

# KIC 007033421

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007033421-01	OBS	No	0.566782	131.830789	21.3	4.198	9.1	8.9	1.10	6268	0.53	8313.50
007033421-02	OBS	No	11.913694	138.232044	112.7	7.991	11.9	5.1	1.10	6268	1.46	143.31
007033421-03	OBS	No	13.544097	143.754747	1410.3	1.500	14.6	-1.0	1.10	6268	4.15	120.78
007033421-04	OBS	No	15.553638	139.978699	454.6	1.704	8.3	7.3	1.10	6268	2.52	100.44
007033421-05	OBS	No	11.480759	141.435276	1139.1	0.633	12.2	10.6	1.10	6268	3.81	150.56
007033421-06	OBS	No	38.545818	133.798103	1384.6	0.876	13.6	17.4	1.10	6268	4.14	29.95

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007033421-01	OBS	FP	0.00	1	0	1	1	LPP_DV—CENT_UNRESOLVED_OFFSET—EPHEM_MATCH
007033421-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—CENT_FEW_DIFFS
007033421-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—NO_FITS—CENT_NOFITS
007033421-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV
007033421-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—CENT_FEW_DIFFS
007033421-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—CENT_FEW_DIFFS

**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.

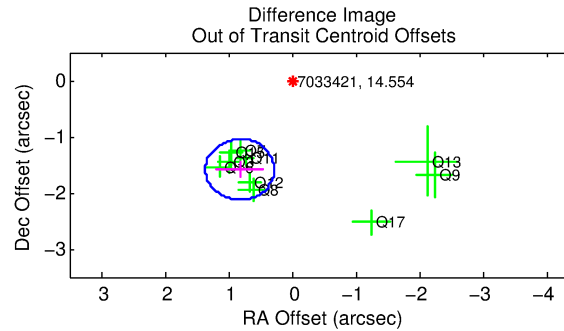
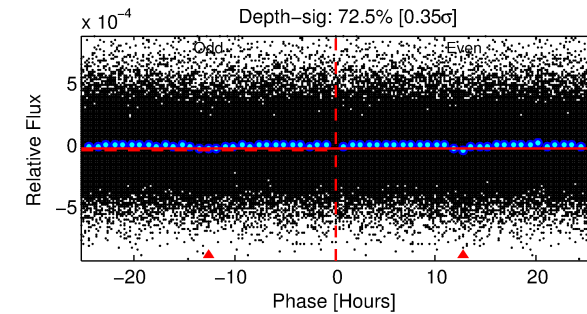
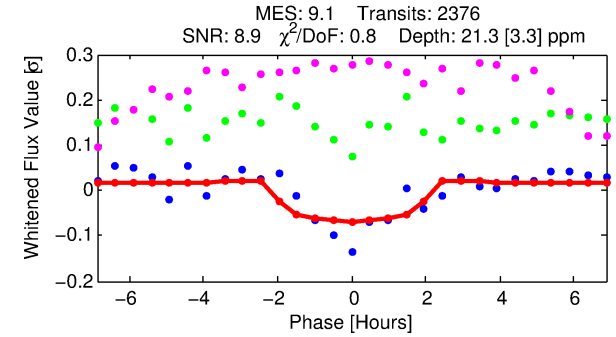
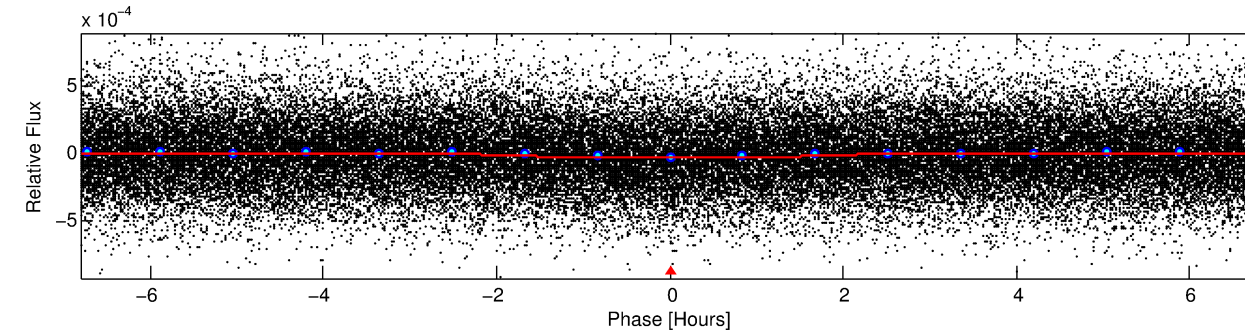
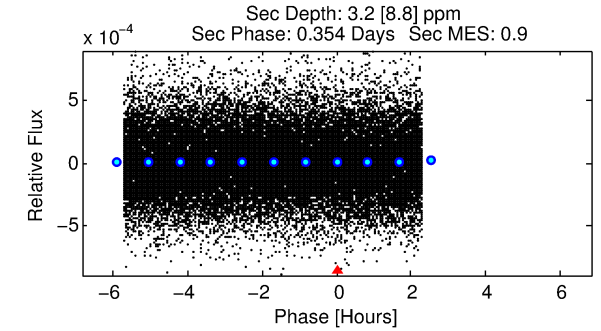
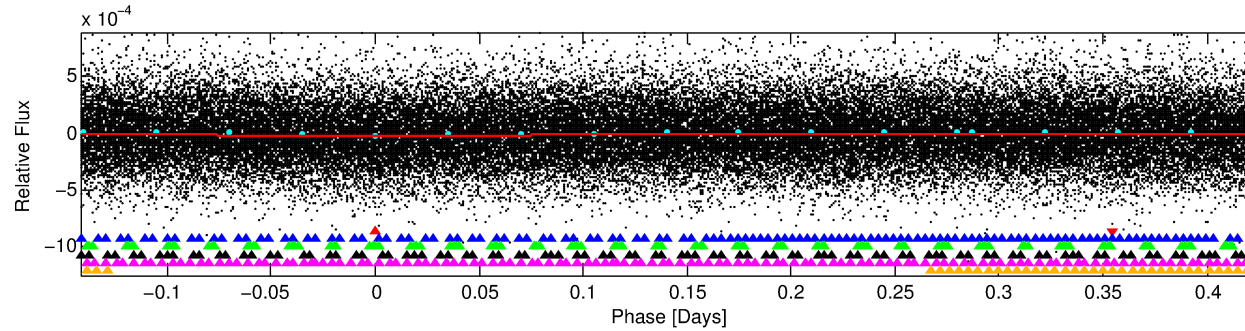
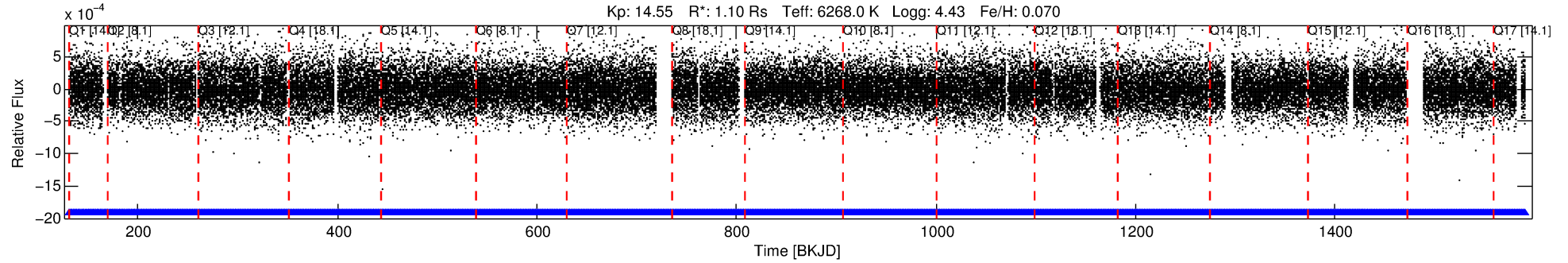
## Ephemeris Match Information For 007033421-01

TCE (1)	KIC	Parent (2)	Parent KIC	P <sub>1</sub> :P <sub>2</sub>	Dist ( $\mu$ )	$\Delta$ Row	$\Delta$ Col	m <sub>2</sub>	m <sub>1</sub>	D <sub>2</sub> /D <sub>1</sub>	Mechanism	Flag	$\sigma_P$	$\sigma_T$
007033421-01	7033421	RR-Lyr-pri	7198959	1:1	1232.1	289	110	7.86	14.55	29681.00	Direct-PRF	0	3.12	18.45

**Notes:** P<sub>1</sub>:P<sub>2</sub> is the period ratio. Dist is the distance in arcseconds.  $\Delta$ Row and  $\Delta$ Col are the number of pixels apart in row and column. m<sub>2</sub> and m<sub>1</sub> are the magnitudes of the parent and child. D<sub>2</sub>/D<sub>1</sub> is the parent's transit depth divided by the child's.  $\sigma_P$  and  $\sigma_T$  are the significance of the match in period and epoch. For a match to be considered significant  $\sigma_P < 5.0$  and  $\sigma_T < 5.0$ . Matches which have  $\sigma_P$  and  $\sigma_T$  very close to this cutoff should receive extra scrutiny, especially if the period ratio is very large.

# DV One-Page Summary

KIC: 7033421 Candidate: 1 of 6 Period: 0.567 d



## DV Fit Results:

Period = 0.56678 [0.00001] d  
Epoch = 131.8308 [0.0046] BKJD  
Rp/R\* = 0.0044 [0.0036]  
a/R\* = 1.15 [1.13]  
b = 0.59 [4.57]  
Seff = 8313.50 [3231.82]  
Teq = 2435 [237] K  
Rp = 0.53 [0.46] Re  
a = 0.0142 [0.0036] AU  
Ag = 1.27 [4.05] [0.07σ]  
Teffp = 3999 [3165] K [0.49σ]

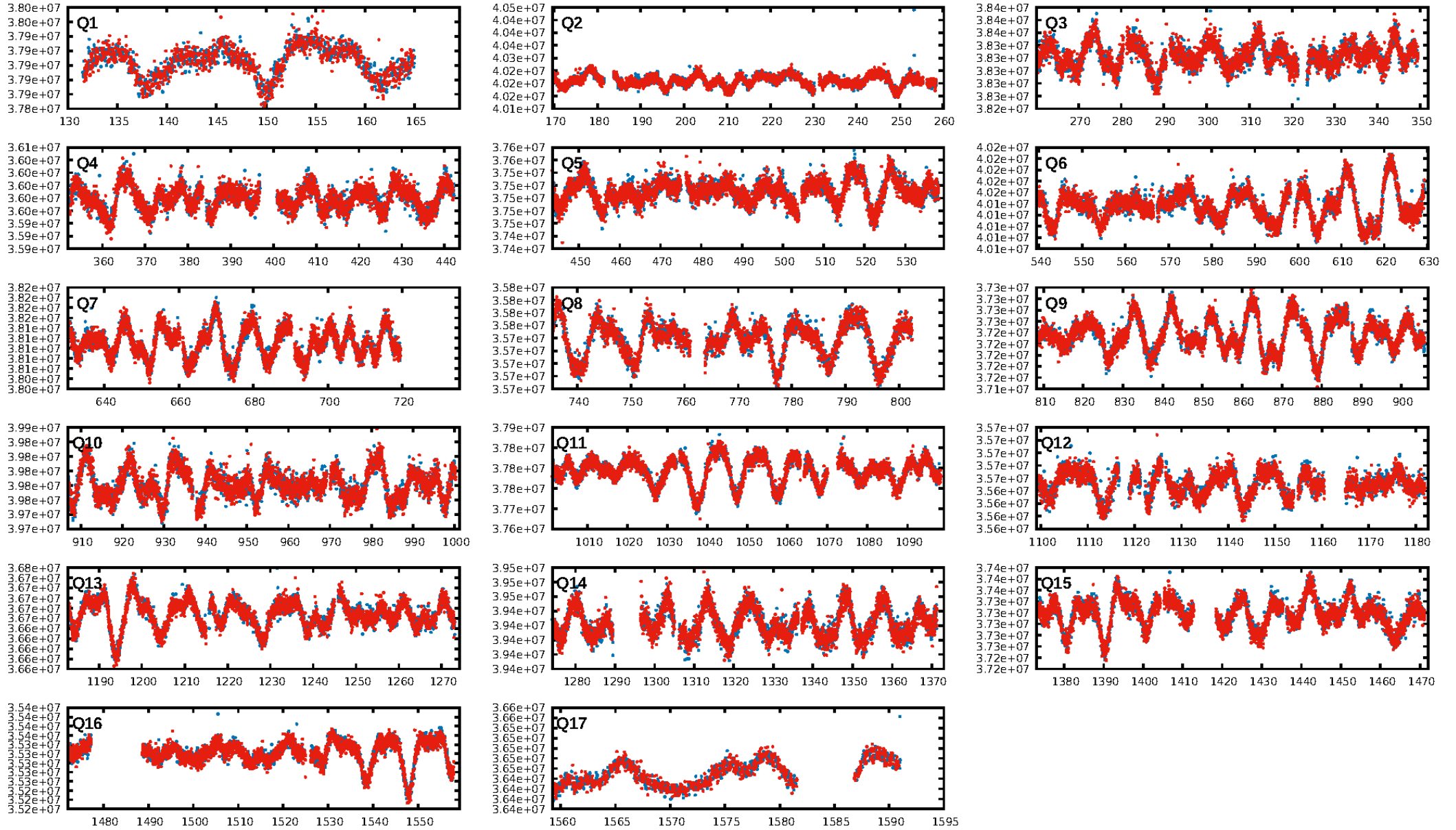
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [61.69σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [2269/2269]  
**GhostDiagnostic-chr: 0.5696**  
Centroid-sig: 2.2%  
Centroid-so: 2.607 arcsec [1.91σ]  
**OotOffset-rm: 1.787 arcsec [9.91σ]**  
**KicOffset-rm: 1.768 arcsec [11.93σ]**  
OotOffset-st: 0/4/3/3 [10]  
KicOffset-st: 0/4/3/3 [10]  
DiffImageQuality-fgm: 0.70 [7/10]  
DiffImageOverlap-fno: 1.00 [17/17]

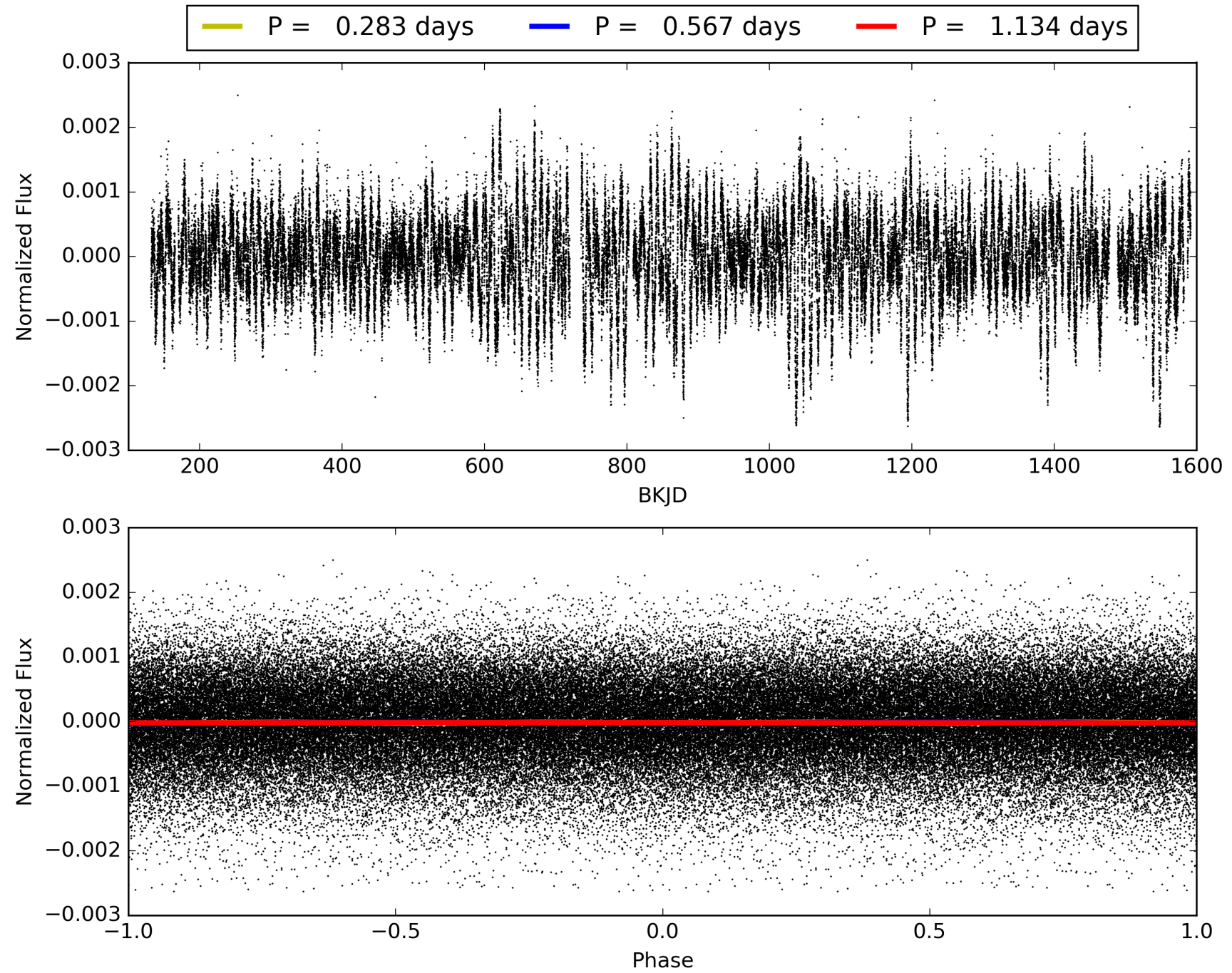
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 14:16:26 Z

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

# TCE 007033421-01, PDC Light Curves



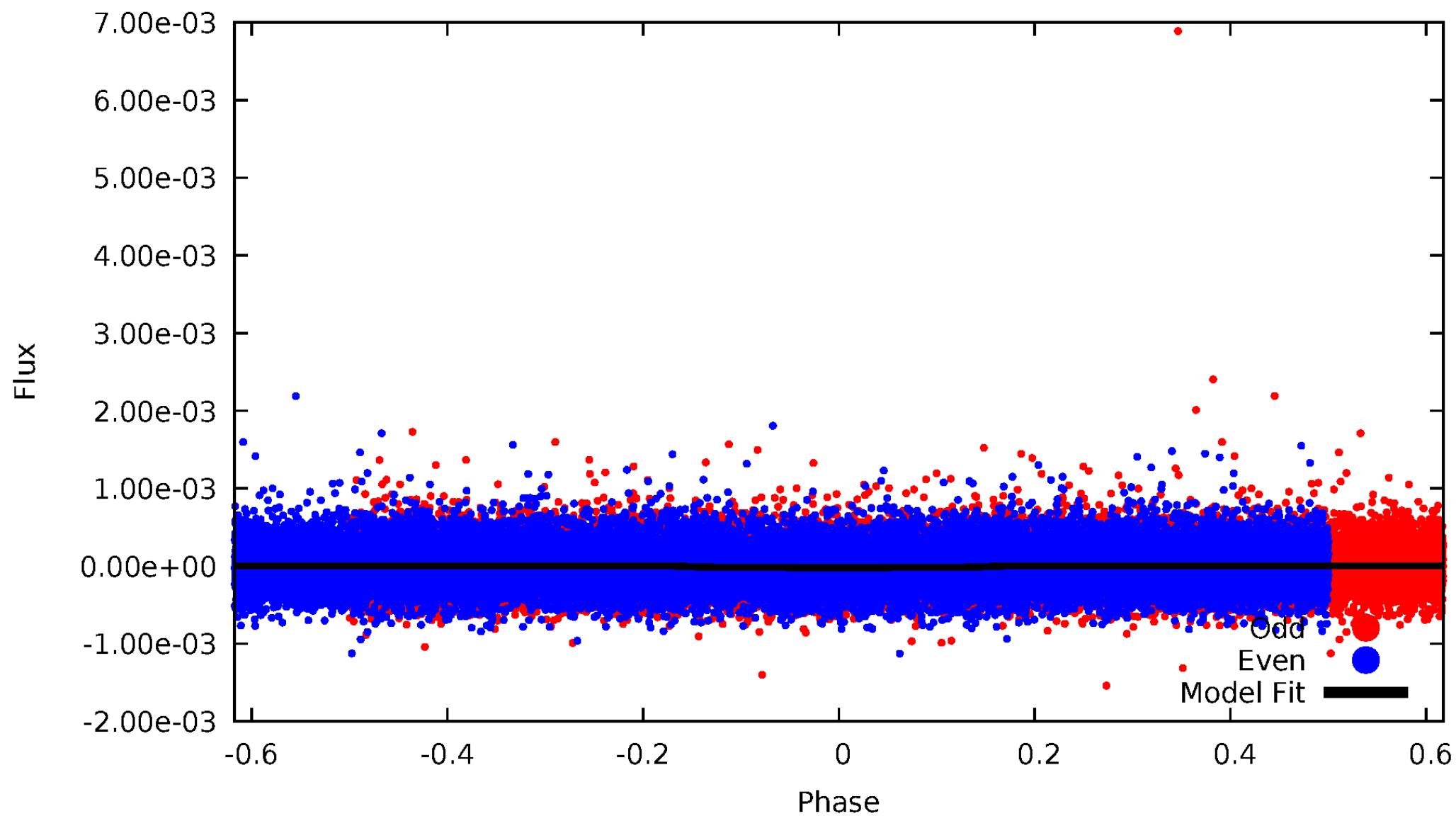
TCE 007033421-01





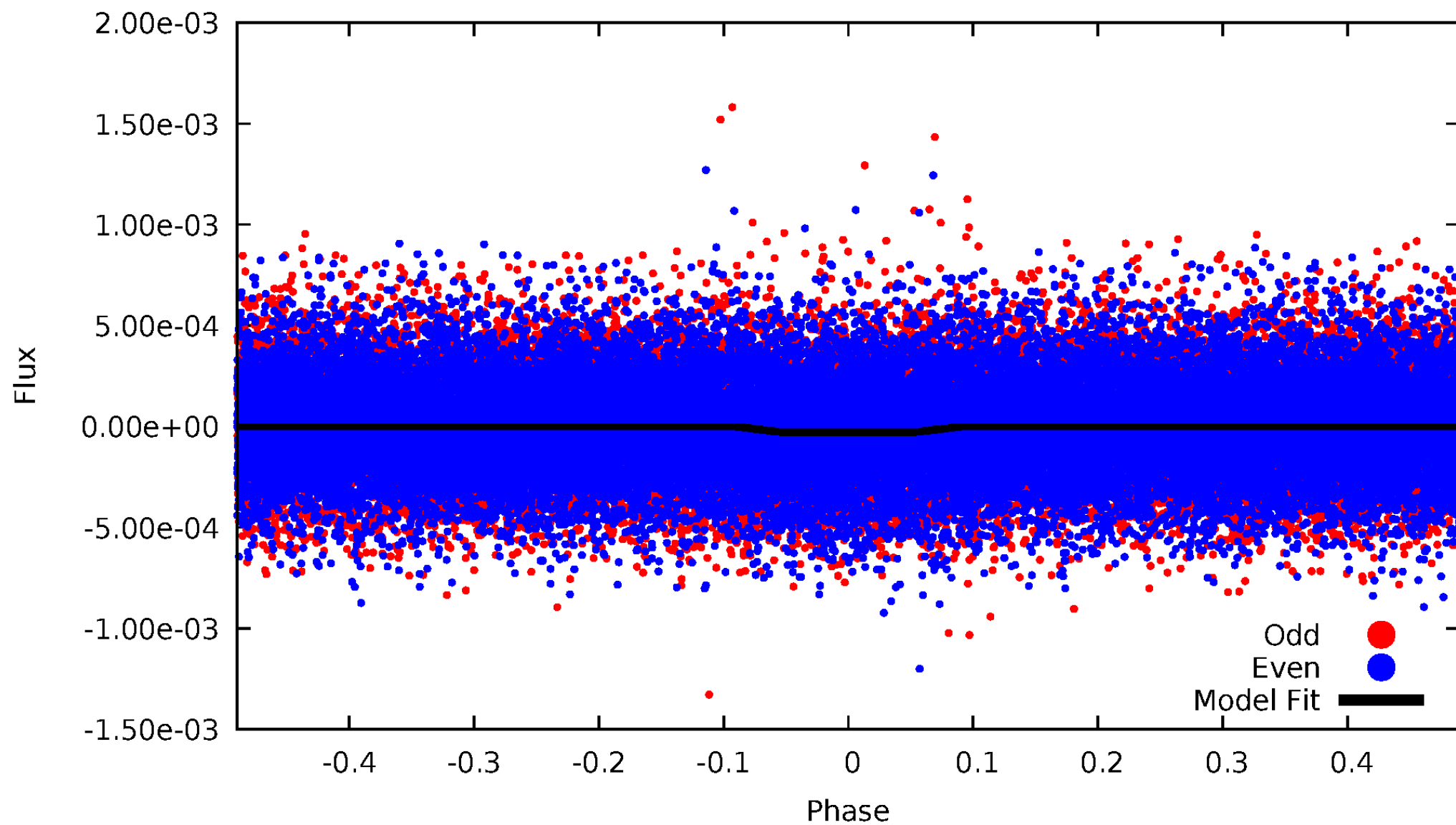
# DV Odd/Even

TCE 007033421-01

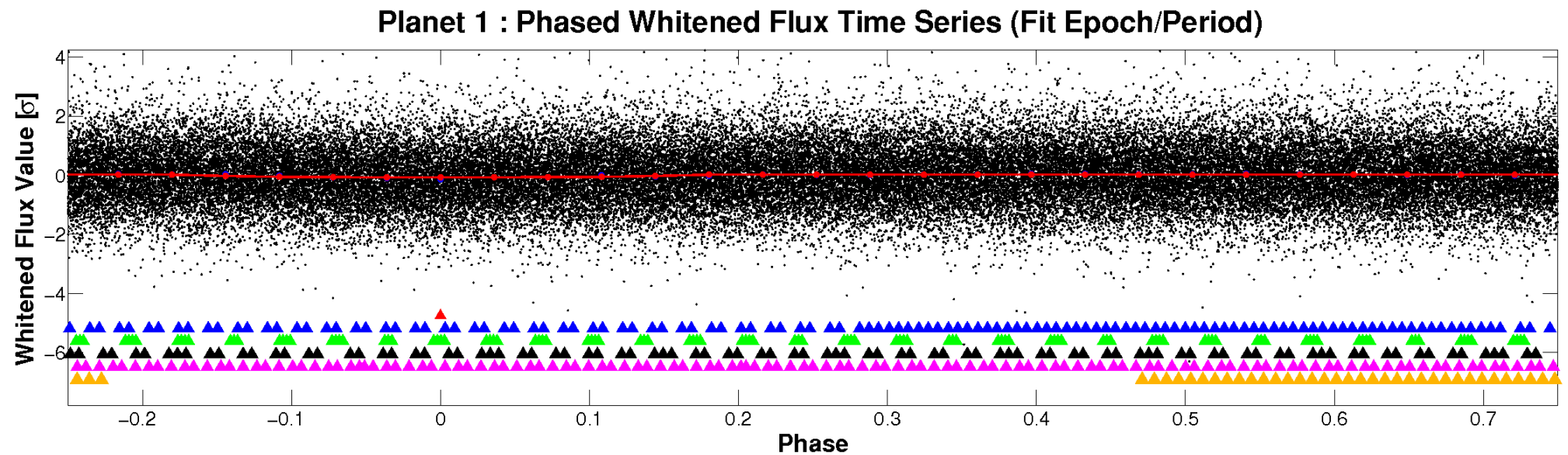
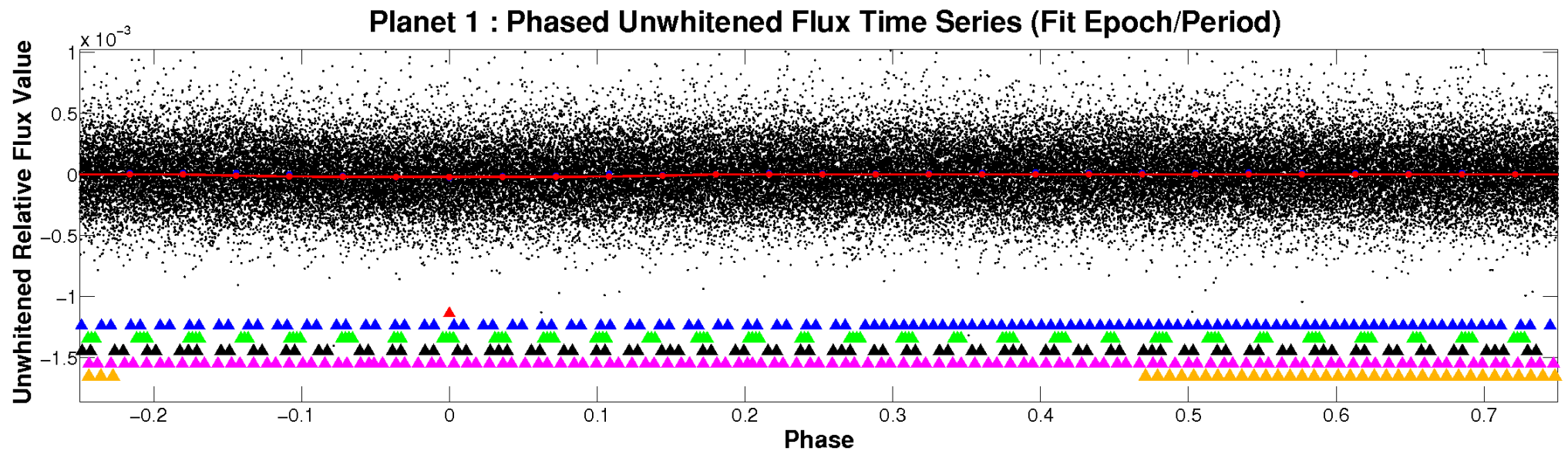


# ALT Odd/Even

TCE 007033421-01

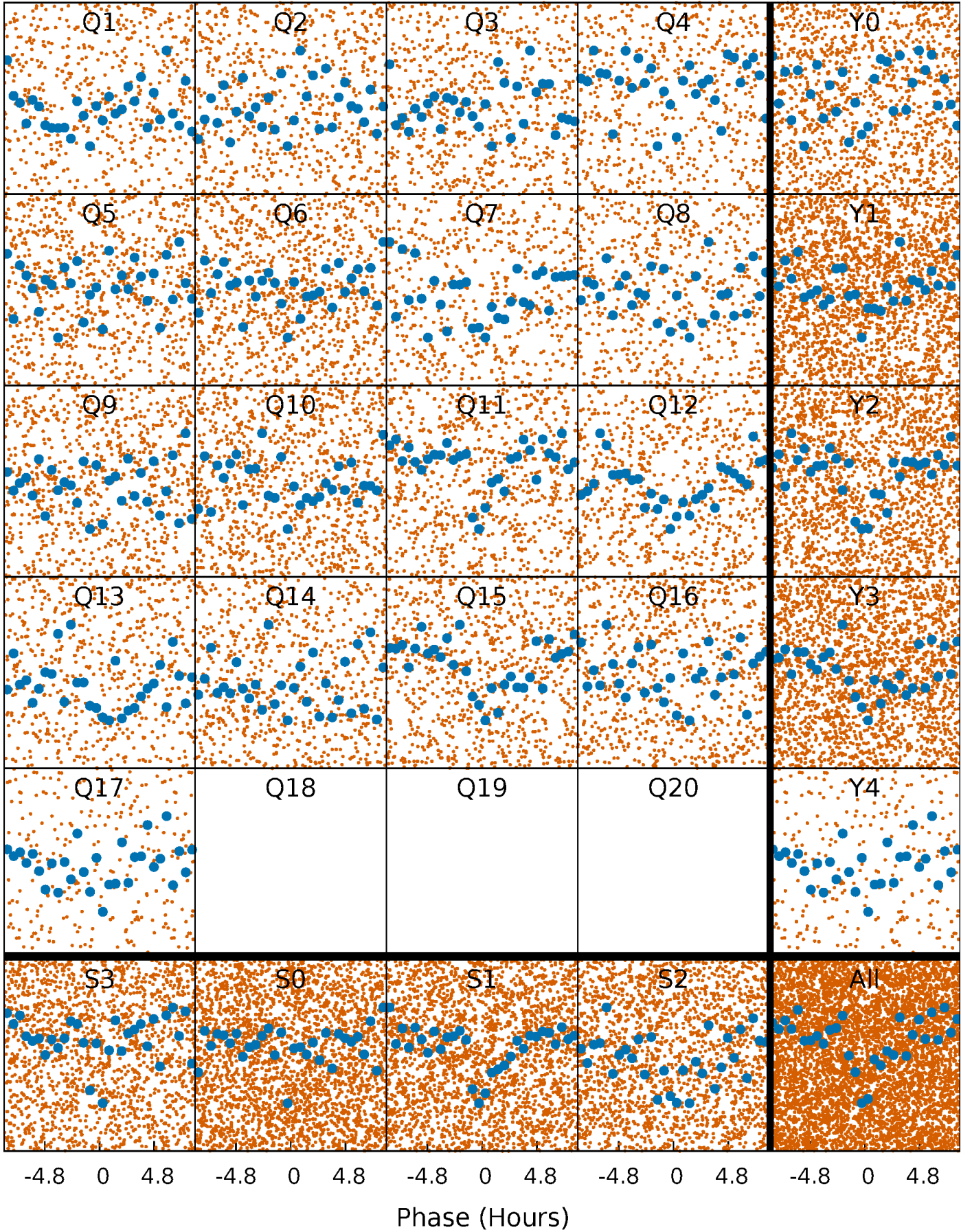


# Non-Whitened Vs. Whitened Light Curve



# PDC Quarter-Phased Transit Curves

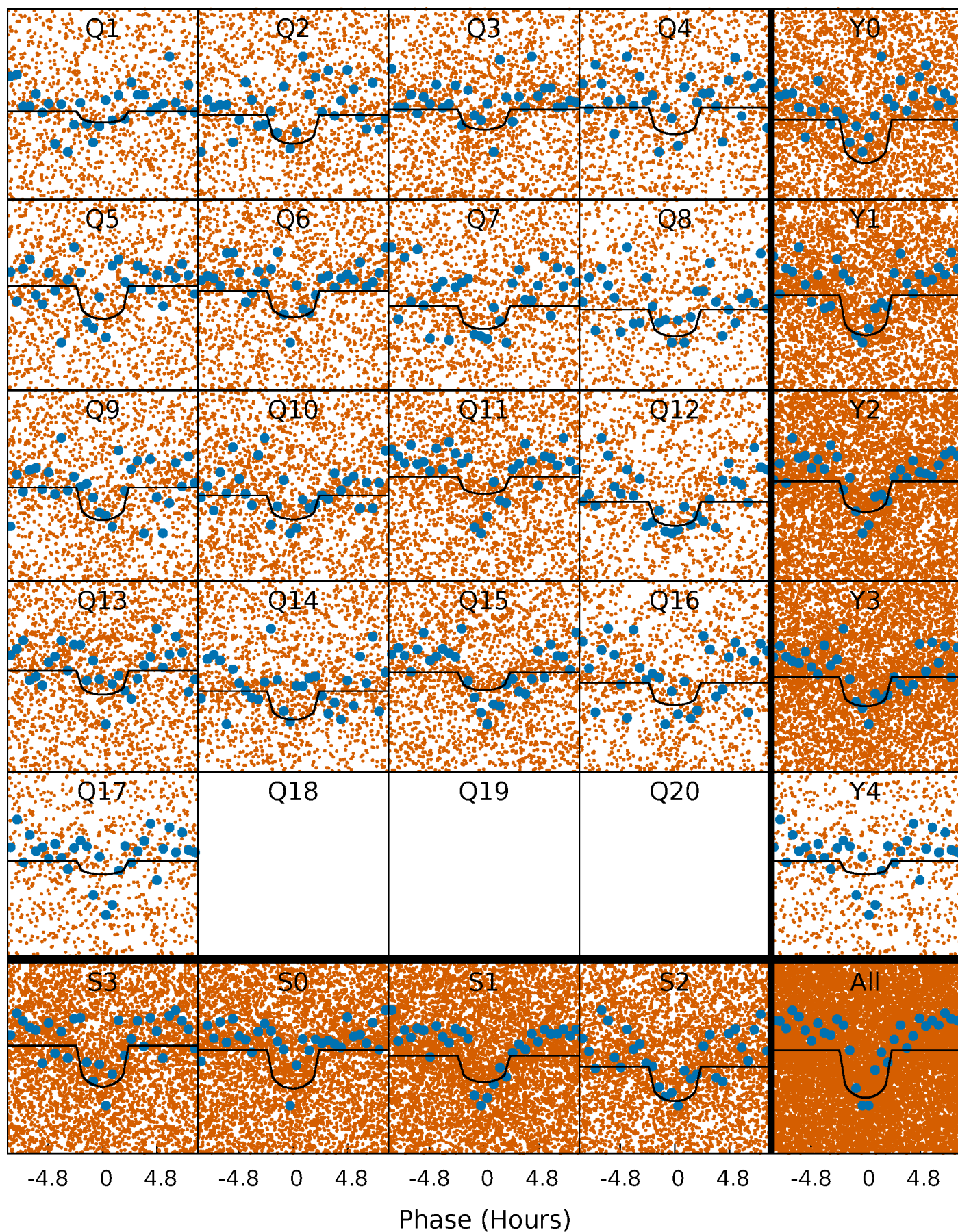
TCE 007033421-01 P= 0.566782 Days  $T_0=131.830789$  (BKJD)





# DV Quarter-Phased Transit Curves

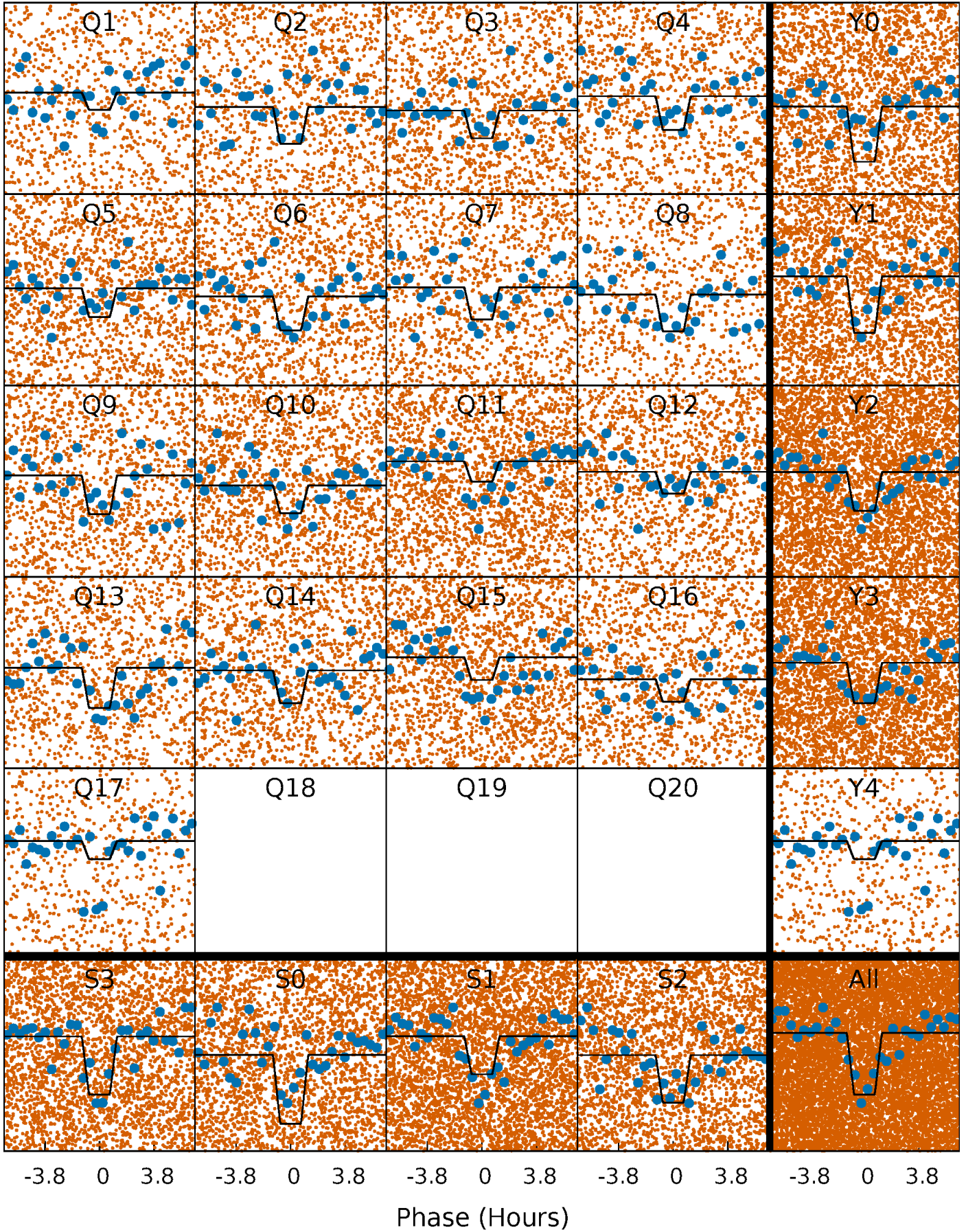
TCE 007033421-01 P= 0.566782 Days  $T_0=131.830789$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

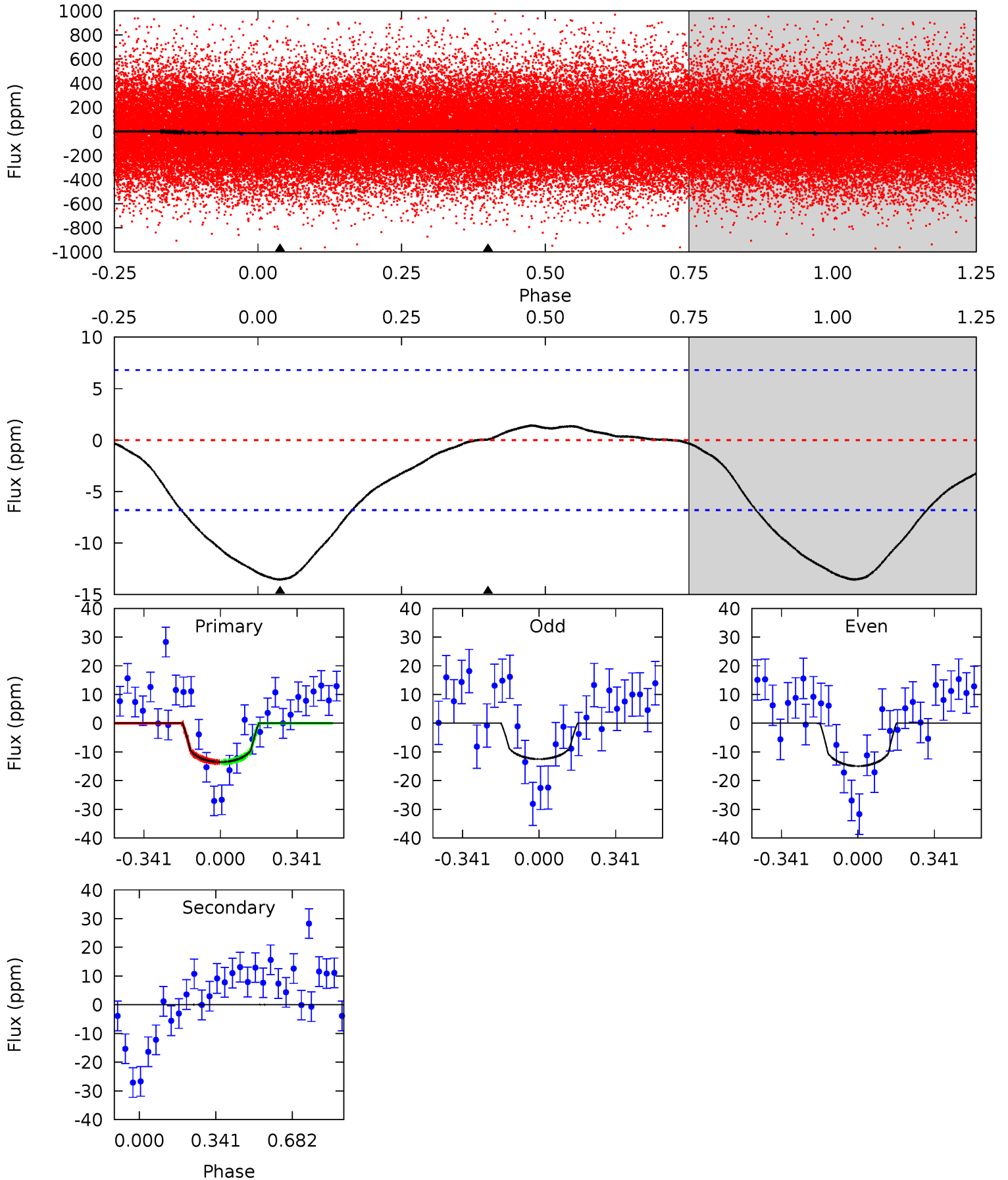
TCE 007033421-01 P= 0.566801 Days  $T_0=131.803523$  (BKJD)



# DV Model-Shift Uniqueness Test

007033421-01, P = 0.566782 Days, E = 131.264007 Days

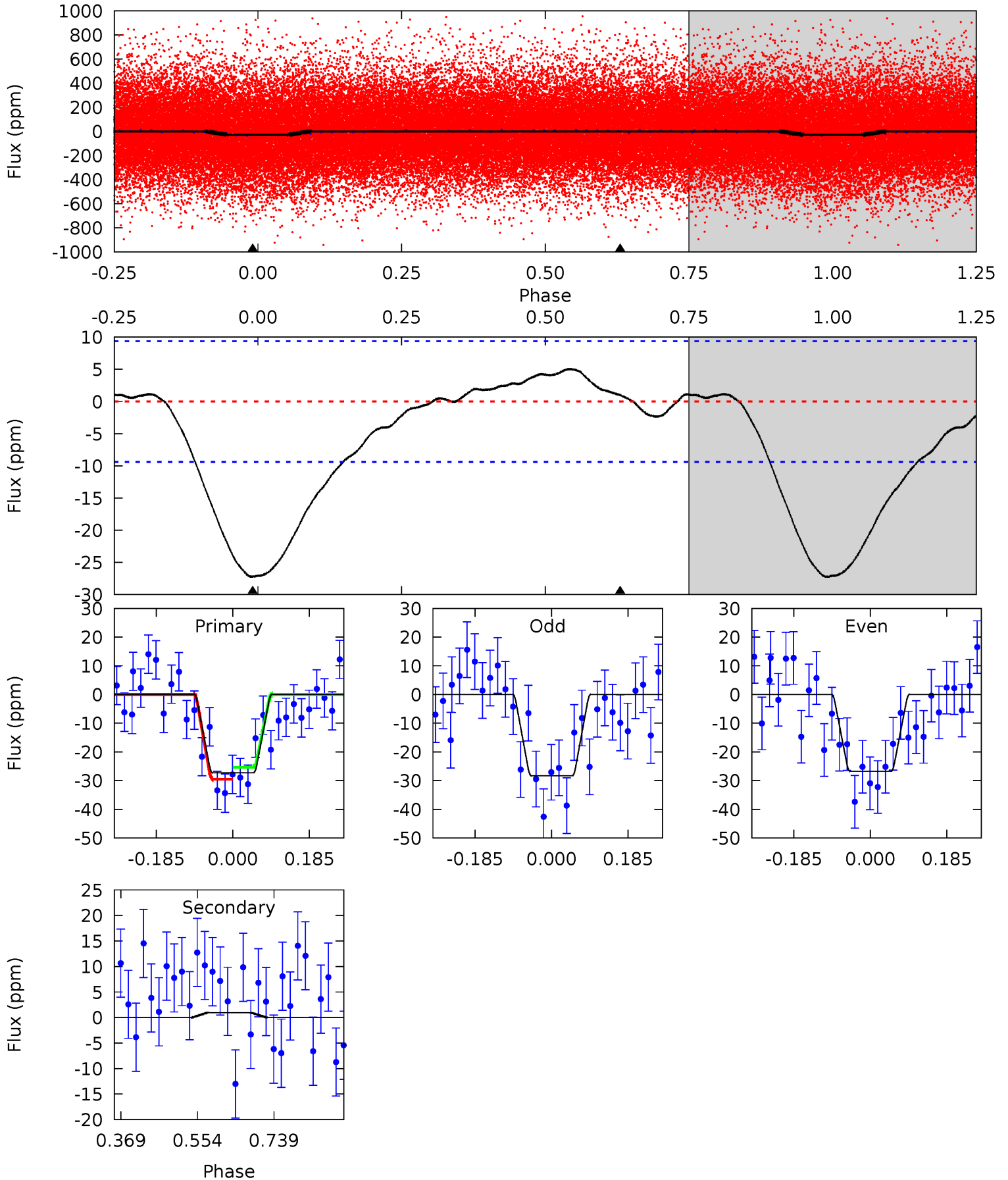
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.56	-0.04	0	0	4.30	0.95	0.17	8.56	8.56	-0.04	-0.04	0.77	0.88	0.10	0.02



# Alt Model-Shift Uniqueness Test

007033421-01, P = 0.566801 Days, E = 131.236722 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.9	-0.45	0	0	4.43	1.33	1.26	12.9	12.9	-0.45	-0.45	0.37	0.98	0.16	0.99





### Stellar Parameters For KIC 007033421

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6268^{+174}_{-196}$	$4.429^{+0.050}_{-0.200}$	$0.070^{+0.250}_{-0.350}$	$1.100^{+0.335}_{-0.112}$	$1.188^{+0.141}_{-0.173}$	$1.257^{+0.338}_{-0.644}$
	+3%/-3%	+1%/-5%	+357%/-500%	+30%/-10%	+12%/-15%	+27%/-51%
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 007033421-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$0 \pm 2$	$0.61^{+0.44}_{-0.38}$	$3472^{+243}_{-156}$	$-3429^{+6889}_{-730}$	$-0.004^{+0.677}_{-0.769}$
Alt.	$1 \pm 2$	$0.72^{+0.45}_{-0.39}$	$3487^{+234}_{-177}$	$-3674^{+958}_{-845}$	$-0.173^{+0.414}_{-1.062}$

$T_{max}$  = 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

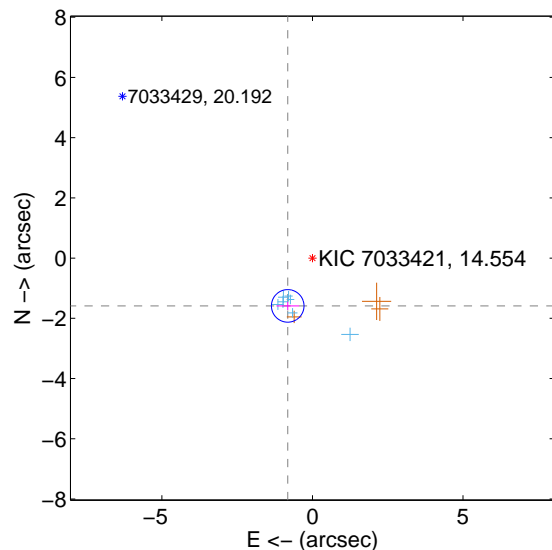
Supplemental centroid analysis for 007033421-01. Kepler magnitude: 14.55. Transit SNR 8.86

There are 7 quarters with good PRF difference image offsets

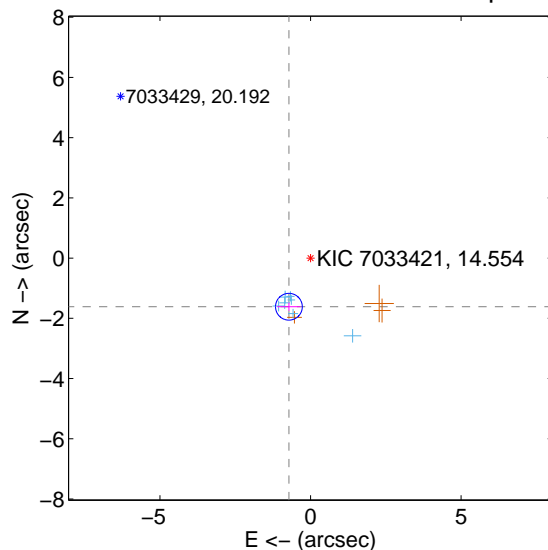
The direct PRF centroid is offset from the target star catalog position by about 0.16 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.787 \pm 0.180$	9.91	$0.821 \pm 0.377$	$-1.587 \pm 0.138$
PRF-fit source offset from KIC position	$1.768 \pm 0.148$	11.93	$0.718 \pm 0.390$	$-1.615 \pm 0.137$
photometric centroid source offset	$2.61 \pm 1.36$	1.91	$-2.44 \pm 1.35$	$0.92 \pm 1.42$

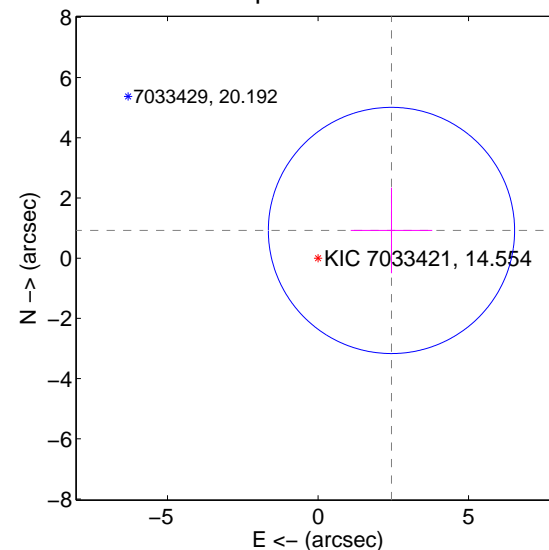
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

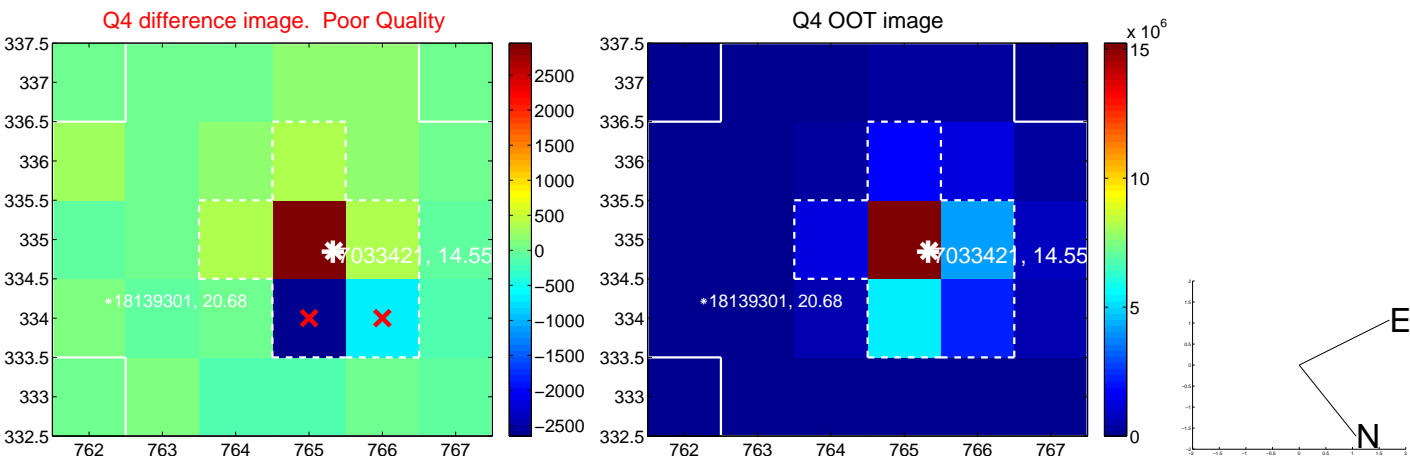
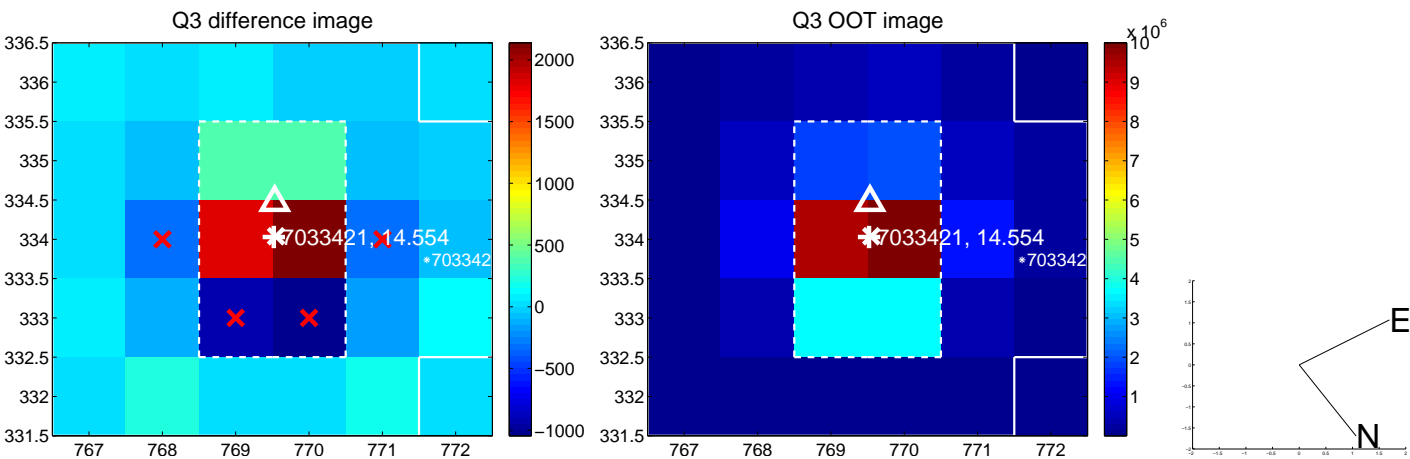
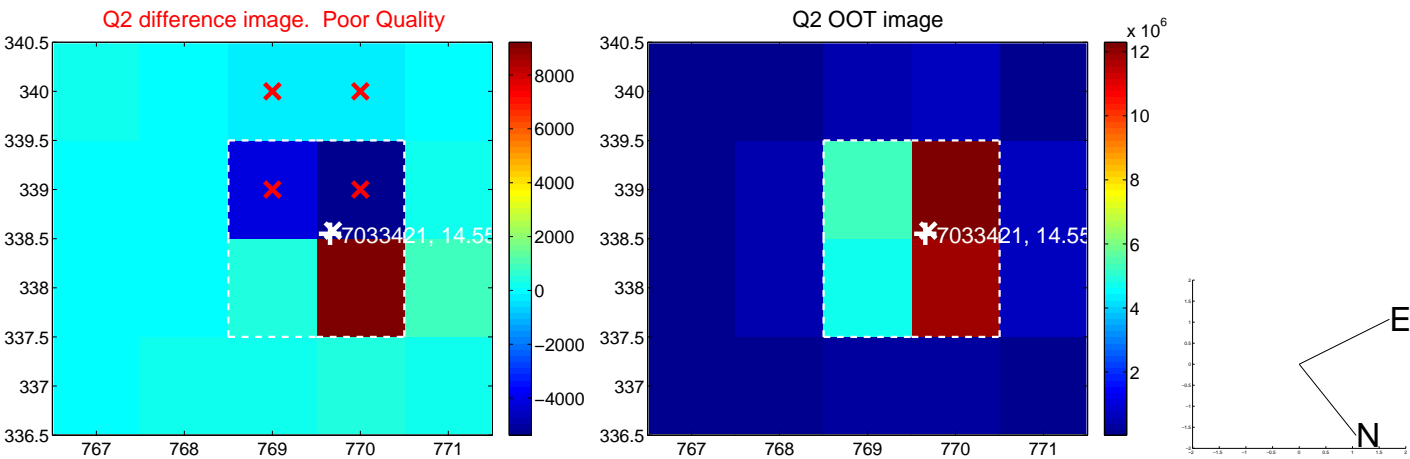
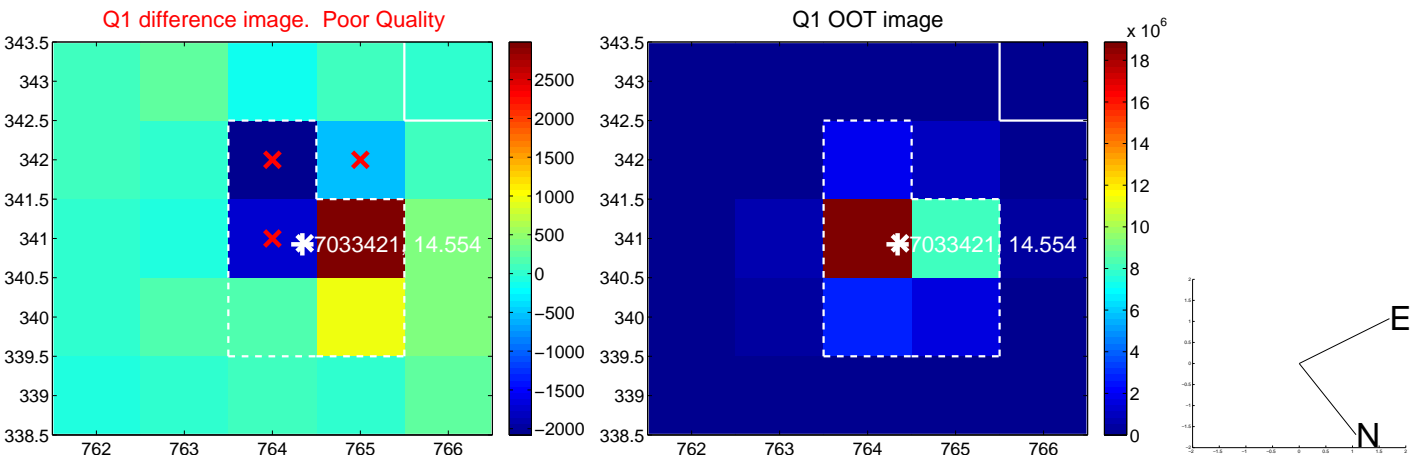


offset from photometric centroids

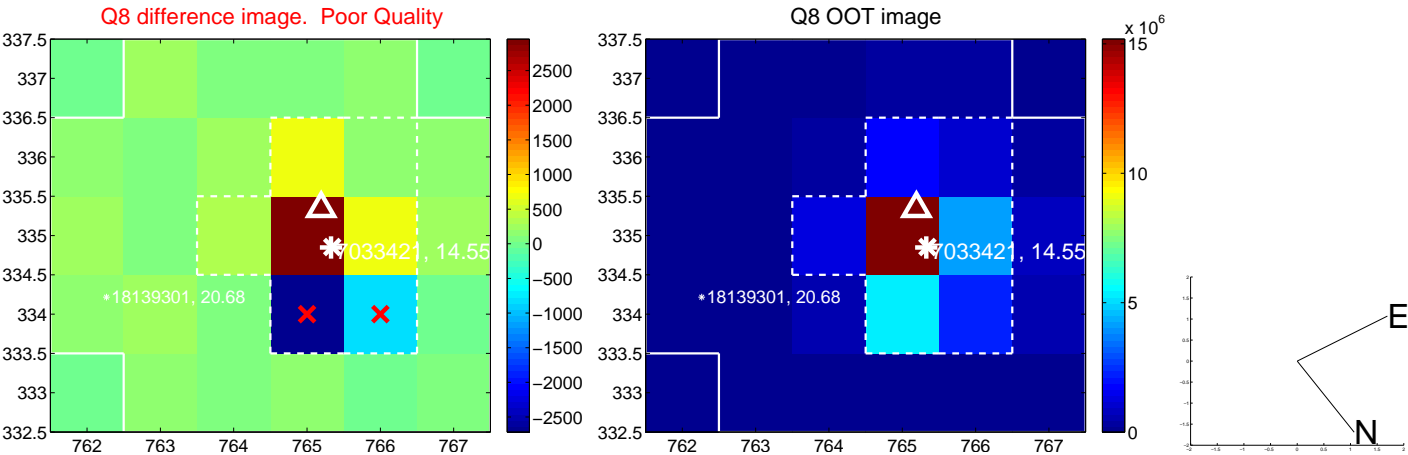
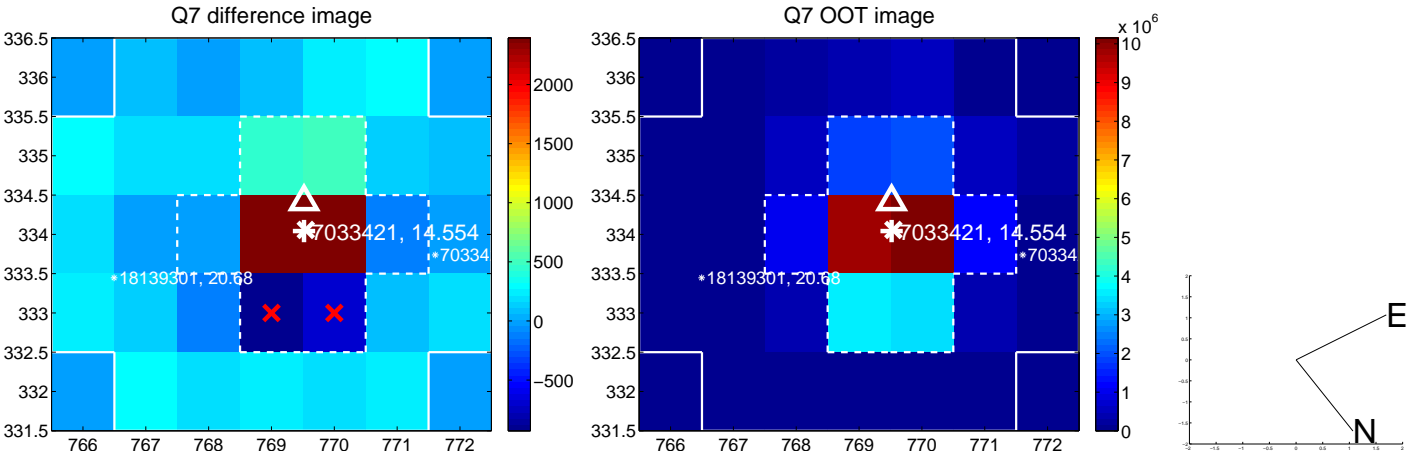
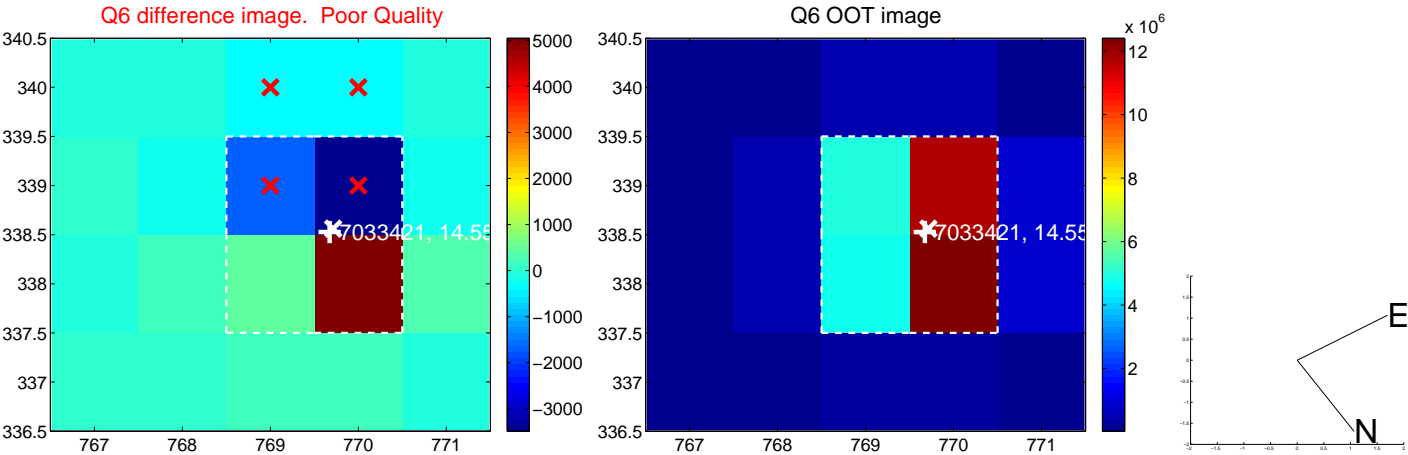
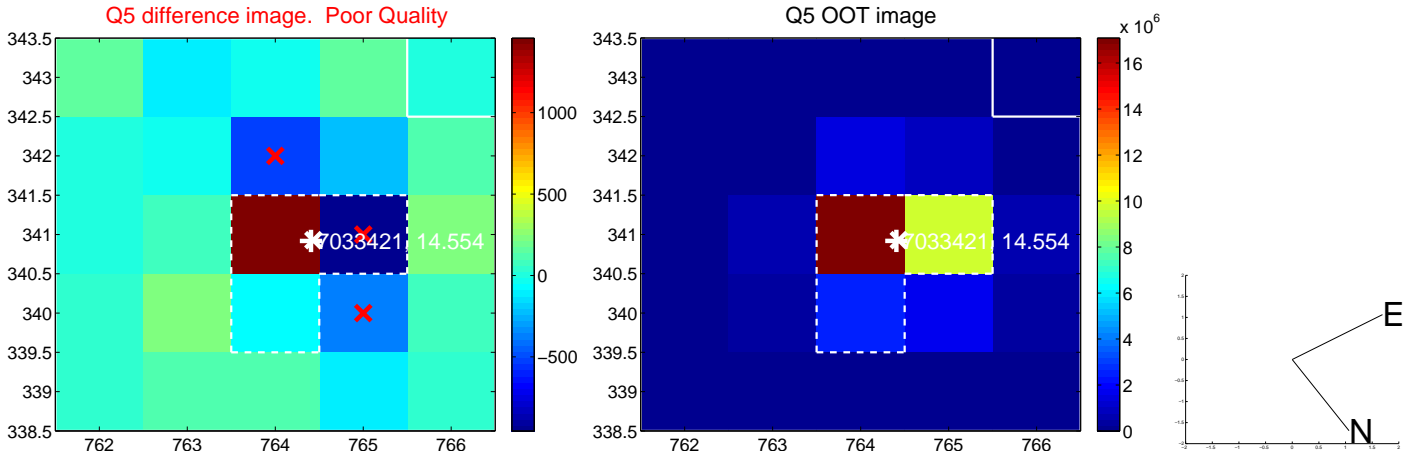


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

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

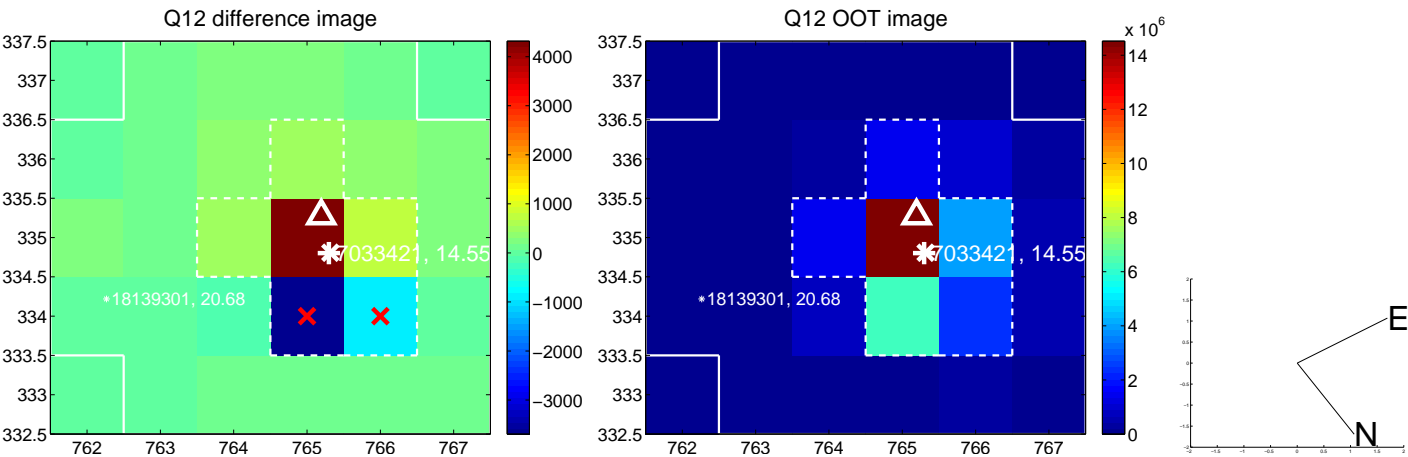
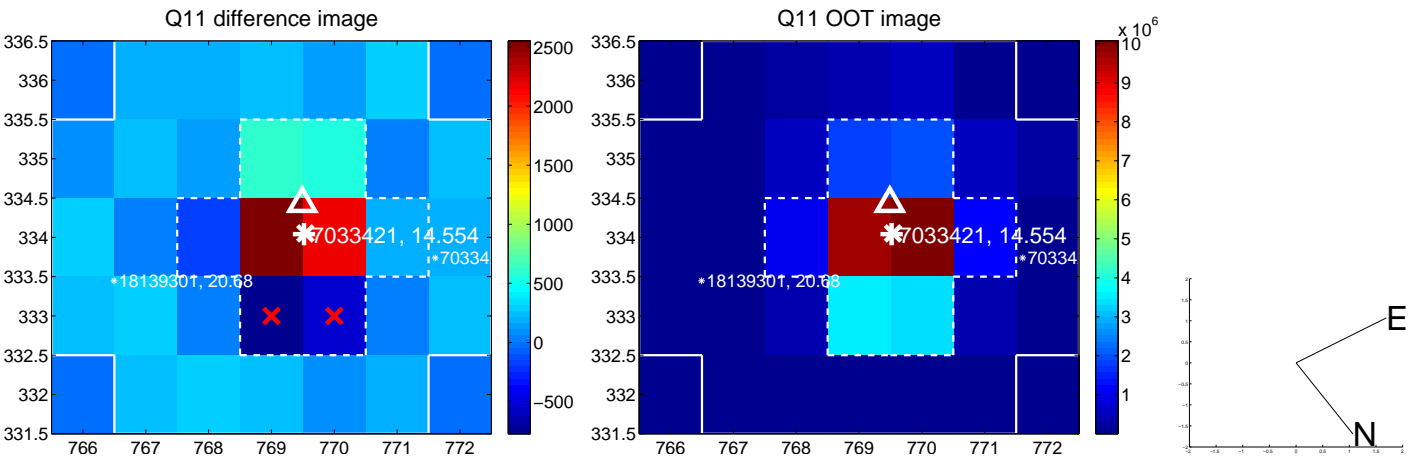
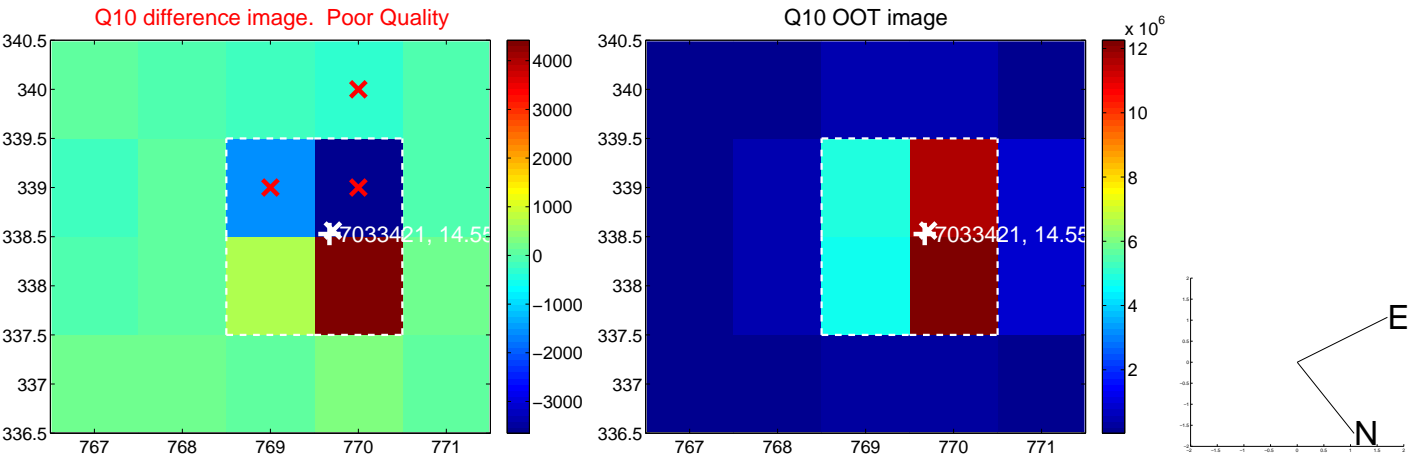
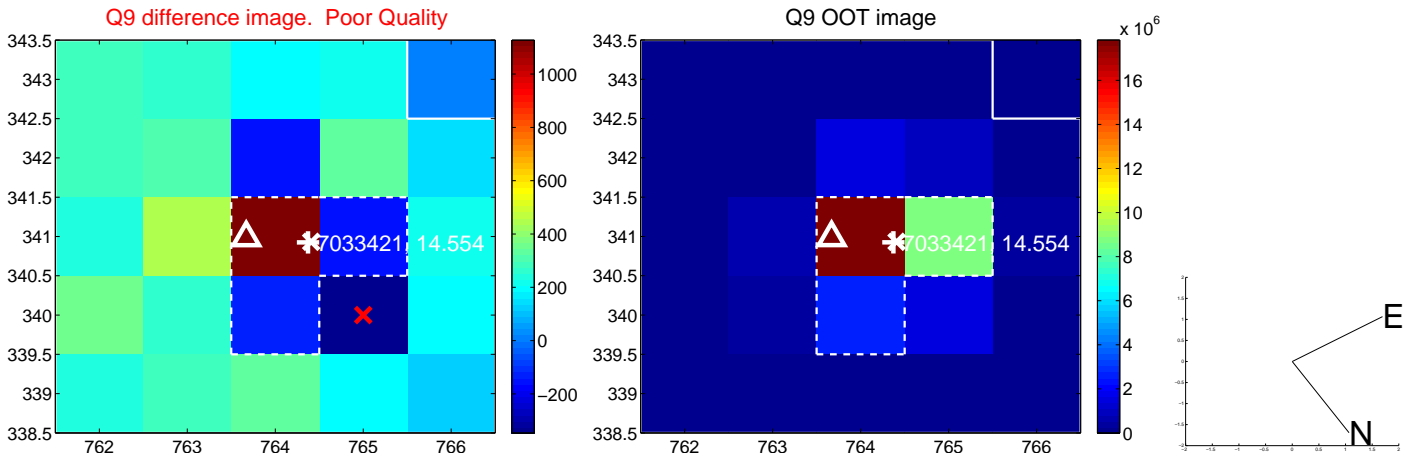


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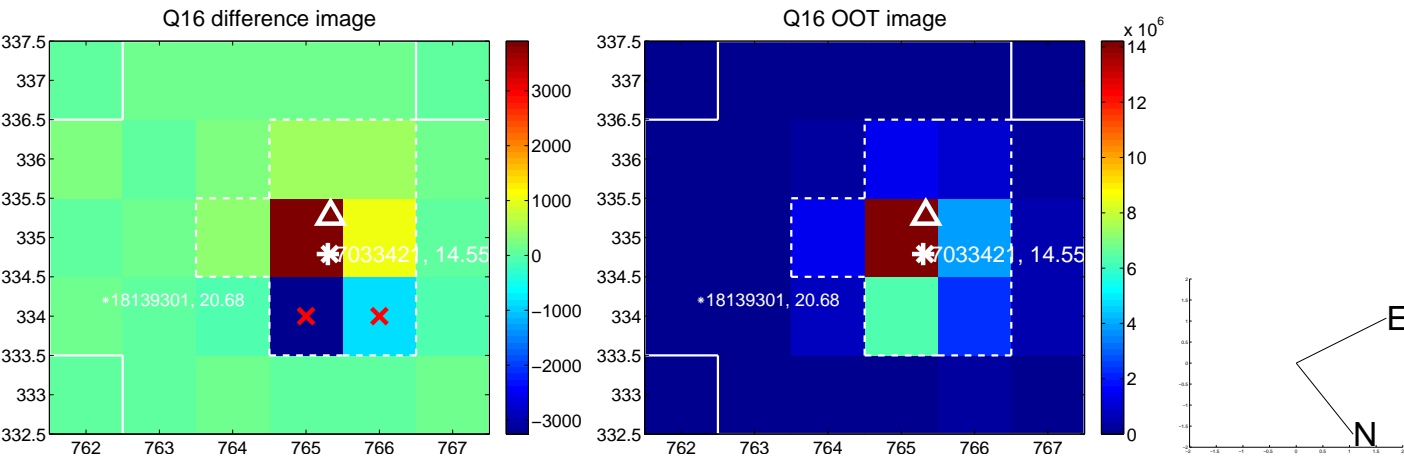
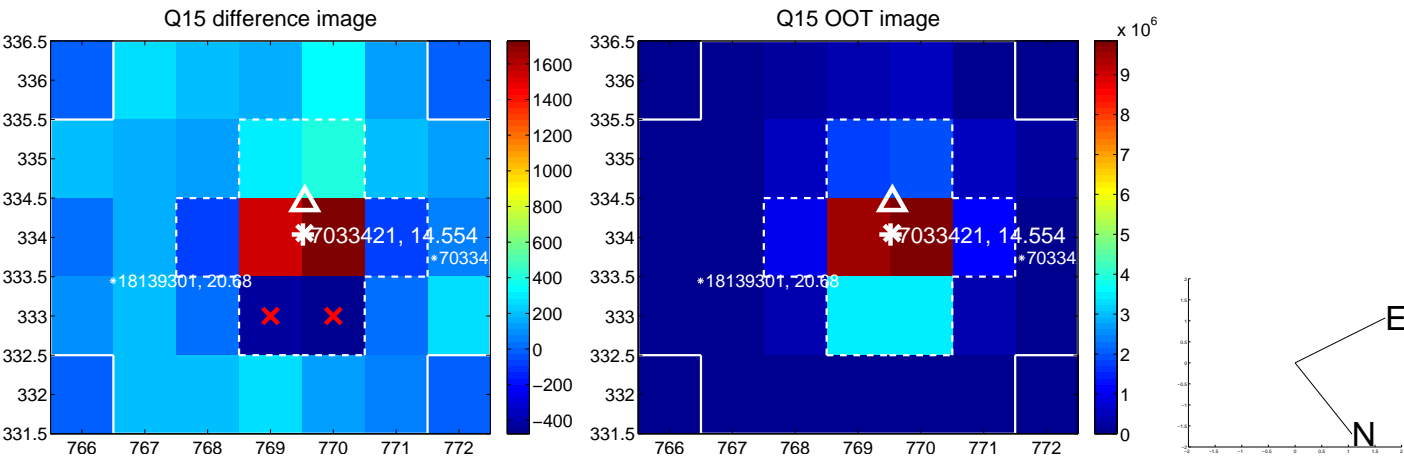
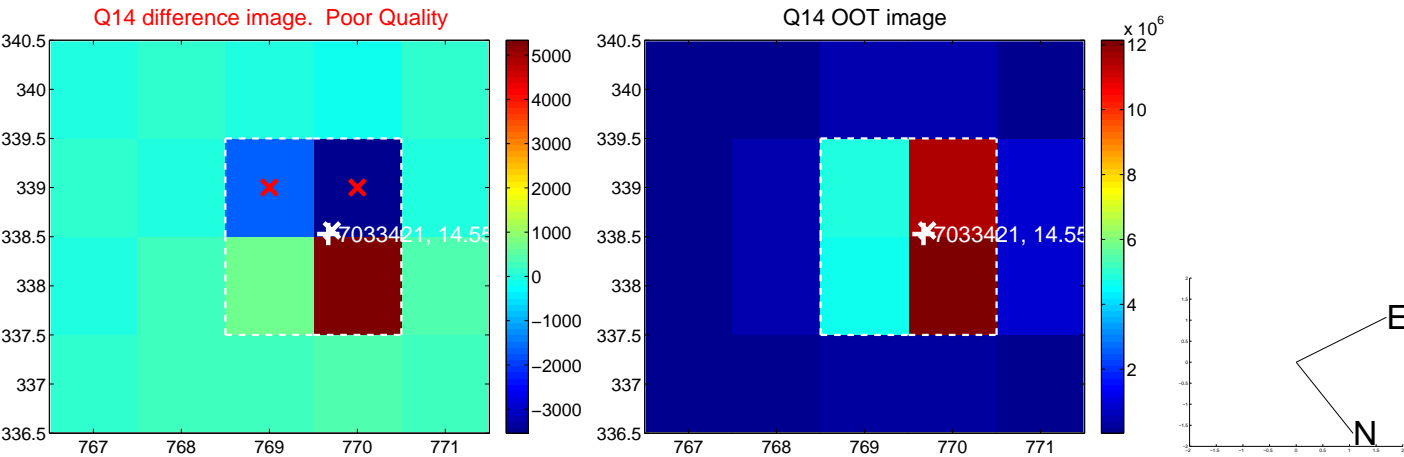
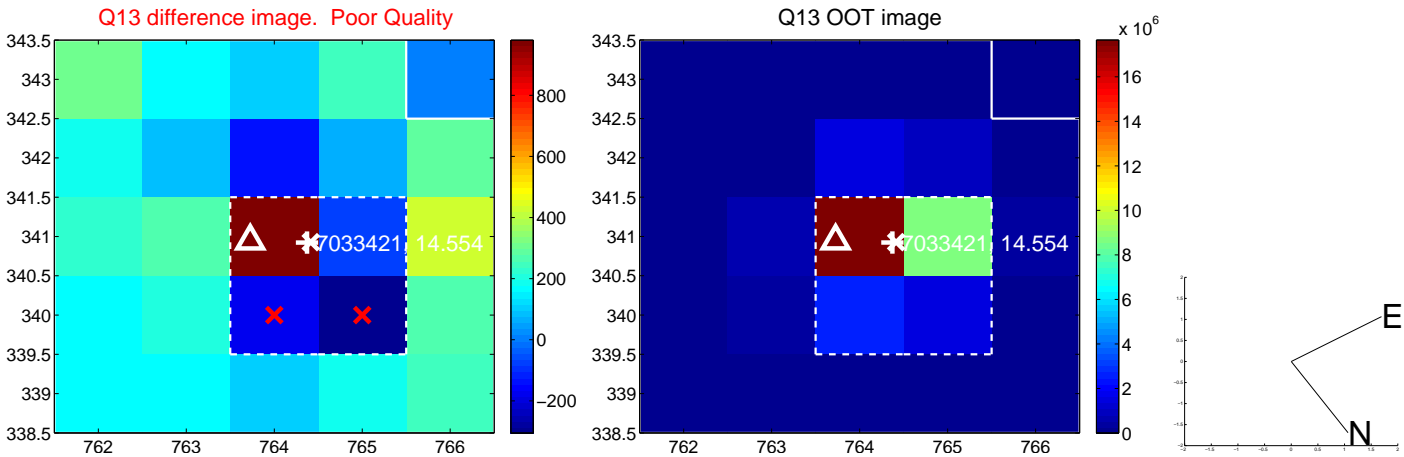




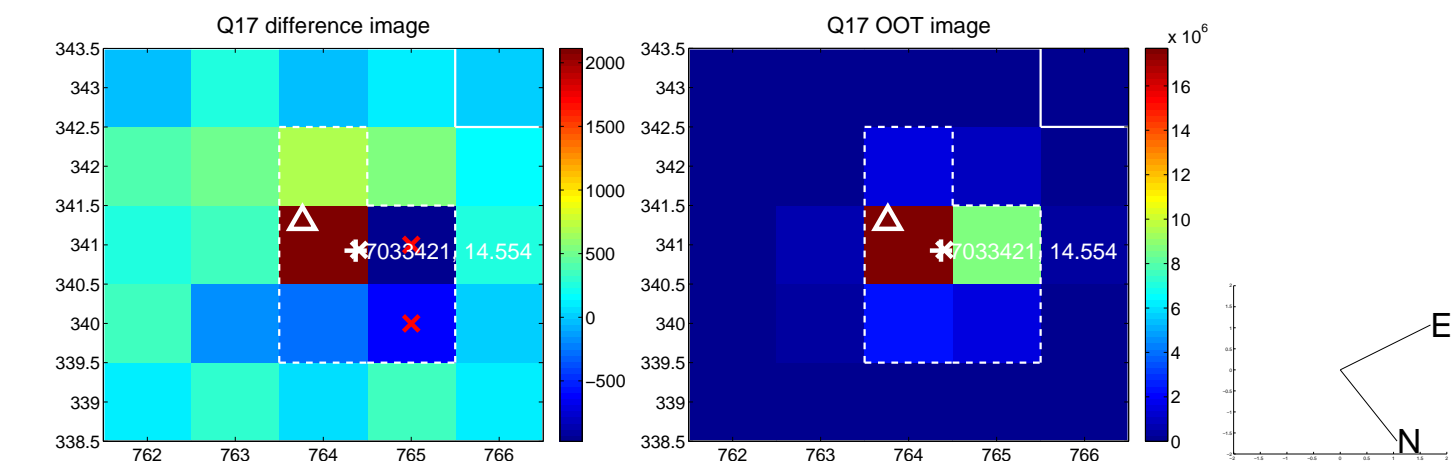
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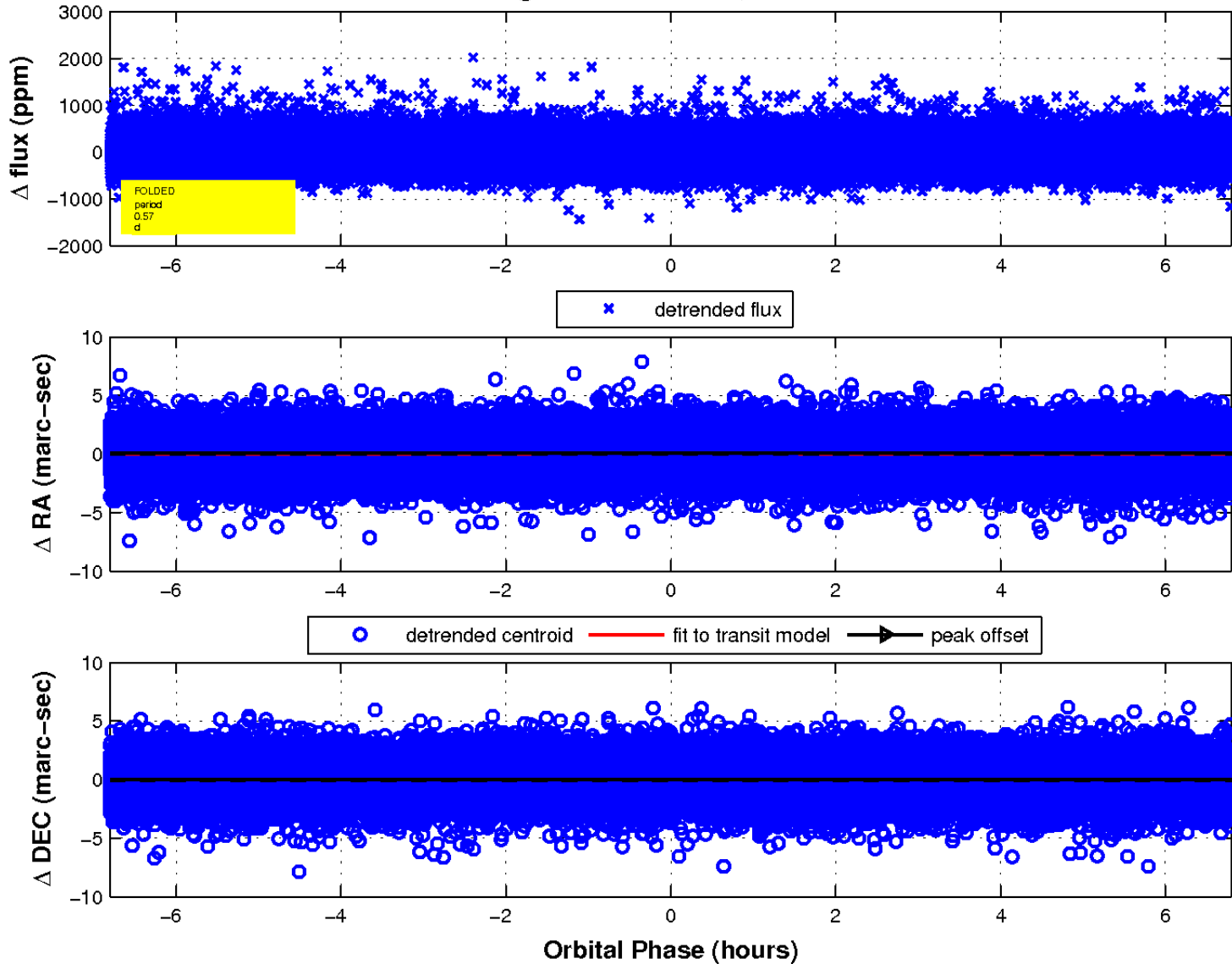
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

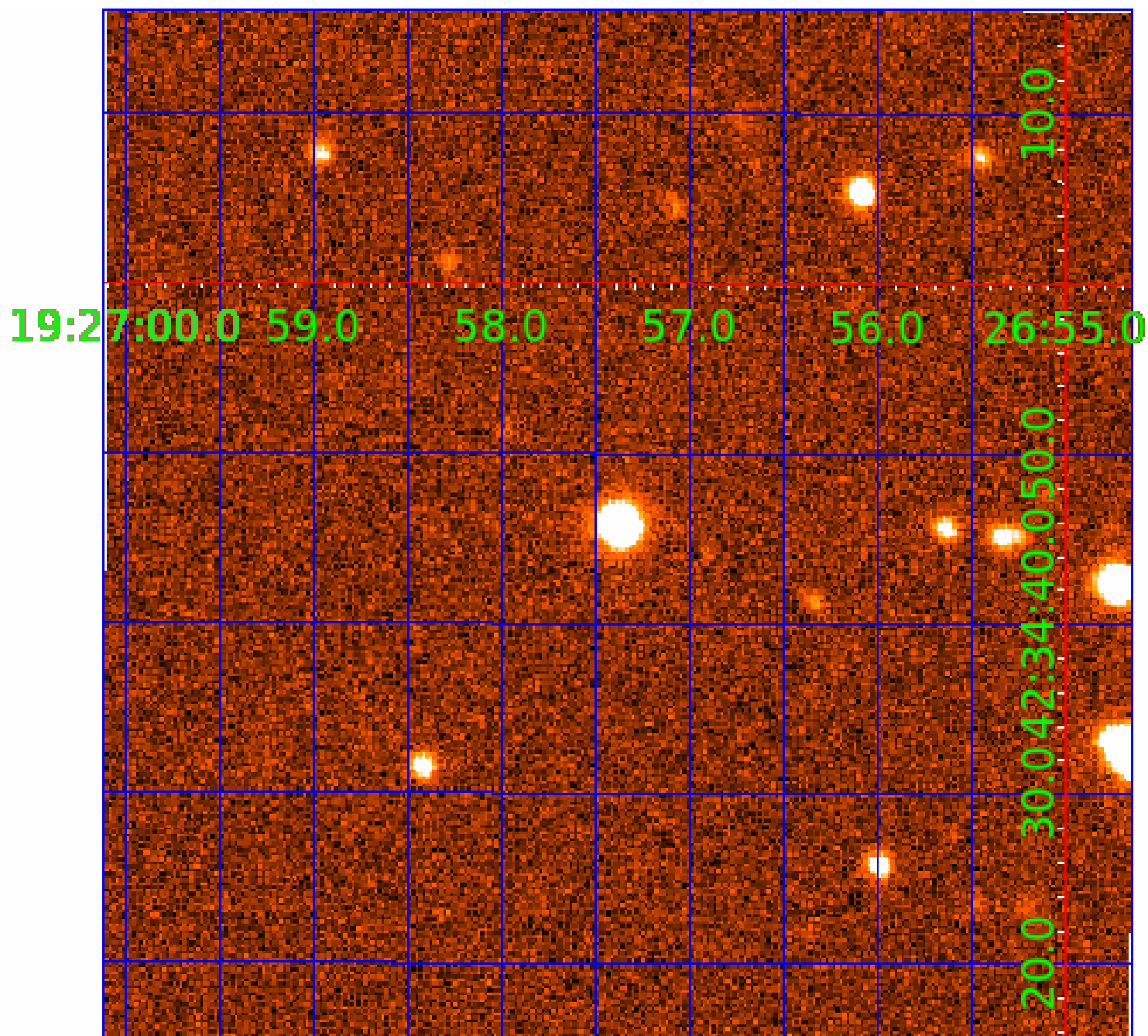


fluxWeightedCentroids, Planet 1 of 6



UKIRT Image

Declination





# KIC 007033421

## 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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007033421-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—CENT_FEW_DIFFS
007033421-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—NO_FITS—CENT_NOFITS
007033421-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV
007033421-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—CENT_FEW_DIFFS
007033421-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—CENT_FEW_DIFFS

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

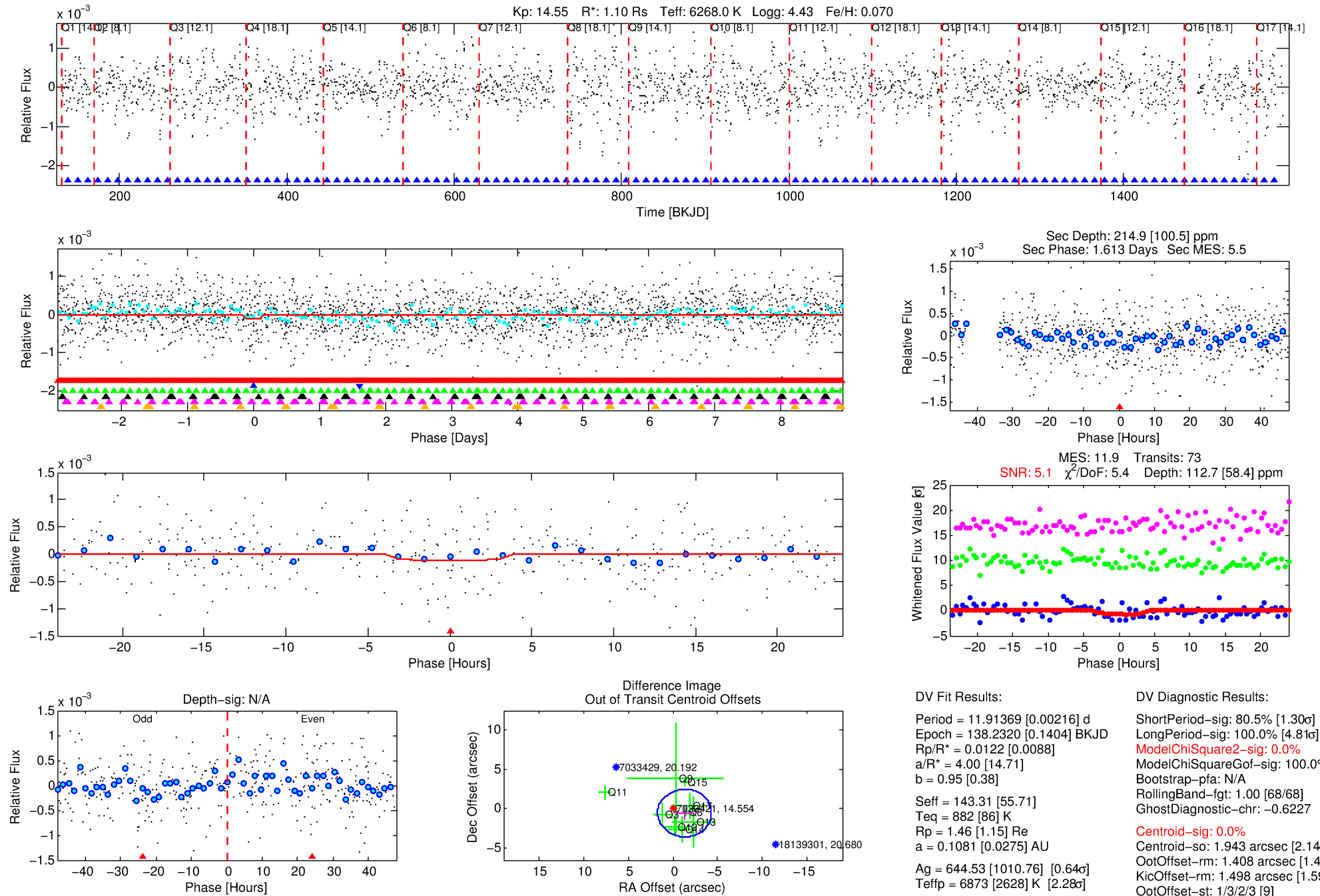
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 007033421-02

No Significant Match Found

# DV One-Page Summary

KIC: 7033421 Candidate: 2 of 6 Period: 11.914 d



## DV Fit Results:

Period = 11.91369 [0.00216] d  
Epoch = 138.2320 [0.1404] BKJD  
Rp/R\* = 0.0122 [0.0088]  
a/R\* = 4.00 [14.71]  
b = 0.95 [0.38]  
Seff = 143.31 [55.71]  
Teff = 882 [86] K  
Rp = 1.46 [1.15] Re  
a = 0.1081 [0.0275] AU  
Ag = 644.53 [1010.76] [0.64] $\sigma$   
Teffp = 6873 [2628] K [2.28] $\sigma$

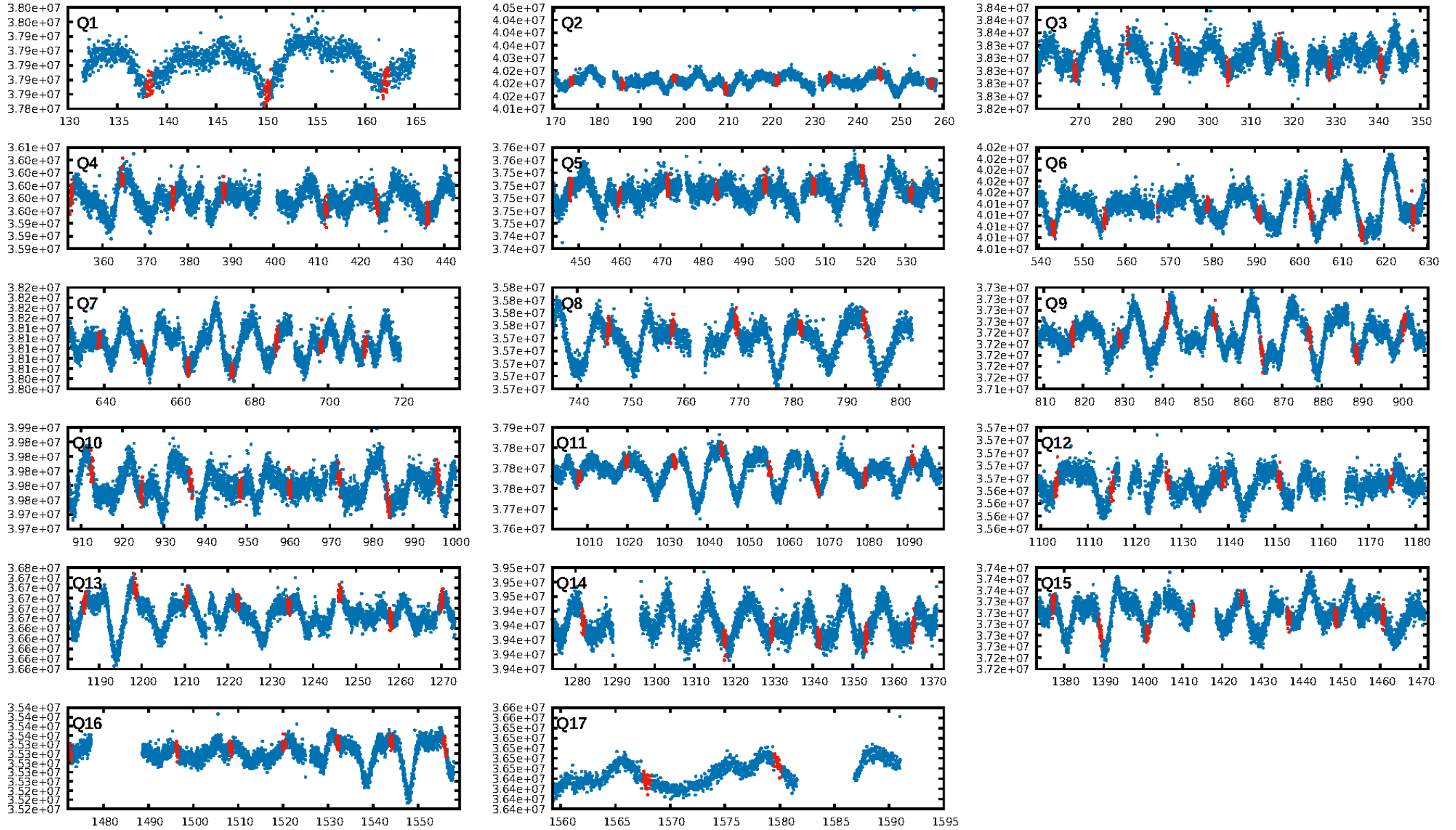
## DV Diagnostic Results:

ShortPeriod-sig: 80.5% [1.30 $\sigma$ ]  
LongPeriod-sig: 100.0% [4.81 $\sigma$ ]  
ModelChiSquare2-sig: 0.0%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [68/68]  
GhostDiagnostic-chr: -0.6227  
Centroid-sig: 0.0%  
Centroid-so: 1.943 arcsec [2.14 $\sigma$ ]  
OotOffset-rm: 1.408 arcsec [1.40 $\sigma$ ]  
KicOffset-rm: 1.498 arcsec [1.59 $\sigma$ ]  
OotOffset-st: 1/3/2/3 [9]  
KicOffset-st: 1/3/2/3 [9]  
DiffImageQuality-fgm: 0.22 [2/9]  
DiffImageOverlap-fno: 0.00 [0/17]

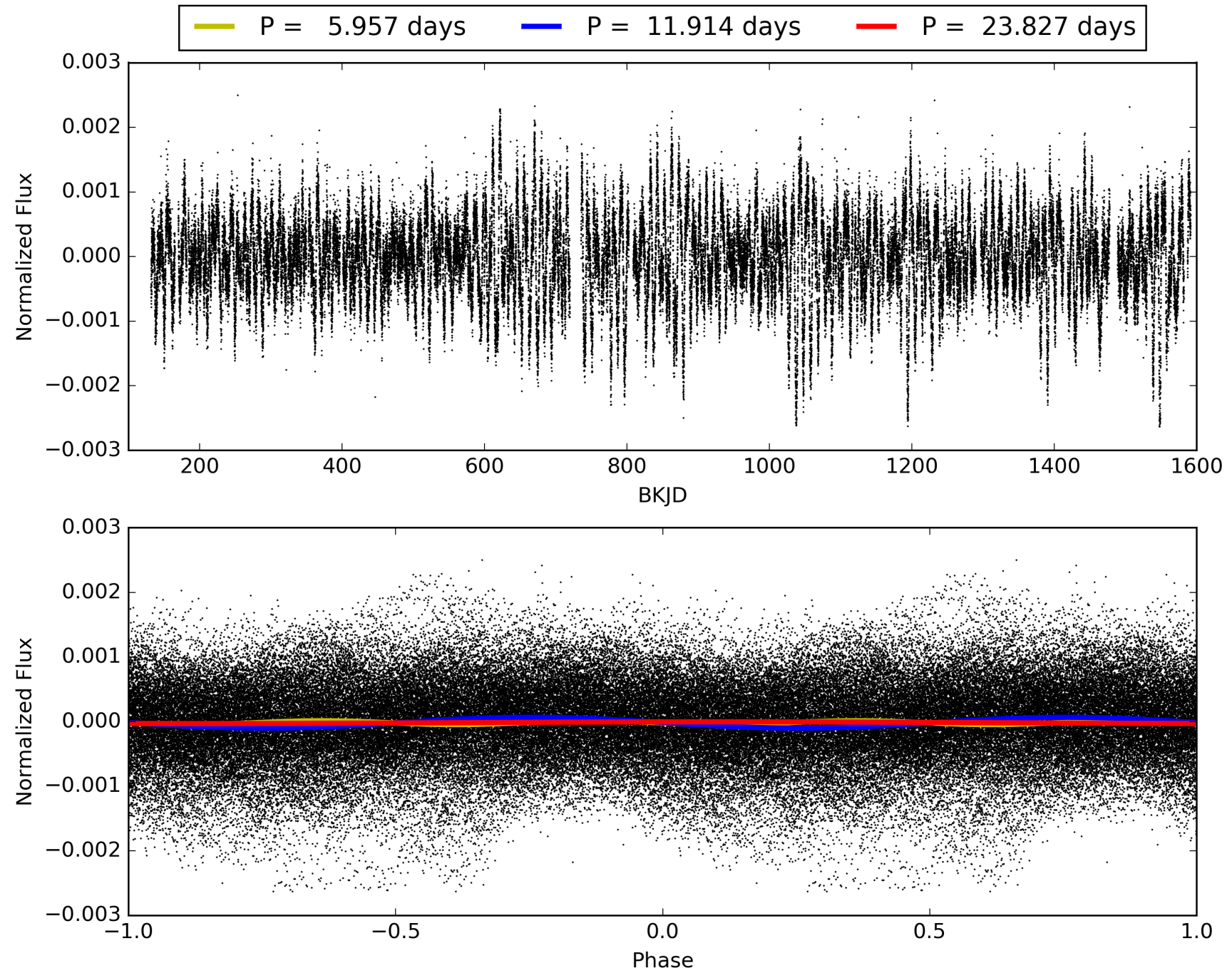
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 14:16:37 Z

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

# TCE 007033421-02, PDC Light Curves



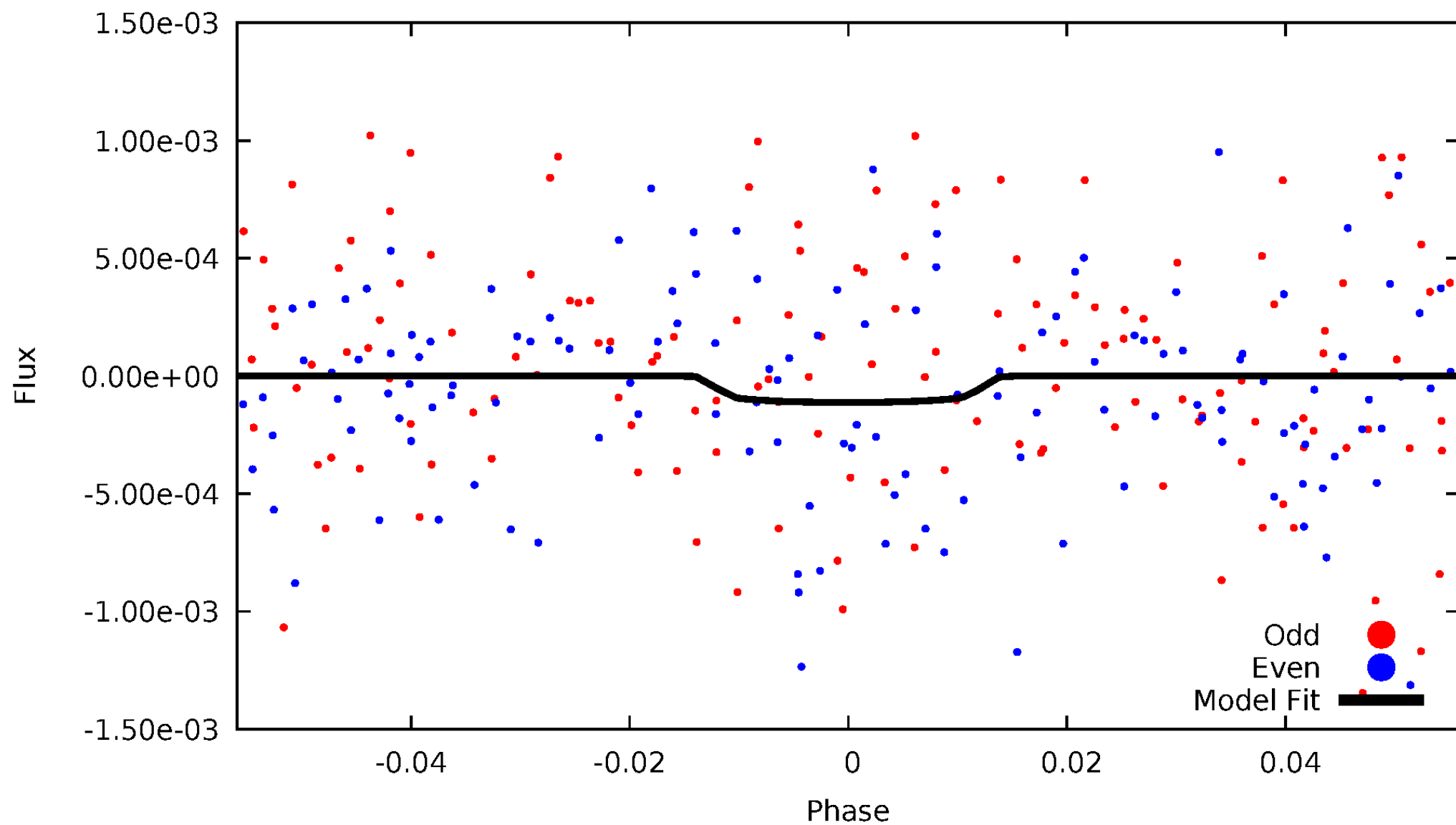
TCE 007033421-02





# DV Odd/Even

TCE 007033421-02



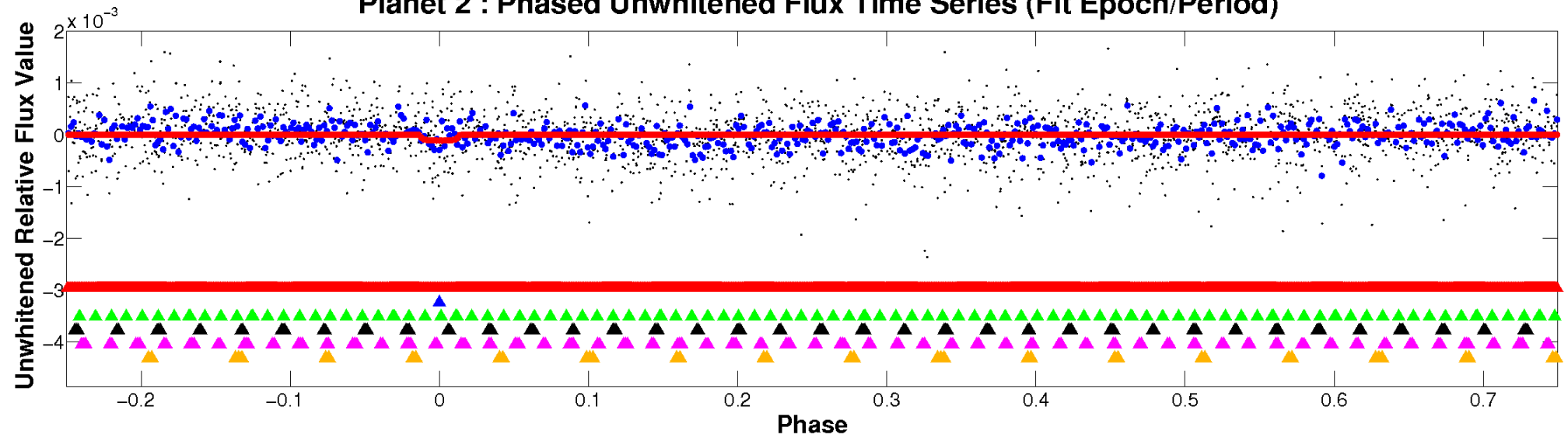


ALT Odd/Even

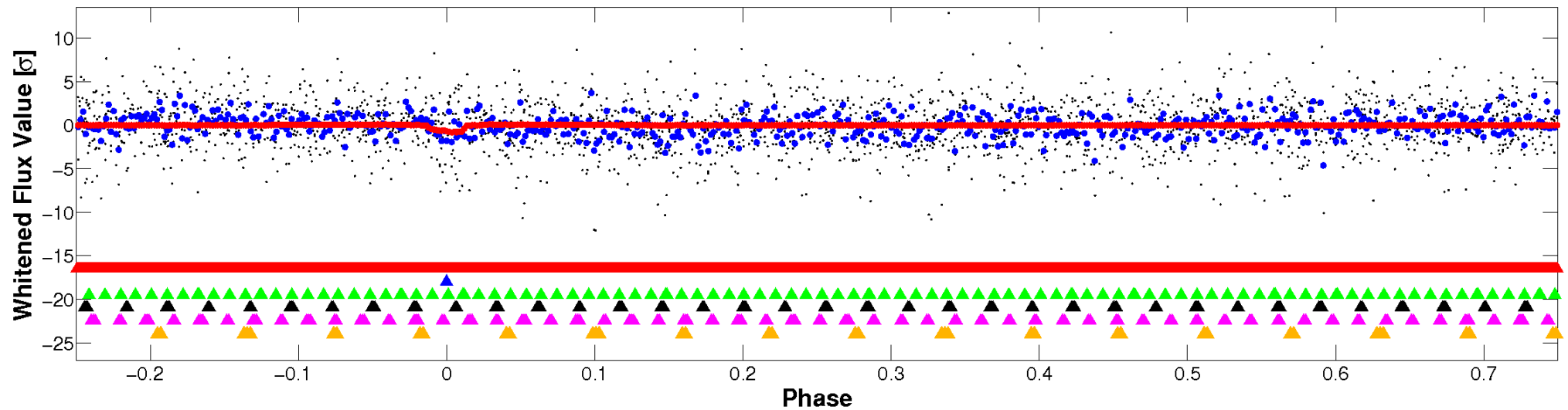
This plot does not exist for this TCE.

# Non-Whitened Vs. Whitened Light Curve

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



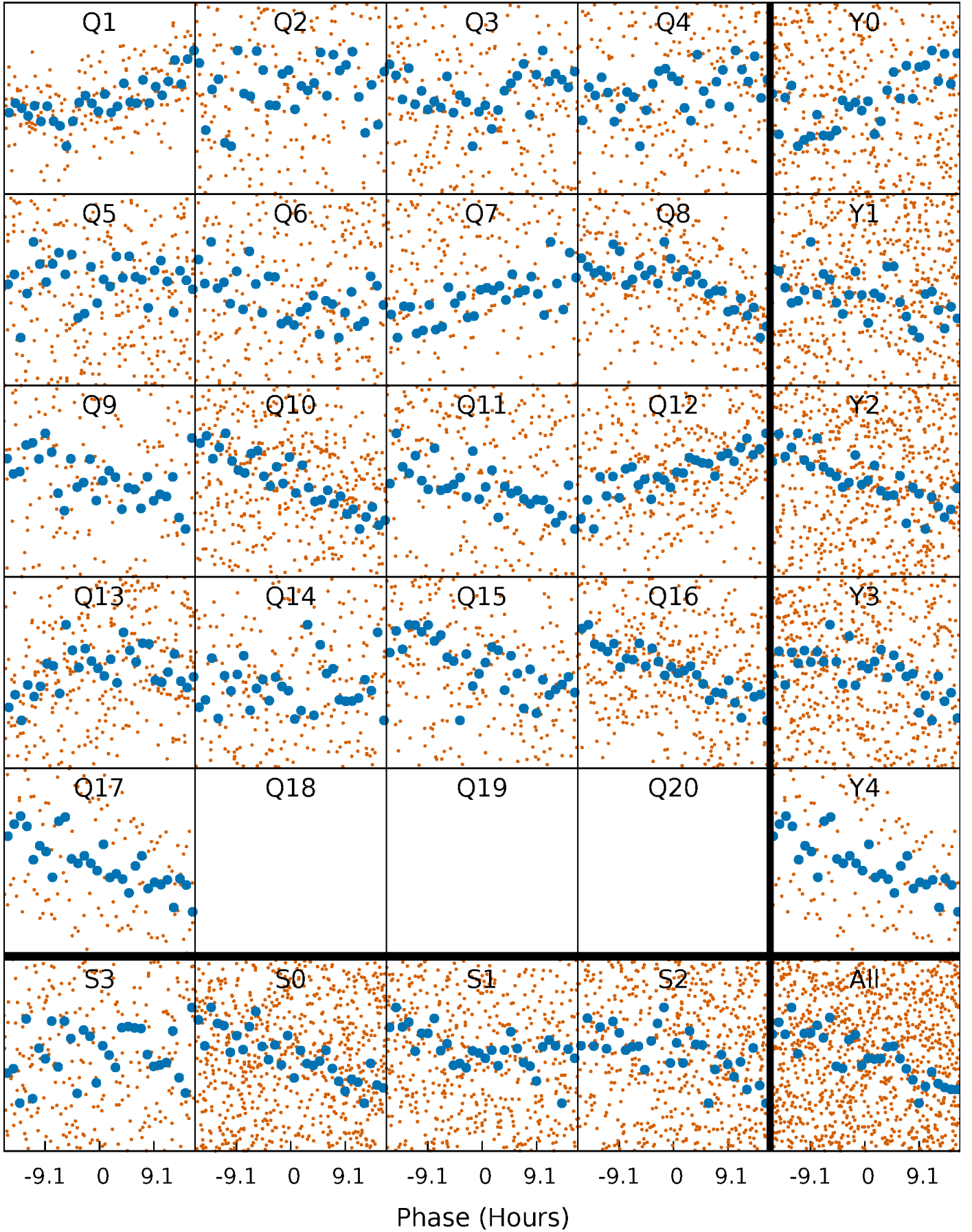
## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)





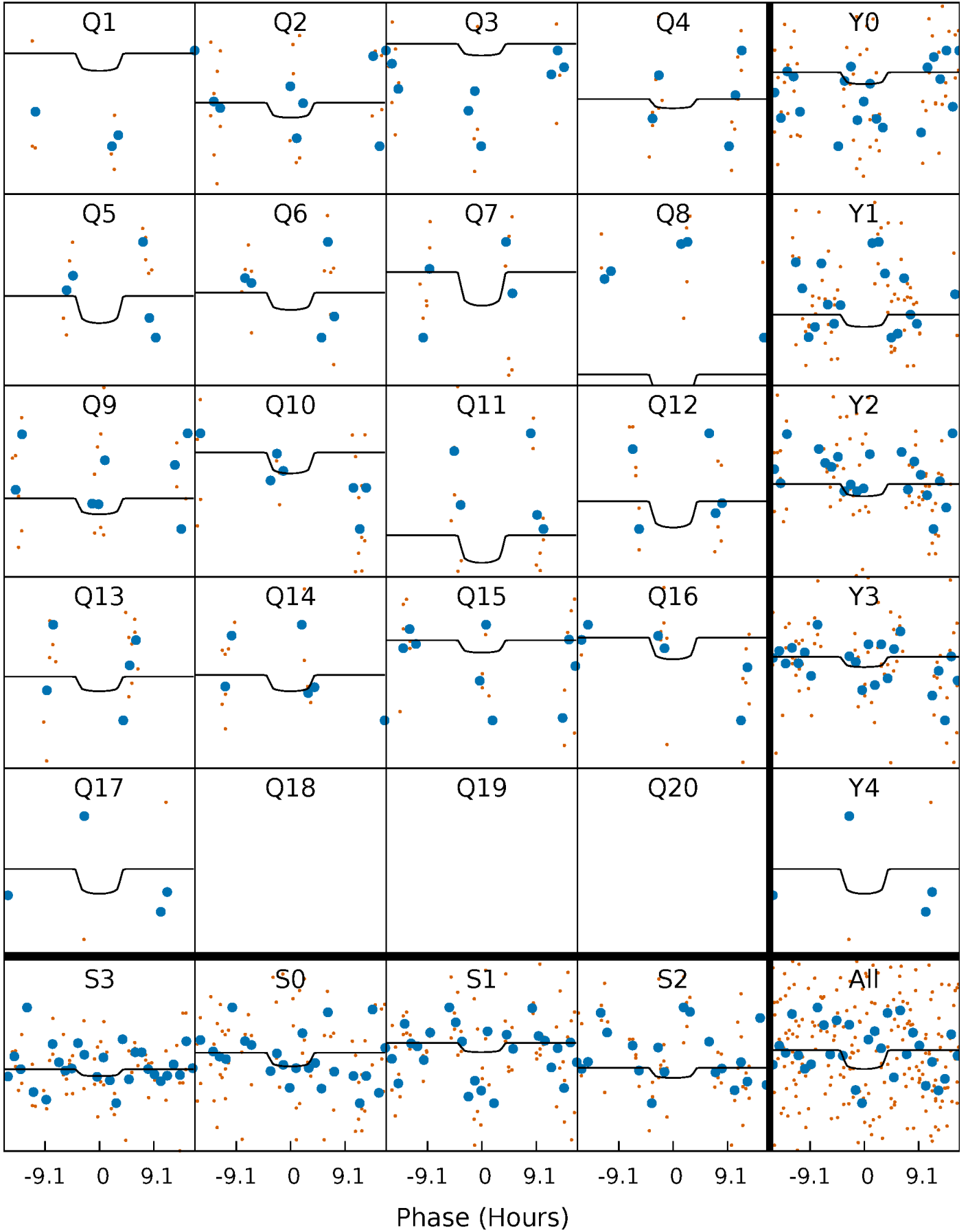
# PDC Quarter-Phased Transit Curves

TCE 007033421-02   P= 11.913694 Days    $T_0=138.232044$  (BKJD)



# DV Quarter-Phased Transit Curves

TCE 007033421-02   P= 11.913694 Days    $T_0=138.232044$  (BKJD)

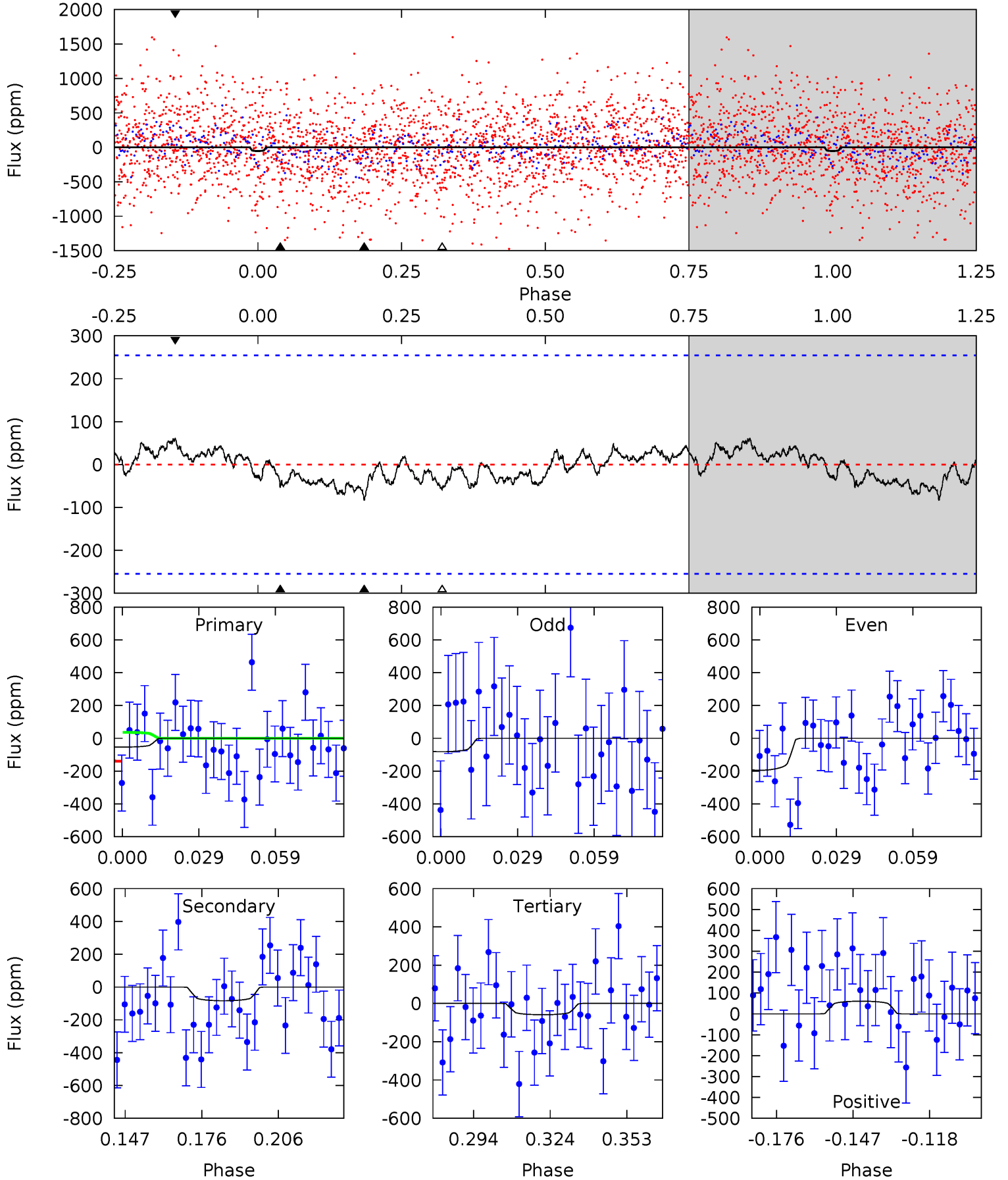


This plot does not exist for this TCE.

# DV Model-Shift Uniqueness Test

007033421-02, P = 11.913694 Days, E = 126.318350 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1.02	1.58	1.11	1.15	4.82	2.18	0.58	-0.10	-0.13	0.47	0.43	1.06	0.55	0.42	0.98





## Alt Model-Shift Uniqueness Test

This plot does not exist for this TCE.

### Stellar Parameters For KIC 007033421

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6268^{+174}_{-196}$	$4.429^{+0.050}_{-0.200}$	$0.070^{+0.250}_{-0.350}$	$1.100^{+0.335}_{-0.112}$	$1.188^{+0.141}_{-0.173}$	$1.257^{+0.338}_{-0.644}$
	+3%/-3%	+1%/-5%	+357%/-500%	+30%/-10%	+12%/-15%	+27%/-51%
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 007033421-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-84 \pm 53$	$1.66^{+1.13}_{-1.02}$	$1259^{+86}_{-59}$	$5057^{+3389}_{-1225}$	$164^{+1003}_{-130}$
Alt.	N/A	N/A	N/A	N/A	N/A

$T_{max}$  = Theoretical Maximum Planetary Temperature

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

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

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

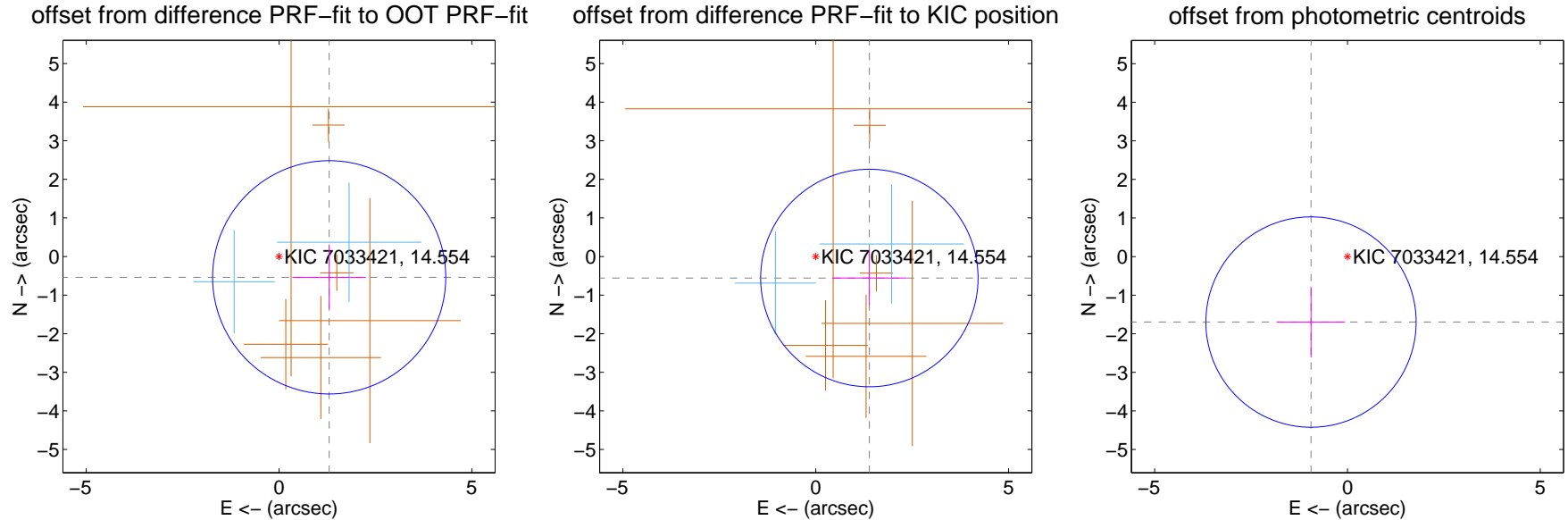
## DV Centroid Data

Supplemental centroid analysis for 007033421-02. Kepler magnitude: 14.55. Transit SNR 5.10

There are 2 quarters with good PRF difference image offsets

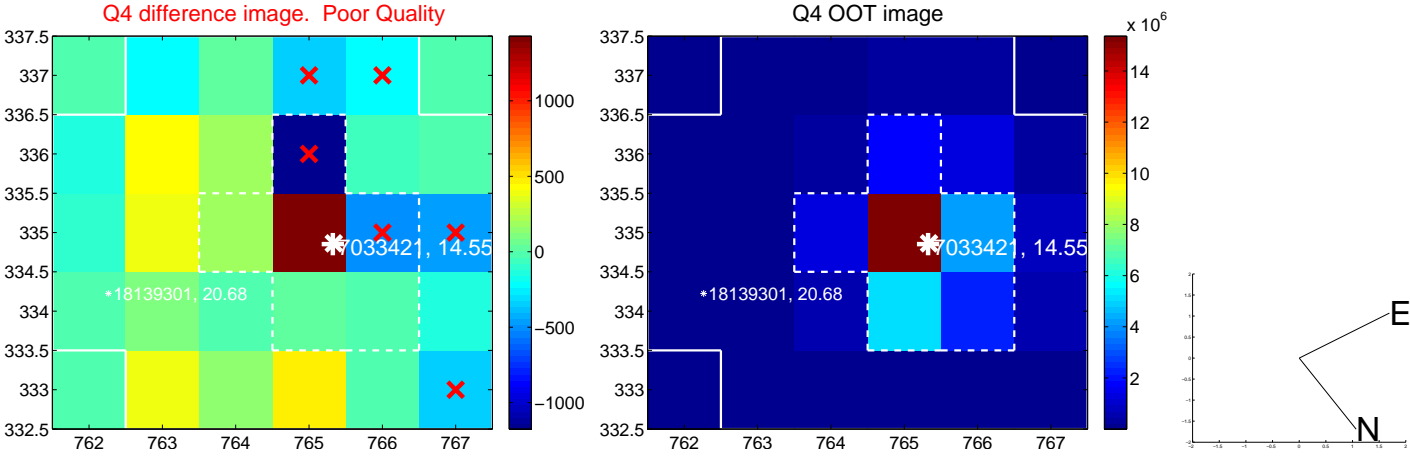
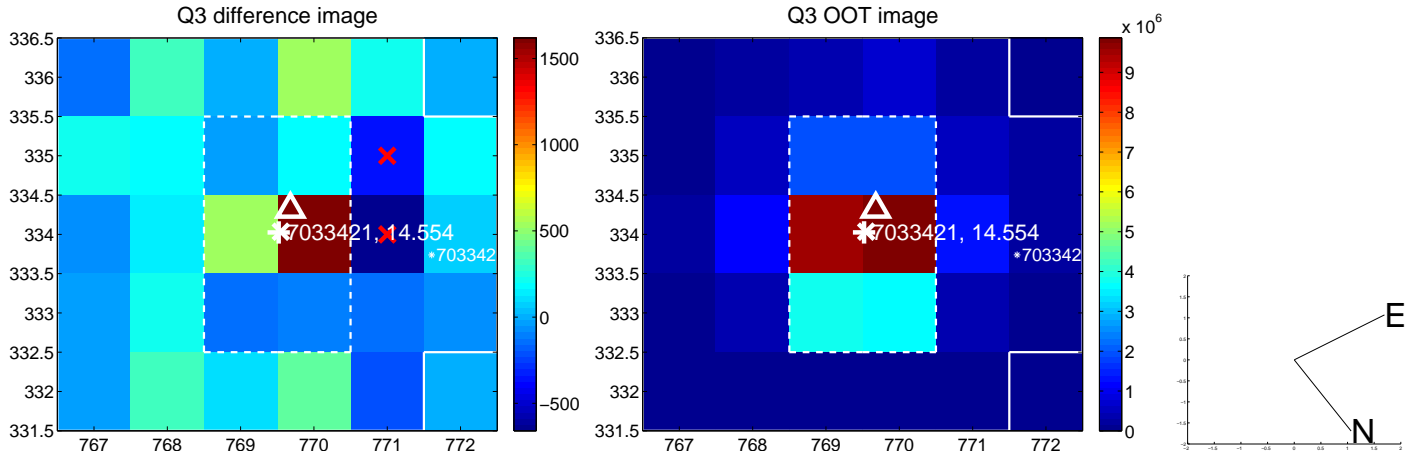
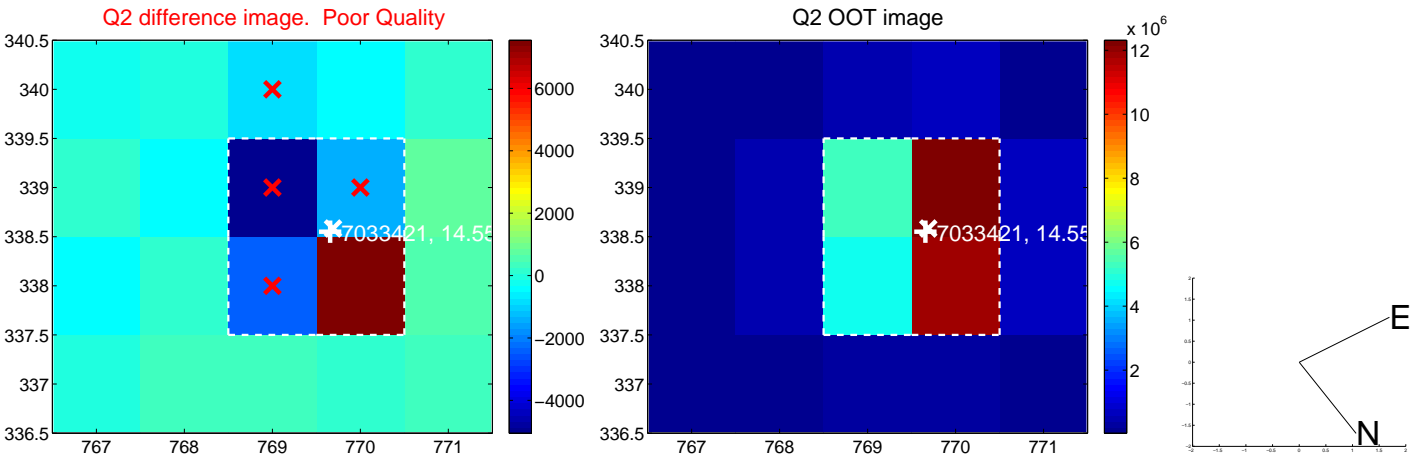
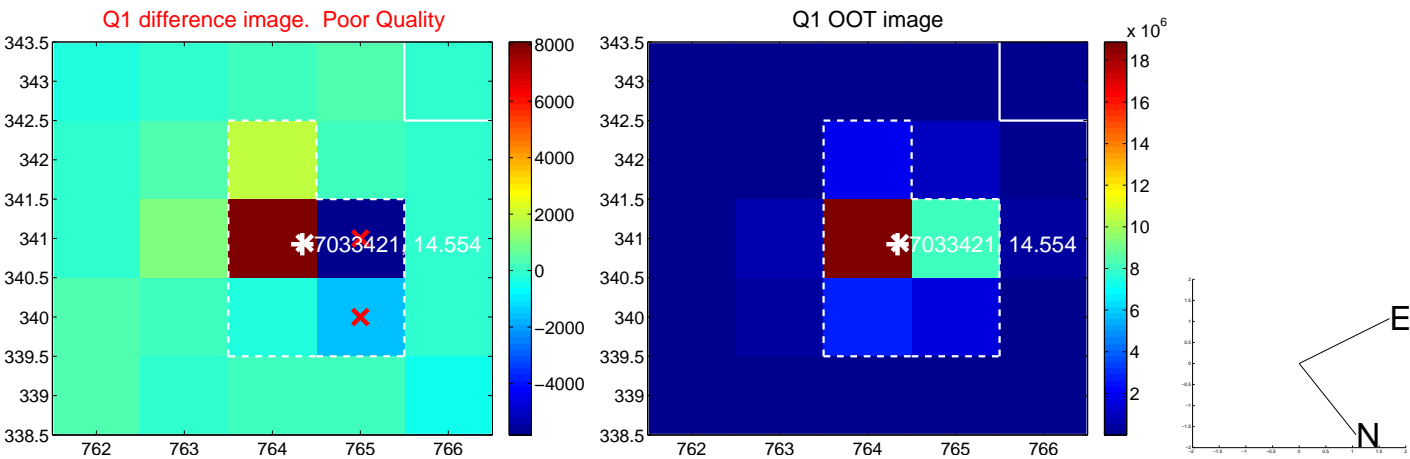
The direct PRF centroid is offset from the target star catalog position by about 0.16 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.408 \pm 1.007$	1.40	$-1.301 \pm 0.952$	$-0.539 \pm 0.825$
PRF-fit source offset from KIC position	$1.498 \pm 0.939$	1.59	$-1.391 \pm 0.966$	$-0.557 \pm 0.703$
photometric centroid source offset	$1.94 \pm 0.91$	2.14	$0.95 \pm 0.89$	$-1.70 \pm 0.92$

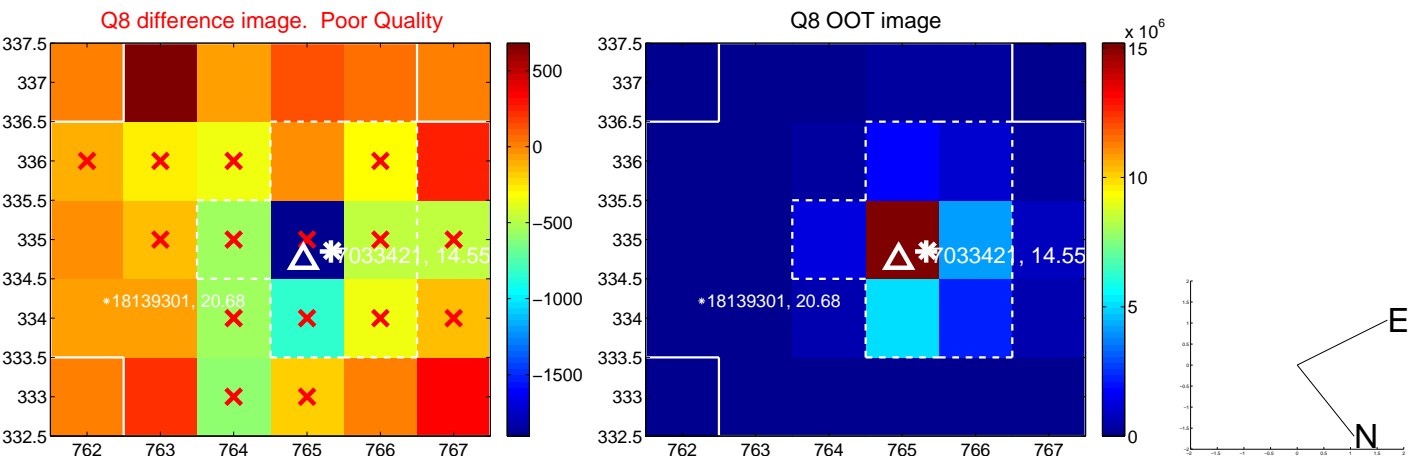
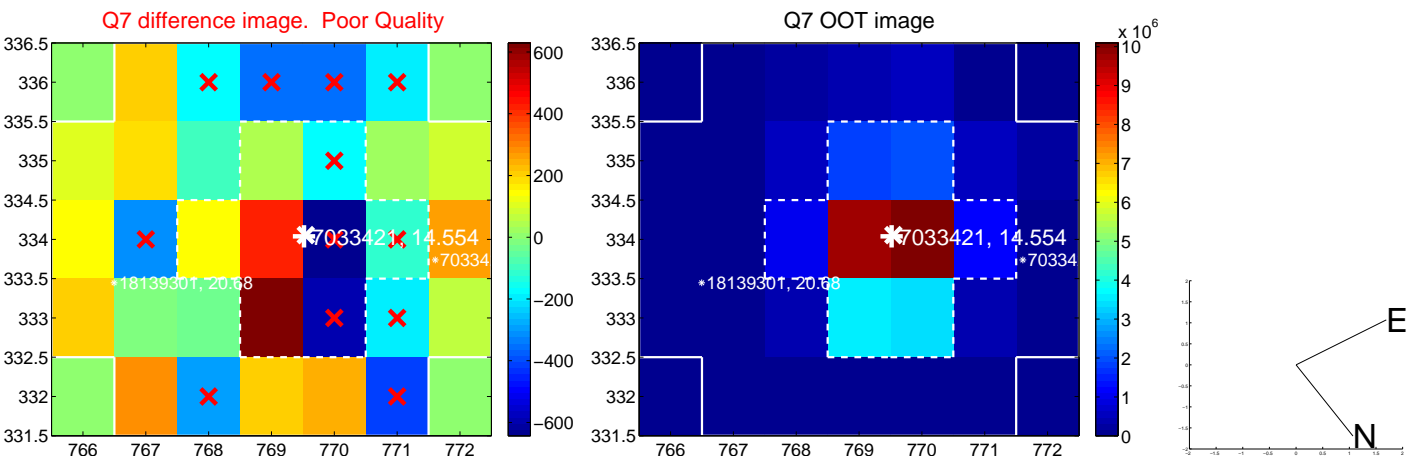
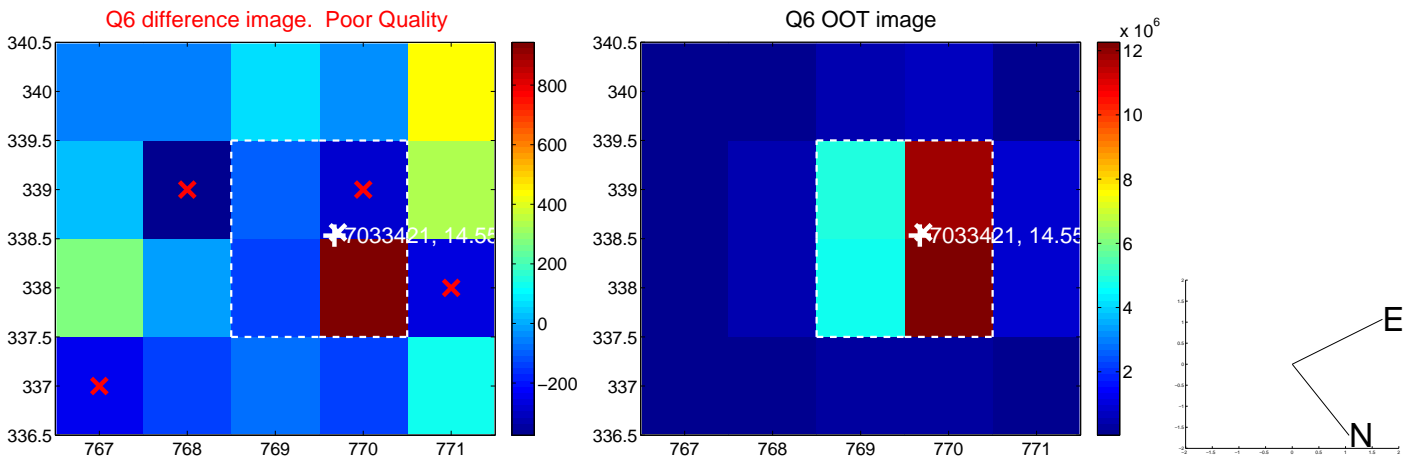
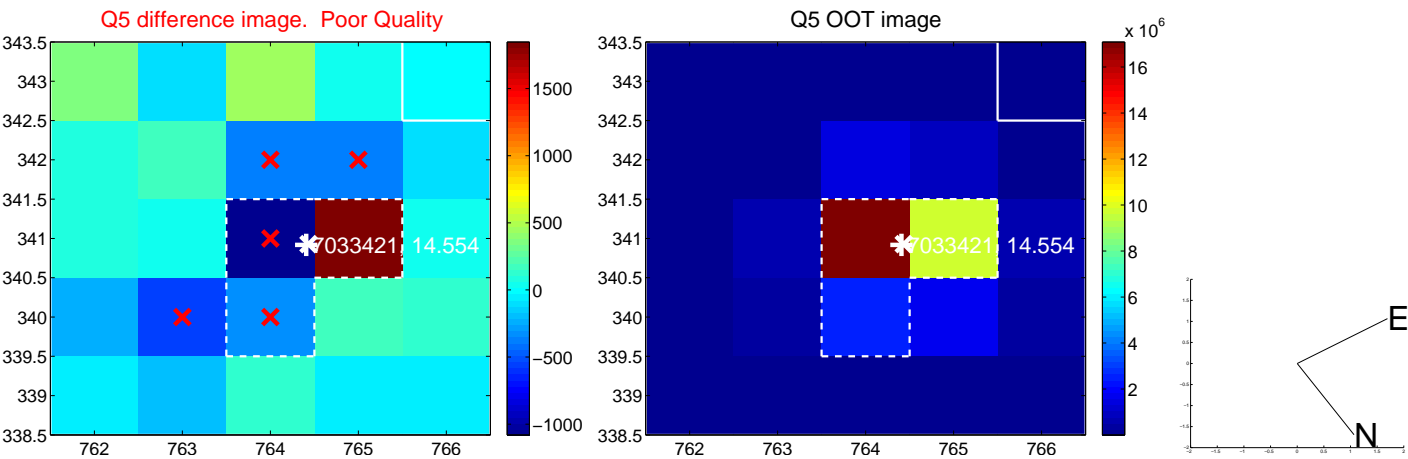


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

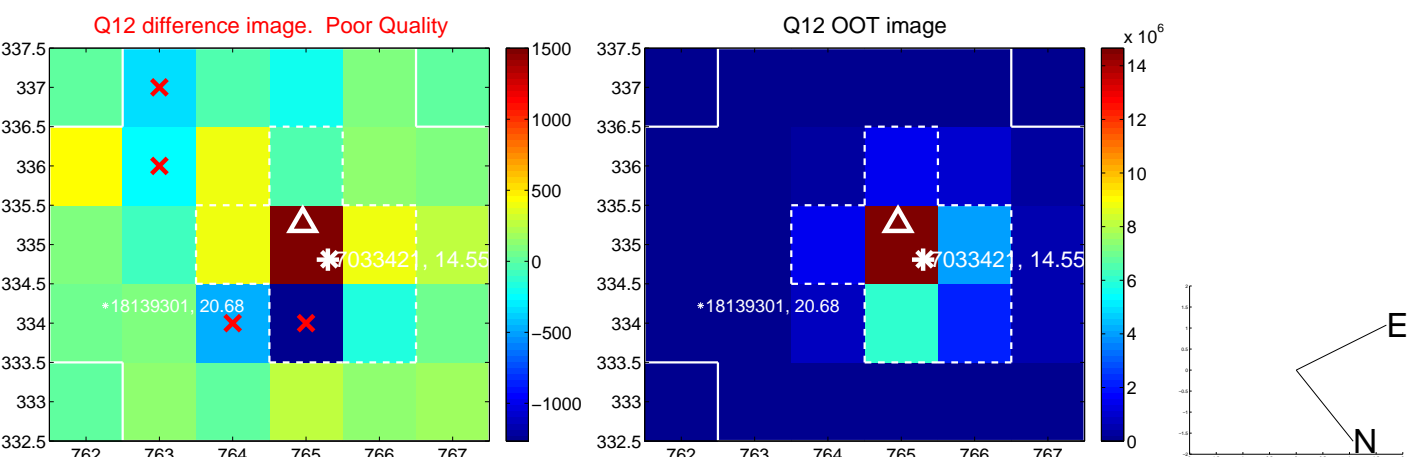
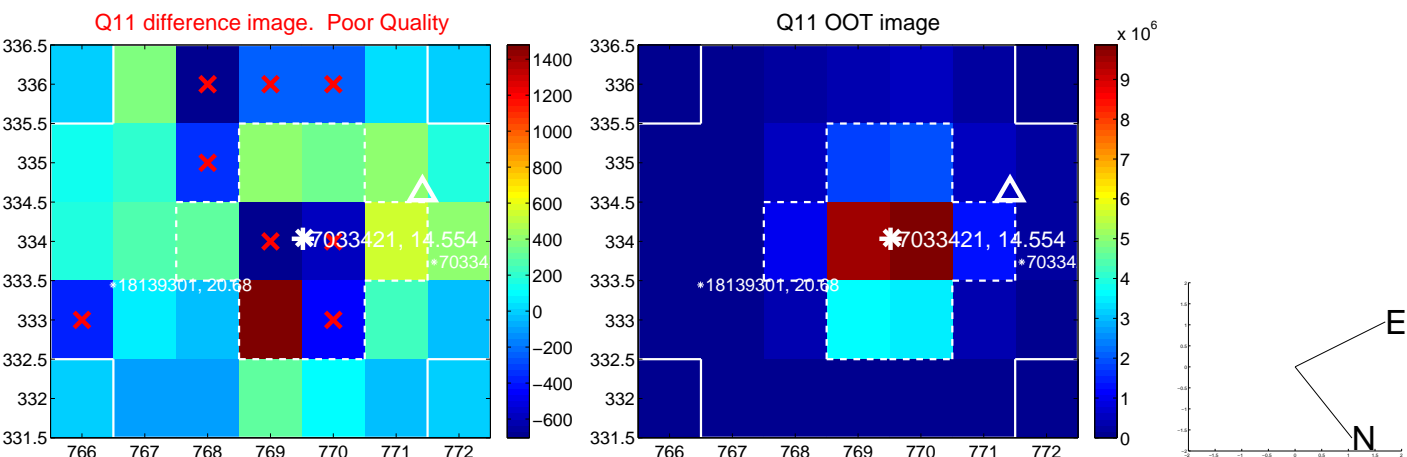
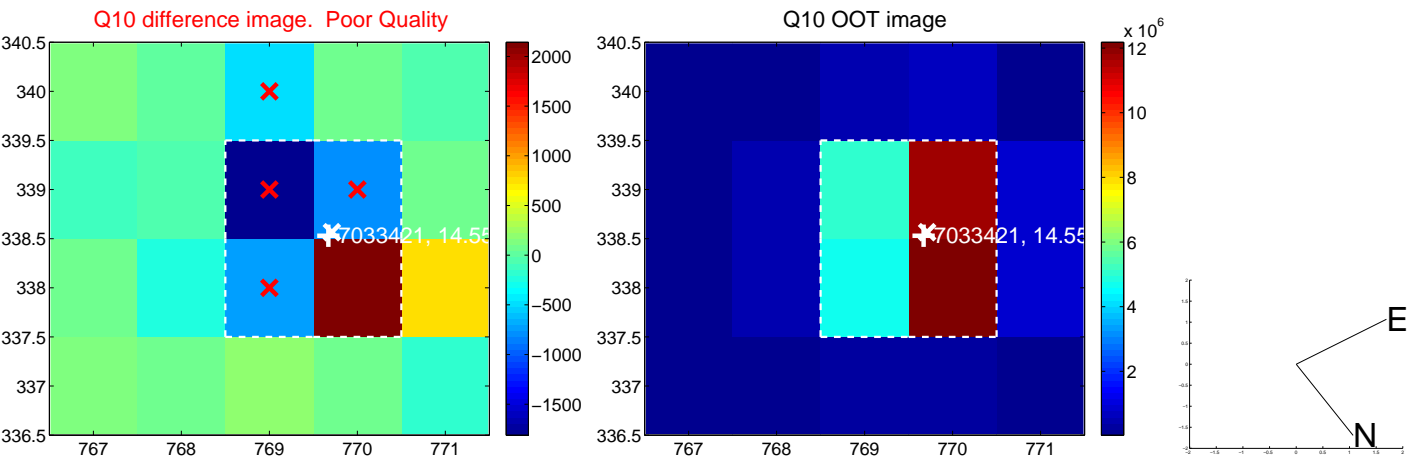
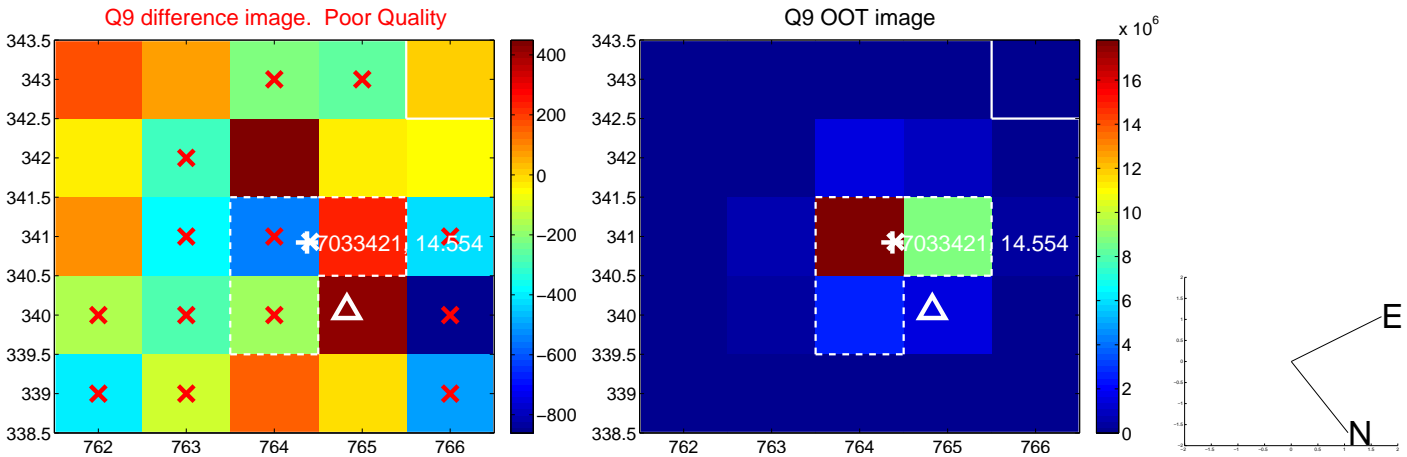
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

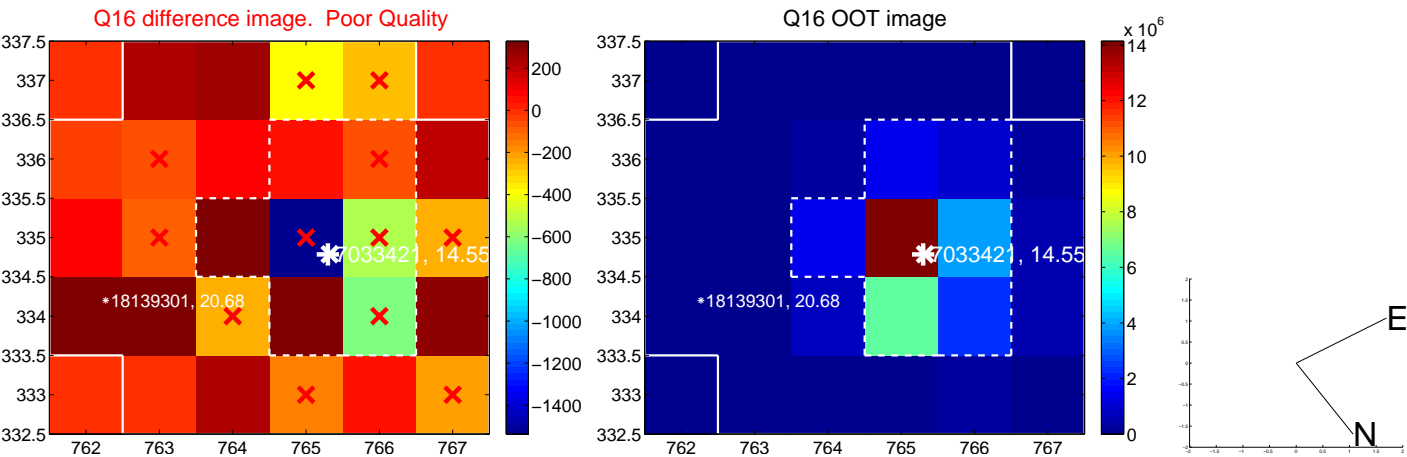
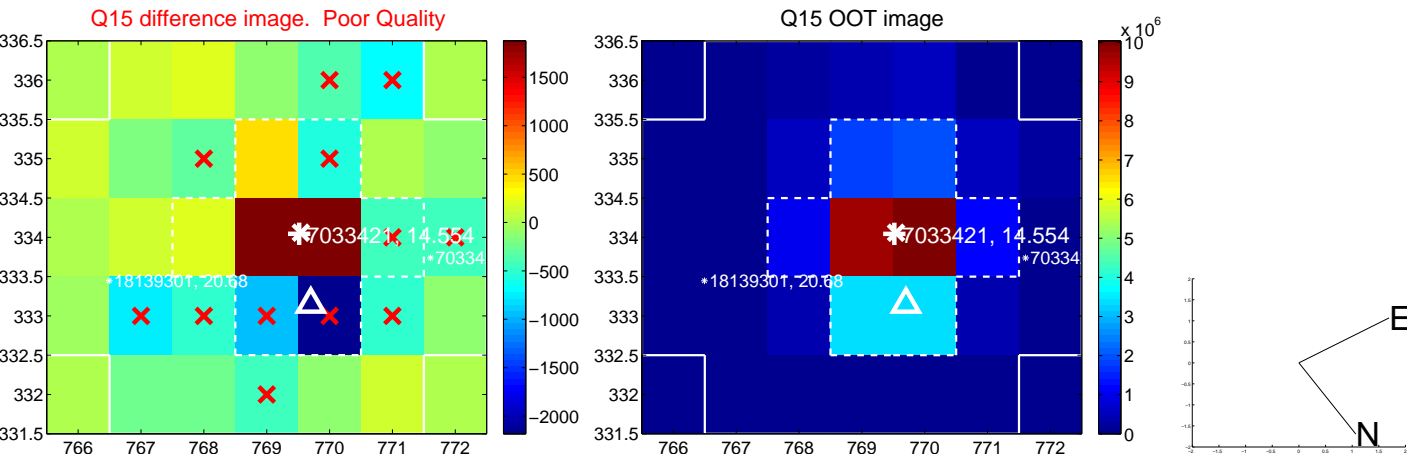
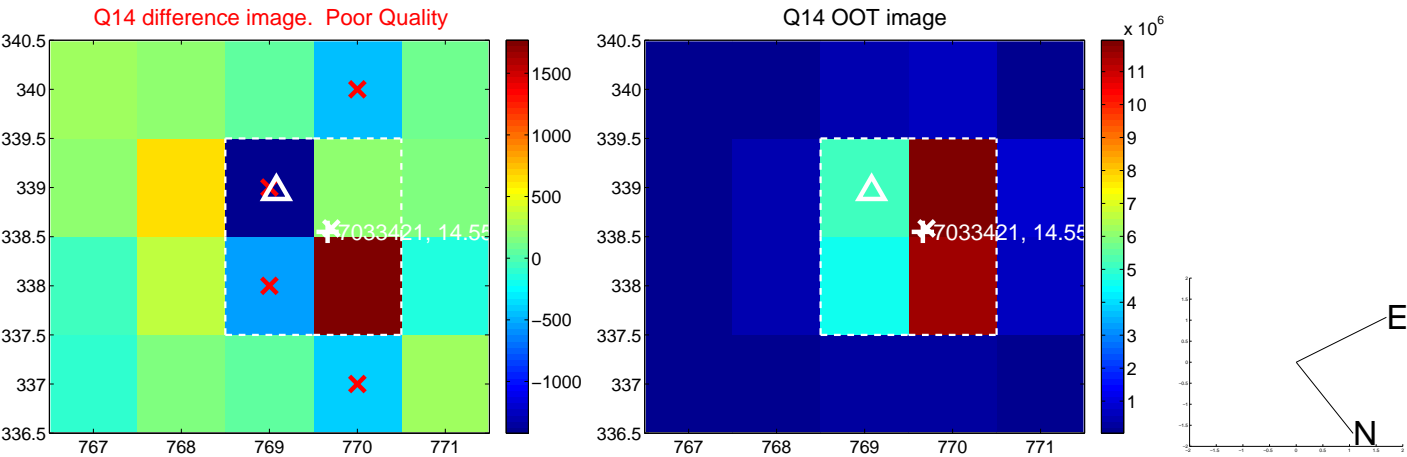
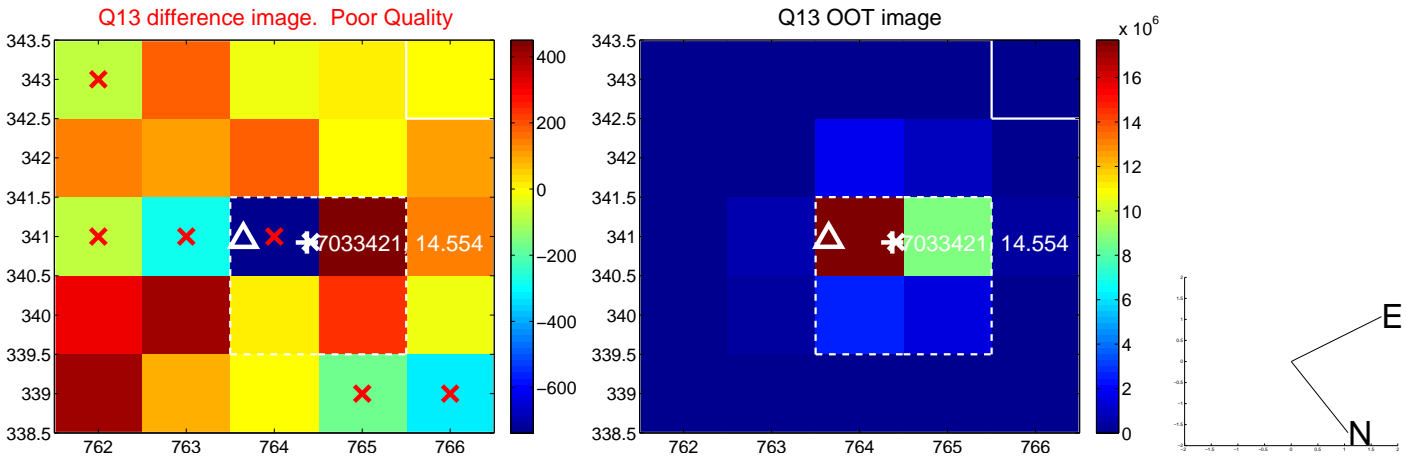


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

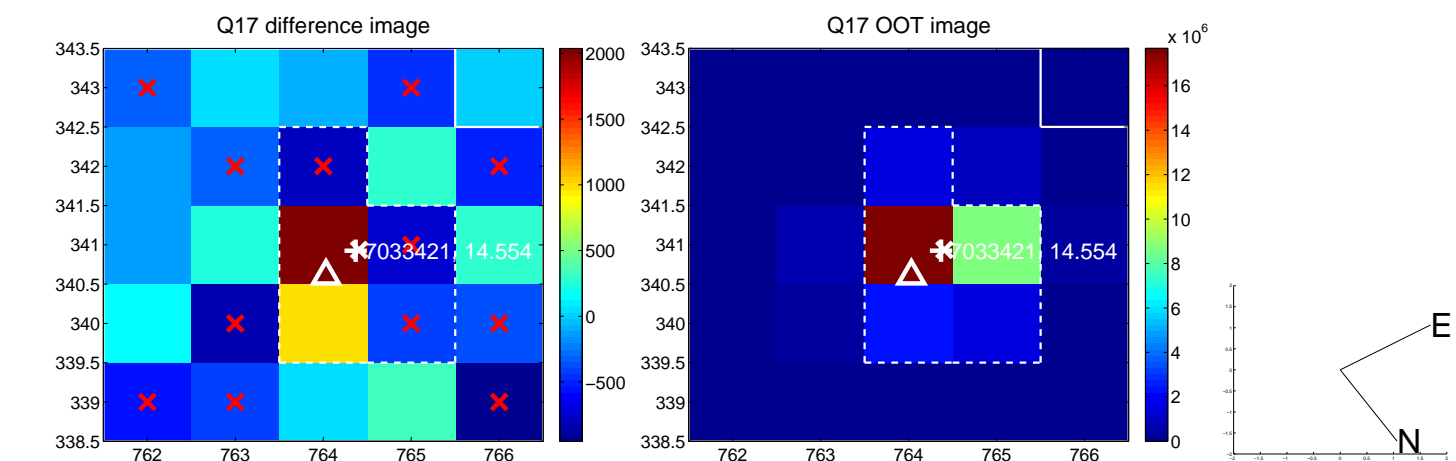




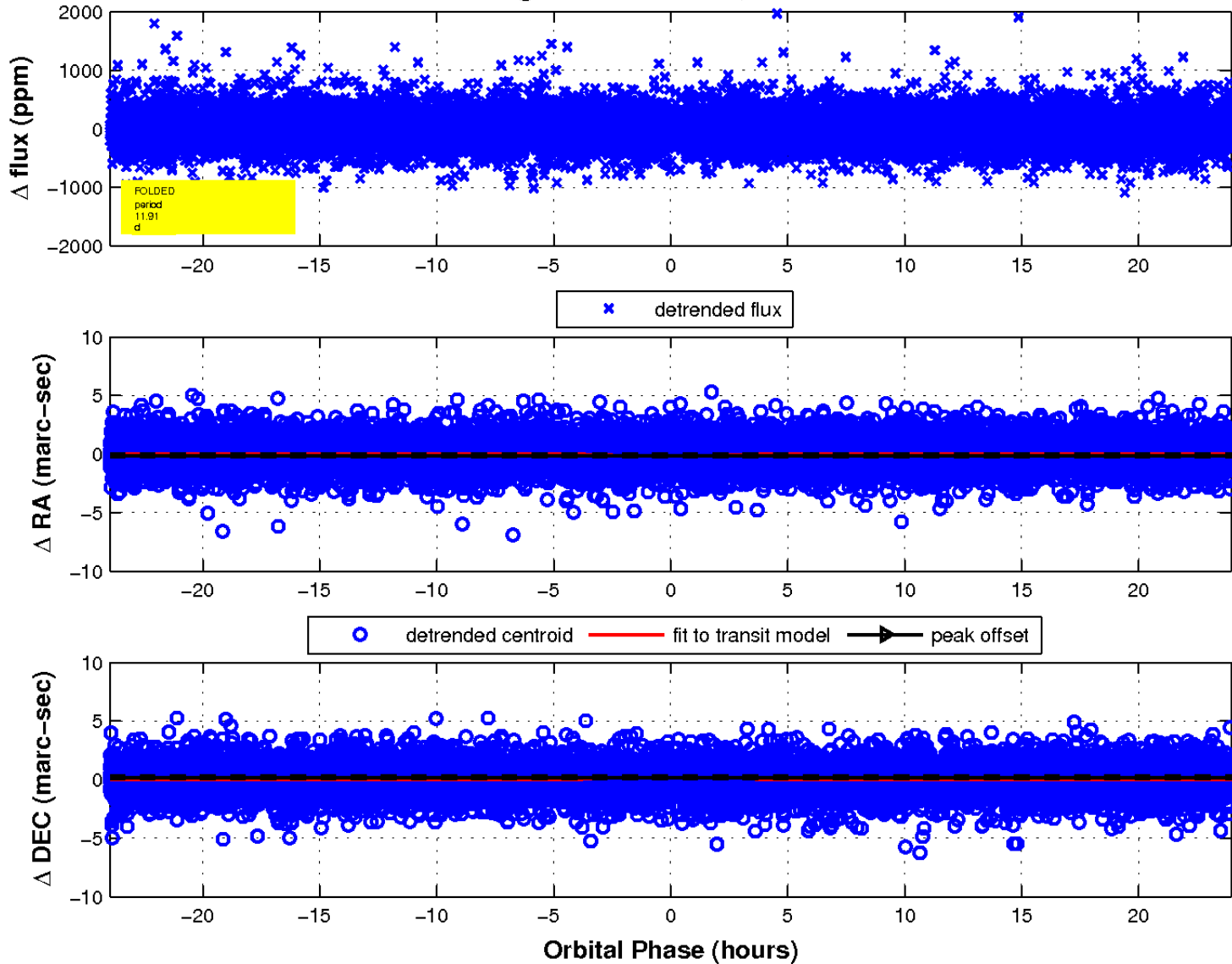
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

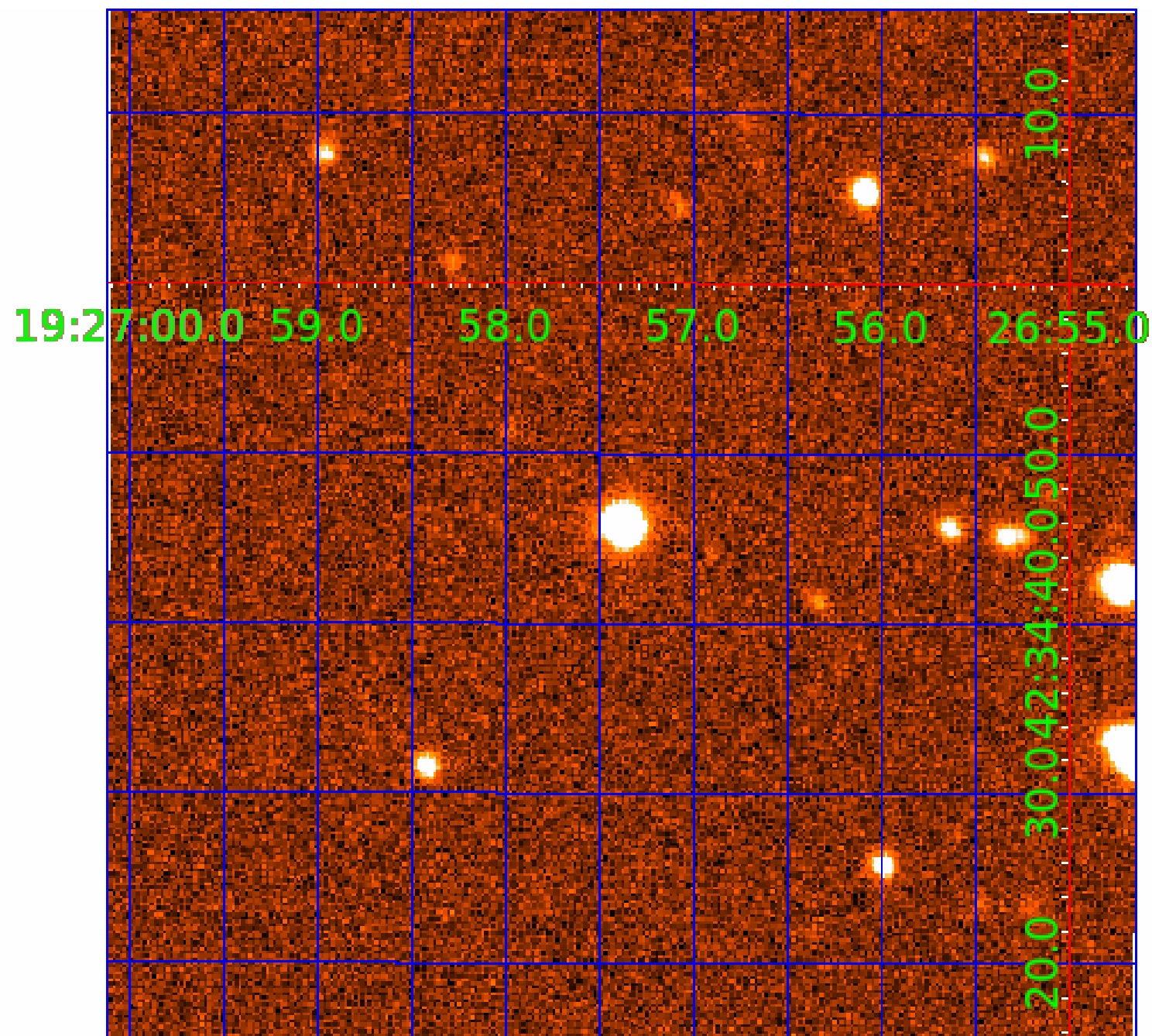


fluxWeightedCentroids, Planet 2 of 6



UKIRT Image

Declination



# KIC 007033421

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007033421-01	OBS	No	0.566782	131.830789	21.3	4.198	9.1	8.9	1.10	6268	0.53	8313.50
007033421-02	OBS	No	11.913694	138.232044	112.7	7.991	11.9	5.1	1.10	6268	1.46	143.31
007033421-03	OBS	No	13.544097	143.754747	1410.3	1.500	14.6	-1.0	1.10	6268	4.15	120.78
007033421-04	OBS	No	15.553638	139.978699	454.6	1.704	8.3	7.3	1.10	6268	2.52	100.44
007033421-05	OBS	No	11.480759	141.435276	1139.1	0.633	12.2	10.6	1.10	6268	3.81	150.56
007033421-06	OBS	No	38.545818	133.798103	1384.6	0.876	13.6	17.4	1.10	6268	4.14	29.95

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007033421-01	OBS	FP	0.00	1	0	1	1	LPP_DV—CENT_UNRESOLVED_OFFSET—EPHEM_MATCH
007033421-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—CENT_FEW_DIFFS
007033421-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—NO_FITS—CENT_NOFITS
007033421-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV
007033421-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—CENT_FEW_DIFFS
007033421-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—CENT_FEW_DIFFS

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

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

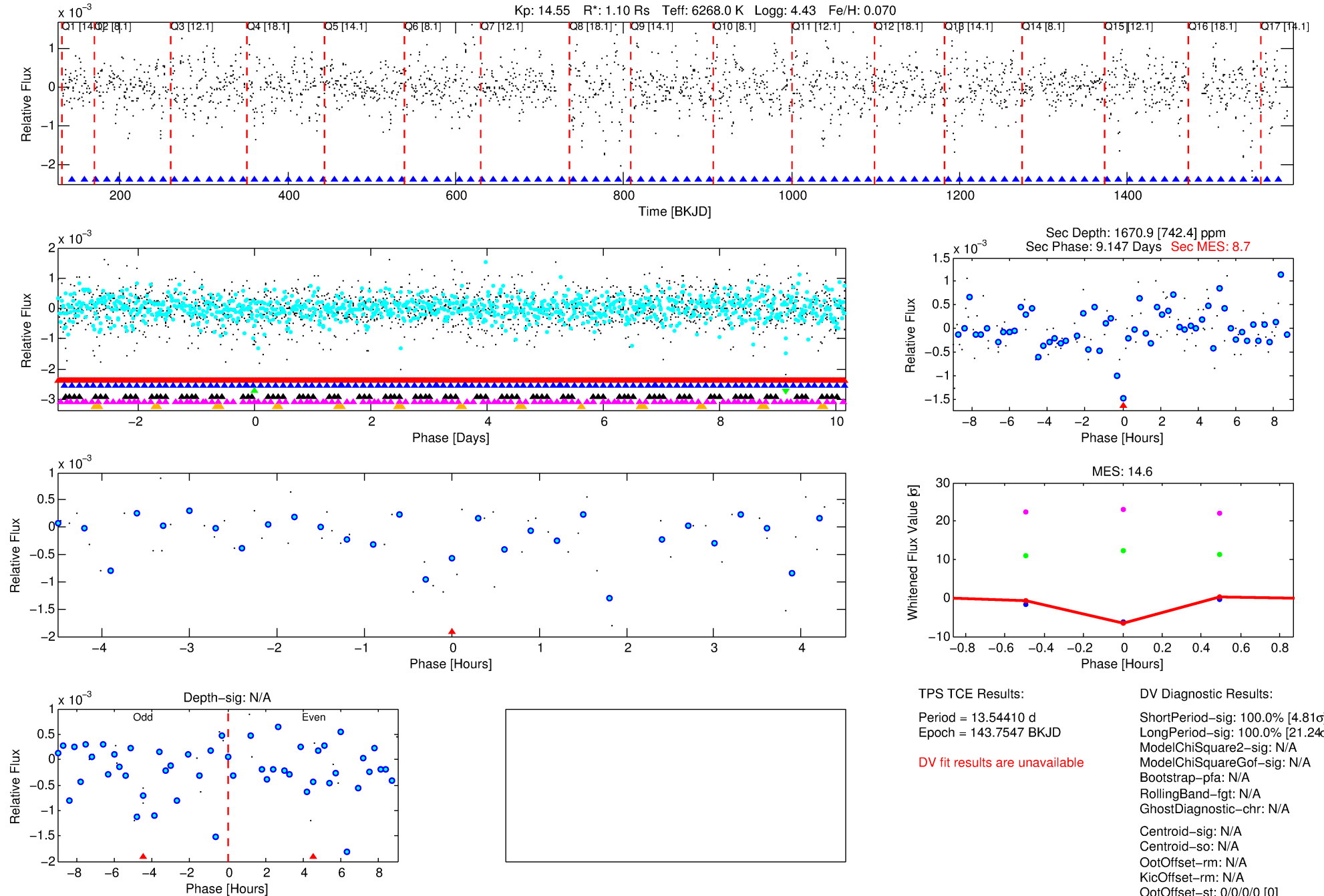
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 007033421-03

No Significant Match Found

# DV One-Page Summary

KIC: 7033421 Candidate: 3 of 6 Period: 13.544 d



## TPS TCE Results:

Period = 13.54410 d  
Epoch = 143.7547 BKJD

DV fit results are unavailable

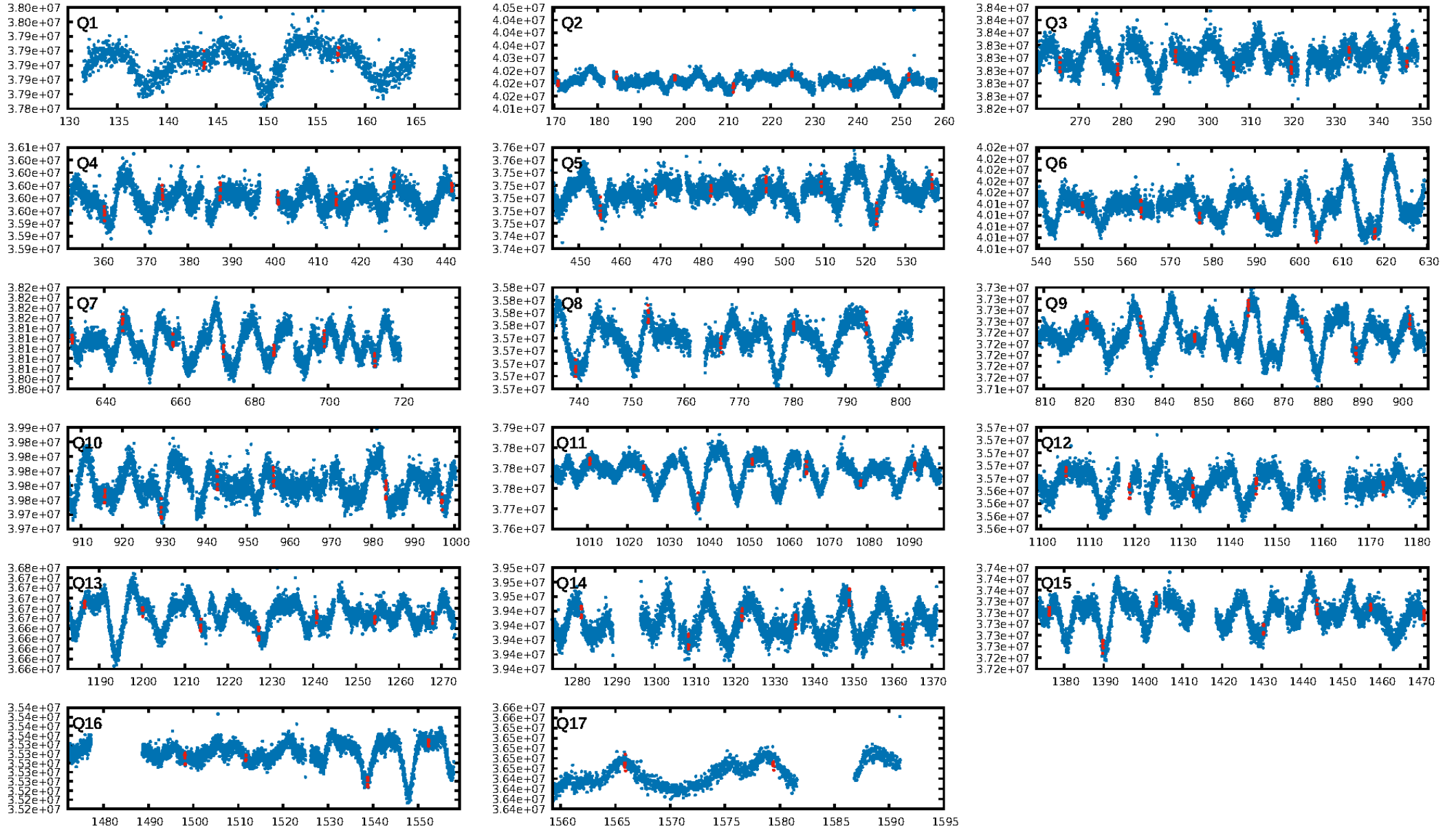
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [4.81 $\sigma$ ]  
LongPeriod-sig: 100.0% [21.24 $\sigma$ ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: N/A  
GhostDiagnostic-chr: N/A  
Centroid-sig: N/A  
Centroid-so: N/A  
OotOffset-rm: N/A  
KicOffset-rm: N/A  
OotOffset-st: 0/0/0/0 [0]  
KicOffset-st: 0/0/0/0 [0]  
DiffImageQuality-fgm: N/A  
DiffImageOverlap-fno: N/A

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 14:16:40 Z

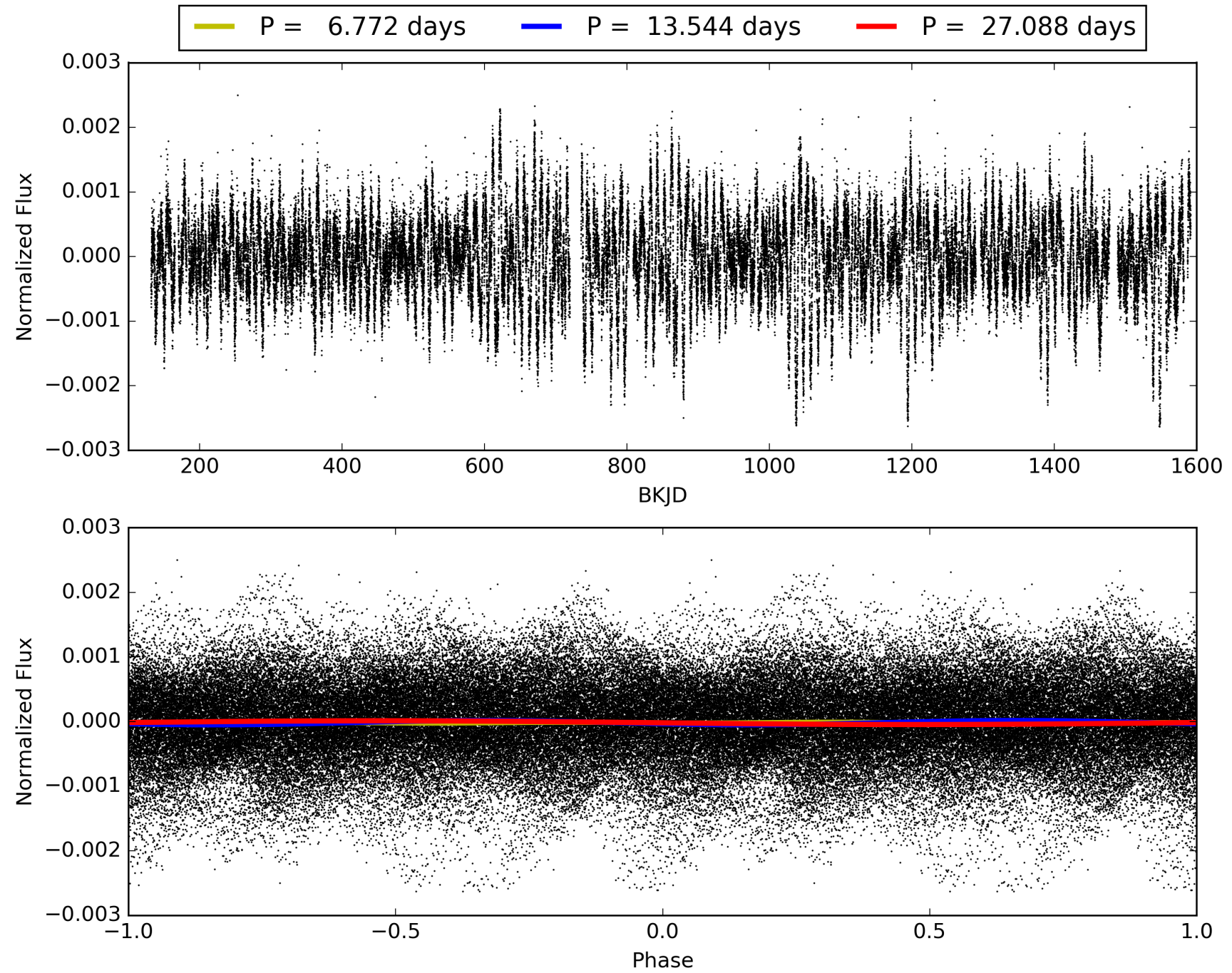
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 007033421-03, PDC Light Curves



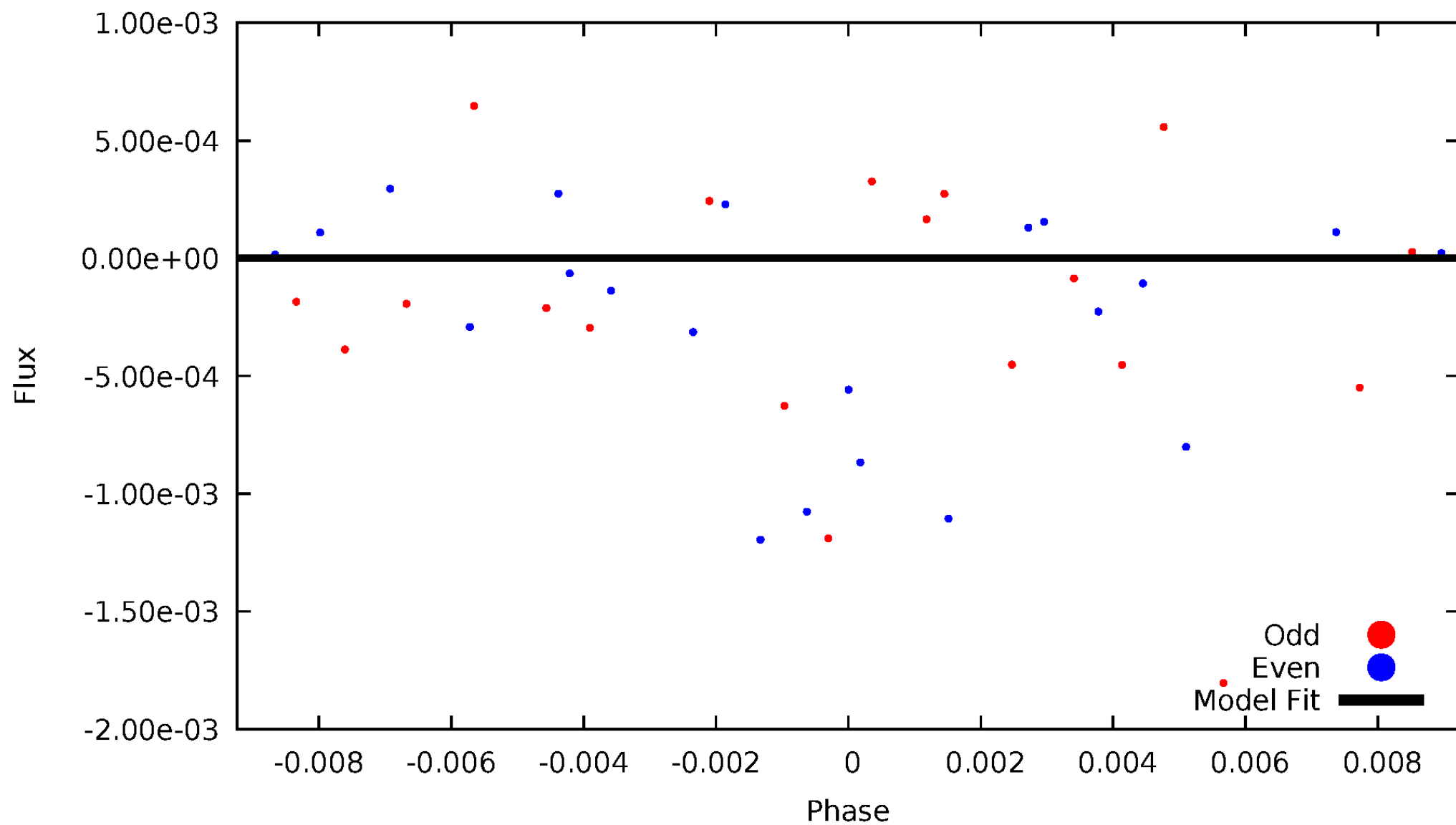


TCE 007033421-03



# DV Odd/Even

TCE 007033421-03



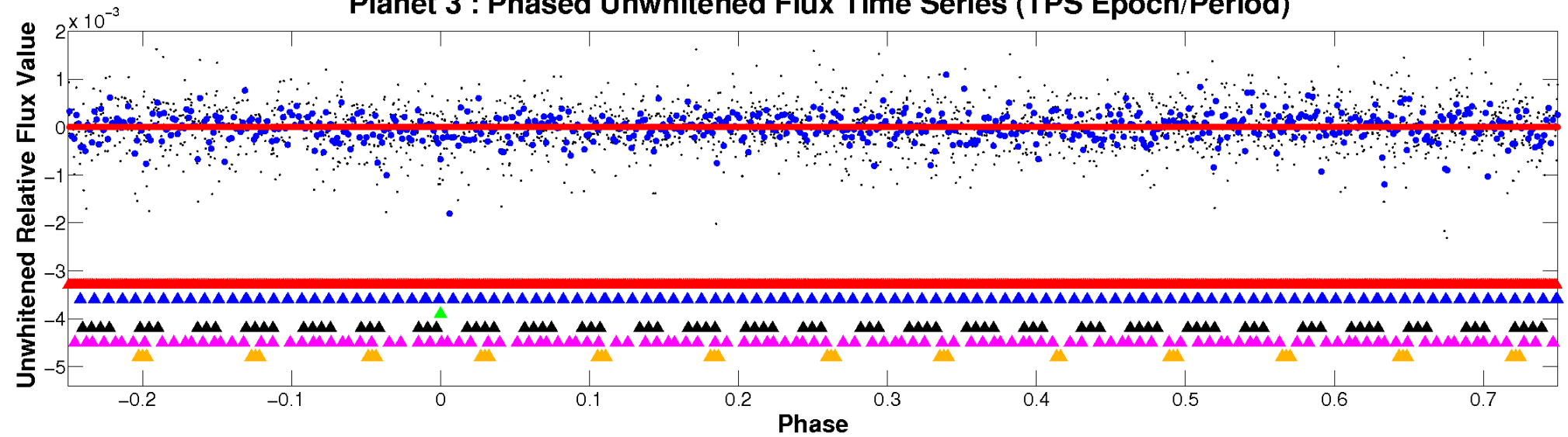


ALT Odd/Even

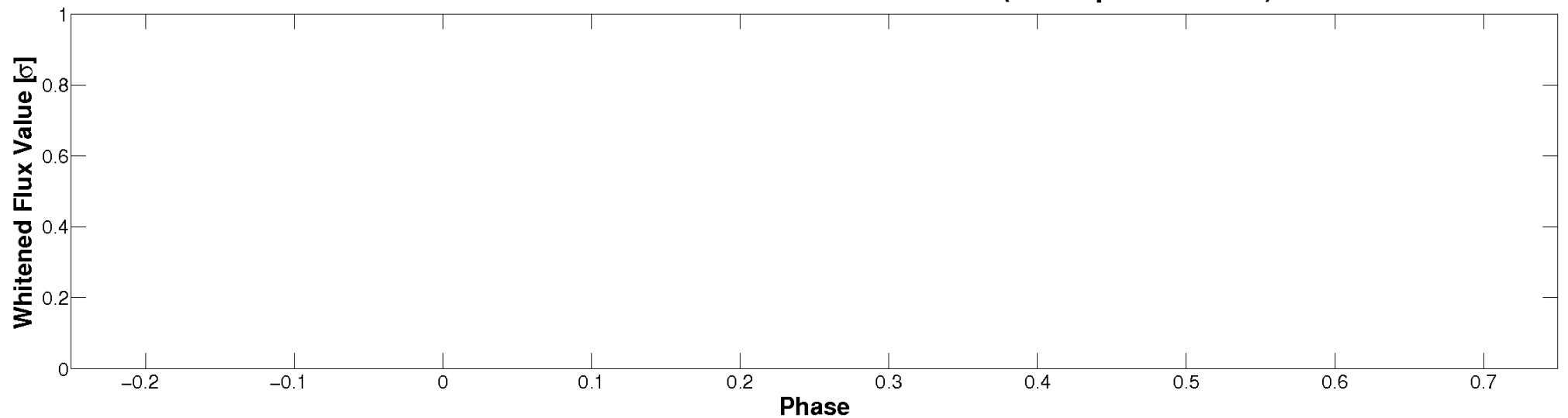
This plot does not exist for this TCE.

# Non-Whitened Vs. Whitened Light Curve

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

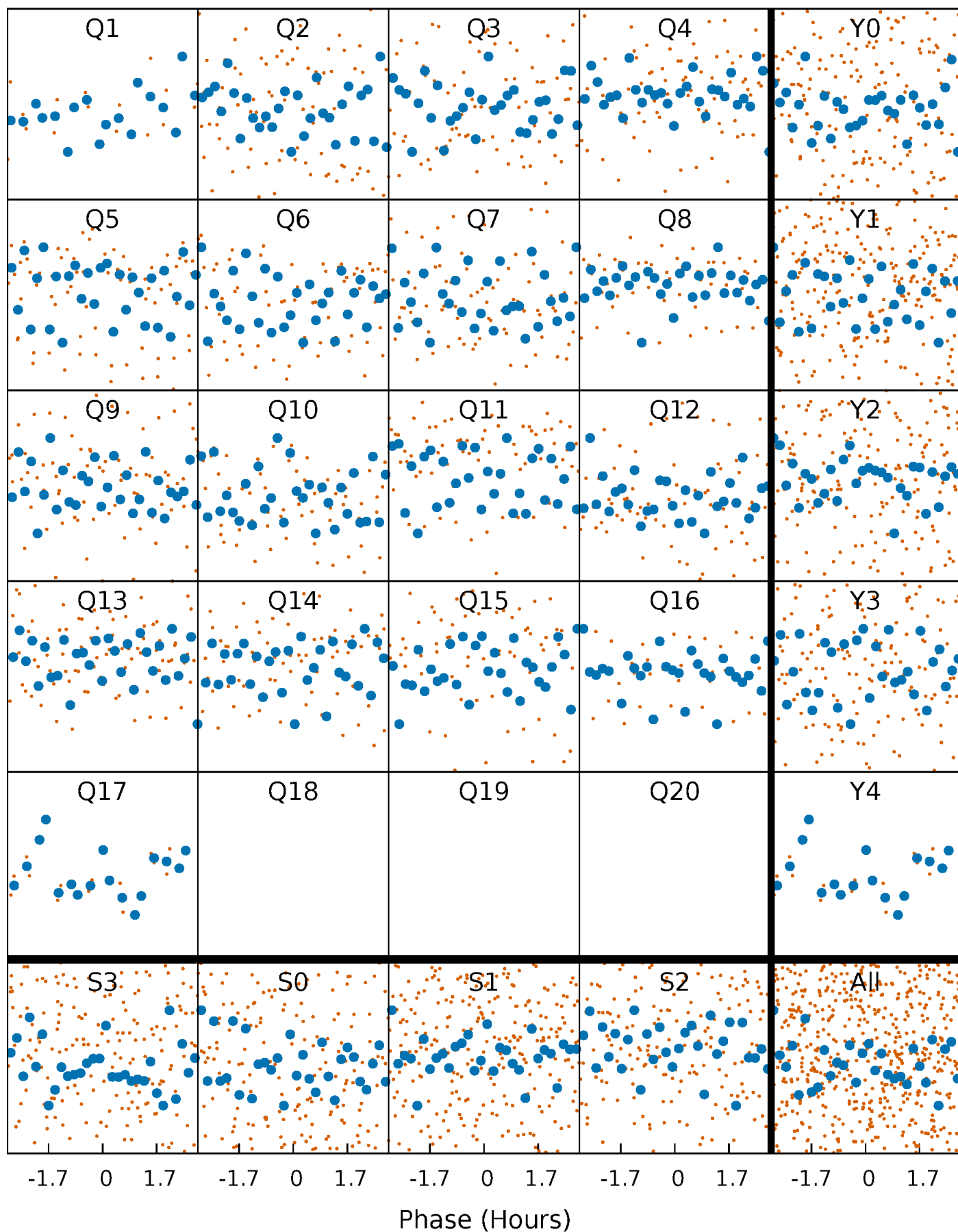


Planet 3 : Phased Whitened Flux Time Series (TPS Epoch/Period)



# PDC Quarter-Phased Transit Curves

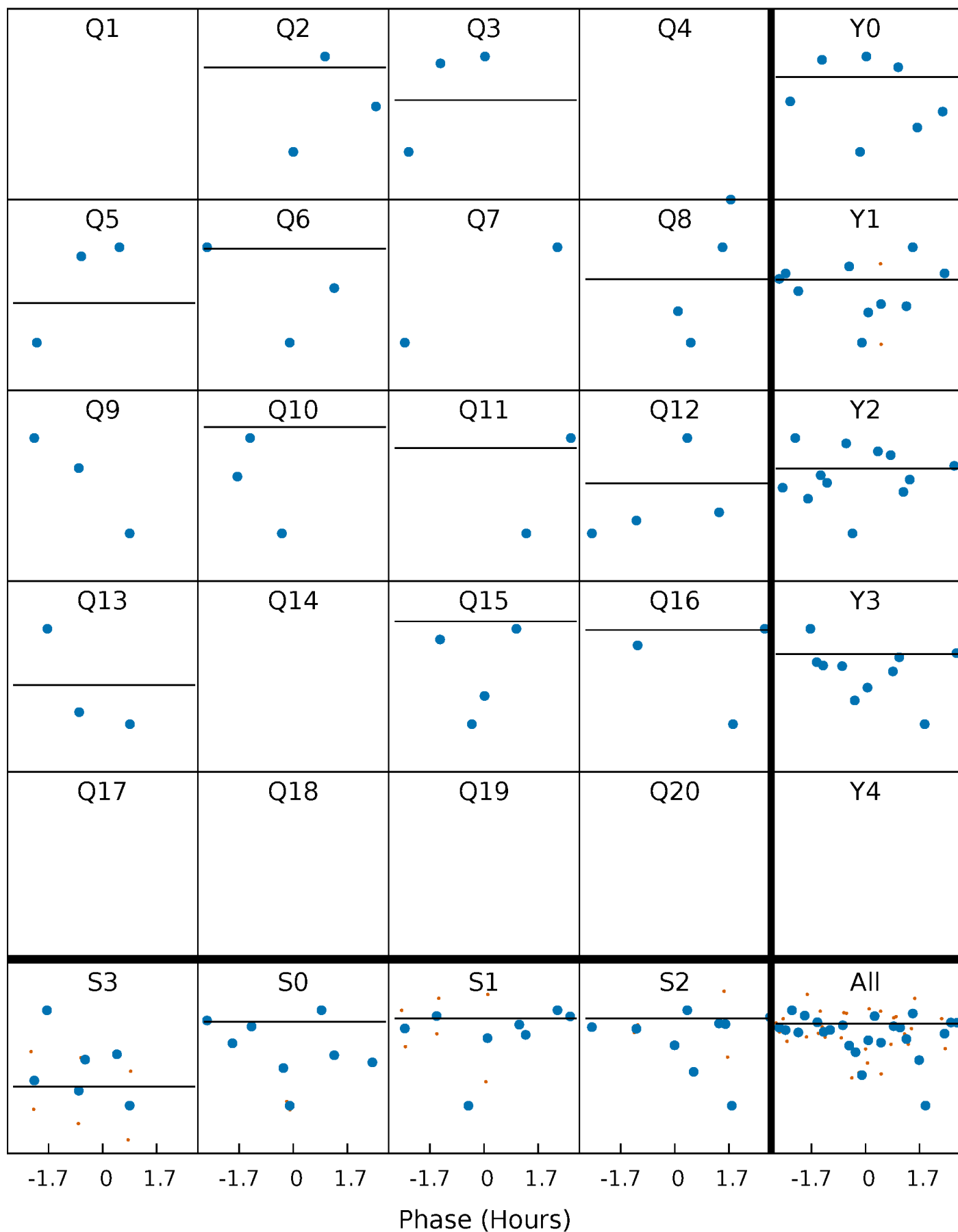
TCE 007033421-03 P= 13.544097 Days  $T_0=143.754747$  (BKJD)





# DV Quarter-Phased Transit Curves

TCE 007033421-03 P= 13.544097 Days  $T_0=143.754747$  (BKJD)

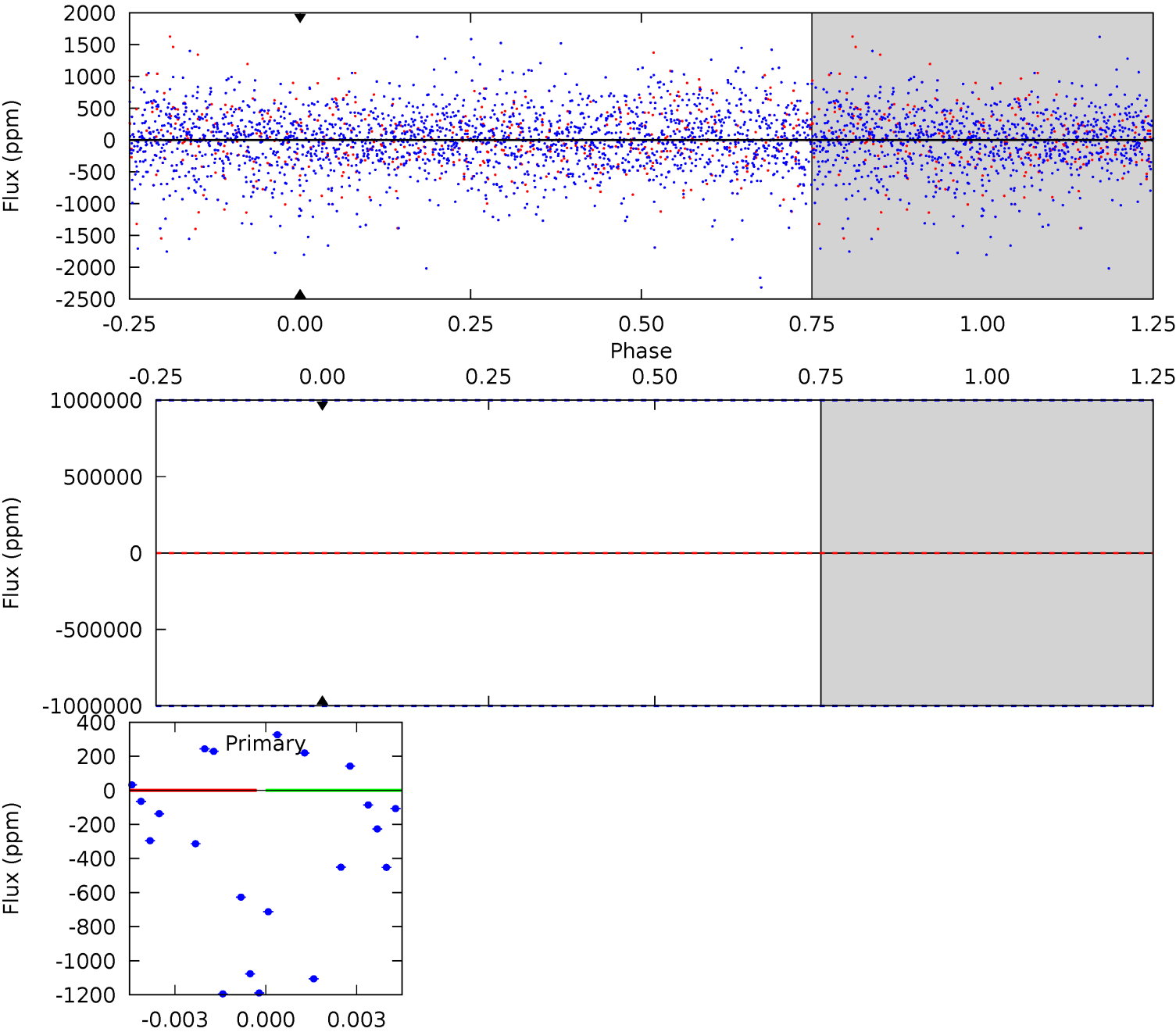


This plot does not exist for this TCE.

# DV Model-Shift Uniqueness Test

007033421-03, P = 13.544097 Days, E = 130.210650 Days

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



## Alt Model-Shift Uniqueness Test

This plot does not exist for this TCE.

### Stellar Parameters For KIC 007033421

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6268^{+174}_{-196}$	$4.429^{+0.050}_{-0.200}$	$0.070^{+0.250}_{-0.350}$	$1.100^{+0.335}_{-0.112}$	$1.188^{+0.141}_{-0.173}$	$1.257^{+0.338}_{-0.644}$
	+3%/-3%	+1%/-5%	+357%/-500%	+30%/-10%	+12%/-15%	+27%/-51%
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 007033421-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$0 \pm 1000000$	$9.67^{+11.19}_{-6.59}$	$1211^{+85}_{-62}$	$4263^{+22347}_{-27574}$	$88^{+15825}_{-14438}$
Alt.	N/A	N/A	N/A	N/A	N/A

$T_{max}$  = Theoretical Maximum Planetary Temperature

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

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

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

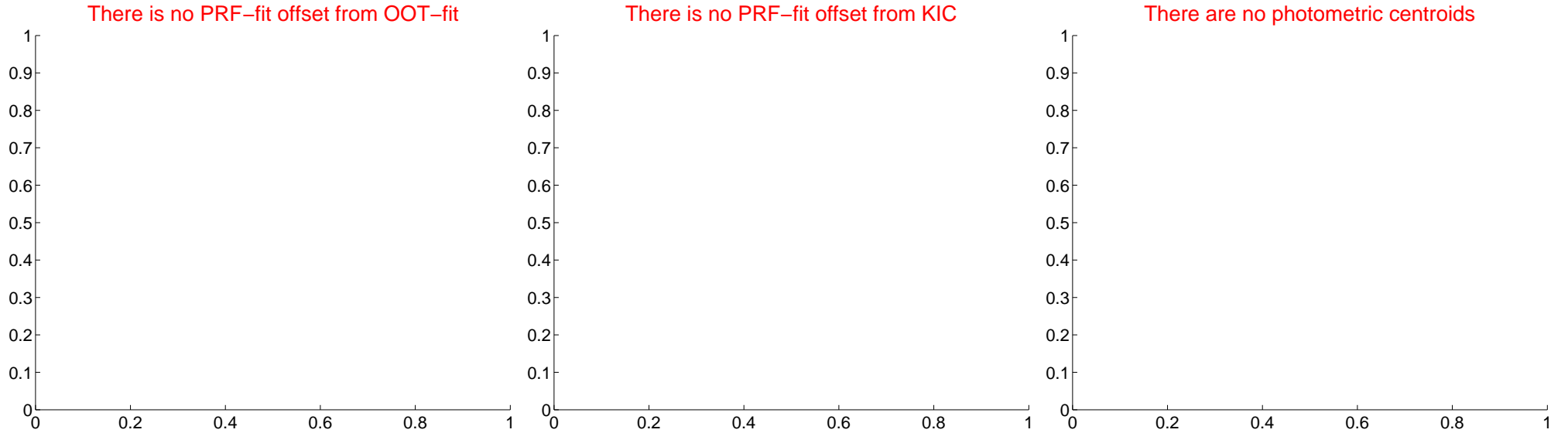
## DV Centroid Data

Supplemental centroid analysis for 007033421-03. Kepler magnitude: 14.55. Transit SNR -1.00

There are 0 quarters with good PRF difference image offsets

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

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



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



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



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



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



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



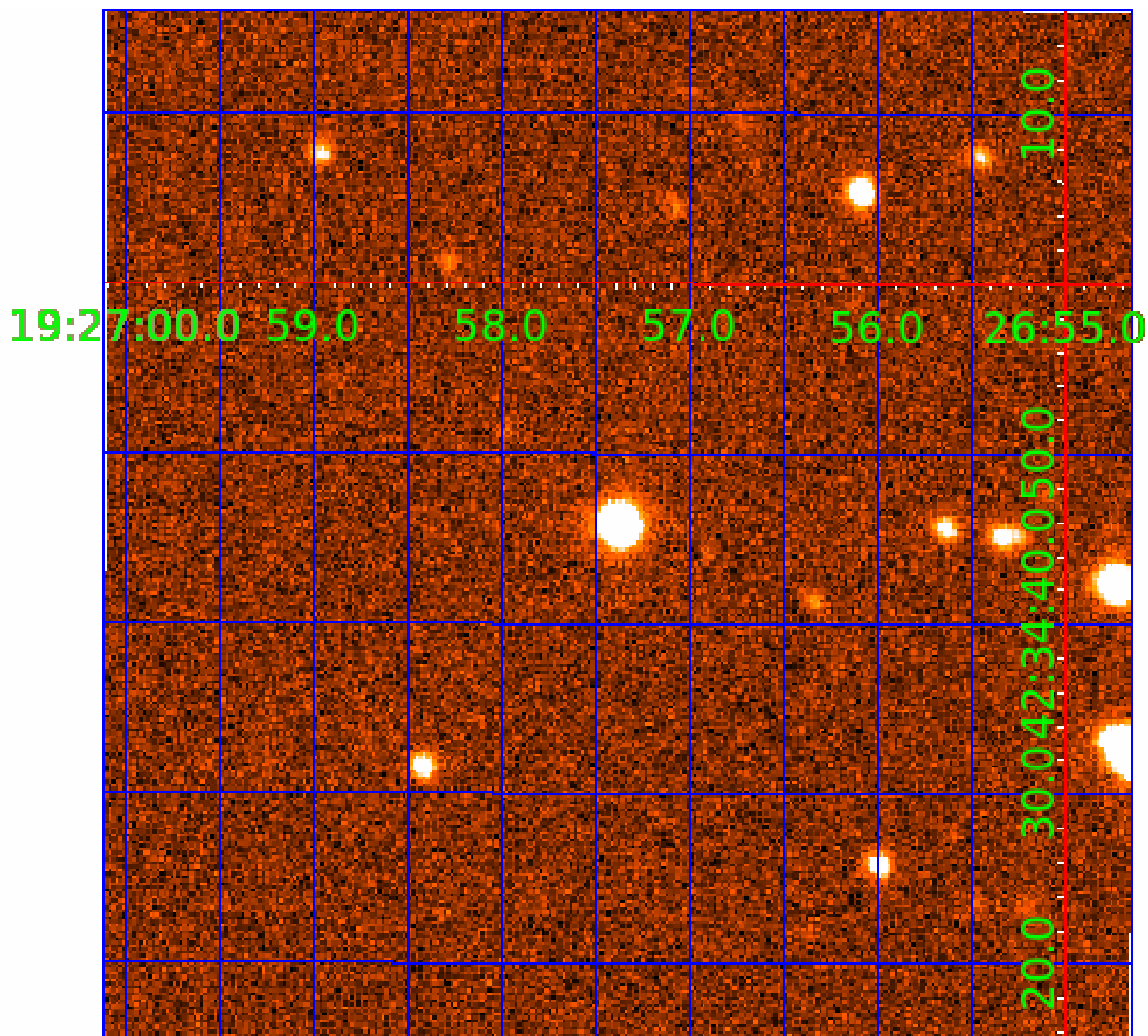
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



folded centroid time series figure for this object.

UKIRT Image

Declination



# KIC 007033421

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007033421-01	OBS	No	0.566782	131.830789	21.3	4.198	9.1	8.9	1.10	6268	0.53	8313.50
007033421-02	OBS	No	11.913694	138.232044	112.7	7.991	11.9	5.1	1.10	6268	1.46	143.31
007033421-03	OBS	No	13.544097	143.754747	1410.3	1.500	14.6	-1.0	1.10	6268	4.15	120.78
007033421-04	OBS	No	15.553638	139.978699	454.6	1.704	8.3	7.3	1.10	6268	2.52	100.44
007033421-05	OBS	No	11.480759	141.435276	1139.1	0.633	12.2	10.6	1.10	6268	3.81	150.56
007033421-06	OBS	No	38.545818	133.798103	1384.6	0.876	13.6	17.4	1.10	6268	4.14	29.95

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007033421-01	OBS	FP	0.00	1	0	1	1	LPP_DV—CENT_UNRESOLVED_OFFSET—EPHEM_MATCH
007033421-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—CENT_FEW_DIFFS
007033421-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—NO_FITS—CENT_NOFITS
007033421-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV
007033421-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—CENT_FEW_DIFFS
007033421-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—CENT_FEW_DIFFS

**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.

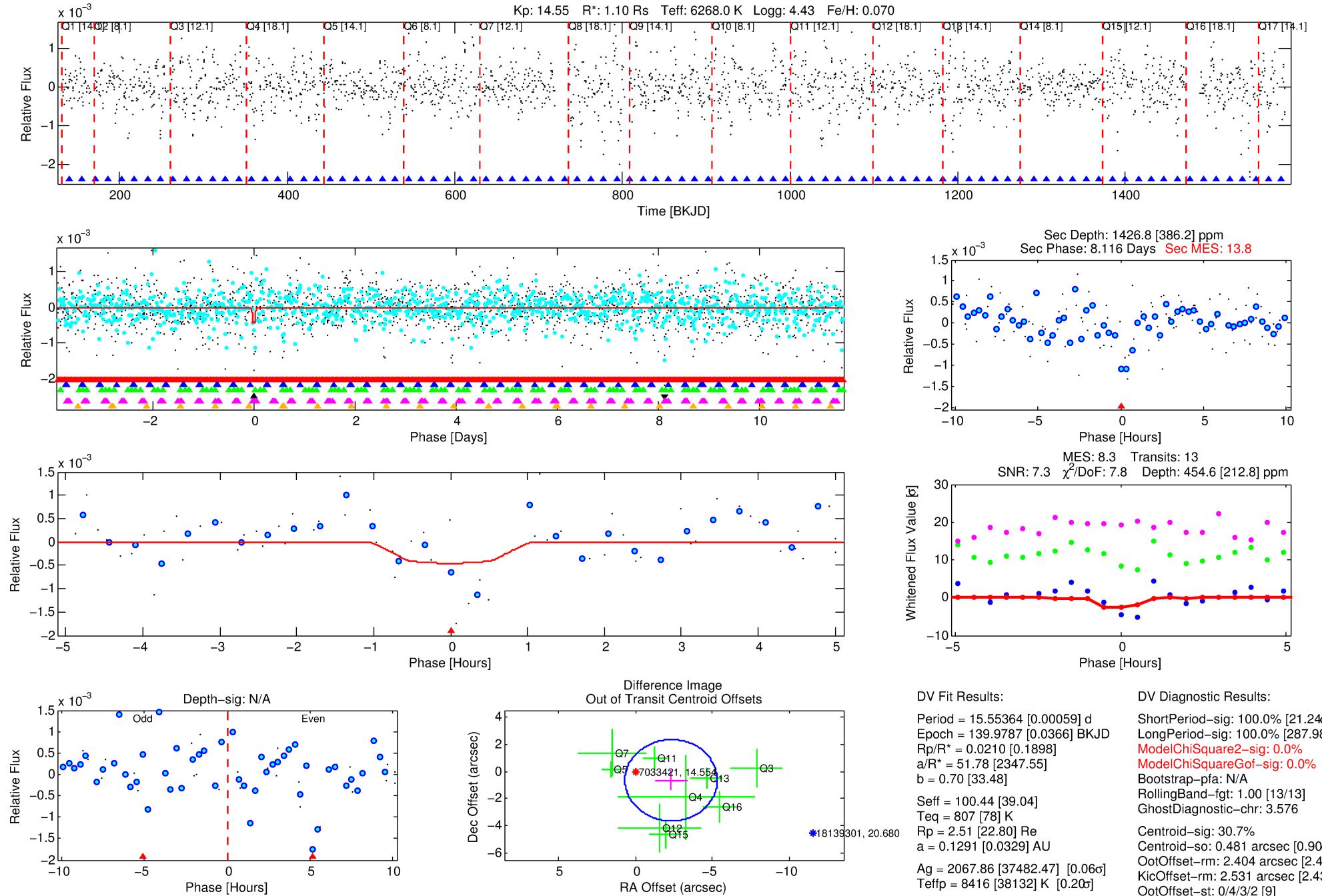
## Ephemeris Match Information For 007033421-04

No Significant Match Found



# DV One-Page Summary

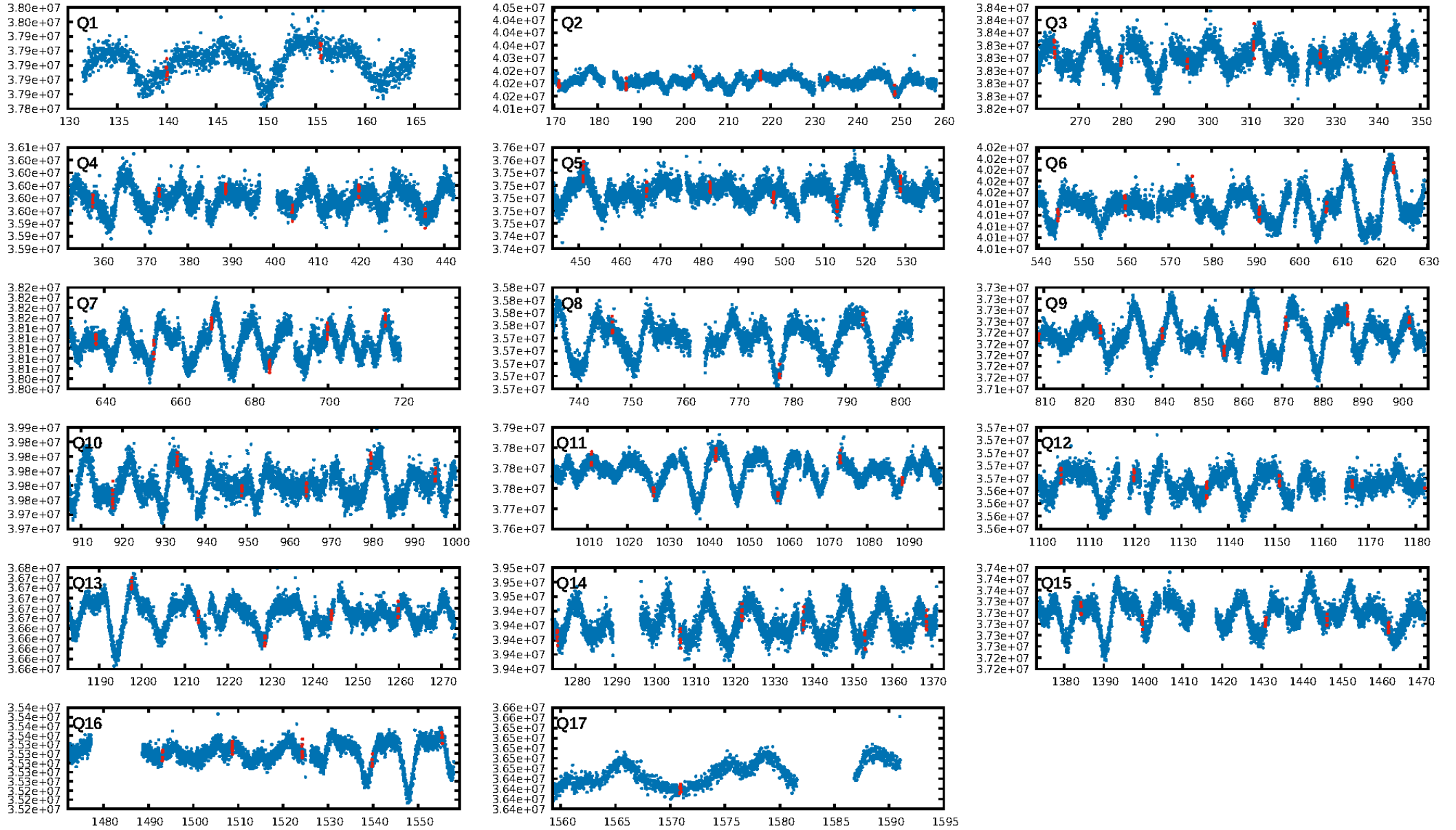
KIC: 7033421 Candidate: 4 of 6 Period: 15.554 d



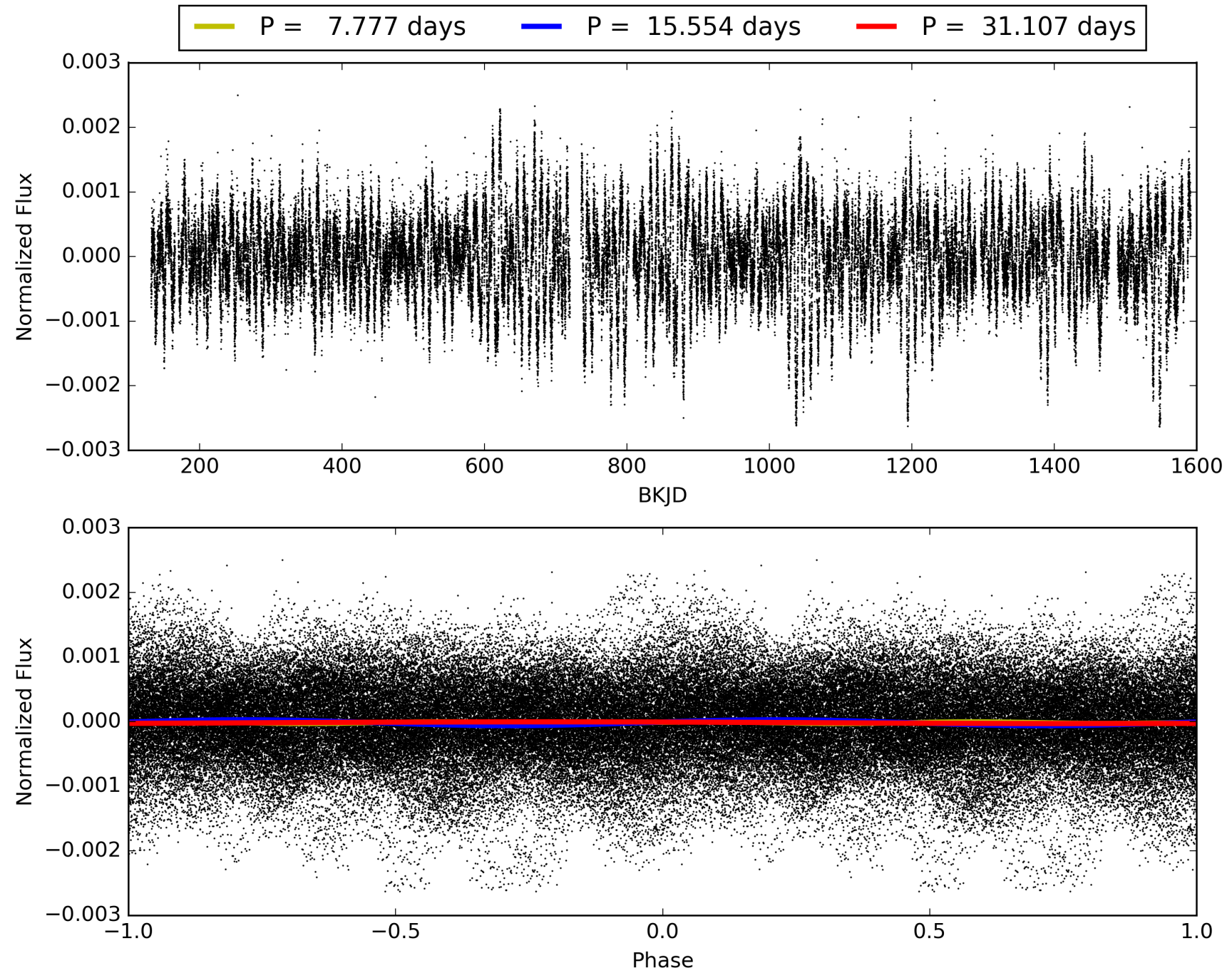
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 14:16:42 Z

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

# TCE 007033421-04, PDC Light Curves

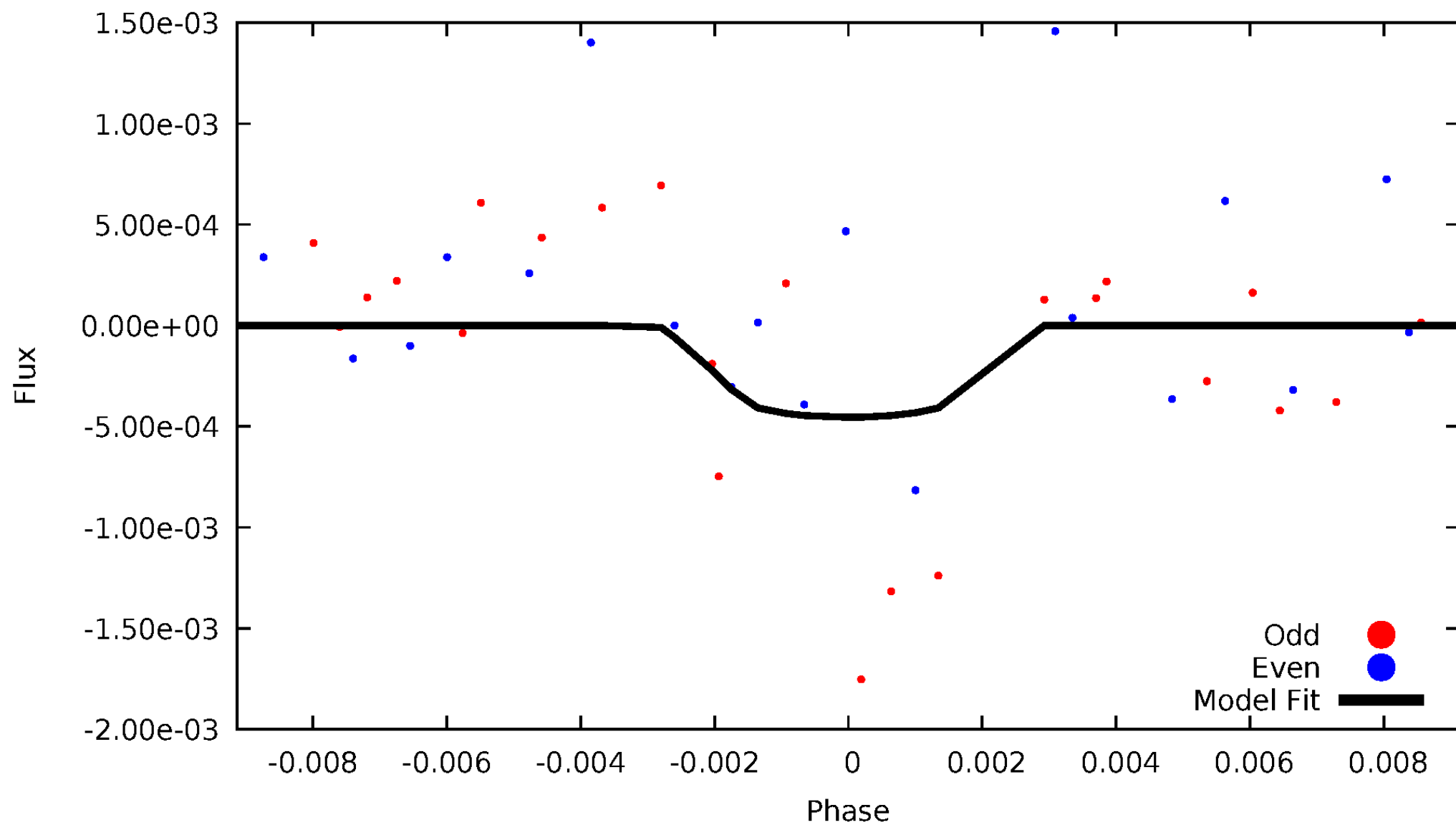


TCE 007033421-04



# DV Odd/Even

TCE 007033421-04



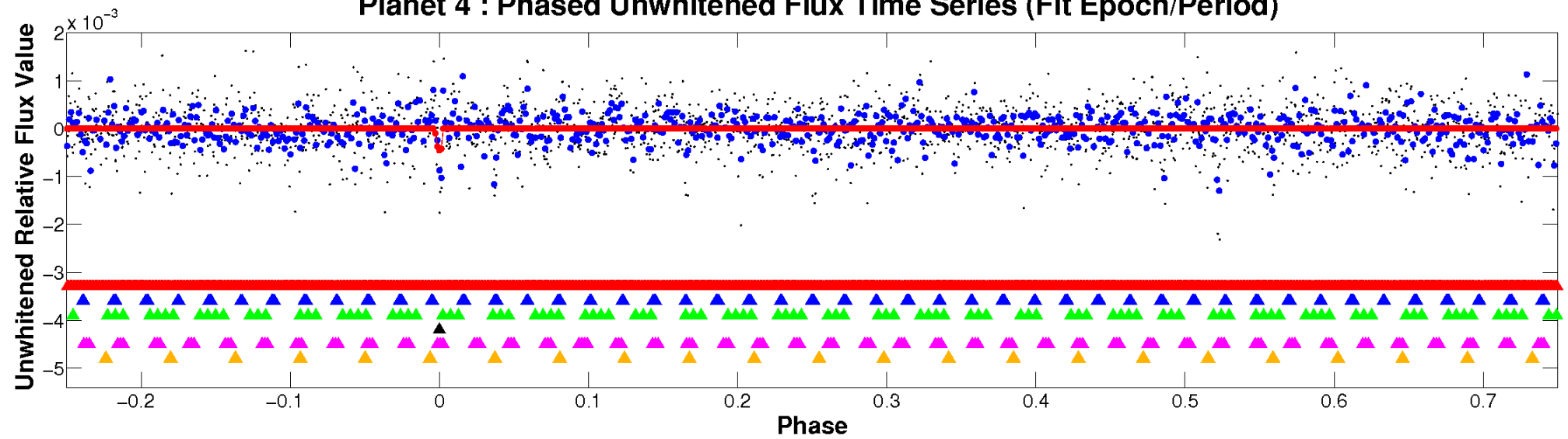


ALT Odd/Even

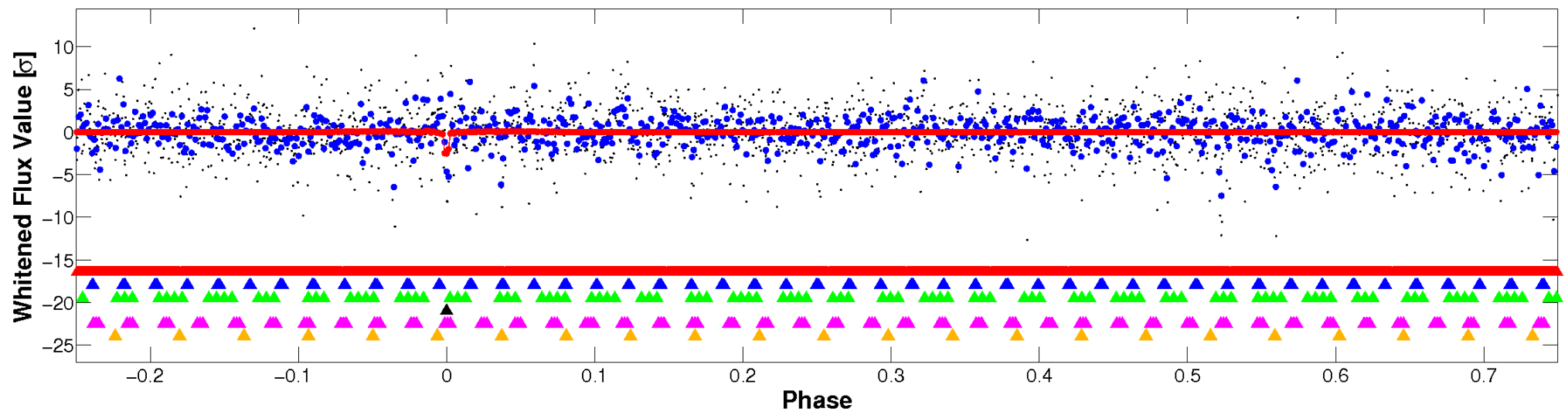
This plot does not exist for this TCE.

# Non-Whitened Vs. Whitened Light Curve

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

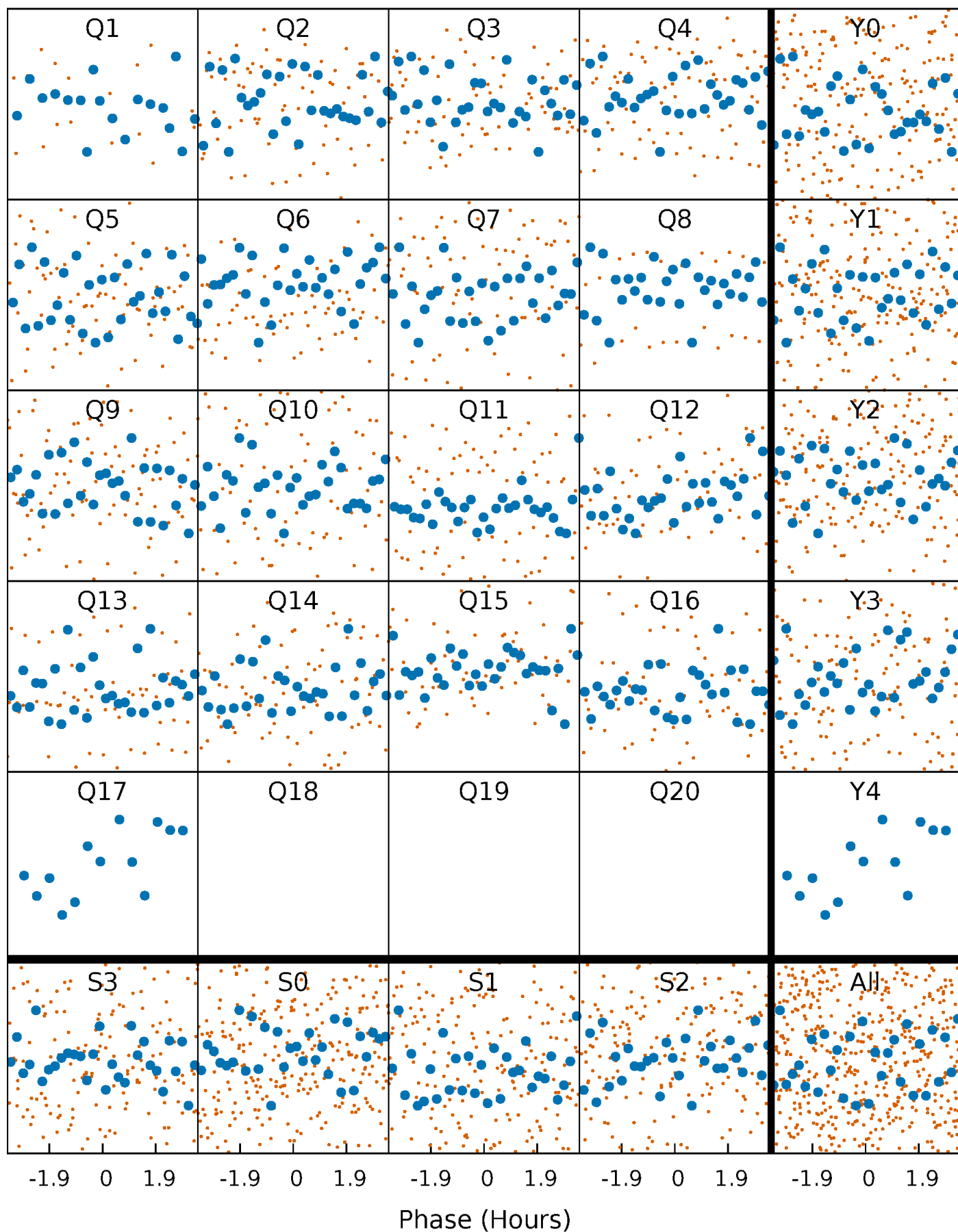


## Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

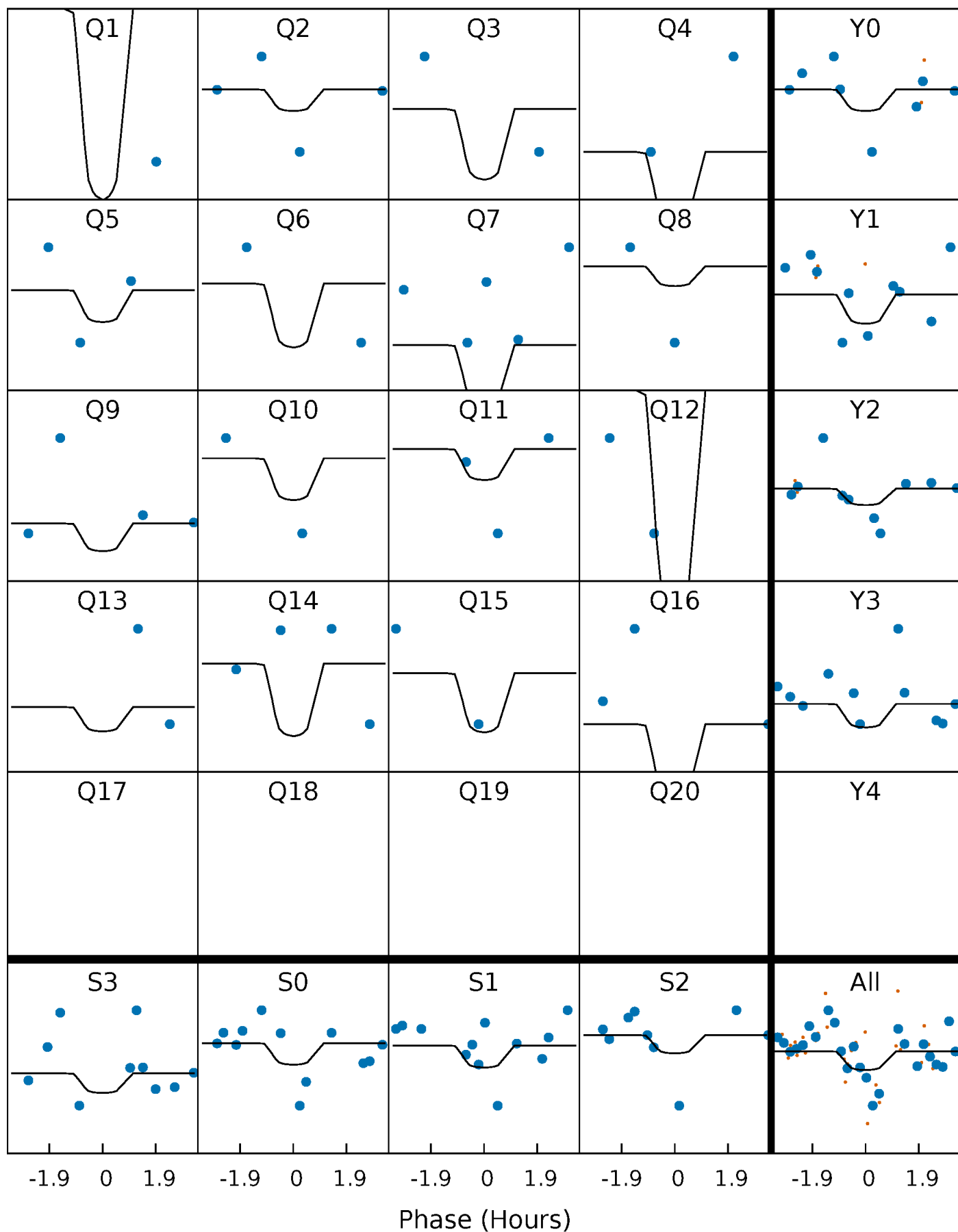
TCE 007033421-04 P= 15.553638 Days  $T_0=139.978699$  (BKJD)





# DV Quarter-Phased Transit Curves

TCE 007033421-04 P= 15.553638 Days  $T_0=139.978699$  (BKJD)

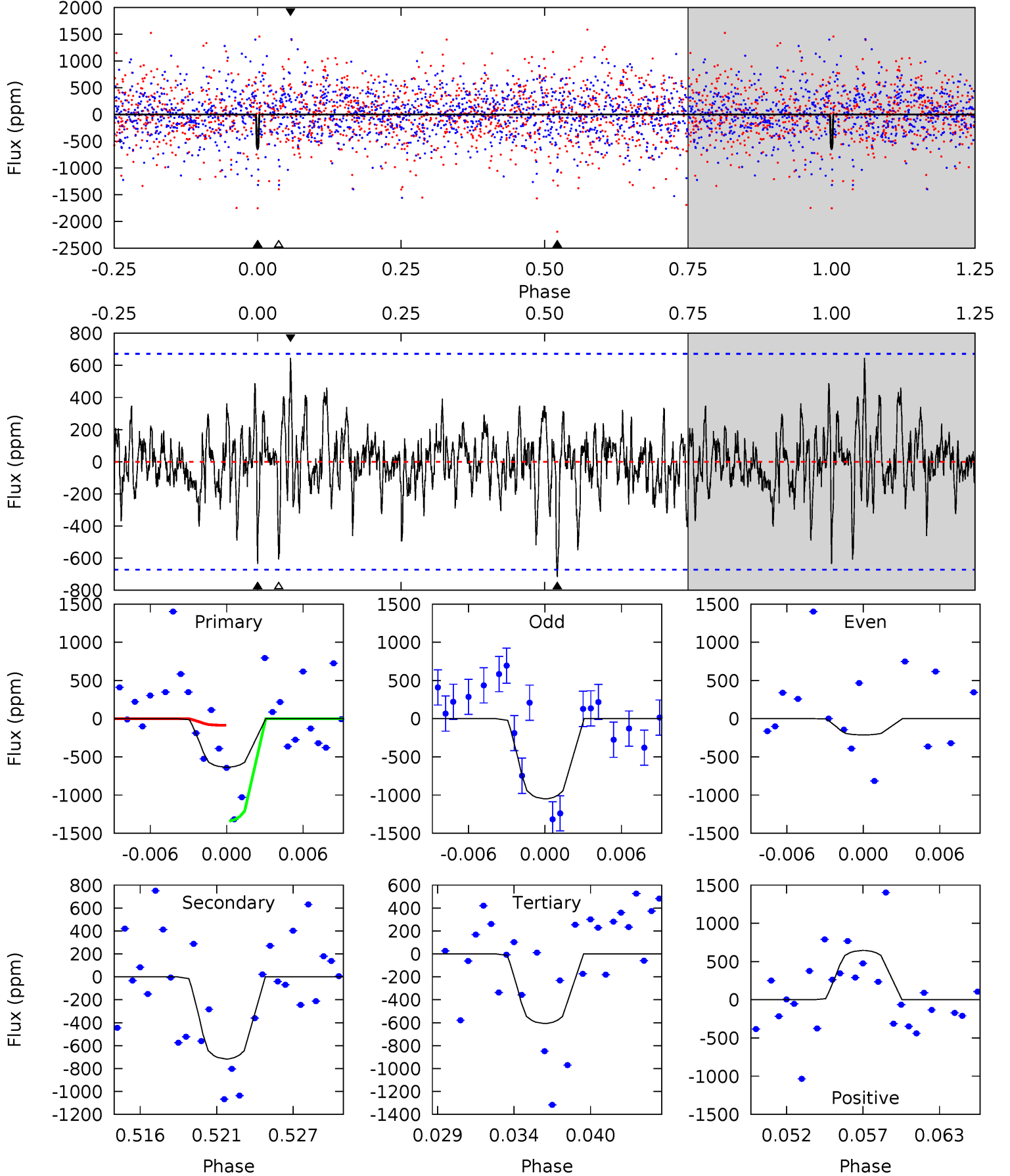


This plot does not exist for this TCE.

# DV Model-Shift Uniqueness Test

007033421-04,  $P = 15.553638$  Days,  $E = 124.425061$  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
4.85	5.48	4.64	4.93	5.13	2.76	1.22	0.22	-0.08	0.84	0.54	3.22	1.00	0.47	4.67



## Alt Model-Shift Uniqueness Test

This plot does not exist for this TCE.

### Stellar Parameters For KIC 007033421

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6268^{+174}_{-196}$	$4.429^{+0.050}_{-0.200}$	$0.070^{+0.250}_{-0.350}$	$1.100^{+0.335}_{-0.112}$	$1.188^{+0.141}_{-0.173}$	$1.257^{+0.338}_{-0.644}$
	+3%/-3%	+1%/-5%	+357%/-500%	+30%/-10%	+12%/-15%	+27%/-51%
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 007033421-04 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-717 \pm 131$	$16.64^{+18.04}_{-11.74}$	$1154^{+80}_{-58}$	$3352^{+1773}_{-634}$	$23^{+239}_{-18}$
Alt.	N/A	N/A	N/A	N/A	N/A

$T_{max}$  = Theoretical Maximum Planetary Temperature

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

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

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

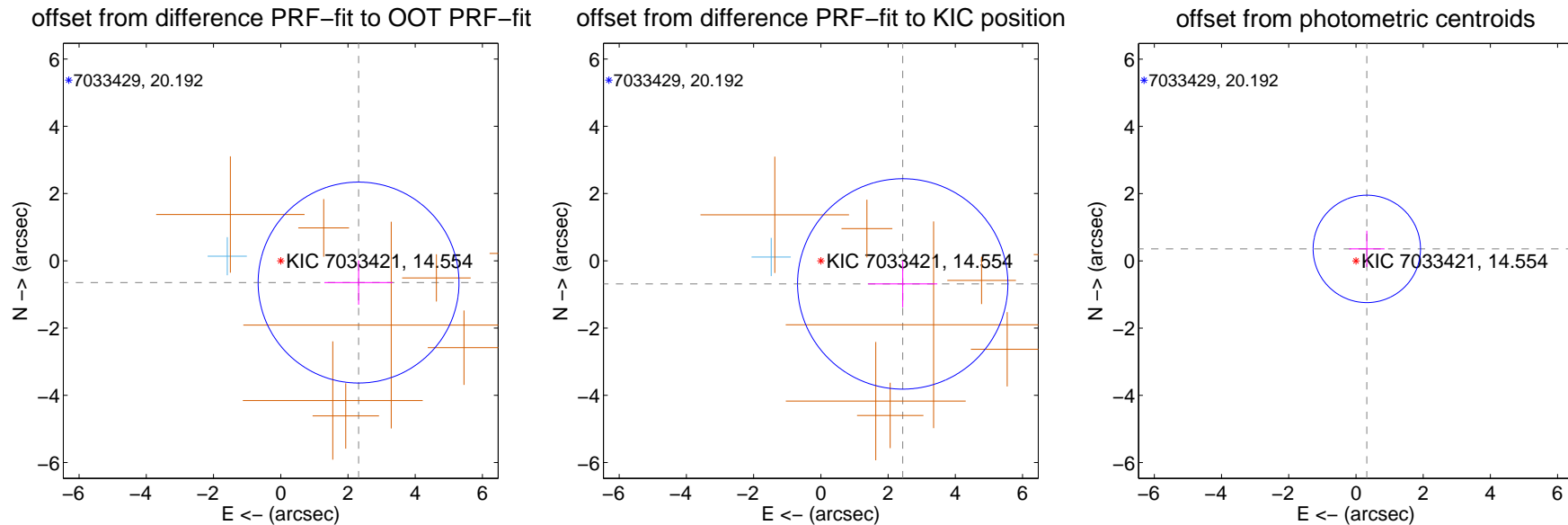
## DV Centroid Data

Supplemental centroid analysis for 007033421-04. Kepler magnitude: 14.55. Transit SNR 7.28

There are 1 quarters with good PRF difference image offsets

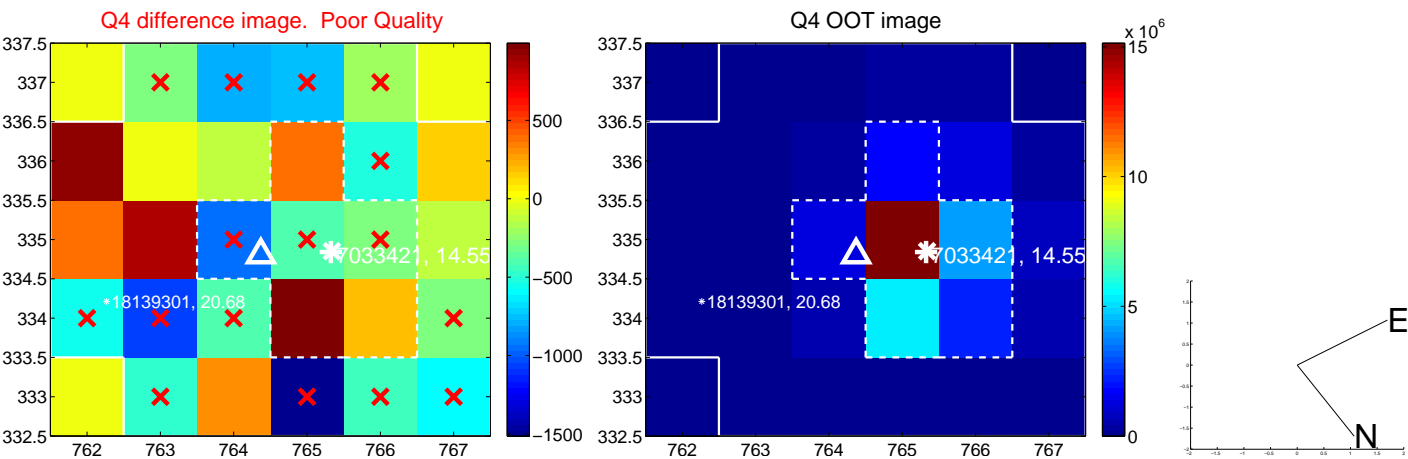
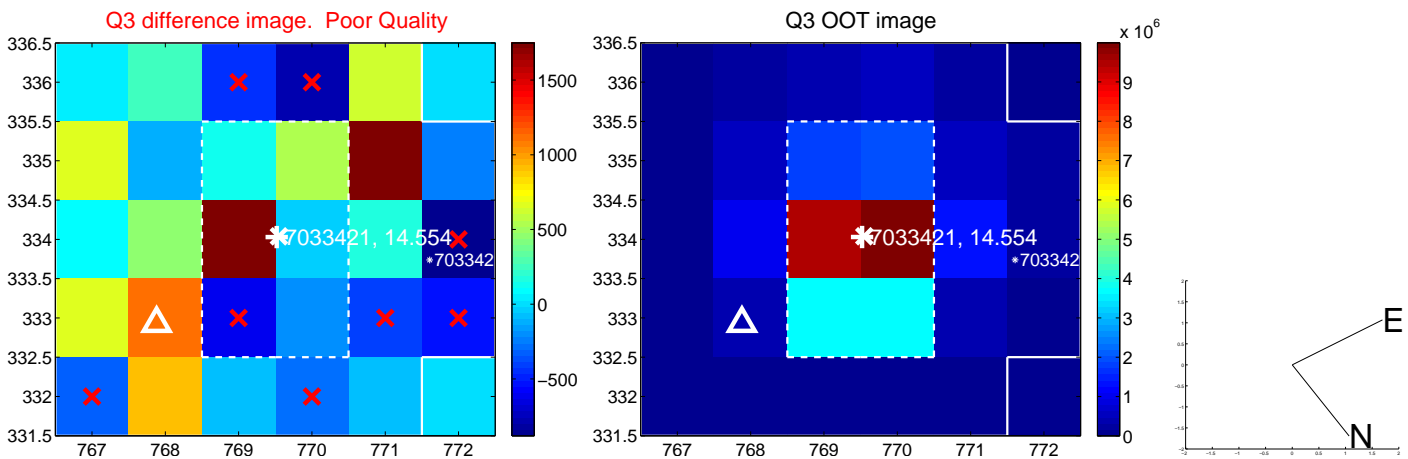
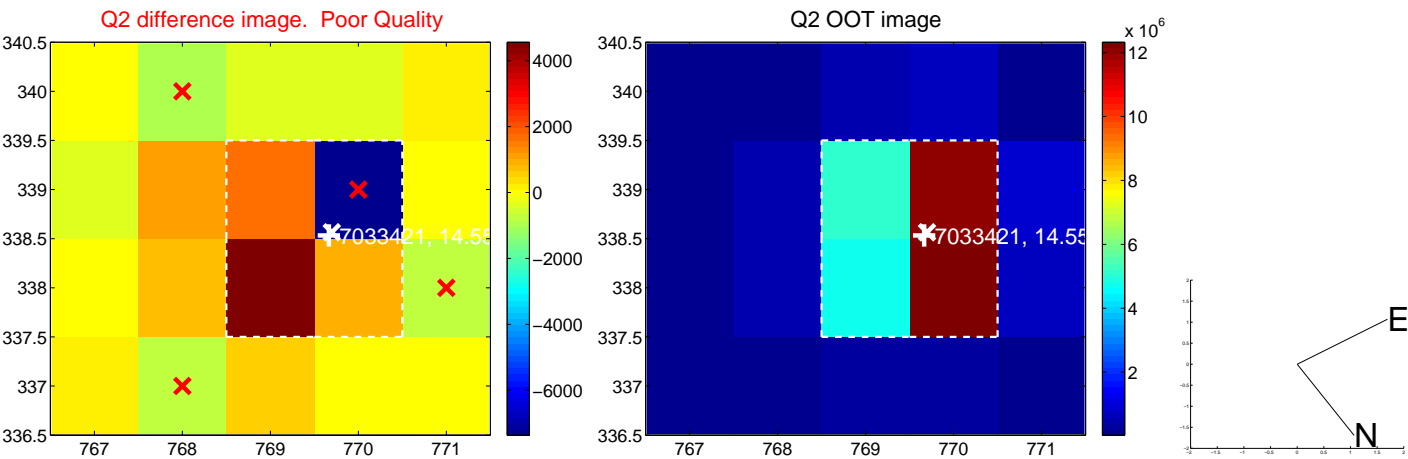
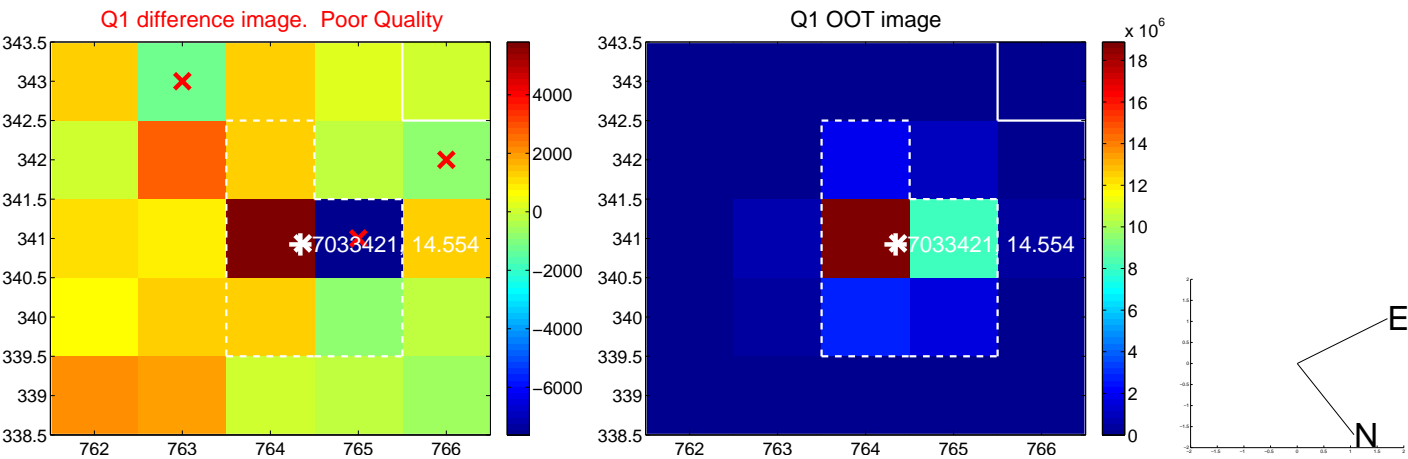
The direct PRF centroid is offset from the target star catalog position by about 0.10 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$2.404 \pm 0.996$	2.41	$-2.315 \pm 1.018$	$-0.648 \pm 0.657$
PRF-fit source offset from KIC position	$2.531 \pm 1.043$	2.43	$-2.436 \pm 1.028$	$-0.688 \pm 0.696$
photometric centroid source offset	$0.48 \pm 0.53$	0.90	$-0.32 \pm 0.53$	$0.36 \pm 0.54$

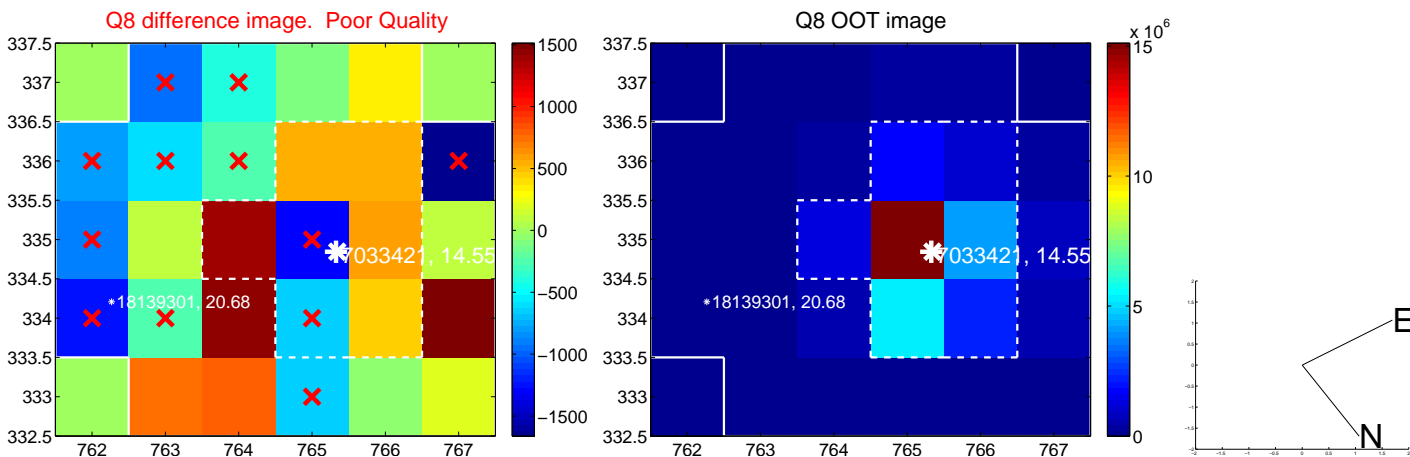
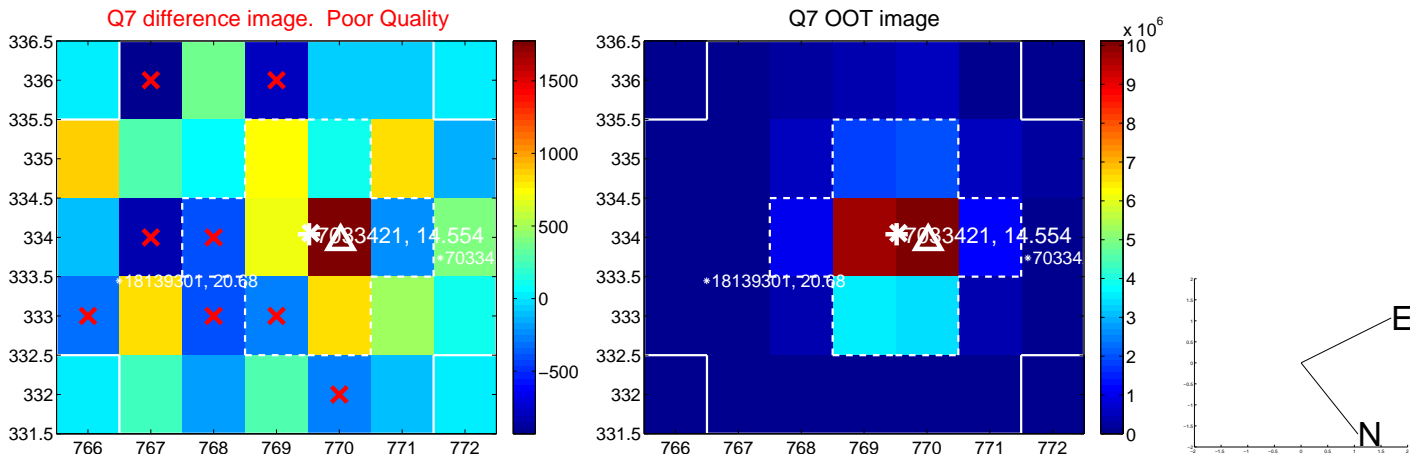
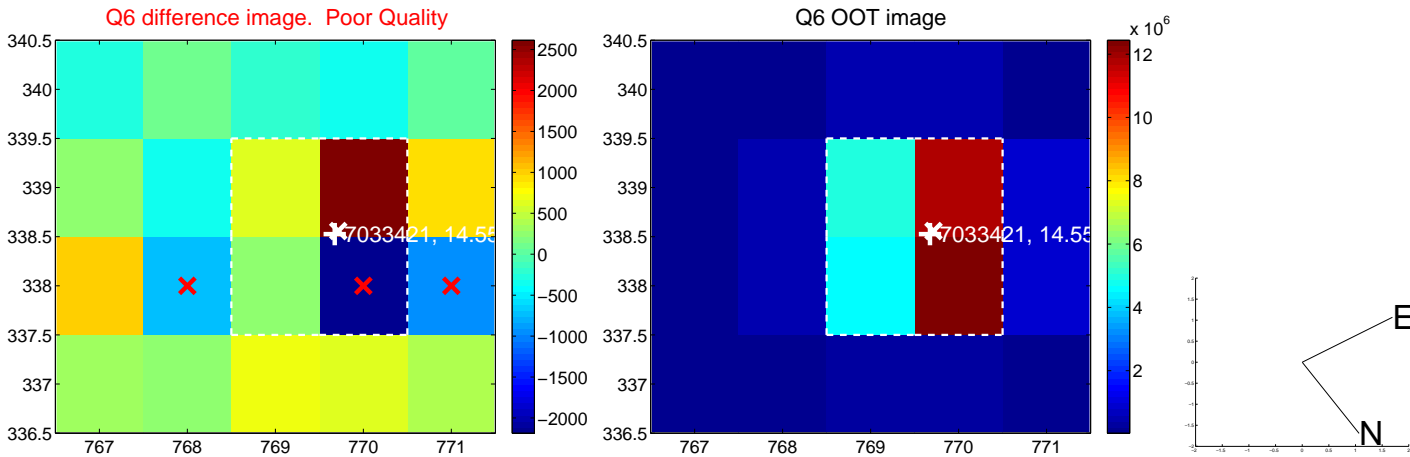
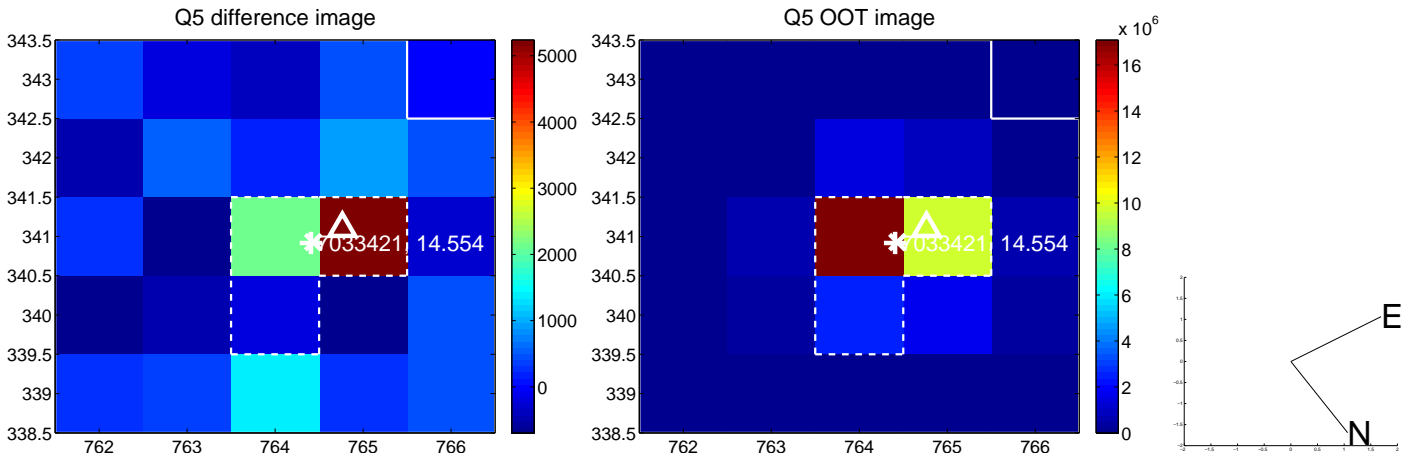


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

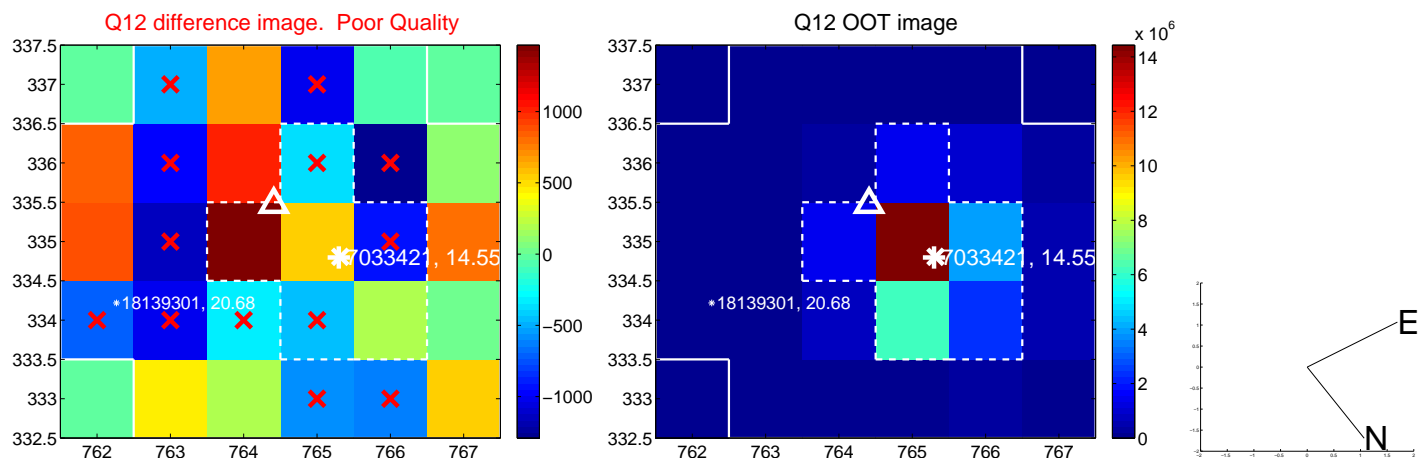
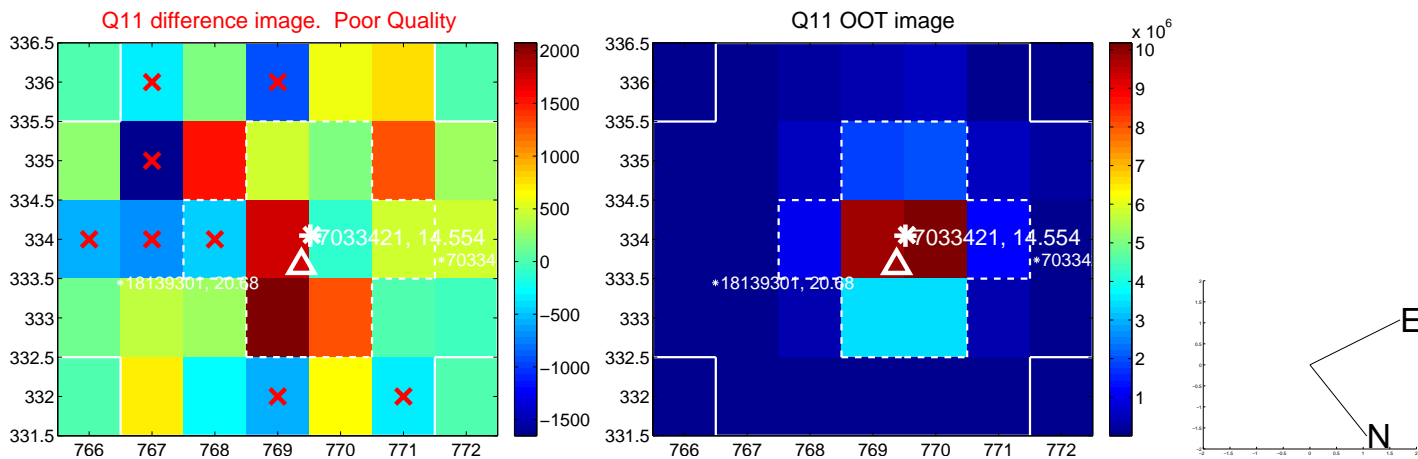
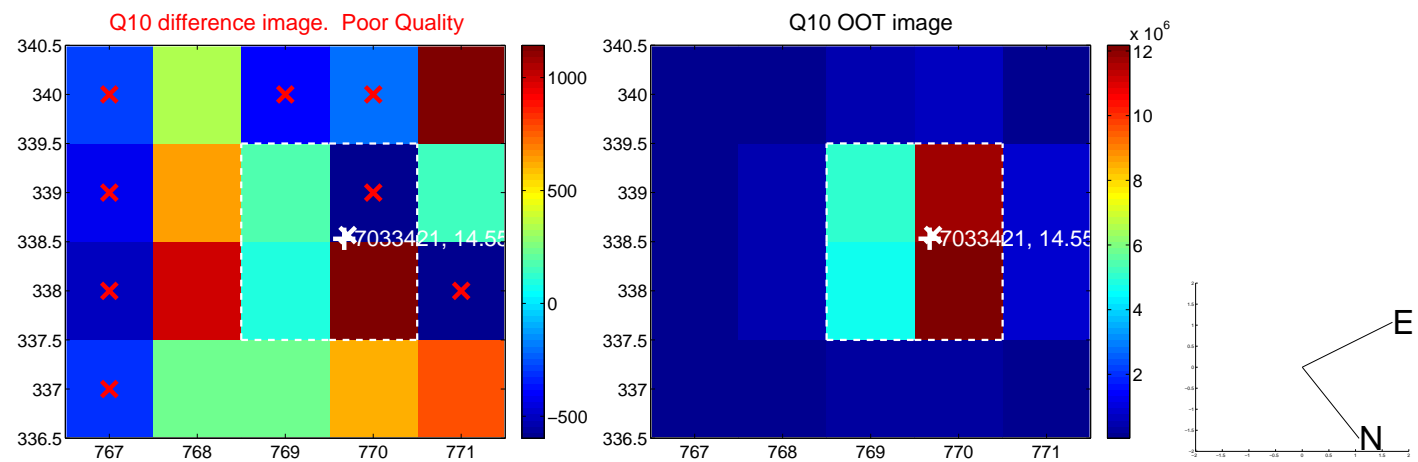
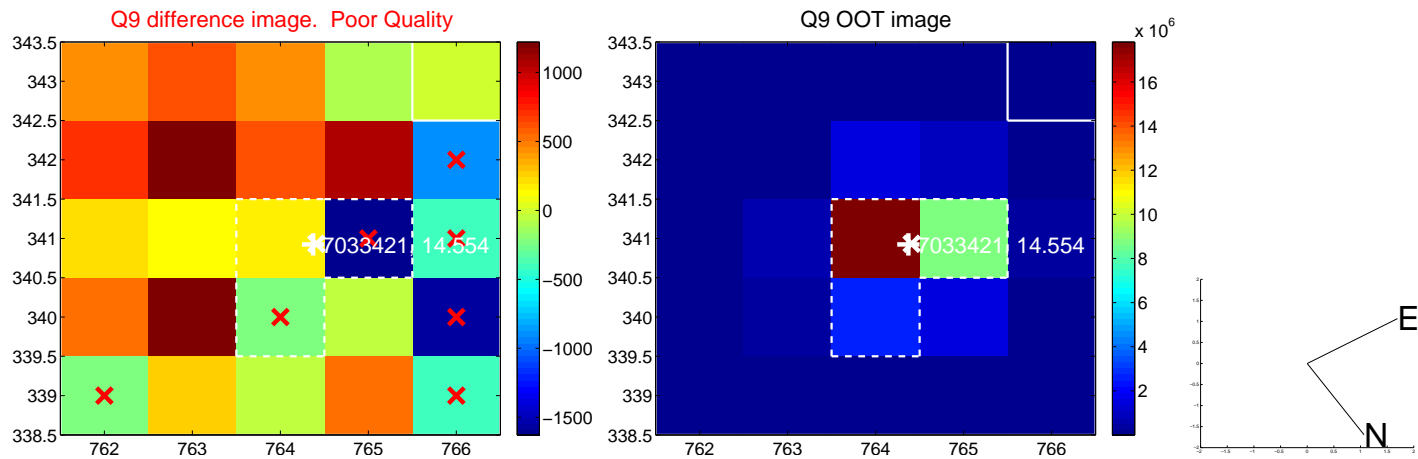


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

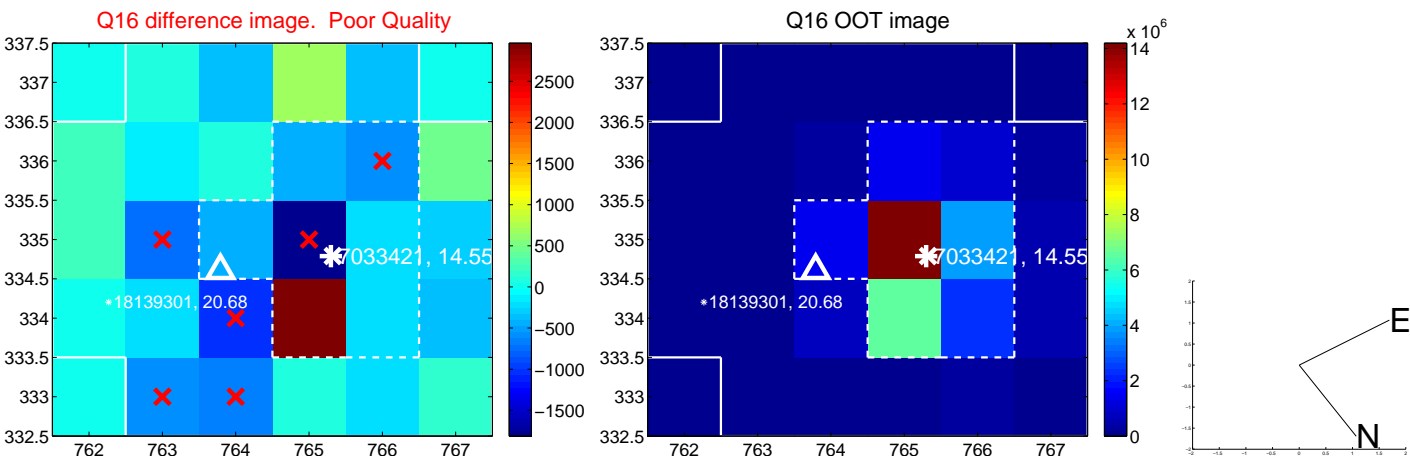
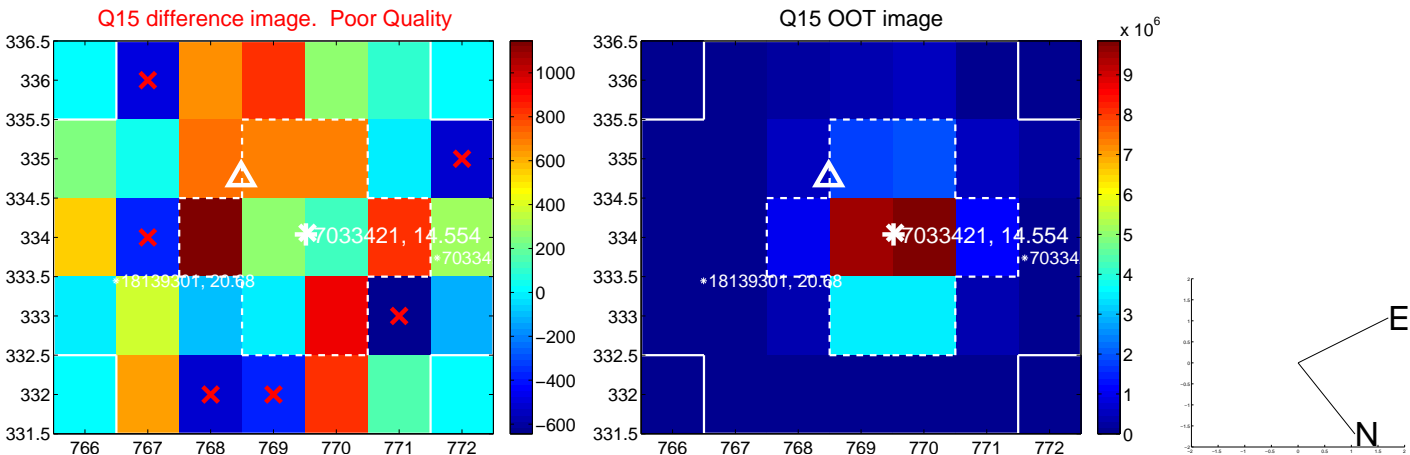
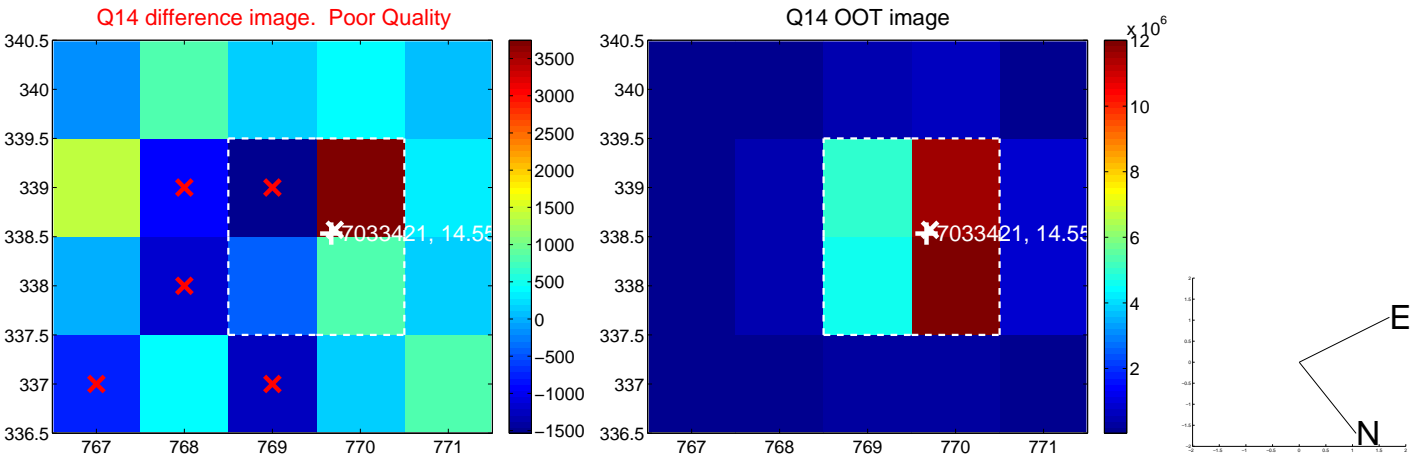
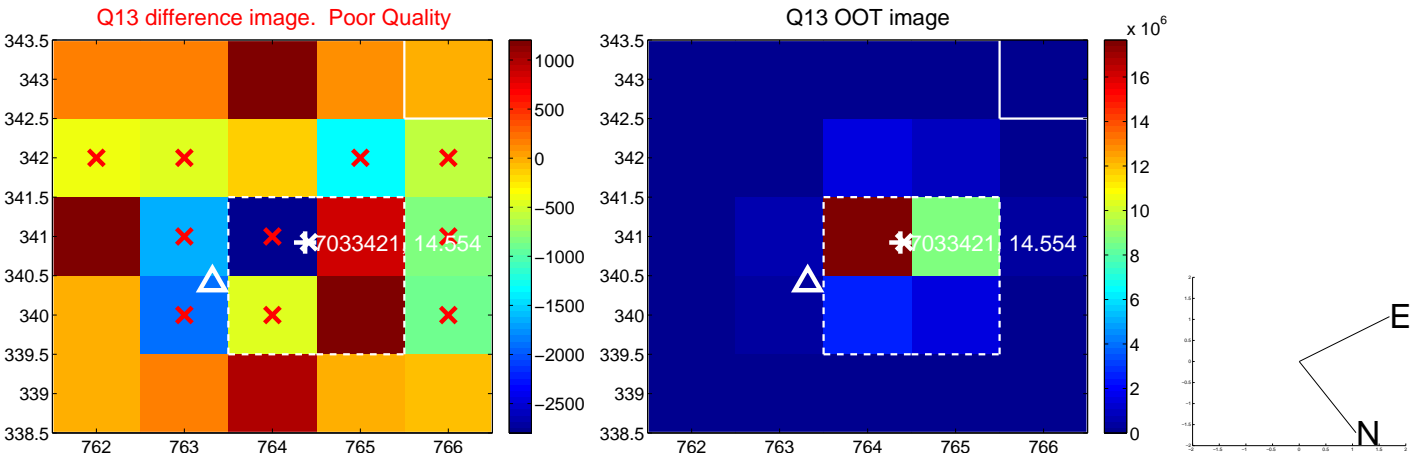




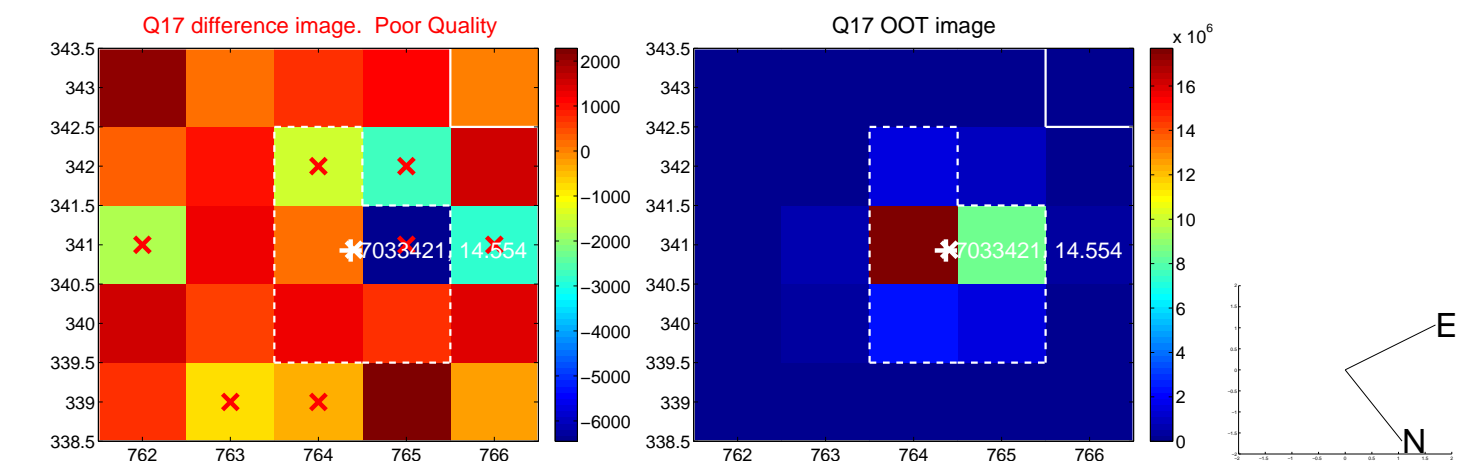
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



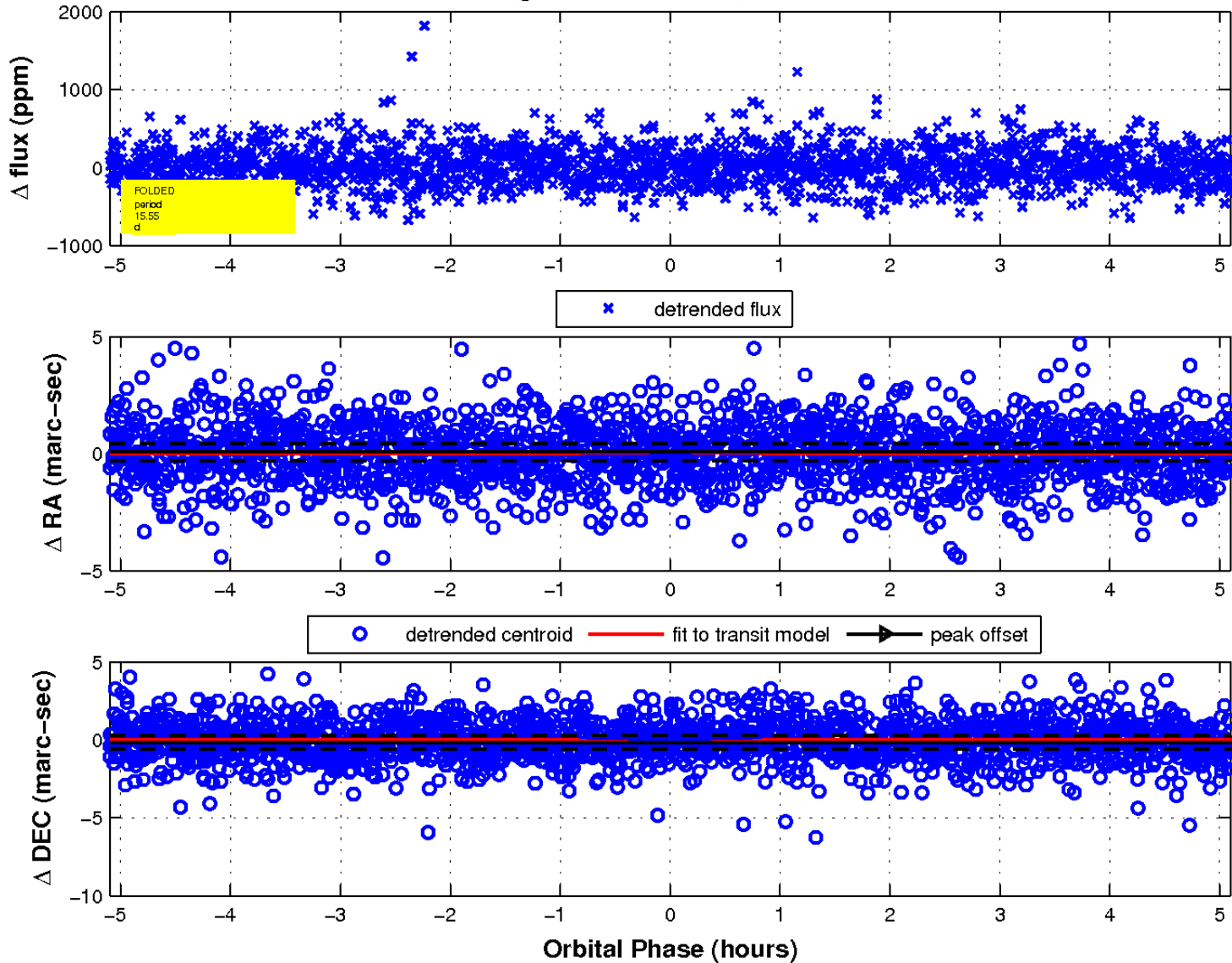
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

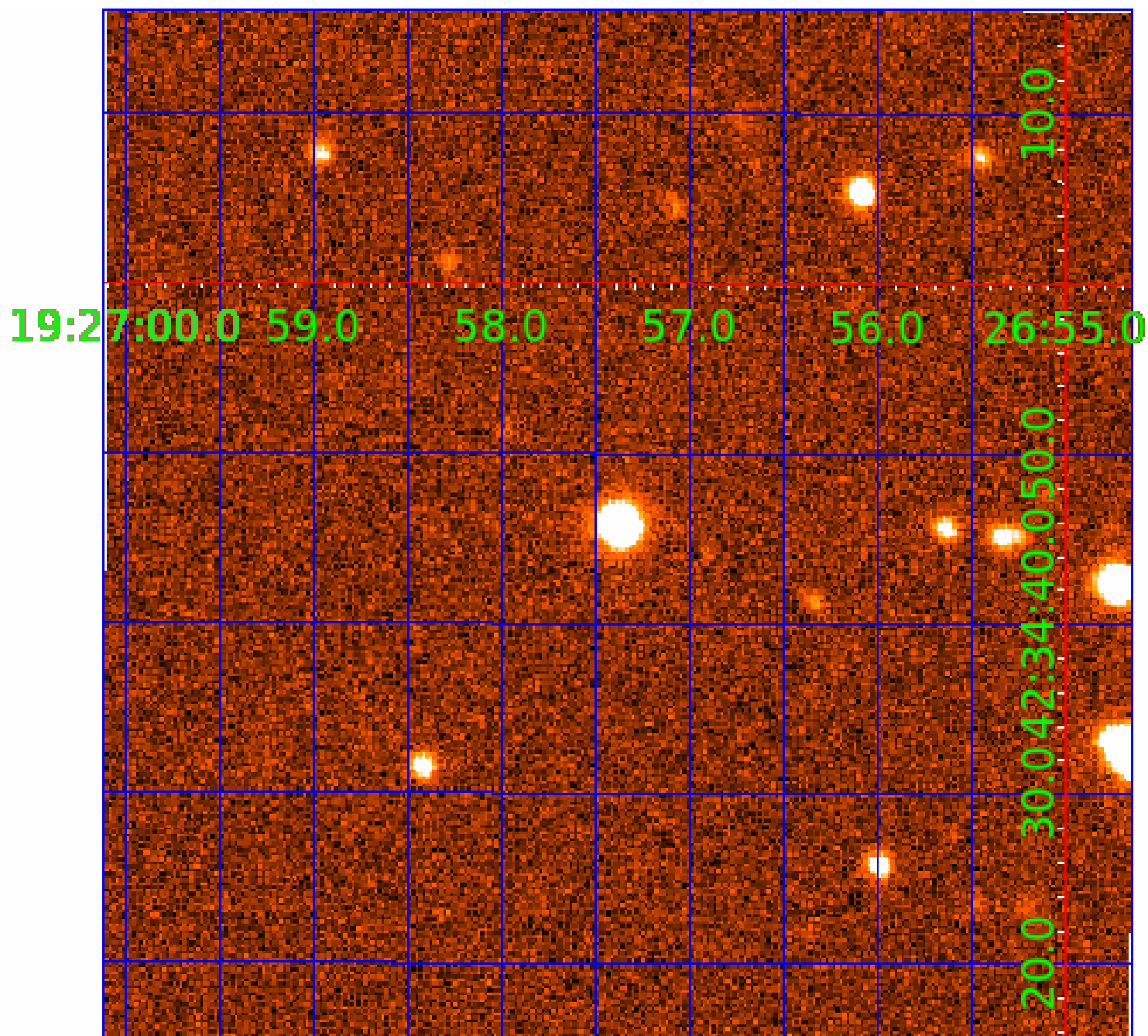


fluxWeightedCentroids, Planet 4 of 6



UKIRT Image

Declination



# KIC 007033421

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007033421-01	OBS	No	0.566782	131.830789	21.3	4.198	9.1	8.9	1.10	6268	0.53	8313.50
007033421-02	OBS	No	11.913694	138.232044	112.7	7.991	11.9	5.1	1.10	6268	1.46	143.31
007033421-03	OBS	No	13.544097	143.754747	1410.3	1.500	14.6	-1.0	1.10	6268	4.15	120.78
007033421-04	OBS	No	15.553638	139.978699	454.6	1.704	8.3	7.3	1.10	6268	2.52	100.44
007033421-05	OBS	No	11.480759	141.435276	1139.1	0.633	12.2	10.6	1.10	6268	3.81	150.56
007033421-06	OBS	No	38.545818	133.798103	1384.6	0.876	13.6	17.4	1.10	6268	4.14	29.95

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007033421-01	OBS	FP	0.00	1	0	1	1	LPP_DV—CENT_UNRESOLVED_OFFSET—EPHEM_MATCH
007033421-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—CENT_FEW_DIFFS
007033421-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—NO_FITS—CENT_NOFITS
007033421-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV
007033421-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—CENT_FEW_DIFFS
007033421-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—CENT_FEW_DIFFS

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

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

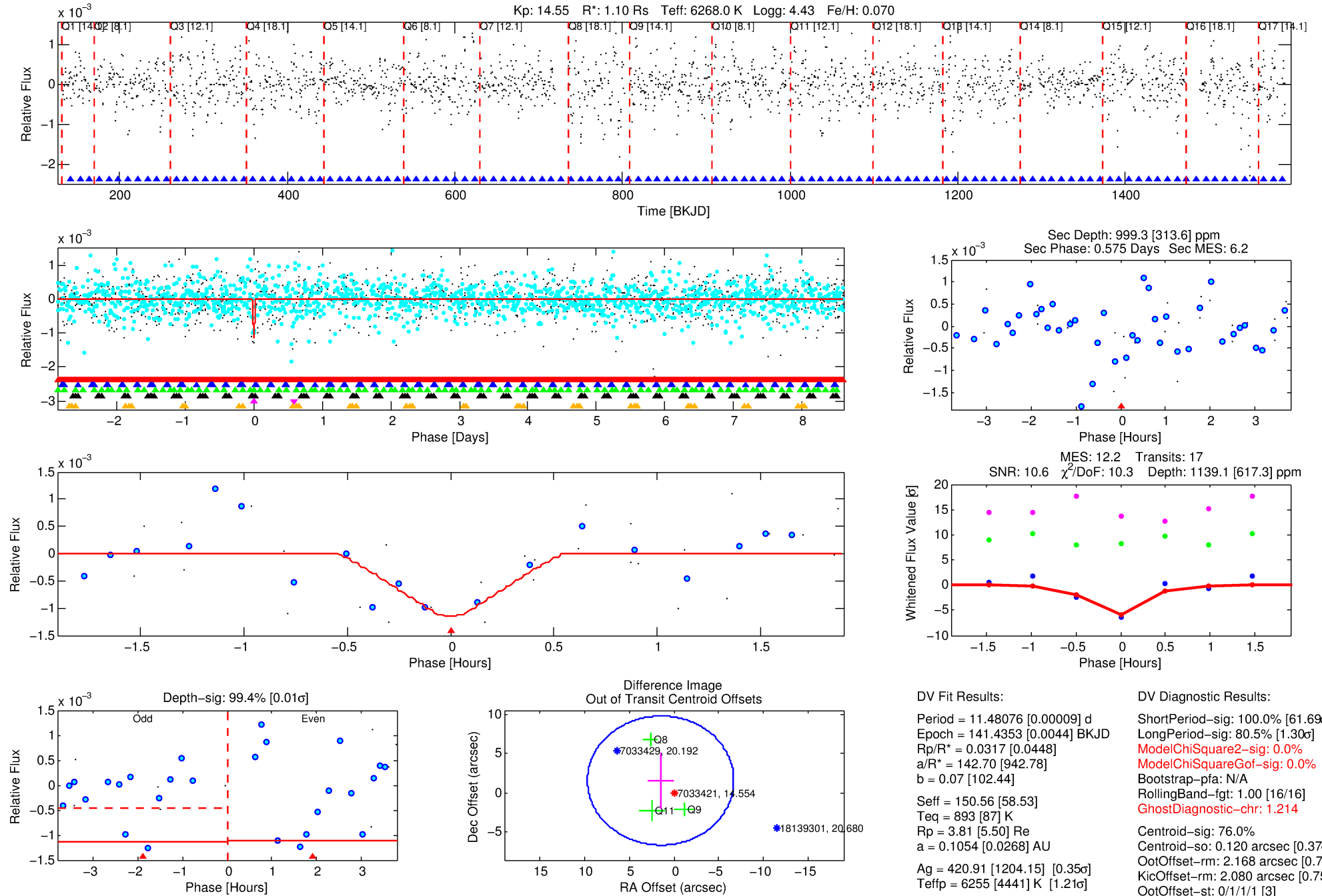
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 007033421-05

No Significant Match Found

# DV One-Page Summary

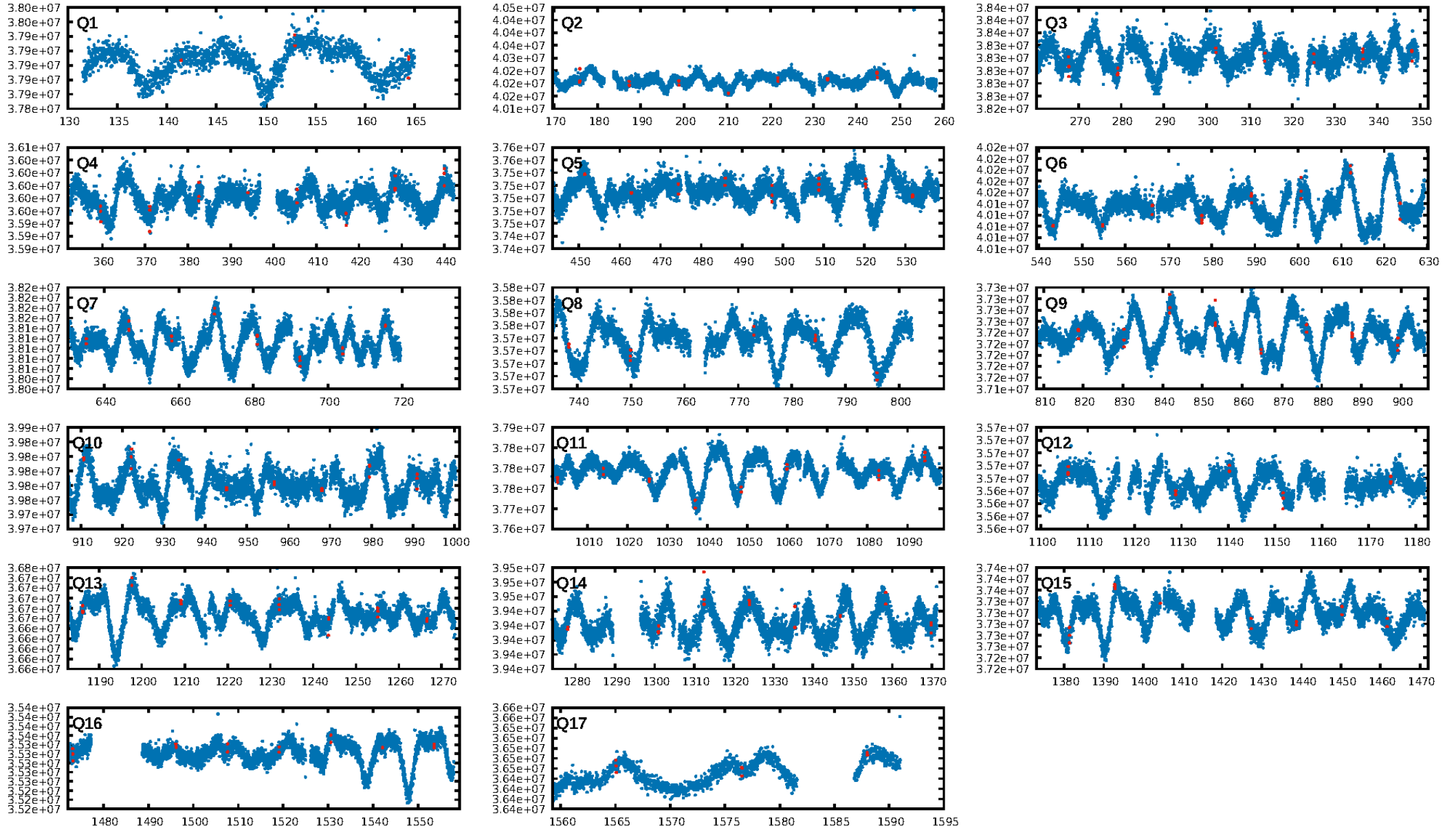
KIC: 7033421 Candidate: 5 of 6 Period: 11.481 d



Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 14:16:45 Z

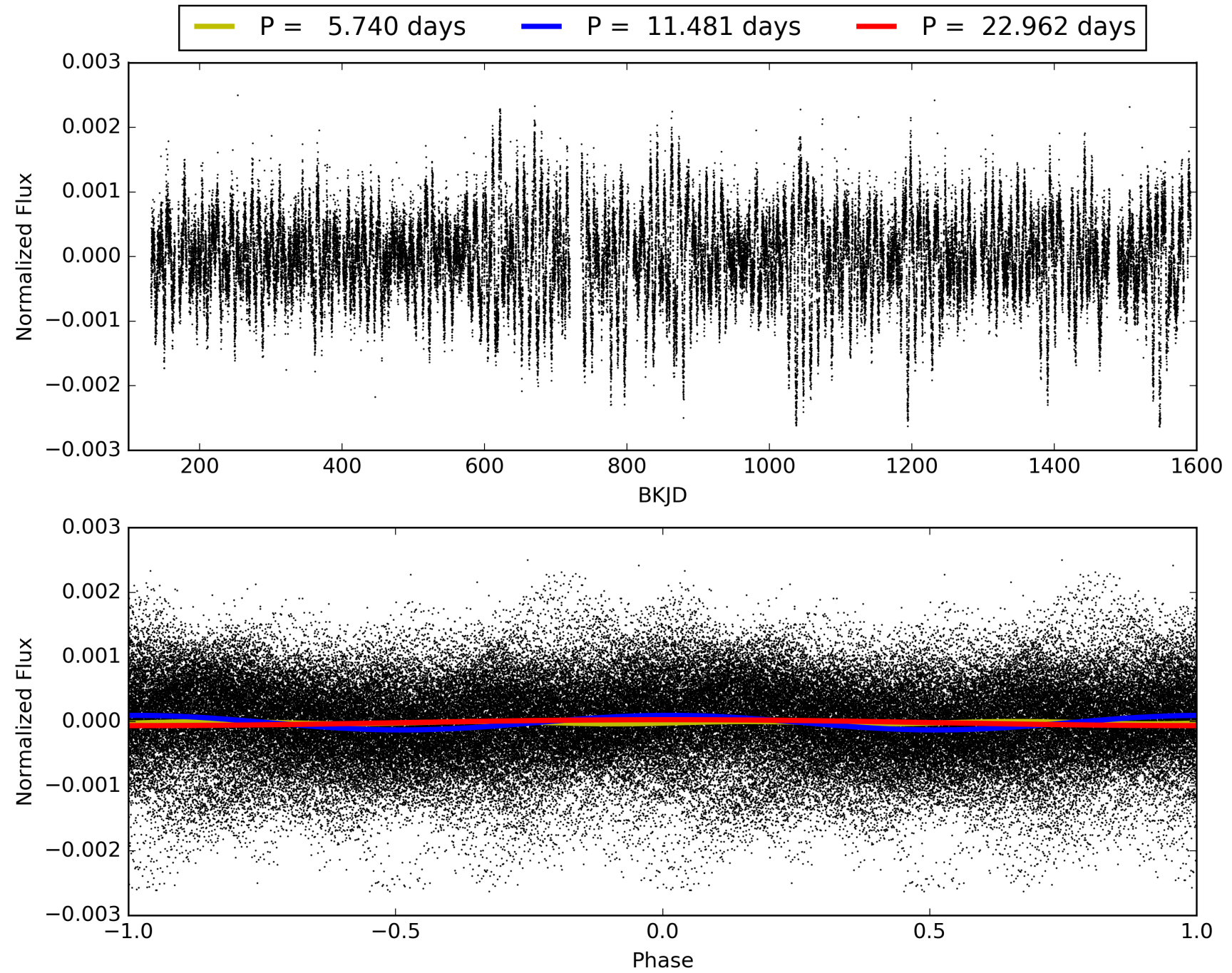
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 007033421-05, PDC Light Curves





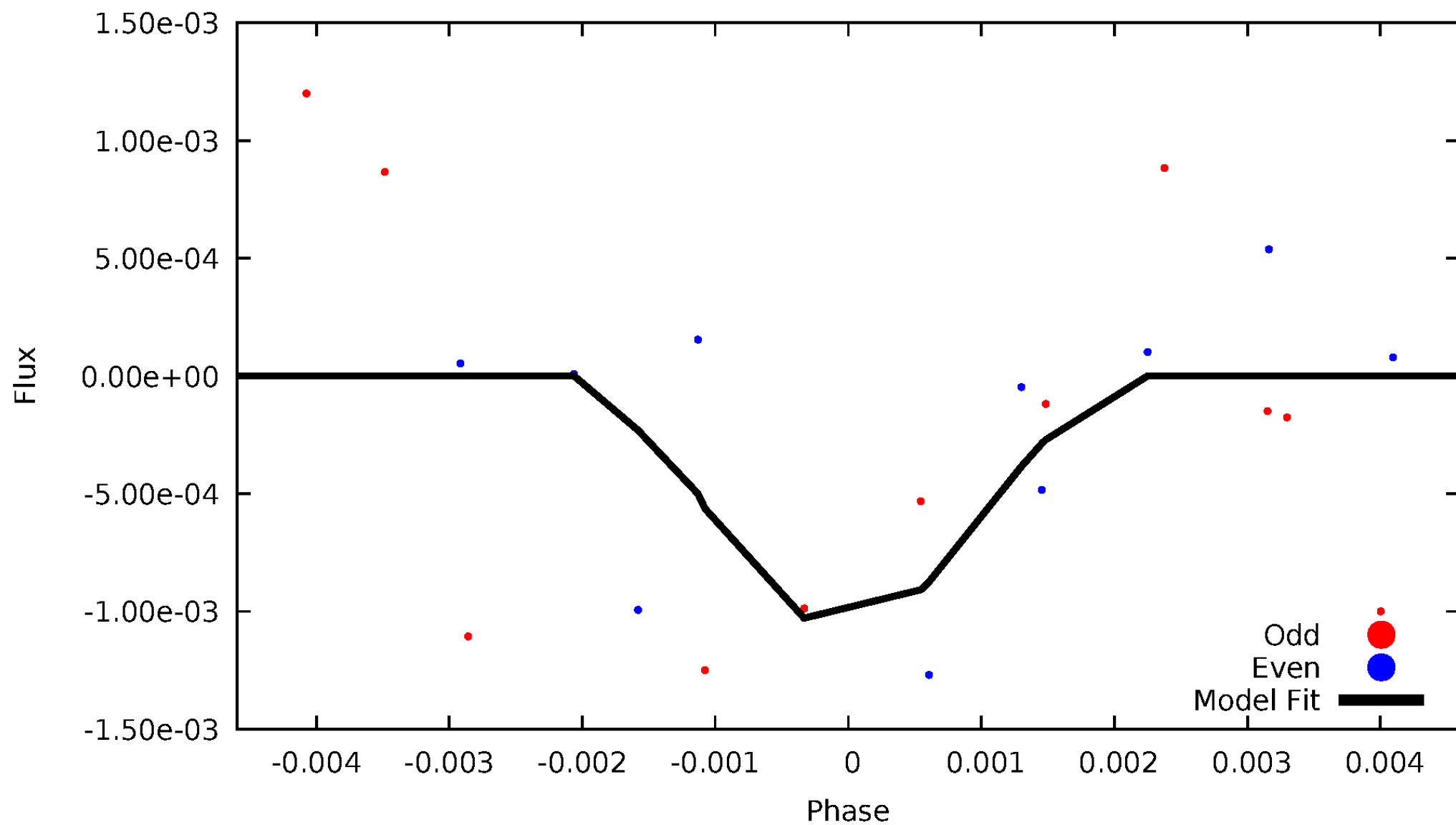
TCE 007033421-05





# DV Odd/Even

TCE 007033421-05



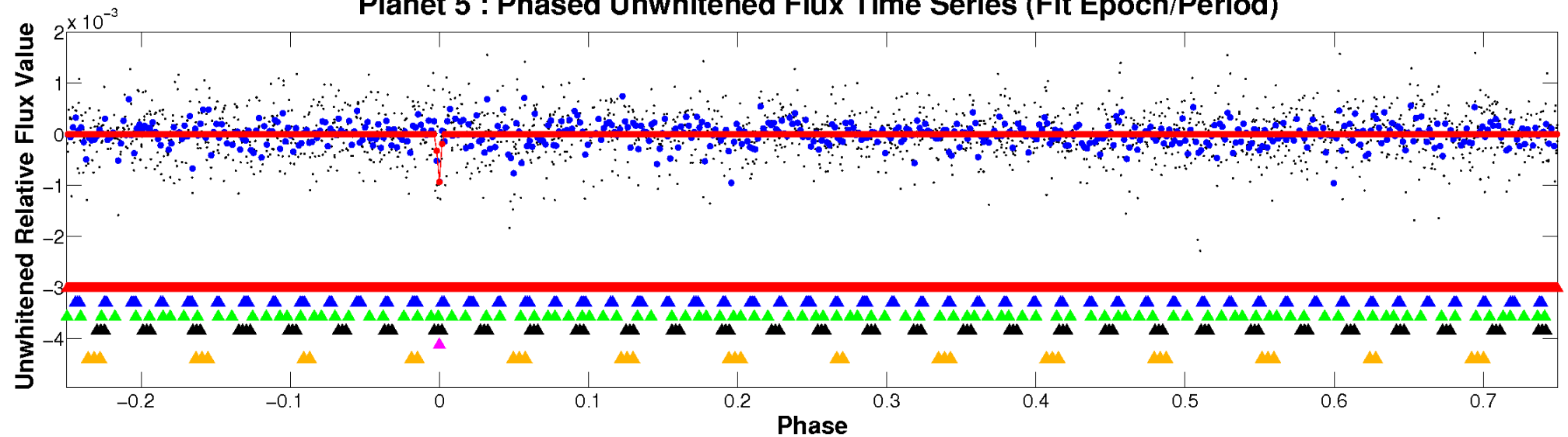


ALT Odd/Even

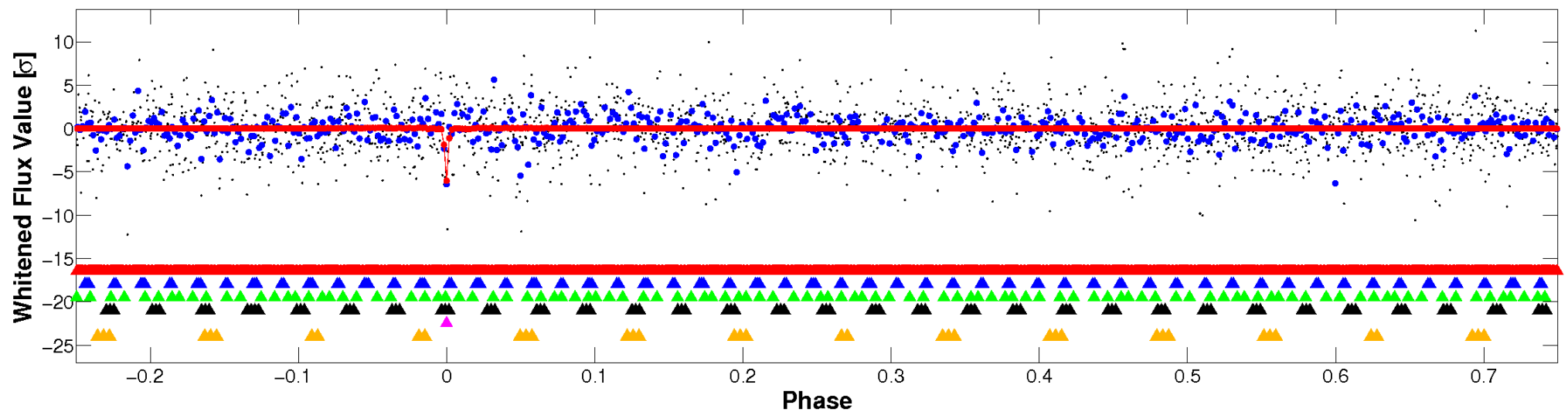
This plot does not exist for this TCE.

# Non-Whitened Vs. Whitened Light Curve

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

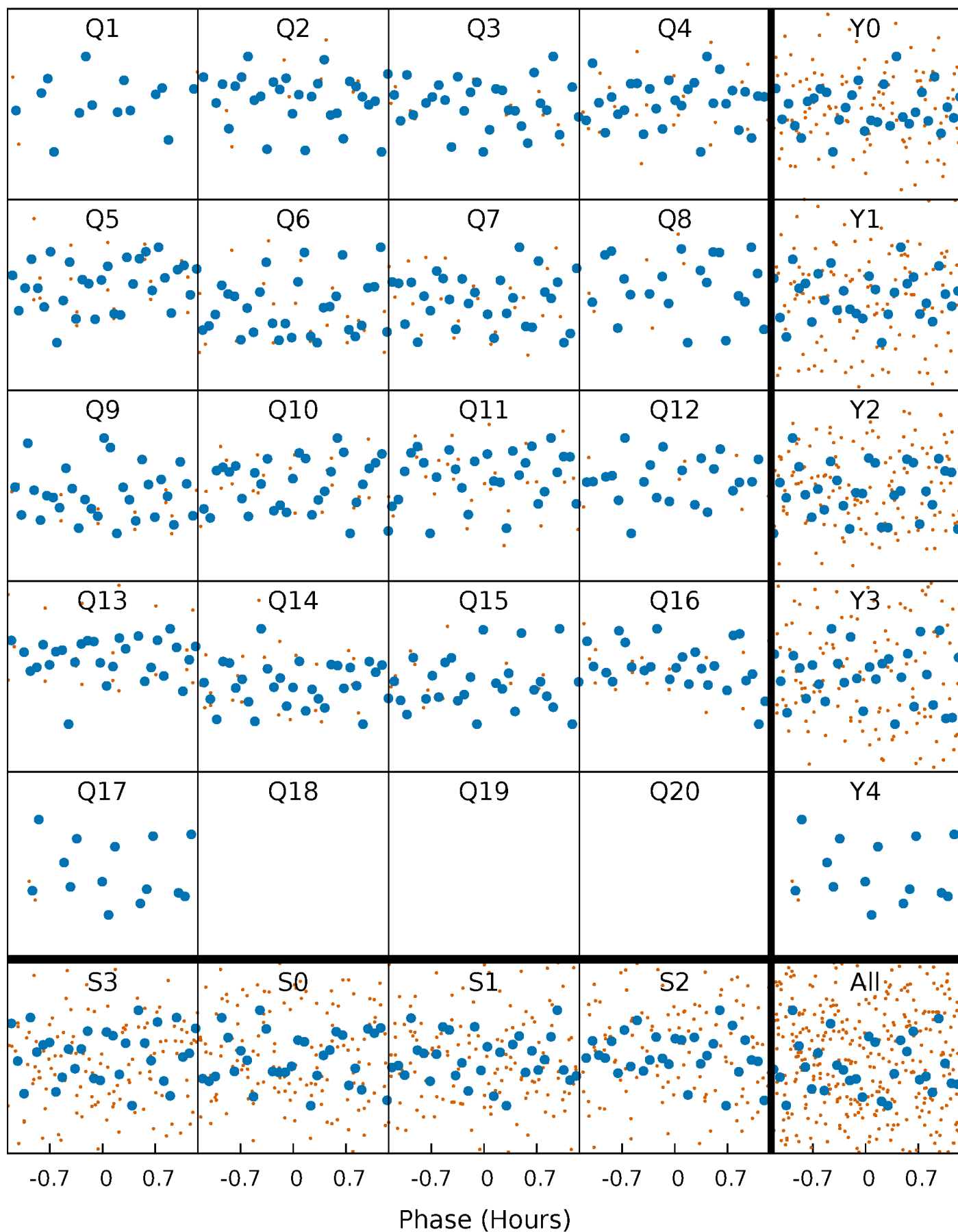


## Planet 5 : Phased Whitened Flux Time Series (Fit Epoch/Period)



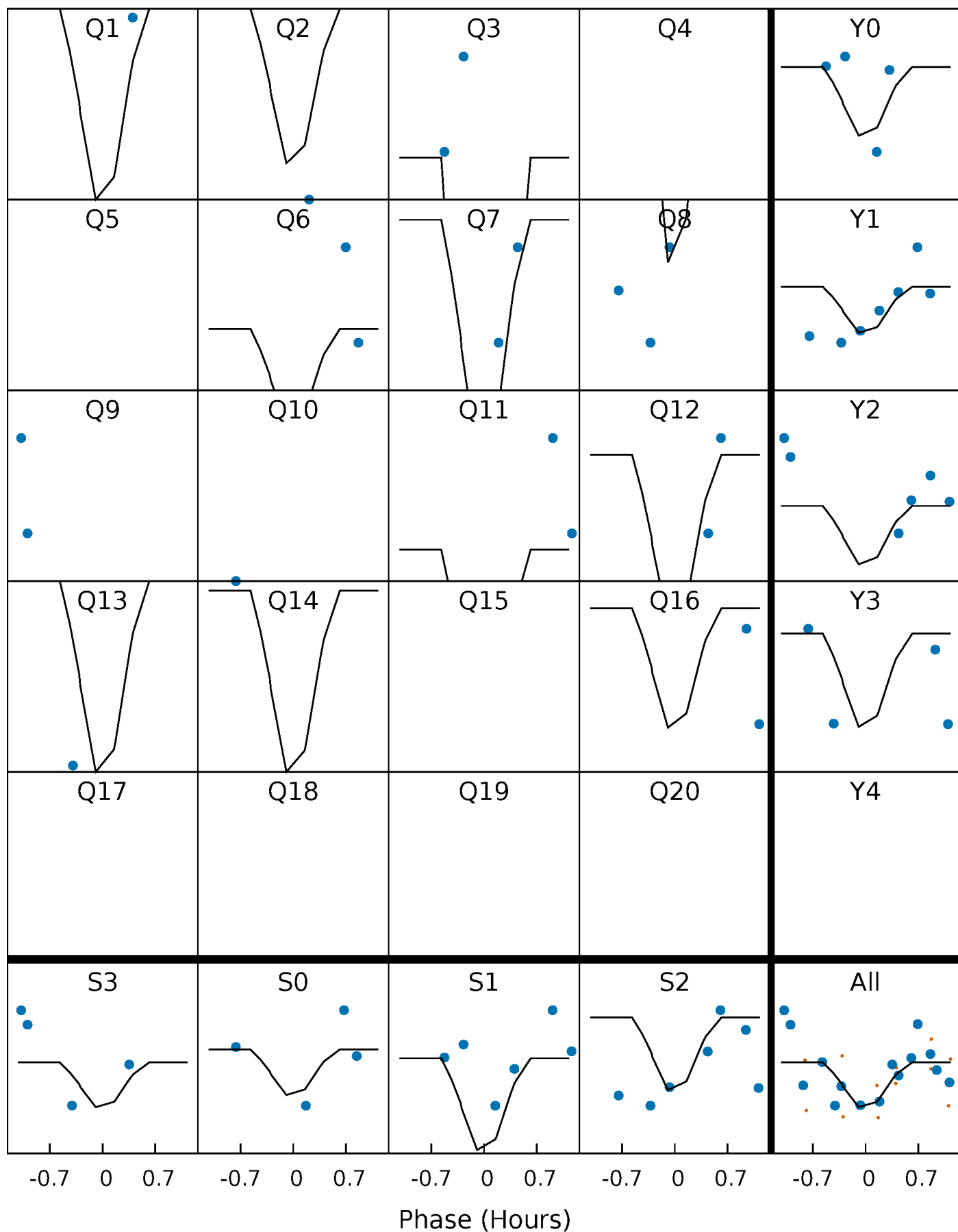
# PDC Quarter-Phased Transit Curves

TCE 007033421-05   P= 11.480759 Days    $T_0=141.435276$  (BKJD)



# DV Quarter-Phased Transit Curves

TCE 007033421-05 P= 11.480759 Days  $T_0=141.435276$  (BKJD)

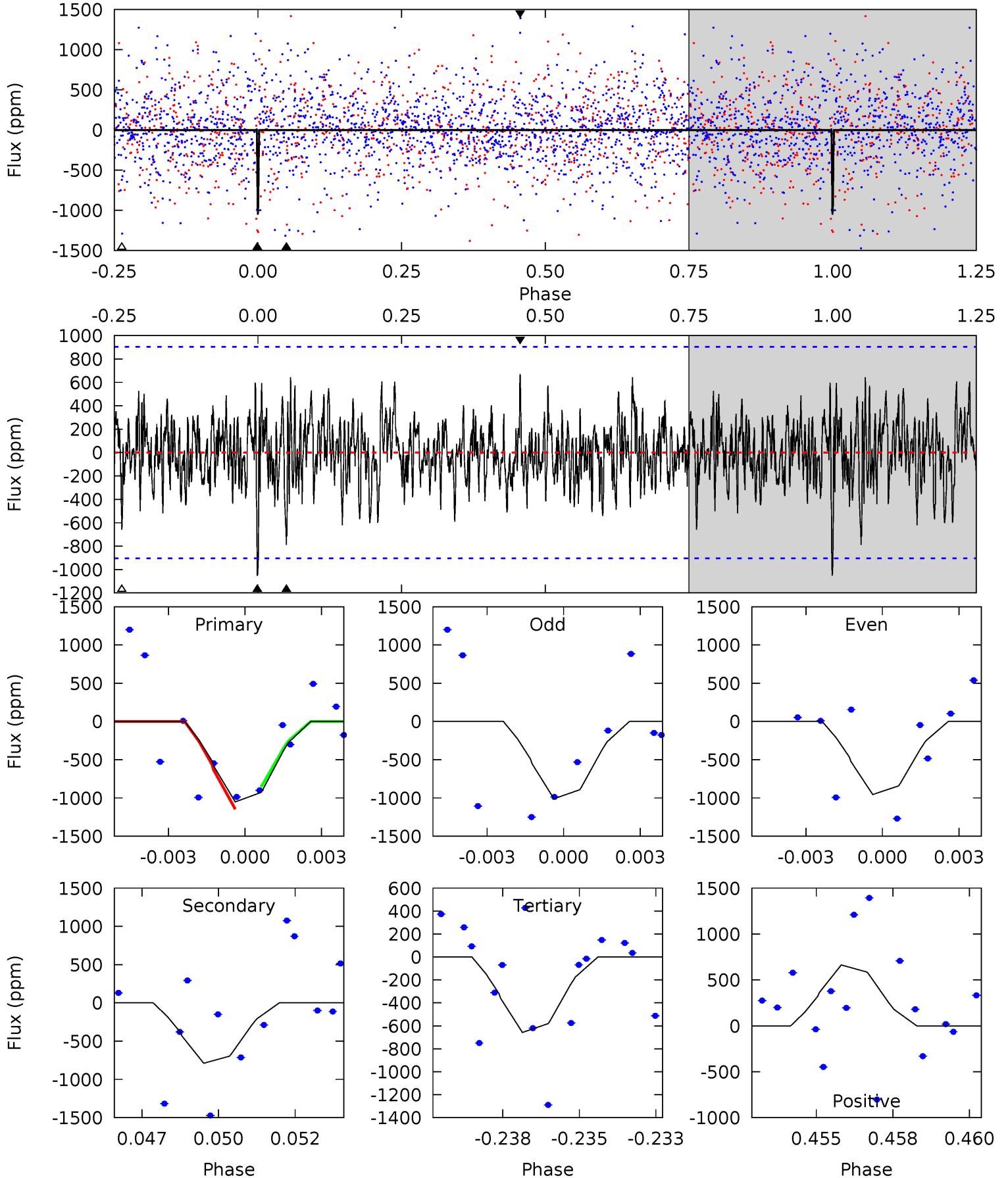


This plot does not exist for this TCE.

# DV Model-Shift Uniqueness Test

007033421-05, P = 11.480759 Days, E = 129.954517 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
6.14	4.61	3.84	3.87	5.28	3.01	1.27	2.30	2.27	0.77	0.73	0.16	0	0.39	0.80





## Alt Model-Shift Uniqueness Test

This plot does not exist for this TCE.

### Stellar Parameters For KIC 007033421

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6268^{+174}_{-196}$	$4.429^{+0.050}_{-0.200}$	$0.070^{+0.250}_{-0.350}$	$1.100^{+0.335}_{-0.112}$	$1.188^{+0.141}_{-0.173}$	$1.257^{+0.338}_{-0.644}$
	+3%/-3%	+1%/-5%	+357%/-500%	+30%/-10%	+12%/-15%	+27%/-51%
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 007033421-05 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-789 \pm 171$	$5.69^{+5.28}_{-3.75}$	$1274^{+98}_{-57}$	$4990^{+3562}_{-1066}$	$147^{+1004}_{-110}$
Alt.	N/A	N/A	N/A	N/A	N/A

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

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

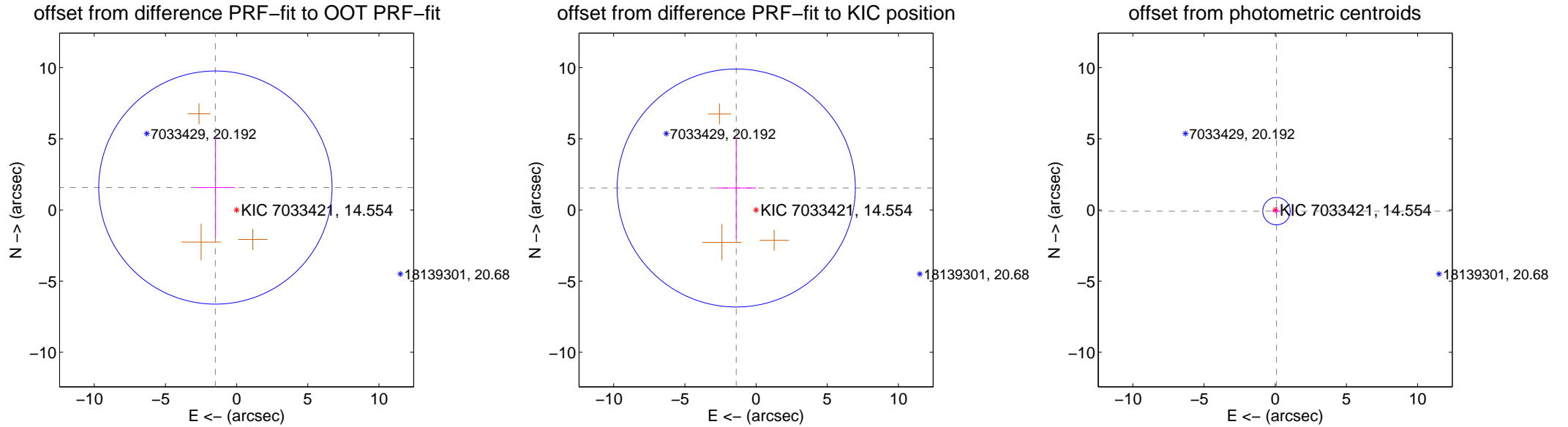
## DV Centroid Data

Supplemental centroid analysis for 007033421-05. Kepler magnitude: 14.55. Transit SNR 10.59

There are 0 quarters with good PRF difference image offsets

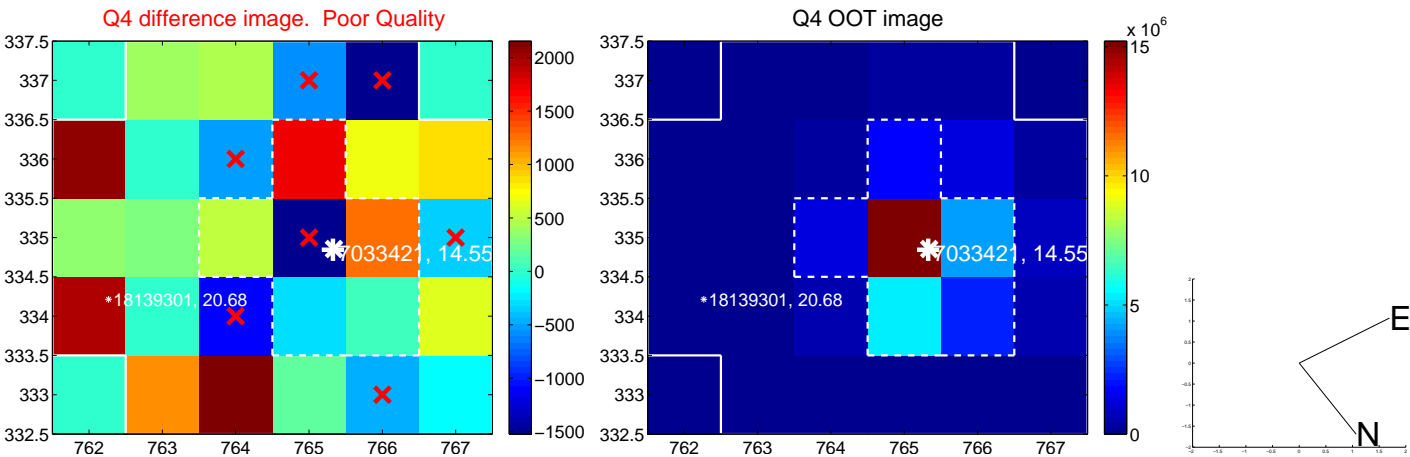
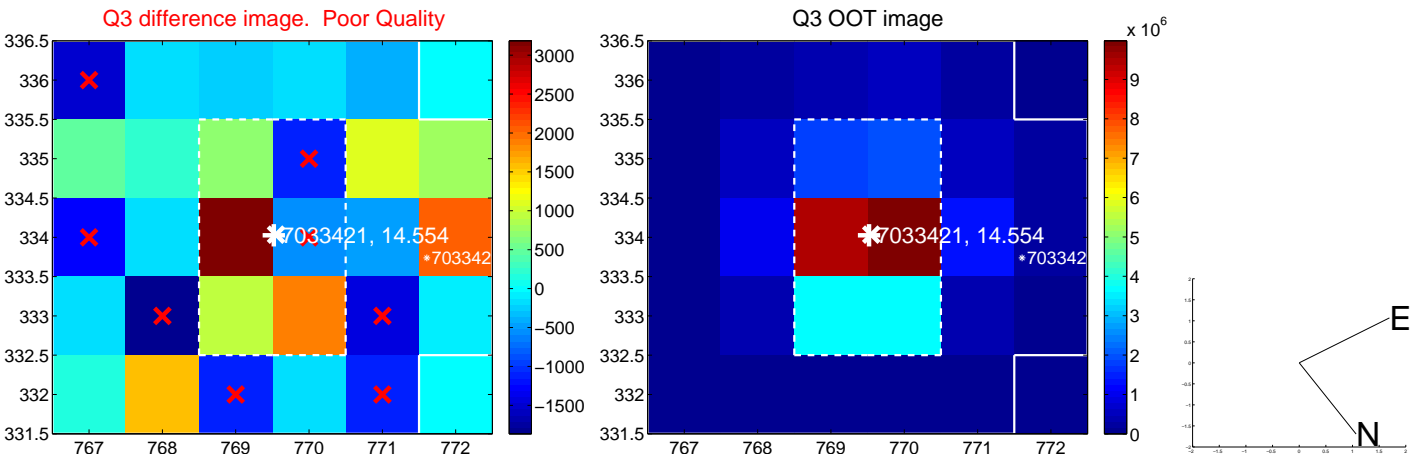
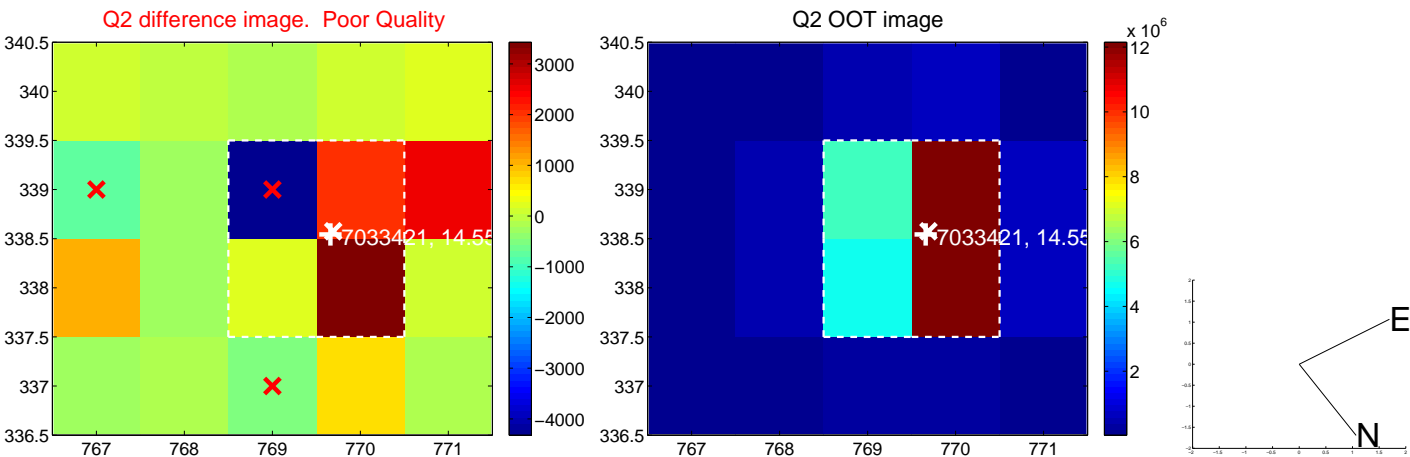
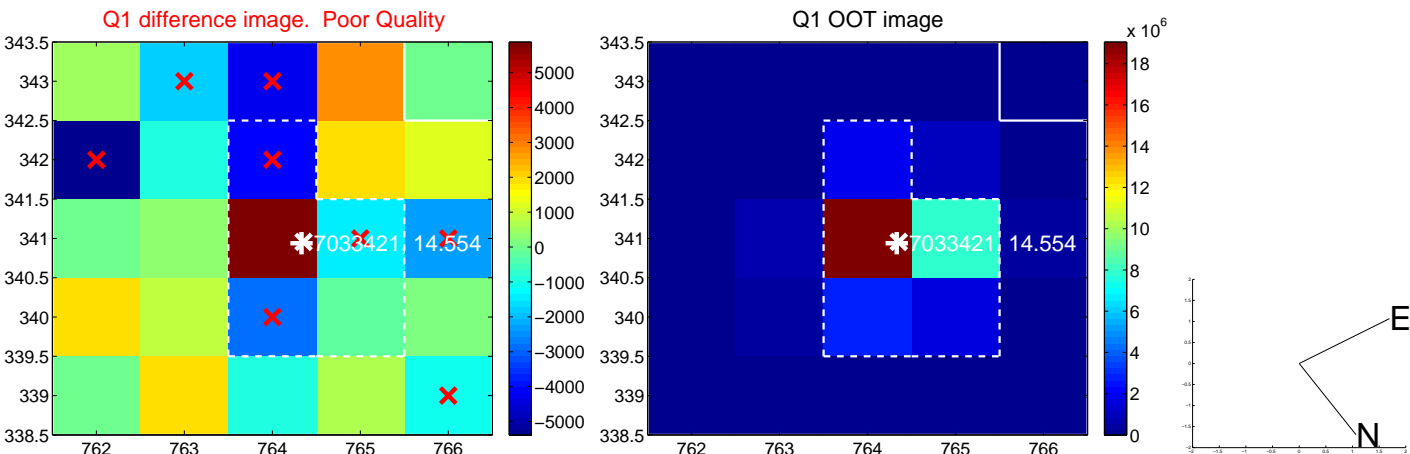
The direct PRF centroid is offset from the target star catalog position by about 0.10 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$2.168 \pm 2.731$	0.79	$1.490 \pm 1.380$	$1.575 \pm 3.526$
PRF-fit source offset from KIC position	$2.080 \pm 2.788$	0.75	$1.394 \pm 1.401$	$1.544 \pm 3.537$
photometric centroid source offset	$0.12 \pm 0.32$	0.37	$-0.09 \pm 0.32$	$-0.08 \pm 0.33$

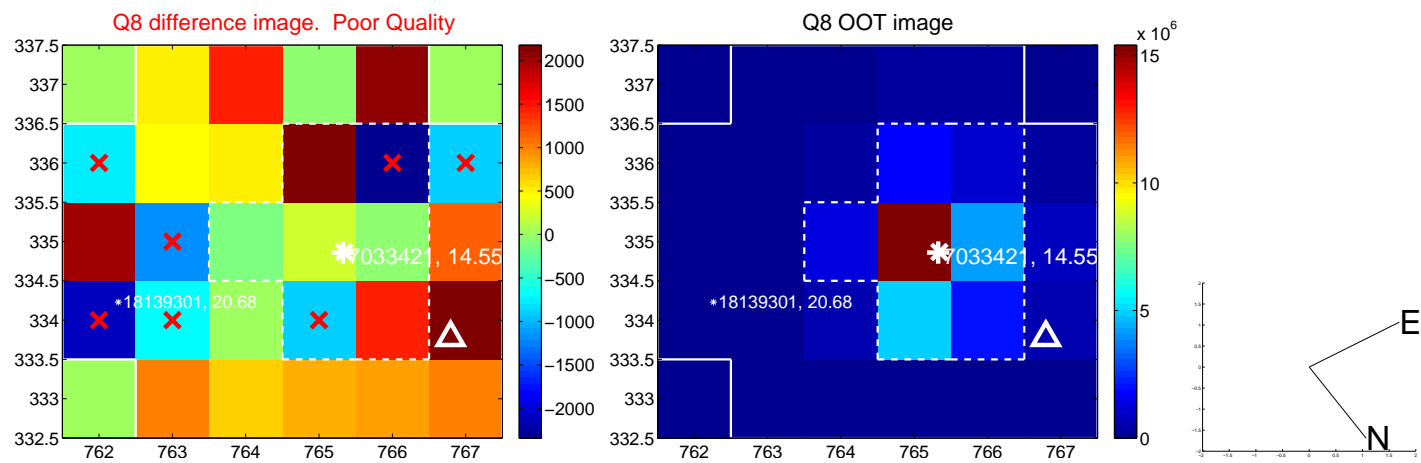
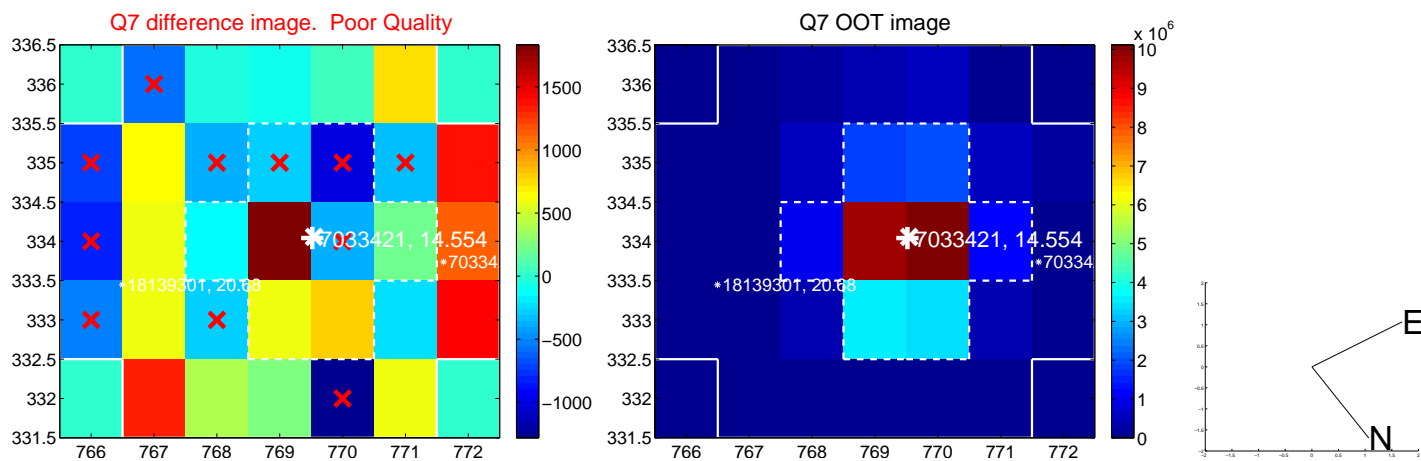
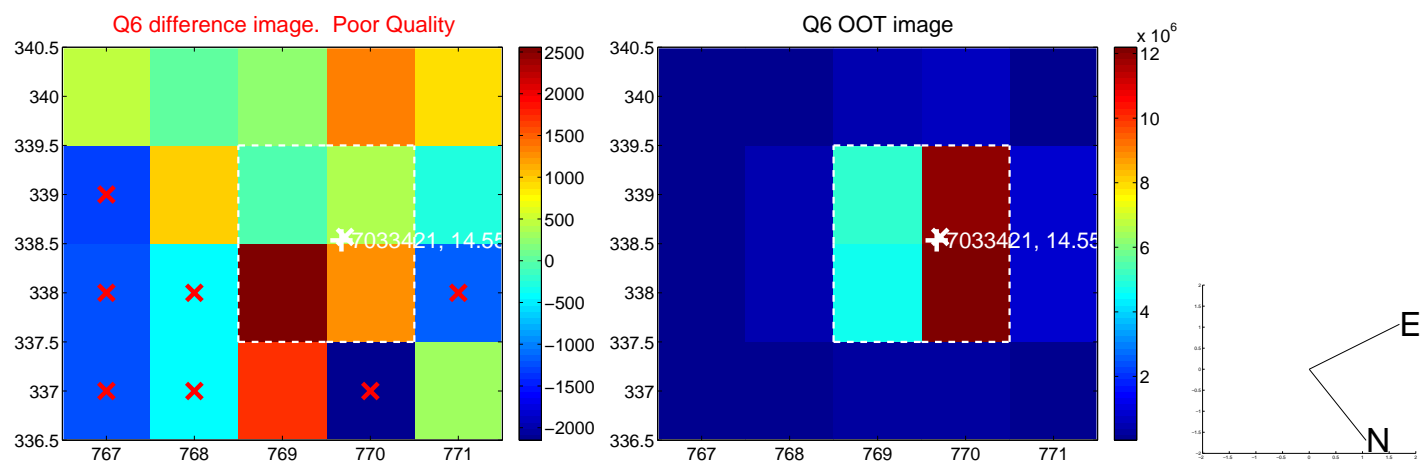
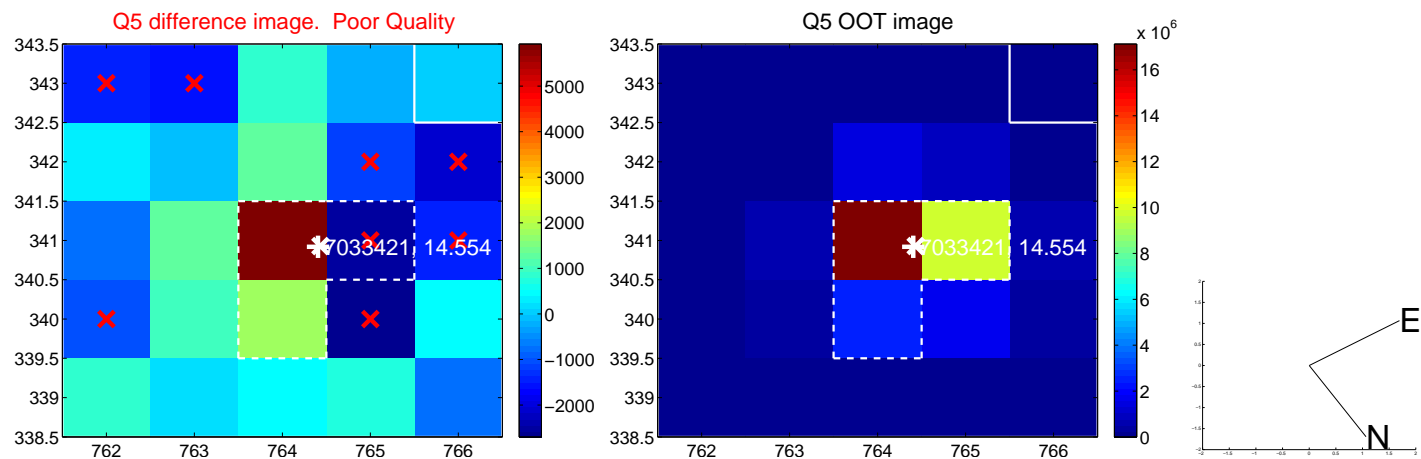


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

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

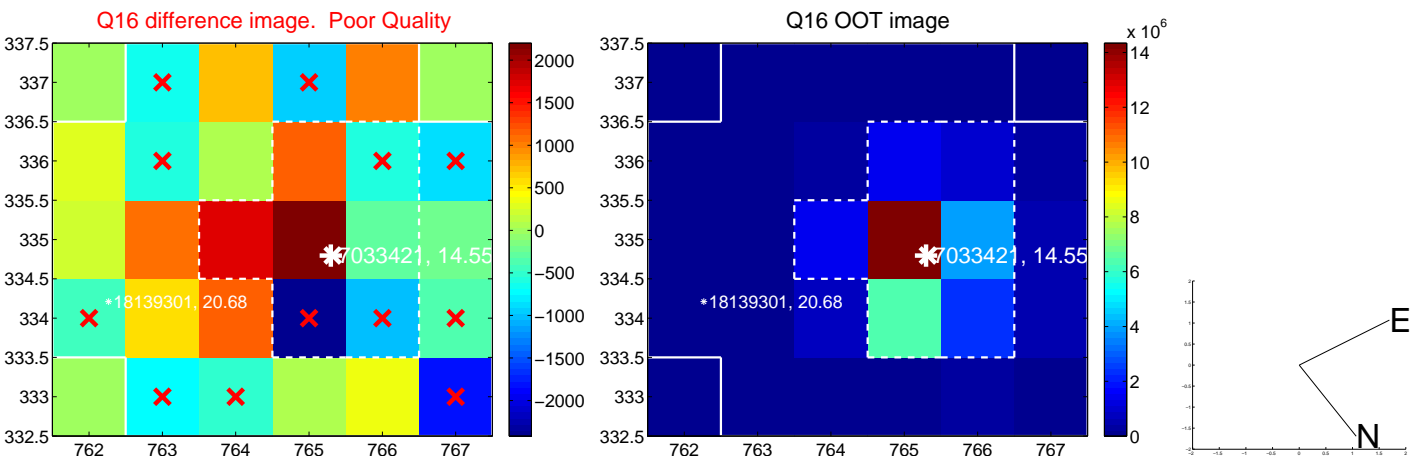
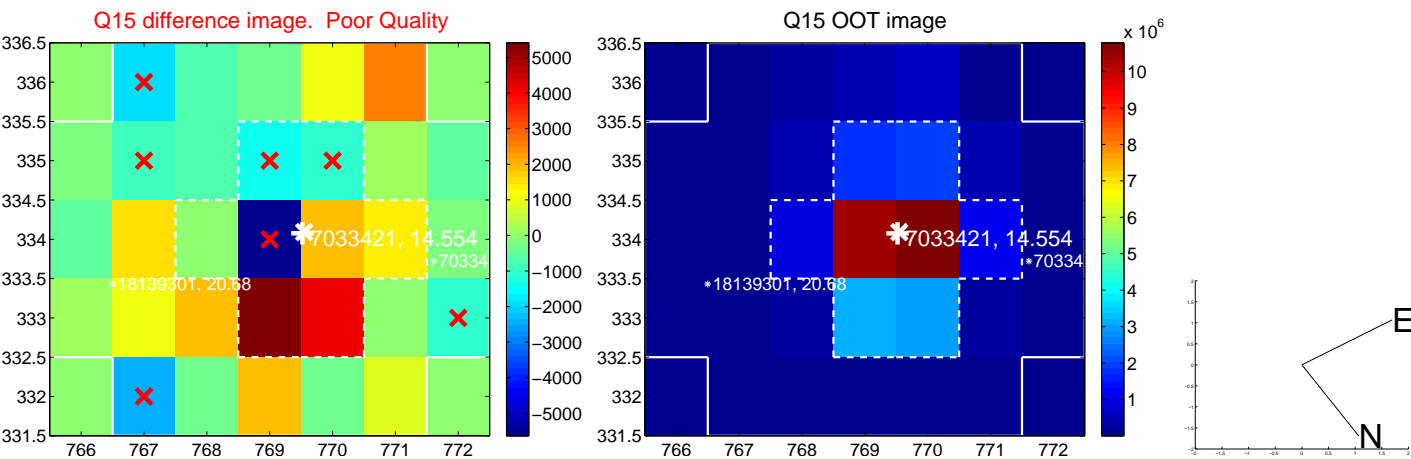
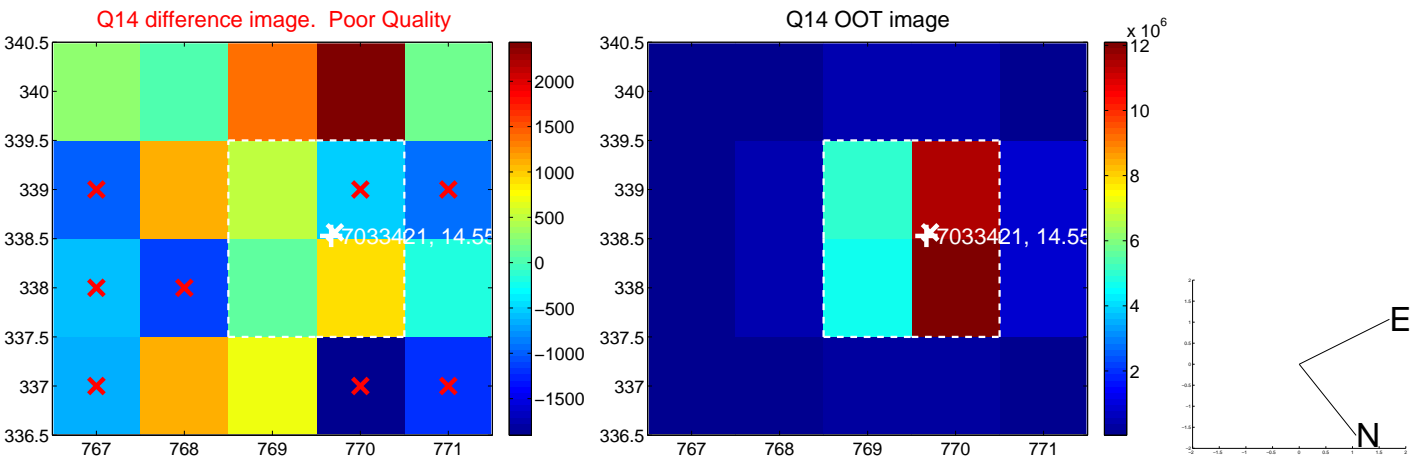
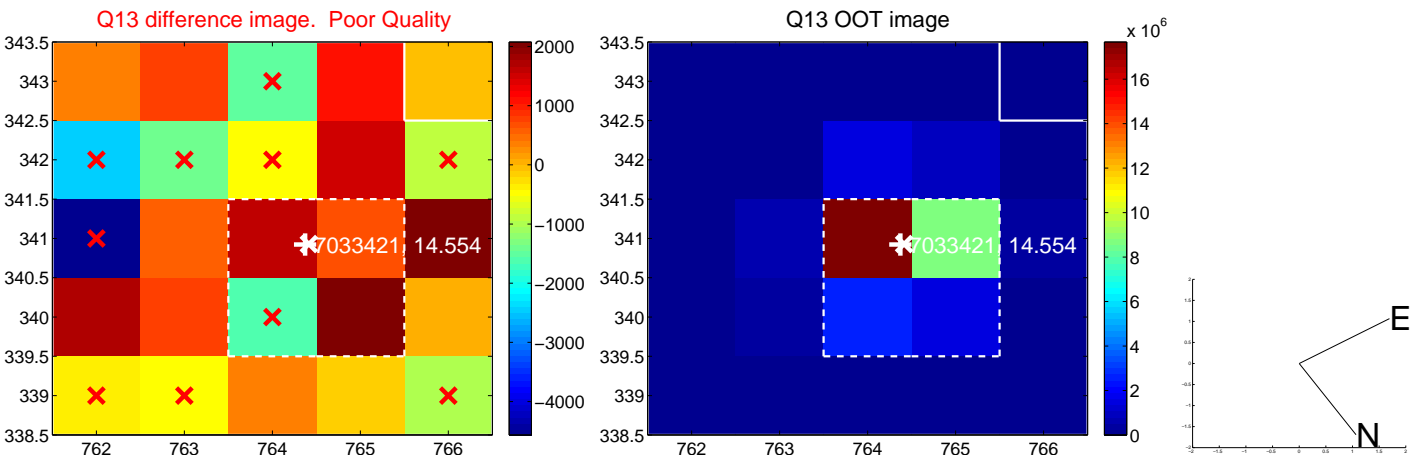


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

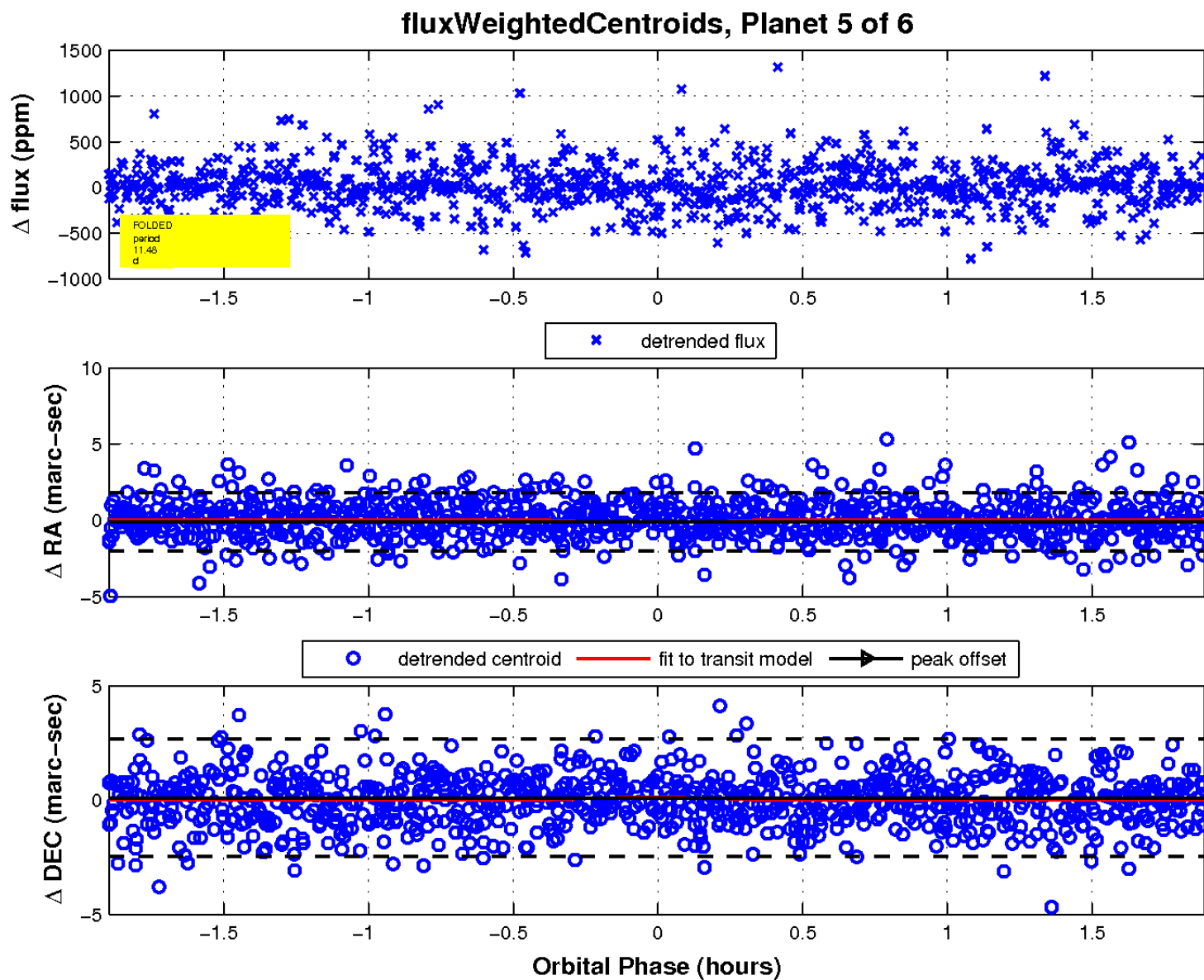
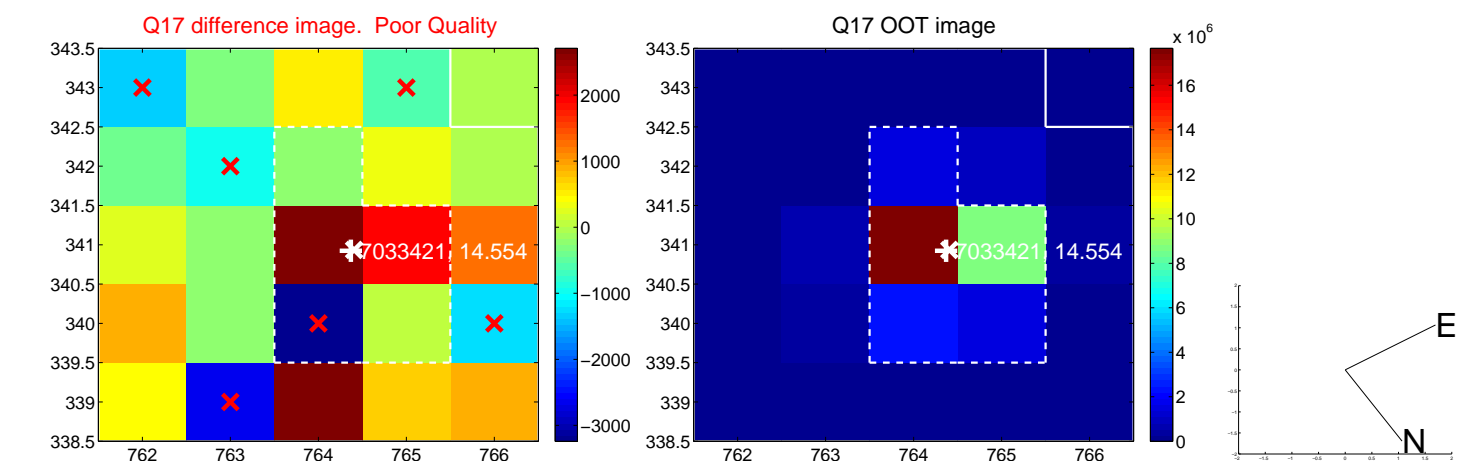




white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



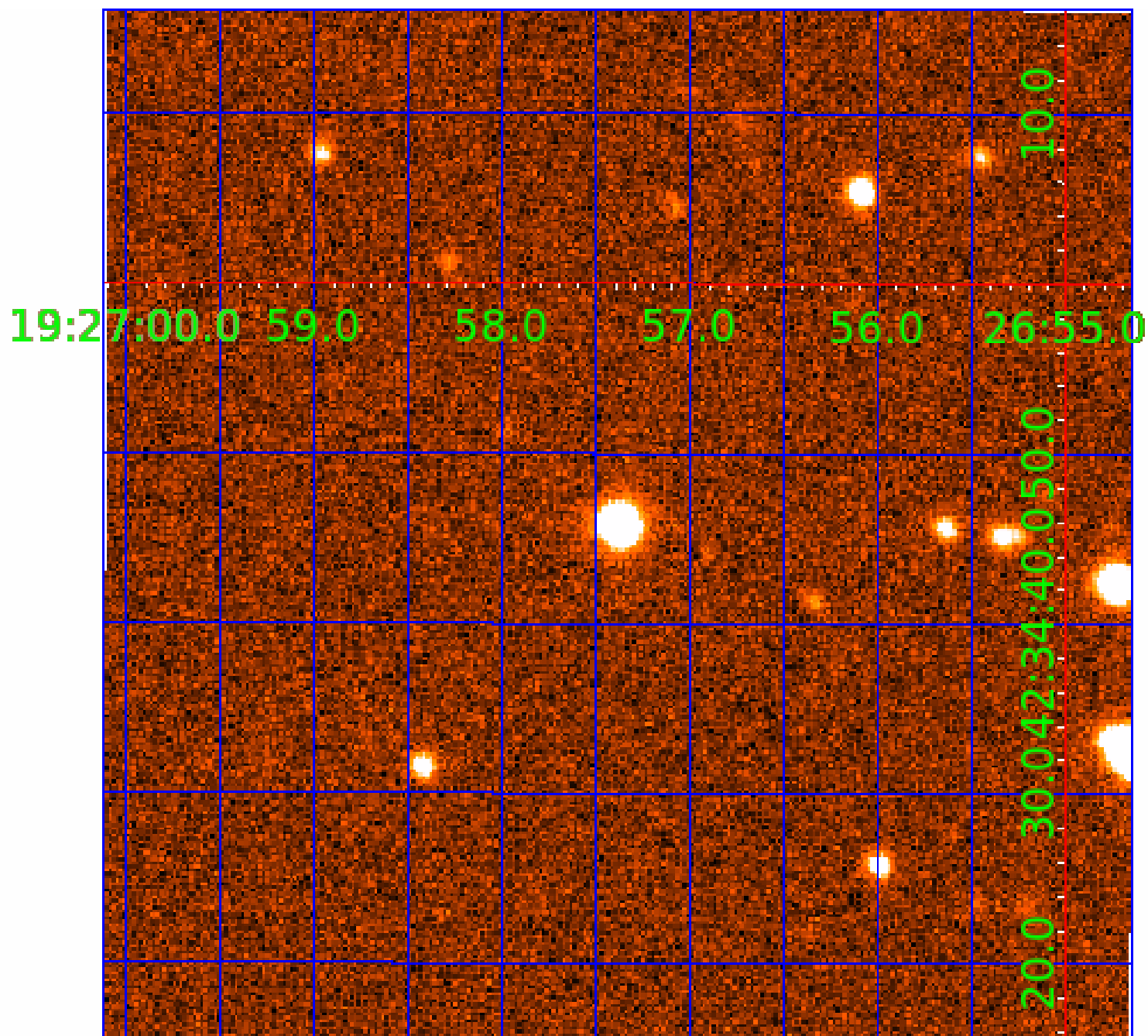
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.





UKIRT Image

Declination



# KIC 007033421

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007033421-01	OBS	No	0.566782	131.830789	21.3	4.198	9.1	8.9	1.10	6268	0.53	8313.50
007033421-02	OBS	No	11.913694	138.232044	112.7	7.991	11.9	5.1	1.10	6268	1.46	143.31
007033421-03	OBS	No	13.544097	143.754747	1410.3	1.500	14.6	-1.0	1.10	6268	4.15	120.78
007033421-04	OBS	No	15.553638	139.978699	454.6	1.704	8.3	7.3	1.10	6268	2.52	100.44
007033421-05	OBS	No	11.480759	141.435276	1139.1	0.633	12.2	10.6	1.10	6268	3.81	150.56
007033421-06	OBS	No	38.545818	133.798103	1384.6	0.876	13.6	17.4	1.10	6268	4.14	29.95

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007033421-01	OBS	FP	0.00	1	0	1	1	LPP_DV—CENT_UNRESOLVED_OFFSET—EPHEM_MATCH
007033421-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—CENT_FEW_DIFFS
007033421-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—NO_FITS—CENT_NOFITS
007033421-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV
007033421-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—CENT_FEW_DIFFS
007033421-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—CENT_FEW_DIFFS

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

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

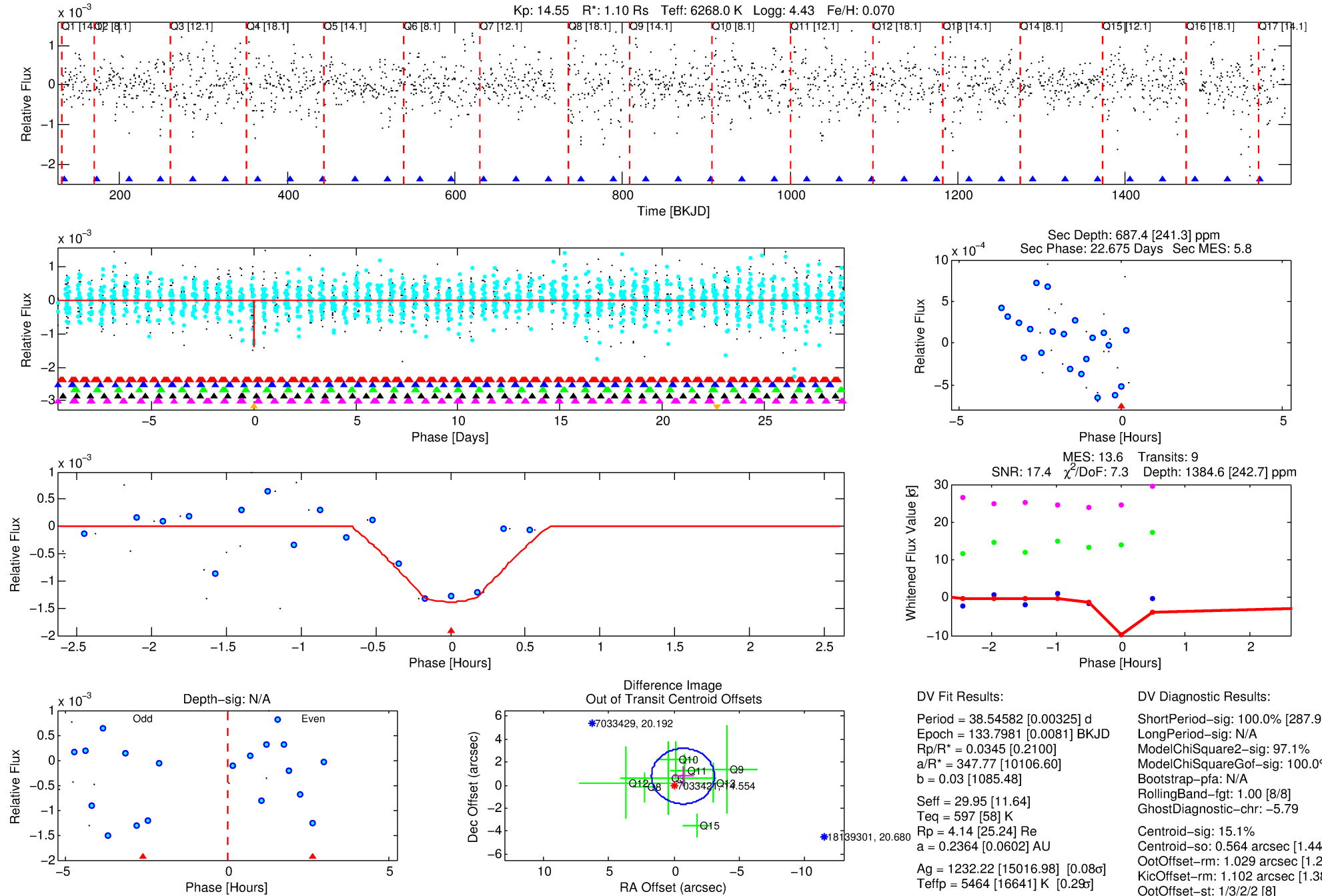
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 007033421-06

No Significant Match Found

# DV One-Page Summary

KIC: 7033421 Candidate: 6 of 6 Period: 38.546 d



## DV Fit Results:

Period = 38.54582 [0.00325] d  
Epoch = 133.7981 [0.0081] BKJD  
Rp/R\* = 0.0345 [0.2100]  
a/R\* = 347.77 [10106.60]  
b = 0.03 [1085.48]  
Seff = 29.95 [11.64]  
Teq = 597 [58] K  
Rp = 4.14 [25.24] Re  
a = 0.2364 [0.0602] AU  
Ag = 1232.22 [15016.98] [0.08] $\sigma$   
Teffp = 5464 [16641] K [0.29] $\sigma$

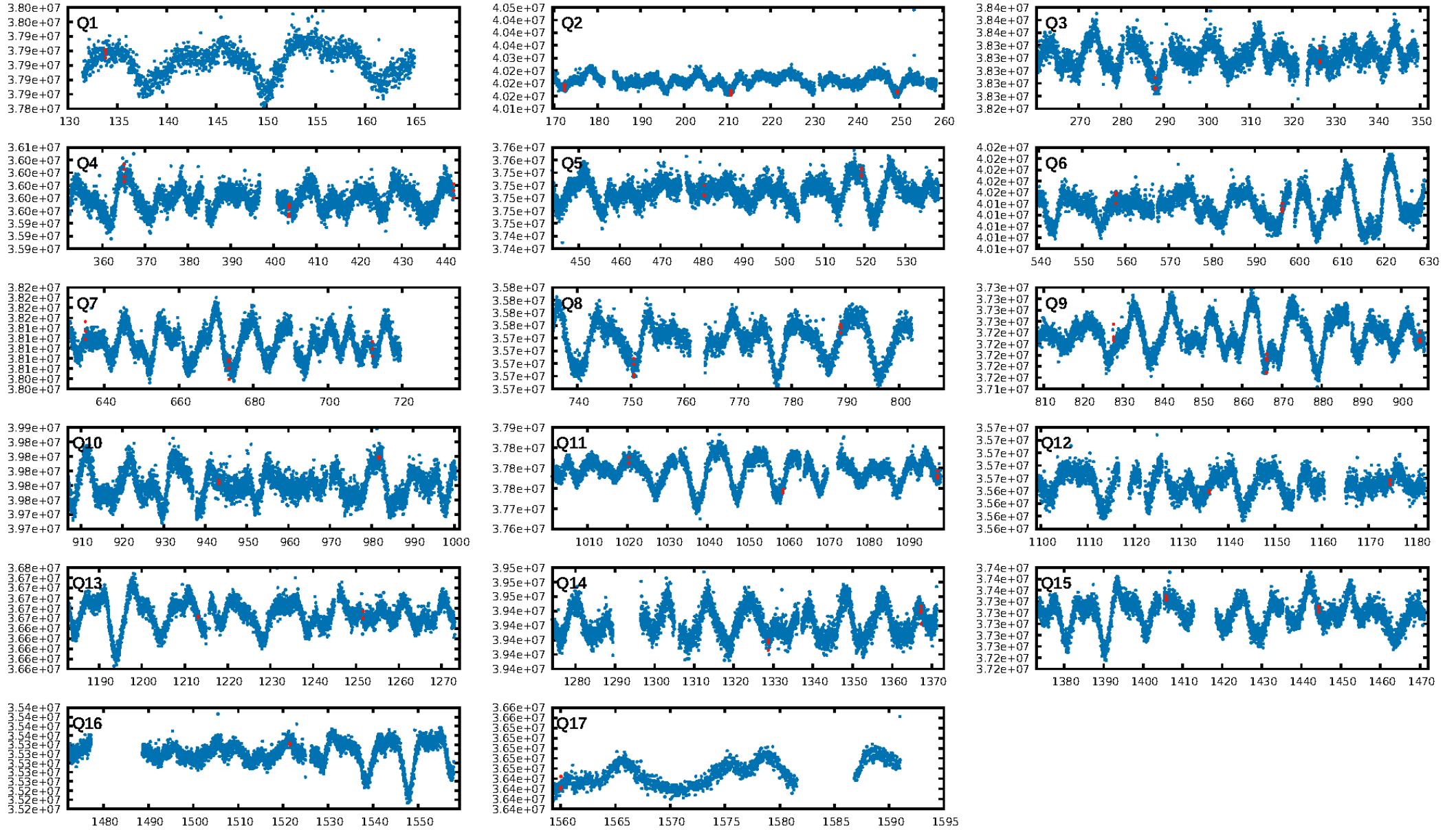
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [287.98] $\sigma$   
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 97.1%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [8/8]  
GhostDiagnostic-chr: -5.79  
Centroid-sig: 15.1%  
Centroid-so: 0.564 arcsec [1.44] $\sigma$   
OotOffset-rm: 1.029 arcsec [1.28] $\sigma$   
KicOffset-rm: 1.102 arcsec [1.38] $\sigma$   
OotOffset-st: 1/3/2/2 [8]  
KicOffset-st: 1/3/2/2 [8]  
DiffImageQuality-fgm: 0.00 [0/8]  
DiffImageOverlap-fno: 0.00 [0/16]

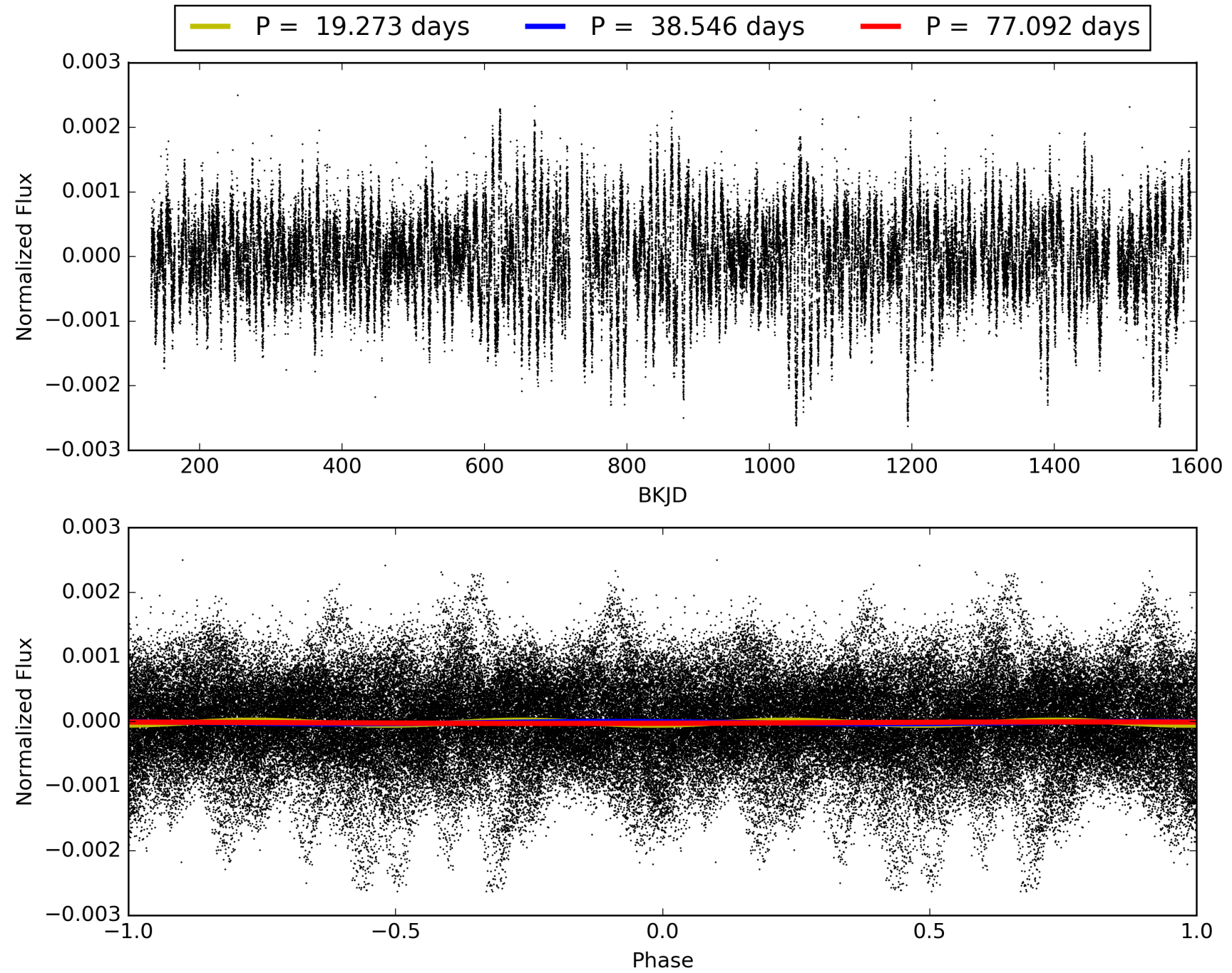
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 14:16:49 Z

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

# TCE 007033421-06, PDC Light Curves

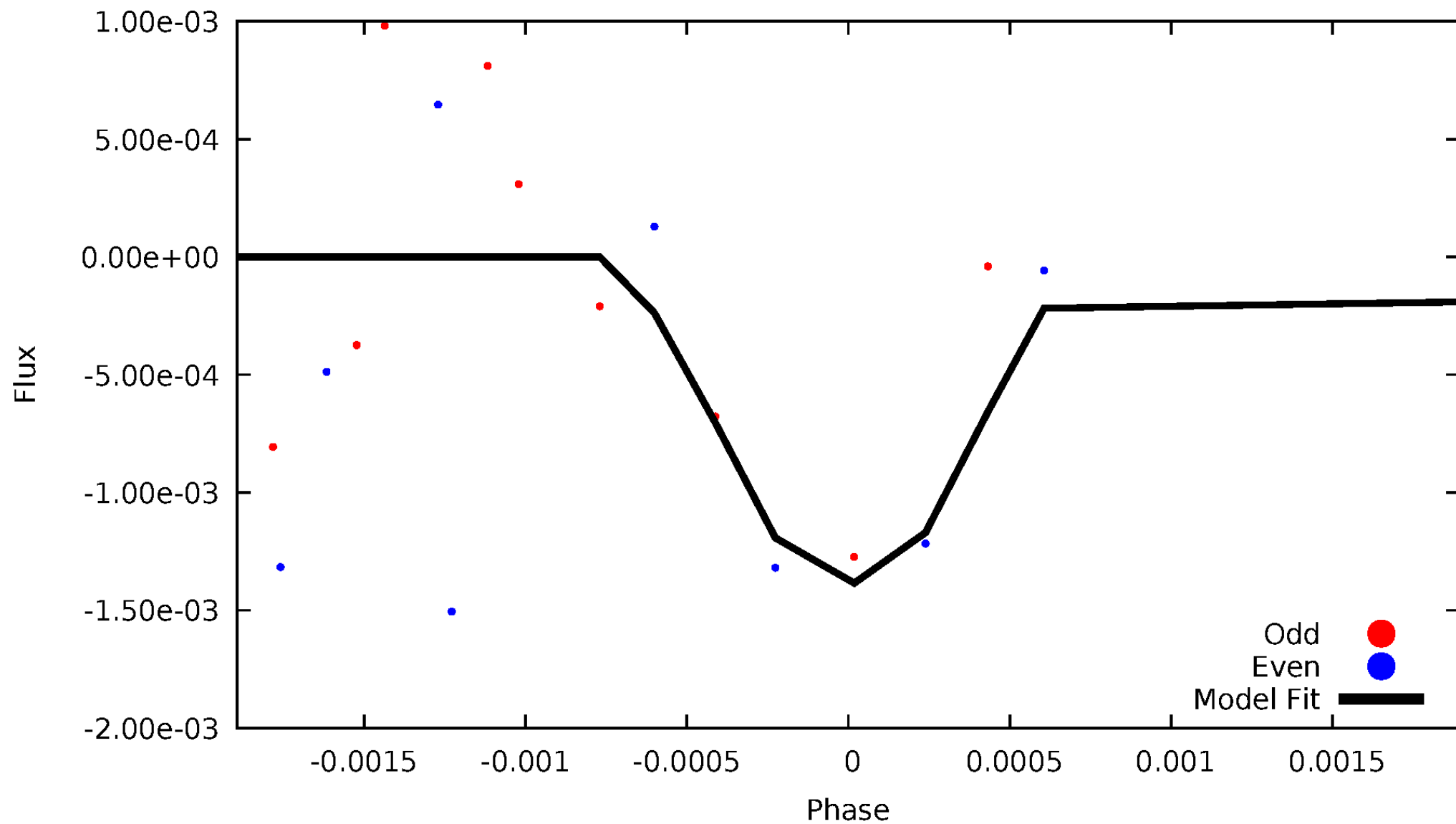


TCE 007033421-06



# DV Odd/Even

TCE 007033421-06





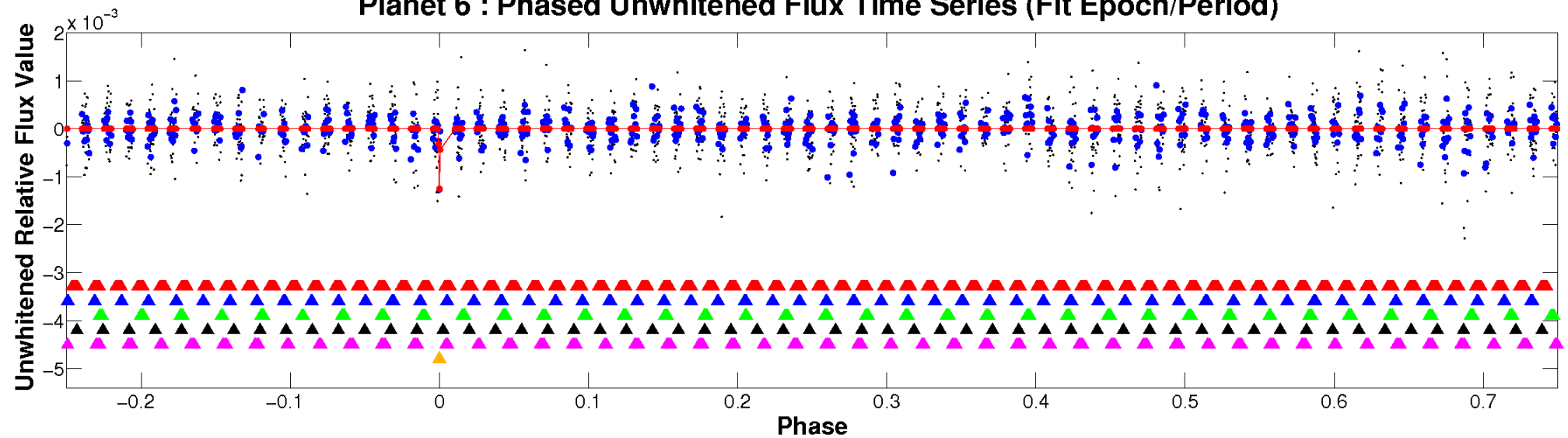
ALT Odd/Even

This plot does not exist for this TCE.

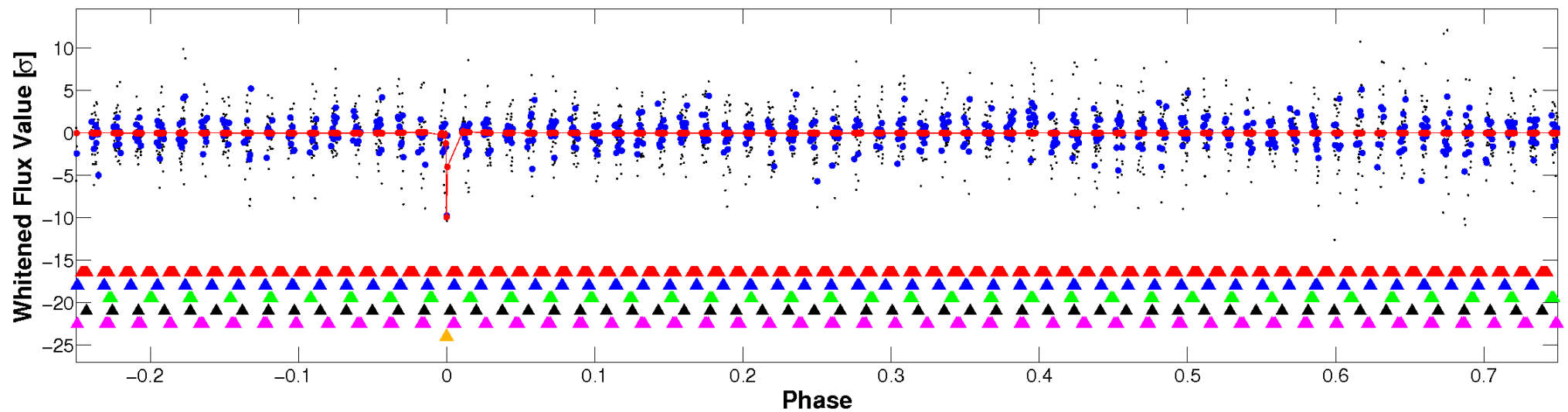


# Non-Whitened Vs. Whitened Light Curve

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

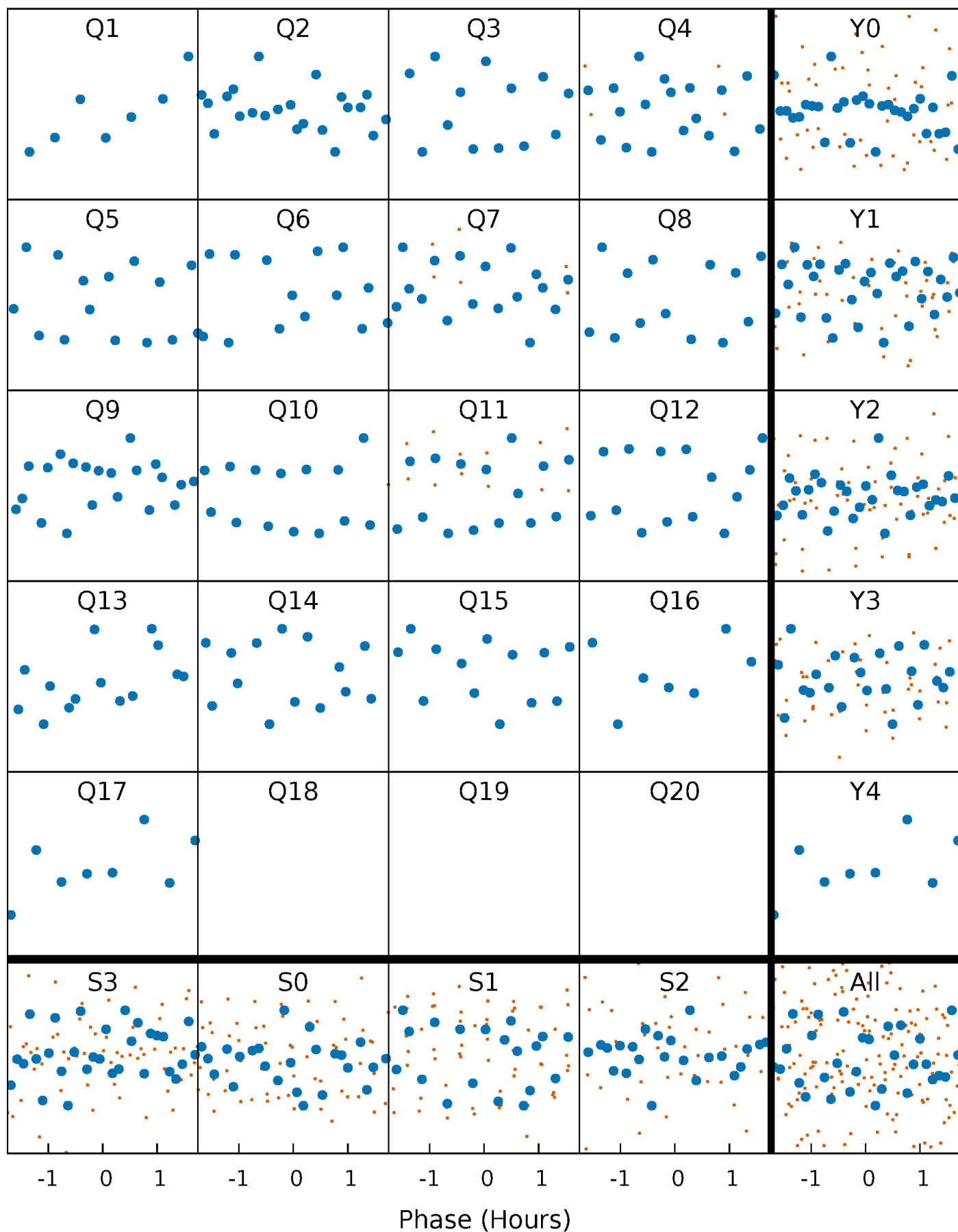


## Planet 6 : Phased Whitened Flux Time Series (Fit Epoch/Period)



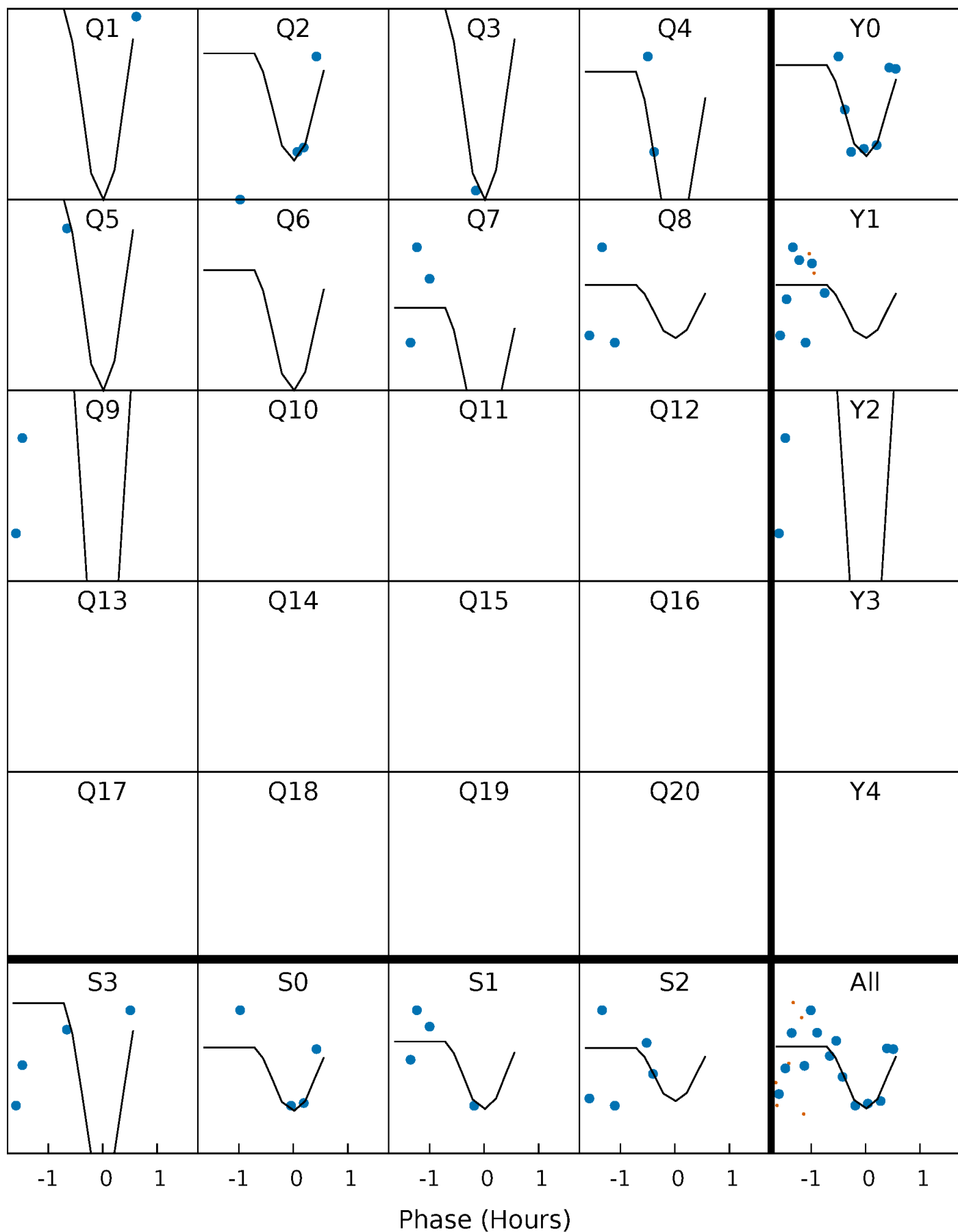
# PDC Quarter-Phased Transit Curves

TCE 007033421-06 P= 38.545818 Days  $T_0=133.798103$  (BKJD)



# DV Quarter-Phased Transit Curves

TCE 007033421-06 P= 38.545818 Days  $T_0=133.798103$  (BKJD)

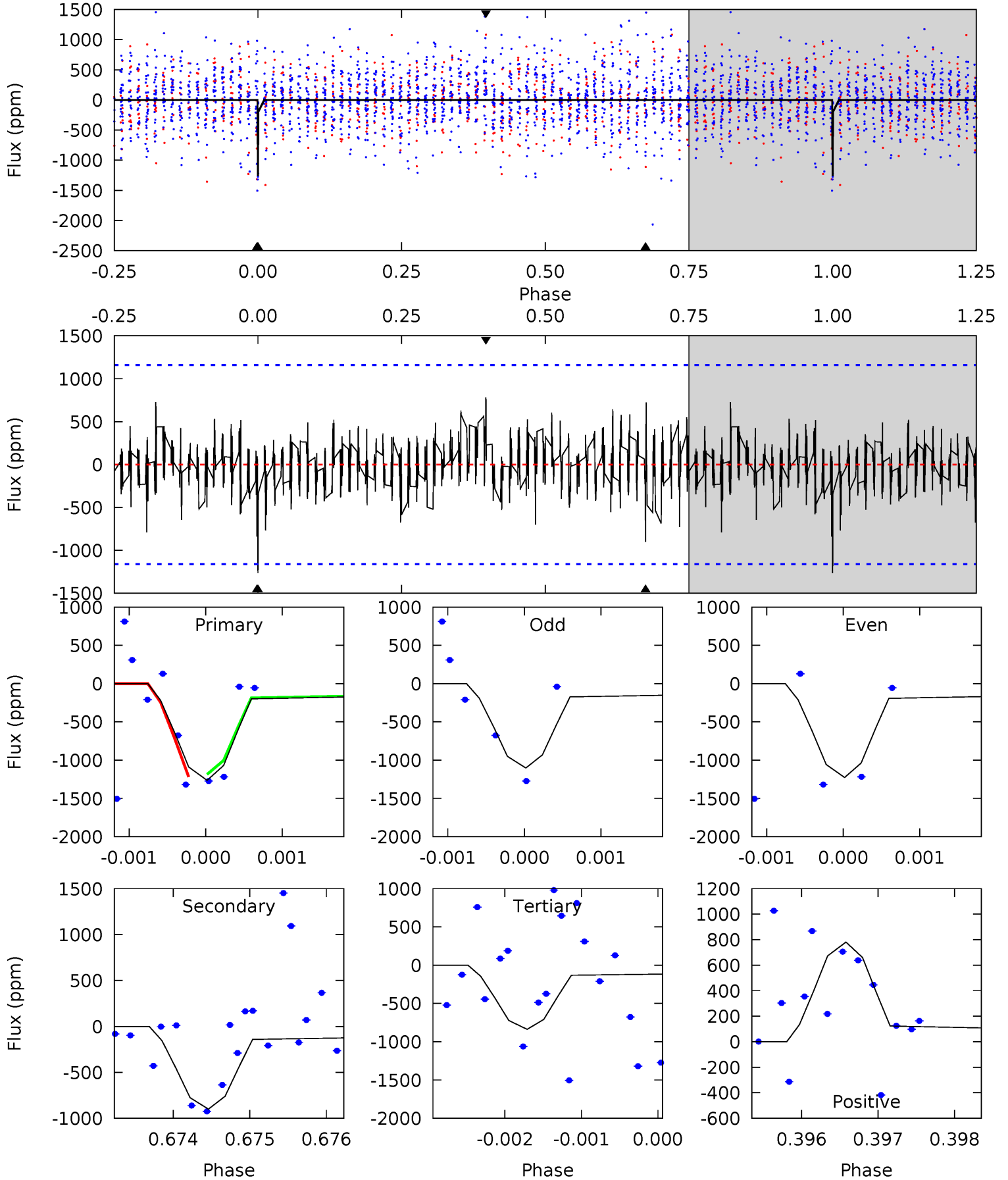


This plot does not exist for this TCE.

# DV Model-Shift Uniqueness Test

007033421-06, P = 38.545818 Days, E = 95.252285 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
5.94	4.23	3.94	3.67	5.45	3.29	1.13	2.00	2.27	0.29	0.56	0.29	0	0.38	0.07



## Alt Model-Shift Uniqueness Test

This plot does not exist for this TCE.

### Stellar Parameters For KIC 007033421

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6268^{+174}_{-196}$	$4.429^{+0.050}_{-0.200}$	$0.070^{+0.250}_{-0.350}$	$1.100^{+0.335}_{-0.112}$	$1.188^{+0.141}_{-0.173}$	$1.257^{+0.338}_{-0.644}$
	+3%/-3%	+1%/-5%	+357%/-500%	+30%/-10%	+12%/-15%	+27%/-51%
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 007033421-06 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-900 \pm 213$	$19.96^{+21.38}_{-14.19}$	$852^{+64}_{-42}$	$3290^{+1836}_{-618}$	$68^{+730}_{-53}$
Alt.	N/A	N/A	N/A	N/A	N/A

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

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

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

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

## DV Centroid Data

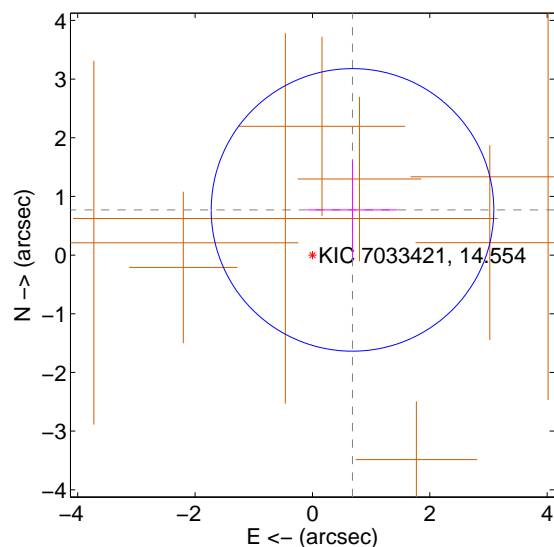
Supplemental centroid analysis for 007033421-06. Kepler magnitude: 14.55. Transit SNR 17.43

There are 0 quarters with good PRF difference image offsets

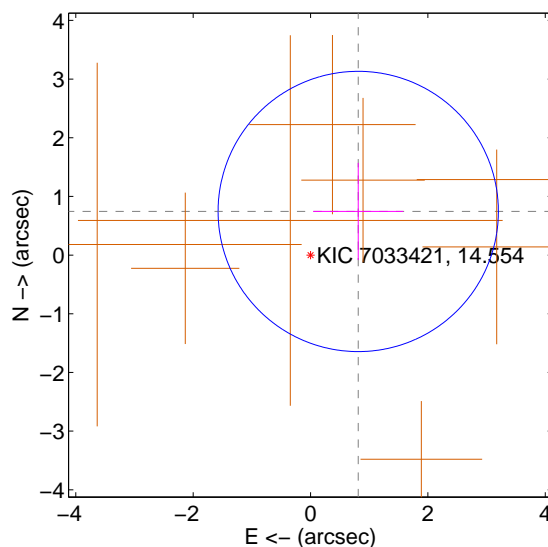
The direct PRF centroid is offset from the target star catalog position by about 0.12 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.029 \pm 0.803$	1.28	$-0.683 \pm 0.767$	$0.770 \pm 0.829$
PRF-fit source offset from KIC position	$1.102 \pm 0.796$	1.38	$-0.813 \pm 0.767$	$0.744 \pm 0.829$
photometric centroid source offset	$0.56 \pm 0.39$	1.44	$-0.47 \pm 0.39$	$0.31 \pm 0.40$

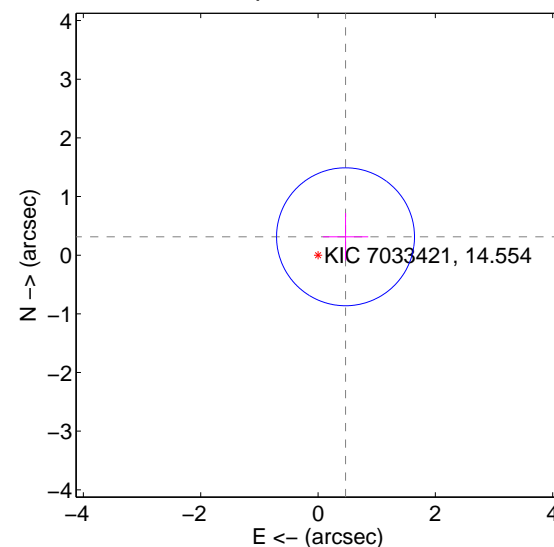
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



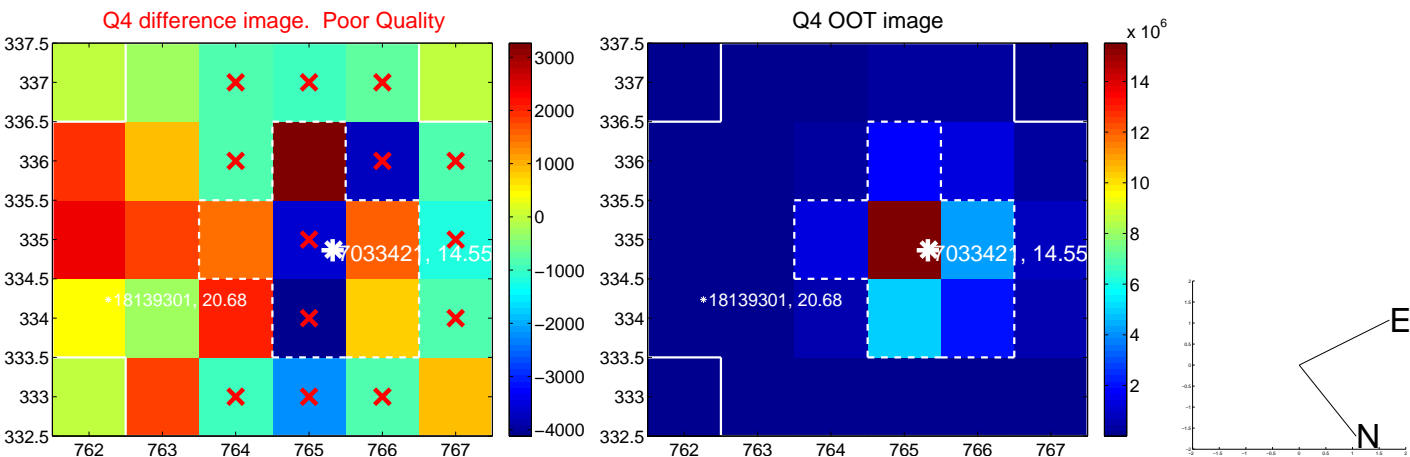
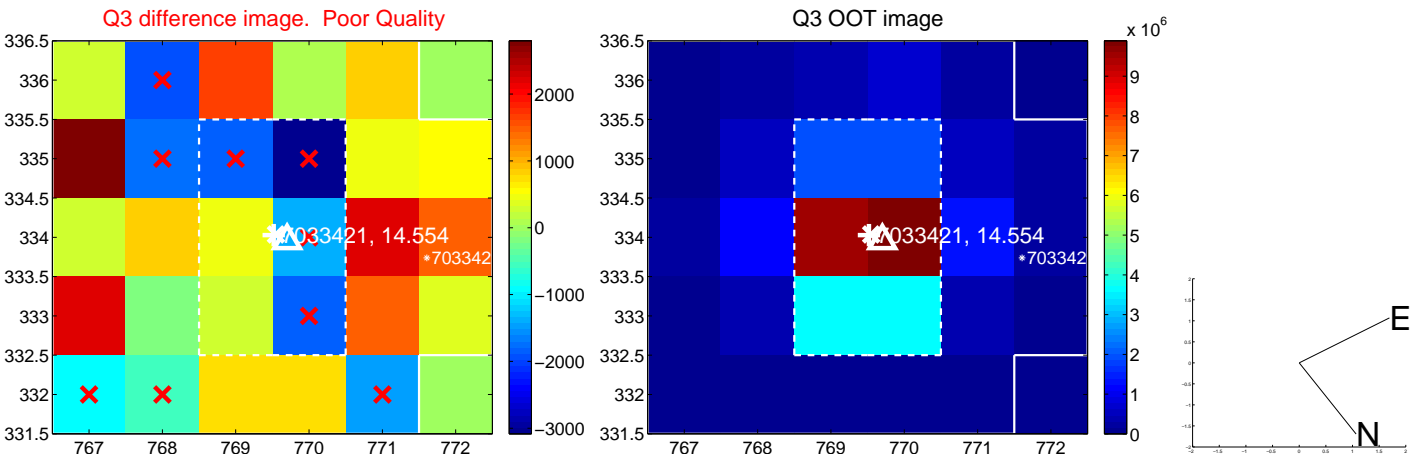
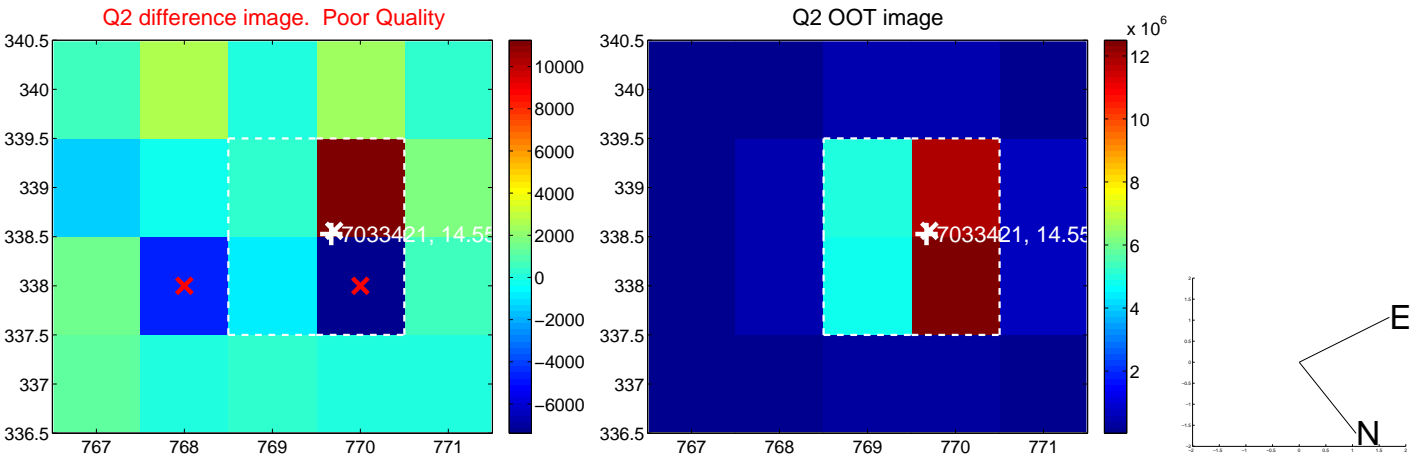
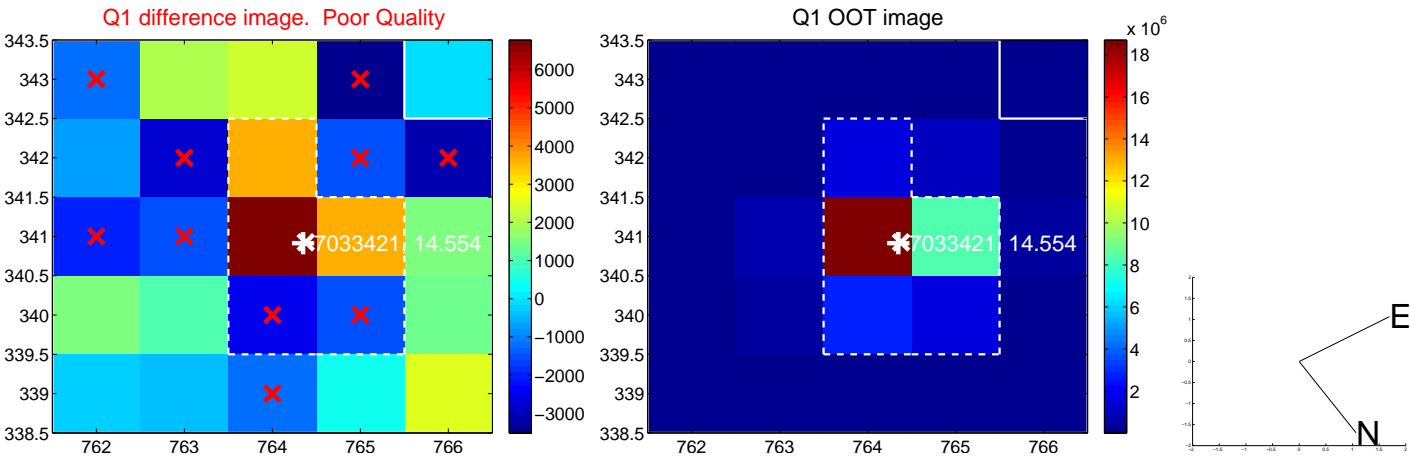
offset from photometric centroids



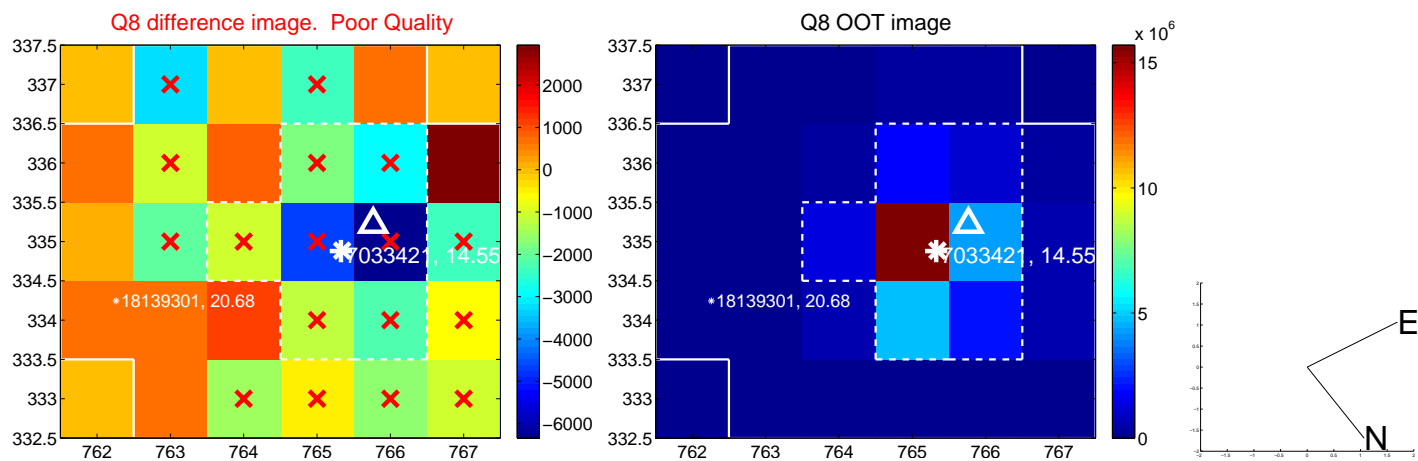
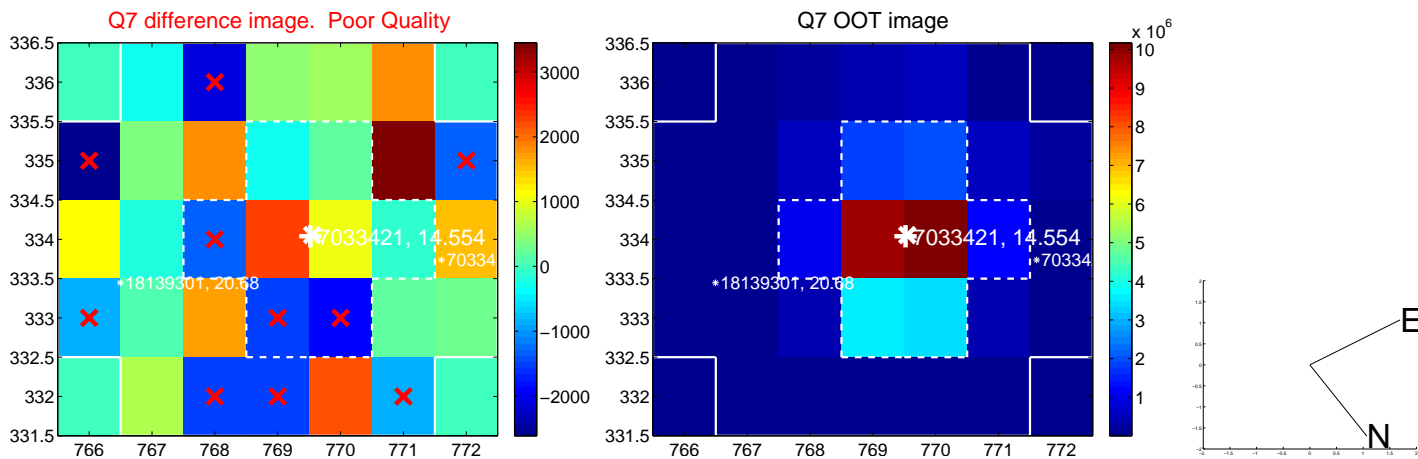
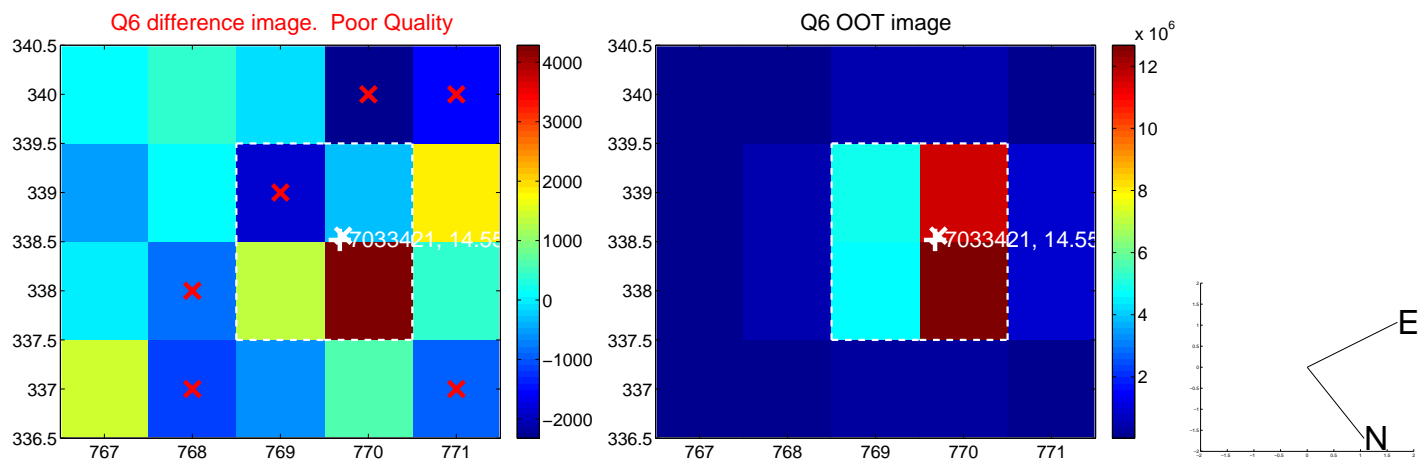
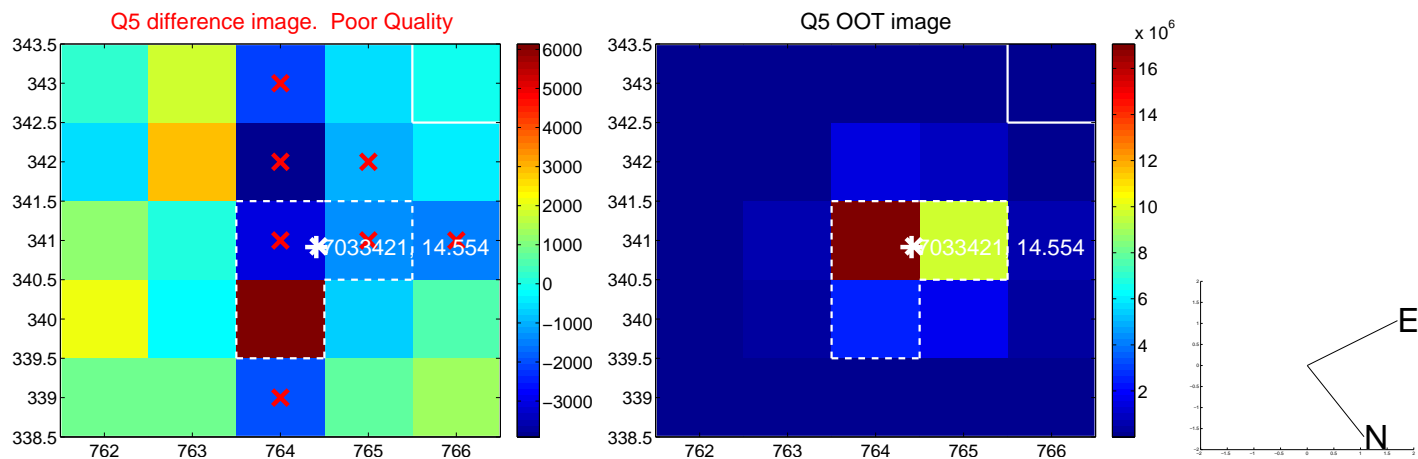
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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



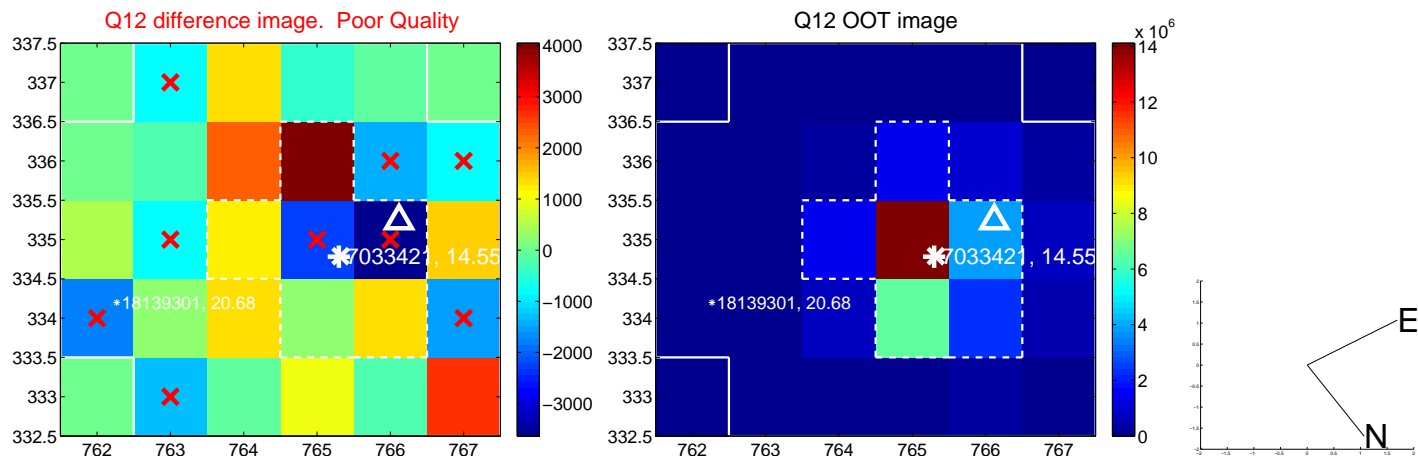
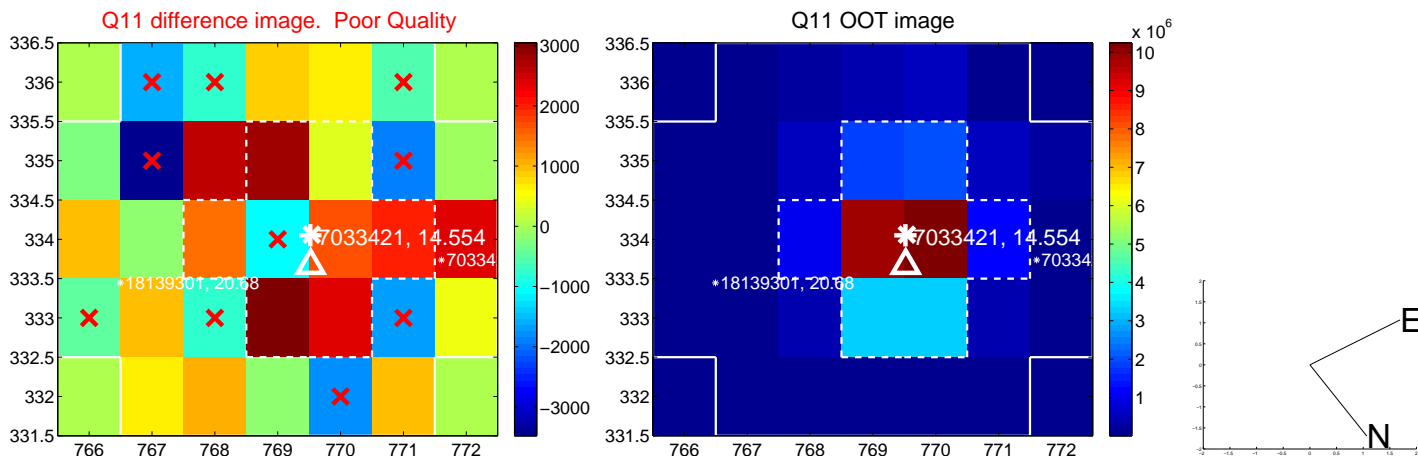
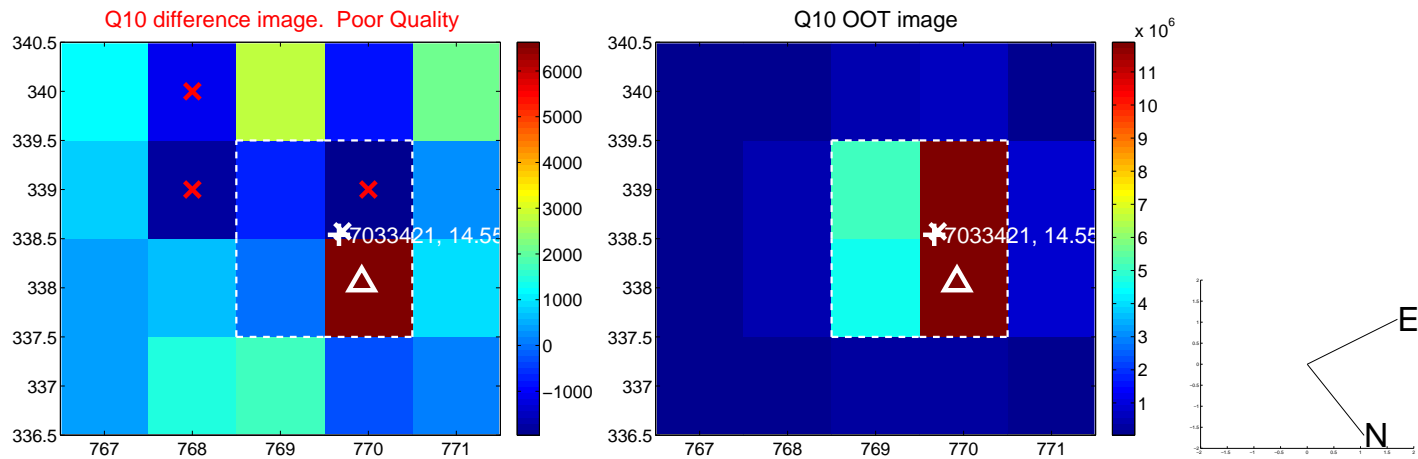
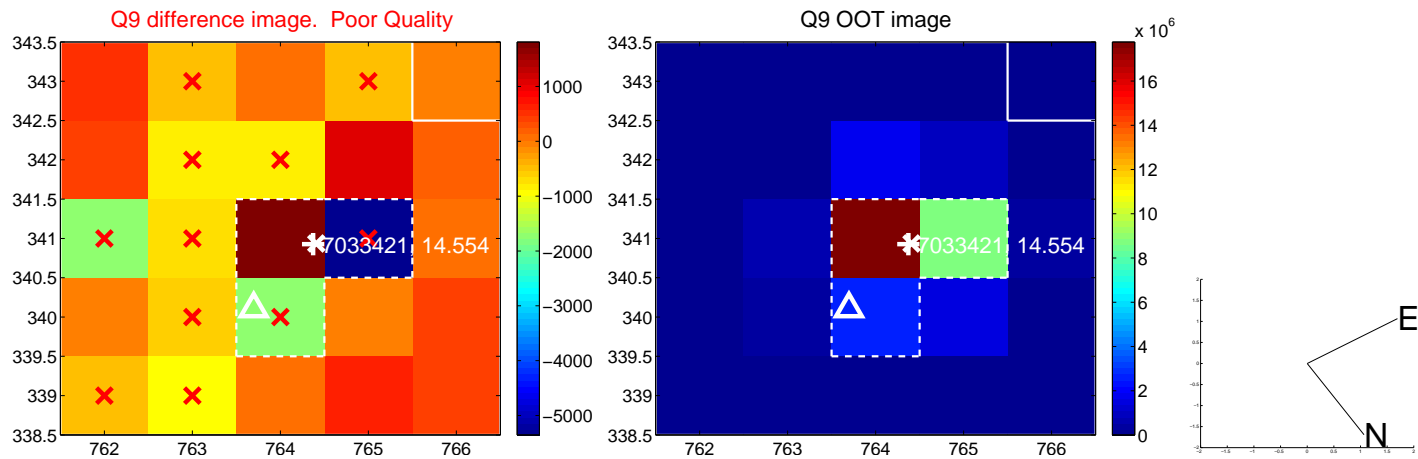
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



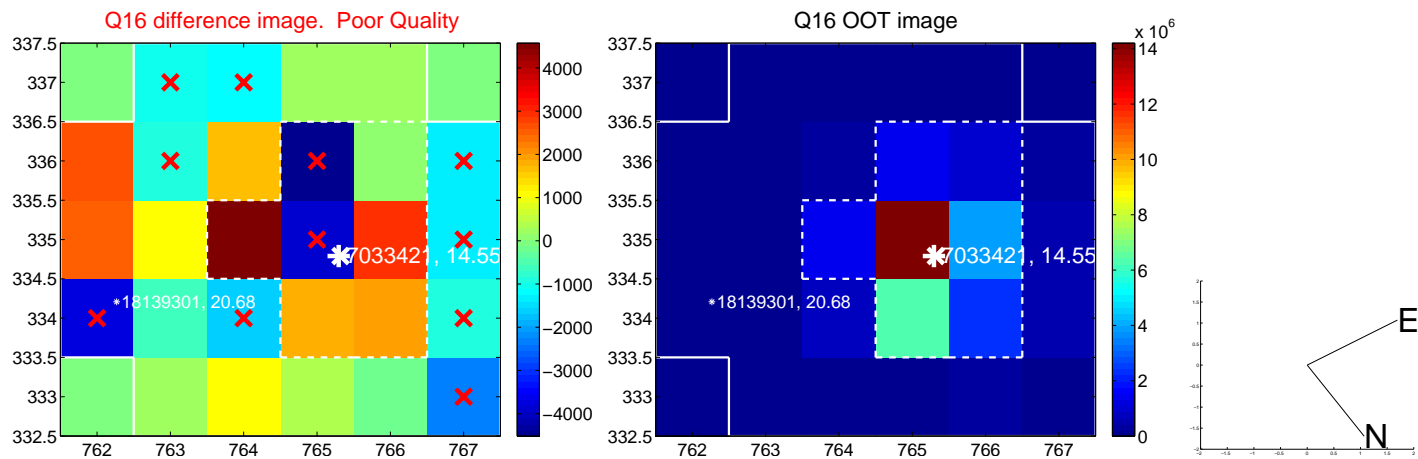
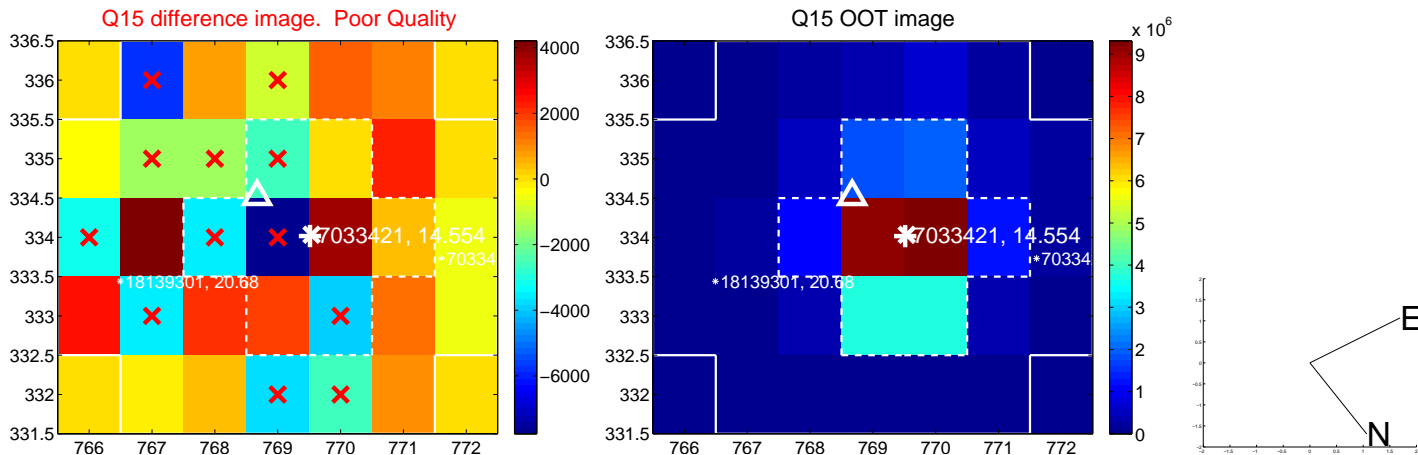
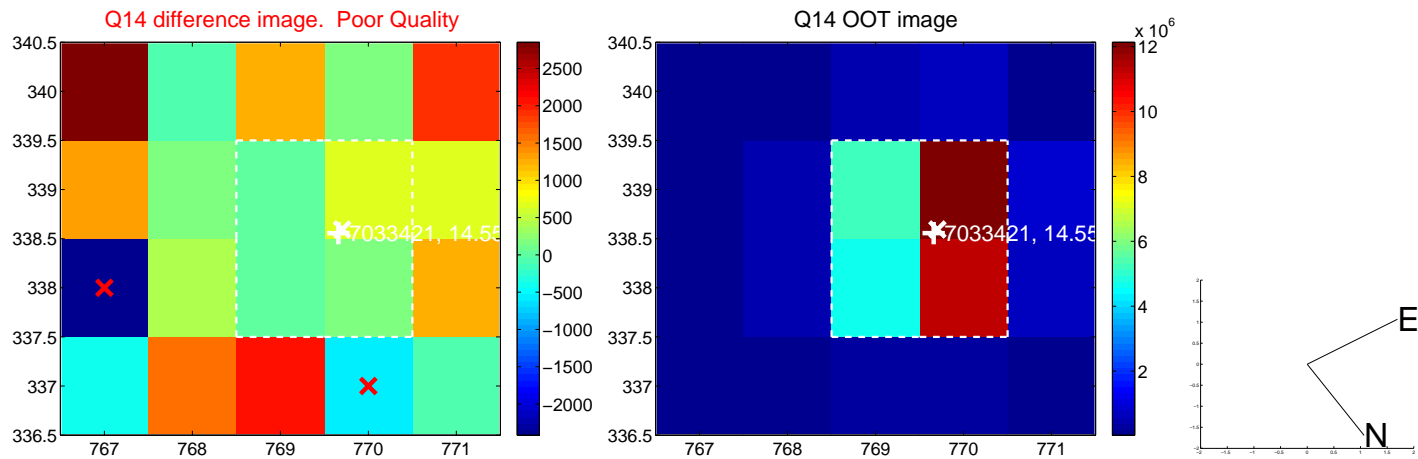
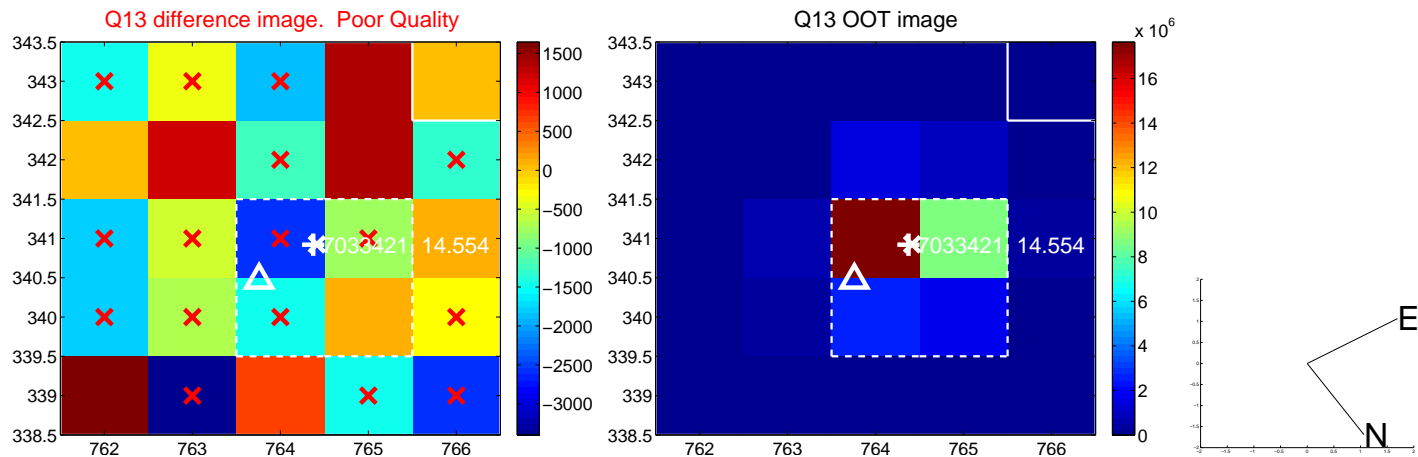
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



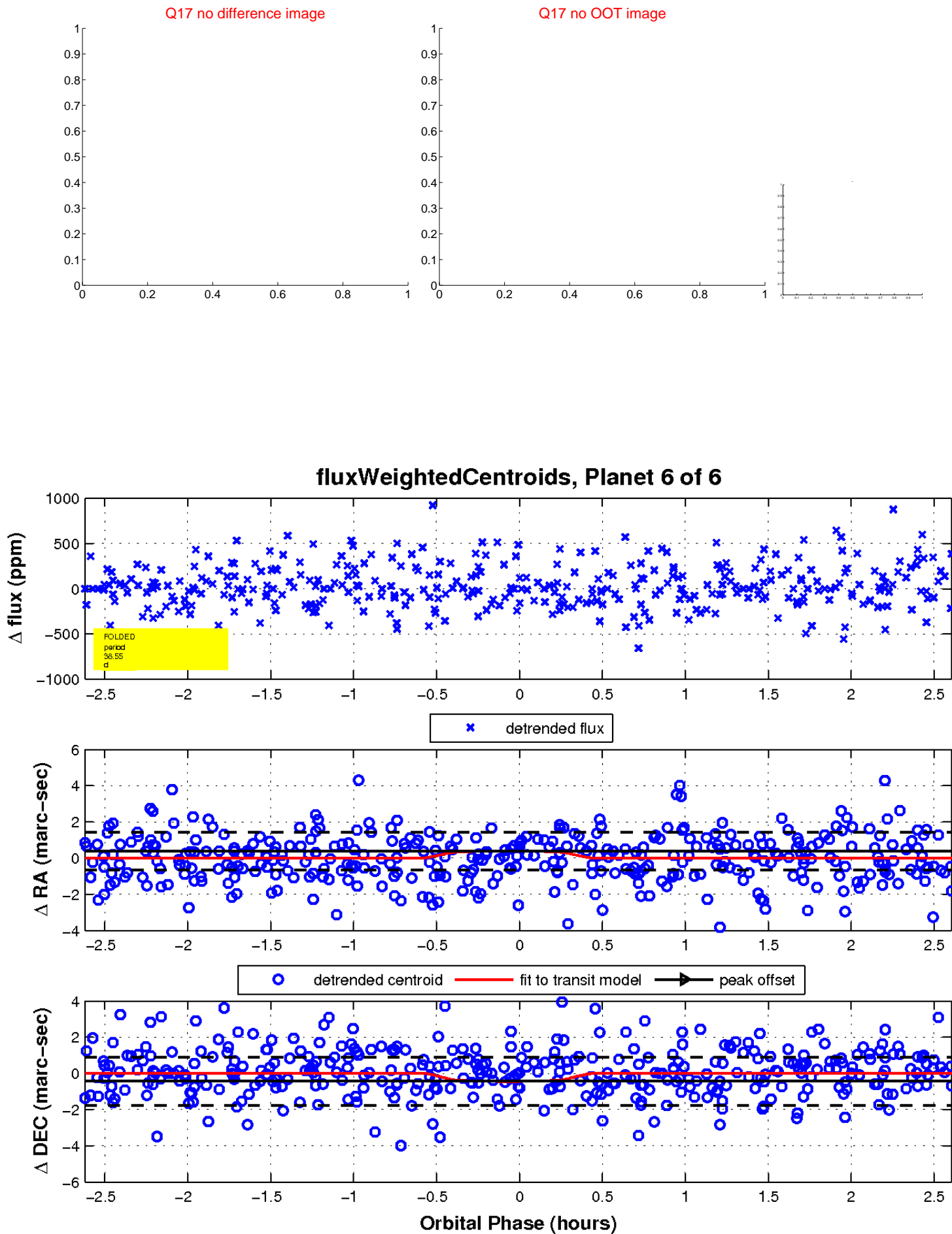
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



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



UKIRT Image

Declination

