

# KIC 004773155

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
004773155-01	OBS	6453.01	25.706003	156.640867	480994.4	6.000	35714.5	-1.0	0.90	5642	49.27	26.61
004773155-02	OBS	No	25.706153	148.344531	375708.7	3.000	24992.2	-1.0	0.90	5642	49.27	26.61
004773155-03	OBS	No	8.568672	138.687426	0.5	1.052	2824.2	0.0	0.90	5642	0.07	115.13
004773155-04	OBS	No	8.568983	138.672959	1596.7	8.154	2826.2	76.2	0.90	5642	6.98	115.13
004773155-05	OBS	No	8.568636	139.781701	12324.5	11.045	2727.3	1314.1	0.90	5642	9.89	115.13

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004773155-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_ALT—MOD_ODDEVEN_ALT—HAS_SEC_TCE—CENT_NOFITS
004773155-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE—CENT_NOFITS
004773155-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT— MOD_POS_ALT—SAME_NTL_PERIOD—CENT_FEW_MEAS
004773155-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—SAME_NTL_PERIOD— CENT_FEW_DIFFS
004773155-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—LPP_DV—RESIDUAL_TCE—CENT_FEW_DIFFS

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

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

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

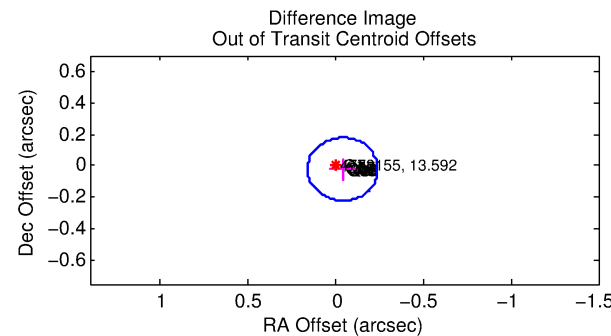
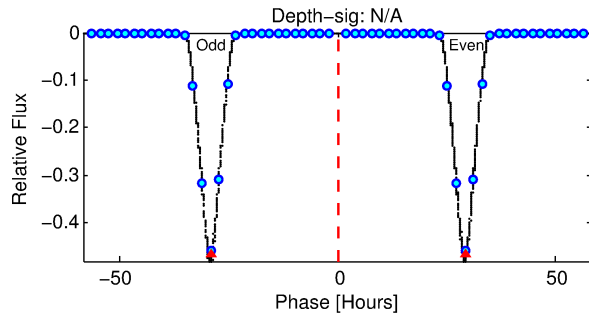
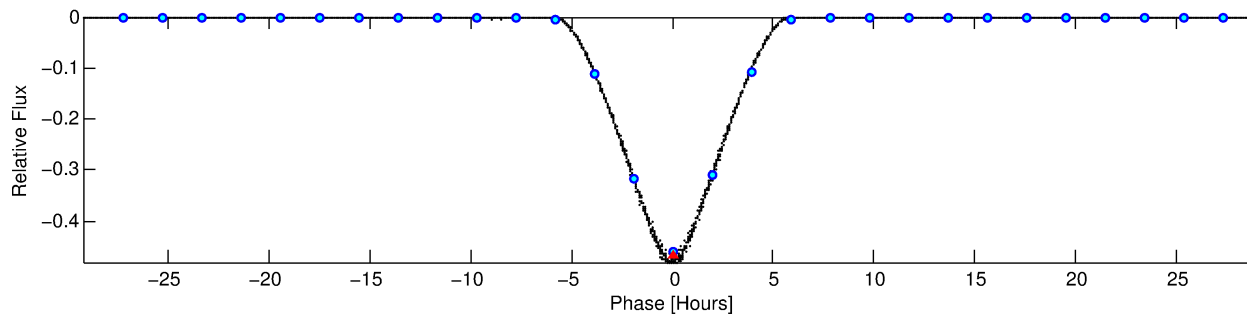
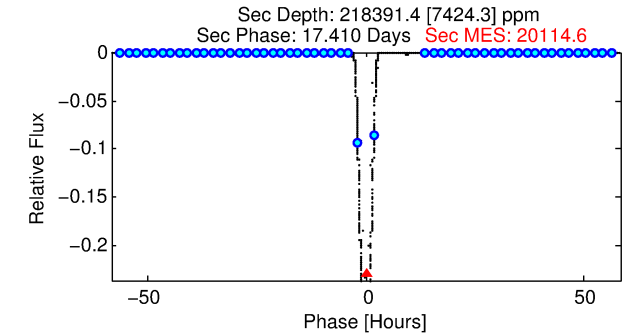
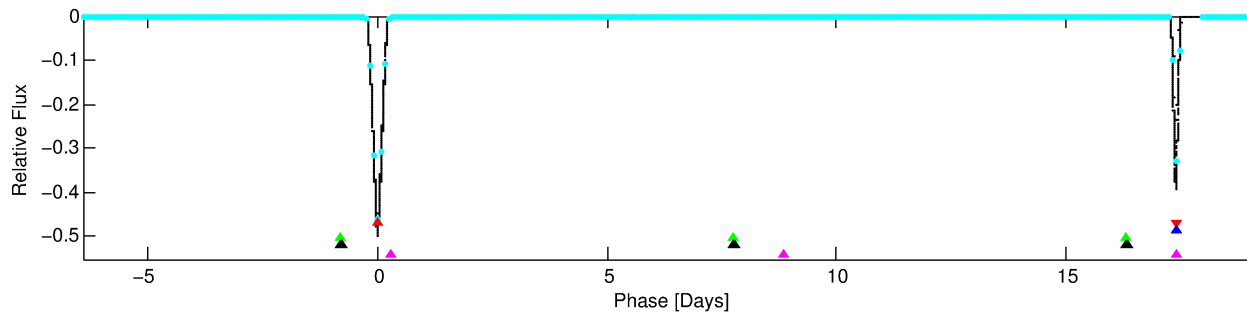
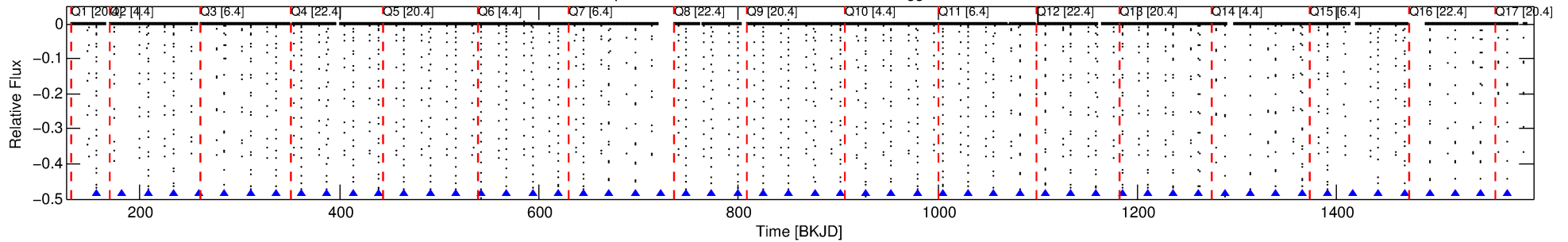
## Ephemeris Match Information For 004773155-01

No Significant Match Found

# DV One-Page Summary

KIC: 4773155 Candidate: 1 of 5 Period: 25.706 d  
KOI: K06453 Corr: No Ephemeris Match

Kp: 13.59 R\*: 0.90 Rs Teff: 5642.0 K Logg: 4.50 Fe/H: -0.020



## TPS TCE Results:

Period = 25.70600 d  
Epoch = 156.6409 BKJD

DV fit results are unavailable

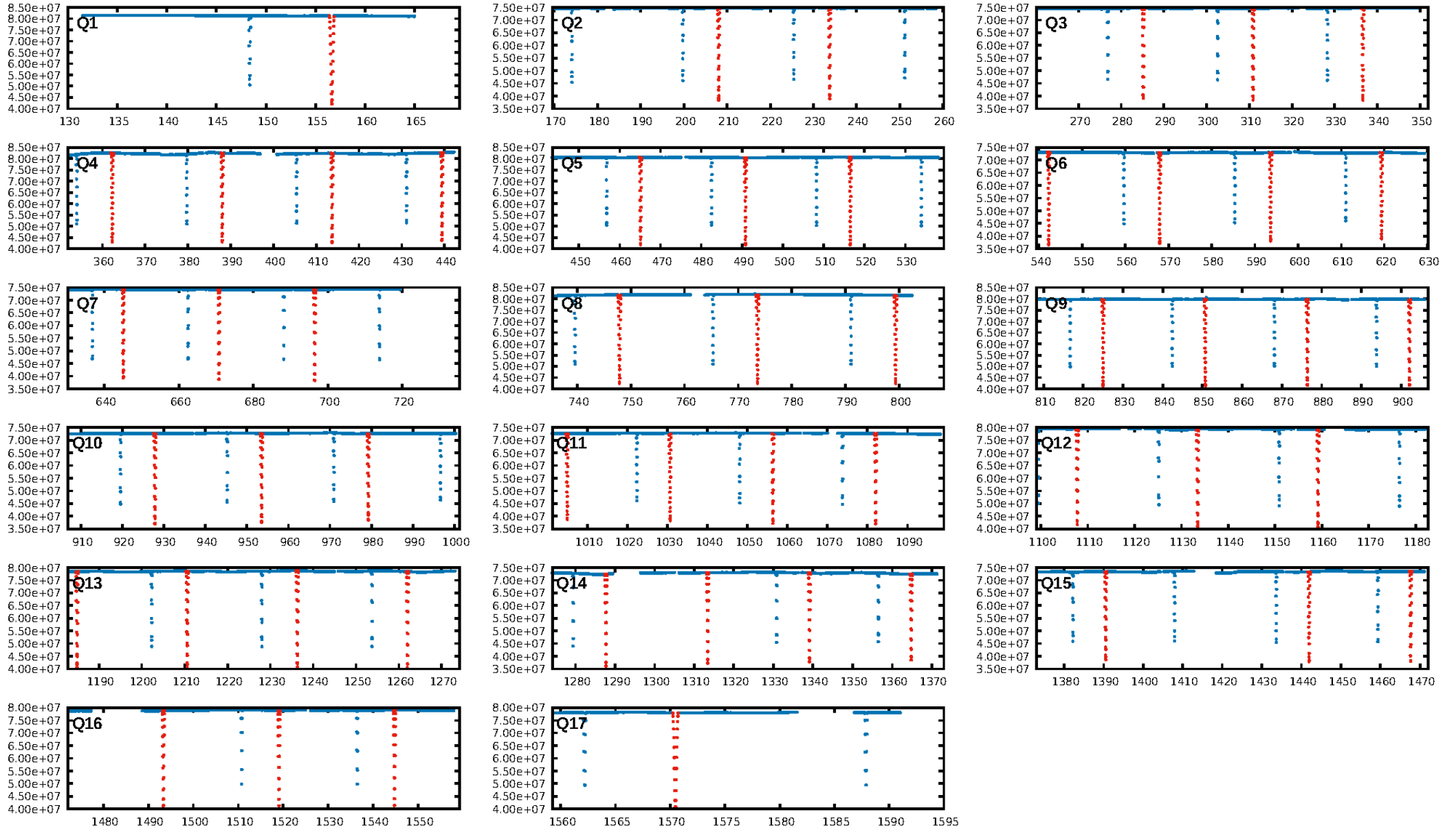
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [40.63 $\sigma$ ]  
LongPeriod-sig: 0.0% [0.00 $\sigma$ ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [50/50]  
GhostDiagnostic-chr: 2.42  
Centroid-sig: N/A  
Centroid-so: 0.359 arcsec [952.96 $\sigma$ ]  
OotOffset-rm: 0.046 arcsec [0.68 $\sigma$ ]  
KicOffset-rm: 0.234 arcsec [3.38 $\sigma$ ]  
OotOffset-st: 4/4/4/5 [17]  
KicOffset-st: 4/4/4/5 [17]  
DiffImageQuality-fgm: 1.00 [17/17]  
DiffImageOverlap-fno: 0.00 [0/17]

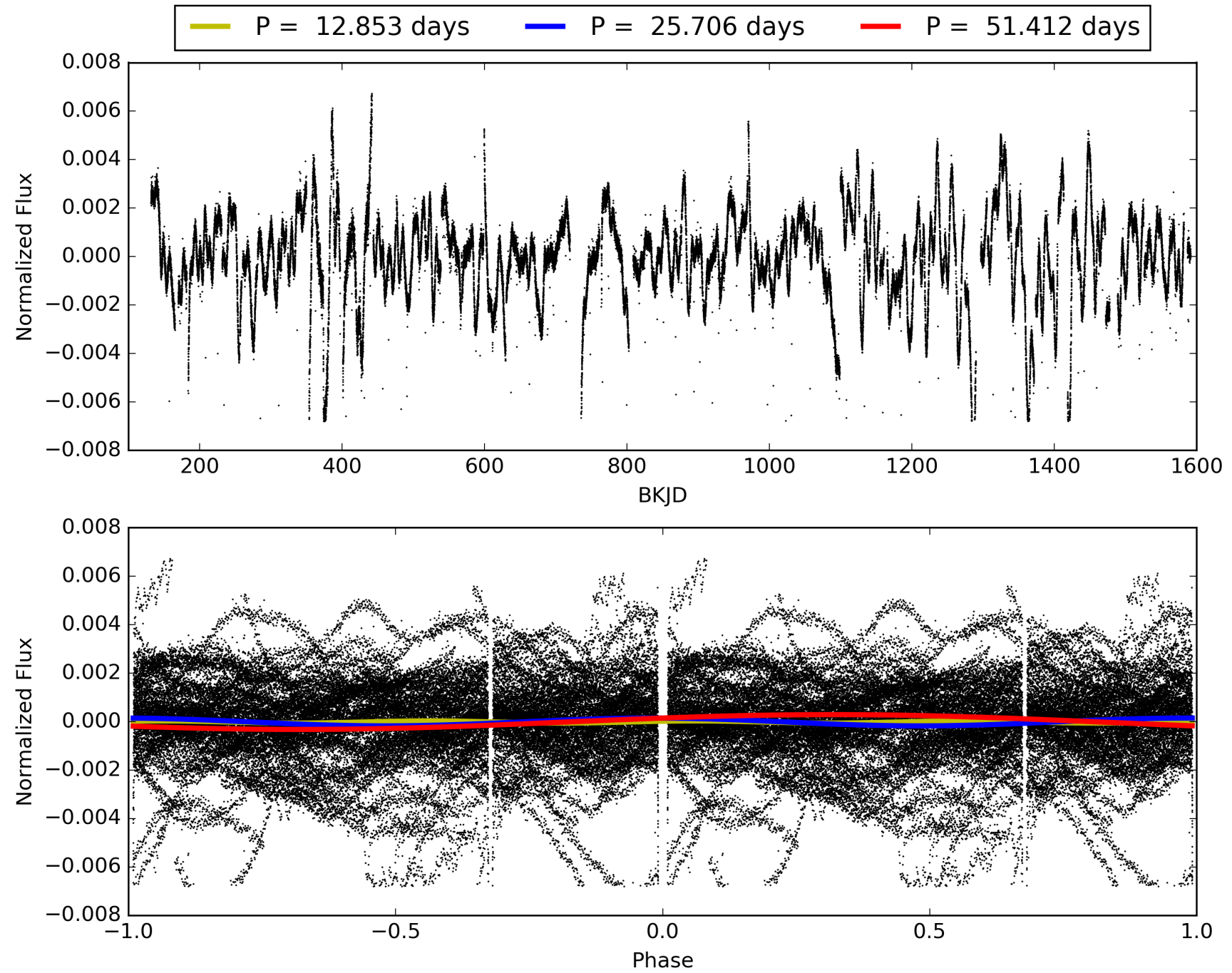
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 08:54:18 Z

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

# TCE 004773155-01, PDC Light Curves



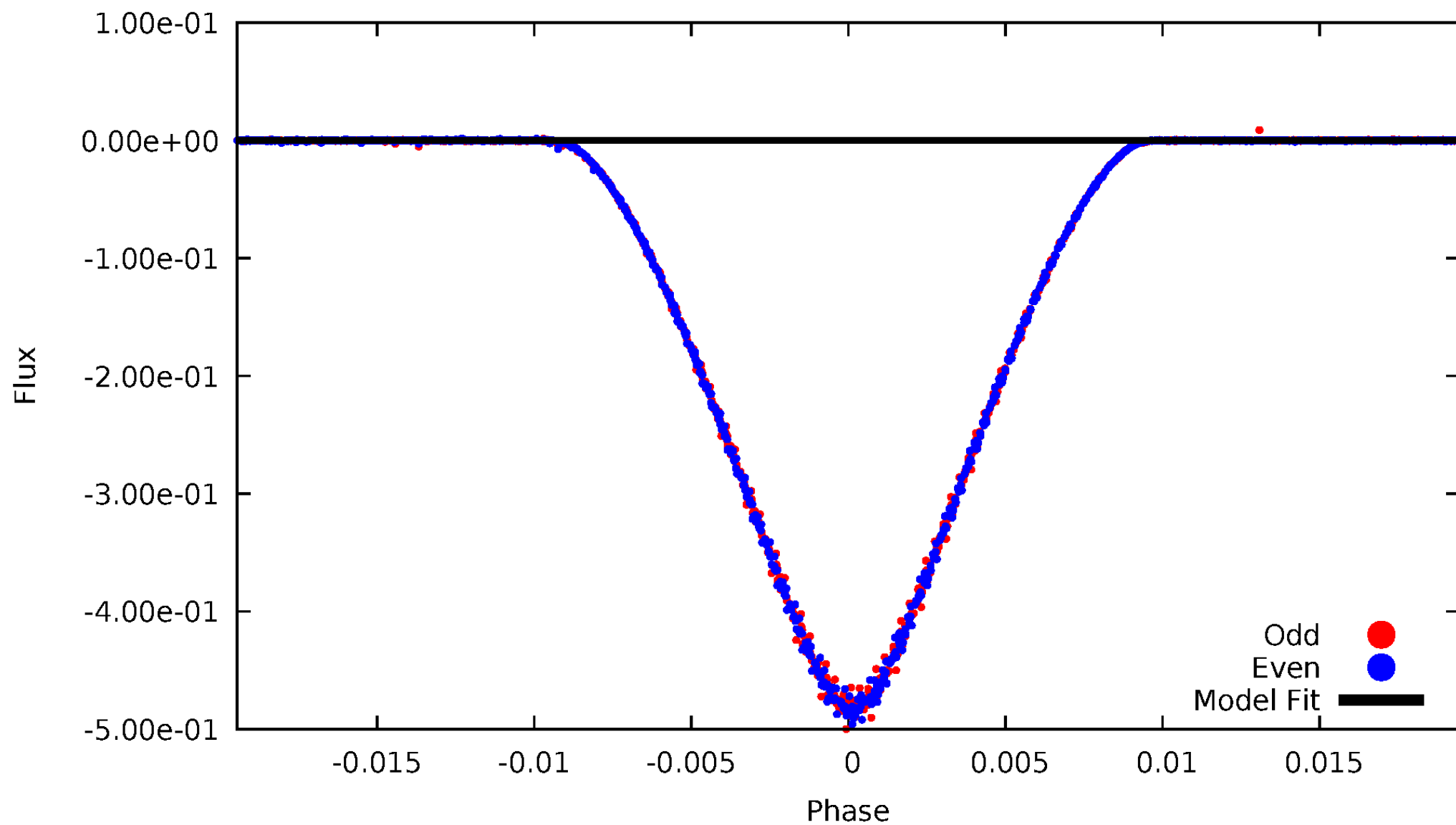
TCE 004773155-01





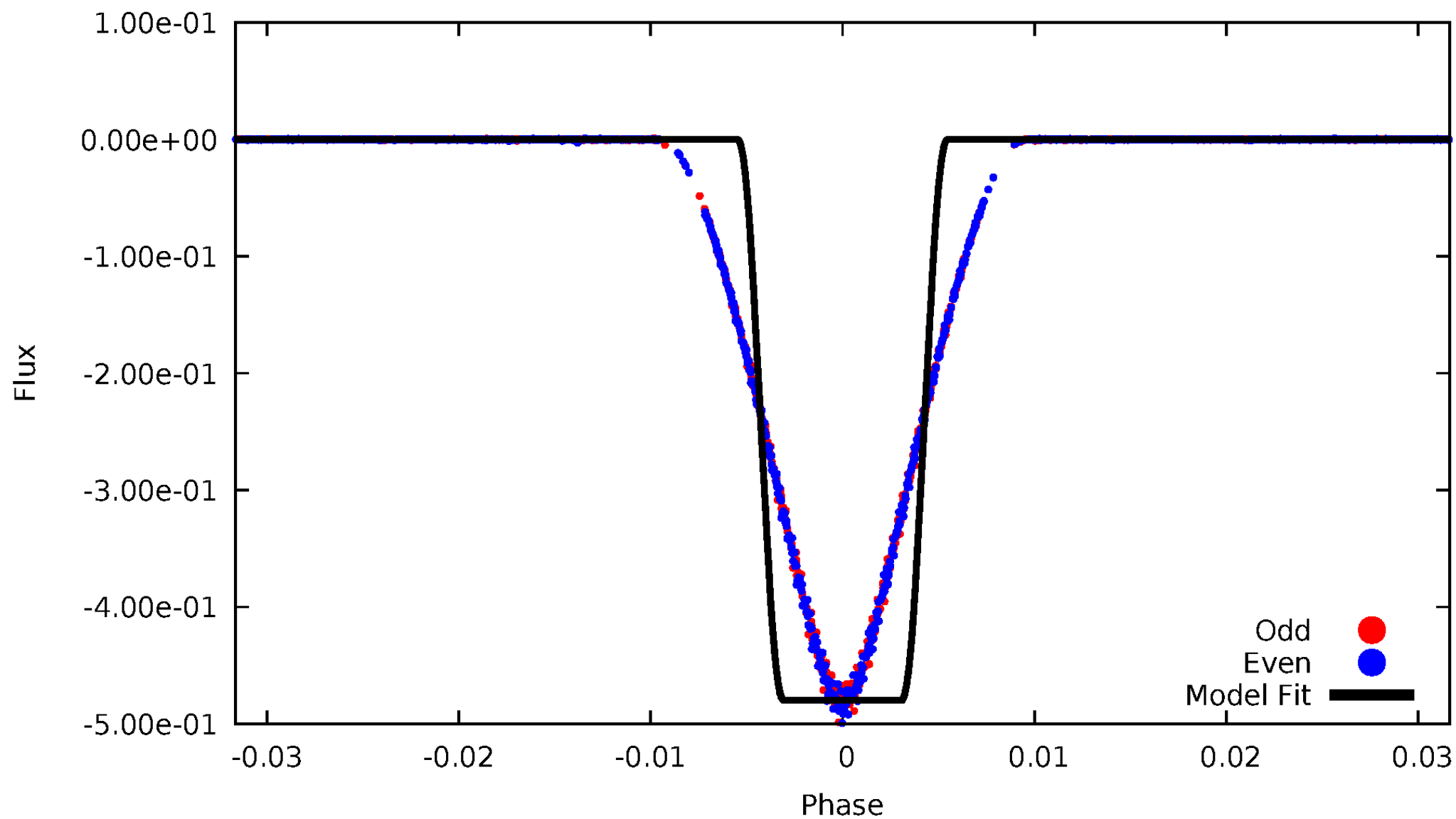
# DV Odd/Even

TCE 004773155-01



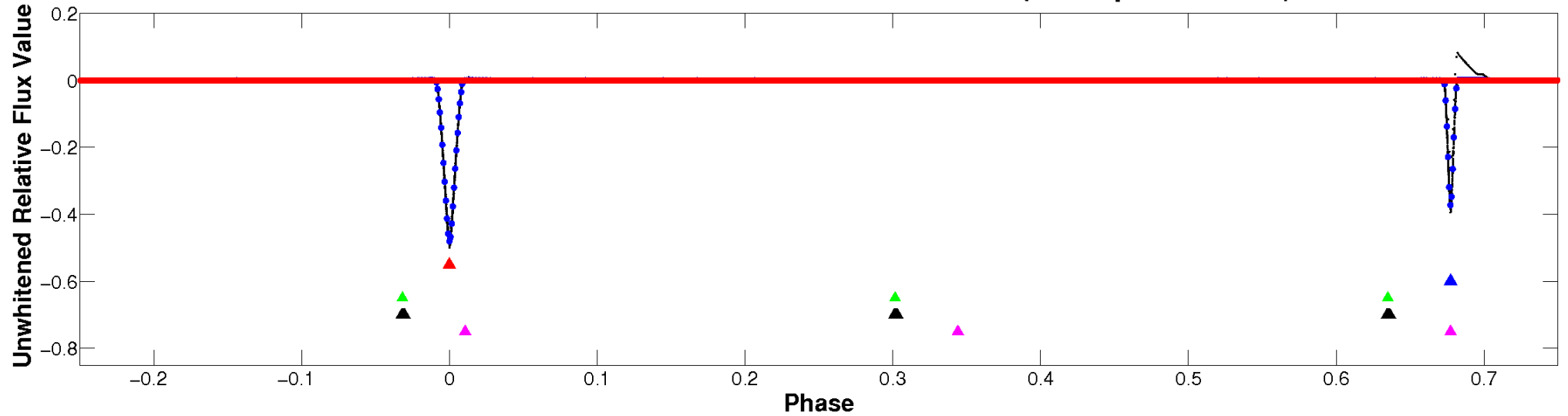
# ALT Odd/Even

TCE 004773155-01



# Non-Whitened Vs. Whitened Light Curve

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

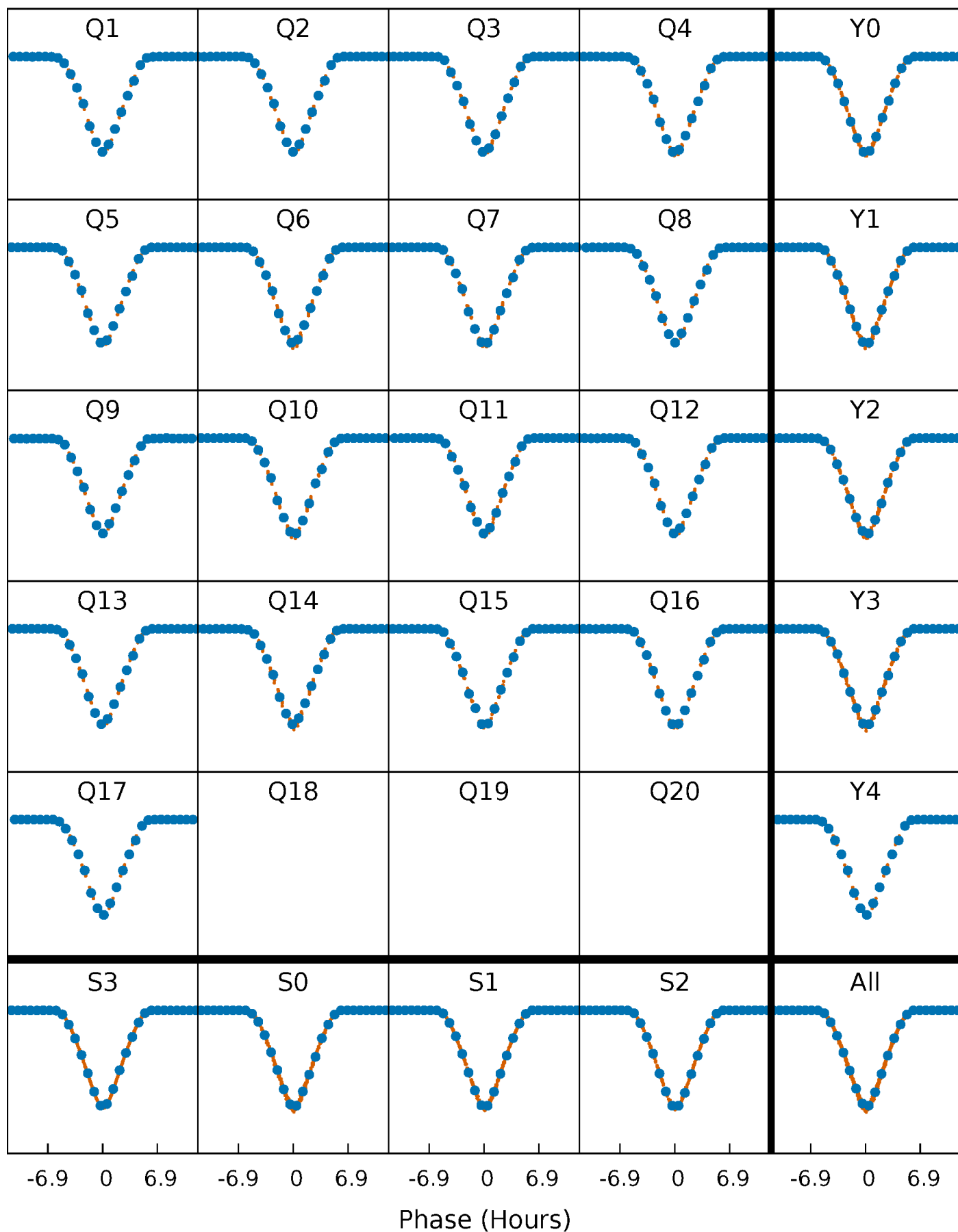


Planet 1 : Phased Whitened Flux Time Series (TPS Epoch/Period)



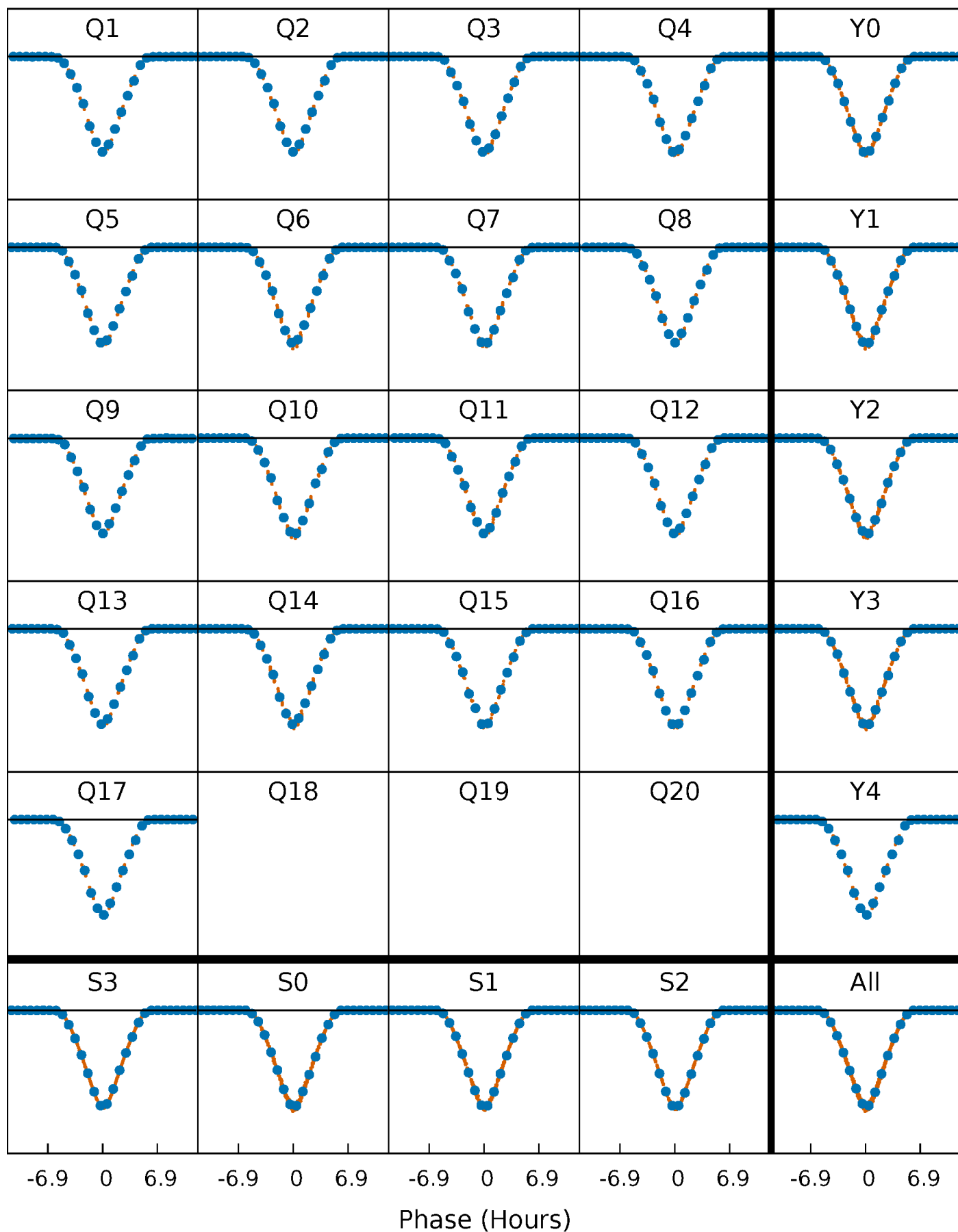
# PDC Quarter-Phased Transit Curves

TCE 004773155-01 P= 25.706003 Days  $T_0=156.640867$  (BKJD)



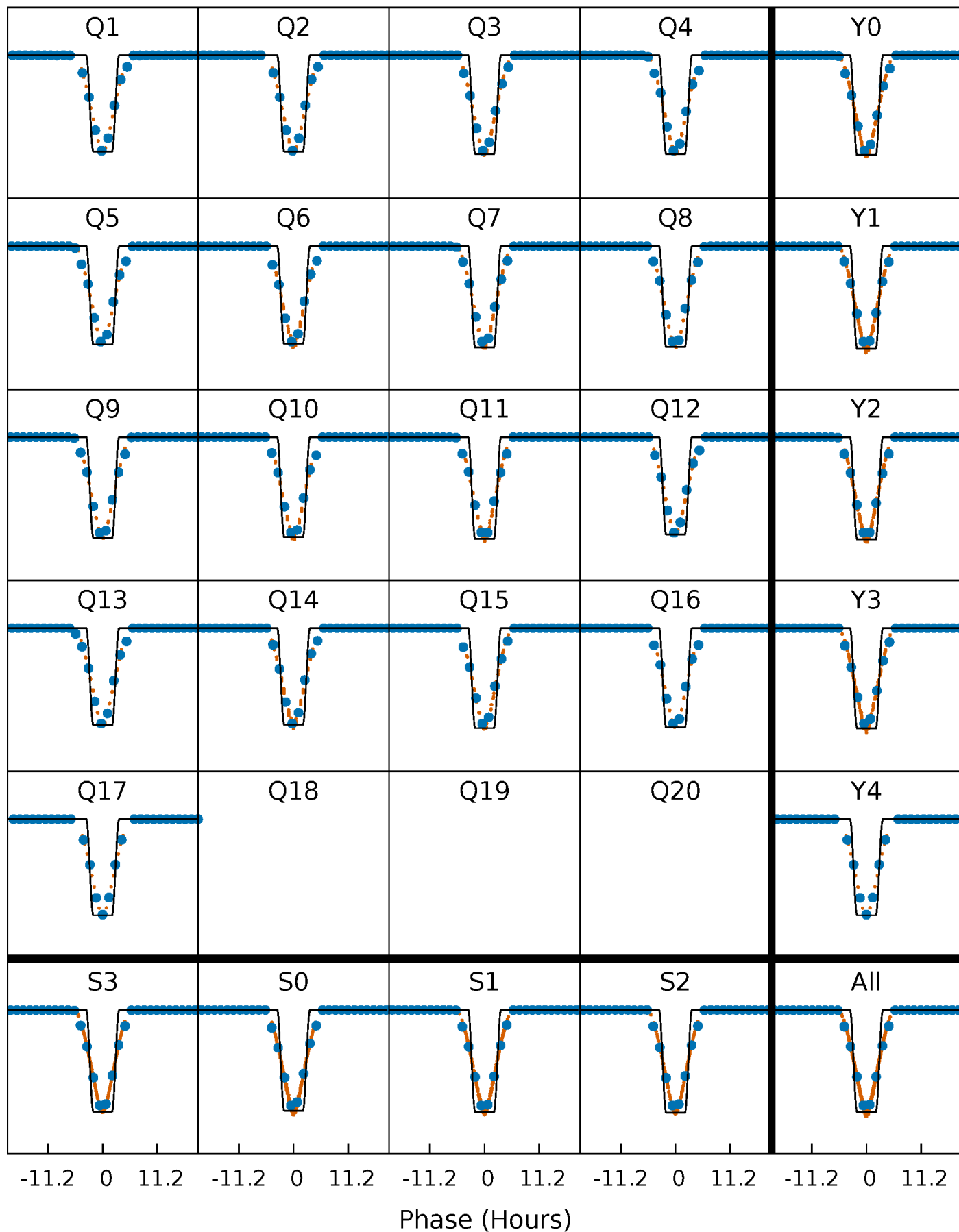
# DV Quarter-Phased Transit Curves

TCE 004773155-01 P= 25.706003 Days  $T_0=156.640867$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 004773155-01 P= 25.706003 Days  $T_0=156.644254$  (BKJD)

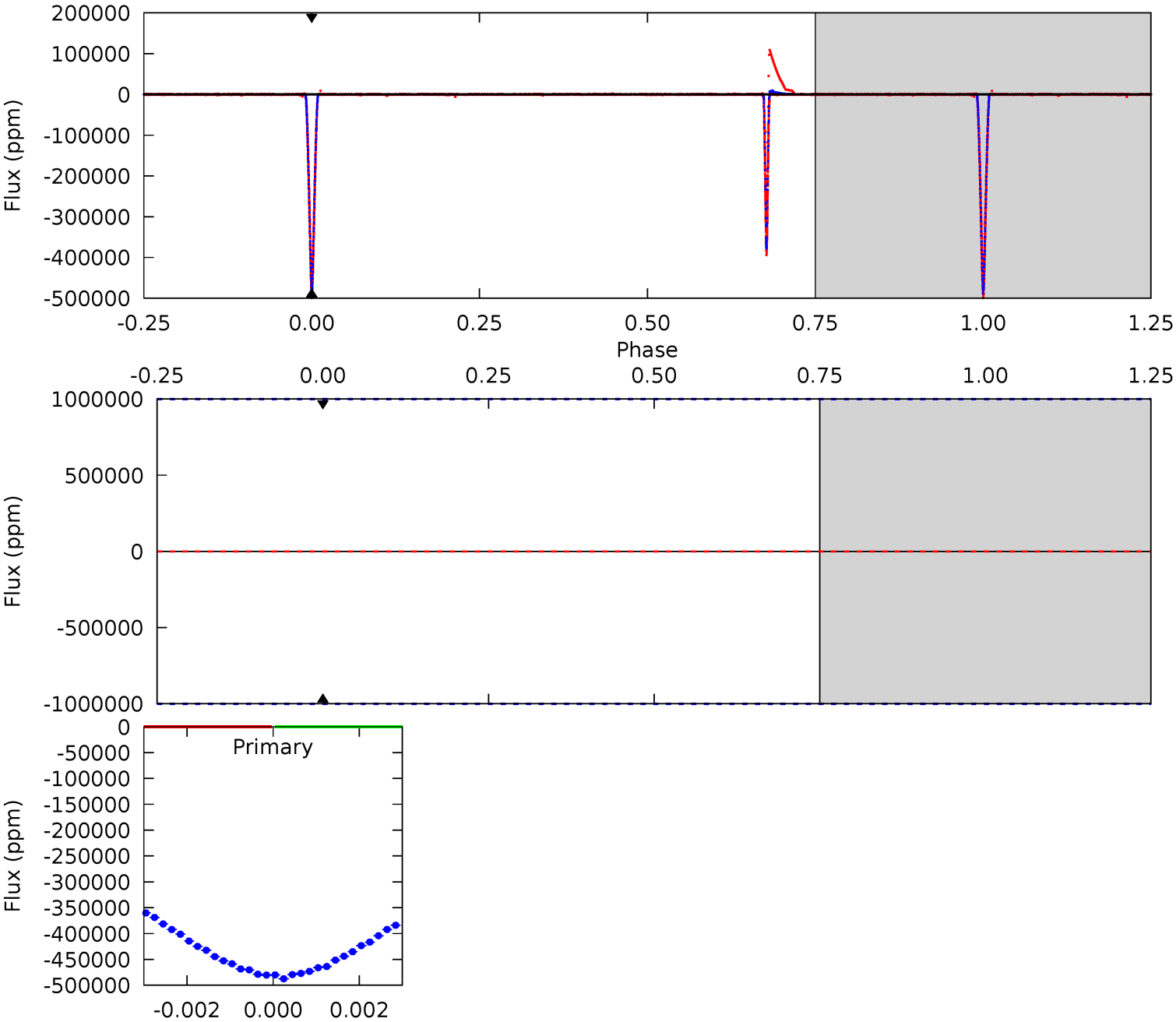




# DV Model-Shift Uniqueness Test

004773155-01, P = 25.706003 Days, E = 130.934864 Days

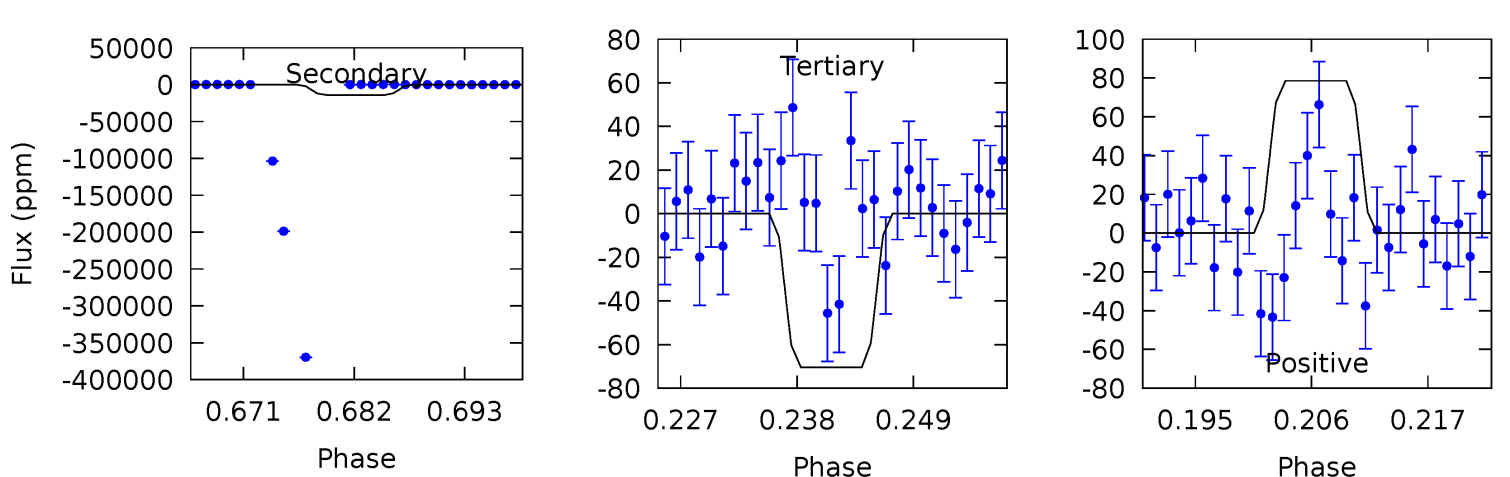
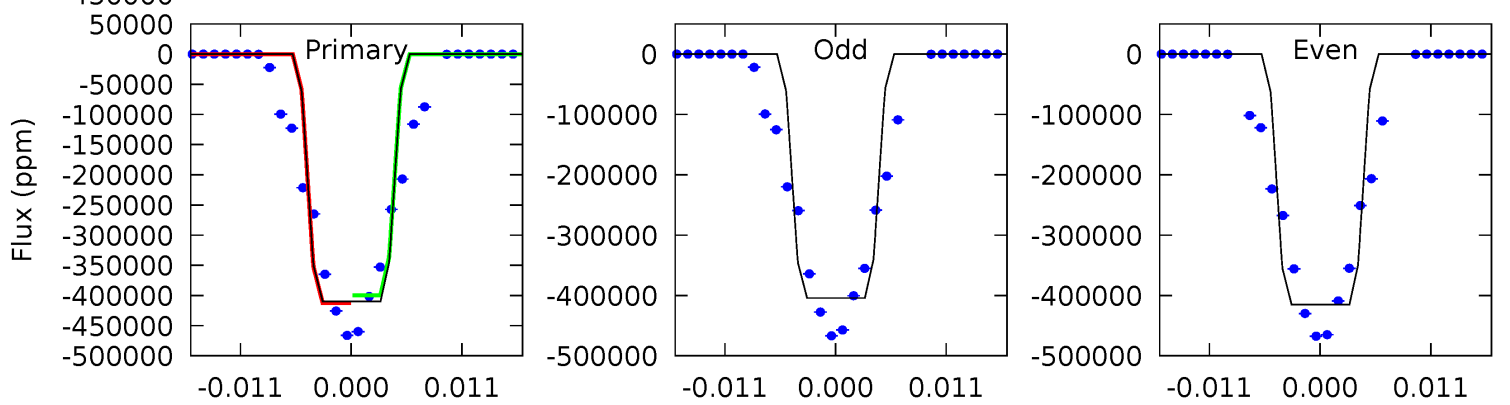
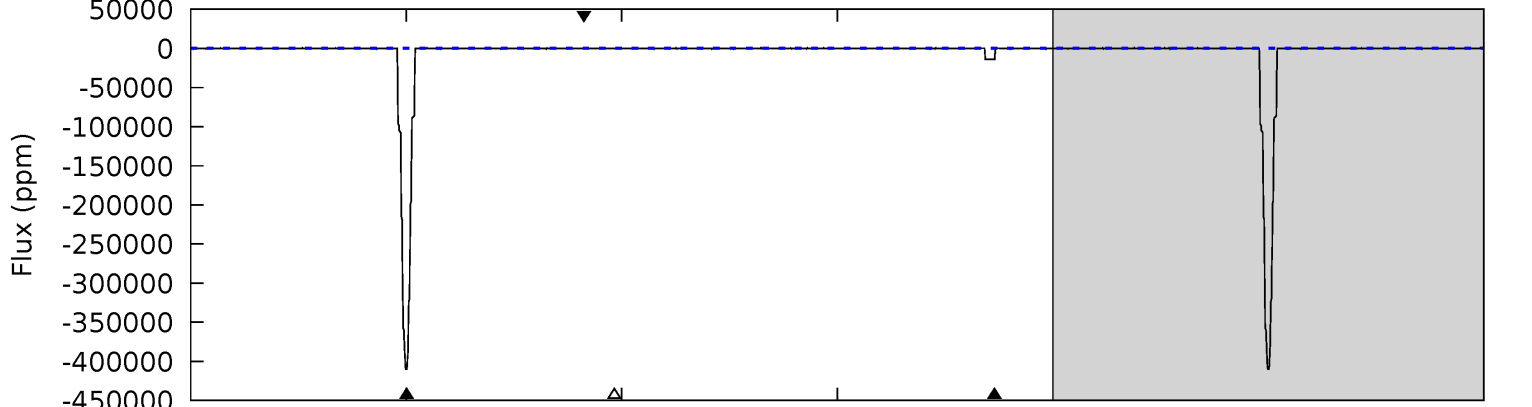
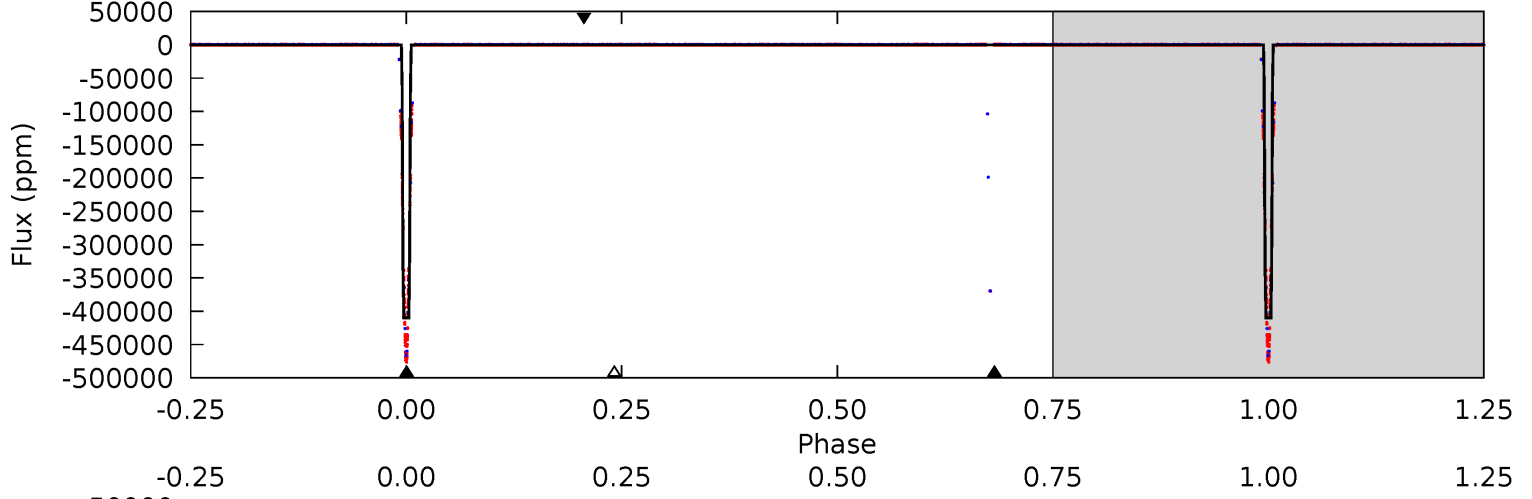
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



# Alt Model-Shift Uniqueness Test

004773155-01, P = 25.706003 Days, E = 130.938251 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
27628	946.0	4.75	5.29	5.01	2.55	14.3	27623	27622	941.3	940.7	413.3	1.00	0.00	0



### Stellar Parameters For KIC 004773155

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5642^{+152}_{-169}$	$4.498^{+0.060}_{-0.180}$	$-0.020^{+0.300}_{-0.300}$	$0.903^{+0.242}_{-0.104}$	$0.936^{+0.104}_{-0.095}$	$1.793^{+0.456}_{-0.888}$
	+3%/-3%	+1%/-4%	+1500%/-1500%	+27%/-12%	+11%/-10%	+25%/-50%
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 004773155-01 / KOI 6453.01

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$0 \pm 1000000$	$51.38^{+13.06}_{-10.78}$	$822^{+53}_{-36}$	$2827^{+2052}_{-7297}$	$30^{+679}_{-515}$
Alt.	$-14041 \pm 15$	$69.73^{+13.89}_{-10.80}$	$820^{+54}_{-38}$	$3006^{+149}_{-128}$	$45^{+17}_{-14}$

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

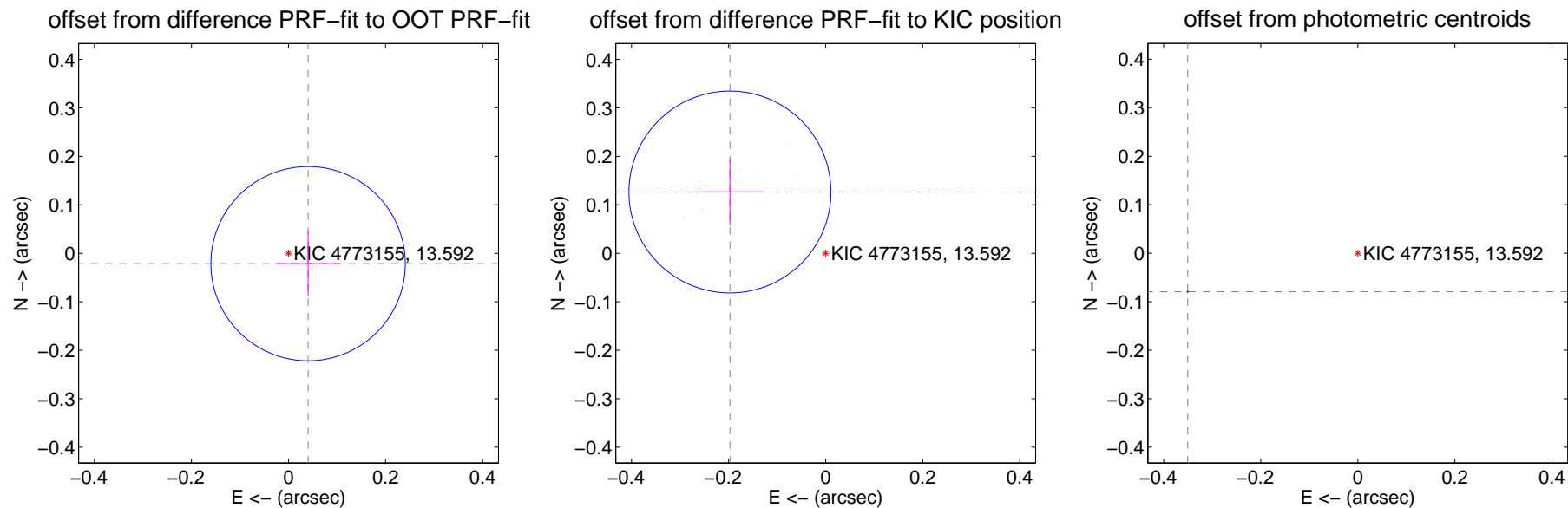
## DV Centroid Data

Supplemental centroid analysis for 004773155-01. Kepler magnitude: 13.59. Transit SNR -1.00

There are 17 quarters with good PRF difference image offsets

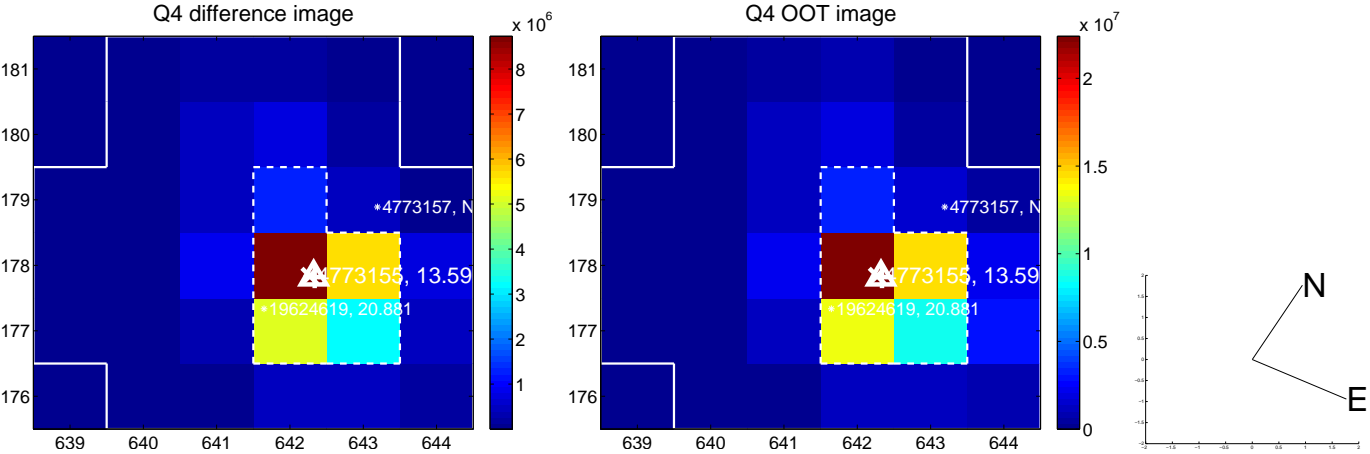
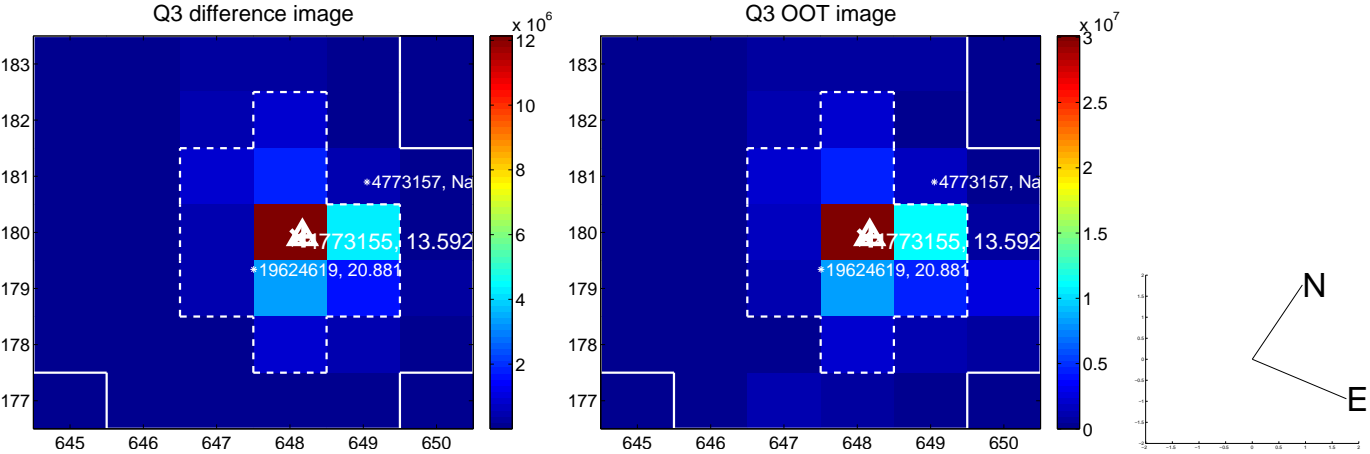
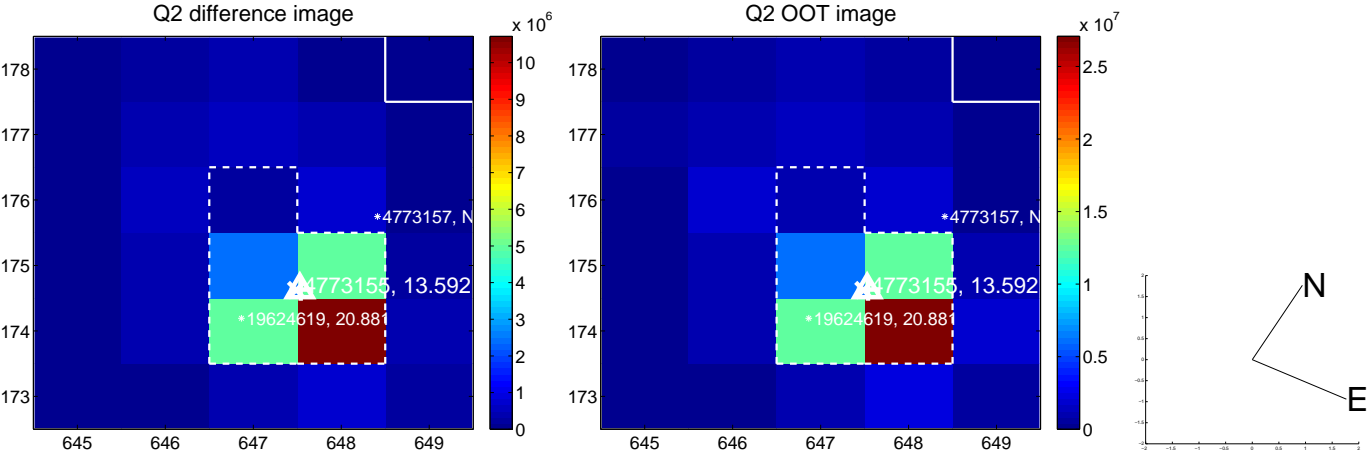
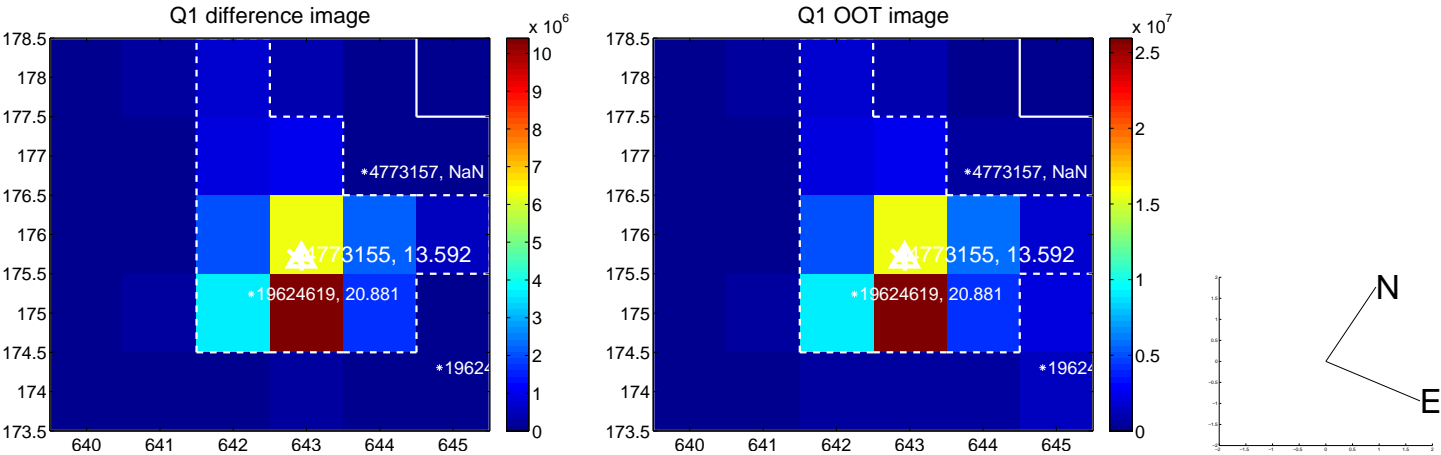
The direct PRF centroid is offset from the target star catalog position by about 0.33 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.046 \pm 0.067$	0.68	$-0.040 \pm 0.067$	$-0.021 \pm 0.067$
PRF-fit source offset from KIC position	<b><math>0.234 \pm 0.069</math></b>	<b>3.38</b>	$0.197 \pm 0.070$	$0.126 \pm 0.068$
photometric centroid source offset	<b><math>0.36 \pm 0.00</math></b>	<b>952.96</b>	$0.35 \pm 0.00$	$-0.08 \pm 0.00$

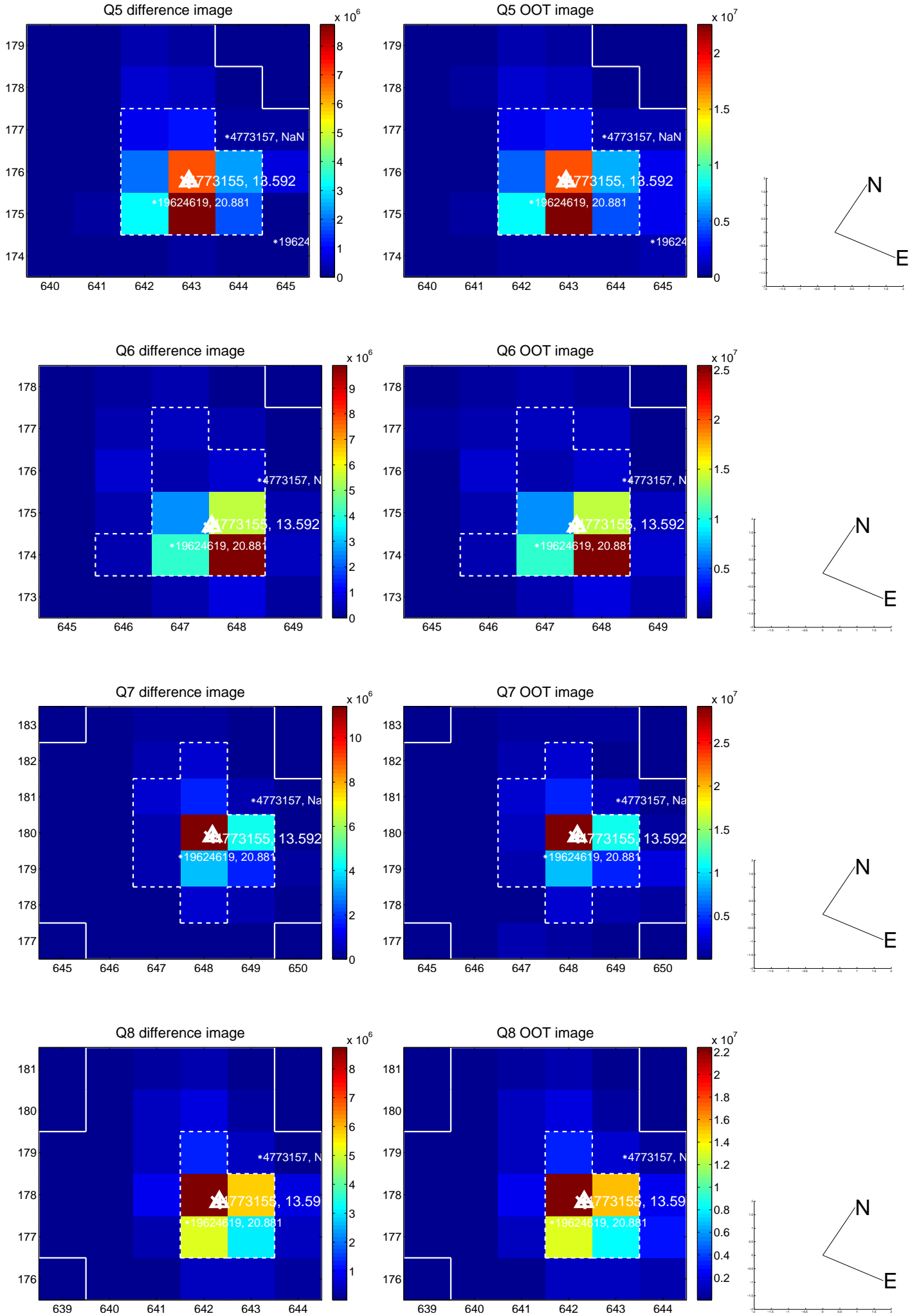


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

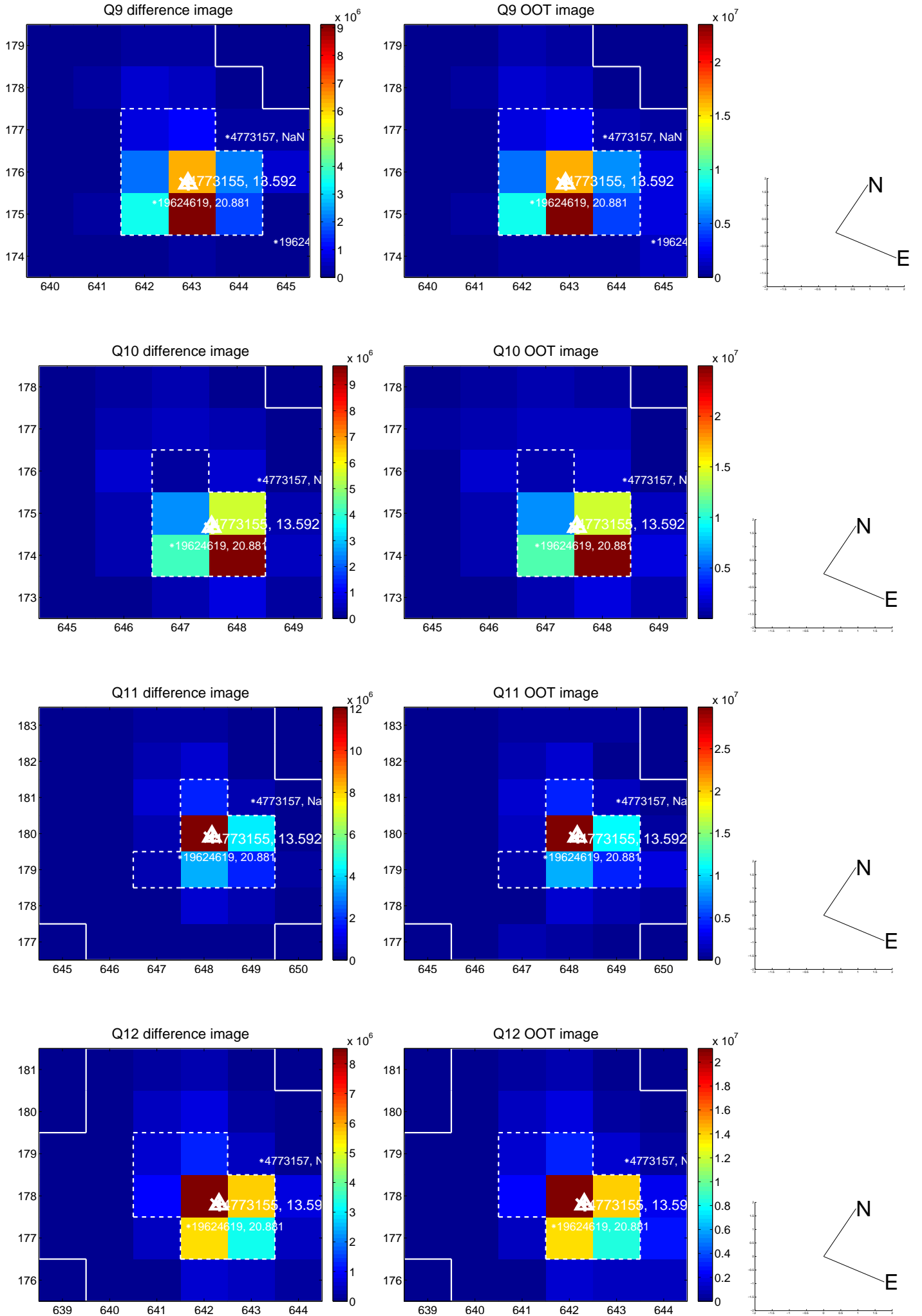


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

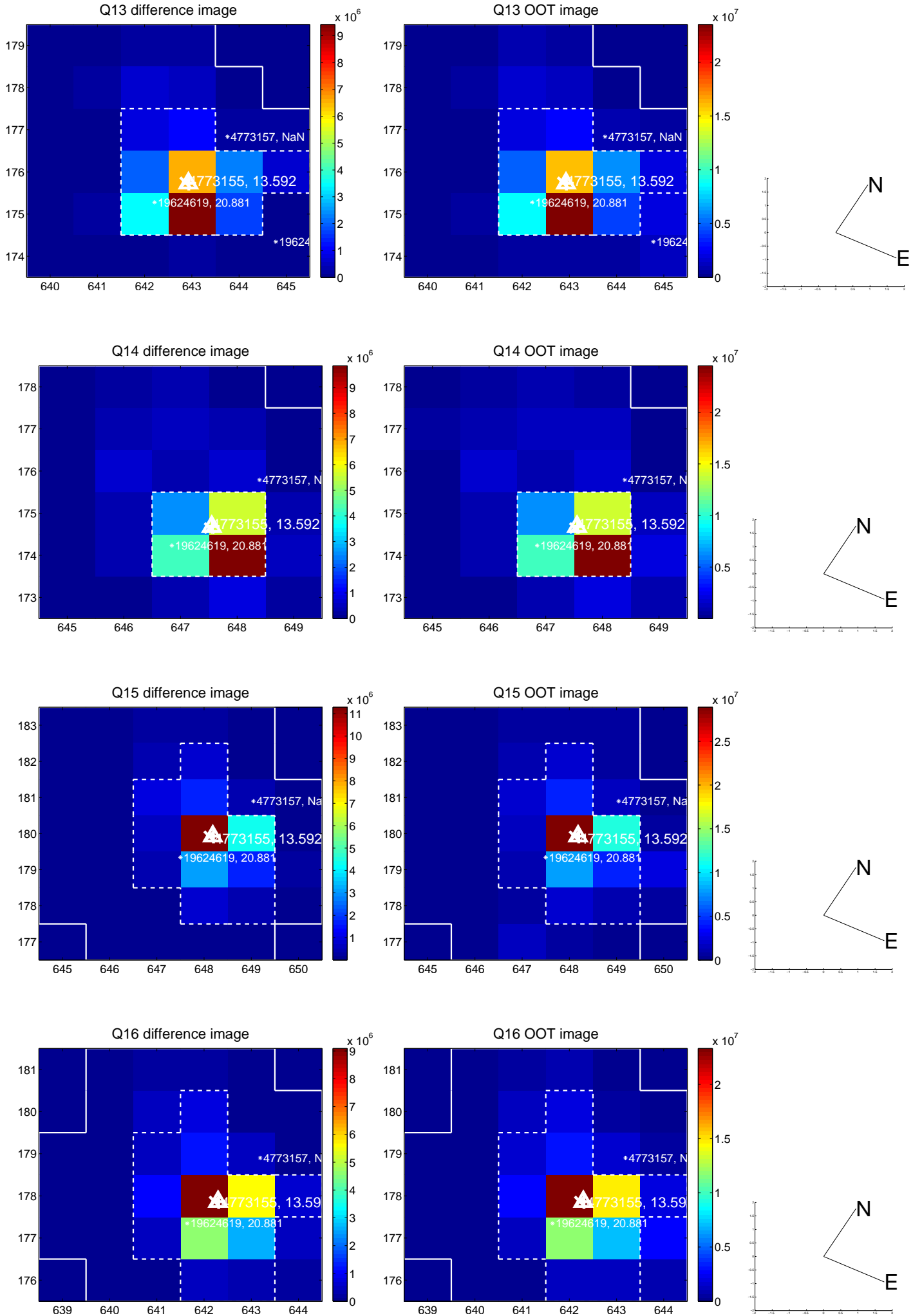




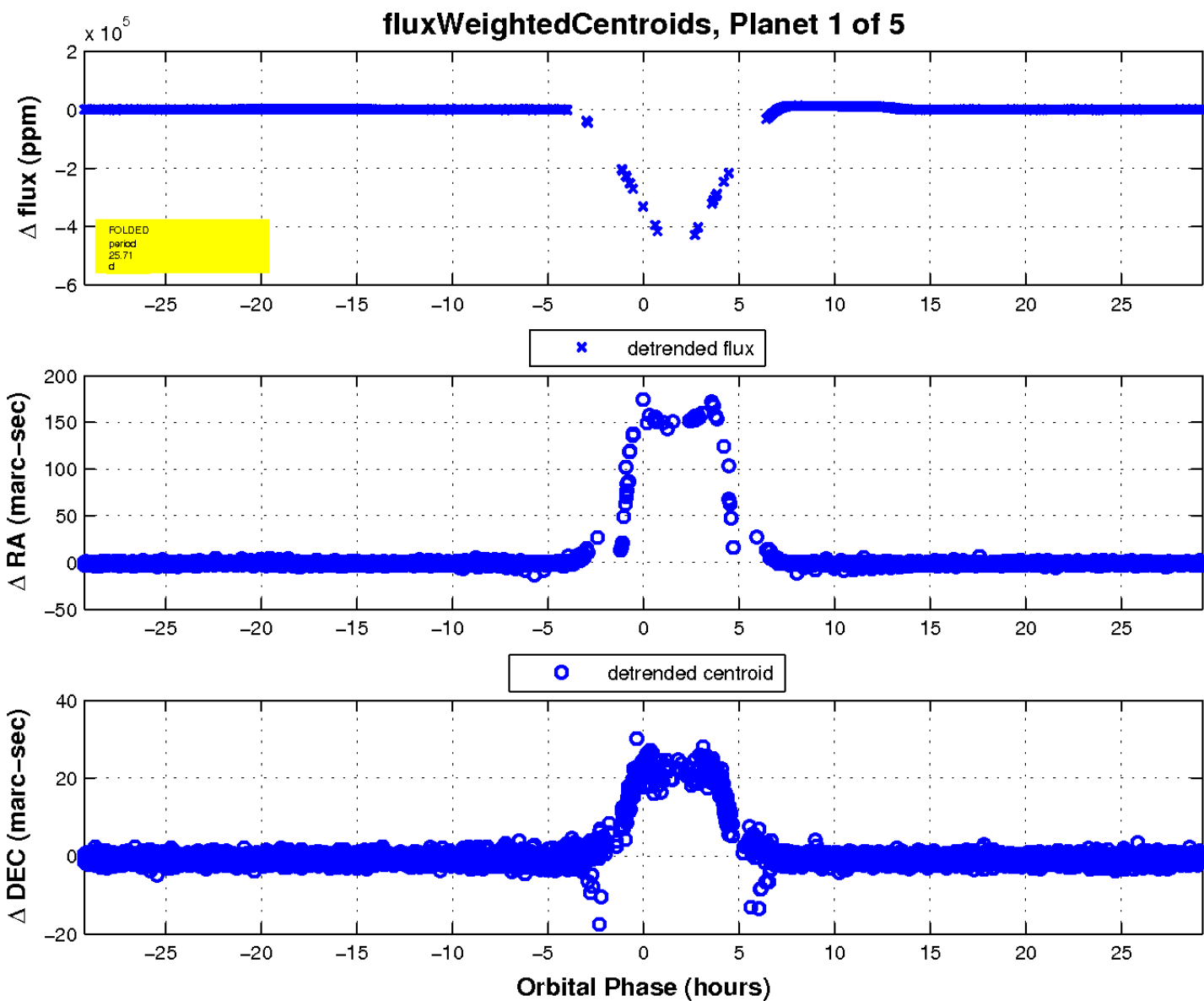
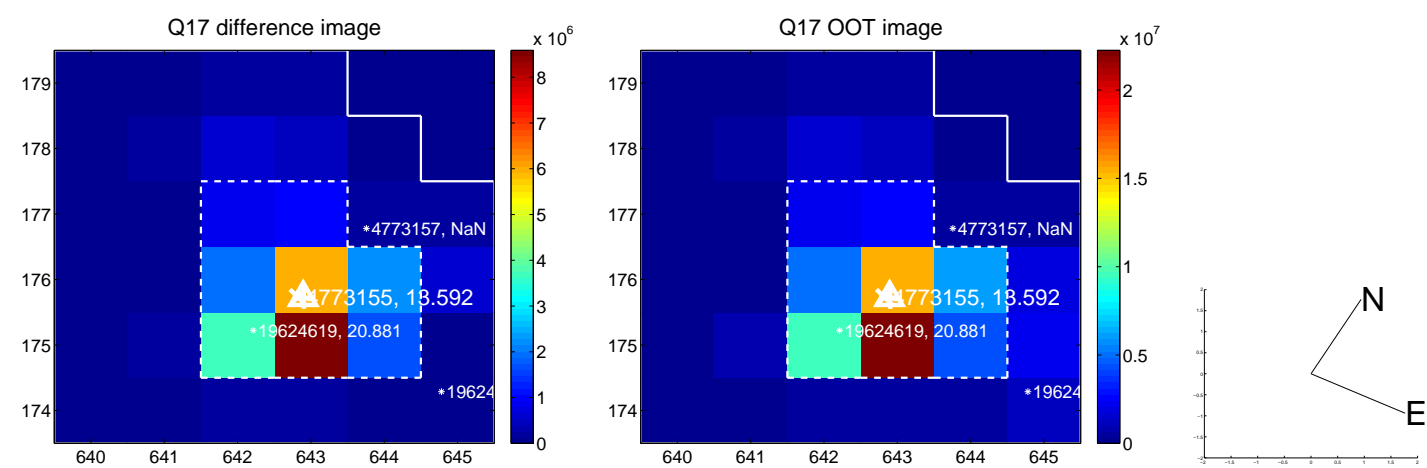
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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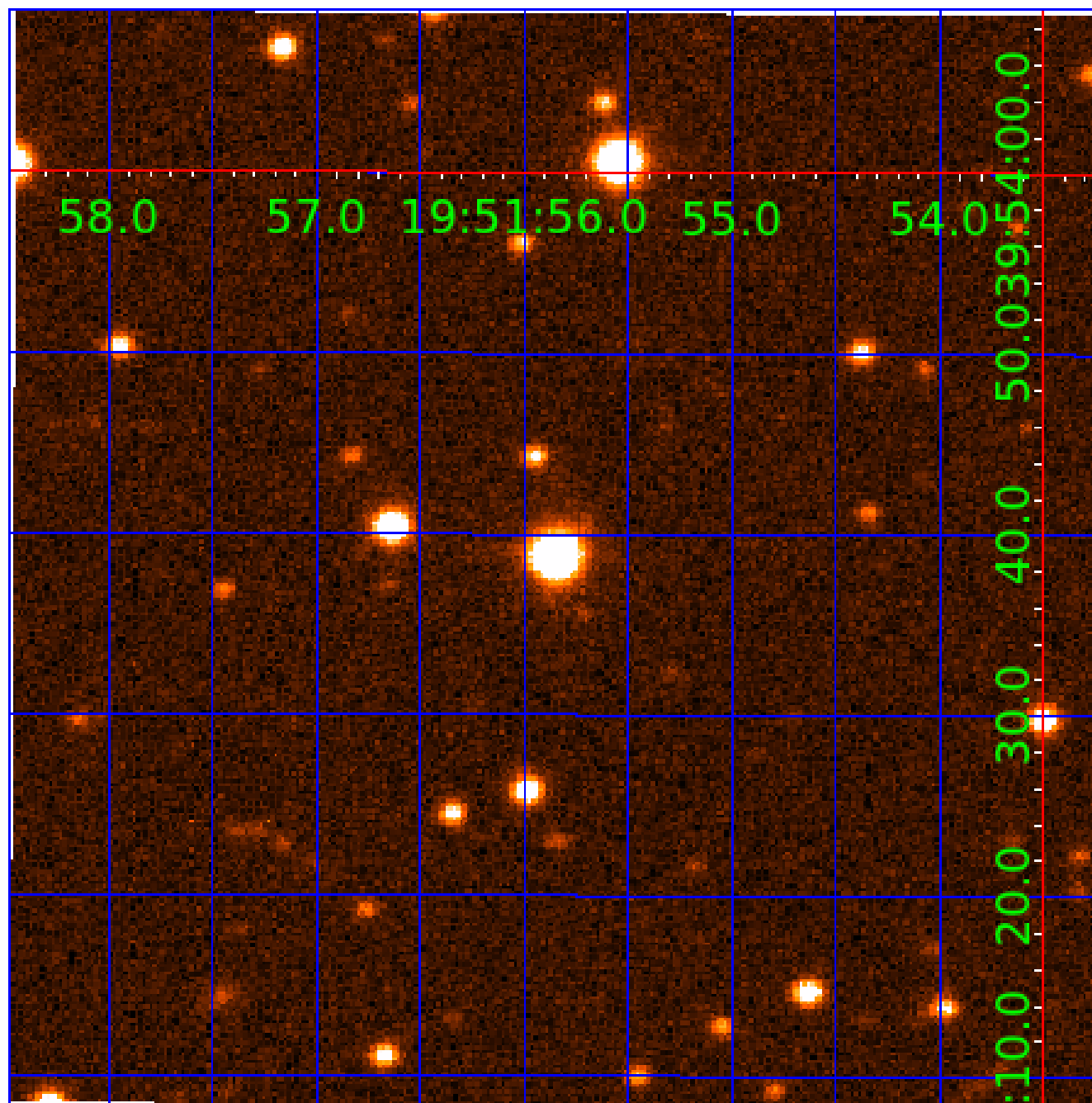


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 004773155

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
004773155-01	OBS	6453.01	25.706003	156.640867	480994.4	6.000	35714.5	-1.0	0.90	5642	49.27	26.61
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004773155-03	OBS	No	8.568672	138.687426	0.5	1.052	2824.2	0.0	0.90	5642	0.07	115.13
004773155-04	OBS	No	8.568983	138.672959	1596.7	8.154	2826.2	76.2	0.90	5642	6.98	115.13
004773155-05	OBS	No	8.568636	139.781701	12324.5	11.045	2727.3	1314.1	0.90	5642	9.89	115.13

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004773155-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_ALT—MOD_ODDEVEN_ALT—HAS_SEC_TCE—CENT_NOFITS
004773155-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE—CENT_NOFITS
004773155-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT— MOD_POS_ALT—SAME_NTL_PERIOD—CENT_FEW_MEAS
004773155-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—SAME_NTL_PERIOD— CENT_FEW_DIFFS
004773155-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—LPP_DV—RESIDUAL_TCE—CENT_FEW_DIFFS

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

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

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

## Ephemeris Match Information For 004773155-02

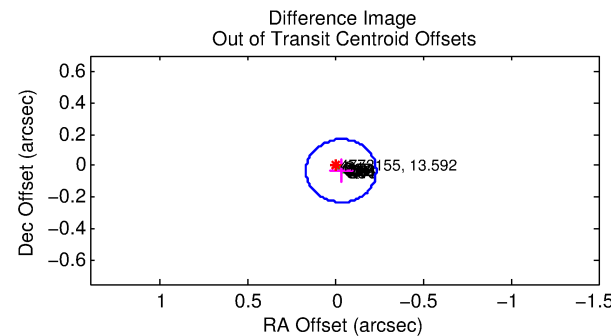
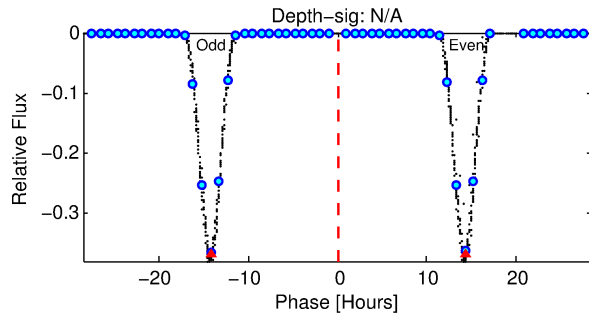
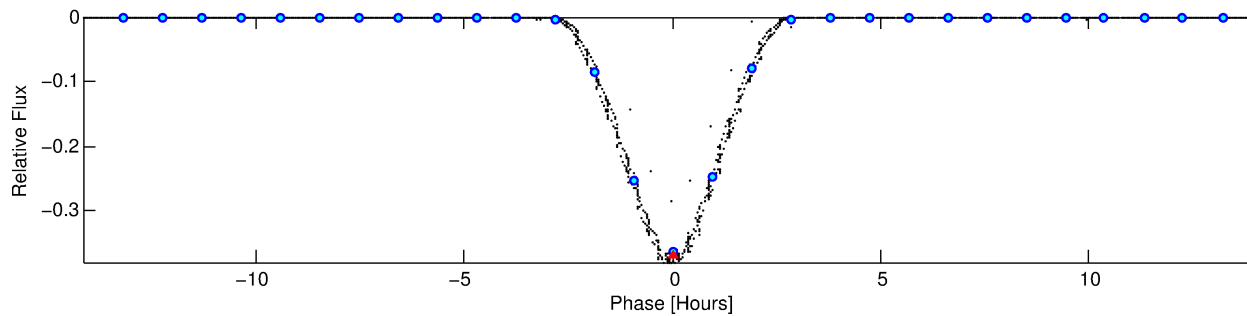
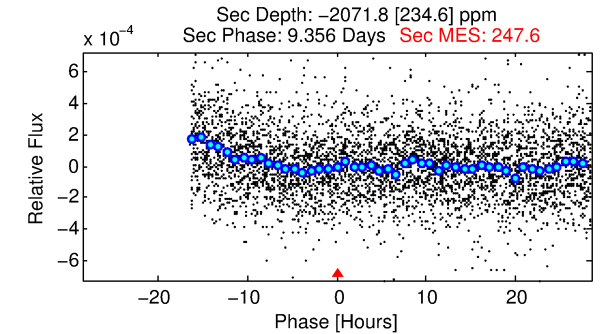
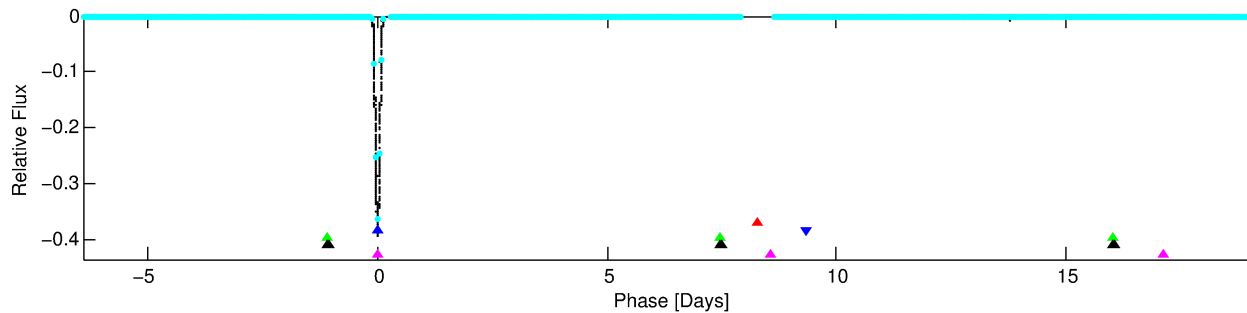
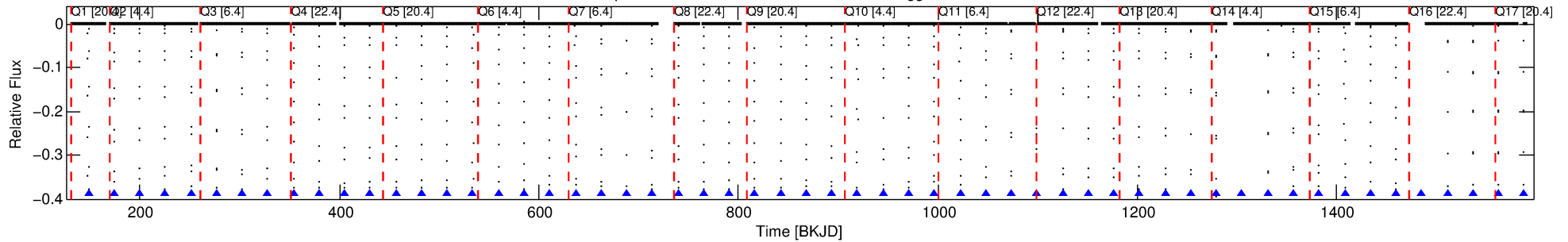
No Significant Match Found

# DV One-Page Summary

KIC: 4773155 Candidate: 2 of 5 Period: 25.706 d

KOI: K06453 Corr: No Ephemeris Match

Kp: 13.59 R\*: 0.90 Rs Teff: 5642.0 K Logg: 4.50 Fe/H: -0.020



TPS TCE Results:

Period = 25.70615 d  
Epoch = 148.3445 BKJD

DV fit results are unavailable

DV Diagnostic Results:

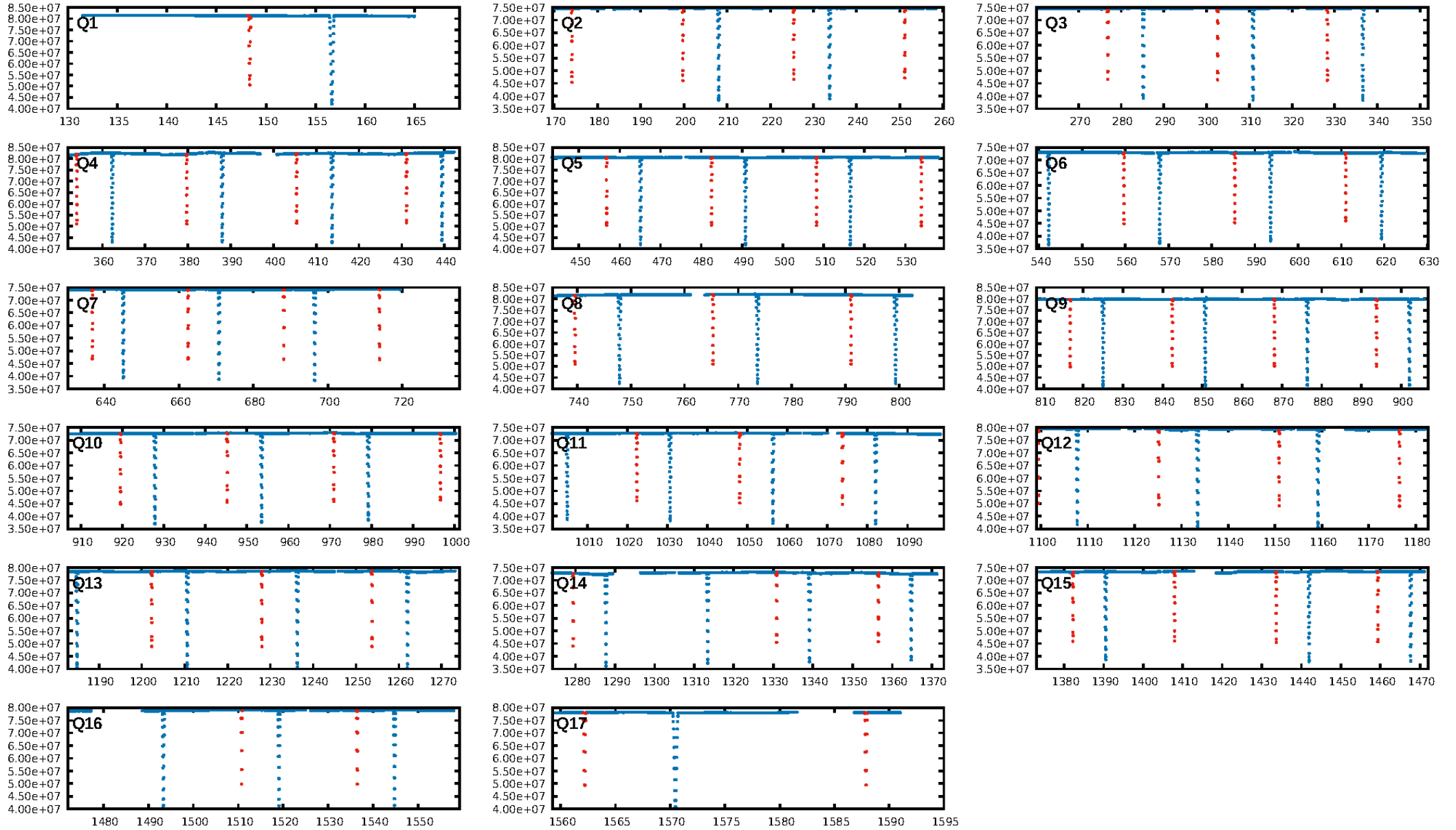
ShortPeriod-sig: 0.0% [0.00 $\sigma$ ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [52/52]  
GhostDiagnostic-chr: 2.897  
Centroid-sig: N/A  
Centroid-so: 0.423 arcsec [757.74 $\sigma$ ]  
OotOffset-rm: 0.045 arcsec [0.67 $\sigma$ ]  
KicOffset-rm: 0.259 arcsec [3.74 $\sigma$ ]  
OotOffset-st: 4/4/4/5 [17]  
KicOffset-st: 4/4/4/5 [17]  
DiffImageQuality-fgm: 1.00 [17/17]  
DiffImageOverlap-fno: 0.00 [0/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 08:54:22 Z

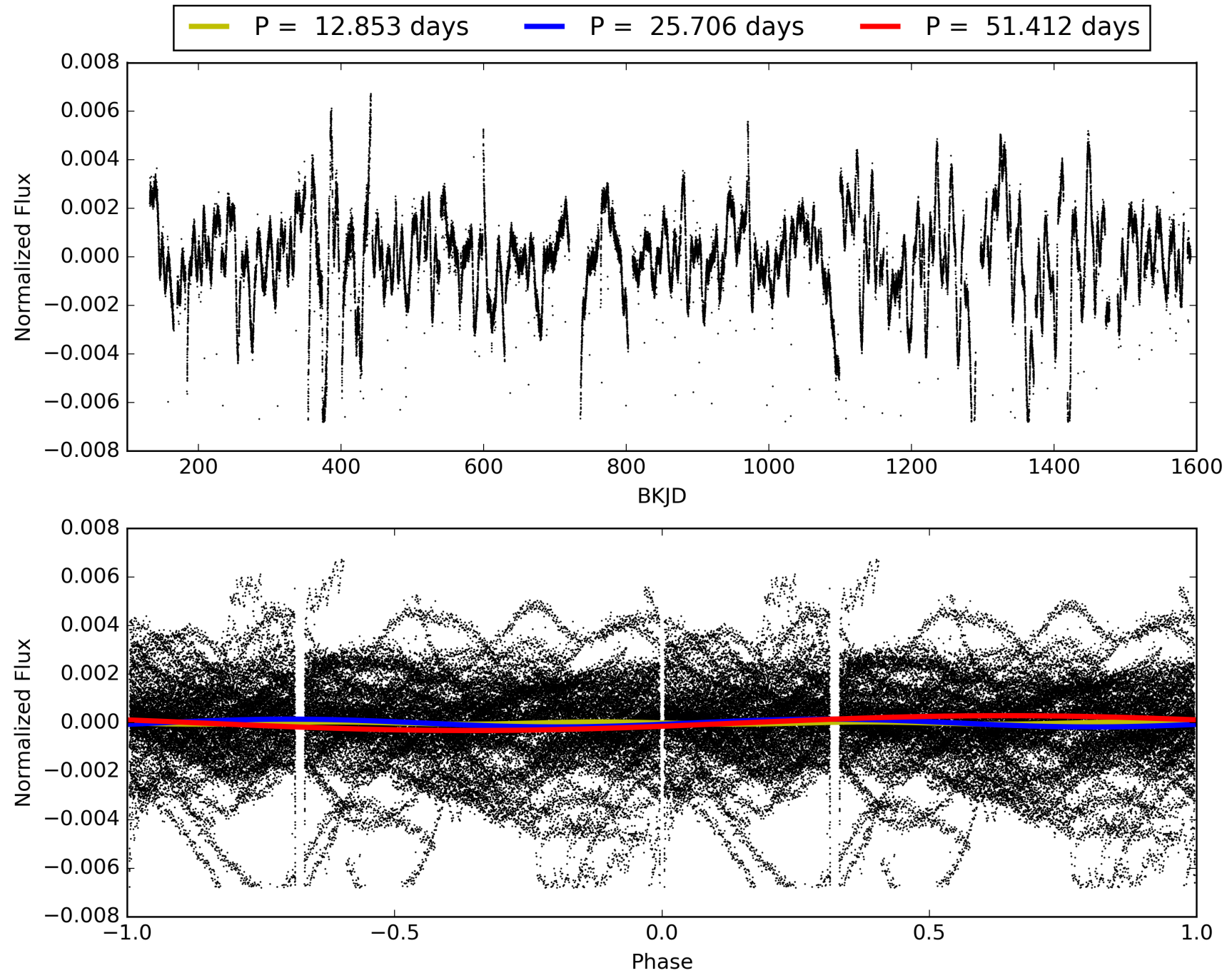
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center



# TCE 004773155-02, PDC Light Curves

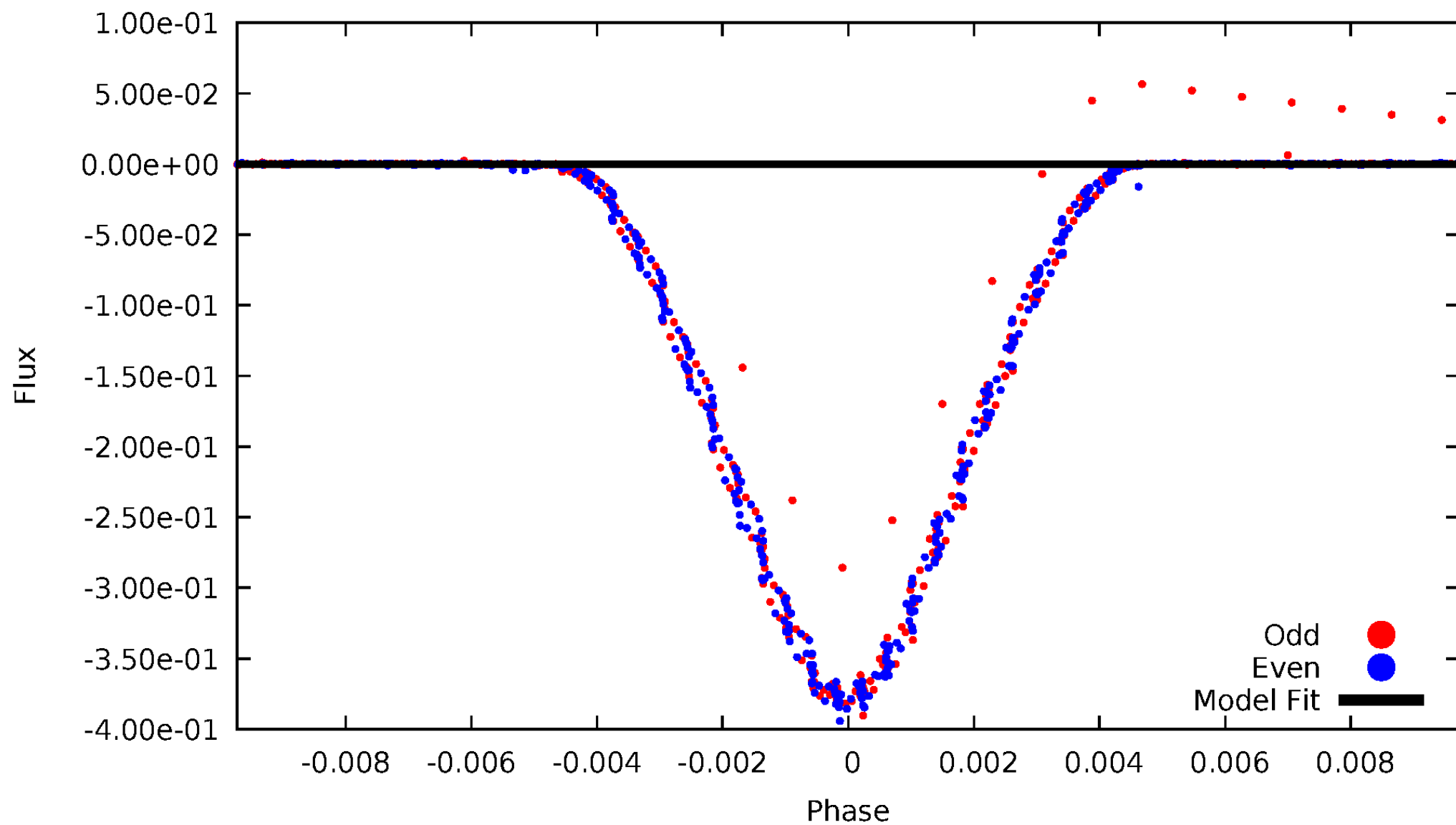


TCE 004773155-02



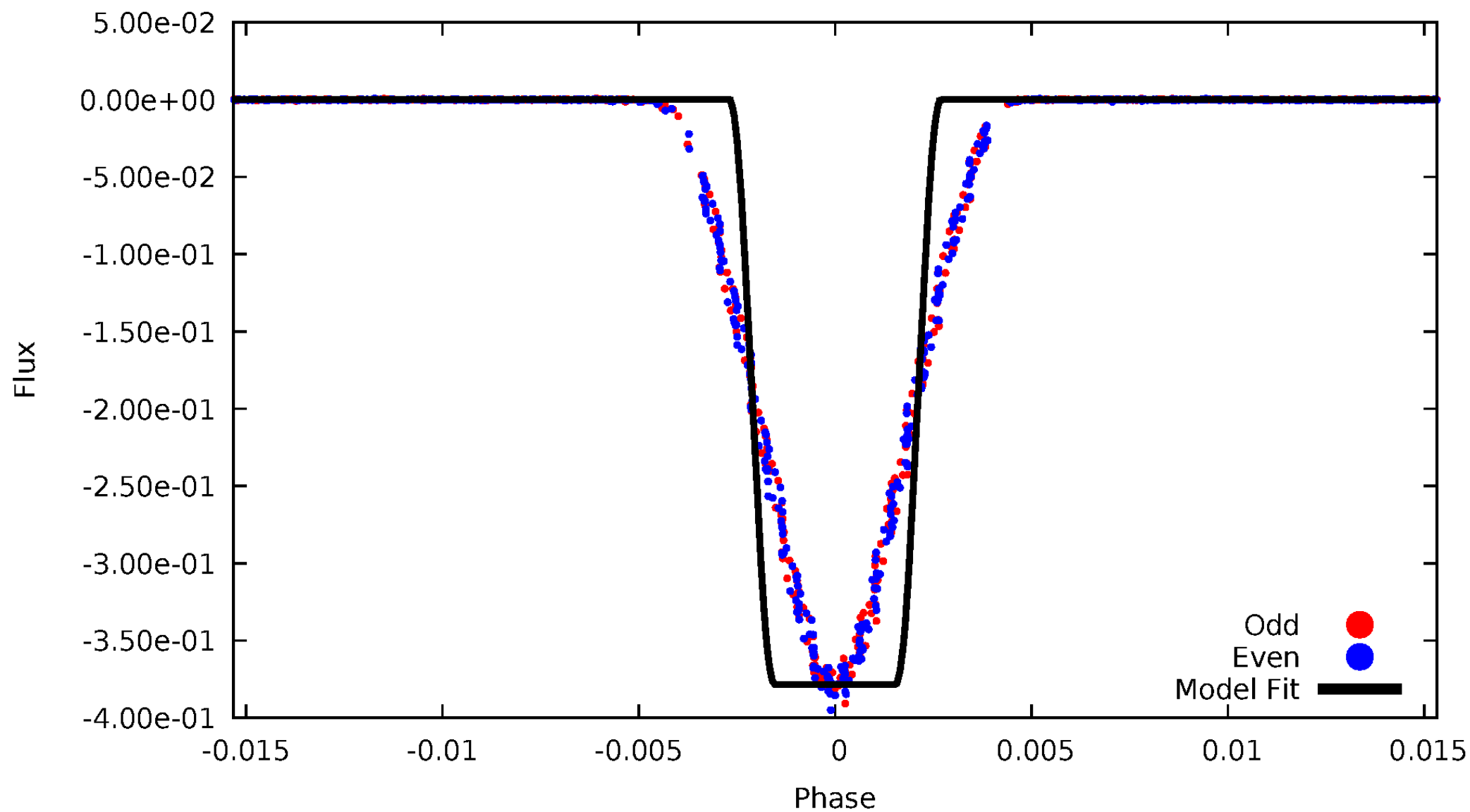
DV Odd/Even

TCE 004773155-02



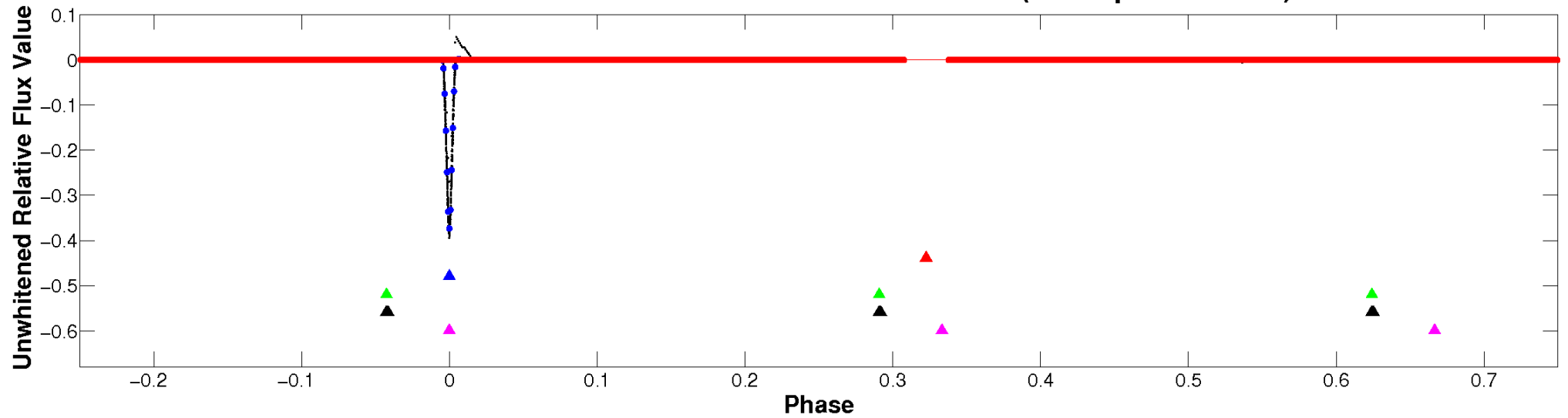
# ALT Odd/Even

TCE 004773155-02

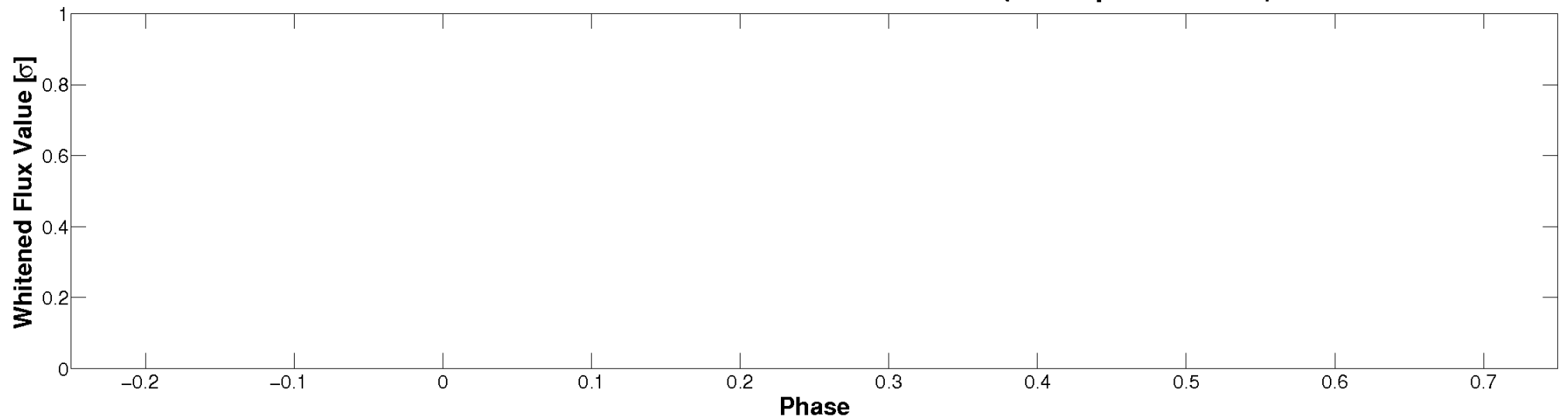


# Non-Whitened Vs. Whitened Light Curve

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

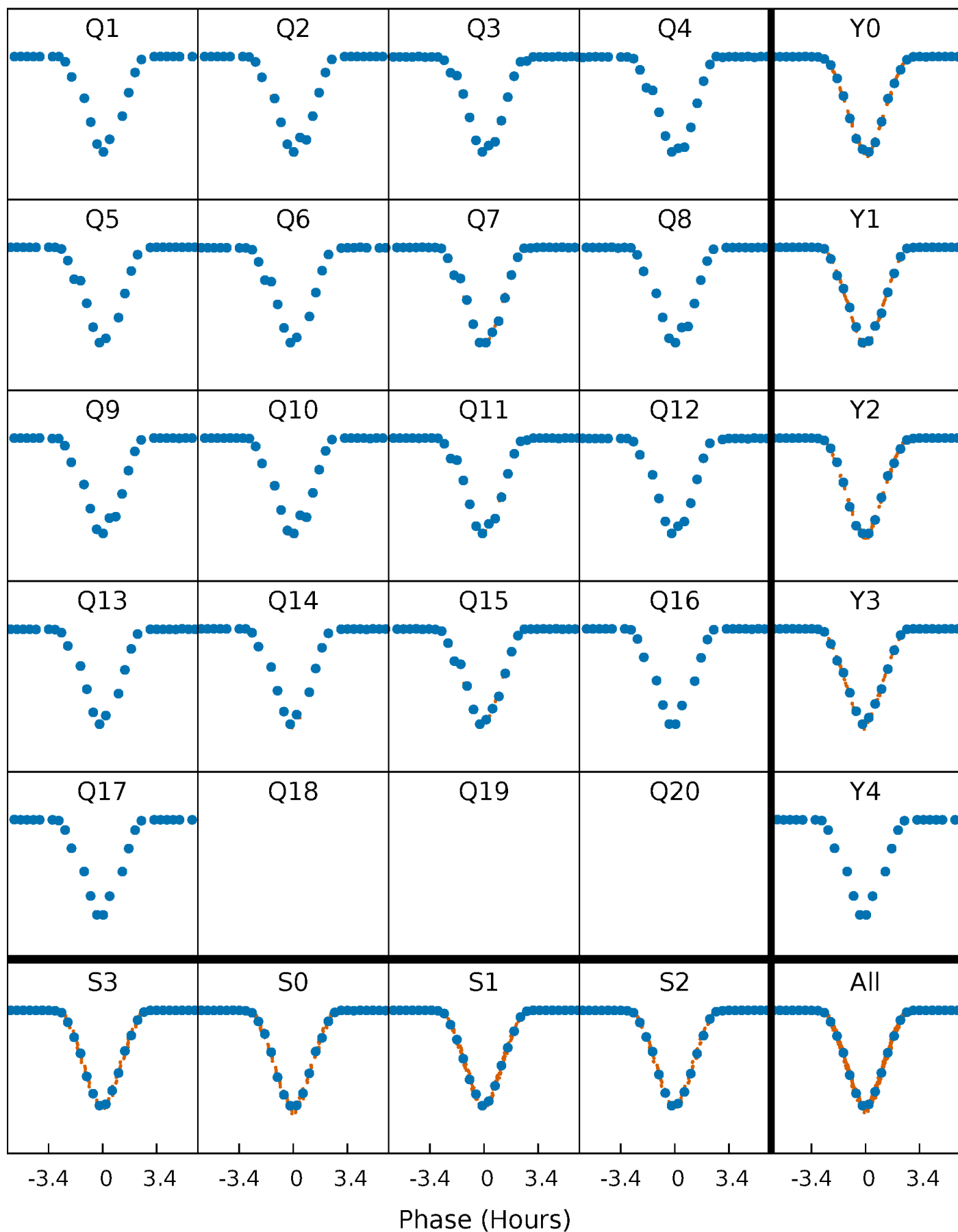


**Planet 2 : Phased Whitened Flux Time Series (TPS Epoch/Period)**



# PDC Quarter-Phased Transit Curves

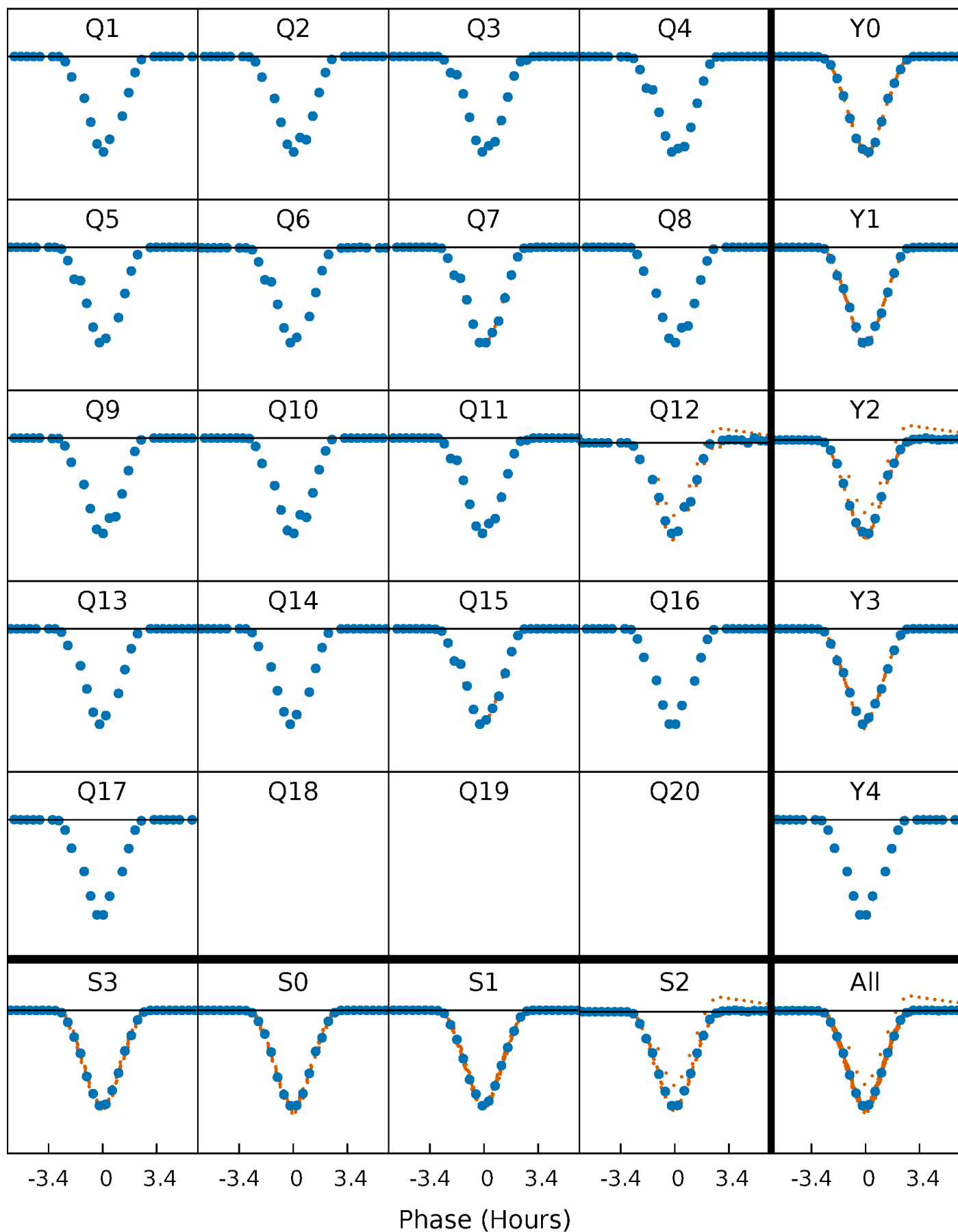
TCE 004773155-02 P= 25.706153 Days  $T_0=148.344531$  (BKJD)





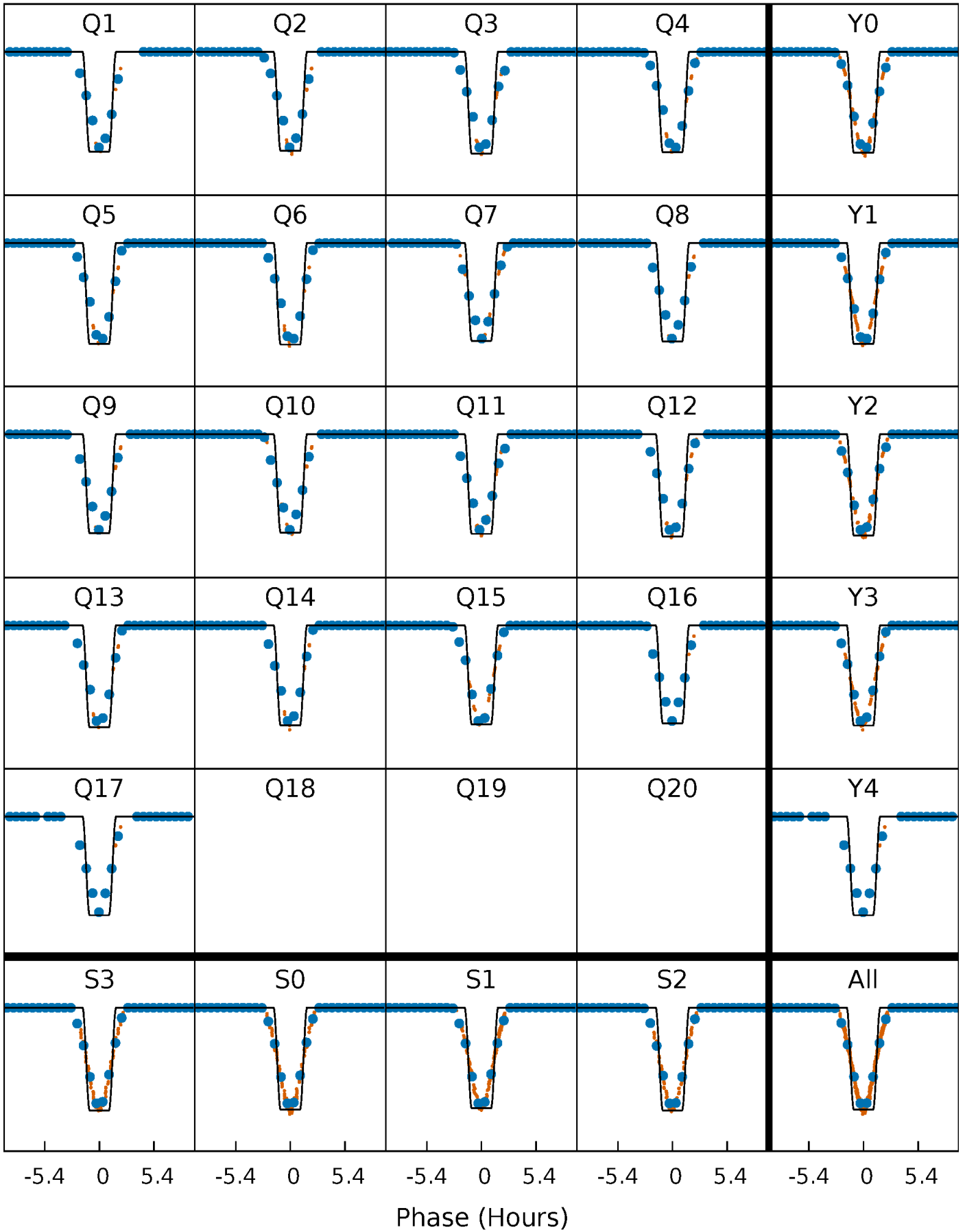
# DV Quarter-Phased Transit Curves

TCE 004773155-02 P= 25.706153 Days  $T_0=148.344531$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

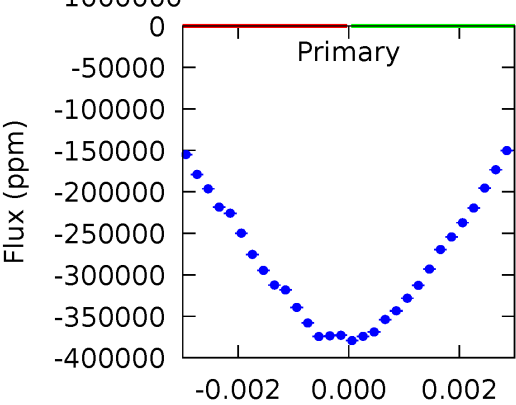
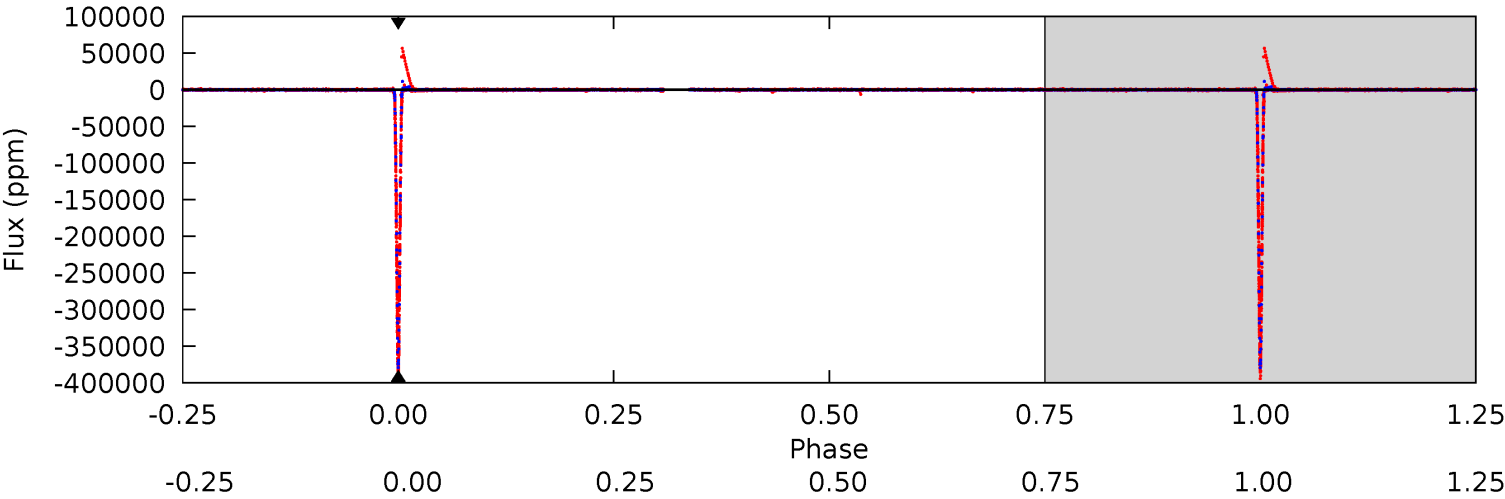
TCE 004773155-02 P= 25.706153 Days  $T_0=148.343952$  (BKJD)



# DV Model-Shift Uniqueness Test

004773155-02, P = 25.706153 Days, E = 122.638378 Days

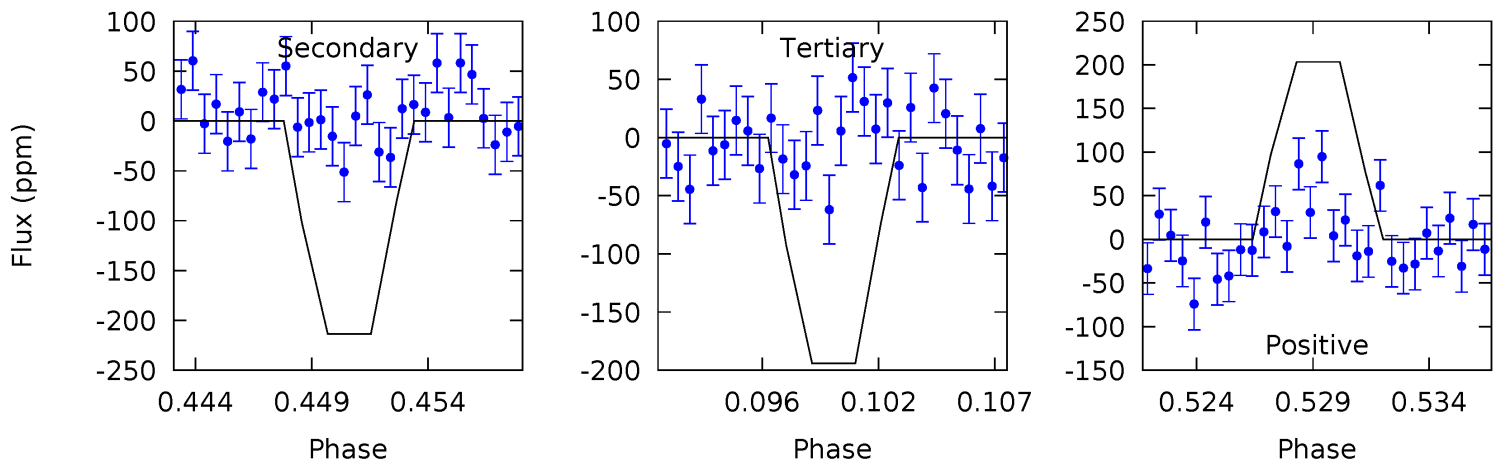
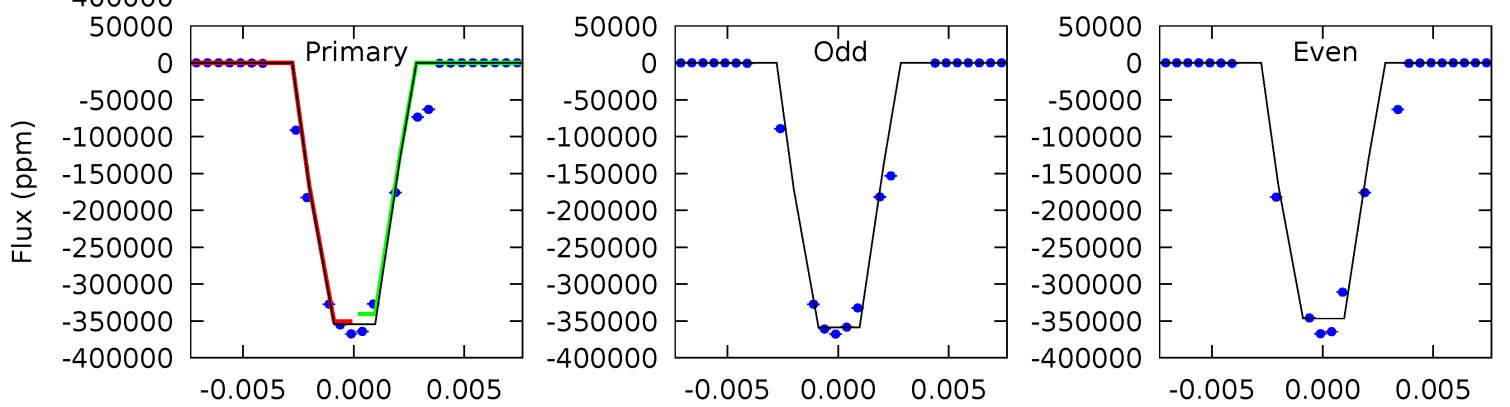
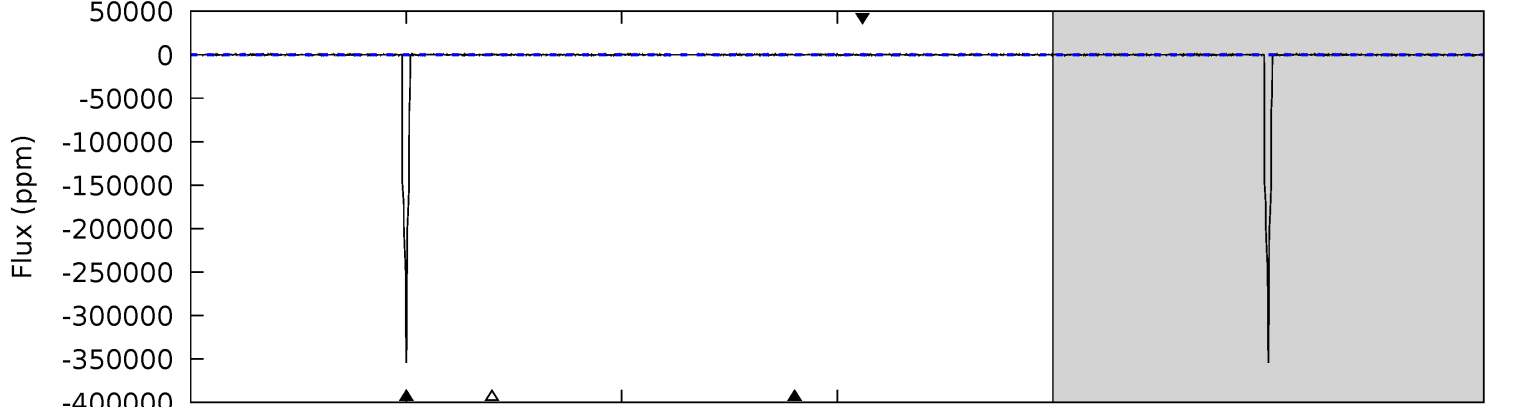
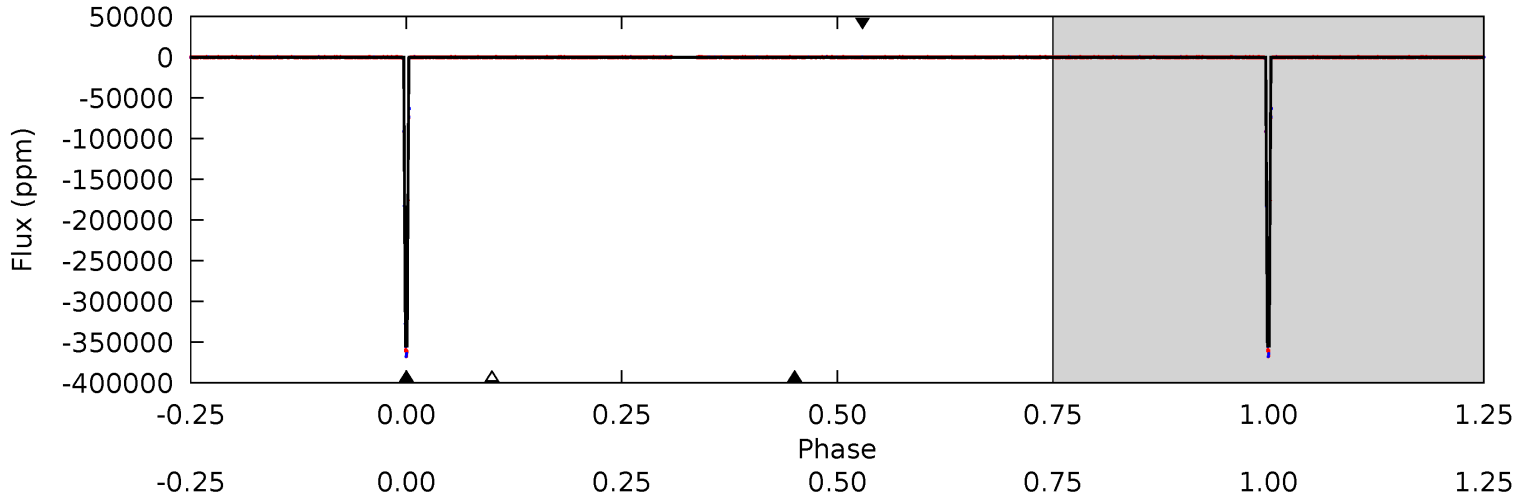
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



# Alt Model-Shift Uniqueness Test

004773155-02, P = 25.706153 Days, E = 122.637799 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
7888	4.75	4.32	4.52	5.15	2.79	1.05	7884	7883	0.43	0.23	165.9	1.00	0.00	0



### Stellar Parameters For KIC 004773155

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5642^{+152}_{-169}$	$4.498^{+0.060}_{-0.180}$	$-0.020^{+0.300}_{-0.300}$	$0.903^{+0.242}_{-0.104}$	$0.936^{+0.104}_{-0.095}$	$1.793^{+0.456}_{-0.888}$
	+3%/-3%	+1%/-4%	+1500%/-1500%	+27%/-12%	+11%/-10%	+25%/-50%
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 004773155-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$0 \pm 1000000$	$51.97^{+11.81}_{-11.24}$	$825^{+51}_{-39}$	$2698^{+2061}_{-7242}$	$20^{+646}_{-562}$
Alt.	$-213 \pm 45$	$62.14^{+12.68}_{-11.27}$	$818^{+53}_{-35}$	$1808^{+108}_{-123}$	$0.816^{+0.457}_{-0.292}$

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

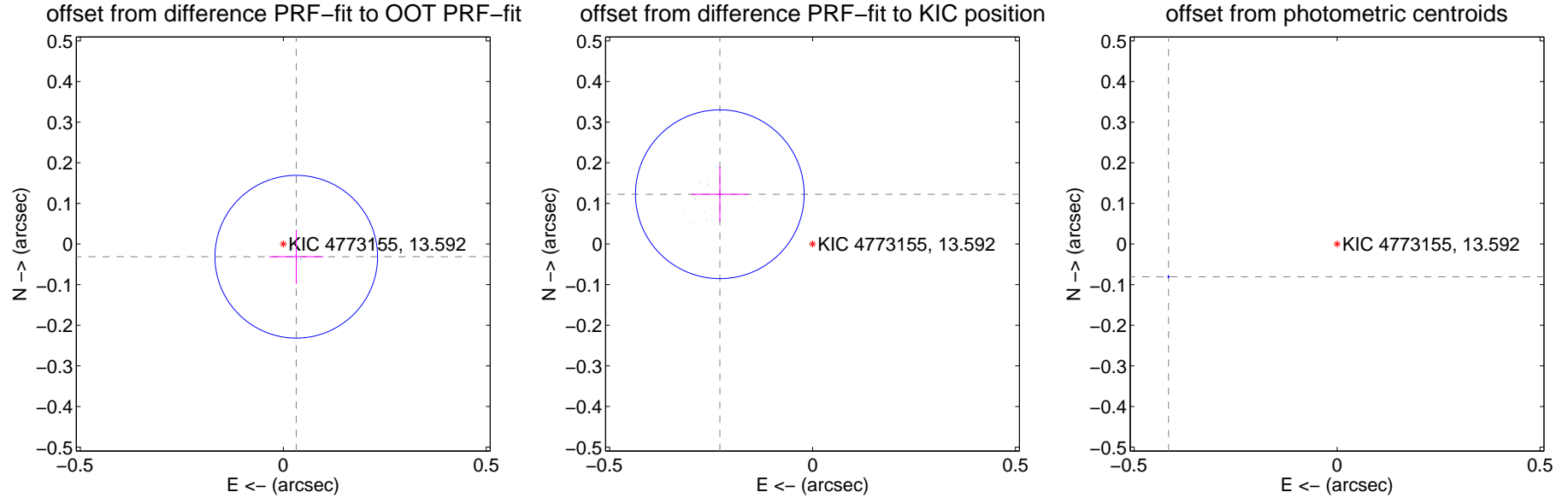
## DV Centroid Data

Supplemental centroid analysis for 004773155-02. Kepler magnitude: 13.59. Transit SNR -1.00

There are 17 quarters with good PRF difference image offsets

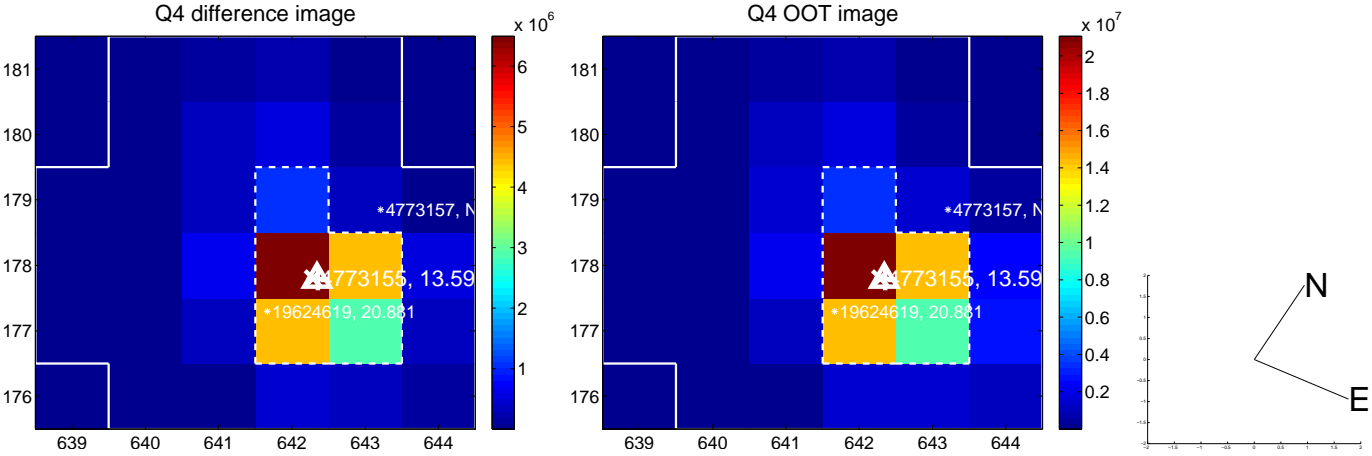
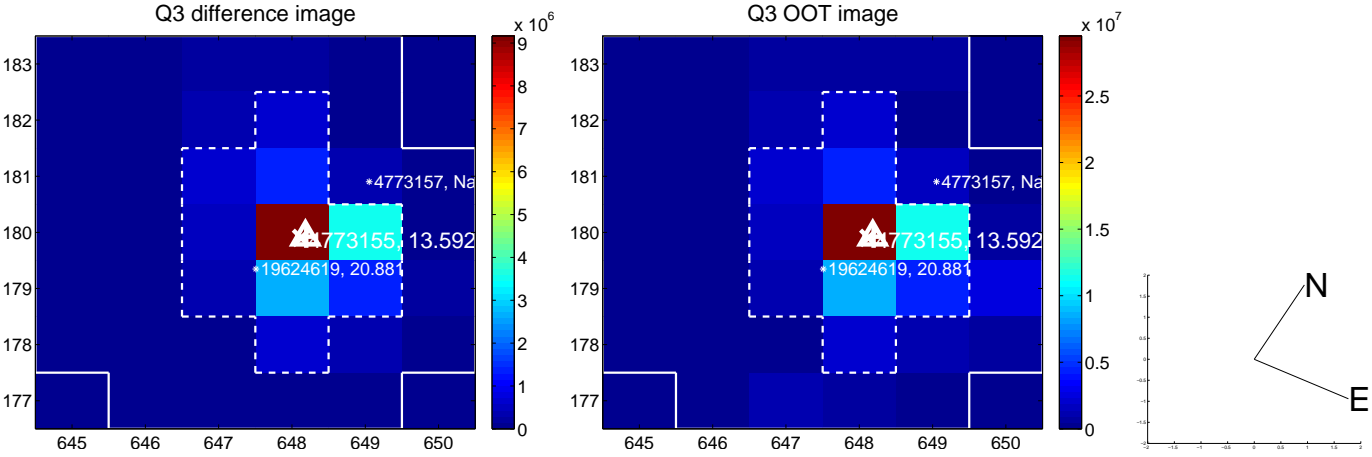
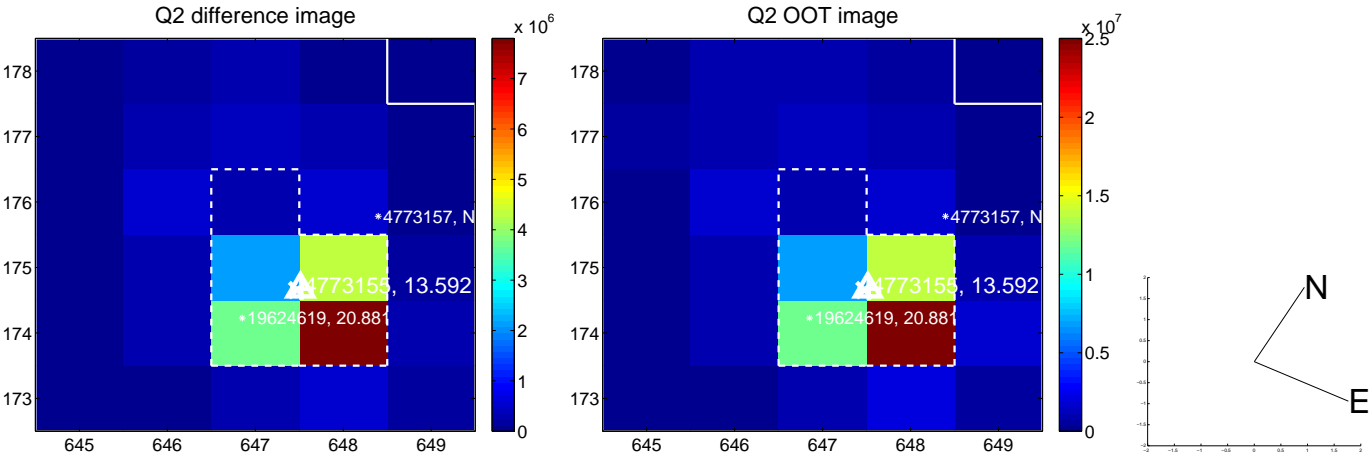
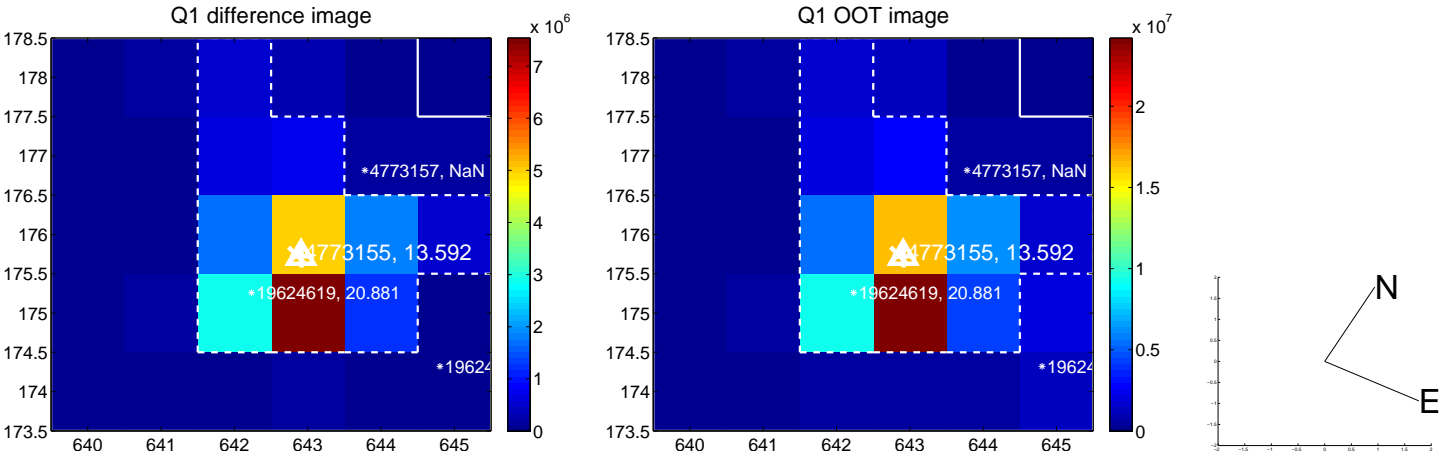
The direct PRF centroid is offset from the target star catalog position by about 0.33 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.045 \pm 0.067$	0.67	$-0.032 \pm 0.067$	$-0.031 \pm 0.067$
PRF-fit source offset from KIC position	$0.259 \pm 0.069$	3.74	$0.228 \pm 0.070$	$0.123 \pm 0.068$
photometric centroid source offset	$0.42 \pm 0.00$	757.74	$0.42 \pm 0.00$	$-0.08 \pm 0.00$

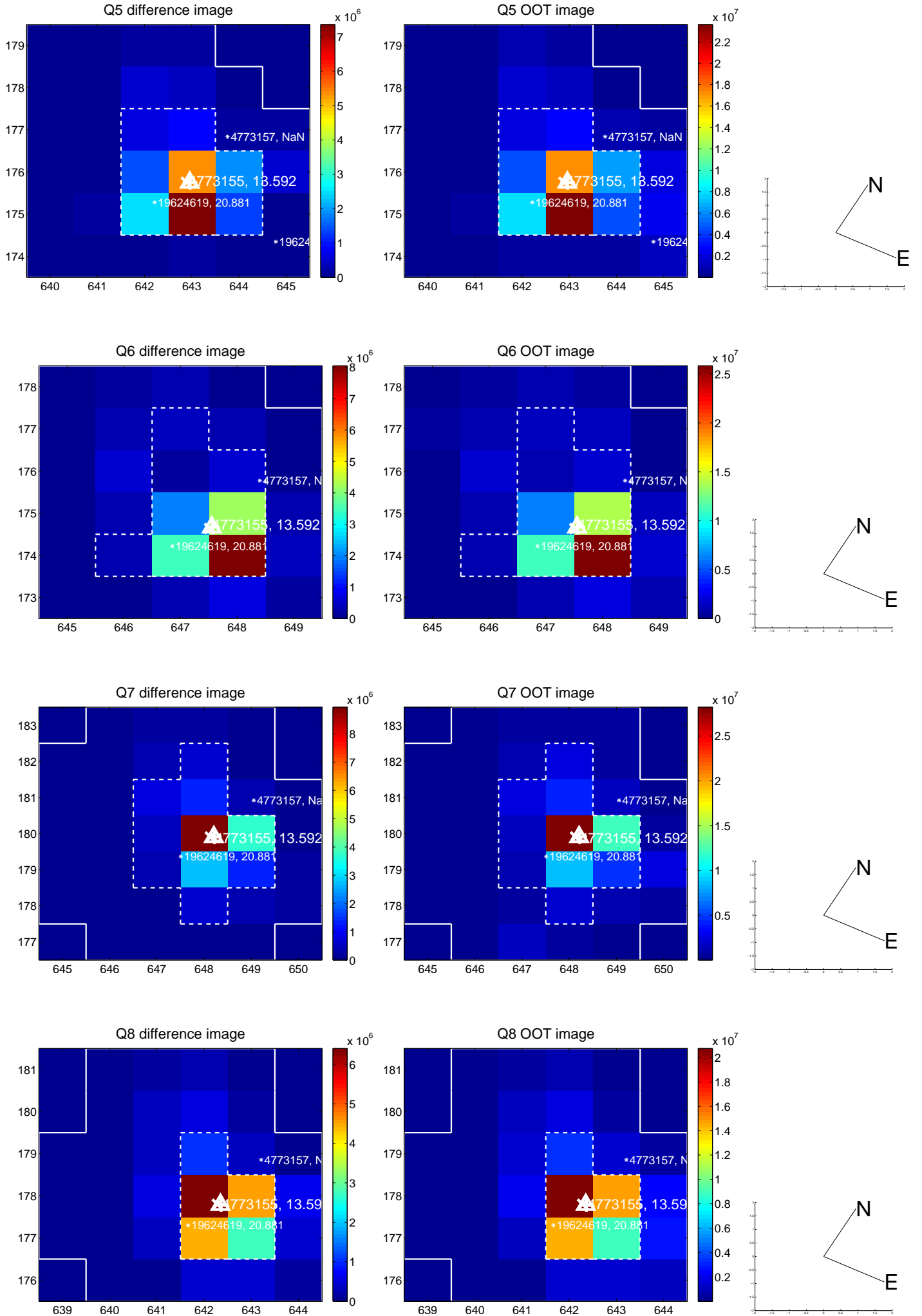


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

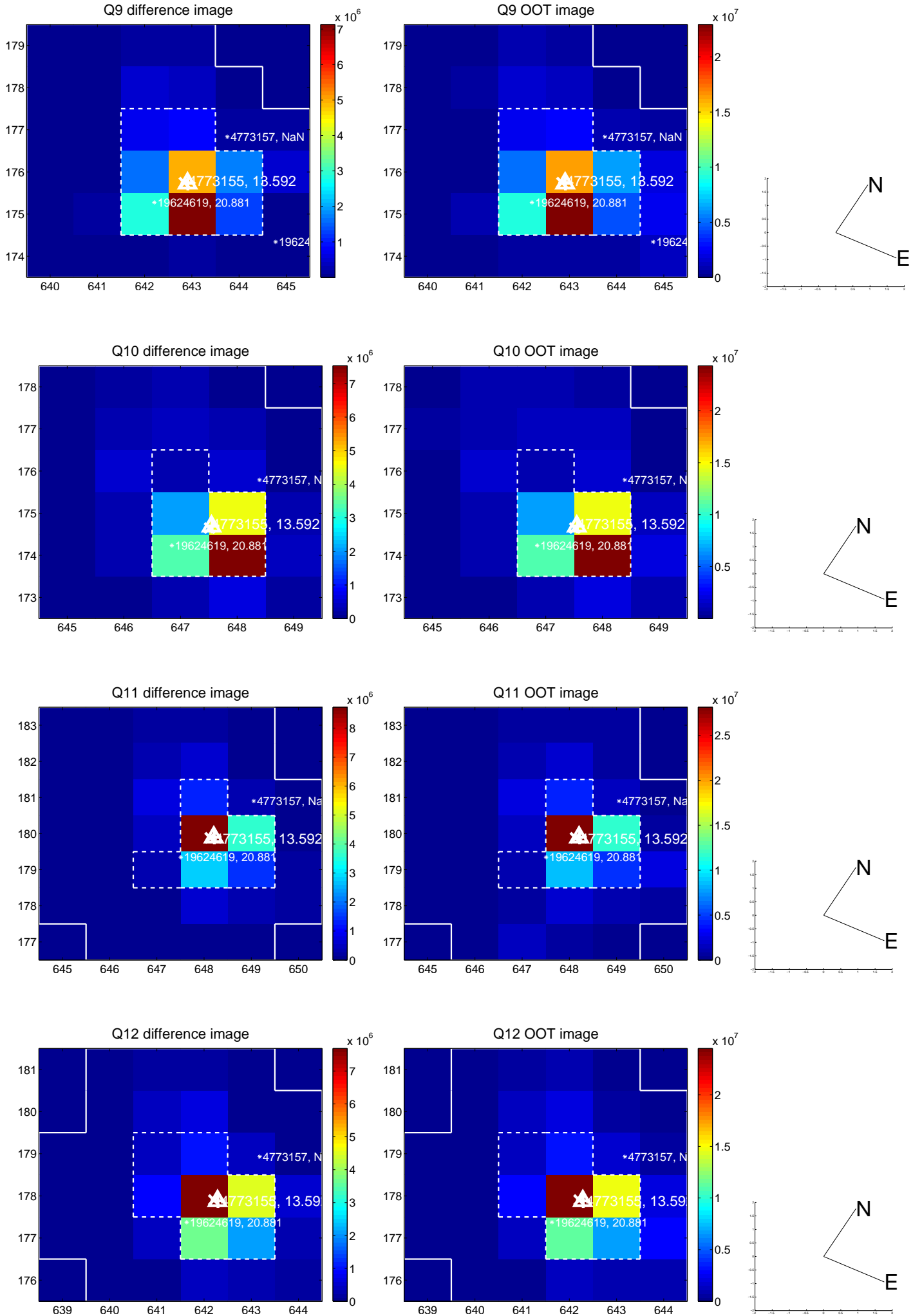


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

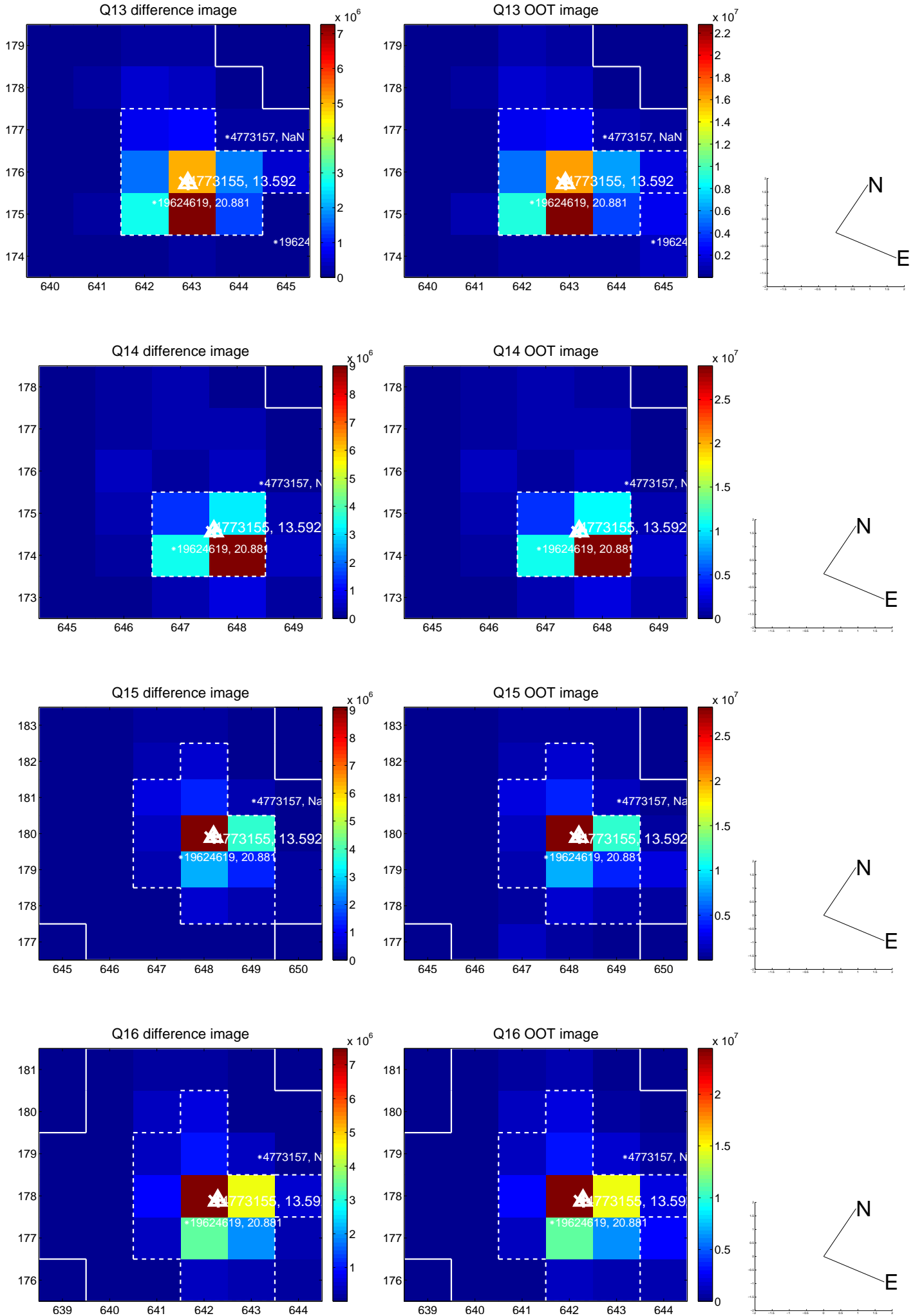




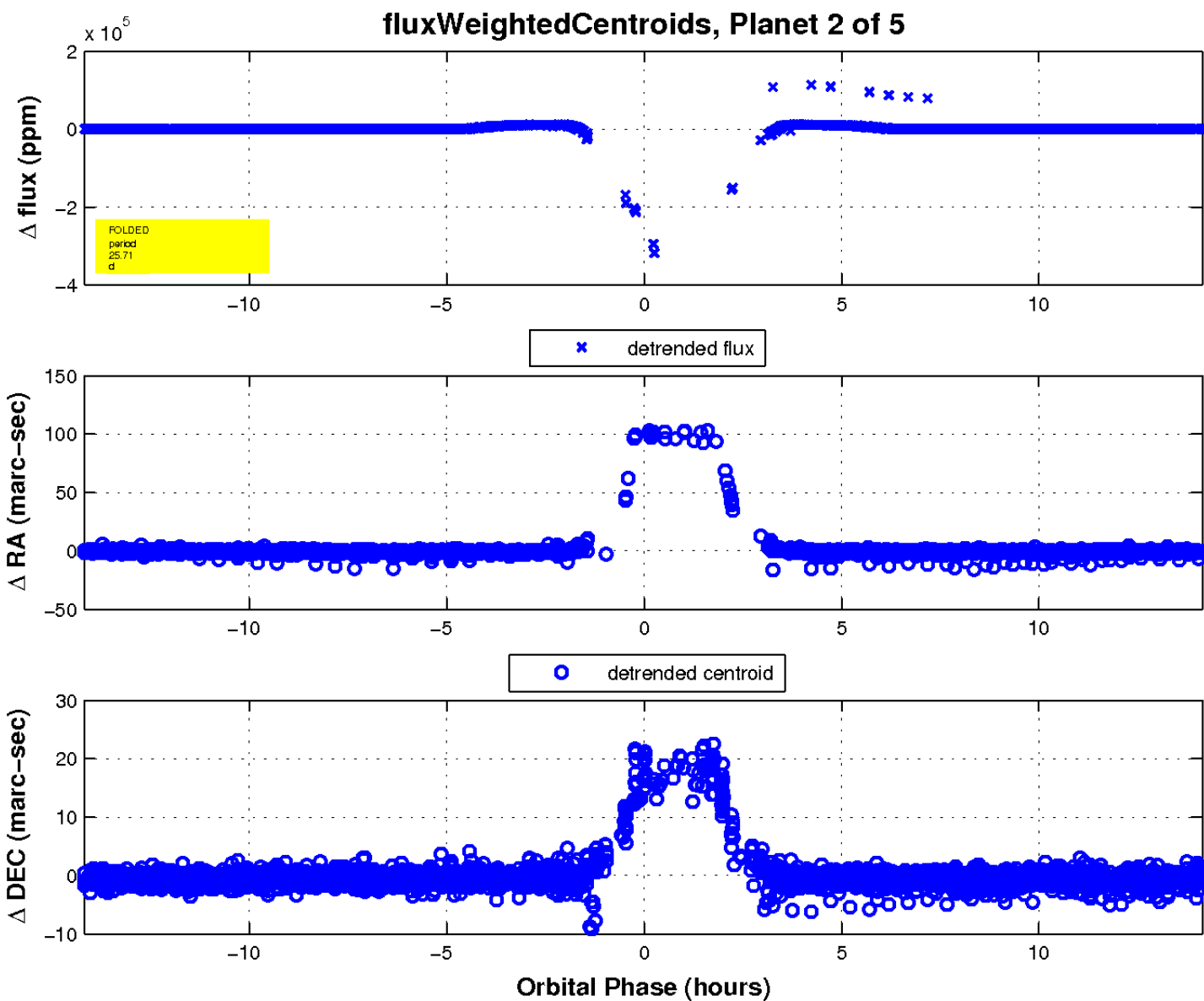
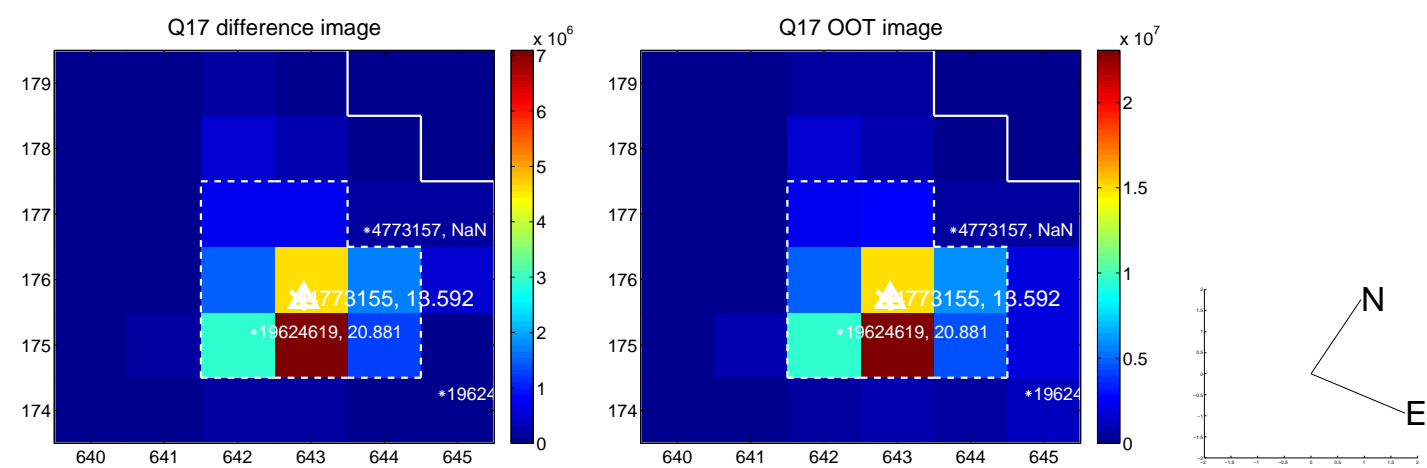
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

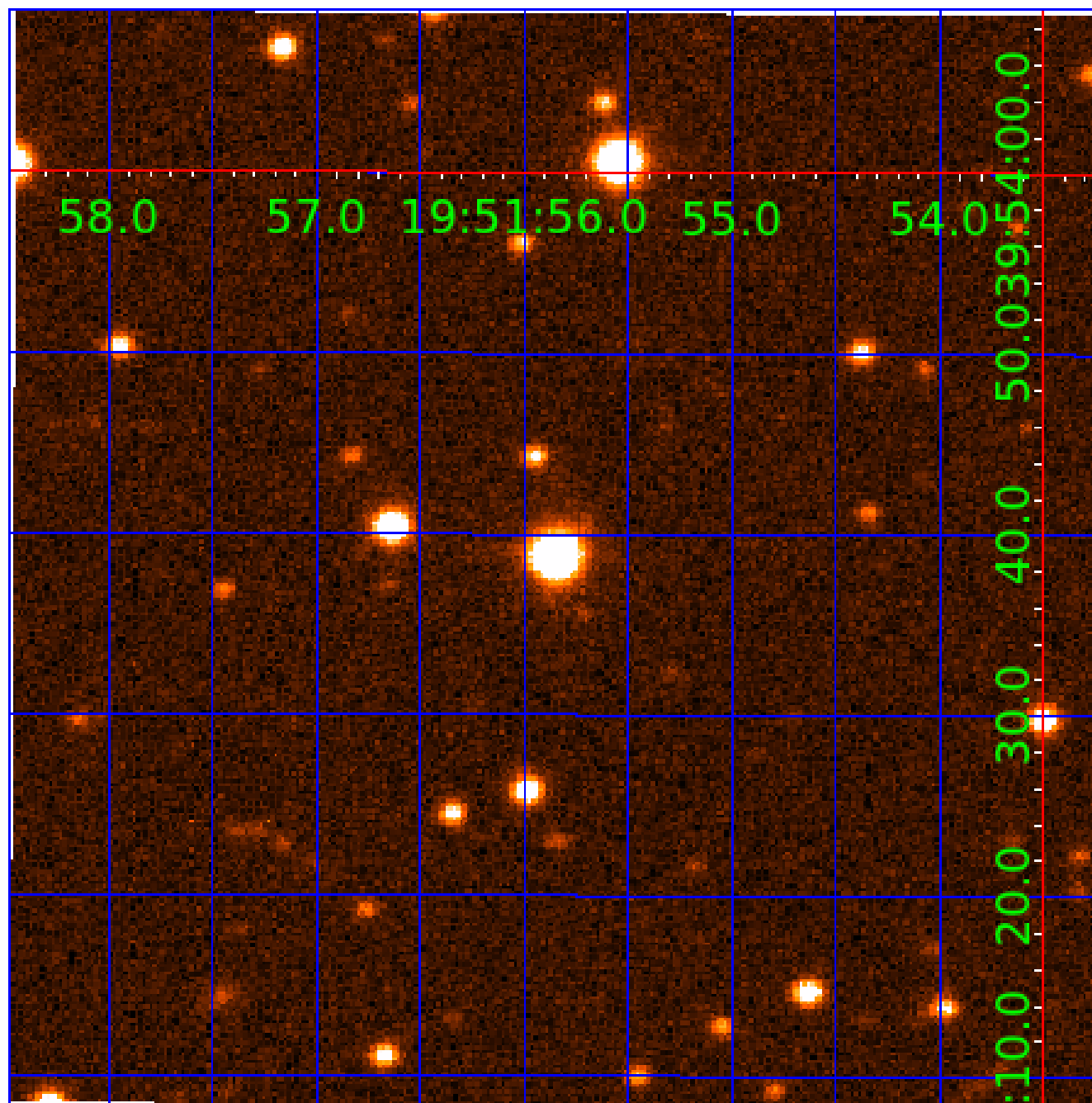


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 004773155

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
004773155-01	OBS	6453.01	25.706003	156.640867	480994.4	6.000	35714.5	-1.0	0.90	5642	49.27	26.61
004773155-02	OBS	No	25.706153	148.344531	375708.7	3.000	24992.2	-1.0	0.90	5642	49.27	26.61
004773155-03	OBS	No	8.568672	138.687426	0.5	1.052	2824.2	0.0	0.90	5642	0.07	115.13
004773155-04	OBS	No	8.568983	138.672959	1596.7	8.154	2826.2	76.2	0.90	5642	6.98	115.13
004773155-05	OBS	No	8.568636	139.781701	12324.5	11.045	2727.3	1314.1	0.90	5642	9.89	115.13

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004773155-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_ALT—MOD_ODDEVEN_ALT—HAS_SEC_TCE—CENT_NOFITS
004773155-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE—CENT_NOFITS
004773155-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT— MOD_POS_ALT—SAME_NTL_PERIOD—CENT_FEW_MEAS
004773155-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—SAME_NTL_PERIOD— CENT_FEW_DIFFS
004773155-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—LPP_DV—RESIDUAL_TCE—CENT_FEW_DIFFS

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

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

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

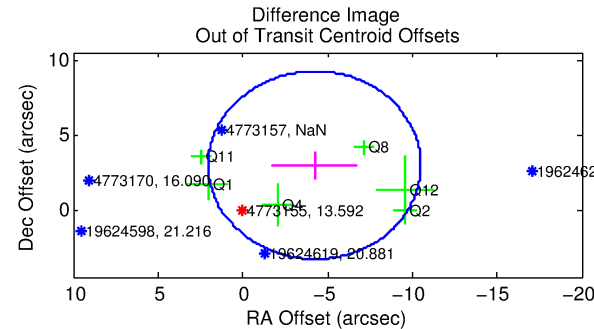
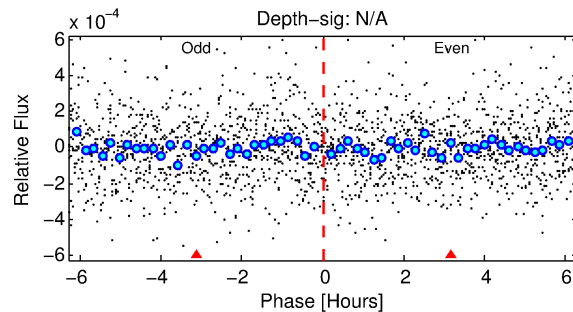
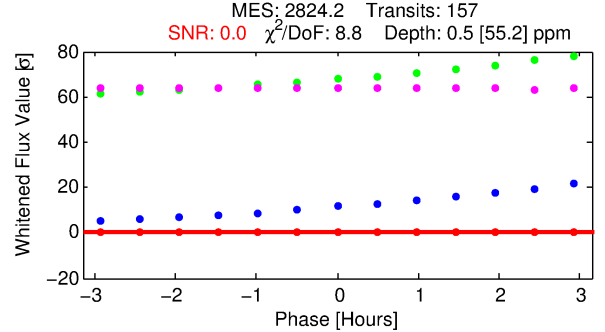
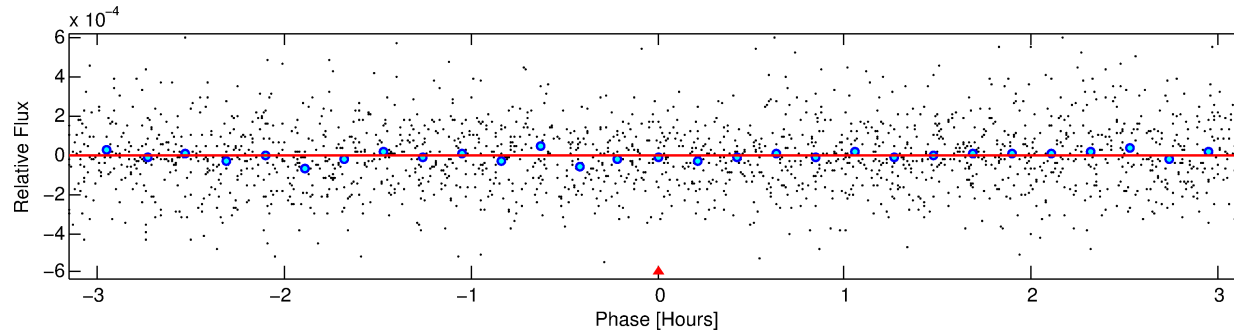
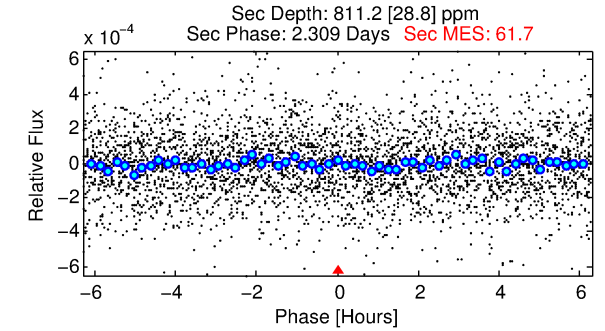
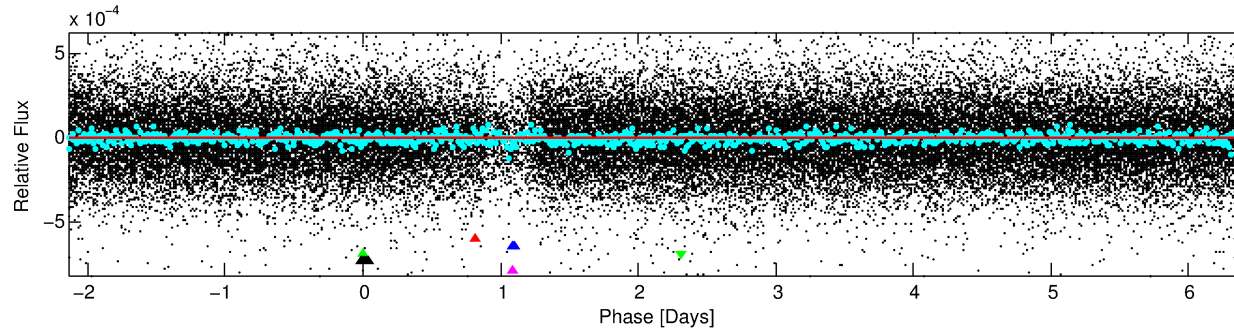
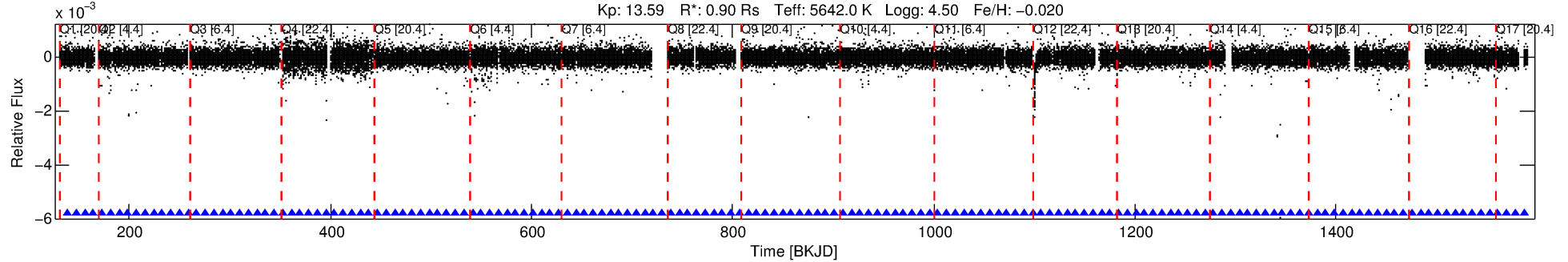
## Ephemeris Match Information For 004773155-03

No Significant Match Found

# DV One-Page Summary

KIC: 4773155 Candidate: 3 of 5 Period: 8.569 d  
KOI: K06453 Corr: No Ephemeris Match

Kp: 13.59 R\*: 0.90 Rs Teff: 5642.0 K Logg: 4.50 Fe/H: -0.020



## DV Fit Results:

Period = 8.56867 [0.04063] d  
Epoch = 138.6874 [3.5812] BKJD  
Rp/R\* = 0.0007 [0.0497]  
a/R\* = 38.95 [7187.76]  
b = 0.78 [84.77]  
Seff = 115.13 [40.32]  
Teq = 835 [73] K  
Rp = 0.07 [4.90] Re  
a = 0.0802 [0.0181] AU  
Ag = 625211.10 [90389511.79] [0.01σ]  
Teffp = 36314 [1312529] K [0.03σ]

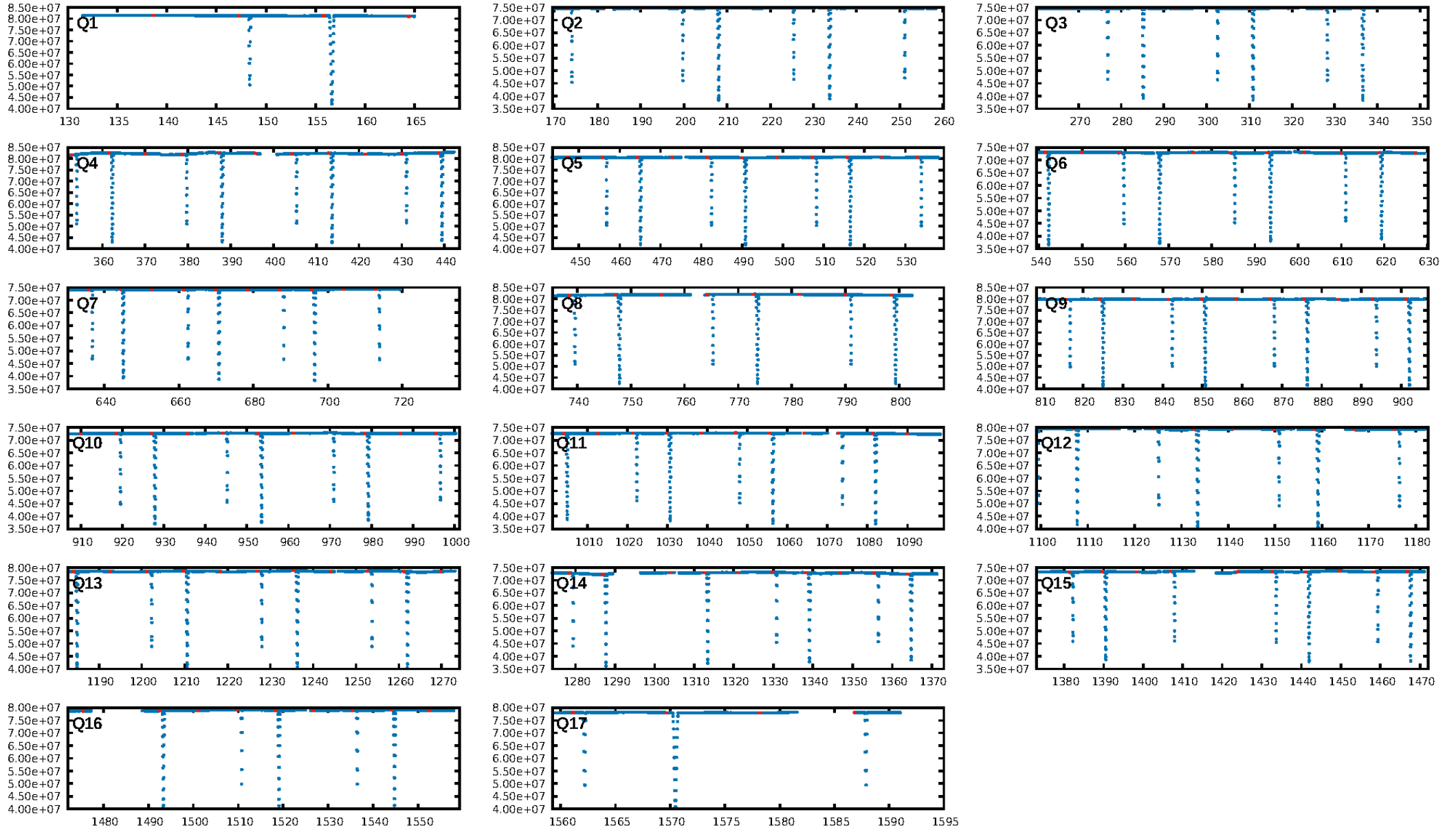
## DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]  
LongPeriod-sig: 0.1% [0.00σ]  
ModelChiSquare2-sig: 0.0%  
ModelChiSquareGof-sig: 0.0%  
Bootstrap-pfa: 0.00e+00  
RollingBand-fgt: 1.00 [149/149]  
GhostDiagnostic-chr: N/A  
Centroid-sig: N/A  
Centroid-so: N/A  
OotOffset-rm: 5.173 arcsec [2.48σ]  
KicOffset-rm: 5.015 arcsec [2.46σ]  
OotOffset-st: 1/1/3/1 [6]  
KicOffset-st: 1/1/3/1 [6]  
DiffImageQuality-fgm: 0.17 [1/6]  
DiffImageOverlap-fno: 0.00 [0/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 08:54:26 Z

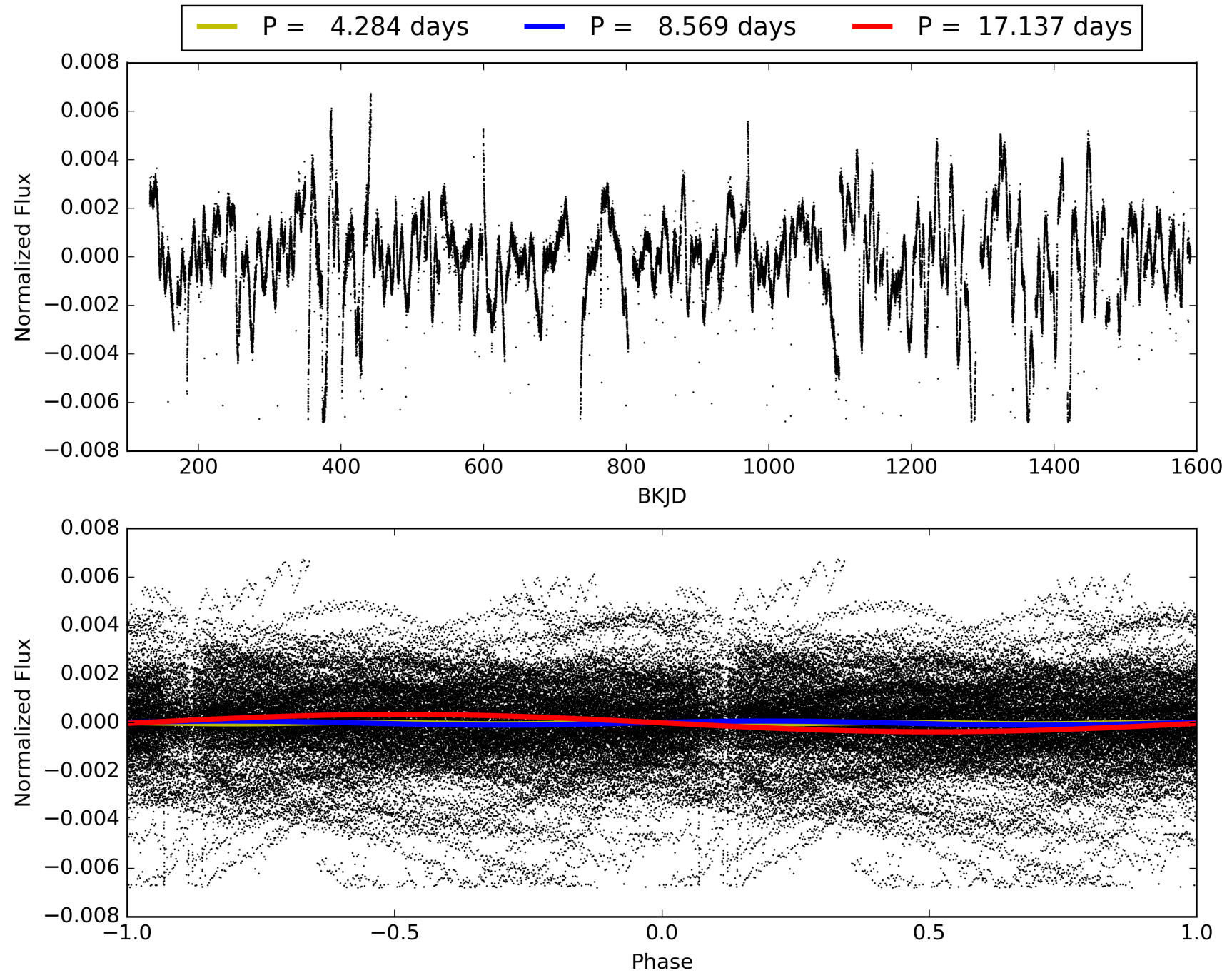
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 004773155-03, PDC Light Curves





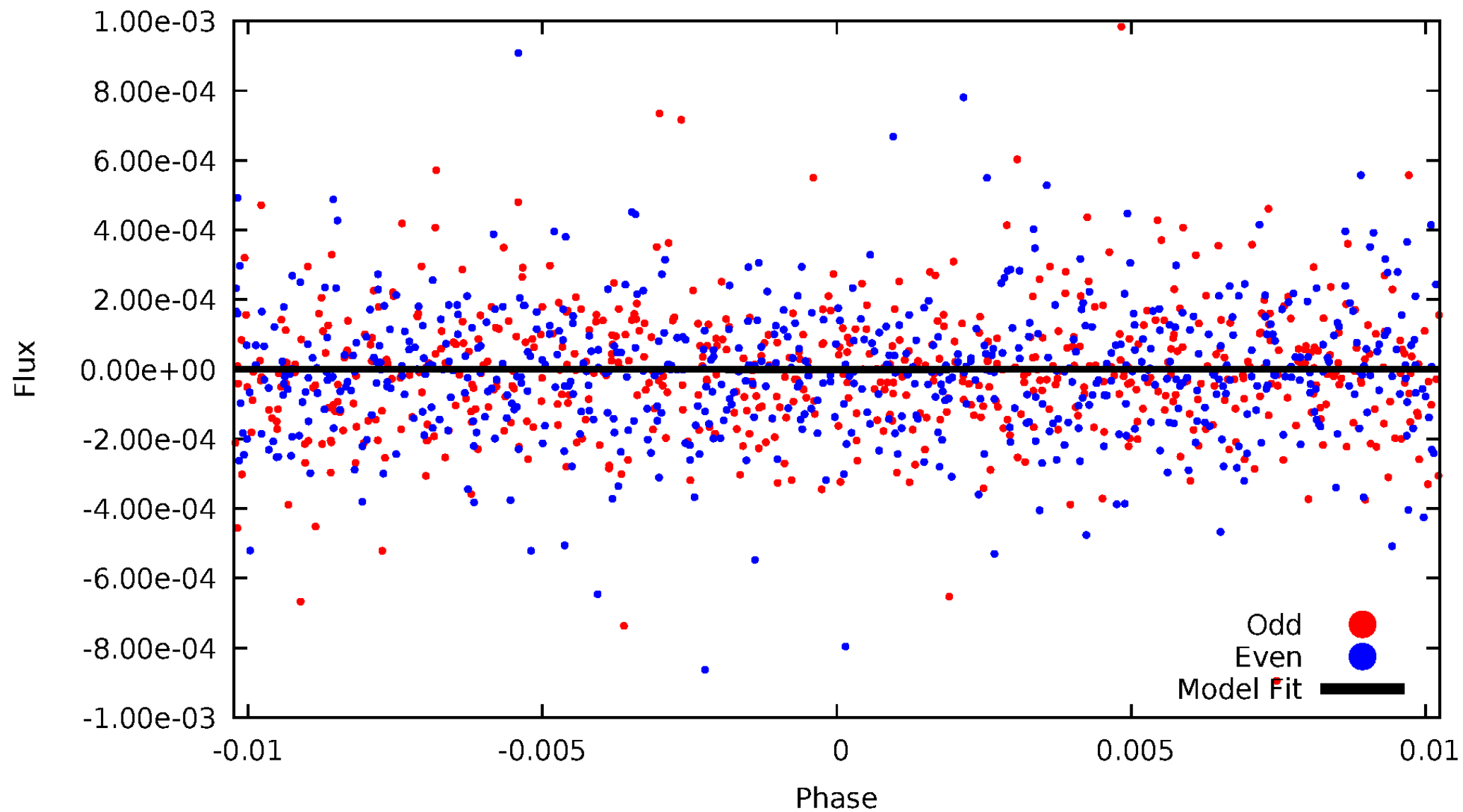
TCE 004773155-03





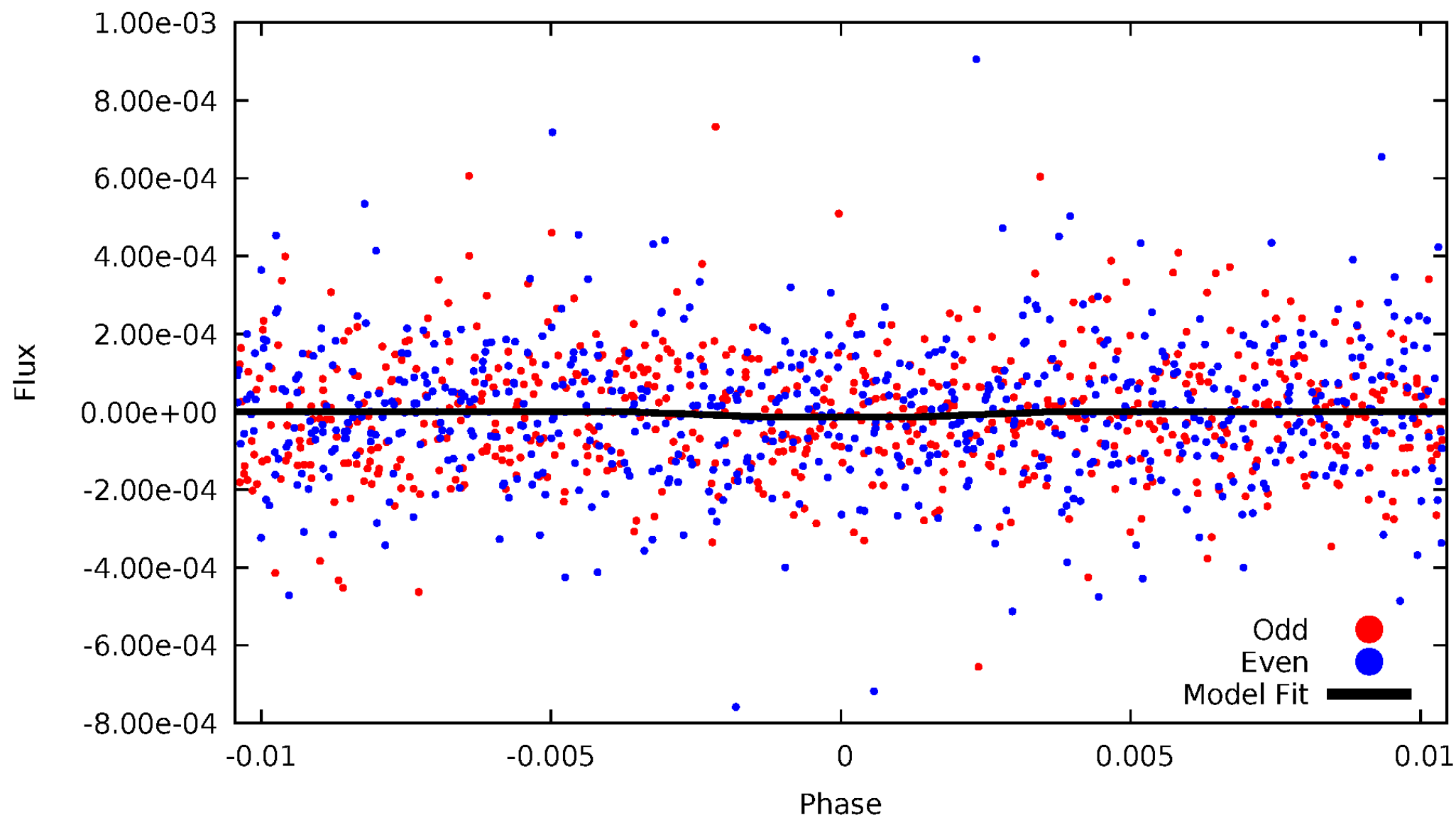
# DV Odd/Even

TCE 004773155-03



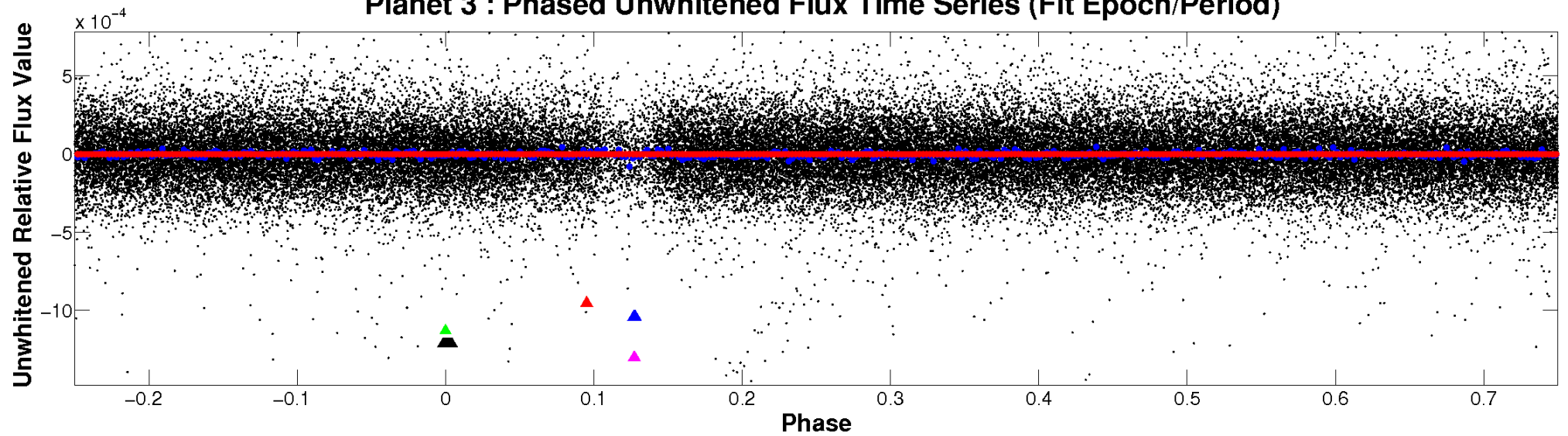
# ALT Odd/Even

TCE 004773155-03

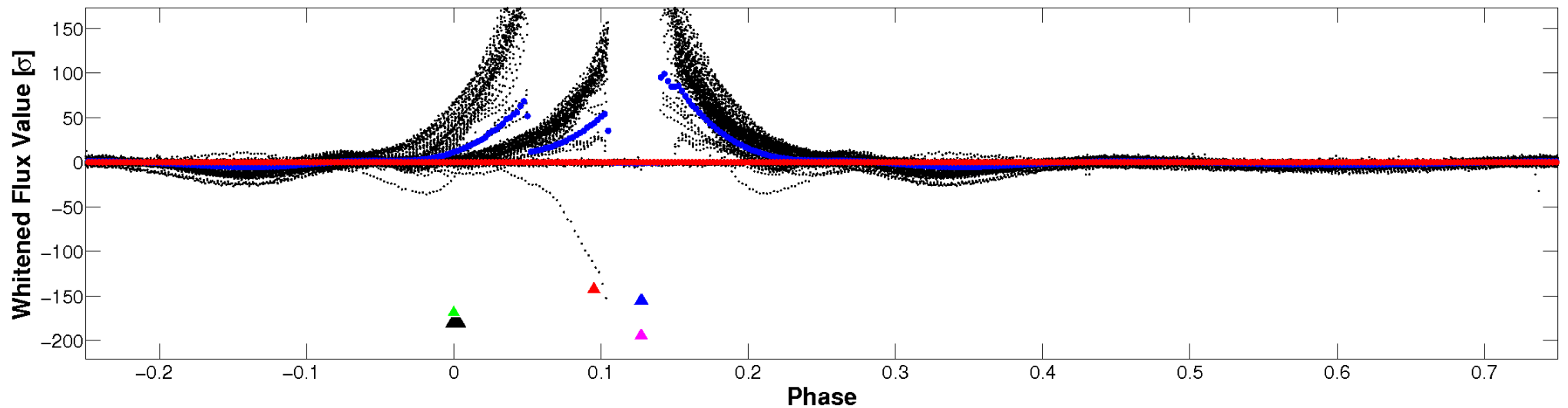


# Non-Whitened Vs. Whitened Light Curve

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

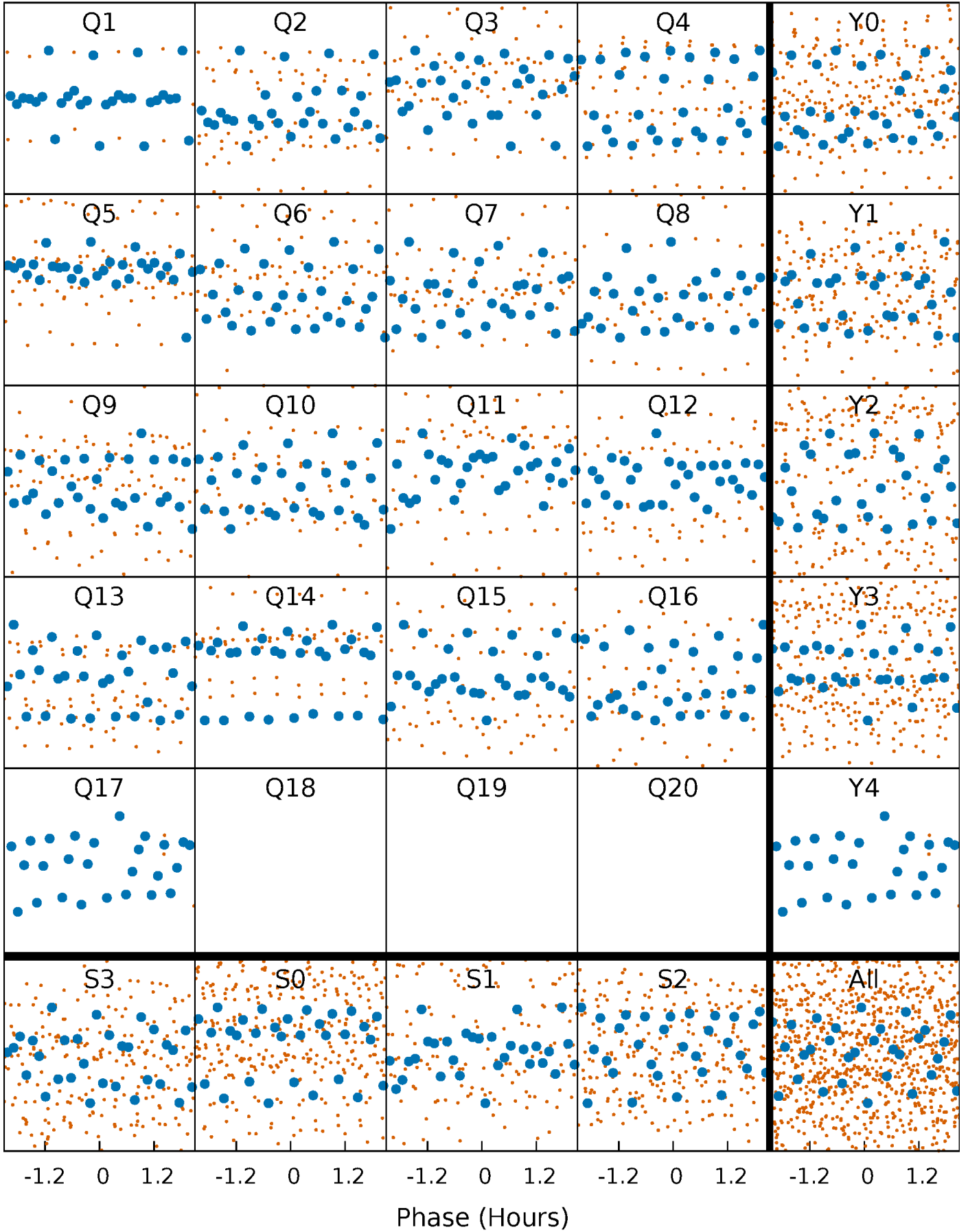


## Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



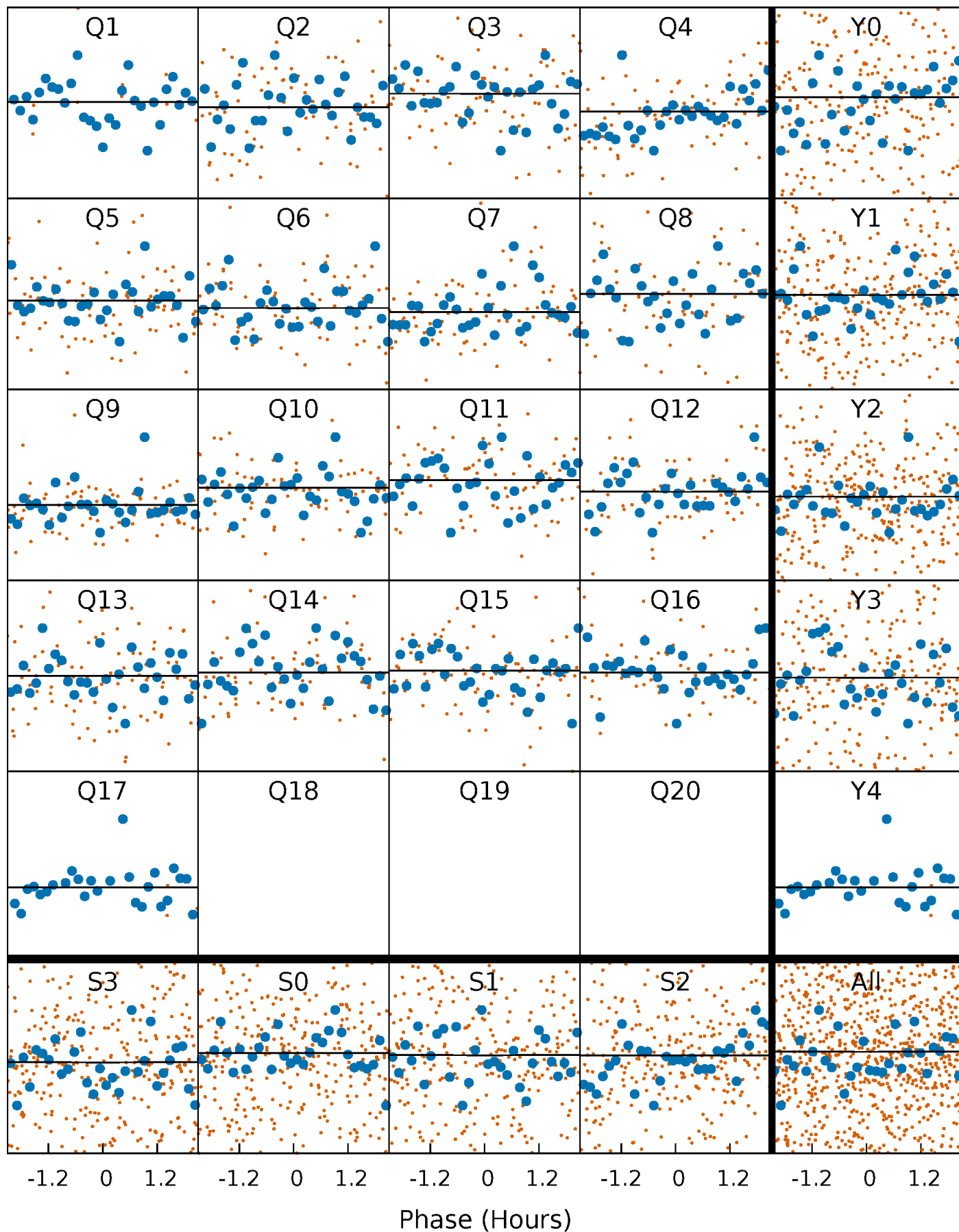
# PDC Quarter-Phased Transit Curves

TCE 004773155-03    P= 8.568672 Days     $T_0=138.687426$  (BKJD)



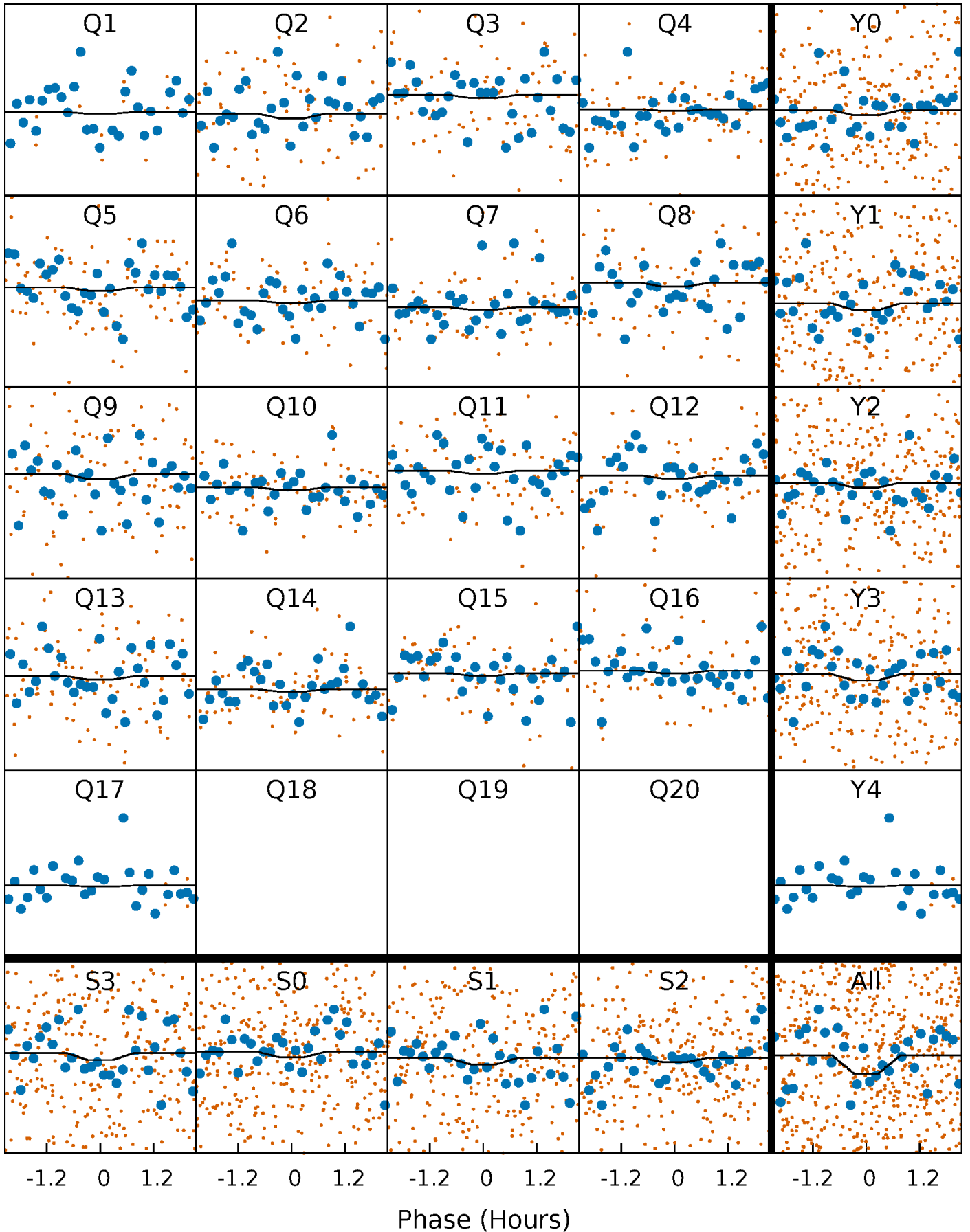
# DV Quarter-Phased Transit Curves

TCE 004773155-03 P= 8.568672 Days  $T_0=138.687426$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

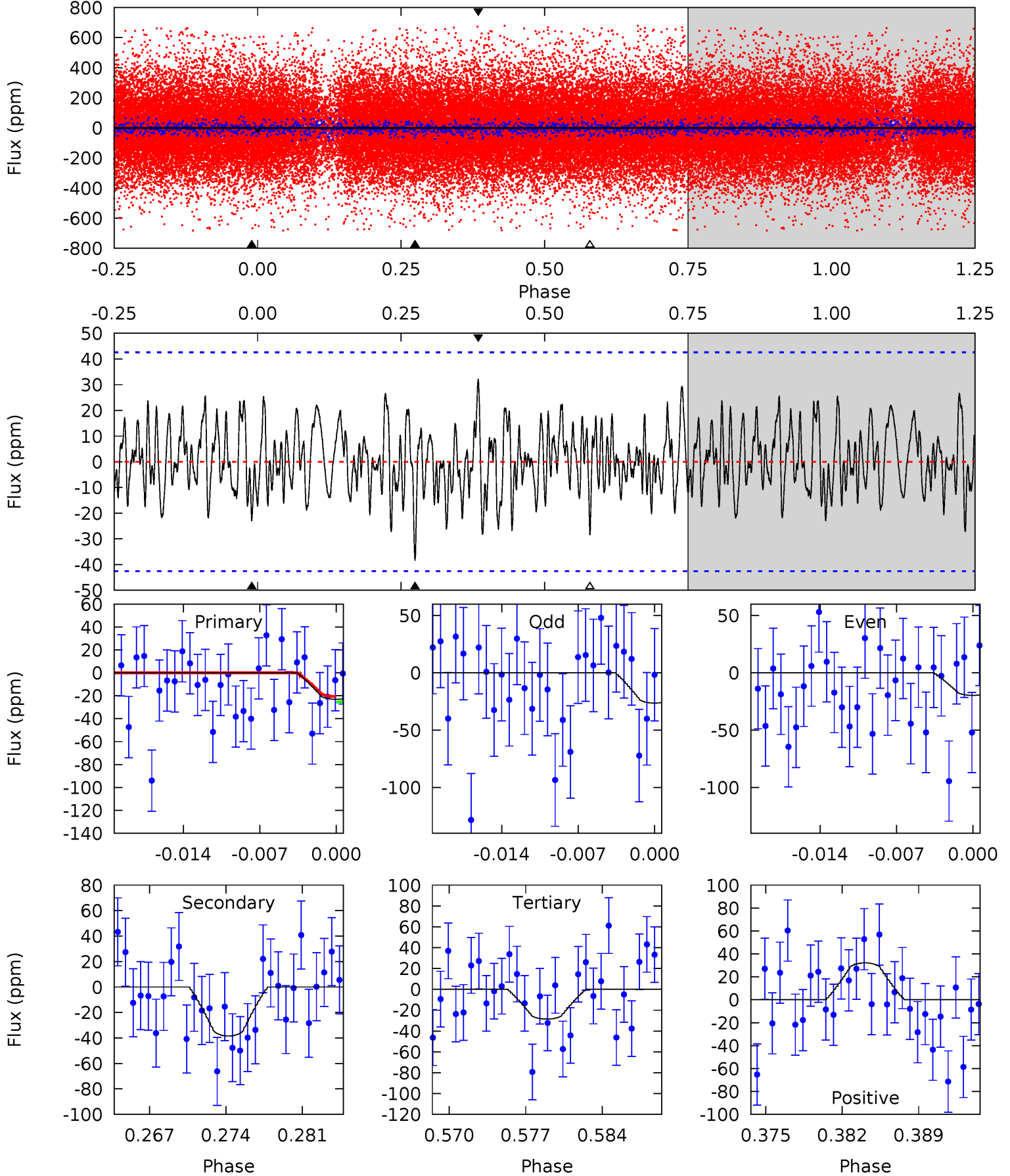
TCE 004773155-03 P= 8.568687 Days  $T_0=138.683254$  (BKJD)



# DV Model-Shift Uniqueness Test

004773155-03, P = 8.568672 Days, E = 130.118754 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
2.76	4.60	3.41	3.85	5.09	2.69	1.34	-0.65	-1.09	1.19	0.76	0.41	1.41	0.46	0.29

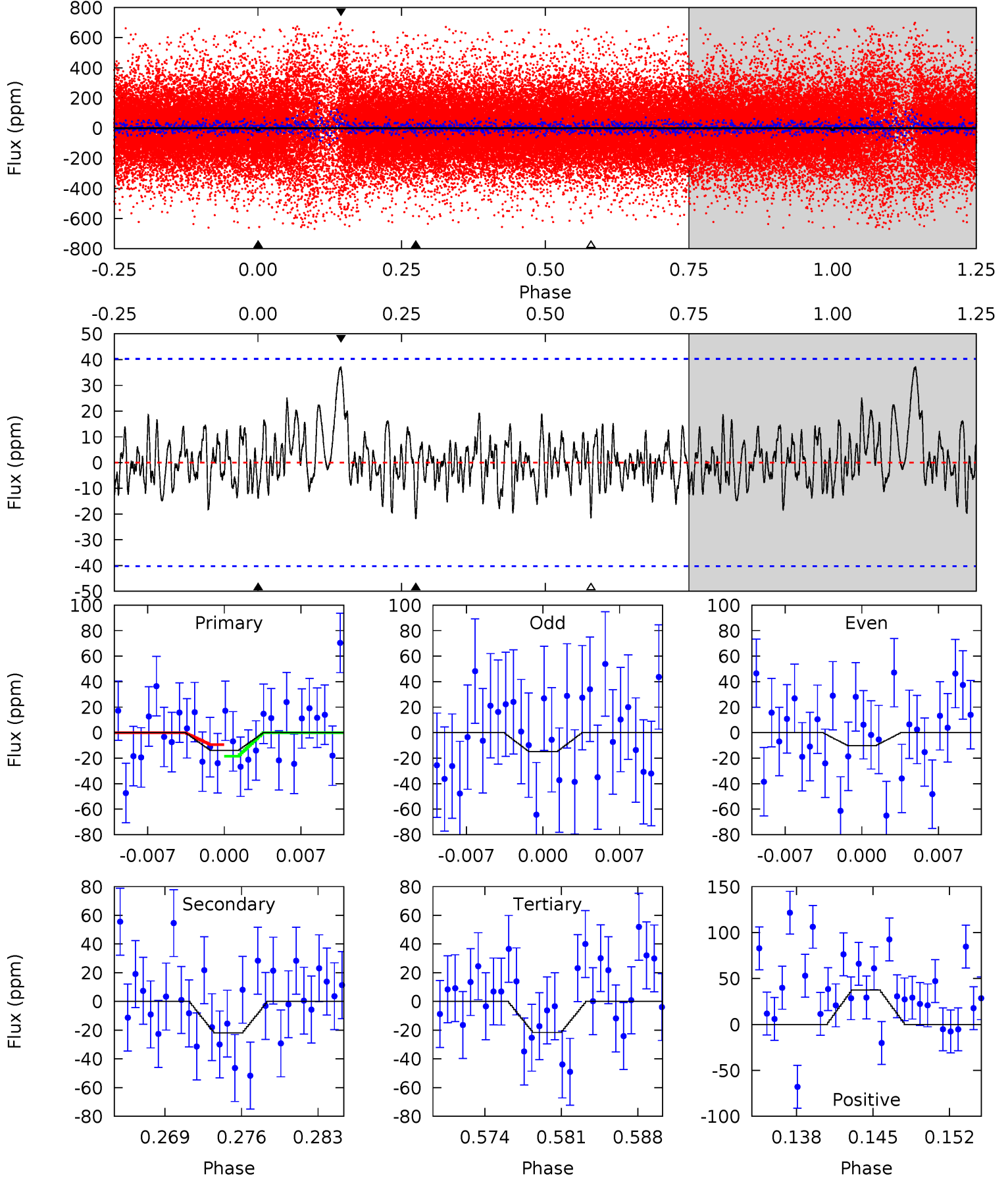




# Alt Model-Shift Uniqueness Test

004773155-03, P = 8.568687 Days, E = 130.114567 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
1.75	2.77	2.73	4.72	5.09	2.68	1.05	-0.98	-2.97	0.04	-1.95	0.30	0.95	0.63	0.57





### Stellar Parameters For KIC 004773155

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5642^{+152}_{-169}$	$4.498^{+0.060}_{-0.180}$	$-0.020^{+0.300}_{-0.300}$	$0.903^{+0.242}_{-0.104}$	$0.936^{+0.104}_{-0.095}$	$1.793^{+0.456}_{-0.888}$
	+3%/-3%	+1%/-4%	+1500%/-1500%	+27%/-12%	+11%/-10%	+25%/-50%
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 004773155-03 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-39 \pm 8$	$3.55^{+3.87}_{-2.39}$	$1186^{+86}_{-57}$	$3019^{+1342}_{-563}$	$10^{+98}_{-8}$
Alt.	$-22 \pm 8$	$3.77^{+3.76}_{-2.66}$	$1191^{+83}_{-61}$	$2734^{+1288}_{-513}$	$5.453^{+55.028}_{-4.295}$

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

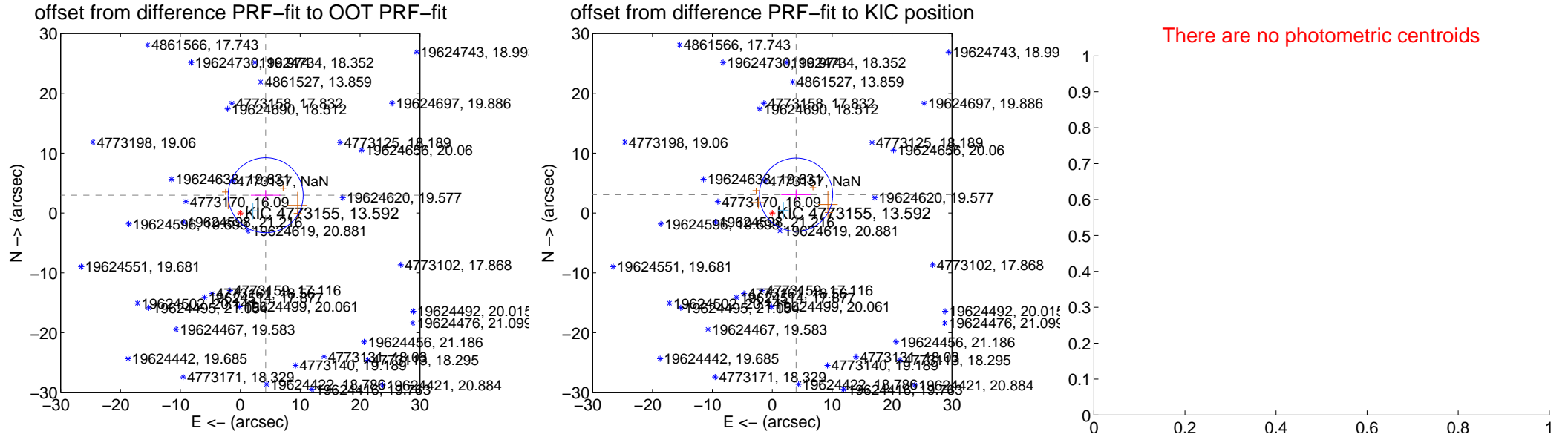
## DV Centroid Data

Supplemental centroid analysis for 004773155-03. Kepler magnitude: 13.59. Transit SNR 0.03

There are 1 quarters with good PRF difference image offsets

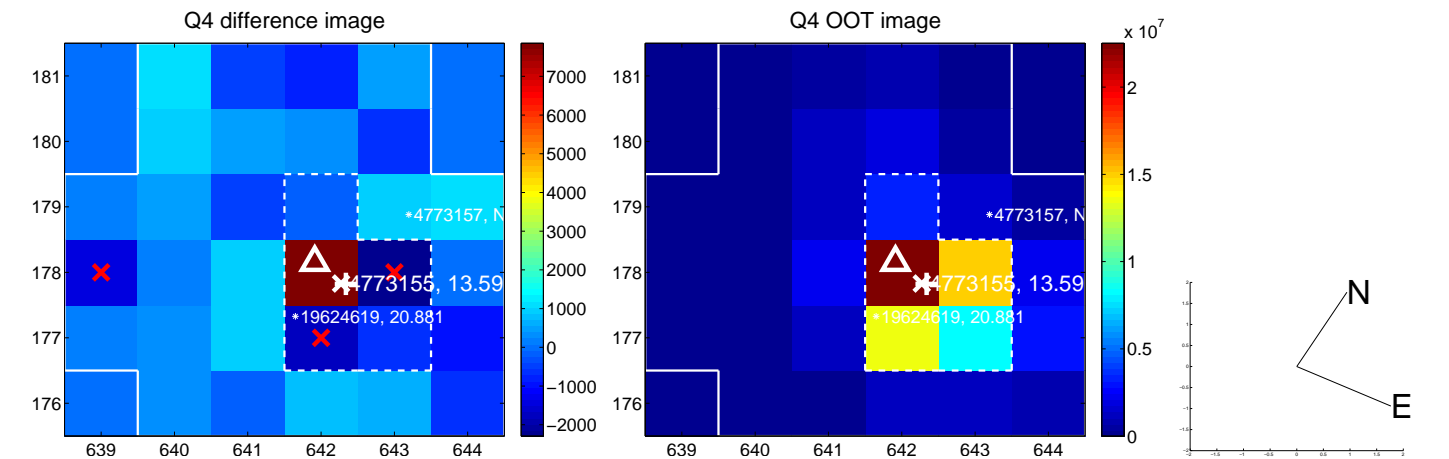
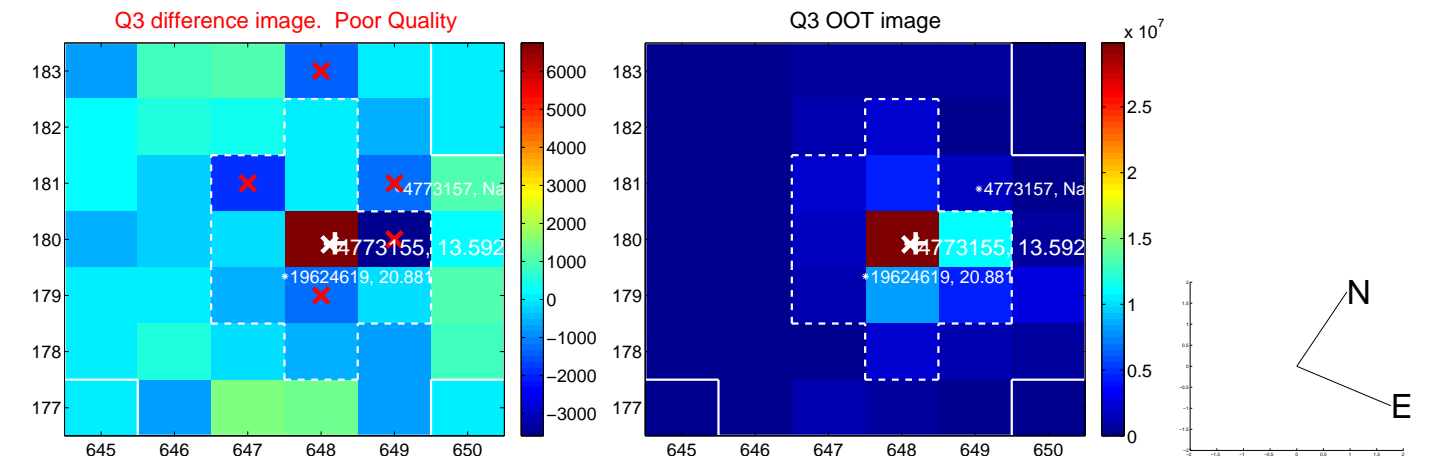
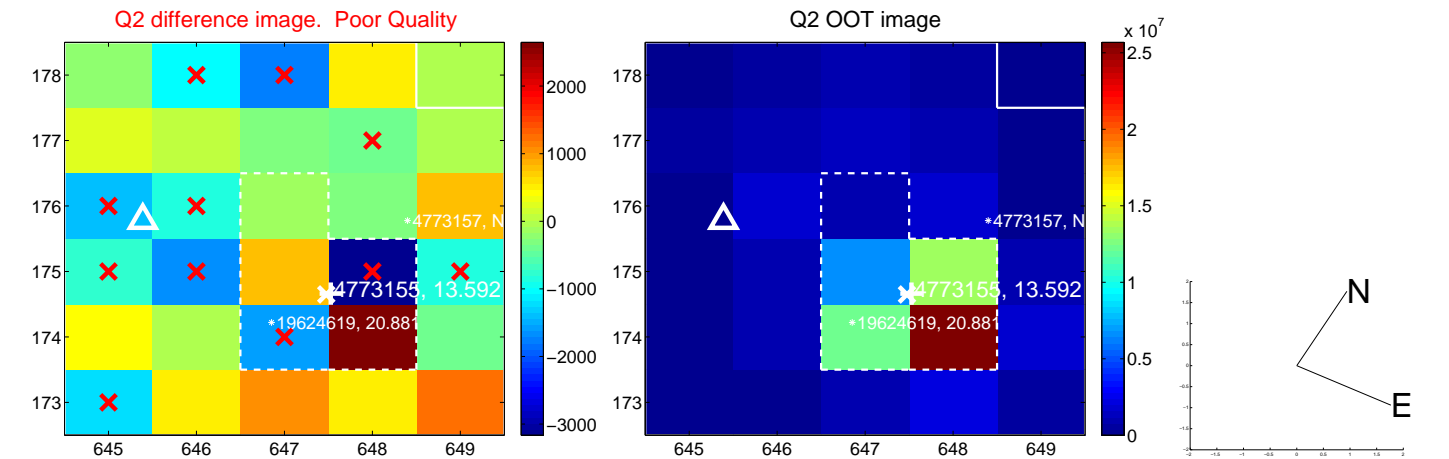
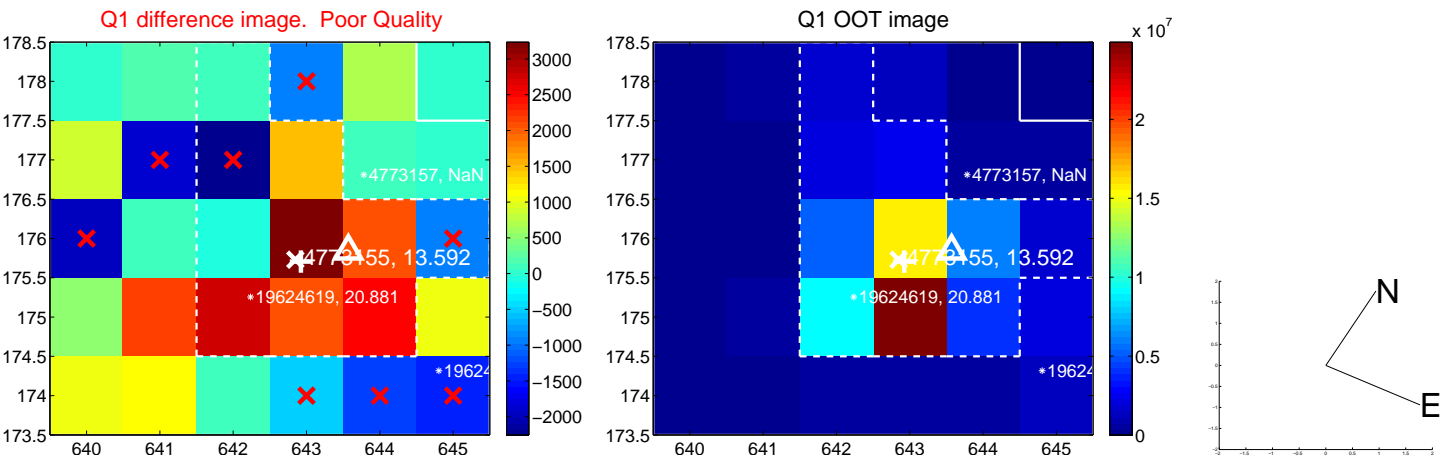
The direct PRF centroid is offset from the target star catalog position by about 0.32 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$5.173 \pm 2.088$	2.48	$-4.237 \pm 2.473$	$2.968 \pm 0.888$
PRF-fit source offset from KIC position	$5.015 \pm 2.039$	2.46	$-3.976 \pm 2.483$	$3.057 \pm 0.875$
photometric centroid source offset	—	—	—	—

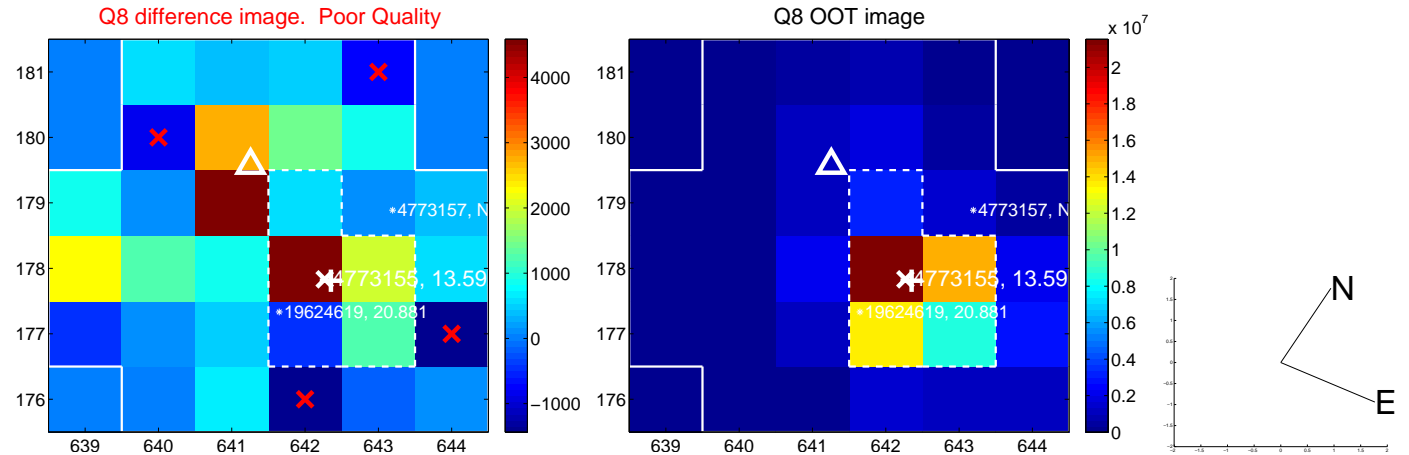
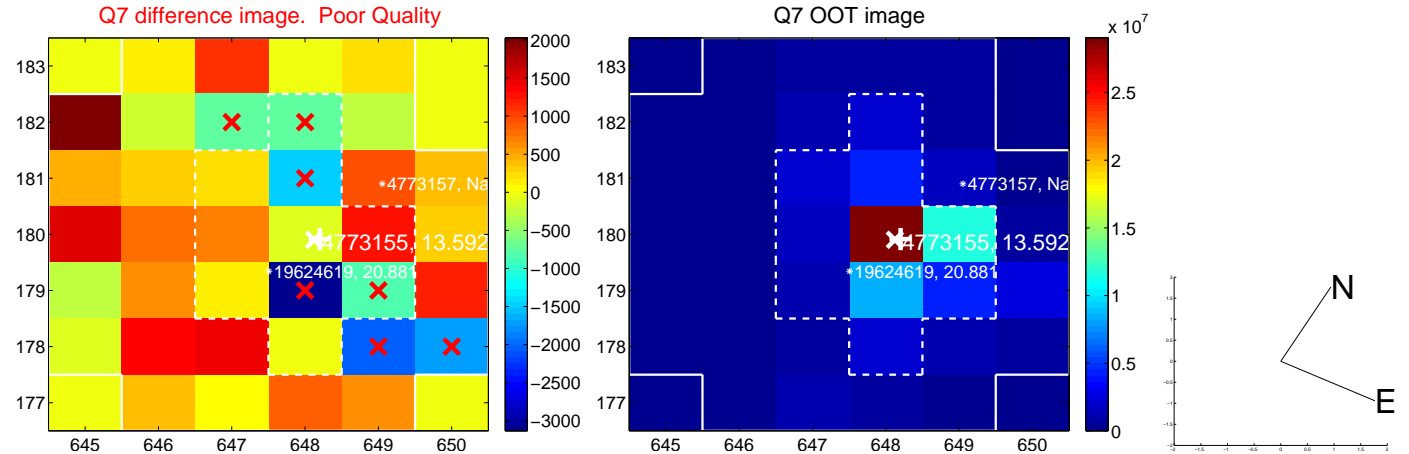
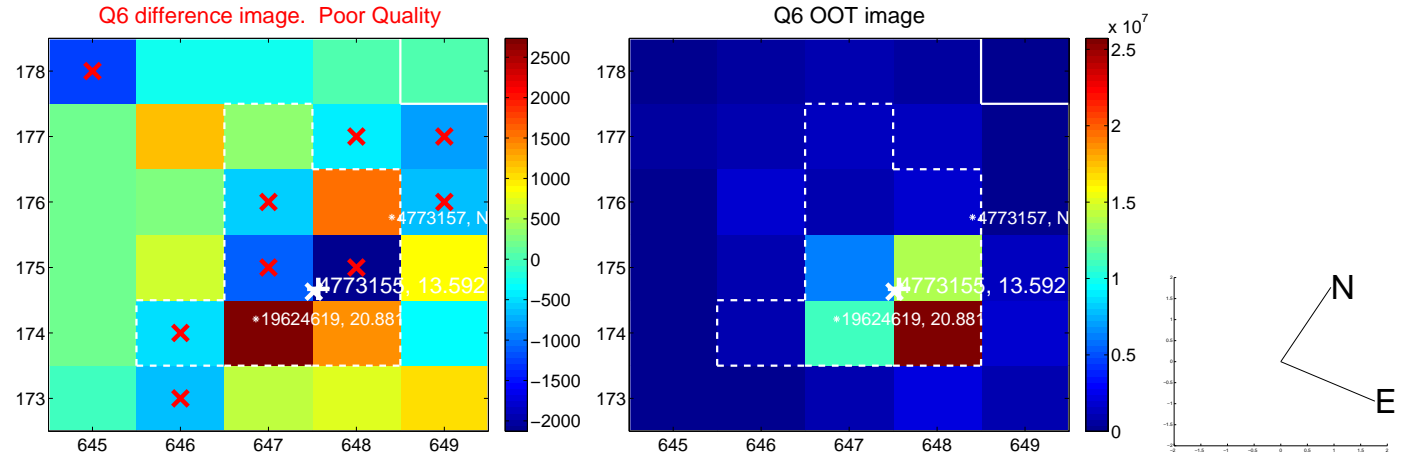
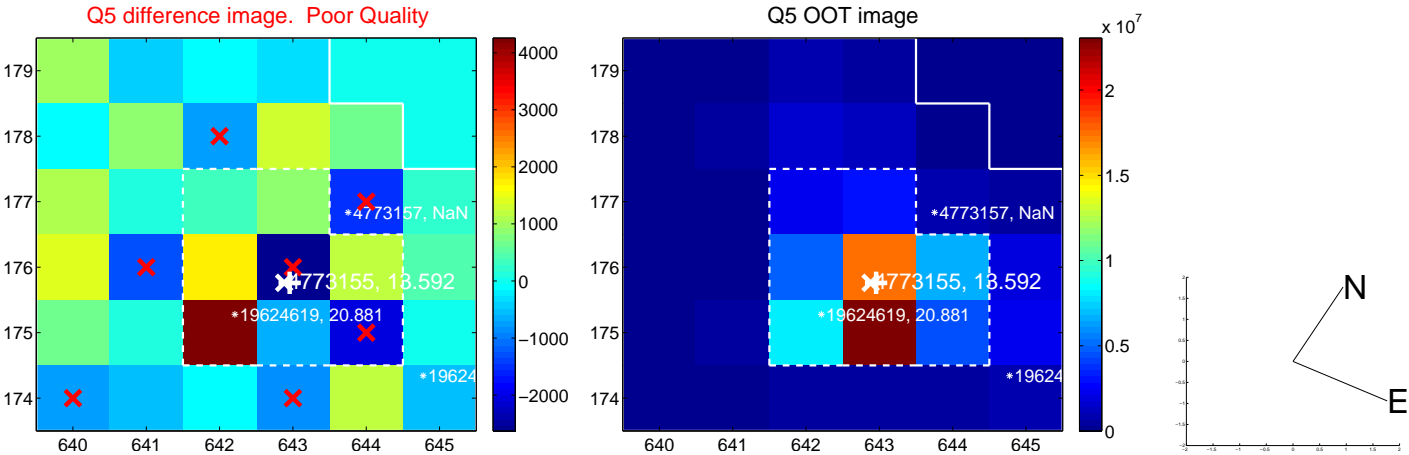


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

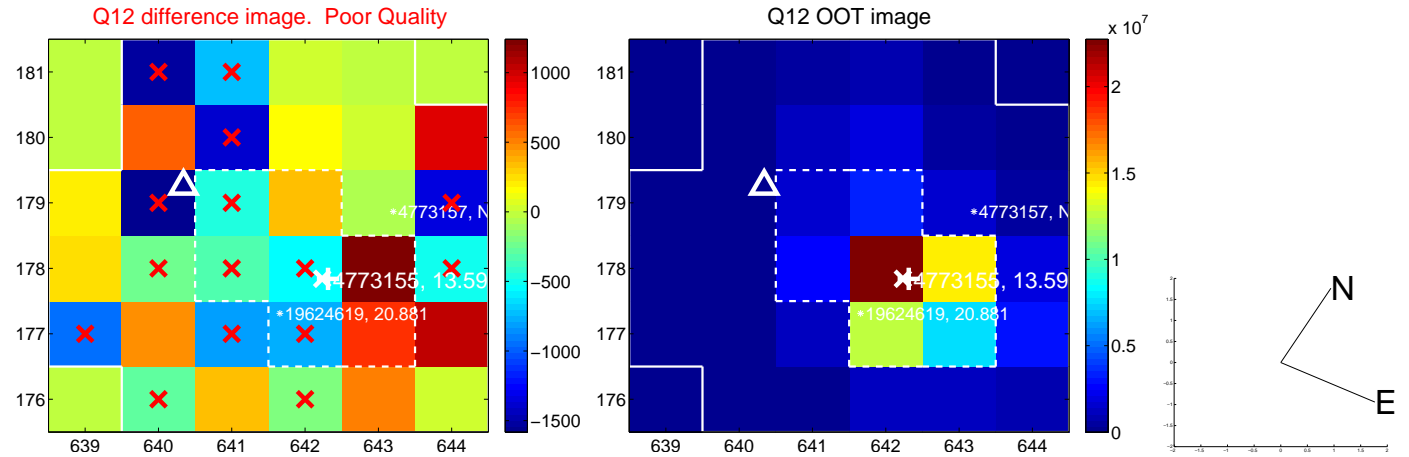
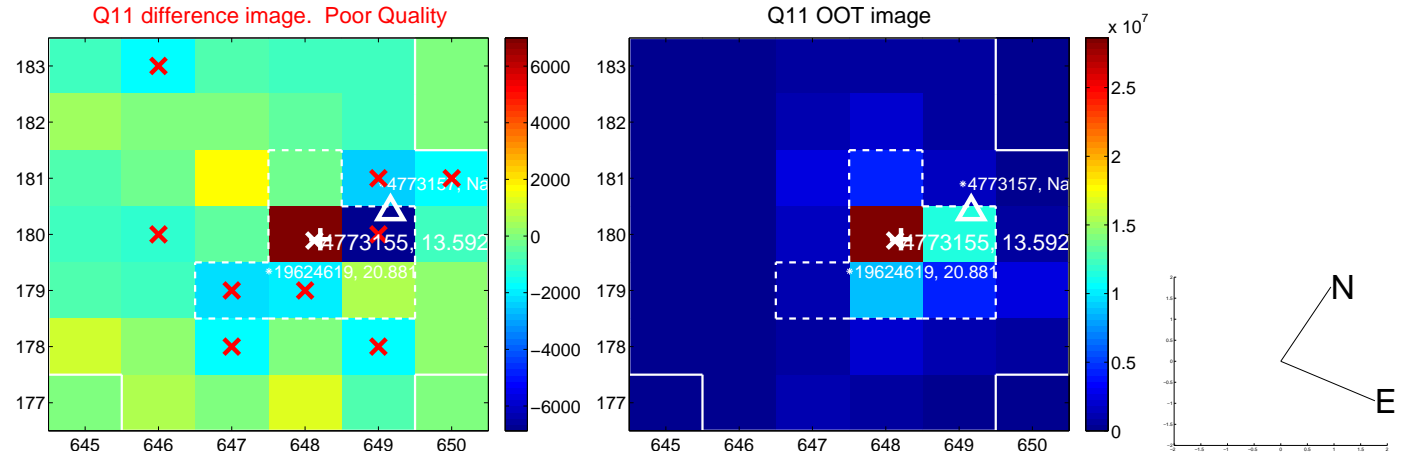
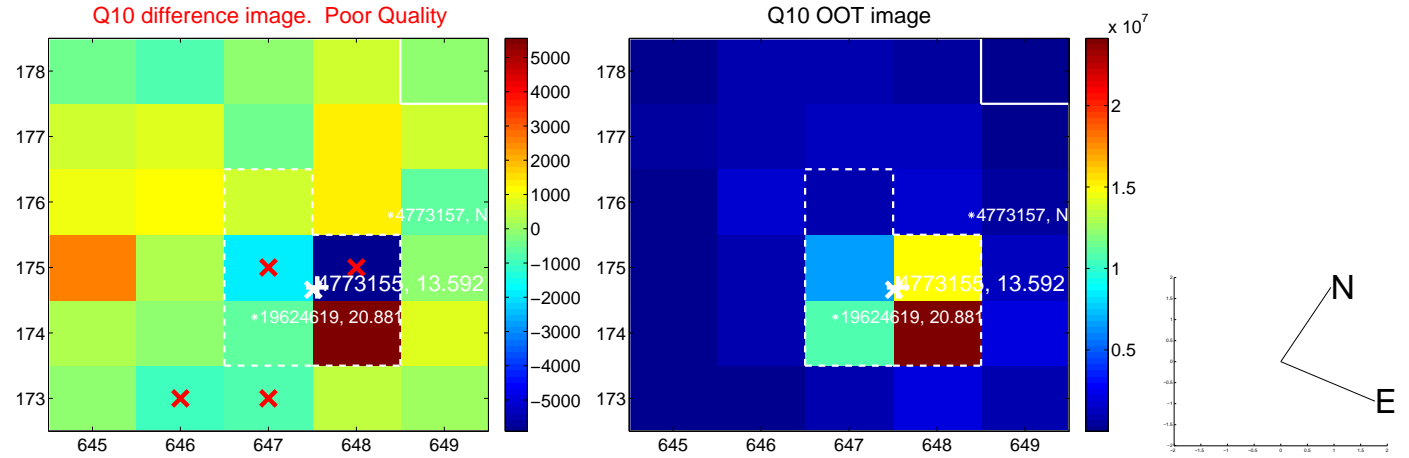
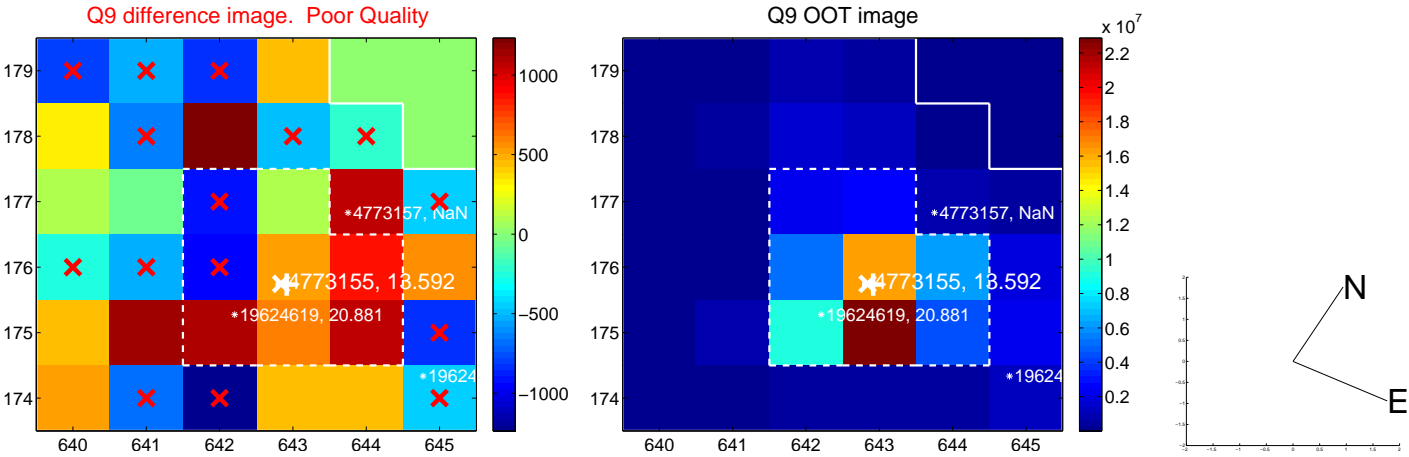
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



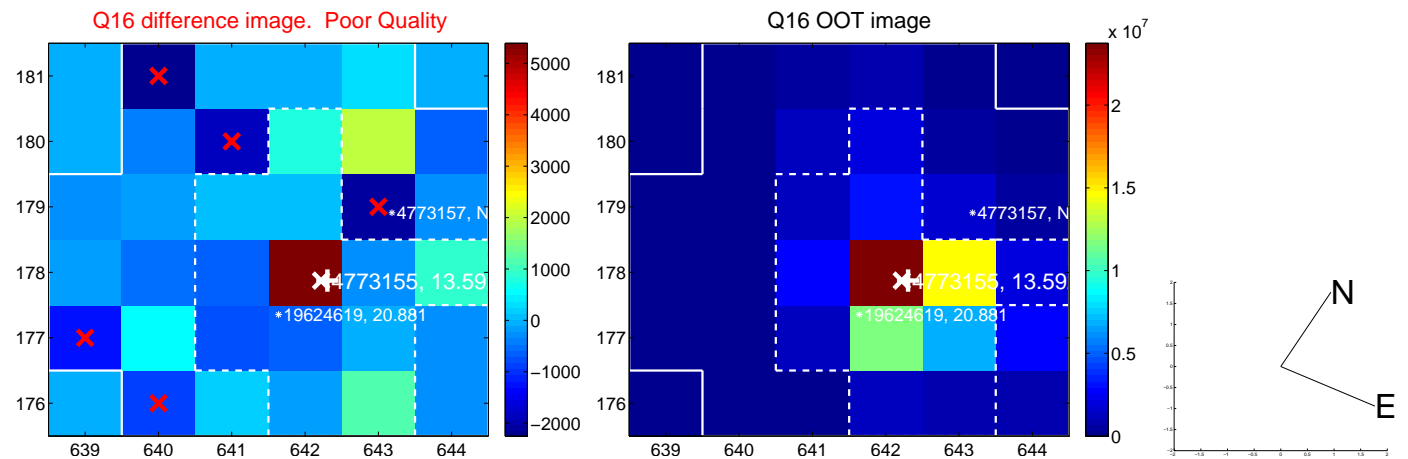
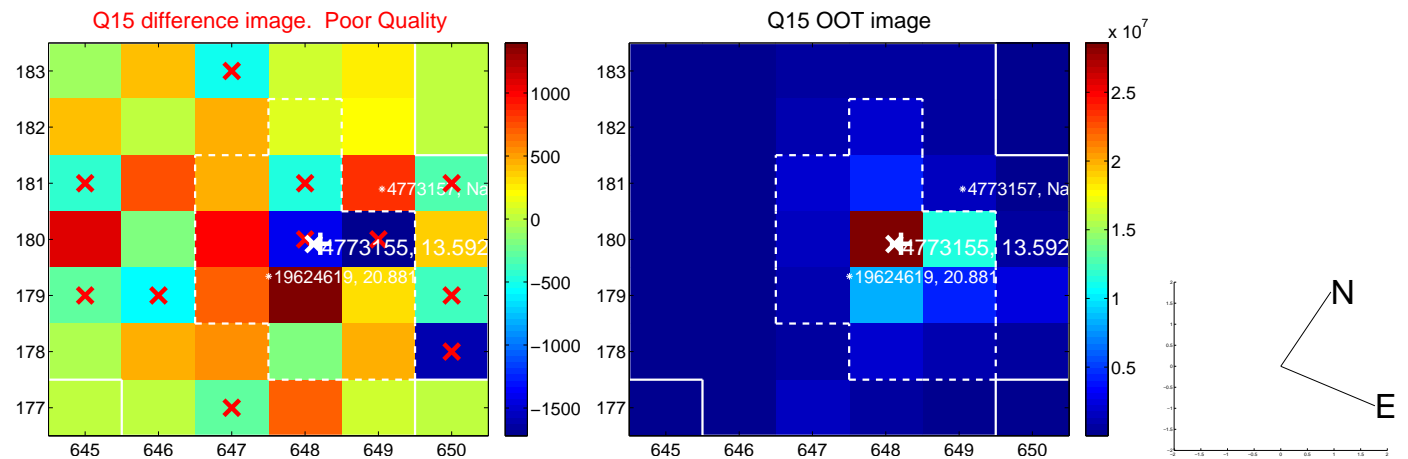
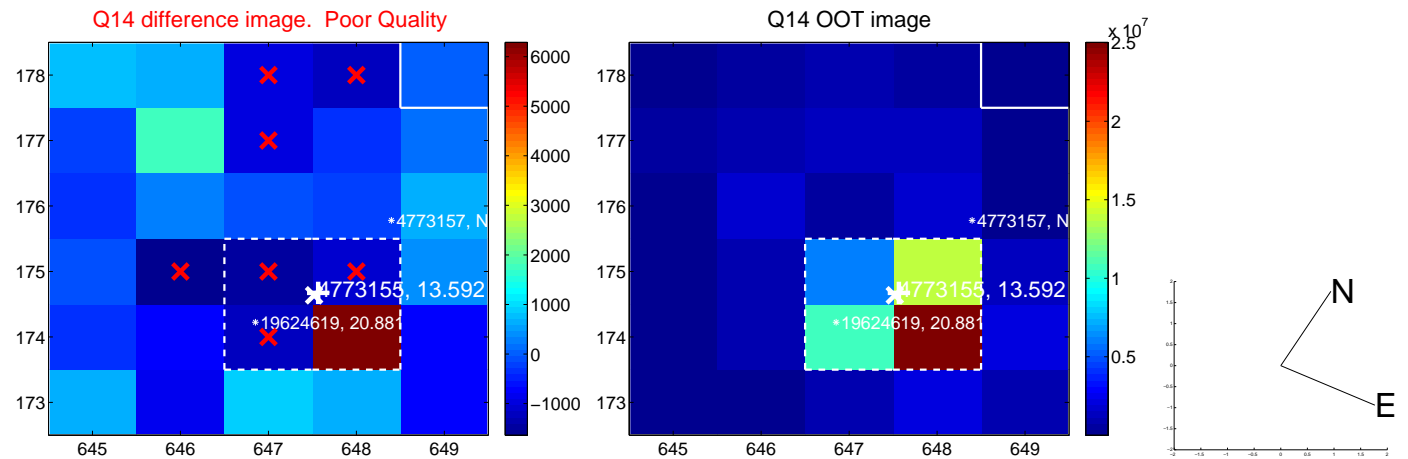
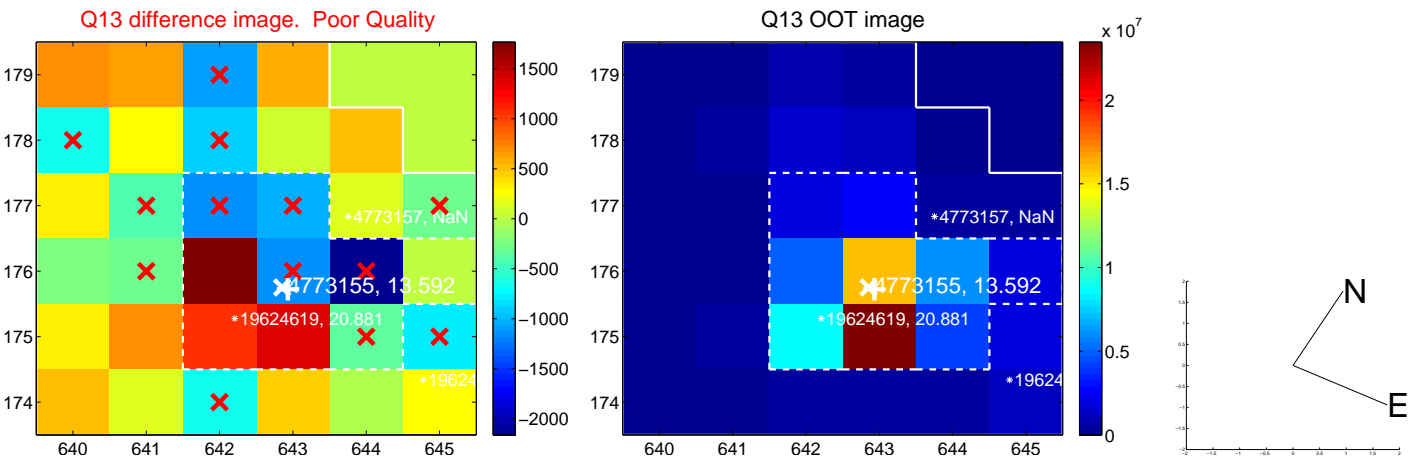
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



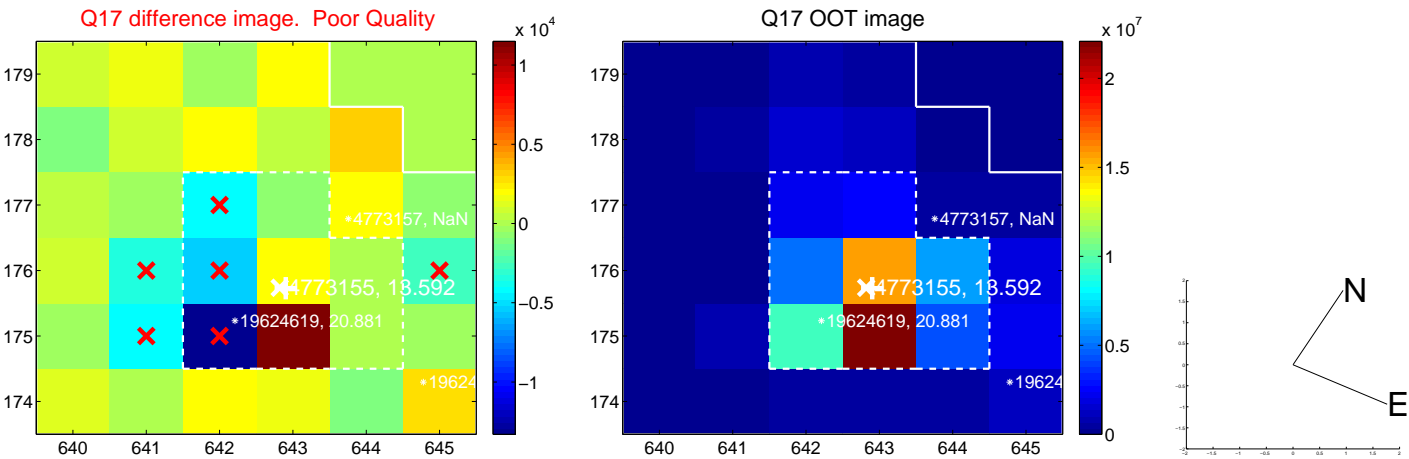
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



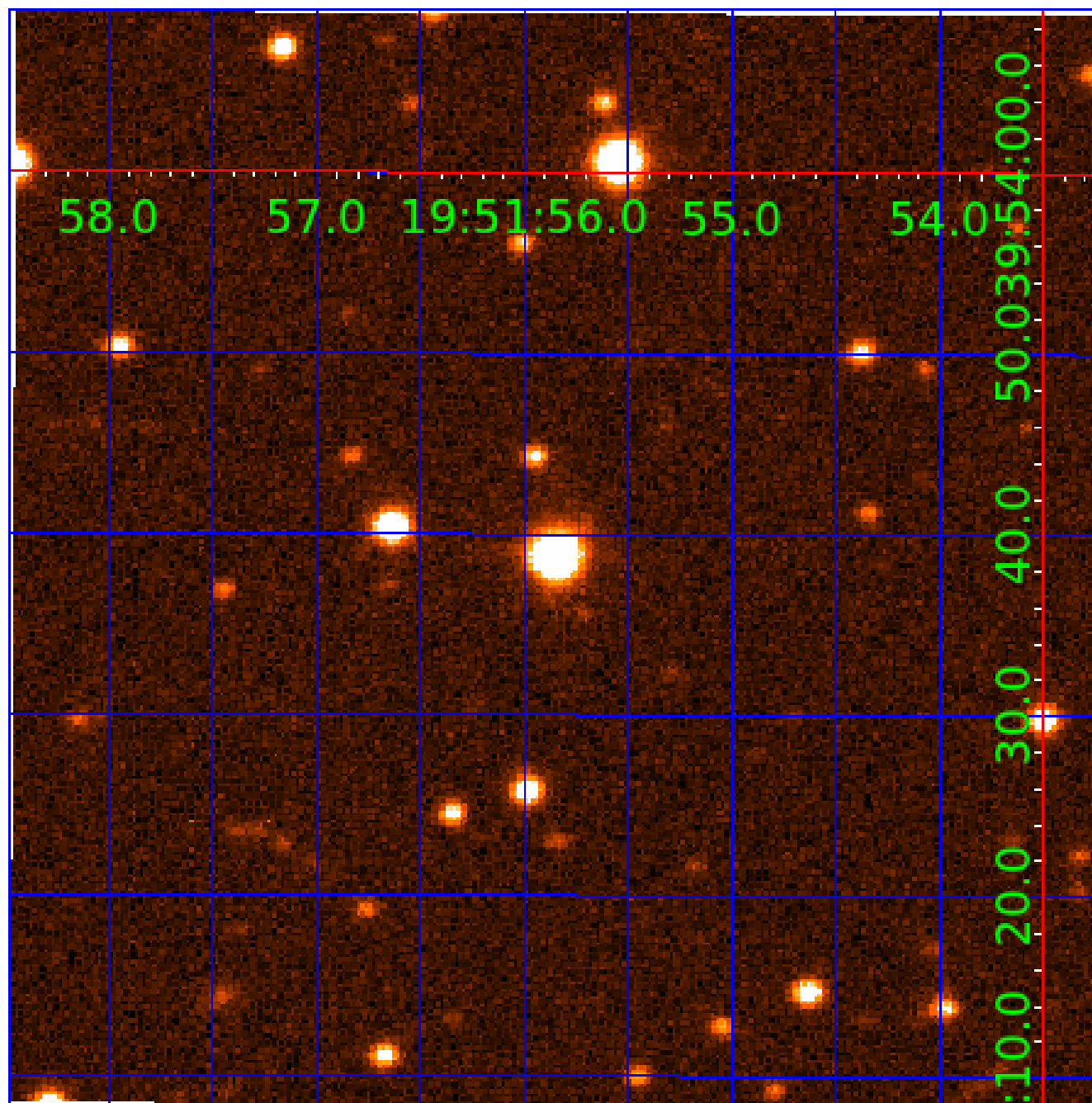
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



folded centroid time series figure for this object.

UKIRT Image

Declination





# KIC 004773155

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
004773155-01	OBS	6453.01	25.706003	156.640867	480994.4	6.000	35714.5	-1.0	0.90	5642	49.27	26.61
004773155-02	OBS	No	25.706153	148.344531	375708.7	3.000	24992.2	-1.0	0.90	5642	49.27	26.61
004773155-03	OBS	No	8.568672	138.687426	0.5	1.052	2824.2	0.0	0.90	5642	0.07	115.13
004773155-04	OBS	No	8.568983	138.672959	1596.7	8.154	2826.2	76.2	0.90	5642	6.98	115.13
004773155-05	OBS	No	8.568636	139.781701	12324.5	11.045	2727.3	1314.1	0.90	5642	9.89	115.13

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004773155-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_ALT—MOD_ODDEVEN_ALT—HAS_SEC_TCE—CENT_NOFITS
004773155-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE—CENT_NOFITS
004773155-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT— MOD_POS_ALT—SAME_NTL_PERIOD—CENT_FEW_MEAS
004773155-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—SAME_NTL_PERIOD— CENT_FEW_DIFFS
004773155-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—LPP_DV—RESIDUAL_TCE—CENT_FEW_DIFFS

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

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

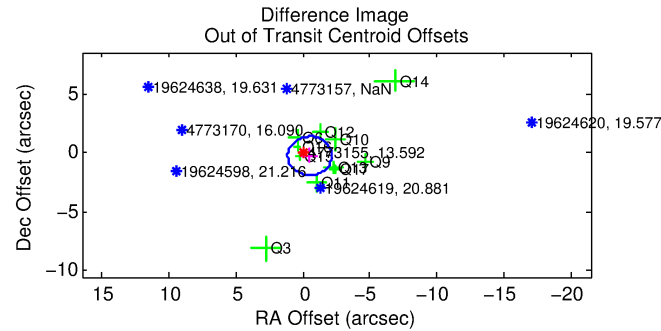
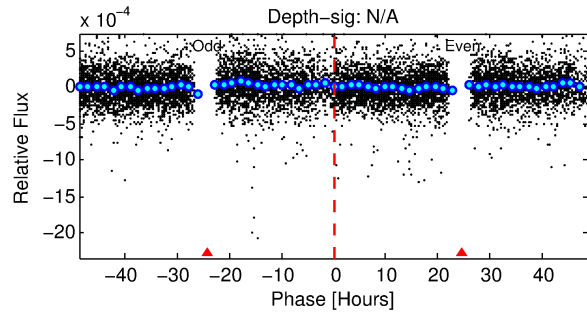
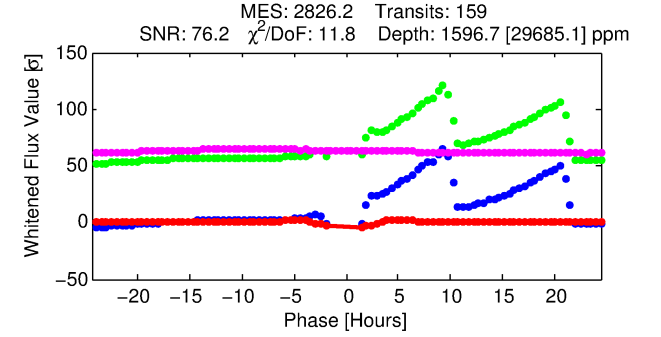
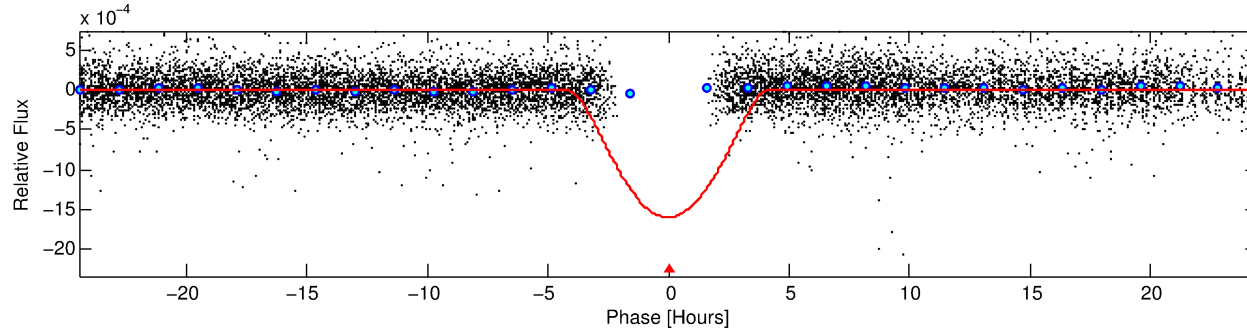
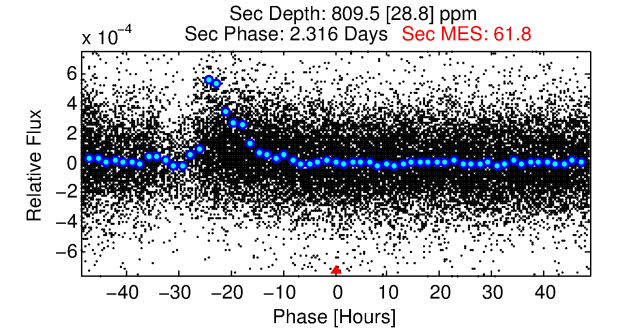
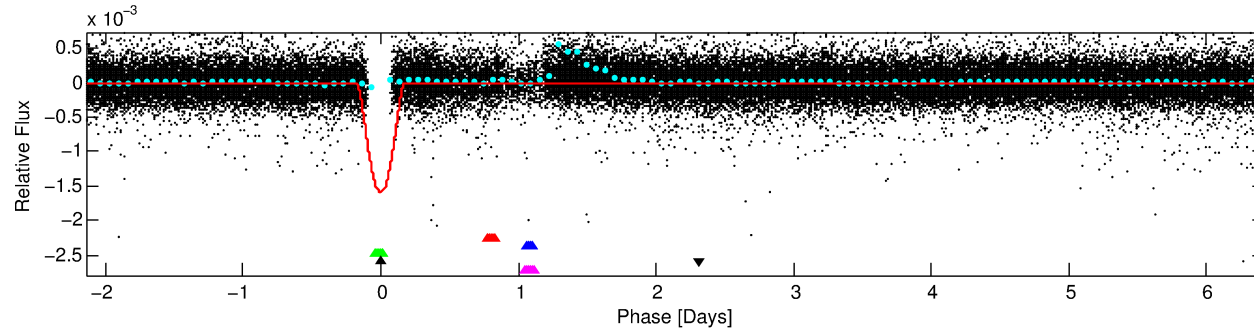
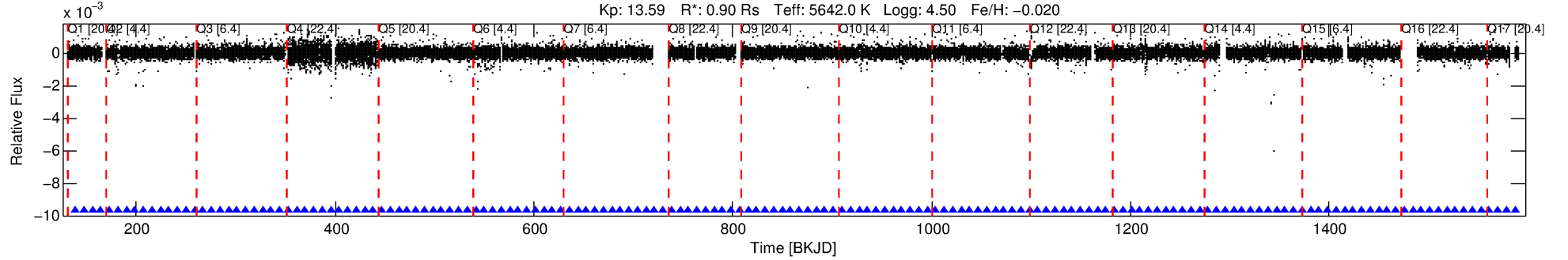
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 004773155-04

No Significant Match Found

# DV One-Page Summary

KIC: 4773155 Candidate: 4 of 5 Period: 8.569 d  
KOI: K06453 Corr: No Ephemeris Match



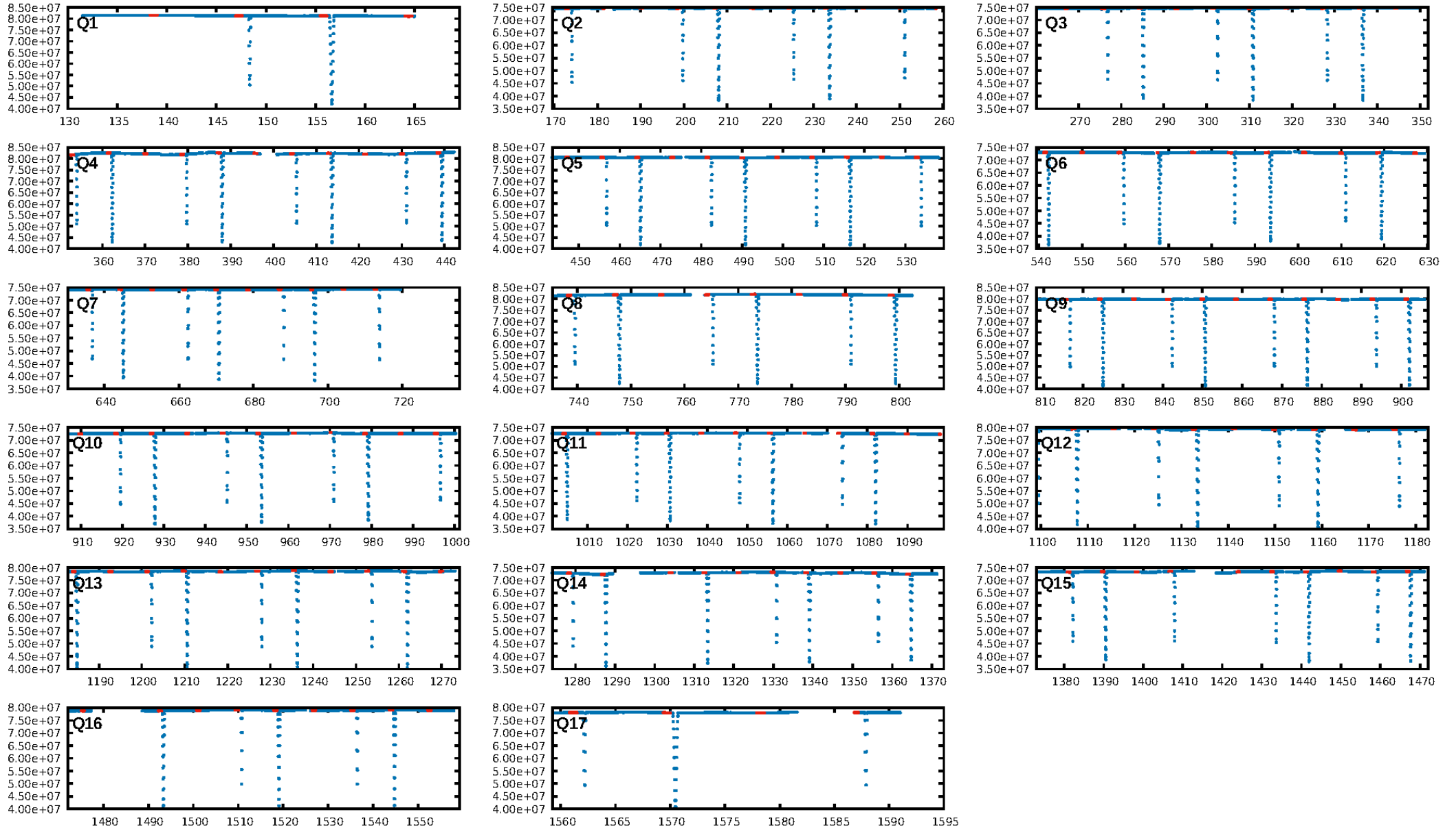
## DV Fit Results:

Period = 8.56898 [0.00005] d  
Epoch = 138.6730 [0.0048] BKJD  
Rp/R\* = 0.0708 [0.1101]  
a/R\* = 3.24 [0.86]  
b = 1.00 [0.72]  
Seff = 115.13 [40.32]  
Teq = 835 [73] K  
Rp = 6.98 [11.01] Re  
a = 0.0802 [0.0181] AU  
Ag = 58.79 [183.83] [0.31σ]  
Teffp = 3576 [2782] K [0.98σ]

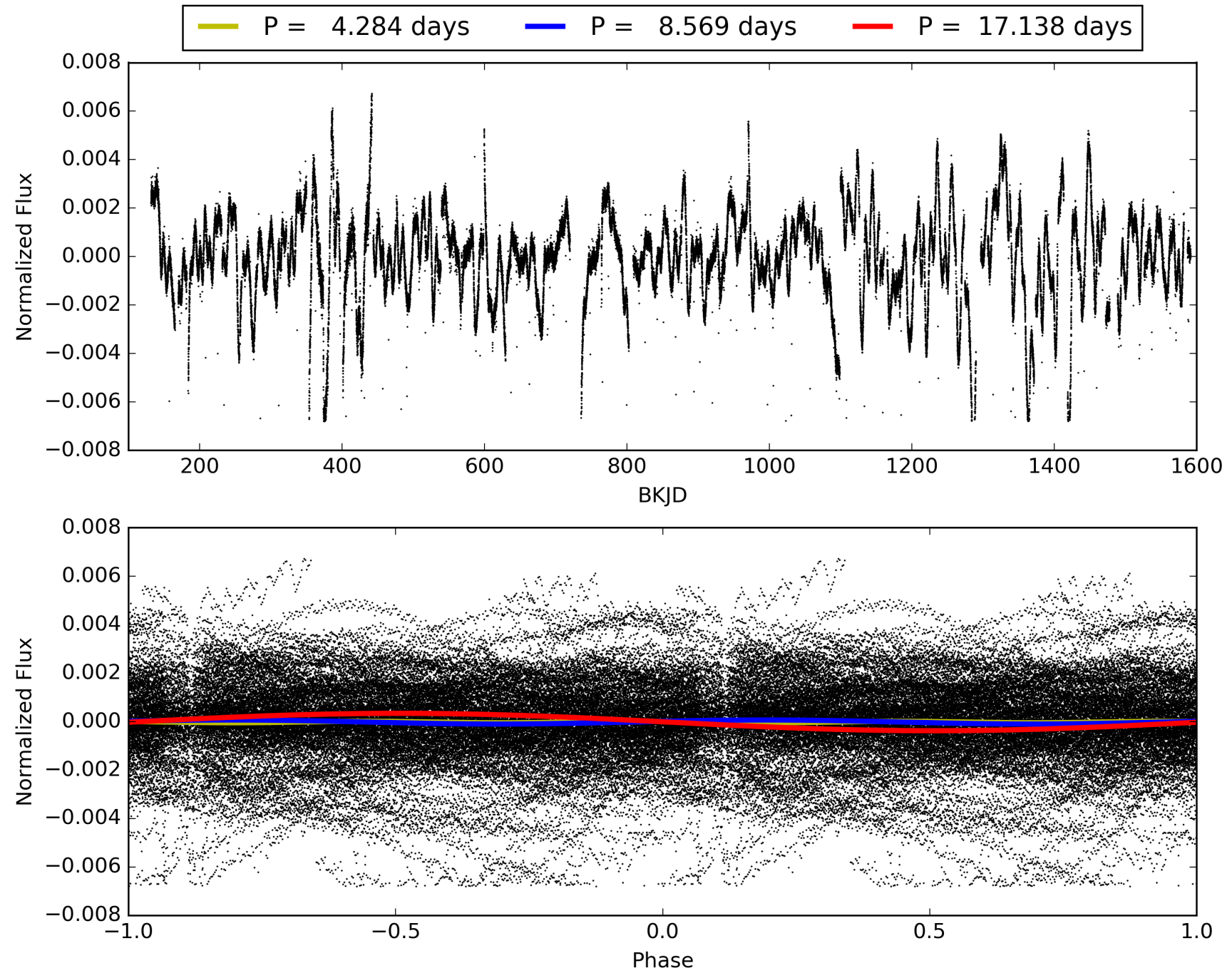
## DV Diagnostic Results:

ShortPeriod-sig: 0.1% [0.006]  
LongPeriod-sig: 100.0% [40.63σ]  
ModelChiSquare2-sig: 0.0%  
ModelChiSquareGof-sig: 0.0%  
Bootstrap-pfa: 0.00e+00  
RollingBand-fgt: 1.00 [151/151]  
GhostDiagnostic-chr: 20.96  
Centroid-sig: N/A  
Centroid-so: 0.586 arcsec [9.99σ]  
OotOffset-rm: 0.553 arcsec [1.01σ]  
KicOffset-rm: 0.234 arcsec [0.43σ]  
OotOffset-st: 3/3/2/3 [11]  
KicOffset-st: 3/3/2/3 [11]  
DiffImageQuality-fgm: 0.00 [0/11]  
DiffImageOverlap-fno: 0.00 [0/17]

# TCE 004773155-04, PDC Light Curves

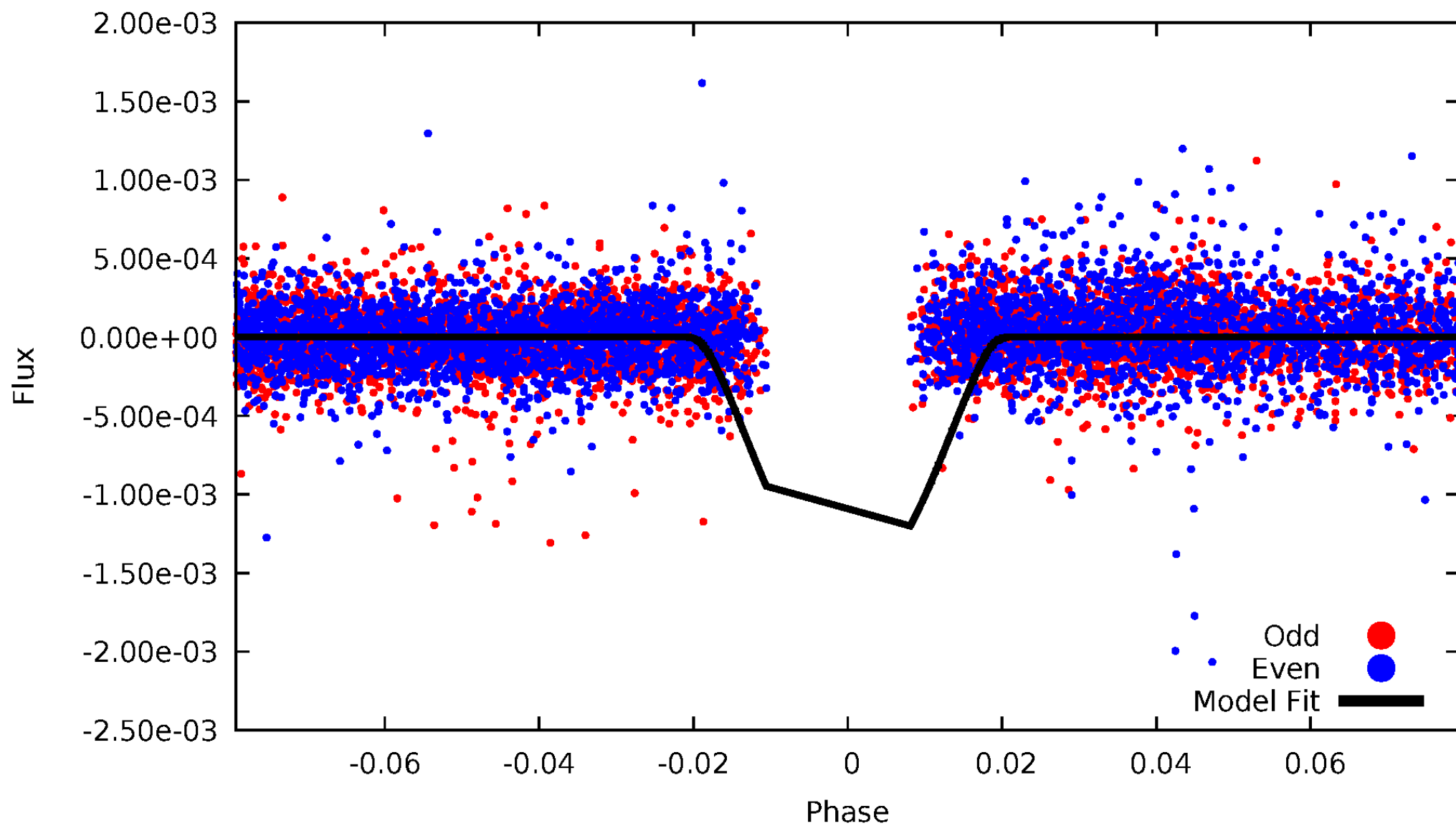


TCE 004773155-04



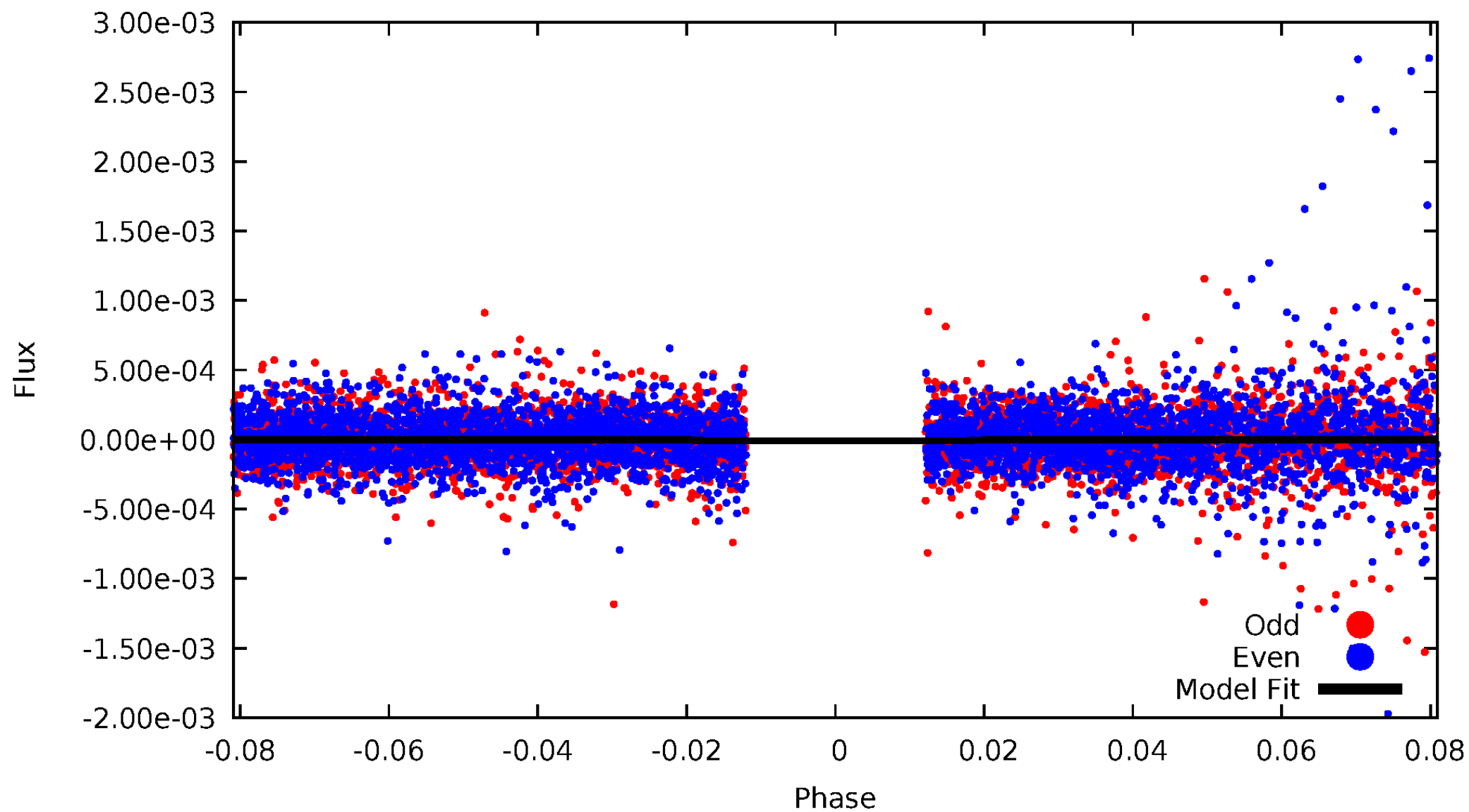
# DV Odd/Even

TCE 004773155-04



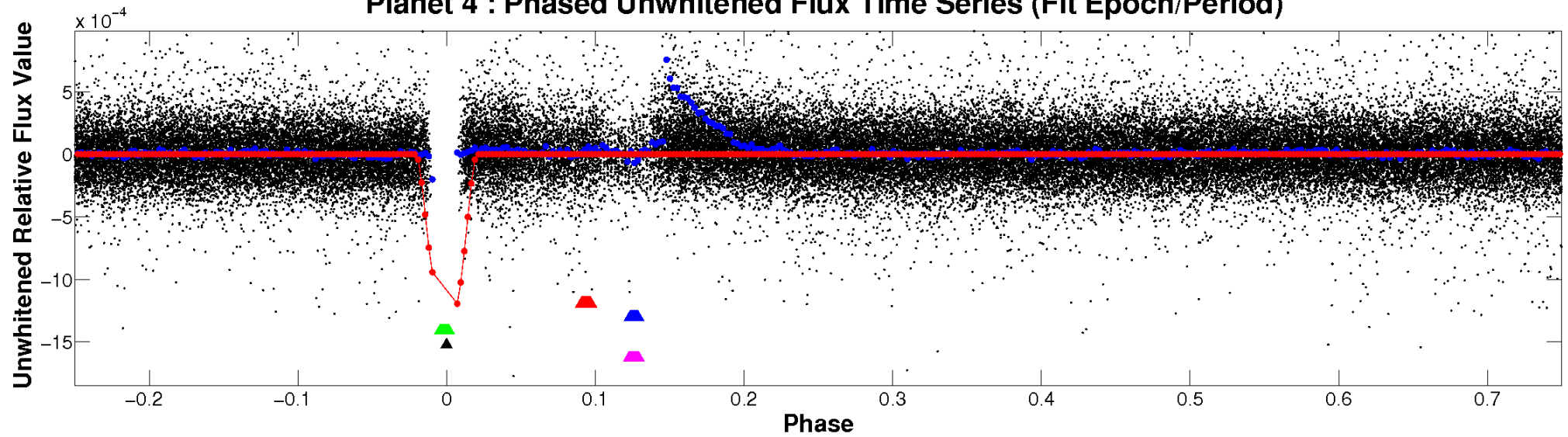
# ALT Odd/Even

TCE 004773155-04

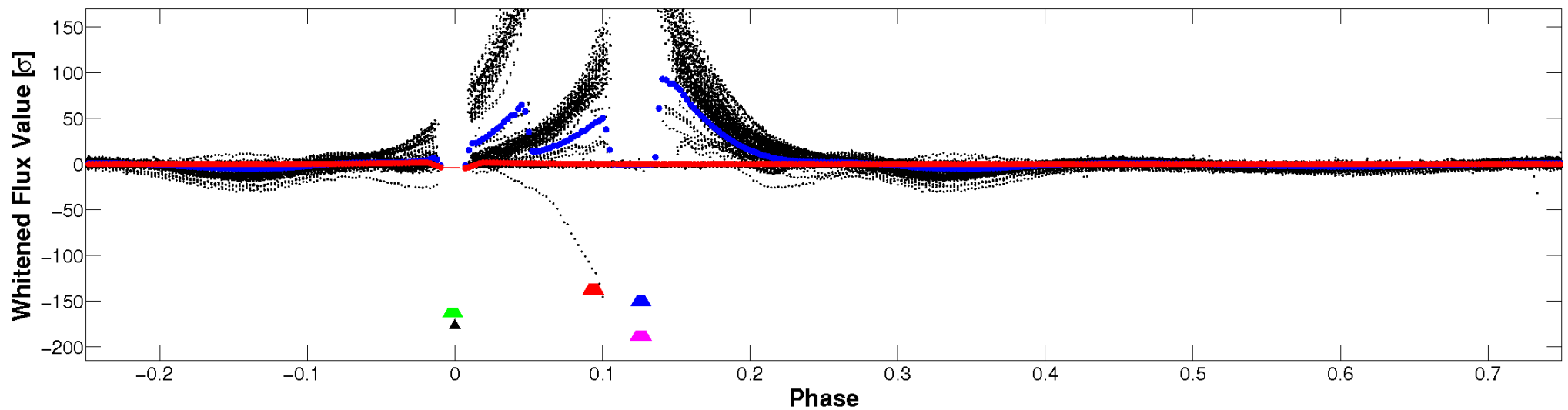


# Non-Whitened Vs. Whitened Light Curve

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



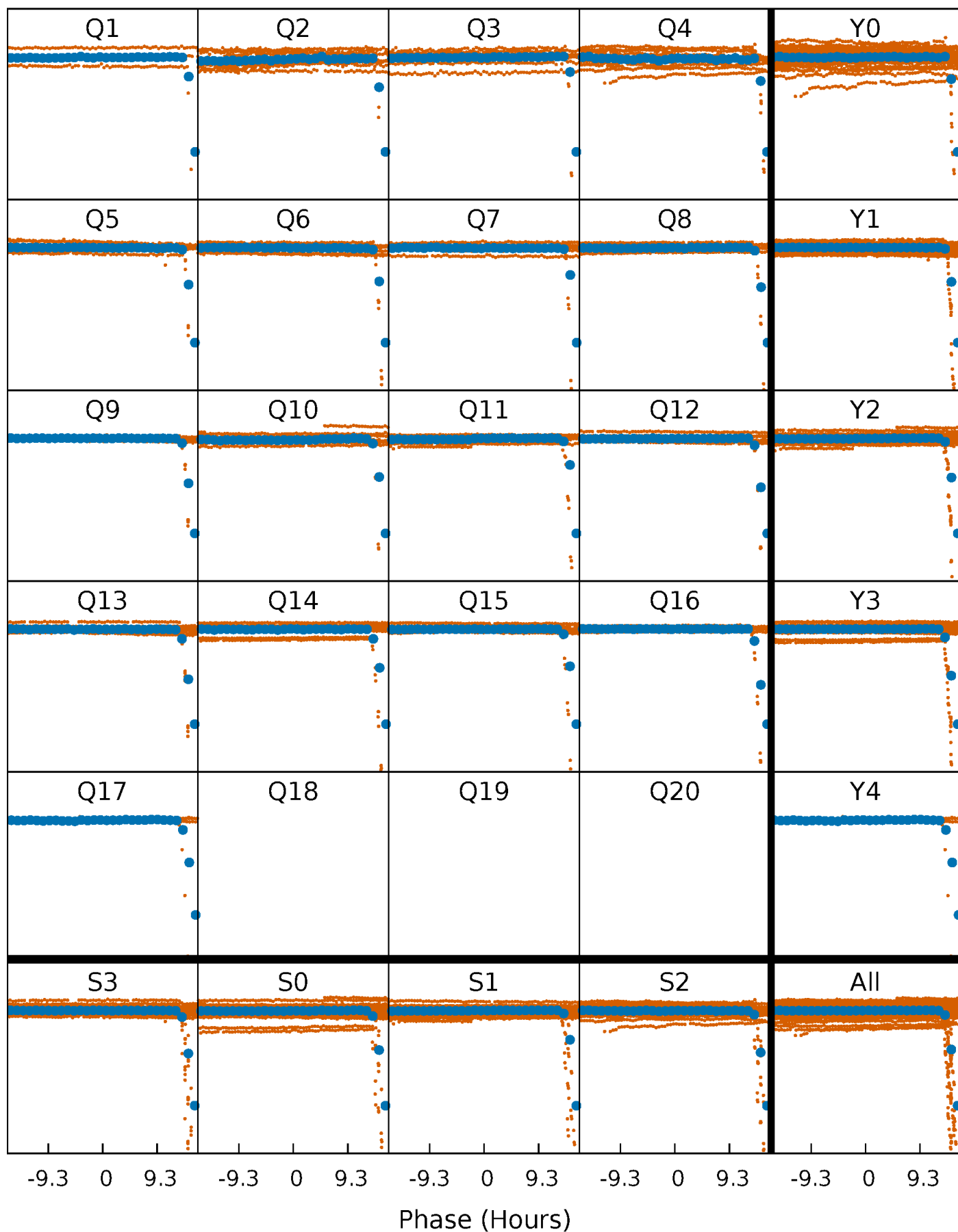
## Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)





# PDC Quarter-Phased Transit Curves

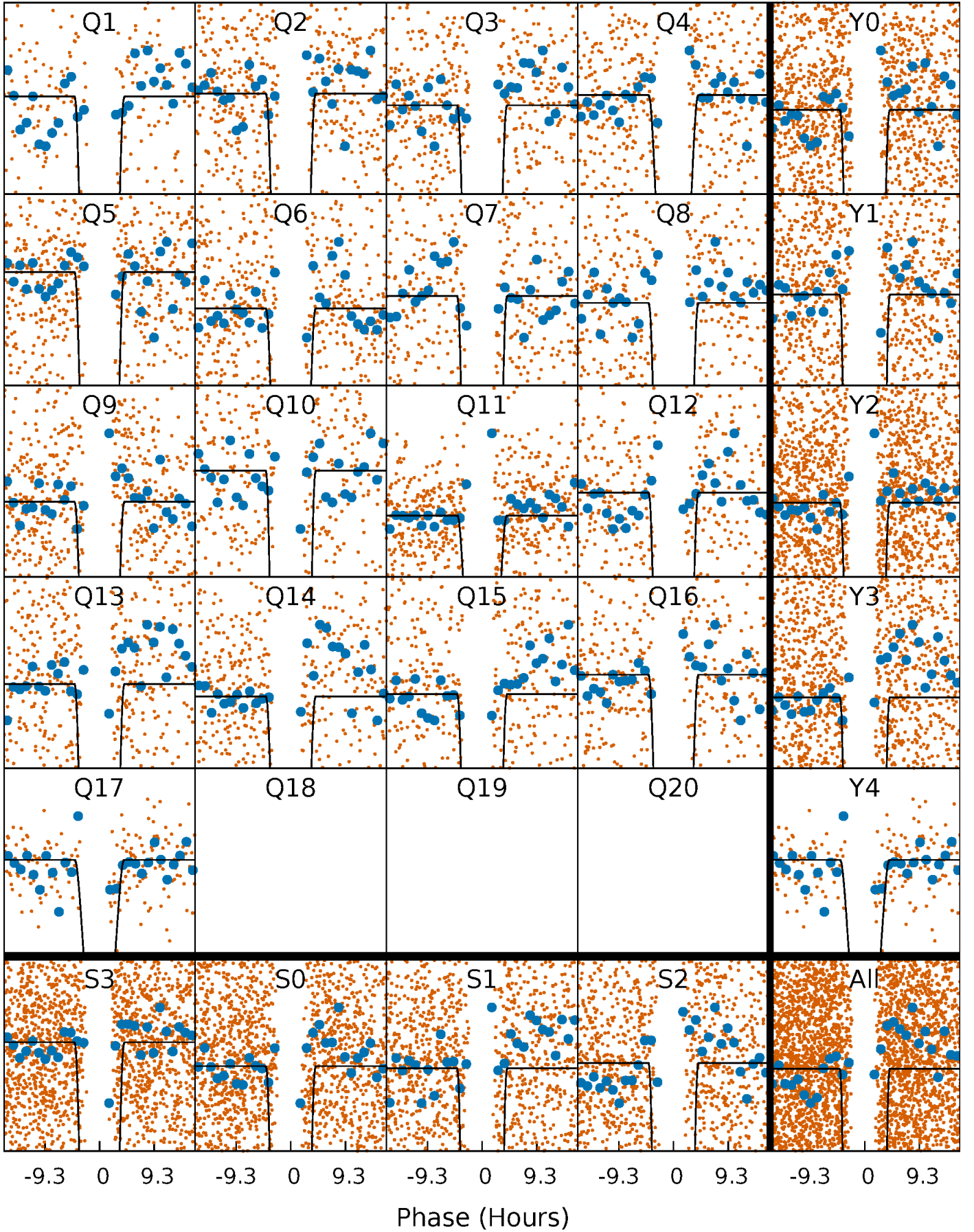
TCE 004773155-04   P= 8.568983 Days    $T_0=138.672959$  (BKJD)





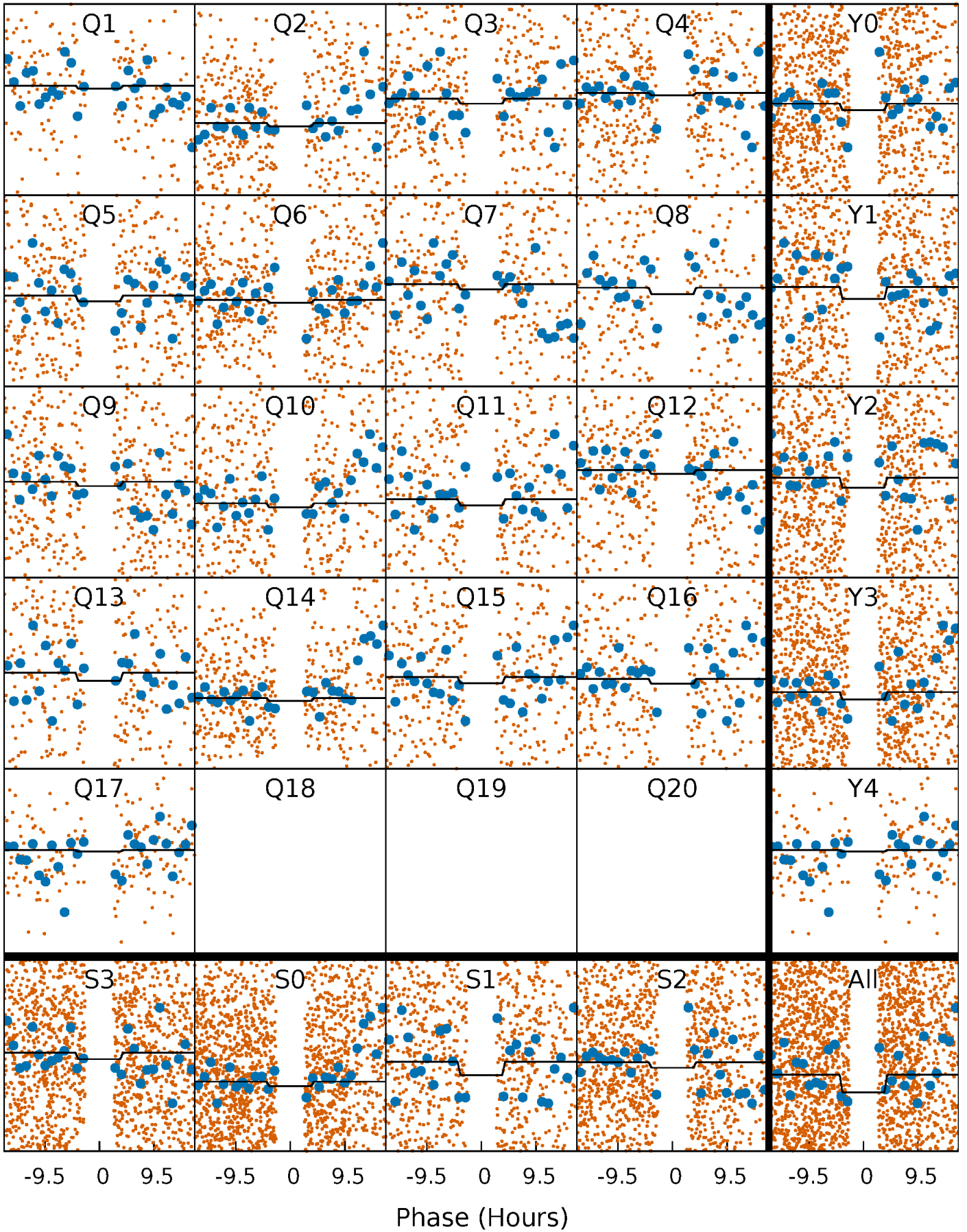
# DV Quarter-Phased Transit Curves

TCE 004773155-04 P= 8.568983 Days  $T_0=138.672959$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

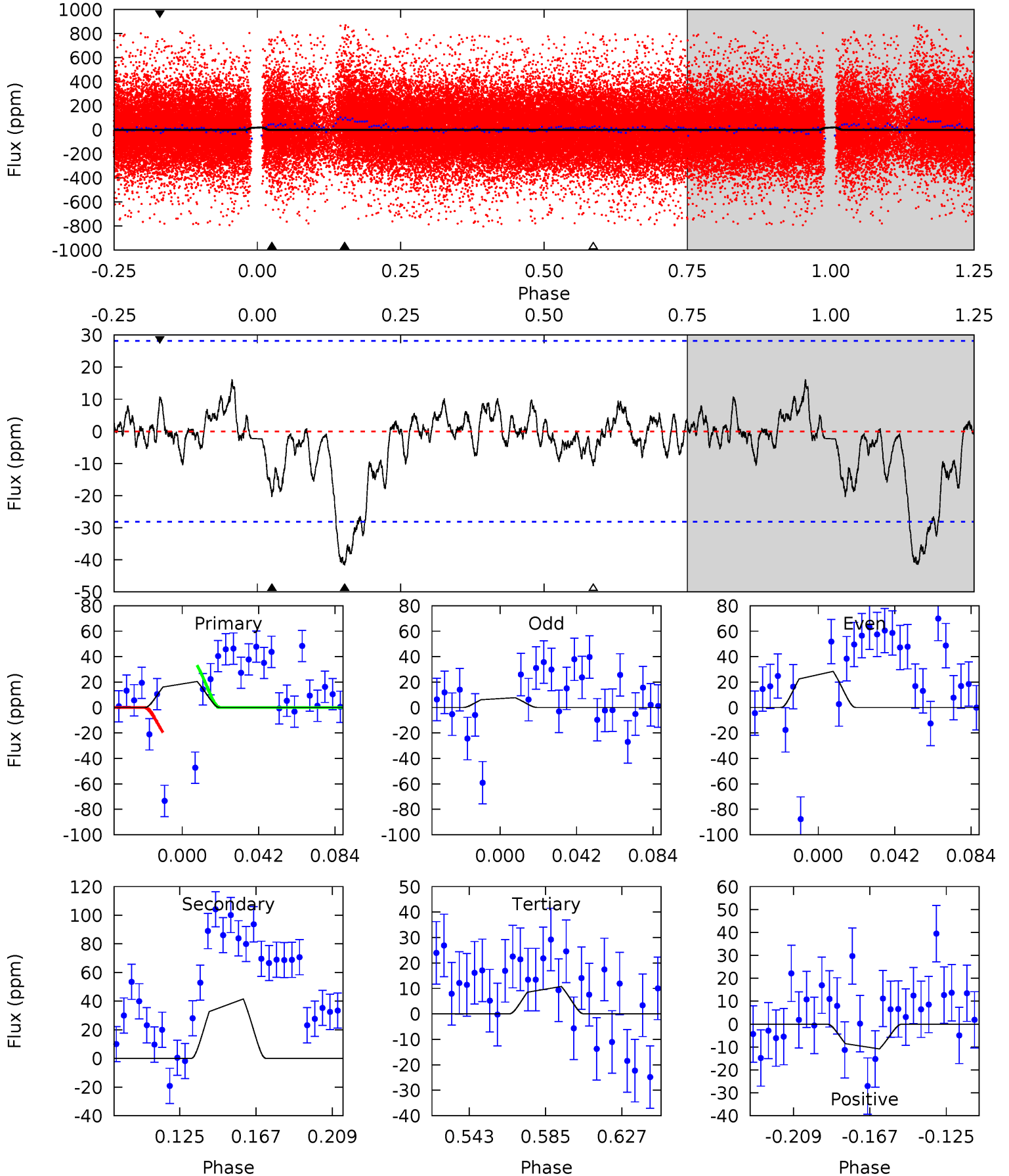
TCE 004773155-04 P= 8.568687 Days  $T_0=138.686167$  (BKJD)



# DV Model-Shift Uniqueness Test

004773155-04, P = 8.568983 Days, E = 130.103976 Days

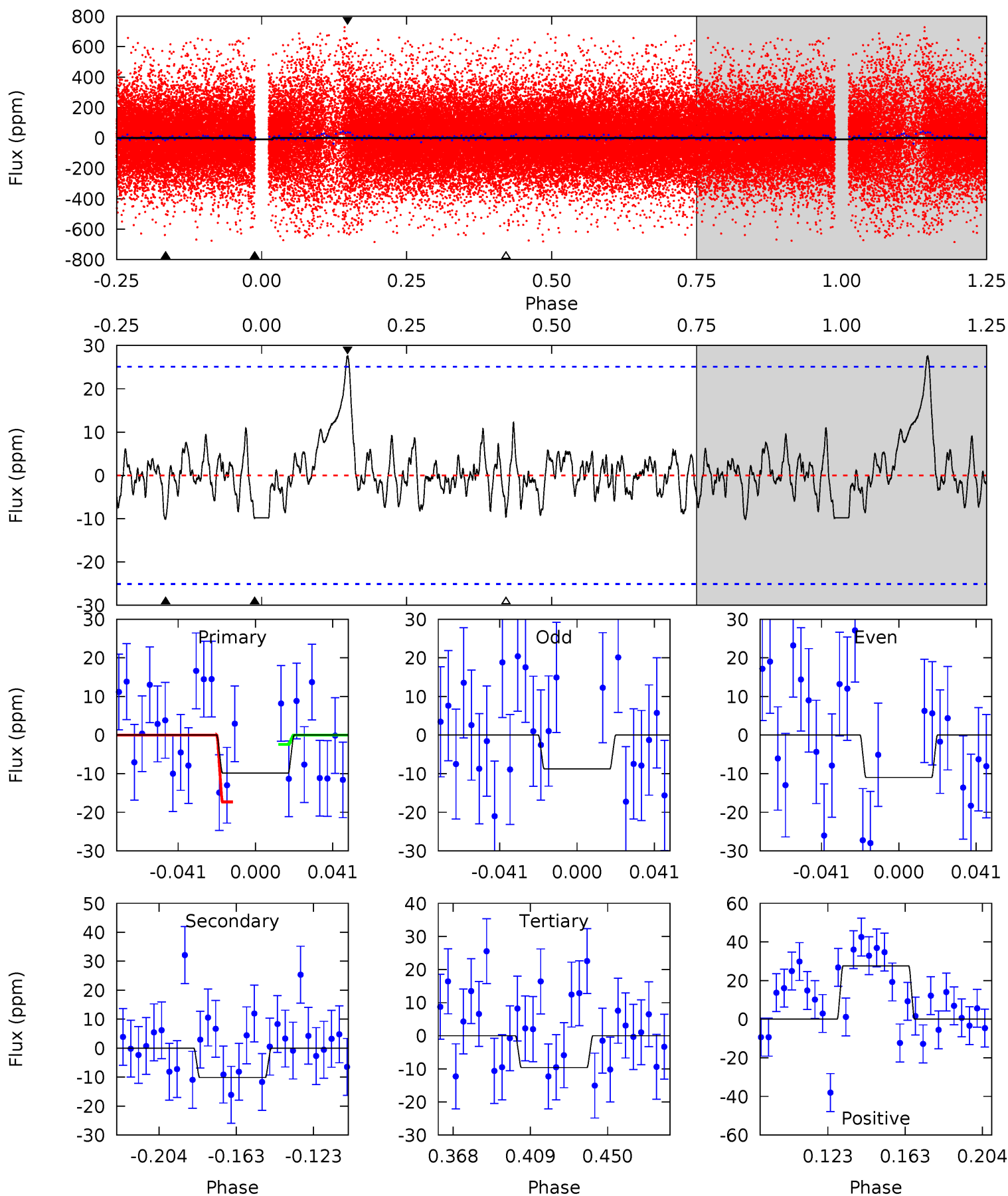
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3.44	7.00	1.81	1.82	4.74	2.04	0.91	1.63	1.61	5.18	5.17	1.75	-4.13	0.28	1.14



# Alt Model-Shift Uniqueness Test

004773155-04, P = 8.568687 Days, E = 130.117480 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
1.87	1.92	1.82	5.21	4.75	2.04	0.93	0.05	-3.35	0.10	-3.30	0.22	1.09	0.73	1.42



### Stellar Parameters For KIC 004773155

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5642^{+152}_{-169}$	$4.498^{+0.060}_{-0.180}$	$-0.020^{+0.300}_{-0.300}$	$0.903^{+0.242}_{-0.104}$	$0.936^{+0.104}_{-0.095}$	$1.793^{+0.456}_{-0.888}$
	+3%/-3%	+1%/-4%	+1500%/-1500%	+27%/-12%	+11%/-10%	+25%/-50%
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 004773155-04 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-42 \pm 6$	$11.11^{+10.18}_{-7.57}$	$1180^{+74}_{-53}$	$2227^{+839}_{-676}$	$1.206^{+10.743}_{-0.886}$
Alt.	$-10 \pm 5$	$7.85^{+9.07}_{-5.60}$	$1185^{+68}_{-55}$	$1919^{+904}_{-3823}$	$0.532^{+5.806}_{-0.436}$

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

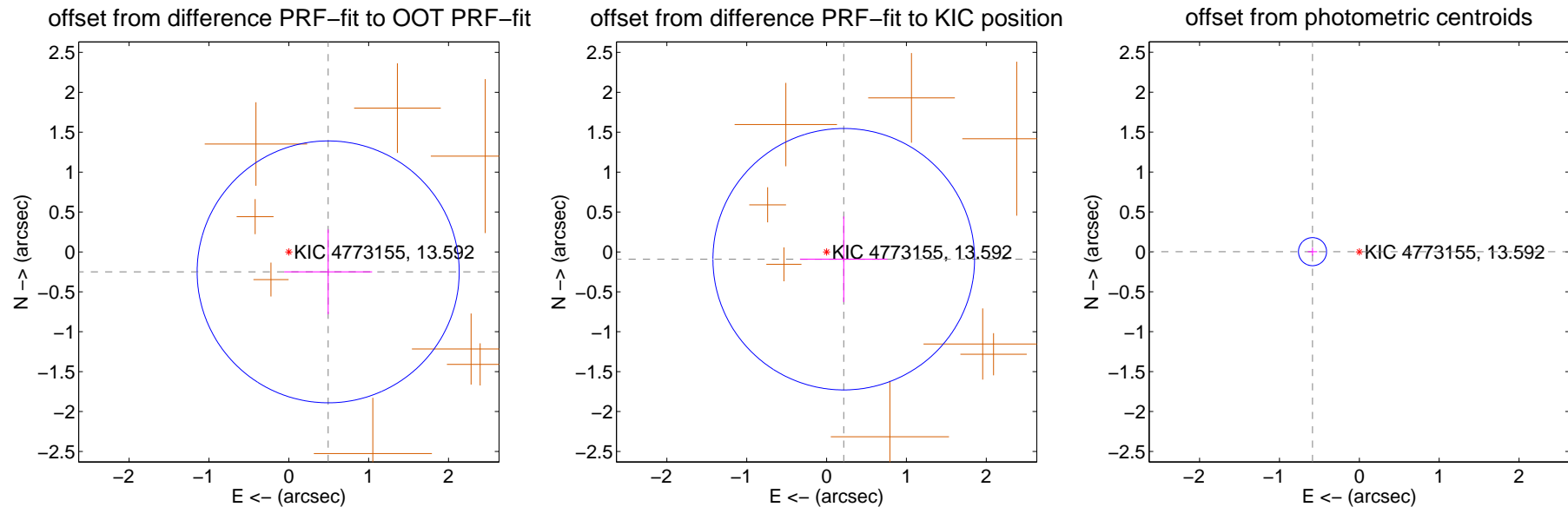
## DV Centroid Data

Supplemental centroid analysis for 004773155-04. Kepler magnitude: 13.59. Transit SNR 76.17

There are 0 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.33 arcsec

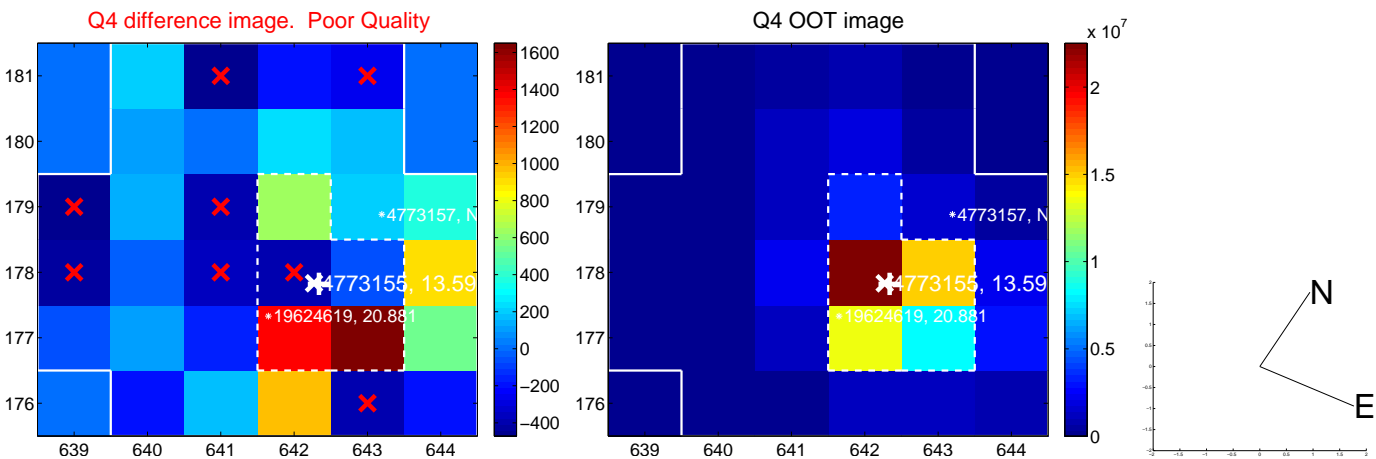
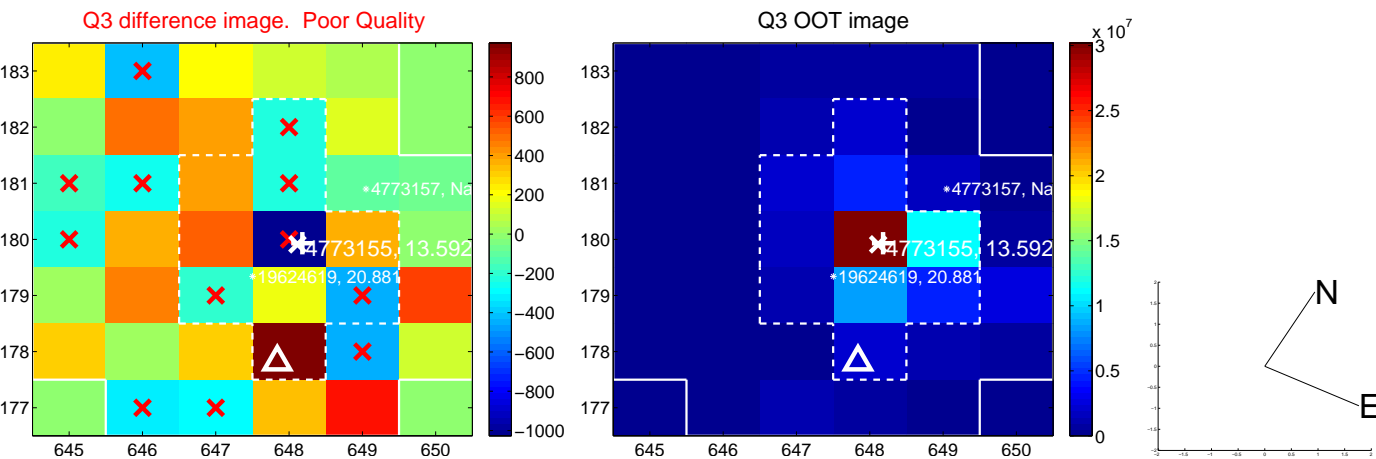
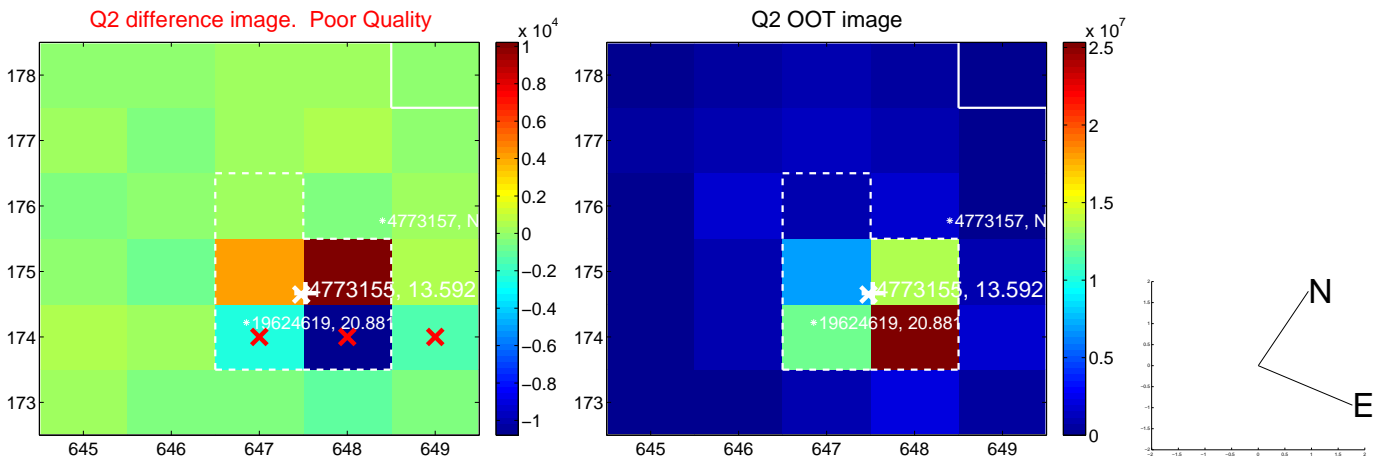
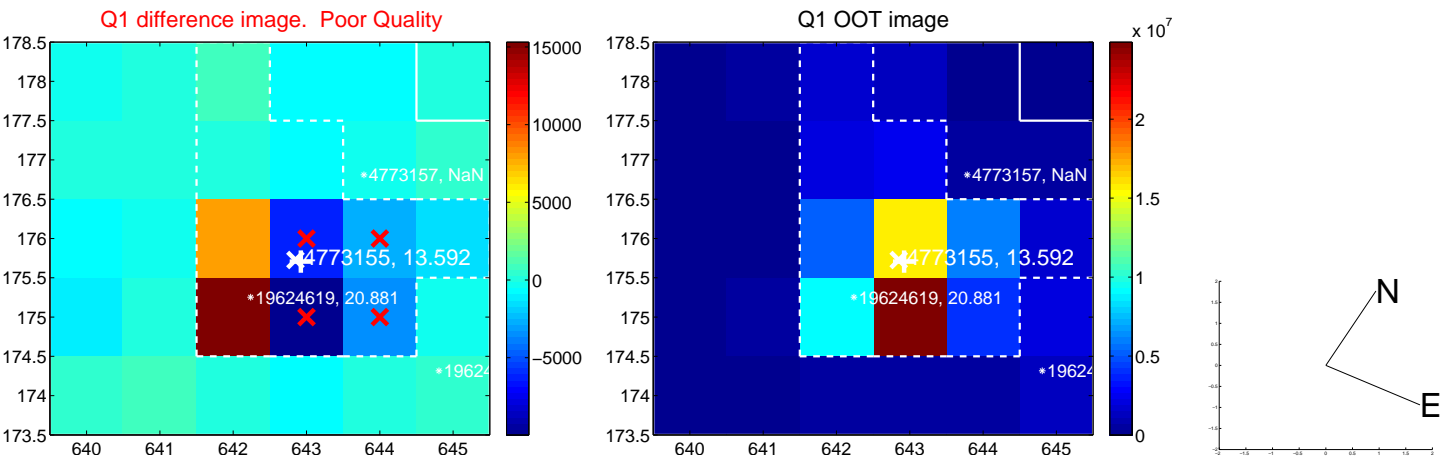
	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.553 \pm 0.547$	1.01	$-0.493 \pm 0.551$	$-0.250 \pm 0.531$
PRF-fit source offset from KIC position	$0.234 \pm 0.546$	0.43	$-0.215 \pm 0.548$	$-0.091 \pm 0.536$
photometric centroid source offset	$0.59 \pm 0.06$	9.99	$0.59 \pm 0.06$	$0.00 \pm 0.05$



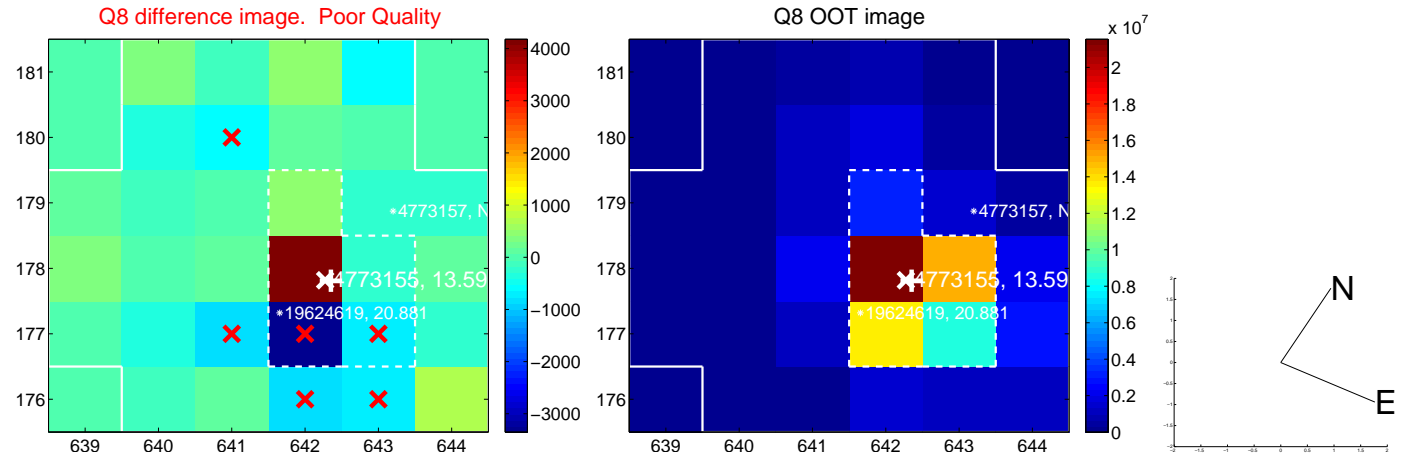
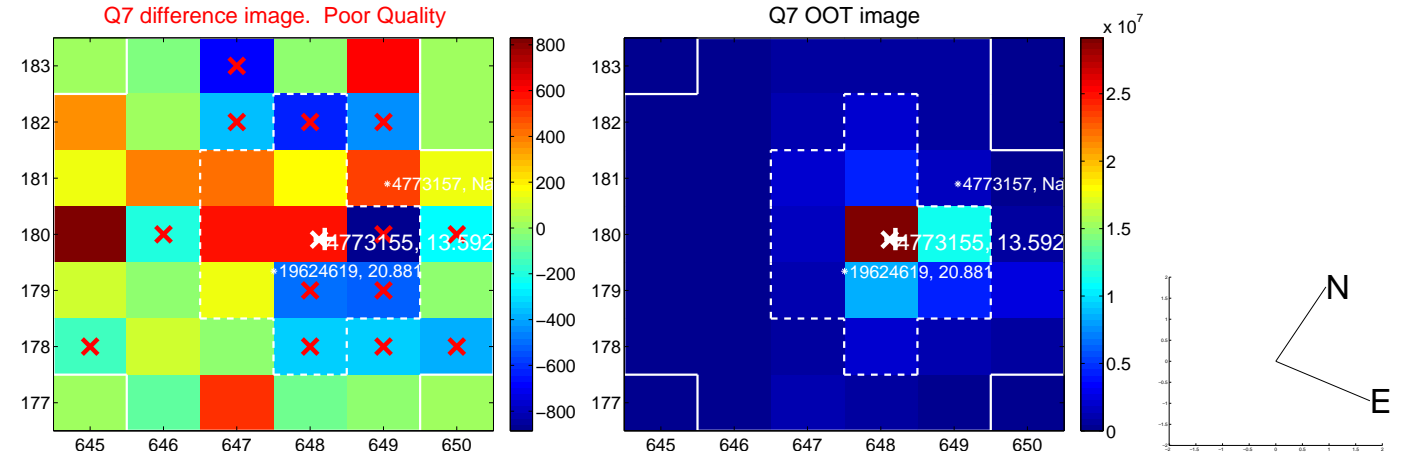
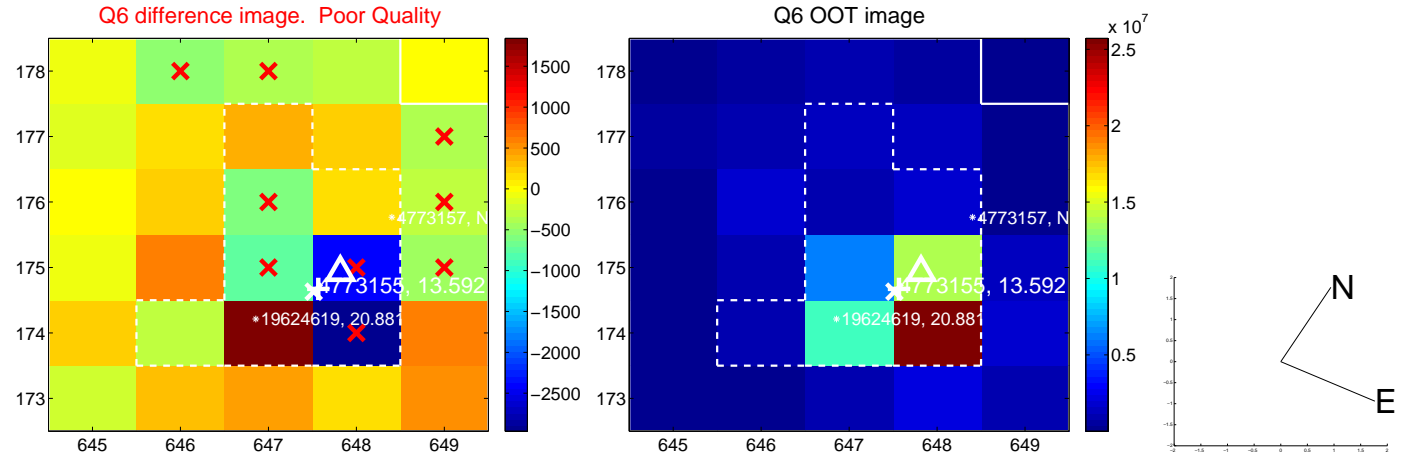
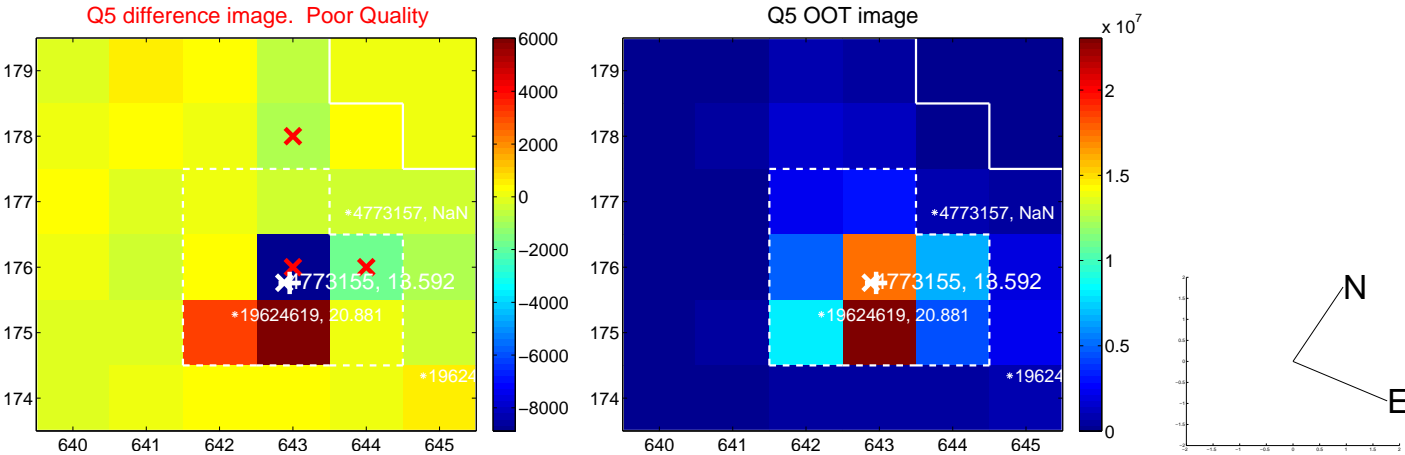
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

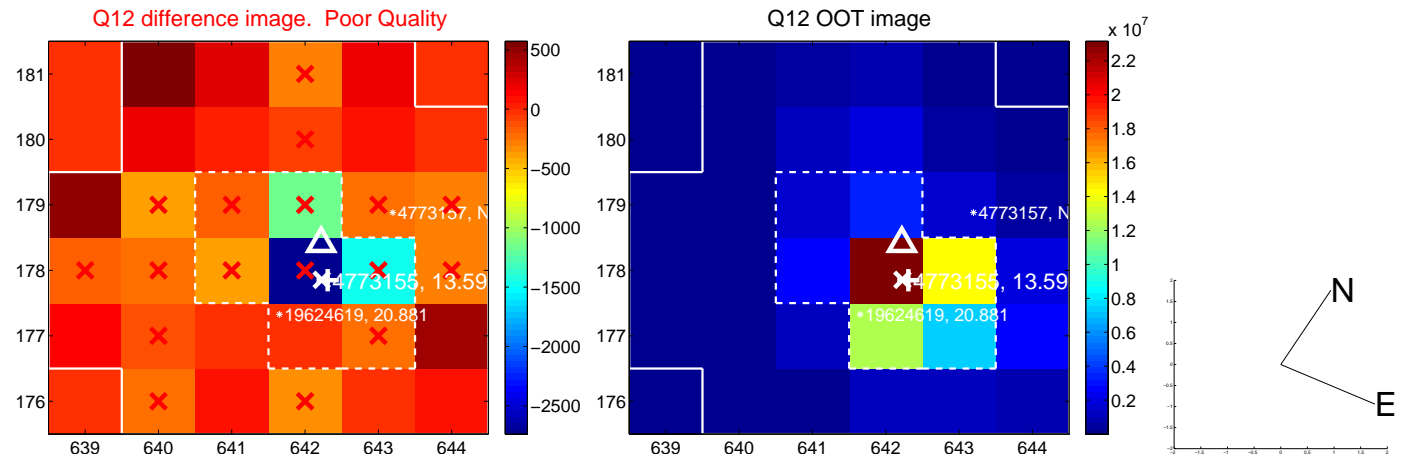
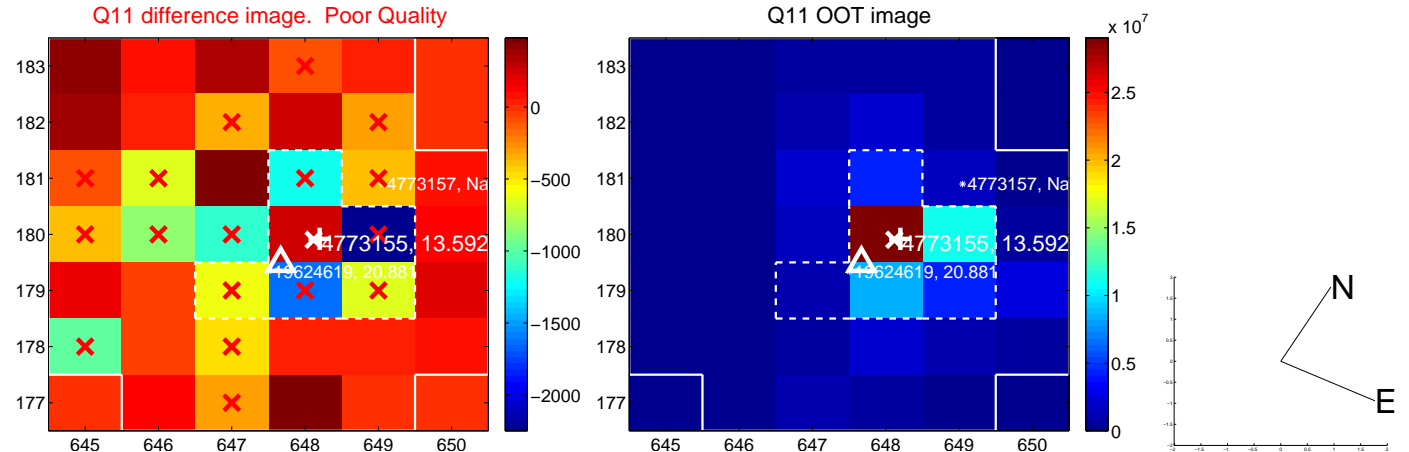
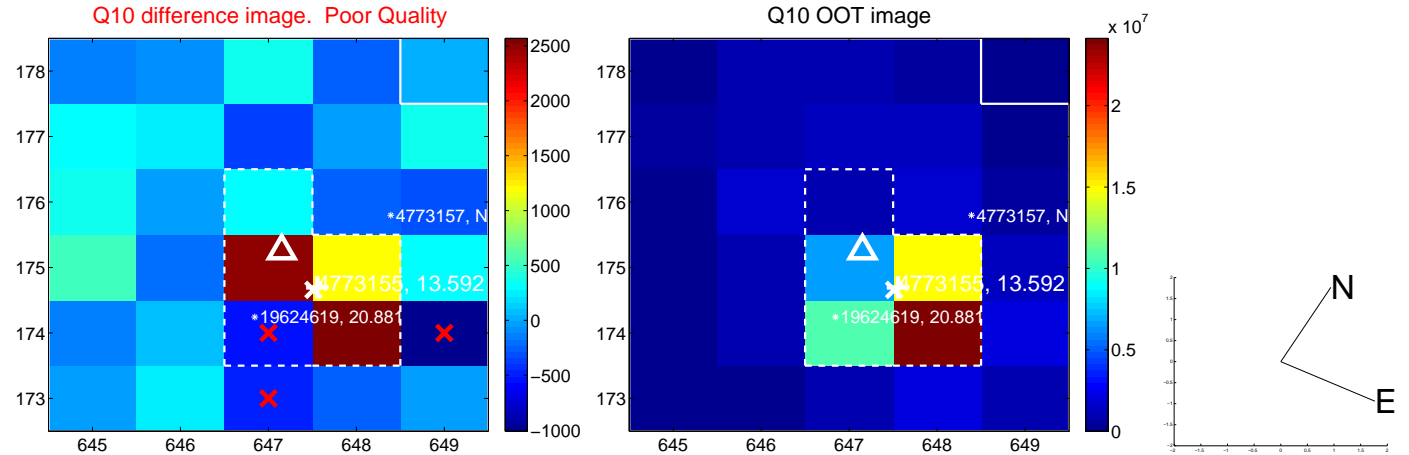
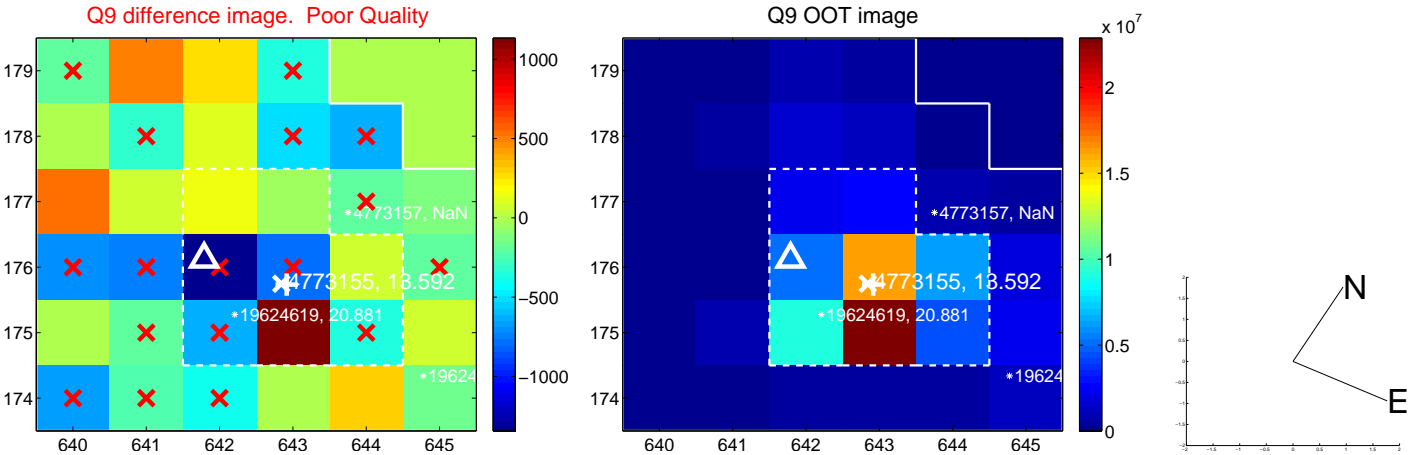


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

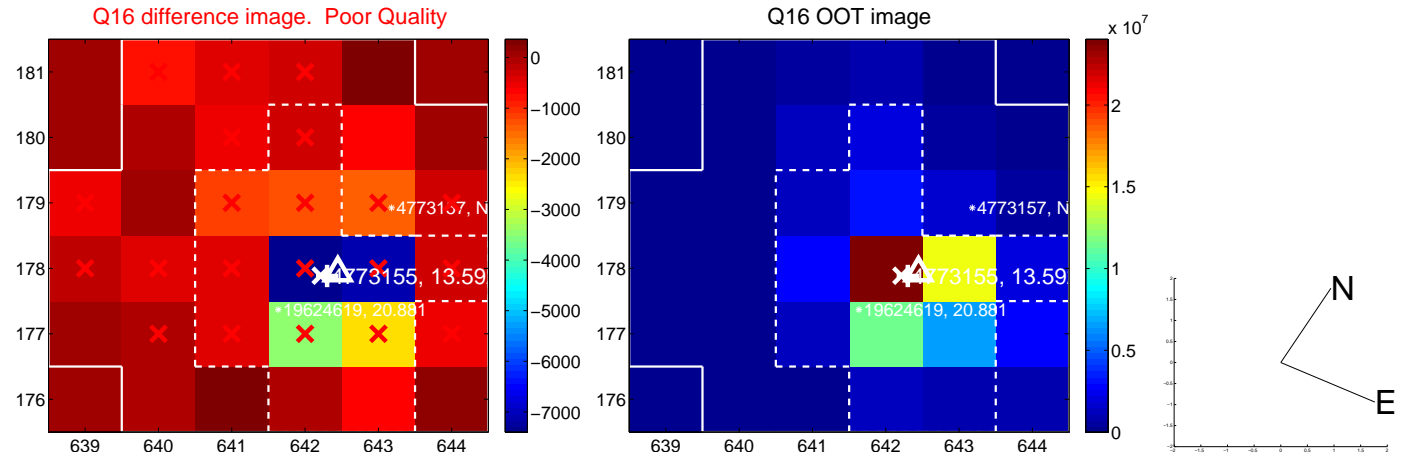
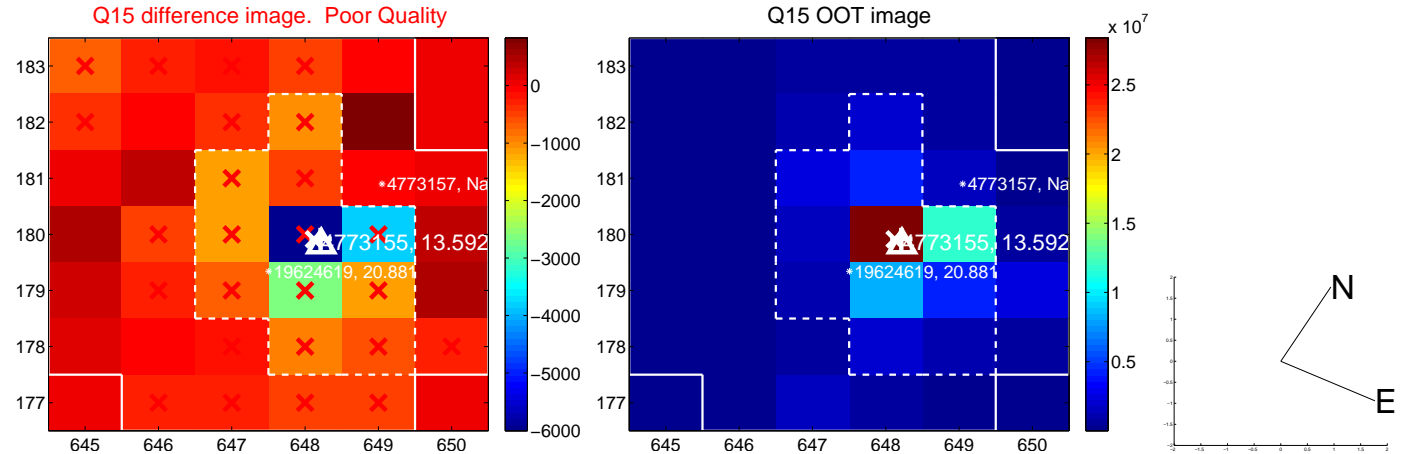
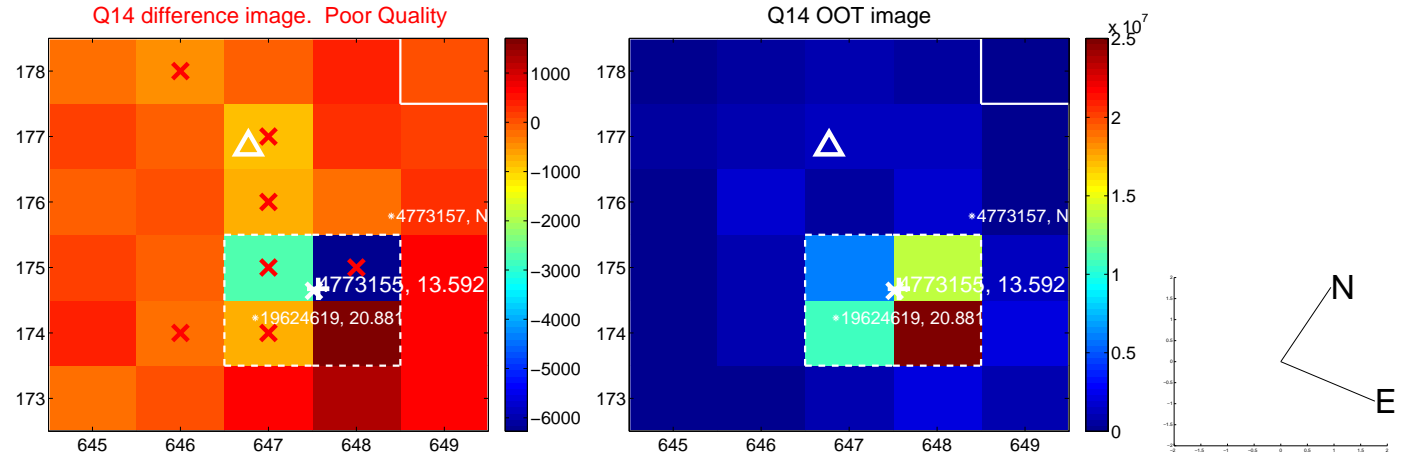
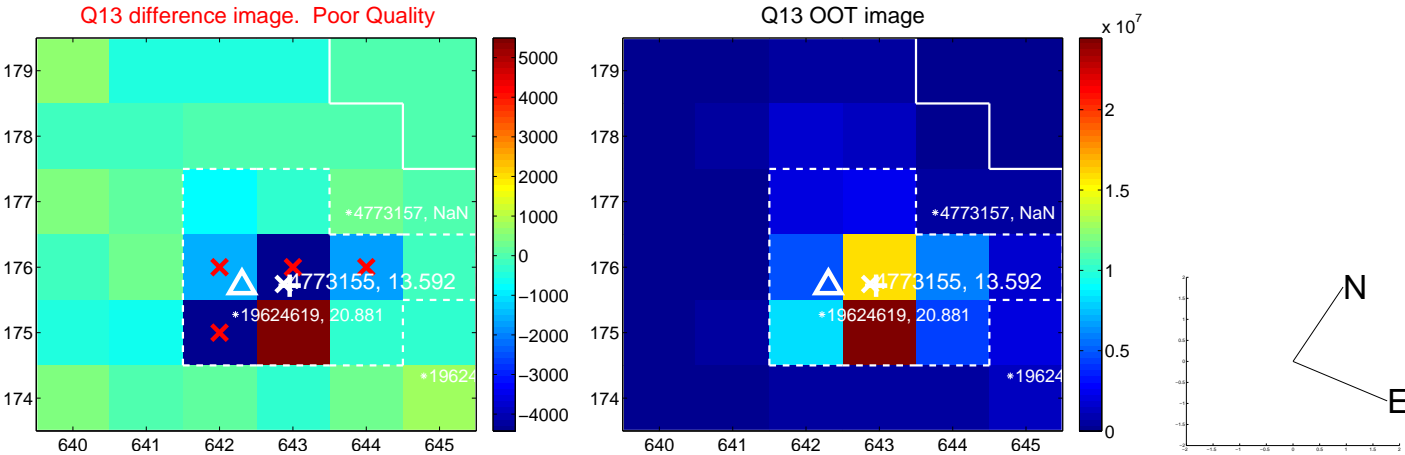




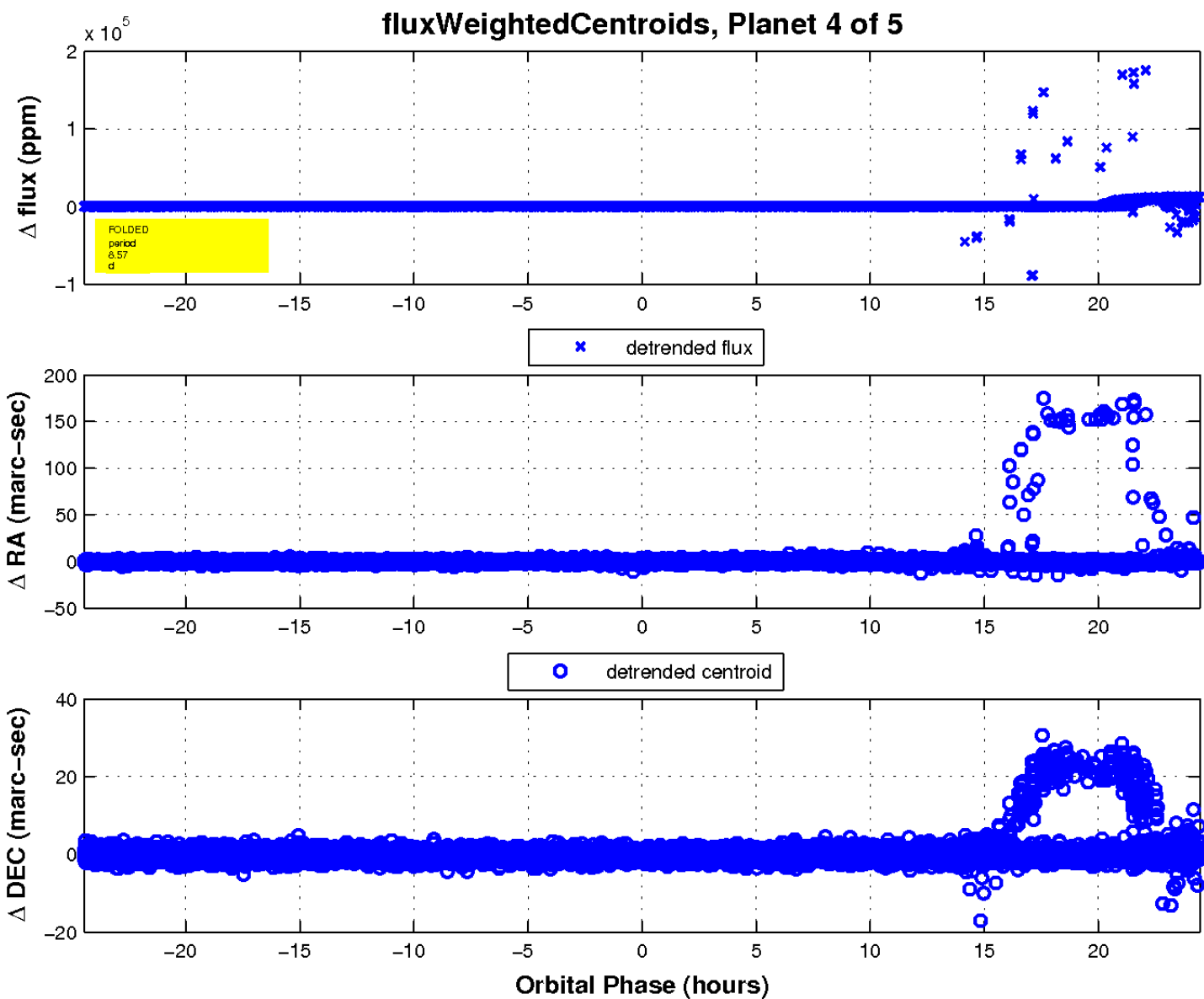
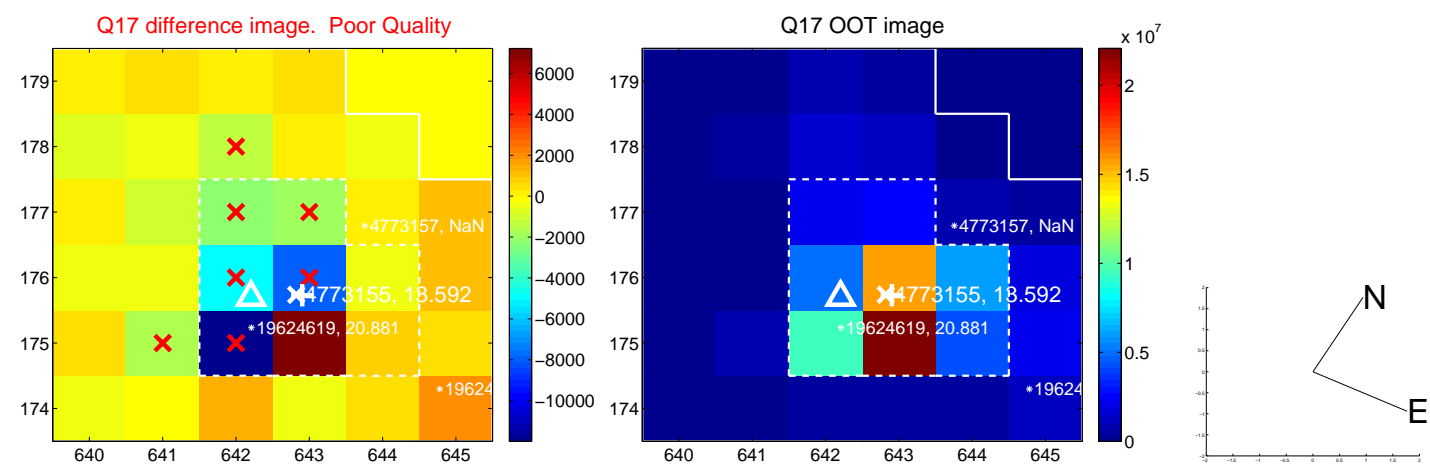
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

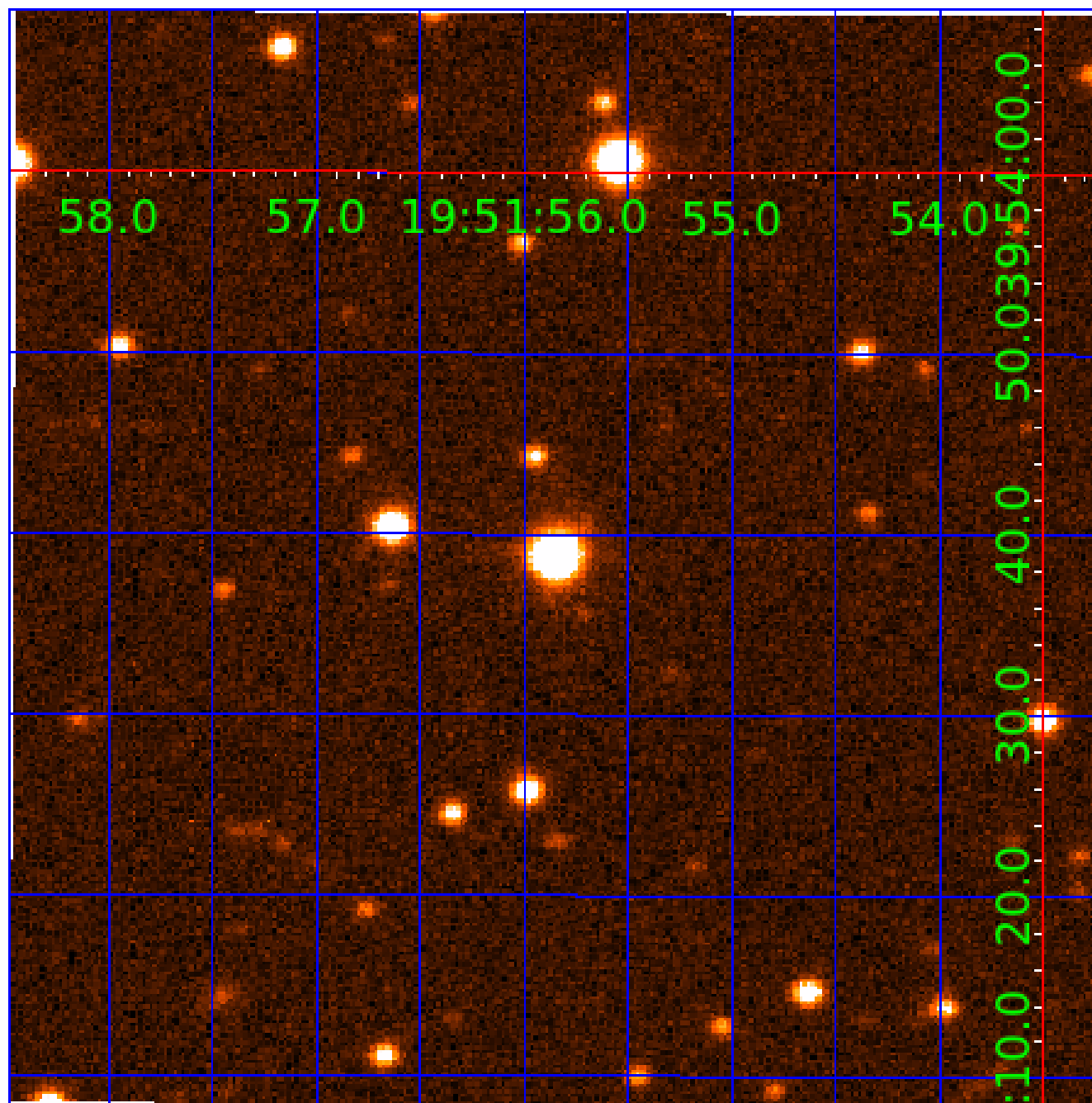


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 004773155

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
004773155-01	OBS	6453.01	25.706003	156.640867	480994.4	6.000	35714.5	-1.0	0.90	5642	49.27	26.61
004773155-02	OBS	No	25.706153	148.344531	375708.7	3.000	24992.2	-1.0	0.90	5642	49.27	26.61
004773155-03	OBS	No	8.568672	138.687426	0.5	1.052	2824.2	0.0	0.90	5642	0.07	115.13
004773155-04	OBS	No	8.568983	138.672959	1596.7	8.154	2826.2	76.2	0.90	5642	6.98	115.13
004773155-05	OBS	No	8.568636	139.781701	12324.5	11.045	2727.3	1314.1	0.90	5642	9.89	115.13

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004773155-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_ALT—MOD_ODDEVEN_ALT—HAS_SEC_TCE—CENT_NOFITS
004773155-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE—CENT_NOFITS
004773155-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT— MOD_POS_ALT—SAME_NTL_PERIOD—CENT_FEW_MEAS
004773155-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—SAME_NTL_PERIOD— CENT_FEW_DIFFS
004773155-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—LPP_DV—RESIDUAL_TCE—CENT_FEW_DIFFS

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

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

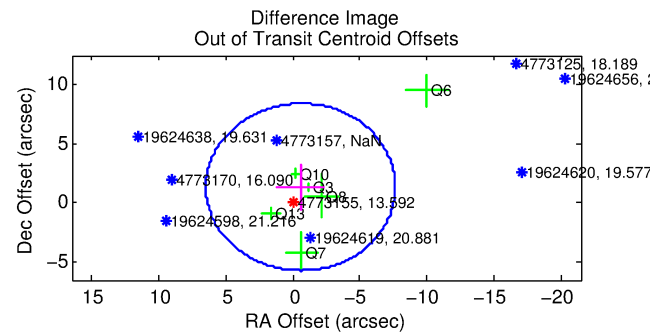
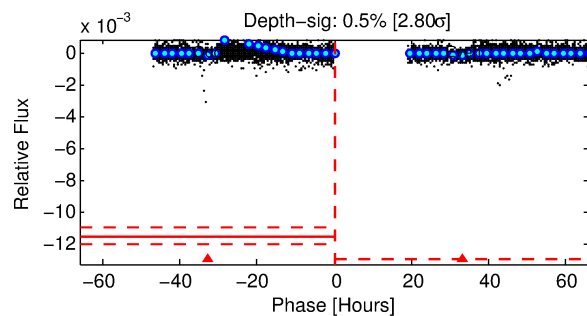
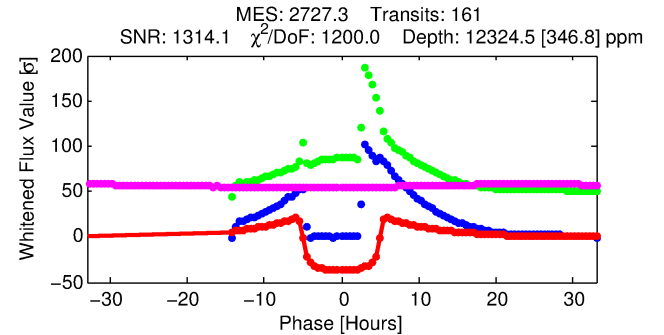
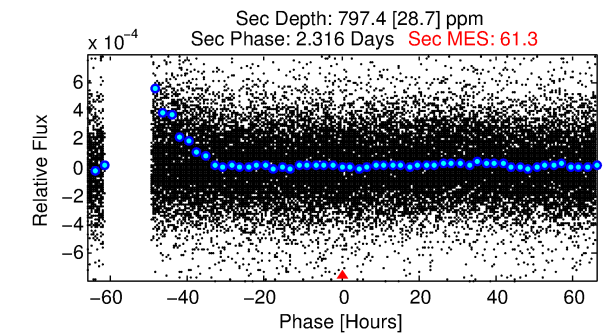
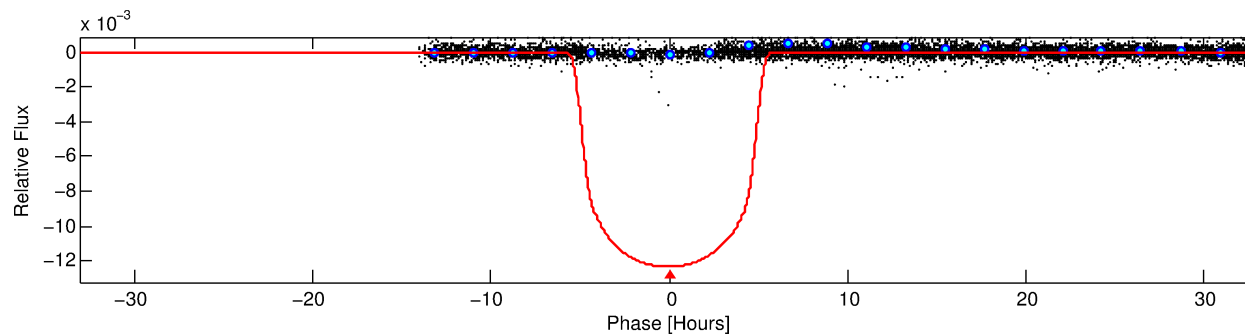
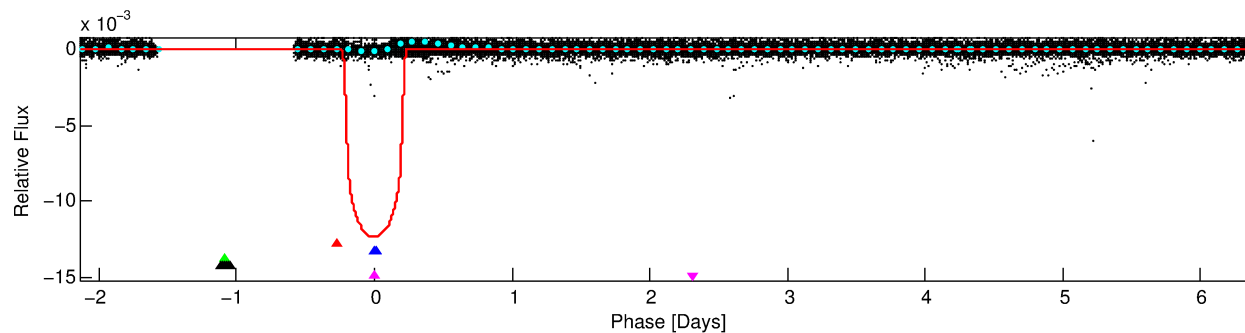
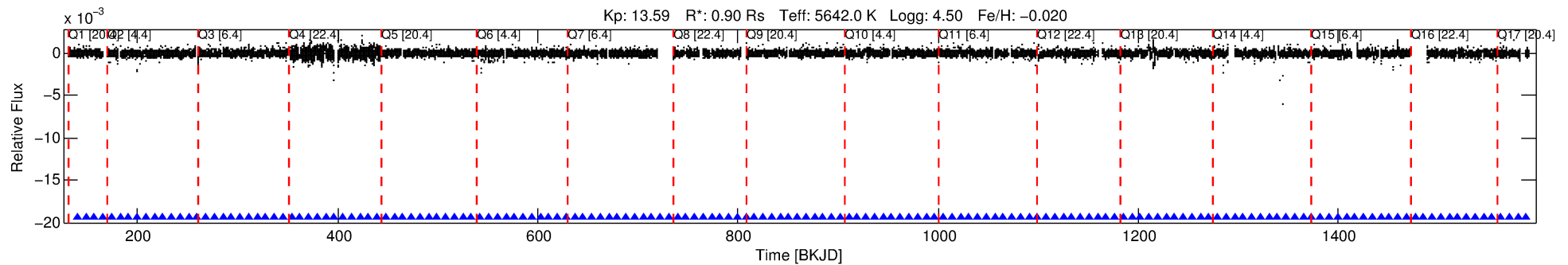
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 004773155-05

No Significant Match Found

# DV One-Page Summary

KIC: 4773155    Candidate: 5 of 5    Period: 8.569 d  
KOI: K06453    Corr: No Ephemeris Match



DV Fit Results:

Period = 8.56864 [0.00004] d  
 Epoch = 139.7817 [0.0034] BKJD  
 Rp/R\* = 0.1003 [0.0037]  
 a/R\* = 6.55 [0.84]  
 b = 0.02 [5.56]  
 Seff = 115.13 [40.32]  
 Teq = 835 [73] K  
 Rp = 9.89 [2.67] Re  
 a = 0.0802 [0.0181] AU  
 Ag = 28.86 [9.79] [2.85σ]  
 T<sub>eff</sub> = 2993 [109] K [16.47σ]

DV Diagnostic Results:

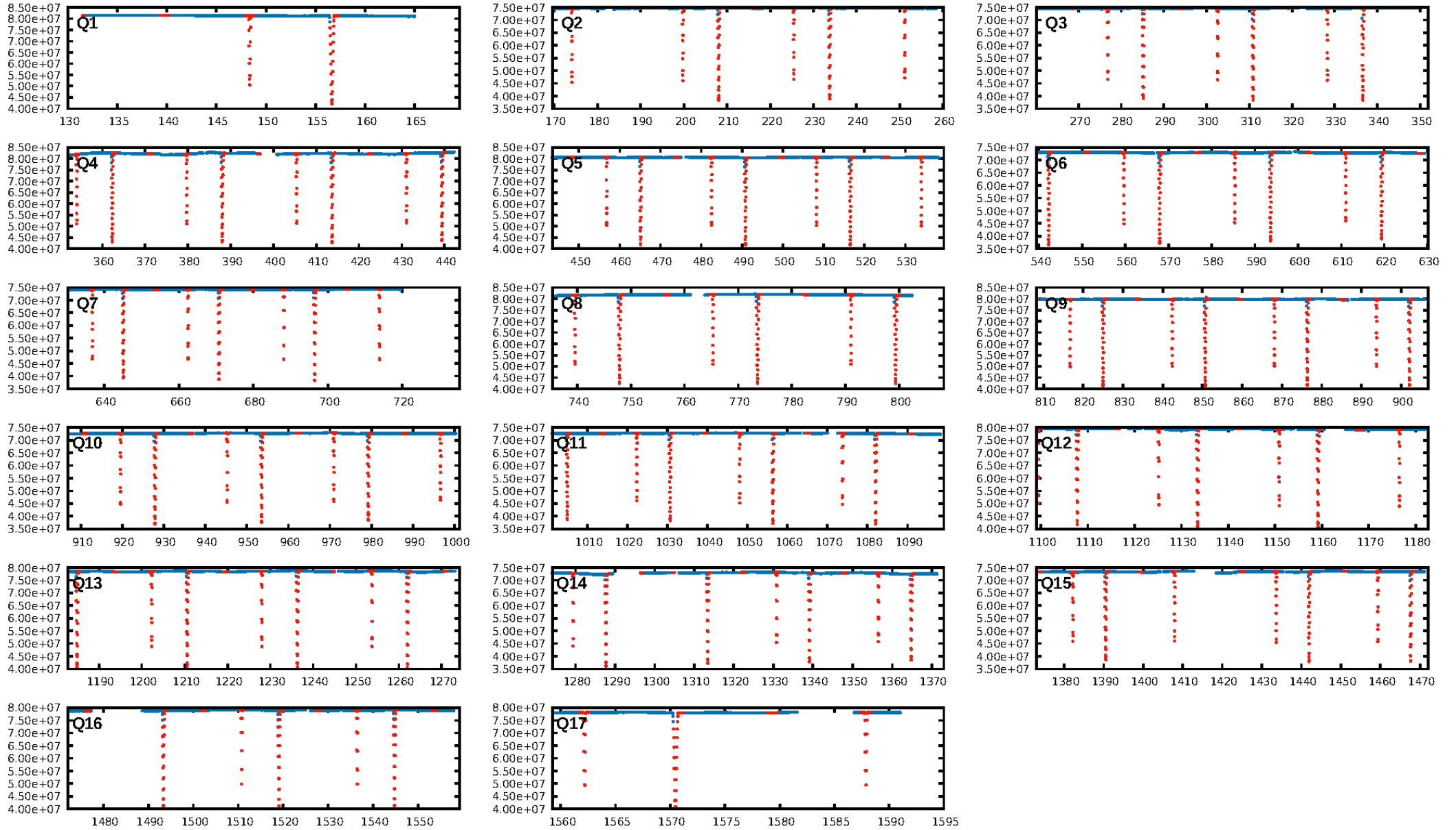
ShortPeriod-sig: N/A  
 LongPeriod-sig: 0.0% [0.00σ]  
 ModelChiSquare2-sig: 0.0%  
 ModelChiSquareGof-sig: 0.0%  
 Bootstrap-pfa: 0.00e+00  
 RollingBand-fgt: 1.00 [154/154]  
 GhostDiagnostic-chr: 295.7

Centroid-sig: N/A  
 Centroid-so: 0.685 arcsec [117.16σ]  
 OotOffset-rm: 1.475 arcsec [0.63σ]  
 KicOffset-rm: 1.590 arcsec [0.78σ]  
 OotOffset-st: 2/2/1/1 [6]  
 KicOffset-st: 2/2/1/1 [6]  
 DiffImageQuality-fgm: 0.33 [2/6]  
 DiffImageOverlap-fno: 1.00 [17/17]

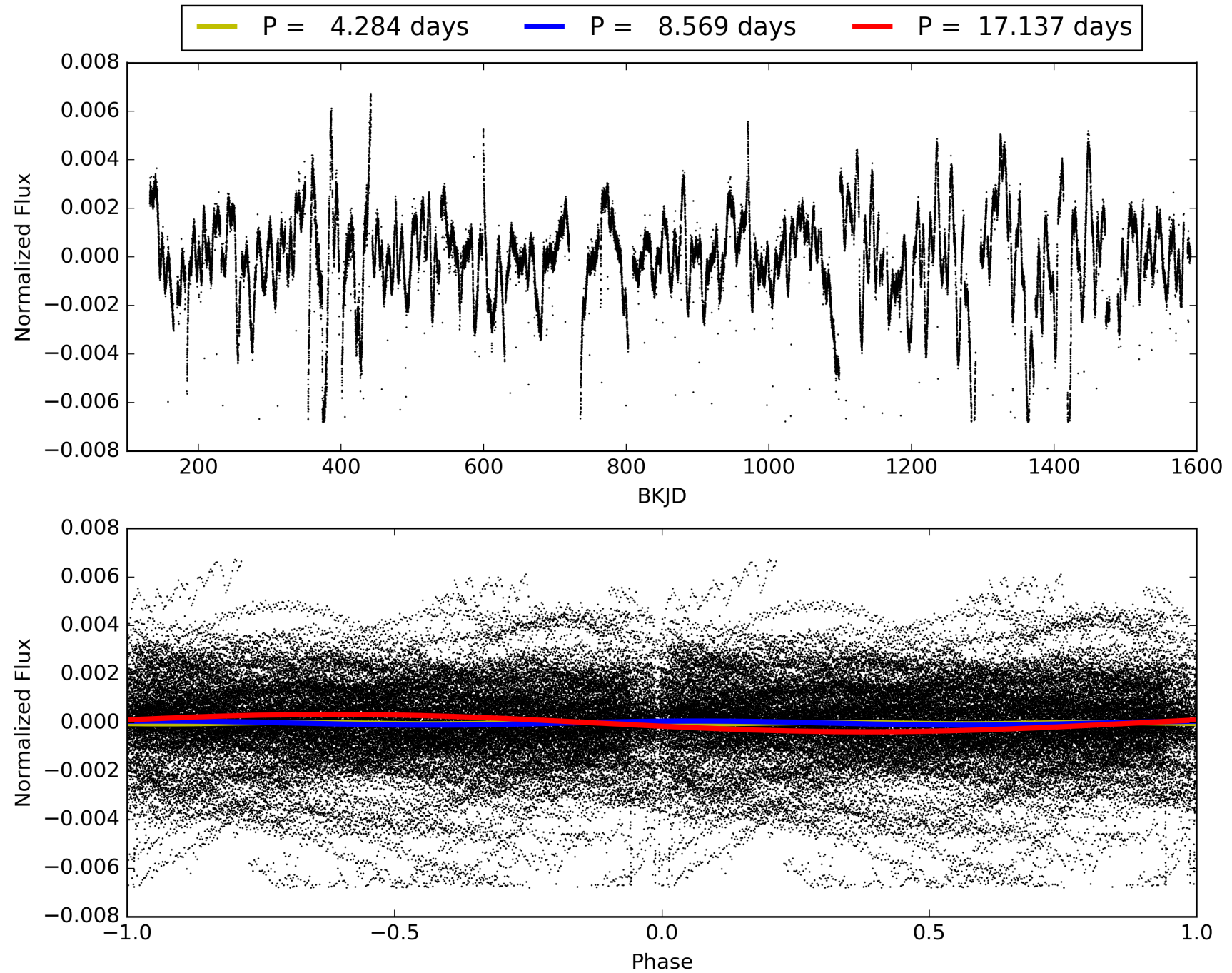
Software Revision: <svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958> -- Date Generated: 30-Jan-2016 08:54:40 Z

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

# TCE 004773155-05, PDC Light Curves



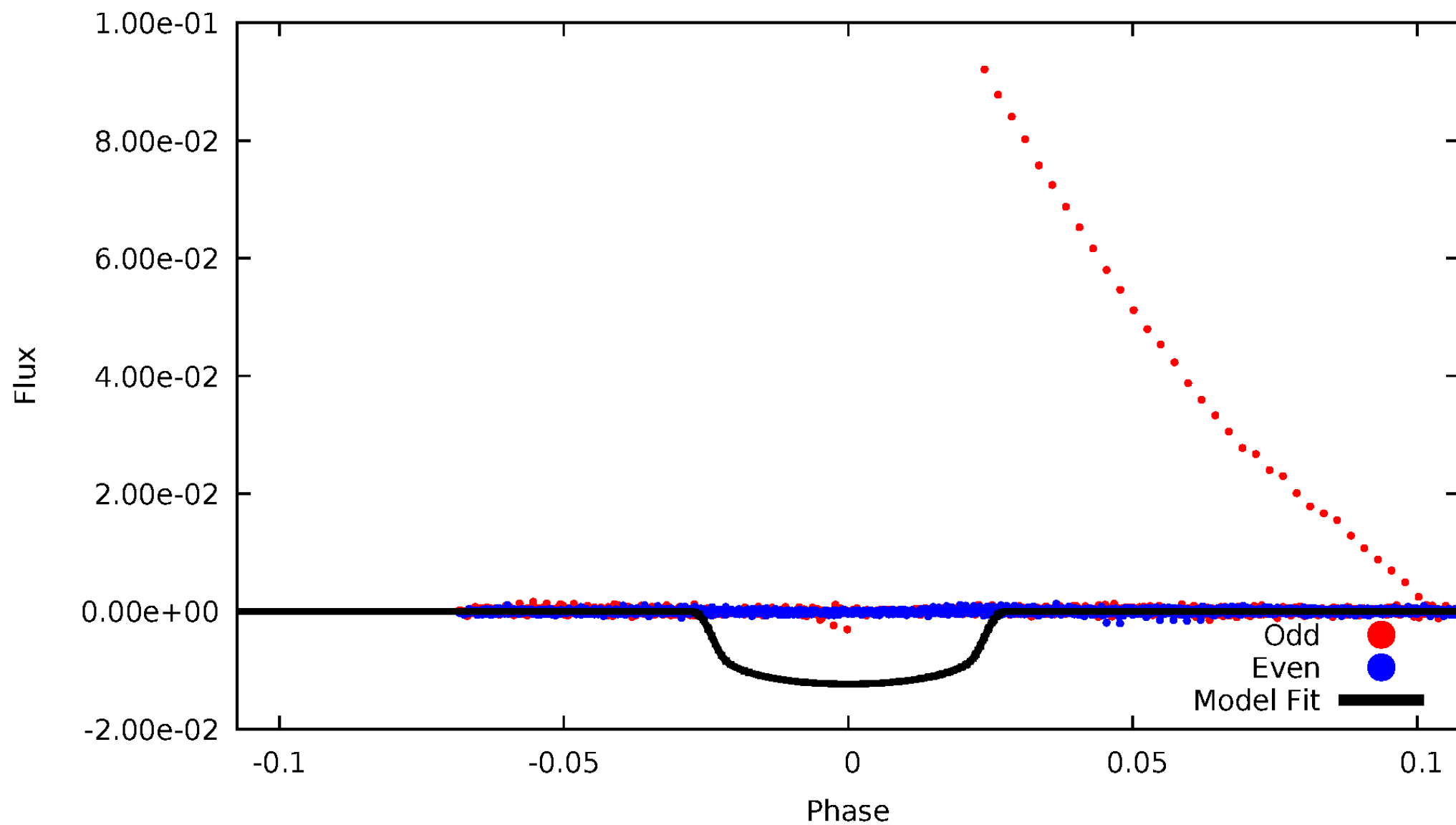
TCE 004773155-05





# DV Odd/Even

TCE 004773155-05



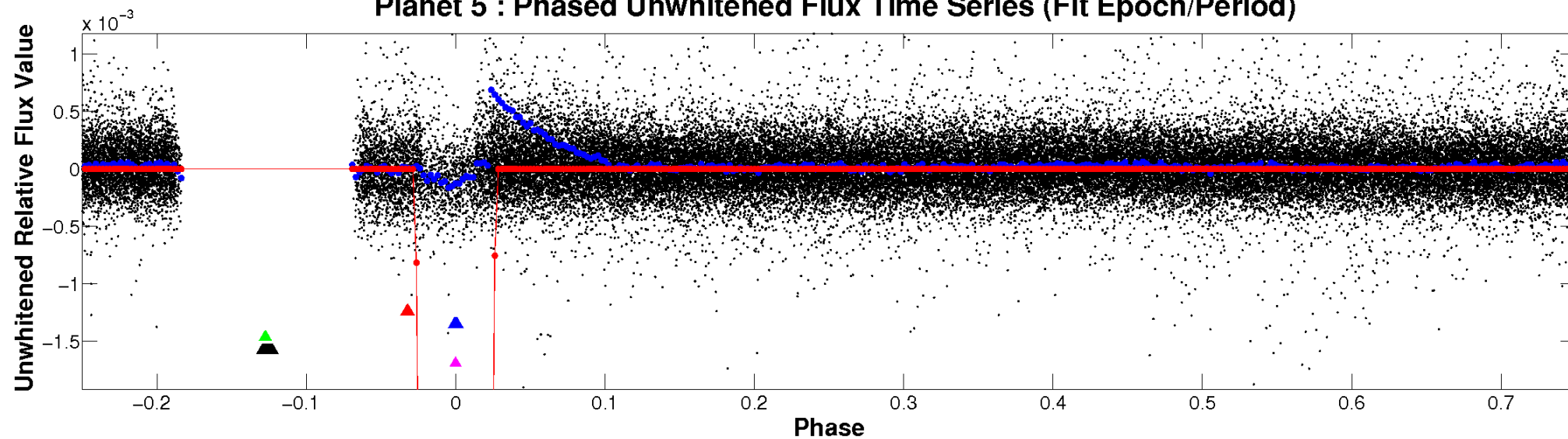


ALT Odd/Even

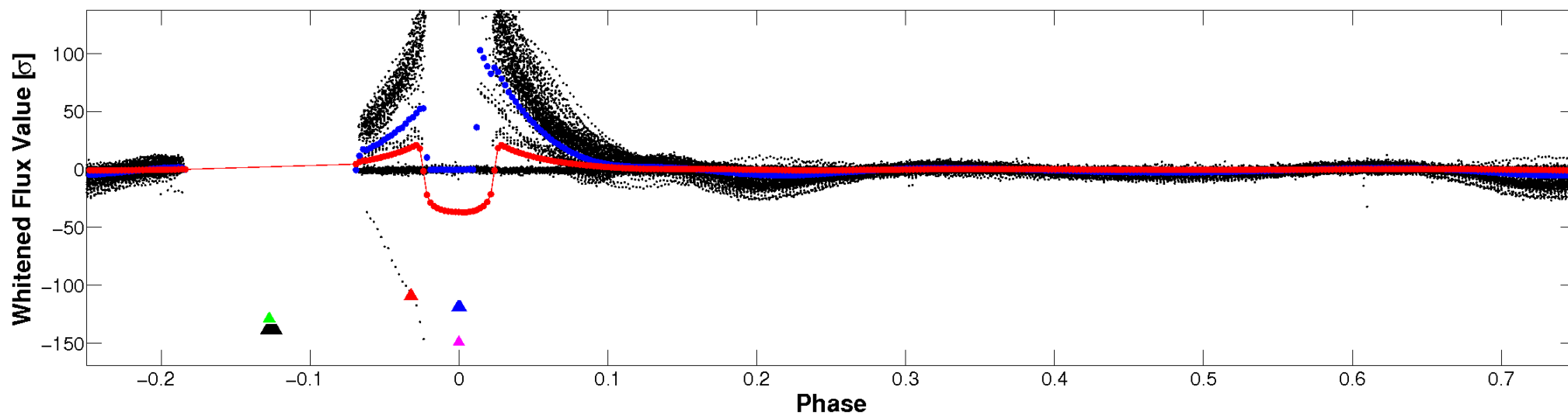
This plot does not exist for this TCE.

# Non-Whitened Vs. Whitened Light Curve

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

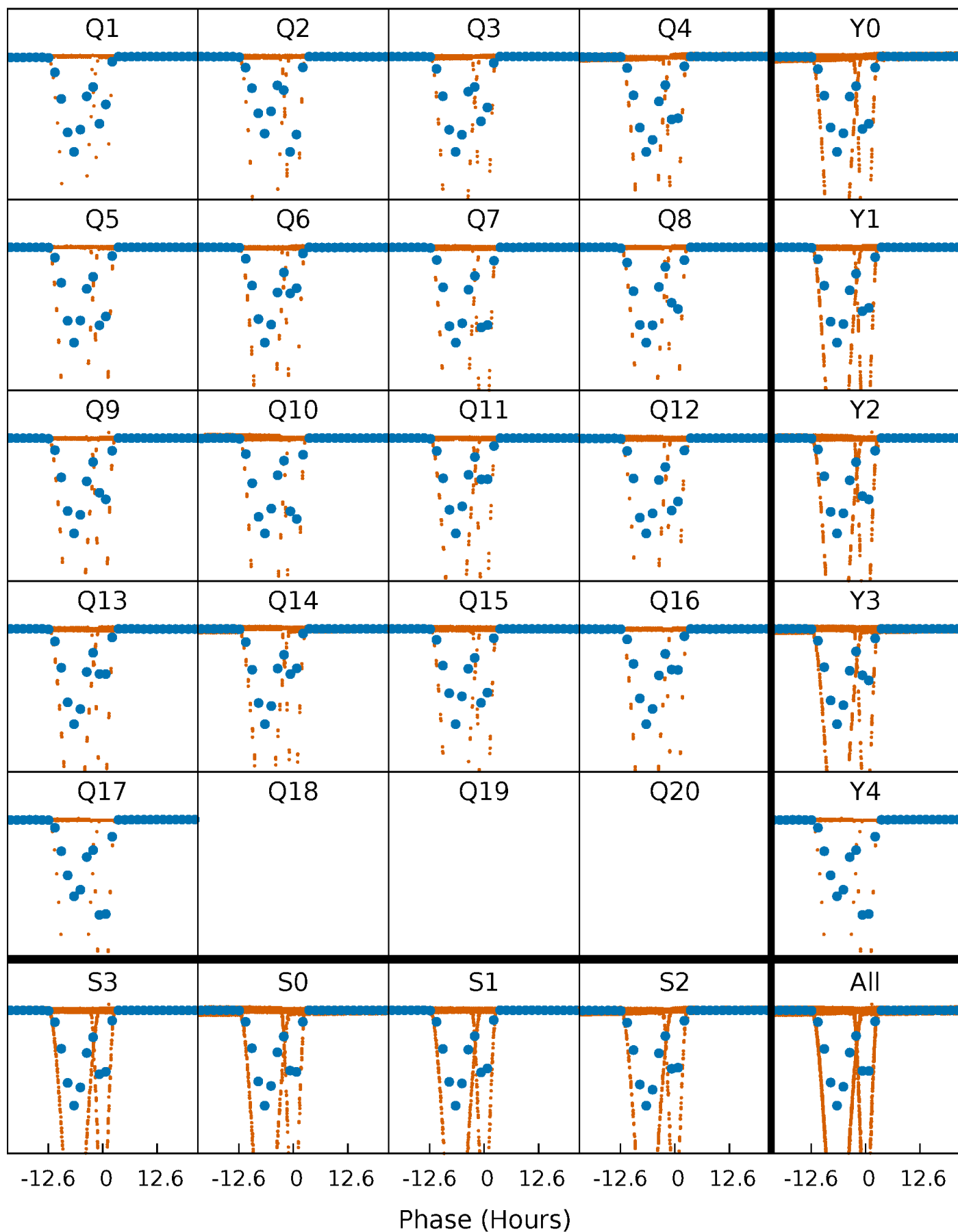


## Planet 5 : Phased Whitened Flux Time Series (Fit Epoch/Period)



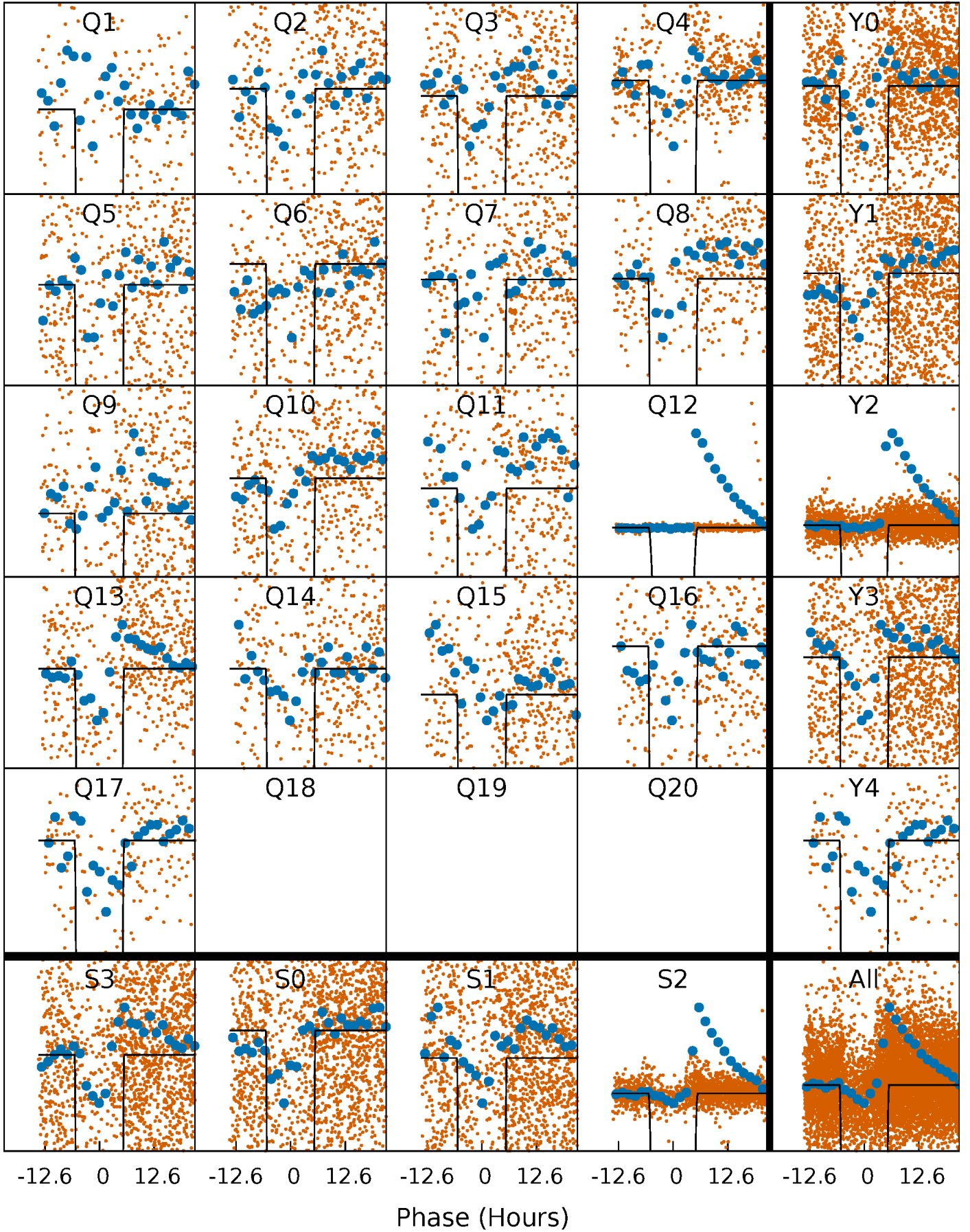
# PDC Quarter-Phased Transit Curves

TCE 004773155-05   P= 8.568636 Days    $T_0=139.781701$  (BKJD)



# DV Quarter-Phased Transit Curves

TCE 004773155-05     $P = 8.568636$  Days     $T_0 = 139.781701$  (BKJD)

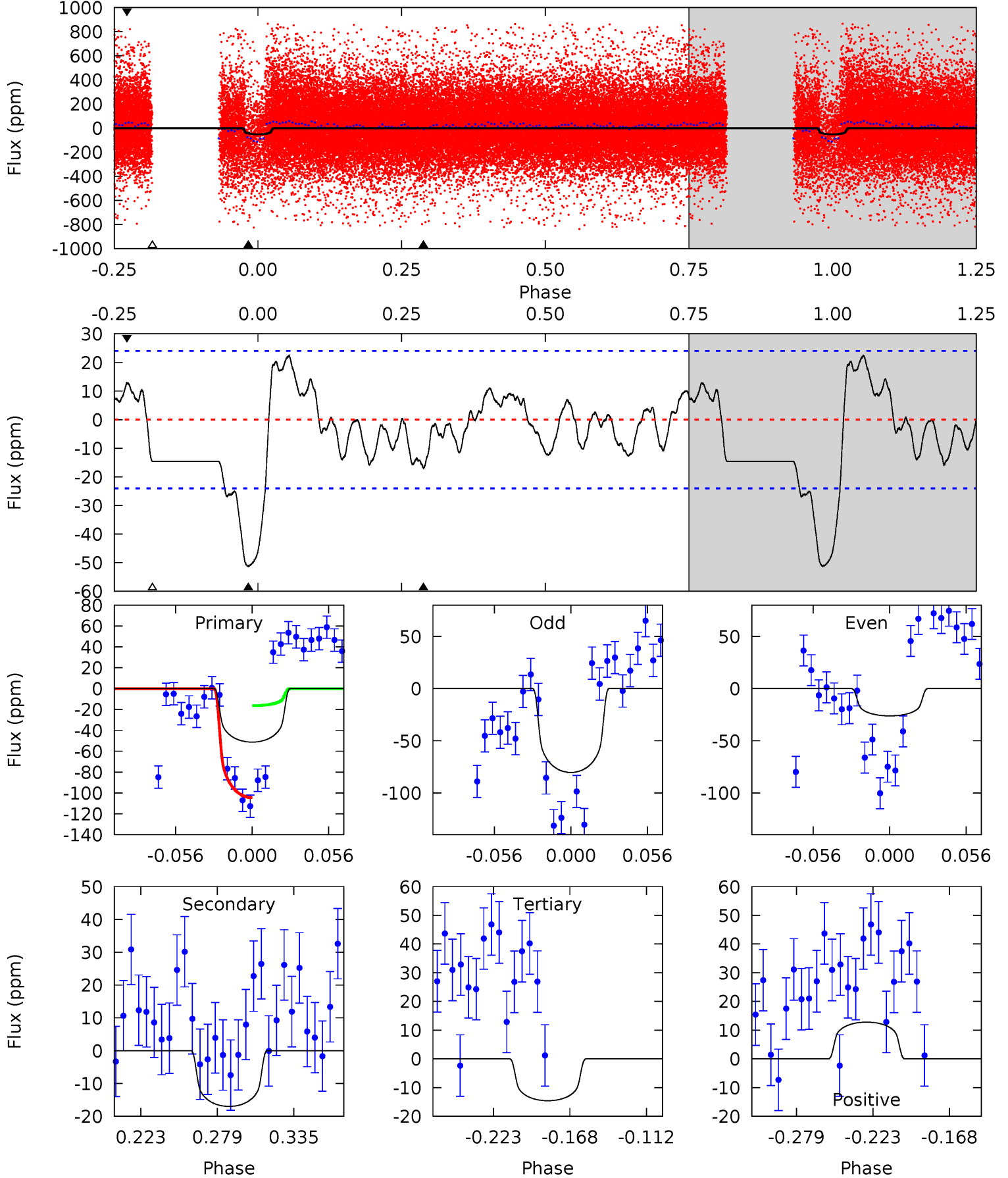


This plot does not exist for this TCE.

# DV Model-Shift Uniqueness Test

004773155-05, P = 8.568636 Days, E = 131.213065 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
10.0	3.32	2.85	2.50	4.69	1.91	1.61	7.17	7.51	0.47	0.82	5.33	38.4	0.30	8.51





## Alt Model-Shift Uniqueness Test

This plot does not exist for this TCE.

### Stellar Parameters For KIC 004773155

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5642^{+152}_{-169}$	$4.498^{+0.060}_{-0.180}$	$-0.020^{+0.300}_{-0.300}$	$0.903^{+0.242}_{-0.104}$	$0.936^{+0.104}_{-0.095}$	$1.793^{+0.456}_{-0.888}$
	+3%/-3%	+1%/-4%	+1500%/-1500%	+27%/-12%	+11%/-10%	+25%/-50%
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 004773155-05 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-17 \pm 5$	$10.20^{+1.43}_{-0.92}$	$1190^{+75}_{-58}$	$1944^{+114}_{-230}$	$0.550^{+0.206}_{-0.189}$
Alt.	N/A	N/A	N/A	N/A	N/A

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

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

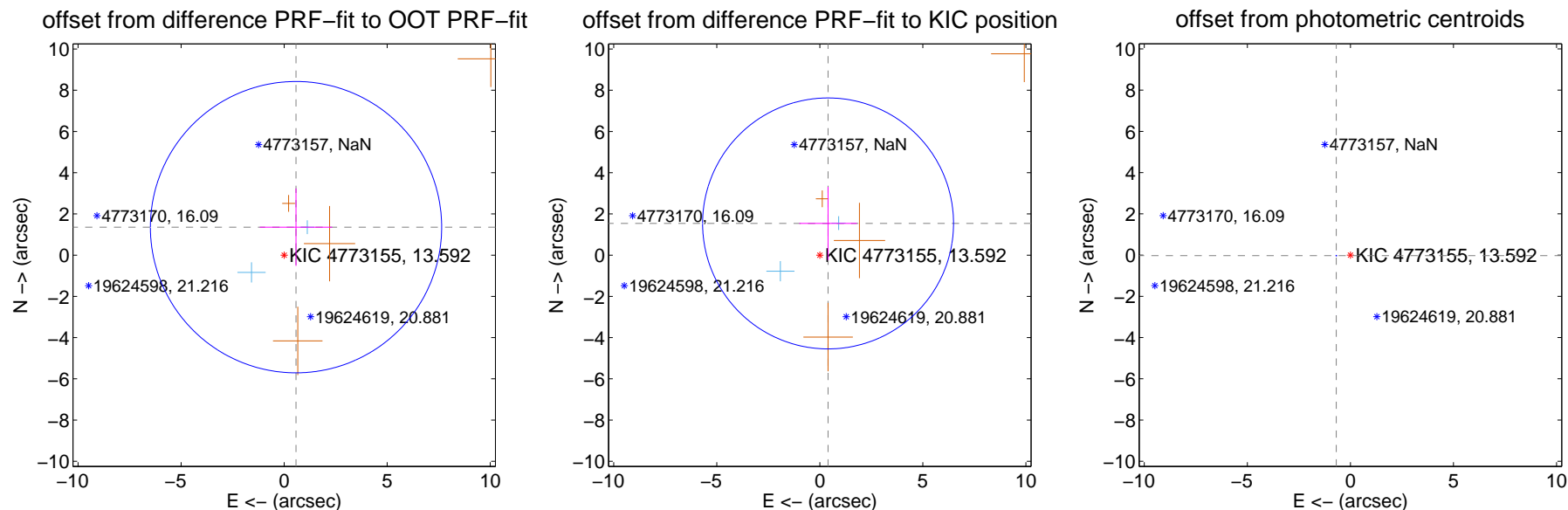
## DV Centroid Data

Supplemental centroid analysis for 004773155-05. Kepler magnitude: 13.59. Transit SNR 1314.08

There are 2 quarters with good PRF difference image offsets

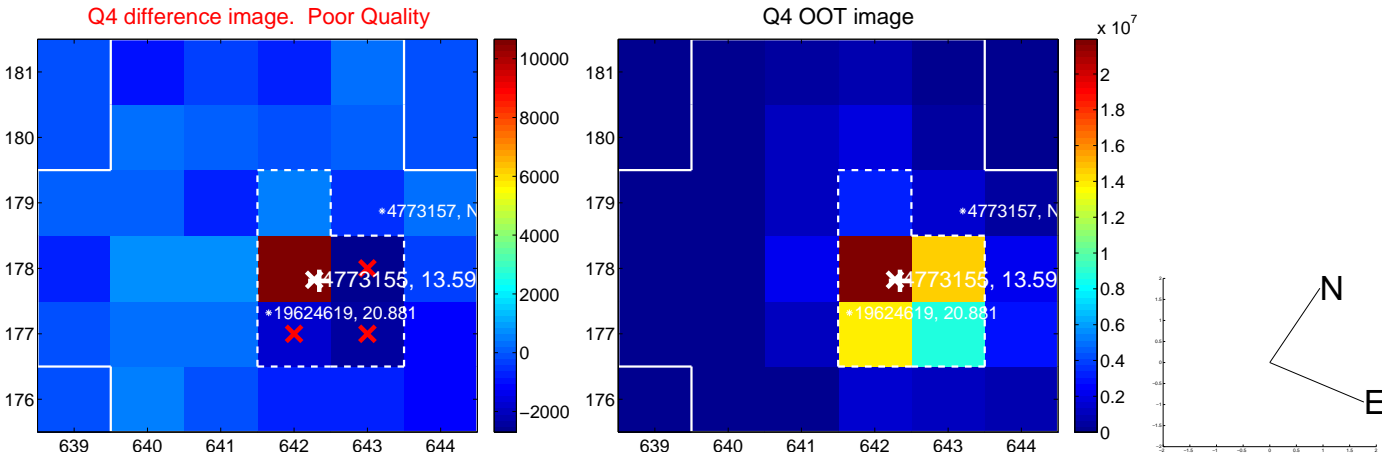
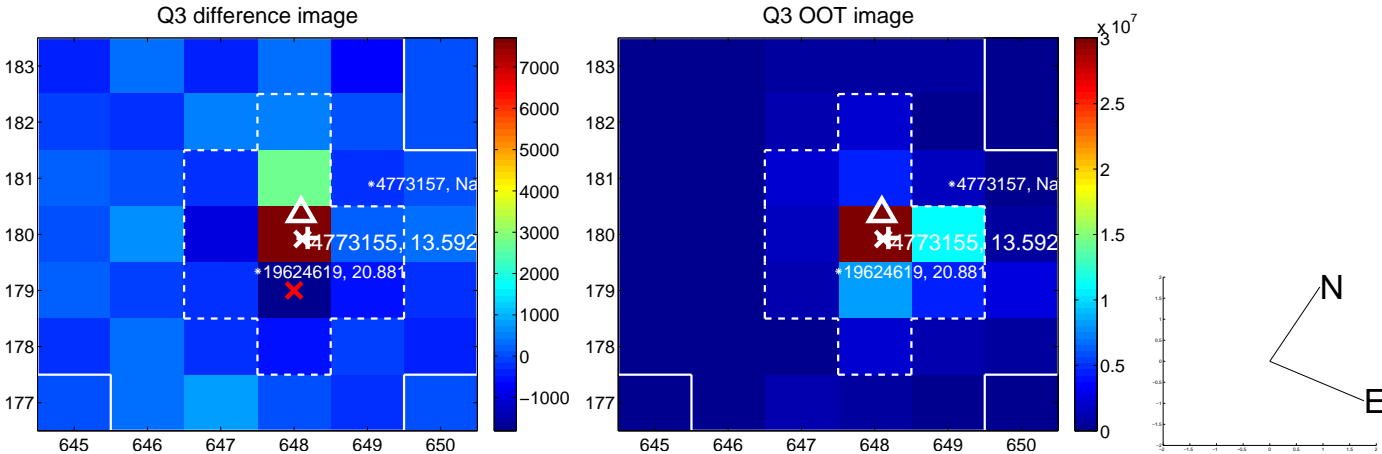
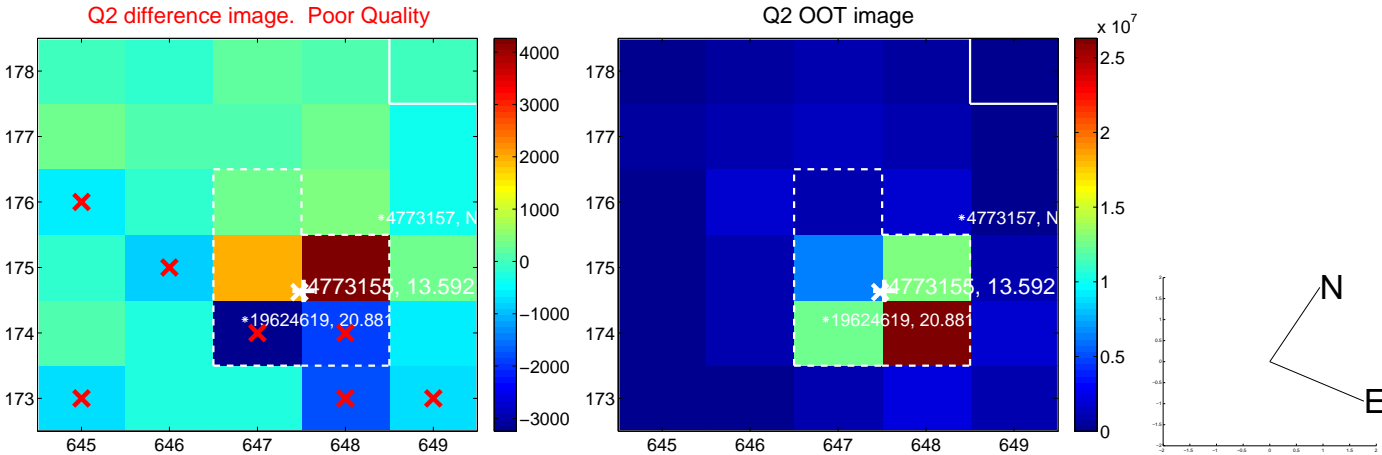
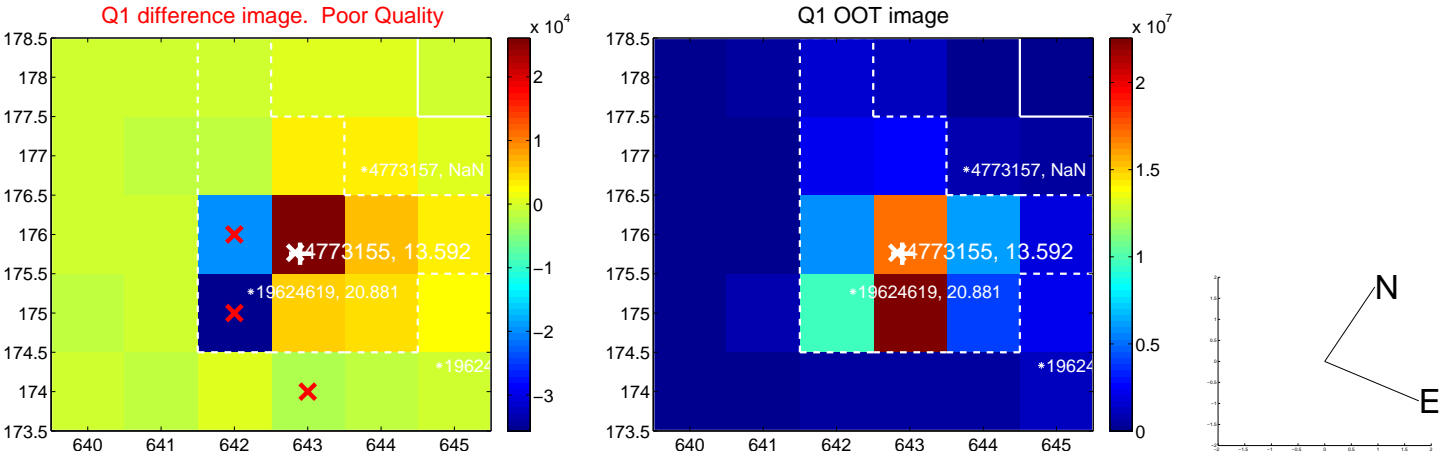
The direct PRF centroid is offset from the target star catalog position by about 0.33 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.475 \pm 2.356$	0.63	$-0.576 \pm 1.756$	$1.358 \pm 1.879$
PRF-fit source offset from KIC position	$1.590 \pm 2.029$	0.78	$-0.400 \pm 1.399$	$1.539 \pm 1.774$
photometric centroid source offset	$0.68 \pm 0.01$	117.16	$0.68 \pm 0.01$	$-0.03 \pm 0.00$

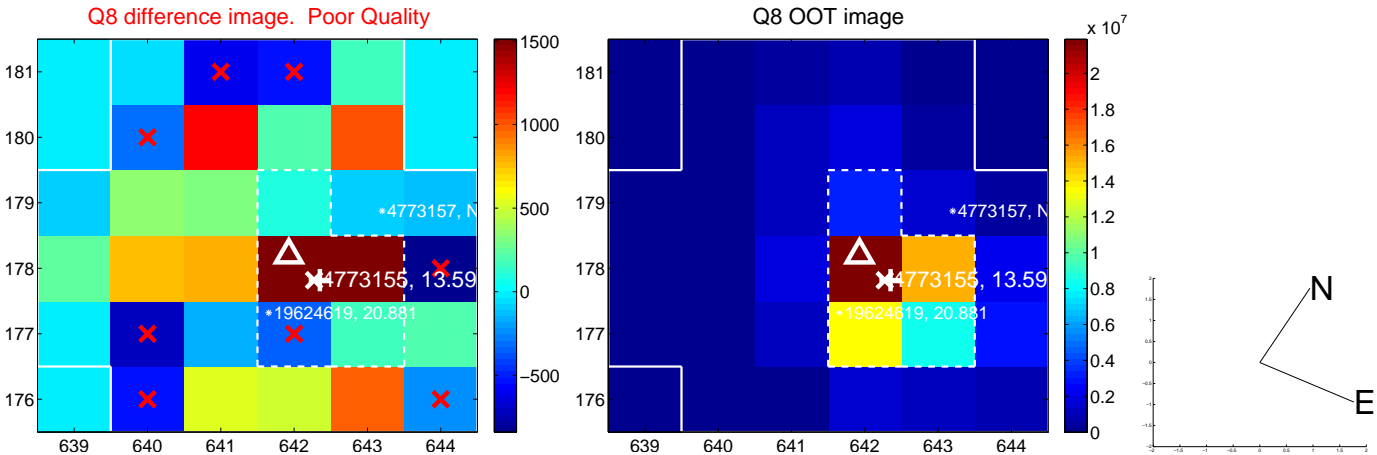
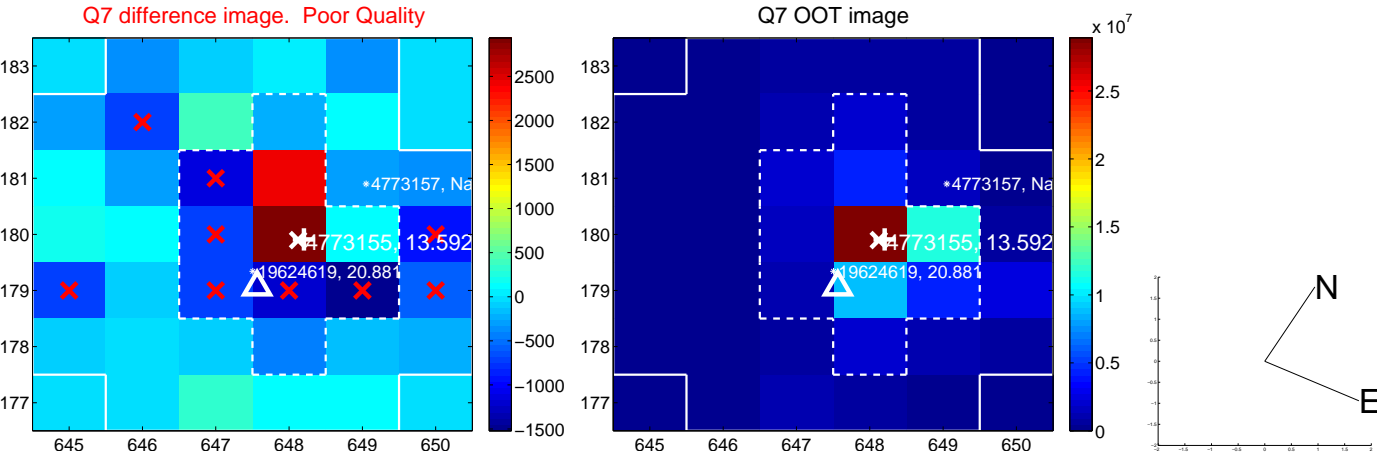
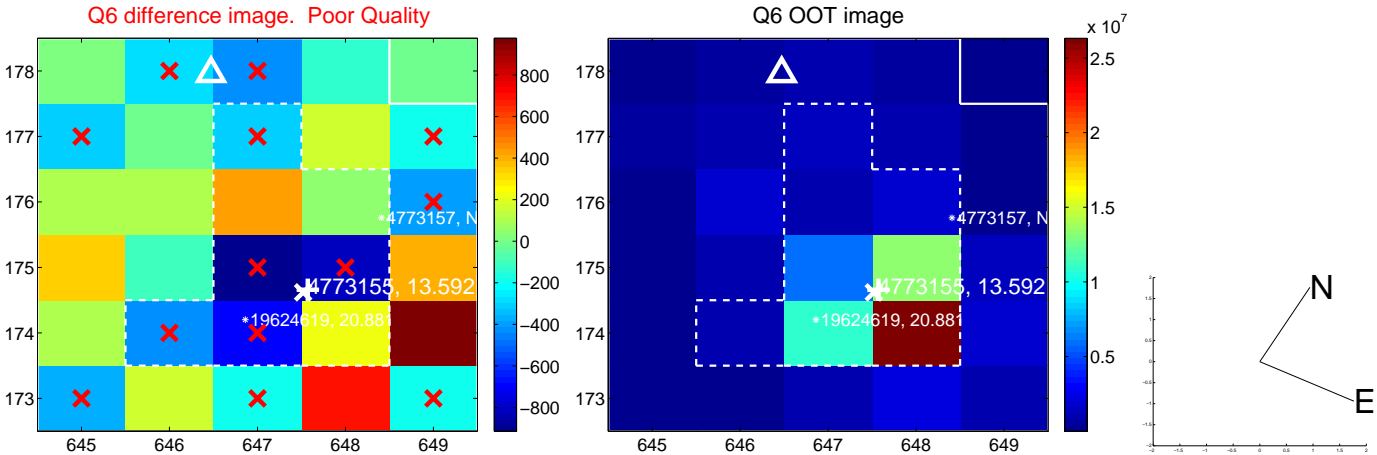
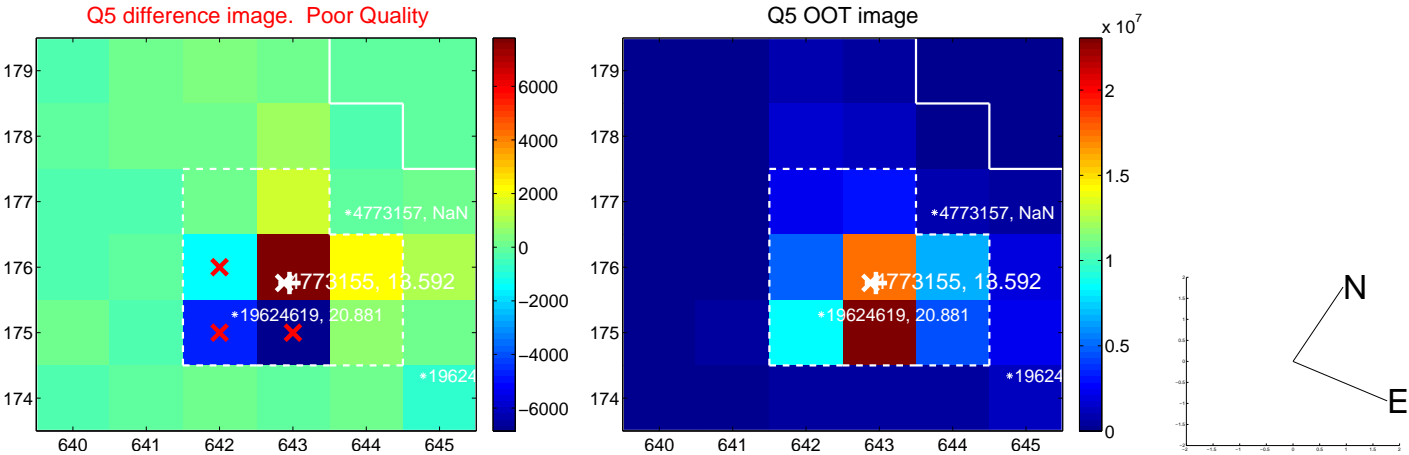


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

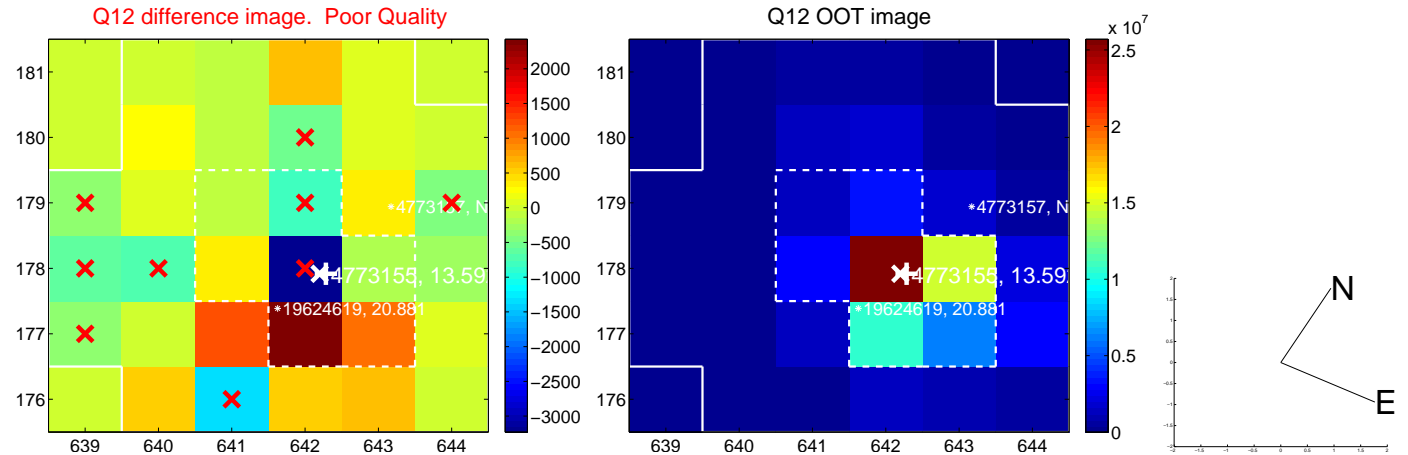
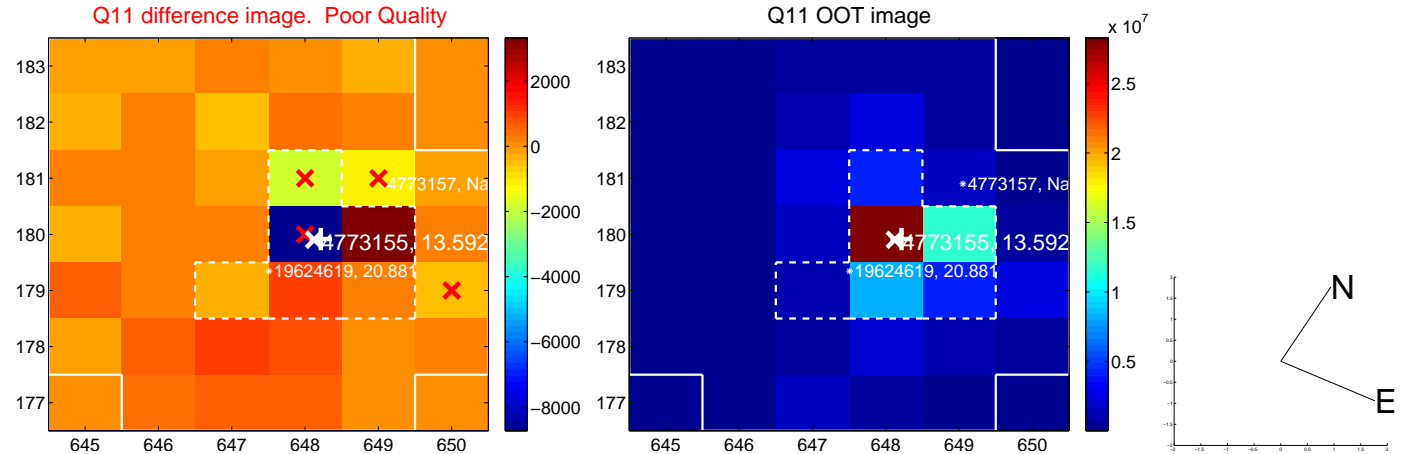
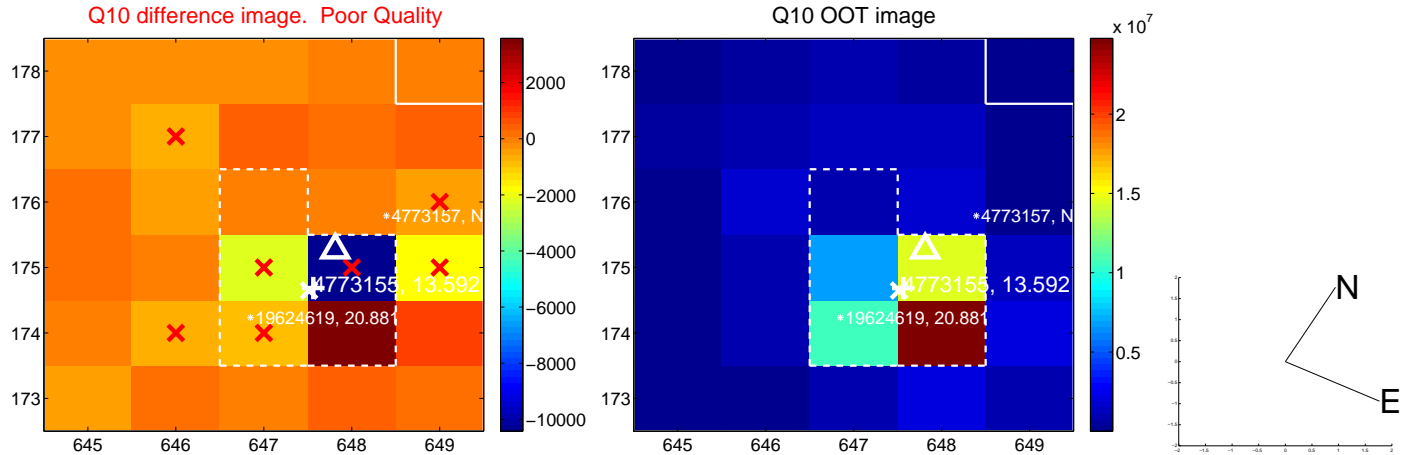
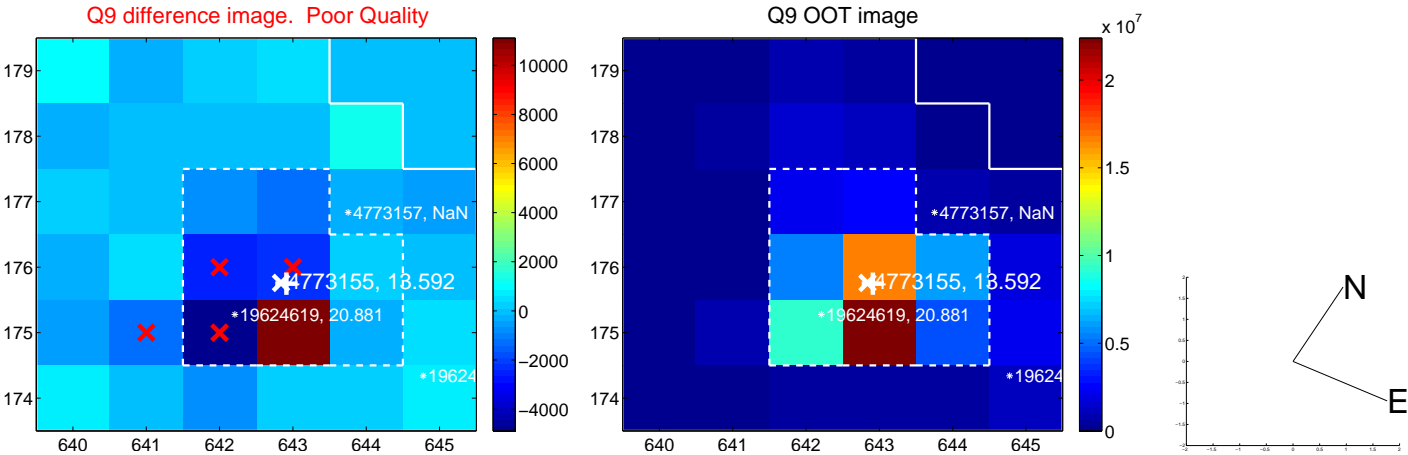
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

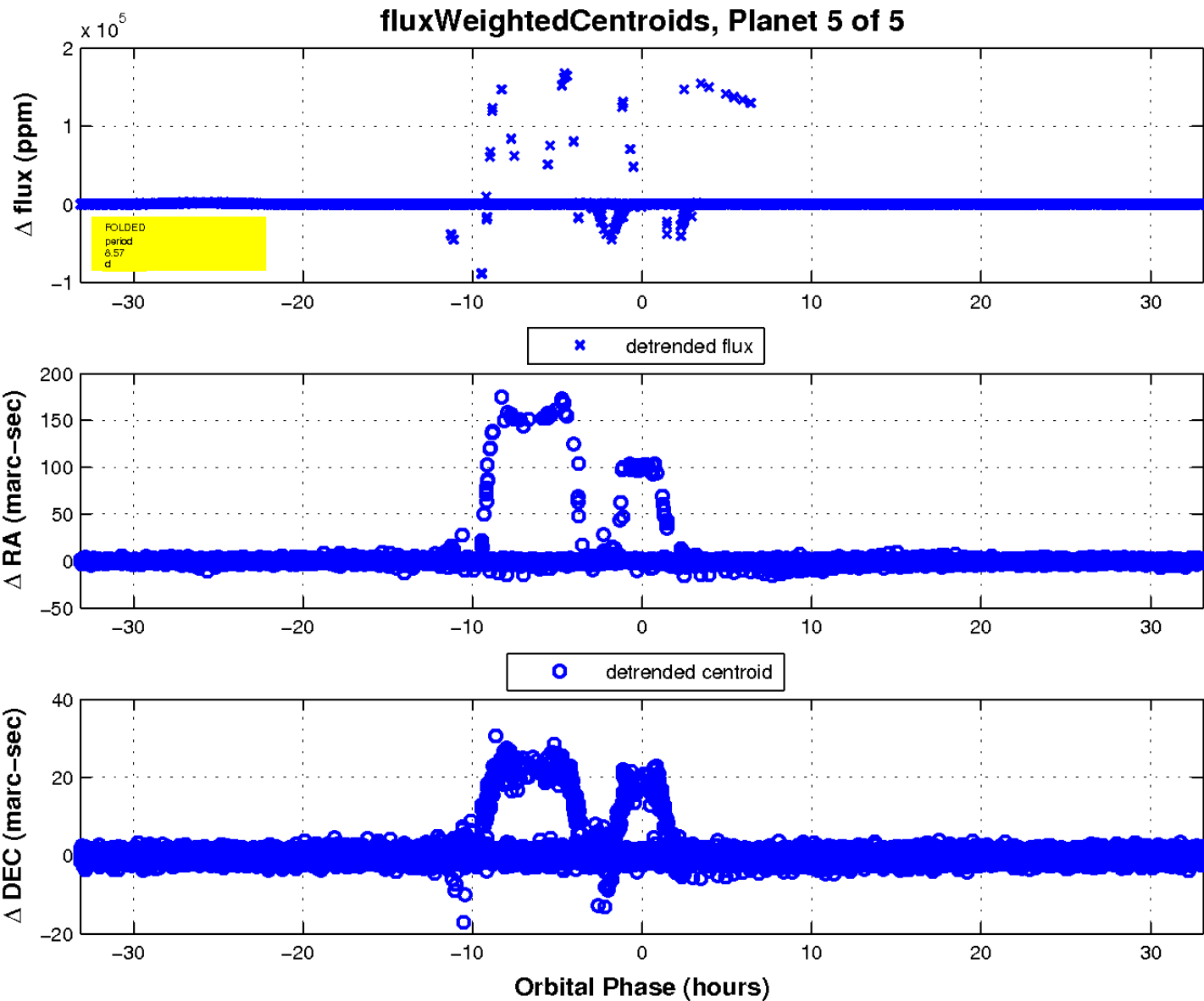
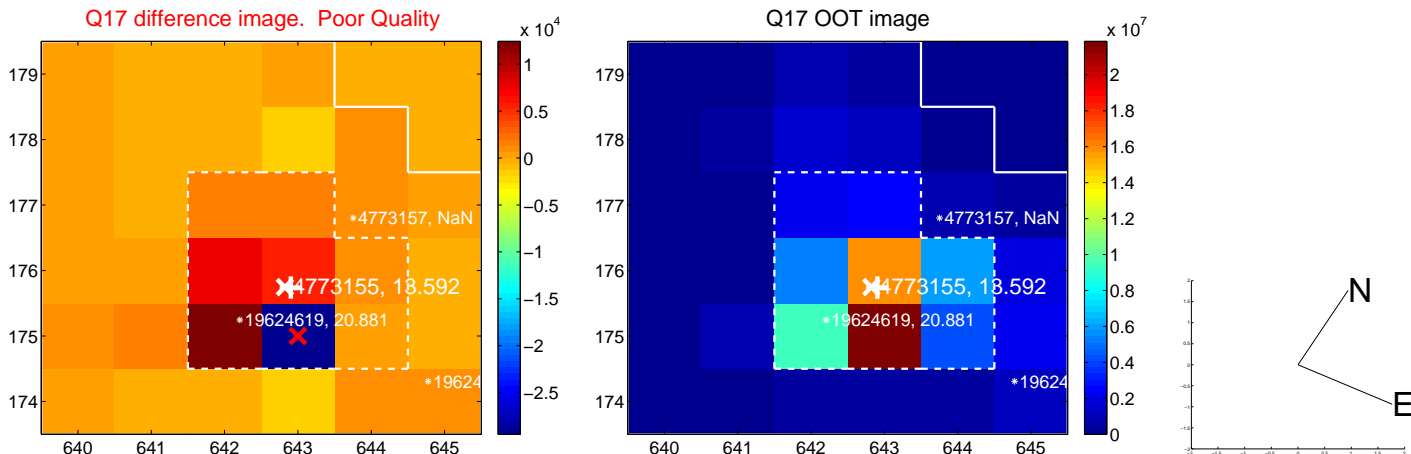


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.





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





UKIRT Image

Declination

