

# KIC 012458666

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
012458666-01	OBS	No	5.716316	134.232263	27.7	18.670	8.4	7.5	3.60	6826	2.63	4118.11
012458666-02	OBS	No	600.245378	141.416459	202.5	20.240	9.7	5.4	3.60	6826	6.07	8.31
012458666-03	OBS	No	196.091145	254.576270	211.8	5.516	7.4	7.9	3.60	6826	5.89	36.95

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
012458666-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV—CENT_SATURATED
012458666-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—INCONSISTENT_TRANS—CENT_SATURATED
012458666-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—CENT_SATURATED

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

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

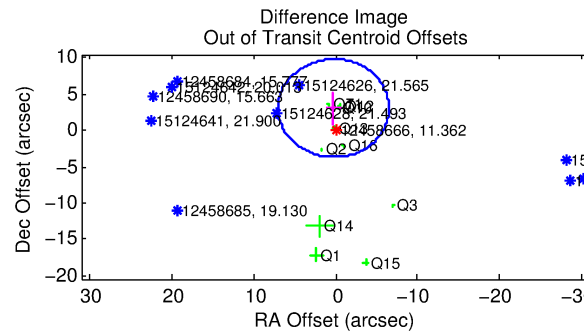
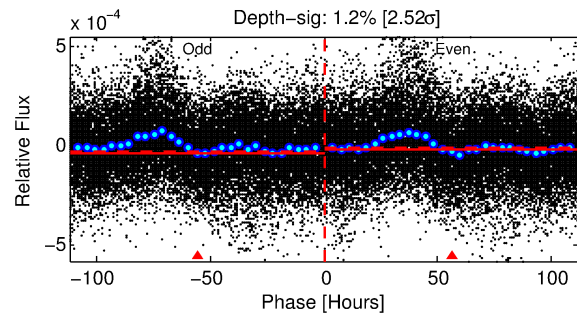
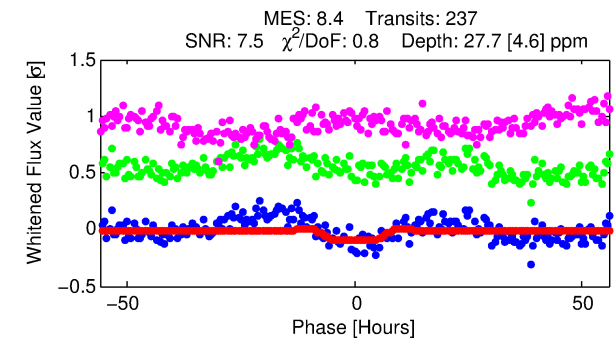
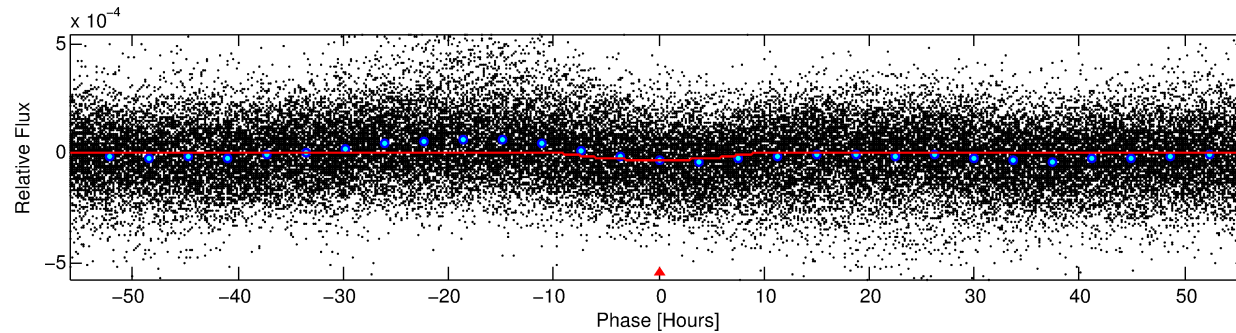
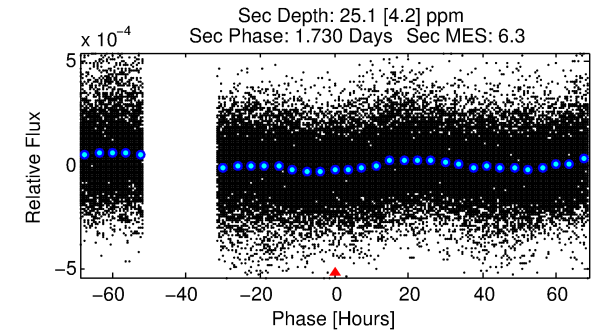
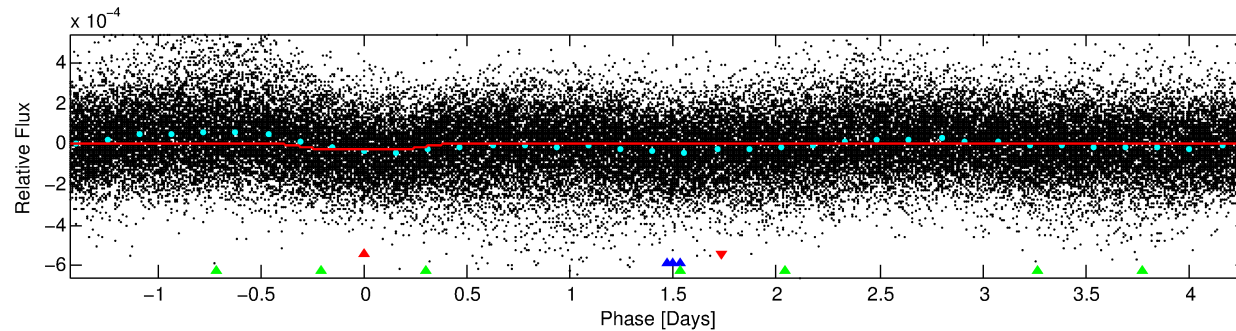
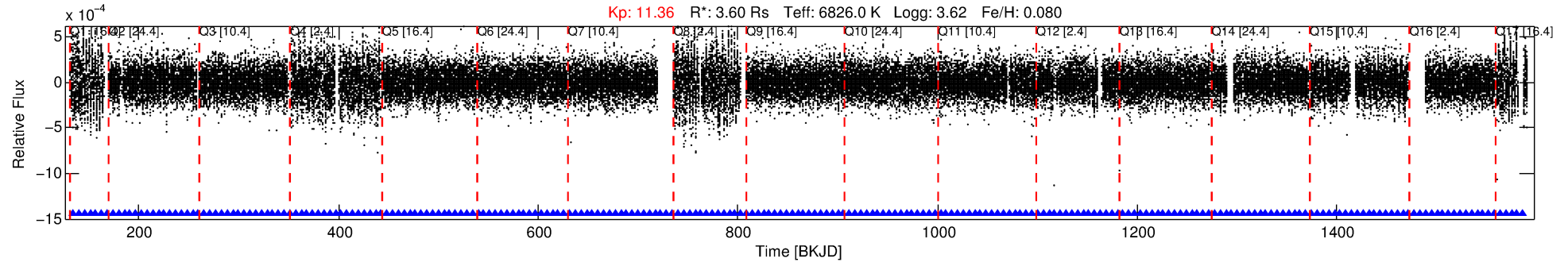
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 012458666-01

No Significant Match Found

# DV One-Page Summary

KIC: 12458666 Candidate: 1 of 3 Period: 5.716 d



## DV Fit Results:

Period = 5.71632 [0.00037] d  
Epoch = 134.2323 [0.0554] BKJD  
Rp/R\* = 0.0067 [0.0007]  
a/R\* = 1.08 [0.03]  
b = 0.99 [0.00]  
Seff = 4118.11 [2136.12]  
Teq = 2043 [265] K  
Rp = 2.63 [0.99] Re  
a = 0.0782 [0.0256] AU  
Ag = 12.17 [6.92] [1.61σ]  
Teff = 5899 [424] K [7.72σ]

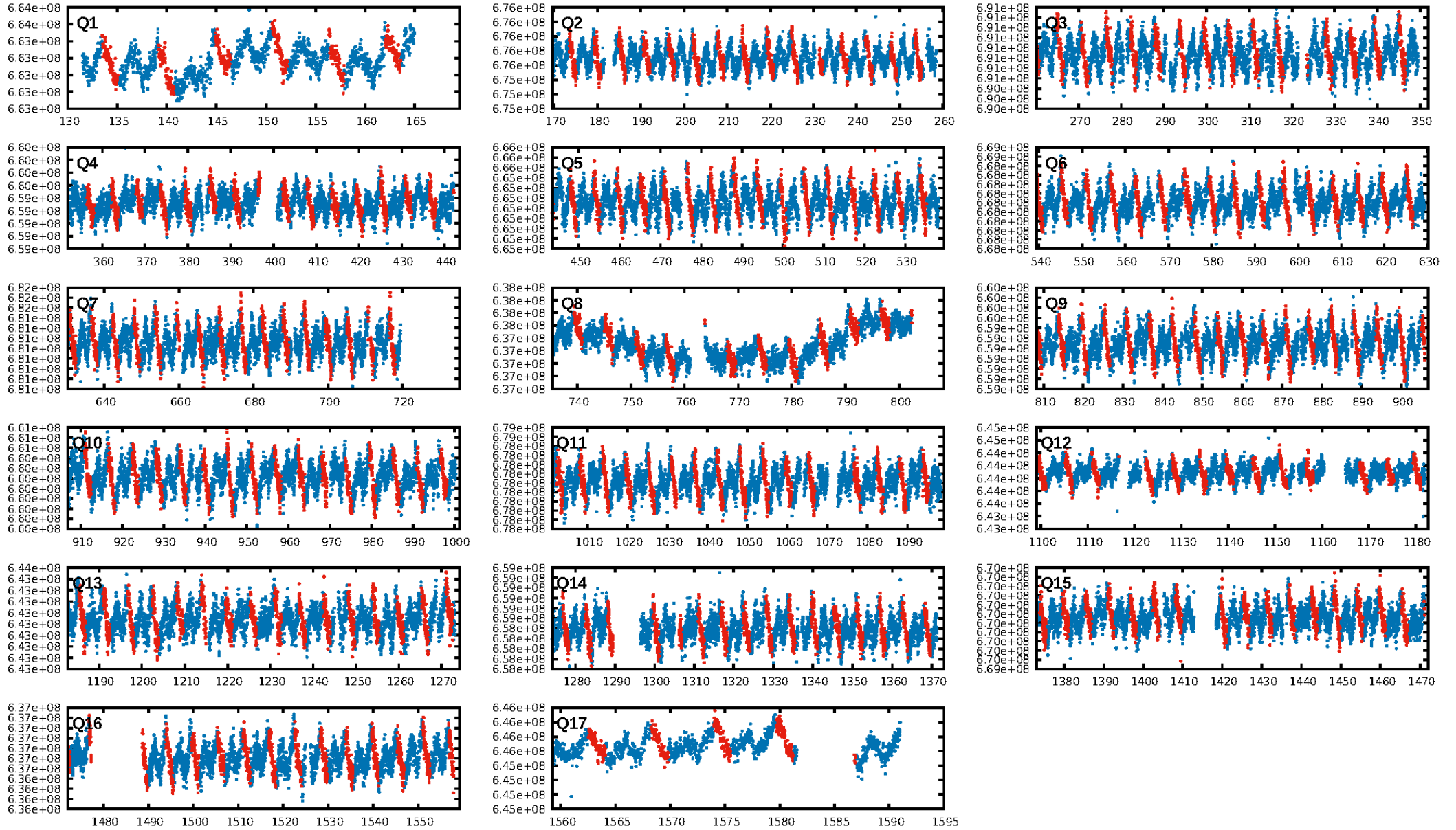
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [234.69σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
**Bootstrap-pfa: 6.19e-11**  
RollingBand-fgt: 1.00 [227/227]  
GhostDiagnostic-chr: 4.41  
Centroid-sig: 41.4%  
Centroid-so: 0.519 arcsec [0.98σ]  
OotOffset-rm: 3.081 arcsec [1.37σ]  
KicOffset-rm: 2.995 arcsec [1.20σ]  
OotOffset-st: 3/4/2/2 [11]  
KicOffset-st: 3/4/2/2 [11]  
DiffImageQuality-fgm: 0.18 [2/11]  
DiffImageOverlap-fno: 1.00 [17/17]

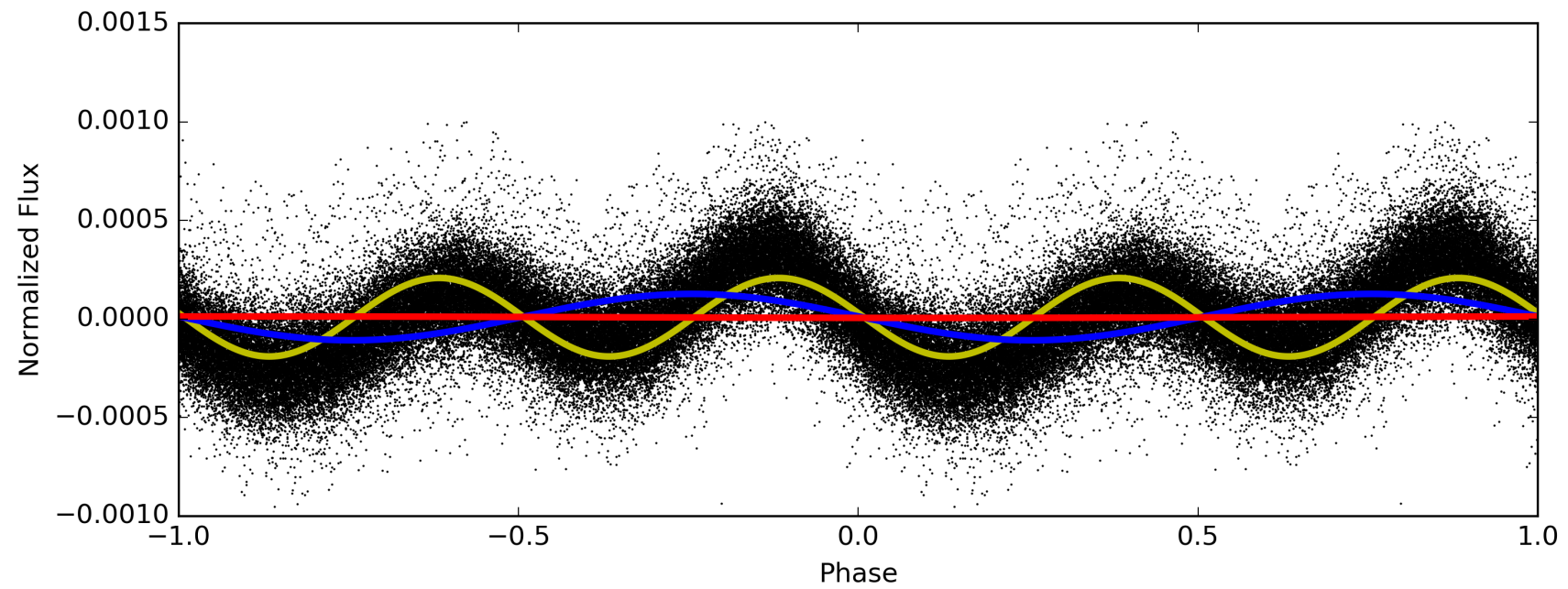
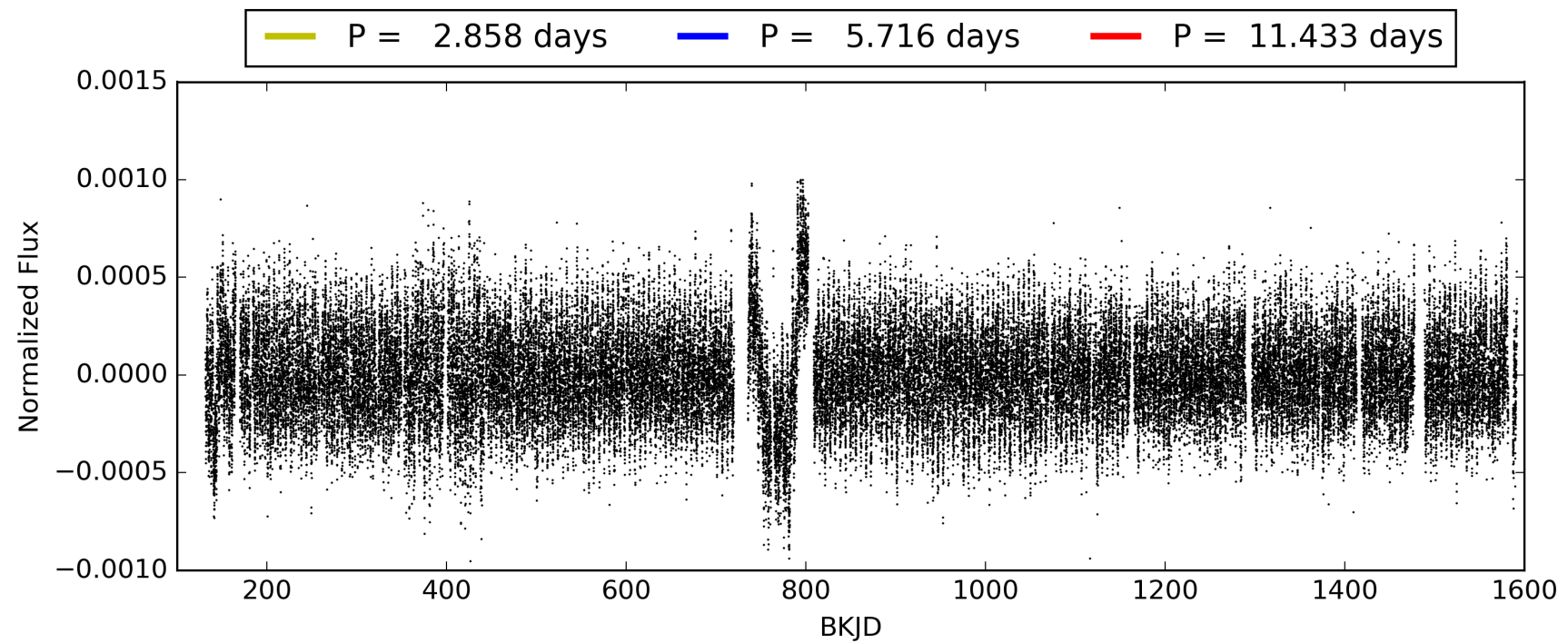
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 05:54:54 Z

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

# TCE 012458666-01, PDC Light Curves



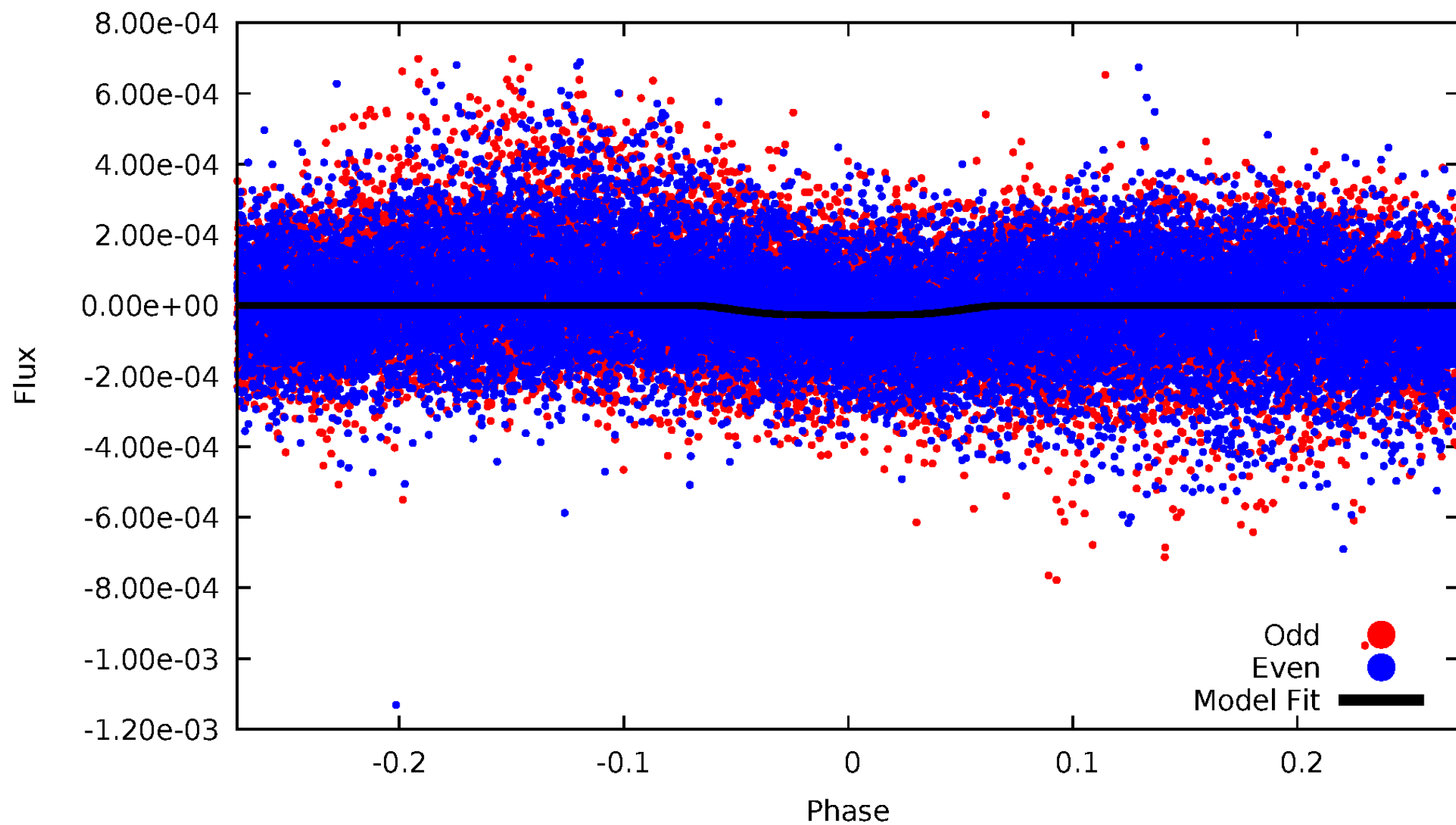
TCE 012458666-01





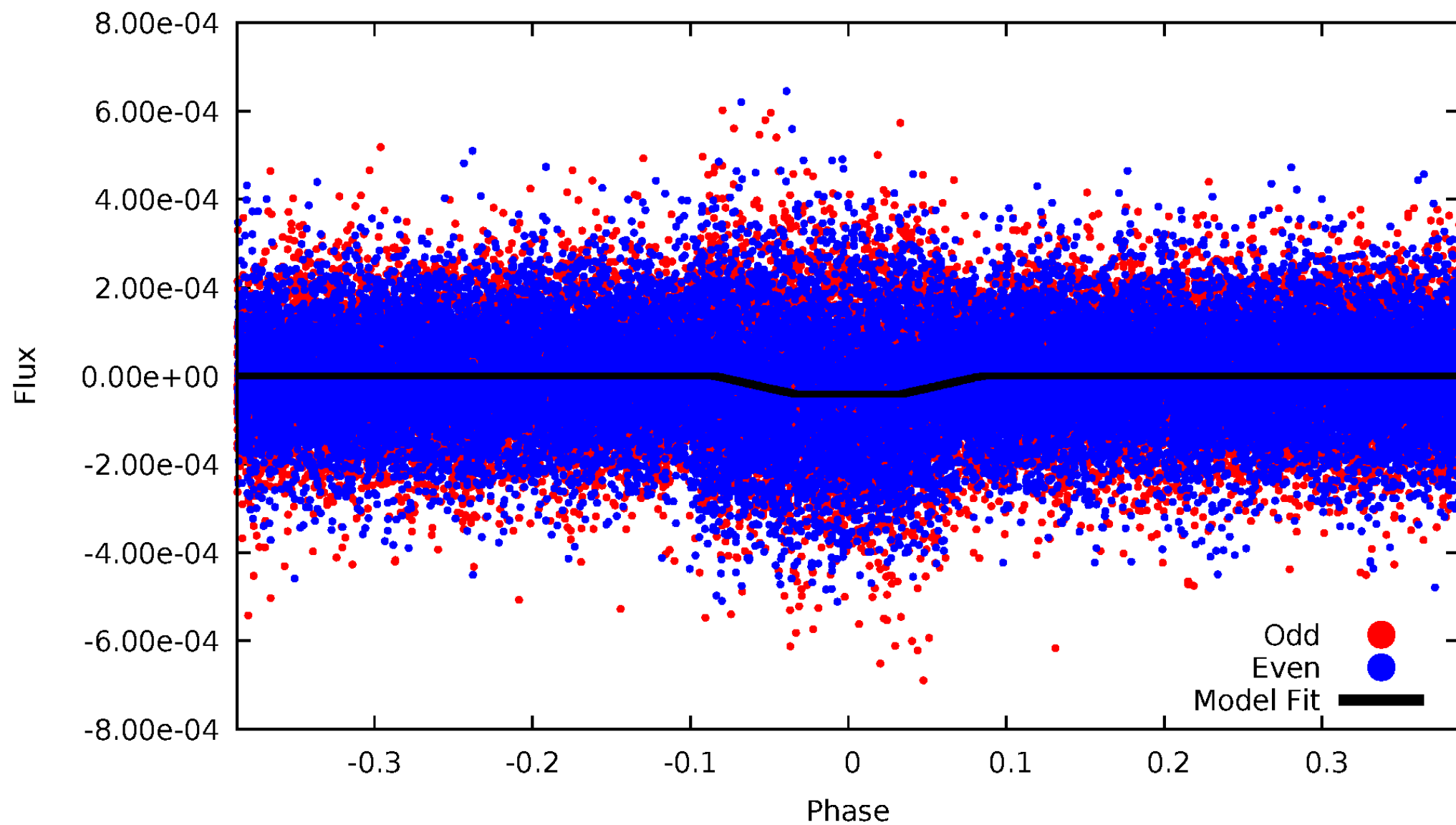
# DV Odd/Even

TCE 012458666-01



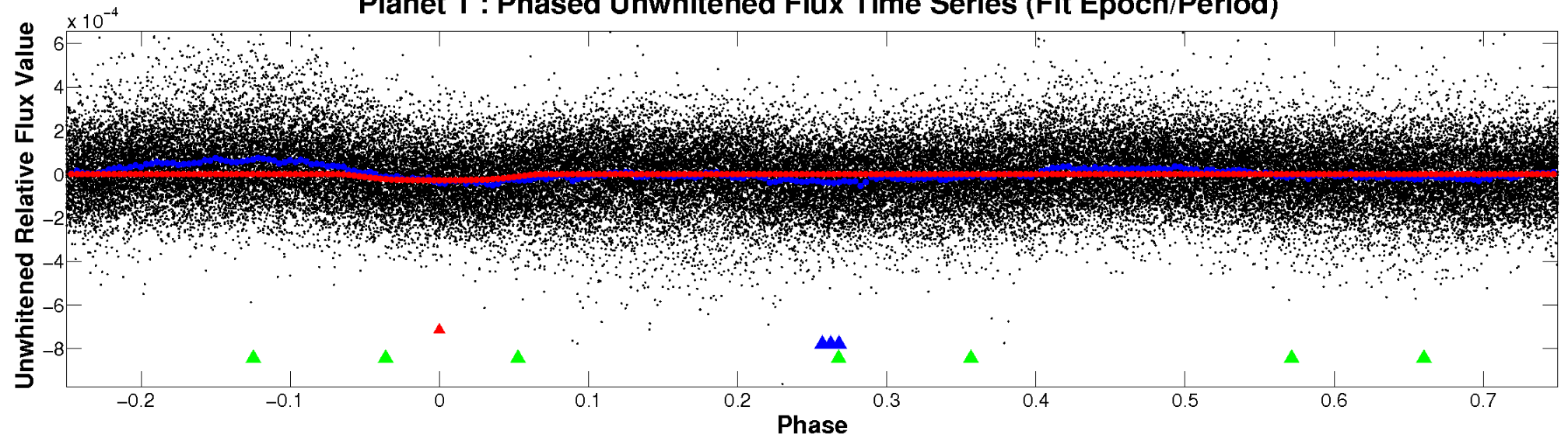
# ALT Odd/Even

TCE 012458666-01

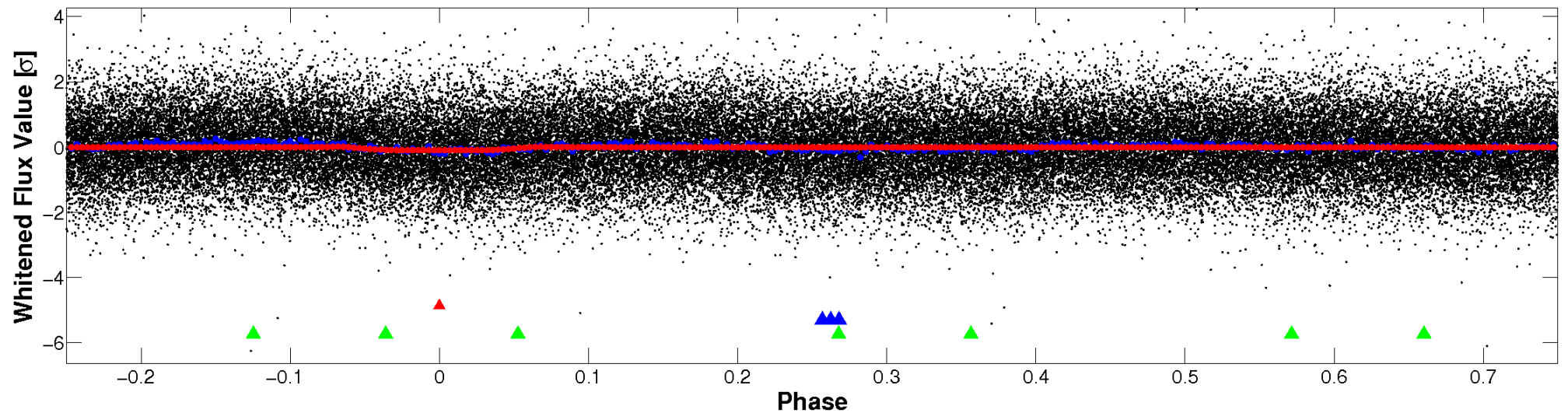


# Non-Whitened Vs. Whitened Light Curve

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

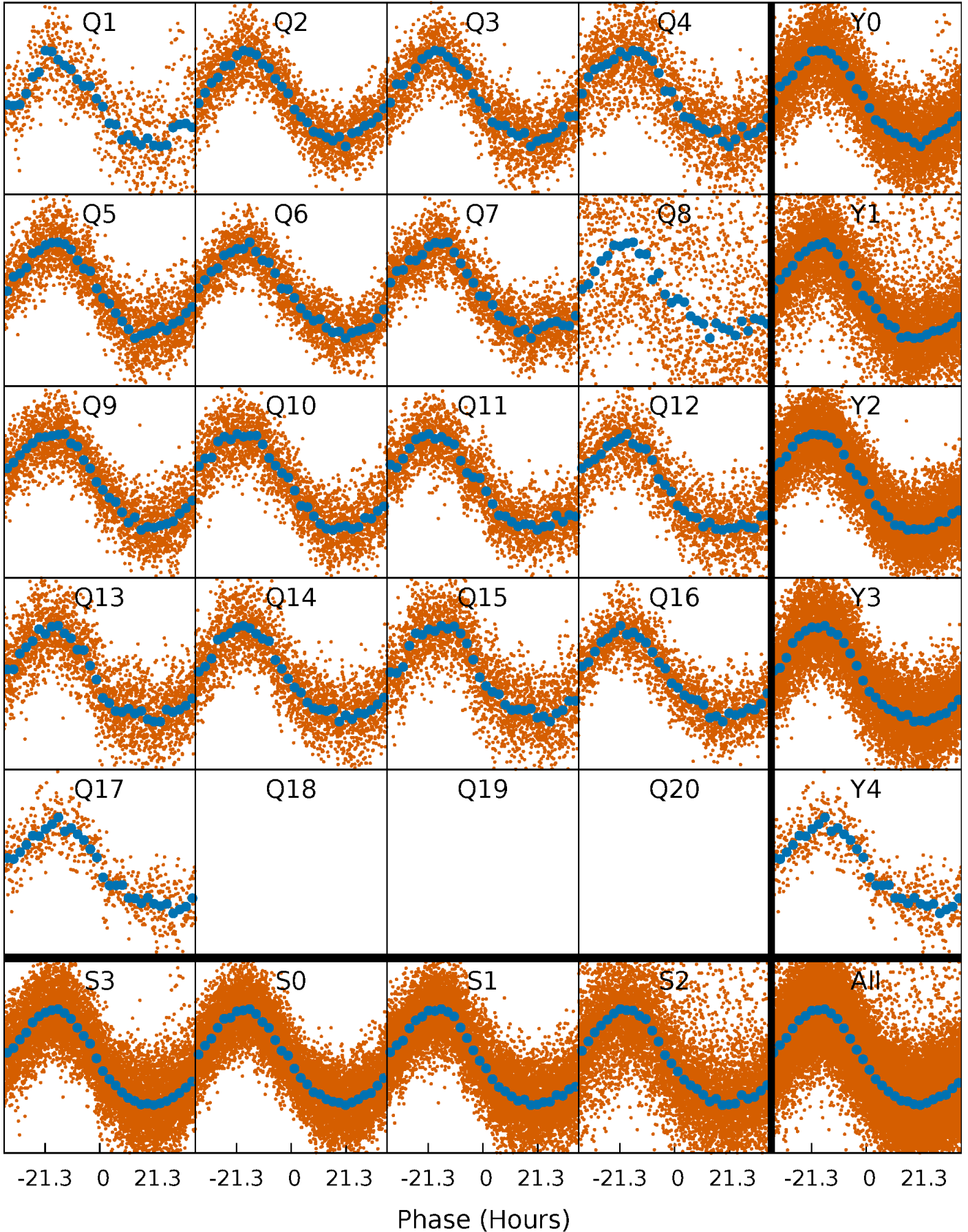


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

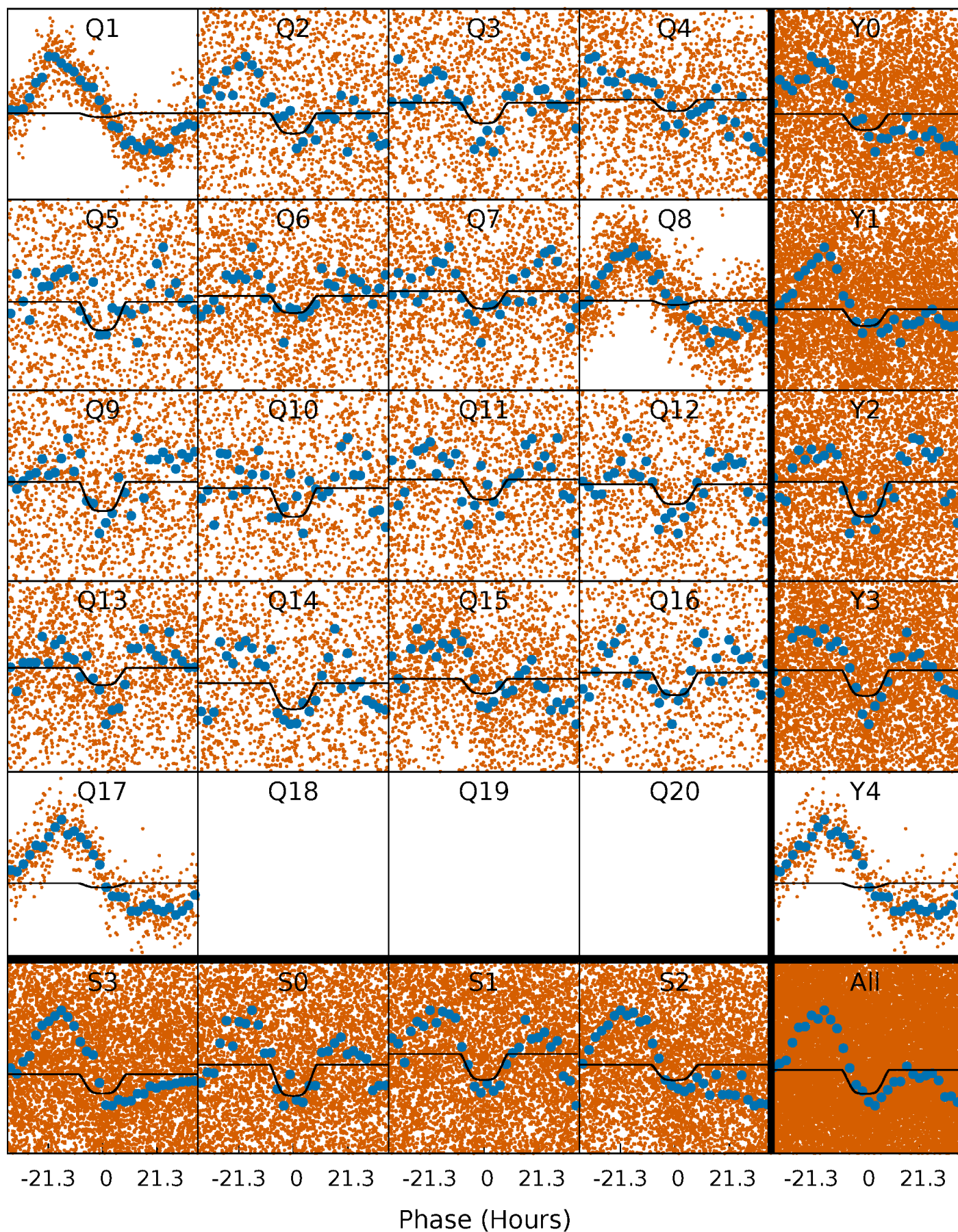
TCE 012458666-01 P= 5.716316 Days  $T_0=134.232263$  (BKJD)





# DV Quarter-Phased Transit Curves

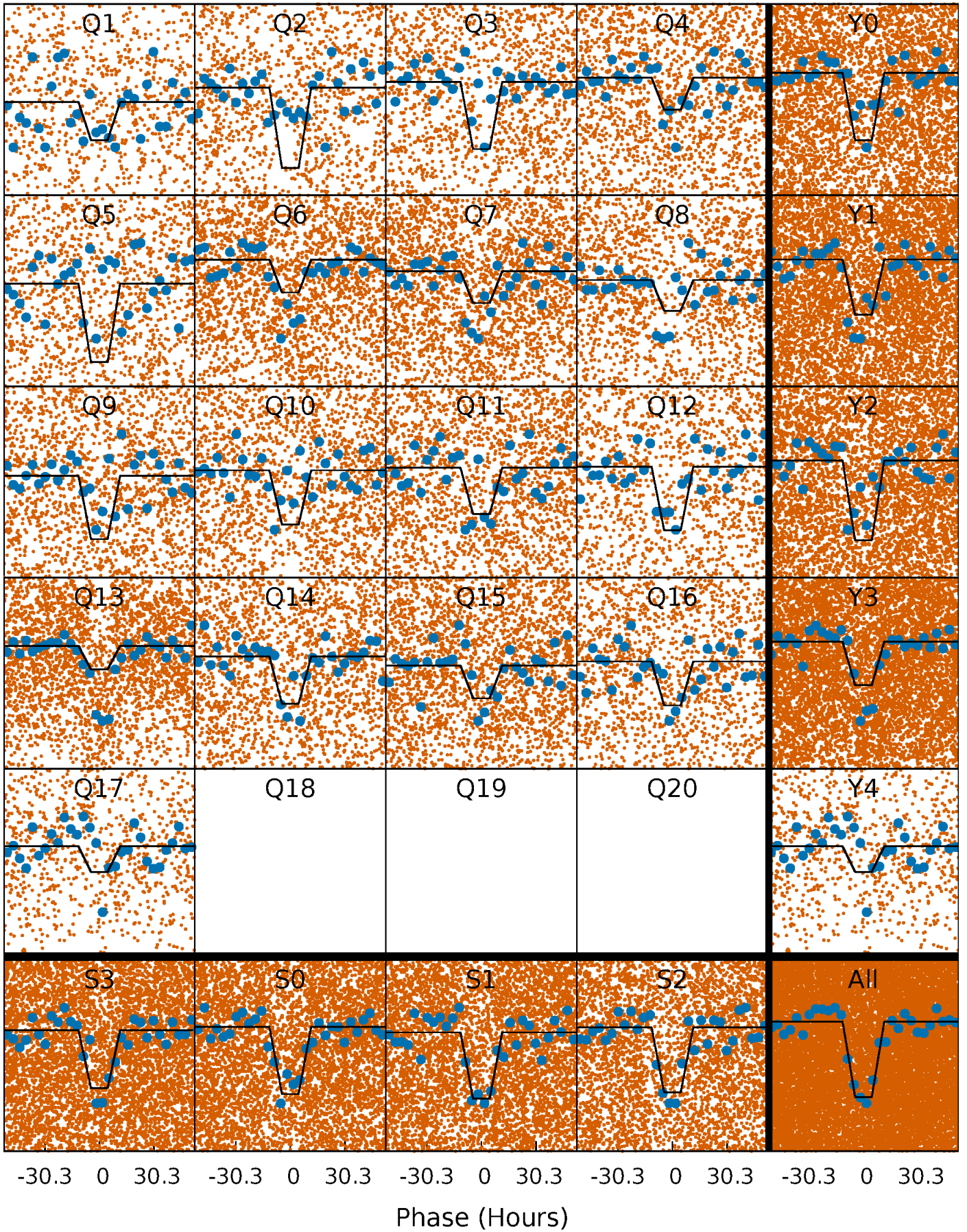
TCE 012458666-01 P= 5.716316 Days  $T_0=134.232263$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

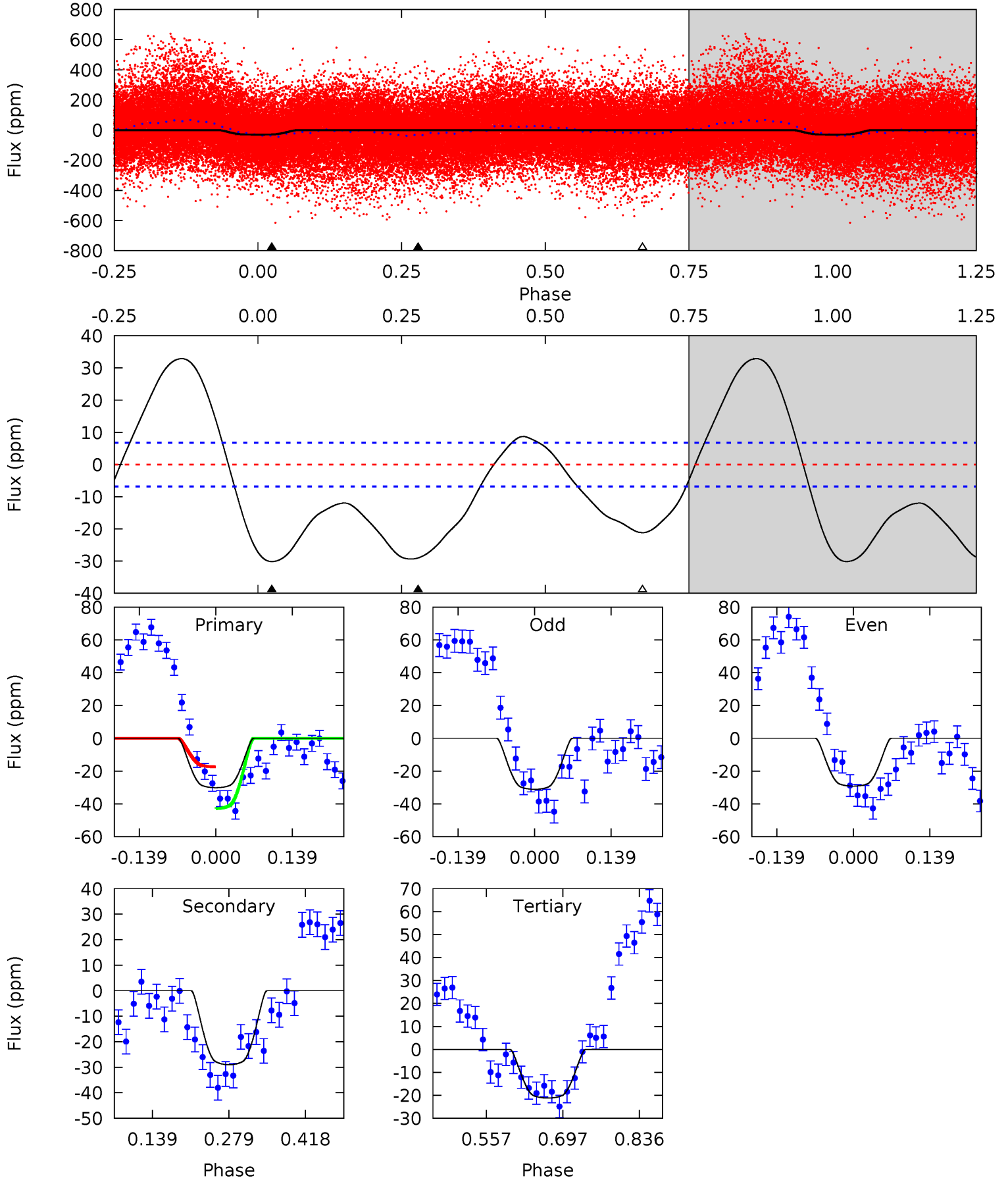
TCE 012458666-01 P= 5.716289 Days  $T_0=134.291021$  (BKJD)



# DV Model-Shift Uniqueness Test

012458666-01, P = 5.716316 Days, E = 128.515947 Days

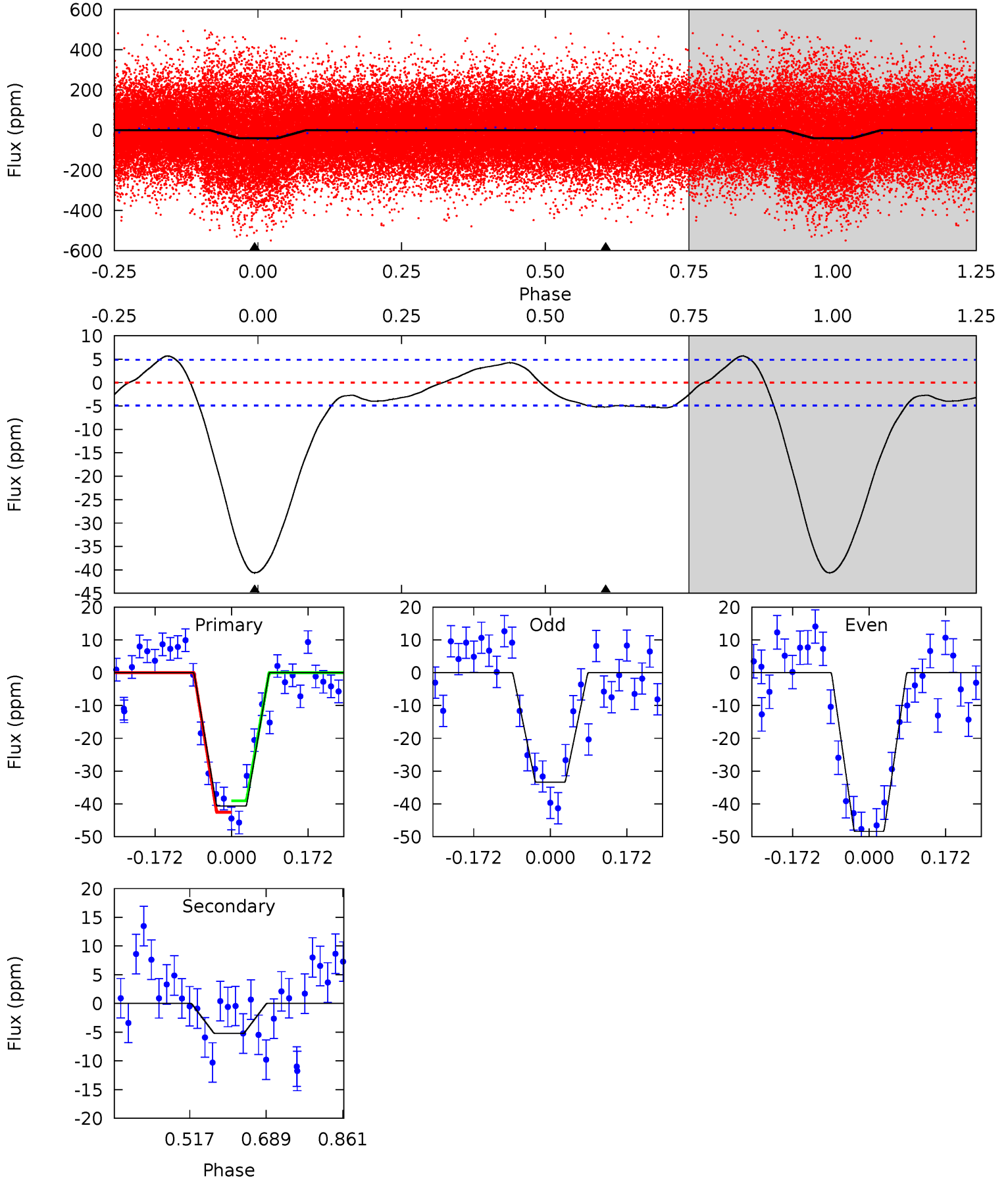
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
19.9	19.1	14.0	0	4.49	1.48	10.9	5.91	19.9	5.17	19.1	0.63	0.87	0.52	8.33



# Alt Model-Shift Uniqueness Test

012458666-01, P = 5.716289 Days, E = 128.574732 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
37.0	4.75	0	0	4.45	1.37	2.55	37.0	37.0	4.75	4.75	6.82	0.80	0.12	1.57





### Stellar Parameters For KIC 012458666

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$6826^{+153}_{-204}$	$3.616^{+0.289}_{-0.051}$	$0.080^{+0.250}_{-0.250}$	$3.597^{+0.325}_{-1.299}$	$1.948^{+0.159}_{-0.370}$	$0.059^{+0.124}_{-0.011}$
	+2%/-3%	+8%/-1%	+312%/-312%	+9%/-36%	+8%/-19%	+210%/-18%
Source	PHO1	FLK73	KIC0	DSEP		

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

### Secondary Eclipse Parameters for KIC 012458666-01 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-29 \pm 2$	$2.47^{+0.40}_{-0.46}$	$2778^{+138}_{-229}$	$6034^{+426}_{-312}$	$16^{+7}_{-4}$
Alt.	$-5 \pm 1$	$2.36^{+0.36}_{-0.45}$	$2782^{+134}_{-229}$	$4210^{+251}_{-252}$	$3.156^{+1.471}_{-0.984}$

$T_{max}$  = 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

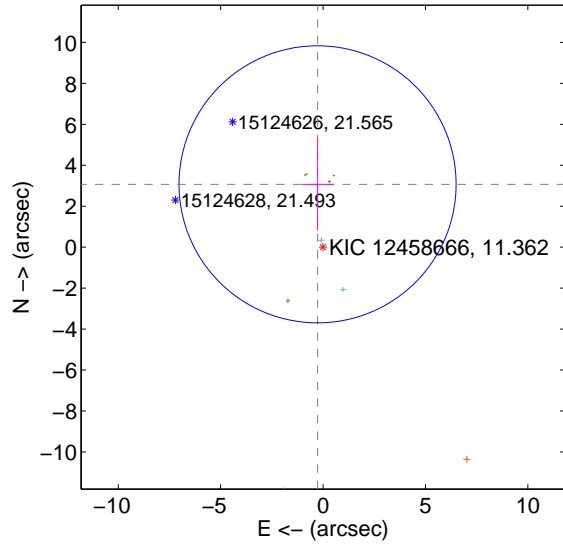
Supplemental centroid analysis for 012458666-01. **Kepler magnitude: 11.36.** Transit SNR 7.46

**There are 2 quarters with good PRF difference image offsets**

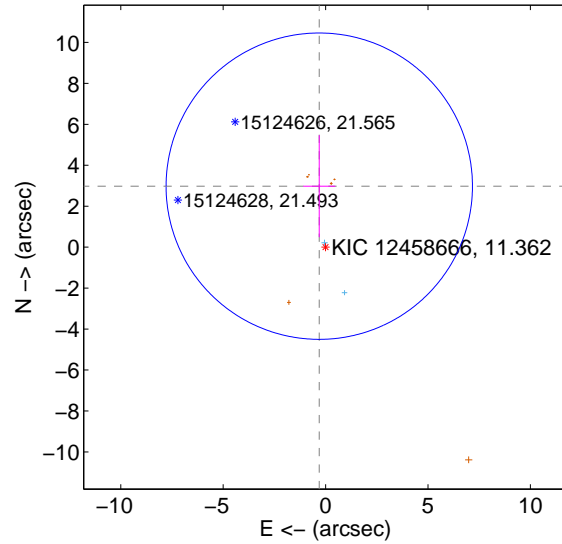
The direct PRF centroid is offset from the target star catalog position by about 0.16 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$3.081 \pm 2.255$	1.37	$0.267 \pm 0.786$	$3.070 \pm 2.249$
PRF-fit source offset from KIC position	$2.995 \pm 2.494$	1.20	$0.309 \pm 0.779$	$2.979 \pm 2.489$
photometric centroid source offset	$0.52 \pm 0.53$	0.98	$0.49 \pm 0.49$	$-0.18 \pm 0.76$

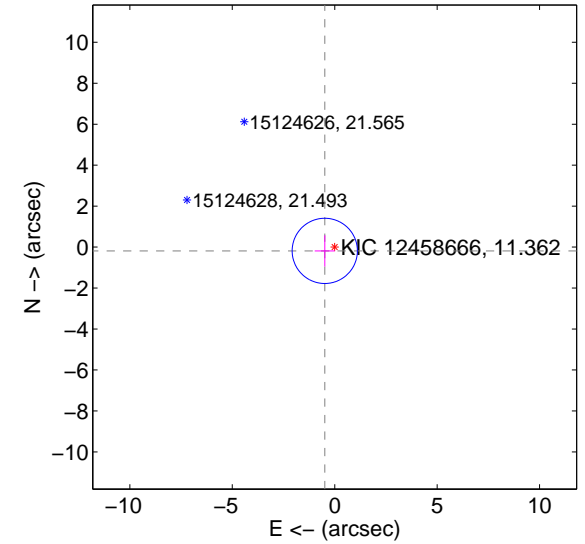
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

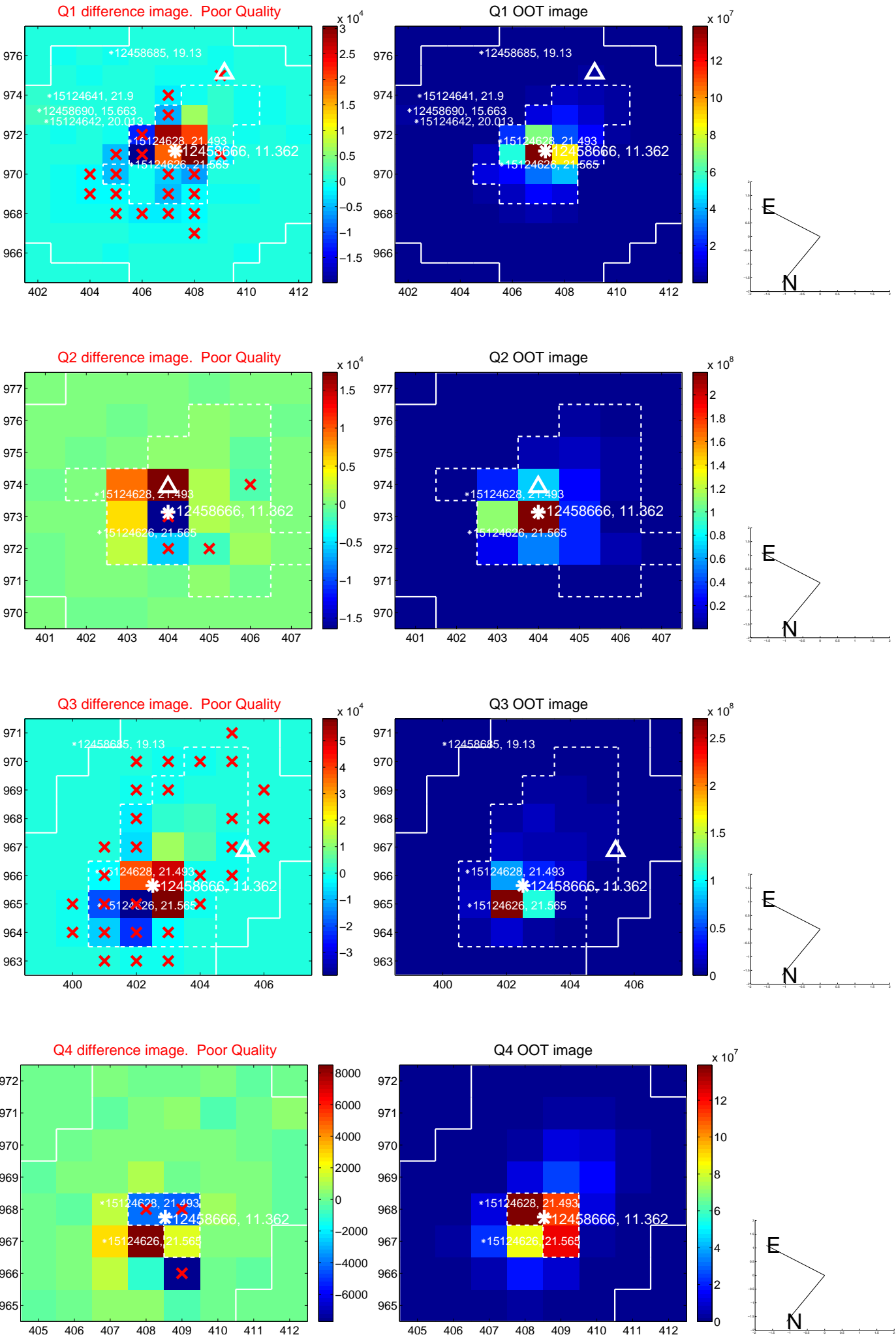


offset from photometric centroids

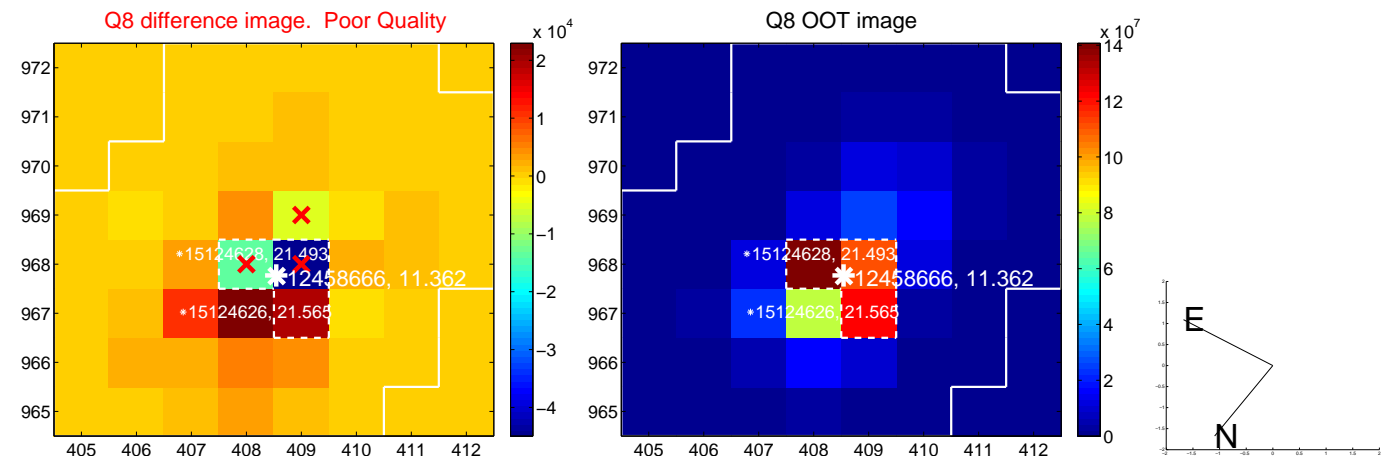
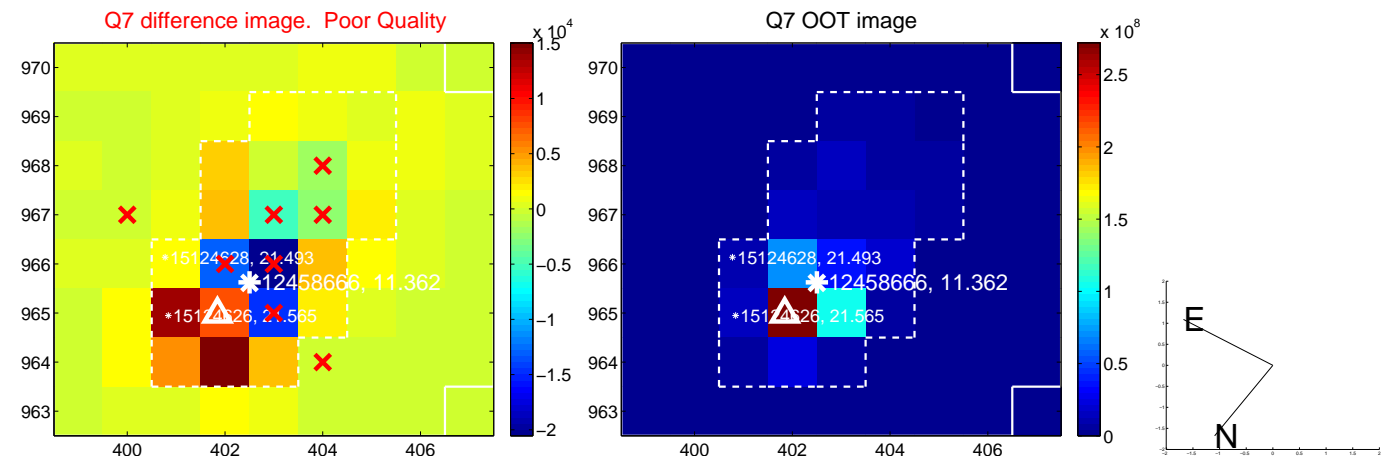
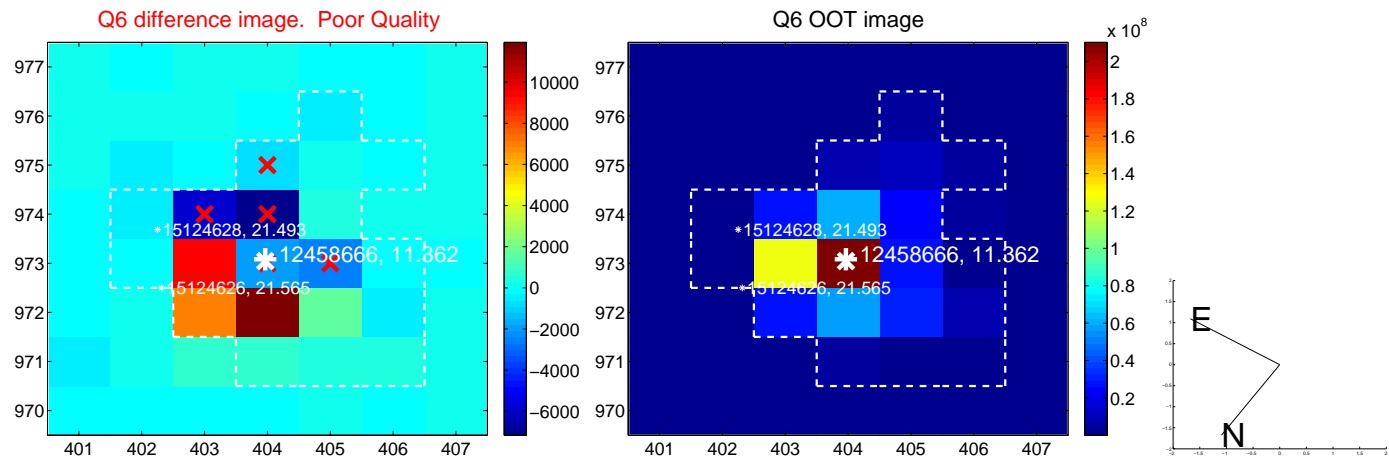
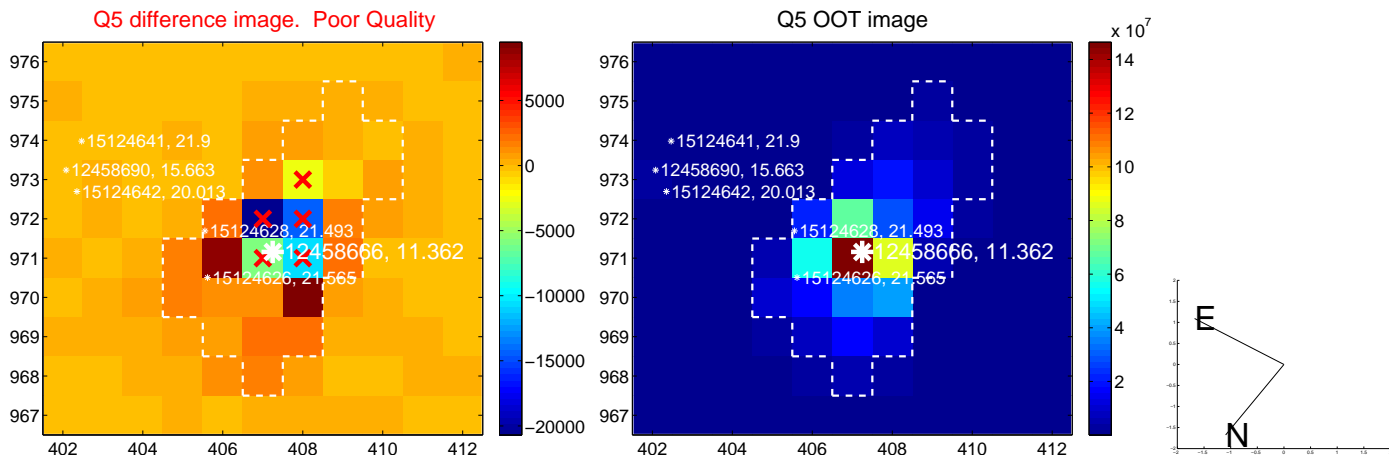


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

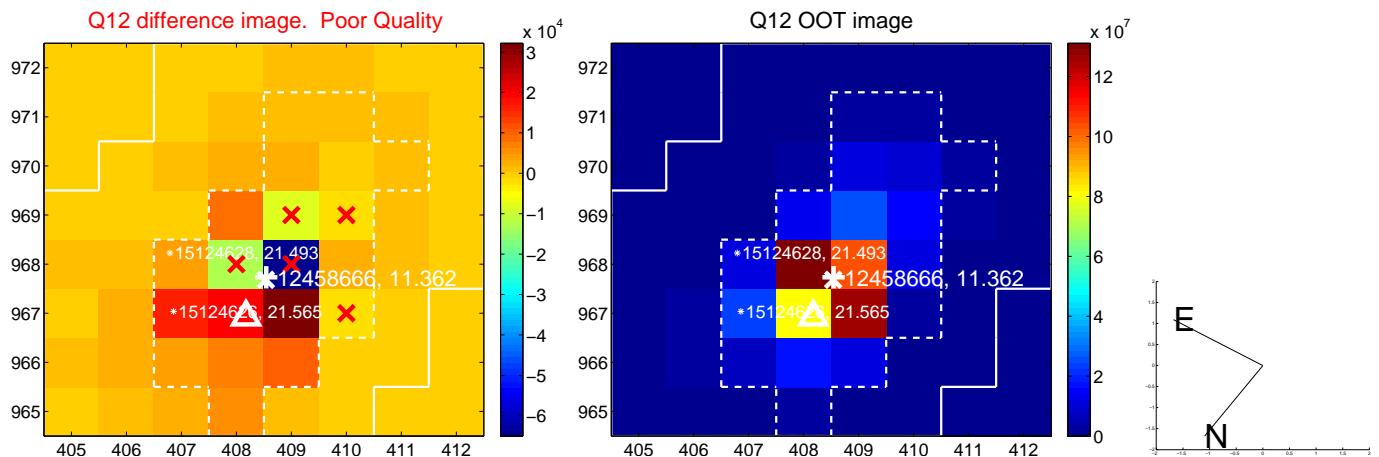
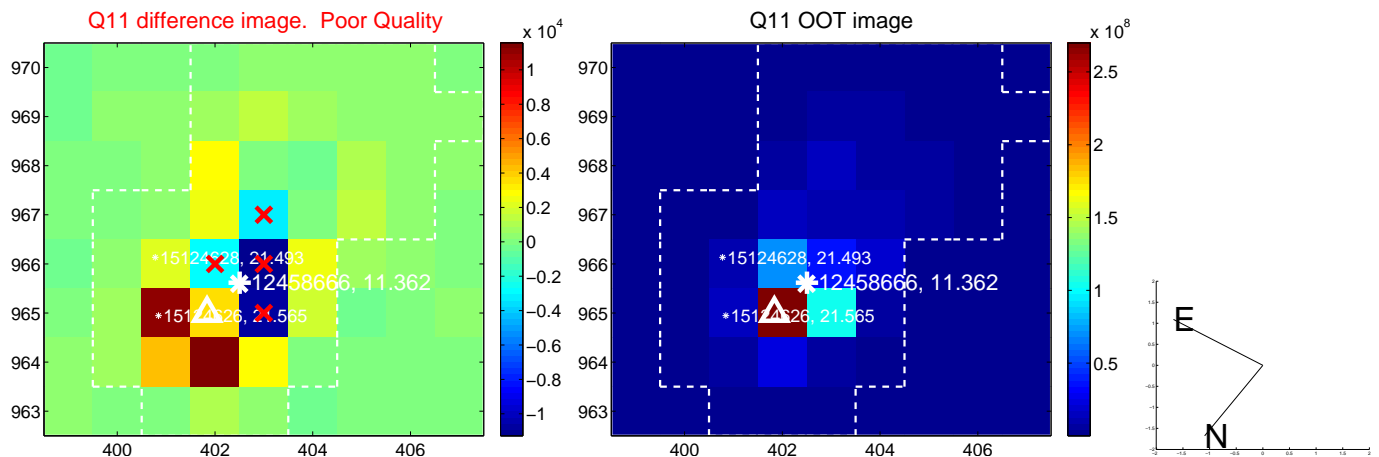
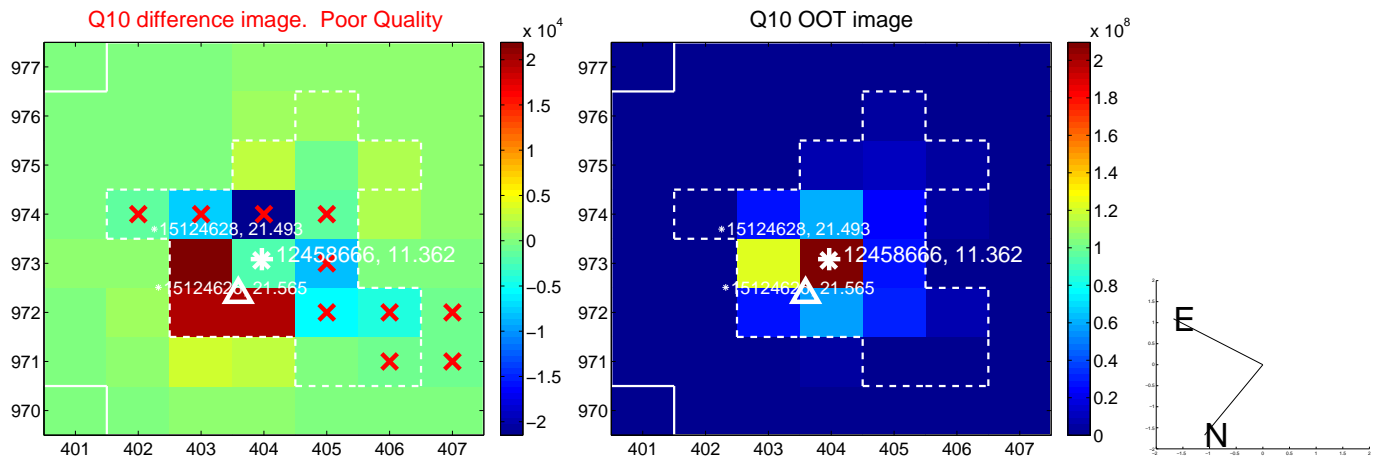
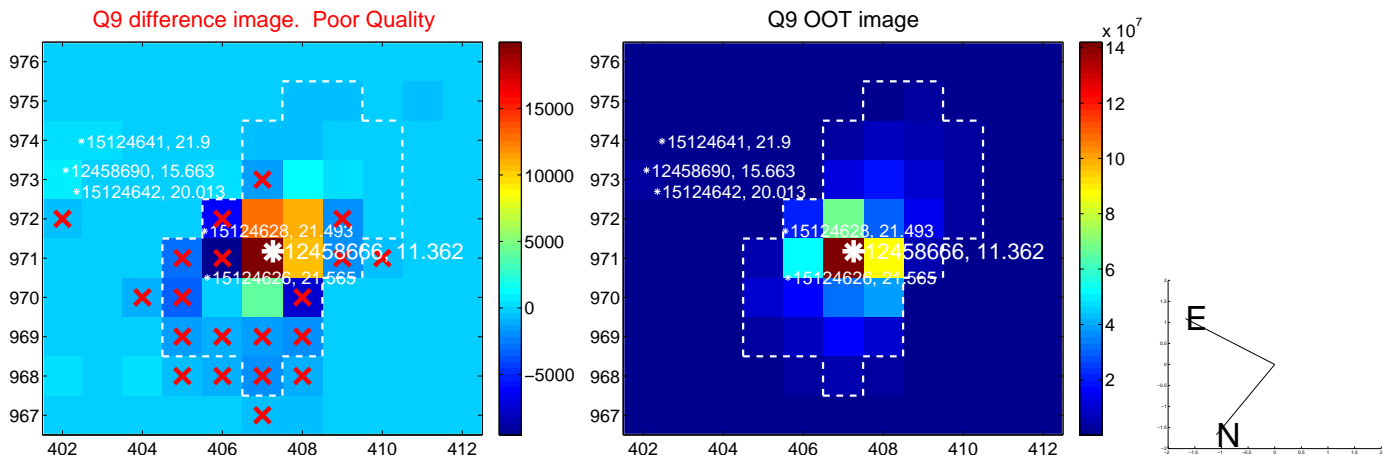


white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.

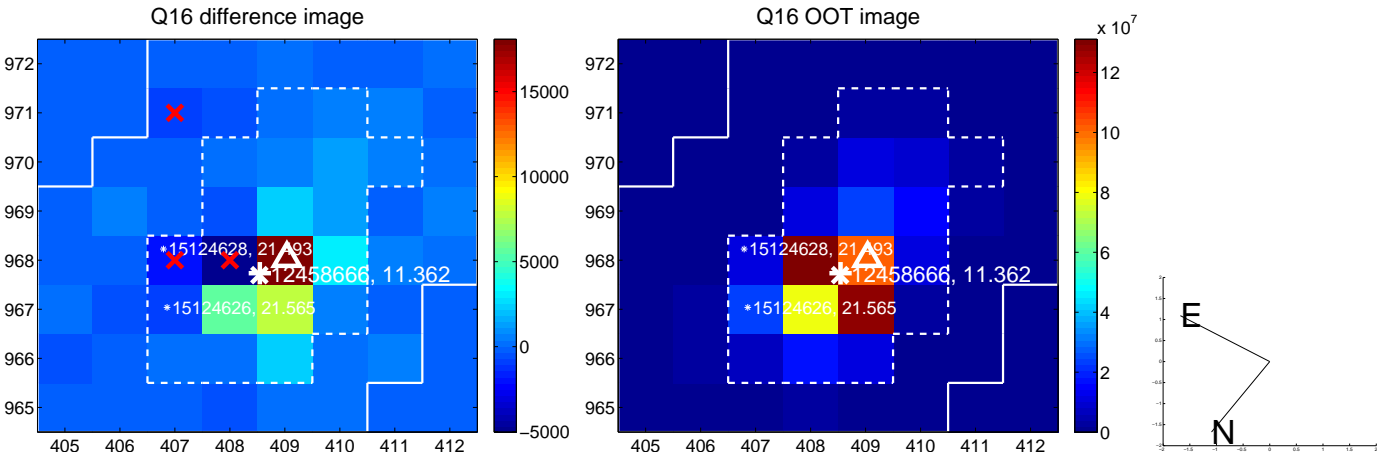
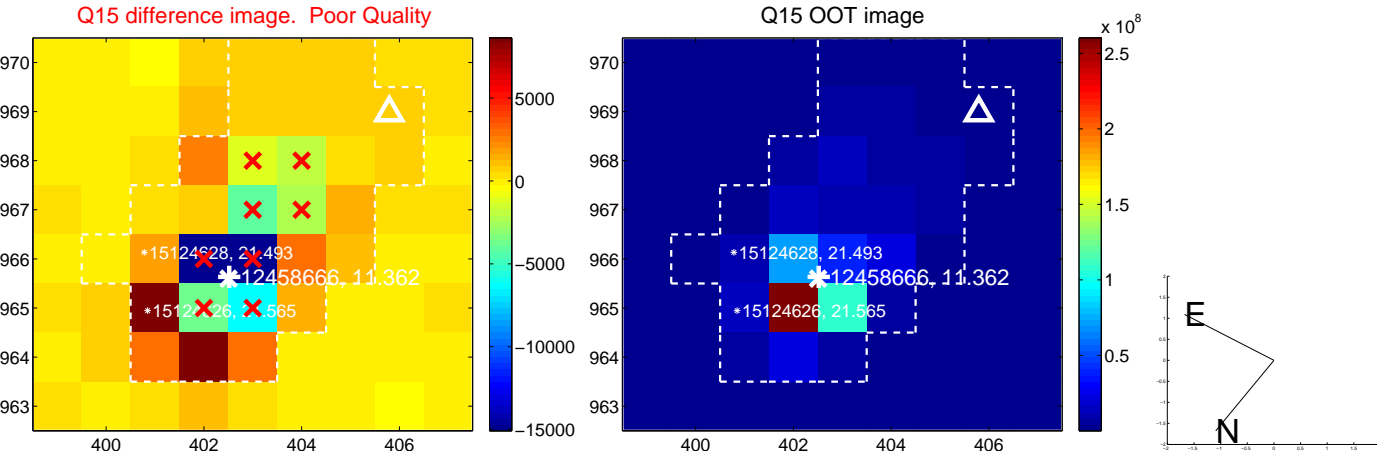
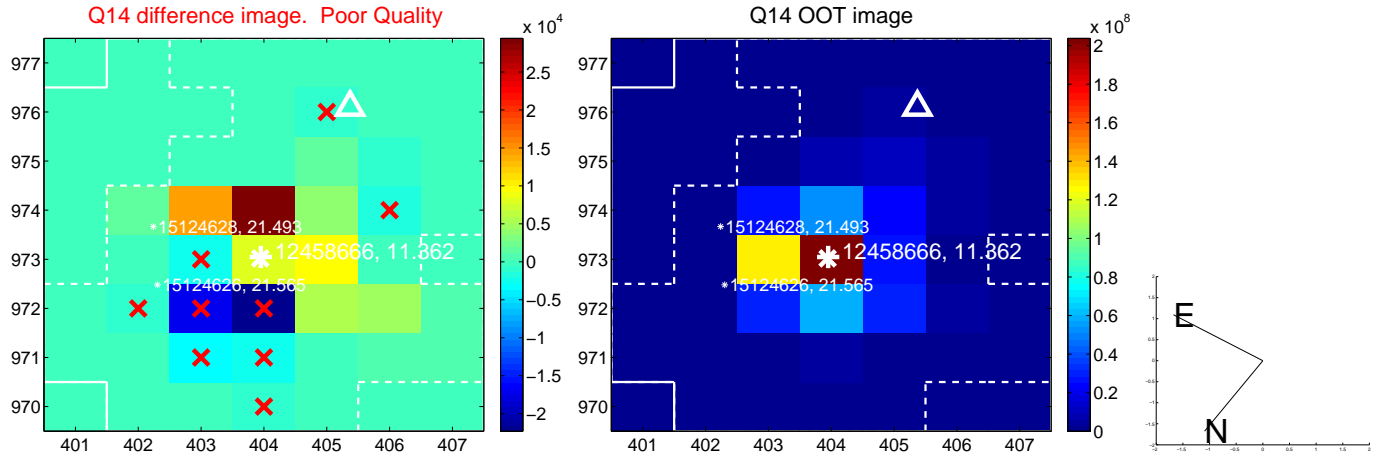
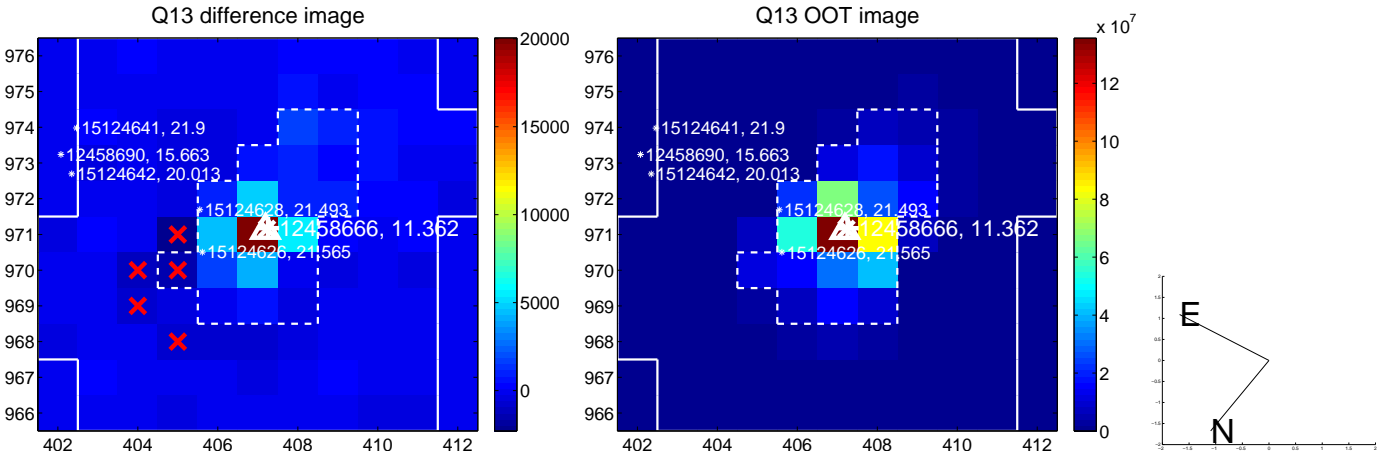




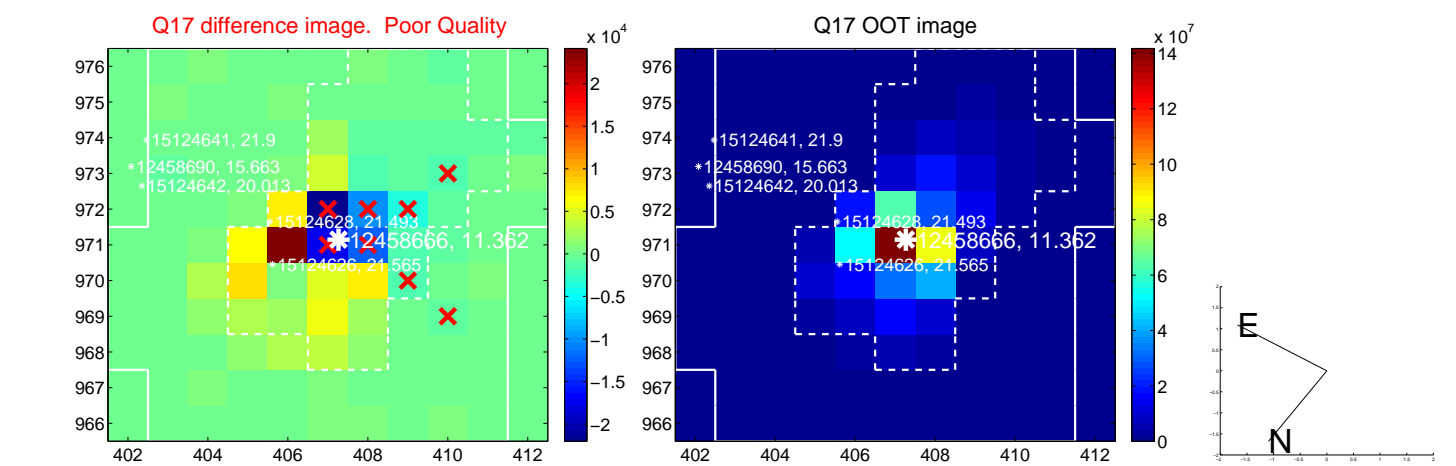
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



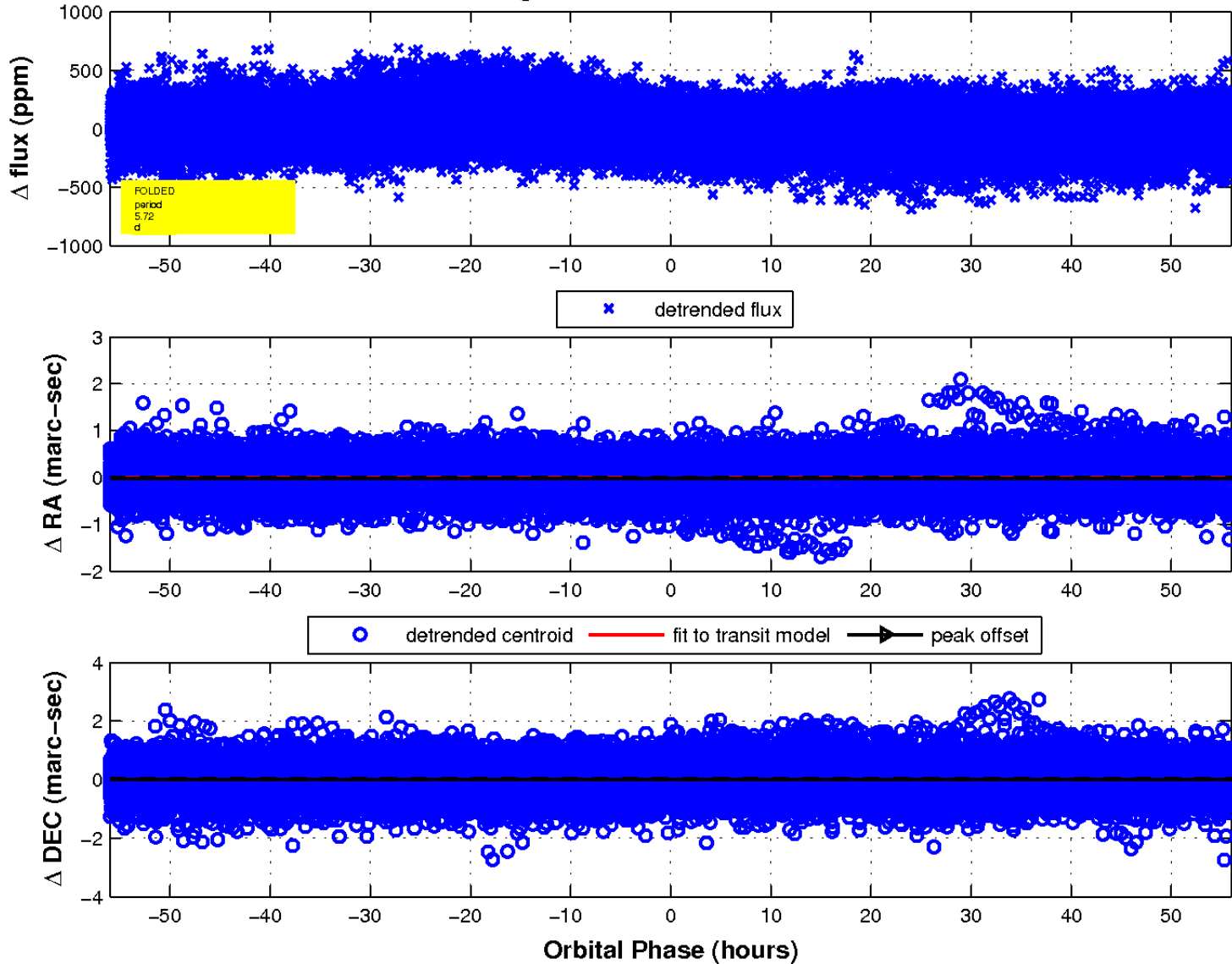
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

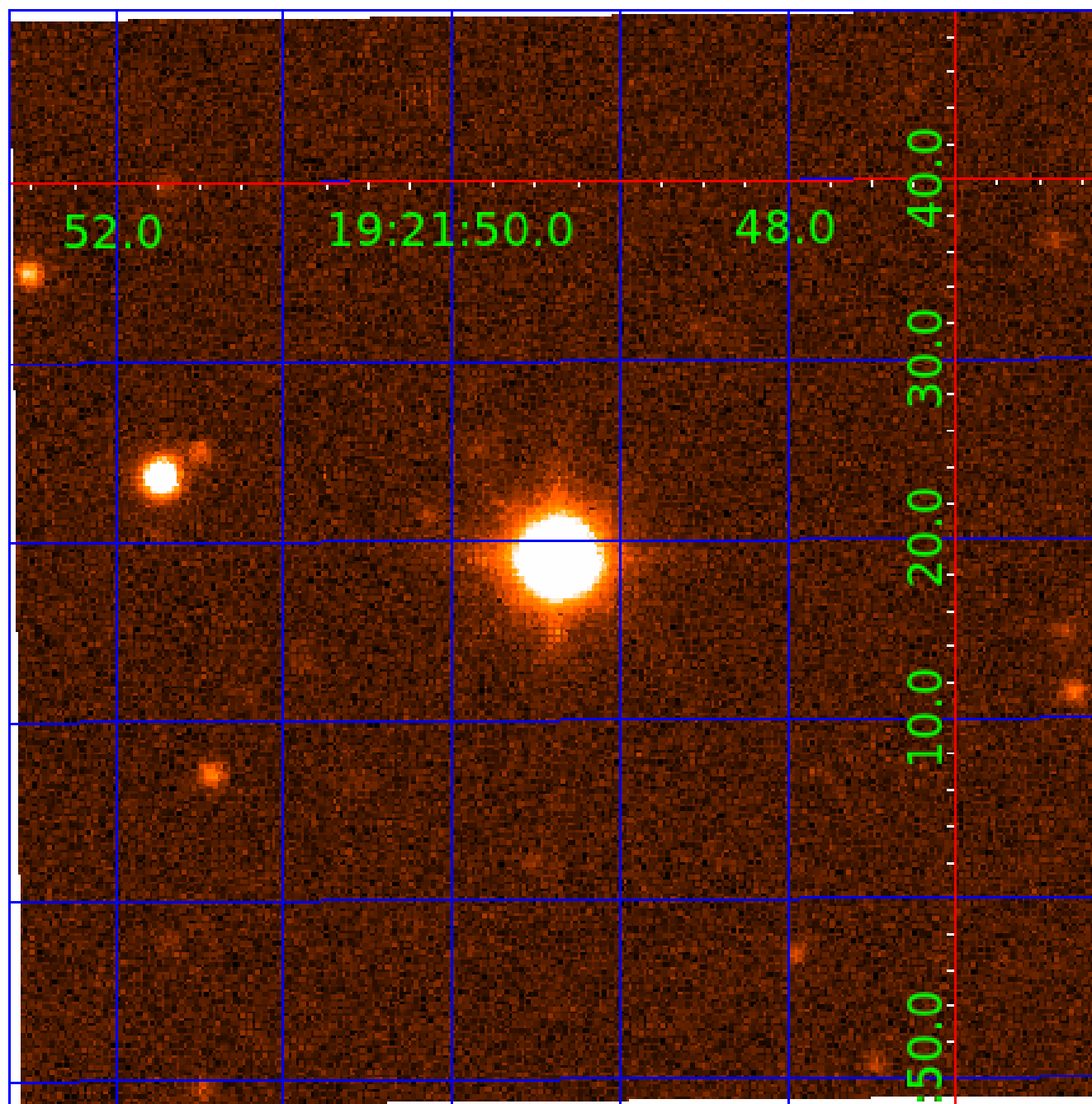


fluxWeightedCentroids, Planet 1 of 3



UKIRT Image

Declination





# KIC 012458666

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
012458666-01	OBS	No	5.716316	134.232263	27.7	18.670	8.4	7.5	3.60	6826	2.63	4118.11
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## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
012458666-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV—CENT_SATURATED
012458666-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—INCONSISTENT_TRANS—CENT_SATURATED
012458666-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—CENT_SATURATED

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

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

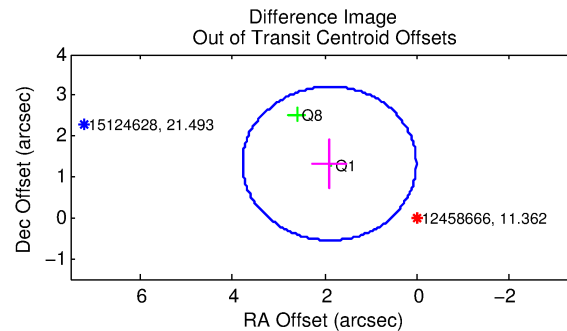
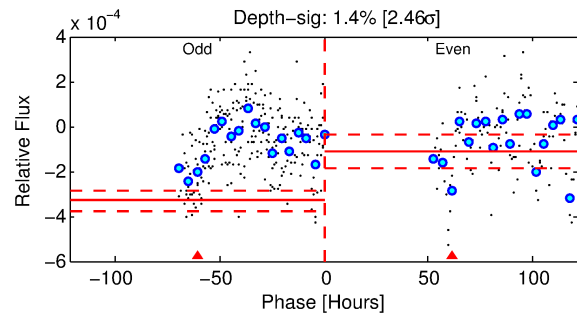
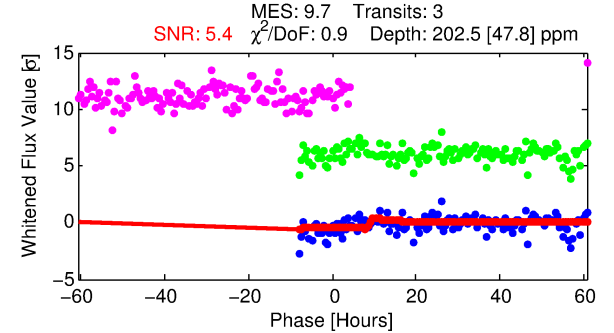
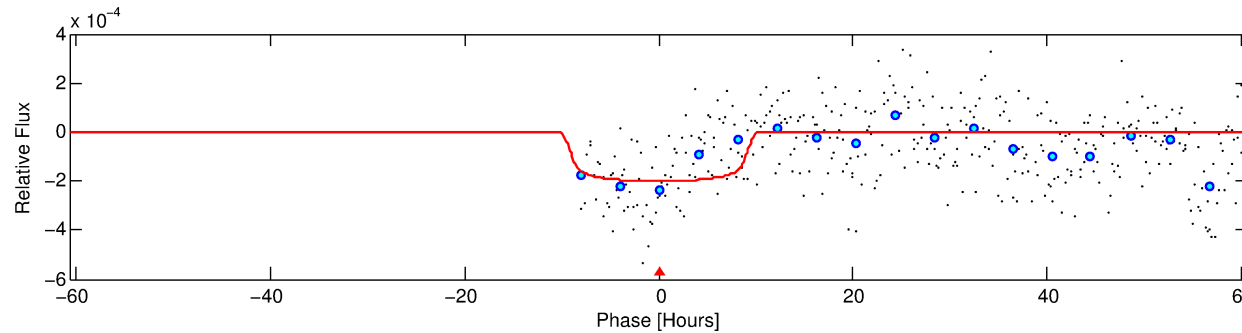
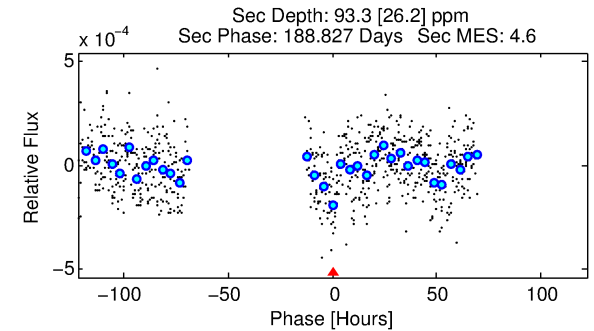
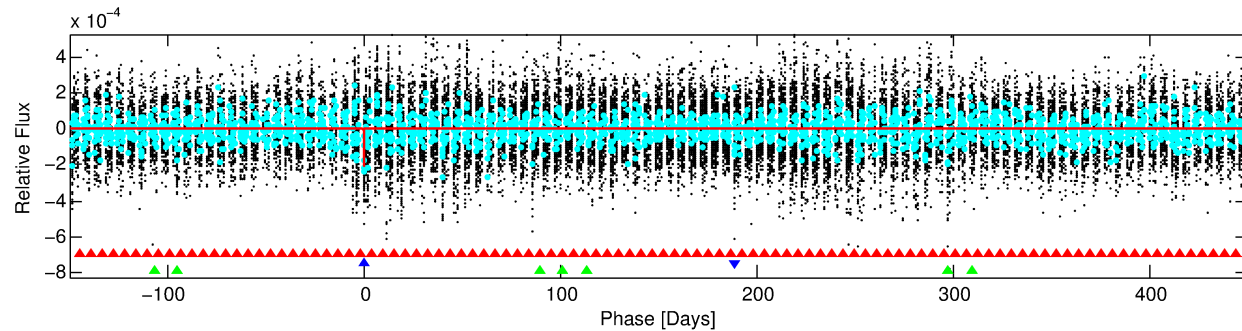
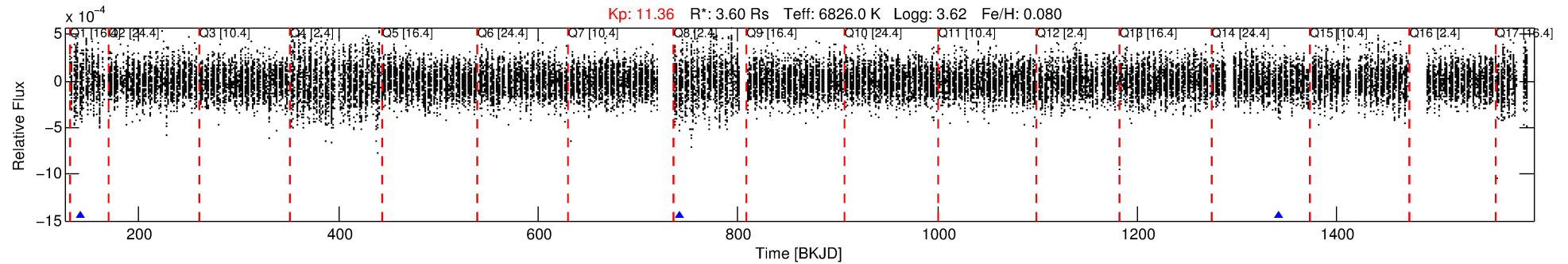
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 012458666-02

No Significant Match Found

# DV One-Page Summary

KIC: 12458666 Candidate: 2 of 3 Period: 600.245 d



## DV Fit Results:

Period = 600.24538 [0.03061] d  
Epoch = 141.4165 [0.1262] BKJD  
Rp/R\* = 0.0155 [0.0025]  
a/R\* = 96.69 [68.50]  
b = 0.92 [0.09]  
Seff = 8.31 [4.31]  
Teq = 433 [56] K  
Rp = 6.07 [2.40] Re  
a = 1.7400 [0.5696] AU  
Ag = 4218.31 [2797.41] [1.51σ]  
Teffp = 5395 [602] K [8.21σ]

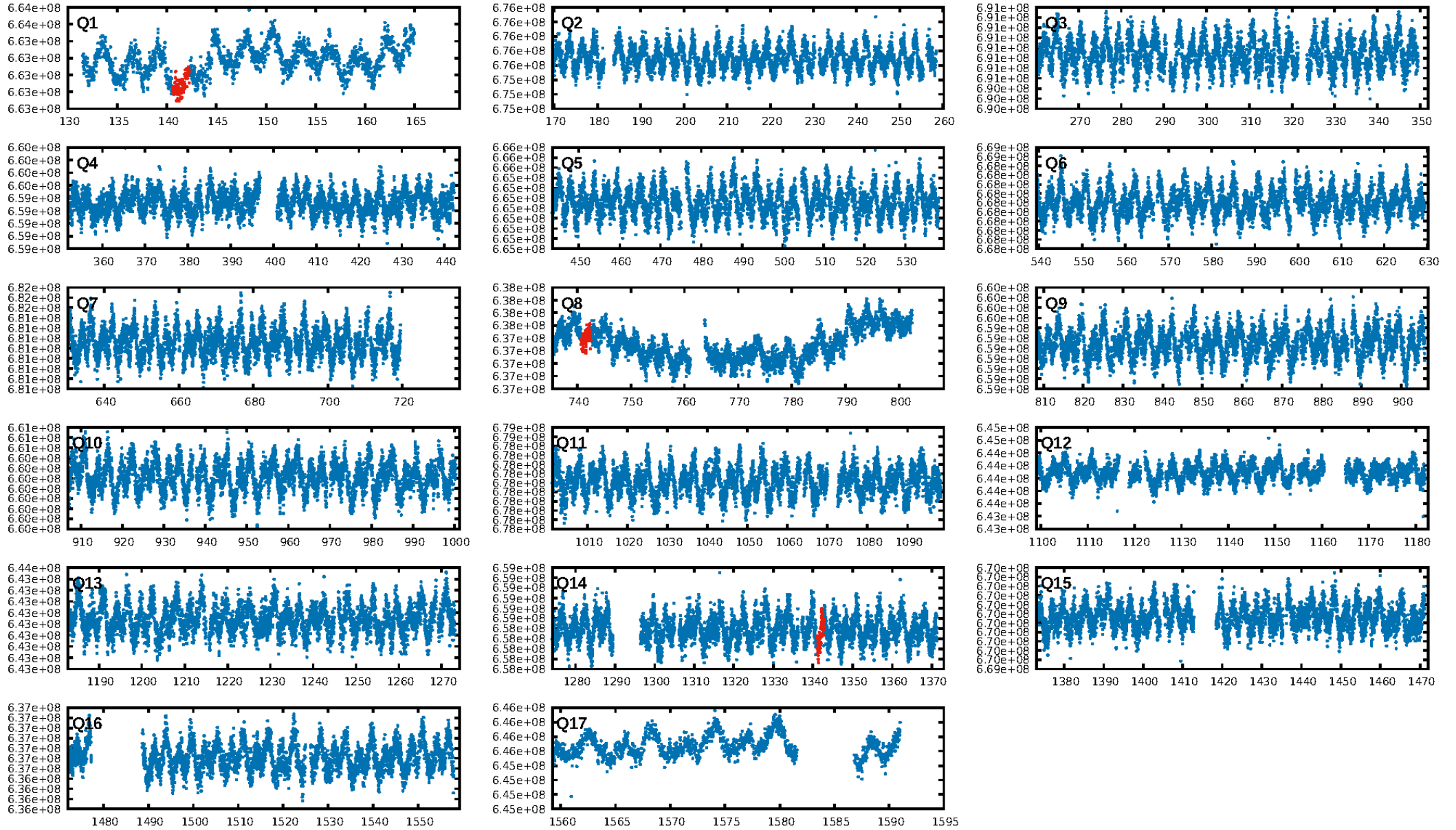
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [462.36σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 11.2%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 3.28e-14  
RollingBand-fgt: 1.00 [2/2]  
GhostDiagnostic-chr: -11.4  
Centroid-sig: 31.7%  
Centroid-so: 0.547 arcsec [1.22σ]  
OotOffset-rm: 2.314 arcsec [3.69σ]  
KicOffset-rm: 2.332 arcsec [6.84σ]  
OotOffset-st: 0/0/1/1 [2]  
KicOffset-st: 0/0/1/1 [2]  
DiffImageQuality-fgm: 0.50 [1/2]  
DiffImageOverlap-fno: 0.00 [0/3]

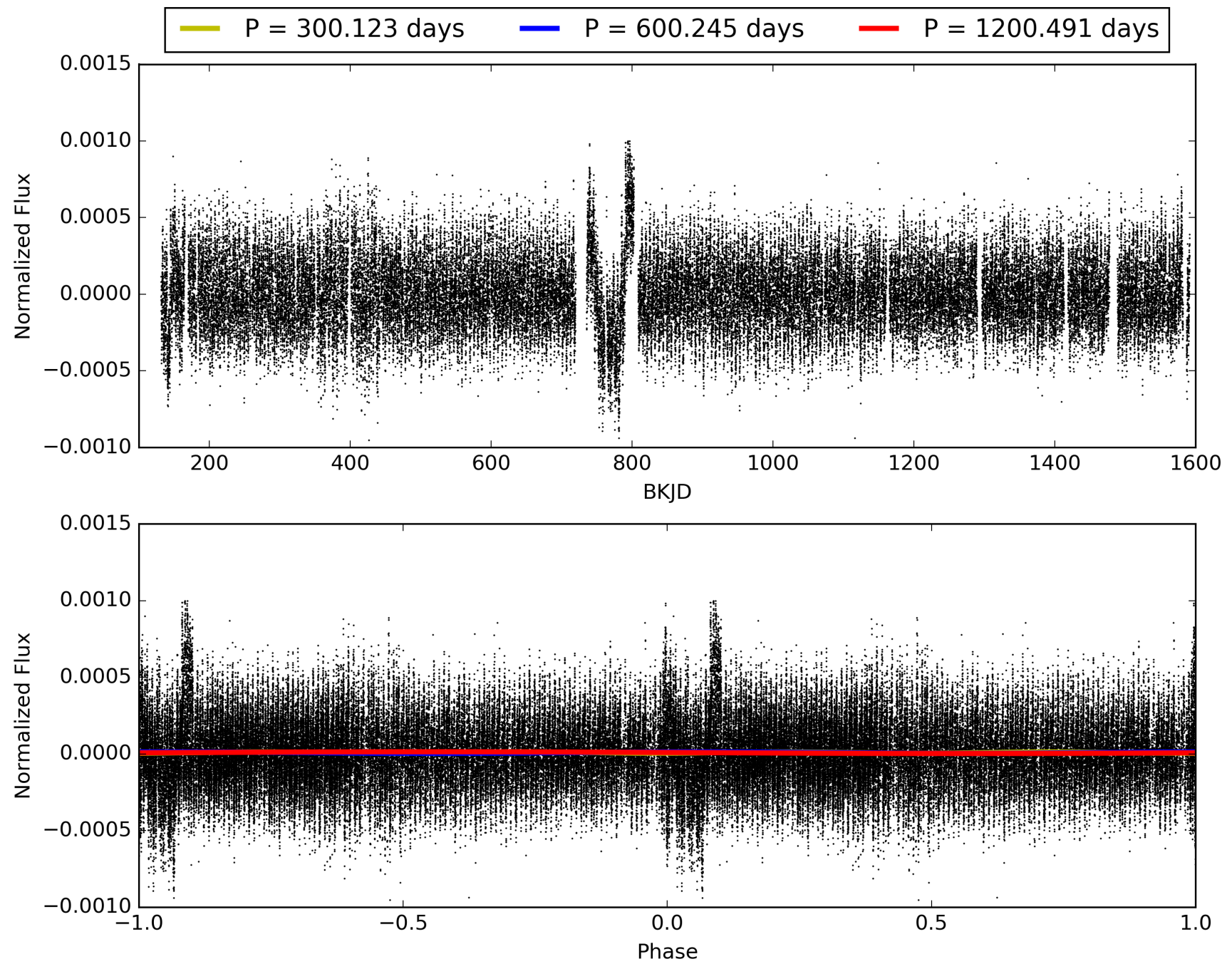
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 05:55:11 Z

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

# TCE 012458666-02, PDC Light Curves



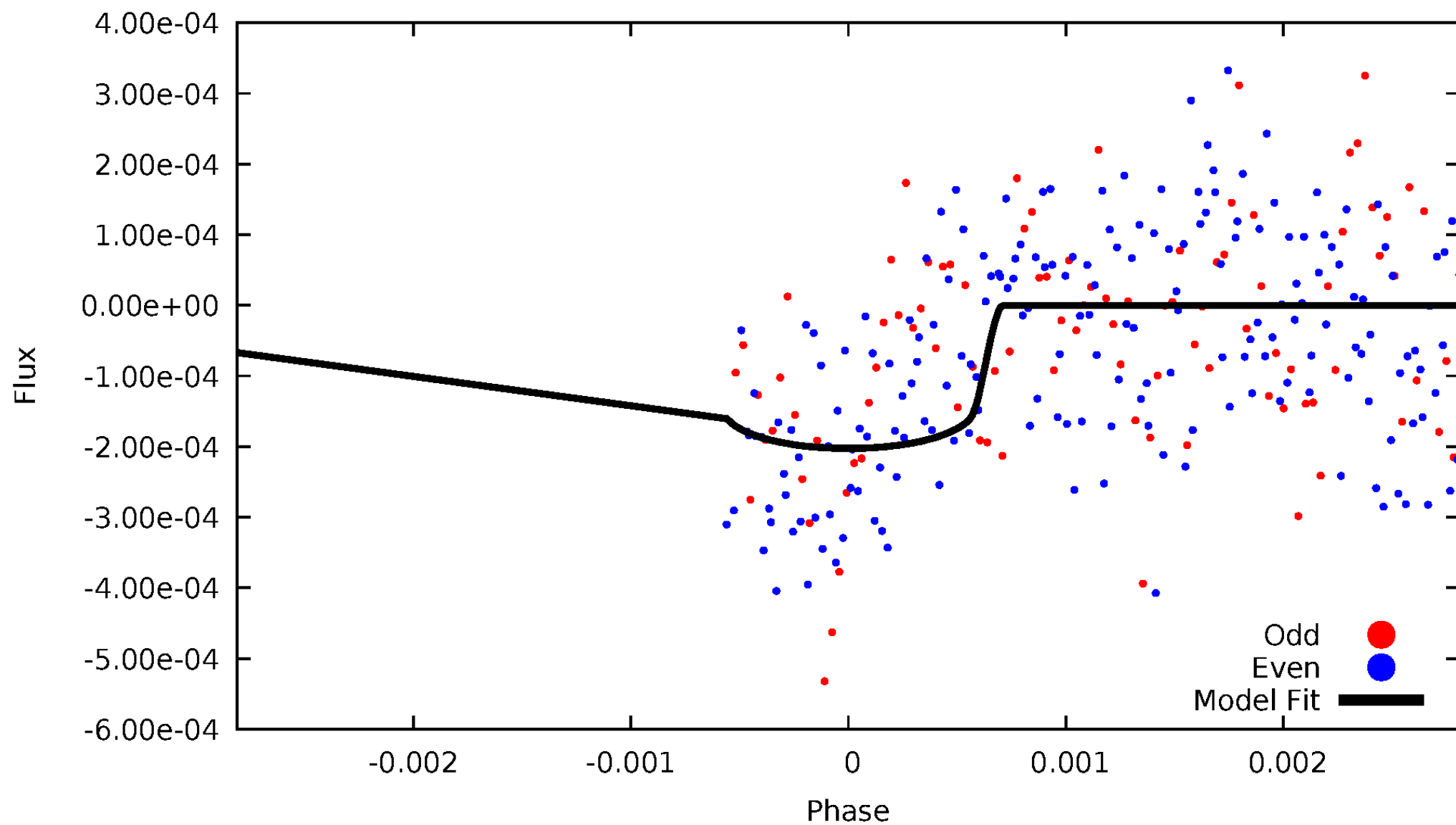
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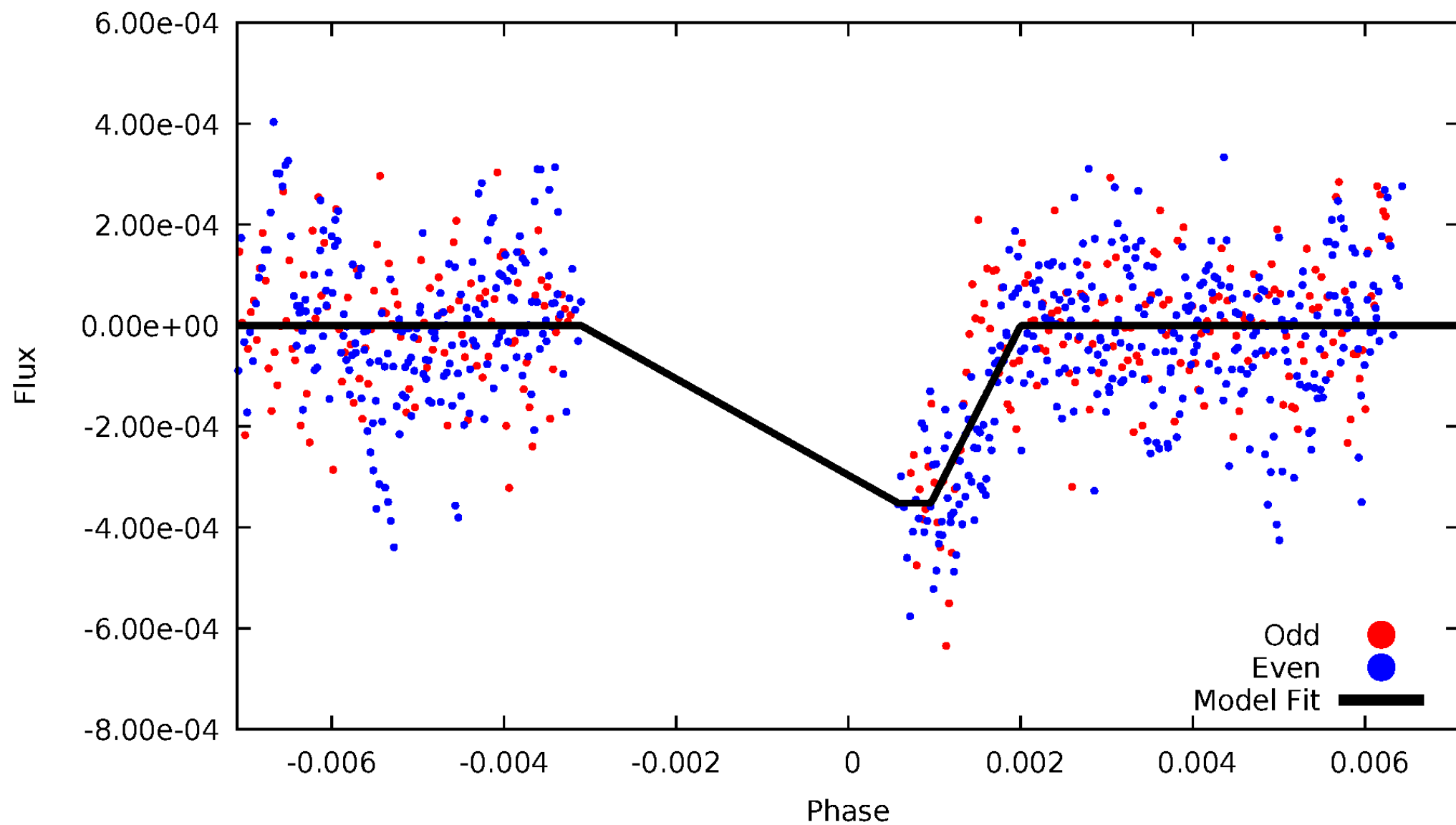
# DV Odd/Even

TCE 012458666-02



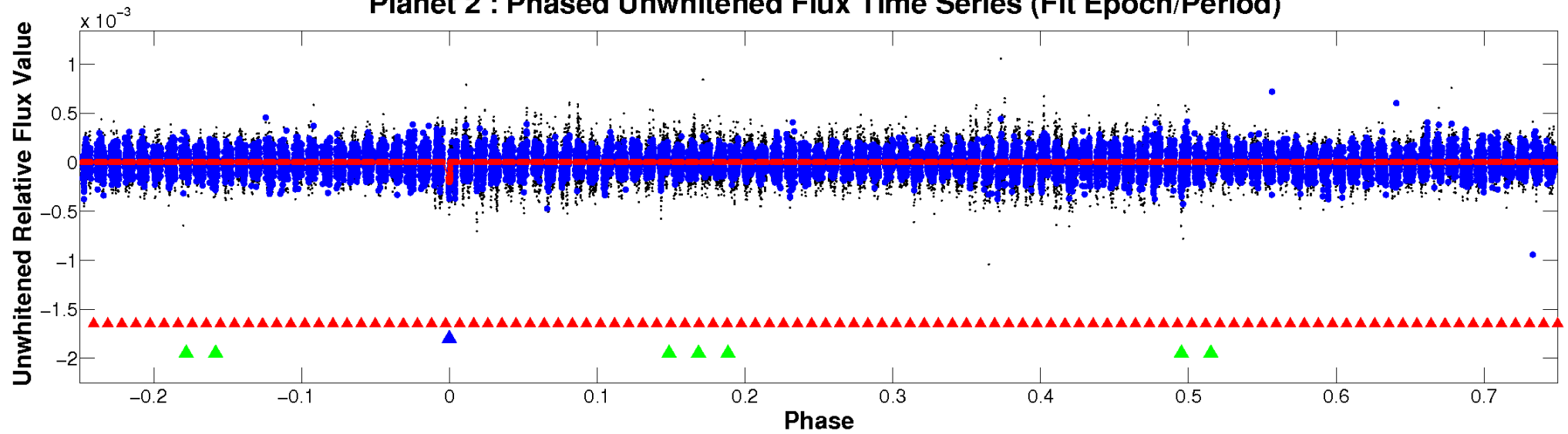
ALT Odd/Even

TCE 012458666-02

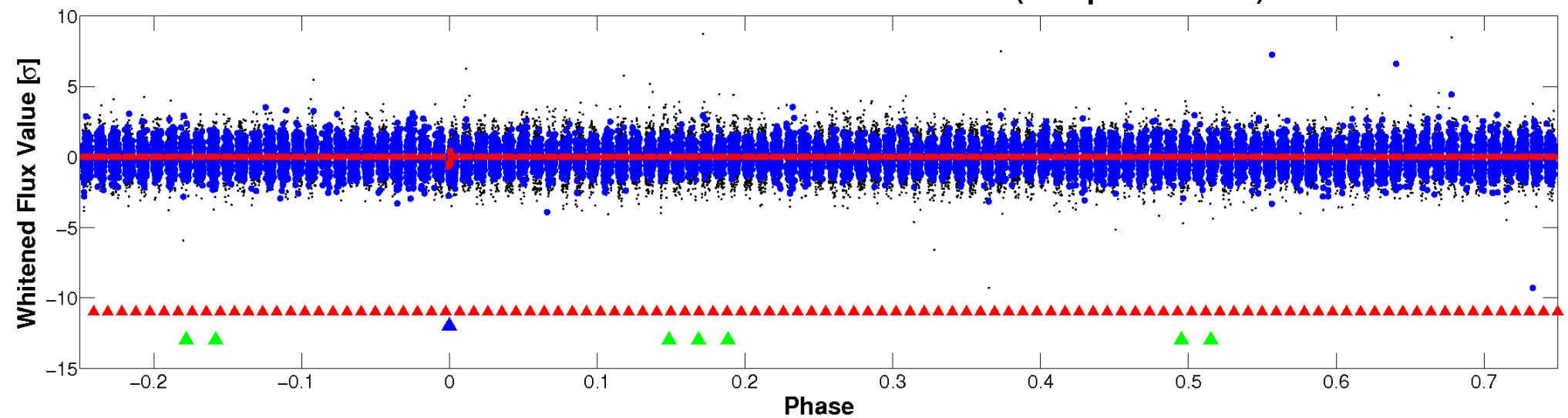


# Non-Whitened Vs. Whitened Light Curve

## 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 012458666-02     $P=600.245378$  Days     $T_0=141.416459$  (BKJD)



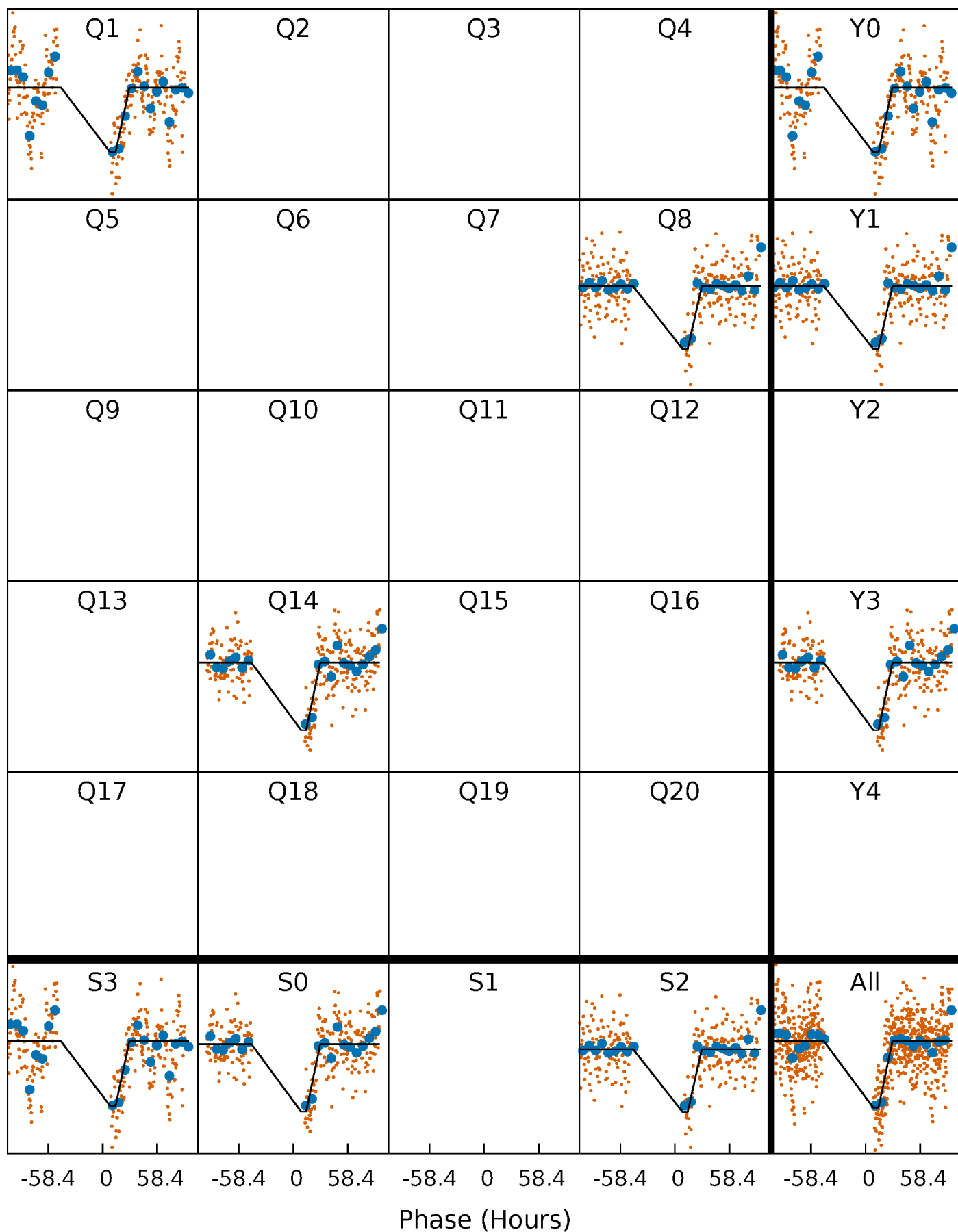
# DV Quarter-Phased Transit Curves

TCE 012458666-02     $P=600.245378$  Days     $T_0=141.416459$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 012458666-02 P=600.126846 Days  $T_0=140.788675$  (BKJD)

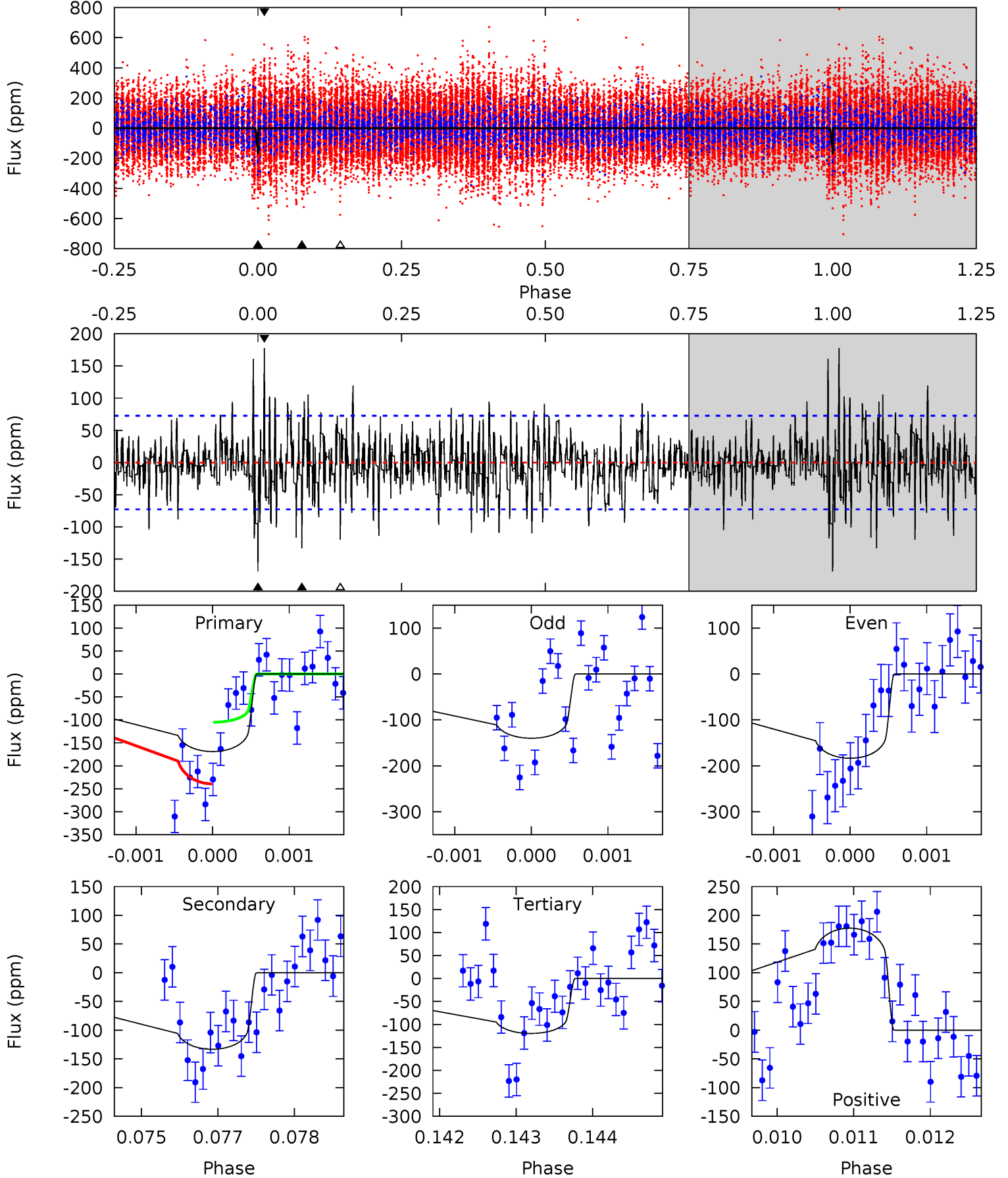




# DV Model-Shift Uniqueness Test

012458666-02, P = 600.245378 Days, E = 141.416459 Days

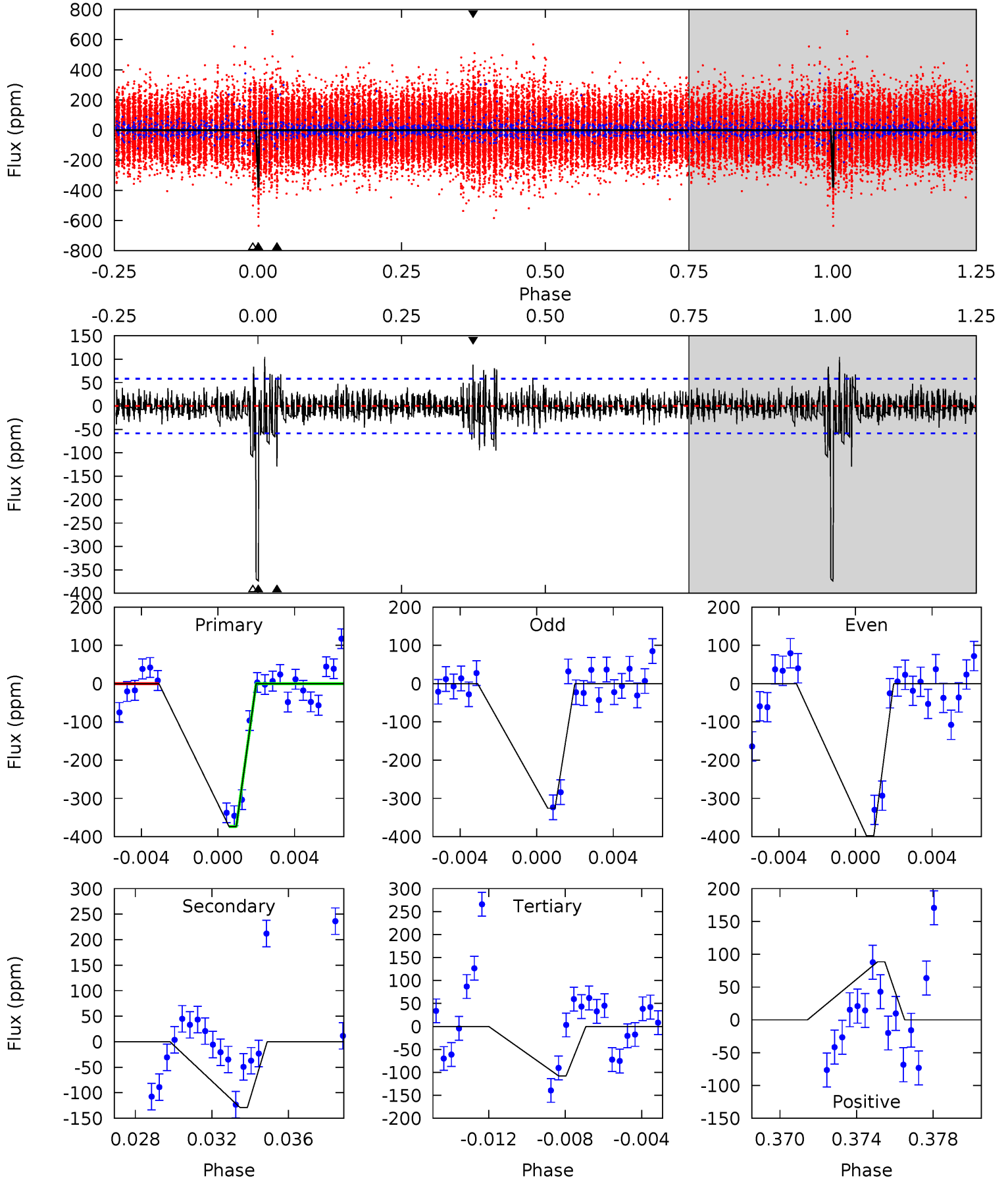
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.6	9.92	8.91	13.2	5.41	3.23	2.76	3.67	-0.65	1.01	-3.30	1.57	0.93	0.51	5.05



# Alt Model-Shift Uniqueness Test

012458666-02, P = 600.126846 Days, E = 140.788675 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
33.3	11.5	9.64	7.89	5.20	2.88	1.75	23.7	25.4	1.88	3.63	3.10	0.94	0.22	0



### Stellar Parameters For KIC 012458666

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6826^{+153}_{-204}$	$3.616^{+0.289}_{-0.051}$	$0.080^{+0.250}_{-0.250}$	$3.597^{+0.325}_{-1.299}$	$1.948^{+0.159}_{-0.370}$	$0.059^{+0.124}_{-0.011}$
	+2%/-3%	+8%/-1%	+312%/-312%	+9%/-36%	+8%/-19%	+210%/-18%
Source	PHO1	FLK73	KIC0	DSEP		

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

### Secondary Eclipse Parameters for KIC 012458666-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-133 \pm 13$	$5.59^{+1.25}_{-1.17}$	$589^{+28}_{-47}$	$5857^{+600}_{-431}$	$6949^{+4223}_{-2212}$
Alt.	$-129 \pm 11$	$6.97^{+1.31}_{-1.50}$	$592^{+27}_{-54}$	$5324^{+396}_{-338}$	$4424^{+2801}_{-1261}$

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

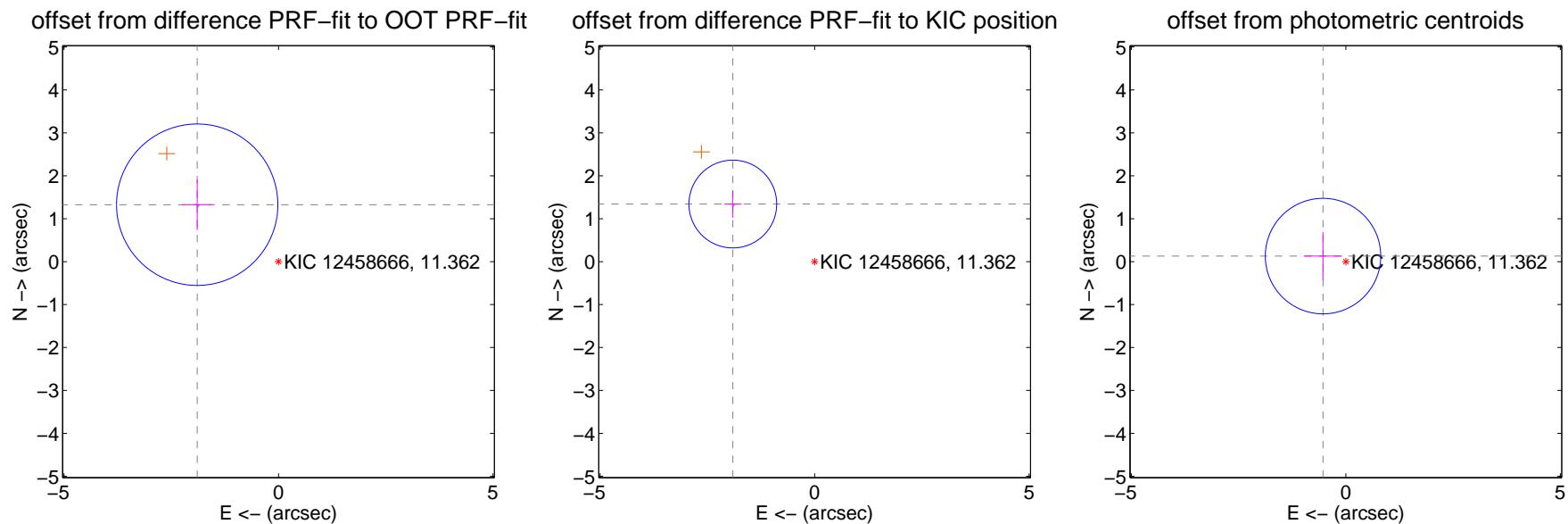
## DV Centroid Data

Supplemental centroid analysis for 012458666-02. **Kepler magnitude: 11.36.** Transit SNR 5.35

**There are 1 quarters with good PRF difference image offsets**

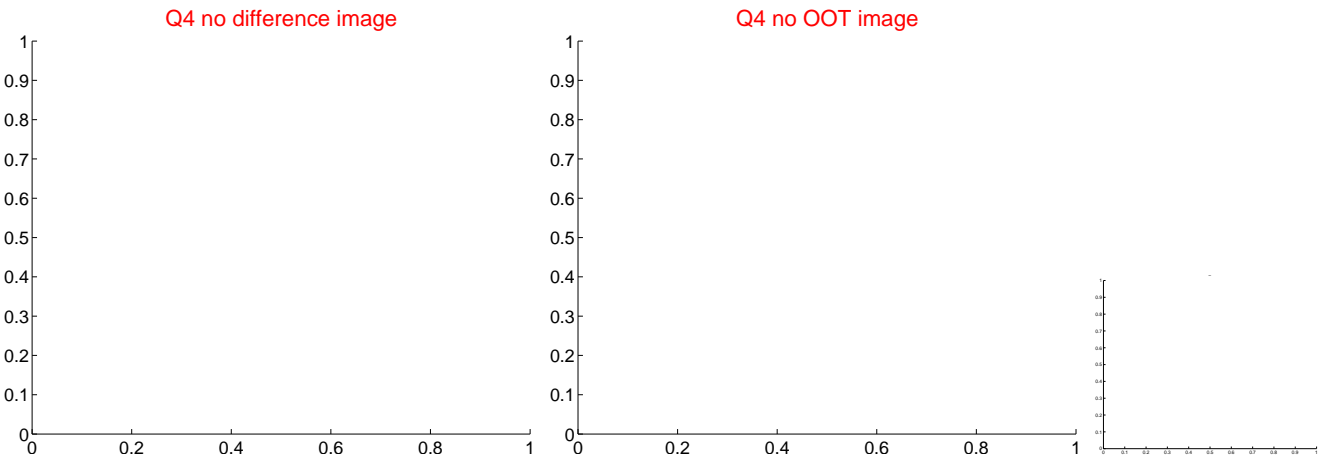
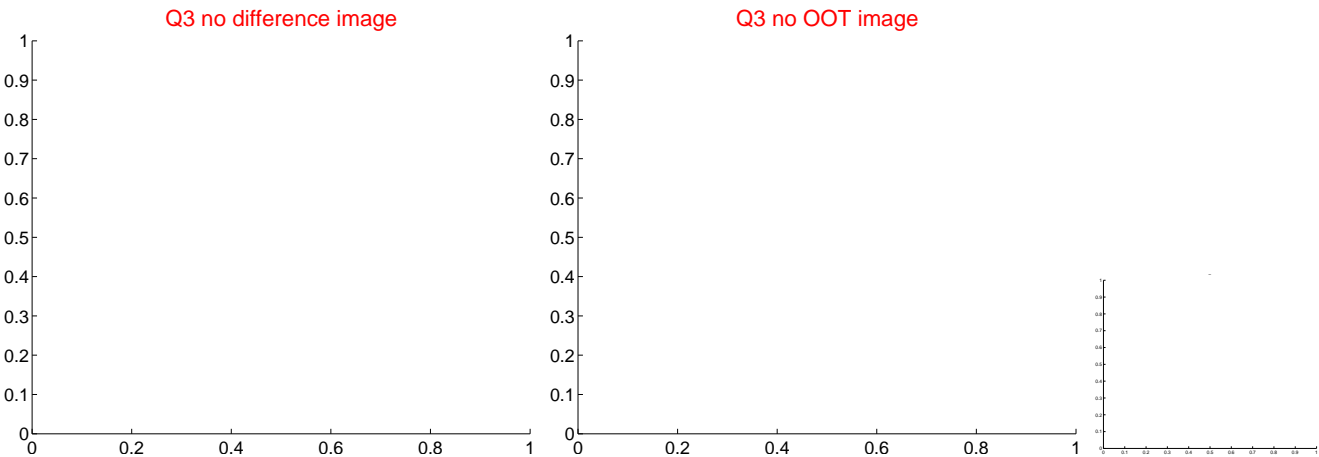
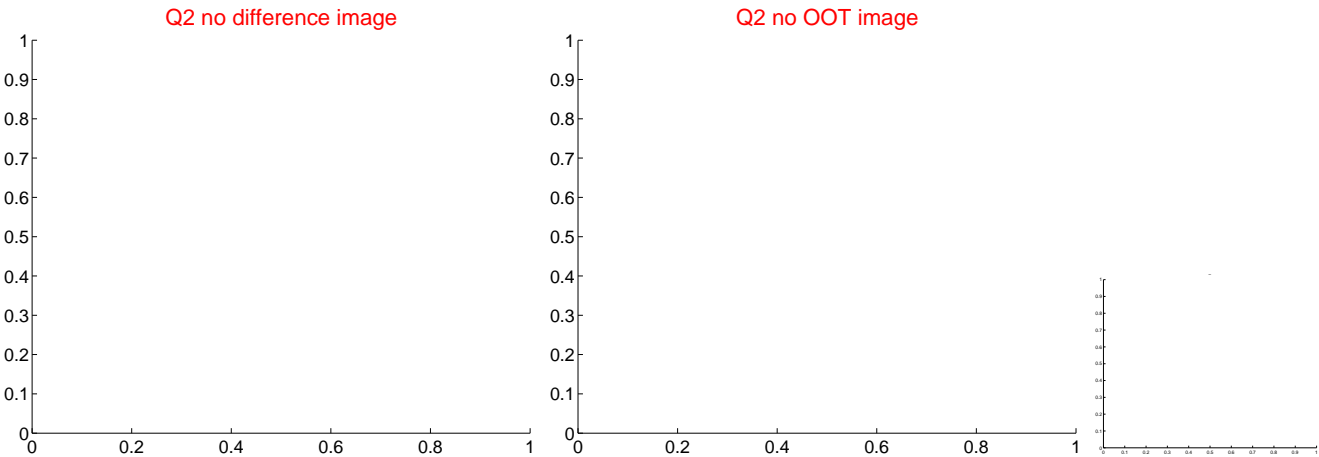
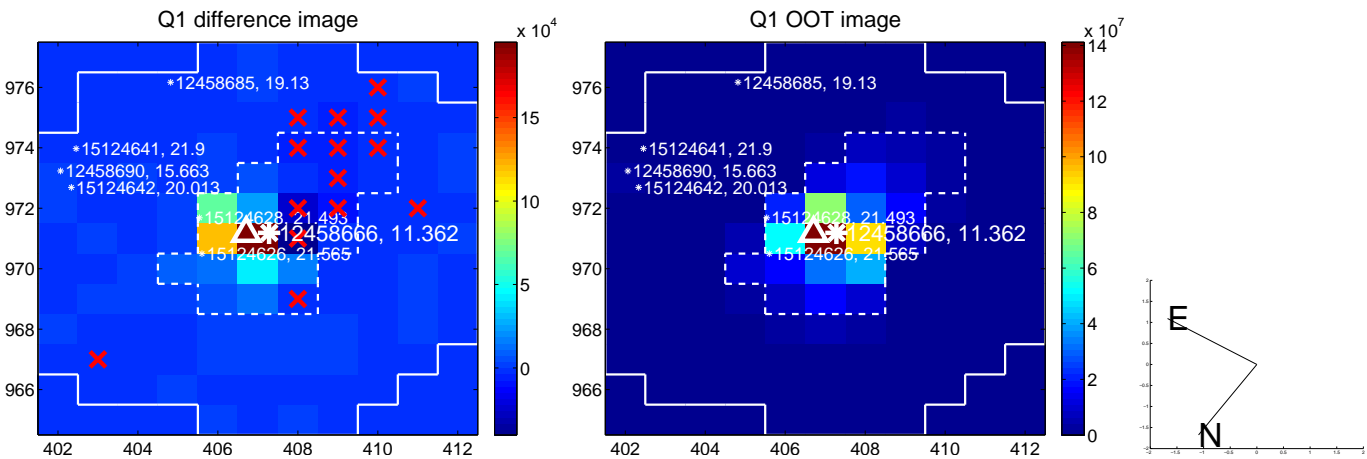
The direct PRF centroid is offset from the target star catalog position by about 0.05 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	<b>2.314 <math>\pm</math> 0.627</b>	<b>3.69</b>	1.896 $\pm$ 0.356	1.326 $\pm$ 0.591
PRF-fit source offset from KIC position	<b>2.332 <math>\pm</math> 0.341</b>	<b>6.84</b>	1.907 $\pm$ 0.200	1.342 $\pm$ 0.320
photometric centroid source offset	0.55 $\pm$ 0.45	1.22	0.53 $\pm$ 0.44	0.13 $\pm$ 0.56

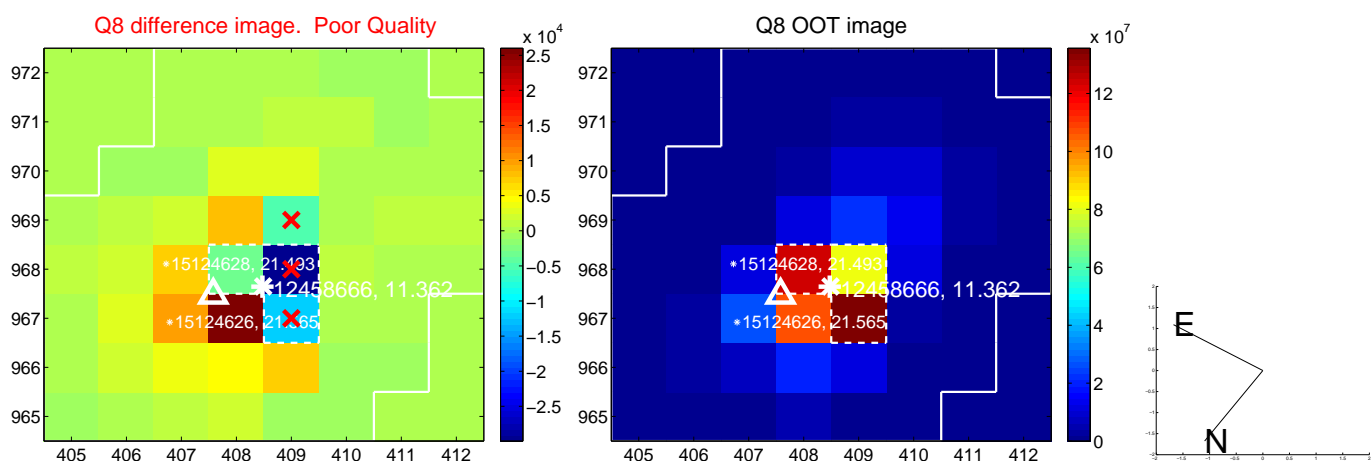
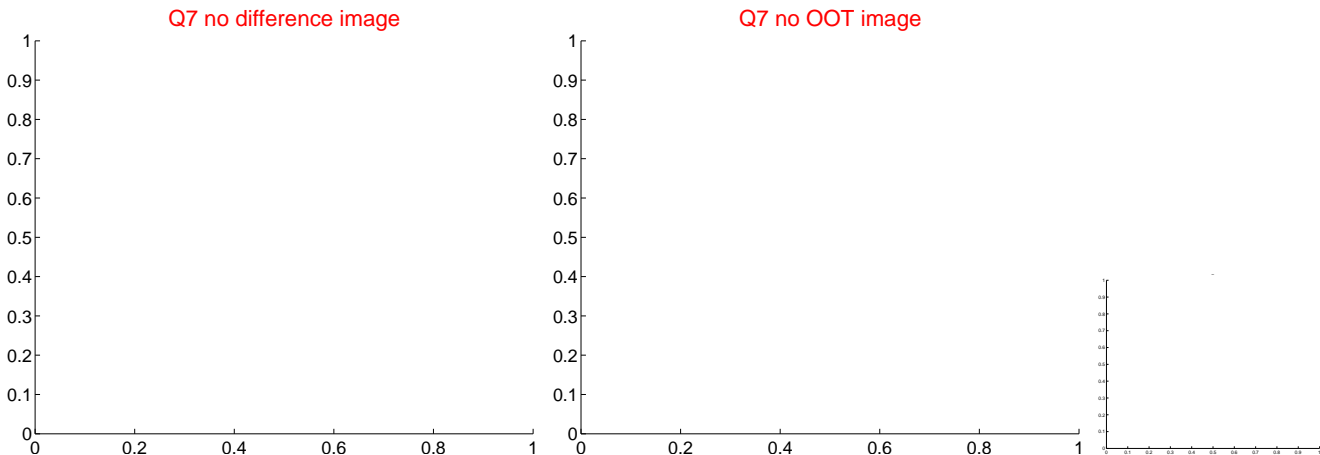
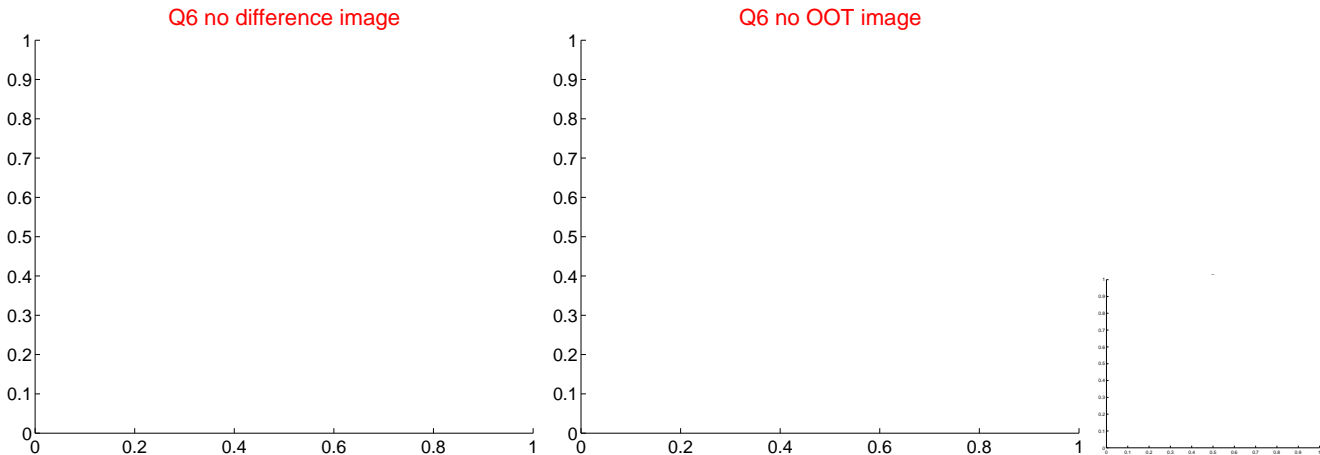
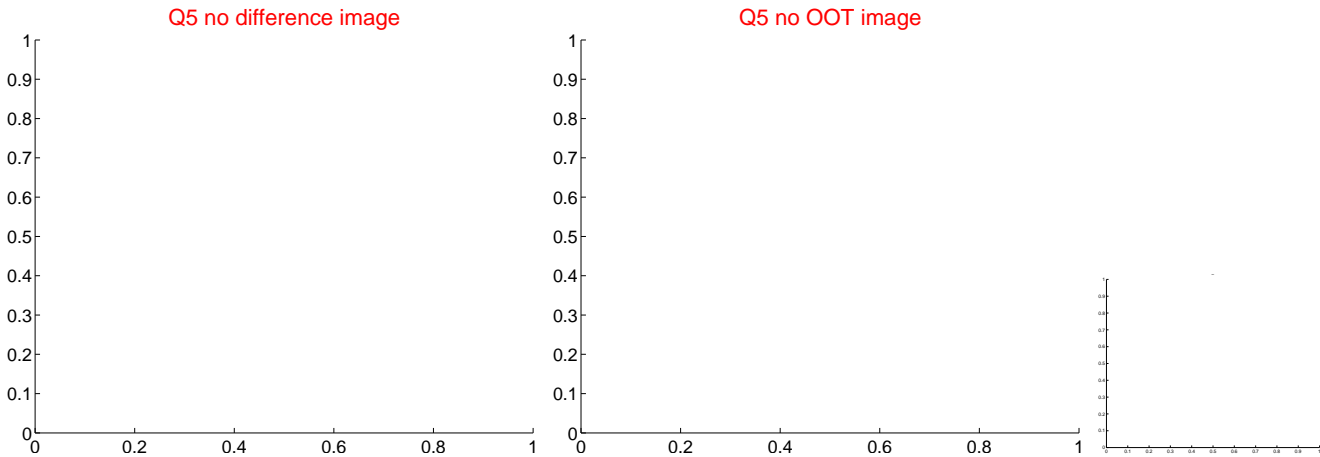


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

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



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

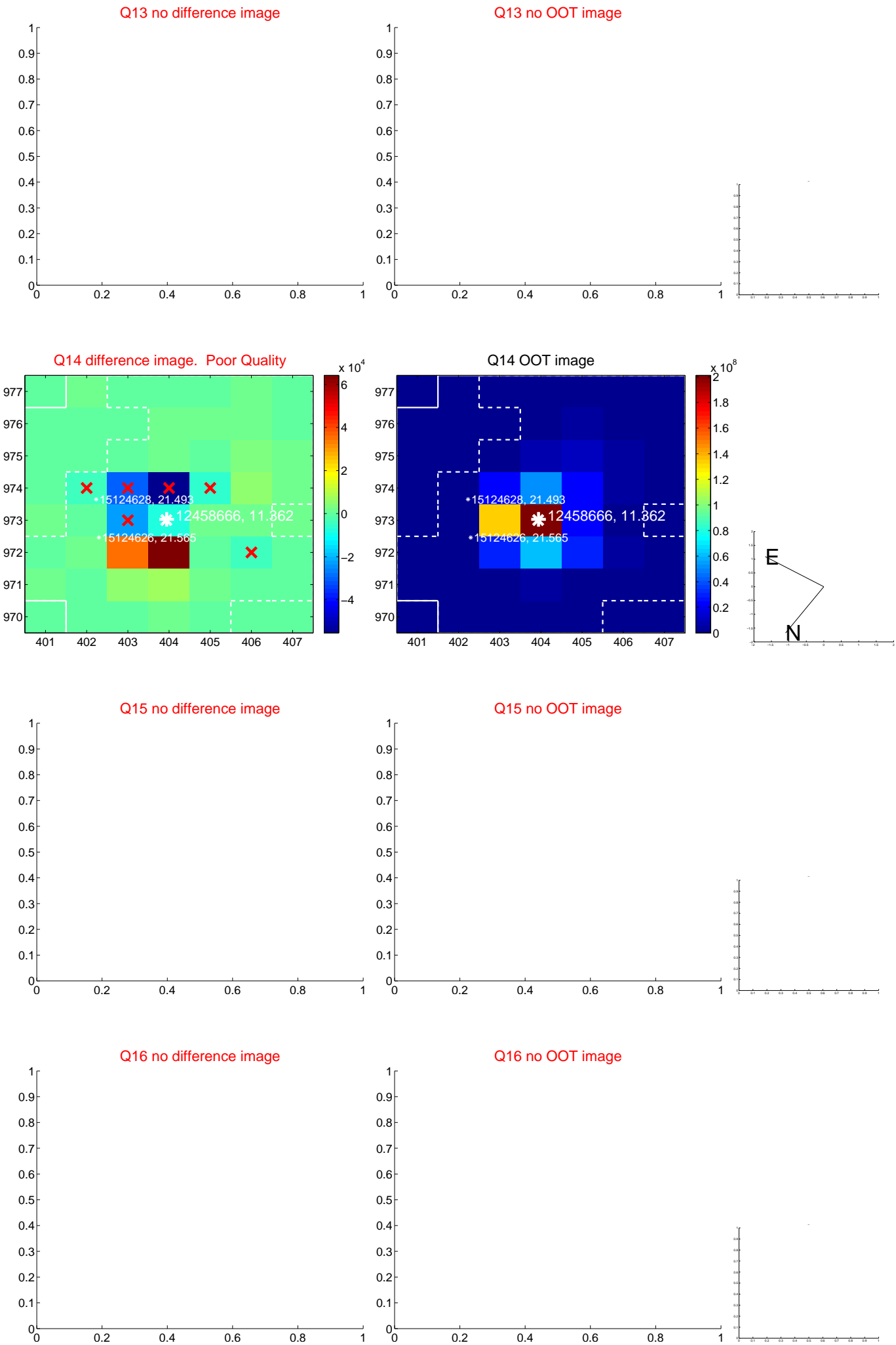




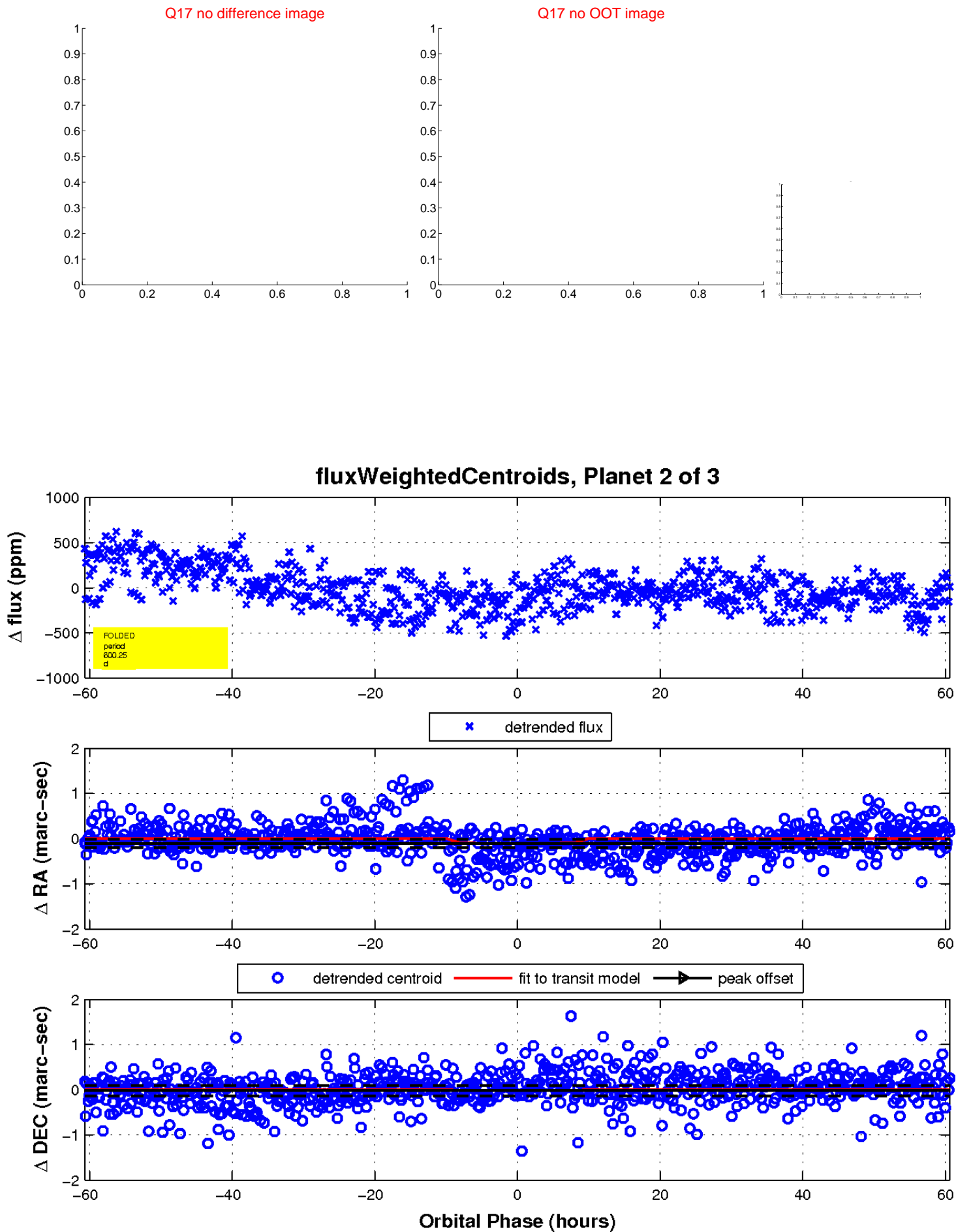
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

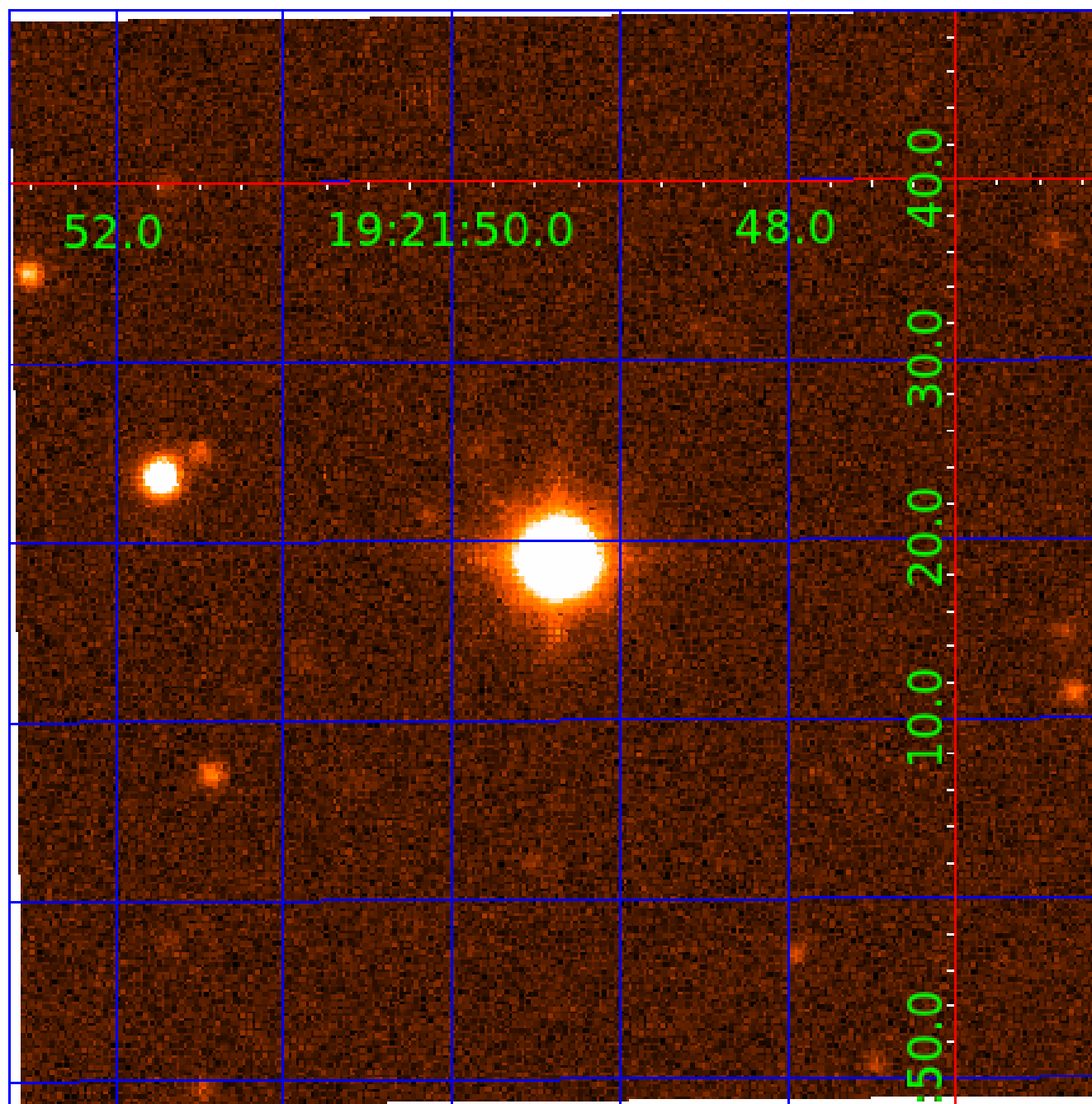


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 012458666

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
012458666-01	OBS	No	5.716316	134.232263	27.7	18.670	8.4	7.5	3.60	6826	2.63	4118.11
012458666-02	OBS	No	600.245378	141.416459	202.5	20.240	9.7	5.4	3.60	6826	6.07	8.31
012458666-03	OBS	No	196.091145	254.576270	211.8	5.516	7.4	7.9	3.60	6826	5.89	36.95

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
012458666-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV—CENT_SATURATED
012458666-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—INCONSISTENT_TRANS—CENT_SATURATED
012458666-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—CENT_SATURATED

**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.

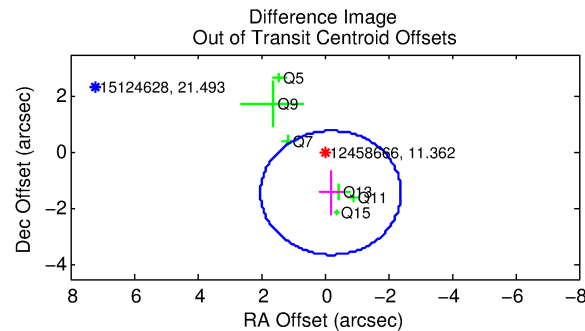
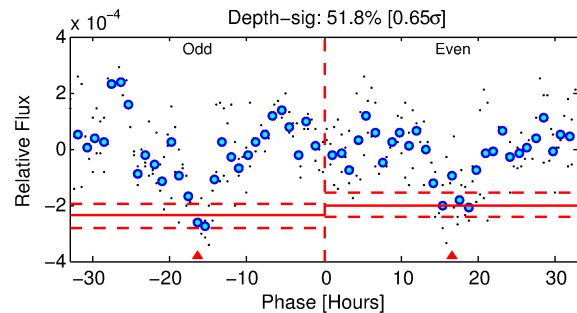
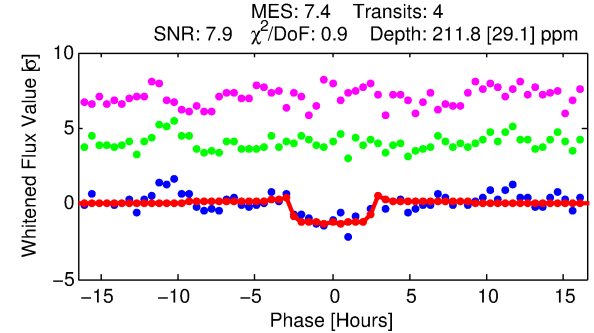
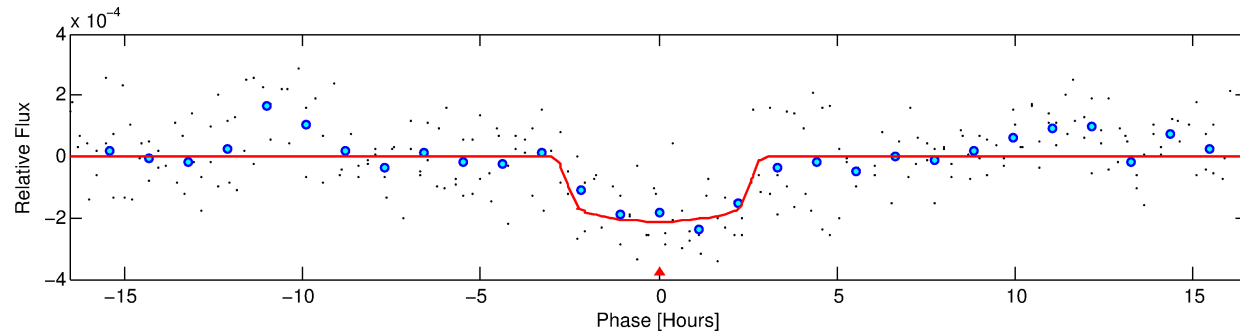
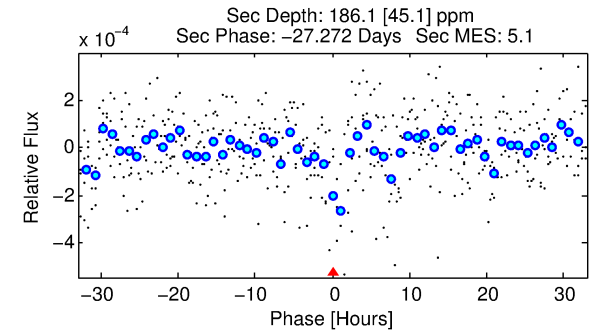
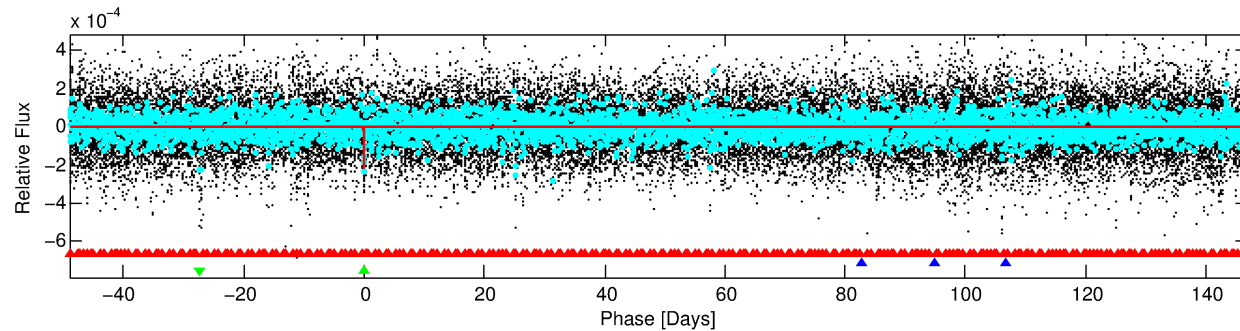
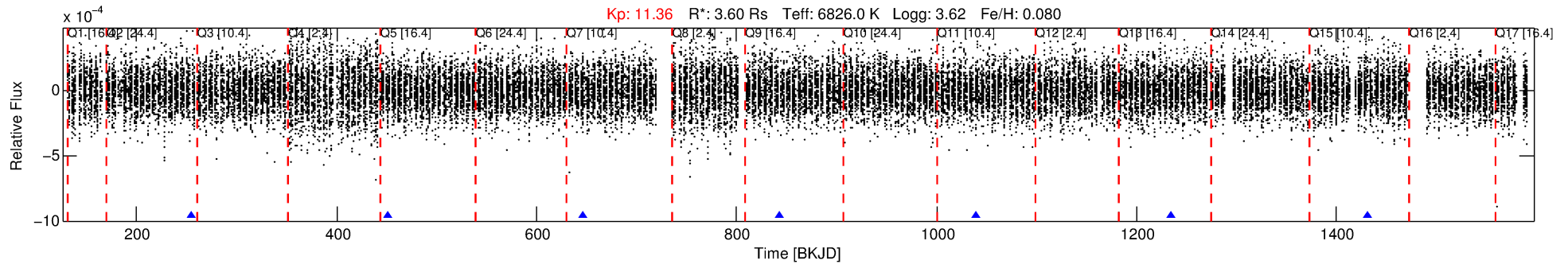
## Ephemeris Match Information For 012458666-03

No Significant Match Found



# DV One-Page Summary

KIC: 12458666 Candidate: 3 of 3 Period: 196.091 d



## DV Fit Results:

Period = 196.09115 [0.00288] d  
Epoch = 254.5763 [0.0102] BKJD  
Rp/R\* = 0.0150 [0.0046]  
a/R\* = 152.65 [257.24]  
b = 0.85 [0.58]  
Seff = 36.95 [19.16]  
Teq = 629 [82] K  
Rp = 5.89 [2.78] Re  
a = 0.8253 [0.2702] AU  
Ag = 2009.84 [1660.75] [1.21σ]  
Teffp = 6508 [1082] K [5.42σ]

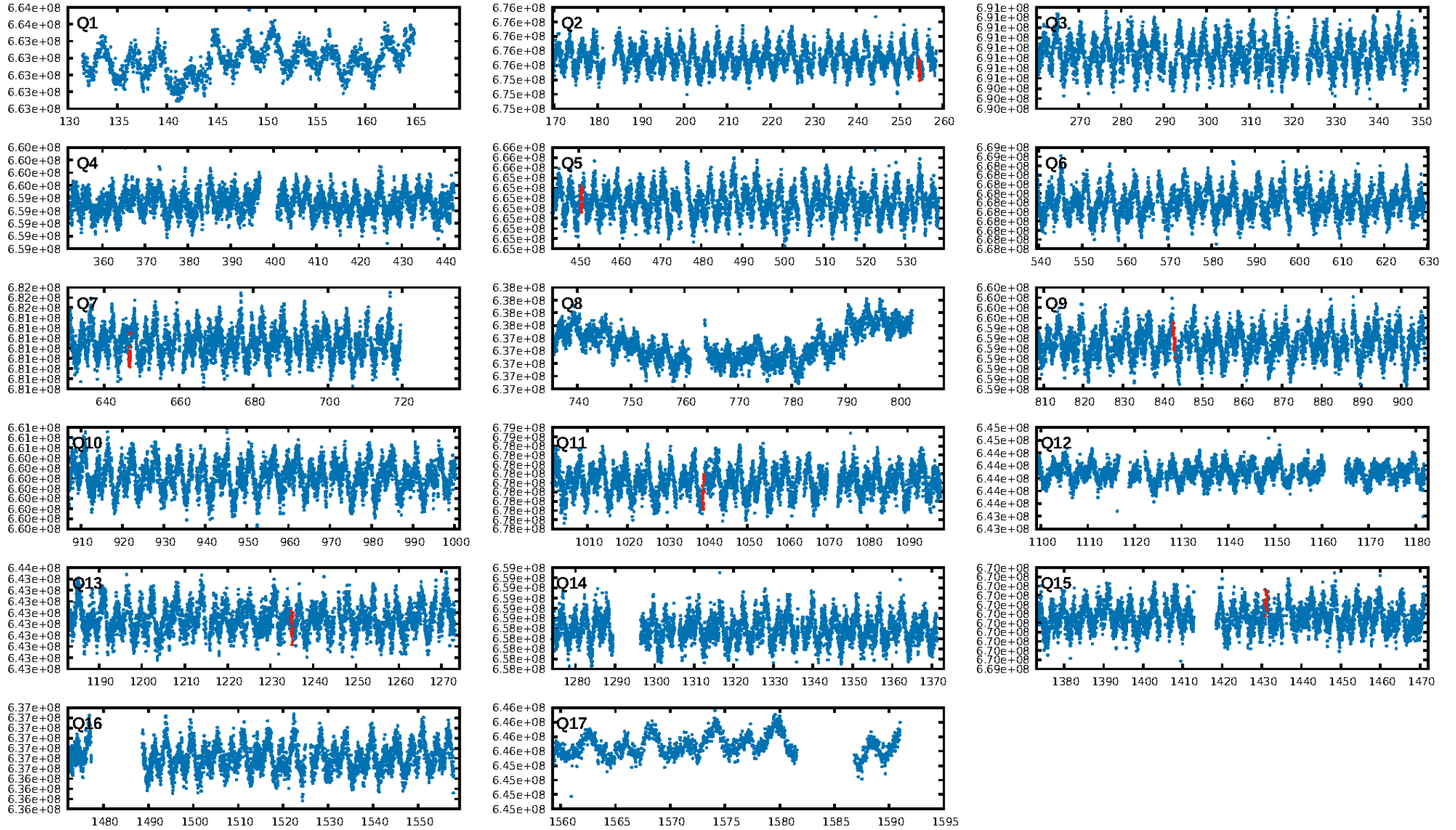
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [234.69σ]  
LongPeriod-sig: 100.0% [462.36σ]  
ModelChiSquare2-sig: 72.5%  
ModelChiSquareGof-sig: 99.4%  
**Bootstrap-pfa: 3.32e-08**  
RollingBand-fgt: 1.00 [4/4]  
GhostDiagnostic-chr: -2.981  
Centroid-sig: 81.4%  
Centroid-so: 0.303 arcsec [0.60σ]  
OotOffset-rm: 1.444 arcsec [1.96σ]  
KicOffset-rm: 1.543 arcsec [1.72σ]  
OotOffset-st: 0/3/0/3 [6]  
KicOffset-st: 0/3/0/3 [6]  
DiffImageQuality-fgm: 0.67 [4/6]  
DiffImageOverlap-fno: 0.57 [4/7]

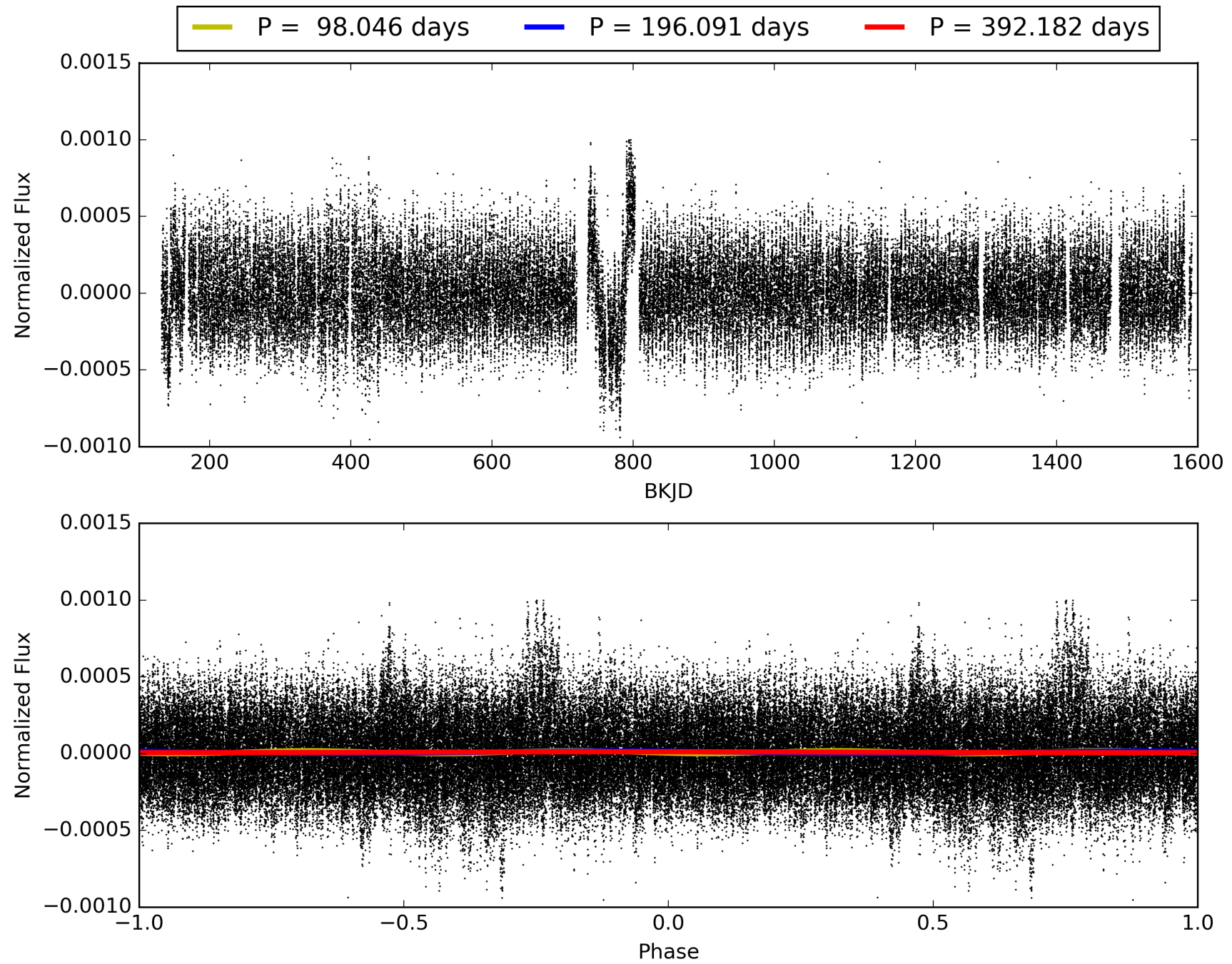
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 05:55:22 Z

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

# TCE 012458666-03, PDC Light Curves

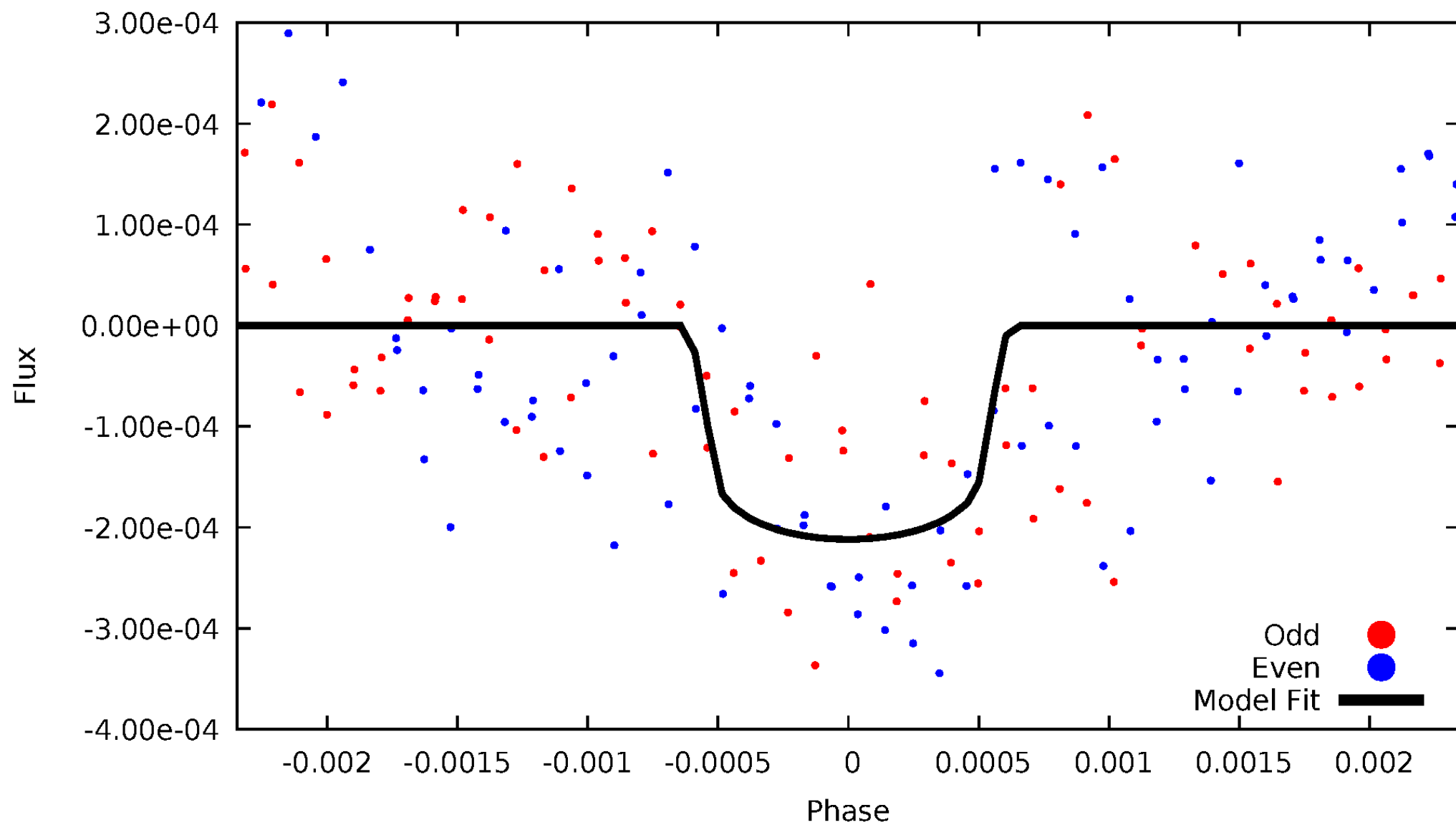


TCE 012458666-03



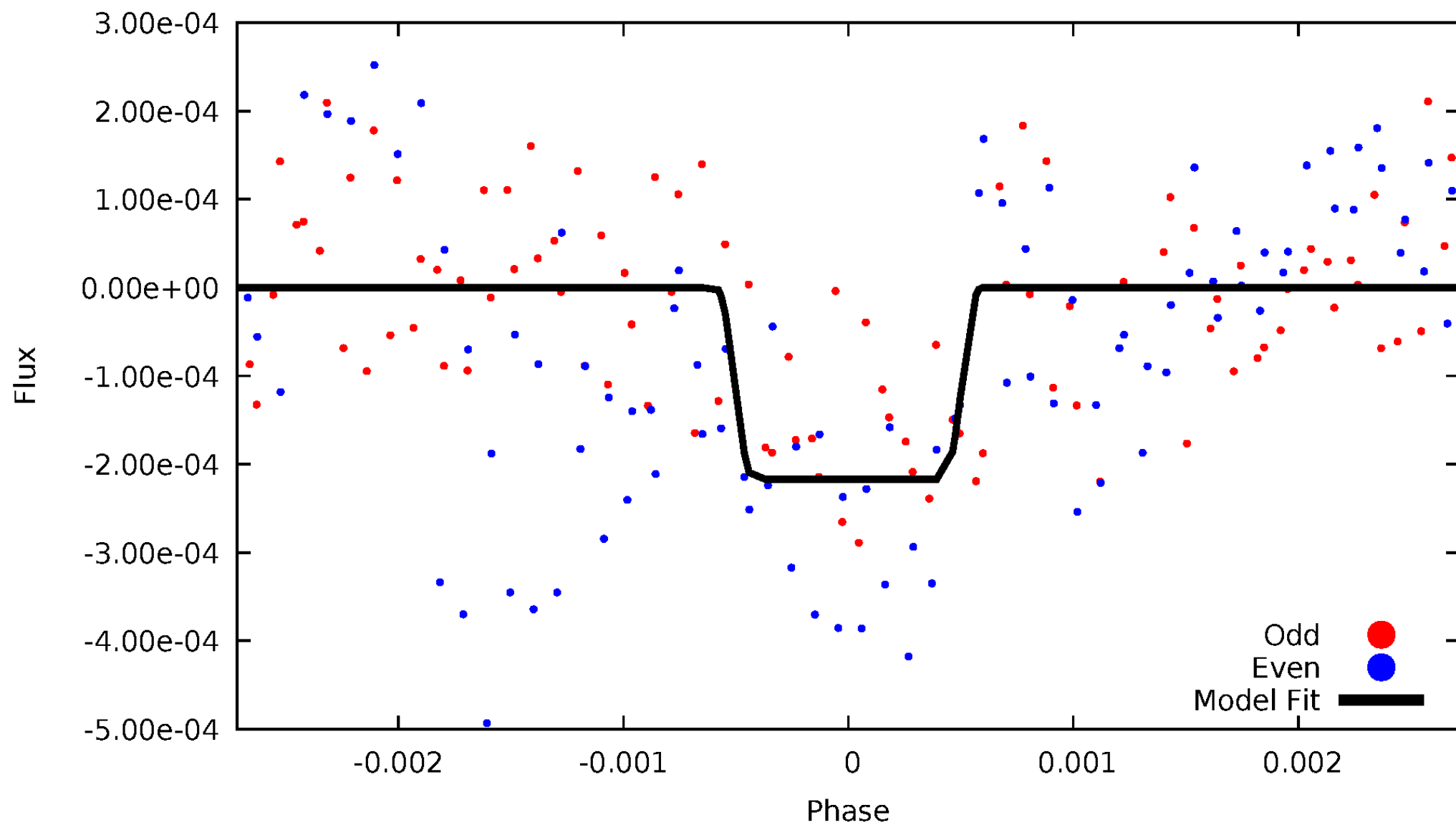
# DV Odd/Even

TCE 012458666-03



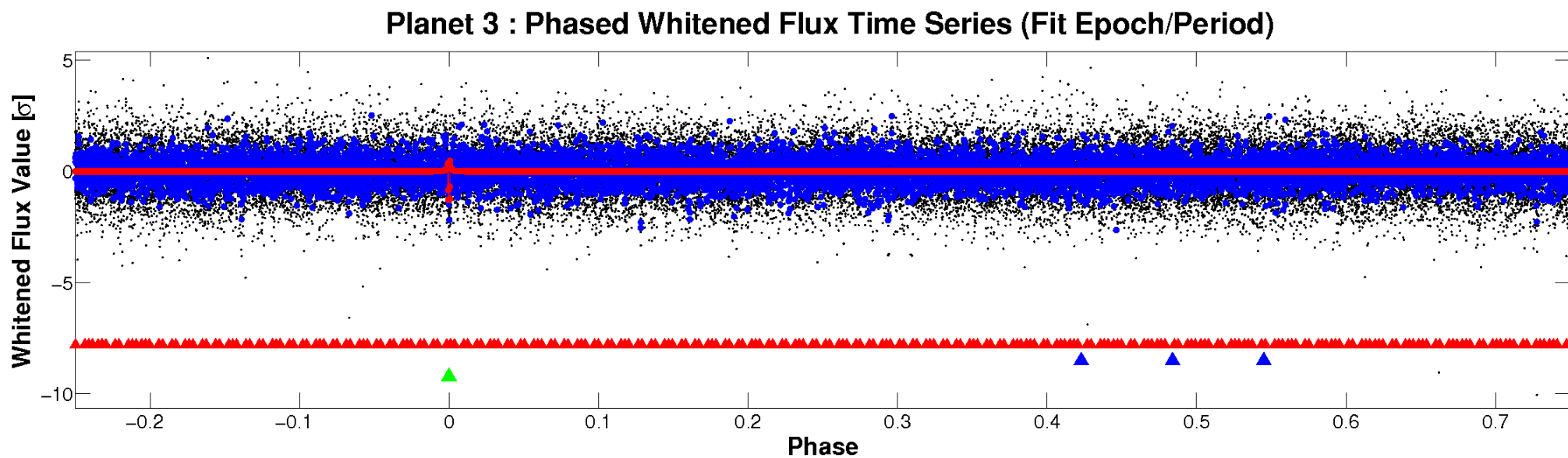
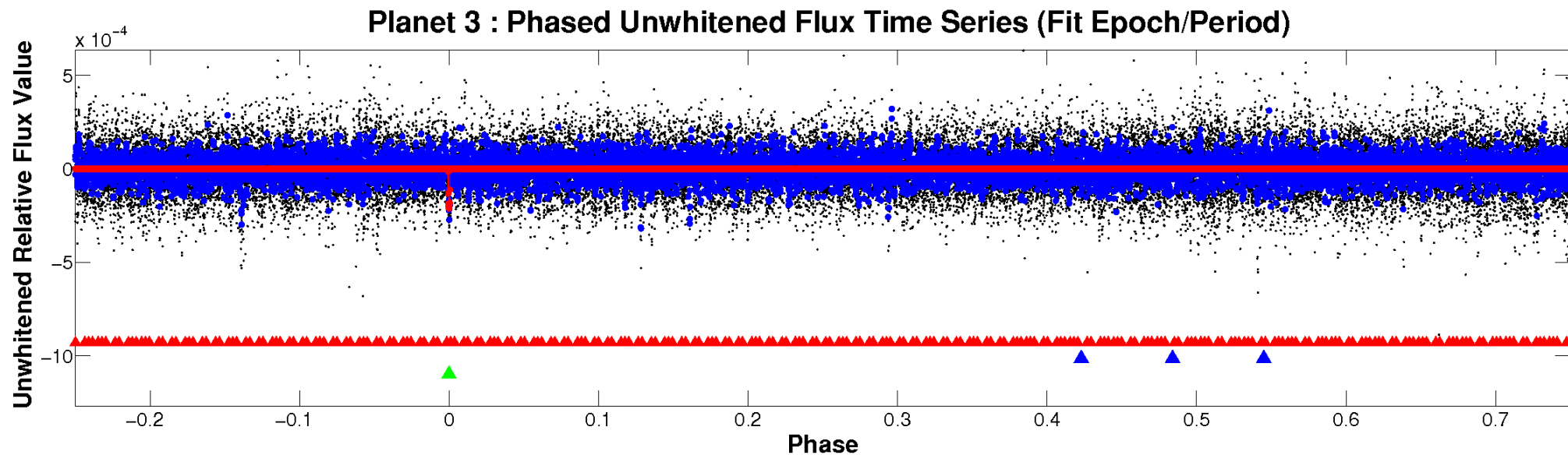
# ALT Odd/Even

TCE 012458666-03



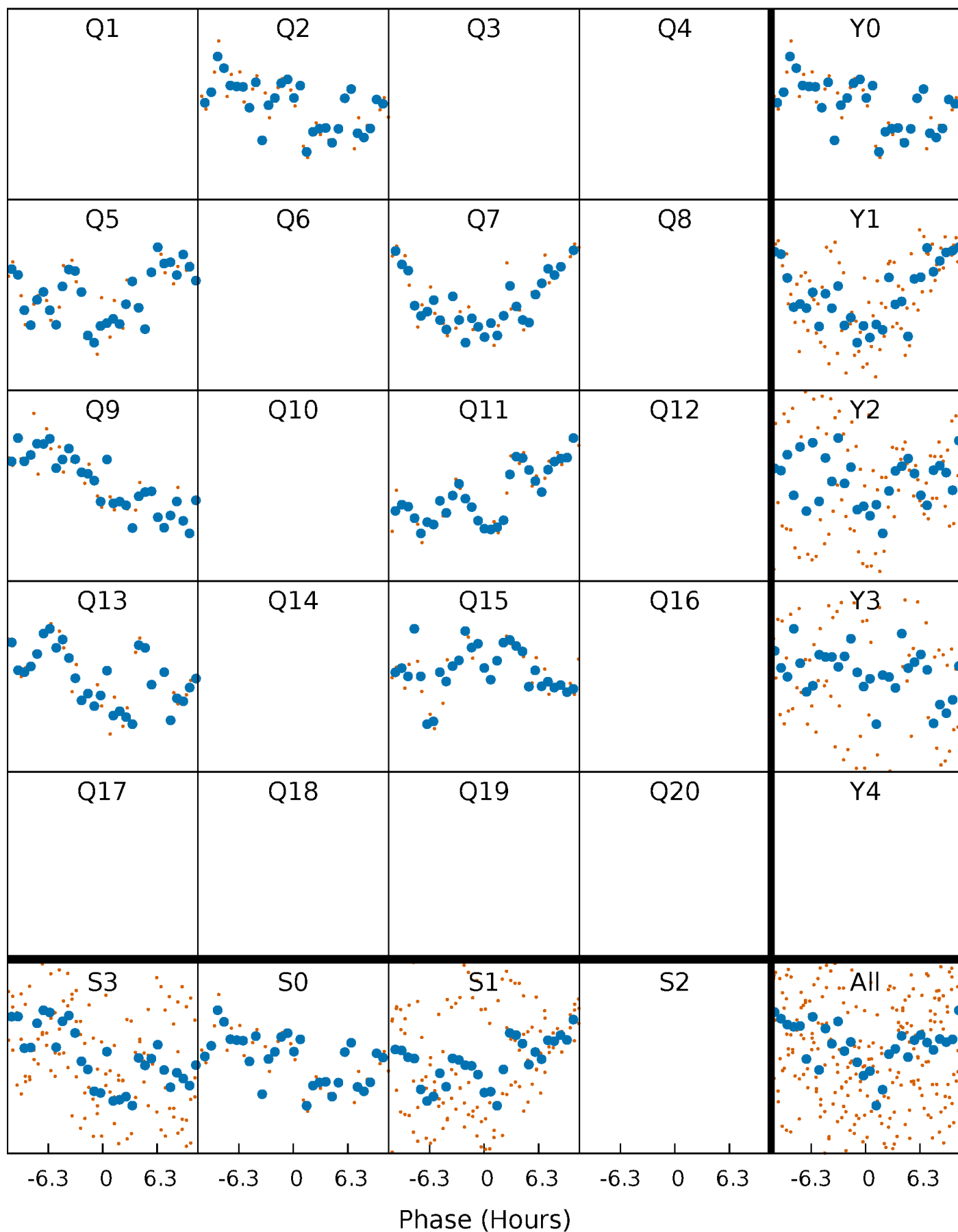


# Non-Whitened Vs. Whitened Light Curve



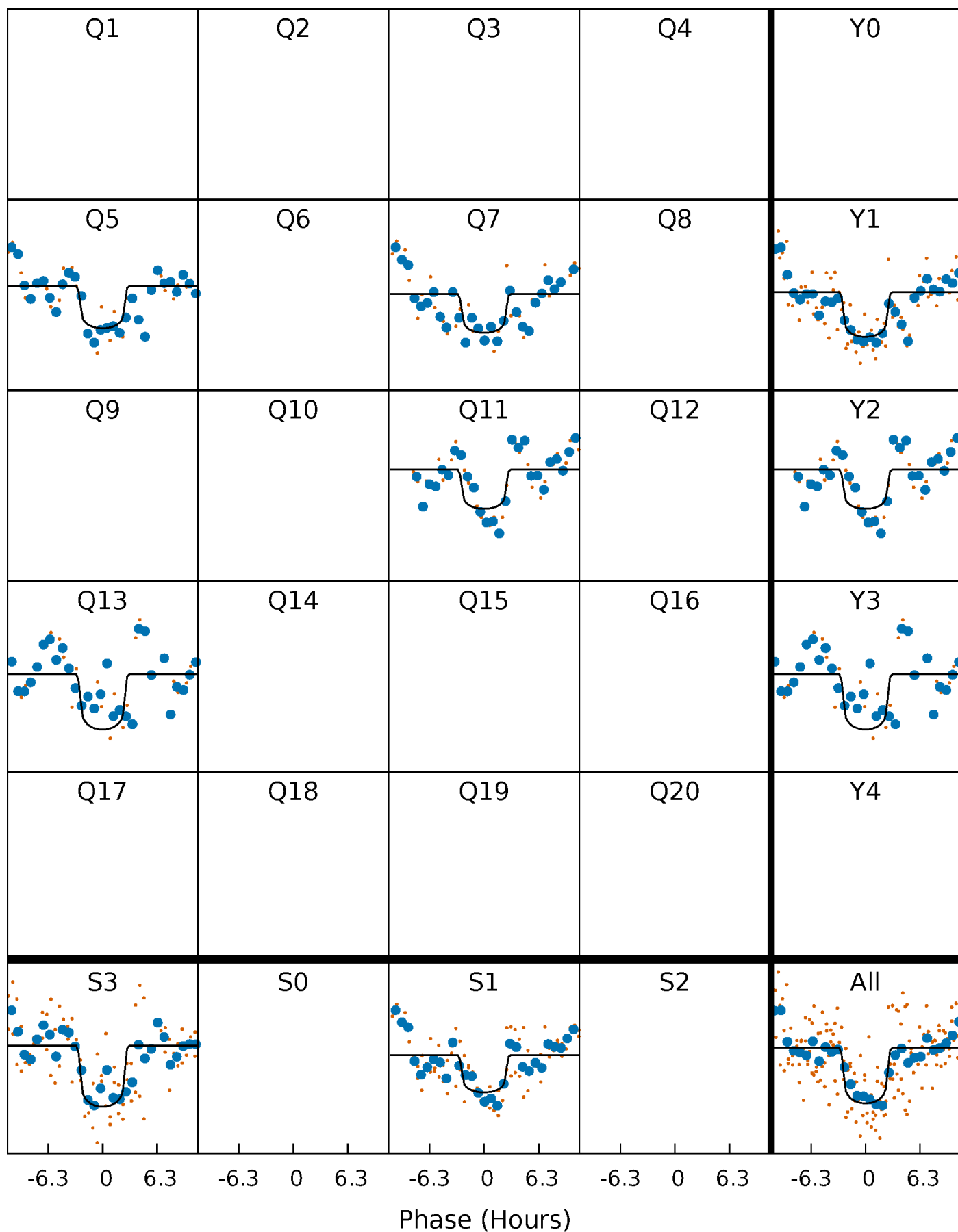
# PDC Quarter-Phased Transit Curves

TCE 012458666-03   P=196.091145 Days    $T_0=254.576270$  (BKJD)



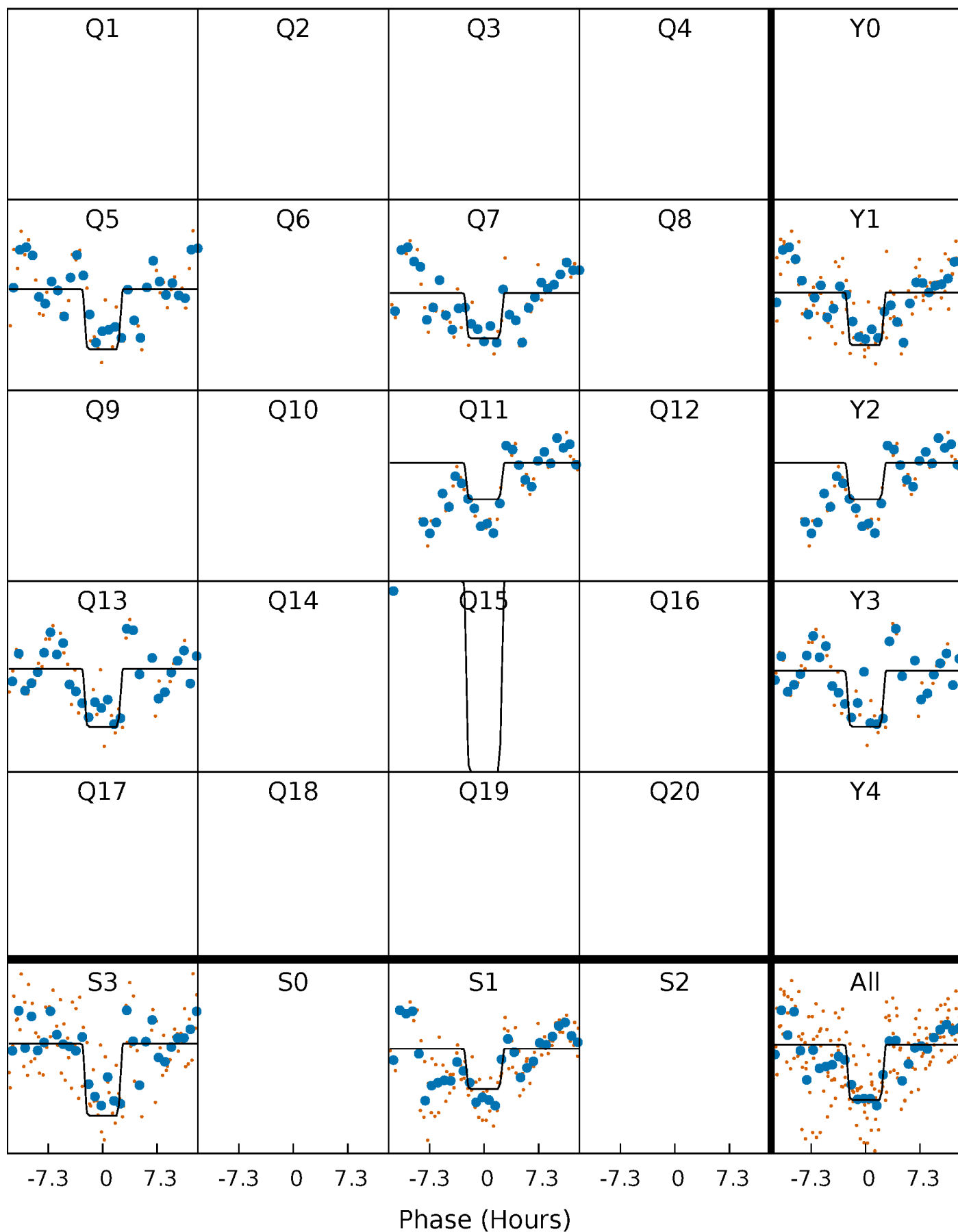
# DV Quarter-Phased Transit Curves

TCE 012458666-03     $P=196.091145$  Days     $T_0=254.576270$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

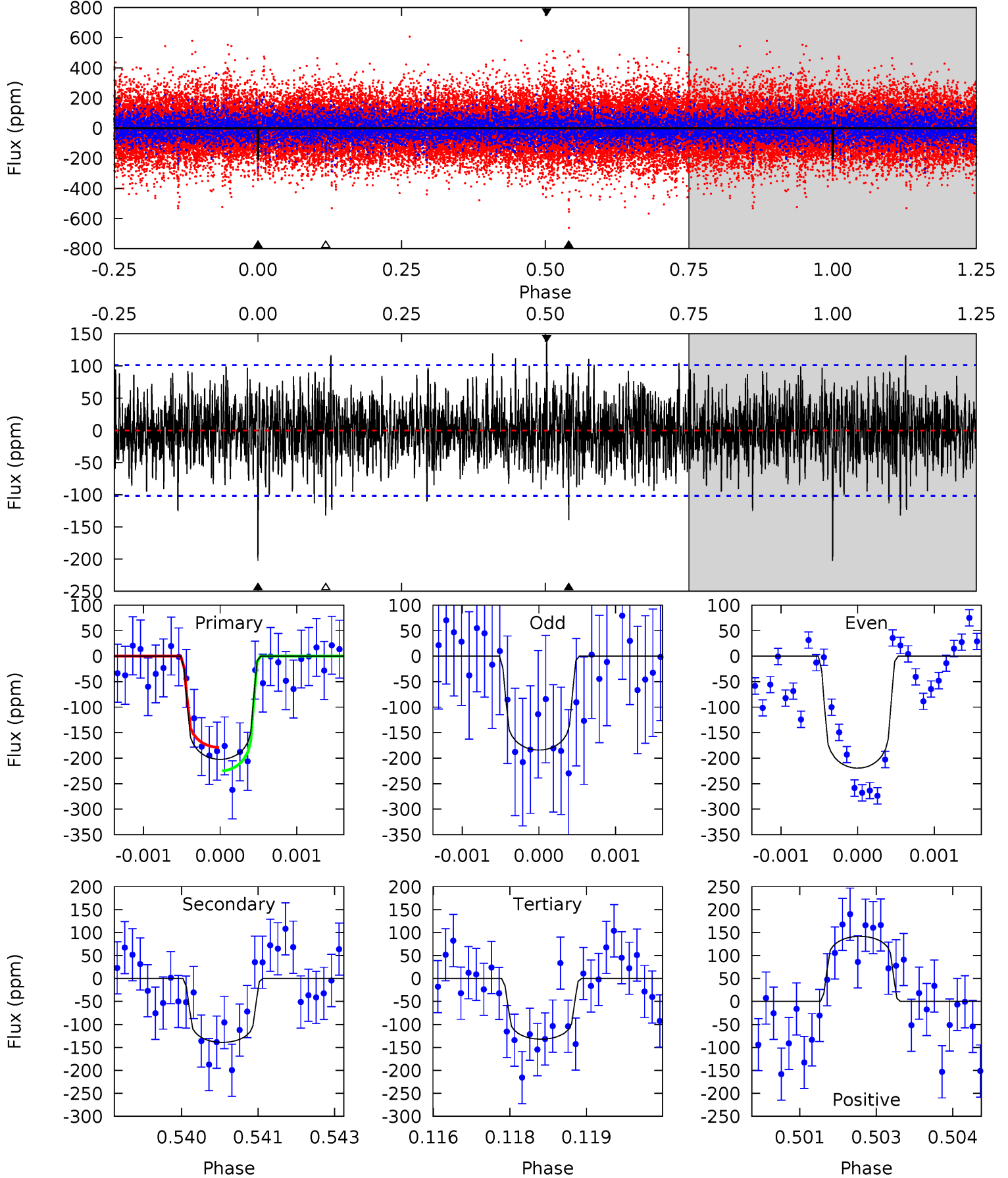
TCE 012458666-03 P=196.103027 Days  $T_0=254.544672$  (BKJD)



# DV Model-Shift Uniqueness Test

012458666-03, P = 196.091145 Days, E = 58.485125 Days

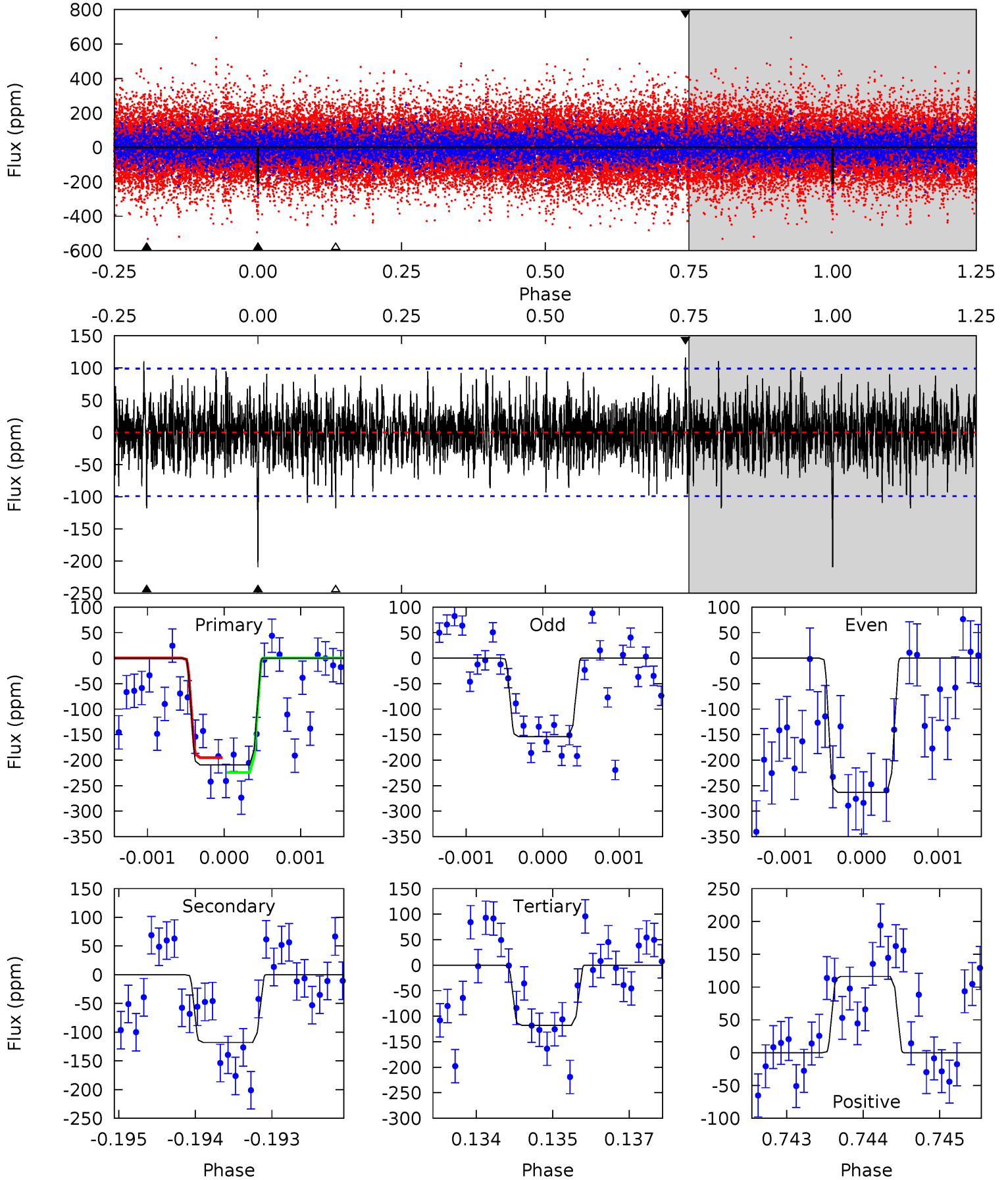
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.8	7.41	7.03	7.55	5.41	3.23	1.92	3.74	3.22	0.37	-0.14	0.95	0.91	0.41	1.22



# Alt Model-Shift Uniqueness Test

012458666-03, P = 196.103027 Days, E = 58.441645 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.5	6.46	6.44	6.36	5.42	3.24	1.66	5.01	5.10	0.01	0.10	2.96	1.17	0.36	0.80





### Stellar Parameters For KIC 012458666

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$6826^{+153}_{-204}$	$3.616^{+0.289}_{-0.051}$	$0.080^{+0.250}_{-0.250}$	$3.597^{+0.325}_{-1.299}$	$1.948^{+0.159}_{-0.370}$	$0.059^{+0.124}_{-0.011}$
	+2%/-3%	+8%/-1%	+312%/-312%	+9%/-36%	+8%/-19%	+210%/-18%
Source	PHO1	FLK73	KIC0	DSEP		

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

### Secondary Eclipse Parameters for KIC 012458666-03 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-139 \pm 19$	$5.58^{+1.81}_{-1.85}$	$859^{+37}_{-62}$	$5975^{+1214}_{-669}$	$1686^{+1895}_{-722}$
Alt.	$-118 \pm 18$	$5.25^{+1.76}_{-1.84}$	$855^{+41}_{-72}$	$5888^{+1390}_{-728}$	$1602^{+2077}_{-731}$

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

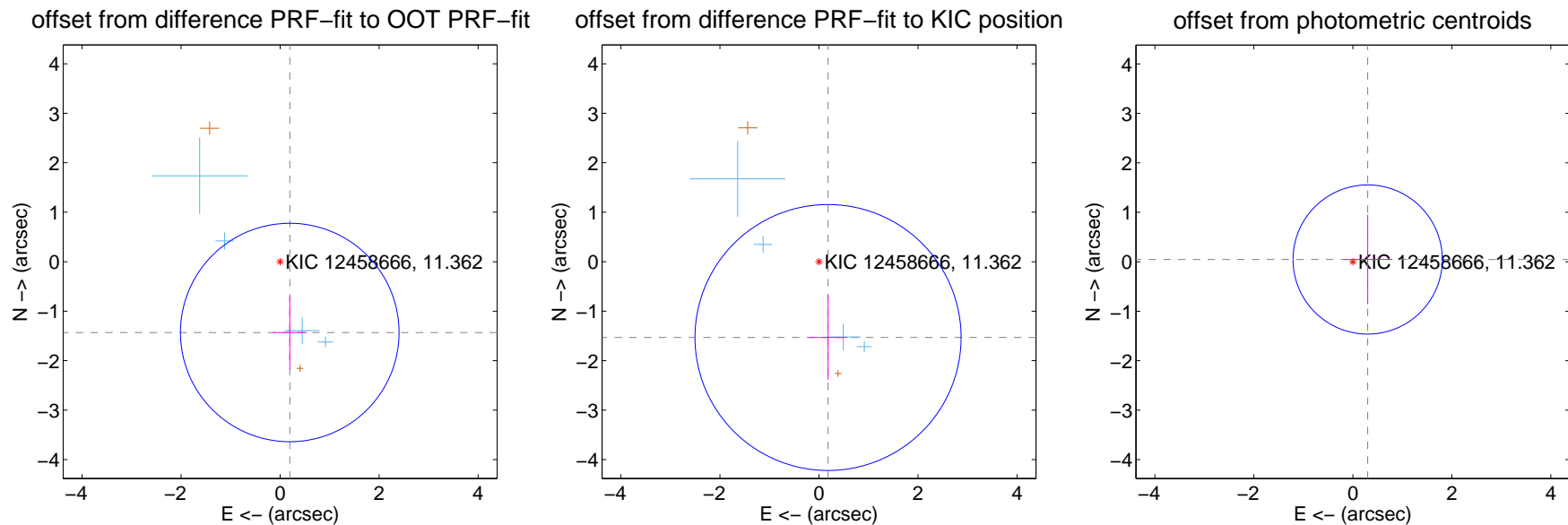
## DV Centroid Data

Supplemental centroid analysis for 012458666-03. **Kepler magnitude: 11.36.** Transit SNR 7.90

There are 4 quarters with good PRF difference image offsets

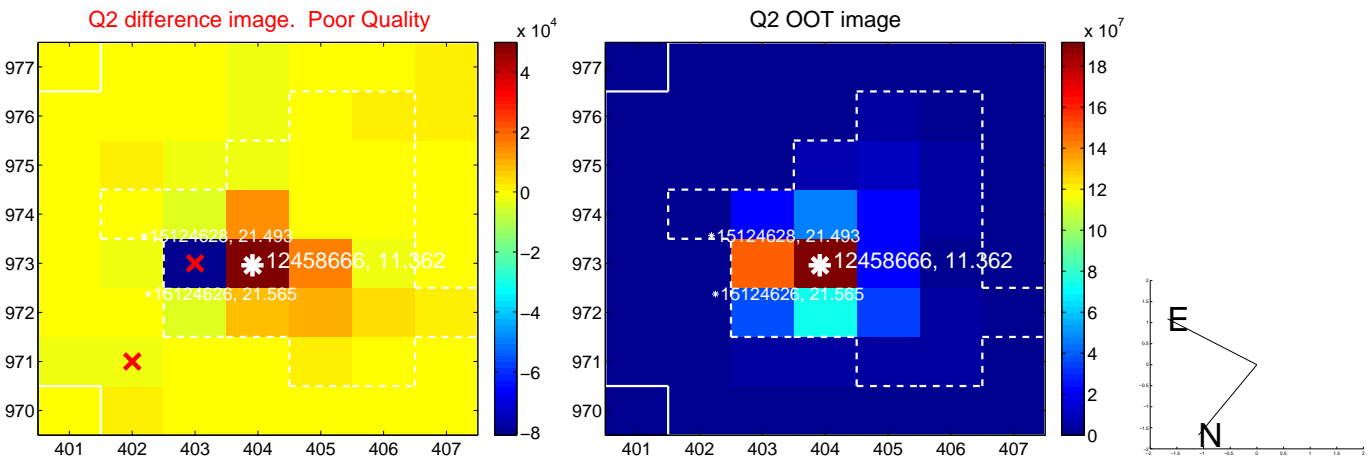
The direct PRF centroid is offset from the target star catalog position by about 0.11 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.444 \pm 0.736$	1.96	$-0.195 \pm 0.344$	$-1.431 \pm 0.741$
PRF-fit source offset from KIC position	$1.543 \pm 0.896$	1.72	$-0.183 \pm 0.388$	$-1.532 \pm 0.860$
photometric centroid source offset	$0.30 \pm 0.50$	0.60	$-0.30 \pm 0.49$	$0.05 \pm 0.90$

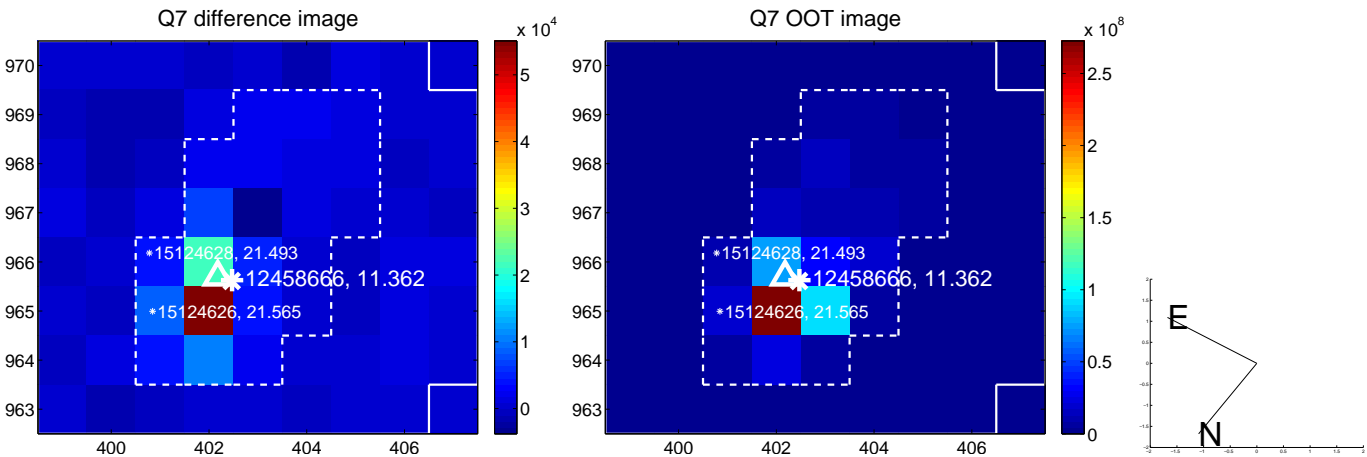
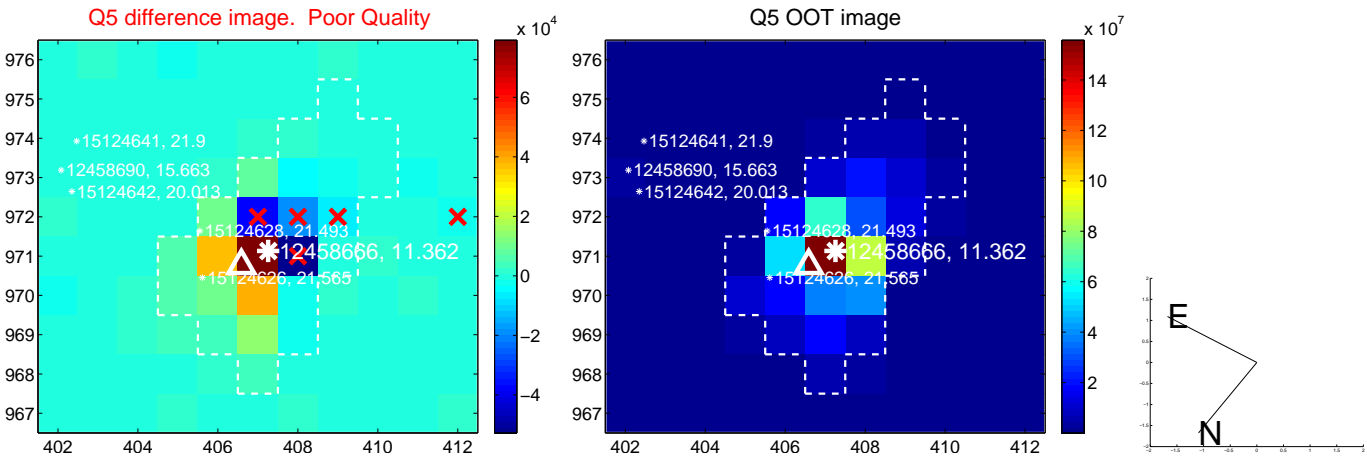


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

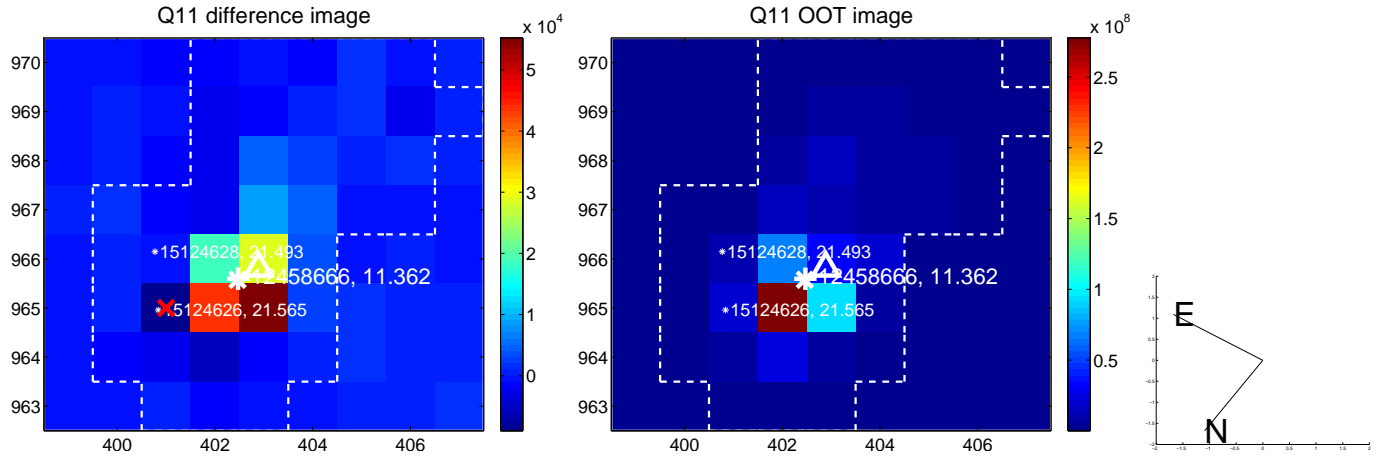
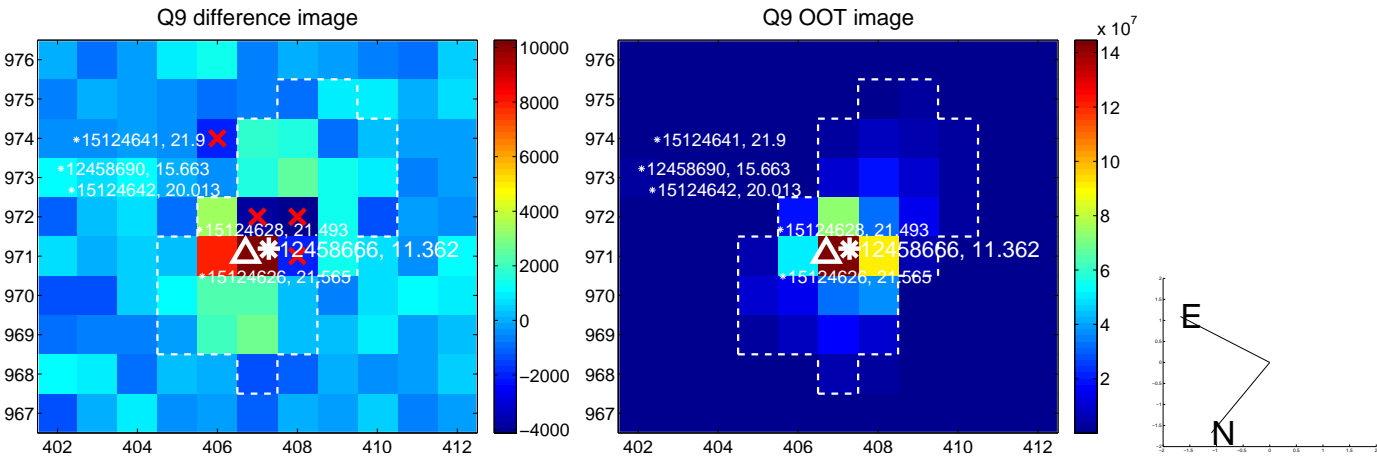
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



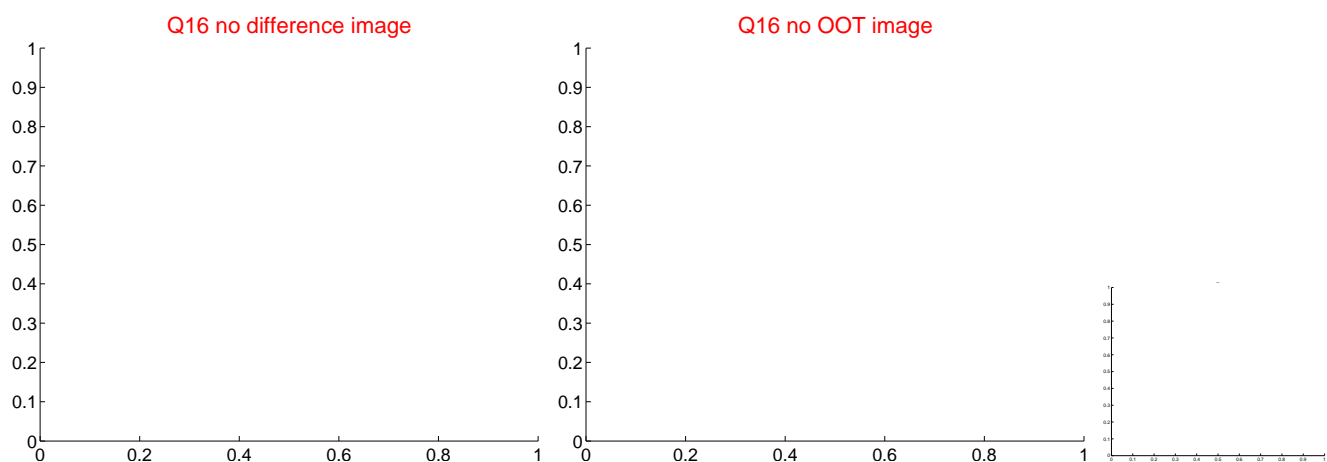
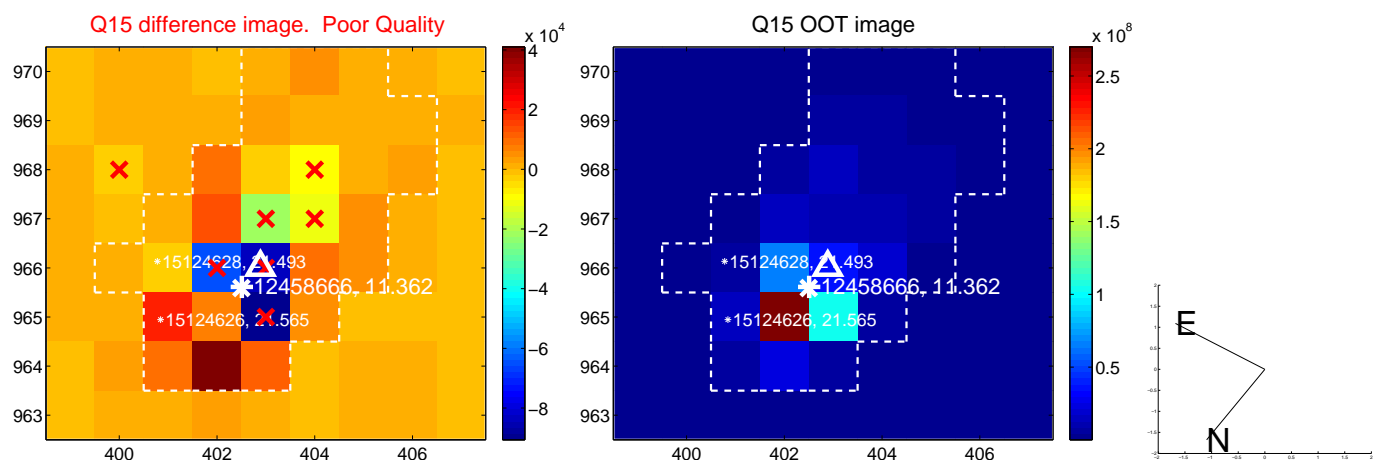
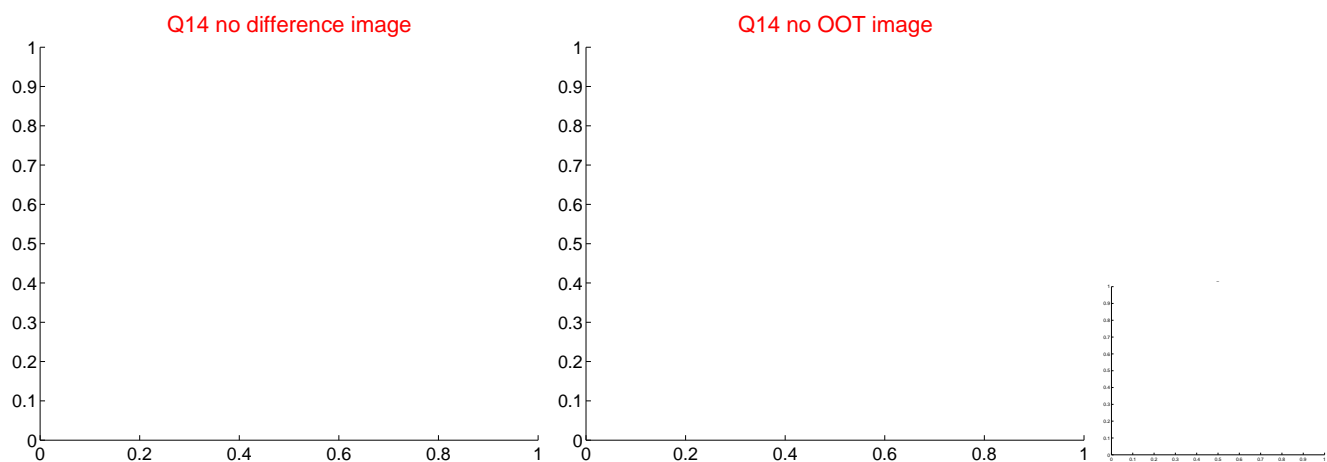
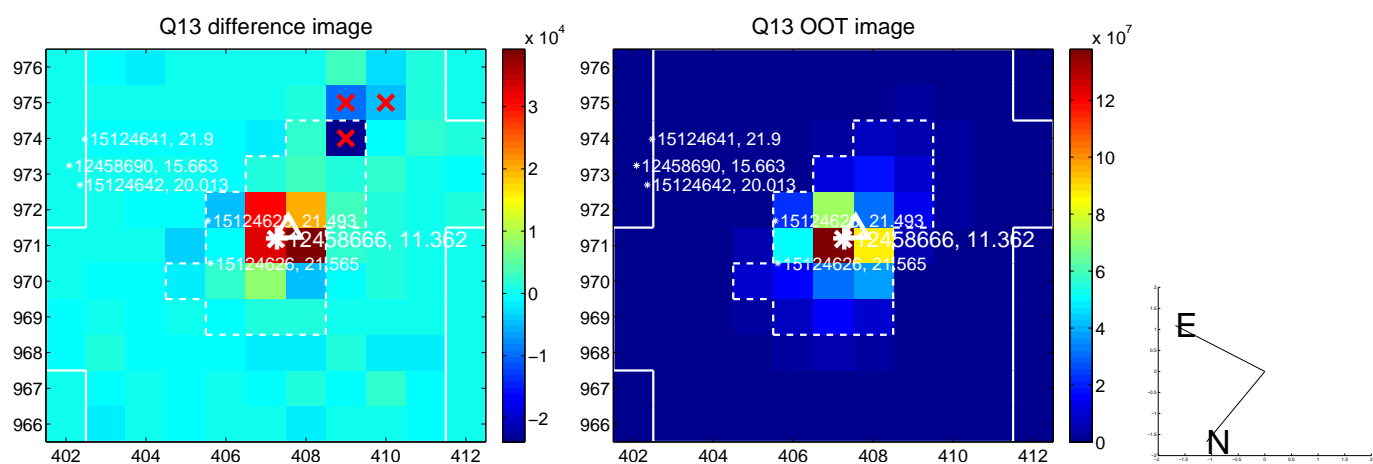
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



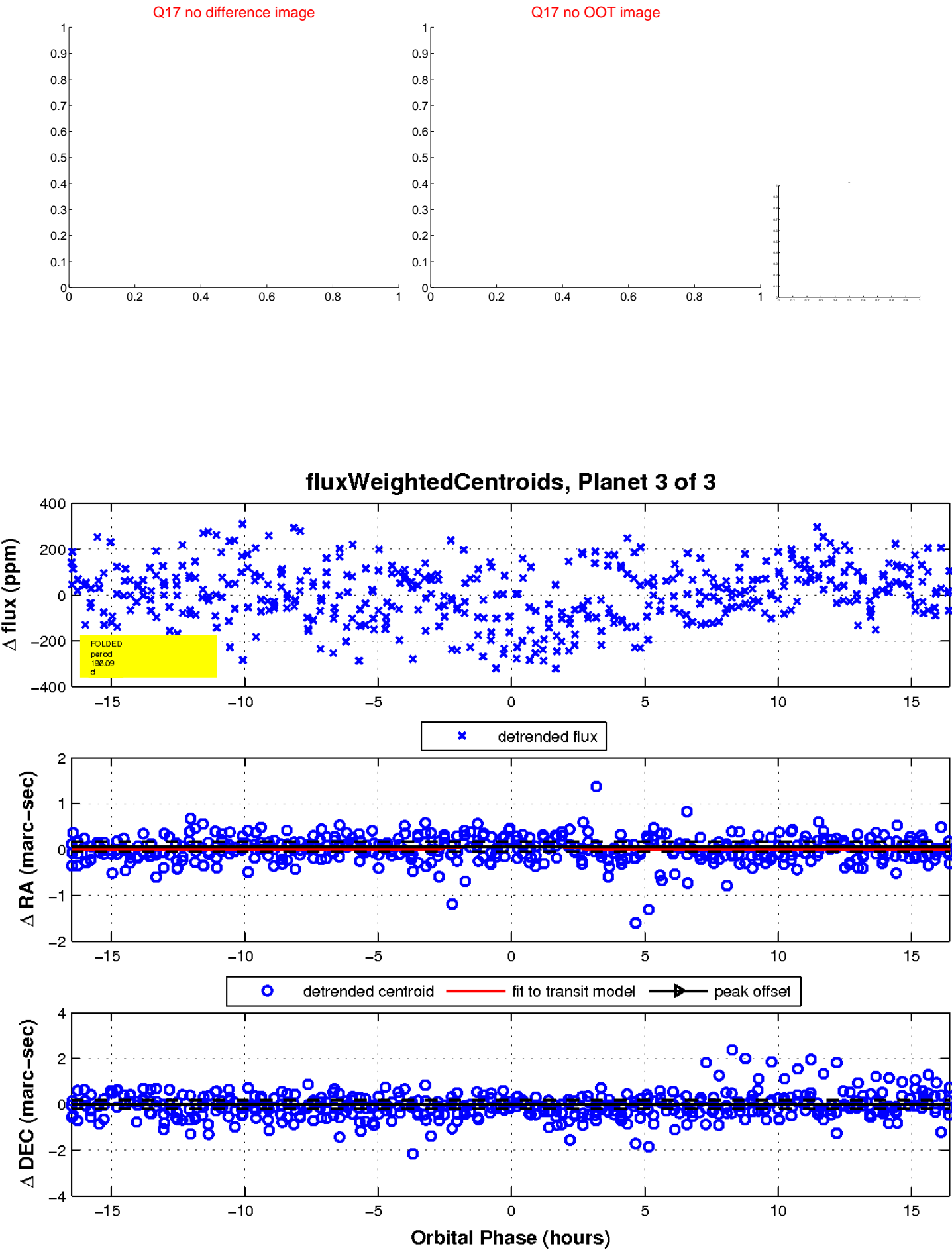
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

