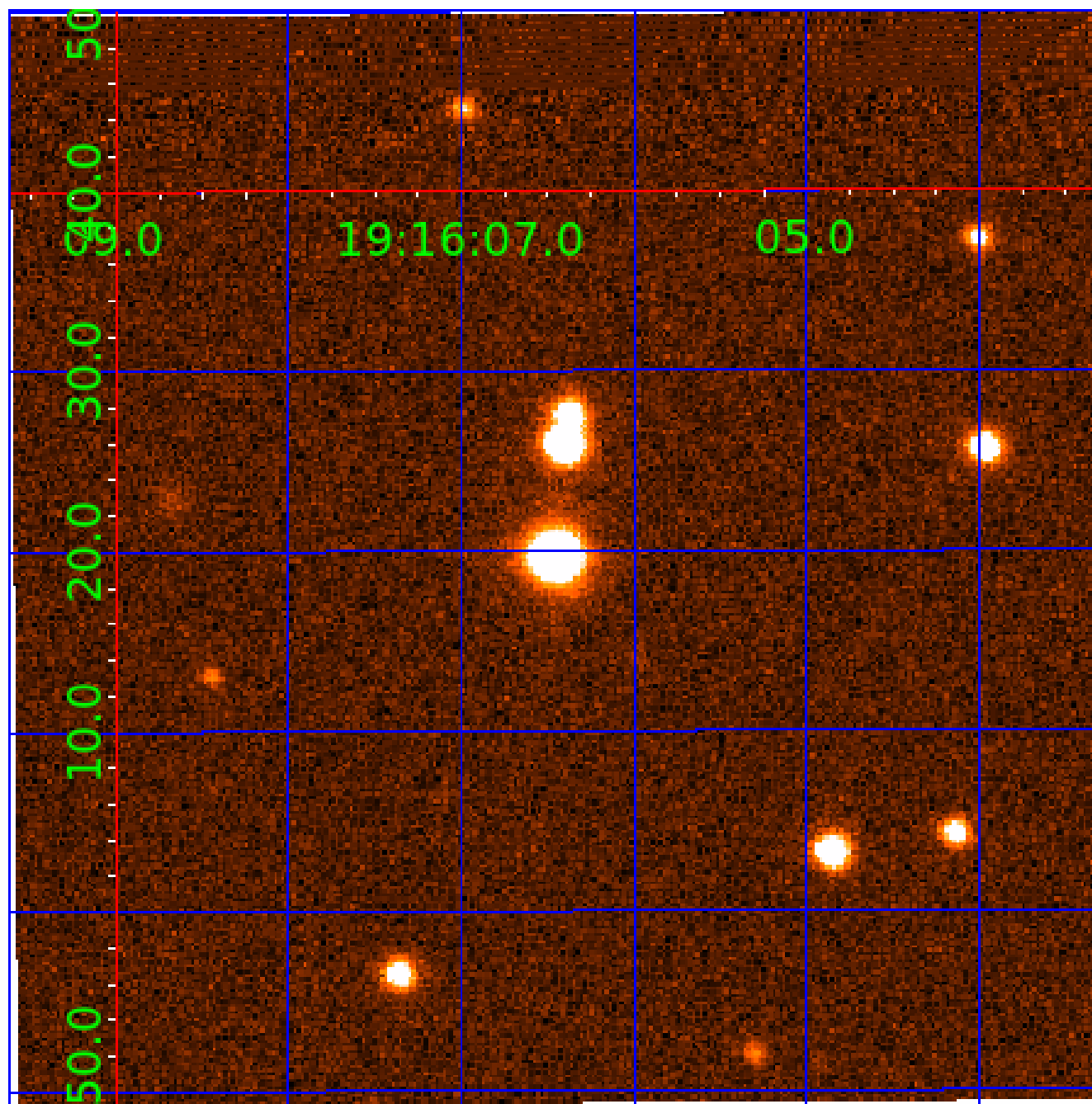
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.





UKIRT Image

Declination



# KIC 011958955

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
011958955-01	OBS	No	609.990552	172.502121	700.4	10.032	15.6	6.0	0.77	4981	2.21	0.20
011958955-02	OBS	No	619.391847	206.185446	822.8	4.390	11.6	6.9	0.77	4981	2.33	0.19
011958955-03	OBS	No	624.344901	150.726038	635.1	17.271	10.7	4.9	0.77	4981	2.23	0.19
011958955-04	OBS	No	384.839018	318.703990	901.3	4.616	10.8	7.5	0.77	4981	2.50	0.36
011958955-05	OBS	No	446.767859	373.700685	1422.8	19.154	9.7	8.2	0.77	4981	3.39	0.30
011958955-06	OBS	No	346.443665	437.536963	1099.5	3.840	9.3	8.6	0.77	4981	2.85	0.41
011958955-07	OBS	No	351.630210	432.911970	948.3	3.220	9.1	7.4	0.77	4981	2.67	0.41
011958955-08	OBS	No	254.737256	211.434970	813.1	20.113	9.5	6.3	0.77	4981	2.23	0.63
011958955-09	OBS	No	413.479898	380.401971	780.1	5.000	9.2	-1.0	0.77	4981	2.07	0.33

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011958955-01	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
011958955-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_UNCERTAIN
011958955-03	OBS	FP	0.00	1	0	1	0	ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS—HALO_GHOST
011958955-04	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_TER_DV—CENT_KIC_POS—HALO_GHOST
011958955-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
011958955-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_KIC_POS
011958955-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_KIC_POS
011958955-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
011958955-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_NOFITS

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

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

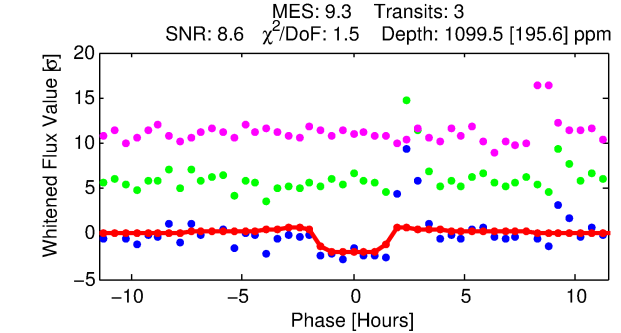
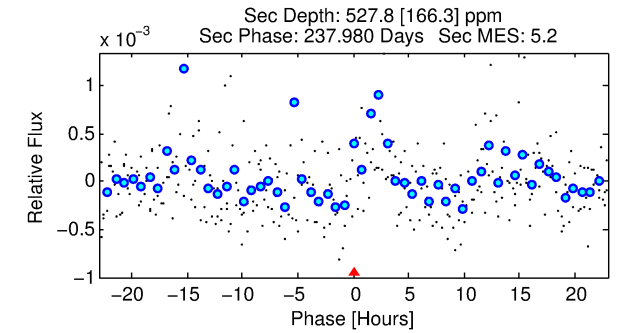
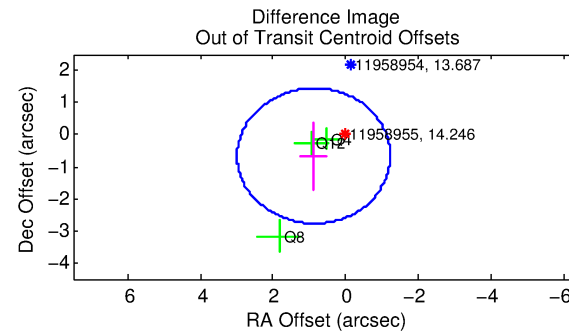
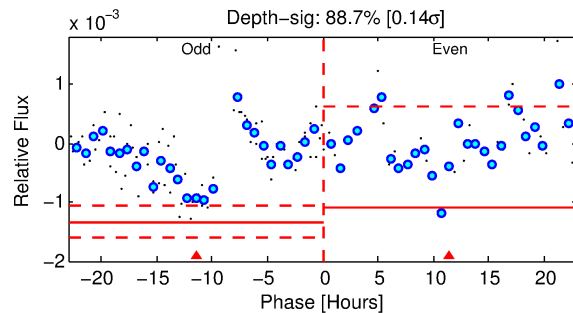
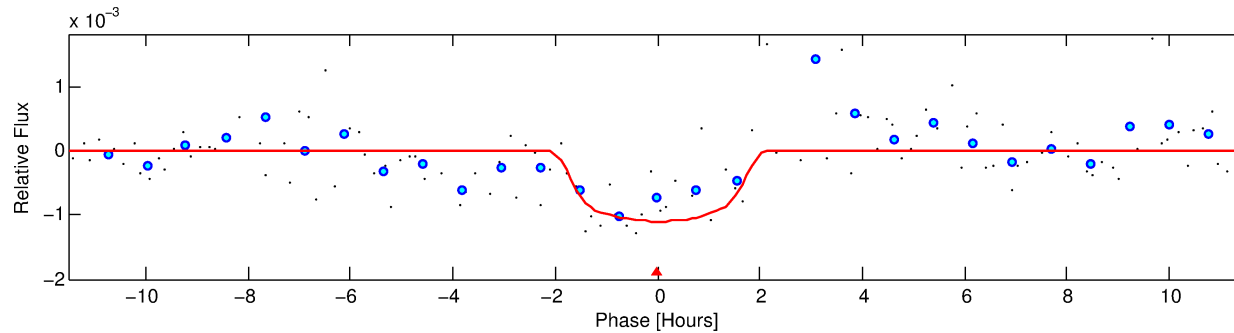
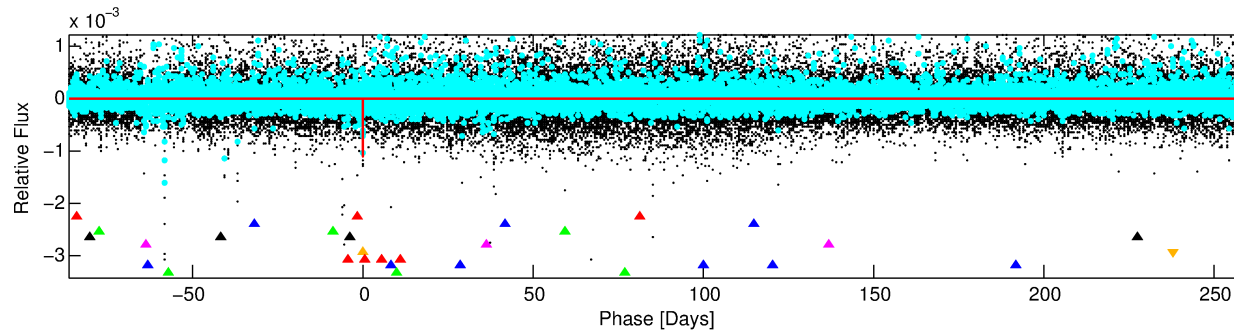
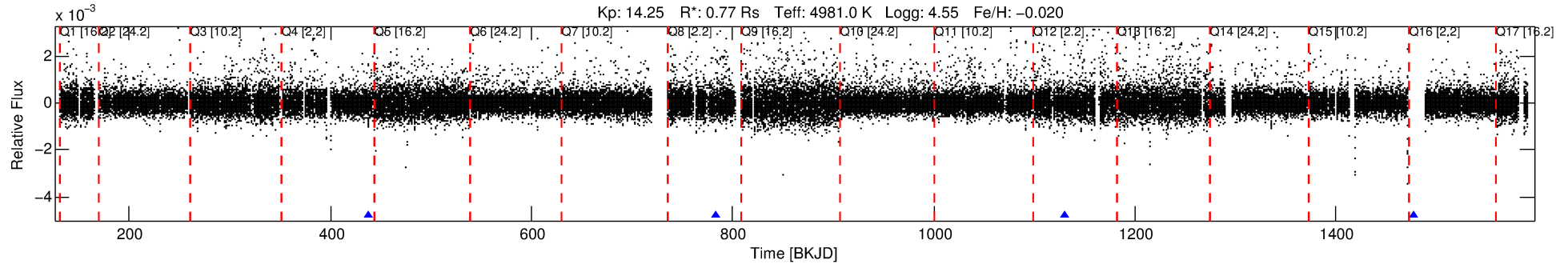
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 011958955-06

No Significant Match Found

# DV One-Page Summary

KIC: 11958955 Candidate: 6 of 9 Period: 346.444 d



## DV Fit Results:

Period = 346.44366 [0.00725] d  
Epoch = 437.5370 [0.0086] BKJD  
Rp/R\* = 0.0340 [0.0334]  
a/R\* = 452.52 [1559.00]  
b = 0.80 [1.60]  
Seff = 0.42 [0.07]  
Teq = 205 [8] K  
Rp = 2.85 [2.81] Re  
a = 0.8837 [0.0687] AU  
Ag = 27930.54 [55592.83] [0.50 $\sigma$ ]  
Teff = 4092 [2037] K [1.91 $\sigma$ ]

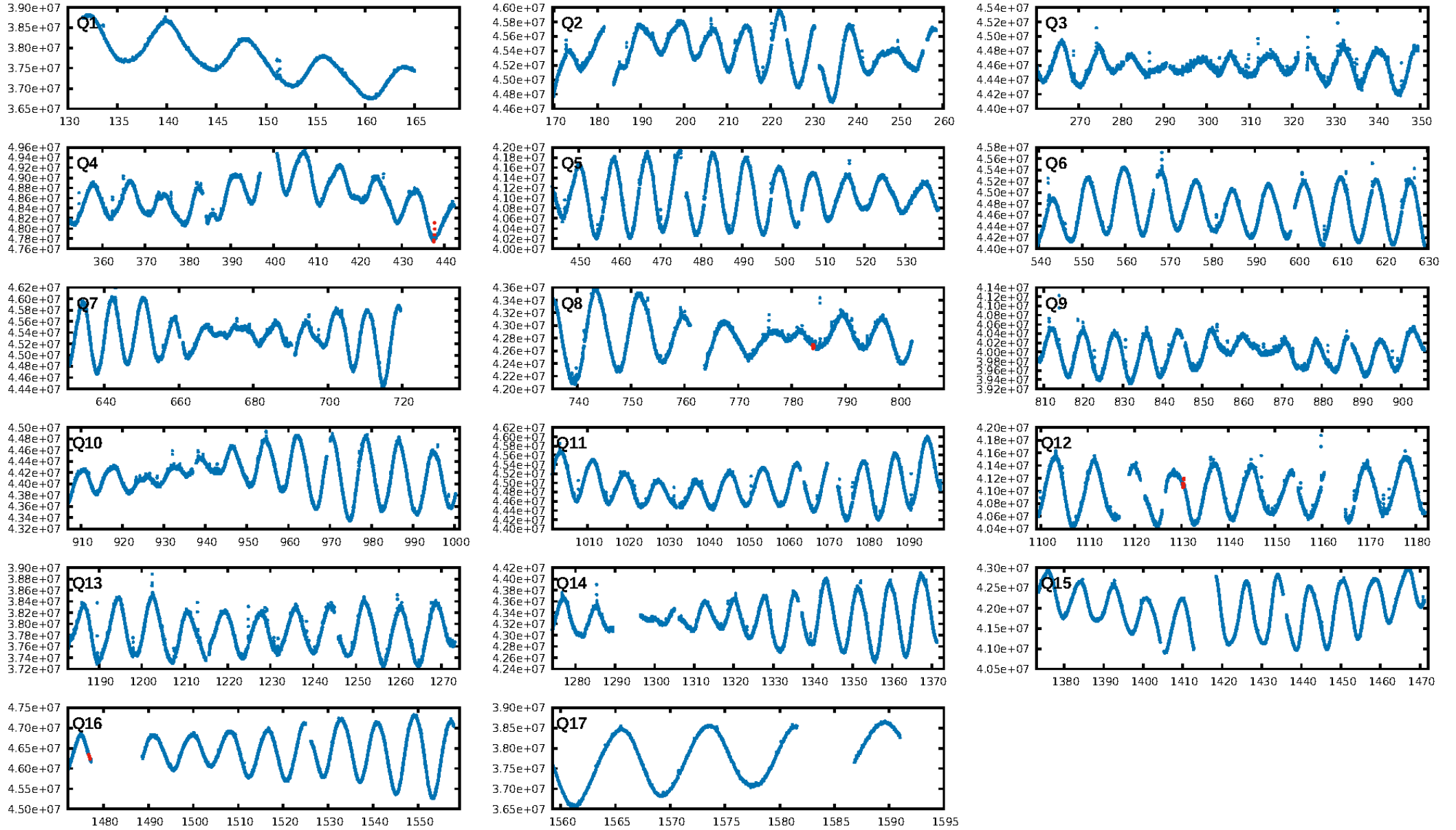
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [107.49 $\sigma$ ]  
LongPeriod-sig: 100.0% [24.84 $\sigma$ ]  
ModelChiSquare2-sig: 4.3%  
ModelChiSquareGof-sig: 69.2%  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [3/3]  
**GhostDiagnostic-chr: 0.9667**  
Centroid-sig: 37.8%  
Centroid-so: 1.682 arcsec [1.44 $\sigma$ ]  
OotOffset-rm: 1.101 arcsec [1.57 $\sigma$ ]  
KicOffset-rm: 1.083 arcsec [2.20 $\sigma$ ]  
OotOffset-st: 0/0/3/0 [3]  
KicOffset-st: 0/0/3/0 [3]  
DiffImageQuality-fgm: 1.00 [3/3]  
DiffImageOverlap-fno: 1.00 [3/3]

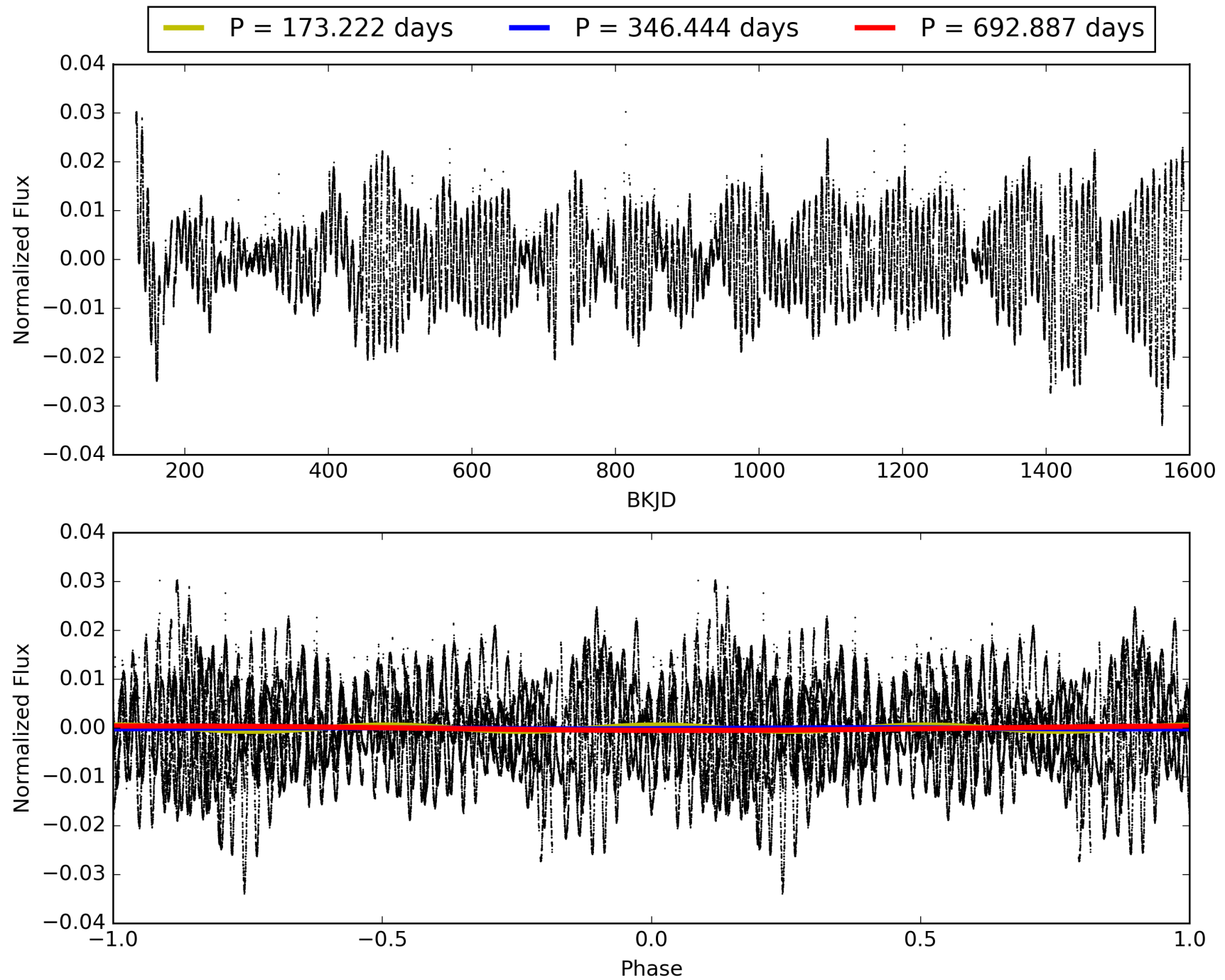
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 05:48:58 Z

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

# TCE 011958955-06, PDC Light Curves

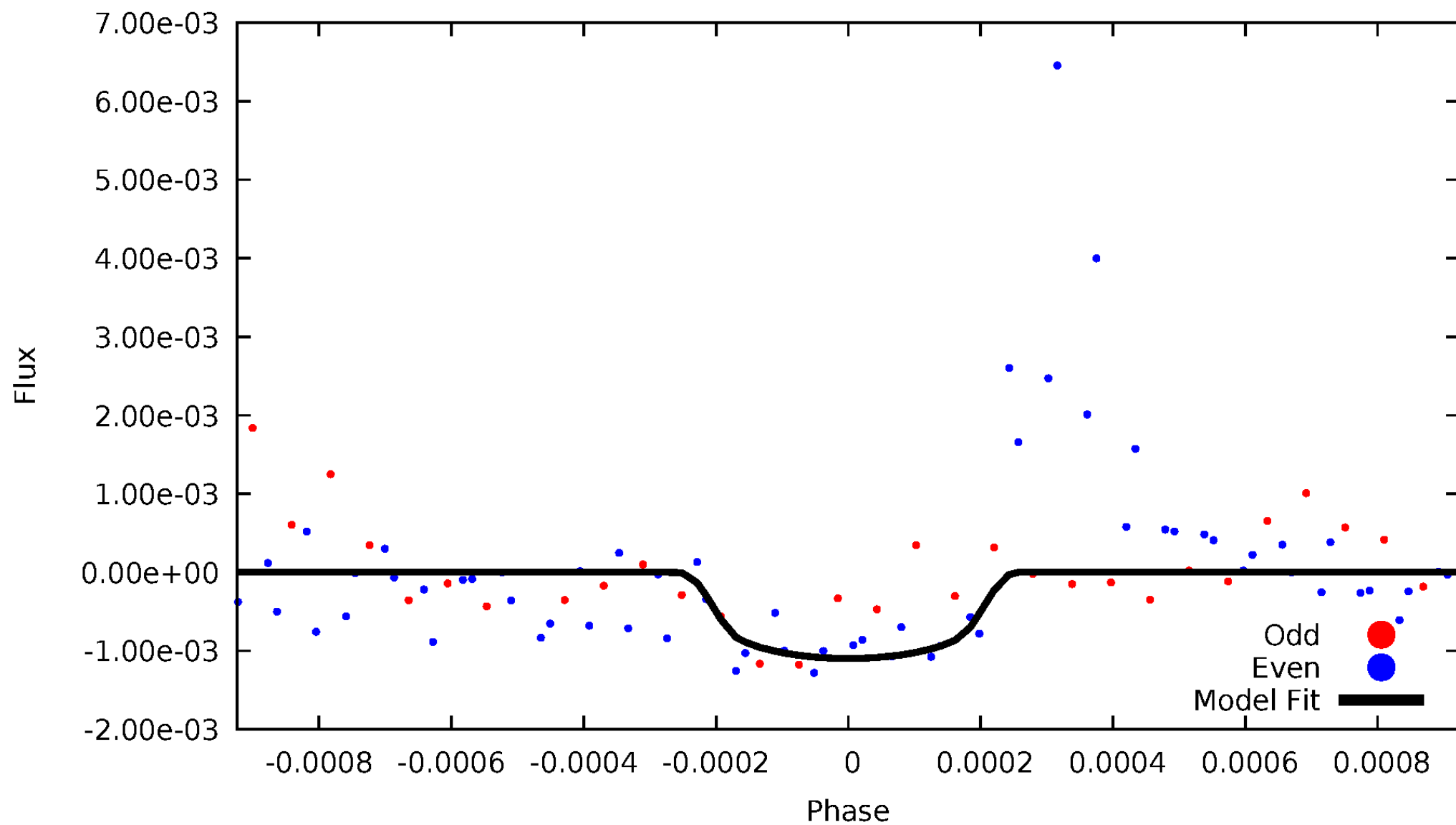


# TCE 011958955-06



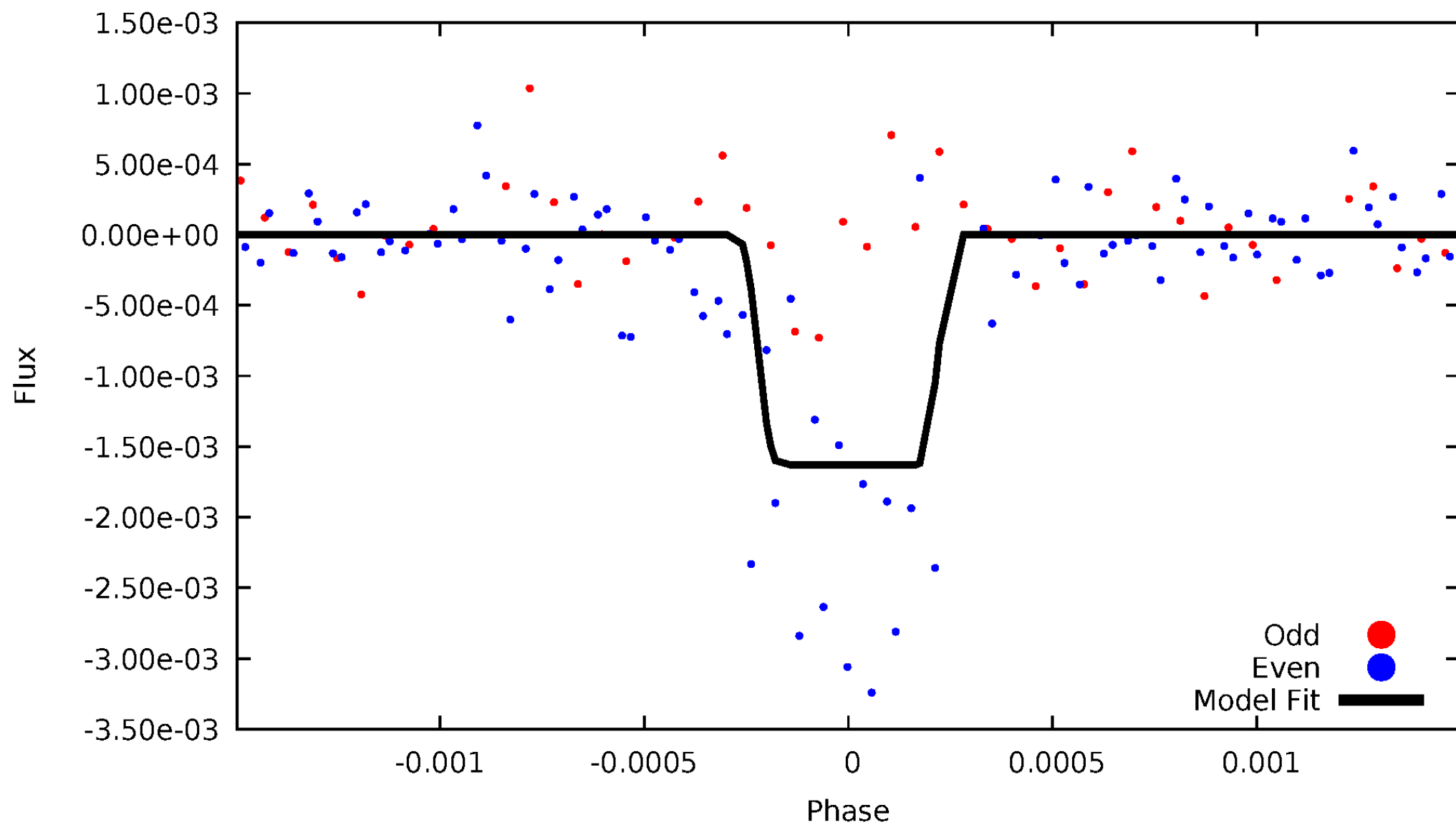
# DV Odd/Even

TCE 011958955-06



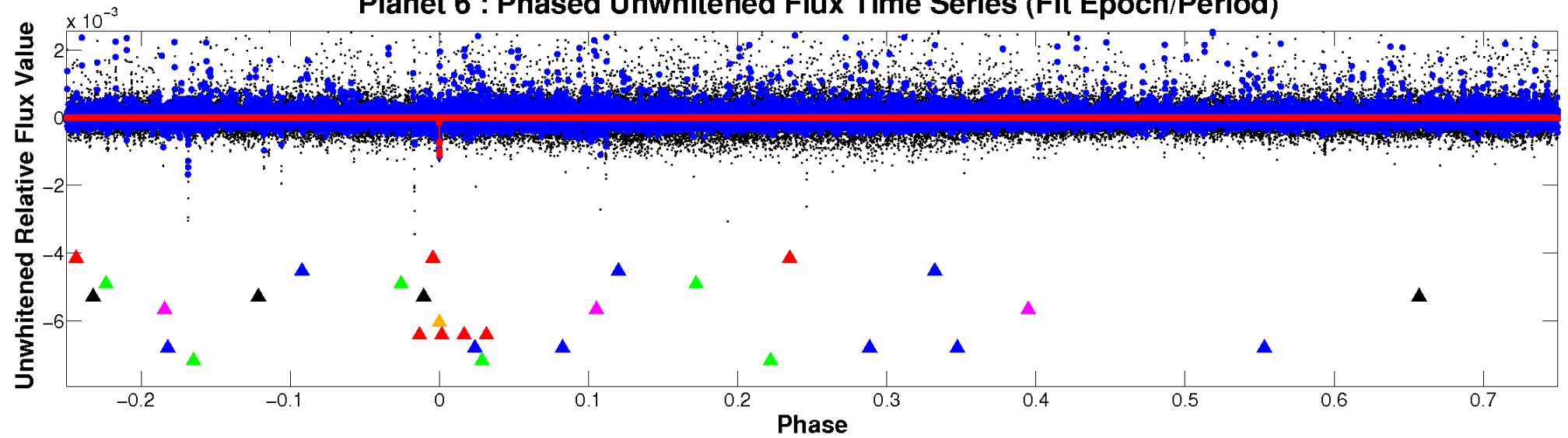
# ALT Odd/Even

TCE 011958955-06

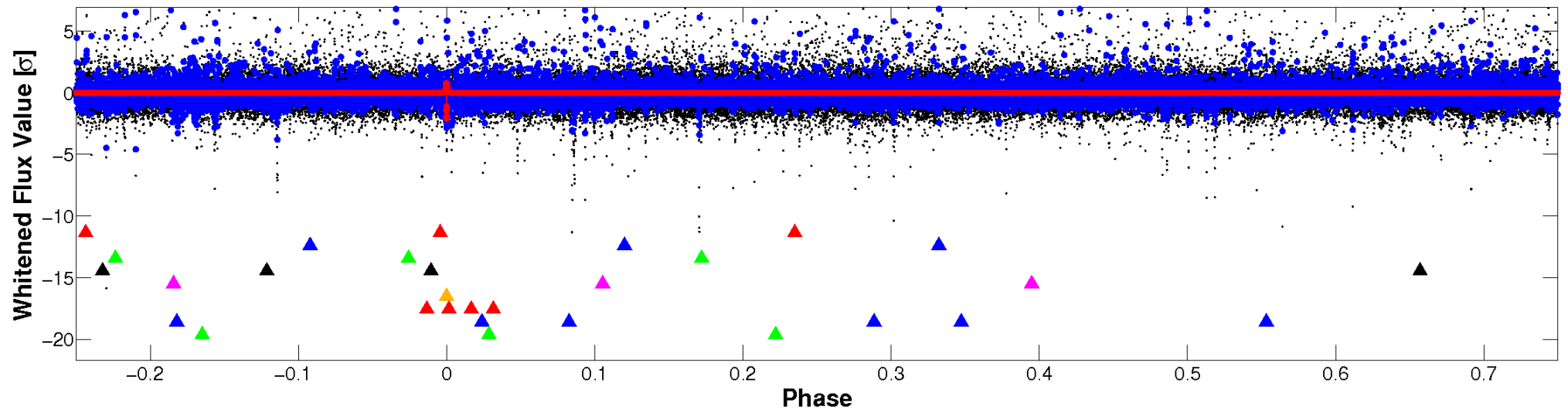


# Non-Whitened Vs. Whitened Light Curve

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



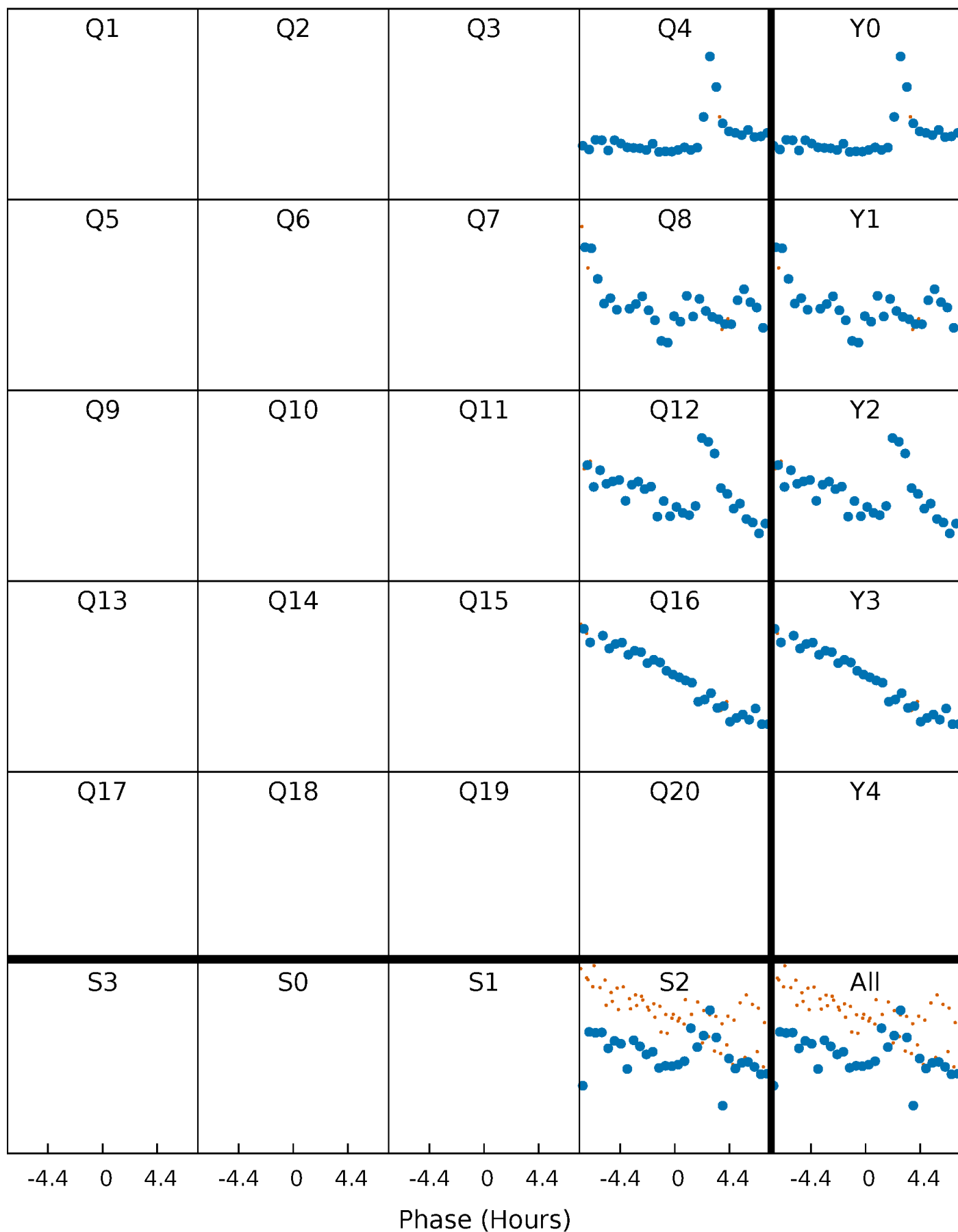
## Planet 6 : Phased Whitened Flux Time Series (Fit Epoch/Period)





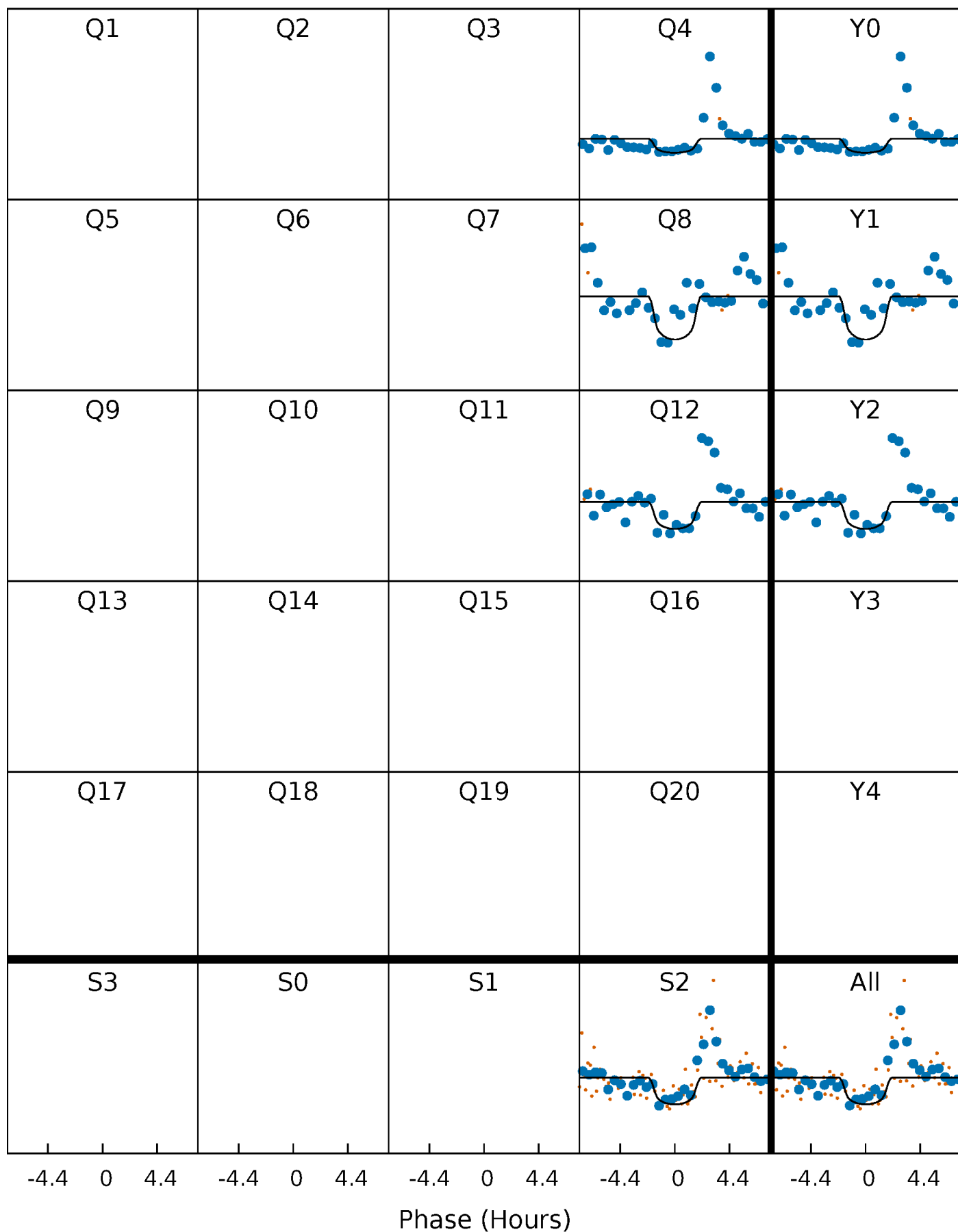
# PDC Quarter-Phased Transit Curves

TCE 011958955-06 P=346.443665 Days  $T_0=437.536963$  (BKJD)



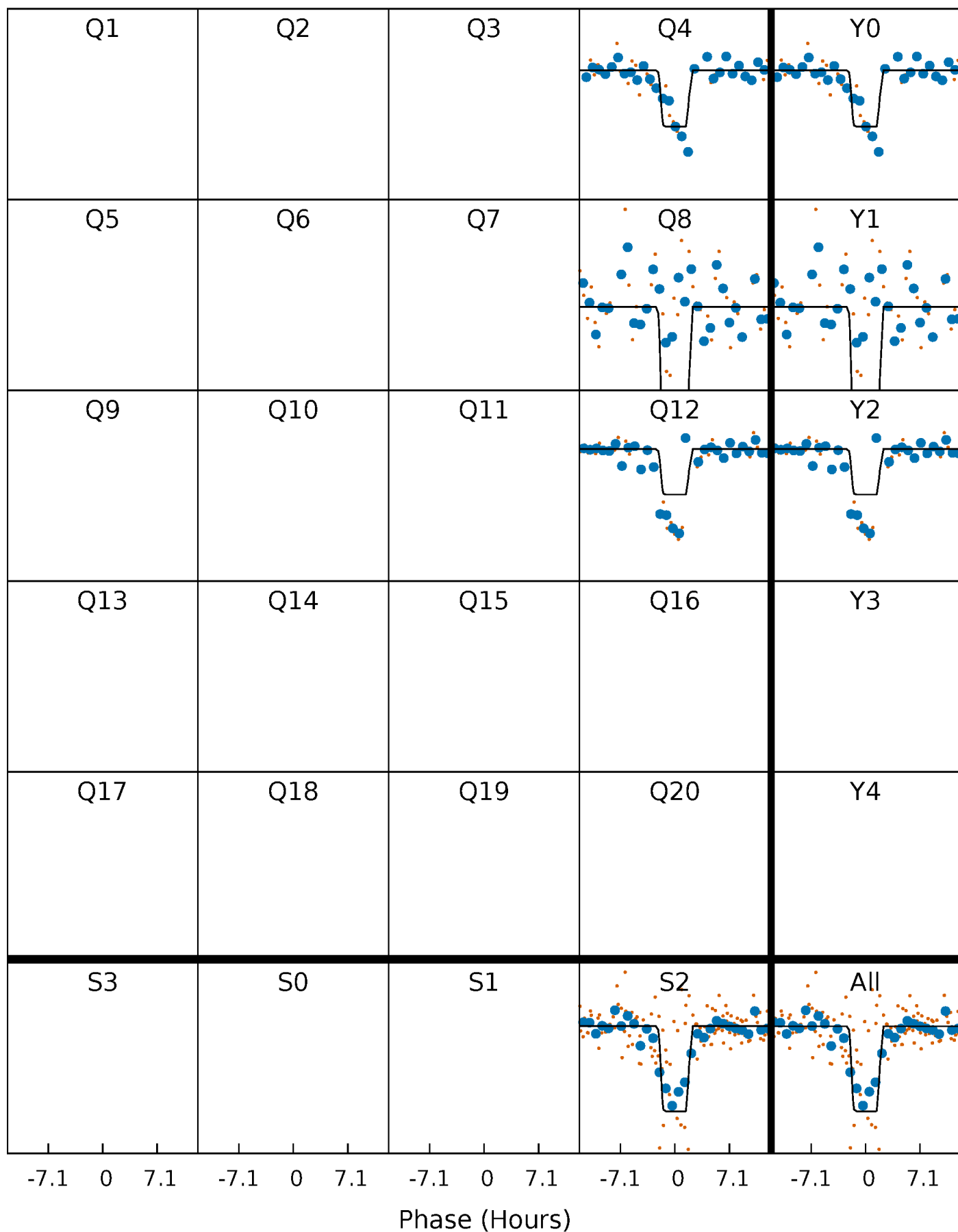
# DV Quarter-Phased Transit Curves

TCE 011958955-06 P=346.443665 Days  $T_0=437.536963$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

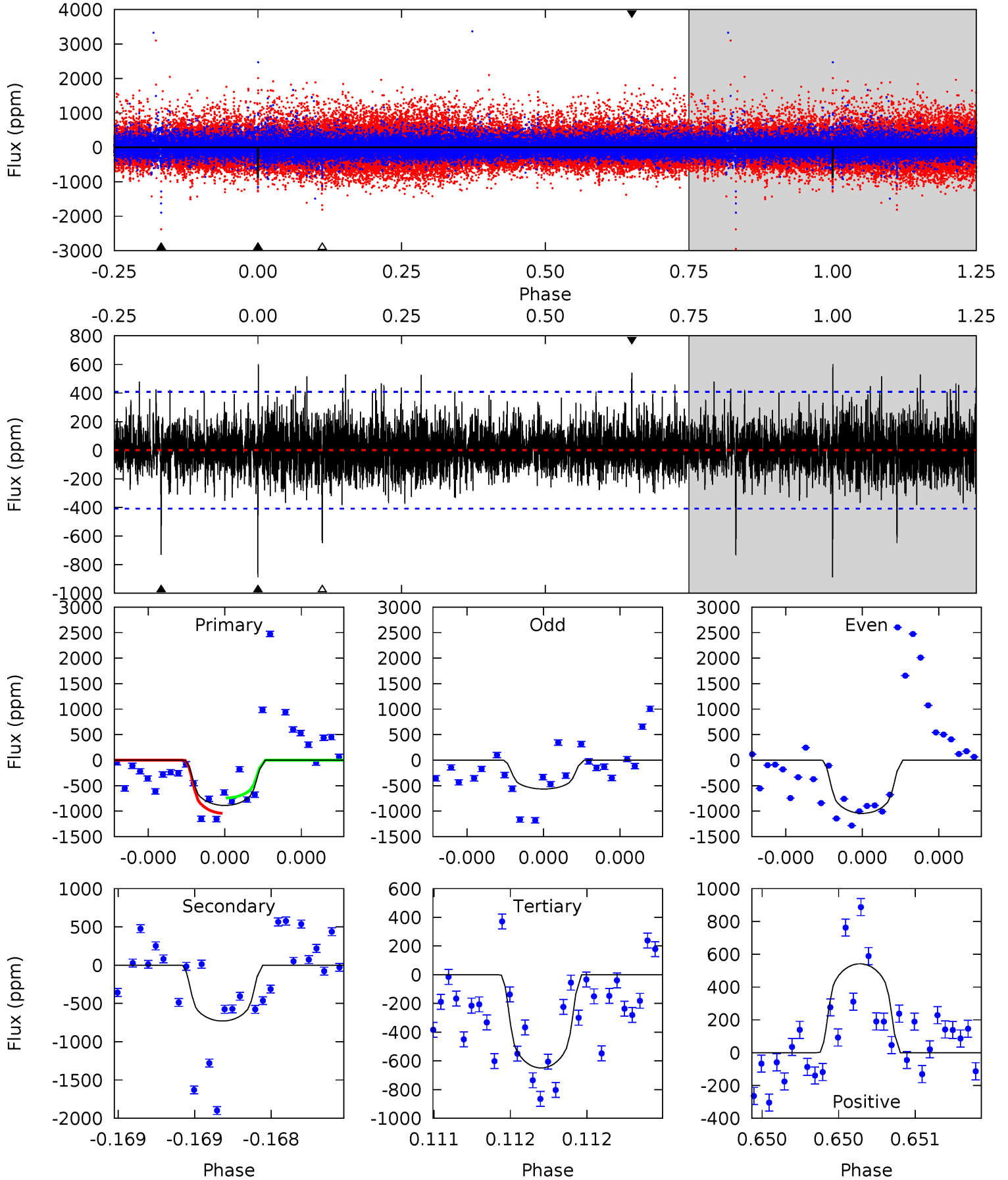
TCE 011958955-06 P=346.468242 Days  $T_0=437.511421$  (BKJD)



# DV Model-Shift Uniqueness Test

011958955-06, P = 346.443665 Days, E = 91.093298 Days

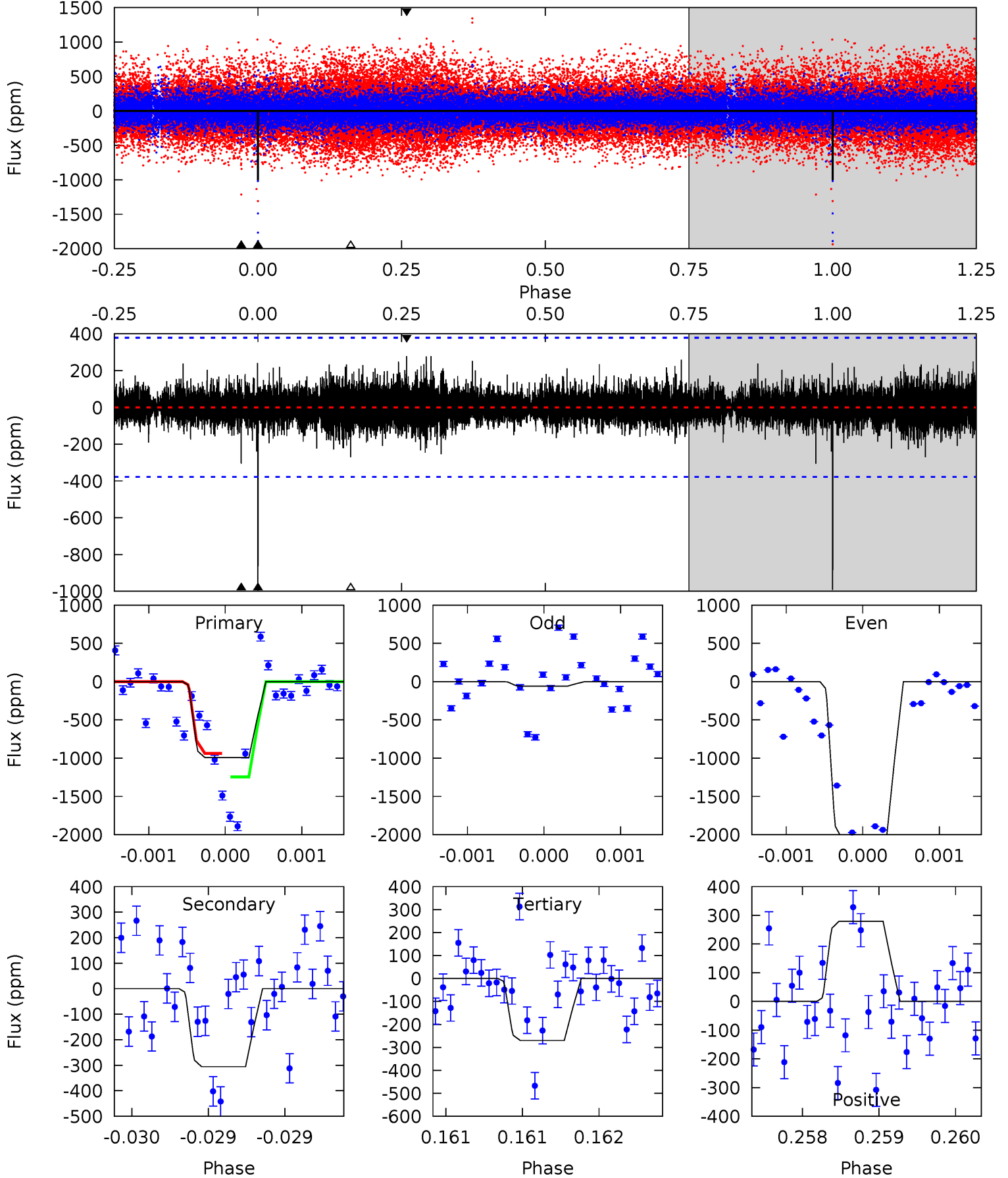
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.1	9.96	8.87	7.39	5.58	3.49	1.57	3.26	4.73	1.09	2.56	2.87	0.87	0.40	2.08



# Alt Model-Shift Uniqueness Test

011958955-06,  $P = 346.468242$  Days,  $E = 91.043179$  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
14.6	4.50	3.97	4.11	5.56	3.46	0.81	10.6	10.5	0.53	0.39	17.9	0.85	0.22	0



### Stellar Parameters For KIC 011958955

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$4981^{+151}_{-136}$	$4.553^{+0.060}_{-0.050}$	$-0.020^{+0.250}_{-0.300}$	$0.767^{+0.065}_{-0.072}$	$0.768^{+0.078}_{-0.064}$	$2.395^{+0.557}_{-0.411}$
	+3%/-3%	+1%/-1%	+1250%/-1500%	+8%/-9%	+10%/-8%	+23%/-17%
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 011958955-06 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-729 \pm 73$	$3.35^{+2.54}_{-2.12}$	$286^{+11}_{-11}$	$4281^{+2491}_{-777}$	$28479^{+181934}_{-19318}$
Alt.	$-306 \pm 68$	$3.76^{+2.63}_{-2.13}$	$286^{+11}_{-10}$	$3551^{+1248}_{-559}$	$9433^{+40758}_{-6312}$

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

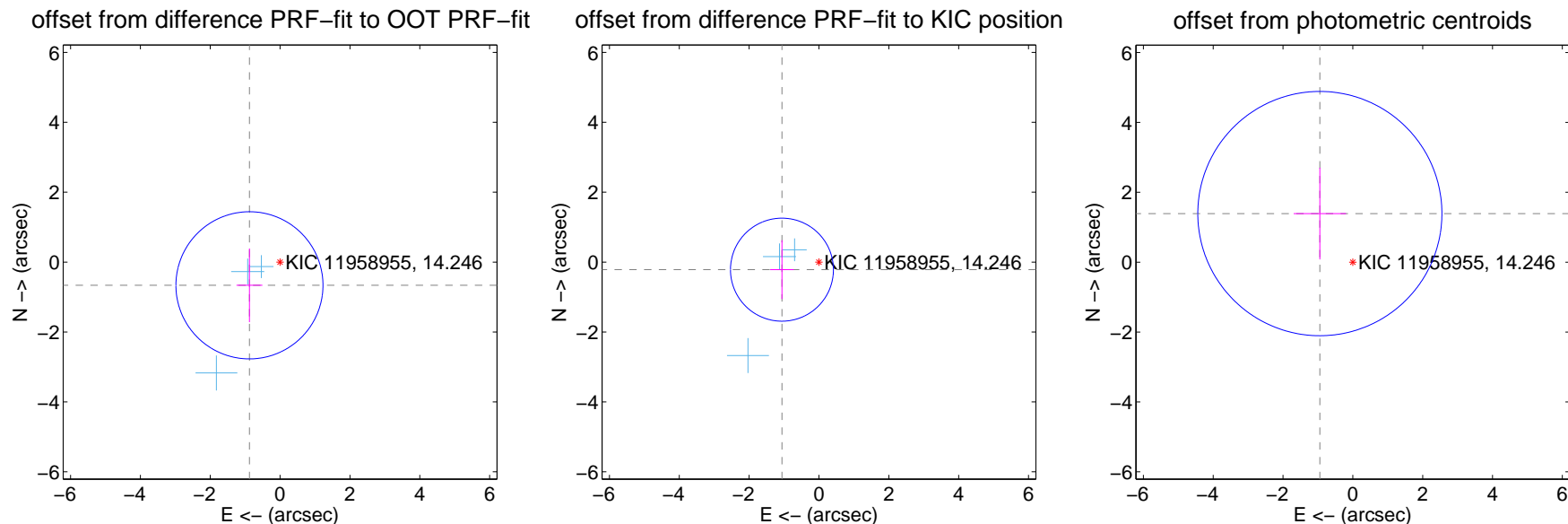
## DV Centroid Data

Supplemental centroid analysis for 011958955-06. Kepler magnitude: 14.25. Transit SNR 8.62

There are 3 quarters with good PRF difference image offsets

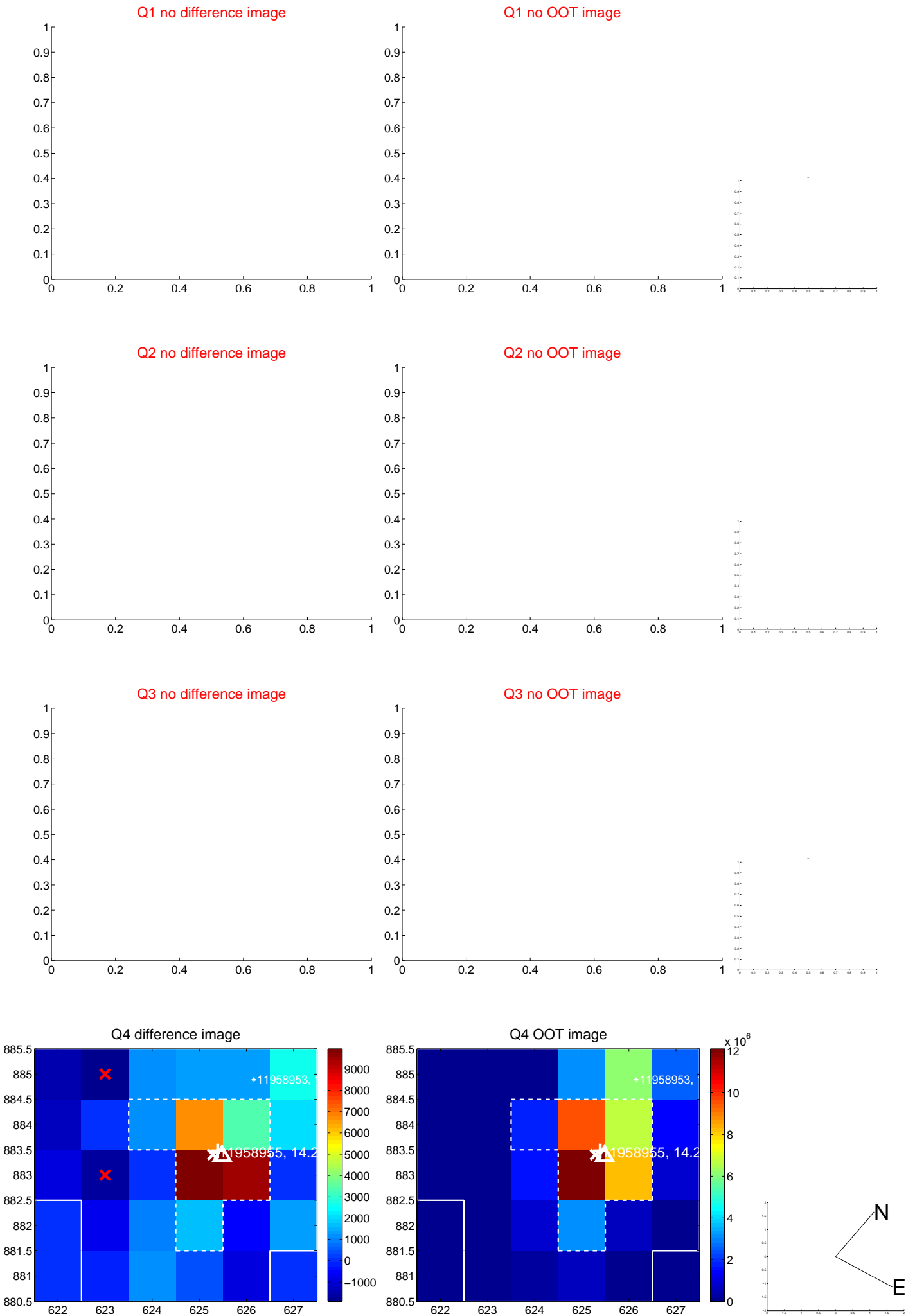
The direct PRF centroid is offset from the target star catalog position by about 0.48 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.101 \pm 0.702$	1.57	$0.878 \pm 0.370$	$-0.665 \pm 1.055$
PRF-fit source offset from KIC position	$1.083 \pm 0.491$	2.20	$1.061 \pm 0.339$	$-0.217 \pm 0.841$
photometric centroid source offset	$1.68 \pm 1.17$	1.44	$0.95 \pm 0.75$	$1.39 \pm 1.31$



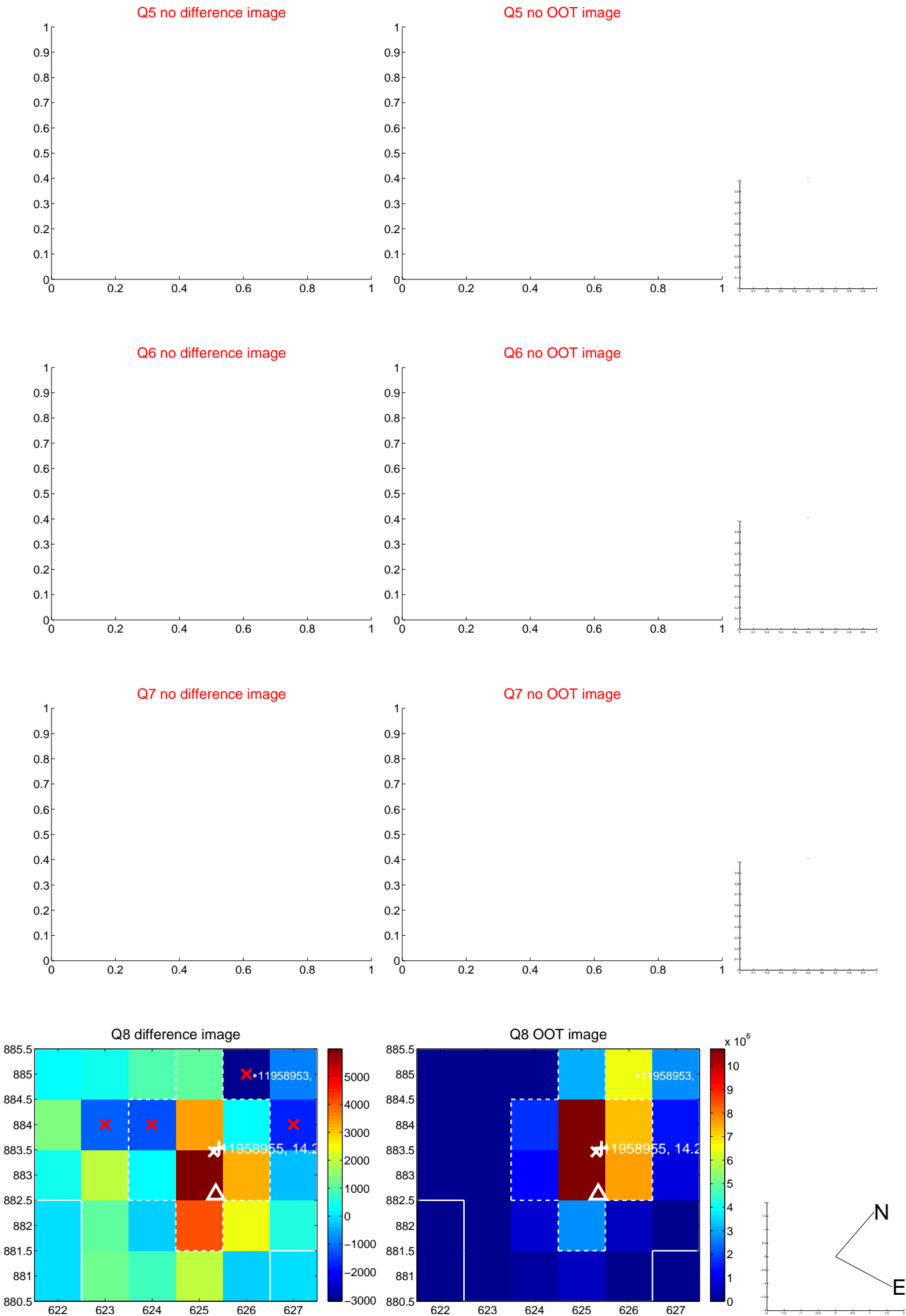
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

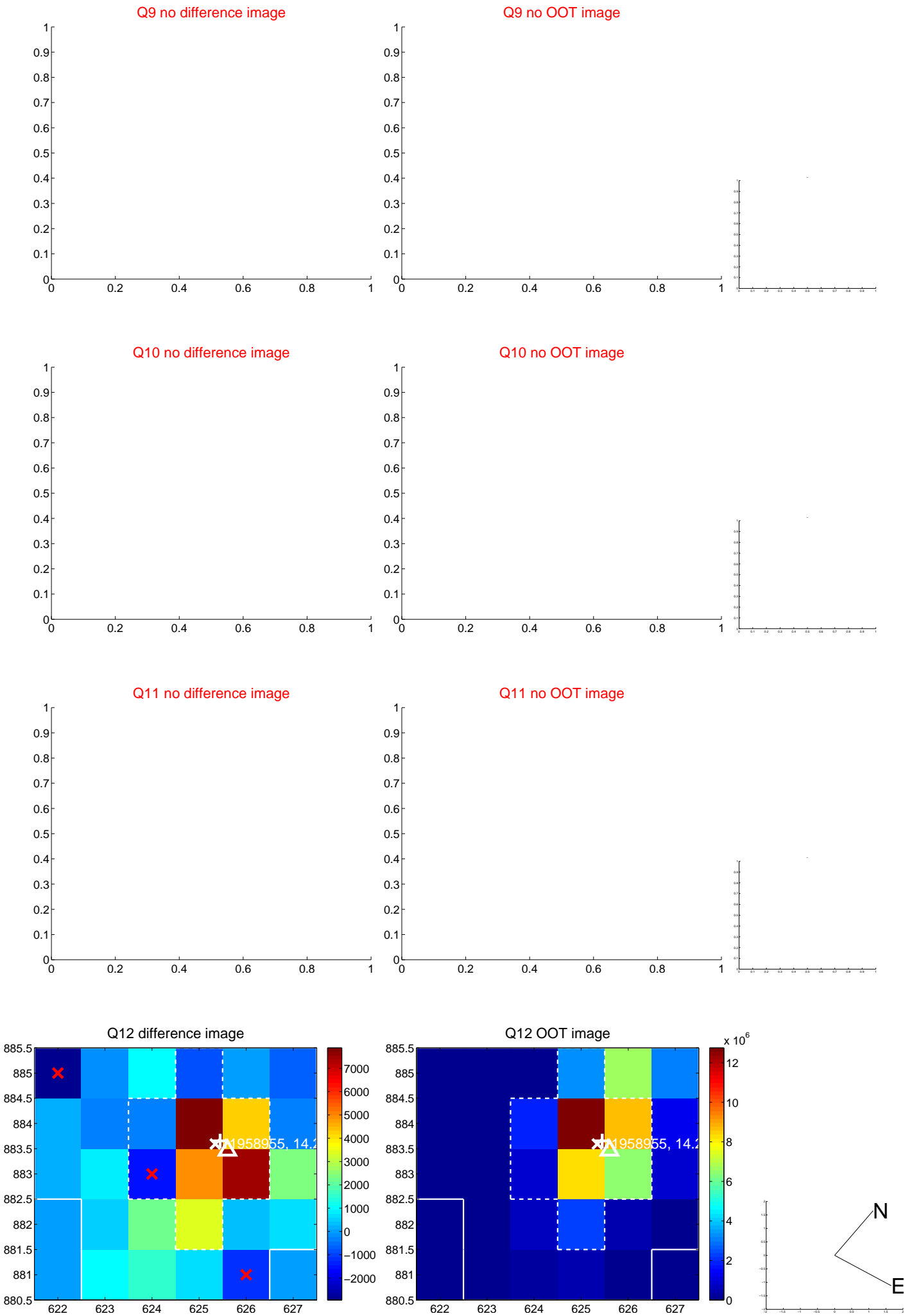




white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



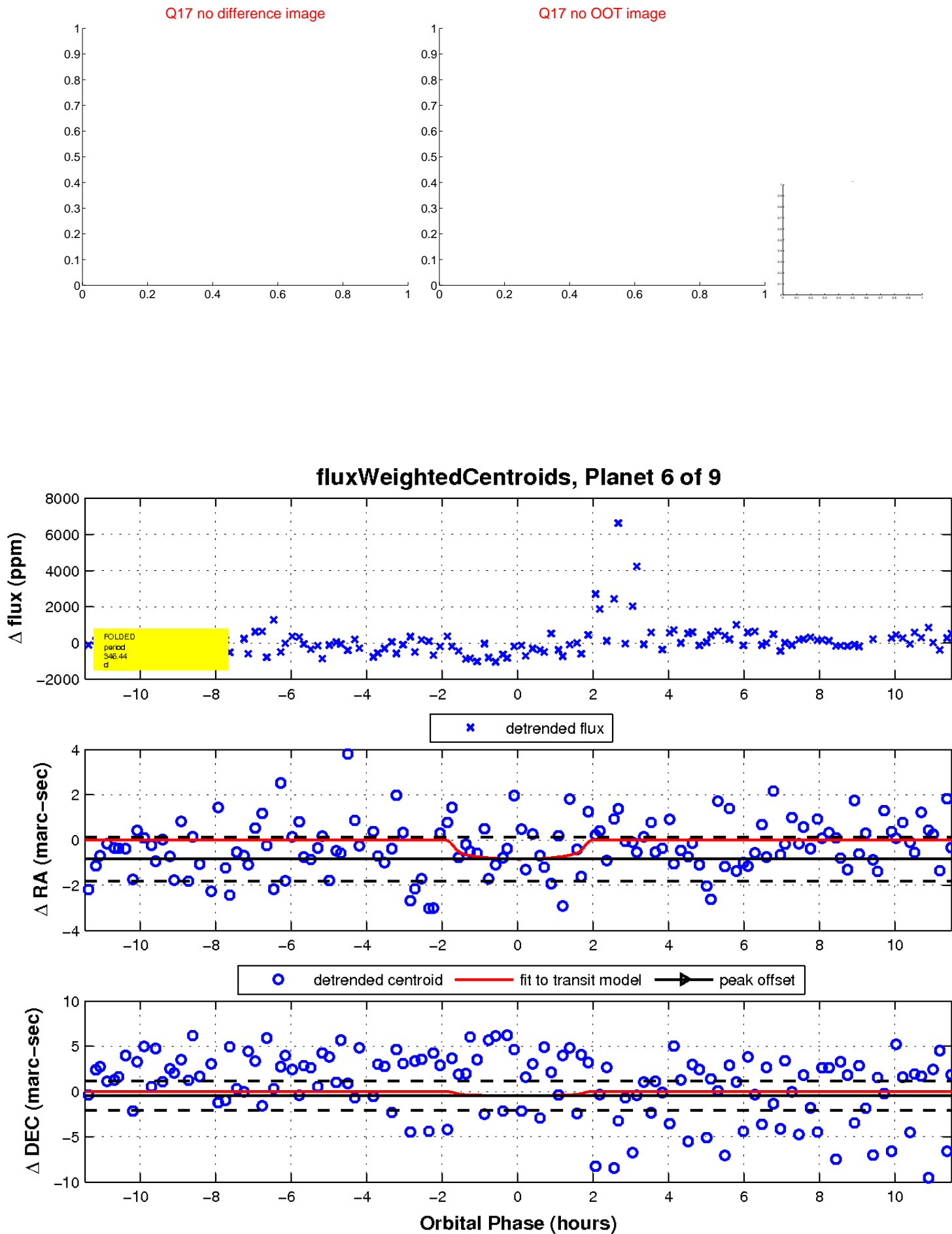
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

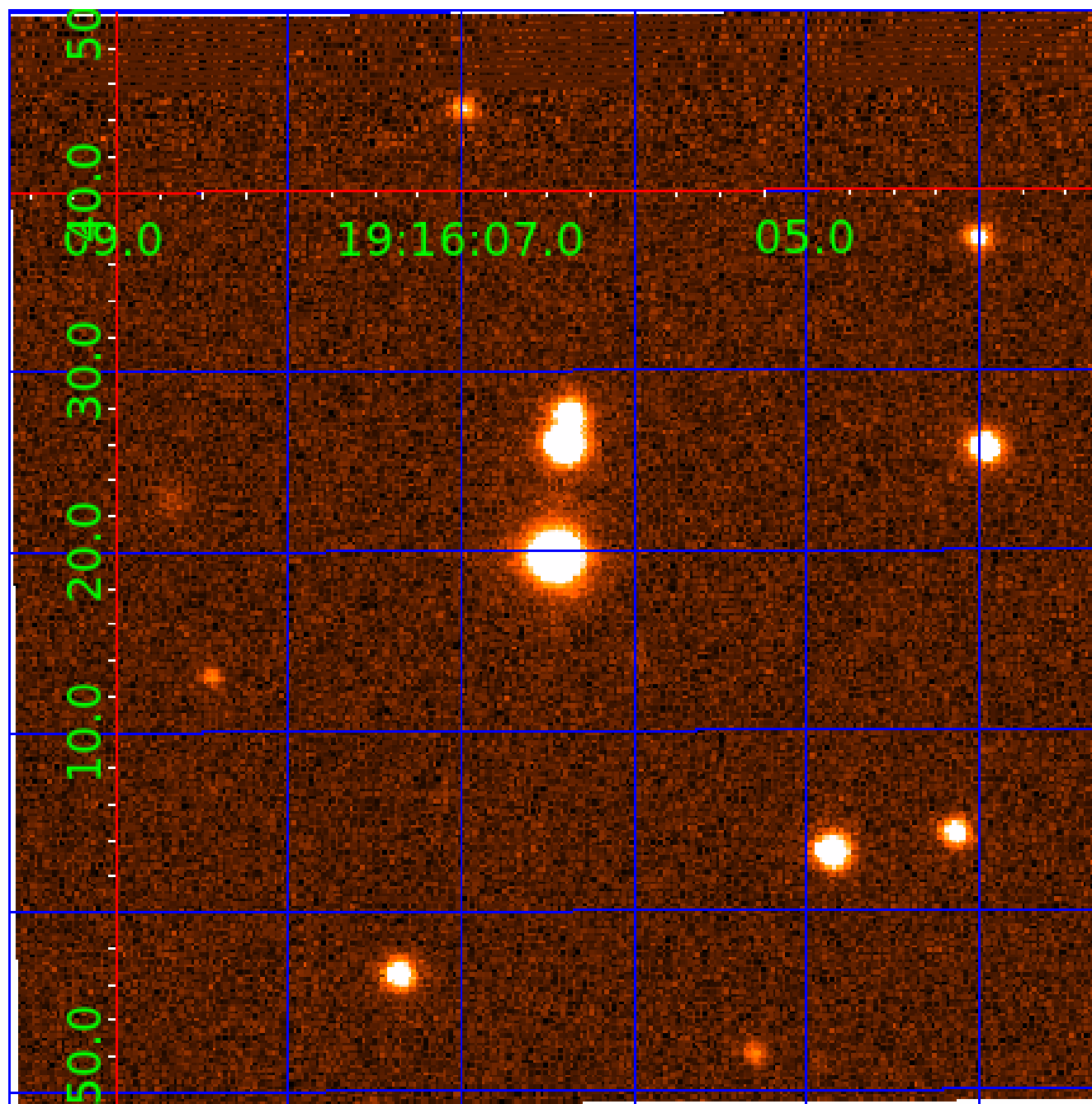


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 011958955

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
011958955-01	OBS	No	609.990552	172.502121	700.4	10.032	15.6	6.0	0.77	4981	2.21	0.20
011958955-02	OBS	No	619.391847	206.185446	822.8	4.390	11.6	6.9	0.77	4981	2.33	0.19
011958955-03	OBS	No	624.344901	150.726038	635.1	17.271	10.7	4.9	0.77	4981	2.23	0.19
011958955-04	OBS	No	384.839018	318.703990	901.3	4.616	10.8	7.5	0.77	4981	2.50	0.36
011958955-05	OBS	No	446.767859	373.700685	1422.8	19.154	9.7	8.2	0.77	4981	3.39	0.30
011958955-06	OBS	No	346.443665	437.536963	1099.5	3.840	9.3	8.6	0.77	4981	2.85	0.41
011958955-07	OBS	No	351.630210	432.911970	948.3	3.220	9.1	7.4	0.77	4981	2.67	0.41
011958955-08	OBS	No	254.737256	211.434970	813.1	20.113	9.5	6.3	0.77	4981	2.23	0.63
011958955-09	OBS	No	413.479898	380.401971	780.1	5.000	9.2	-1.0	0.77	4981	2.07	0.33

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011958955-01	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
011958955-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_UNCERTAIN
011958955-03	OBS	FP	0.00	1	0	1	0	ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS—HALO_GHOST
011958955-04	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_TER_DV—CENT_KIC_POS—HALO_GHOST
011958955-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
011958955-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_KIC_POS
011958955-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_KIC_POS
011958955-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
011958955-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_NOFITS

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

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

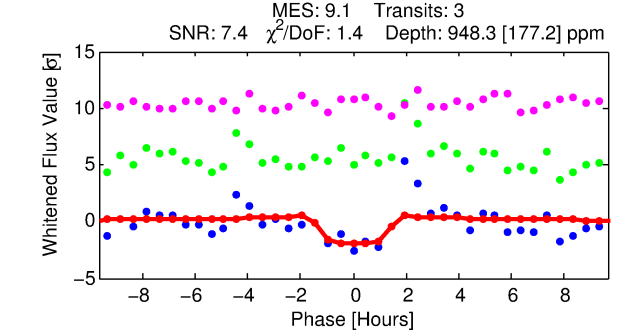
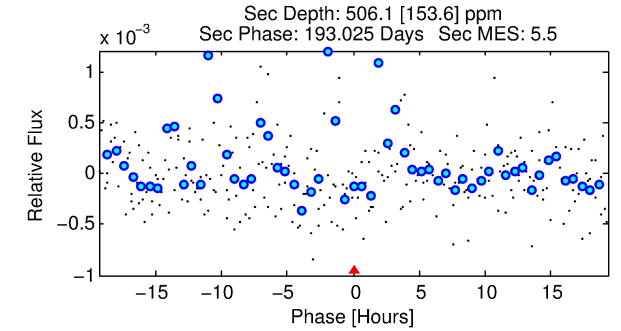
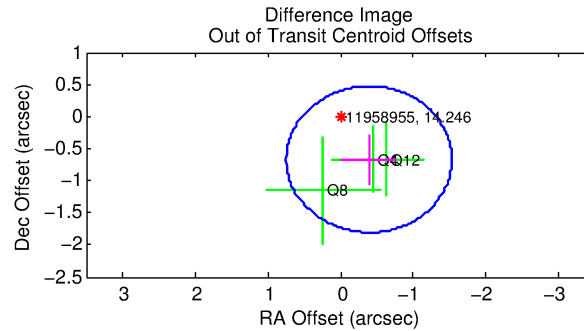
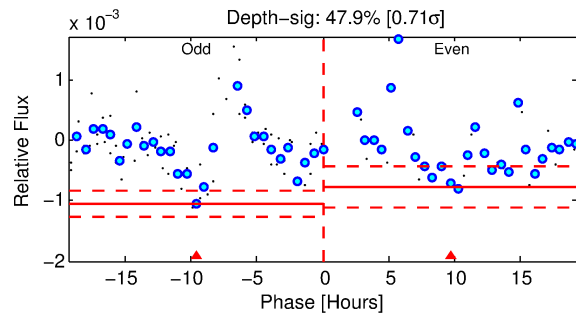
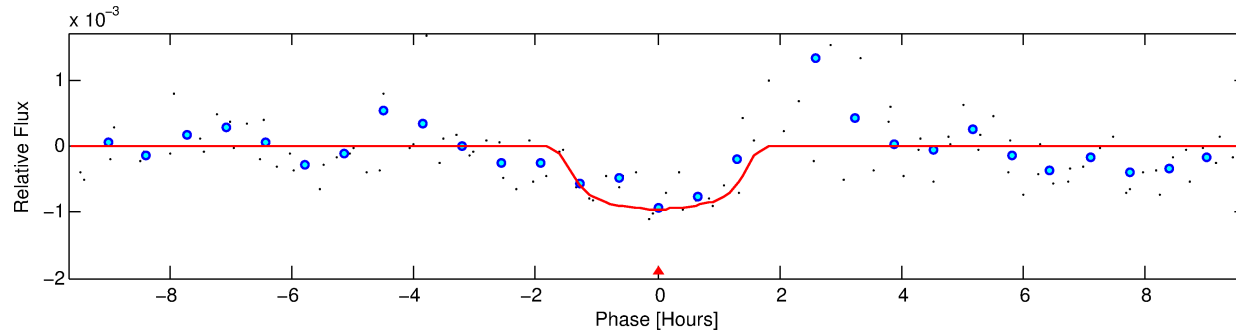
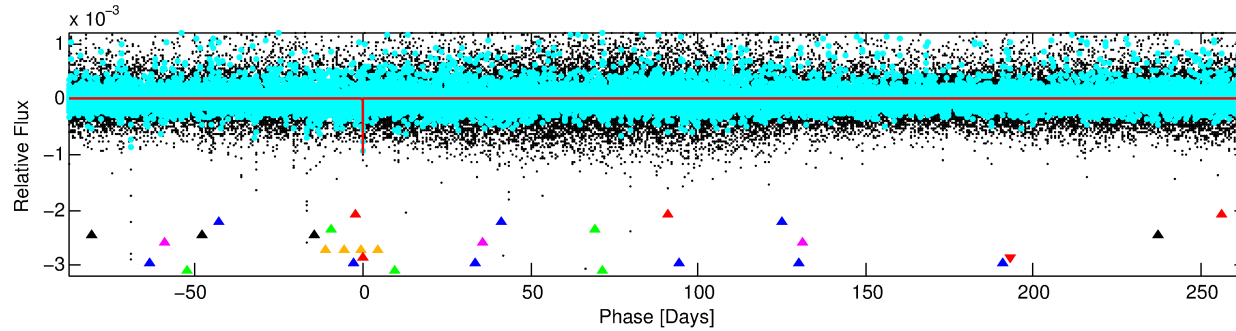
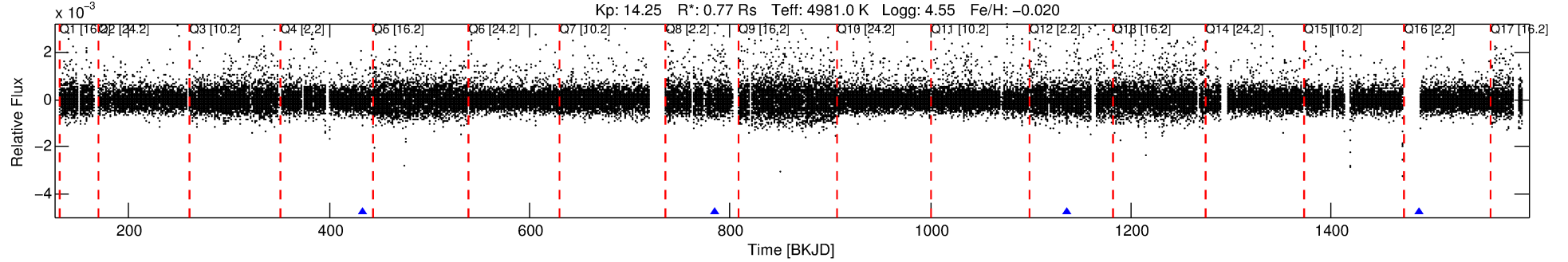
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 011958955-07

No Significant Match Found

# DV One-Page Summary

KIC: 11958955 Candidate: 7 of 9 Period: 351.630 d



## DV Fit Results:

Period = 351.63021 [0.00696] d  
Epoch = 432.9120 [0.0085] BKJD  
Rp/R\* = 0.0319 [0.0647]  
a/R\* = 529.64 [3833.02]  
b = 0.81 [3.10]  
Seff = 0.41 [0.07]  
Teq = 204 [8] K  
Rp = 2.67 [5.42] Re  
a = 0.8925 [0.0693] AU  
Ag = 31045.95 [126240.72] [0.25 $\sigma$ ]  
Teffp = 4181 [4250] K [0.94 $\sigma$ ]

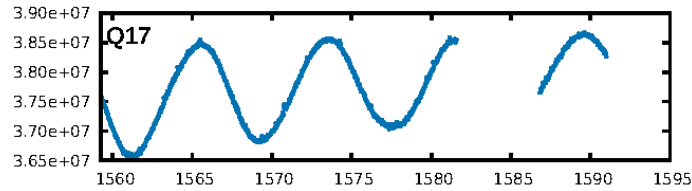
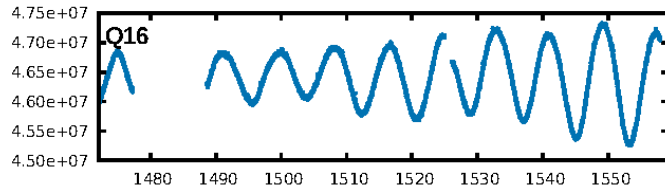
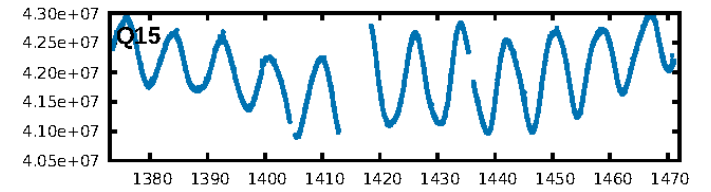
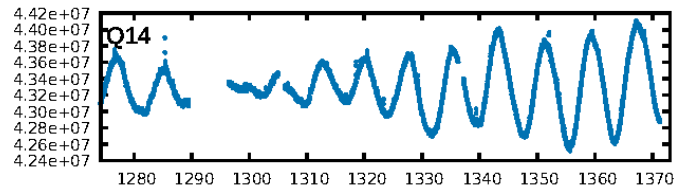
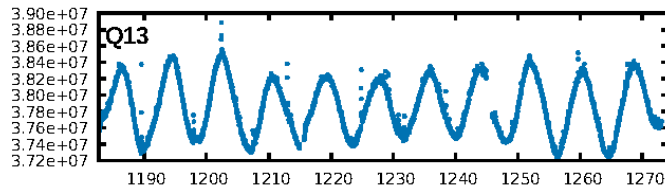
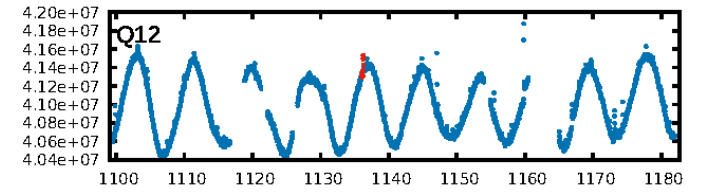
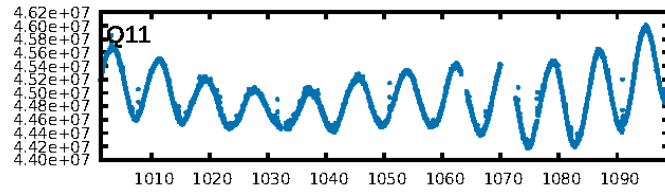
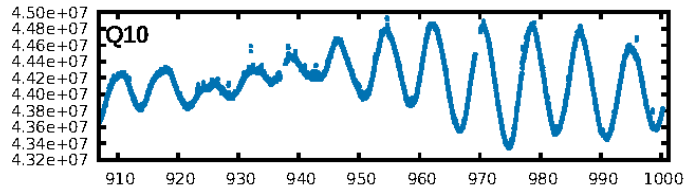
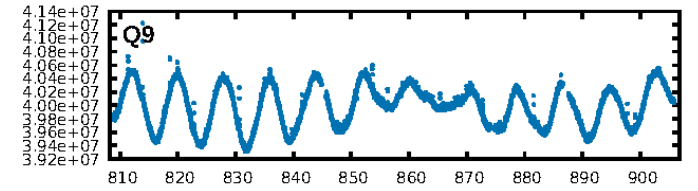
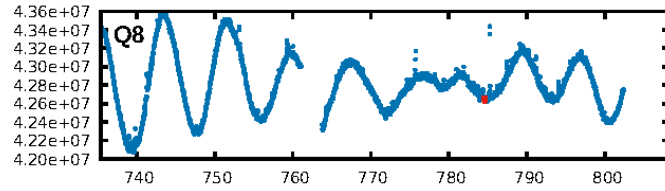
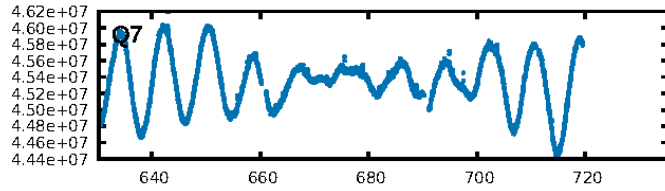
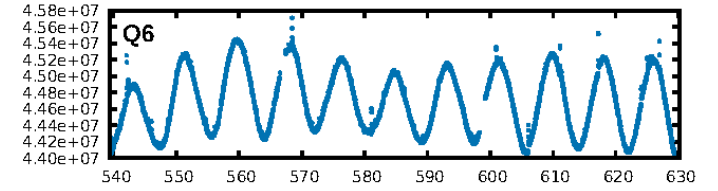
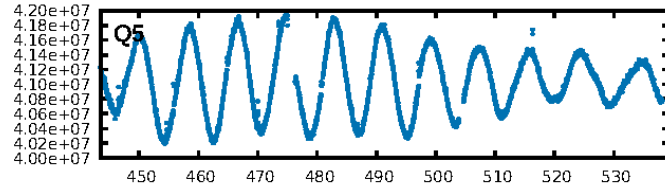
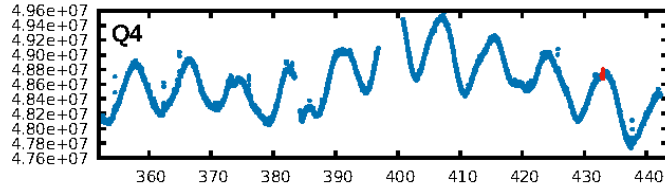
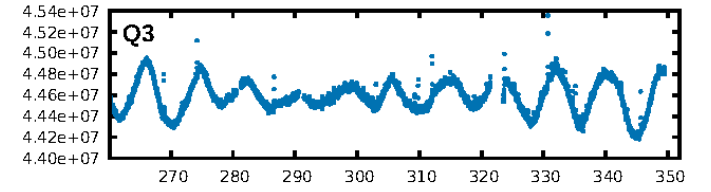
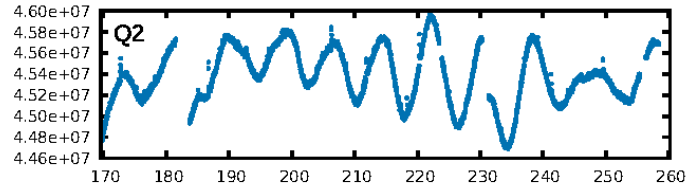
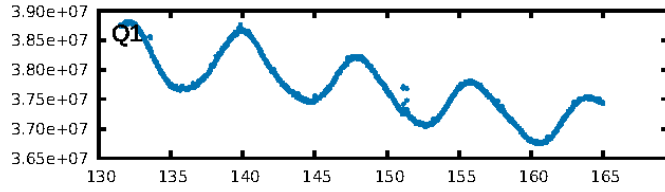
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [24.84 $\sigma$ ]  
LongPeriod-sig: 100.0% [141.61 $\sigma$ ]  
ModelChiSquare2-sig: 56.6%  
ModelChiSquareGof-sig: 92.6%  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: -6.989  
Centroid-sig: 41.9%  
Centroid-so: 0.256 arcsec [0.27 $\sigma$ ]  
OotOffset-rm: 0.774 arcsec [2.04 $\sigma$ ]  
KicOffset-rm: 0.301 arcsec [0.80 $\sigma$ ]  
OotOffset-st: 0/0/3/0 [3]  
KicOffset-st: 0/0/3/0 [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: 30-Jan-2016 05:49:14 Z

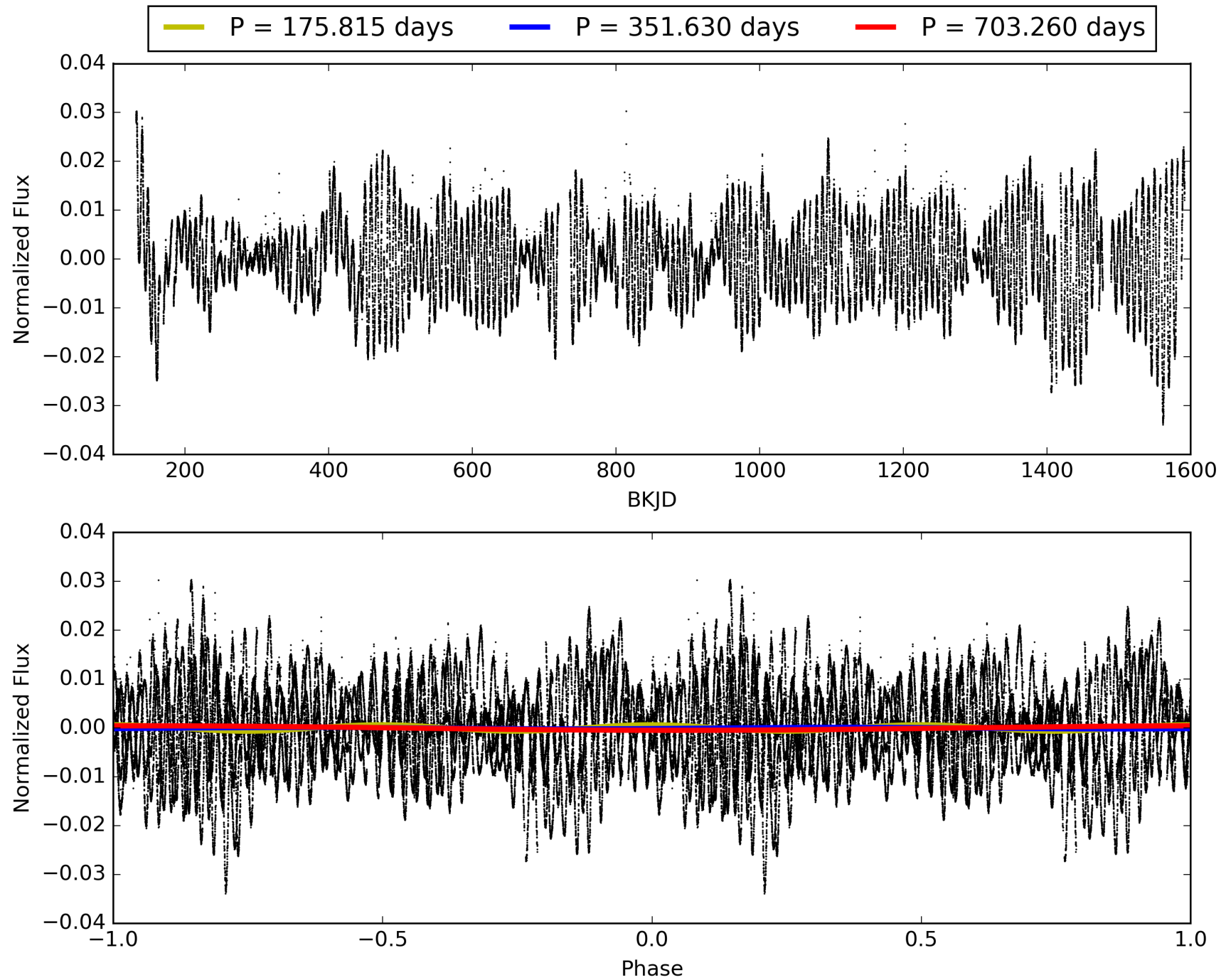
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 011958955-07, PDC Light Curves



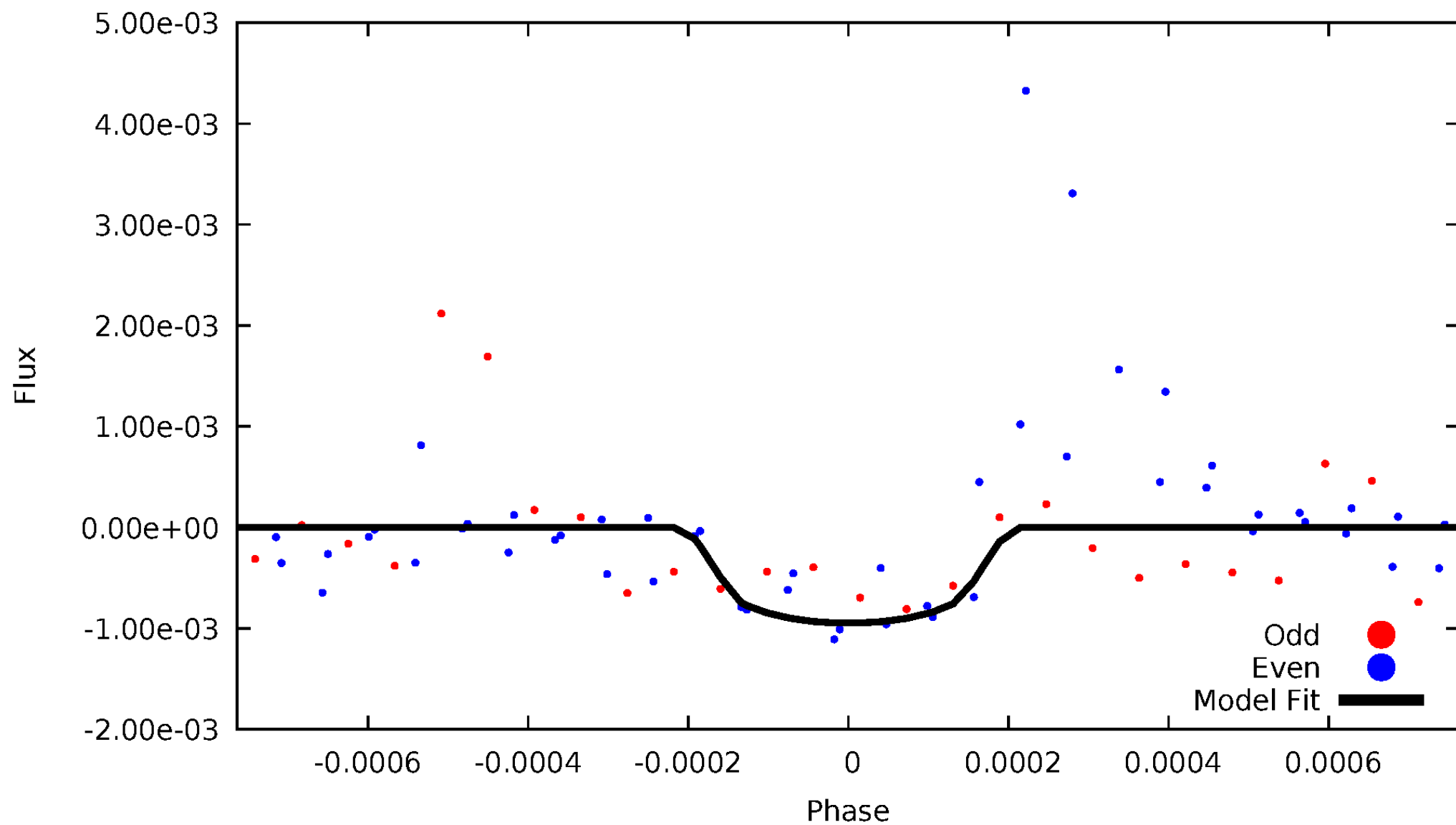


# TCE 011958955-07



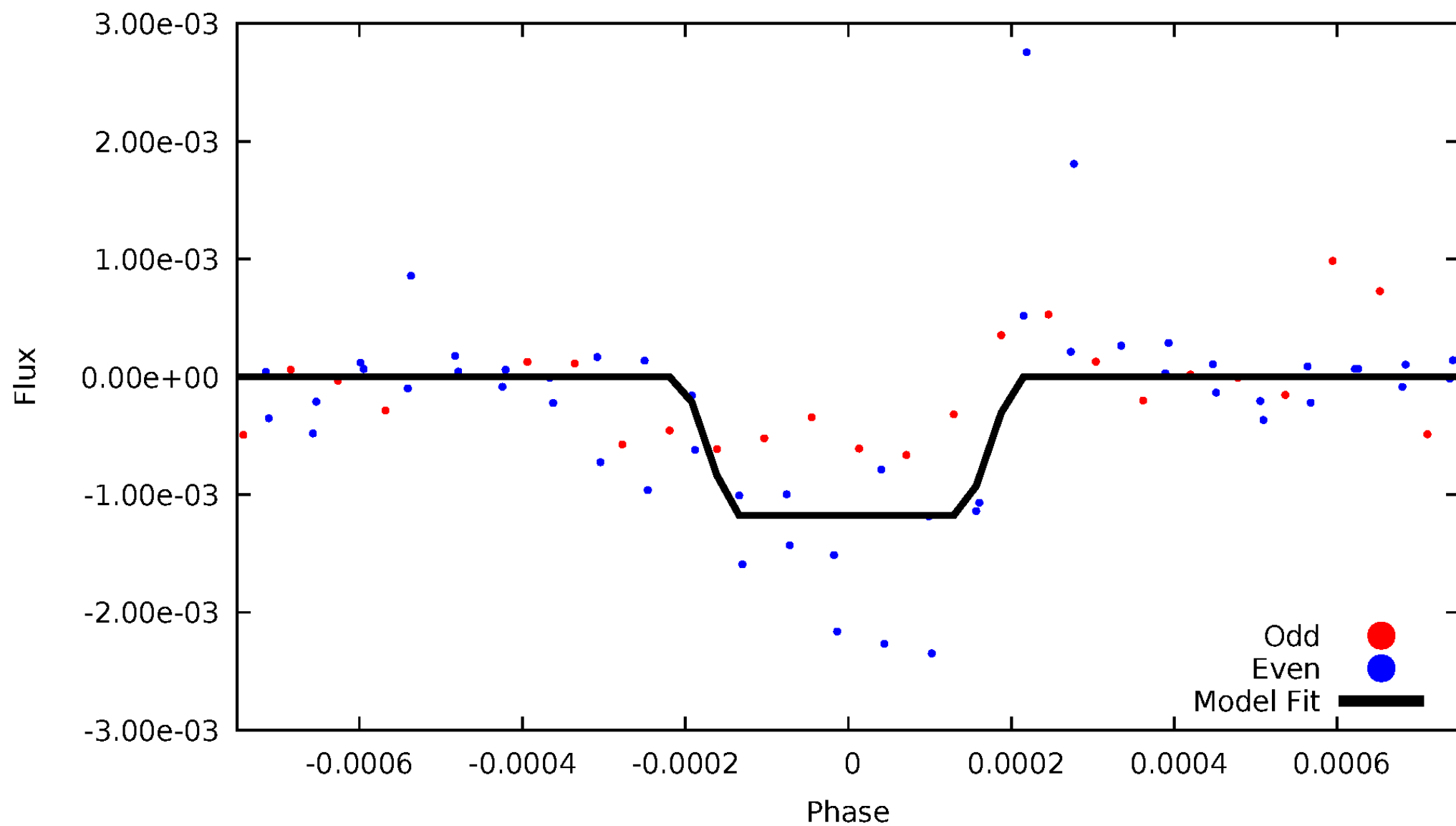
# DV Odd/Even

TCE 011958955-07



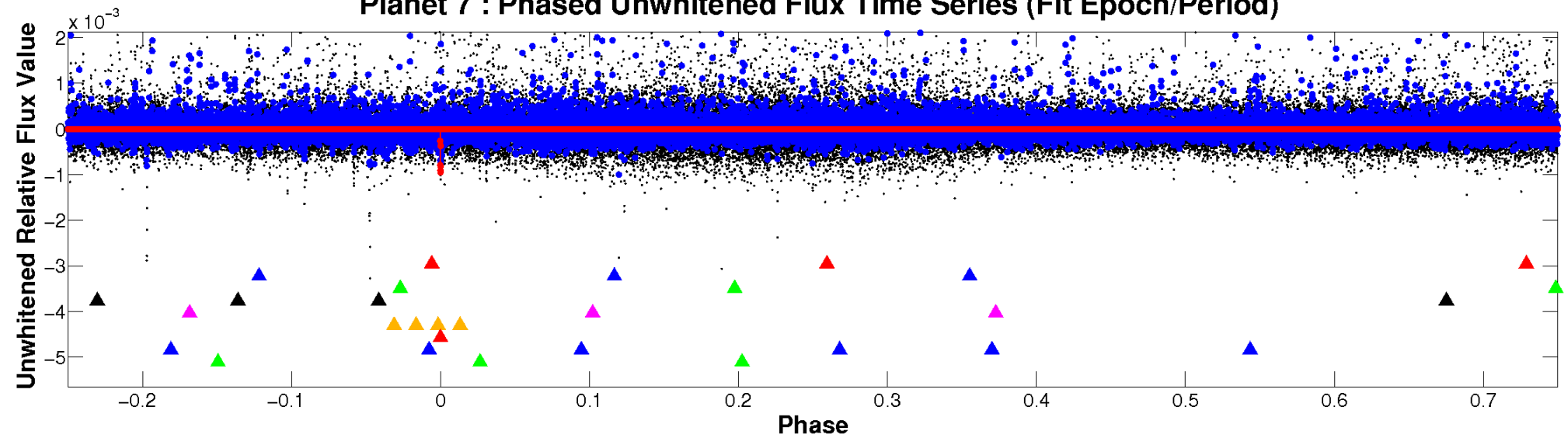
# ALT Odd/Even

TCE 011958955-07

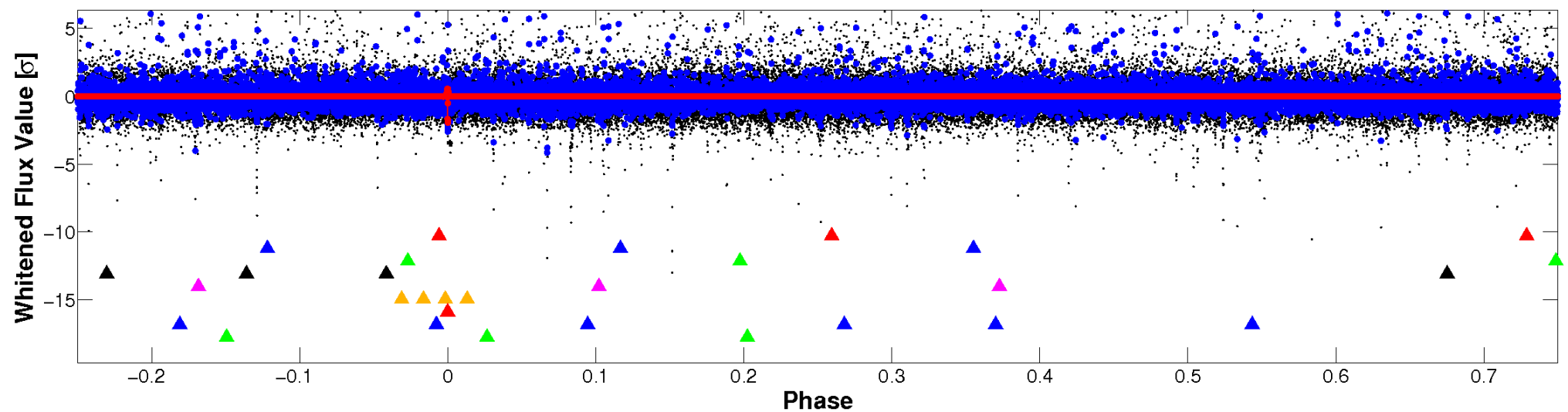


# Non-Whitened Vs. Whitened Light Curve

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

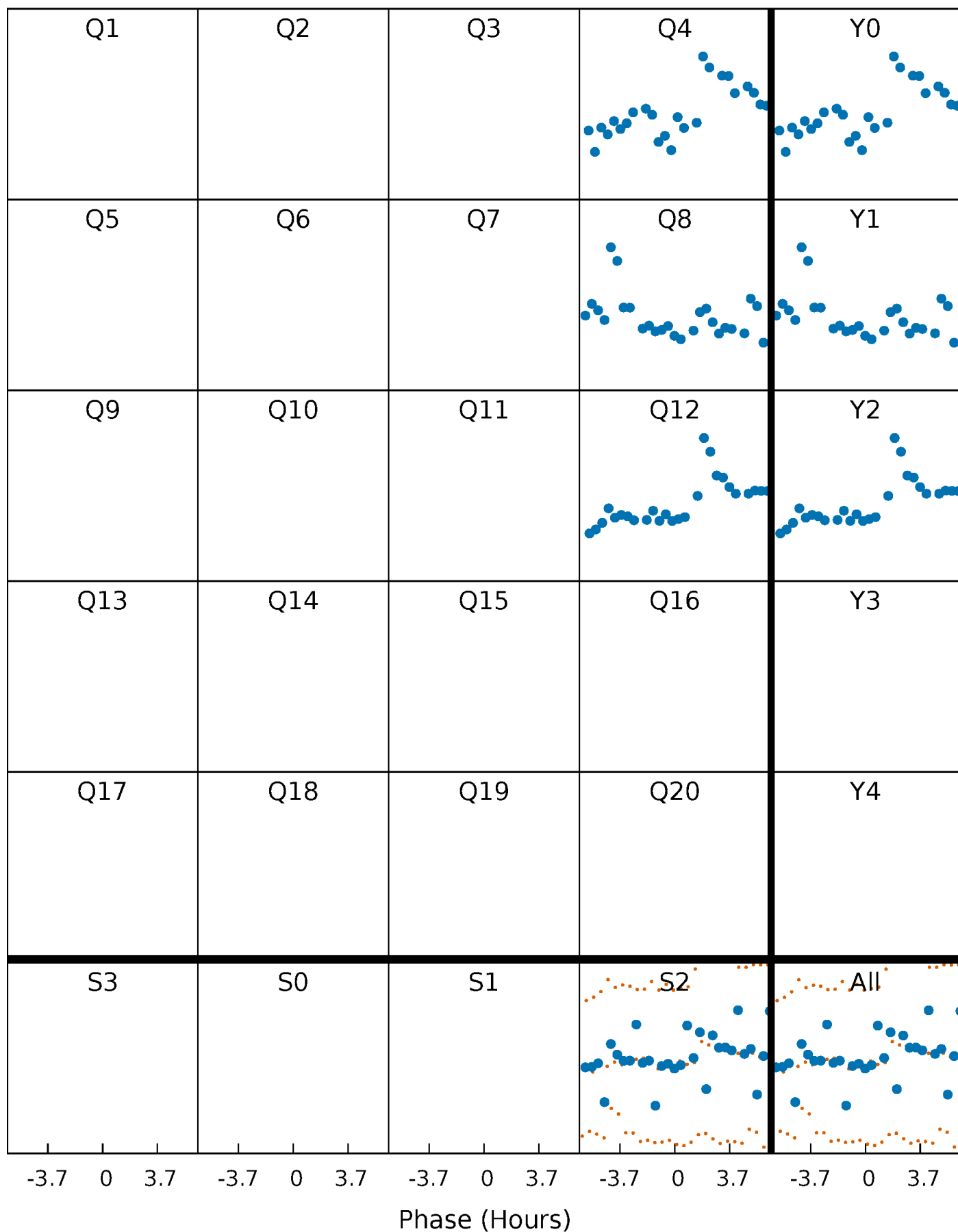


## Planet 7 : Phased Whitened Flux Time Series (Fit Epoch/Period)



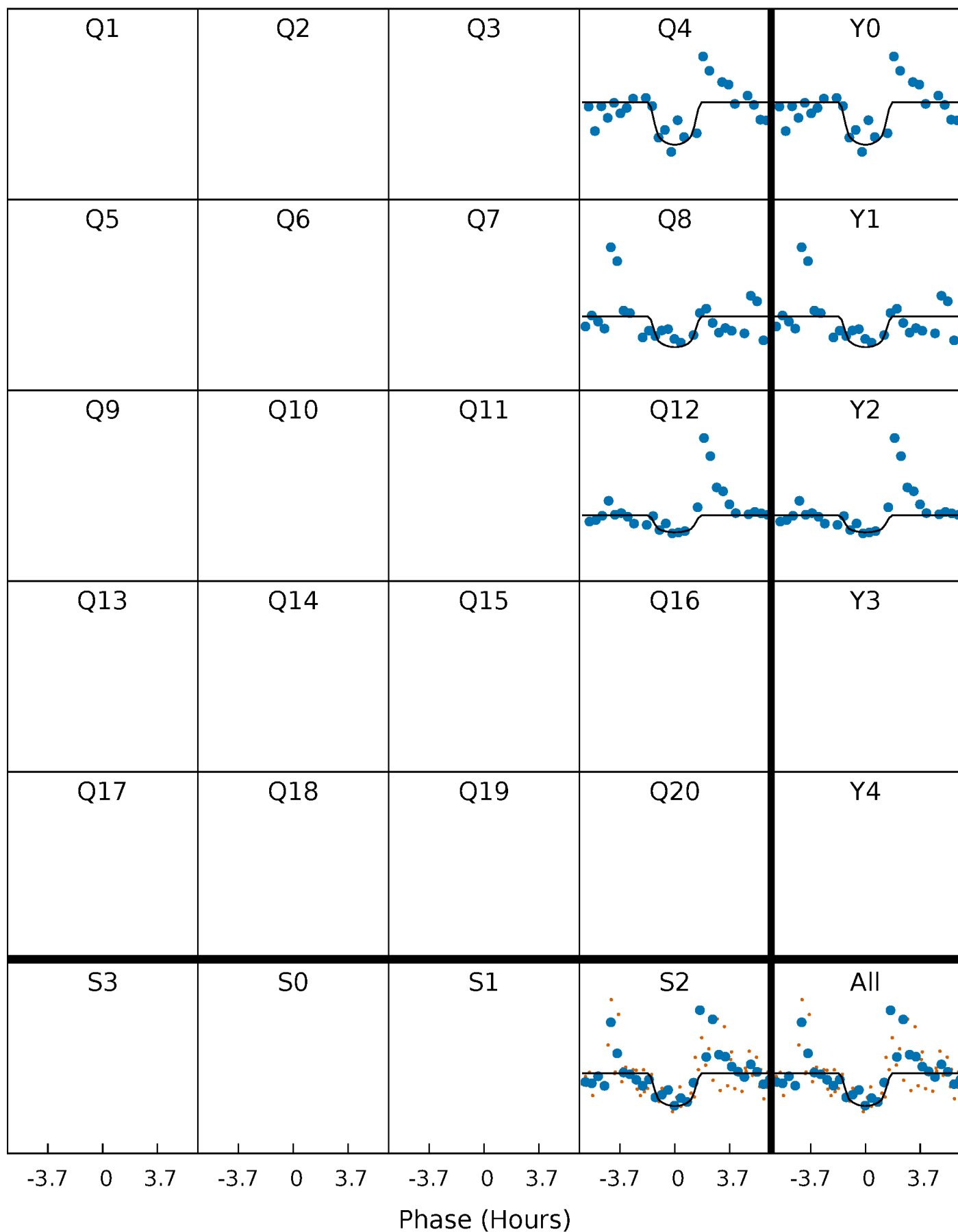
# PDC Quarter-Phased Transit Curves

TCE 011958955-07     $P=351.630210$  Days     $T_0=432.911970$  (BKJD)



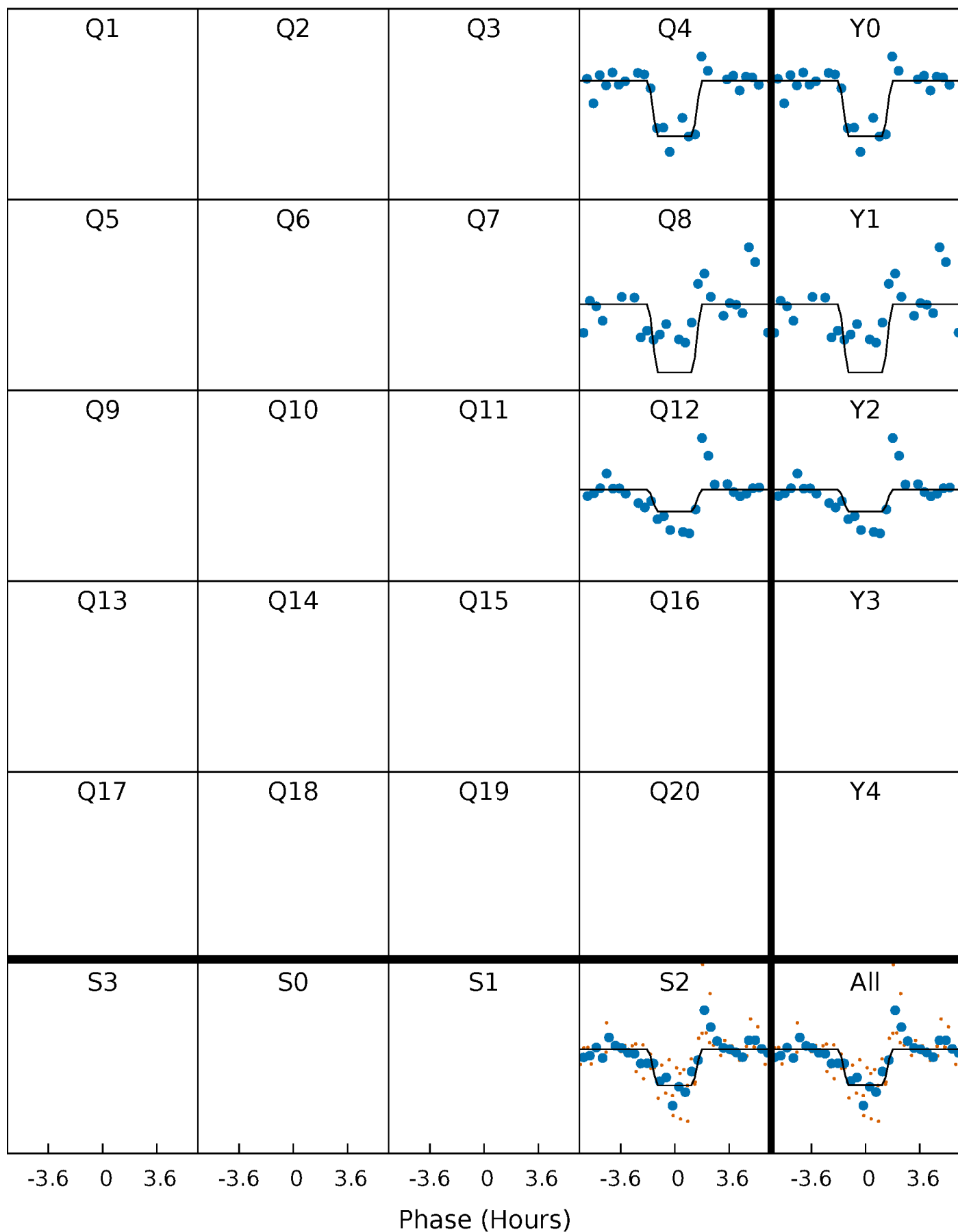
# DV Quarter-Phased Transit Curves

TCE 011958955-07 P=351.630210 Days  $T_0=432.911970$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

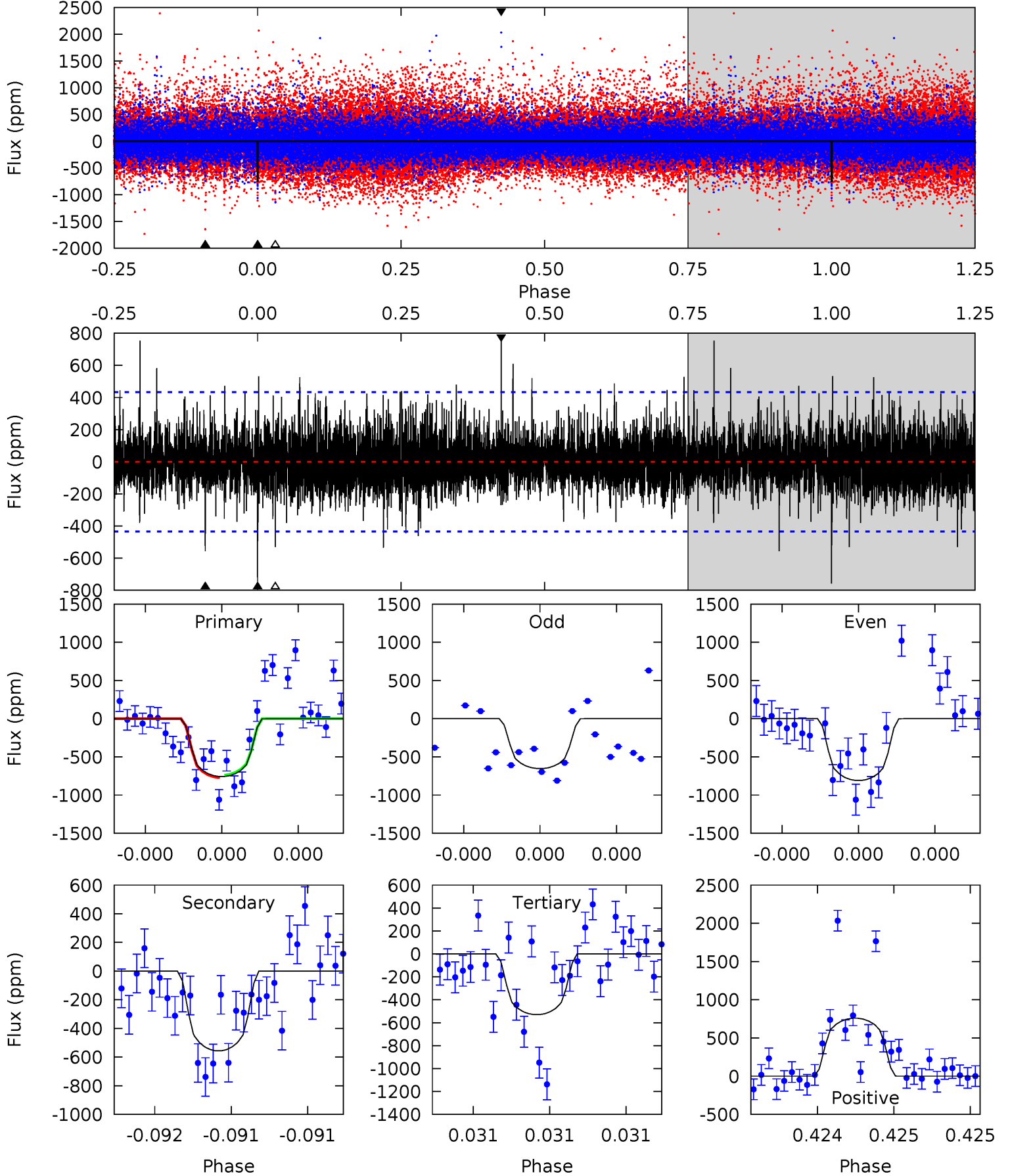
TCE 011958955-07     $P=351.630744$  Days     $T_0=432.911954$  (BKJD)



# DV Model-Shift Uniqueness Test

011958955-07,  $P = 351.630210$  Days,  $E = 81.281760$  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
9.80	7.20	6.86	9.82	5.61	3.54	1.53	2.94	-0.02	0.35	-2.61	0.89	0.95	0.50	0.20

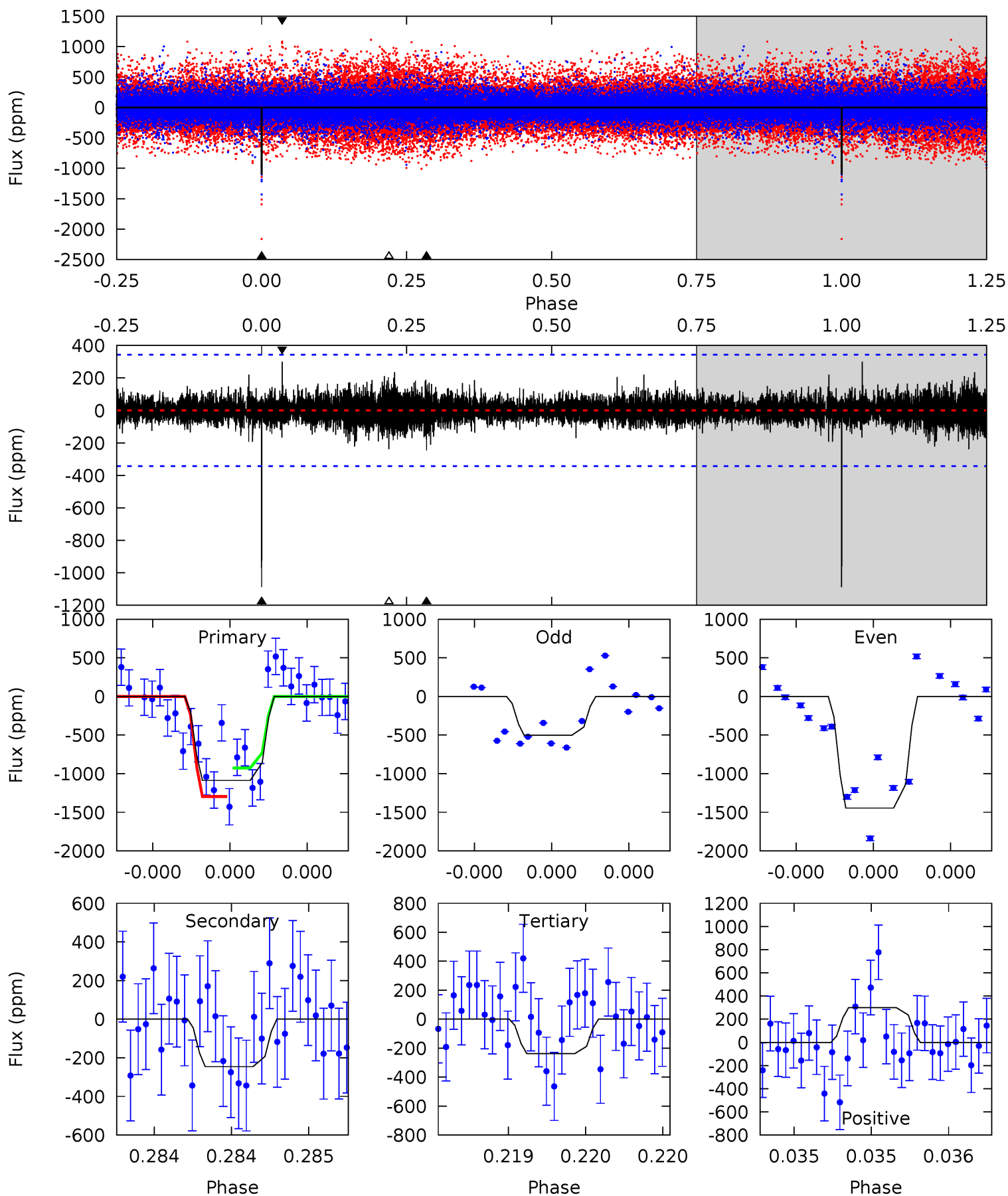




# Alt Model-Shift Uniqueness Test

011958955-07, P = 351.630744 Days, E = 81.281210 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
17.8	4.03	3.91	4.90	5.62	3.56	0.75	13.9	12.9	0.12	-0.87	7.95	1.04	0.22	2.89



### Stellar Parameters For KIC 011958955

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$4981^{+151}_{-136}$	$4.553^{+0.060}_{-0.050}$	$-0.020^{+0.250}_{-0.300}$	$0.767^{+0.065}_{-0.072}$	$0.768^{+0.078}_{-0.064}$	$2.395^{+0.557}_{-0.411}$
	+3%/-3%	+1%/-1%	+1250%/-1500%	+8%/-9%	+10%/-8%	+23%/-17%
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 011958955-07 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-557 \pm 77$	$4.70^{+4.40}_{-3.30}$	$284^{+11}_{-10}$	$3600^{+2166}_{-646}$	$10594^{+110553}_{-7594}$
Alt.	$-246 \pm 61$	$5.19^{+4.49}_{-3.75}$	$284^{+11}_{-10}$	$3106^{+1630}_{-504}$	$3948^{+45218}_{-2817}$

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

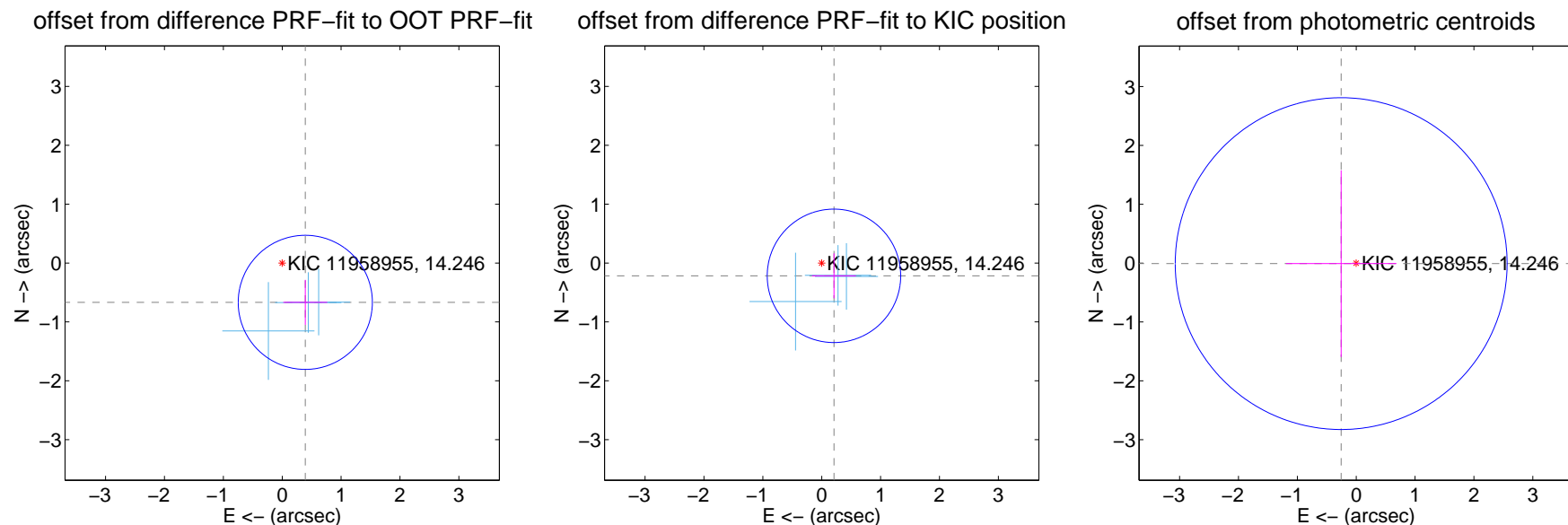
## DV Centroid Data

Supplemental centroid analysis for 011958955-07. Kepler magnitude: 14.25. Transit SNR 7.44

There are 3 quarters with good PRF difference image offsets

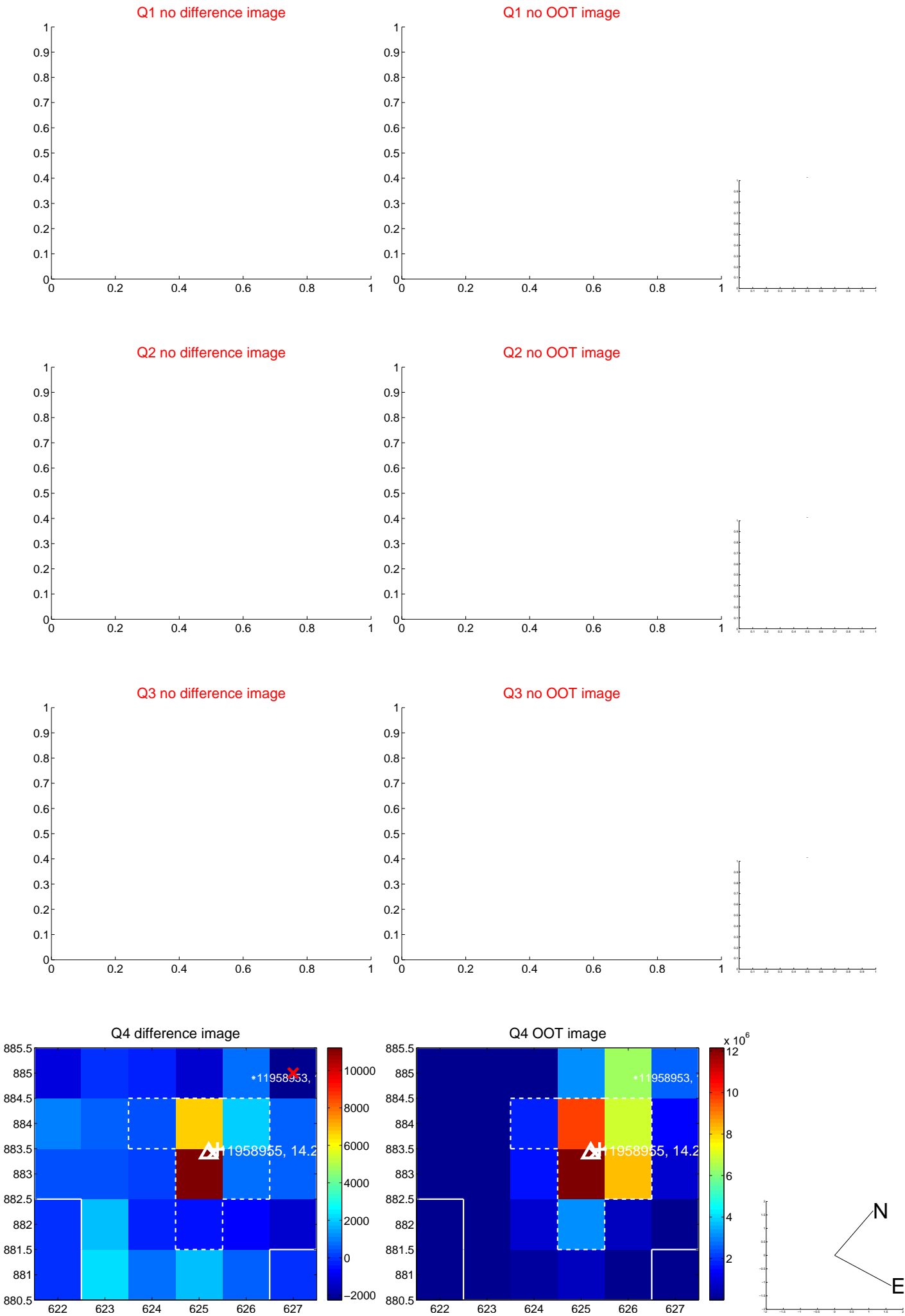
The direct PRF centroid is offset from the target star catalog position by about 0.48 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.774 \pm 0.380$	2.04	$-0.392 \pm 0.373$	$-0.668 \pm 0.382$
PRF-fit source offset from KIC position	$0.301 \pm 0.378$	0.80	$-0.208 \pm 0.373$	$-0.217 \pm 0.382$
photometric centroid source offset	$0.26 \pm 0.94$	0.27	$0.26 \pm 0.94$	$-0.01 \pm 1.59$

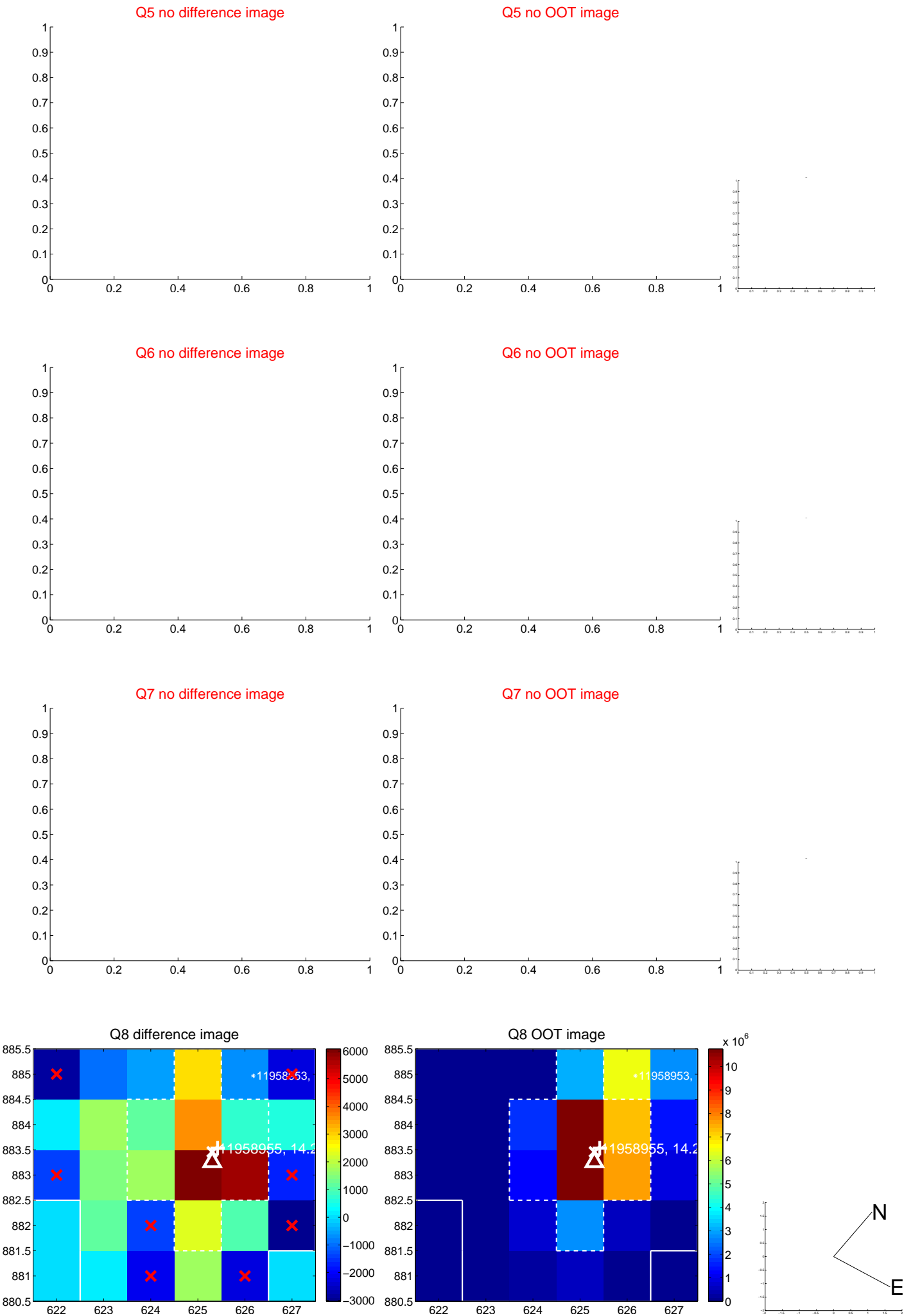


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

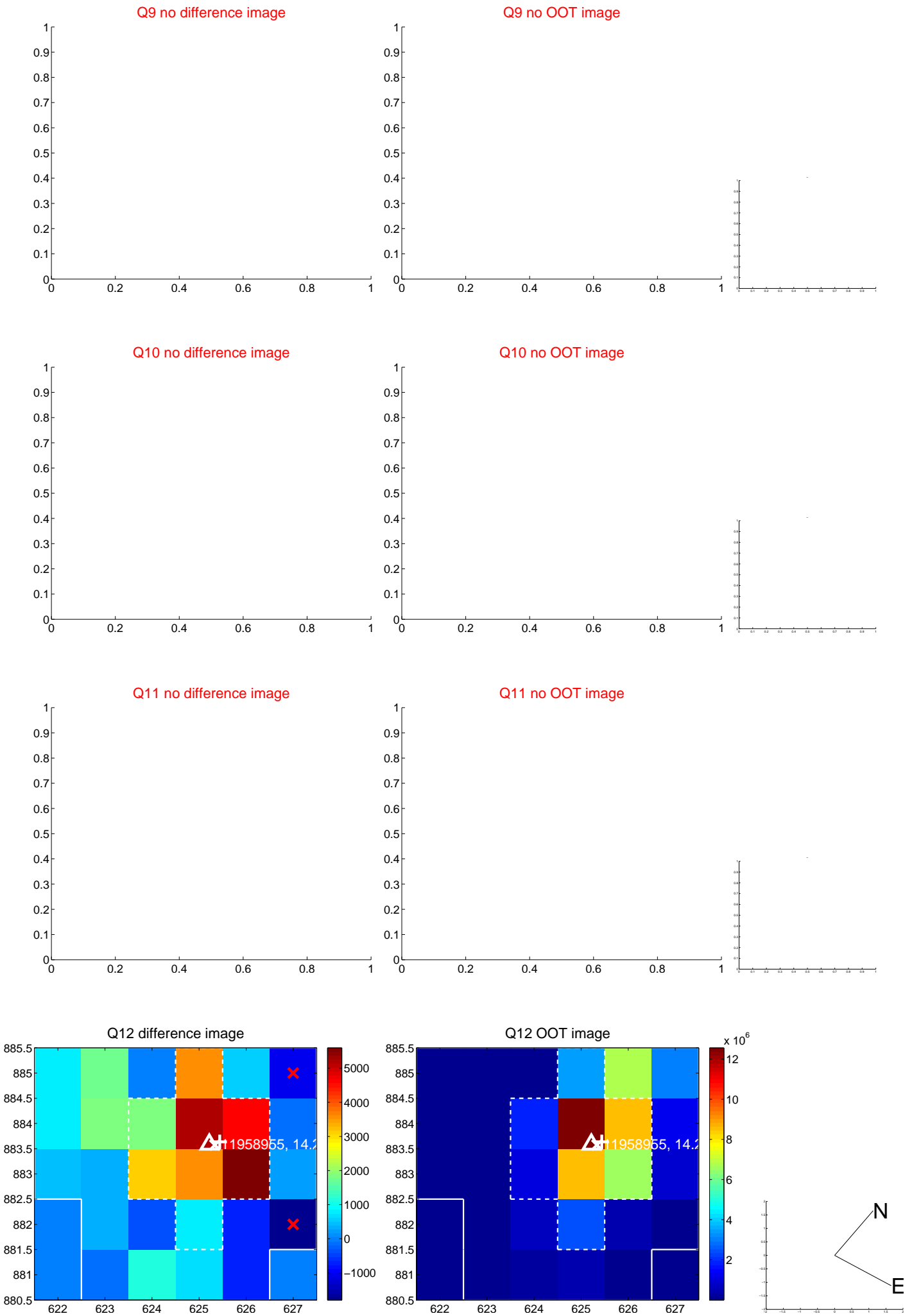
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



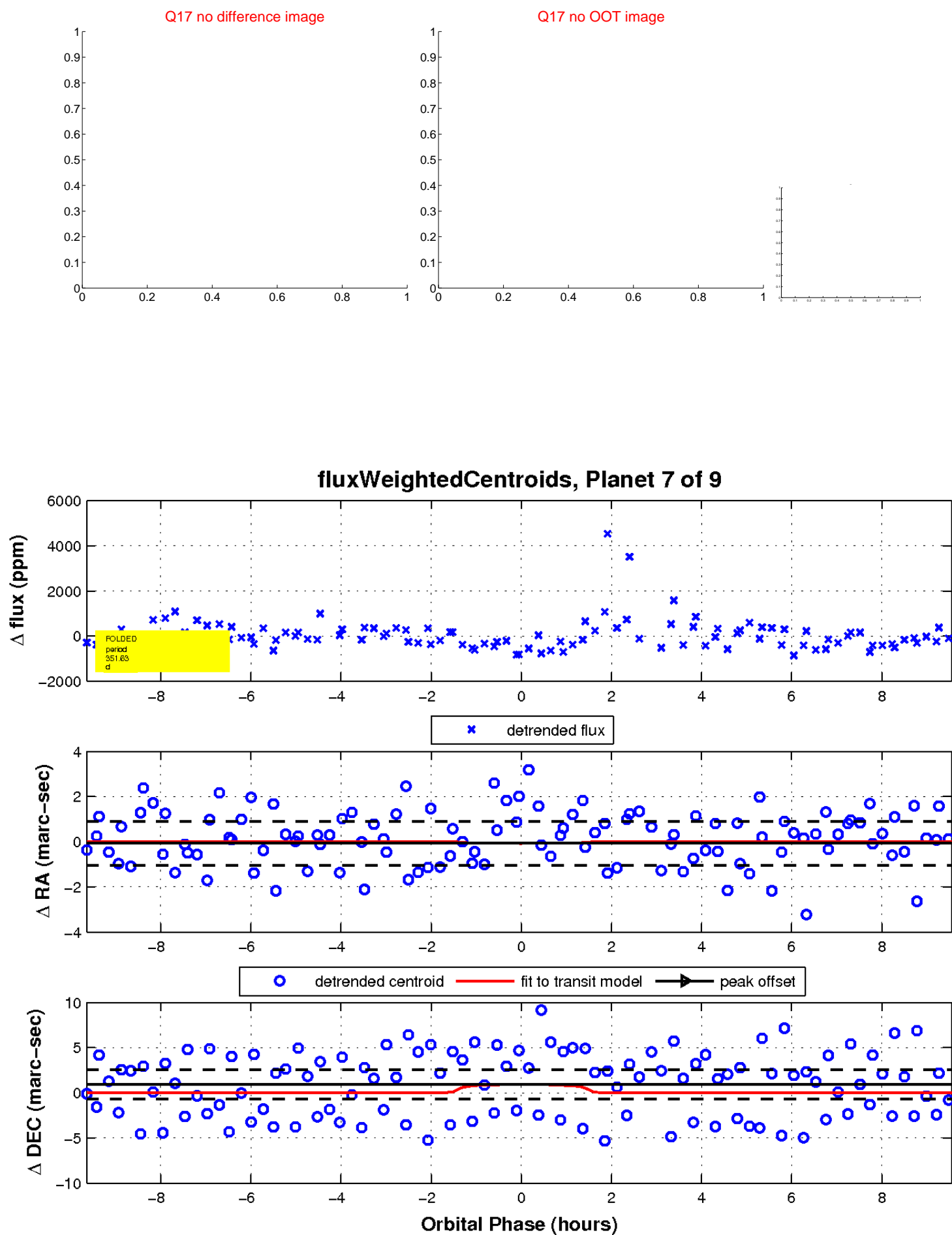
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



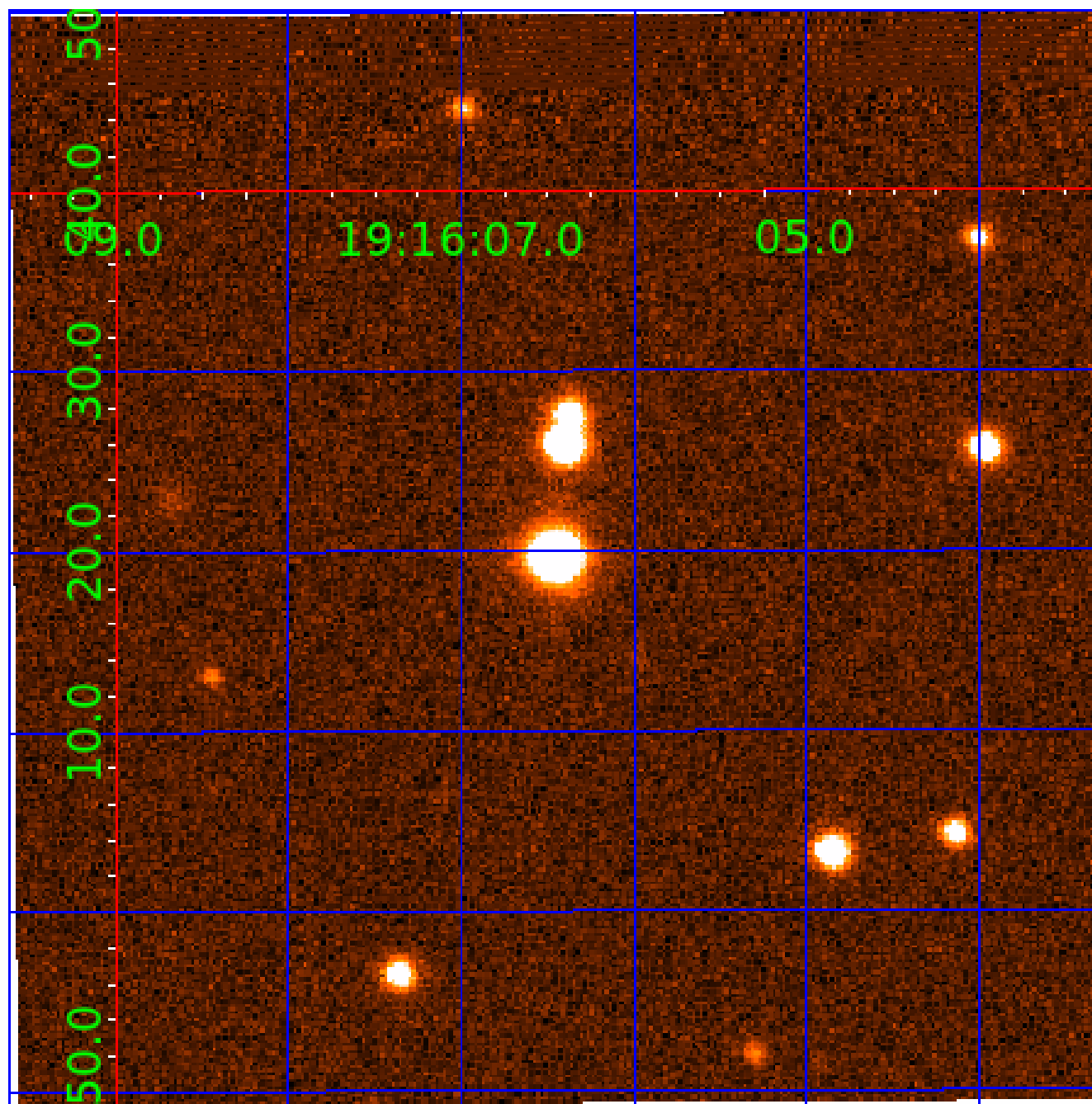
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.





UKIRT Image

Declination



# KIC 011958955

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
011958955-01	OBS	No	609.990552	172.502121	700.4	10.032	15.6	6.0	0.77	4981	2.21	0.20
011958955-02	OBS	No	619.391847	206.185446	822.8	4.390	11.6	6.9	0.77	4981	2.33	0.19
011958955-03	OBS	No	624.344901	150.726038	635.1	17.271	10.7	4.9	0.77	4981	2.23	0.19
011958955-04	OBS	No	384.839018	318.703990	901.3	4.616	10.8	7.5	0.77	4981	2.50	0.36
011958955-05	OBS	No	446.767859	373.700685	1422.8	19.154	9.7	8.2	0.77	4981	3.39	0.30
011958955-06	OBS	No	346.443665	437.536963	1099.5	3.840	9.3	8.6	0.77	4981	2.85	0.41
011958955-07	OBS	No	351.630210	432.911970	948.3	3.220	9.1	7.4	0.77	4981	2.67	0.41
011958955-08	OBS	No	254.737256	211.434970	813.1	20.113	9.5	6.3	0.77	4981	2.23	0.63
011958955-09	OBS	No	413.479898	380.401971	780.1	5.000	9.2	-1.0	0.77	4981	2.07	0.33

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011958955-01	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
011958955-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_UNCERTAIN
011958955-03	OBS	FP	0.00	1	0	1	0	ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS—HALO_GHOST
011958955-04	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_TER_DV—CENT_KIC_POS—HALO_GHOST
011958955-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
011958955-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_KIC_POS
011958955-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_KIC_POS
011958955-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
011958955-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_NOFITS

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

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

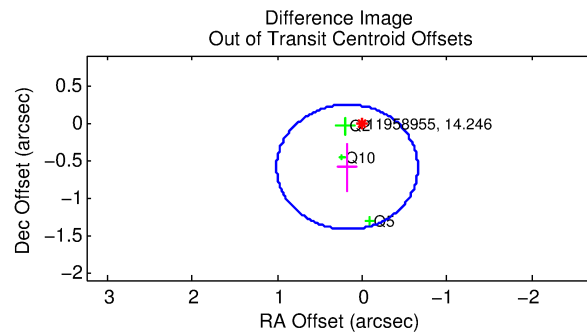
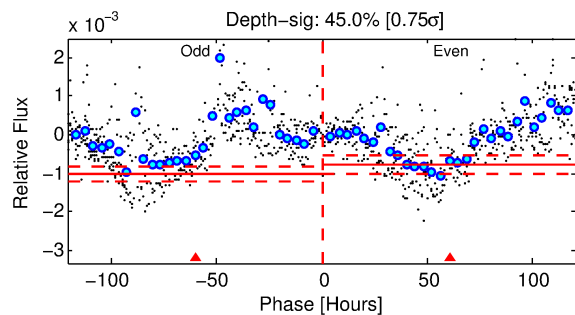
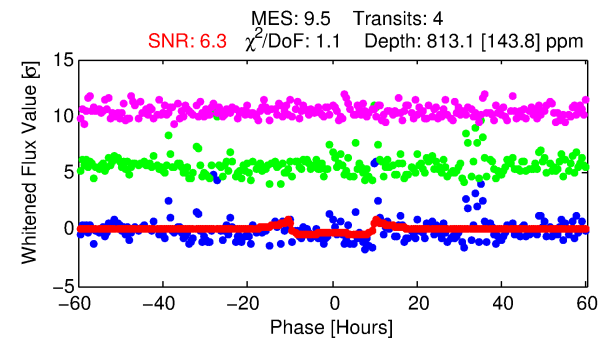
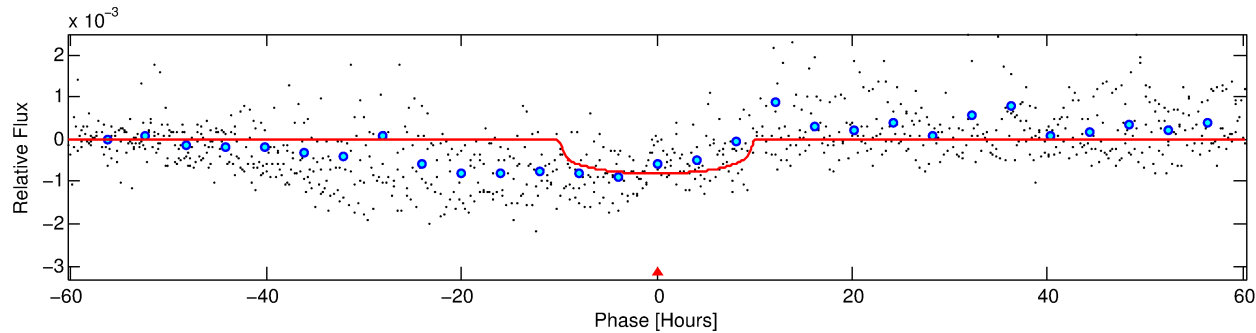
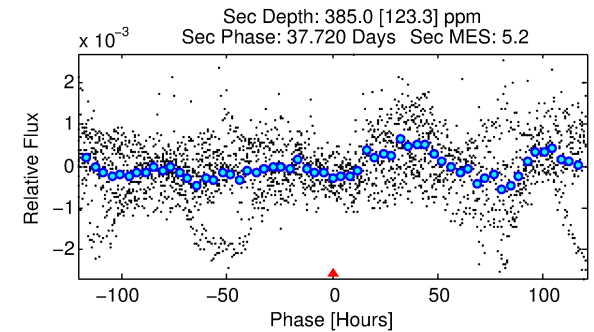
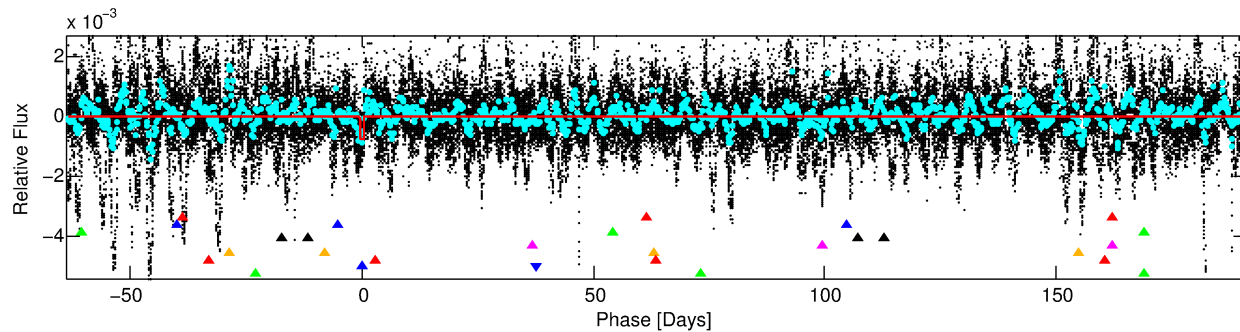
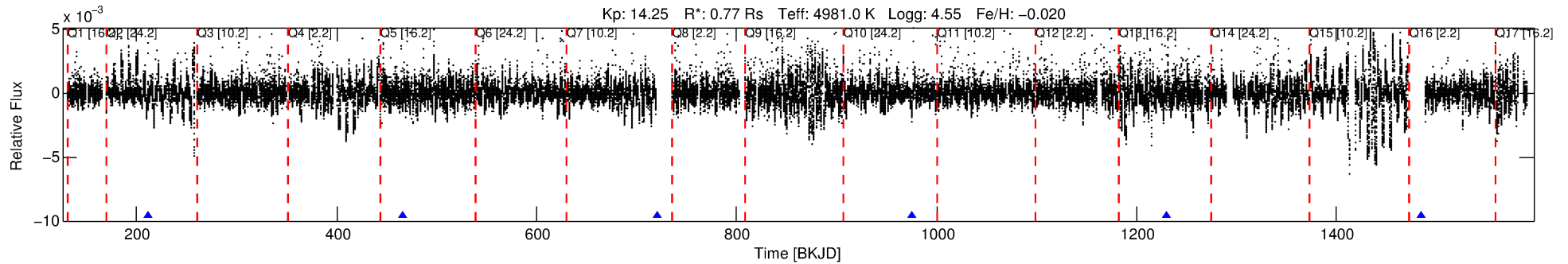
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 011958955-08

No Significant Match Found

# DV One-Page Summary

KIC: 11958955 Candidate: 8 of 9 Period: 254.737 d



## DV Fit Results:

Period = 254.73726 [0.00594] d  
Epoch = 211.4350 [0.0140] BKJD  
Rp/R\* = 0.0266 [0.0070]  
a/R\* = 83.98 [68.77]  
b = 0.55 [1.06]  
Seff = 0.63 [0.10]  
Teq = 227 [9] K  
Rp = 2.23 [0.62] Re  
a = 0.7199 [0.0559] AU  
Ag = 22138.27 [13801.01] [1.60 $\sigma$ ]  
Teffp = 4278 [669] K [6.06 $\sigma$ ]

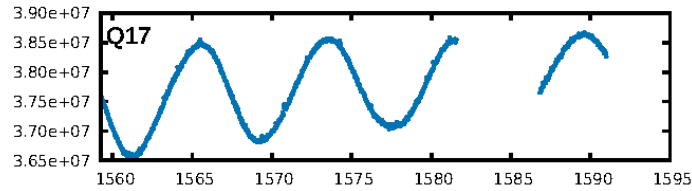
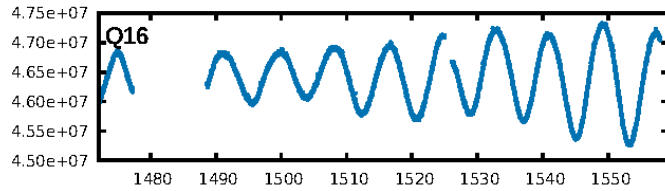
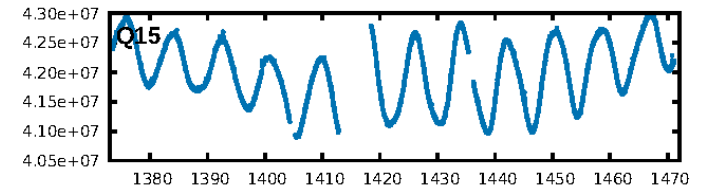
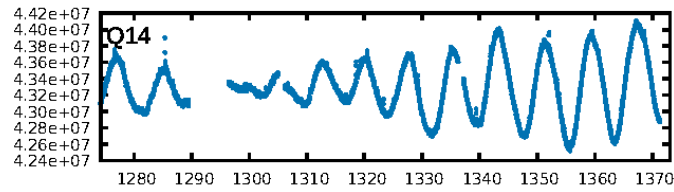
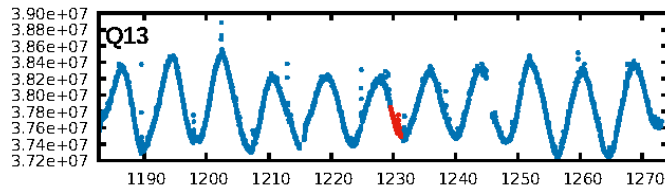
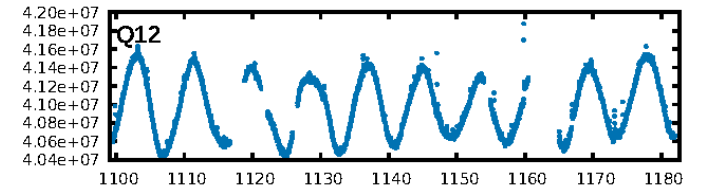
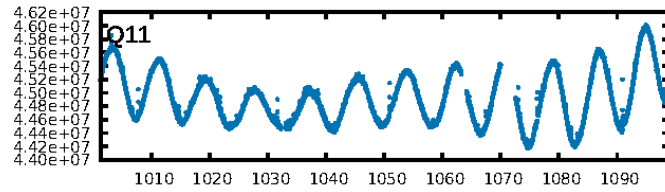
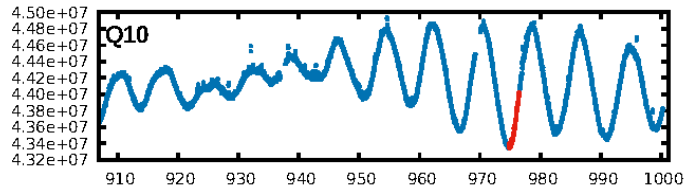
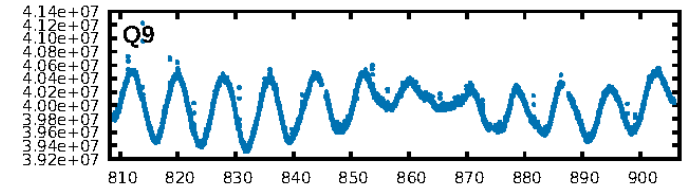
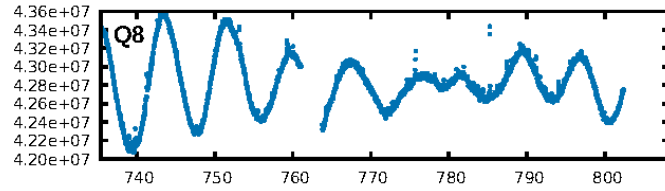
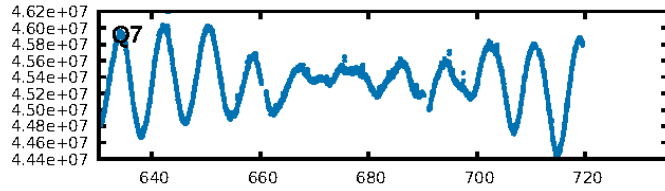
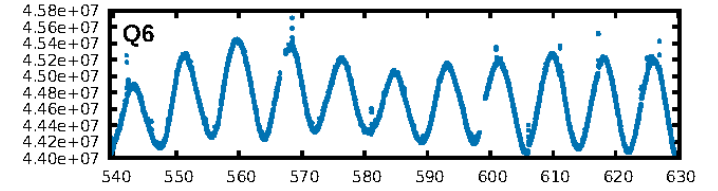
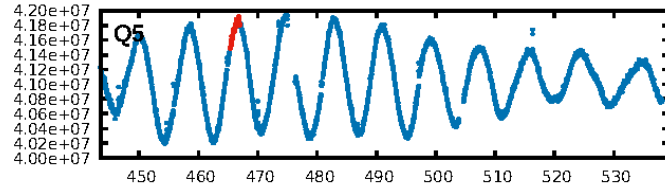
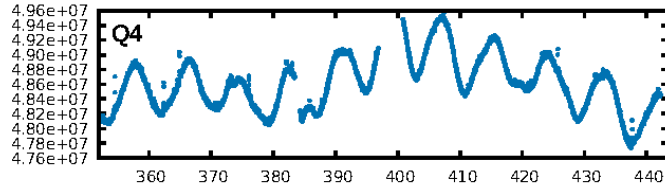
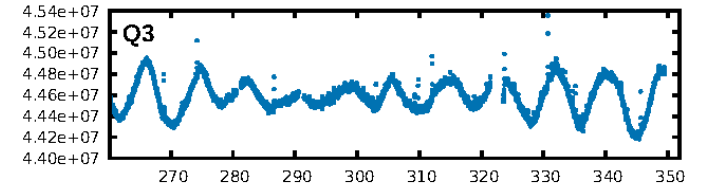
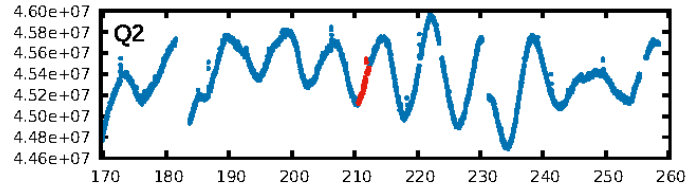
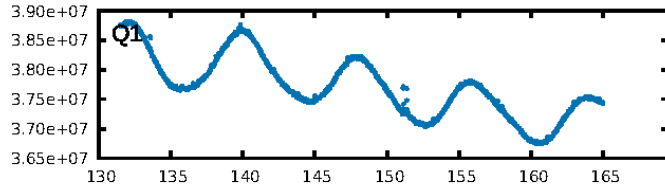
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [107.49 $\sigma$ ]  
ModelChiSquare2-sig: 91.4%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [4/4]  
GhostDiagnostic-chr: 1.683  
Centroid-sig: 0.0%  
Centroid-so: 3.132 arcsec [1.95 $\sigma$ ]  
OotOffset-rm: 0.616 arcsec [2.22 $\sigma$ ]  
KicOffset-rm: 0.275 arcsec [2.19 $\sigma$ ]  
OotOffset-st: 2/0/0/1 [3]  
KicOffset-st: 2/0/0/1 [3]  
DiffImageQuality-fgm: 0.67 [2/3]  
DiffImageOverlap-fno: 1.00 [3/3]

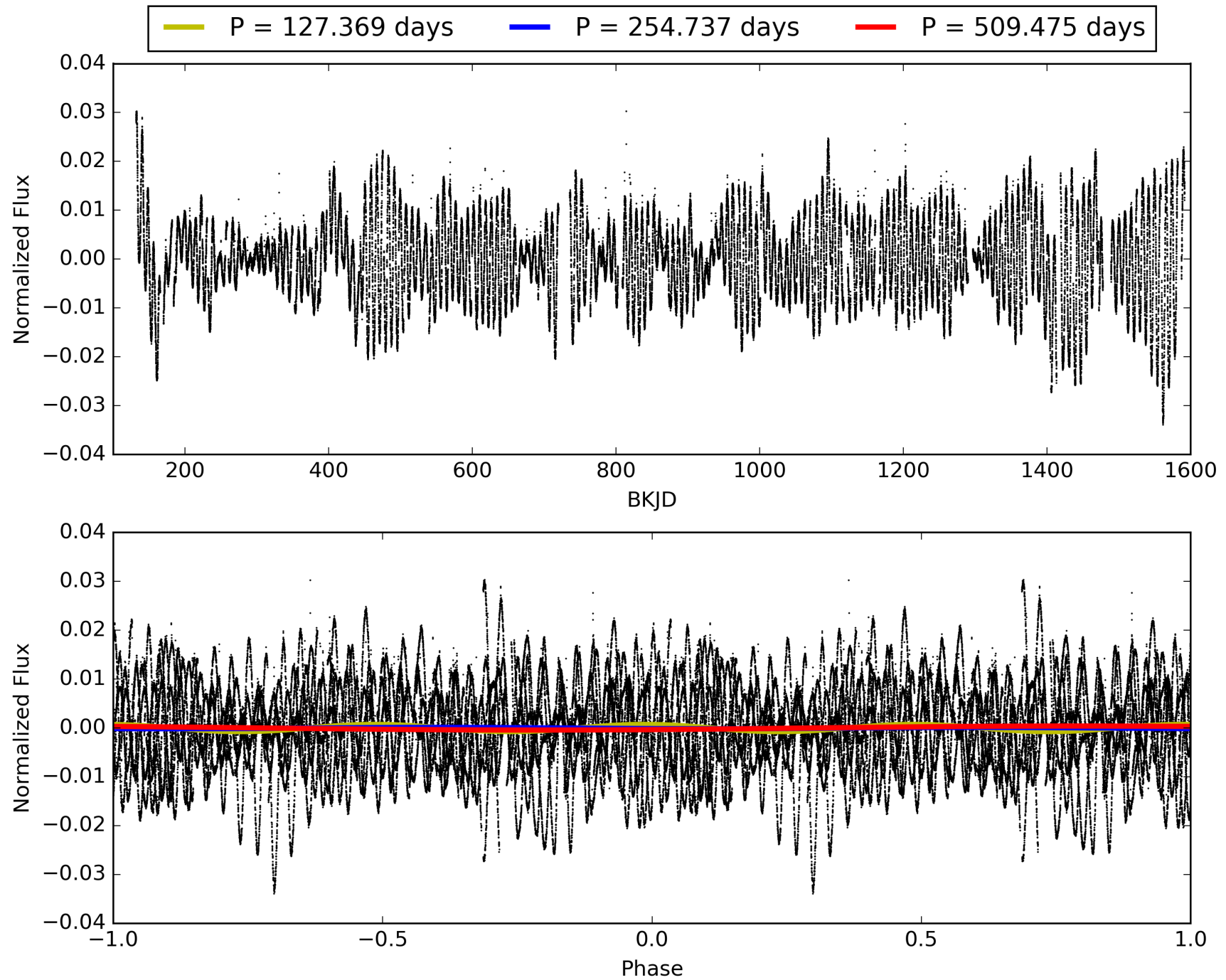
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 05:49:22 Z

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

# TCE 011958955-08, PDC Light Curves

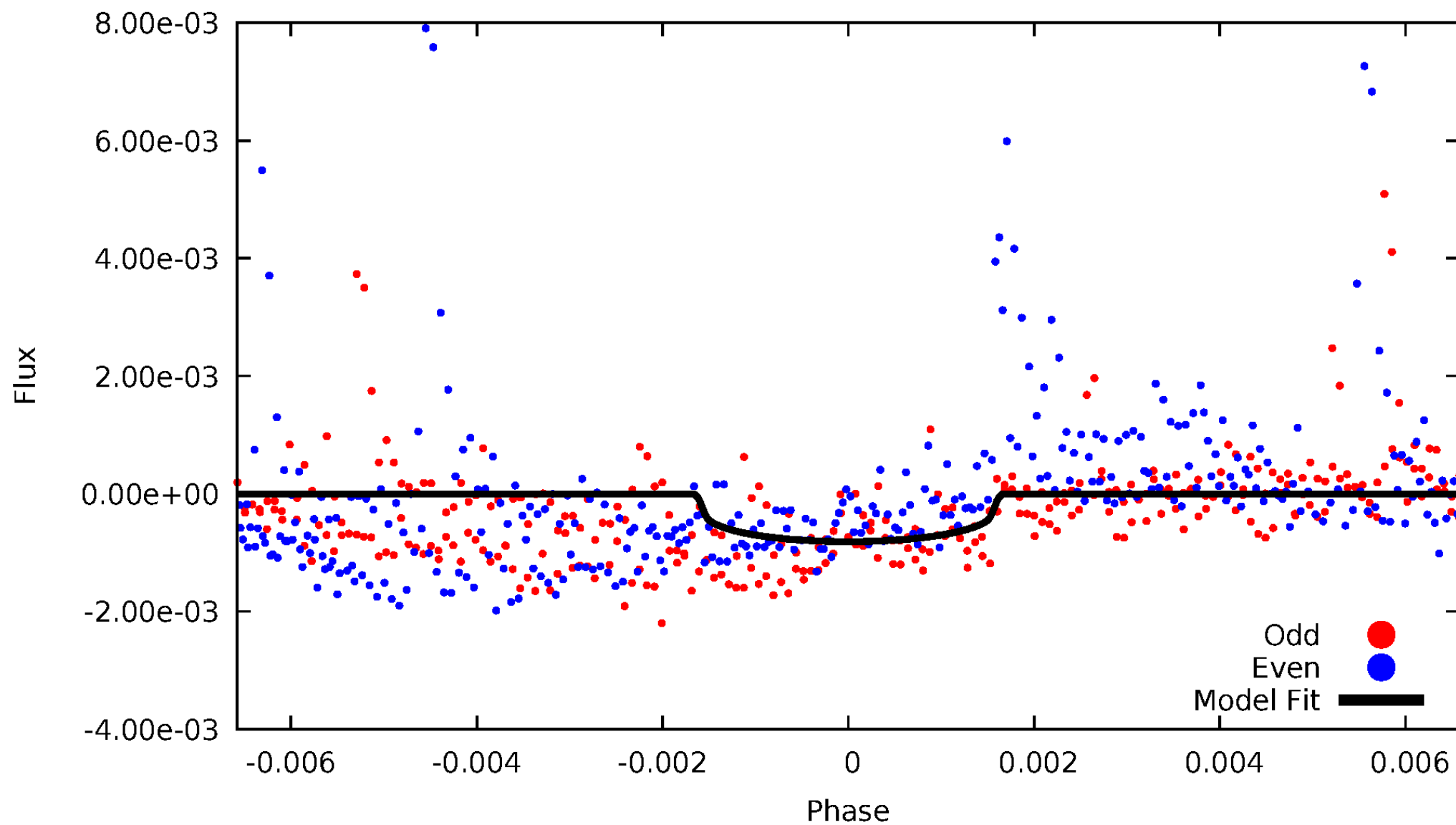


# TCE 011958955-08



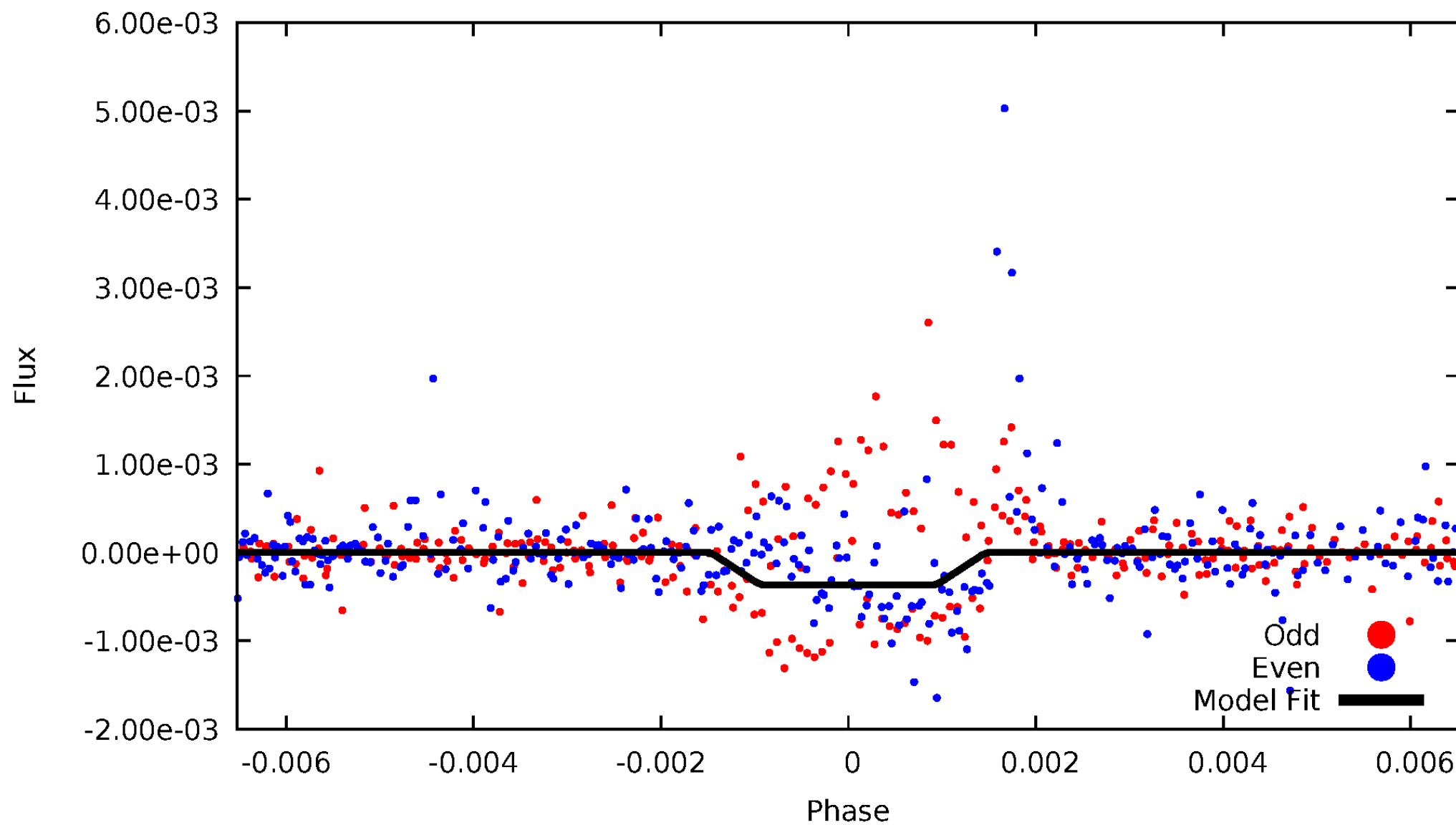
# DV Odd/Even

TCE 011958955-08



# ALT Odd/Even

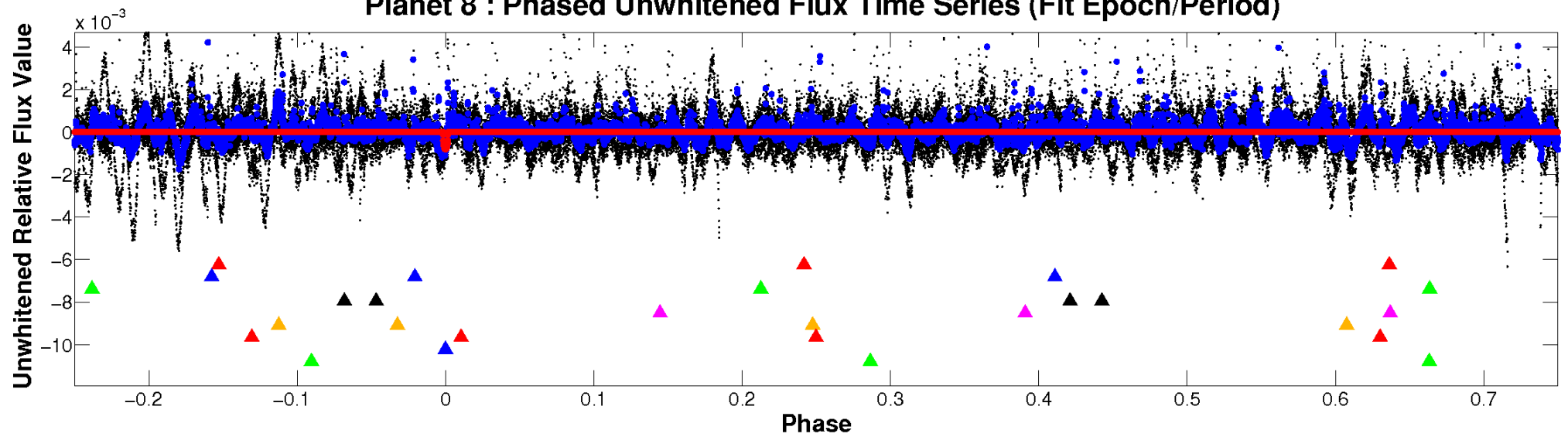
TCE 011958955-08



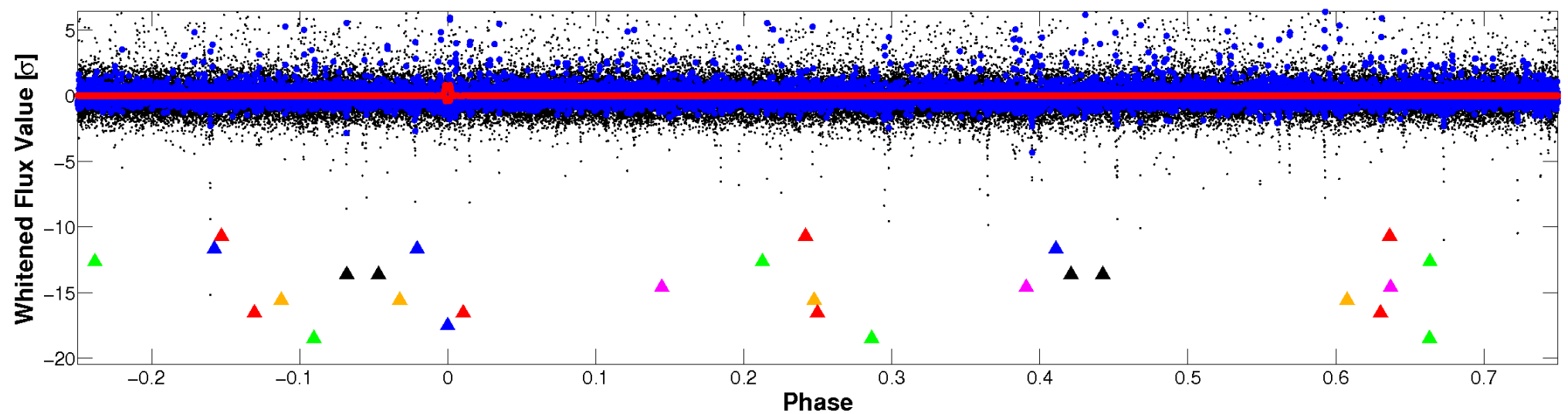


# Non-Whitened Vs. Whitened Light Curve

## Planet 8 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)



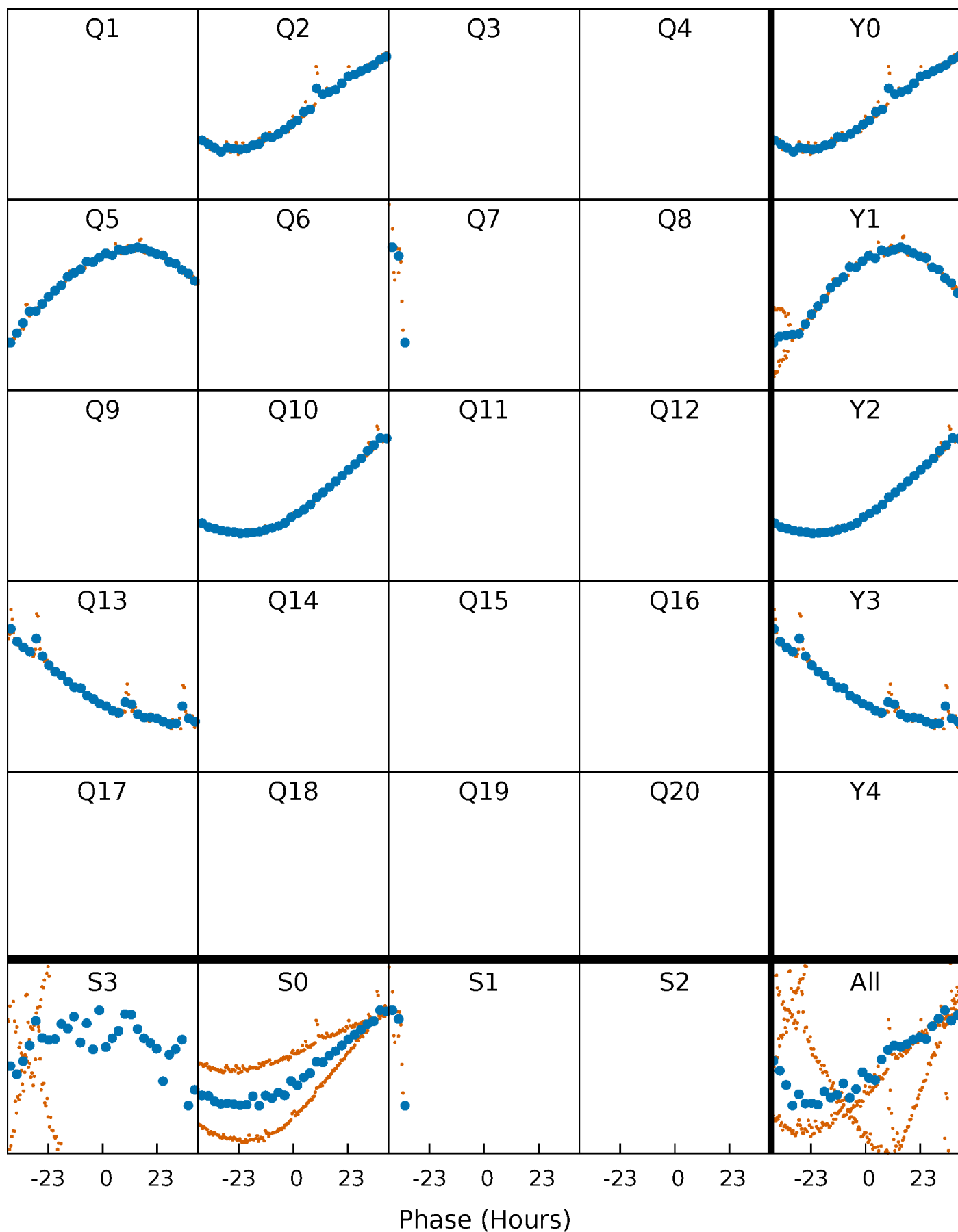
## Planet 8 : Phased Whitened Flux Time Series (Fit Epoch/Period)





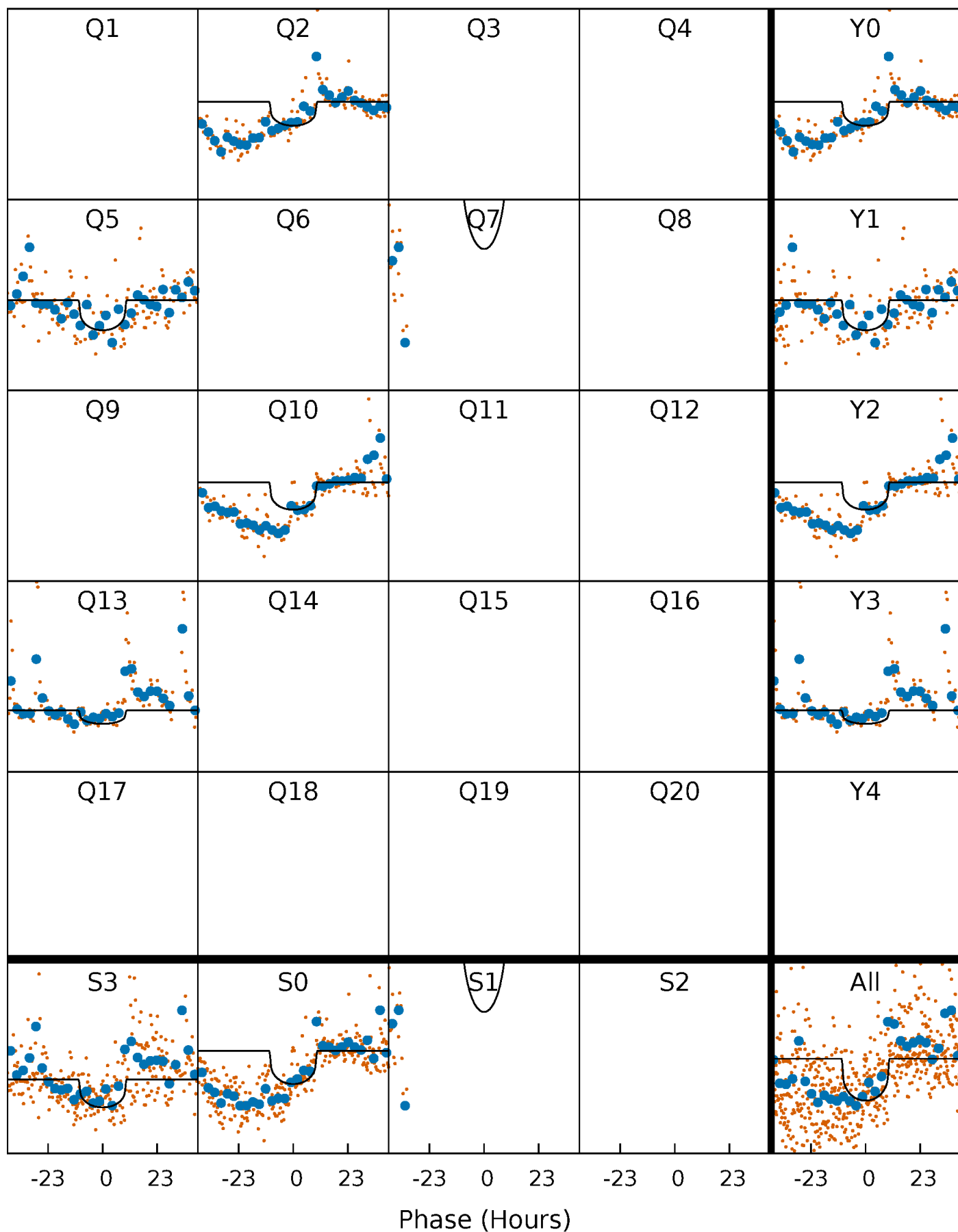
# PDC Quarter-Phased Transit Curves

TCE 011958955-08     $P=254.737256$  Days     $T_0=211.434970$  (BKJD)



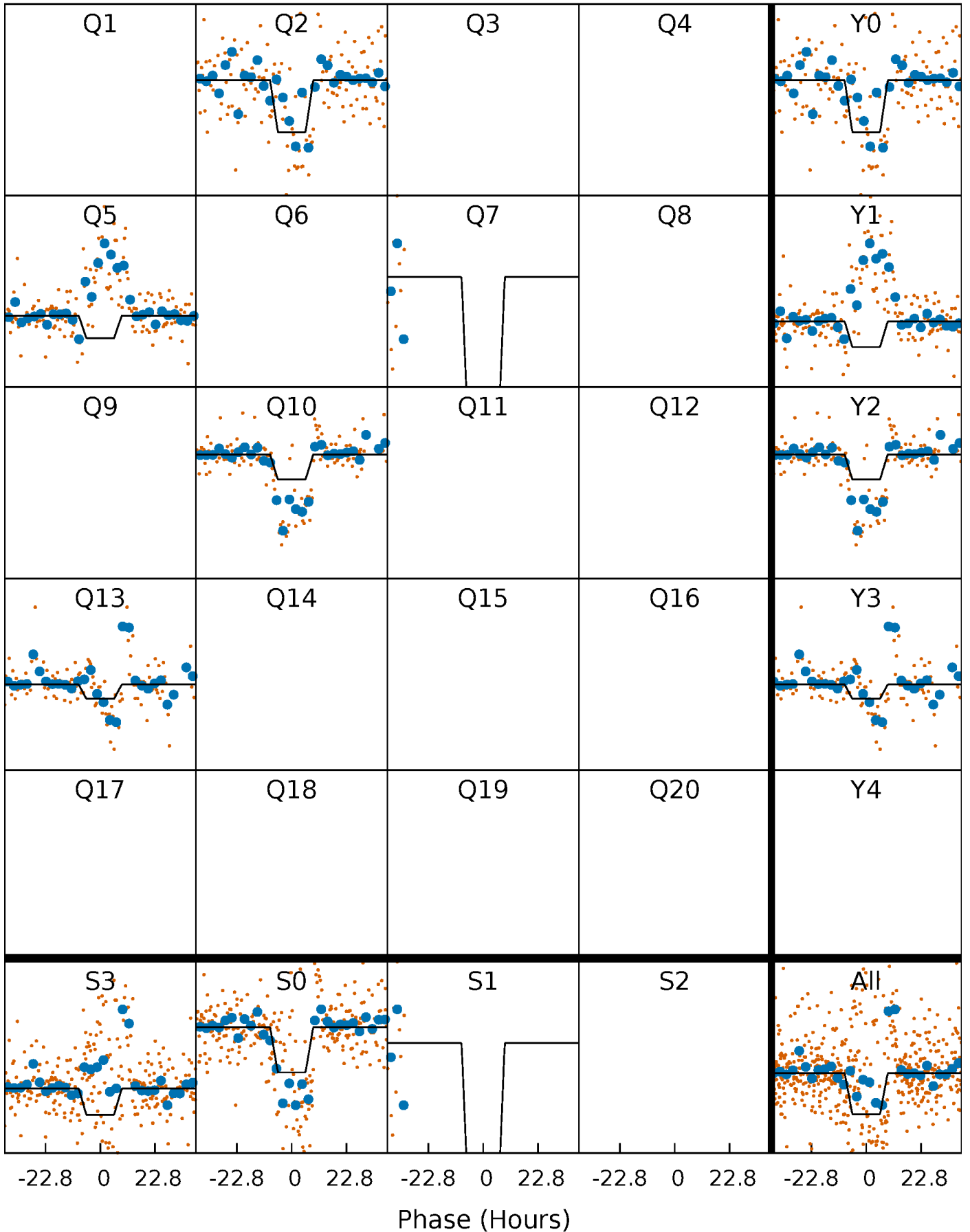
# DV Quarter-Phased Transit Curves

TCE 011958955-08     $P=254.737256$  Days     $T_0=211.434970$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

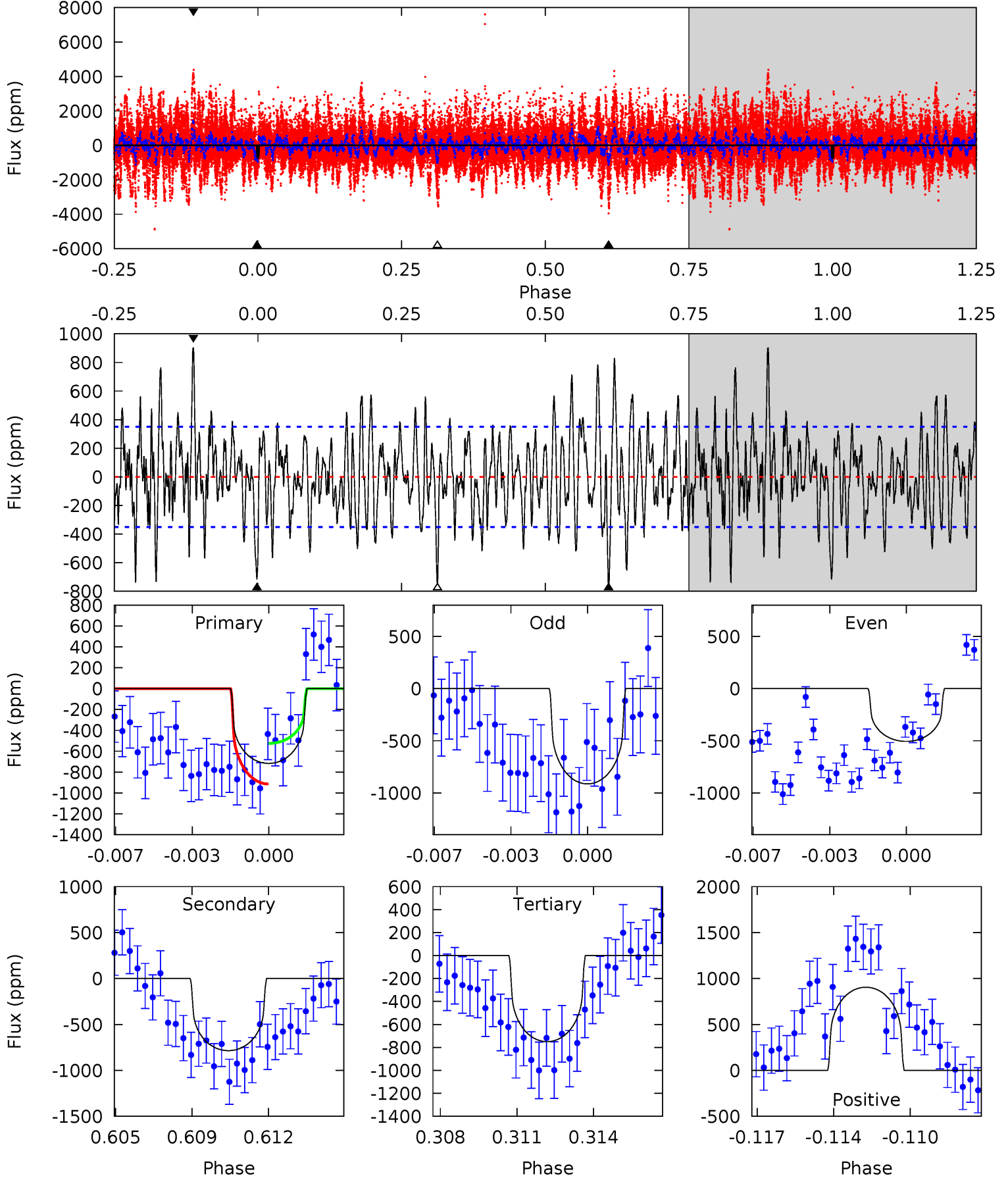
TCE 011958955-08 P=254.738381 Days  $T_0=211.440920$  (BKJD)



# DV Model-Shift Uniqueness Test

011958955-08,  $P = 254.737256$  Days,  $E = 211.434970$  Days

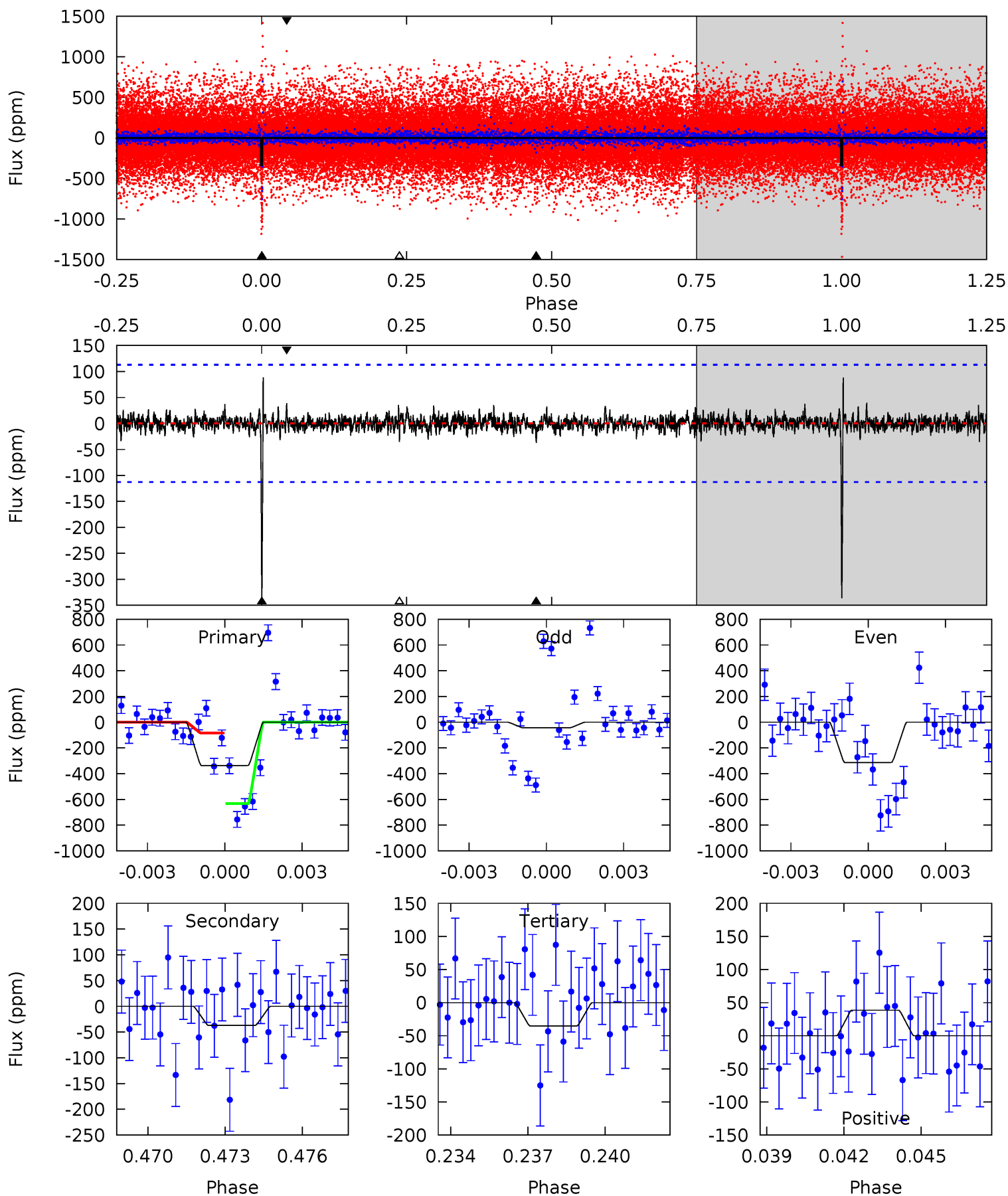
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.7	11.7	11.2	13.5	5.23	2.93	3.72	-0.49	-2.80	0.53	-1.78	2.97	1.04	0.54	2.90



# Alt Model-Shift Uniqueness Test

011958955-08, P = 254.738381 Days, E = 211.440920 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
15.7	1.72	1.64	1.80	5.25	2.97	0.44	14.0	13.9	0.08	-0.08	6.76	0.53	0.21	12.7



### Stellar Parameters For KIC 011958955

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$4981^{+151}_{-136}$	$4.553^{+0.060}_{-0.050}$	$-0.020^{+0.250}_{-0.300}$	$0.767^{+0.065}_{-0.072}$	$0.768^{+0.078}_{-0.064}$	$2.395^{+0.557}_{-0.411}$
	+3%/-3%	+1%/-1%	+1250%/-1500%	+8%/-9%	+10%/-8%	+23%/-17%
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 011958955-08 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-785 \pm 67$	$2.21^{+0.63}_{-0.60}$	$316^{+13}_{-11}$	$5128^{+793}_{-484}$	$46054^{+38436}_{-17798}$
Alt.	$-37 \pm 21$	$1.61^{+0.65}_{-0.62}$	$317^{+12}_{-11}$	$3285^{+601}_{-470}$	$4035^{+6843}_{-2724}$

$T_{max}$  = 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

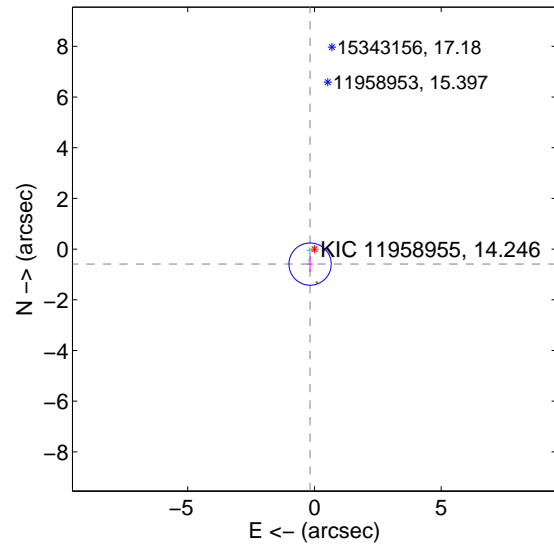
Supplemental centroid analysis for 011958955-08. Kepler magnitude: 14.25. Transit SNR 6.34

There are 2 quarters with good PRF difference image offsets

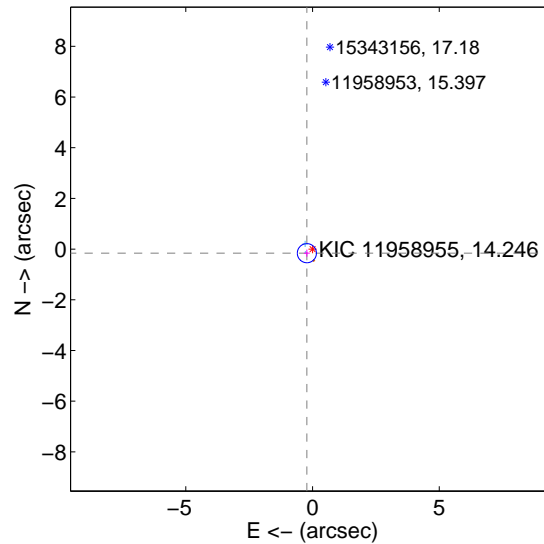
The direct PRF centroid is offset from the target star catalog position by about 0.35 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.616 \pm 0.278$	2.22	$0.172 \pm 0.103$	$-0.591 \pm 0.309$
PRF-fit source offset from KIC position	$0.275 \pm 0.126$	2.19	$0.223 \pm 0.118$	$-0.161 \pm 0.140$
photometric centroid source offset	$3.13 \pm 1.61$	1.95	$0.79 \pm 0.45$	$-3.03 \pm 1.66$

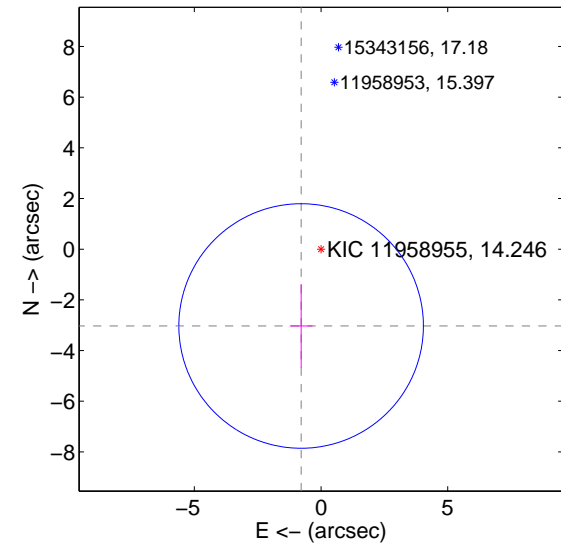
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

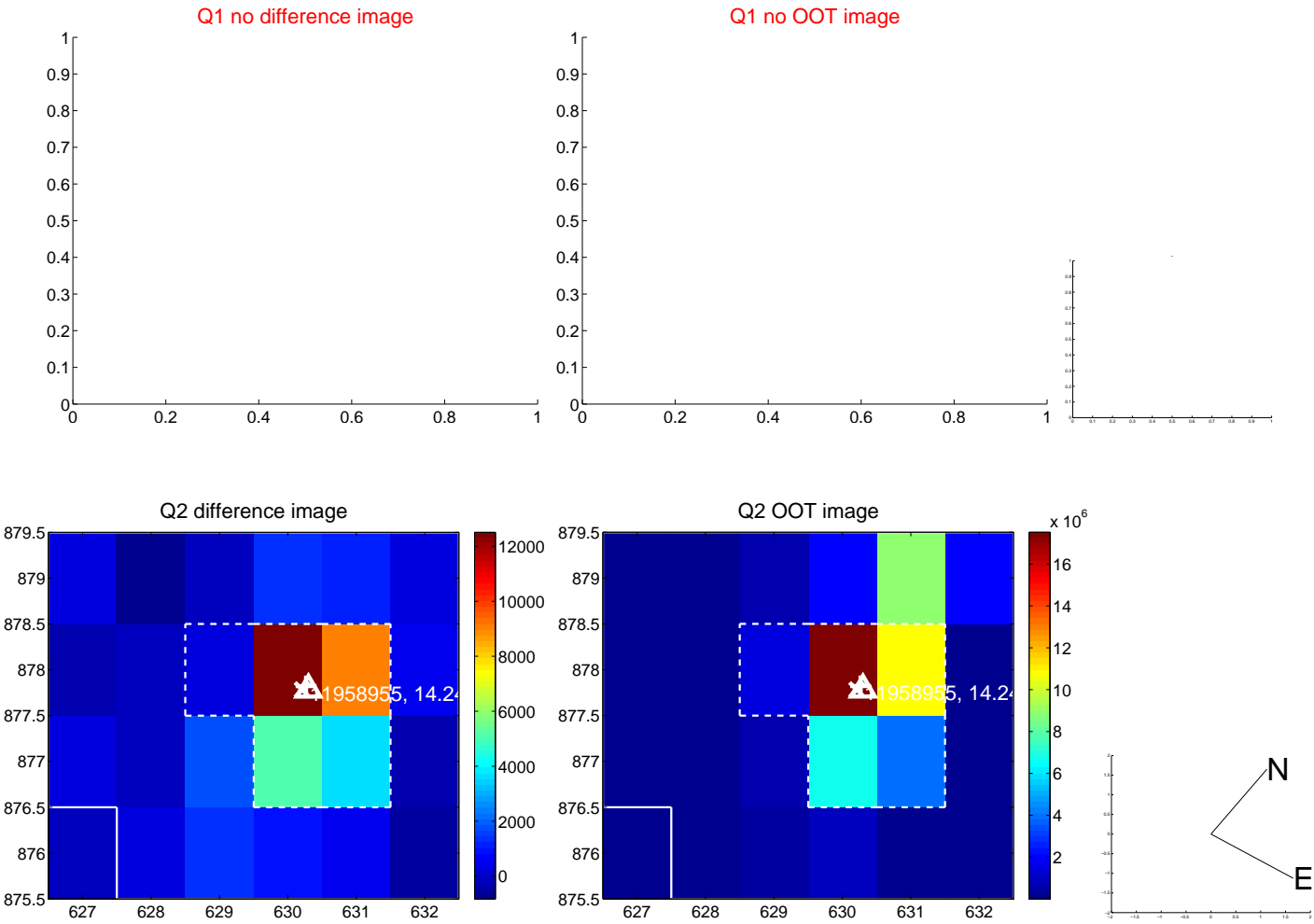


offset from photometric centroids



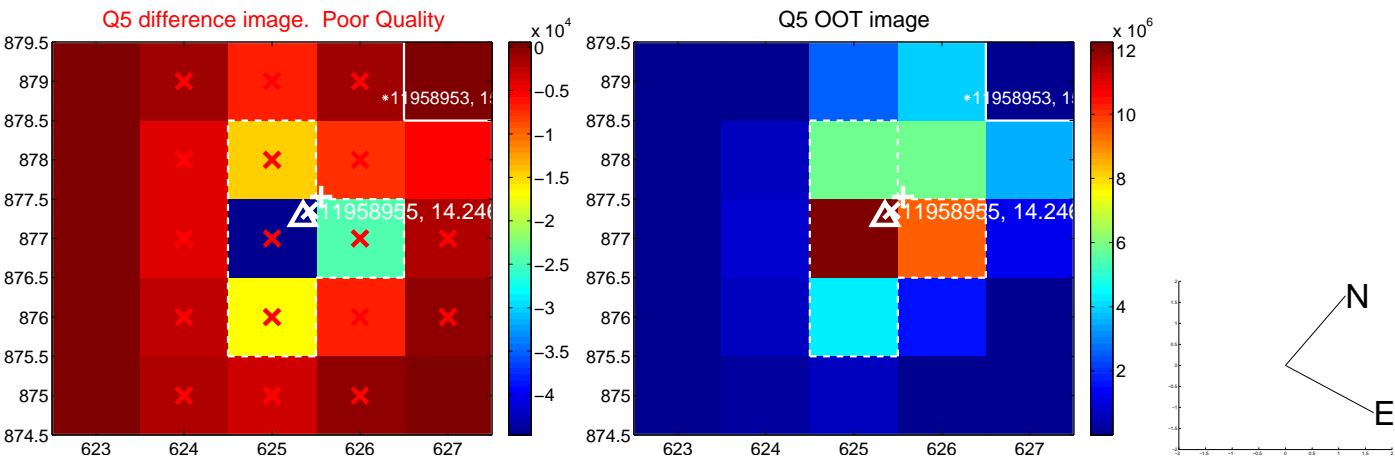
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

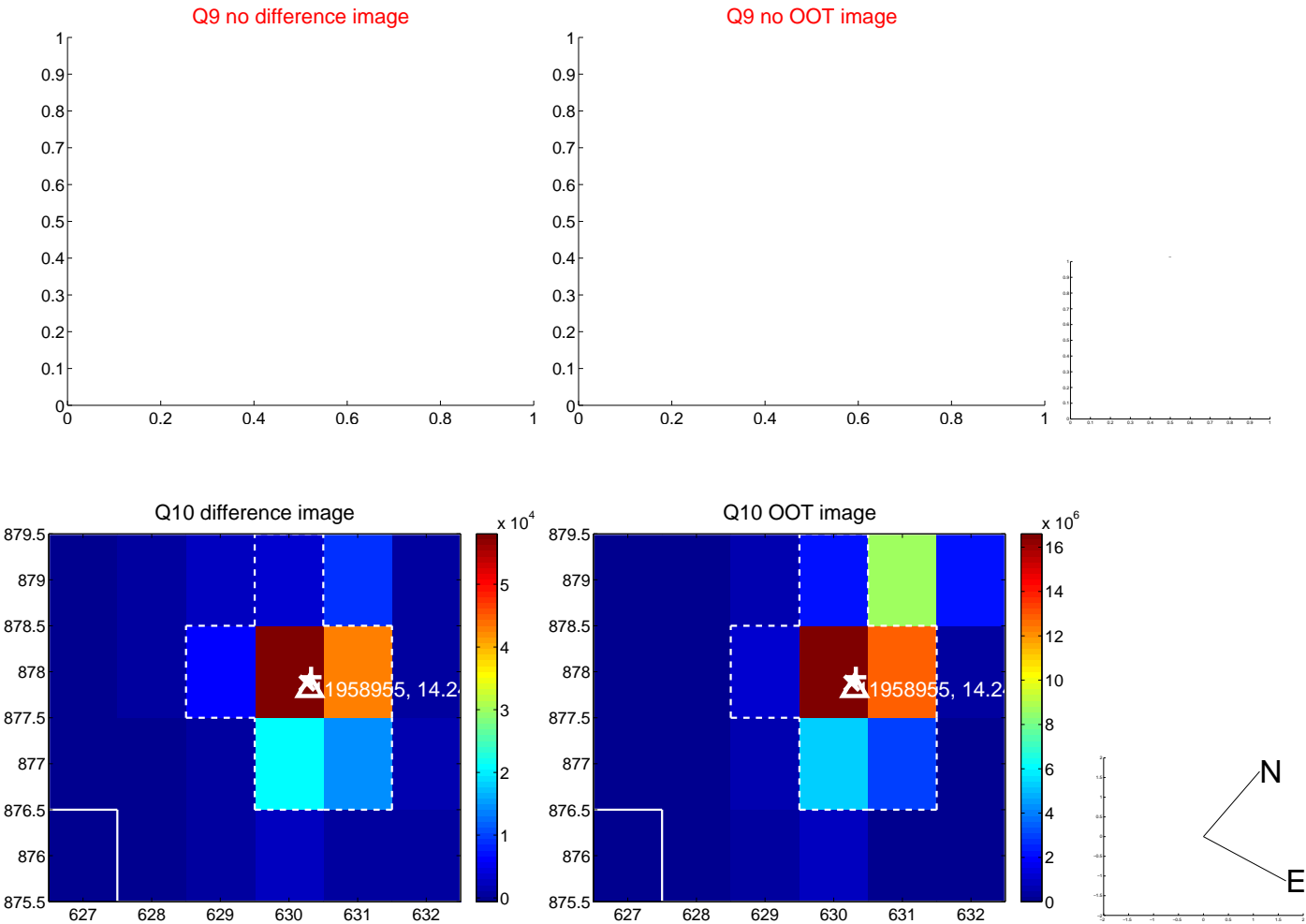




white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



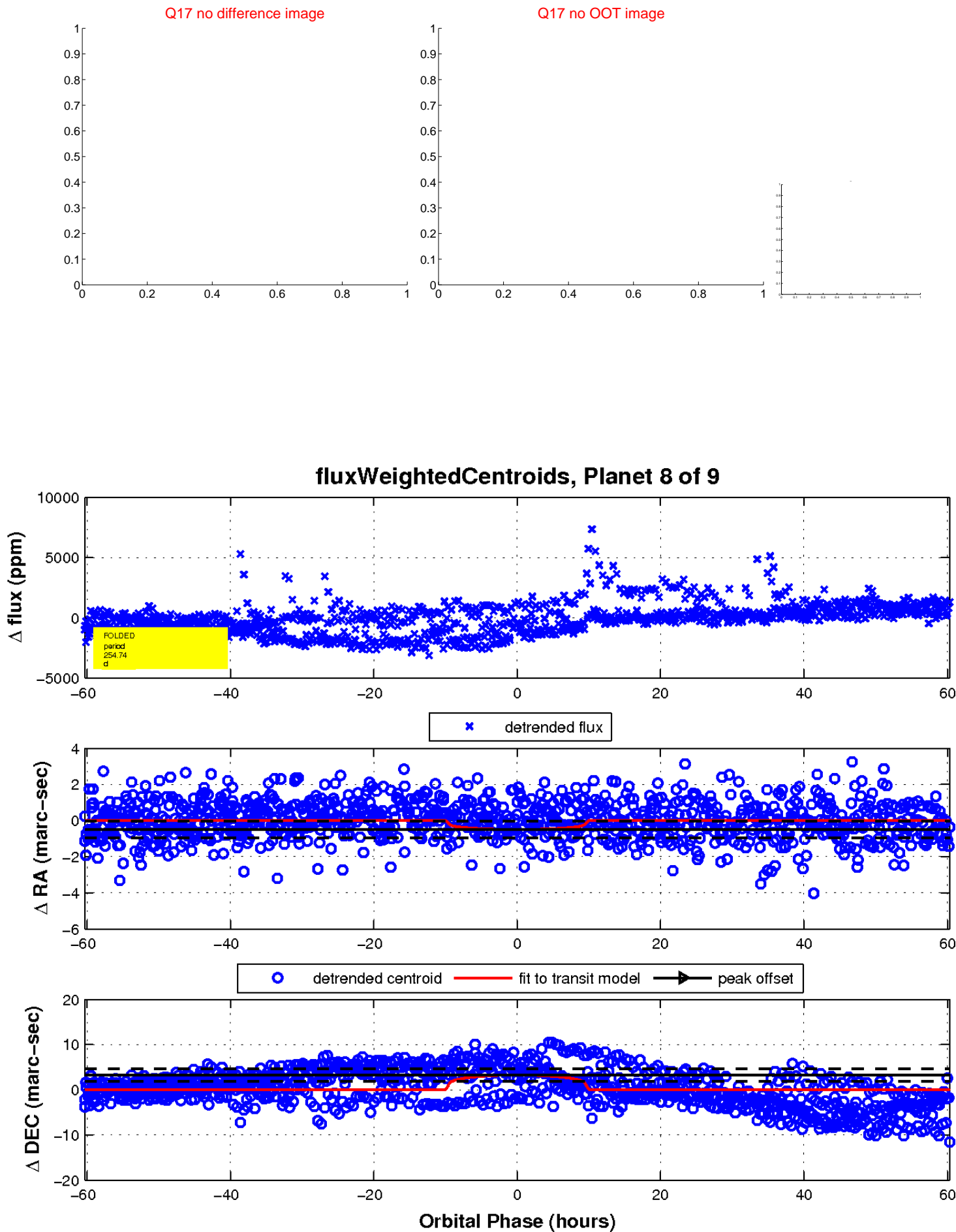
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

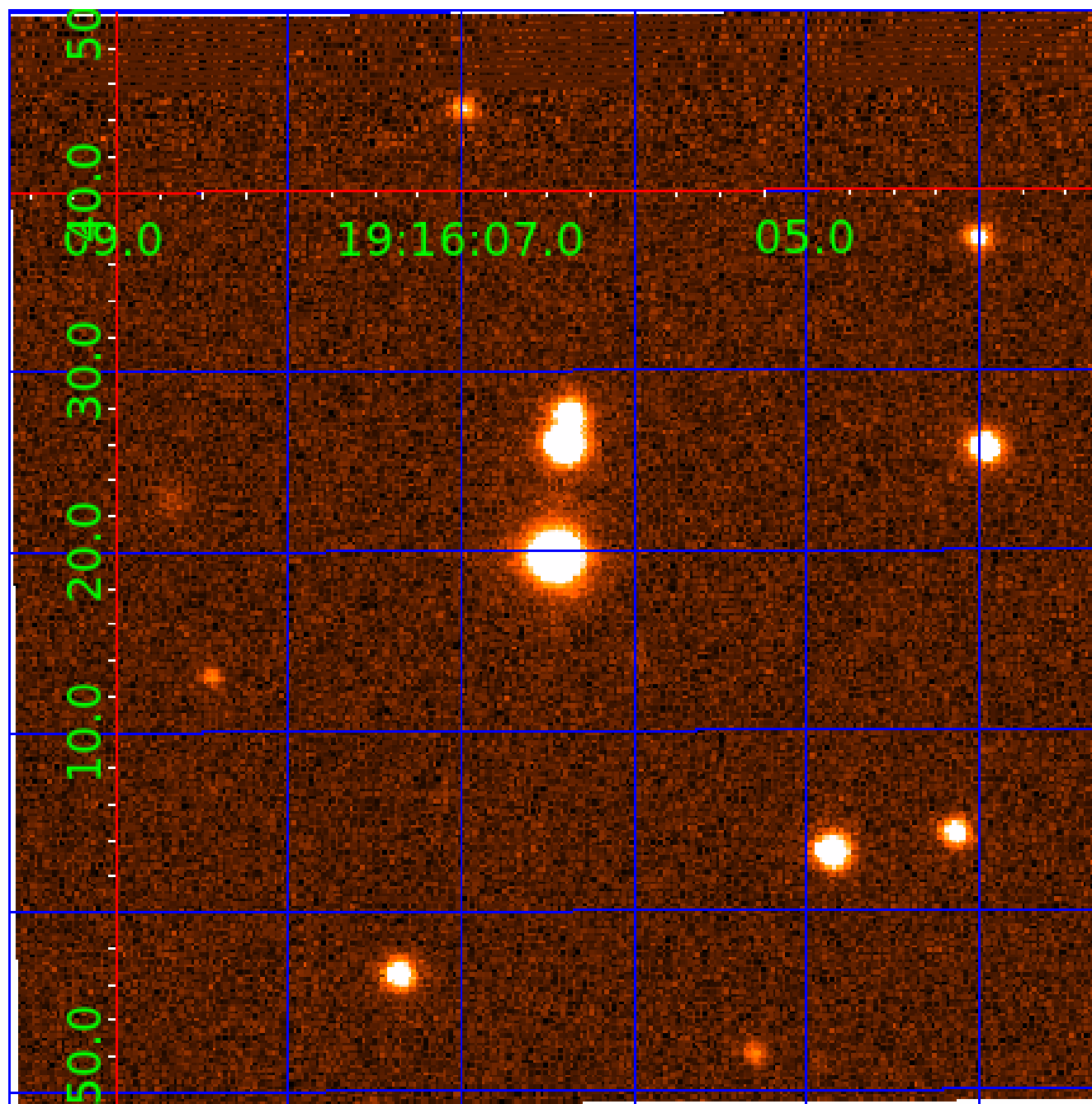


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 011958955

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
011958955-01	OBS	No	609.990552	172.502121	700.4	10.032	15.6	6.0	0.77	4981	2.21	0.20
011958955-02	OBS	No	619.391847	206.185446	822.8	4.390	11.6	6.9	0.77	4981	2.33	0.19
011958955-03	OBS	No	624.344901	150.726038	635.1	17.271	10.7	4.9	0.77	4981	2.23	0.19
011958955-04	OBS	No	384.839018	318.703990	901.3	4.616	10.8	7.5	0.77	4981	2.50	0.36
011958955-05	OBS	No	446.767859	373.700685	1422.8	19.154	9.7	8.2	0.77	4981	3.39	0.30
011958955-06	OBS	No	346.443665	437.536963	1099.5	3.840	9.3	8.6	0.77	4981	2.85	0.41
011958955-07	OBS	No	351.630210	432.911970	948.3	3.220	9.1	7.4	0.77	4981	2.67	0.41
011958955-08	OBS	No	254.737256	211.434970	813.1	20.113	9.5	6.3	0.77	4981	2.23	0.63
011958955-09	OBS	No	413.479898	380.401971	780.1	5.000	9.2	-1.0	0.77	4981	2.07	0.33

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011958955-01	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
011958955-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_UNCERTAIN
011958955-03	OBS	FP	0.00	1	0	1	0	ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS—HALO_GHOST
011958955-04	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_TER_DV—CENT_KIC_POS—HALO_GHOST
011958955-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
011958955-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_KIC_POS
011958955-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_KIC_POS
011958955-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
011958955-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_NOFITS

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

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

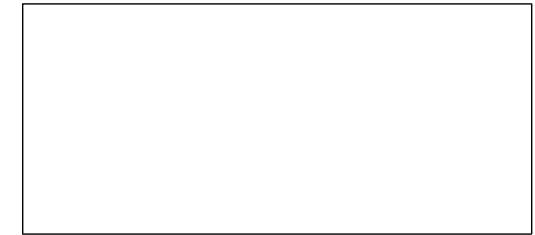
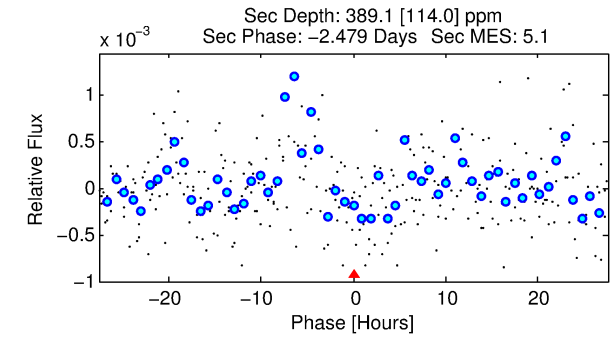
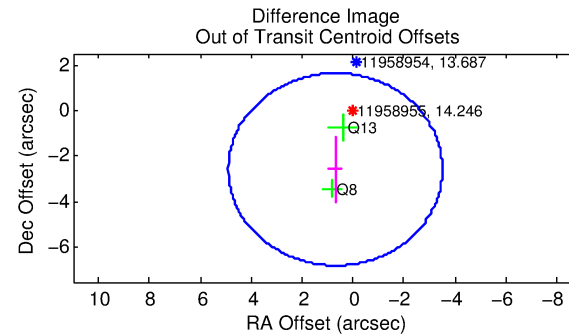
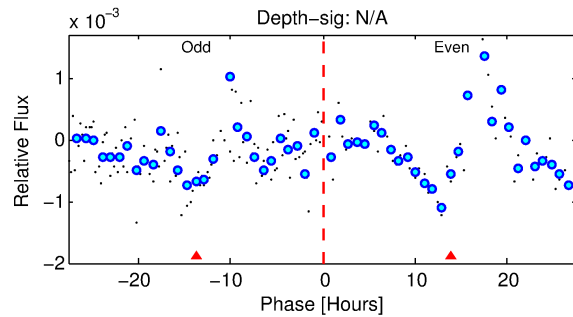
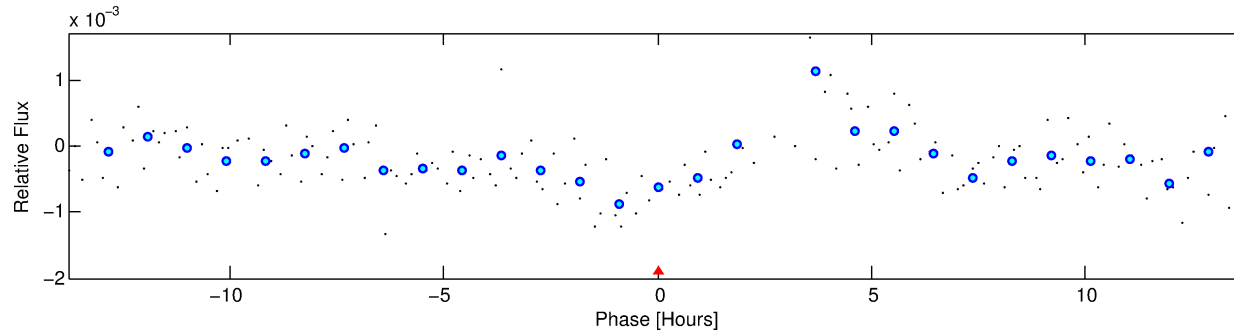
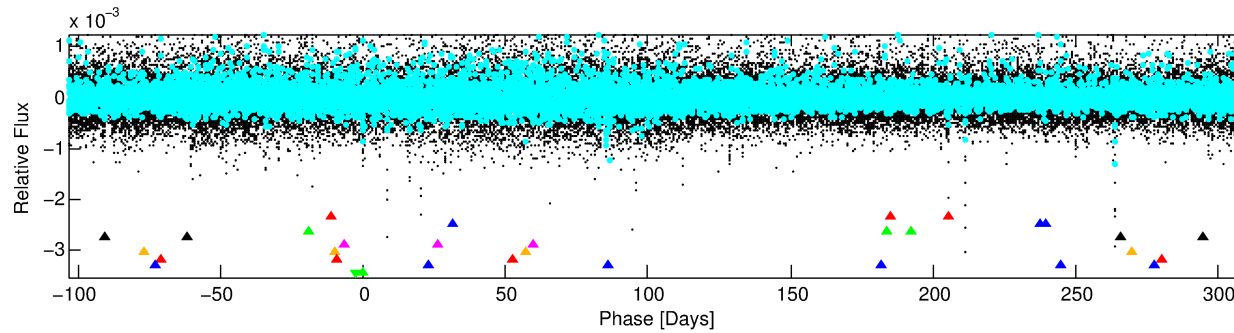
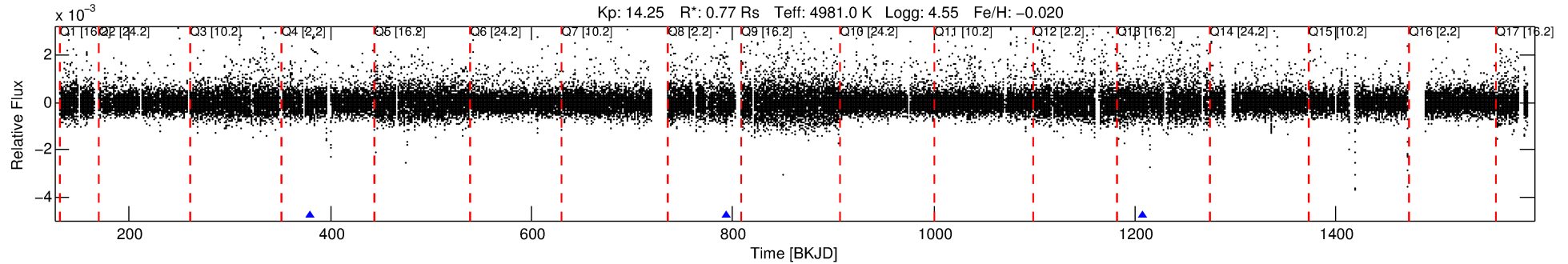
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 011958955-09

No Significant Match Found

# DV One-Page Summary

KIC: 11958955 Candidate: 9 of 9 Period: 413.480 d



## TPS TCE Results:

Period = 413.47990 d  
Epoch = 380.4020 BKJD

DV fit results are unavailable

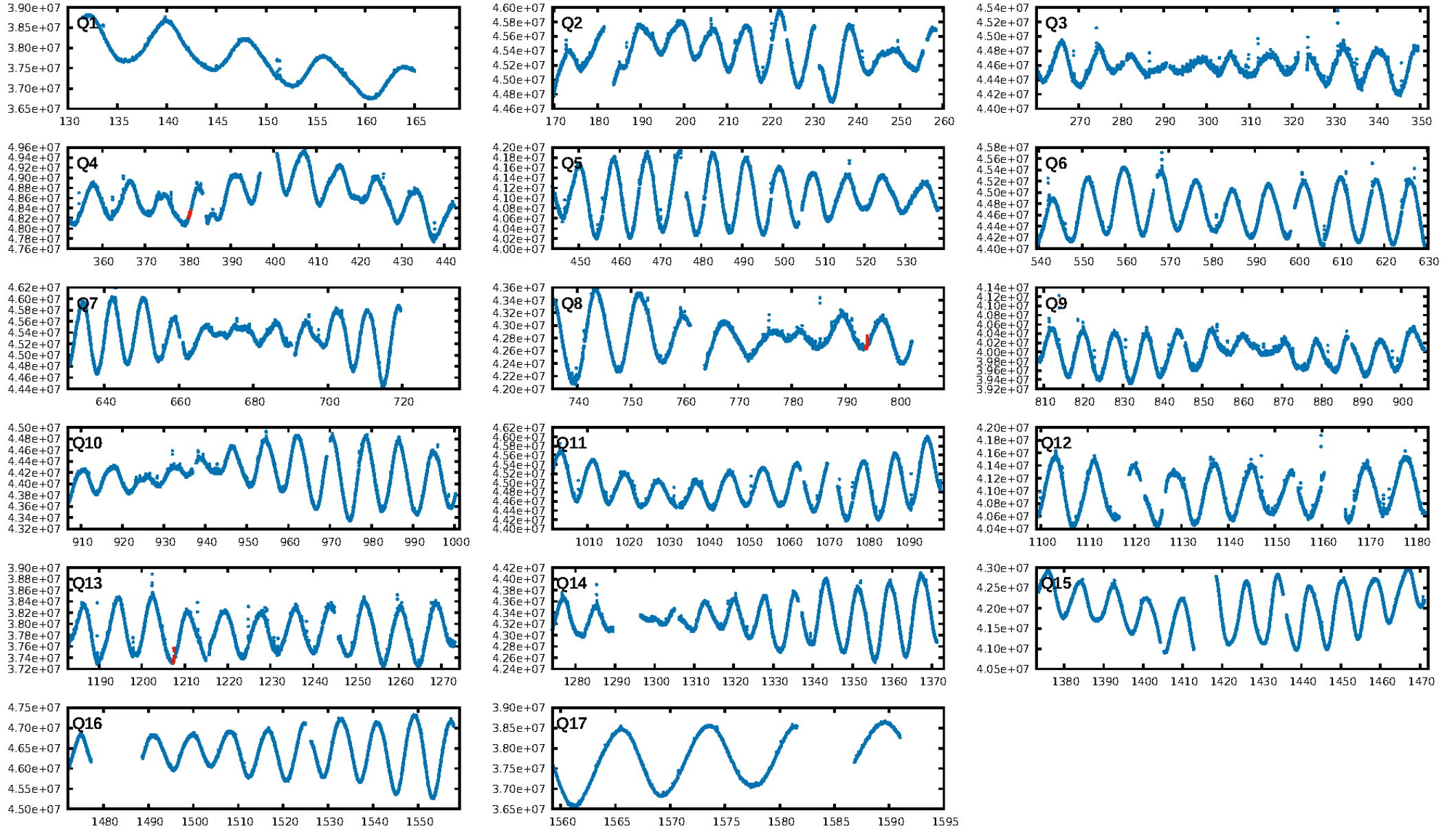
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [101.01 $\sigma$ ]  
LongPeriod-sig: 100.0% [40.36 $\sigma$ ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: -3.285  
Centroid-sig: 13.2%  
Centroid-so: 0.561 arcsec [0.88 $\sigma$ ]  
OotOffset-rm: 2.661 arcsec [1.90 $\sigma$ ]  
KicOffset-rm: 2.073 arcsec [1.32 $\sigma$ ]  
OotOffset-st: 0/0/1/1 [2]  
KicOffset-st: 0/0/1/1 [2]  
DiffImageQuality-fgm: 1.00 [2/2]  
DiffImageOverlap-fno: 1.00 [3/3]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 05:49:36 Z

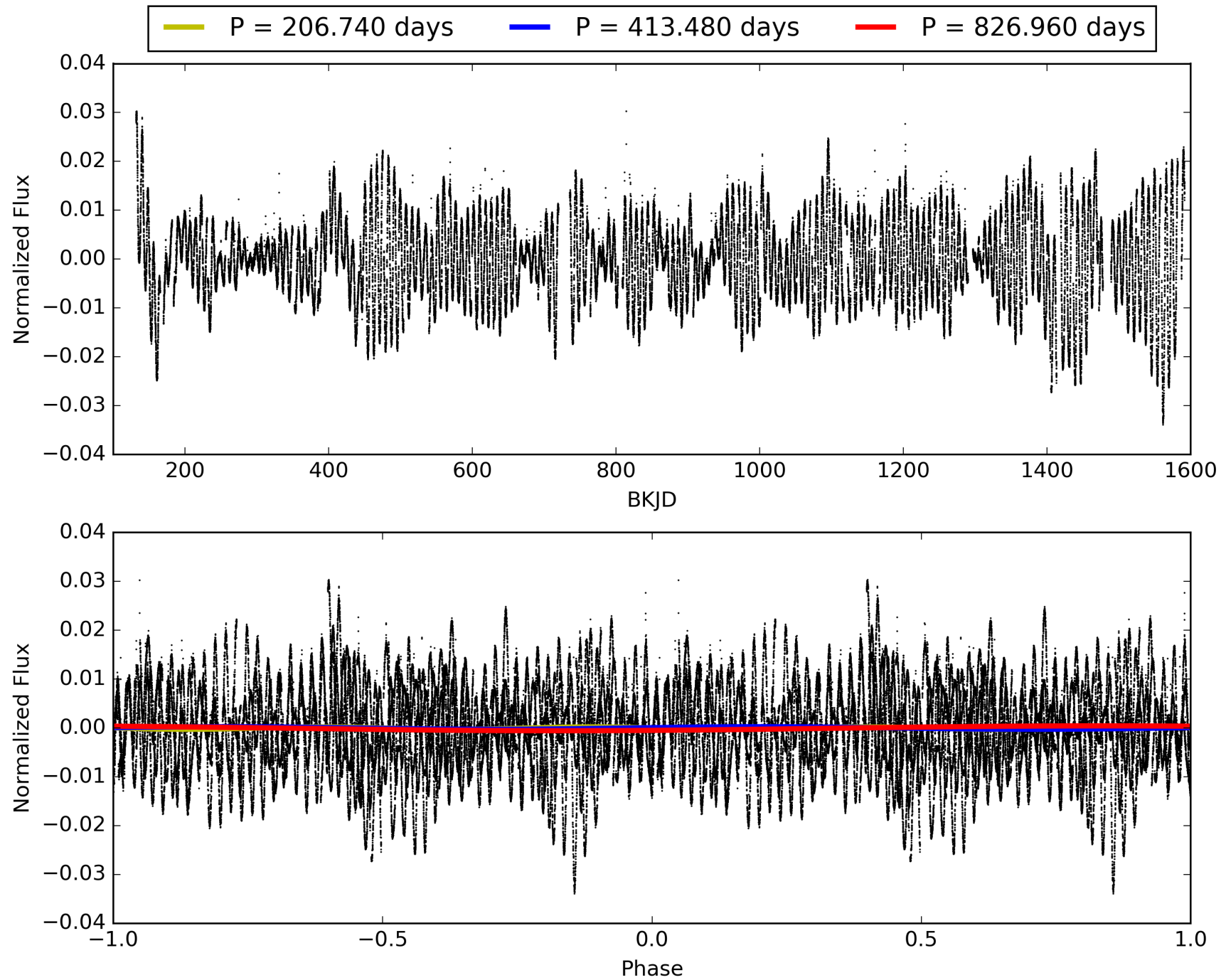
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 011958955-09, PDC Light Curves



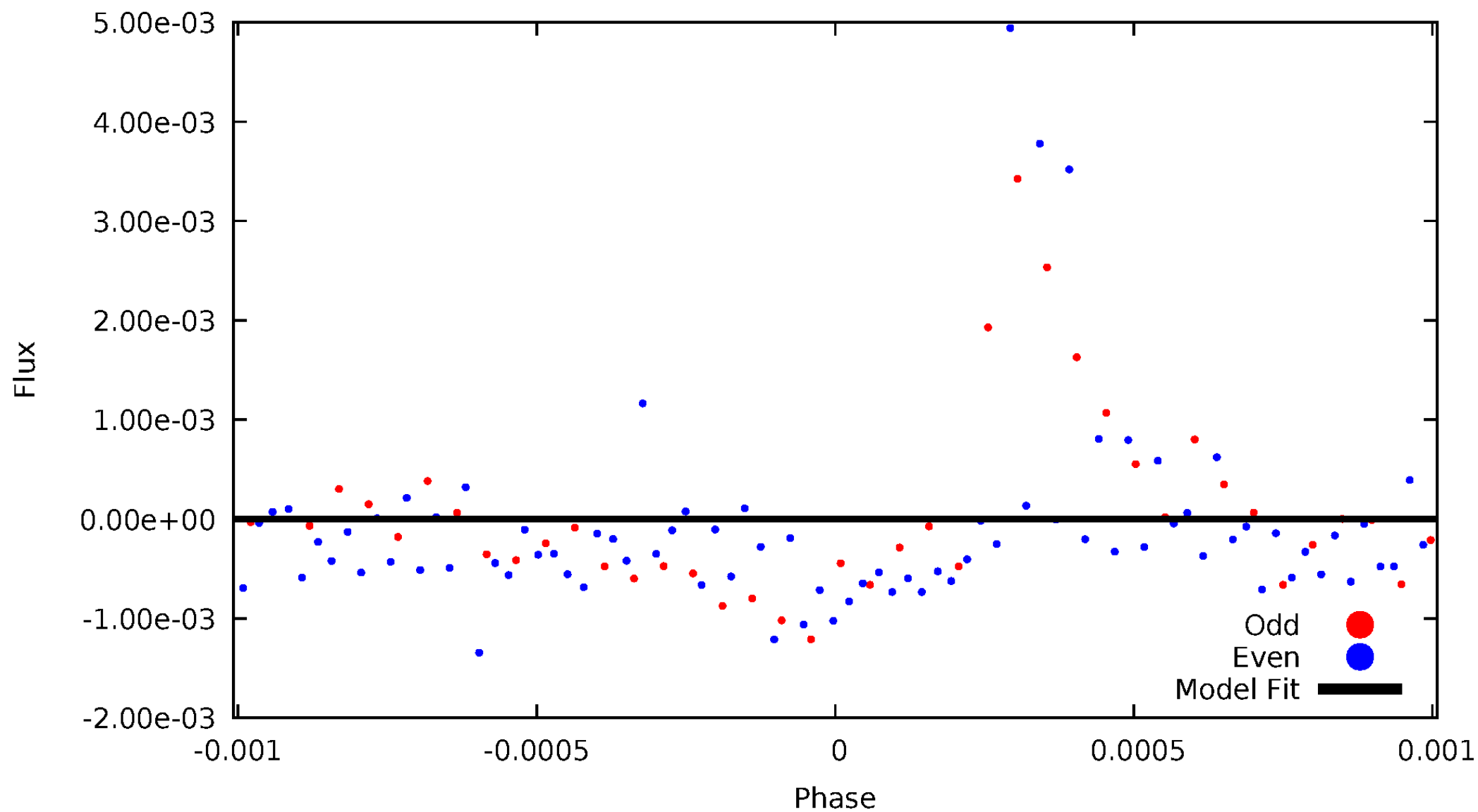


# TCE 011958955-09



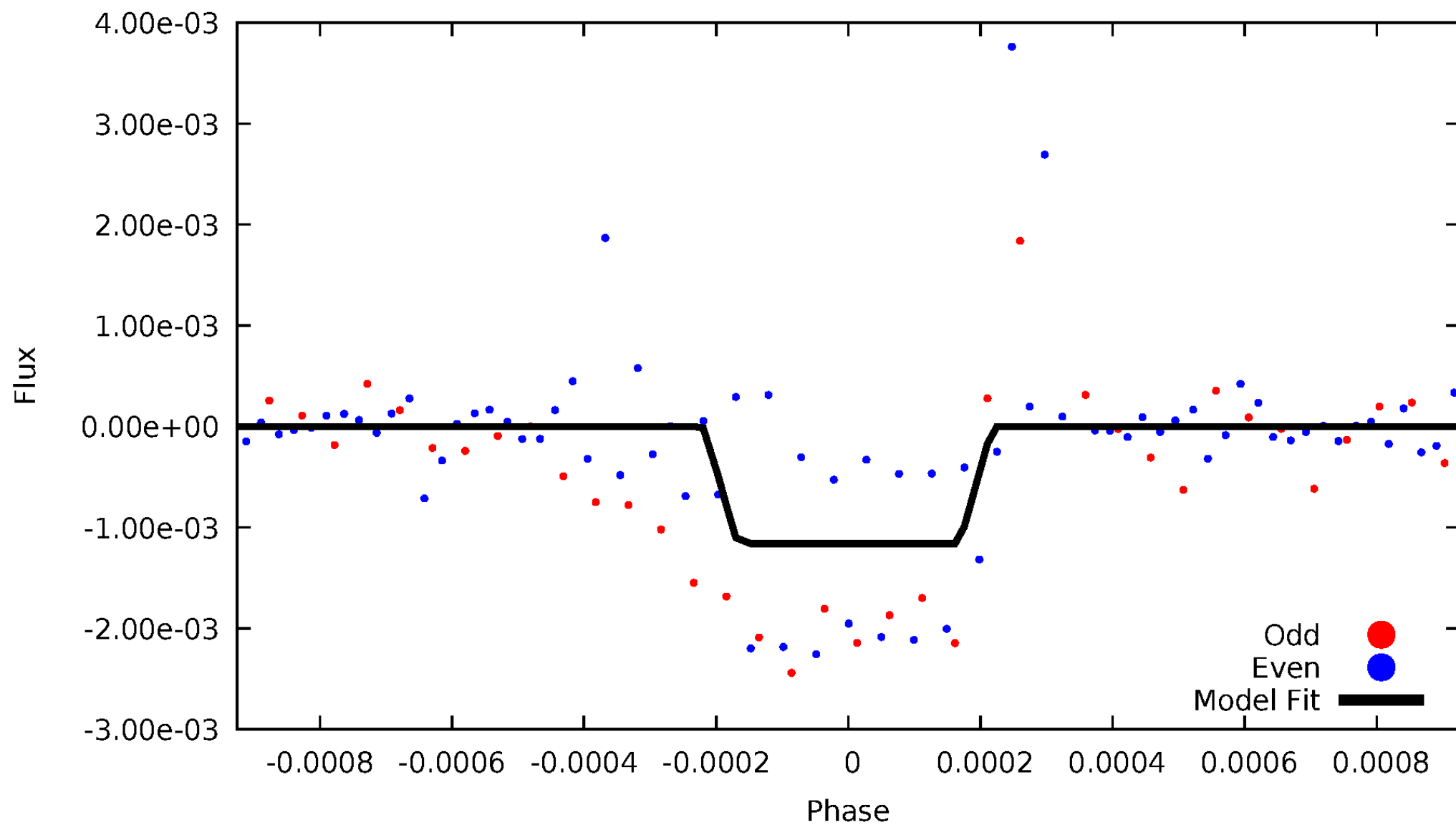
# DV Odd/Even

TCE 011958955-09

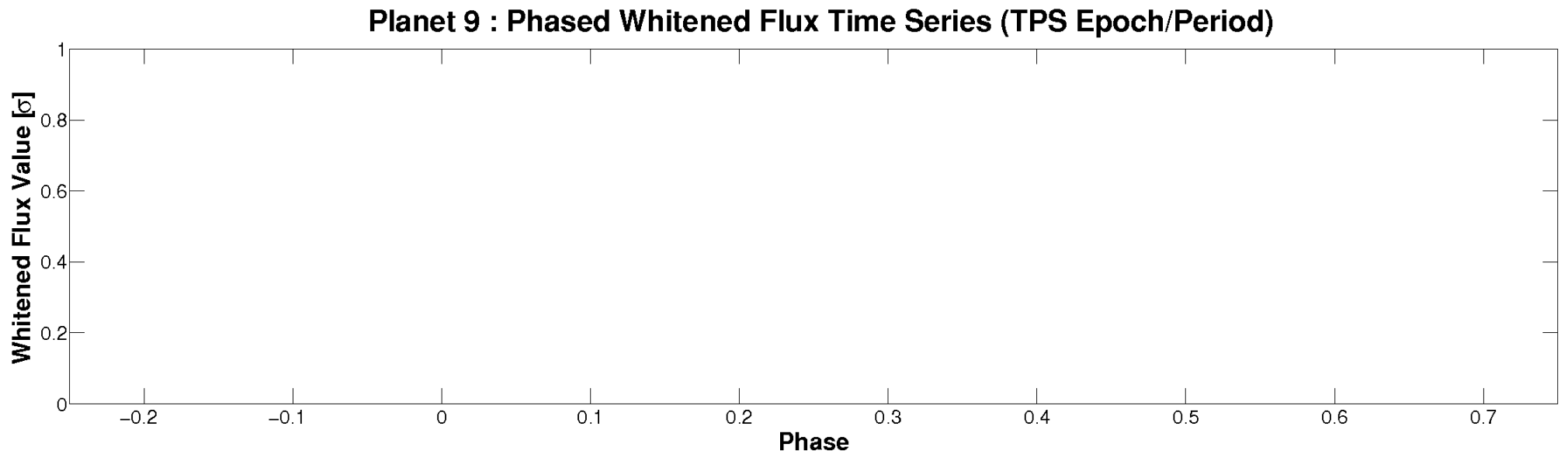
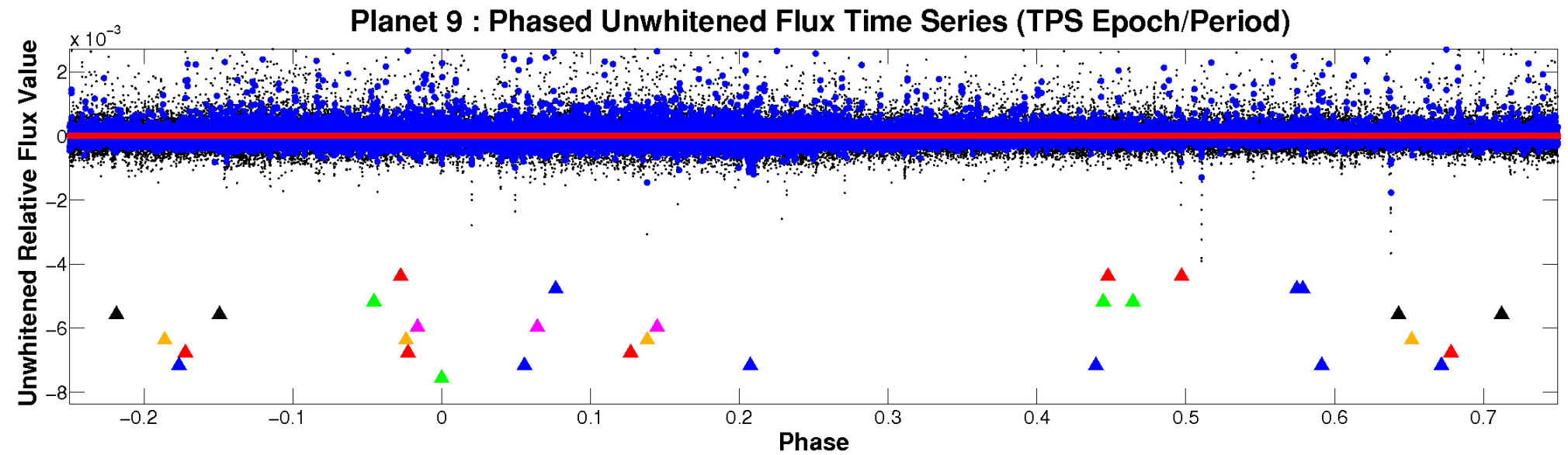


# ALT Odd/Even

TCE 011958955-09

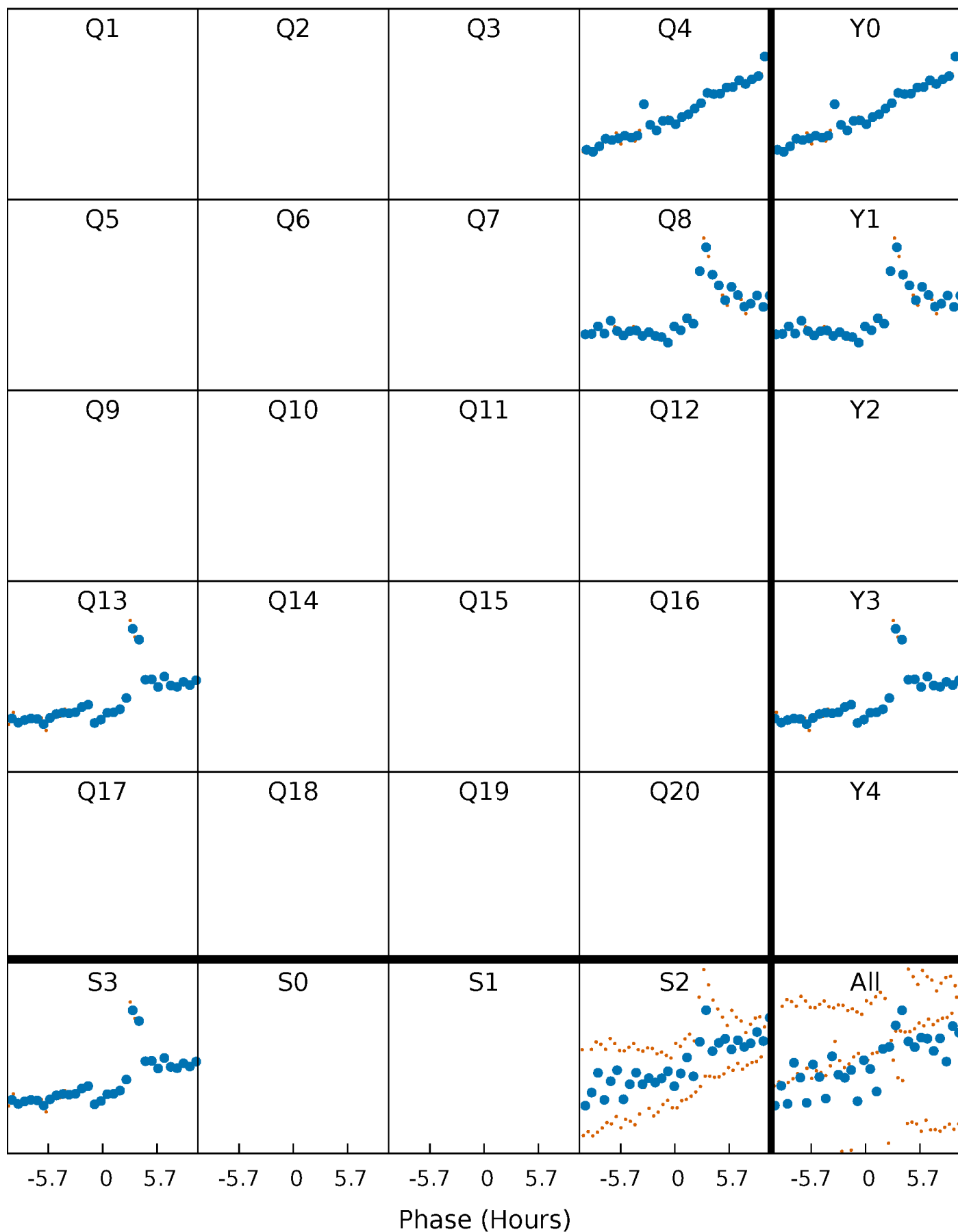


# Non-Whitened Vs. Whitened Light Curve



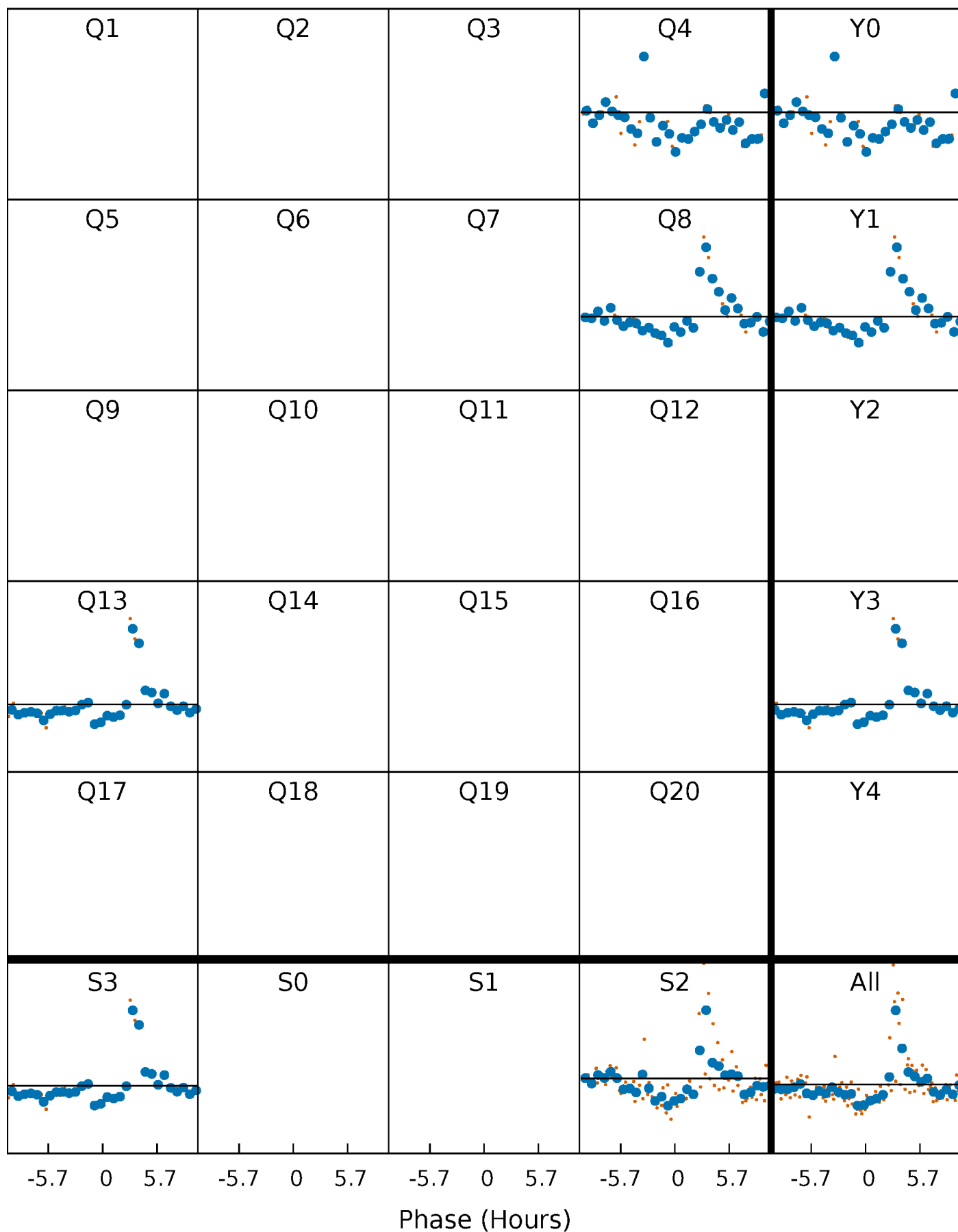
# PDC Quarter-Phased Transit Curves

TCE 011958955-09     $P=413.479898$  Days     $T_0=380.401971$  (BKJD)



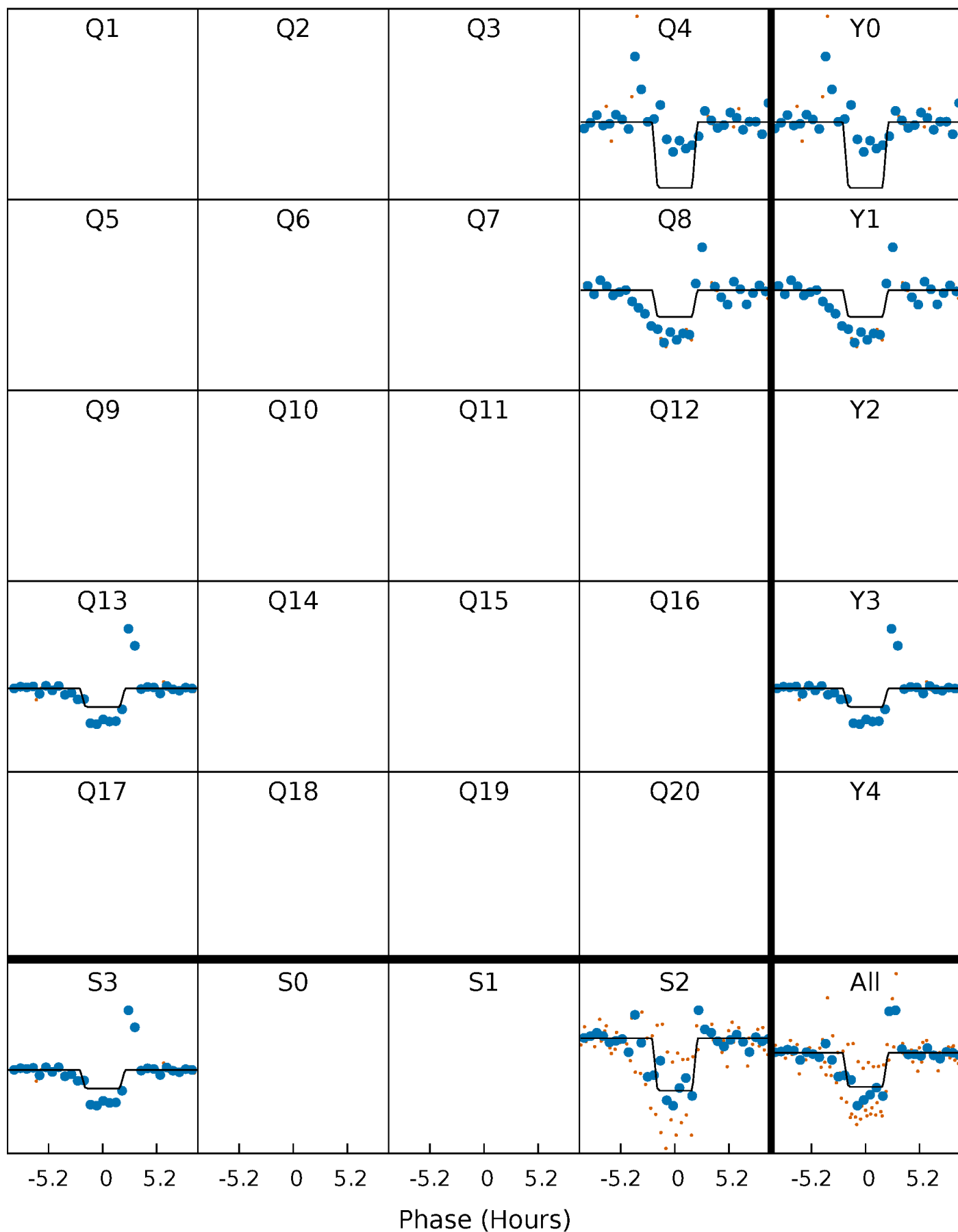
# DV Quarter-Phased Transit Curves

TCE 011958955-09     $P=413.479898$  Days     $T_0=380.401971$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

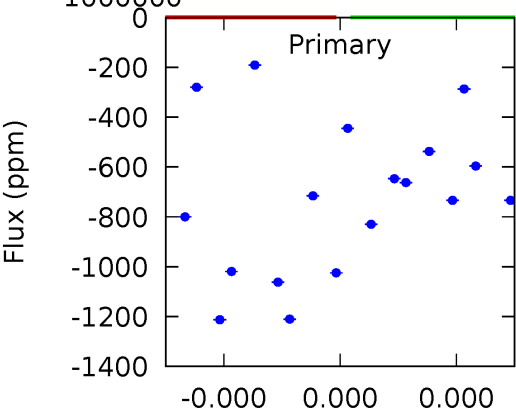
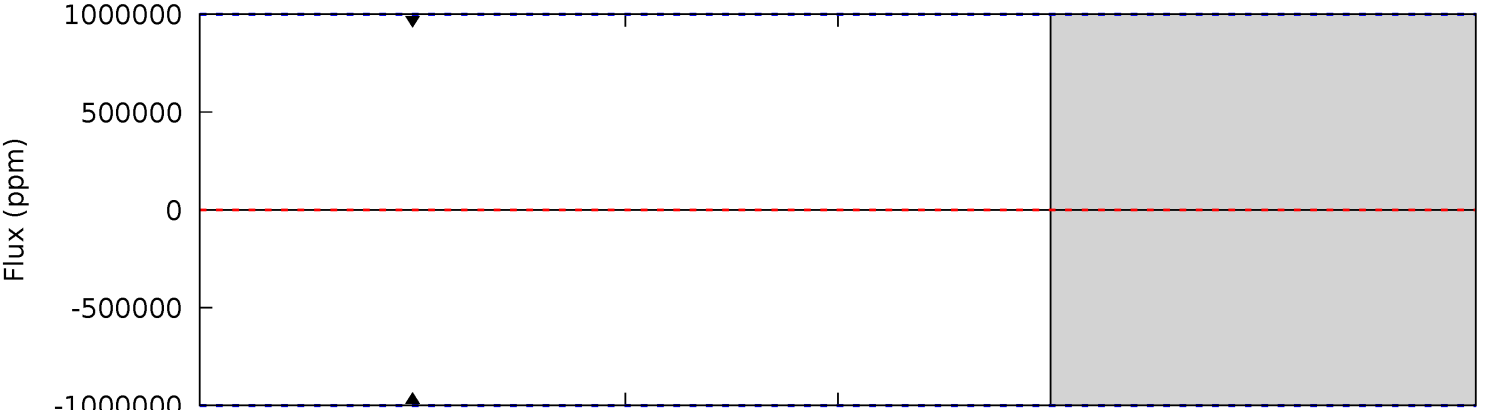
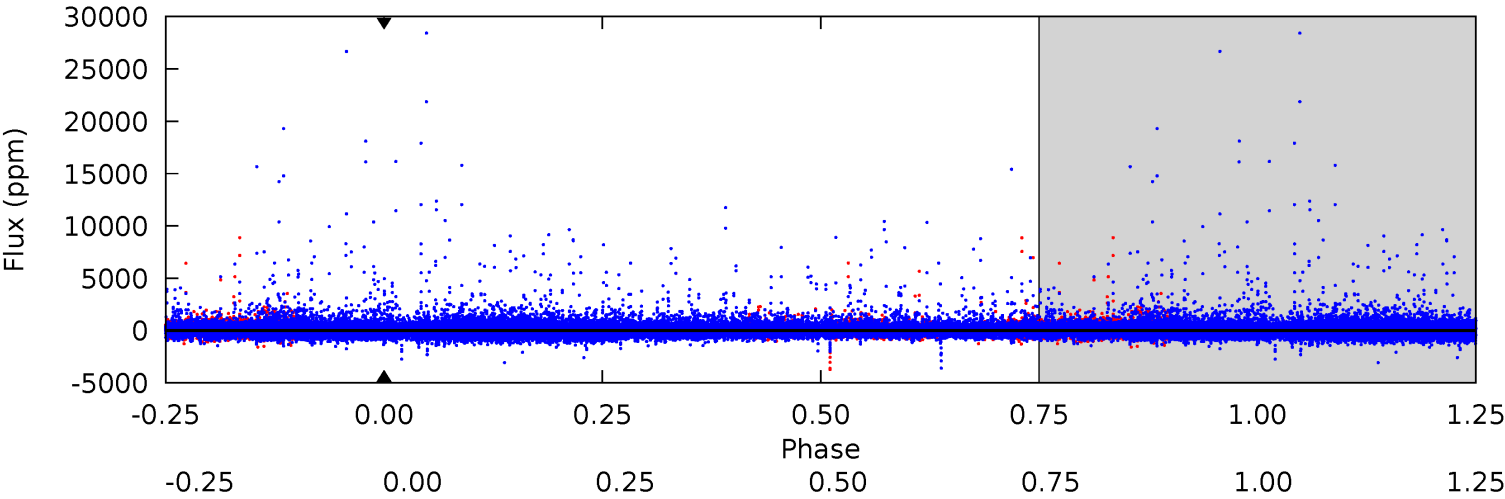
TCE 011958955-09 P=413.479898 Days  $T_0=380.420711$  (BKJD)



# DV Model-Shift Uniqueness Test

011958955-09, P = 413.479898 Days, E = 380.401971 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

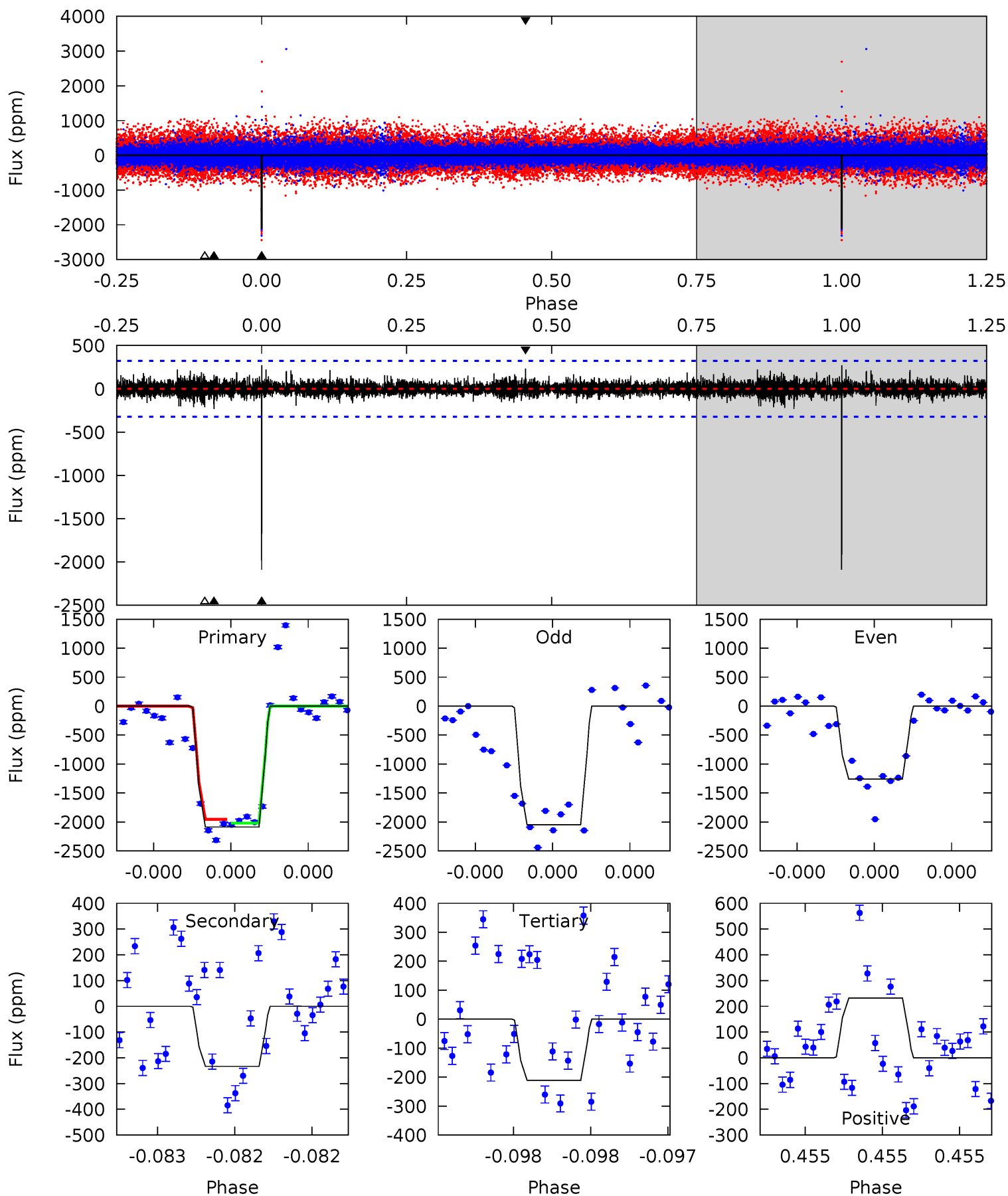




# Alt Model-Shift Uniqueness Test

011958955-09, P = 413.479898 Days, E = 380.420711 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
36.3	4.06	3.67	4.03	5.59	3.51	0.73	32.6	32.2	0.39	0.03	7.53	0.72	0.11	0.56



### Stellar Parameters For KIC 011958955

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$4981^{+151}_{-136}$	$4.553^{+0.060}_{-0.050}$	$-0.020^{+0.250}_{-0.300}$	$0.767^{+0.065}_{-0.072}$	$0.768^{+0.078}_{-0.064}$	$2.395^{+0.557}_{-0.411}$
	+3%/-3%	+1%/-1%	+1250%/-1500%	+8%/-9%	+10%/-8%	+23%/-17%
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 011958955-09 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$0 \pm 1000000$	$6.01^{+6.95}_{-4.23}$	$269^{+10}_{-9}$	$4138^{+12306}_{-18122}$	$25180^{+2985504}_{-2220486}$
Alt.	$-233 \pm 58$	$6.74^{+6.99}_{-4.61}$	$270^{+10}_{-10}$	$2855^{+1199}_{-488}$	$2824^{+21775}_{-2191}$

$T_{max}$  = 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

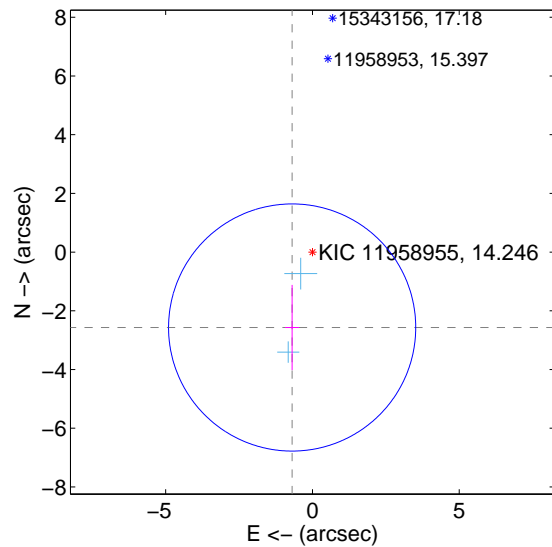
Supplemental centroid analysis for 011958955-09. Kepler magnitude: 14.25. Transit SNR -1.00

There are 2 quarters with good PRF difference image offsets

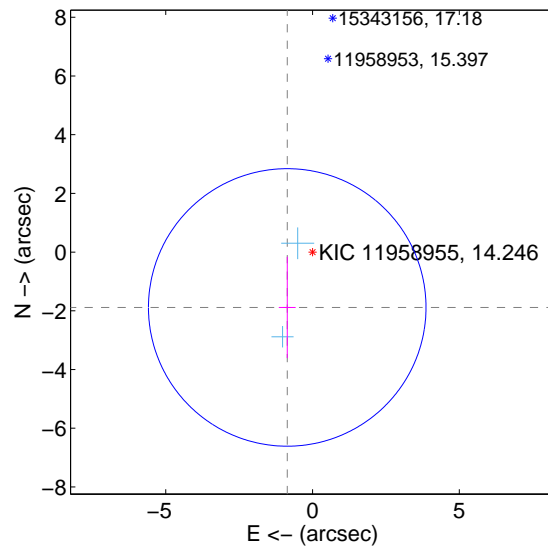
The direct PRF centroid is offset from the target star catalog position by about 1.04 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$2.661 \pm 1.403$	1.90	$0.691 \pm 0.240$	$-2.569 \pm 1.452$
PRF-fit source offset from KIC position	$2.073 \pm 1.576$	1.32	$0.861 \pm 0.287$	$-1.886 \pm 1.728$
photometric centroid source offset	$0.56 \pm 0.64$	0.88	$0.55 \pm 0.62$	$-0.10 \pm 1.11$

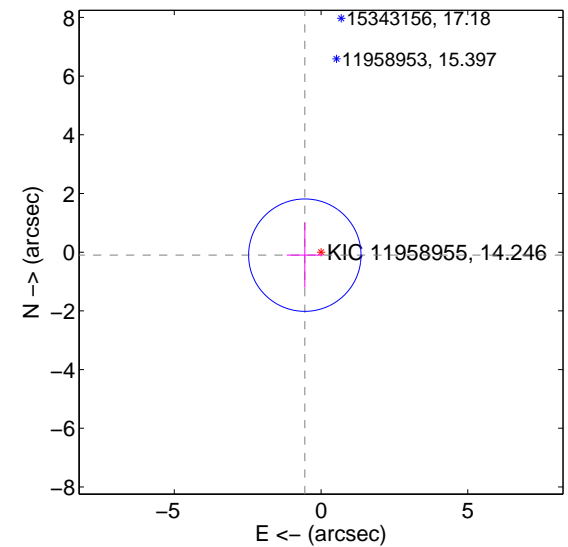
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

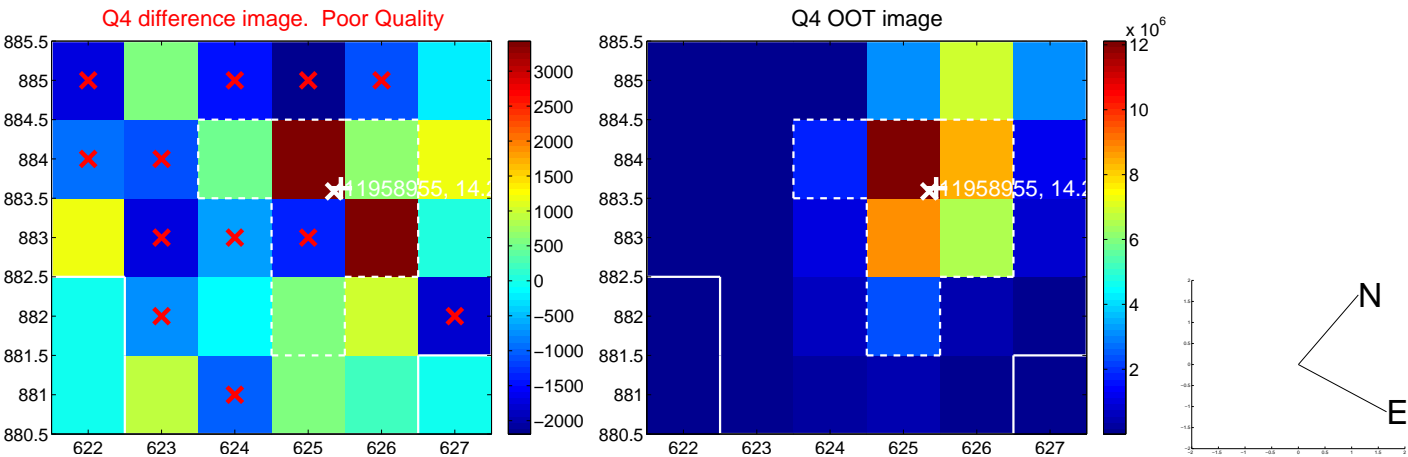


offset from photometric centroids

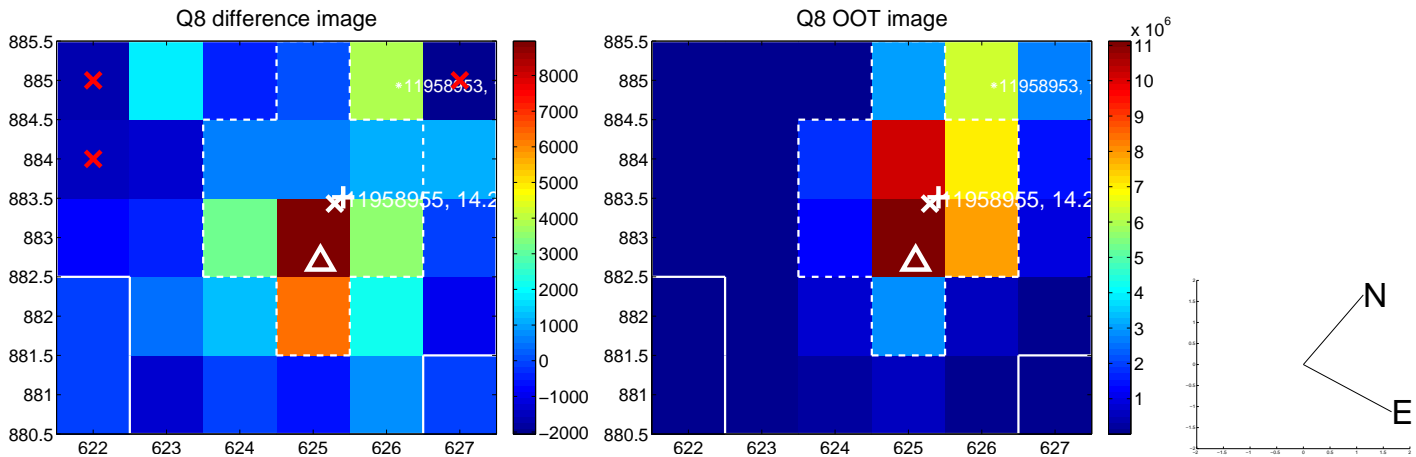
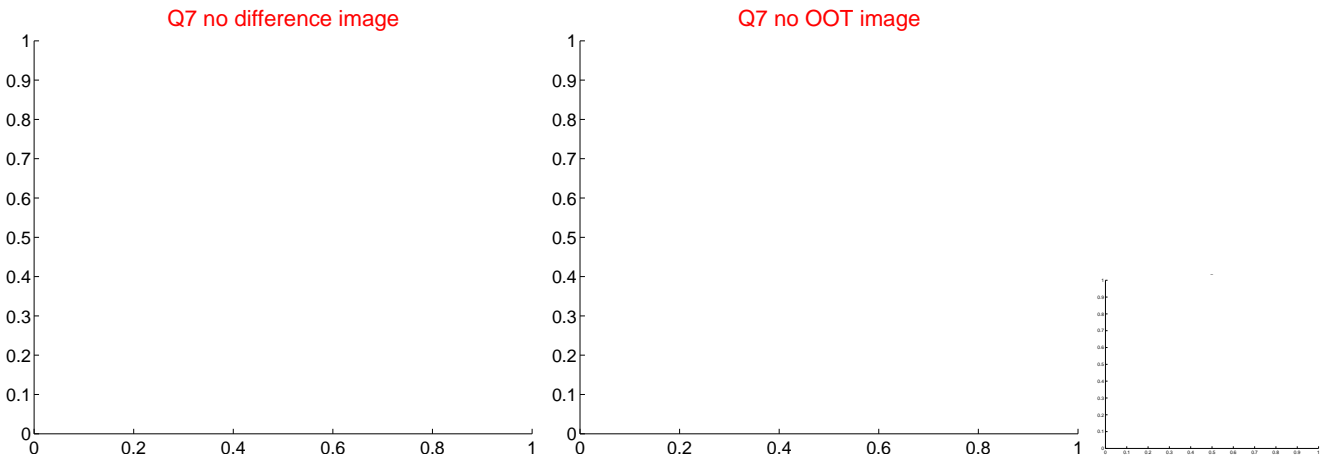
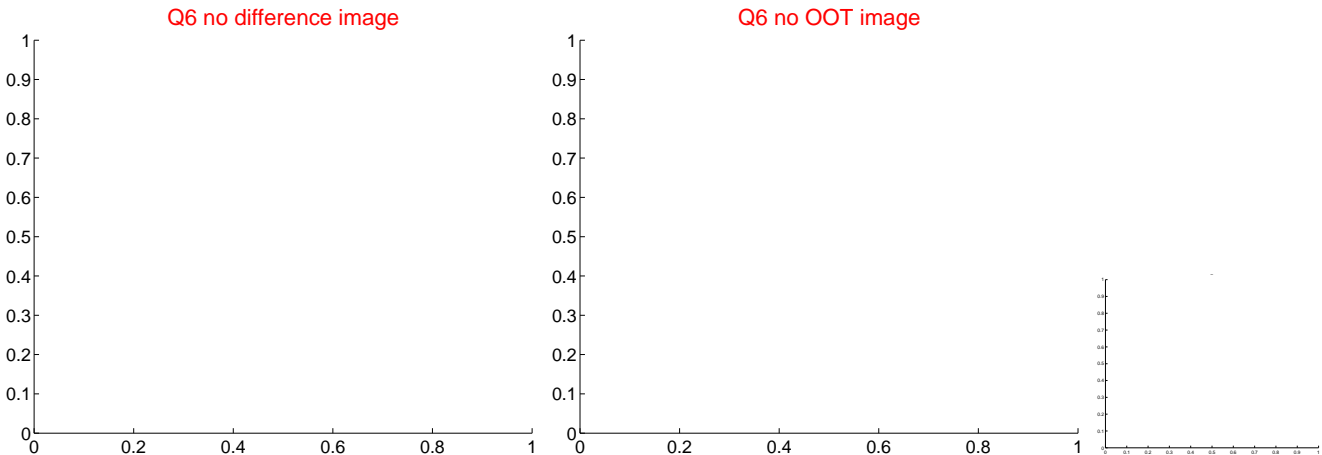
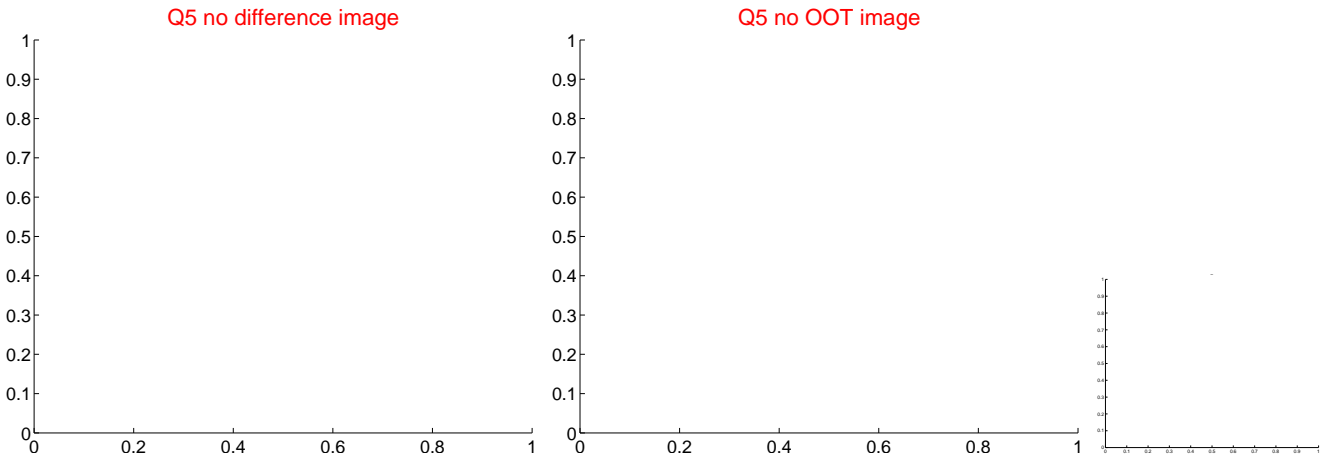


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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



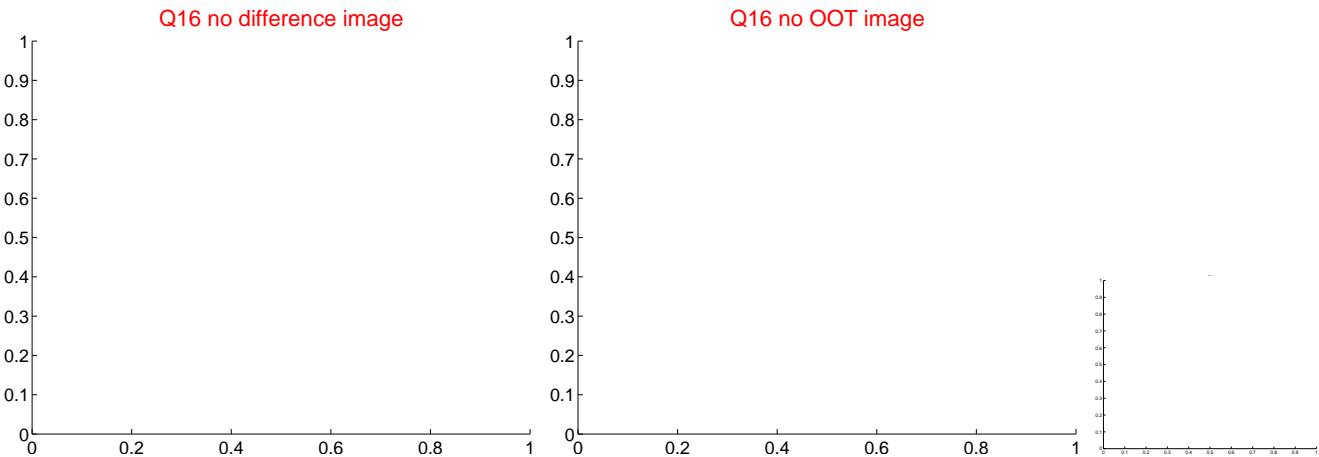
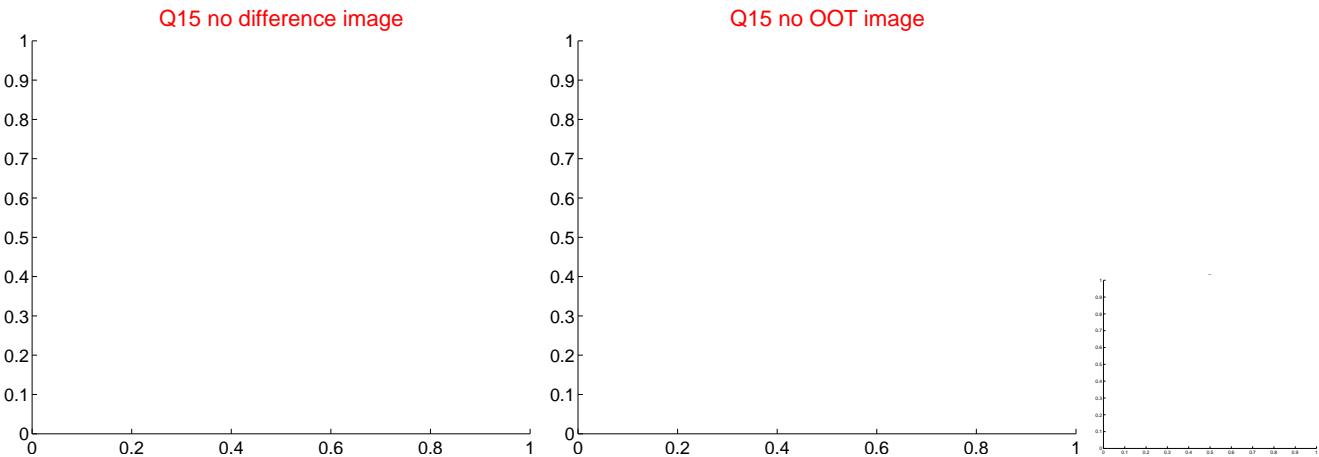
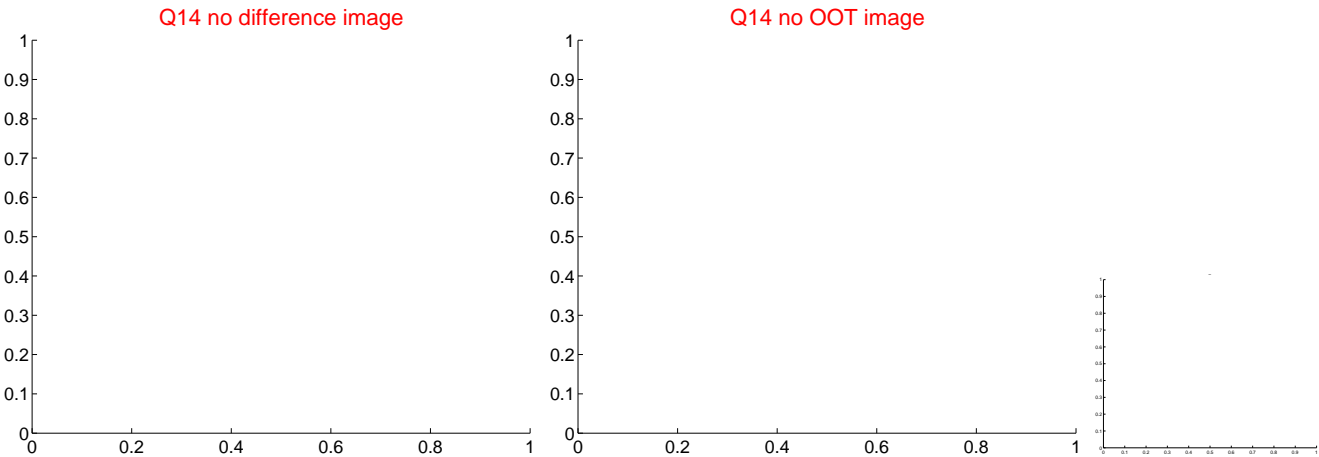
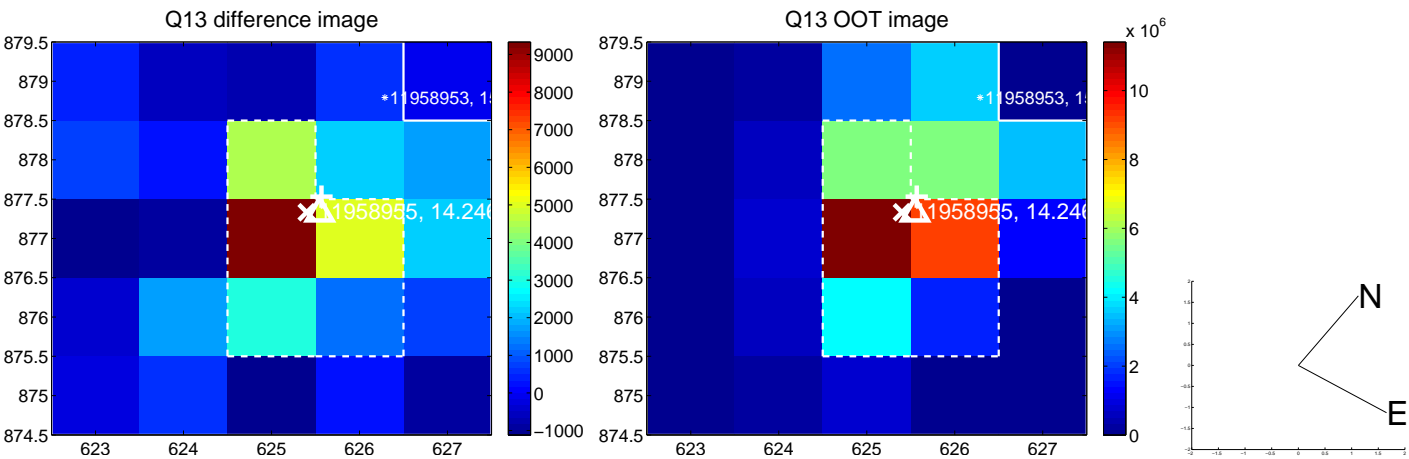
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value



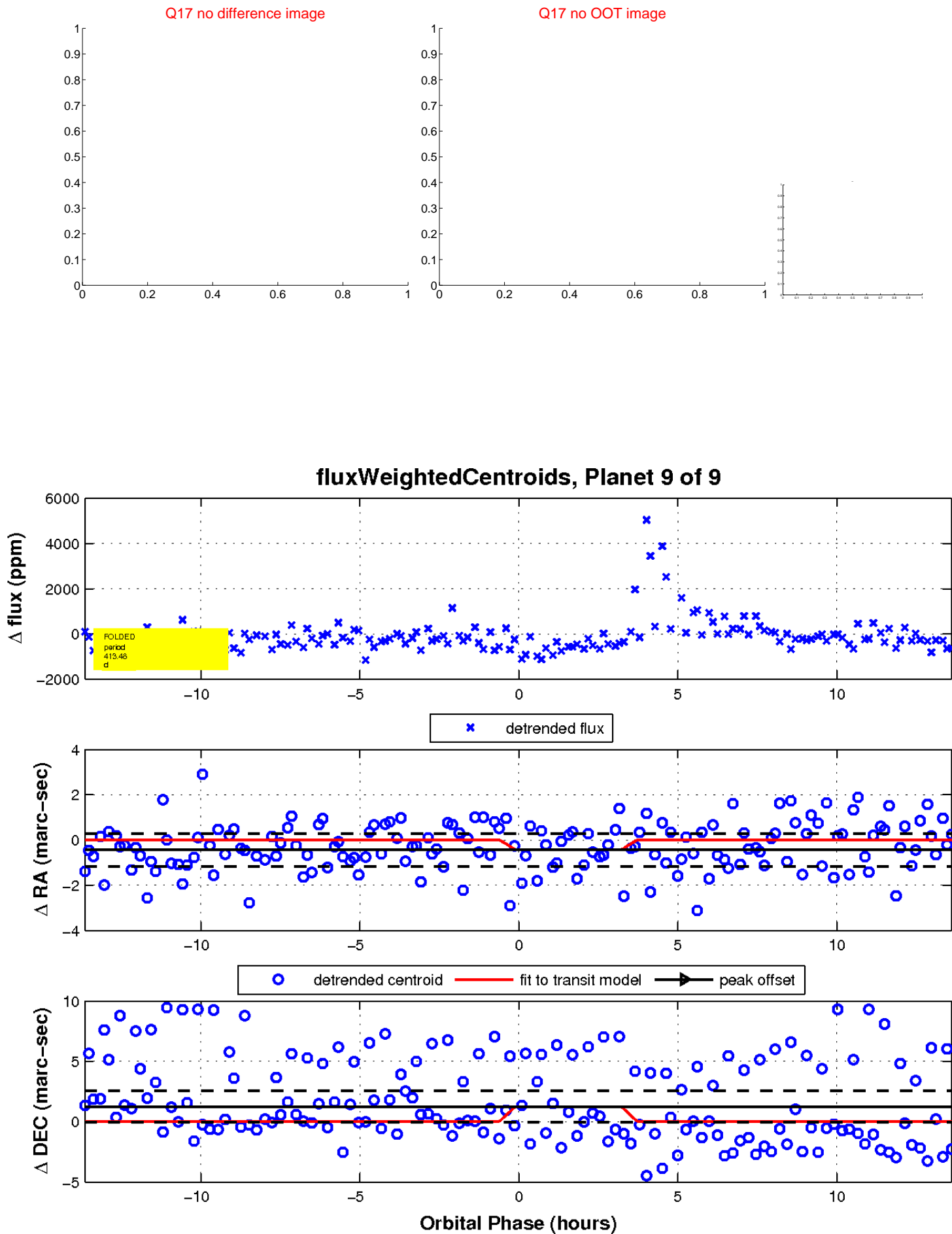
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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.





UKIRT Image

Declination

