

# KIC 011972294

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
011972294-01	OBS	No	121.140947	165.290705	37.6	4.993	9.9	12.4	12.40	5364	9.35	285.89
011972294-02	OBS	No	46.904408	143.782921	24.1	1.056	9.0	15.4	12.40	5364	7.12	1013.05
011972294-03	OBS	No	169.419023	253.096549	36.6	0.737	14.3	3.8	12.40	5364	8.22	182.79

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011972294-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
011972294-02	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
011972294-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE_ZUMA_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED

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

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

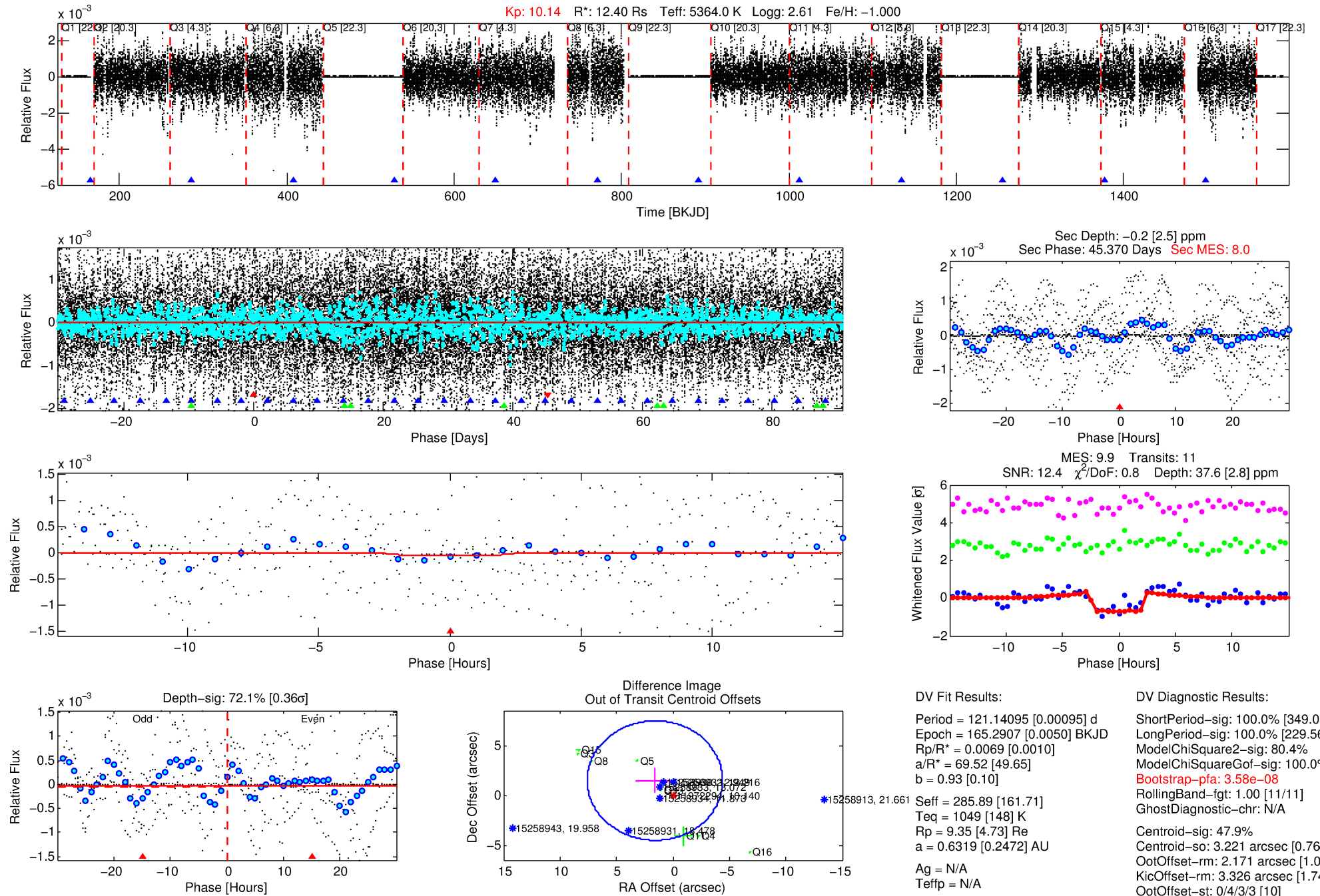
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 011972294-01

No Significant Match Found

# DV One-Page Summary

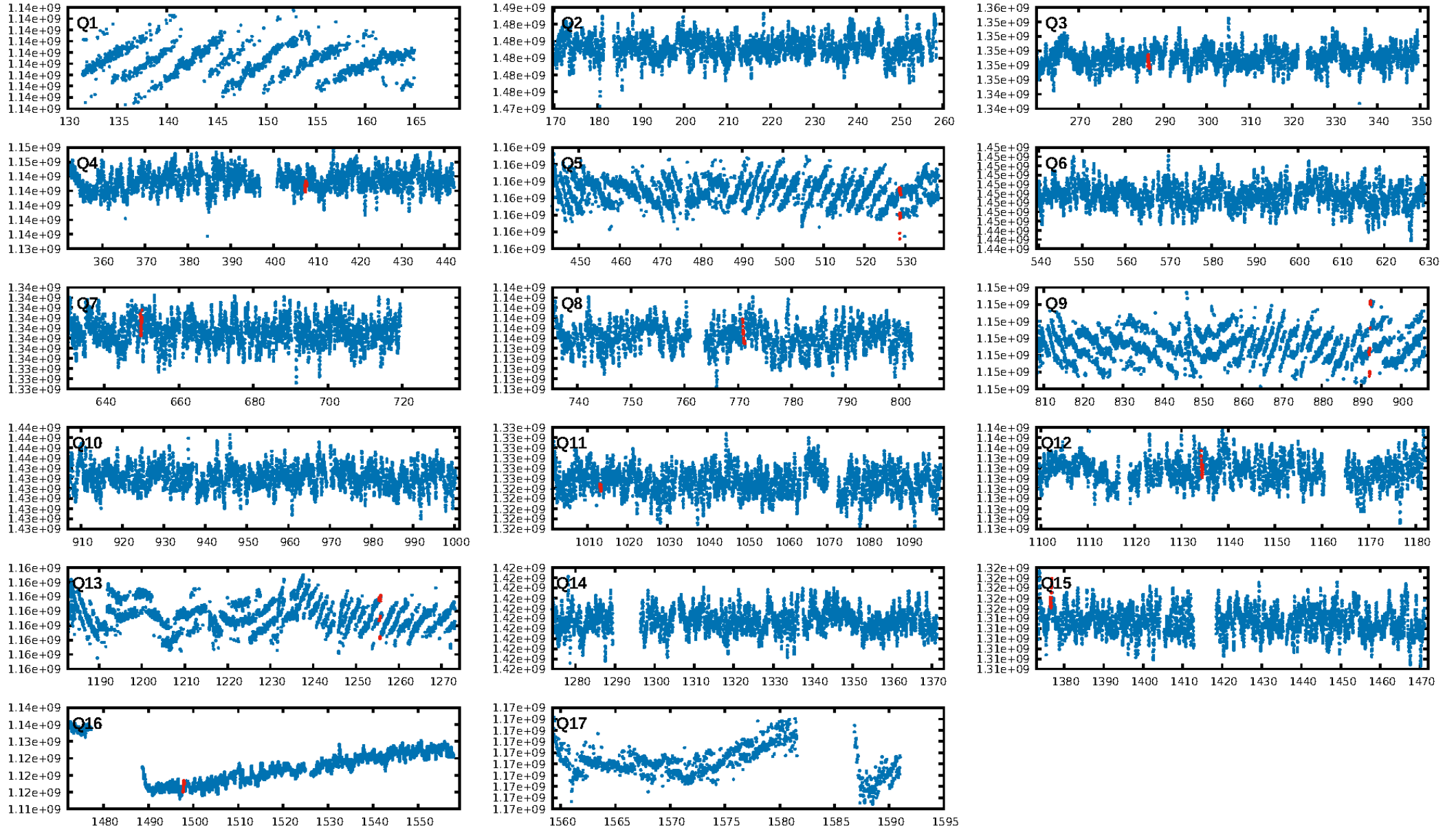
KIC: 11972294 Candidate: 1 of 3 Period: 121.141 d



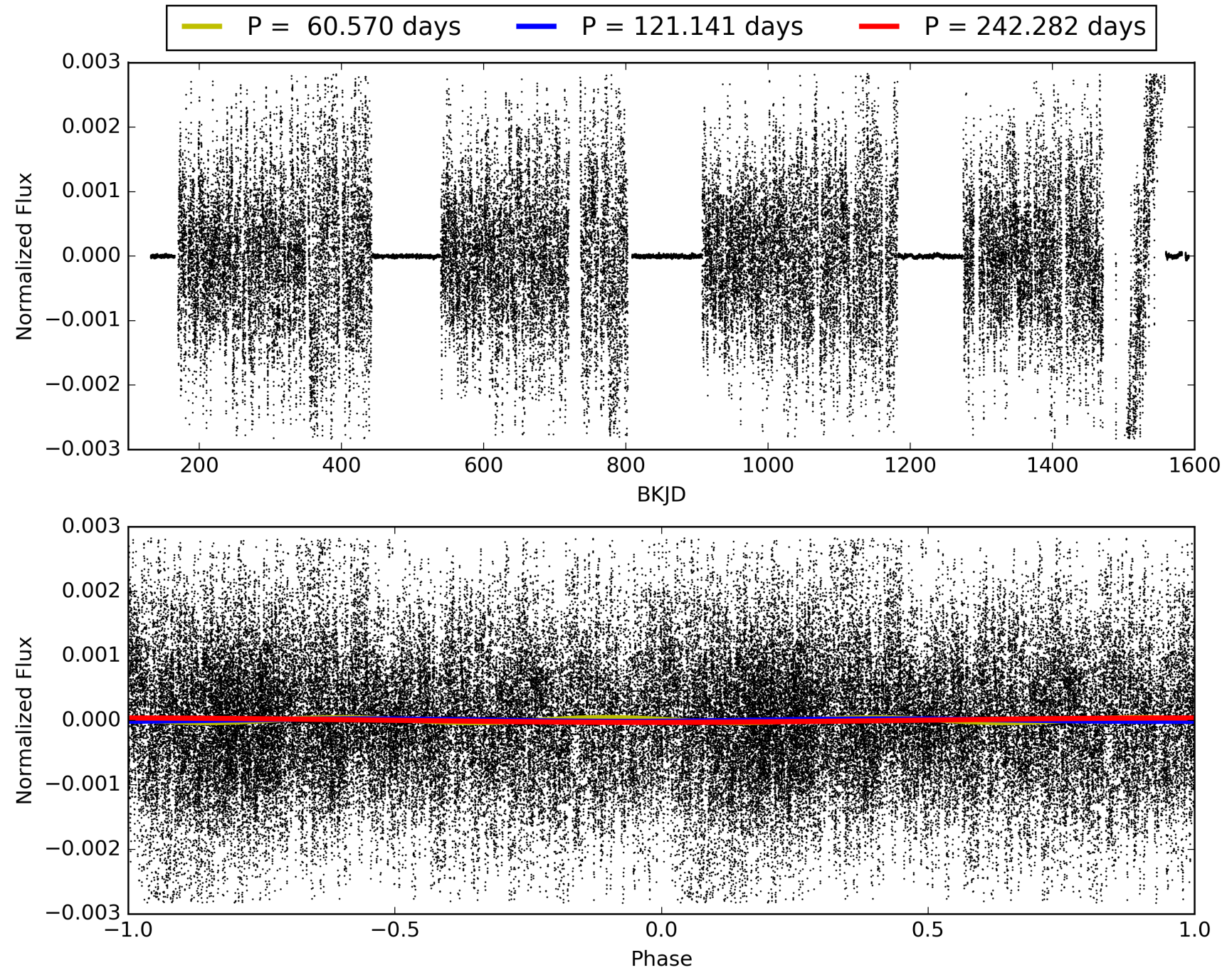
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 04:26:42 Z

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

# TCE 011972294-01, PDC Light Curves



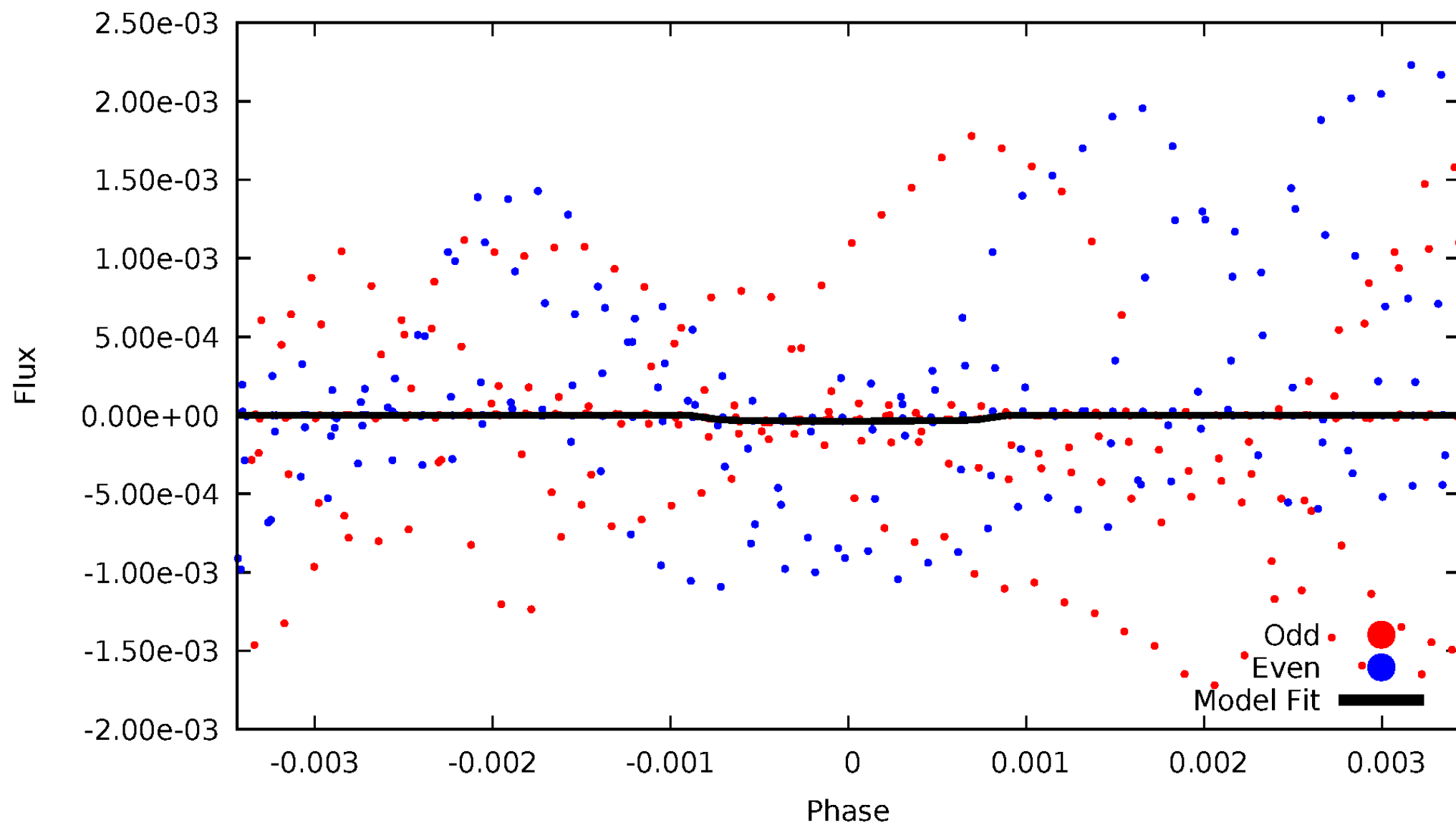
# TCE 011972294-01





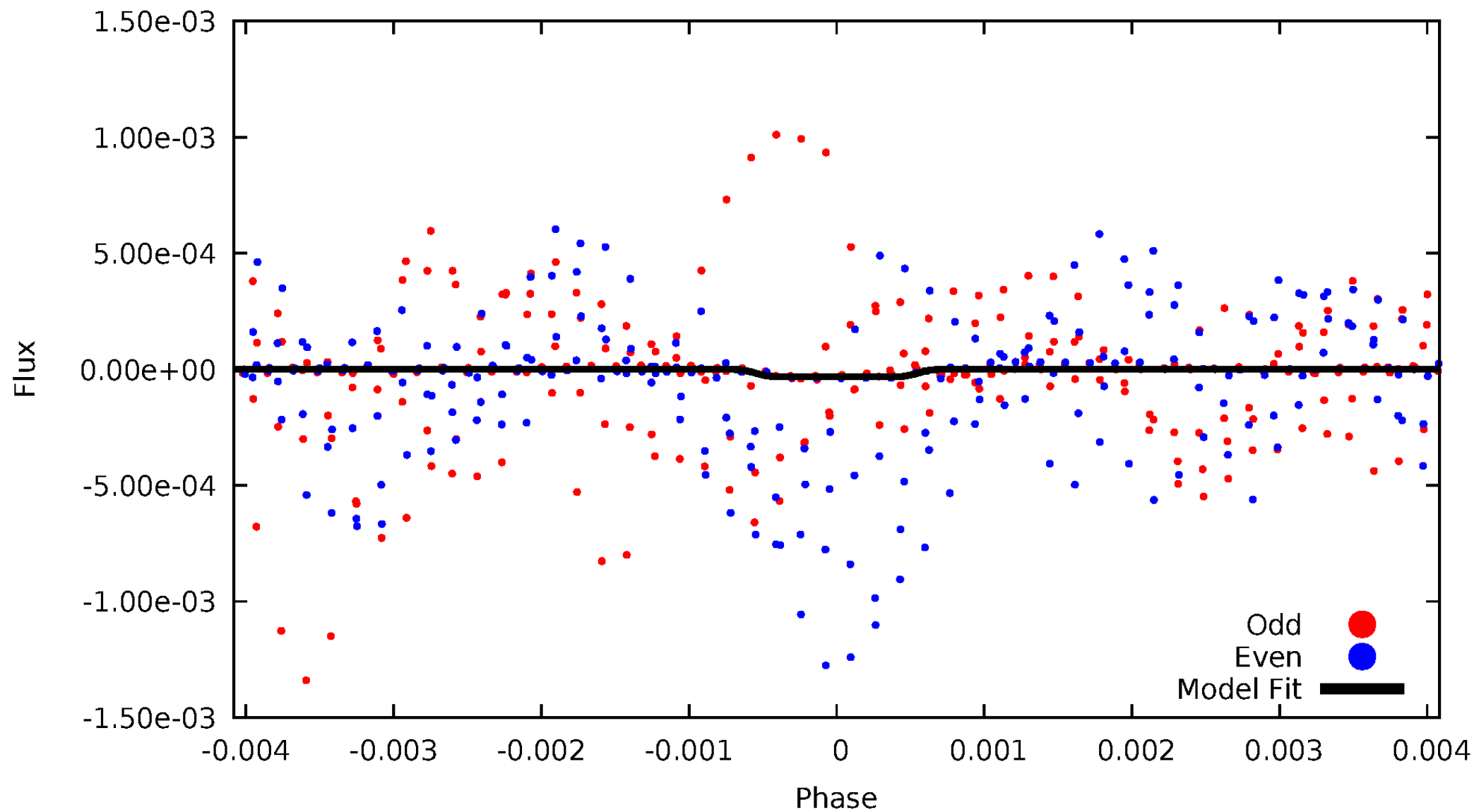
# DV Odd/Even

TCE 011972294-01



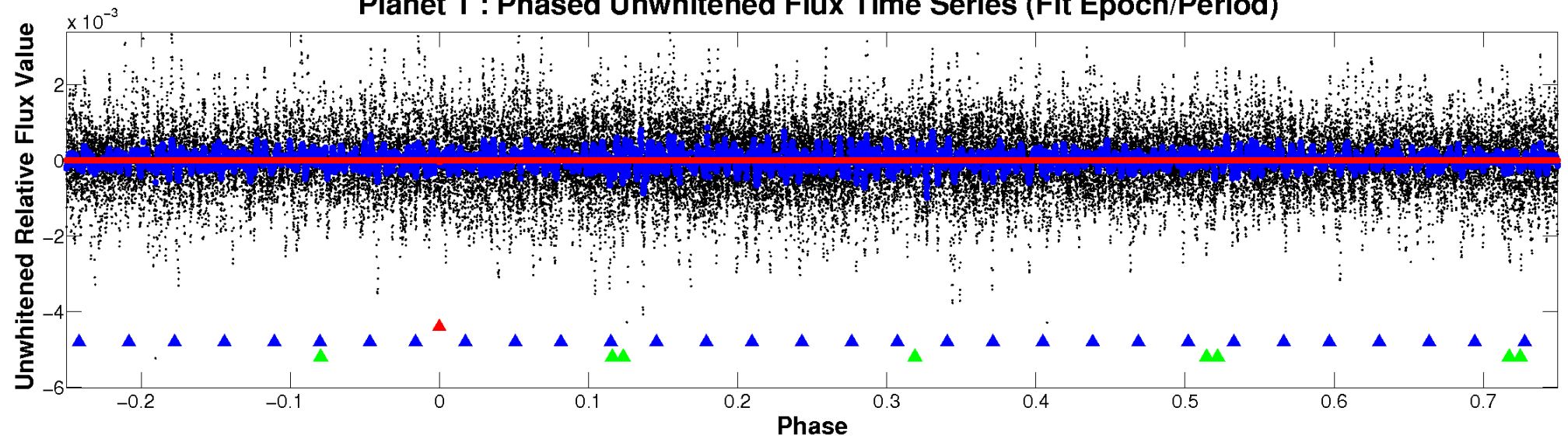
# ALT Odd/Even

TCE 011972294-01

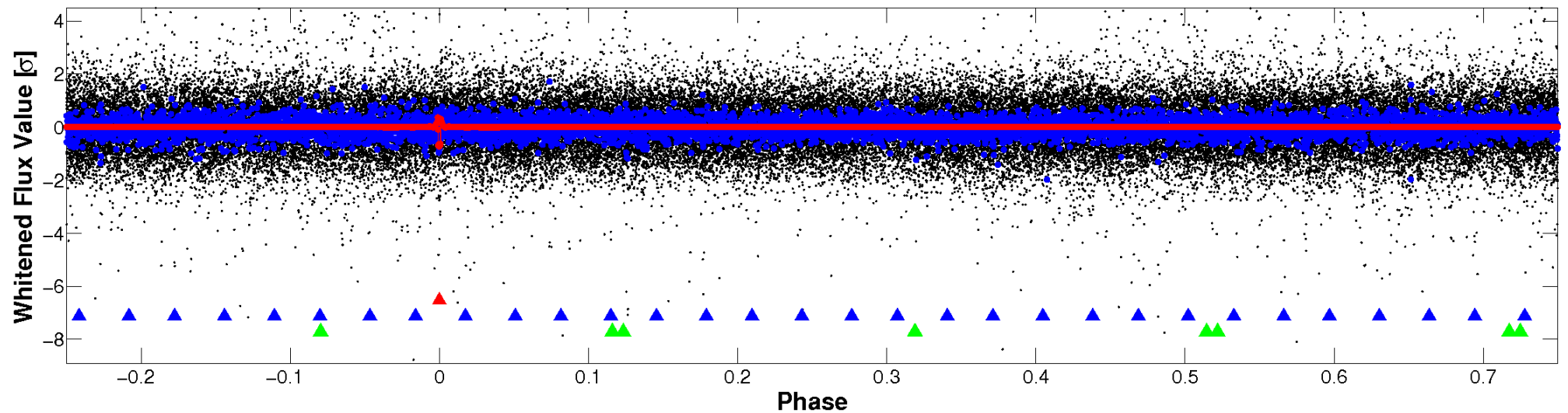


# Non-Whitened Vs. Whitened Light Curve

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

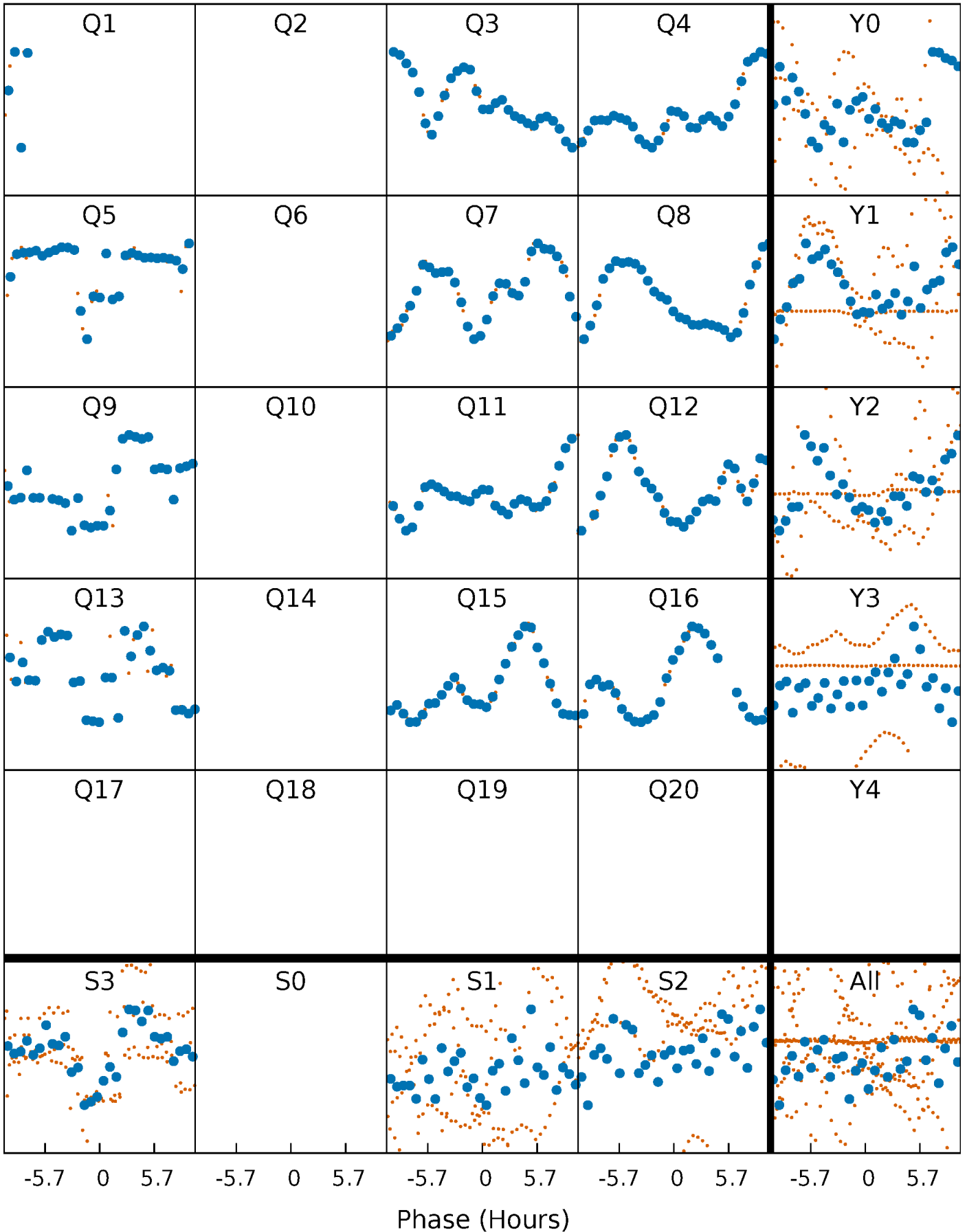


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

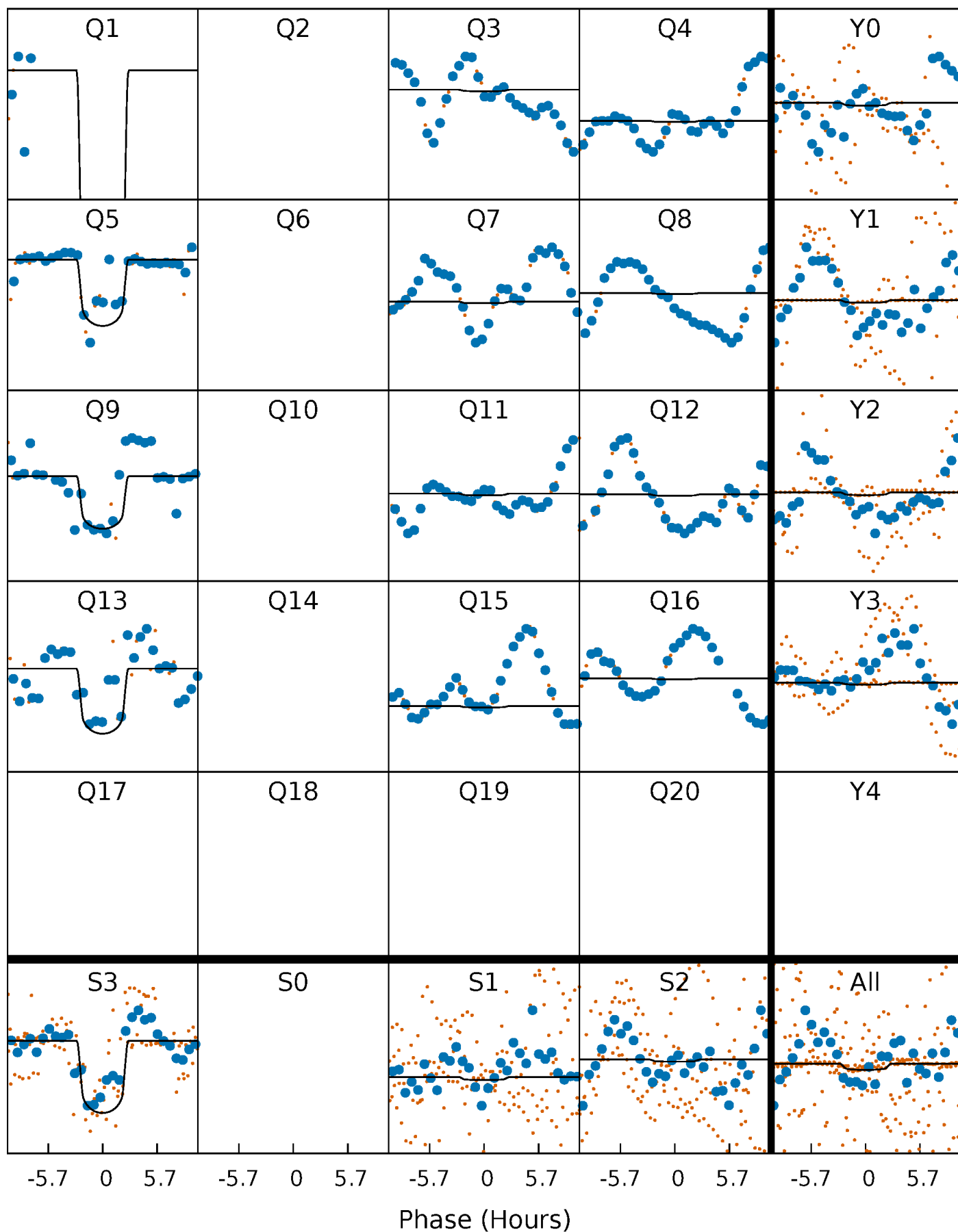
TCE 011972294-01 P=121.140947 Days  $T_0=165.290705$  (BKJD)





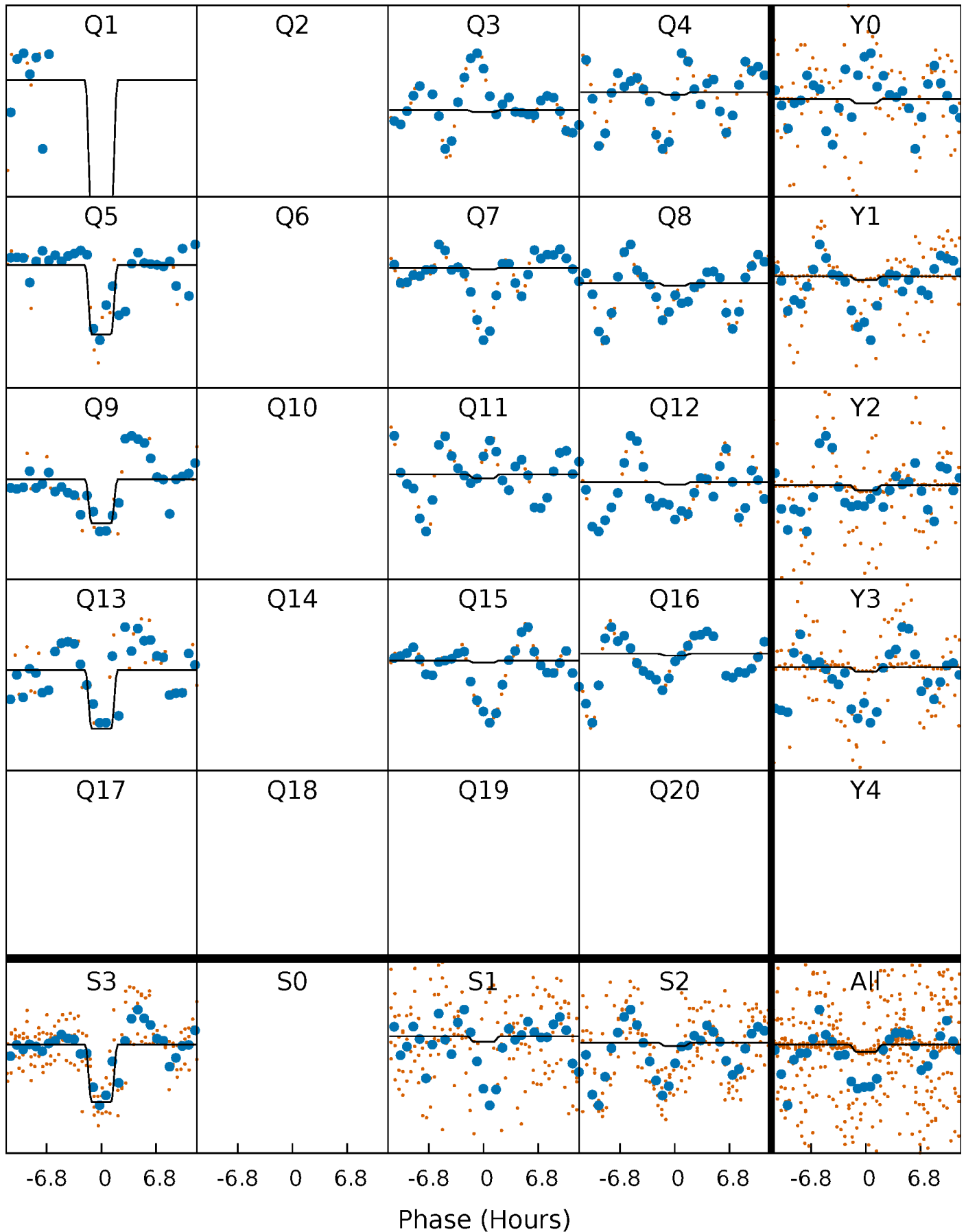
# DV Quarter-Phased Transit Curves

TCE 011972294-01 P=121.140947 Days  $T_0=165.290705$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

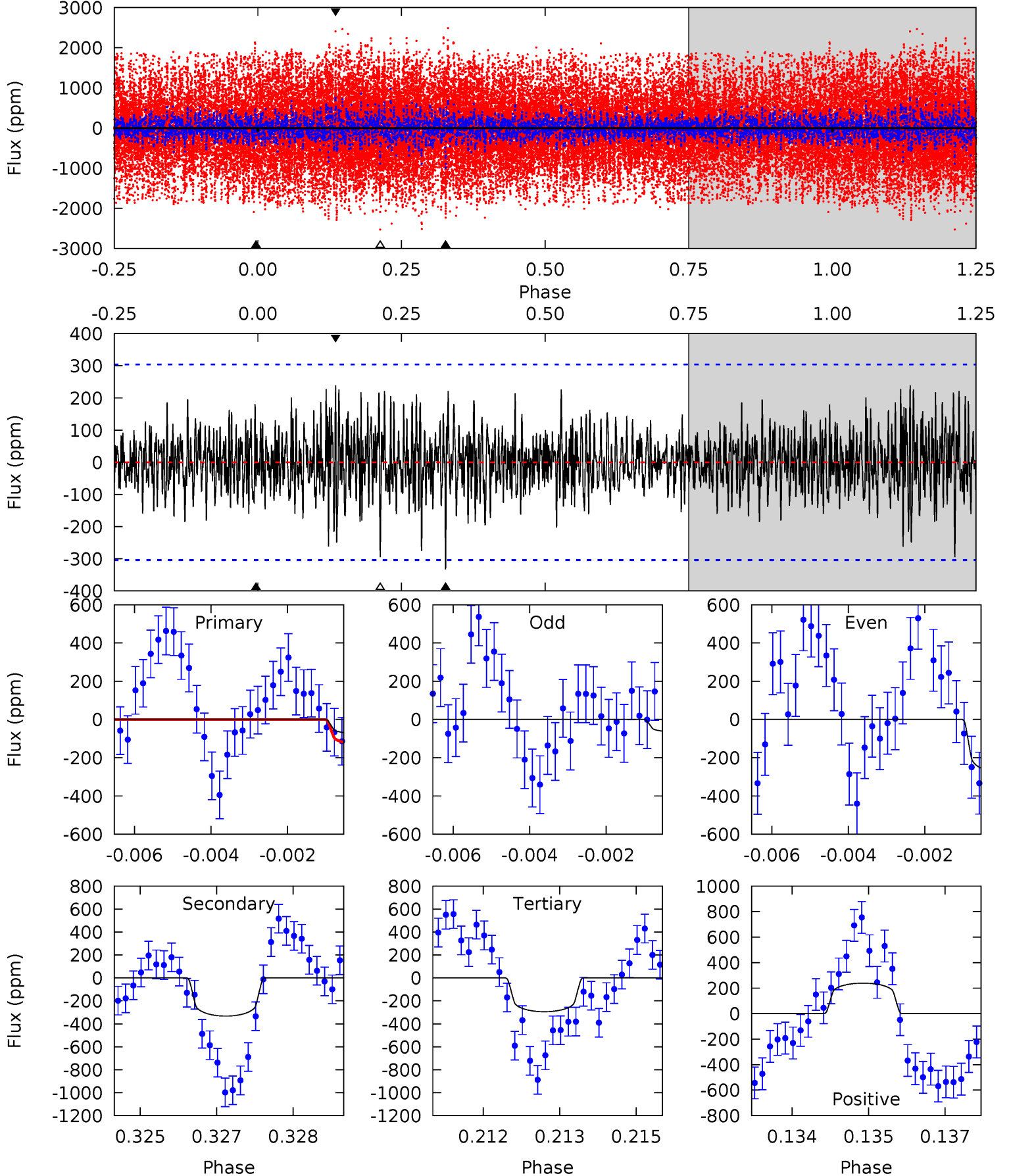
TCE 011972294-01 P=121.144118 Days  $T_0=165.243742$  (BKJD)



# DV Model-Shift Uniqueness Test

011972294-01, P = 121.140947 Days, E = 44.149758 Days

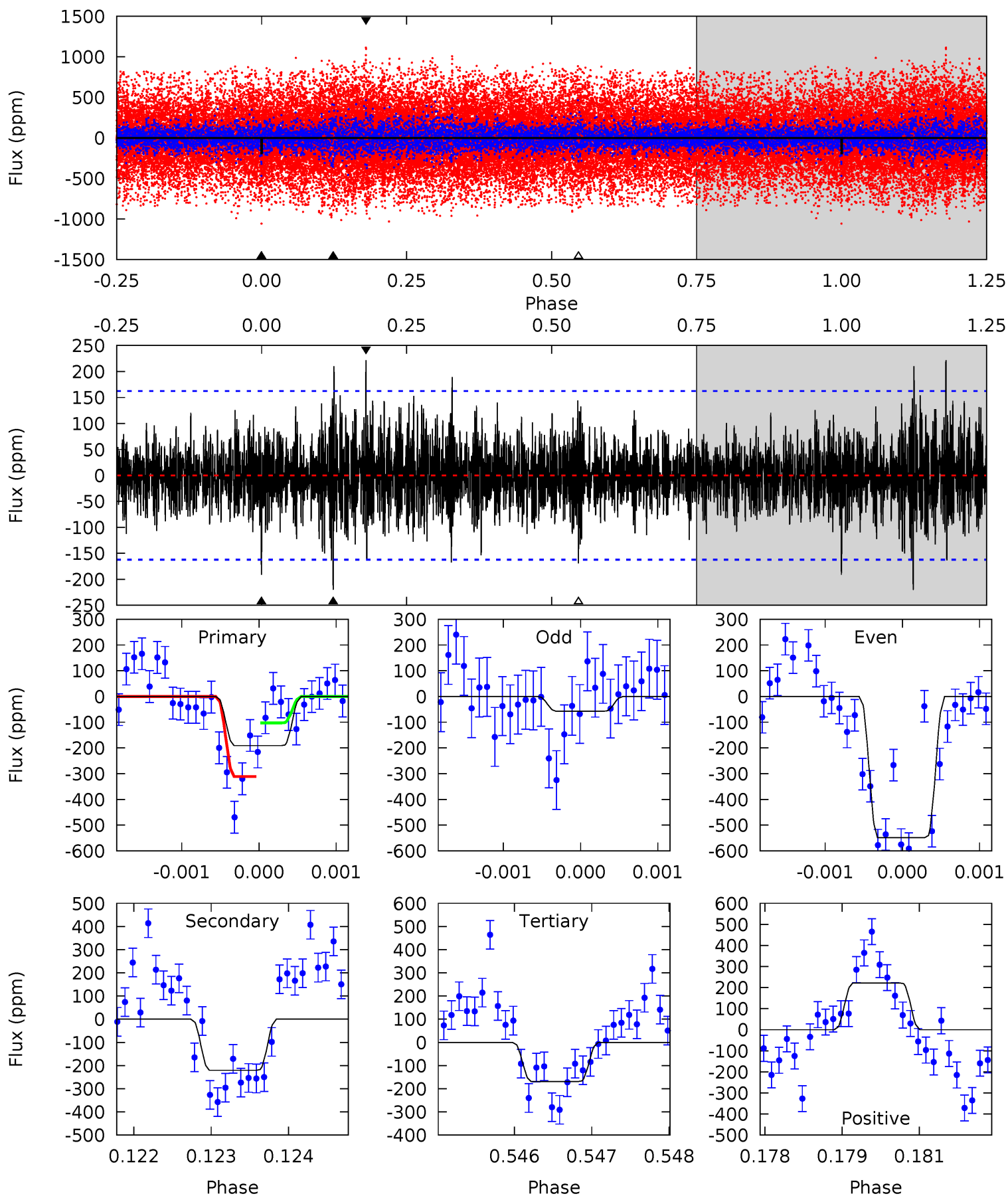
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1.31	5.85	5.17	4.20	5.34	3.11	1.33	-3.86	-2.89	0.67	1.65	1.84	2.40	0.42	1.03



# Alt Model-Shift Uniqueness Test

011972294-01, P = 121.144118 Days, E = 44.099624 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
6.37	7.34	5.63	7.38	5.41	3.22	1.66	0.74	-1.02	1.71	-0.05	8.28	1.56	0.50	3.68



### Stellar Parameters For KIC 011972294

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5364^{+52}_{-196}$	$2.611^{+0.287}_{-0.123}$	$-1.000^{+0.200}_{-0.300}$	$12.405^{+3.239}_{-6.015}$	$2.290^{+0.312}_{-1.249}$	$0.002^{+0.004}_{-0.001}$
	+1%/-4%	+11%/-5%	+20%/-30%	+26%/-48%	+14%/-55%	+233%/-41%
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 011972294-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-333 \pm 57$	$9.09^{+2.07}_{-2.30}$	$1432^{+100}_{-139}$	$8937^{+1254}_{-946}$	$912^{+565}_{-343}$
Alt.	$-220 \pm 30$	$7.24^{+1.89}_{-2.11}$	$1431^{+94}_{-142}$	$8975^{+1539}_{-972}$	$930^{+759}_{-343}$

$T_{max}$  = 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

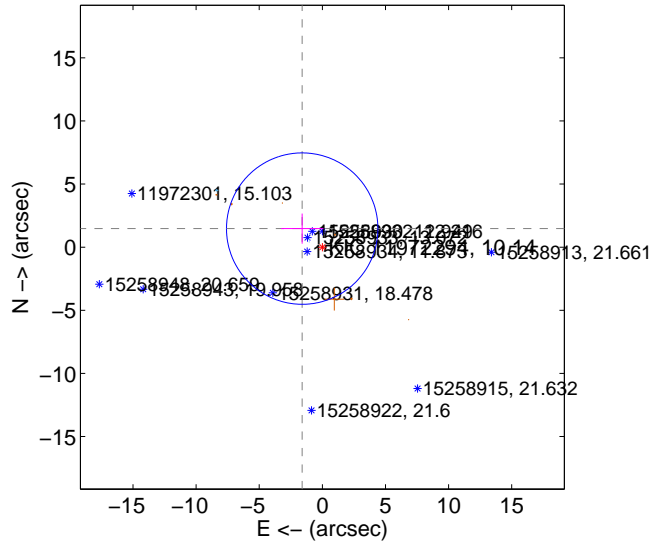
Supplemental centroid analysis for 011972294-01. **Kepler magnitude: 10.14.** Transit SNR 12.41

**There are 3 quarters with good PRF difference image offsets**

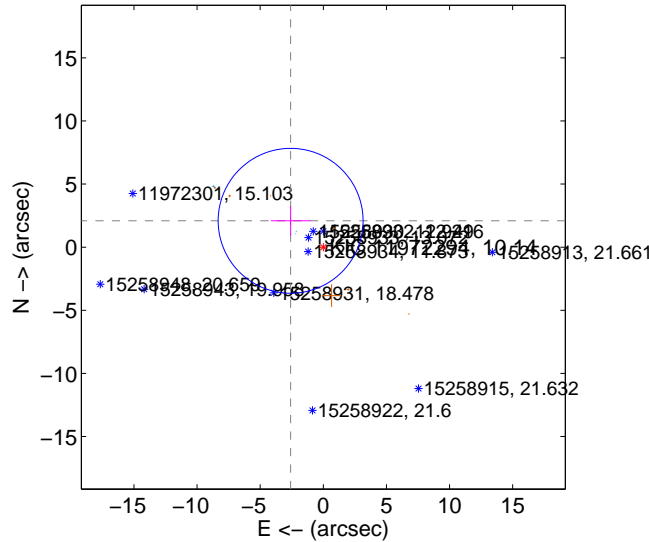
The direct PRF centroid is offset from the target star catalog position by about 0.46 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$2.171 \pm 1.998$	1.09	$1.596 \pm 1.672$	$1.471 \pm 1.193$
PRF-fit source offset from KIC position	$3.326 \pm 1.913$	1.74	$2.589 \pm 1.564$	$2.088 \pm 1.165$
photometric centroid source offset	$3.22 \pm 4.25$	0.76	$1.25 \pm 4.87$	$2.97 \pm 4.13$

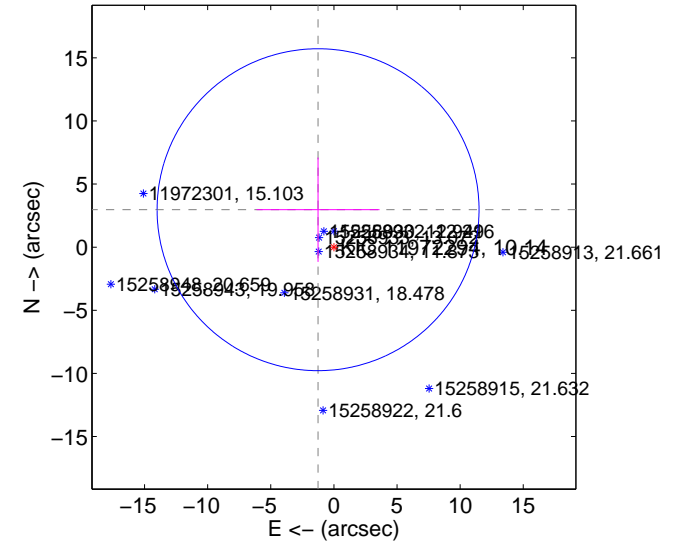
offset from difference PRF-fit to OOT PRF-fit



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.

Q1 no difference image



Q1 no OOT image



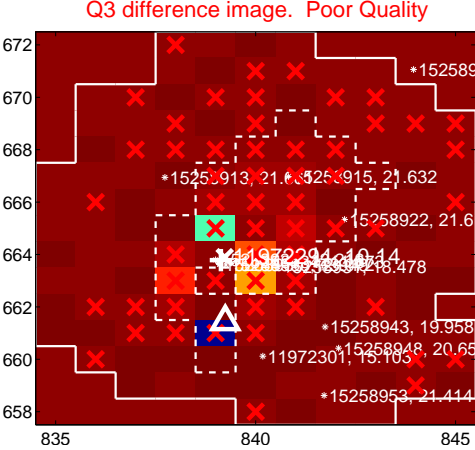
Q2 no difference image



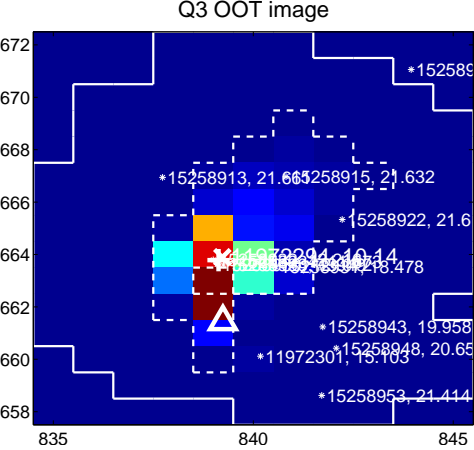
Q2 no OOT image



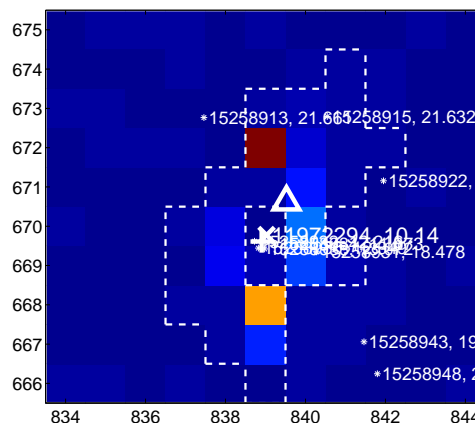
Q3 difference image. Poor Quality



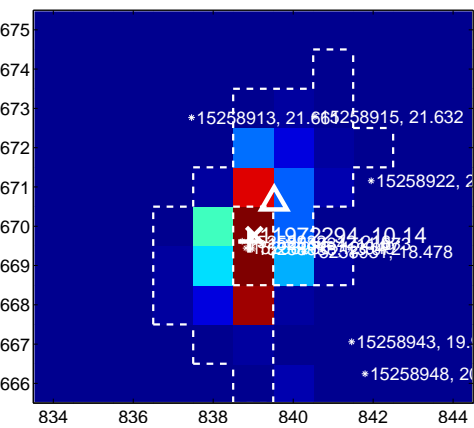
Q3 OOT image



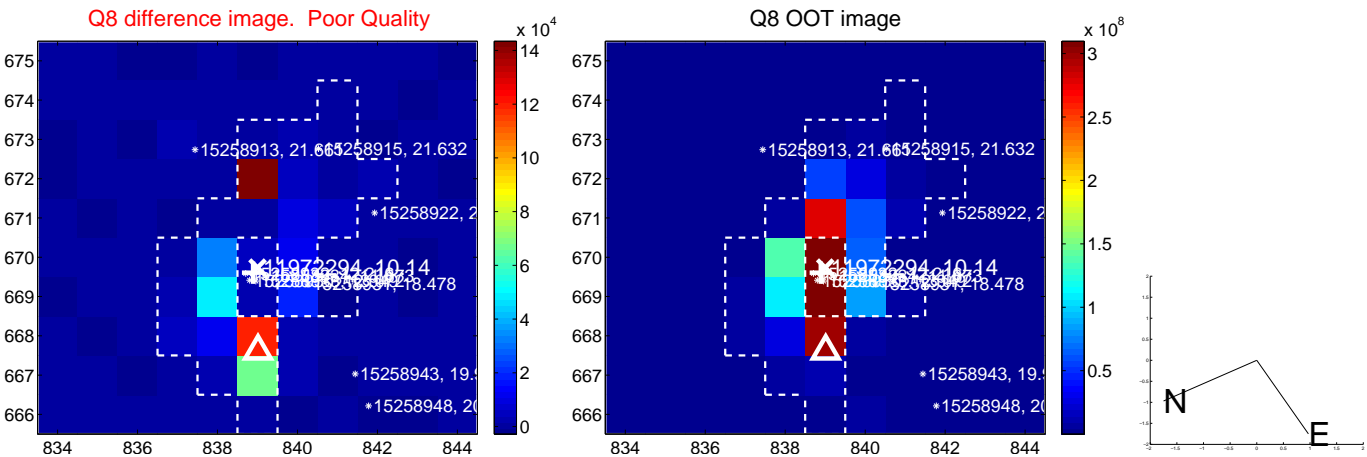
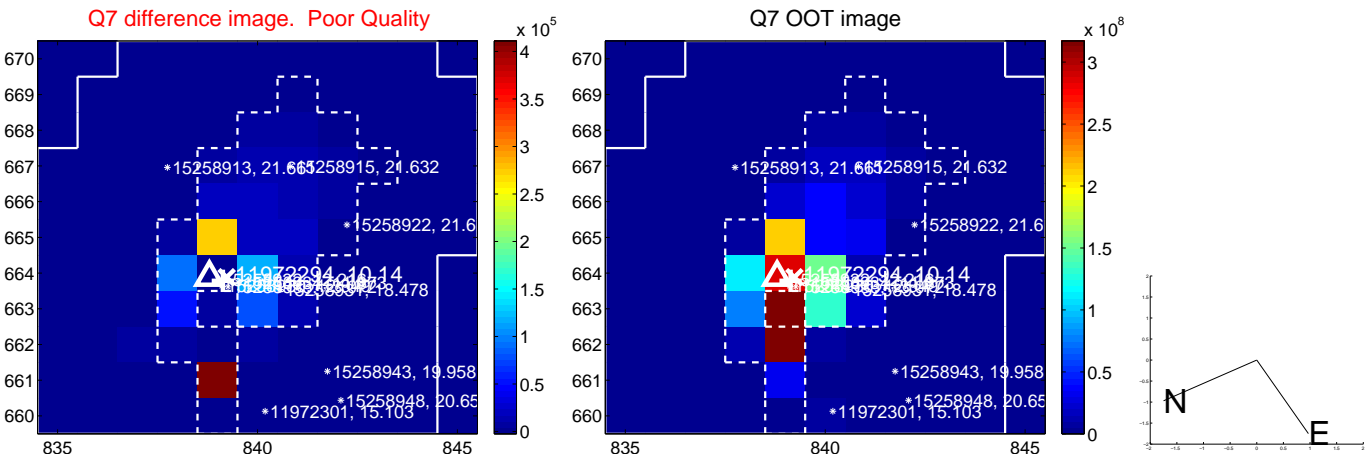
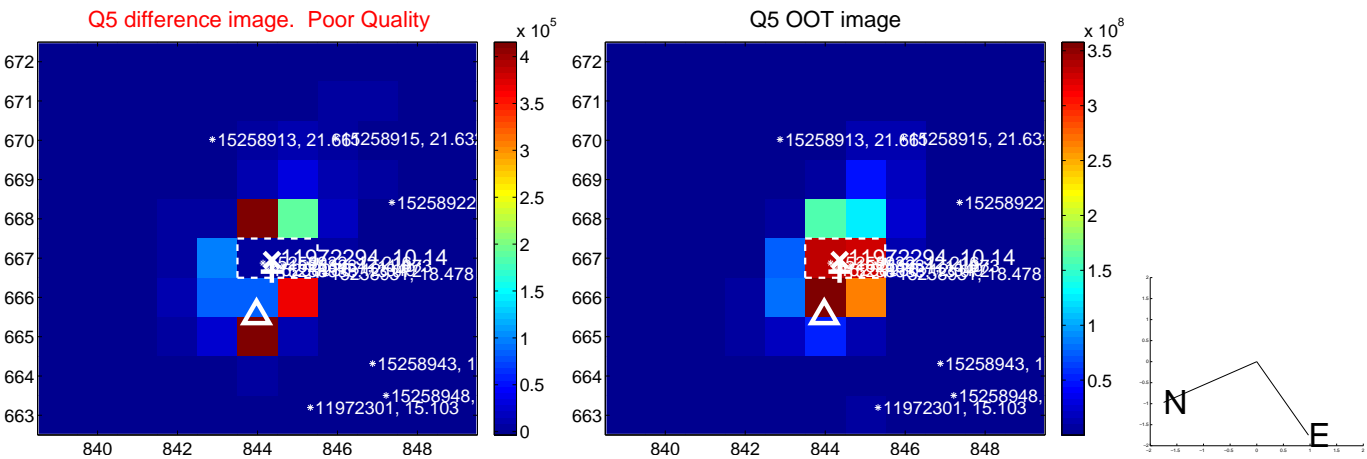
Q4 difference image. Poor Quality



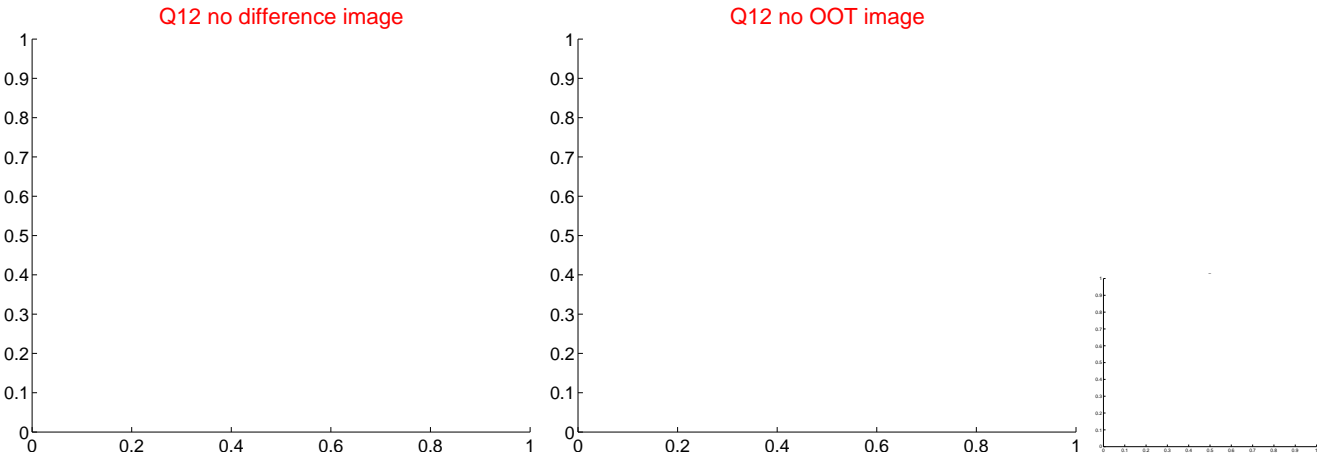
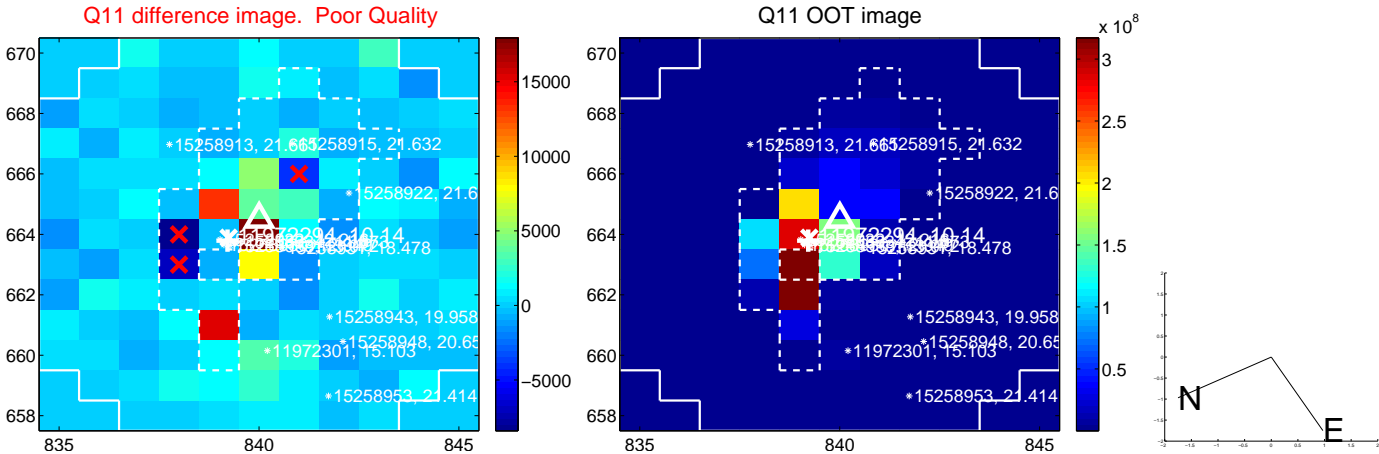
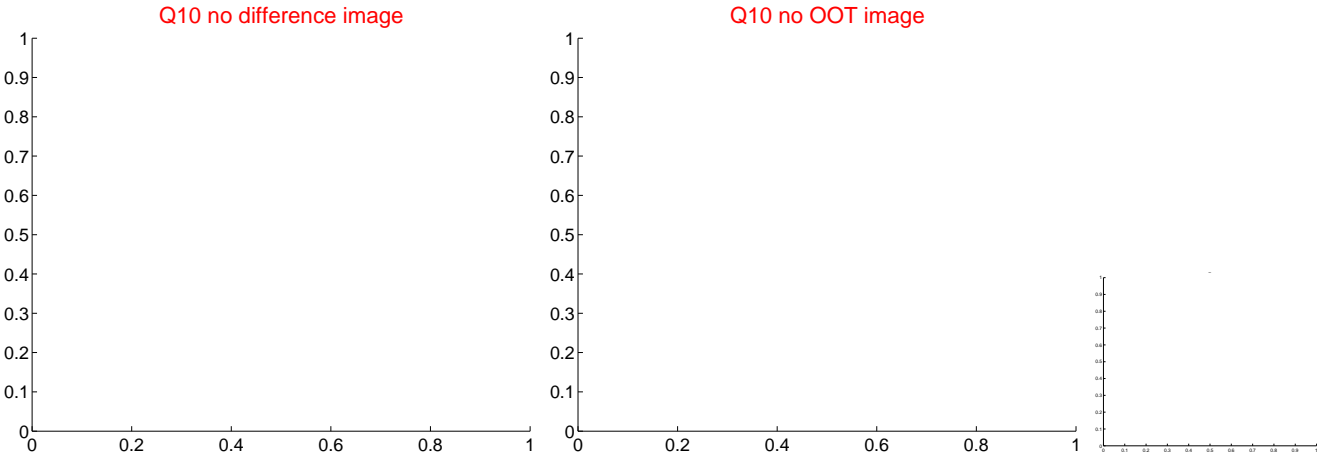
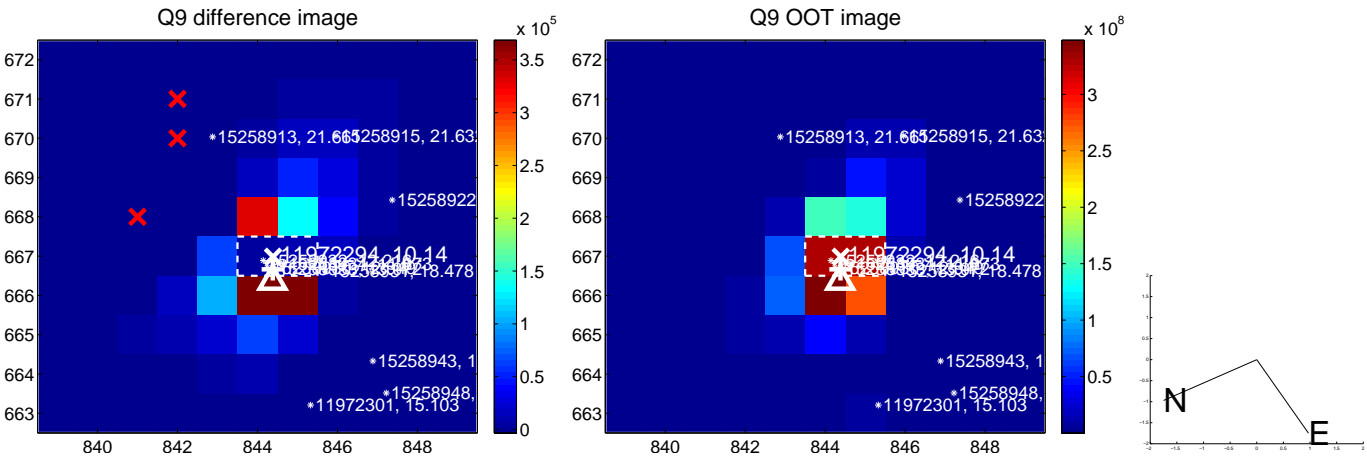
Q4 OOT image



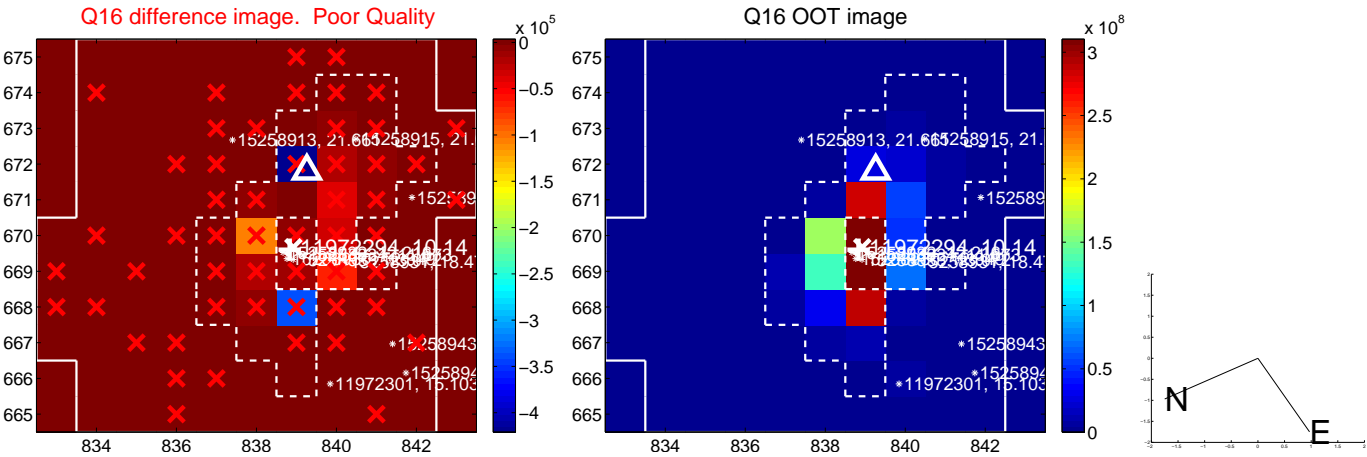
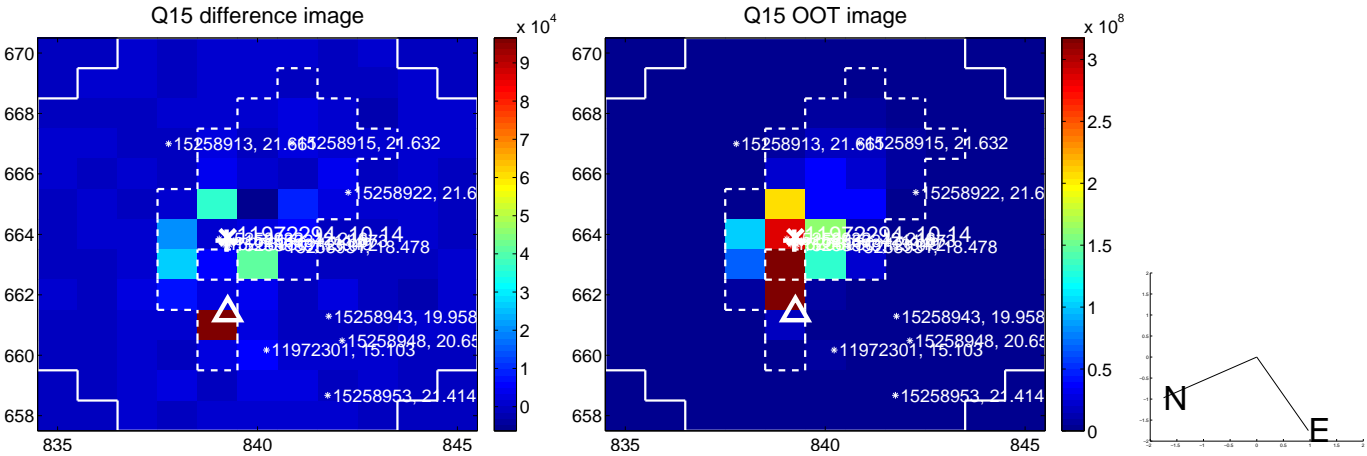
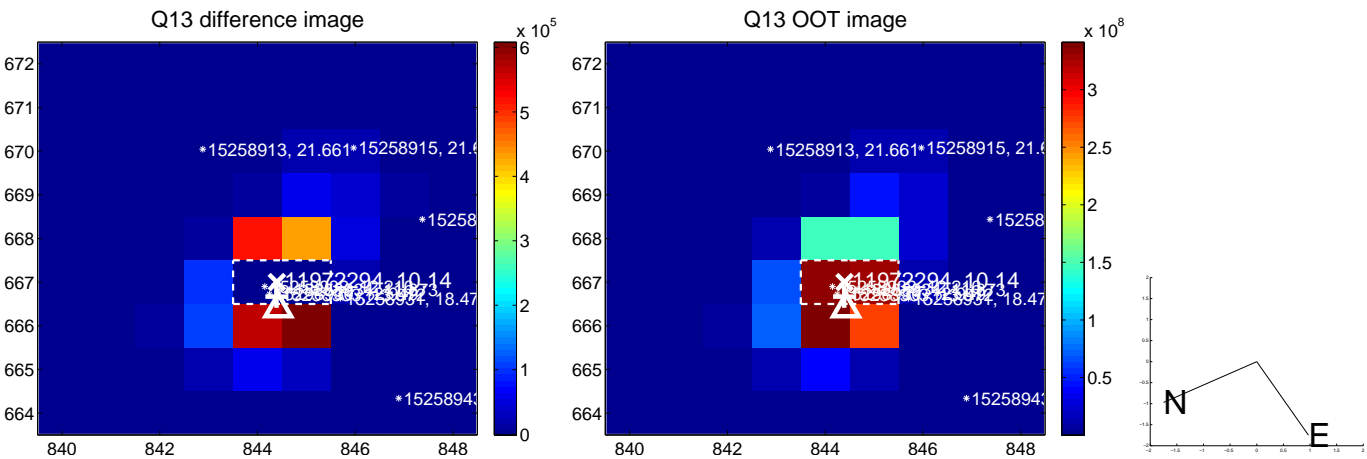
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

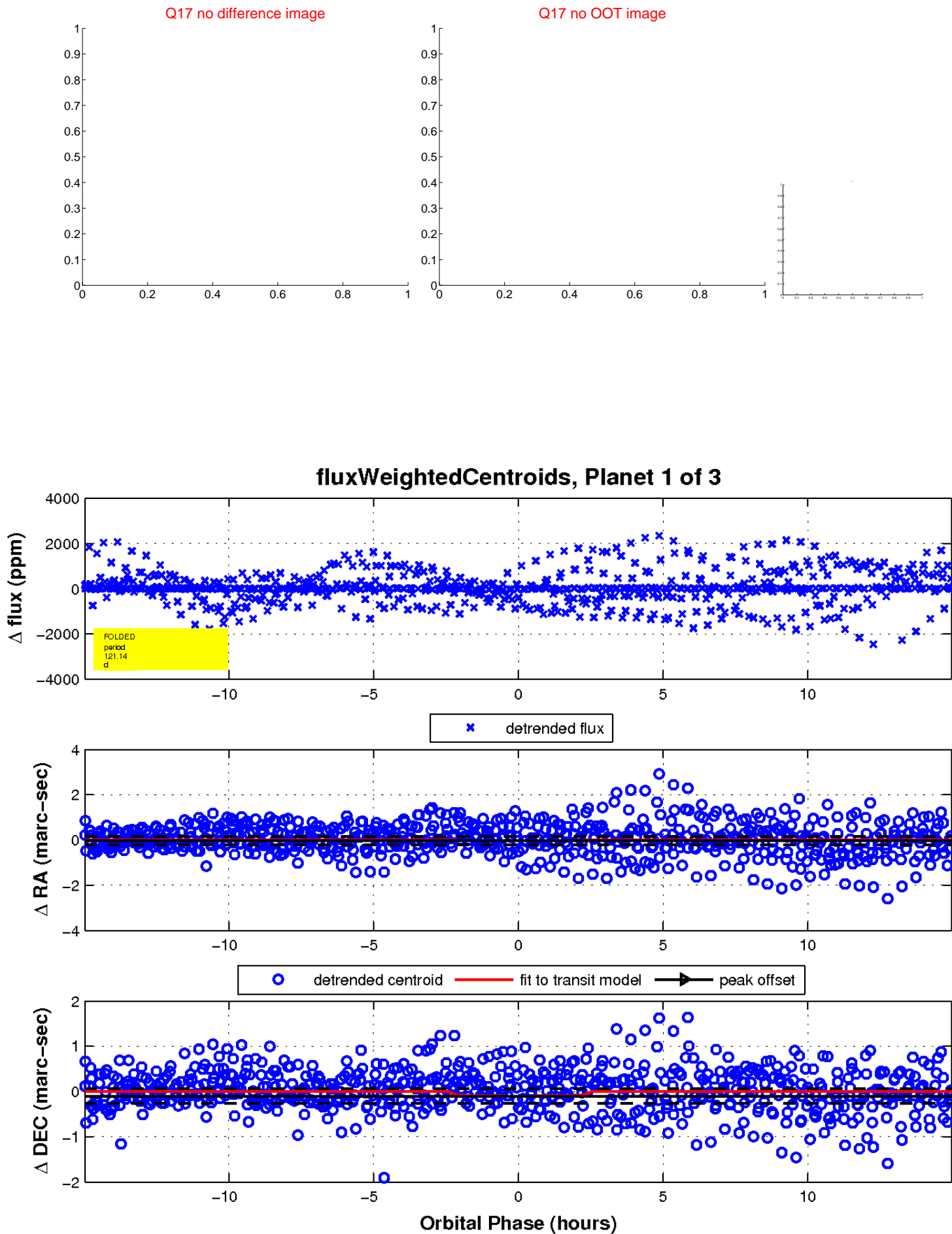


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



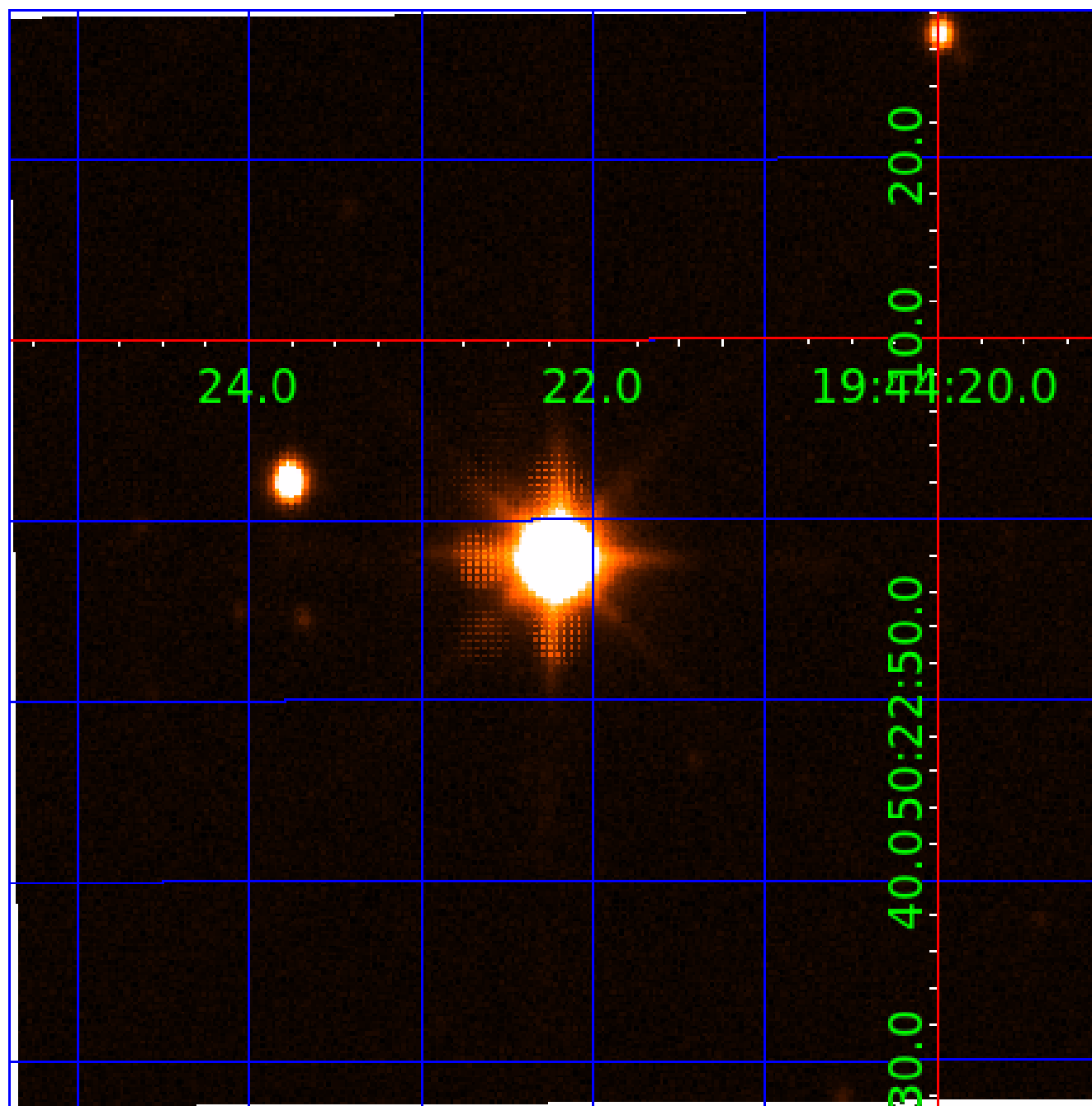


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 011972294

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
011972294-01	OBS	No	121.140947	165.290705	37.6	4.993	9.9	12.4	12.40	5364	9.35	285.89
011972294-02	OBS	No	46.904408	143.782921	24.1	1.056	9.0	15.4	12.40	5364	7.12	1013.05
011972294-03	OBS	No	169.419023	253.096549	36.6	0.737	14.3	3.8	12.40	5364	8.22	182.79

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011972294-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
011972294-02	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
011972294-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE_ZUMA_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED

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

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

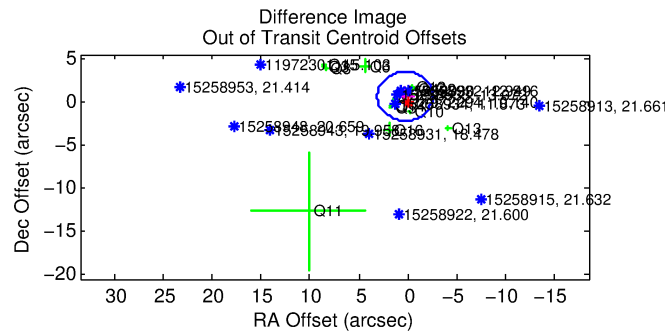
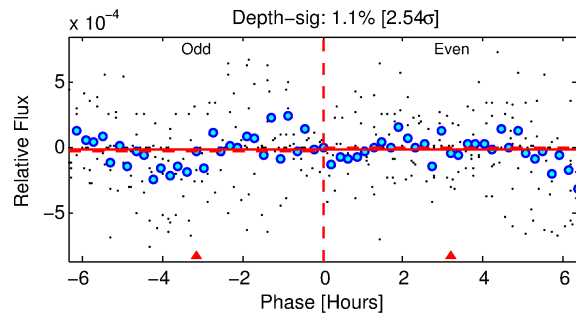
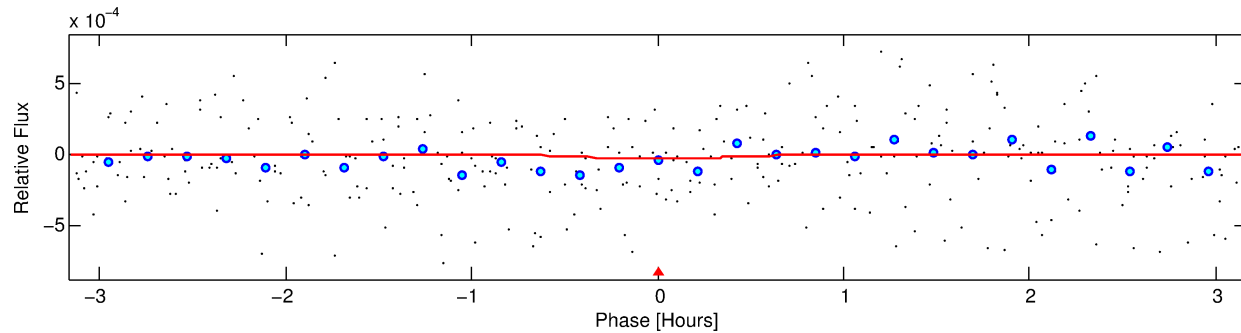
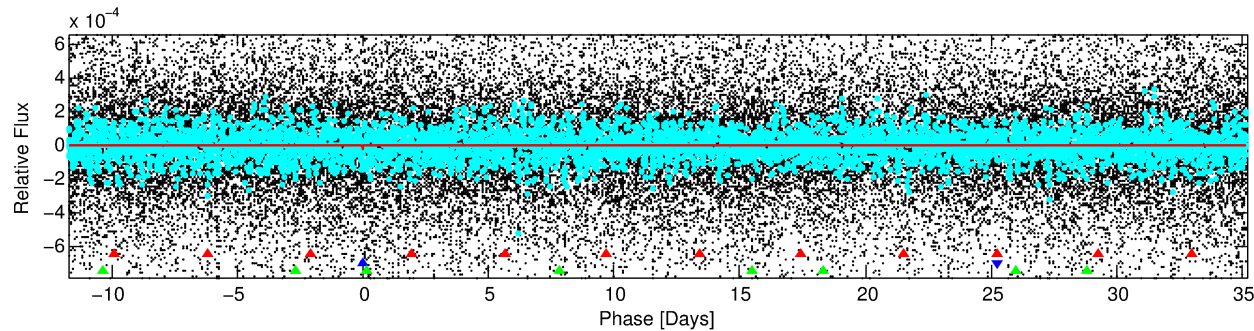
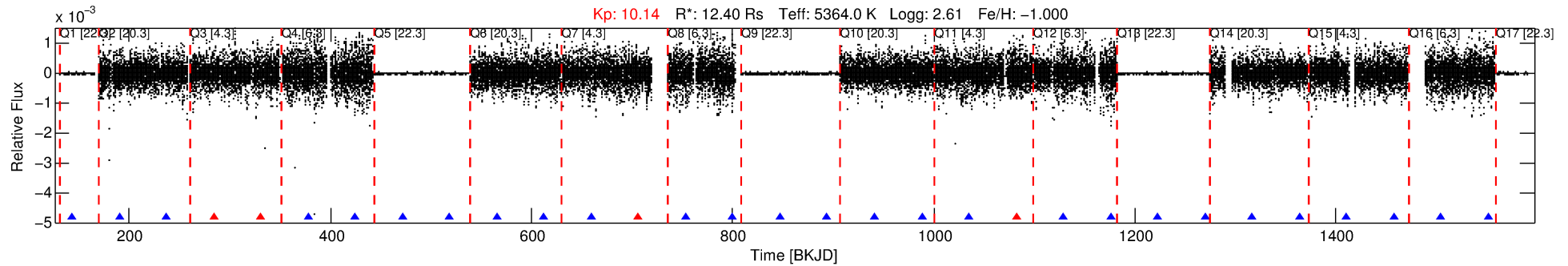
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 011972294-02

No Significant Match Found

# DV One-Page Summary

KIC: 11972294 Candidate: 2 of 3 Period: 46.904 d



## DV Fit Results:

Period = 46.90441 [0.00013] d  
Epoch = 143.7829 [0.0016] BKJD  
 $R_p/R^*$  = 0.0053 [0.0009]  
 $a/R^*$  = 164.67 [124.29]  
 $b$  = 0.88 [0.20]  
 $S_{\text{eff}}$  = 1013.05 [573.02]  
 $T_{\text{eq}}$  = 1439 [203] K  
 $R_p$  = 7.12 [3.66]  $R_{\text{e}}$   
 $a$  = 0.3357 [0.1313] AU  
 $A_g$  = 9.64 [7.08] [1.22 $\sigma$ ]  
 $T_{\text{eff}}$  = 3920 [501] K [4.59 $\sigma$ ]

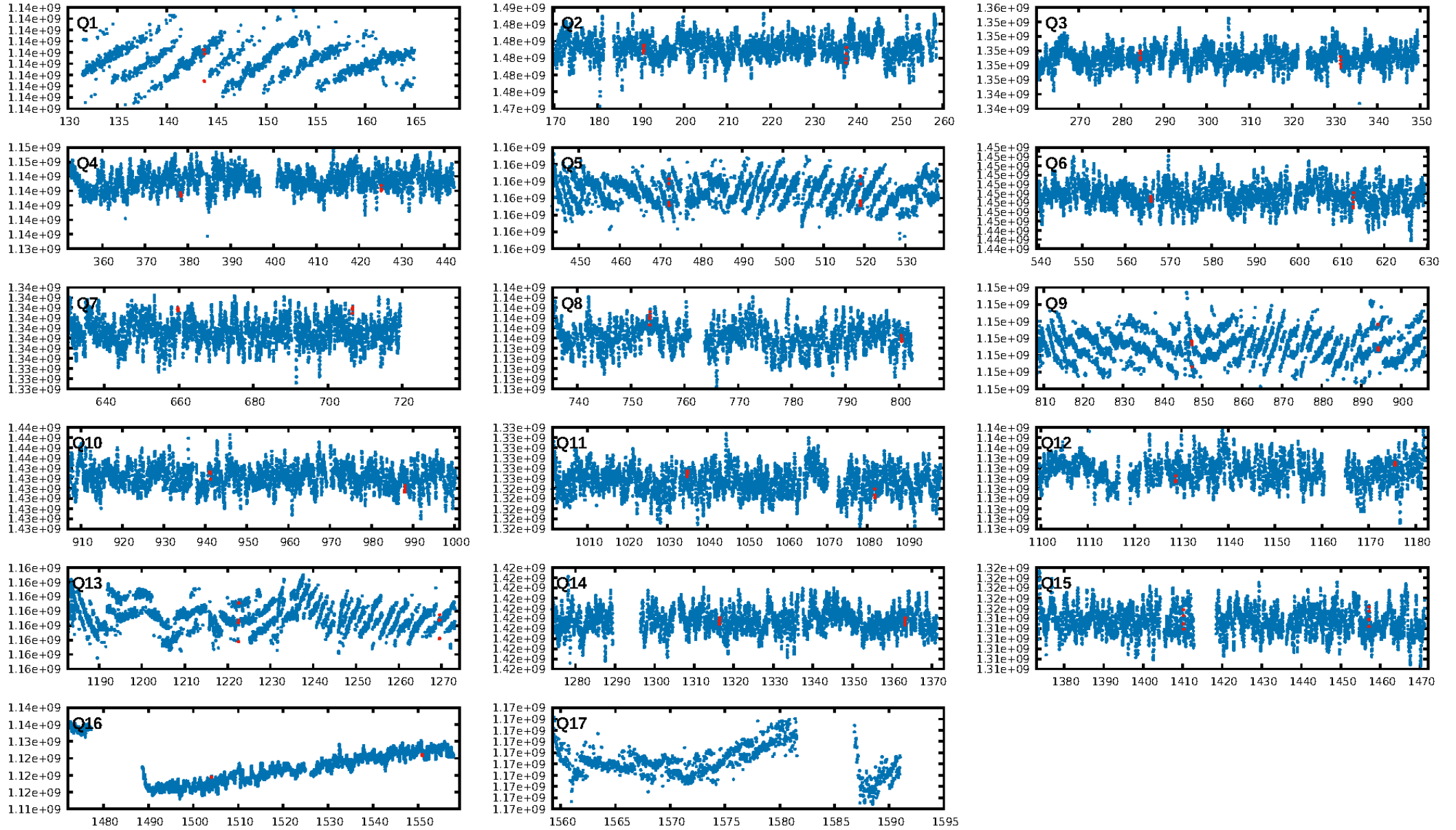
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [349.09 $\sigma$ ]  
ModelChiSquare2-sig: 96.5%  
ModelChiSquareGof-sig: 100.0%  
**Bootstrap-pfa: 3.48e-09**  
RollingBand-fgt: 0.87 [26/30]  
GhostDiagnostic-chr: N/A  
Centroid-sig: 45.0%  
Centroid-so: 4.837 arcsec [1.15 $\sigma$ ]  
OotOffset-rm: 0.725 arcsec [0.77 $\sigma$ ]  
KicOffset-rm: 1.996 arcsec [2.10 $\sigma$ ]  
OotOffset-st: 4/4/4/4 [16]  
KicOffset-st: 4/4/4/4 [16]  
DiffImageQuality-fgm: 0.19 [3/16]  
DiffImageOverlap-fno: 1.00 [16/16]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 04:26:52 Z

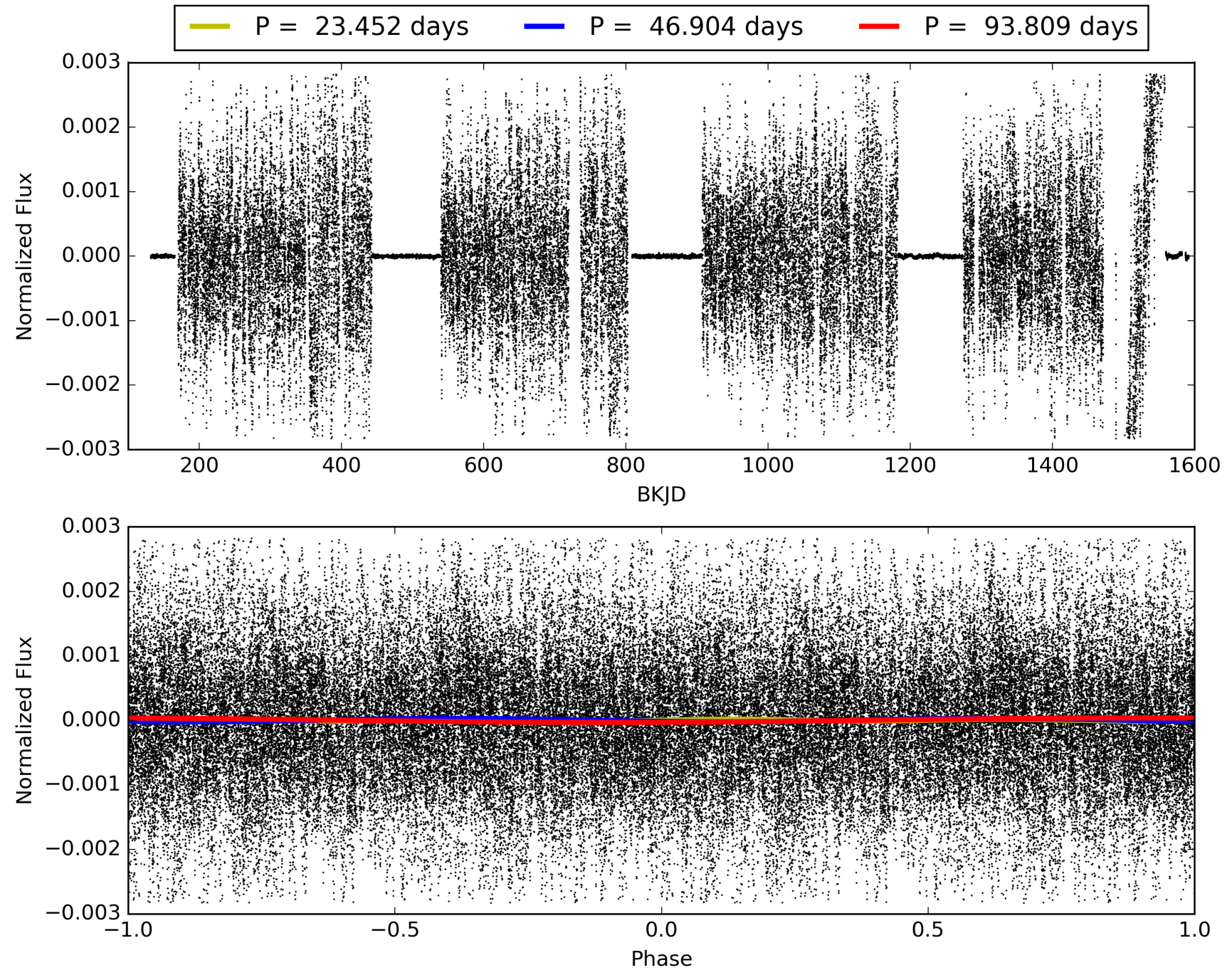
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 011972294-02, PDC Light Curves



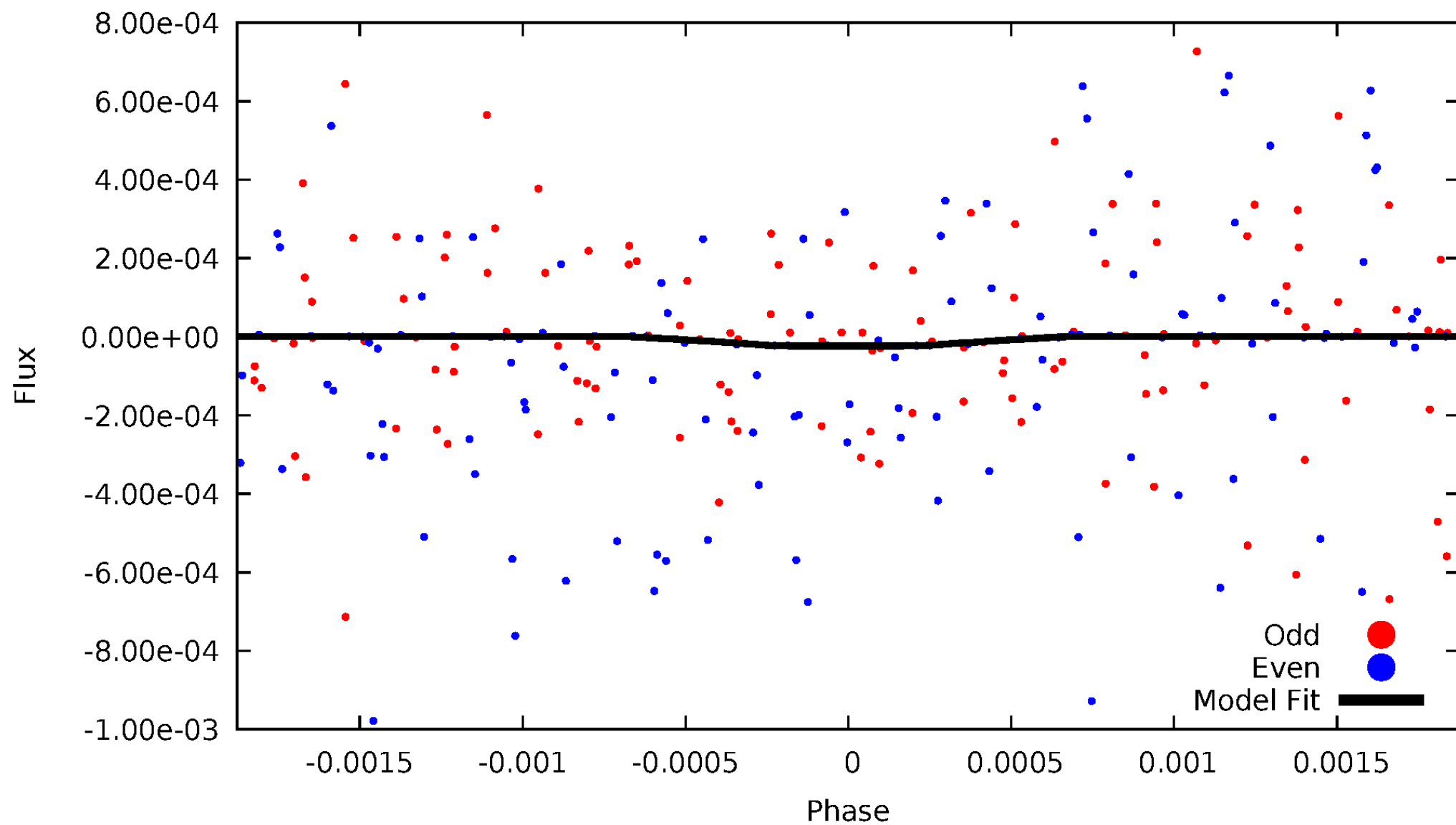


# TCE 011972294-02



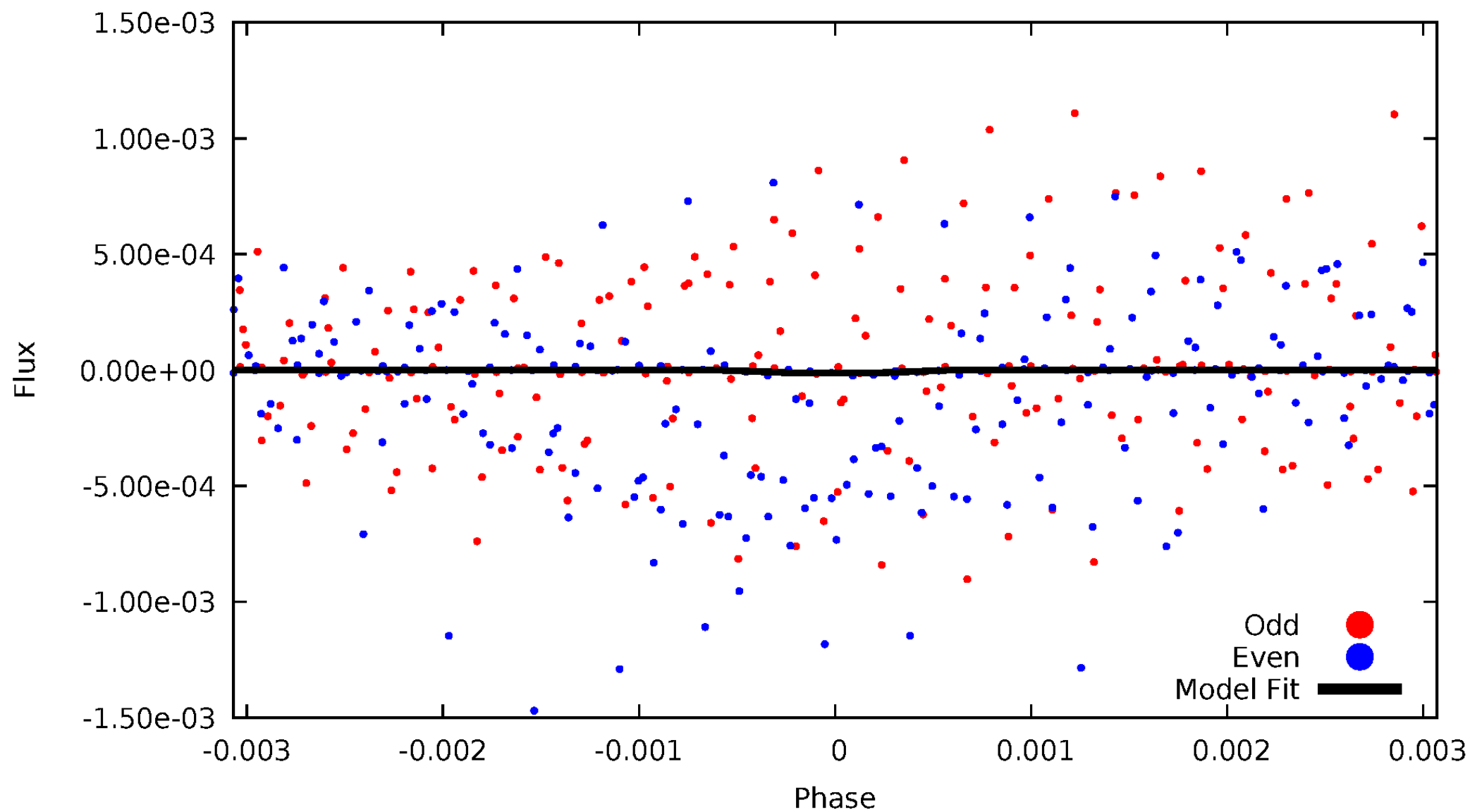
# DV Odd/Even

TCE 011972294-02



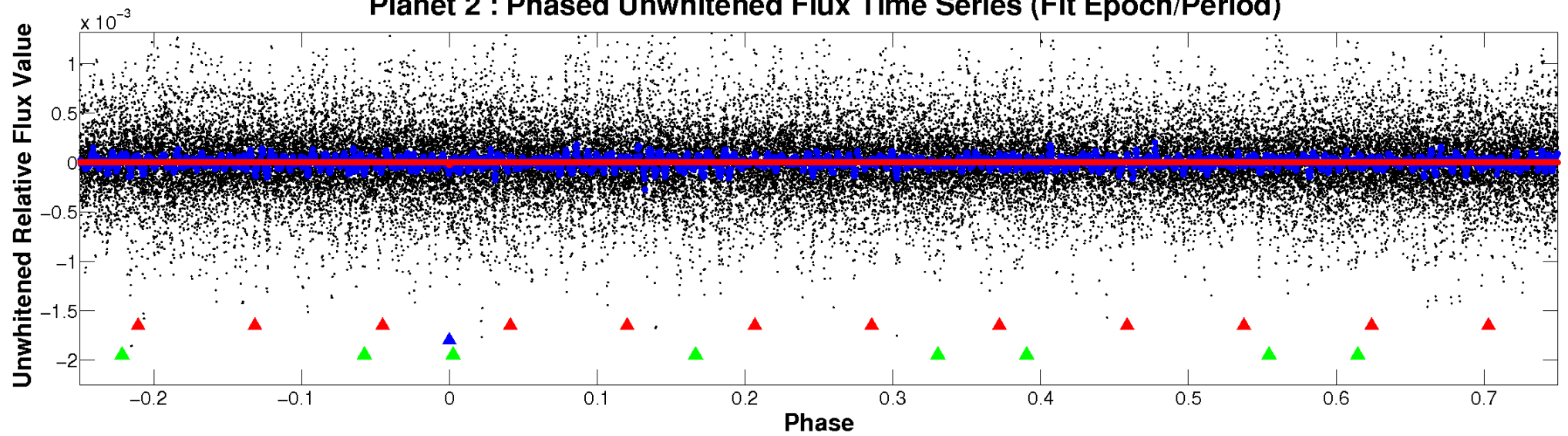
# ALT Odd/Even

TCE 011972294-02

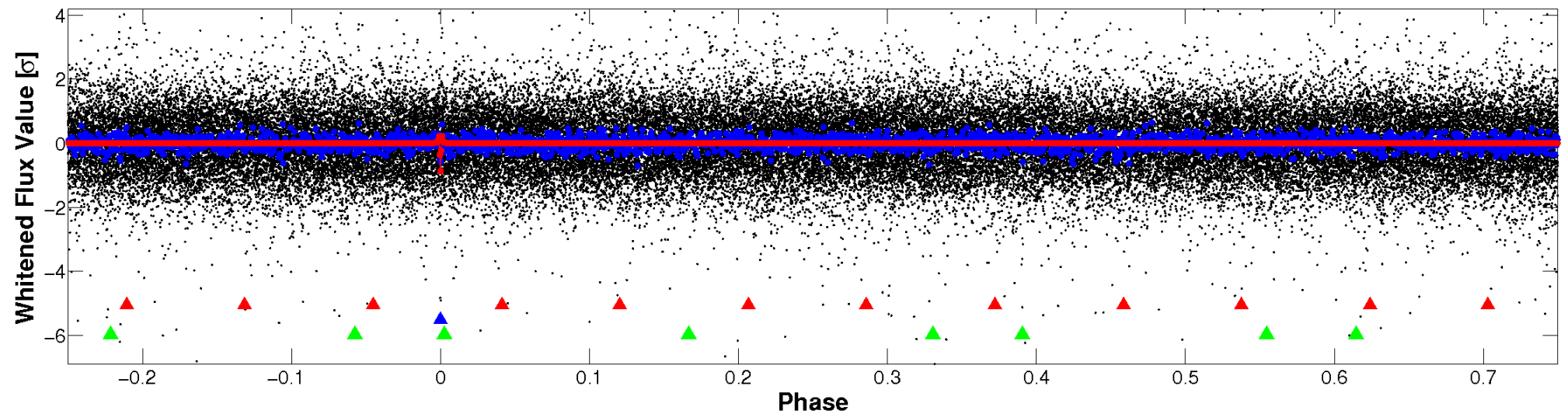


# Non-Whitened Vs. Whitened Light Curve

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

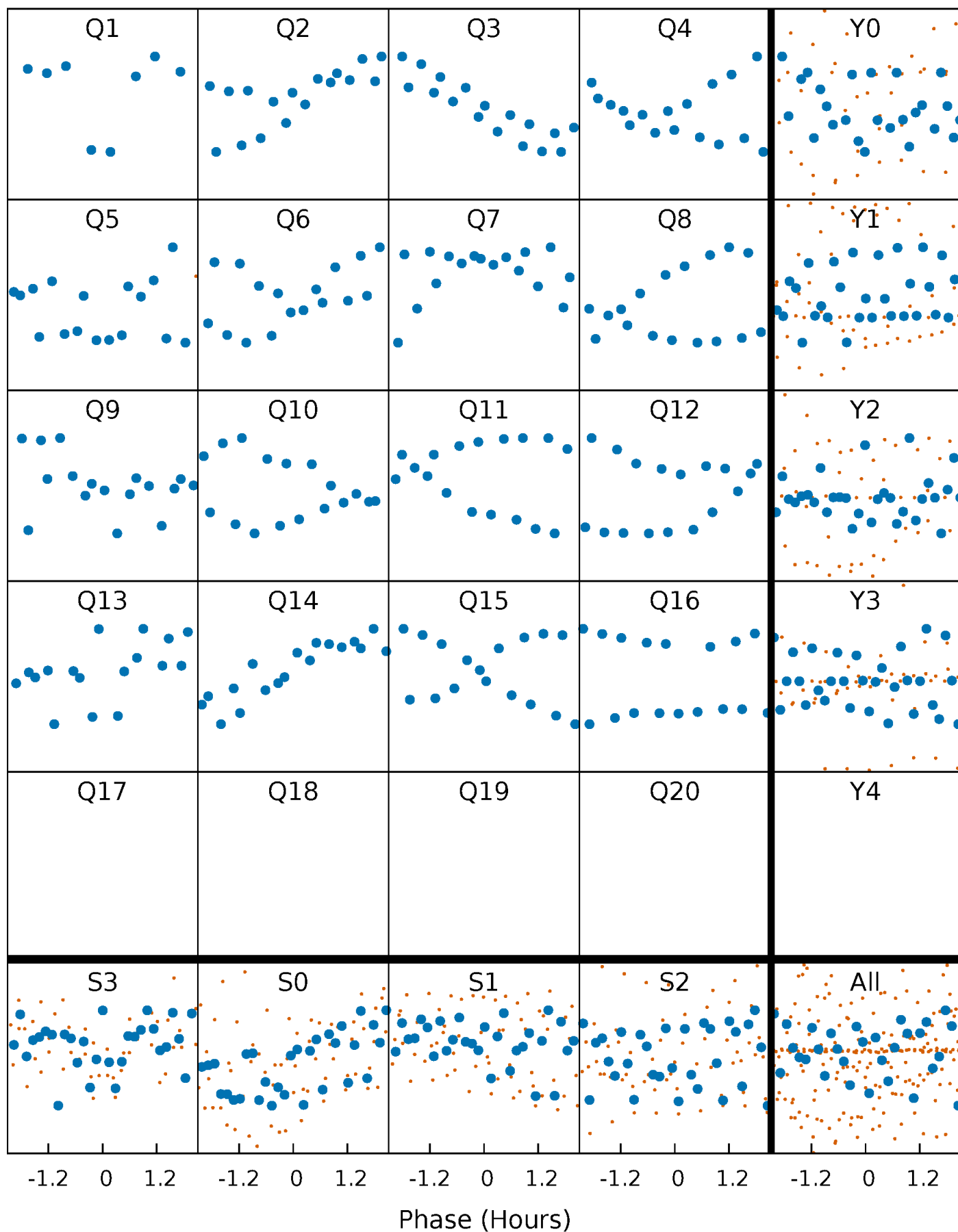


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

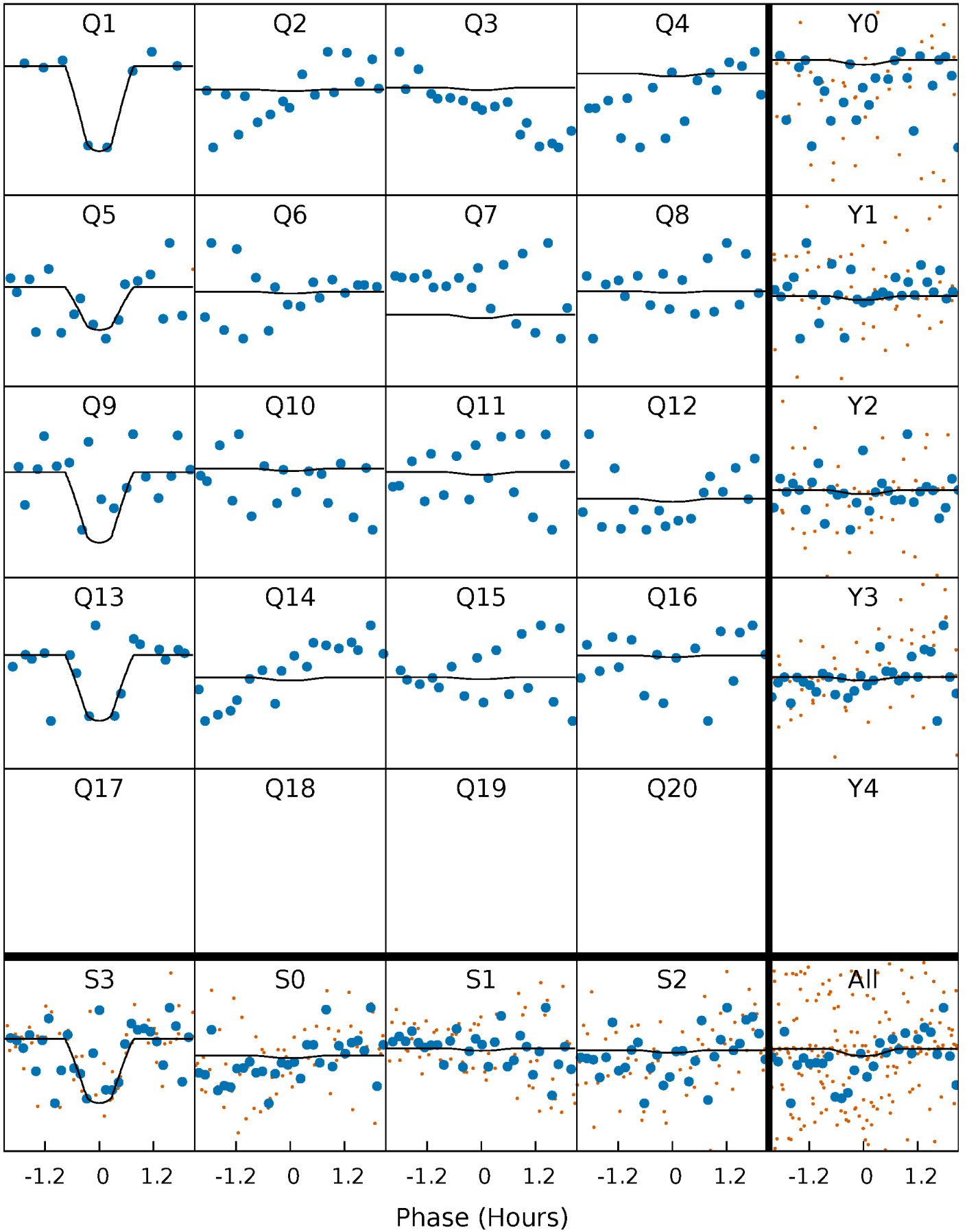
TCE 011972294-02   P= 46.904408 Days    $T_0=143.782921$  (BKJD)





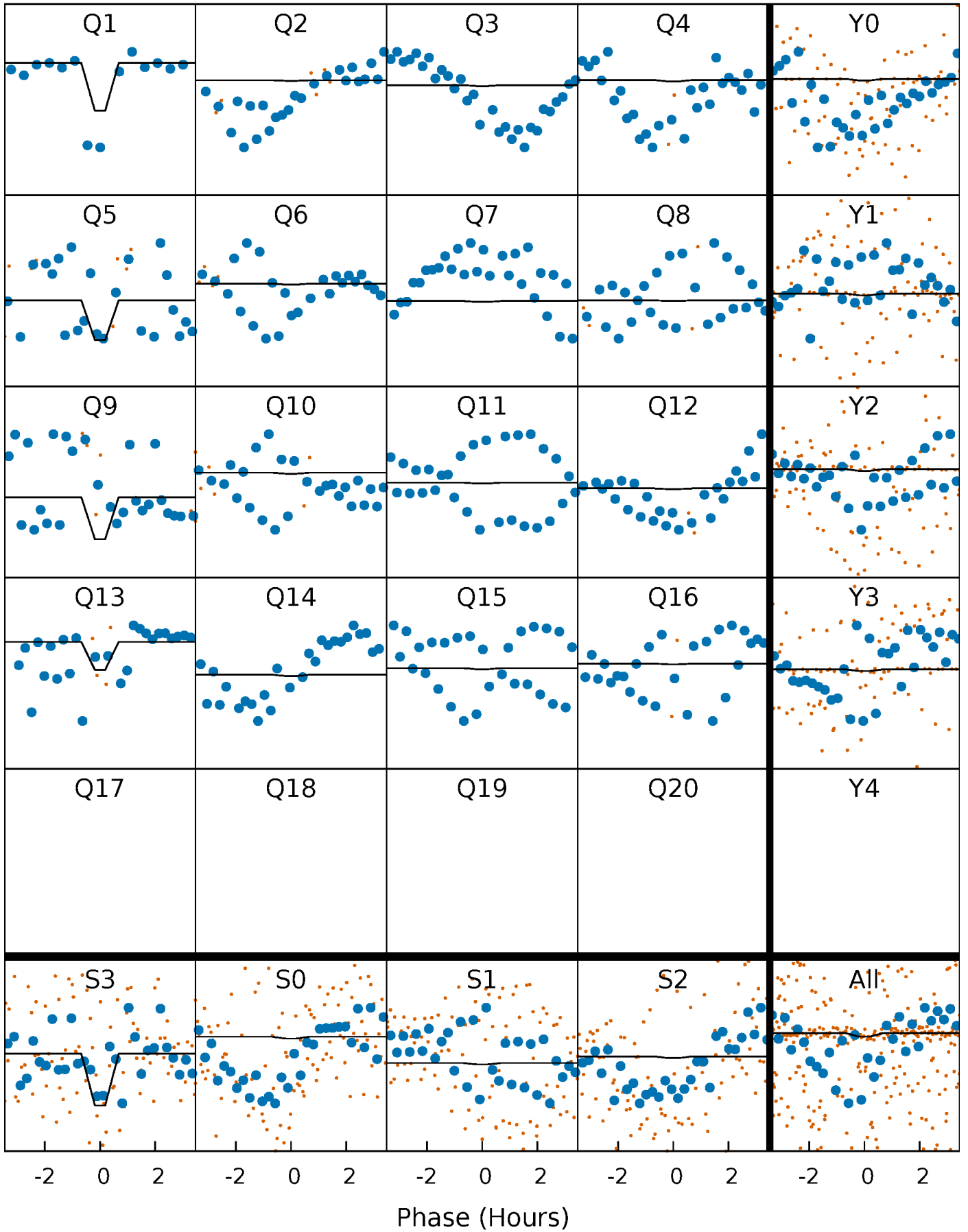
# DV Quarter-Phased Transit Curves

TCE 011972294-02   P= 46.904408 Days    $T_0=143.782921$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

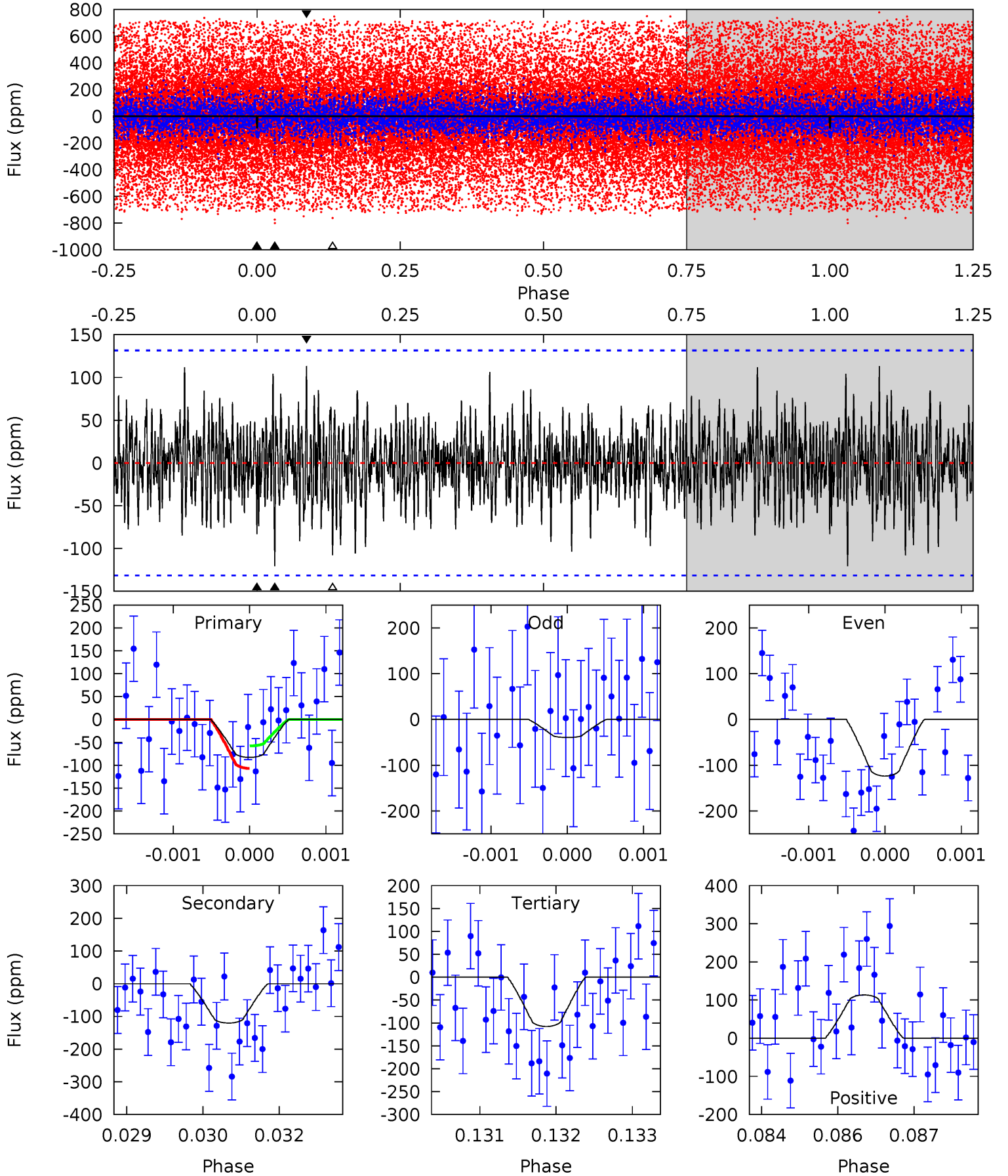
TCE 011972294-02 P= 46.903432 Days  $T_0=143.788440$  (BKJD)



# DV Model-Shift Uniqueness Test

011972294-02, P = 46.904408 Days, E = 96.878513 Days

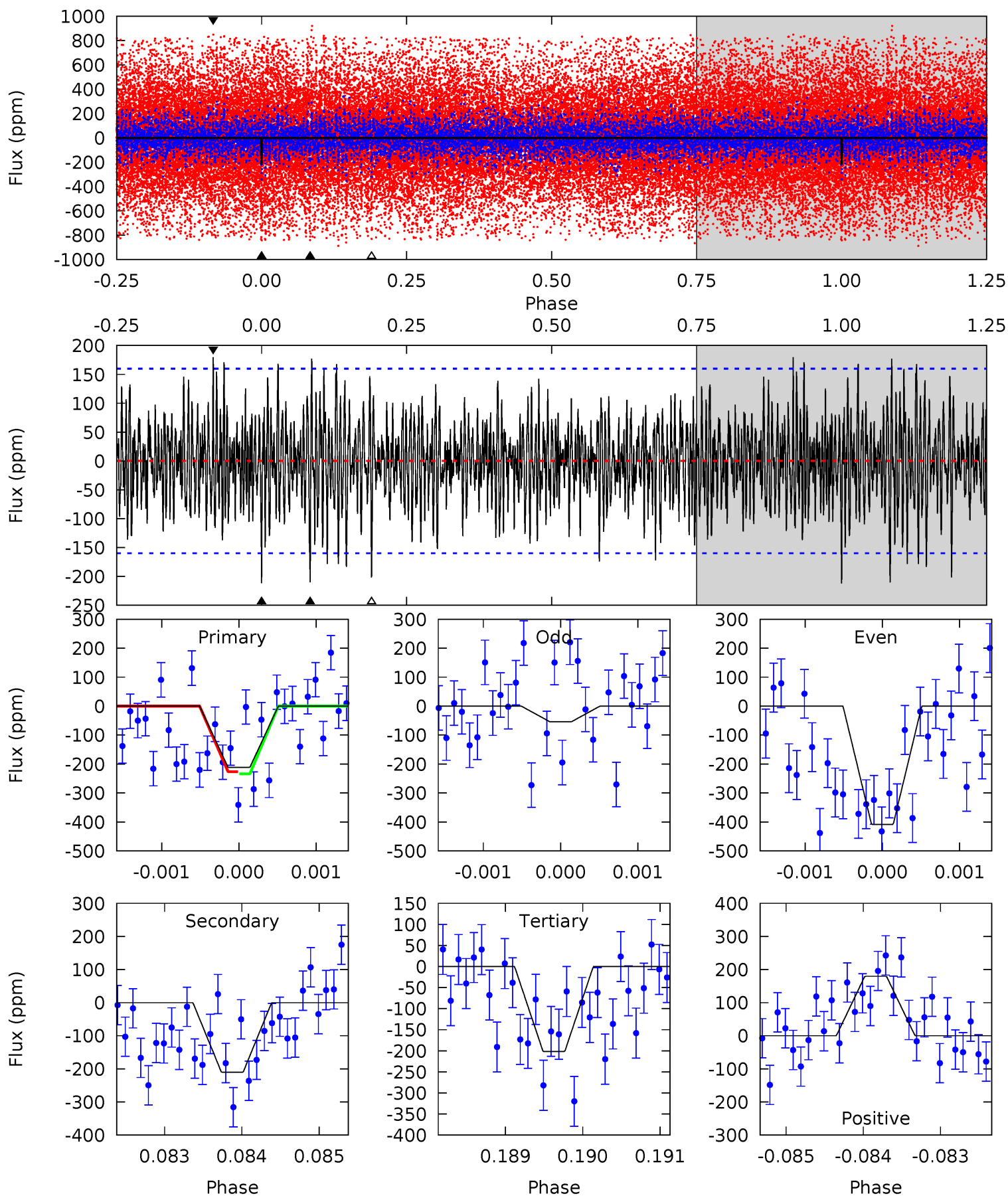
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3.41	4.95	4.43	4.66	5.40	3.21	1.35	-1.02	-1.25	0.52	0.29	1.76	3.66	0.48	1.03



# Alt Model-Shift Uniqueness Test

011972294-02, P = 46.903432 Days, E = 96.885008 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.18	7.13	6.84	6.09	5.42	3.24	1.99	0.34	1.10	0.29	1.05	6.12	1.44	0.46	0.12



### Stellar Parameters For KIC 011972294

	$T_{\text{eff}} (K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5364^{+52}_{-196}$	$2.611^{+0.287}_{-0.123}$	$-1.000^{+0.200}_{-0.300}$	$12.405^{+3.239}_{-6.015}$	$2.290^{+0.312}_{-1.249}$	$0.002^{+0.004}_{-0.001}$
	+1%/-4%	+11%/-5%	+20%/-30%	+26%/-48%	+14%/-55%	+233%/-41%
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 011972294-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-120 \pm 24$	$6.87^{+1.79}_{-1.95}$	$1964^{+140}_{-169}$	$7705^{+1203}_{-805}$	$158^{+113}_{-59}$
Alt.	$-210 \pm 29$	$4.65^{+1.54}_{-1.42}$	$1971^{+130}_{-196}$	$12275^{+3556}_{-2151}$	$574^{+583}_{-236}$

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

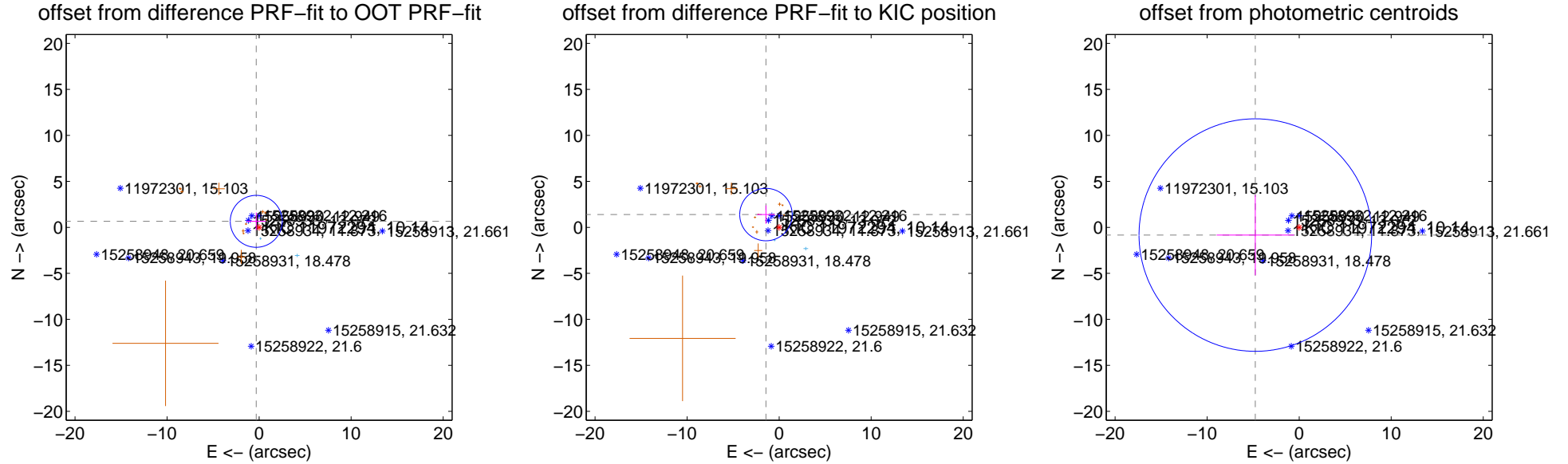
## DV Centroid Data

Supplemental centroid analysis for 011972294-02. **Kepler magnitude: 10.14.** Transit SNR 15.45

**There are 3 quarters with good PRF difference image offsets**

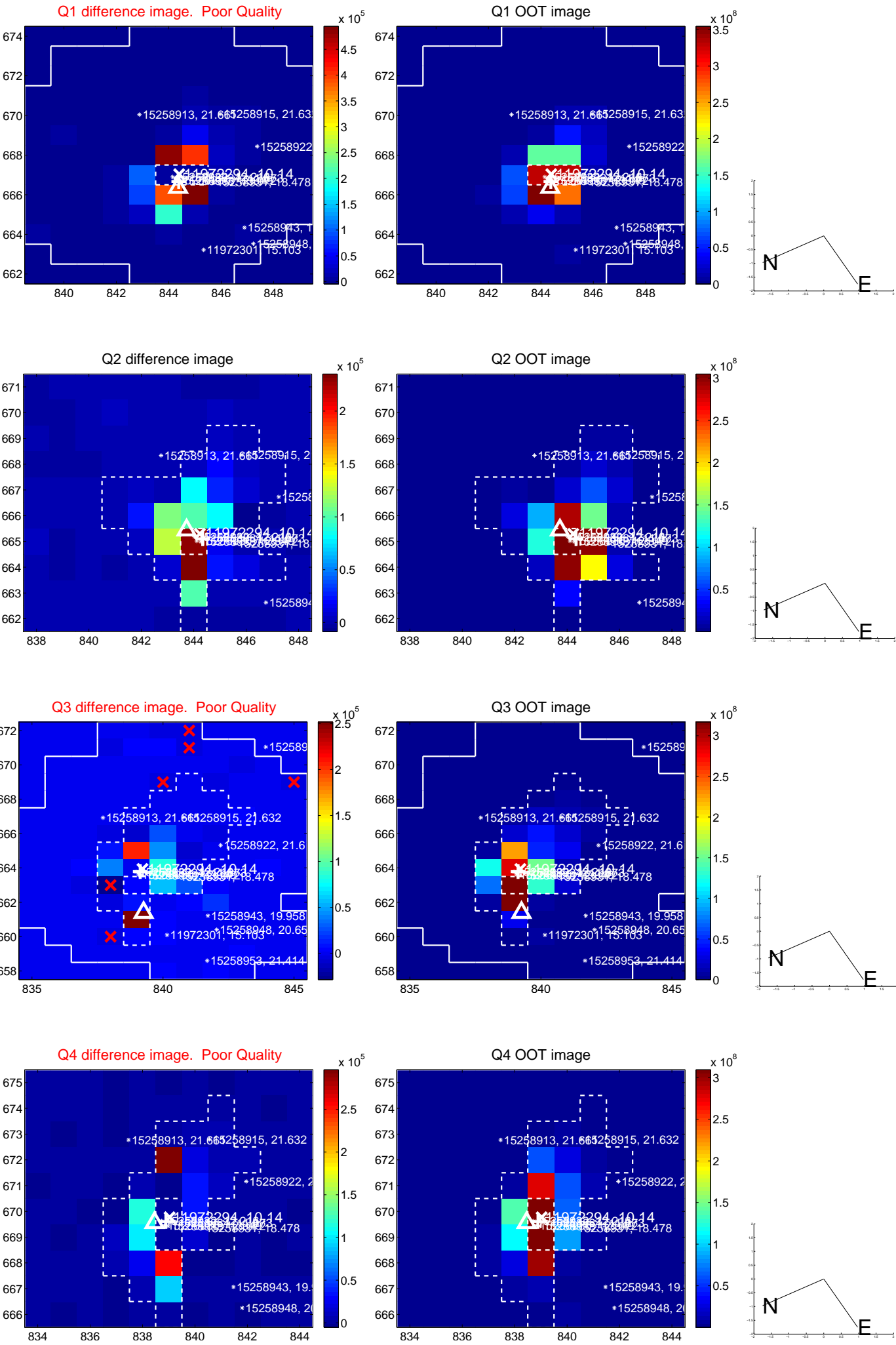
The direct PRF centroid is offset from the target star catalog position by about 0.77 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.725 \pm 0.941$	0.77	$0.311 \pm 1.030$	$0.655 \pm 0.961$
PRF-fit source offset from KIC position	$1.996 \pm 0.950$	2.10	$1.432 \pm 0.962$	$1.390 \pm 0.998$
photometric centroid source offset	$4.84 \pm 4.21$	1.15	$4.76 \pm 4.21$	$-0.84 \pm 4.37$



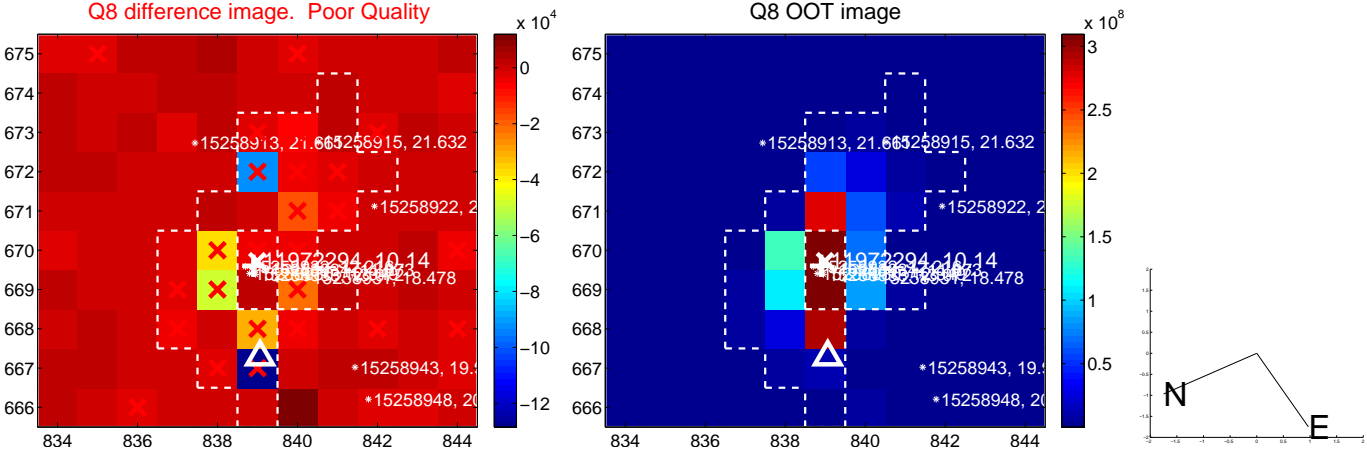
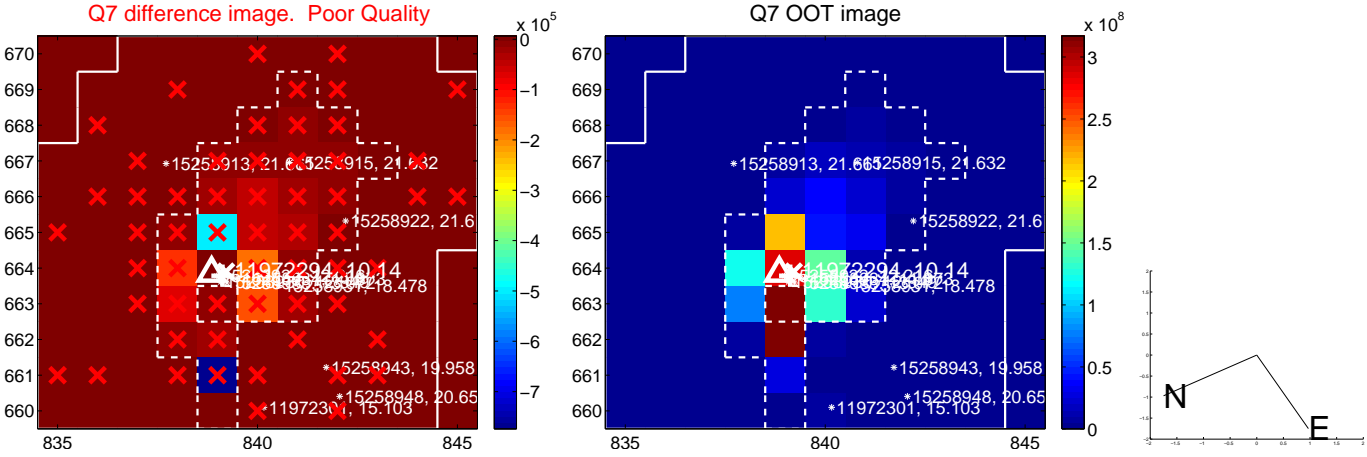
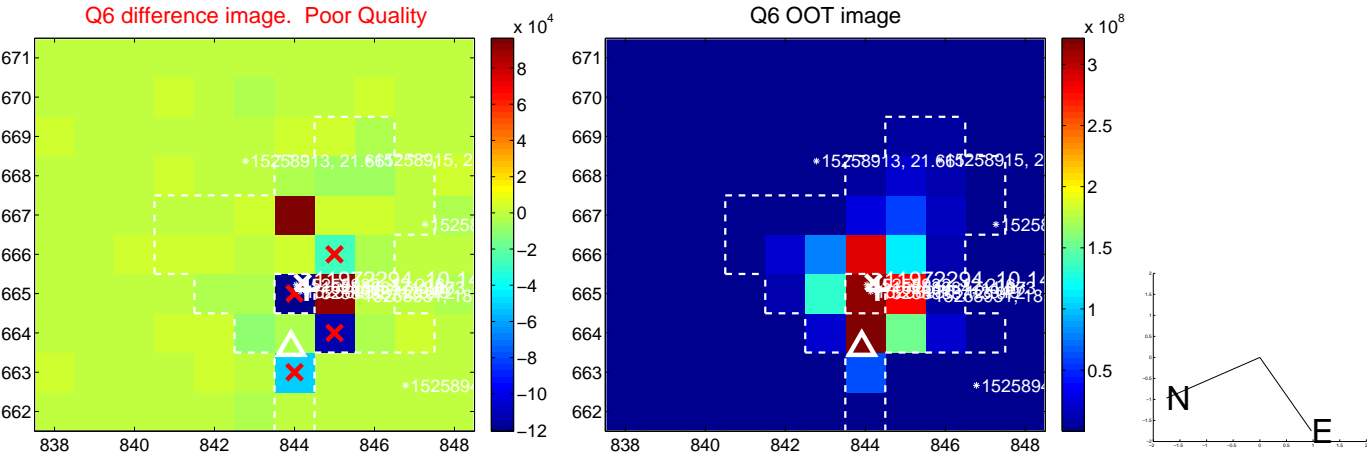
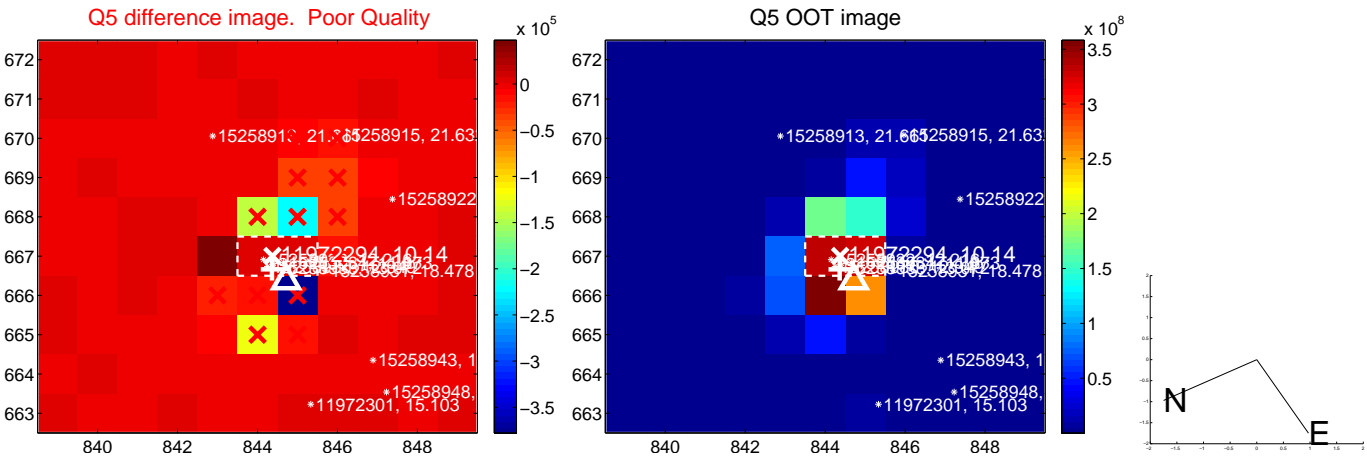
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

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

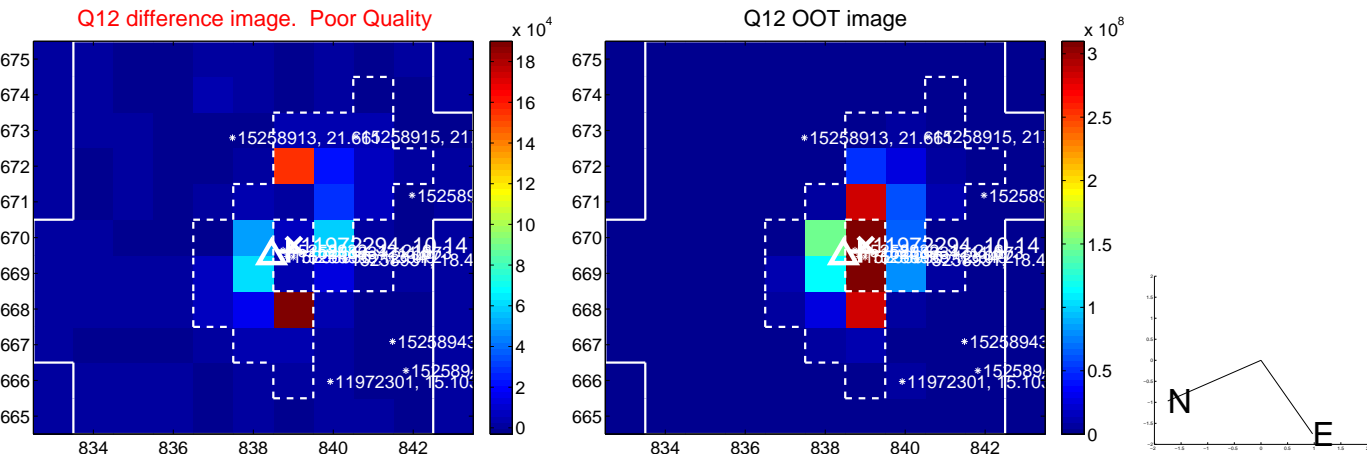
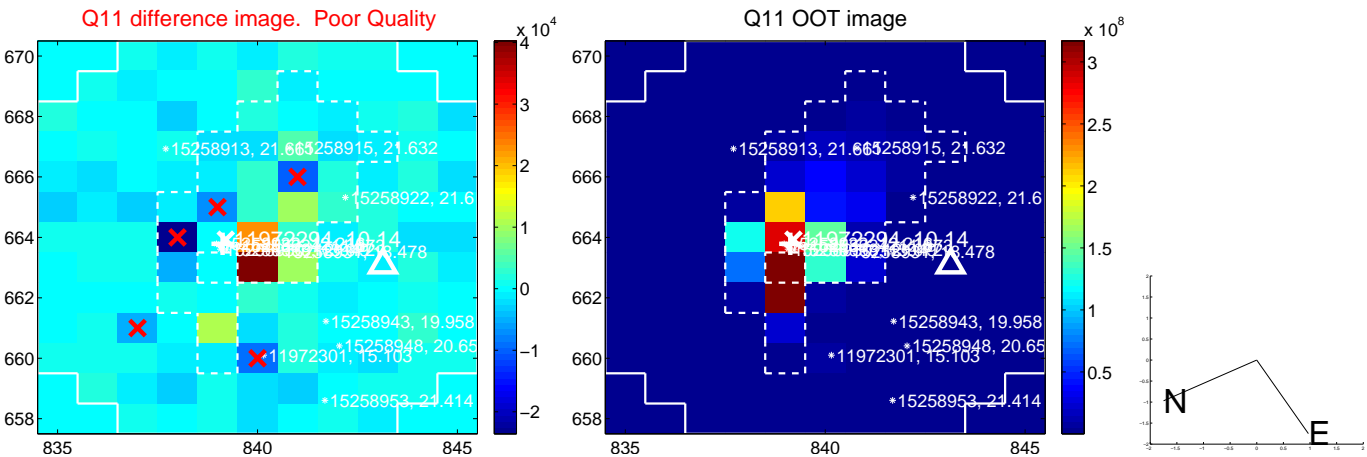
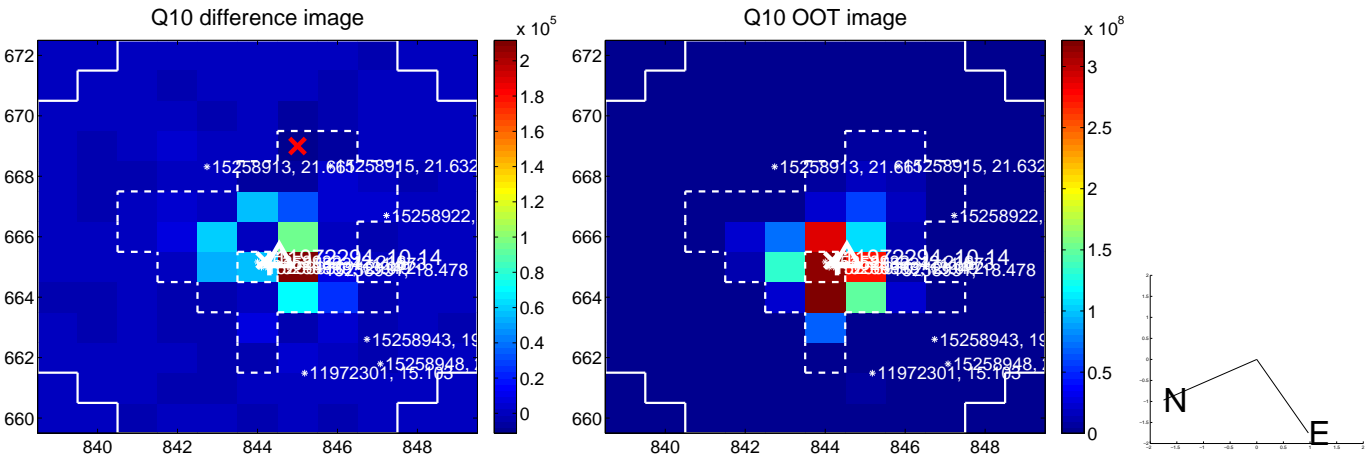
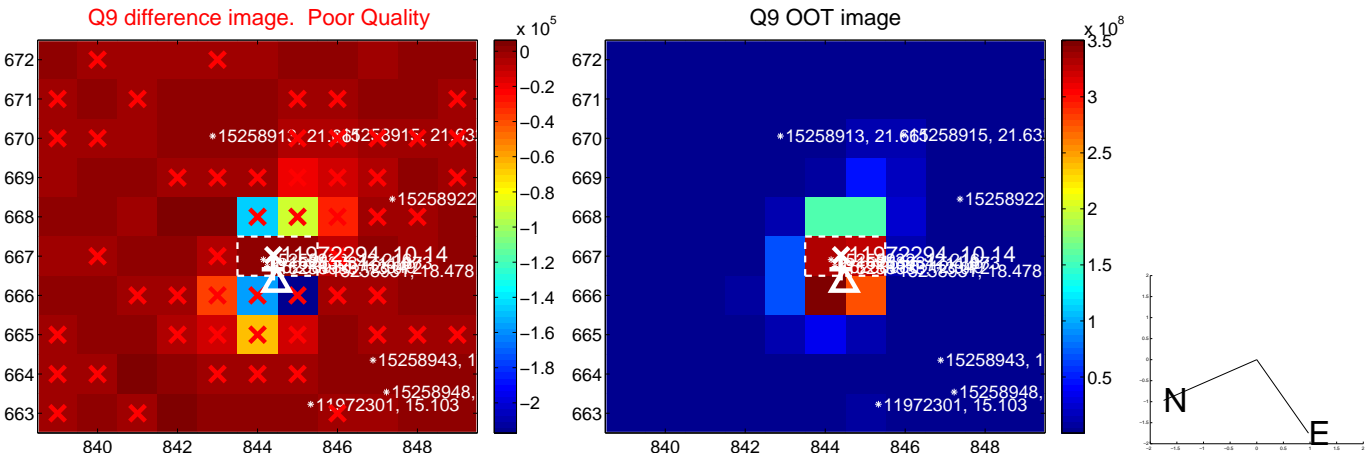




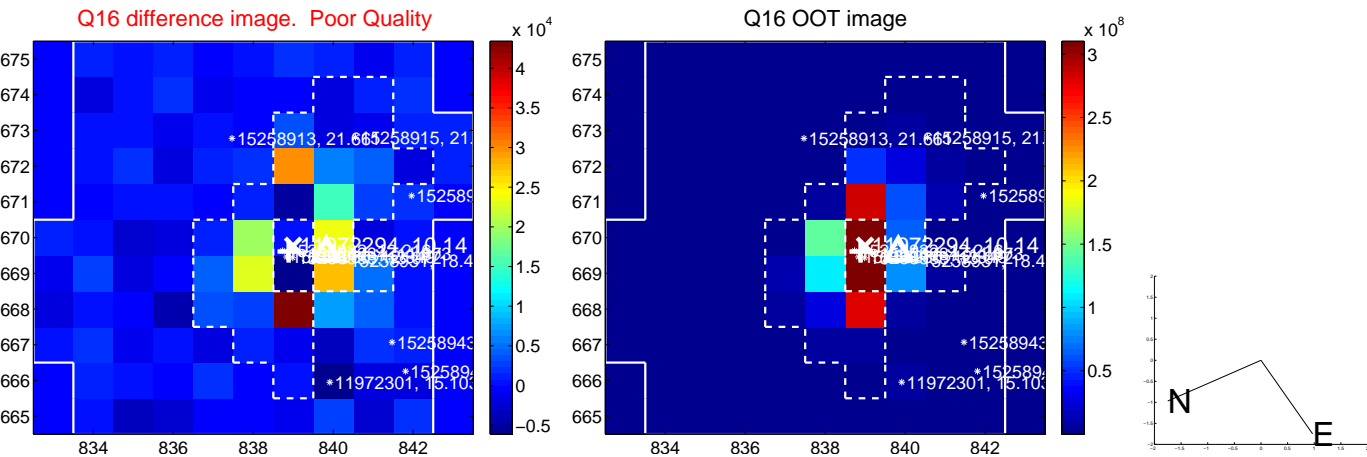
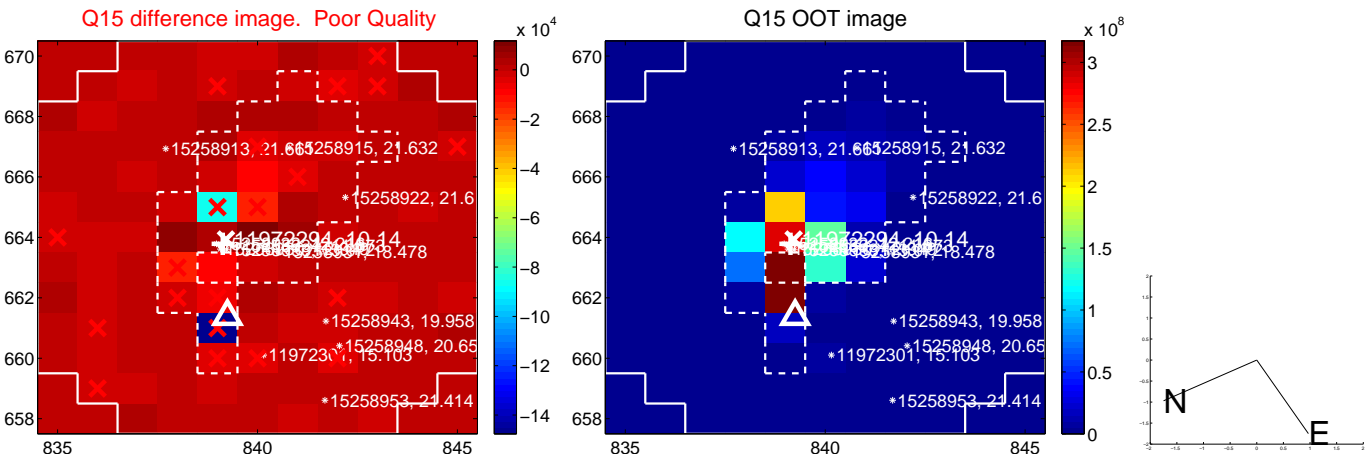
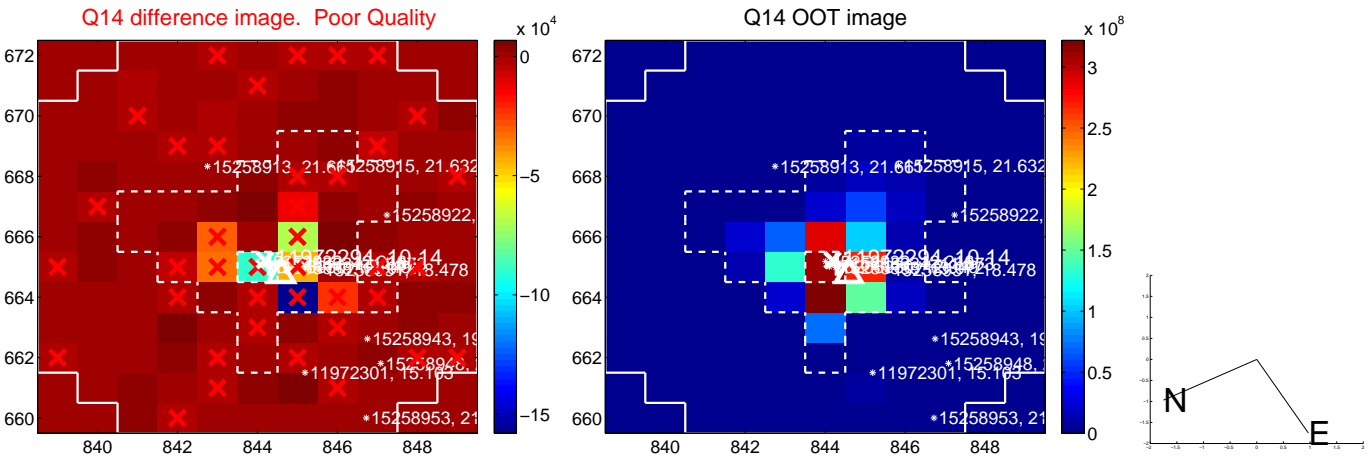
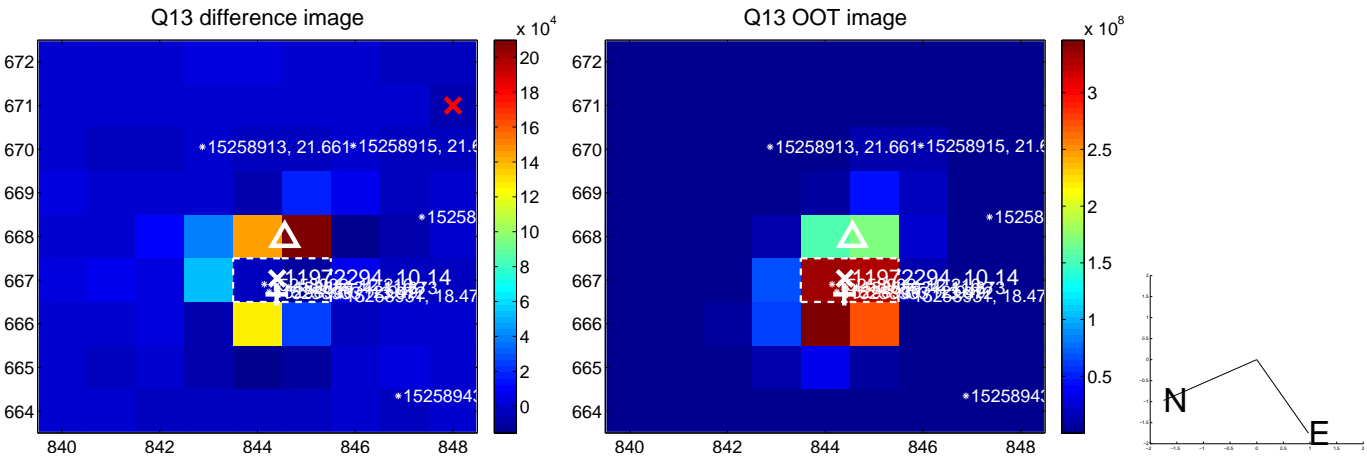
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



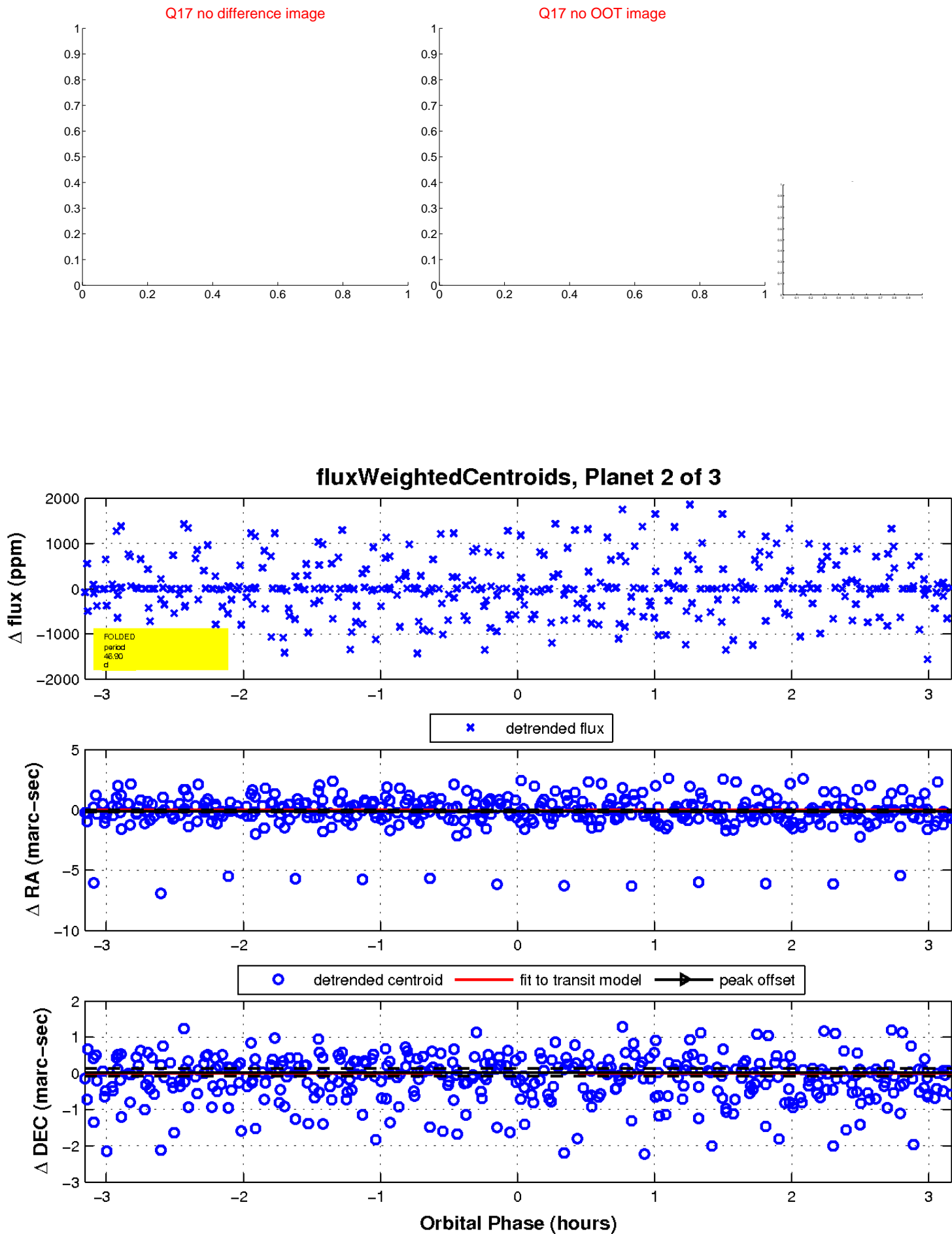
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

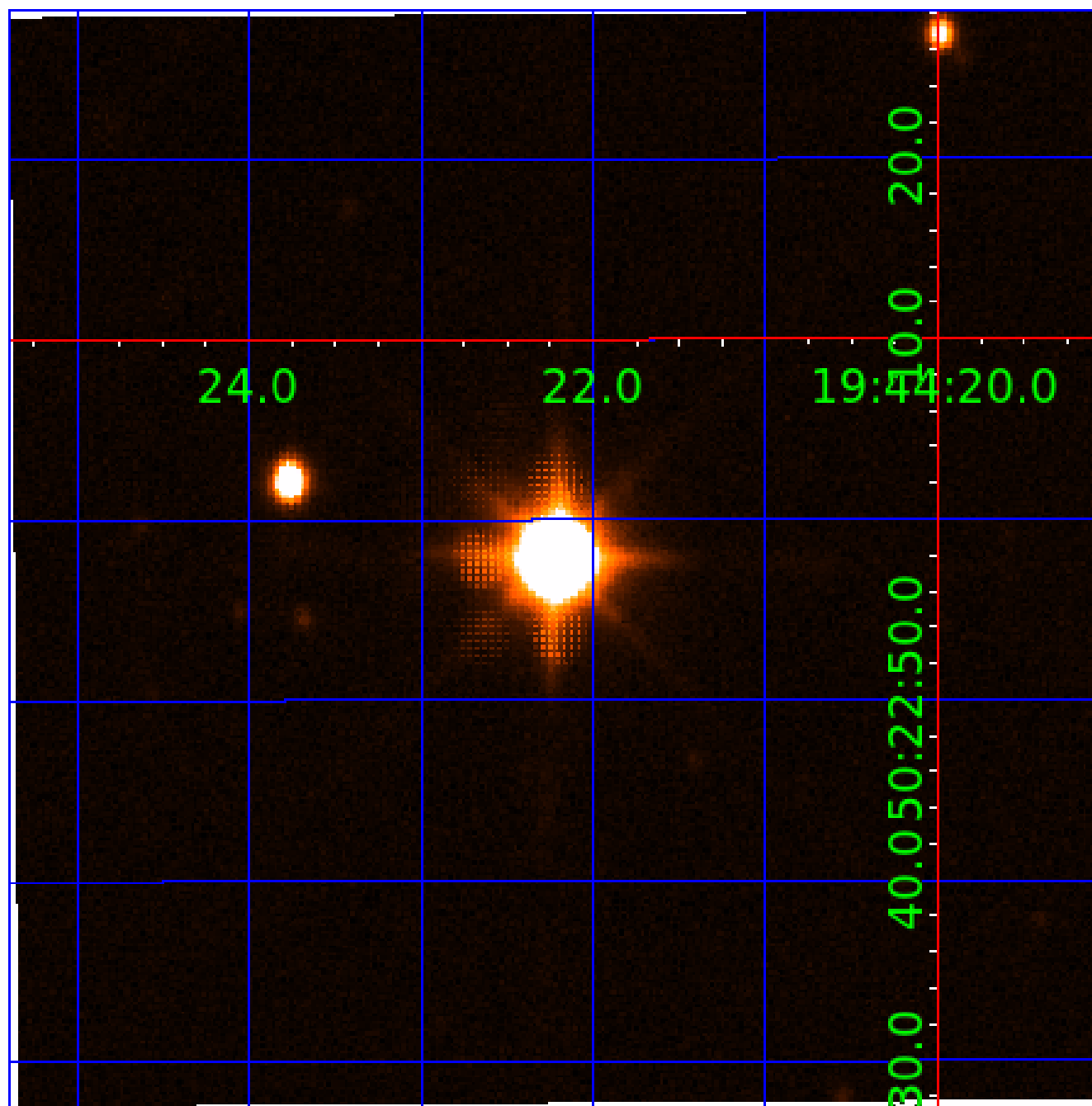


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 011972294

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
011972294-01	OBS	No	121.140947	165.290705	37.6	4.993	9.9	12.4	12.40	5364	9.35	285.89
011972294-02	OBS	No	46.904408	143.782921	24.1	1.056	9.0	15.4	12.40	5364	7.12	1013.05
011972294-03	OBS	No	169.419023	253.096549	36.6	0.737	14.3	3.8	12.40	5364	8.22	182.79

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011972294-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
011972294-02	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
011972294-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE_ZUMA_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED

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

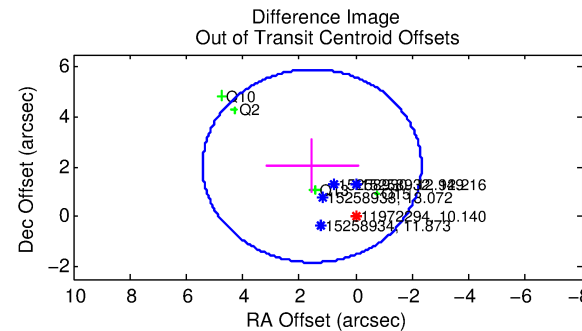
N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

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 011972294-03

No Significant Match Found

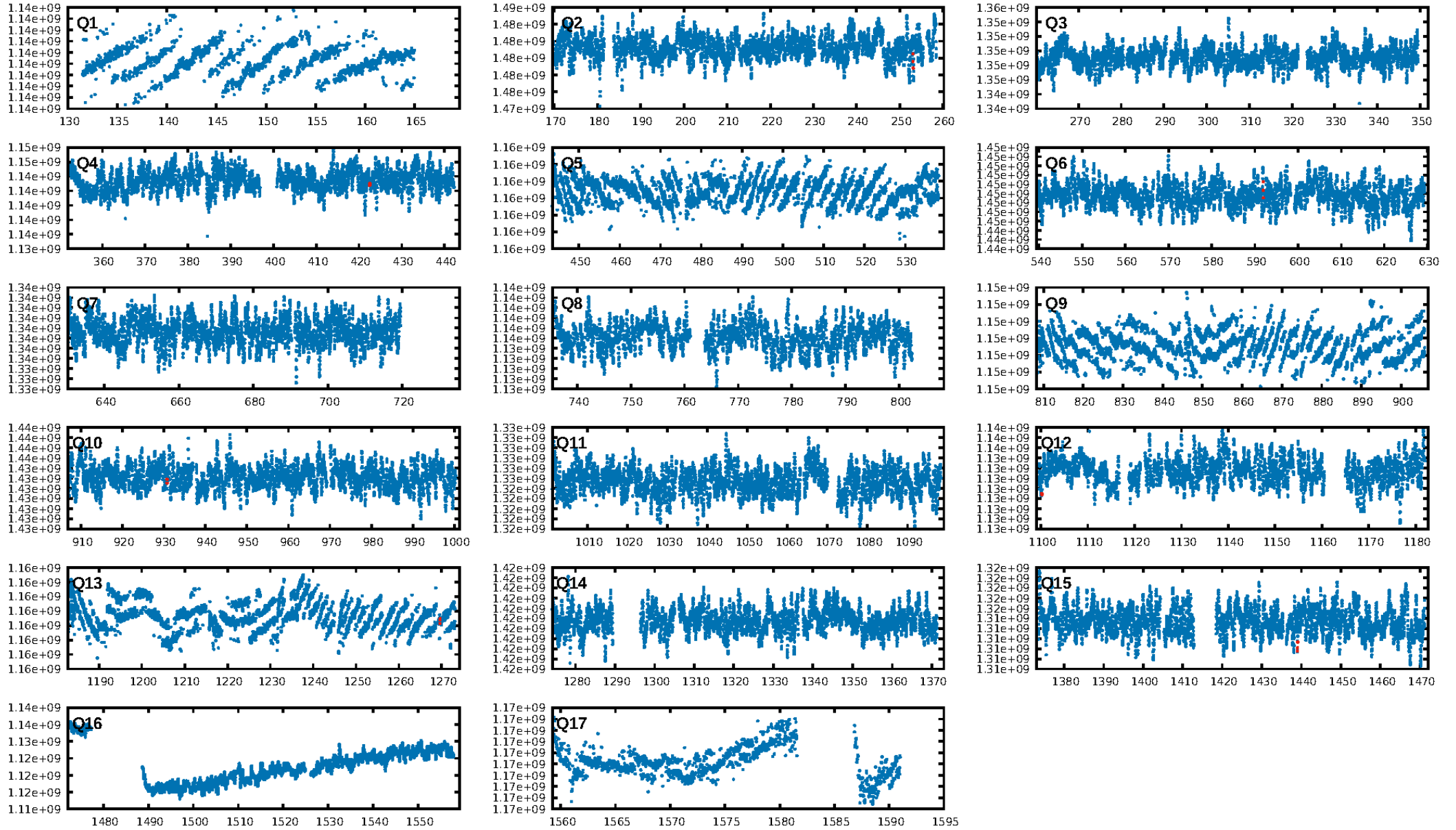
## KIC: 11972294    Candidate: 3 of 3    Period: 169.419 d



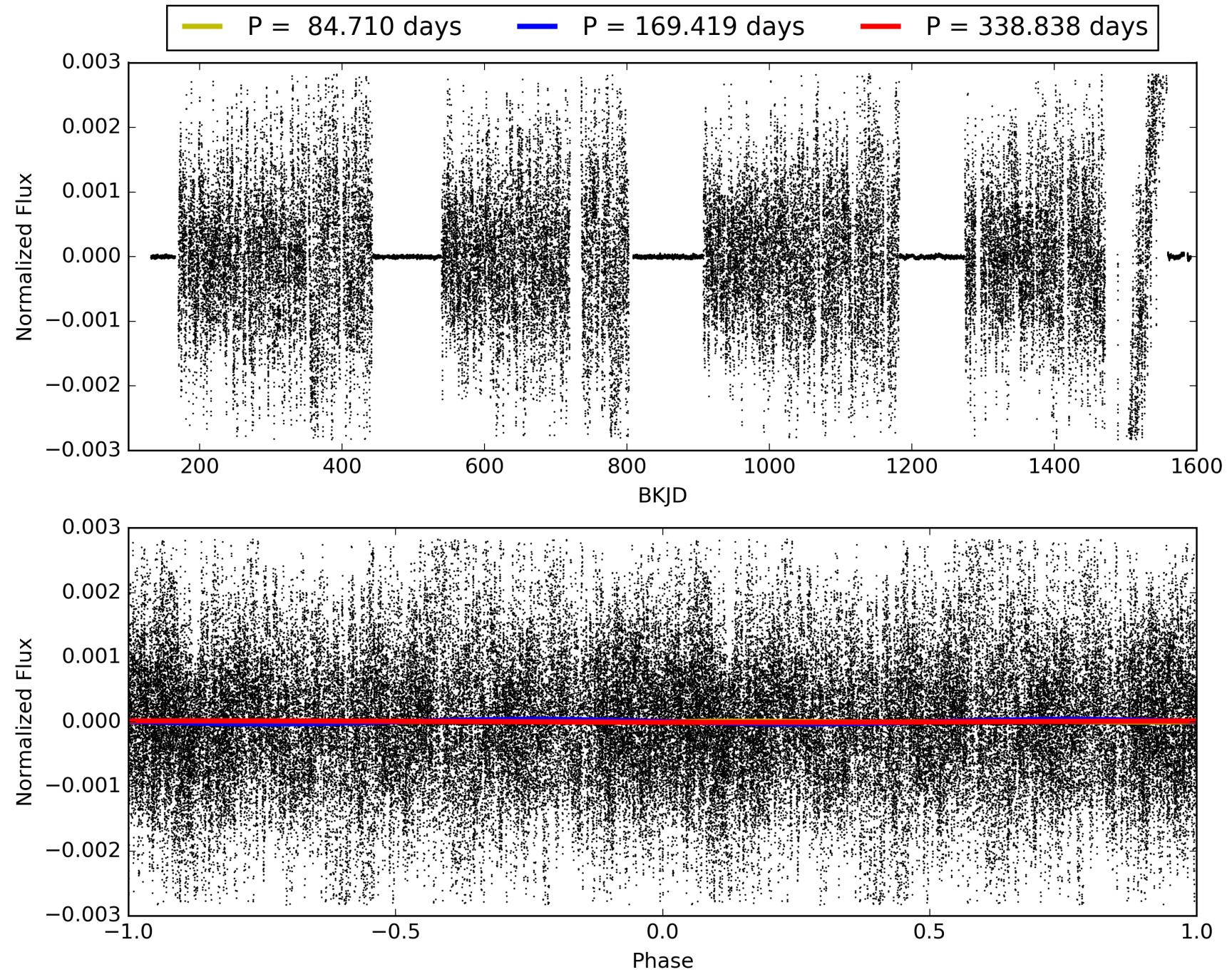
ShortPeriod-sig: 100.0% [229.56σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 50.1%  
ModelChiSquareGof-sig: 60.3%  
Bootstrap-pfa: 8.15e-15  
RollingBand-fgt: 0.86 [6/7]  
GhostDiagnostic-chr: N/A  
  
Centroid-sig: 32.2%  
Centroid-so: 6.970 arcsec [0.97σ]  
OotOffset-rm: 2.551 arcsec [1.98σ]  
KicOffset-rm: 3.175 arcsec [2.18σ]  
OotOffset-st: 2/1/0/1 [4]  
KicOffset-st: 2/1/0/1 [4]  
  
DiffImageQuality-fgm: 0.00 [0/4]  
DiffImageOverlap-fno: 0.75 [3/4]



# TCE 011972294-03, PDC Light Curves

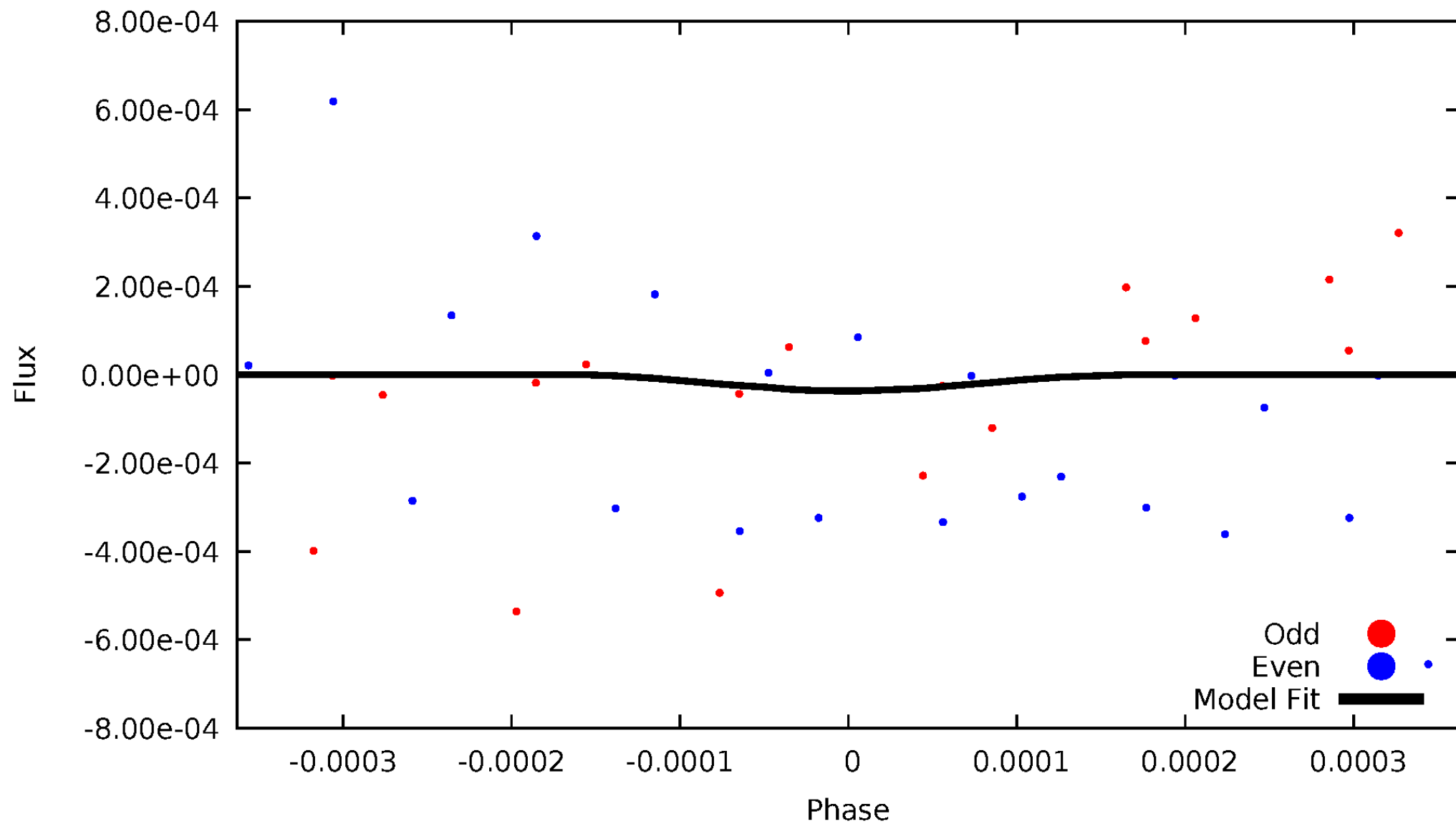


# TCE 011972294-03



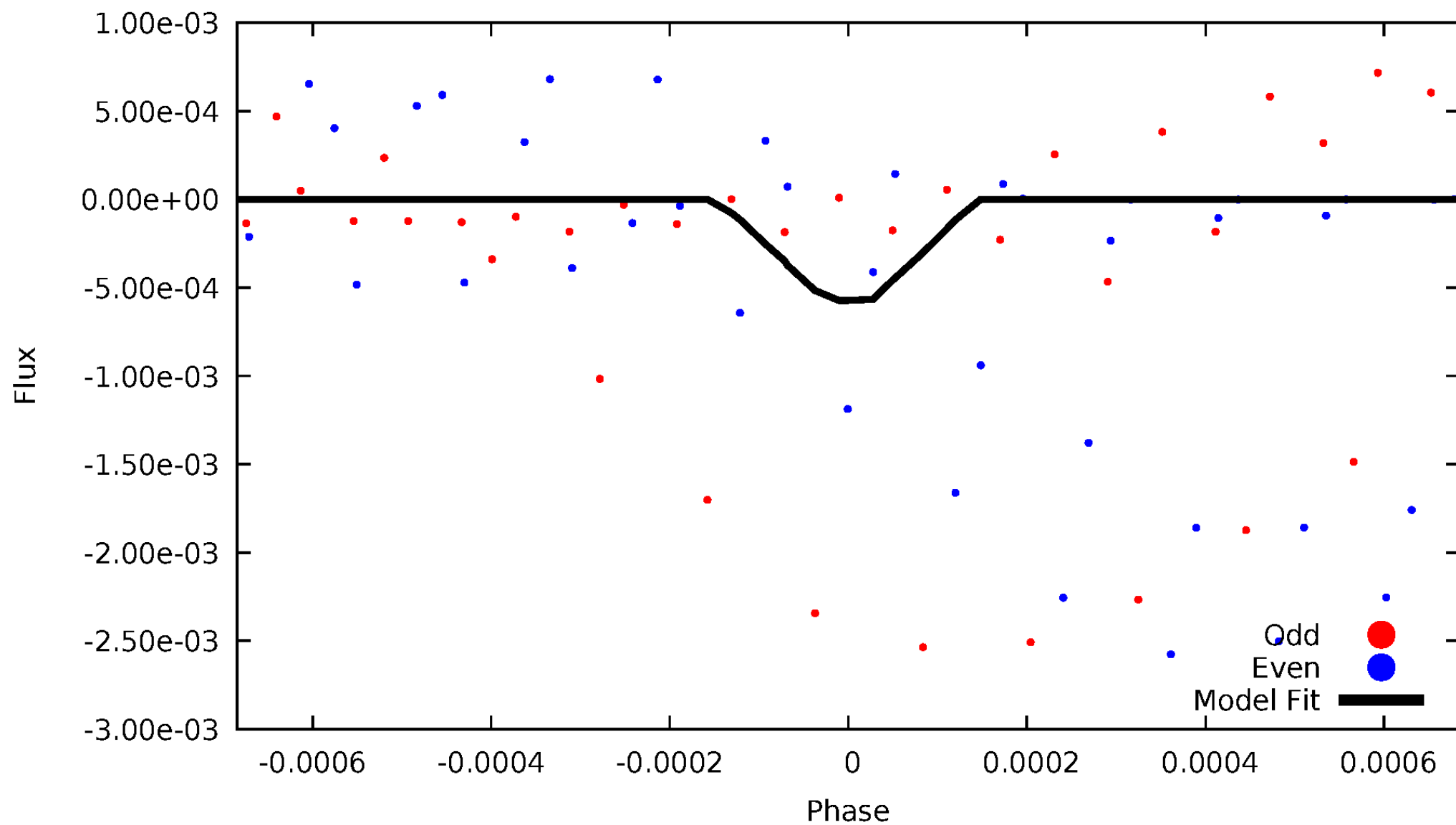
# DV Odd/Even

TCE 011972294-03

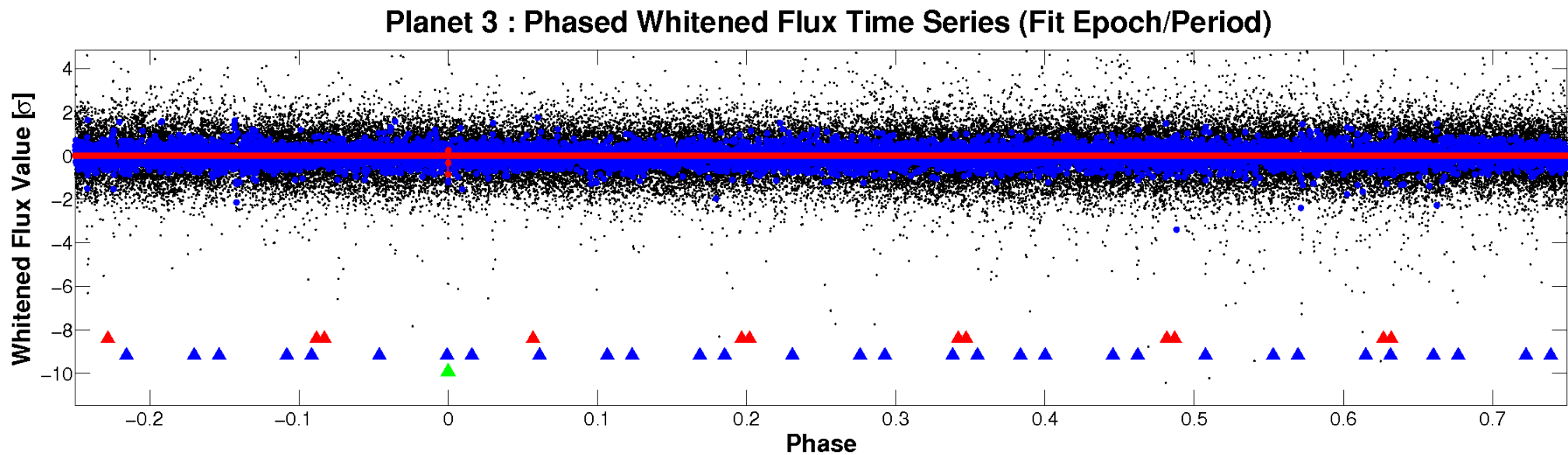
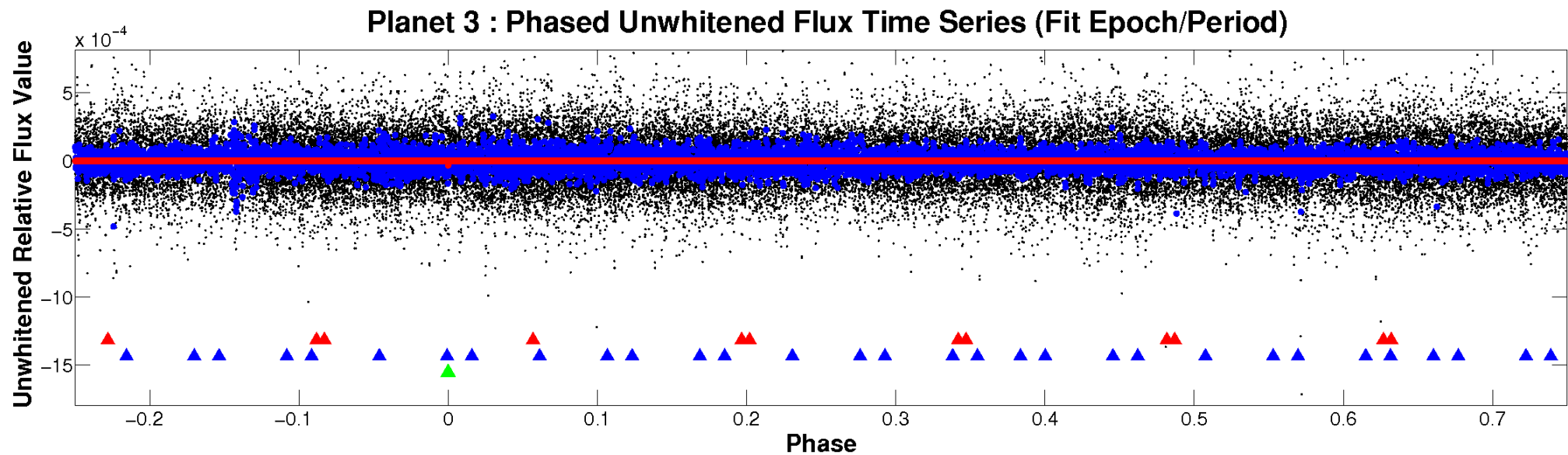


# ALT Odd/Even

TCE 011972294-03

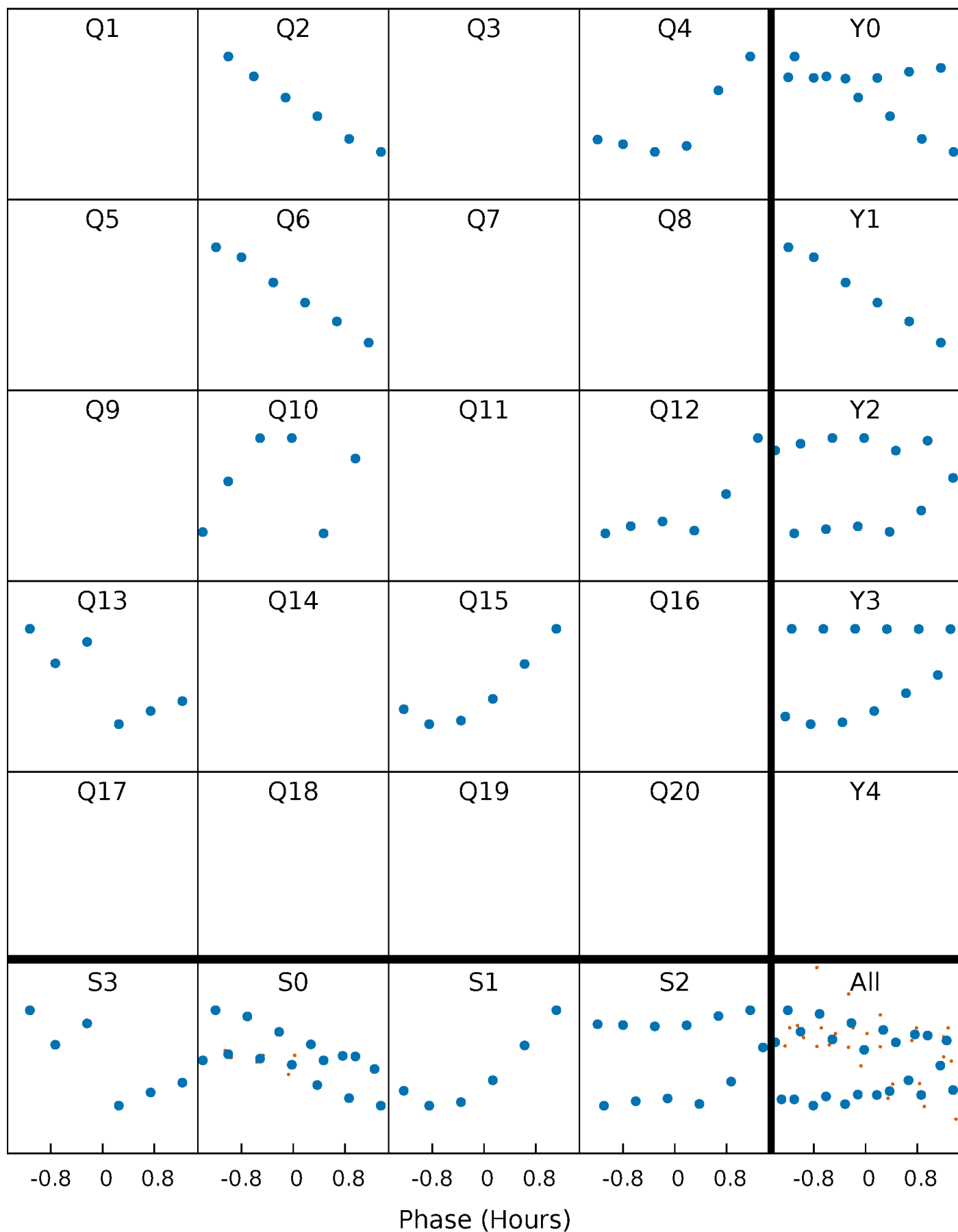


# Non-Whitened Vs. Whitened Light Curve



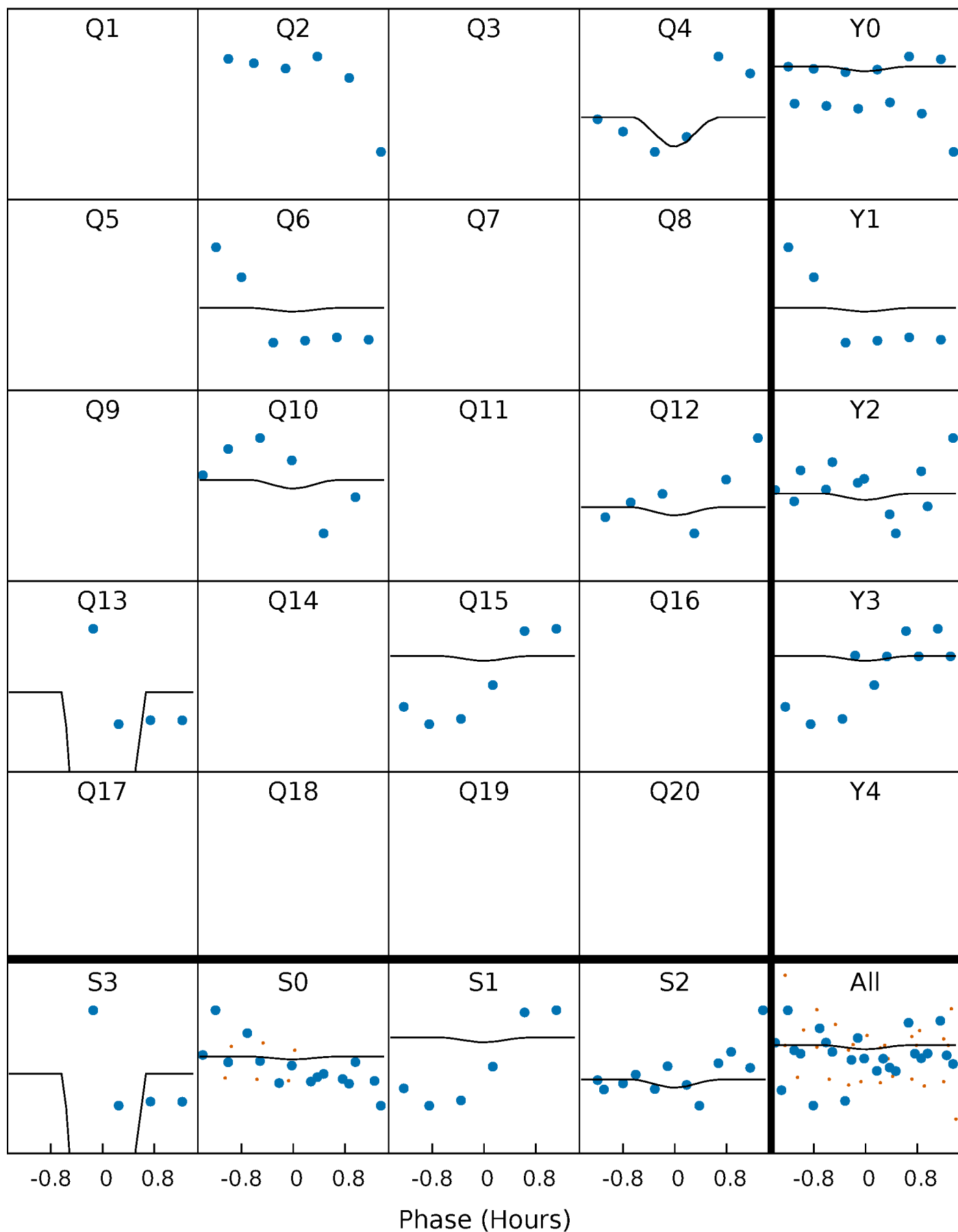
# PDC Quarter-Phased Transit Curves

TCE 011972294-03 P=169.419023 Days  $T_0=253.096549$  (BKJD)



# DV Quarter-Phased Transit Curves

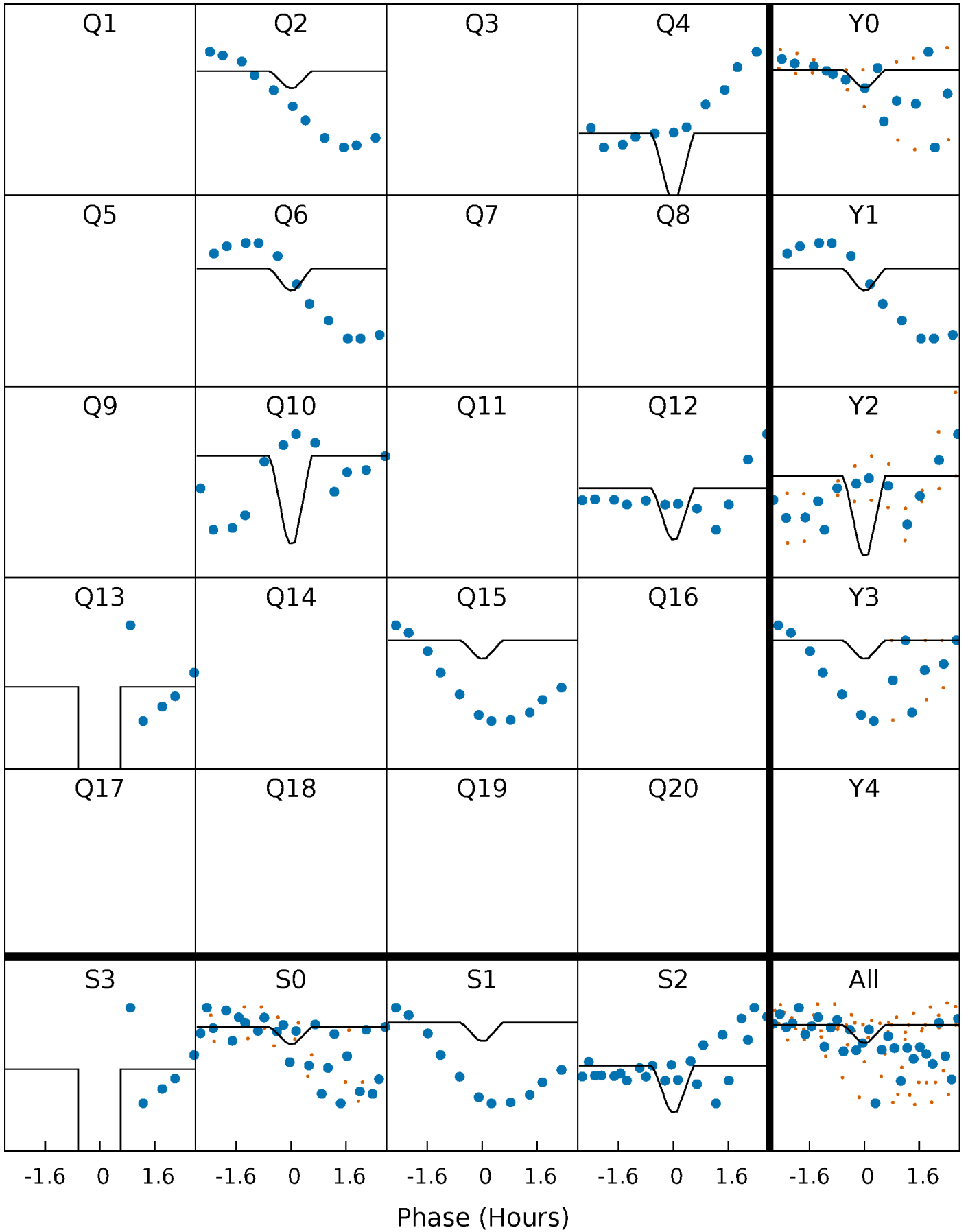
TCE 011972294-03 P=169.419023 Days  $T_0=253.096549$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

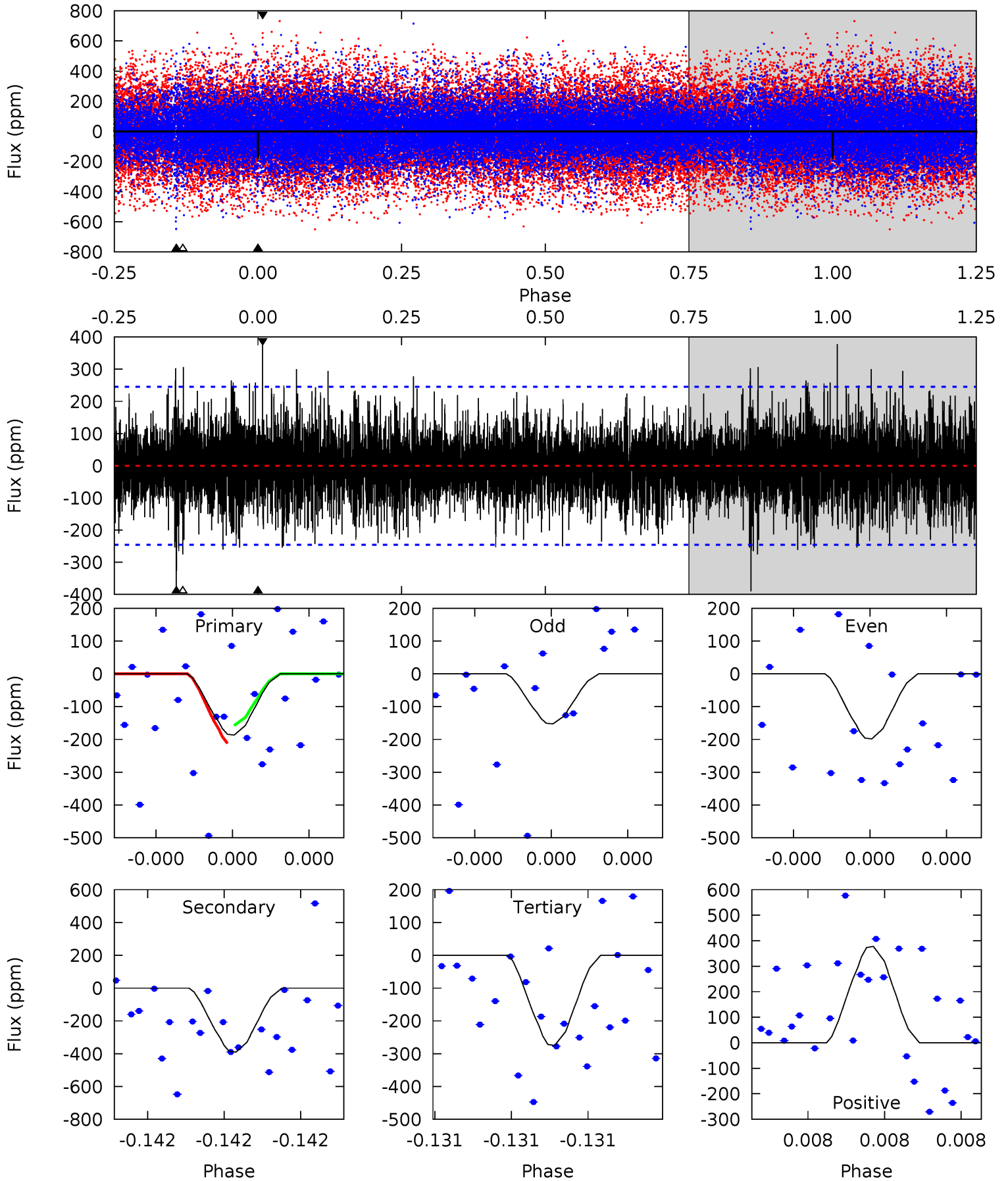
TCE 011972294-03     $P=169.412644$  Days     $T_0=253.093691$  (BKJD)



# DV Model-Shift Uniqueness Test

011972294-03, P = 169.419023 Days, E = 83.677526 Days

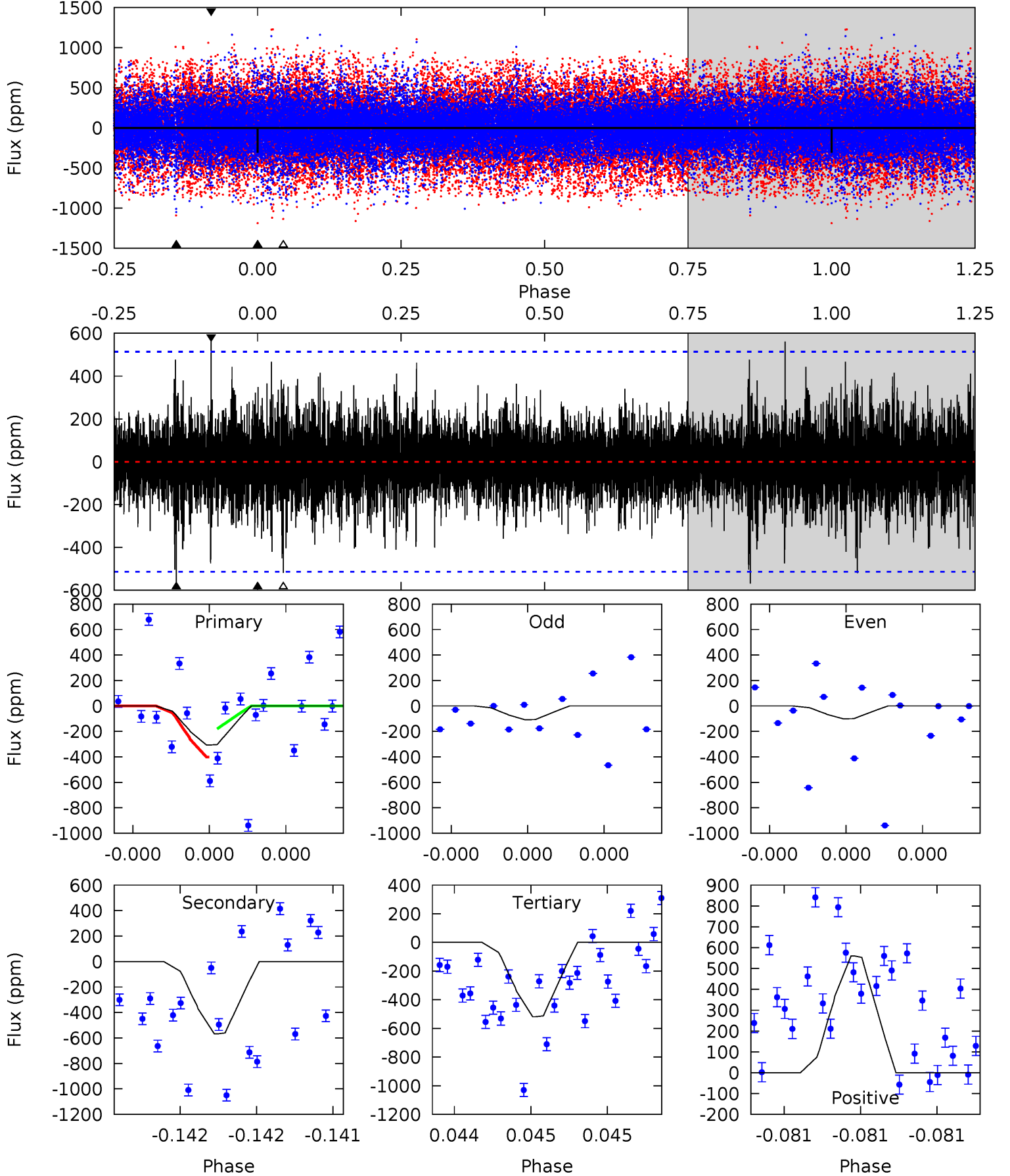
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4.32	9.03	6.36	8.74	5.68	3.65	1.74	-2.05	-4.42	2.66	0.29	0.51	3.92	0.49	0.64



# Alt Model-Shift Uniqueness Test

011972294-03, P = 169.412644 Days, E = 83.681047 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3.40	6.28	5.74	6.20	5.68	3.64	1.22	-2.34	-2.80	0.54	0.08	0.04	3.52	0.50	1.23



### Stellar Parameters For KIC 011972294

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5364^{+52}_{-196}$	$2.611^{+0.287}_{-0.123}$	$-1.000^{+0.200}_{-0.300}$	$12.405^{+3.239}_{-6.015}$	$2.290^{+0.312}_{-1.249}$	$0.002^{+0.004}_{-0.001}$
	+1%/-4%	+11%/-5%	+20%/-30%	+26%/-48%	+14%/-55%	+233%/-41%
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 011972294-03 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-390 \pm 43$	$20.31^{+22.41}_{-13.84}$	$1279^{+83}_{-133}$	$5707^{+5701}_{-1406}$	$316^{+2586}_{-243}$
Alt.	$-568 \pm 90$	$33.45^{+26.28}_{-19.68}$	$1278^{+89}_{-127}$	$4995^{+2983}_{-896}$	$158^{+841}_{-103}$

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

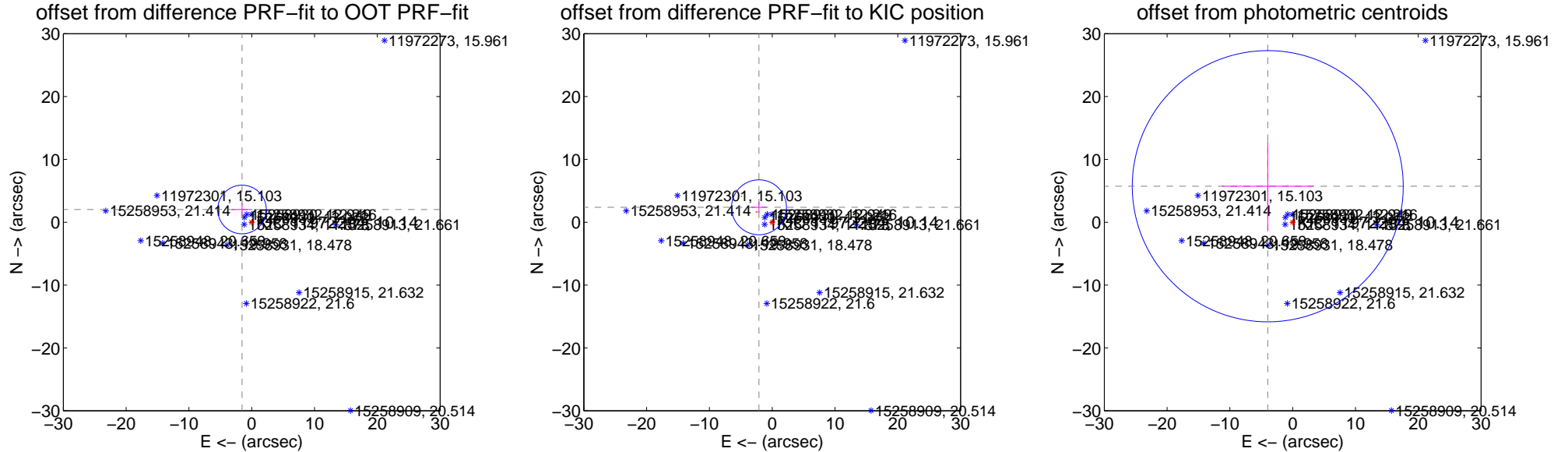
## DV Centroid Data

Supplemental centroid analysis for 011972294-03. **Kepler magnitude: 10.14.** Transit SNR 3.79

**There are 0 quarters with good PRF difference image offsets**

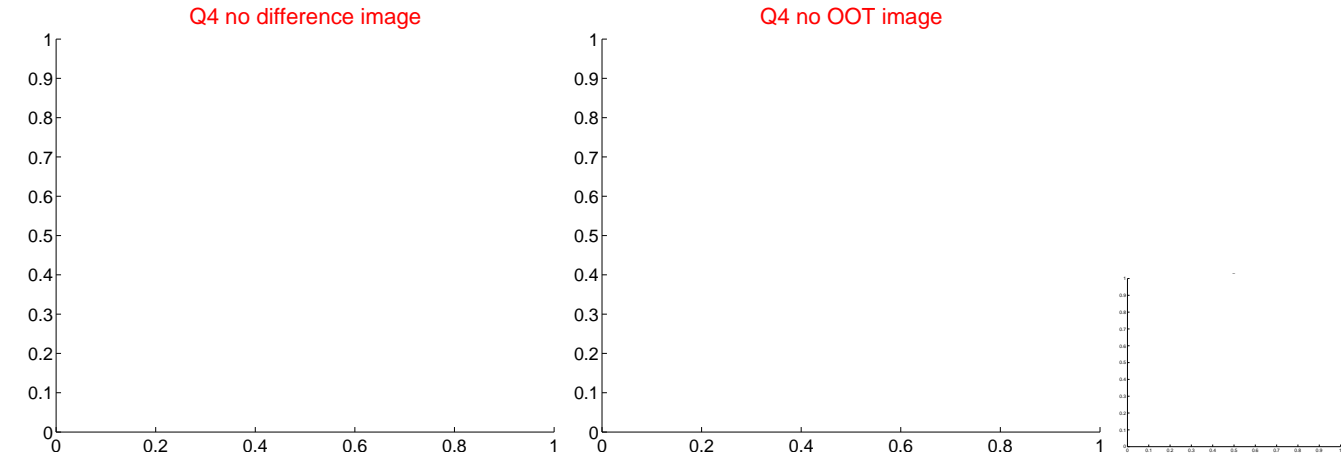
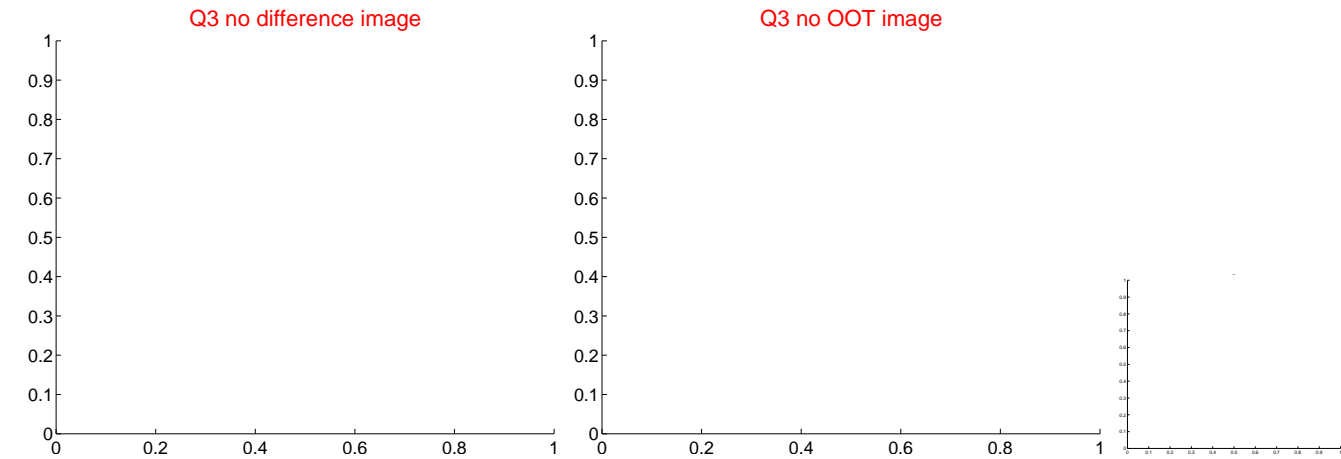
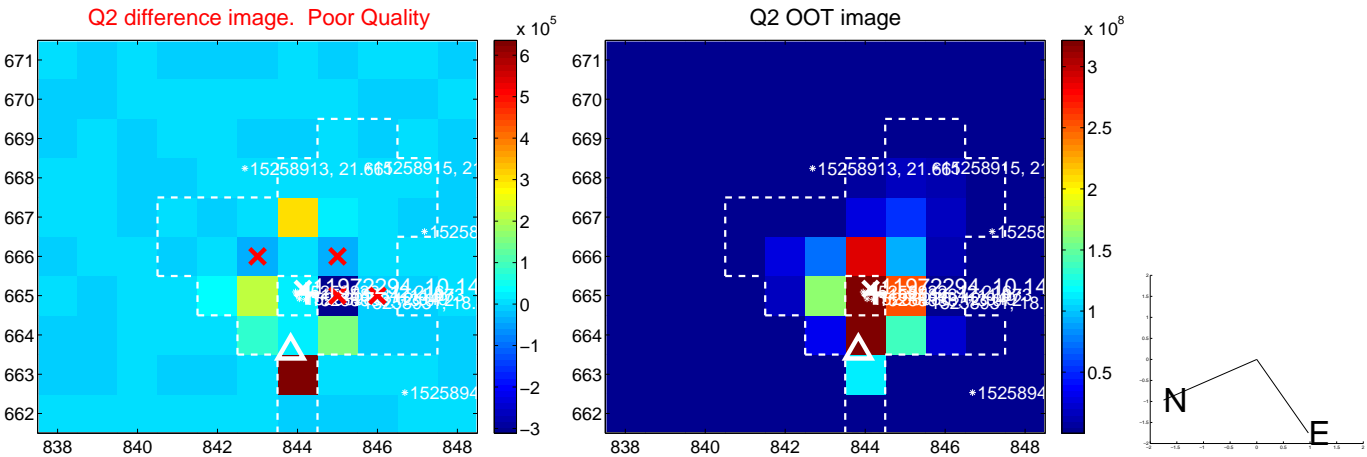
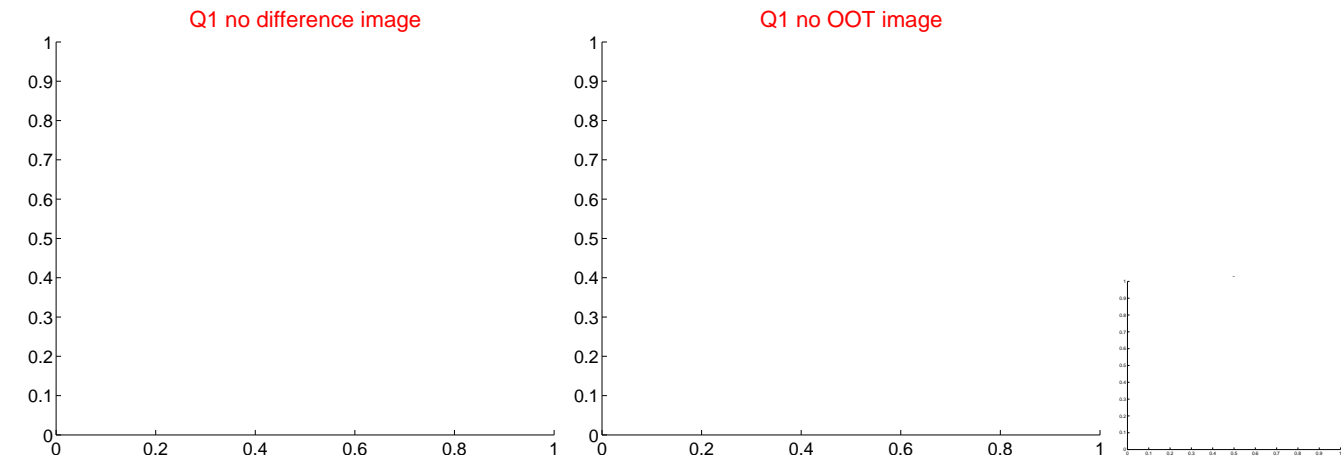
The direct PRF centroid is offset from the target star catalog position by about 0.62 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$2.551 \pm 1.289$	1.98	$1.547 \pm 1.630$	$2.028 \pm 1.041$
PRF-fit source offset from KIC position	$3.175 \pm 1.457$	2.18	$2.105 \pm 1.239$	$2.377 \pm 0.892$
photometric centroid source offset	$6.97 \pm 7.19$	0.97	$3.97 \pm 7.28$	$5.73 \pm 7.15$



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.

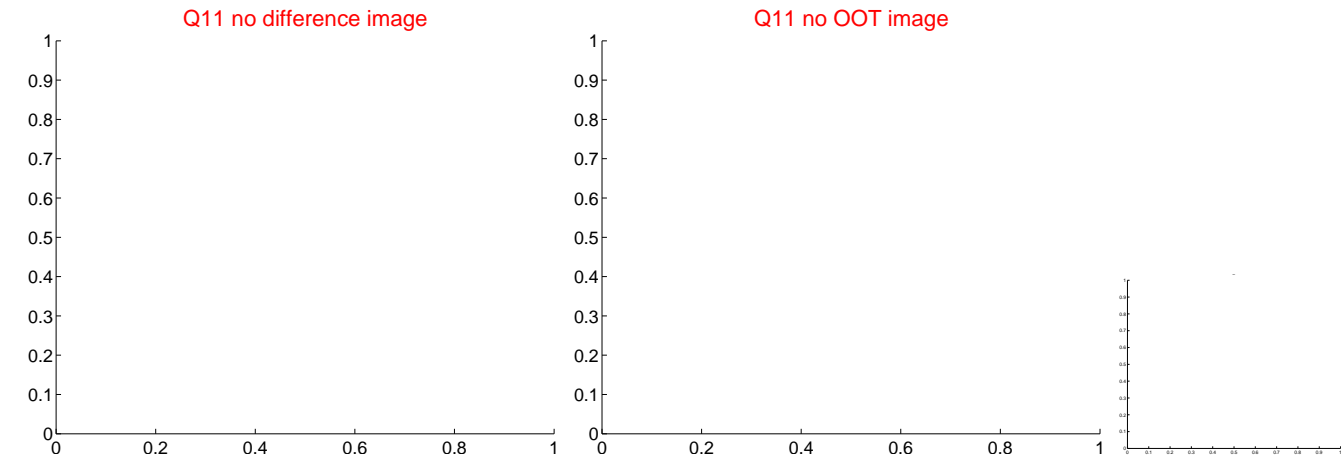
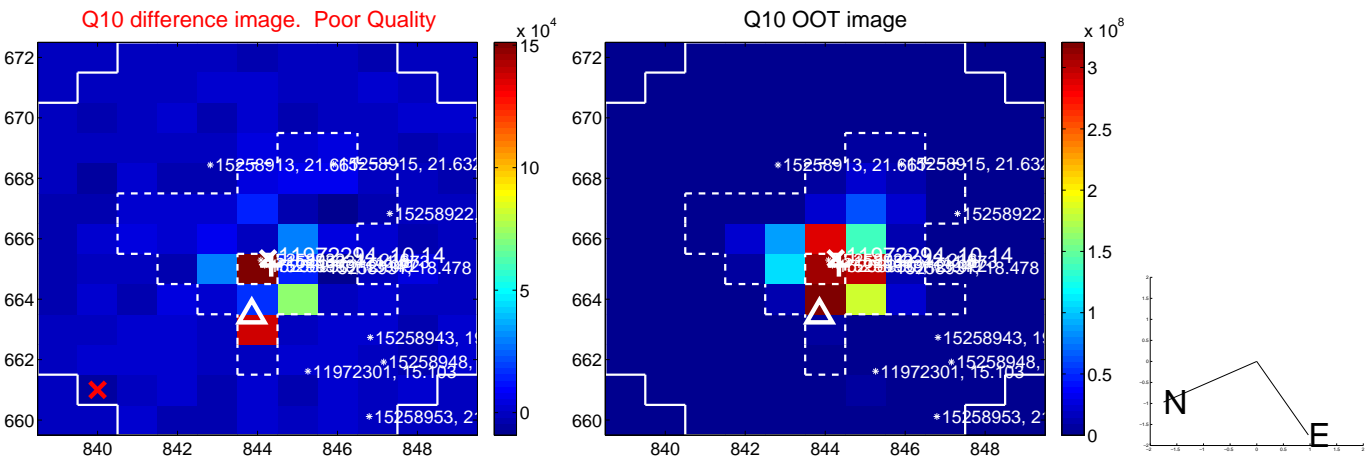


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

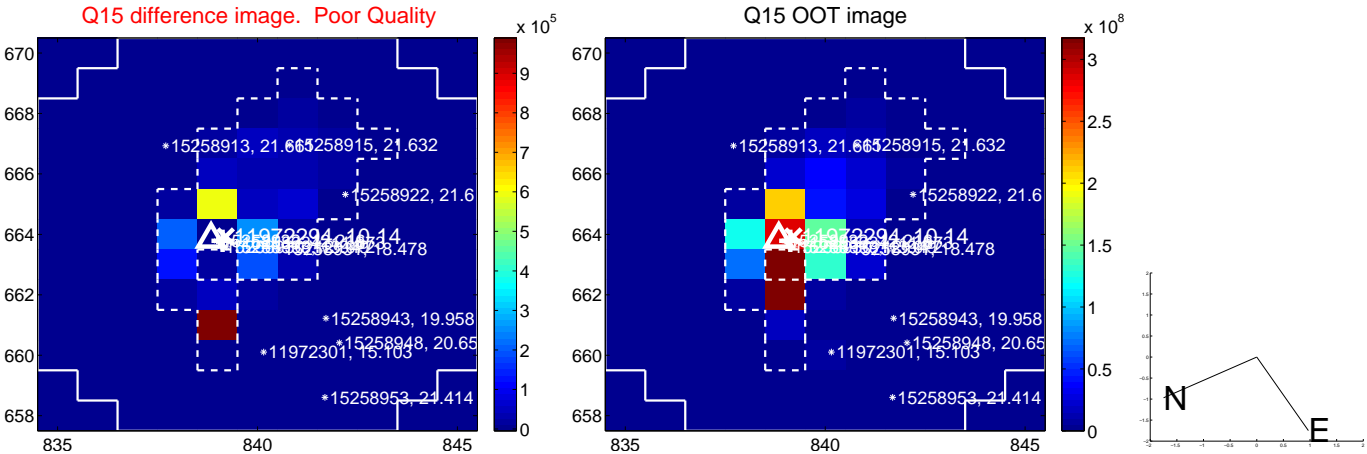
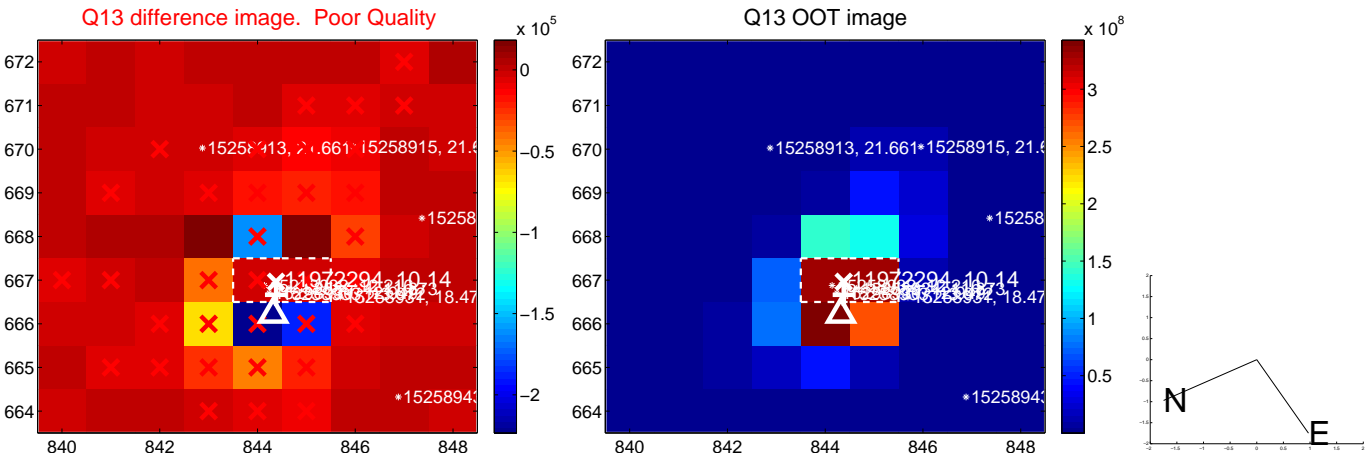




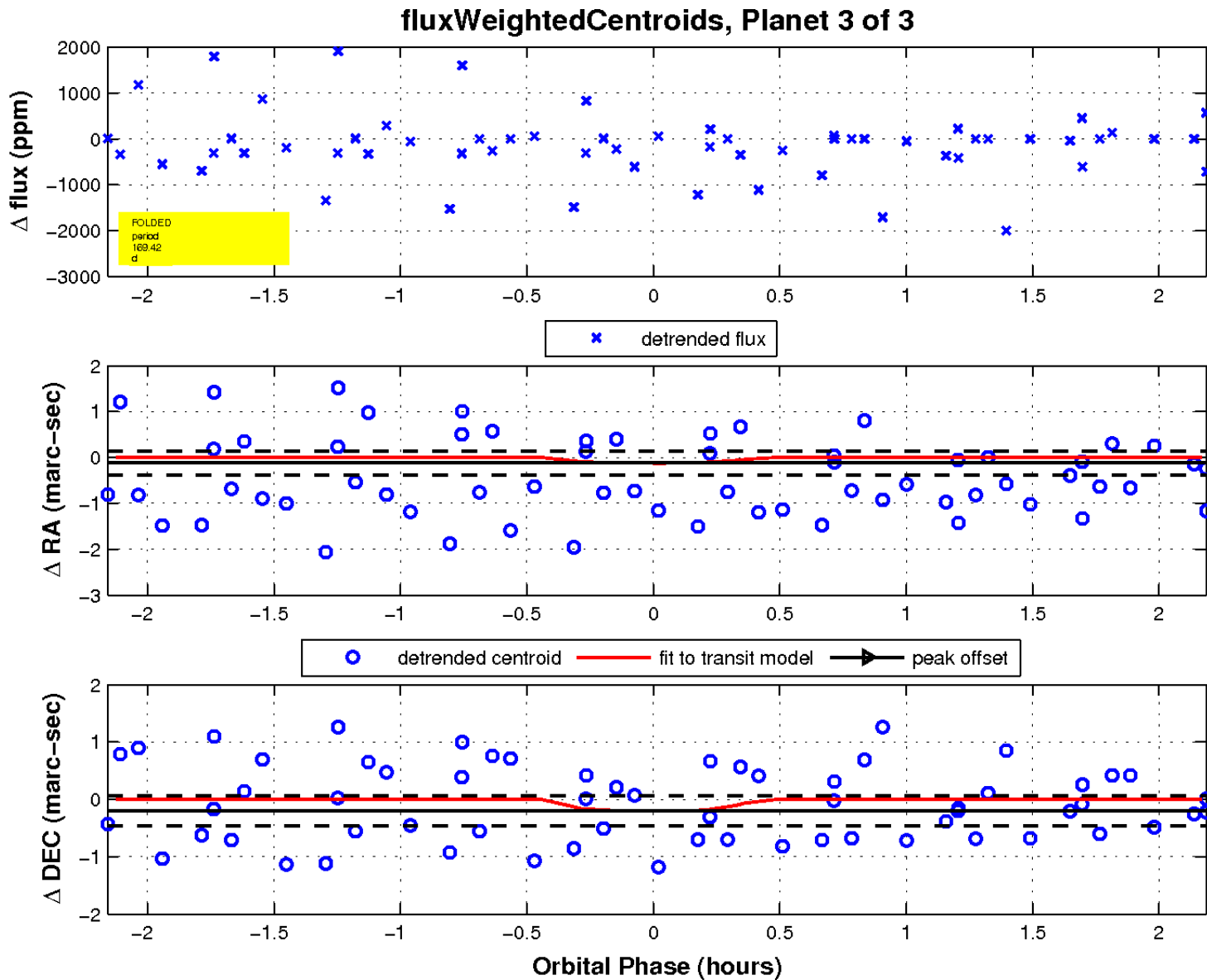
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

