

# KIC 007890526

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007890526-01	OBS	No	1.769661	133.272714	24.5	2.778	11.1	5.8	1.73	7085	1.00	6633.86
007890526-02	OBS	No	0.588500	131.776060	7.5	5.145	10.9	2.8	1.73	7085	0.48	28793.27

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007890526-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
007890526-02	OBS	FP	0.00	1	0	0	0	LPP_DV—CENT_SATURATED

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

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

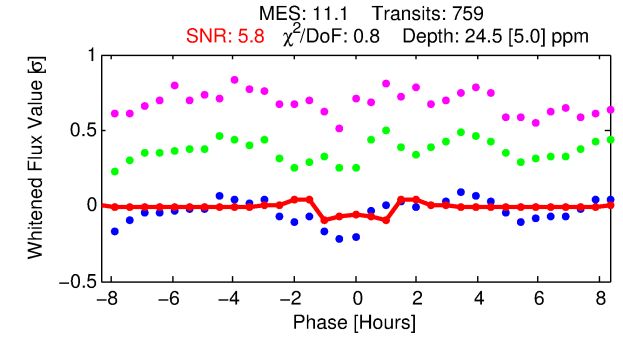
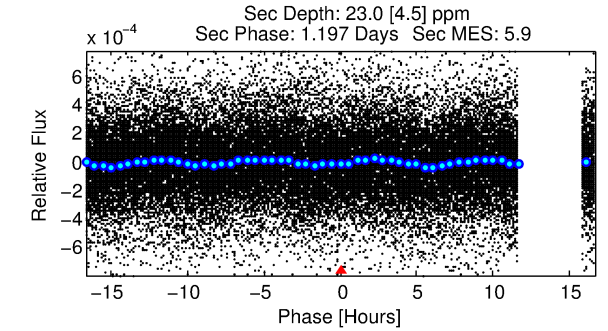
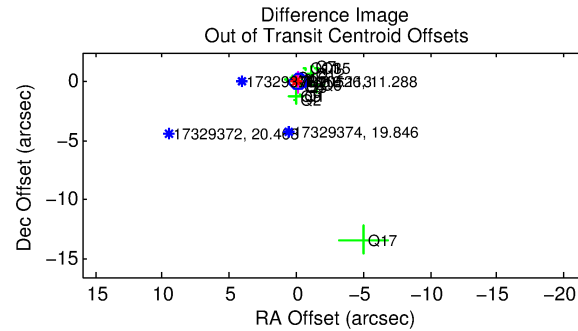
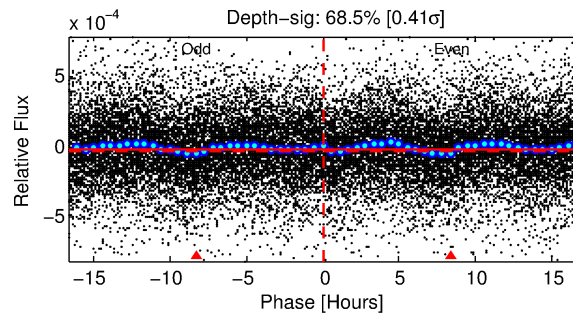
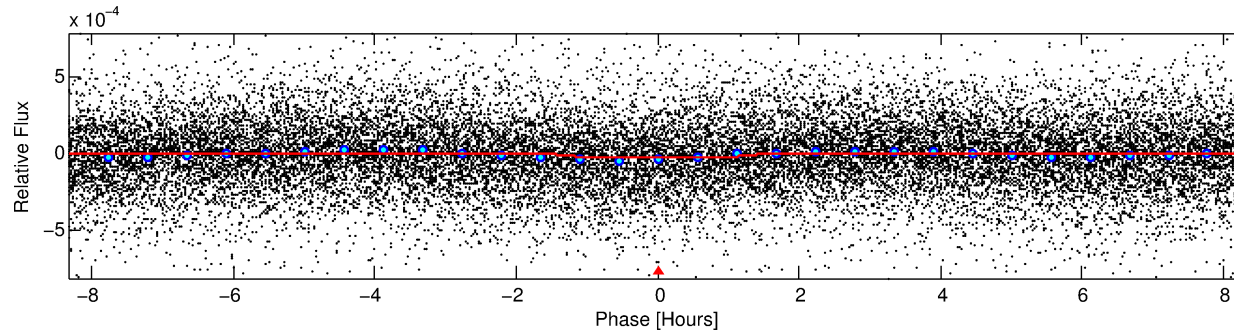
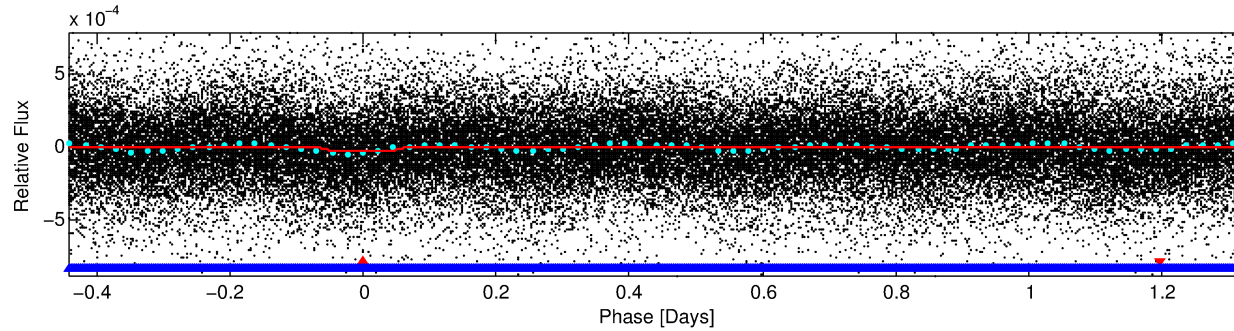
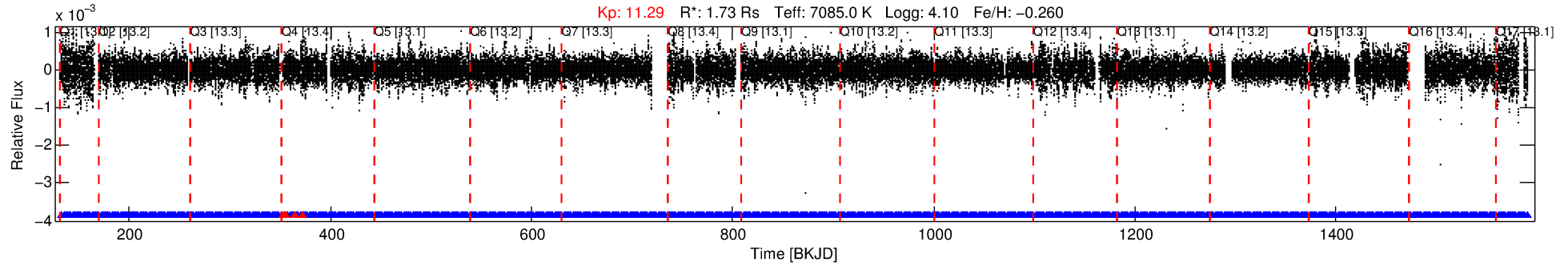
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 007890526-01

No Significant Match Found

# DV One-Page Summary

KIC: 7890526 Candidate: 1 of 2 Period: 1.770 d



## DV Fit Results:

Period = 1.76966 [0.00002] d  
Epoch = 133.2727 [0.0025] BKJD  
Rp/R\* = 0.0053 [0.0011]  
a/R\* = 2.35 [2.21]  
b = 0.90 [0.24]  
Seff = 6633.86 [1579.14]  
Teq = 2301 [137] K  
Rp = 1.00 [0.27] Re  
a = 0.0320 [0.0049] AU  
Ag = 12.93 [6.72] [1.77σ]  
Teffp = 6747 [788] K [5.56σ]

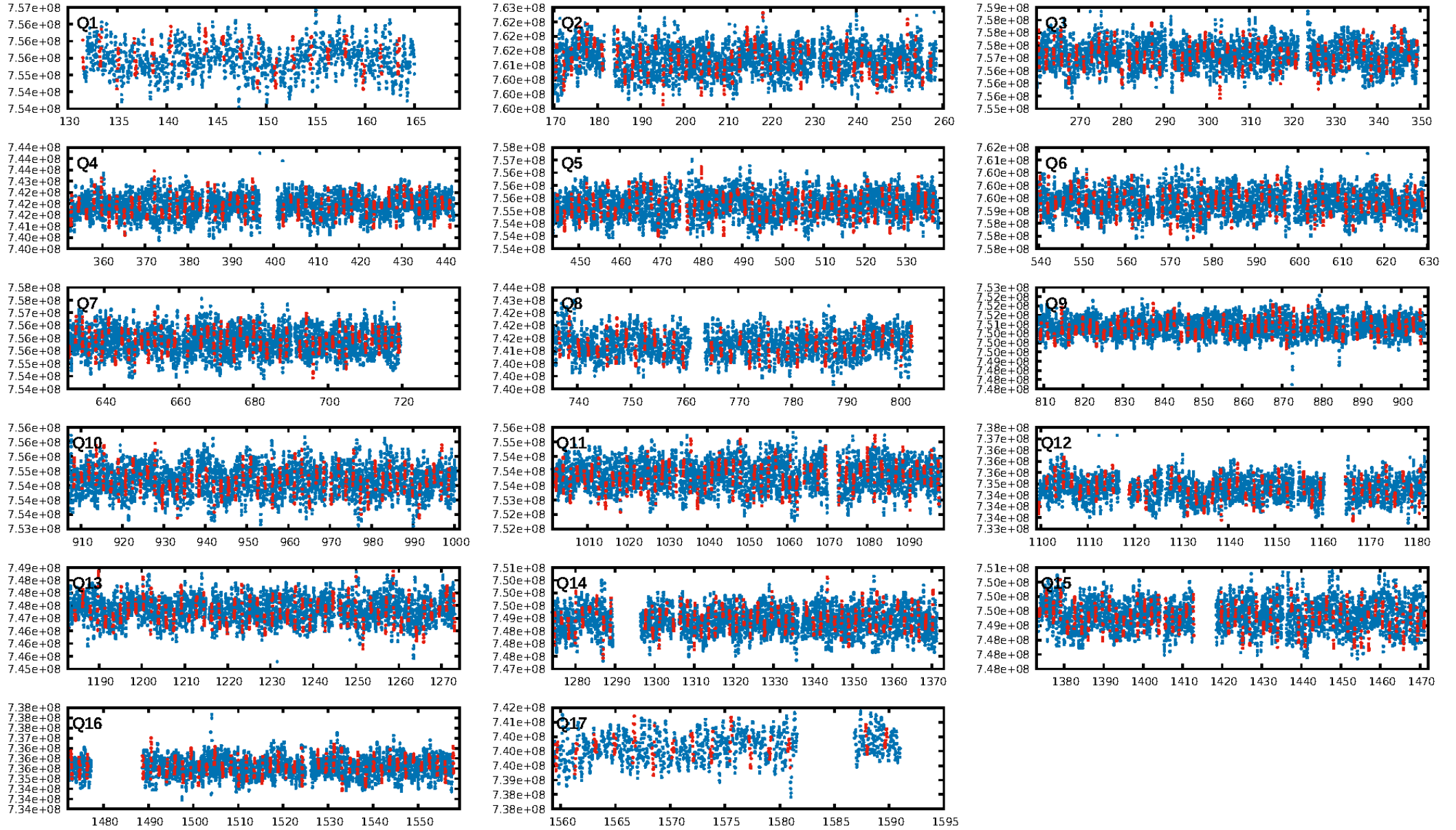
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [4.85σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 0.99 [720/725]  
GhostDiagnostic-chr: 1.885  
Centroid-sig: 8.8%  
Centroid-so: 0.696 arcsec [1.29σ]  
OotOffset-rm: 0.130 arcsec [0.61σ]  
KicOffset-rm: 0.128 arcsec [0.16σ]  
OotOffset-st: 4/4/4/5 [17]  
KicOffset-st: 4/4/4/5 [17]  
DiffImageQuality-fgm: 0.53 [9/17]  
DiffImageOverlap-fno: 0.00 [0/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 22:55:24 Z

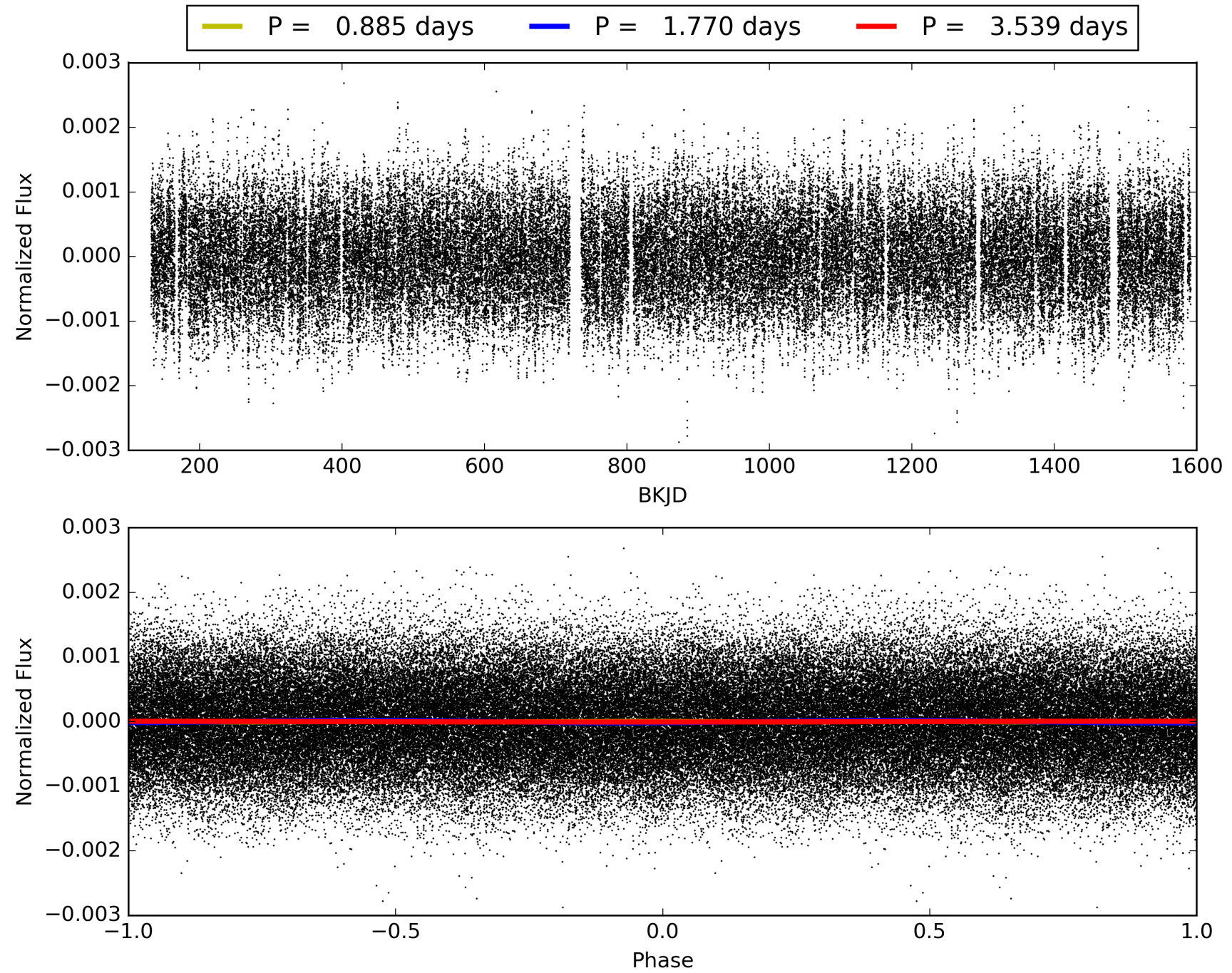
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 007890526-01, PDC Light Curves



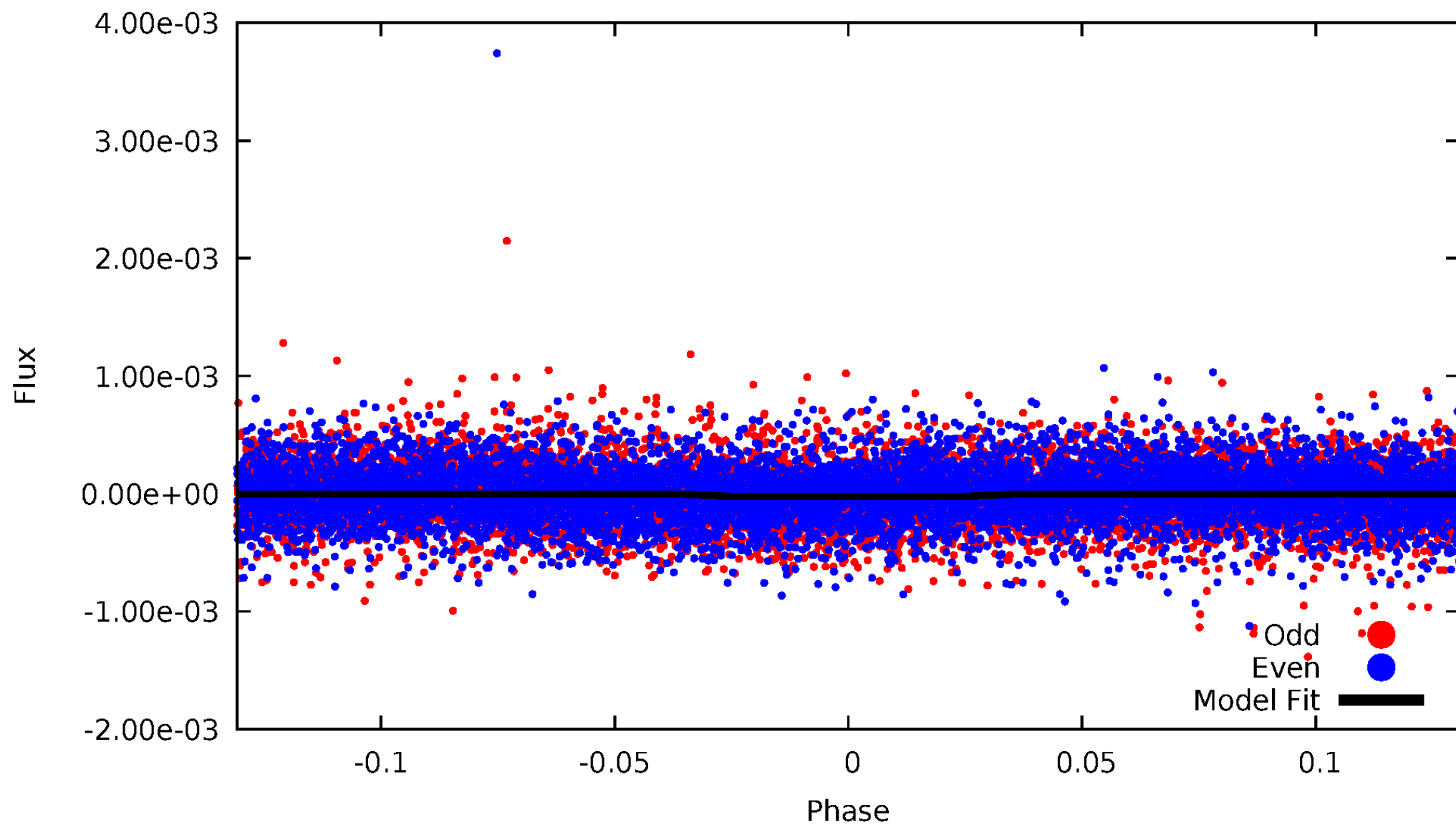


TCE 007890526-01



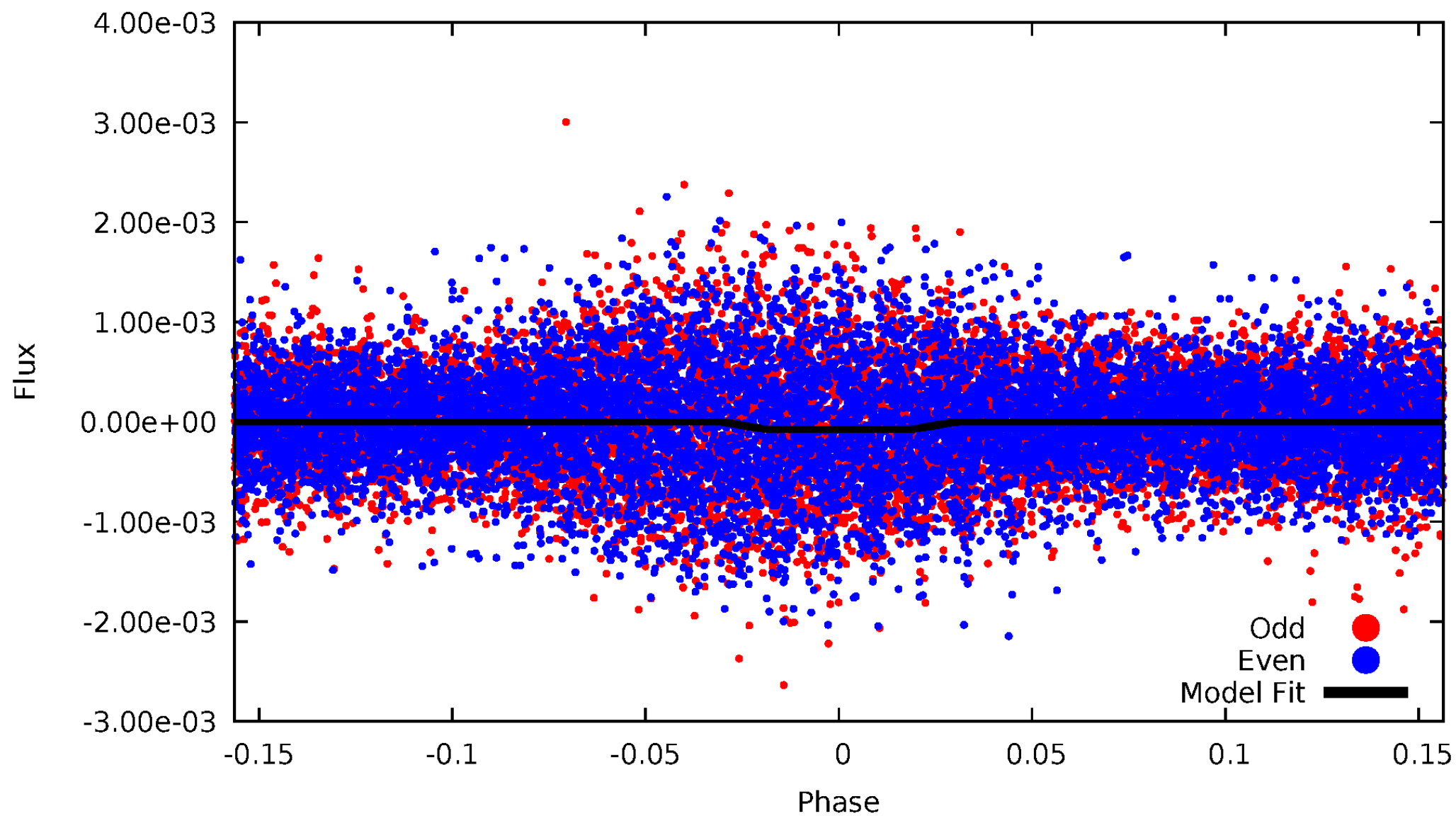
# DV Odd/Even

TCE 007890526-01



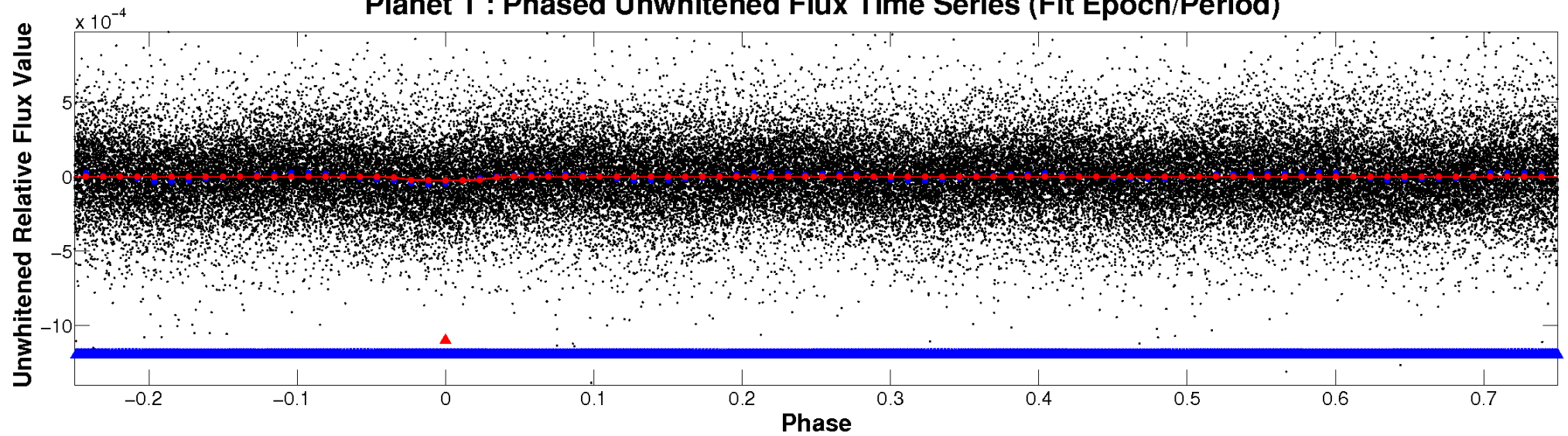
# ALT Odd/Even

TCE 007890526-01

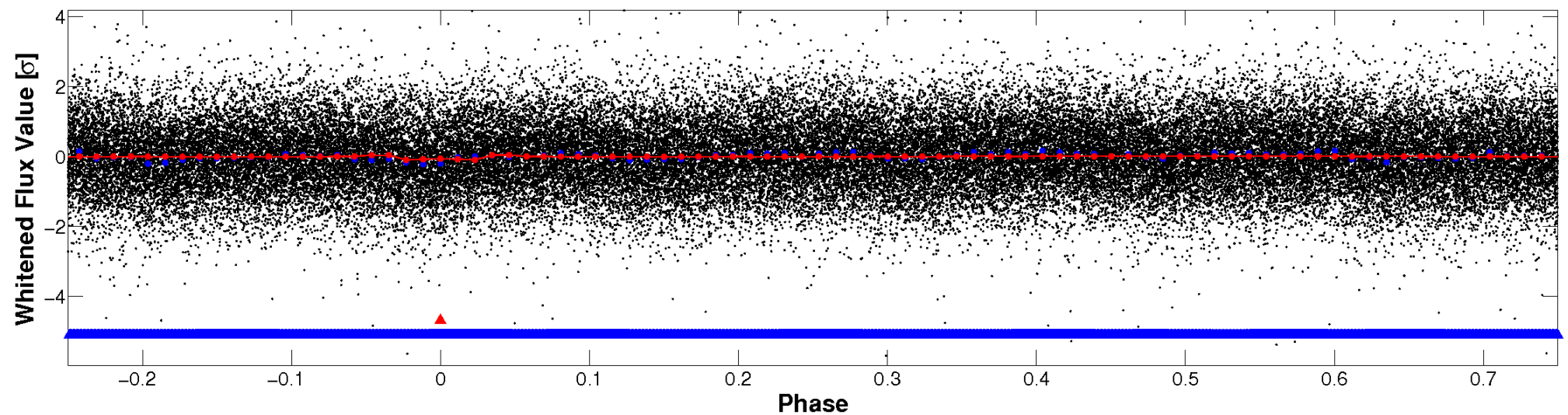


# Non-Whitened Vs. Whitened Light Curve

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



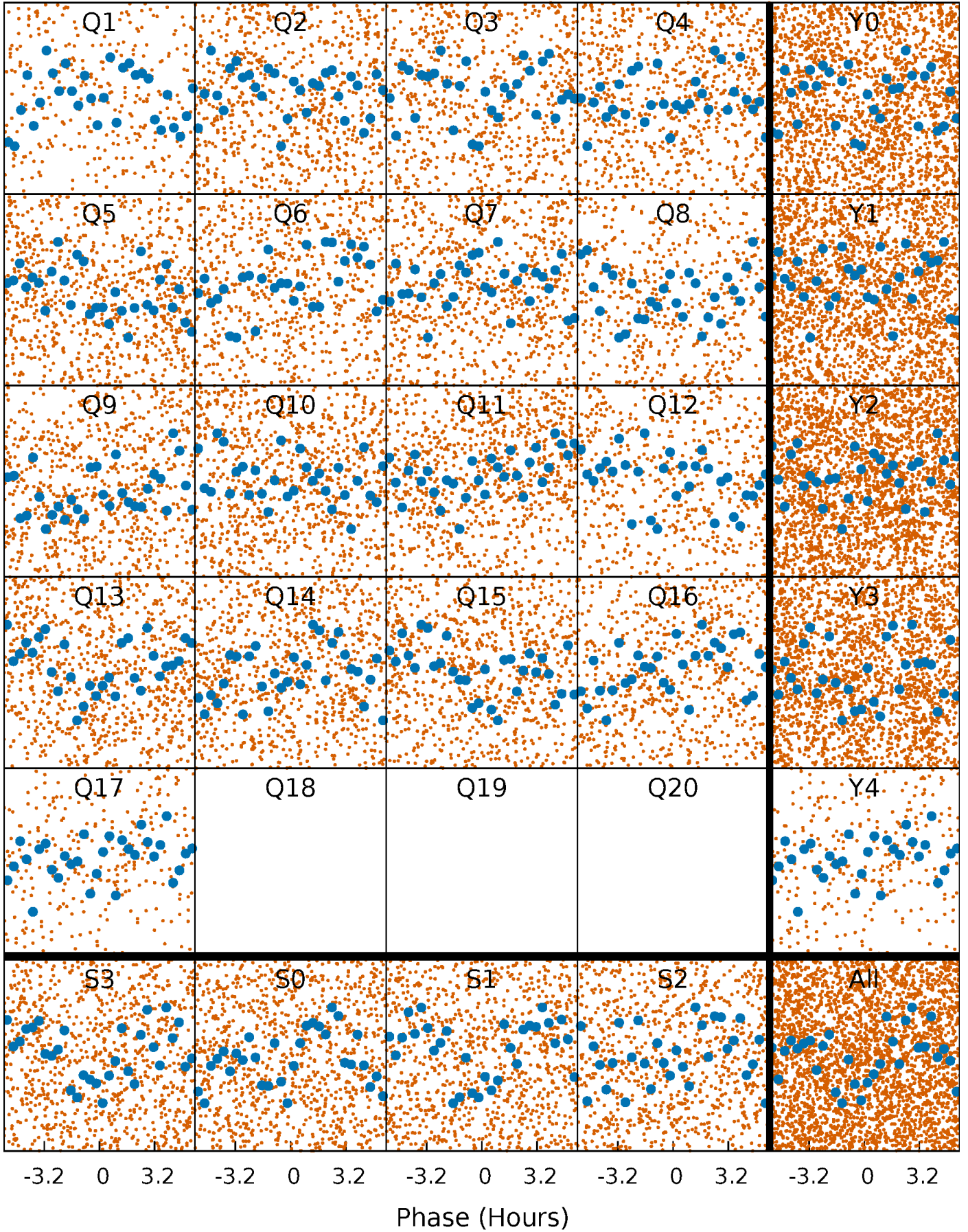
**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**





# PDC Quarter-Phased Transit Curves

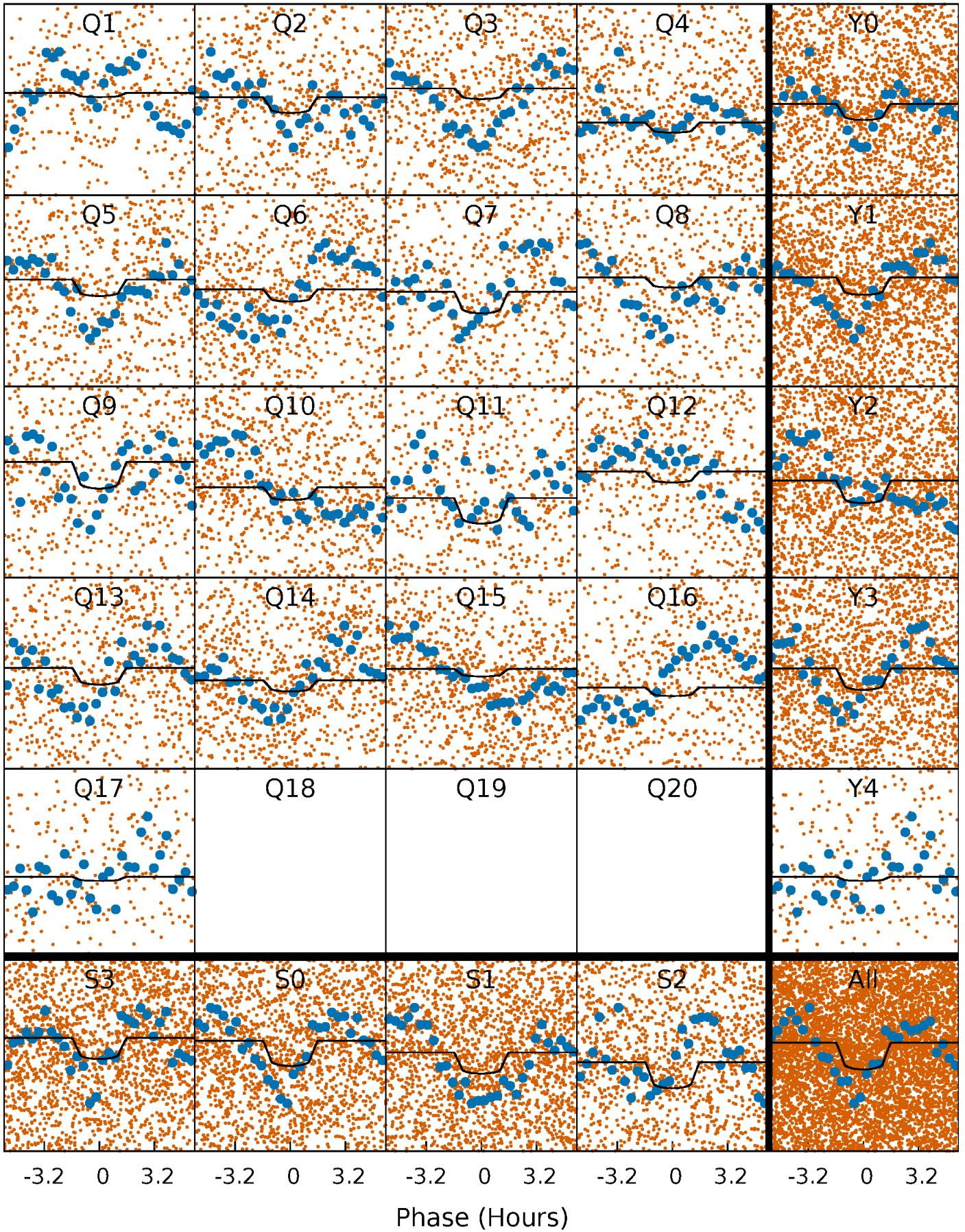
TCE 007890526-01   P= 1.769661 Days    $T_0=133.272714$  (BKJD)





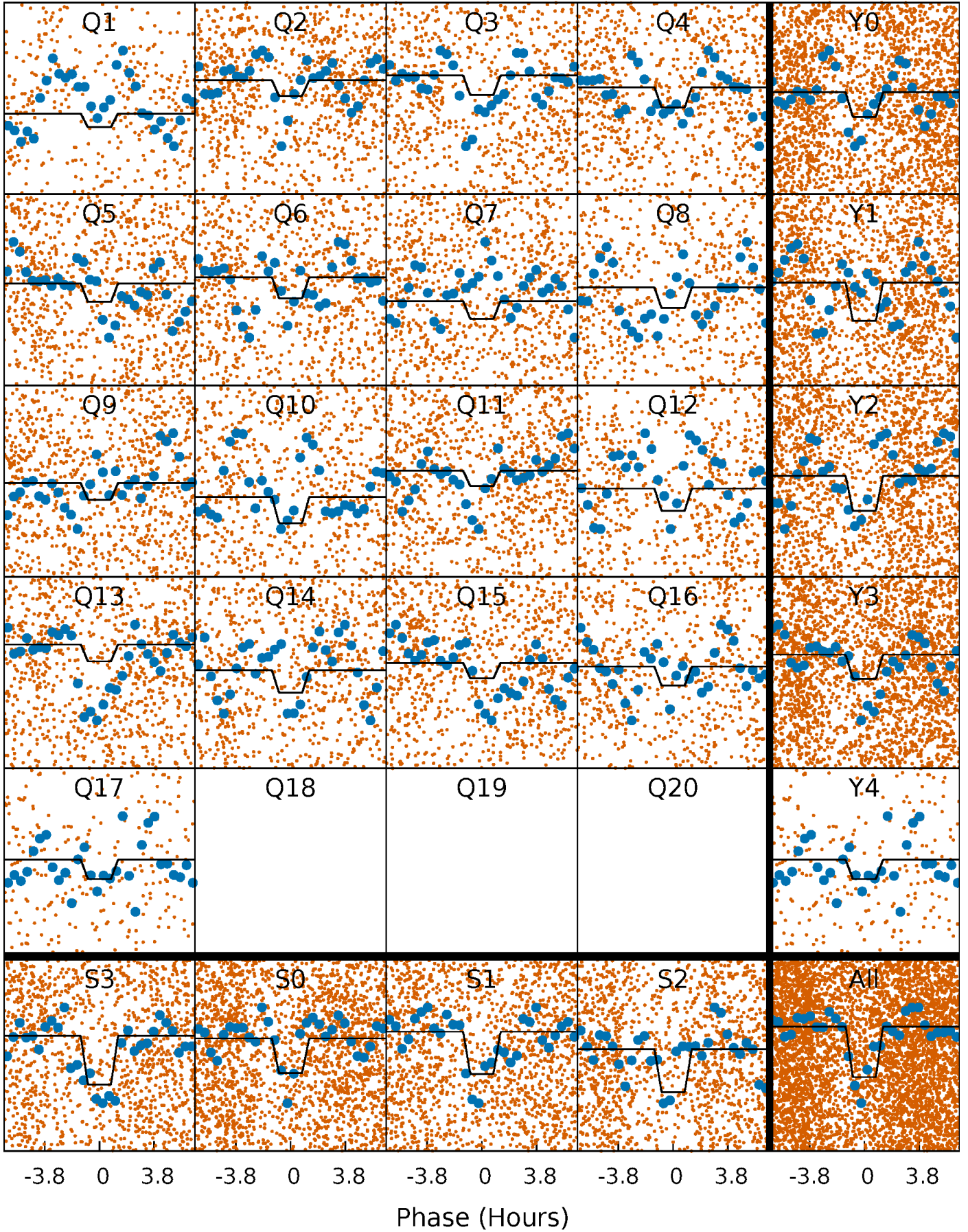
# DV Quarter-Phased Transit Curves

TCE 007890526-01 P= 1.769661 Days  $T_0=133.272714$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

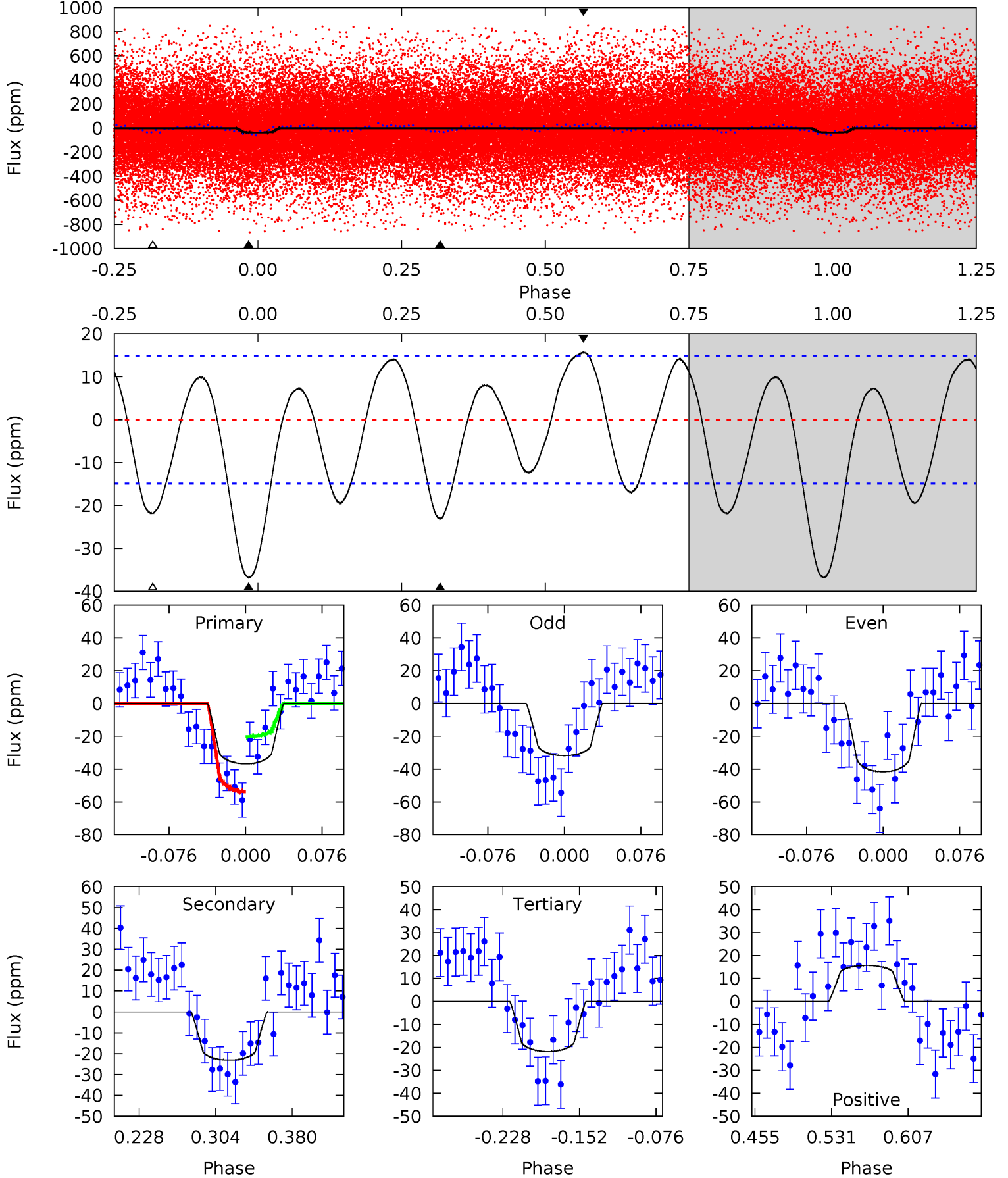
TCE 007890526-01 P= 1.769603 Days  $T_0=133.277061$  (BKJD)



# DV Model-Shift Uniqueness Test

007890526-01, P = 1.769661 Days, E = 131.503053 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
11.4	7.17	6.77	4.86	4.62	1.77	3.44	4.67	6.57	0.40	2.30	1.53	1.03	0.30	5.21

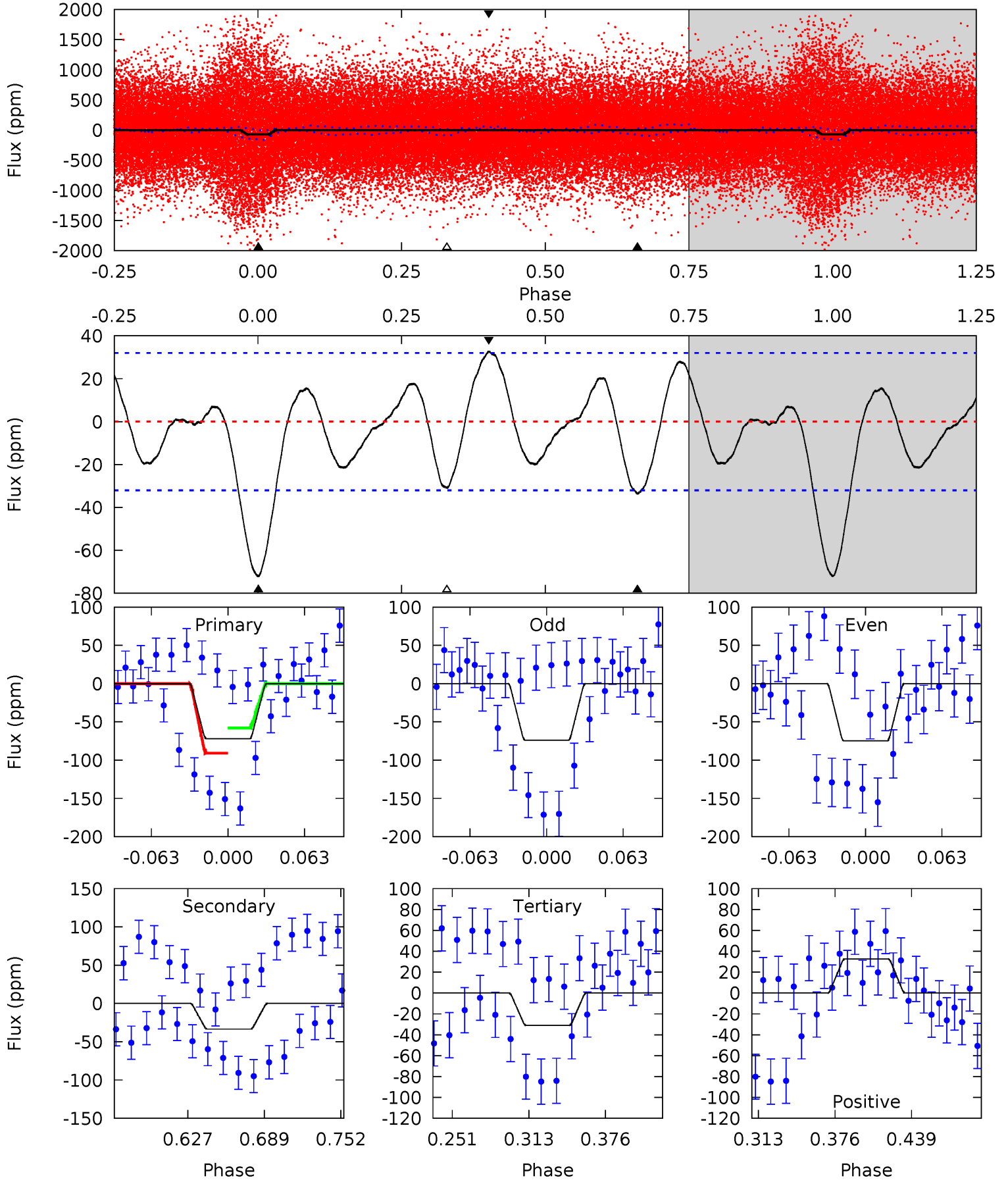




# Alt Model-Shift Uniqueness Test

007890526-01, P = 1.769603 Days, E = 131.507458 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
10.5	4.88	4.50	4.76	4.66	1.86	2.21	5.99	5.73	0.39	0.13	0.07	0.70	0.31	2.41





### Stellar Parameters For KIC 007890526

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$7085^{+85}_{-78}$	$4.104^{+0.132}_{-0.108}$	$-0.260^{+0.150}_{-0.200}$	$1.734^{+0.300}_{-0.270}$	$1.396^{+0.113}_{-0.113}$	$0.377^{+0.218}_{-0.139}$
	+1%/-1%	+3%/-3%	+58%/-77%	+17%/-16%	+8%/-8%	+58%/-37%
Source	SPE68	SPE68	SPE68	DSEP		

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

### Secondary Eclipse Parameters for KIC 007890526-01 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-23 \pm 3$	$0.97^{+0.24}_{-0.21}$	$3207^{+130}_{-139}$	$6735^{+1006}_{-688}$	$14^{+9}_{-5}$
Alt.	$-34 \pm 7$	$1.65^{+0.25}_{-0.28}$	$3212^{+148}_{-144}$	$5672^{+499}_{-418}$	$6.951^{+3.350}_{-2.142}$

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

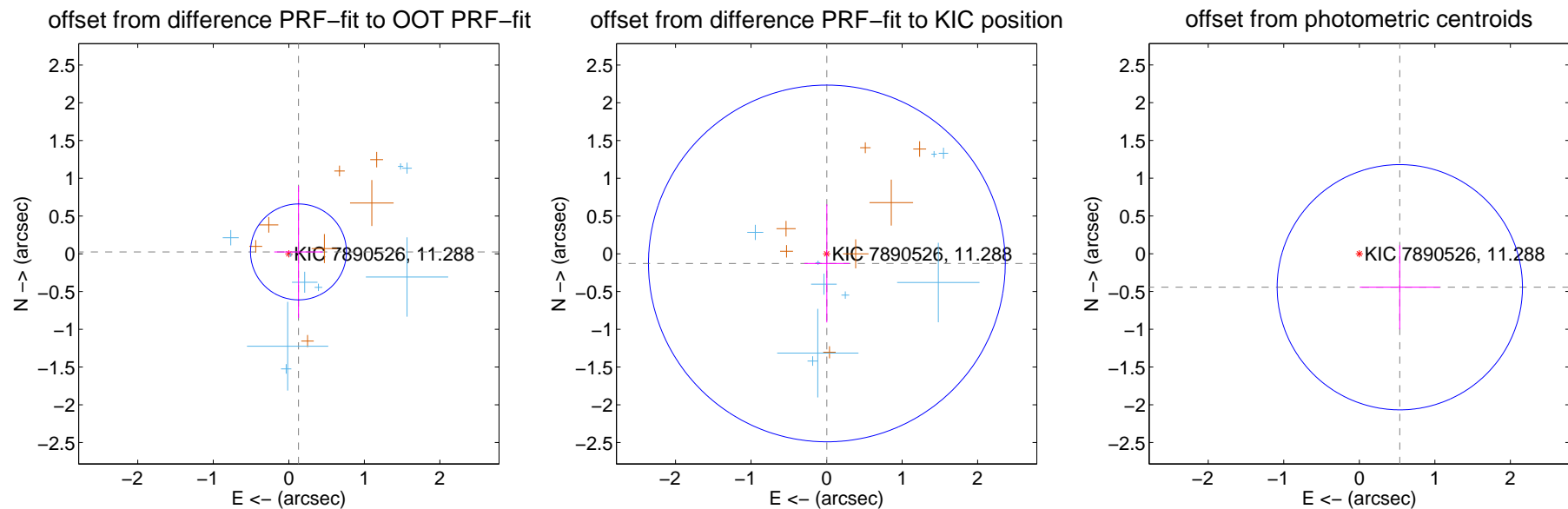
## DV Centroid Data

Supplemental centroid analysis for 007890526-01. **Kepler magnitude: 11.29.** Transit SNR 5.81

There are 9 quarters with good PRF difference image offsets

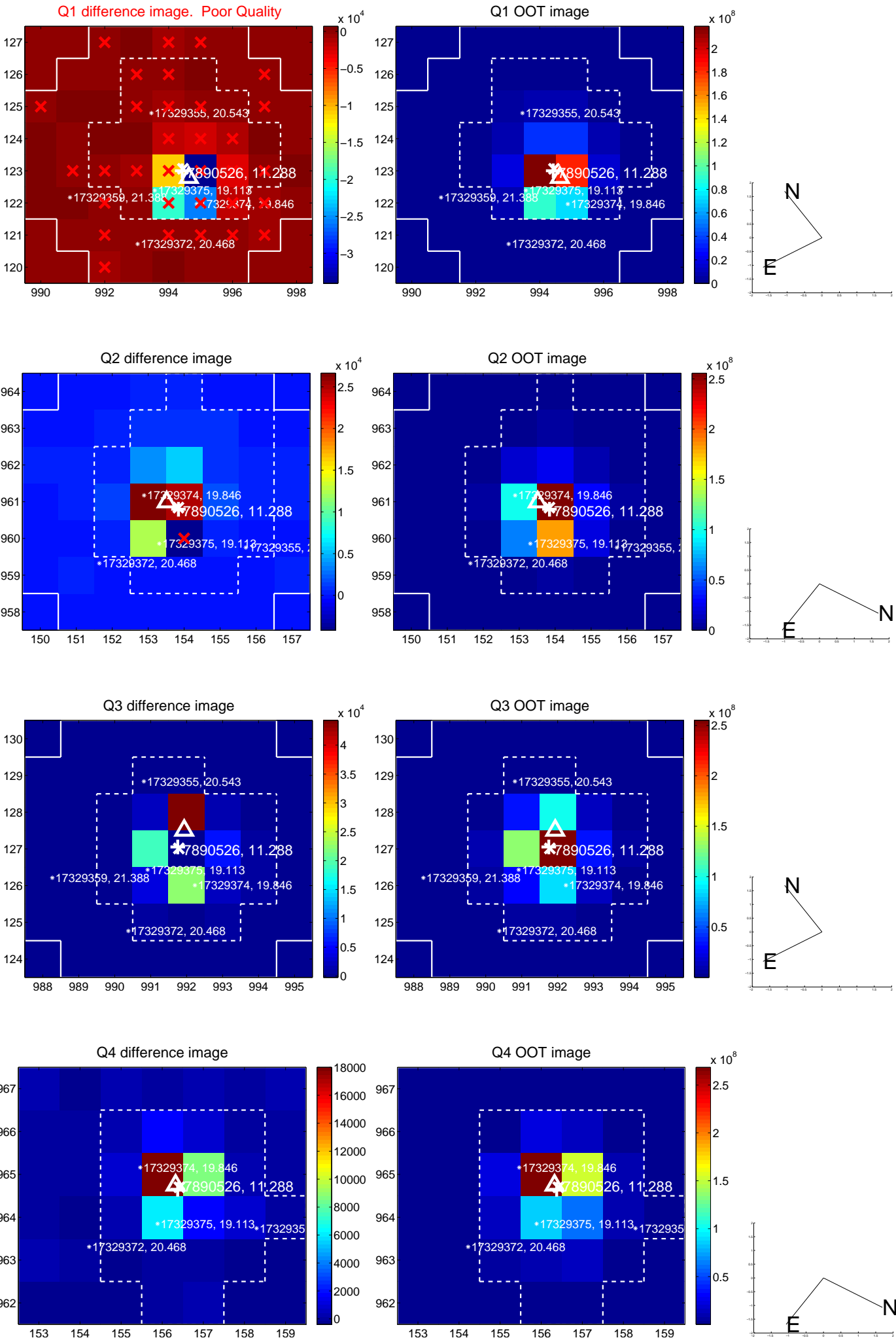
The direct PRF centroid is offset from the target star catalog position by about 0.18 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.130 \pm 0.212$	0.61	$-0.128 \pm 0.320$	$0.025 \pm 0.874$
PRF-fit source offset from KIC position	$0.128 \pm 0.787$	0.16	$-0.004 \pm 0.298$	$-0.128 \pm 0.782$
photometric centroid source offset	$0.70 \pm 0.54$	1.29	$-0.54 \pm 0.53$	$-0.44 \pm 0.56$

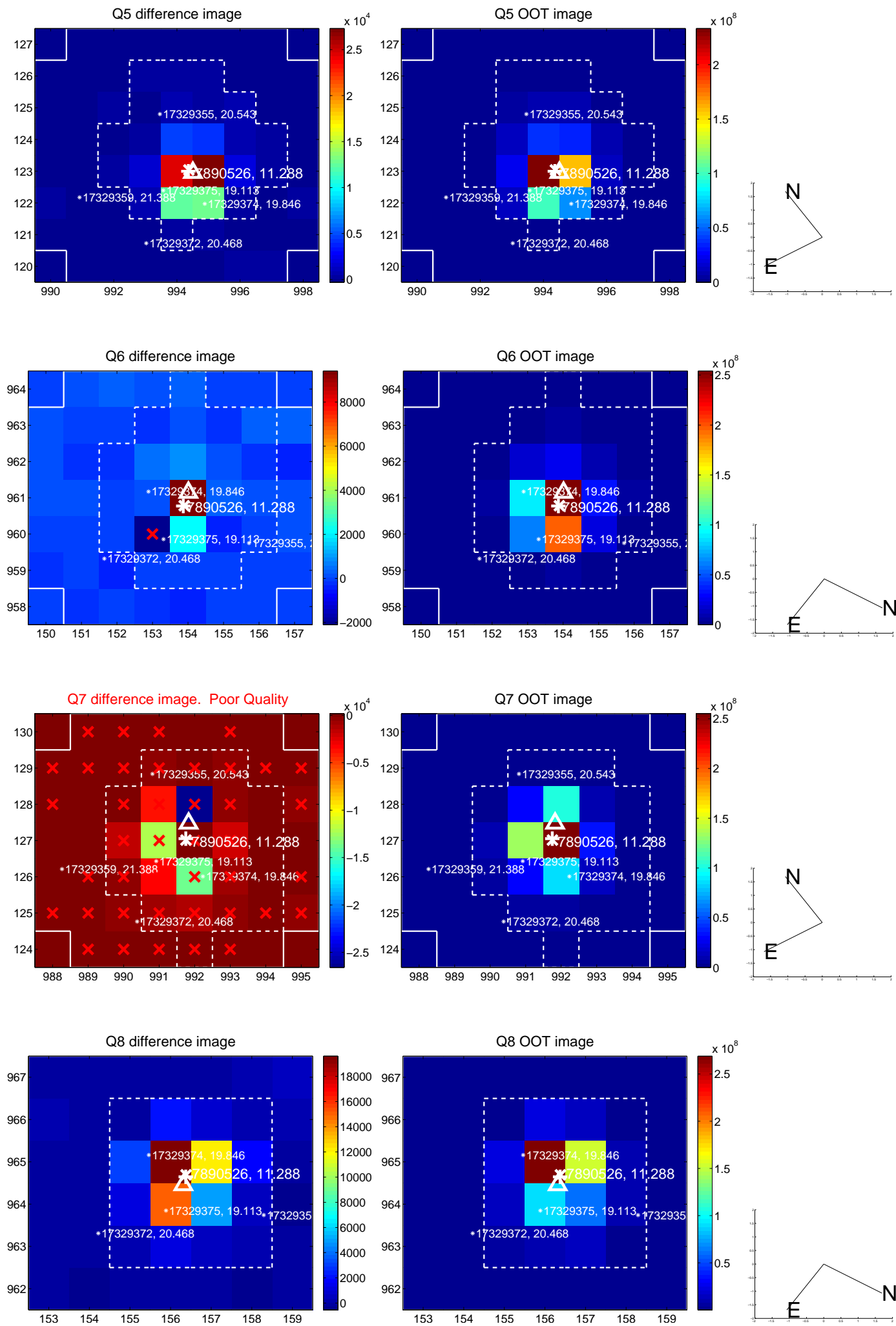


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

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

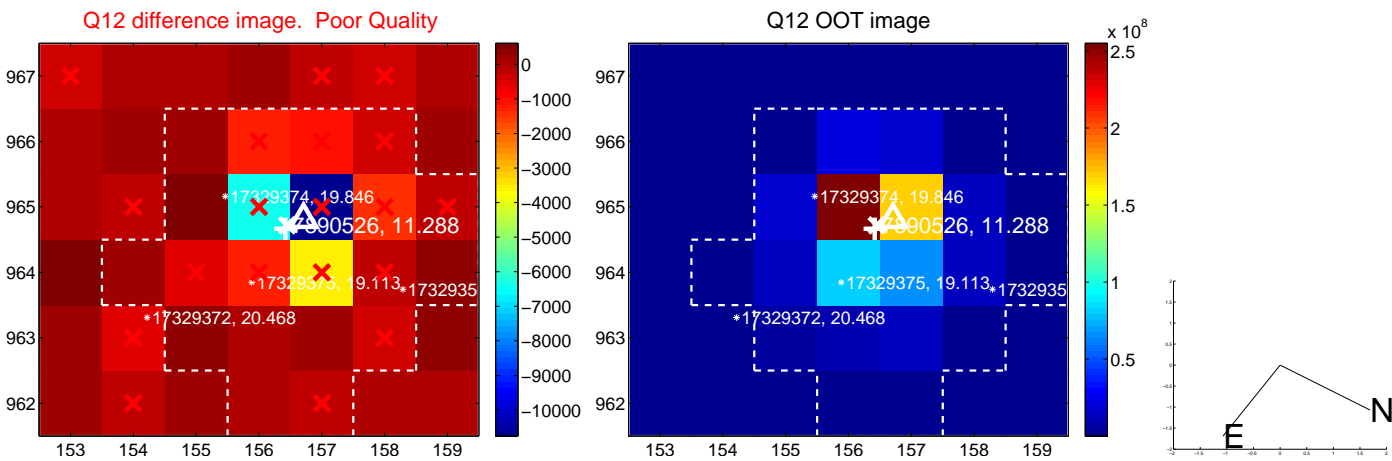
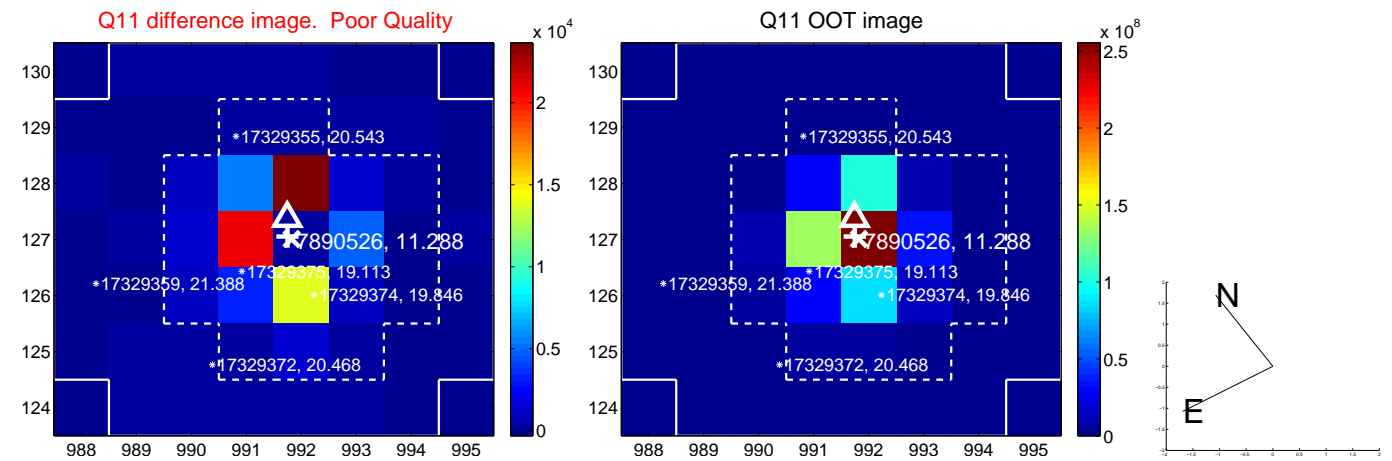
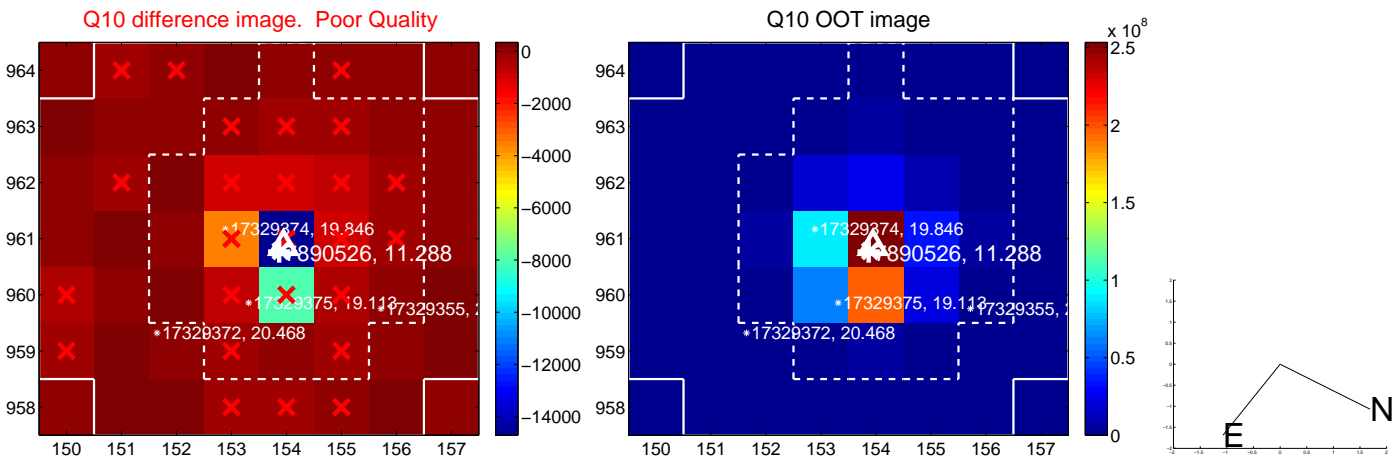
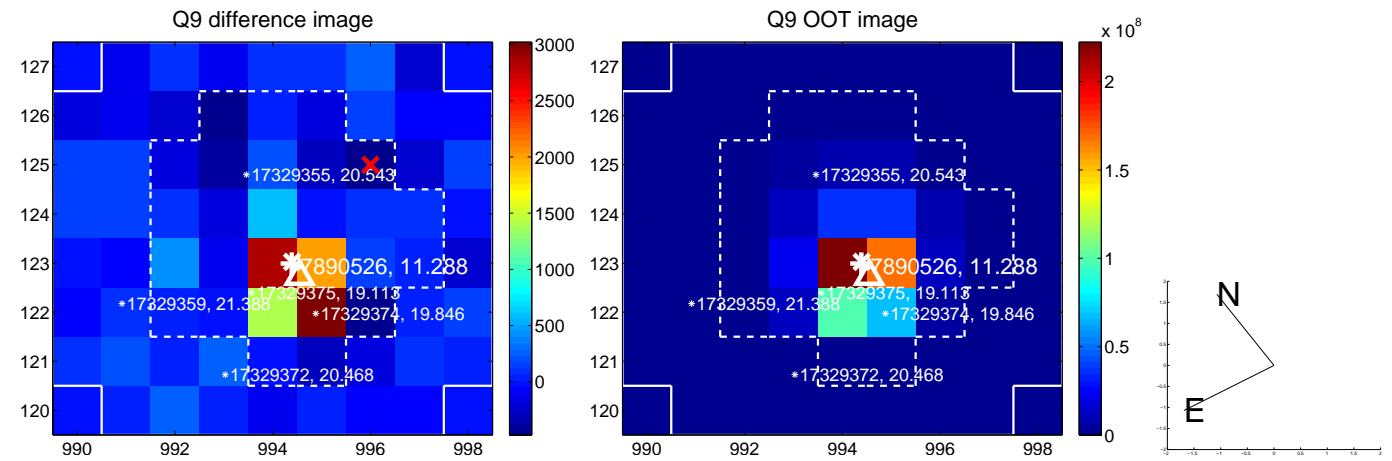


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

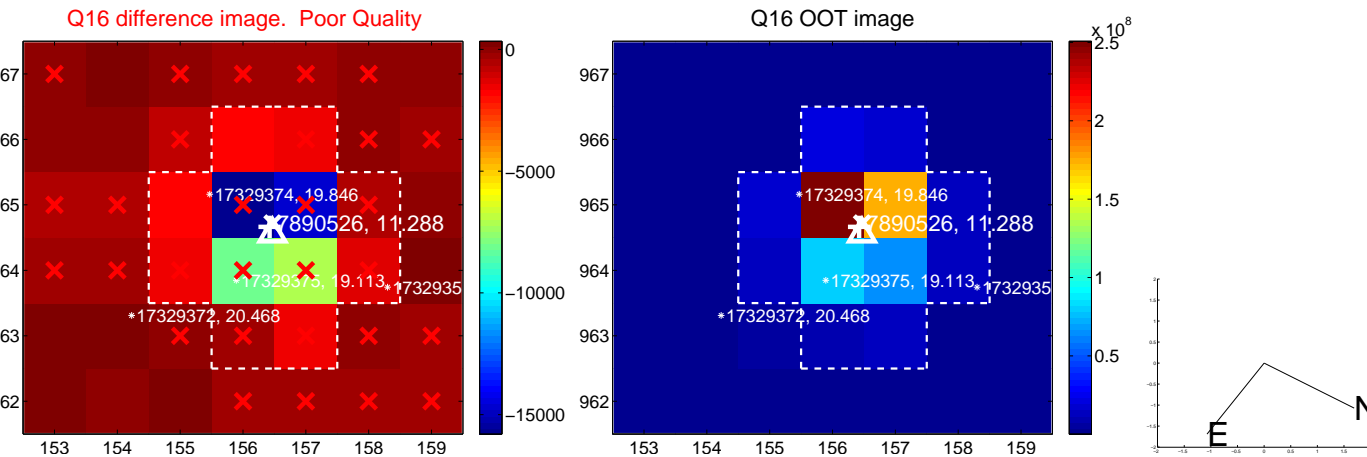
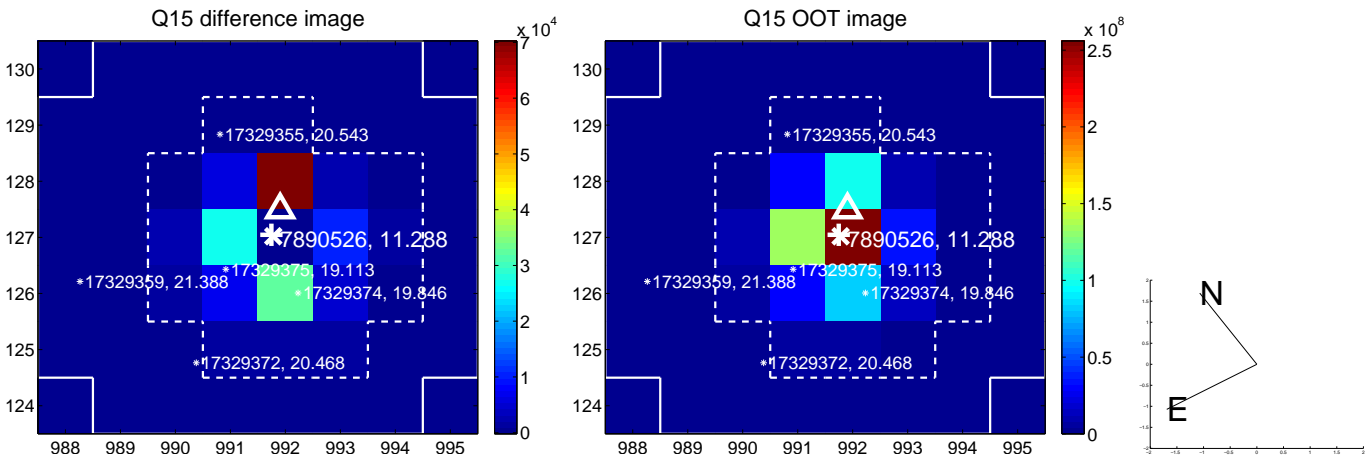
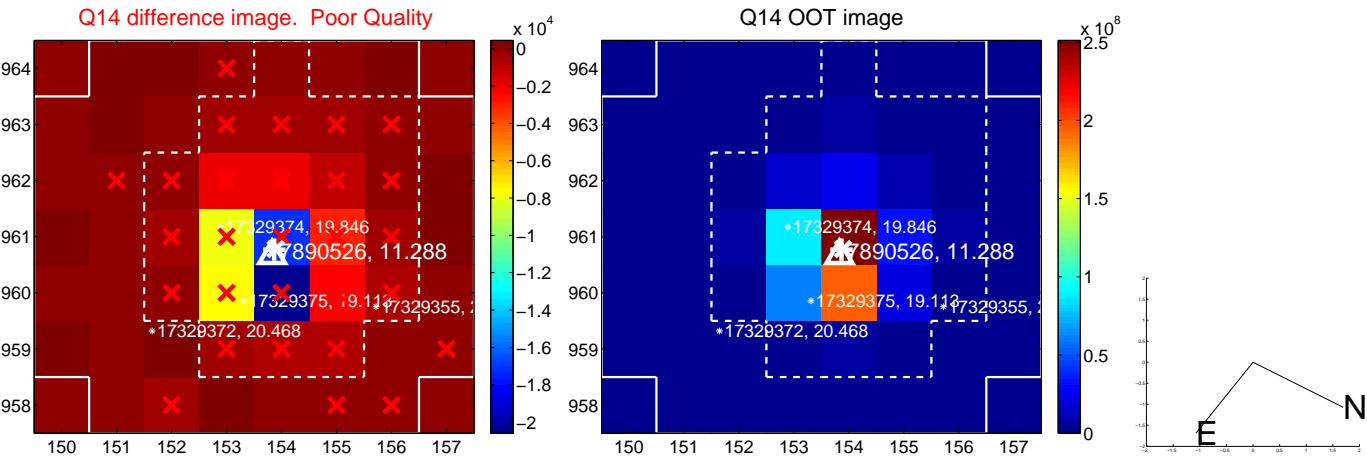
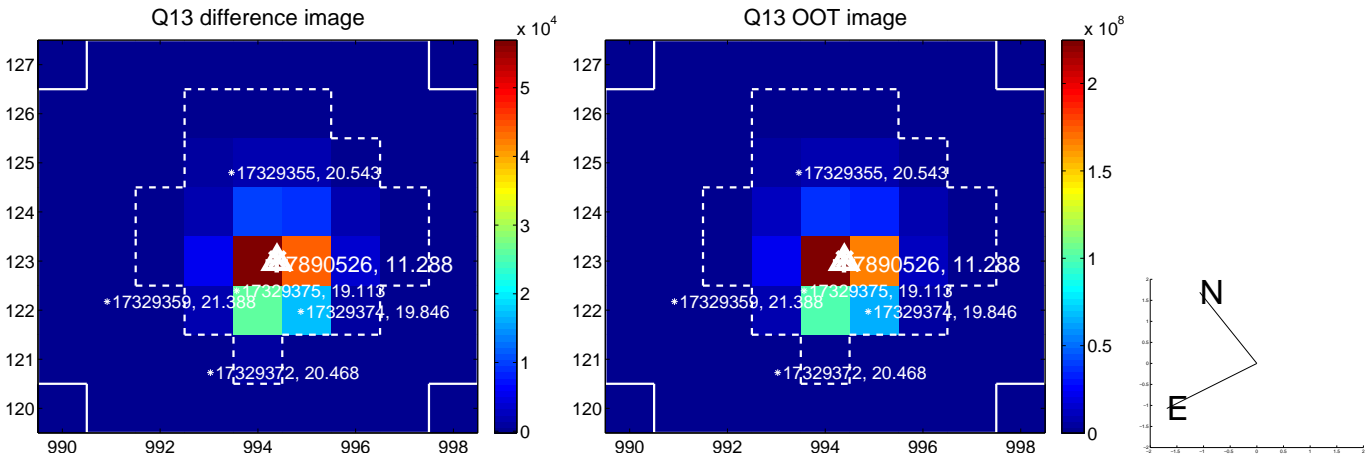




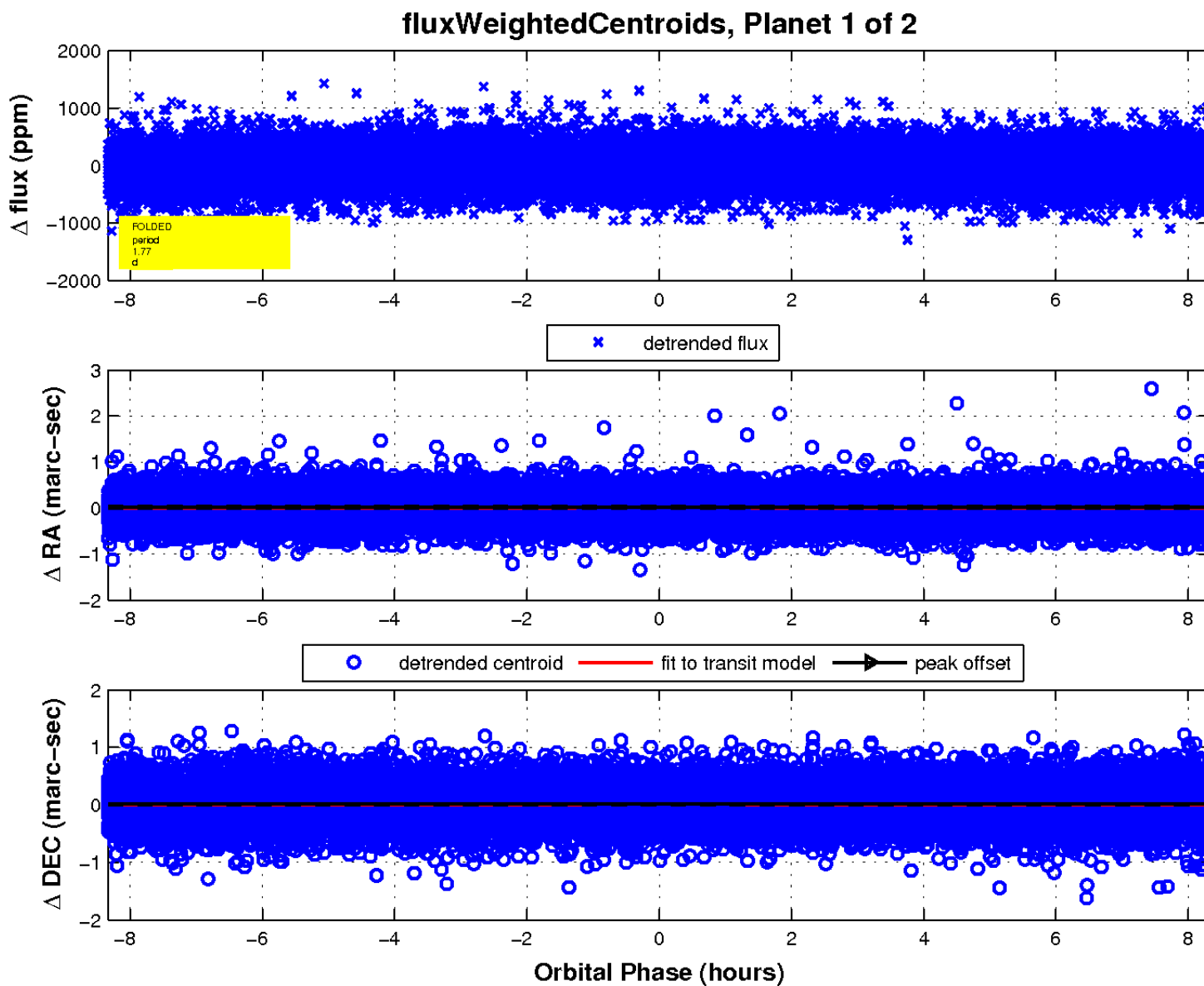
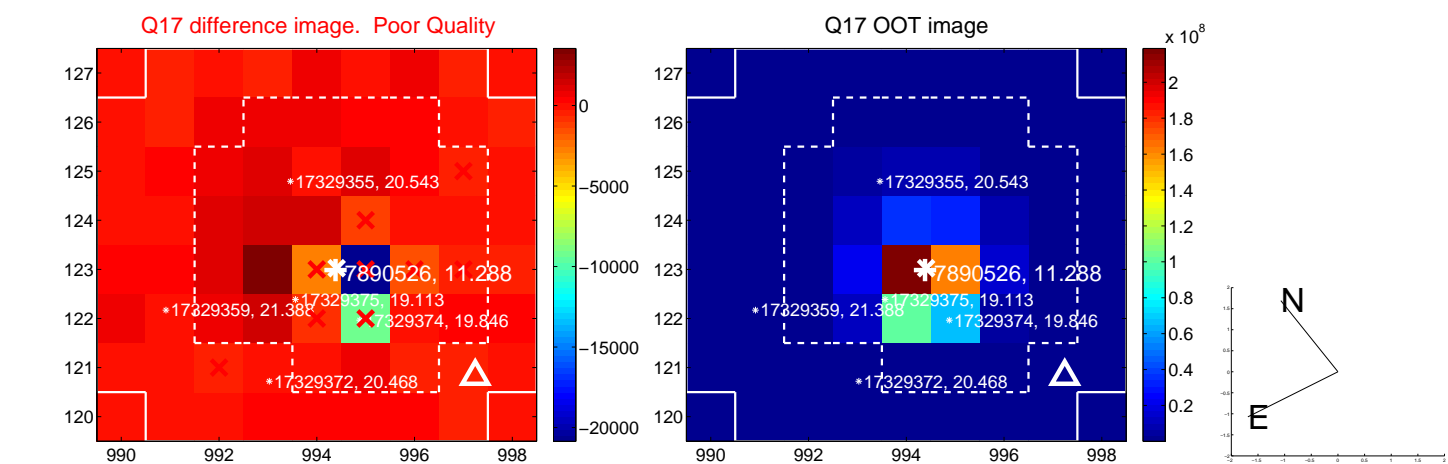
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

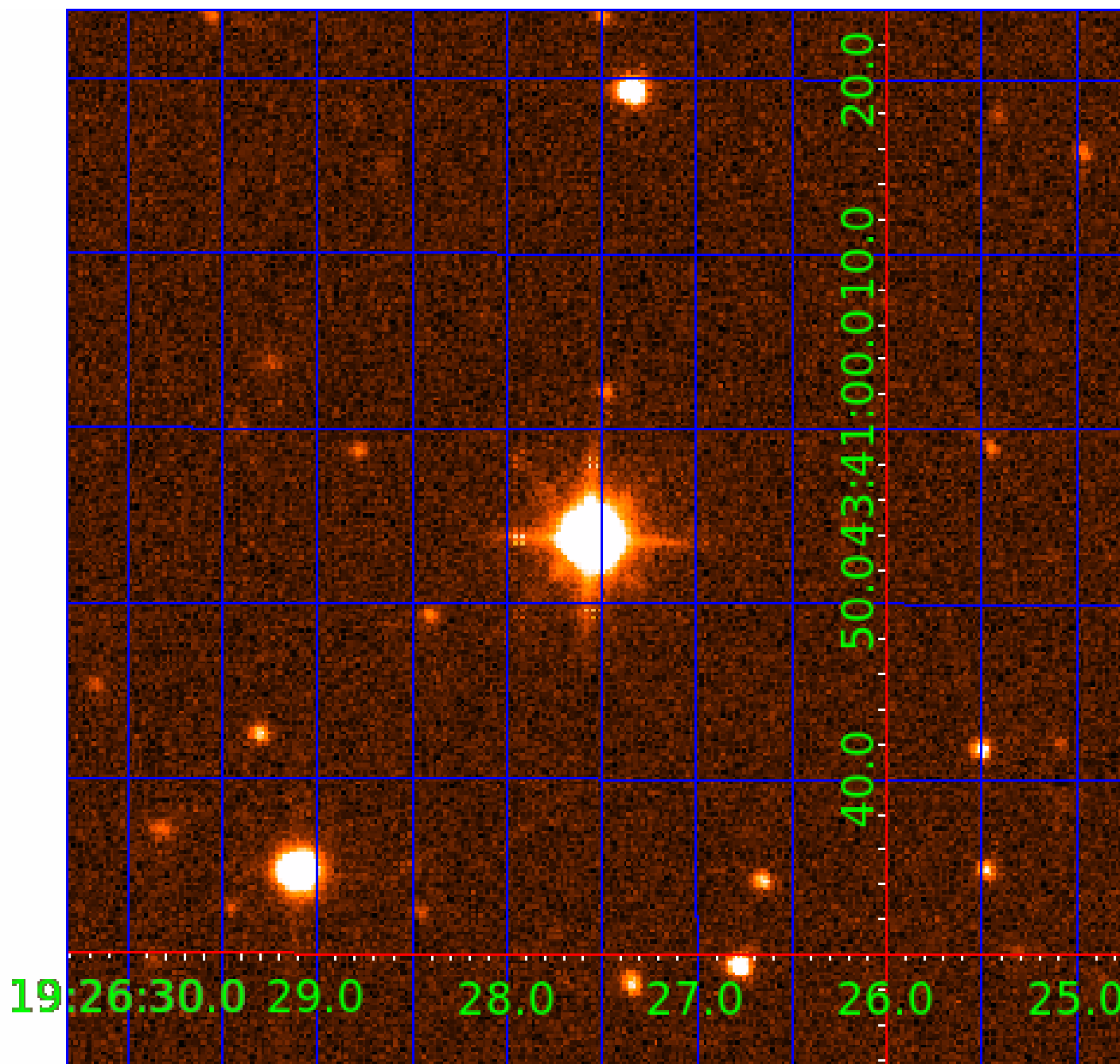


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination





# KIC 007890526

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007890526-01	OBS	No	1.769661	133.272714	24.5	2.778	11.1	5.8	1.73	7085	1.00	6633.86
007890526-02	OBS	No	0.588500	131.776060	7.5	5.145	10.9	2.8	1.73	7085	0.48	28793.27

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007890526-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
007890526-02	OBS	FP	0.00	1	0	0	0	LPP_DV—CENT_SATURATED

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

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

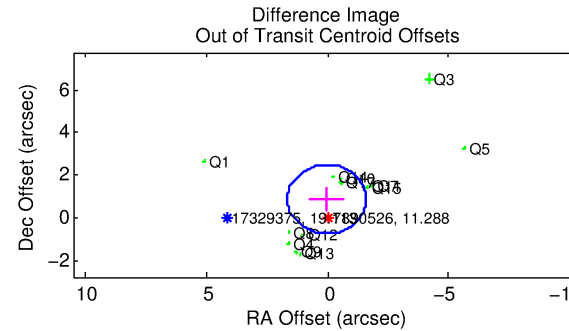
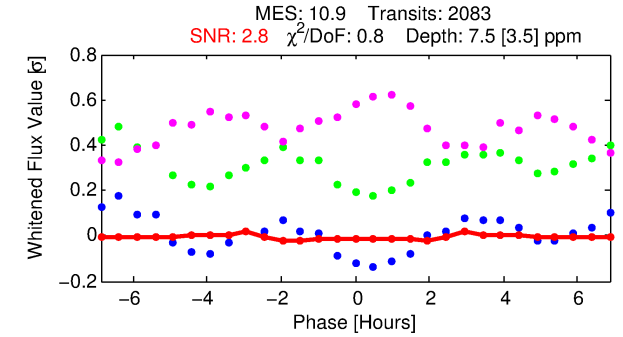
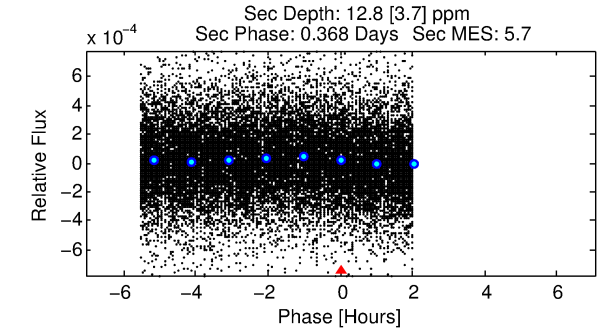
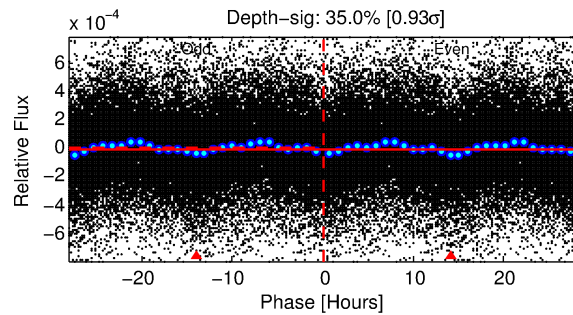
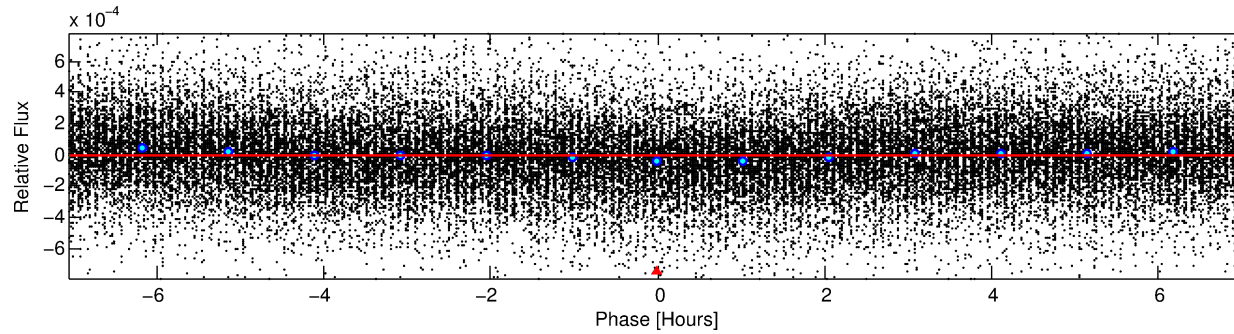
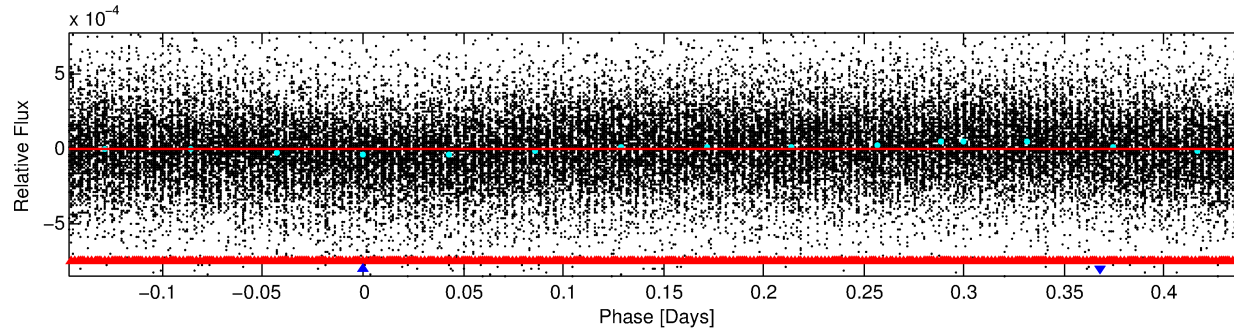
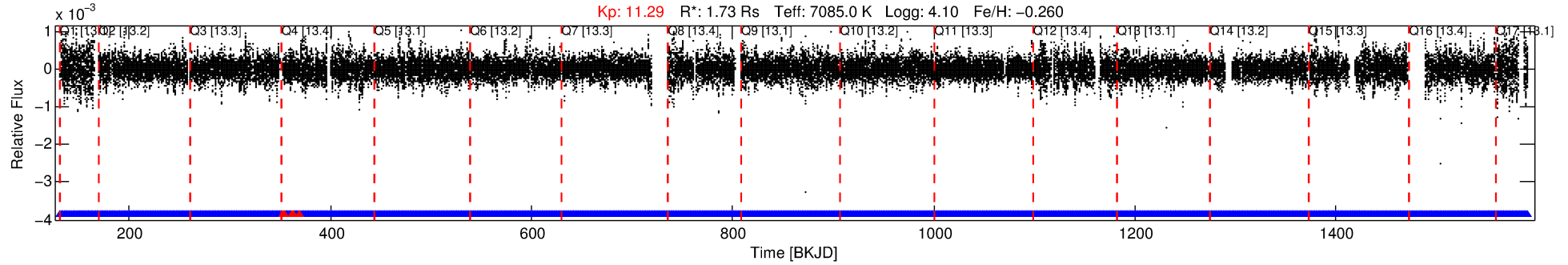
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 007890526-02

No Significant Match Found

# DV One-Page Summary

KIC: 7890526 Candidate: 2 of 2 Period: 0.589 d



## DV Fit Results:

Period = 0.58850 [0.00004] d  
Epoch = 131.7761 [0.0063] BKJD  
Rp/R\* = 0.0026 [0.0035]  
a/R\* = 1.09 [1.48]  
b = 0.28 [27.45]  
Seff = 28793.27 [6854.02]  
Teq = 3322 [198] K  
Rp = 0.48 [0.67] Re  
a = 0.0154 [0.0024] AU  
Ag = 7.11 [19.73] [0.31 $\sigma$ ]  
Teffp = 8386 [5797] K [0.87 $\sigma$ ]

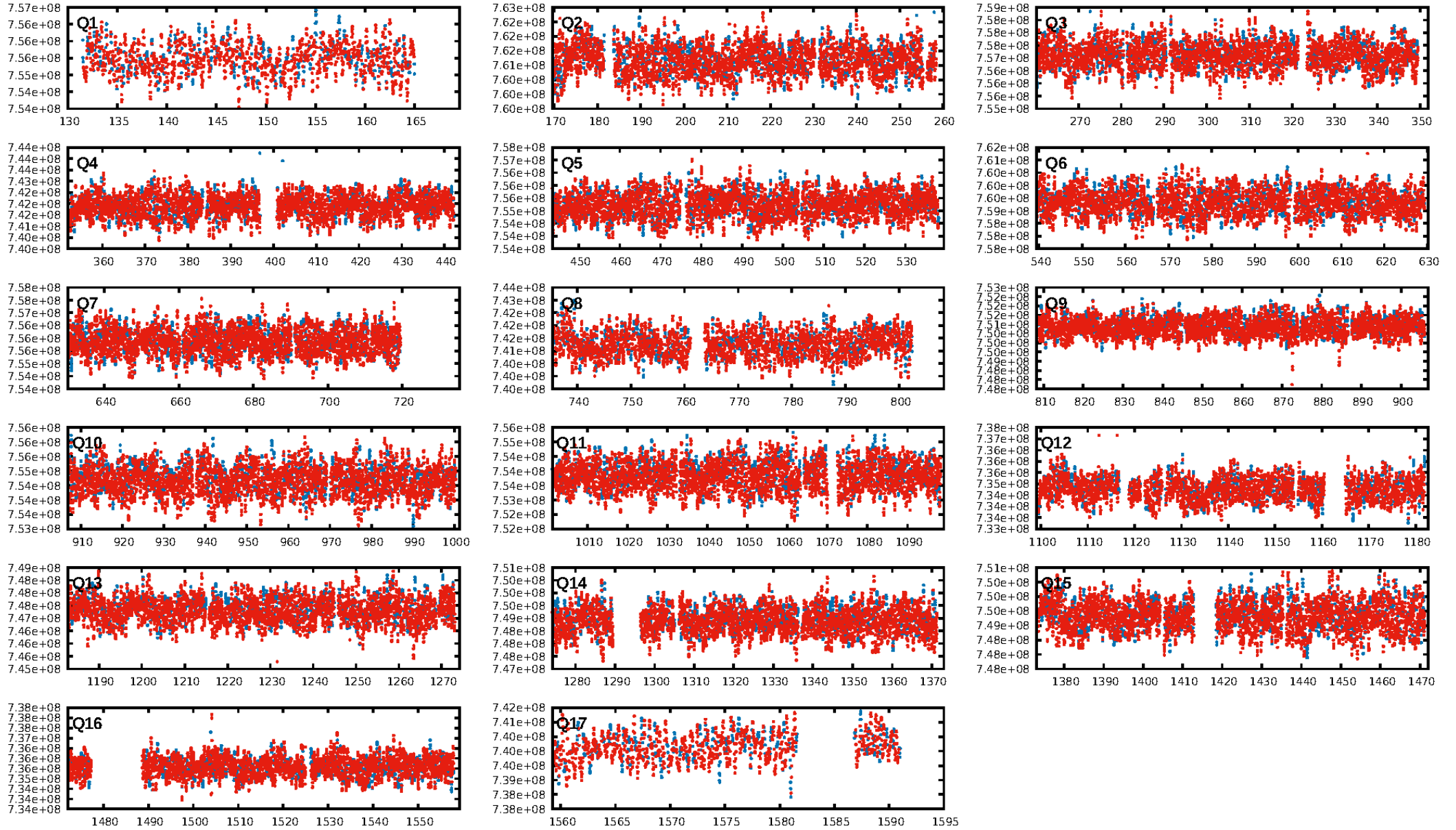
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [4.85 $\sigma$ ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [1972/1981]  
GhostDiagnostic-chr: 1.073  
Centroid-sig: 17.6%  
Centroid-so: 0.868 arcsec [1.14 $\sigma$ ]  
OotOffset-rm: 0.880 arcsec [1.63 $\sigma$ ]  
KicOffset-rm: 0.897 arcsec [1.77 $\sigma$ ]  
OotOffset-st: 2/4/3/5 [14]  
KicOffset-st: 2/4/3/5 [14]  
DiffImageQuality-fgm: 0.57 [8/14]  
DiffImageOverlap-fno: 1.00 [17/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 22:55:38 Z

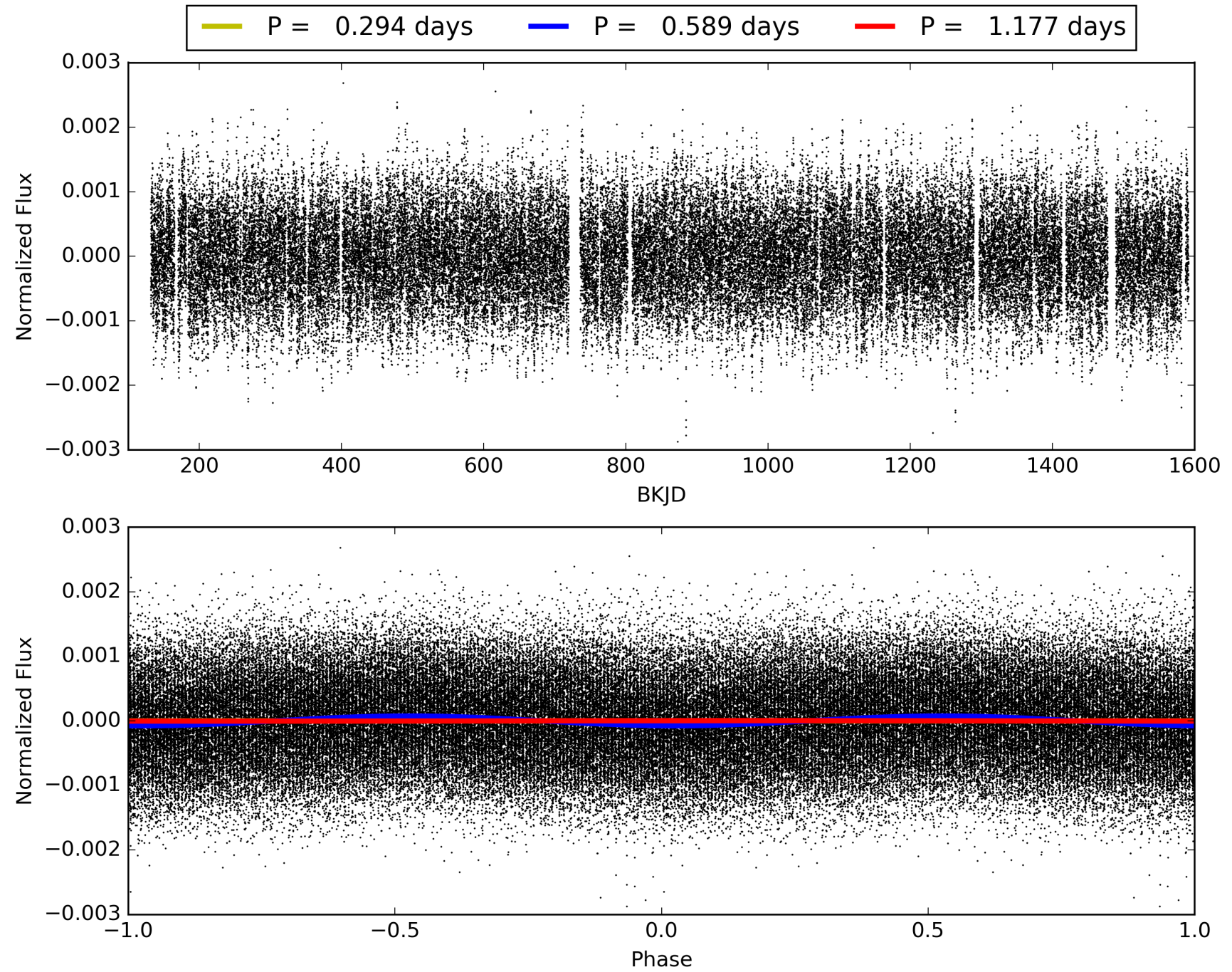
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 007890526-02, PDC Light Curves





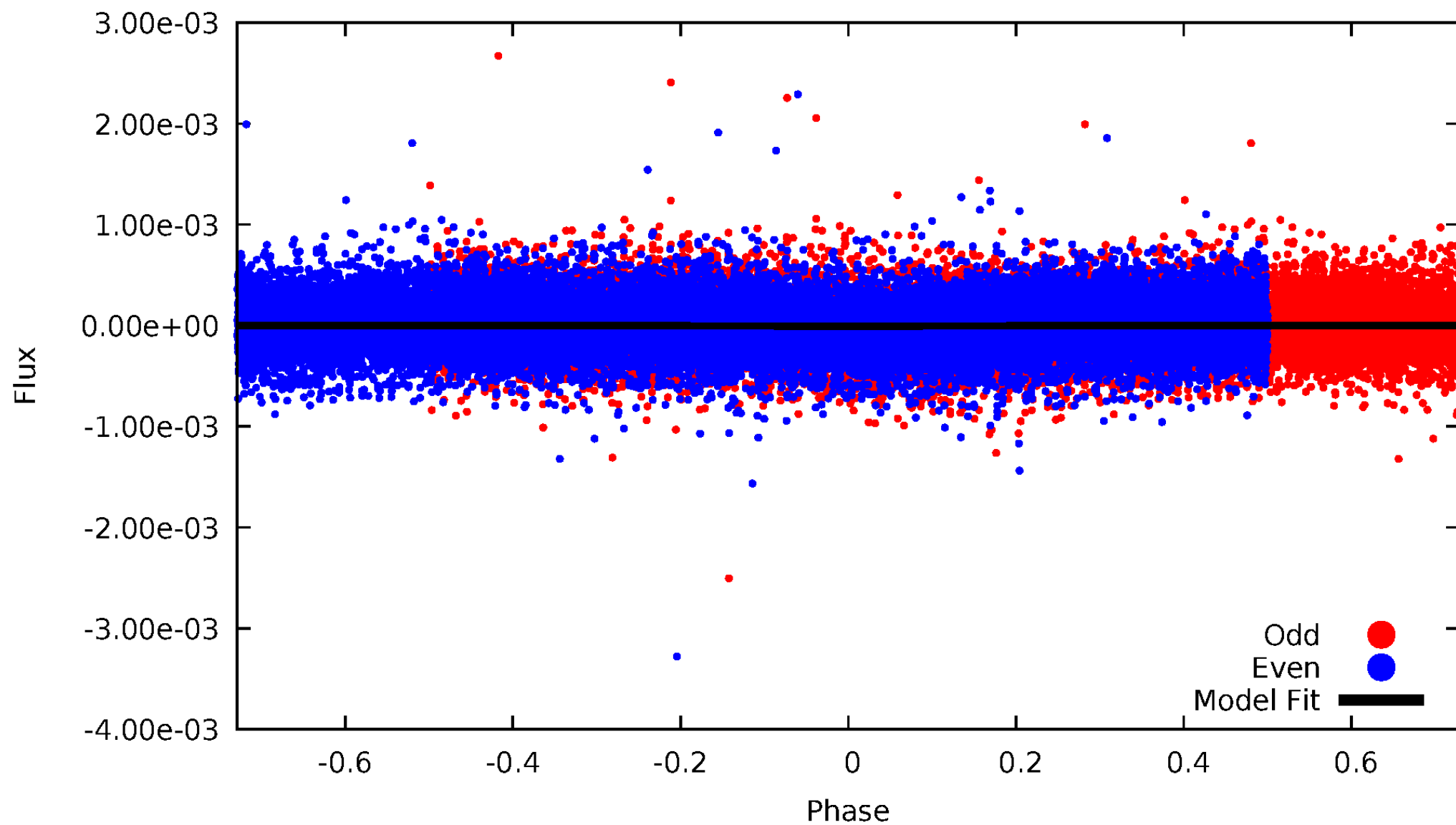
# TCE 007890526-02





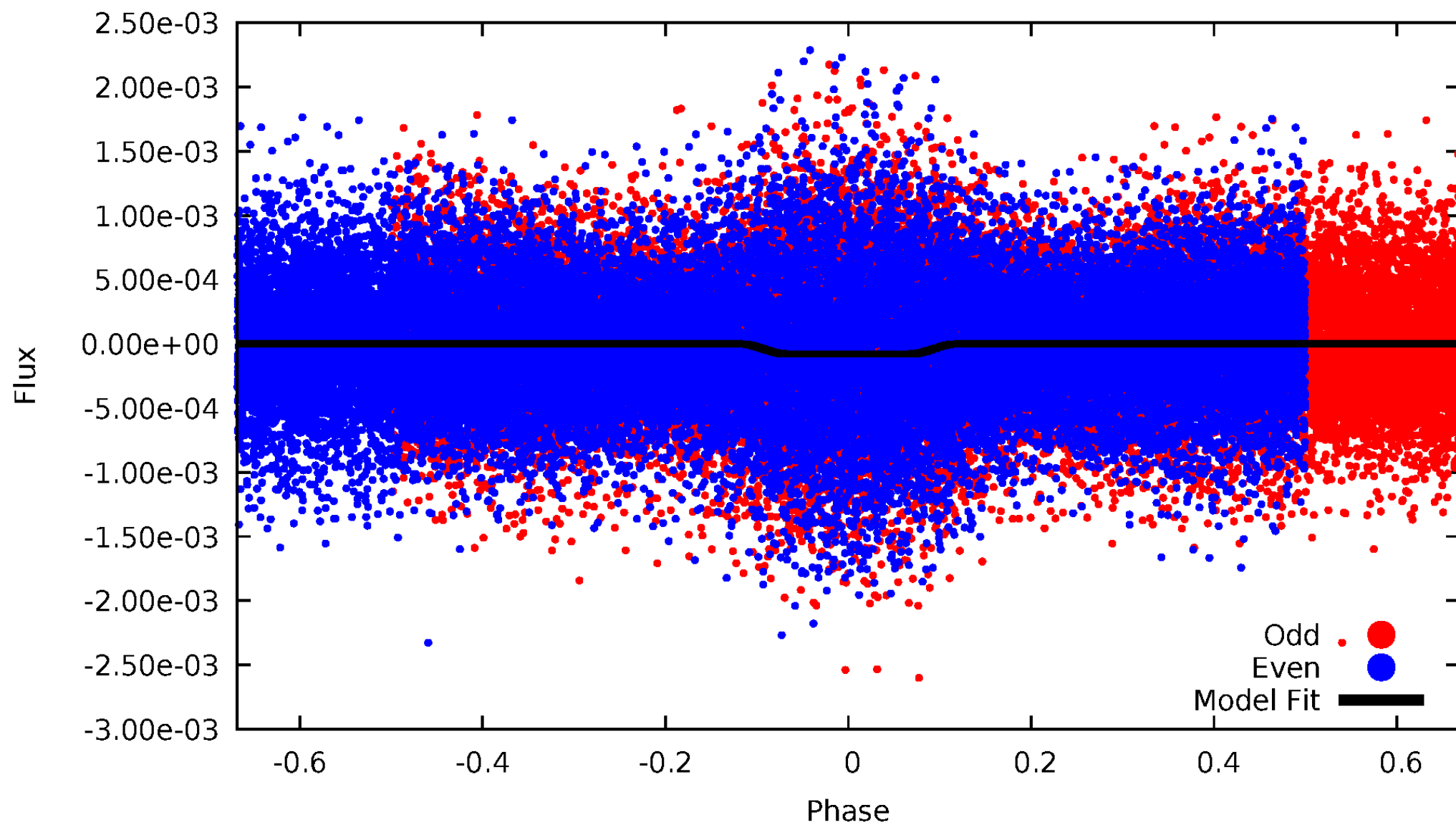
# DV Odd/Even

TCE 007890526-02



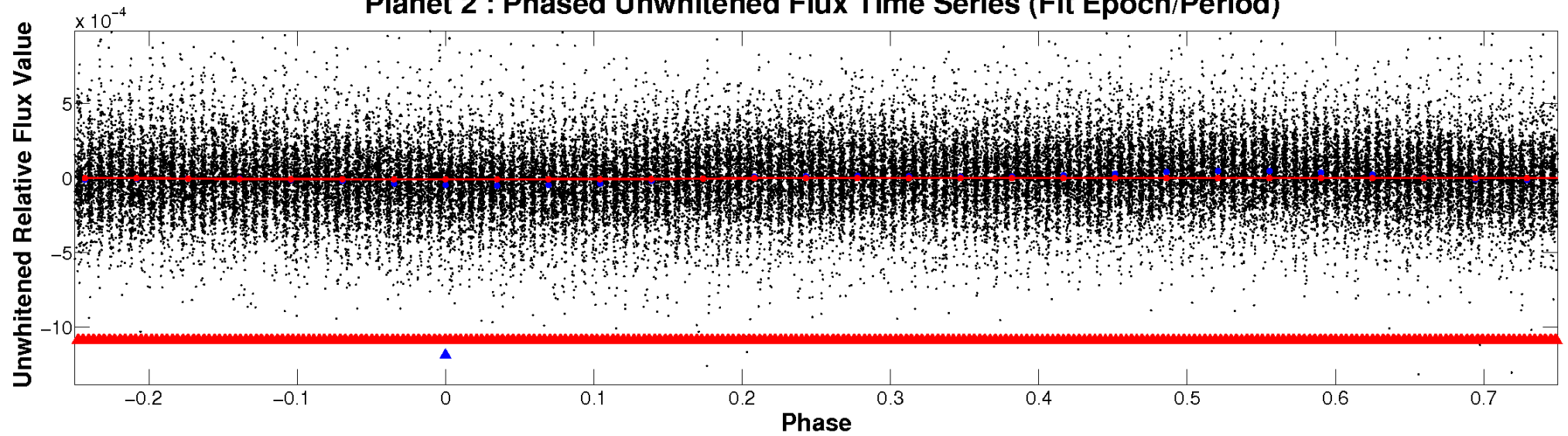
# ALT Odd/Even

TCE 007890526-02

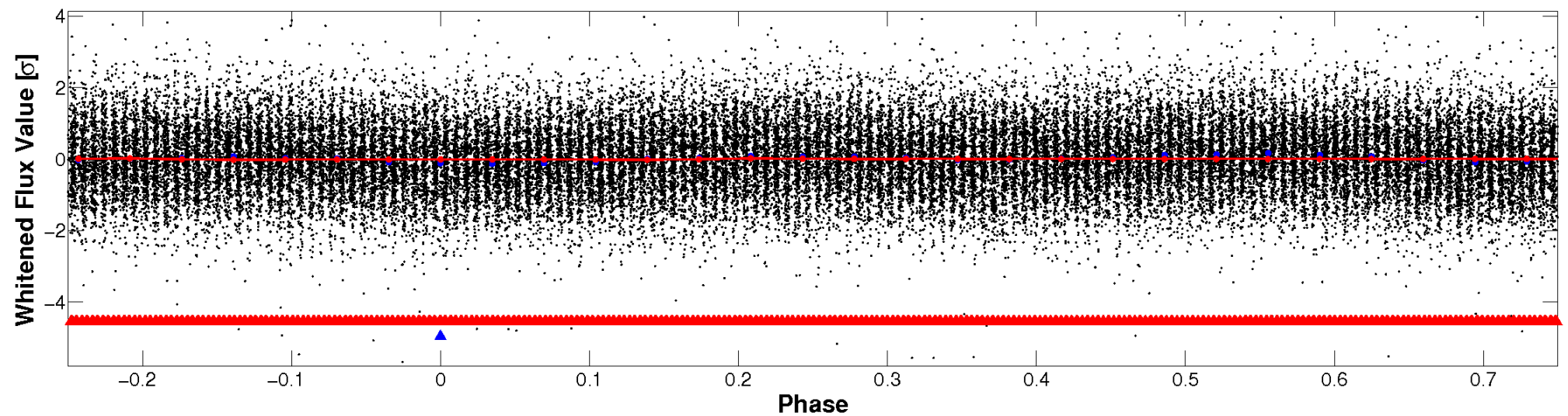


# Non-Whitened Vs. Whitened Light Curve

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

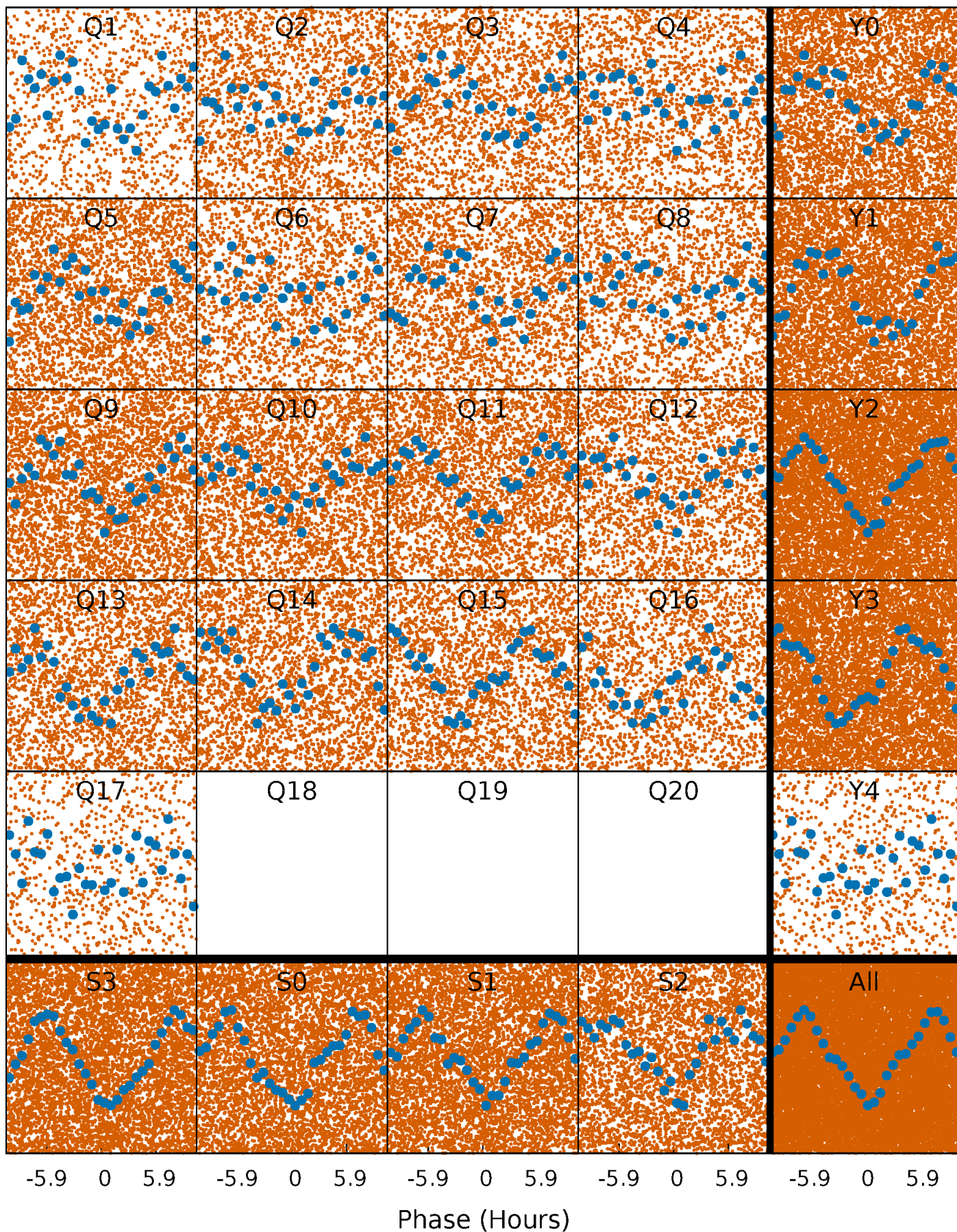


**Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

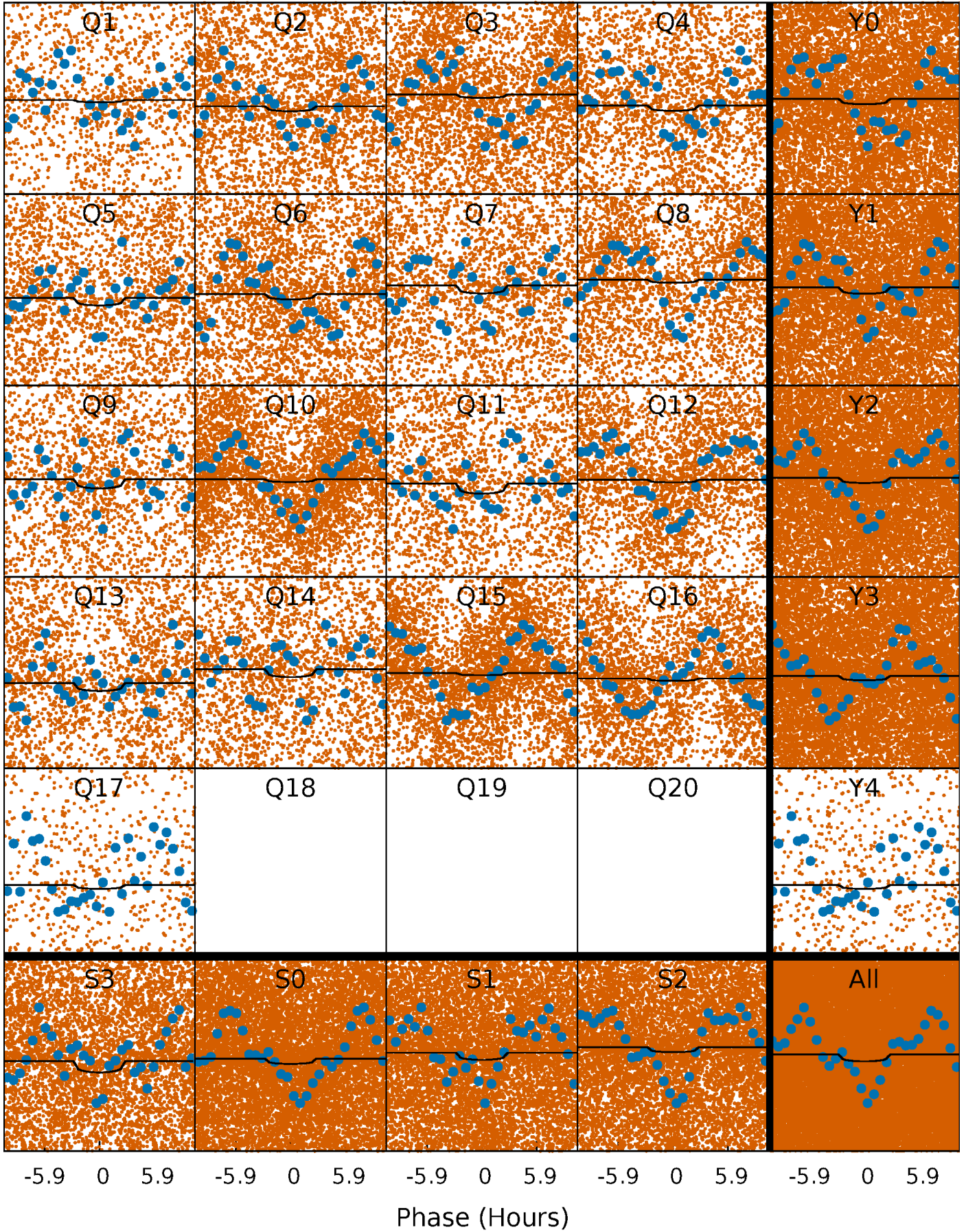
TCE 007890526-02 P= 0.588500 Days  $T_0=131.776060$  (BKJD)





# DV Quarter-Phased Transit Curves

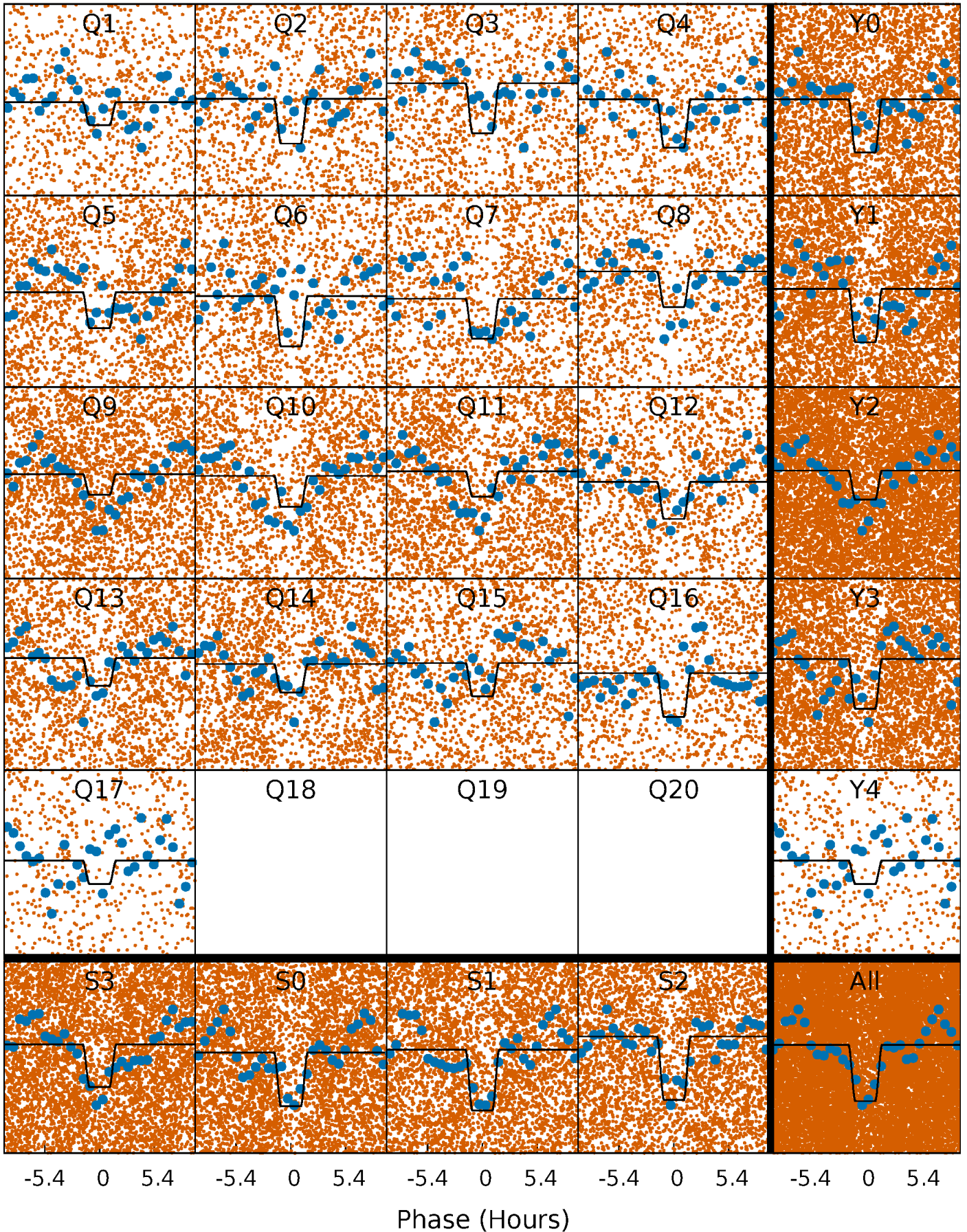
TCE 007890526-02 P= 0.588500 Days  $T_0=131.776060$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

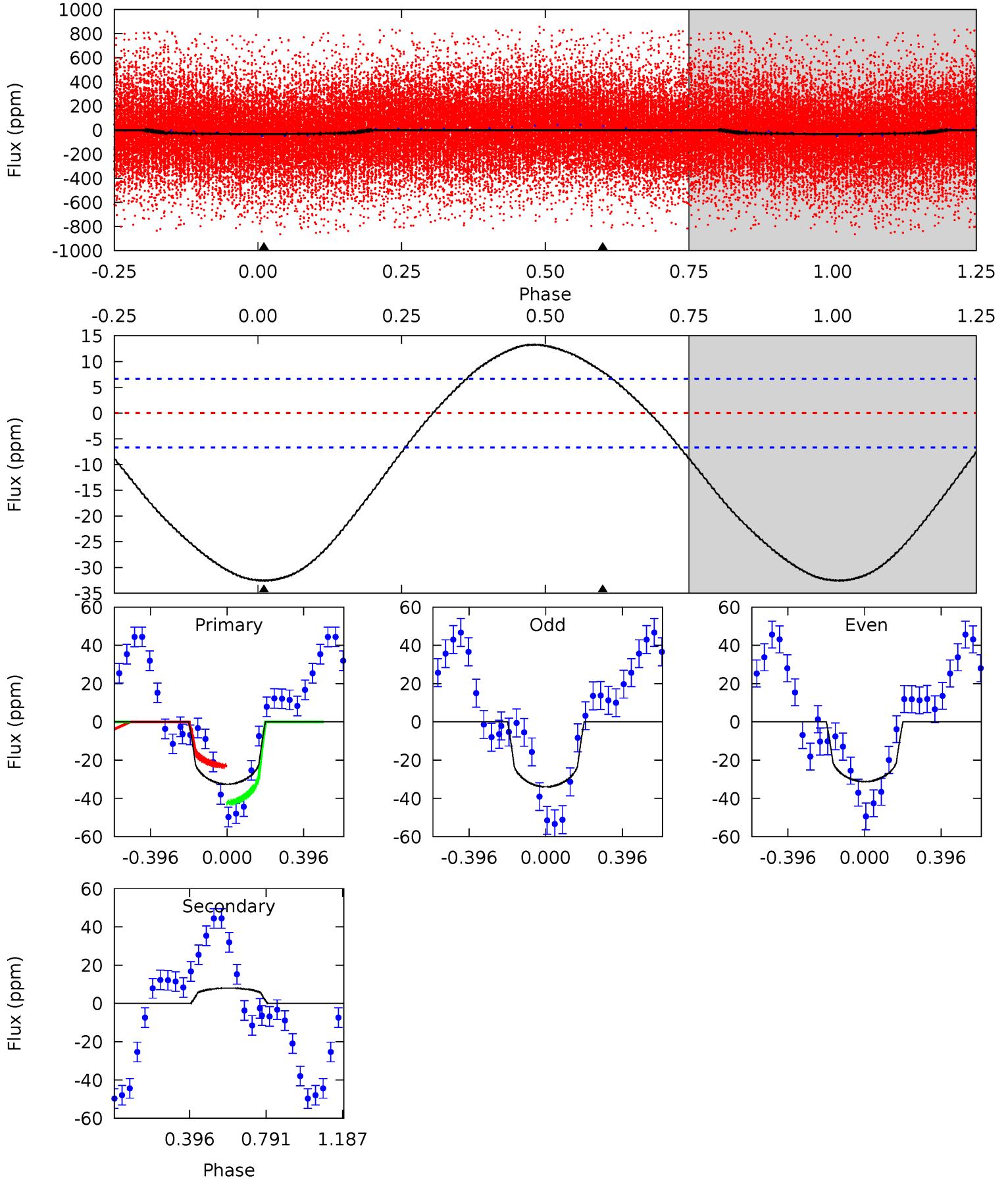
TCE 007890526-02   P= 0.588537 Days    $T_0=131.754534$  (BKJD)



# DV Model-Shift Uniqueness Test

007890526-02, P = 0.588500 Days, E = 131.187560 Days

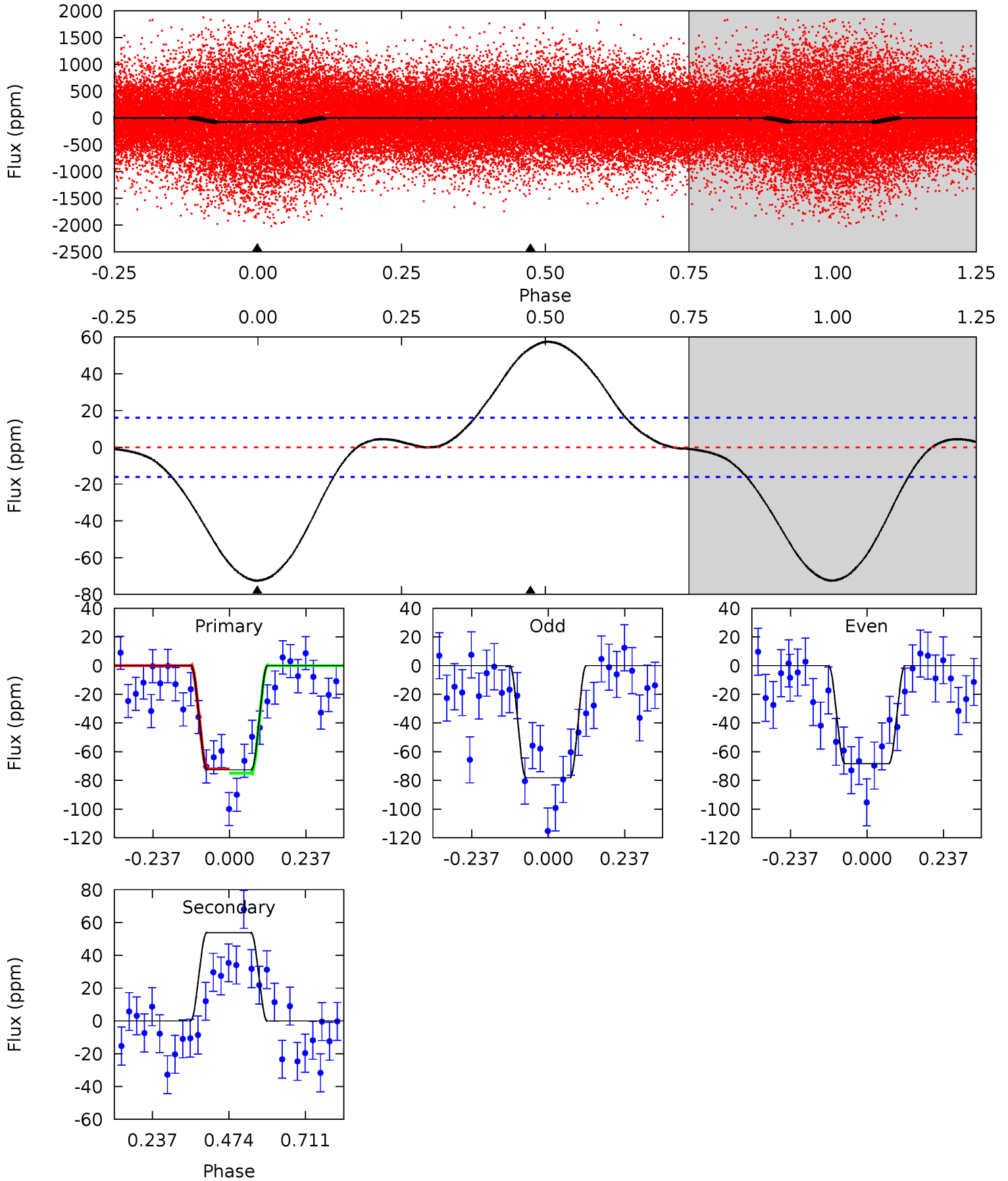
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
20.8	-5.13	0	0	4.27	0.85	2.38	20.8	20.8	-5.13	-5.13	0.88	1.16	0.29	6.19



# Alt Model-Shift Uniqueness Test

007890526-02, P = 0.588537 Days, E = 131.165997 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
19.8	-14.7	0	0	4.38	1.18	0.56	19.8	19.8	-14.7	-14.7	1.35	0.89	0.44	0.41



### Stellar Parameters For KIC 007890526

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$7085^{+85}_{-78}$	$4.104^{+0.132}_{-0.108}$	$-0.260^{+0.150}_{-0.200}$	$1.734^{+0.300}_{-0.270}$	$1.396^{+0.113}_{-0.113}$	$0.377^{+0.218}_{-0.139}$
	+1%/-1%	+3%/-3%	+58%/-77%	+17%/-16%	+8%/-8%	+58%/-37%
Source	SPE68	SPE68	SPE68	DSEP		

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

### Secondary Eclipse Parameters for KIC 007890526-02 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$8\pm 2$	$0.70^{+0.59}_{-0.46}$	$4633^{+206}_{-200}$	$-6393^{+1340}_{-6233}$	$-2.138^{+1.513}_{-16.908}$
Alt.	$54\pm 4$	$1.67^{+0.64}_{-0.71}$	$4630^{+195}_{-201}$	$-6589^{+841}_{-2256}$	$-2.493^{+1.186}_{-4.661}$

$T_{\text{max}}$  = 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

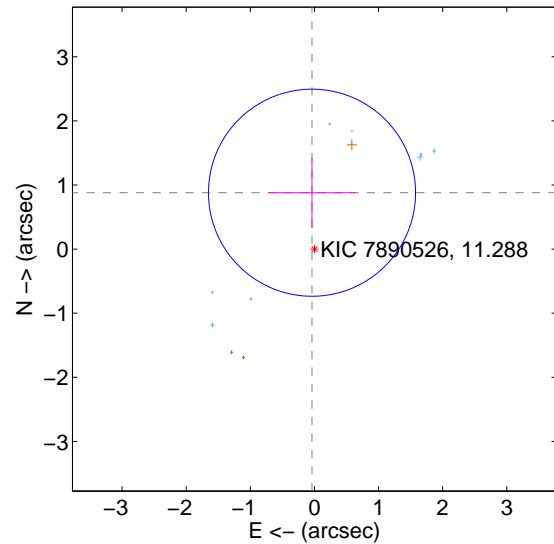
Supplemental centroid analysis for 007890526-02. **Kepler magnitude: 11.29.** Transit SNR 2.82

There are 8 quarters with good PRF difference image offsets

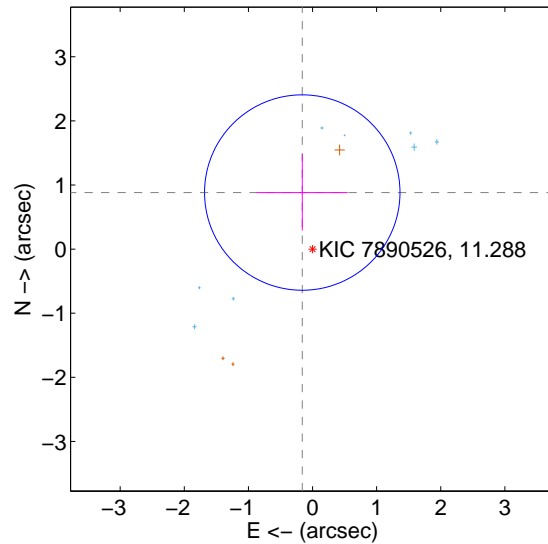
The direct PRF centroid is offset from the target star catalog position by about 0.18 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.880 \pm 0.538$	1.63	$0.038 \pm 0.680$	$0.879 \pm 0.553$
PRF-fit source offset from KIC position	$0.897 \pm 0.508$	1.77	$0.160 \pm 0.710$	$0.882 \pm 0.594$
photometric centroid source offset	$0.87 \pm 0.76$	1.14	$-0.87 \pm 0.76$	$-0.08 \pm 0.76$

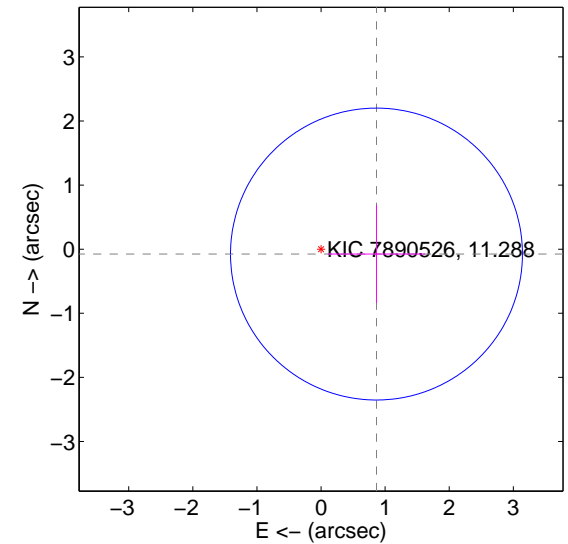
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



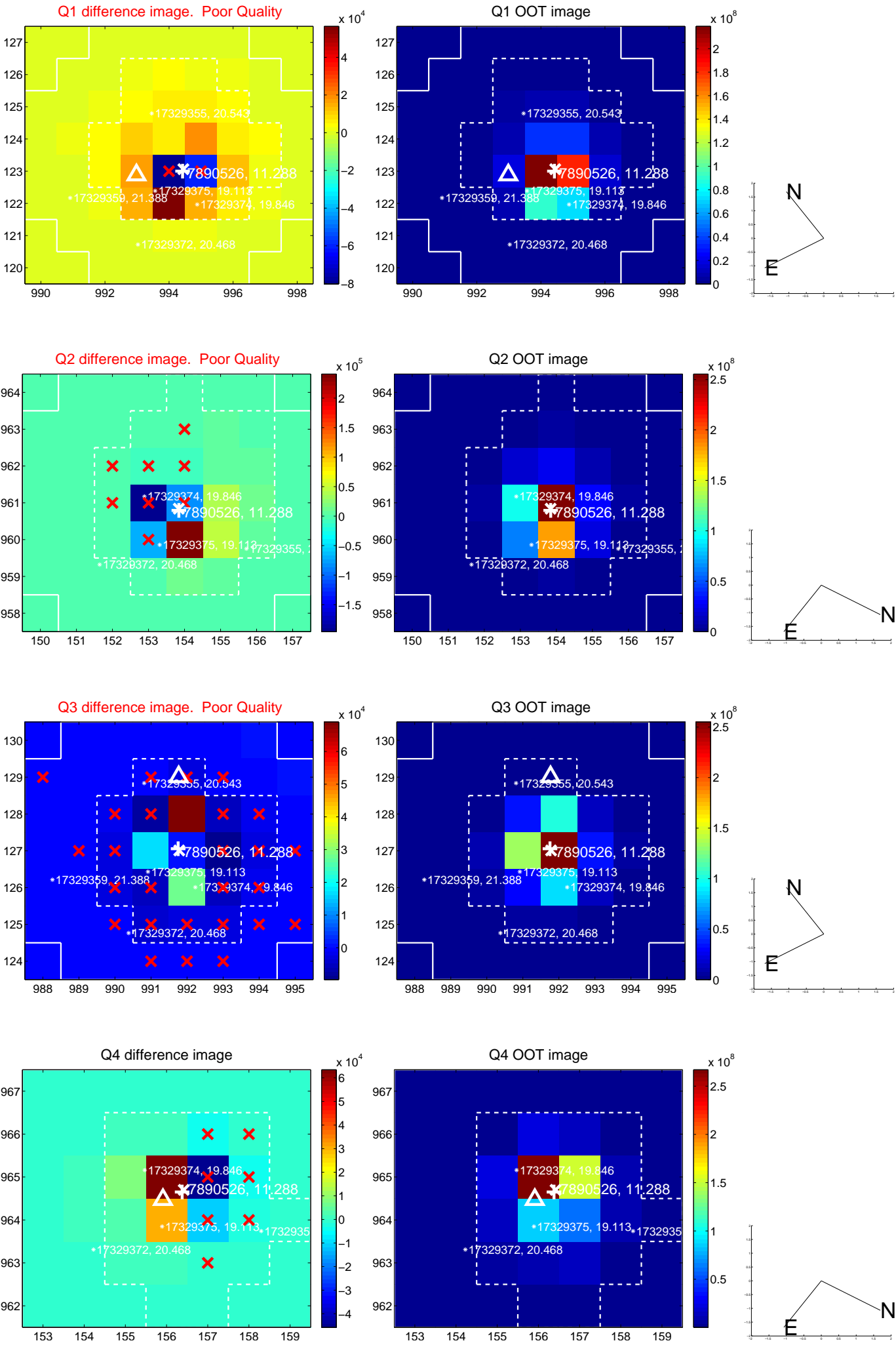
offset from photometric centroids



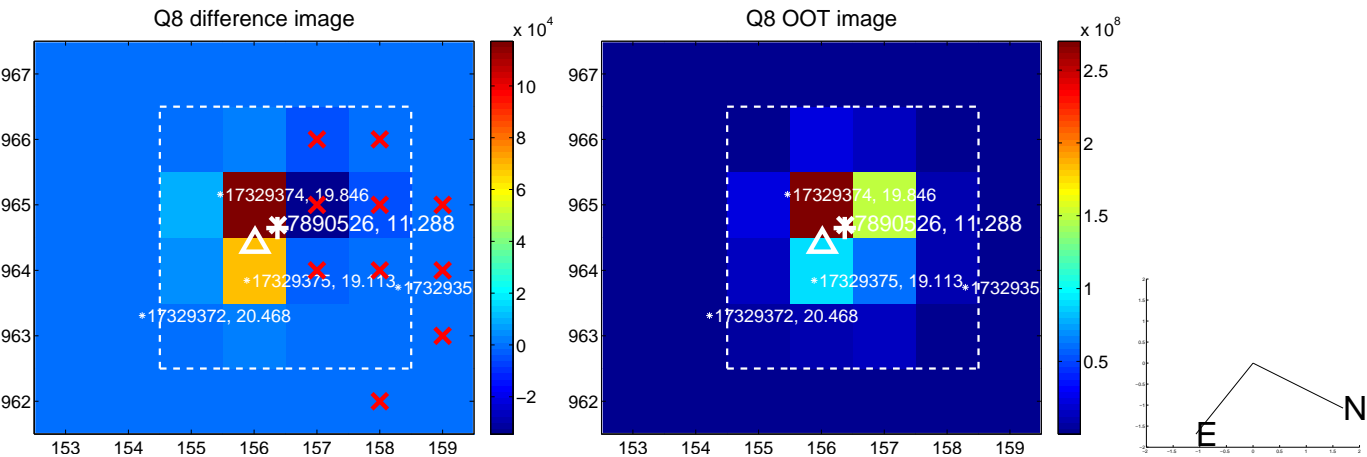
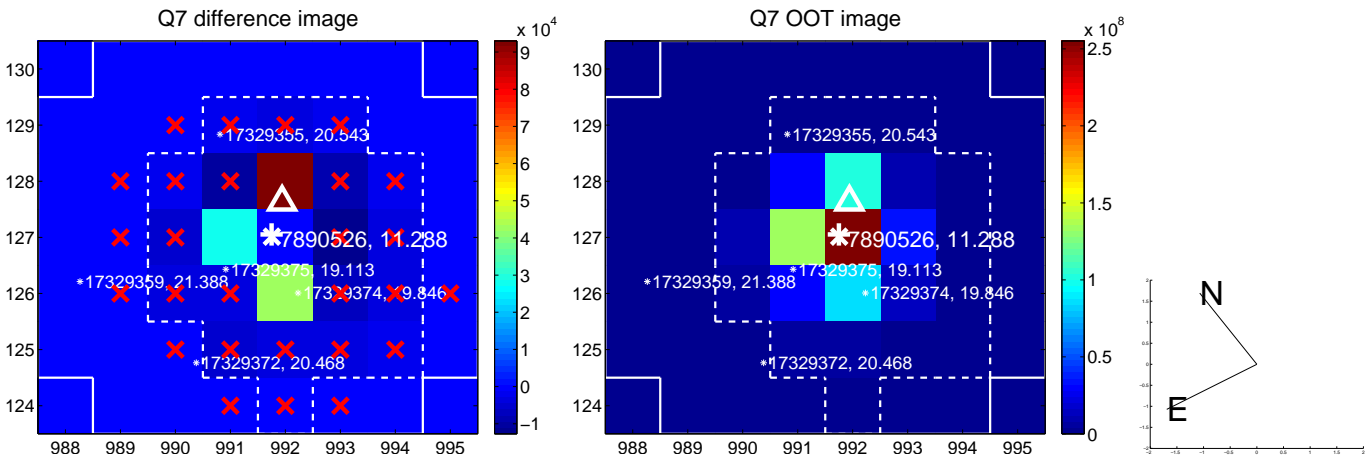
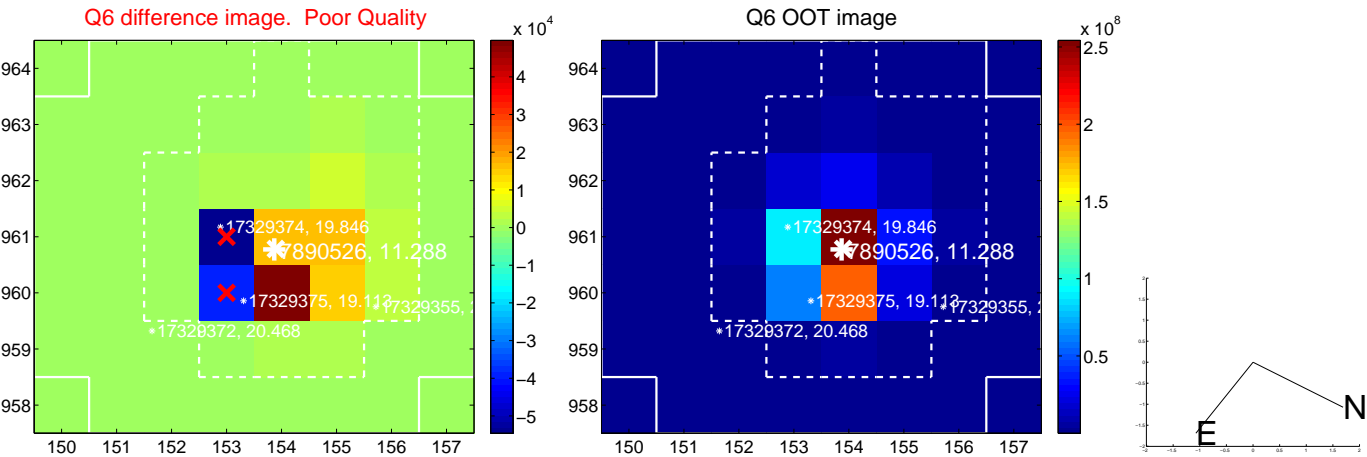
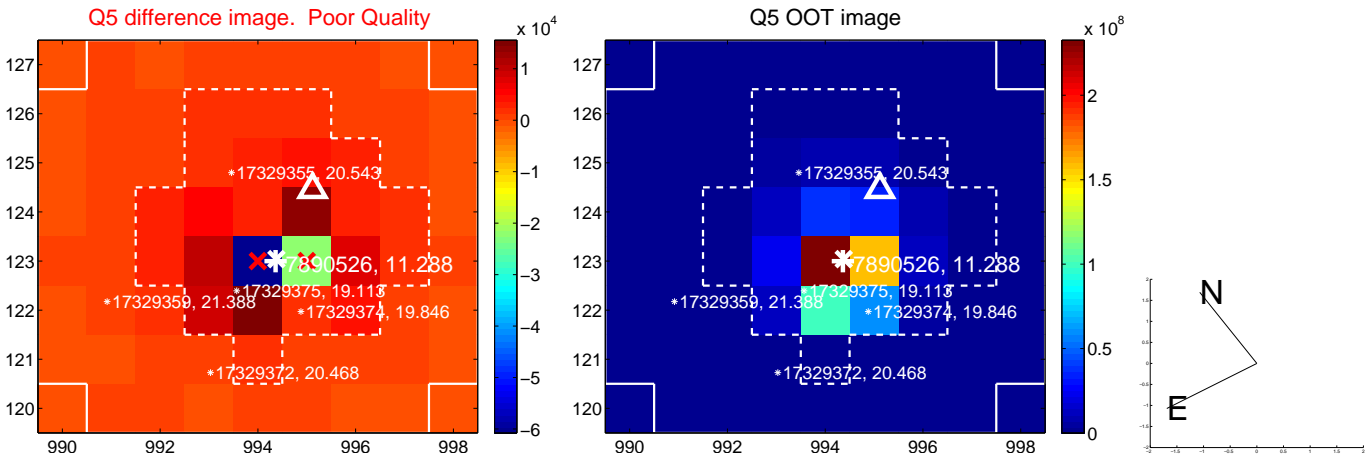
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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



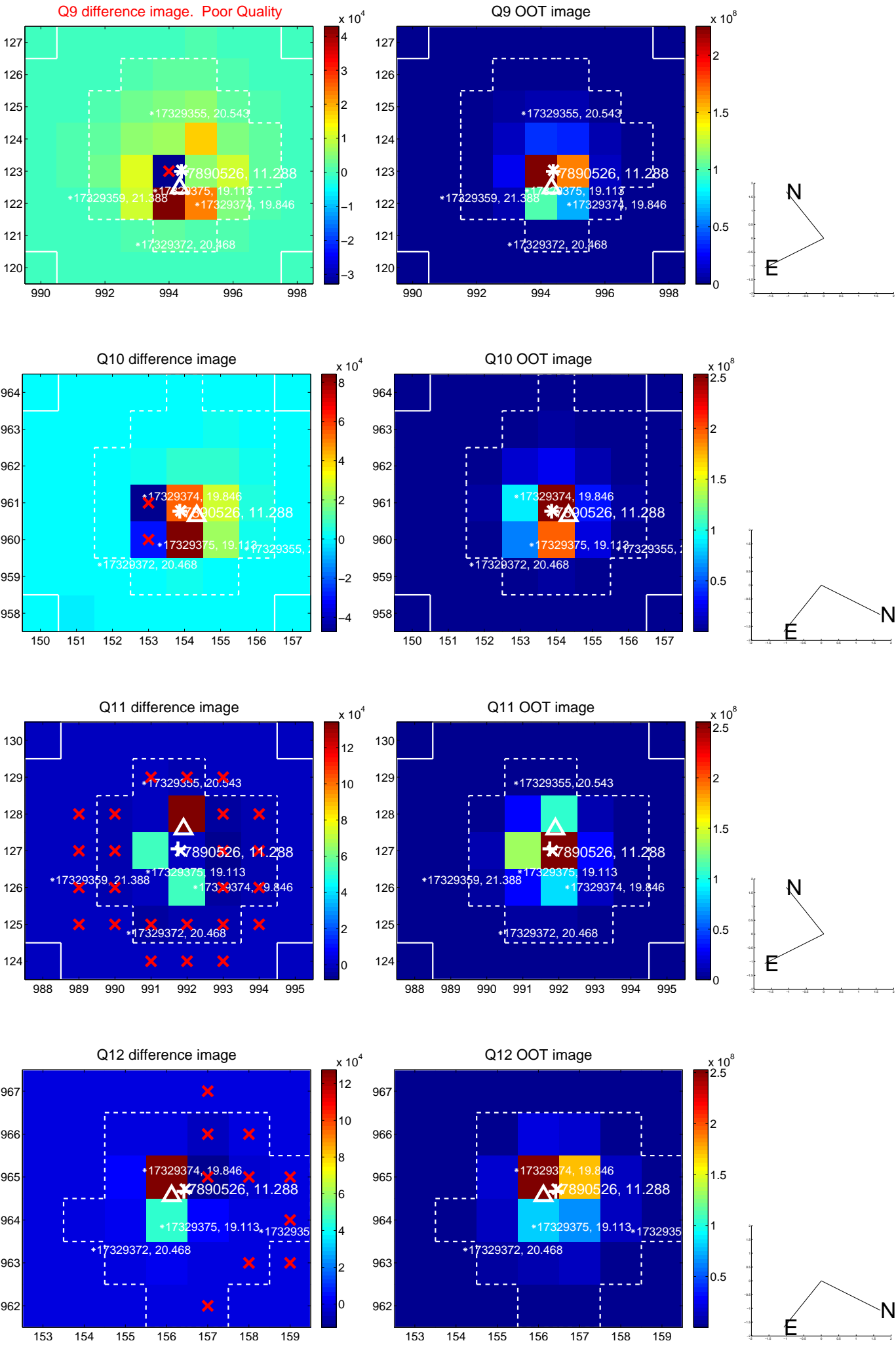
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



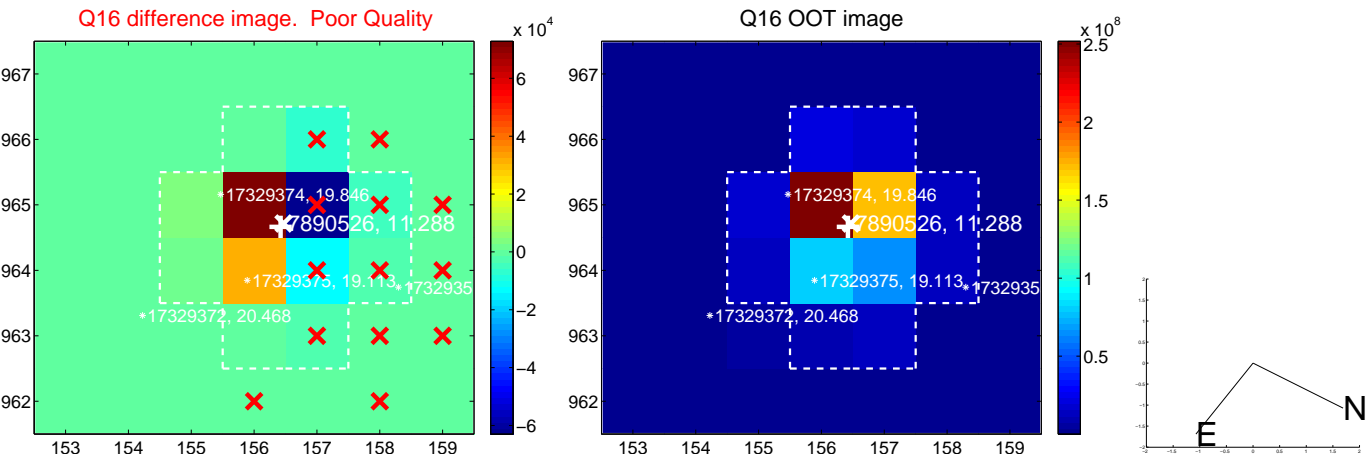
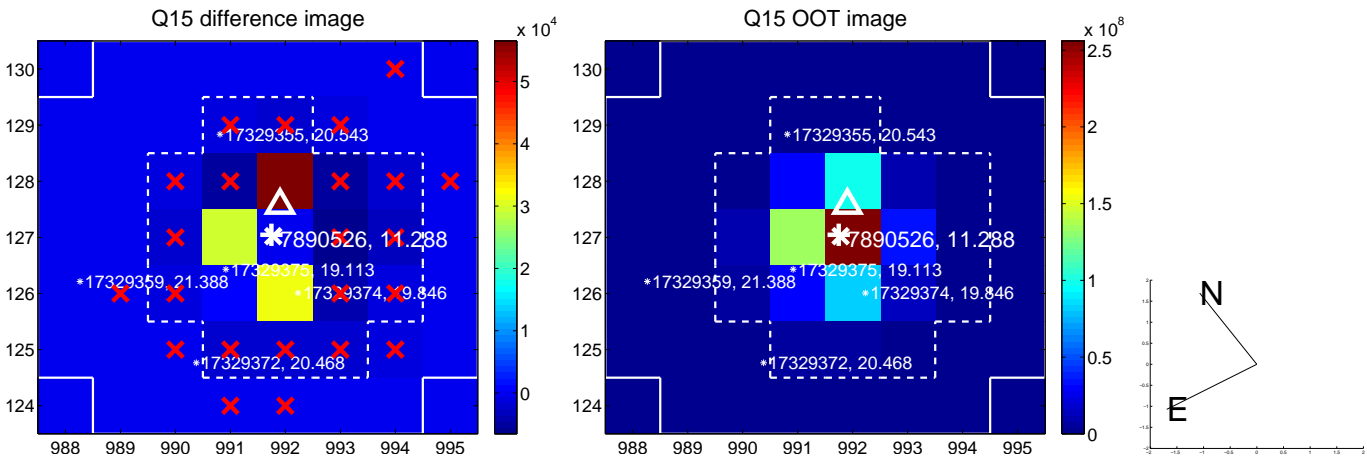
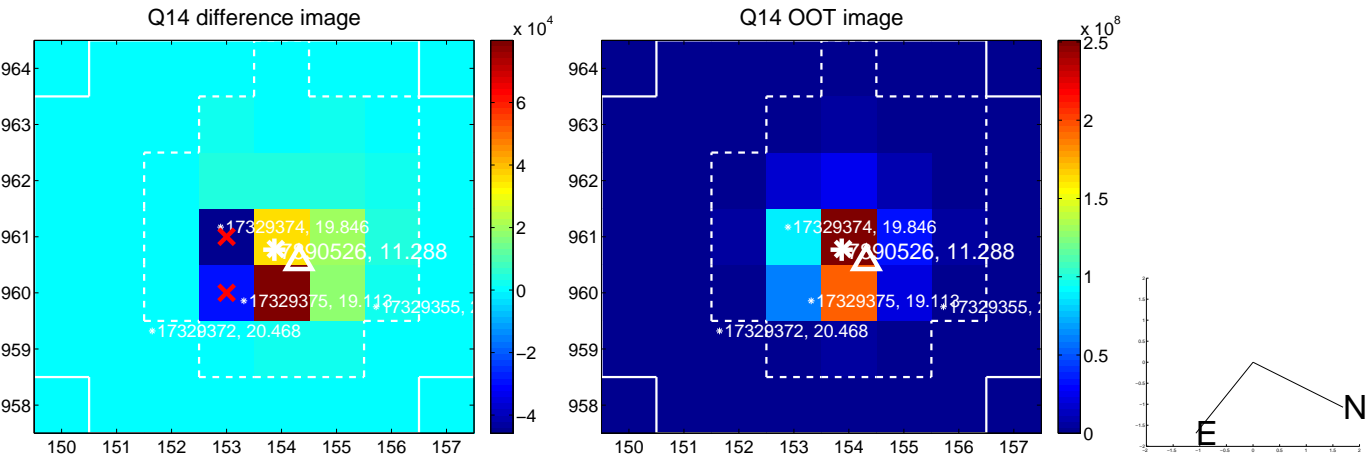
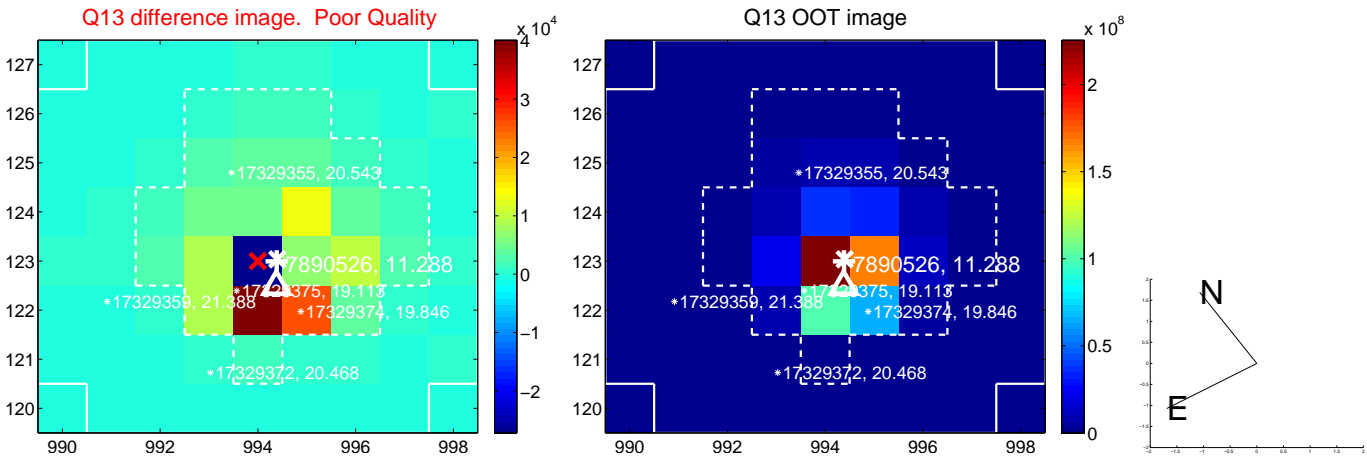
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



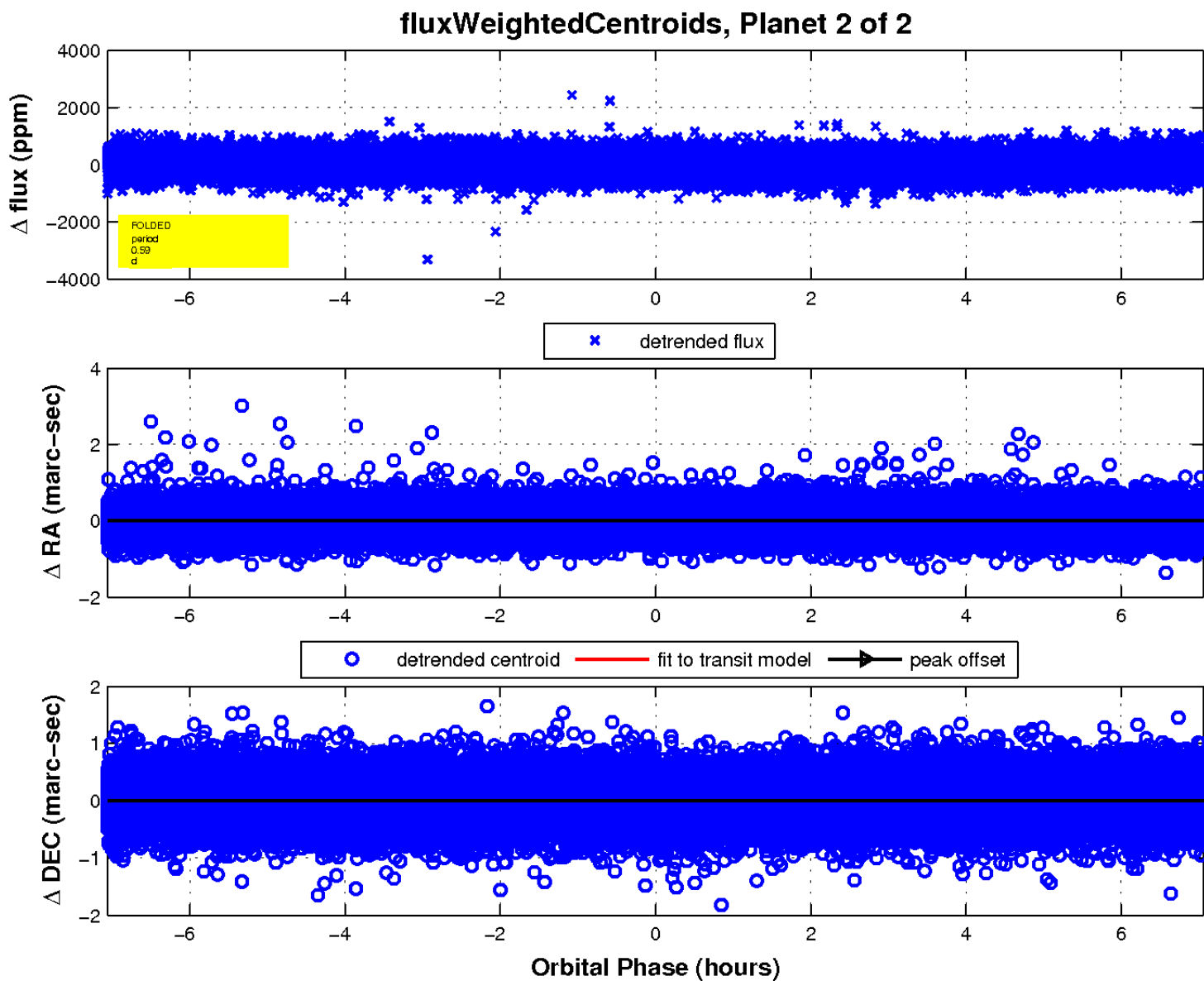
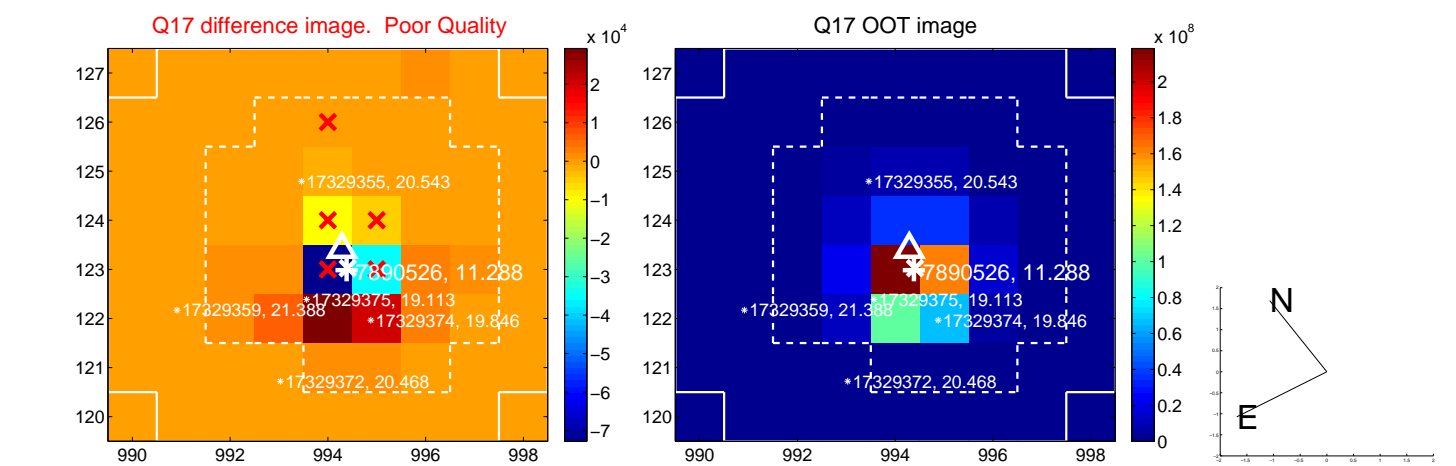
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

