

# KIC 003942571

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
003942571-01	OBS	No	1.257394	132.164961	8.1	7.242	9.3	3.8	5.45	6208	1.70	47048.90
003942571-02	OBS	No	218.009814	298.710758	233.0	6.496	14.9	7.0	5.45	6208	9.42	48.66
003942571-03	OBS	No	90.433559	139.776241	173.8	15.269	12.8	8.8	5.45	6208	8.08	157.30
003942571-04	OBS	No	72.236527	146.037624	146.6	5.312	9.6	6.6	5.45	6208	7.42	212.24
003942571-05	OBS	No	90.591459	221.813942	212.4	2.840	8.9	9.3	5.45	6208	8.31	156.94
003942571-06	OBS	No	192.470308	172.581220	222.7	3.505	8.8	7.2	5.45	6208	9.56	57.46
003942571-07	OBS	No	103.635467	170.730217	279.4	4.708	8.6	9.3	5.45	6208	11.10	131.17
003942571-08	OBS	No	18.949271	132.724536	169.2	2.500	8.8	-1.0	5.45	6208	7.11	1263.92

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003942571-01	OBS	FP	0.00	1	0	1	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—HALO_GHOST
003942571-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
003942571-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
003942571-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
003942571-05	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
003942571-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
003942571-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
003942571-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_ALT—MOD_NONUNIQ_ALT—CENT_NOFITS

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

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

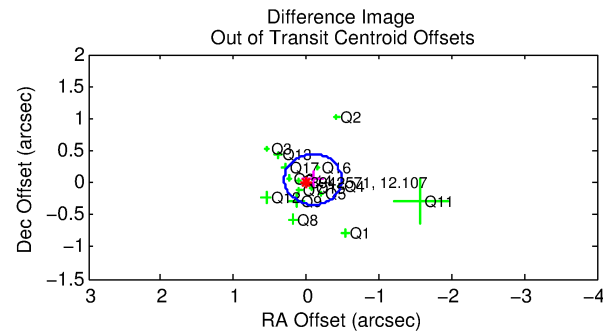
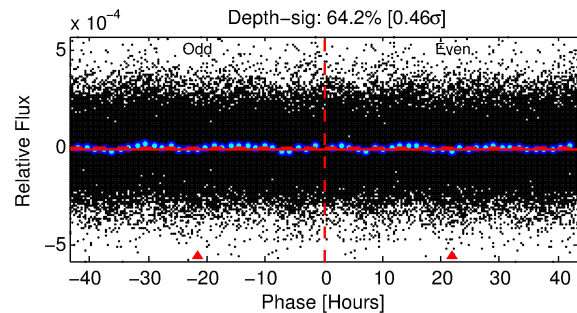
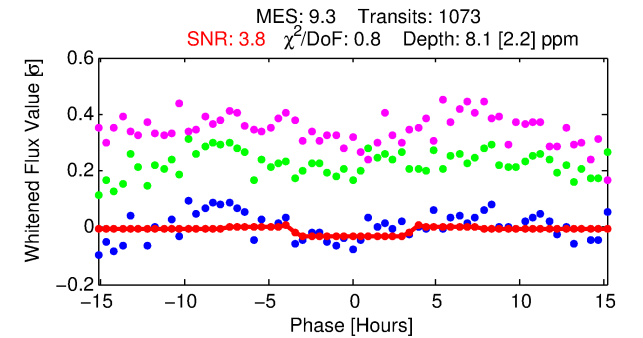
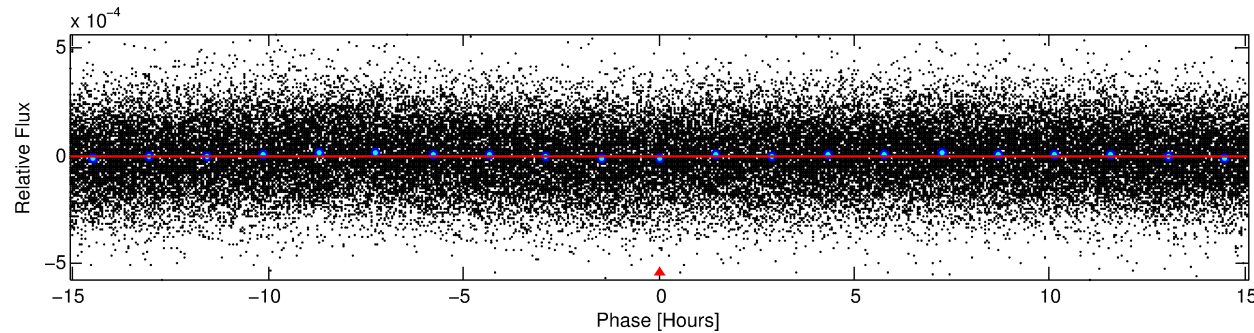
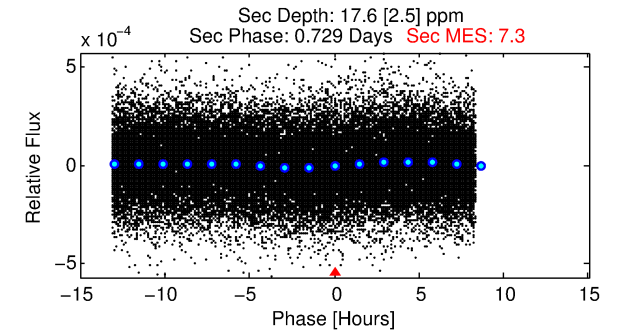
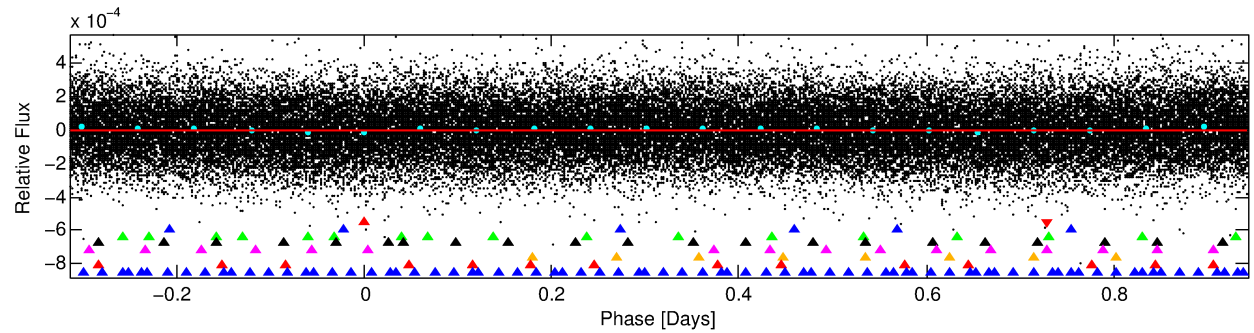
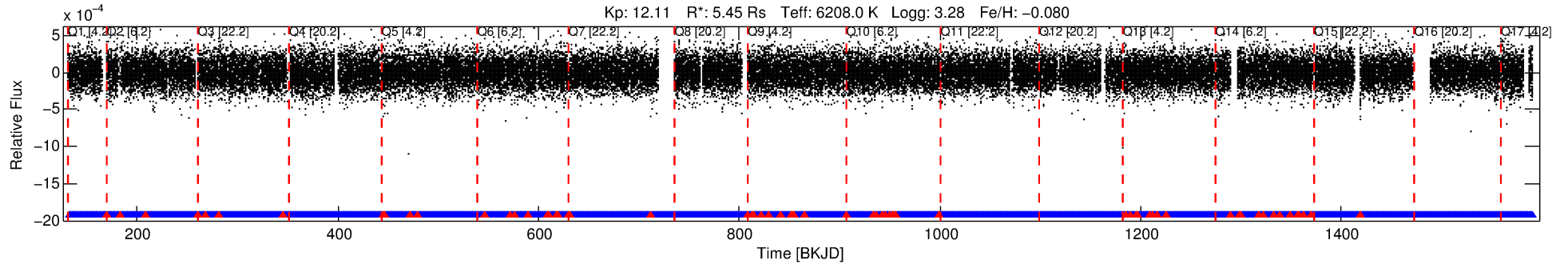
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 003942571-01

No Significant Match Found

# DV One-Page Summary

KIC: 3942571 Candidate: 1 of 8 Period: 1.257 d



## DV Fit Results:

Period = 1.25739 [0.00004] d  
Epoch = 132.1650 [0.0113] BKJD  
Rp/R\* = 0.0029 [0.0017]  
a/R\* = 1.20 [1.20]  
b = 0.78 [1.59]  
Seff = 47048.90 [36586.41]  
Teq = 3755 [730] K  
Rp = 1.70 [1.30] Re  
a = 0.0290 [0.0136] AU  
Ag = 2.81 [4.07] [0.45σ]  
Teffp = 7518 [2310] K [1.55σ]

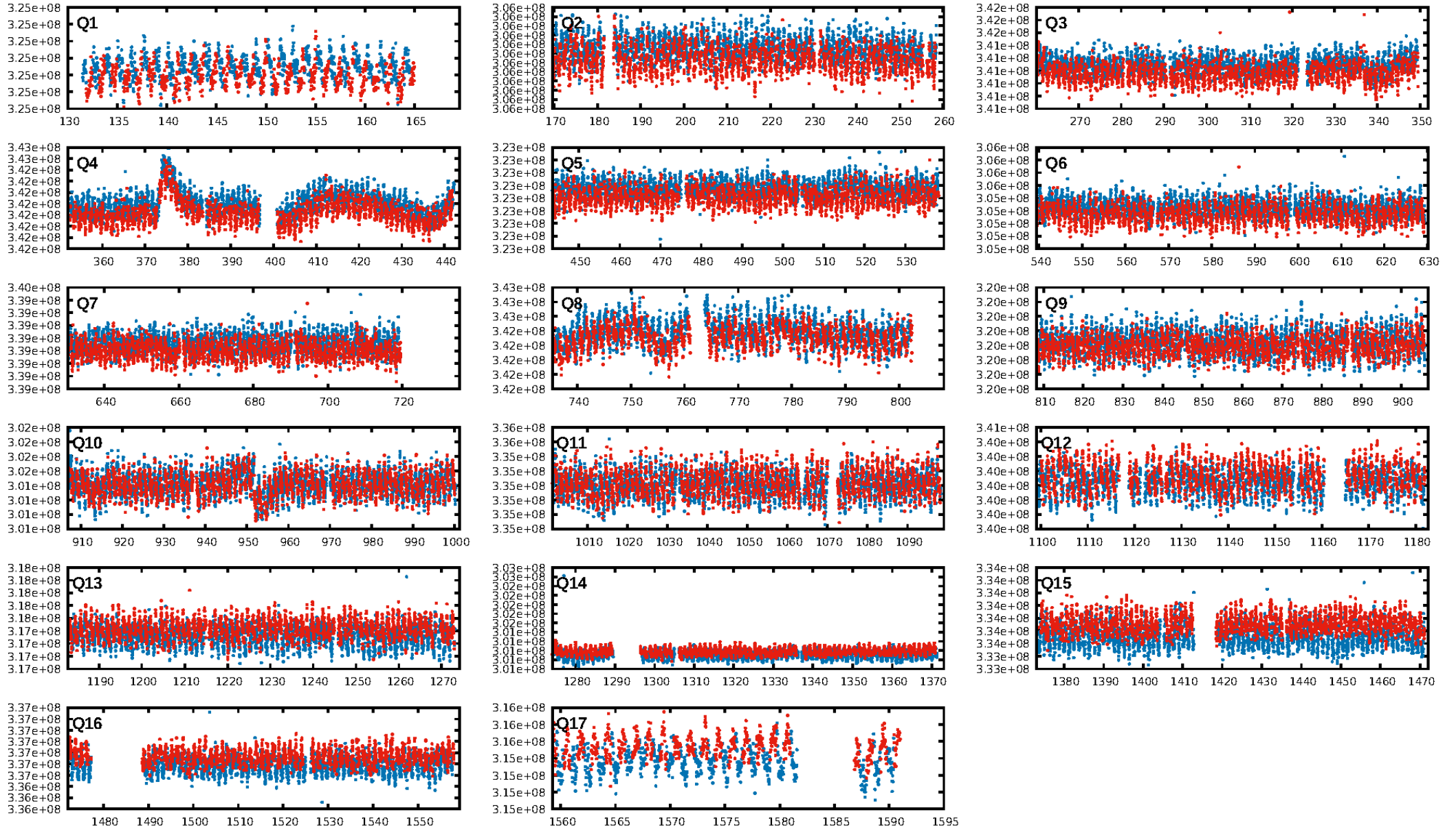
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [55.42σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGoF-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 0.94 [961/1024]  
**GhostDiagnostic-chr: 0.05397**  
Centroid-sig: 11.8%  
Centroid-so: 1.824 arcsec [1.37σ]  
OotOffset-rm: 0.103 arcsec [0.79σ]  
OotOffset-st: 3/4/4/5 [16]  
KicOffset-rm: 0.211 arcsec [1.78σ]  
KicOffset-st: 3/4/4/5 [16]  
DiffImageQuality-fgm: 0.56 [9/16]  
DiffImageOverlap-fno: 1.00 [17/17]

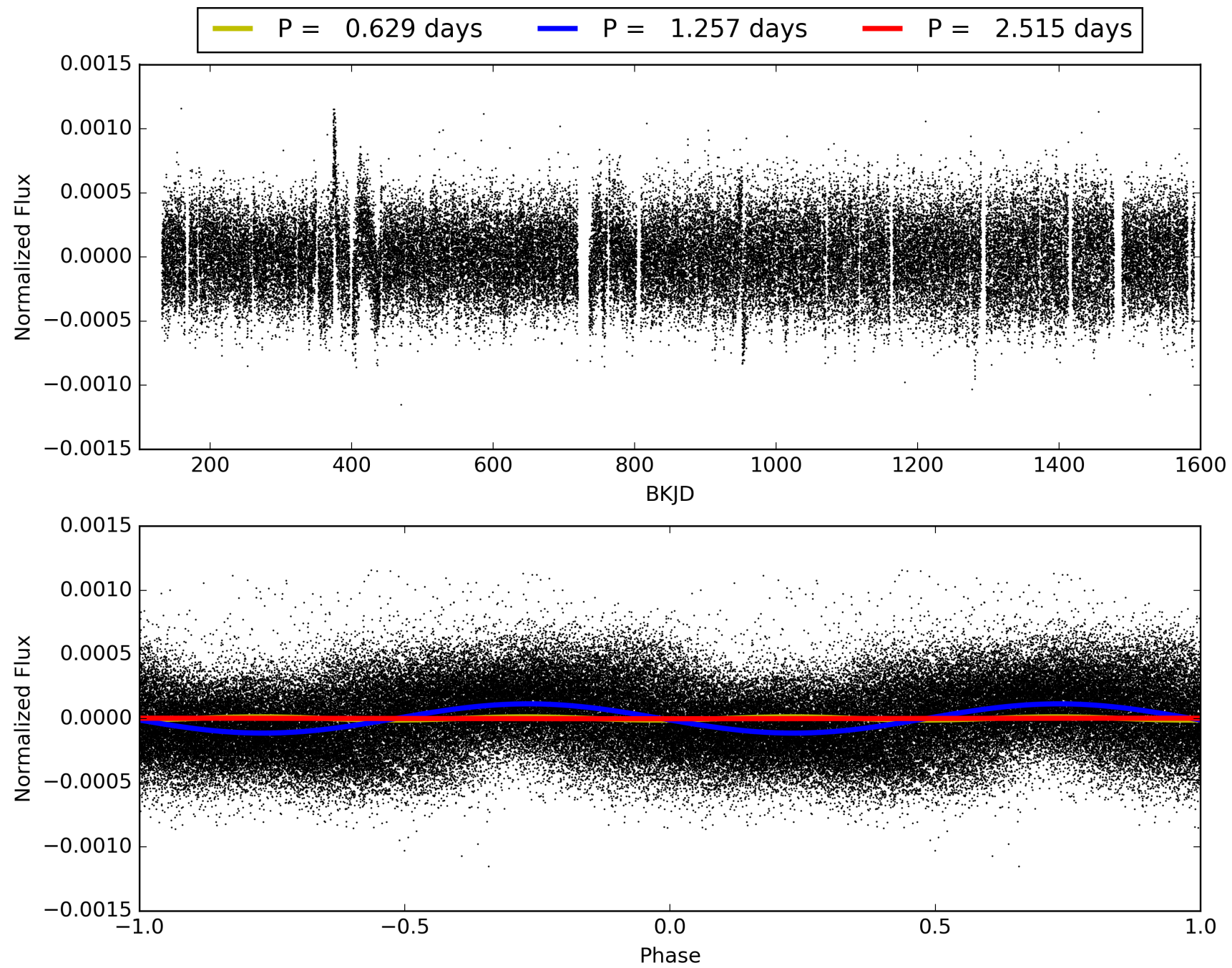
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 01:11:33 Z

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

# TCE 003942571-01, PDC Light Curves



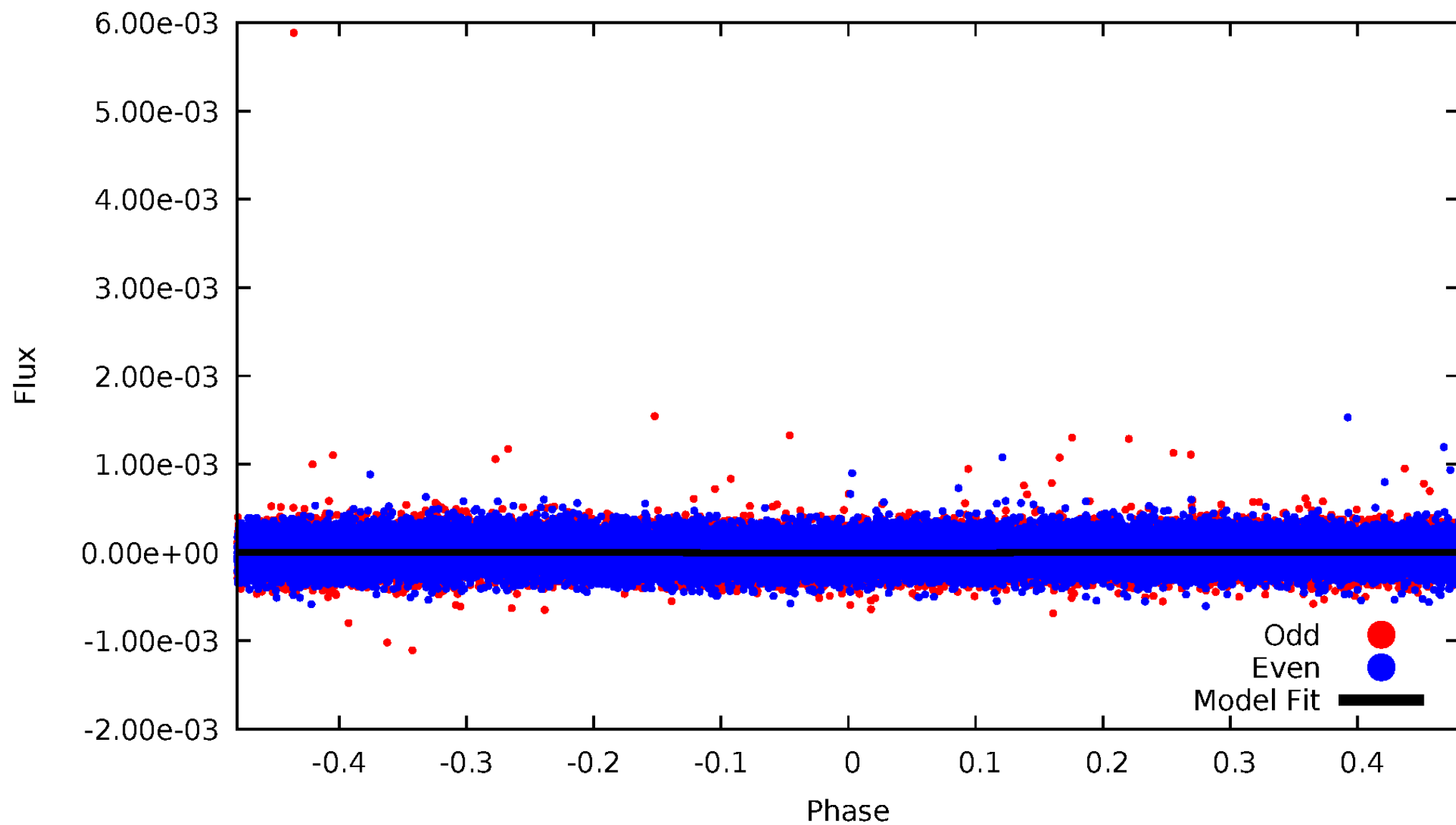
TCE 003942571-01





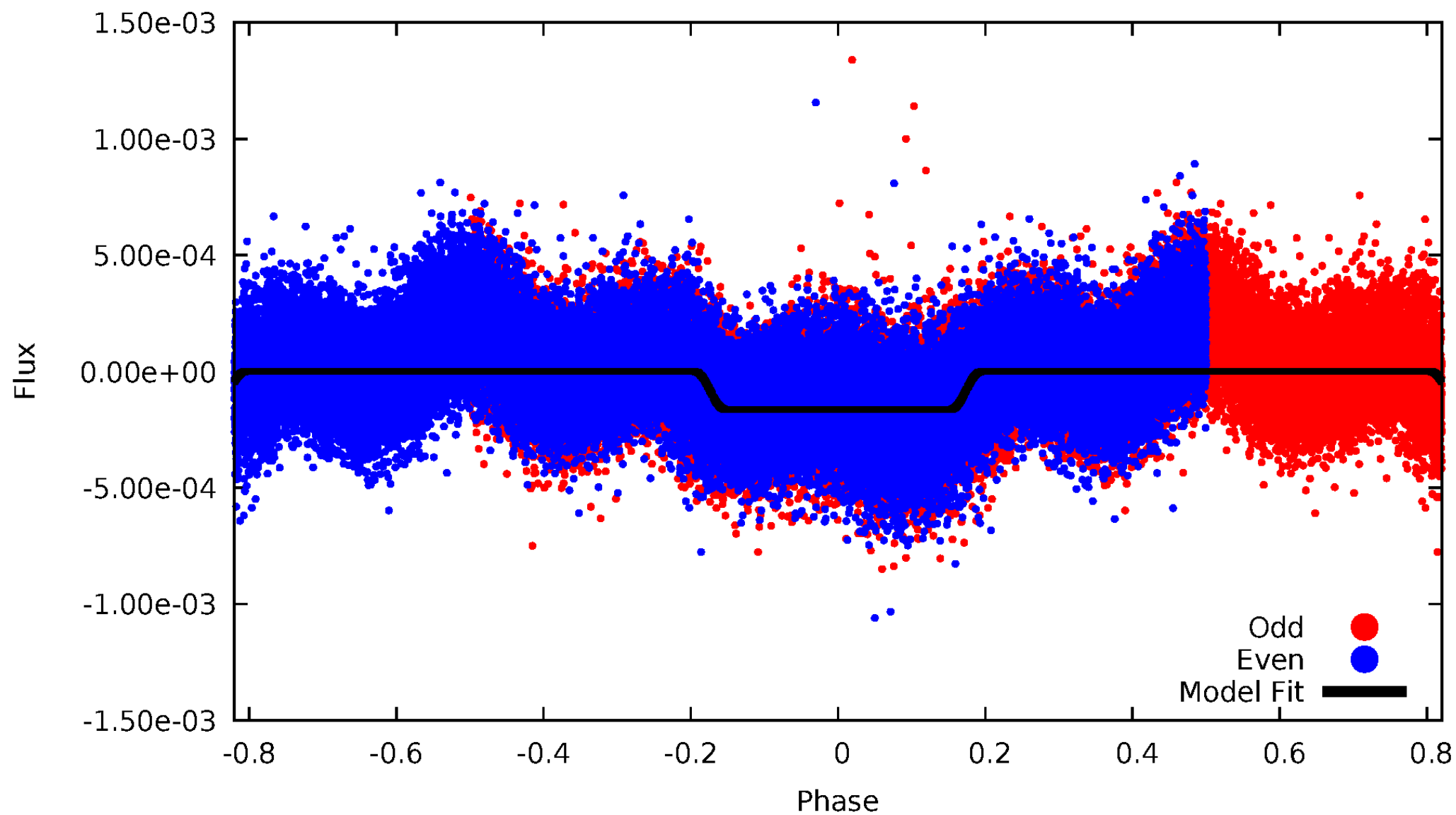
# DV Odd/Even

TCE 003942571-01

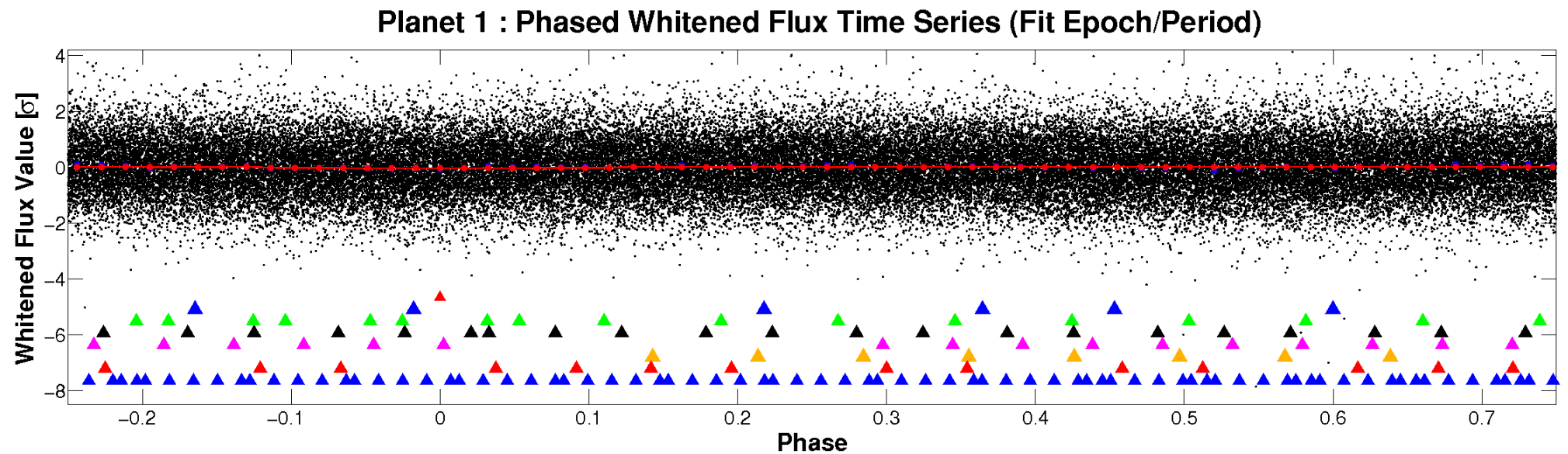
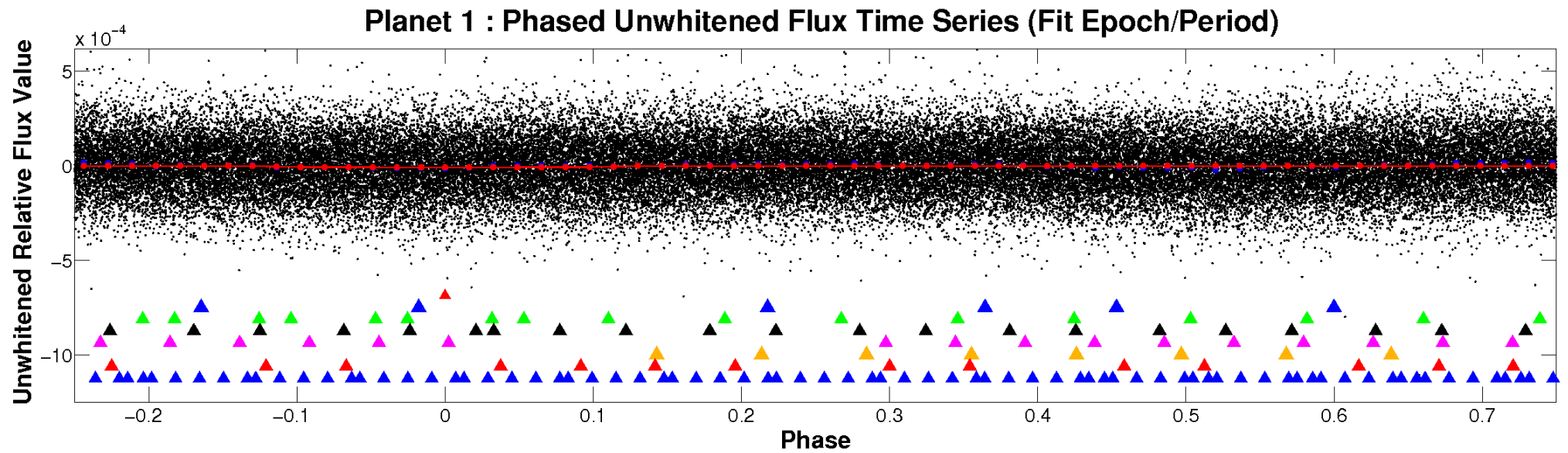


# ALT Odd/Even

TCE 003942571-01

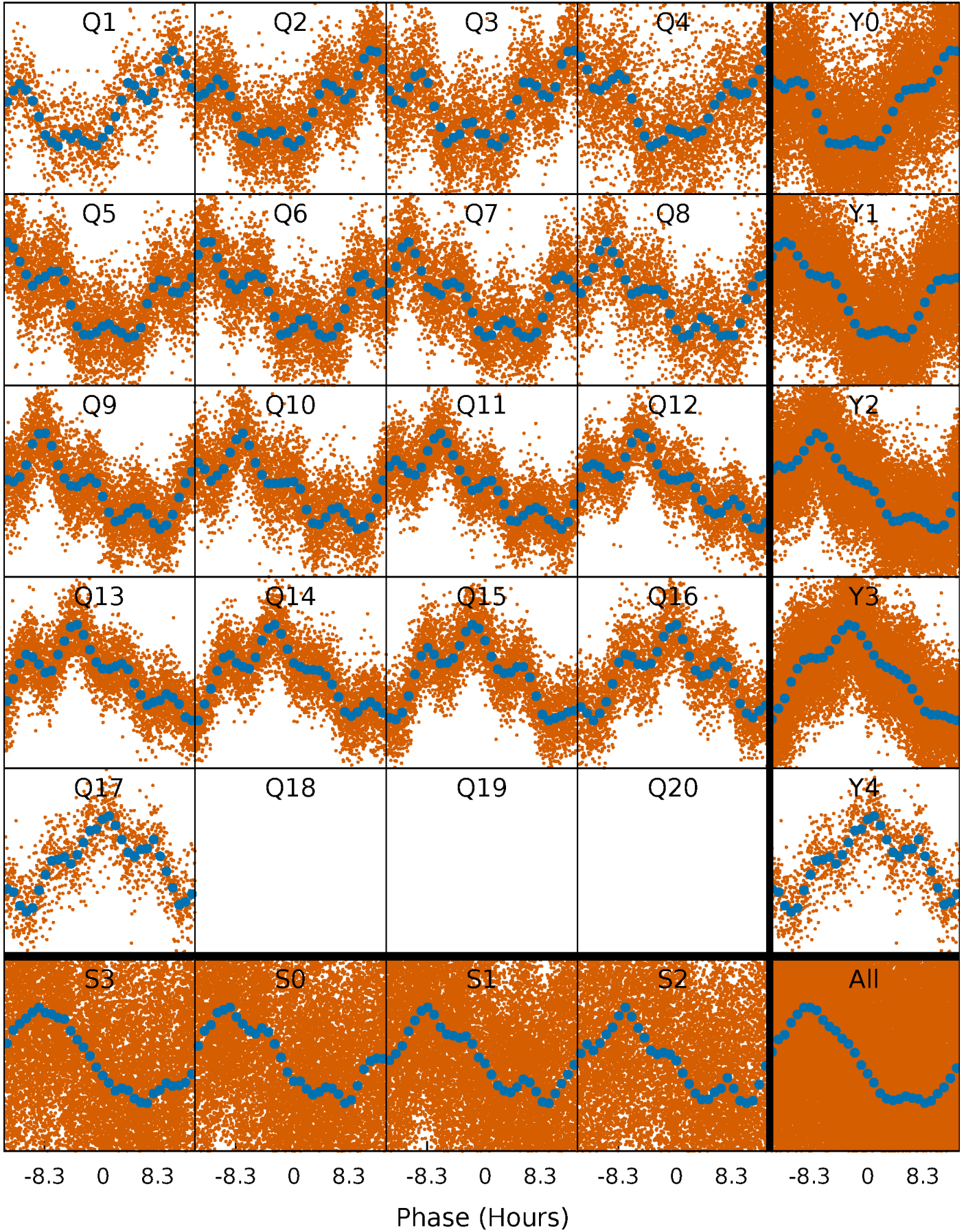


# Non-Whitened Vs. Whitened Light Curve



# PDC Quarter-Phased Transit Curves

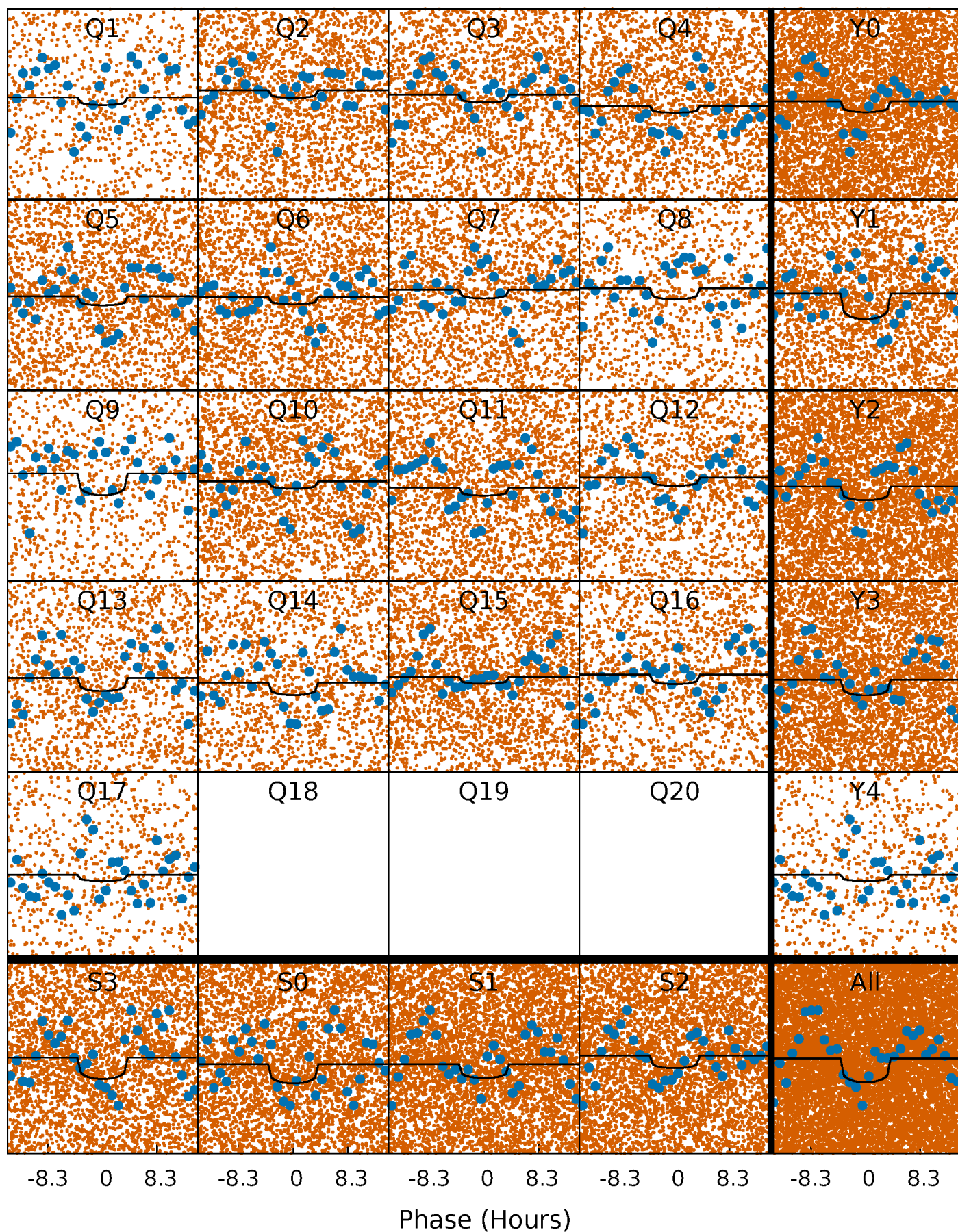
TCE 003942571-01 P= 1.257394 Days  $T_0=132.164961$  (BKJD)





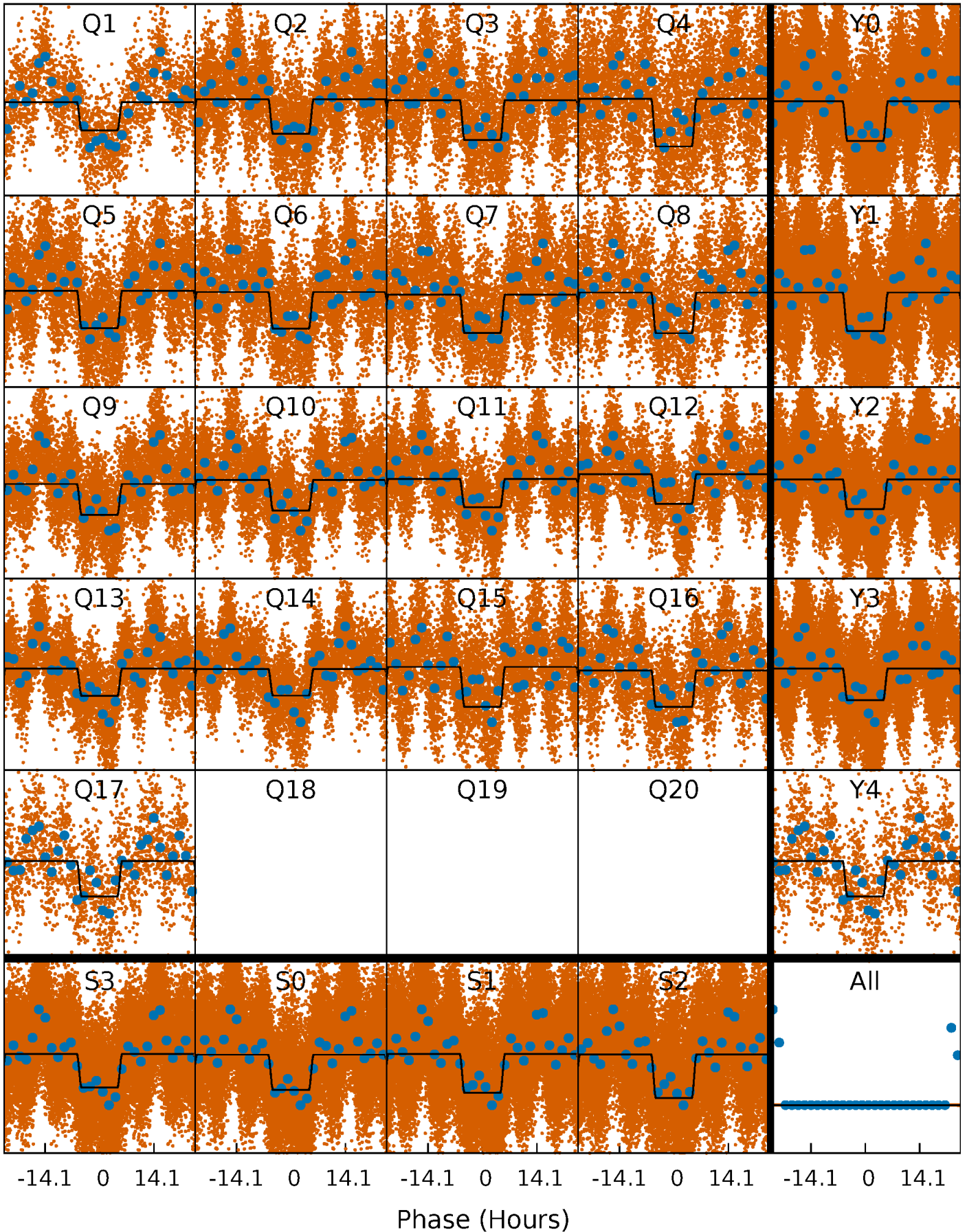
# DV Quarter-Phased Transit Curves

TCE 003942571-01 P= 1.257394 Days  $T_0=132.164961$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 003942571-01 P= 1.258208 Days  $T_0=131.961965$  (BKJD)

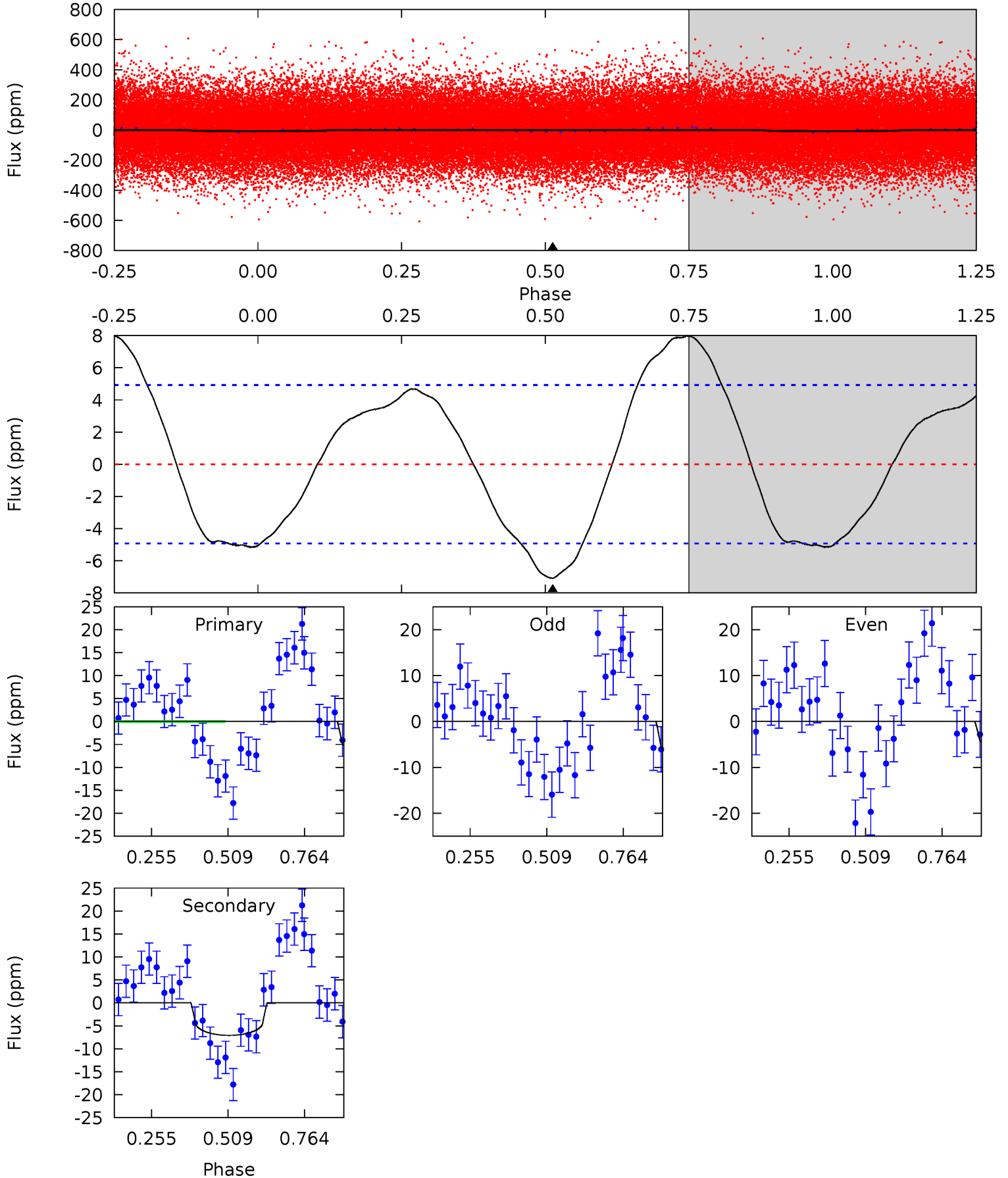




# DV Model-Shift Uniqueness Test

003942571-01, P = 1.257394 Days, E = 130.907567 Days

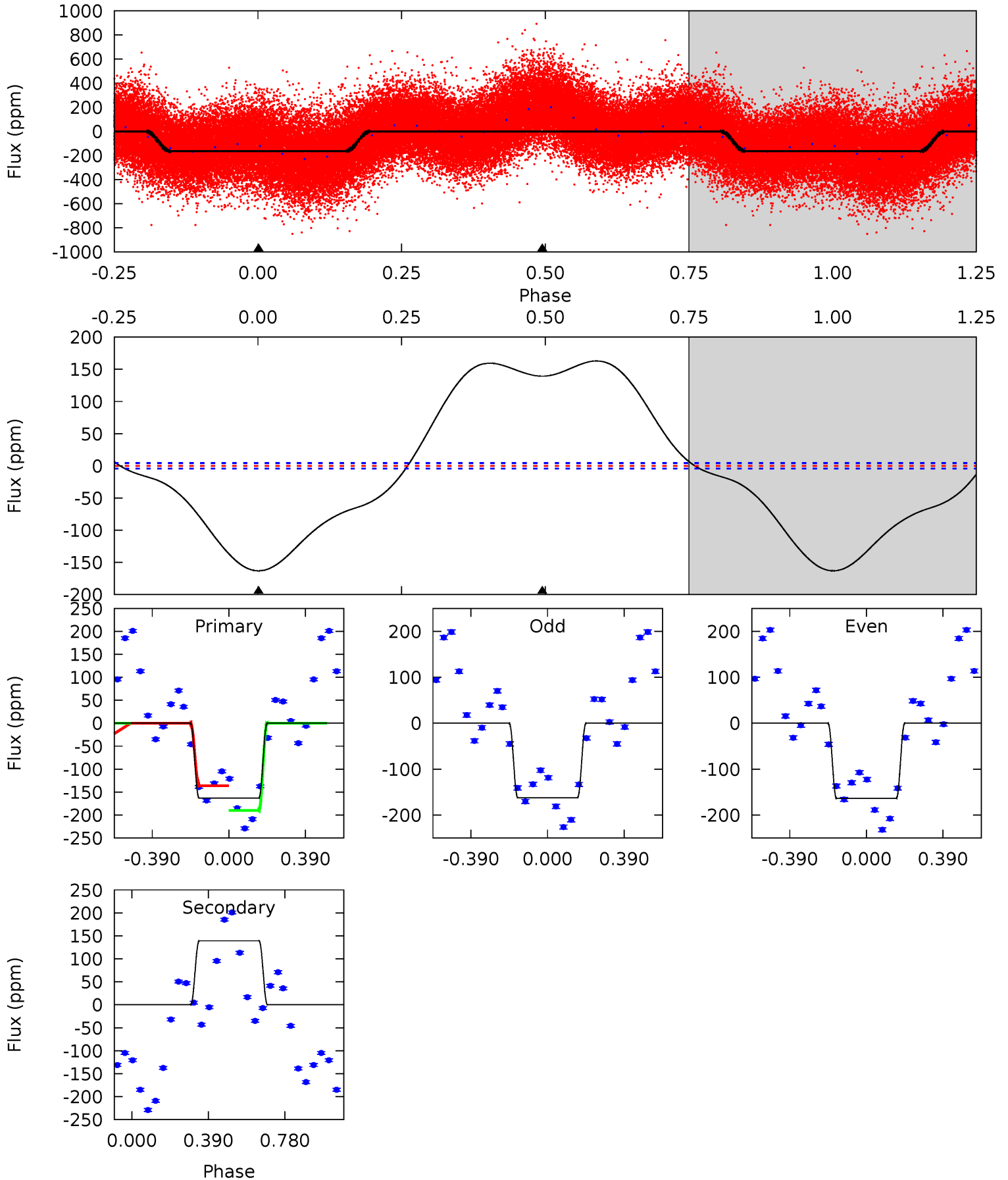
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.28	6.28	0	0	4.36	1.14	3.43	6.28	6.28	6.28	6.28	0.92	1.66	0.53	4.58



# Alt Model-Shift Uniqueness Test

003942571-01, P = 1.258208 Days, E = 130.703757 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
162.6	-138.8	0	0	4.27	0.86	18.3	162.6	162.6	-138.8	-138.8	0.86	1.01	0.50	27.0





### Stellar Parameters For KIC 003942571

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6208^{+169}_{-169}$	$3.278^{+0.459}_{-0.051}$	$-0.080^{+0.350}_{-0.300}$	$5.454^{+0.282}_{-2.540}$	$2.058^{+0.095}_{-0.539}$	$0.018^{+0.084}_{-0.002}$
	+3%/-3%	+14%/-2%	+438%/-375%	+5%/-47%	+5%/-26%	+472%/-9%
Source	PHO1	FLK73	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 003942571-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-7 \pm 1$	$1.58^{+0.97}_{-0.84}$	$5132^{+257}_{-584}$	$5428^{+3142}_{-1422}$	$1.220^{+4.271}_{-0.734}$
Alt.	$139 \pm 1$	$7.05^{+1.40}_{-1.74}$	$5120^{+245}_{-541}$	$-6274^{+347}_{-449}$	$-1.289^{+0.383}_{-0.871}$

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

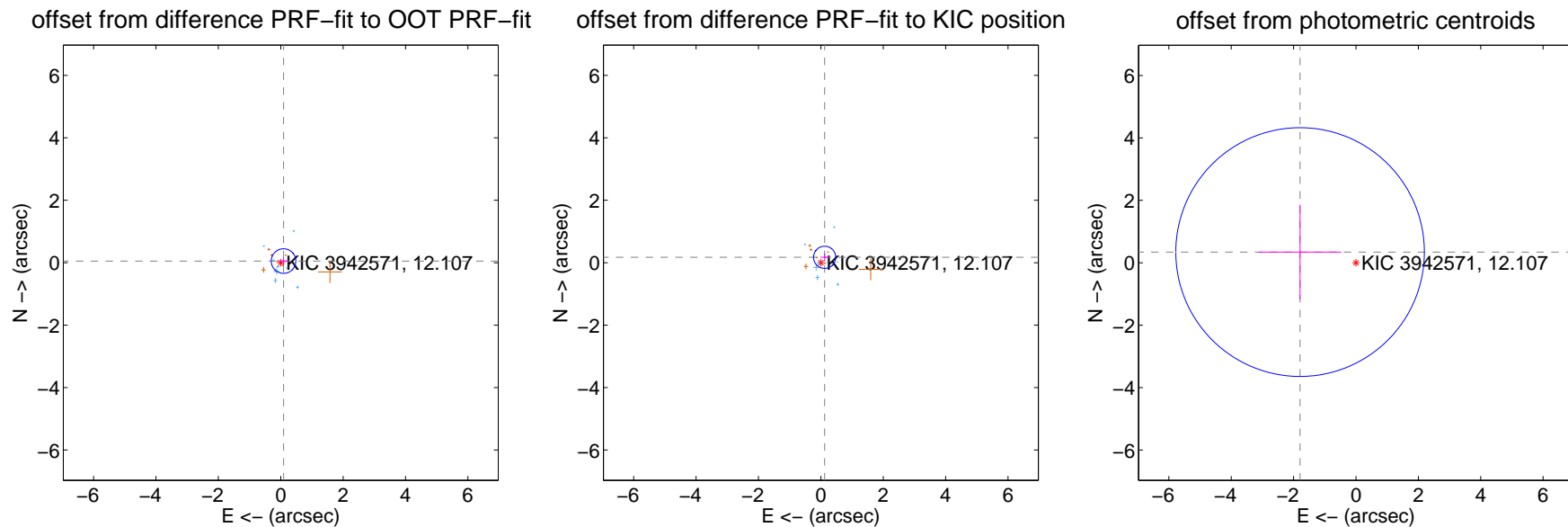
## DV Centroid Data

Supplemental centroid analysis for 003942571-01. Kepler magnitude: 12.11. Transit SNR 3.77

There are 9 quarters with good PRF difference image offsets

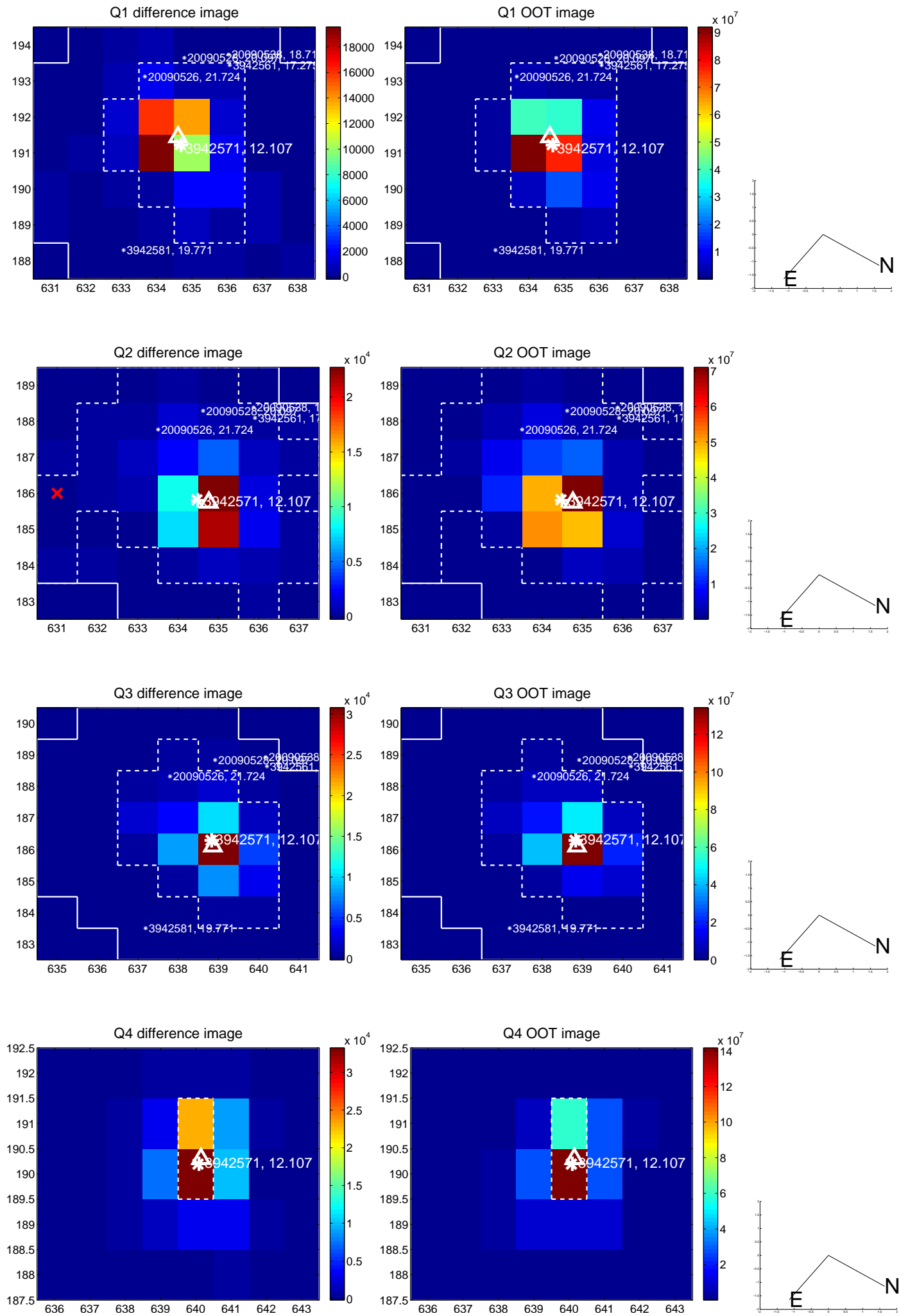
The direct PRF centroid is offset from the target star catalog position by about 0.17 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.103 \pm 0.131$	0.79	$-0.089 \pm 0.149$	$0.052 \pm 0.123$
PRF-fit source offset from KIC position	$0.211 \pm 0.118$	1.78	$-0.121 \pm 0.136$	$0.173 \pm 0.127$
photometric centroid source offset	$1.82 \pm 1.33$	1.37	$1.79 \pm 1.32$	$0.34 \pm 1.52$

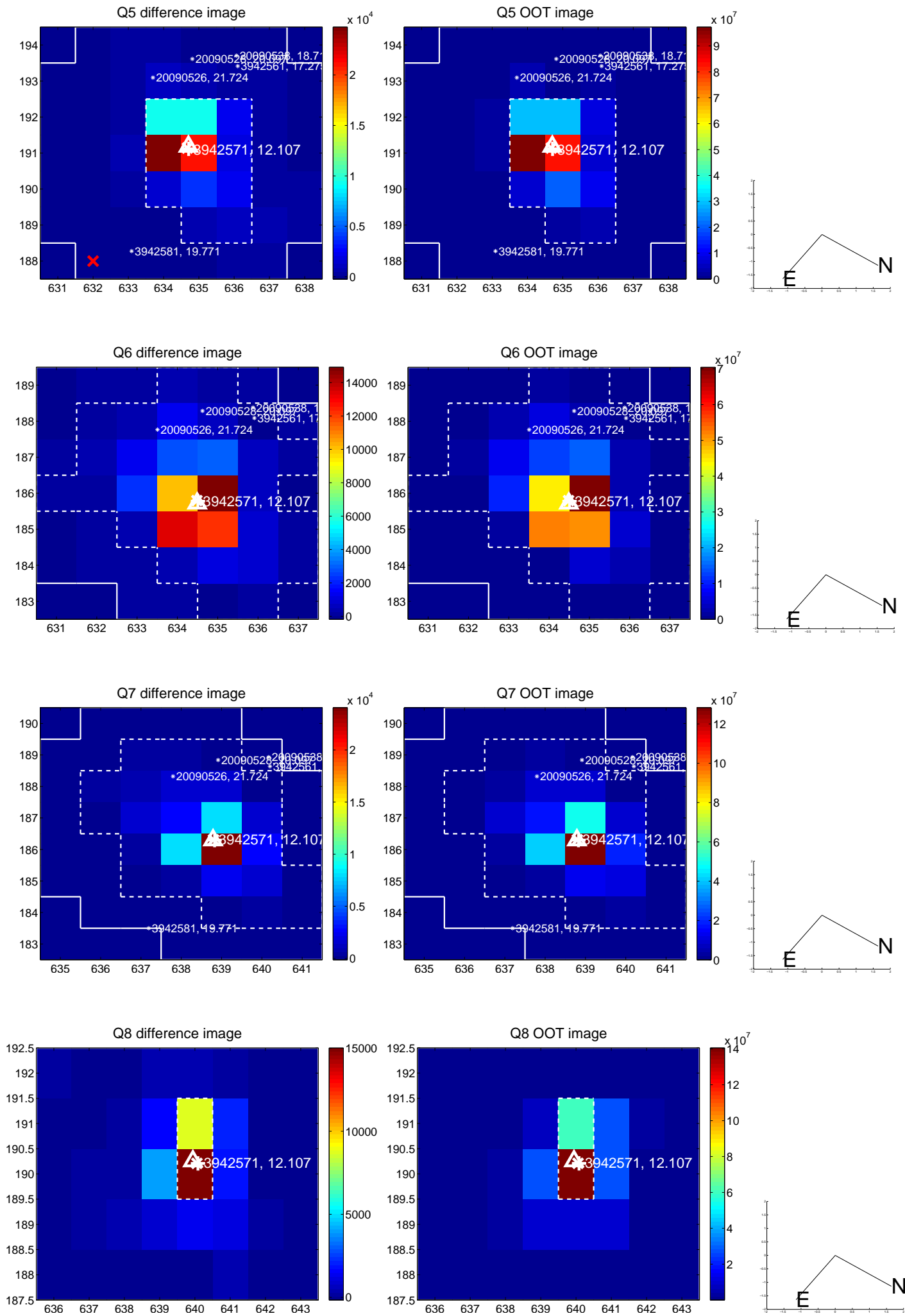


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

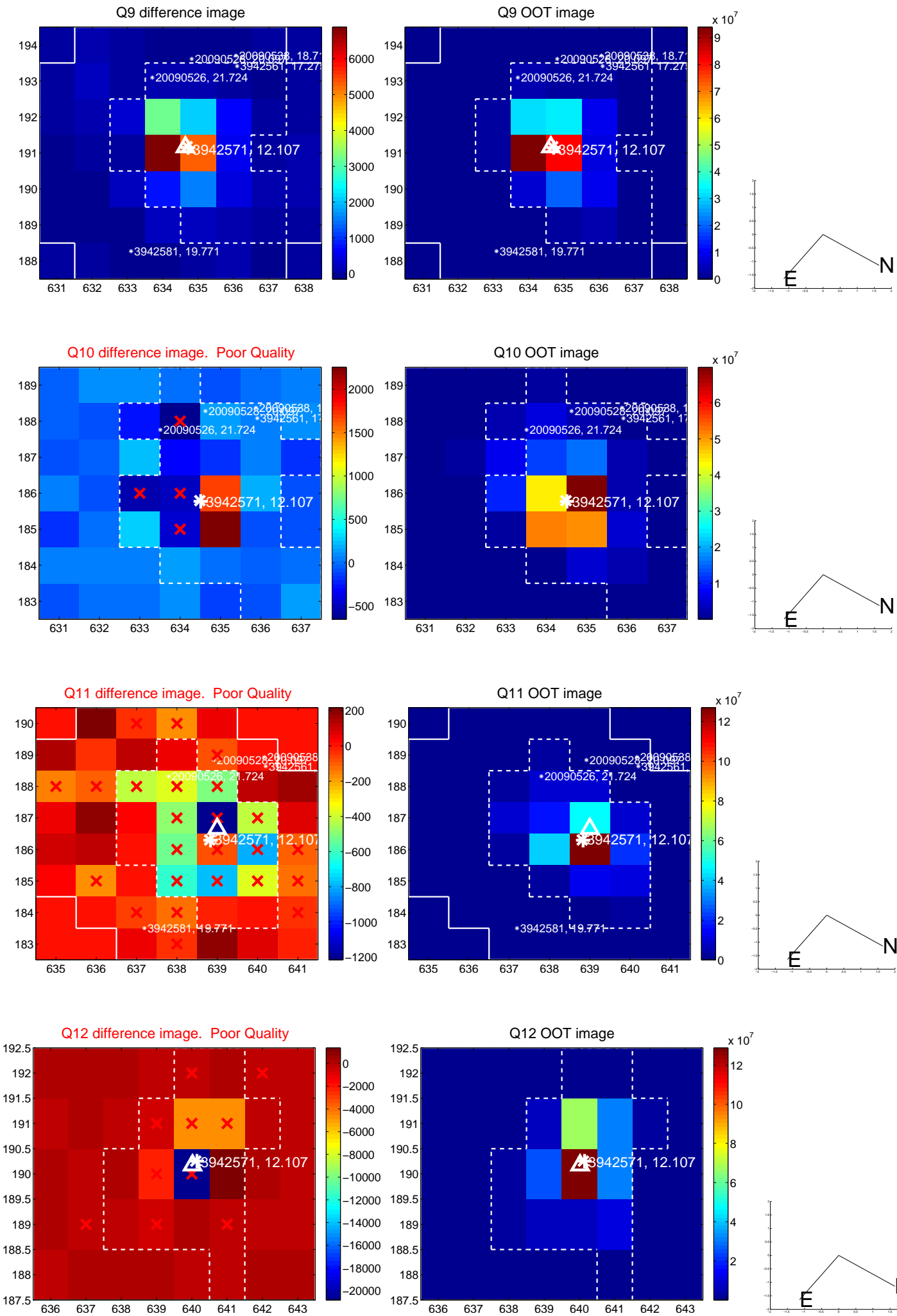


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

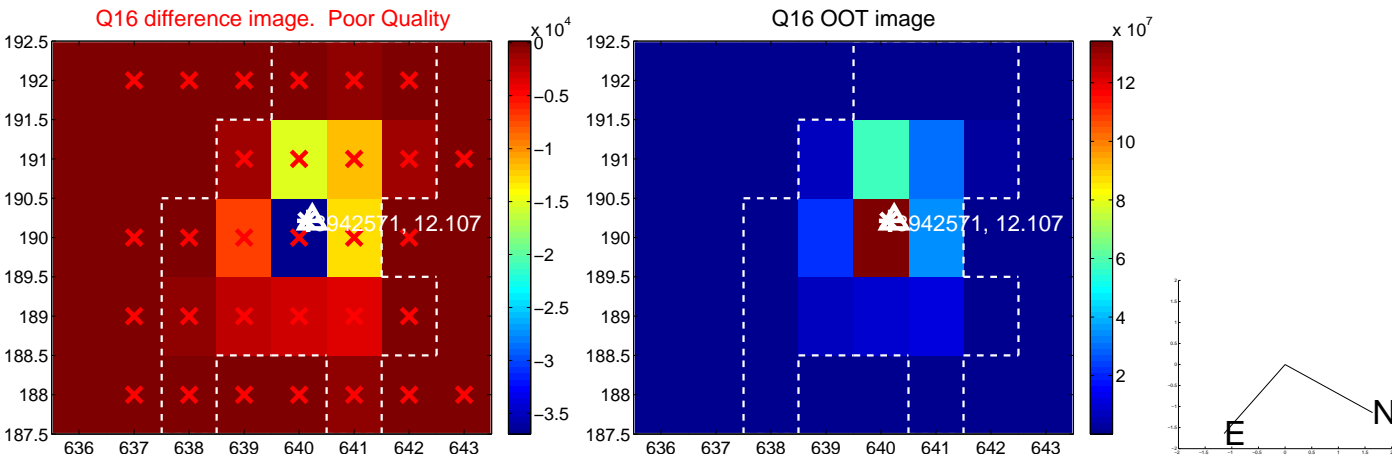
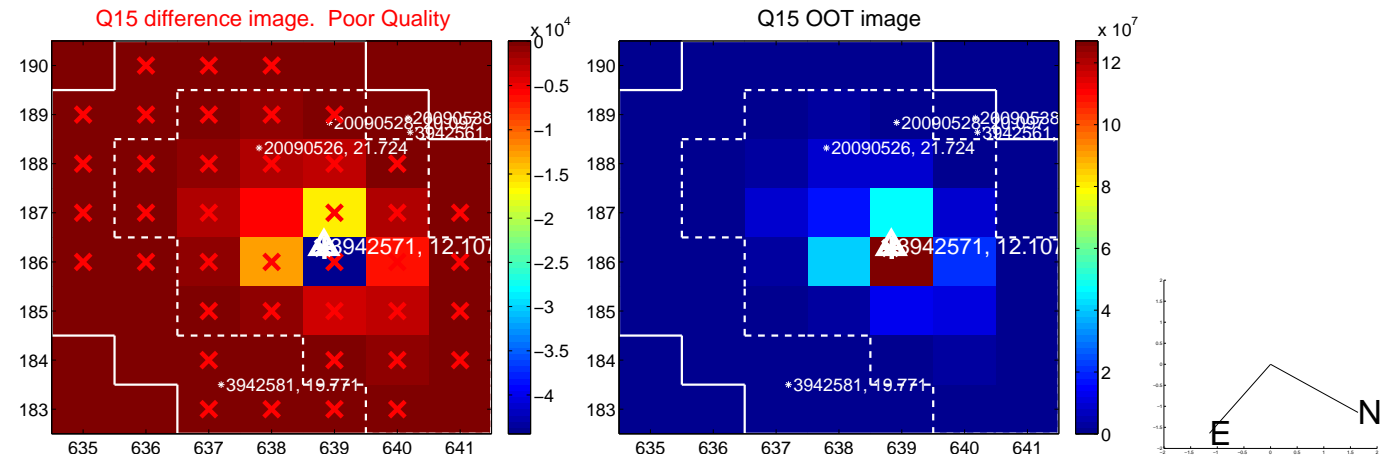
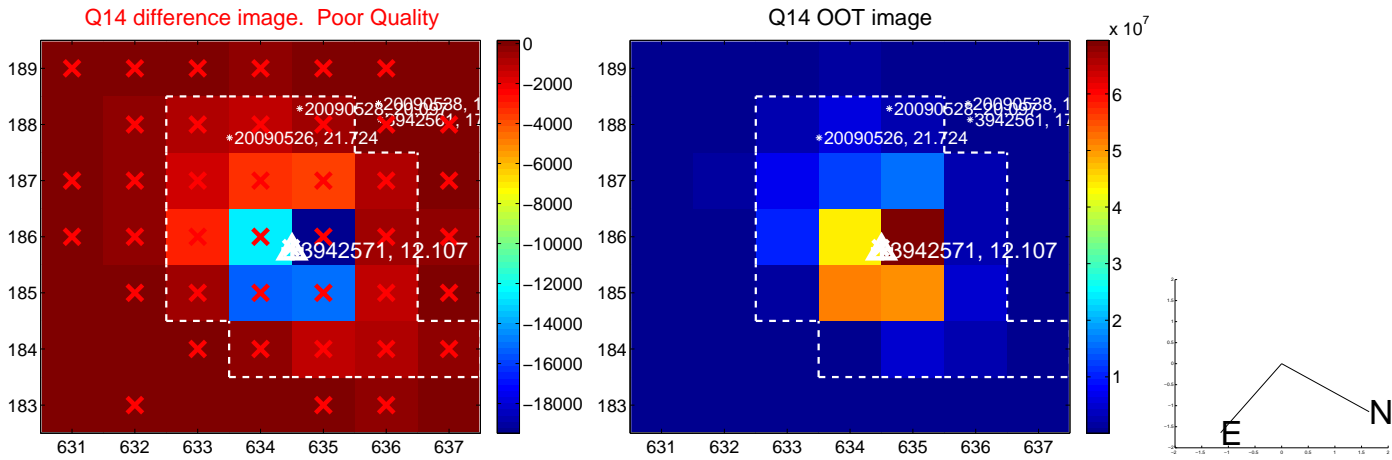
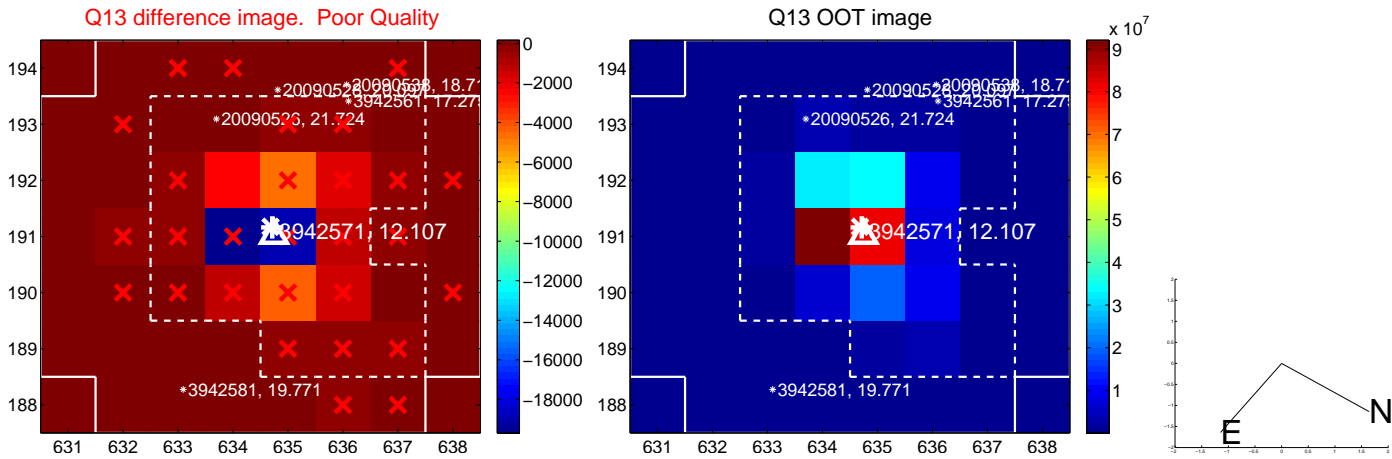




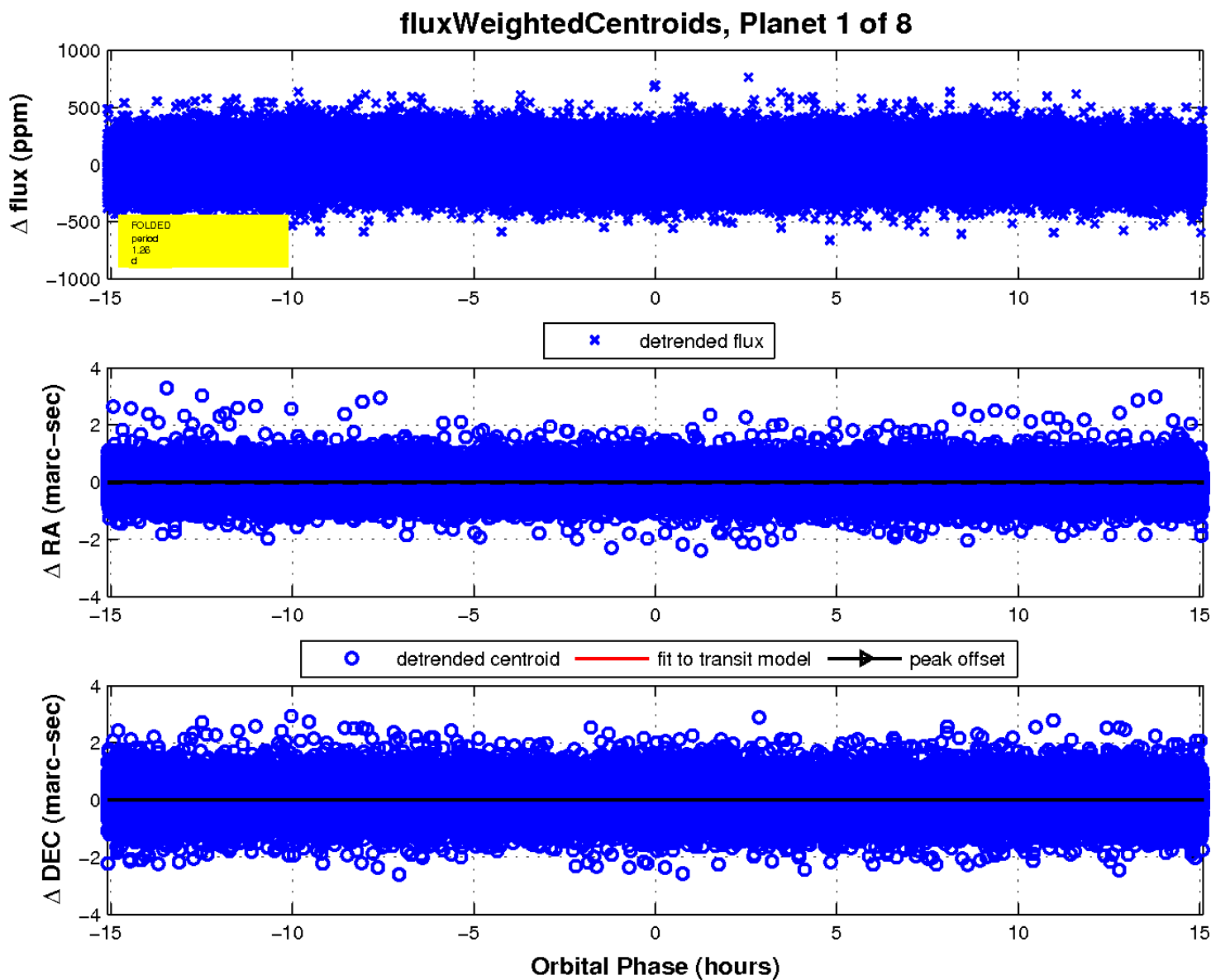
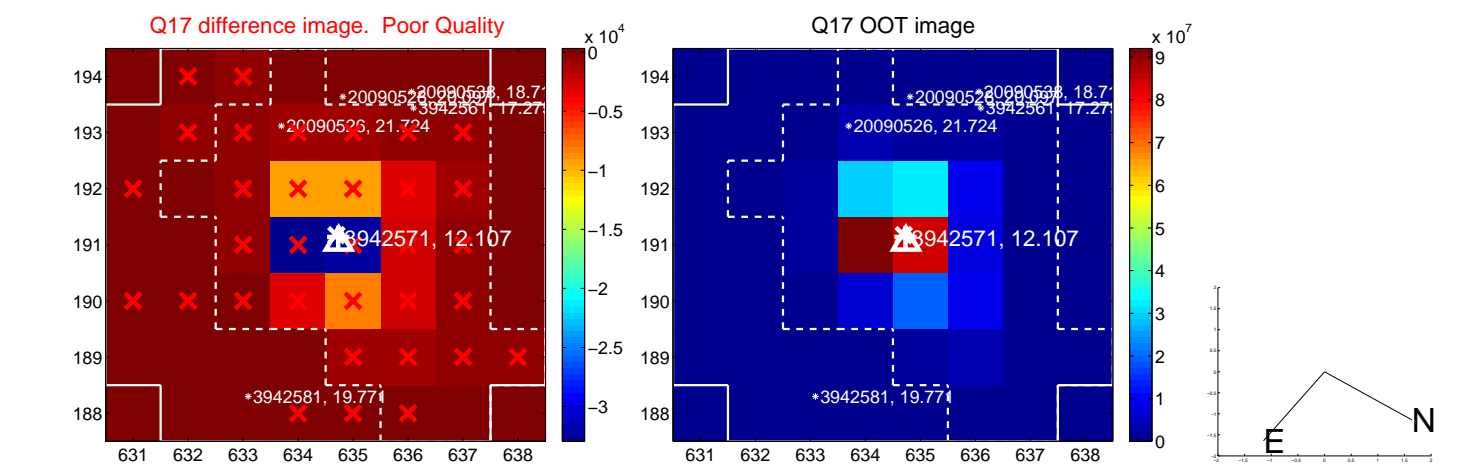
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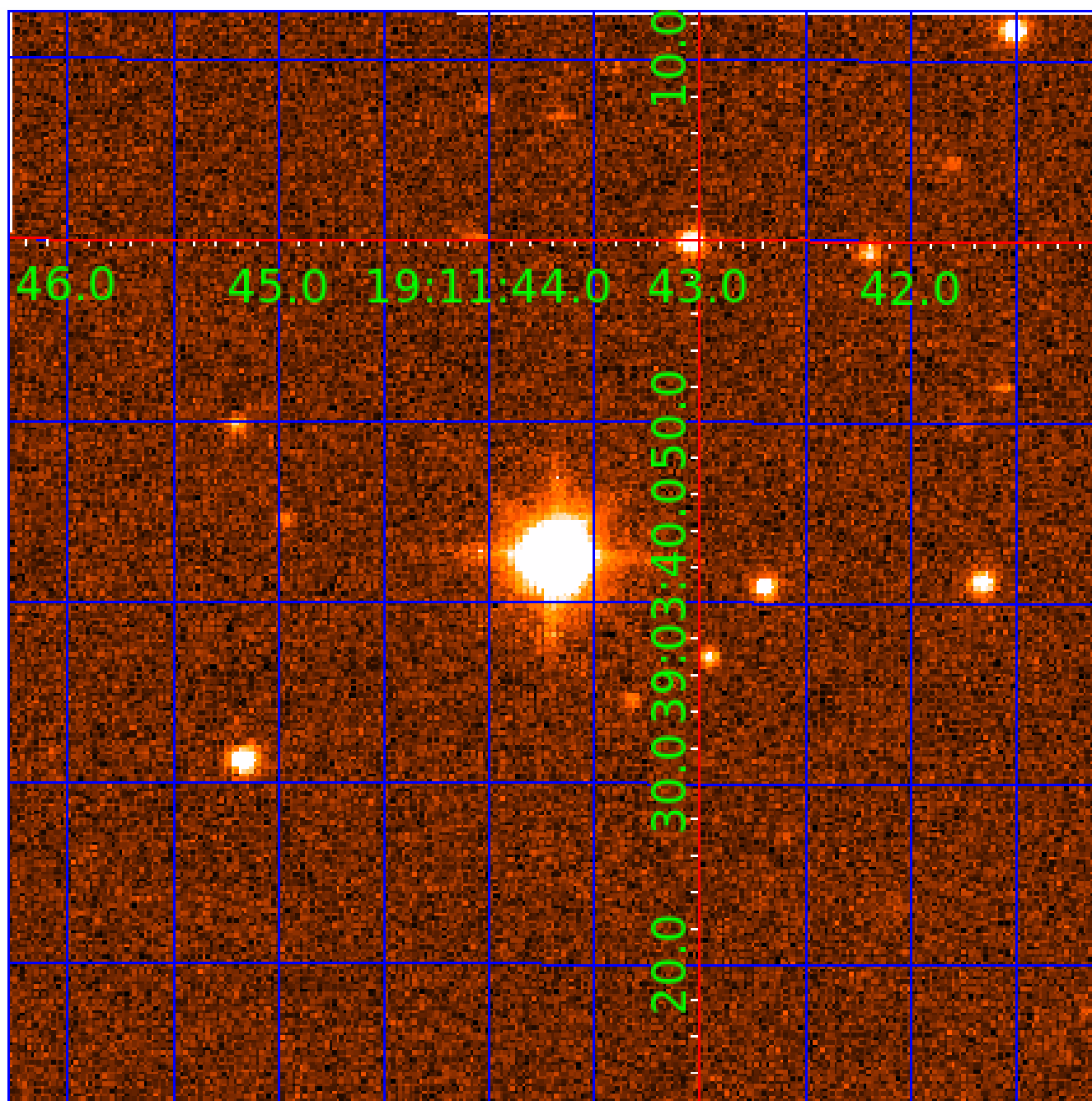


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UKIRT Image

Declination



# KIC 003942571

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
003942571-01	OBS	No	1.257394	132.164961	8.1	7.242	9.3	3.8	5.45	6208	1.70	47048.90
003942571-02	OBS	No	218.009814	298.710758	233.0	6.496	14.9	7.0	5.45	6208	9.42	48.66
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## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
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003942571-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
003942571-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
003942571-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
003942571-05	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
003942571-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
003942571-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
003942571-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_ALT—MOD_NONUNIQ_ALT—CENT_NOFITS

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

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

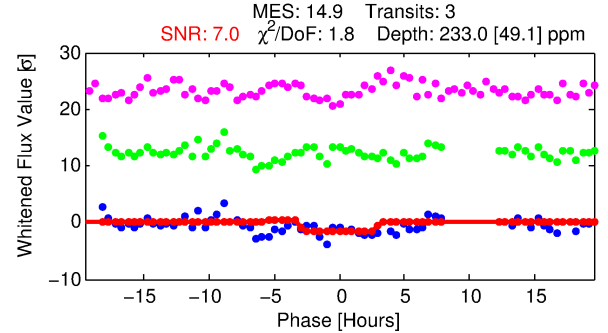
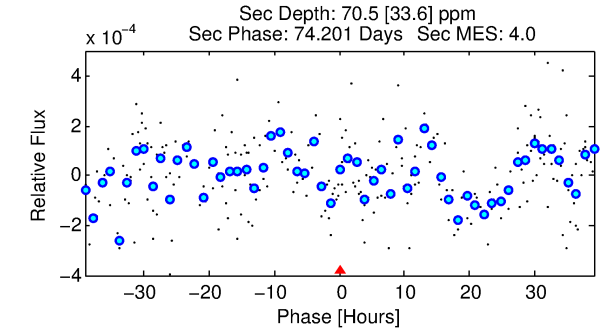
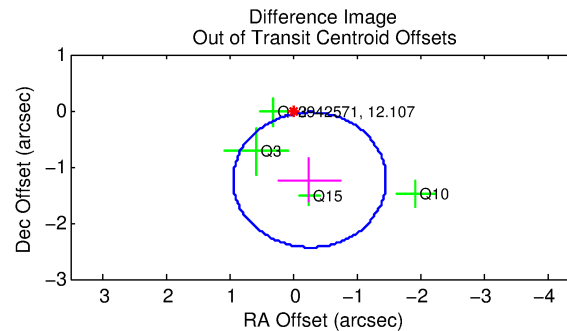
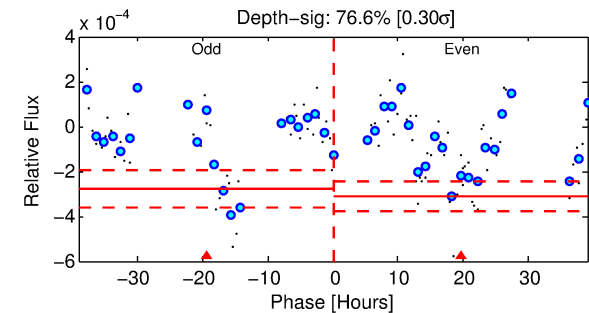
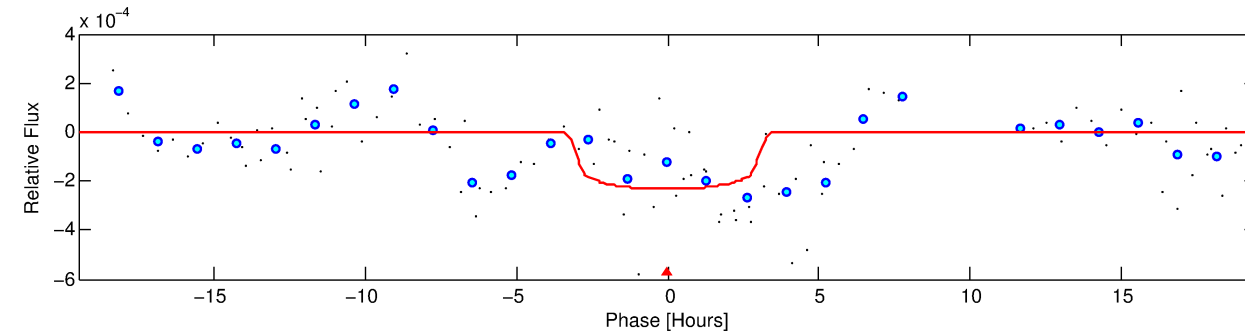
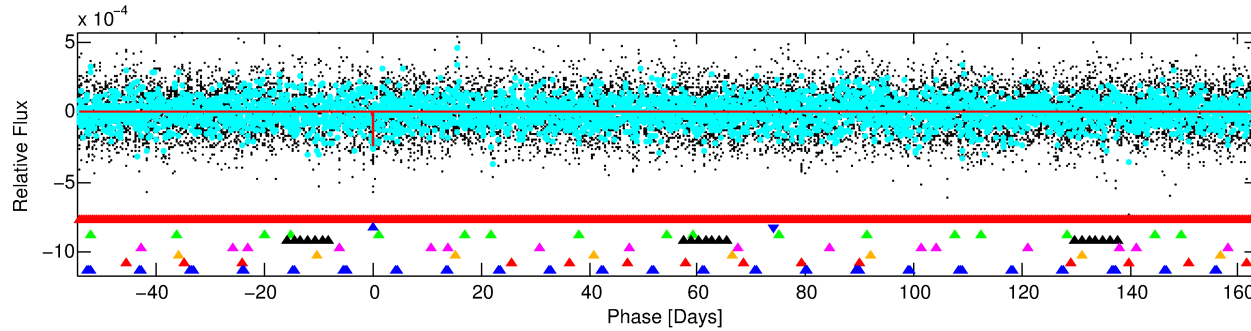
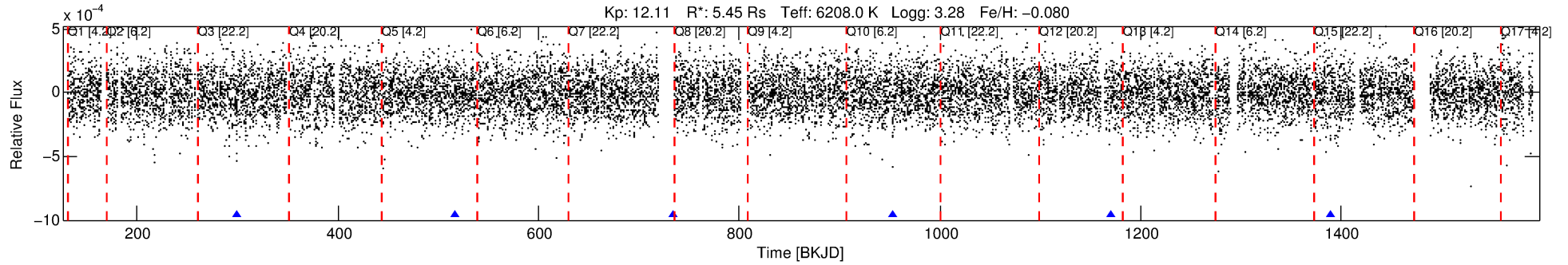
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 003942571-02

No Significant Match Found

# DV One-Page Summary

KIC: 3942571 Candidate: 2 of 8 Period: 218.010 d



## DV Fit Results:

Period = 218.00981 [0.00599] d  
Epoch = 298.7108 [0.0184] BKJD  
Rp/R\* = 0.0158 [0.0120]  
a/R\* = 143.57 [583.65]  
b = 0.85 [1.36]  
Seff = 48.66 [37.84]  
Teq = 673 [131] K  
Rp = 9.42 [8.38] Re  
a = 0.9019 [0.4235] AU  
Ag = 355.41 [627.58] [0.56 $\sigma$ ]  
Teffp = 4521 [1800] K [2.13 $\sigma$ ]

## DV Diagnostic Results:

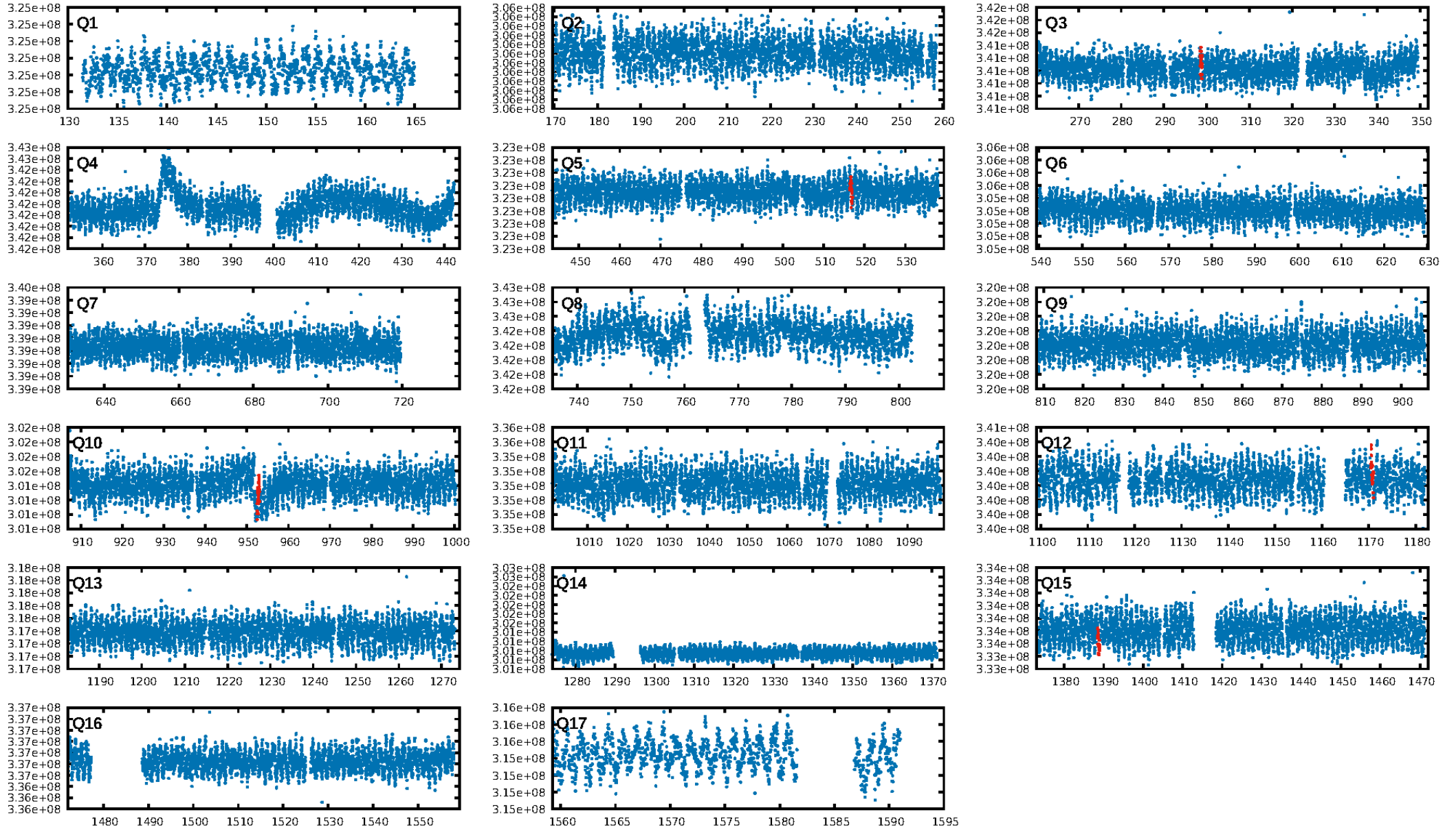
ShortPeriod-sig: 100.0% [83.04 $\sigma$ ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 4.1%  
ModelChiSquareGof-sig: 97.7%  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: 5.816  
Centroid-sig: 77.4%  
Centroid-so: 0.395 arcsec [0.49 $\sigma$ ]  
OotOffset-rm: 1.263 arcsec [3.15 $\sigma$ ]  
KicOffset-rm: 1.221 arcsec [2.94 $\sigma$ ]  
OotOffset-st: 1/2/1/0 [4]  
KicOffset-st: 1/2/1/0 [4]  
DiffImageQuality-fgm: 0.25 [1/4]  
DiffImageOverlap-fno: 0.00 [0/5]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 01:11:44 Z

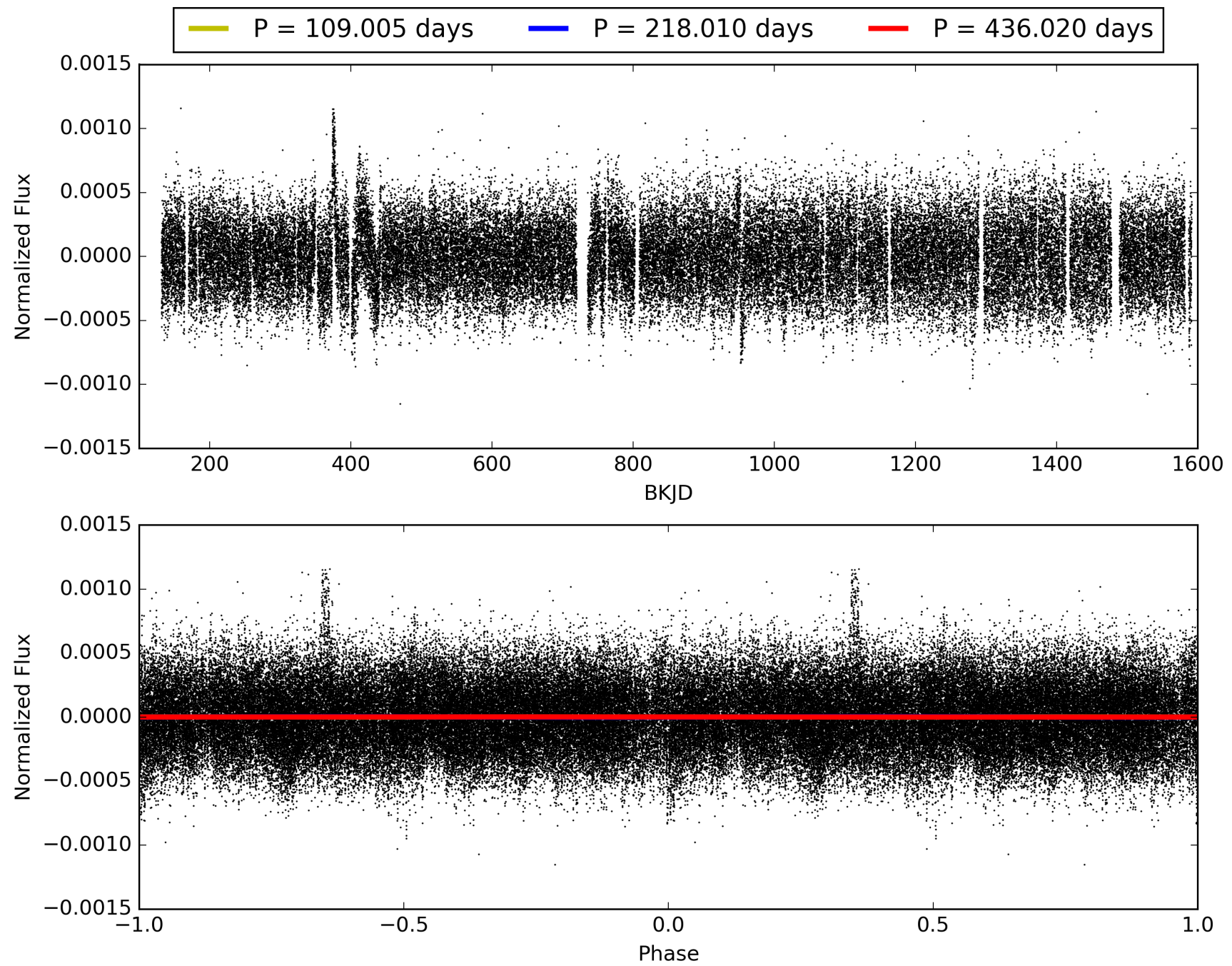
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center



# TCE 003942571-02, PDC Light Curves

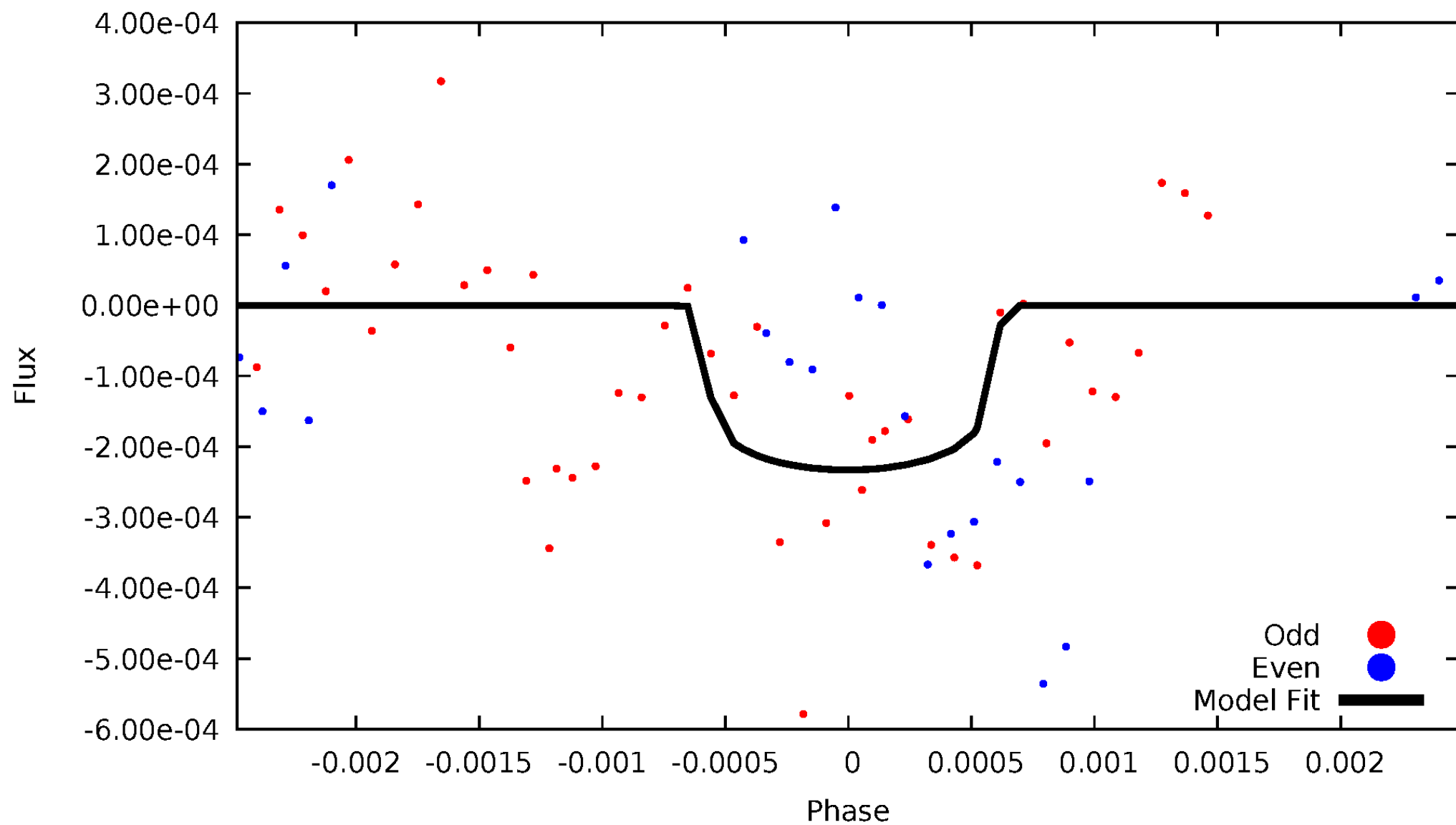


TCE 003942571-02



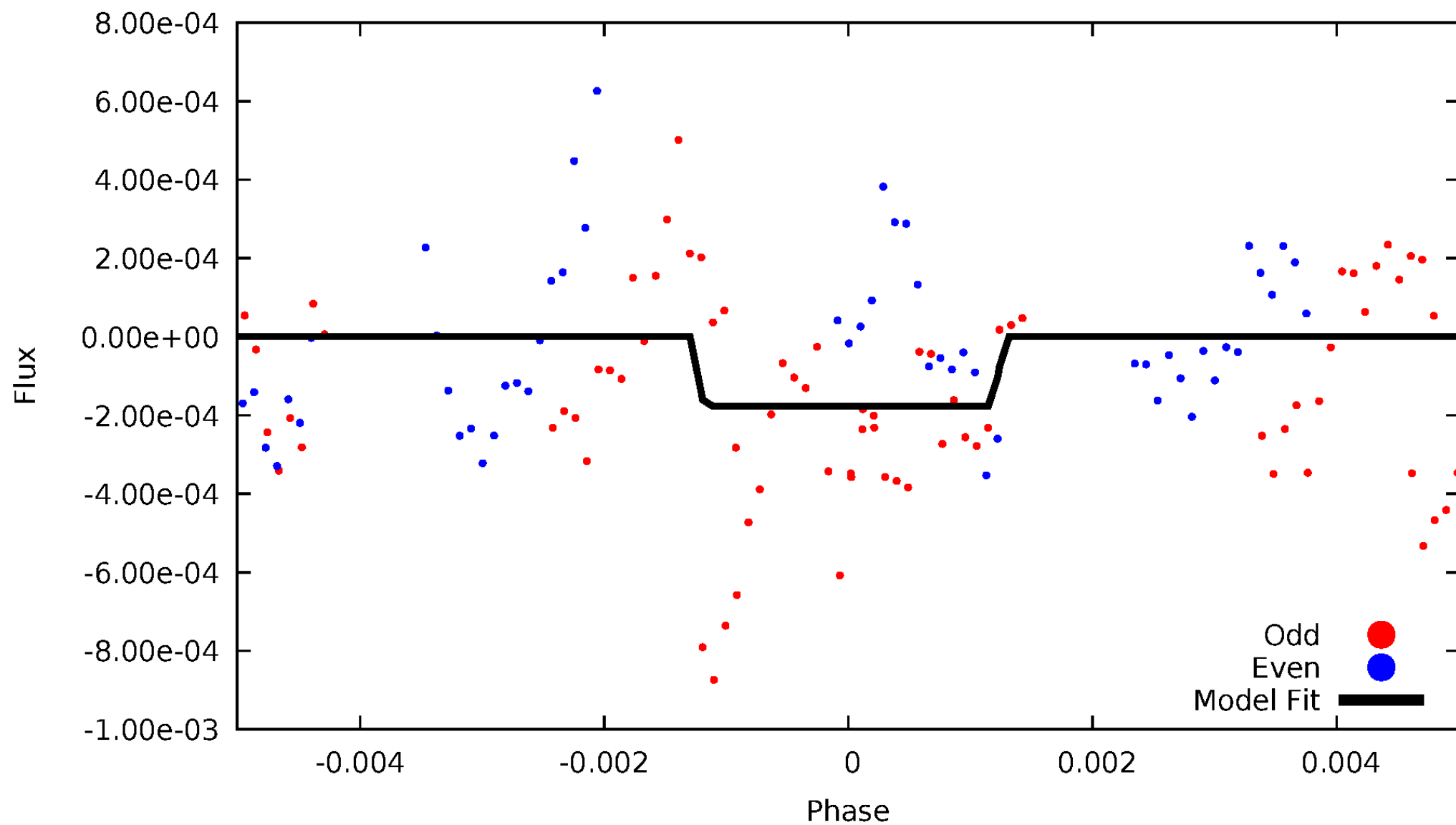
# DV Odd/Even

TCE 003942571-02



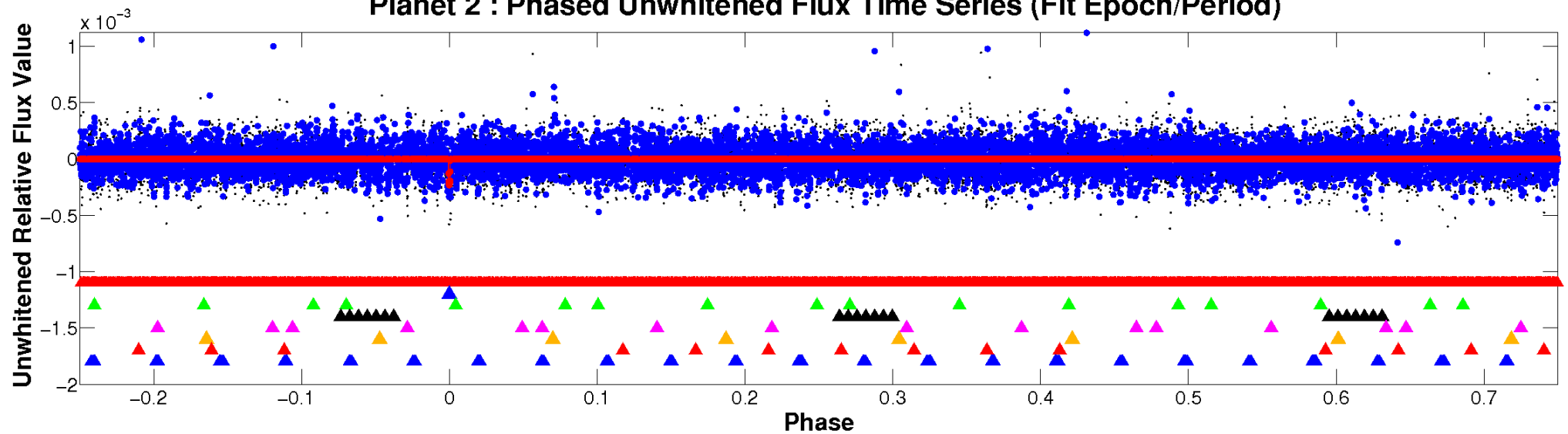
# ALT Odd/Even

TCE 003942571-02

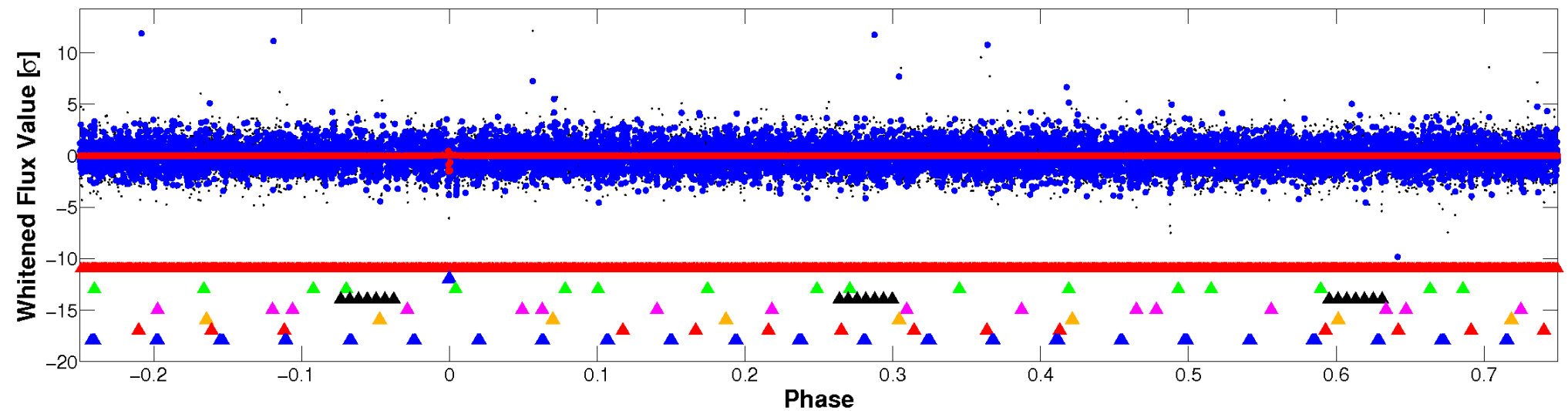


# Non-Whitened Vs. Whitened Light Curve

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

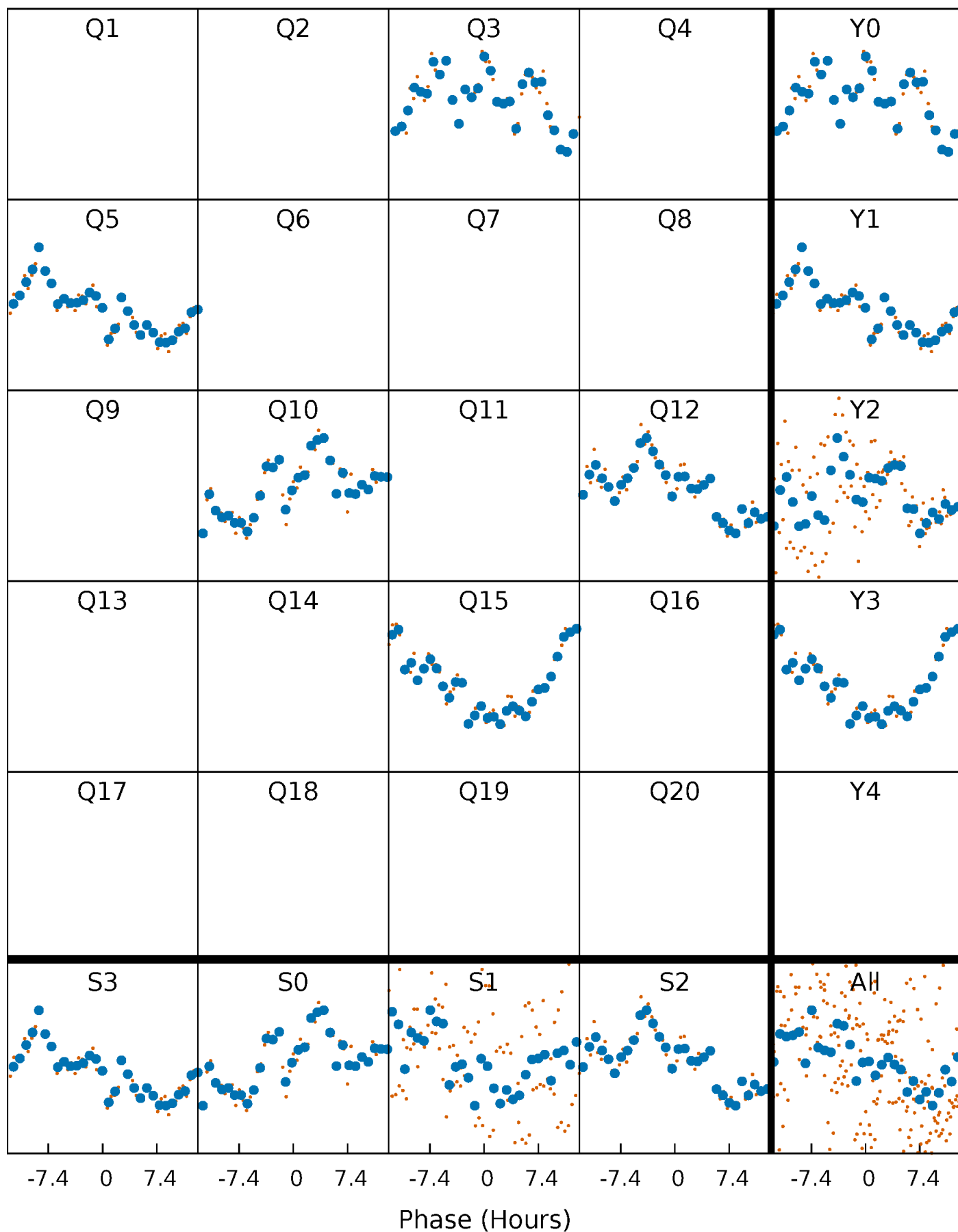


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

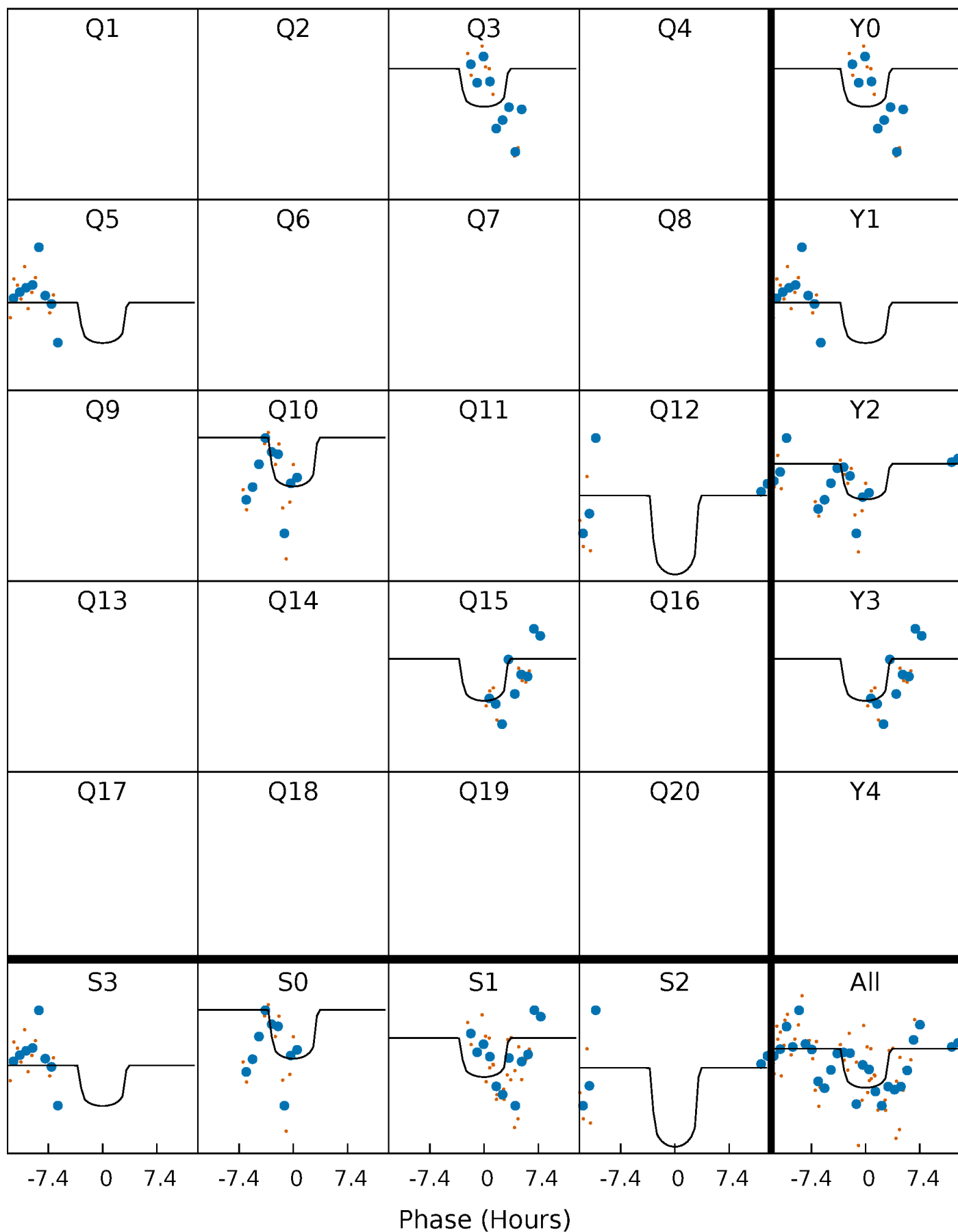
TCE 003942571-02     $P=218.009815$  Days     $T_0=298.710758$  (BKJD)





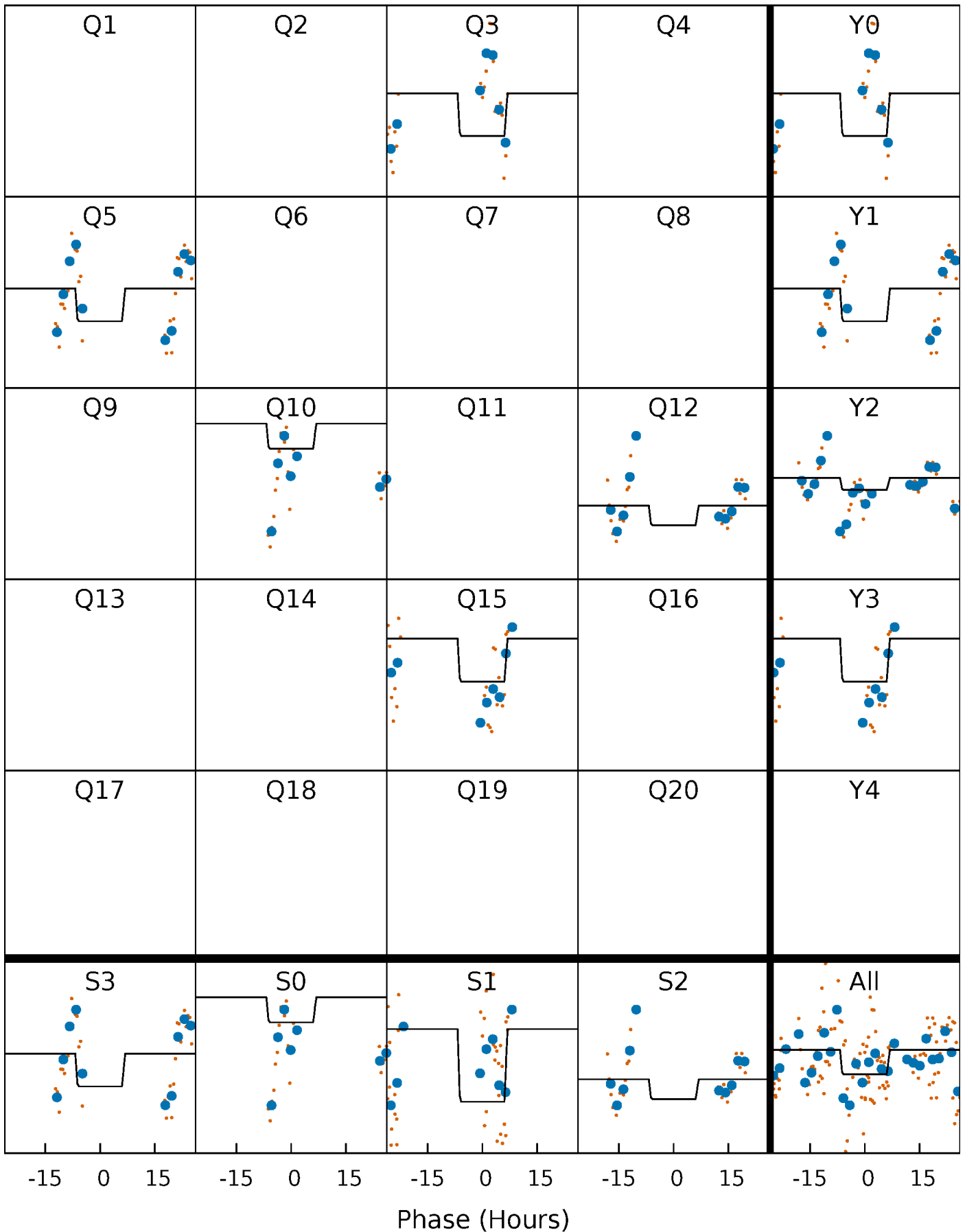
# DV Quarter-Phased Transit Curves

TCE 003942571-02   P=218.009815 Days    $T_0=298.710758$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

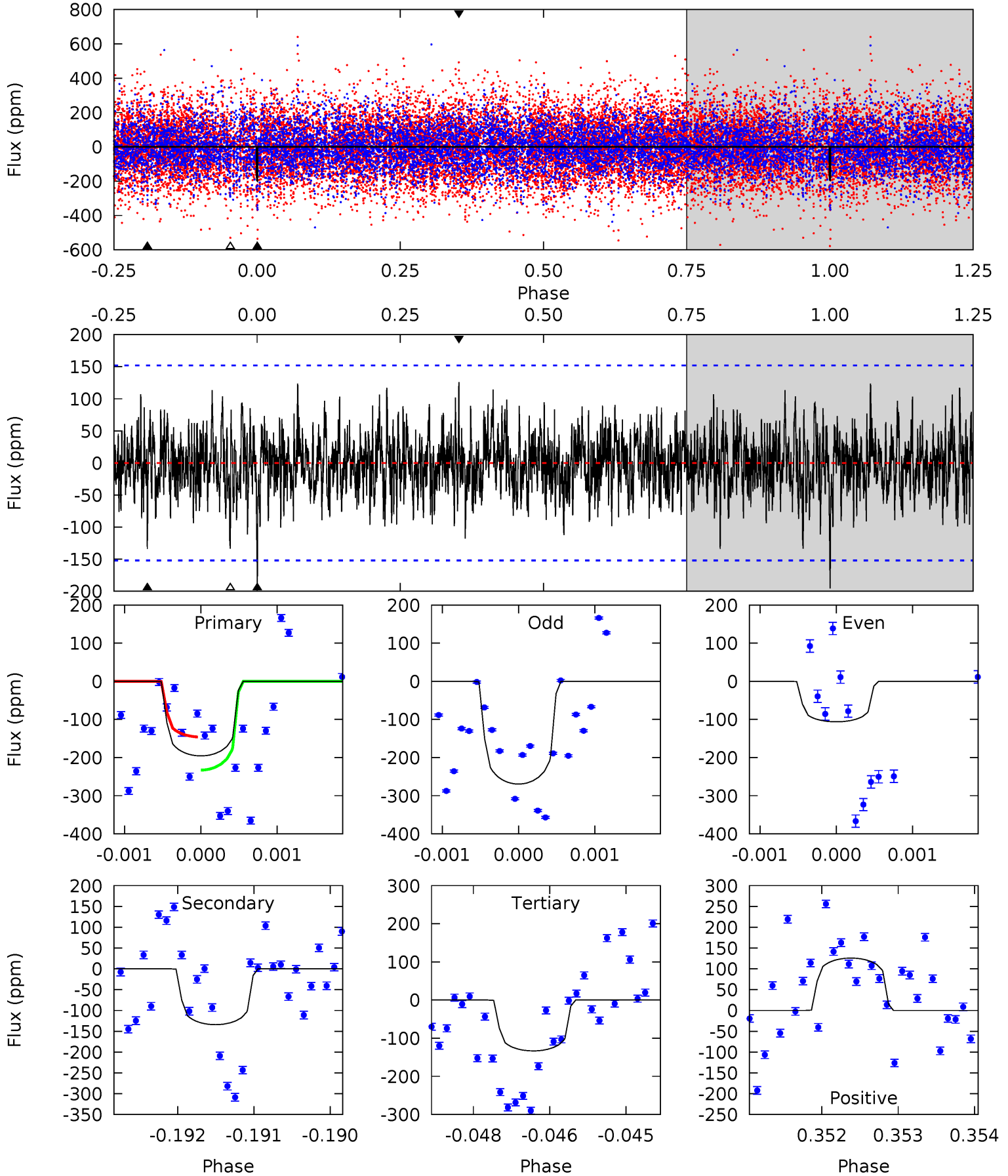
TCE 003942571-02 P=218.026085 Days  $T_0=298.636970$  (BKJD)



# DV Model-Shift Uniqueness Test

003942571-02,  $P = 218.009815$  Days,  $E = 80.700943$  Days

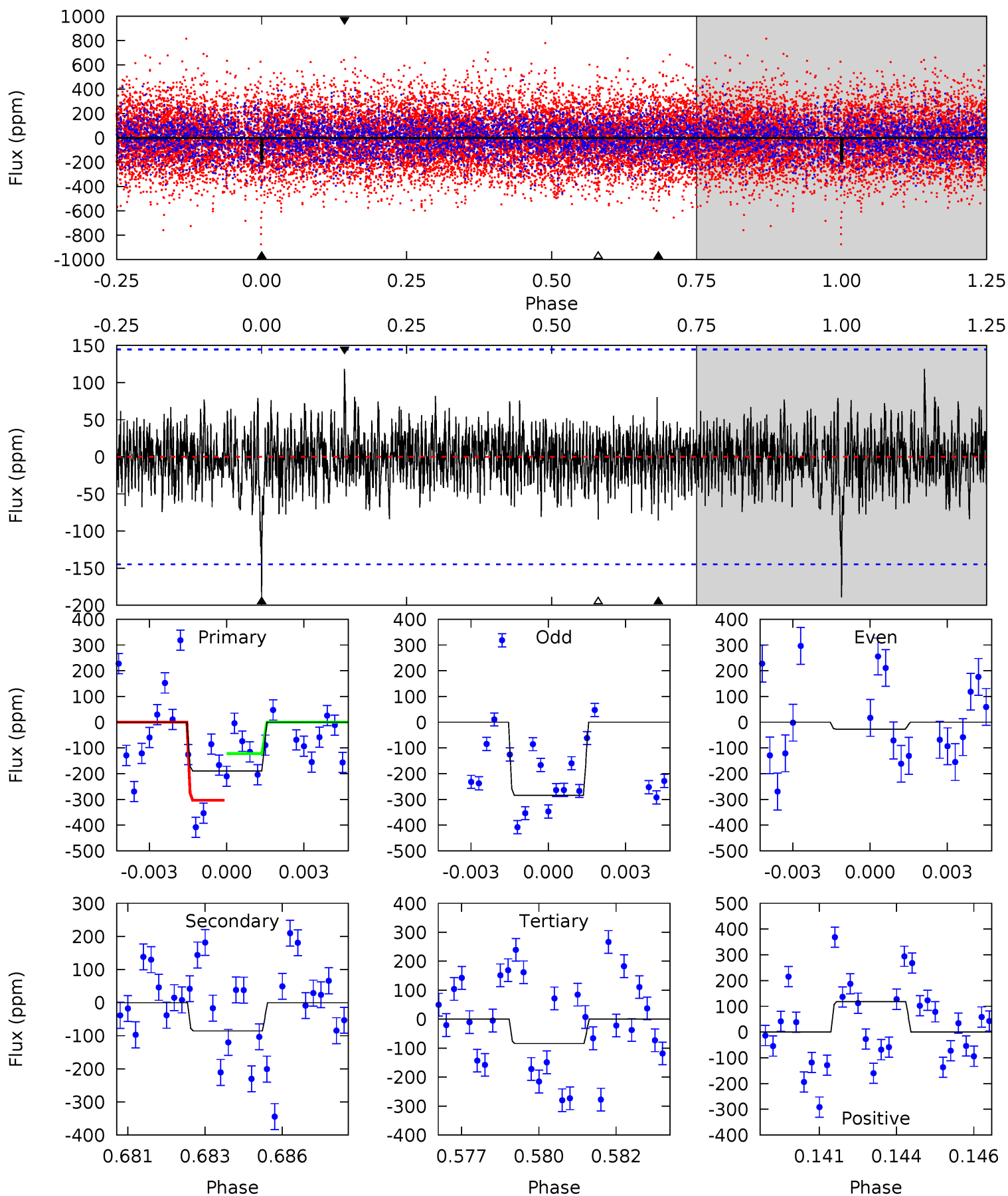
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.96	4.78	4.75	4.48	5.41	3.23	1.36	2.22	2.48	0.03	0.29	2.90	0.86	0.39	1.50



# Alt Model-Shift Uniqueness Test

003942571-02,  $P = 218.026085$  Days,  $E = 80.610885$  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
6.91	3.13	3.07	4.32	5.28	3.02	0.99	3.84	2.59	0.05	-1.20	4.34	1.23	0.38	3.17



### Stellar Parameters For KIC 003942571

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6208^{+169}_{-169}$	$3.278^{+0.459}_{-0.051}$	$-0.080^{+0.350}_{-0.300}$	$5.454^{+0.282}_{-2.540}$	$2.058^{+0.095}_{-0.539}$	$0.018^{+0.084}_{-0.002}$
	+3%/-3%	+14%/-2%	+438%/-375%	+5%/-47%	+5%/-26%	+472%/-9%
Source	PHO1	FLK73	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 003942571-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-134 \pm 28$	$9.05^{+7.02}_{-5.41}$	$924^{+43}_{-96}$	$5227^{+2958}_{-1040}$	$737^{+3775}_{-508}$
Alt.	$-86 \pm 27$	$7.56^{+6.93}_{-4.77}$	$919^{+44}_{-106}$	$4906^{+3181}_{-973}$	$597^{+3761}_{-434}$

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



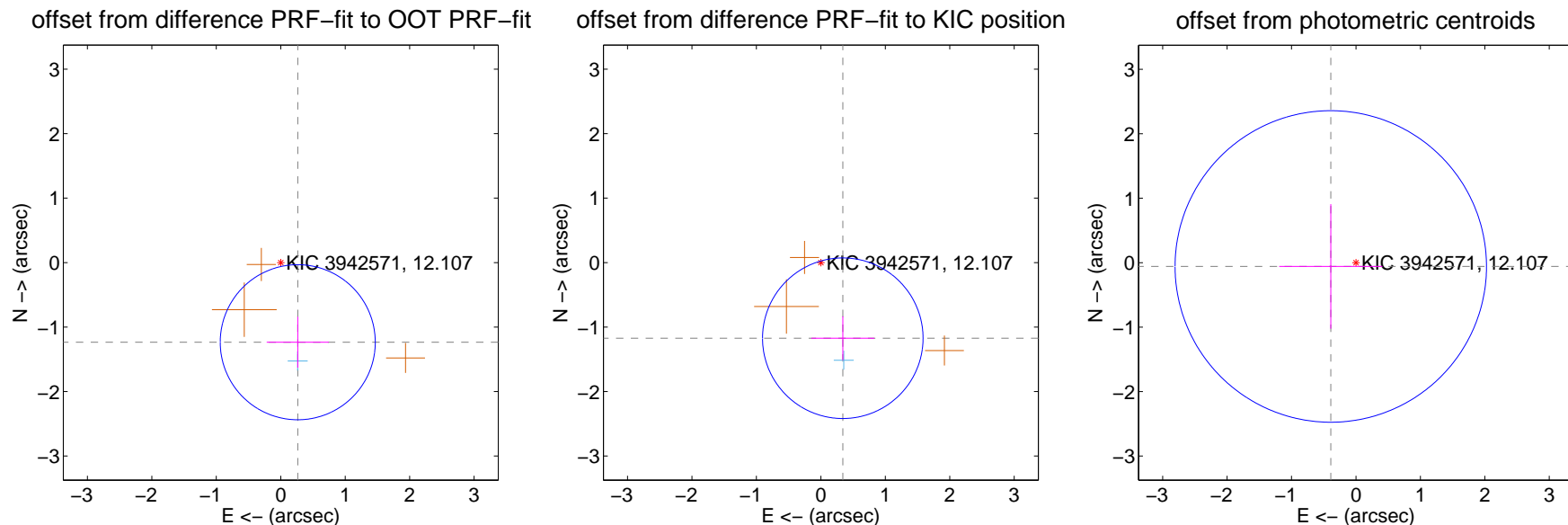
## DV Centroid Data

Supplemental centroid analysis for 003942571-02. Kepler magnitude: 12.11. Transit SNR 6.97

There are 1 quarters with good PRF difference image offsets

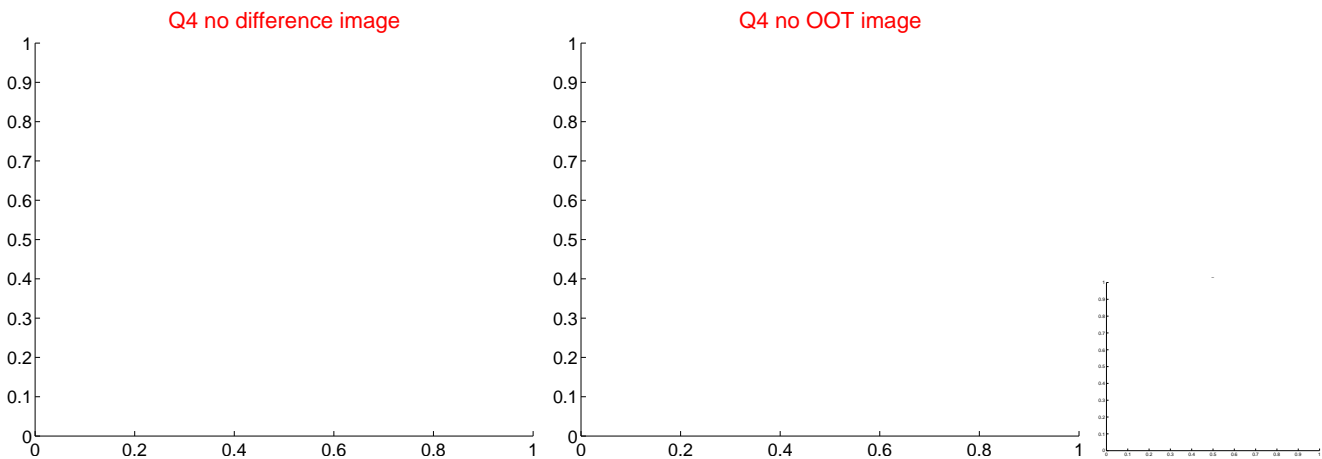
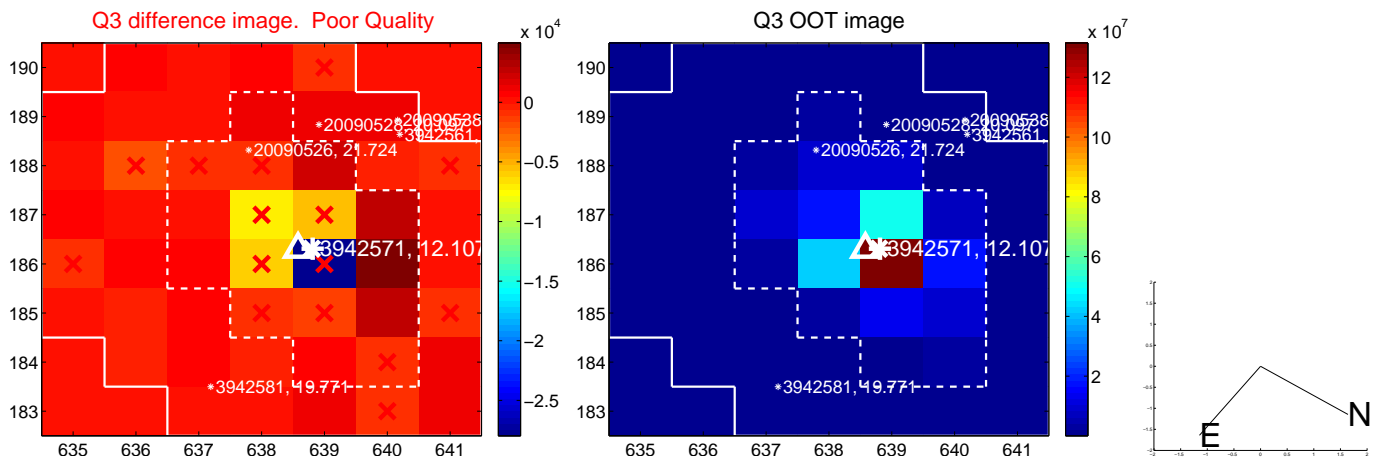
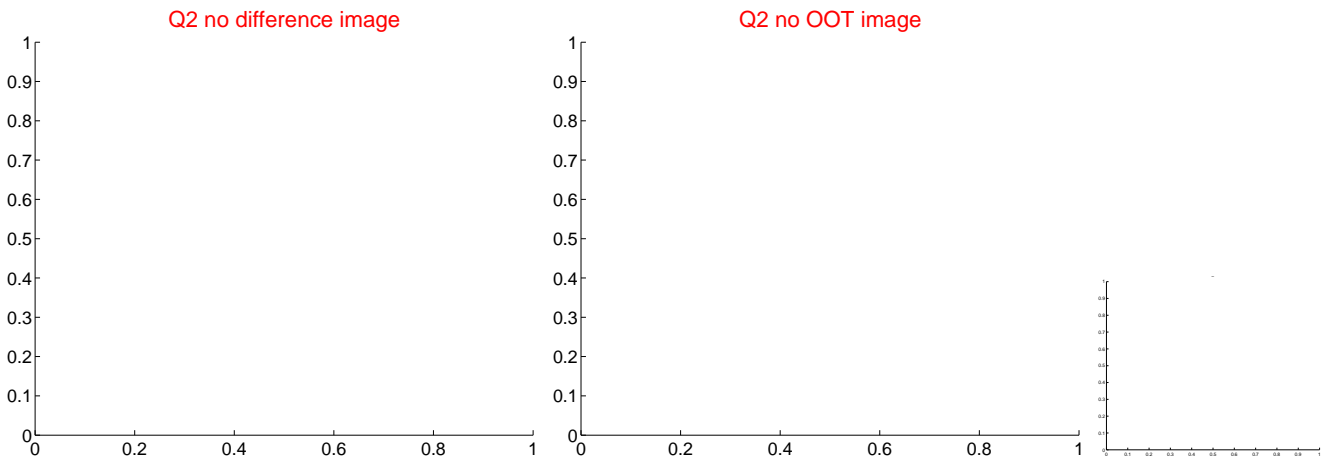
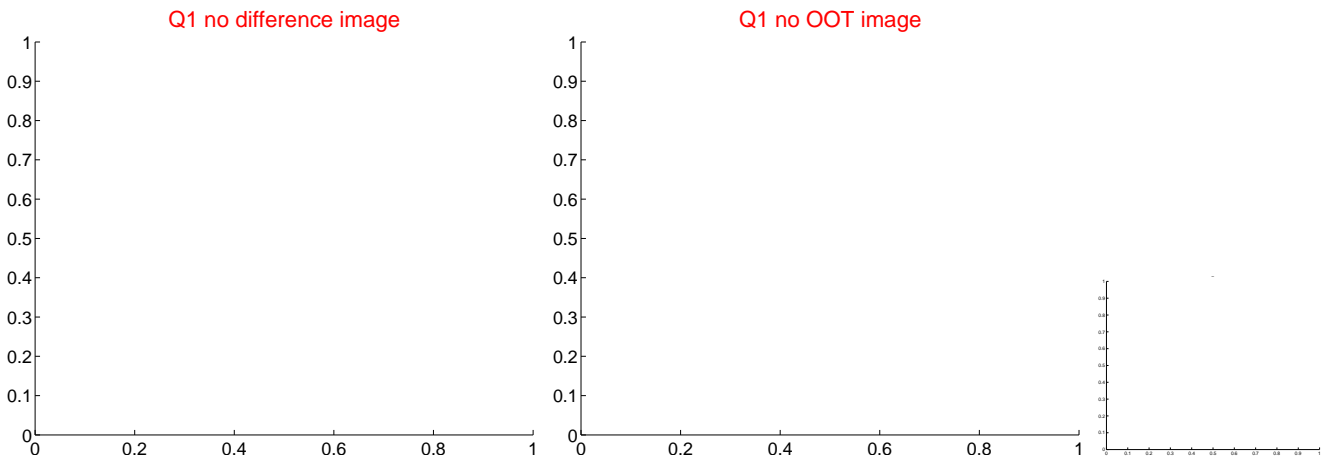
The direct PRF centroid is offset from the target star catalog position by about 0.09 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.263 \pm 0.401$	$3.15$	$-0.264 \pm 0.482$	$-1.235 \pm 0.397$
PRF-fit source offset from KIC position	$1.221 \pm 0.415$	$2.94$	$-0.340 \pm 0.490$	$-1.173 \pm 0.340$
photometric centroid source offset	$0.40 \pm 0.81$	$0.49$	$0.39 \pm 0.80$	$-0.06 \pm 0.97$

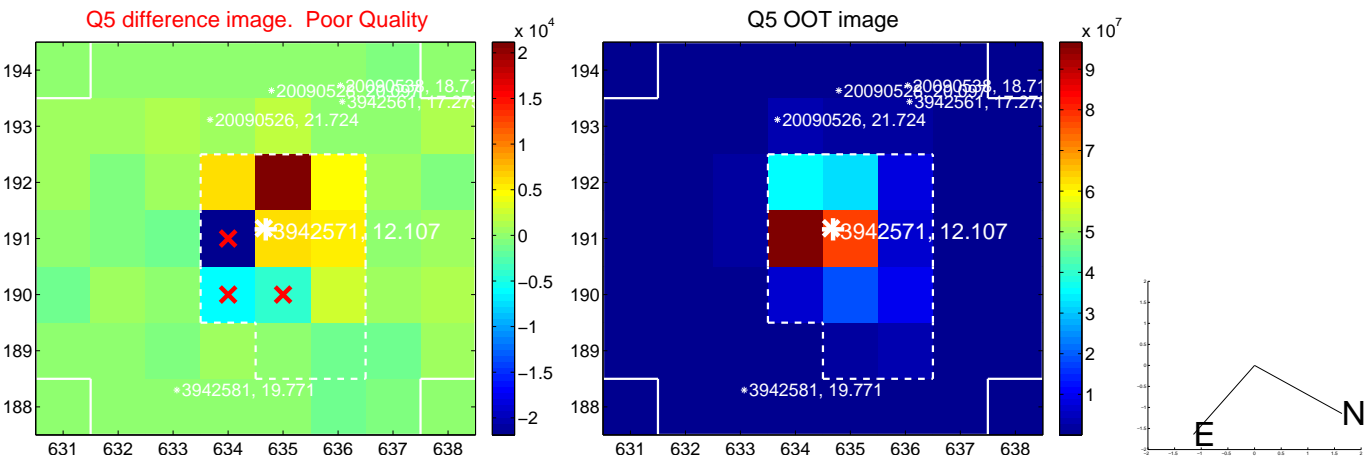


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

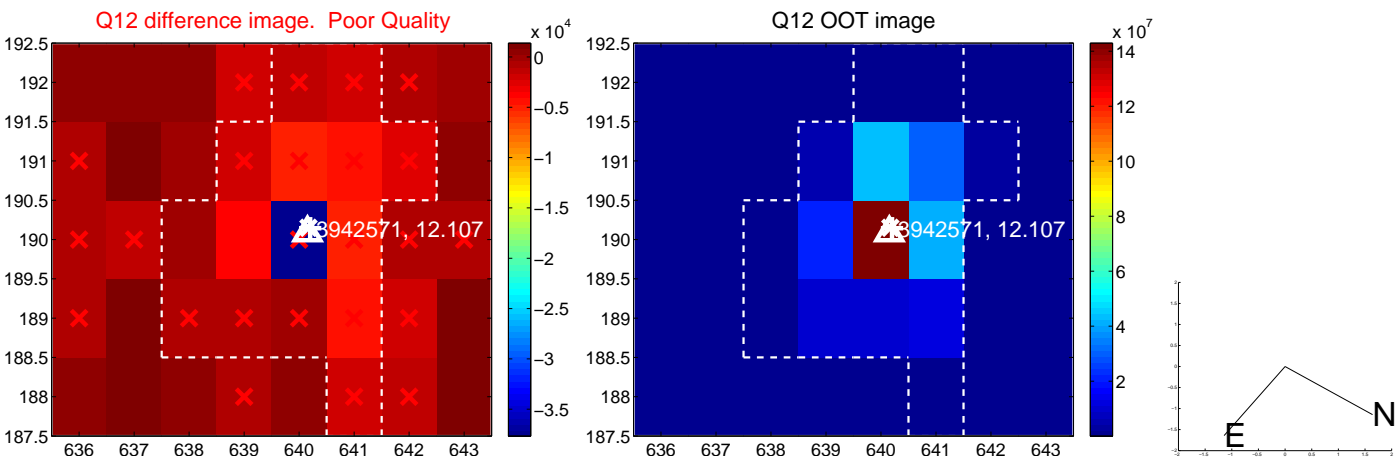
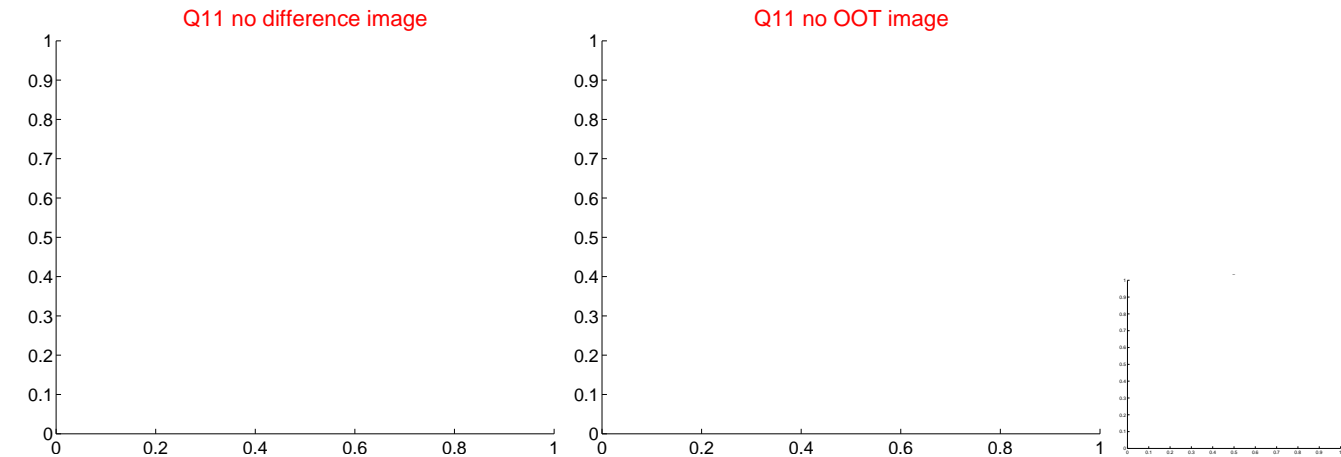
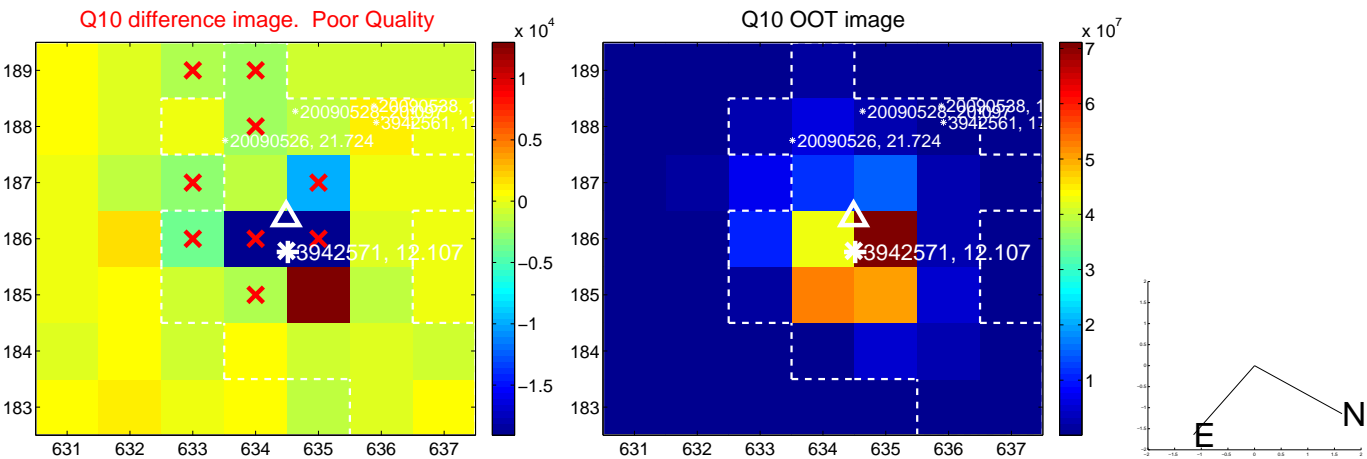
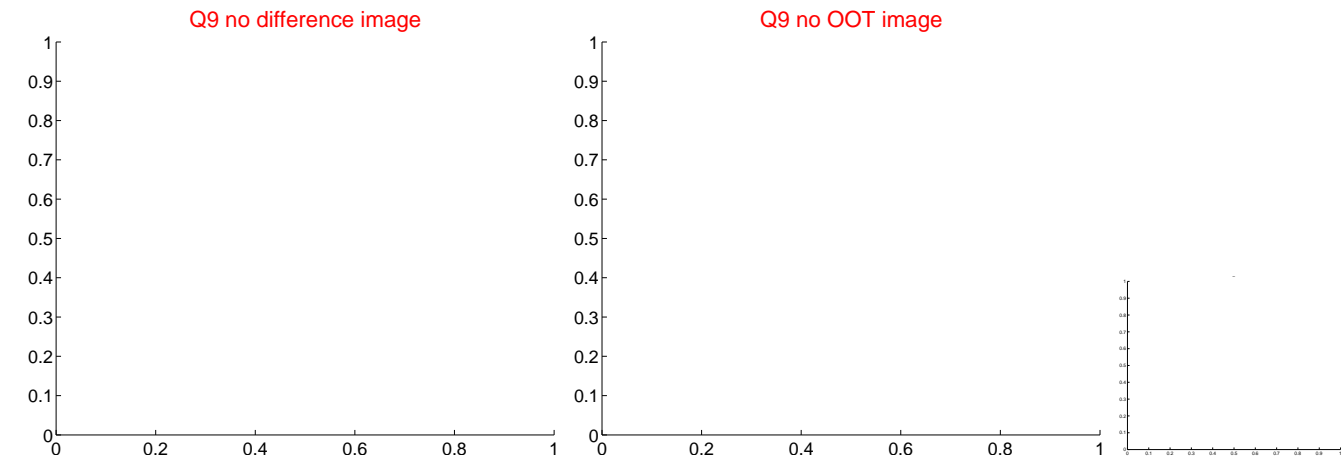
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



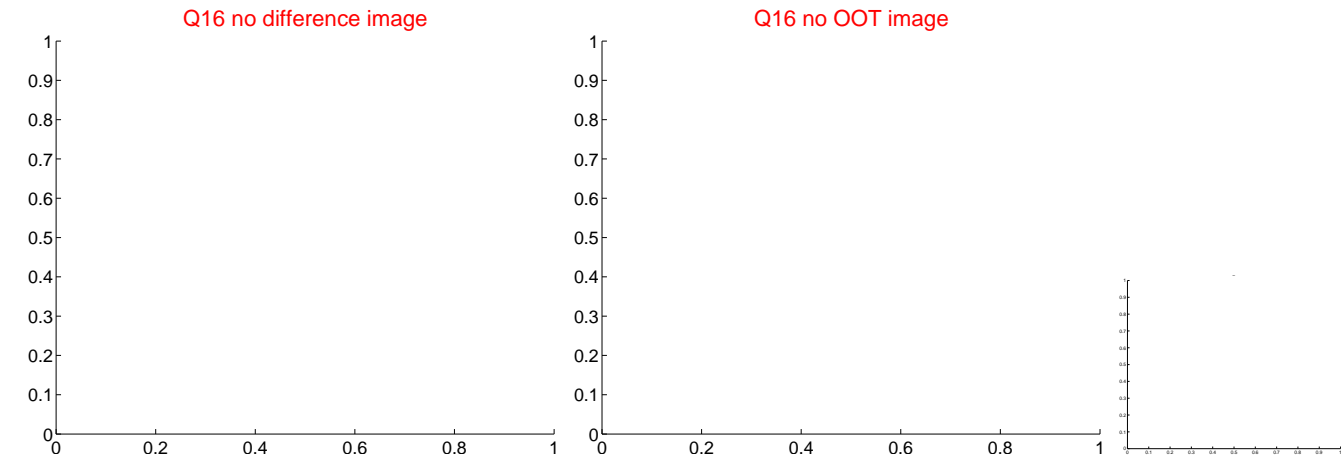
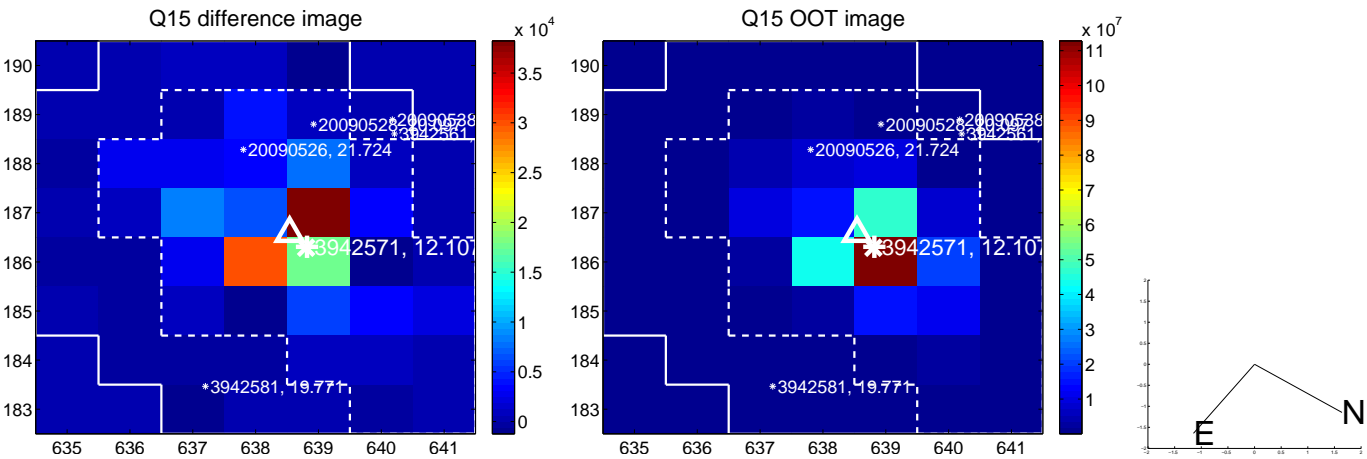
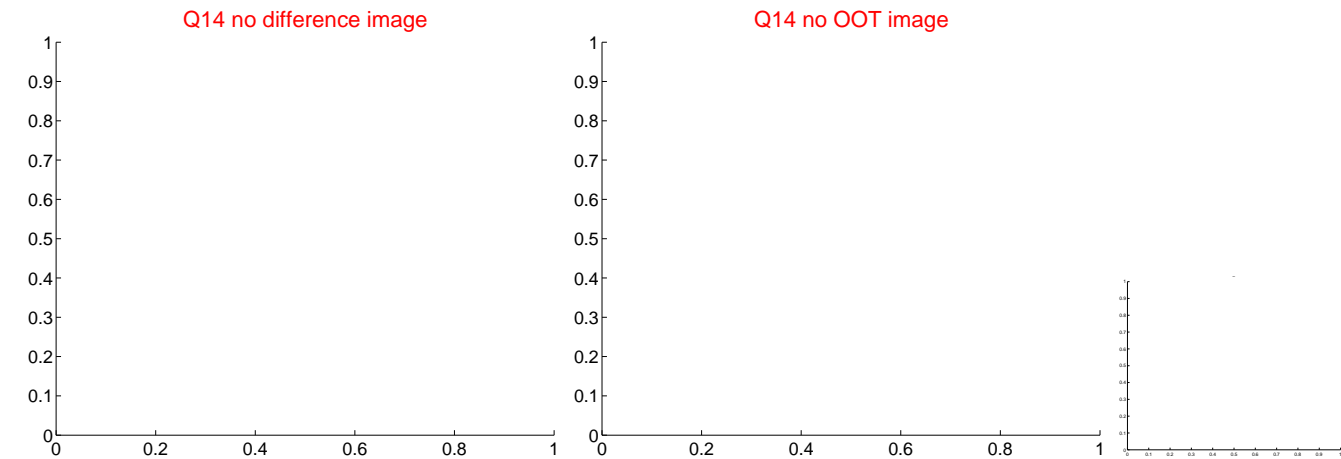
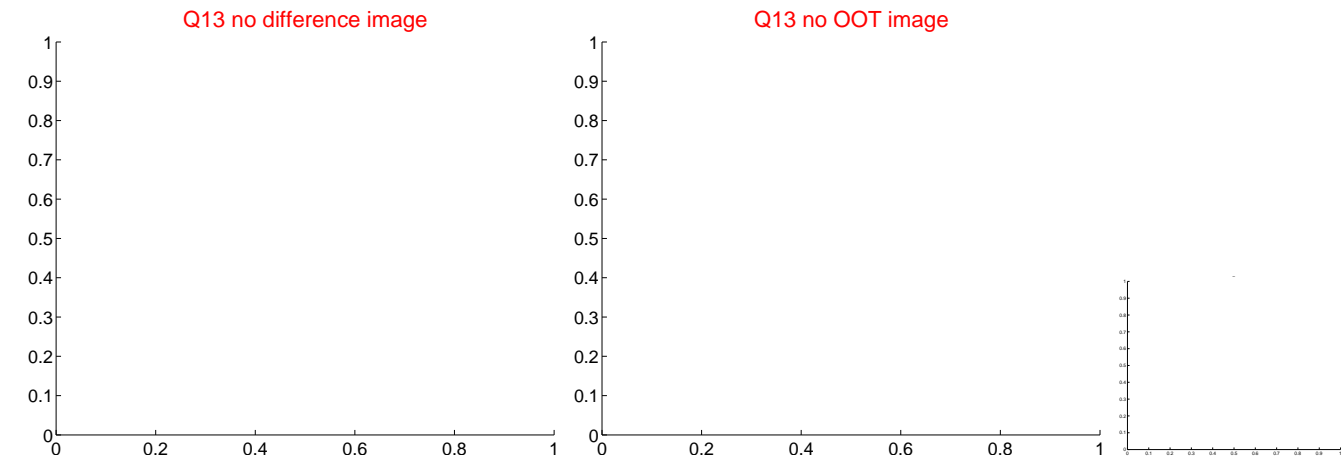
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.



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

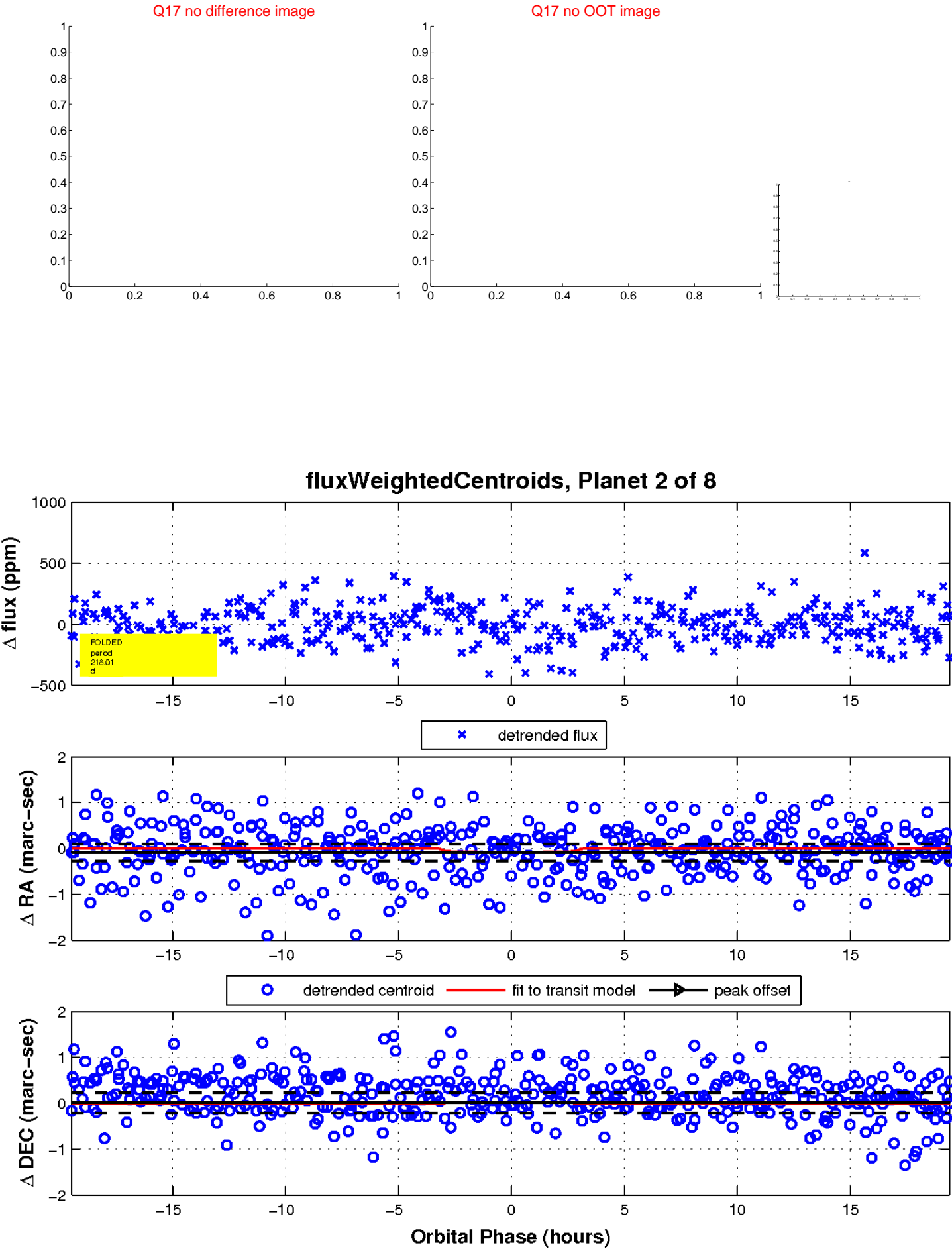


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



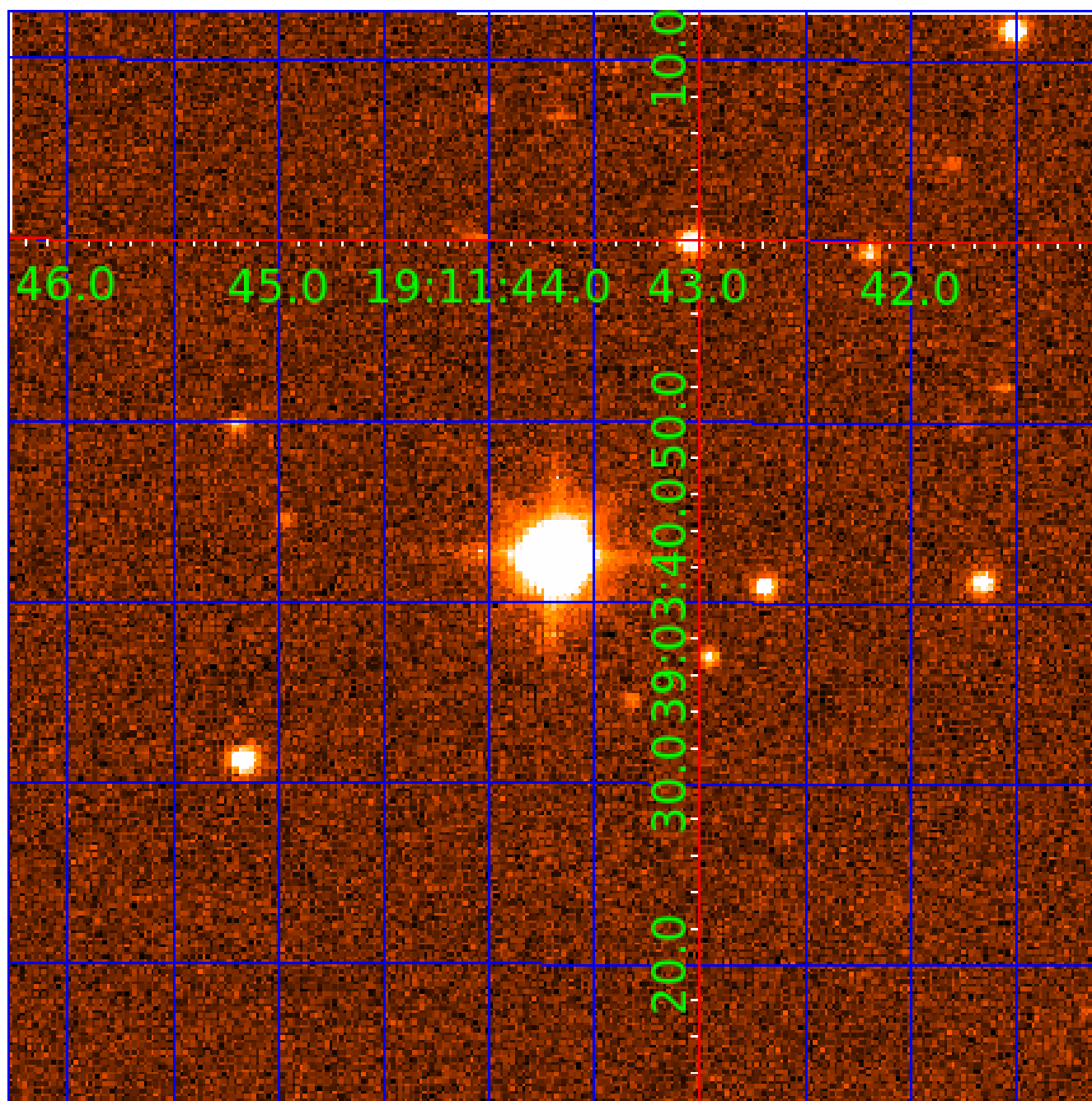


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 003942571

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
003942571-01	OBS	No	1.257394	132.164961	8.1	7.242	9.3	3.8	5.45	6208	1.70	47048.90
003942571-02	OBS	No	218.009814	298.710758	233.0	6.496	14.9	7.0	5.45	6208	9.42	48.66
003942571-03	OBS	No	90.433559	139.776241	173.8	15.269	12.8	8.8	5.45	6208	8.08	157.30
003942571-04	OBS	No	72.236527	146.037624	146.6	5.312	9.6	6.6	5.45	6208	7.42	212.24
003942571-05	OBS	No	90.591459	221.813942	212.4	2.840	8.9	9.3	5.45	6208	8.31	156.94
003942571-06	OBS	No	192.470308	172.581220	222.7	3.505	8.8	7.2	5.45	6208	9.56	57.46
003942571-07	OBS	No	103.635467	170.730217	279.4	4.708	8.6	9.3	5.45	6208	11.10	131.17
003942571-08	OBS	No	18.949271	132.724536	169.2	2.500	8.8	-1.0	5.45	6208	7.11	1263.92

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003942571-01	OBS	FP	0.00	1	0	1	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—HALO_GHOST
003942571-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
003942571-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
003942571-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
003942571-05	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
003942571-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
003942571-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
003942571-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_ALT—MOD_NONUNIQ_ALT—CENT_NOFITS

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

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

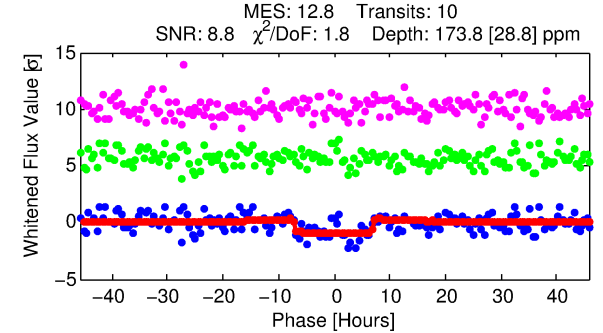
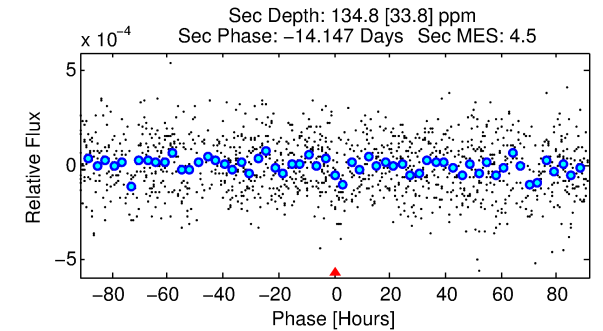
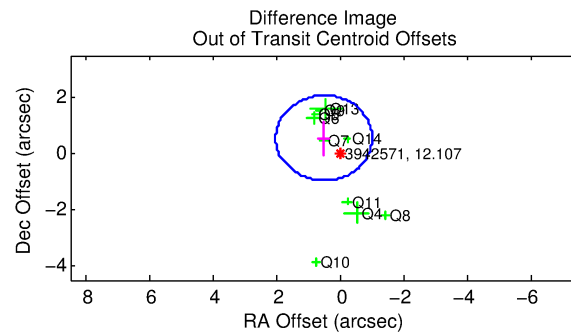
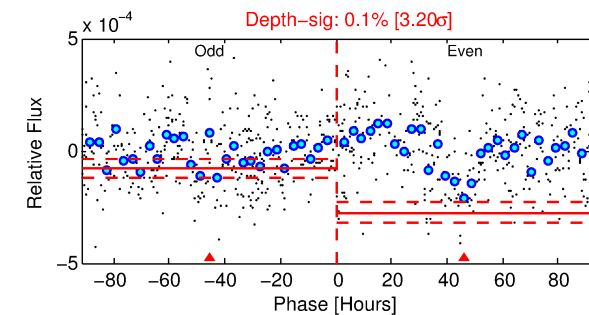
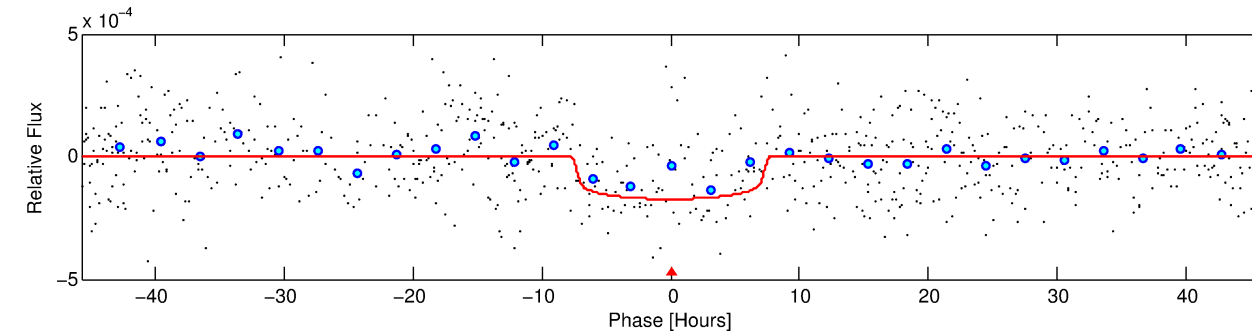
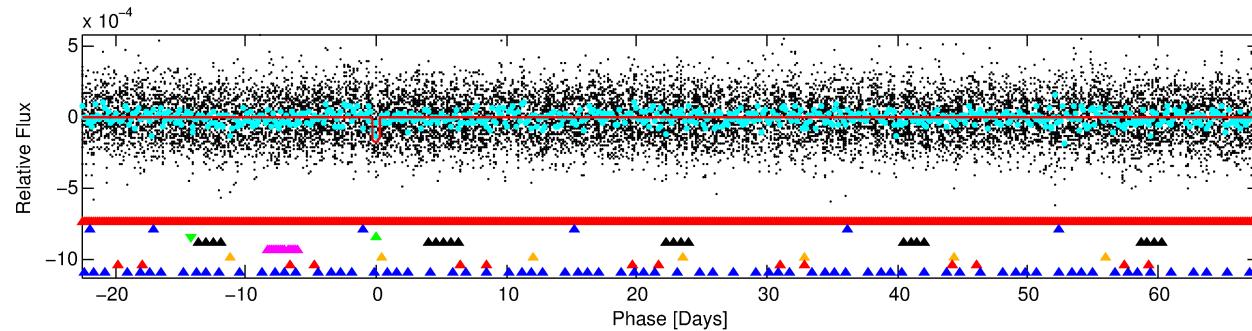
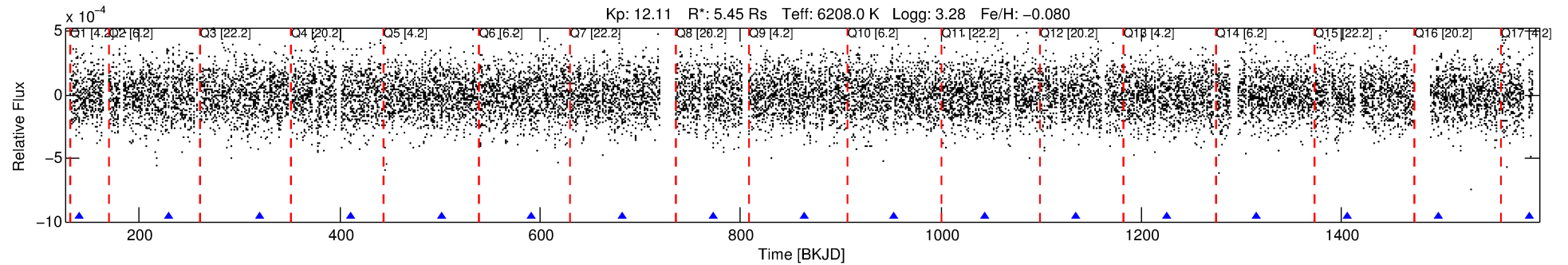
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 003942571-03

No Significant Match Found

# DV One-Page Summary

KIC: 3942571 Candidate: 3 of 8 Period: 90.434 d



## DV Fit Results:

Period = 90.43356 [0.00743] d  
Epoch = 139.7762 [0.0567] BKJD  
Rp/R\* = 0.0136 [0.0031]  
a/R\* = 26.00 [28.53]  
b = 0.84 [0.42]  
Seff = 157.30 [122.32]  
Teq = 903 [176] K  
Rp = 8.08 [4.19] Re  
a = 0.5016 [0.2356] AU  
Ag = 285.89 [265.47] [1.07 $\sigma$ ]  
Teffp = 5741 [761] K [6.19 $\sigma$ ]

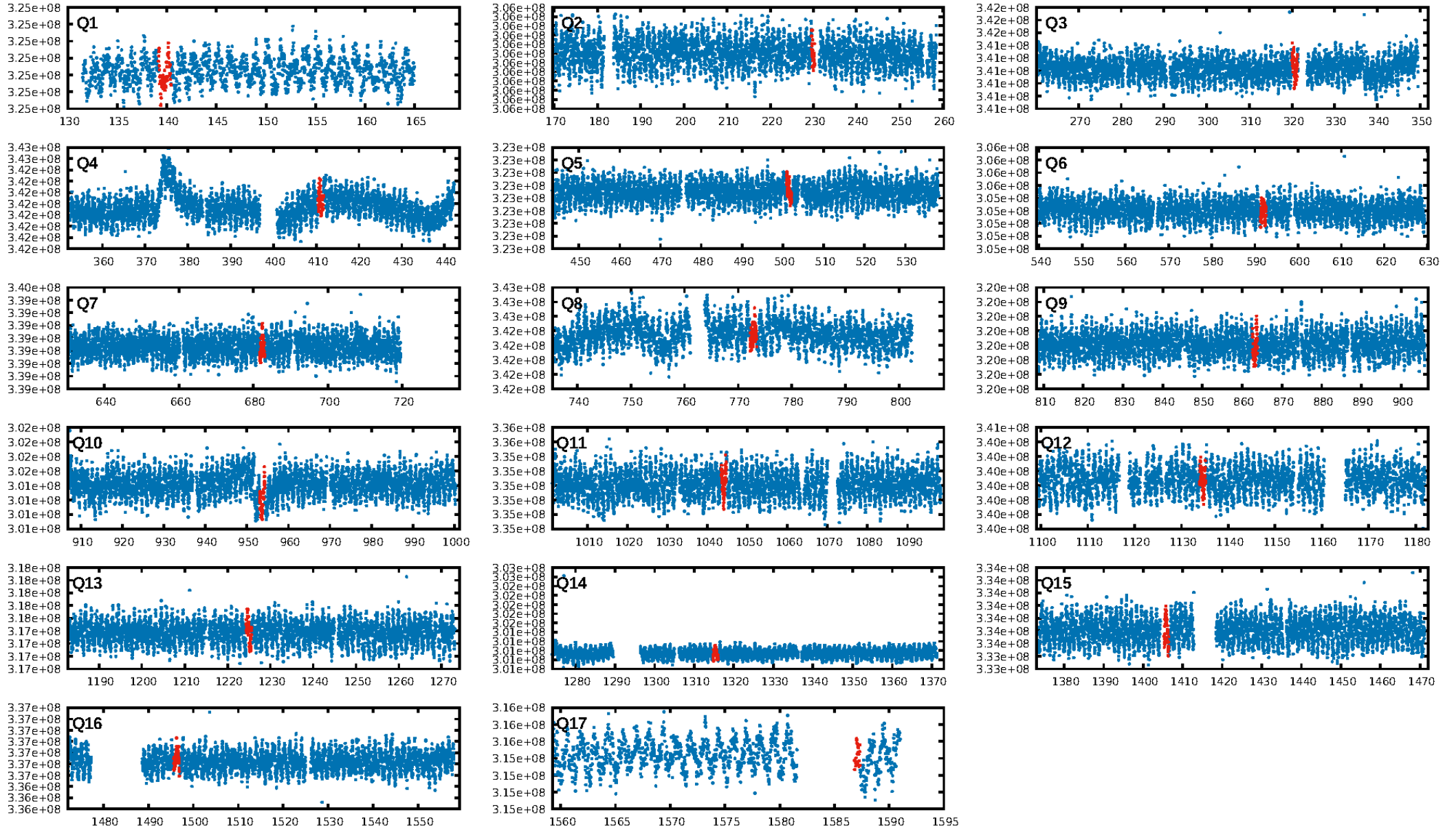
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [27.01 $\sigma$ ]  
LongPeriod-sig: 19.3% [0.24 $\sigma$ ]  
ModelChiSquare2-sig: 0.0%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [10/10]  
GhostDiagnostic-chr: 22.99  
Centroid-sig: 36.9%  
Centroid-so: 0.352 arcsec [0.68 $\sigma$ ]  
OotOffset-rm: 0.764 arcsec [1.51 $\sigma$ ]  
KicOffset-rm: 0.811 arcsec [1.60 $\sigma$ ]  
OotOffset-st: 3/2/2/3 [10]  
KicOffset-st: 3/2/2/3 [10]  
DiffImageQuality-fgm: 0.30 [3/10]  
DiffImageOverlap-fno: 0.00 [0/12]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 01:11:49 Z

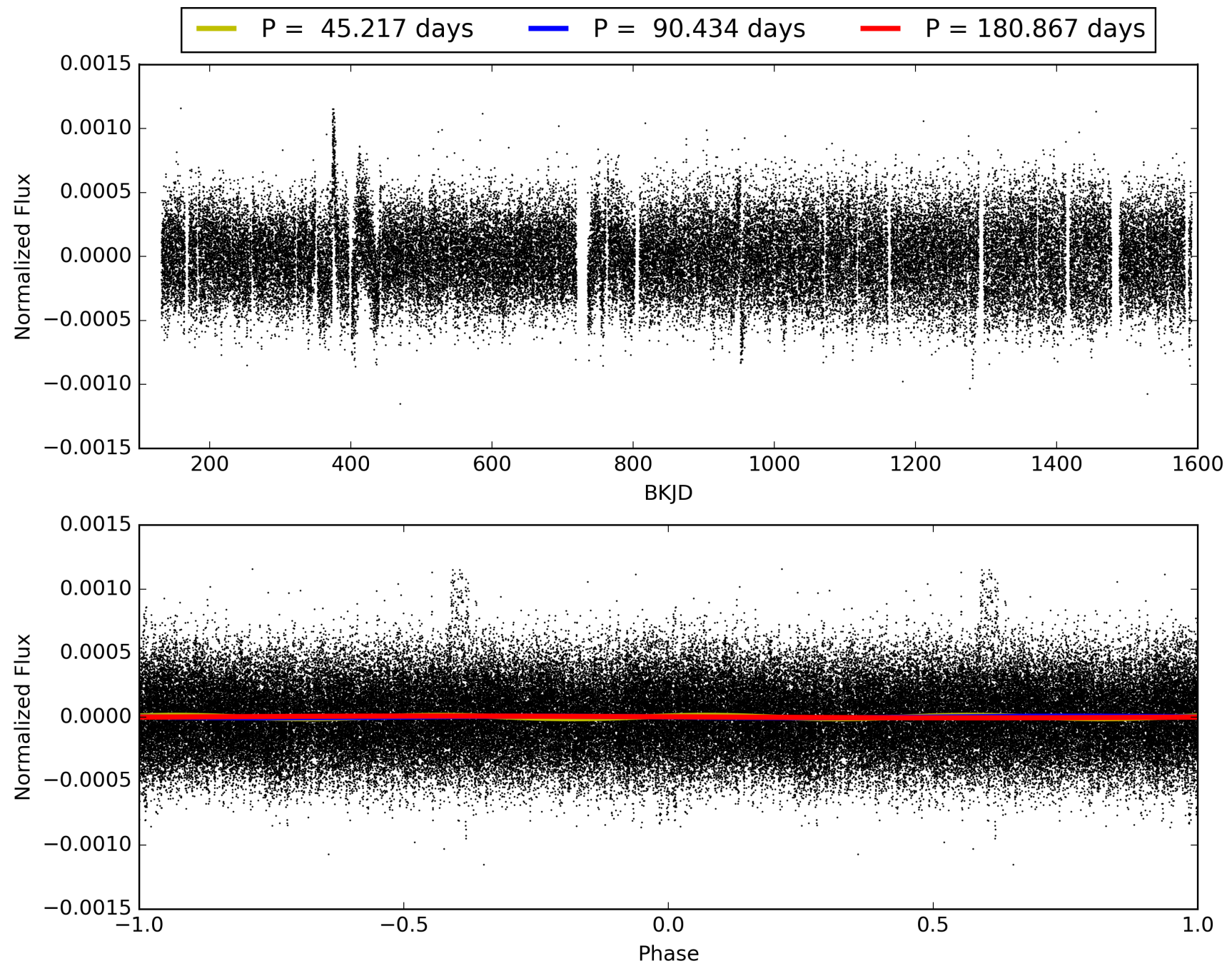
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 003942571-03, PDC Light Curves



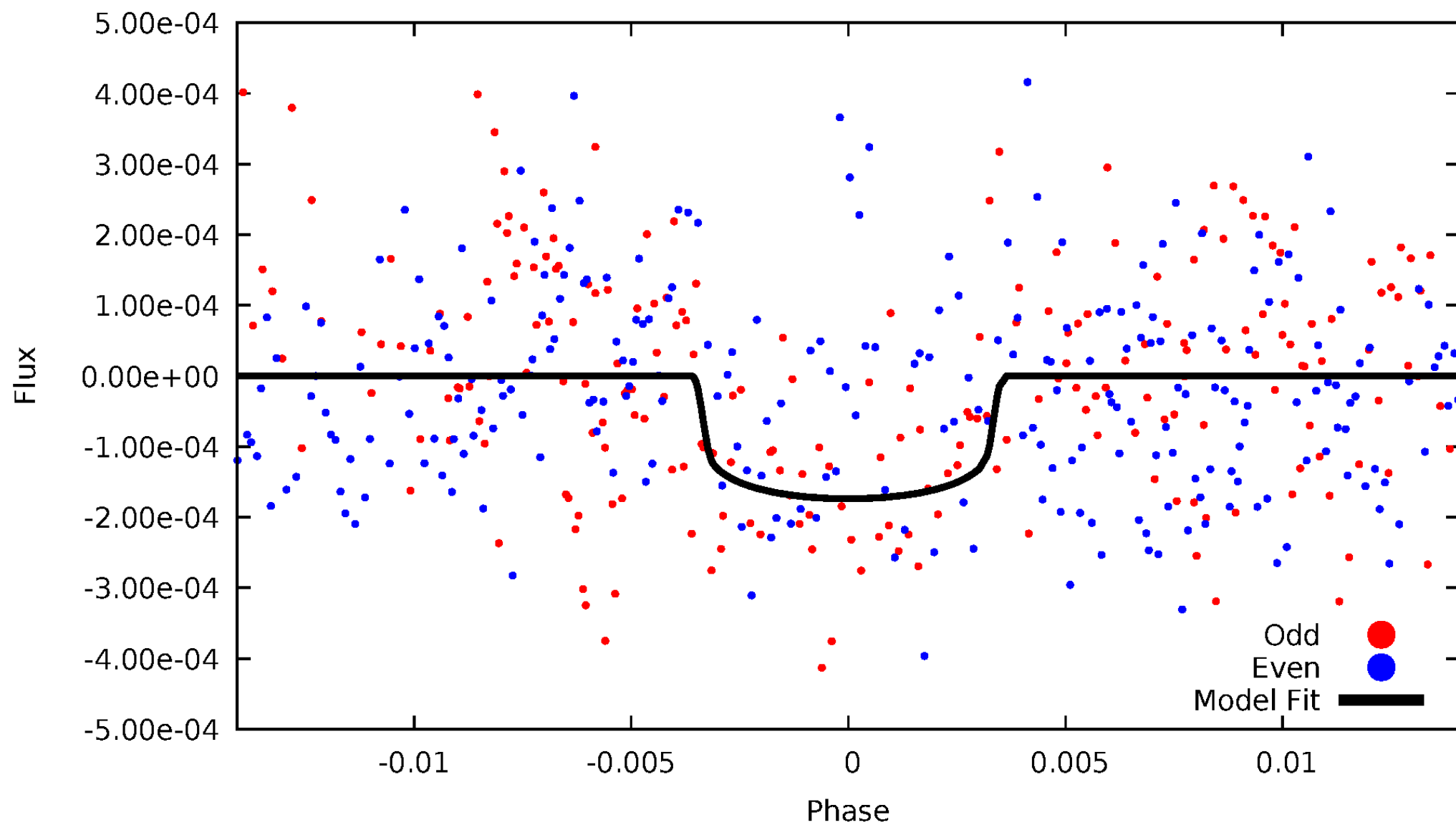


TCE 003942571-03



# DV Odd/Even

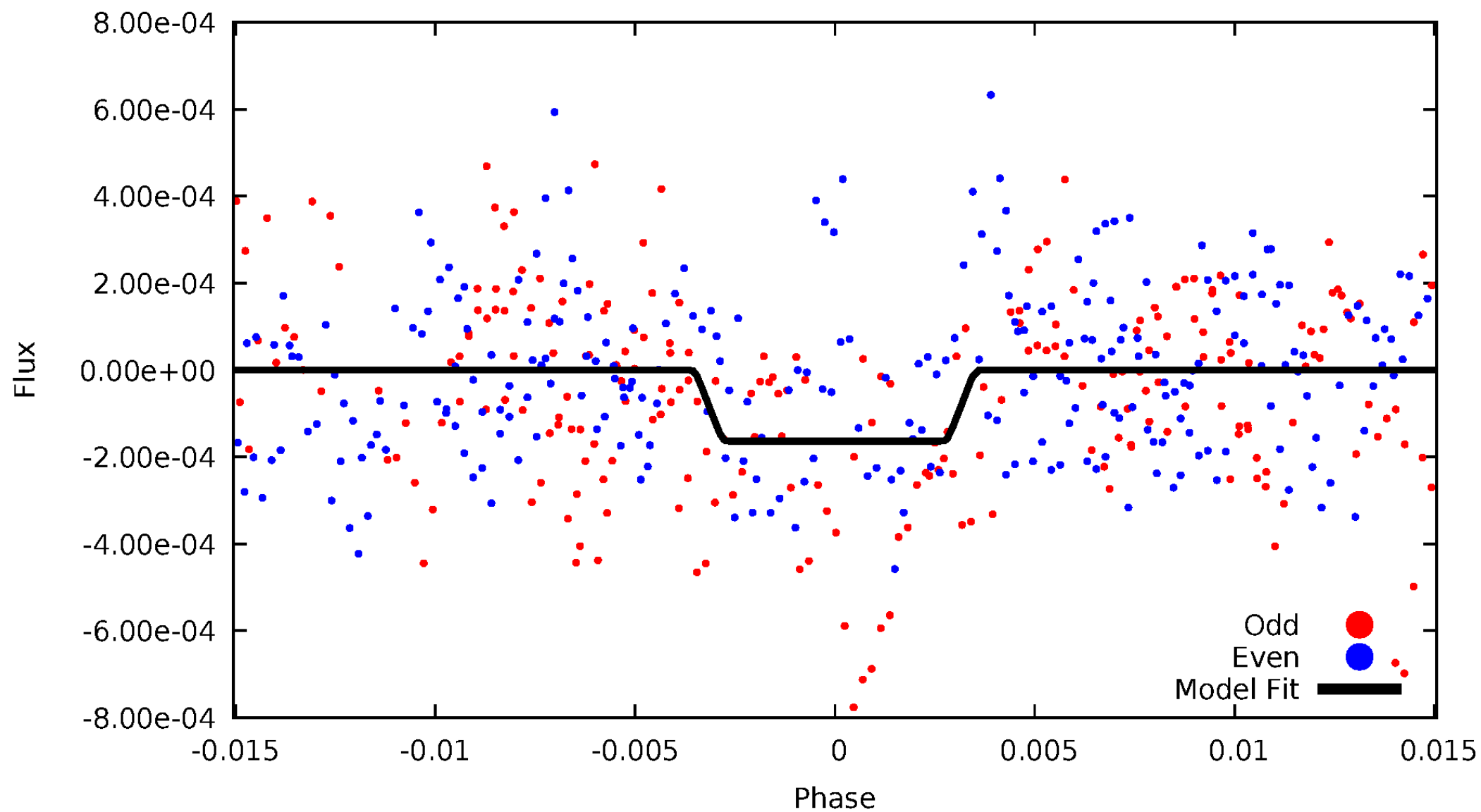
TCE 003942571-03





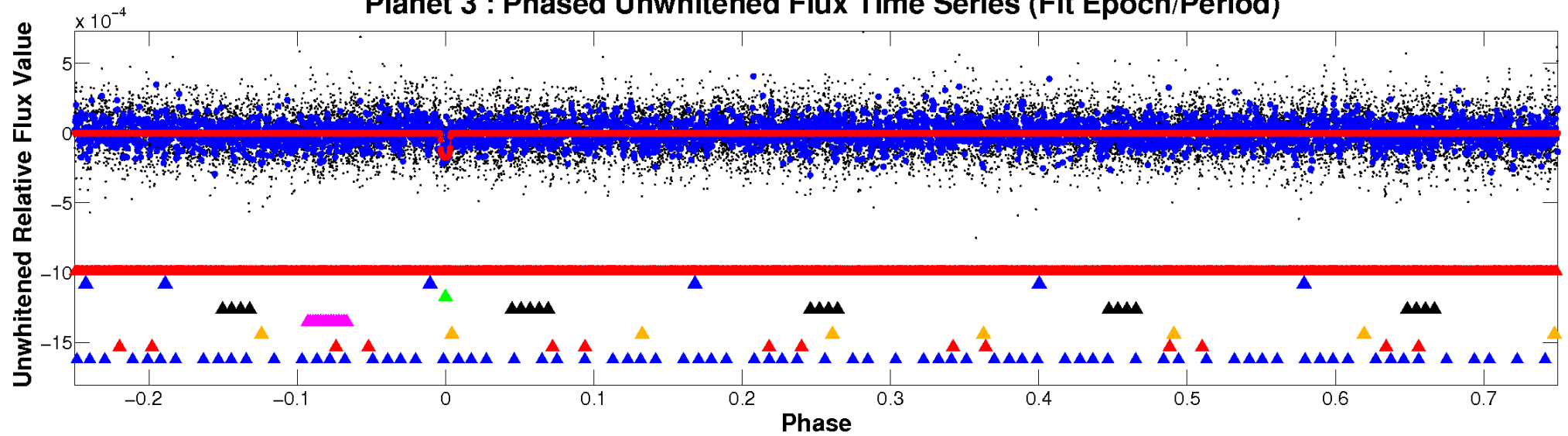
# ALT Odd/Even

TCE 003942571-03

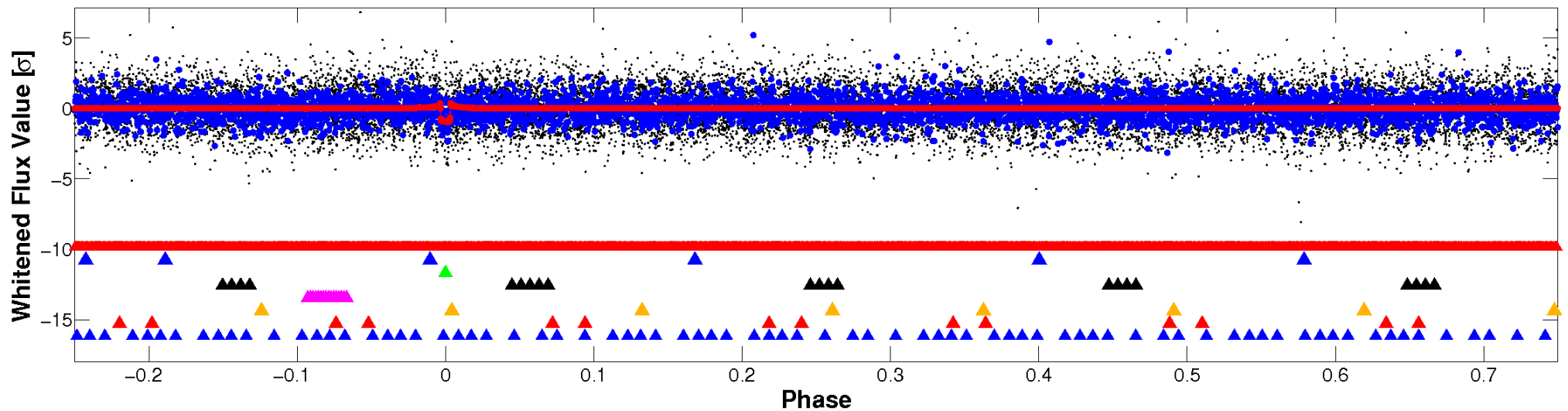


# Non-Whitened Vs. Whitened Light Curve

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

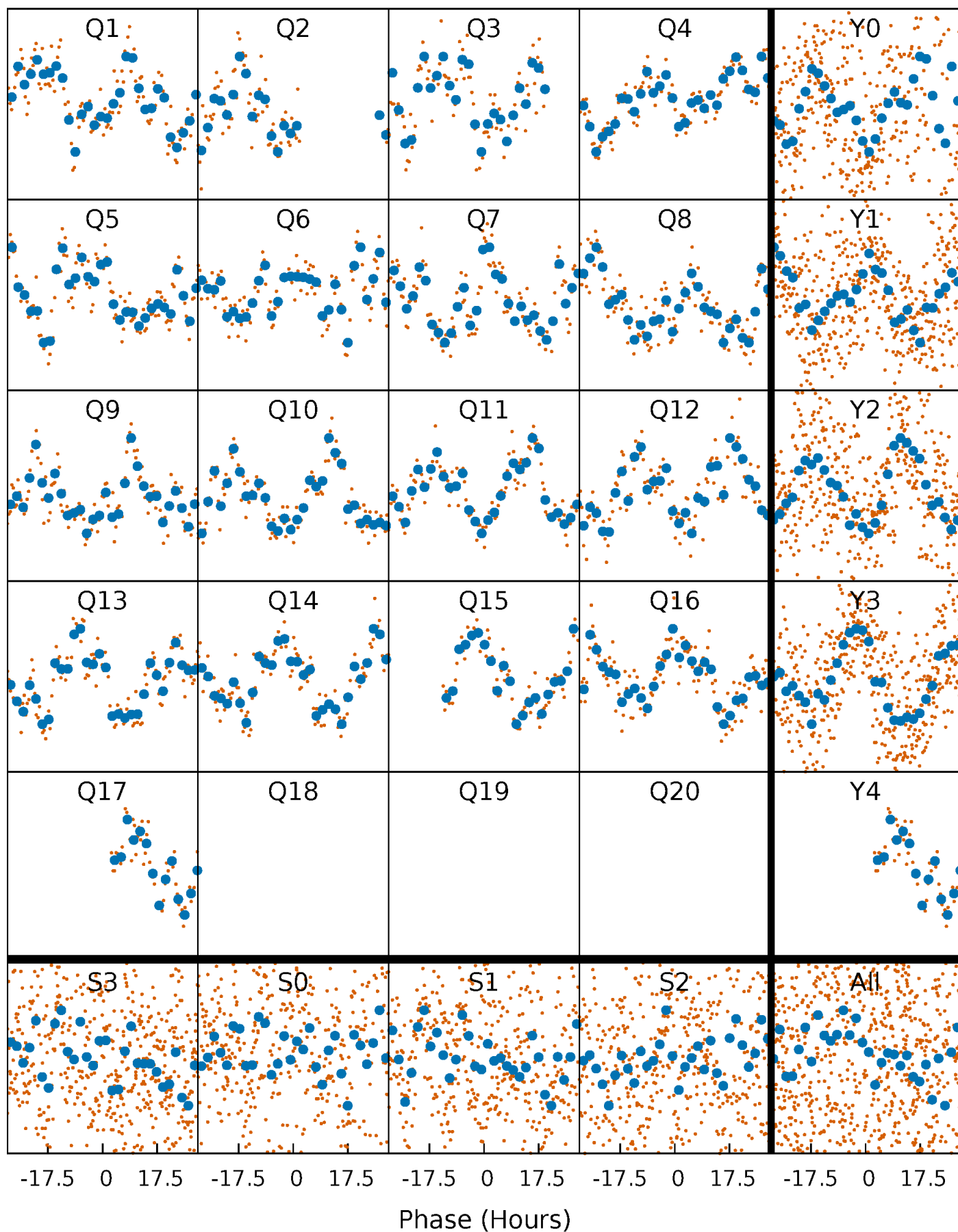


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



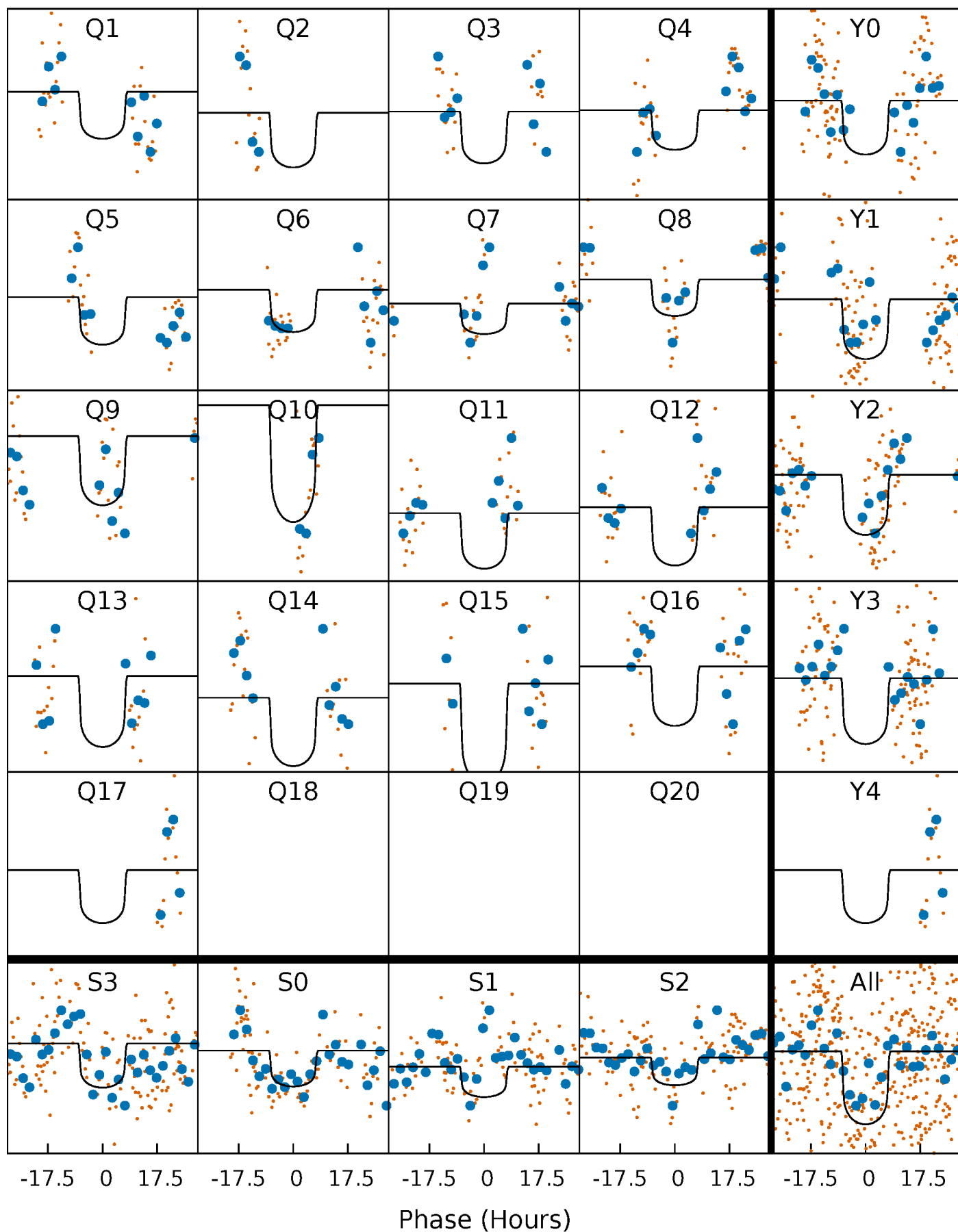
# PDC Quarter-Phased Transit Curves

TCE 003942571-03     $P = 90.433559$  Days     $T_0 = 139.776241$  (BKJD)



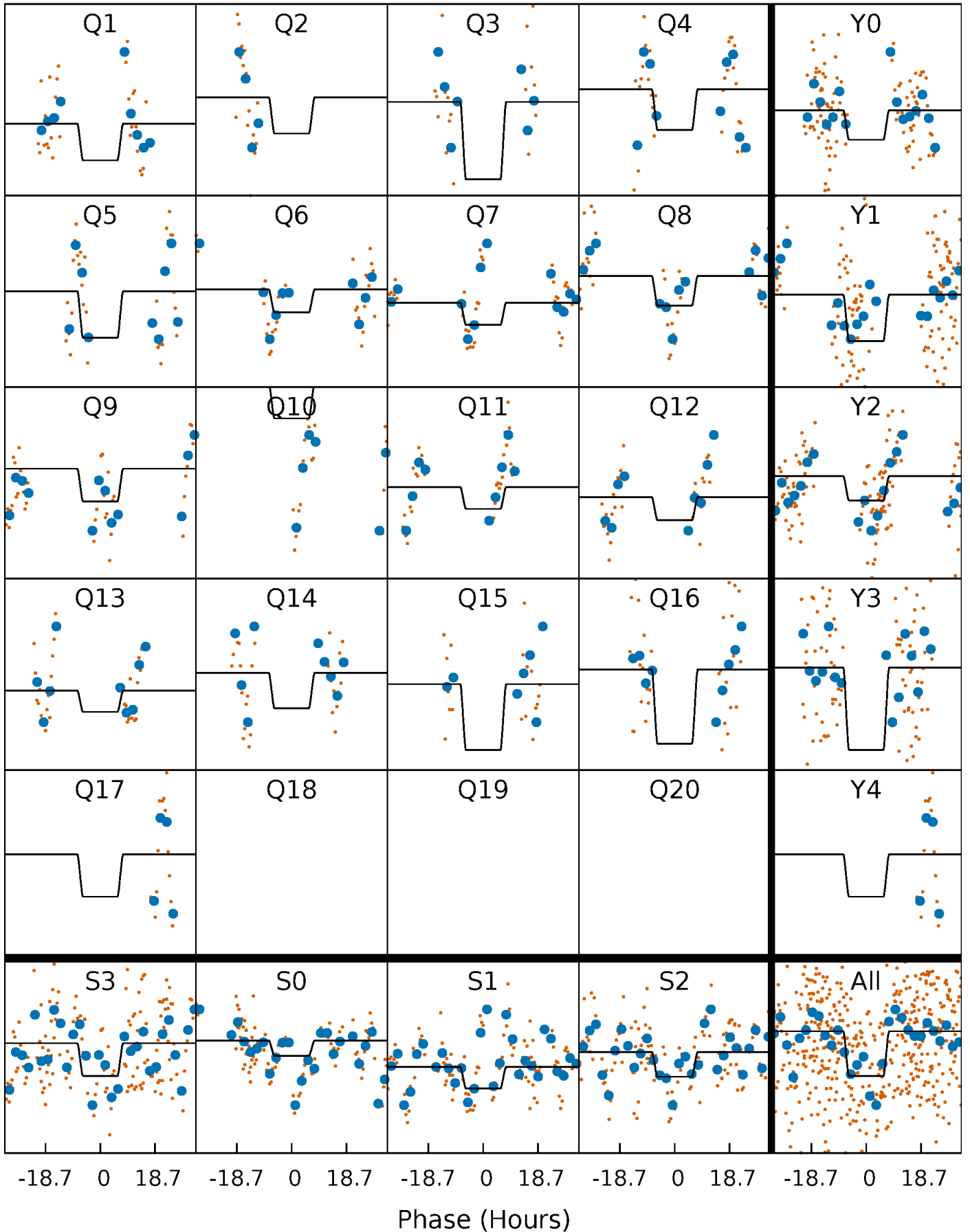
# DV Quarter-Phased Transit Curves

TCE 003942571-03   P= 90.433559 Days    $T_0=139.776241$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

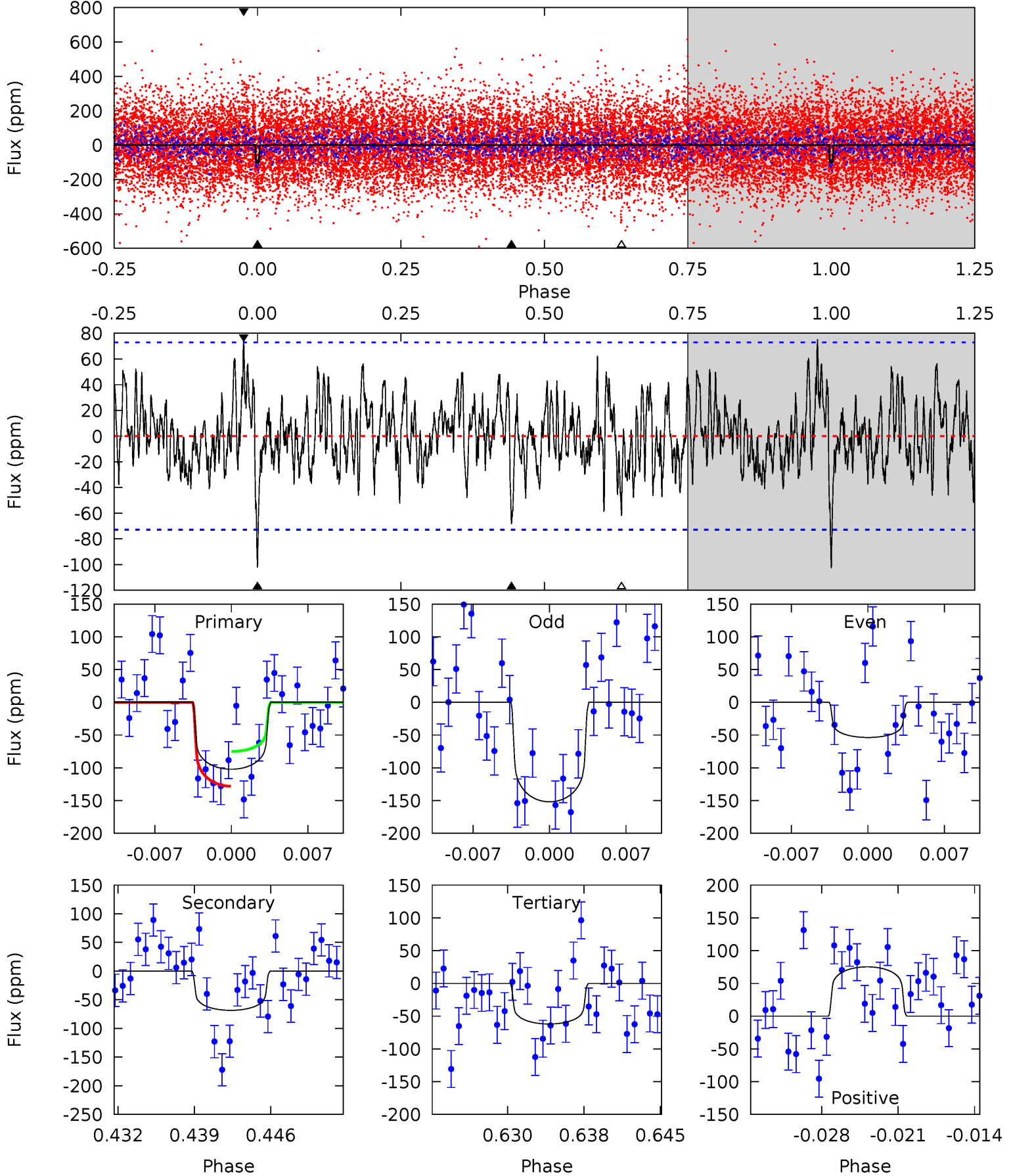
TCE 003942571-03   P= 90.432194 Days    $T_0=139.810297$  (BKJD)



# DV Model-Shift Uniqueness Test

003942571-03, P = 90.433559 Days, E = 49.342682 Days

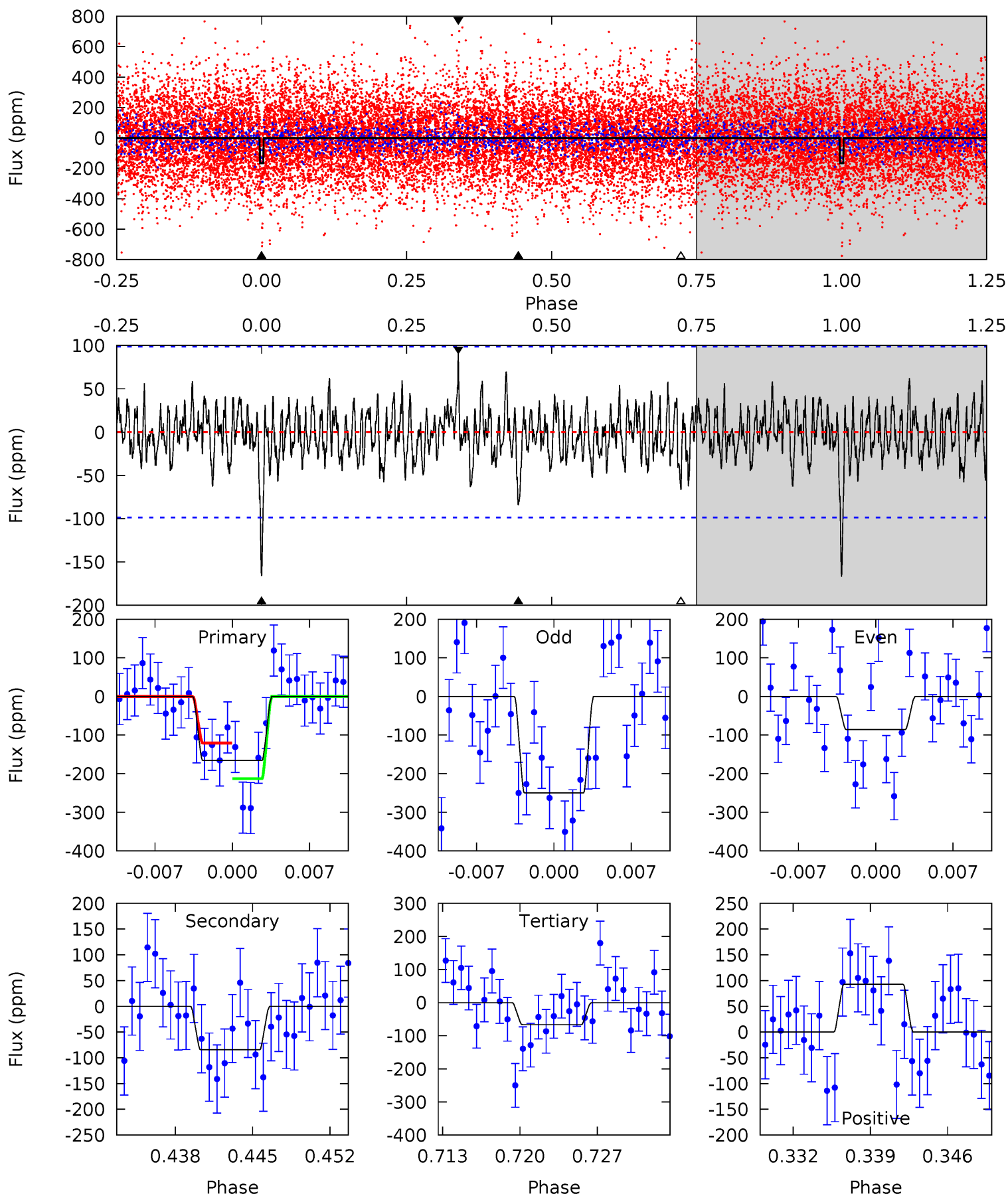
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.14	4.78	4.33	5.25	5.09	2.69	1.55	2.81	1.88	0.45	-0.48	3.44	0.61	0.42	1.86



# Alt Model-Shift Uniqueness Test

003942571-03, P = 90.432194 Days, E = 49.378103 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
8.57	4.35	3.43	4.79	5.09	2.69	1.22	5.14	3.78	0.92	-0.44	4.25	1.05	0.36	2.39





### Stellar Parameters For KIC 003942571

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6208^{+169}_{-169}$	$3.278^{+0.459}_{-0.051}$	$-0.080^{+0.350}_{-0.300}$	$5.454^{+0.282}_{-2.540}$	$2.058^{+0.095}_{-0.539}$	$0.018^{+0.084}_{-0.002}$
	+3%/-3%	+14%/-2%	+438%/-375%	+5%/-47%	+5%/-26%	+472%/-9%
Source	PHO1	FLK73	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 003942571-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-68 \pm 14$	$7.32^{+2.14}_{-2.20}$	$1238^{+58}_{-133}$	$4932^{+634}_{-454}$	$170^{+182}_{-70}$
Alt.	$-84 \pm 19$	$6.97^{+1.88}_{-2.14}$	$1233^{+56}_{-139}$	$5269^{+863}_{-542}$	$236^{+272}_{-102}$

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

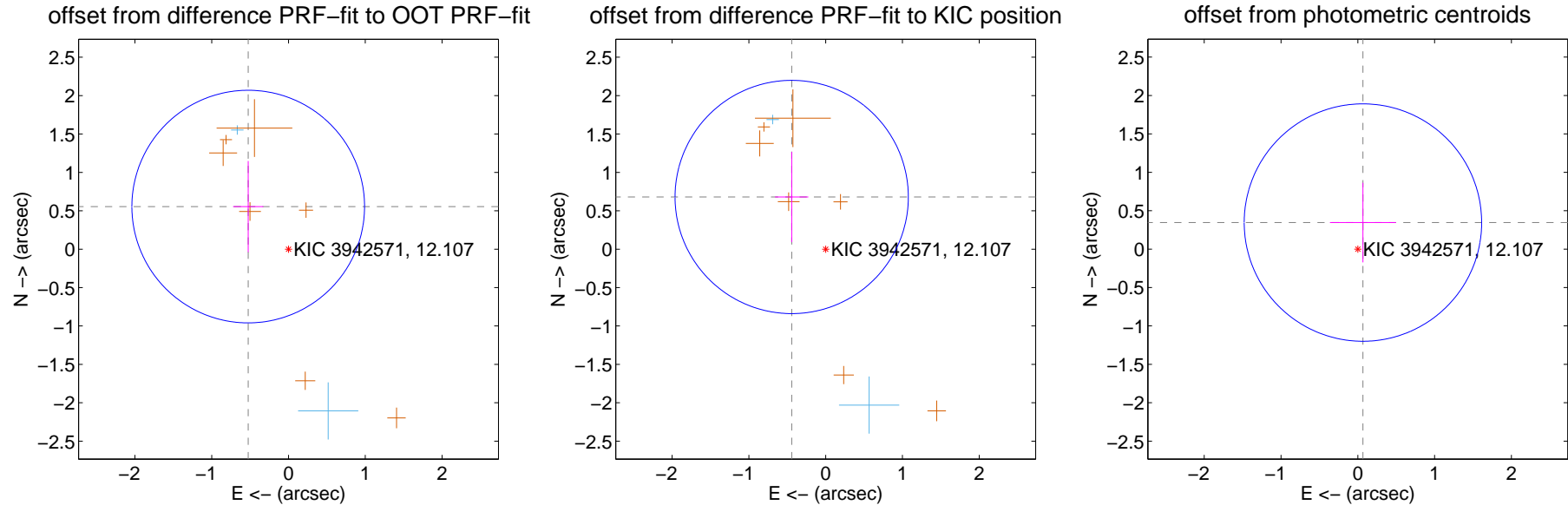
## DV Centroid Data

Supplemental centroid analysis for 003942571-03. Kepler magnitude: 12.11. Transit SNR 8.82

There are 3 quarters with good PRF difference image offsets

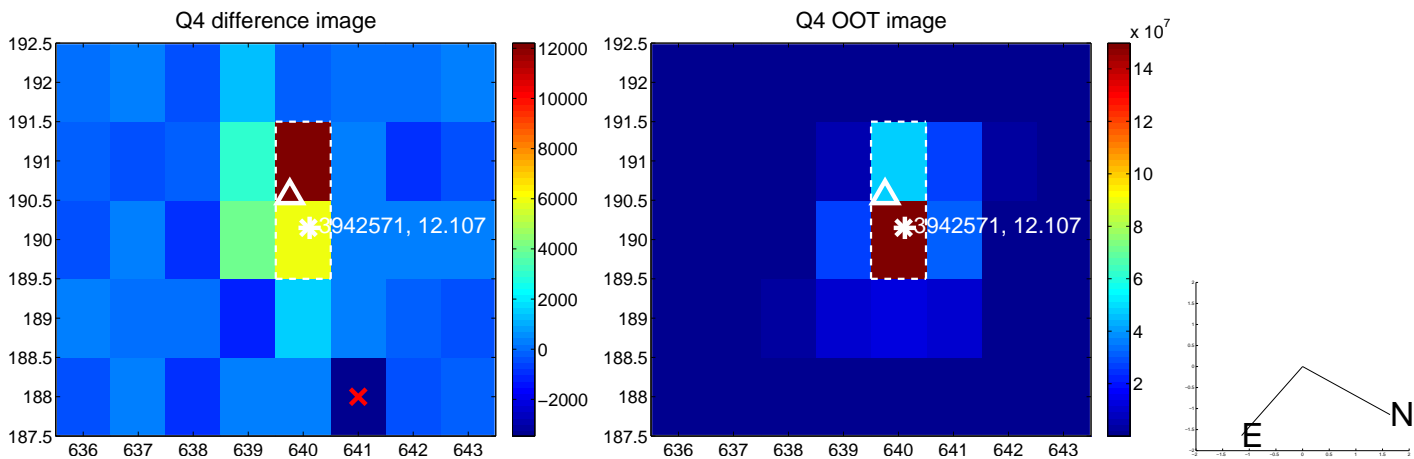
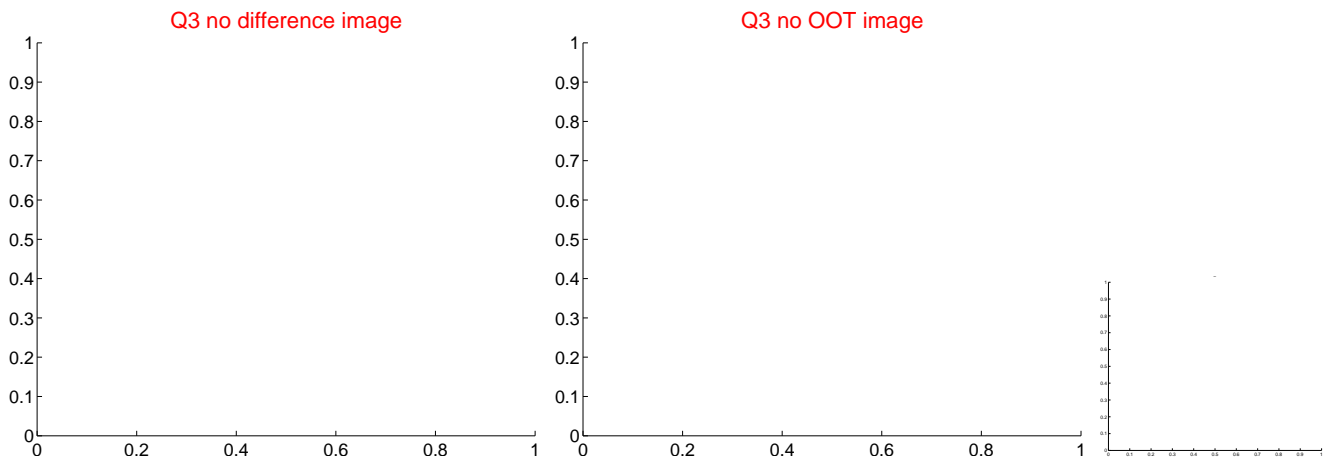
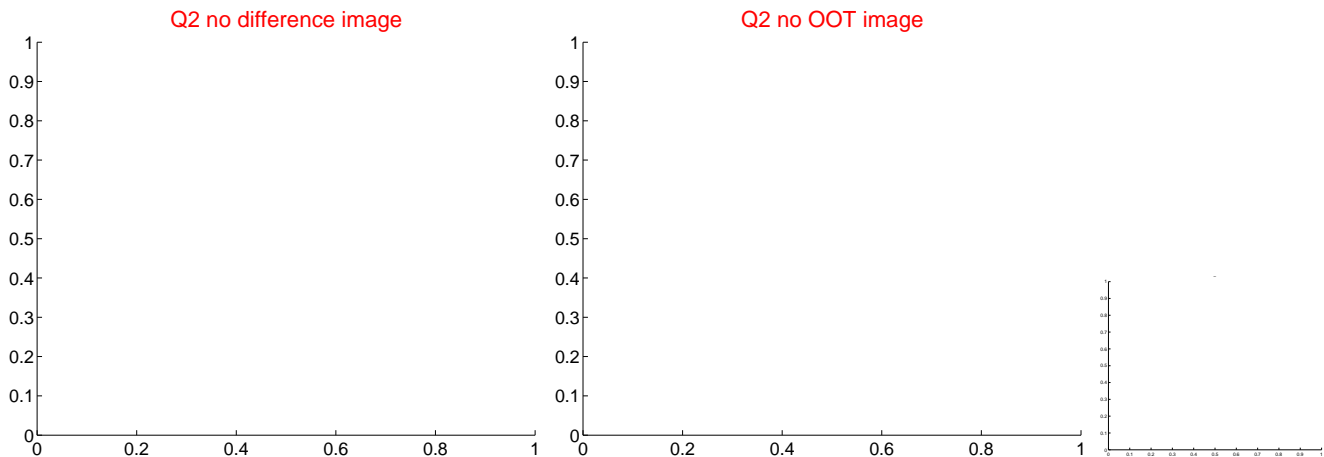
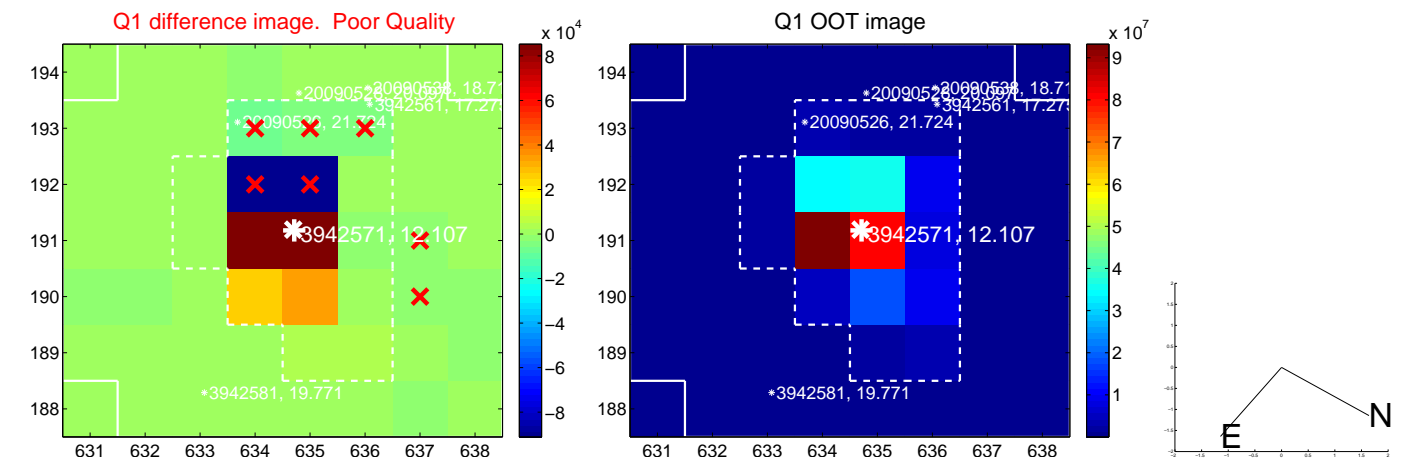
The direct PRF centroid is offset from the target star catalog position by about 0.11 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.764 \pm 0.505$	1.51	$0.525 \pm 0.197$	$0.555 \pm 0.593$
PRF-fit source offset from KIC position	$0.811 \pm 0.506$	1.60	$0.442 \pm 0.216$	$0.680 \pm 0.587$
photometric centroid source offset	$0.35 \pm 0.52$	0.68	$-0.07 \pm 0.43$	$0.35 \pm 0.52$

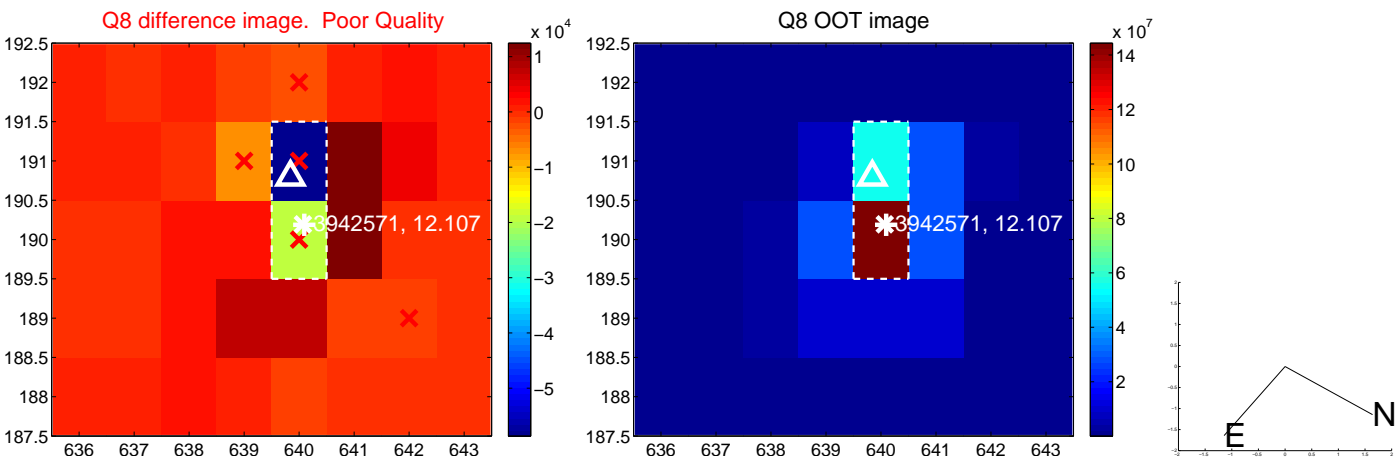
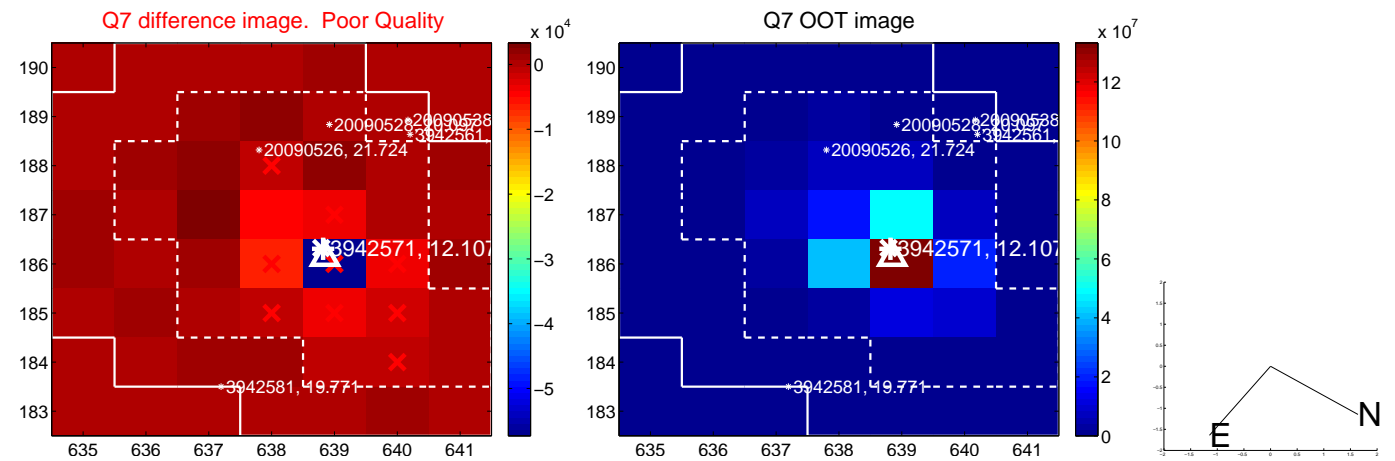
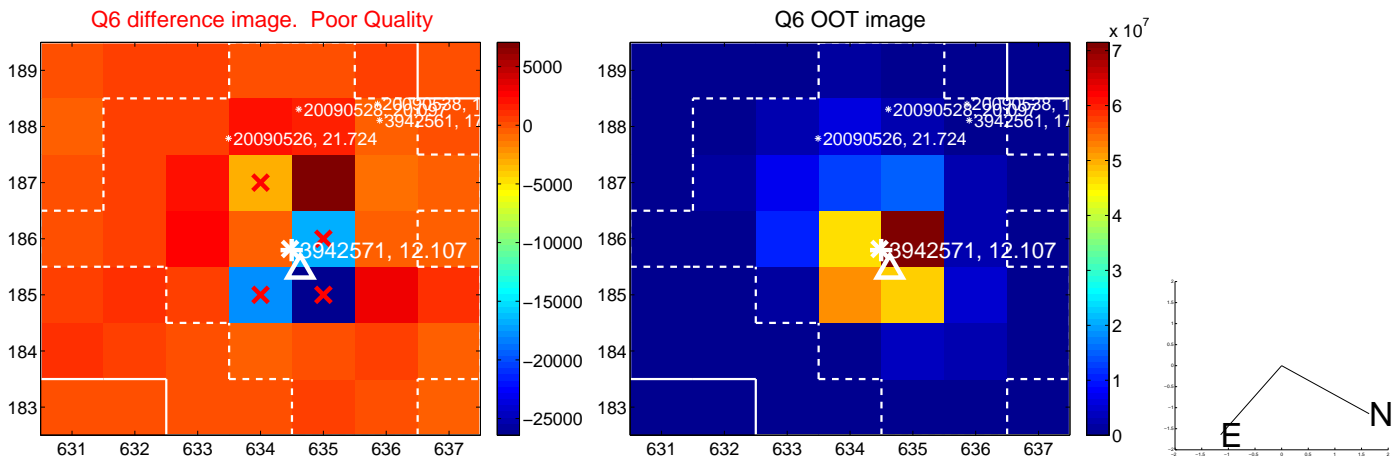
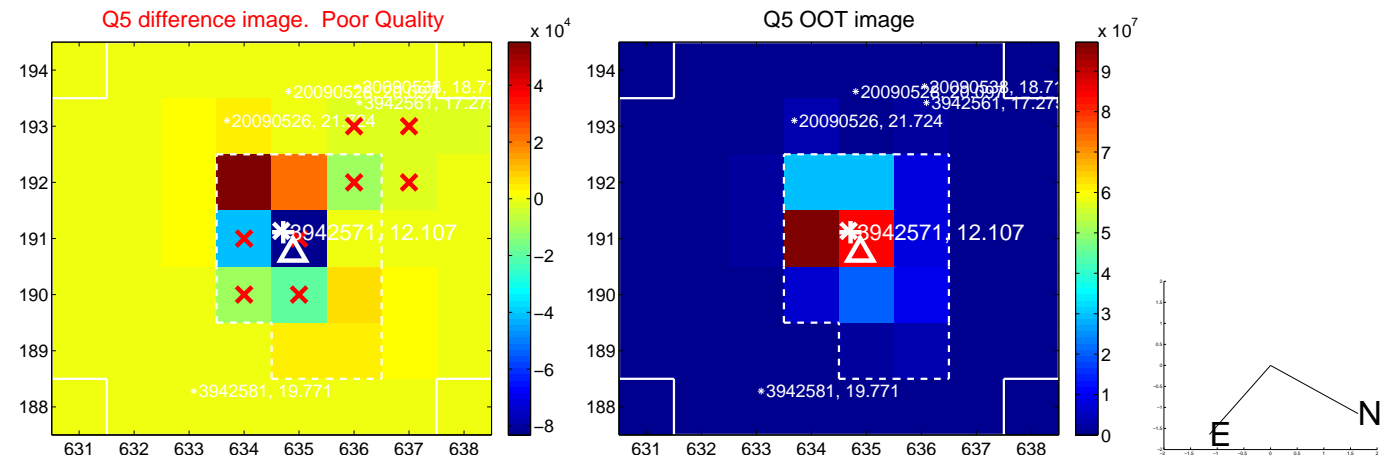


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

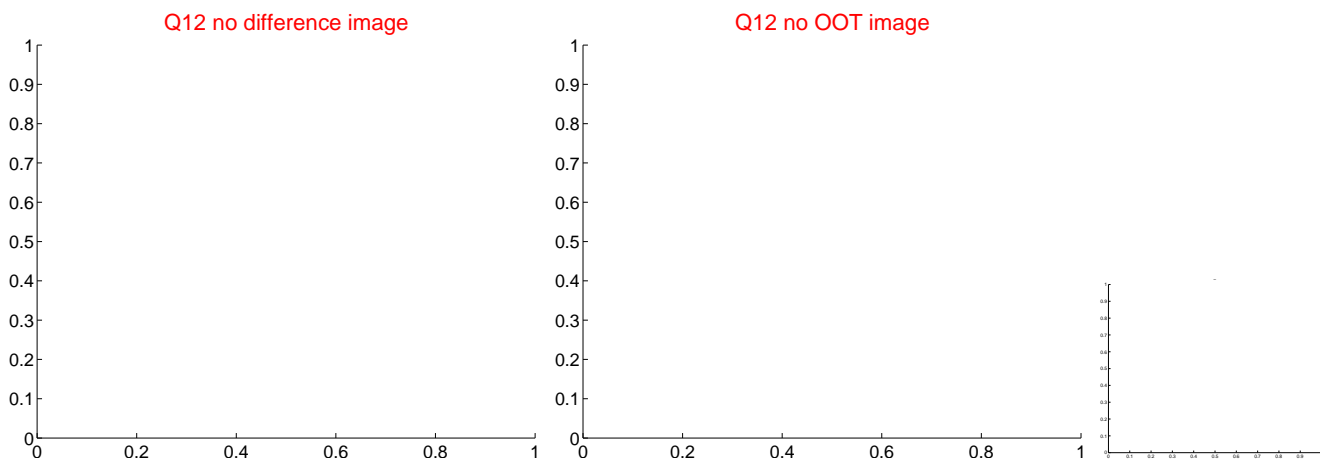
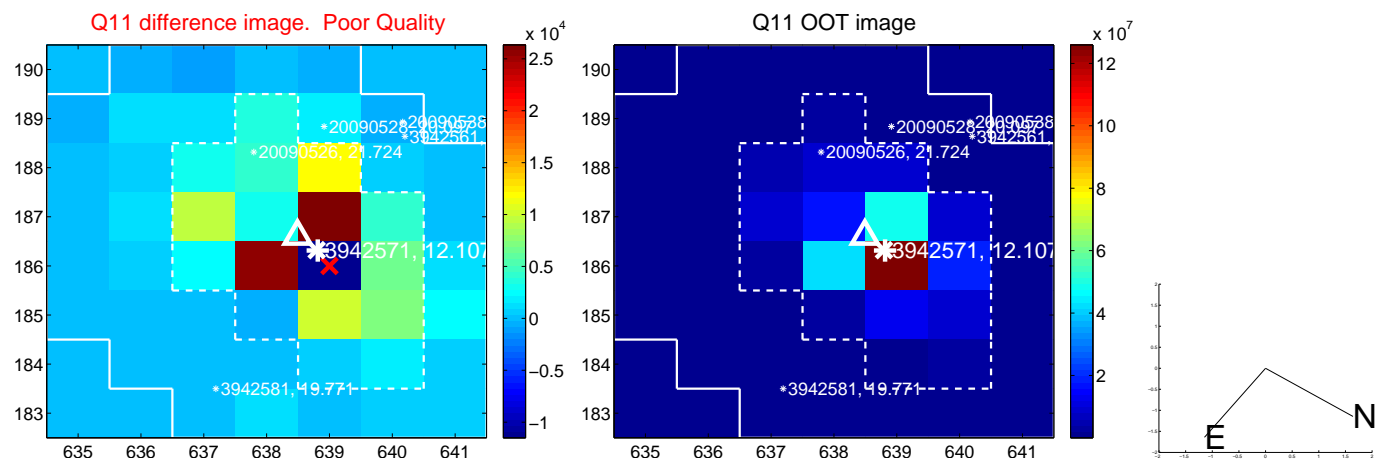
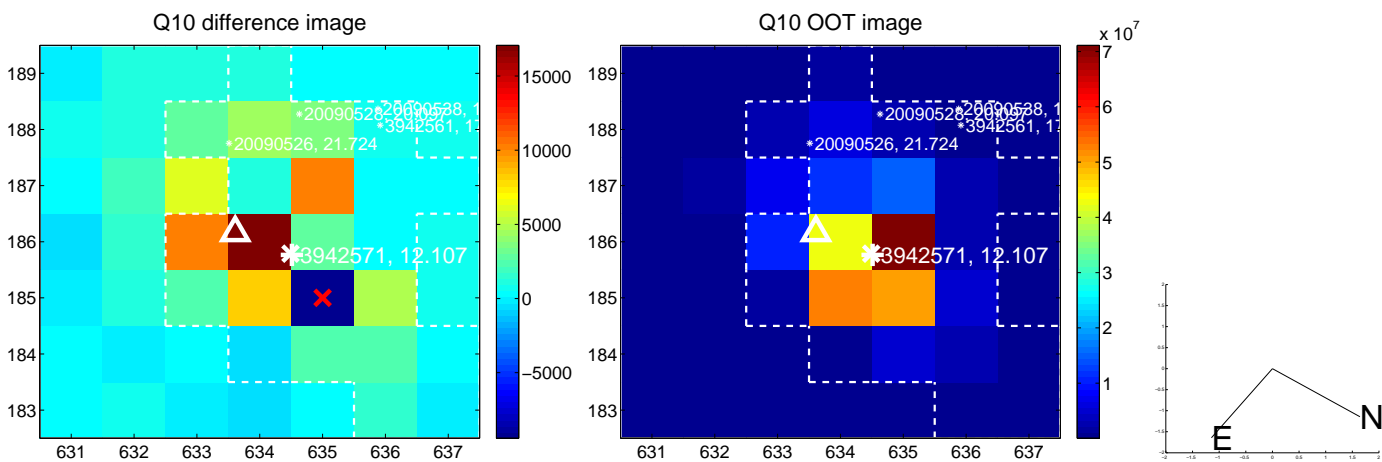
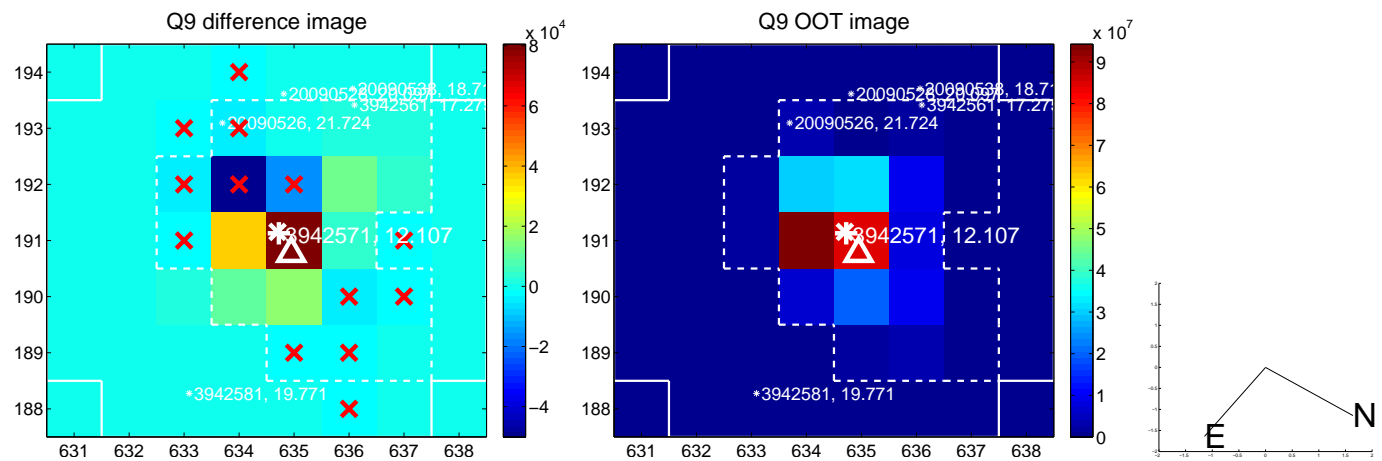
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



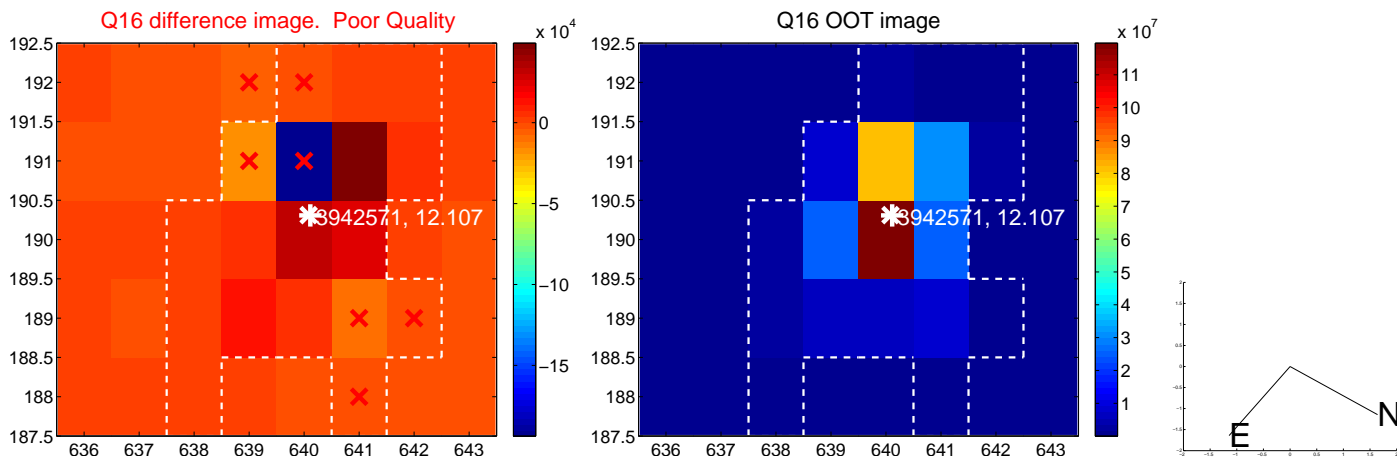
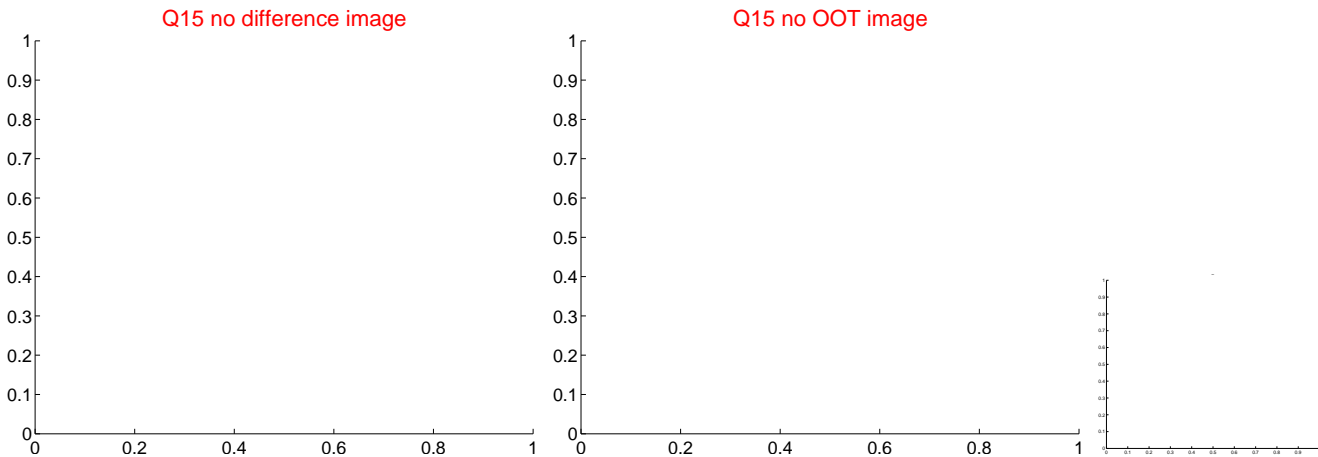
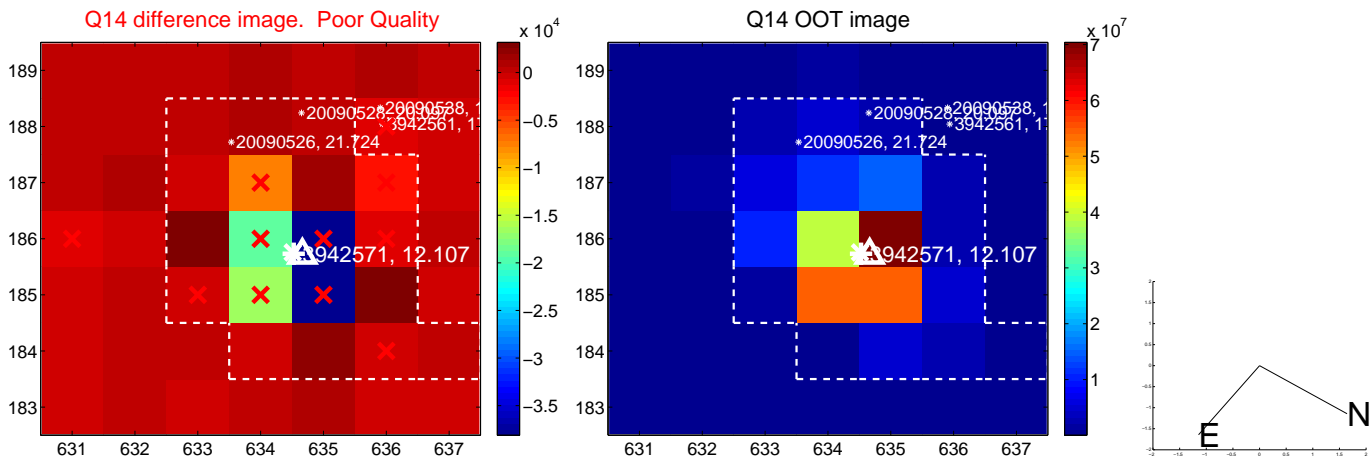
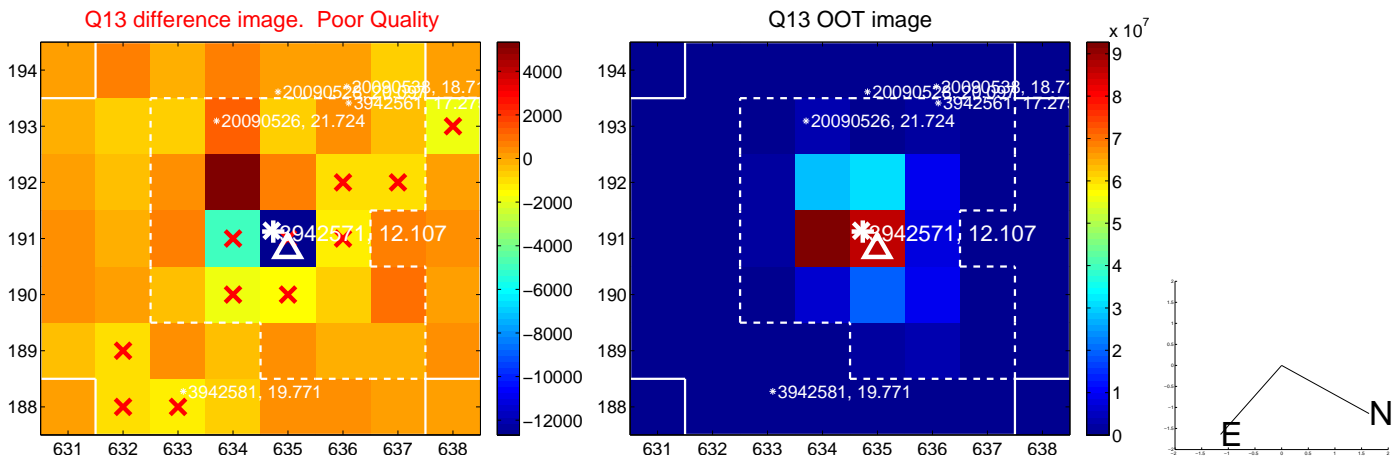
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



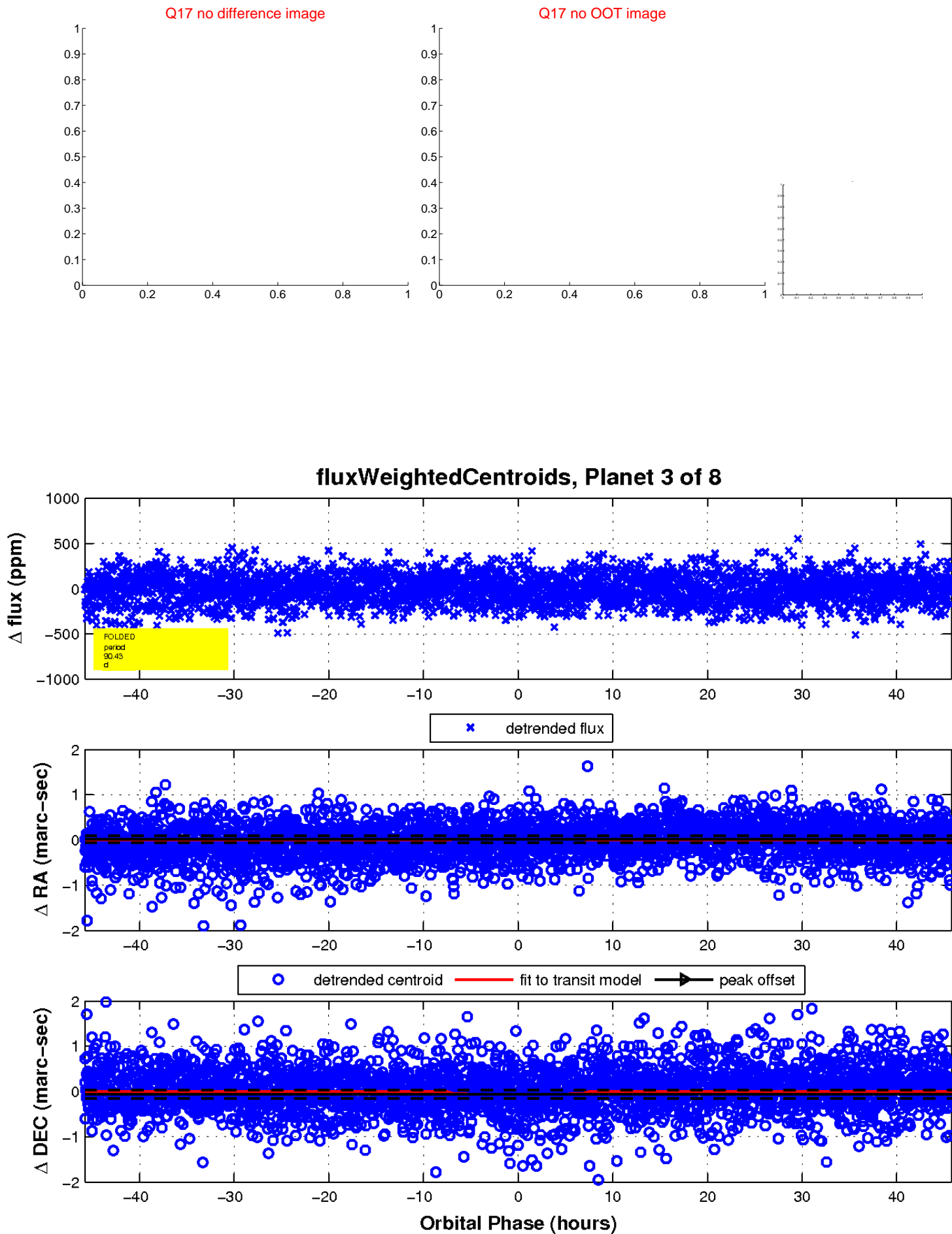
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



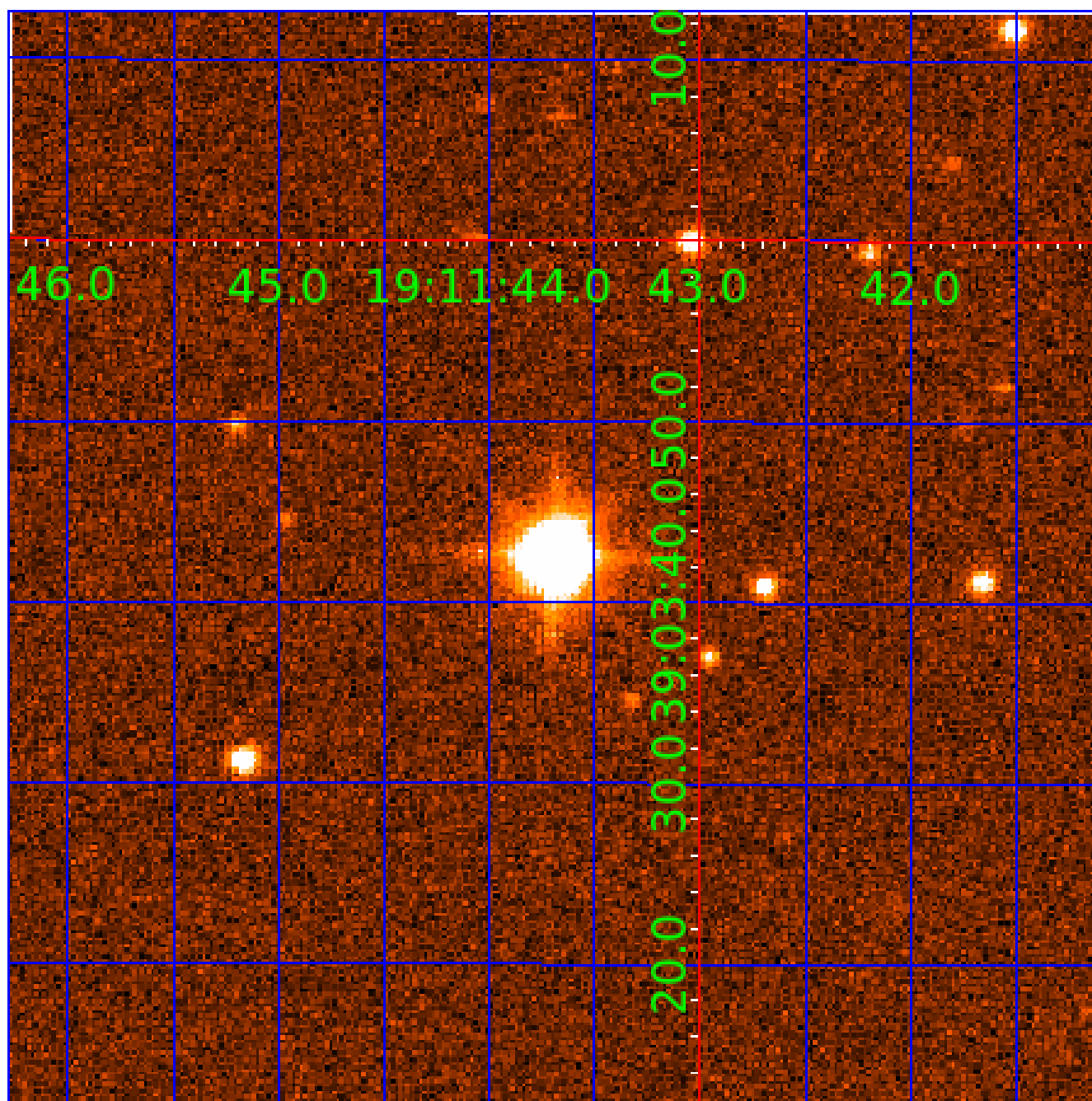
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.





UKIRT Image

Declination



# KIC 003942571

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
003942571-01	OBS	No	1.257394	132.164961	8.1	7.242	9.3	3.8	5.45	6208	1.70	47048.90
003942571-02	OBS	No	218.009814	298.710758	233.0	6.496	14.9	7.0	5.45	6208	9.42	48.66
003942571-03	OBS	No	90.433559	139.776241	173.8	15.269	12.8	8.8	5.45	6208	8.08	157.30
003942571-04	OBS	No	72.236527	146.037624	146.6	5.312	9.6	6.6	5.45	6208	7.42	212.24
003942571-05	OBS	No	90.591459	221.813942	212.4	2.840	8.9	9.3	5.45	6208	8.31	156.94
003942571-06	OBS	No	192.470308	172.581220	222.7	3.505	8.8	7.2	5.45	6208	9.56	57.46
003942571-07	OBS	No	103.635467	170.730217	279.4	4.708	8.6	9.3	5.45	6208	11.10	131.17
003942571-08	OBS	No	18.949271	132.724536	169.2	2.500	8.8	-1.0	5.45	6208	7.11	1263.92

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003942571-01	OBS	FP	0.00	1	0	1	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—HALO_GHOST
003942571-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
003942571-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
003942571-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
003942571-05	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
003942571-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
003942571-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
003942571-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_ALT—MOD_NONUNIQ_ALT—CENT_NOFITS

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

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

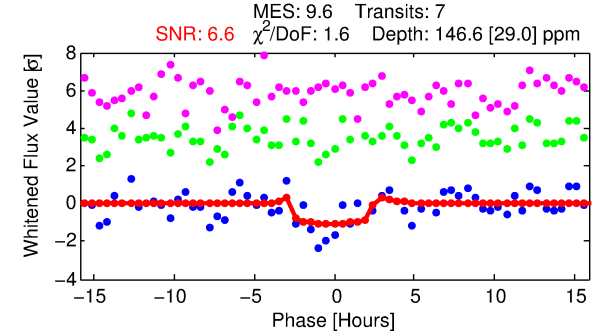
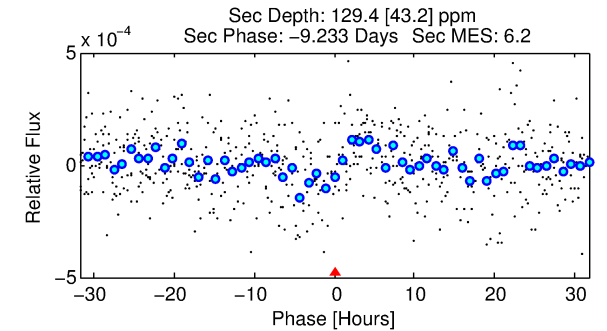
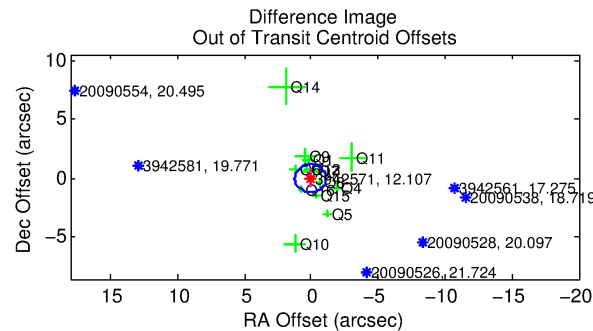
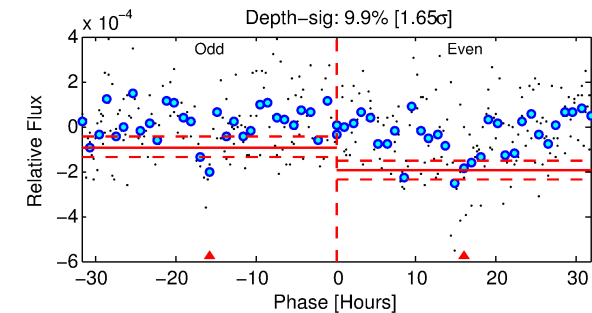
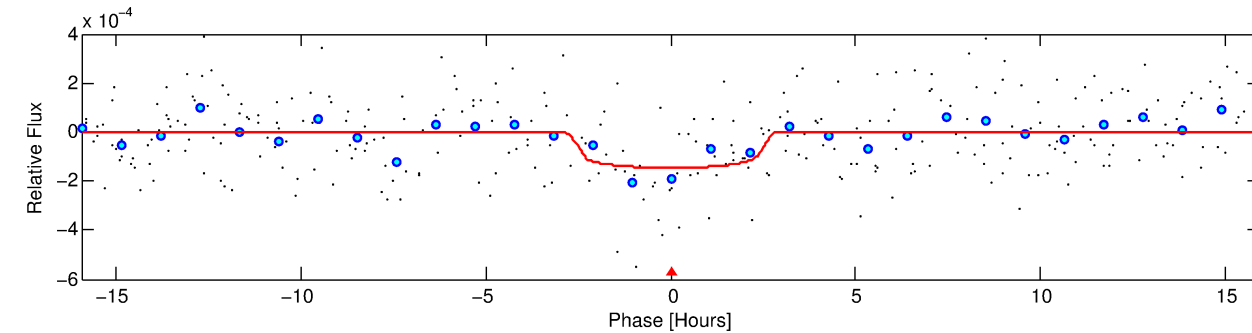
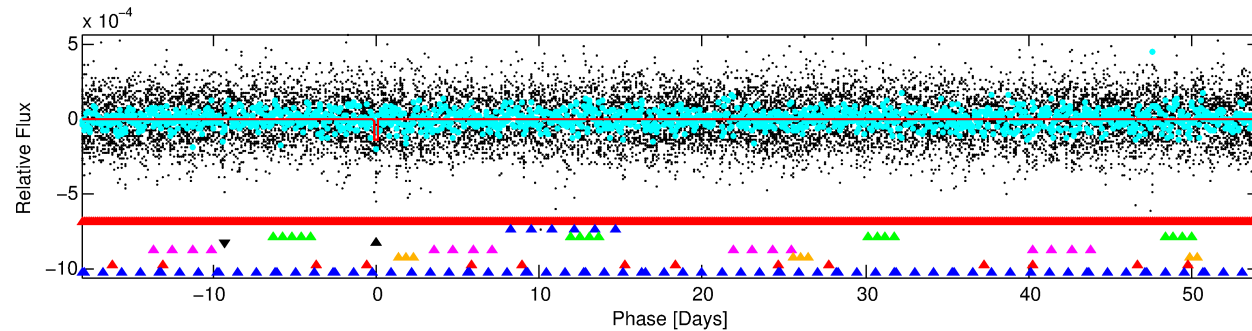
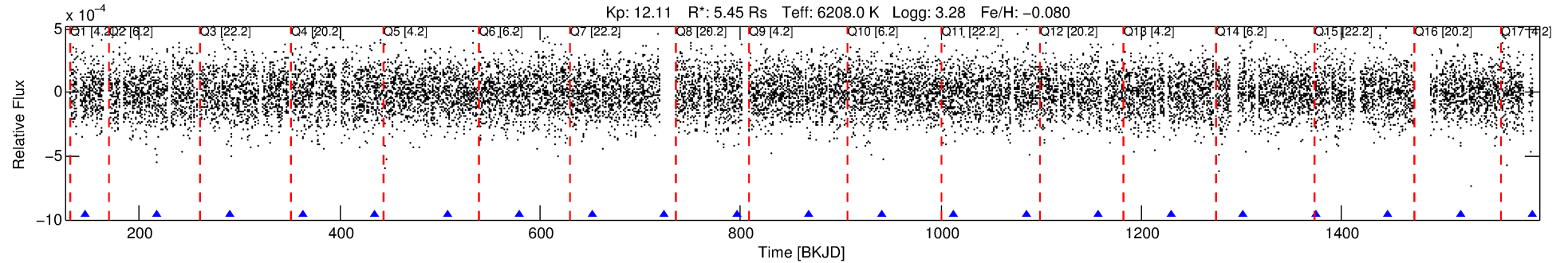
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 003942571-04

No Significant Match Found

# DV One-Page Summary

KIC: 3942571 Candidate: 4 of 8 Period: 72.237 d



## DV Fit Results:

Period = 72.23653 [0.00160] d  
Epoch = 146.0376 [0.0212] BKJD  
Rp/R\* = 0.0125 [0.0084]  
a/R\* = 59.36 [213.23]  
b = 0.84 [1.30]  
Seff = 212.24 [165.05]  
Teq = 973 [189] K  
Rp = 7.43 [6.07] Re  
a = 0.4319 [0.2028] AU  
Ag = 240.71 [381.44] [0.63 $\sigma$ ]  
Teffp = 5927 [2059] K [2.40 $\sigma$ ]

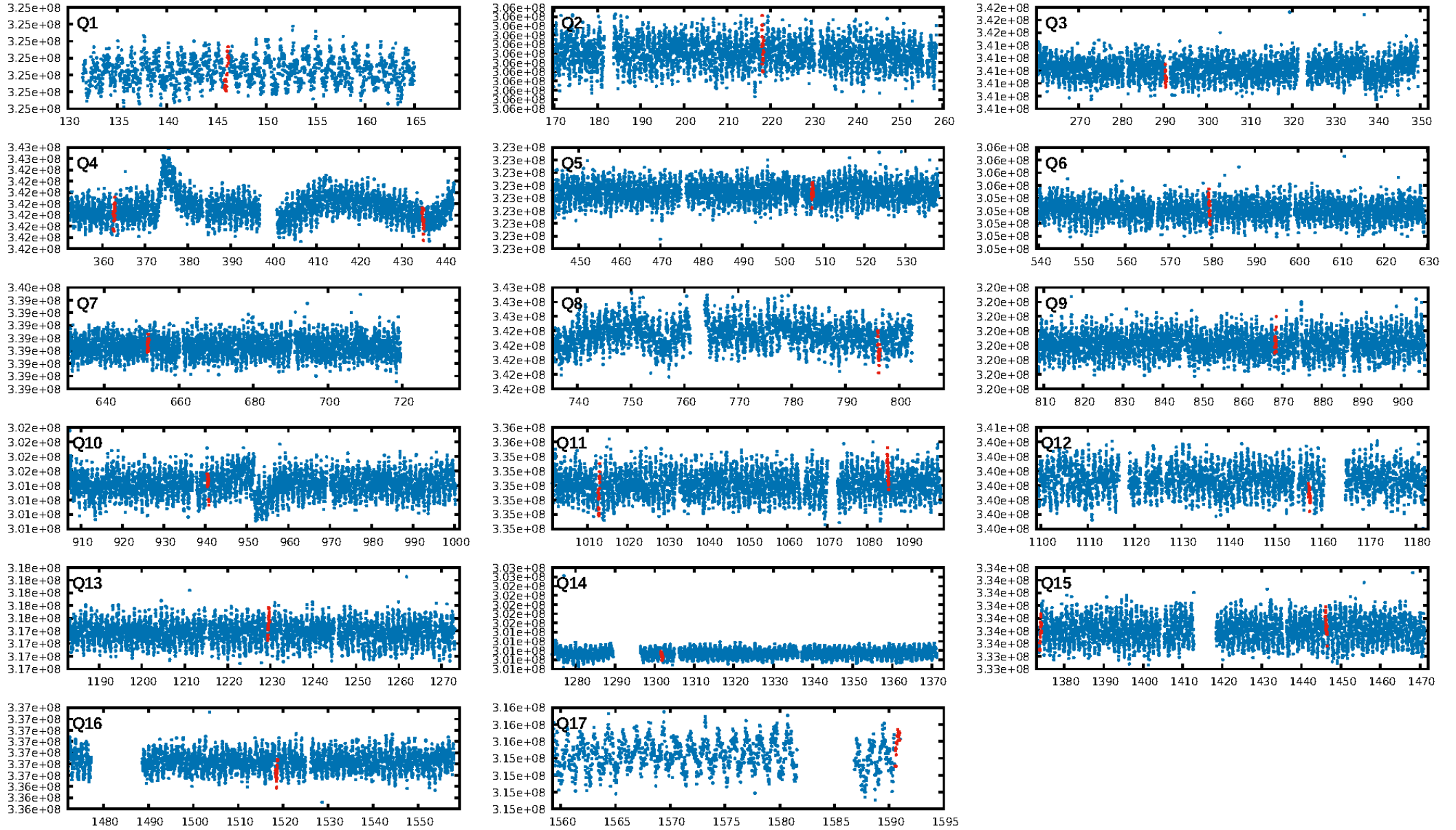
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [217.84 $\sigma$ ]  
LongPeriod-sig: 100.0% [27.01 $\sigma$ ]  
ModelChiSquare2-sig: 1.4%  
ModelChiSquareGof-sig: 96.2%  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [7/7]  
GhostDiagnostic-chr: 0.7559  
Centroid-sig: 48.3%  
Centroid-so: 0.433 arcsec [0.68 $\sigma$ ]  
OotOffset-rm: 0.072 arcsec [0.19 $\sigma$ ]  
OotOffset-st: 3/3/4/4 [14]  
KicOffset-rm: 0.122 arcsec [0.17 $\sigma$ ]  
KicOffset-st: 3/3/4/4 [14]  
DiffImageQuality-fgm: 0.36 [5/14]  
DiffImageOverlap-fno: 0.00 [0/15]

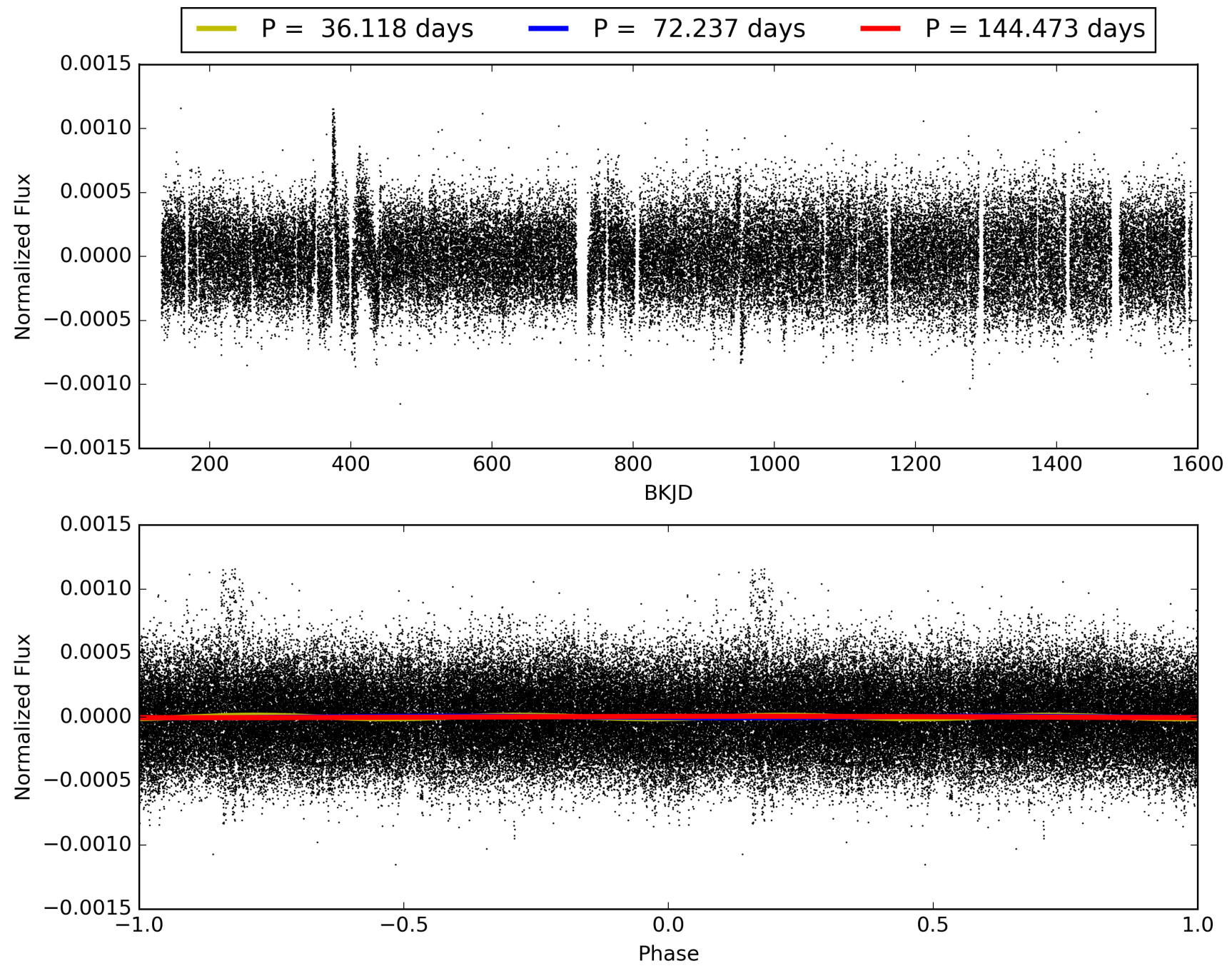
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 01:11:53 Z

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

# TCE 003942571-04, PDC Light Curves

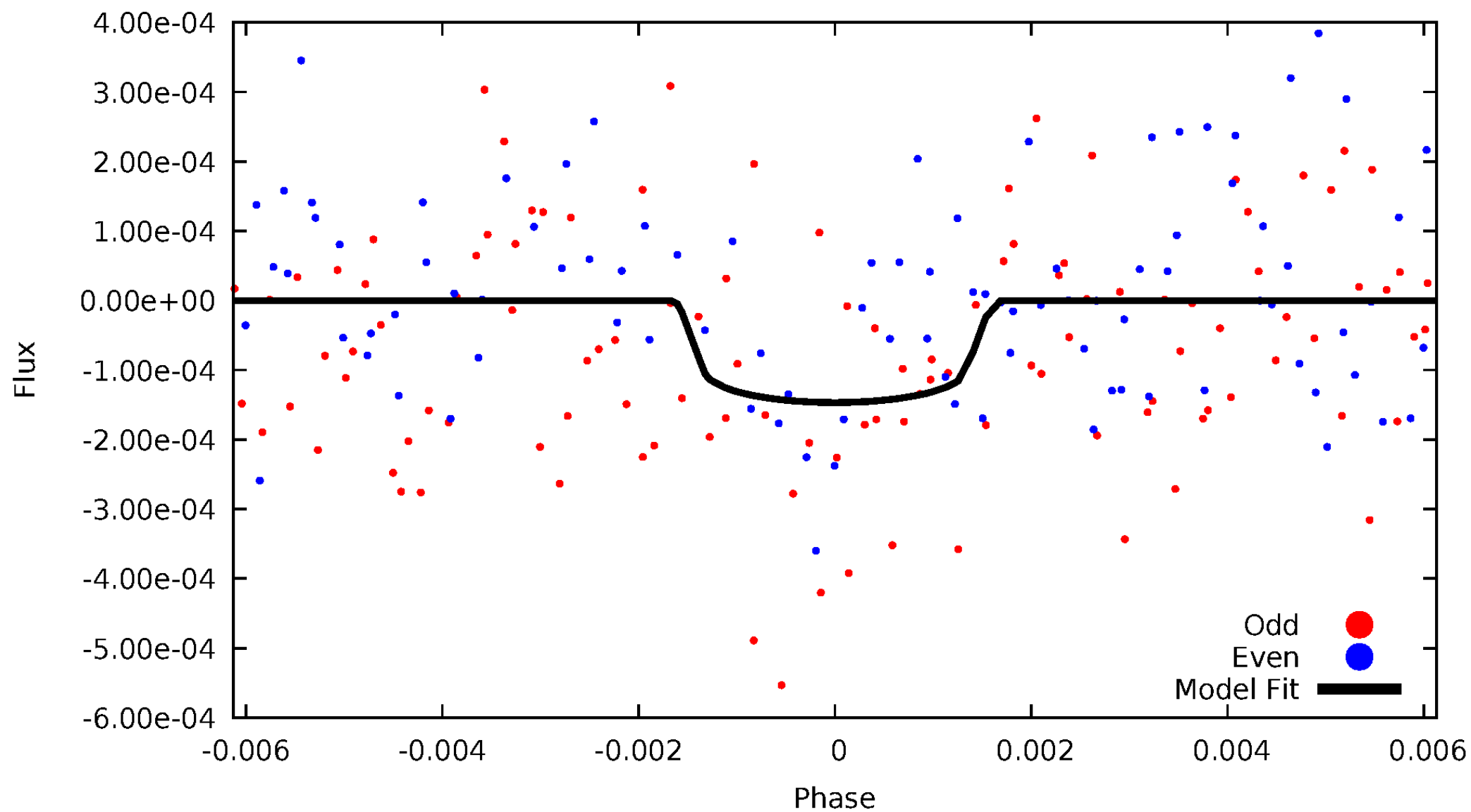


TCE 003942571-04



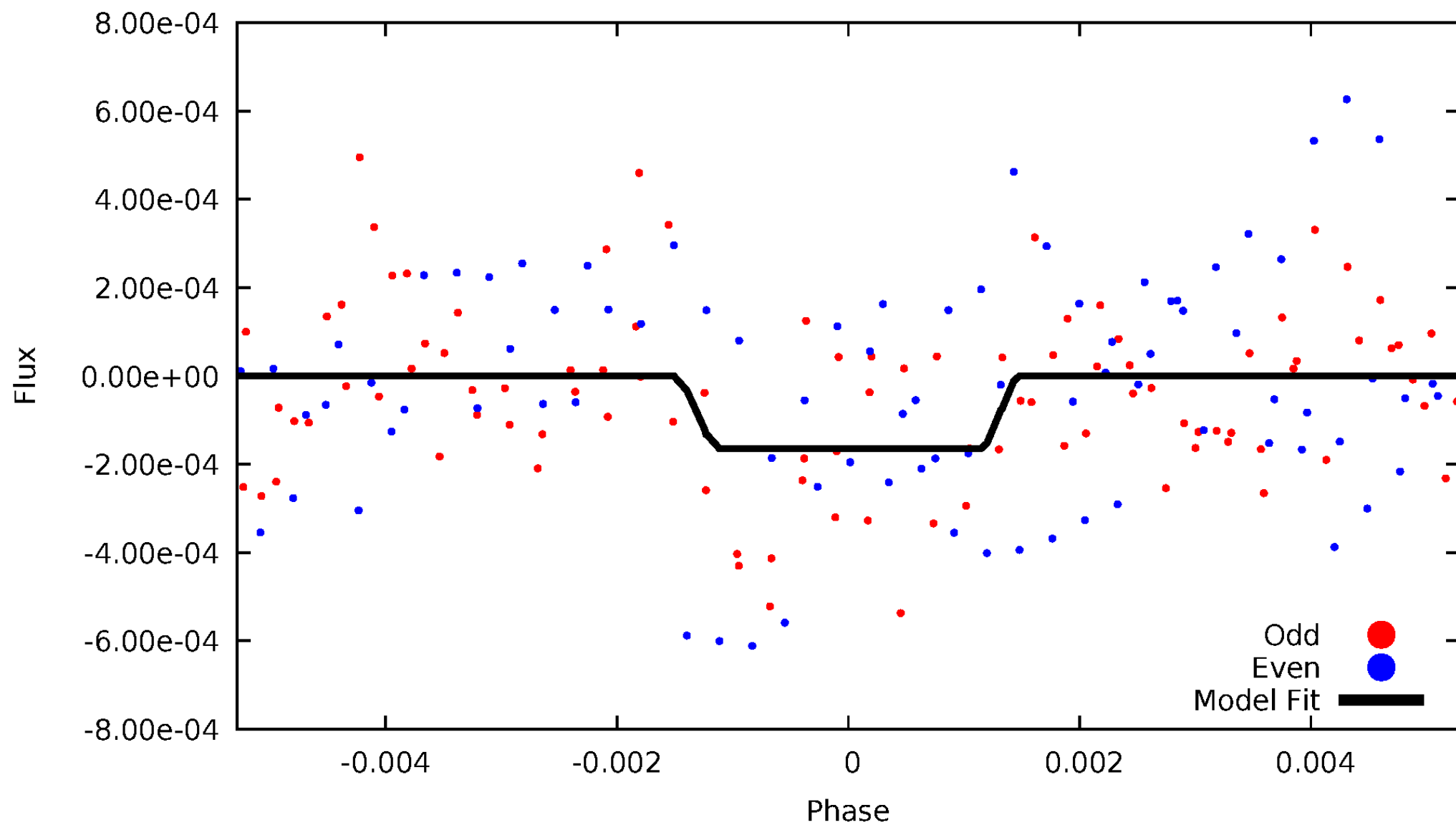
# DV Odd/Even

TCE 003942571-04



# ALT Odd/Even

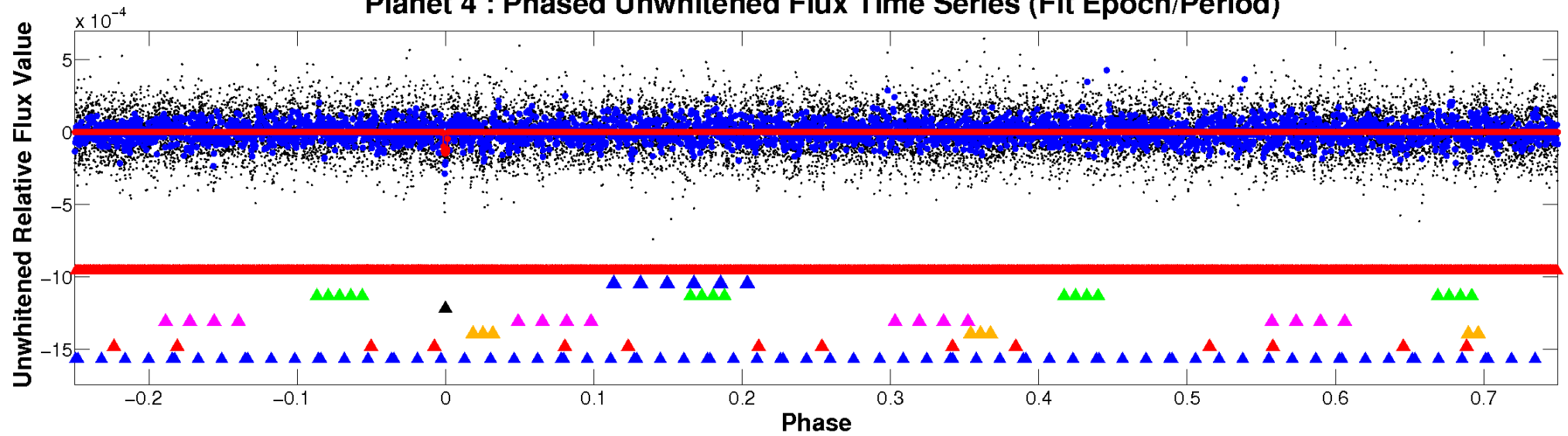
TCE 003942571-04



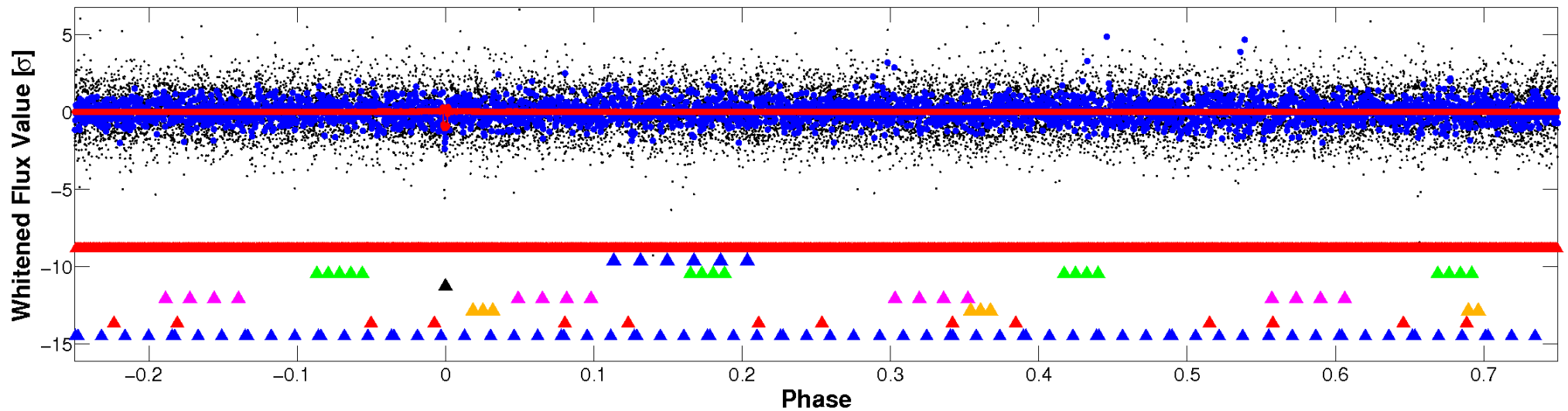


# Non-Whitened Vs. Whitened Light Curve

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

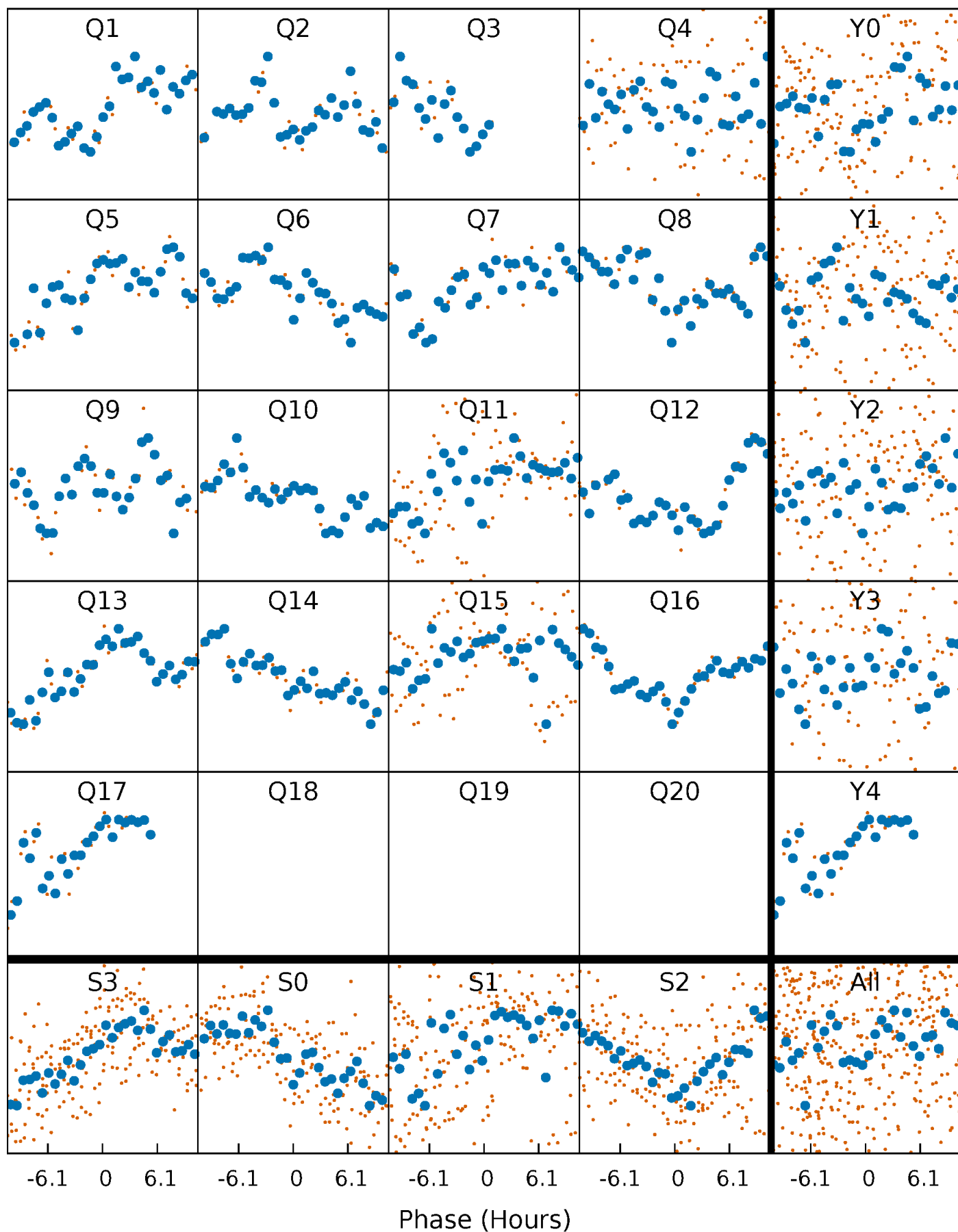


## Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



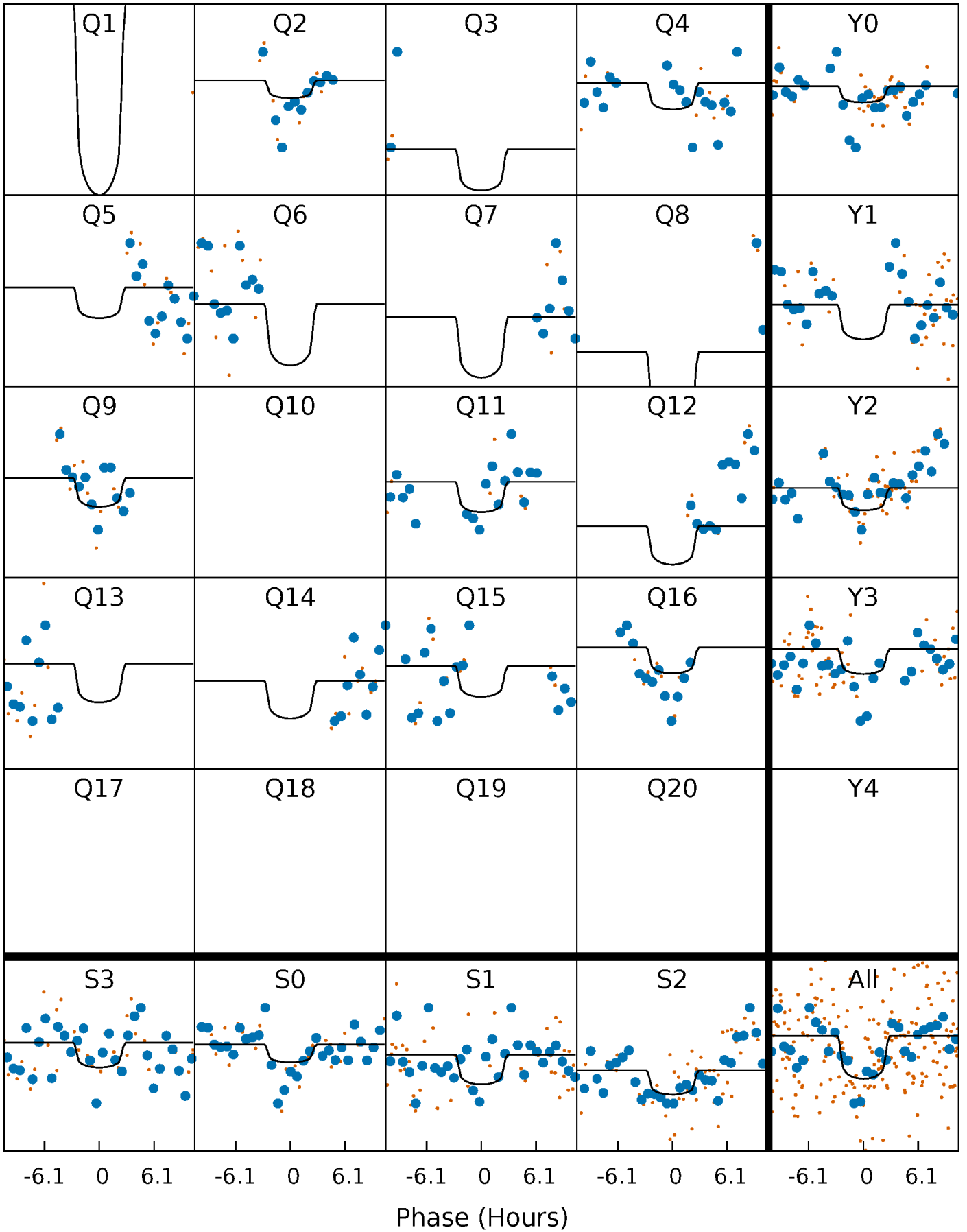
# PDC Quarter-Phased Transit Curves

TCE 003942571-04 P= 72.236527 Days  $T_0=146.037624$  (BKJD)



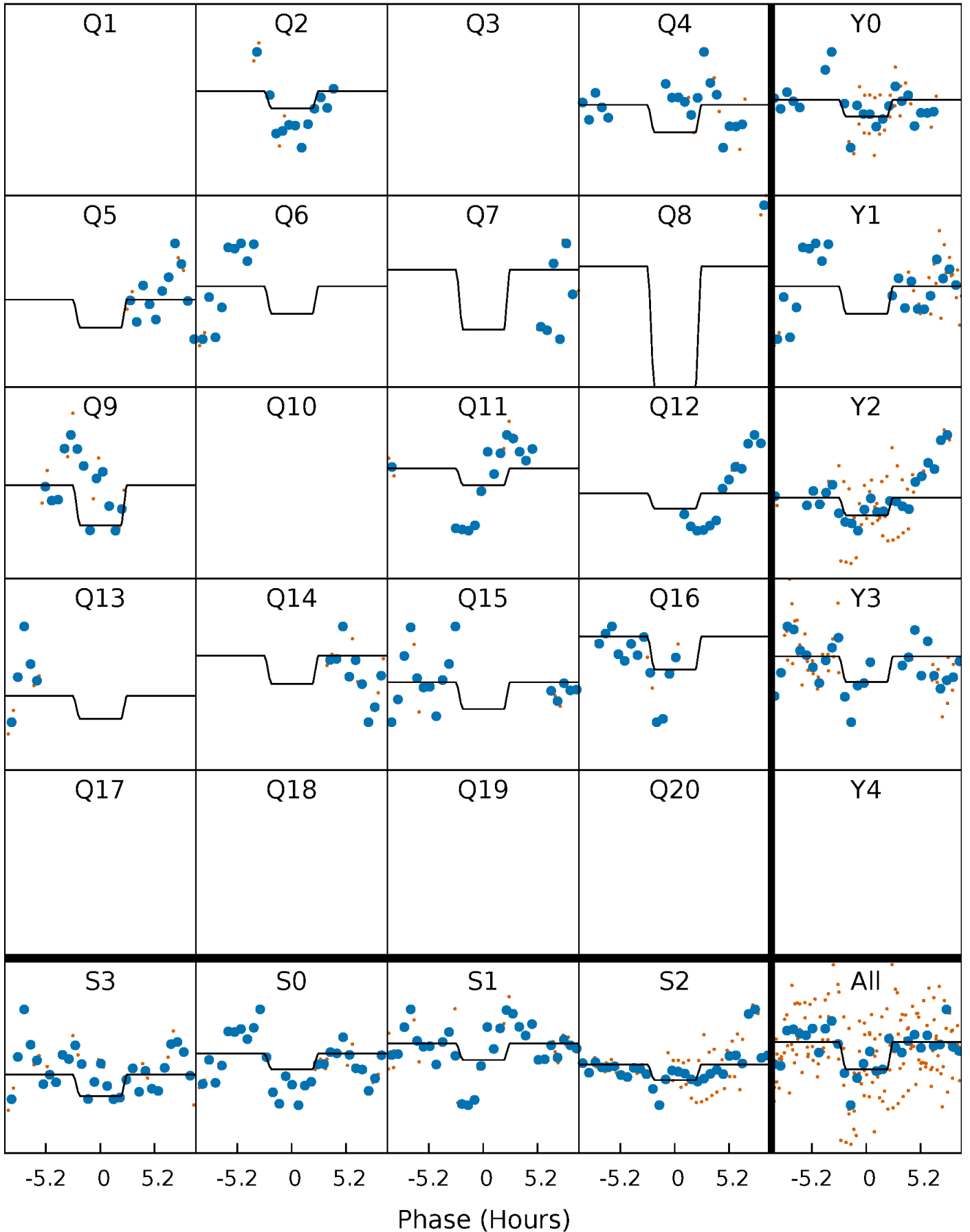
# DV Quarter-Phased Transit Curves

TCE 003942571-04   P= 72.236527 Days    $T_0=146.037624$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

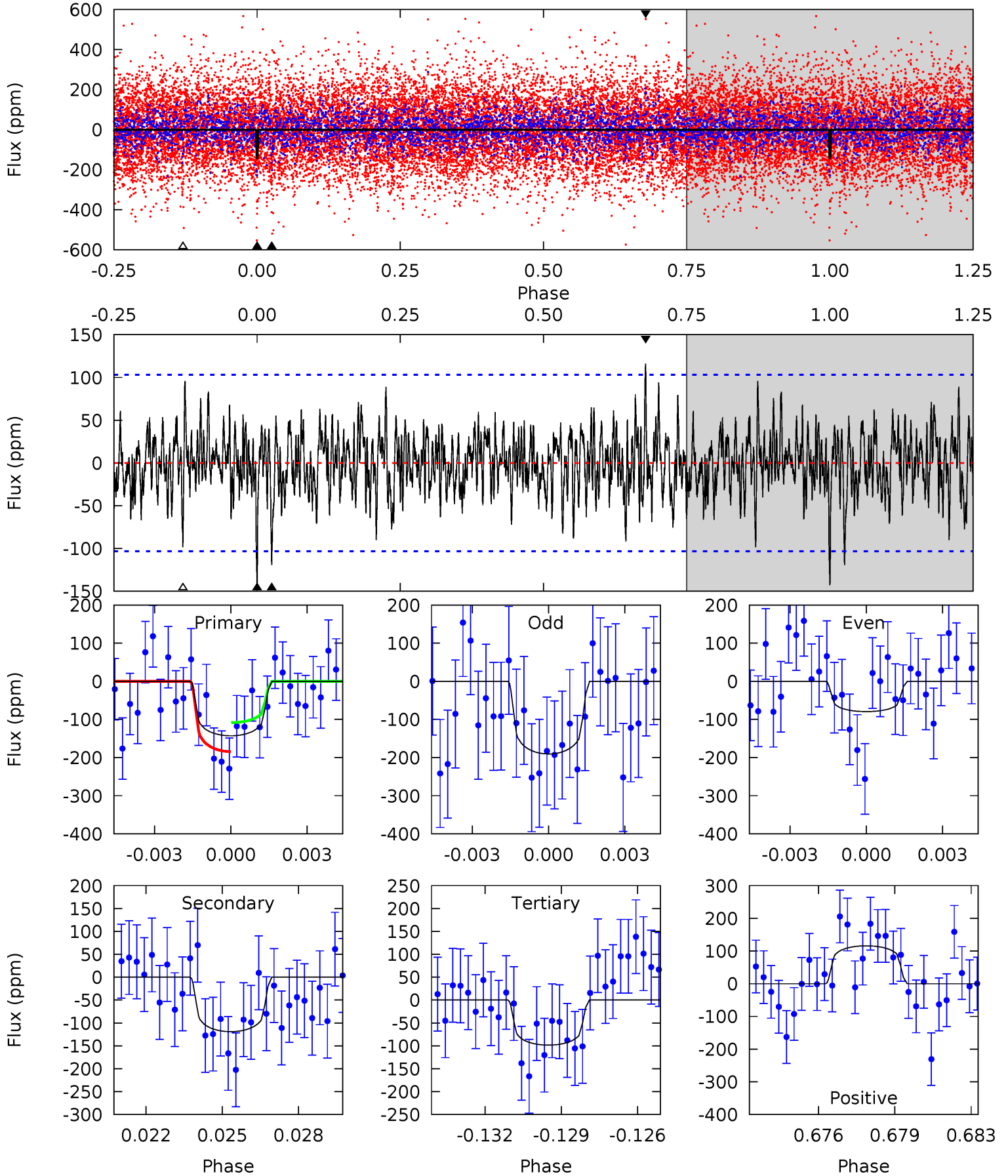
TCE 003942571-04   P= 72.239218 Days    $T_0=146.044603$  (BKJD)



# DV Model-Shift Uniqueness Test

003942571-04, P = 72.236527 Days, E = 73.801097 Days

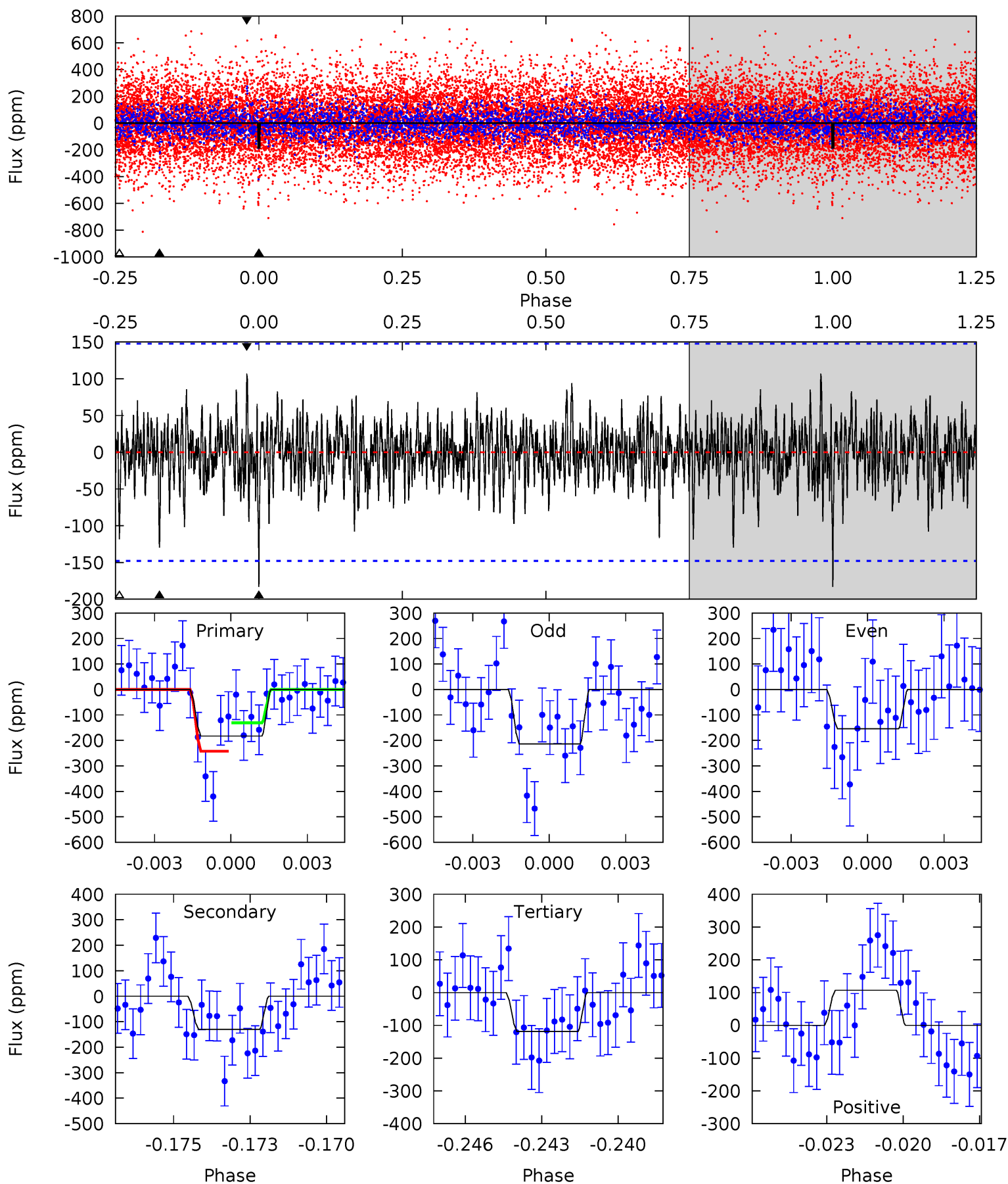
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.26	6.05	5.00	5.89	5.24	2.95	1.52	2.26	1.37	1.05	0.16	2.80	0.93	0.45	1.92



# Alt Model-Shift Uniqueness Test

003942571-04, P = 72.239218 Days, E = 73.805385 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
6.52	4.62	4.22	3.80	5.26	2.99	1.12	2.30	2.71	0.40	0.82	1.05	0.82	0.37	1.99



### Stellar Parameters For KIC 003942571

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6208^{+169}_{-169}$	$3.278^{+0.459}_{-0.051}$	$-0.080^{+0.350}_{-0.300}$	$5.454^{+0.282}_{-2.540}$	$2.058^{+0.095}_{-0.539}$	$0.018^{+0.084}_{-0.002}$
	+3%/-3%	+14%/-2%	+438%/-375%	+5%/-47%	+5%/-26%	+472%/-9%
Source	PHO1	FLK73	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 003942571-04 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-119 \pm 20$	$6.74^{+4.67}_{-3.78}$	$1329^{+66}_{-152}$	$5716^{+3120}_{-1098}$	$251^{+1003}_{-162}$
Alt.	$-130 \pm 28$	$7.08^{+4.88}_{-3.94}$	$1329^{+67}_{-151}$	$5729^{+3323}_{-1134}$	$248^{+1087}_{-161}$

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



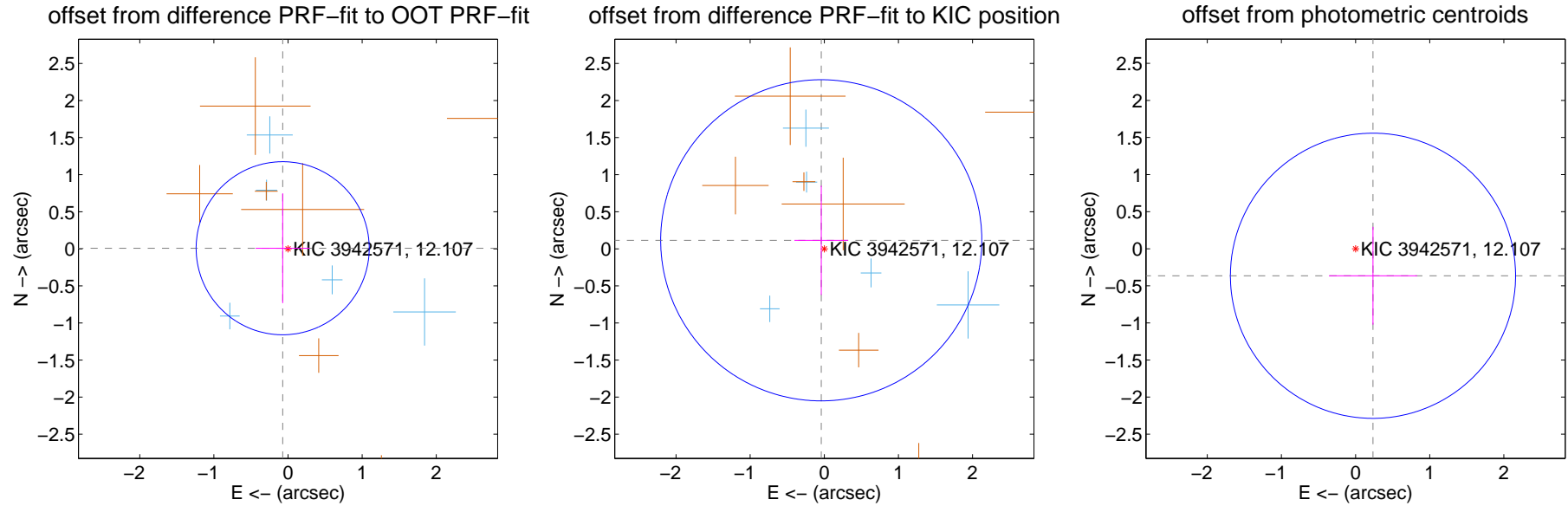
## DV Centroid Data

Supplemental centroid analysis for 003942571-04. Kepler magnitude: 12.11. Transit SNR 6.65

There are 5 quarters with good PRF difference image offsets

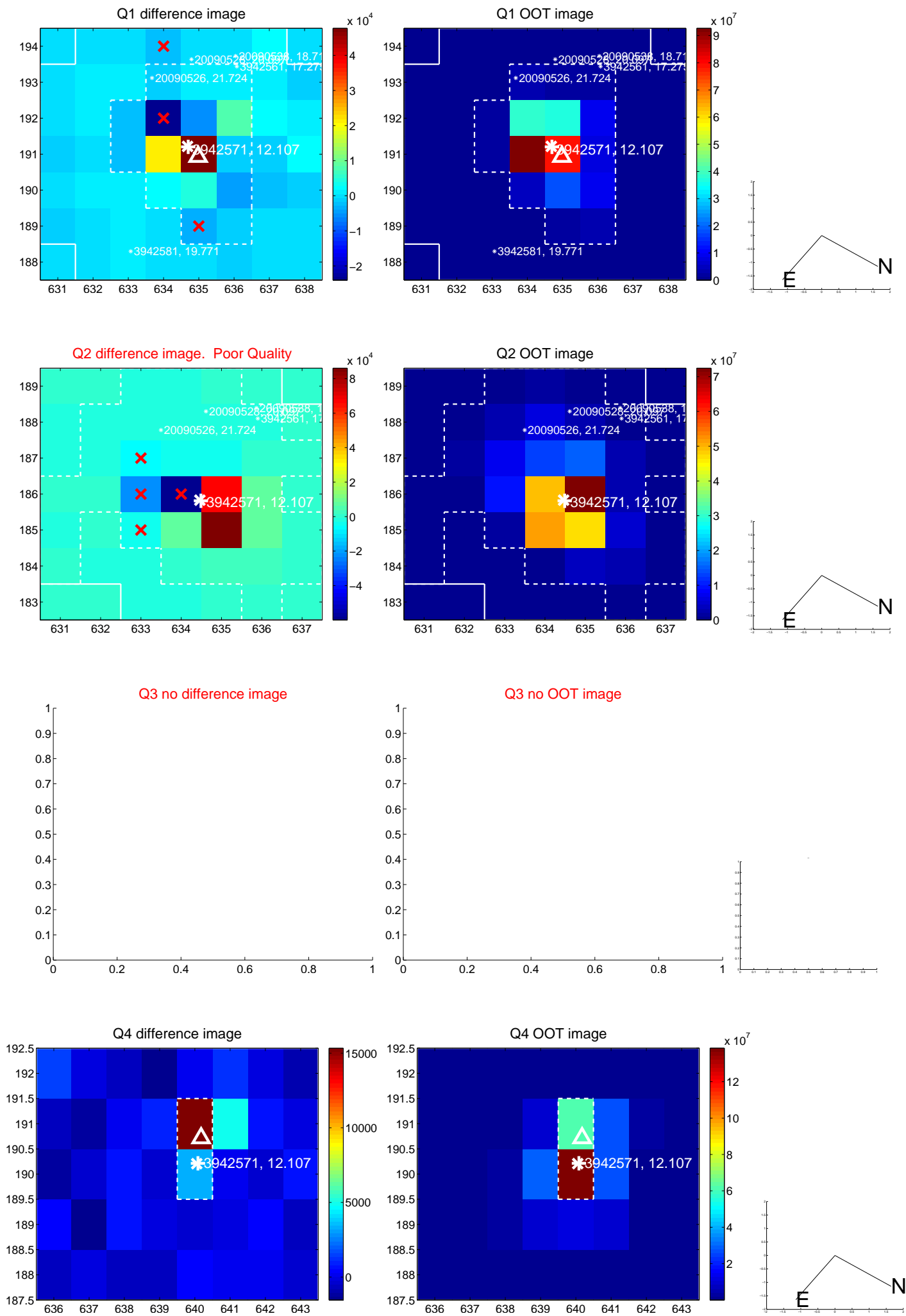
The direct PRF centroid is offset from the target star catalog position by about 0.11 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.072 \pm 0.389$	0.19	$0.072 \pm 0.364$	$0.008 \pm 0.740$
PRF-fit source offset from KIC position	$0.122 \pm 0.722$	0.17	$0.041 \pm 0.362$	$0.115 \pm 0.736$
photometric centroid source offset	$0.43 \pm 0.64$	0.68	$-0.23 \pm 0.59$	$-0.36 \pm 0.66$



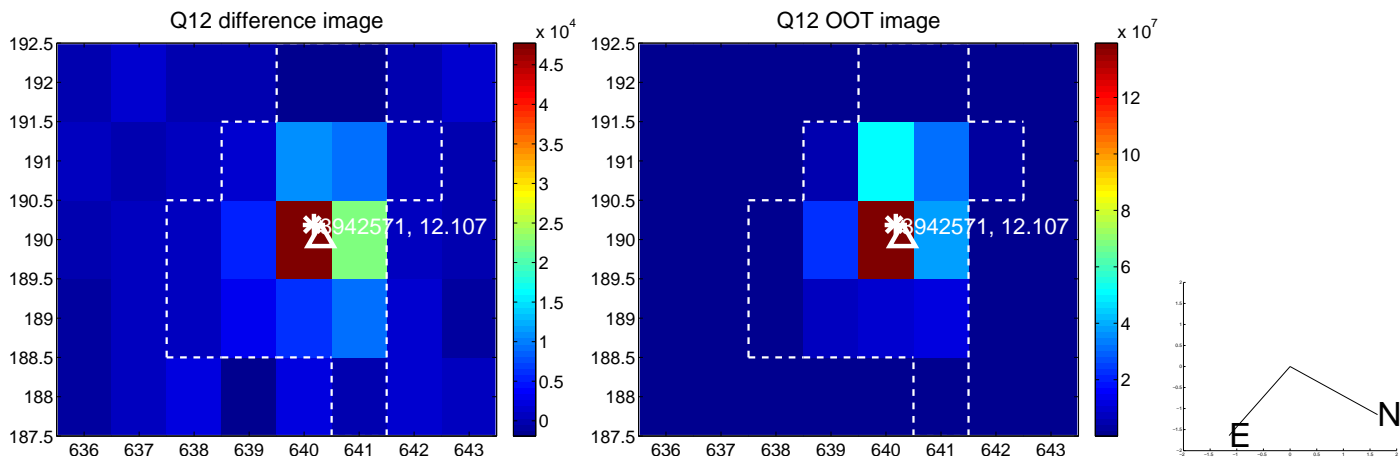
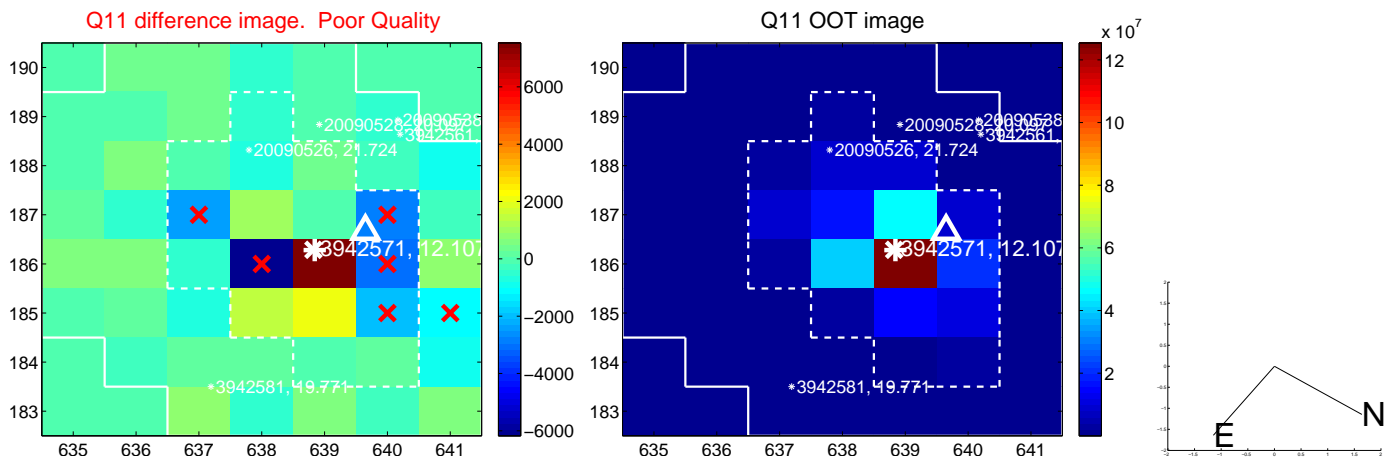
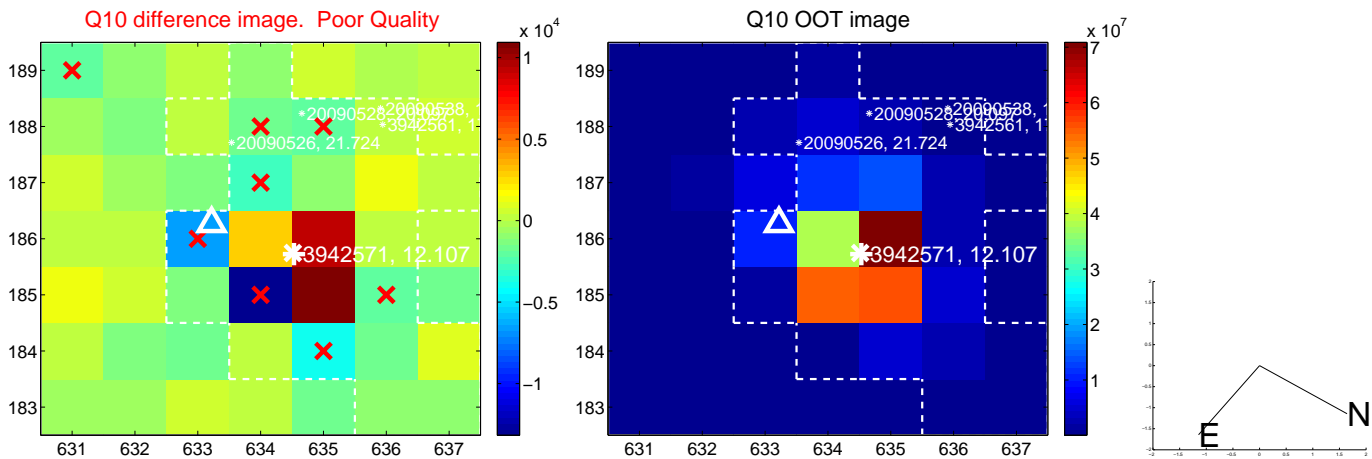
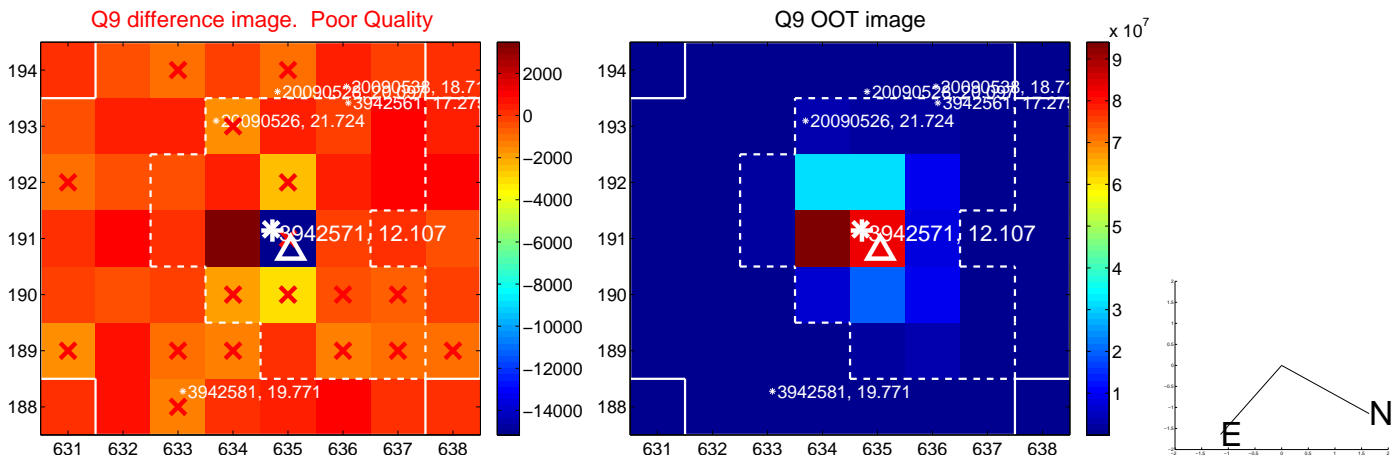
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

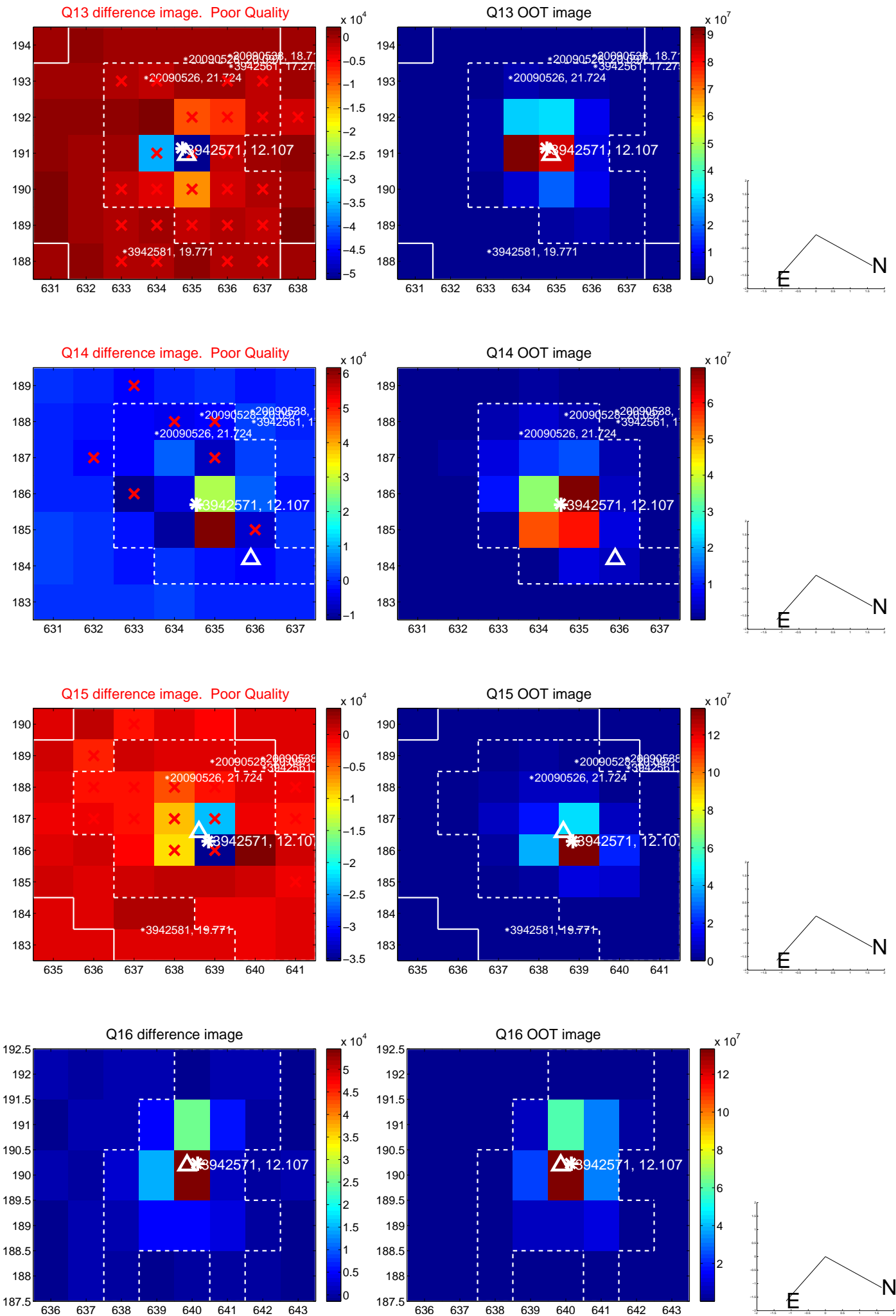




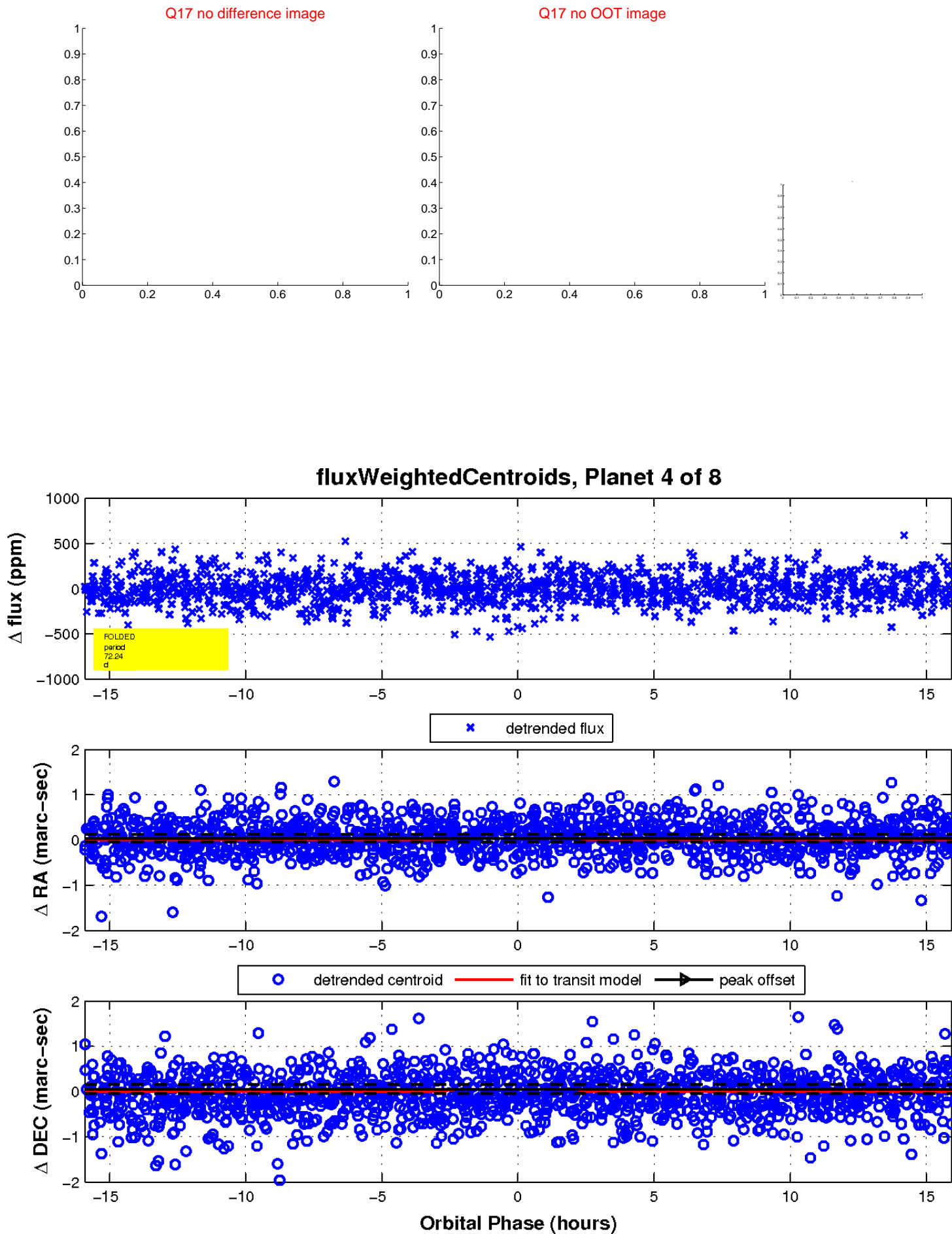
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

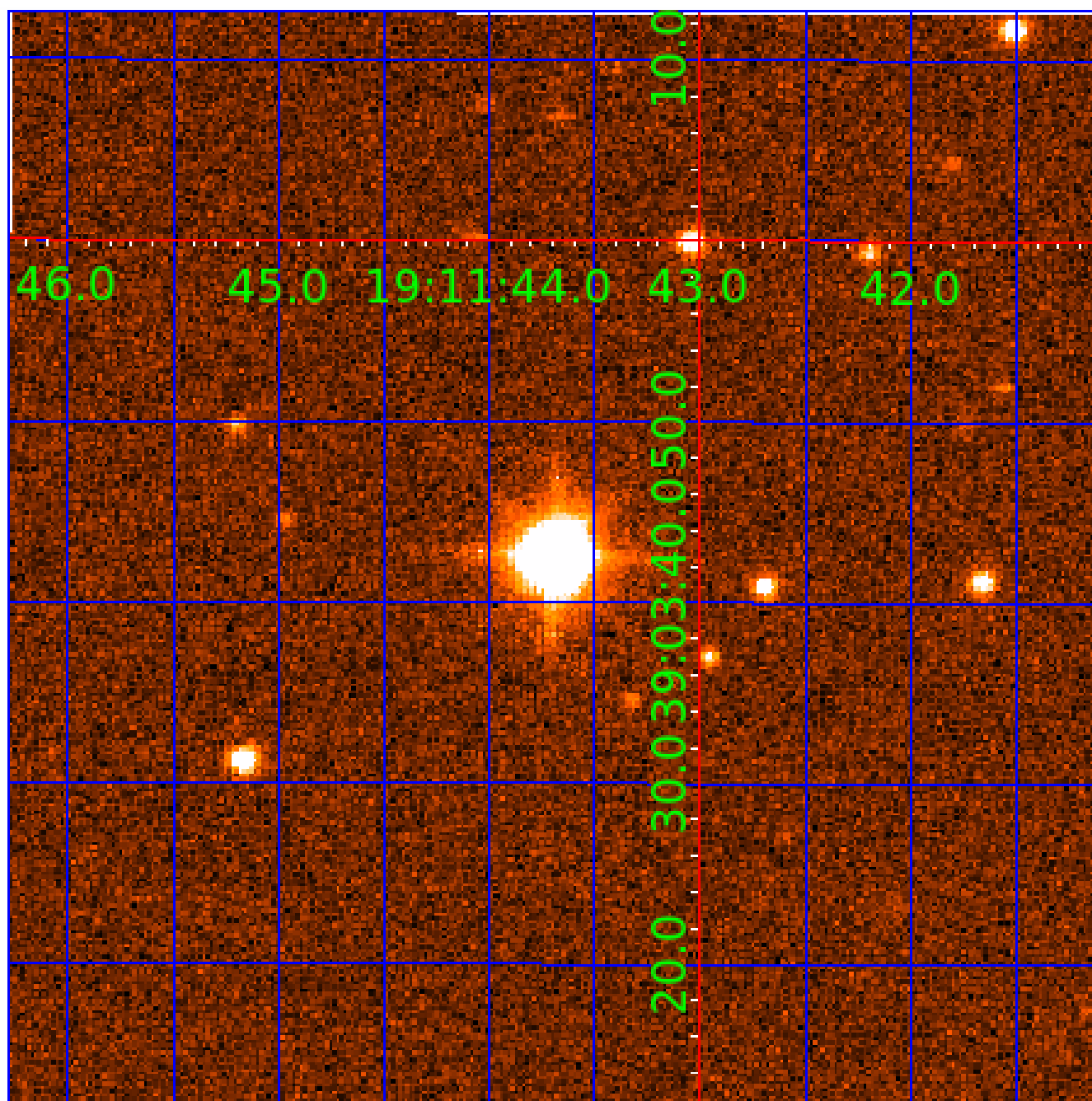


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination





# KIC 003942571

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
003942571-01	OBS	No	1.257394	132.164961	8.1	7.242	9.3	3.8	5.45	6208	1.70	47048.90
003942571-02	OBS	No	218.009814	298.710758	233.0	6.496	14.9	7.0	5.45	6208	9.42	48.66
003942571-03	OBS	No	90.433559	139.776241	173.8	15.269	12.8	8.8	5.45	6208	8.08	157.30
003942571-04	OBS	No	72.236527	146.037624	146.6	5.312	9.6	6.6	5.45	6208	7.42	212.24
003942571-05	OBS	No	90.591459	221.813942	212.4	2.840	8.9	9.3	5.45	6208	8.31	156.94
003942571-06	OBS	No	192.470308	172.581220	222.7	3.505	8.8	7.2	5.45	6208	9.56	57.46
003942571-07	OBS	No	103.635467	170.730217	279.4	4.708	8.6	9.3	5.45	6208	11.10	131.17
003942571-08	OBS	No	18.949271	132.724536	169.2	2.500	8.8	-1.0	5.45	6208	7.11	1263.92

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003942571-01	OBS	FP	0.00	1	0	1	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—HALO_GHOST
003942571-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
003942571-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
003942571-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
003942571-05	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
003942571-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
003942571-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
003942571-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_ALT—MOD_NONUNIQ_ALT—CENT_NOFITS

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

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

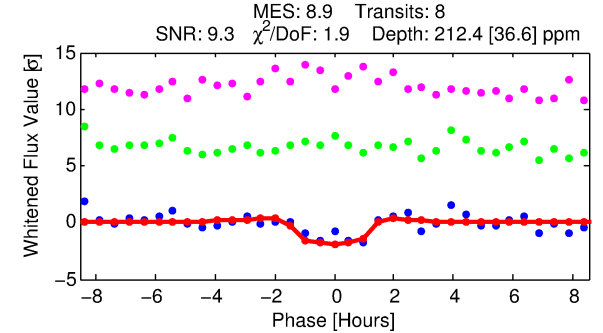
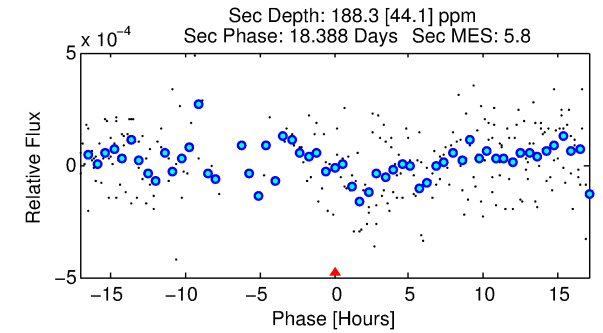
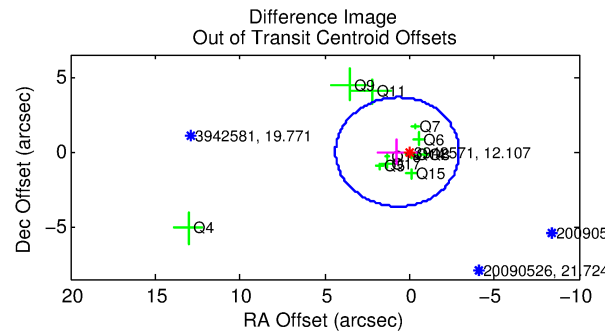
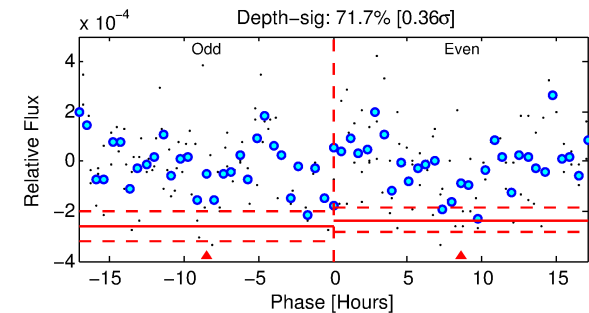
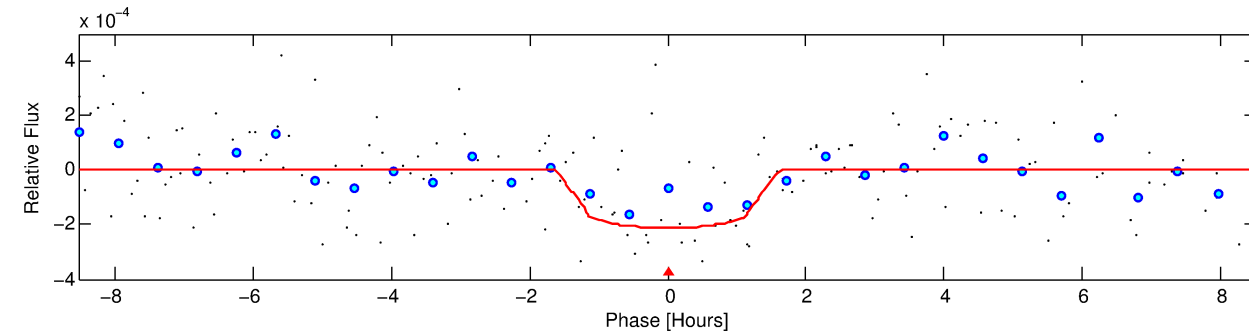
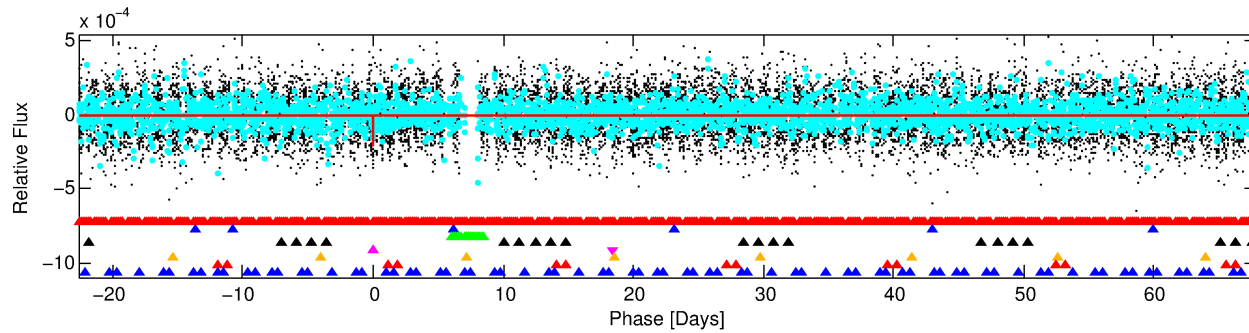
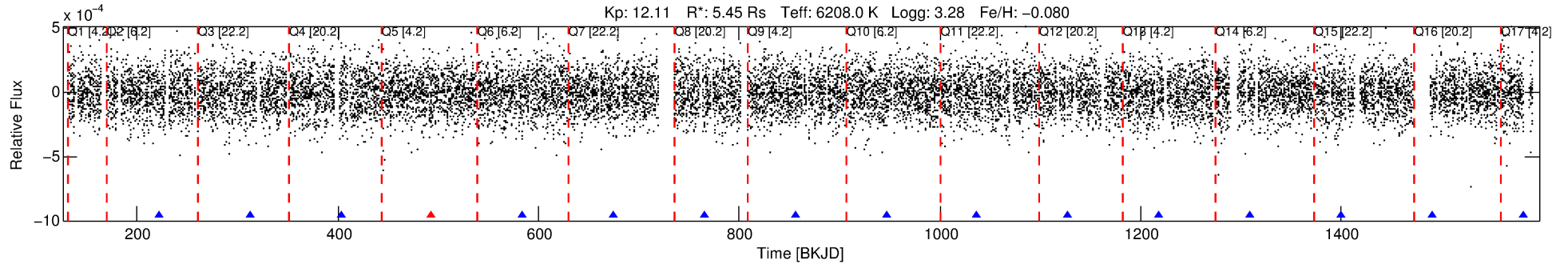
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 003942571-05

No Significant Match Found

# DV One-Page Summary

KIC: 3942571 Candidate: 5 of 8 Period: 90.591 d



## DV Fit Results:

Period = 90.59146 [0.00268] d  
Epoch = 221.8139 [0.0126] BKJD  
Rp/R\* = 0.0140 [0.0314]  
a/R\* = 200.30 [2299.57]  
b = 0.59 [12.65]  
Seff = 156.94 [122.04]  
Teq = 903 [175] K  
Rp = 8.31 [19.10] Re  
a = 0.5022 [0.2358] AU  
Ag = 377.88 [1727.46] [0.22 $\sigma$ ]  
Teffp = 6152 [6933] K [0.76 $\sigma$ ]

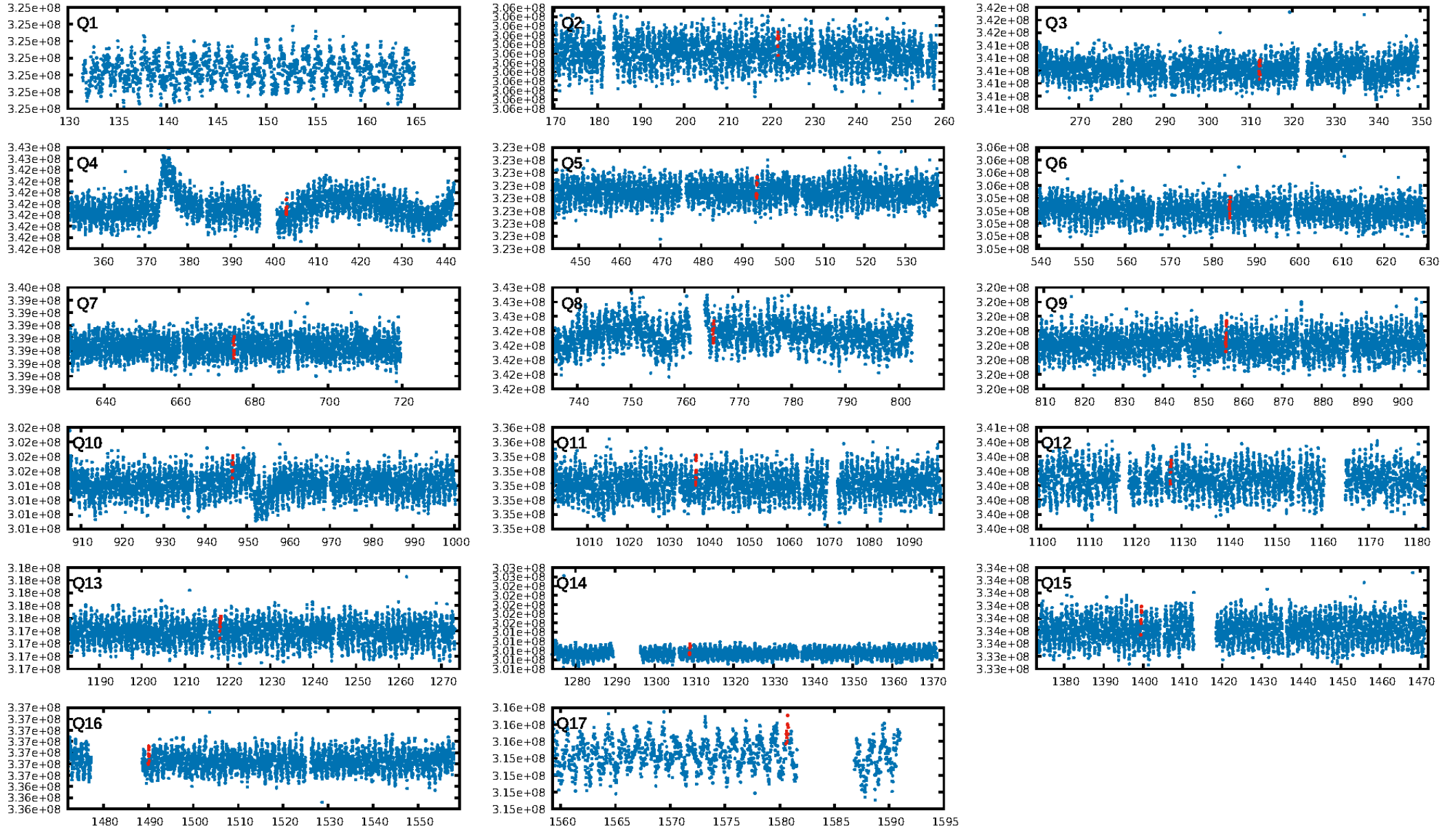
## DV Diagnostic Results:

ShortPeriod-sig: 19.3% [0.24 $\sigma$ ]  
LongPeriod-sig: 100.0% [56.93 $\sigma$ ]  
ModelChiSquare2-sig: 0.4%  
ModelChiSquareGof-sig: 88.7%  
Bootstrap-pfa: N/A  
RollingBand-fgt: 0.88 [7/8]  
GhostDiagnostic-chr: -3.437  
Centroid-sig: 92.4%  
Centroid-so: 0.155 arcsec [0.24 $\sigma$ ]  
OotOffset-rm: 0.705 arcsec [0.58 $\sigma$ ]  
KicOffset-rm: 0.686 arcsec [0.63 $\sigma$ ]  
OotOffset-st: 2/3/3/3 [11]  
KicOffset-st: 2/3/3/3 [11]  
DiffImageQuality-fgm: 0.36 [4/11]  
DiffImageOverlap-fno: 0.43 [6/14]

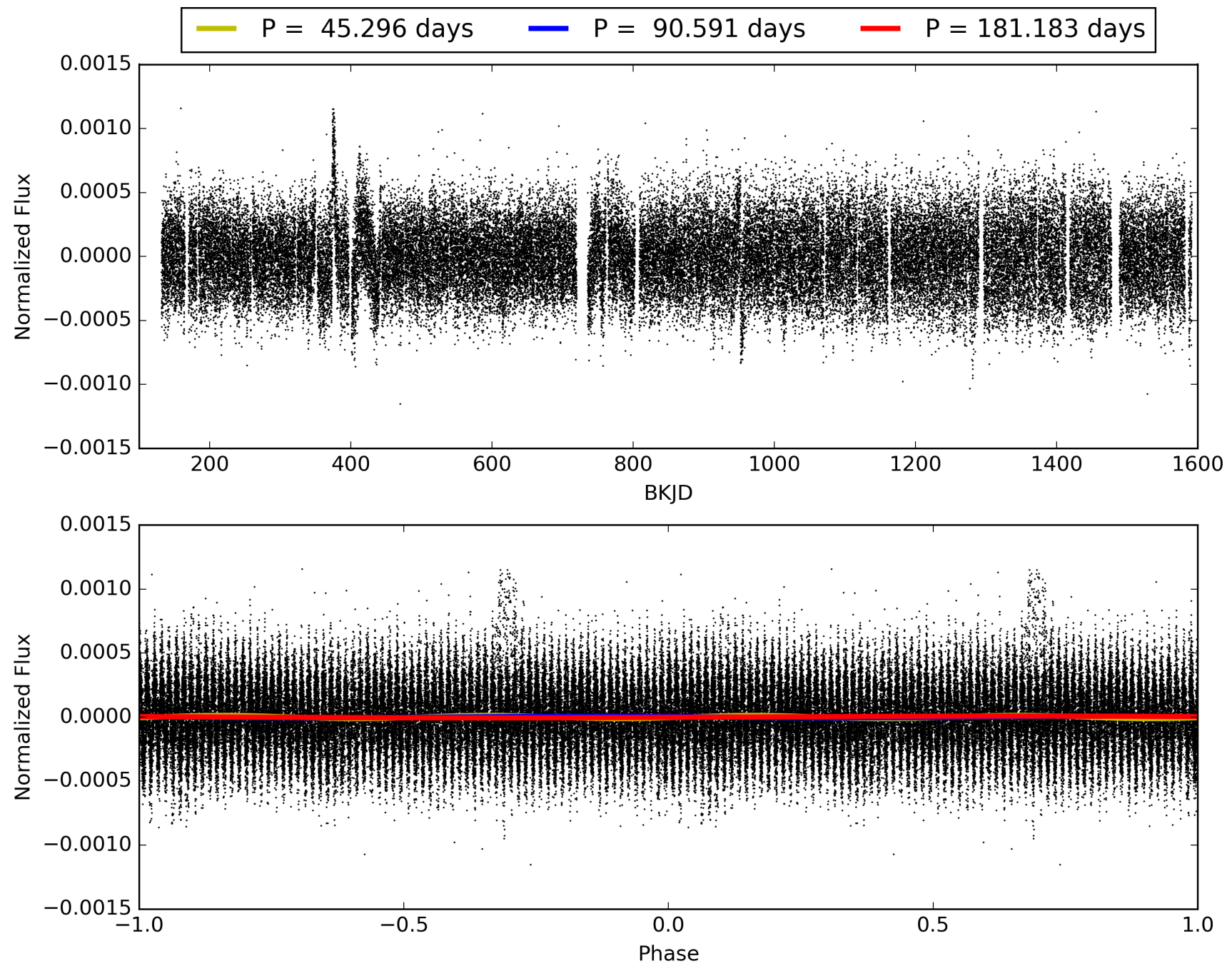
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 01:11:58 Z

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

# TCE 003942571-05, PDC Light Curves

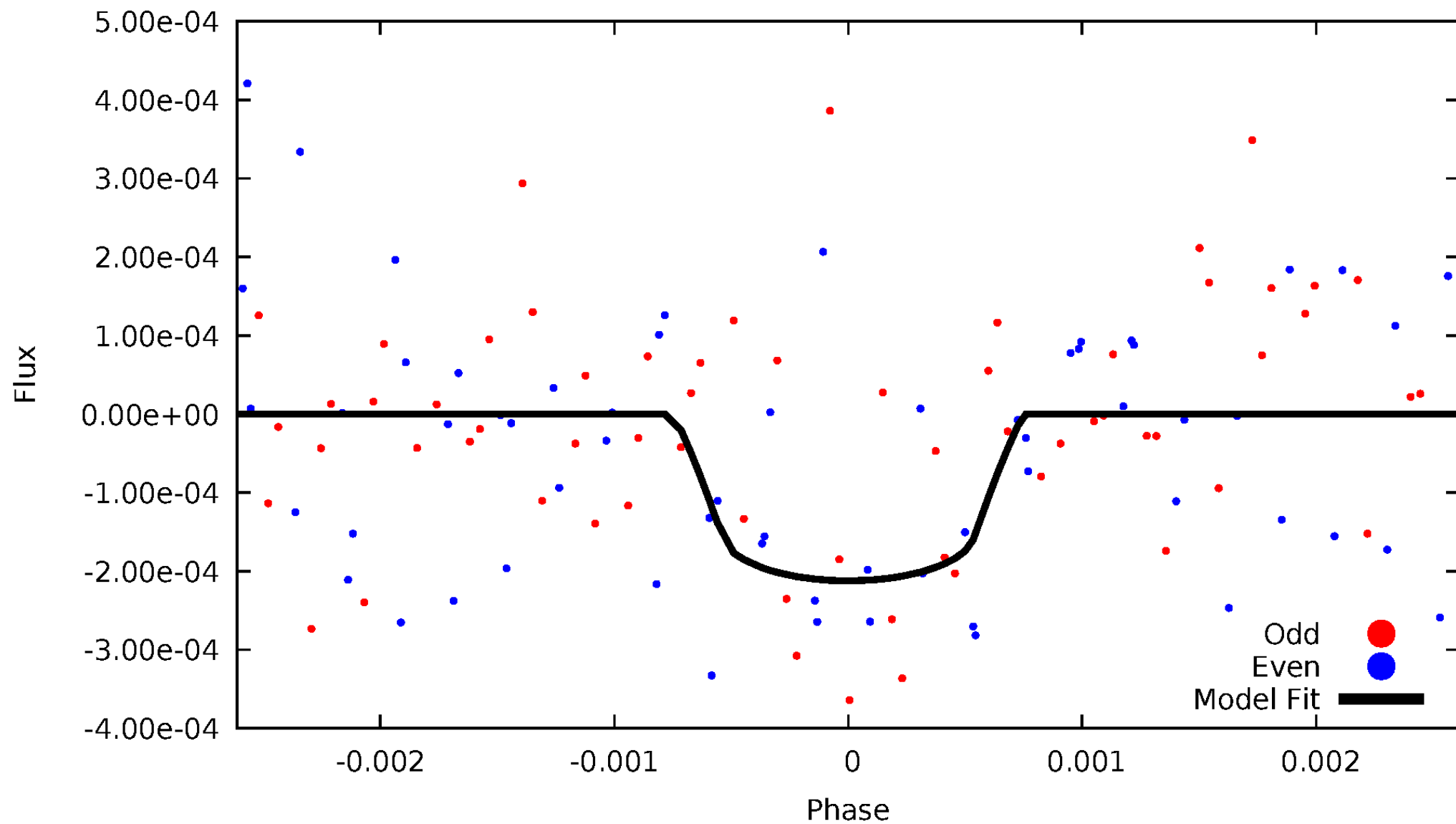


TCE 003942571-05



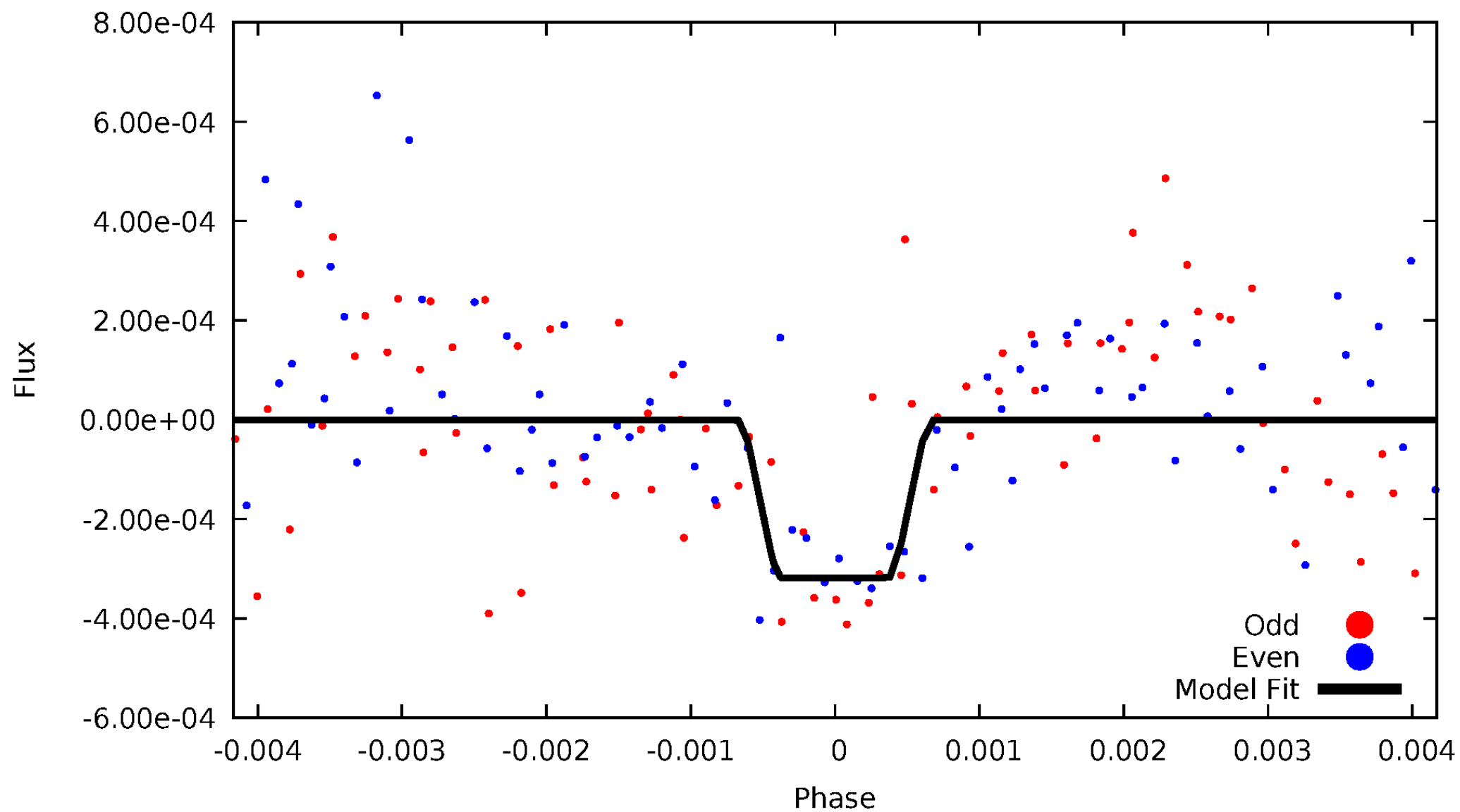
# DV Odd/Even

TCE 003942571-05



# ALT Odd/Even

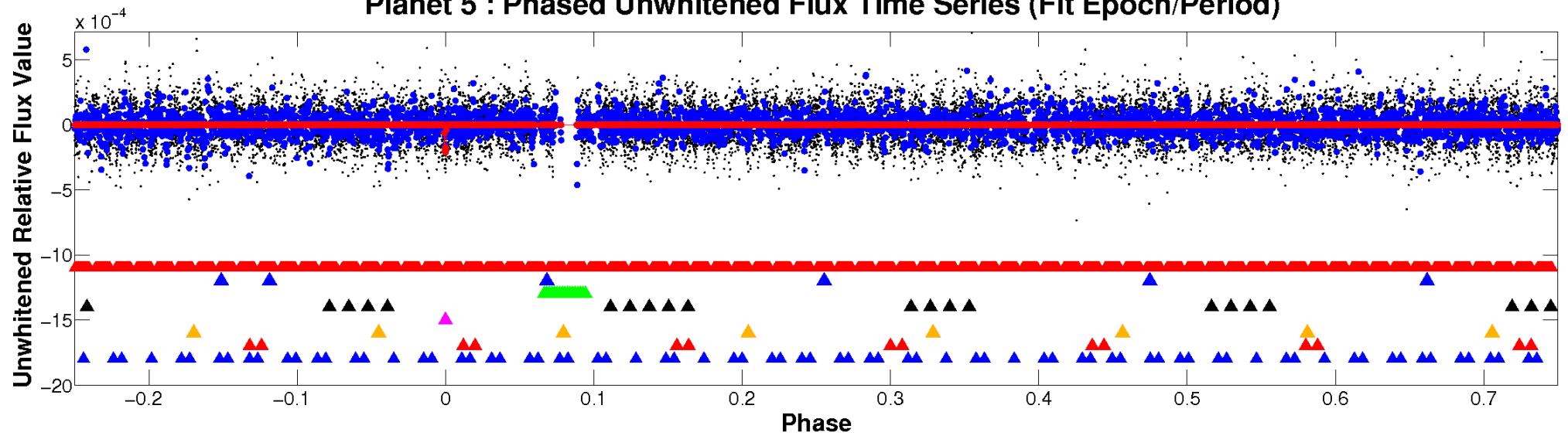
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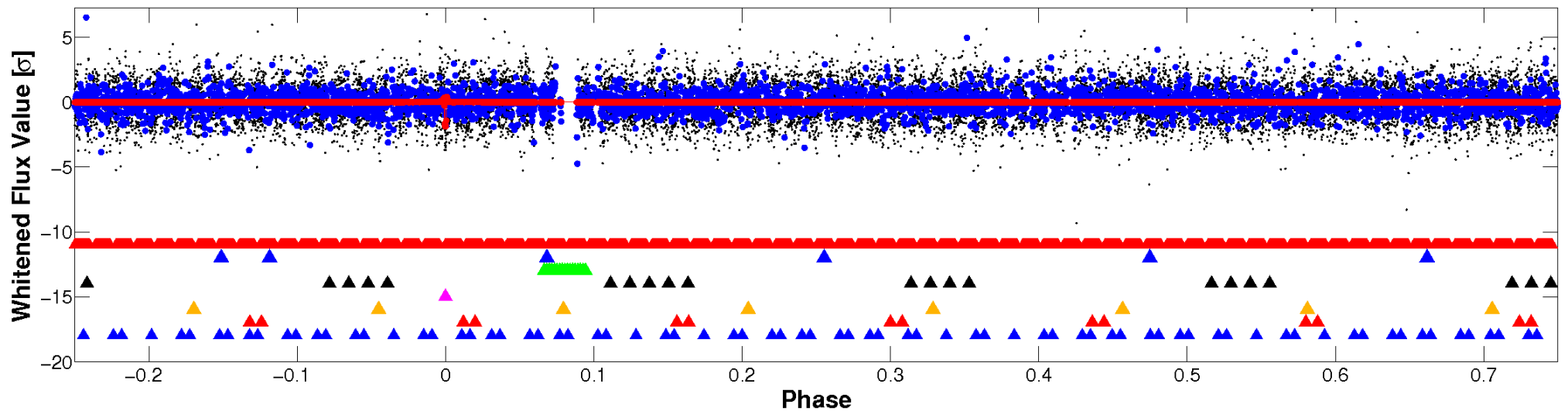


# Non-Whitened Vs. Whitened Light Curve

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



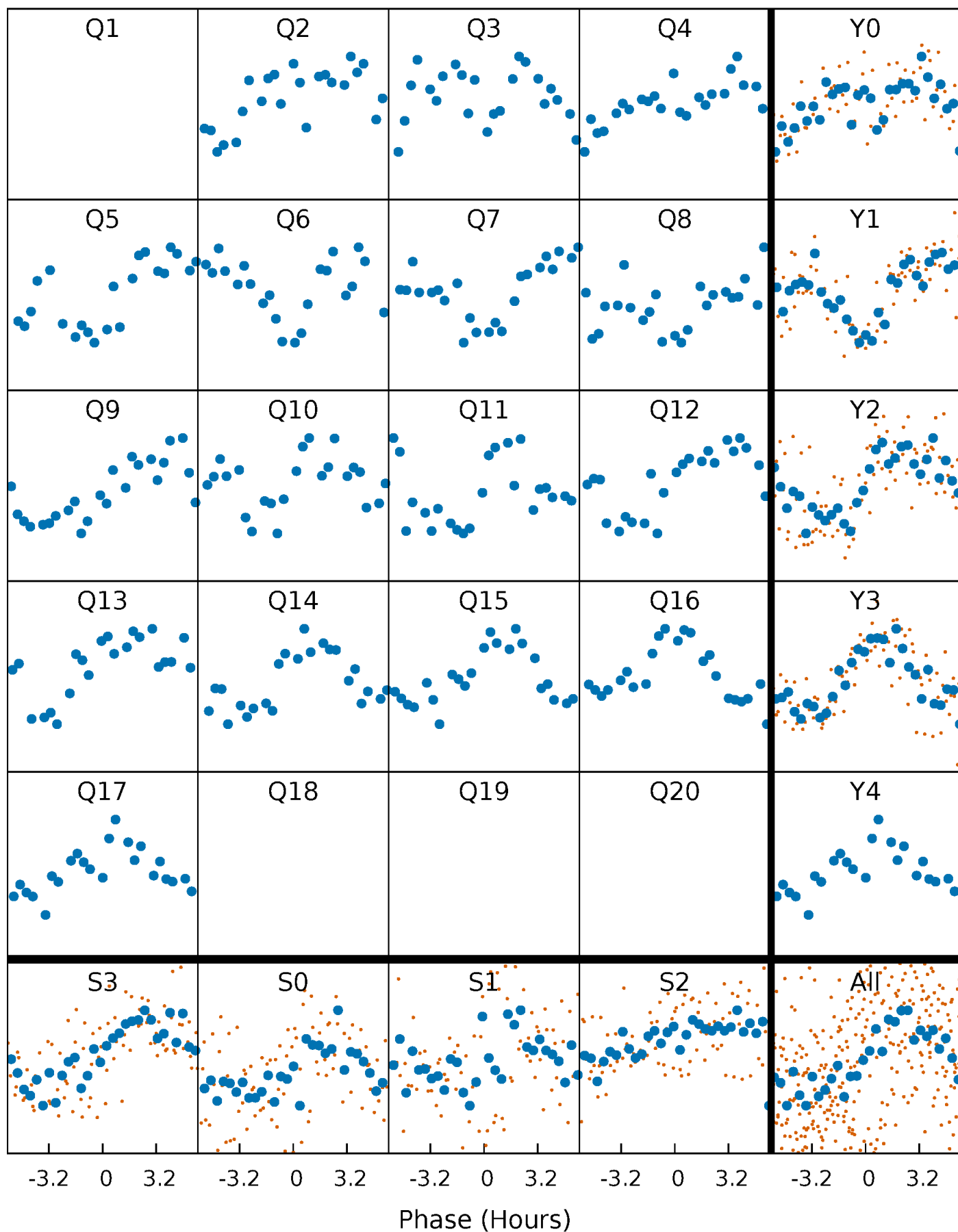
## Planet 5 : Phased Whitened Flux Time Series (Fit Epoch/Period)





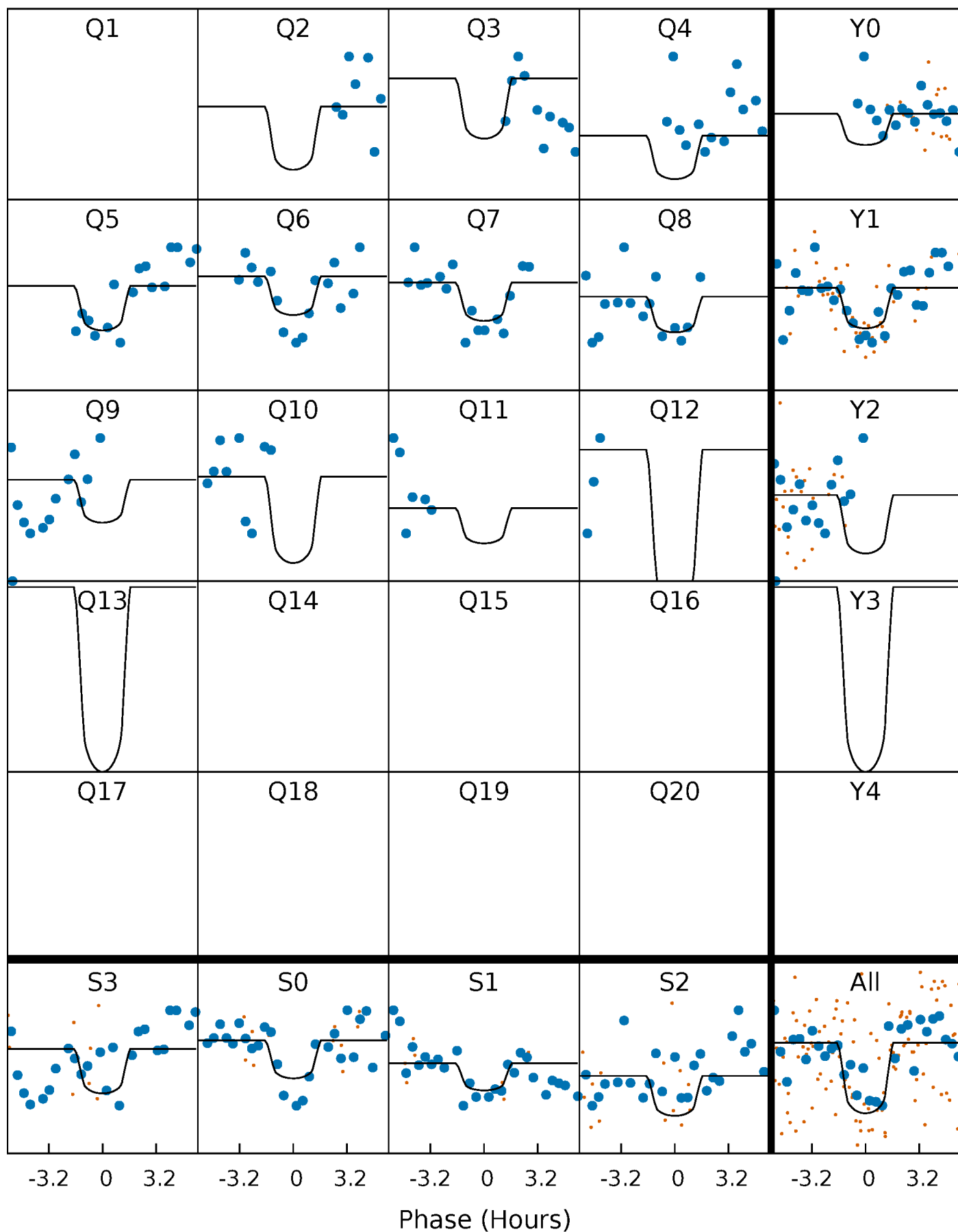
# PDC Quarter-Phased Transit Curves

TCE 003942571-05     $P = 90.591459$  Days     $T_0 = 221.813942$  (BKJD)



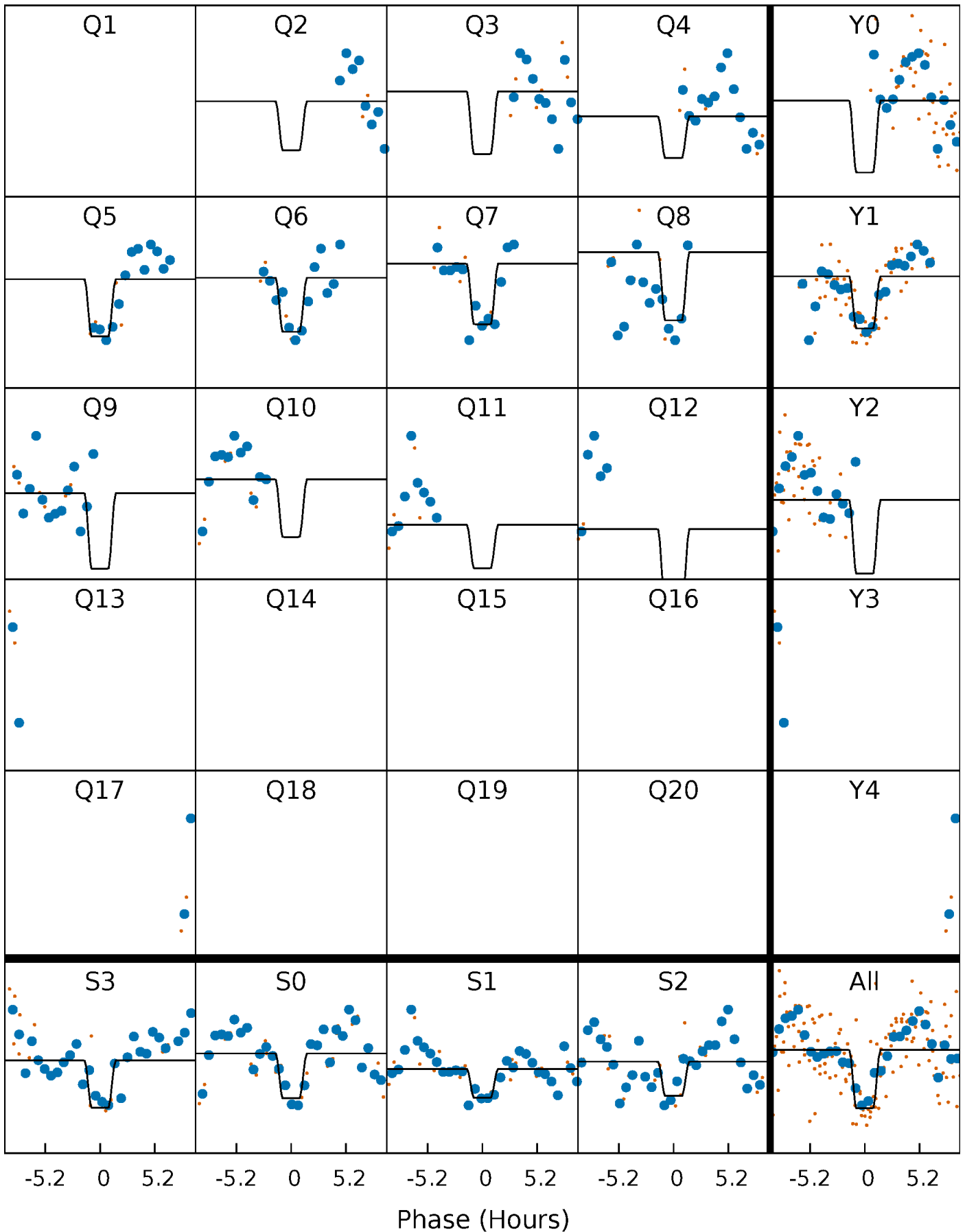
# DV Quarter-Phased Transit Curves

TCE 003942571-05   P= 90.591459 Days    $T_0=221.813942$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

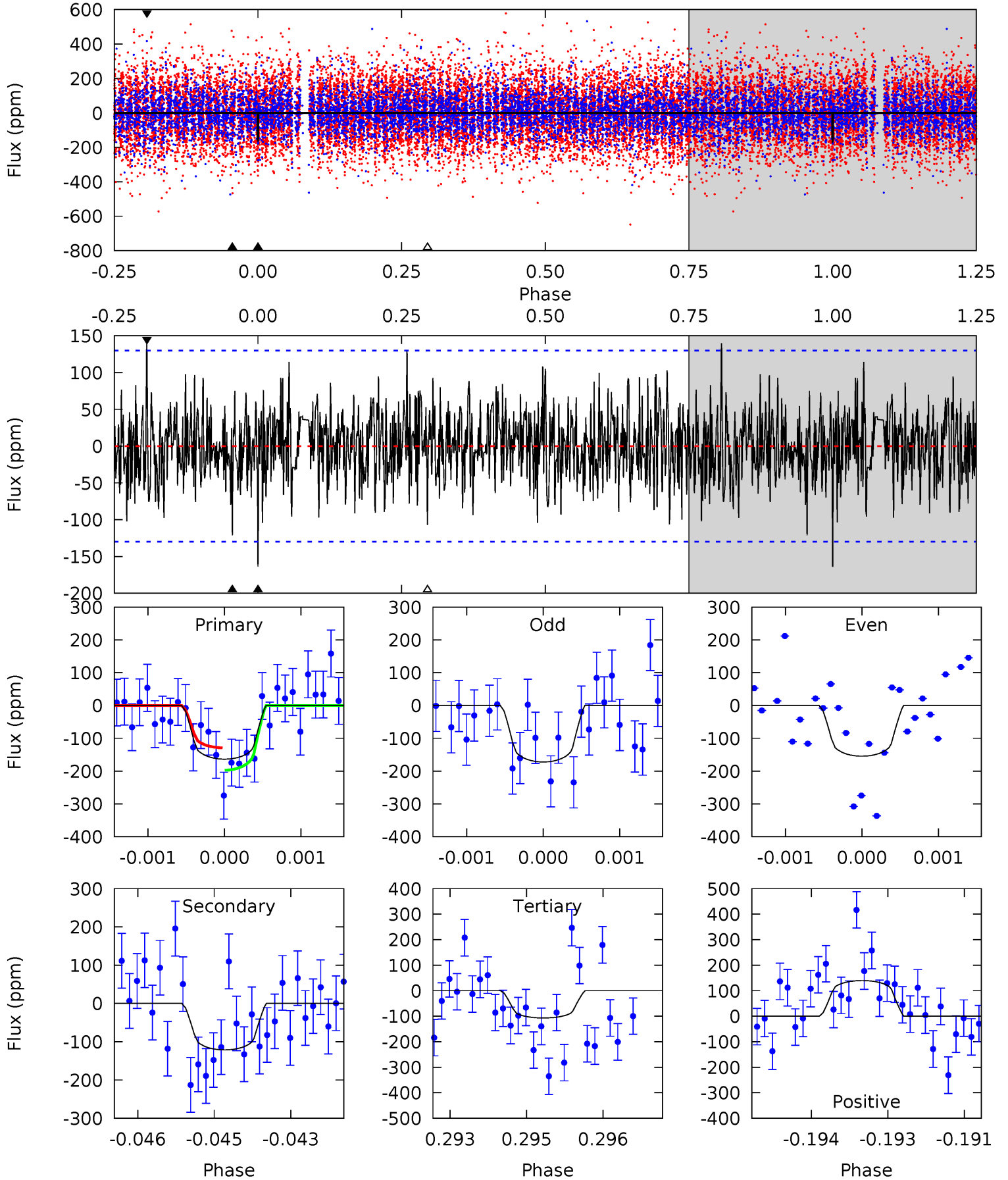
TCE 003942571-05     $P = 90.606592$  Days     $T_0 = 221.732687$  (BKJD)



# DV Model-Shift Uniqueness Test

003942571-05,  $P = 90.591459$  Days,  $E = 131.222483$  Days

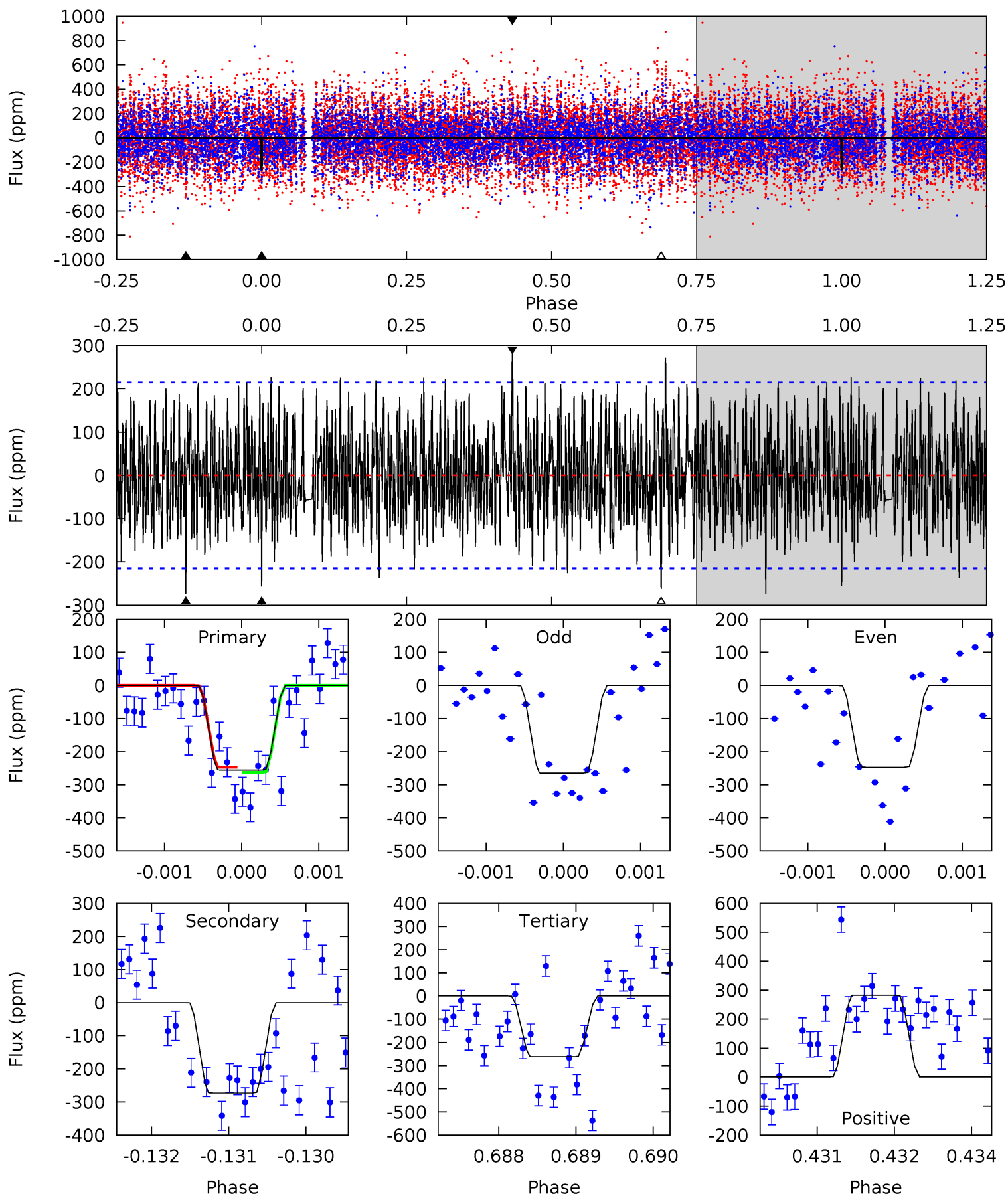
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.80	5.04	4.44	5.80	5.39	3.20	1.56	2.36	1.00	0.60	-0.76	0.37	0.71	0.46	1.41



# Alt Model-Shift Uniqueness Test

003942571-05, P = 90.606592 Days, E = 131.126095 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
6.45	6.89	6.61	7.13	5.42	3.24	2.32	-0.16	-0.67	0.28	-0.23	0.23	0.51	0.51	0.20



### Stellar Parameters For KIC 003942571

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6208^{+169}_{-169}$	$3.278^{+0.459}_{-0.051}$	$-0.080^{+0.350}_{-0.300}$	$5.454^{+0.282}_{-2.540}$	$2.058^{+0.095}_{-0.539}$	$0.018^{+0.084}_{-0.002}$
	+3%/-3%	+14%/-2%	+438%/-375%	+5%/-47%	+5%/-26%	+472%/-9%
Source	PHO1	FLK73	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 003942571-05 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-121 \pm 24$	$14.41^{+14.63}_{-9.97}$	$1234^{+56}_{-143}$	$4144^{+3003}_{-821}$	$77^{+802}_{-59}$
Alt.	$-273 \pm 40$	$15.95^{+15.05}_{-11.27}$	$1238^{+54}_{-148}$	$4736^{+3956}_{-1017}$	$149^{+1596}_{-111}$

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

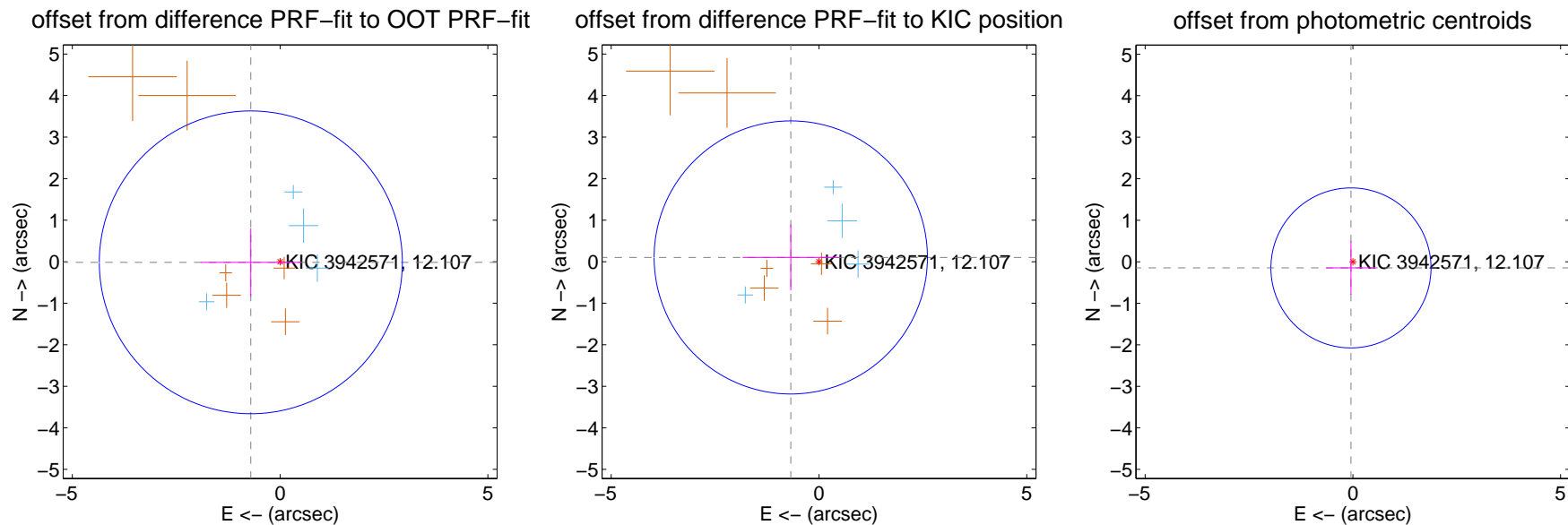
## DV Centroid Data

Supplemental centroid analysis for 003942571-05. Kepler magnitude: 12.11. Transit SNR 9.31

There are 4 quarters with good PRF difference image offsets

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

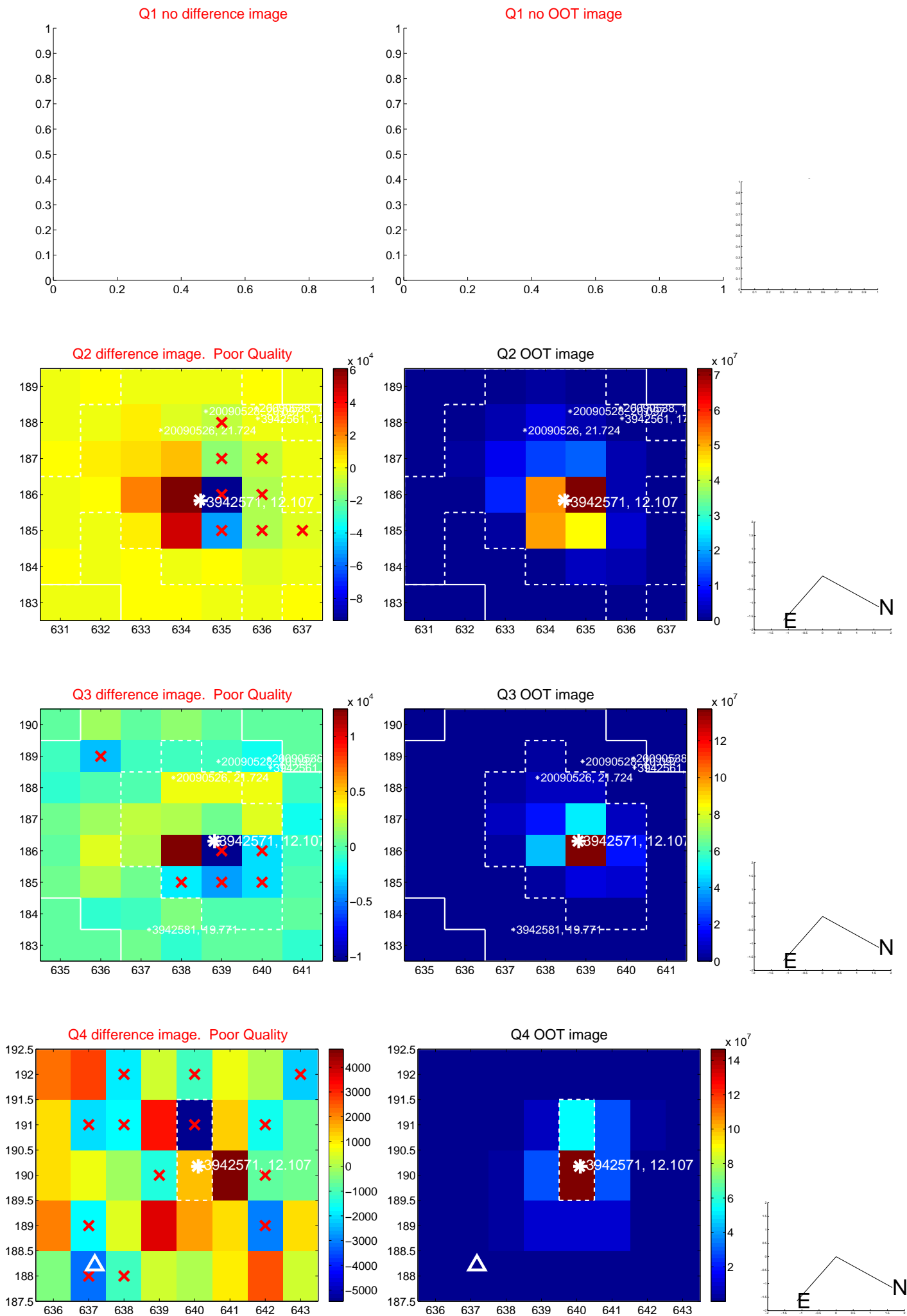
	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.705 \pm 1.215$	0.58	$0.705 \pm 1.205$	$-0.016 \pm 0.818$
PRF-fit source offset from KIC position	$0.686 \pm 1.096$	0.63	$0.679 \pm 1.159$	$0.102 \pm 0.789$
photometric centroid source offset	$0.15 \pm 0.64$	0.24	$0.05 \pm 0.59$	$-0.15 \pm 0.65$



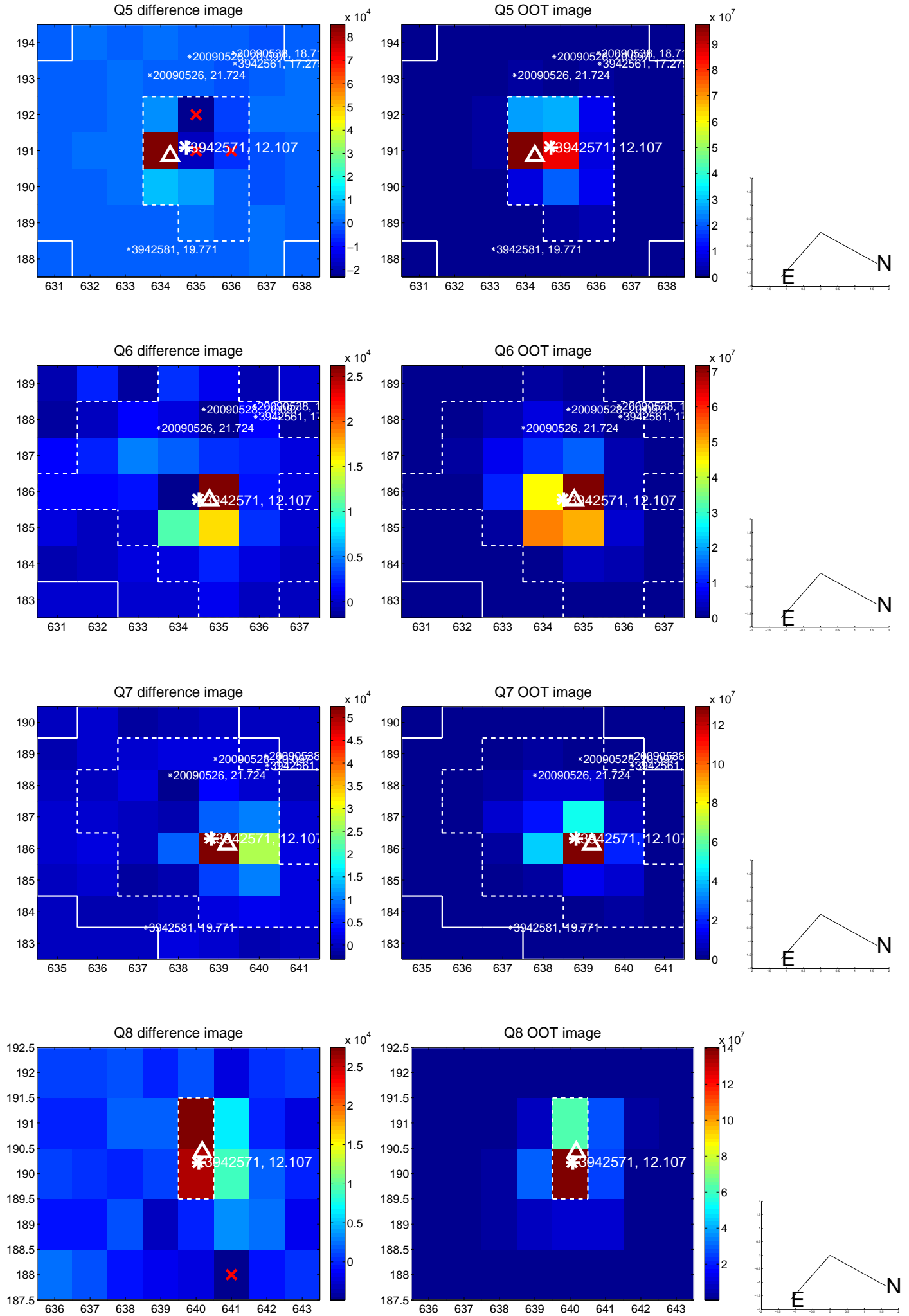
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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



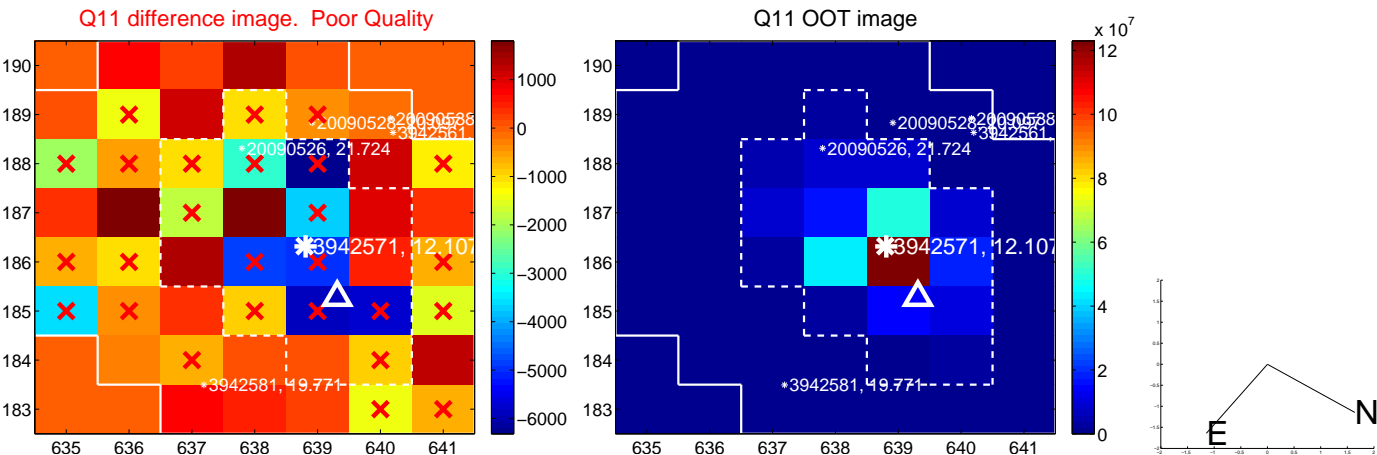
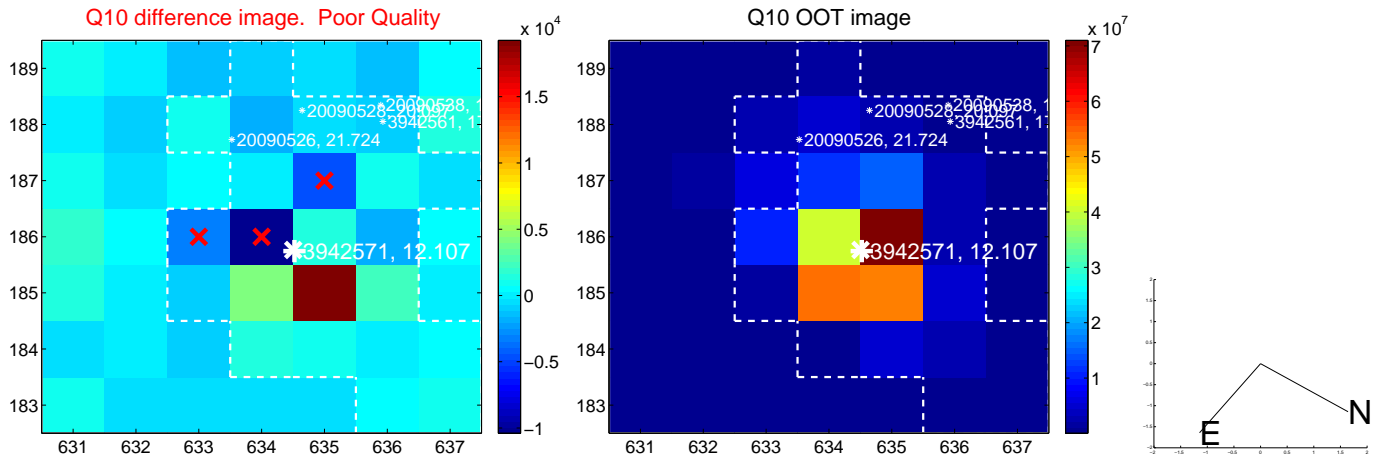
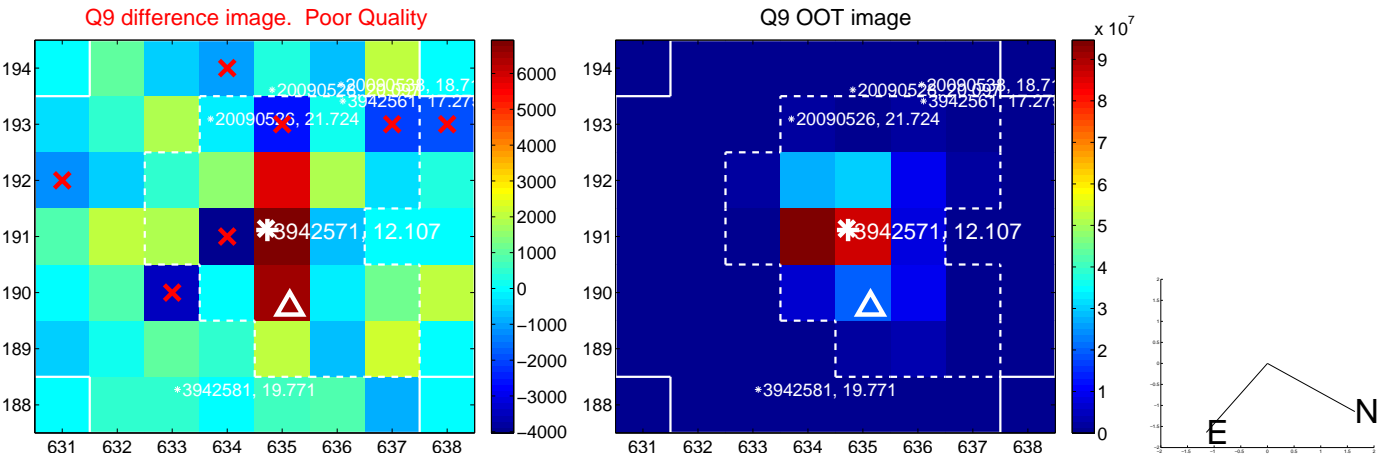
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



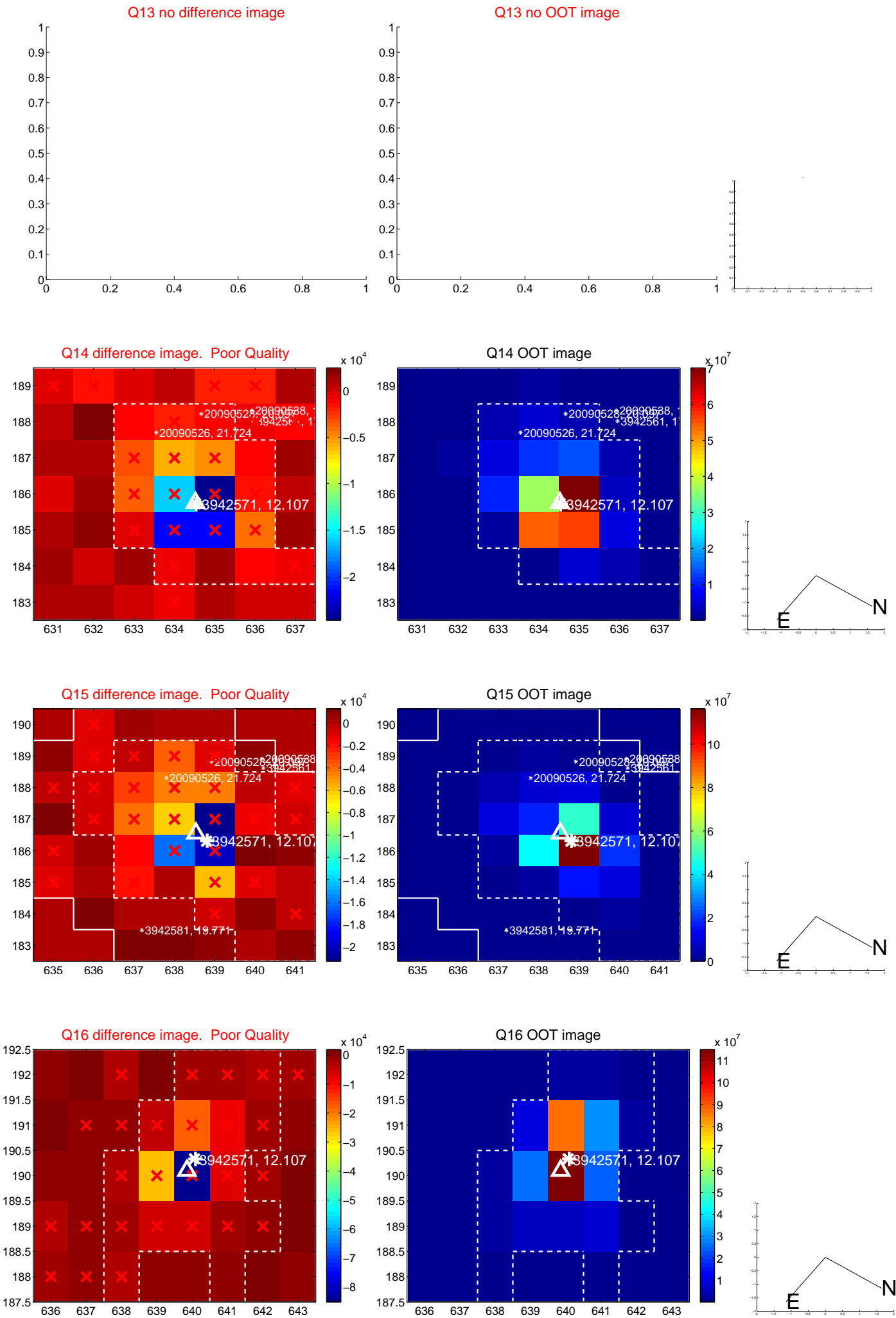
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



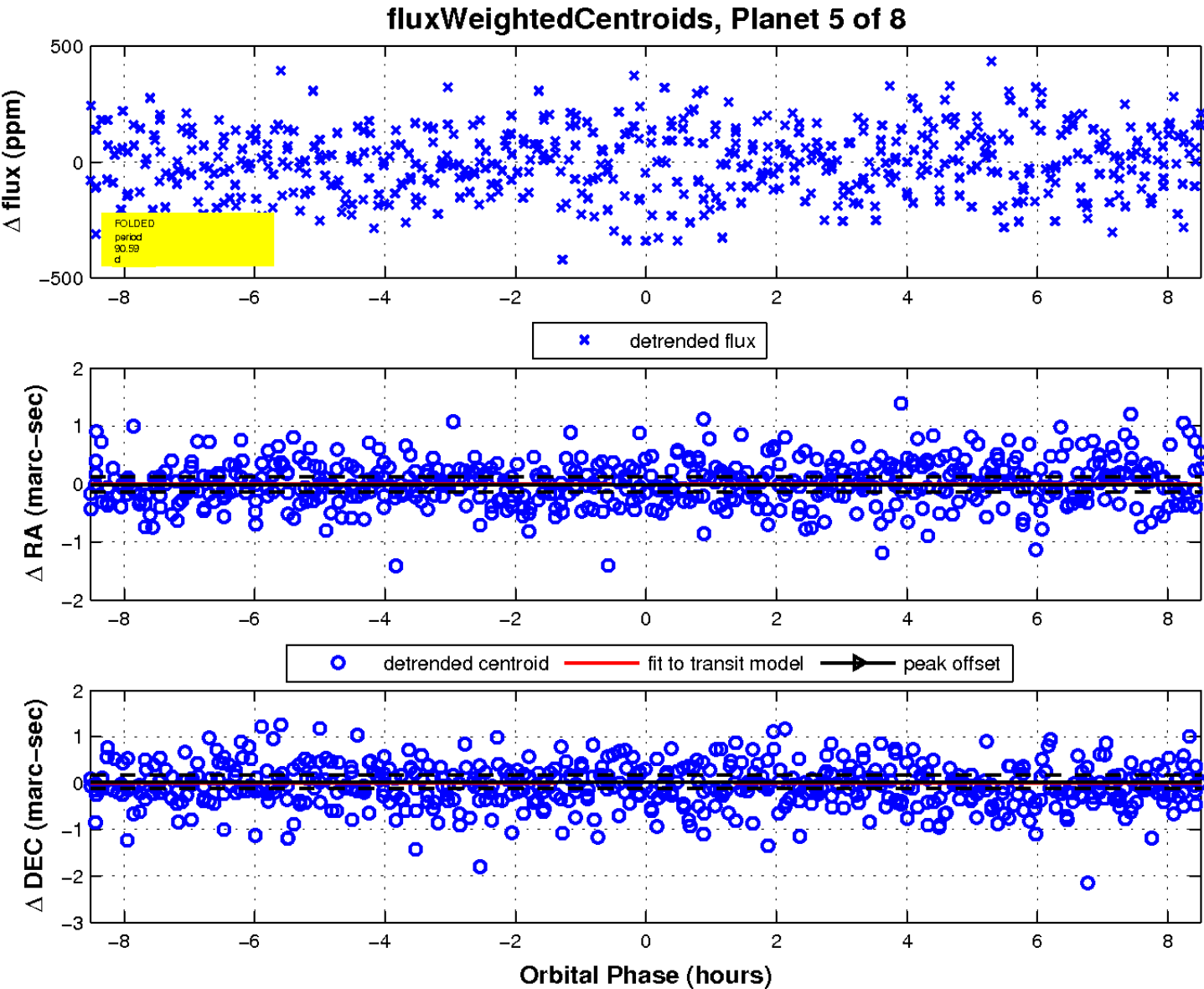
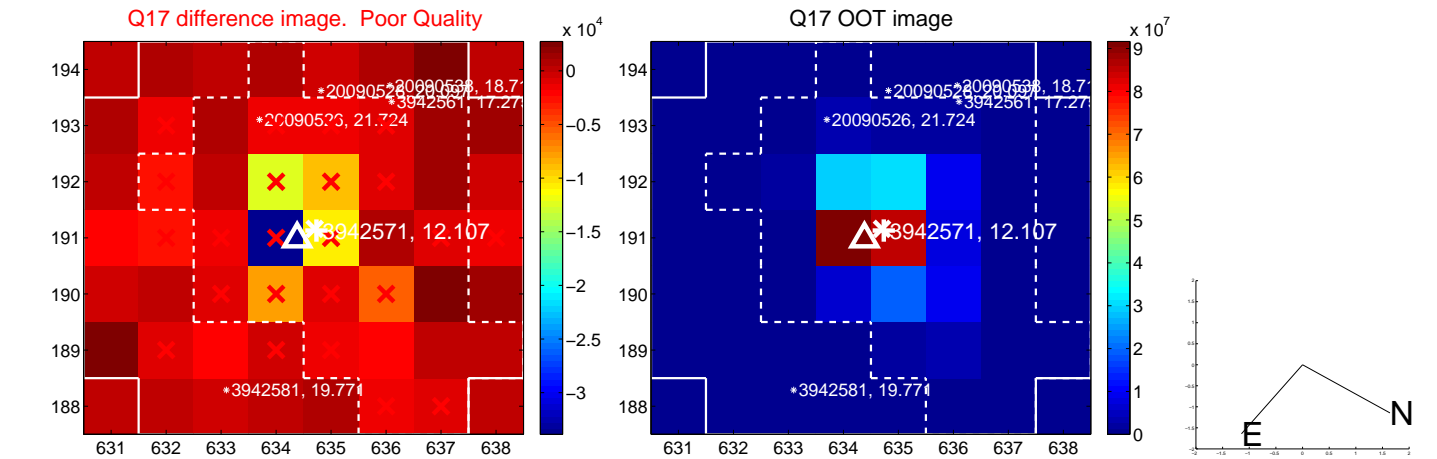
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

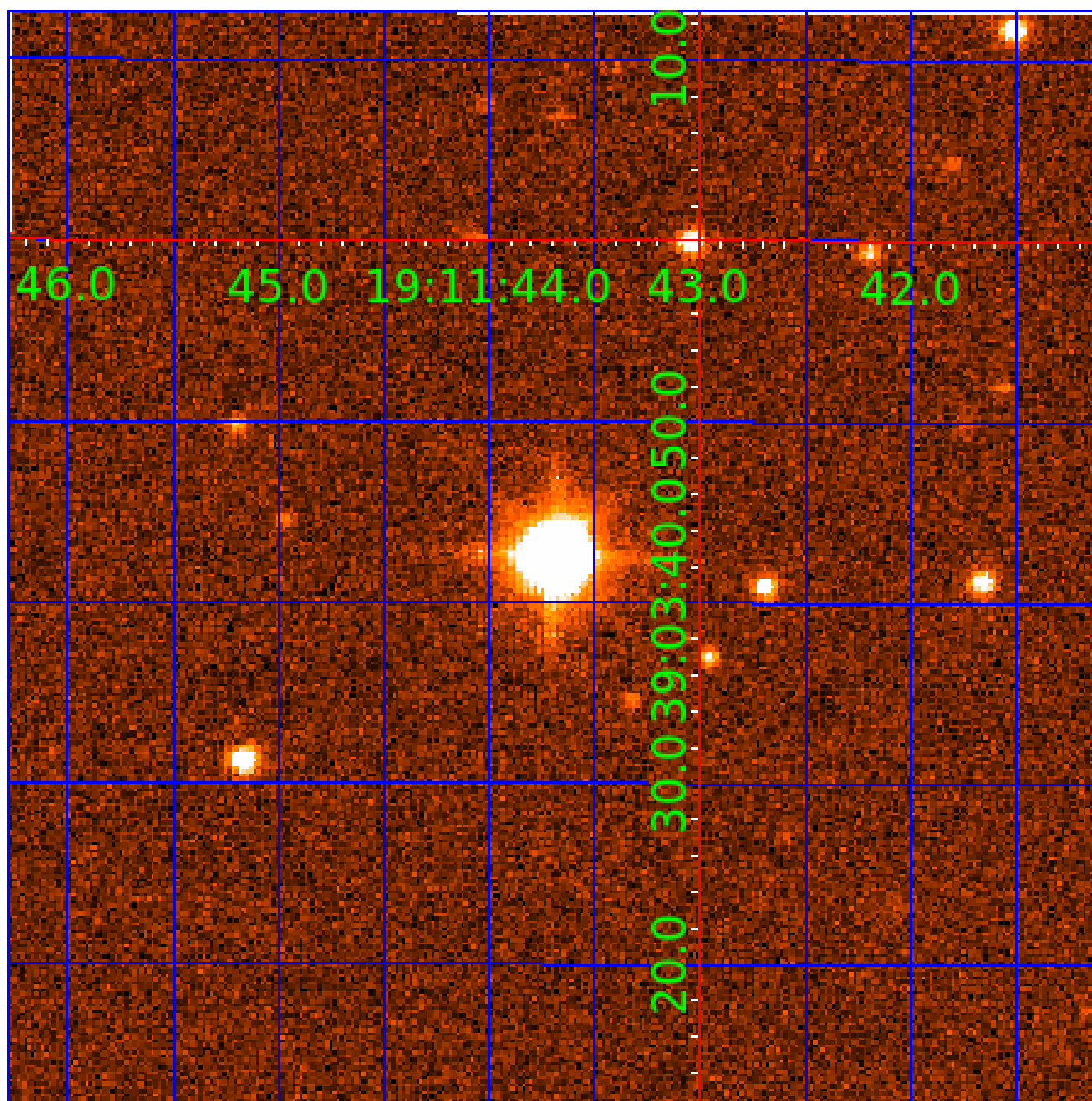


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 003942571

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
003942571-01	OBS	No	1.257394	132.164961	8.1	7.242	9.3	3.8	5.45	6208	1.70	47048.90
003942571-02	OBS	No	218.009814	298.710758	233.0	6.496	14.9	7.0	5.45	6208	9.42	48.66
003942571-03	OBS	No	90.433559	139.776241	173.8	15.269	12.8	8.8	5.45	6208	8.08	157.30
003942571-04	OBS	No	72.236527	146.037624	146.6	5.312	9.6	6.6	5.45	6208	7.42	212.24
003942571-05	OBS	No	90.591459	221.813942	212.4	2.840	8.9	9.3	5.45	6208	8.31	156.94
003942571-06	OBS	No	192.470308	172.581220	222.7	3.505	8.8	7.2	5.45	6208	9.56	57.46
003942571-07	OBS	No	103.635467	170.730217	279.4	4.708	8.6	9.3	5.45	6208	11.10	131.17
003942571-08	OBS	No	18.949271	132.724536	169.2	2.500	8.8	-1.0	5.45	6208	7.11	1263.92

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003942571-01	OBS	FP	0.00	1	0	1	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—HALO_GHOST
003942571-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
003942571-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
003942571-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
003942571-05	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
003942571-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
003942571-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
003942571-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_ALT—MOD_NONUNIQ_ALT—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.

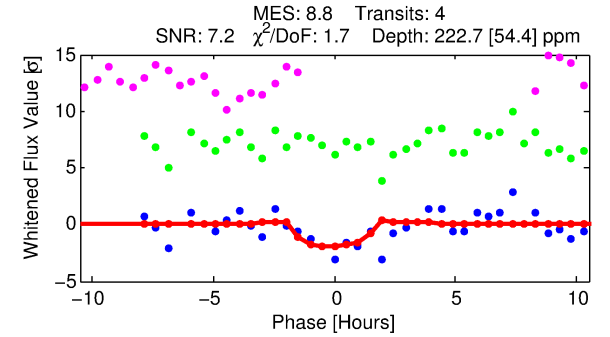
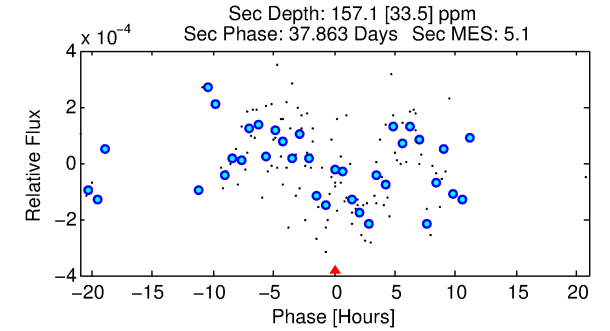
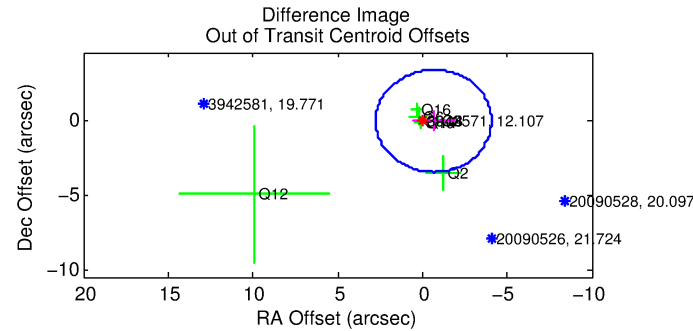
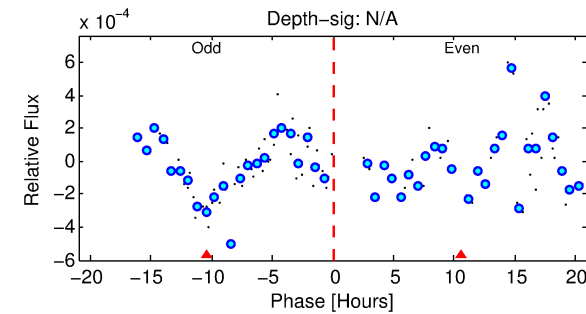
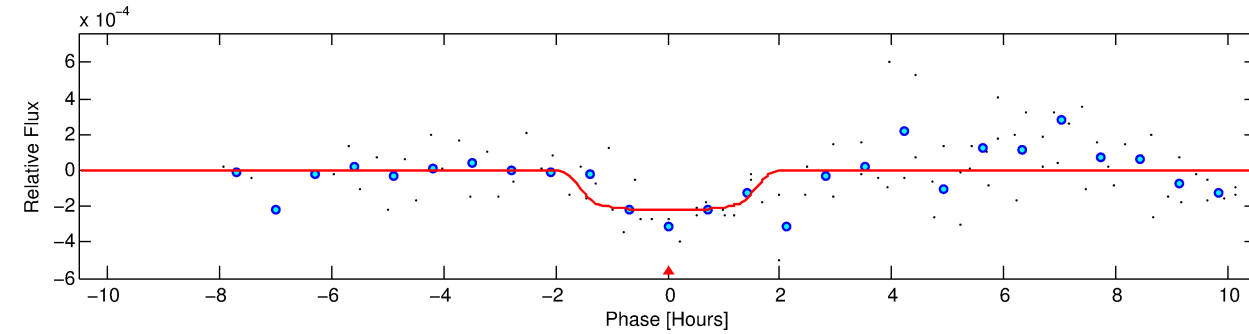
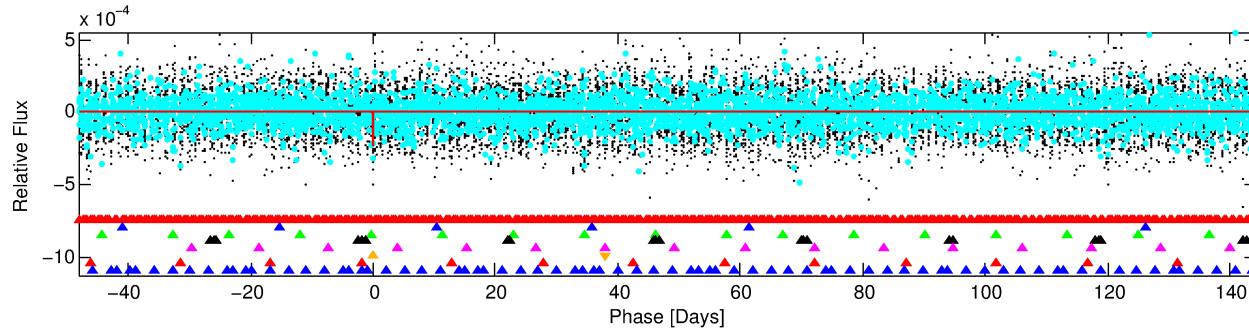
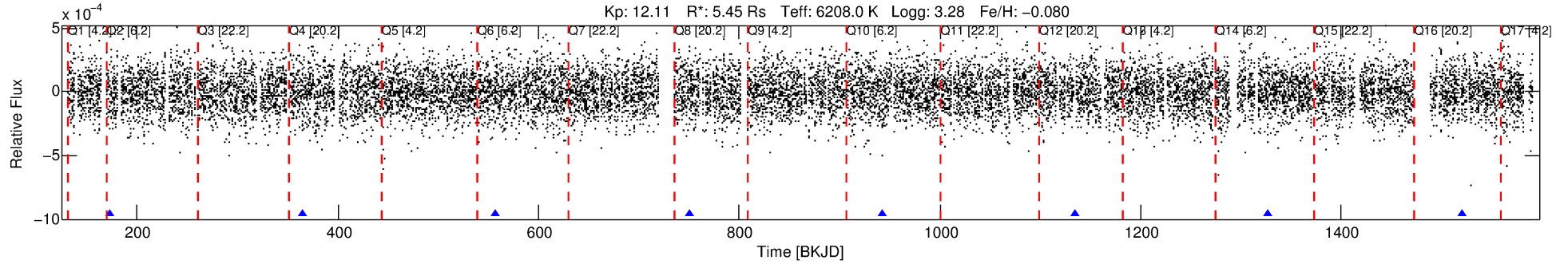
Ephemeris Match Information For 003942571-06

No Significant Match Found



# DV One-Page Summary

KIC: 3942571 Candidate: 6 of 8 Period: 192.470 d



## DV Fit Results:

Period = 192.47031 [0.00690] d  
Epoch = 172.5812 [0.0367] BKJD  
Rp/R\* = 0.0161 [0.0313]  
a/R\* = 196.95 [2137.68]  
b = 0.90 [2.28]  
Seff = 57.46 [44.68]  
Teq = 702 [136] K  
Rp = 9.56 [19.13] Re  
a = 0.8300 [0.3898] AU  
Ag = 651.97 [2591.32] [0.25] $\sigma$   
Teffp = 5485 [5349] K [0.89] $\sigma$

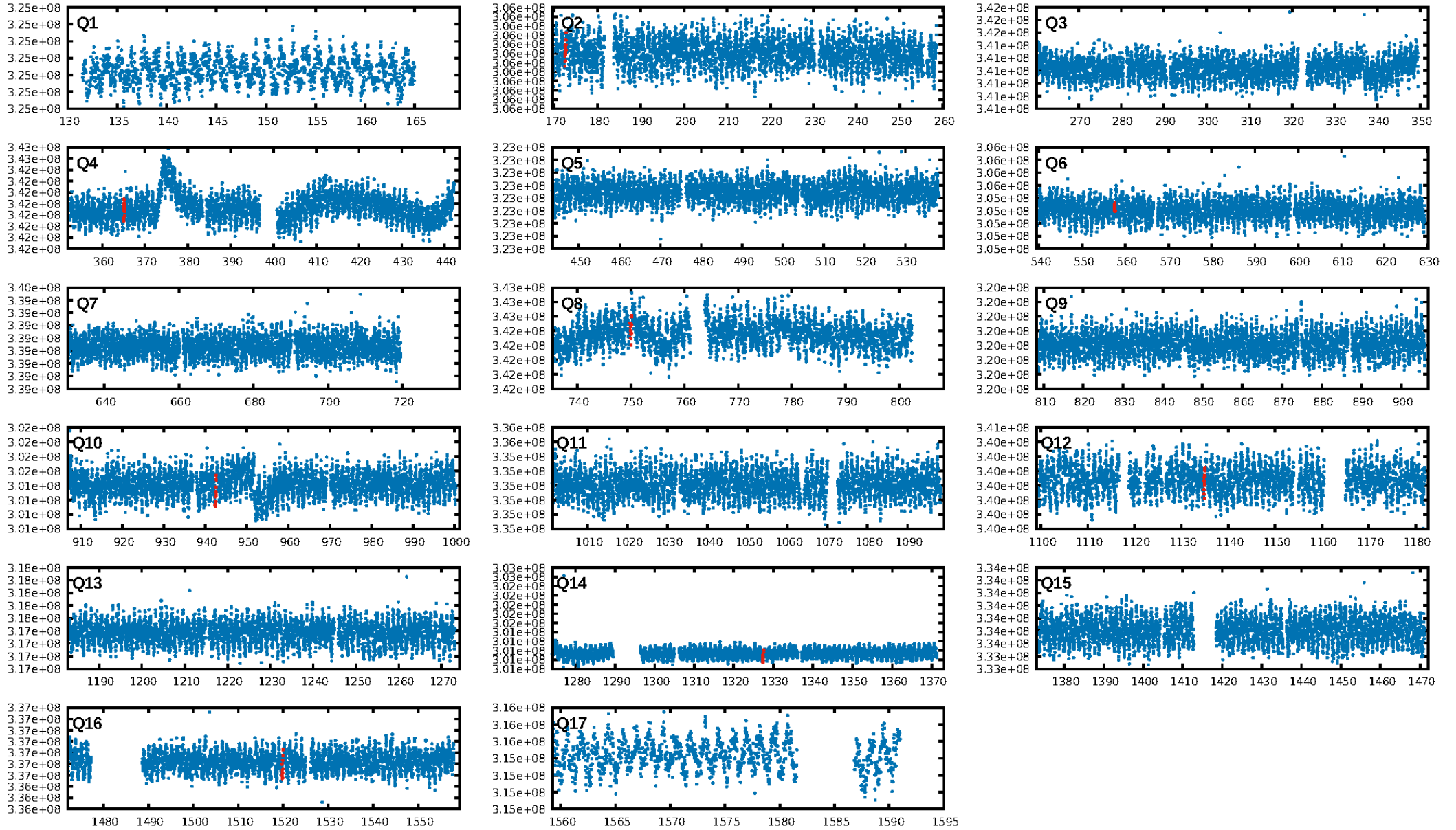
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [363.22 $\sigma$ ]  
LongPeriod-sig: 100.0% [83.04 $\sigma$ ]  
ModelChiSquare2-sig: 19.4%  
ModelChiSquareGof-sig: 99.8%  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [4/4]  
GhostDiagnostic-chr: 9.719  
Centroid-sig: 79.0%  
Centroid-so: 0.239 arcsec [0.34 $\sigma$ ]  
OotOffset-rm: 0.666 arcsec [0.59 $\sigma$ ]  
OotOffset-st: 4/0/4/0 [8]  
KicOffset-rm: 0.702 arcsec [0.62 $\sigma$ ]  
KicOffset-st: 4/0/4/0 [8]  
DiffImageQuality-fgm: 0.62 [5/8]  
DiffImageOverlap-fno: 0.25 [2/8]

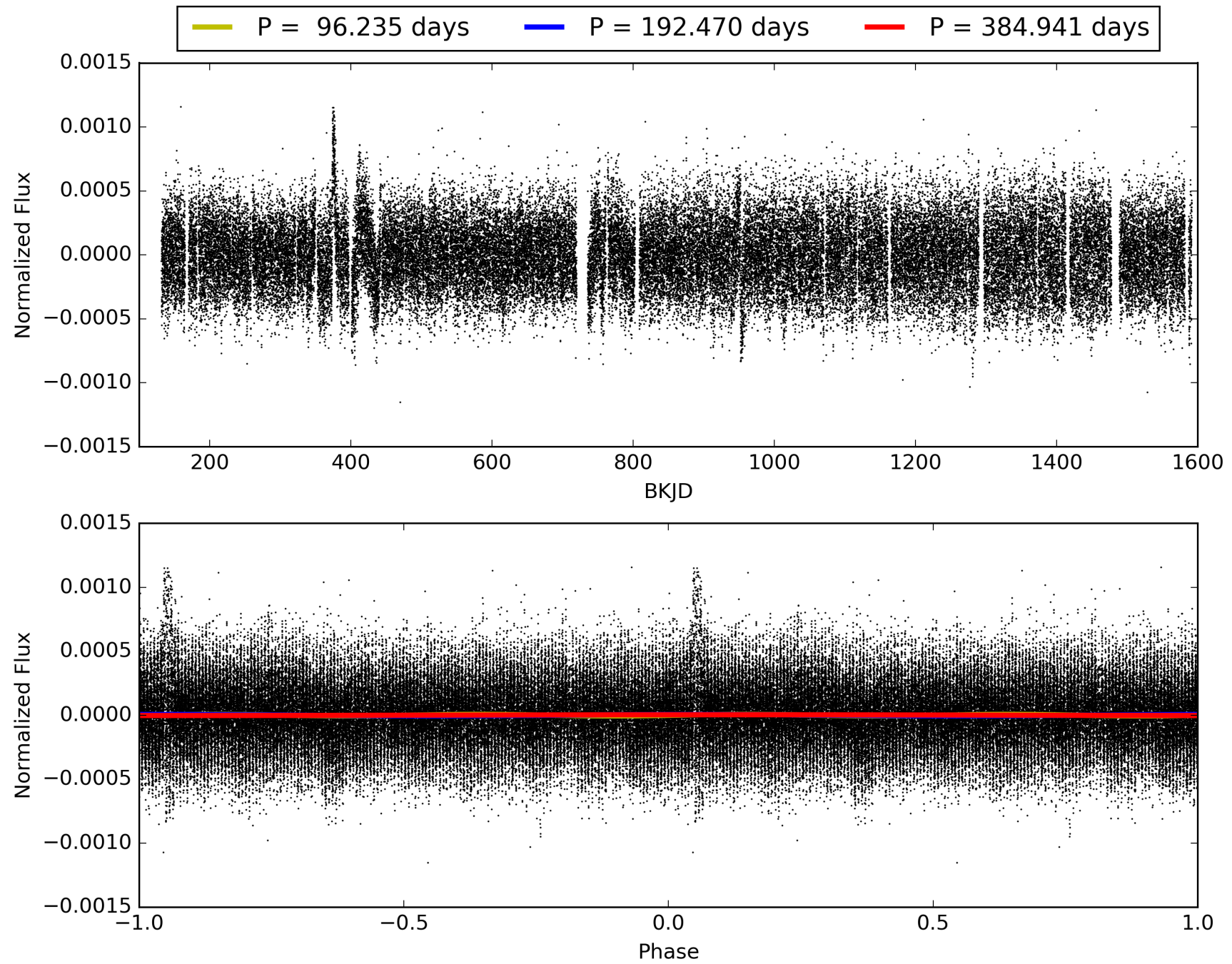
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 01:12:03 Z

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

# TCE 003942571-06, PDC Light Curves

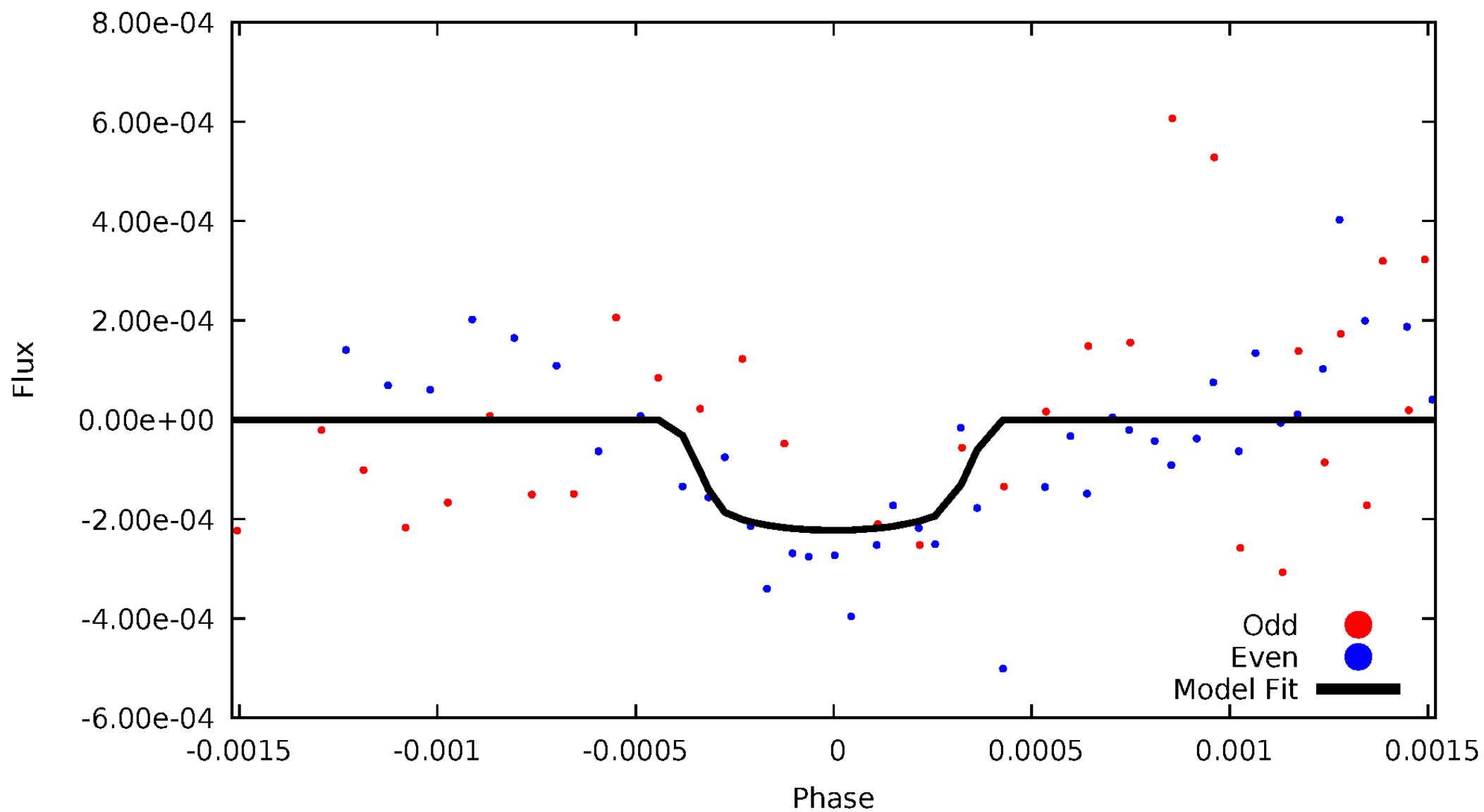


TCE 003942571-06



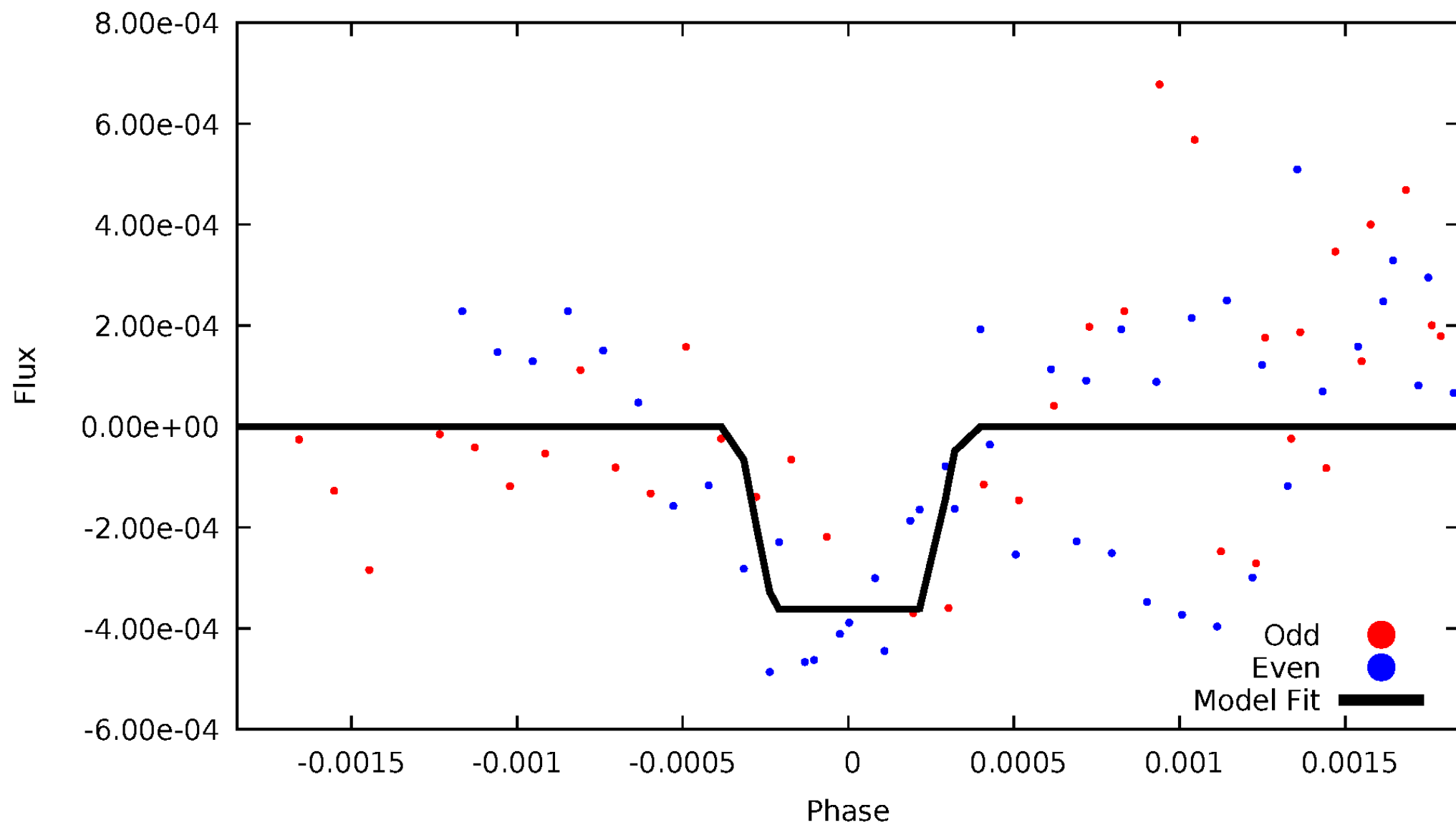
# DV Odd/Even

TCE 003942571-06



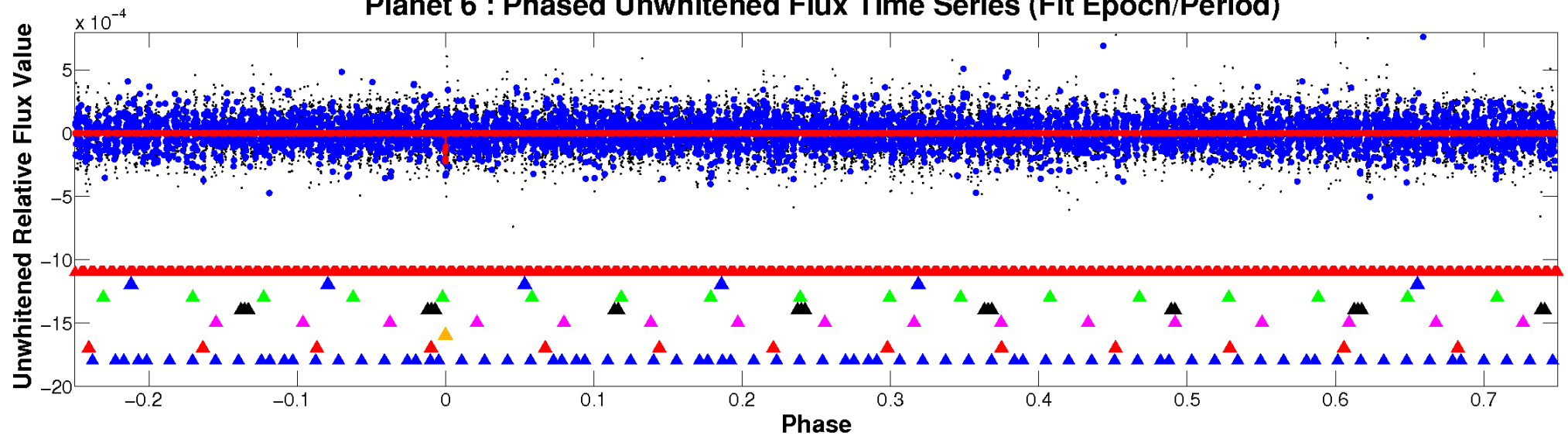
# ALT Odd/Even

TCE 003942571-06

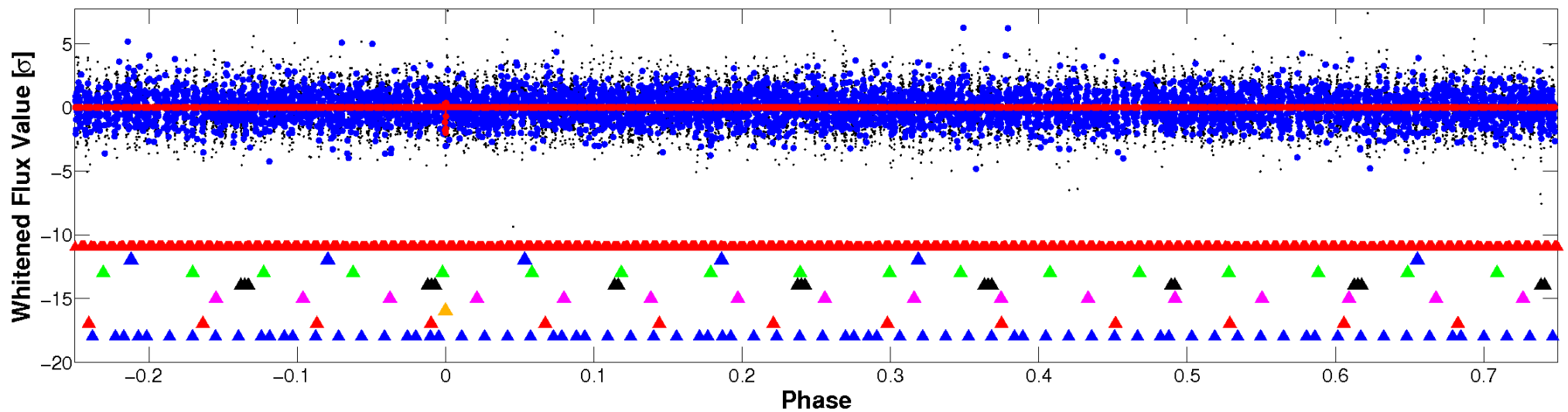


# Non-Whitened Vs. Whitened Light Curve

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

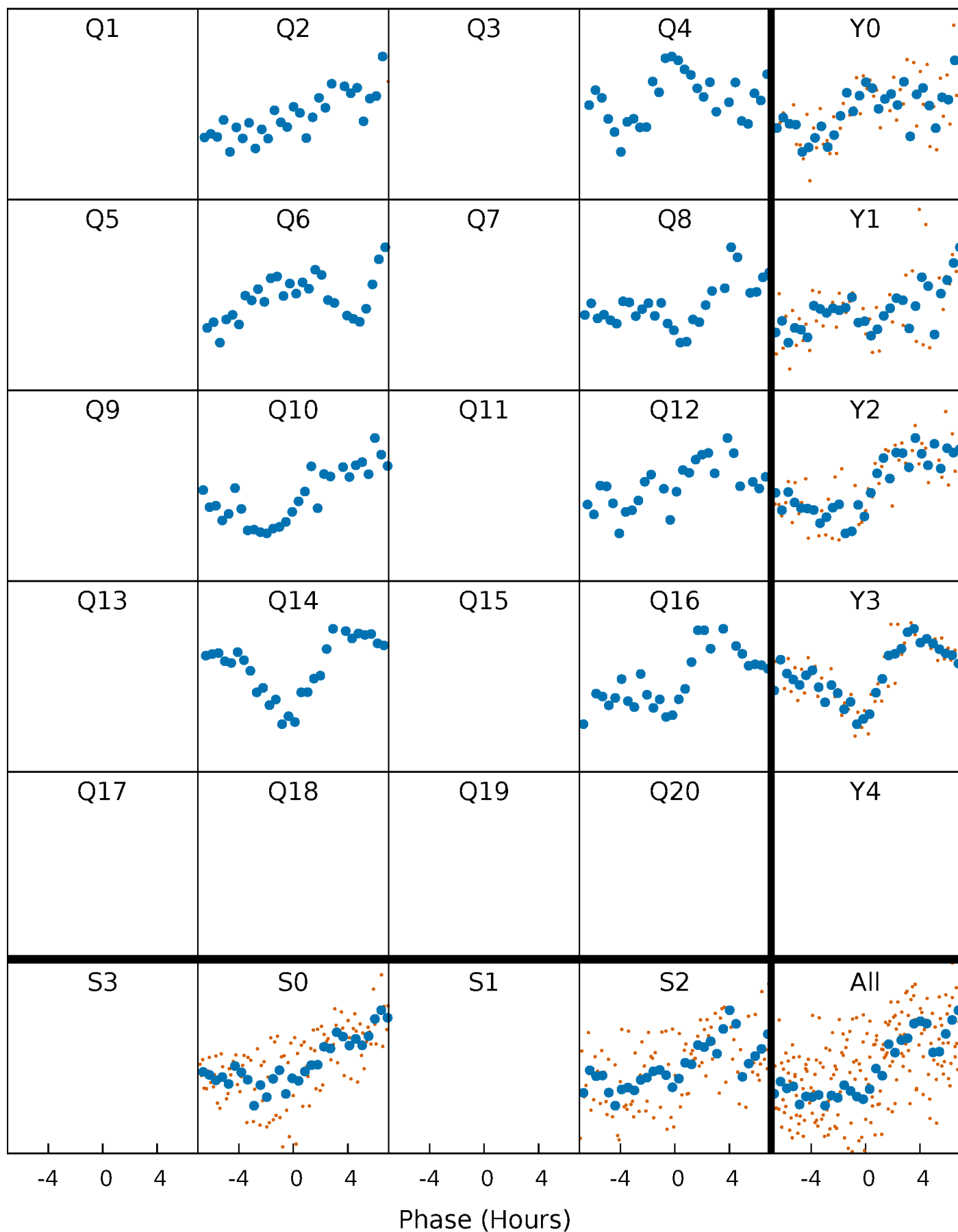


## Planet 6 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

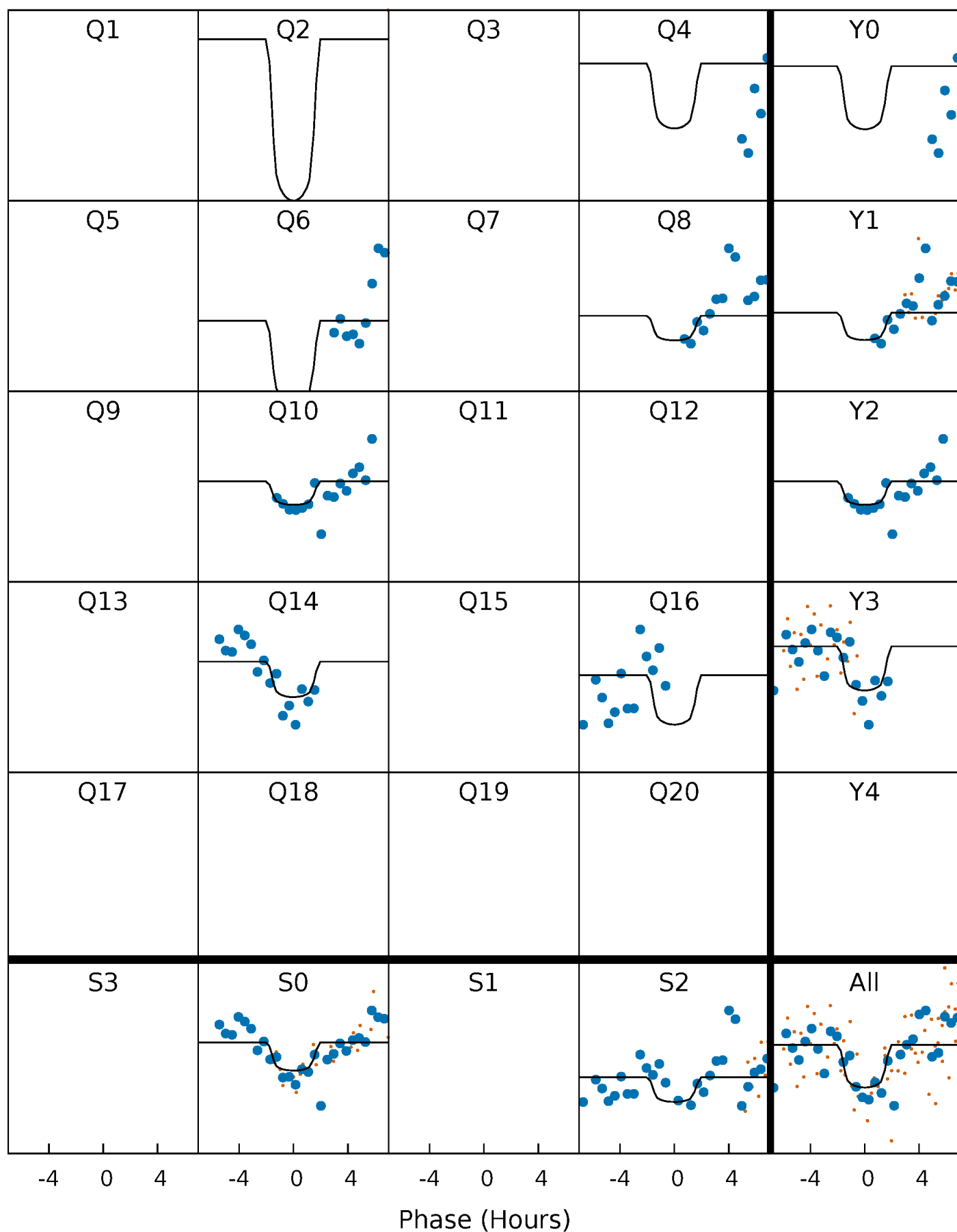
TCE 003942571-06 P=192.470308 Days  $T_0=172.581220$  (BKJD)





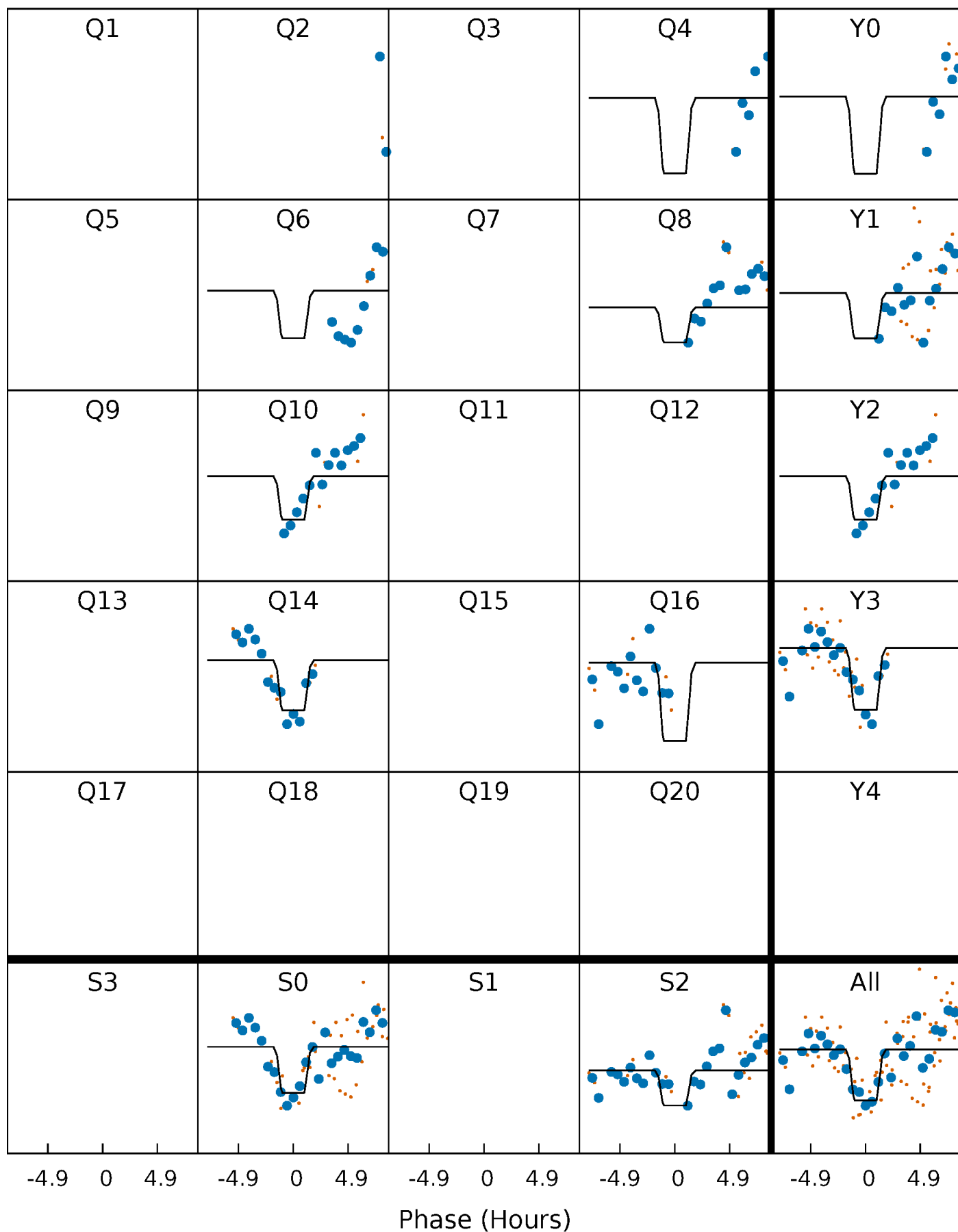
# DV Quarter-Phased Transit Curves

TCE 003942571-06 P=192.470308 Days  $T_0=172.581220$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

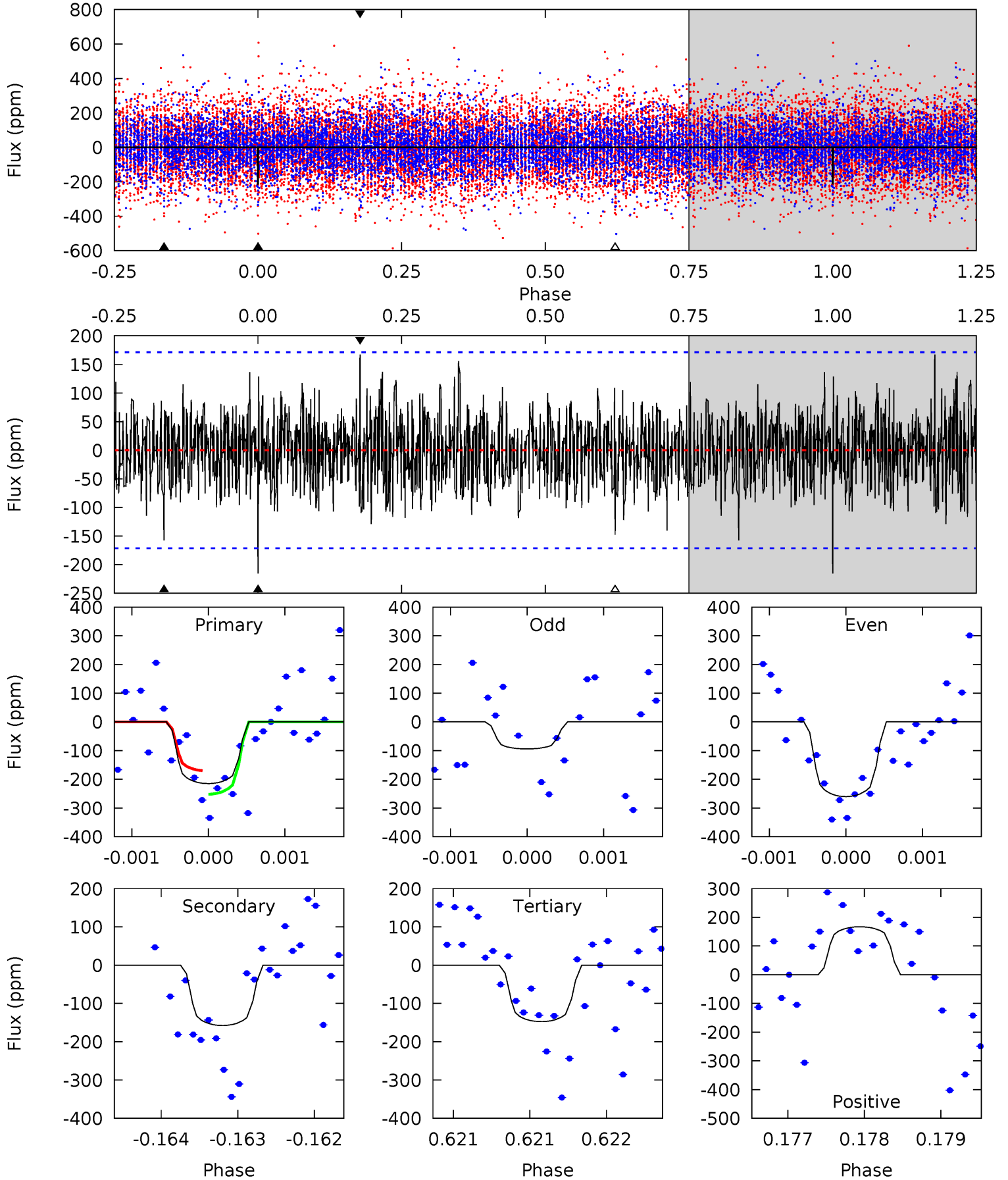
TCE 003942571-06 P=192.471569 Days  $T_0=172.561083$  (BKJD)



# DV Model-Shift Uniqueness Test

003942571-06, P = 192.470308 Days, E = 172.581220 Days

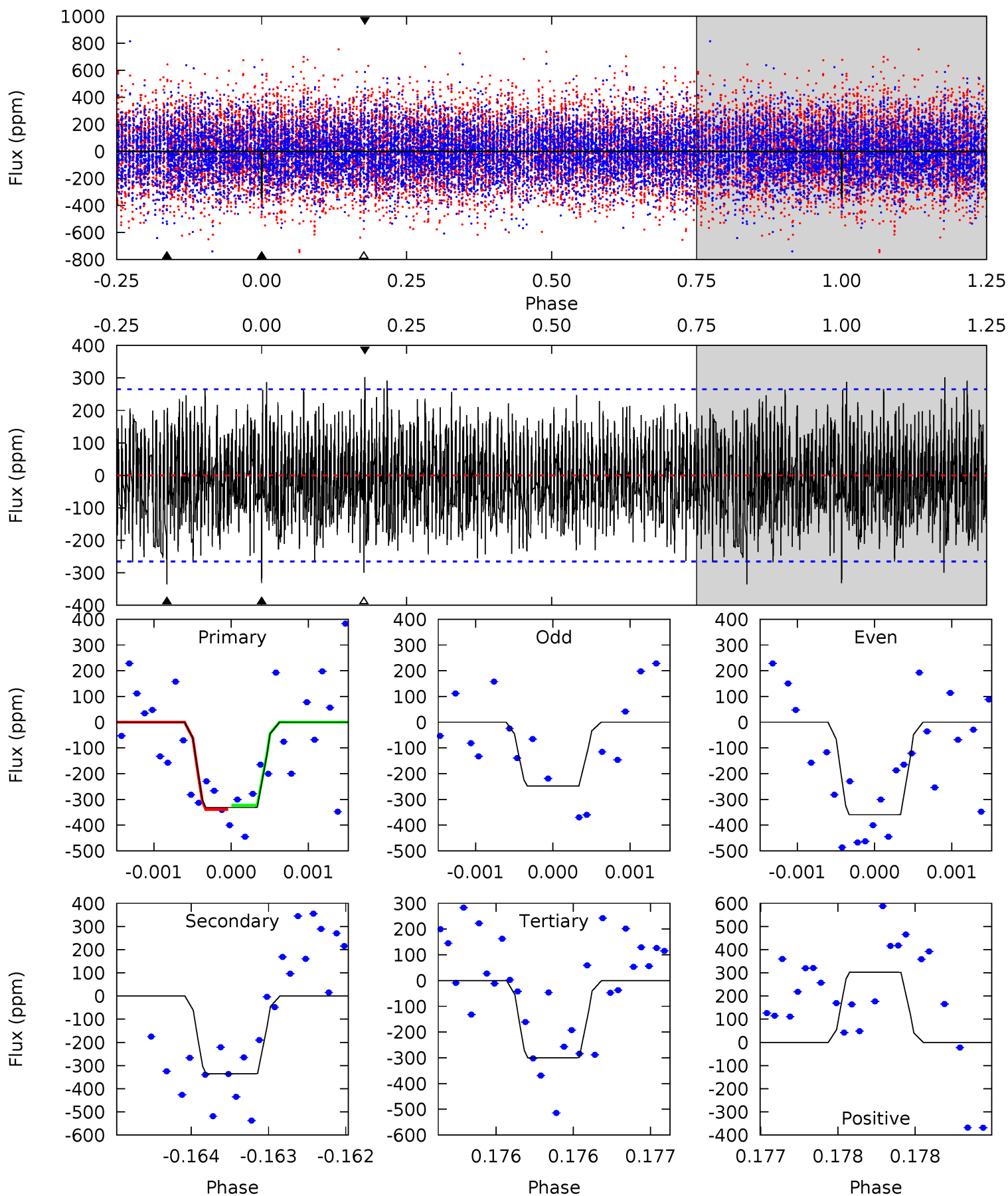
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.90	5.05	4.73	5.36	5.49	3.35	1.35	2.16	1.53	0.32	-0.31	2.47	0.76	0.44	1.31



# Alt Model-Shift Uniqueness Test

003942571-06, P = 192.471569 Days, E = 172.561083 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
6.90	6.99	6.24	6.30	5.53	3.42	2.10	0.66	0.61	0.75	0.69	1.08	0.91	0.47	0.17



### Stellar Parameters For KIC 003942571

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6208^{+169}_{-169}$	$3.278^{+0.459}_{-0.051}$	$-0.080^{+0.350}_{-0.300}$	$5.454^{+0.282}_{-2.540}$	$2.058^{+0.095}_{-0.539}$	$0.018^{+0.084}_{-0.002}$
	+3%/-3%	+14%/-2%	+438%/-375%	+5%/-47%	+5%/-26%	+472%/-9%
Source	PHO1	FLK73	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 003942571-06 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-158 \pm 31$	$14.93^{+15.10}_{-10.95}$	$960^{+47}_{-101}$	$4318^{+3899}_{-874}$	$252^{+3345}_{-190}$
Alt.	$-335 \pm 48$	$15.50^{+13.53}_{-10.27}$	$959^{+48}_{-101}$	$4979^{+4078}_{-1065}$	$503^{+4146}_{-358}$

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

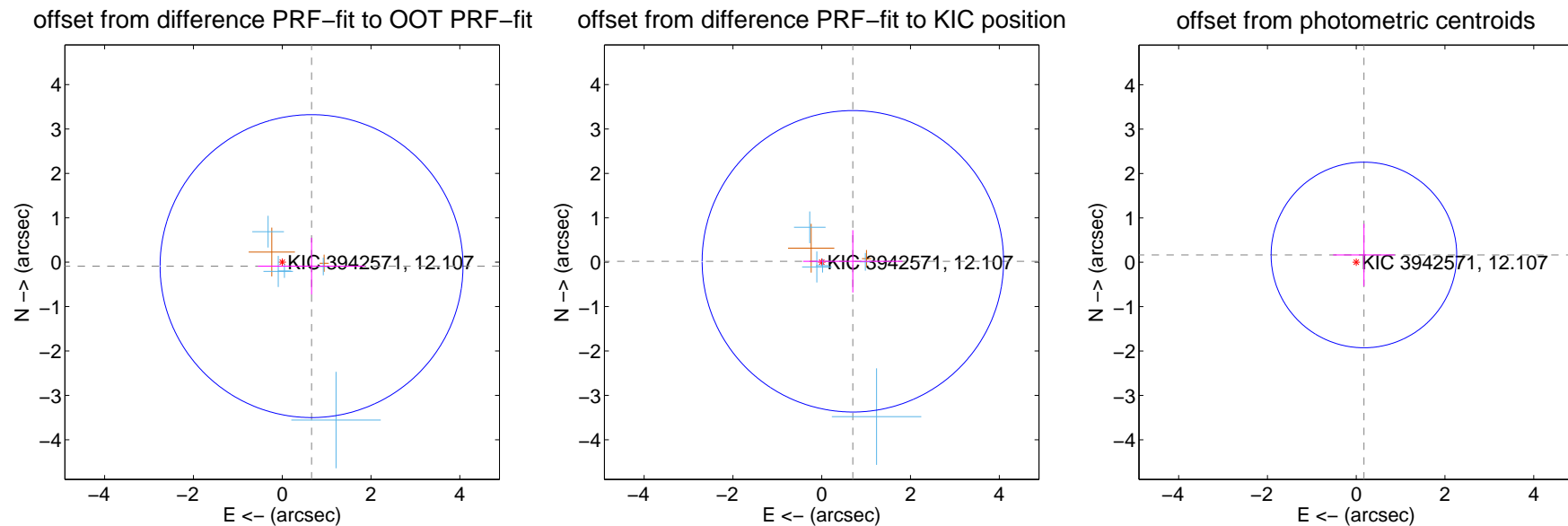
## DV Centroid Data

Supplemental centroid analysis for 003942571-06. Kepler magnitude: 12.11. Transit SNR 7.21

There are 5 quarters with good PRF difference image offsets

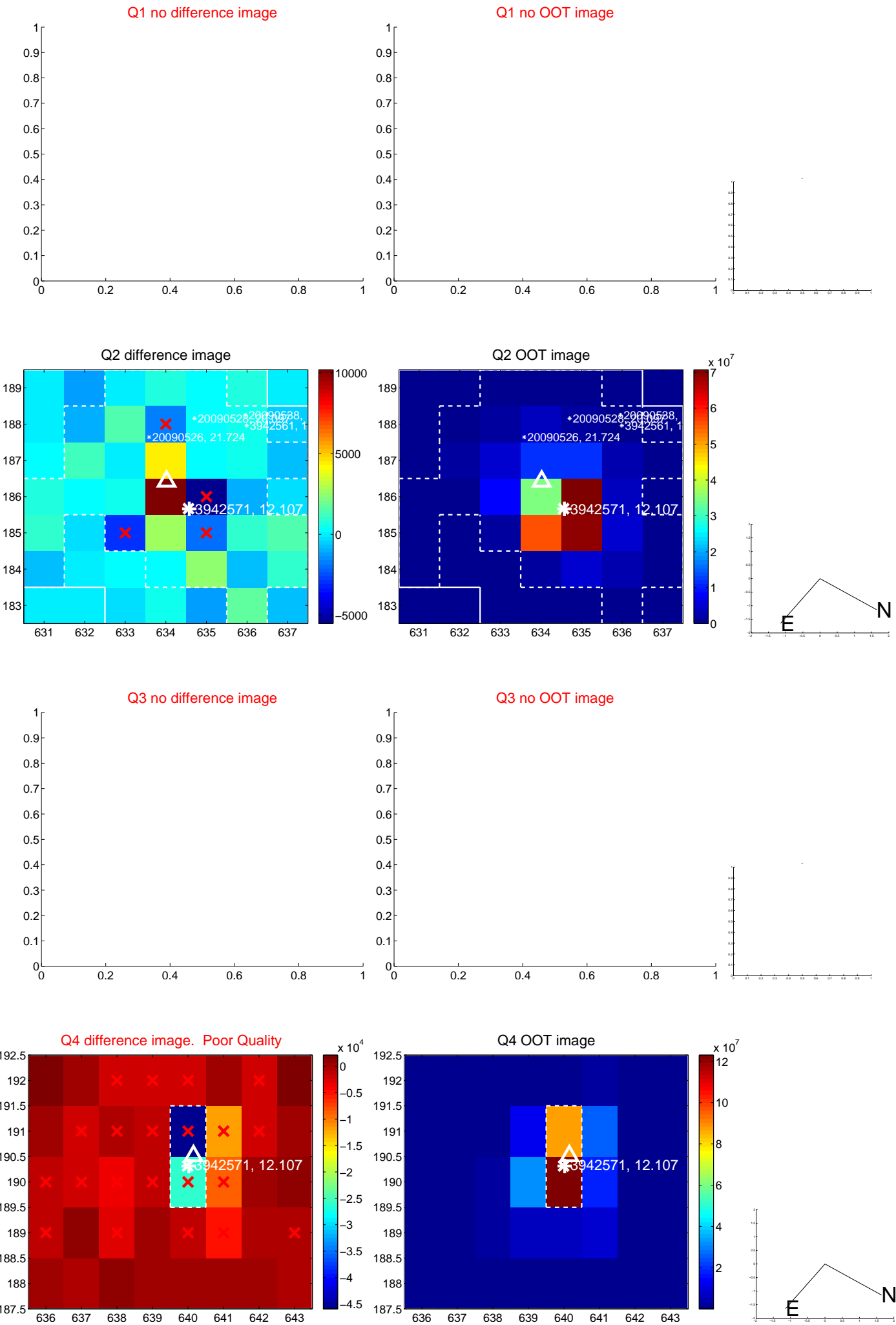
The direct PRF centroid is offset from the target star catalog position by about 0.11 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.666 \pm 1.137$	0.59	$-0.660 \pm 1.205$	$-0.089 \pm 0.638$
PRF-fit source offset from KIC position	$0.702 \pm 1.132$	0.62	$-0.701 \pm 1.118$	$0.020 \pm 0.701$
photometric centroid source offset	$0.24 \pm 0.70$	0.34	$-0.17 \pm 0.69$	$0.16 \pm 0.70$



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.

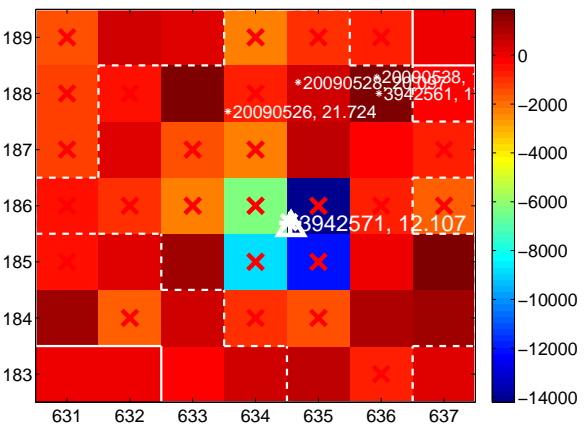
Q5 no difference image



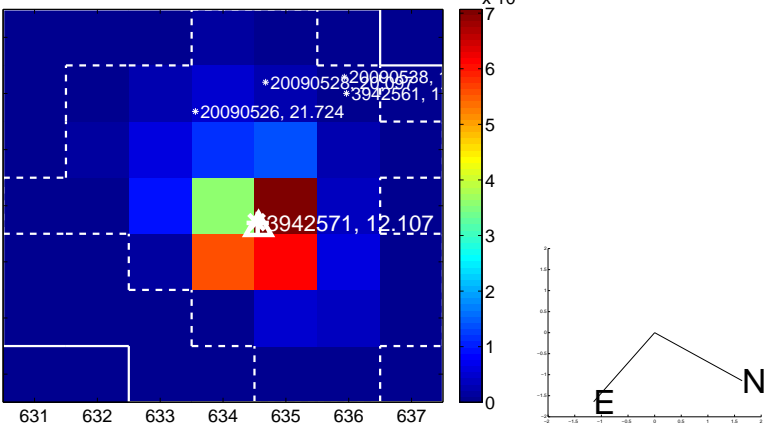
Q5 no OOT image



Q6 difference image. Poor Quality



Q6 OOT image



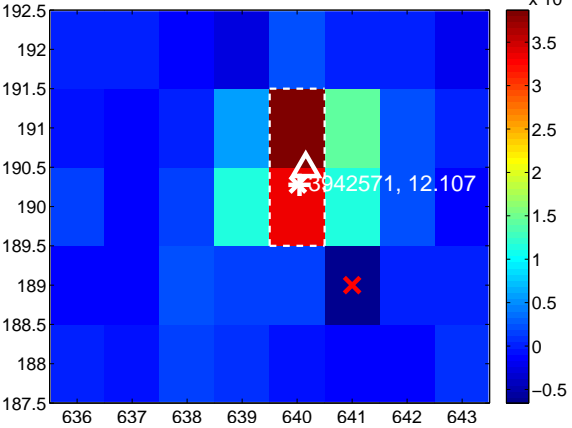
Q7 no difference image



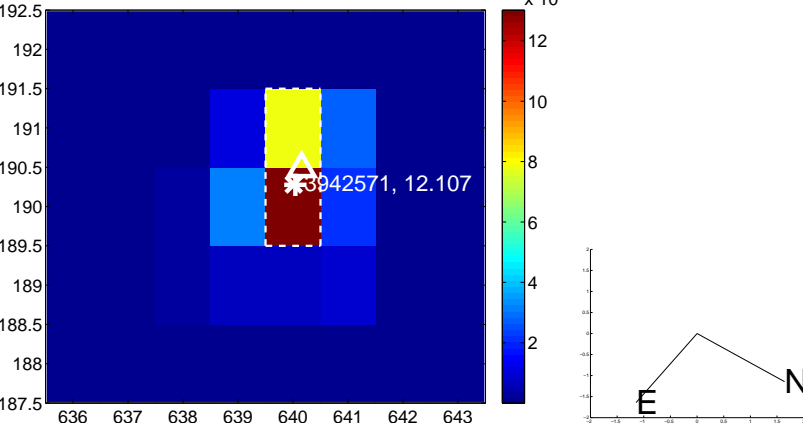
Q7 no OOT image



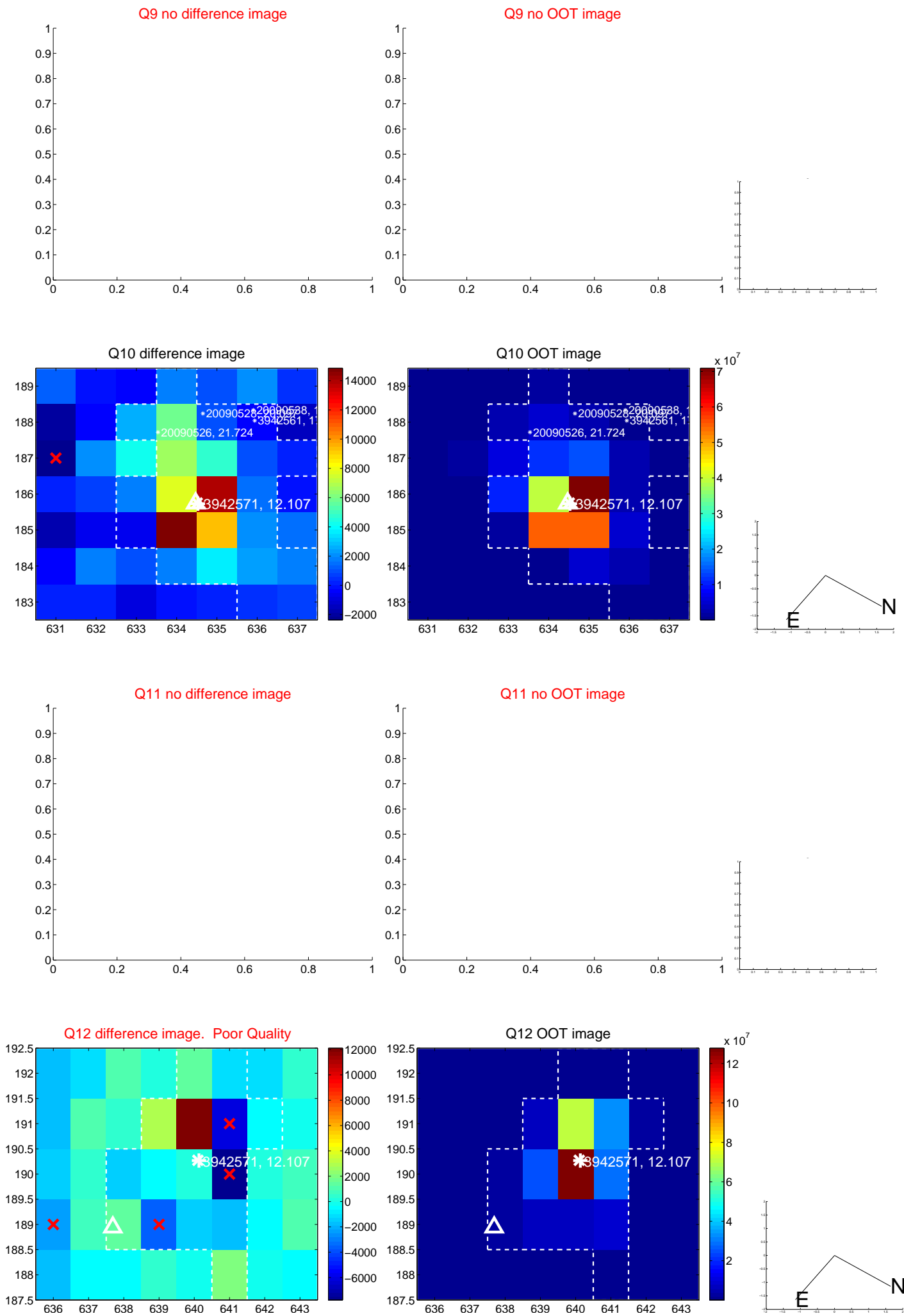
Q8 difference image



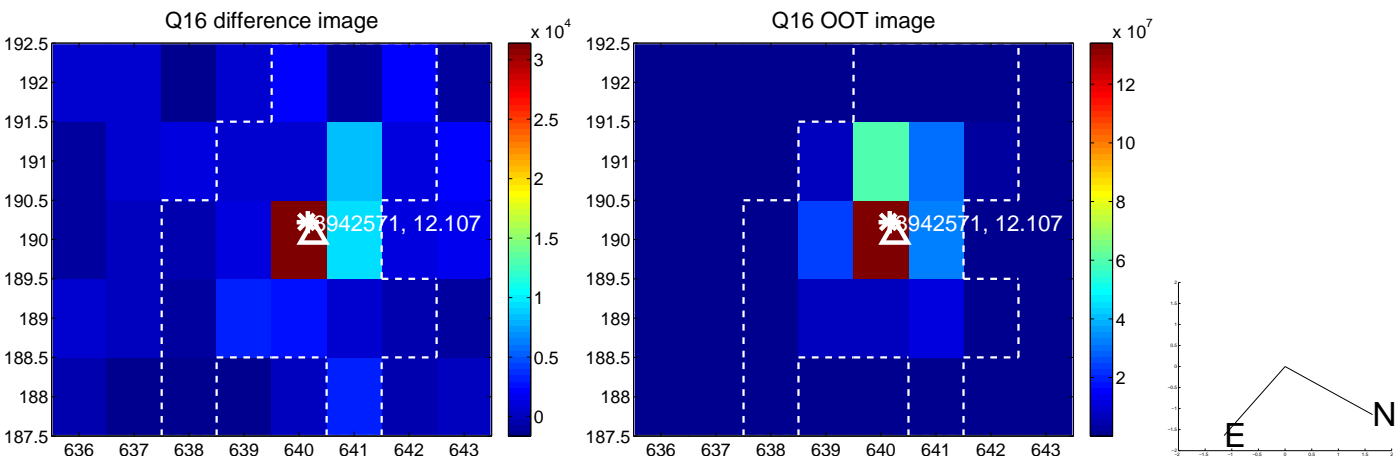
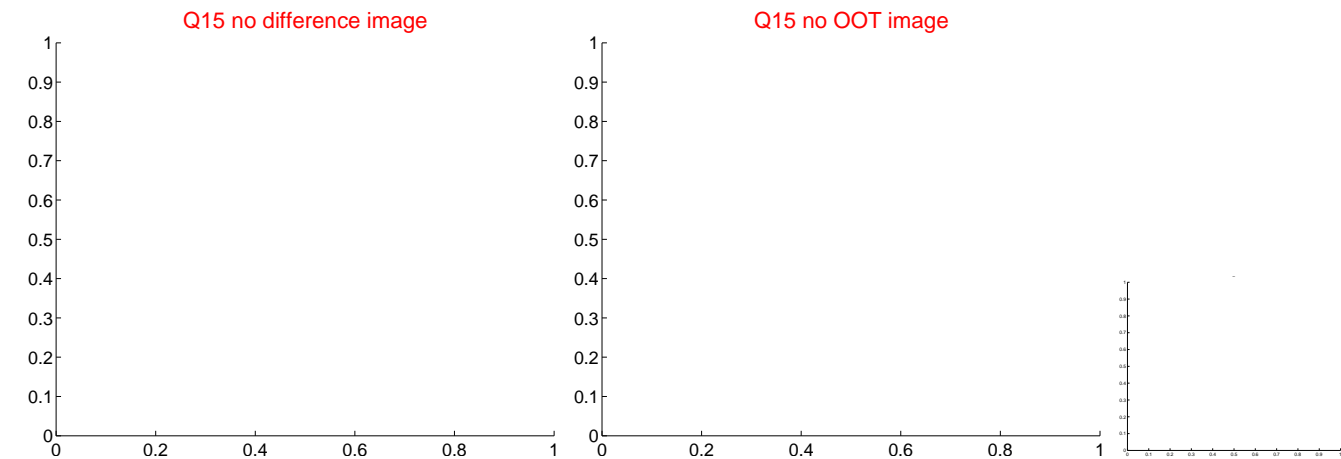
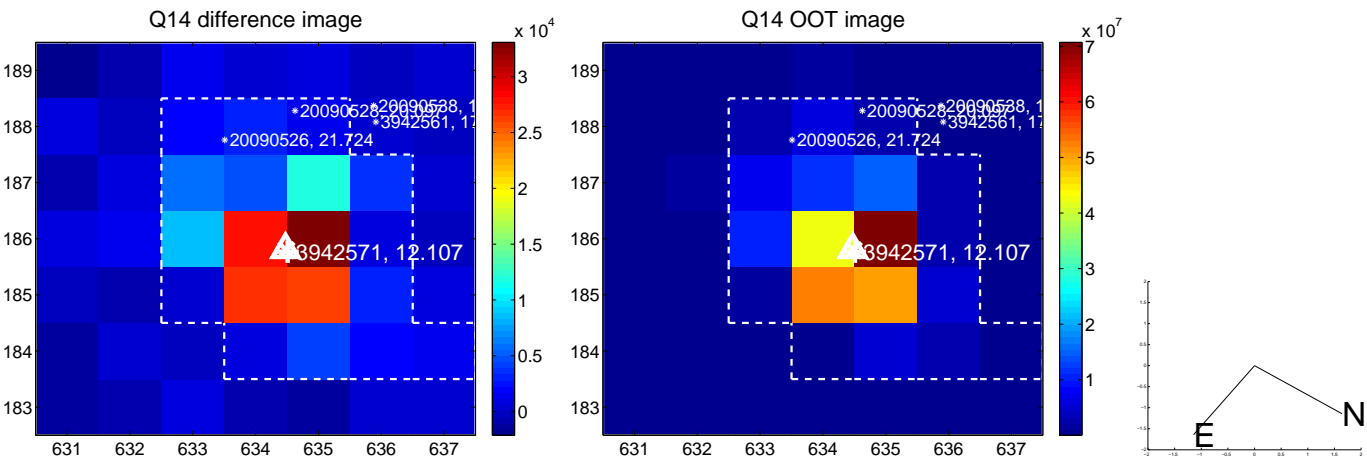
Q8 OOT image



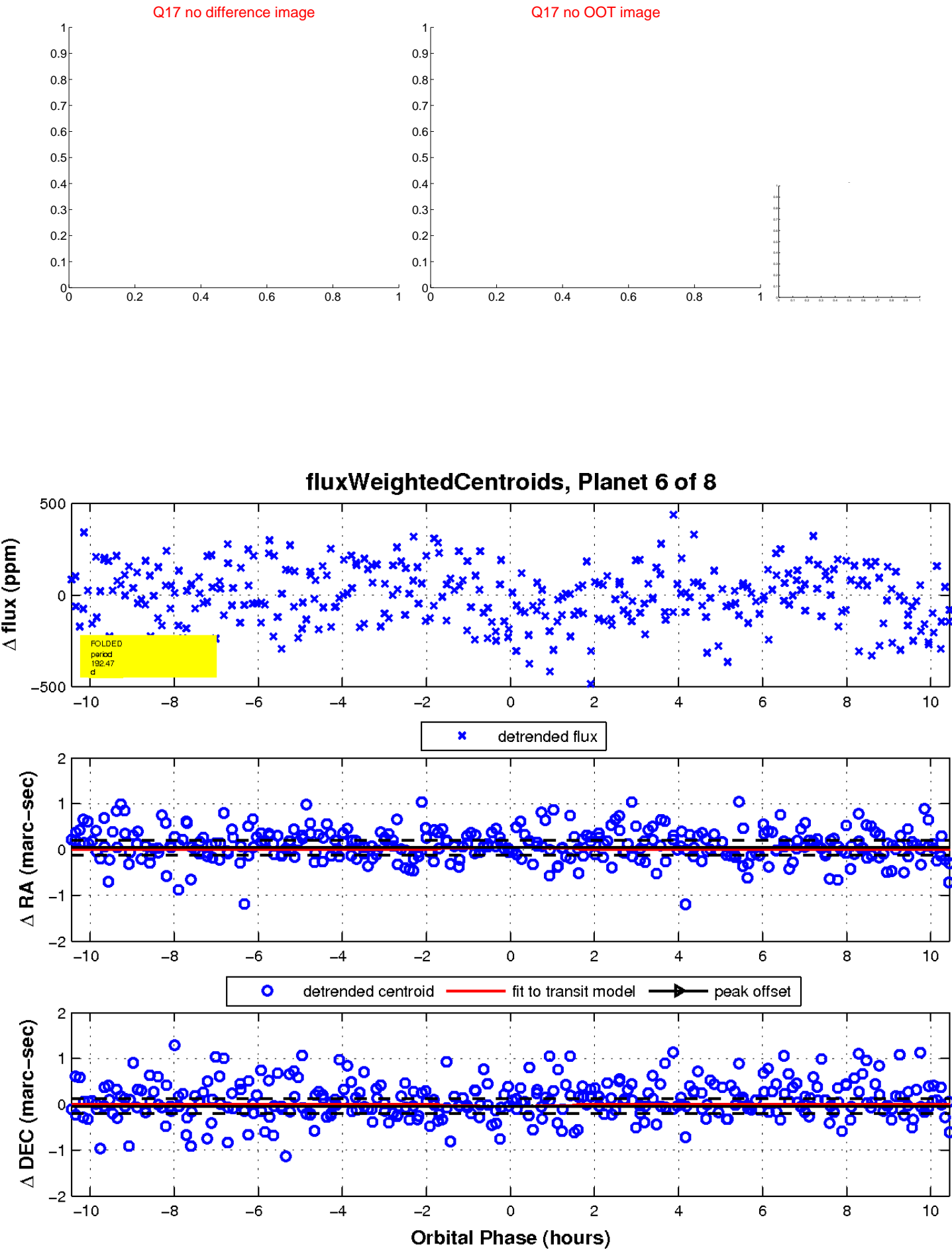
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

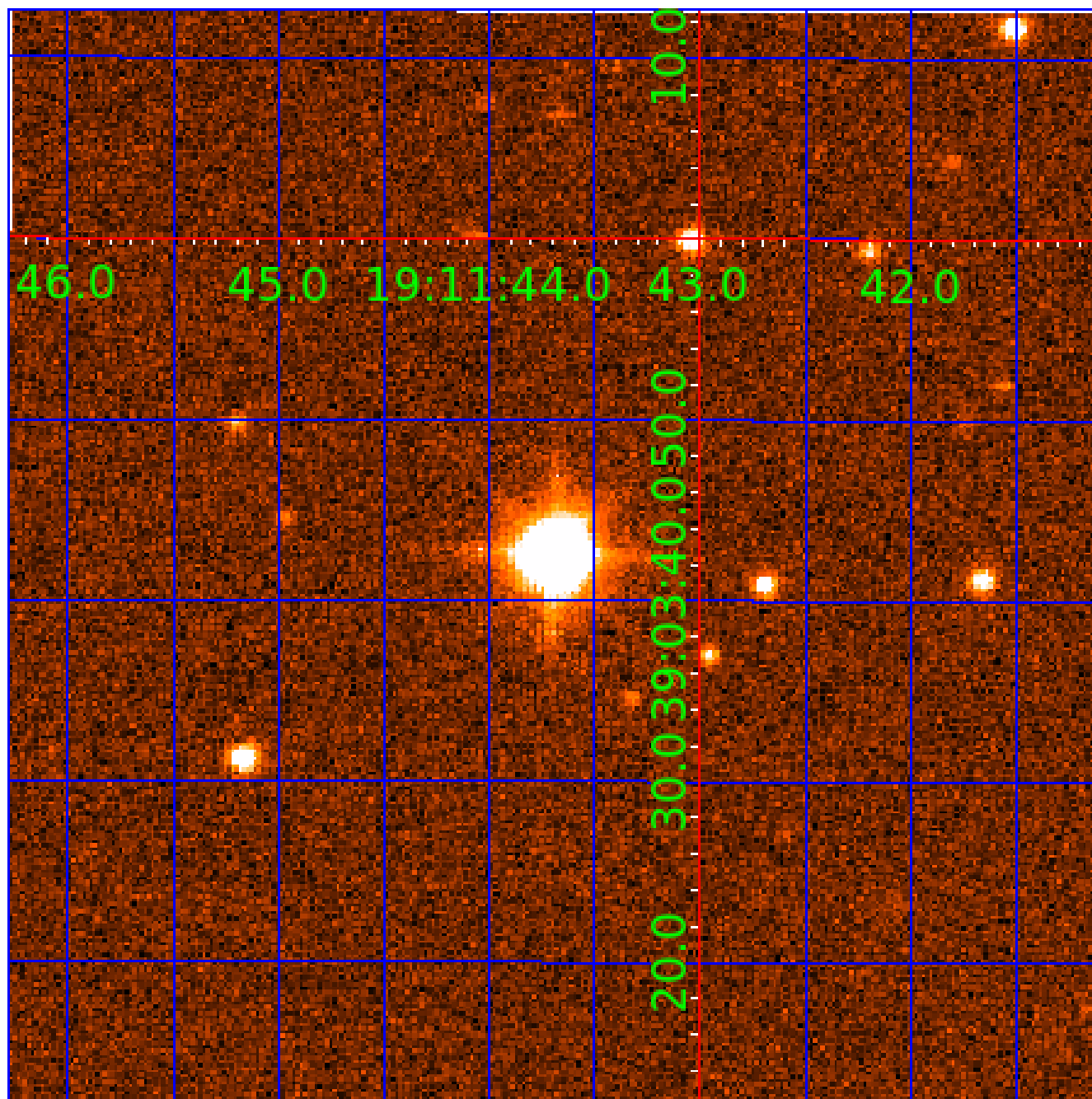


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 003942571

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
003942571-01	OBS	No	1.257394	132.164961	8.1	7.242	9.3	3.8	5.45	6208	1.70	47048.90
003942571-02	OBS	No	218.009814	298.710758	233.0	6.496	14.9	7.0	5.45	6208	9.42	48.66
003942571-03	OBS	No	90.433559	139.776241	173.8	15.269	12.8	8.8	5.45	6208	8.08	157.30
003942571-04	OBS	No	72.236527	146.037624	146.6	5.312	9.6	6.6	5.45	6208	7.42	212.24
003942571-05	OBS	No	90.591459	221.813942	212.4	2.840	8.9	9.3	5.45	6208	8.31	156.94
003942571-06	OBS	No	192.470308	172.581220	222.7	3.505	8.8	7.2	5.45	6208	9.56	57.46
003942571-07	OBS	No	103.635467	170.730217	279.4	4.708	8.6	9.3	5.45	6208	11.10	131.17
003942571-08	OBS	No	18.949271	132.724536	169.2	2.500	8.8	-1.0	5.45	6208	7.11	1263.92

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003942571-01	OBS	FP	0.00	1	0	1	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—HALO_GHOST
003942571-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
003942571-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
003942571-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
003942571-05	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
003942571-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
003942571-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
003942571-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_ALT—MOD_NONUNIQ_ALT—CENT_NOFITS

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

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

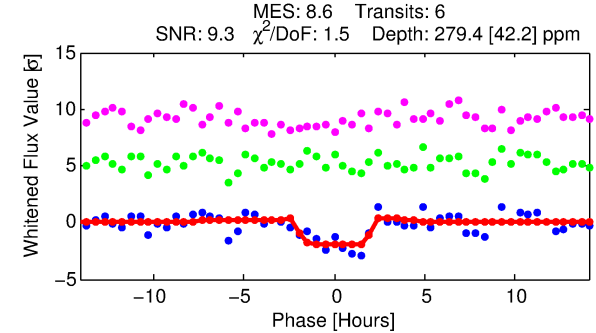
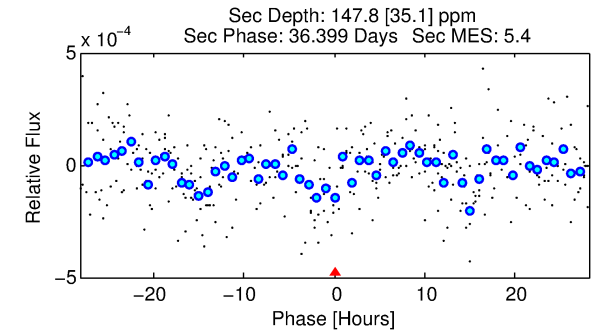
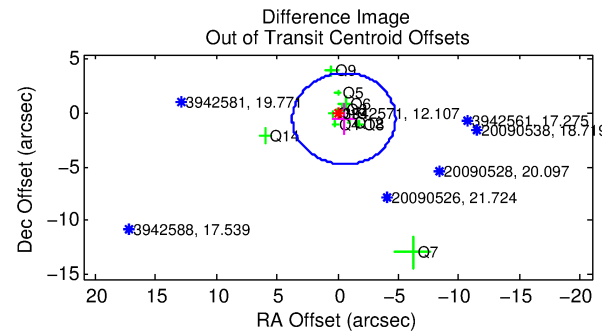
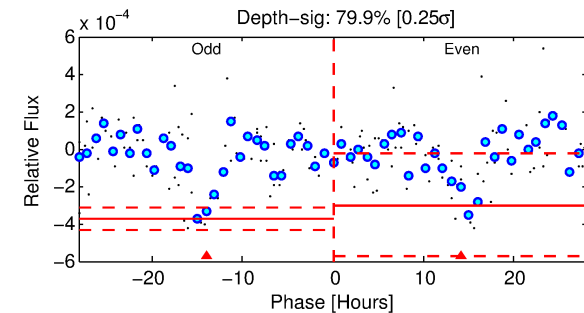
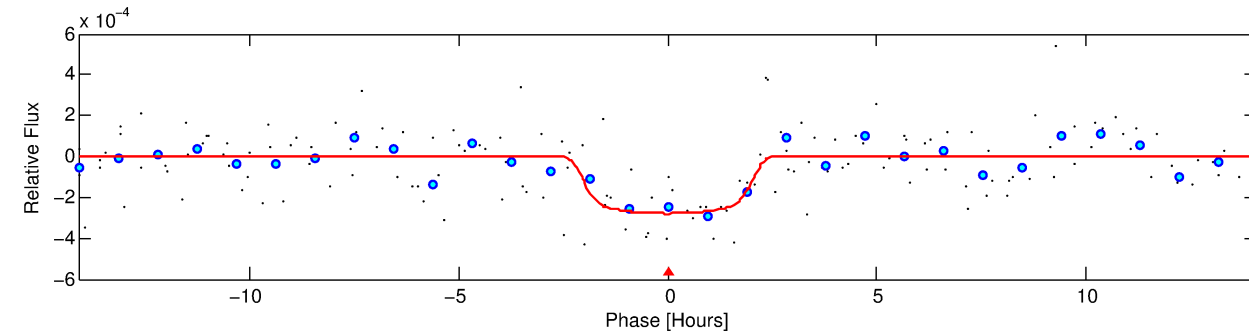
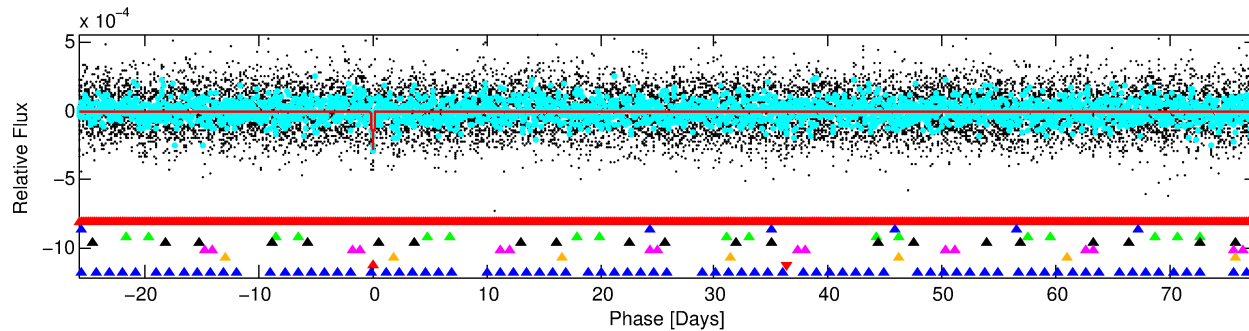
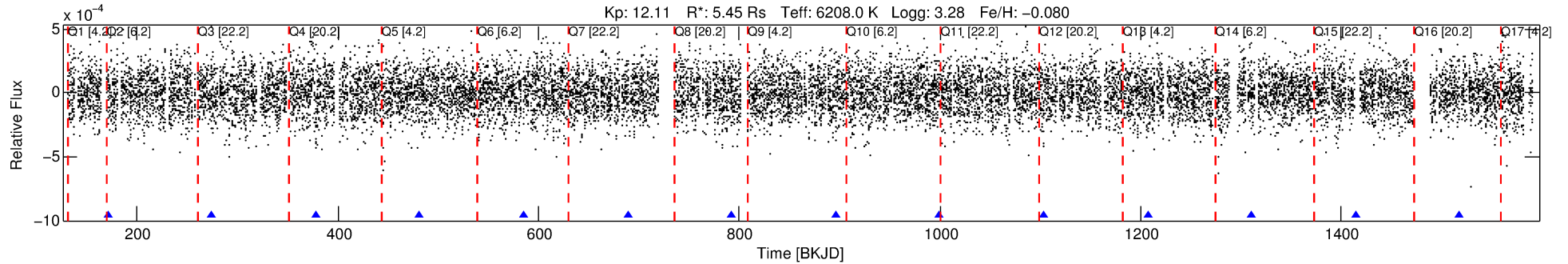
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 003942571-07

No Significant Match Found

# DV One-Page Summary

KIC: 3942571 Candidate: 7 of 8 Period: 103.635 d



## DV Fit Results:

Period = 103.63547 [0.00167] d  
Epoch = 170.7302 [0.0107] BKJD  
Rp/R\* = 0.0187 [0.0029]  
a/R\* = 67.56 [47.55]  
b = 0.94 [0.09]  
Seff = 131.17 [102.00]  
Teq = 863 [168] K  
Rp = 11.10 [5.46] Re  
a = 0.5493 [0.2580] AU  
Ag = 199.12 [172.28] [1.15 $\sigma$ ]  
Teffp = 5012 [513] K [7.69 $\sigma$ ]

## DV Diagnostic Results:

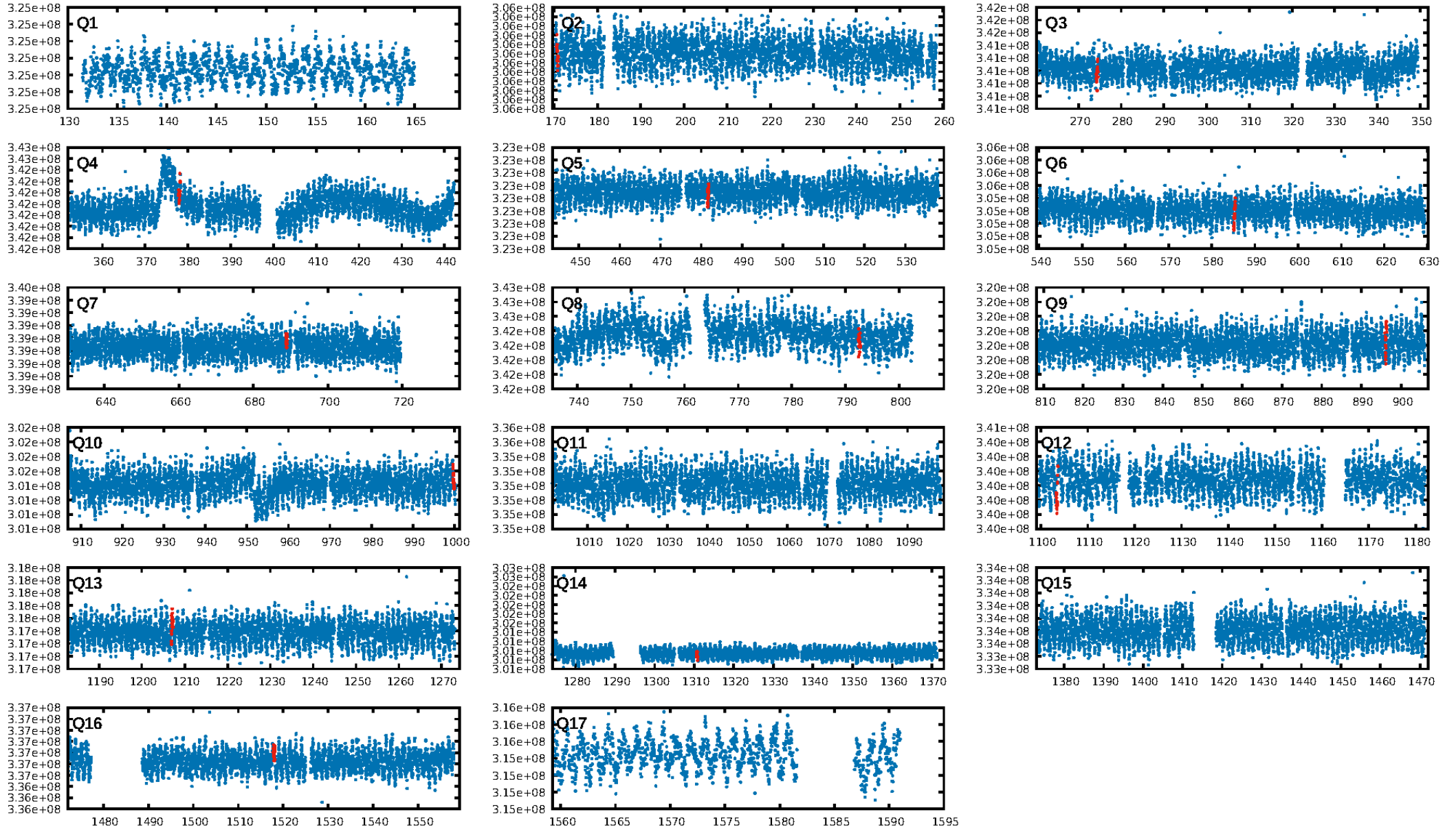
ShortPeriod-sig: 100.0% [56.93 $\sigma$ ]  
LongPeriod-sig: 100.0% [363.22 $\sigma$ ]  
ModelChiSquare2-sig: 1.8%  
ModelChiSquareGof-sig: 99.7%  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [6/6]  
GhostDiagnostic-chr: -0.6347  
Centroid-sig: 17.6%  
Centroid-so: 0.514 arcsec [1.19 $\sigma$ ]  
OotOffset-rm: 0.743 arcsec [0.52 $\sigma$ ]  
OotOffset-st: 2/2/3/3 [10]  
KicOffset-rm: 0.720 arcsec [0.48 $\sigma$ ]  
KicOffset-st: 2/2/3/3 [10]  
DiffImageQuality-fgm: 0.60 [6/10]  
DiffImageOverlap-fno: 0.08 [1/12]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 01:12:07 Z

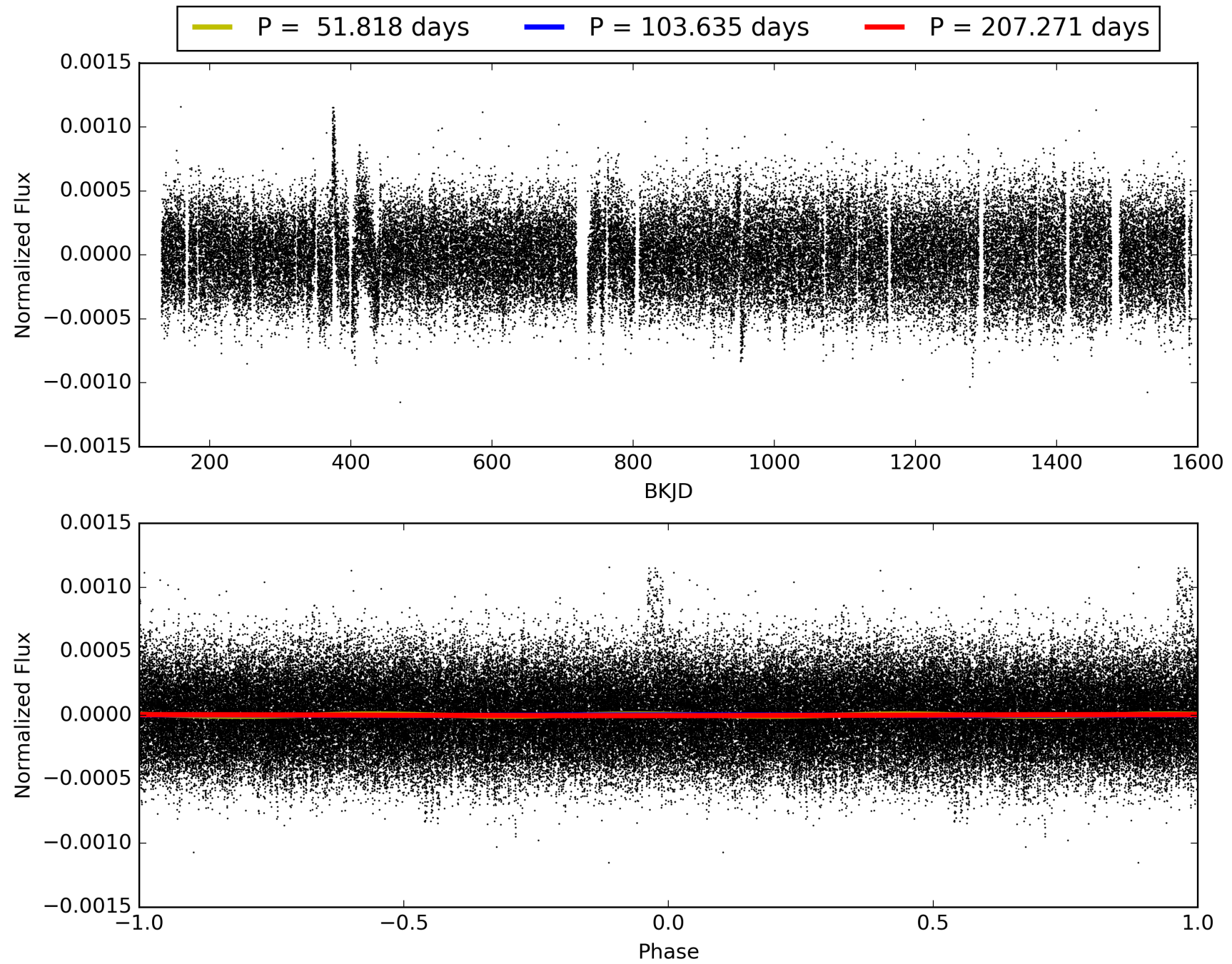
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center



# TCE 003942571-07, PDC Light Curves

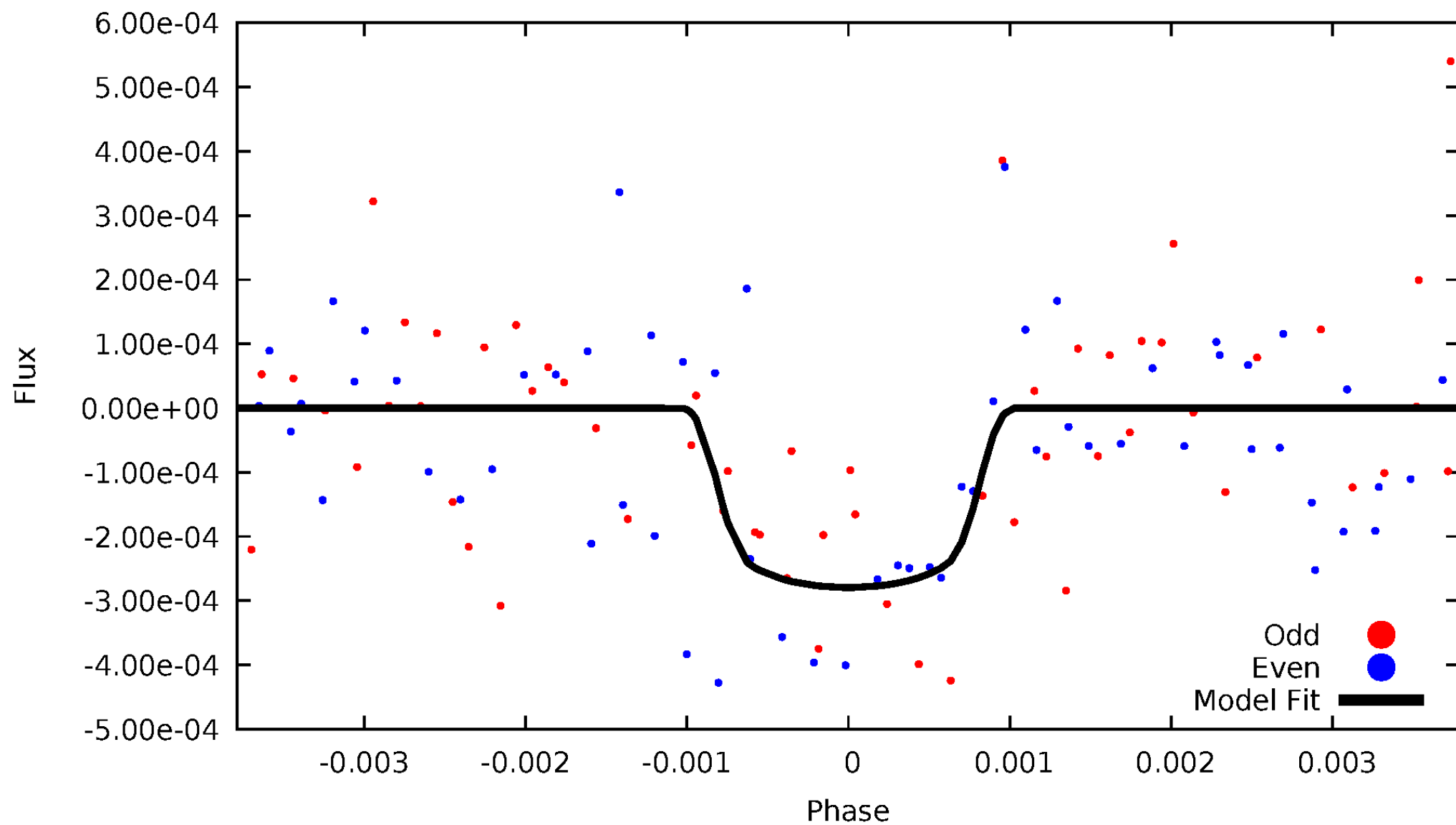


TCE 003942571-07



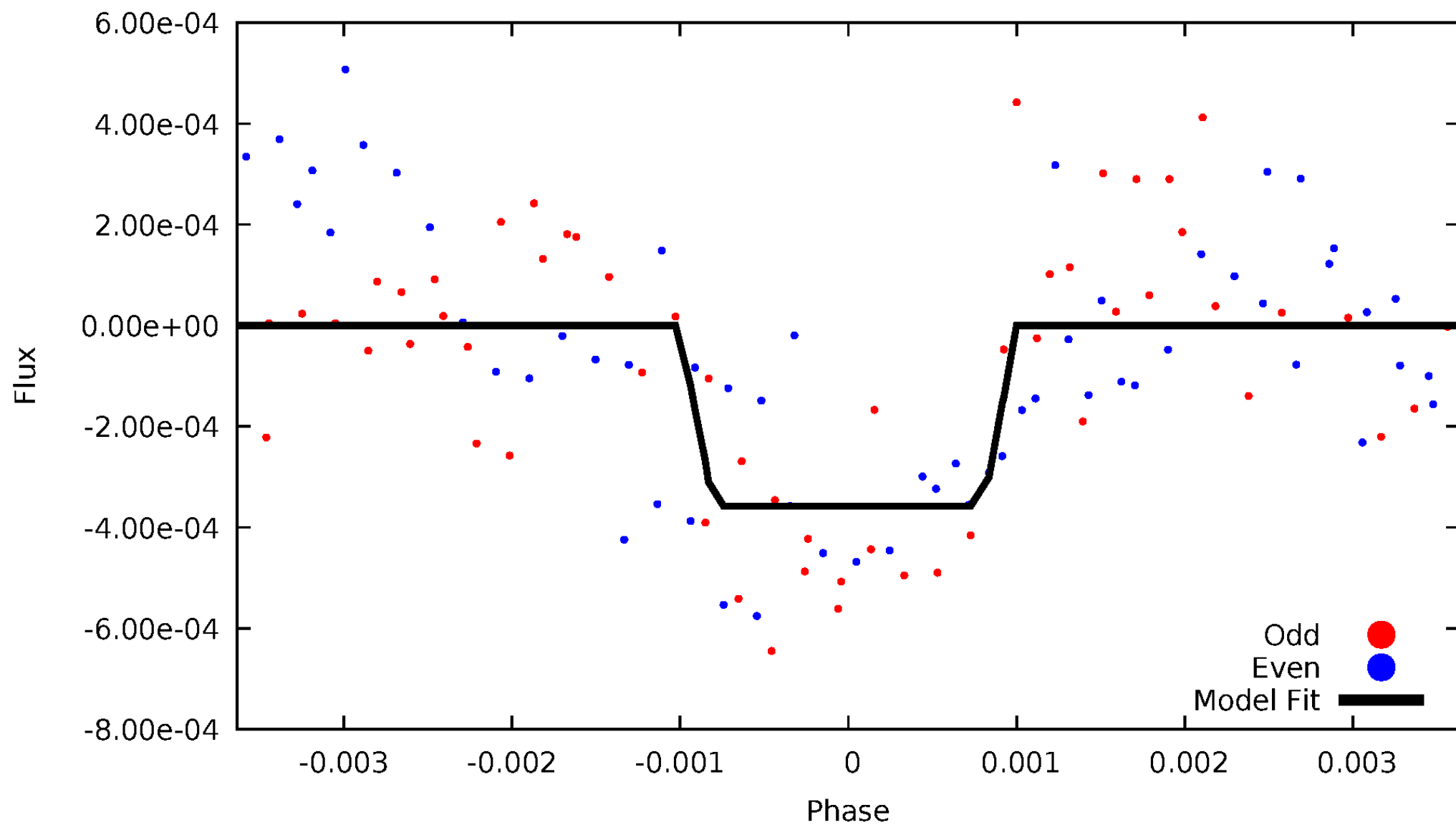
# DV Odd/Even

TCE 003942571-07



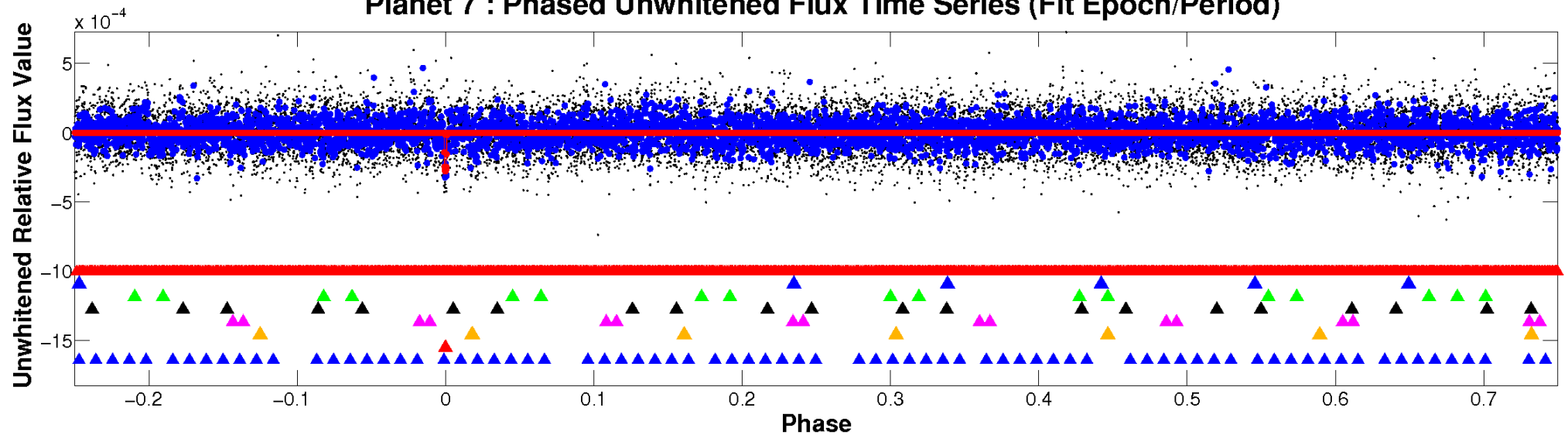
# ALT Odd/Even

TCE 003942571-07

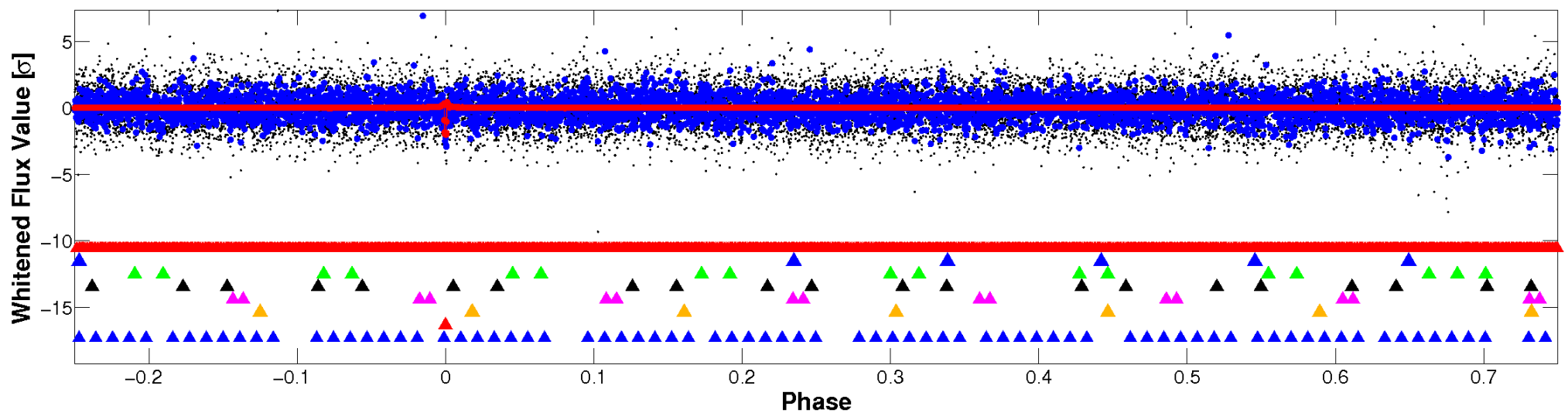


# Non-Whitened Vs. Whitened Light Curve

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

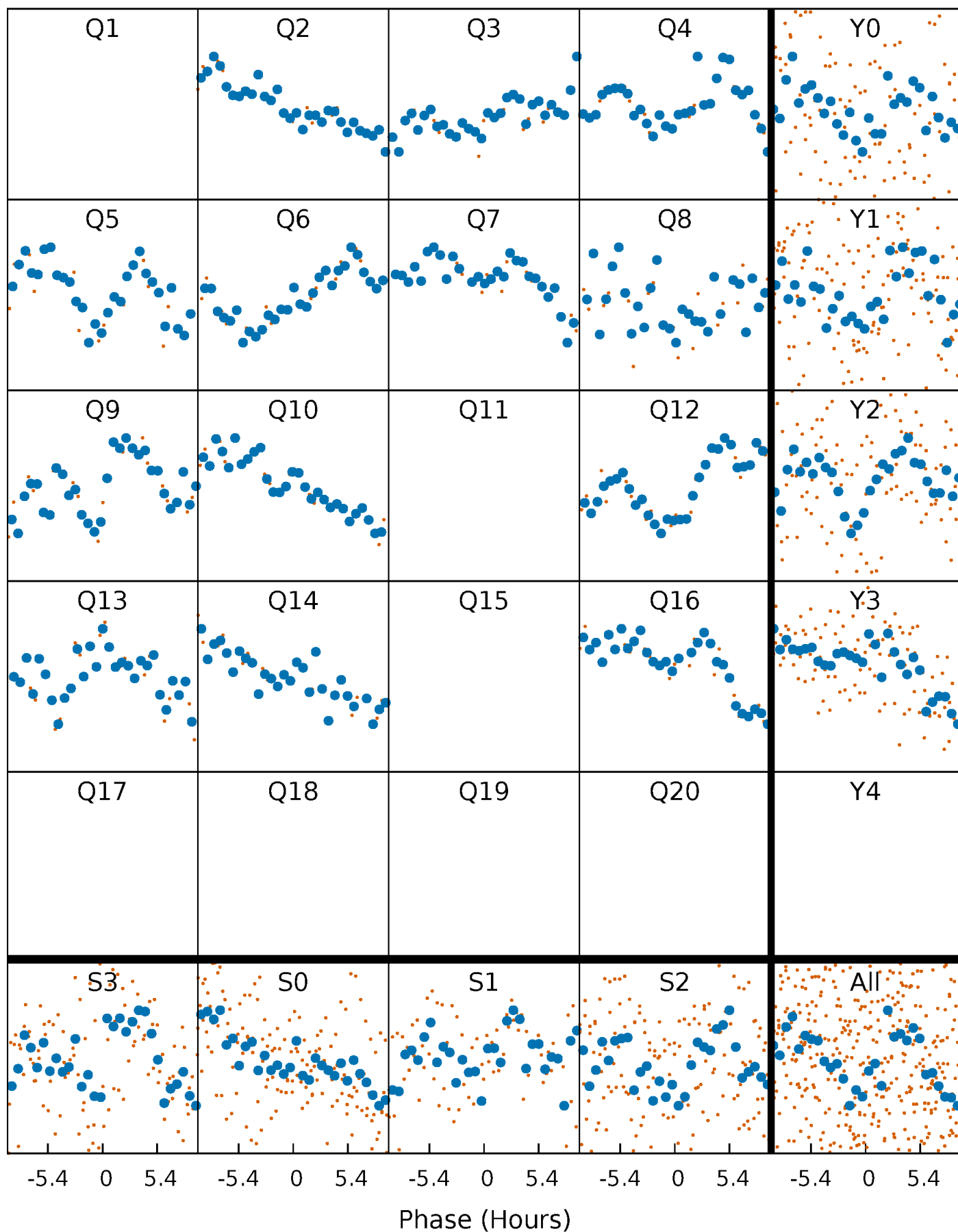


## Planet 7 : Phased Whitened Flux Time Series (Fit Epoch/Period)



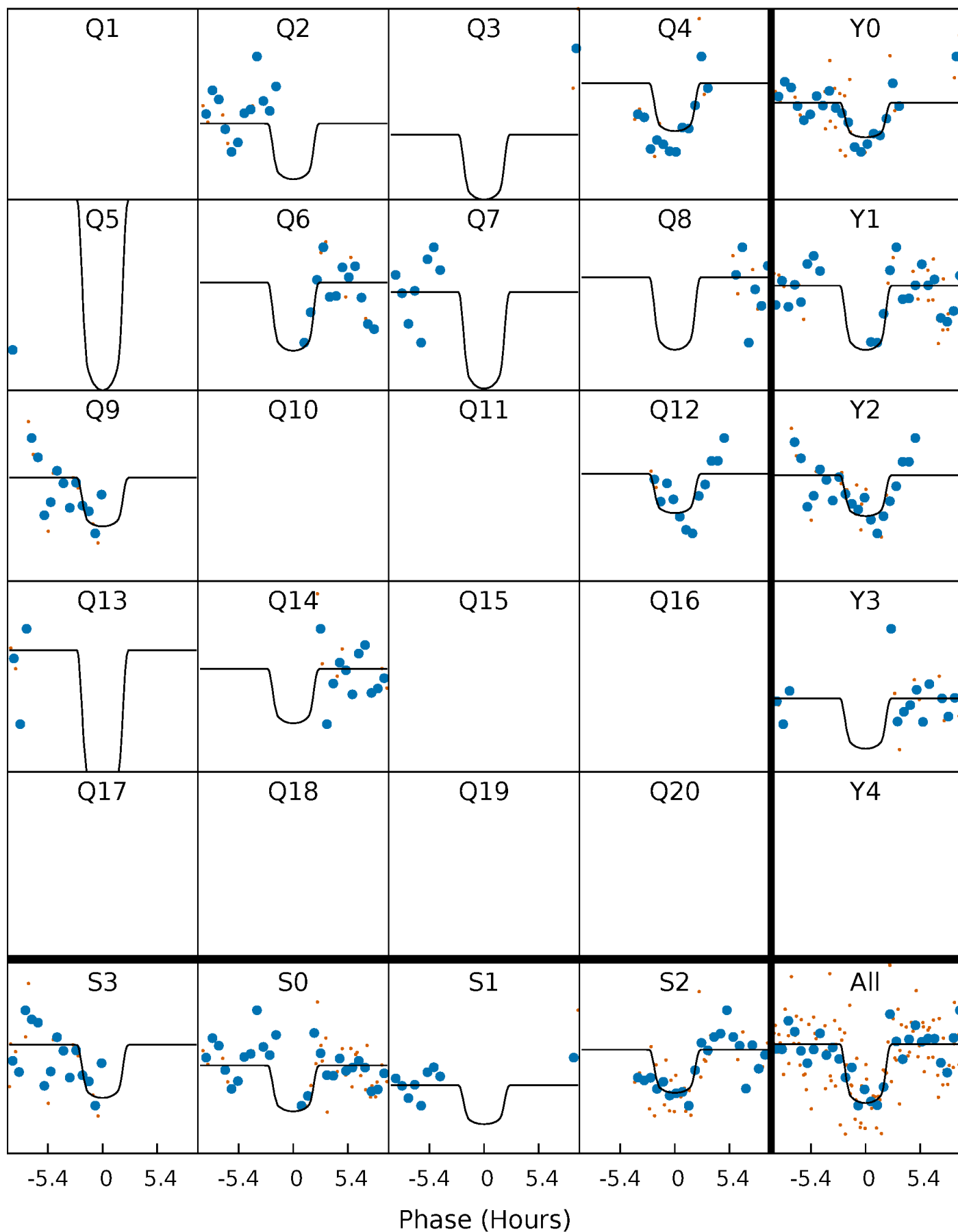
# PDC Quarter-Phased Transit Curves

TCE 003942571-07 P=103.635467 Days  $T_0=170.730217$  (BKJD)



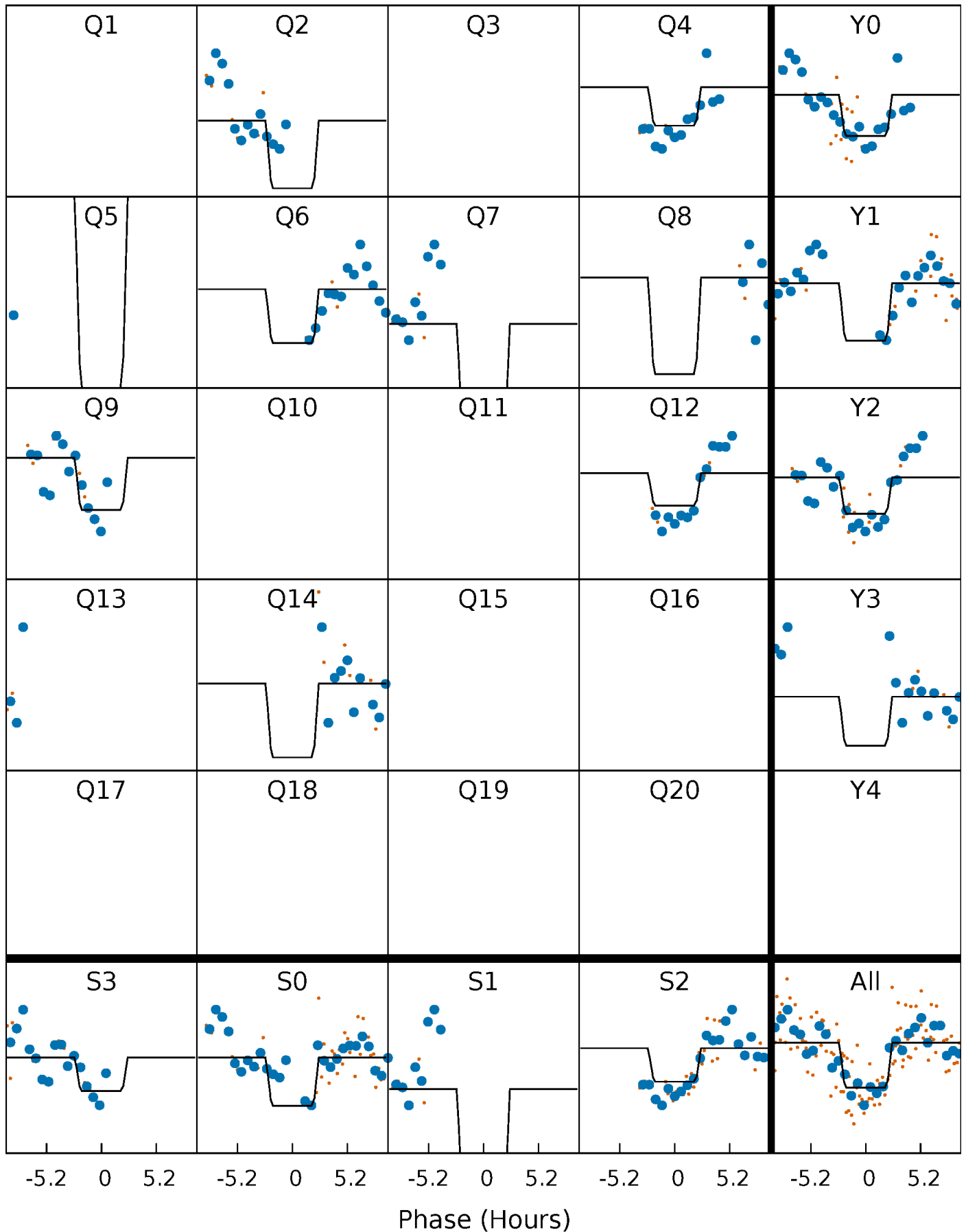
# DV Quarter-Phased Transit Curves

TCE 003942571-07     $P=103.635467$  Days     $T_0=170.730217$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 003942571-07 P=103.637953 Days  $T_0=170.698190$  (BKJD)

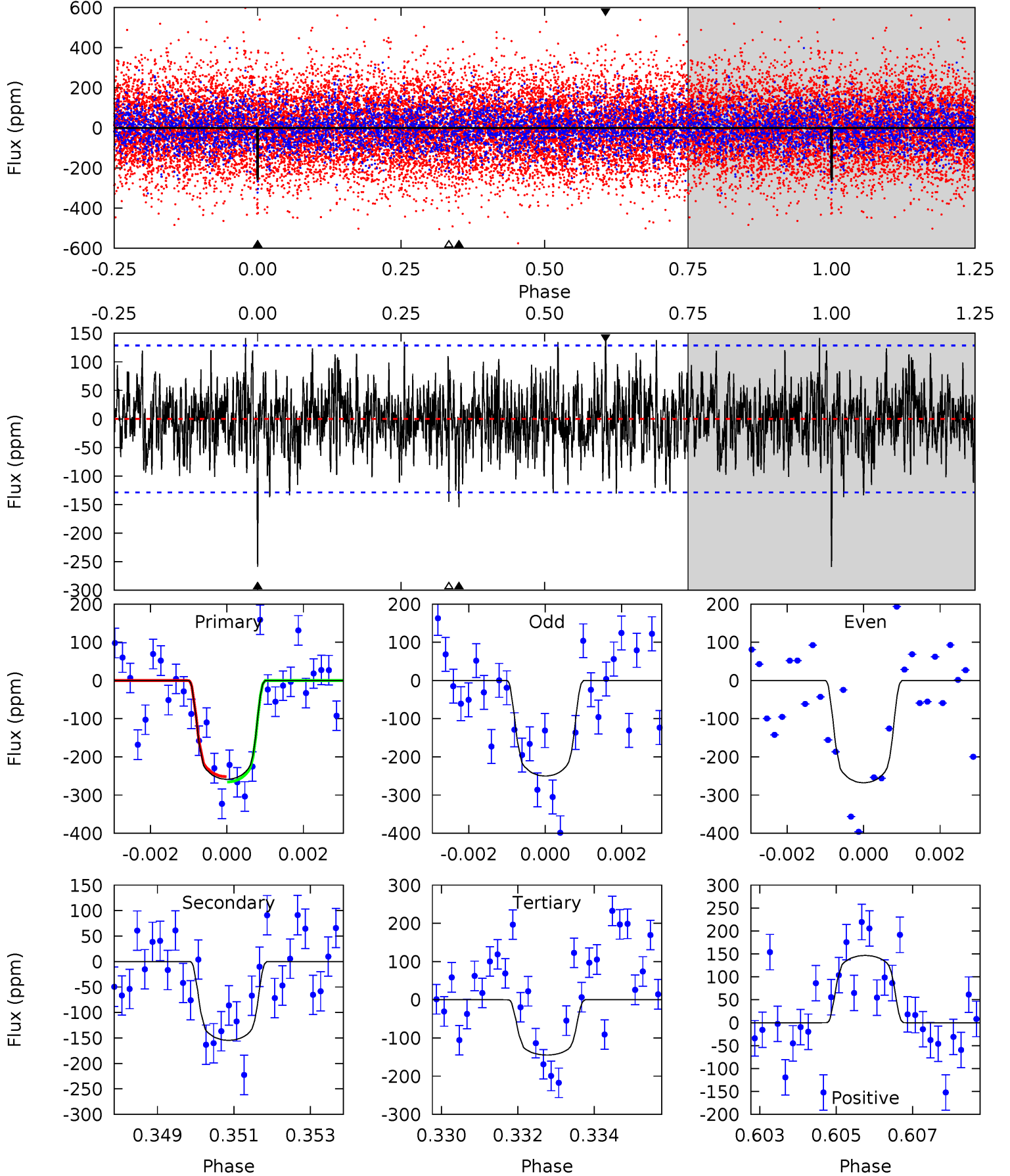




# DV Model-Shift Uniqueness Test

003942571-07,  $P = 103.635467$  Days,  $E = 67.094750$  Days

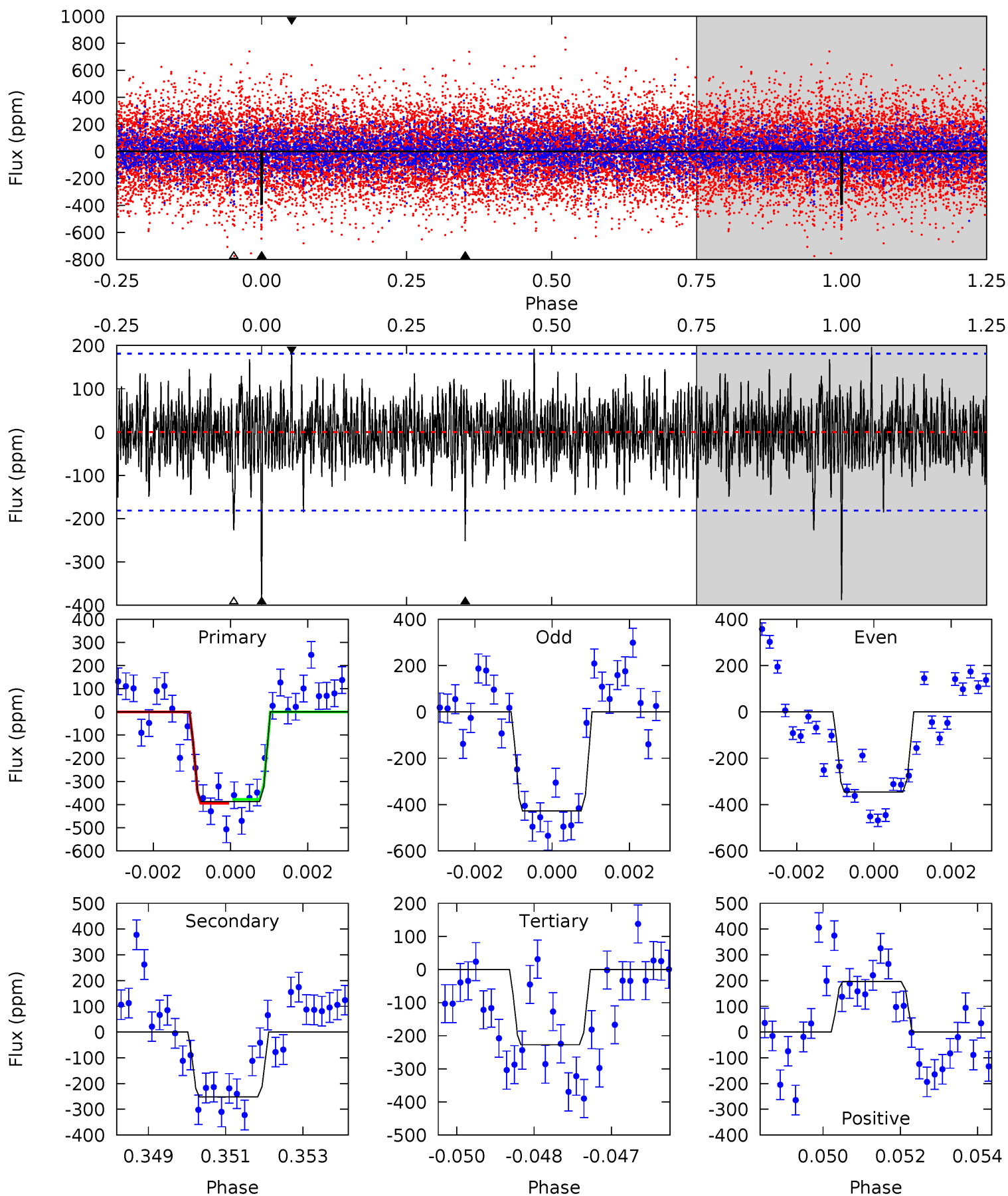
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.7	6.40	5.99	6.07	5.32	3.08	1.83	4.72	4.64	0.41	0.33	0.36	0.71	0.36	0.29



# Alt Model-Shift Uniqueness Test

003942571-07,  $P = 103.637953$  Days,  $E = 67.060237$  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
11.4	7.40	6.68	5.77	5.33	3.10	1.64	4.72	5.62	0.72	1.63	1.21	0.95	0.34	0.24



### Stellar Parameters For KIC 003942571

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6208^{+169}_{-169}$	$3.278^{+0.459}_{-0.051}$	$-0.080^{+0.350}_{-0.300}$	$5.454^{+0.282}_{-2.540}$	$2.058^{+0.095}_{-0.539}$	$0.018^{+0.084}_{-0.002}$
	+3%/-3%	+14%/-2%	+438%/-375%	+5%/-47%	+5%/-26%	+472%/-9%
Source	PHO1	FLK73	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 003942571-07 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-155 \pm 24$	$10.20^{+2.36}_{-2.72}$	$1175^{+60}_{-139}$	$5132^{+455}_{-389}$	$244^{+209}_{-85}$
Alt.	$-251 \pm 34$	$10.23^{+2.33}_{-2.66}$	$1176^{+57}_{-135}$	$5710^{+546}_{-445}$	$400^{+317}_{-146}$

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

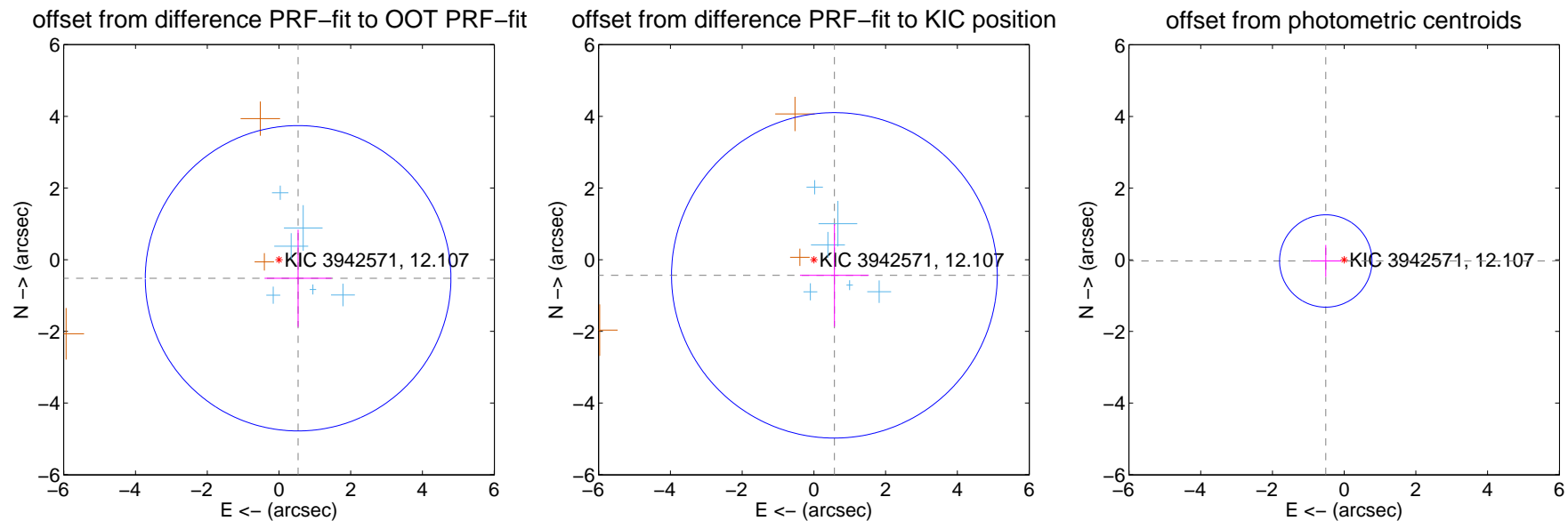
## DV Centroid Data

Supplemental centroid analysis for 003942571-07. Kepler magnitude: 12.11. Transit SNR 9.28

There are 6 quarters with good PRF difference image offsets

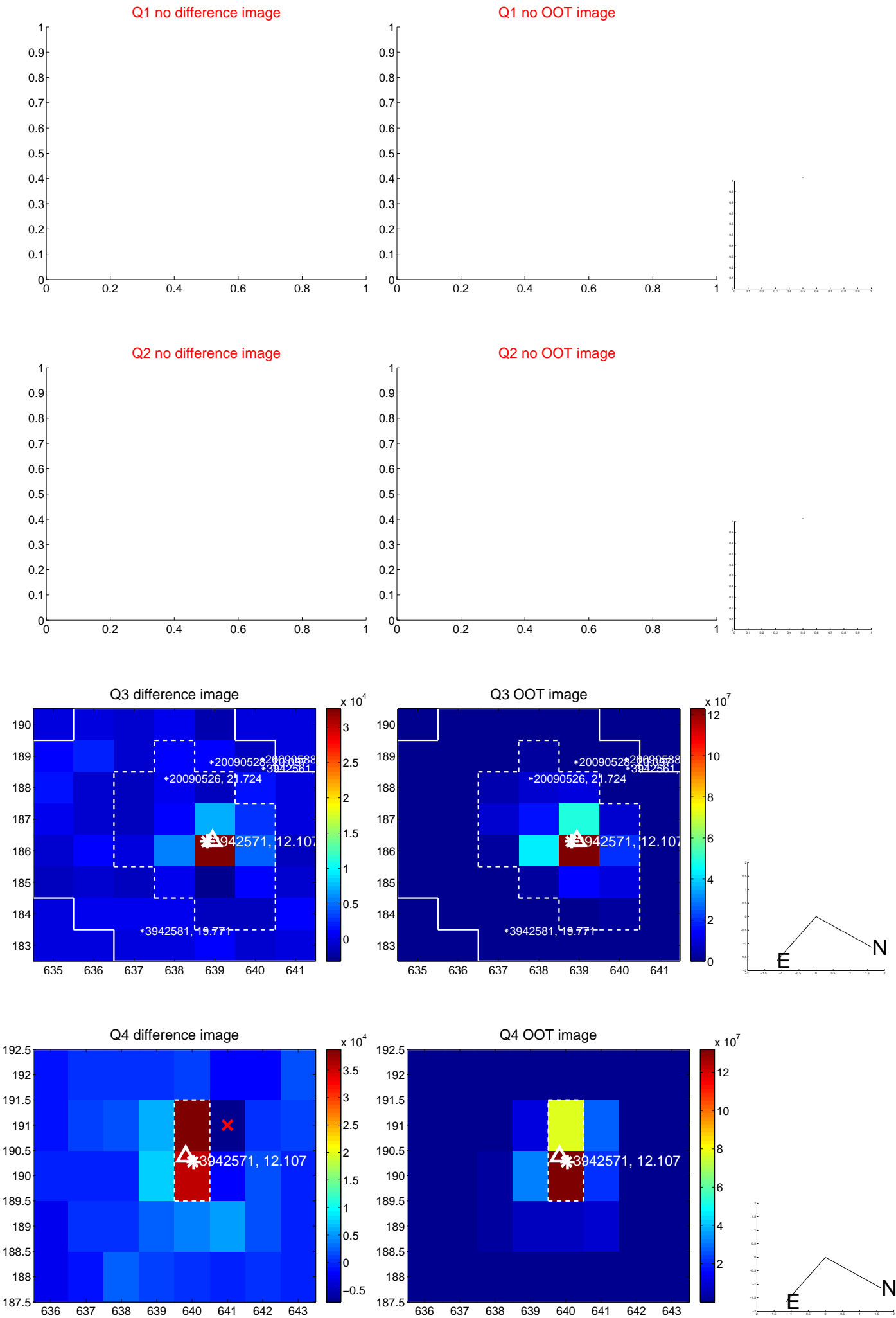
The direct PRF centroid is offset from the target star catalog position by about 0.11 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.743 \pm 1.420$	0.52	$-0.533 \pm 0.935$	$-0.518 \pm 1.356$
PRF-fit source offset from KIC position	$0.720 \pm 1.514$	0.48	$-0.572 \pm 0.960$	$-0.437 \pm 1.432$
photometric centroid source offset	$0.51 \pm 0.43$	1.19	$0.51 \pm 0.43$	$-0.03 \pm 0.45$

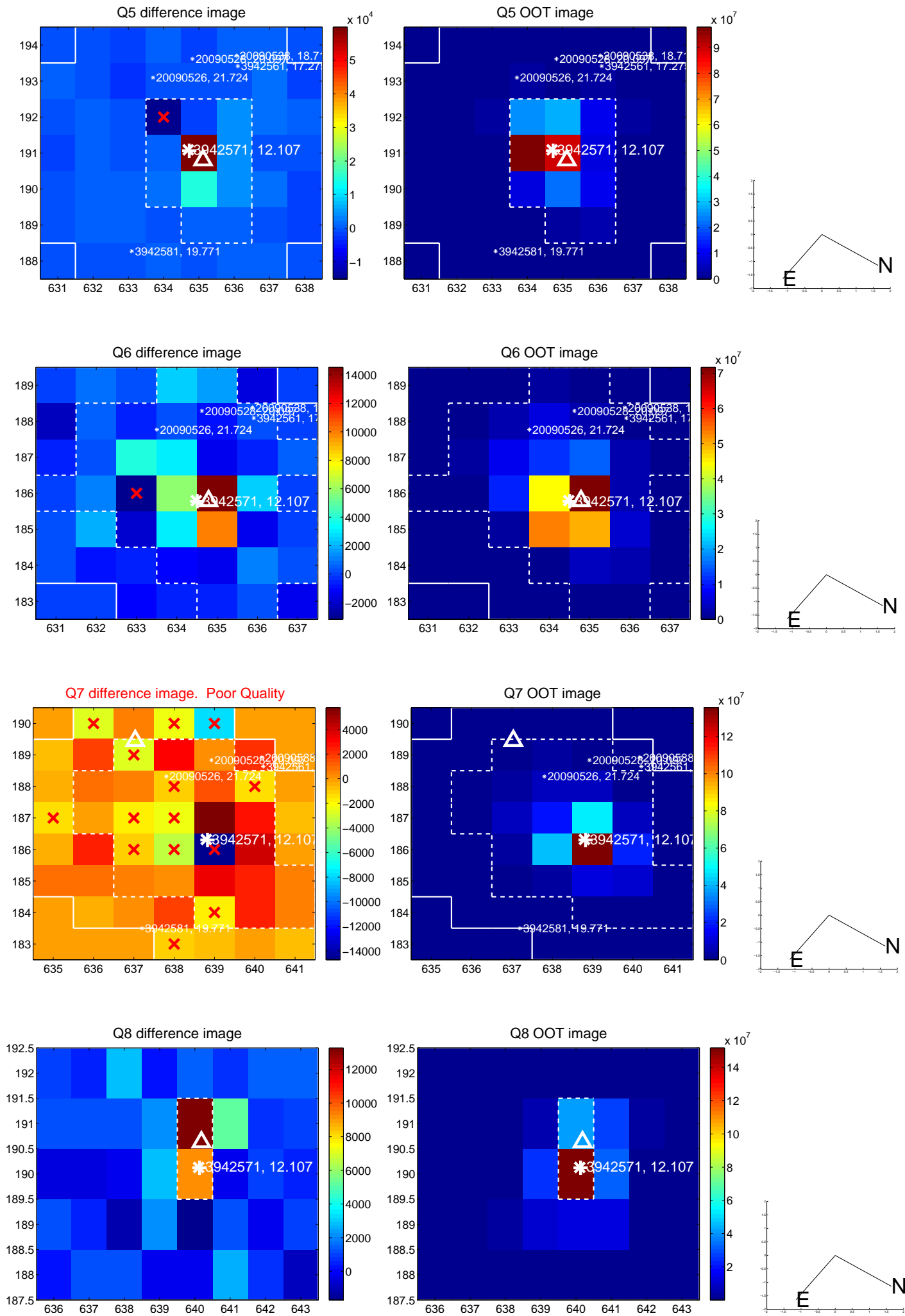


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

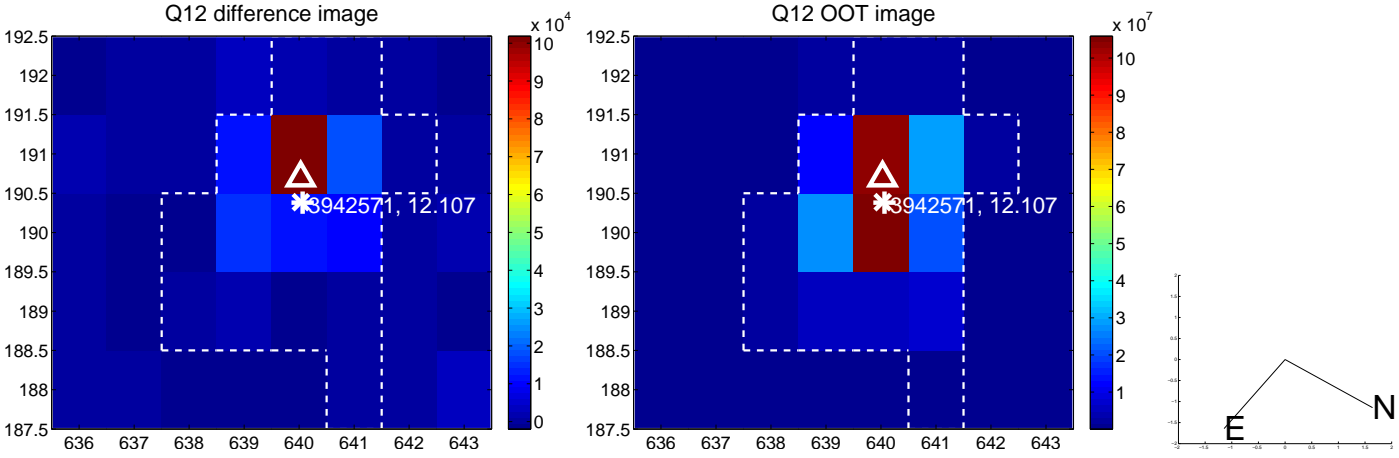
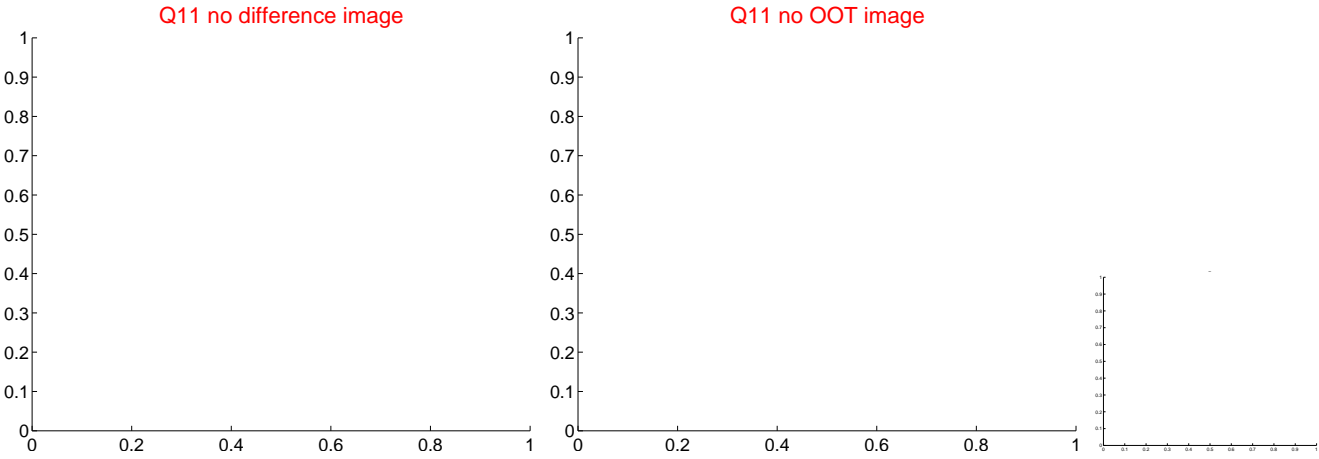
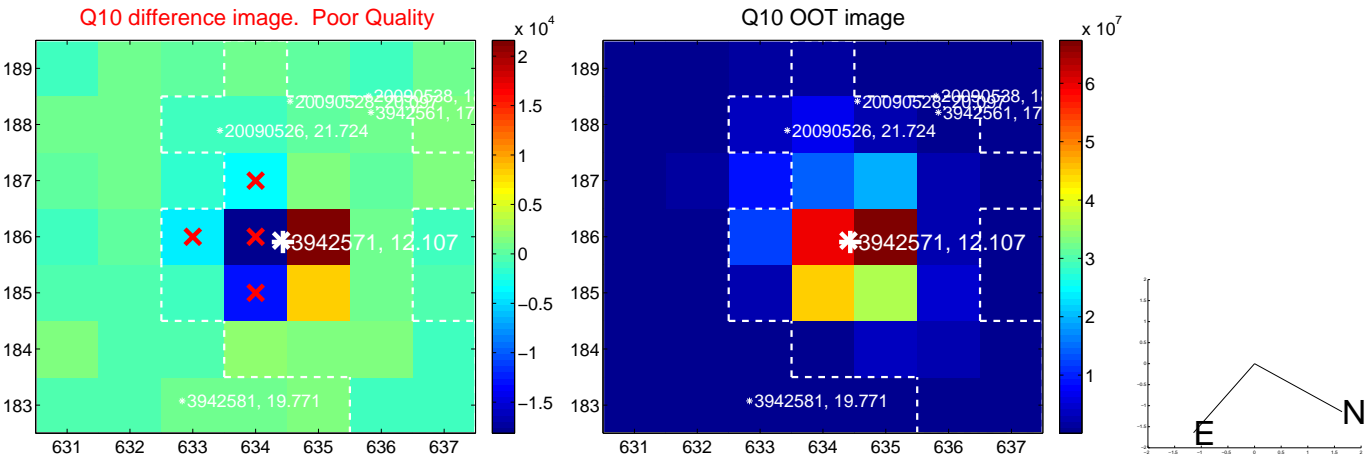
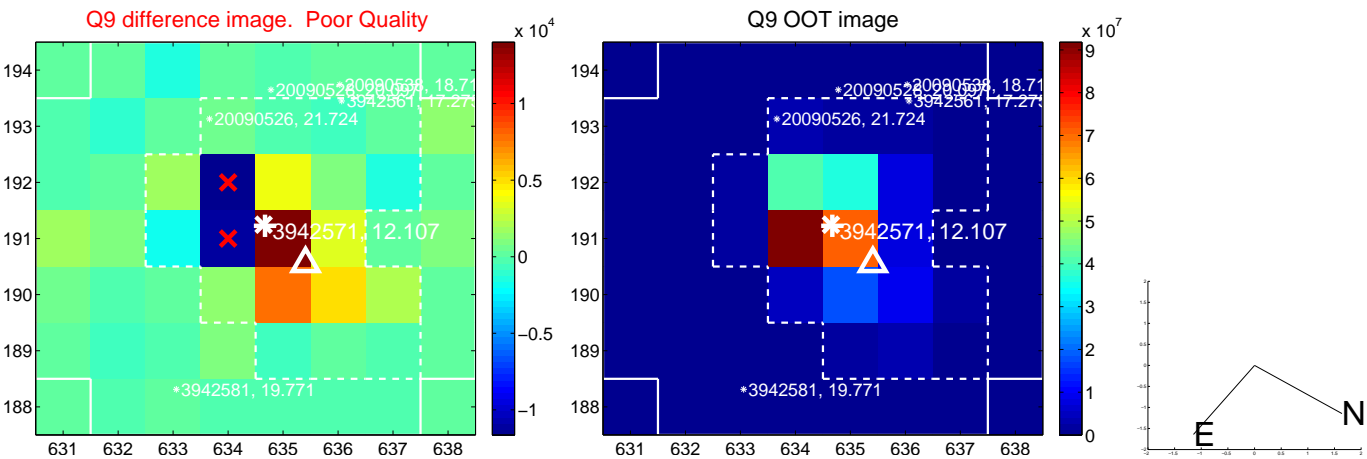
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



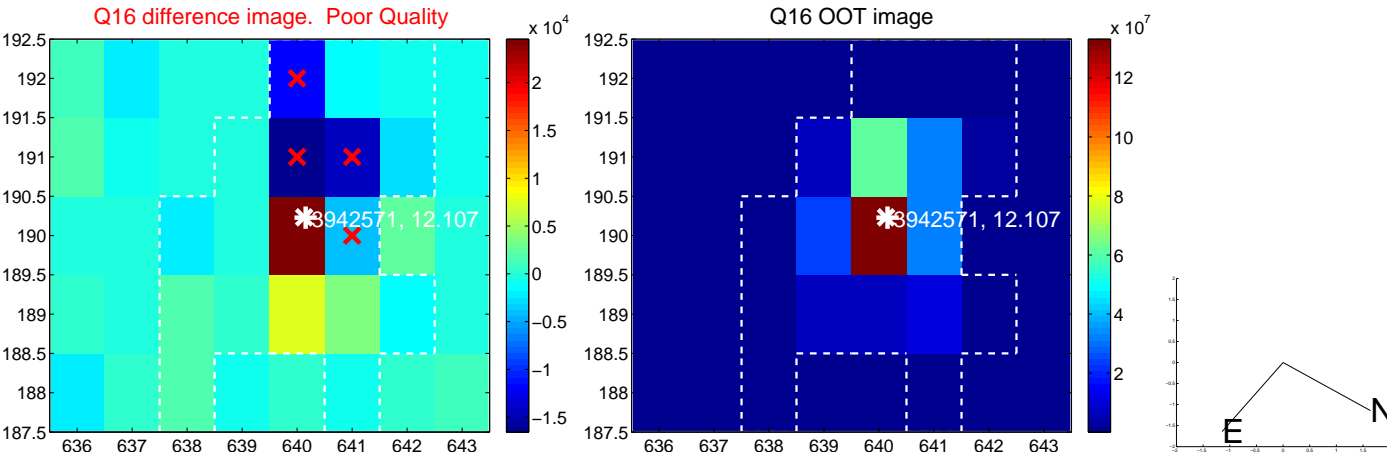
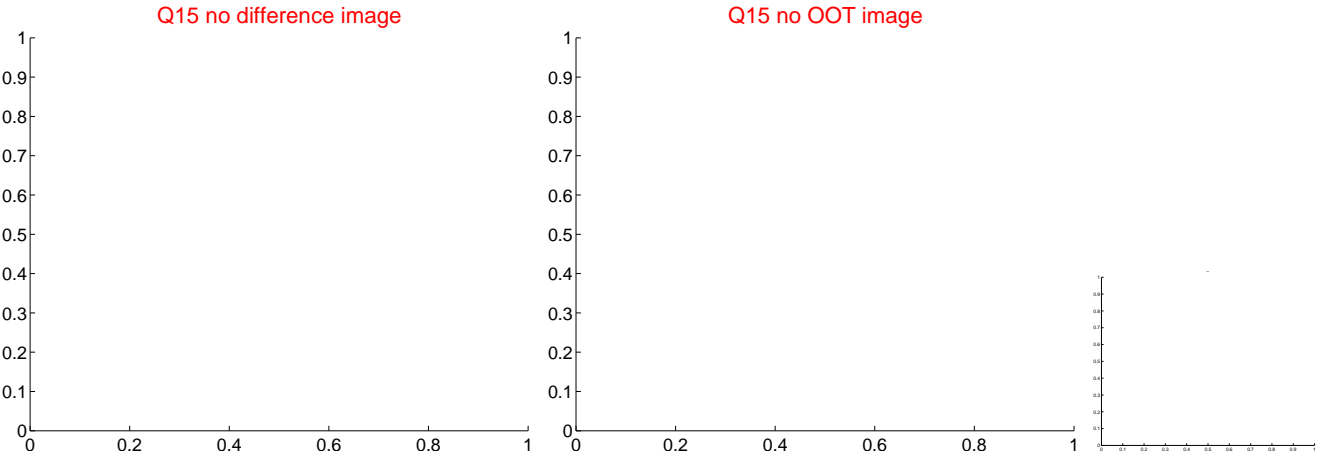
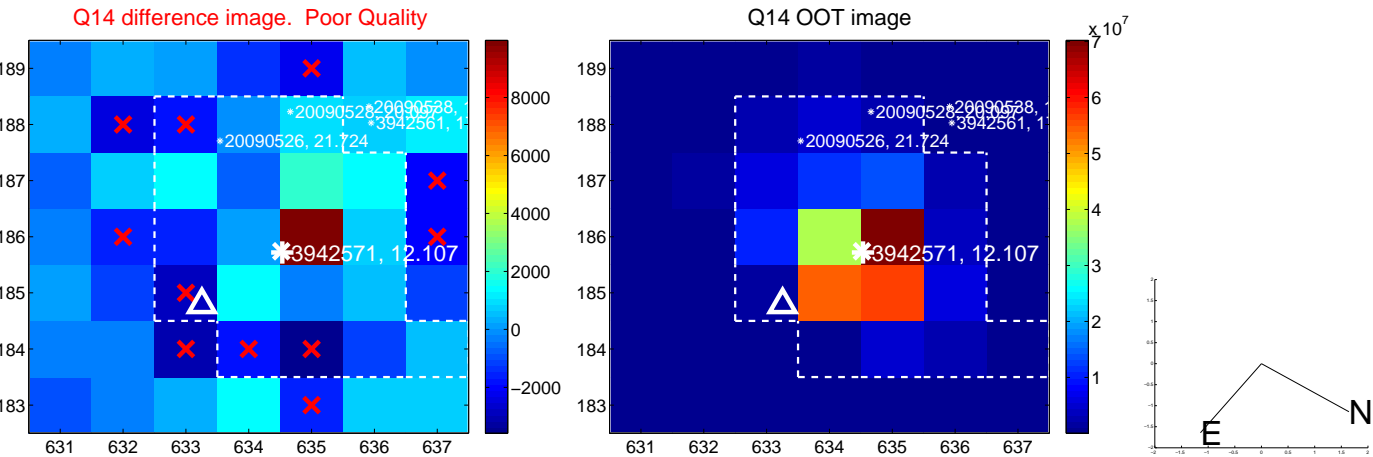
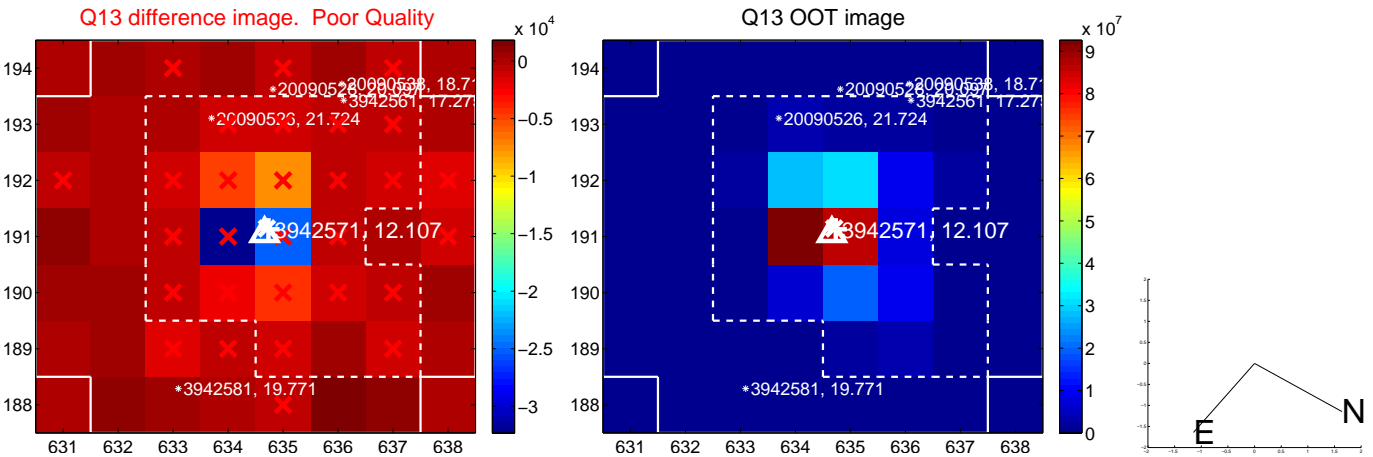
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

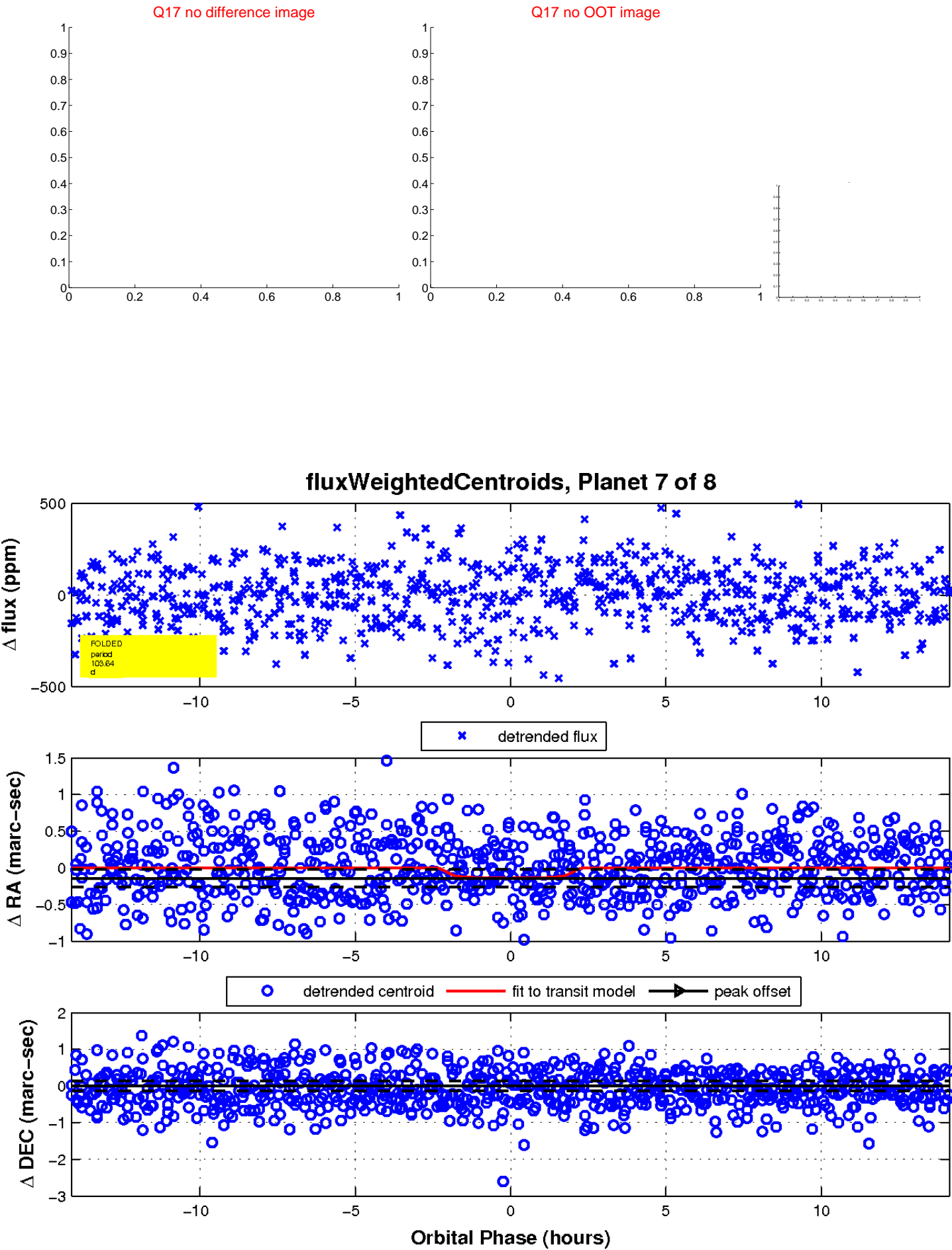


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



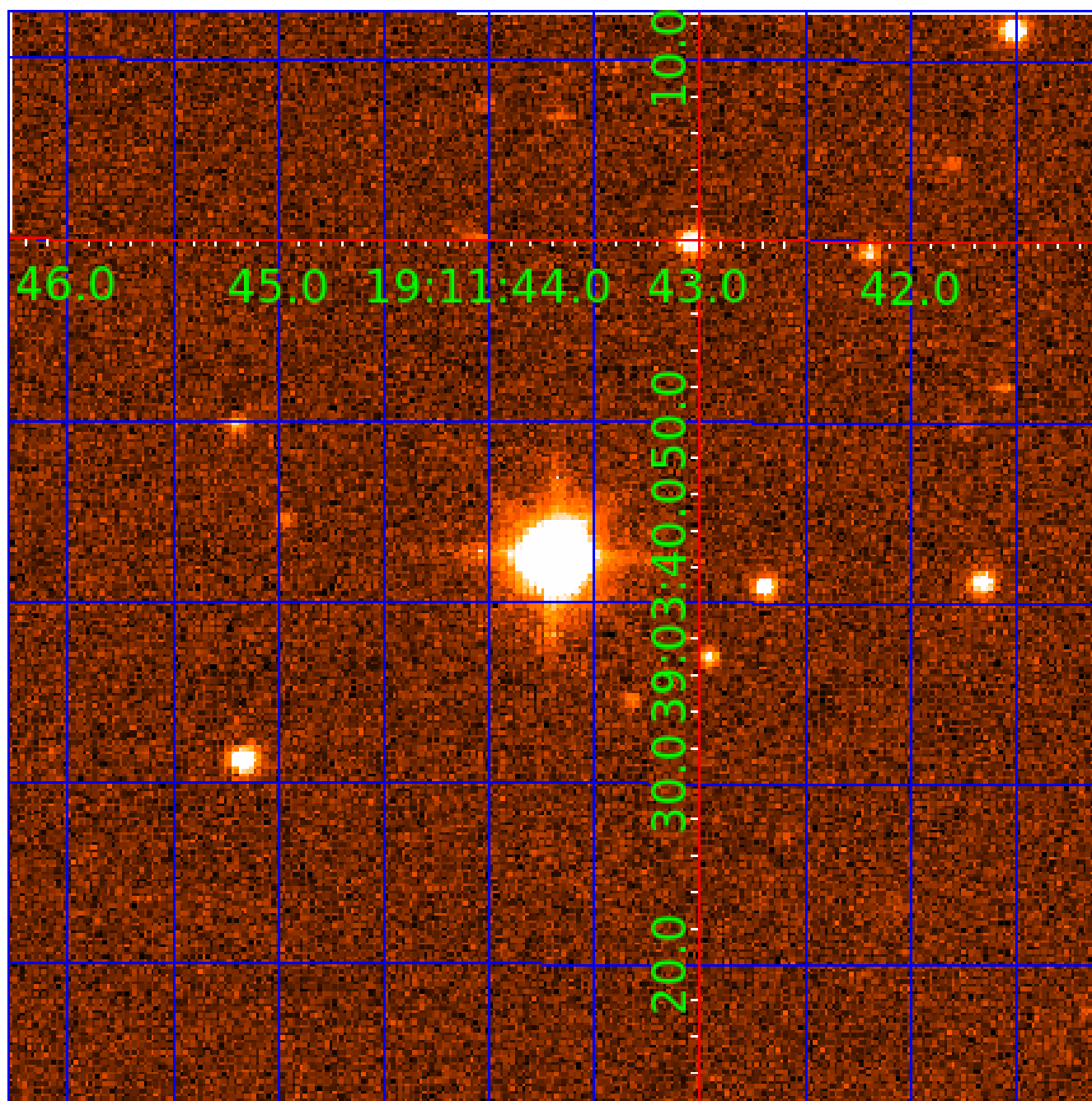


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 003942571

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
003942571-01	OBS	No	1.257394	132.164961	8.1	7.242	9.3	3.8	5.45	6208	1.70	47048.90
003942571-02	OBS	No	218.009814	298.710758	233.0	6.496	14.9	7.0	5.45	6208	9.42	48.66
003942571-03	OBS	No	90.433559	139.776241	173.8	15.269	12.8	8.8	5.45	6208	8.08	157.30
003942571-04	OBS	No	72.236527	146.037624	146.6	5.312	9.6	6.6	5.45	6208	7.42	212.24
003942571-05	OBS	No	90.591459	221.813942	212.4	2.840	8.9	9.3	5.45	6208	8.31	156.94
003942571-06	OBS	No	192.470308	172.581220	222.7	3.505	8.8	7.2	5.45	6208	9.56	57.46
003942571-07	OBS	No	103.635467	170.730217	279.4	4.708	8.6	9.3	5.45	6208	11.10	131.17
003942571-08	OBS	No	18.949271	132.724536	169.2	2.500	8.8	-1.0	5.45	6208	7.11	1263.92

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003942571-01	OBS	FP	0.00	1	0	1	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—HALO_GHOST
003942571-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
003942571-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
003942571-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
003942571-05	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
003942571-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
003942571-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
003942571-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_ALT—MOD_NONUNIQ_ALT—CENT_NOFITS

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

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

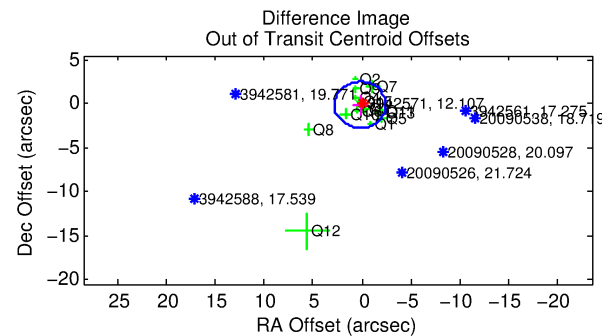
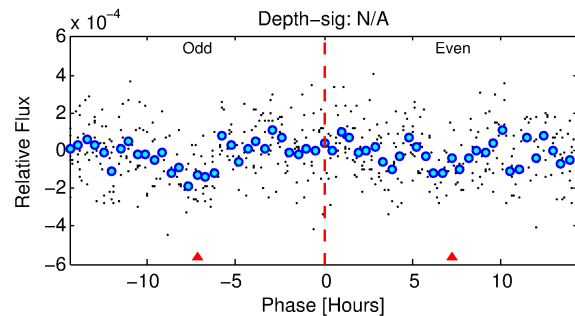
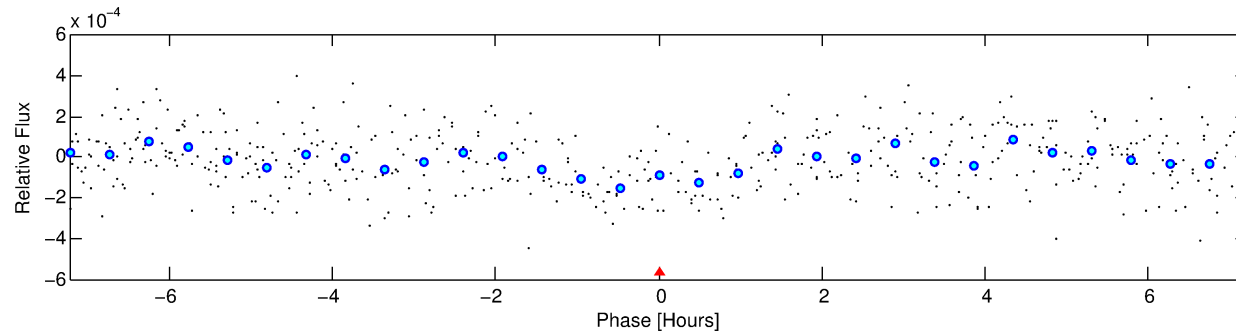
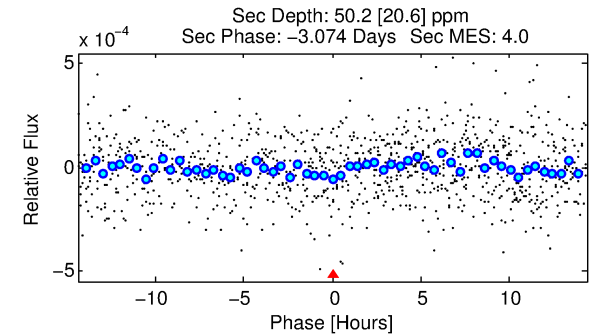
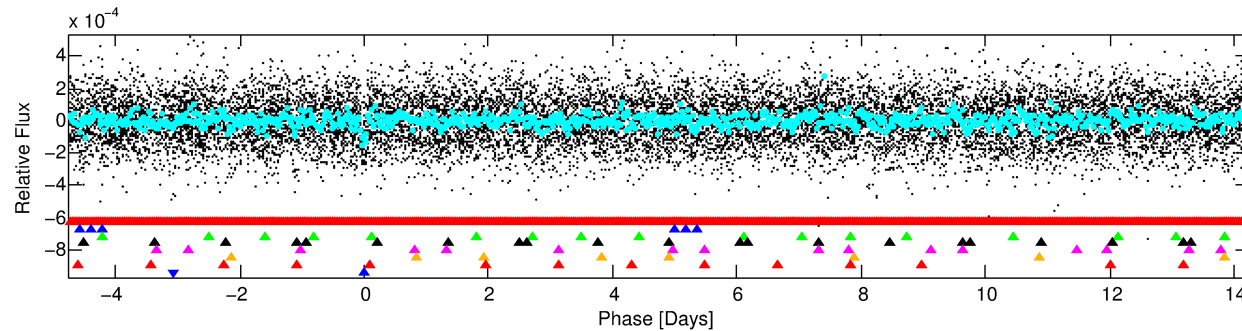
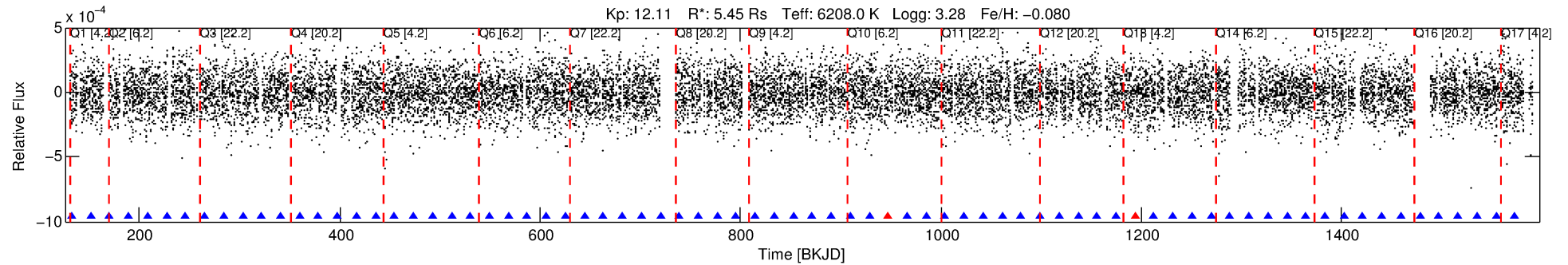
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 003942571-08

No Significant Match Found

# DV One-Page Summary

KIC: 3942571 Candidate: 8 of 8 Period: 18.949 d



## TPS TCE Results:

Period = 18.94927 d  
Epoch = 132.7245 BKJD

DV fit results are unavailable

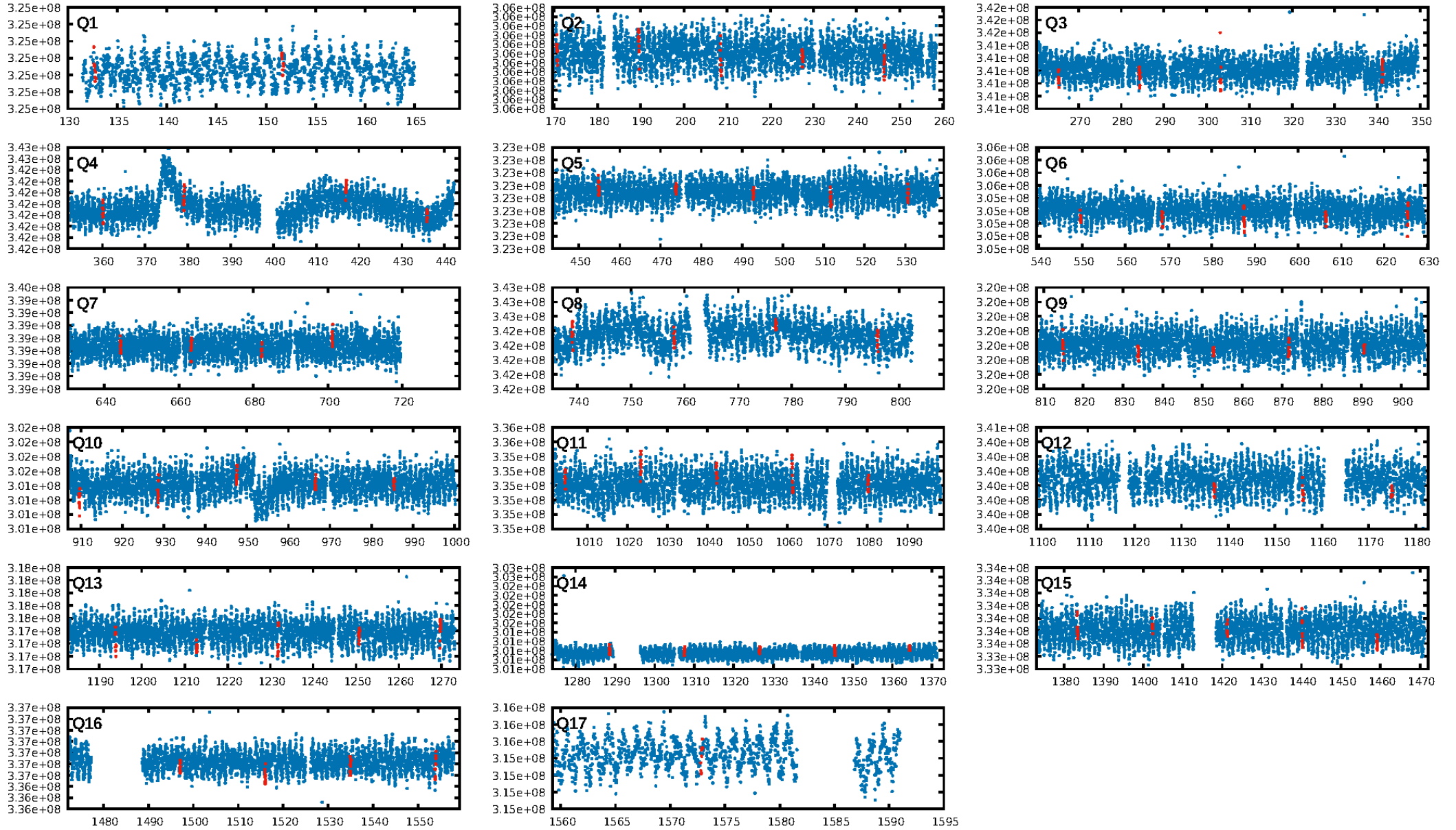
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [55.42σ]  
LongPeriod-sig: 100.0% [217.84σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 0.89 [17/19]  
GhostDiagnostic-chr: 0.4323  
Centroid-sig: 38.3%  
Centroid-so: 0.397 arcsec [0.75σ]  
OotOffset-rm: 0.221 arcsec [0.25σ]  
KicOffset-rm: 0.170 arcsec [0.26σ]  
OotOffset-st: 3/4/3/4 [14]  
KicOffset-st: 3/4/3/4 [14]  
DiffImageQuality-fgm: 0.50 [7/14]  
DiffImageOverlap-fno: 0.41 [7/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 01:12:11 Z

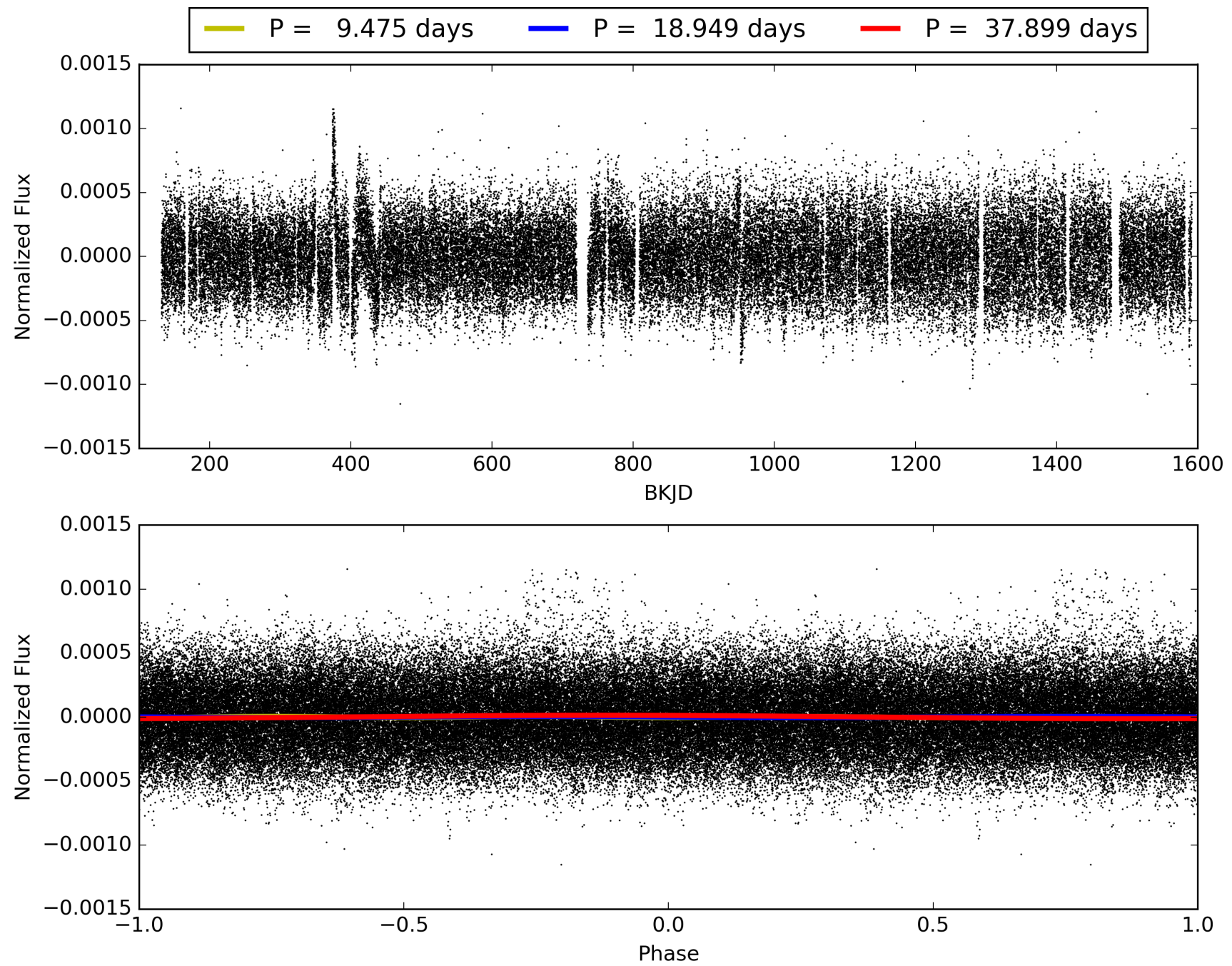
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 003942571-08, PDC Light Curves



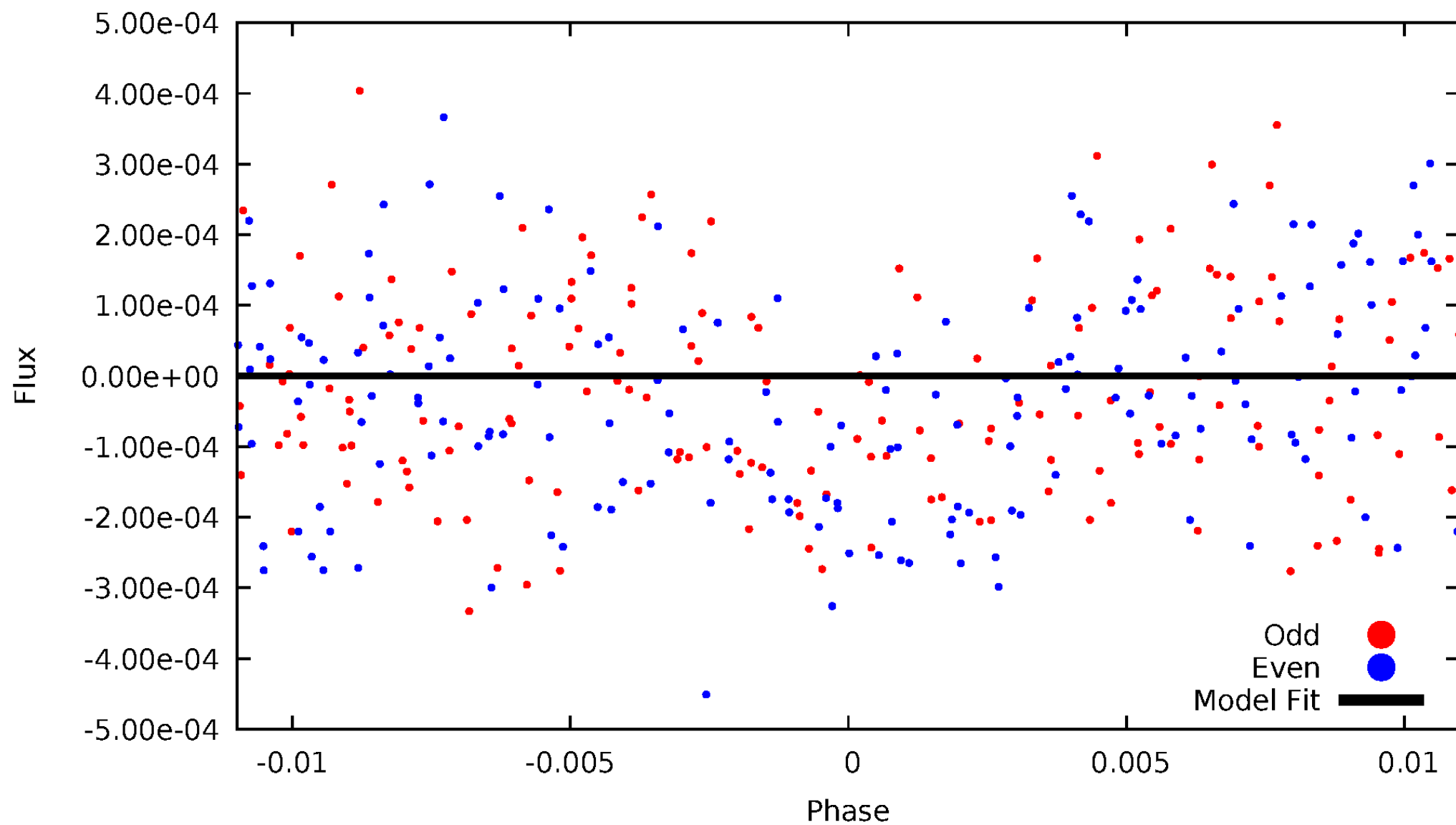


TCE 003942571-08



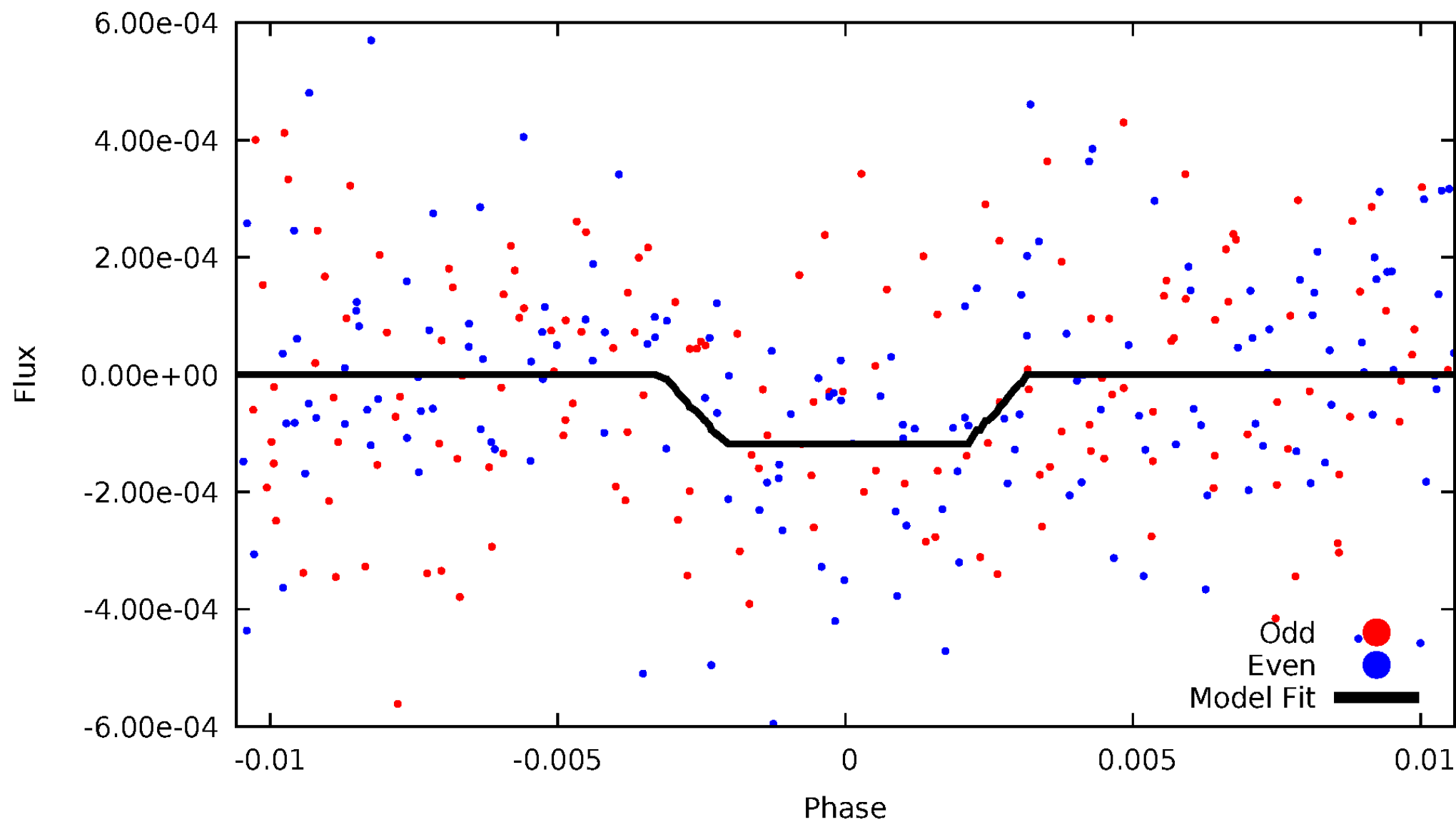
# DV Odd/Even

TCE 003942571-08



# ALT Odd/Even

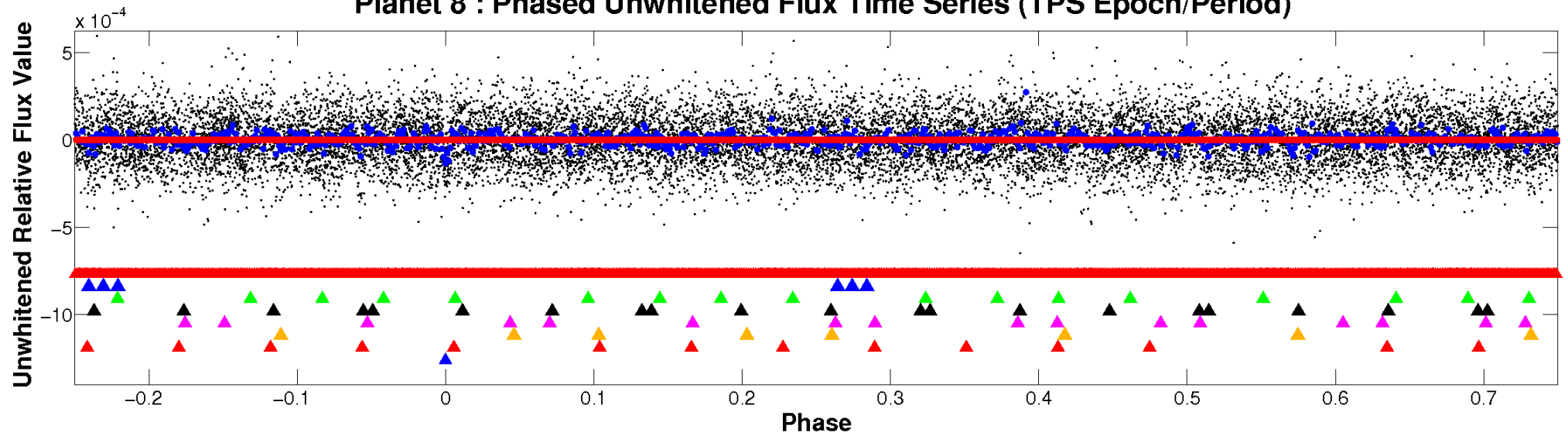
TCE 003942571-08



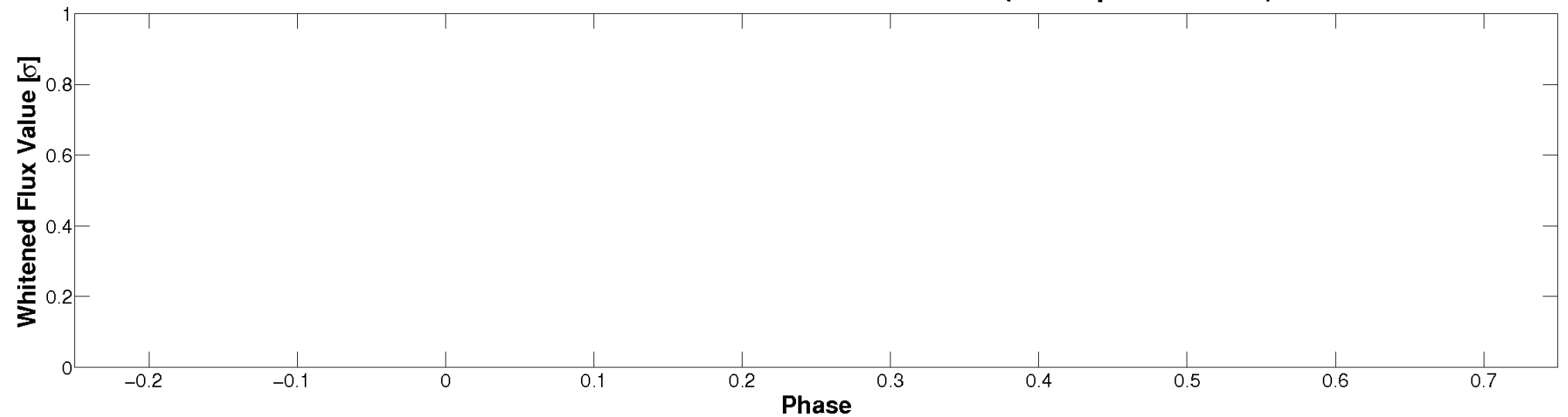


# Non-Whitened Vs. Whitened Light Curve

**Planet 8 : Phased Unwhitened Flux Time Series (TPS Epoch/Period)**

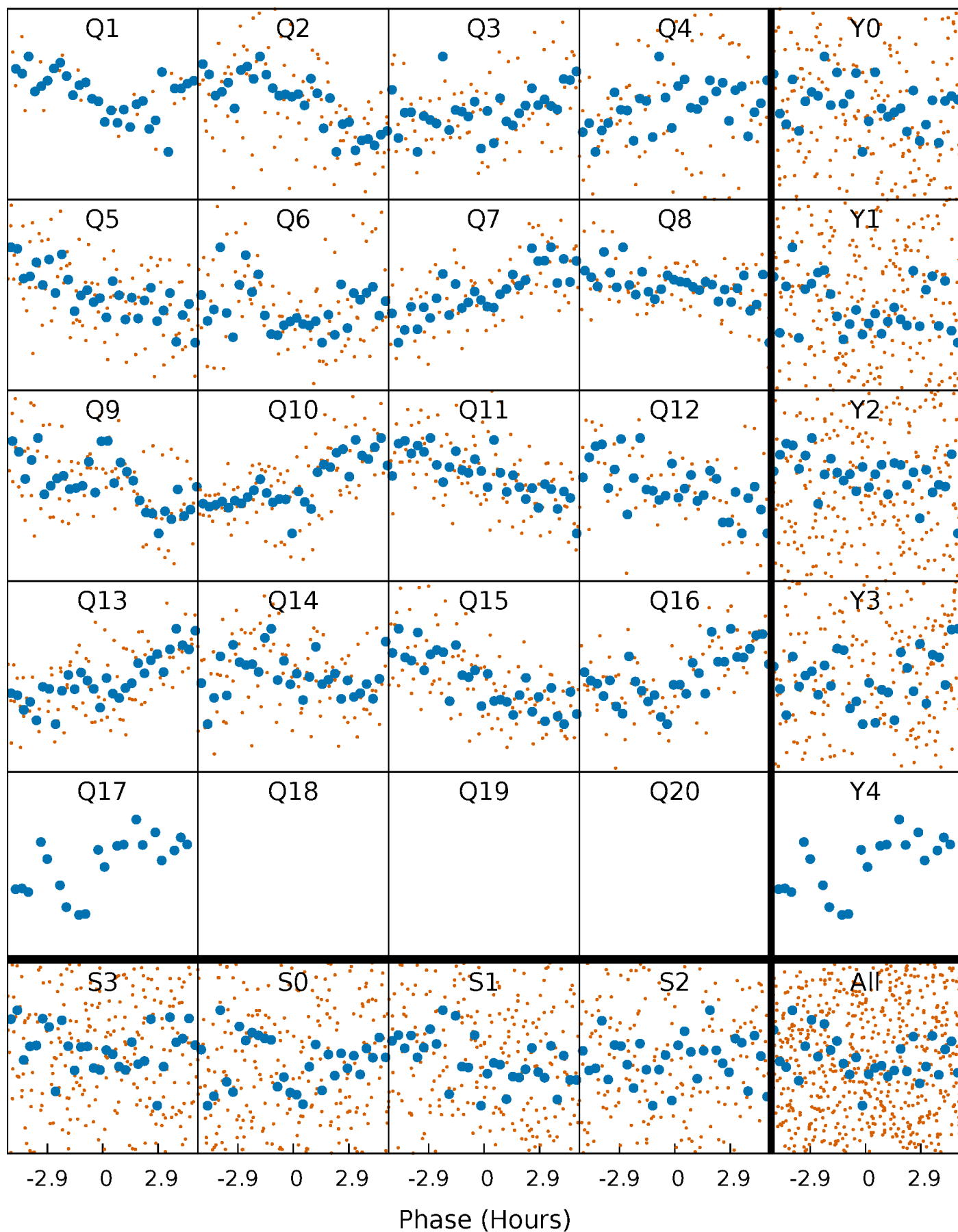


**Planet 8 : Phased Whitened Flux Time Series (TPS Epoch/Period)**



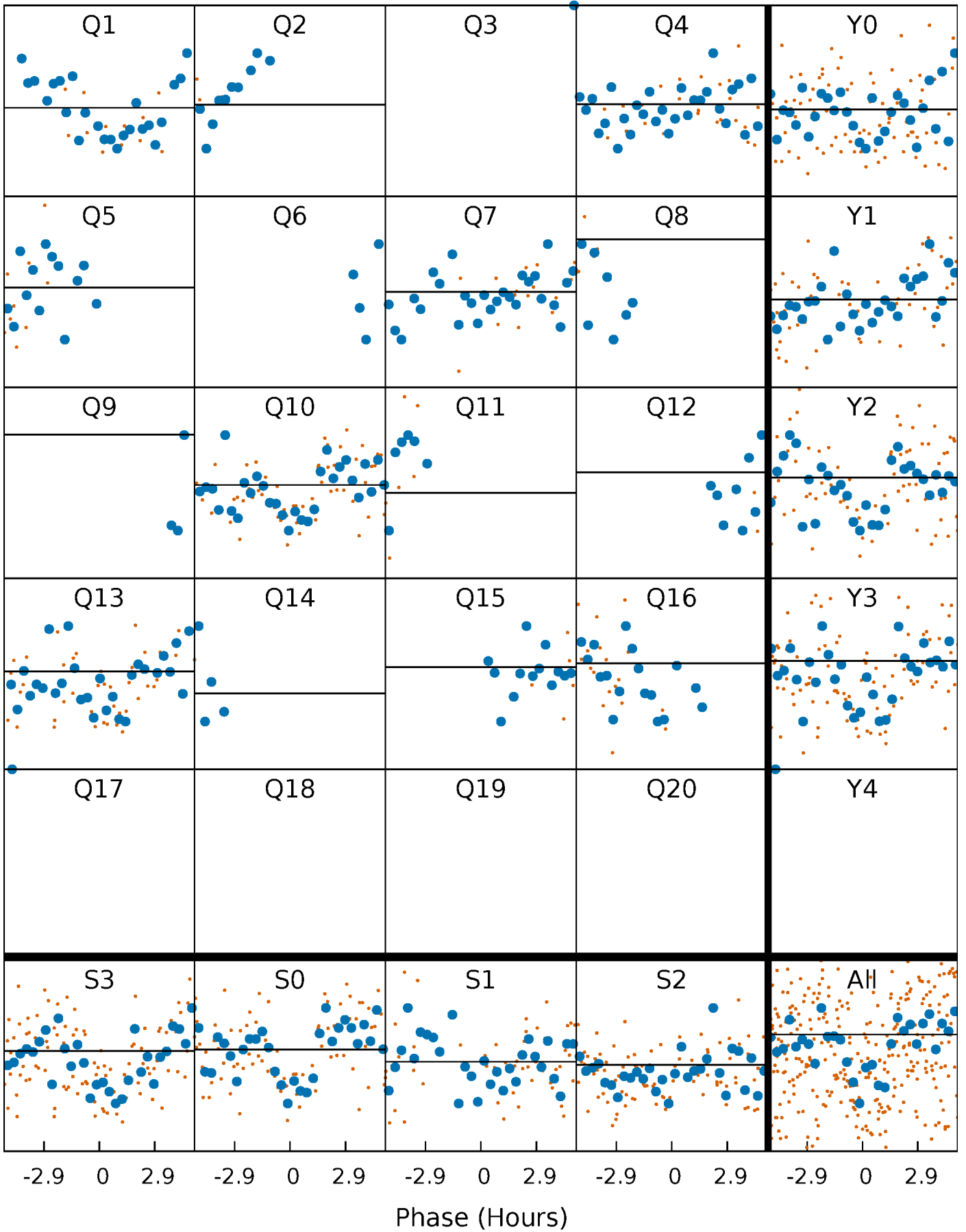
# PDC Quarter-Phased Transit Curves

TCE 003942571-08 P= 18.949271 Days  $T_0=132.724536$  (BKJD)



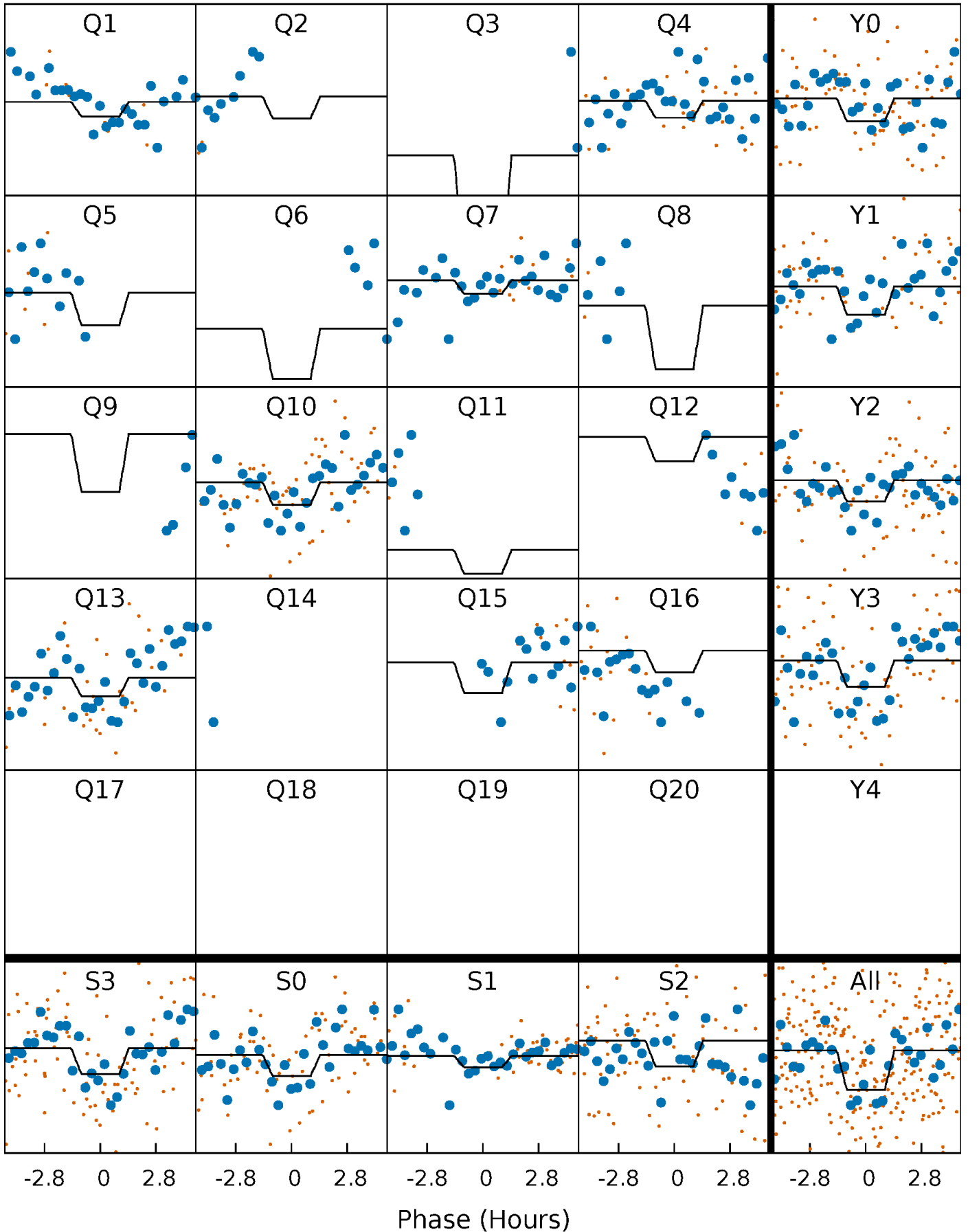
# DV Quarter-Phased Transit Curves

TCE 003942571-08   P= 18.949271 Days    $T_0=132.724536$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

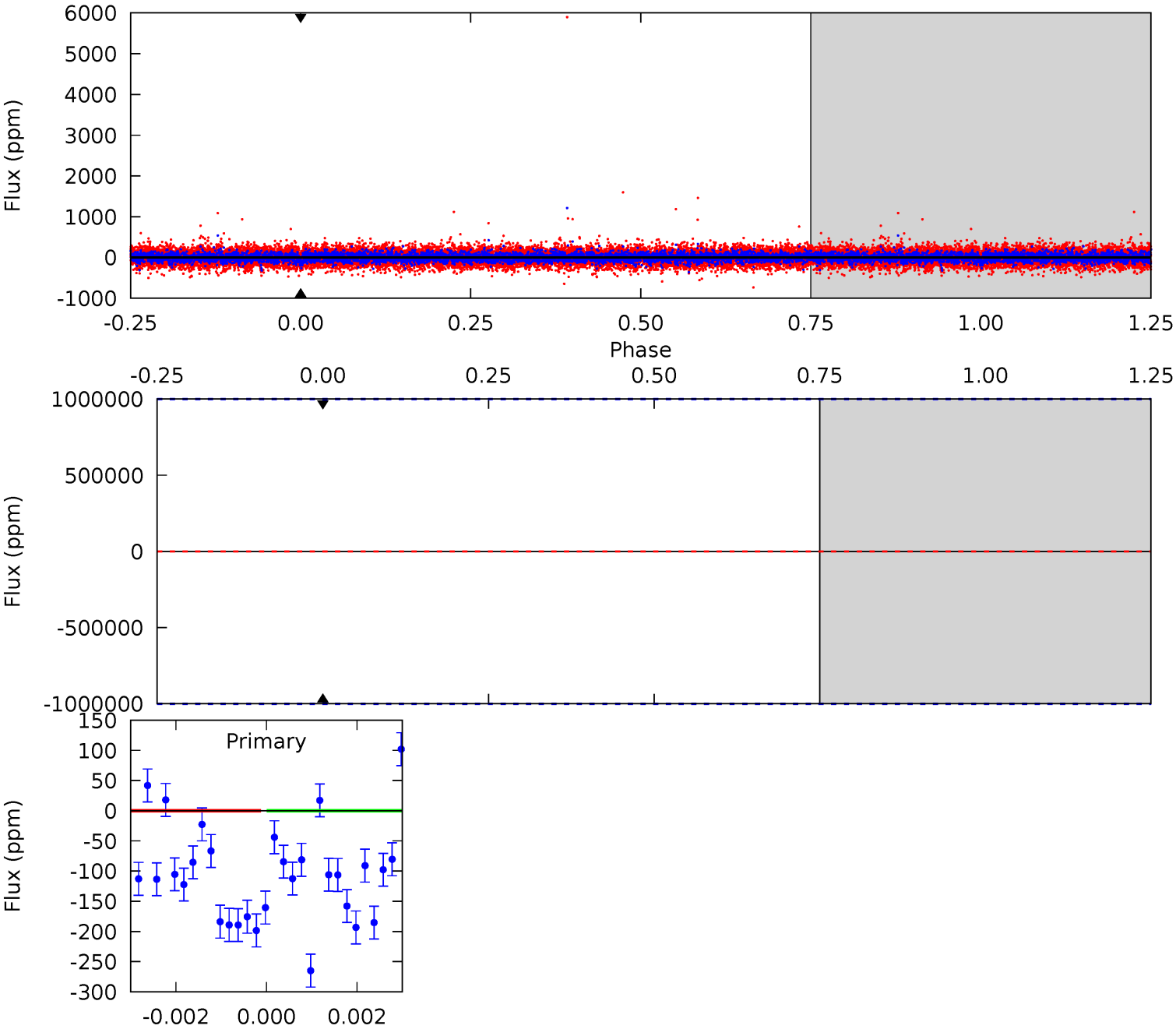
TCE 003942571-08 P= 18.949271 Days  $T_0=132.742784$  (BKJD)



# DV Model-Shift Uniqueness Test

003942571-08, P = 18.949271 Days, E = 113.775265 Days

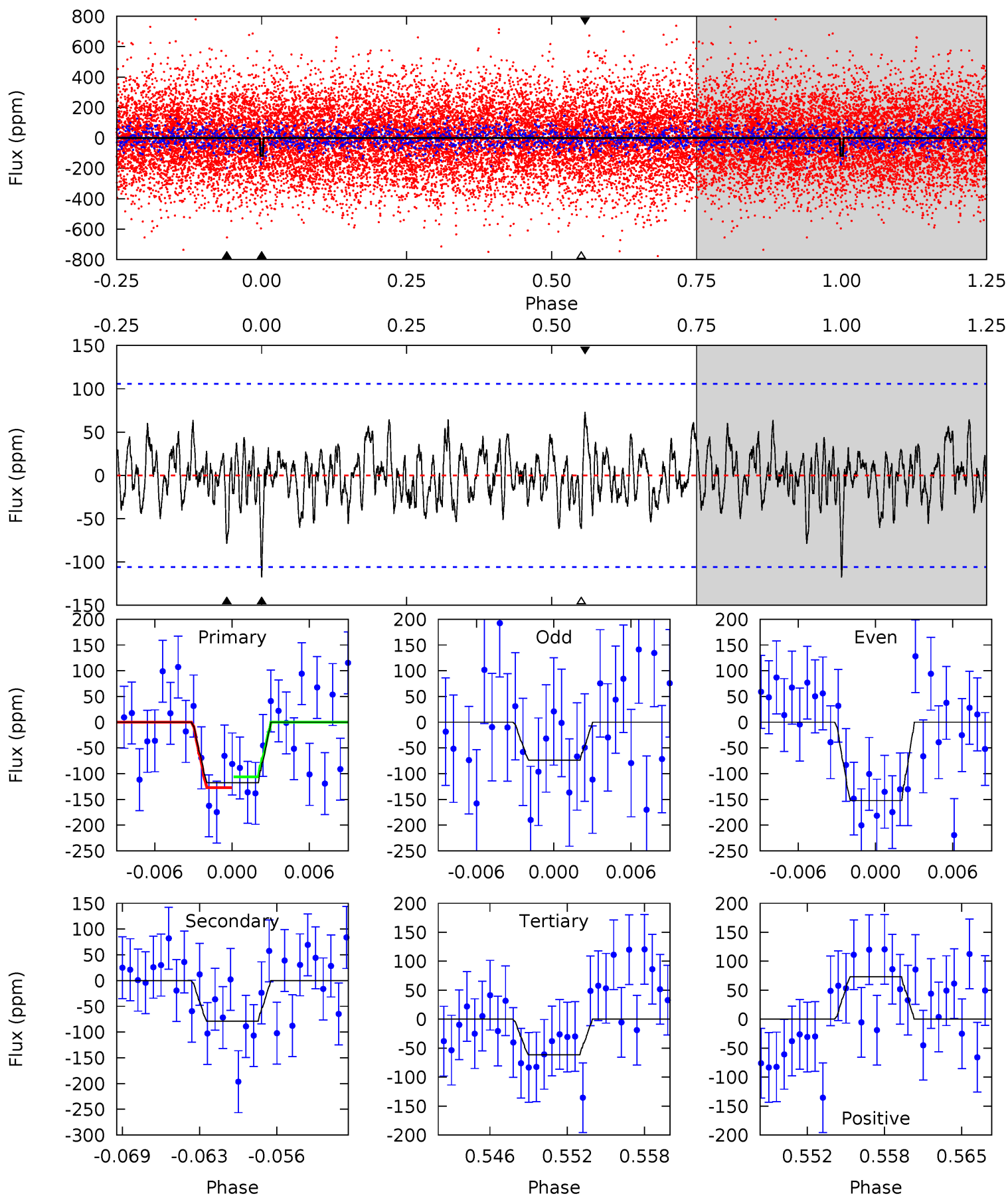
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



# Alt Model-Shift Uniqueness Test

003942571-08, P = 18.949271 Days, E = 113.793513 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
5.69	3.82	2.98	3.54	5.12	2.73	1.19	2.71	2.15	0.84	0.28	1.90	1.27	0.38	0.51



### Stellar Parameters For KIC 003942571

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6208^{+169}_{-169}$	$3.278^{+0.459}_{-0.051}$	$-0.080^{+0.350}_{-0.300}$	$5.454^{+0.282}_{-2.540}$	$2.058^{+0.095}_{-0.539}$	$0.018^{+0.084}_{-0.002}$
	+3%/-3%	+14%/-2%	+438%/-375%	+5%/-47%	+5%/-26%	+472%/-9%
Source	PHO1	FLK73	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 003942571-08 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$0 \pm 1000000$	$36.48^{+41.28}_{-25.18}$	$2075^{+98}_{-233}$	$-3959^{+33638}_{-19418}$	$-8.595^{+2617.120}_{-2072.912}$
Alt.	$-79 \pm 21$	$40.37^{+41.95}_{-28.59}$	$2073^{+103}_{-247}$	$2650^{+1353}_{-4897}$	$0.776^{+9.000}_{-0.586}$

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

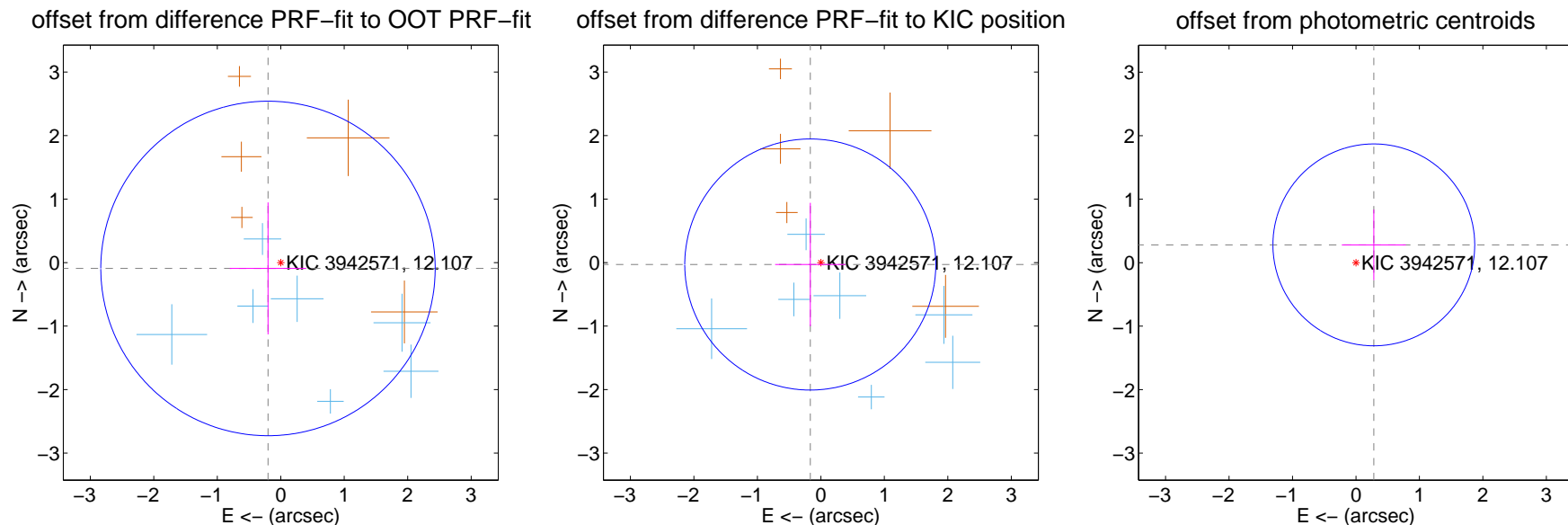
## DV Centroid Data

Supplemental centroid analysis for 003942571-08. Kepler magnitude: 12.11. Transit SNR -1.00

There are 7 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.09 arcsec

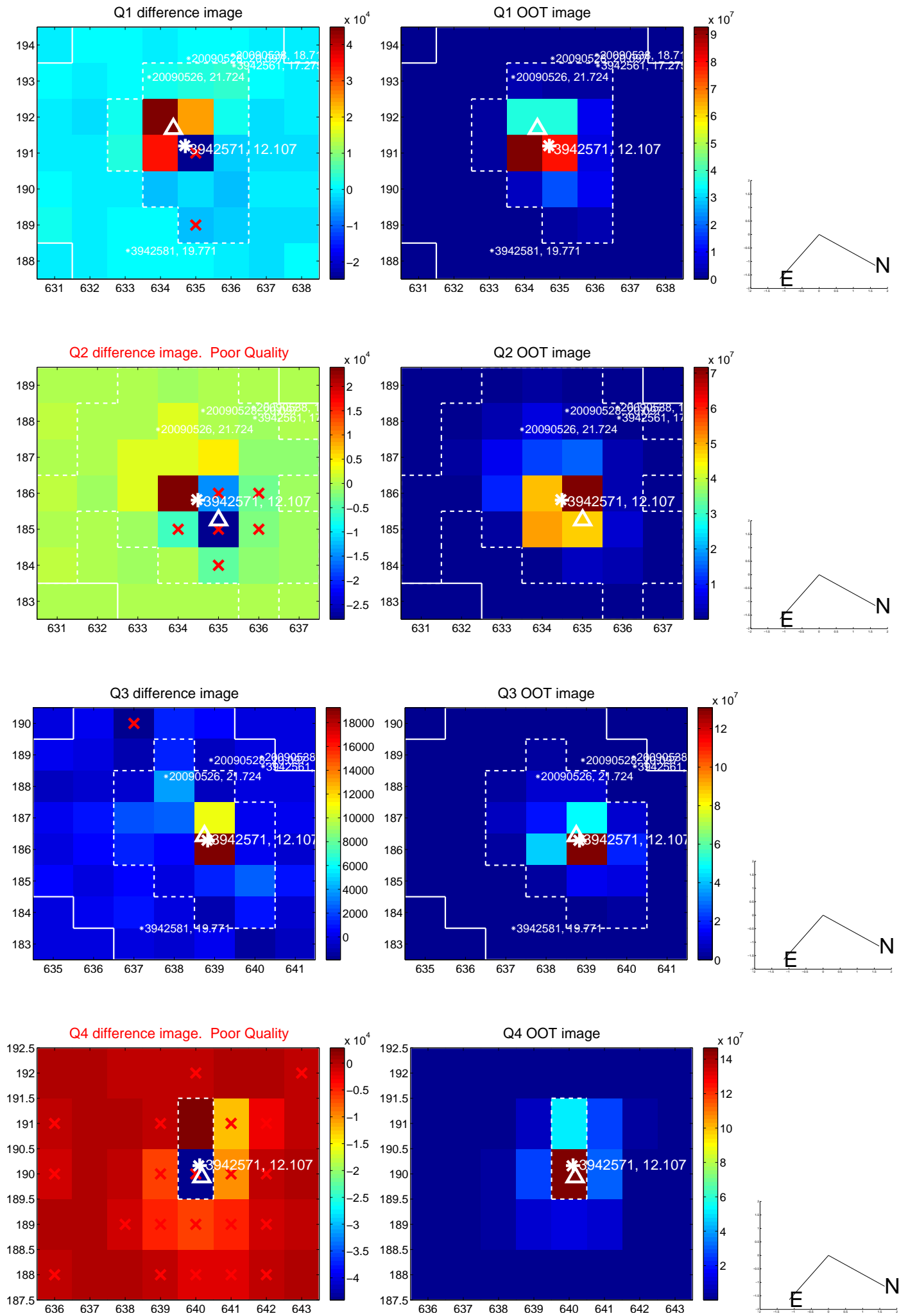
	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.221 \pm 0.878$	0.25	$0.201 \pm 0.602$	$-0.092 \pm 1.039$
PRF-fit source offset from KIC position	$0.170 \pm 0.659$	0.26	$0.167 \pm 0.553$	$-0.030 \pm 0.972$
photometric centroid source offset	$0.40 \pm 0.53$	0.75	$-0.28 \pm 0.50$	$0.28 \pm 0.56$



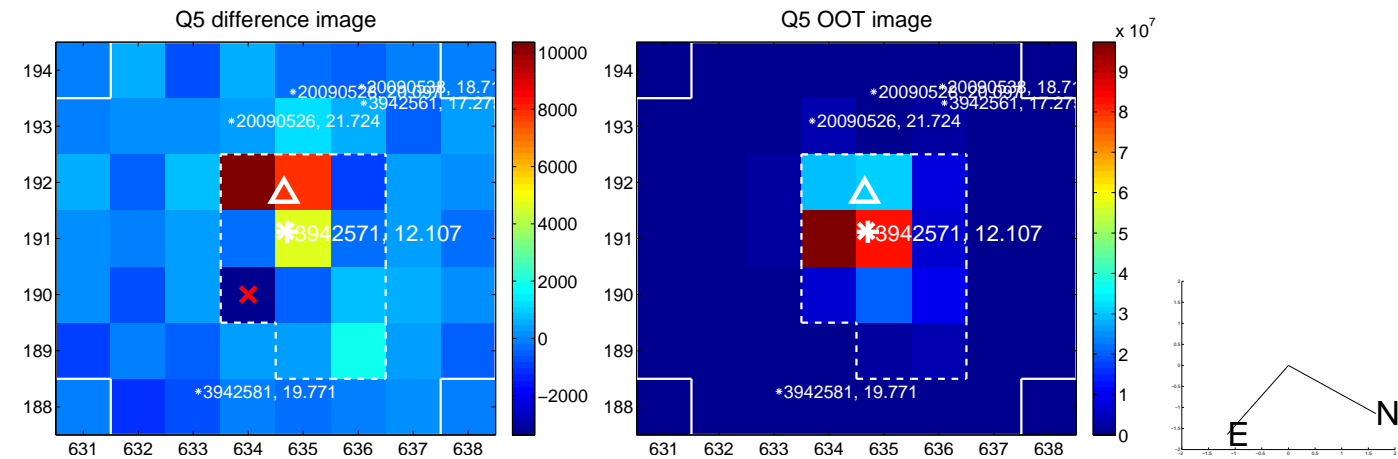
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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



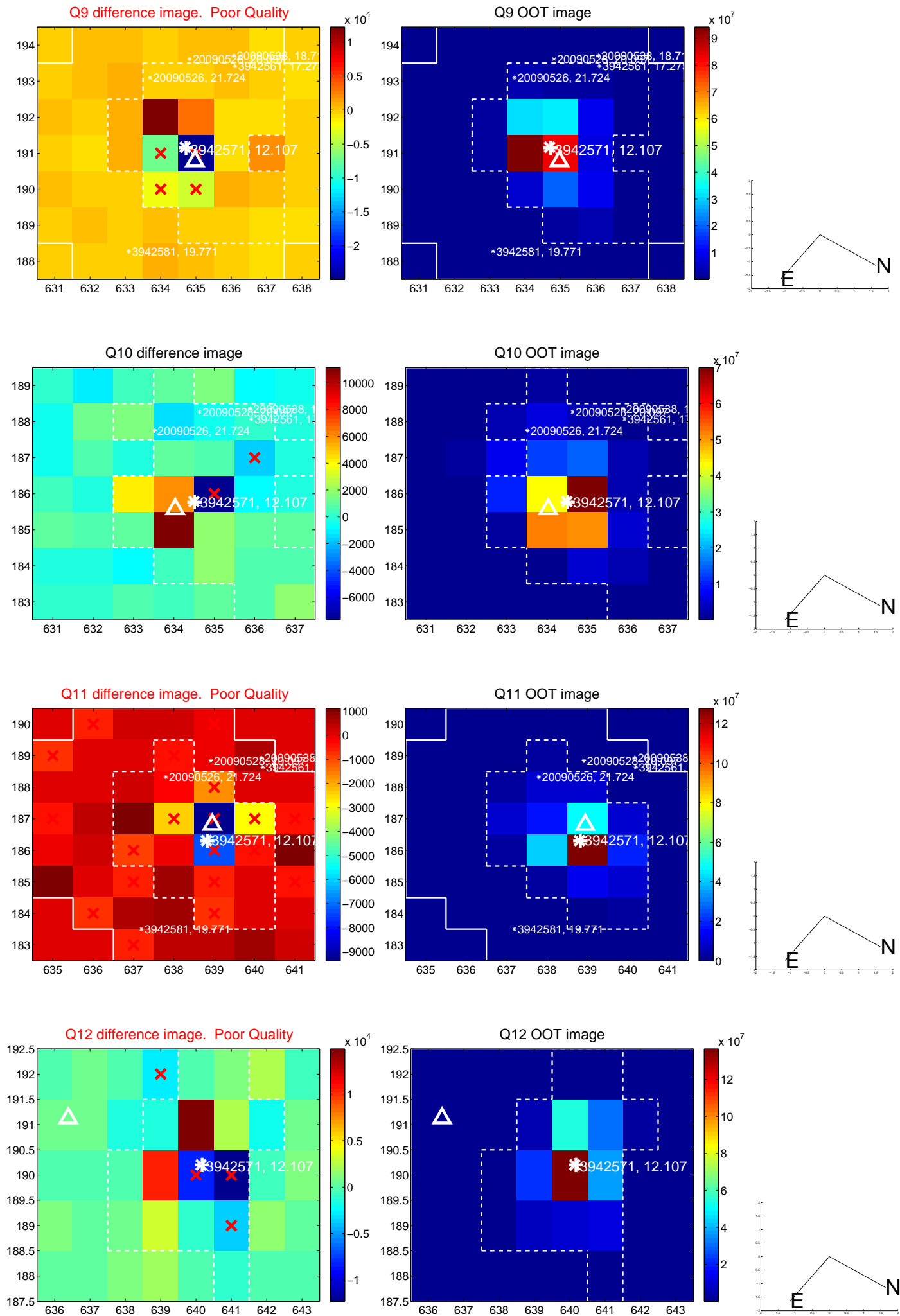
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



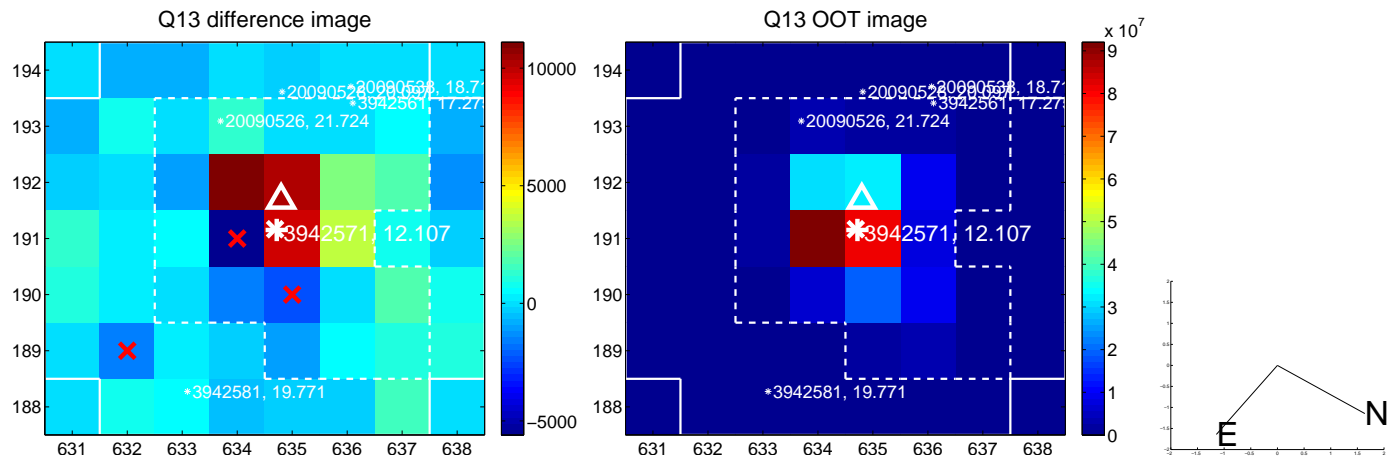
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



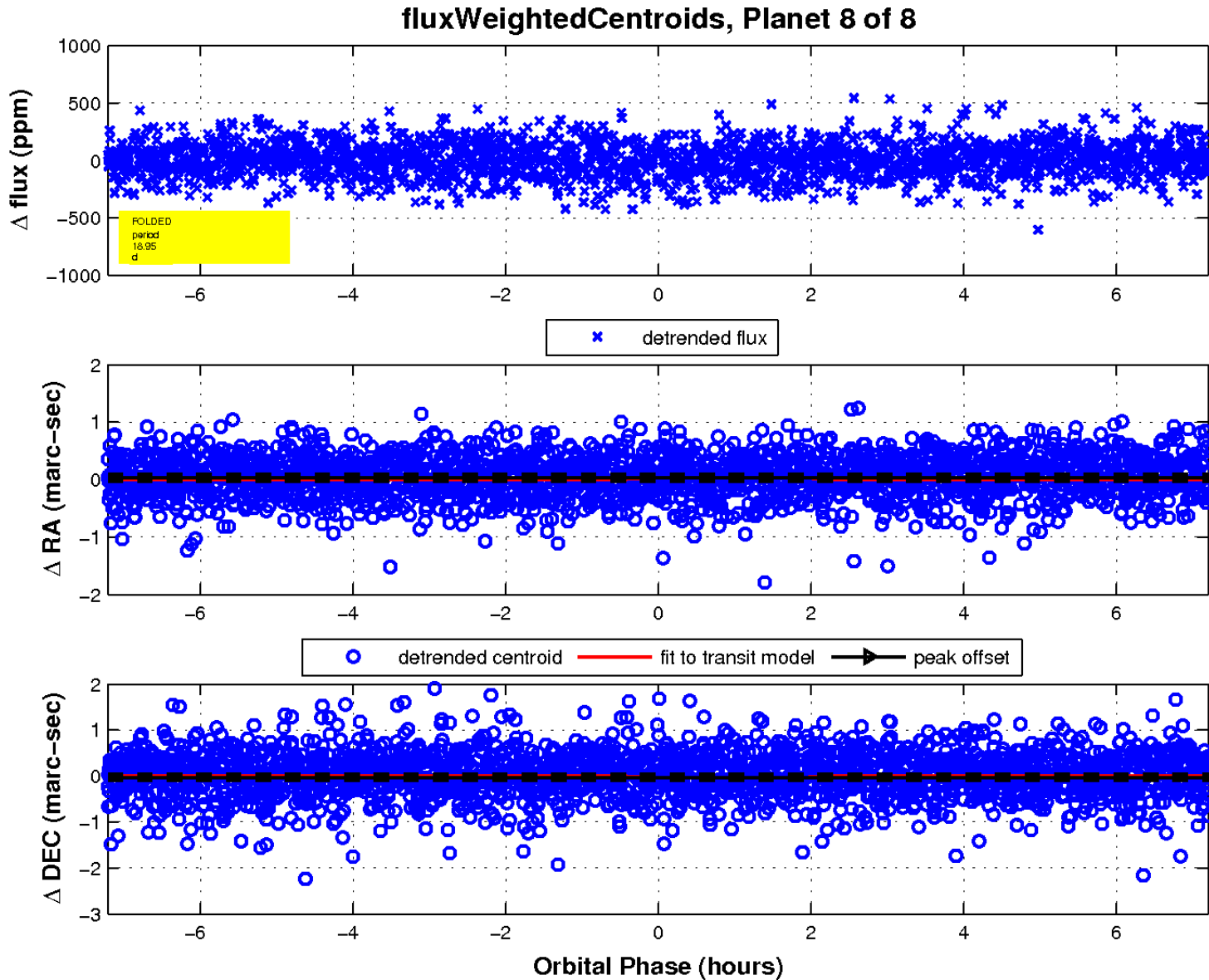
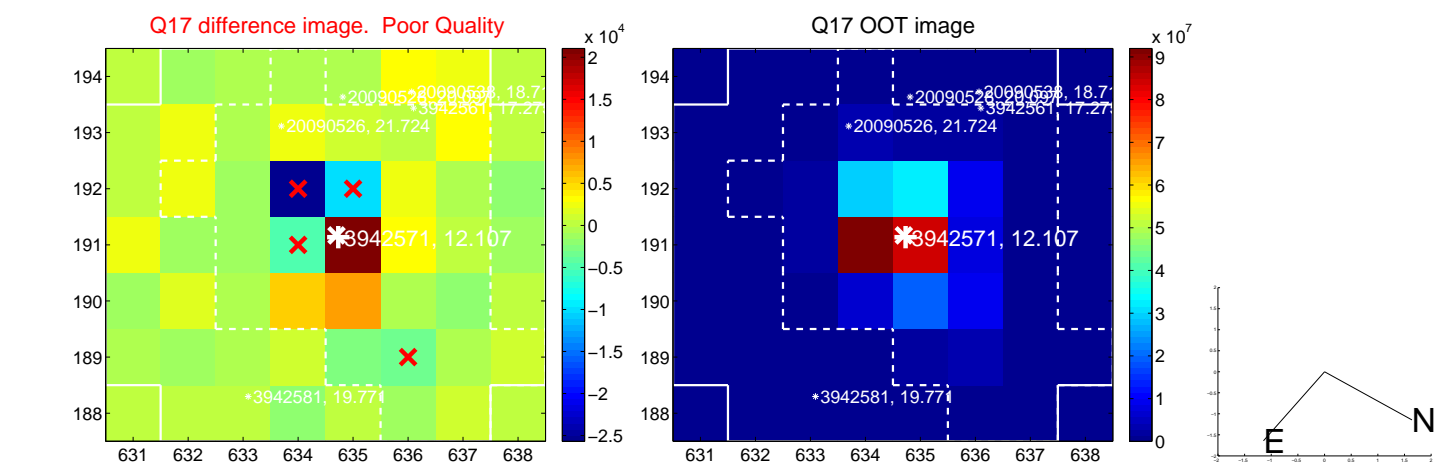
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

