

# KIC 010034425

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
010034425-01	OBS	No	2.760204	132.619682	6.6	16.118	7.6	2.4	1.32	6465	0.35	1774.07
010034425-02	OBS	No	129.294083	201.146008	169.1	20.465	10.2	6.9	1.32	6465	1.89	10.51

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010034425-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
010034425-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_MEAS

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

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

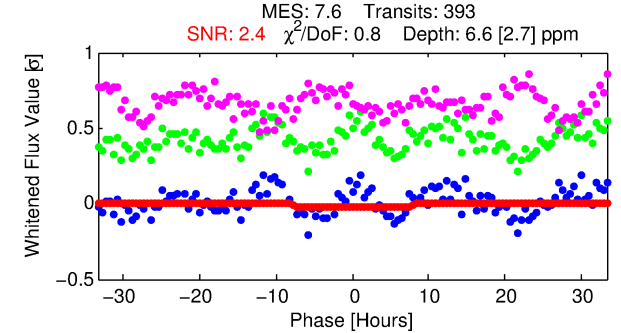
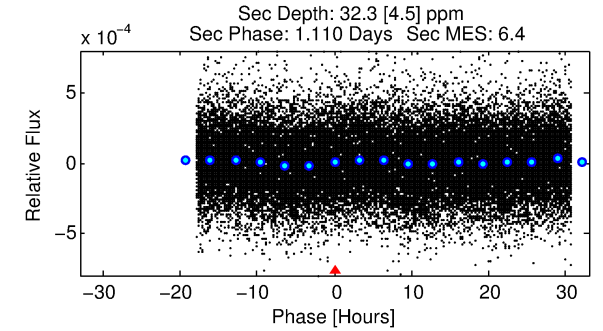
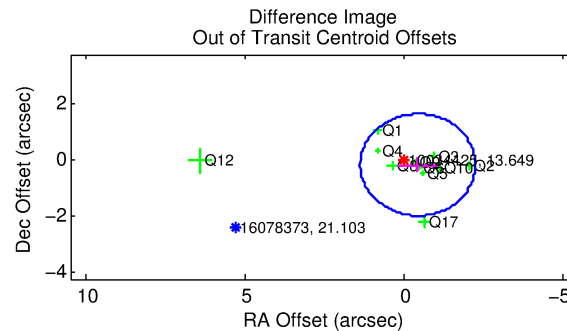
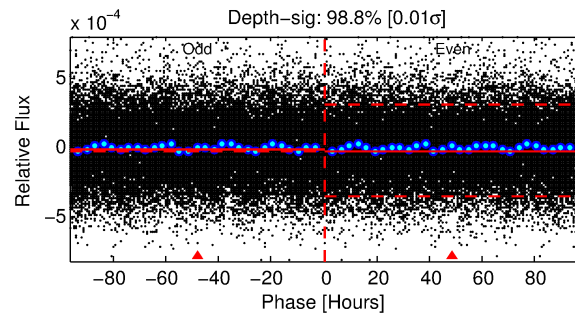
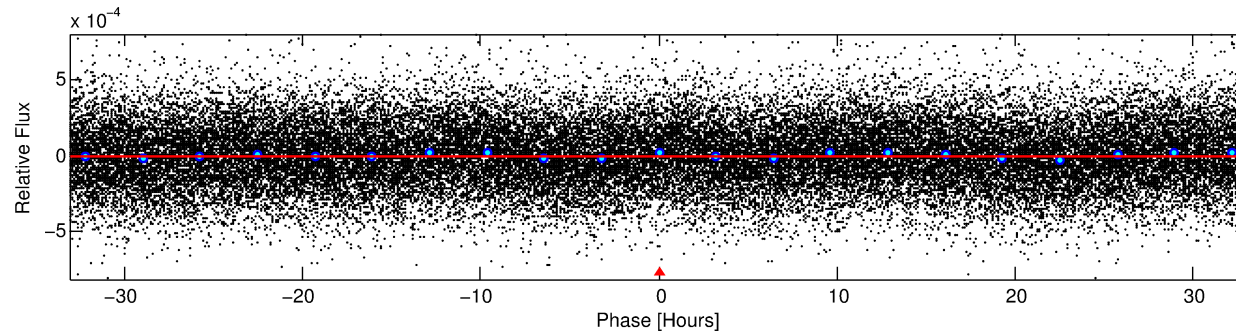
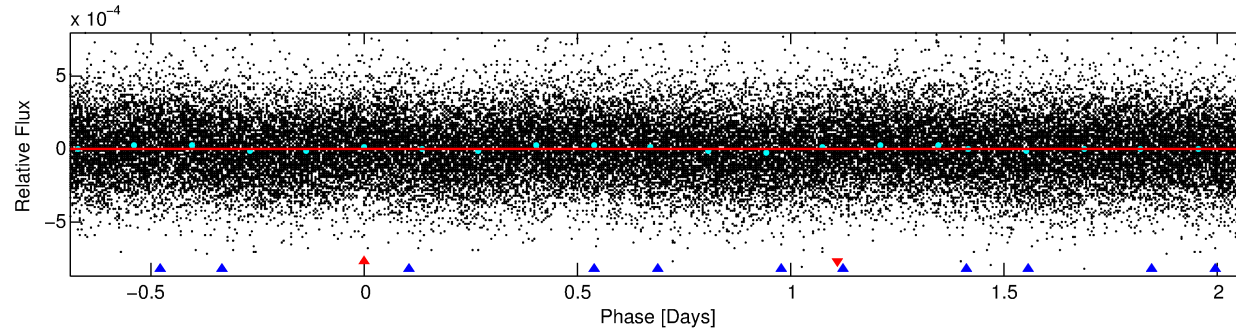
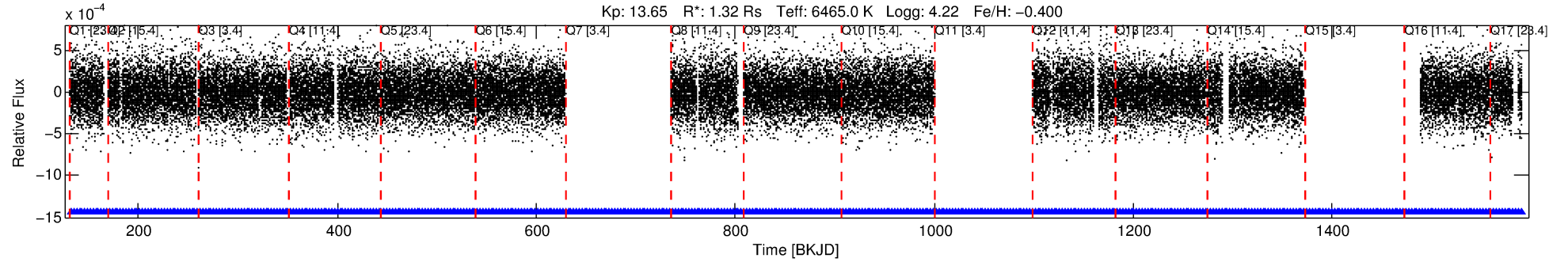
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 010034425-01

No Significant Match Found

# DV One-Page Summary

KIC: 10034425 Candidate: 1 of 2 Period: 2.760 d



## DV Fit Results:

Period = 2.76020 [0.00022] d  
Epoch = 132.6197 [0.0458] BKJD  
Rp/R\* = 0.0024 [0.0037]  
a/R\* = 1.35 [5.09]  
b = 0.50 [12.70]  
Seff = 1774.07 [642.15]  
Teq = 1655 [150] K  
Rp = 0.35 [0.54] Re  
a = 0.0391 [0.0090] AU  
Ag = 222.29 [682.47] [0.32 $\sigma$ ]  
Teffp = 9880 [7544] K [1.09 $\sigma$ ]

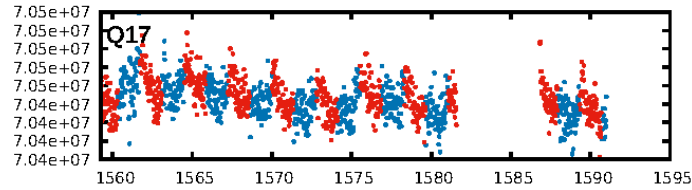
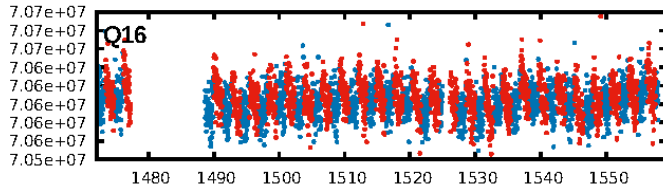
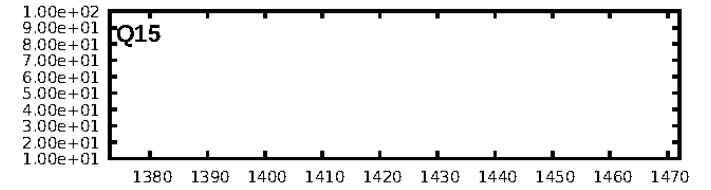
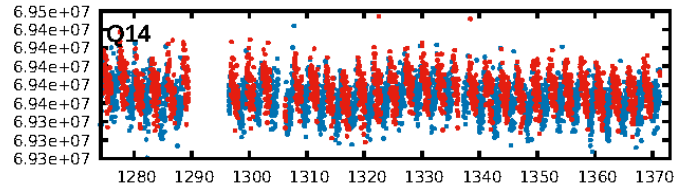
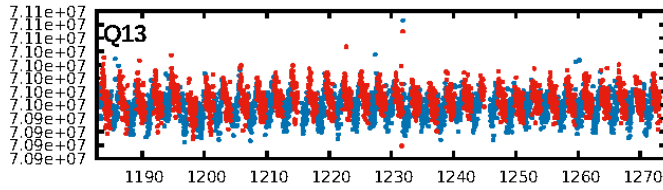
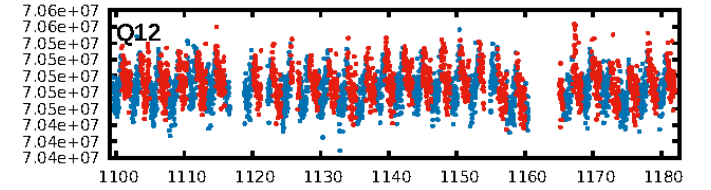
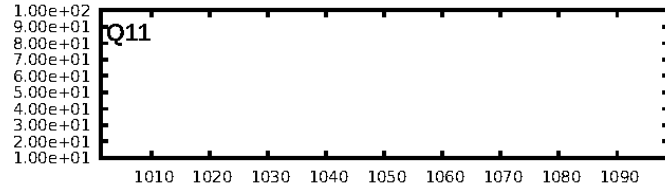
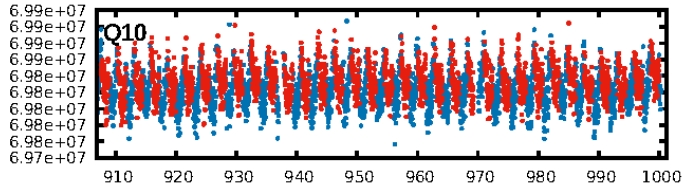
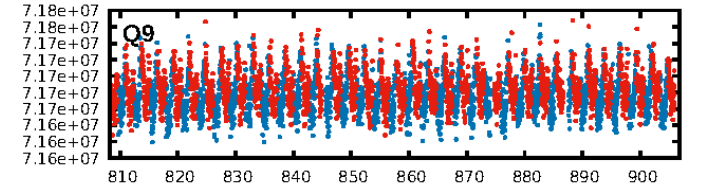
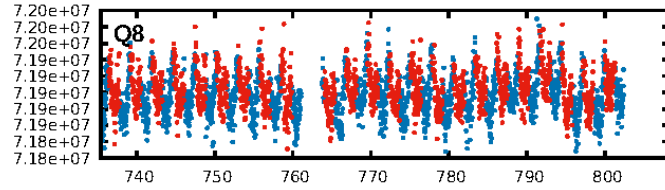
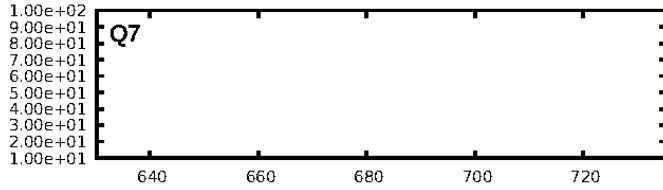
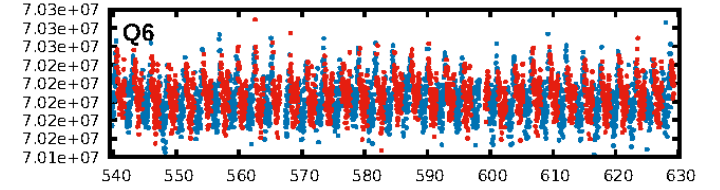
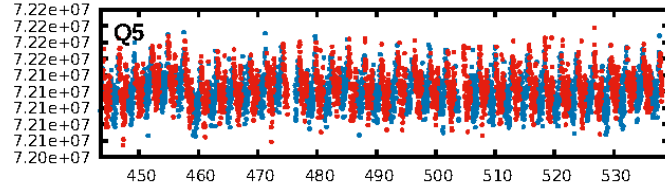
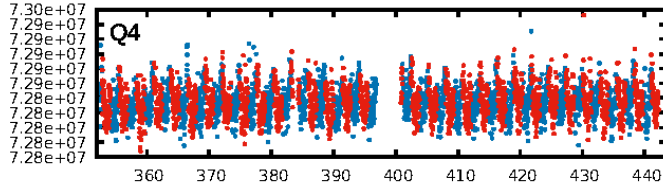
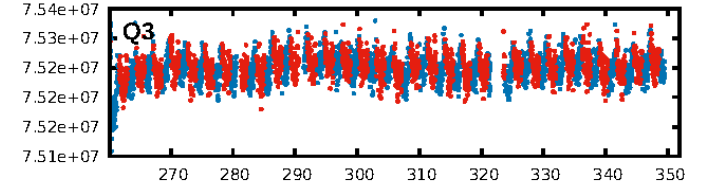
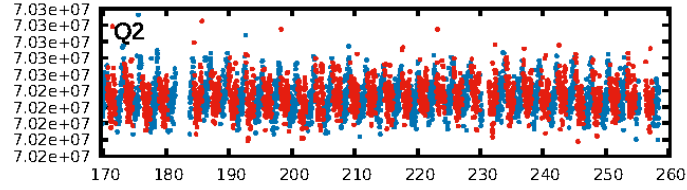
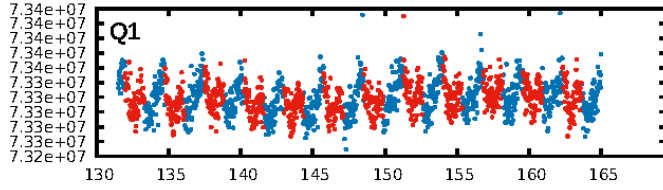
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [116.58 $\sigma$ ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
**Bootstrap-pfa: 2.19e-08**  
RollingBand-fgt: 1.00 [370/370]  
GhostDiagnostic-chr: 1.839  
Centroid-sig: 33.5%  
Centroid-so: 4.234 arcsec [0.89 $\sigma$ ]  
OotOffset-rm: 0.466 arcsec [0.77 $\sigma$ ]  
OotOffset-st: 3/1/3/4 [11]  
KicOffset-rm: 0.424 arcsec [0.68 $\sigma$ ]  
KicOffset-st: 3/1/3/4 [11]  
DiffImageQuality-fgm: 0.91 [10/11]  
DiffImageOverlap-fno: 1.00 [14/14]

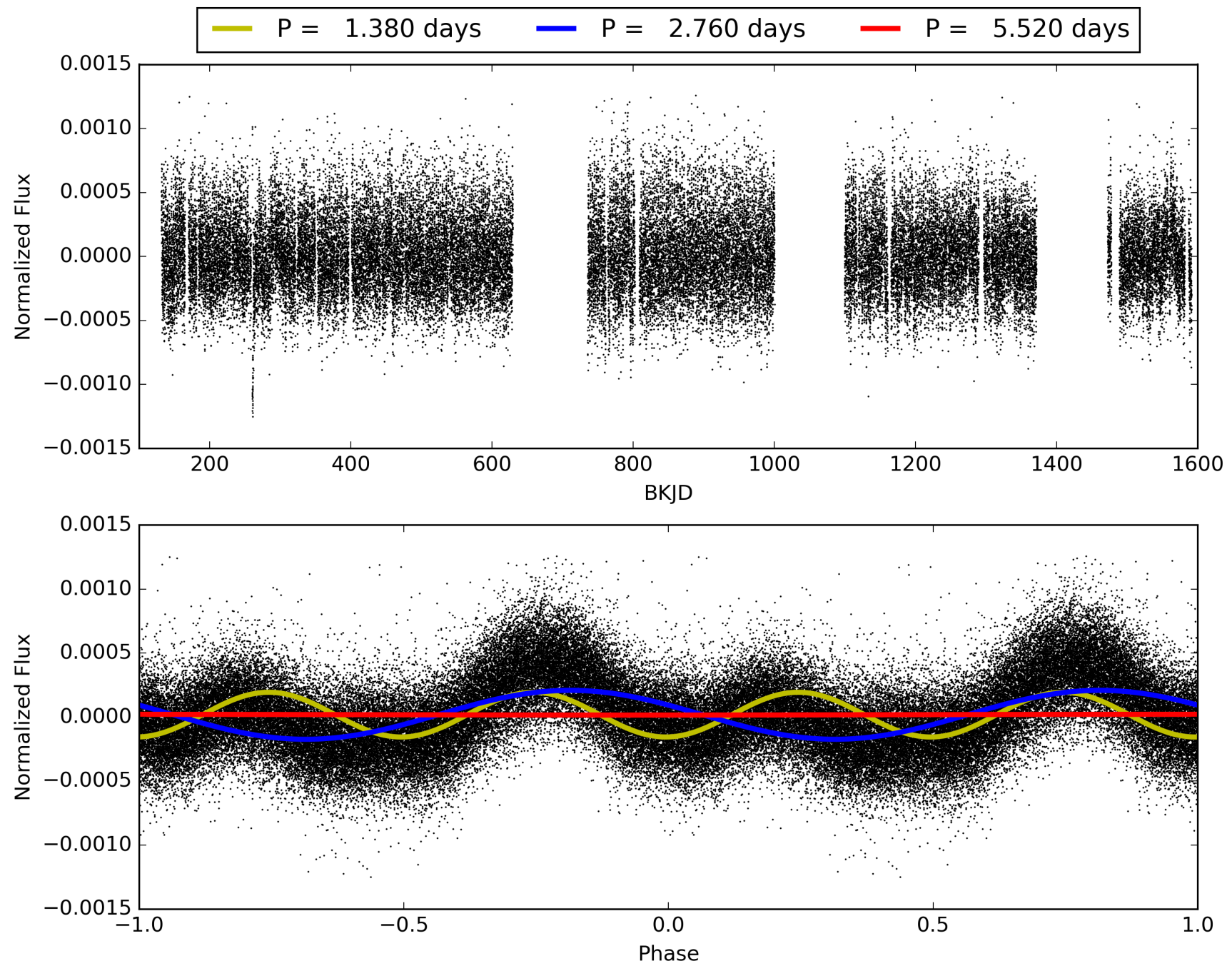
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 010034425-01, PDC Light Curves

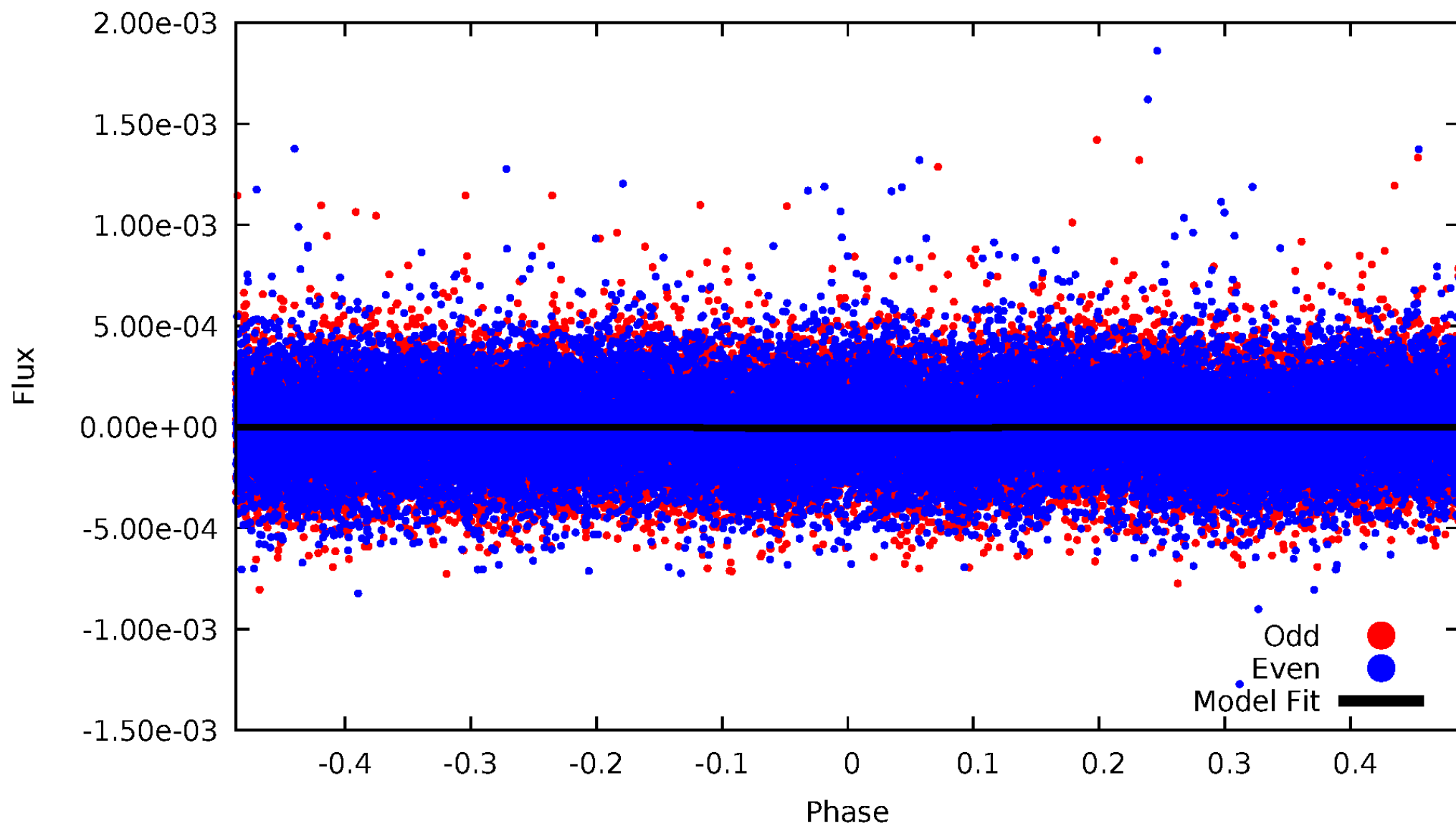


TCE 010034425-01



# DV Odd/Even

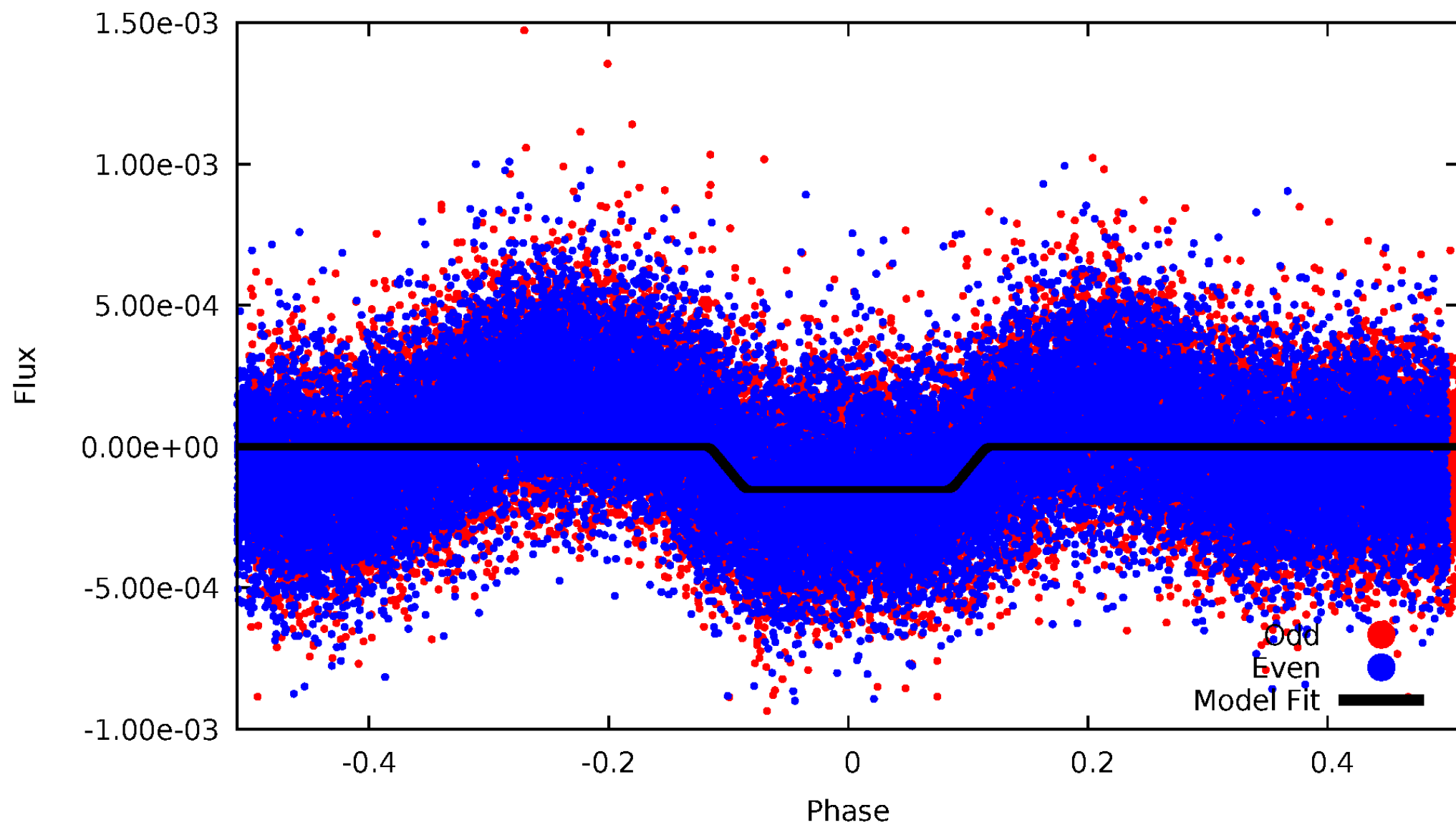
TCE 010034425-01





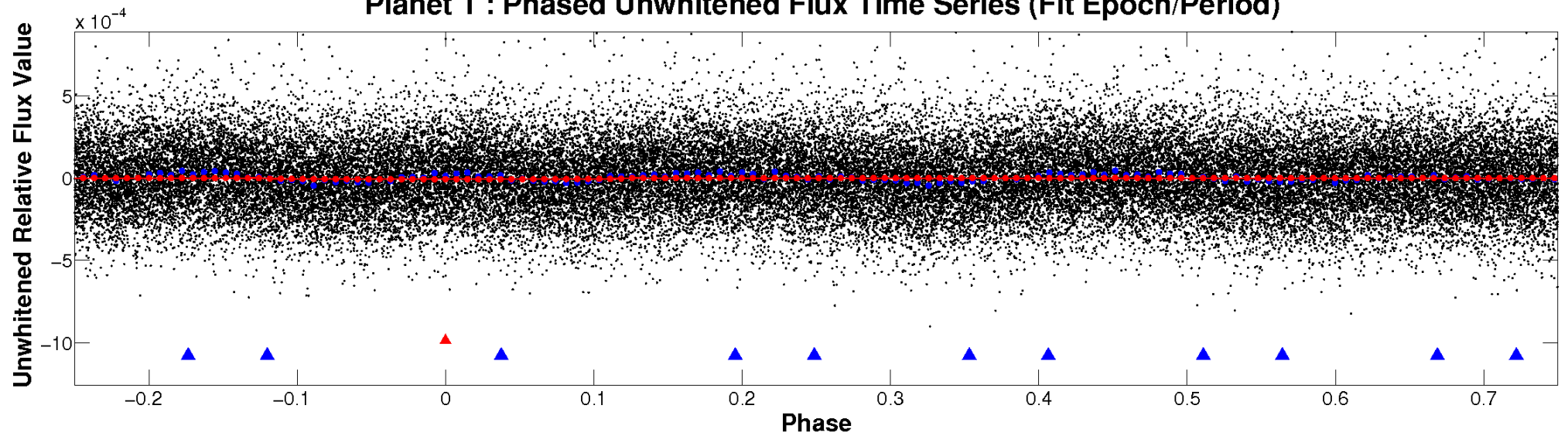
# ALT Odd/Even

TCE 010034425-01

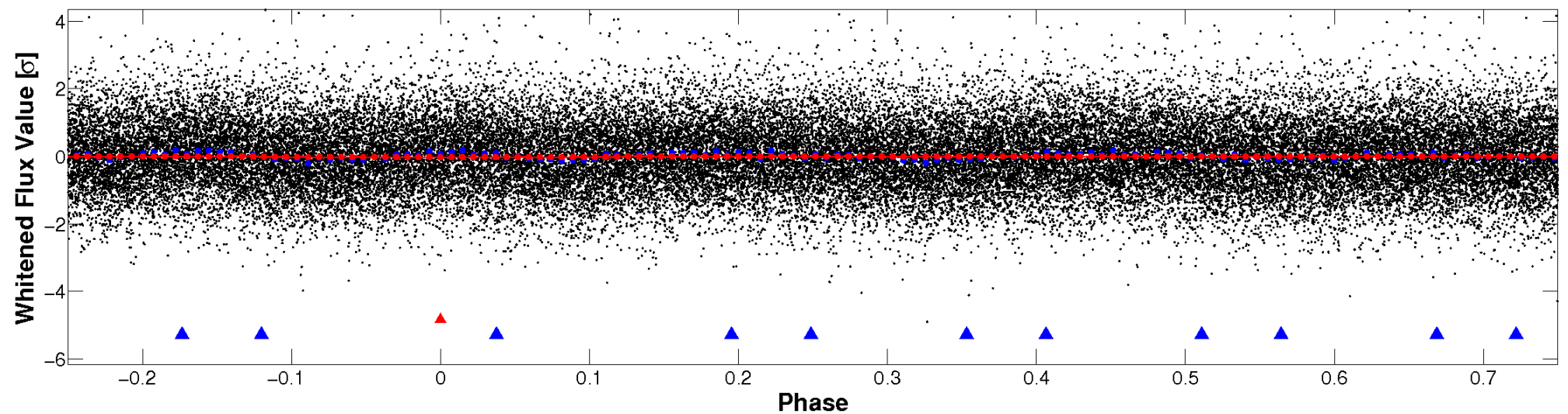


# Non-Whitened Vs. Whitened Light Curve

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

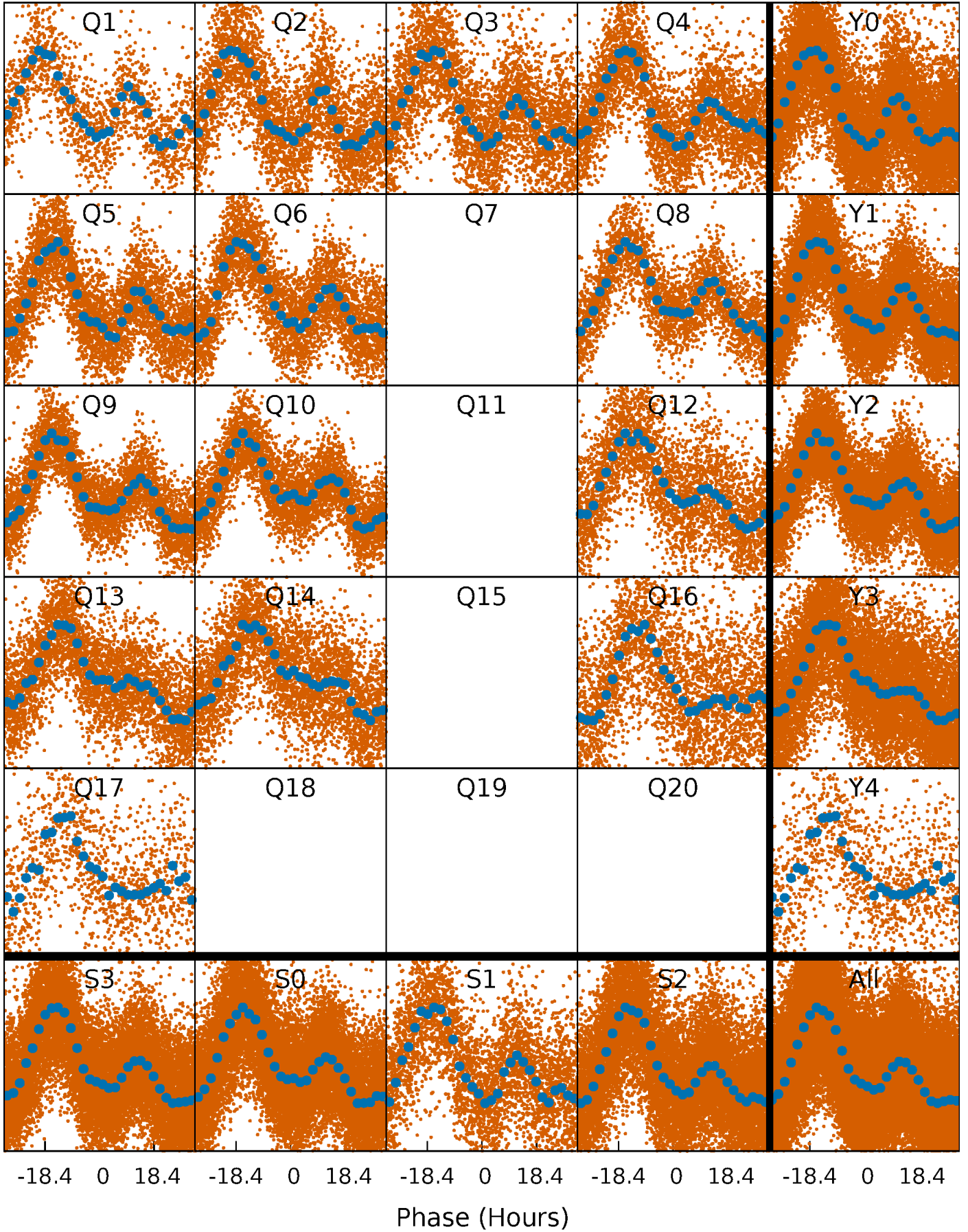


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

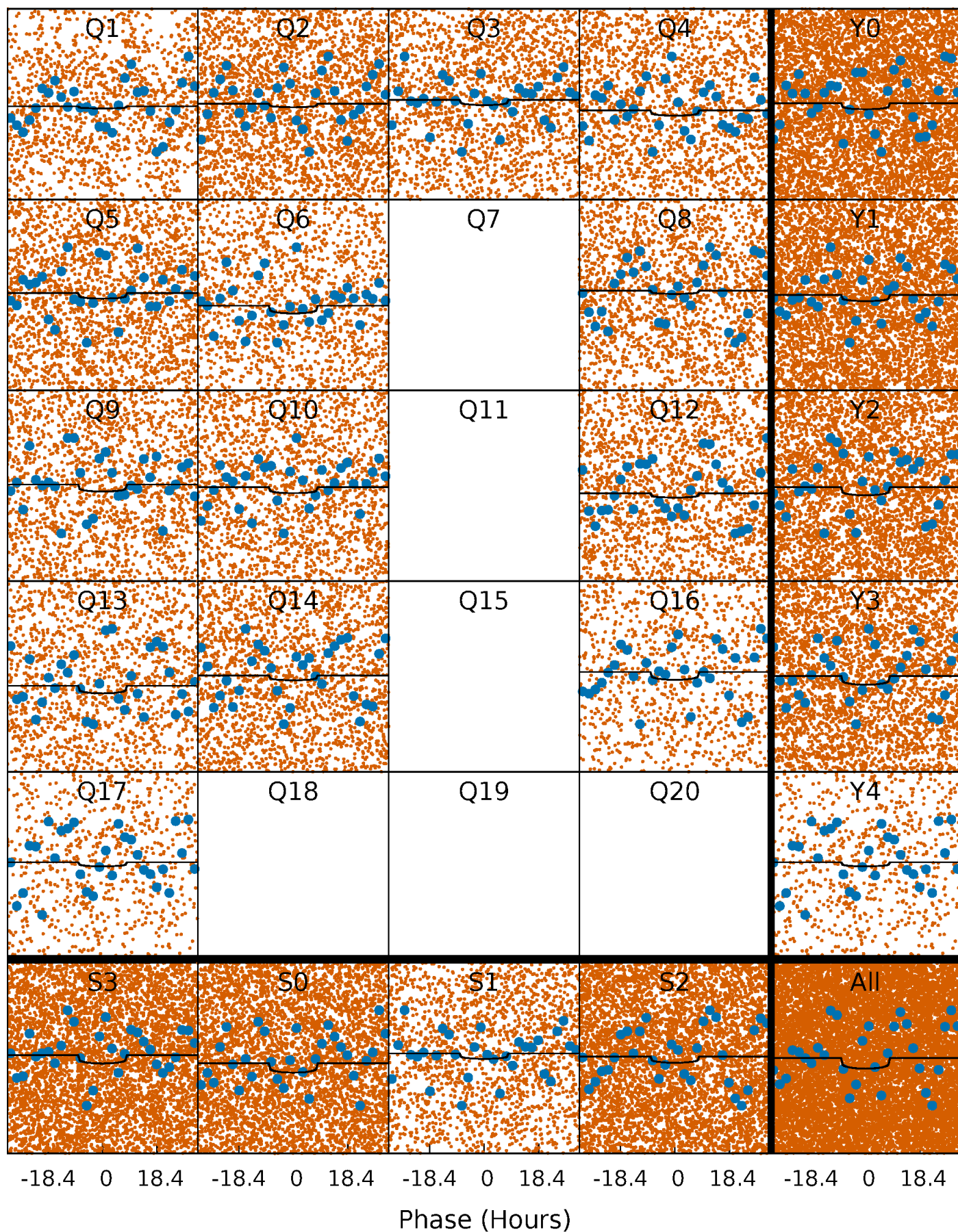
TCE 010034425-01 P= 2.760204 Days  $T_0=132.619682$  (BKJD)





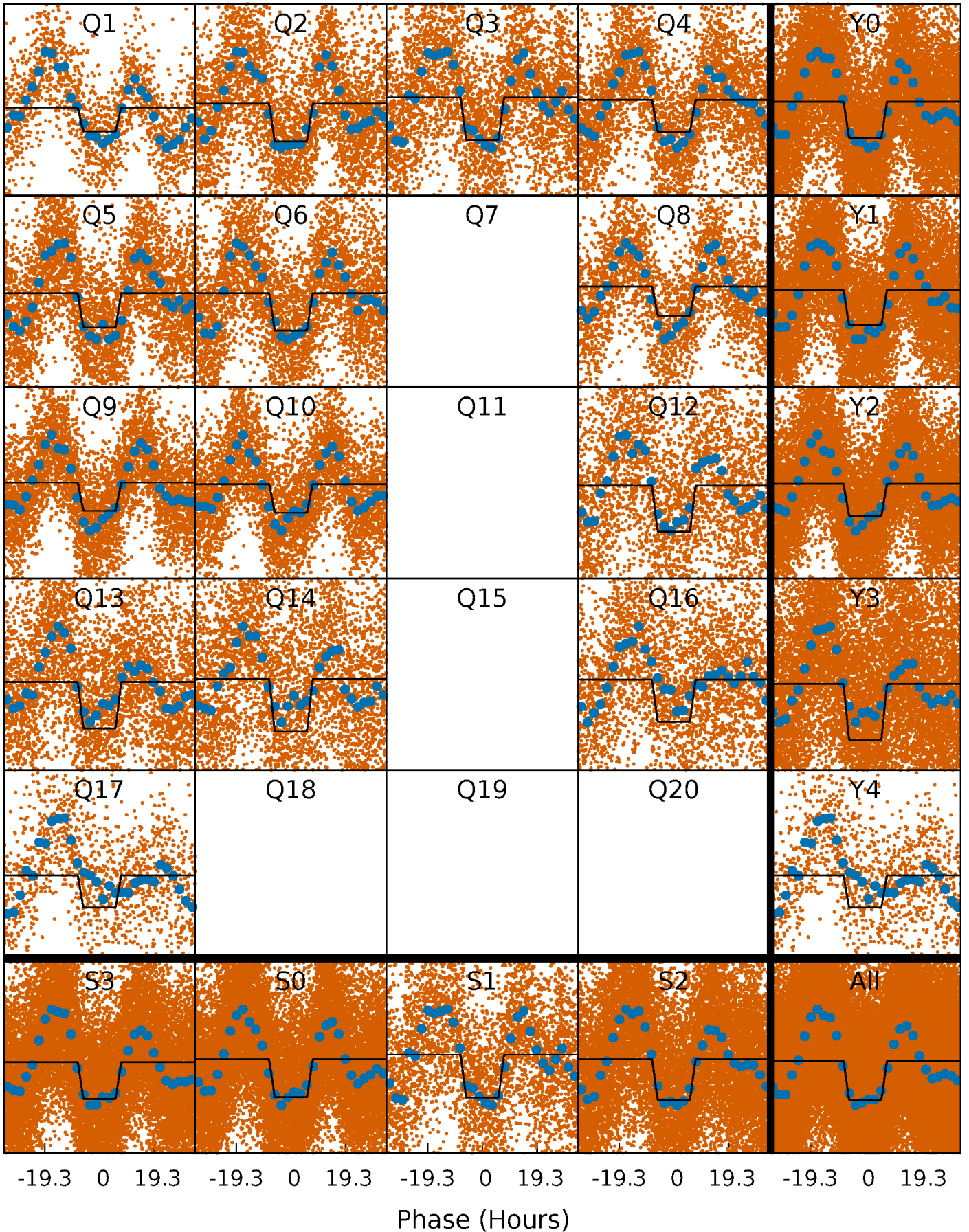
# DV Quarter-Phased Transit Curves

TCE 010034425-01 P= 2.760204 Days  $T_0=132.619682$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 010034425-01 P= 2.760604 Days  $T_0=132.522531$  (BKJD)

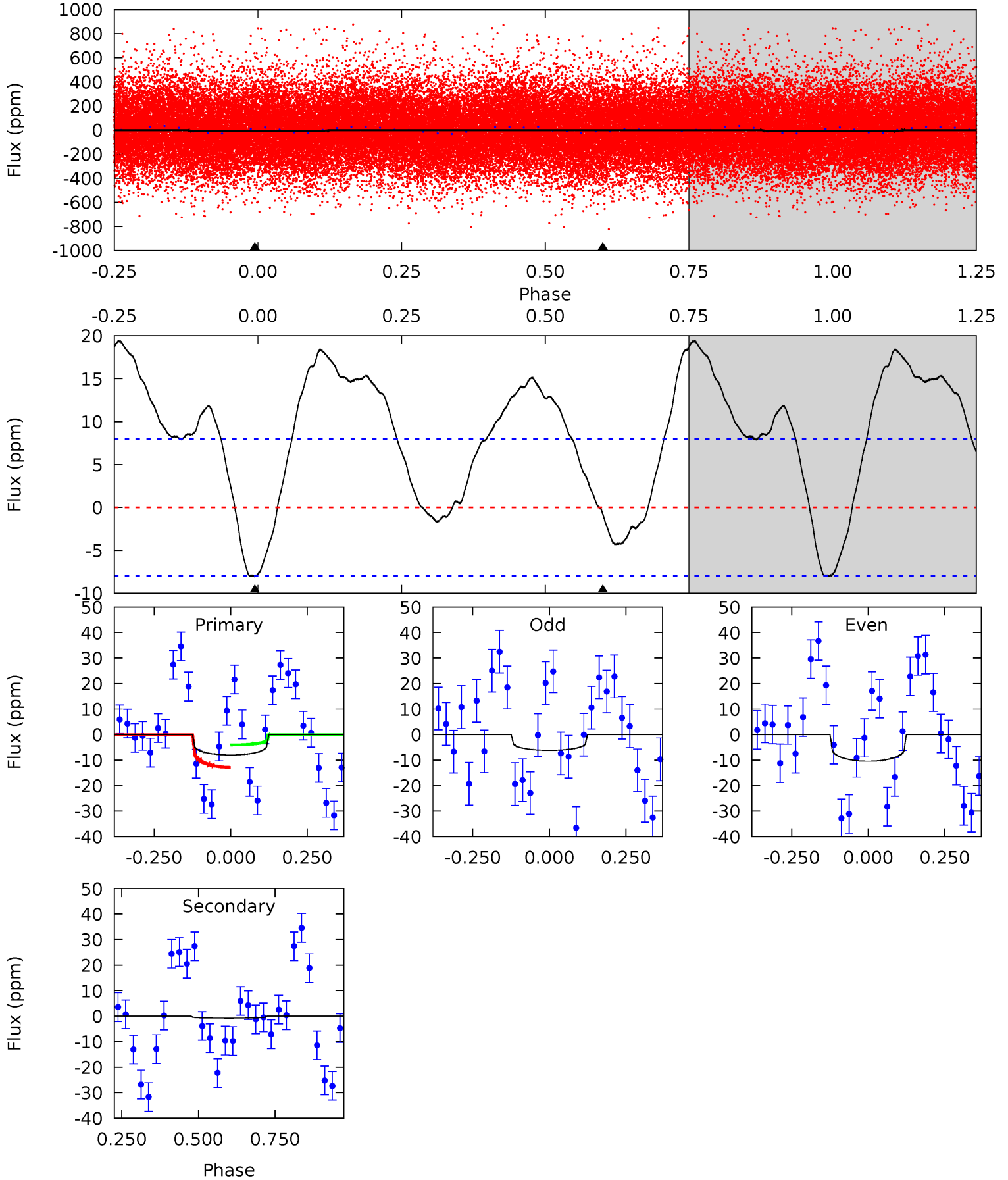




# DV Model-Shift Uniqueness Test

010034425-01, P = 2.760204 Days, E = 129.859478 Days

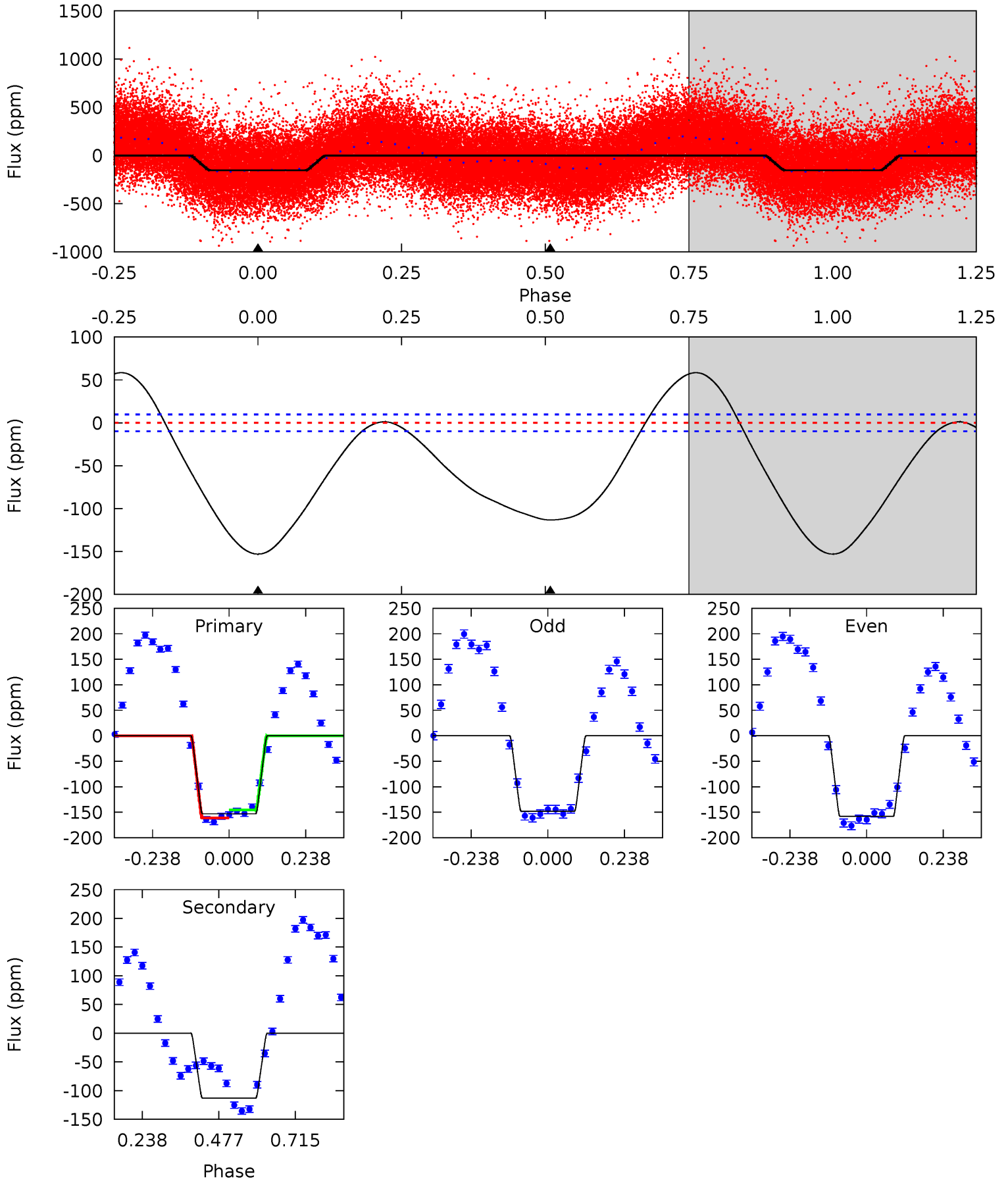
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4.39	0.41	0	0	4.37	1.15	1.38	4.39	4.39	0.41	0.41	1.18	1.19	0.71	2.42



# Alt Model-Shift Uniqueness Test

010034425-01, P = 2.760604 Days, E = 129.761927 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
68.0	50.4	0	0	4.38	1.18	14.5	68.0	68.0	50.4	50.4	2.21	0.90	0.28	3.40





### Stellar Parameters For KIC 010034425

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6465^{+155}_{-214}$	$4.219^{+0.185}_{-0.185}$	$-0.400^{+0.300}_{-0.300}$	$1.317^{+0.358}_{-0.293}$	$1.046^{+0.160}_{-0.131}$	$0.644^{+0.608}_{-0.312}$
	+2%/-3%	+4%/-4%	+75%/-75%	+27%/-22%	+15%/-13%	+94%/-48%
Source	PHO1	KIC0	KIC0	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology  
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

### Secondary Eclipse Parameters for KIC 010034425-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-1 \pm 2$	$0.49^{+0.51}_{-0.33}$	$2319^{+172}_{-167}$	$3207^{+2279}_{-7067}$	$1.357^{+19.170}_{-4.258}$
Alt.	$-113 \pm 2$	$1.79^{+0.61}_{-0.60}$	$2313^{+158}_{-166}$	$5964^{+1275}_{-717}$	$31^{+37}_{-14}$

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

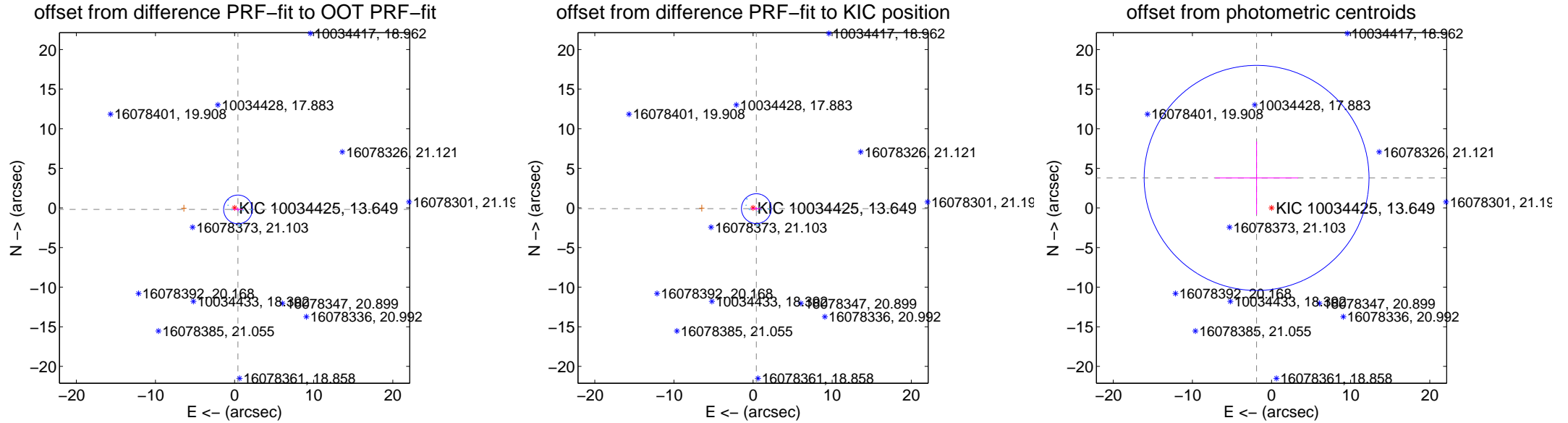
## DV Centroid Data

Supplemental centroid analysis for 010034425-01. Kepler magnitude: 13.65. Transit SNR 2.43

There are 10 quarters with good PRF difference image offsets

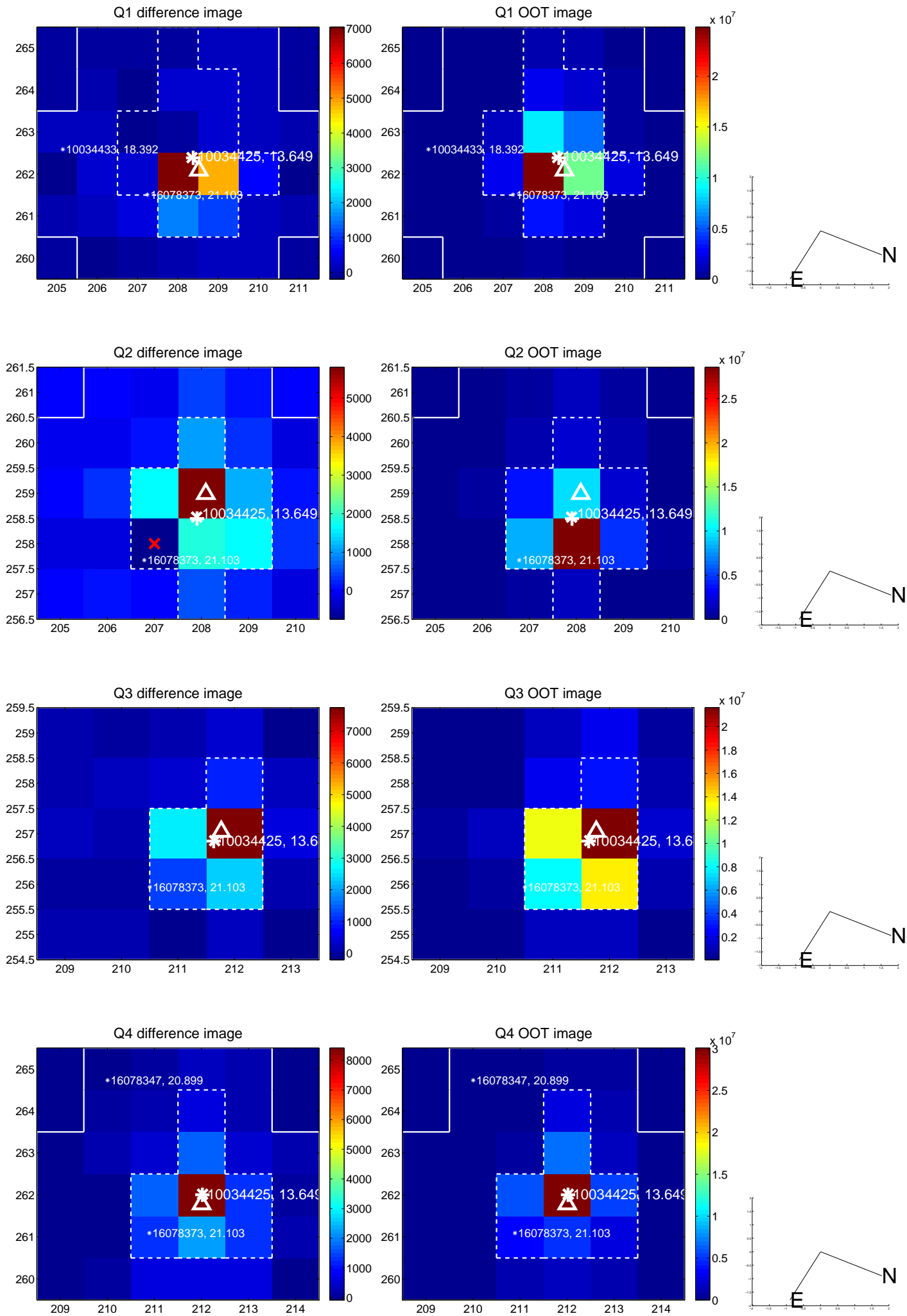
The direct PRF centroid is offset from the target star catalog position by about 0.06 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.466 \pm 0.604$	0.77	$-0.428 \pm 0.633$	$-0.185 \pm 0.246$
PRF-fit source offset from KIC position	$0.424 \pm 0.627$	0.68	$-0.415 \pm 0.636$	$-0.087 \pm 0.230$
photometric centroid source offset	$4.23 \pm 4.74$	0.89	$1.89 \pm 5.25$	$3.79 \pm 4.60$

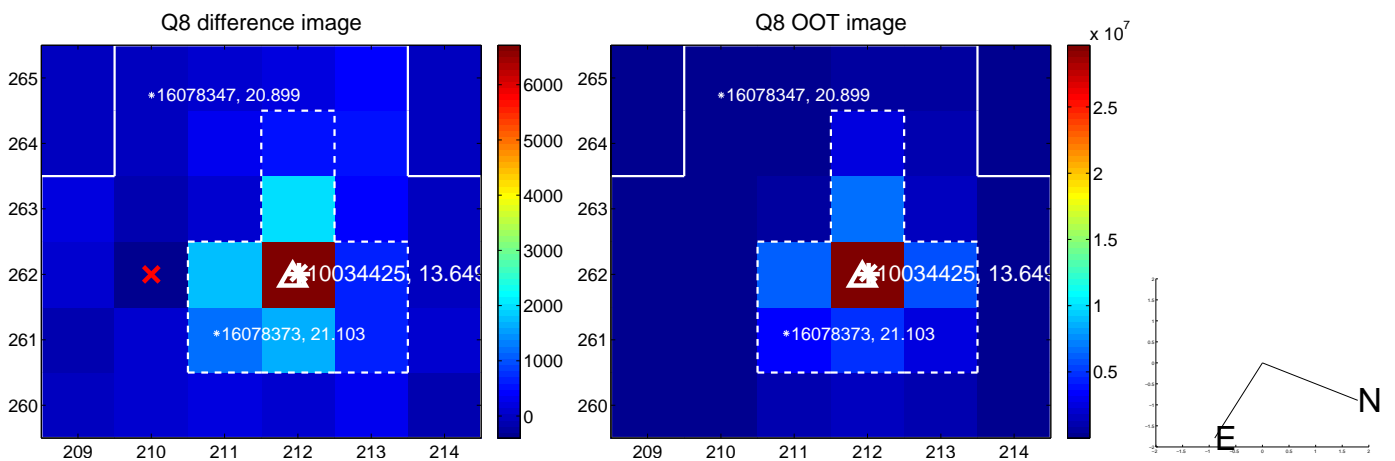
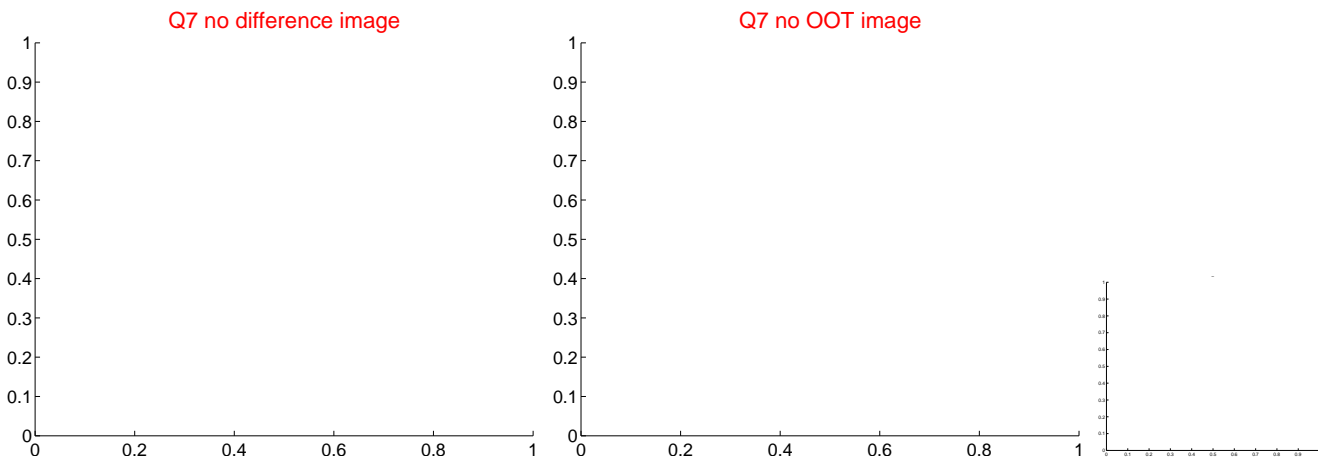
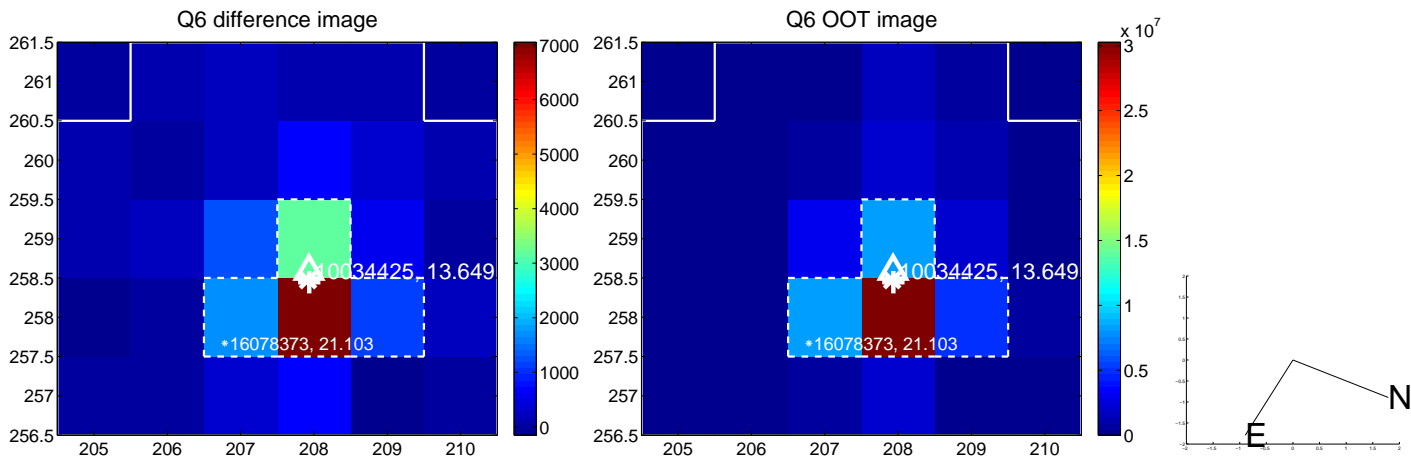
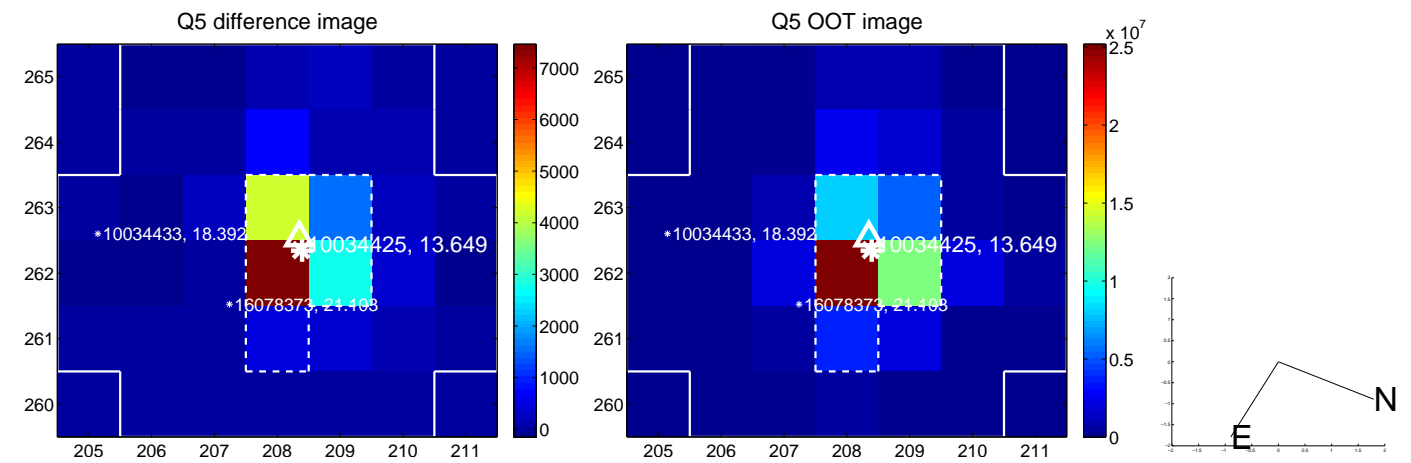


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

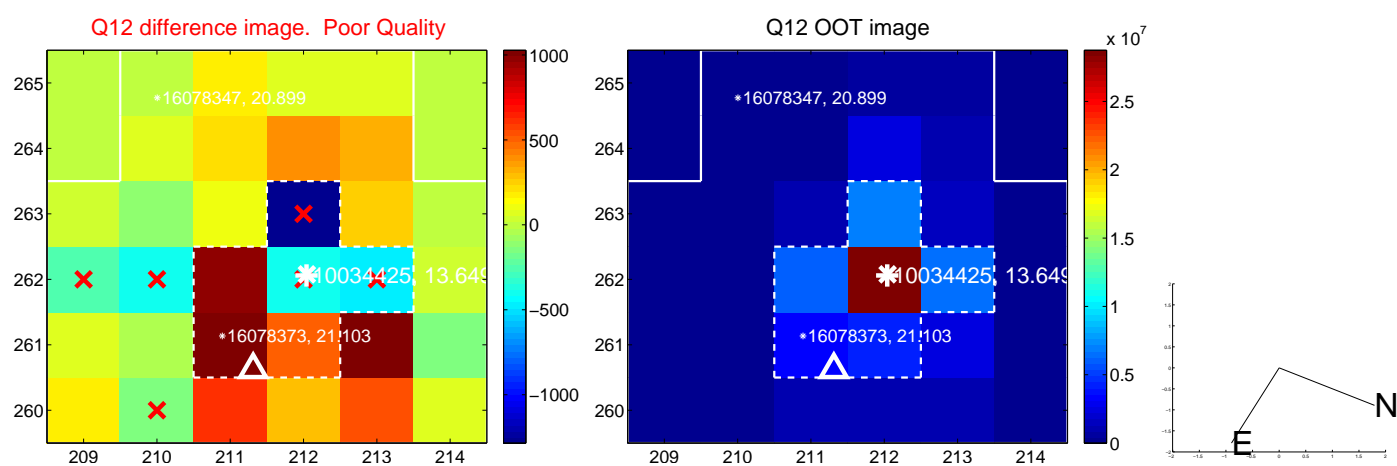
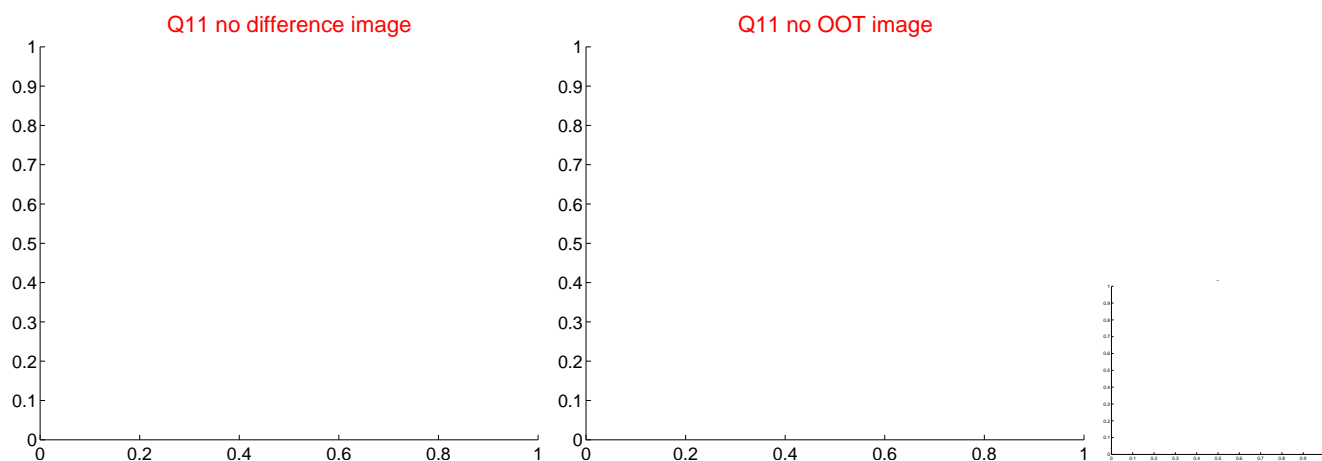
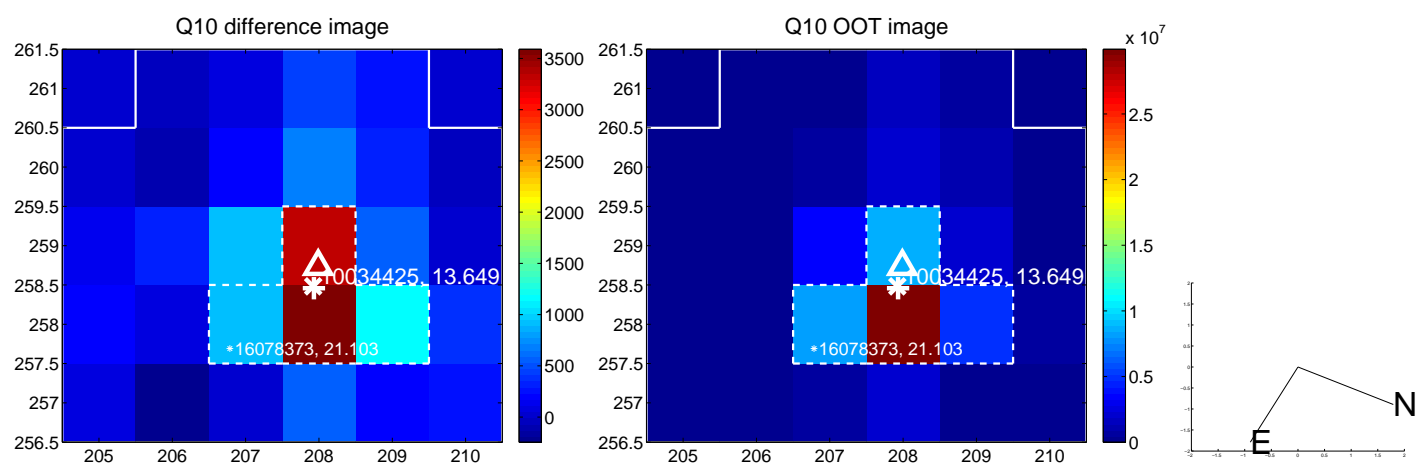
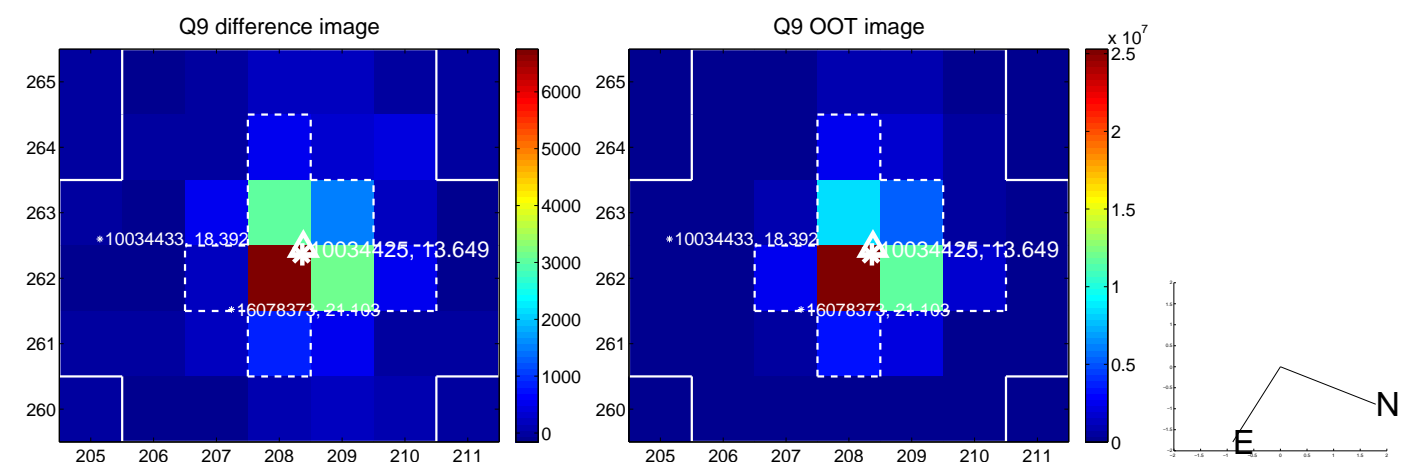


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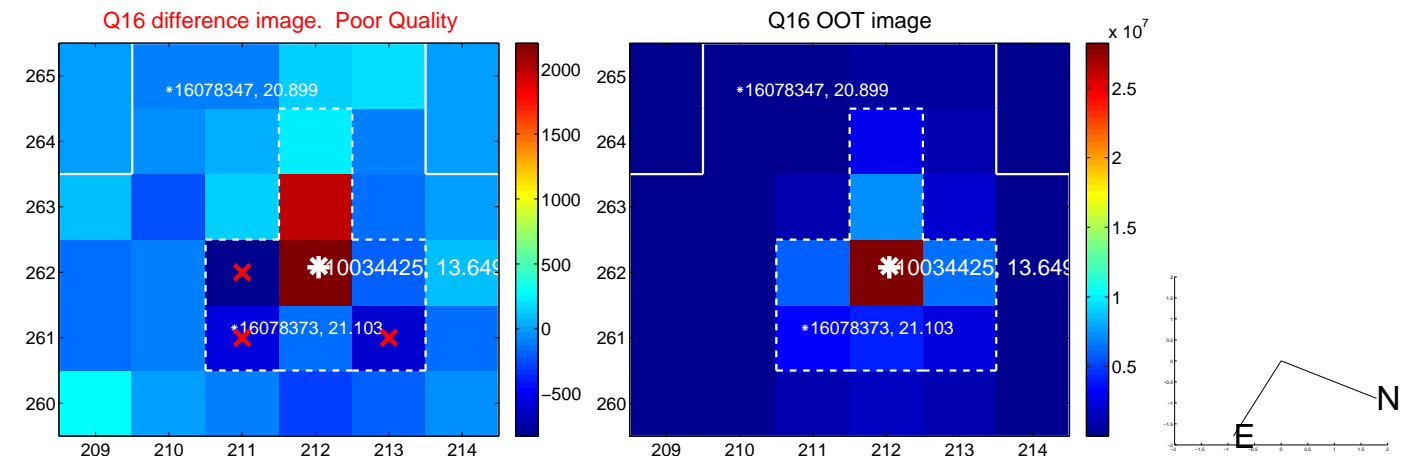
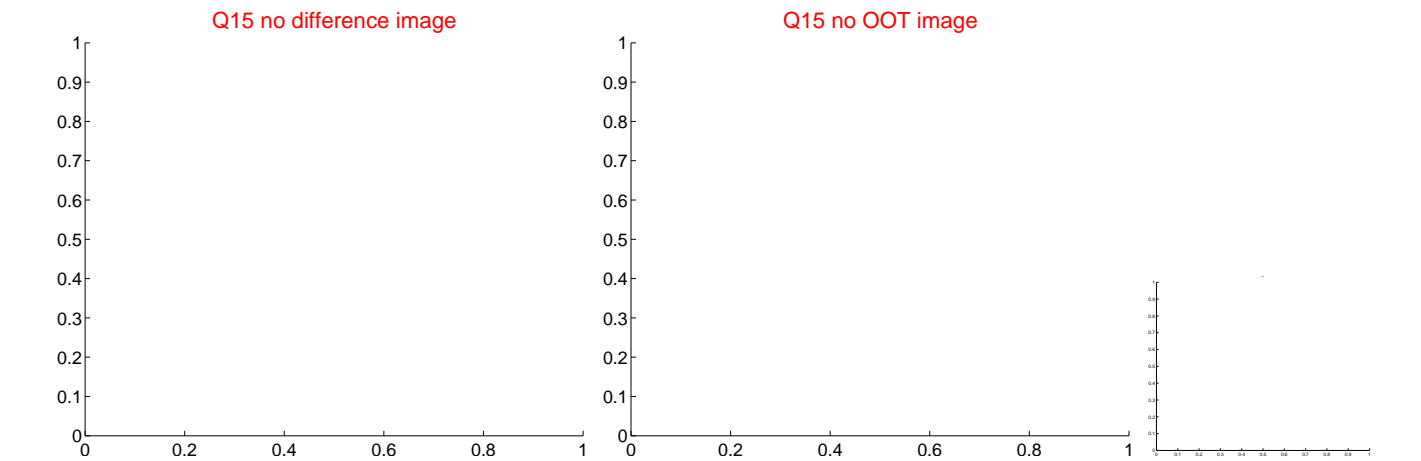
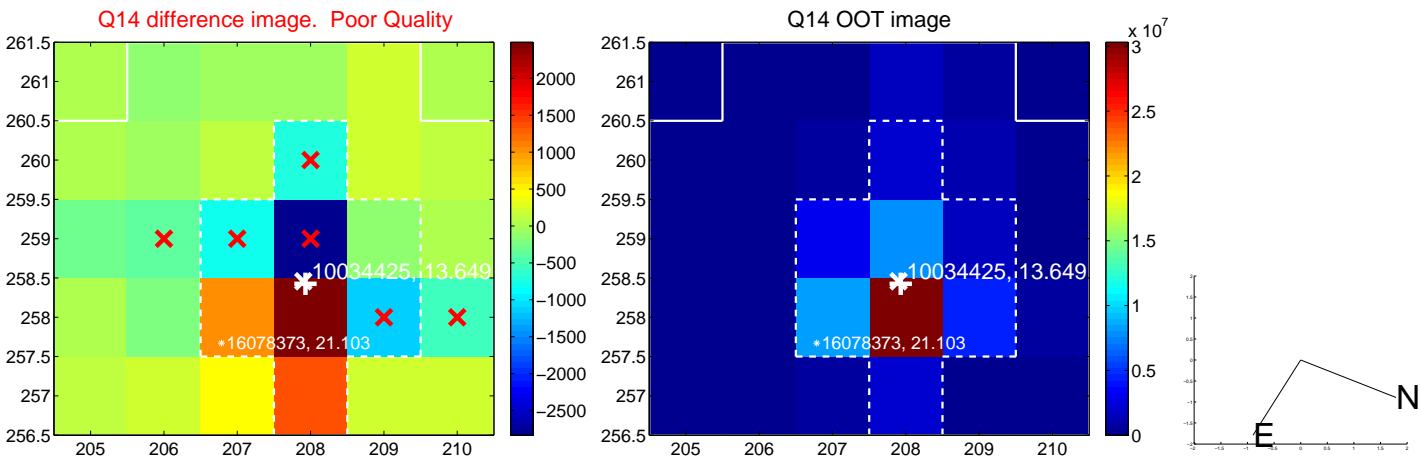
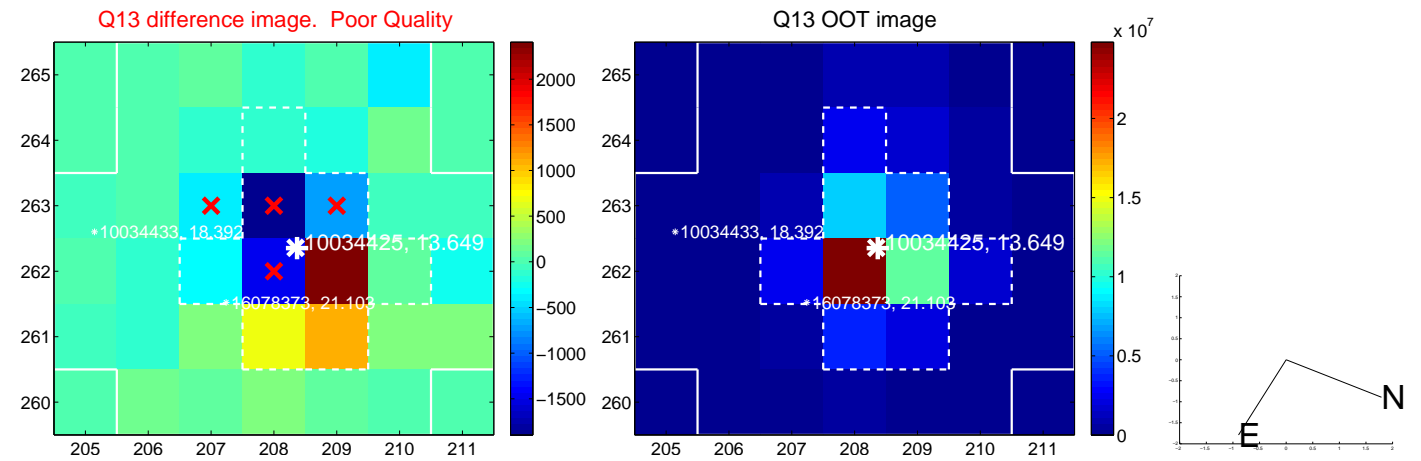




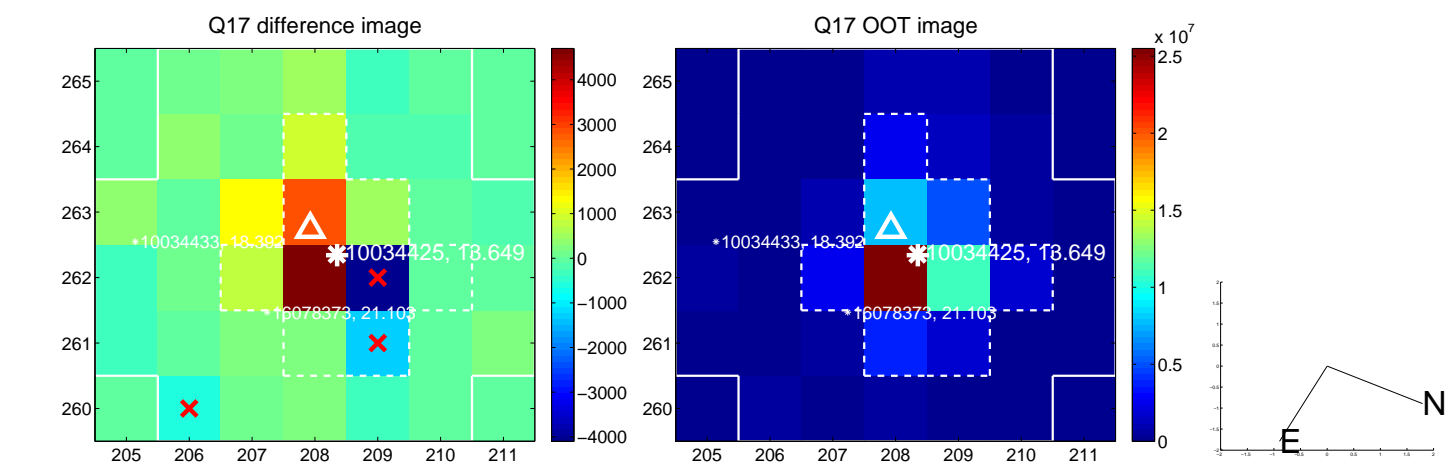
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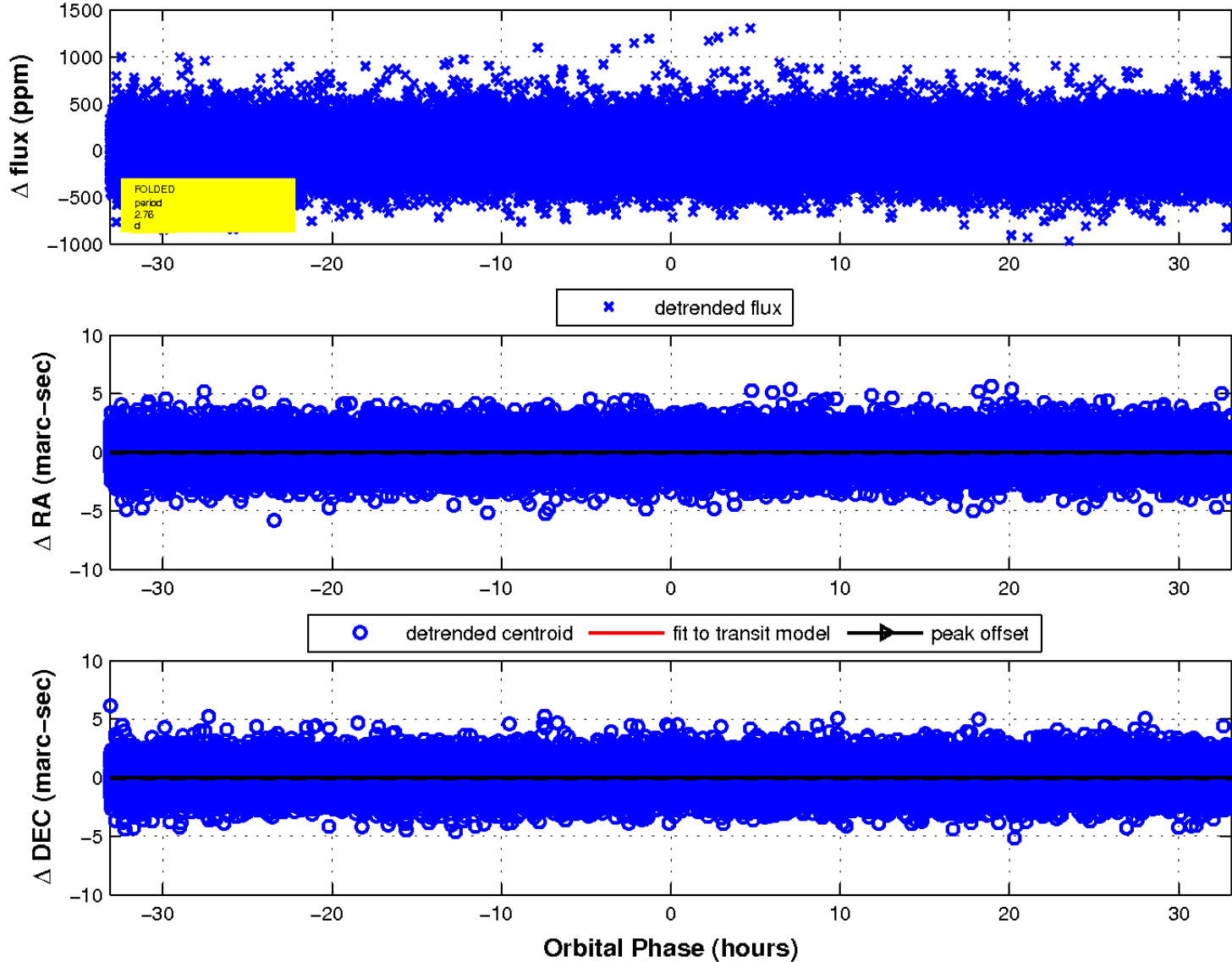
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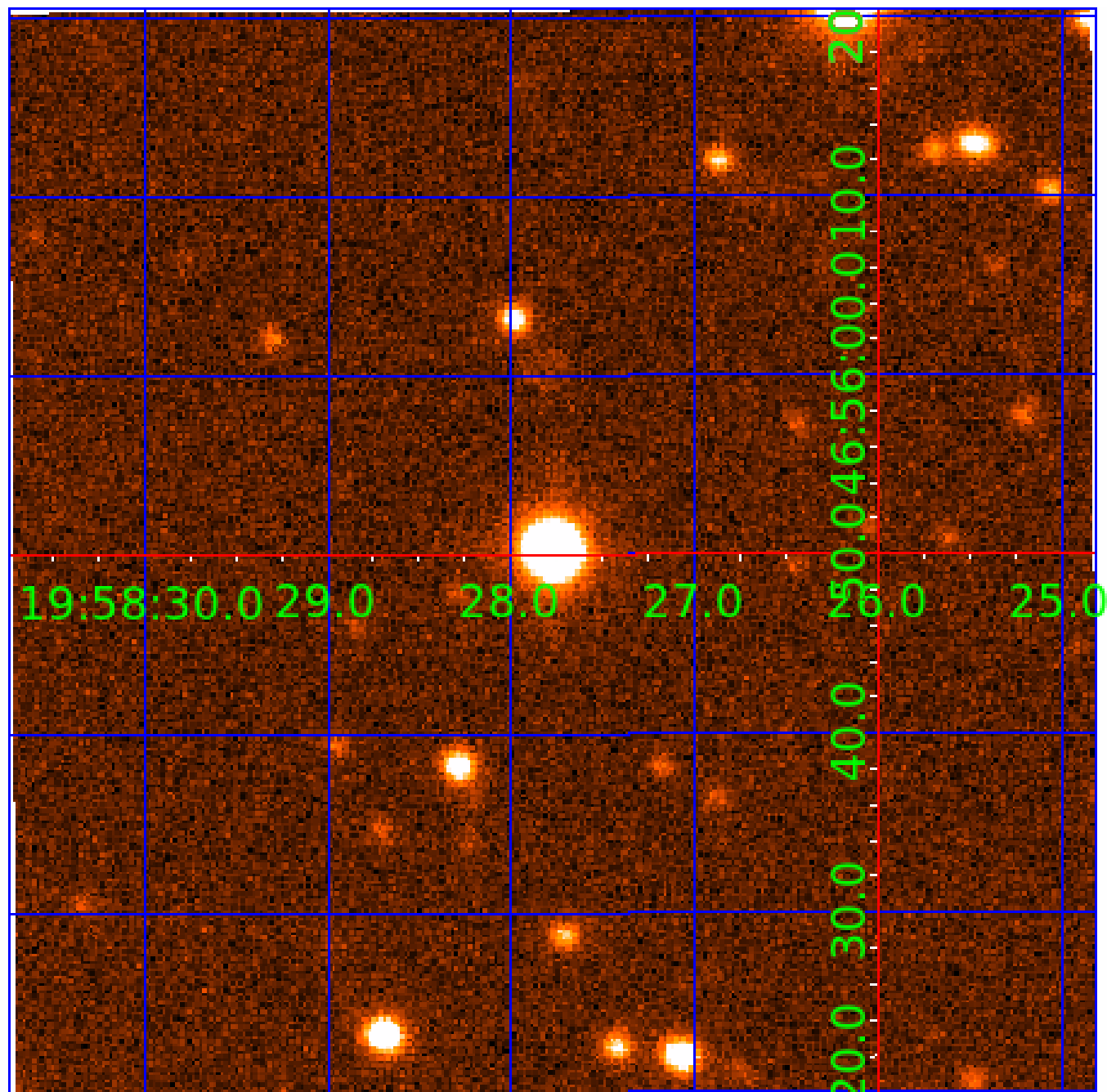


fluxWeightedCentroids, Planet 1 of 2



UKIRT Image

Declination





# KIC 010034425

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
010034425-01	OBS	No	2.760204	132.619682	6.6	16.118	7.6	2.4	1.32	6465	0.35	1774.07
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## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010034425-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
010034425-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_MEAS

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

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

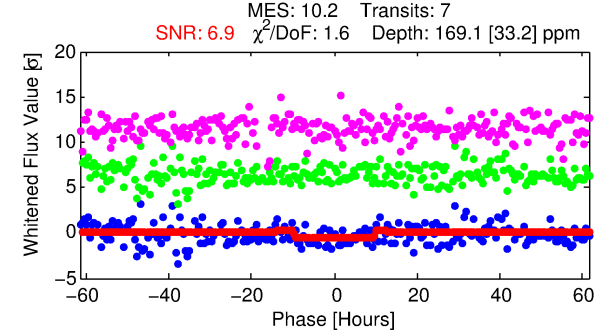
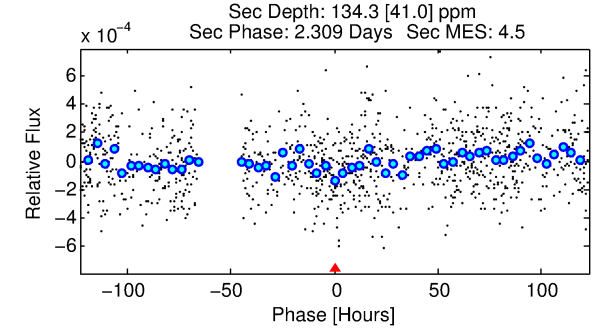
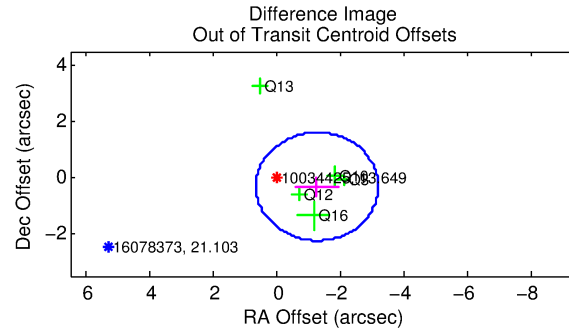
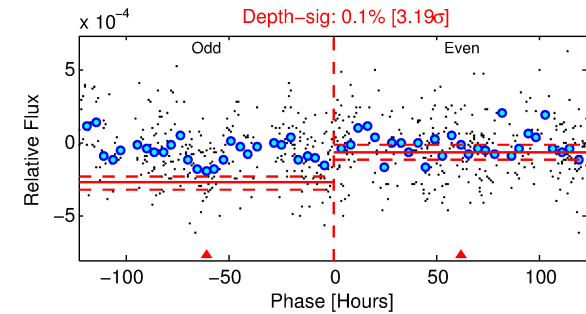
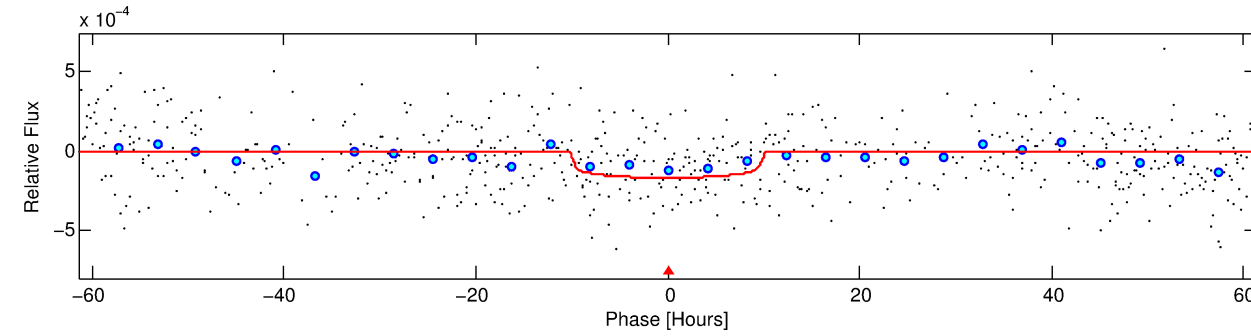
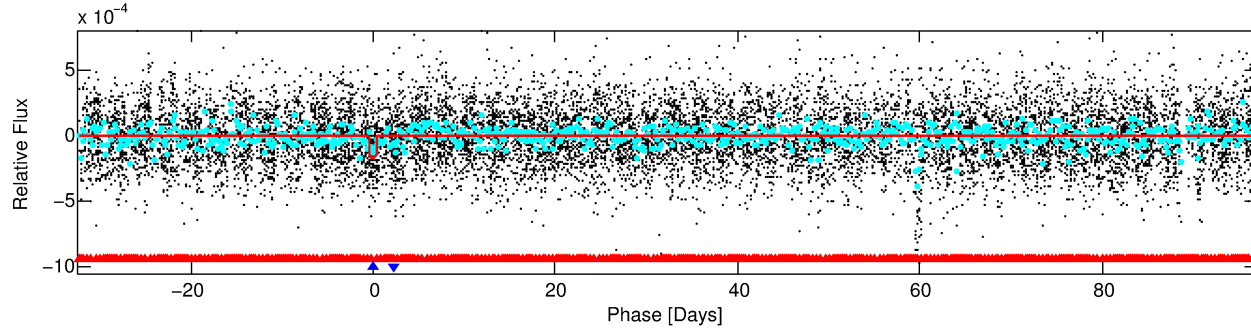
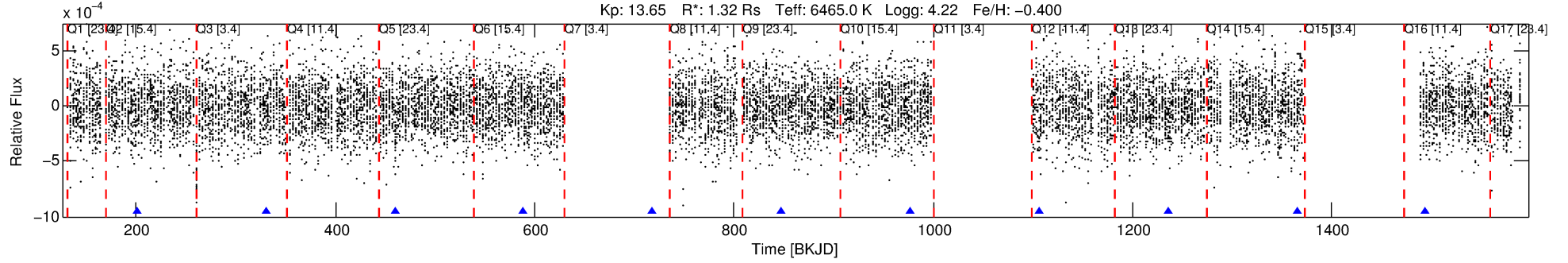
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 010034425-02

No Significant Match Found

# DV One-Page Summary

KIC: 10034425 Candidate: 2 of 2 Period: 129.294 d



## DV Fit Results:

Period = 129.29408 [0.00621] d  
Epoch = 201.1460 [0.0439] BKJD  
Rp/R\* = 0.0131 [0.0033]  
a/R\* = 30.42 [39.07]  
b = 0.79 [0.60]  
Seff = 10.51 [3.80]  
Teq = 459 [42] K  
Rp = 1.89 [0.70] Re  
a = 0.5083 [0.1170] AU  
Ag = 5364.58 [3655.52] [1.47σ]  
Teffp = 6075 [922] K [6.09σ]

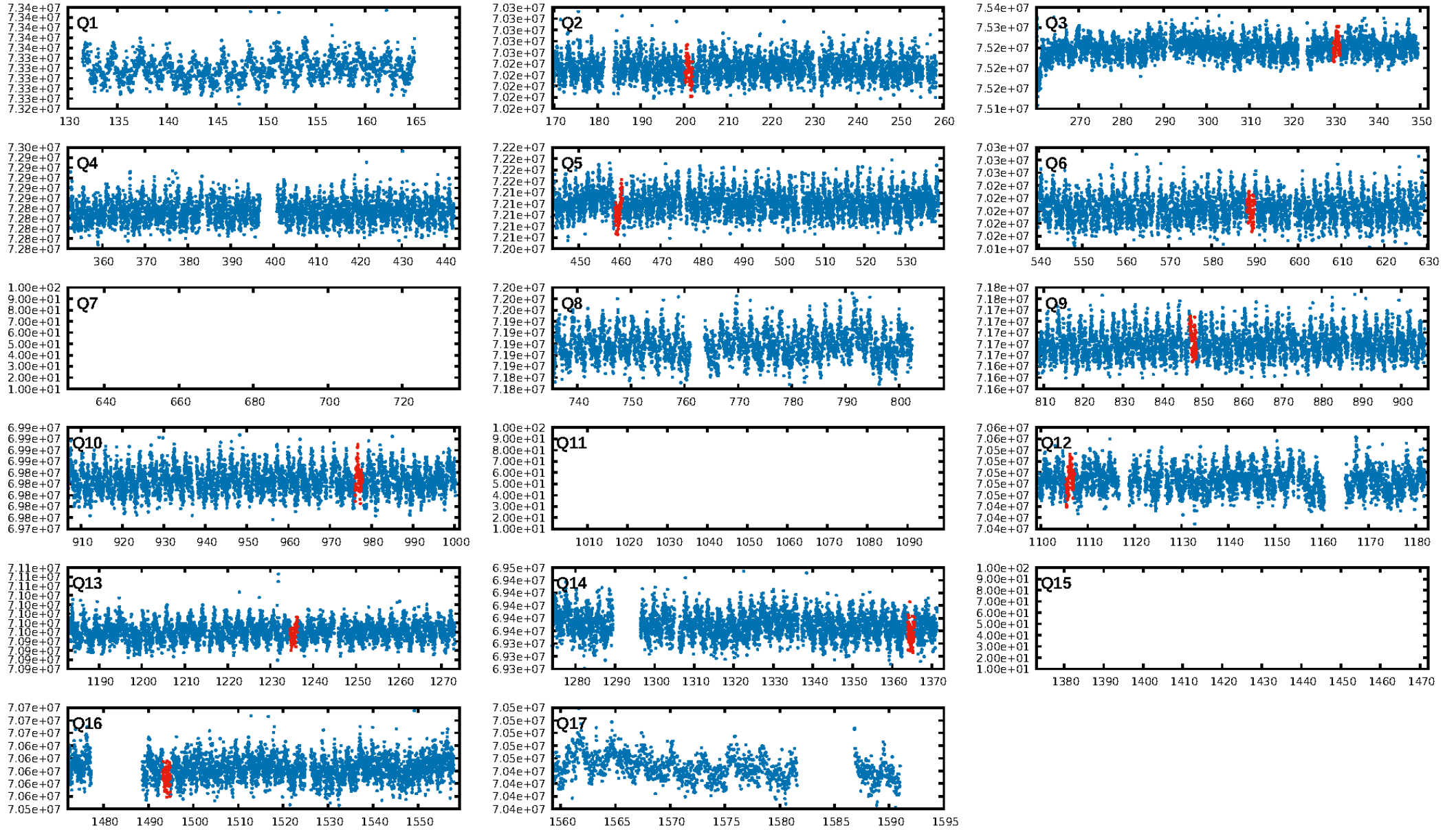
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [116.58σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 0.0%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 1.87e-13  
RollingBand-fgt: 1.00 [7/7]  
GhostDiagnostic-chr: 1.258  
Centroid-sig: 0.8%  
Centroid-so: 2.147 arcsec [1.92σ]  
OotOffset-rm: 1.300 arcsec [2.02σ]  
KicOffset-rm: 1.247 arcsec [1.95σ]  
OotOffset-st: 1/1/2/1 [5]  
KicOffset-st: 1/1/2/1 [5]  
DiffImageQuality-fgm: 0.20 [1/5]  
DiffImageOverlap-fno: 0.00 [0/8]

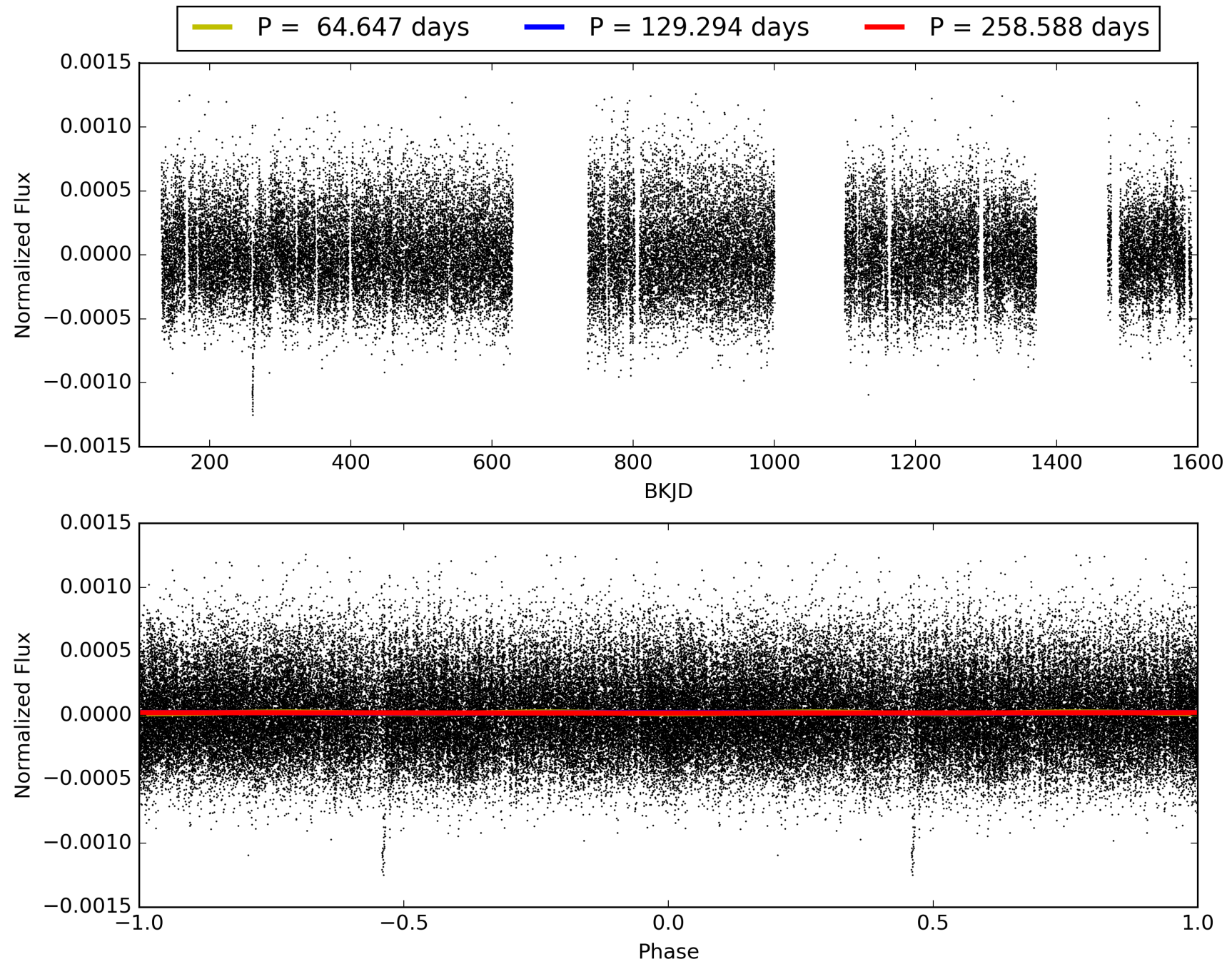
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 15:20:09 Z

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

# TCE 010034425-02, PDC Light Curves



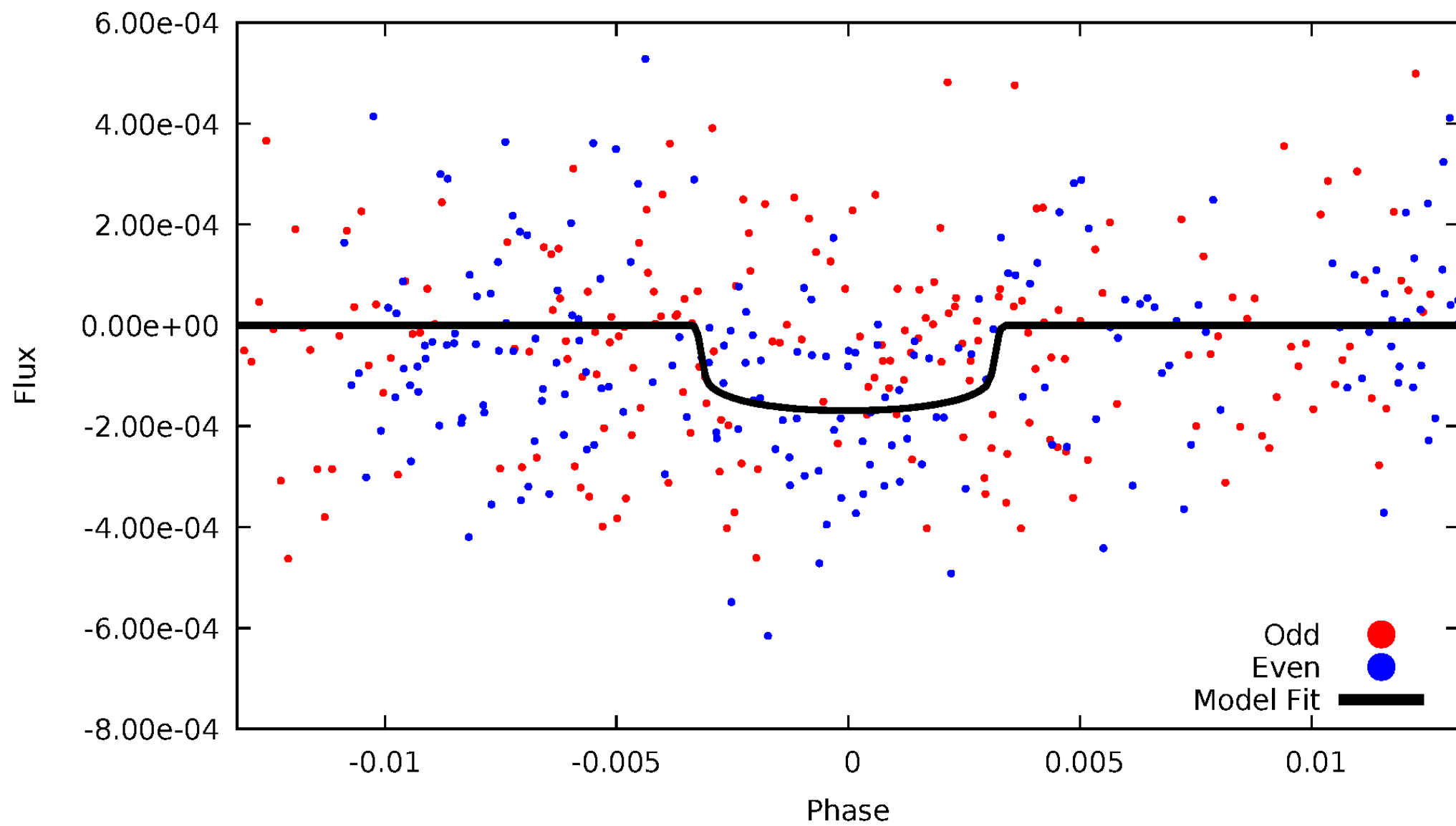
TCE 010034425-02





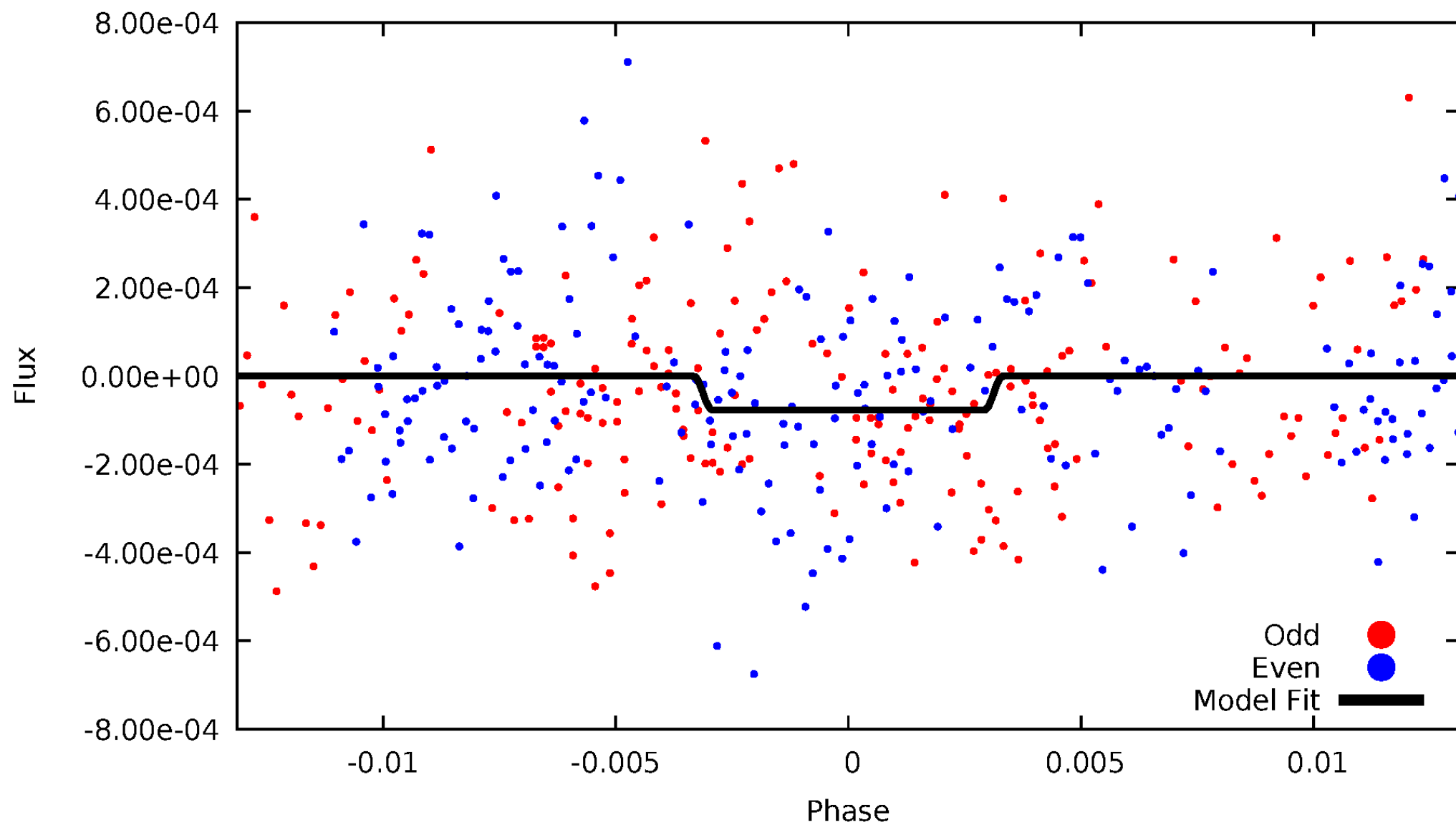
# DV Odd/Even

TCE 010034425-02



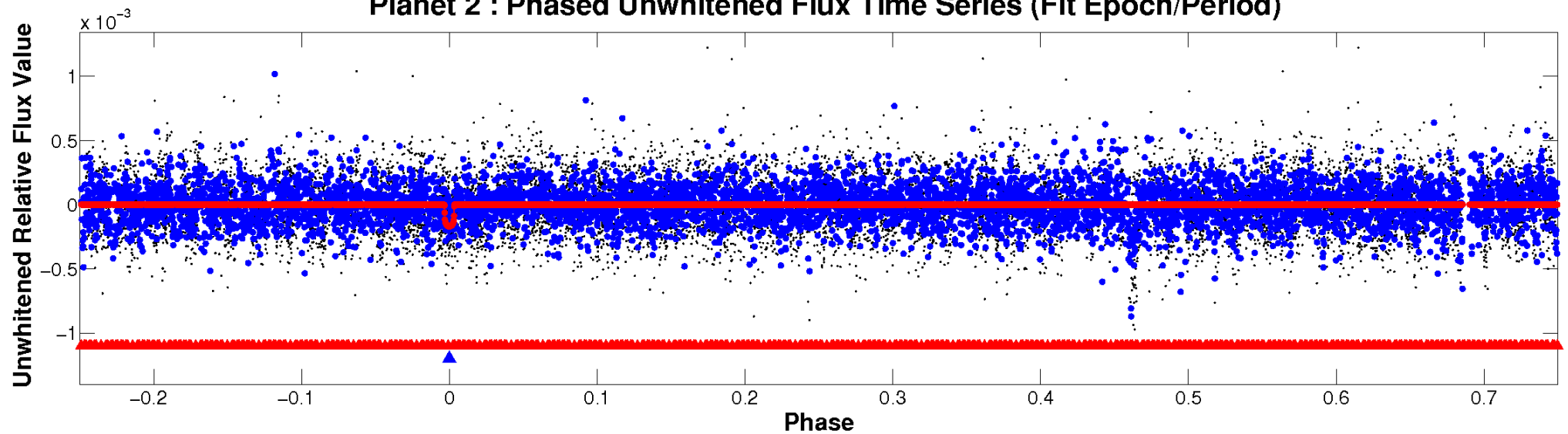
# ALT Odd/Even

TCE 010034425-02

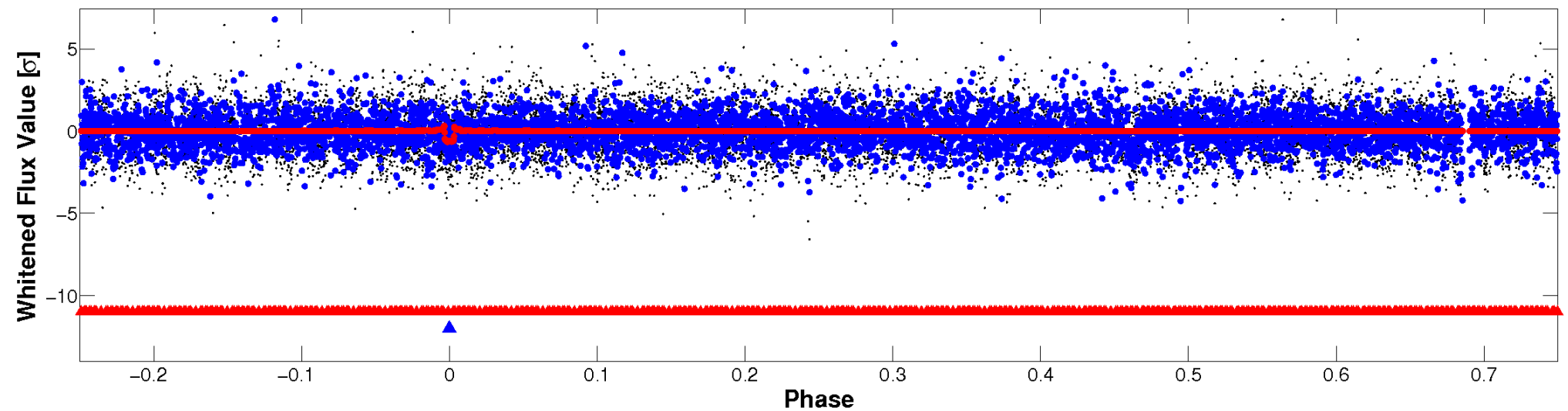


# Non-Whitened Vs. Whitened Light Curve

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

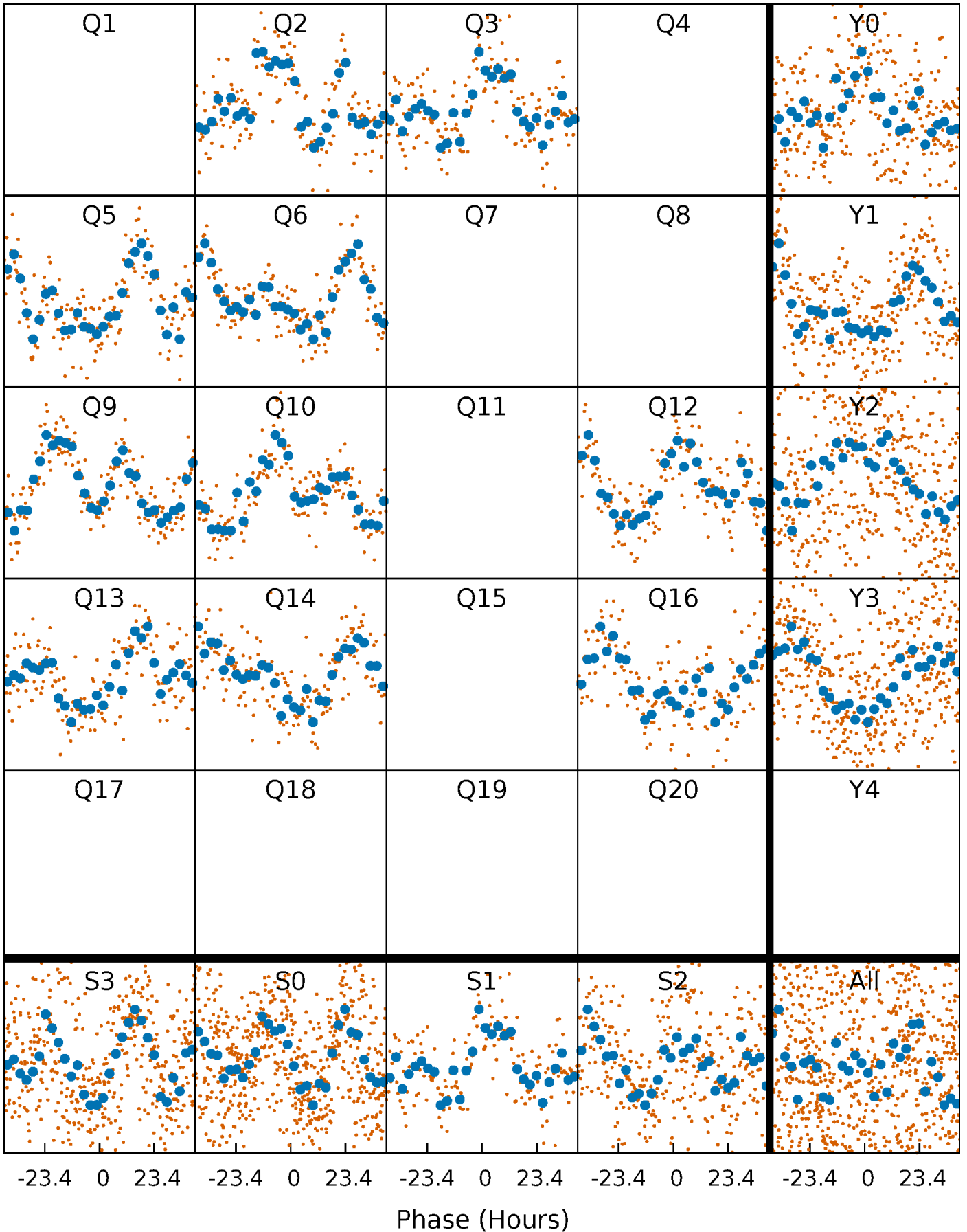


**Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



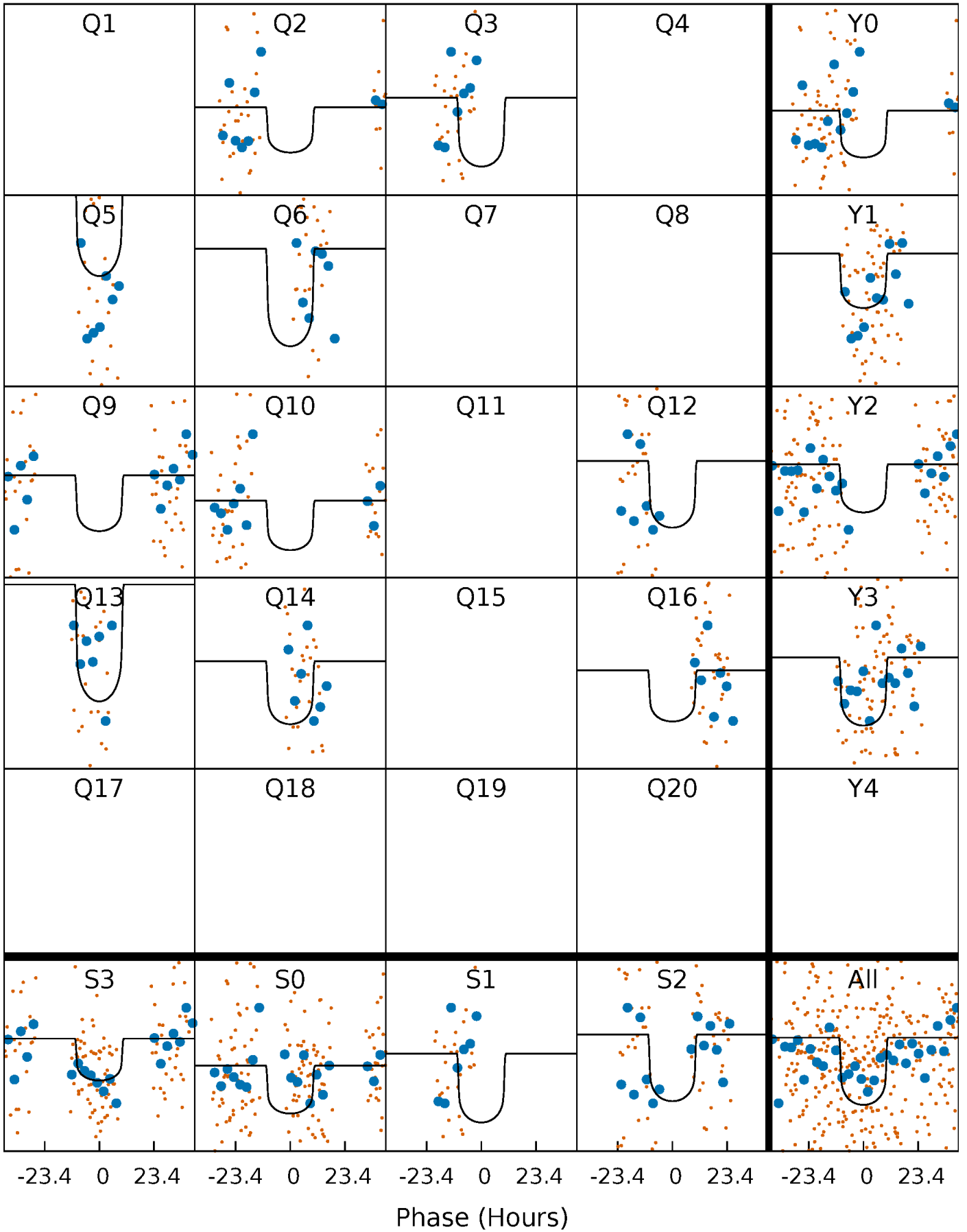
# PDC Quarter-Phased Transit Curves

TCE 010034425-02 P=129.294083 Days  $T_0=201.146008$  (BKJD)



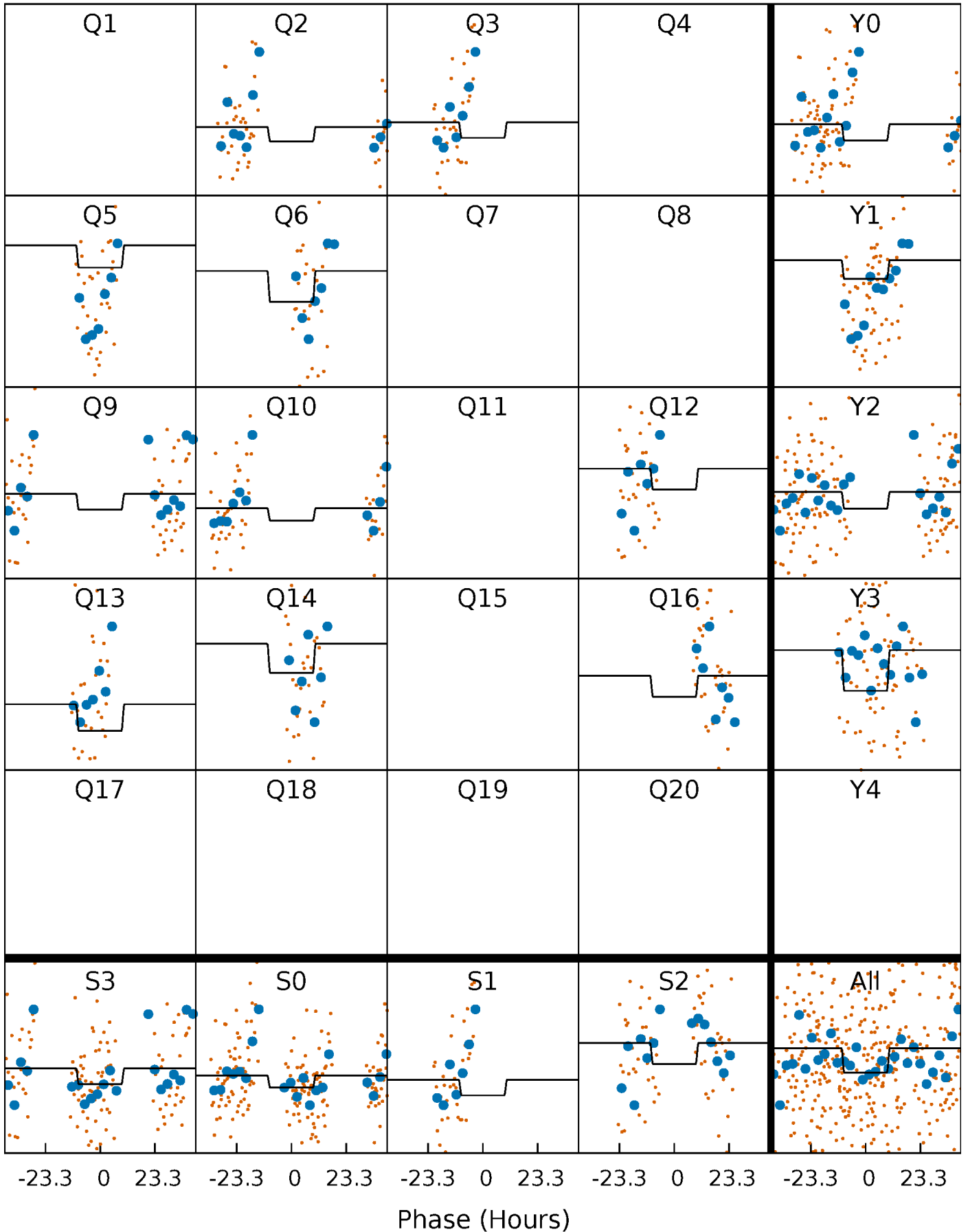
# DV Quarter-Phased Transit Curves

TCE 010034425-02 P=129.294083 Days  $T_0=201.146008$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

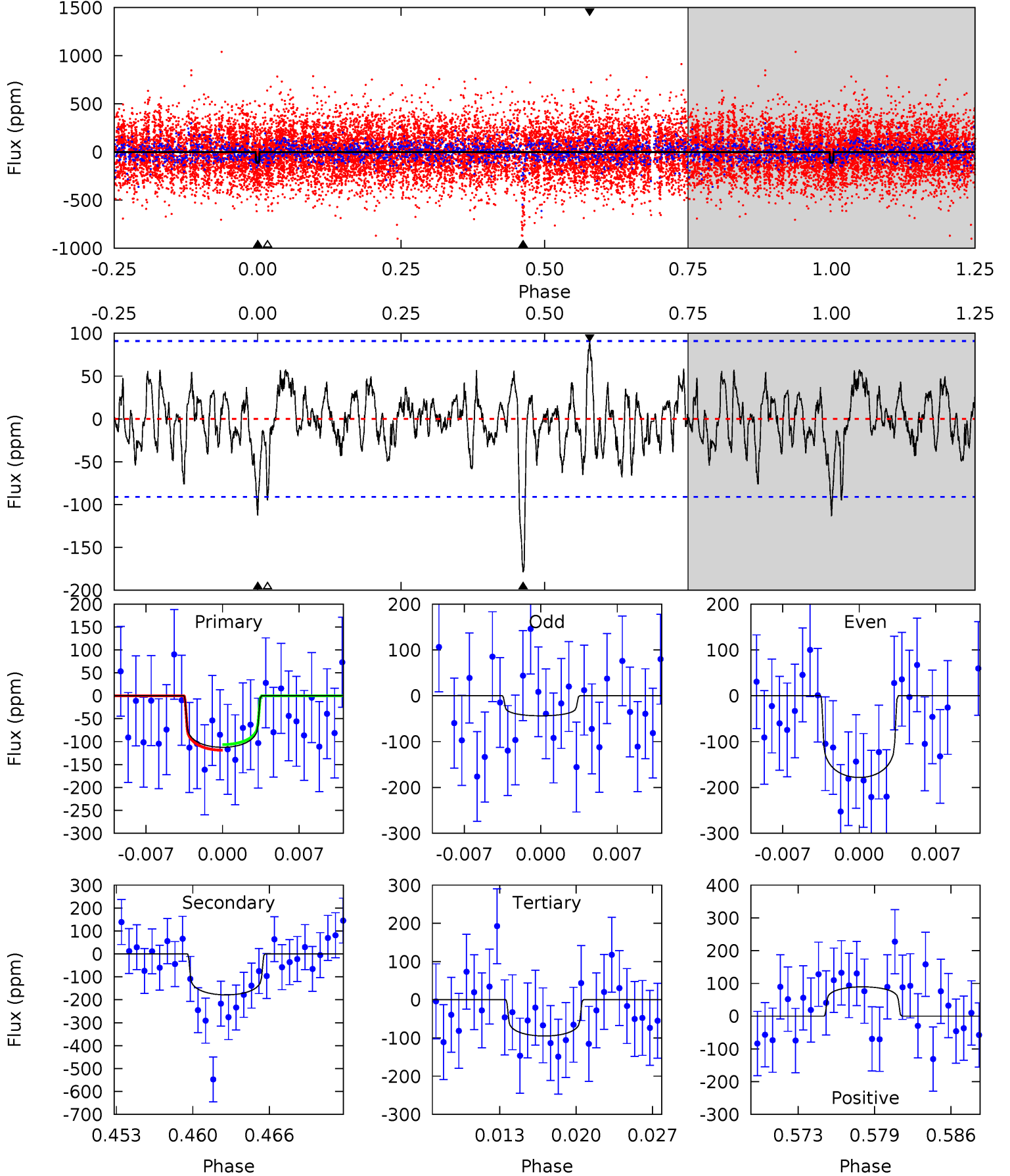
TCE 010034425-02 P=129.289945 Days  $T_0=201.192517$  (BKJD)



# DV Model-Shift Uniqueness Test

010034425-02,  $P = 129.294083$  Days,  $E = 71.851925$  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
6.31	10.0	5.32	5.02	5.10	2.71	1.54	0.99	1.30	4.71	5.01	3.78	1.38	0.33	0.34

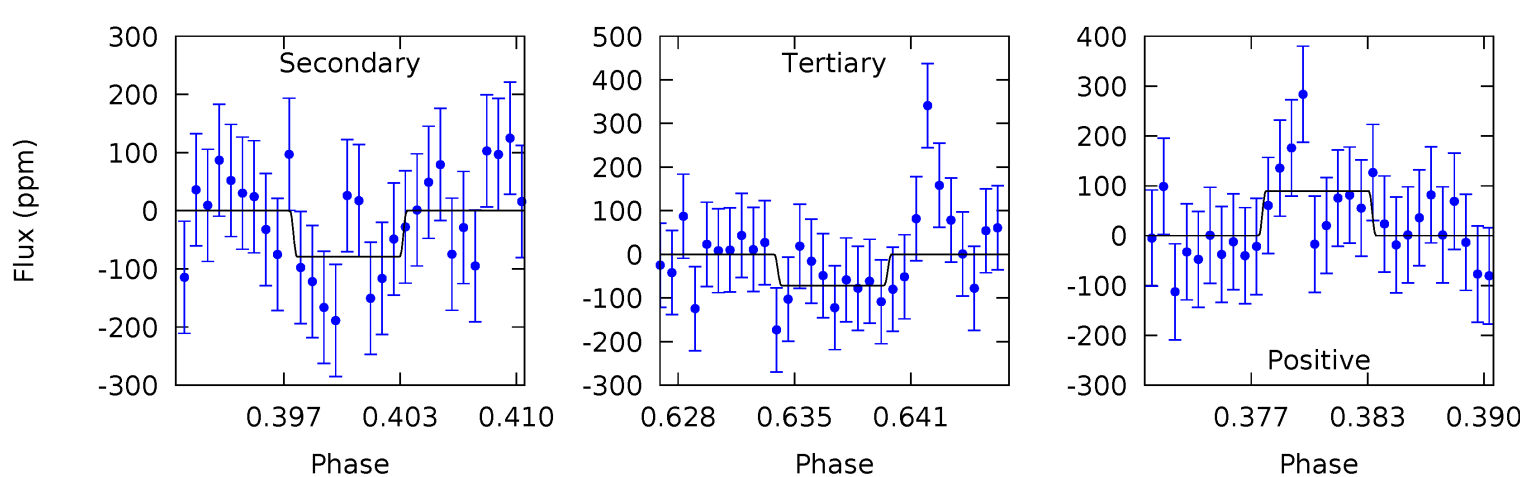
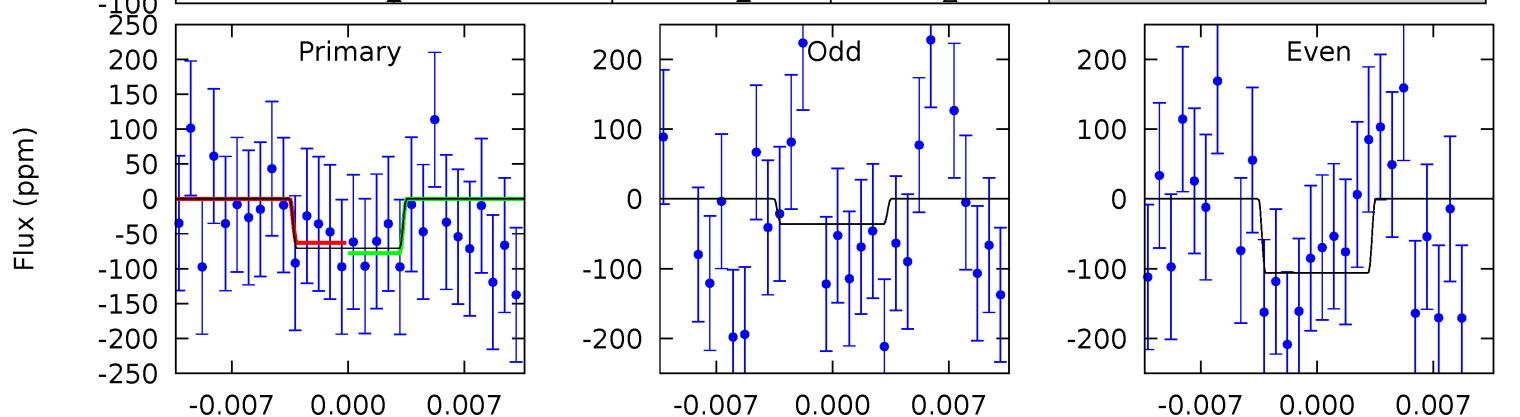
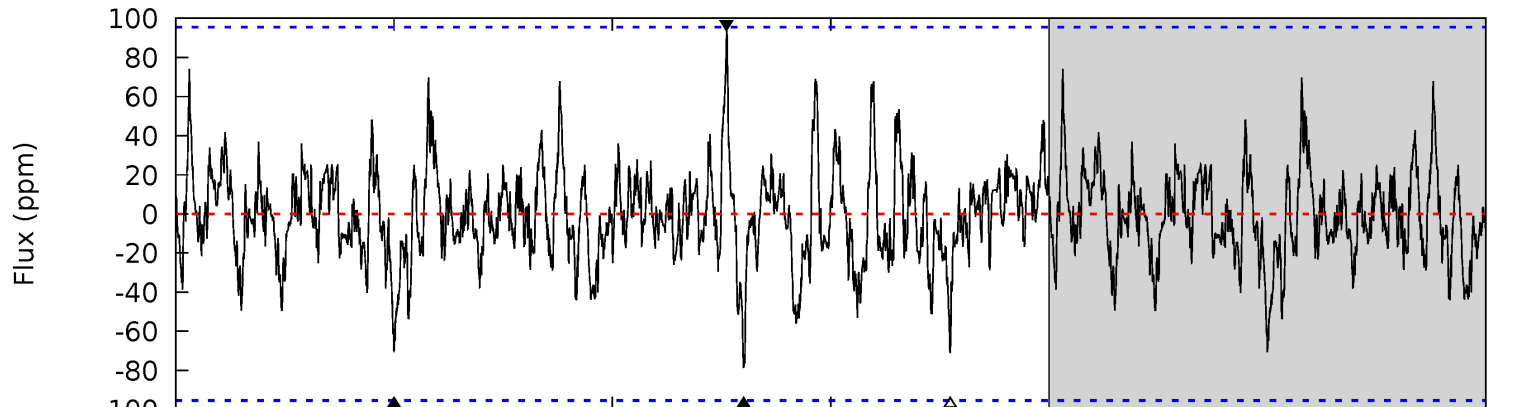
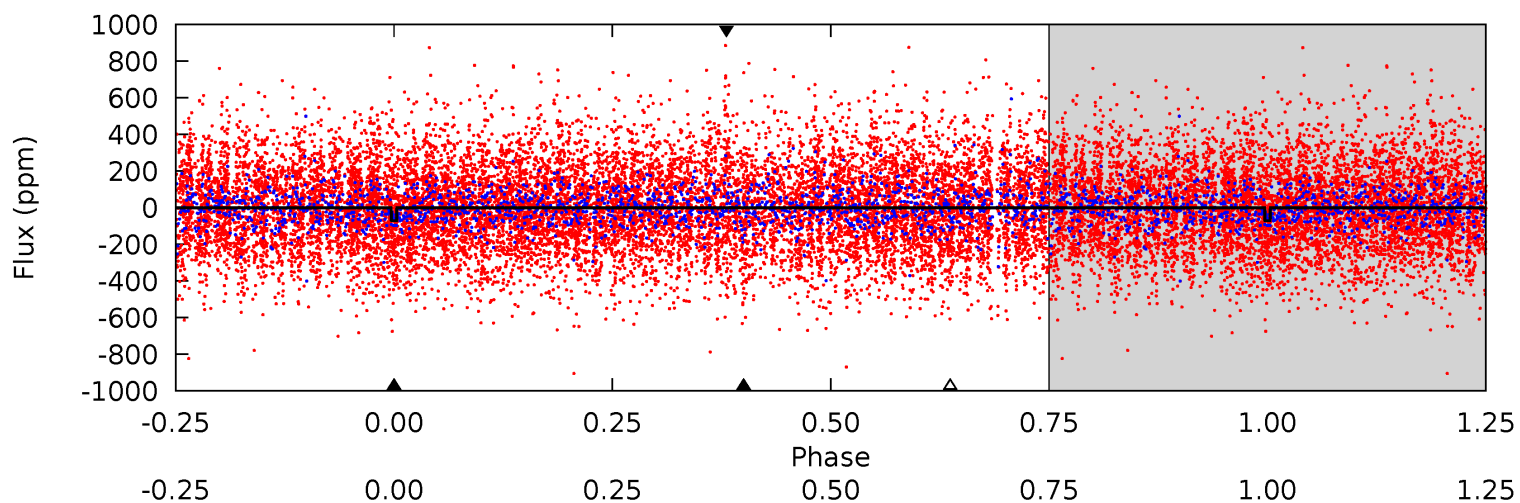




# Alt Model-Shift Uniqueness Test

010034425-02, P = 129.289945 Days, E = 71.902572 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
3.78	4.22	3.81	4.78	5.11	2.72	1.23	-0.03	-1.00	0.41	-0.57	1.87	-2.04	0.55	0.40



### Stellar Parameters For KIC 010034425

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6465^{+155}_{-214}$	$4.219^{+0.185}_{-0.185}$	$-0.400^{+0.300}_{-0.300}$	$1.317^{+0.358}_{-0.293}$	$1.046^{+0.160}_{-0.131}$	$0.644^{+0.608}_{-0.312}$
	+2%/-3%	+4%/-4%	+75%/-75%	+27%/-22%	+15%/-13%	+94%/-48%
Source	PHO1	KIC0	KIC0	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology  
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

### Secondary Eclipse Parameters for KIC 010034425-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-179 \pm 18$	$1.87^{+0.56}_{-0.51}$	$638^{+47}_{-44}$	$6505^{+1217}_{-728}$	$7351^{+7070}_{-3149}$
Alt.	$-79 \pm 19$	$1.25^{+0.52}_{-0.50}$	$640^{+48}_{-44}$	$6556^{+1858}_{-1085}$	$7071^{+12099}_{-3711}$

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

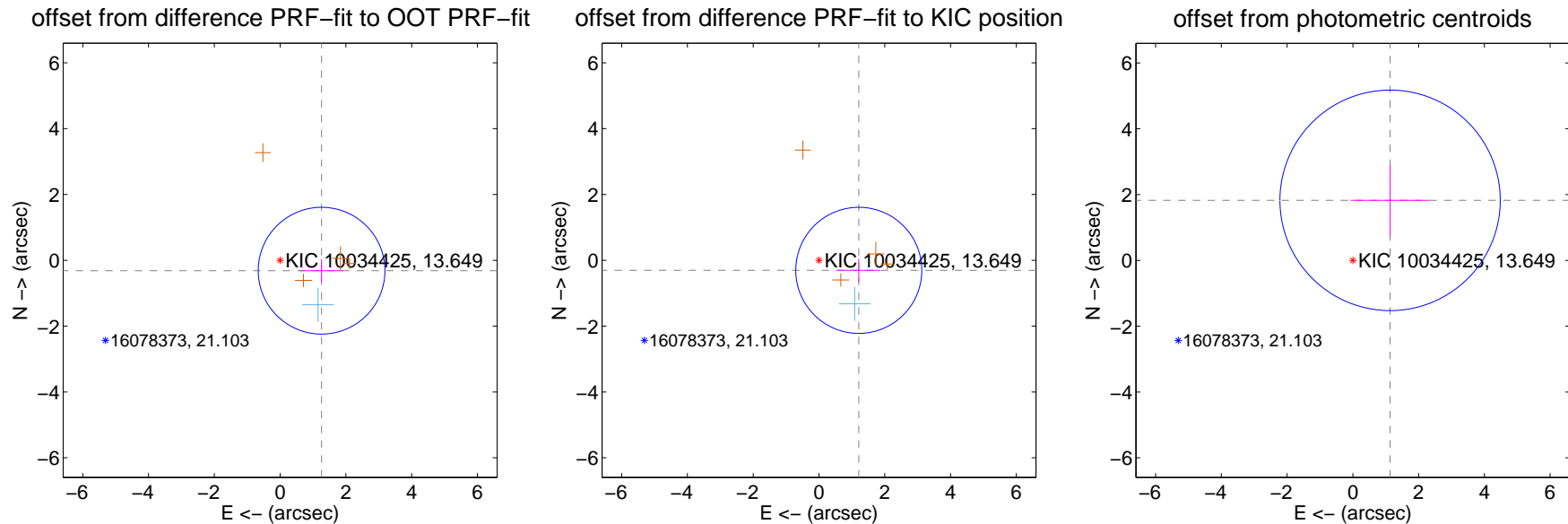
## DV Centroid Data

Supplemental centroid analysis for 010034425-02. Kepler magnitude: 13.65. Transit SNR 6.92

There are 1 quarters with good PRF difference image offsets

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

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.300 \pm 0.642$	2.02	$-1.261 \pm 0.656$	$-0.316 \pm 0.346$
PRF-fit source offset from KIC position	$1.247 \pm 0.639$	1.95	$-1.210 \pm 0.652$	$-0.305 \pm 0.353$
photometric centroid source offset	$2.15 \pm 1.12$	1.92	$-1.13 \pm 1.20$	$1.82 \pm 1.08$



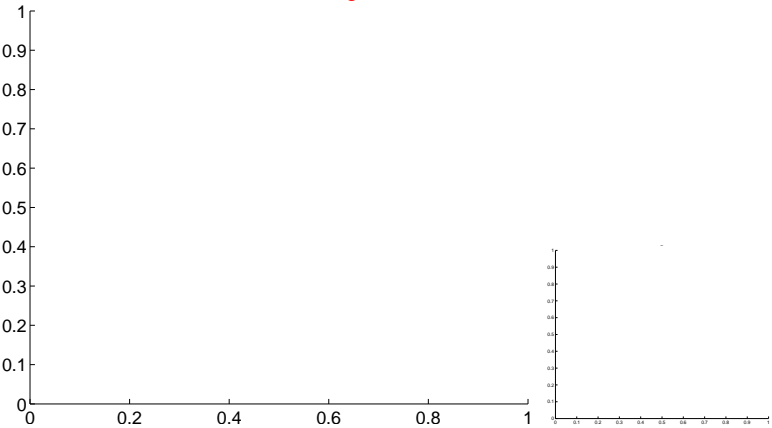
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

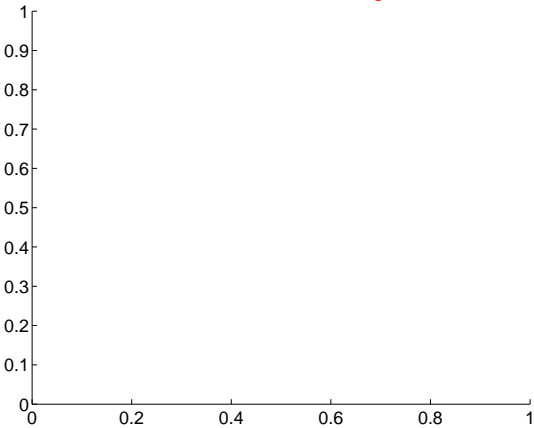
Q1 no difference image



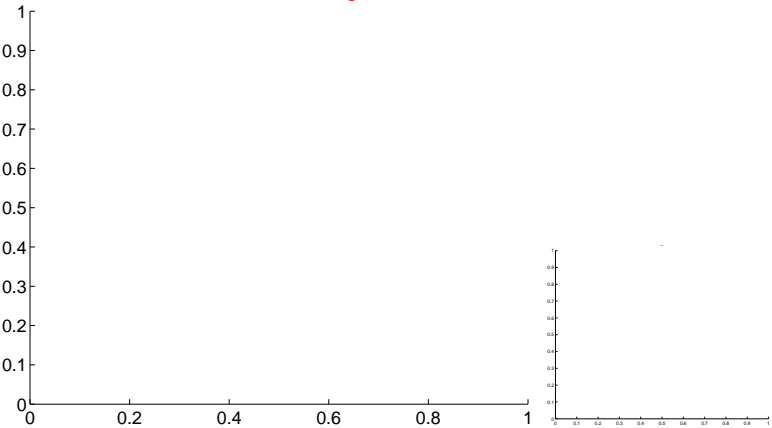
Q1 no OOT image



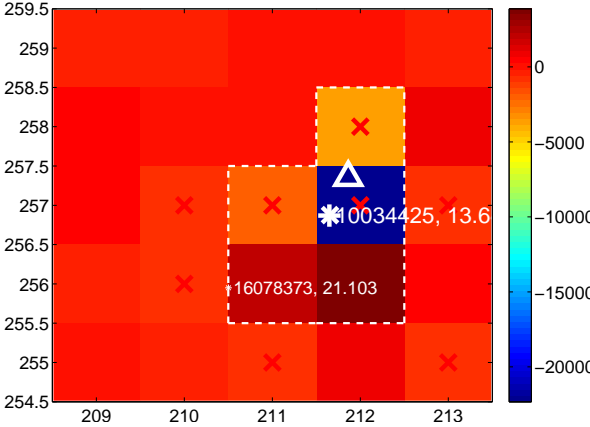
Q2 no difference image



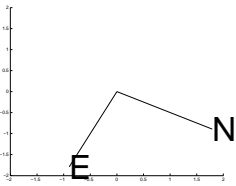
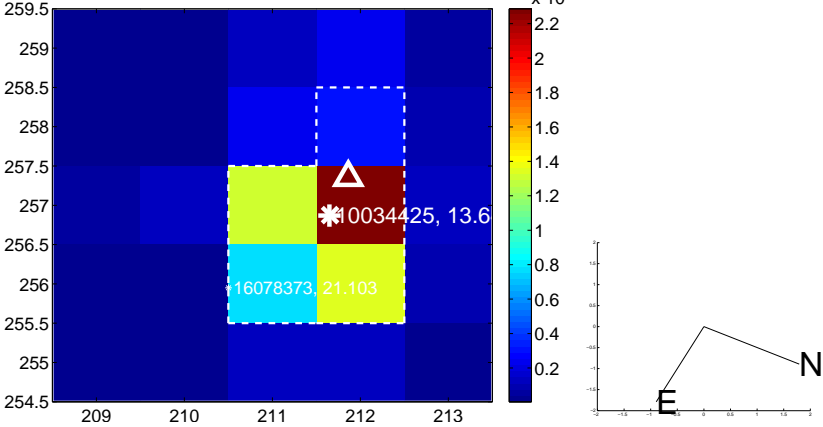
Q2 no OOT image



Q3 difference image. Poor Quality



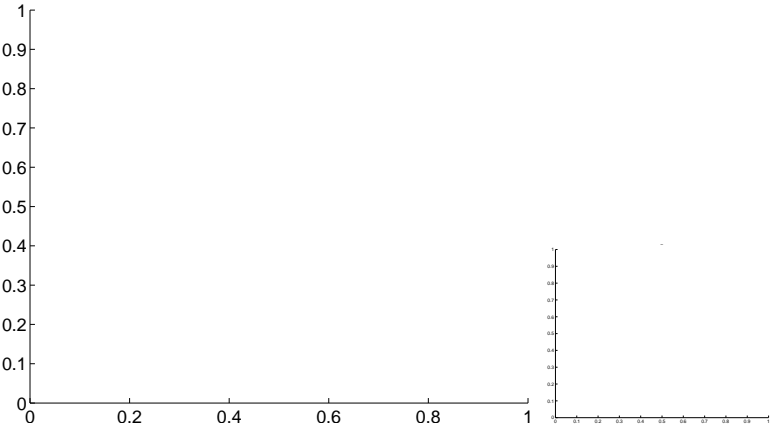
Q3 OOT image



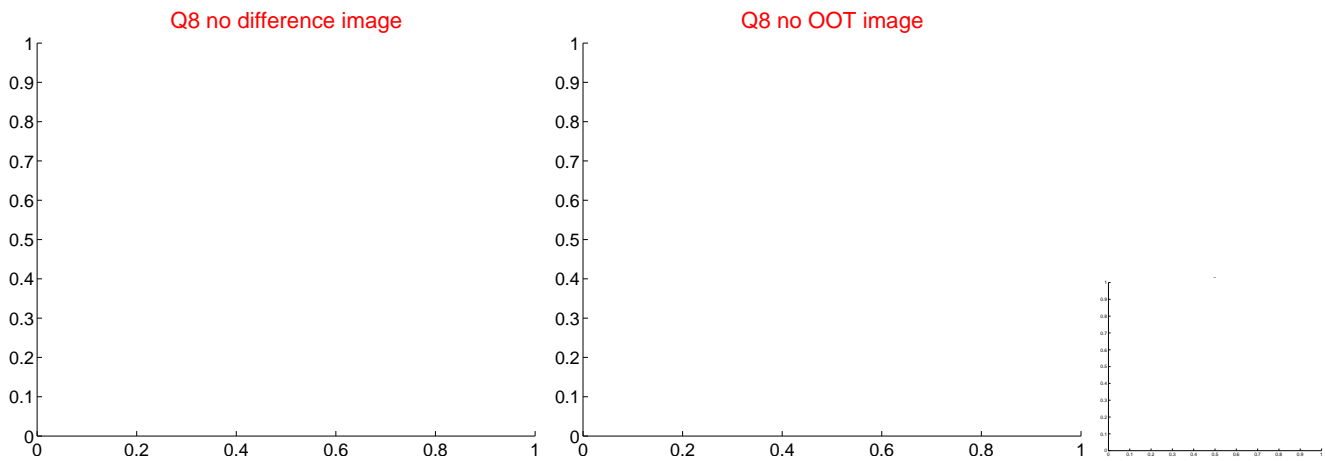
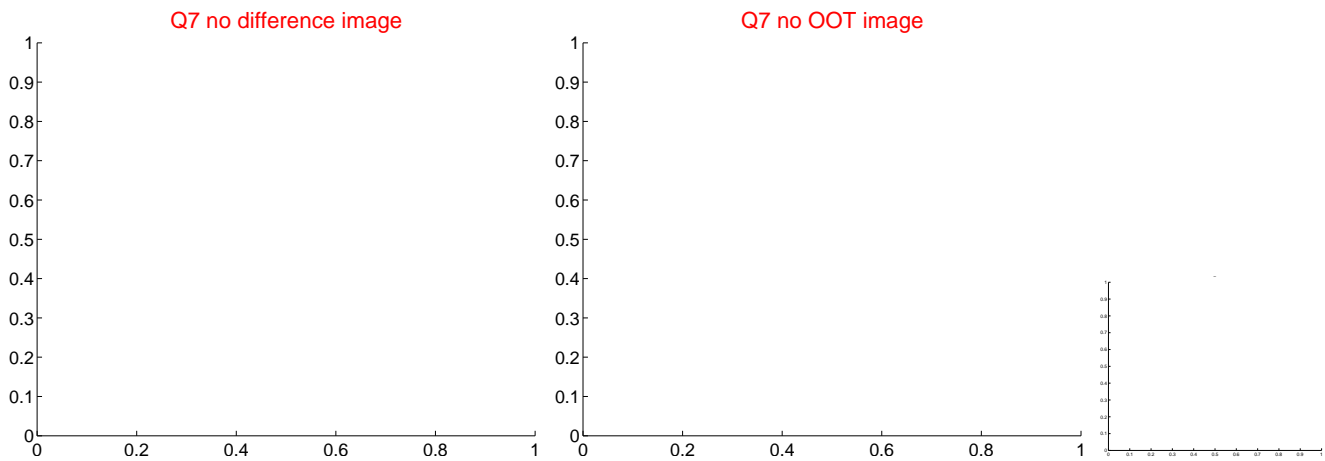
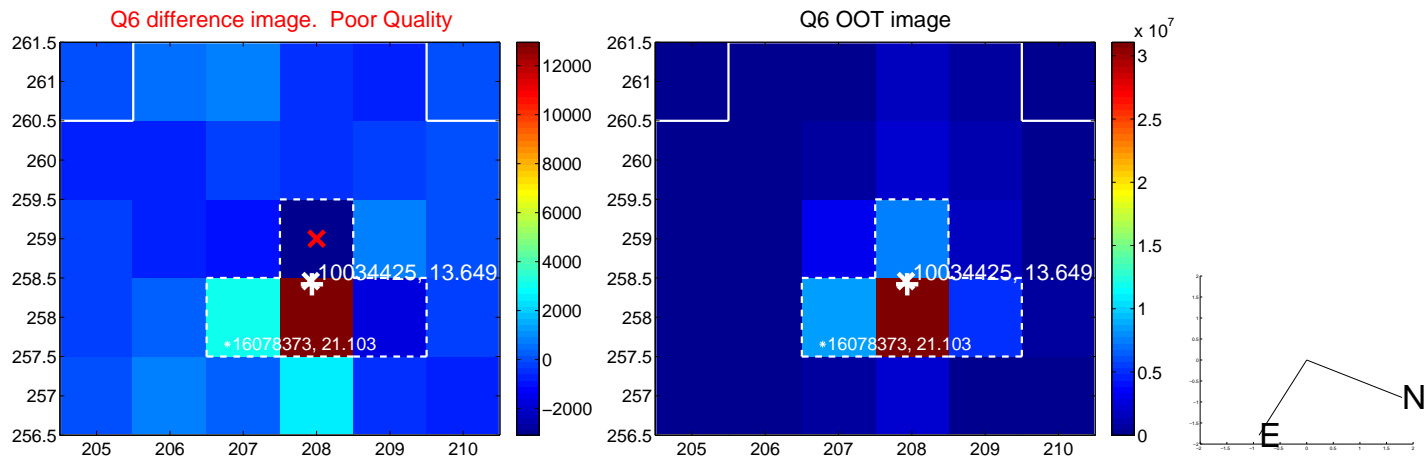
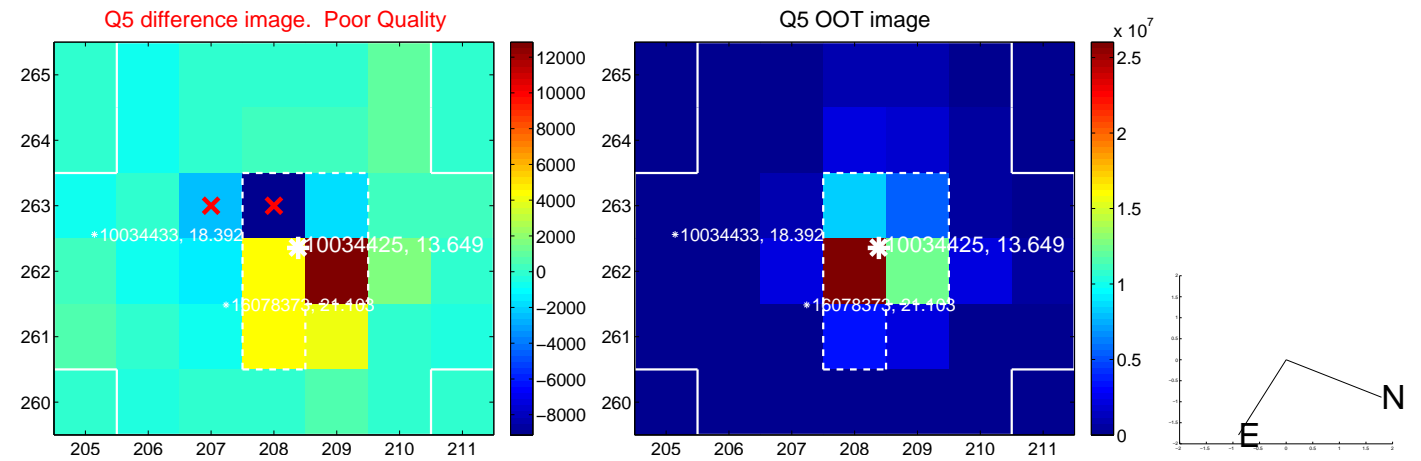
Q4 no difference image



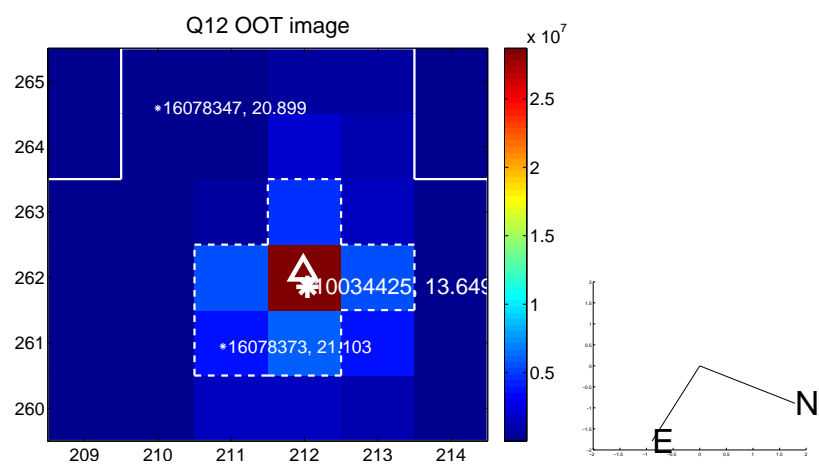
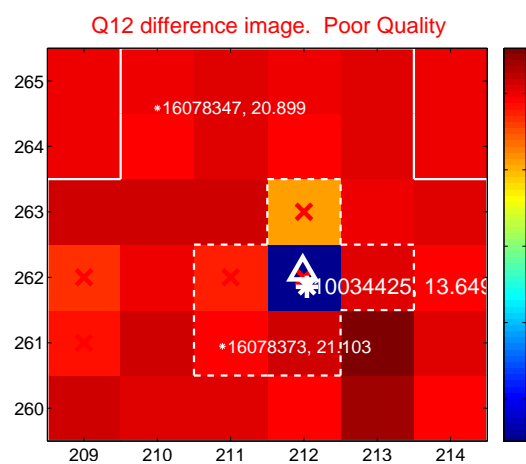
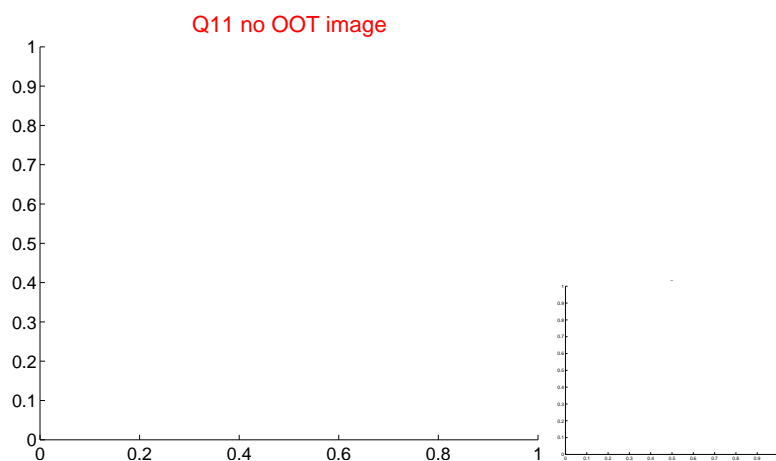
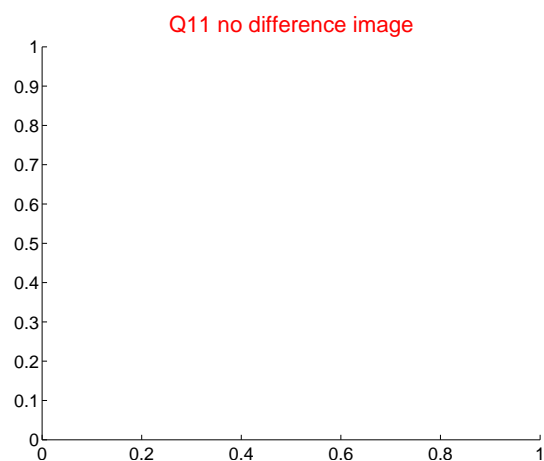
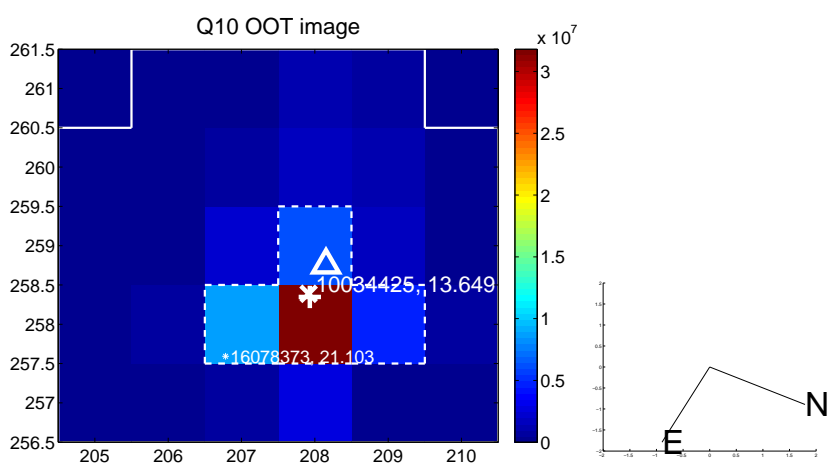
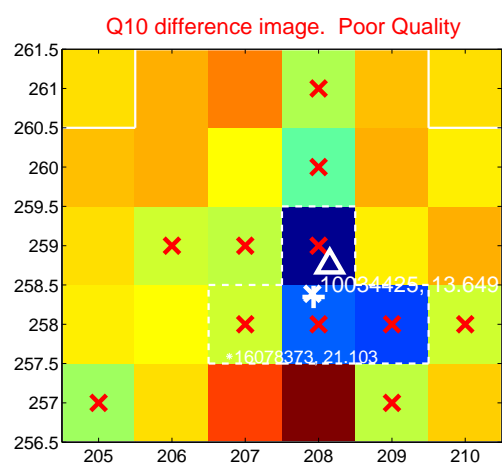
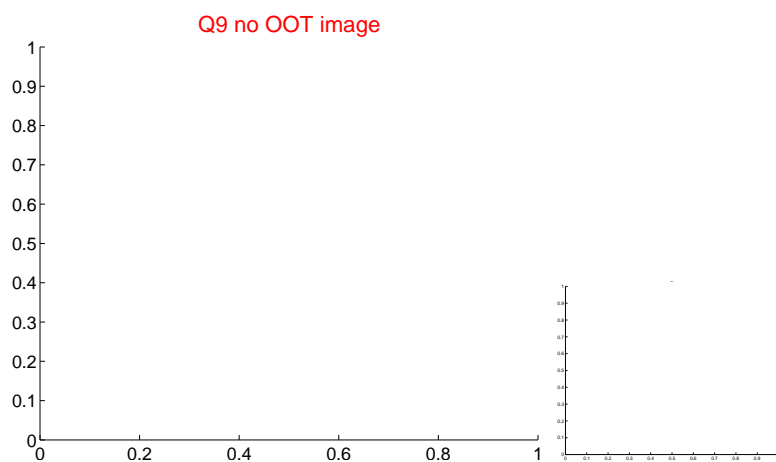
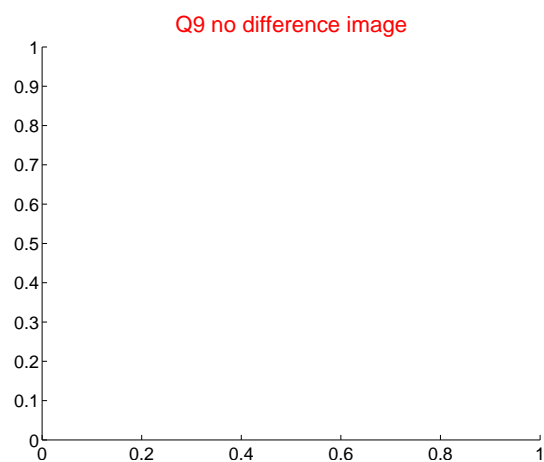
Q4 no OOT image



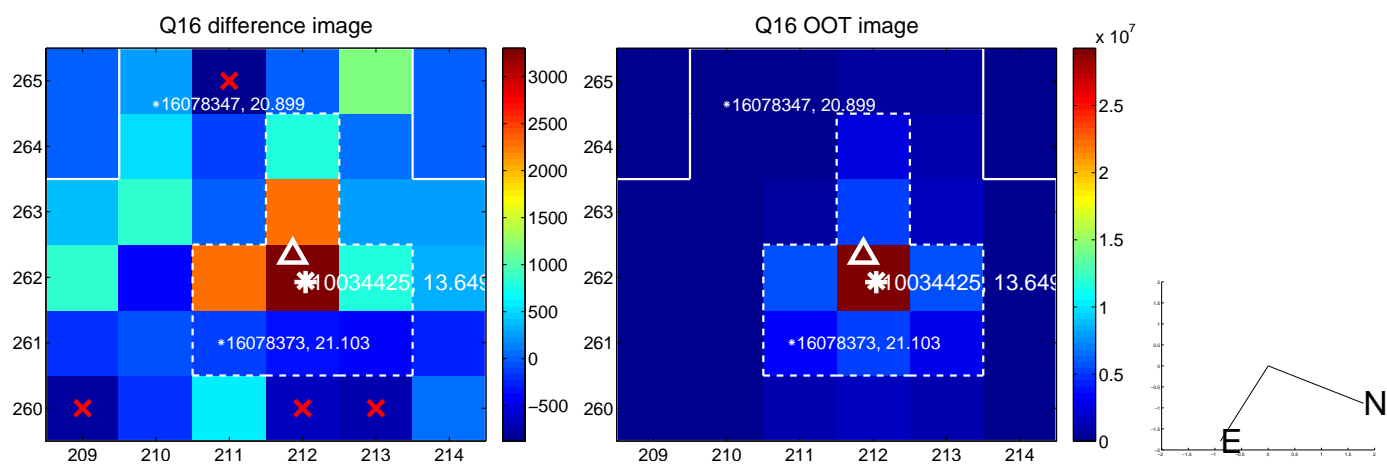
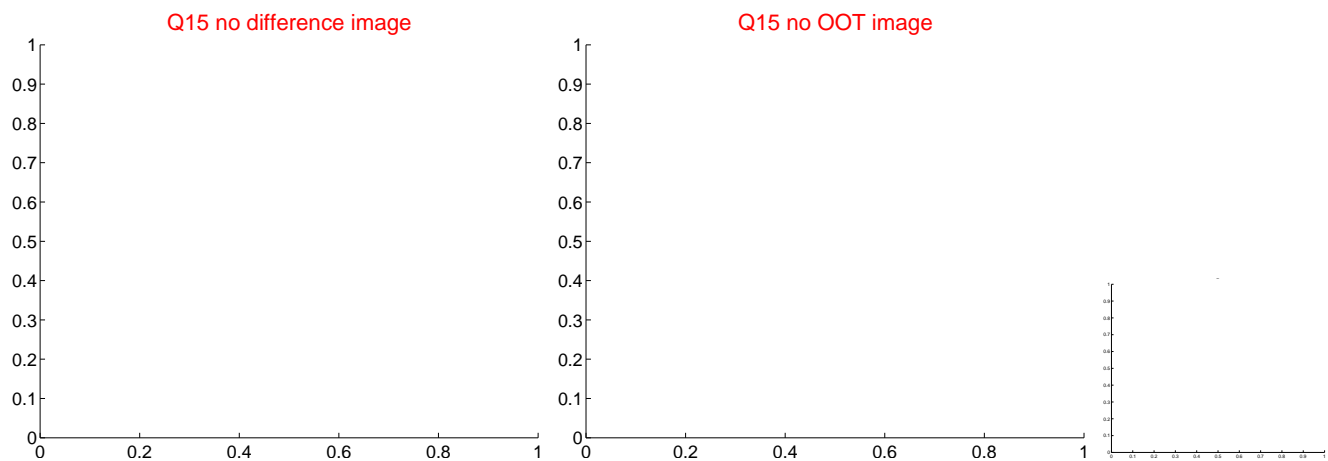
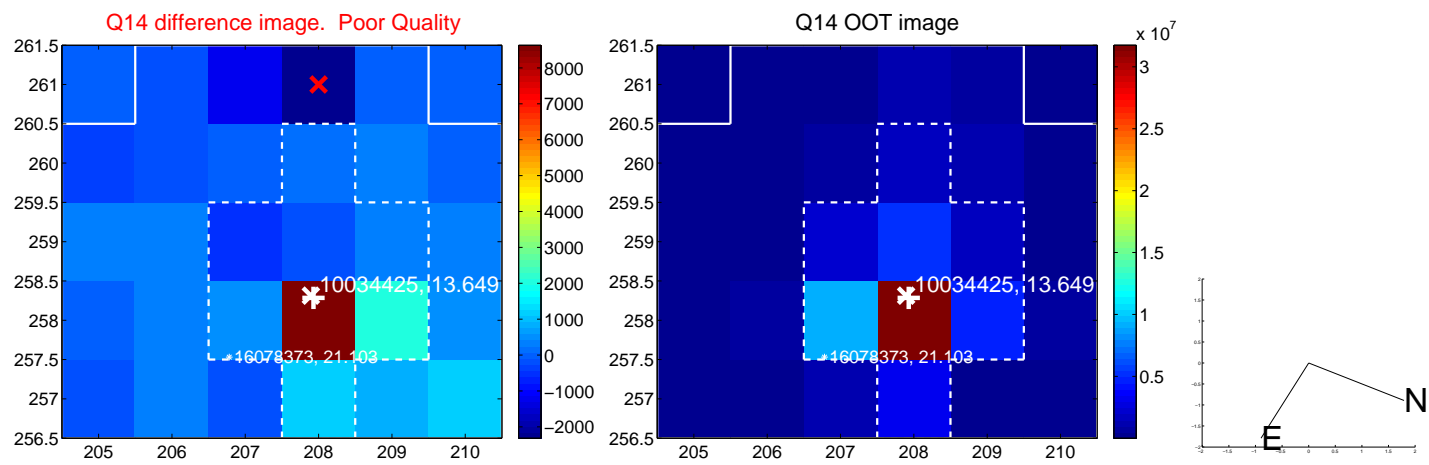
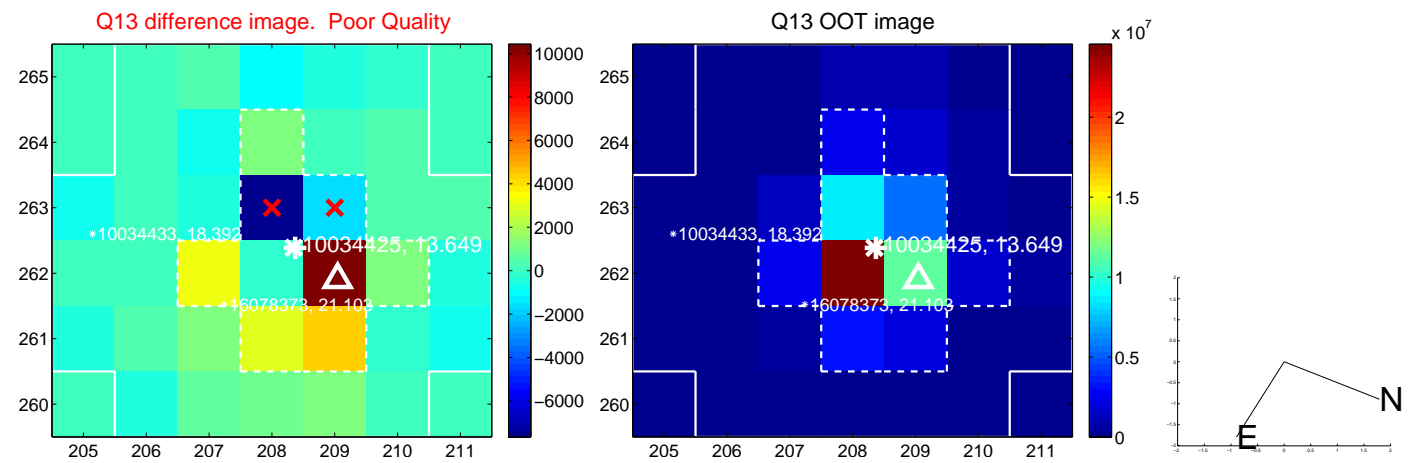
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

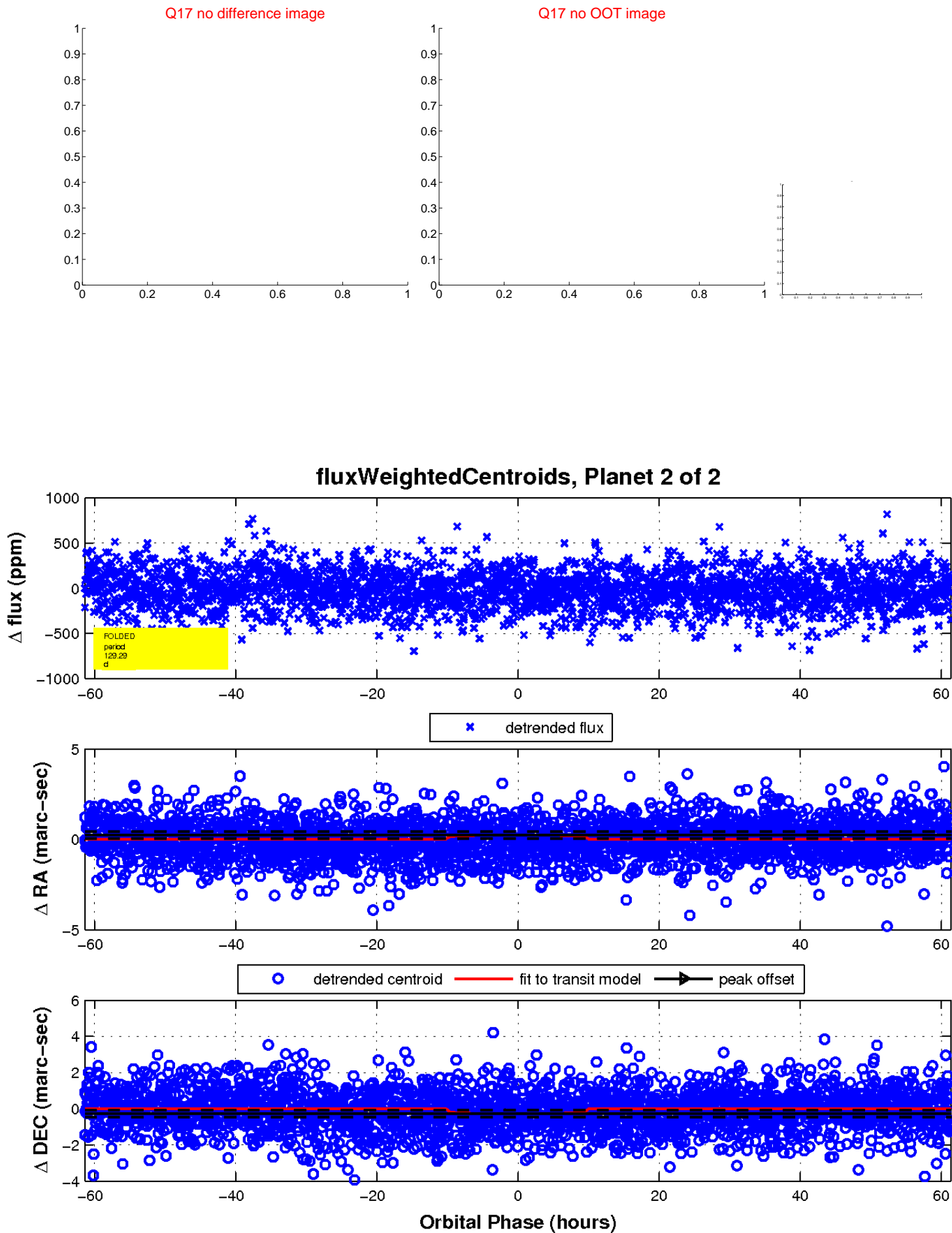


white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.





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



UKIRT Image

Declination

