

# KIC 011572490

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
011572490-01	OBS	No	3.948209	132.054469	17.4	20.106	8.9	10.3	1.46	7211	0.64	1633.49
011572490-02	OBS	No	279.356782	212.401619	108.8	12.793	9.1	6.3	1.46	7211	1.72	5.58
011572490-03	OBS	No	171.723949	228.243018	169.4	2.804	7.3	7.4	1.46	7211	2.20	10.68

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011572490-01	OBS	FP	0.00	1	0	1	0	LPP_DV—LPP_ALT—CENT_UNRESOLVED_OFFSET
011572490-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
011572490-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT

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

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

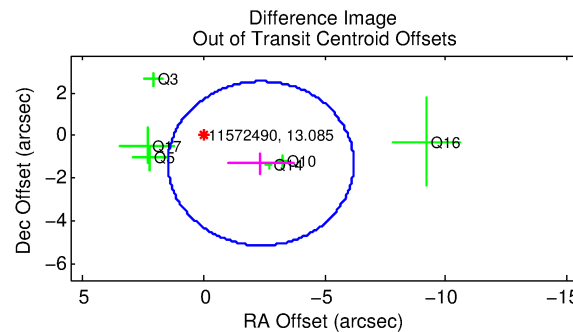
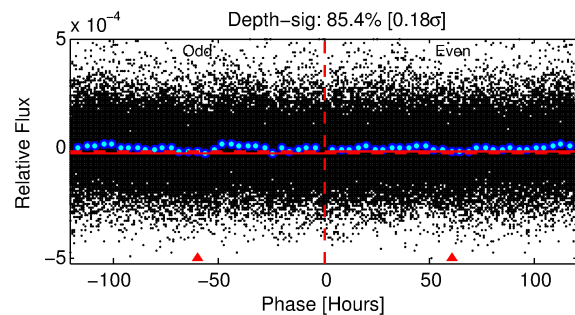
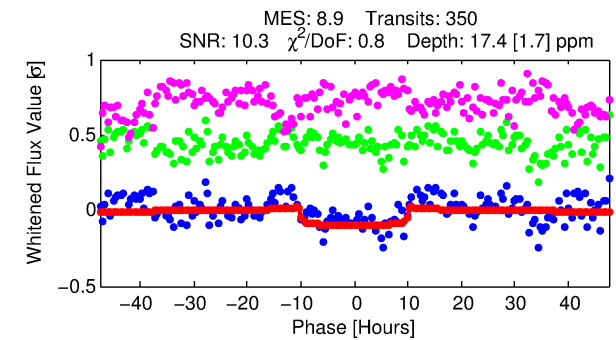
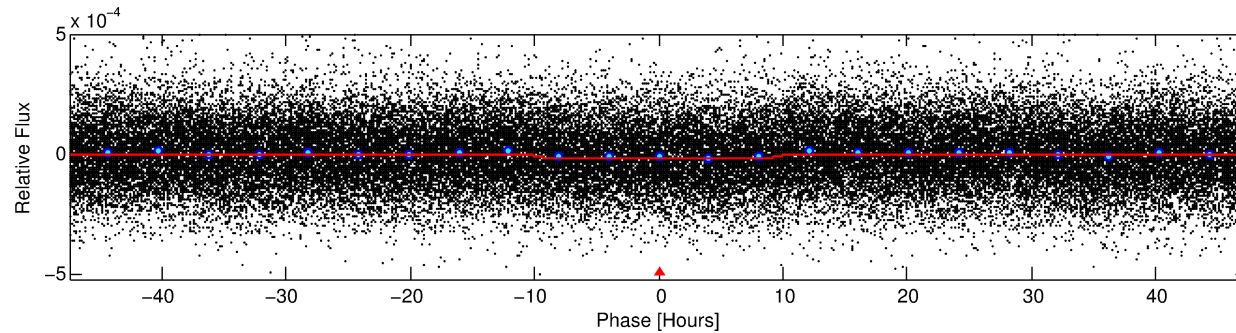
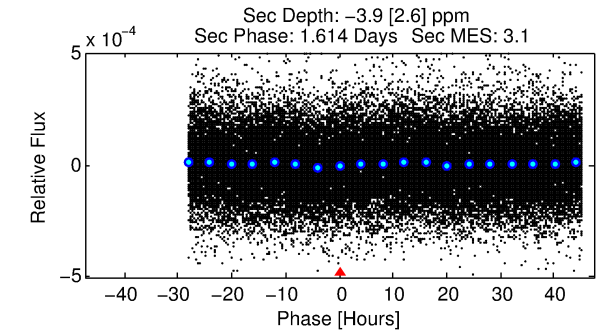
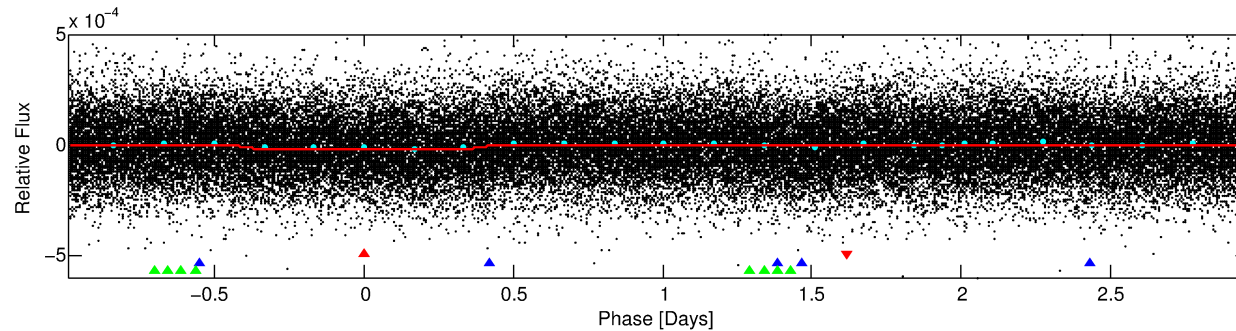
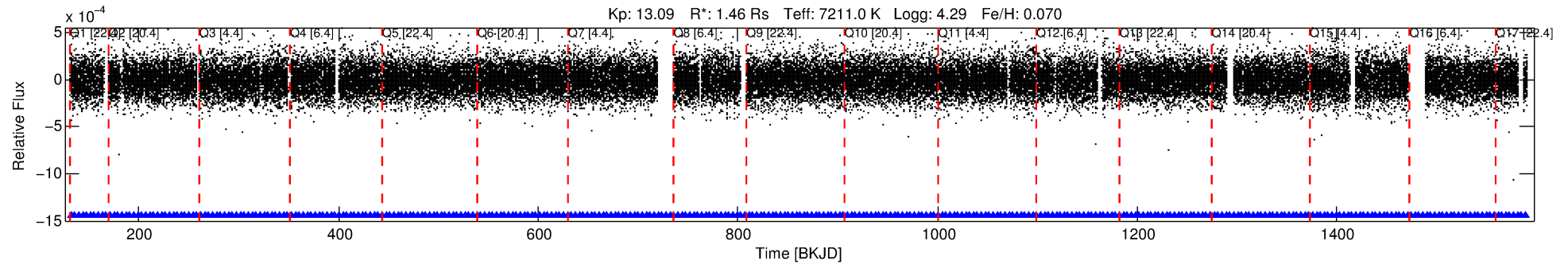
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 011572490-01

No Significant Match Found

# DV One-Page Summary

KIC: 11572490 Candidate: 1 of 3 Period: 3.948 d



## DV Fit Results:

Period = 3.94821 [0.00008] d  
Epoch = 132.0545 [0.0131] BKJD  
Rp/R\* = 0.0040 [0.0012]  
a/R\* = 1.40 [1.29]  
b = 0.64 [1.70]  
Seff = 1633.49 [805.47]  
Teff = 1621 [200] K  
Rp = 0.64 [0.32] Re  
a = 0.0561 [0.0183] AU  
Ag = N/A  
Teffp = N/A

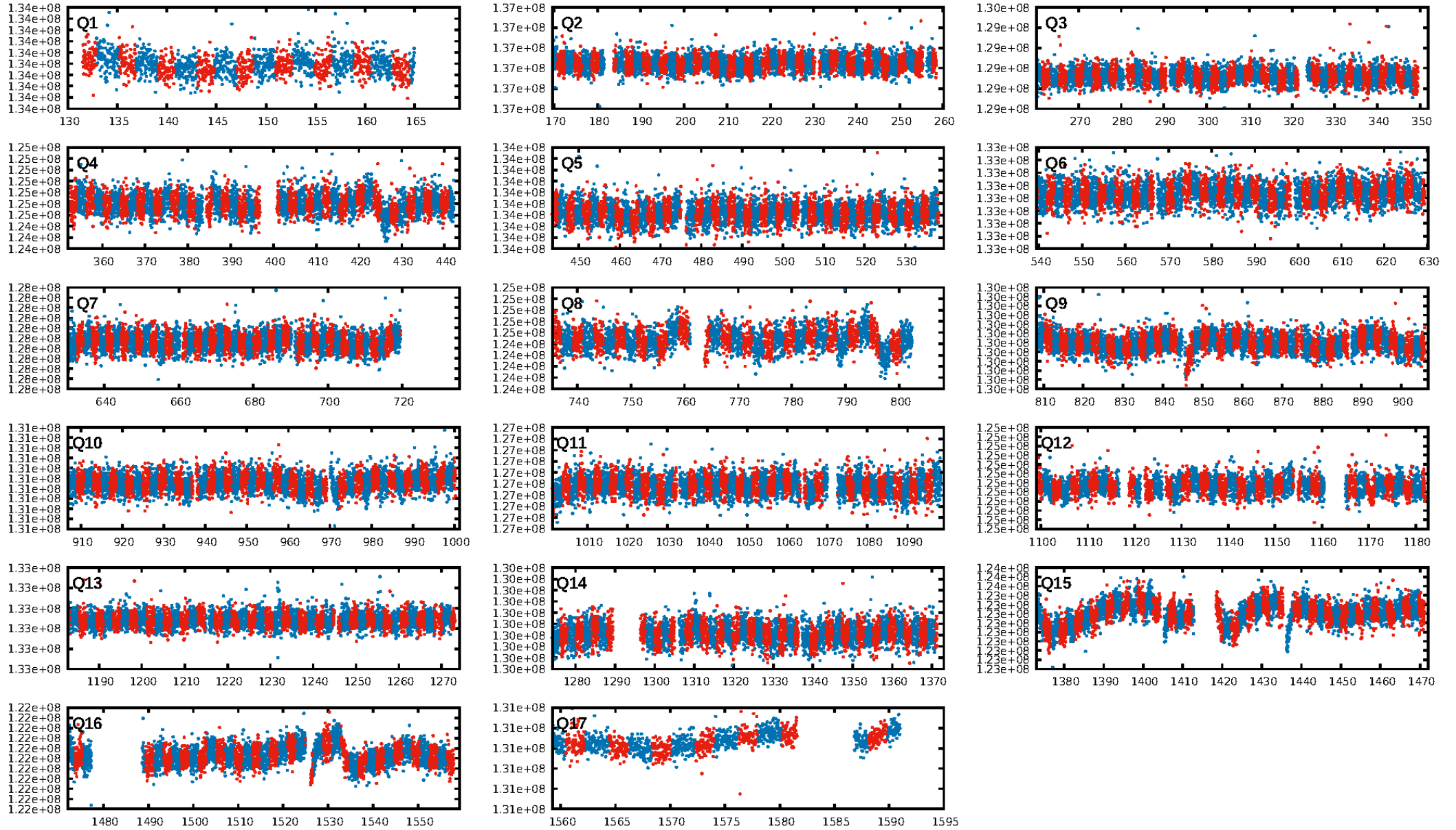
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [198.35σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 1.55e-16  
RollingBand-fgt: 1.00 [334/334]  
**GhostDiagnostic-chr: 0.9064**  
Centroid-sig: 17.2%  
Centroid-so: 1.884 arcsec [1.47σ]  
OotOffset-rm: 2.703 arcsec [2.11σ]  
KicOffset-rm: 2.707 arcsec [1.83σ]  
OotOffset-st: 2/1/1/2 [6]  
KicOffset-st: 2/1/1/2 [6]  
DiffImageQuality-fgm: 0.33 [2/6]  
DiffImageOverlap-fno: 1.00 [17/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 02:36:41 Z

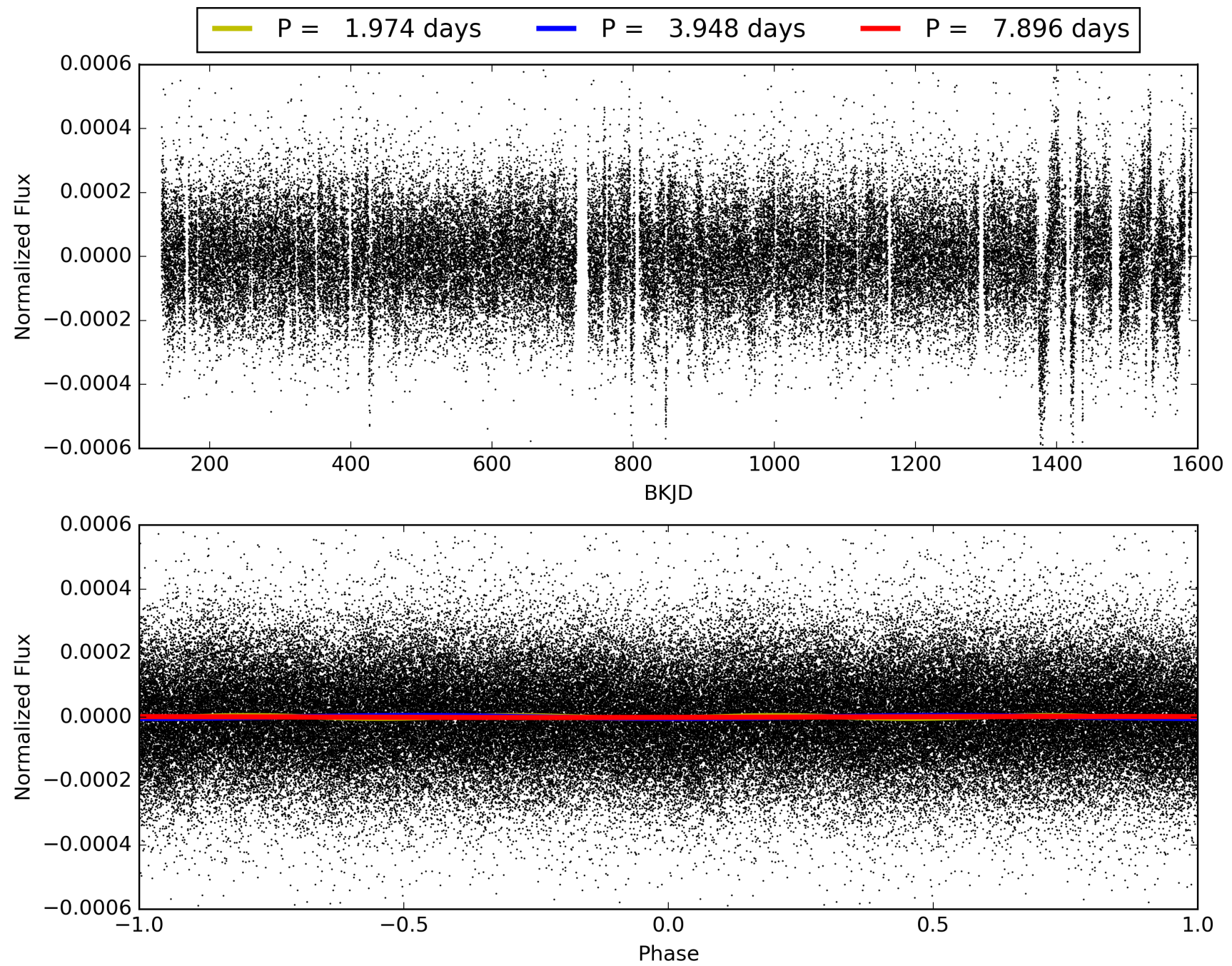
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 011572490-01, PDC Light Curves





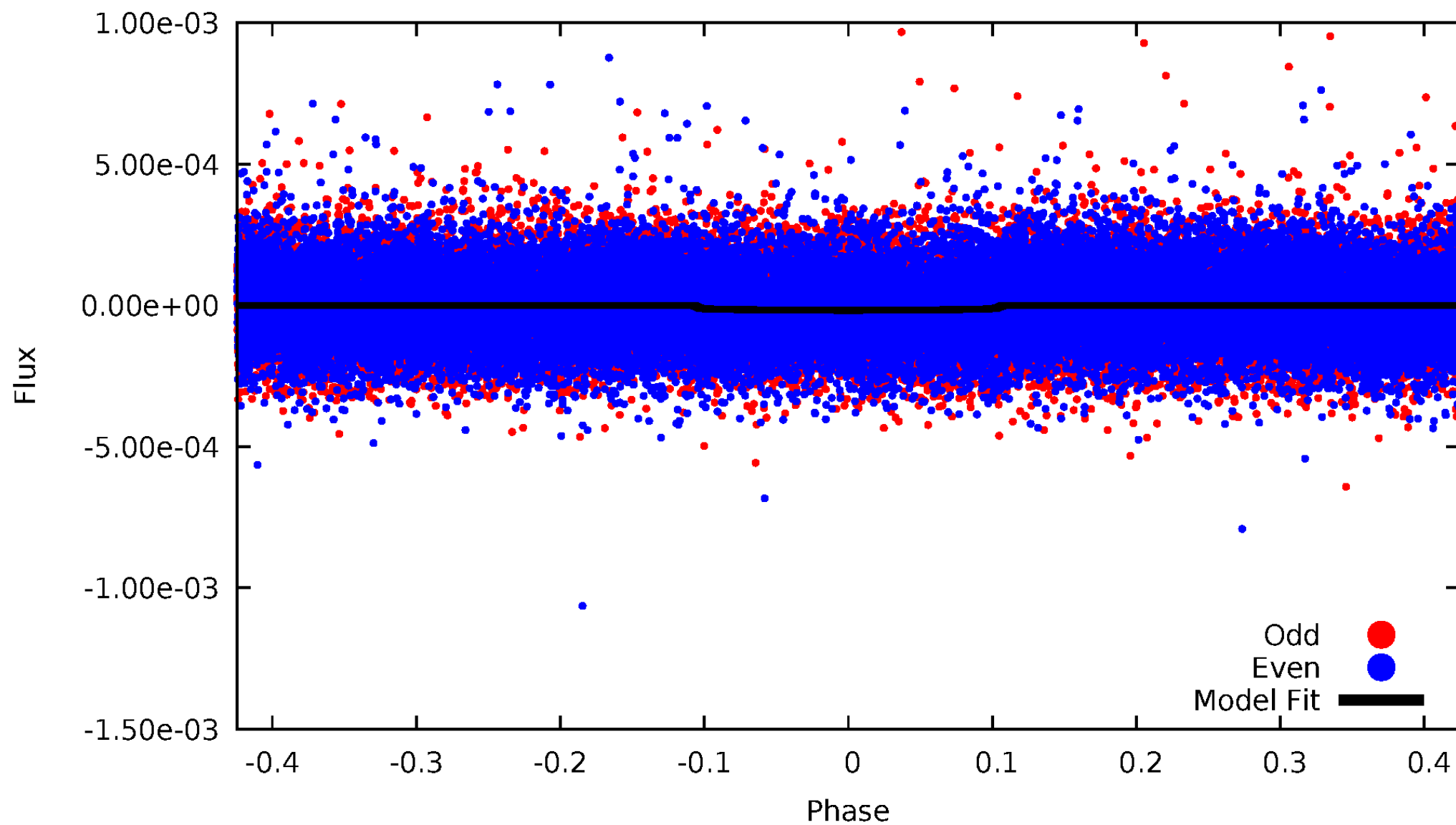
TCE 011572490-01





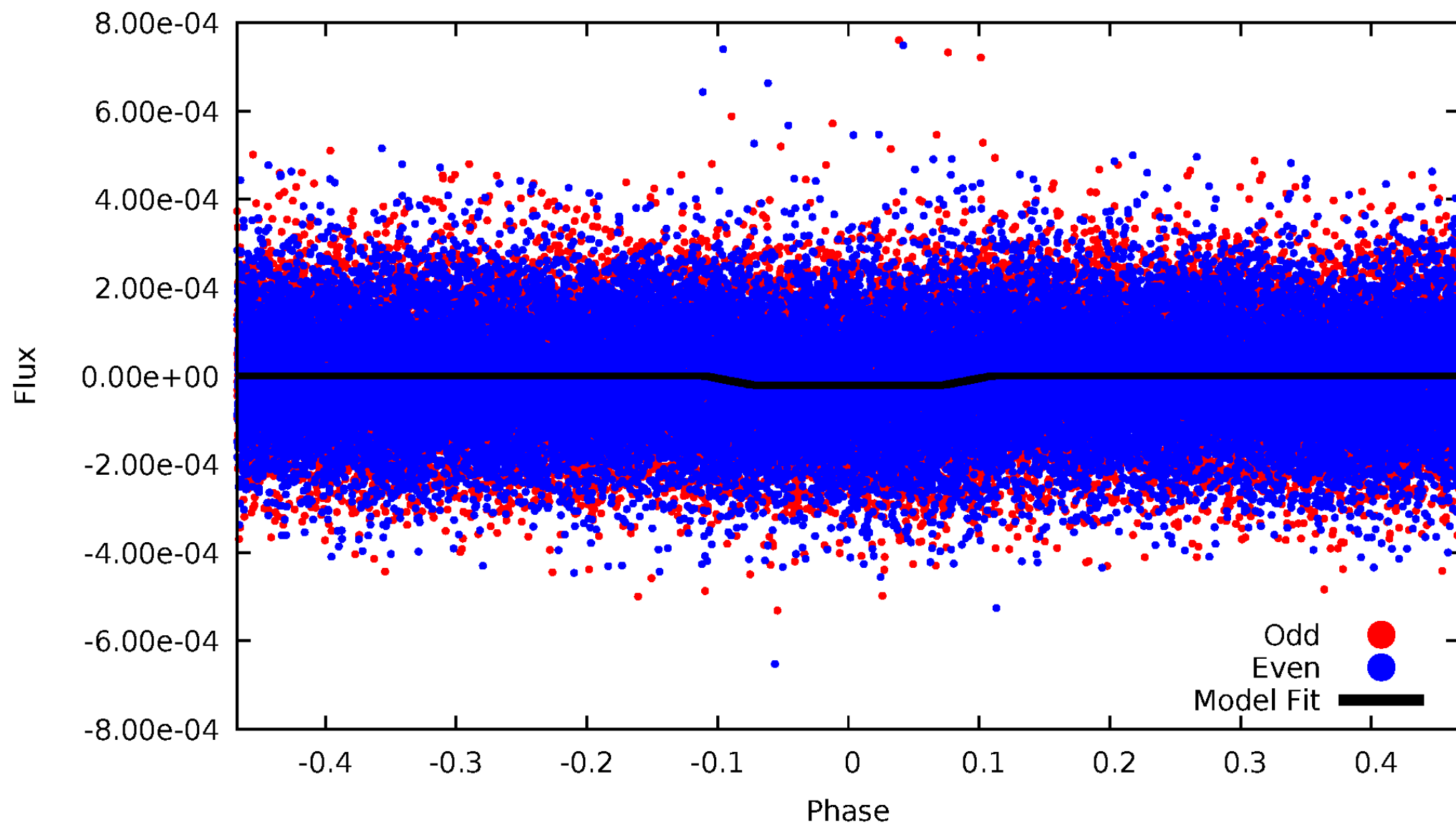
# DV Odd/Even

TCE 011572490-01



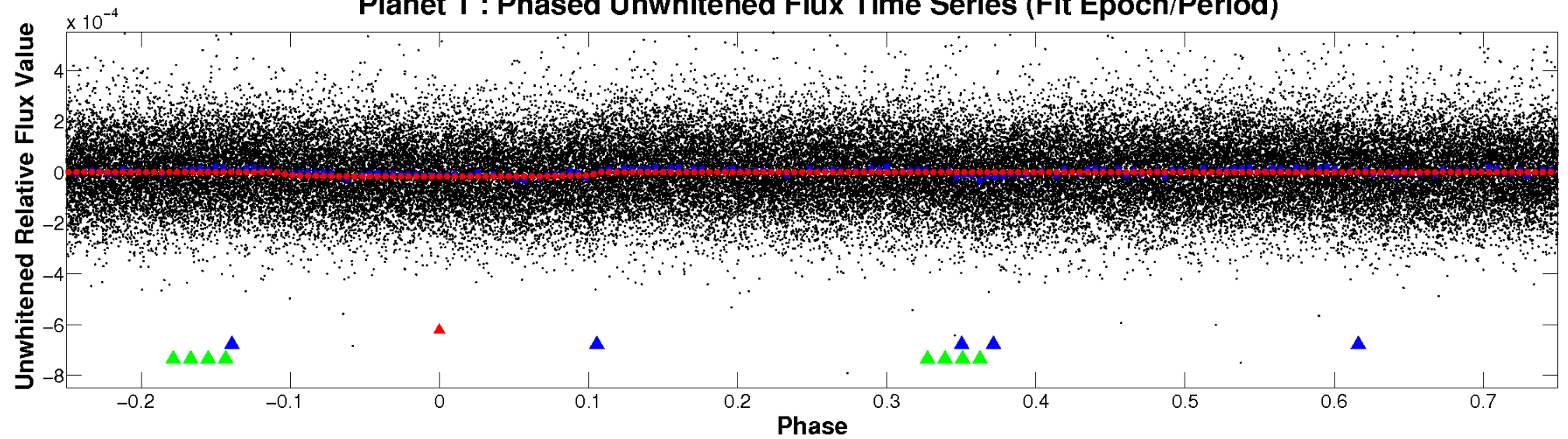
# ALT Odd/Even

TCE 011572490-01

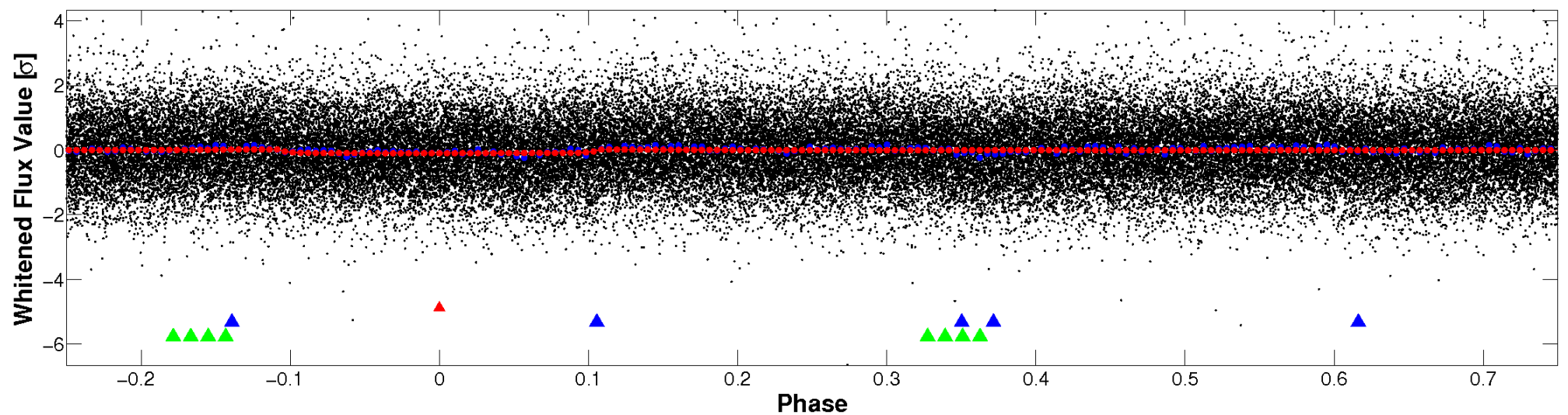


# Non-Whitened Vs. Whitened Light Curve

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



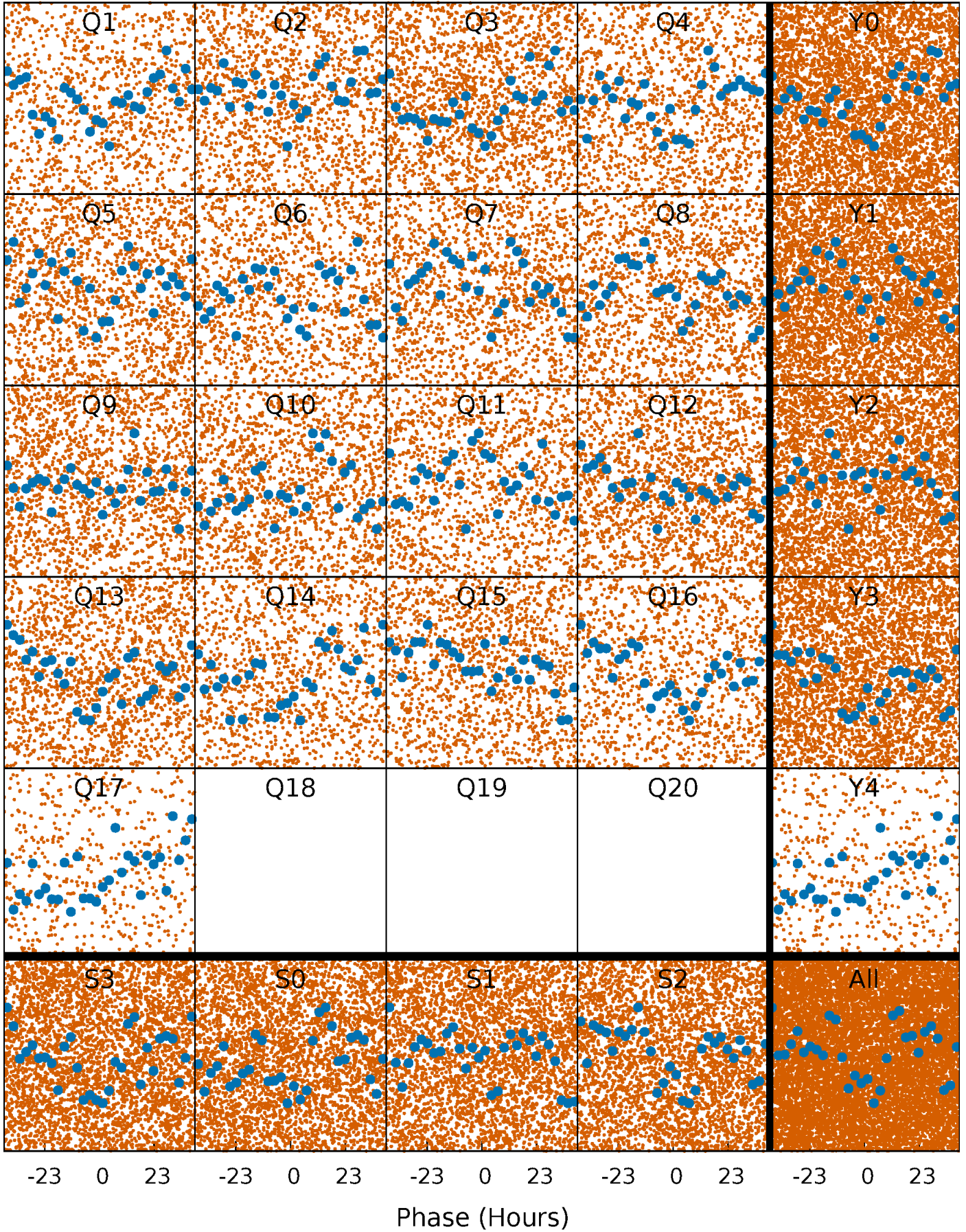
**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**





# PDC Quarter-Phased Transit Curves

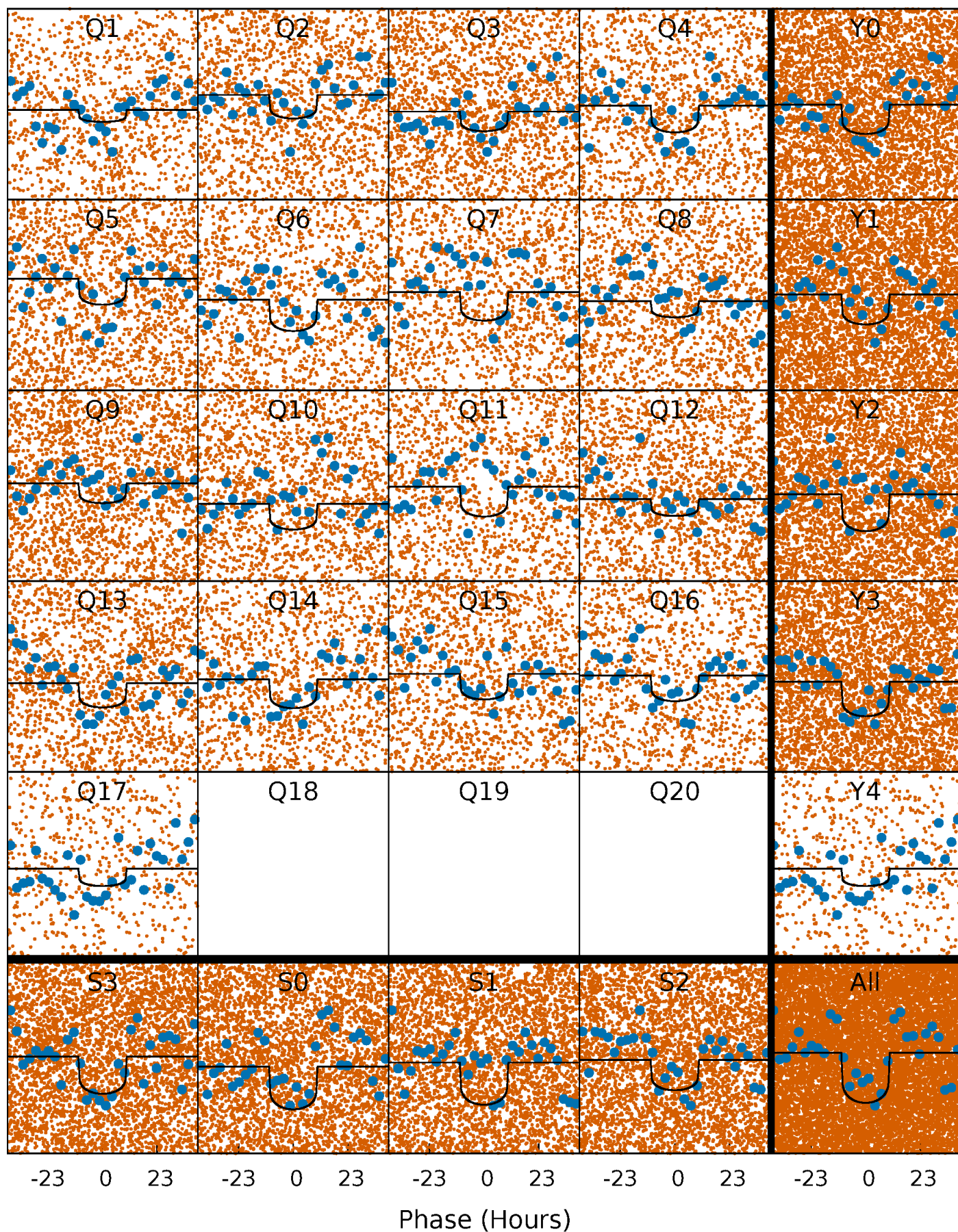
TCE 011572490-01 P= 3.948209 Days  $T_0=132.054469$  (BKJD)





# DV Quarter-Phased Transit Curves

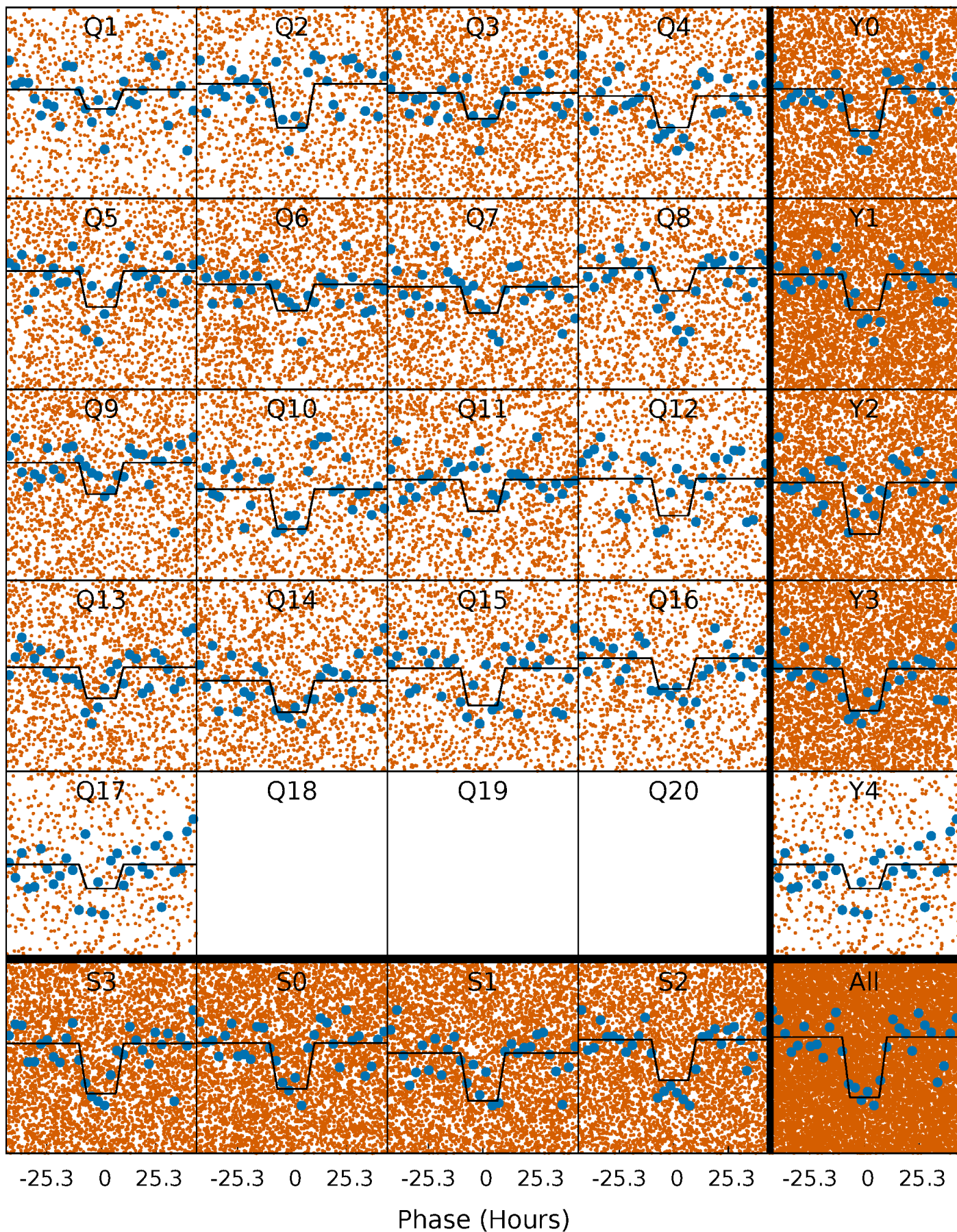
TCE 011572490-01 P= 3.948209 Days  $T_0=132.054469$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

TCE 011572490-01 P= 3.947897 Days  $T_0=132.127553$  (BKJD)

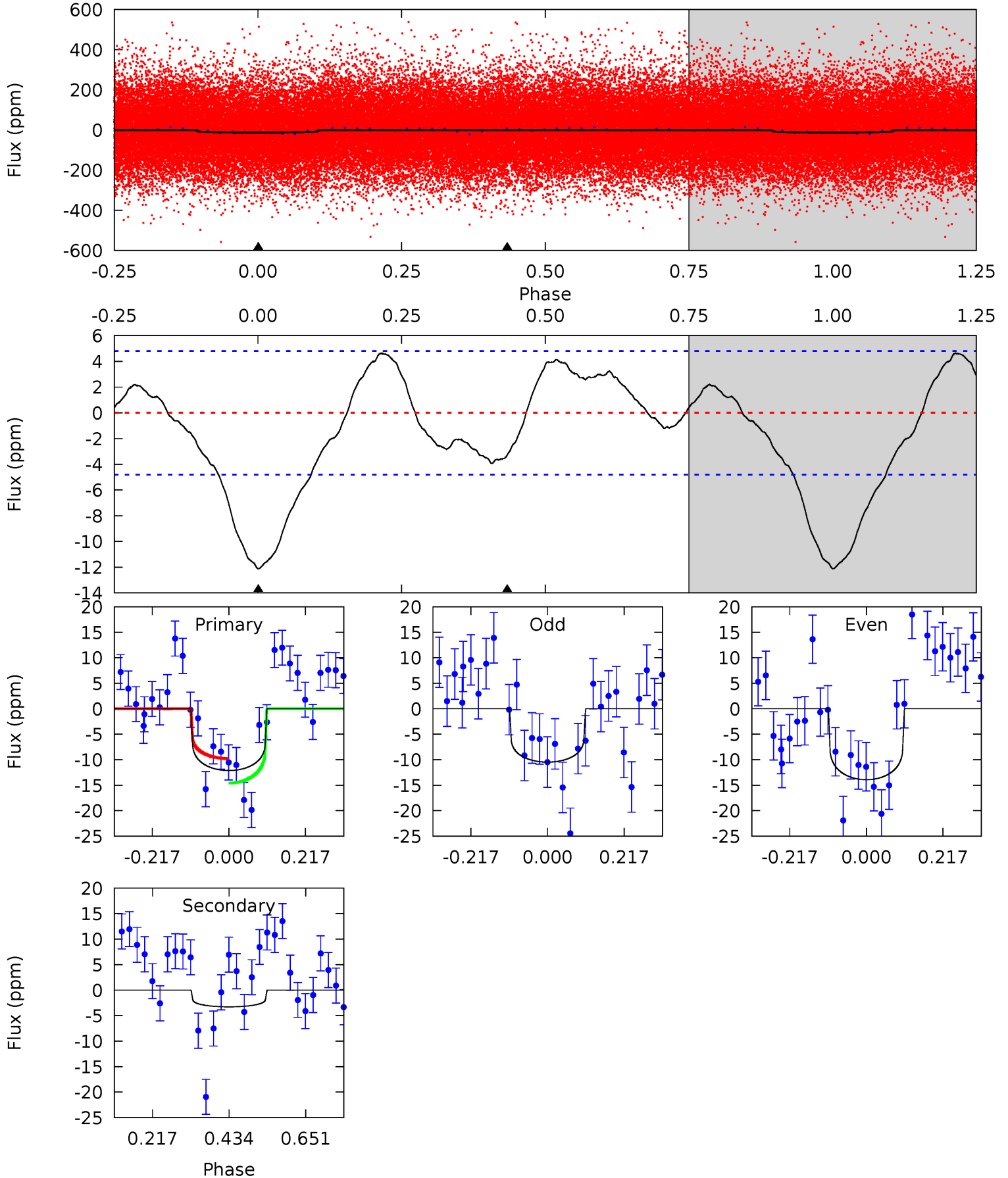




# DV Model-Shift Uniqueness Test

011572490-01, P = 3.948209 Days, E = 128.106260 Days

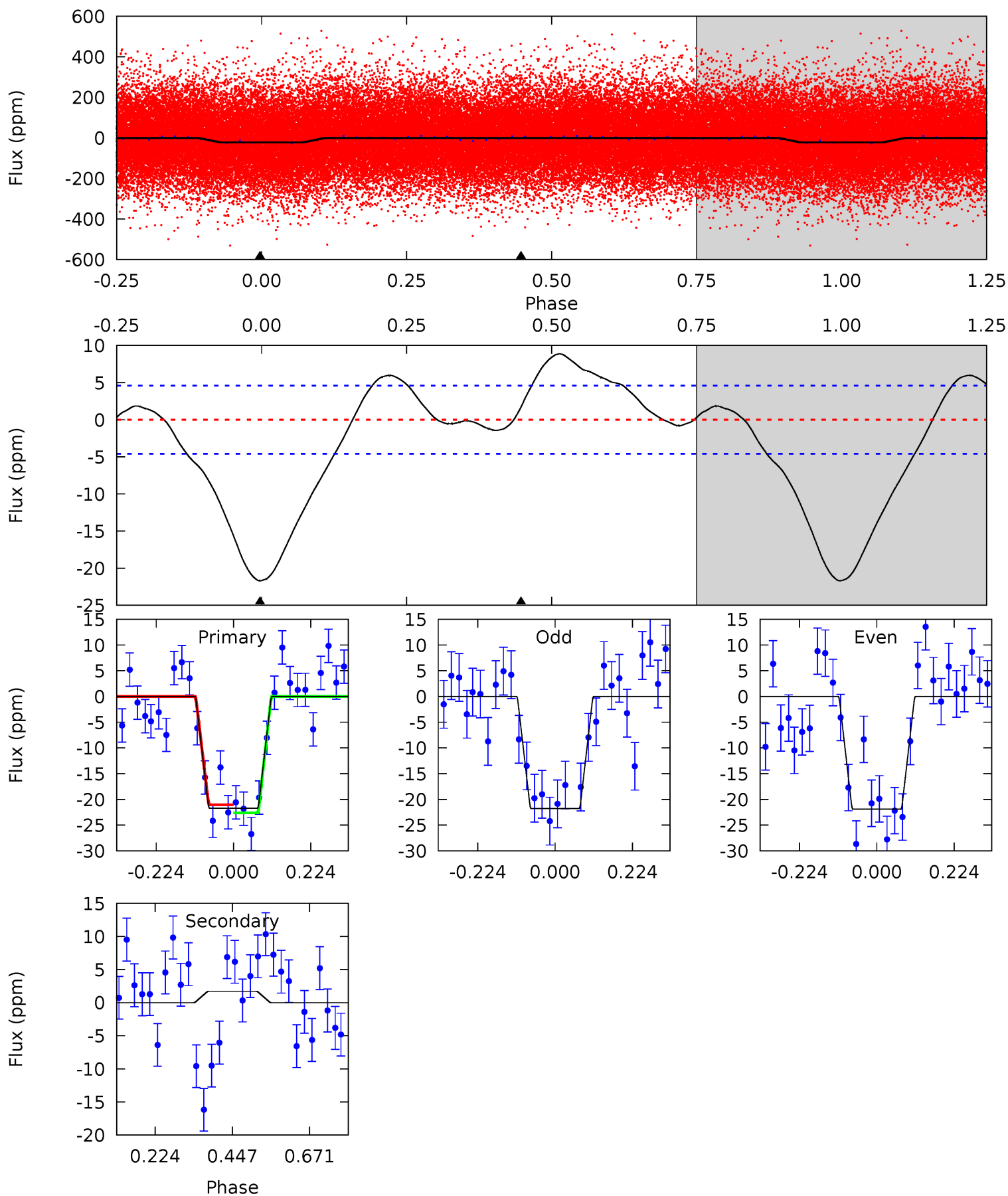
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.1	3.00	0	0	4.40	1.23	0.89	11.1	11.1	3.00	3.00	1.58	0.85	0.28	2.22



# Alt Model-Shift Uniqueness Test

011572490-01, P = 3.947897 Days, E = 128.179656 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	-1.63	0	0	4.39	1.22	1.15	20.8	20.8	-1.63	-1.63	0.05	1.46	0.29	0.75



### Stellar Parameters For KIC 011572490

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$7211^{+175}_{-300}$	$4.290^{+0.047}_{-0.248}$	$0.070^{+0.200}_{-0.350}$	$1.456^{+0.580}_{-0.193}$	$1.505^{+0.216}_{-0.196}$	$0.687^{+0.182}_{-0.420}$
	+2%/-4%	+1%/-6%	+286%/-500%	+40%/-13%	+14%/-13%	+27%/-61%
Source	PHO1	KIC0	KIC0	DSEP		

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

### Secondary Eclipse Parameters for KIC 011572490-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-3\pm 1$	$0.70^{+0.24}_{-0.23}$	$2324^{+206}_{-132}$	$4770^{+936}_{-596}$	$11^{+14}_{-6}$
Alt.	$2\pm 1$	$0.79^{+0.25}_{-0.21}$	$2307^{+226}_{-106}$	$-4086^{+609}_{-635}$	$-4.355^{+2.886}_{-5.790}$

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



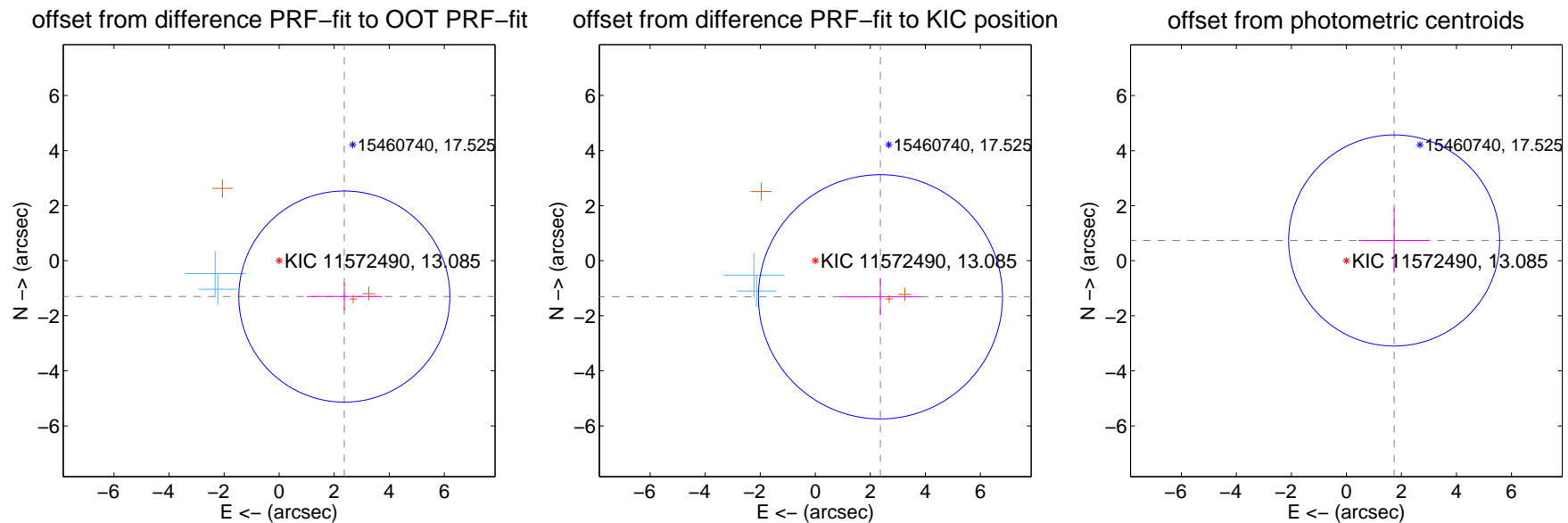
## DV Centroid Data

Supplemental centroid analysis for 011572490-01. Kepler magnitude: 13.09. Transit SNR 10.32

There are 2 quarters with good PRF difference image offsets

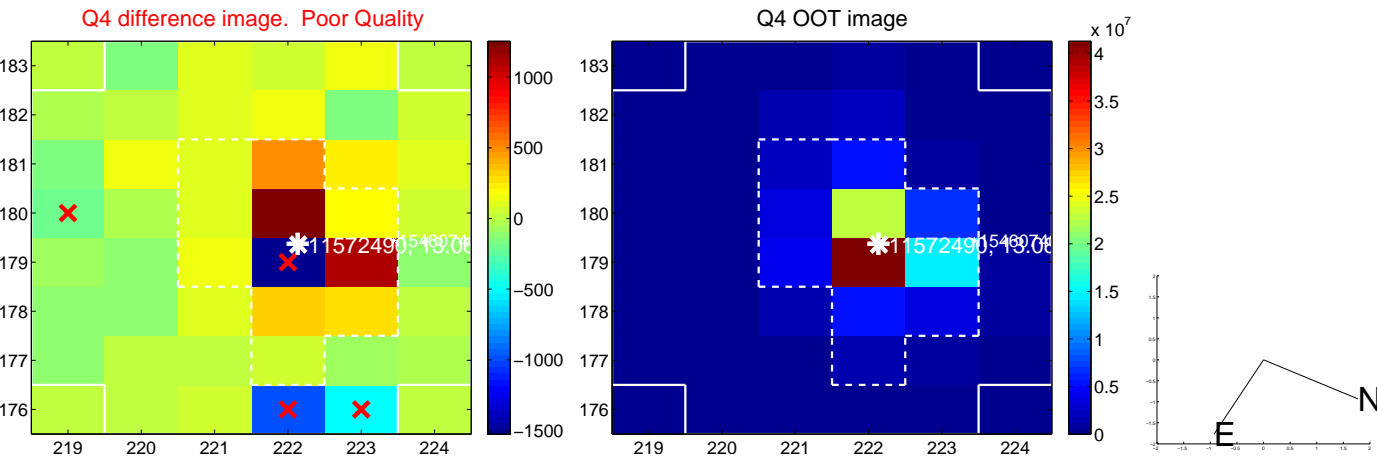
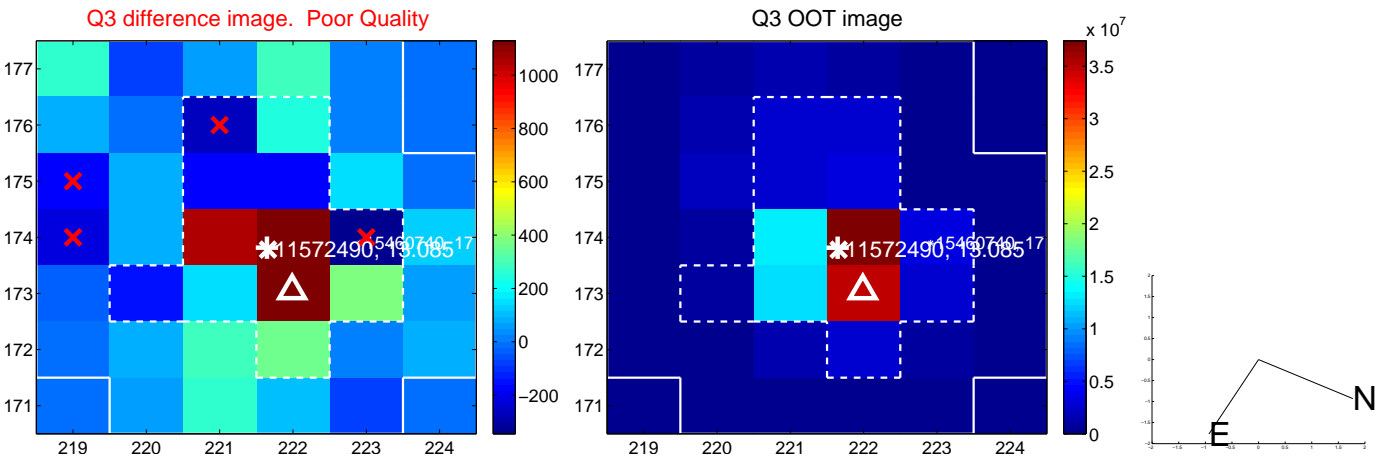
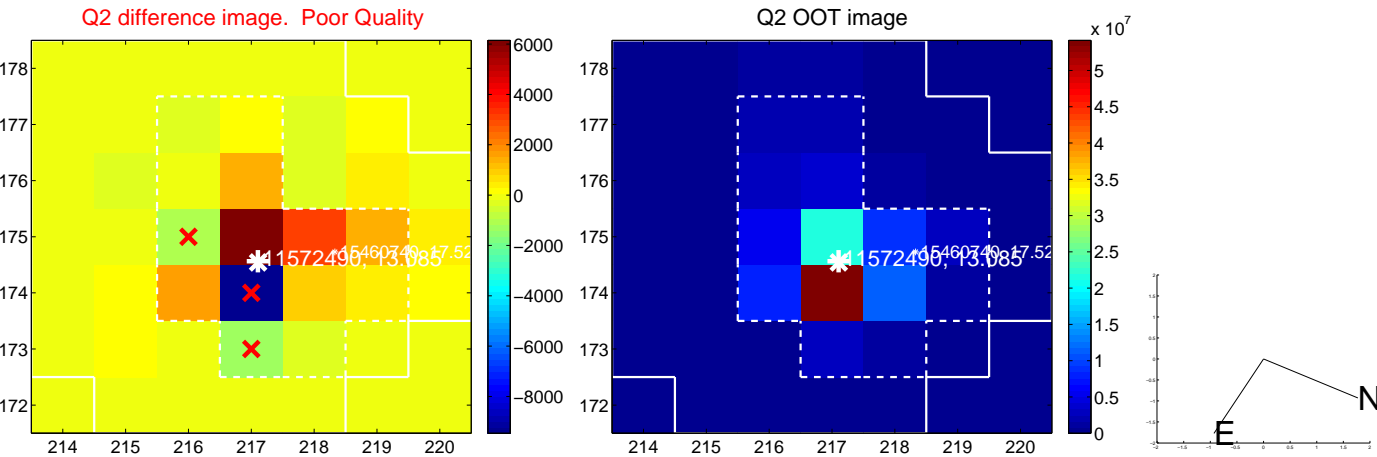
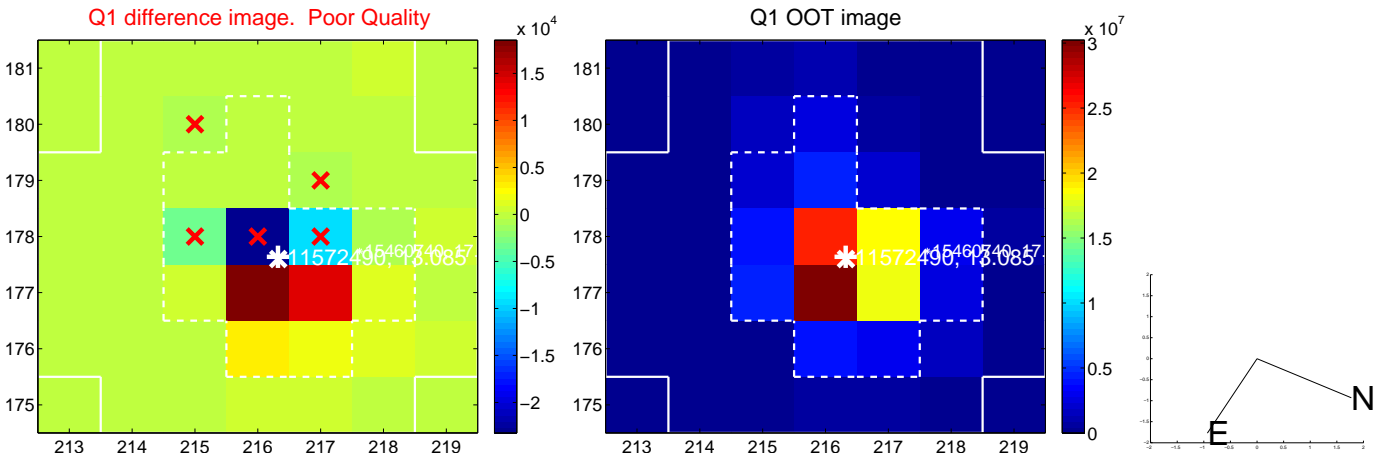
The direct PRF centroid is offset from the target star catalog position by about 0.11 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$2.703 \pm 1.278$	2.11	$-2.368 \pm 1.376$	$-1.302 \pm 0.494$
PRF-fit source offset from KIC position	$2.707 \pm 1.478$	1.83	$-2.368 \pm 1.490$	$-1.311 \pm 0.657$
photometric centroid source offset	$1.88 \pm 1.28$	1.47	$-1.73 \pm 1.30$	$0.74 \pm 1.17$

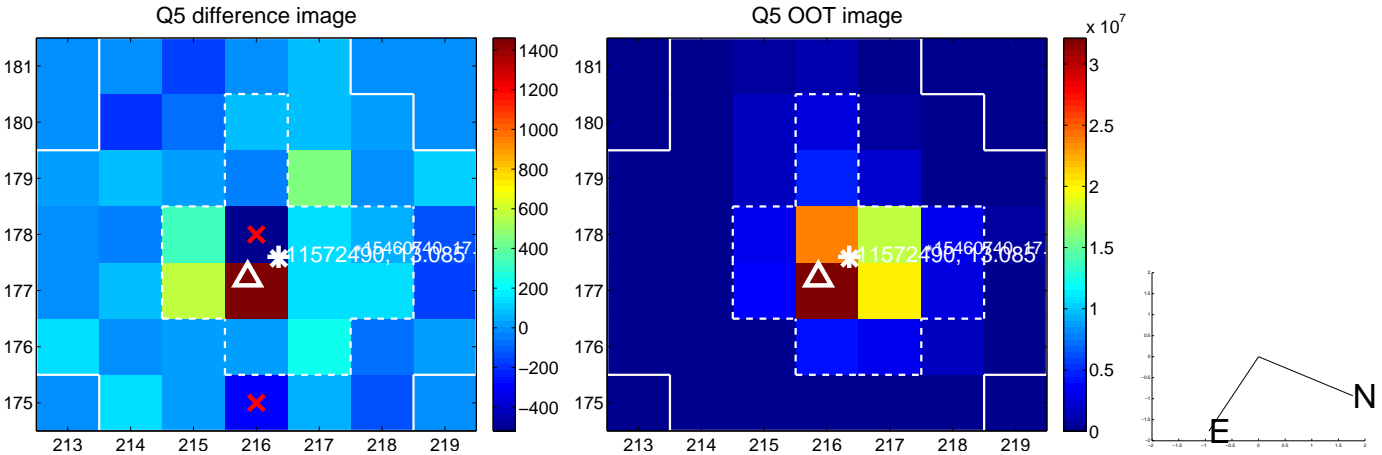


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

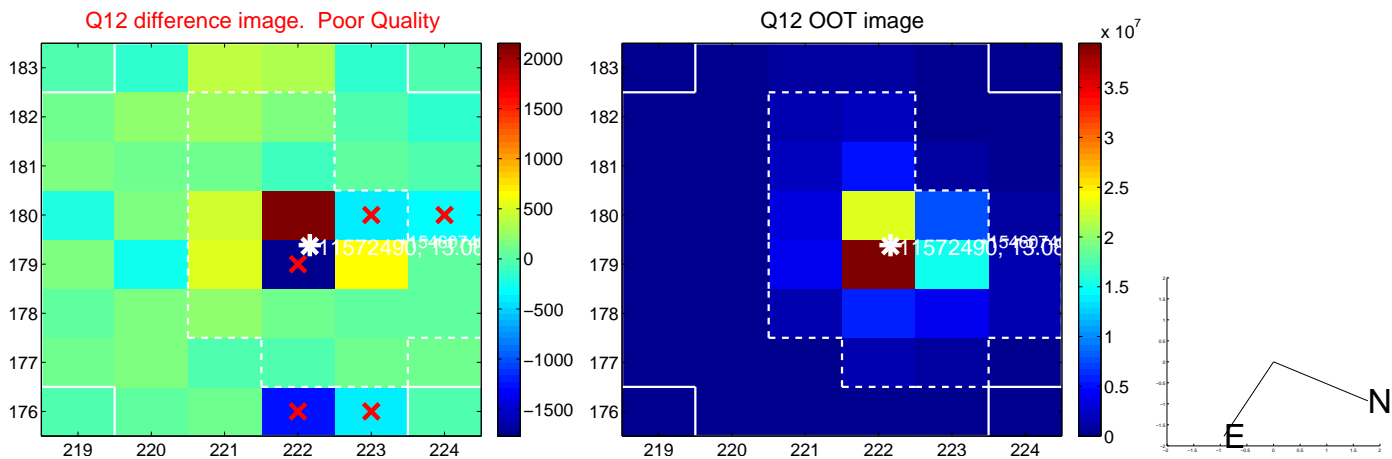
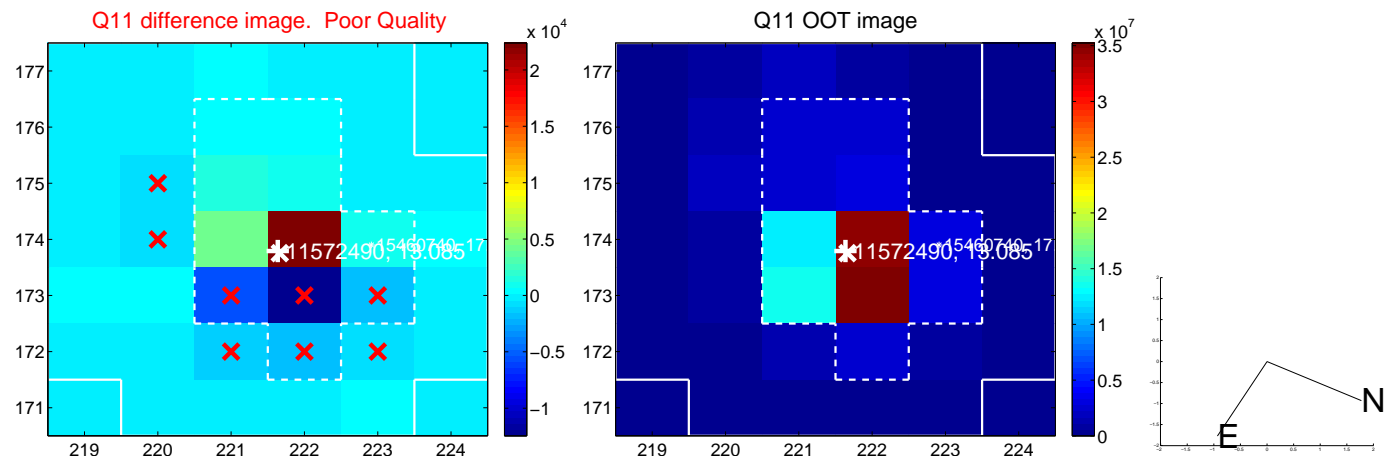
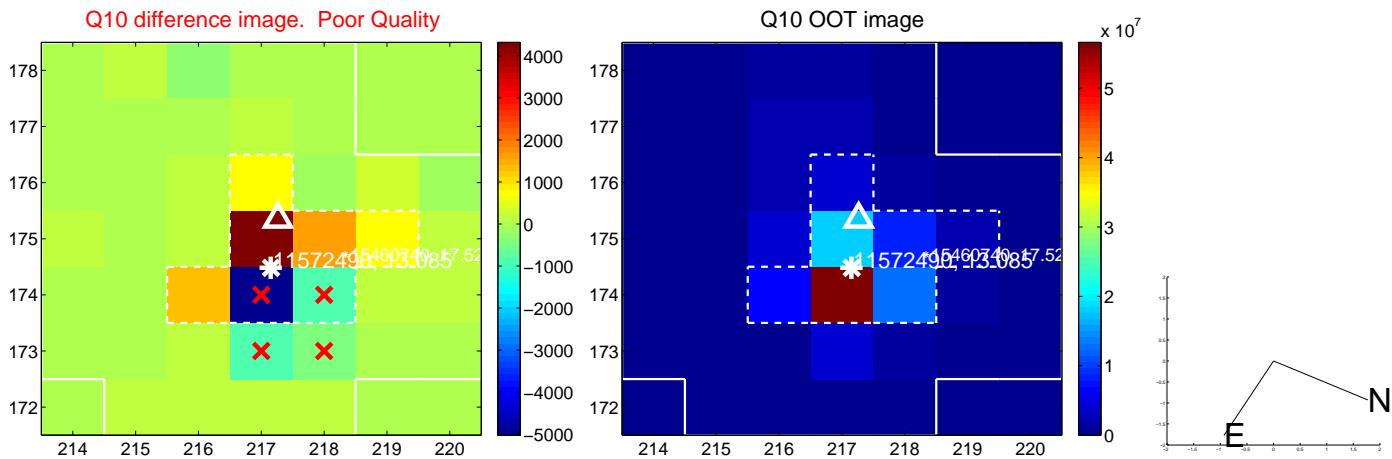
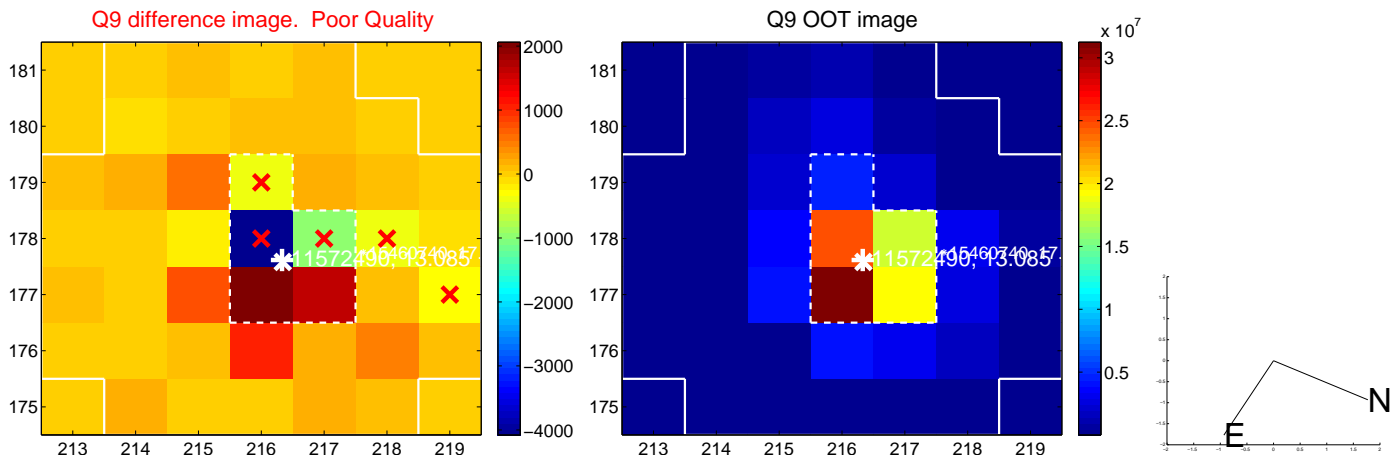


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

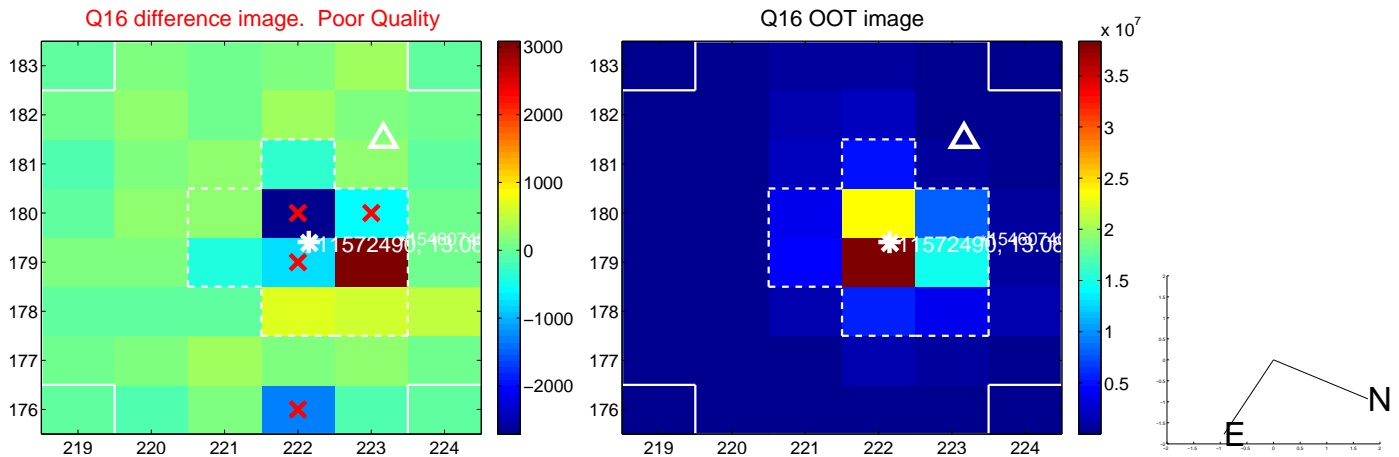
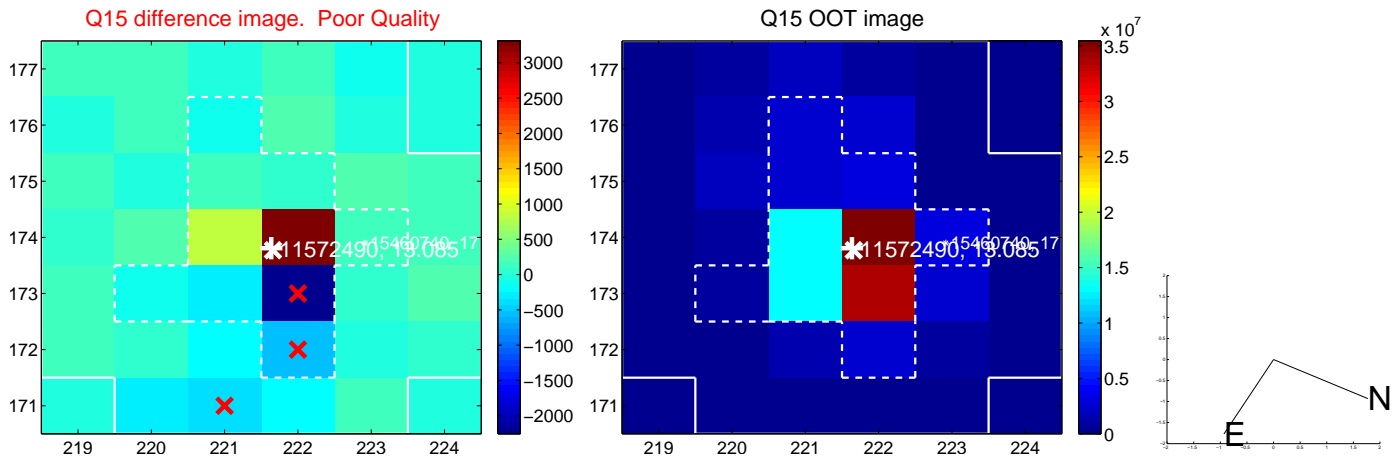
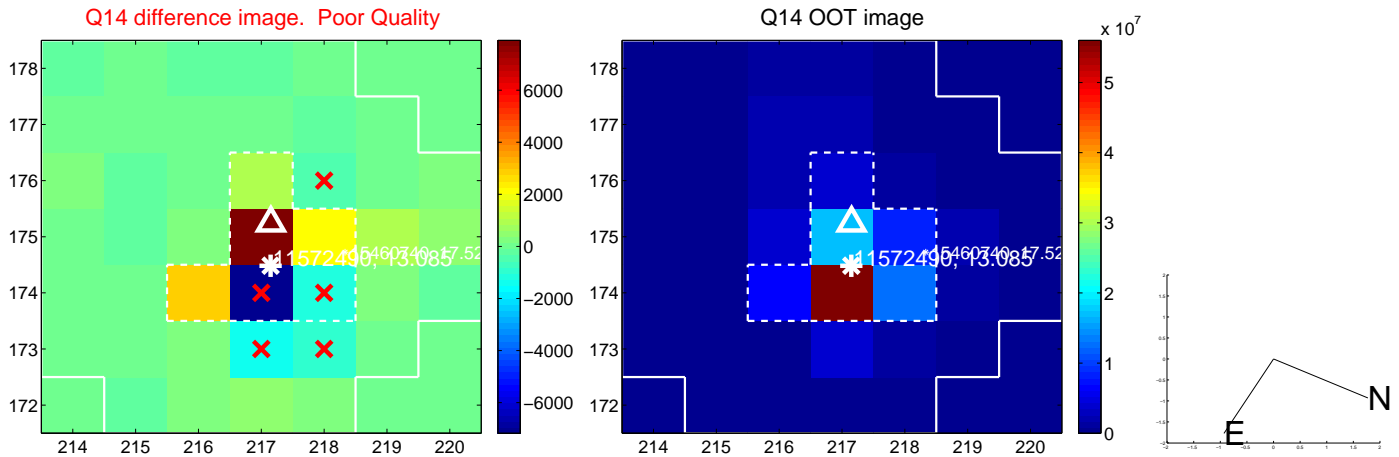
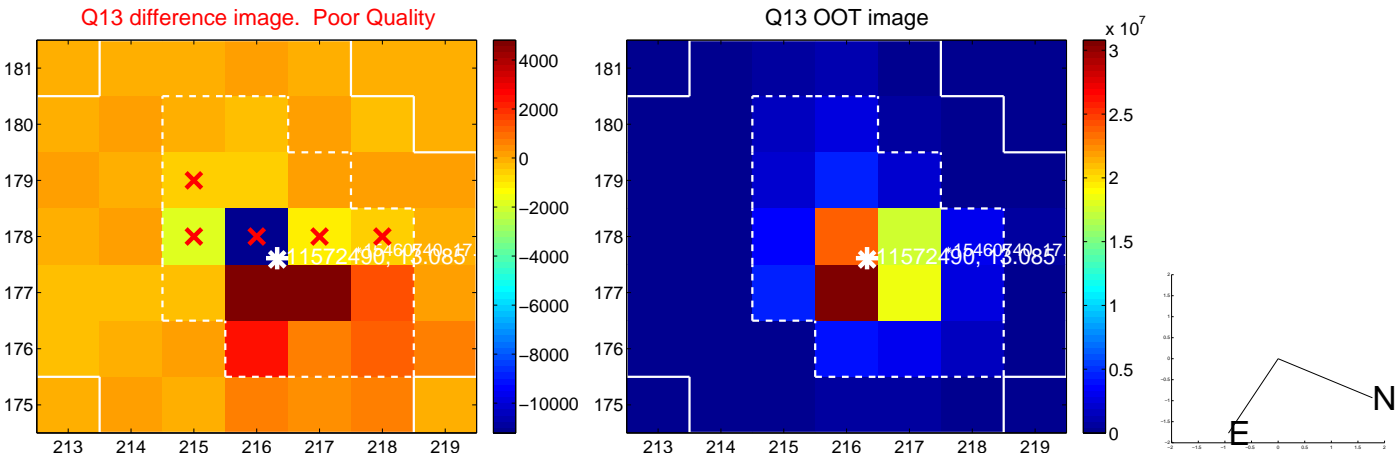




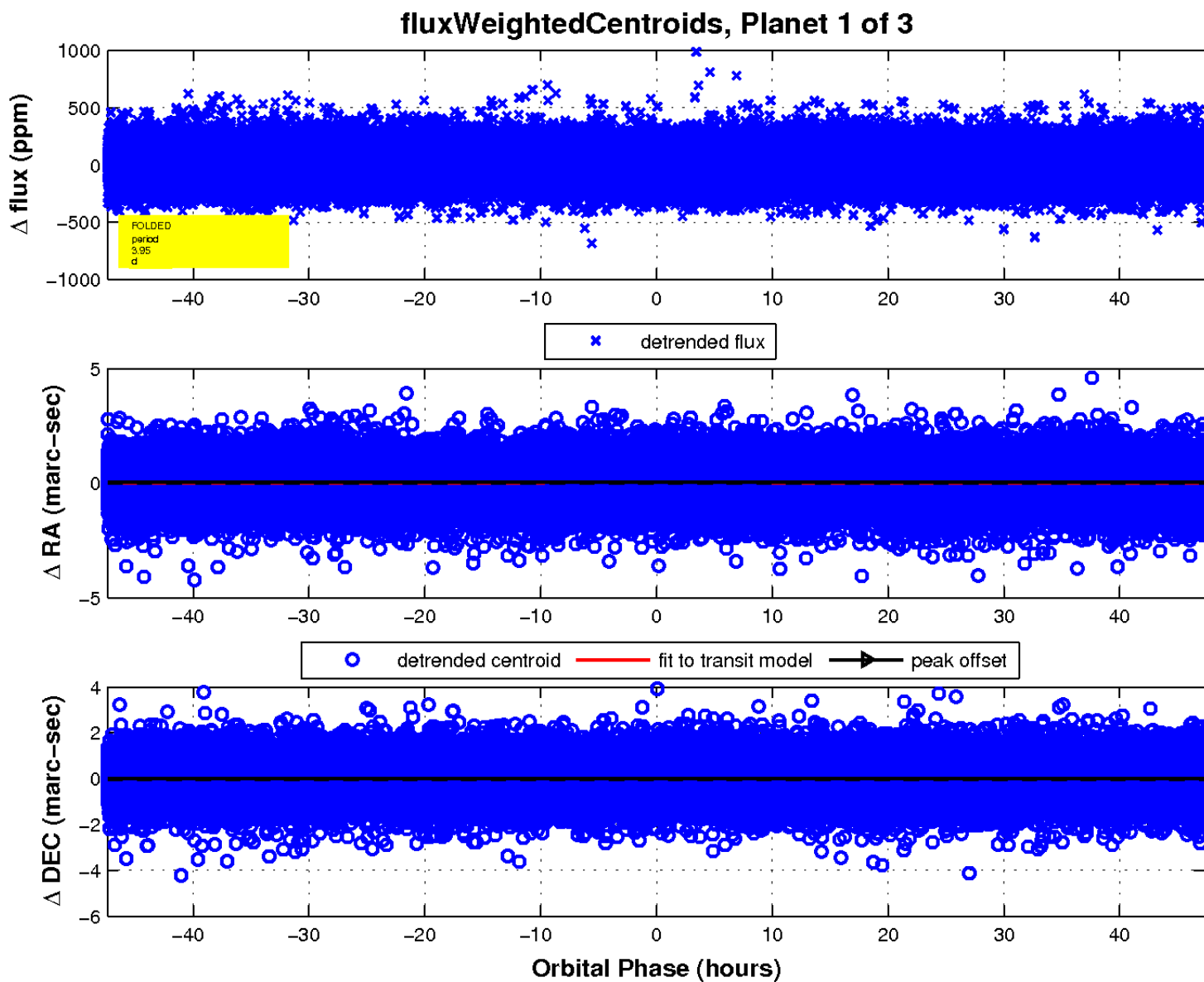
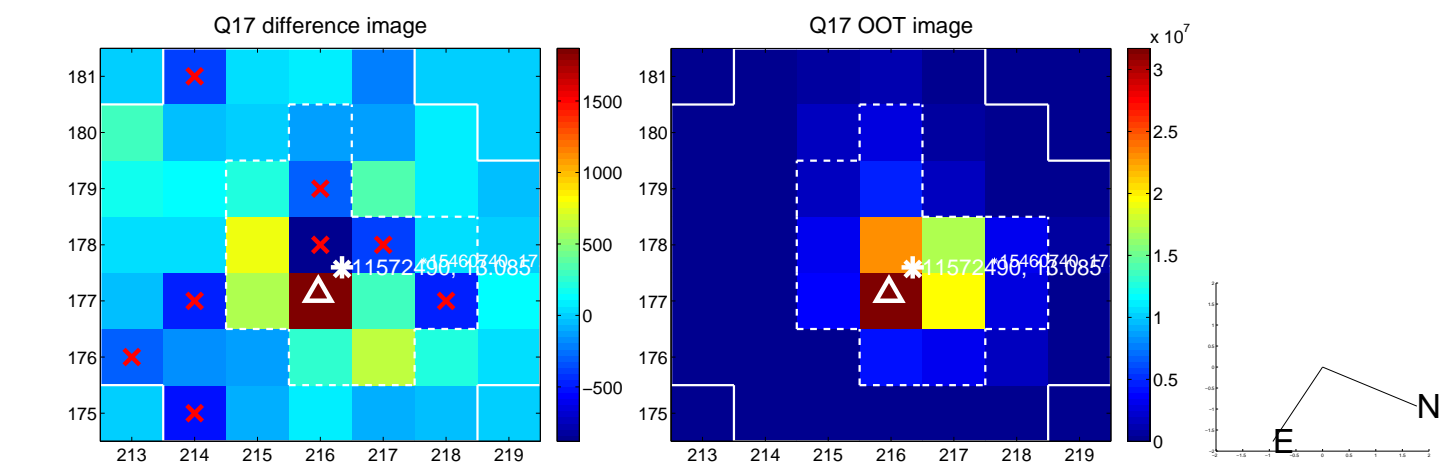
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

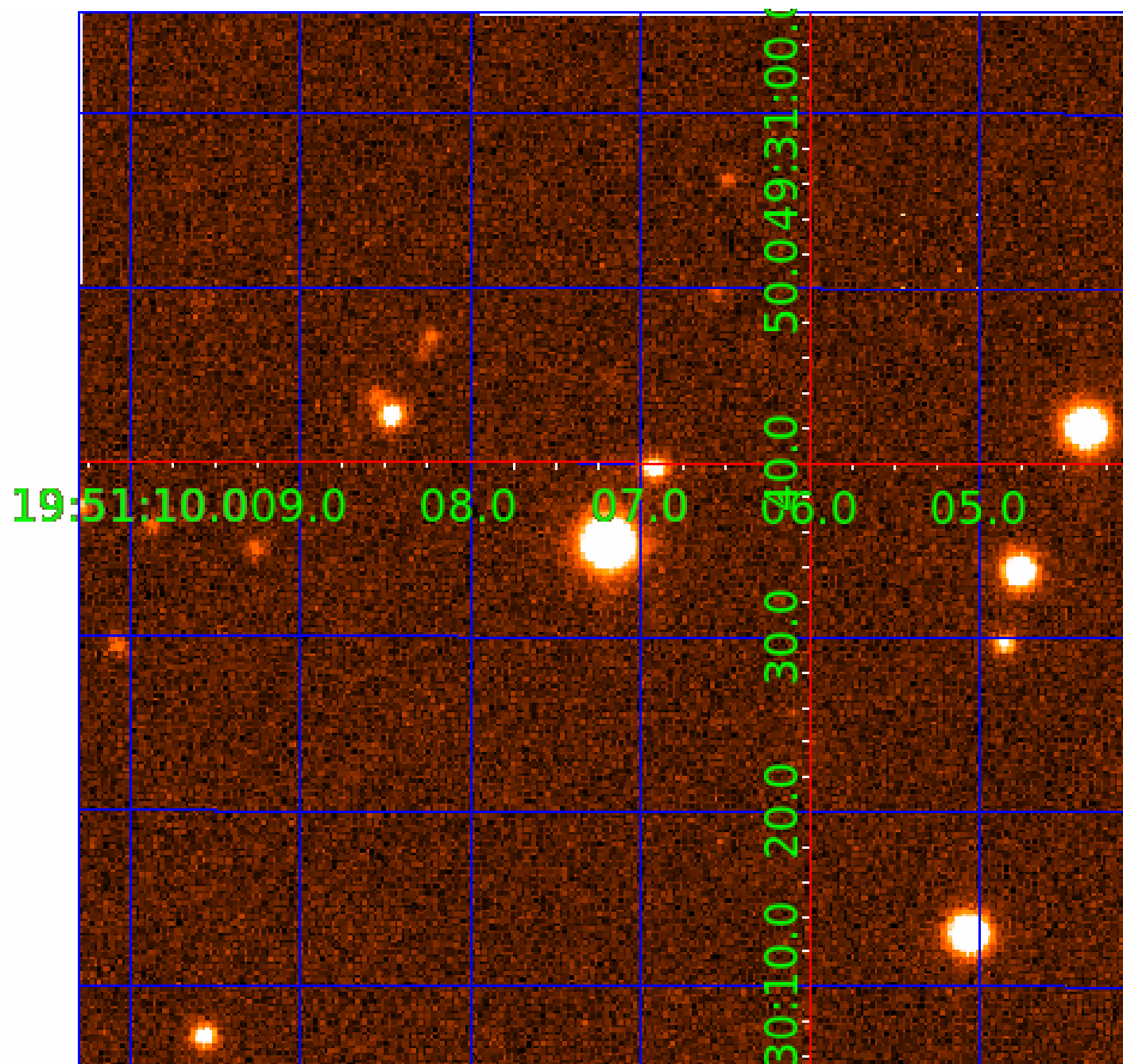


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



# UKIRT Image

Declination



# KIC 011572490

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
011572490-01	OBS	No	3.948209	132.054469	17.4	20.106	8.9	10.3	1.46	7211	0.64	1633.49
011572490-02	OBS	No	279.356782	212.401619	108.8	12.793	9.1	6.3	1.46	7211	1.72	5.58
011572490-03	OBS	No	171.723949	228.243018	169.4	2.804	7.3	7.4	1.46	7211	2.20	10.68

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011572490-01	OBS	FP	0.00	1	0	1	0	LPP_DV—LPP_ALT—CENT_UNRESOLVED_OFFSET
011572490-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
011572490-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT

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

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

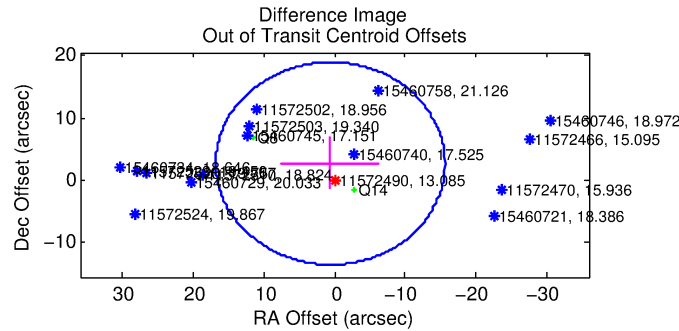
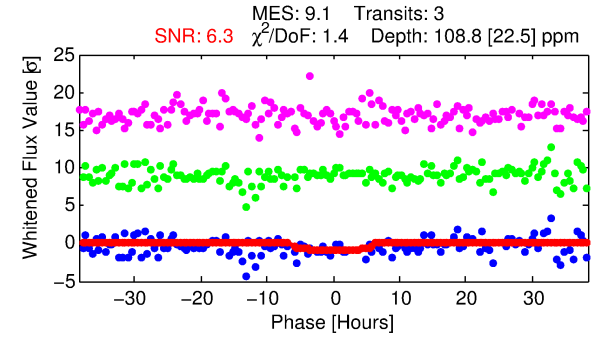
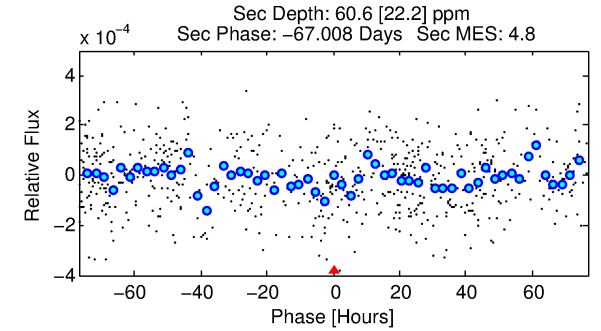
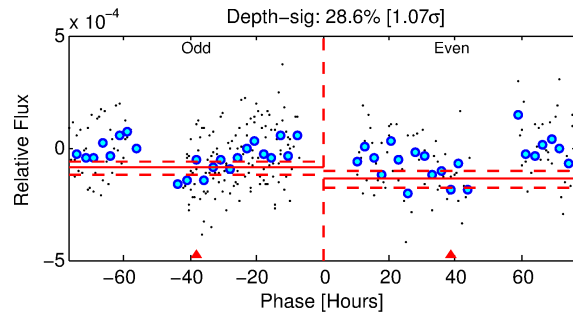
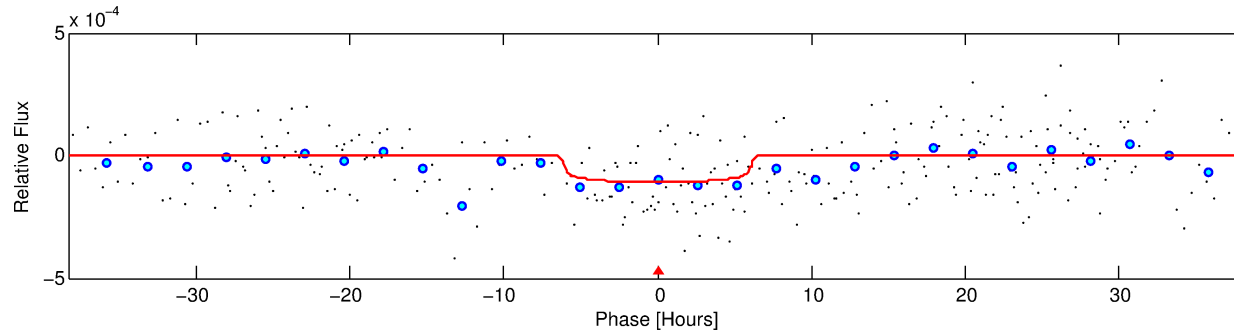
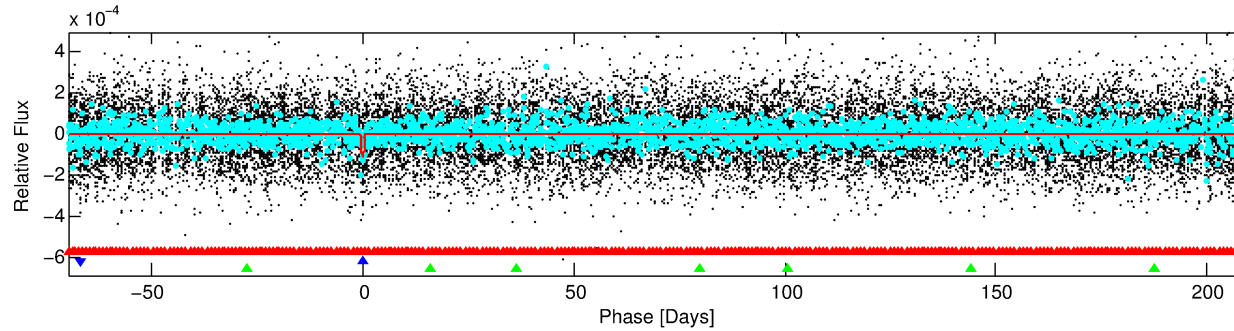
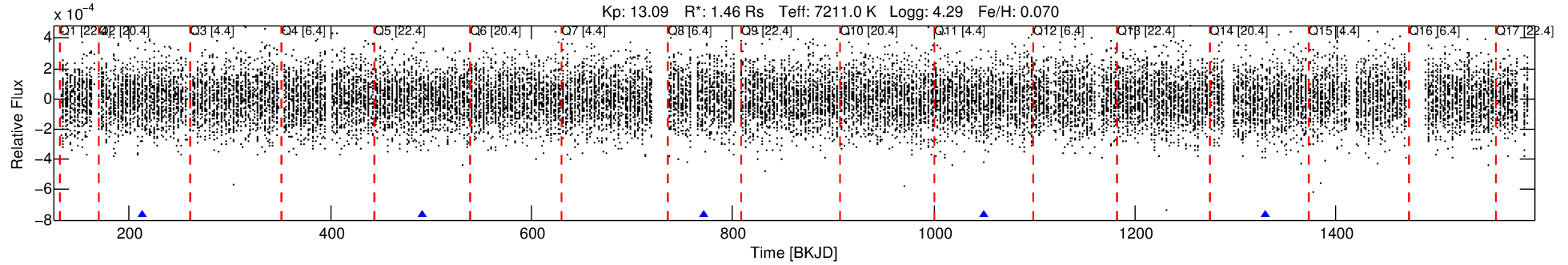
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 011572490-02

No Significant Match Found

# DV One-Page Summary

KIC: 11572490 Candidate: 2 of 3 Period: 279.357 d



## DV Fit Results:

Period = 279.35678 [0.01432] d  
Epoch = 212.4016 [0.0517] BKJD  
Rp/R\* = 0.0108 [0.0063]  
a/R\* = 89.22 [327.74]  
b = 0.86 [1.11]  
Seff = 5.58 [2.75]  
Teq = 392 [48] K  
Rp = 1.72 [1.21] Re  
a = 0.9592 [0.3134] AU  
Ag = 10426.81 [13679.17] [0.76 $\sigma$ ]  
Teffp = 6123 [1896] K [3.02 $\sigma$ ]

## DV Diagnostic Results:

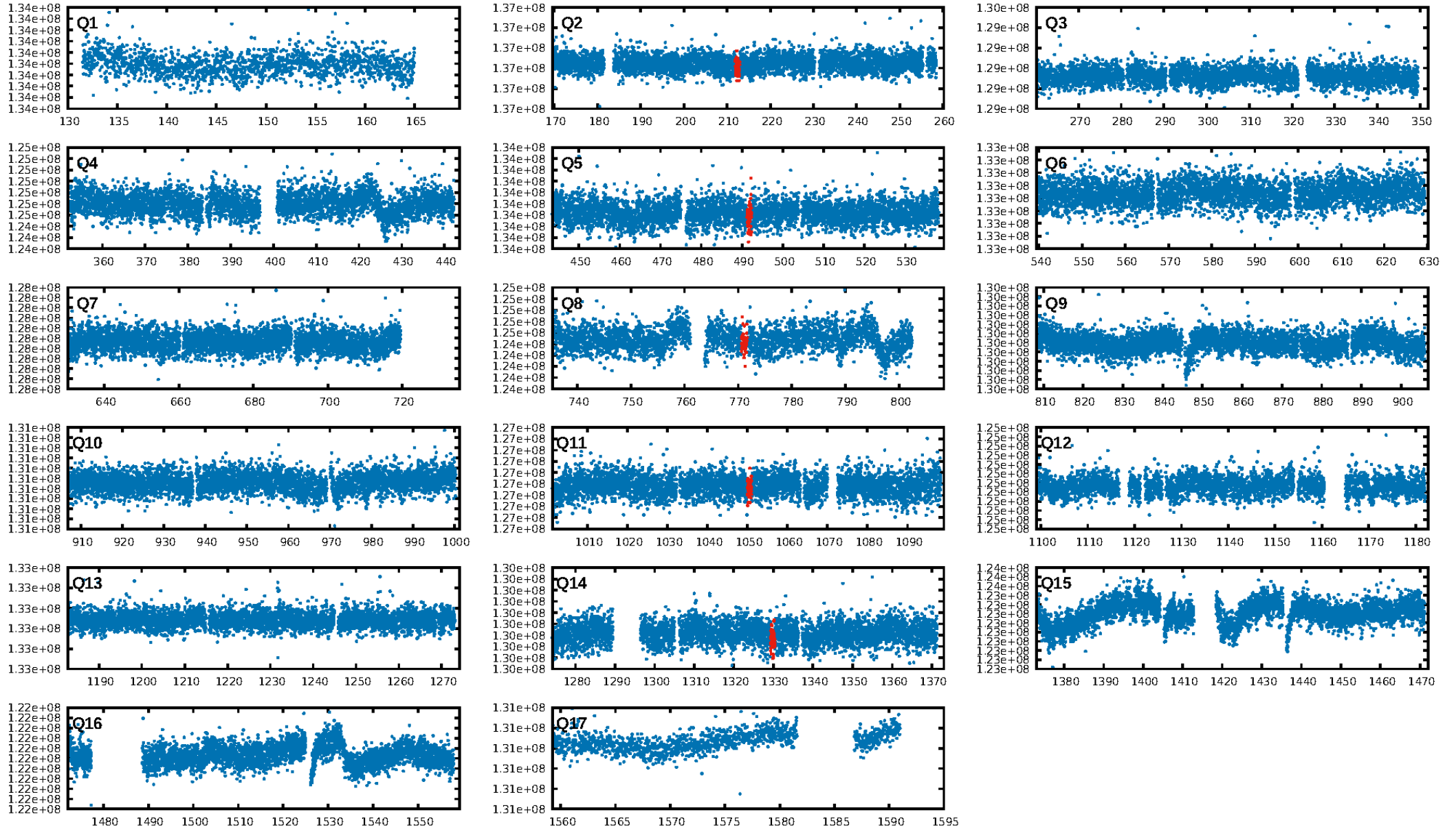
ShortPeriod-sig: 100.0% [197.23 $\sigma$ ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 1.3%  
ModelChiSquareGof-sig: 95.0%  
**Bootstrap-pfa: 5.39e-10**  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: -0.9688  
Centroid-sig: 10.9%  
Centroid-so: 2.261 arcsec [1.13 $\sigma$ ]  
OotOffset-rm: 2.753 arcsec [0.51 $\sigma$ ]  
OotOffset-st: 1/0/1/0 [2]  
KicOffset-rm: 2.733 arcsec [0.54 $\sigma$ ]  
KicOffset-st: 1/0/1/0 [2]  
DiffImageQuality-fgm: 0.50 [1/2]  
DiffImageOverlap-fno: 0.60 [3/5]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 02:36:52 Z

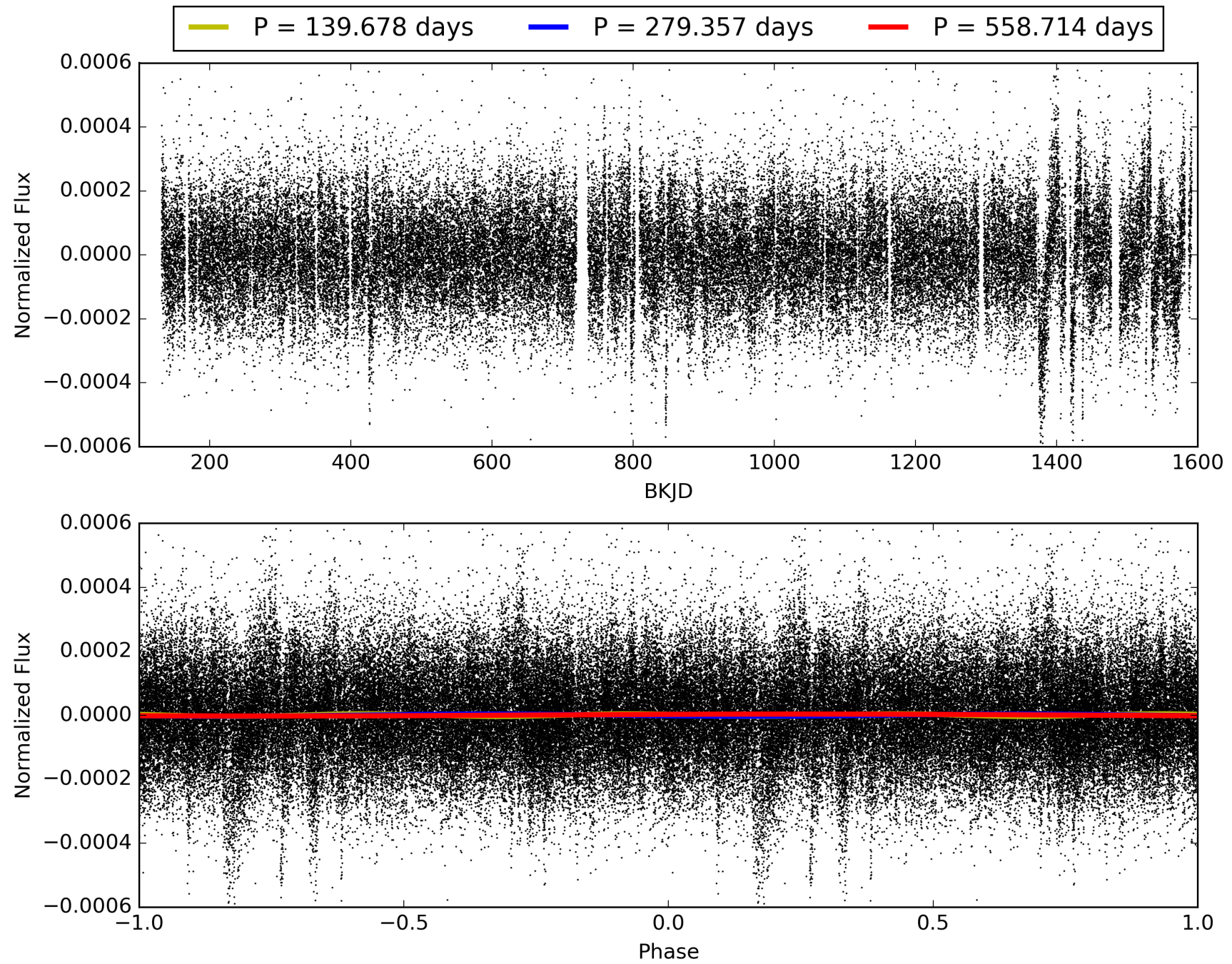
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center



# TCE 011572490-02, PDC Light Curves

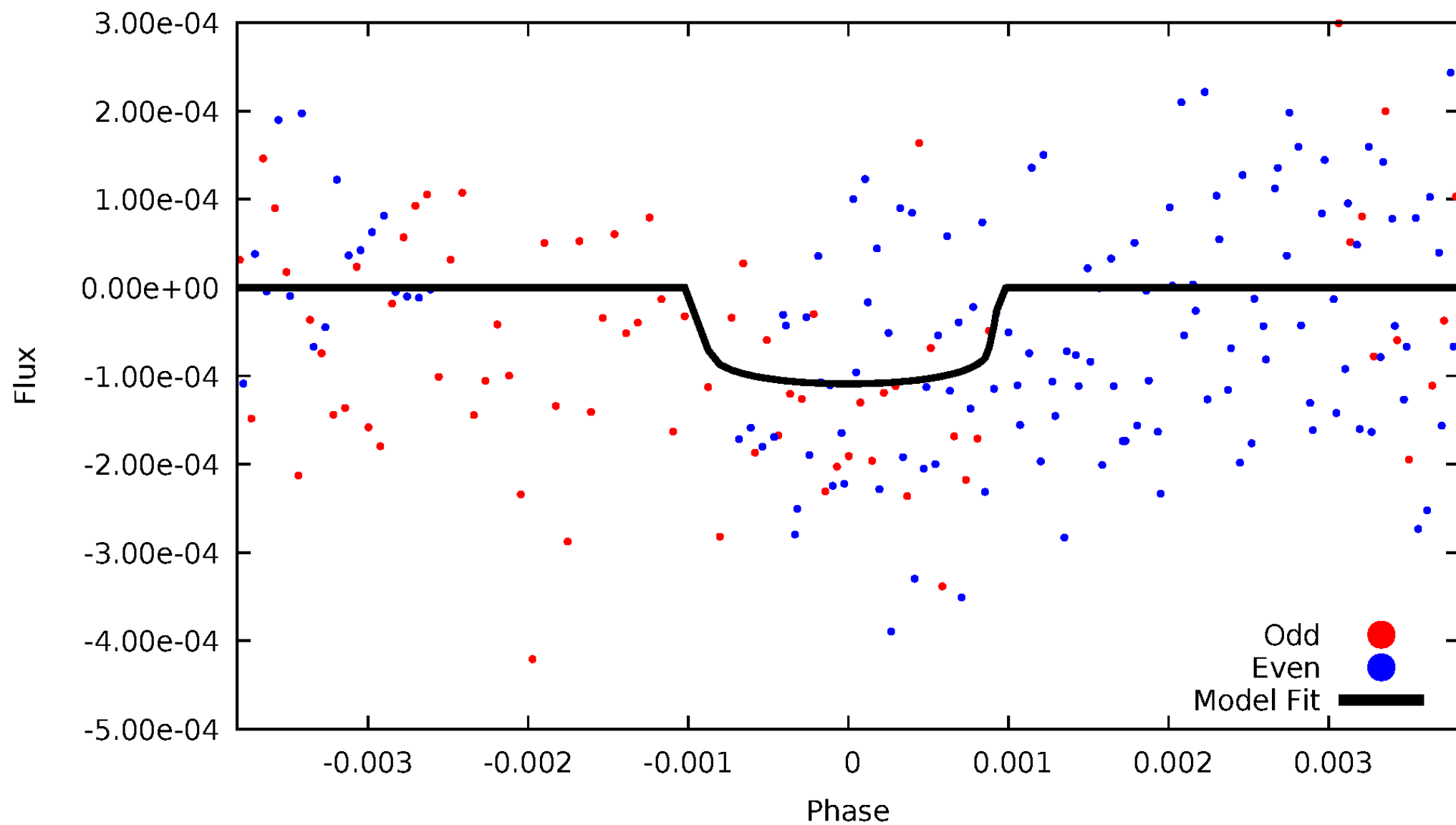


TCE 011572490-02



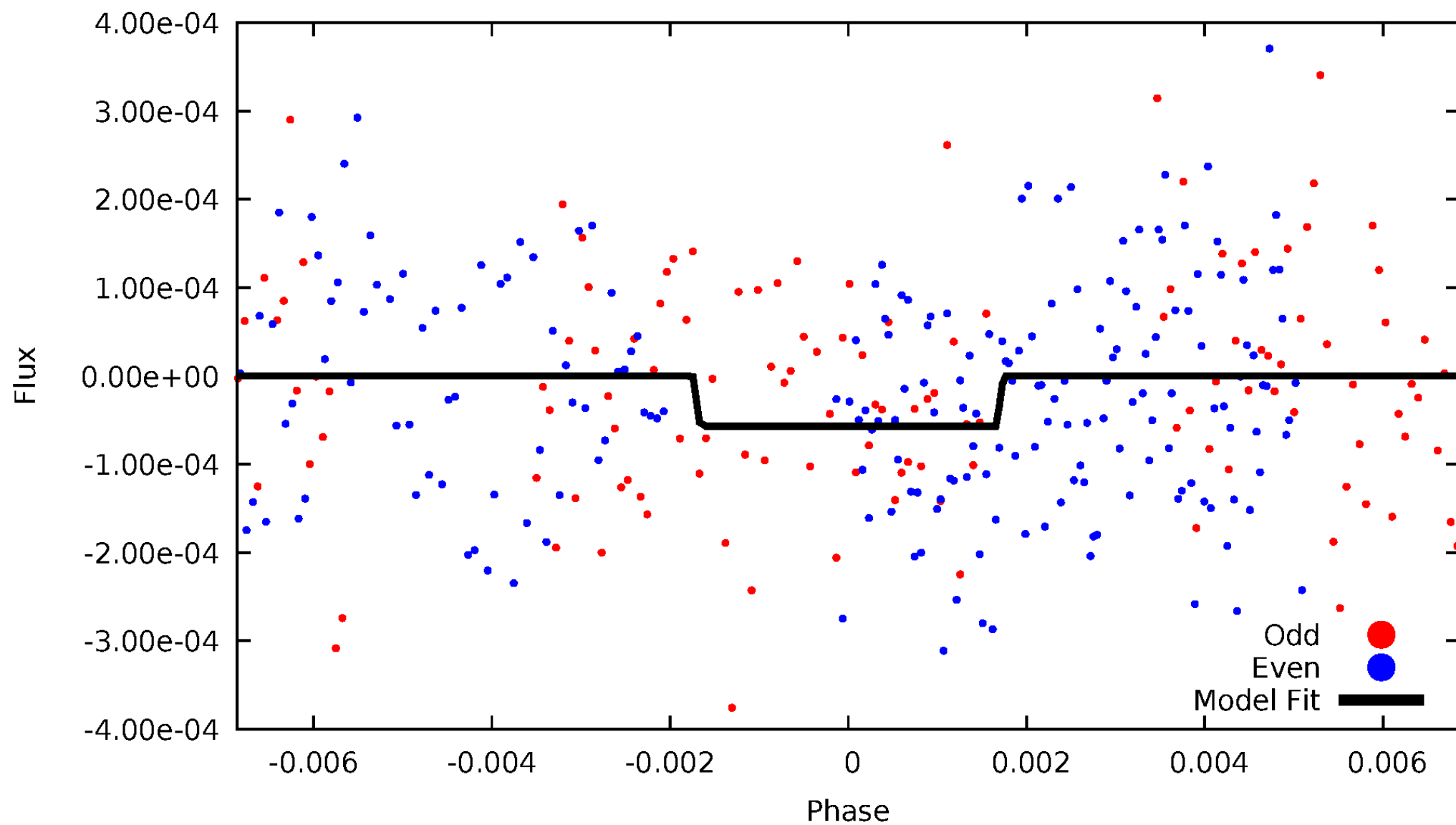
# DV Odd/Even

TCE 011572490-02



# ALT Odd/Even

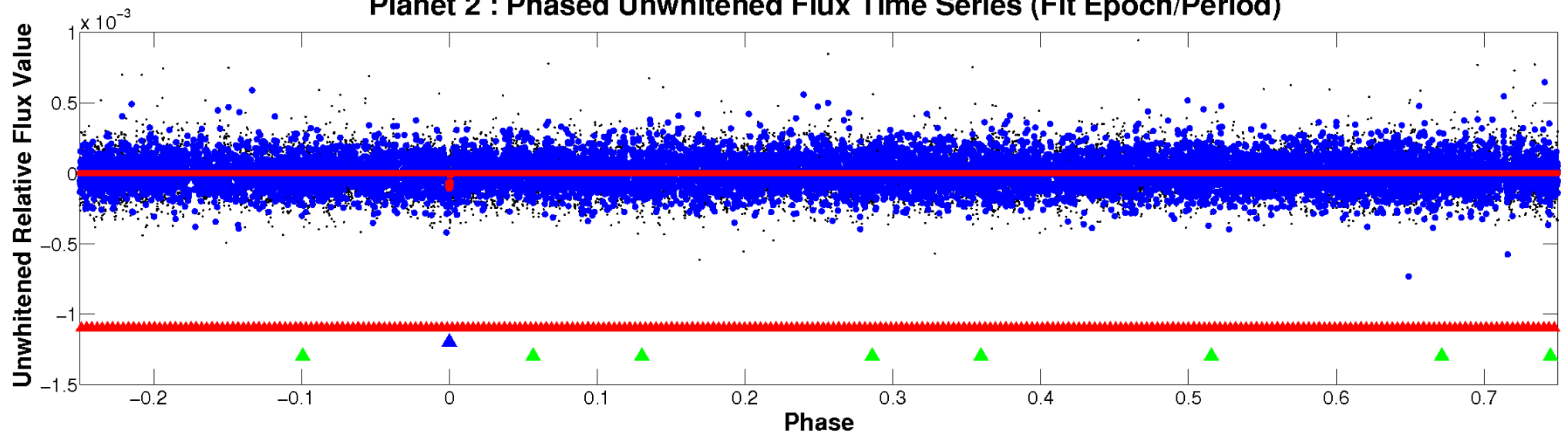
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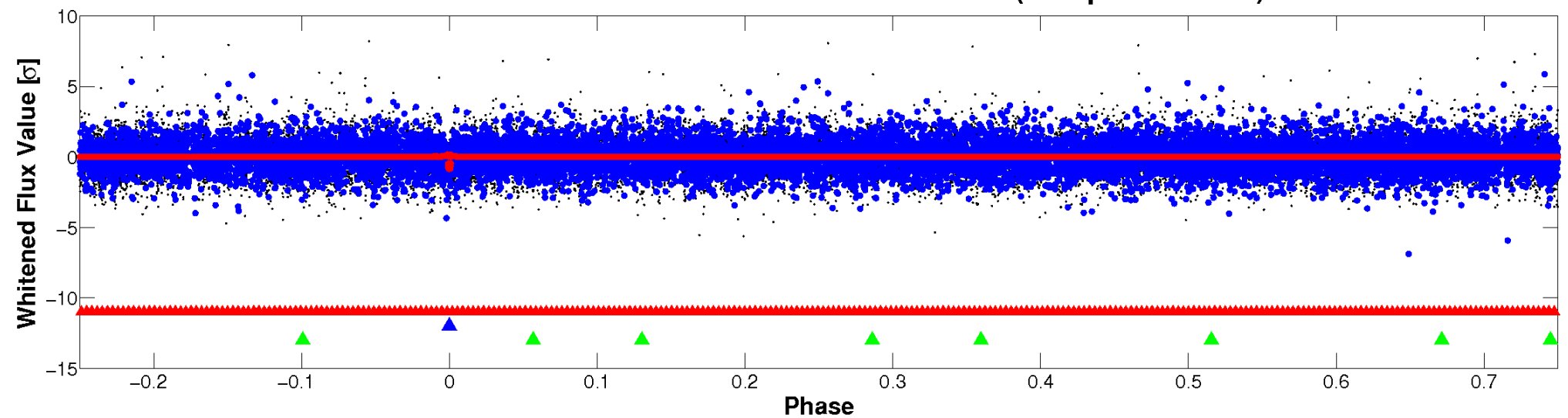


# Non-Whitened Vs. Whitened Light Curve

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

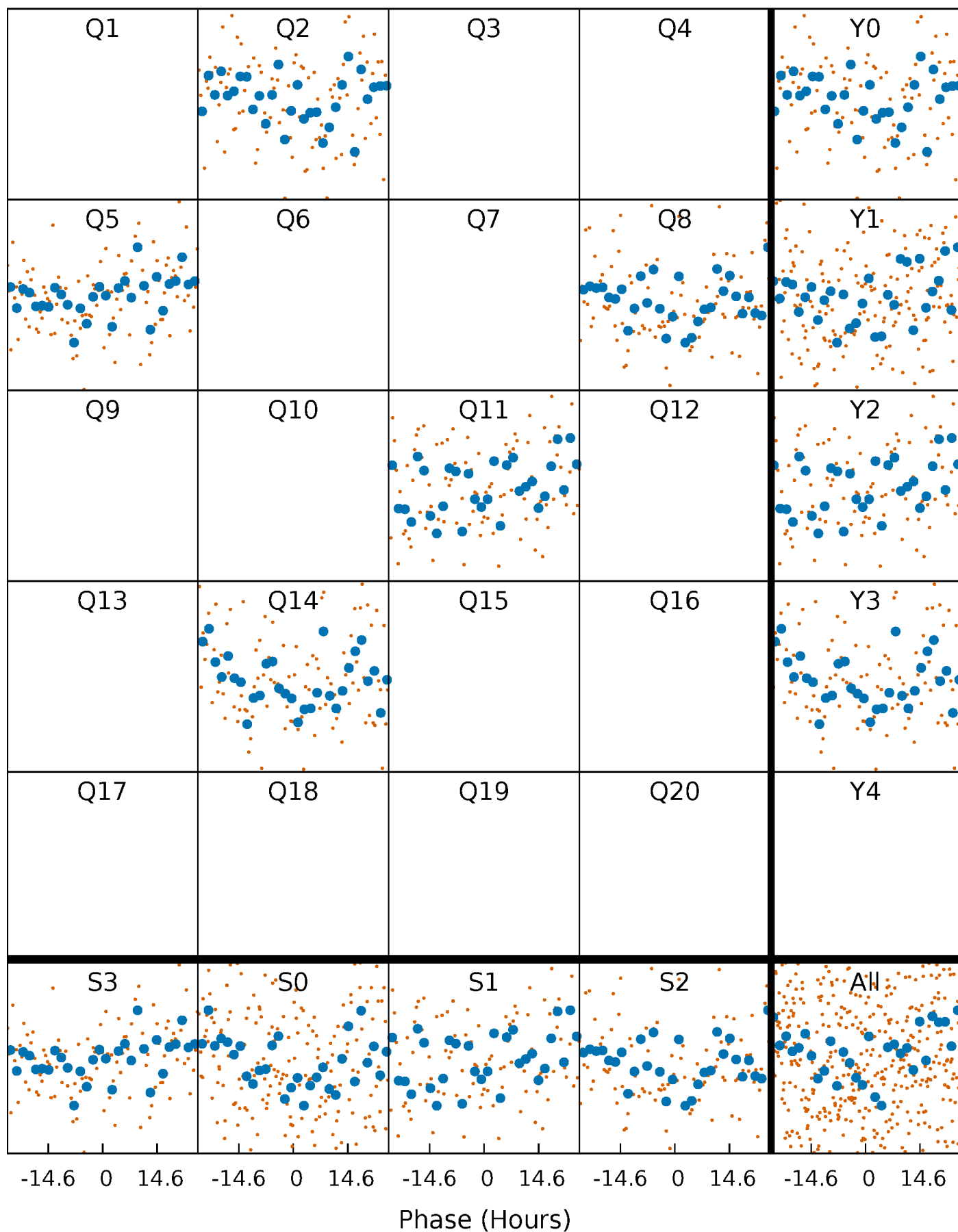


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



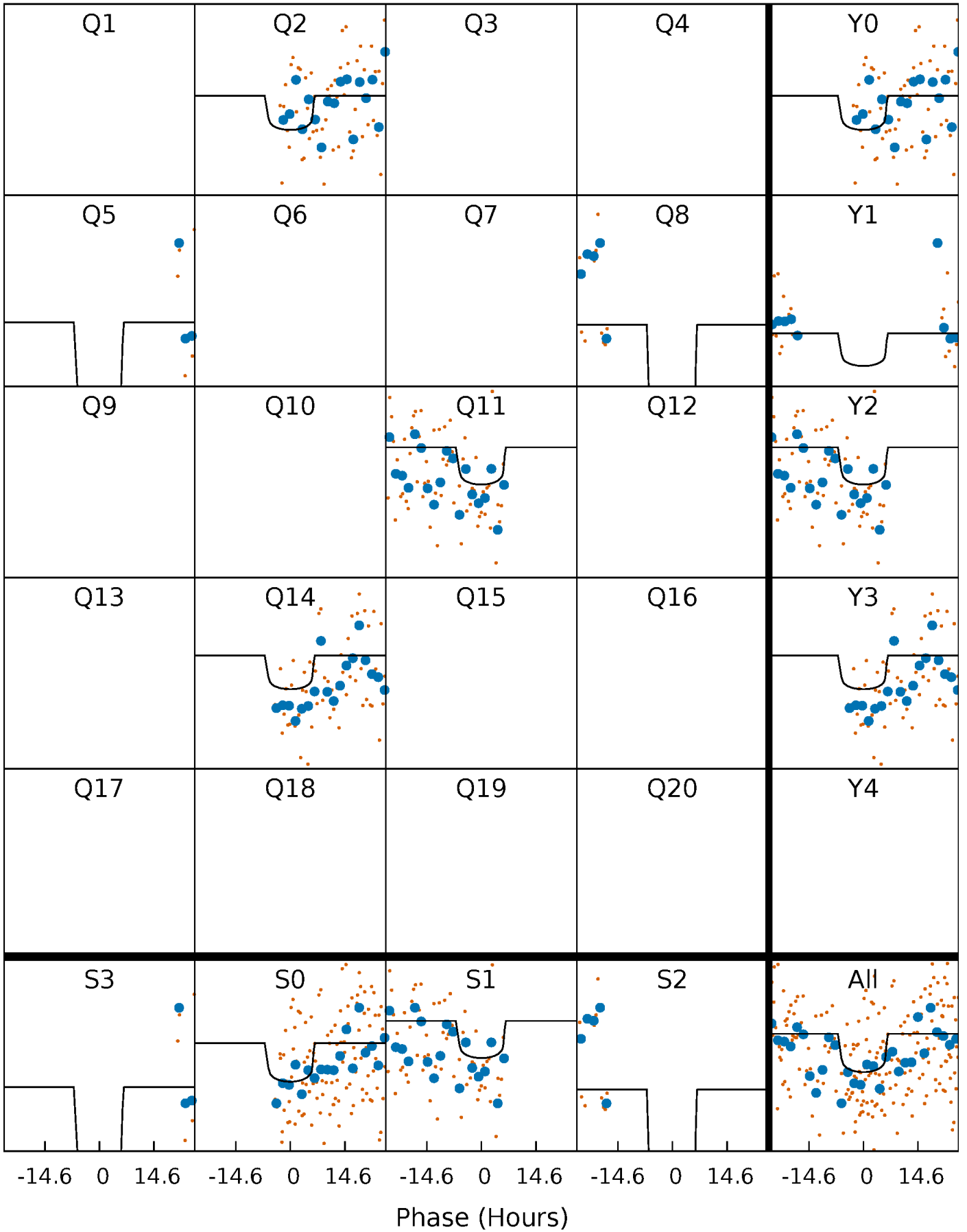
# PDC Quarter-Phased Transit Curves

TCE 011572490-02 P=279.356782 Days  $T_0=212.401619$  (BKJD)



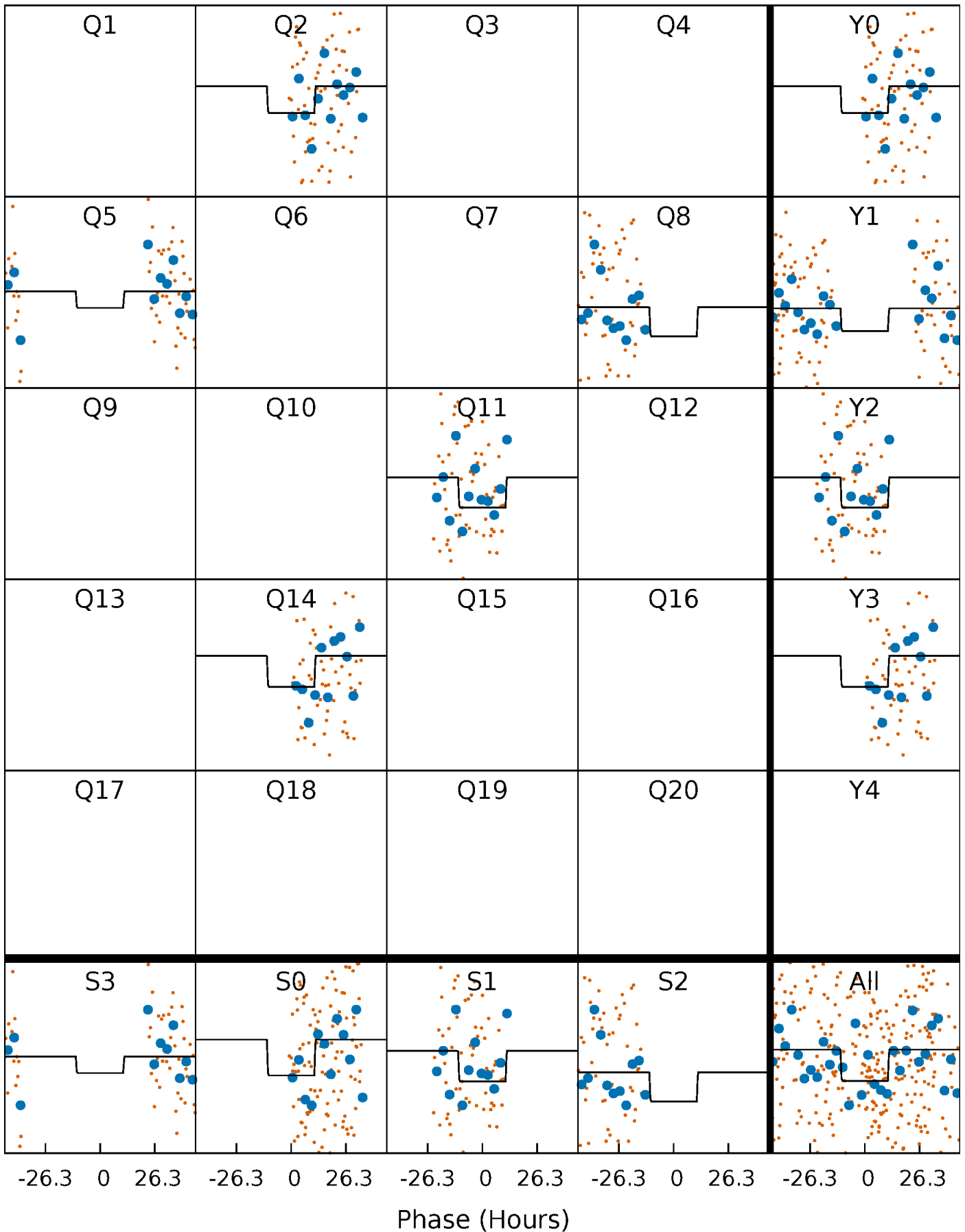
# DV Quarter-Phased Transit Curves

TCE 011572490-02     $P=279.356782$  Days     $T_0=212.401619$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 011572490-02 P=279.319954 Days  $T_0=212.325433$  (BKJD)

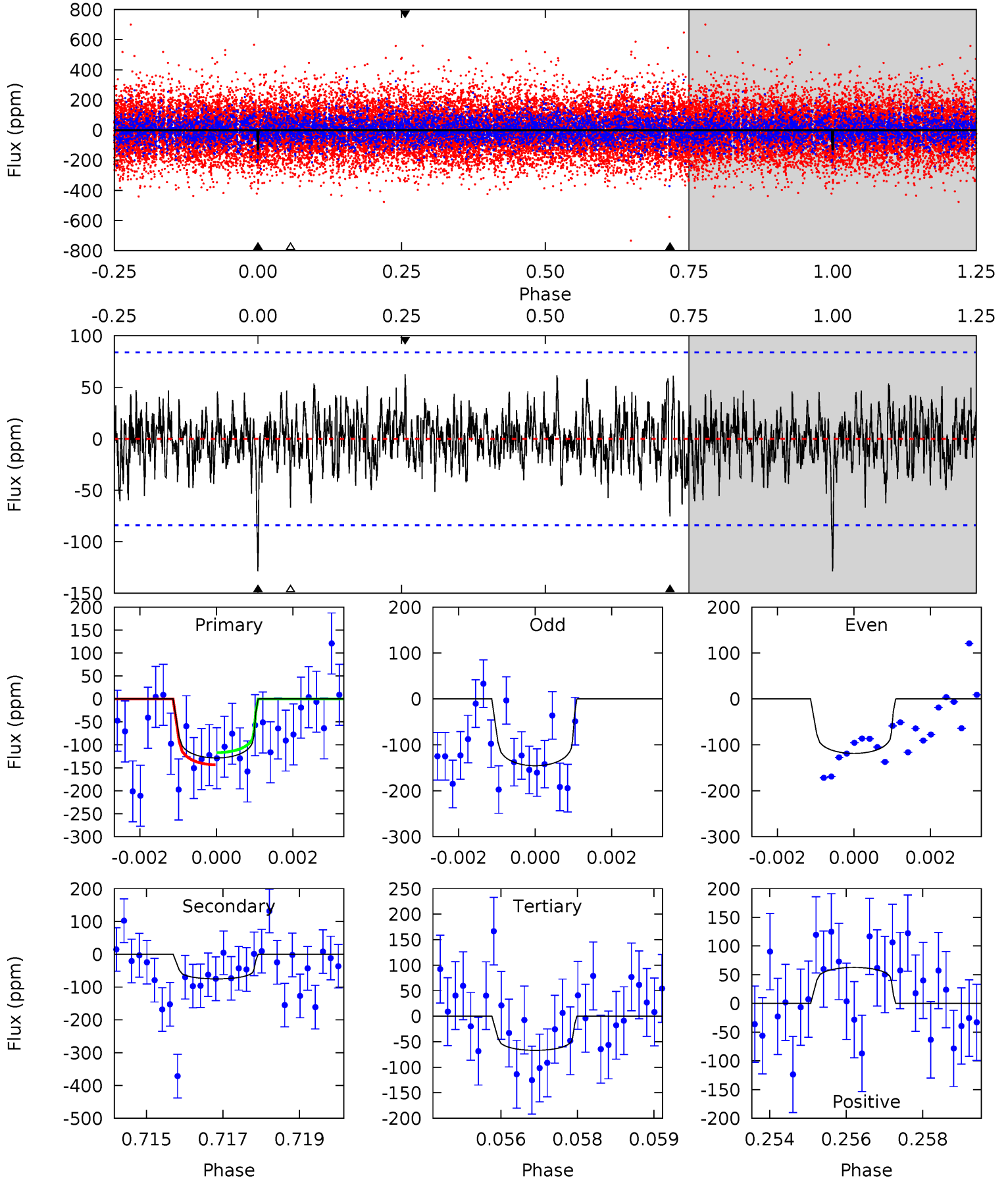




# DV Model-Shift Uniqueness Test

011572490-02, P = 279.356782 Days, E = 212.401619 Days

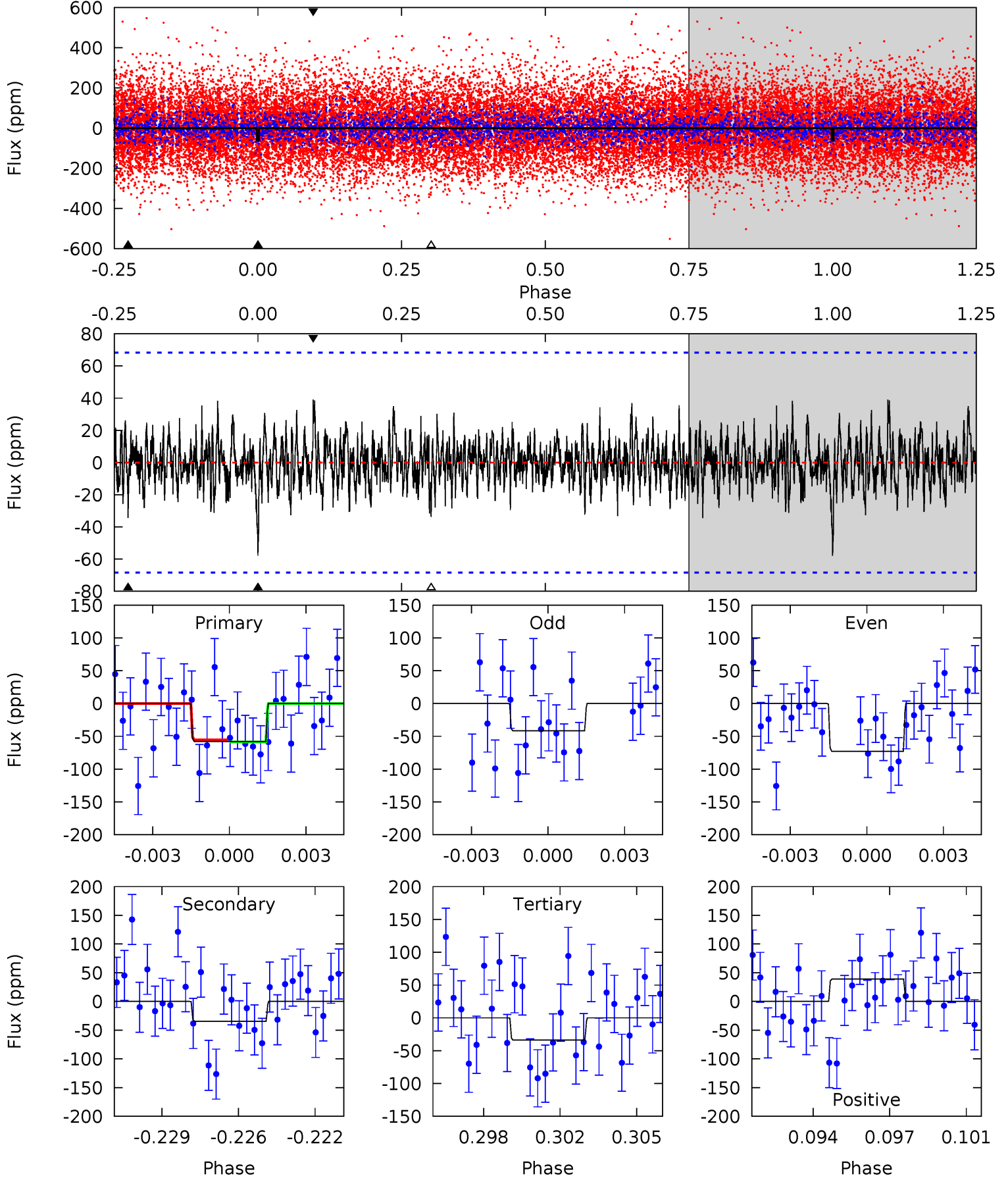
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.19	4.79	4.26	4.00	5.35	3.12	1.28	3.93	4.20	0.53	0.79	0.82	0.85	0.33	0.83



# Alt Model-Shift Uniqueness Test

011572490-02, P = 279.319954 Days, E = 212.325433 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
4.42	2.63	2.59	2.99	5.23	2.92	0.87	1.83	1.44	0.04	-0.35	1.20	1.01	0.40	0.11



### Stellar Parameters For KIC 011572490

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$7211^{+175}_{-300}$	$4.290^{+0.047}_{-0.248}$	$0.070^{+0.200}_{-0.350}$	$1.456^{+0.580}_{-0.193}$	$1.505^{+0.216}_{-0.196}$	$0.687^{+0.182}_{-0.420}$
	+2%/-4%	+1%/-6%	+286%/-500%	+40%/-13%	+14%/-13%	+27%/-61%
Source	PHO1	KIC0	KIC0	DSEP		

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

### Secondary Eclipse Parameters for KIC 011572490-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-75 \pm 16$	$1.93^{+1.18}_{-1.00}$	$564^{+49}_{-30}$	$6104^{+3379}_{-1120}$	$9745^{+34598}_{-5998}$
Alt.	$-34 \pm 13$	$1.45^{+1.05}_{-0.85}$	$559^{+49}_{-28}$	$5806^{+3639}_{-1228}$	$7833^{+35650}_{-5463}$

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

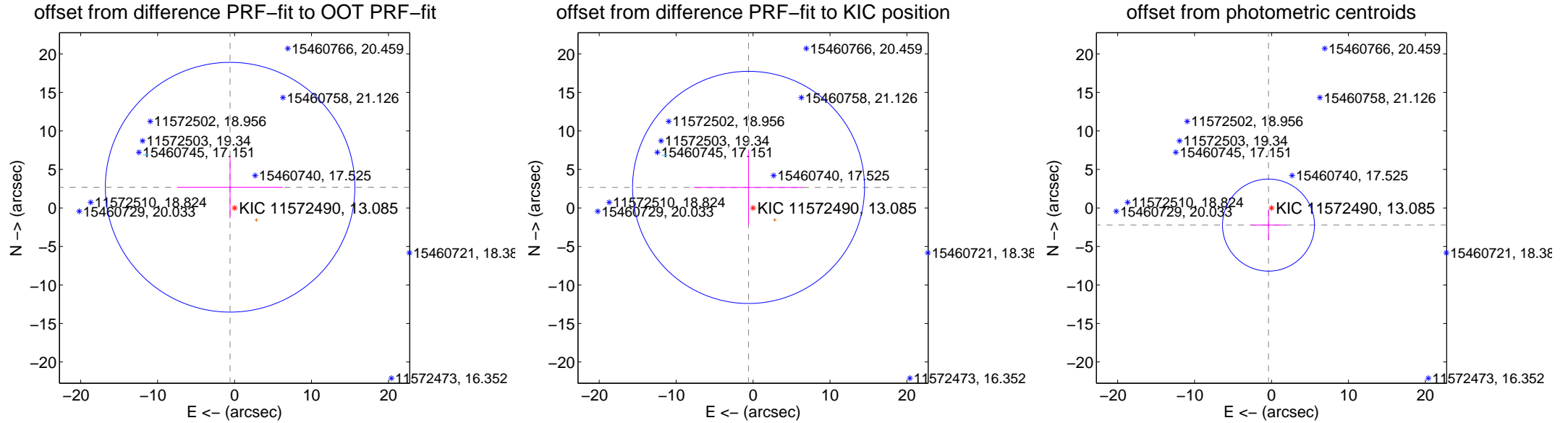
## DV Centroid Data

Supplemental centroid analysis for 011572490-02. Kepler magnitude: 13.09. Transit SNR 6.35

There are 1 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.02 arcsec

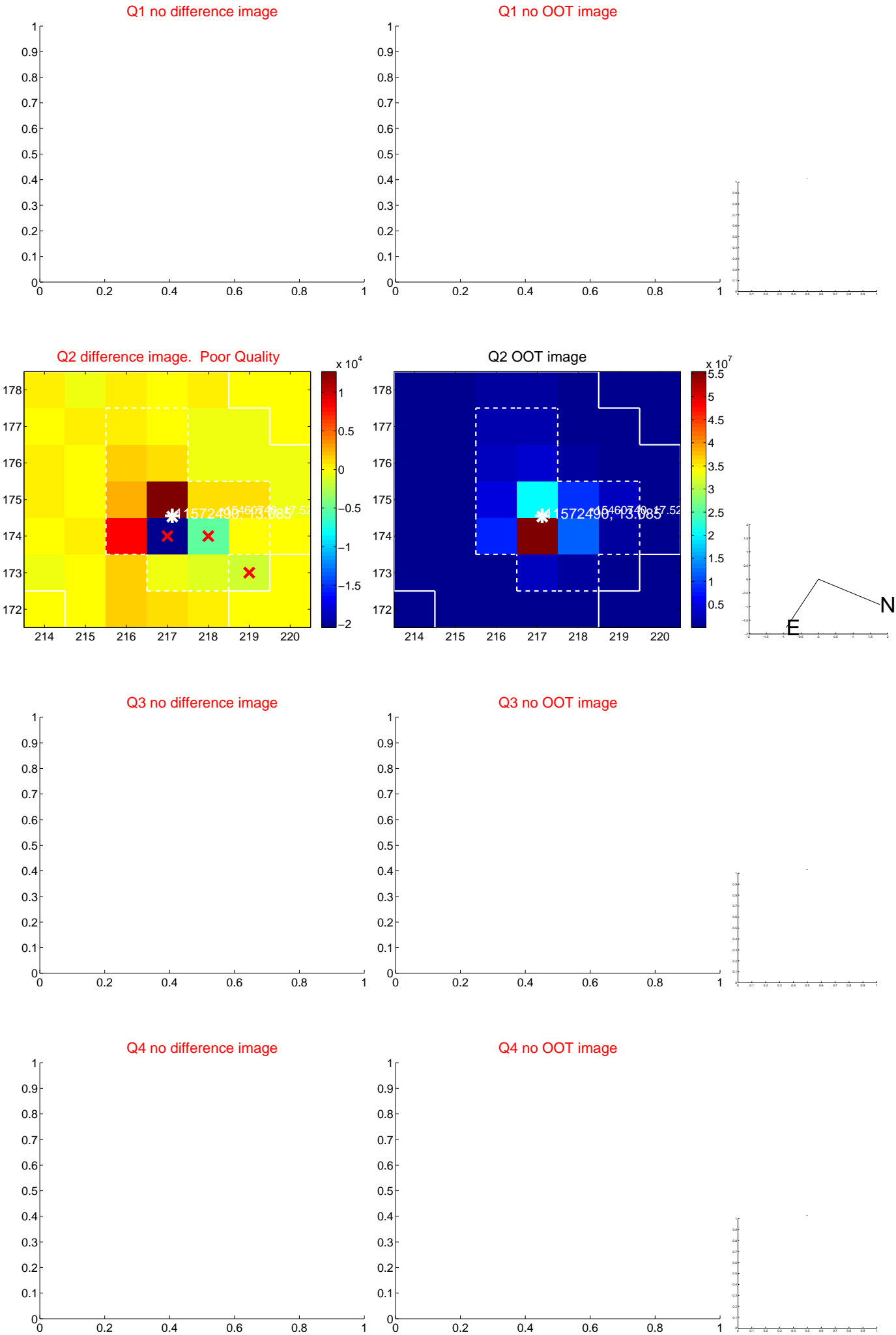
	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$2.753 \pm 5.406$	0.51	$0.582 \pm 6.869$	$2.691 \pm 4.046$
PRF-fit source offset from KIC position	$2.733 \pm 5.026$	0.54	$0.585 \pm 7.119$	$2.669 \pm 4.903$
photometric centroid source offset	$2.26 \pm 1.99$	1.13	$0.39 \pm 2.33$	$-2.23 \pm 1.98$



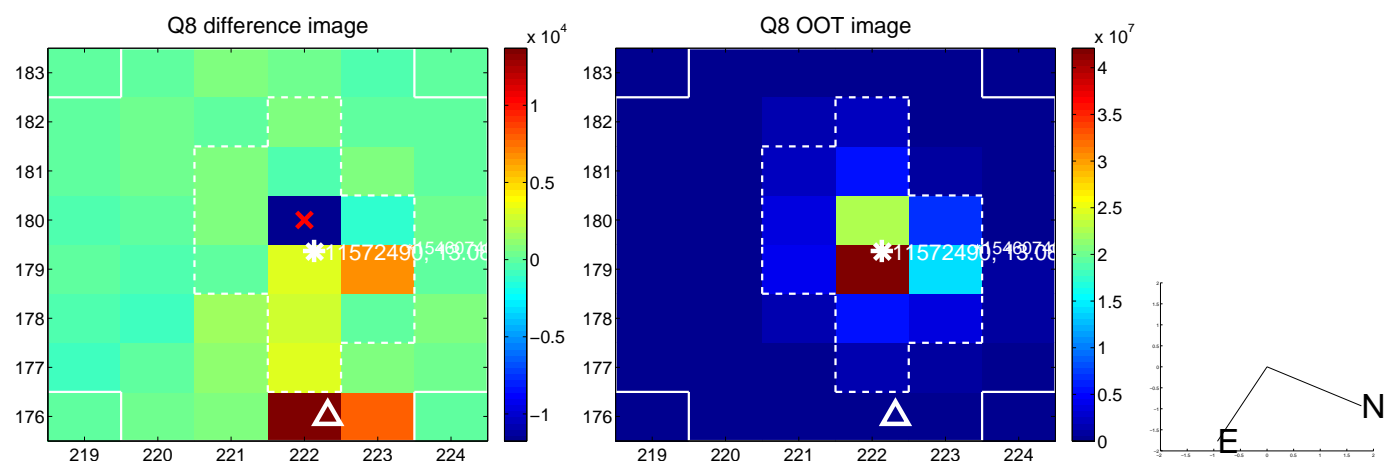
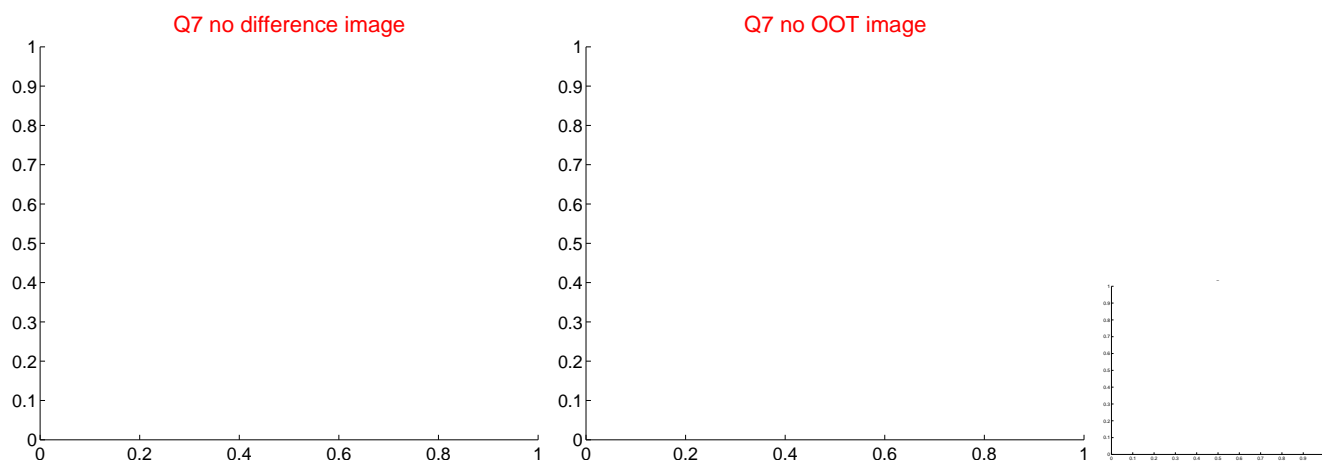
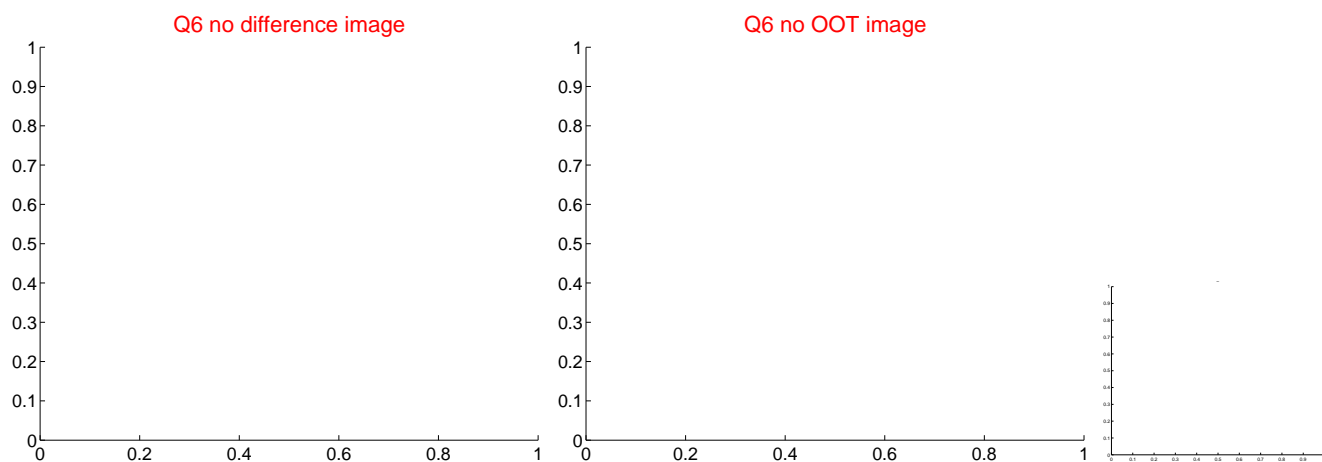
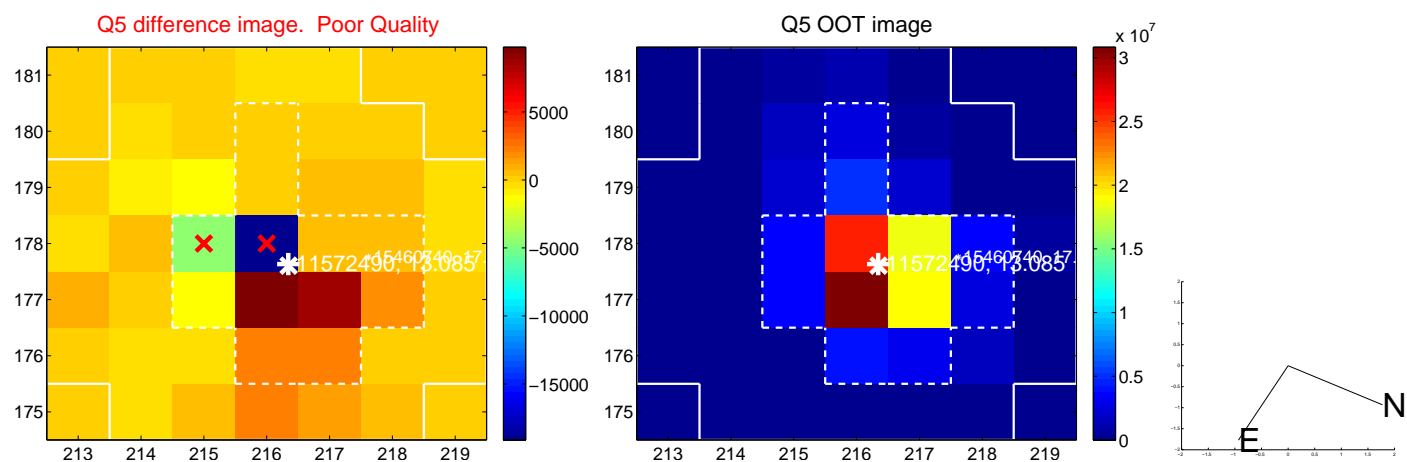
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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



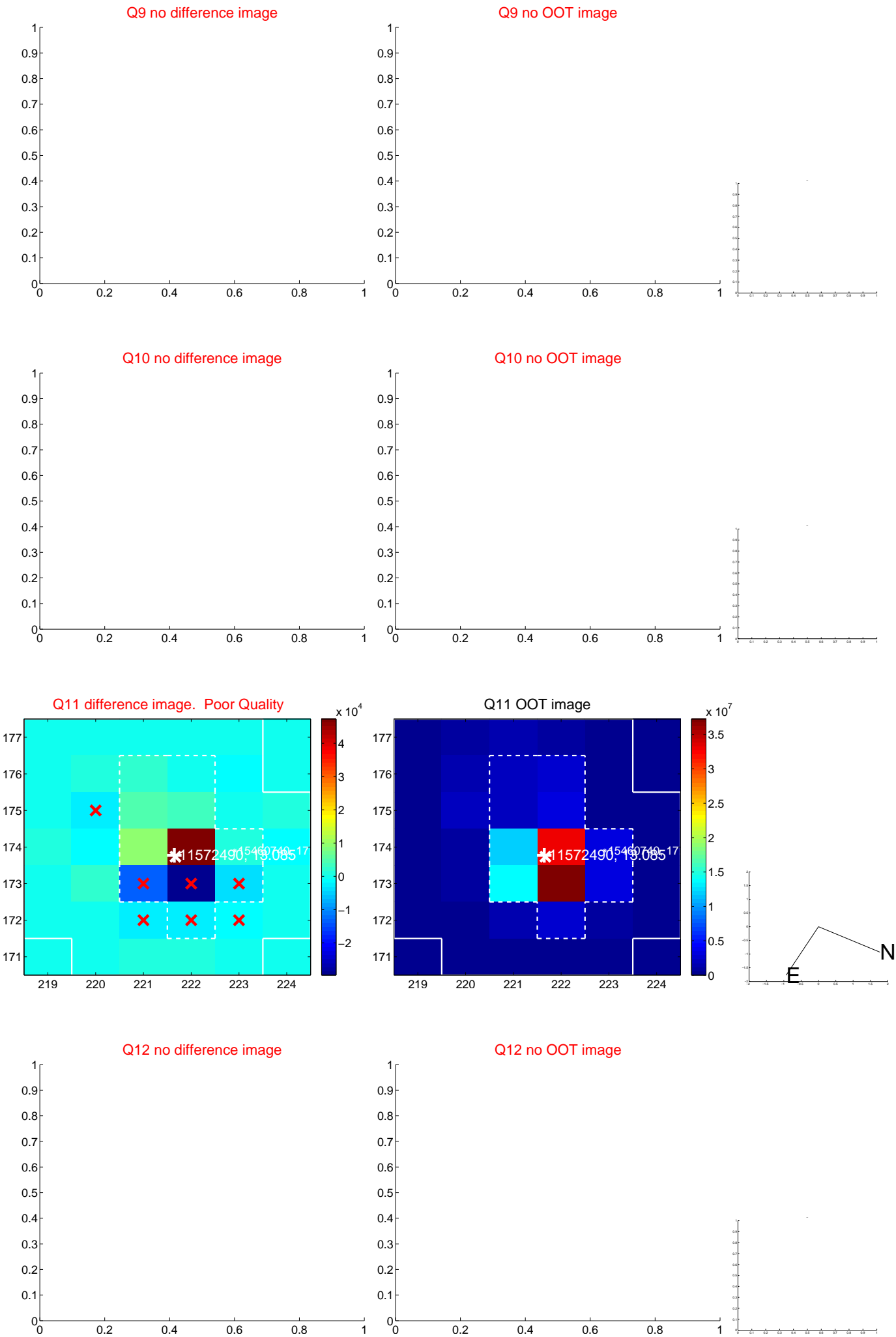
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



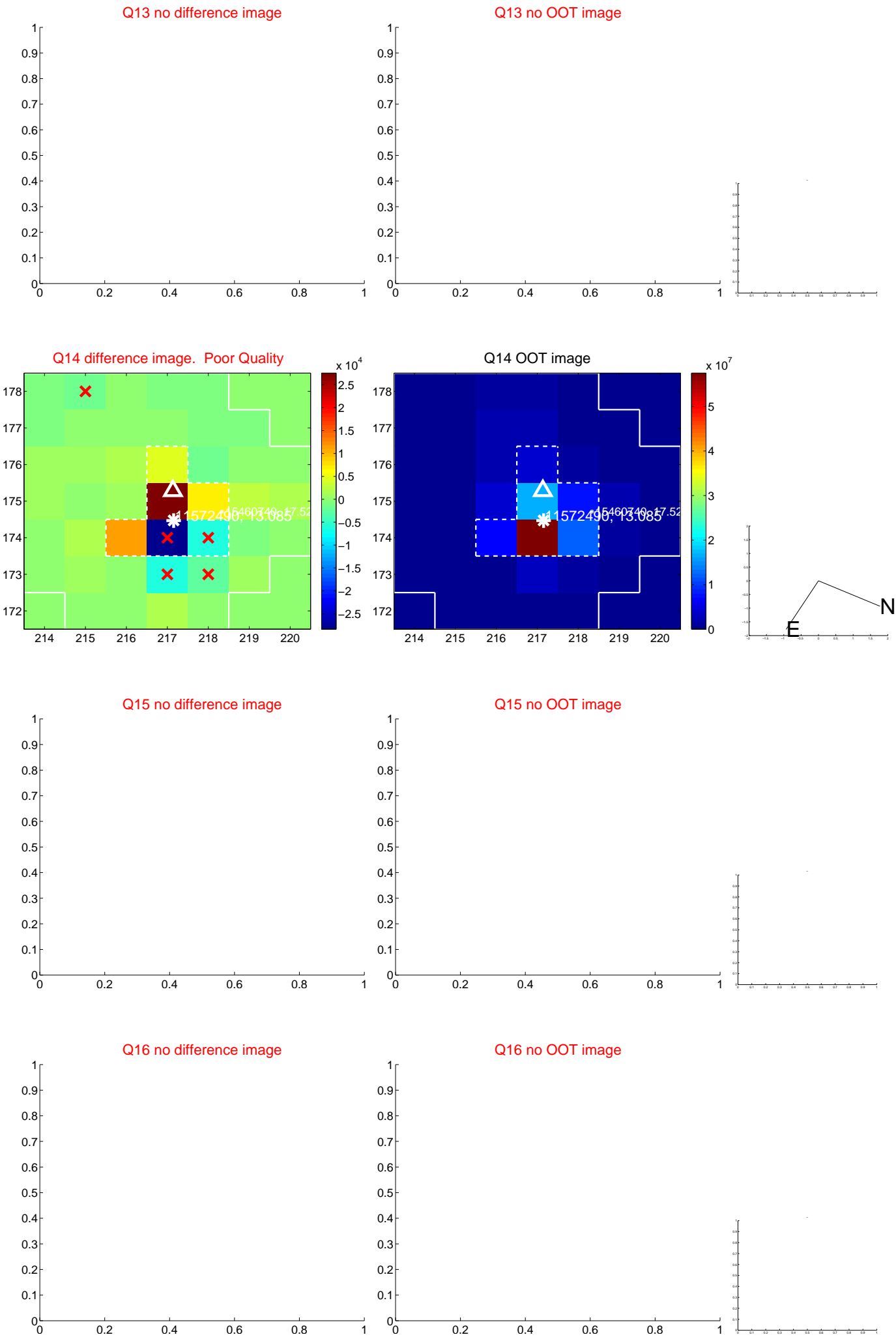
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



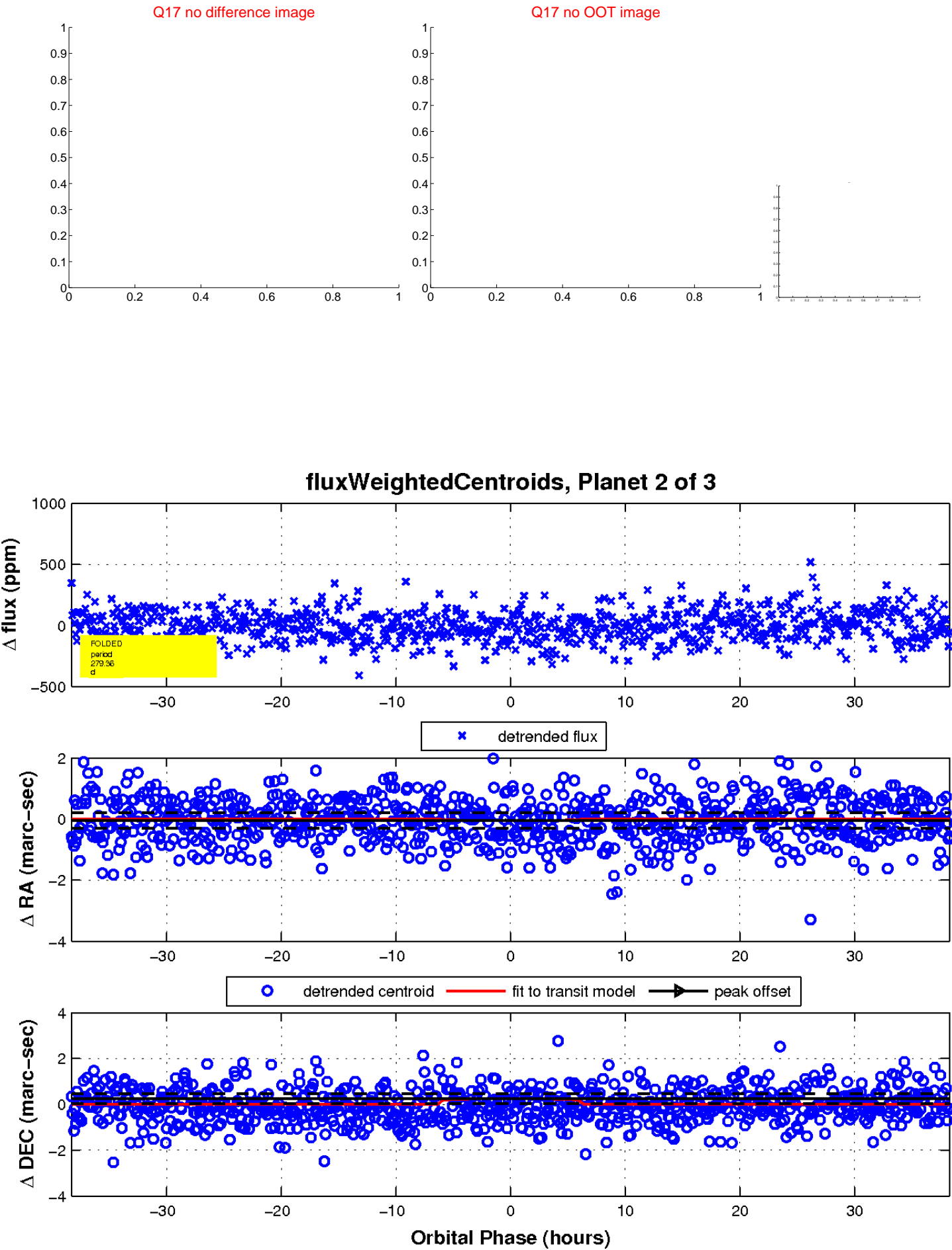
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



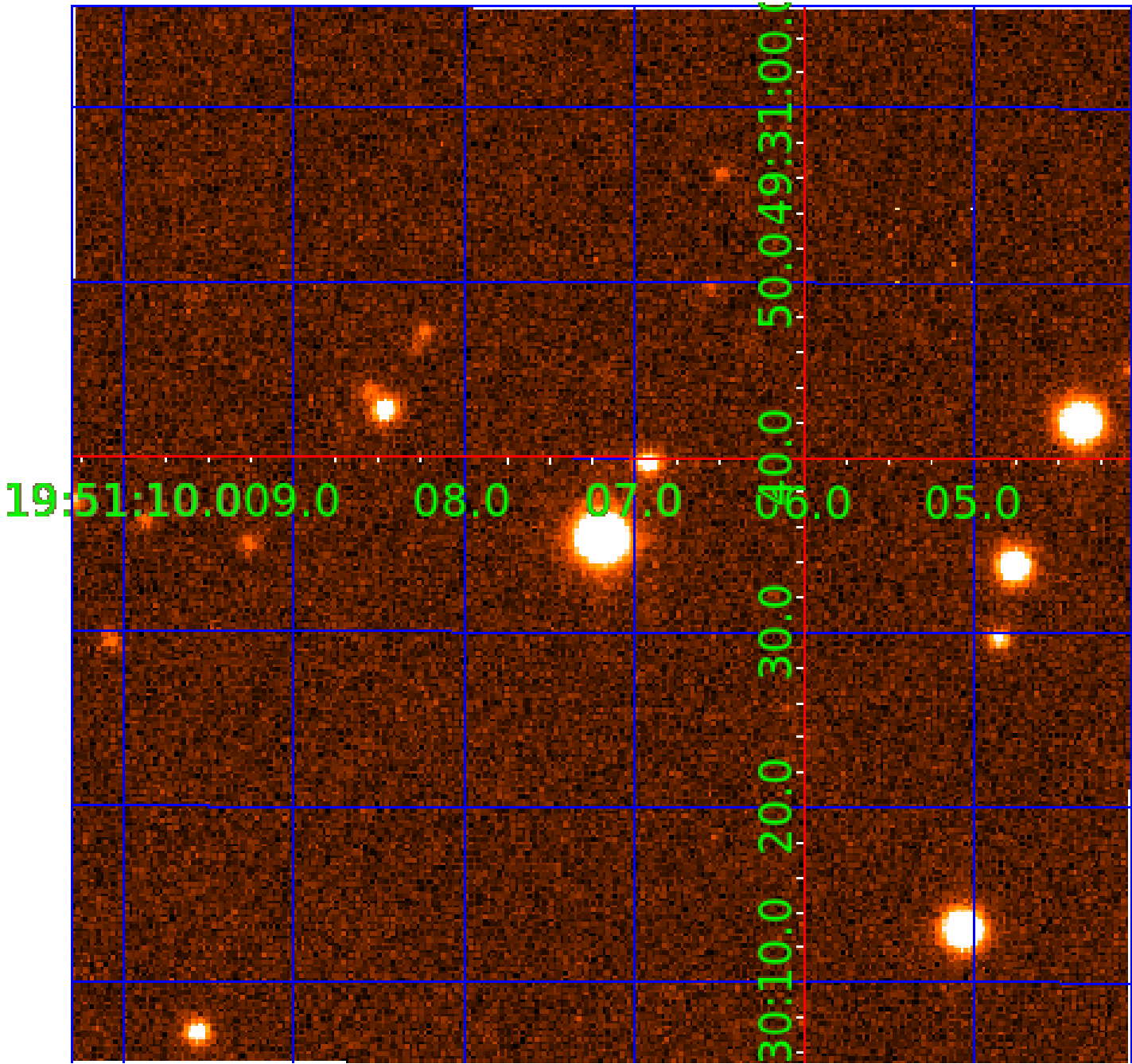
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.





UKIRT Image

Declination



# KIC 011572490

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
011572490-01	OBS	No	3.948209	132.054469	17.4	20.106	8.9	10.3	1.46	7211	0.64	1633.49
011572490-02	OBS	No	279.356782	212.401619	108.8	12.793	9.1	6.3	1.46	7211	1.72	5.58
011572490-03	OBS	No	171.723949	228.243018	169.4	2.804	7.3	7.4	1.46	7211	2.20	10.68

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011572490-01	OBS	FP	0.00	1	0	1	0	LPP_DV—LPP_ALT—CENT_UNRESOLVED_OFFSET
011572490-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
011572490-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT

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

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

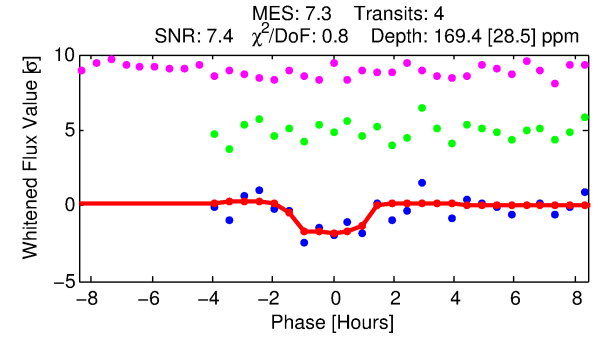
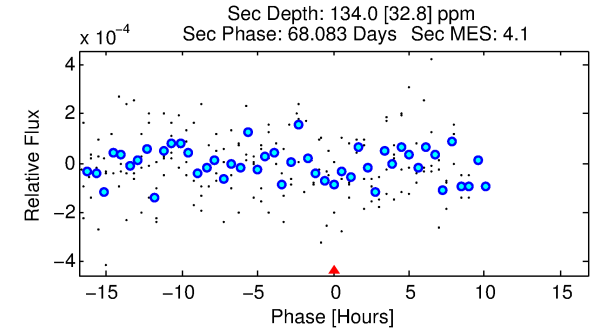
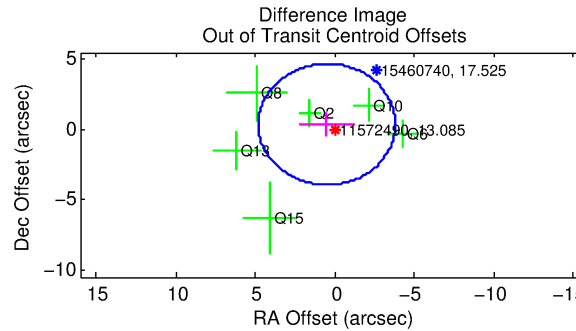
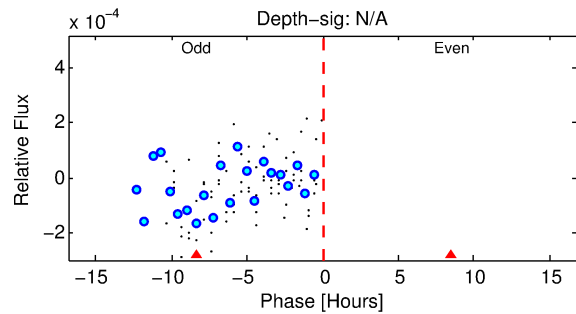
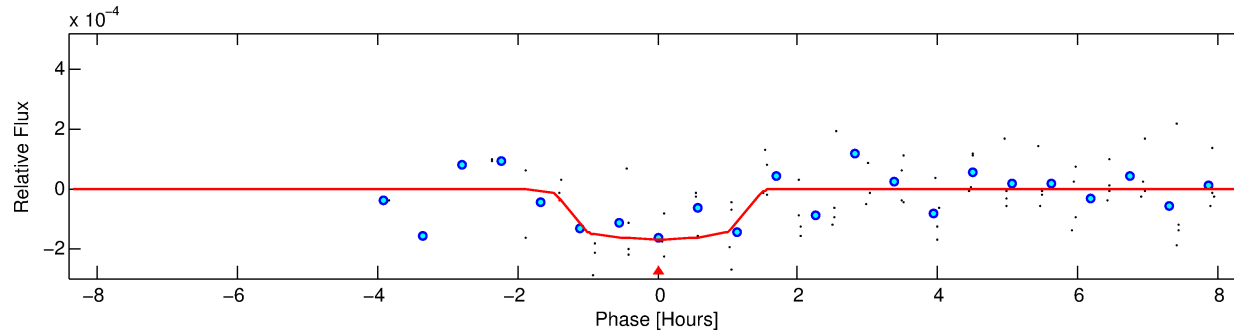
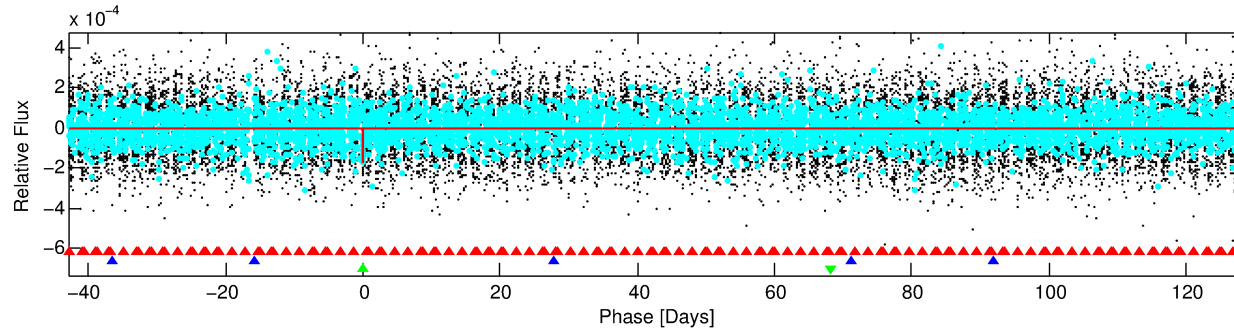
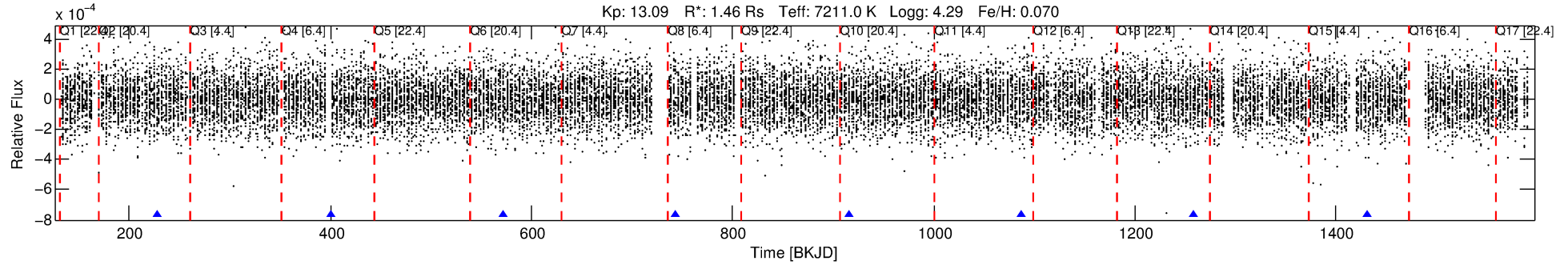
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 011572490-03

No Significant Match Found

# DV One-Page Summary

KIC: 11572490 Candidate: 3 of 3 Period: 171.724 d



## DV Fit Results:

Period = 171.72395 [0.00307] d  
Epoch = 228.2430 [0.0092] BKJD  
Rp/R\* = 0.0139 [0.0082]  
a/R\* = 217.21 [780.64]  
b = 0.90 [0.76]  
Seff = 10.68 [5.27]  
Teq = 461 [57] K  
Rp = 2.20 [1.57] Re  
a = 0.6935 [0.2266] AU  
Ag = 7319.55 [9457.19] [0.77σ]  
Teffp = 6592 [2006] K [3.06σ]

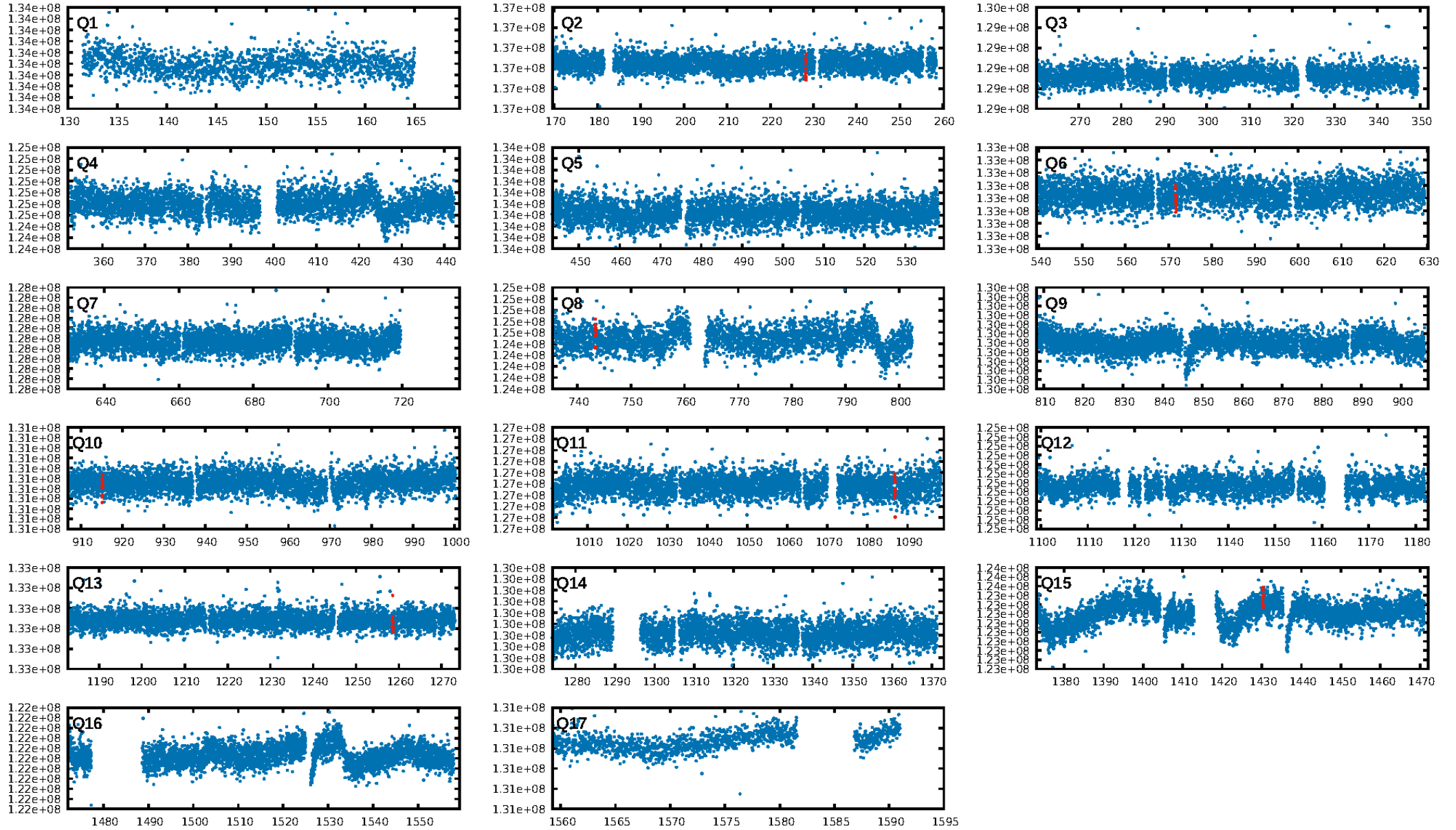
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [198.35σ]  
LongPeriod-sig: 100.0% [197.23σ]  
ModelChiSquare2-sig: 57.2%  
ModelChiSquareGof-sig: 99.0%  
**Bootstrap-pfa: 2.48e-09**  
RollingBand-fgt: 1.00 [4/4]  
GhostDiagnostic-chr: -1.332  
Centroid-sig: 59.7%  
Centroid-so: 1.671 arcsec [0.79σ]  
OotOffset-rm: 0.610 arcsec [0.42σ]  
KicOffset-rm: 0.556 arcsec [0.39σ]  
OotOffset-st: 3/1/1/1 [6]  
KicOffset-st: 3/1/1/1 [6]  
DiffImageQuality-fgm: 0.00 [0/6]  
DiffImageOverlap-fno: 0.57 [4/7]

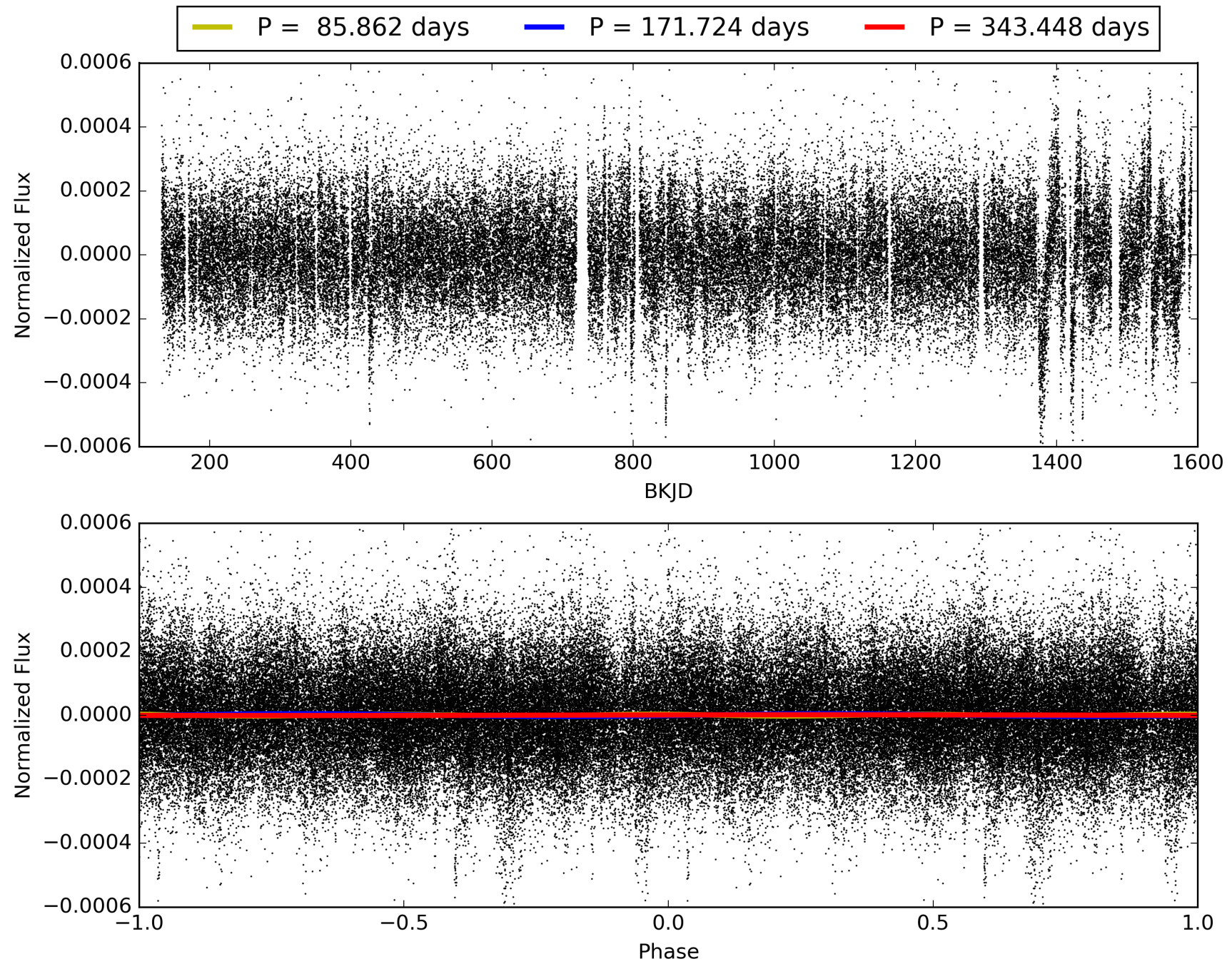
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 02:36:59 Z

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

# TCE 011572490-03, PDC Light Curves

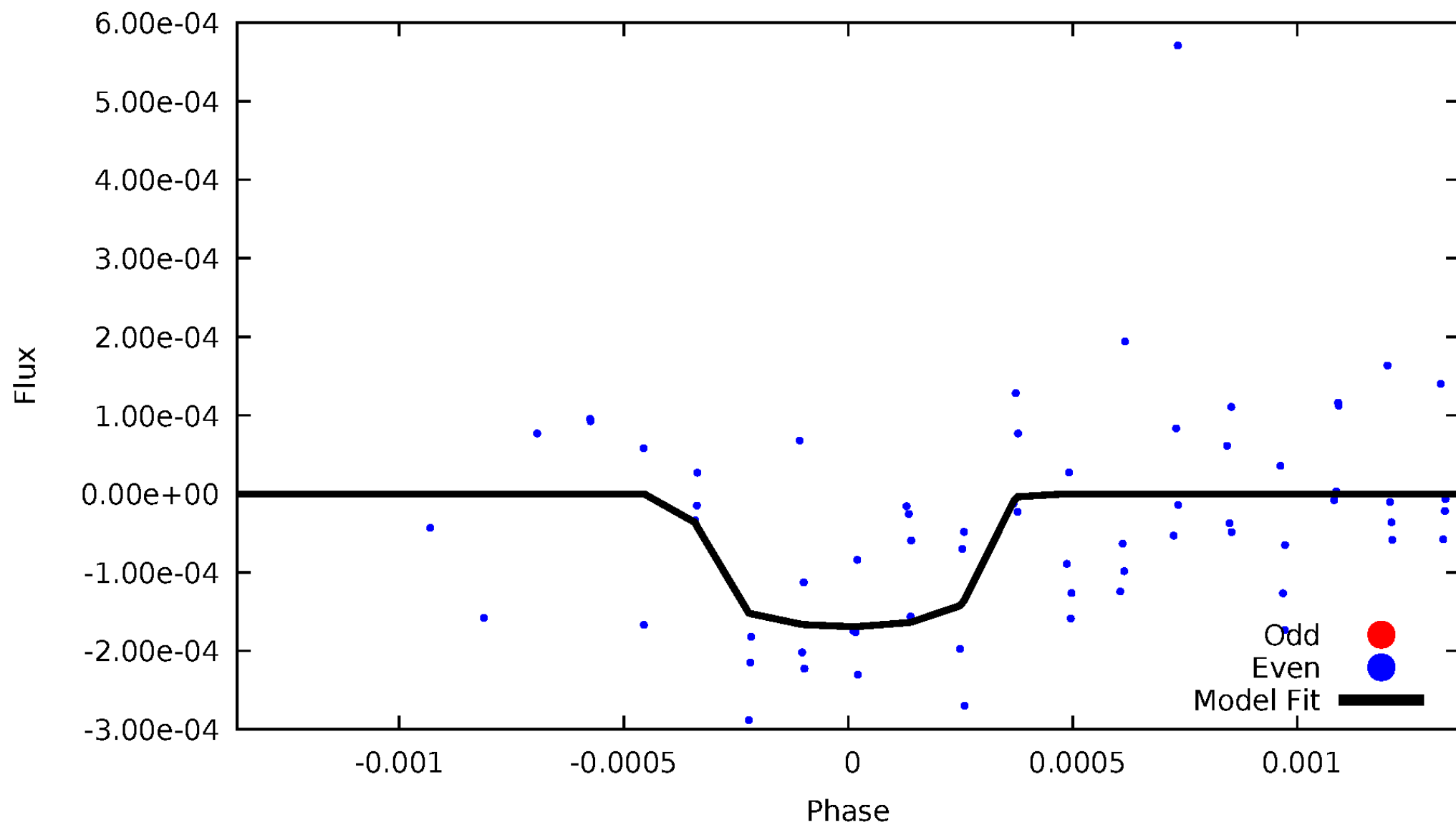


TCE 011572490-03



# DV Odd/Even

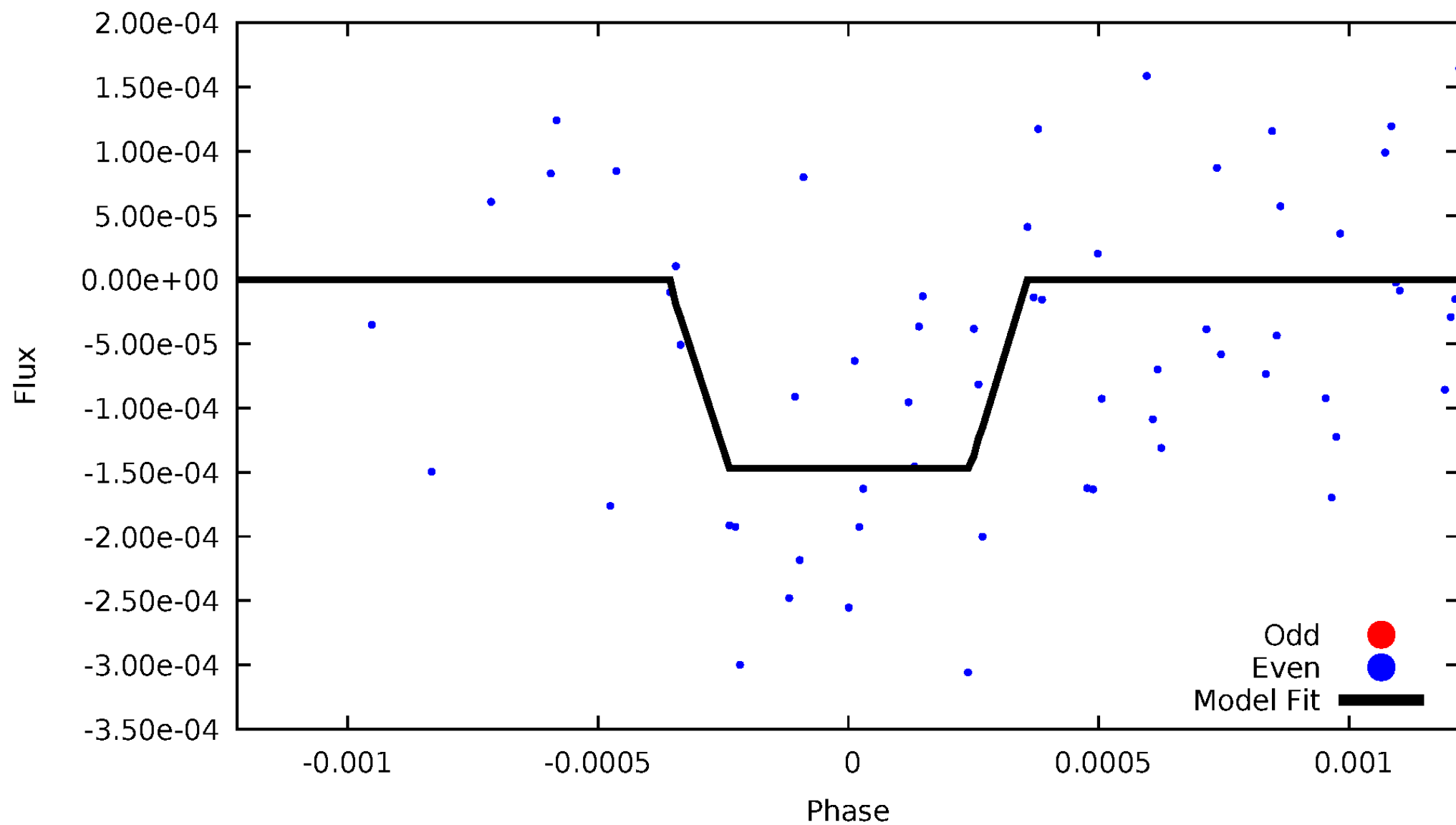
TCE 011572490-03



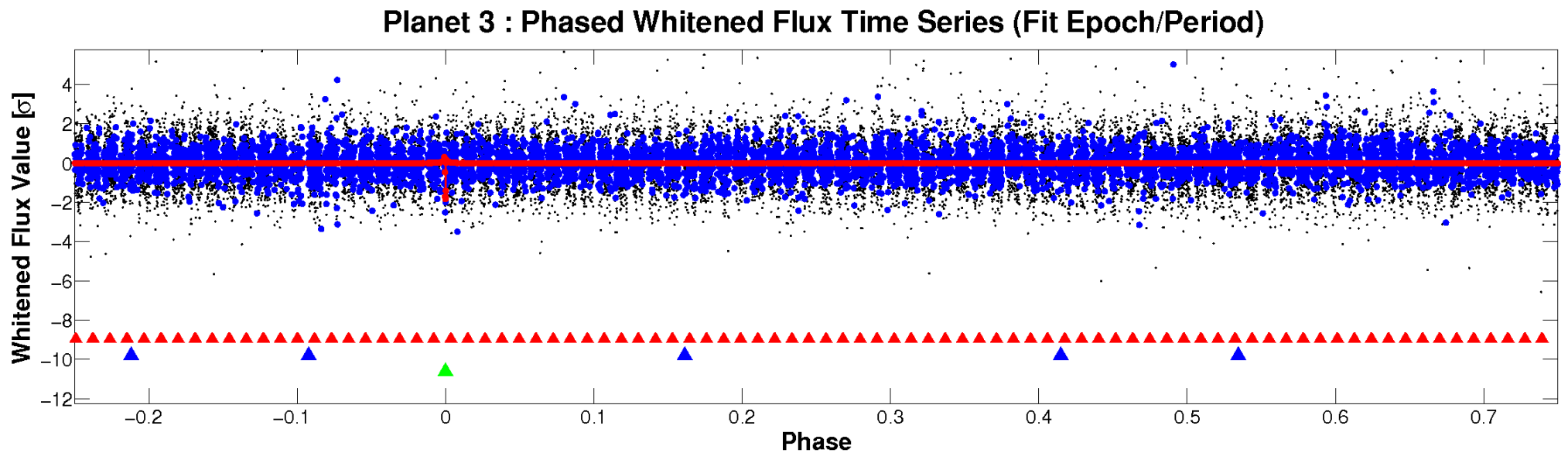
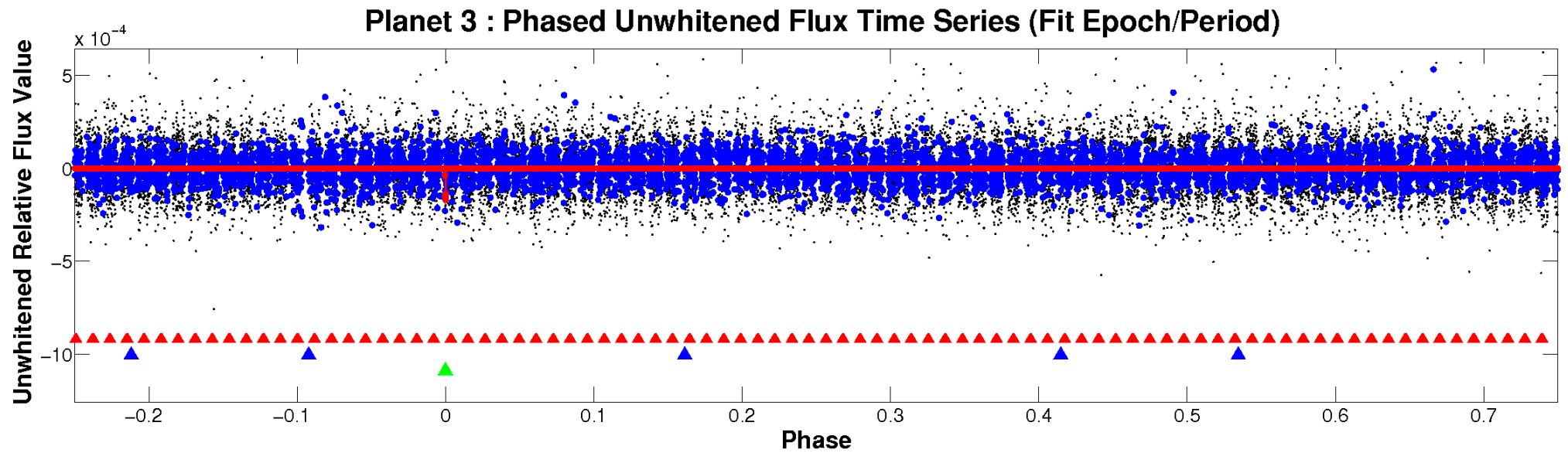


# ALT Odd/Even

TCE 011572490-03

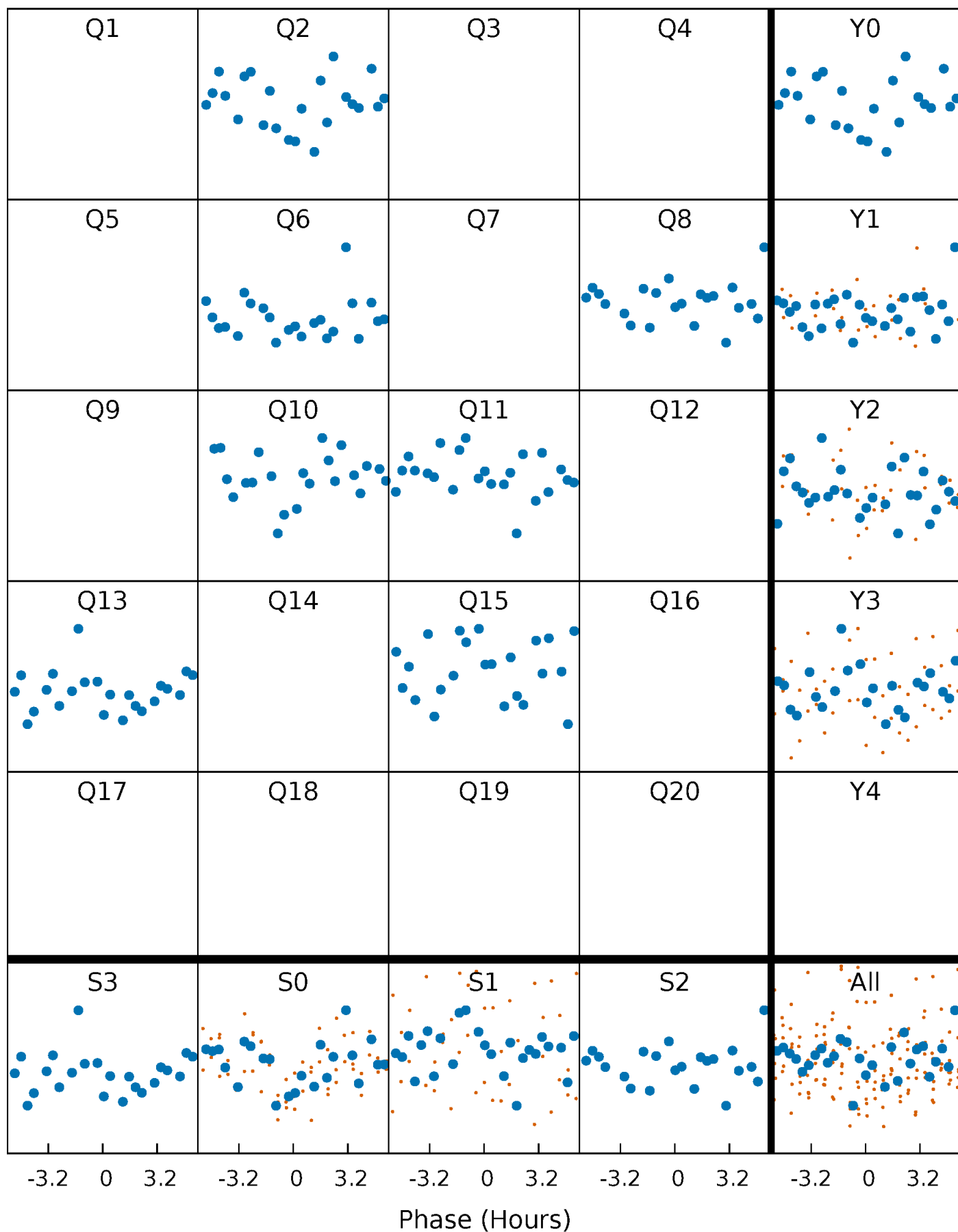


# Non-Whitened Vs. Whitened Light Curve



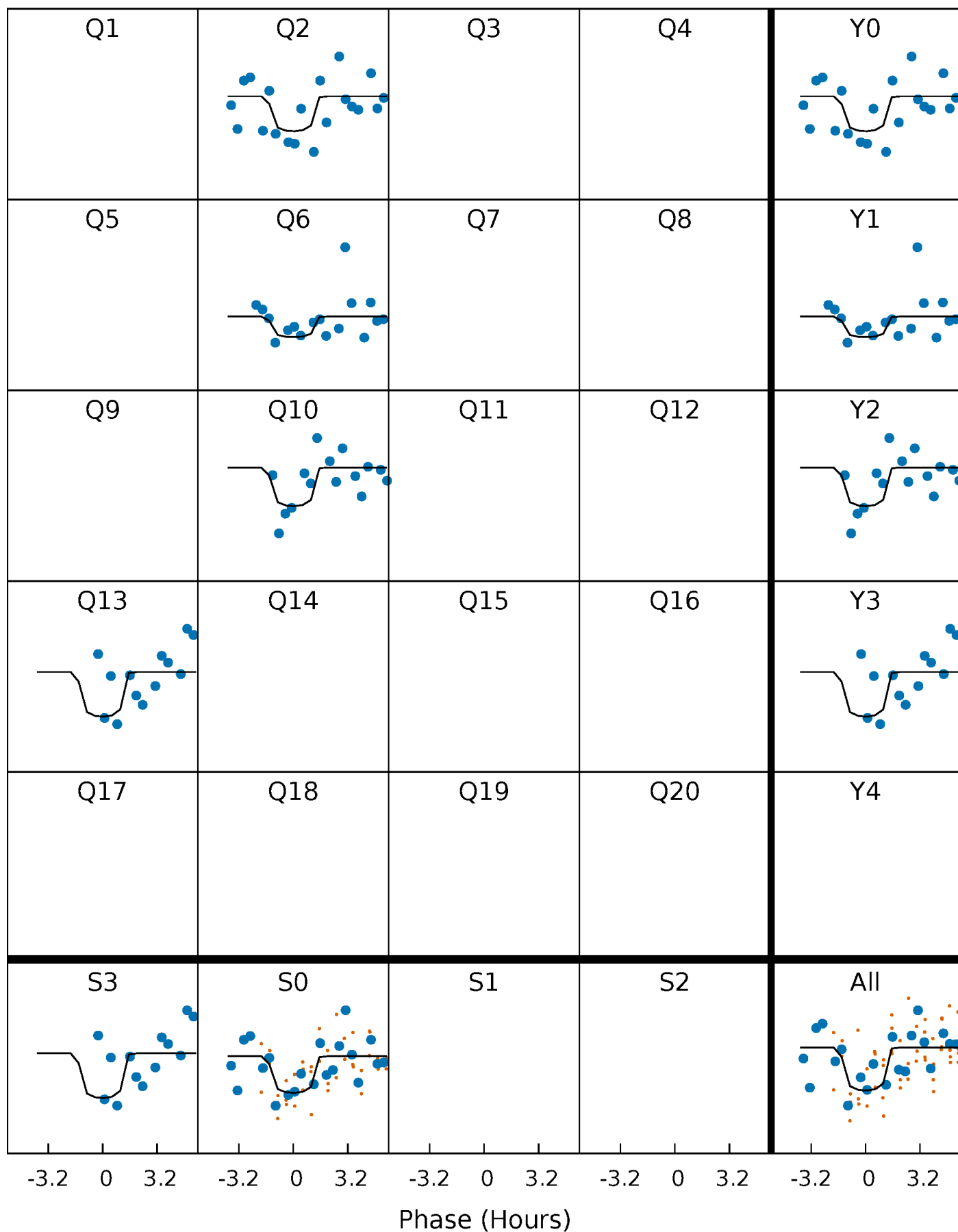
# PDC Quarter-Phased Transit Curves

TCE 011572490-03   P=171.723949 Days    $T_0=228.243018$  (BKJD)



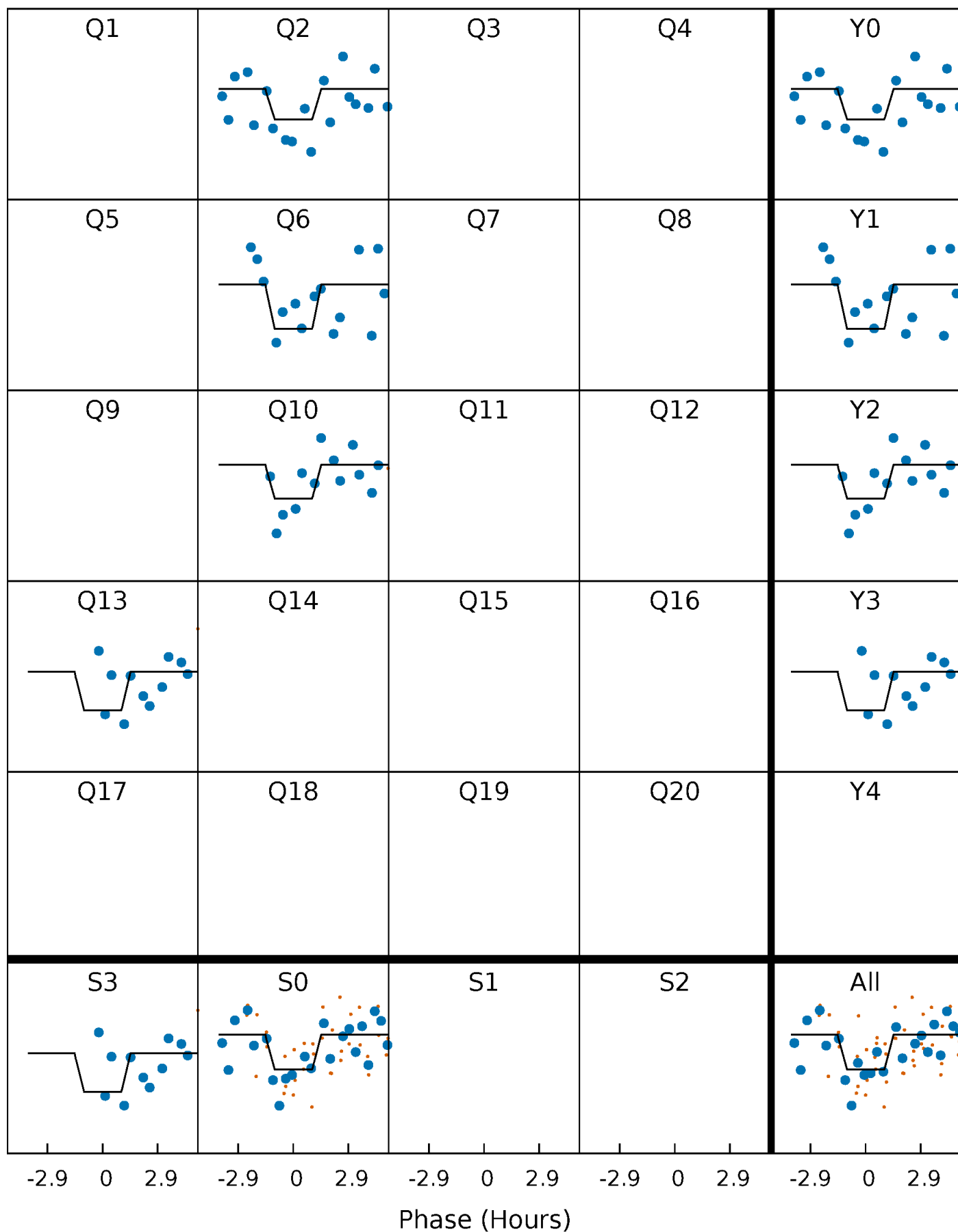
# DV Quarter-Phased Transit Curves

TCE 011572490-03 P=171.723949 Days  $T_0=228.243018$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

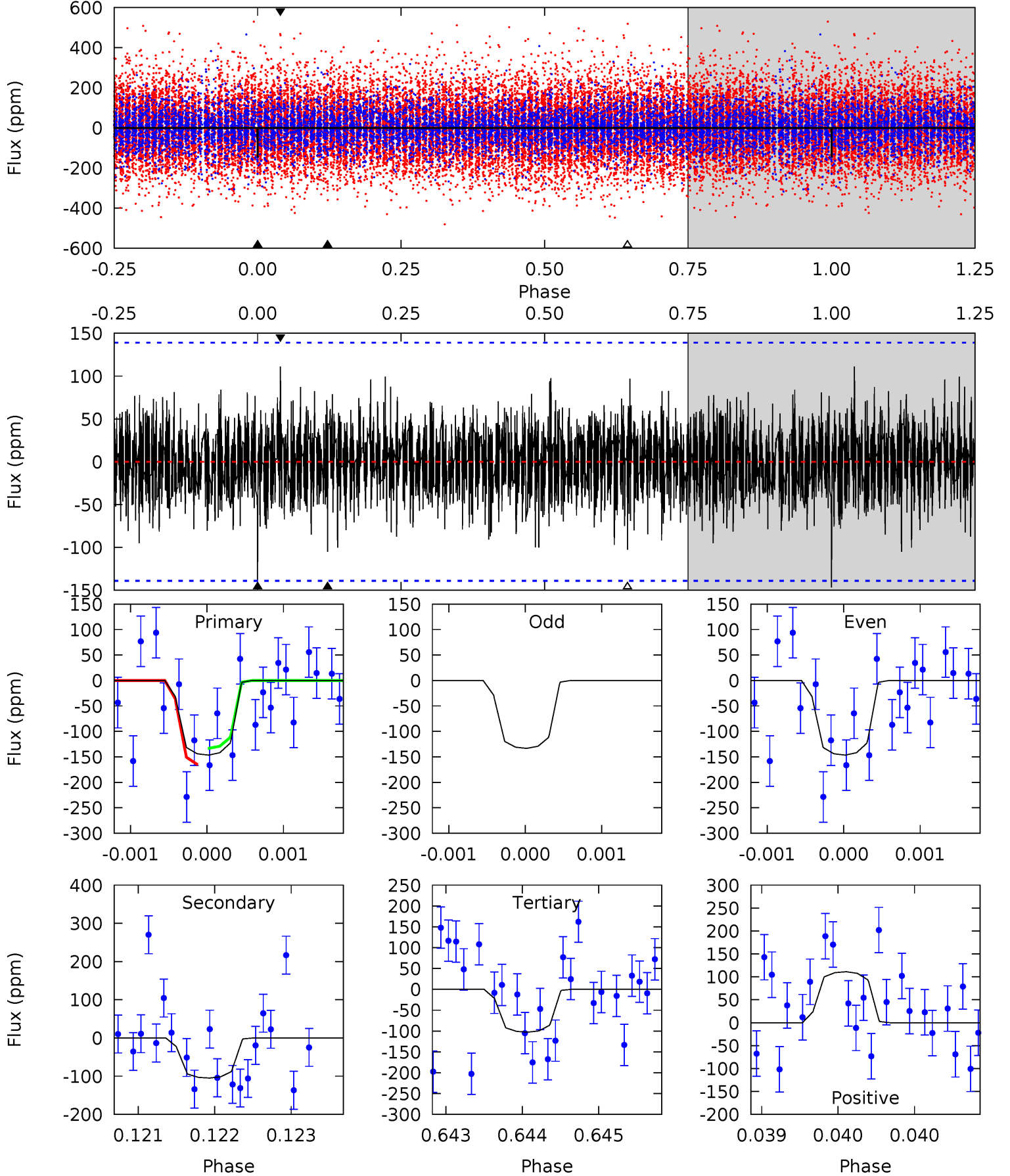
TCE 011572490-03 P=171.722830 Days  $T_0=228.246469$  (BKJD)



# DV Model-Shift Uniqueness Test

011572490-03, P = 171.723949 Days, E = 56.519069 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.78	4.14	4.05	4.38	5.49	3.34	1.16	1.73	1.40	0.08	-0.25	0.33	0.97	0.43	0.60

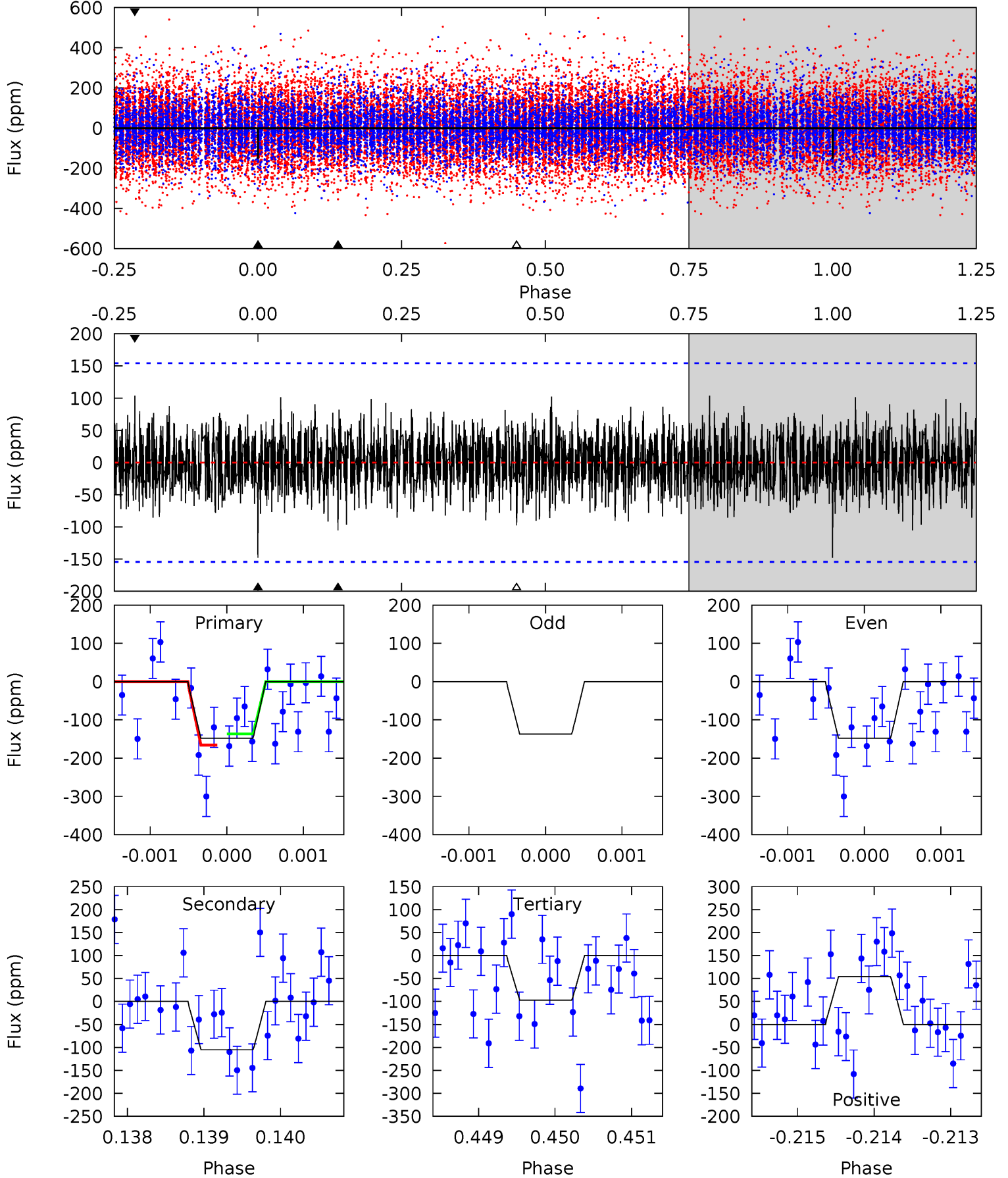




# Alt Model-Shift Uniqueness Test

011572490-03,  $P = 171.722830$  Days,  $E = 56.523639$  Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.29	3.76	3.48	3.71	5.51	3.39	1.06	1.82	1.58	0.28	0.05	0.25	1.01	0.41	0.51



### Stellar Parameters For KIC 011572490

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$7211^{+175}_{-300}$	$4.290^{+0.047}_{-0.248}$	$0.070^{+0.200}_{-0.350}$	$1.456^{+0.580}_{-0.193}$	$1.505^{+0.216}_{-0.196}$	$0.687^{+0.182}_{-0.420}$
	+2%/-4%	+1%/-6%	+286%/-500%	+40%/-13%	+14%/-13%	+27%/-61%
Source	PHO1	KIC0	KIC0	DSEP		

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

### Secondary Eclipse Parameters for KIC 011572490-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-105 \pm 25$	$2.52^{+1.42}_{-1.28}$	$665^{+59}_{-38}$	$5943^{+3014}_{-1101}$	$4257^{+13308}_{-2605}$
Alt.	$-105 \pm 28$	$2.21^{+1.37}_{-1.24}$	$661^{+56}_{-37}$	$6352^{+3846}_{-1295}$	$5750^{+21742}_{-3684}$

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

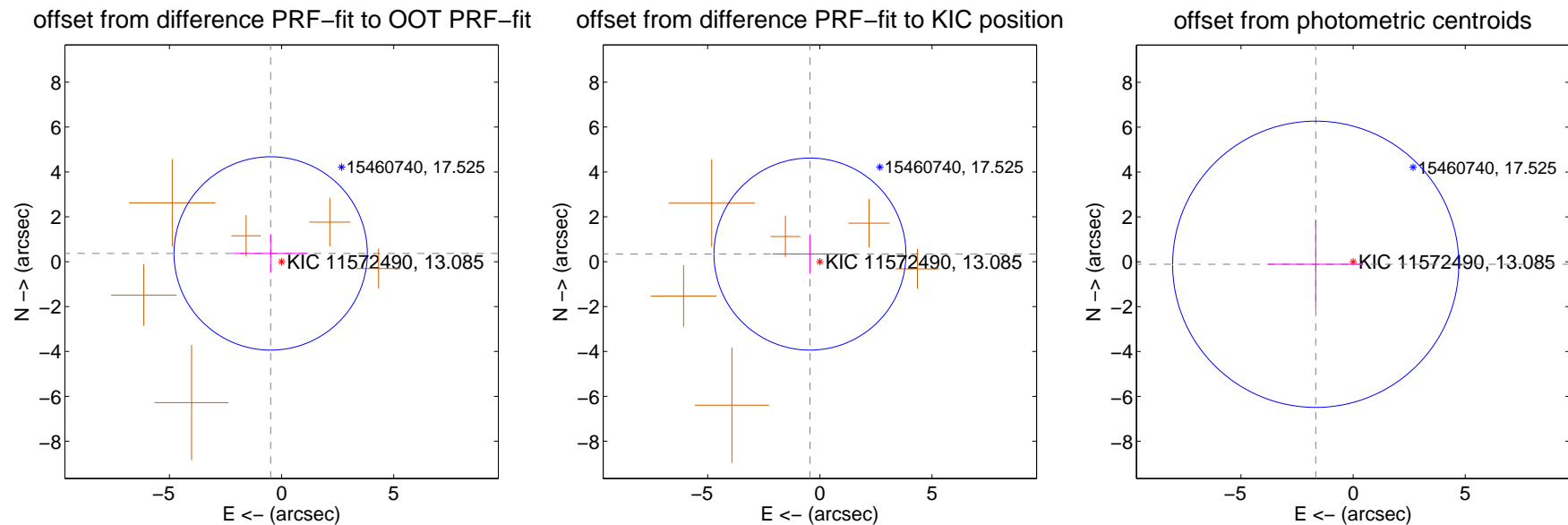
## DV Centroid Data

Supplemental centroid analysis for 011572490-03. Kepler magnitude: 13.09. Transit SNR 7.35

There are 0 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.15 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.610 \pm 1.436$	0.42	$0.486 \pm 1.677$	$0.368 \pm 0.866$
PRF-fit source offset from KIC position	$0.556 \pm 1.426$	0.39	$0.441 \pm 1.670$	$0.338 \pm 0.871$
photometric centroid source offset	$1.67 \pm 2.13$	0.79	$1.67 \pm 2.13$	$-0.11 \pm 1.98$



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.

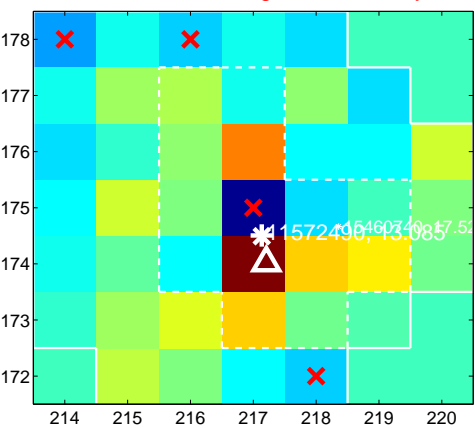
Q1 no difference image



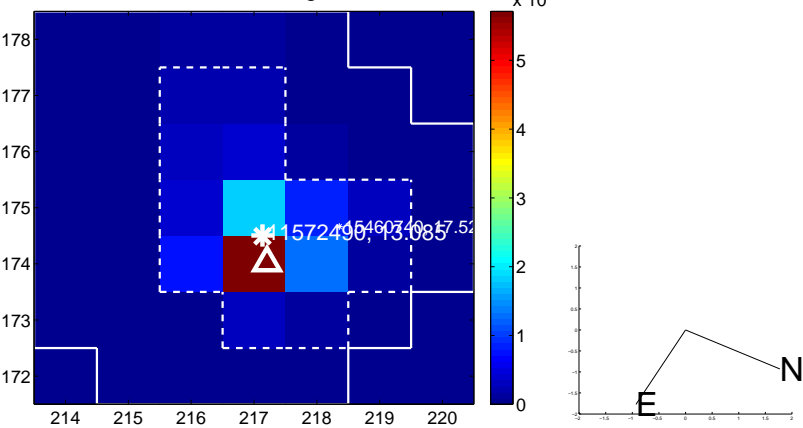
Q1 no OOT image



Q2 difference image. Poor Quality



Q2 OOT image



Q3 no difference image



Q3 no OOT image



Q4 no difference image



Q4 no OOT image



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

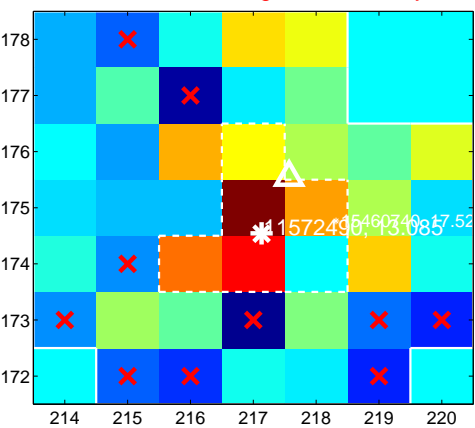
Q5 no difference image



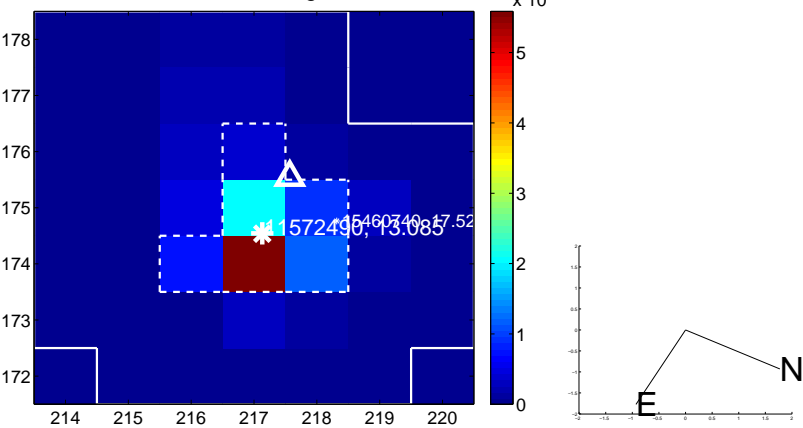
Q5 no OOT image



Q6 difference image. Poor Quality



Q6 OOT image



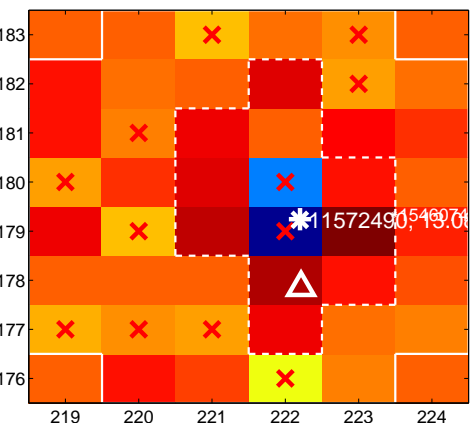
Q7 no difference image



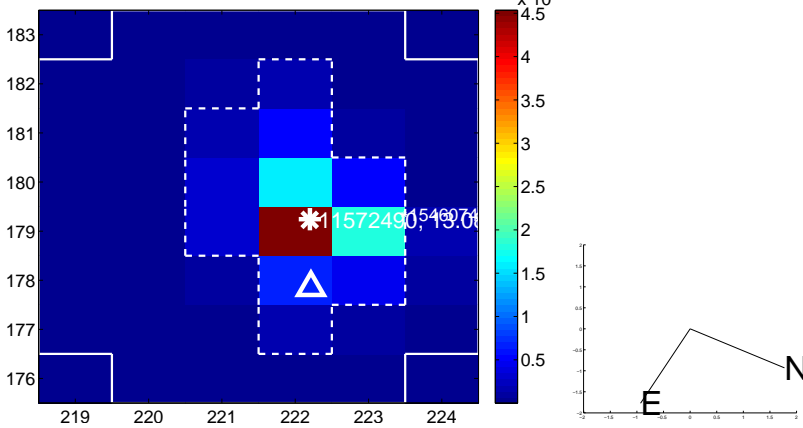
Q7 no OOT image



Q8 difference image. Poor Quality



Q8 OOT image



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

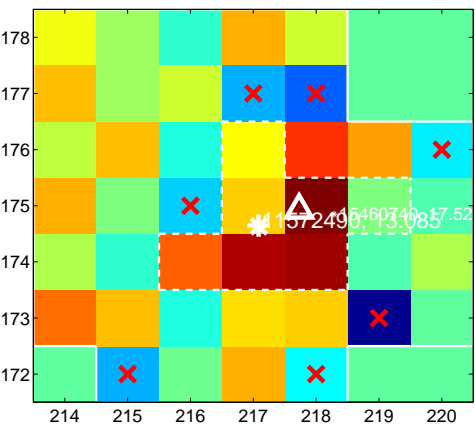
Q9 no difference image



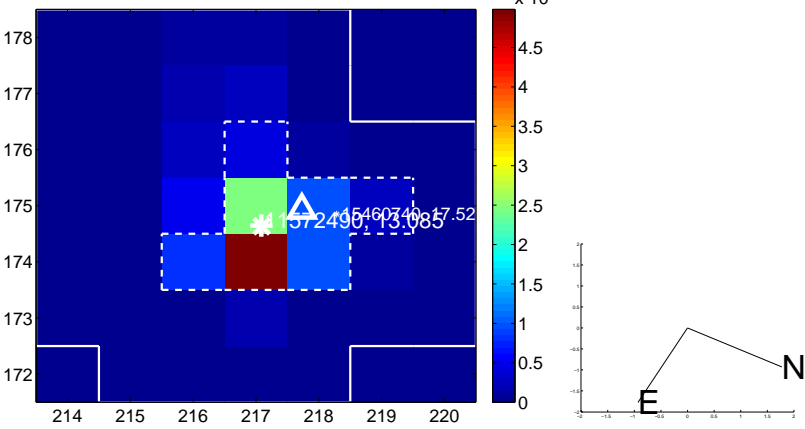
Q9 no OOT image



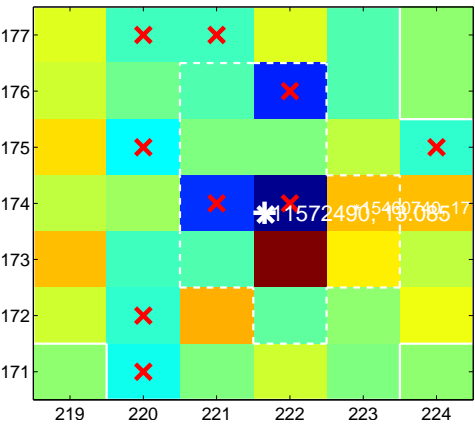
Q10 difference image. Poor Quality



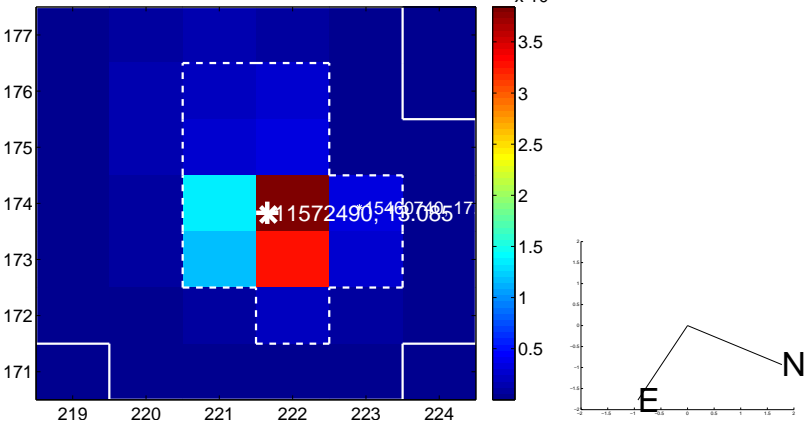
Q10 OOT image



Q11 difference image. Poor Quality



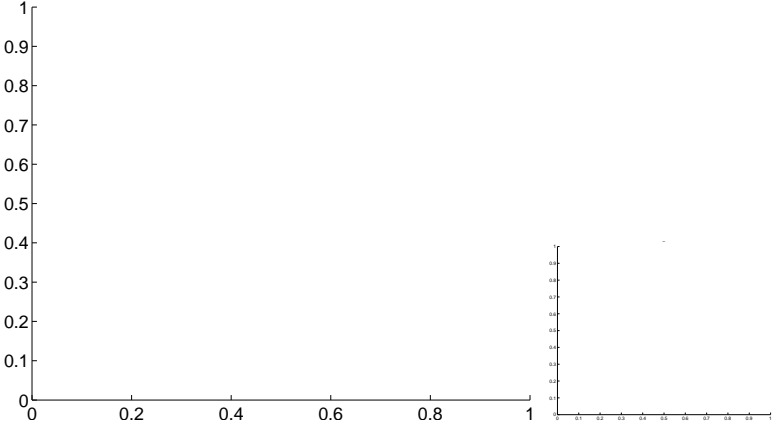
Q11 OOT image



Q12 no difference image

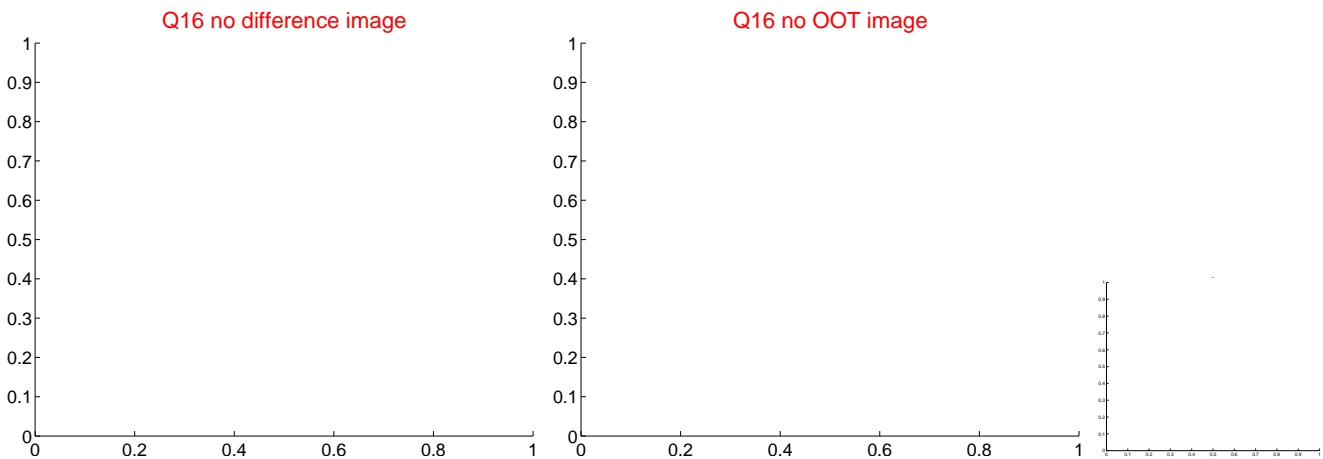
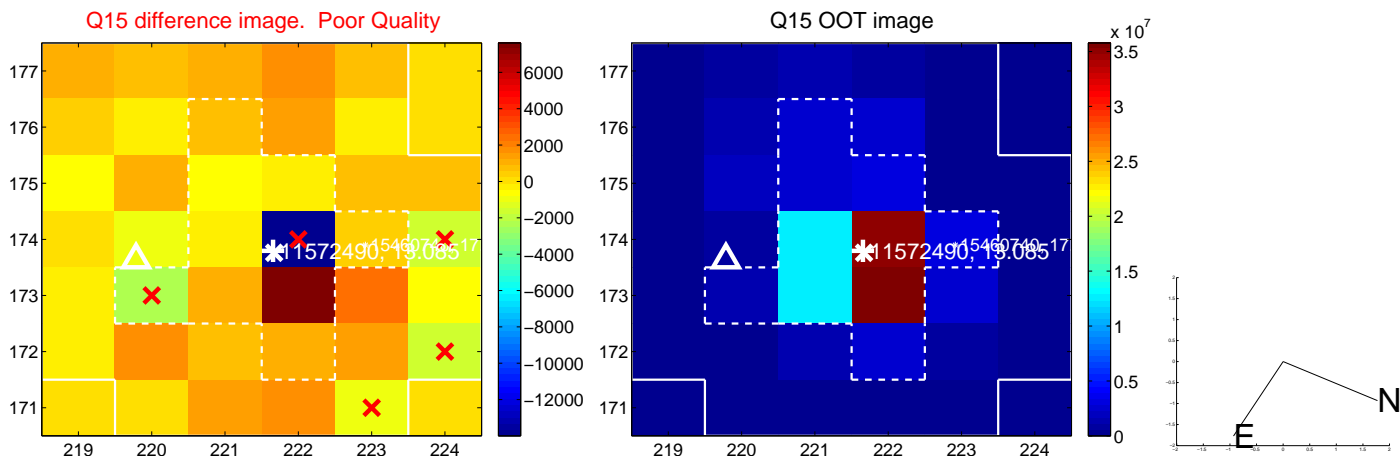
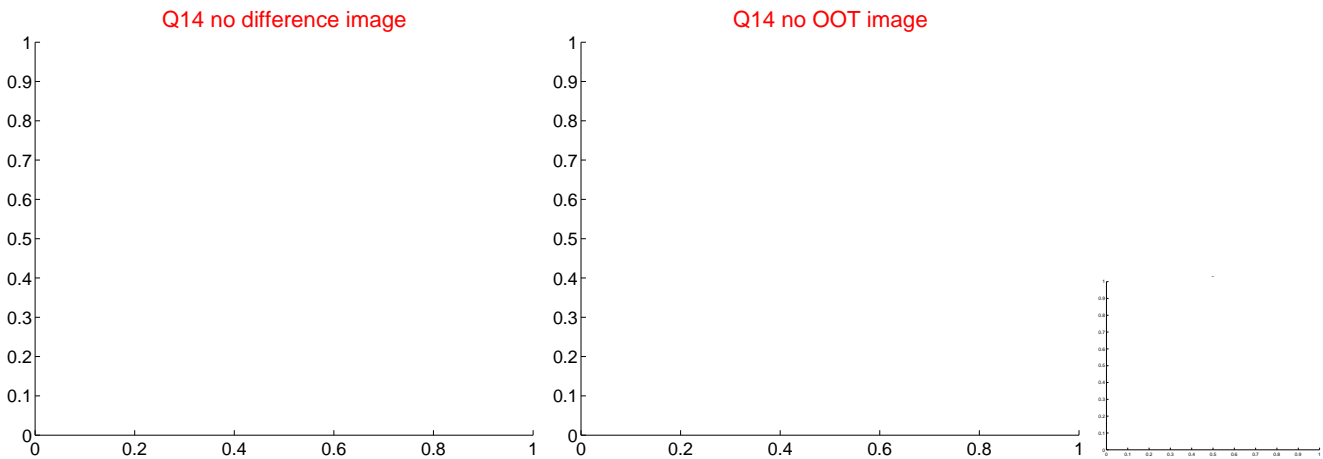
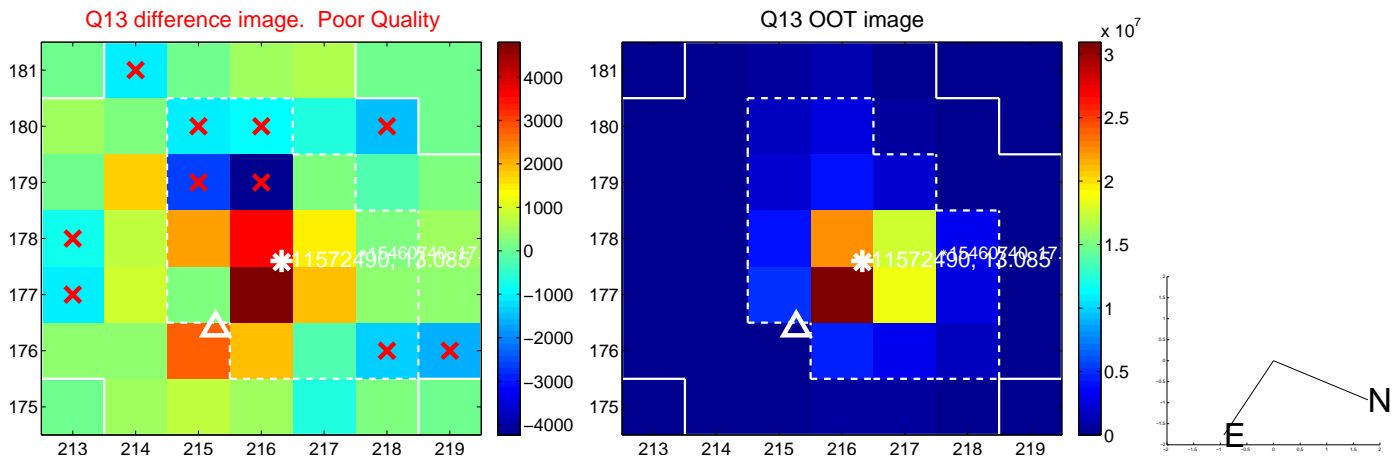


Q12 no OOT image

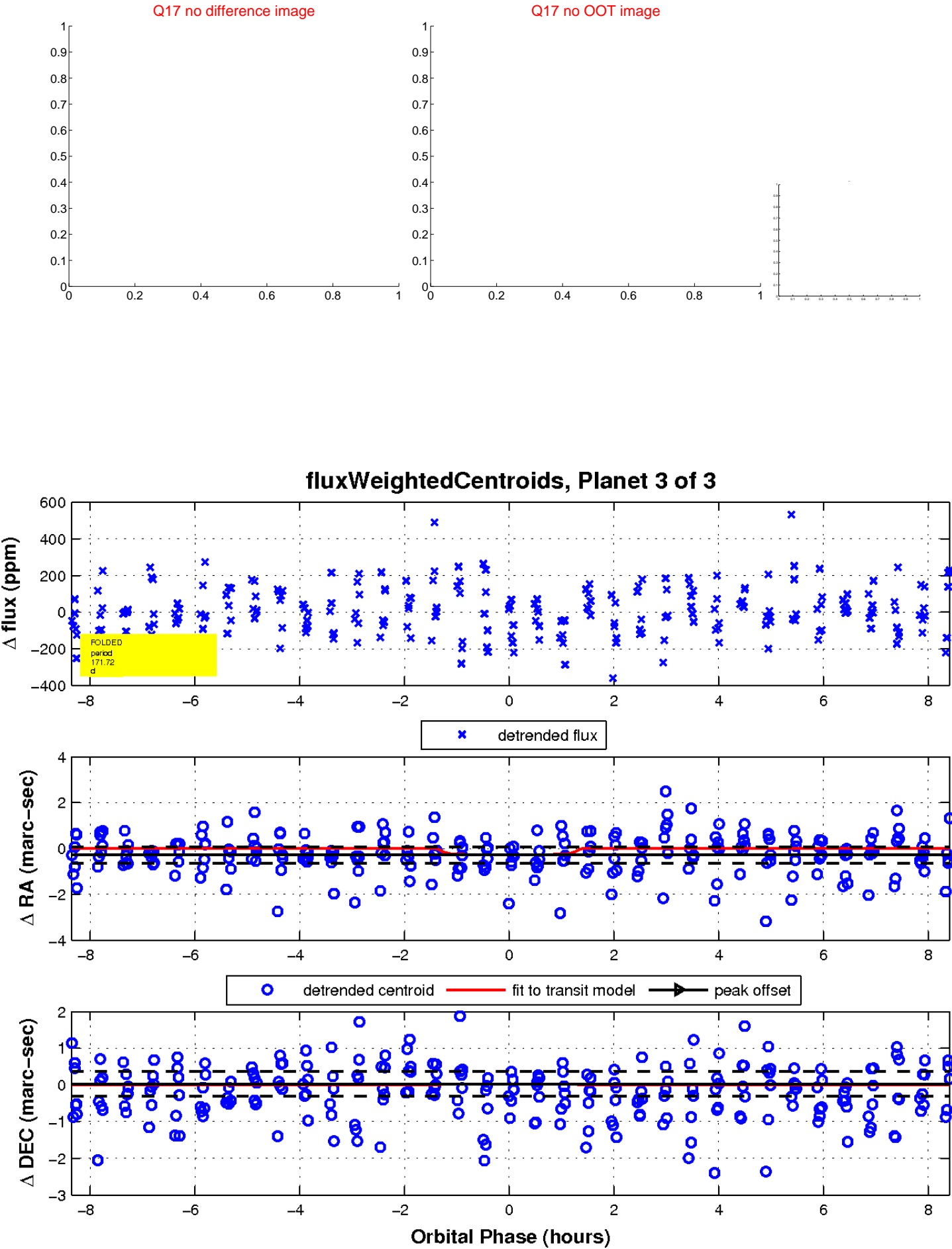




white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



# UKIRT Image

Declination

