

# KIC 009612225

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
009612225-01	OBS	No	1.569074	132.357241	5.4	11.763	8.4	2.9	4.21	6068	0.99	20635.40
009612225-02	OBS	No	15.389879	132.709323	325.0	1.505	18.4	16.1	4.21	6068	7.73	982.86
009612225-03	OBS	No	17.227206	146.565078	439.3	1.252	17.4	17.2	4.21	6068	9.83	845.64
009612225-04	OBS	No	10.538483	138.586428	319.7	1.531	17.5	18.0	4.21	6068	8.92	1628.42
009612225-05	OBS	No	18.886120	148.709844	263.3	3.838	15.7	15.8	4.21	6068	7.83	748.08
009612225-06	OBS	No	14.068152	136.604942	133.8	3.316	11.2	9.3	4.21	6068	5.74	1107.87
009612225-07	OBS	No	8.400052	134.207869	867.8	1.500	14.3	-1.0	4.21	6068	12.43	2203.41

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009612225-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV
009612225-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_MEAS—HALO_GHOST
009612225-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
009612225-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_MEAS
009612225-05	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—HALO_GHOST
009612225-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT
009612225-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—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.

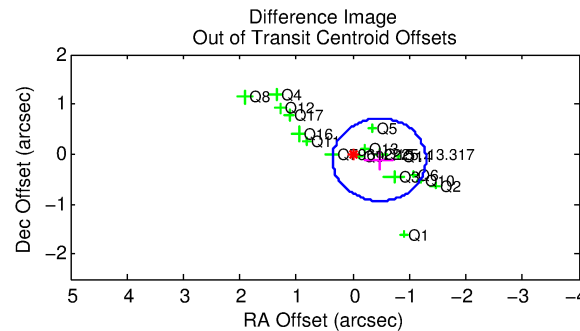
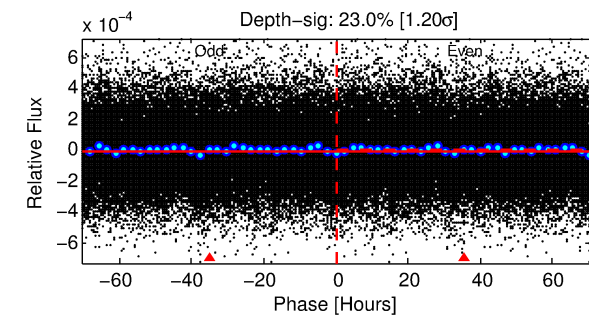
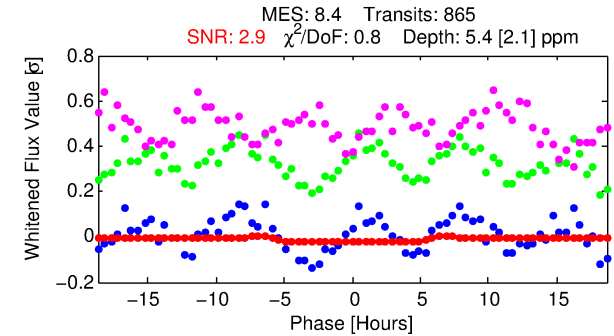
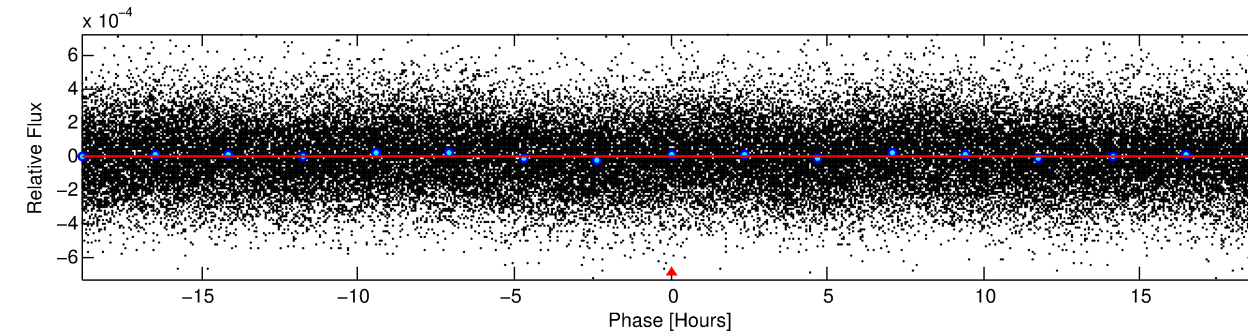
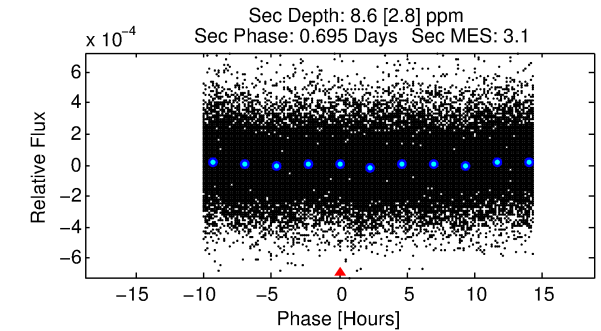
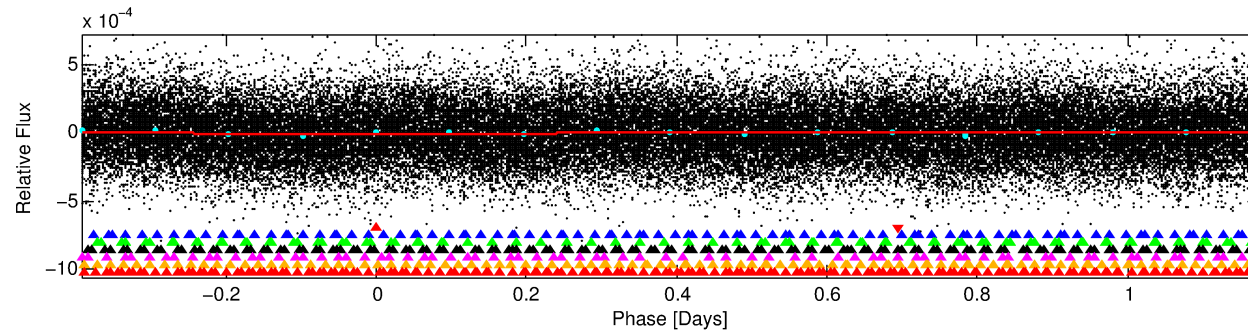
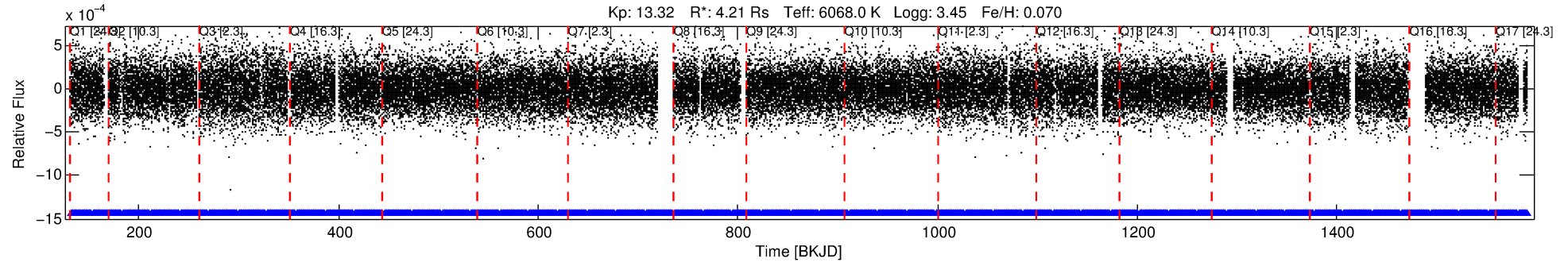
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 009612225-01

No Significant Match Found

# DV One-Page Summary

KIC: 9612225 Candidate: 1 of 7 Period: 1.569 d



## DV Fit Results:

Period = 1.56907 [0.00011] d  
Epoch = 132.3572 [0.0322] BKJD  
Rp/R\* = 0.0022 [0.0059]  
a/R\* = 1.17 [4.12]  
b = 0.45 [23.96]  
Seff = 20635.40 [14499.94]  
Teq = 3056 [537] K  
Rp = 0.99 [2.74] Re  
a = 0.0323 [0.0137] AU  
Ag = 4.99 [27.43] [0.15σ]  
Teffp = 7064 [9625] K [0.42σ]

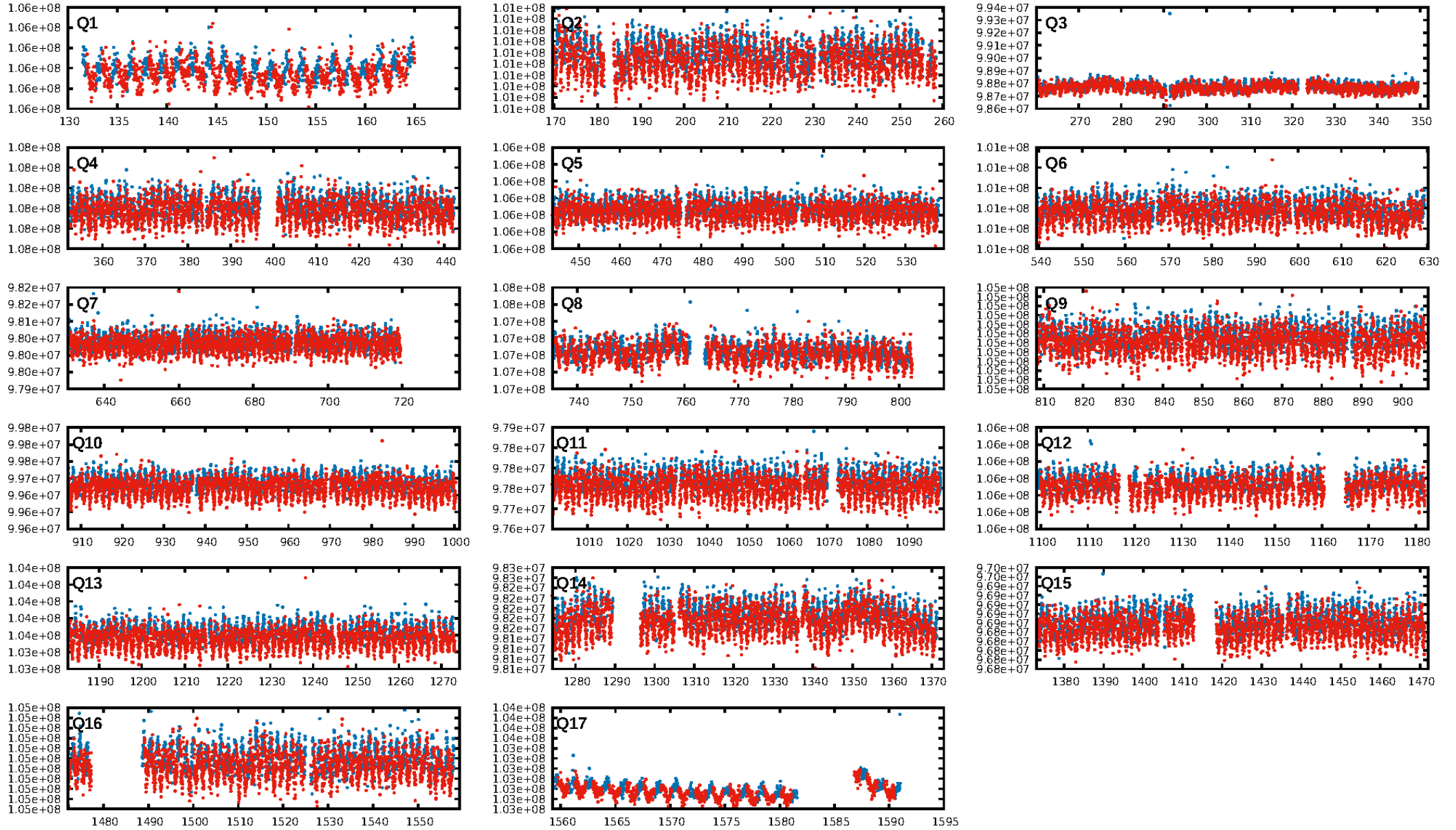
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [13.83σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [827/827]  
GhostDiagnostic-chr: 0.5356  
Centroid-sig: 0.0%  
Centroid-so: 16.133 arcsec [3.77σ]  
OotOffset-rm: 0.479 arcsec [1.74σ]  
KicOffset-rm: 0.582 arcsec [2.22σ]  
OotOffset-st: 4/4/4/5 [17]  
KicOffset-st: 4/4/4/5 [17]  
DiffImageQuality-fgm: 1.00 [17/17]  
DiffImageOverlap-fno: 1.00 [17/17]

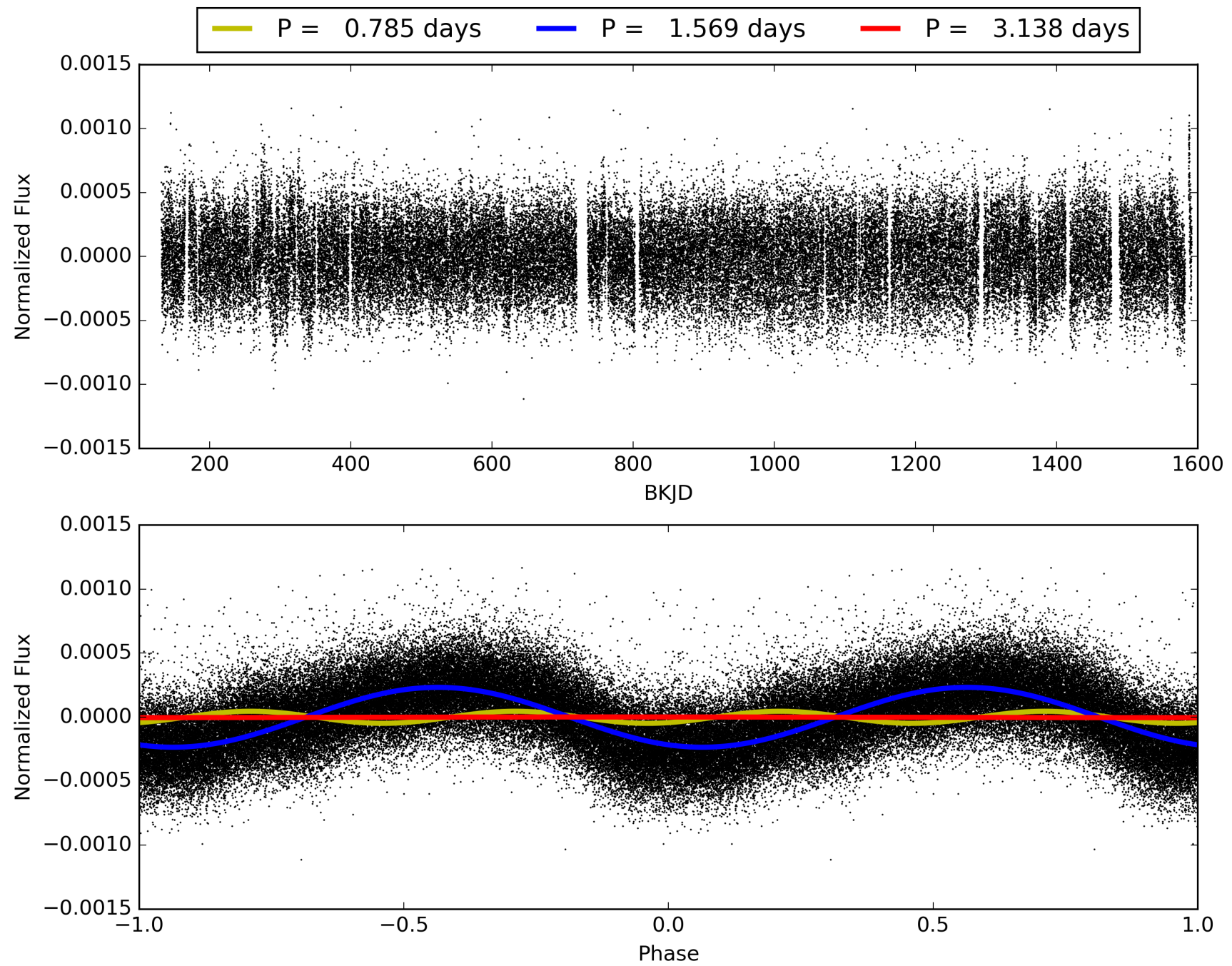
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 13:12:07 Z

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

# TCE 009612225-01, PDC Light Curves



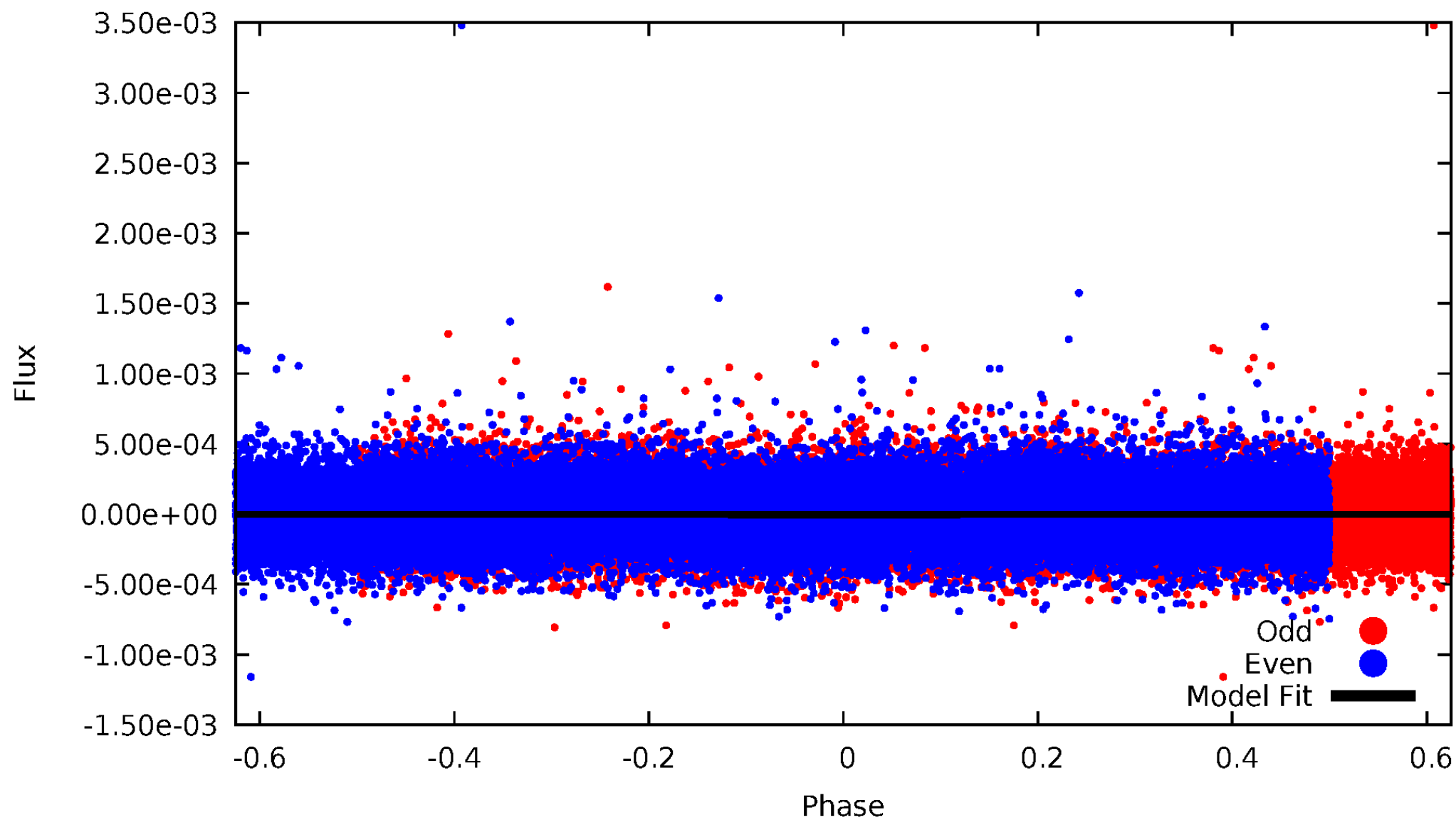
TCE 009612225-01





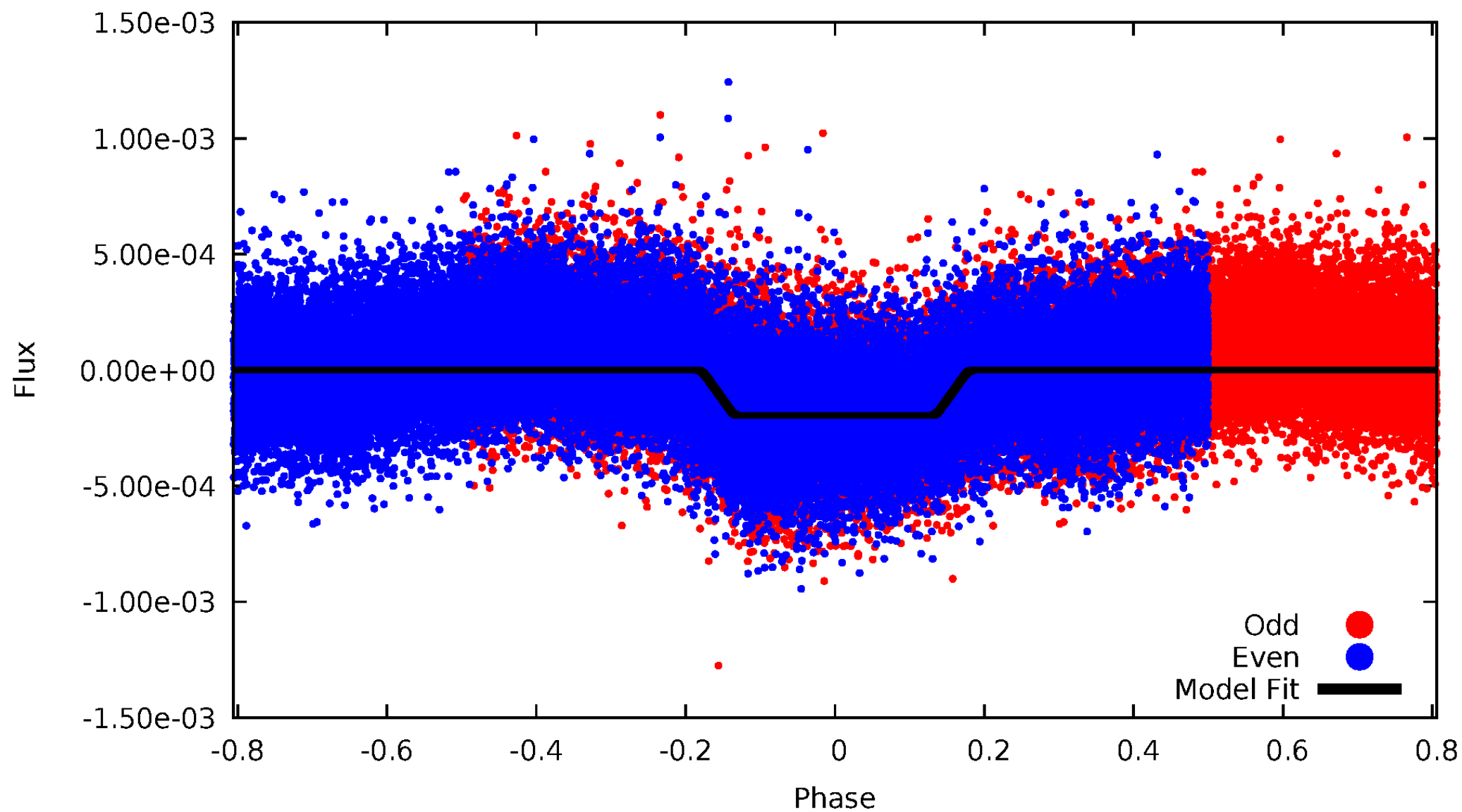
# DV Odd/Even

TCE 009612225-01

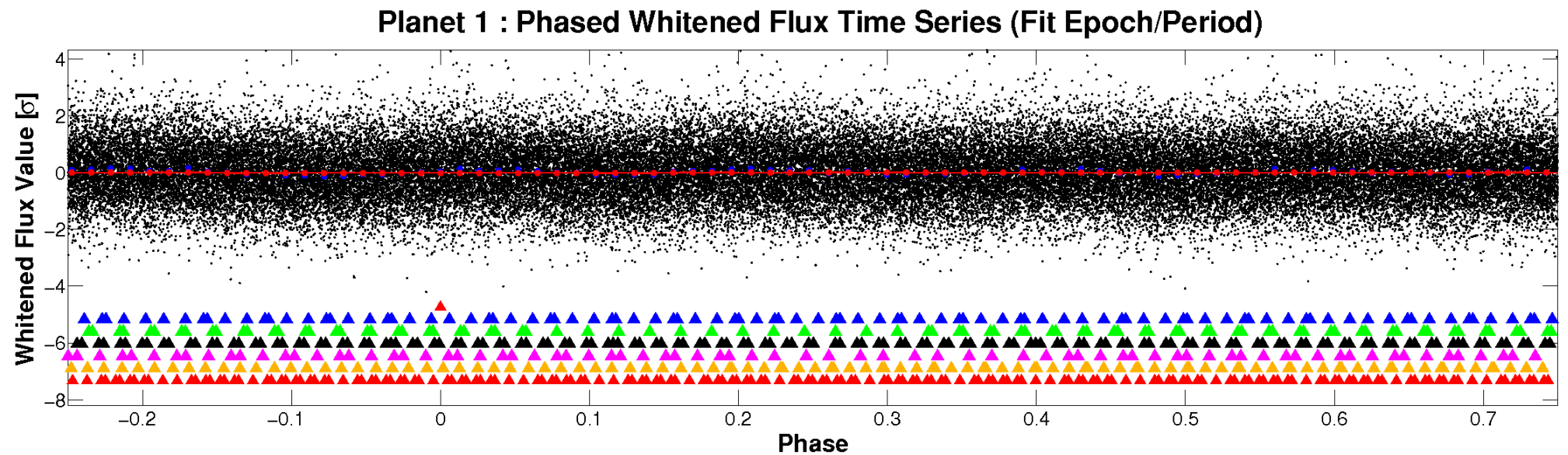
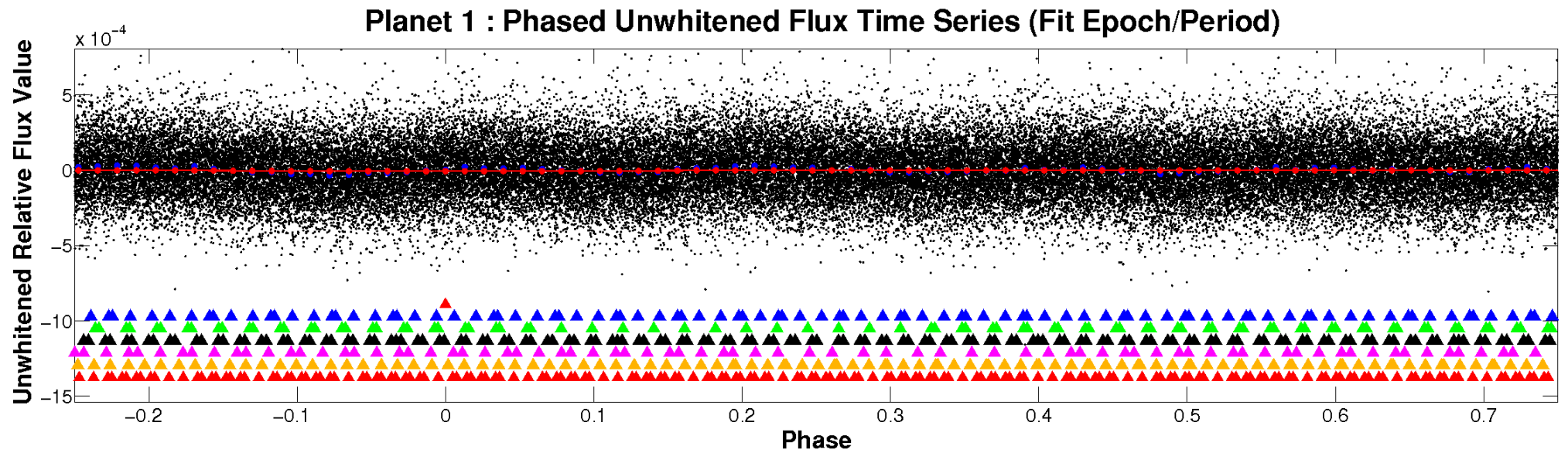


# ALT Odd/Even

TCE 009612225-01

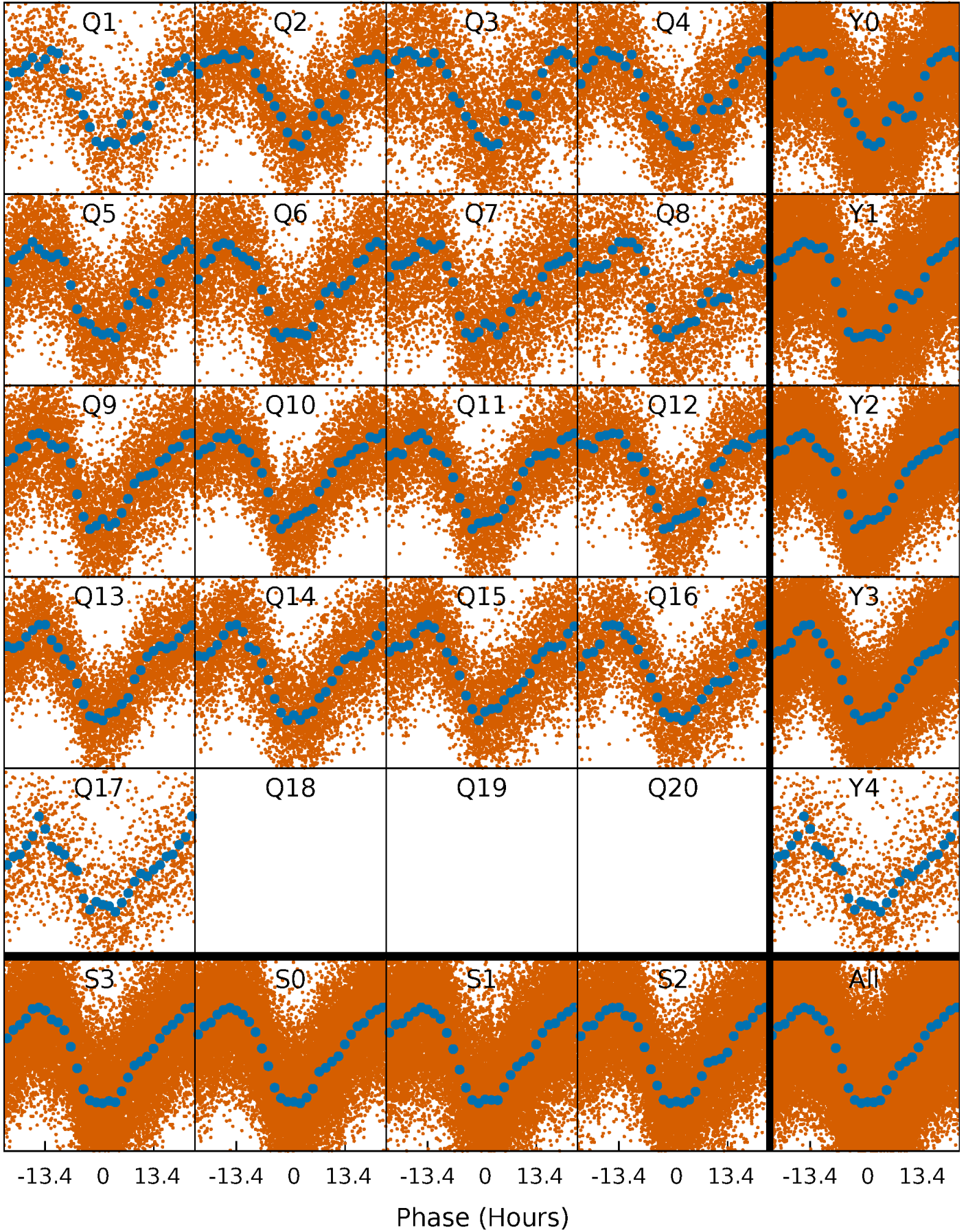


# Non-Whitened Vs. Whitened Light Curve



# PDC Quarter-Phased Transit Curves

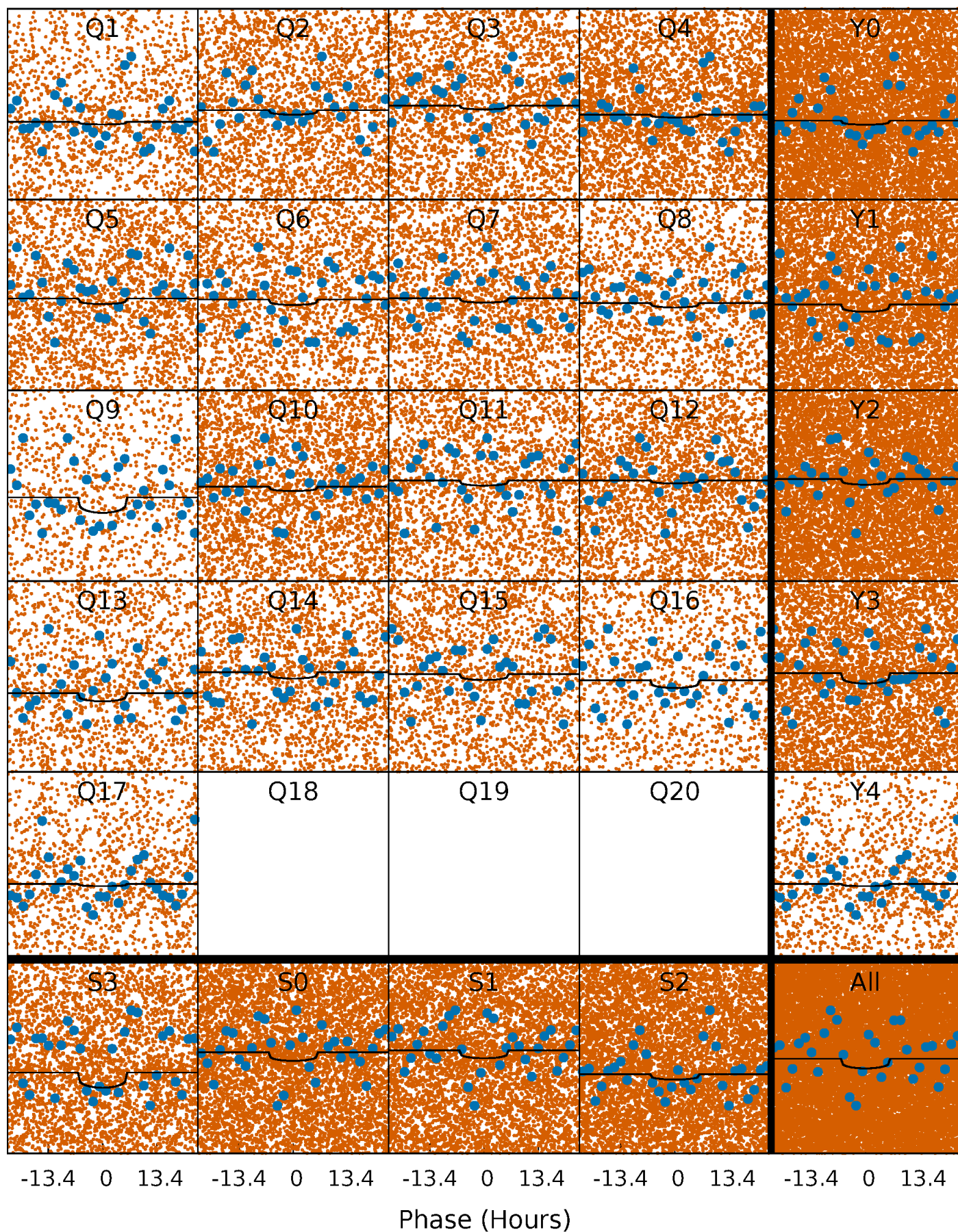
TCE 009612225-01 P= 1.569074 Days  $T_0=132.357241$  (BKJD)





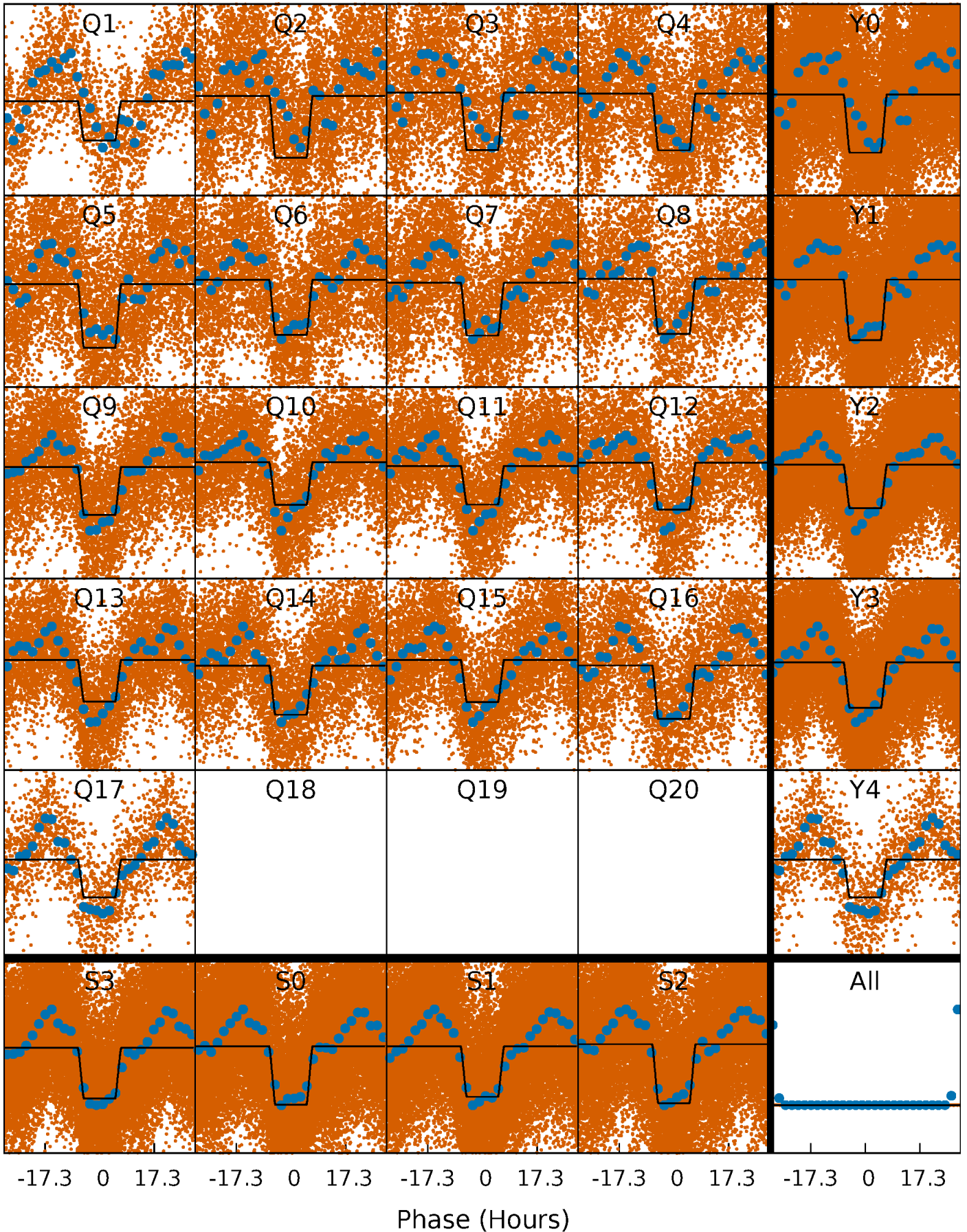
# DV Quarter-Phased Transit Curves

TCE 009612225-01 P= 1.569074 Days  $T_0=132.357241$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 009612225-01 P= 1.569219 Days  $T_0=132.301436$  (BKJD)

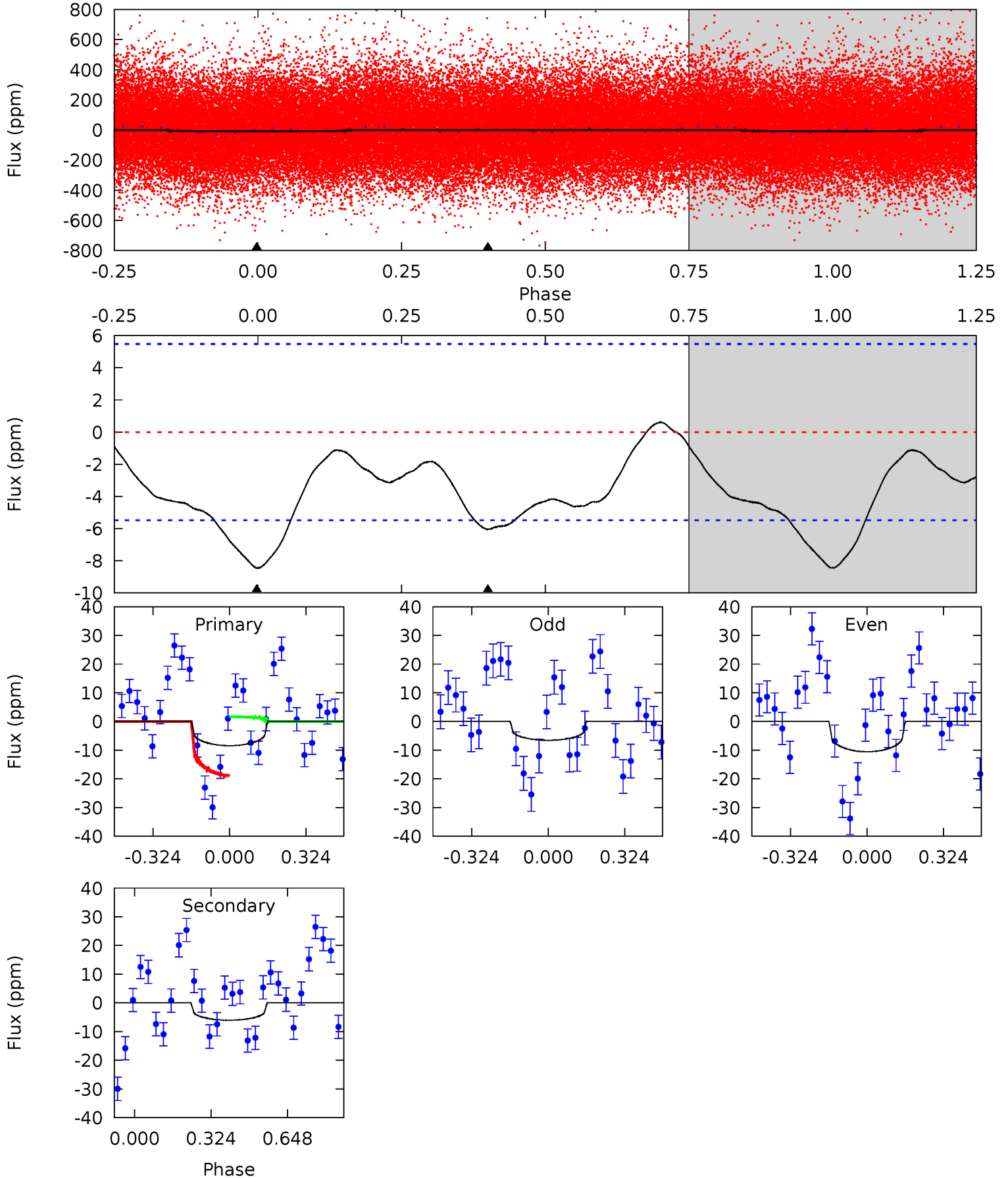




# DV Model-Shift Uniqueness Test

009612225-01, P = 1.569074 Days, E = 130.788167 Days

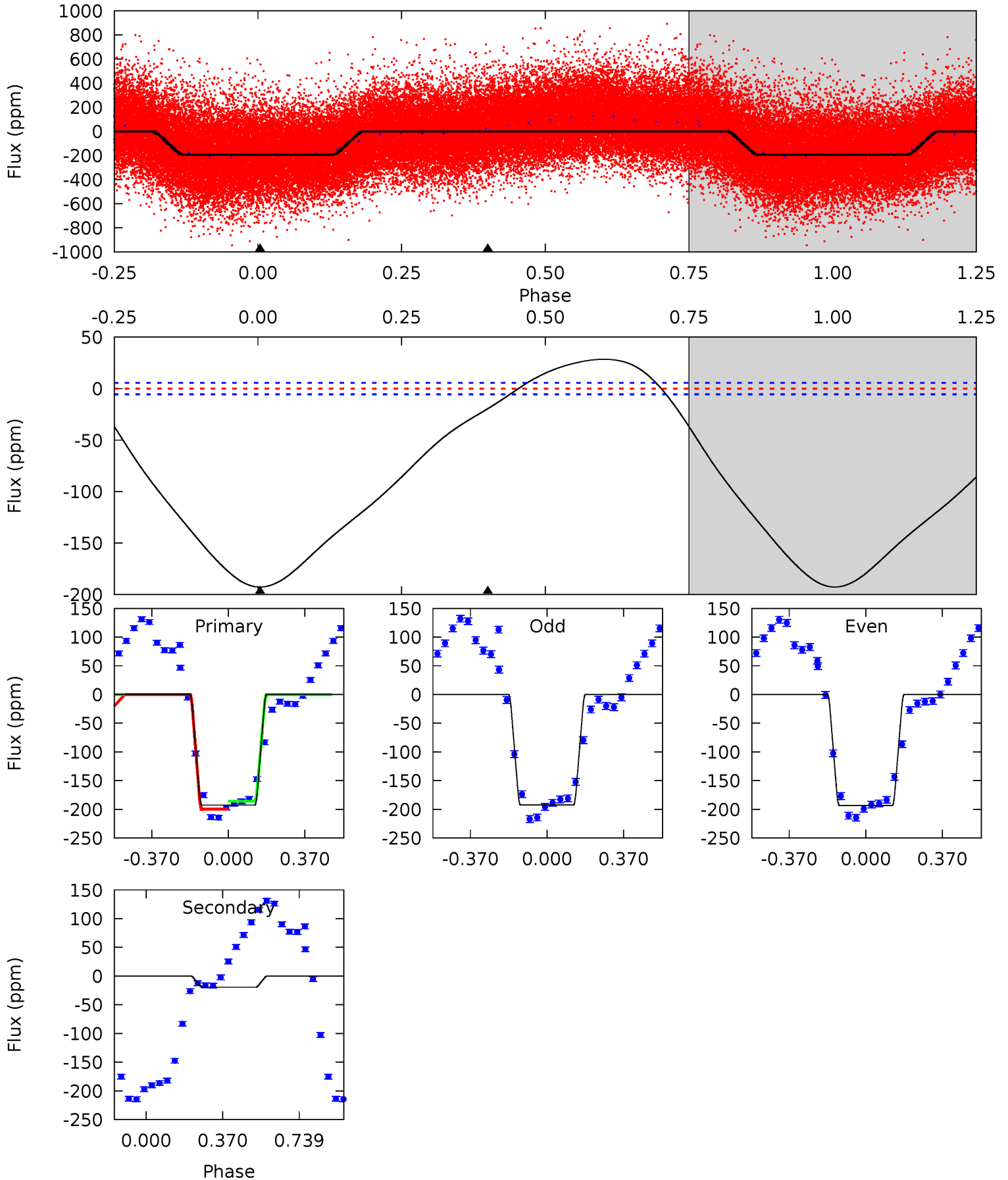
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.65	4.76	0	0	4.31	0.99	0.42	6.65	6.65	4.76	4.76	1.56	1.68	0.07	6.69



# Alt Model-Shift Uniqueness Test

009612225-01, P = 1.569219 Days, E = 130.732217 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
148.9	15.1	0	0	4.28	0.90	14.2	148.9	148.9	15.1	15.1	0.34	1.03	0.13	5.54





### Stellar Parameters For KIC 009612225

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6068^{+216}_{-195}$	$3.451^{+0.408}_{-0.102}$	$0.070^{+0.300}_{-0.300}$	$4.213^{+0.643}_{-1.801}$	$1.829^{+0.149}_{-0.446}$	$0.034^{+0.125}_{-0.011}$
	+4%/-3%	+12%/-3%	+429%/-429%	+15%/-43%	+8%/-24%	+363%/-32%
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 009612225-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-6 \pm 1$	$2.01^{+2.22}_{-1.45}$	$4172^{+325}_{-445}$	$4140^{+4229}_{-7397}$	$0.836^{+10.090}_{-0.651}$
Alt.	$-19 \pm 1$	$5.80^{+2.63}_{-2.56}$	$4164^{+290}_{-452}$	$2598^{+1742}_{-6008}$	$0.333^{+0.686}_{-0.179}$

$T_{\text{max}}$  = Theoretical Maximum Planetary Temperature  
 $T_{\text{obs}}$  = Observed Planetary Temperature (Assuming  $A=0.3$ )  
 $A_{\text{obs}}$  = Observed Albedo (Assuming  $T=0$ )

If a secondary eclipse is present, the system is likely an EB if  $T_{\text{obs}} \gg T_{\text{max}}$  AND  $A_{\text{obs}} \gg 1.0$

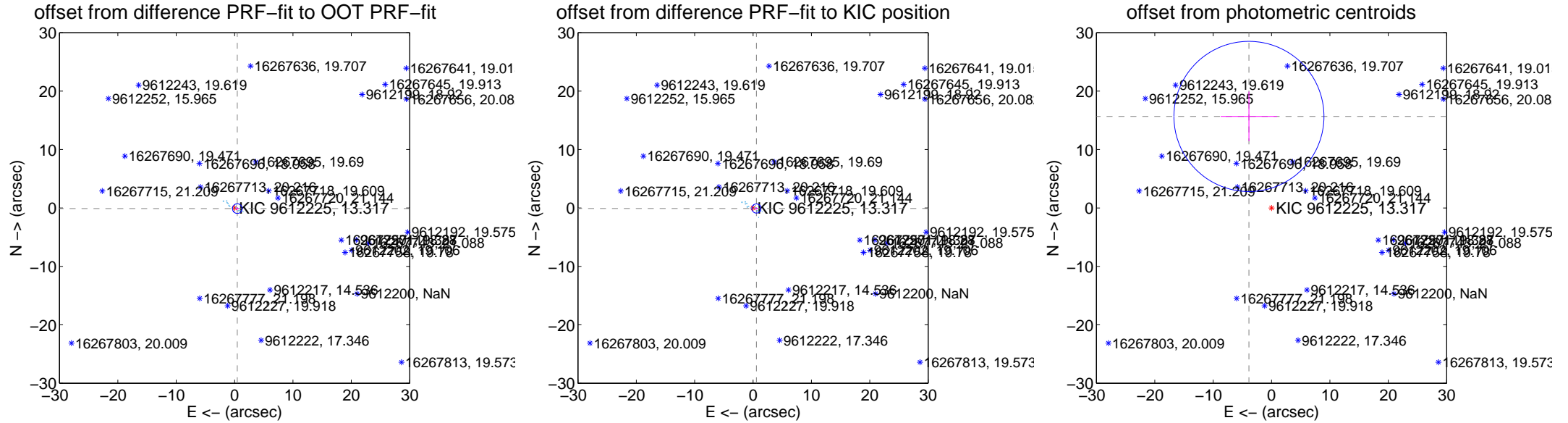
## DV Centroid Data

Supplemental centroid analysis for 009612225-01. Kepler magnitude: 13.32. Transit SNR 2.89

There are 17 quarters with good PRF difference image offsets

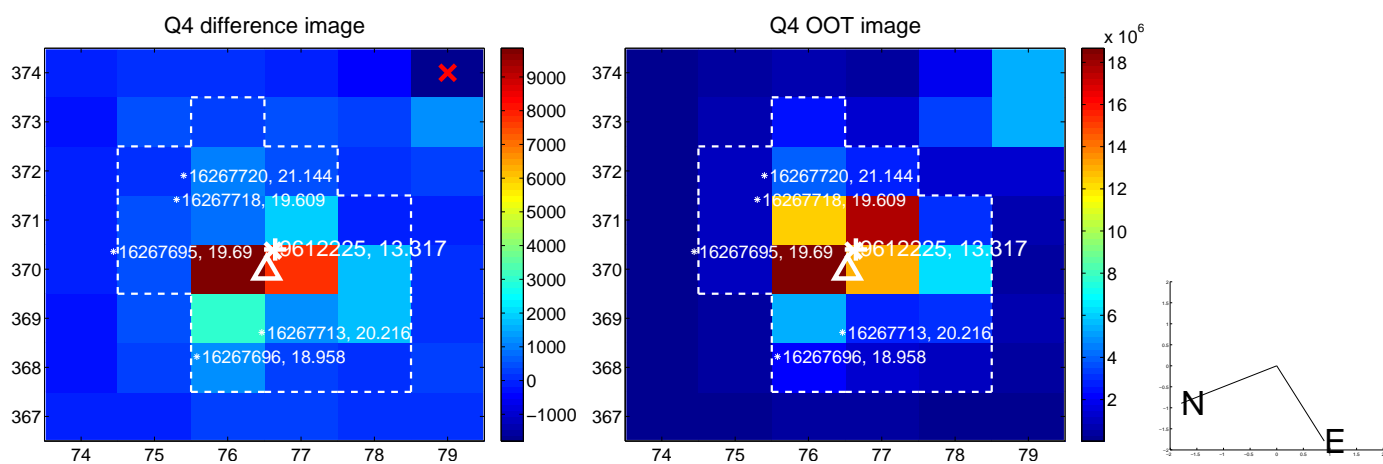
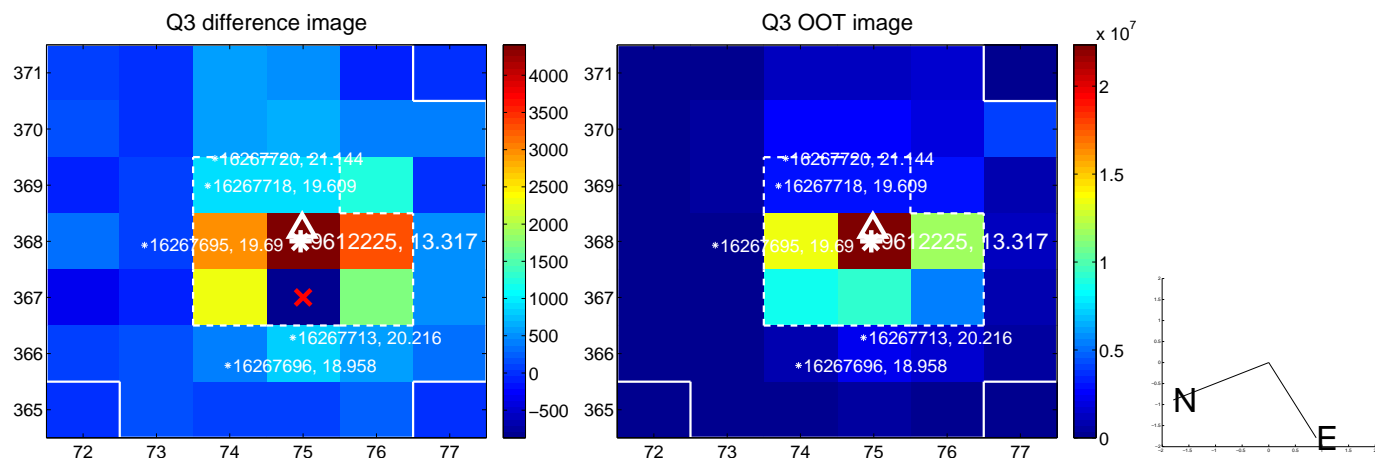
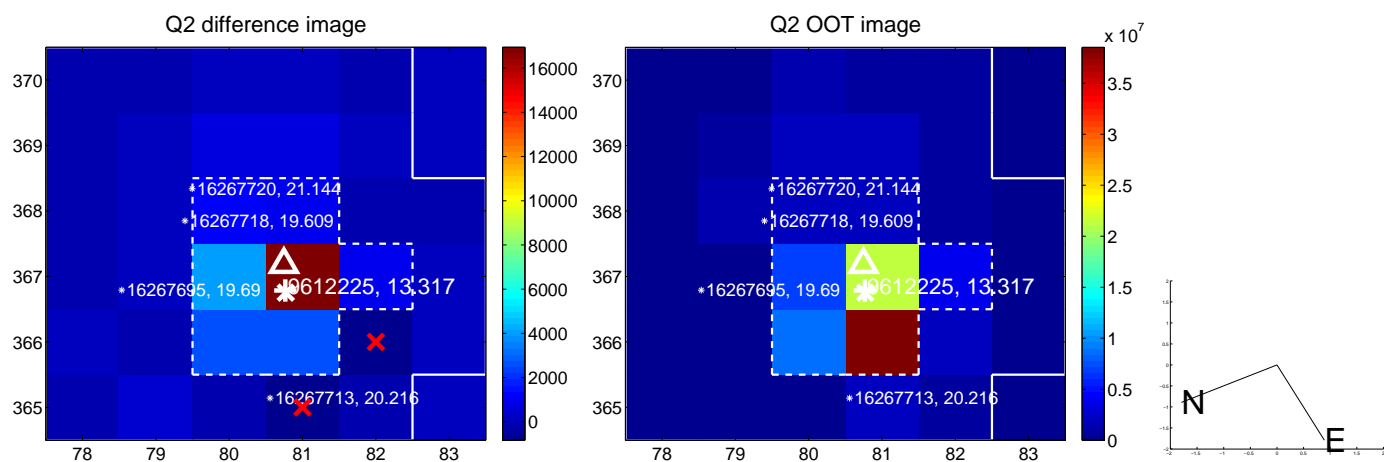
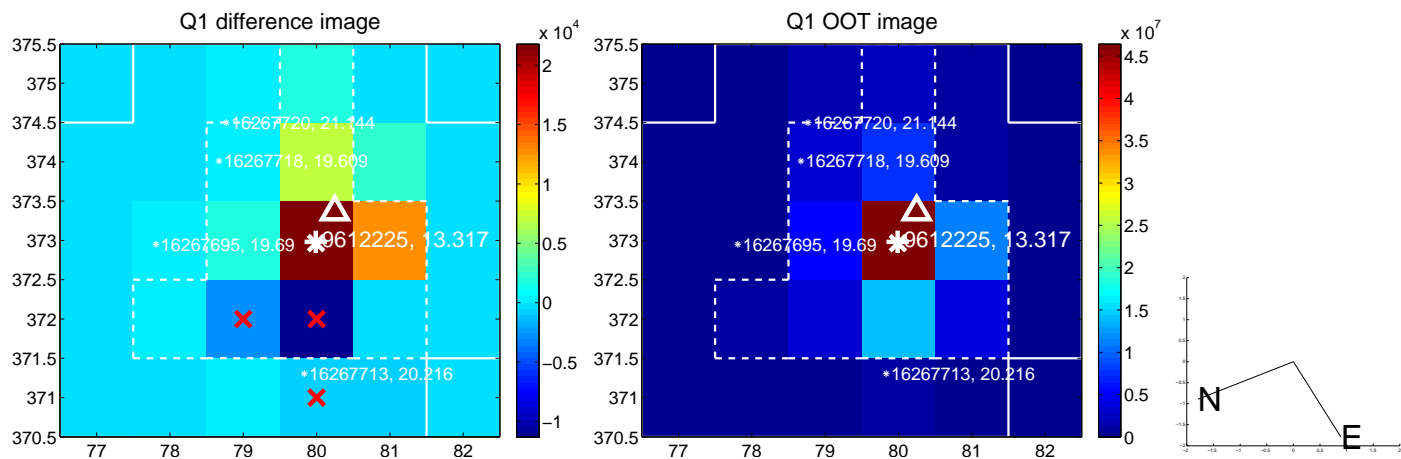
The direct PRF centroid is offset from the target star catalog position by about 0.06 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.479 \pm 0.276$	1.74	$-0.467 \pm 0.248$	$-0.110 \pm 0.188$
PRF-fit source offset from KIC position	$0.582 \pm 0.262$	2.22	$-0.574 \pm 0.247$	$-0.094 \pm 0.162$
photometric centroid source offset	$16.13 \pm 4.28$	3.77	$3.87 \pm 4.85$	$15.66 \pm 4.25$

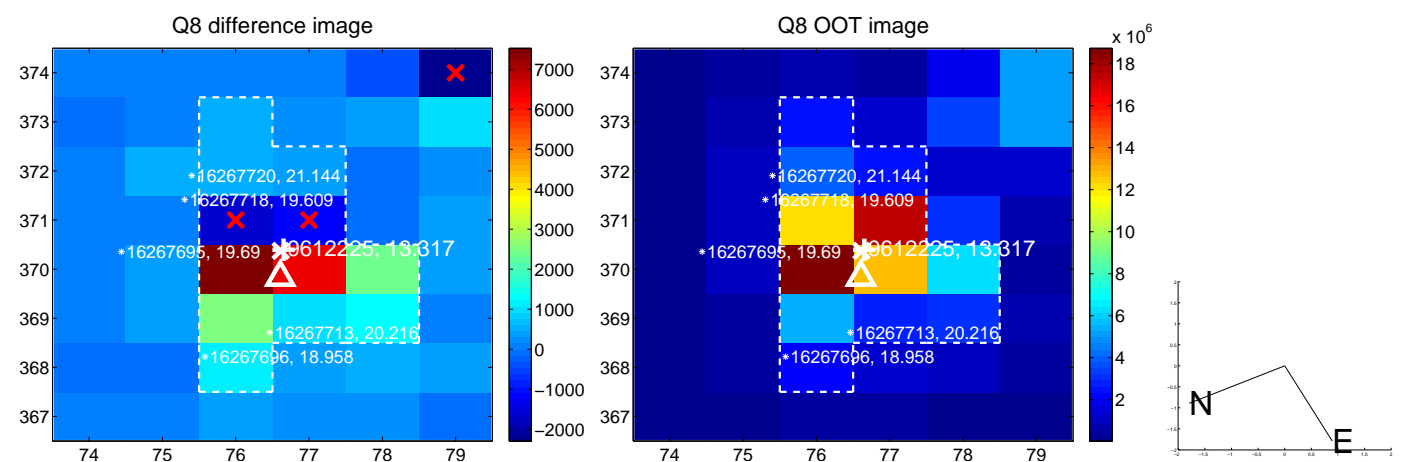
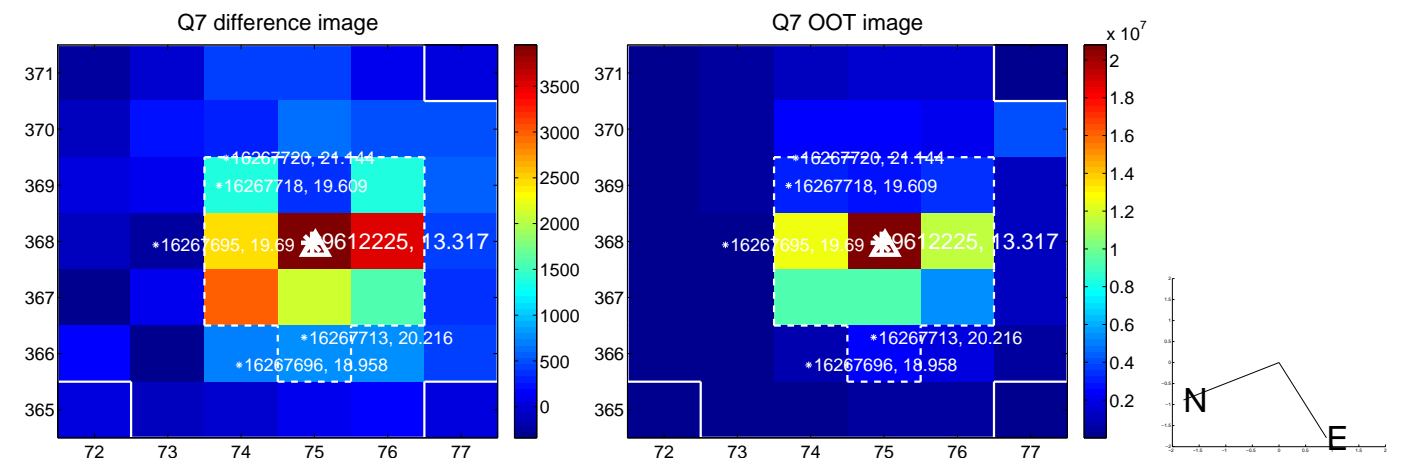
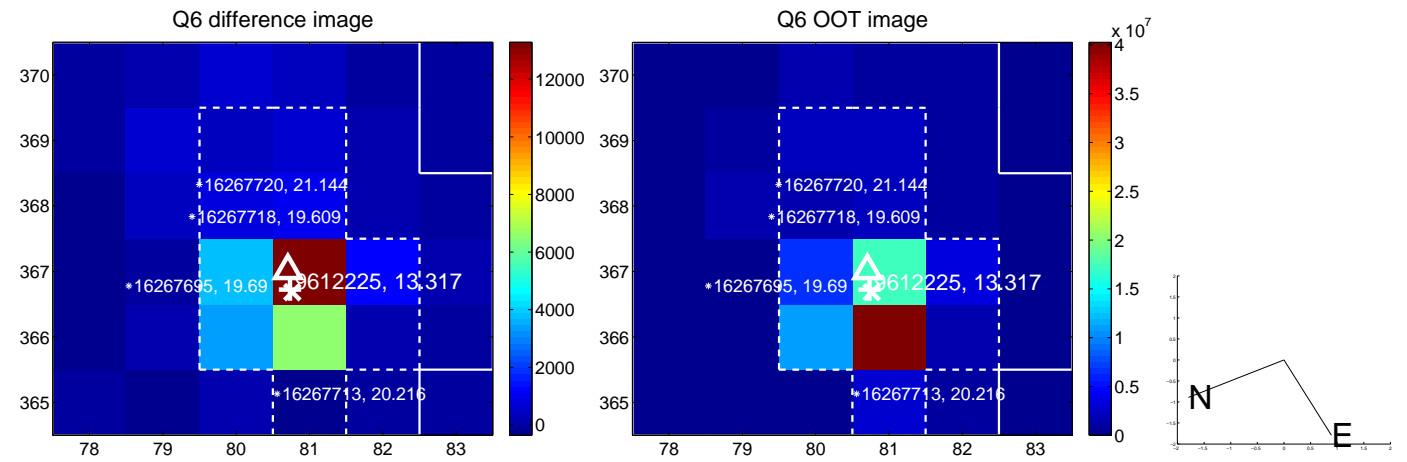
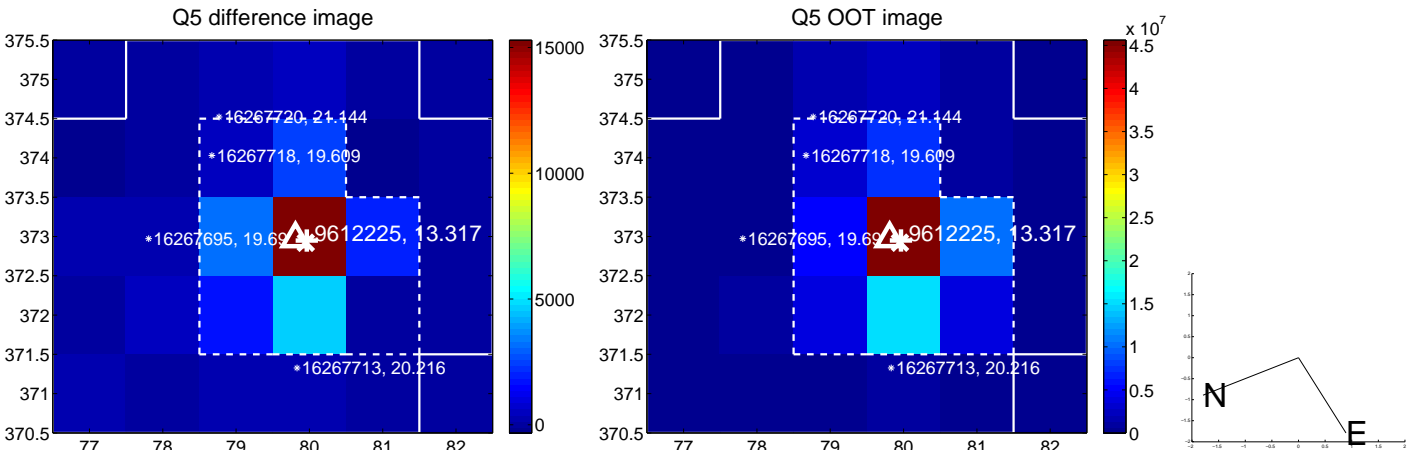


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

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

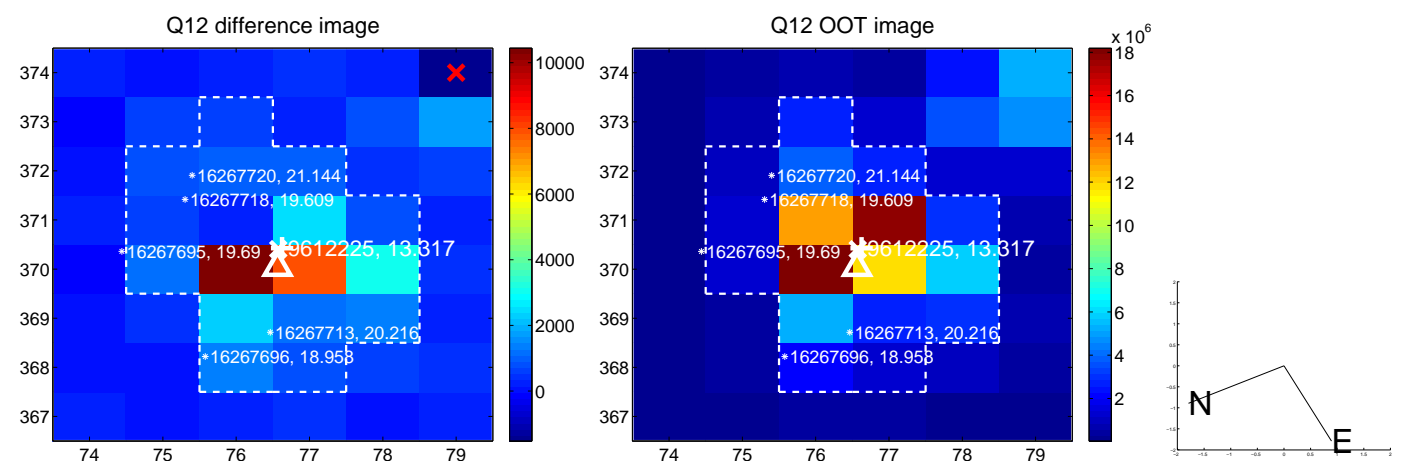
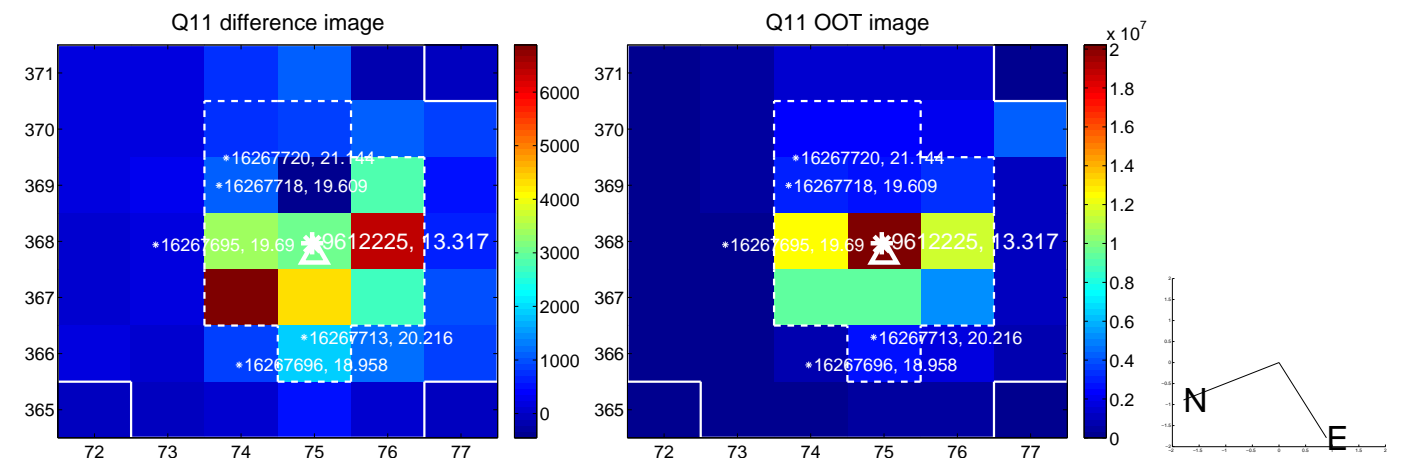
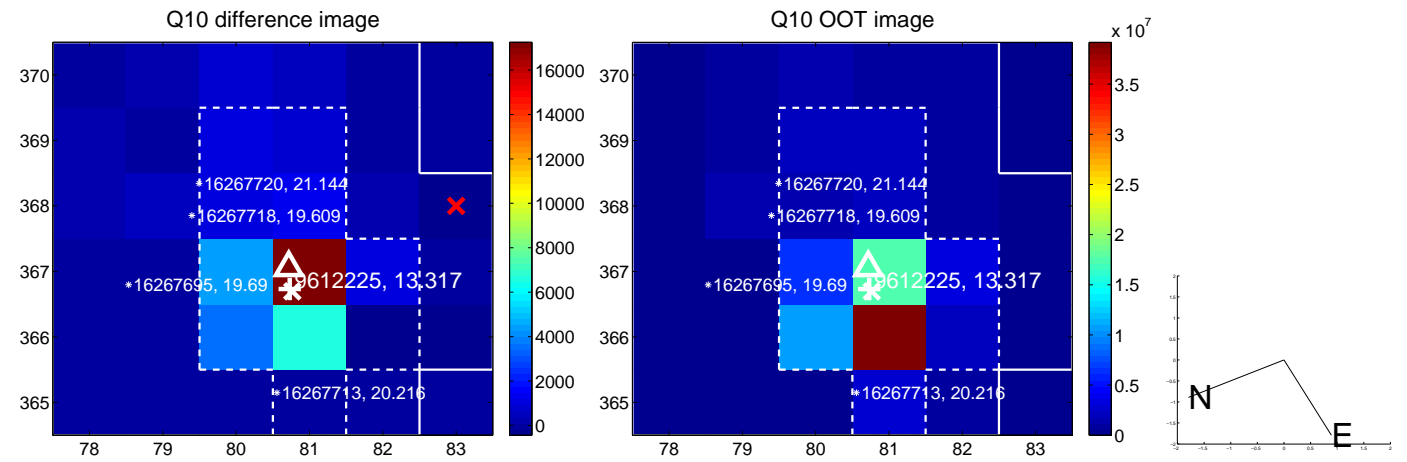
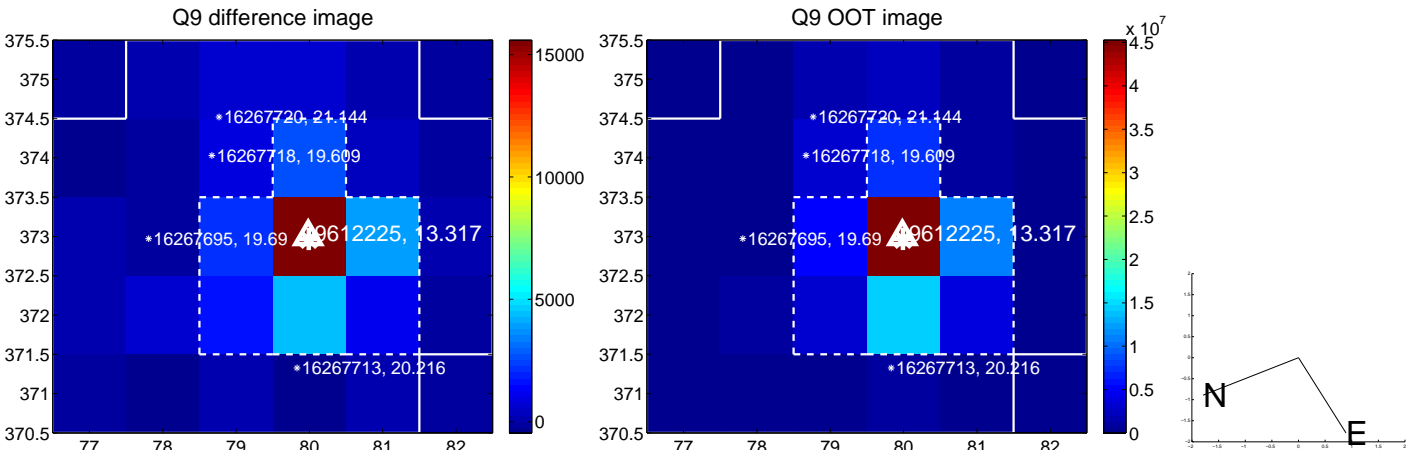


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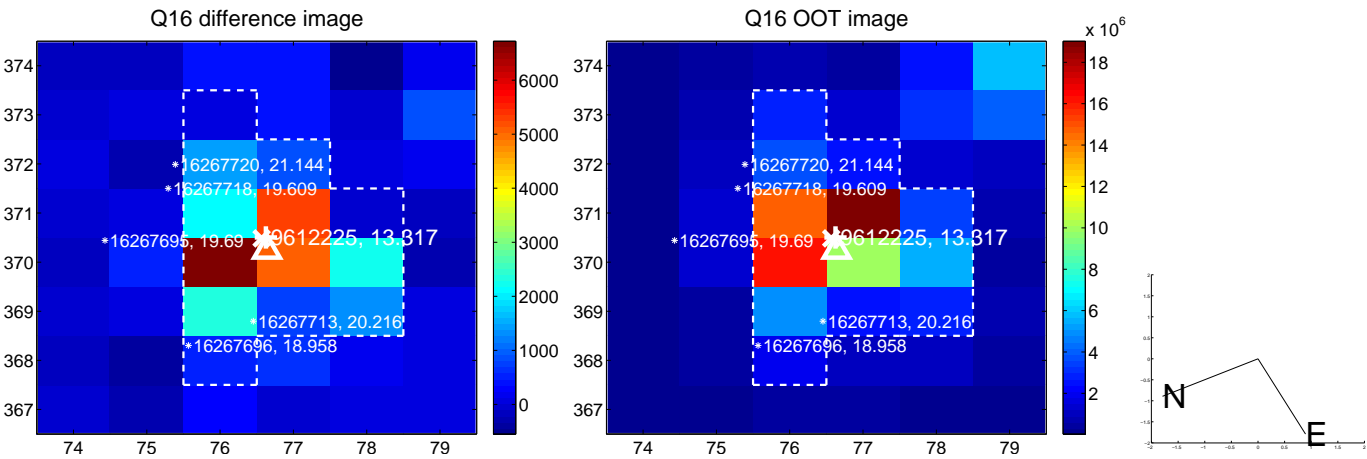
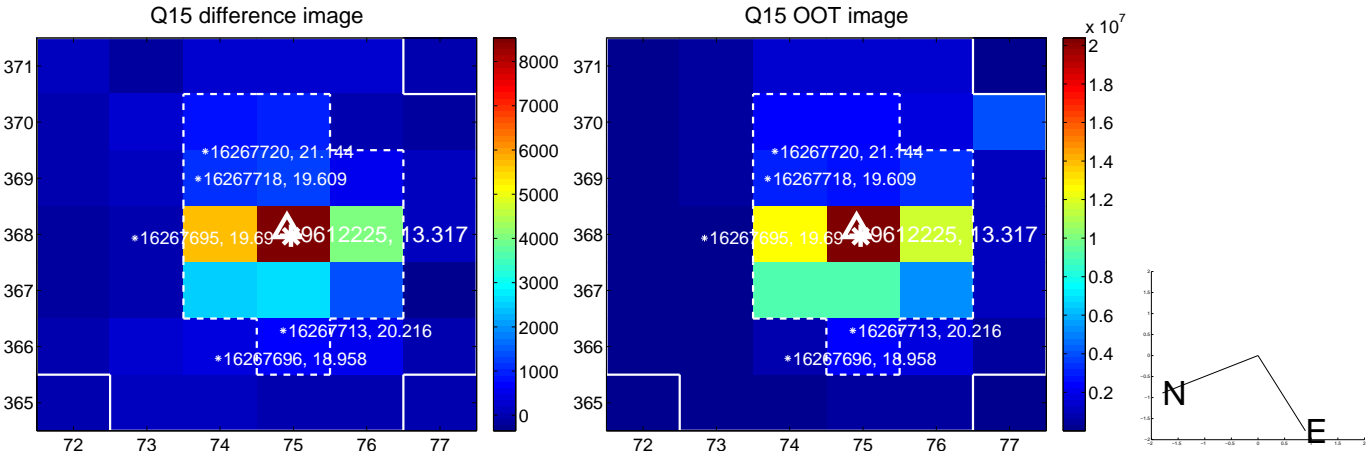
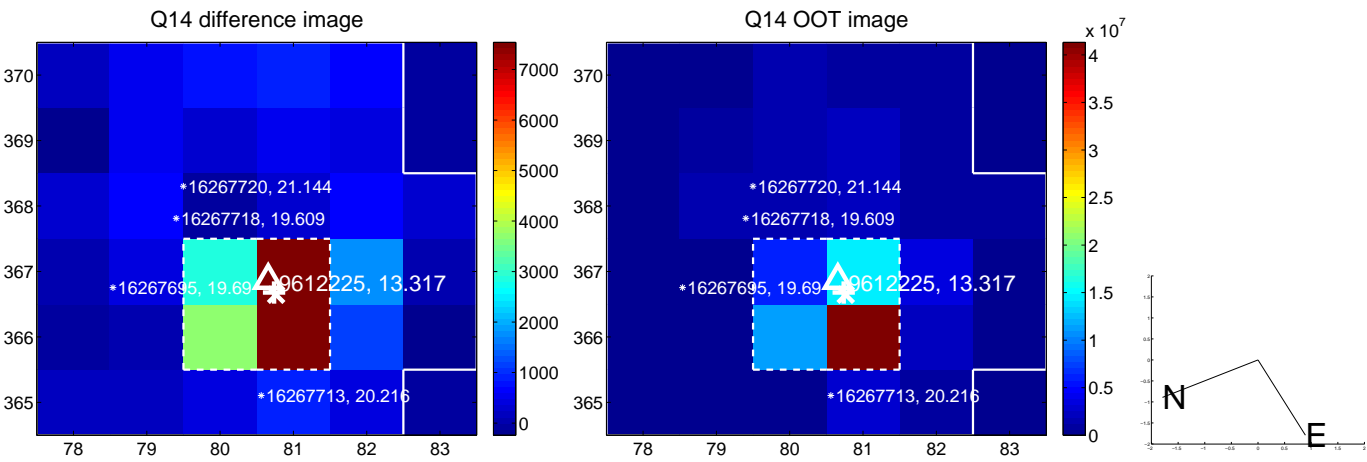
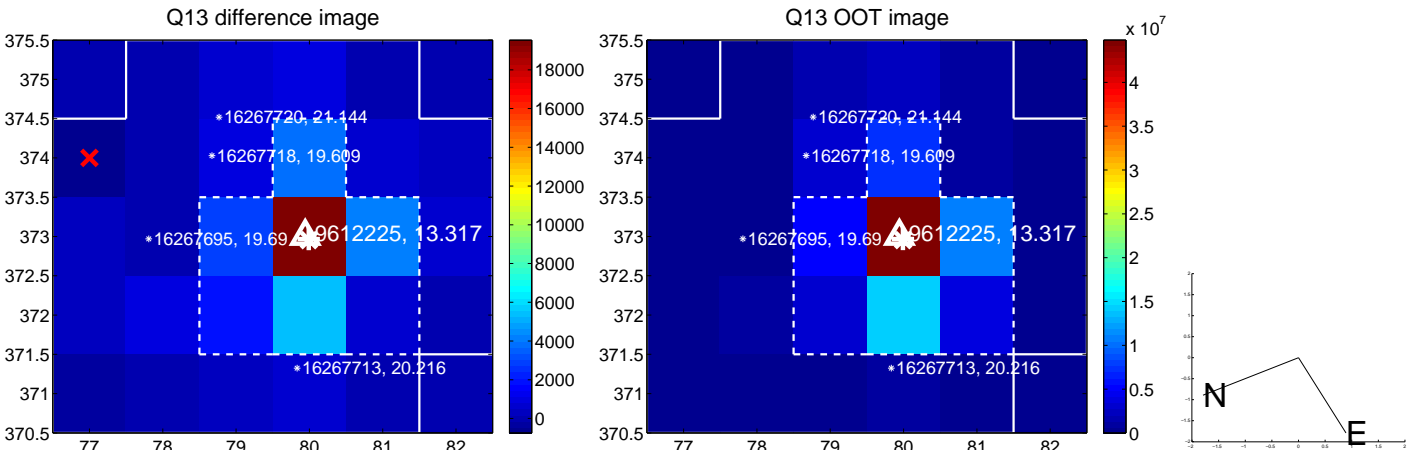




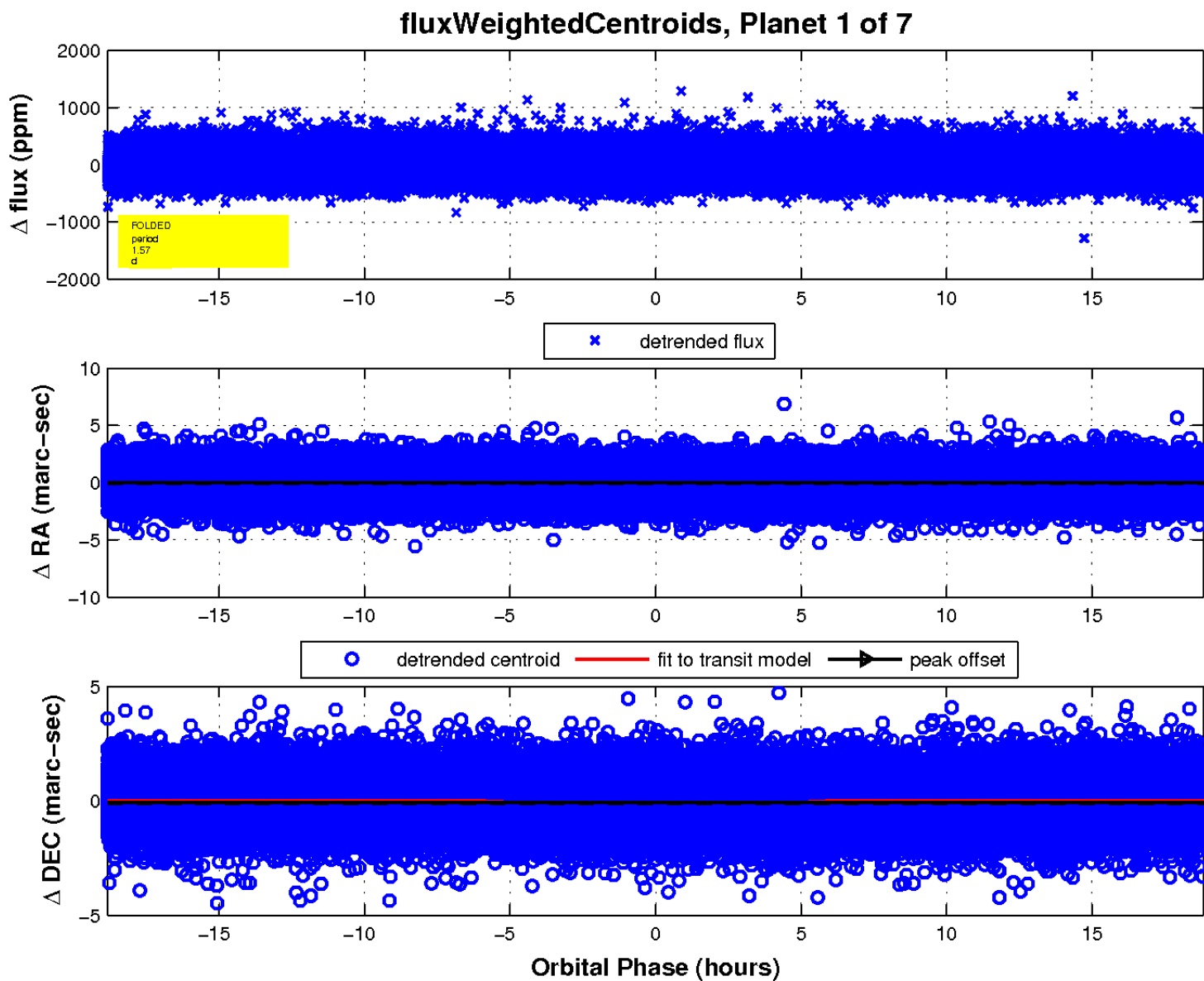
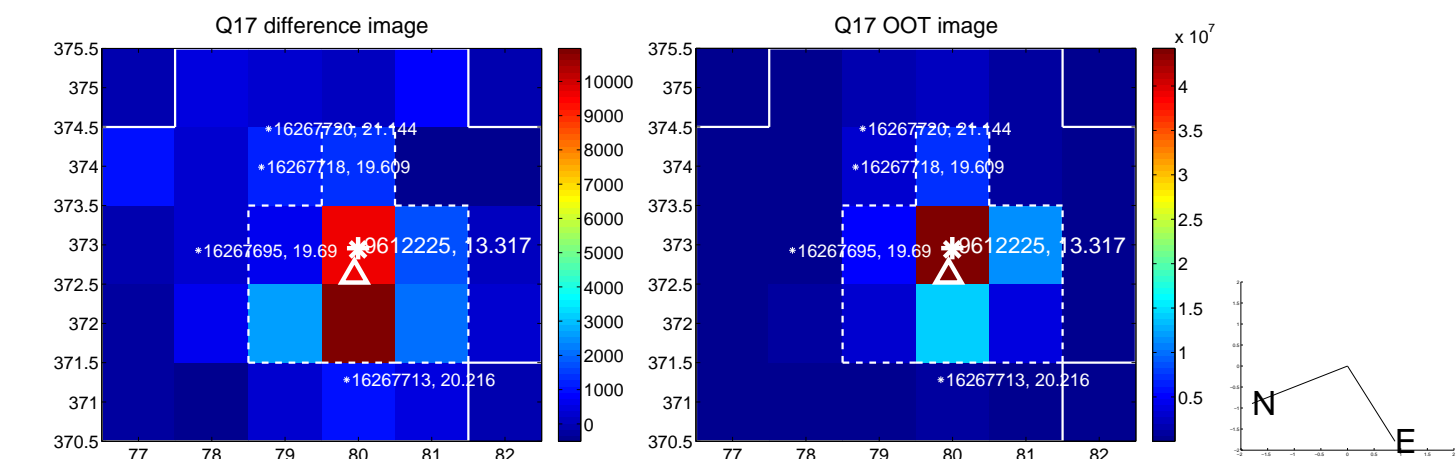
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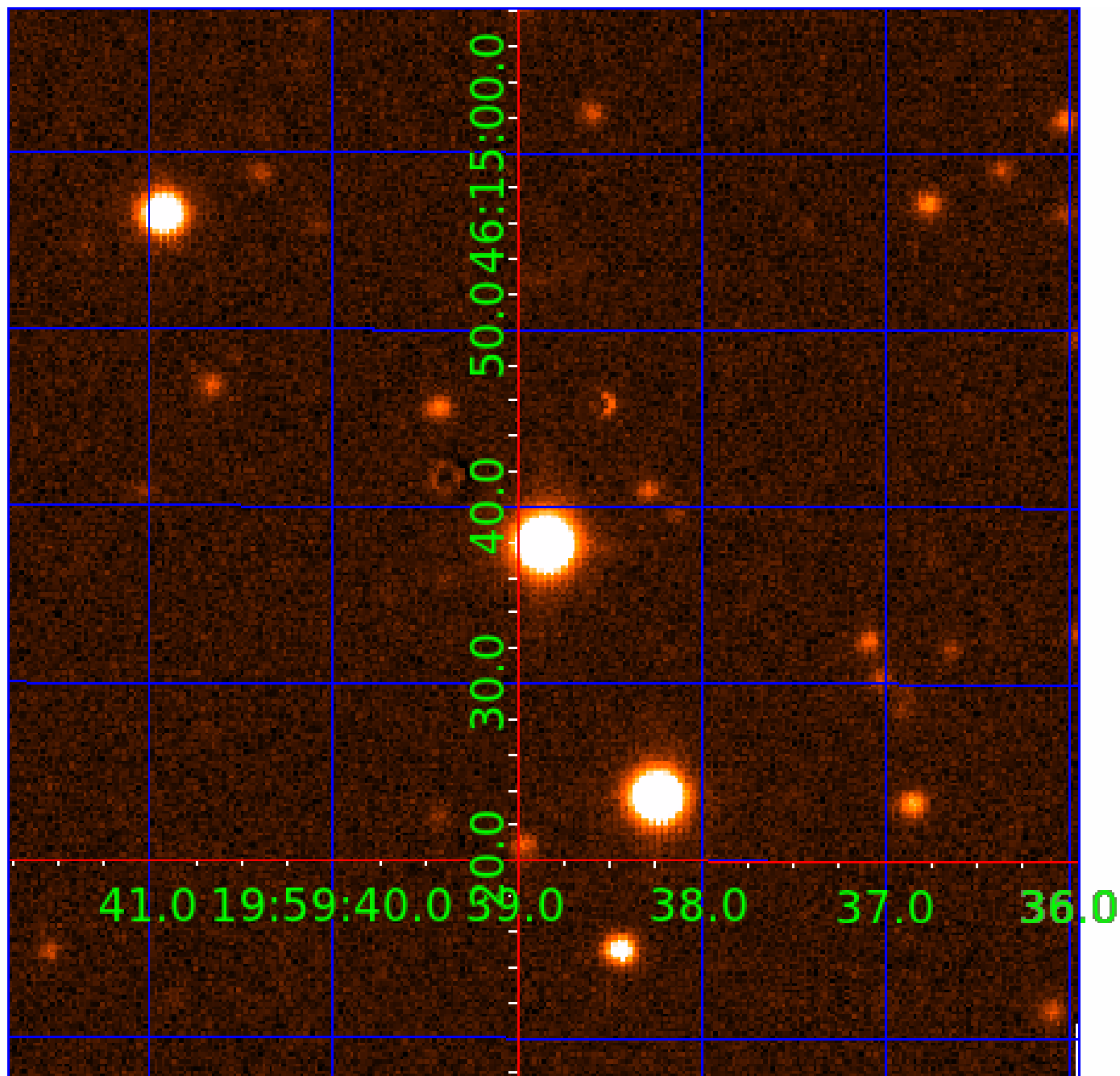


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UKIRT Image

Declination





# KIC 009612225

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
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009612225-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT
009612225-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT—CENT_NOFITS

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

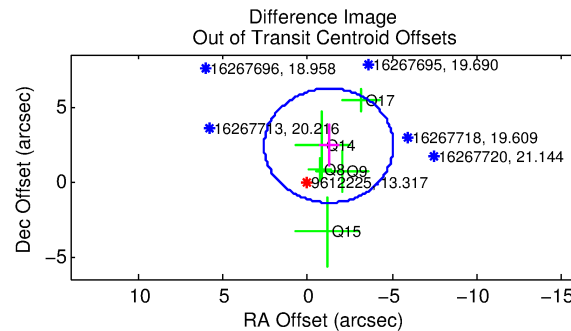
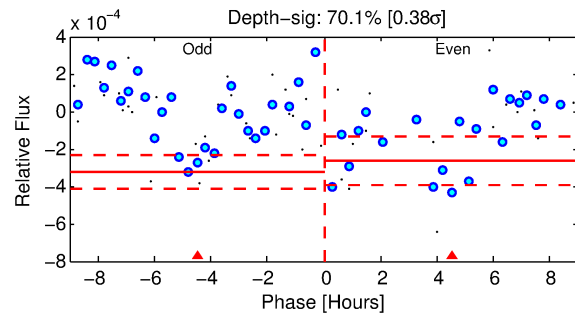
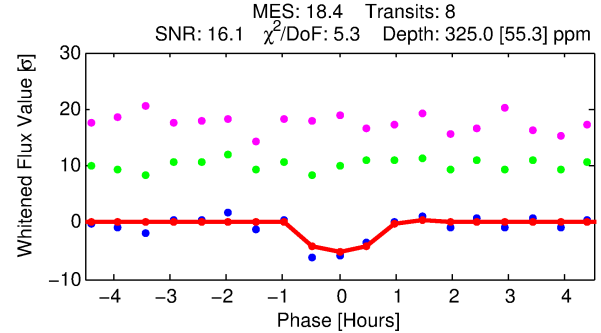
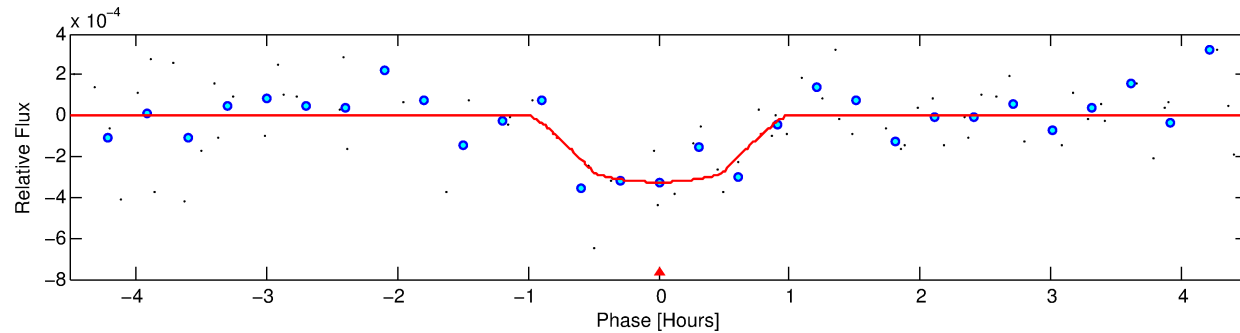
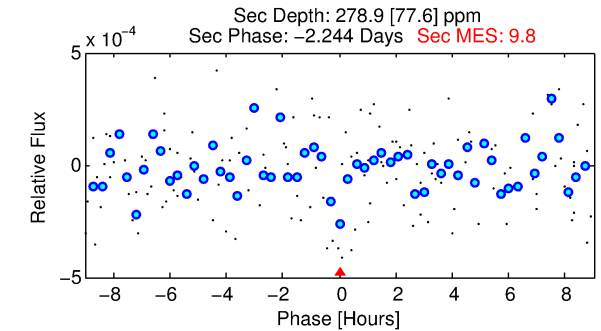
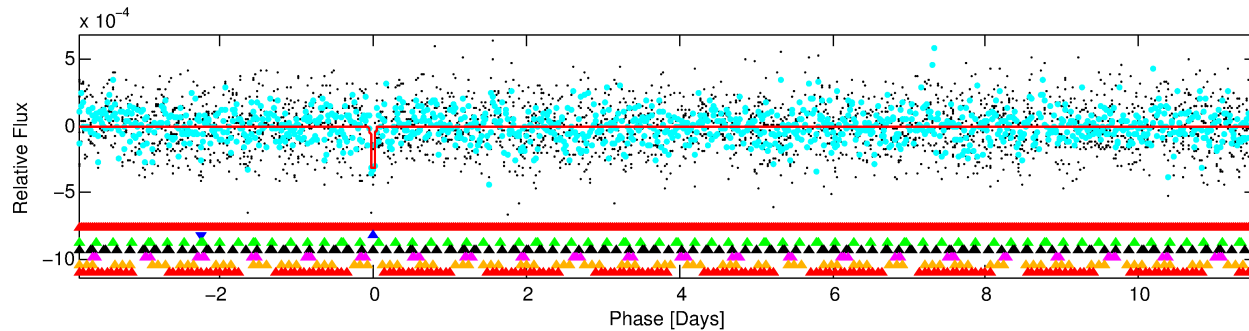
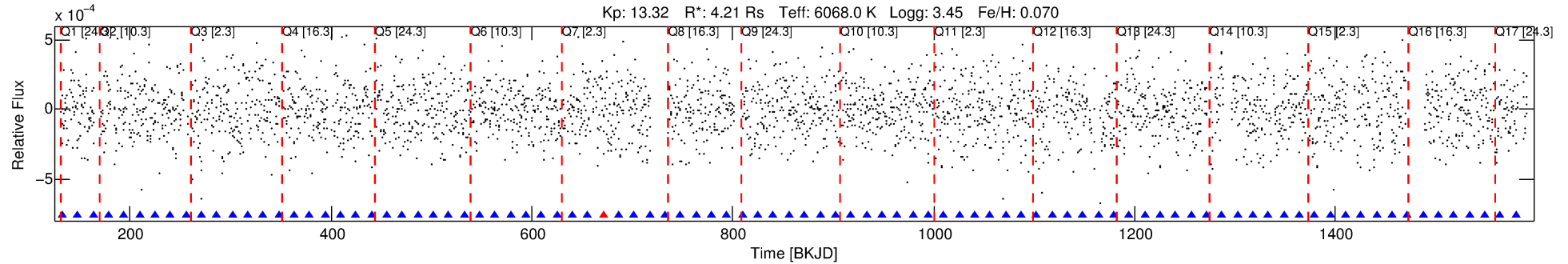
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Ephemeris Match Information For 009612225-02

No Significant Match Found

# DV One-Page Summary

KIC: 9612225 Candidate: 2 of 7 Period: 15.390 d



## DV Fit Results:

Period = 15.38988 [0.00013] d  
Epoch = 132.7093 [0.0064] BKJD  
Rp/R\* = 0.0168 [0.0377]  
a/R\* = 73.50 [767.17]  
b = 0.39 [23.58]  
Seff = 982.86 [690.63]  
Teq = 1428 [251] K  
Rp = 7.73 [17.62] Re  
a = 0.1481 [0.0627] AU  
Ag = 56.36 [255.96] [0.22 $\sigma$ ]  
Teffp = 6048 [6791] K [0.68 $\sigma$ ]

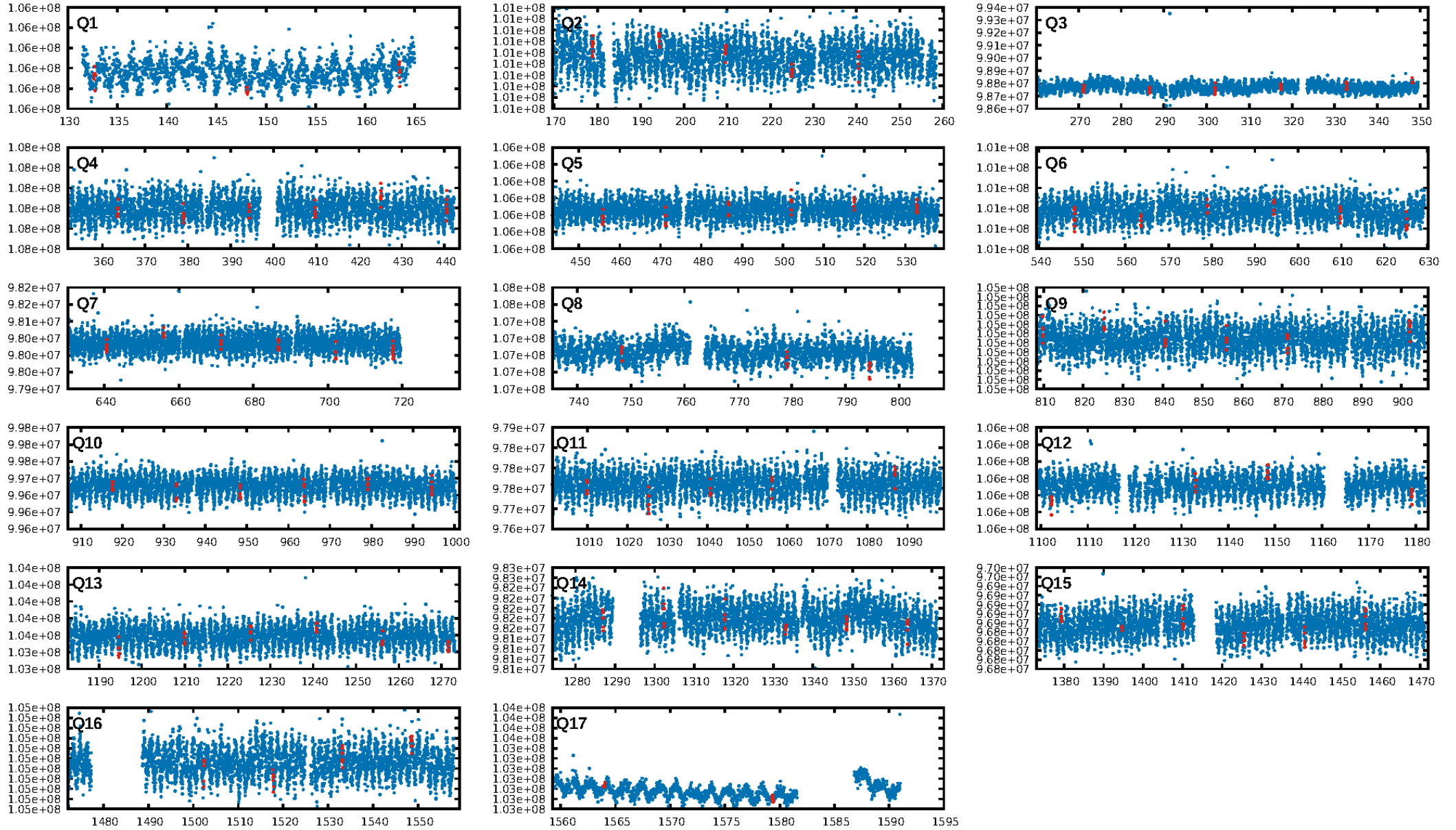
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [8.71 $\sigma$ ]  
LongPeriod-sig: 100.0% [22.53 $\sigma$ ]  
ModelChiSquare2-sig: 0.0%  
ModelChiSquareGof-sig: 11.3%  
Bootstrap-pfa: N/A  
RollingBand-fgt: 0.88 [7/8]  
GhostDiagnostic-chr: 0.0206  
Centroid-sig: 0.0%  
Centroid-so: 1.010 arcsec [1.82 $\sigma$ ]  
OotOffset-rm: 2.705 arcsec [2.13 $\sigma$ ]  
KicOffset-rm: 2.635 arcsec [2.04 $\sigma$ ]  
OotOffset-st: 1/1/1/2 [5]  
KicOffset-st: 1/1/1/2 [5]  
DiffImageQuality-fgm: 0.20 [1/5]  
DiffImageOverlap-fno: 0.82 [14/17]

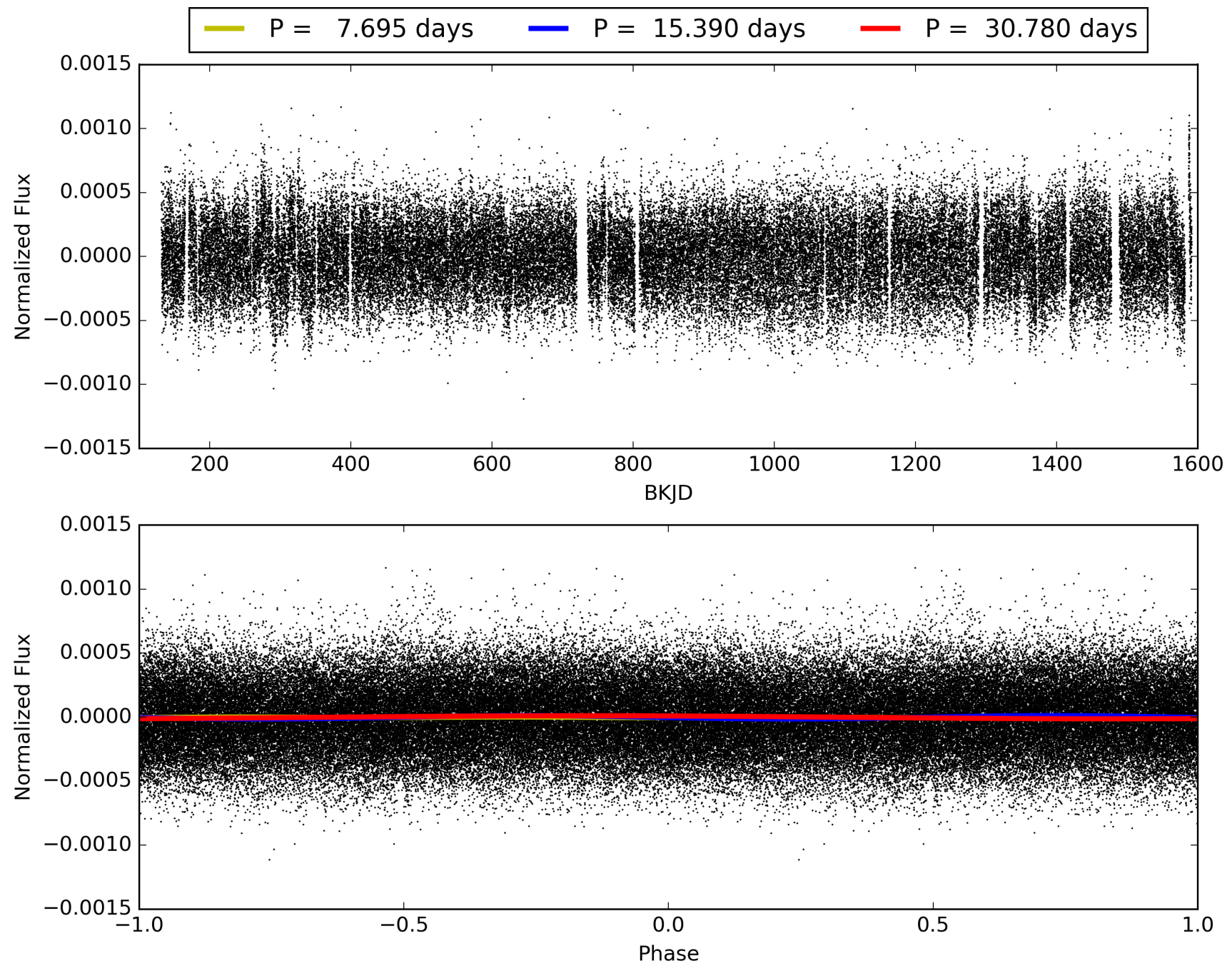
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 13:12:18 Z

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

# TCE 009612225-02, PDC Light Curves

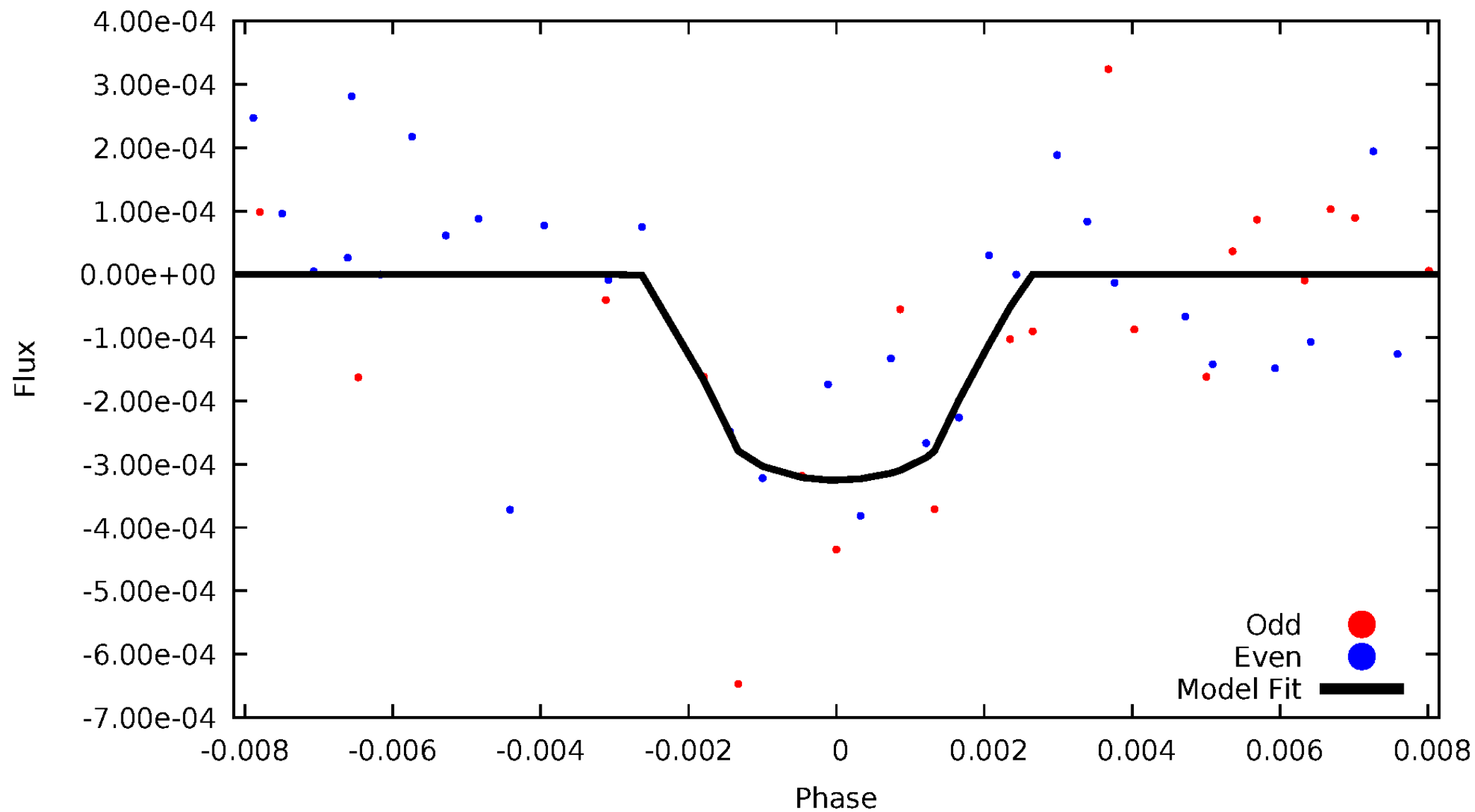


TCE 009612225-02



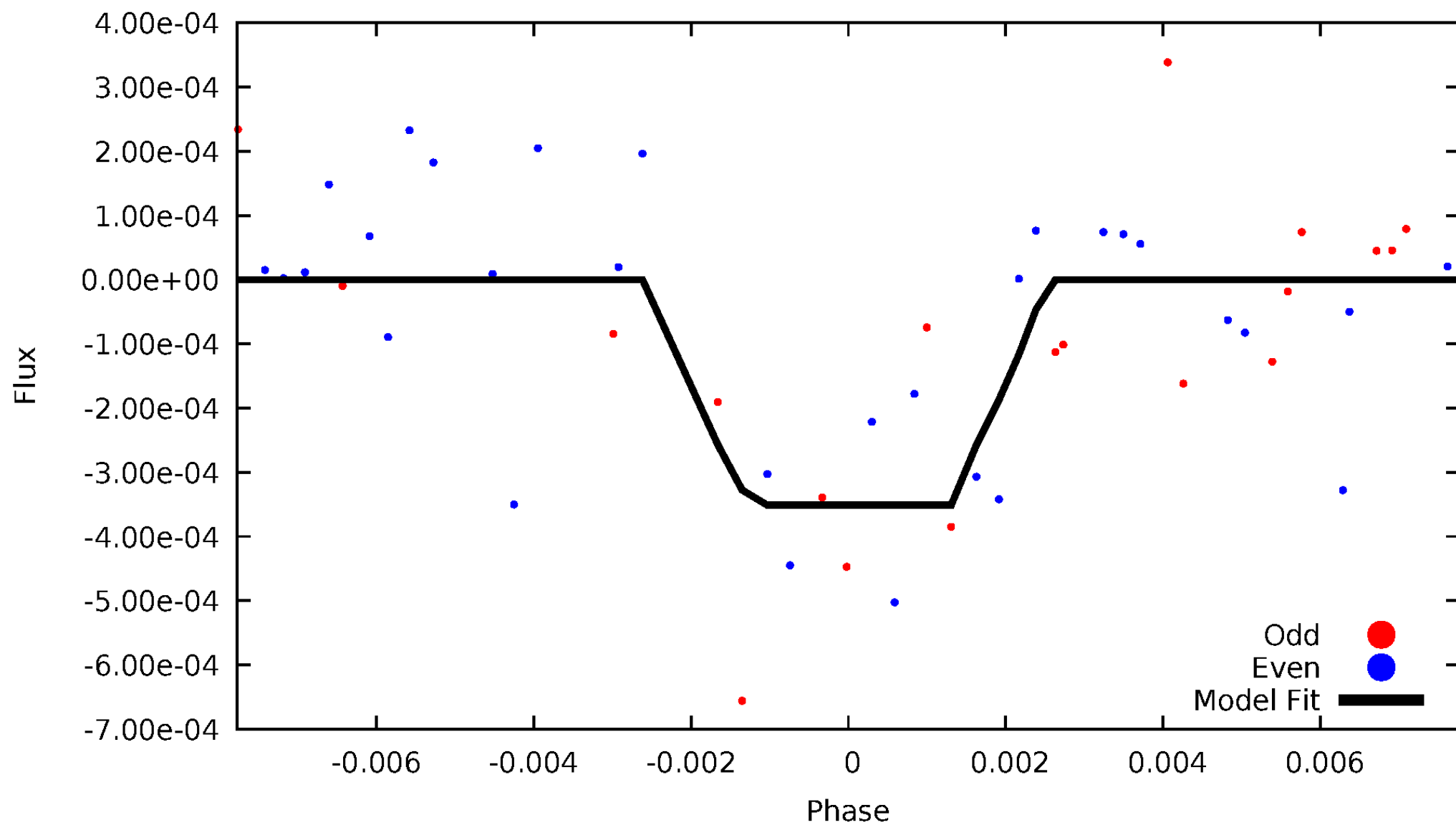
# DV Odd/Even

TCE 009612225-02



# ALT Odd/Even

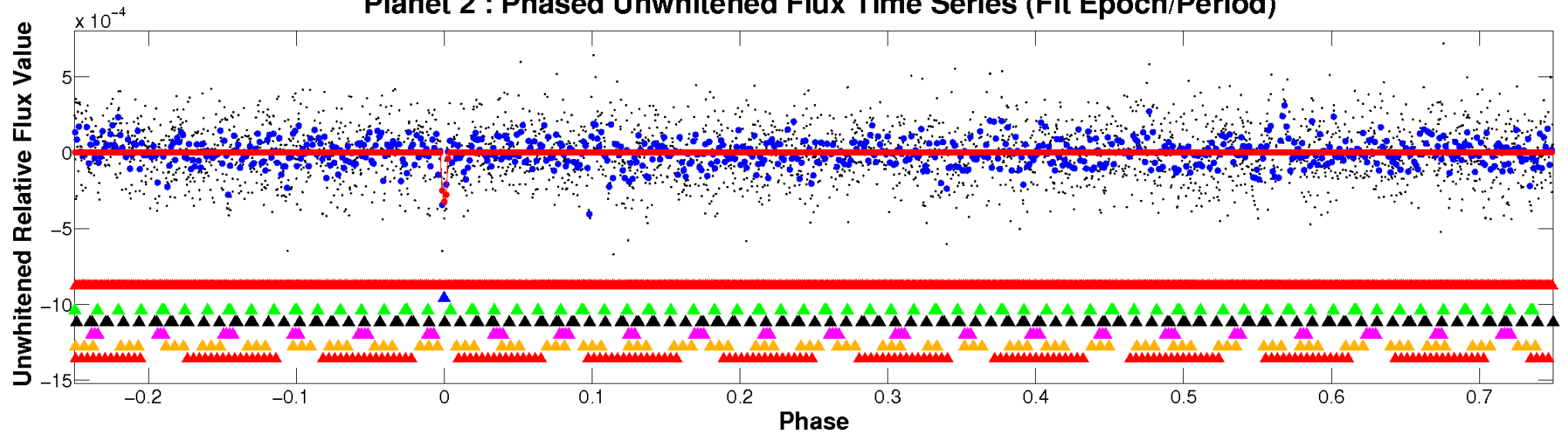
TCE 009612225-02



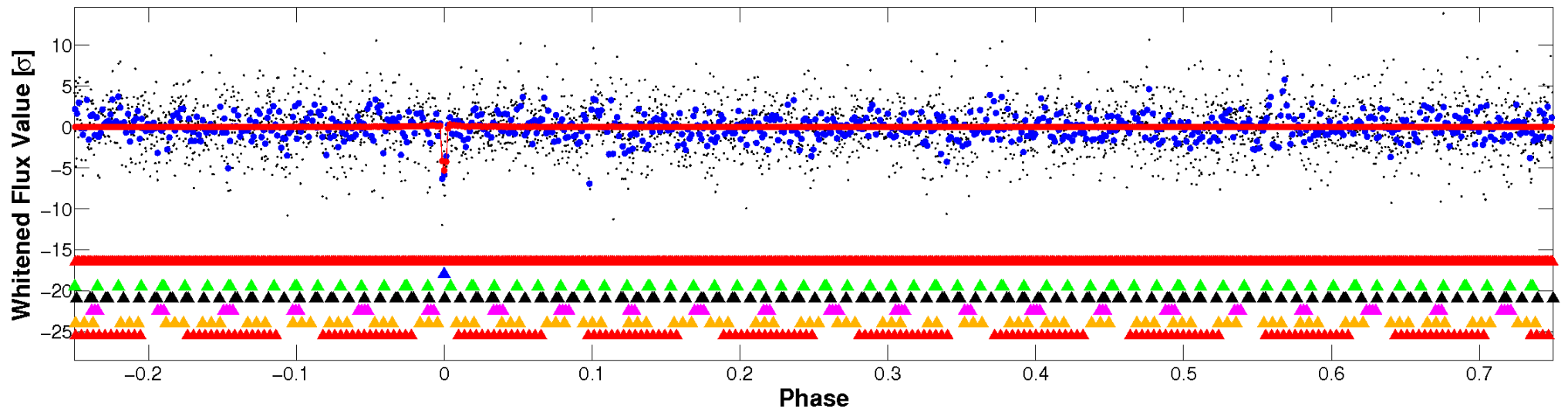


# Non-Whitened Vs. Whitened Light Curve

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

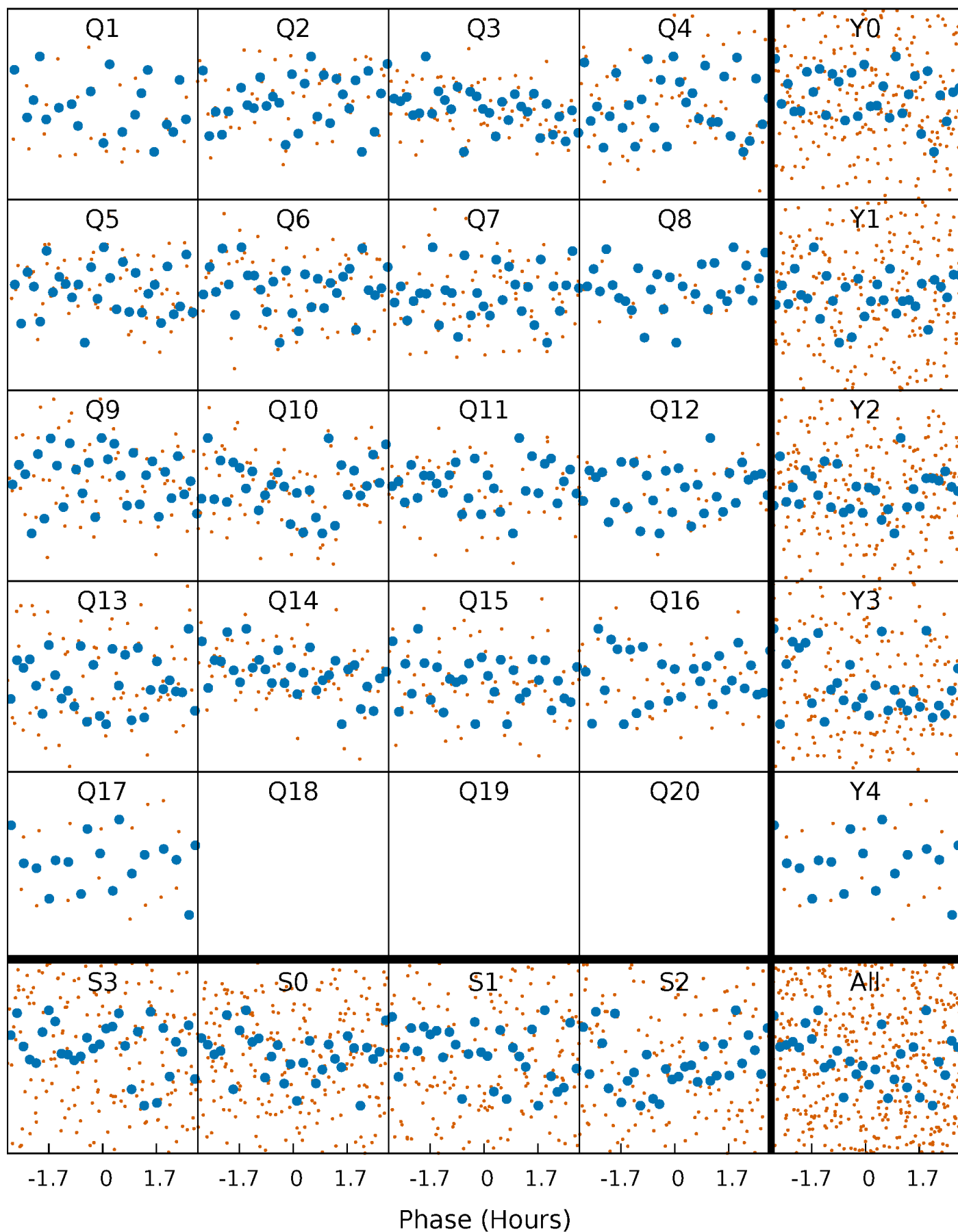


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



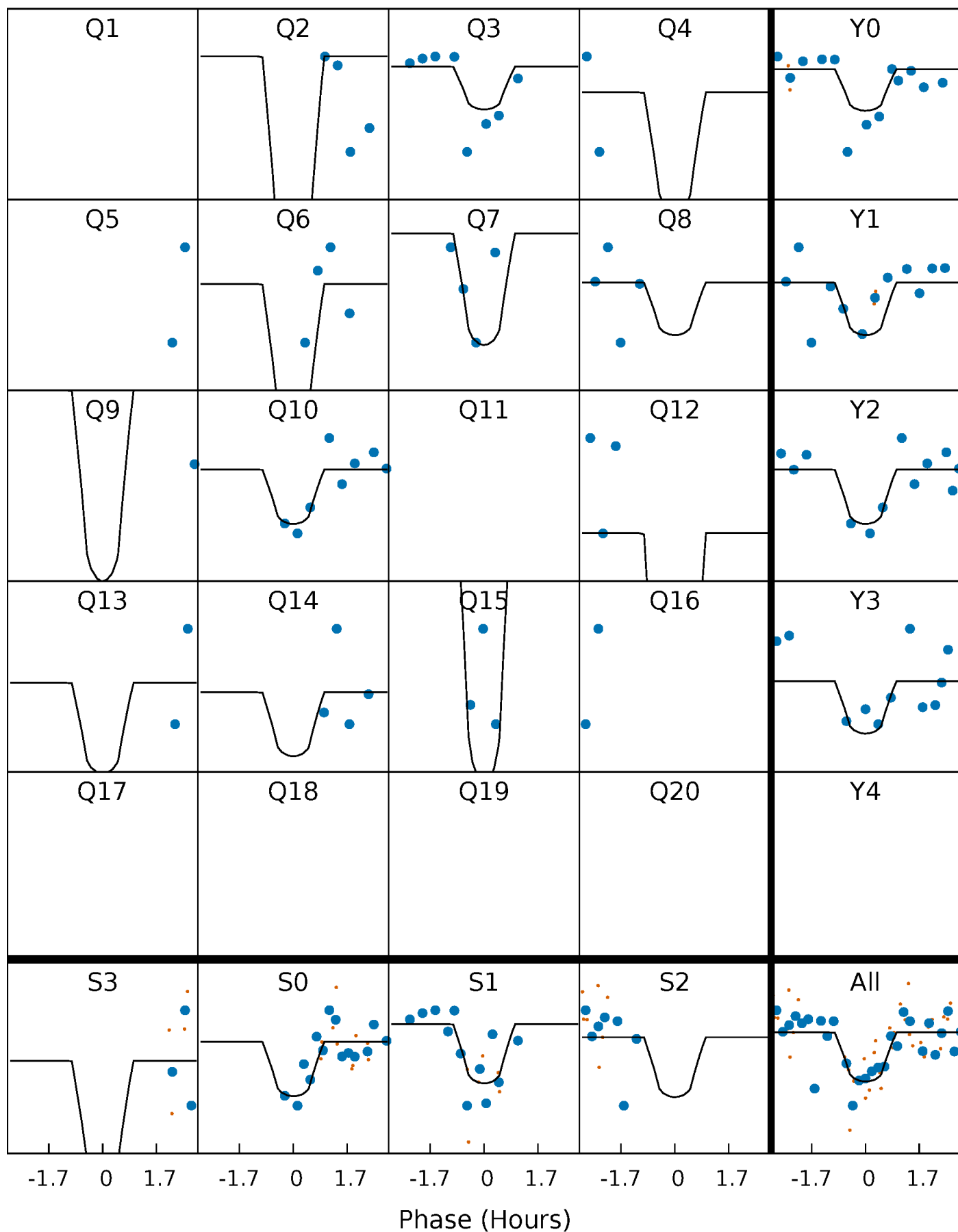
# PDC Quarter-Phased Transit Curves

TCE 009612225-02 P= 15.389879 Days  $T_0=132.709323$  (BKJD)



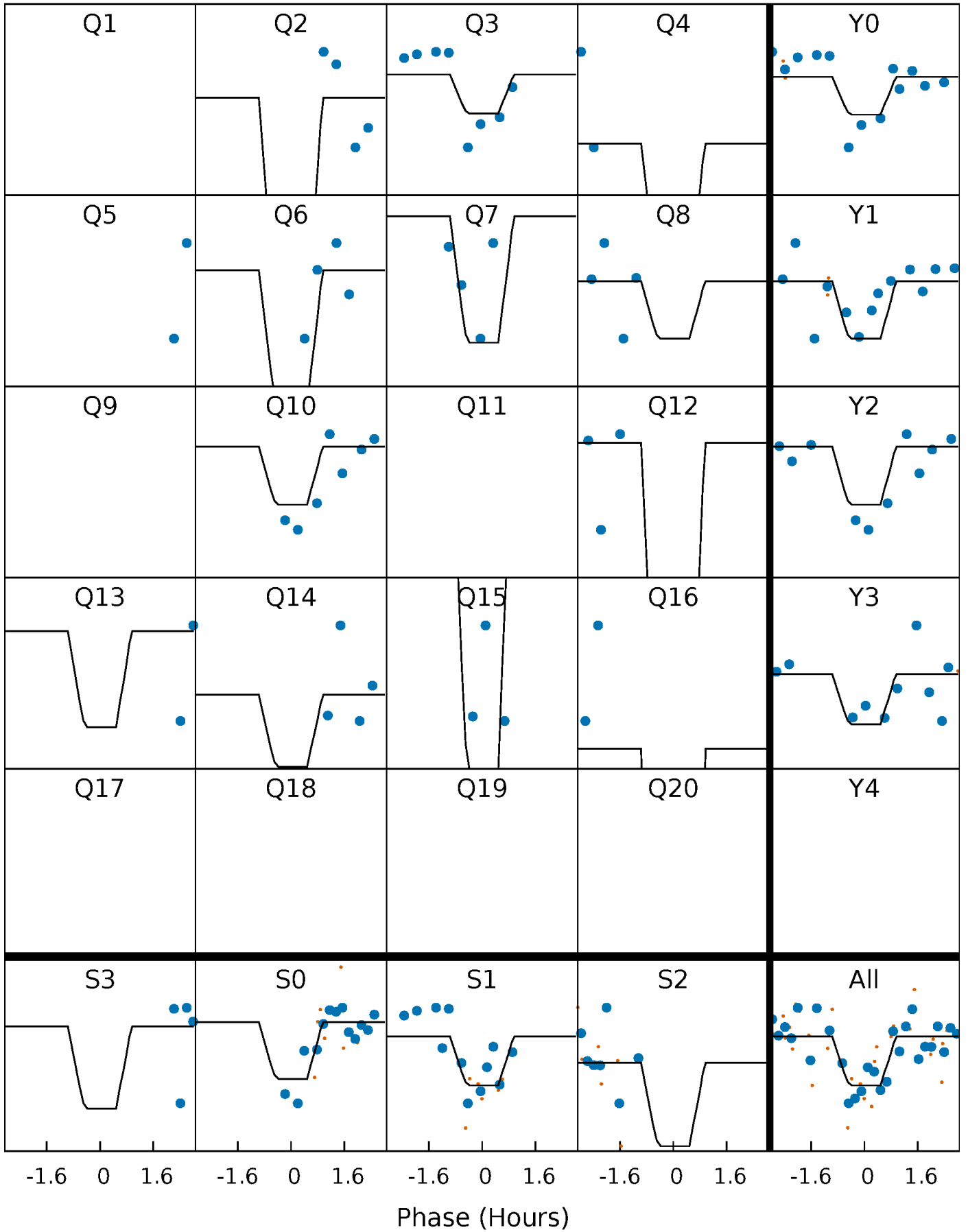
# DV Quarter-Phased Transit Curves

TCE 009612225-02 P= 15.389879 Days  $T_0=132.709323$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

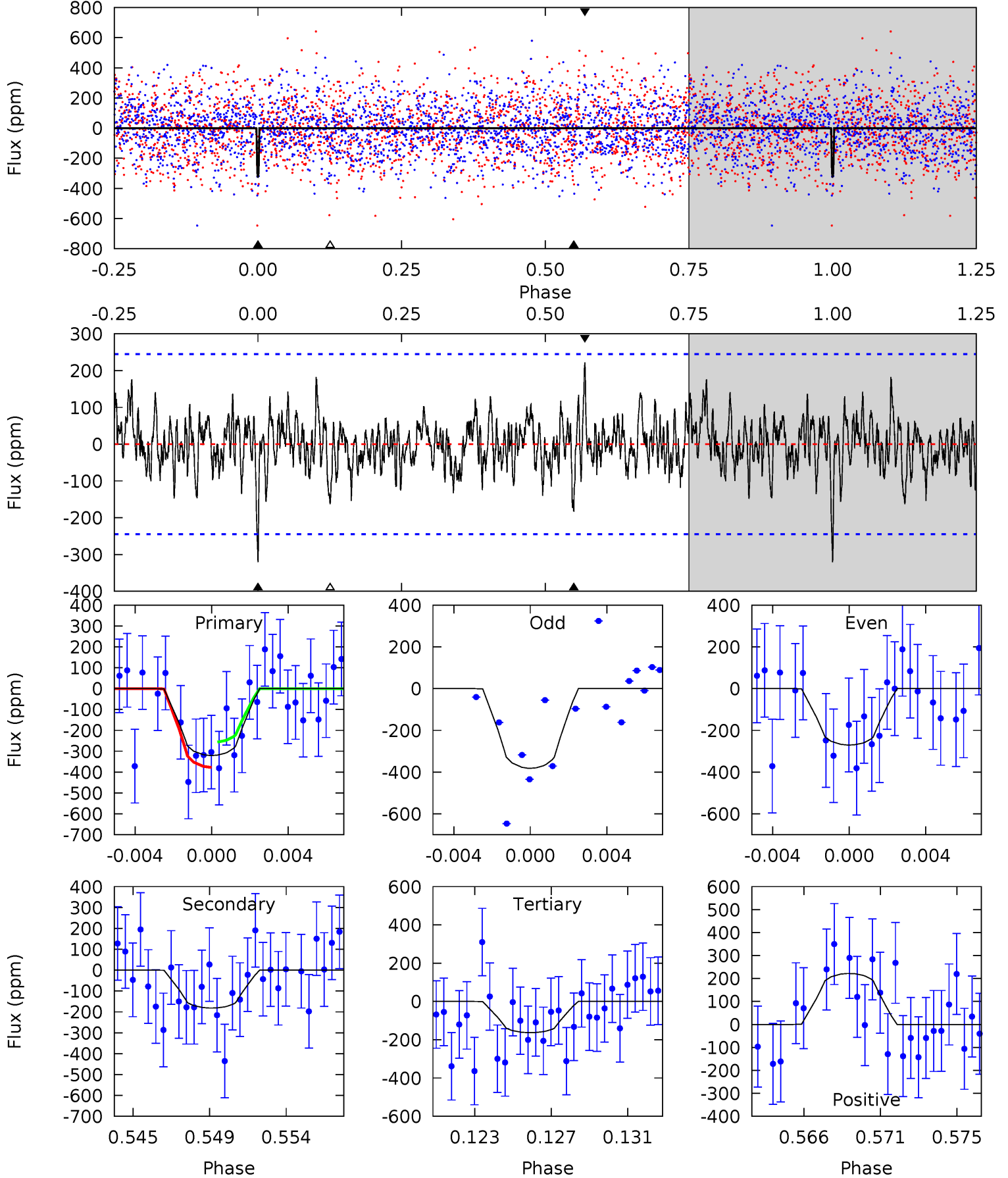
TCE 009612225-02 P= 15.389788 Days  $T_0=132.710457$  (BKJD)



# DV Model-Shift Uniqueness Test

009612225-02,  $P = 15.389879$  Days,  $E = 117.319444$  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	3.85	3.46	4.70	5.19	2.86	1.22	3.34	2.10	0.40	-0.85	1.18	1.16	0.41	1.27

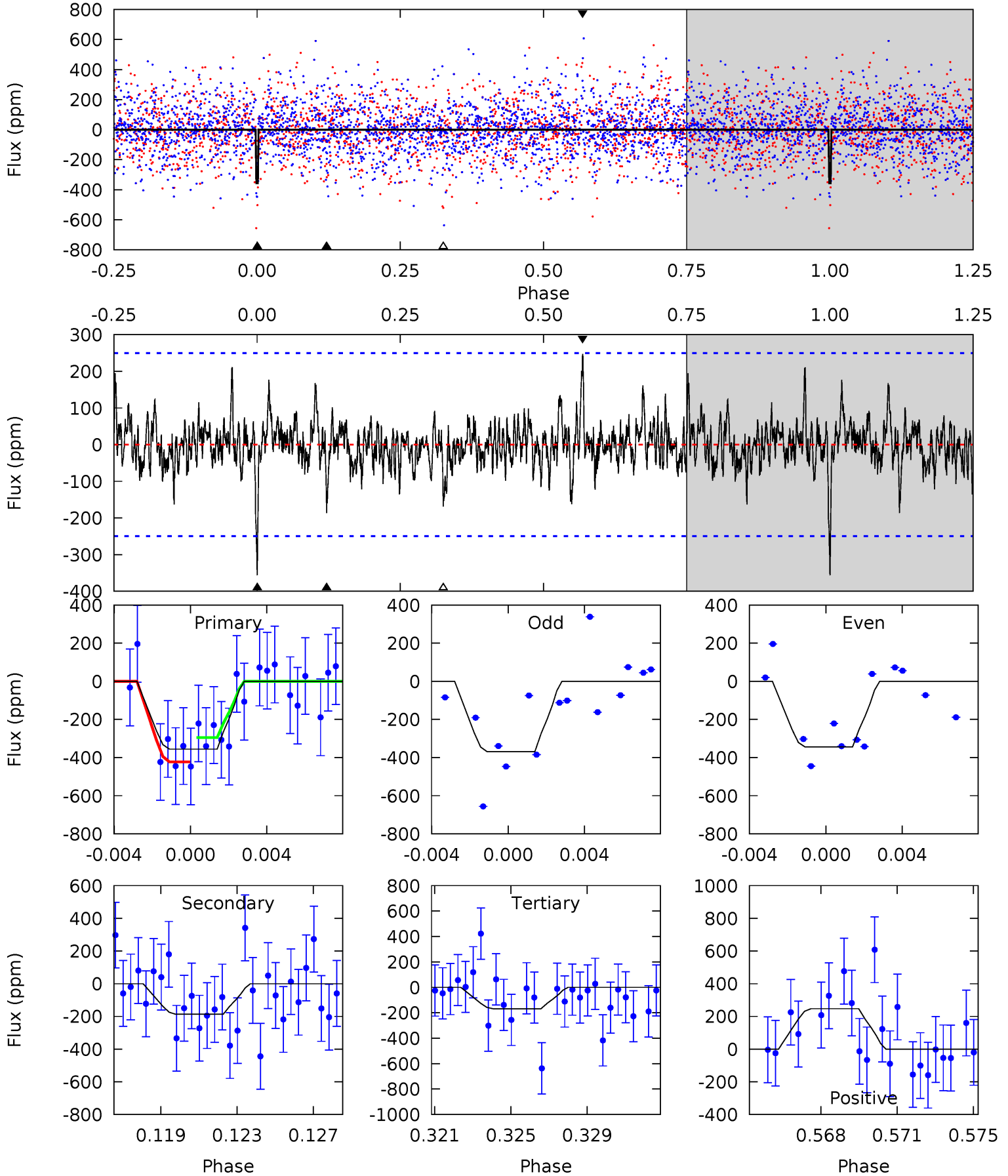




# Alt Model-Shift Uniqueness Test

009612225-02, P = 15.389788 Days, E = 117.320669 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
7.43	3.90	3.52	5.16	5.21	2.90	1.08	3.92	2.27	0.38	-1.26	0.25	1.13	0.41	1.26



### Stellar Parameters For KIC 009612225

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$6068^{+216}_{-195}$	$3.451^{+0.408}_{-0.102}$	$0.070^{+0.300}_{-0.300}$	$4.213^{+0.643}_{-1.801}$	$1.829^{+0.149}_{-0.446}$	$0.034^{+0.125}_{-0.011}$
	+4%/-3%	+12%/-3%	+429%/-429%	+15%/-43%	+8%/-24%	+363%/-32%
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 009612225-02 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-182 \pm 47$	$13.35^{+13.68}_{-8.94}$	$1948^{+147}_{-199}$	$4142^{+2578}_{-910}$	$12^{+91}_{-9}$
Alt.	$-187 \pm 48$	$14.89^{+13.78}_{-9.66}$	$1952^{+132}_{-216}$	$3985^{+2235}_{-787}$	$9.817^{+68.856}_{-7.207}$

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

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

$A_{\text{obs}}$  = Observed Albedo (Assuming  $T=0$ )

If a secondary eclipse is present, the system is likely an EB if  $T_{\text{obs}} \gg T_{\text{max}}$  AND  $A_{\text{obs}} \gg 1.0$

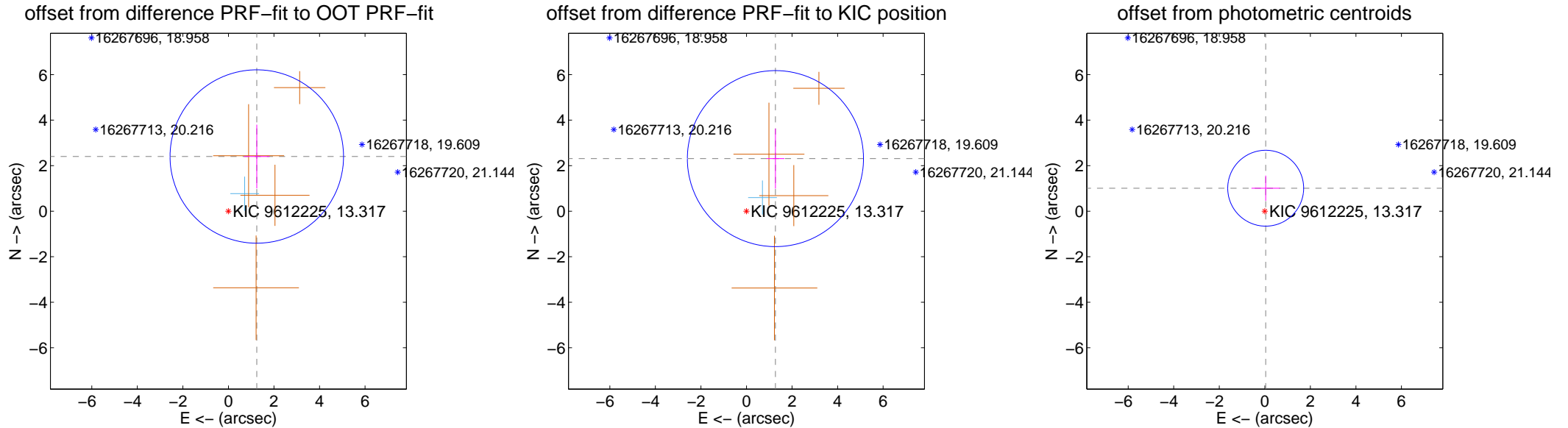
## DV Centroid Data

Supplemental centroid analysis for 009612225-02. Kepler magnitude: 13.32. Transit SNR 16.15

There are 1 quarters with good PRF difference image offsets

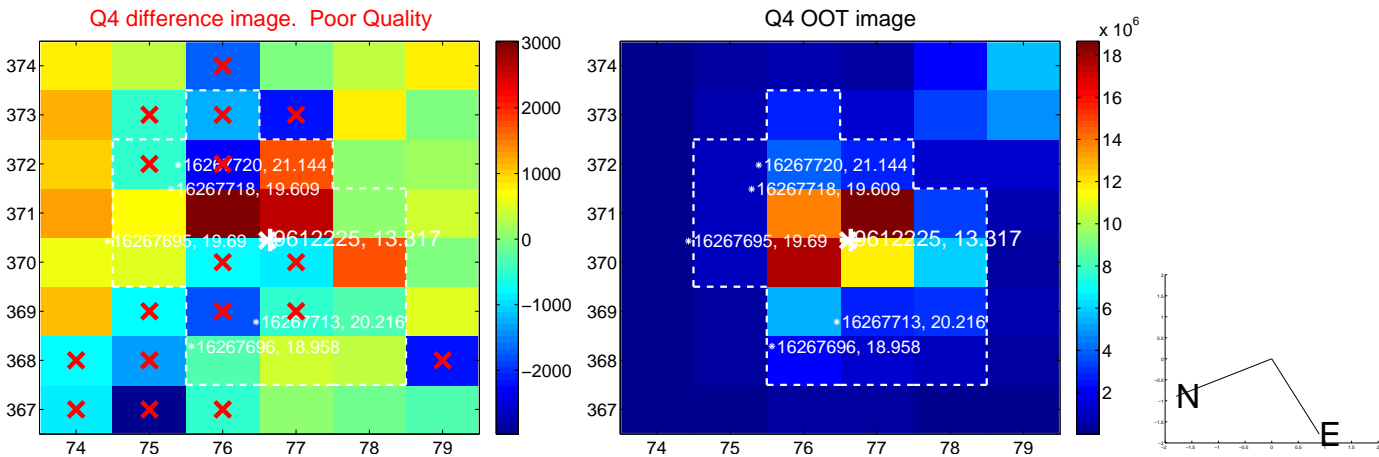
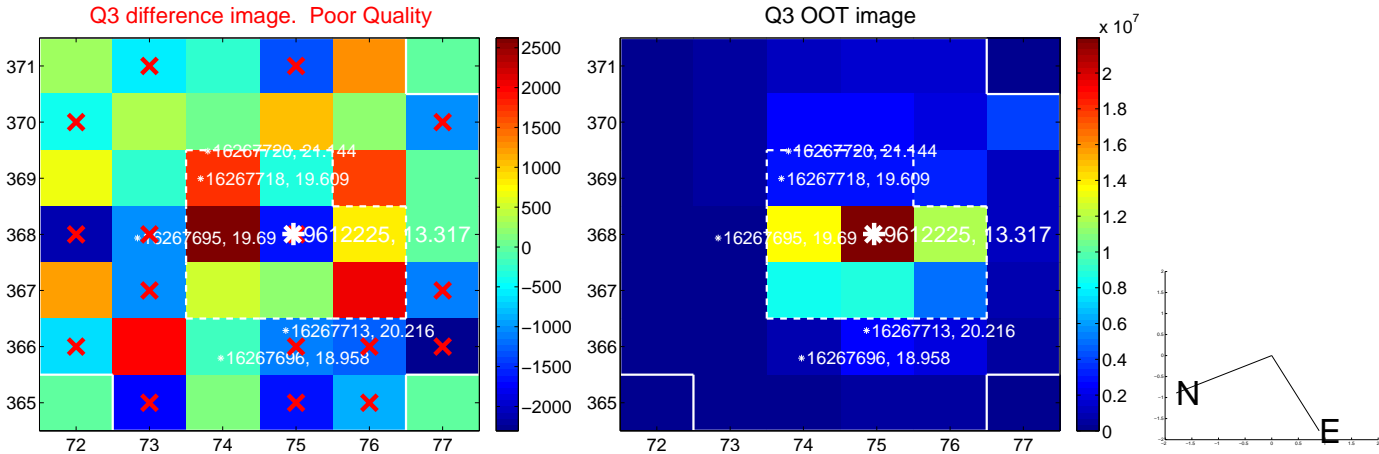
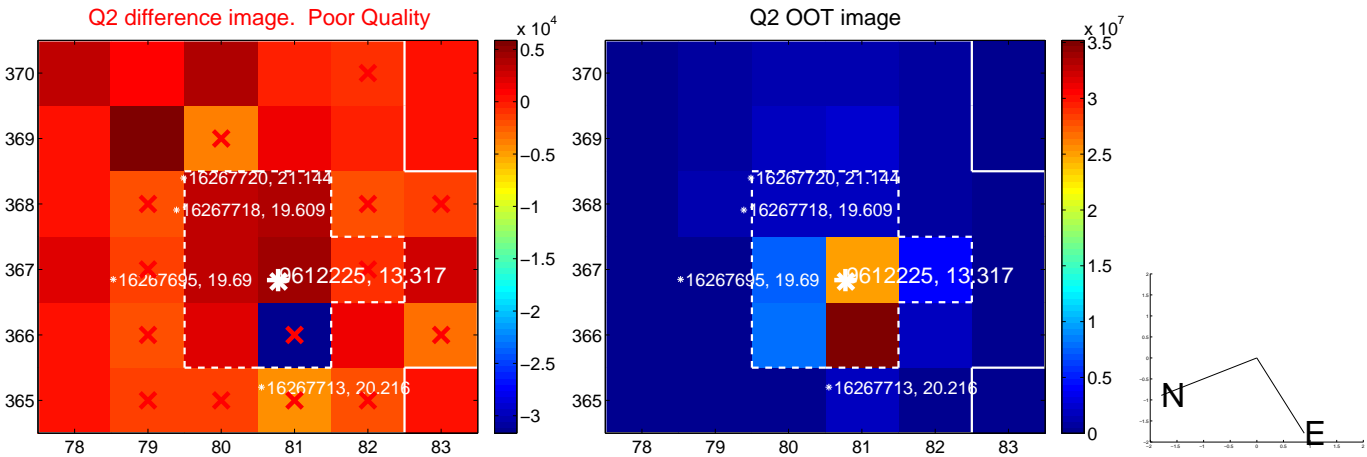
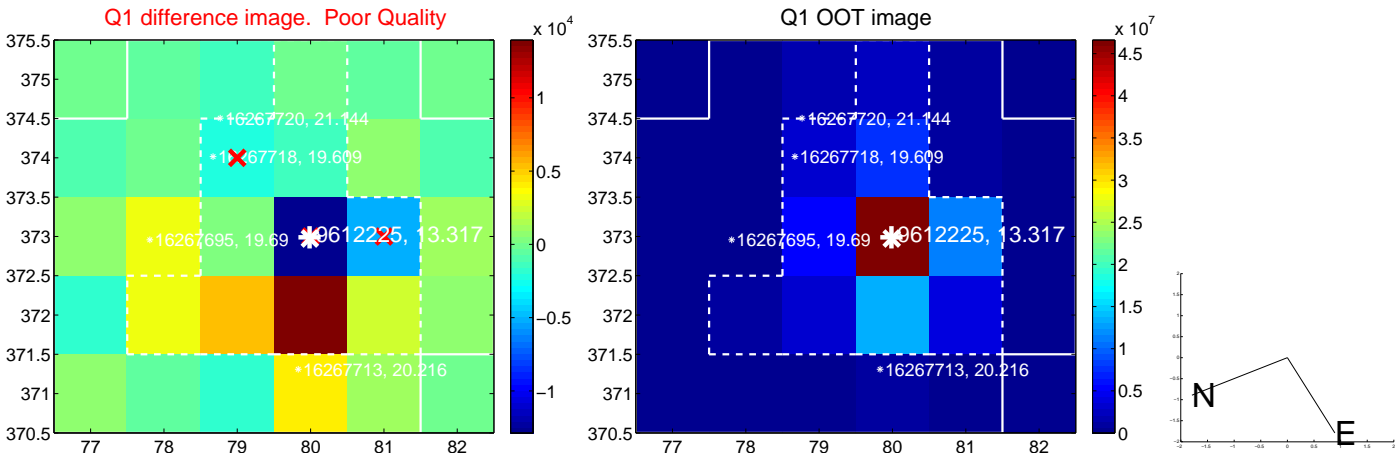
The direct PRF centroid is offset from the target star catalog position by about 0.06 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$2.705 \pm 1.269$	2.13	$-1.245 \pm 0.562$	$2.402 \pm 1.400$
PRF-fit source offset from KIC position	$2.635 \pm 1.289$	2.04	$-1.270 \pm 0.393$	$2.309 \pm 1.321$
photometric centroid source offset	$1.01 \pm 0.56$	1.82	$-0.04 \pm 0.62$	$1.01 \pm 0.56$

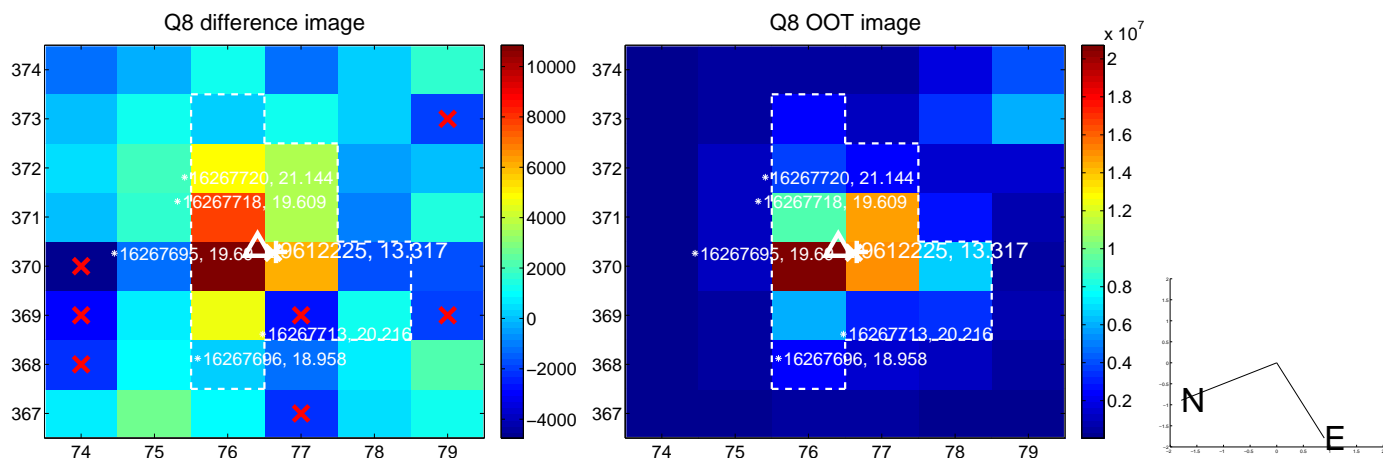
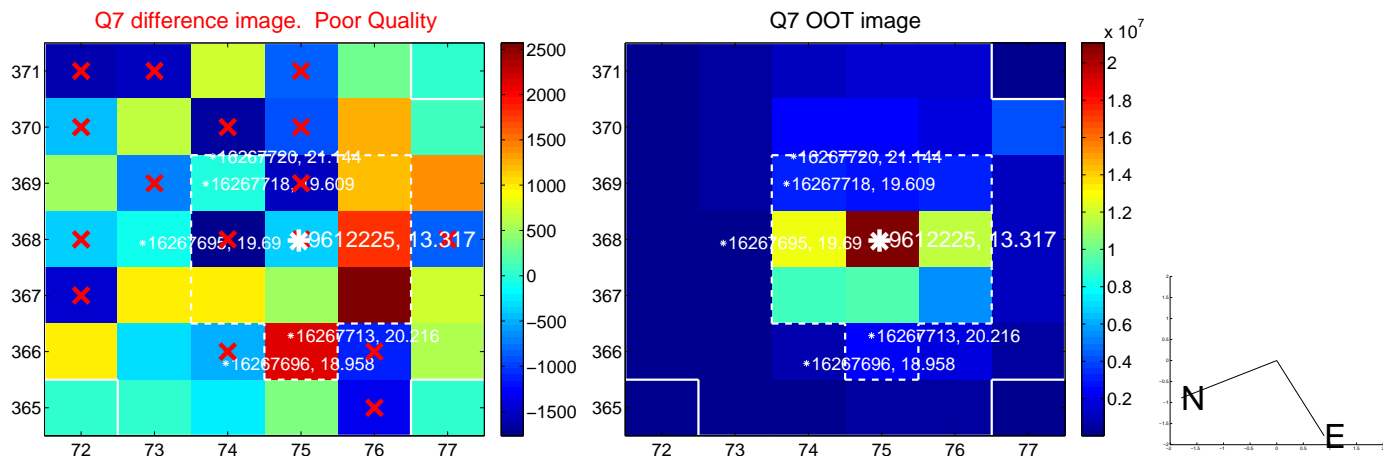
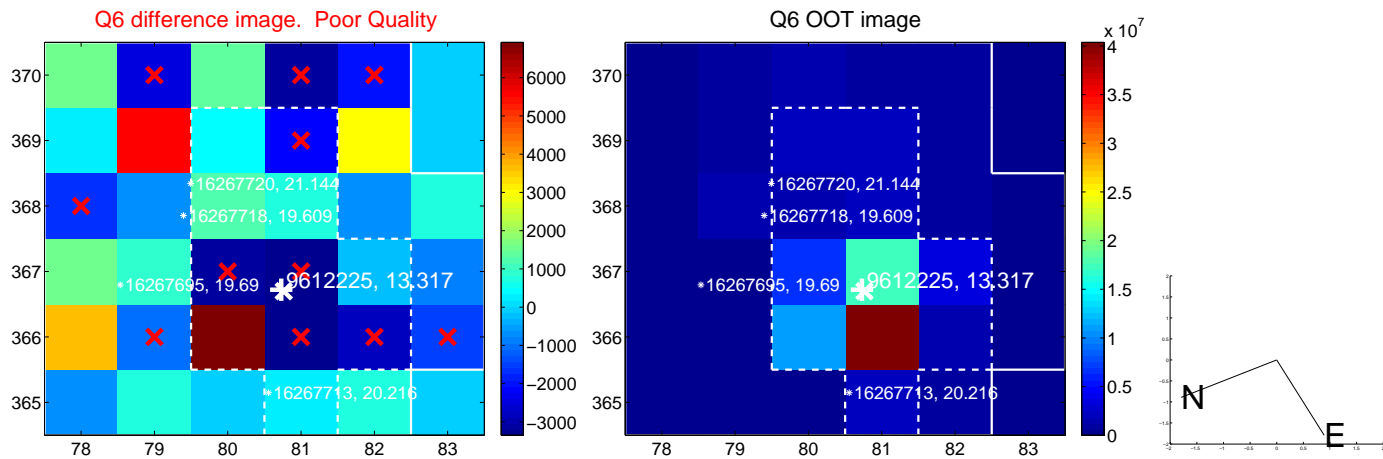
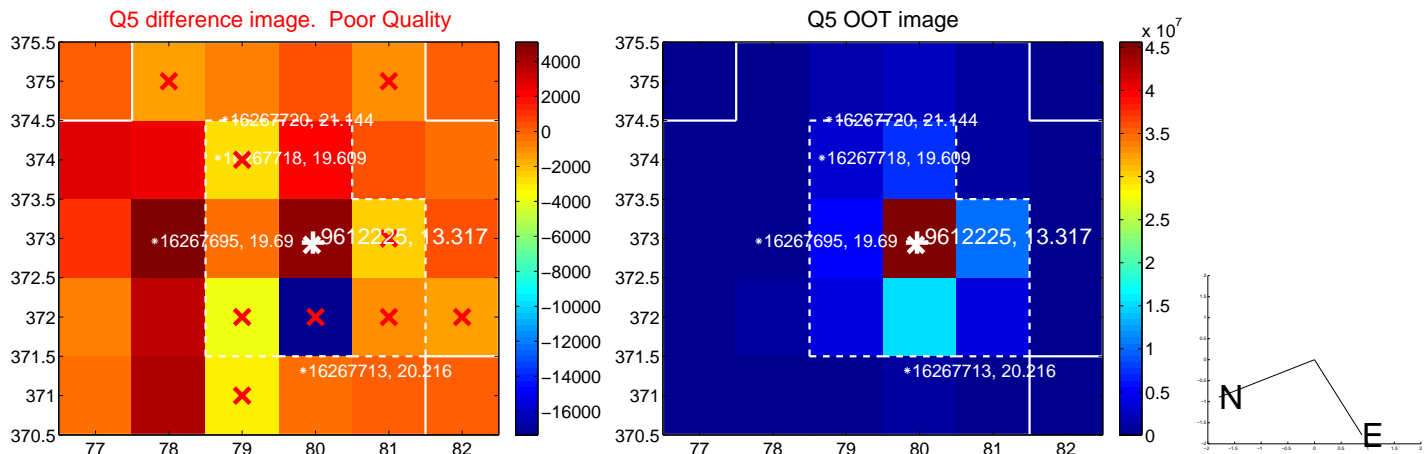


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

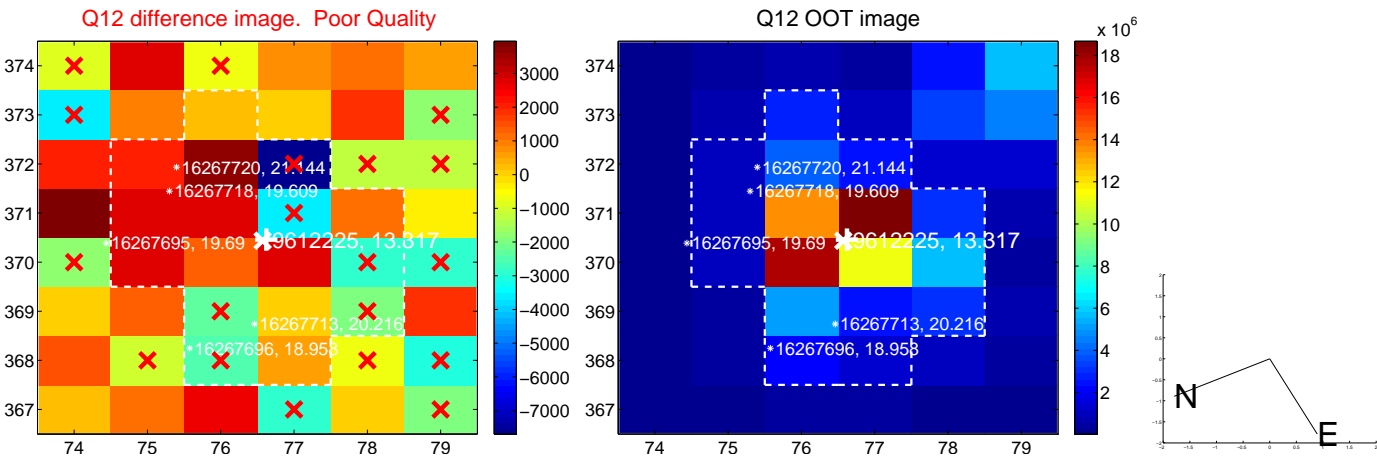
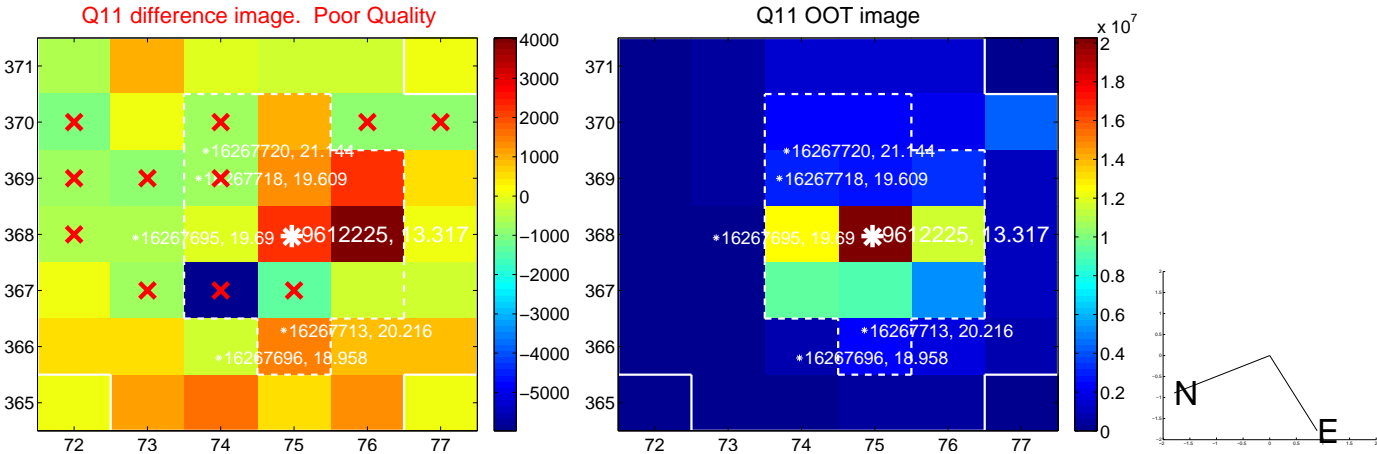
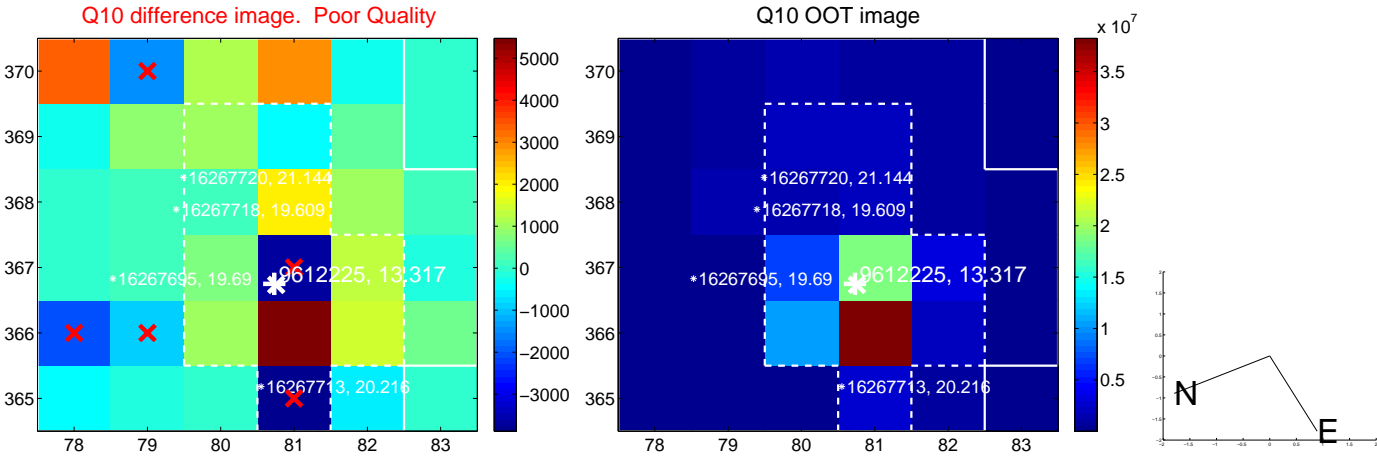
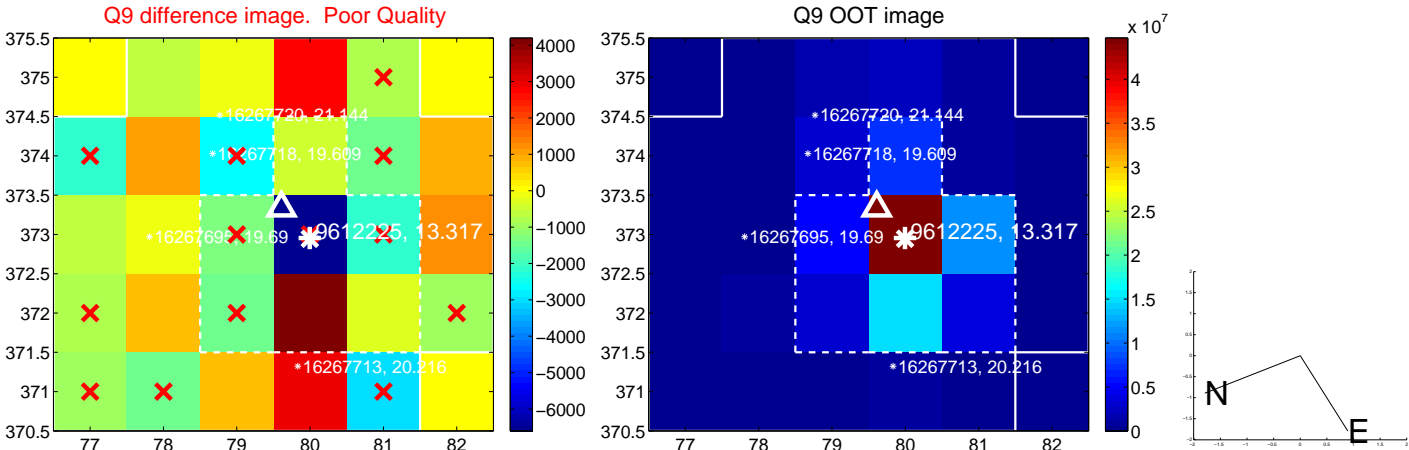


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

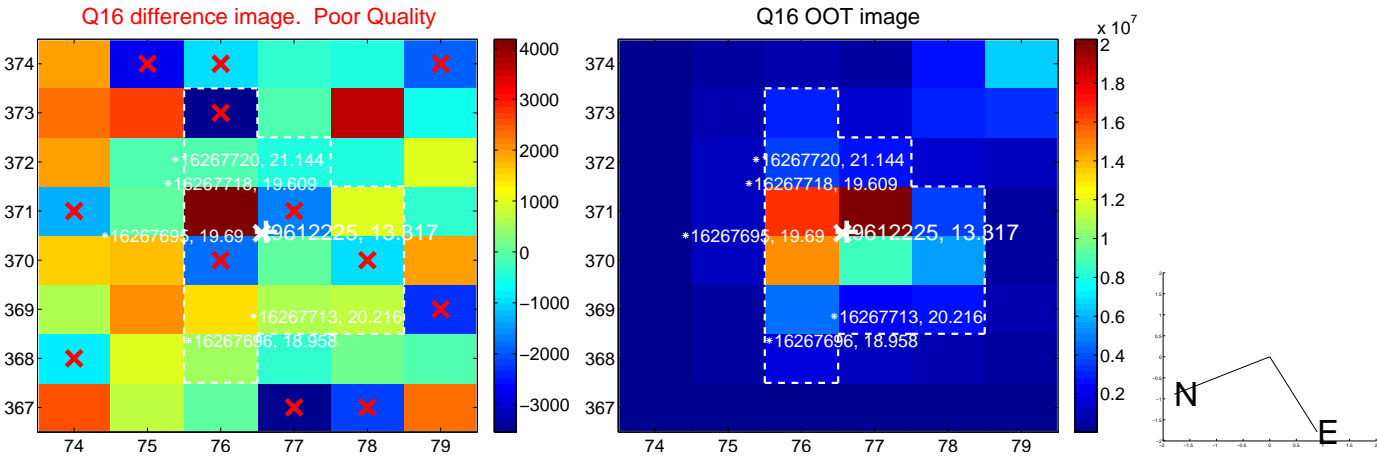
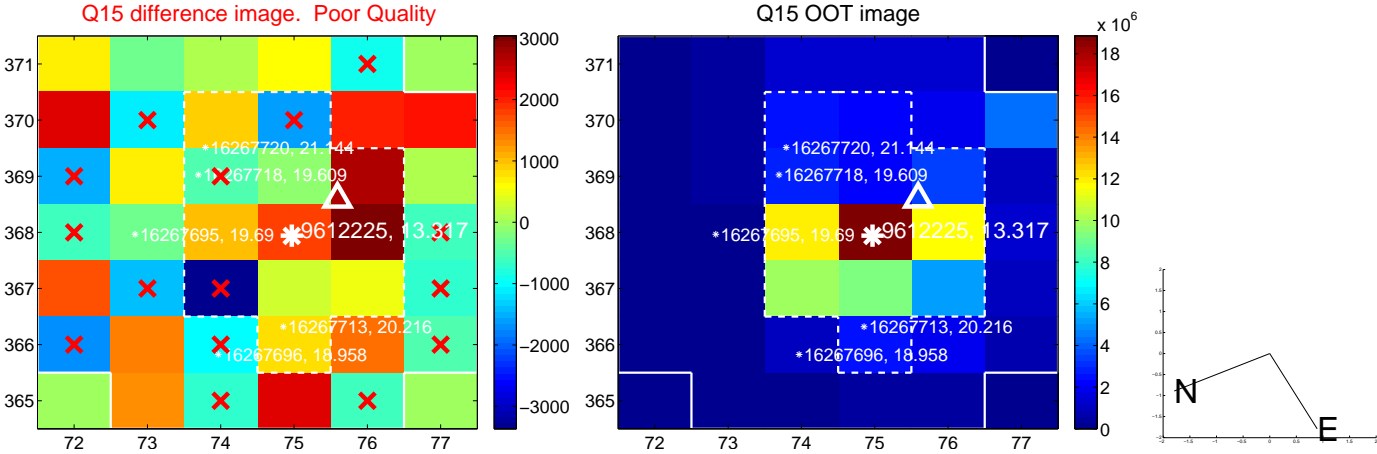
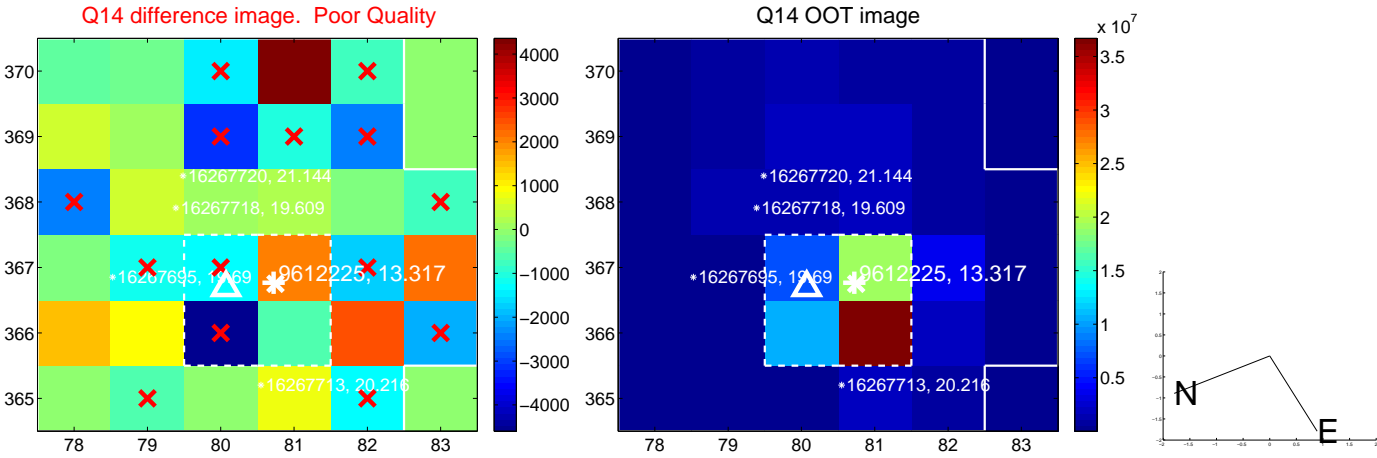
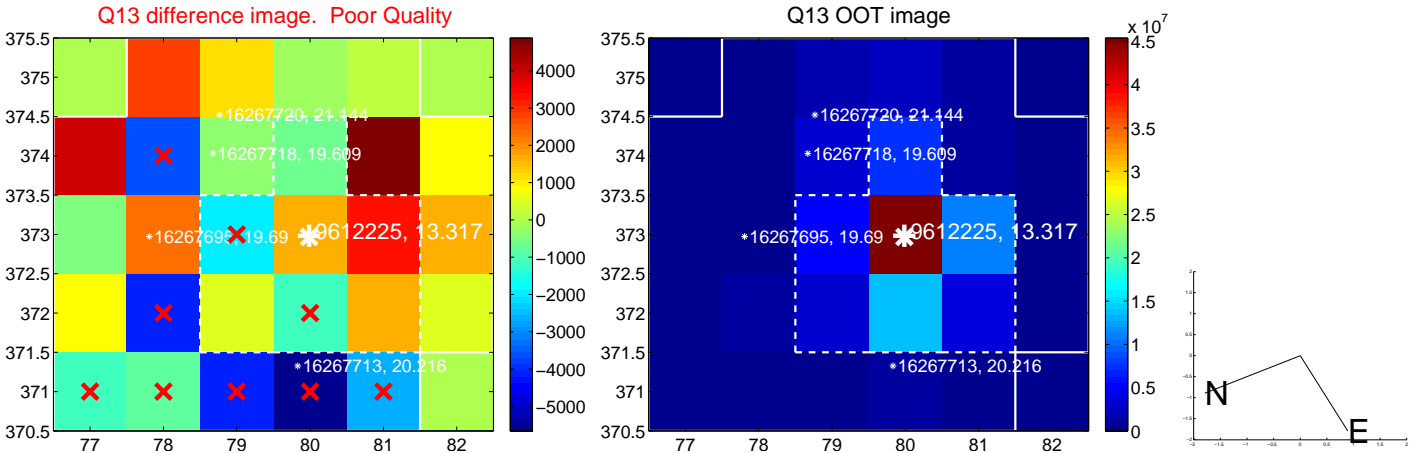




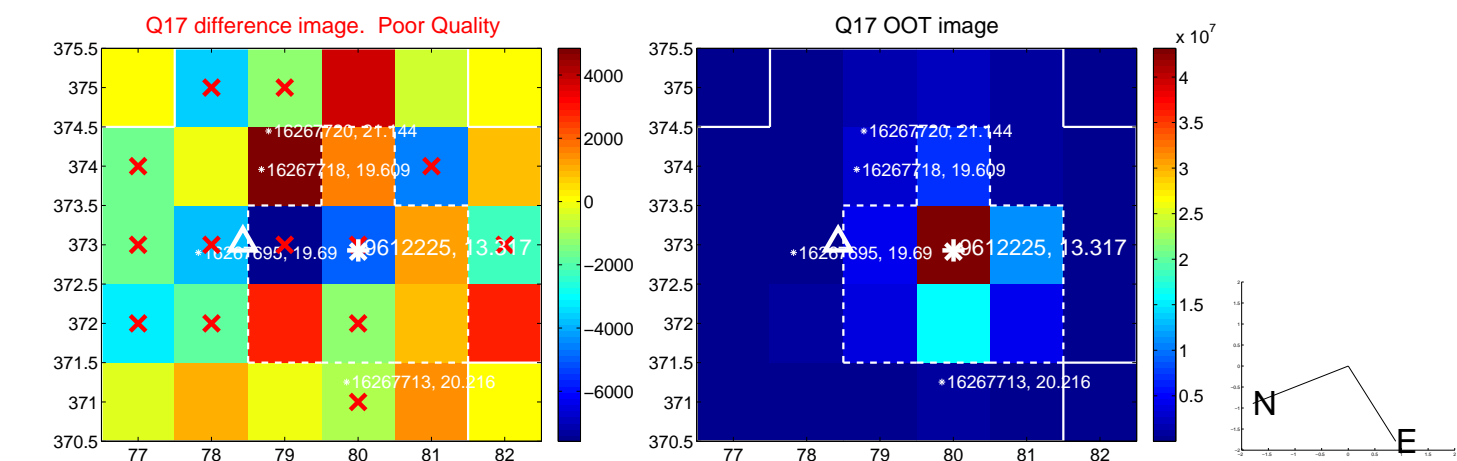
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



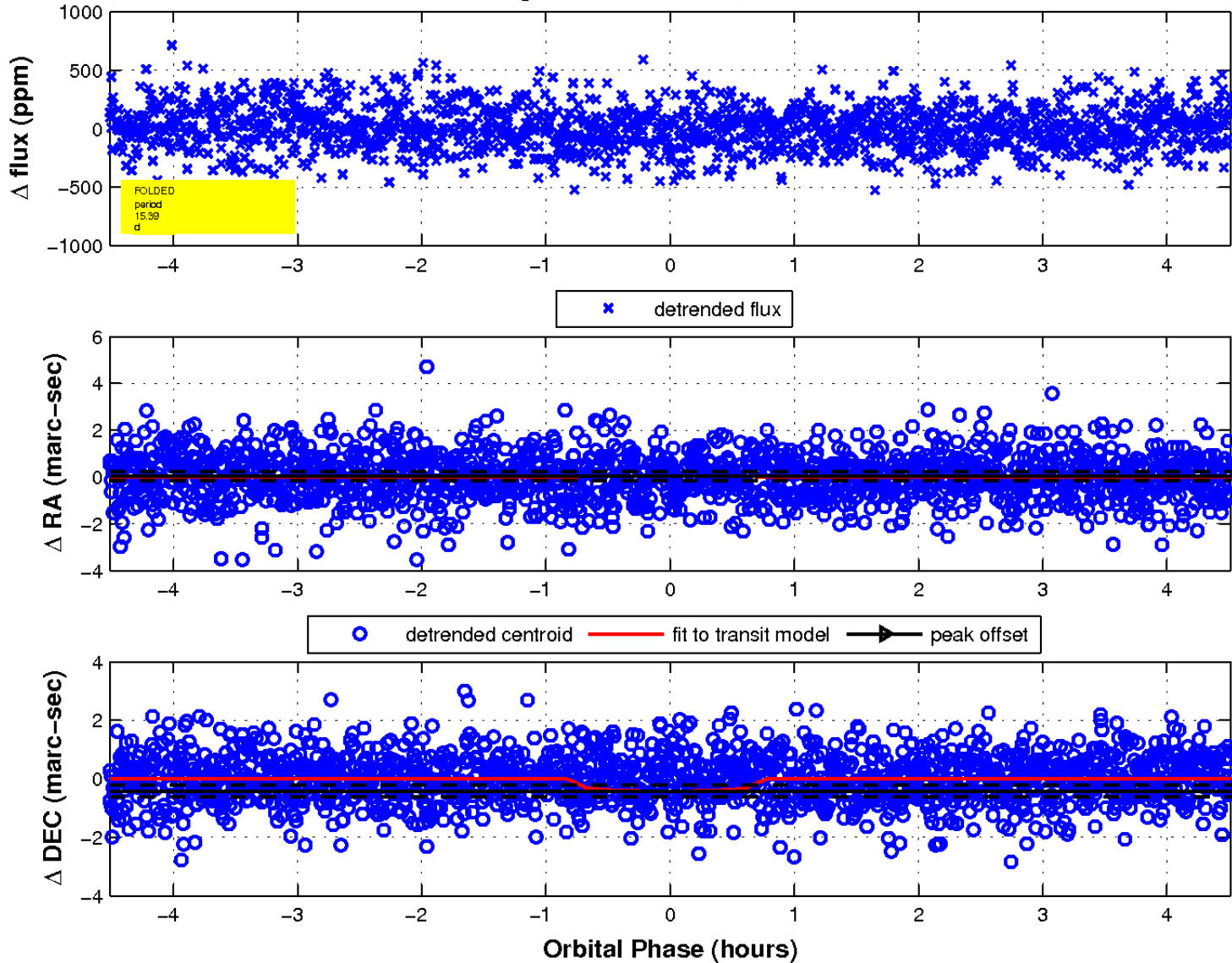
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

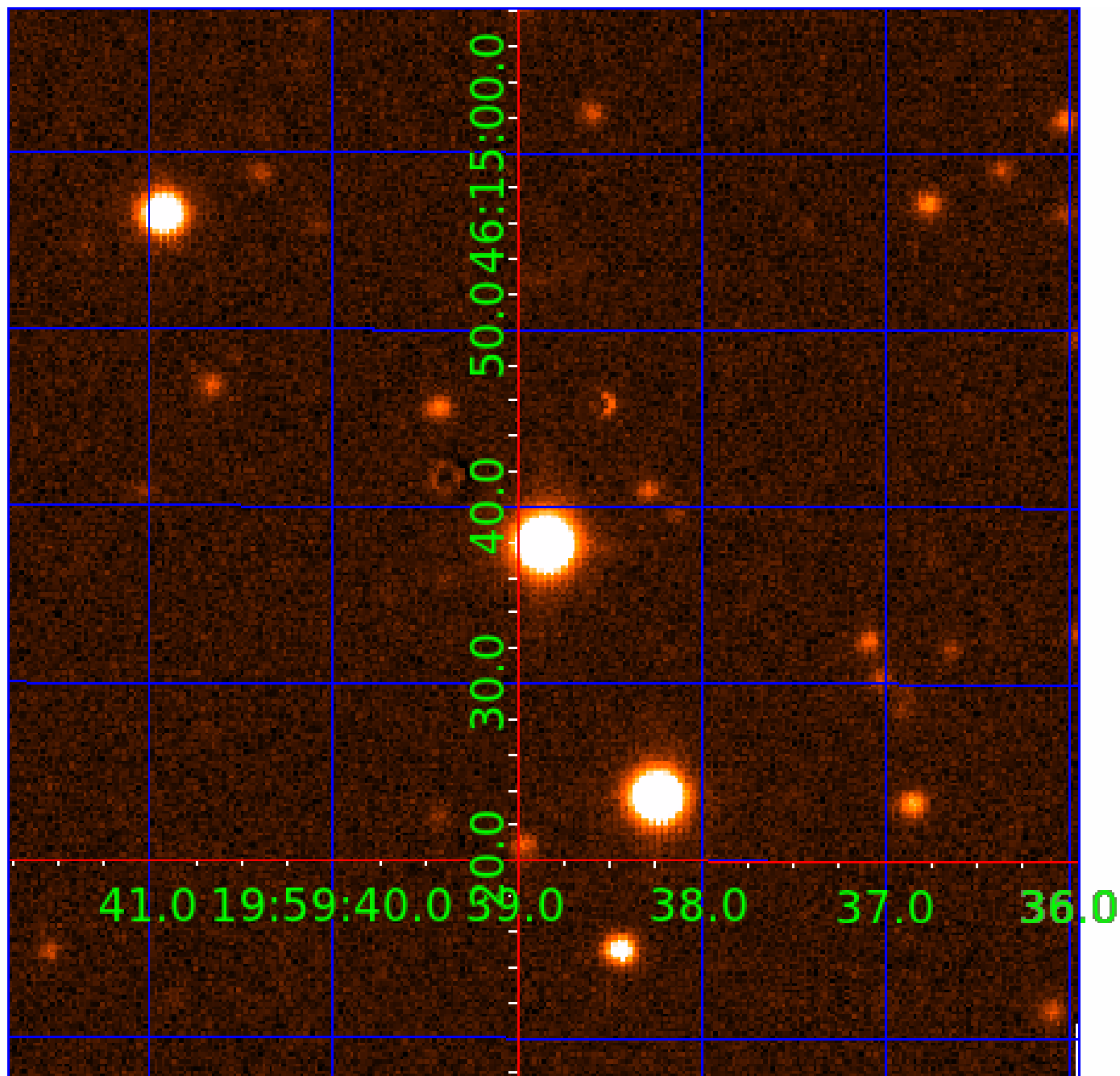


fluxWeightedCentroids, Planet 2 of 7



UKIRT Image

Declination



# KIC 009612225

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
009612225-01	OBS	No	1.569074	132.357241	5.4	11.763	8.4	2.9	4.21	6068	0.99	20635.40
009612225-02	OBS	No	15.389879	132.709323	325.0	1.505	18.4	16.1	4.21	6068	7.73	982.86
009612225-03	OBS	No	17.227206	146.565078	439.3	1.252	17.4	17.2	4.21	6068	9.83	845.64
009612225-04	OBS	No	10.538483	138.586428	319.7	1.531	17.5	18.0	4.21	6068	8.92	1628.42
009612225-05	OBS	No	18.886120	148.709844	263.3	3.838	15.7	15.8	4.21	6068	7.83	748.08
009612225-06	OBS	No	14.068152	136.604942	133.8	3.316	11.2	9.3	4.21	6068	5.74	1107.87
009612225-07	OBS	No	8.400052	134.207869	867.8	1.500	14.3	-1.0	4.21	6068	12.43	2203.41

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009612225-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV
009612225-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_MEAS—HALO_GHOST
009612225-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
009612225-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_MEAS
009612225-05	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—HALO_GHOST
009612225-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT
009612225-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—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.

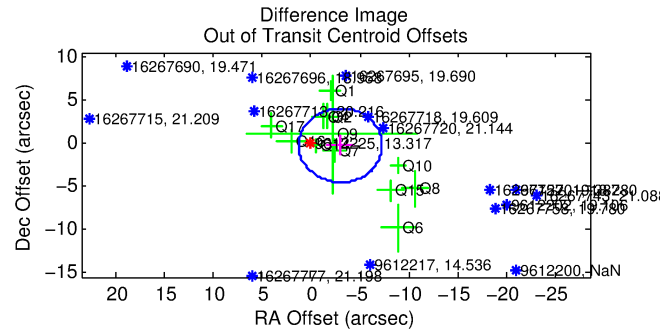
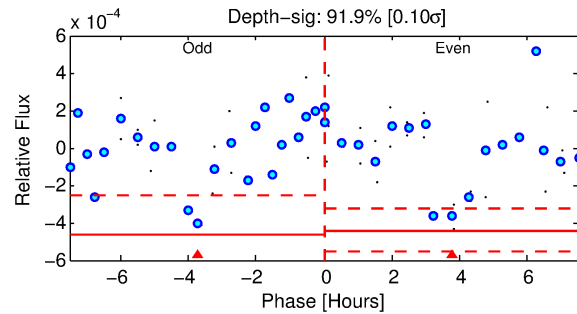
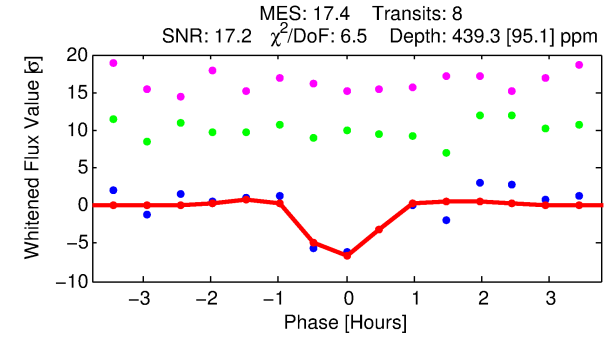
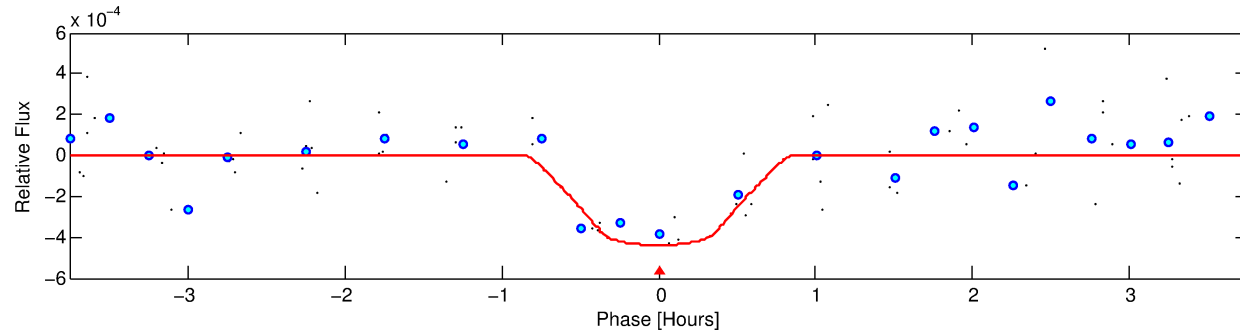
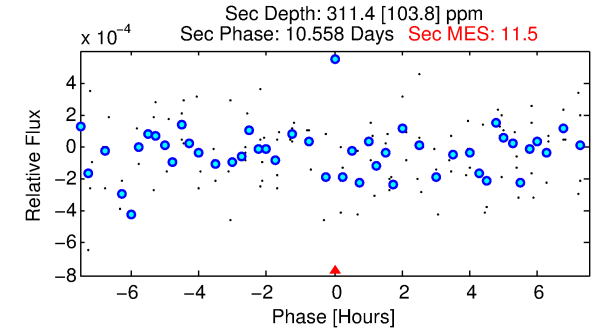
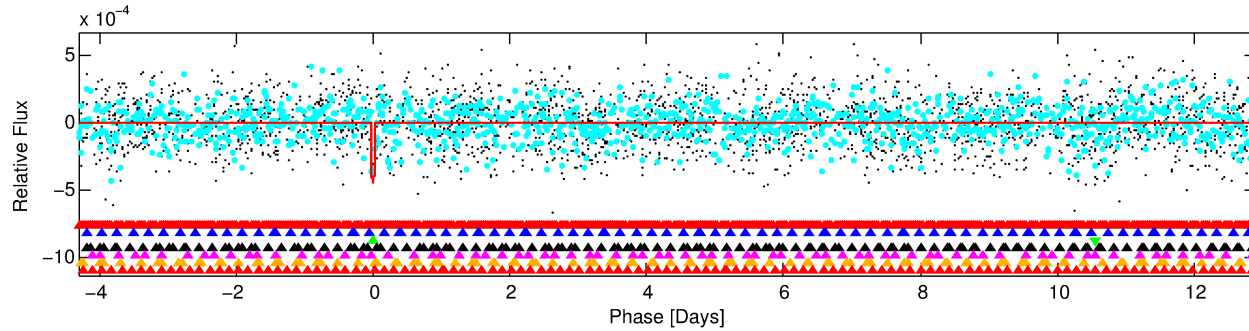
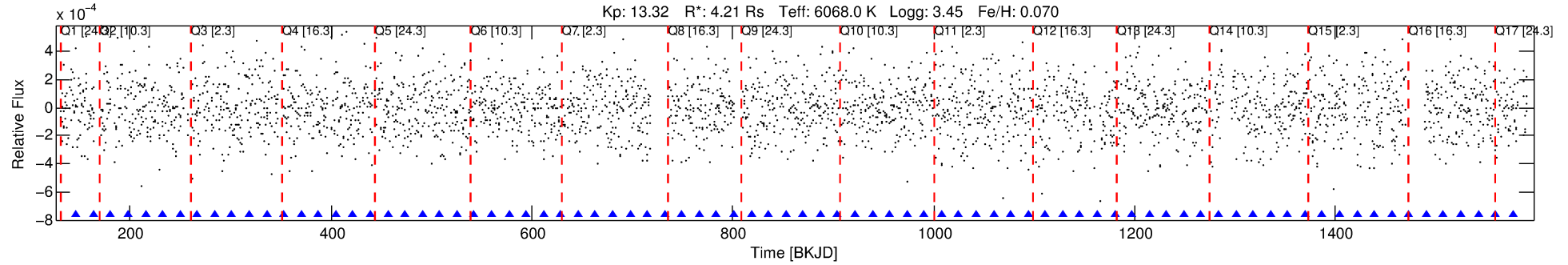
Ephemeris Match Information For 009612225-03

No Significant Match Found



# DV One-Page Summary

KIC: 9612225 Candidate: 3 of 7 Period: 17.227 d



## DV Fit Results:

Period = 17.22721 [0.00014] d  
Epoch = 146.5651 [0.0086] BKJD  
Rp/R\* = 0.0214 [0.0609]  
a/R\* = 66.79 [933.61]  
b = 0.80 [6.42]  
Seff = 845.64 [594.21]  
Teff = 1375 [242] K  
Rp = 9.83 [28.29] Re  
a = 0.1597 [0.0676] AU  
Ag = 45.19 [259.47] [0.17 $\sigma$ ]  
Teffp = 5512 [7858] K [0.53 $\sigma$ ]

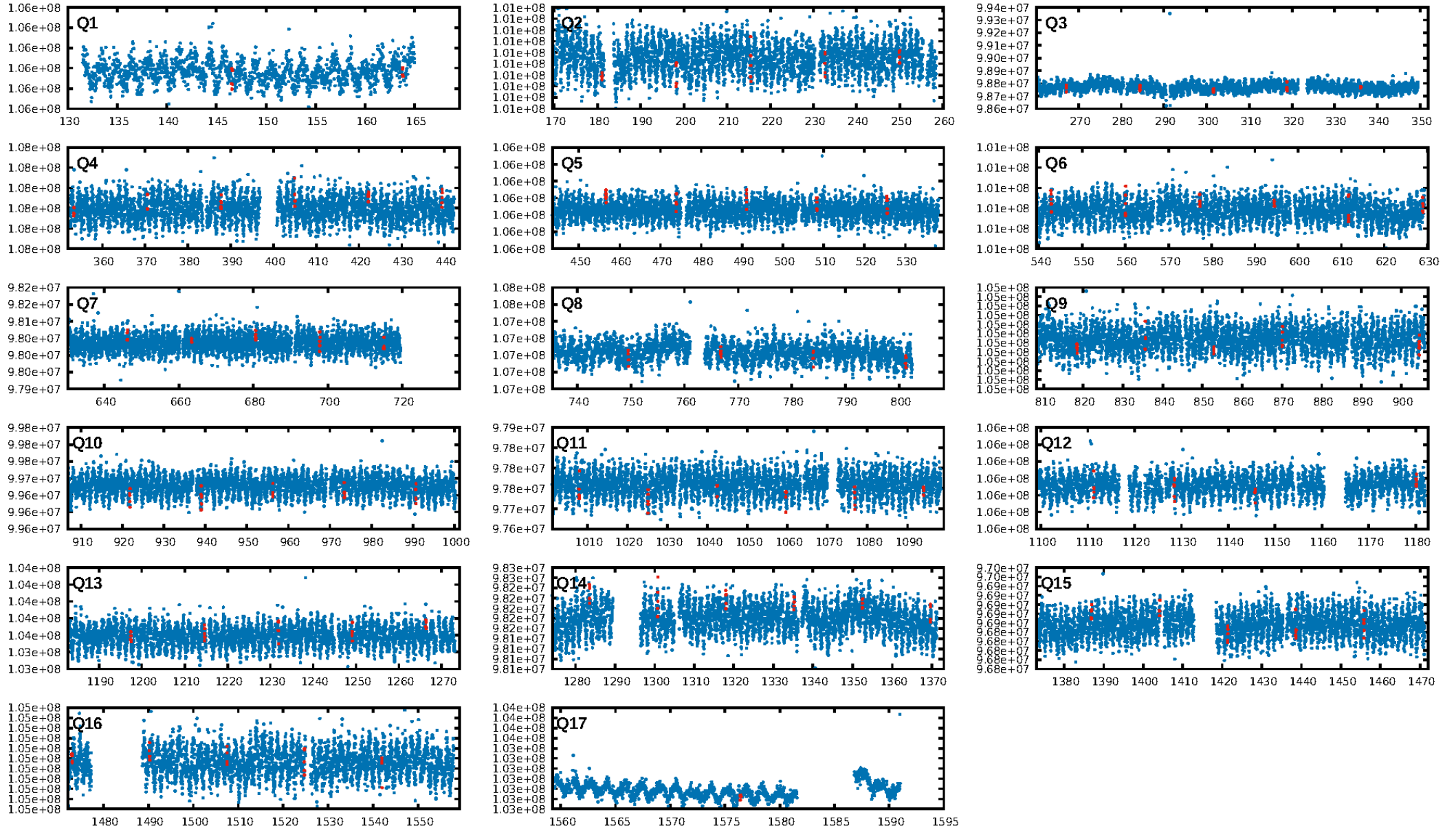
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [22.53 $\sigma$ ]  
LongPeriod-sig: 100.0% [9.86 $\sigma$ ]  
ModelChiSquare2-sig: 0.8%  
ModelChiSquareGof-sig: 46.2%  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [8/8]  
GhostDiagnostic-chr: -0.4304  
Centroid-sig: 20.4%  
Centroid-so: 0.843 arcsec [1.56 $\sigma$ ]  
OotOffset-rm: 2.995 arcsec [2.10 $\sigma$ ]  
OotOffset-st: 4/2/3/3 [12]  
KicOffset-rm: 3.129 arcsec [1.96 $\sigma$ ]  
KicOffset-st: 4/2/3/3 [12]  
DiffImageQuality-fgm: 0.00 [0/12]  
DiffImageOverlap-fno: 0.47 [8/17]

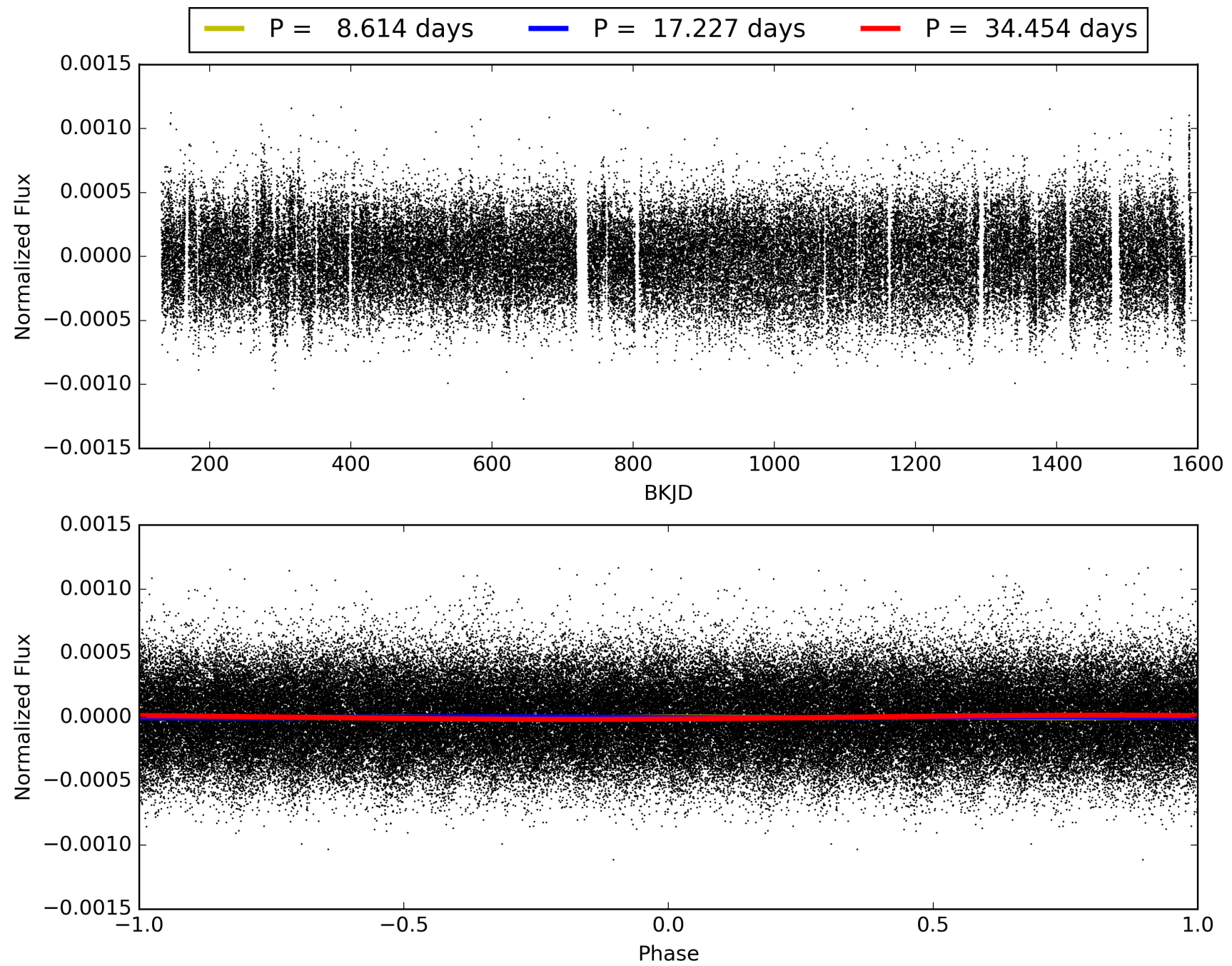
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 13:12:21 Z

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

# TCE 009612225-03, PDC Light Curves

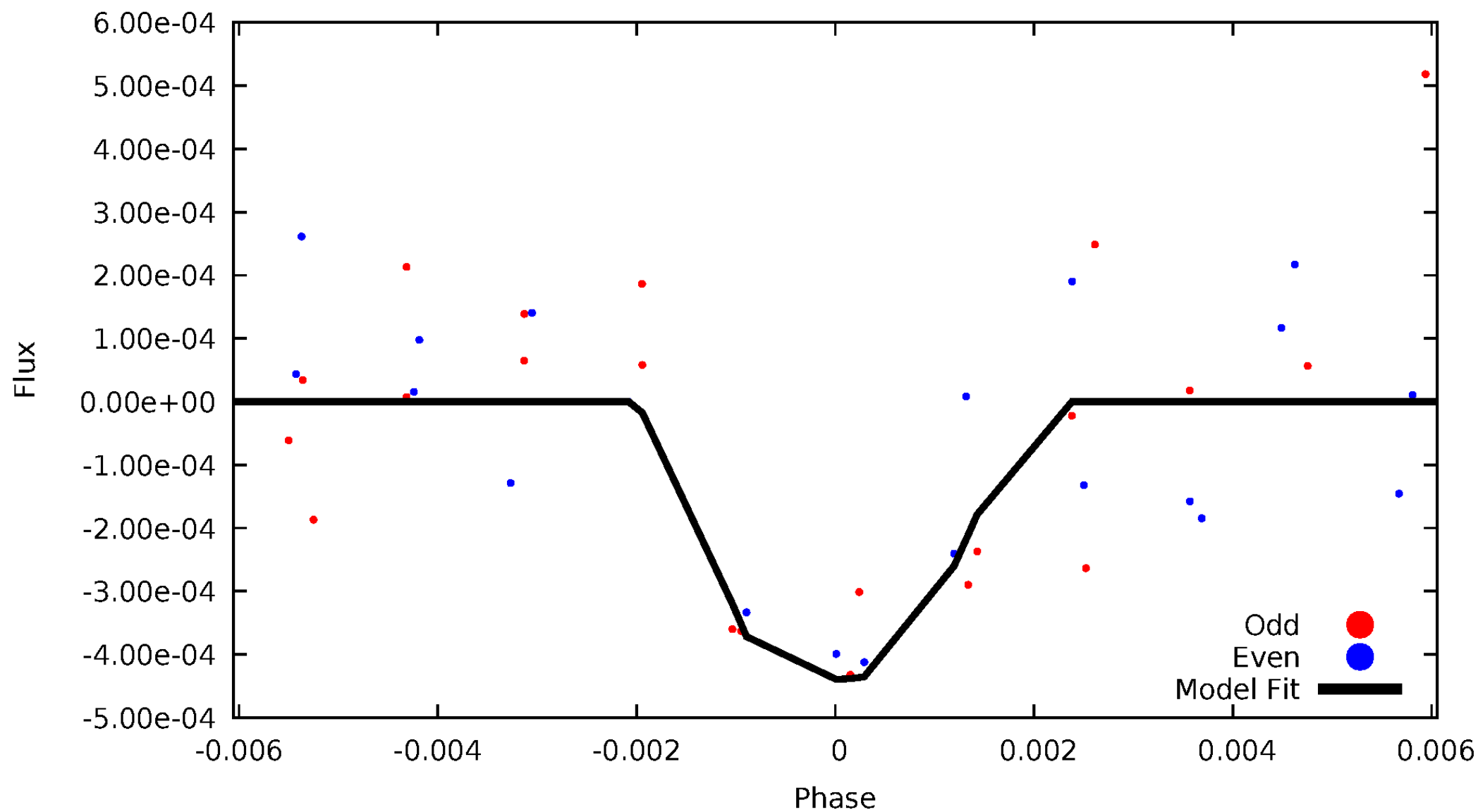


TCE 009612225-03



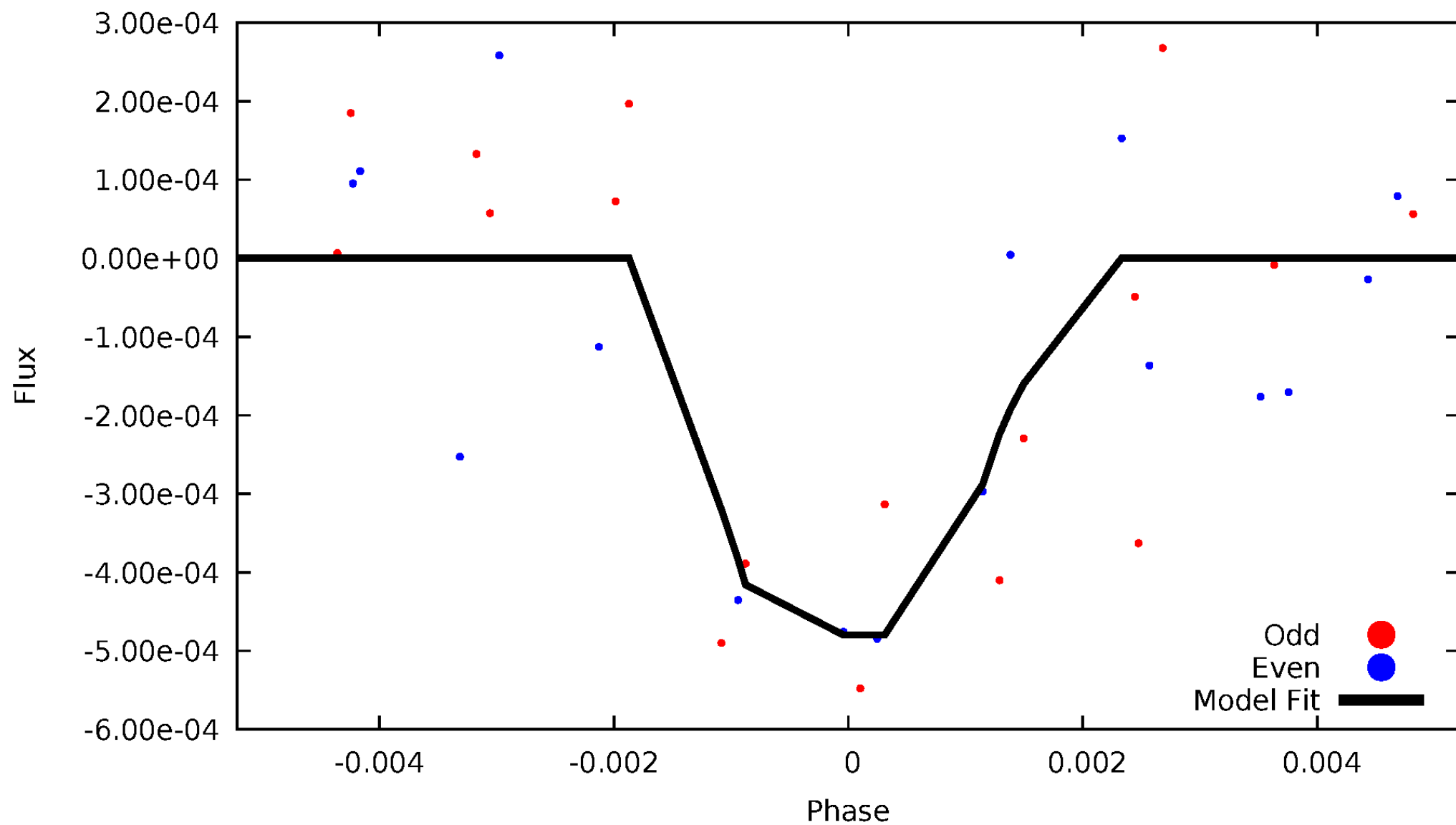
# DV Odd/Even

TCE 009612225-03



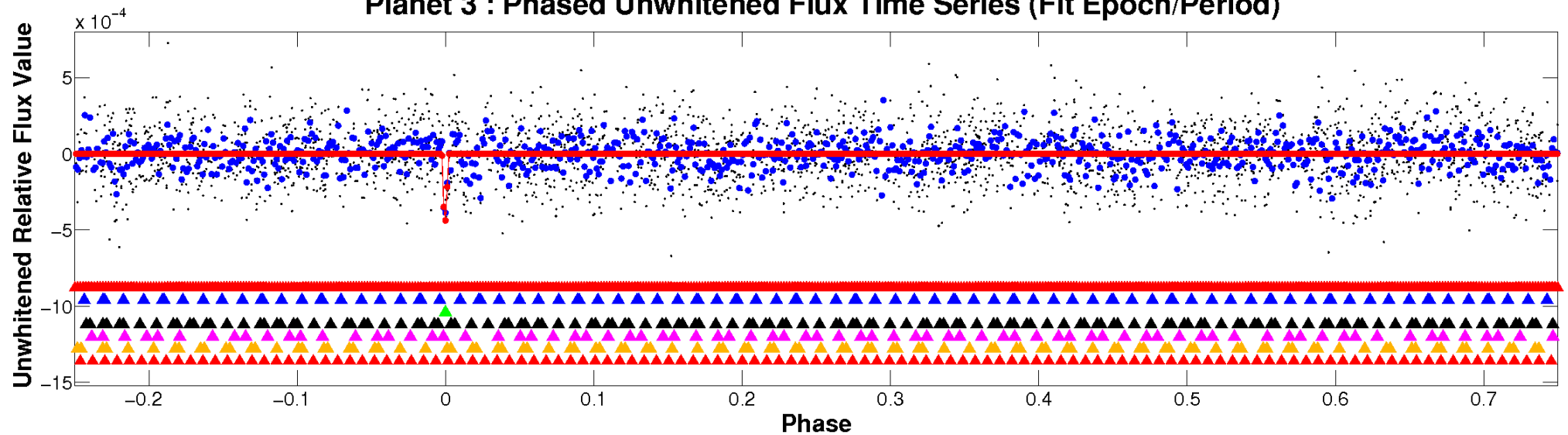
# ALT Odd/Even

TCE 009612225-03

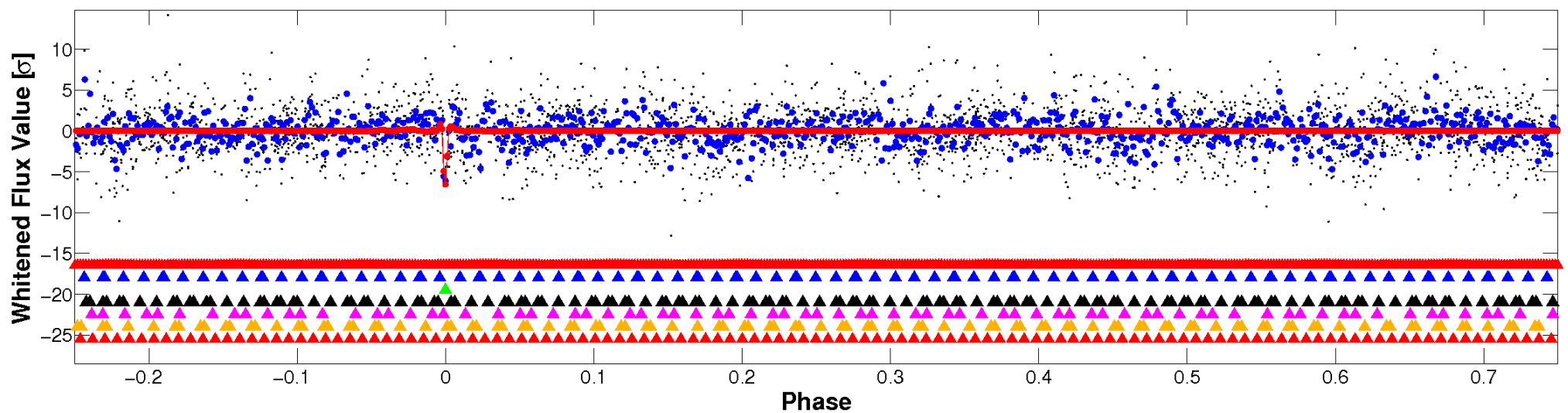


# Non-Whitened Vs. Whitened Light Curve

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



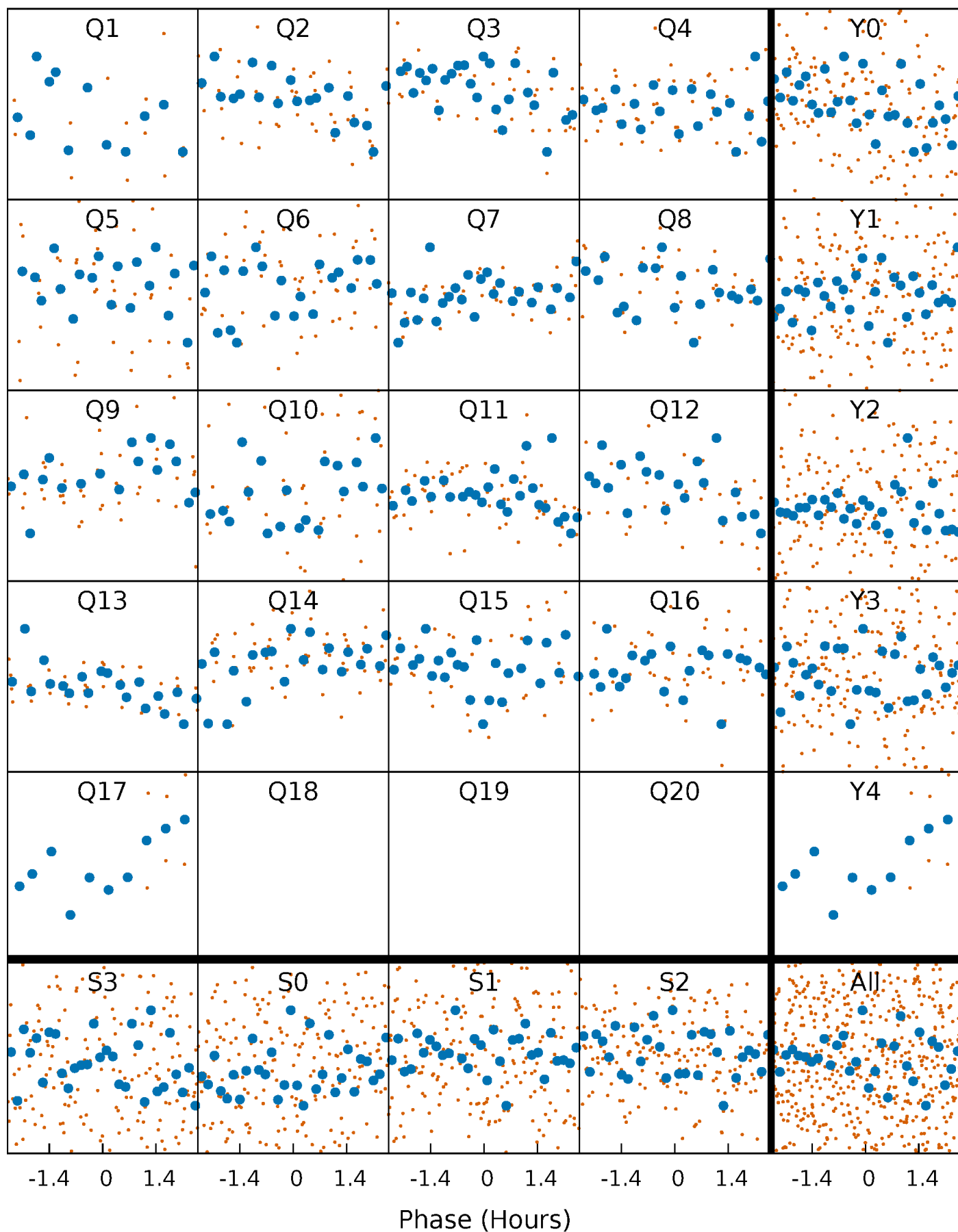
## Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)





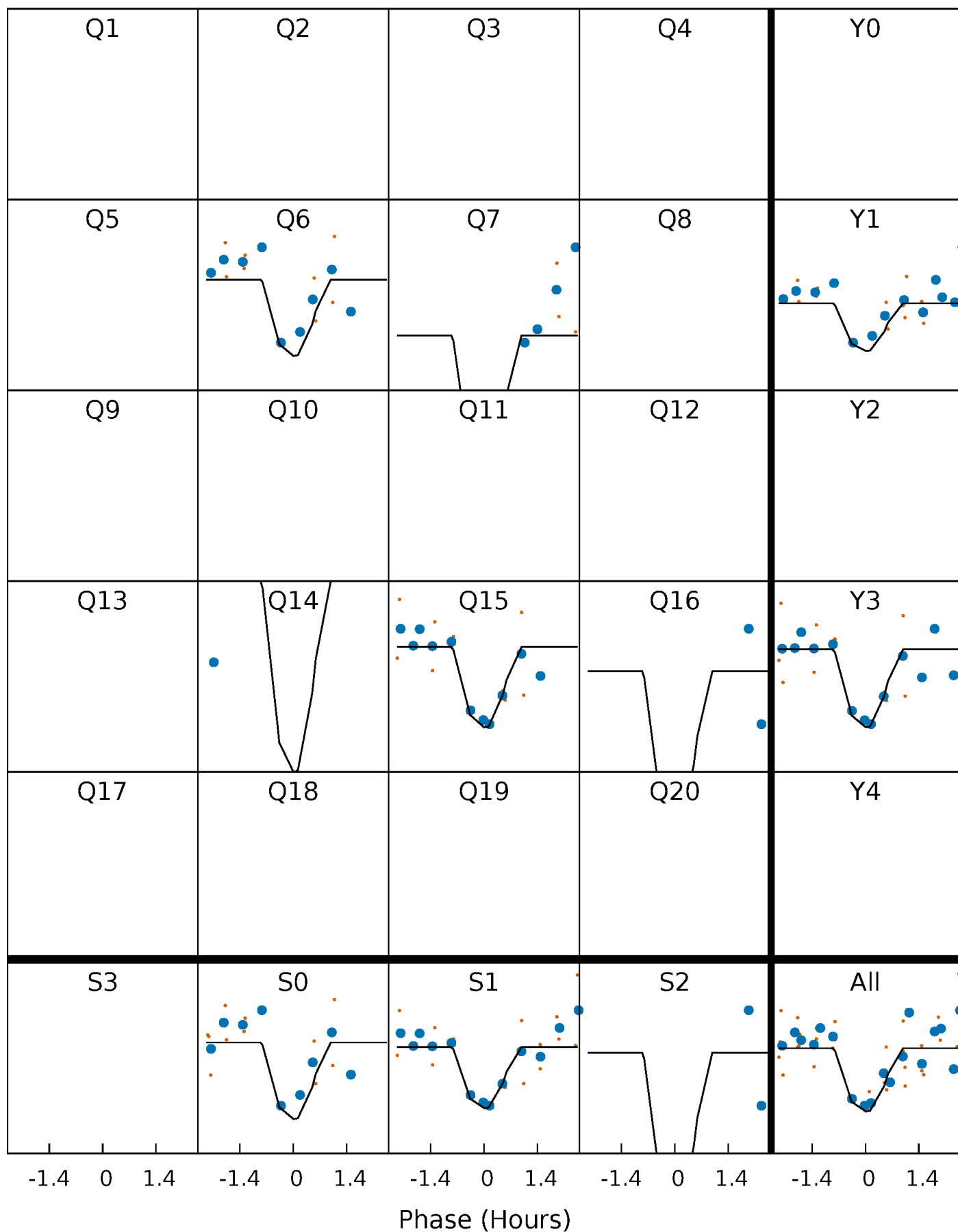
# PDC Quarter-Phased Transit Curves

TCE 009612225-03 P= 17.227206 Days  $T_0=146.565078$  (BKJD)



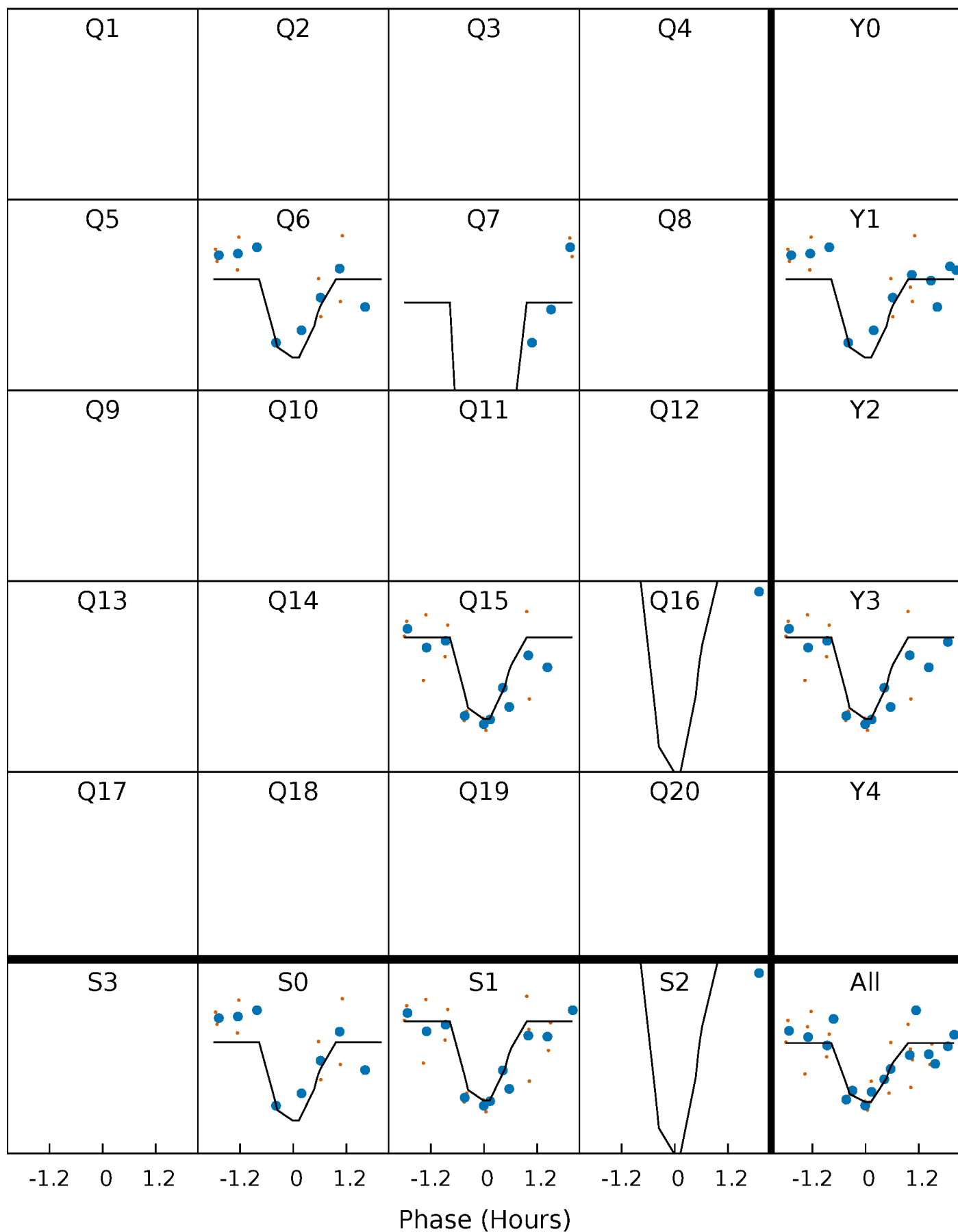
# DV Quarter-Phased Transit Curves

TCE 009612225-03 P= 17.227206 Days  $T_0=146.565078$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

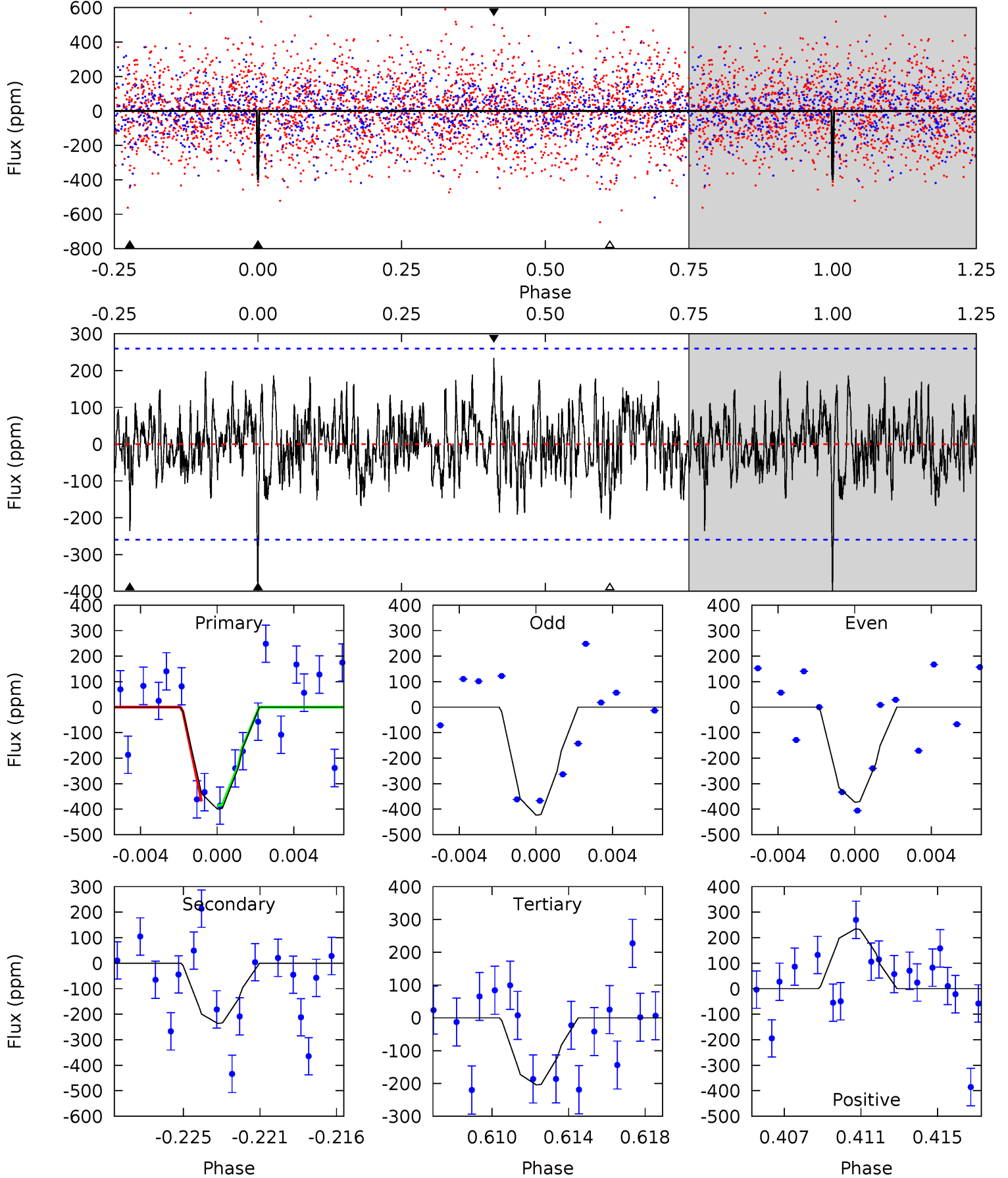
TCE 009612225-03 P= 17.227248 Days  $T_0=146.562772$  (BKJD)



# DV Model-Shift Uniqueness Test

009612225-03, P = 17.227206 Days, E = 129.337872 Days

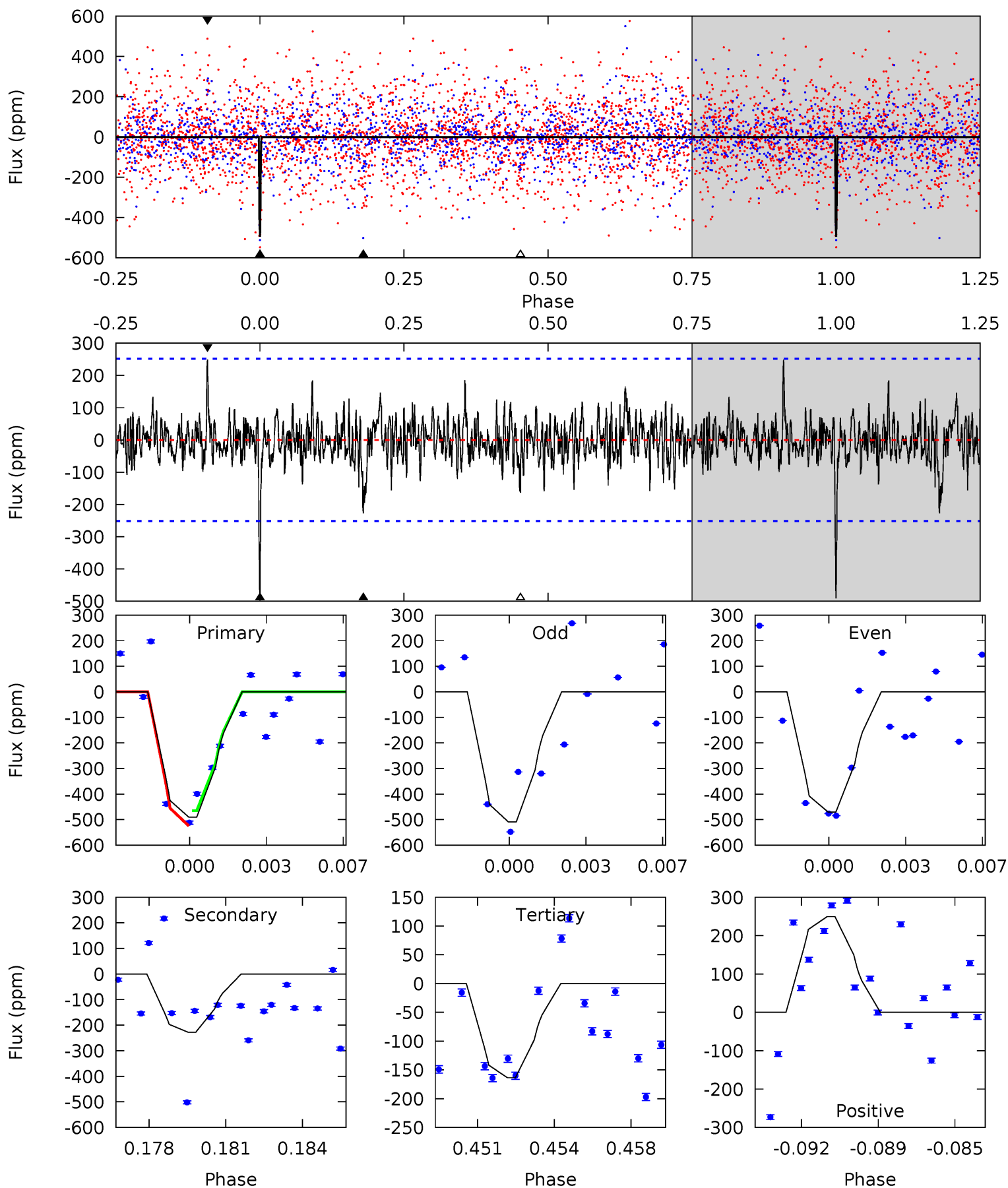
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.98	4.71	4.08	4.67	5.18	2.85	1.40	3.90	3.31	0.63	0.04	0.50	1.03	0.37	0.16



# Alt Model-Shift Uniqueness Test

009612225-03, P = 17.227248 Days, E = 129.335524 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
10.2	4.72	3.40	5.18	5.23	2.93	1.12	6.79	5.01	1.32	-0.46	0.41	1.02	0.34	0.57



### Stellar Parameters For KIC 009612225

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$6068^{+216}_{-195}$	$3.451^{+0.408}_{-0.102}$	$0.070^{+0.300}_{-0.300}$	$4.213^{+0.643}_{-1.801}$	$1.829^{+0.149}_{-0.446}$	$0.034^{+0.125}_{-0.011}$
	+4%/-3%	+12%/-3%	+429%/-429%	+15%/-43%	+8%/-24%	+363%/-32%
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 009612225-03 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-236 \pm 50$	$20.64^{+20.01}_{-13.62}$	$1869^{+133}_{-204}$	$3694^{+2029}_{-753}$	$7.074^{+57.789}_{-5.247}$
Alt.	$-227 \pm 48$	$20.99^{+21.97}_{-14.82}$	$1884^{+138}_{-198}$	$3676^{+2526}_{-759}$	$7.184^{+69.986}_{-5.514}$

$T_{\text{max}}$  = Theoretical Maximum Planetary Temperature  
 $T_{\text{obs}}$  = Observed Planetary Temperature (Assuming  $A=0.3$ )  
 $A_{\text{obs}}$  = Observed Albedo (Assuming  $T=0$ )

If a secondary eclipse is present, the system is likely an EB if  $T_{\text{obs}} \gg T_{\text{max}}$  AND  $A_{\text{obs}} \gg 1.0$



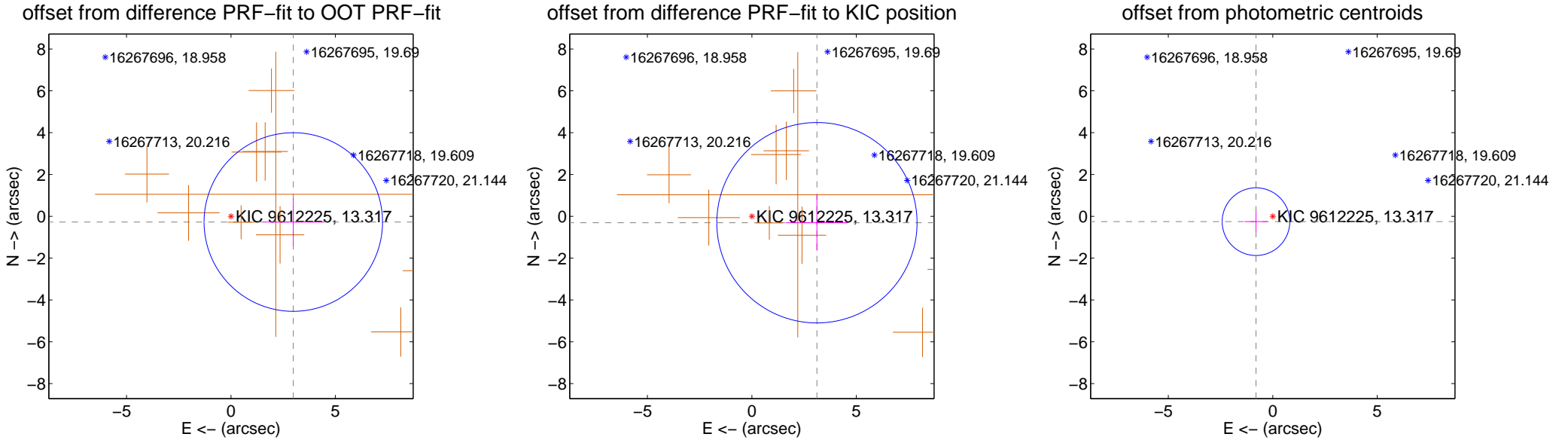
## DV Centroid Data

Supplemental centroid analysis for 009612225-03. Kepler magnitude: 13.32. Transit SNR 17.19

There are 0 quarters with good PRF difference image offsets

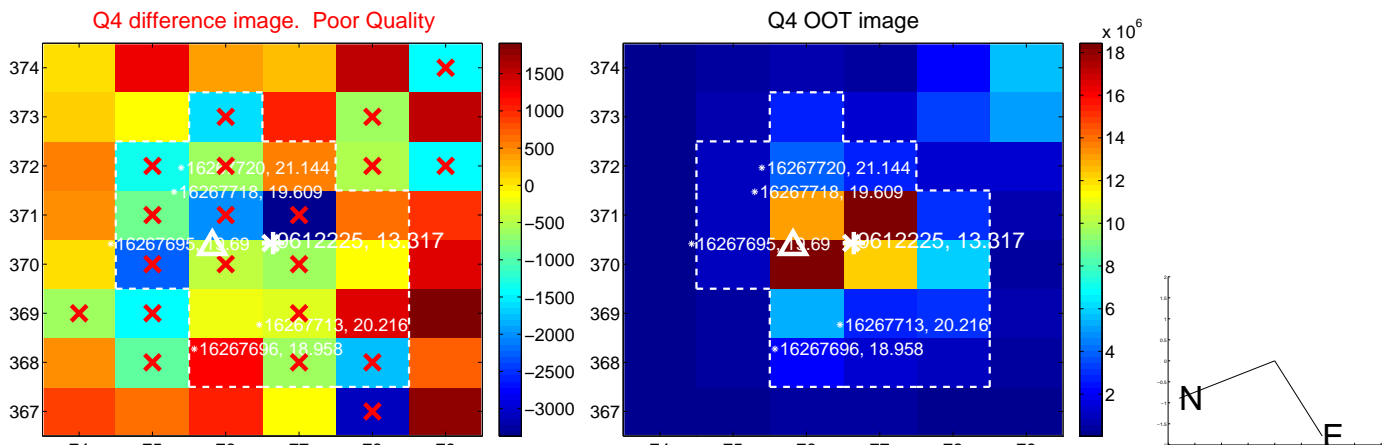
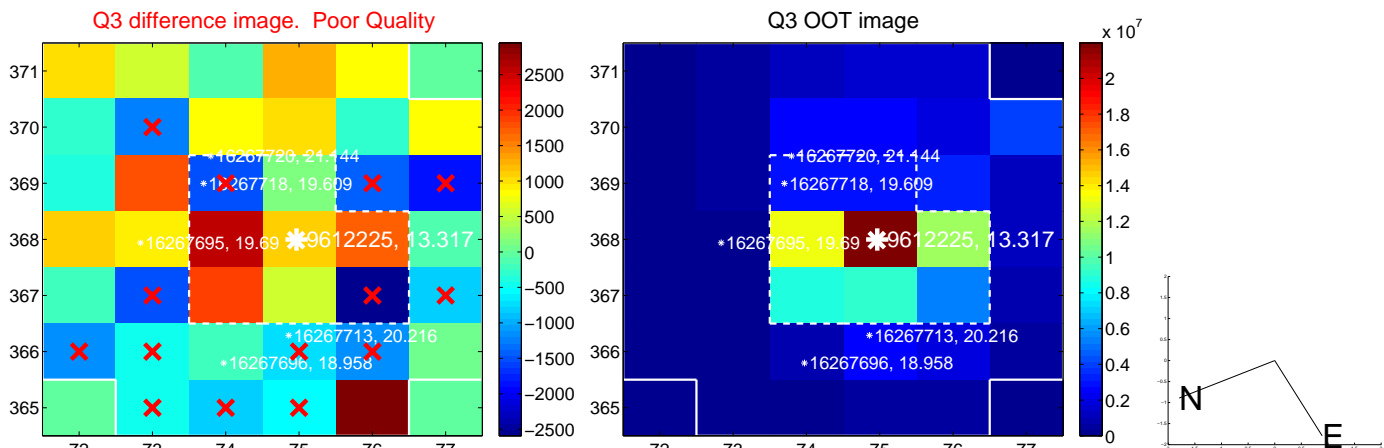
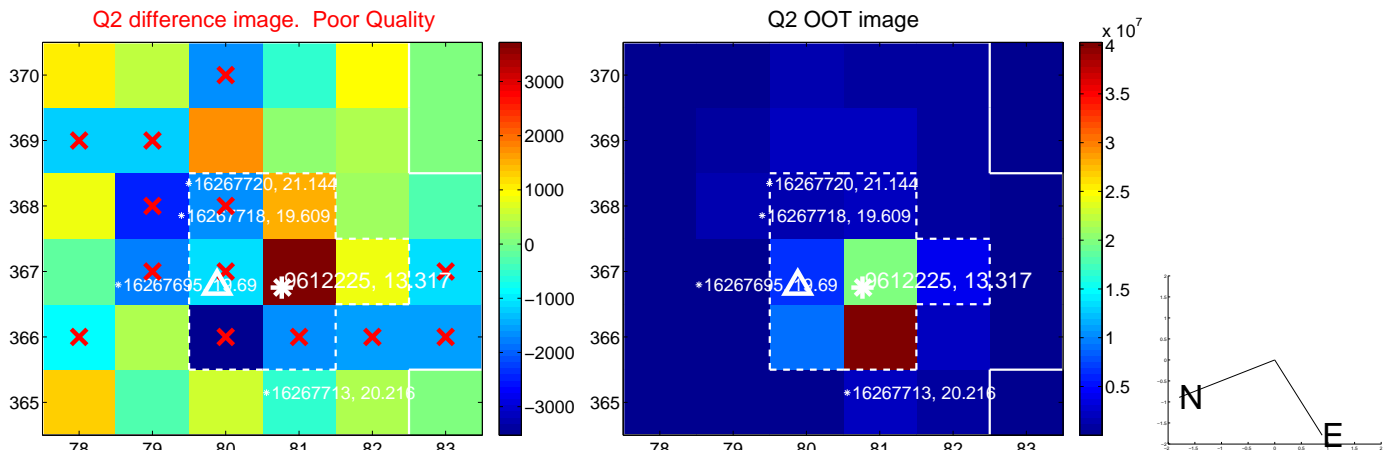
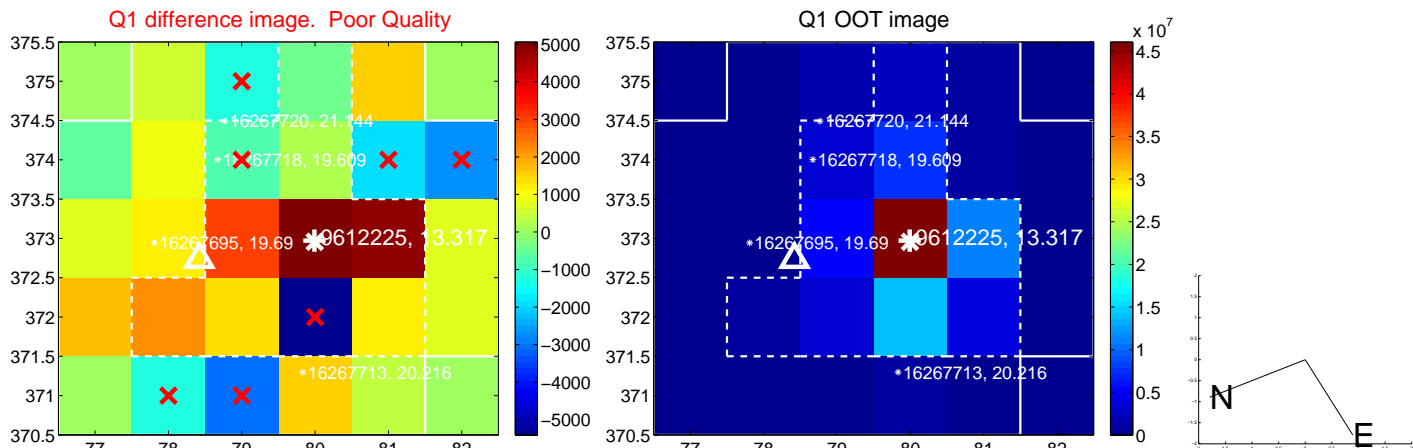
The direct PRF centroid is offset from the target star catalog position by about 0.07 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$2.995 \pm 1.424$	2.10	$-2.982 \pm 1.426$	$-0.273 \pm 1.128$
PRF-fit source offset from KIC position	$3.129 \pm 1.597$	1.96	$-3.114 \pm 1.495$	$-0.307 \pm 1.341$
photometric centroid source offset	$0.84 \pm 0.54$	1.56	$0.80 \pm 0.55$	$-0.26 \pm 0.47$

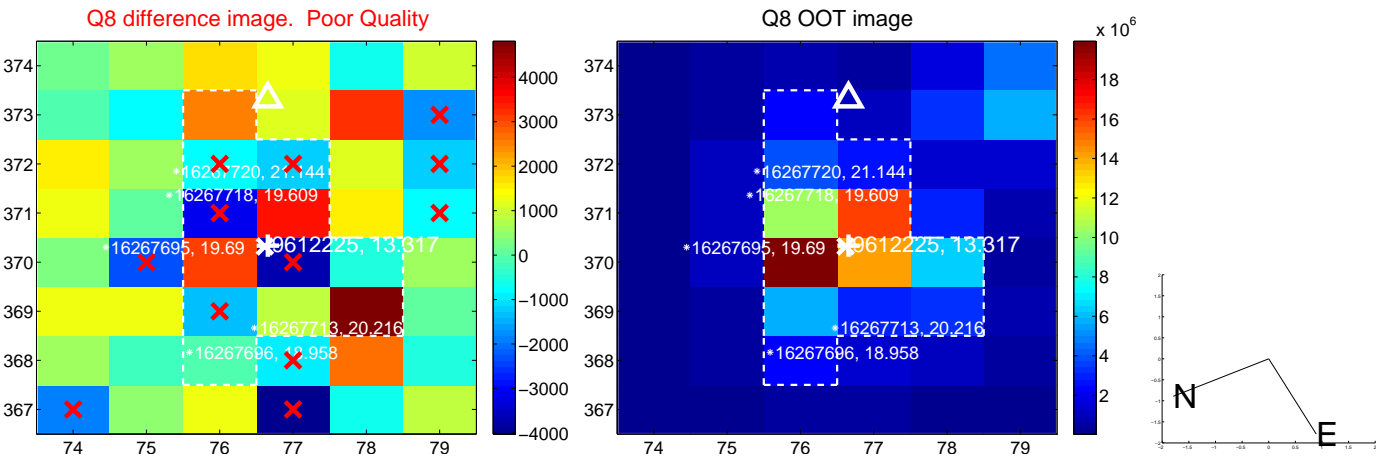
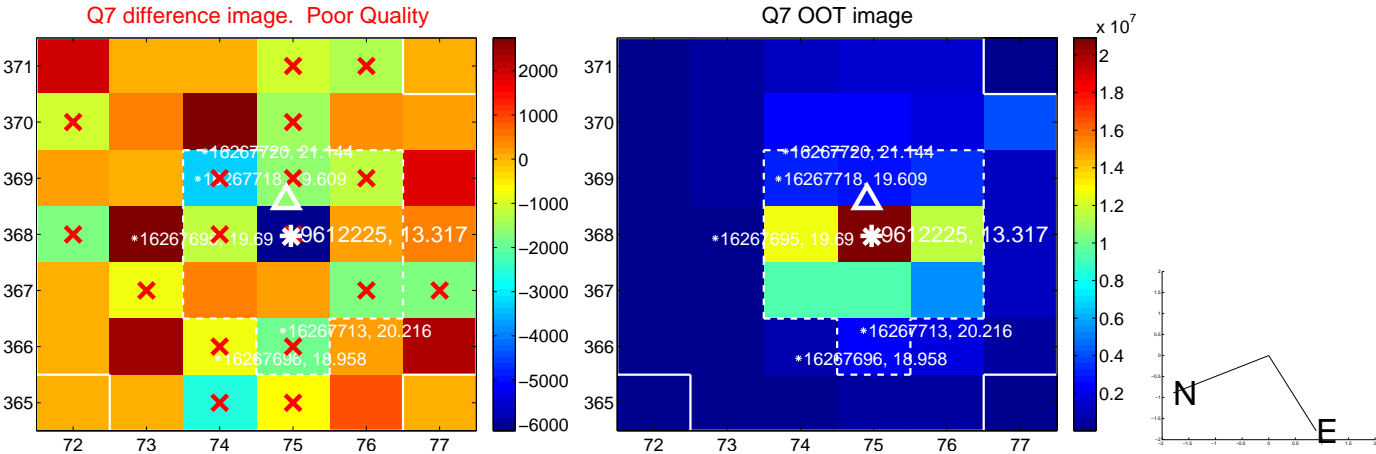
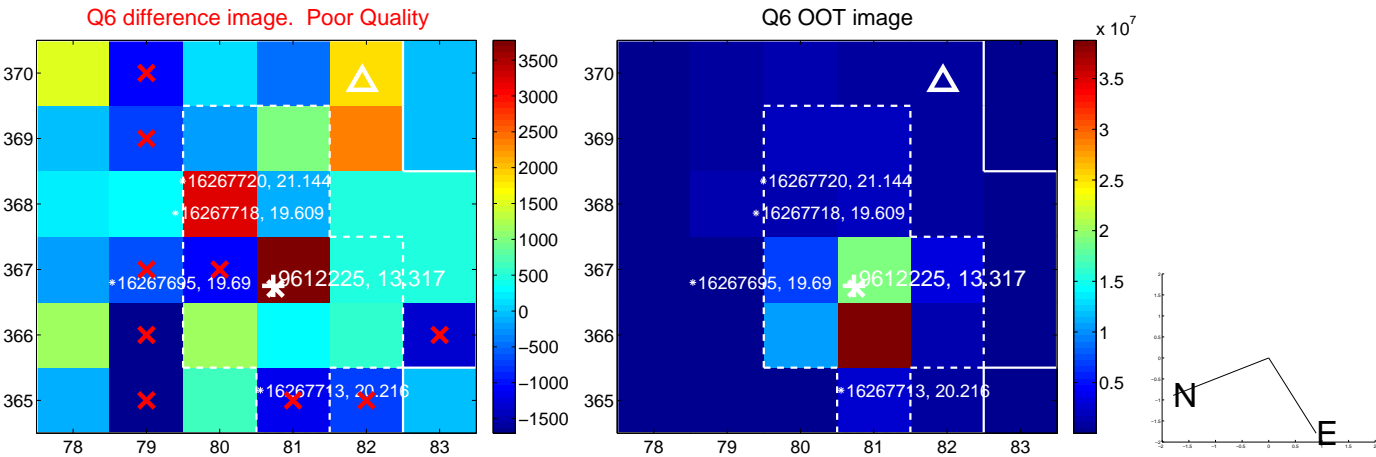
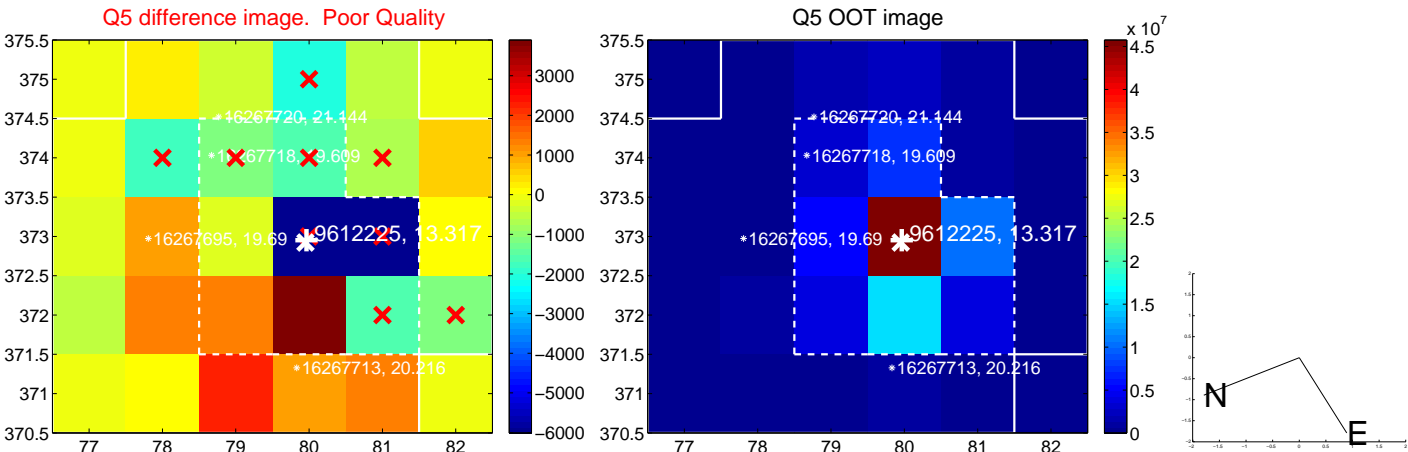


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

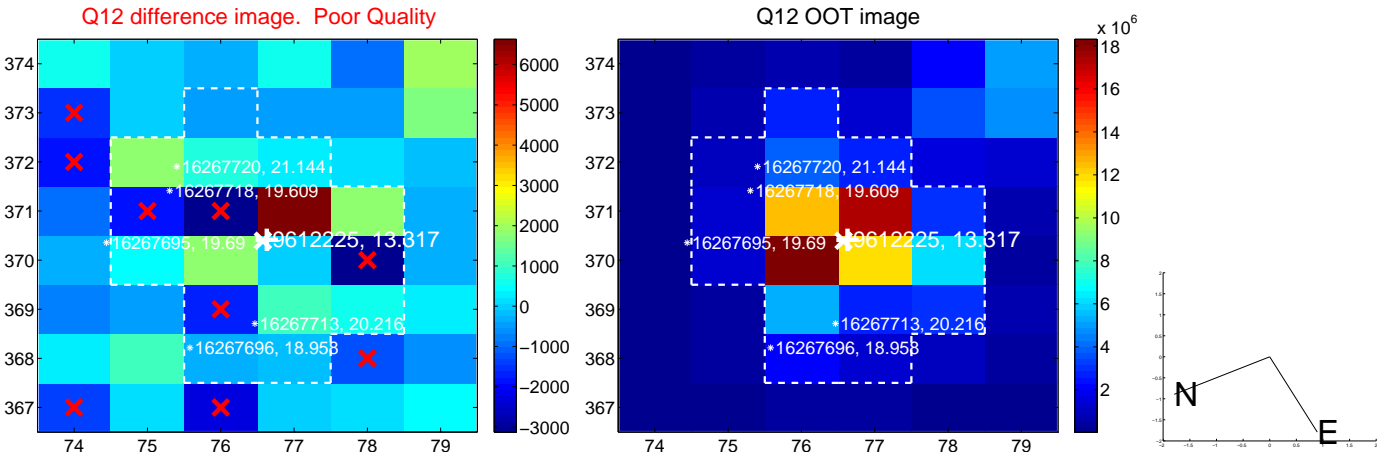
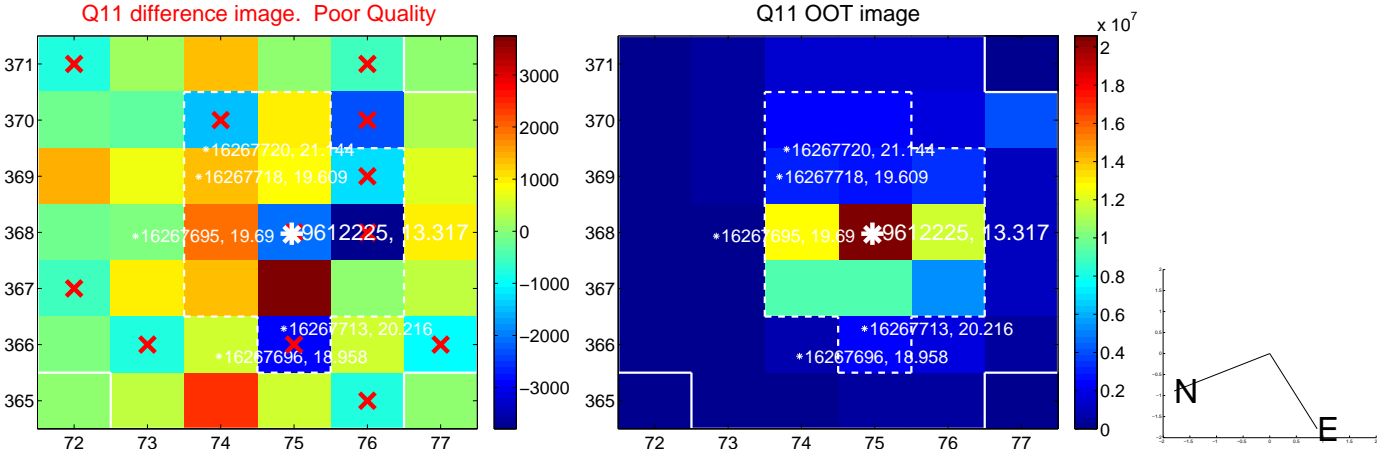
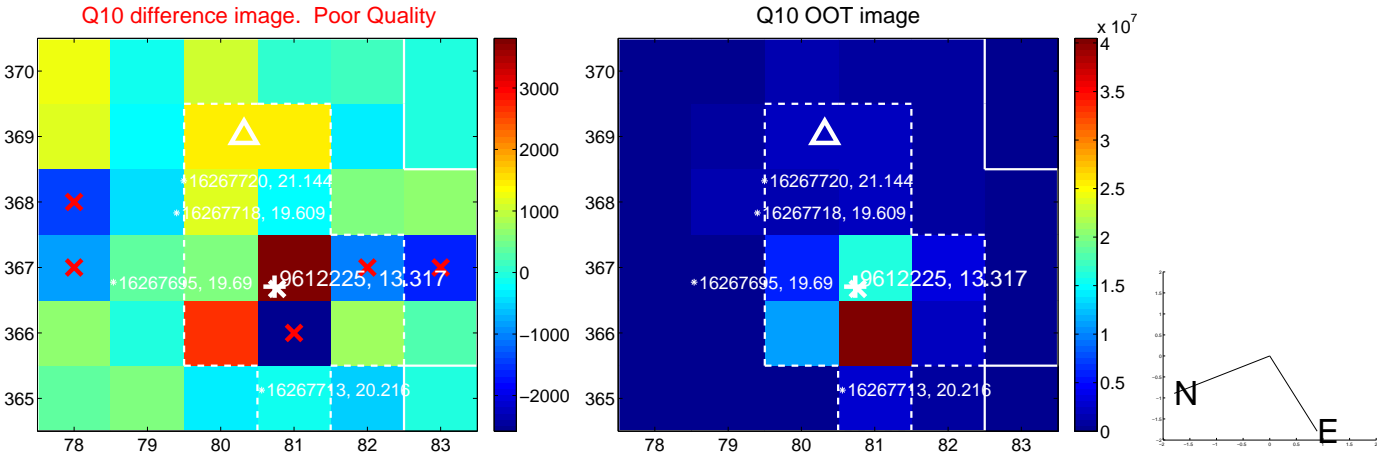
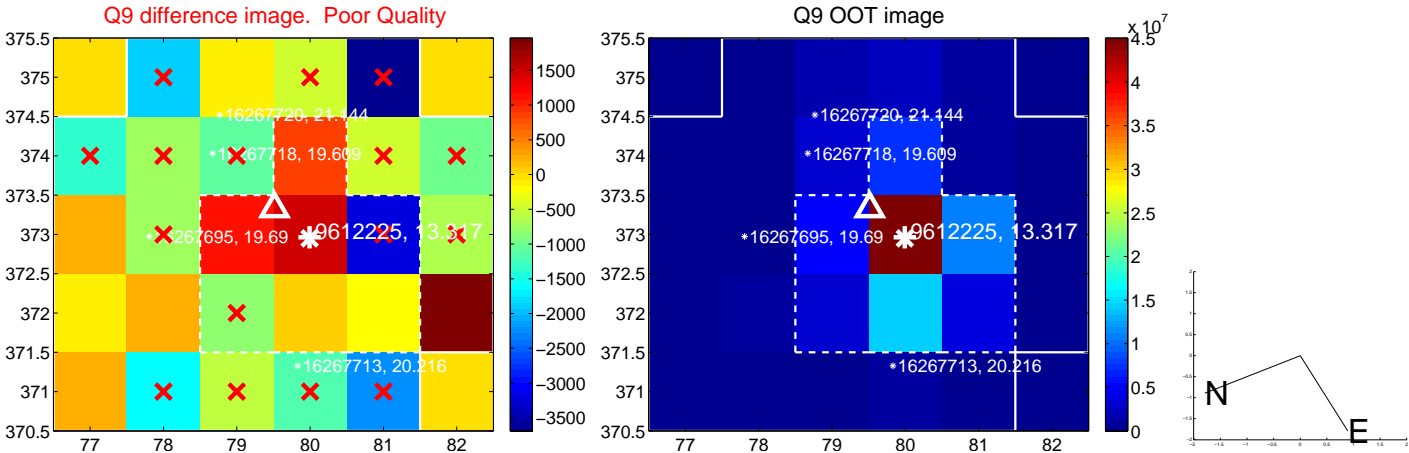
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



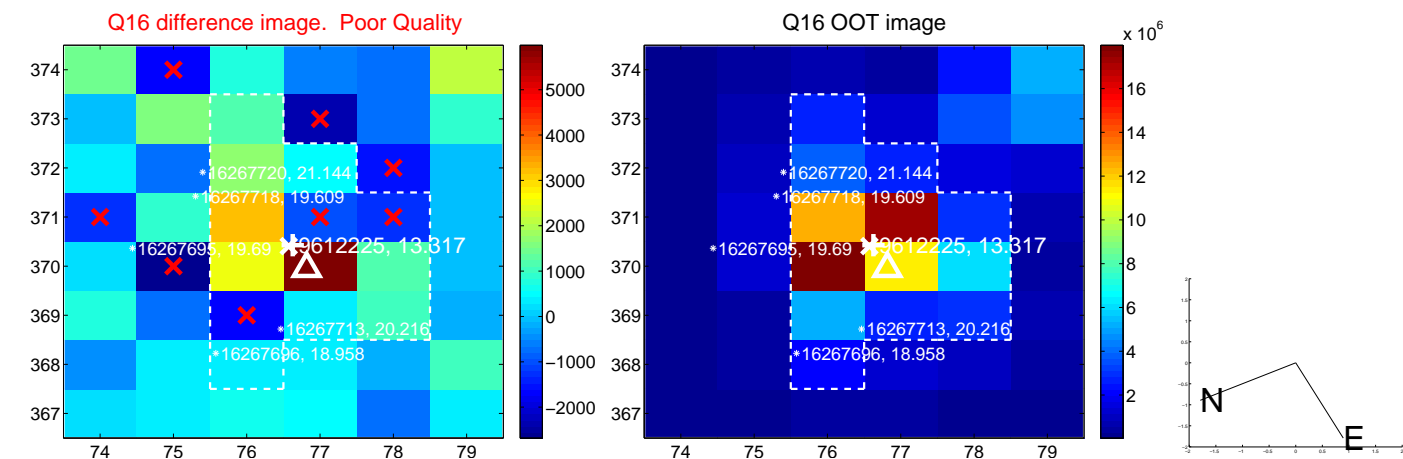
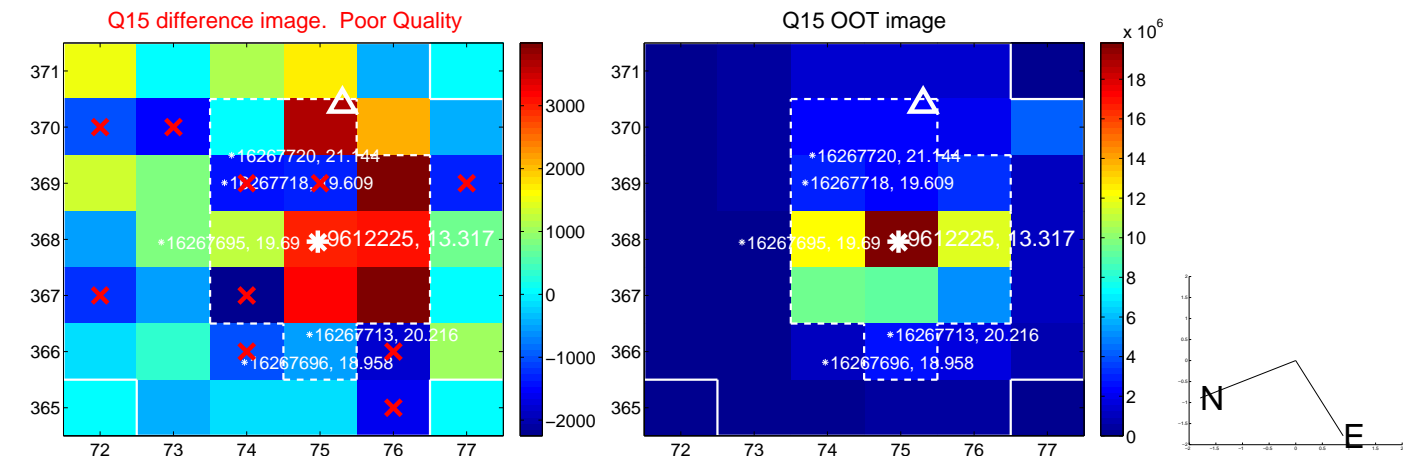
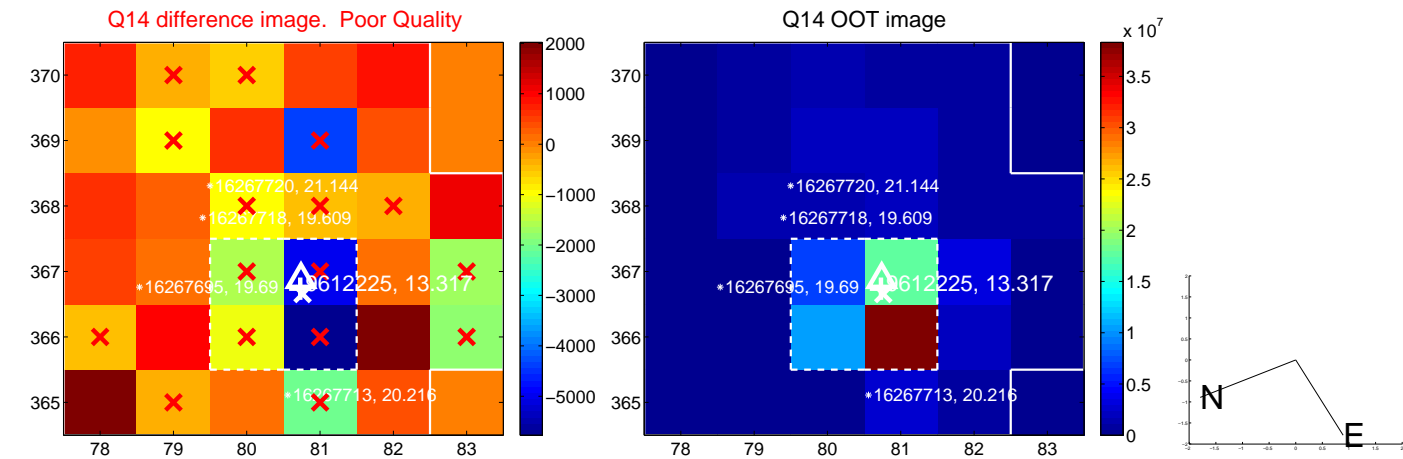
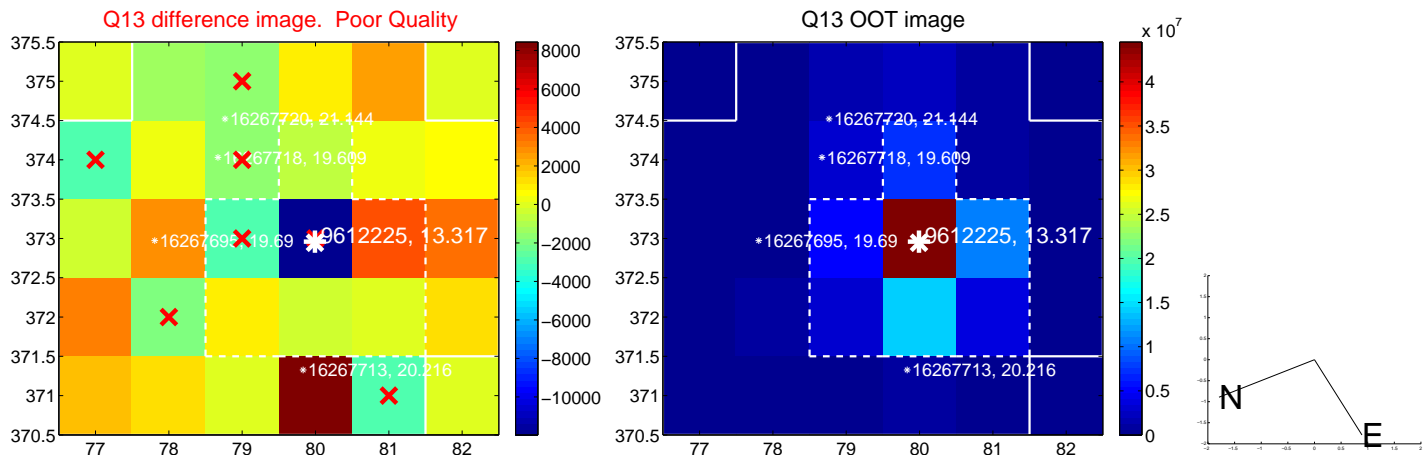
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



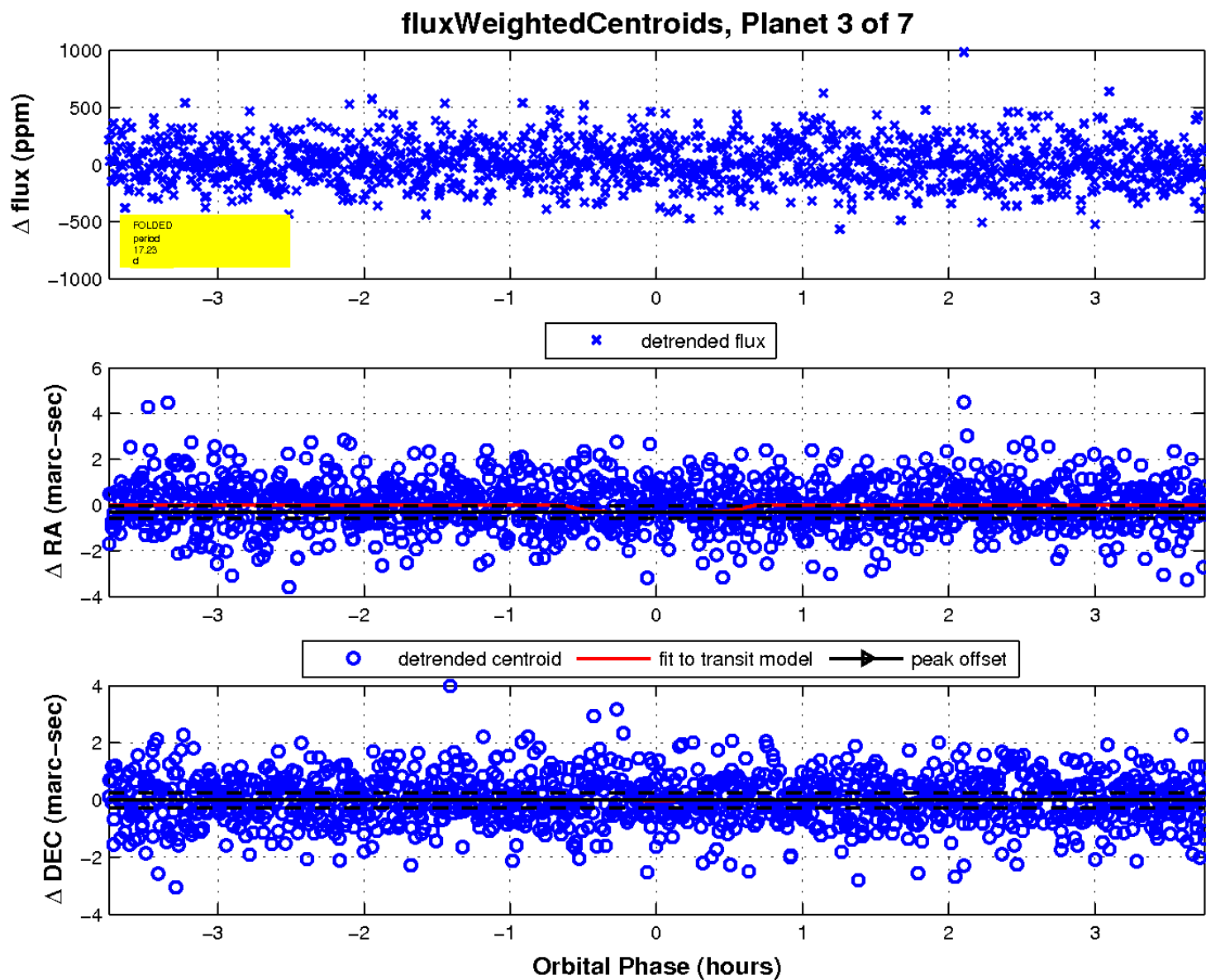
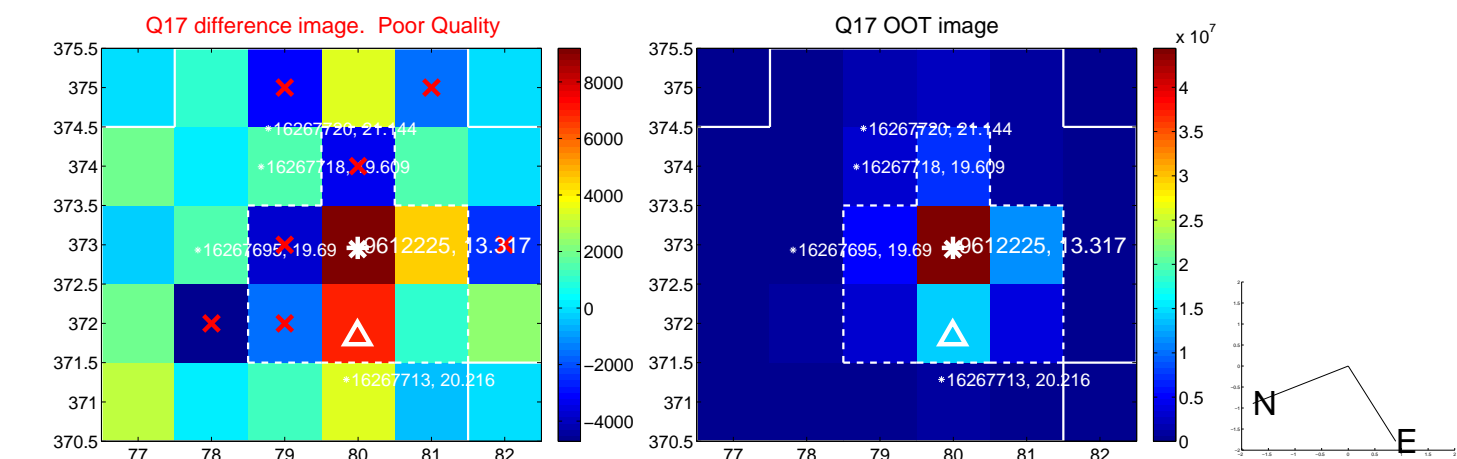
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



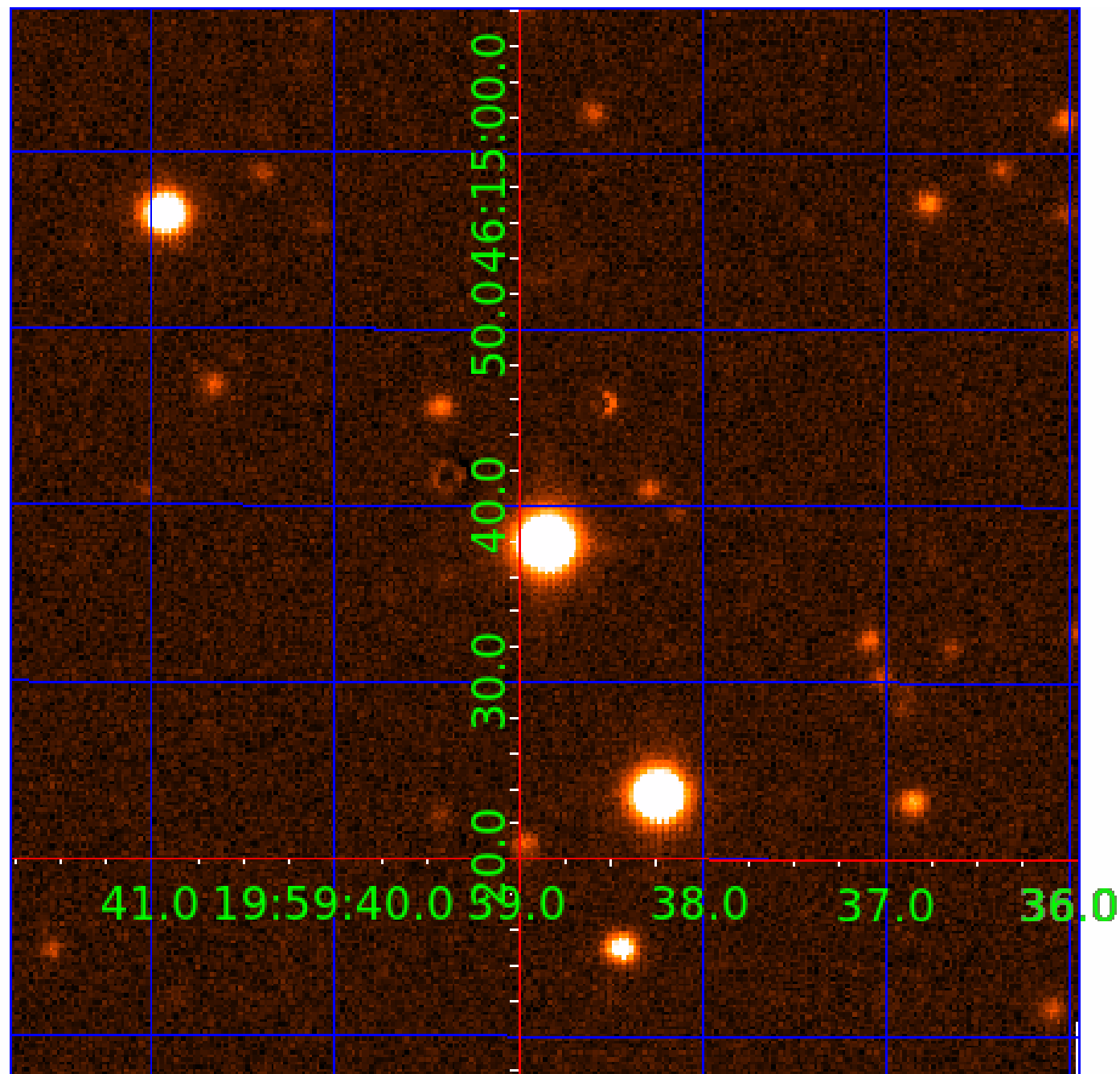
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.





UKIRT Image

Declination



# KIC 009612225

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
009612225-01	OBS	No	1.569074	132.357241	5.4	11.763	8.4	2.9	4.21	6068	0.99	20635.40
009612225-02	OBS	No	15.389879	132.709323	325.0	1.505	18.4	16.1	4.21	6068	7.73	982.86
009612225-03	OBS	No	17.227206	146.565078	439.3	1.252	17.4	17.2	4.21	6068	9.83	845.64
009612225-04	OBS	No	10.538483	138.586428	319.7	1.531	17.5	18.0	4.21	6068	8.92	1628.42
009612225-05	OBS	No	18.886120	148.709844	263.3	3.838	15.7	15.8	4.21	6068	7.83	748.08
009612225-06	OBS	No	14.068152	136.604942	133.8	3.316	11.2	9.3	4.21	6068	5.74	1107.87
009612225-07	OBS	No	8.400052	134.207869	867.8	1.500	14.3	-1.0	4.21	6068	12.43	2203.41

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009612225-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV
009612225-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_MEAS—HALO_GHOST
009612225-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
009612225-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_MEAS
009612225-05	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—HALO_GHOST
009612225-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT
009612225-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—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.

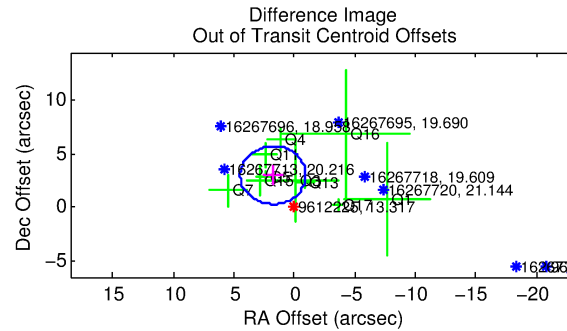
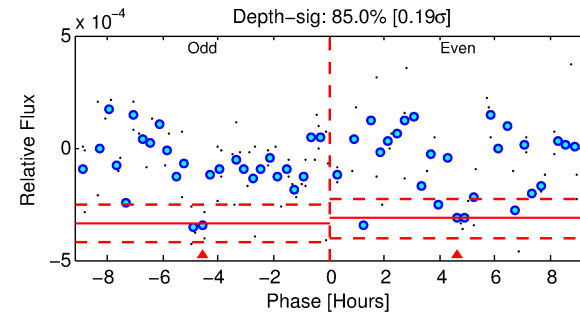
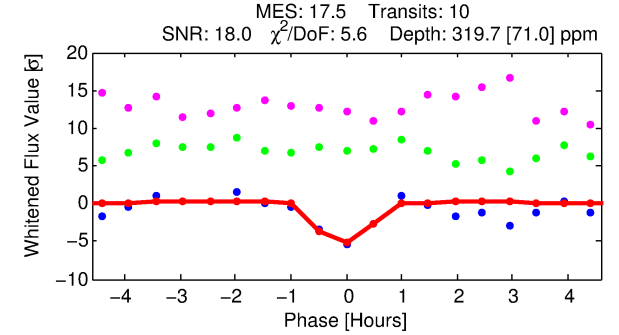
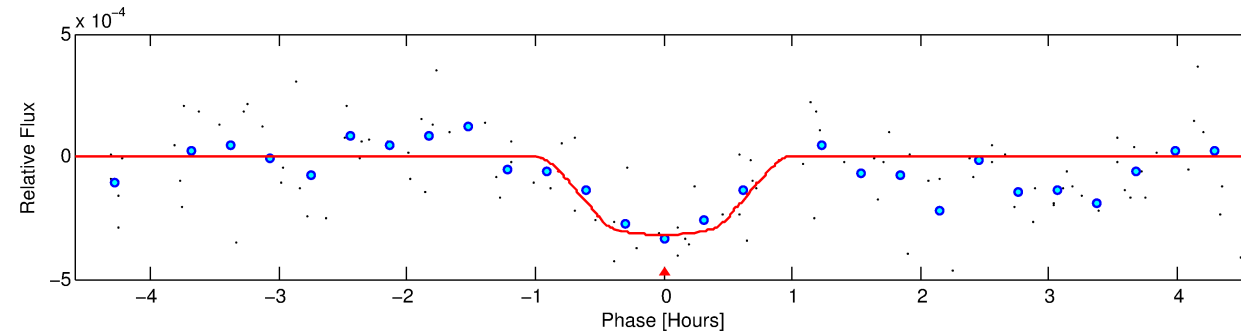
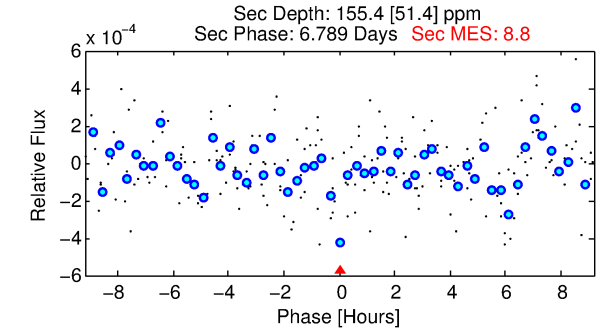
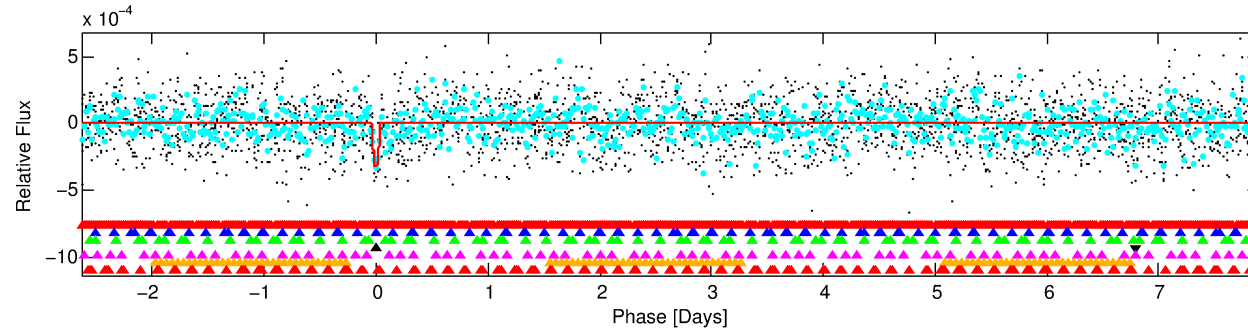
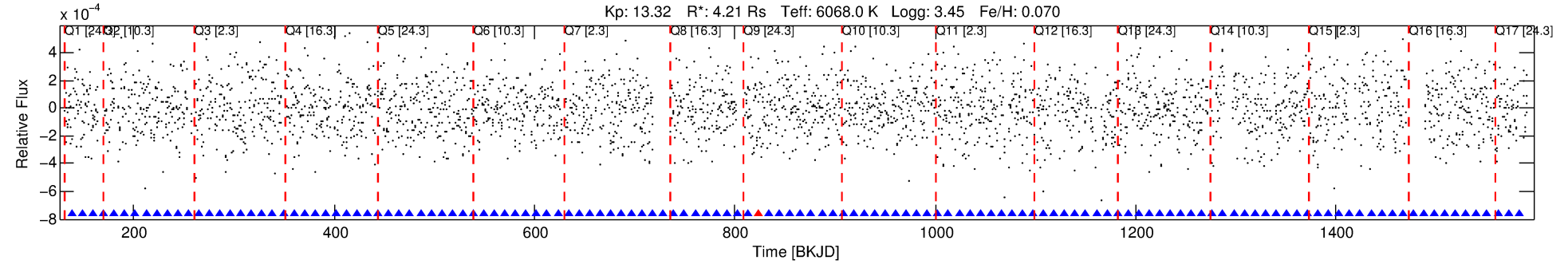
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 009612225-04

No Significant Match Found

# DV One-Page Summary

KIC: 9612225 Candidate: 4 of 7 Period: 10.538 d



## DV Fit Results:

Period = 10.53848 [0.00009] d  
Epoch = 138.5864 [0.0073] BKJD  
Rp/R\* = 0.0194 [0.0348]  
a/R\* = 25.08 [231.45]  
b = 0.90 [1.97]  
Seff = 1628.42 [1144.25]  
Teq = 1620 [285] K  
Rp = 8.92 [16.45] Re  
a = 0.1151 [0.0487] AU  
Ag = 14.24 [52.28] [0.25 $\sigma$ ]  
Teffp = 4865 [4389] K [0.74 $\sigma$ ]

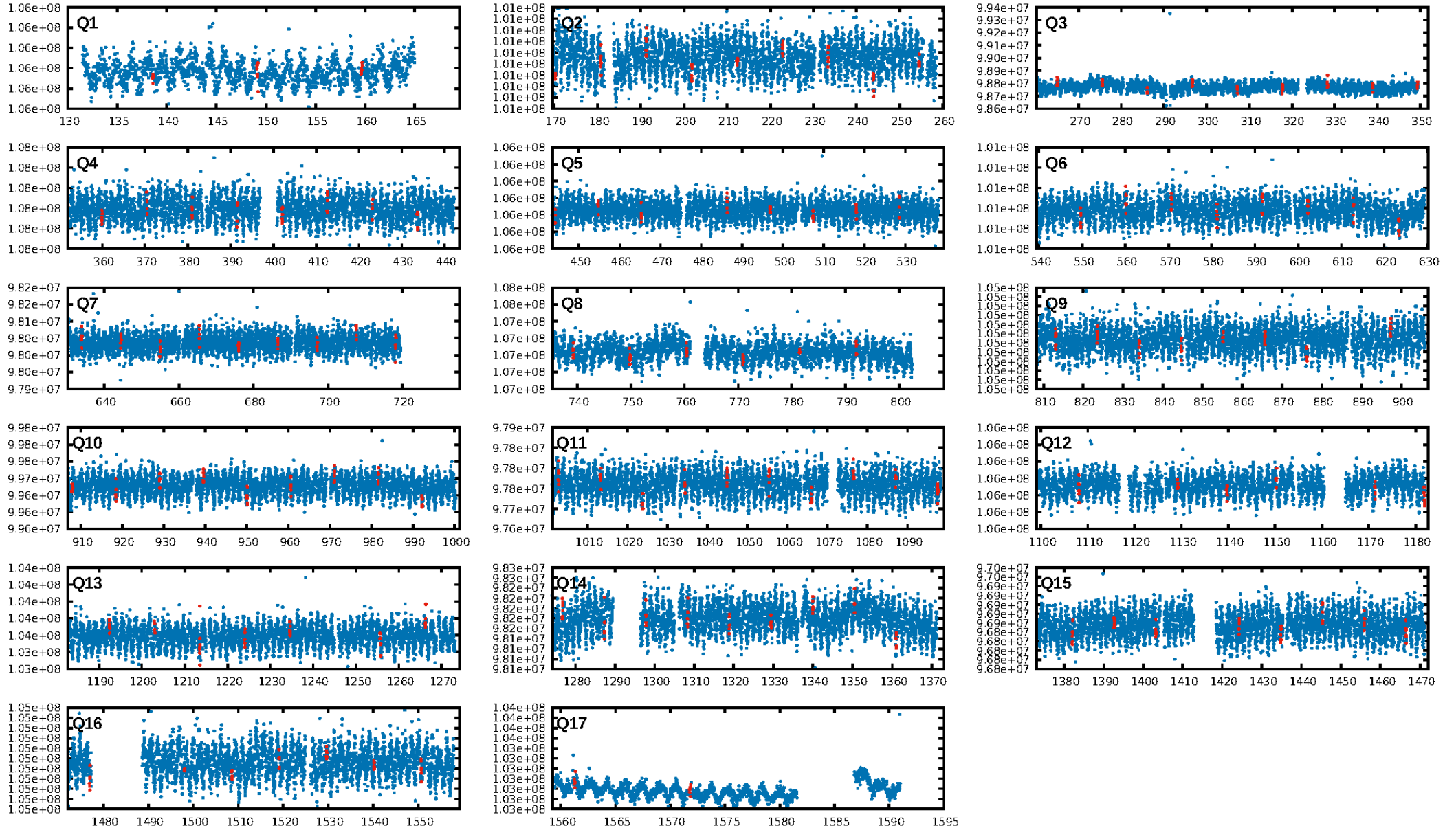
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [23.94 $\sigma$ ]  
LongPeriod-sig: 100.0% [23.19 $\sigma$ ]  
**ModelChiSquare2-sig: 0.0%**  
ModelChiSquareGof-sig: 0.4%  
Bootstrap-pfa: N/A  
RollingBand-fgt: 0.90 [9/10]  
GhostDiagnostic-chr: 2.636  
Centroid-sig: 5.2%  
Centroid-so: 0.538 arcsec [1.00 $\sigma$ ]  
**OotOffset-rm: 3.493 arcsec [3.87 $\sigma$ ]**  
**KicOffset-rm: 3.401 arcsec [3.77 $\sigma$ ]**  
OotOffset-st: 0/4/2/4 [10]  
KicOffset-st: 0/4/2/4 [10]  
DiffImageQuality-fgm: 0.00 [0/10]  
DiffImageOverlap-fno: 1.00 [17/17]

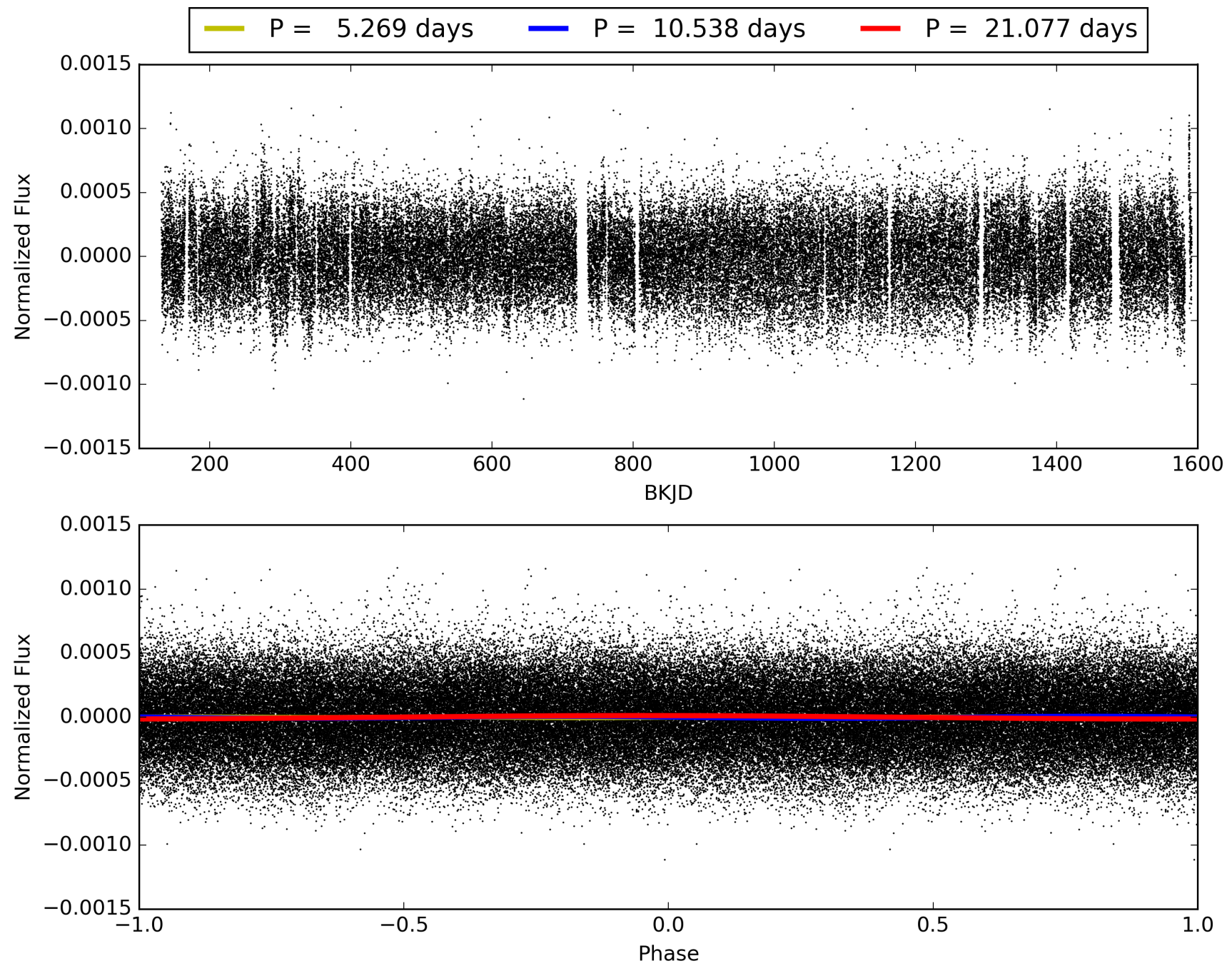
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 13:12:24 Z

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

# TCE 009612225-04, PDC Light Curves

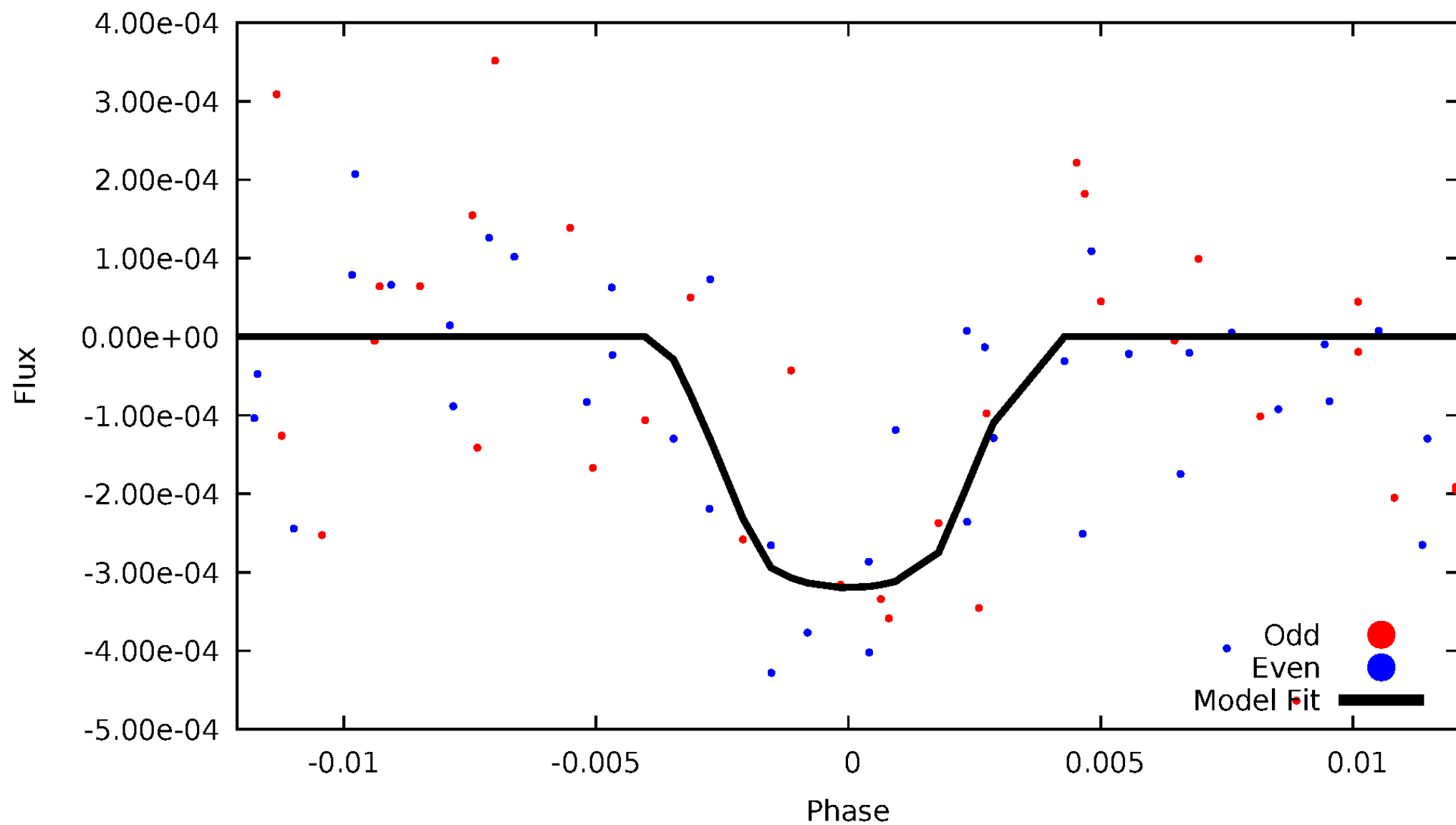


TCE 009612225-04



# DV Odd/Even

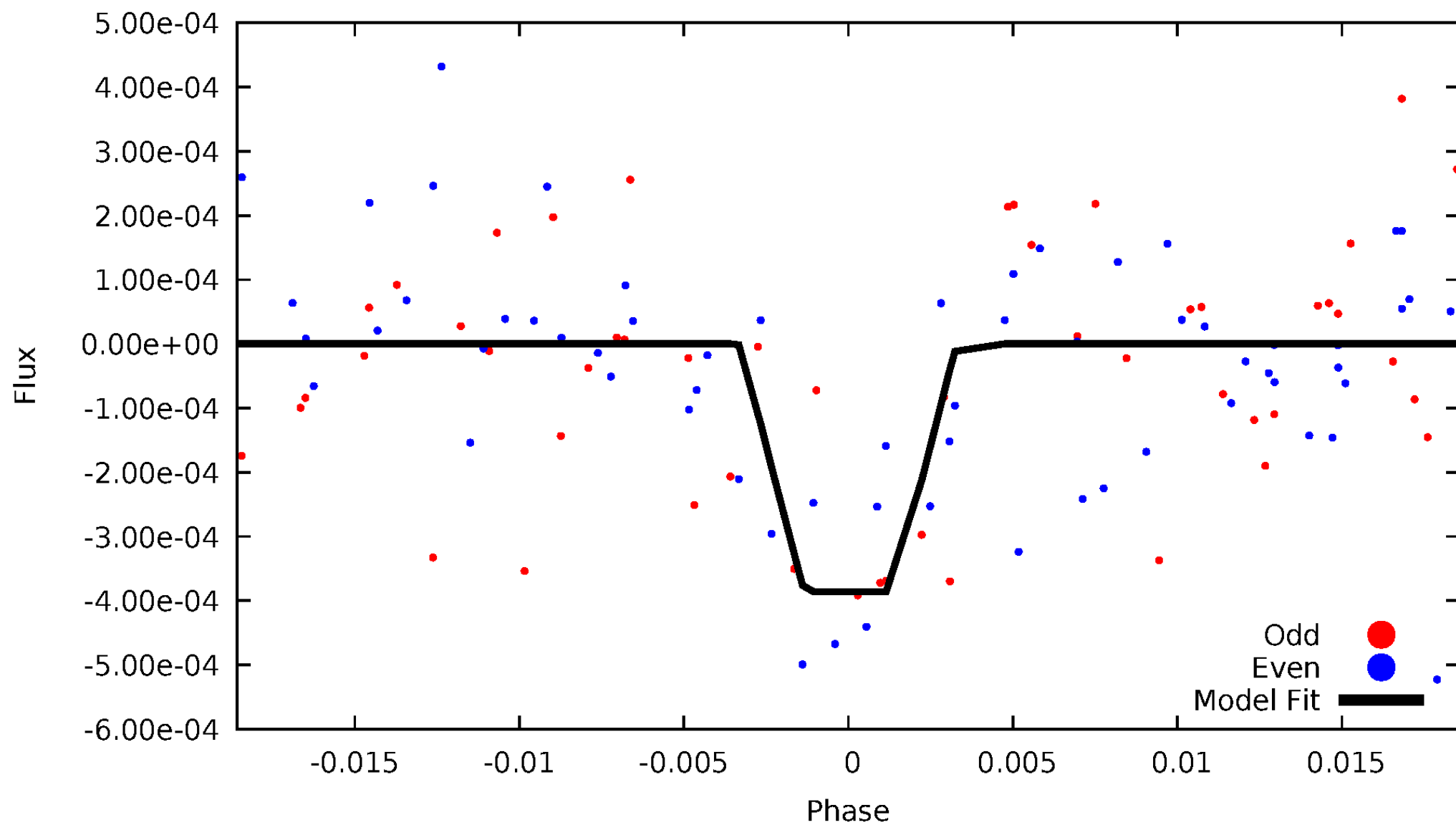
TCE 009612225-04





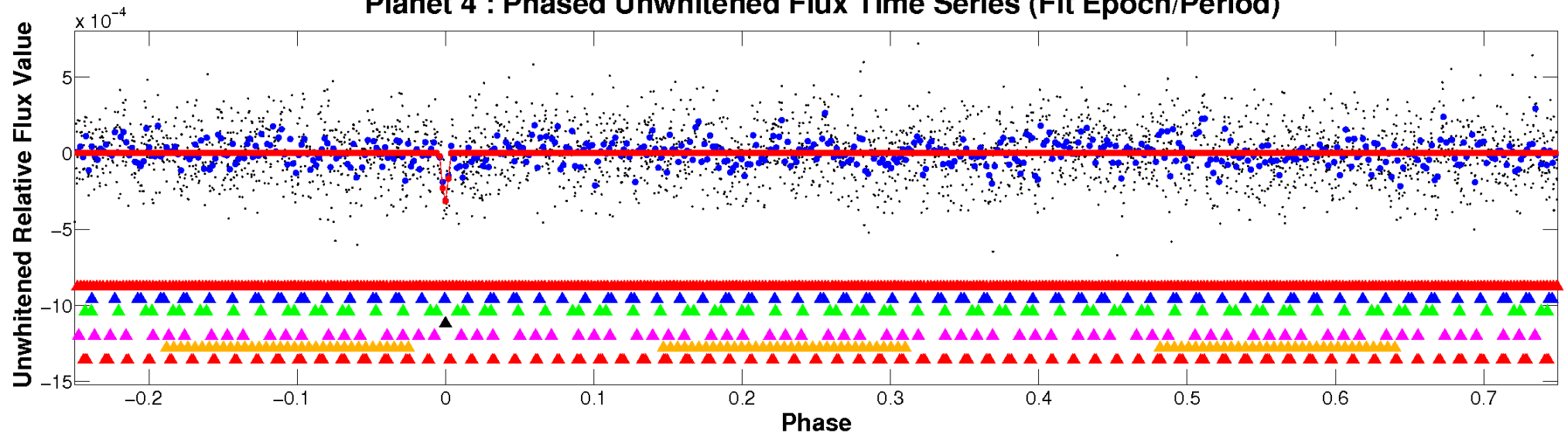
# ALT Odd/Even

TCE 009612225-04

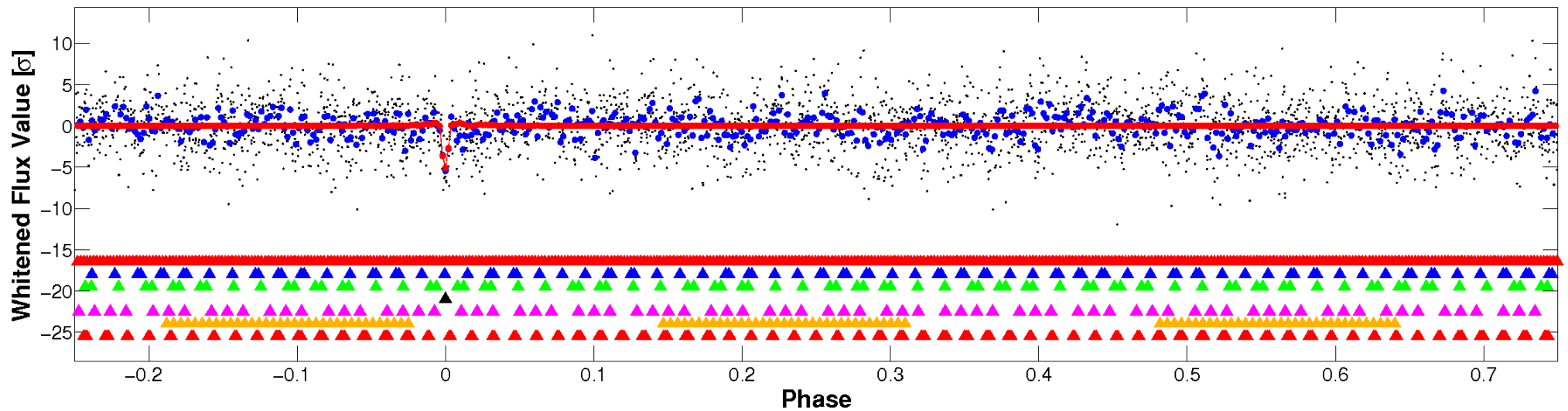


# Non-Whitened Vs. Whitened Light Curve

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

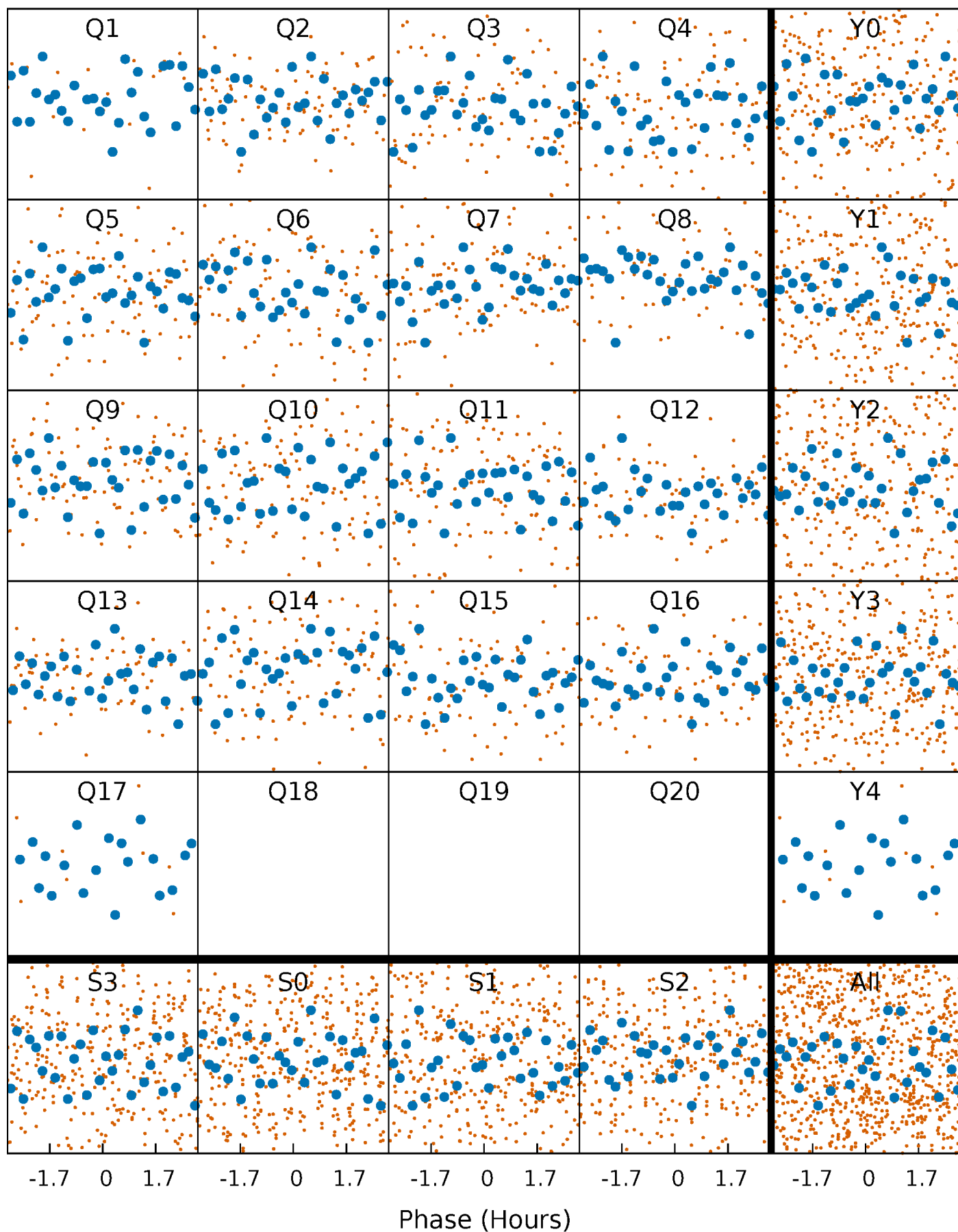


## Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



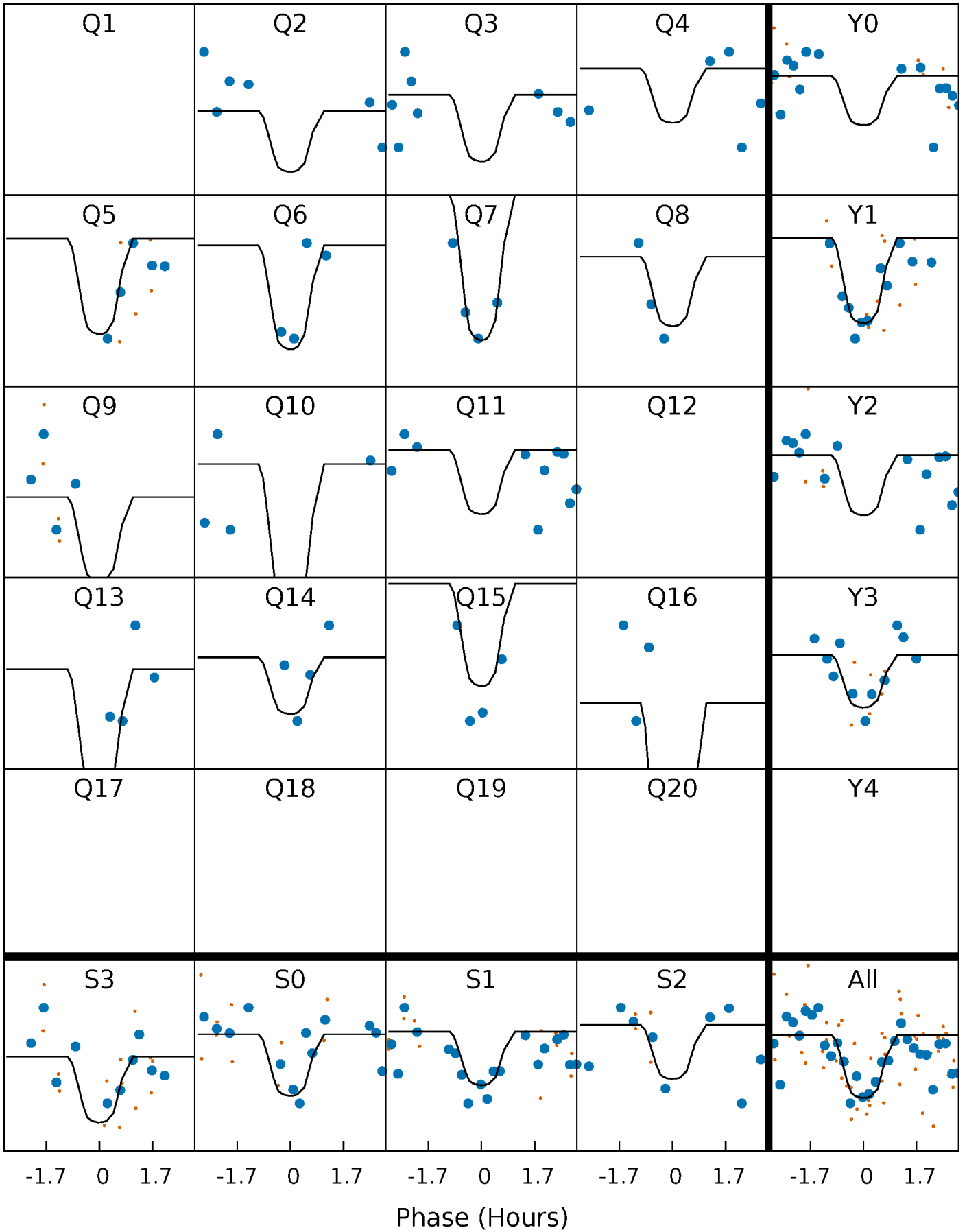
# PDC Quarter-Phased Transit Curves

TCE 009612225-04   P= 10.538483 Days    $T_0=138.586428$  (BKJD)



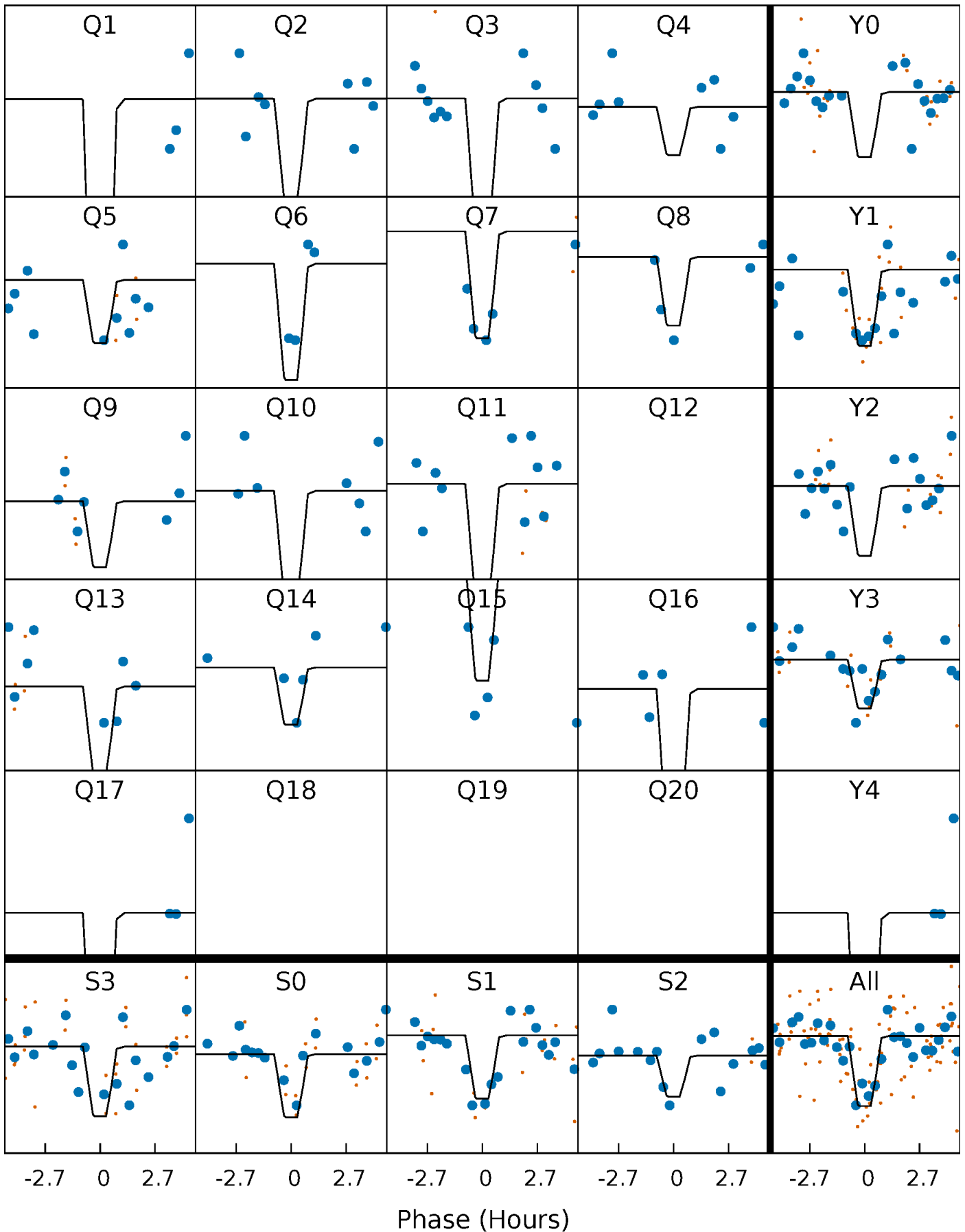
# DV Quarter-Phased Transit Curves

TCE 009612225-04 P= 10.538483 Days  $T_0=138.586428$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

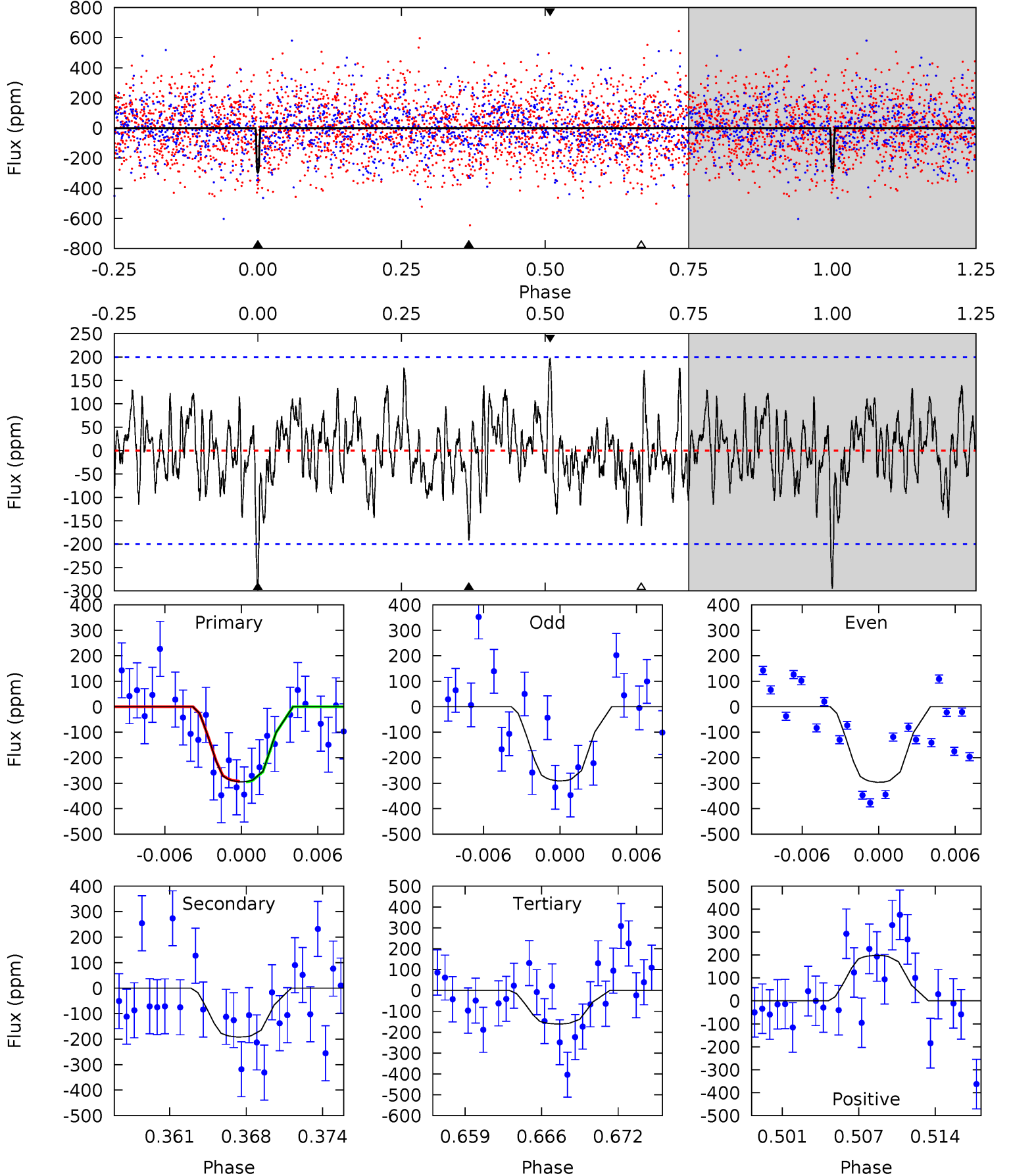
TCE 009612225-04 P= 10.538531 Days  $T_0=138.579337$  (BKJD)



# DV Model-Shift Uniqueness Test

009612225-04, P = 10.538483 Days, E = 128.047945 Days

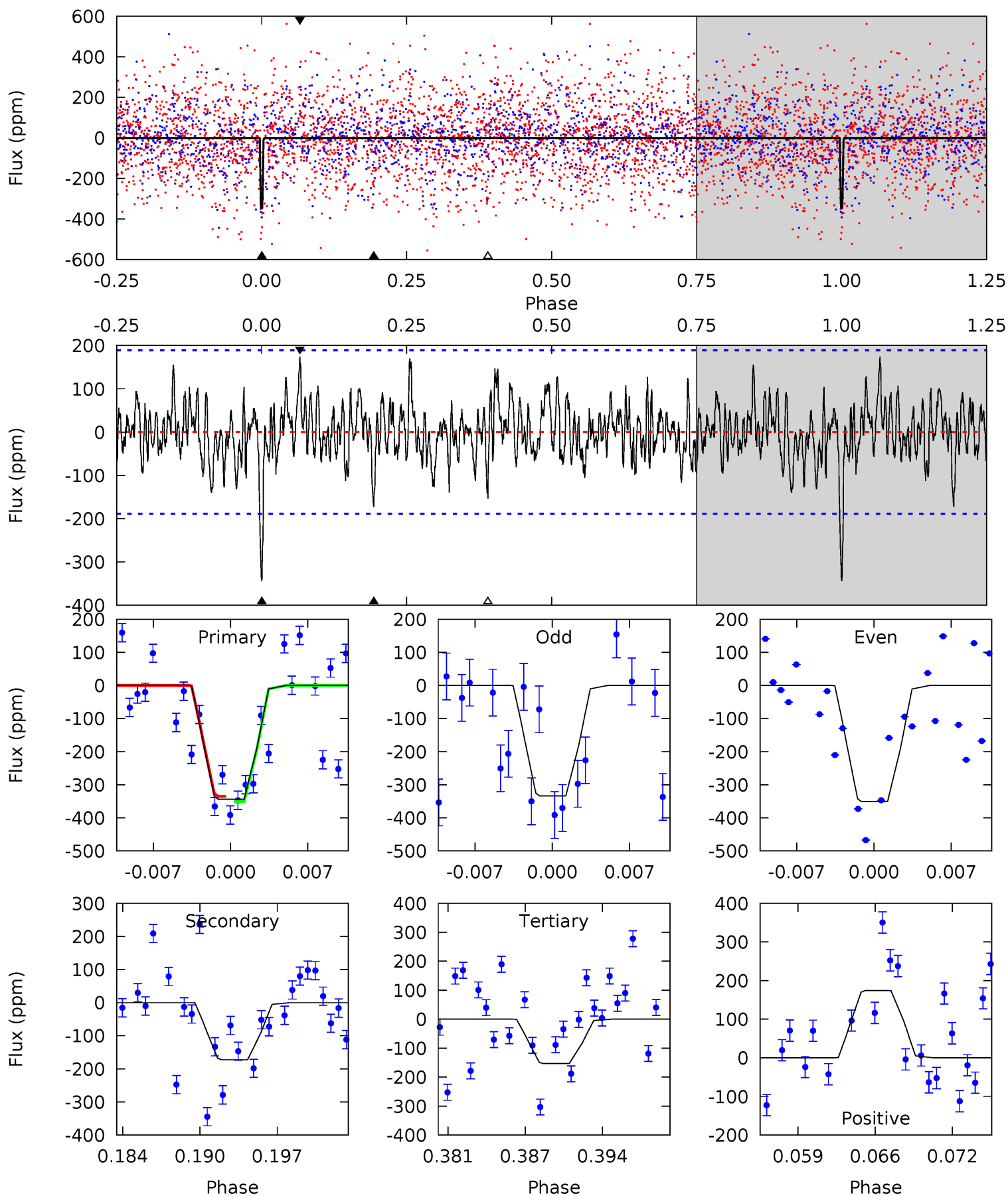
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.54	4.90	4.11	5.07	5.11	2.73	1.53	3.43	2.47	0.79	-0.17	0.07	0.99	0.40	0.03



# Alt Model-Shift Uniqueness Test

009612225-04, P = 10.538531 Days, E = 128.040806 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.31	4.67	4.15	4.71	5.11	2.72	1.45	5.16	4.59	0.53	-0.04	0.24	0.87	0.34	0.21





### Stellar Parameters For KIC 009612225

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$6068^{+216}_{-195}$	$3.451^{+0.408}_{-0.102}$	$0.070^{+0.300}_{-0.300}$	$4.213^{+0.643}_{-1.801}$	$1.829^{+0.149}_{-0.446}$	$0.034^{+0.125}_{-0.011}$
	+4%/-3%	+12%/-3%	+429%/-429%	+15%/-43%	+8%/-24%	+363%/-32%
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 009612225-04 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-192 \pm 39$	$13.48^{+12.57}_{-9.07}$	$2232^{+149}_{-245}$	$4187^{+2676}_{-870}$	$7.715^{+58.511}_{-5.742}$
Alt.	$-173 \pm 37$	$13.24^{+13.62}_{-9.75}$	$2217^{+154}_{-242}$	$4105^{+3386}_{-884}$	$6.658^{+92.611}_{-4.959}$

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

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

$A_{\text{obs}}$  = Observed Albedo (Assuming  $T=0$ )

If a secondary eclipse is present, the system is likely an EB if  $T_{\text{obs}} \gg T_{\text{max}}$  AND  $A_{\text{obs}} \gg 1.0$

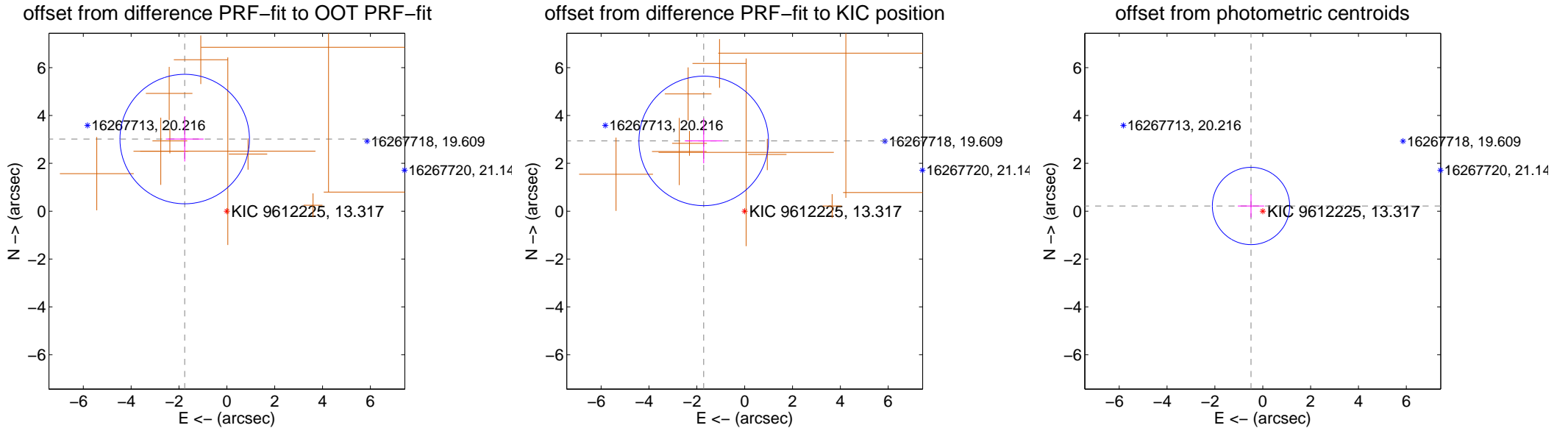
## DV Centroid Data

Supplemental centroid analysis for 009612225-04. Kepler magnitude: 13.32. Transit SNR 17.99

There are 0 quarters with good PRF difference image offsets

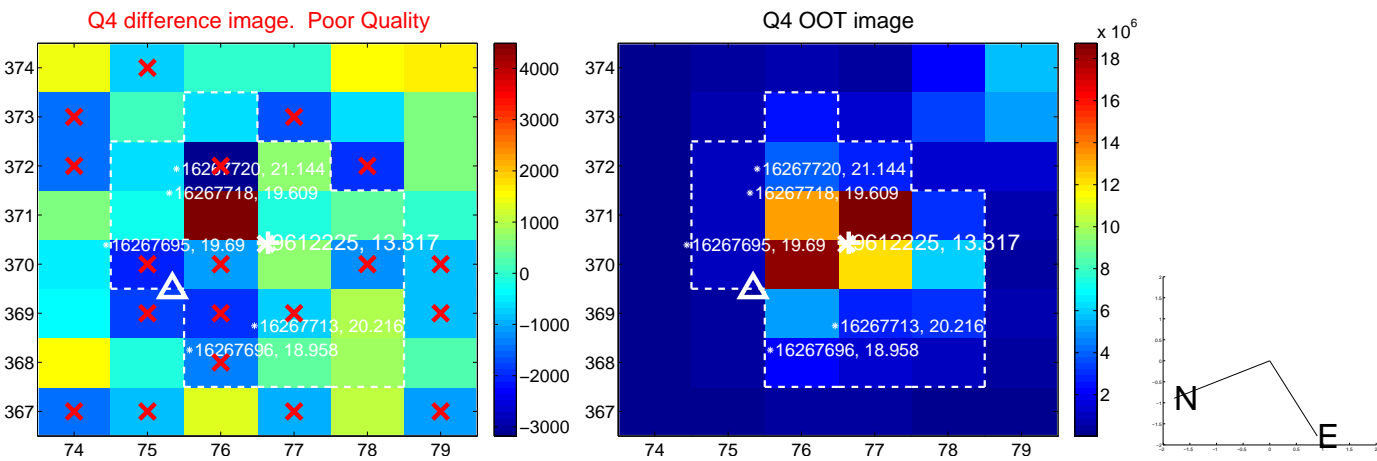
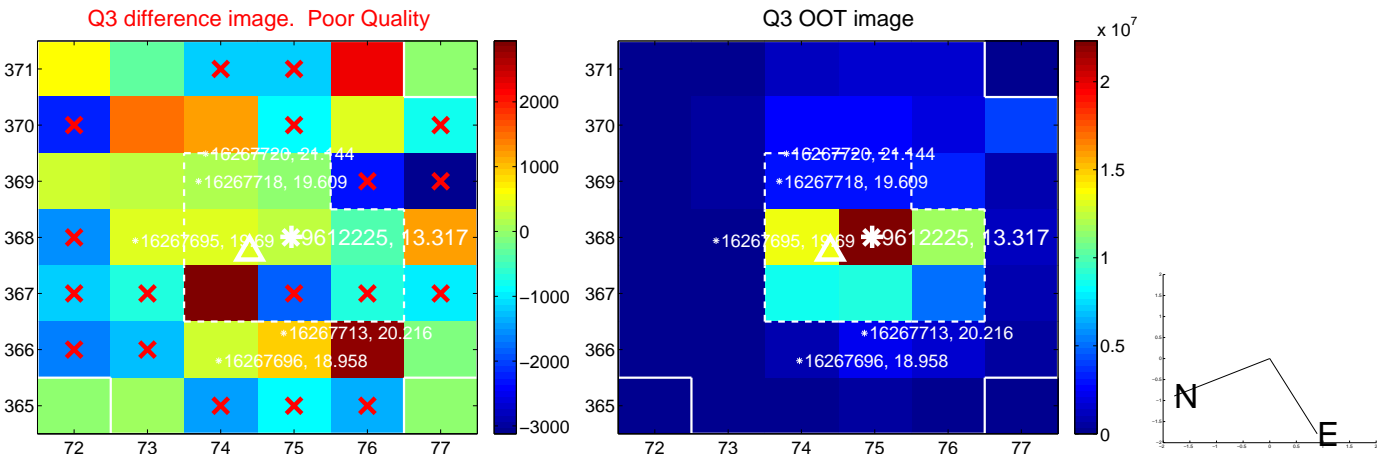
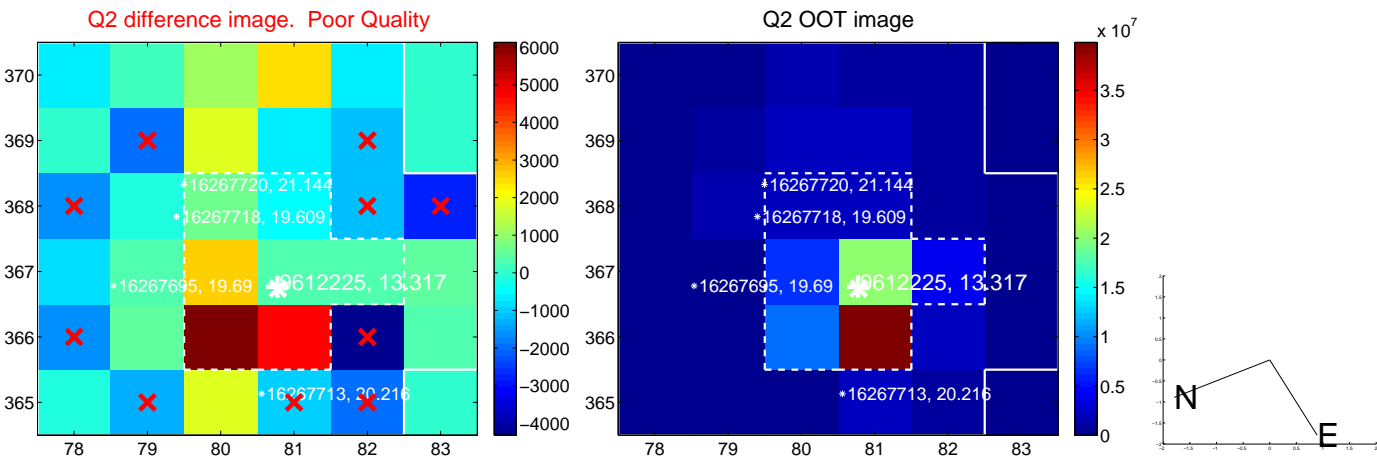
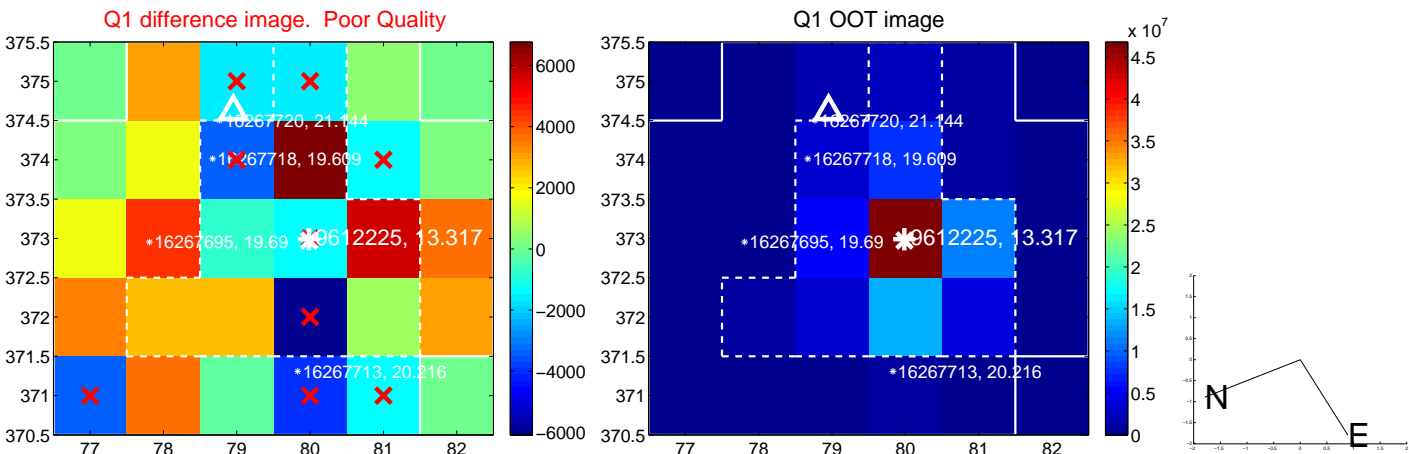
The direct PRF centroid is offset from the target star catalog position by about 0.06 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$3.493 \pm 0.902$	$3.87$	$1.762 \pm 0.789$	$3.016 \pm 0.938$
PRF-fit source offset from KIC position	$3.401 \pm 0.902$	$3.77$	$1.712 \pm 0.789$	$2.939 \pm 0.938$
photometric centroid source offset	$0.54 \pm 0.54$	1.00	$0.49 \pm 0.55$	$0.22 \pm 0.48$

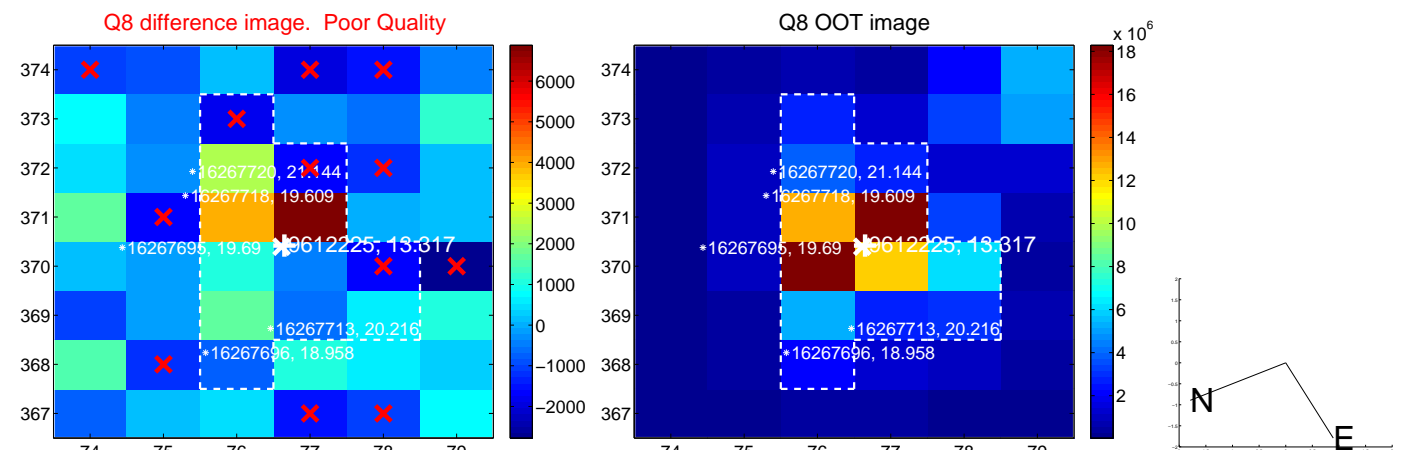
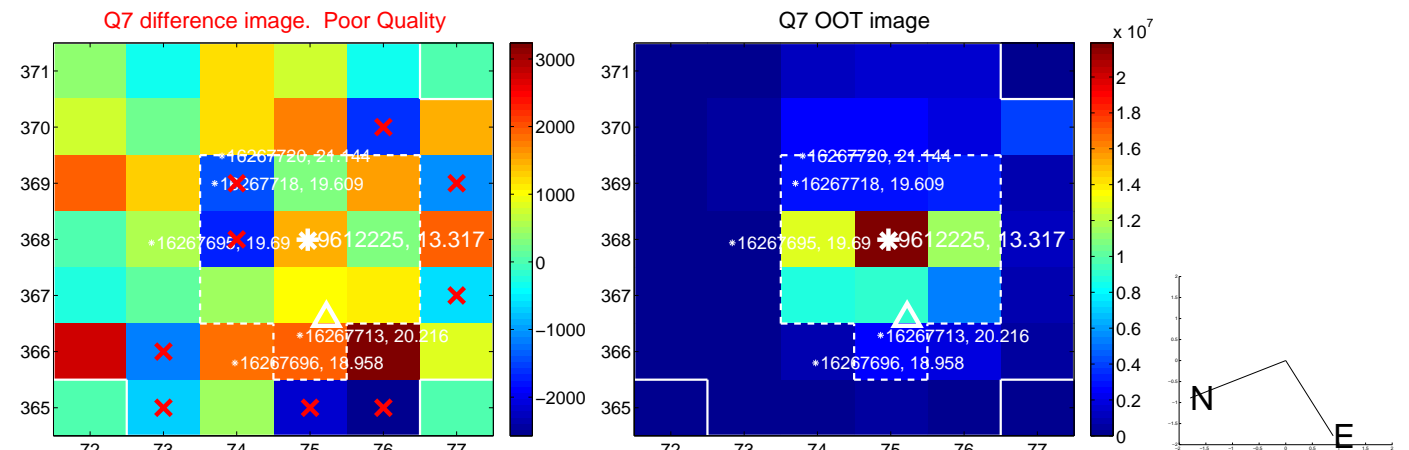
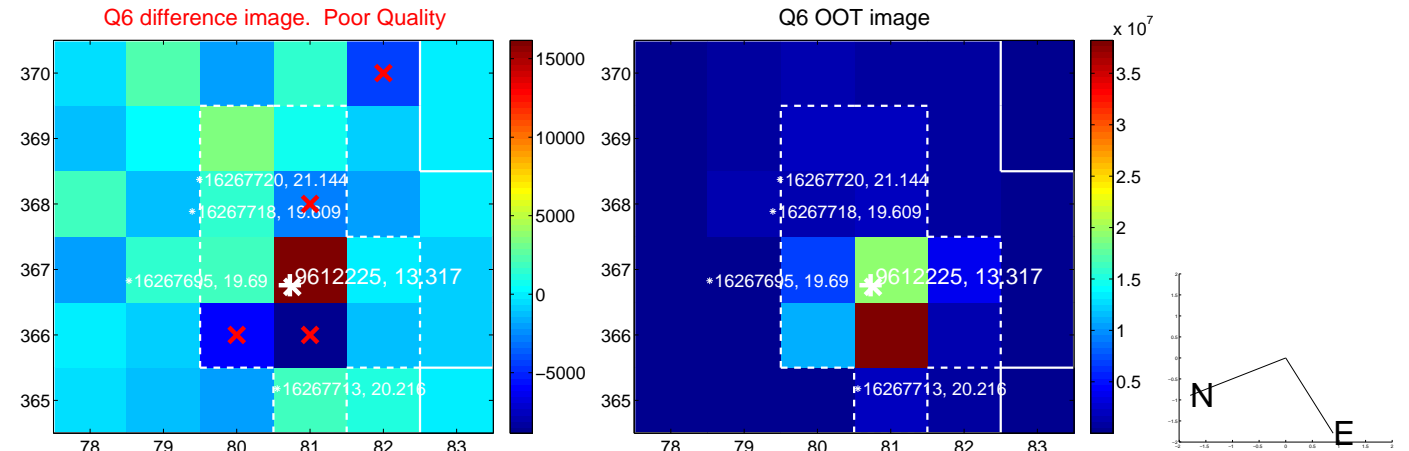
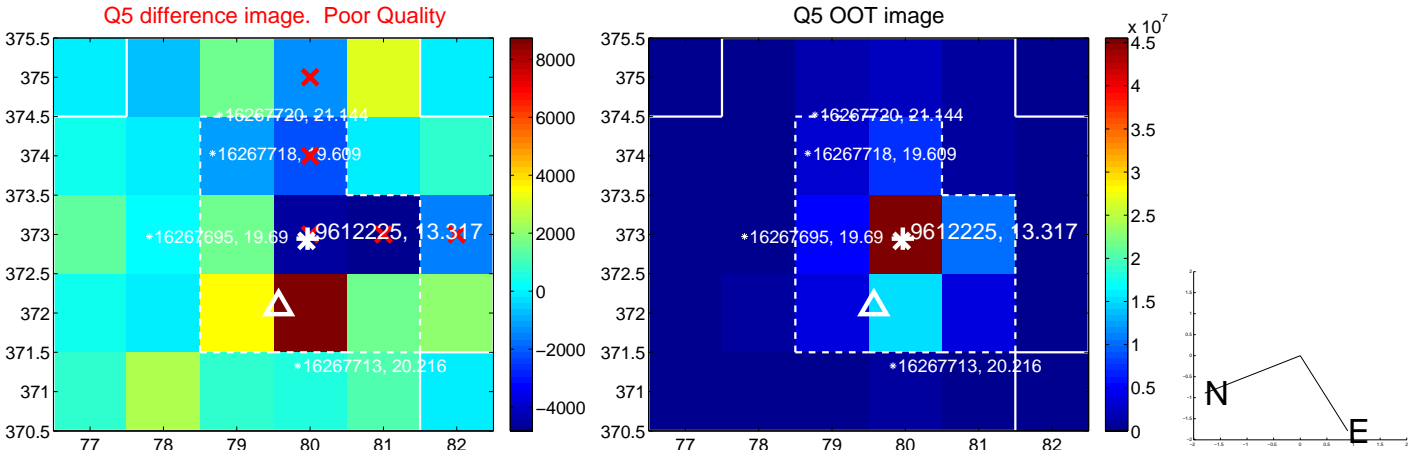


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

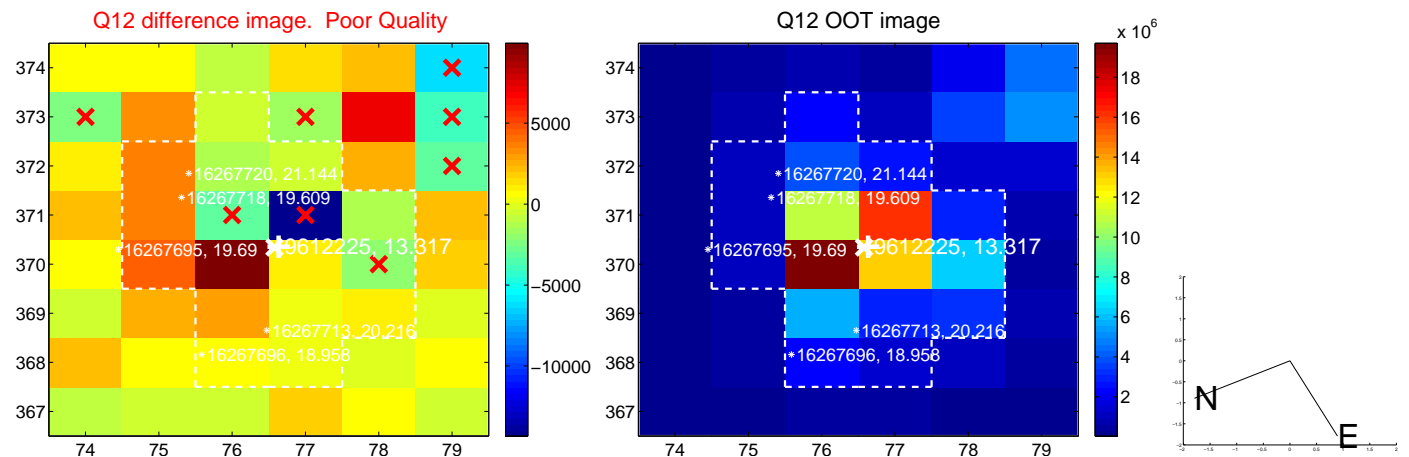
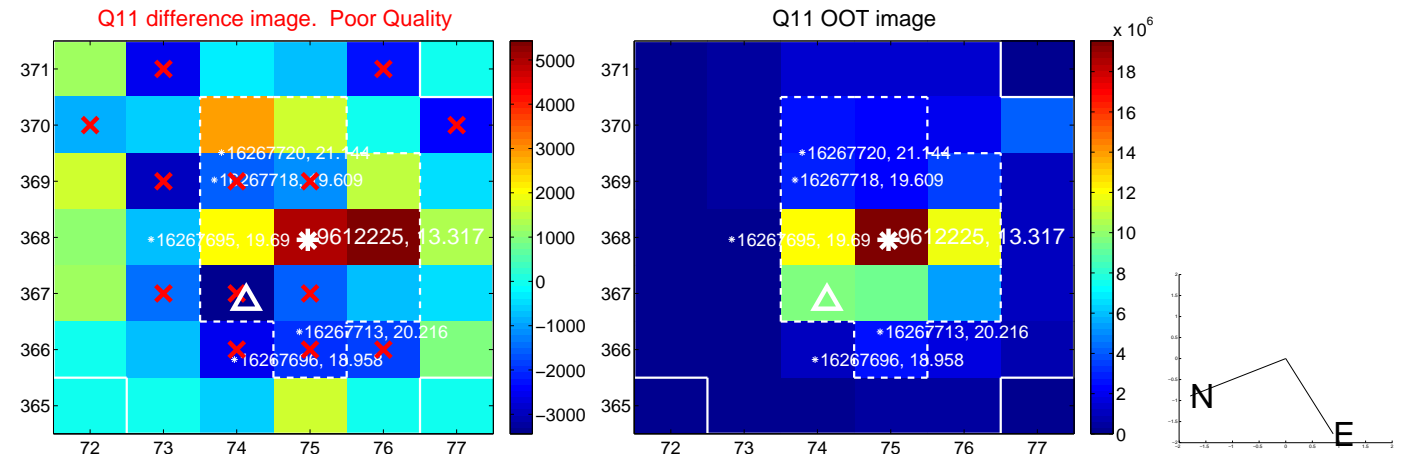
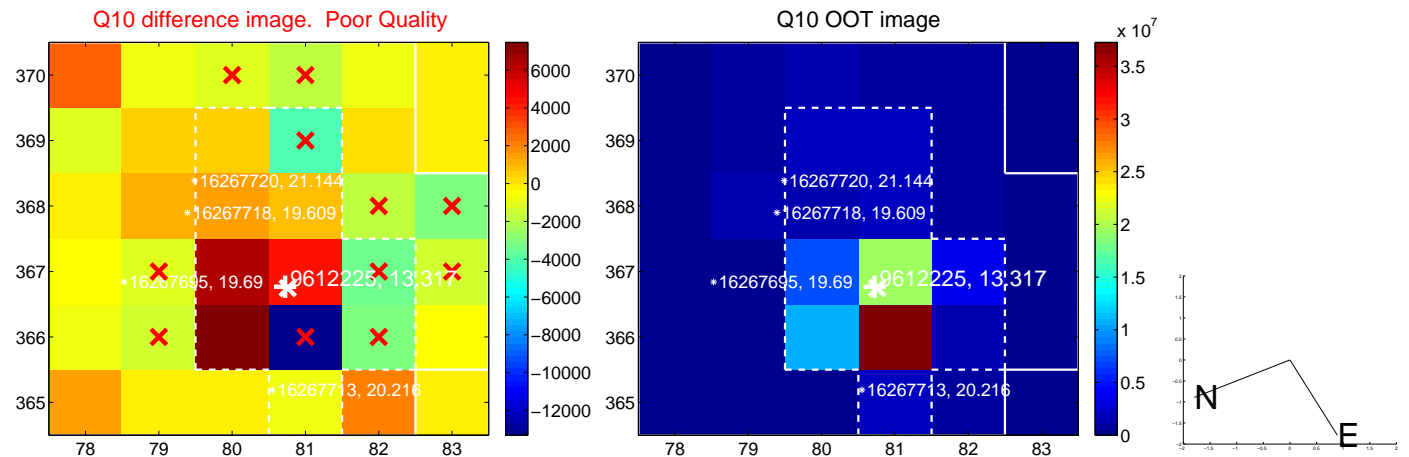
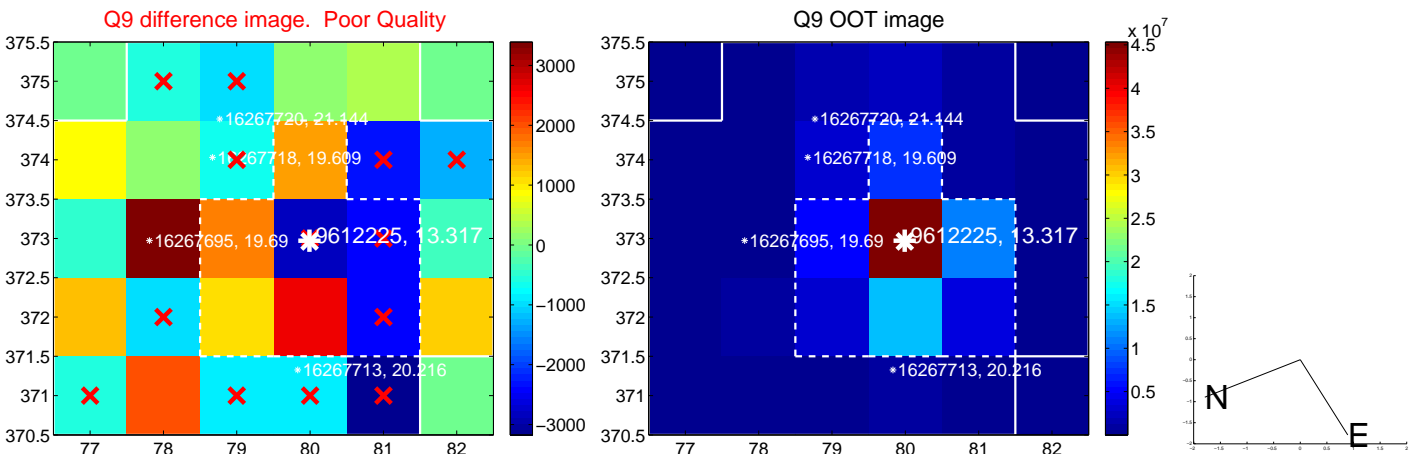
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



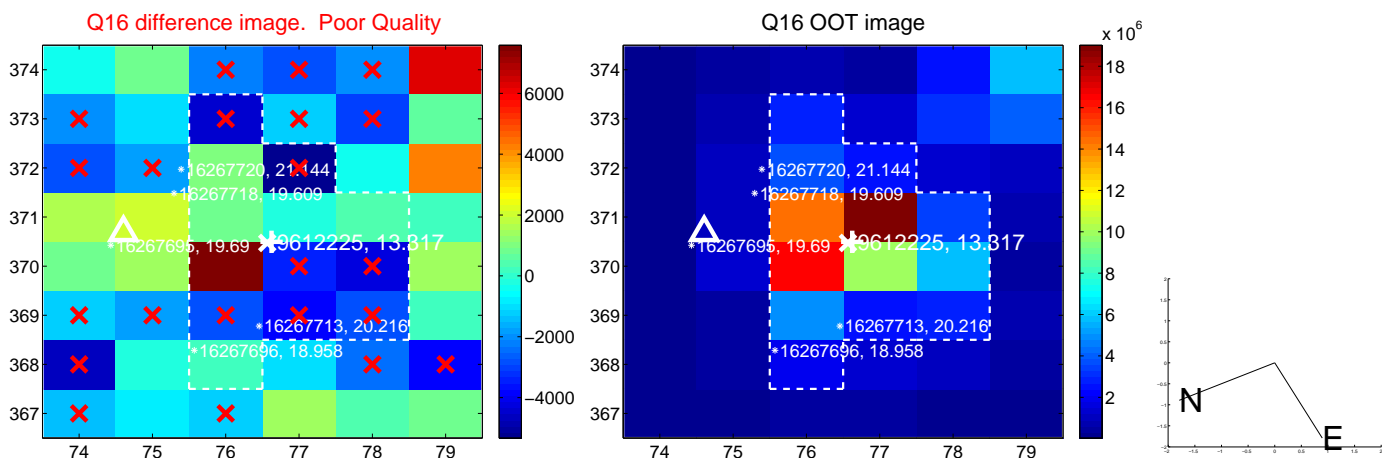
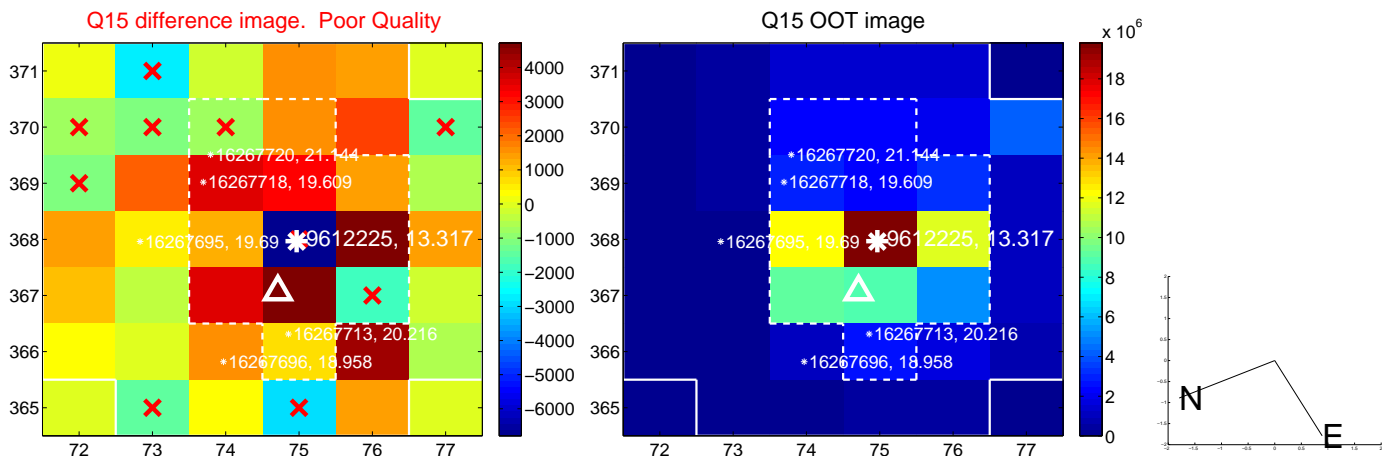
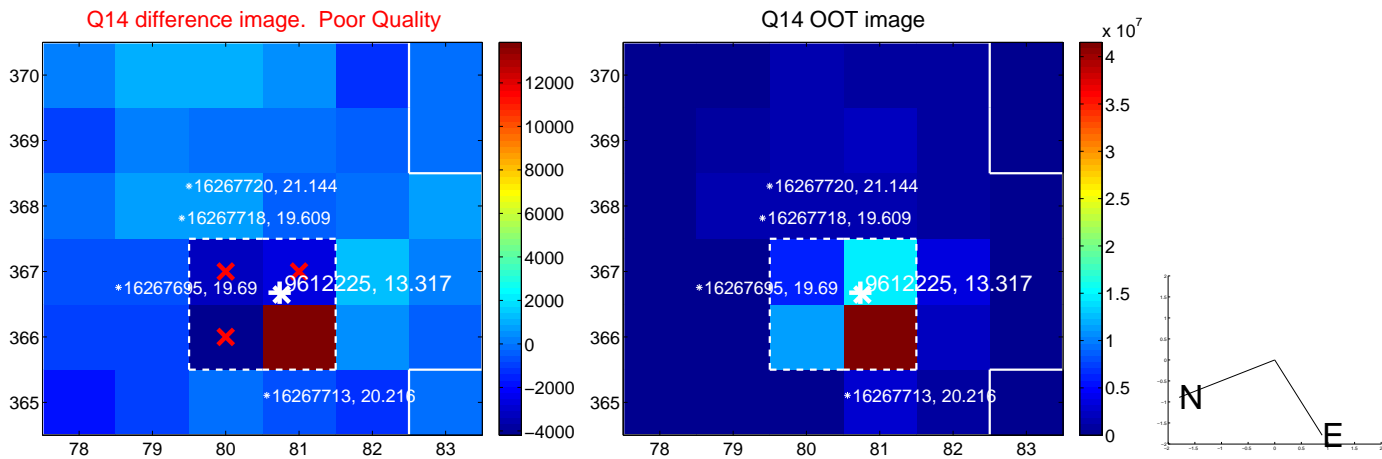
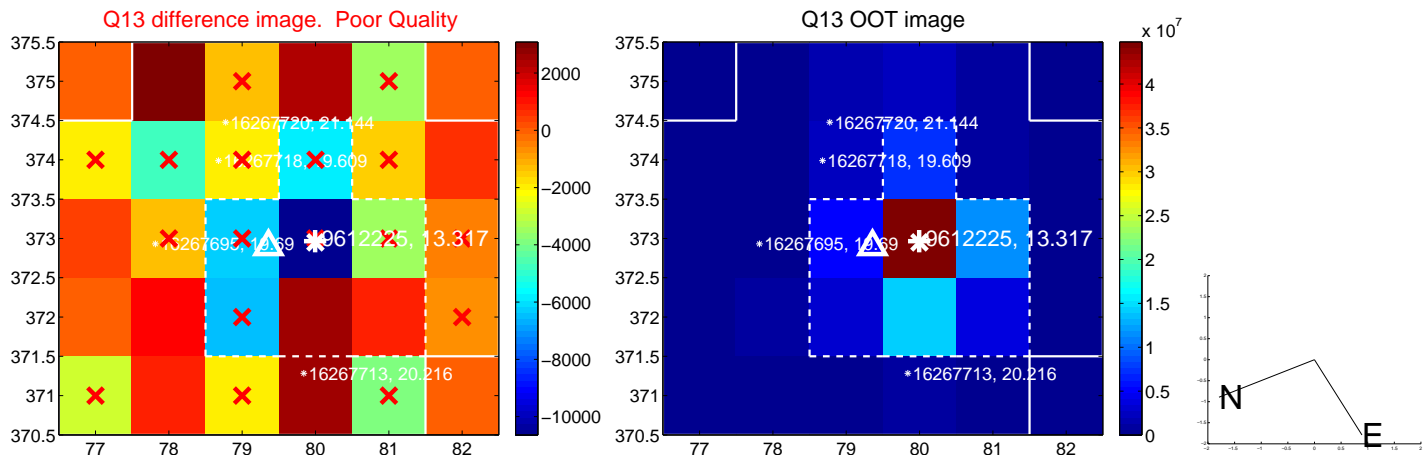
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



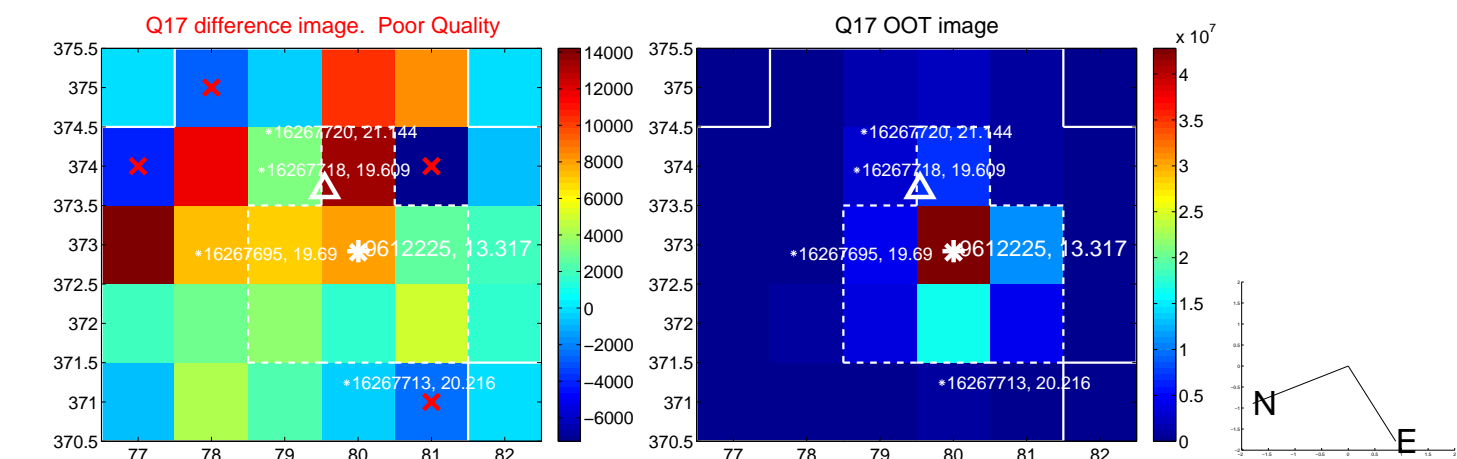
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



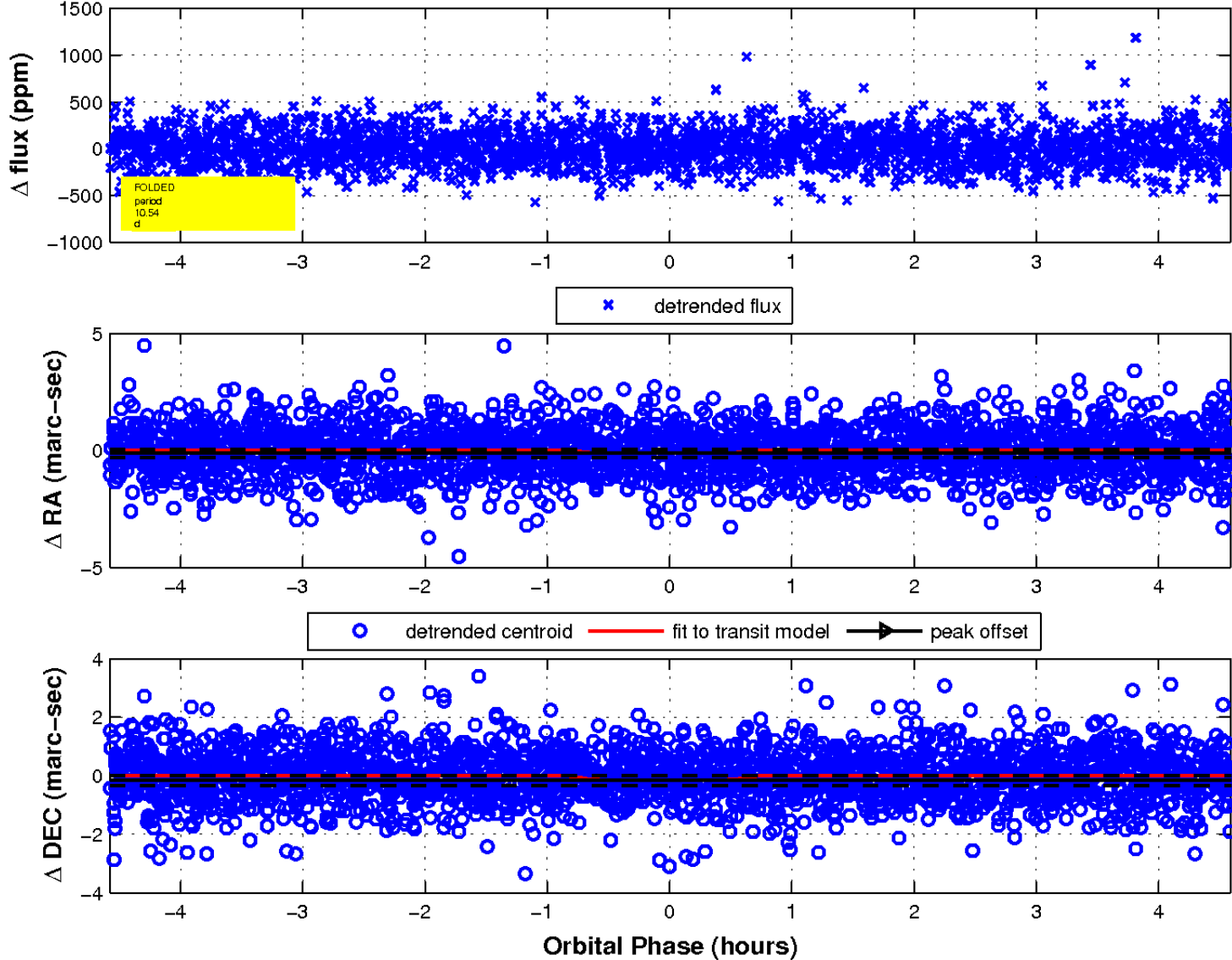
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



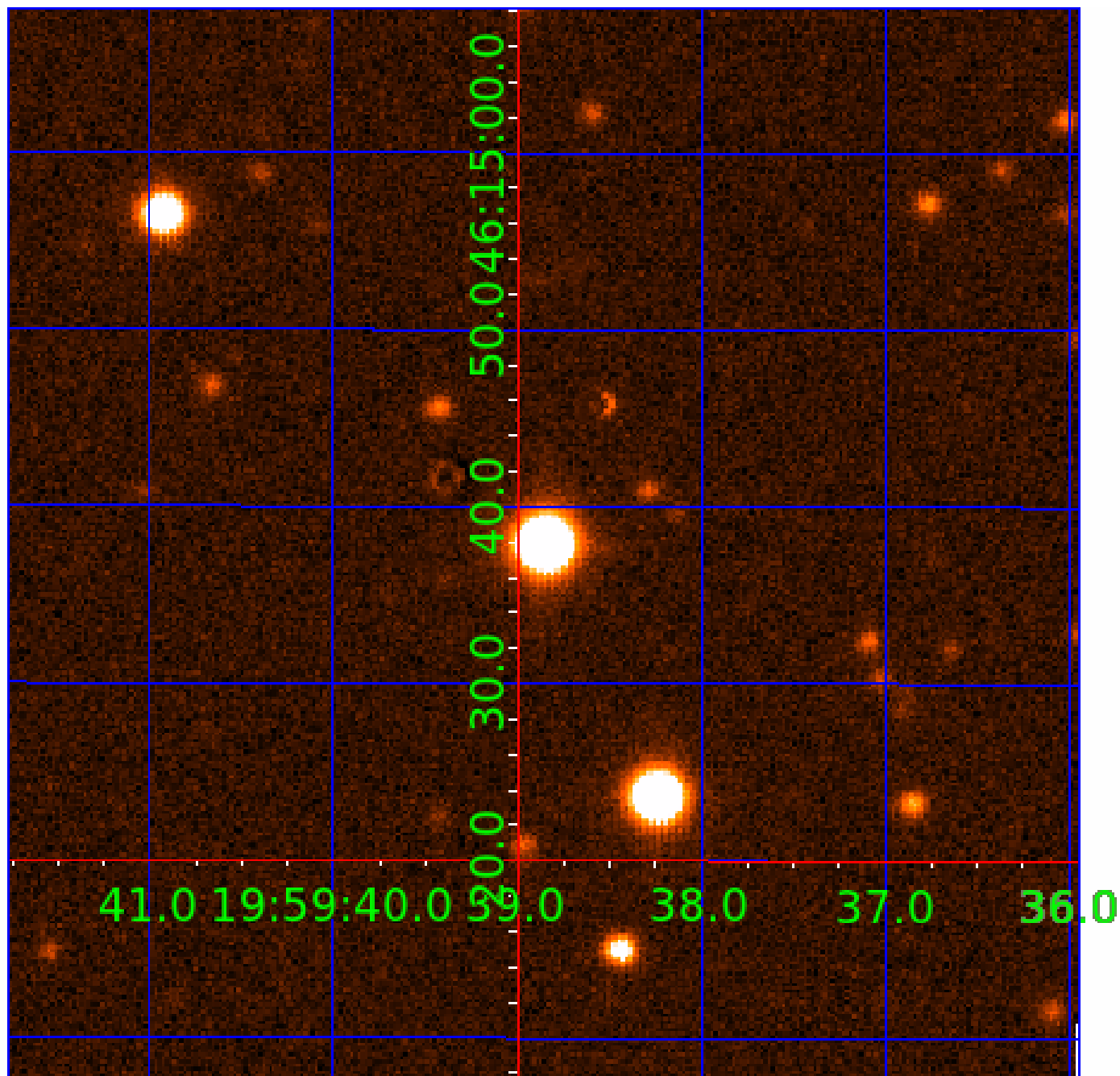
fluxWeightedCentroids, Planet 4 of 7





UKIRT Image

Declination



# KIC 009612225

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
009612225-01	OBS	No	1.569074	132.357241	5.4	11.763	8.4	2.9	4.21	6068	0.99	20635.40
009612225-02	OBS	No	15.389879	132.709323	325.0	1.505	18.4	16.1	4.21	6068	7.73	982.86
009612225-03	OBS	No	17.227206	146.565078	439.3	1.252	17.4	17.2	4.21	6068	9.83	845.64
009612225-04	OBS	No	10.538483	138.586428	319.7	1.531	17.5	18.0	4.21	6068	8.92	1628.42
009612225-05	OBS	No	18.886120	148.709844	263.3	3.838	15.7	15.8	4.21	6068	7.83	748.08
009612225-06	OBS	No	14.068152	136.604942	133.8	3.316	11.2	9.3	4.21	6068	5.74	1107.87
009612225-07	OBS	No	8.400052	134.207869	867.8	1.500	14.3	-1.0	4.21	6068	12.43	2203.41

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009612225-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV
009612225-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_MEAS—HALO_GHOST
009612225-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
009612225-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_MEAS
009612225-05	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—HALO_GHOST
009612225-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT
009612225-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—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.

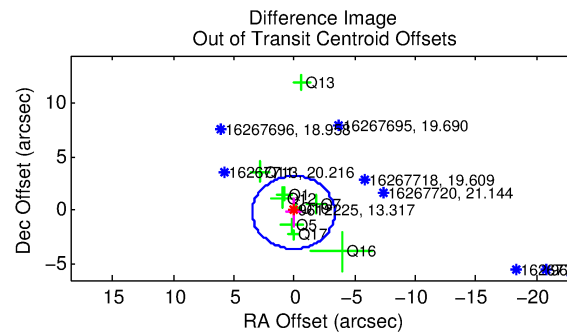
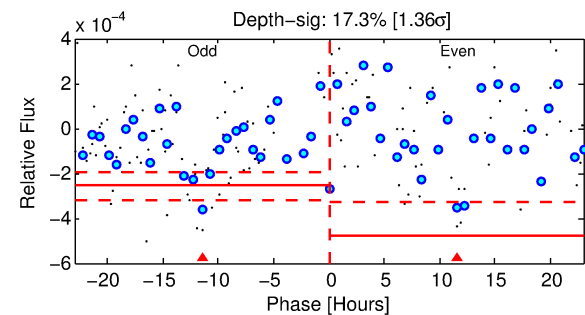
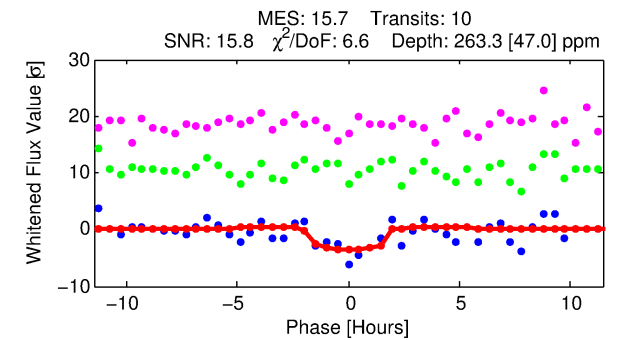
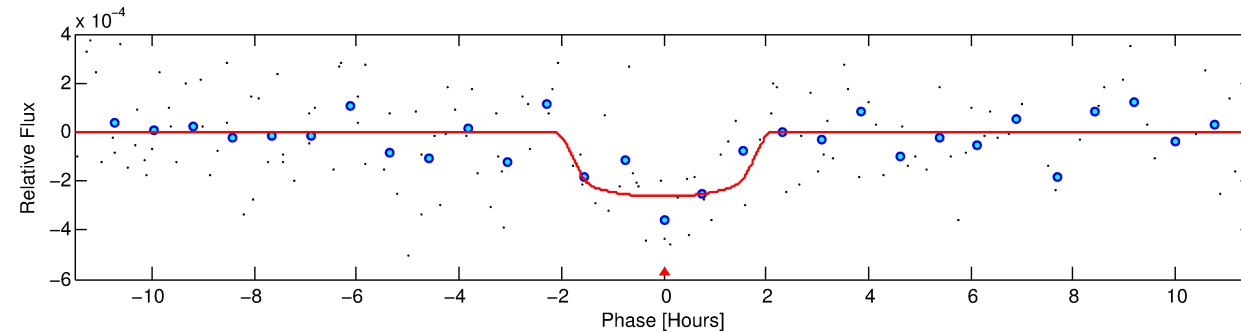
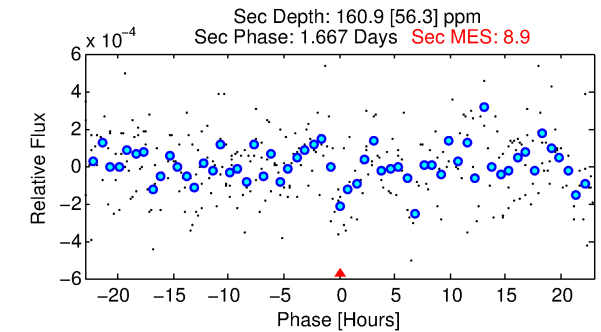
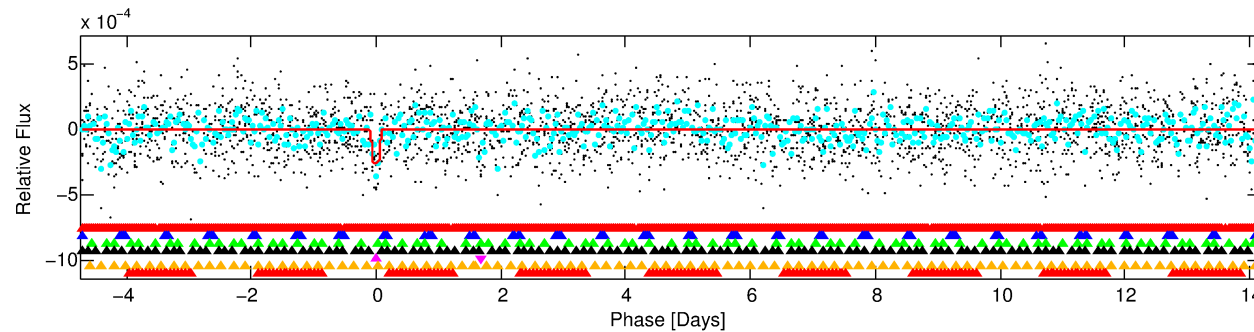
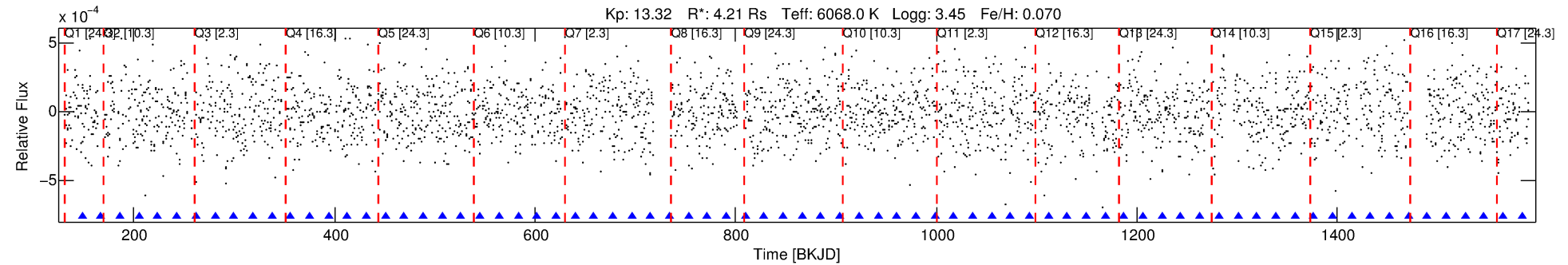
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 009612225-05

No Significant Match Found

# DV One-Page Summary

KIC: 9612225 Candidate: 5 of 7 Period: 18.886 d



## DV Fit Results:

Period = 18.88612 [0.00039] d  
Epoch = 148.7098 [0.0129] BKJD  
Rp/R\* = 0.0170 [0.0158]  
a/R\* = 20.31 [97.16]  
b = 0.86 [1.43]  
Seff = 748.08 [525.65]  
Teq = 1334 [234] K  
Rp = 7.83 [7.99] Re  
a = 0.1698 [0.0719] AU  
Ag = 41.66 [83.63] [0.49 $\sigma$ ]  
Teffp = 5238 [2477] K [1.57 $\sigma$ ]

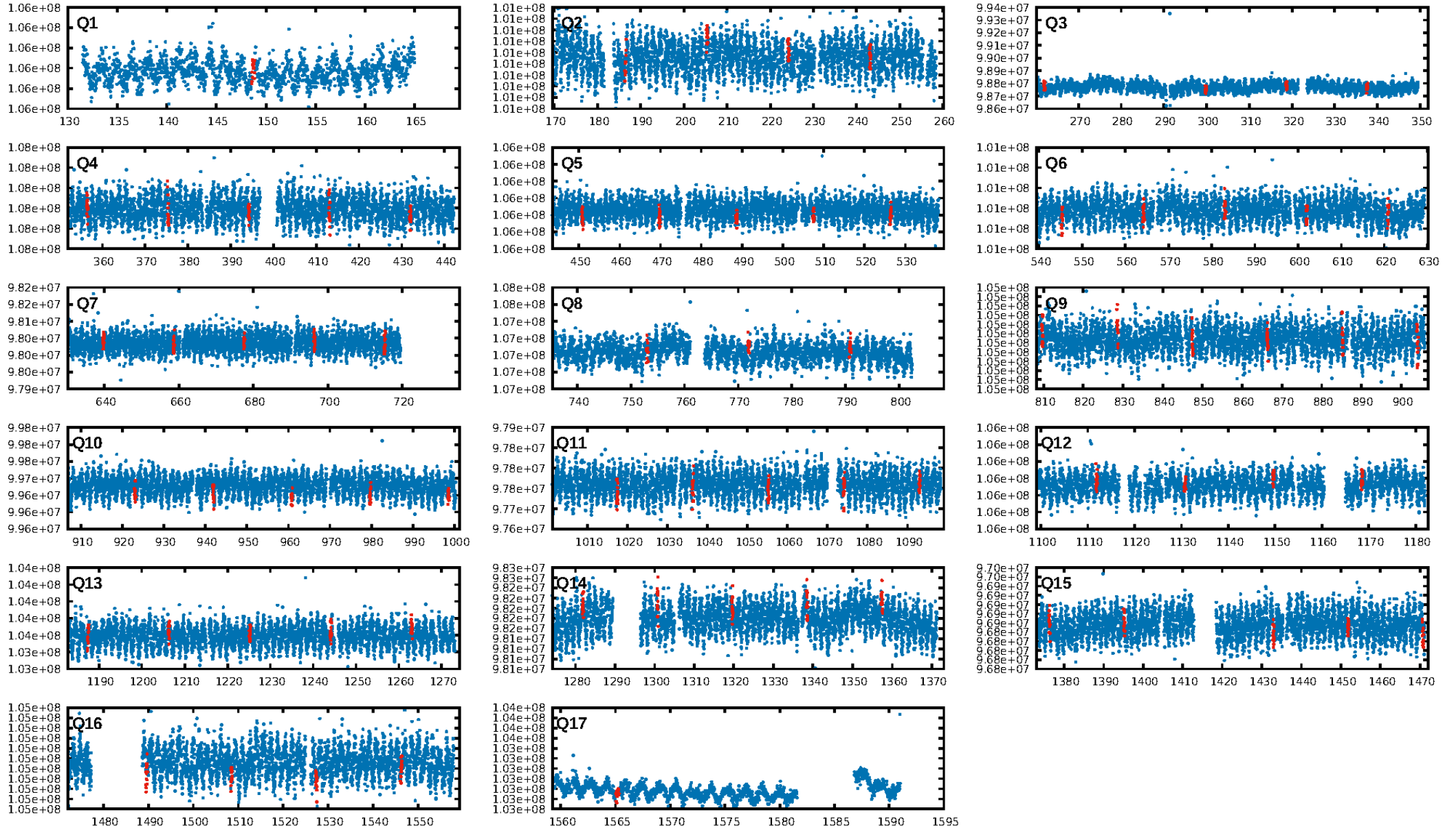
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [9.86 $\sigma$ ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 0.0%  
ModelChiSquareGof-sig: 0.0%  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [9/9]  
GhostDiagnostic-chr: -0.2492  
Centroid-sig: 38.8%  
Centroid-so: 0.200 arcsec [0.35 $\sigma$ ]  
OotOffset-rm: 0.204 arcsec [0.18 $\sigma$ ]  
KicOffset-rm: 0.223 arcsec [0.16 $\sigma$ ]  
OotOffset-st: 1/2/2/4 [9]  
KicOffset-st: 1/2/2/4 [9]  
DiffImageQuality-fgm: 0.44 [4/9]  
DiffImageOverlap-fno: 0.41 [7/17]

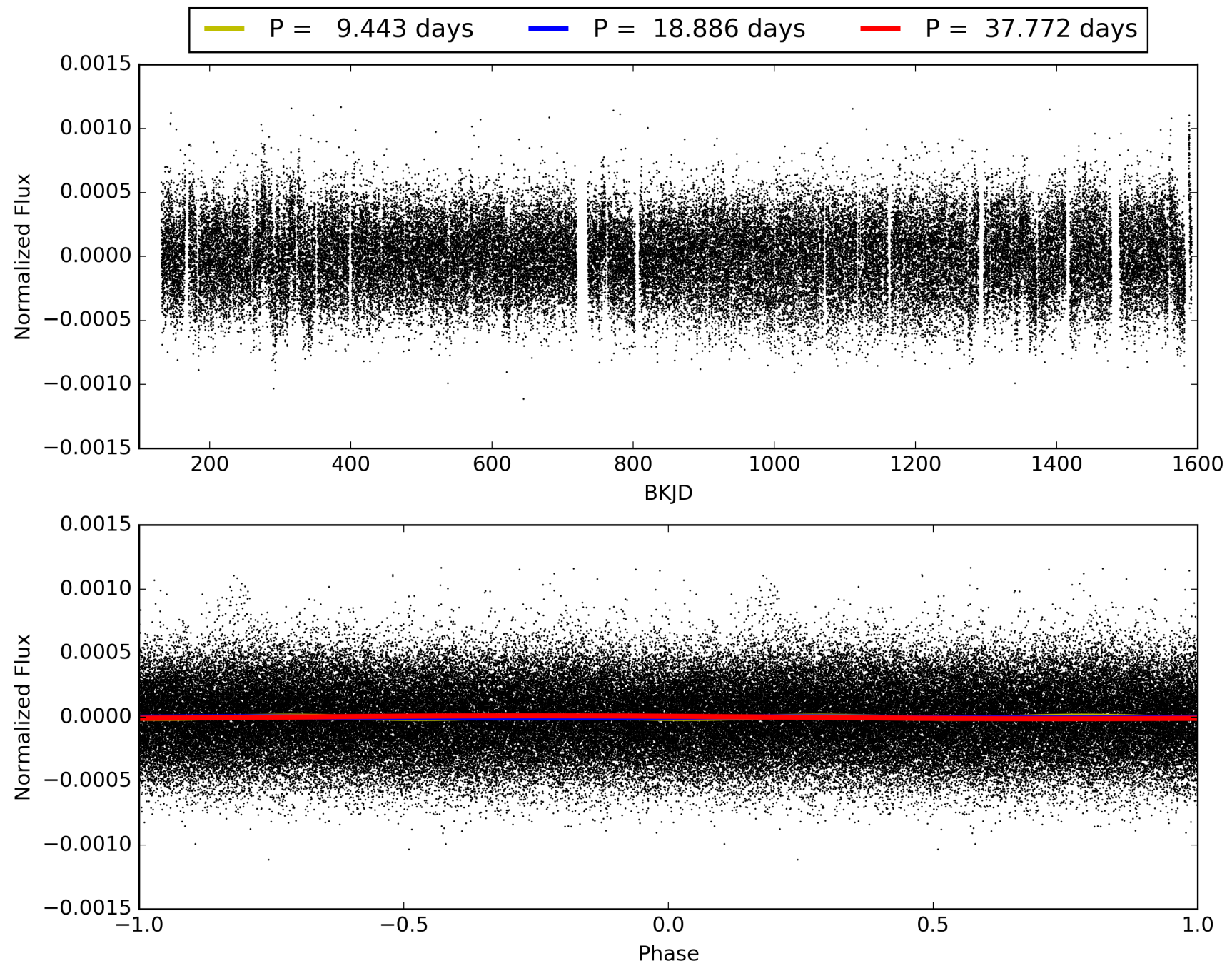
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 13:12:27 Z

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

# TCE 009612225-05, PDC Light Curves

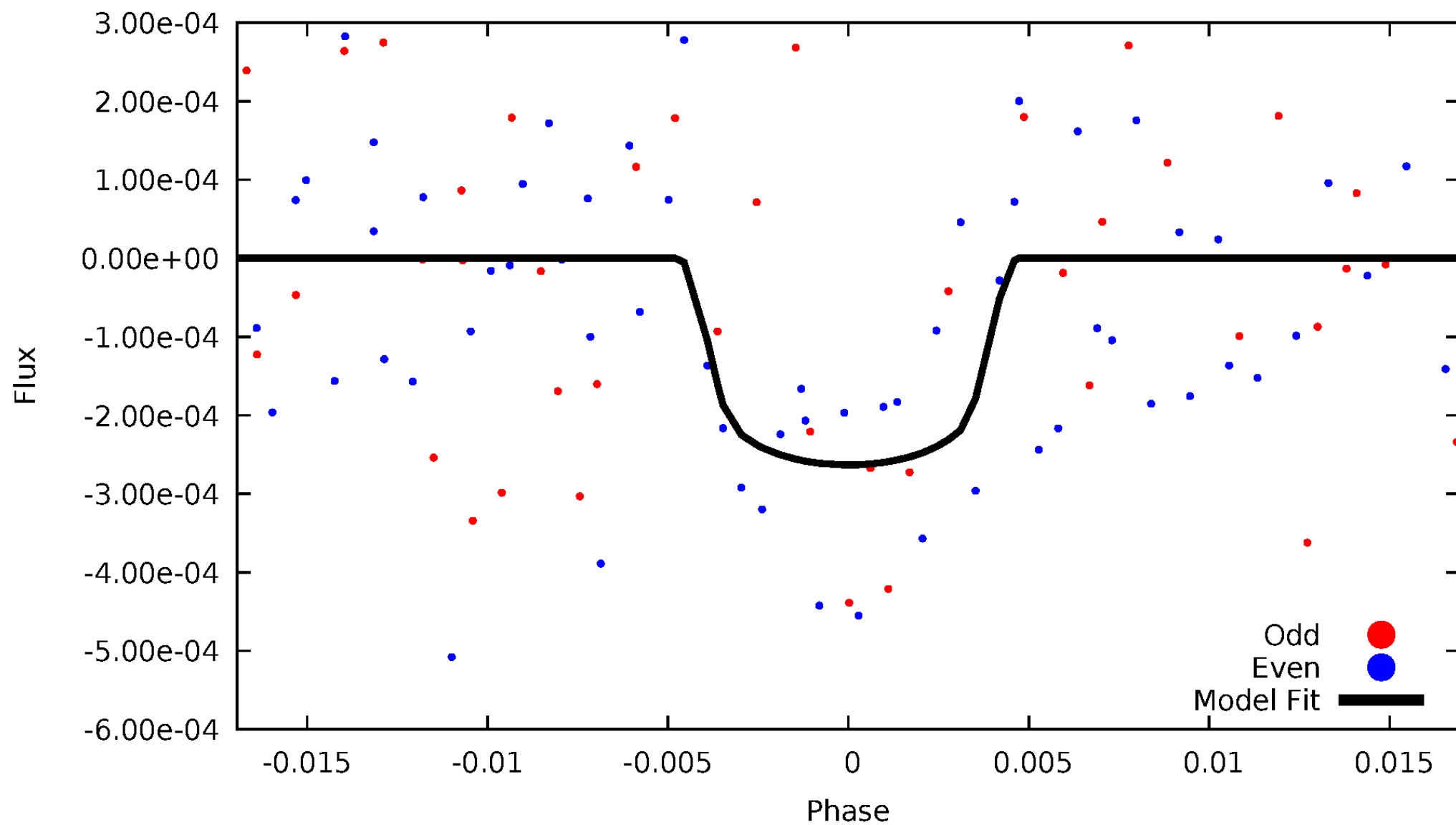


TCE 009612225-05



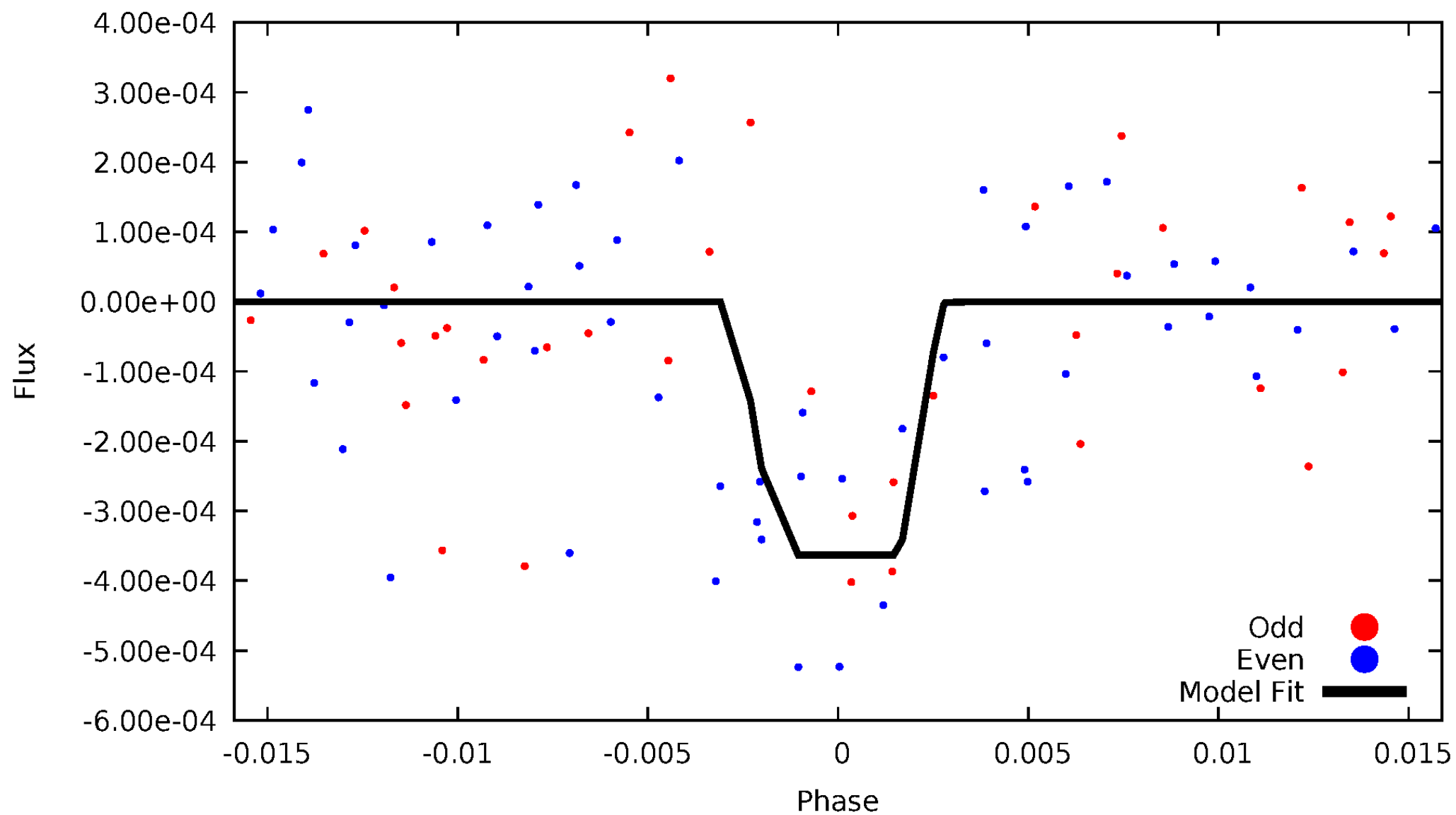
# DV Odd/Even

TCE 009612225-05



# ALT Odd/Even

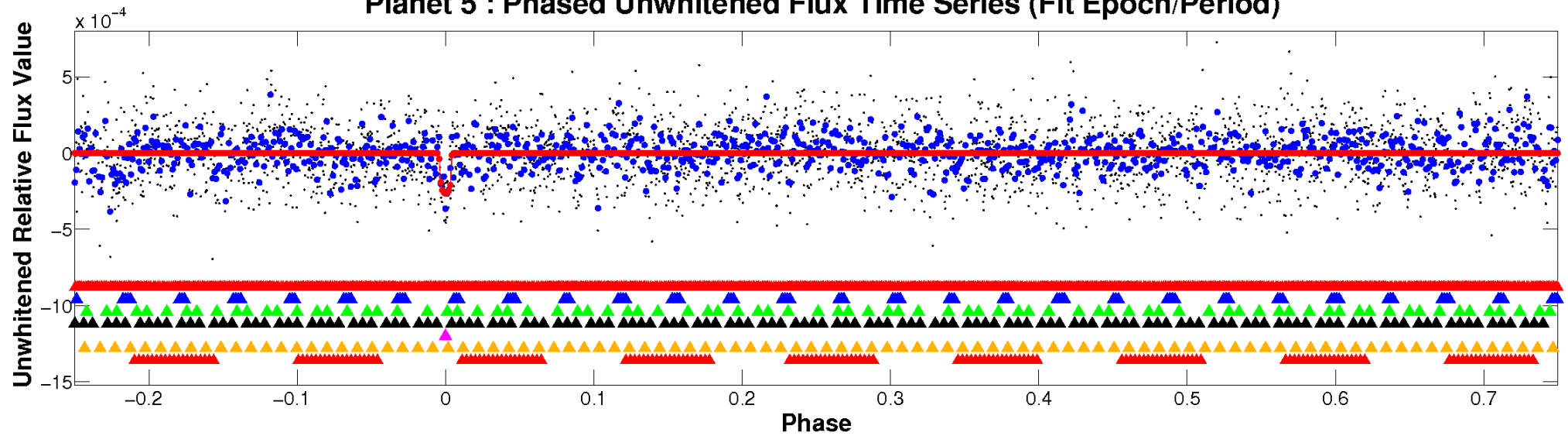
TCE 009612225-05



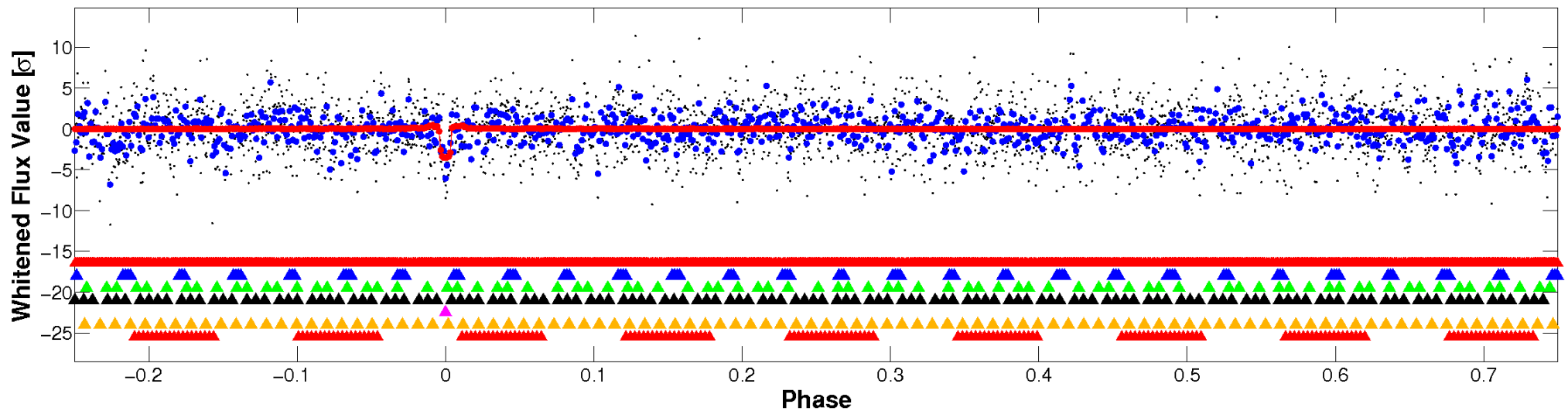


# Non-Whitened Vs. Whitened Light Curve

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

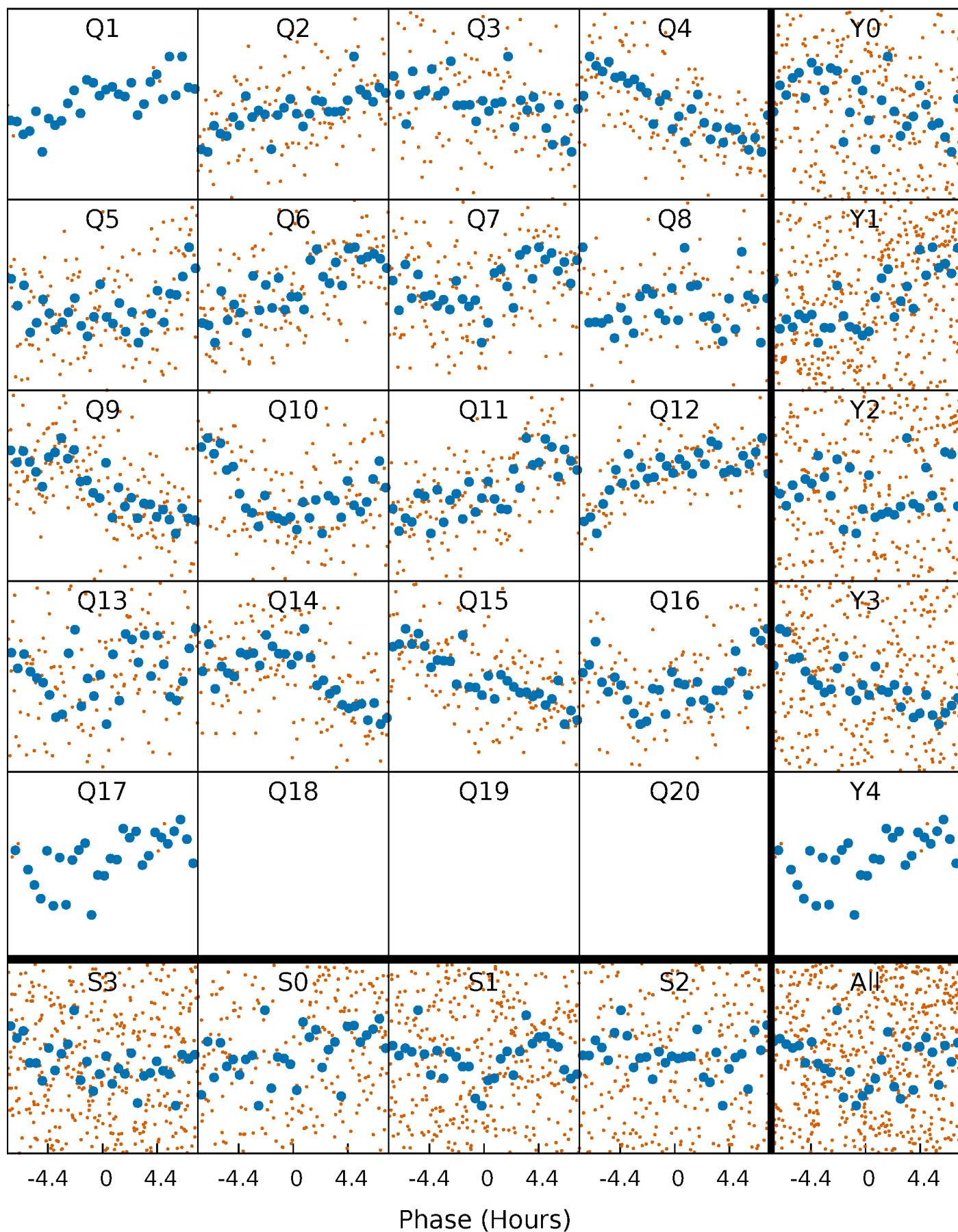


## Planet 5 : Phased Whitened Flux Time Series (Fit Epoch/Period)



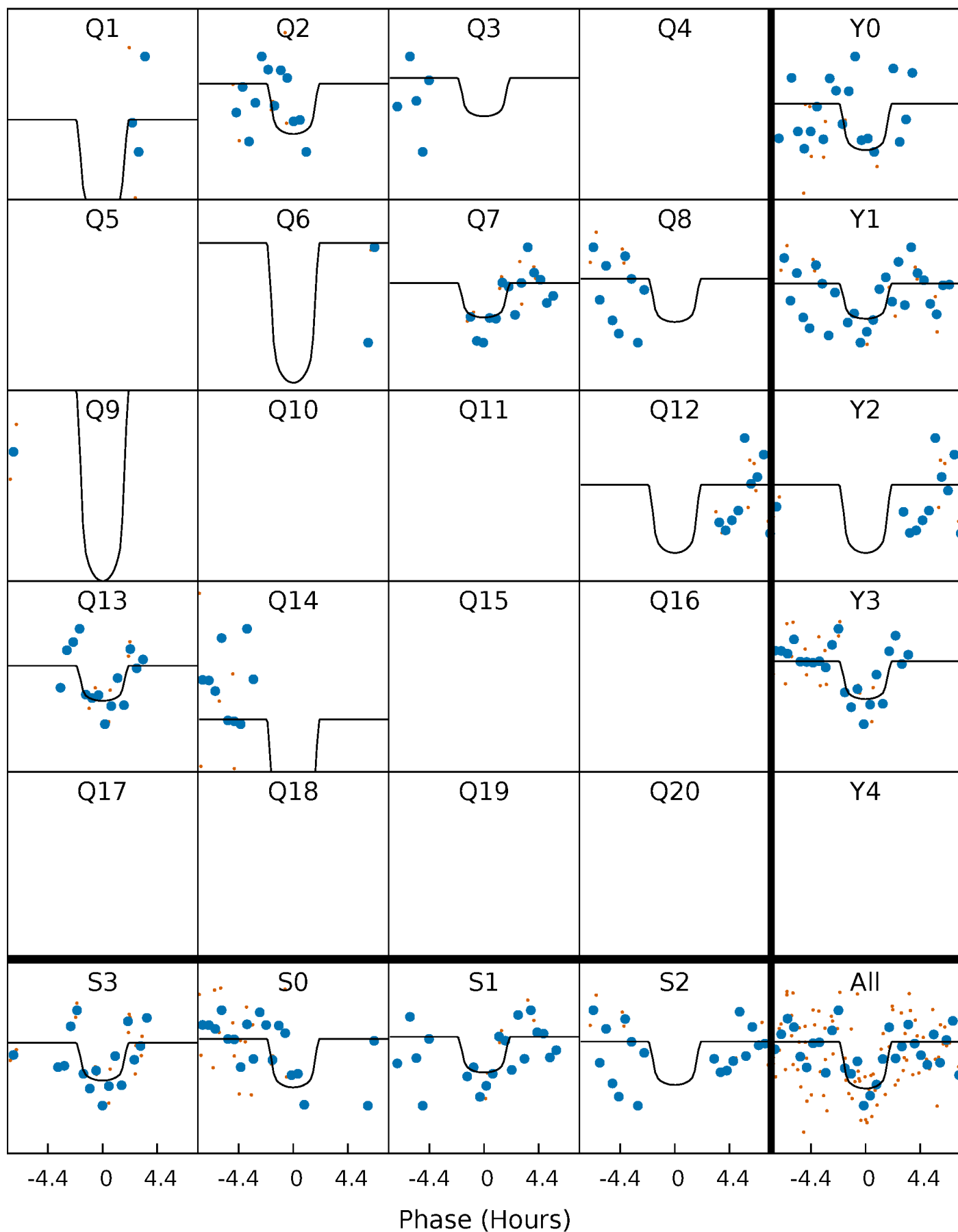
# PDC Quarter-Phased Transit Curves

TCE 009612225-05   P= 18.886120 Days    $T_0=148.709844$  (BKJD)



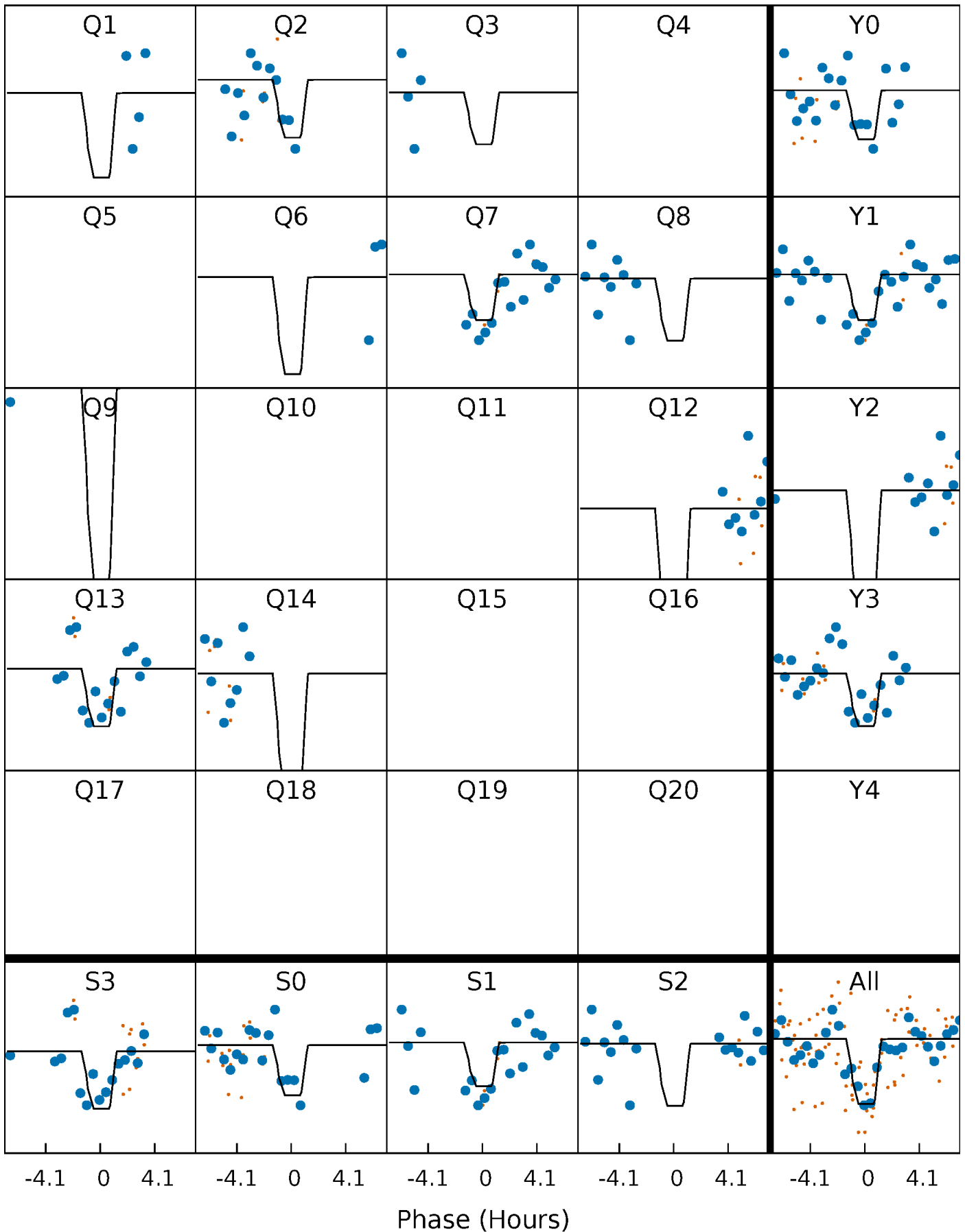
# DV Quarter-Phased Transit Curves

TCE 009612225-05 P= 18.886120 Days  $T_0=148.709844$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

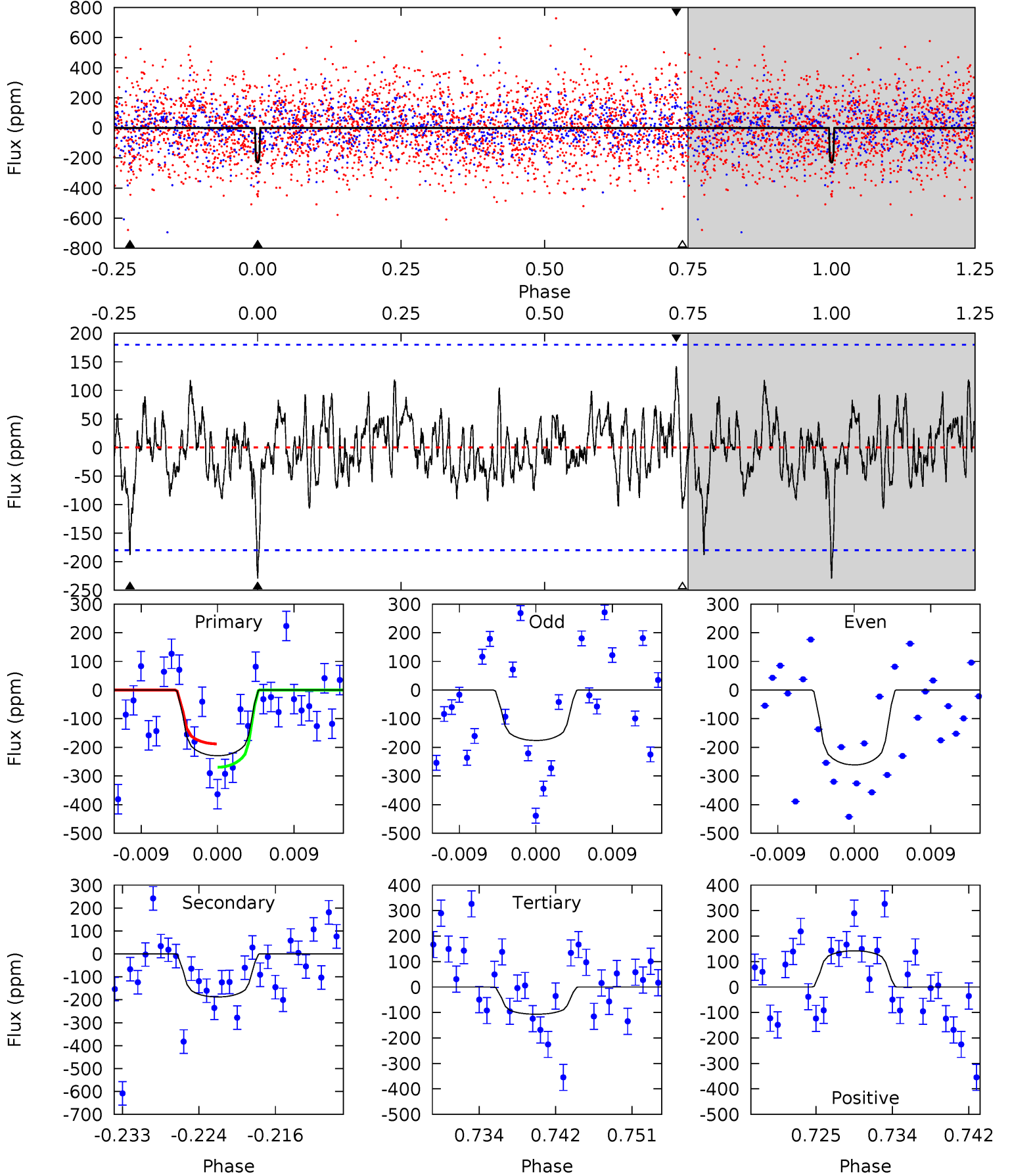
TCE 009612225-05 P= 18.885702 Days  $T_0=148.726989$  (BKJD)



# DV Model-Shift Uniqueness Test

009612225-05,  $P = 18.886120$  Days,  $E = 129.823724$  Days

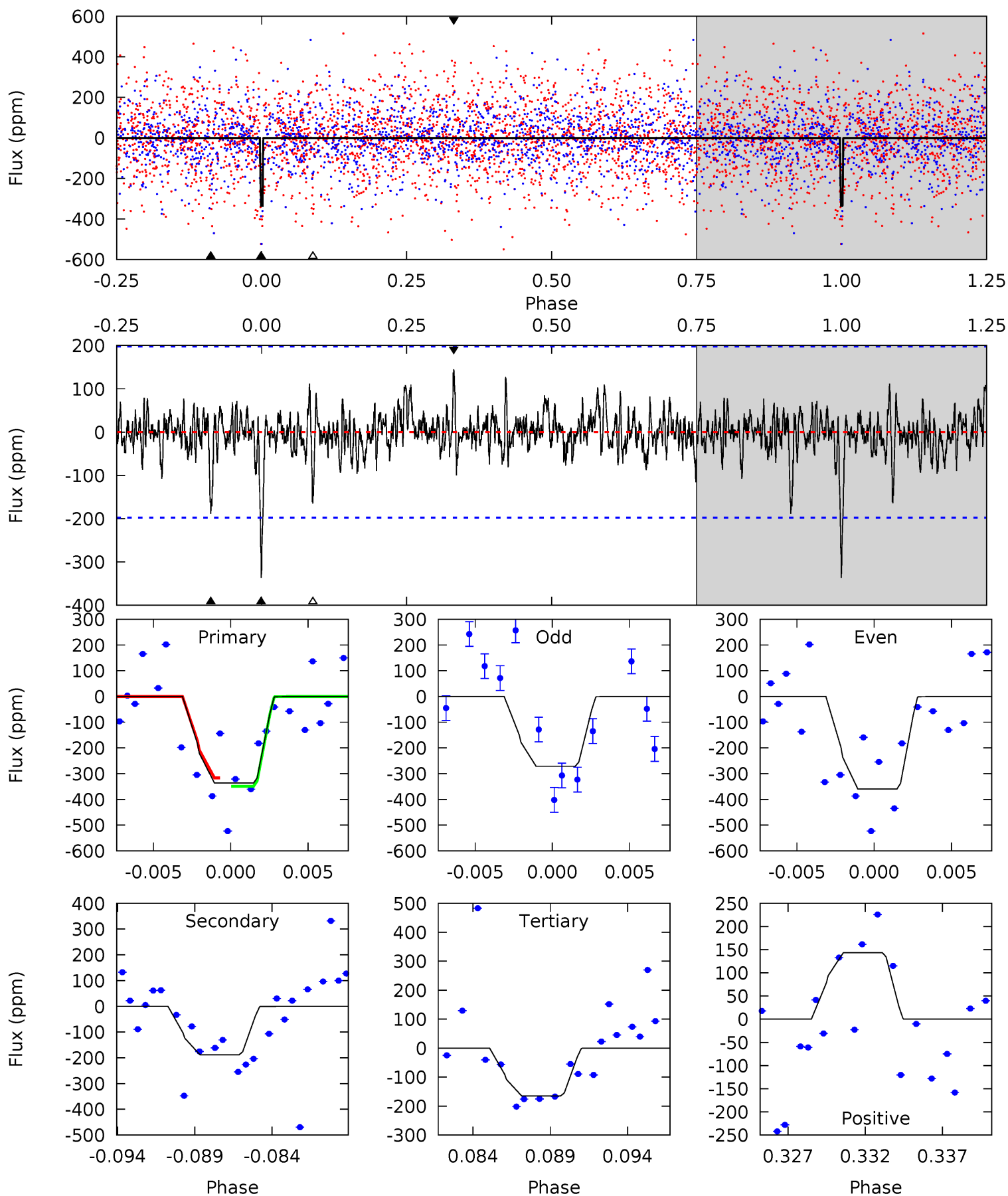
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.45	5.29	3.00	4.00	5.05	2.63	1.19	3.45	2.46	2.28	1.29	1.15	0.82	0.38	1.14



# Alt Model-Shift Uniqueness Test

009612225-05, P = 18.885702 Days, E = 129.841287 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
8.78	4.92	4.30	3.74	5.16	2.81	0.98	4.48	5.04	0.62	1.18	1.13	1.10	0.30	0.41



### Stellar Parameters For KIC 009612225

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$6068^{+216}_{-195}$	$3.451^{+0.408}_{-0.102}$	$0.070^{+0.300}_{-0.300}$	$4.213^{+0.643}_{-1.801}$	$1.829^{+0.149}_{-0.446}$	$0.034^{+0.125}_{-0.011}$
	+4%/-3%	+12%/-3%	+429%/-429%	+15%/-43%	+8%/-24%	+363%/-32%
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 009612225-05 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-188 \pm 36$	$7.99^{+6.37}_{-4.87}$	$1832^{+121}_{-212}$	$5168^{+3097}_{-1022}$	$45^{+238}_{-32}$
Alt.	$-188 \pm 38$	$8.80^{+7.32}_{-5.44}$	$1826^{+132}_{-193}$	$4958^{+3072}_{-974}$	$38^{+203}_{-27}$

$T_{\text{max}}$  = Theoretical Maximum Planetary Temperature  
 $T_{\text{obs}}$  = Observed Planetary Temperature (Assuming  $A=0.3$ )  
 $A_{\text{obs}}$  = Observed Albedo (Assuming  $T=0$ )

If a secondary eclipse is present, the system is likely an EB if  $T_{\text{obs}} \gg T_{\text{max}}$  AND  $A_{\text{obs}} \gg 1.0$



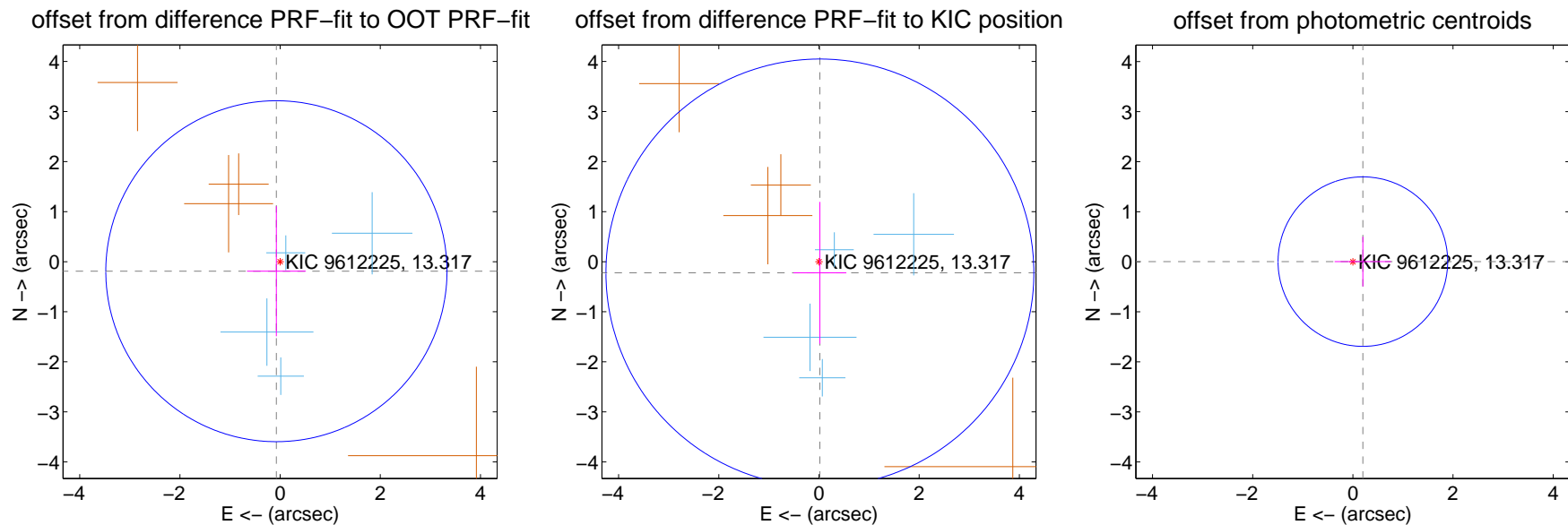
## DV Centroid Data

Supplemental centroid analysis for 009612225-05. Kepler magnitude: 13.32. Transit SNR 15.81

There are 4 quarters with good PRF difference image offsets

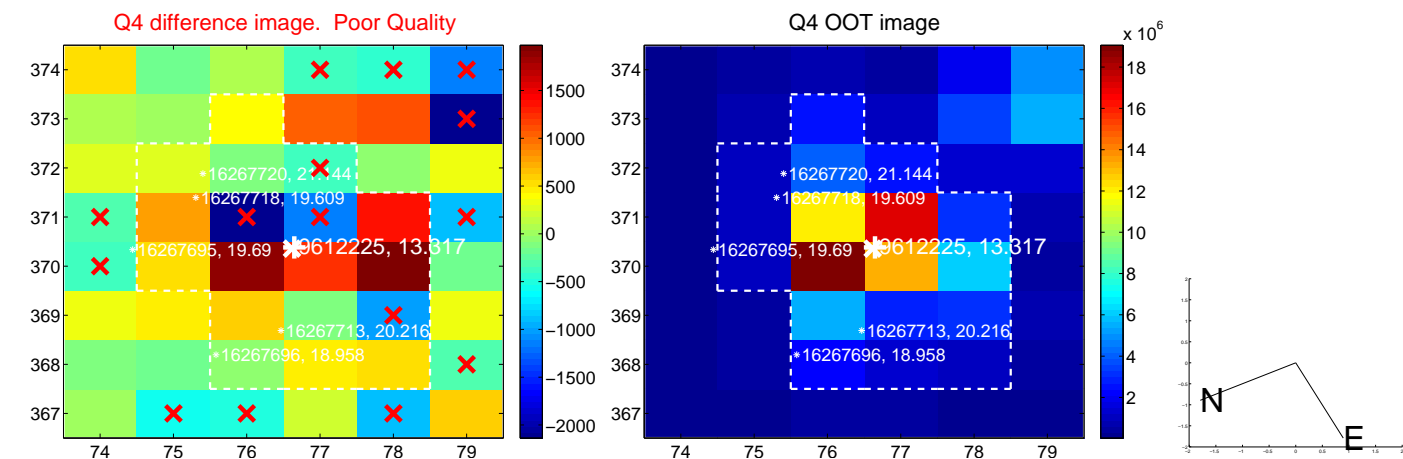
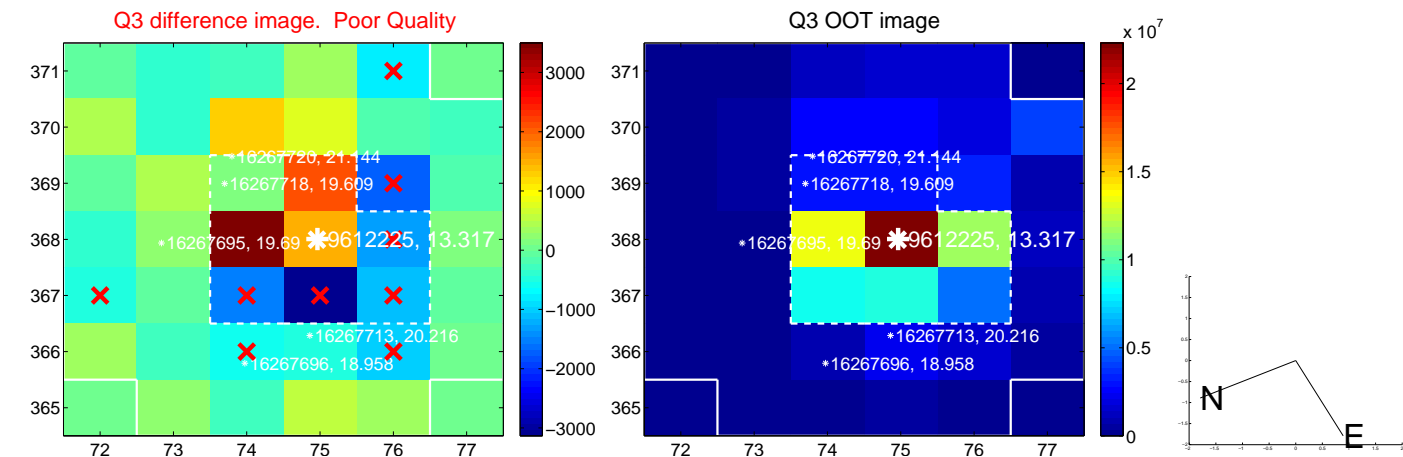
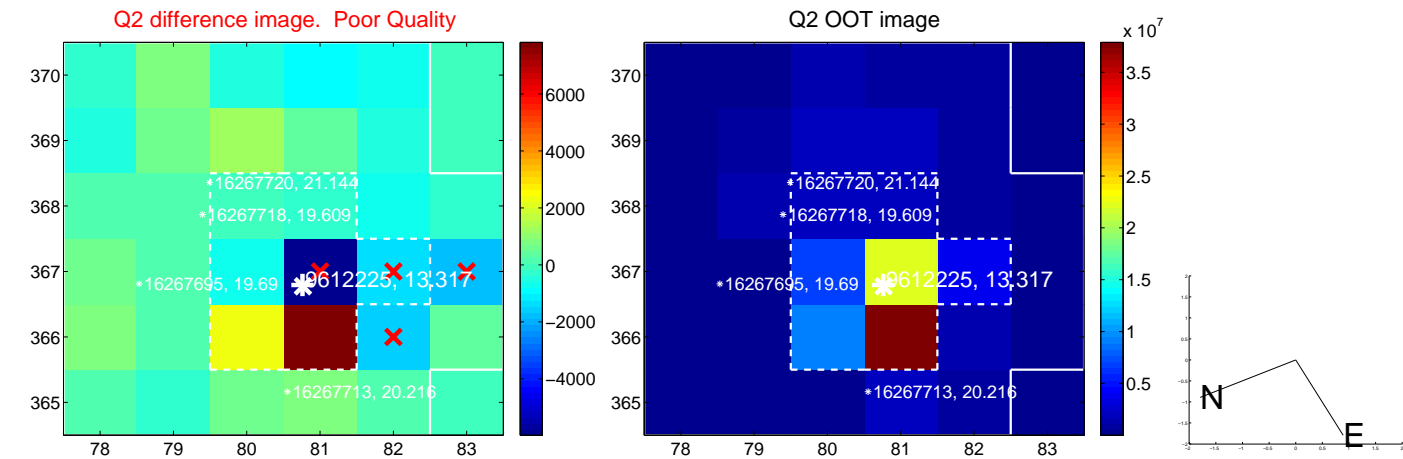
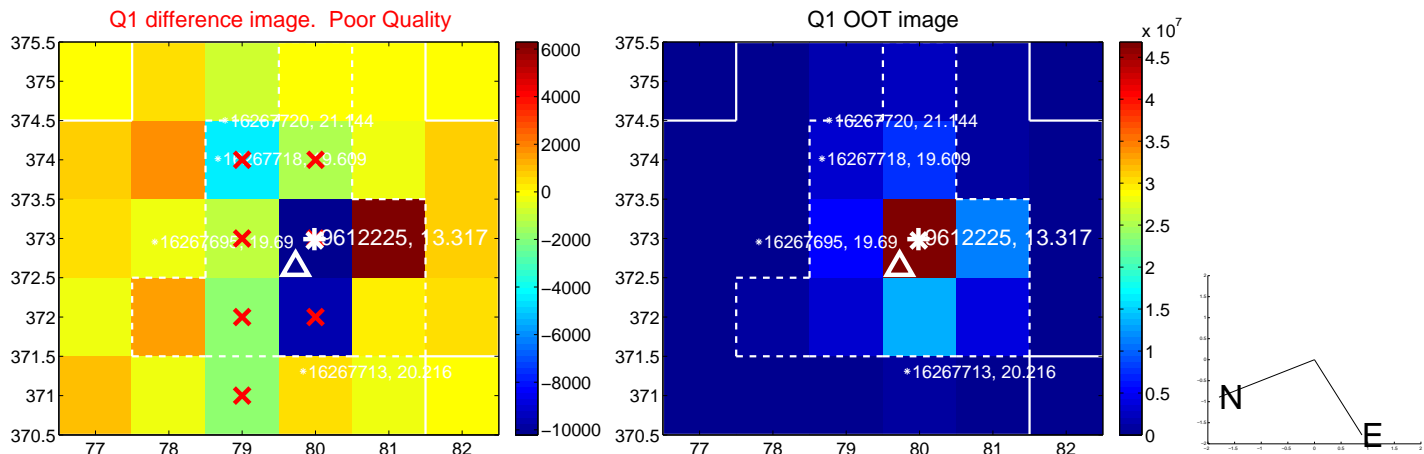
The direct PRF centroid is offset from the target star catalog position by about 0.06 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.204 \pm 1.135$	0.18	$0.074 \pm 0.588$	$-0.190 \pm 1.298$
PRF-fit source offset from KIC position	$0.223 \pm 1.423$	0.16	$-0.018 \pm 0.529$	$-0.222 \pm 1.416$
photometric centroid source offset	$0.20 \pm 0.56$	0.35	$-0.20 \pm 0.56$	$0.00 \pm 0.50$

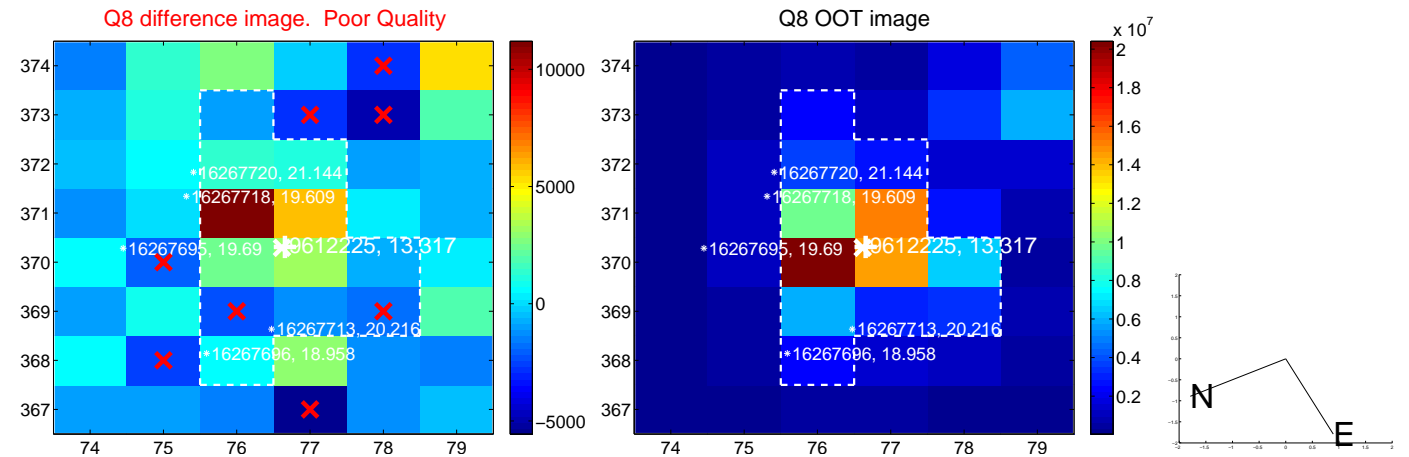
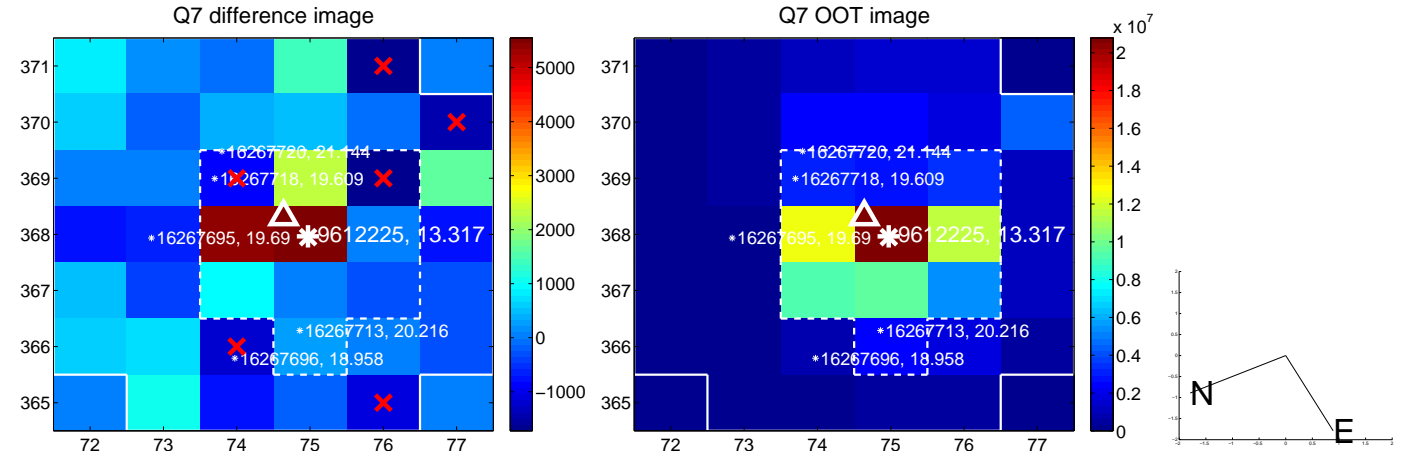
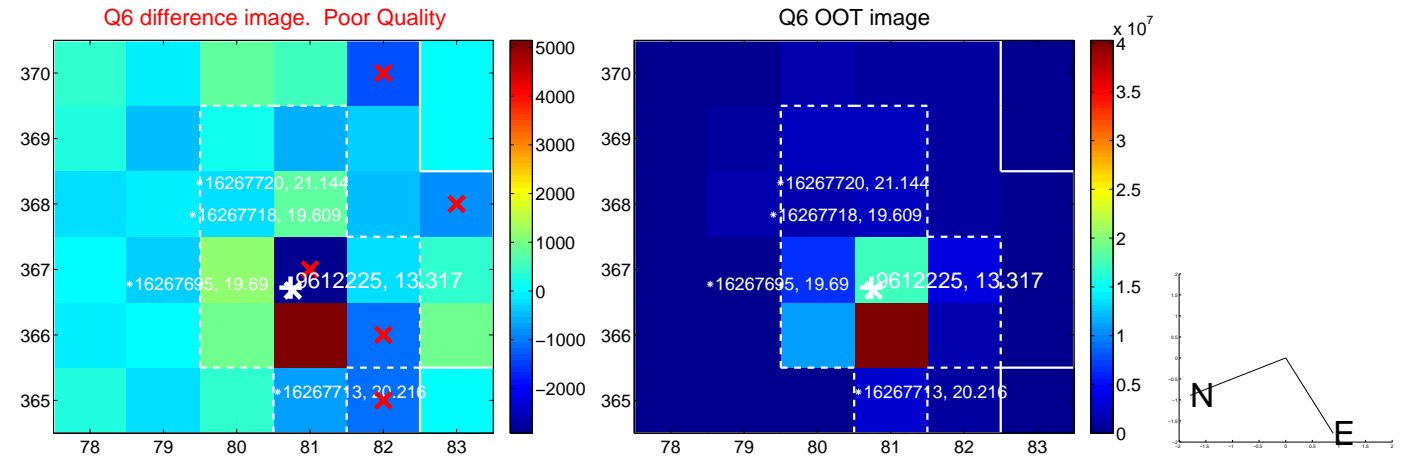
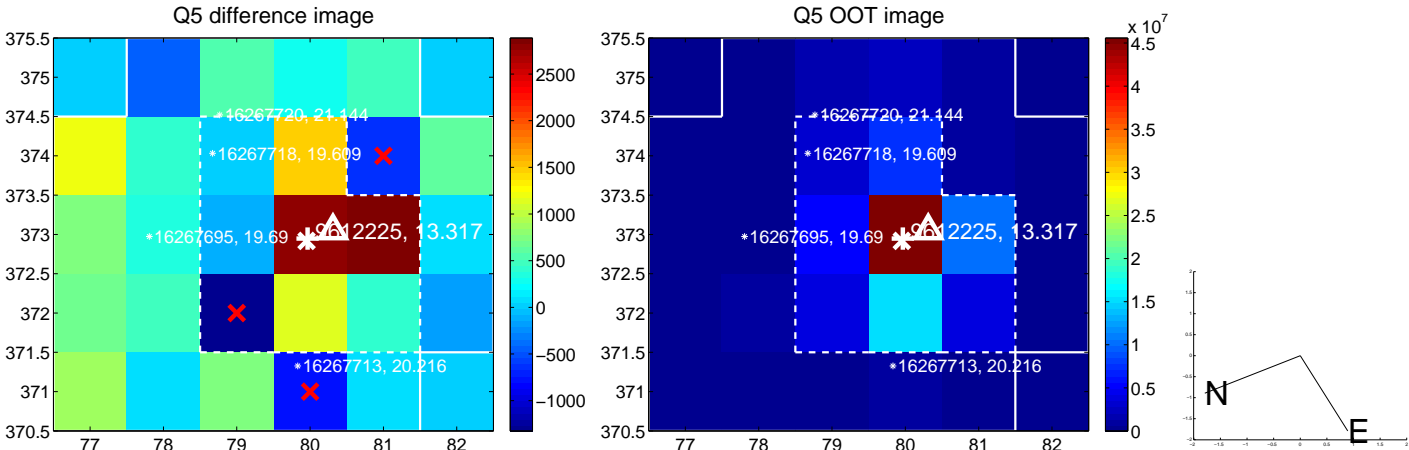


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

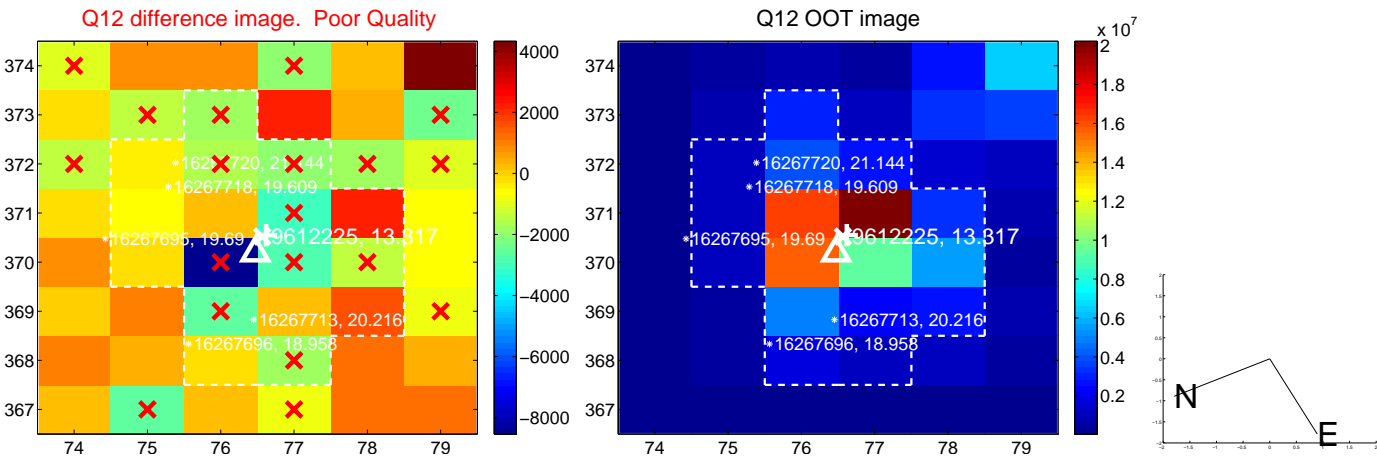
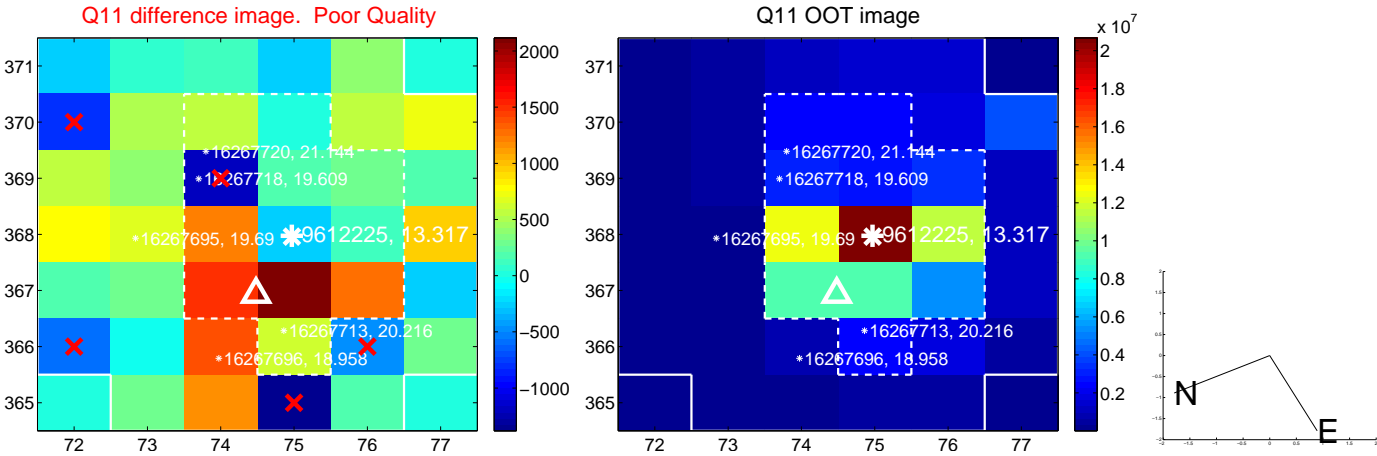
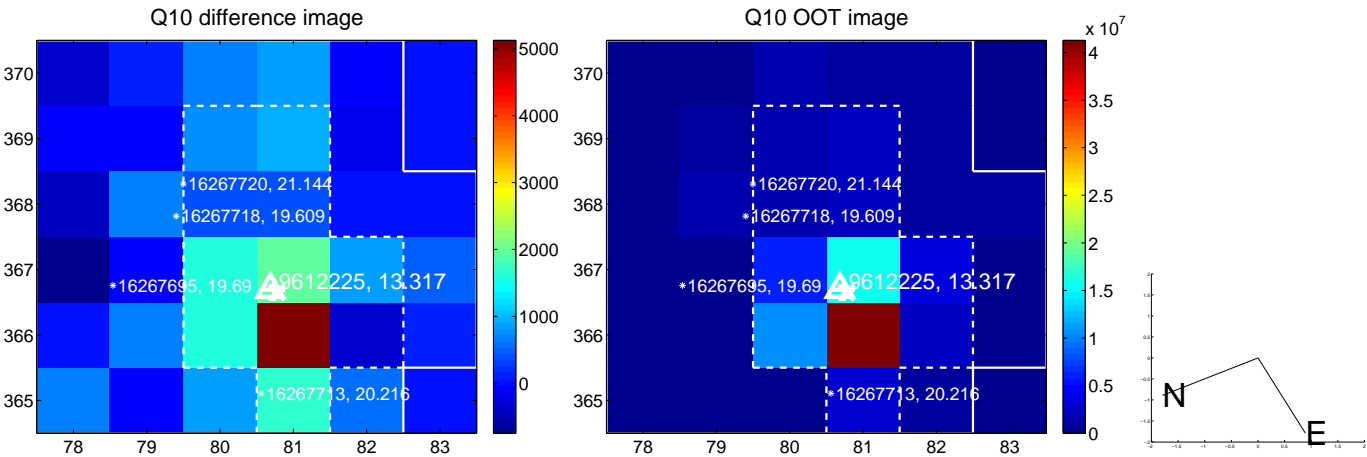
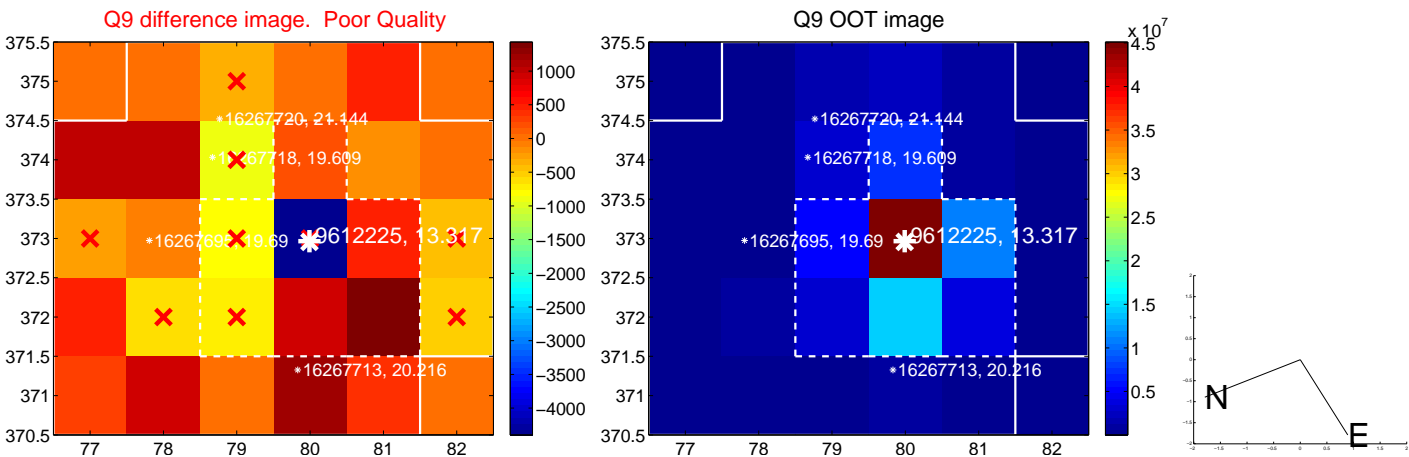
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



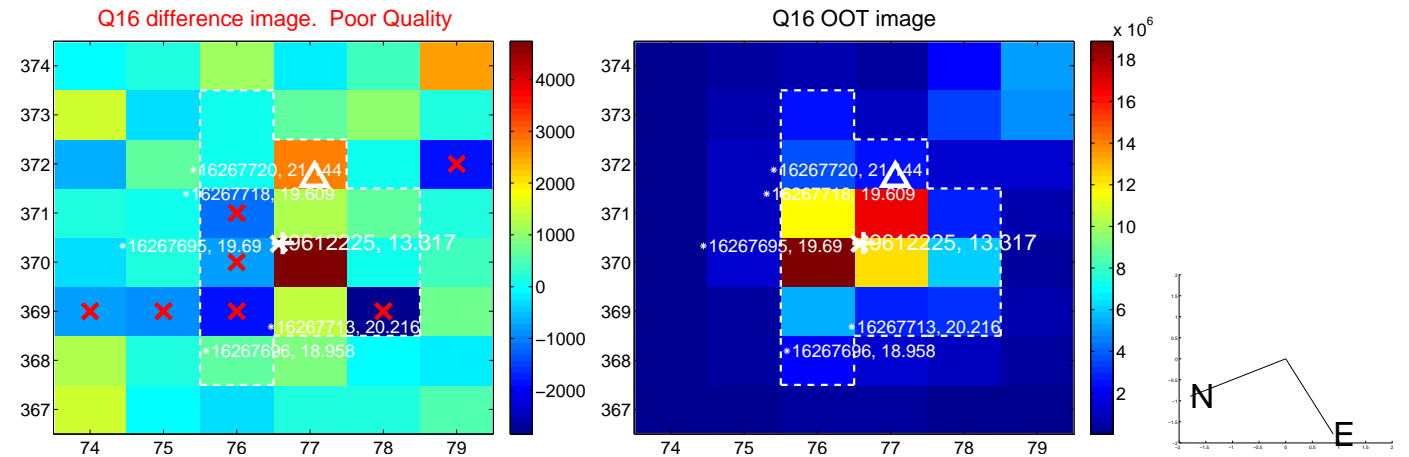
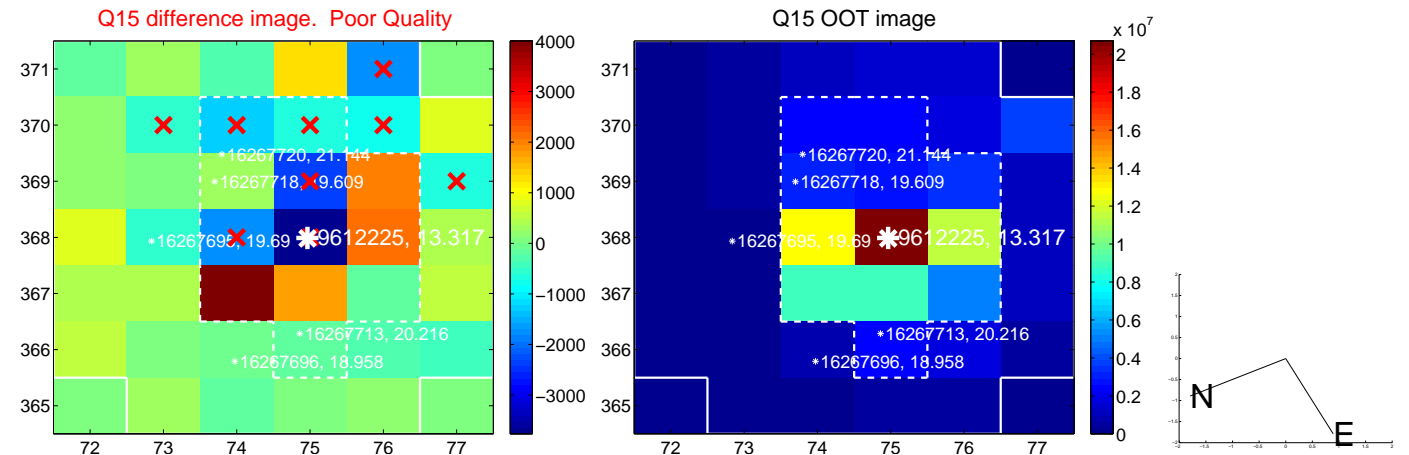
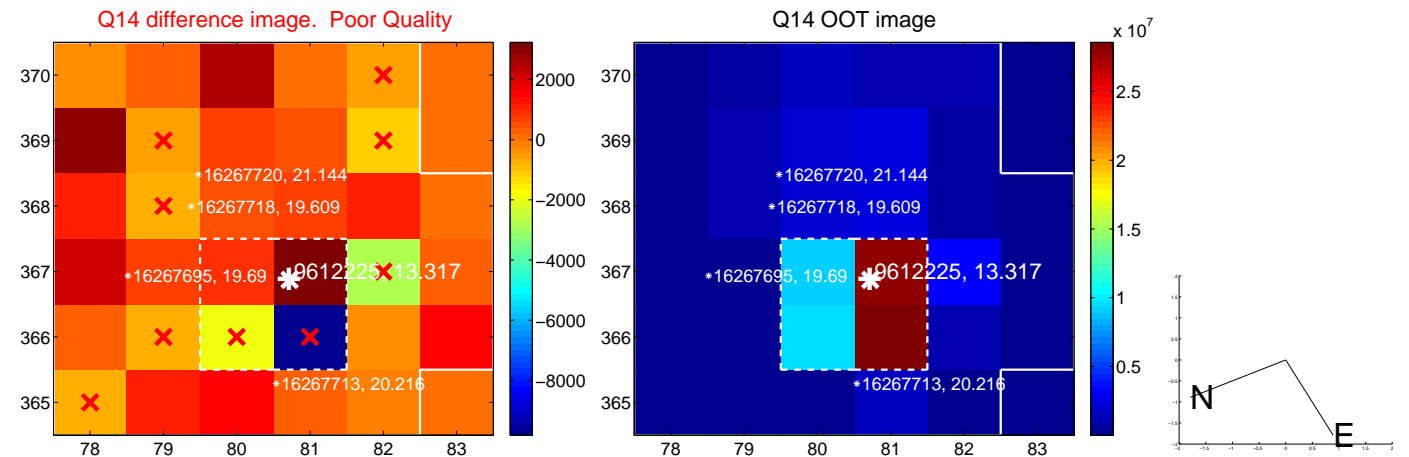
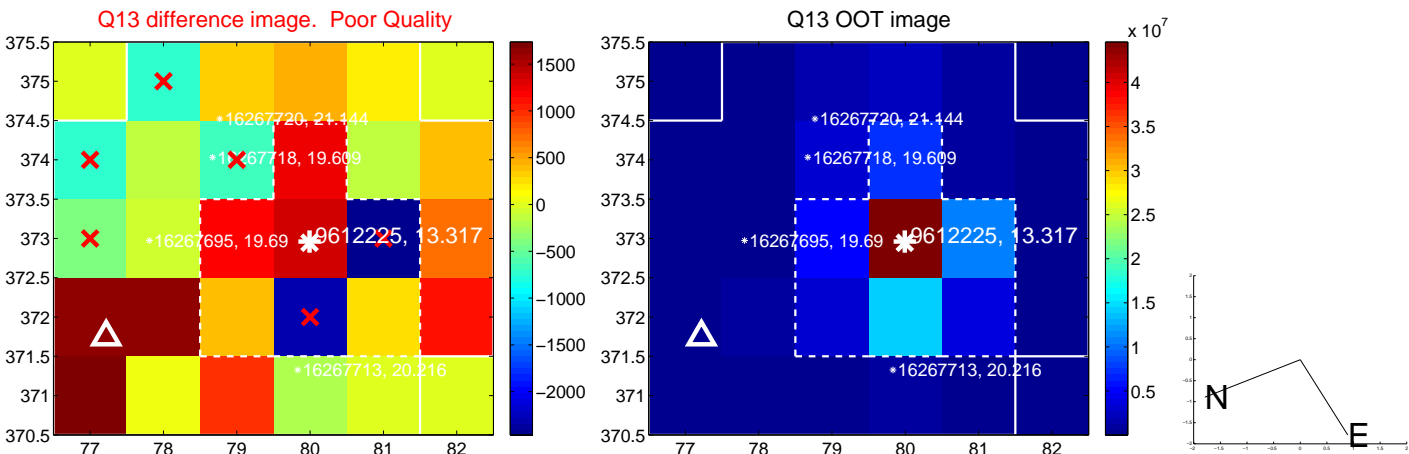
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



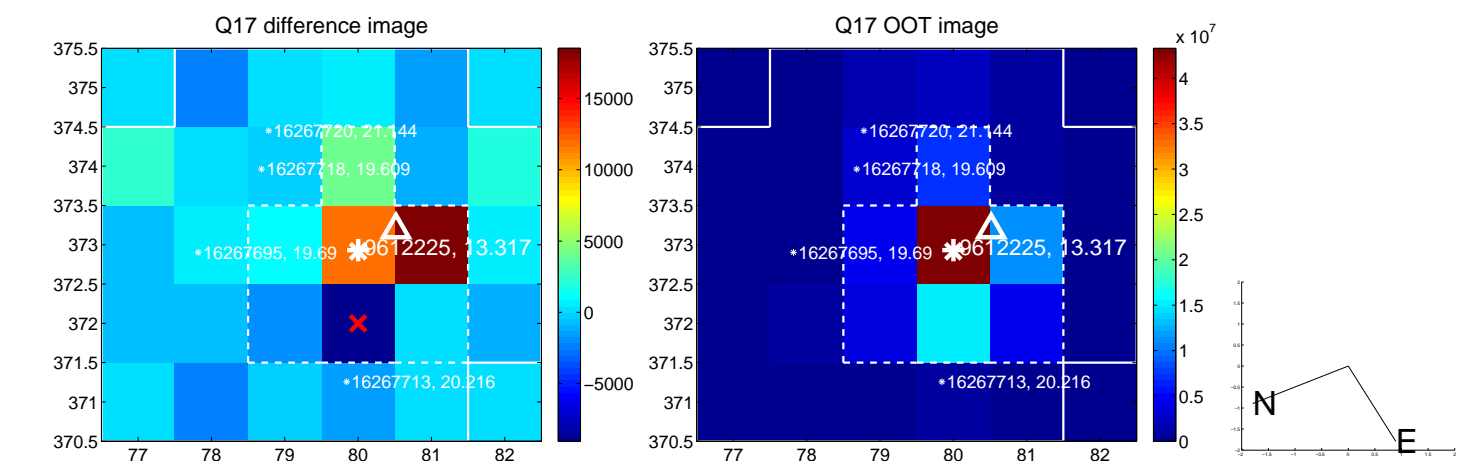
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



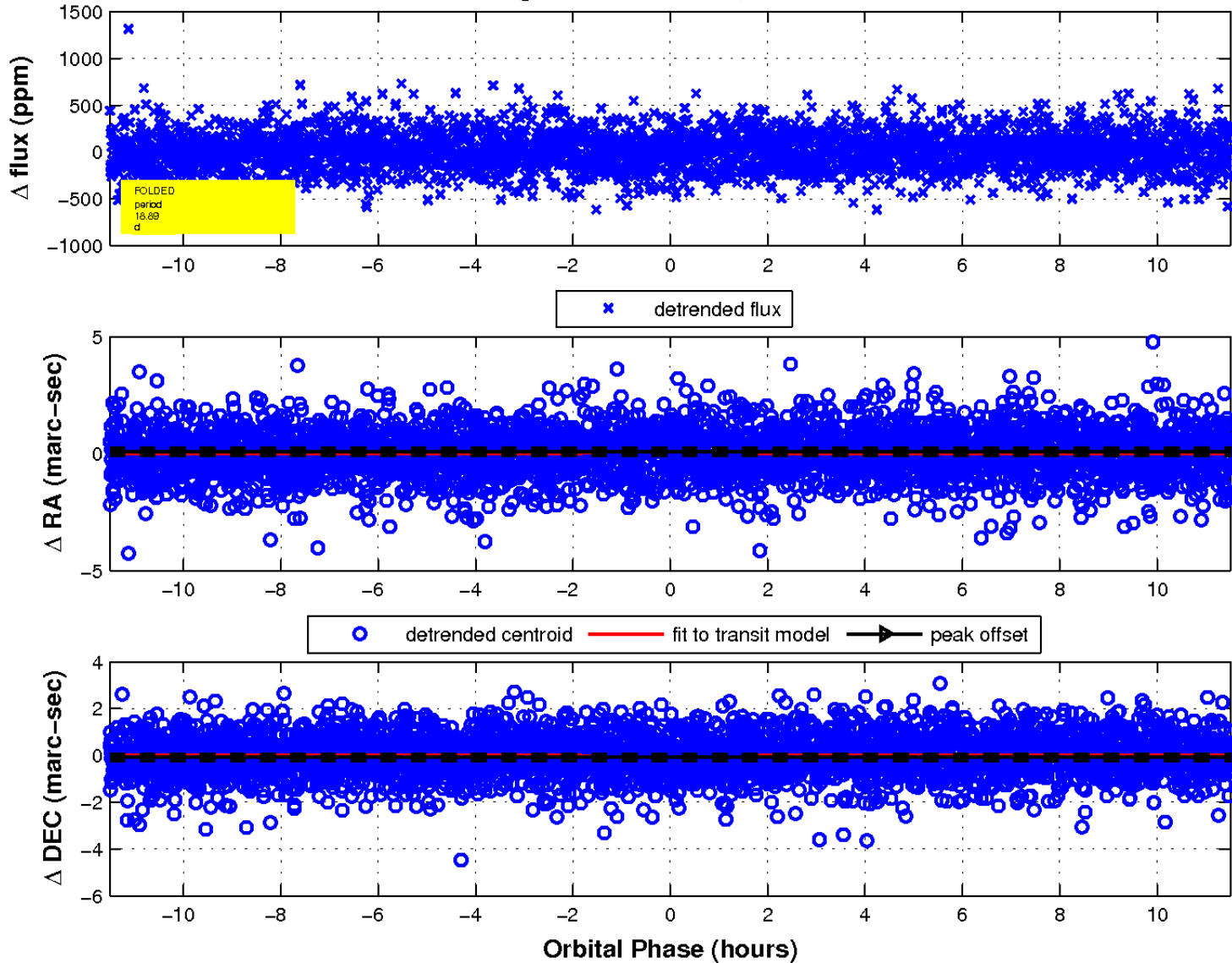
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

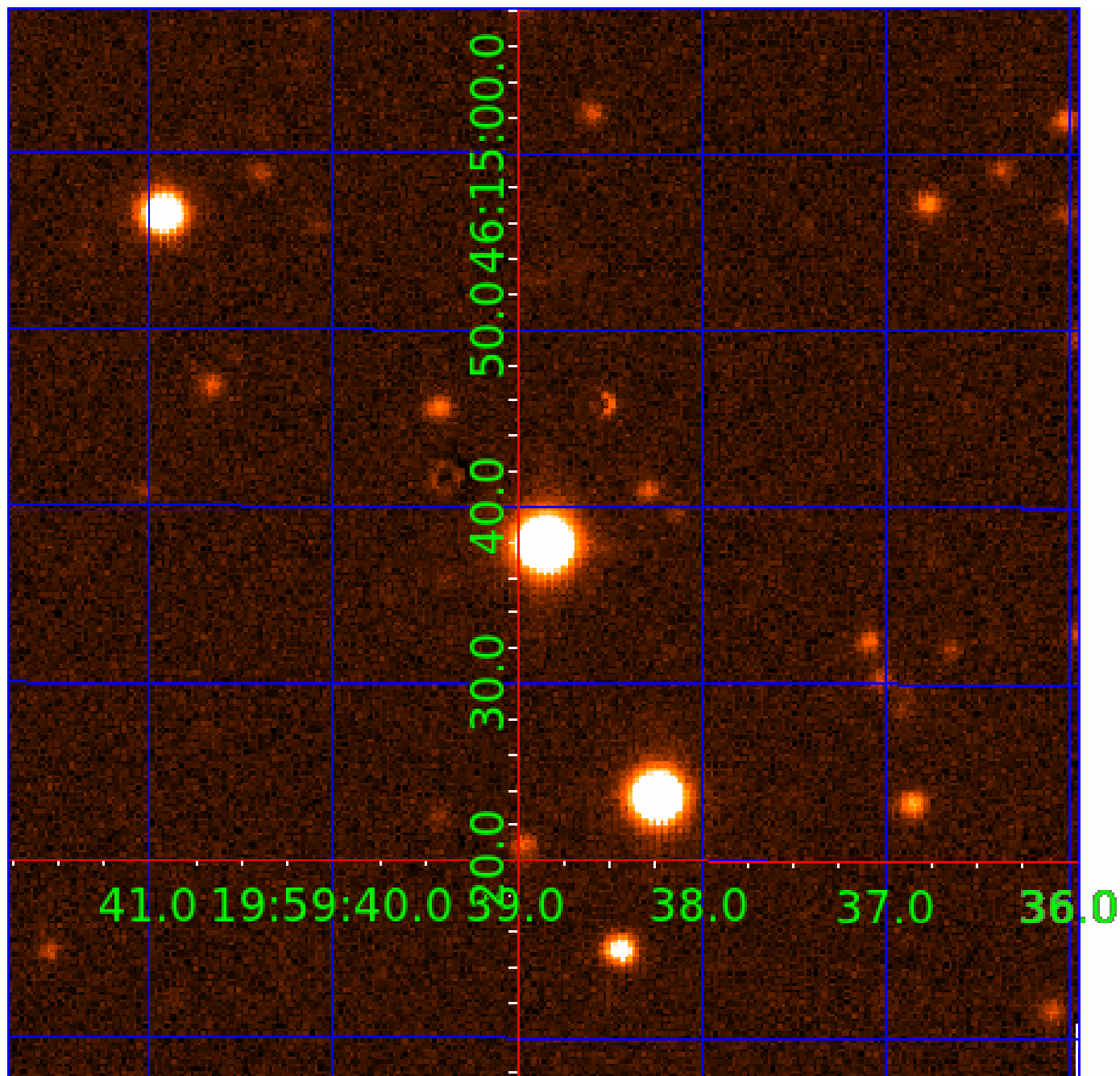


fluxWeightedCentroids, Planet 5 of 7



UKIRT Image

Declination





# KIC 009612225

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
009612225-01	OBS	No	1.569074	132.357241	5.4	11.763	8.4	2.9	4.21	6068	0.99	20635.40
009612225-02	OBS	No	15.389879	132.709323	325.0	1.505	18.4	16.1	4.21	6068	7.73	982.86
009612225-03	OBS	No	17.227206	146.565078	439.3	1.252	17.4	17.2	4.21	6068	9.83	845.64
009612225-04	OBS	No	10.538483	138.586428	319.7	1.531	17.5	18.0	4.21	6068	8.92	1628.42
009612225-05	OBS	No	18.886120	148.709844	263.3	3.838	15.7	15.8	4.21	6068	7.83	748.08
009612225-06	OBS	No	14.068152	136.604942	133.8	3.316	11.2	9.3	4.21	6068	5.74	1107.87
009612225-07	OBS	No	8.400052	134.207869	867.8	1.500	14.3	-1.0	4.21	6068	12.43	2203.41

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009612225-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV
009612225-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_MEAS—HALO_GHOST
009612225-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
009612225-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_MEAS
009612225-05	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—HALO_GHOST
009612225-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT
009612225-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—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.

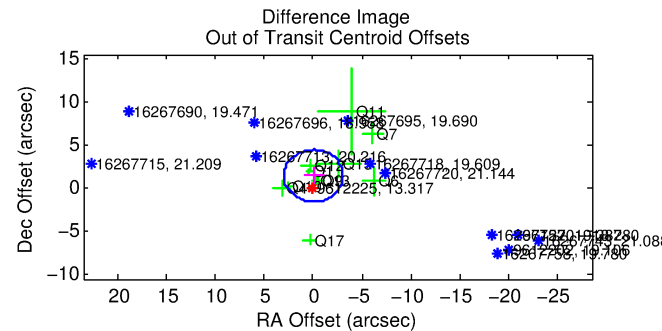
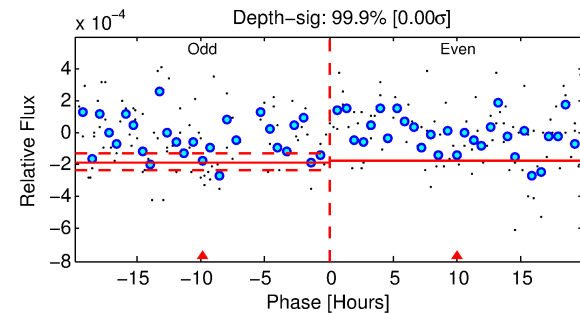
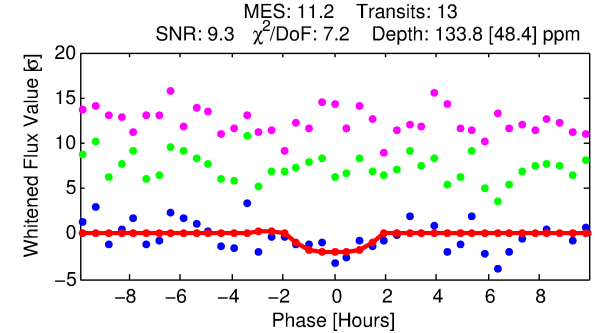
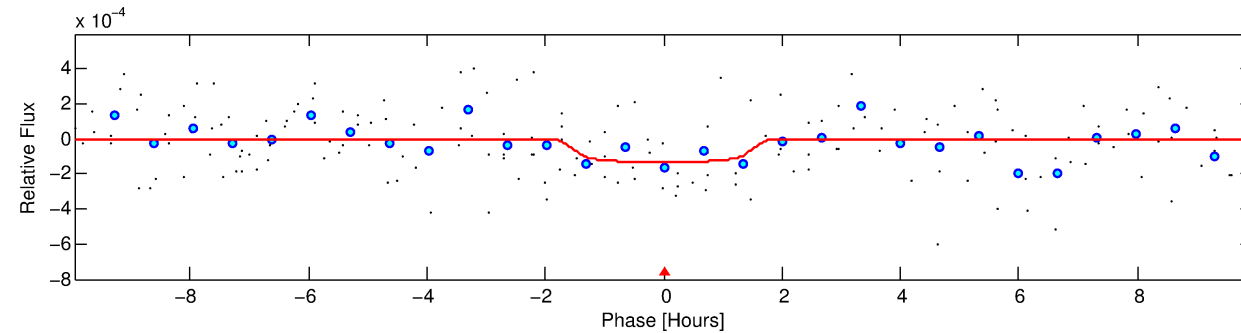
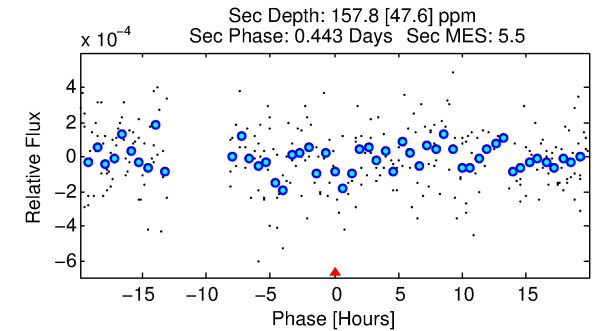
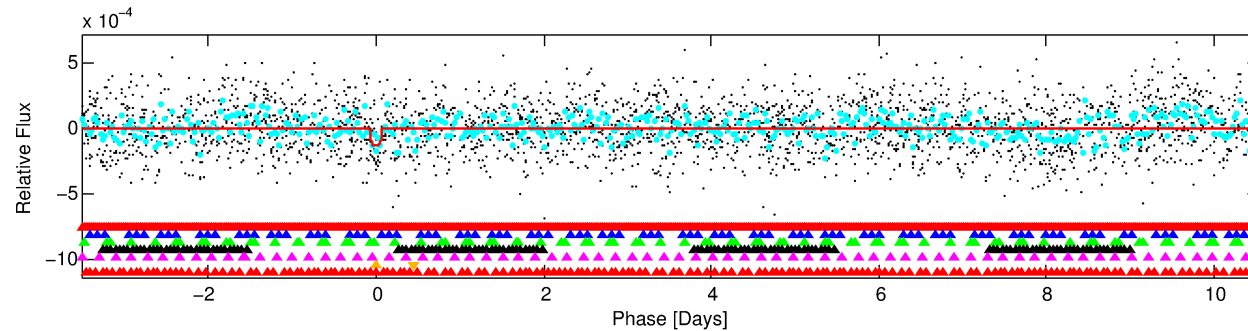
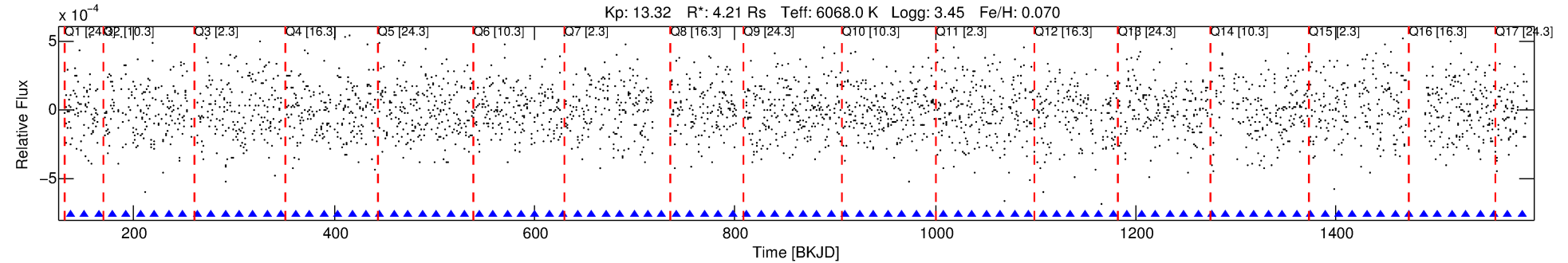
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 009612225-06

No Significant Match Found

# DV One-Page Summary

KIC: 9612225 Candidate: 6 of 7 Period: 14.068 d



## DV Fit Results:

Period = 14.06815 [0.00053] d  
Epoch = 136.6049 [0.0271] BKJD  
Rp/R\* = 0.0125 [0.0346]  
a/R\* = 15.08 [216.11]  
b = 0.90 [3.12]  
Seff = 1107.87 [778.47]  
Teq = 1471 [258] K  
Rp = 5.74 [16.12] Re  
a = 0.1395 [0.0591] AU  
Ag = 51.26 [287.07] [0.18σ]  
Teffp = 6086 [8459] K [0.55σ]

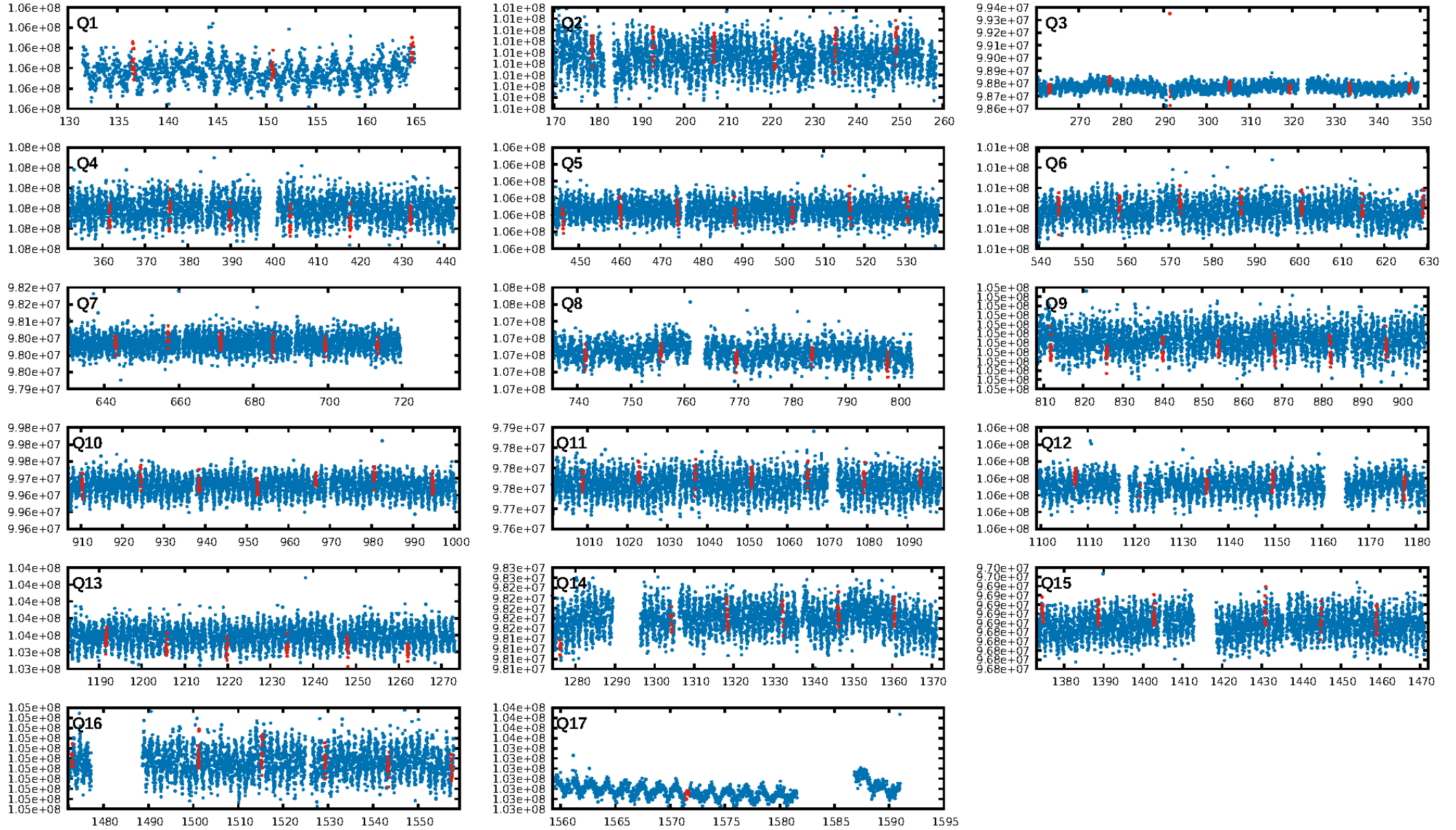
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [23.19σ]  
LongPeriod-sig: 100.0% [8.71σ]  
ModelChiSquare2-sig: 0.0%  
ModelChiSquareGof-sig: 0.4%  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [13/13]  
GhostDiagnostic-chr: 3.628  
Centroid-sig: 12.7%  
Centroid-so: 0.949 arcsec [0.95σ]  
OotOffset-rm: 1.438 arcsec [1.43σ]  
KicOffset-rm: 1.408 arcsec [1.29σ]  
OotOffset-st: 2/3/2/4 [11]  
KicOffset-st: 2/3/2/4 [11]  
DiffImageQuality-fgm: 0.18 [2/11]  
DiffImageOverlap-fno: 0.41 [7/17]

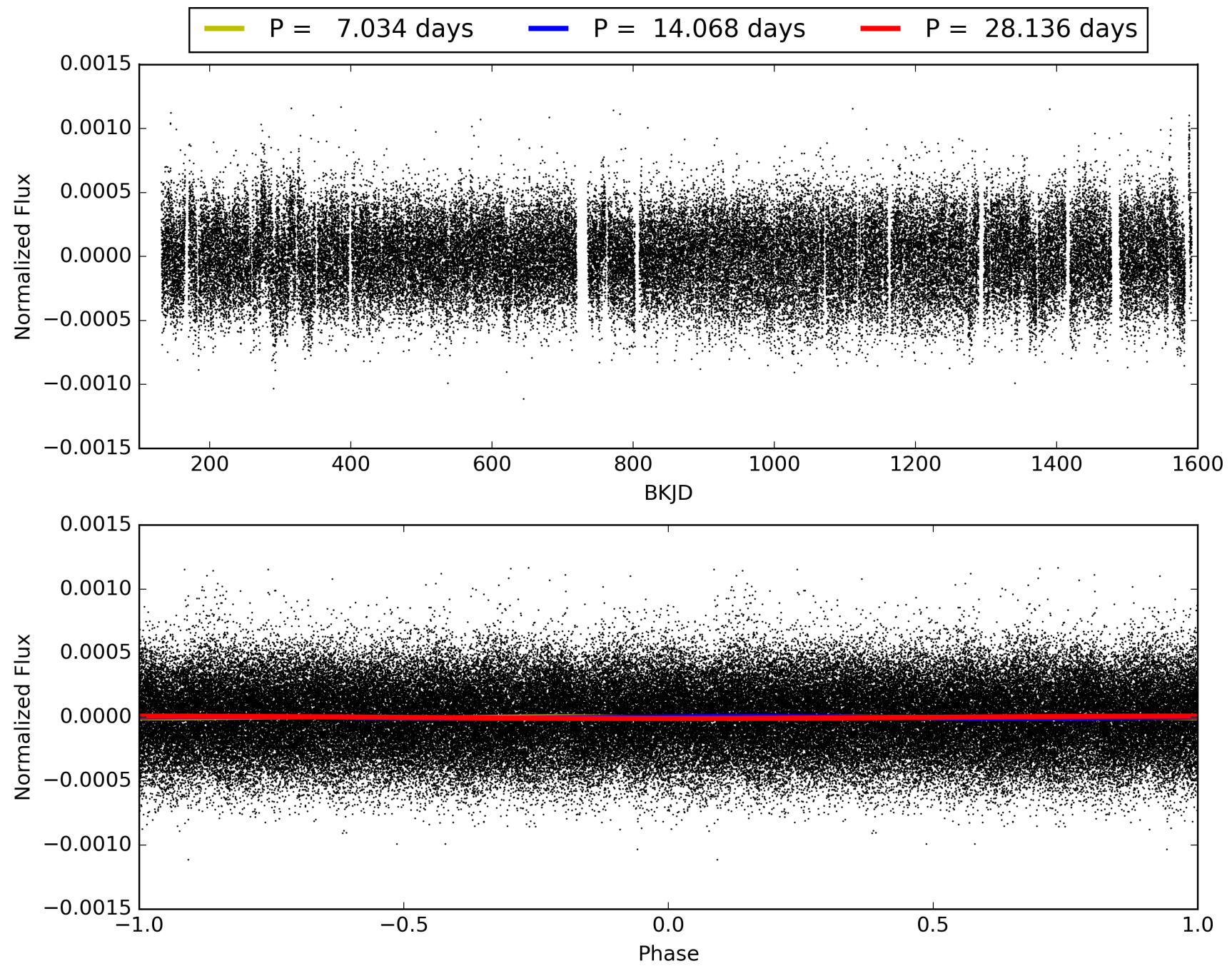
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 13:12:30 Z

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

# TCE 009612225-06, PDC Light Curves

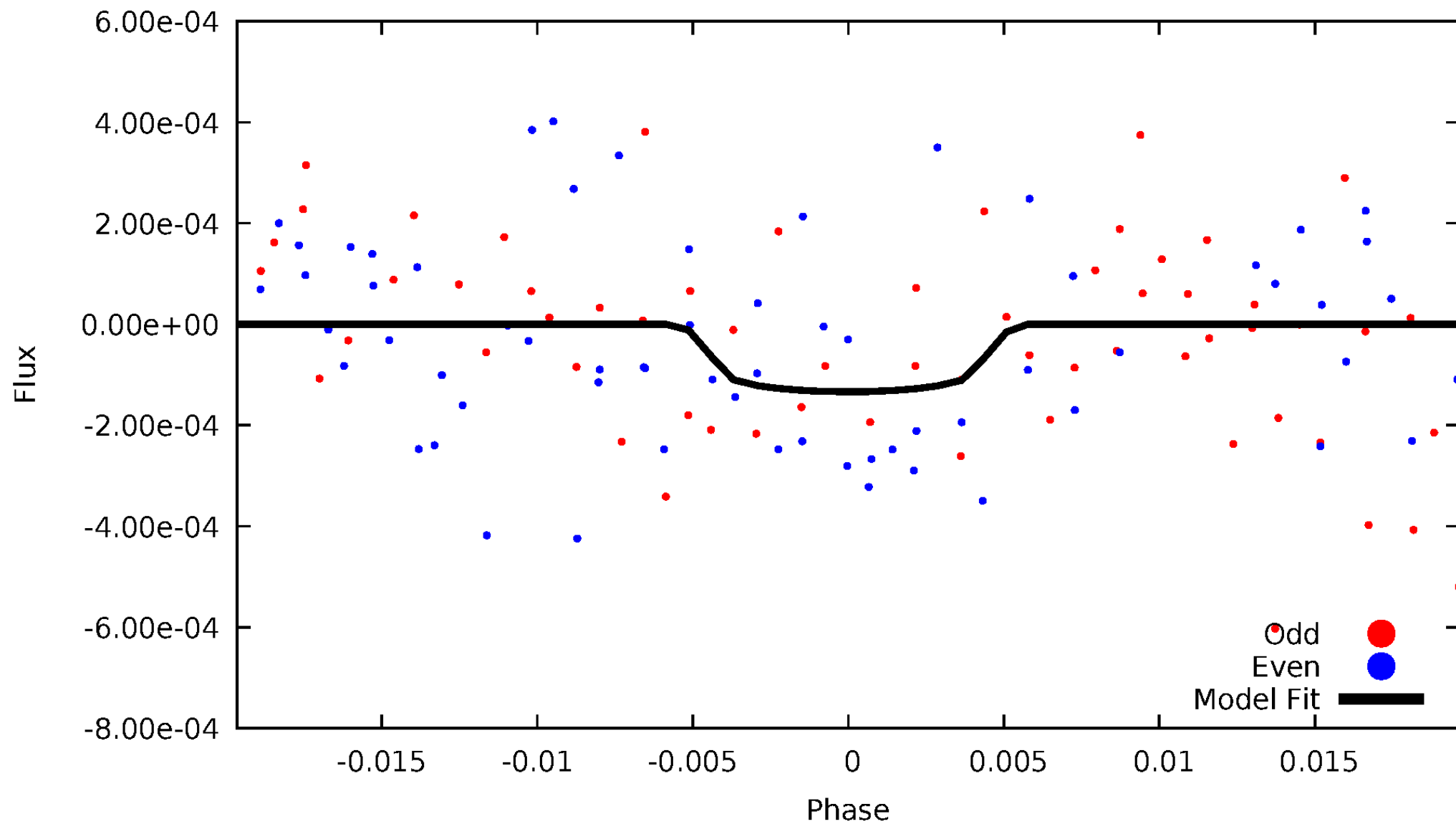


TCE 009612225-06



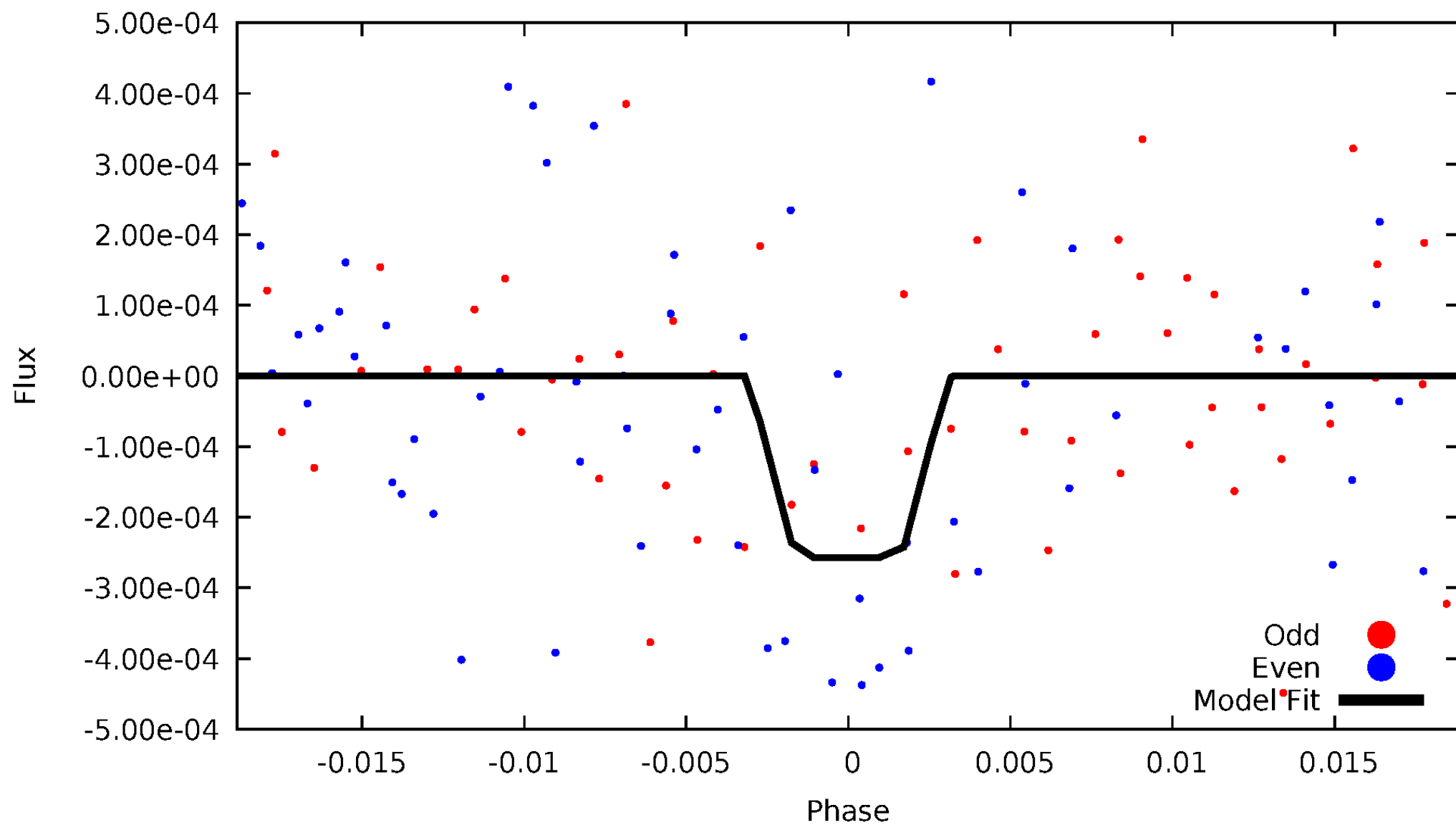
# DV Odd/Even

TCE 009612225-06



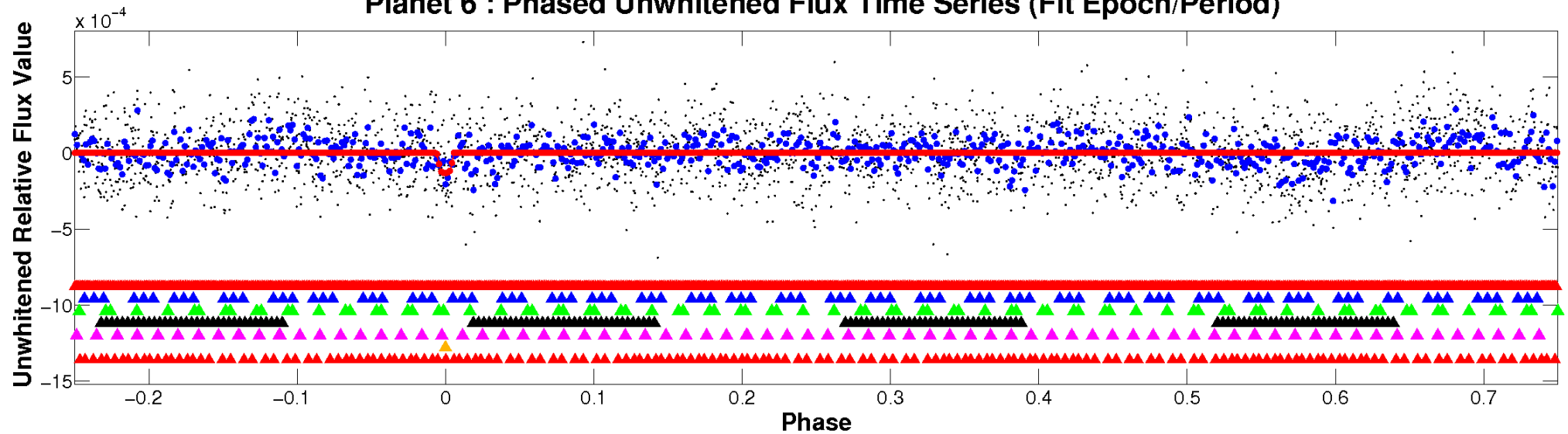
# ALT Odd/Even

TCE 009612225-06

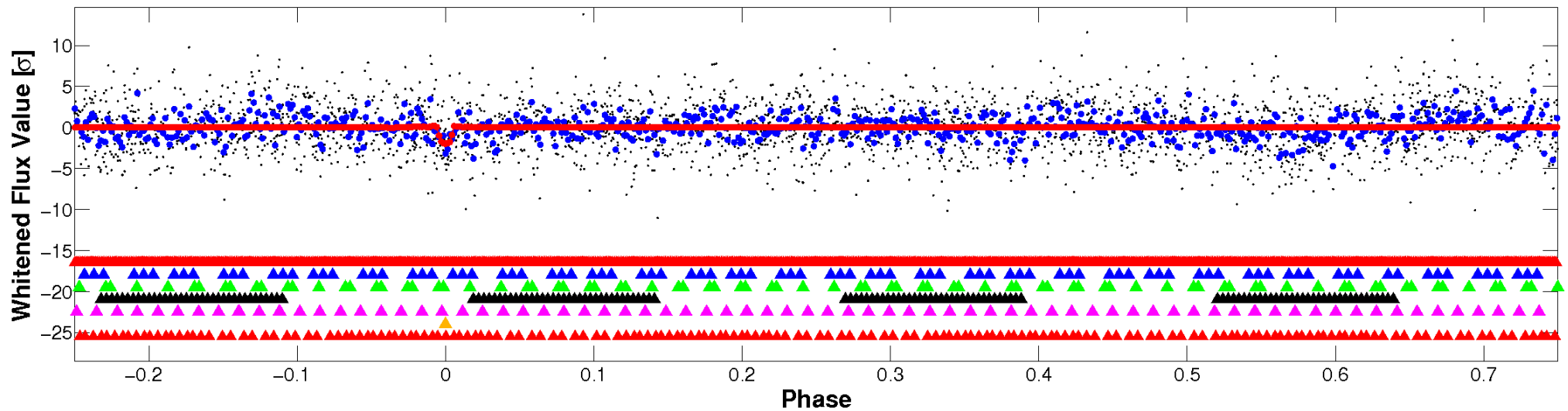


# Non-Whitened Vs. Whitened Light Curve

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



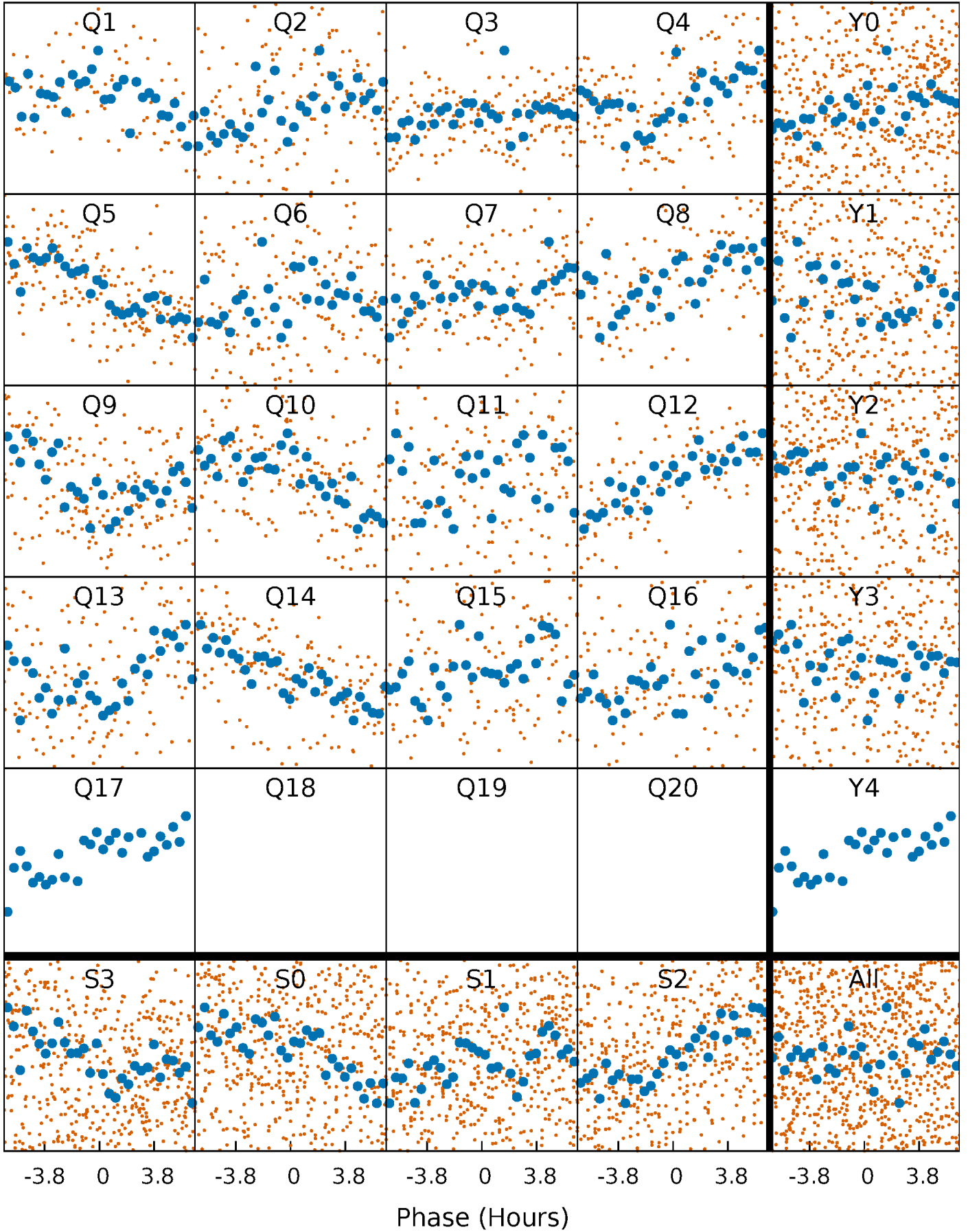
## Planet 6 : Phased Whitened Flux Time Series (Fit Epoch/Period)





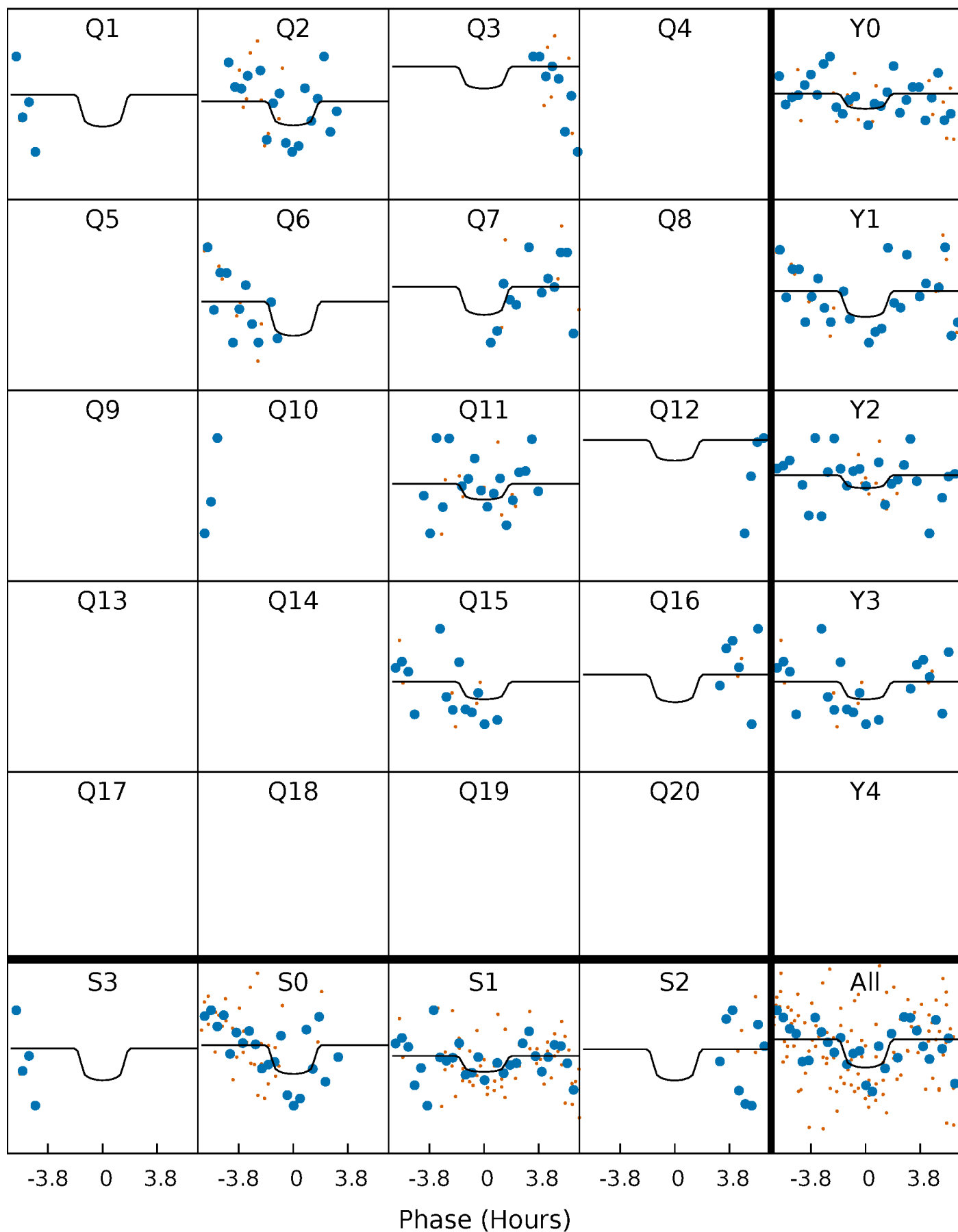
# PDC Quarter-Phased Transit Curves

TCE 009612225-06 P= 14.068152 Days  $T_0=136.604942$  (BKJD)



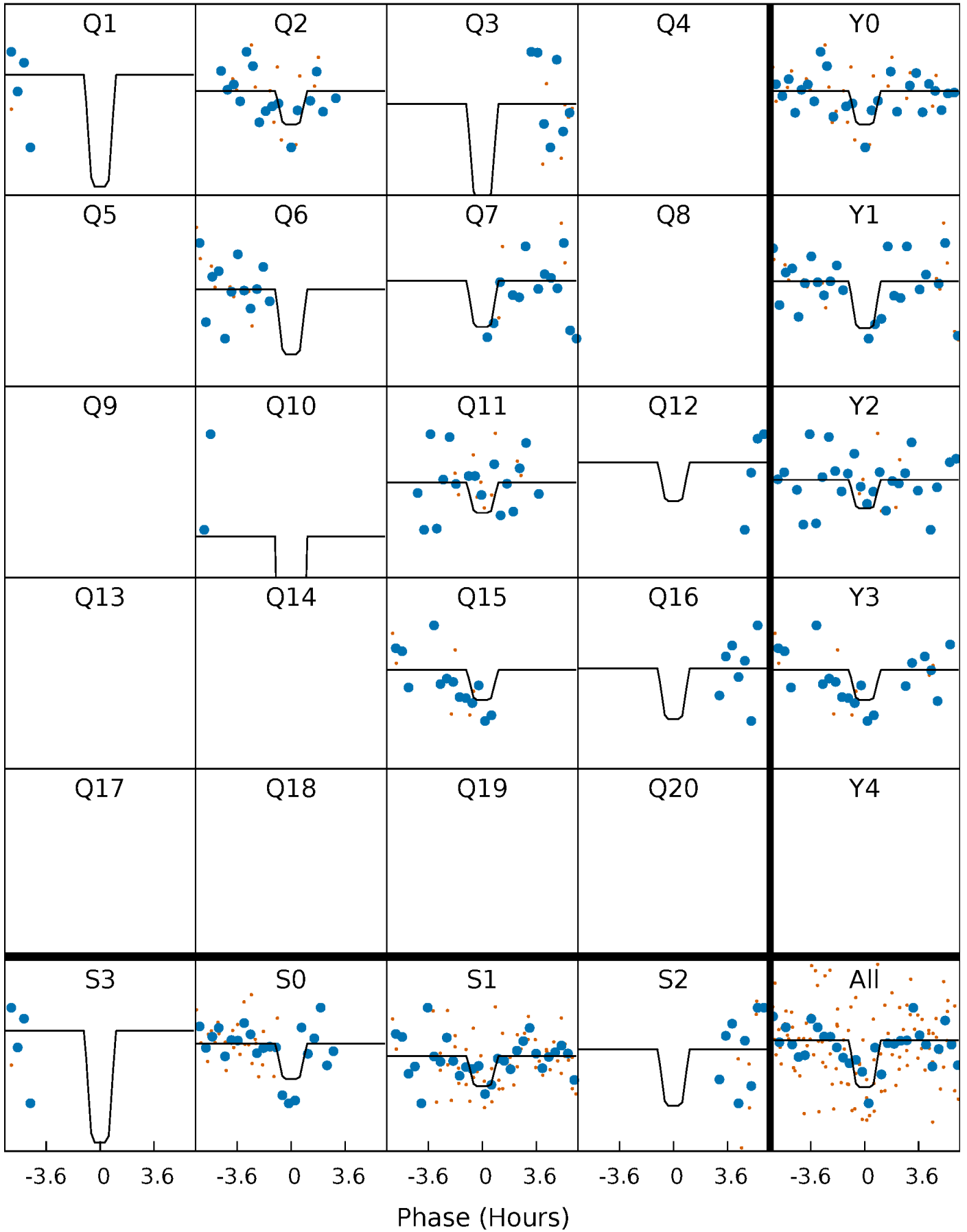
# DV Quarter-Phased Transit Curves

TCE 009612225-06 P= 14.068152 Days  $T_0=136.604942$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

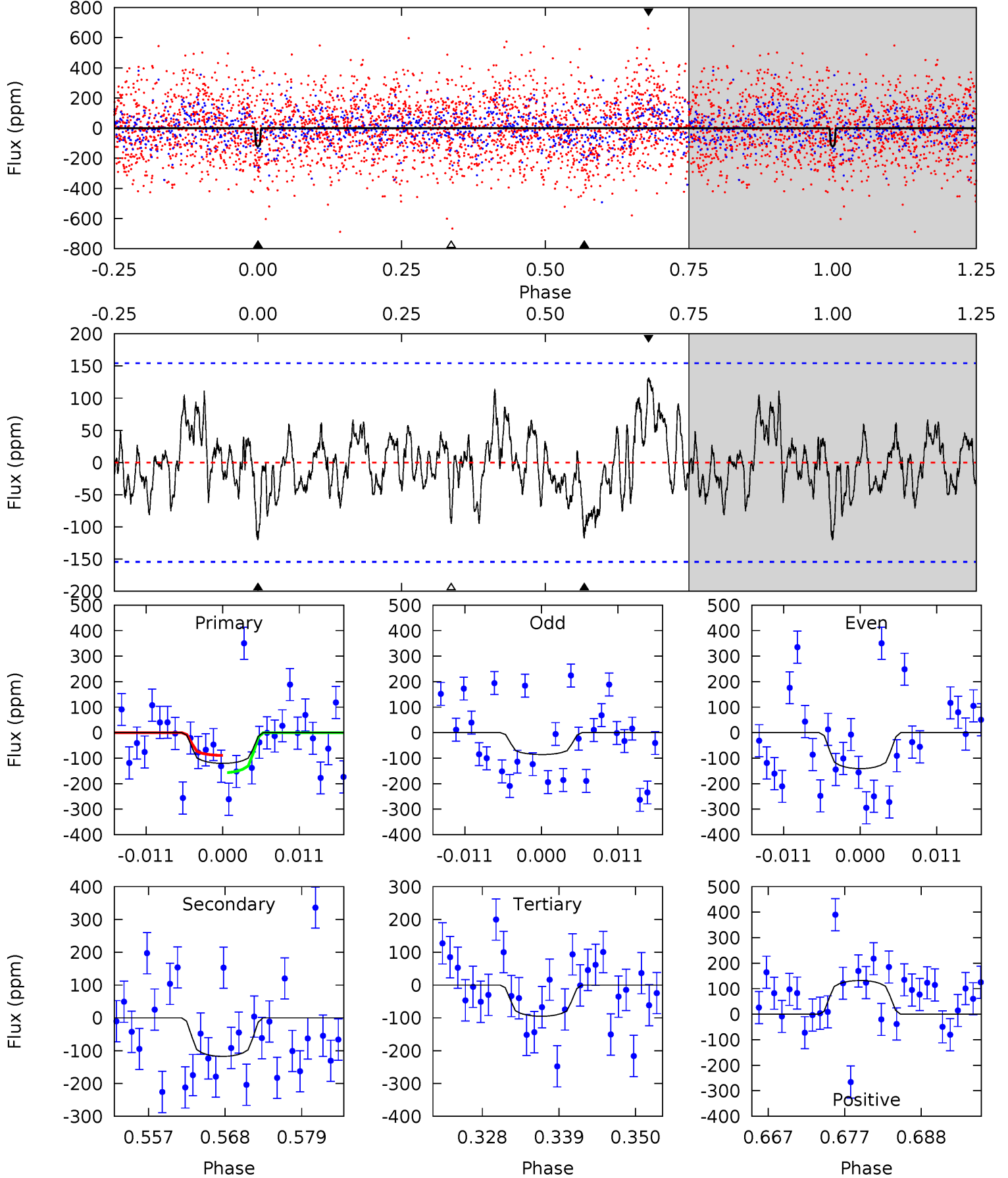
TCE 009612225-06 P= 14.068116 Days  $T_0=136.611724$  (BKJD)



# DV Model-Shift Uniqueness Test

009612225-06,  $P = 14.068152$  Days,  $E = 122.536790$  Days

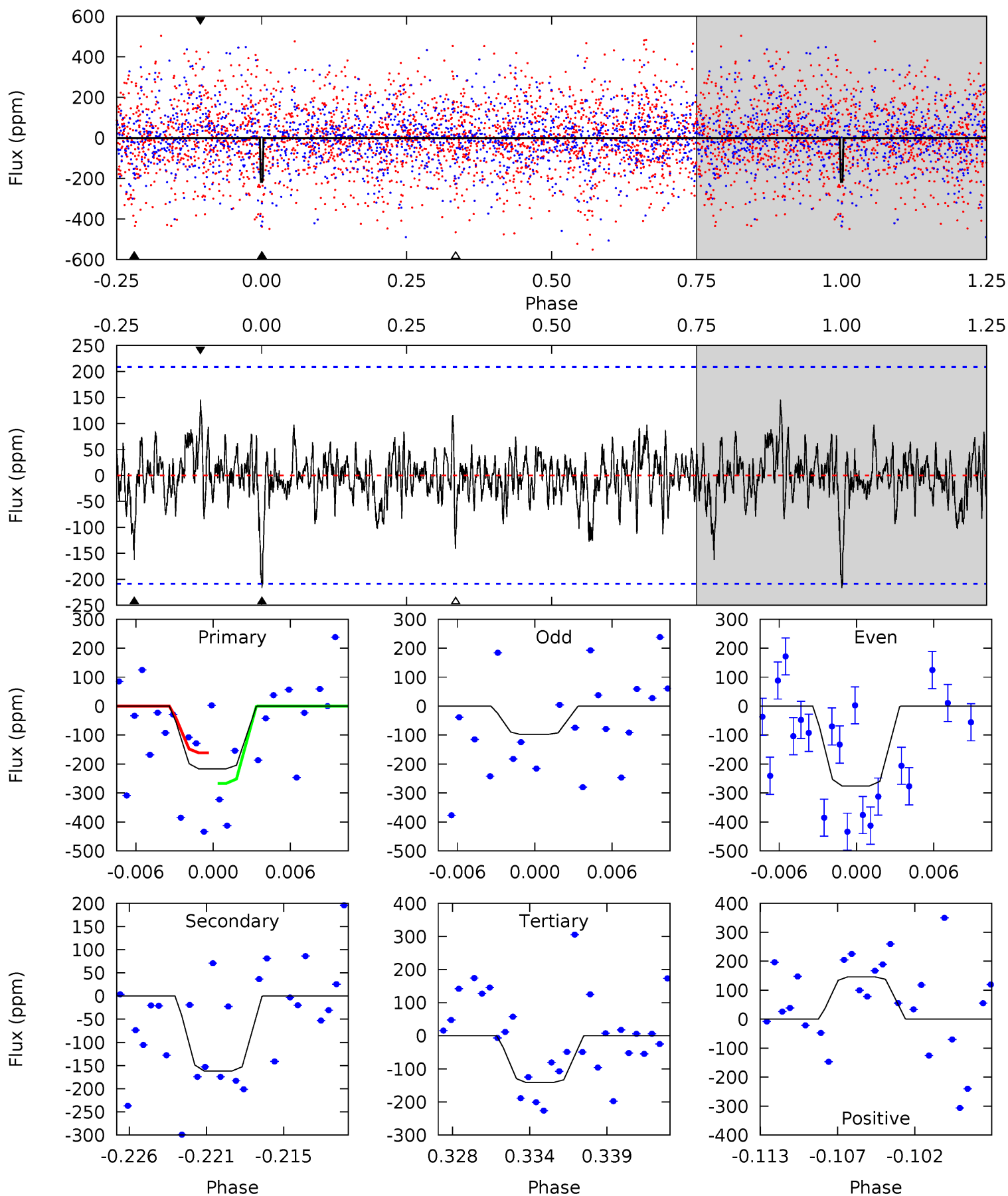
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3.91	3.82	3.09	4.29	5.01	2.55	1.42	0.82	-0.38	0.73	-0.47	0.90	0.60	0.52	1.10



# Alt Model-Shift Uniqueness Test

009612225-06, P = 14.068116 Days, E = 122.543608 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
5.32	3.99	3.47	3.59	5.13	2.77	0.97	1.85	1.73	0.51	0.39	2.09	0.75	0.40	1.30



### Stellar Parameters For KIC 009612225

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$6068^{+216}_{-195}$	$3.451^{+0.408}_{-0.102}$	$0.070^{+0.300}_{-0.300}$	$4.213^{+0.643}_{-1.801}$	$1.829^{+0.149}_{-0.446}$	$0.034^{+0.125}_{-0.011}$
	+4%/-3%	+12%/-3%	+429%/-429%	+15%/-43%	+8%/-24%	+363%/-32%
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 009612225-06 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-118 \pm 31$	$11.85^{+12.42}_{-8.08}$	$2024^{+133}_{-211}$	$3989^{+2568}_{-847}$	$8.224^{+77.915}_{-6.242}$
Alt.	$-162 \pm 41$	$11.92^{+12.78}_{-8.18}$	$2022^{+125}_{-205}$	$4260^{+3242}_{-951}$	$12^{+120}_{-9}$

$T_{\text{max}}$  = Theoretical Maximum Planetary Temperature  
 $T_{\text{obs}}$  = Observed Planetary Temperature (Assuming  $A=0.3$ )  
 $A_{\text{obs}}$  = Observed Albedo (Assuming  $T=0$ )

If a secondary eclipse is present, the system is likely an EB if  $T_{\text{obs}} \gg T_{\text{max}}$  AND  $A_{\text{obs}} \gg 1.0$

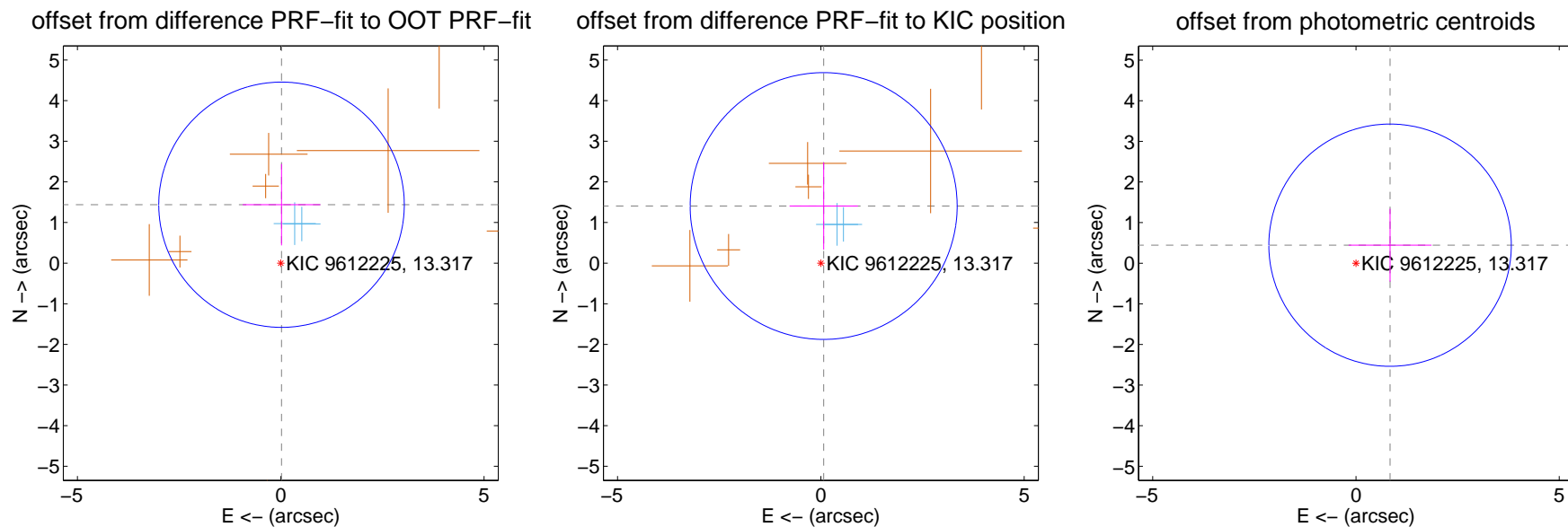
## DV Centroid Data

Supplemental centroid analysis for 009612225-06. Kepler magnitude: 13.32. Transit SNR 9.25

There are 2 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.06 arcsec

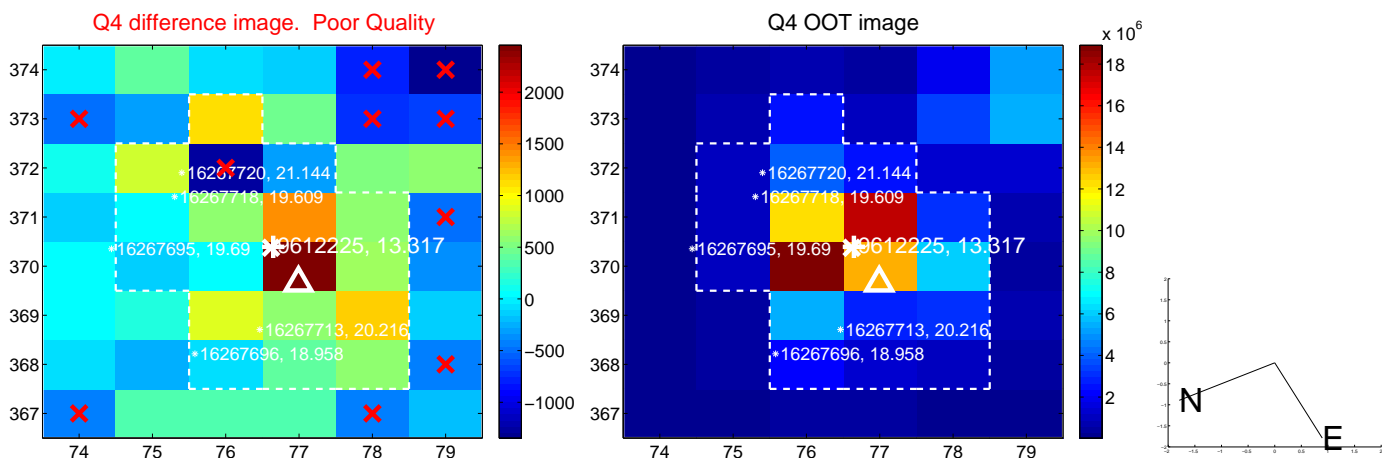
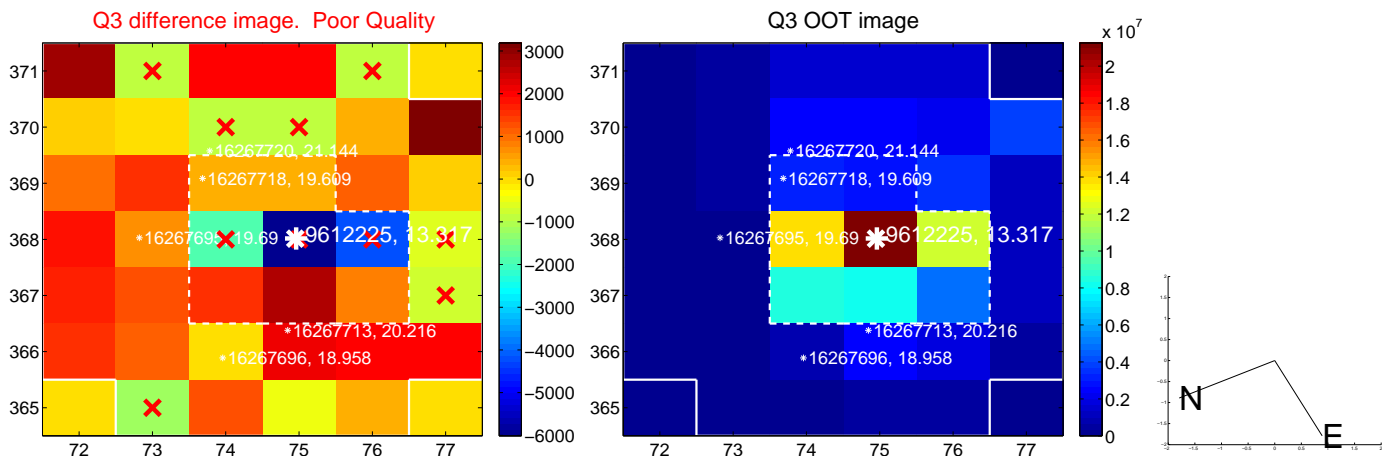
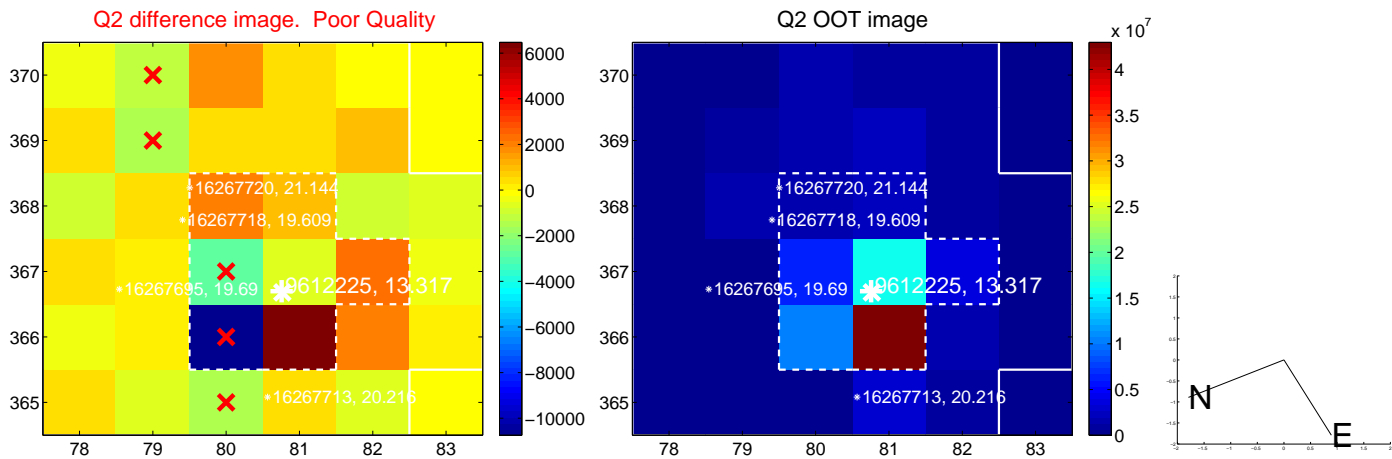
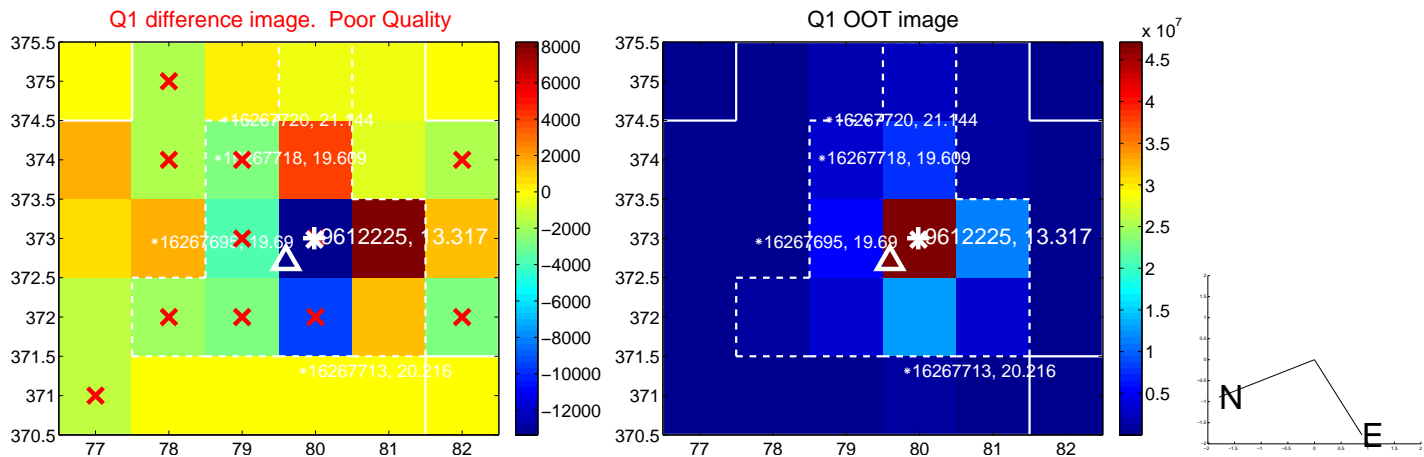
	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.438 \pm 1.006$	1.43	$-0.019 \pm 0.953$	$1.438 \pm 1.000$
PRF-fit source offset from KIC position	$1.408 \pm 1.094$	1.29	$-0.069 \pm 0.840$	$1.406 \pm 1.074$
photometric centroid source offset	$0.95 \pm 0.99$	0.95	$-0.84 \pm 1.02$	$0.44 \pm 0.89$



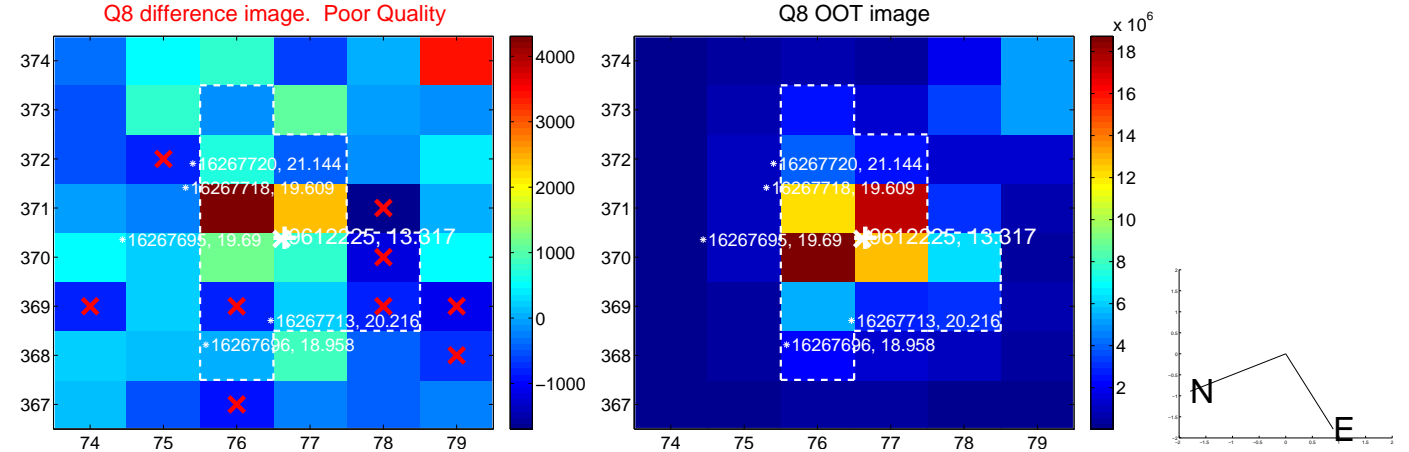
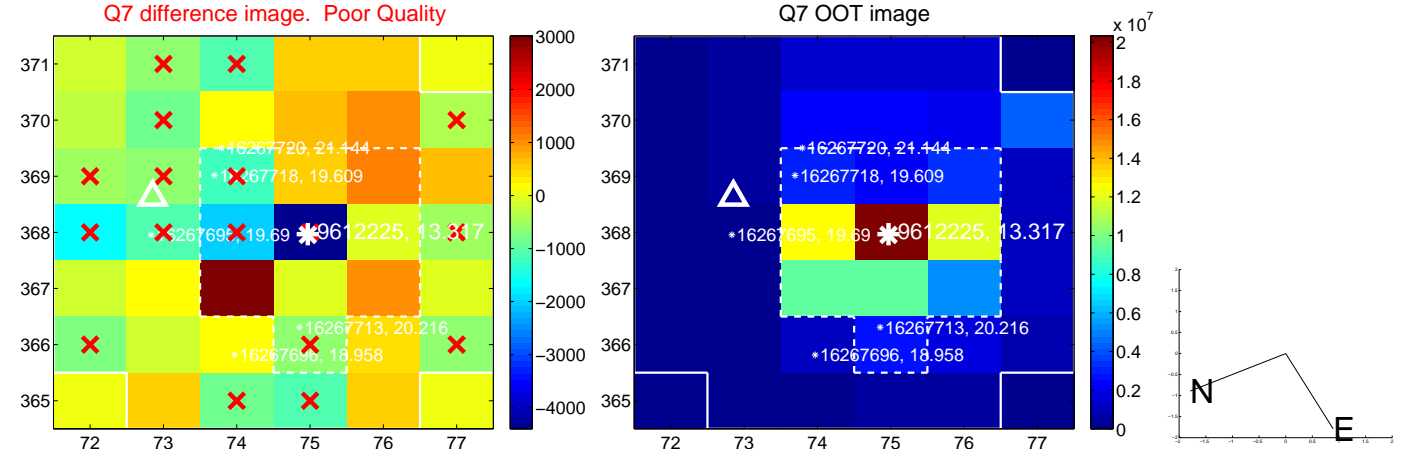
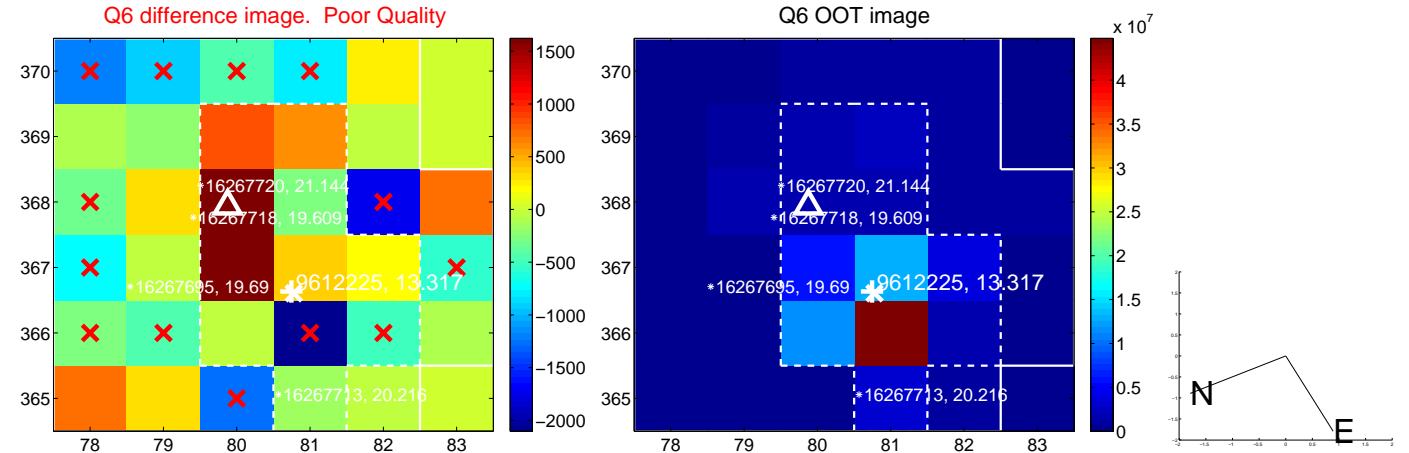
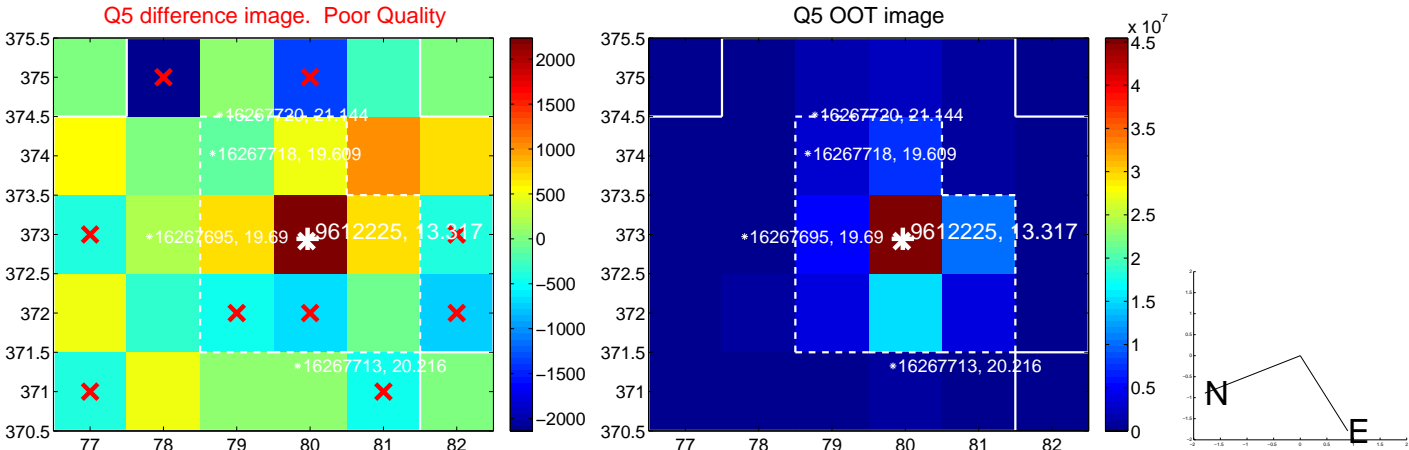
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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



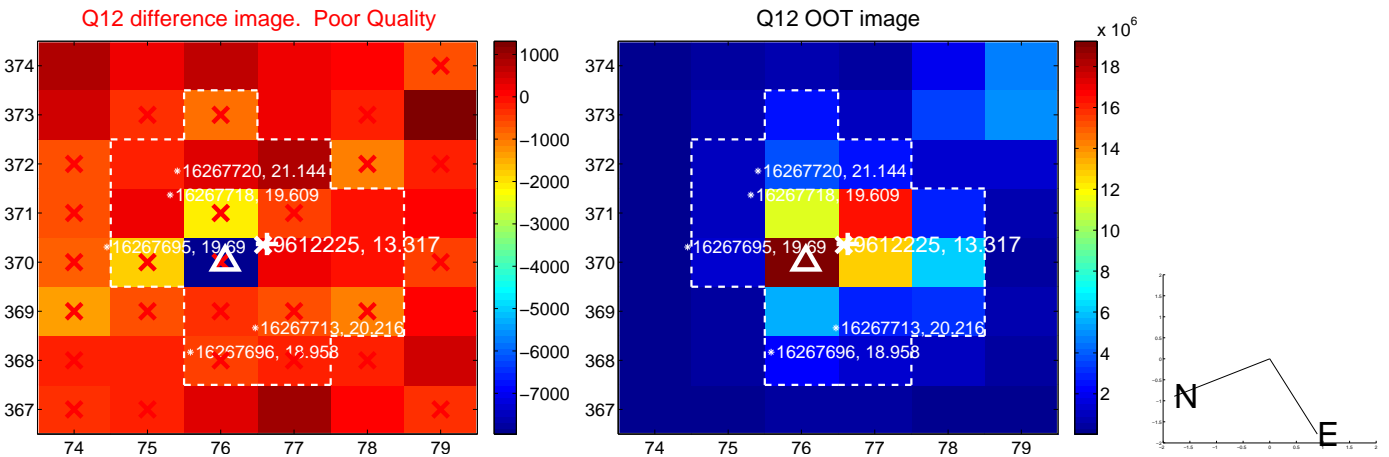
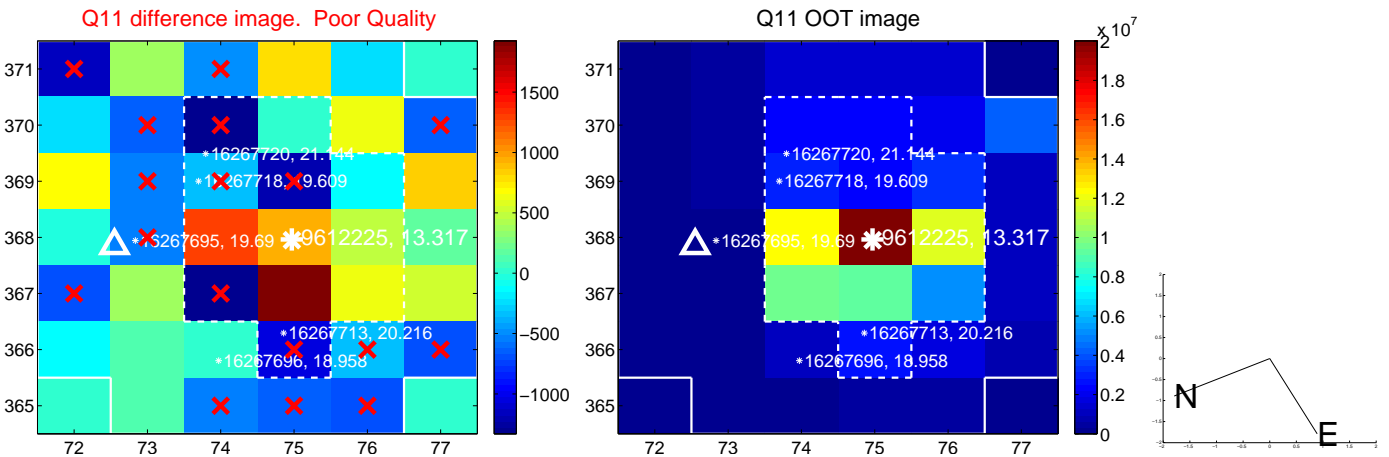
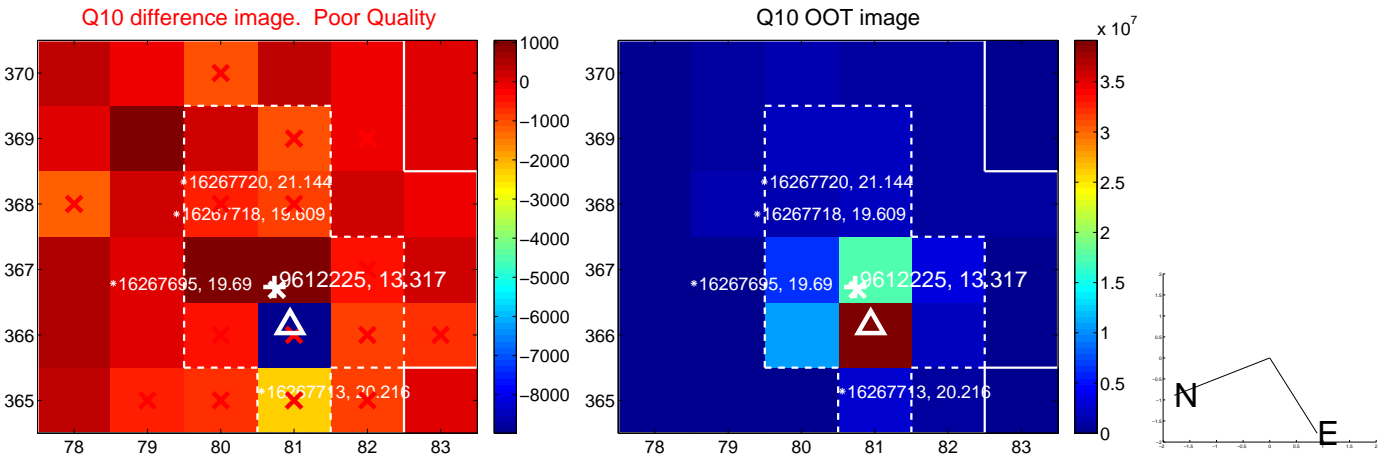
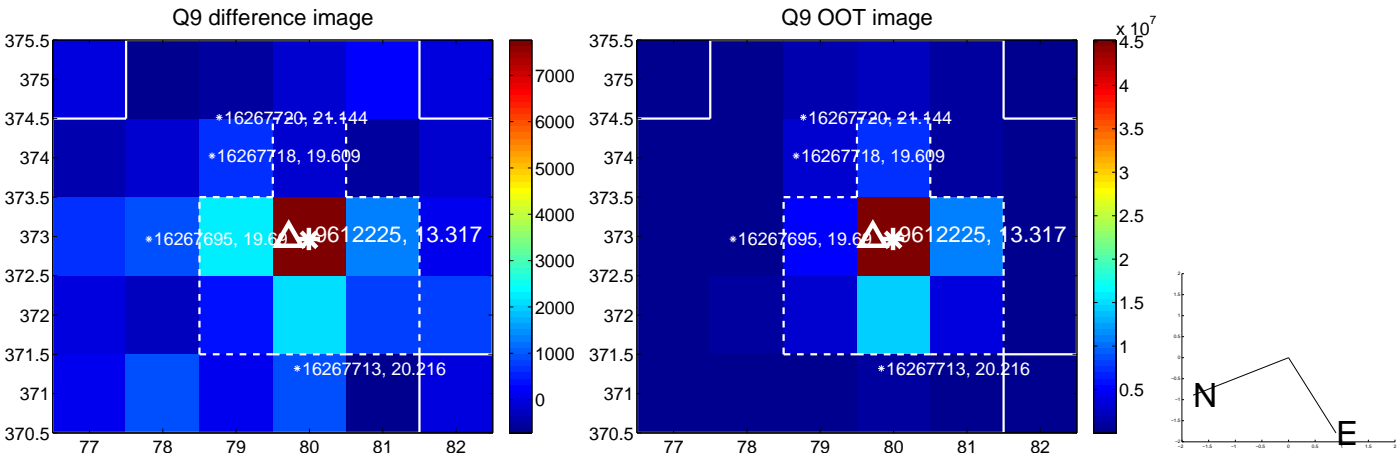
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



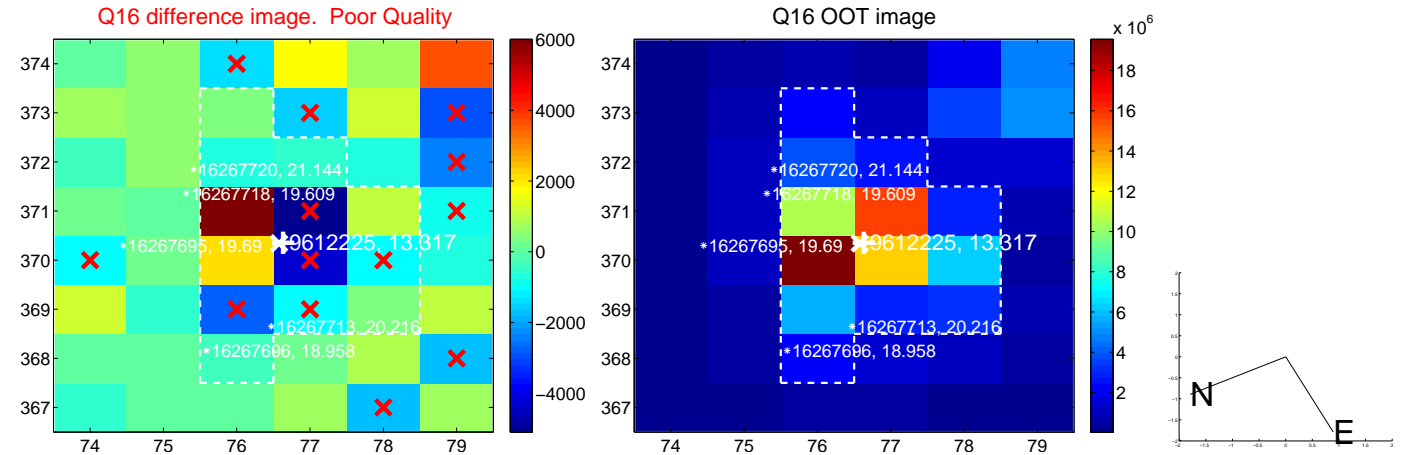
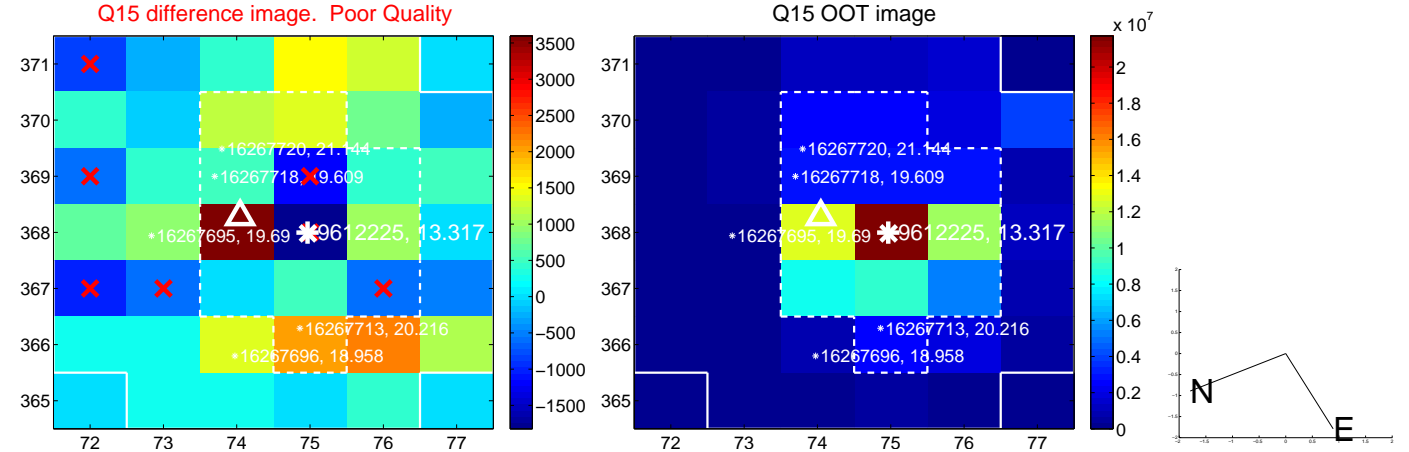
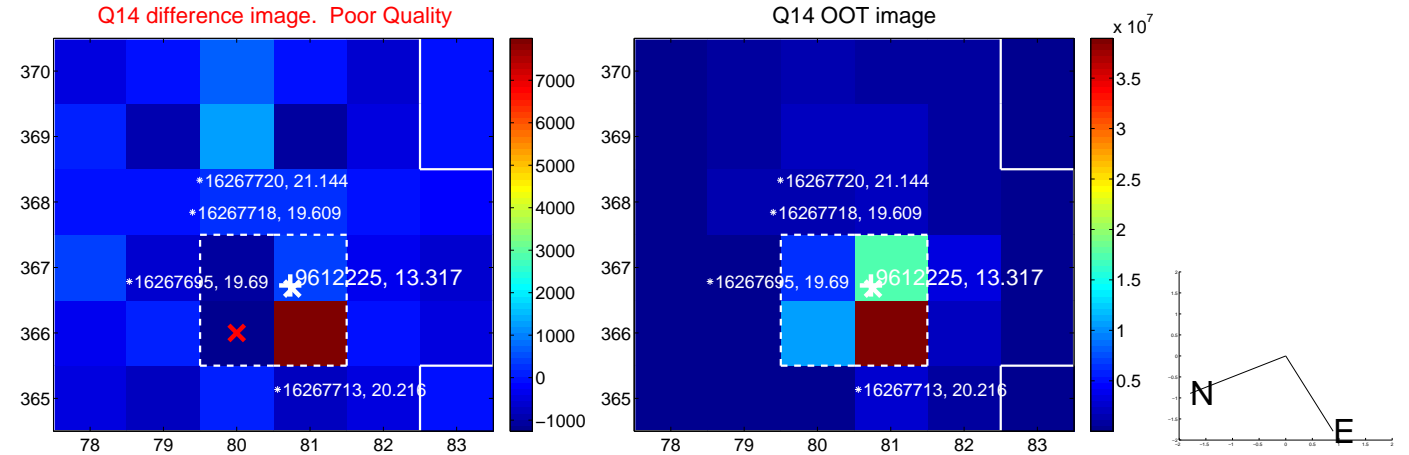
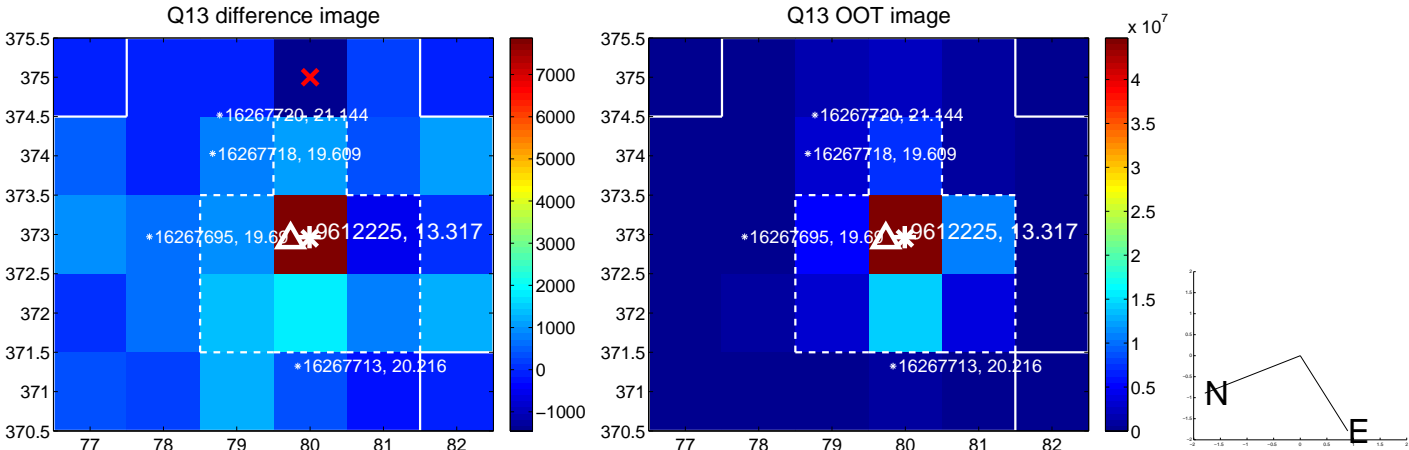
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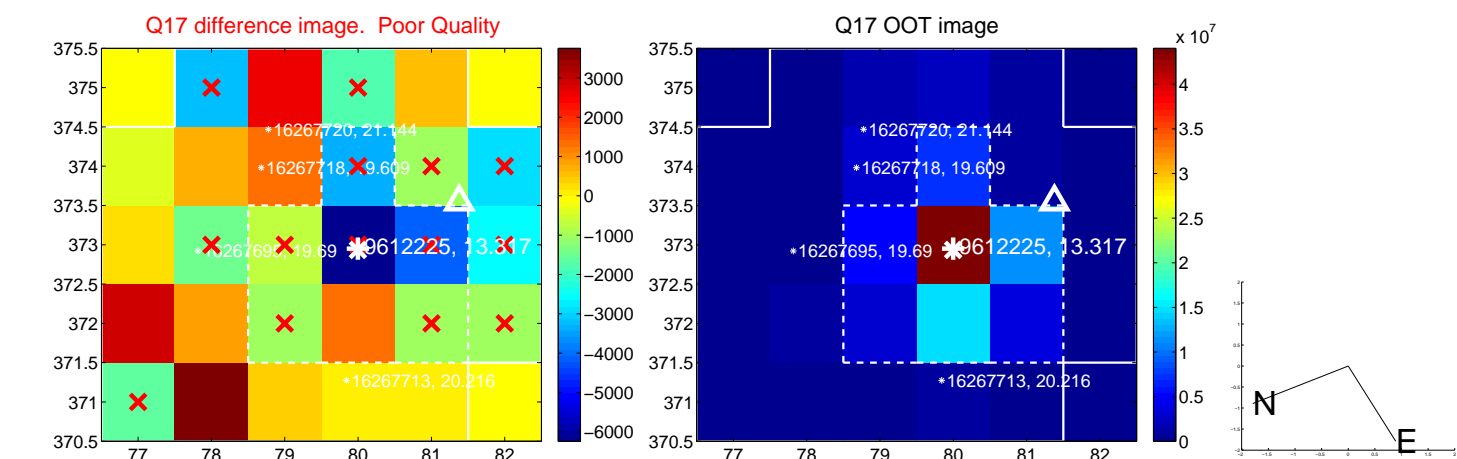
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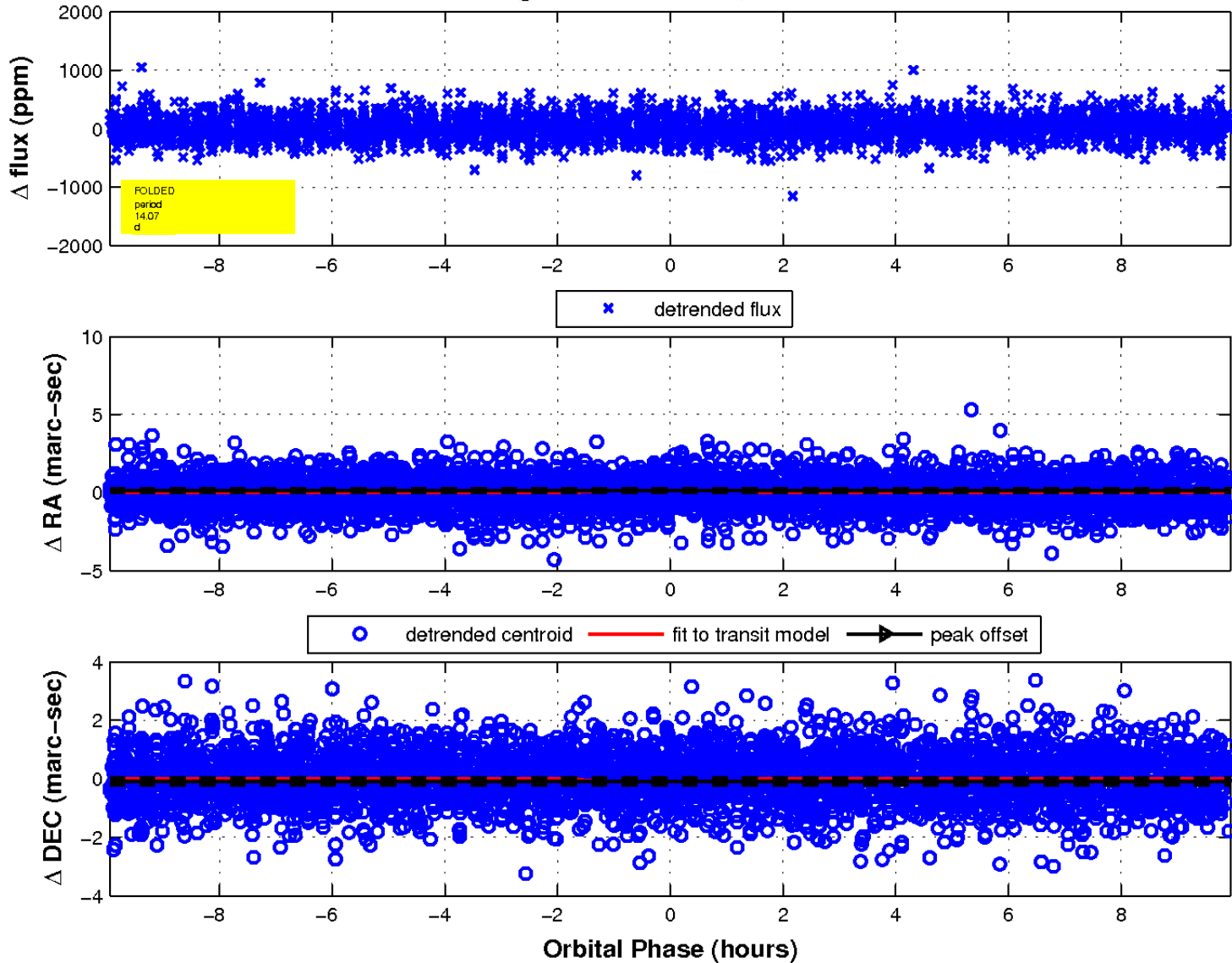
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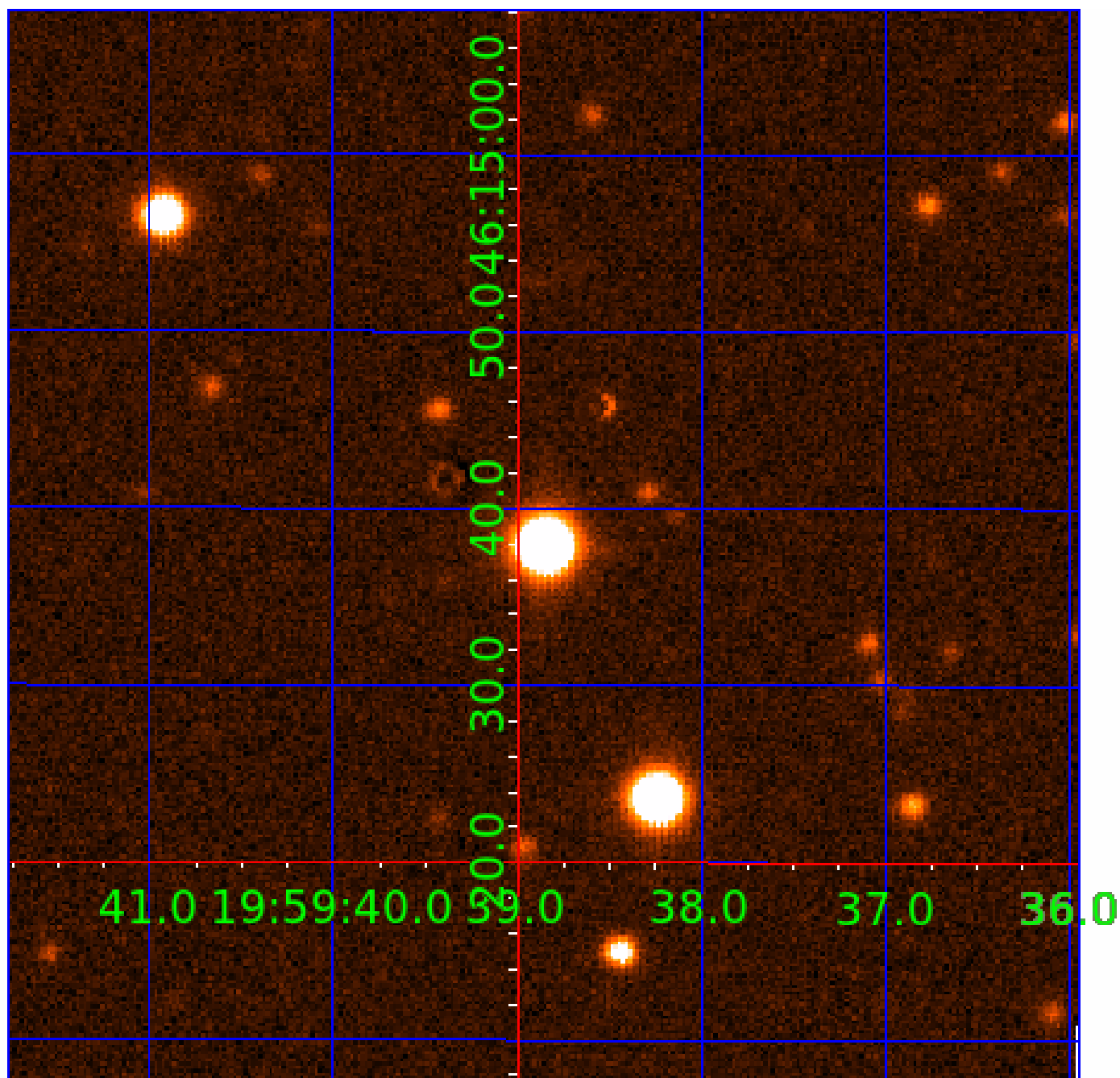


### fluxWeightedCentroids, Planet 6 of 7



UKIRT Image

Declination



# KIC 009612225

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
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## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
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009612225-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_MEAS—HALO_GHOST
009612225-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
009612225-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_MEAS
009612225-05	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—HALO_GHOST
009612225-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT
009612225-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—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.

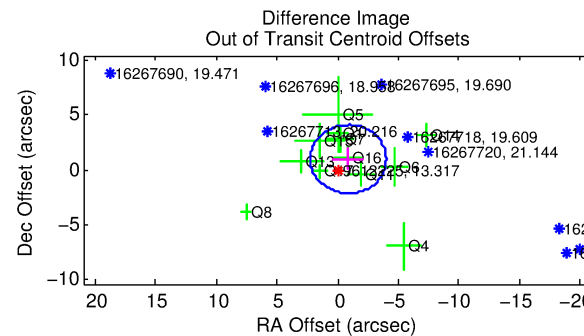
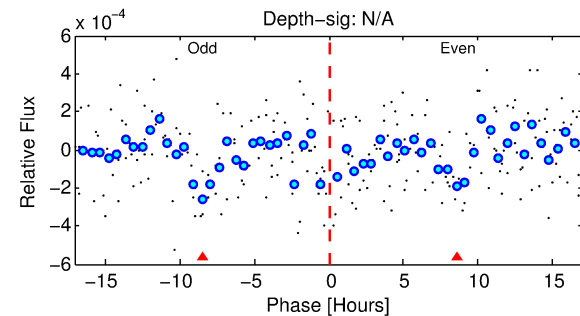
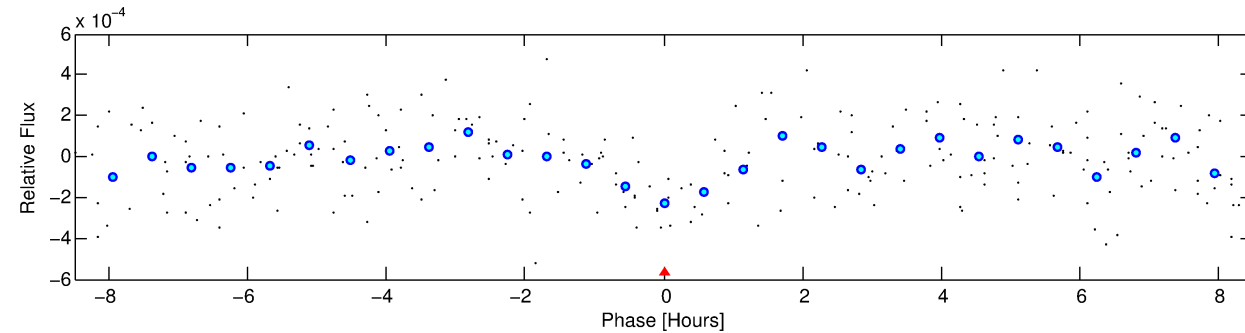
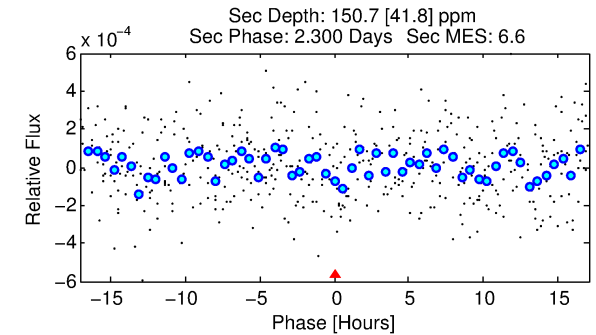
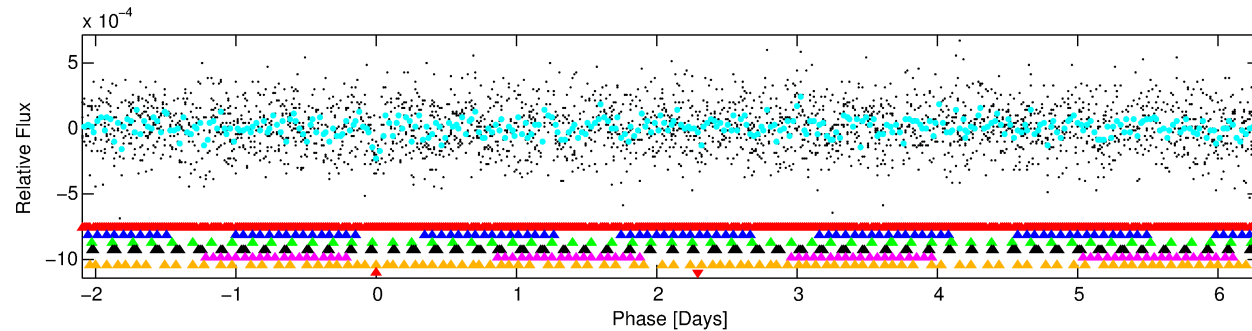
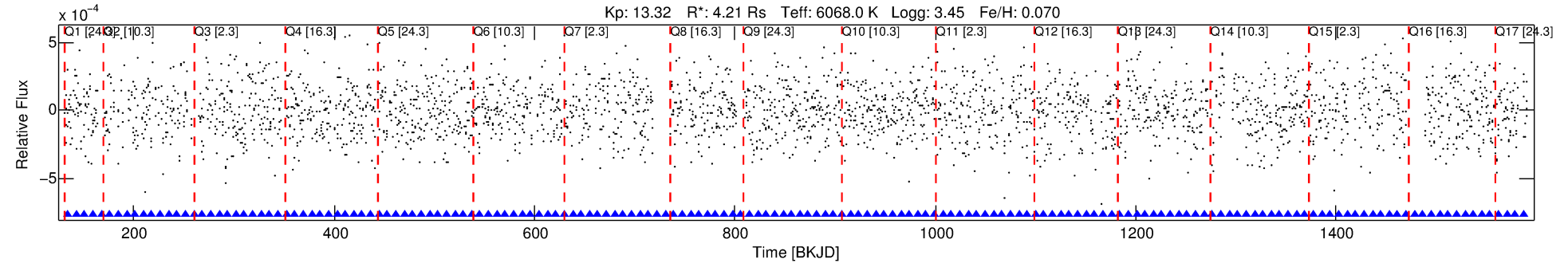
Ephemeris Match Information For 009612225-07

No Significant Match Found



# DV One-Page Summary

KIC: 9612225 Candidate: 7 of 7 Period: 8.400 d



## TPS TCE Results:

Period = 8.40005 d  
Epoch = 134.2079 BKJD

DV fit results are unavailable

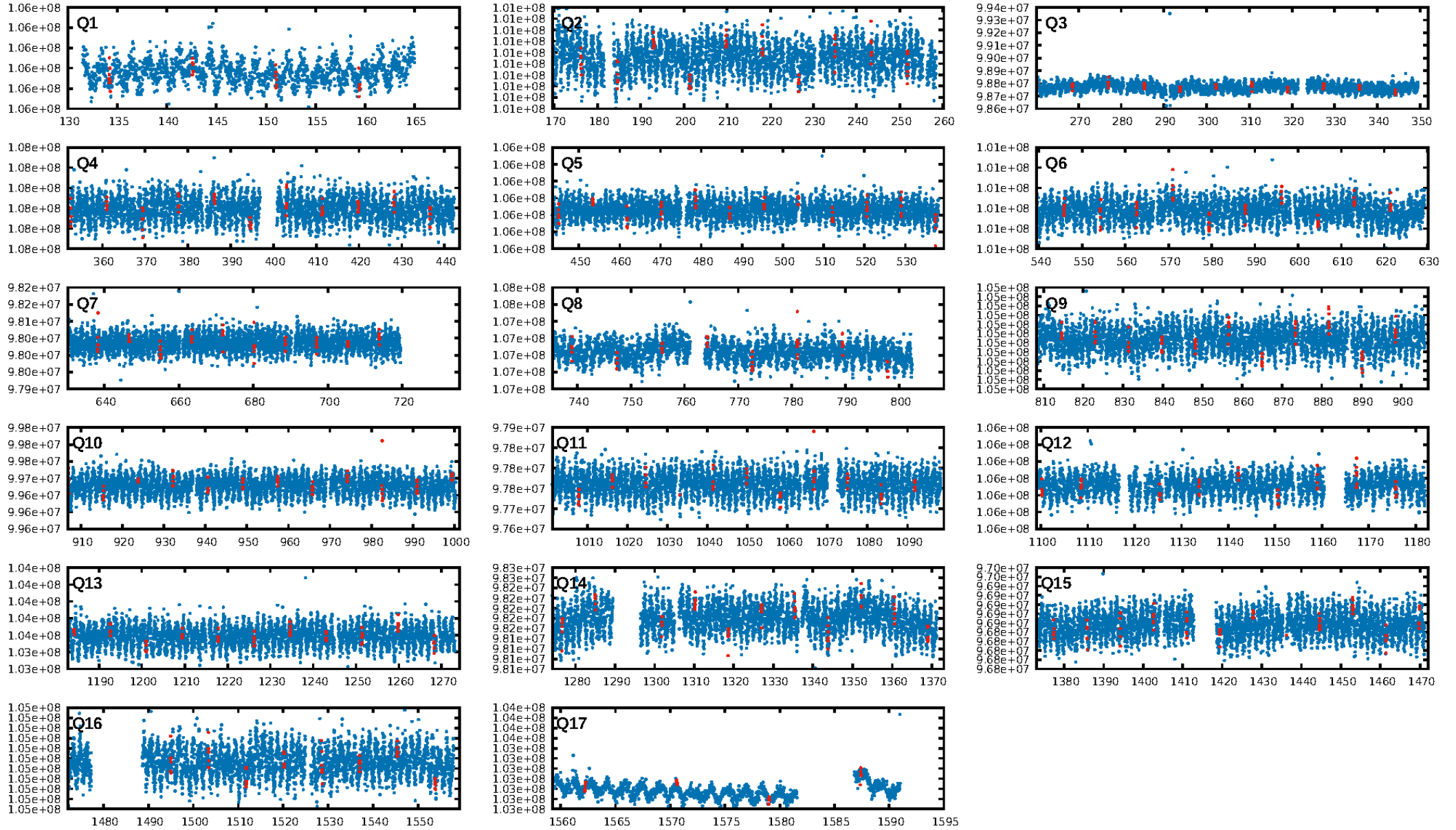
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [13.83 $\sigma$ ]  
LongPeriod-sig: 100.0% [23.94 $\sigma$ ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [16/16]  
GhostDiagnostic-chr: -10.1  
Centroid-sig: 58.8%  
Centroid-so: 0.539 arcsec [1.04 $\sigma$ ]  
OotOffset-rm: 1.317 arcsec [1.26 $\sigma$ ]  
KicOffset-rm: 1.296 arcsec [1.35 $\sigma$ ]  
OotOffset-st: 2/3/3/4 [12]  
KicOffset-st: 2/3/3/4 [12]  
DiffImageQuality-fgm: 0.08 [1/12]  
DiffImageOverlap-fno: 0.94 [16/17]

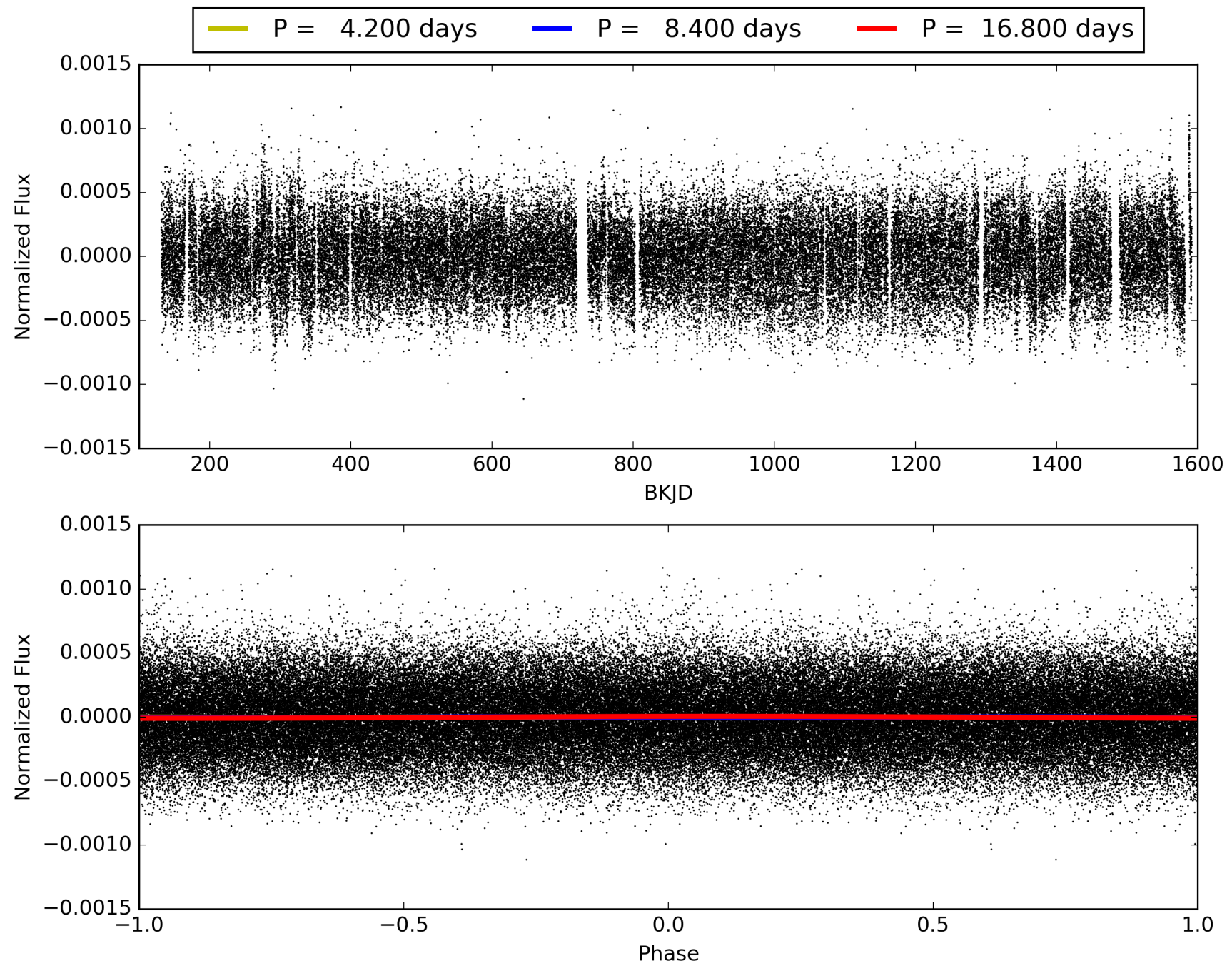
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 13:12:33 Z

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

# TCE 009612225-07, PDC Light Curves

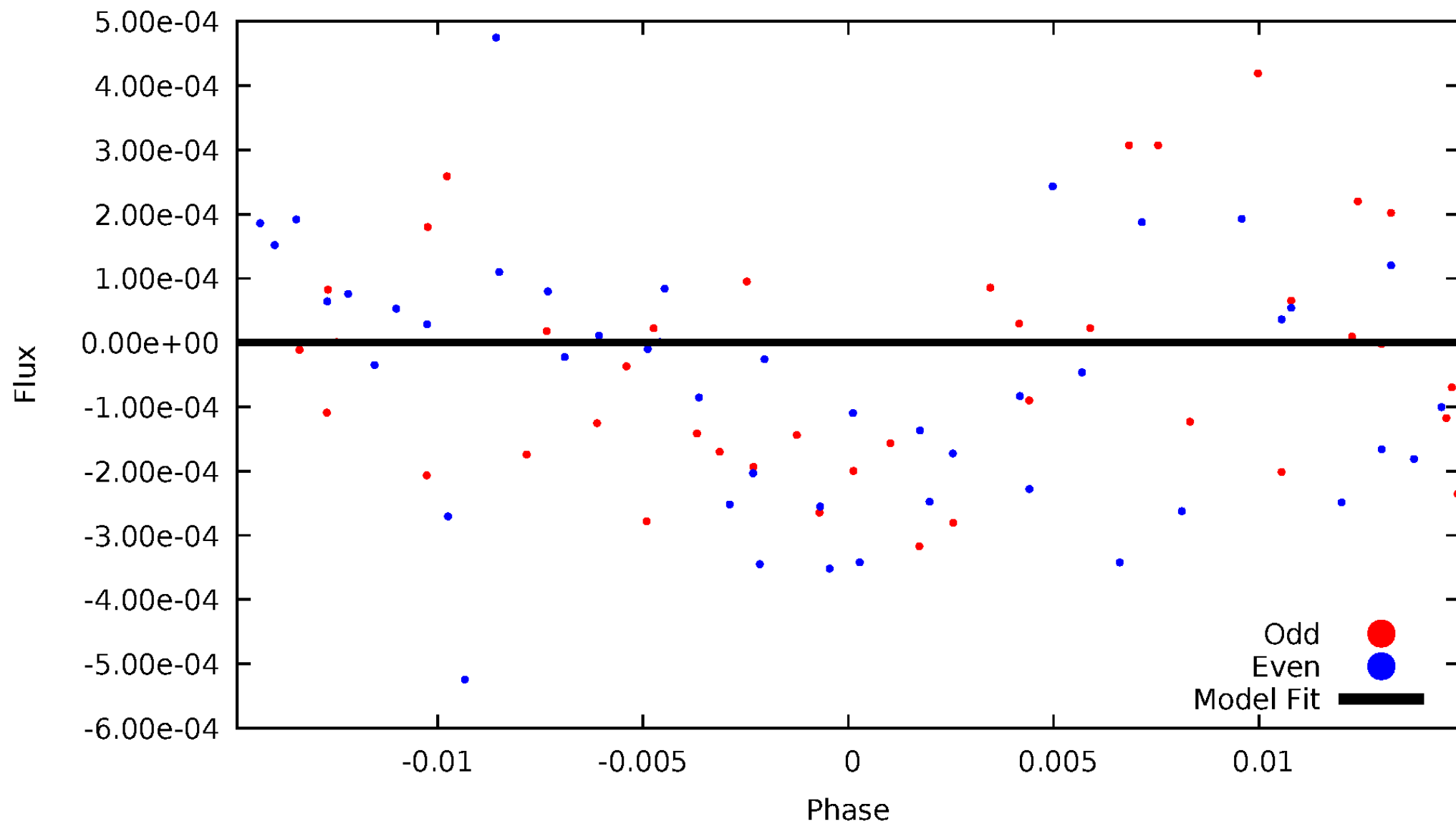


TCE 009612225-07



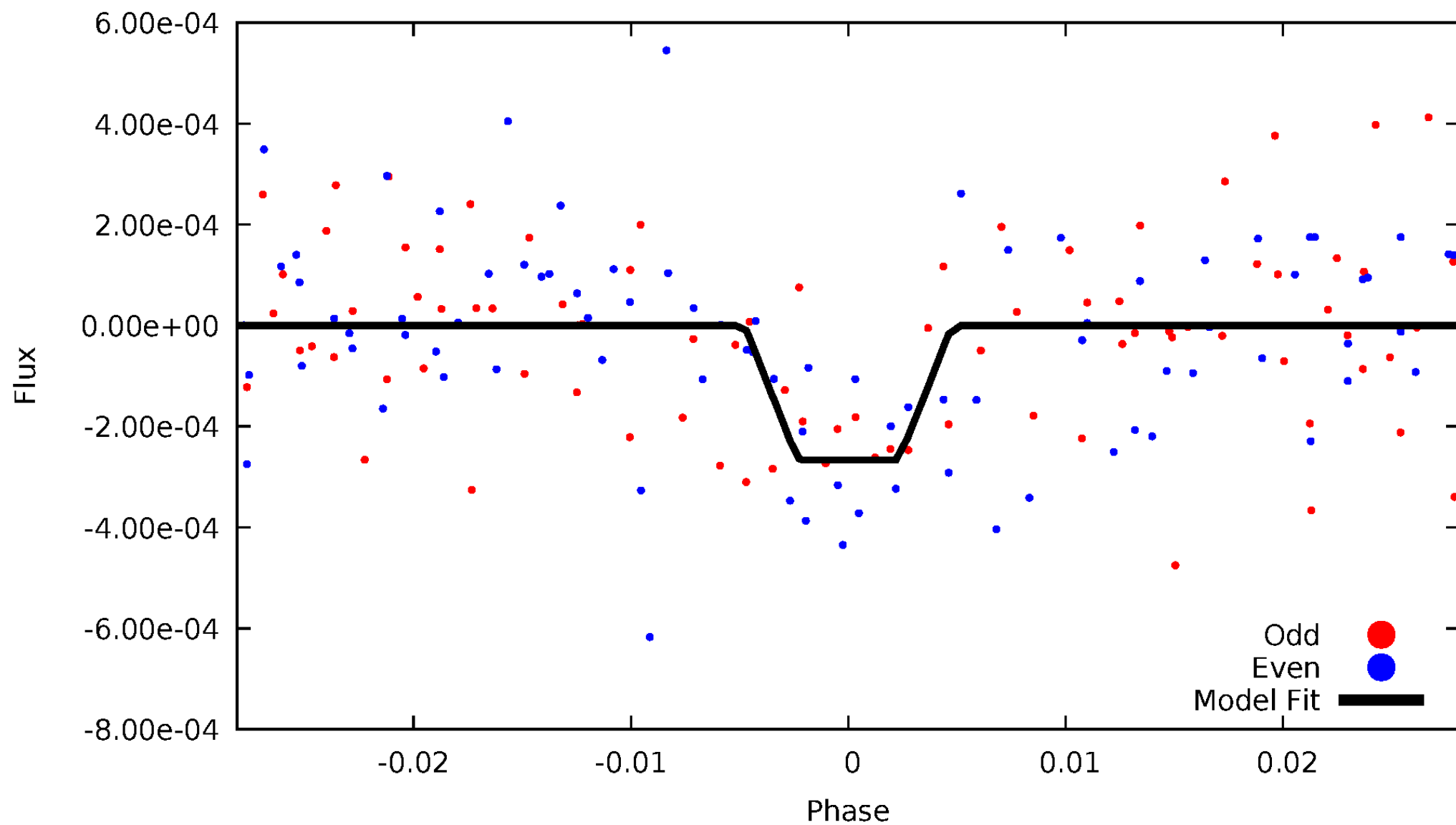
# DV Odd/Even

TCE 009612225-07



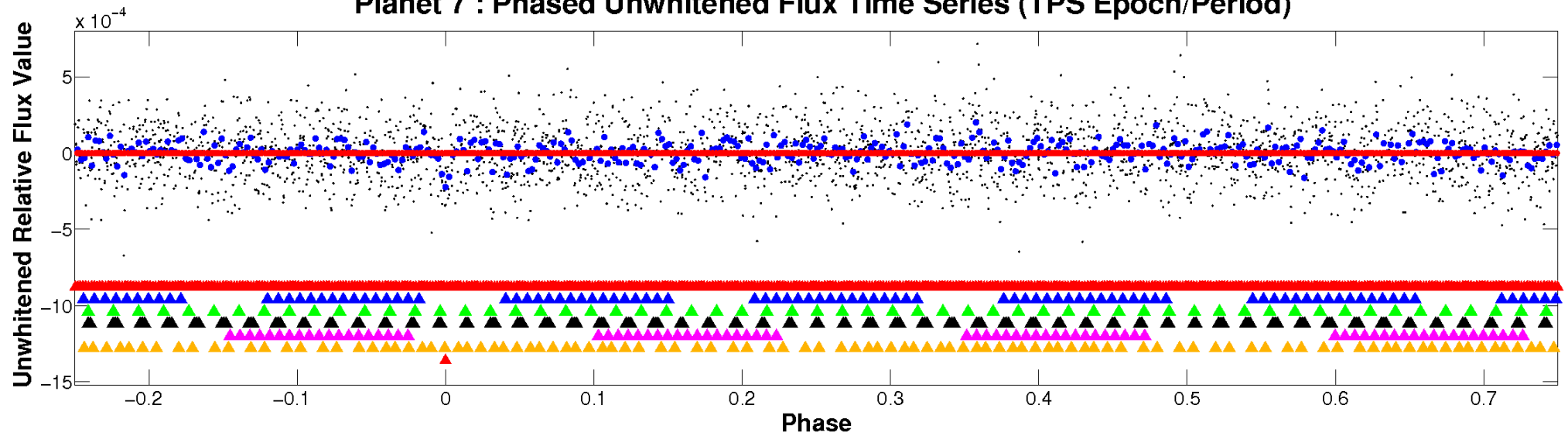
# ALT Odd/Even

TCE 009612225-07

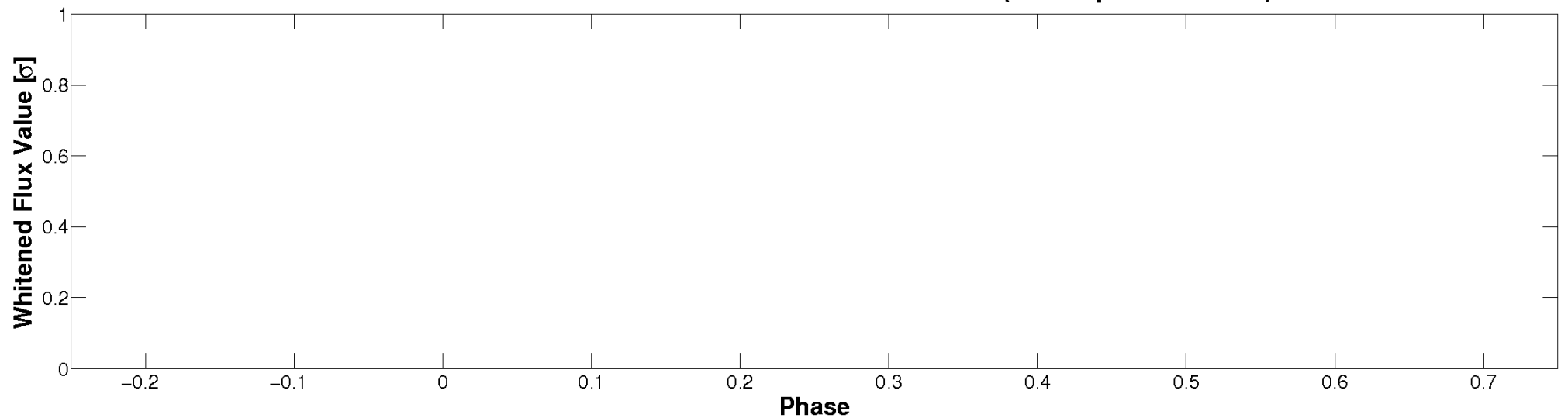


# Non-Whitened Vs. Whitened Light Curve

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

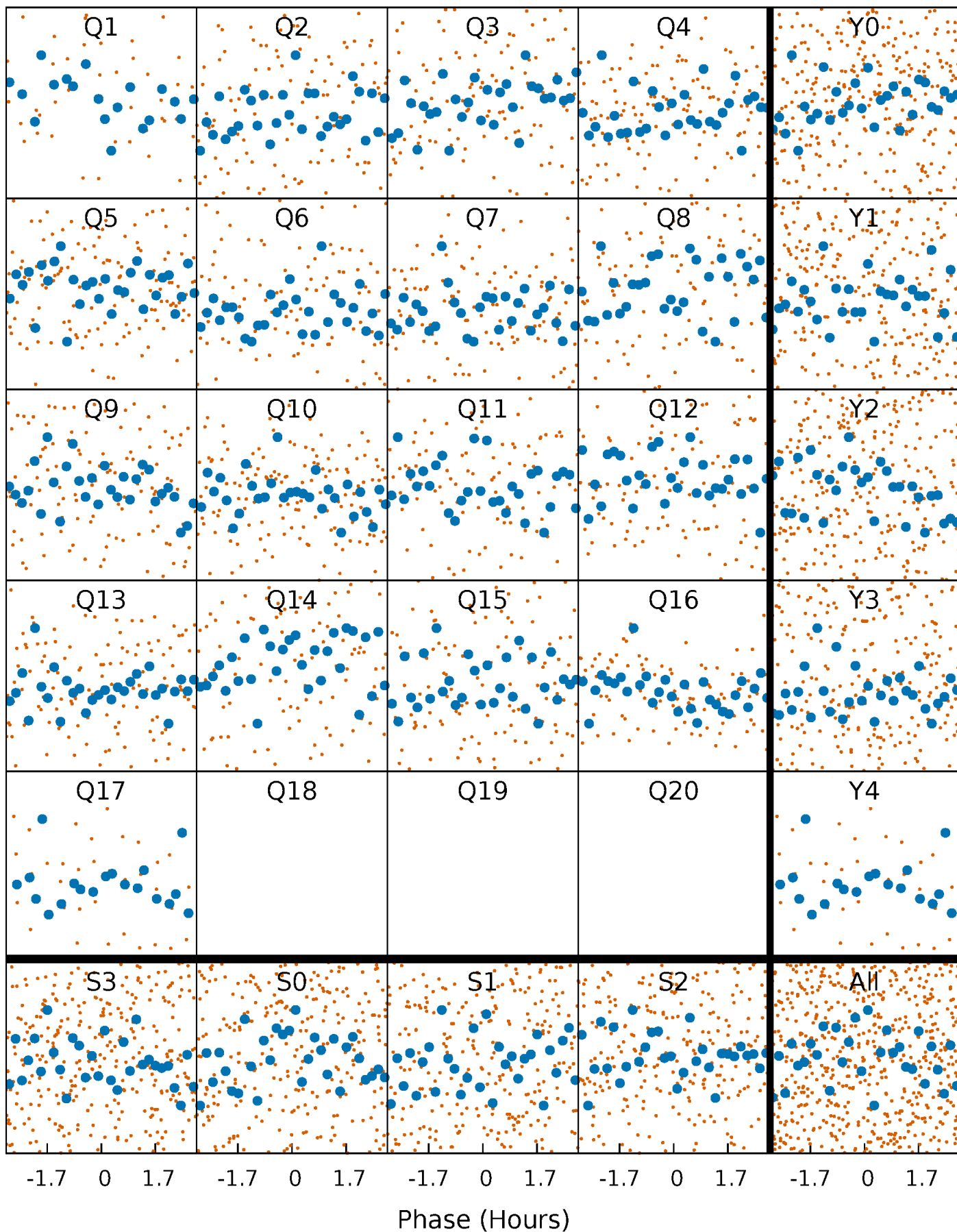


Planet 7 : Phased Whitened Flux Time Series (TPS Epoch/Period)



# PDC Quarter-Phased Transit Curves

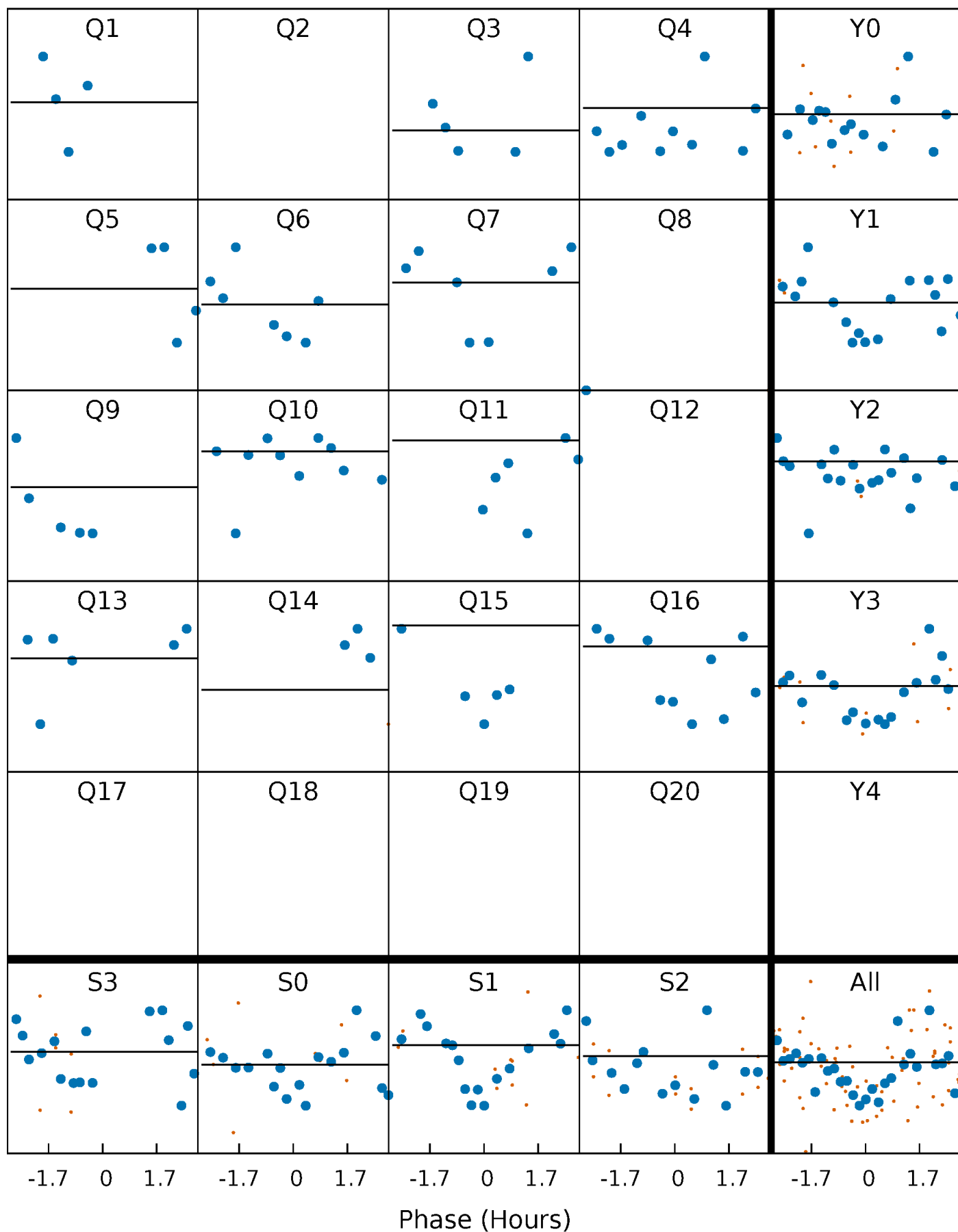
TCE 009612225-07   P= 8.400052 Days    $T_0=134.207869$  (BKJD)





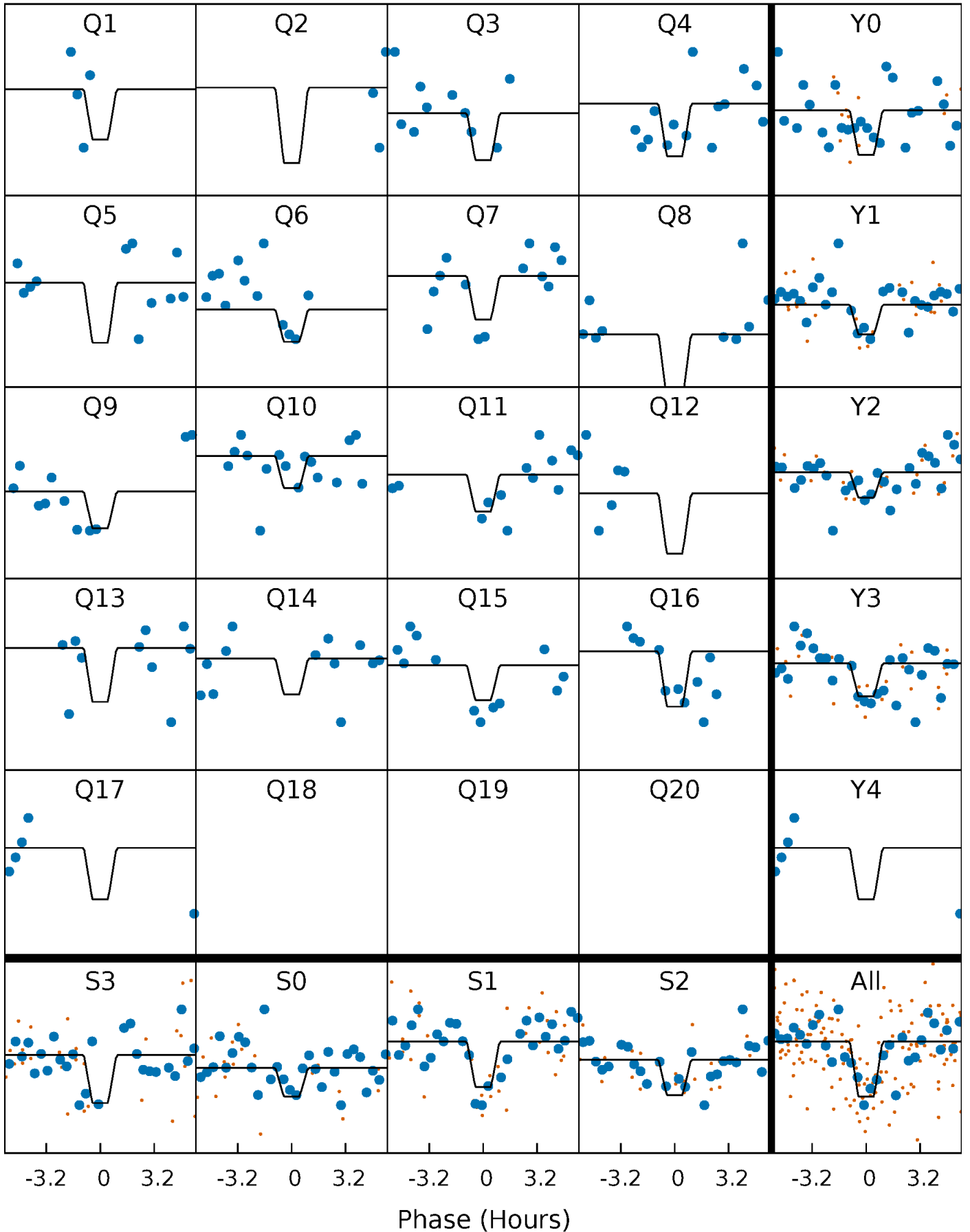
# DV Quarter-Phased Transit Curves

TCE 009612225-07     $P = 8.400052$  Days     $T_0 = 134.207869$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

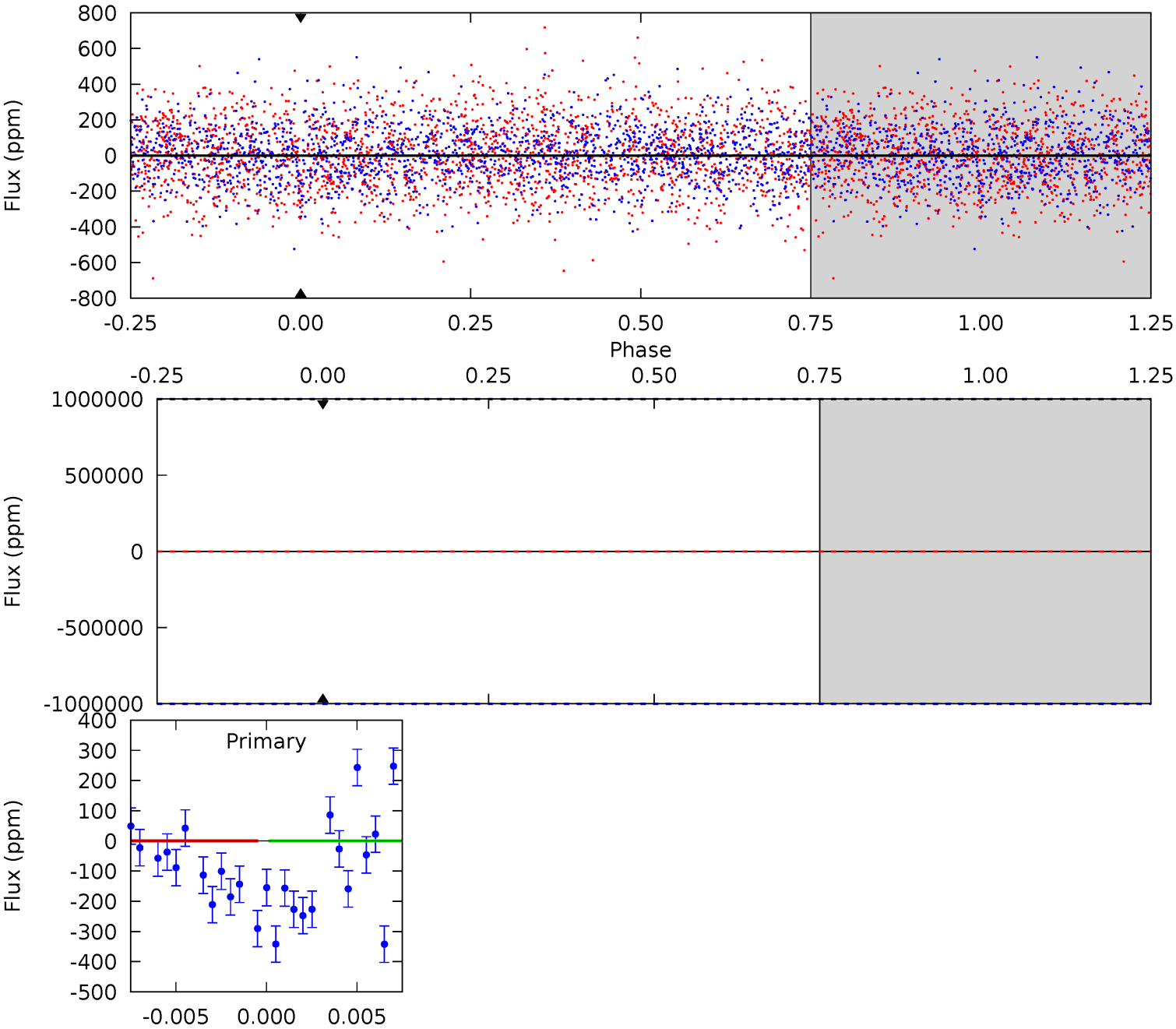
TCE 009612225-07     $P = 8.400052$  Days     $T_0 = 134.206127$  (BKJD)



# DV Model-Shift Uniqueness Test

009612225-07, P = 8.400052 Days, E = 125.807817 Days

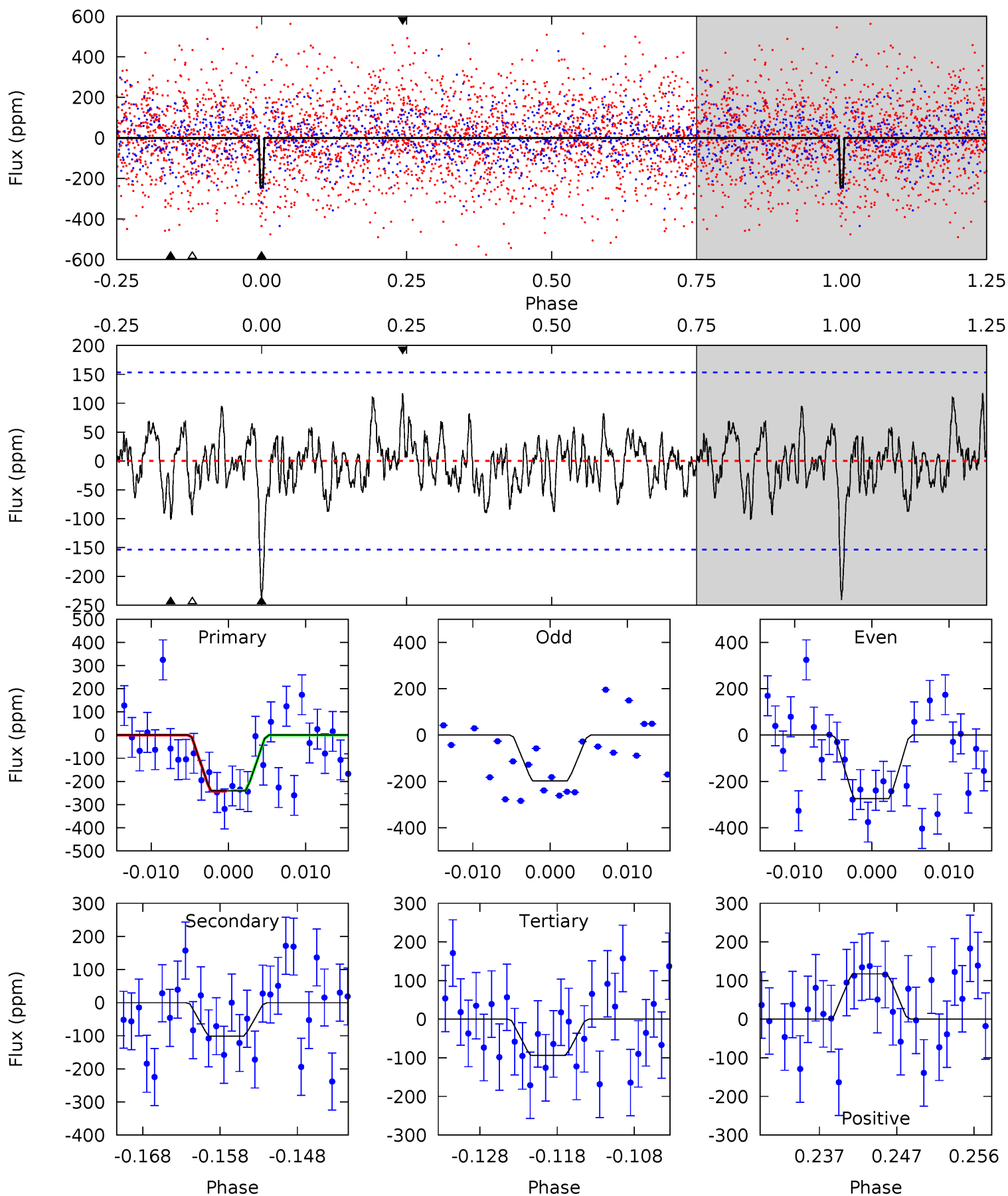
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



# Alt Model-Shift Uniqueness Test

009612225-07, P = 8.400052 Days, E = 125.806075 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
7.89	3.33	3.07	3.85	5.03	2.58	1.21	4.81	4.04	0.26	-0.51	1.26	1.01	0.33	0.04



### Stellar Parameters For KIC 009612225

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$6068^{+216}_{-195}$	$3.451^{+0.408}_{-0.102}$	$0.070^{+0.300}_{-0.300}$	$4.213^{+0.643}_{-1.801}$	$1.829^{+0.149}_{-0.446}$	$0.034^{+0.125}_{-0.011}$
	+4%/-3%	+12%/-3%	+429%/-429%	+15%/-43%	+8%/-24%	+363%/-32%
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 009612225-07 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$0 \pm 1000000$	$32.10^{+33.34}_{-22.66}$	$2388^{+172}_{-261}$	$4090^{+15440}_{-24654}$	$4.812^{+839.682}_{-796.487}$
Alt.	$-102 \pm 31$	$28.85^{+32.58}_{-20.37}$	$2388^{+163}_{-240}$	$2702^{+1661}_{-5251}$	$0.632^{+6.426}_{-0.507}$

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

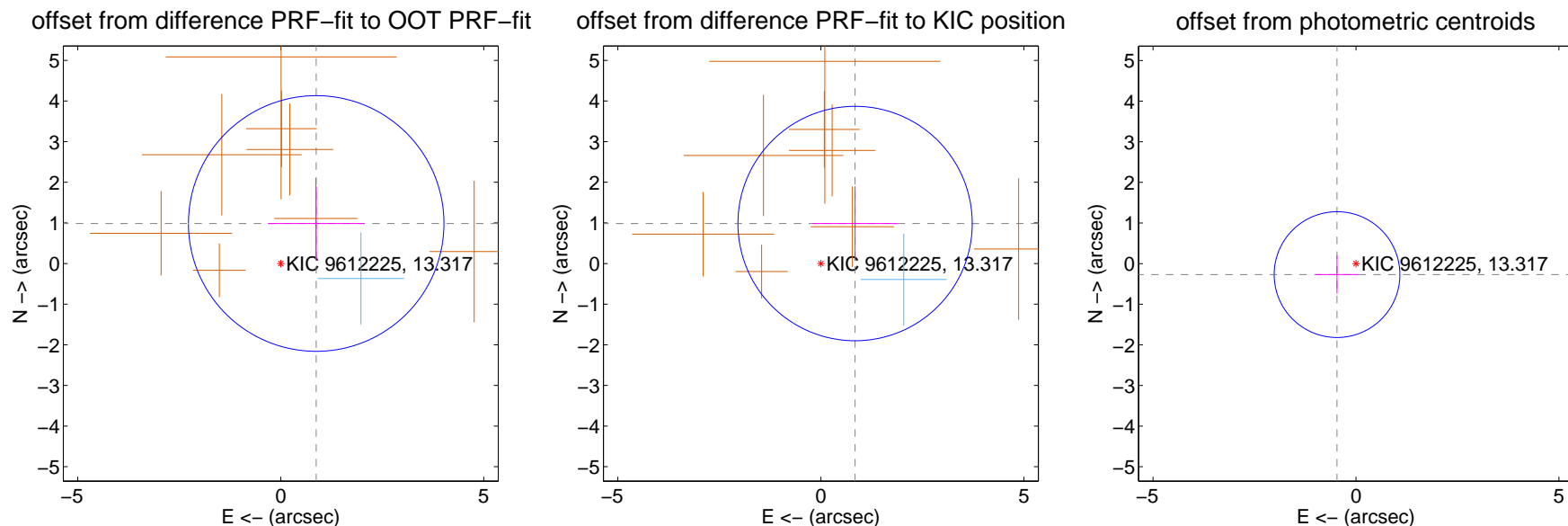
## DV Centroid Data

Supplemental centroid analysis for 009612225-07. Kepler magnitude: 13.32. Transit SNR -1.00

There are 1 quarters with good PRF difference image offsets

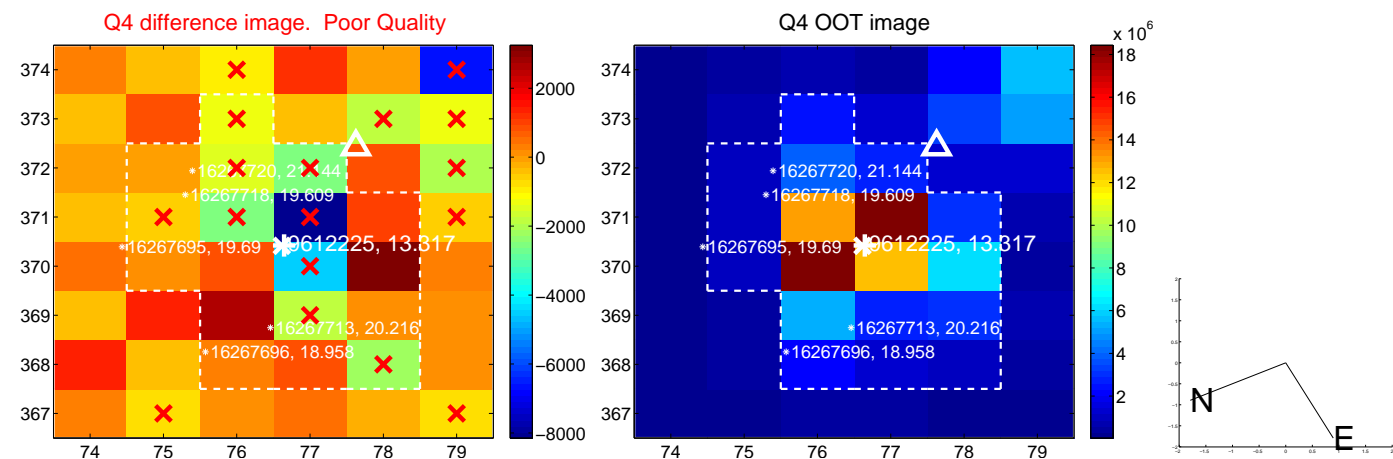
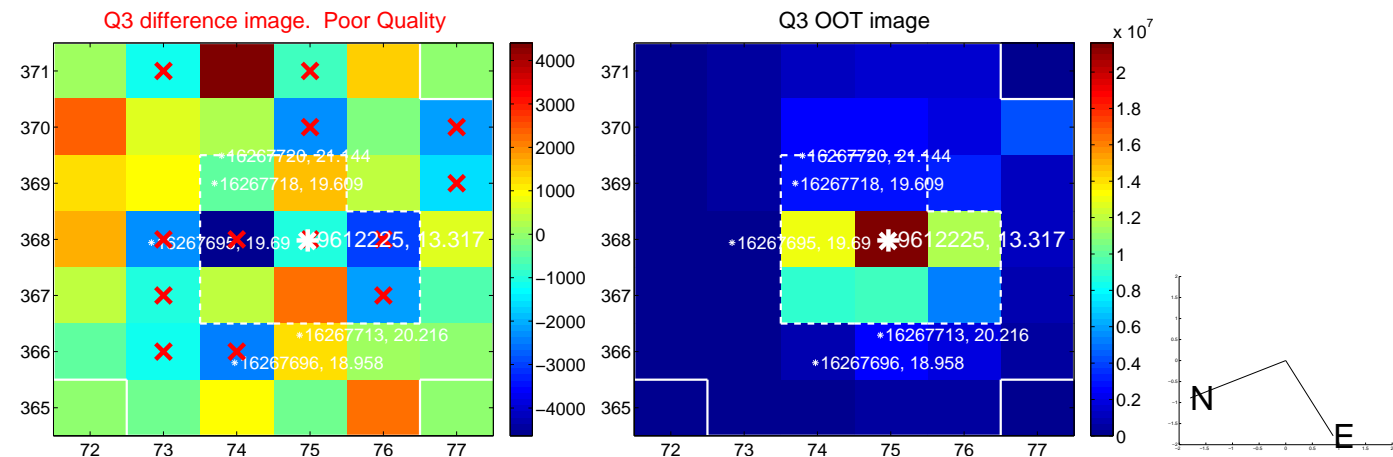
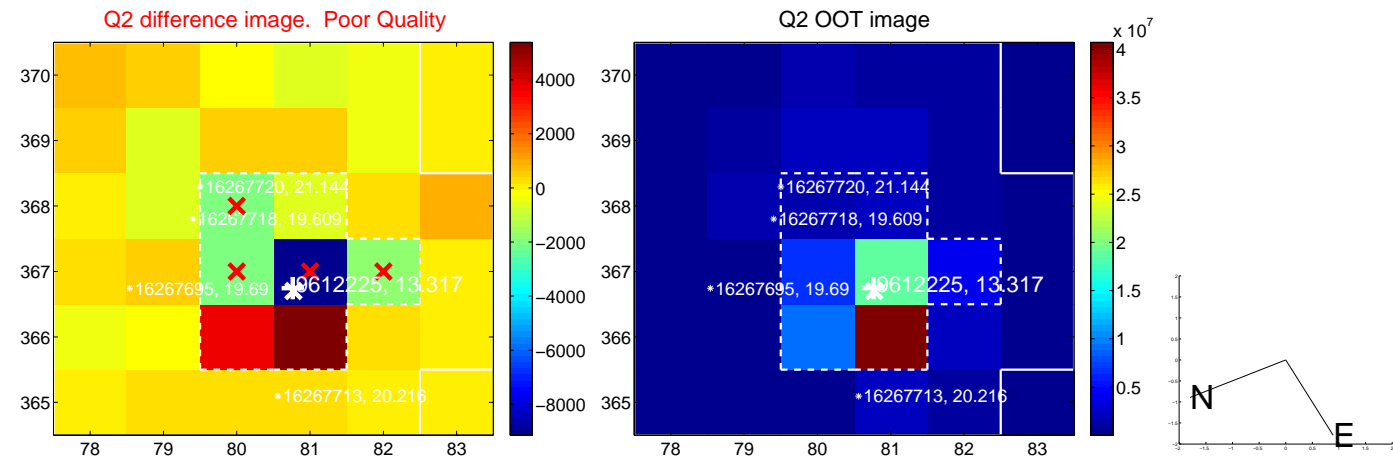
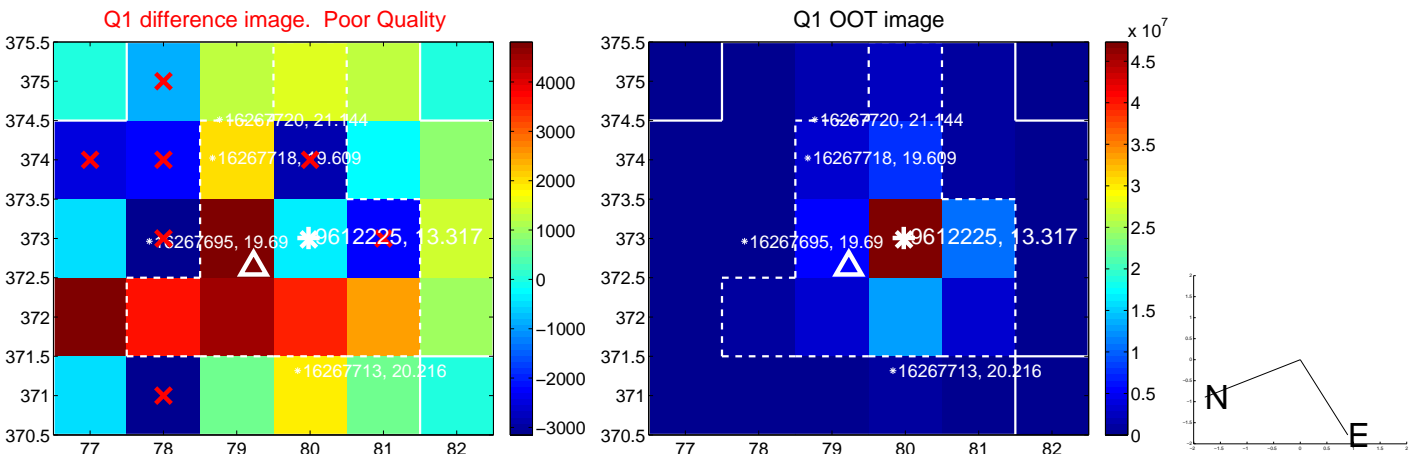
The direct PRF centroid is offset from the target star catalog position by about 0.06 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.317 \pm 1.049$	1.26	$-0.873 \pm 1.189$	$0.986 \pm 0.915$
PRF-fit source offset from KIC position	$1.296 \pm 0.962$	1.35	$-0.843 \pm 1.047$	$0.985 \pm 0.918$
photometric centroid source offset	$0.54 \pm 0.52$	1.04	$0.47 \pm 0.53$	$-0.27 \pm 0.47$



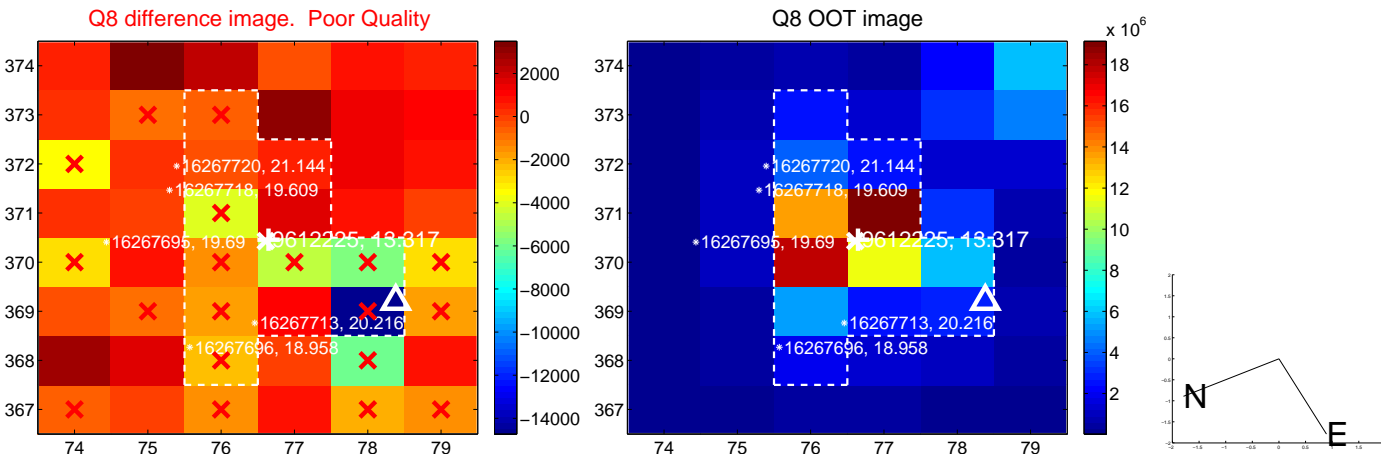
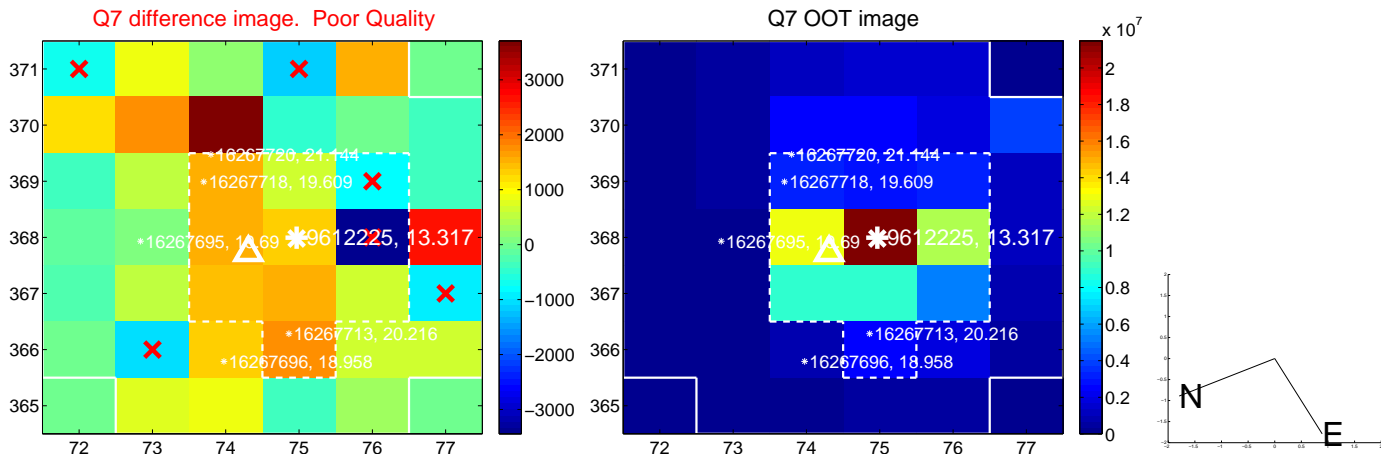
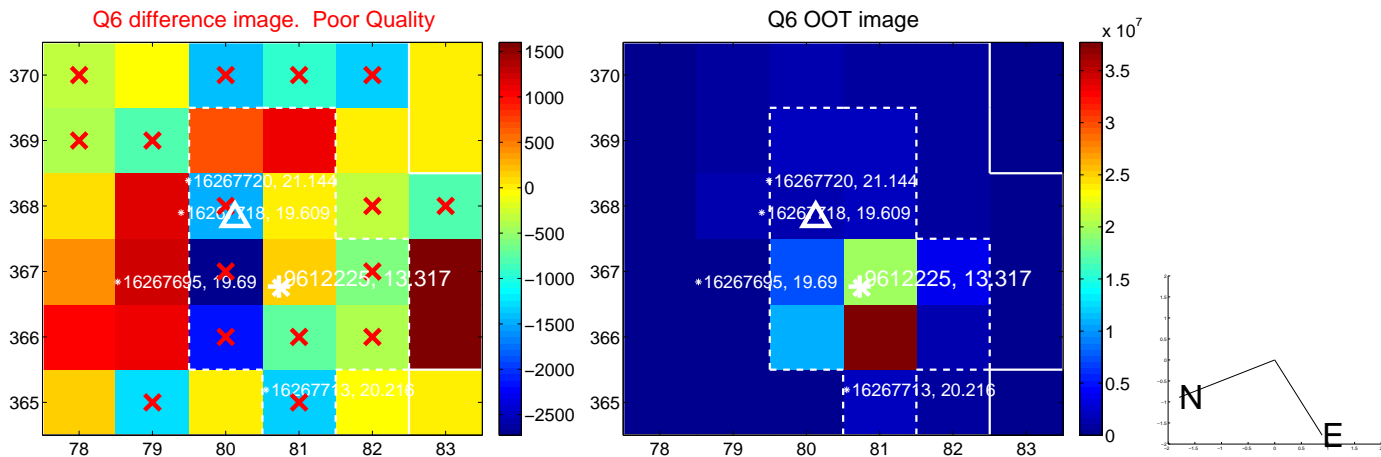
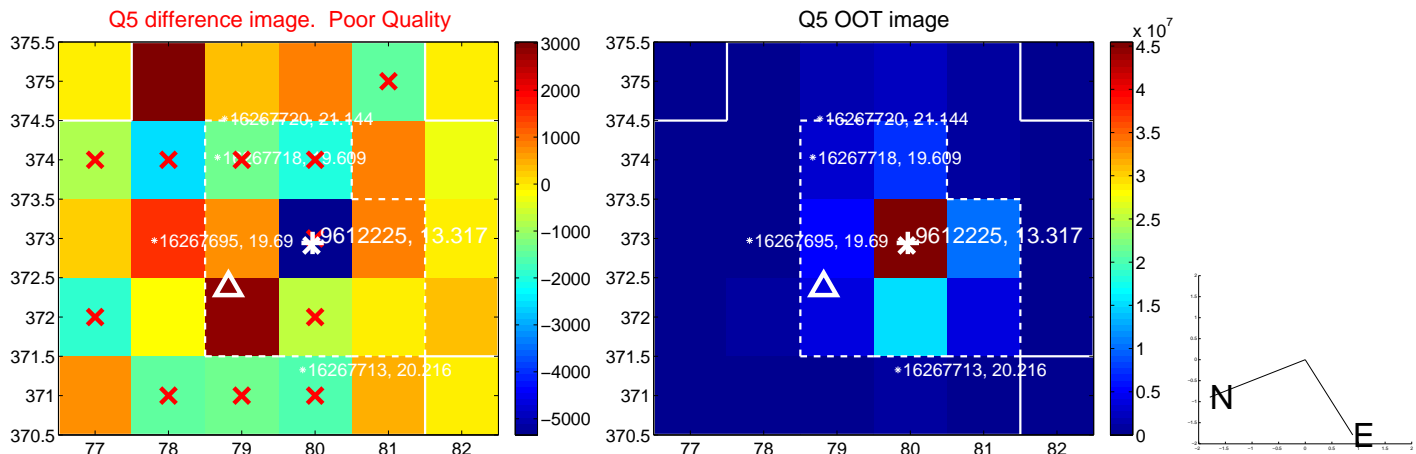
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

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

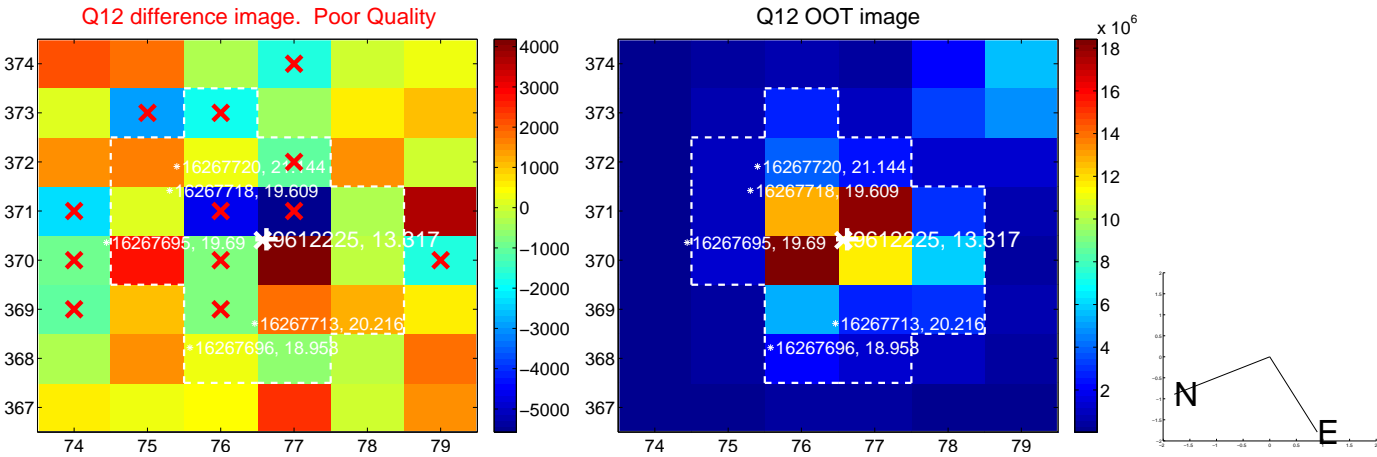
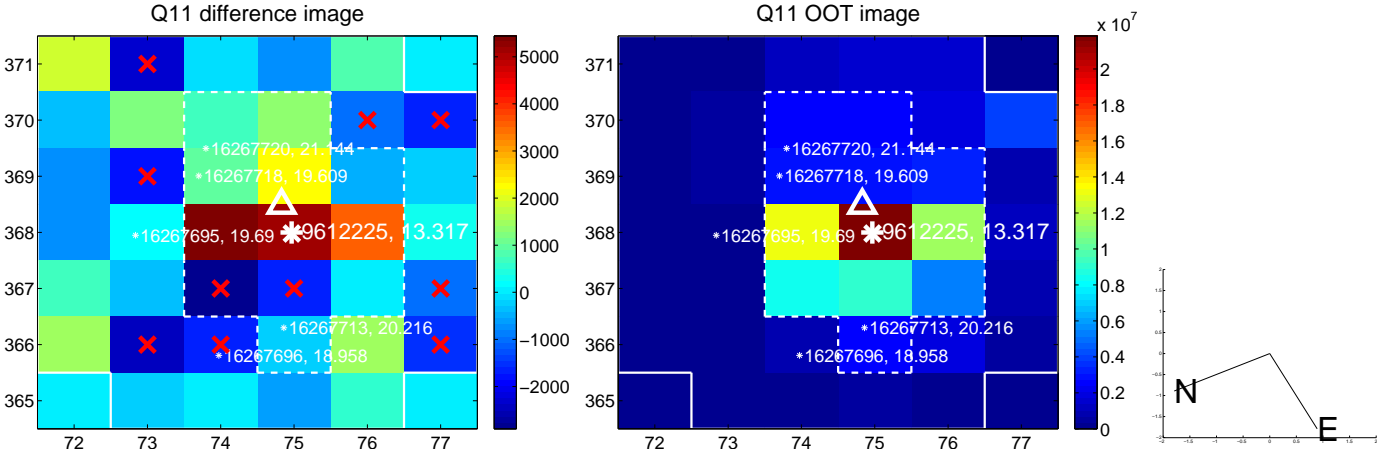
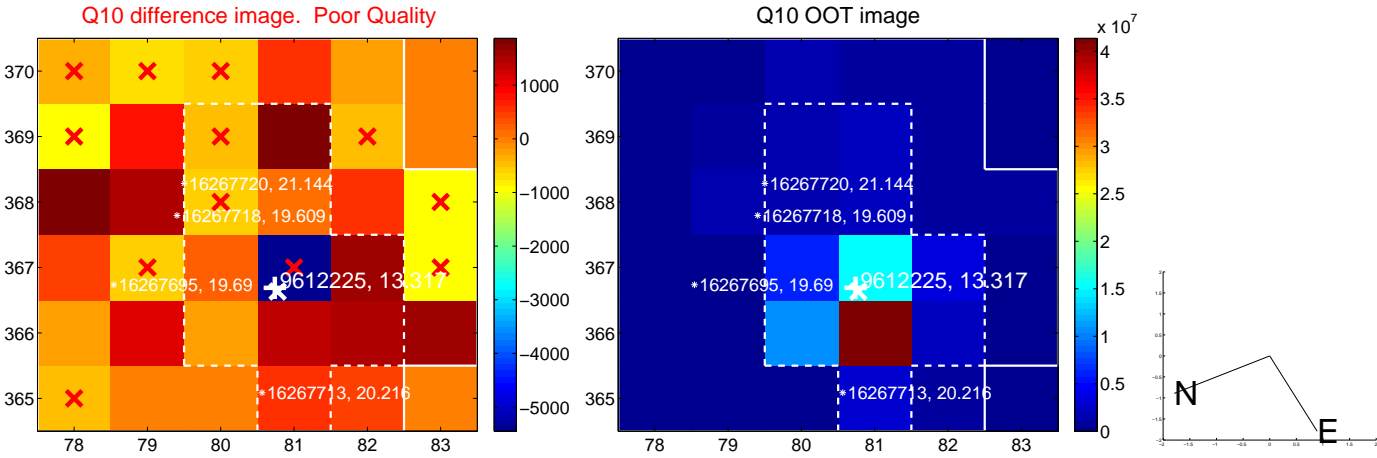
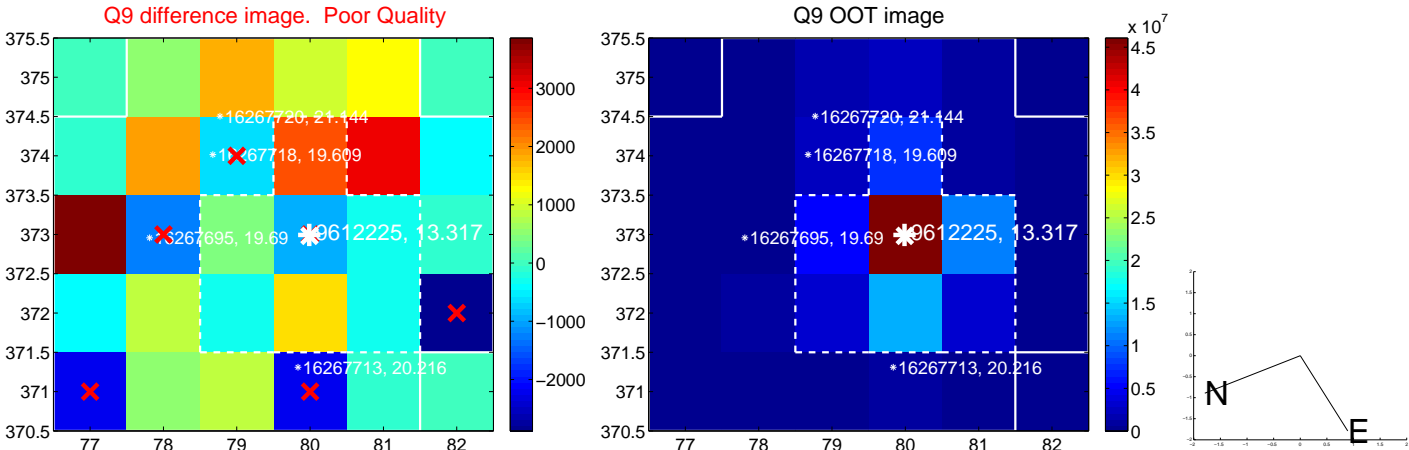




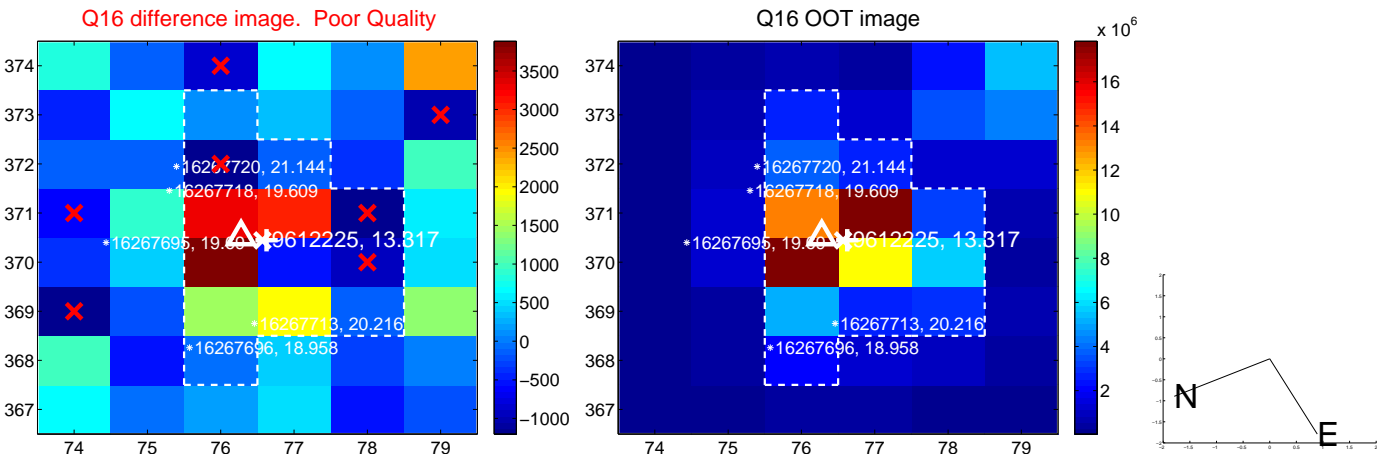
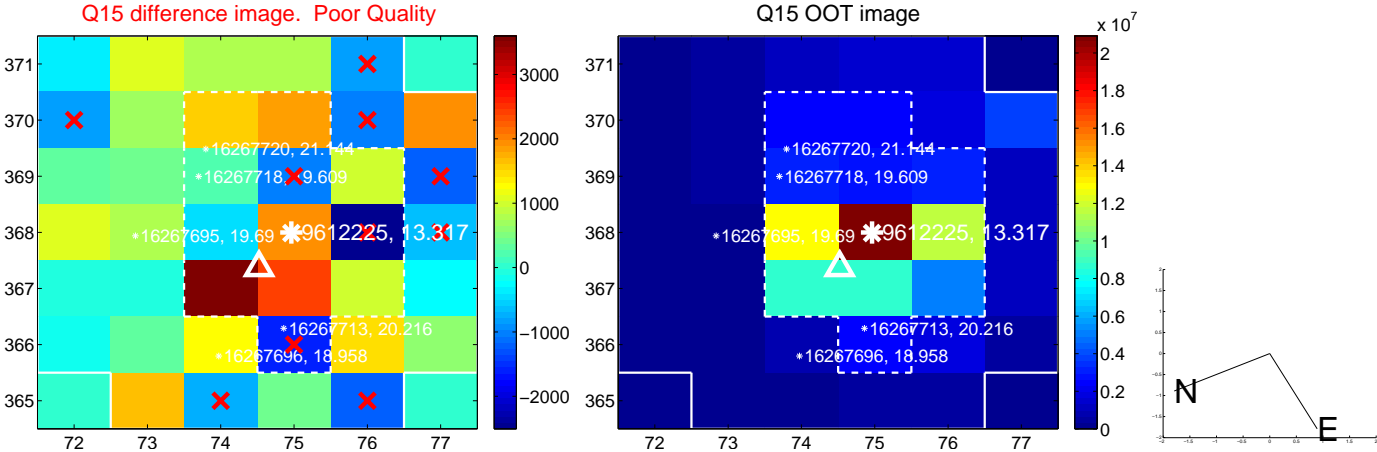
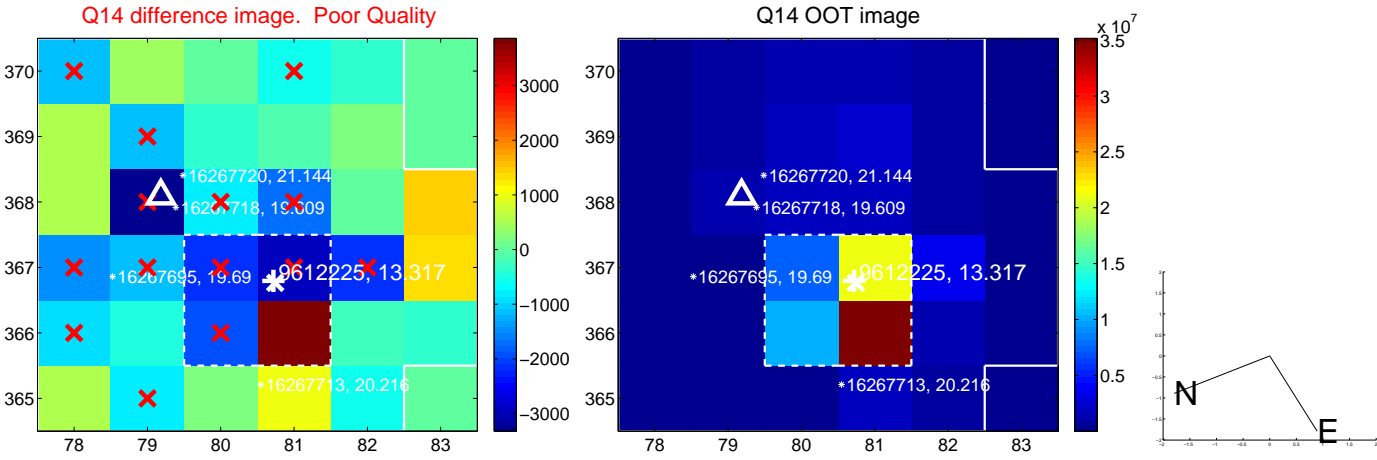
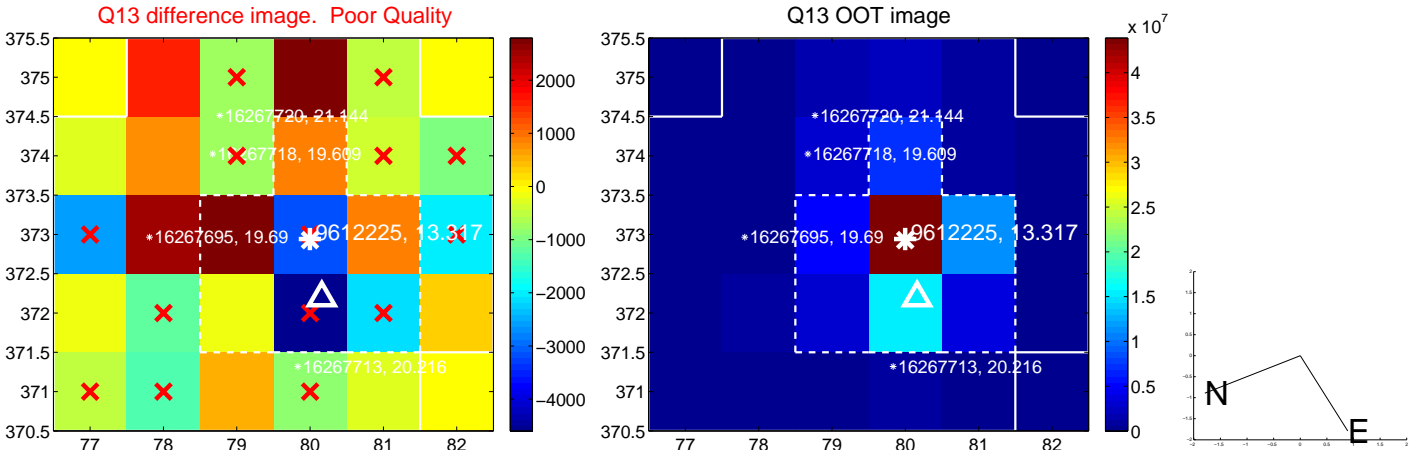
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



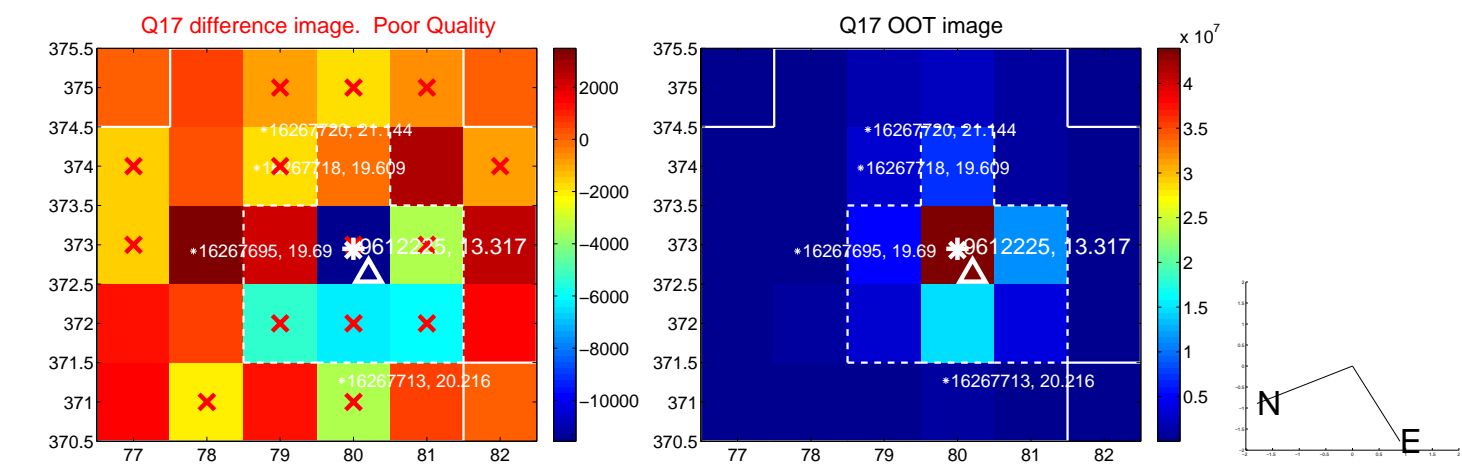
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



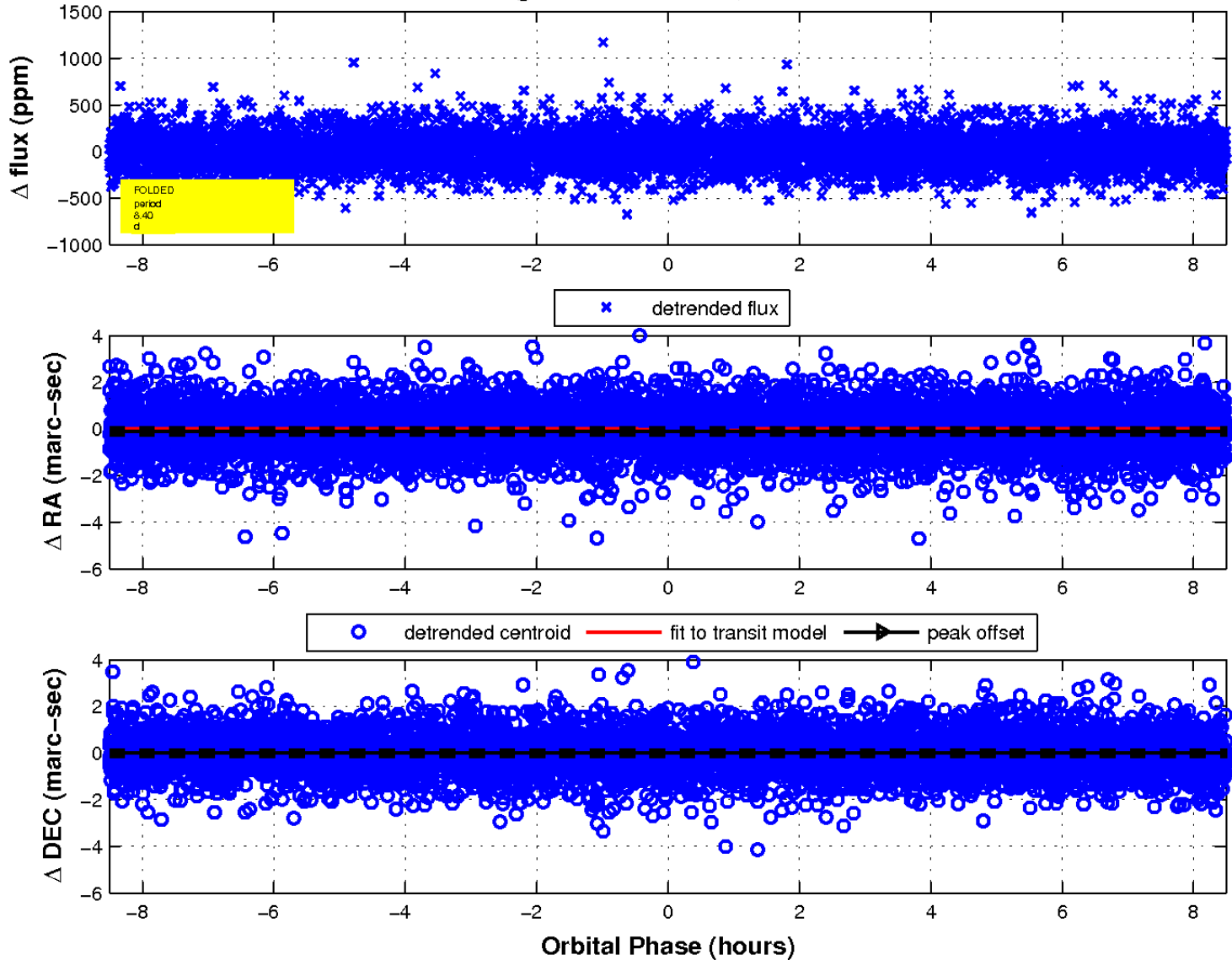
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



fluxWeightedCentroids, Planet 7 of 7



UKIRT Image

Declination

