

# KIC 007379646

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007379646-01	OBS	No	0.963456	131.826779	14.8	7.011	9.7	4.1	4.04	7358	1.57	72699.24
007379646-02	OBS	No	97.295571	149.665891	534.9	1.765	10.5	11.4	4.04	7358	9.90	154.59
007379646-03	OBS	No	14.690897	133.994480	397.5	1.265	7.5	8.6	4.04	7358	8.39	1922.68
007379646-04	OBS	No	28.272278	137.439401	394.9	1.607	7.3	8.0	4.04	7358	8.98	803.20

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007379646-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
007379646-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
007379646-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
007379646-04	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED—HALO_GHOST

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

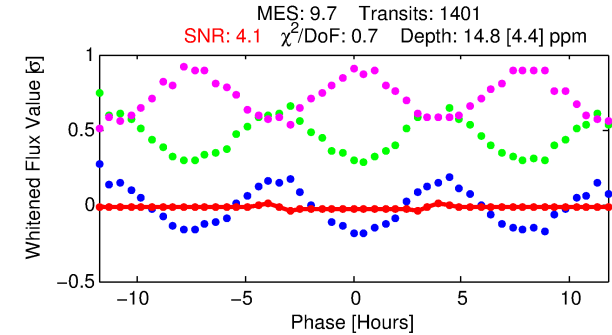
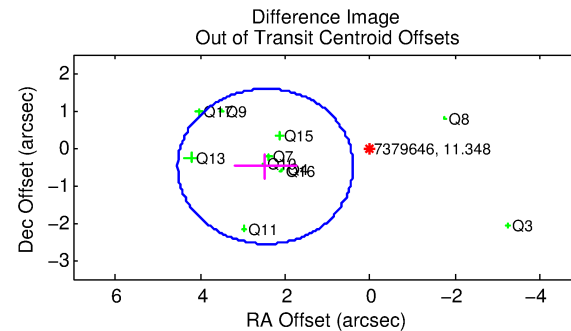
N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

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 007379646-01

No Significant Match Found

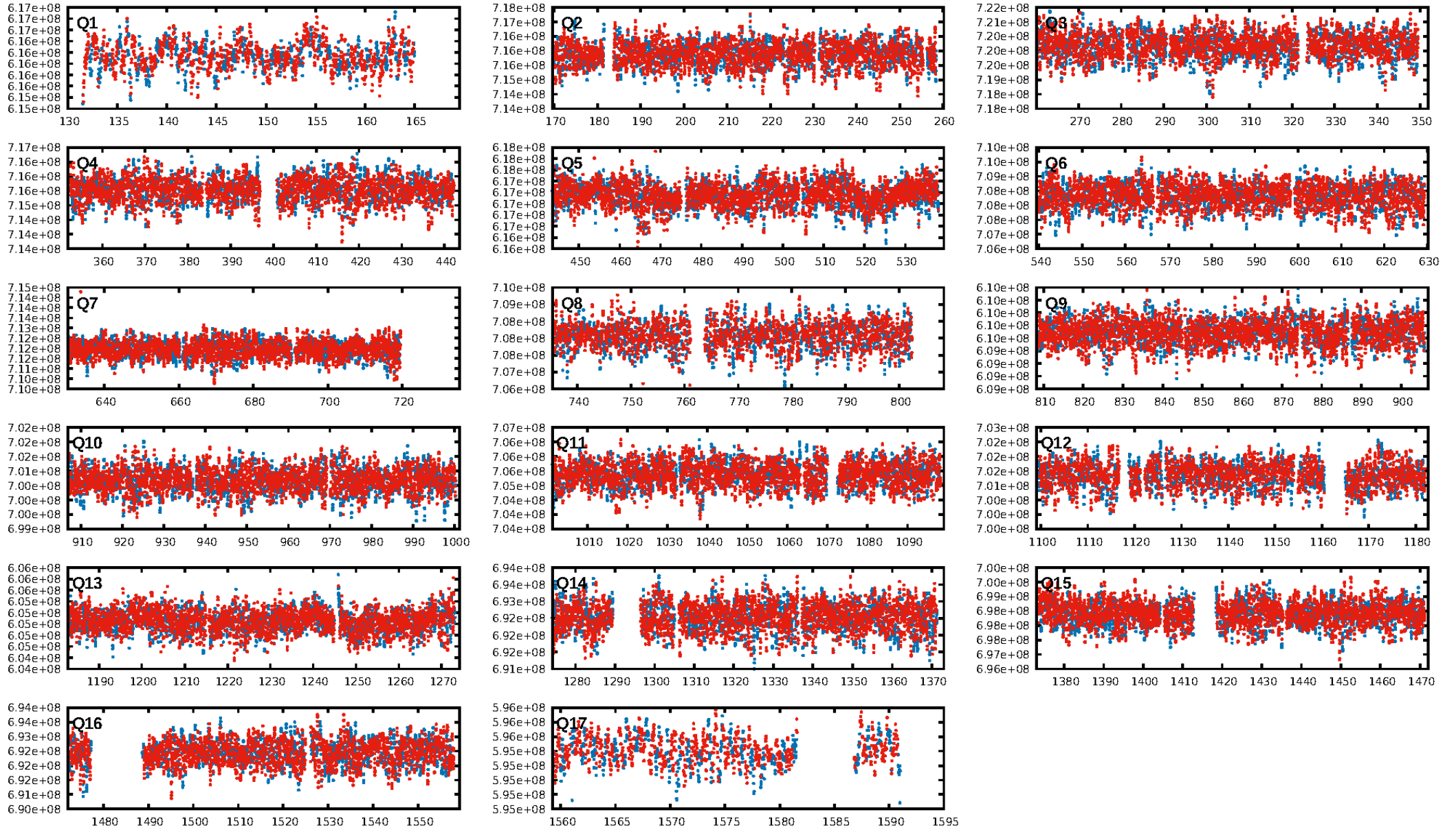
## KIC: 7379646    Candidate: 1 of 4    Period: 0.963 d



ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [46.24σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 7.36e-19  
RollingBand-fgt: 1.00 [1339/1339]  
GhostDiagnostic-chr: -0.814

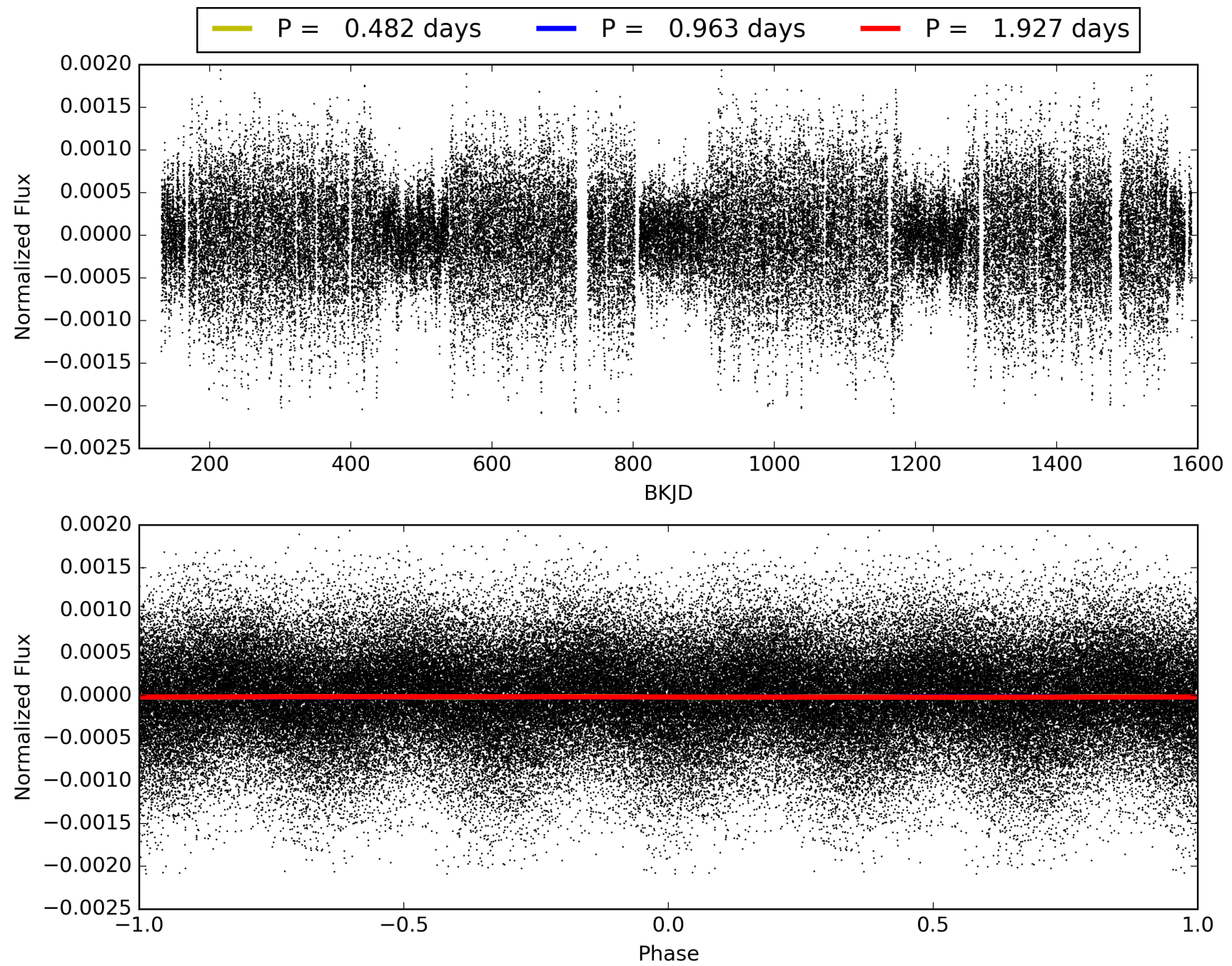
Centroid-sig: 0.1%  
Centroid-so: 1.554 arcsec [2.73σ]  
OotOffset-rm: 2.512 arcsec [3.64σ]  
KicOffset-rm: 2.476 arcsec [3.92σ]  
OotOffset-st: 1/4/3/3 [11]  
KicOffset-st: 1/4/3/3 [11]  
DiffImageQuality-fgm: 0.55 [6/11]  
DiffImageOverlap-fno: 1.00 [17/17]

# TCE 007379646-01, PDC Light Curves





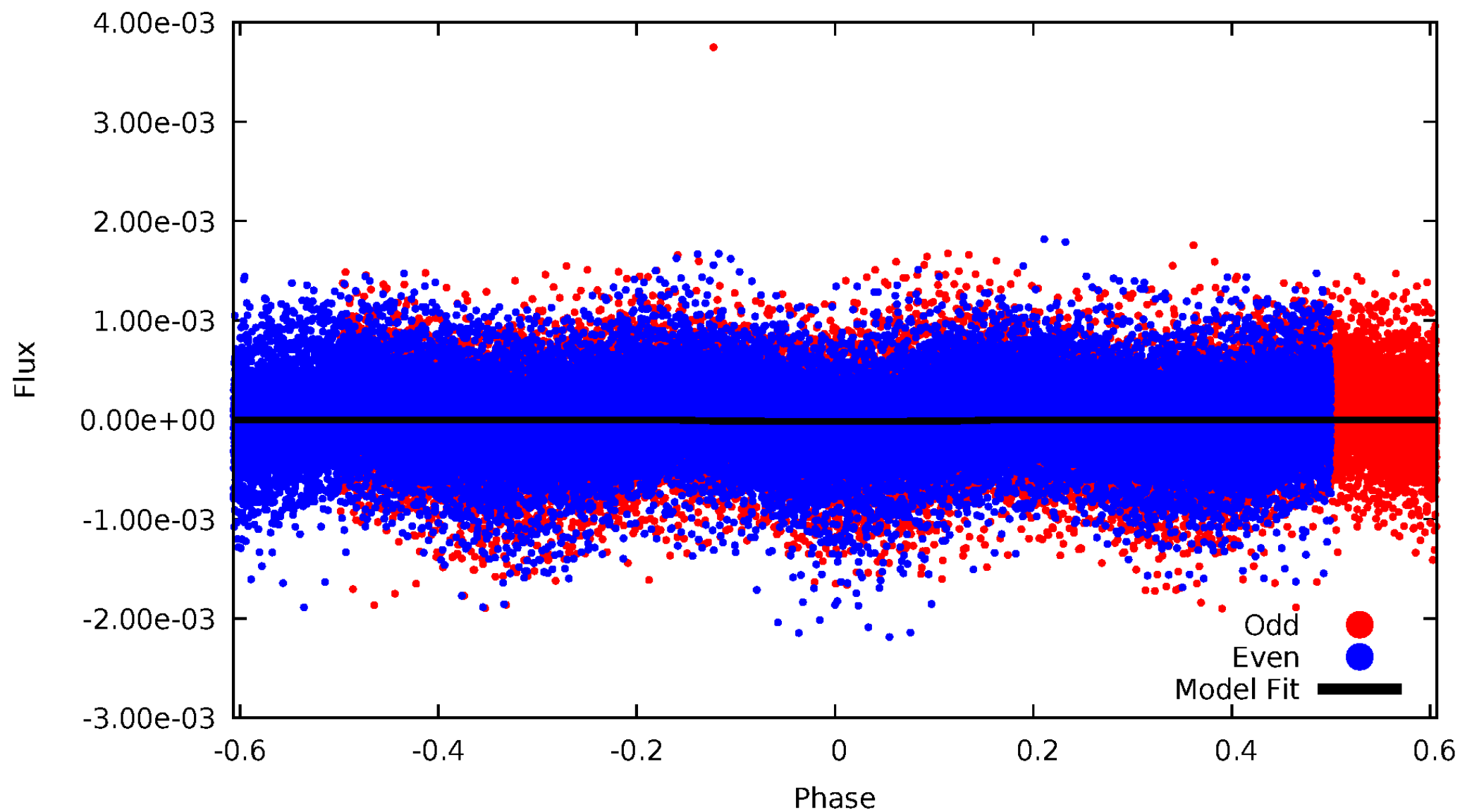
TCE 007379646-01





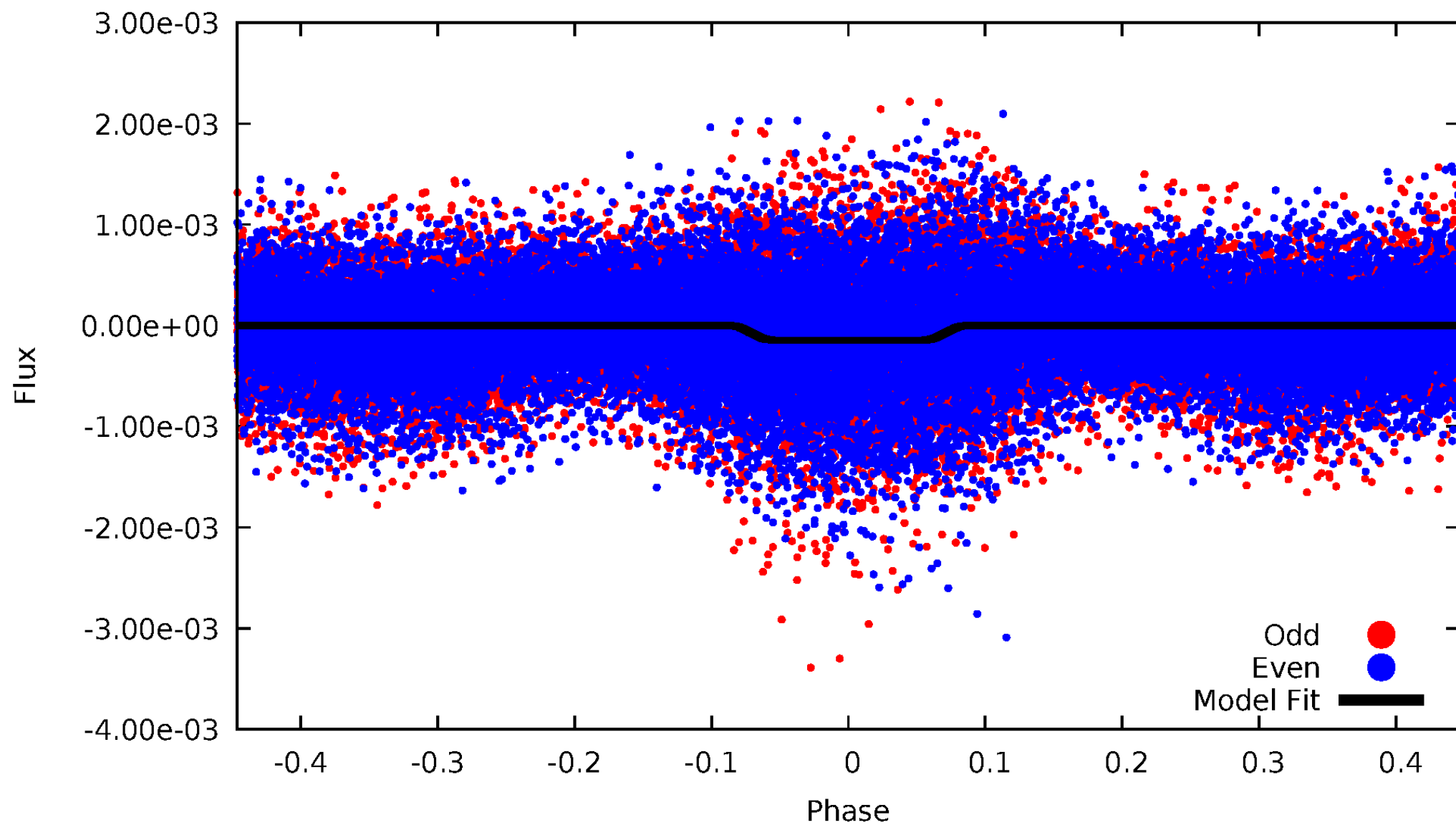
# DV Odd/Even

TCE 007379646-01



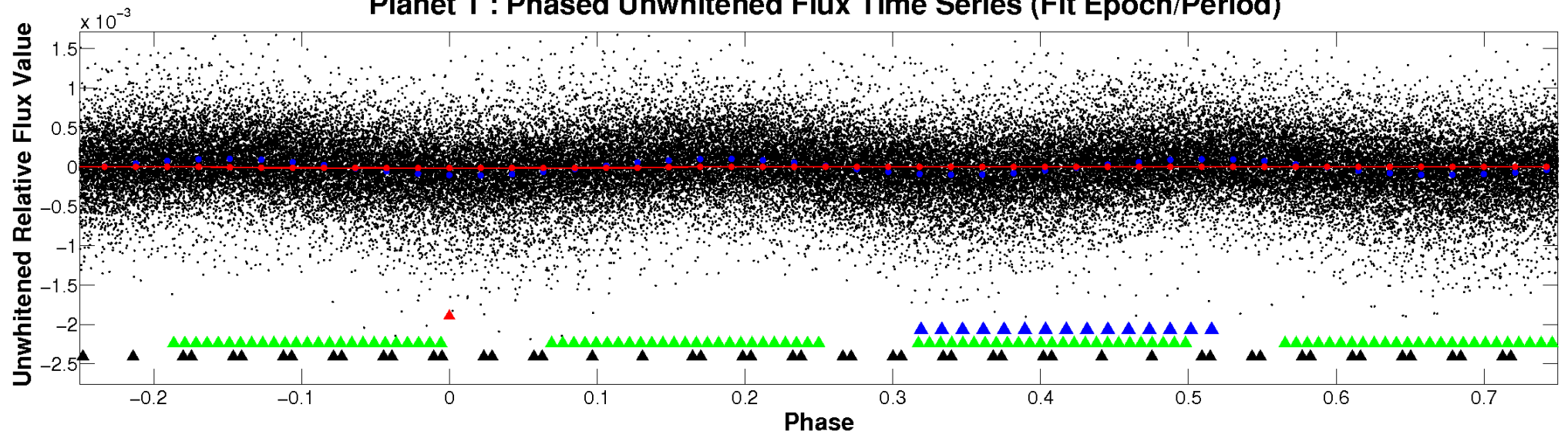
# ALT Odd/Even

TCE 007379646-01

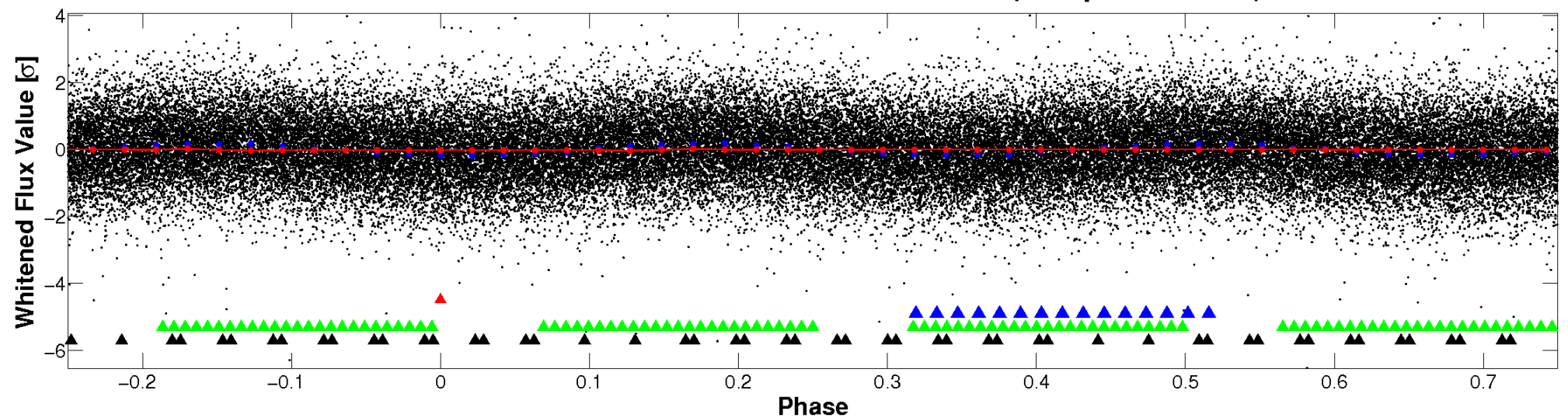


# Non-Whitened Vs. Whitened Light Curve

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



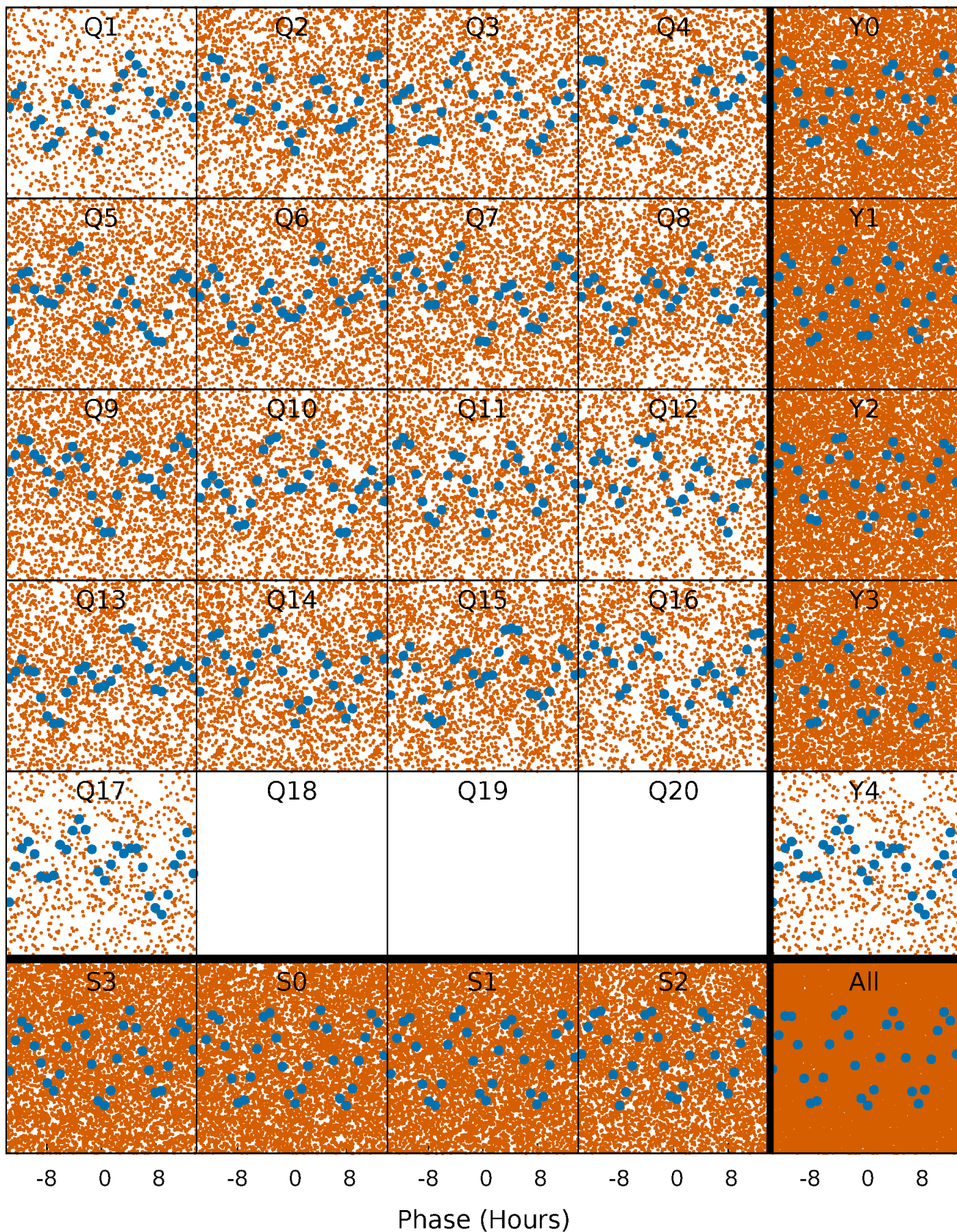
Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)





# PDC Quarter-Phased Transit Curves

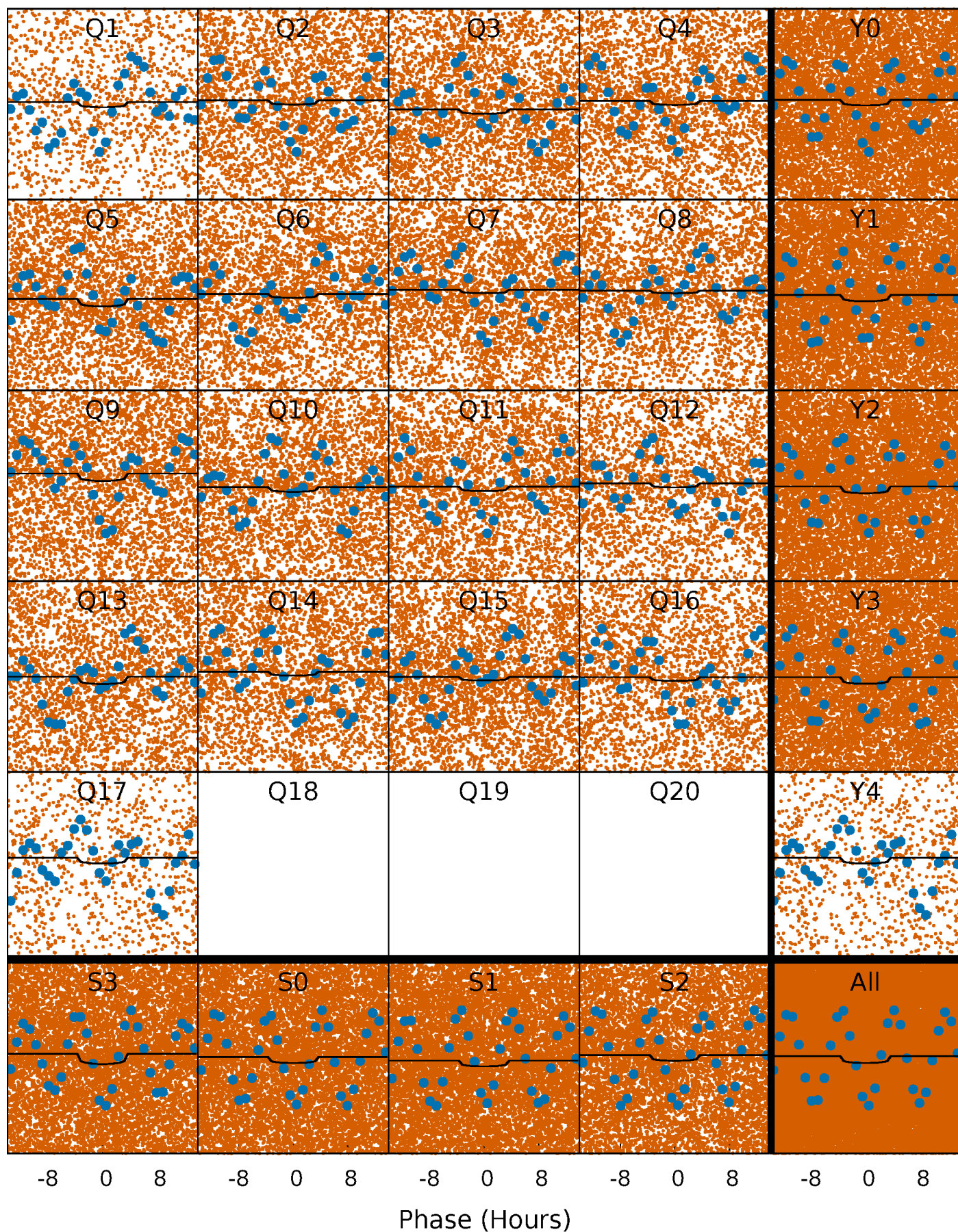
TCE 007379646-01 P= 0.963456 Days  $T_0=131.826779$  (BKJD)





# DV Quarter-Phased Transit Curves

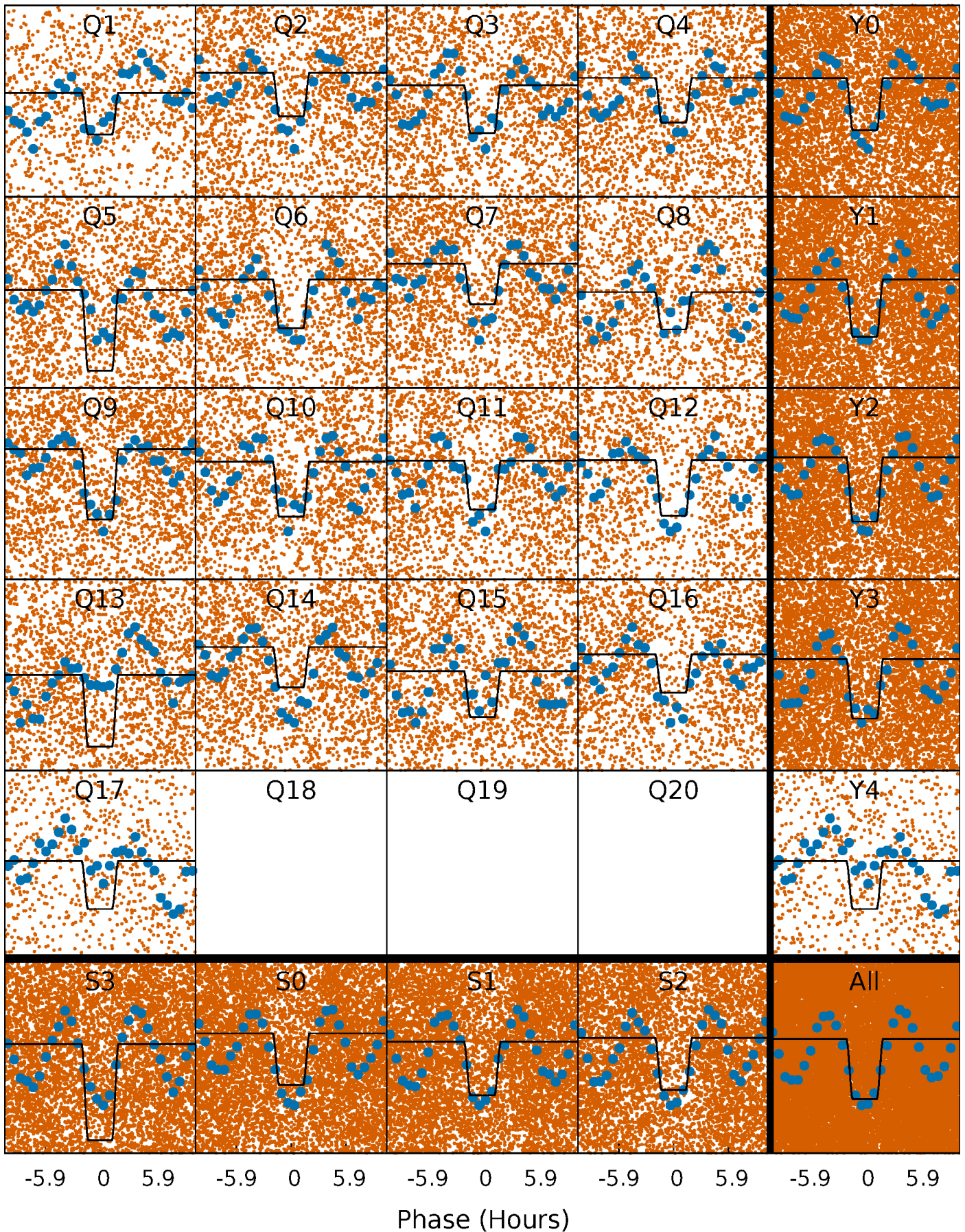
TCE 007379646-01 P= 0.963456 Days  $T_0=131.826779$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

TCE 007379646-01 P= 0.963471 Days  $T_0=131.828997$  (BKJD)

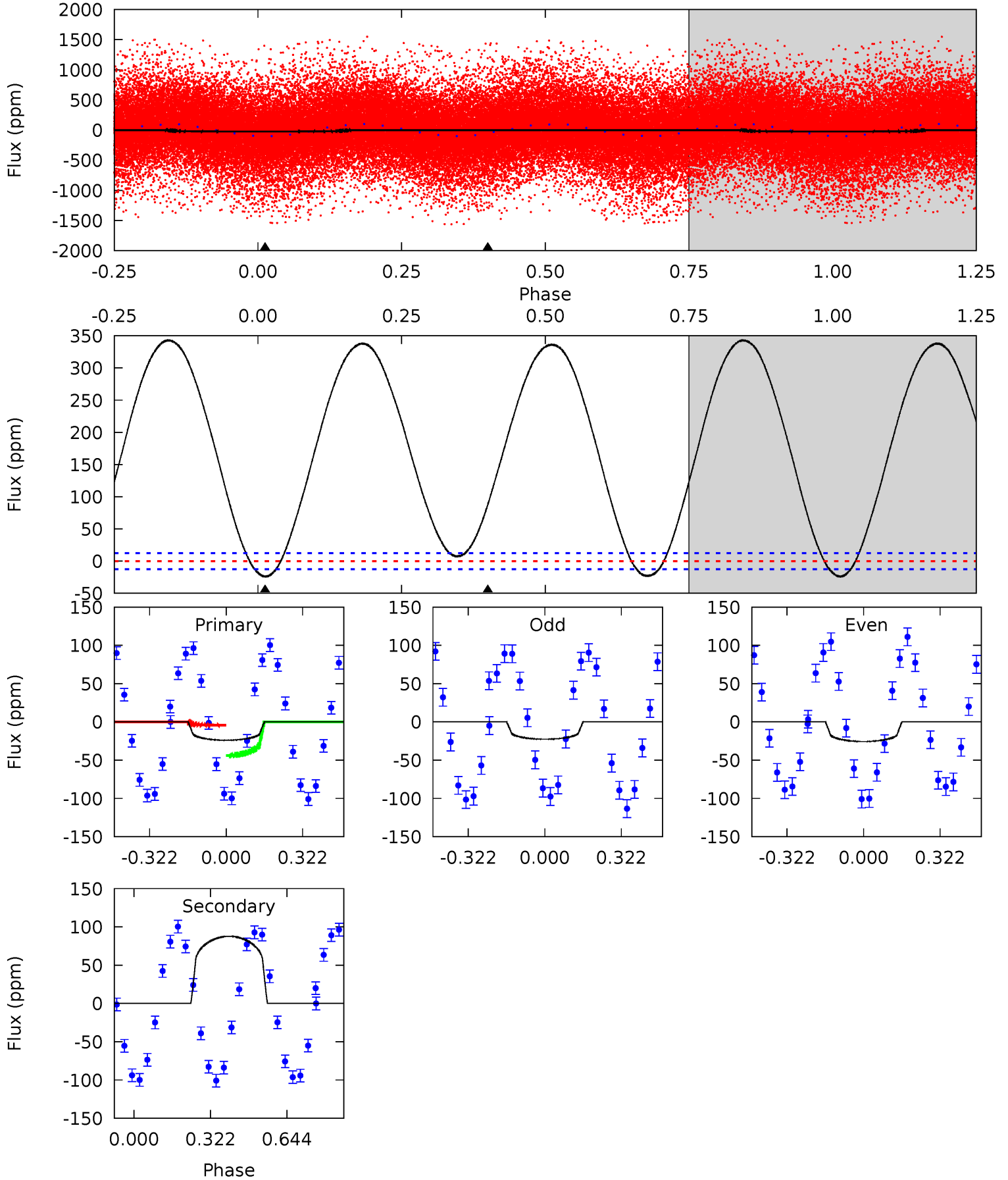




# DV Model-Shift Uniqueness Test

007379646-01, P = 0.963456 Days, E = 130.863323 Days

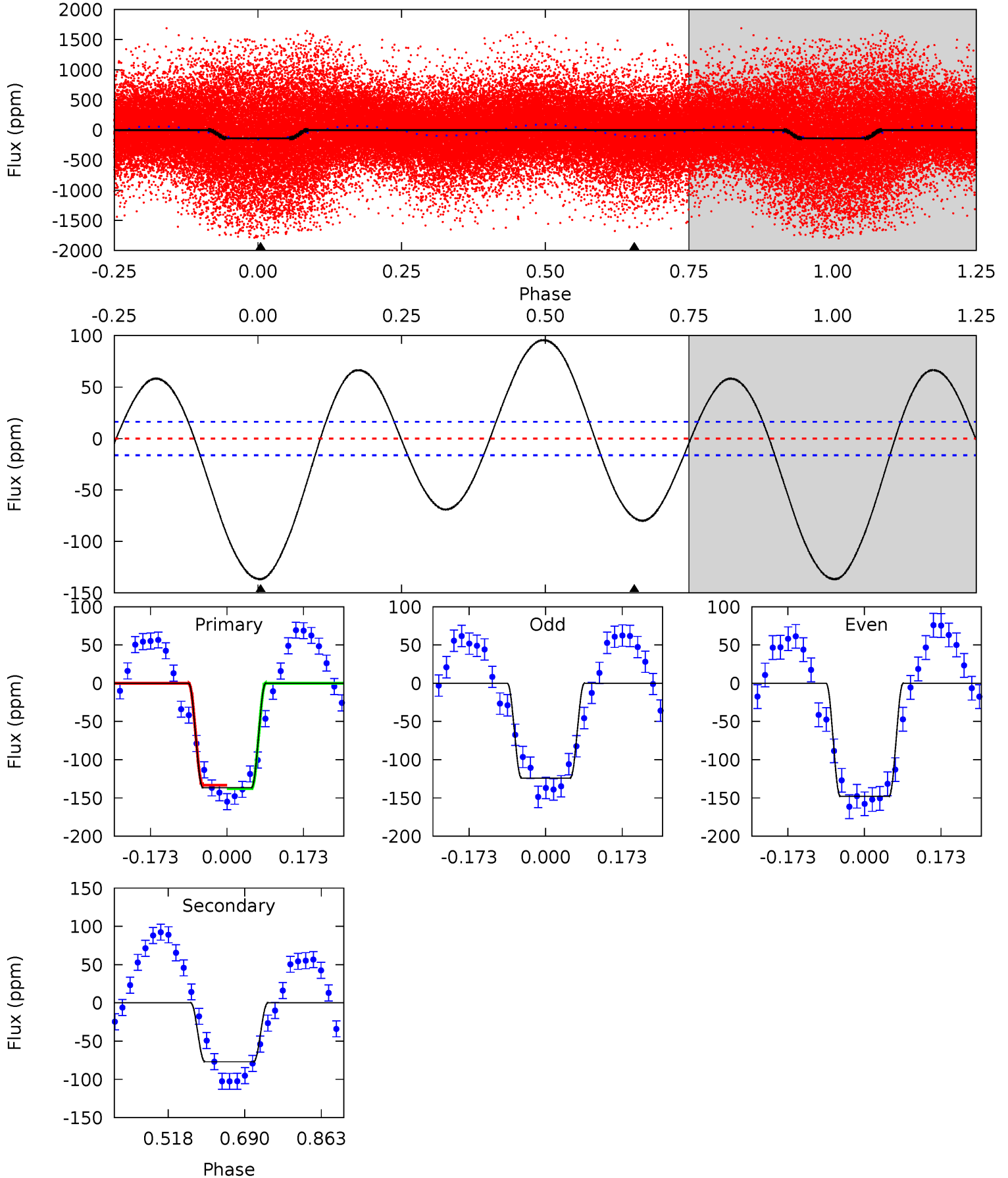
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.31	-30.4	0	0	4.31	0.99	17.8	8.31	8.31	-30.4	-30.4	0.55	9.15	0.93	7.12



# Alt Model-Shift Uniqueness Test

007379646-01, P = 0.963471 Days, E = 130.865526 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
37.4	21.1	0	0	4.45	1.36	14.2	37.4	37.4	21.1	21.1	3.28	1.10	0.41	0.65



### Stellar Parameters For KIC 007379646

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$7358^{+205}_{-308}$	$3.538^{+0.580}_{-0.061}$	$-0.080^{+0.250}_{-0.300}$	$4.037^{+0.396}_{-2.242}$	$2.054^{+0.134}_{-0.570}$	$0.044^{+0.322}_{-0.010}$
	+3%/-4%	+16%/-2%	+312%/-375%	+10%/-56%	+7%/-28%	+733%/-22%
Source	KIC0	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 007379646-01 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$88 \pm 3$	$1.57^{+1.25}_{-1.01}$	$5603^{+411}_{-800}$	$-13327^{+4446}_{-23992}$	$-11.183^{+7.609}_{-73.195}$
Alt.	$-77 \pm 4$	$4.61^{+1.65}_{-1.71}$	$5620^{+374}_{-828}$	$5755^{+1249}_{-934}$	$1.160^{+1.599}_{-0.525}$

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

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



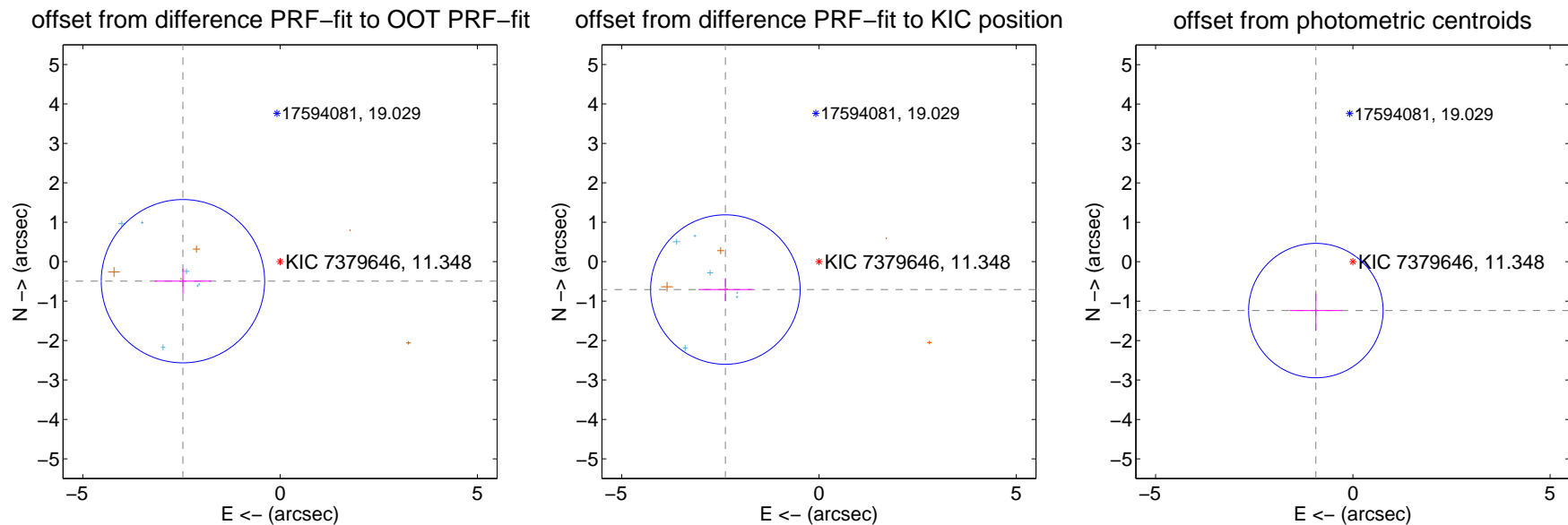
## DV Centroid Data

Supplemental centroid analysis for 007379646-01. **Kepler magnitude: 11.35.** Transit SNR 4.09

There are 6 quarters with good PRF difference image offsets

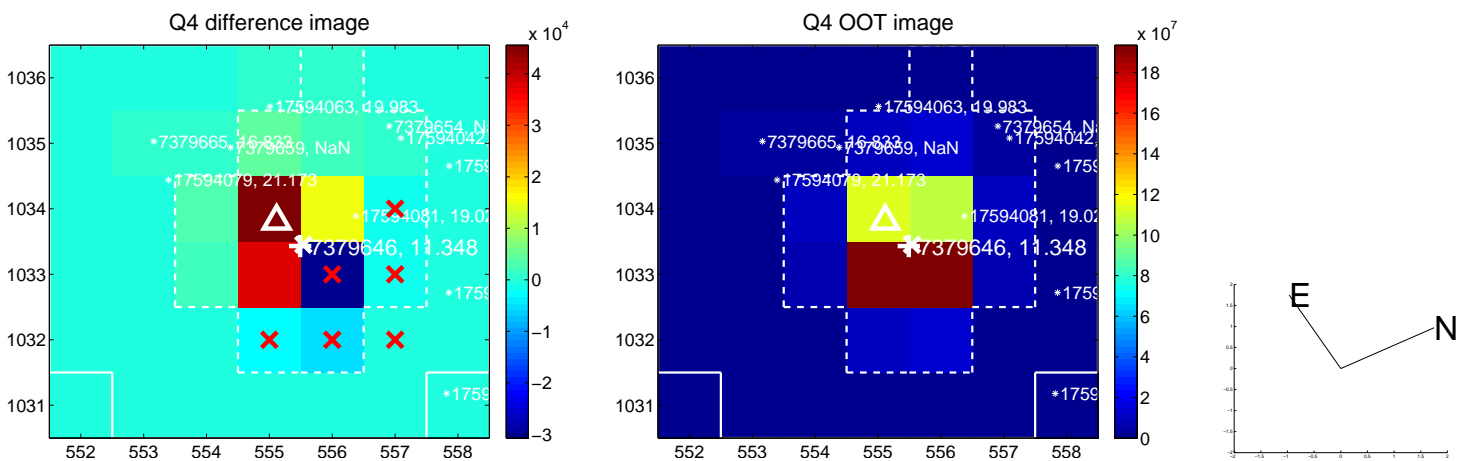
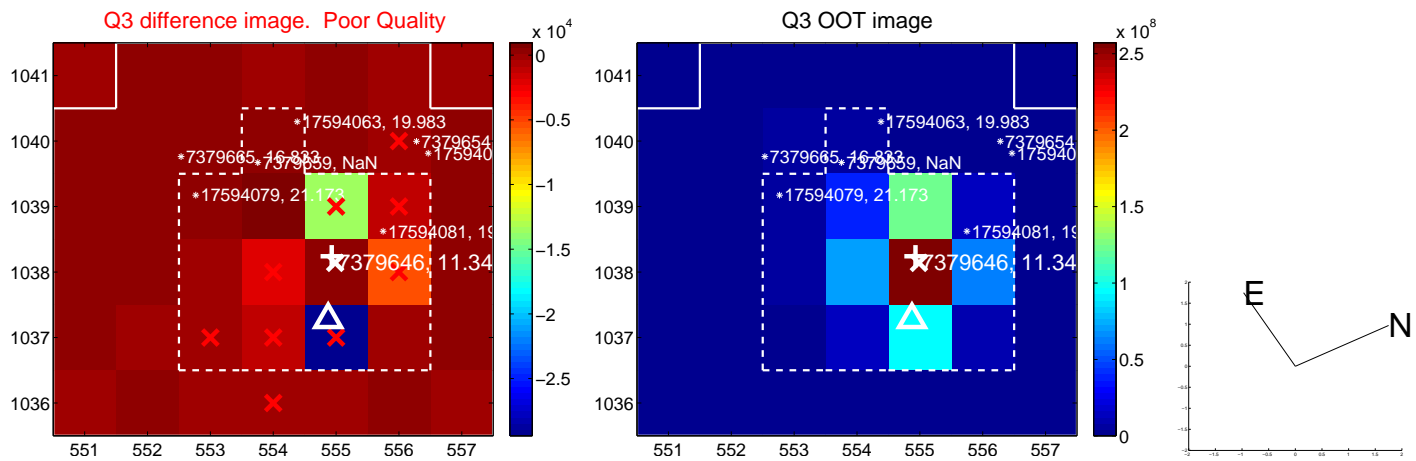
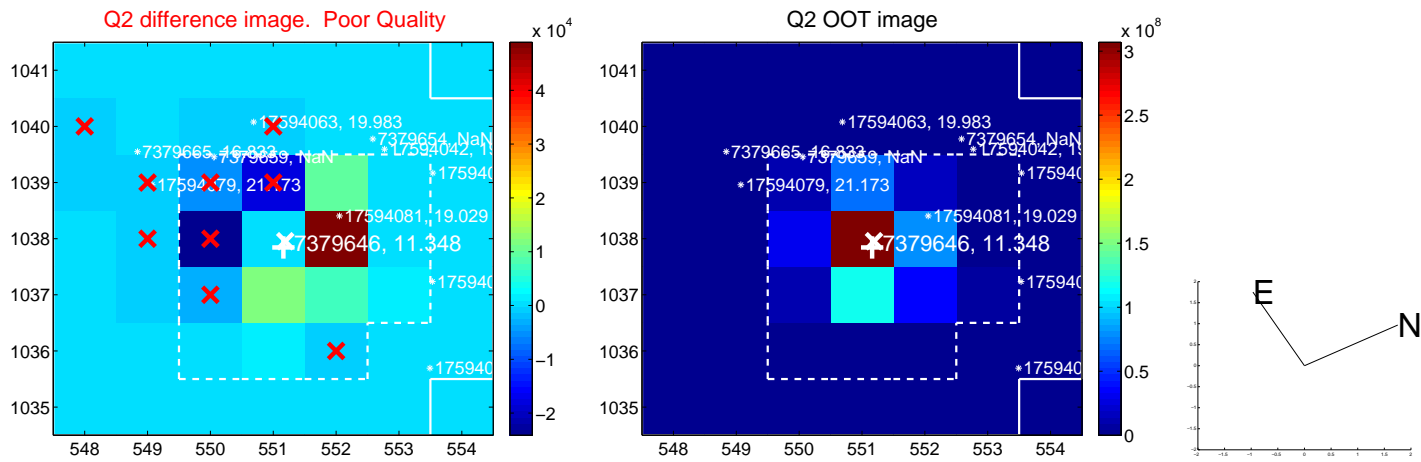
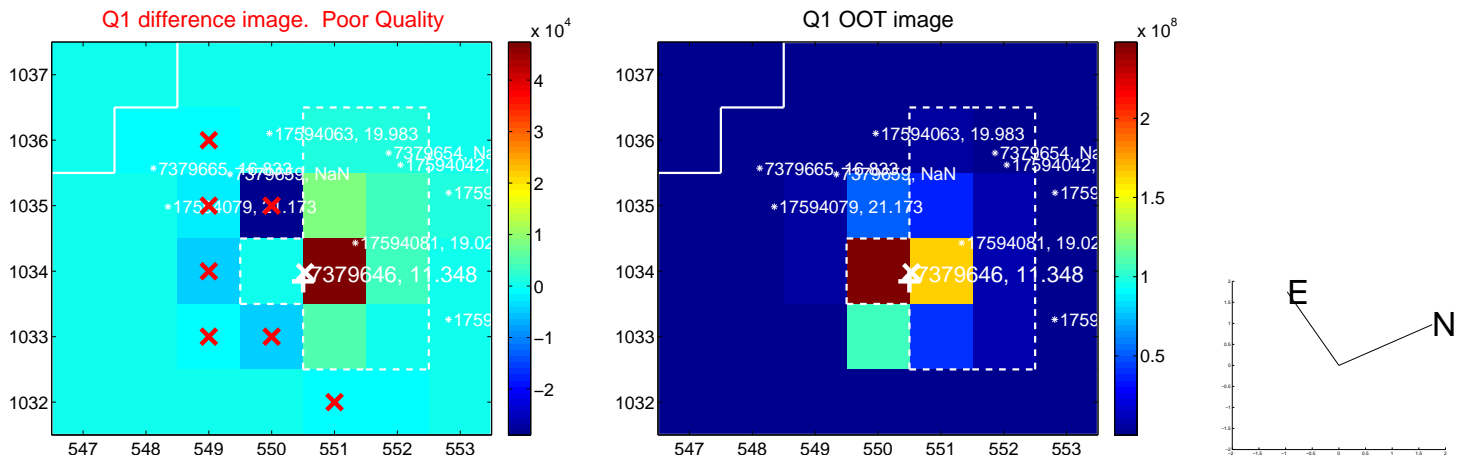
The direct PRF centroid is offset from the target star catalog position by about 0.61 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	<b><math>2.512 \pm 0.690</math></b>	<b>3.64</b>	$2.463 \pm 0.721$	$-0.494 \pm 0.317$
PRF-fit source offset from KIC position	<b><math>2.476 \pm 0.632</math></b>	<b>3.92</b>	$2.373 \pm 0.682$	$-0.706 \pm 0.289$
photometric centroid source offset	$1.55 \pm 0.57$	2.73	$0.94 \pm 0.67$	$-1.24 \pm 0.50$

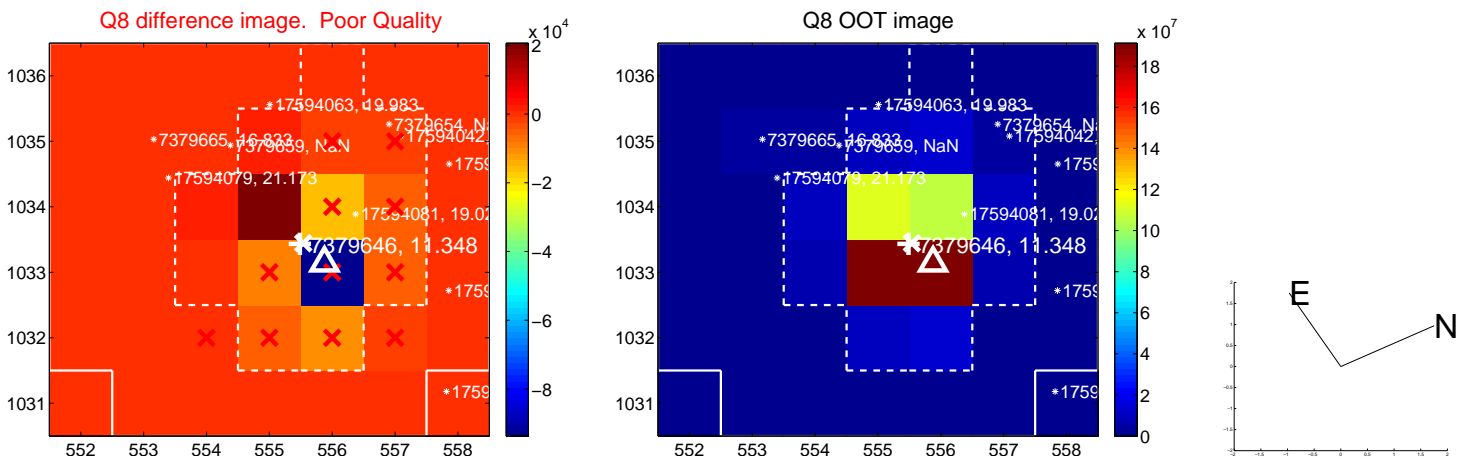
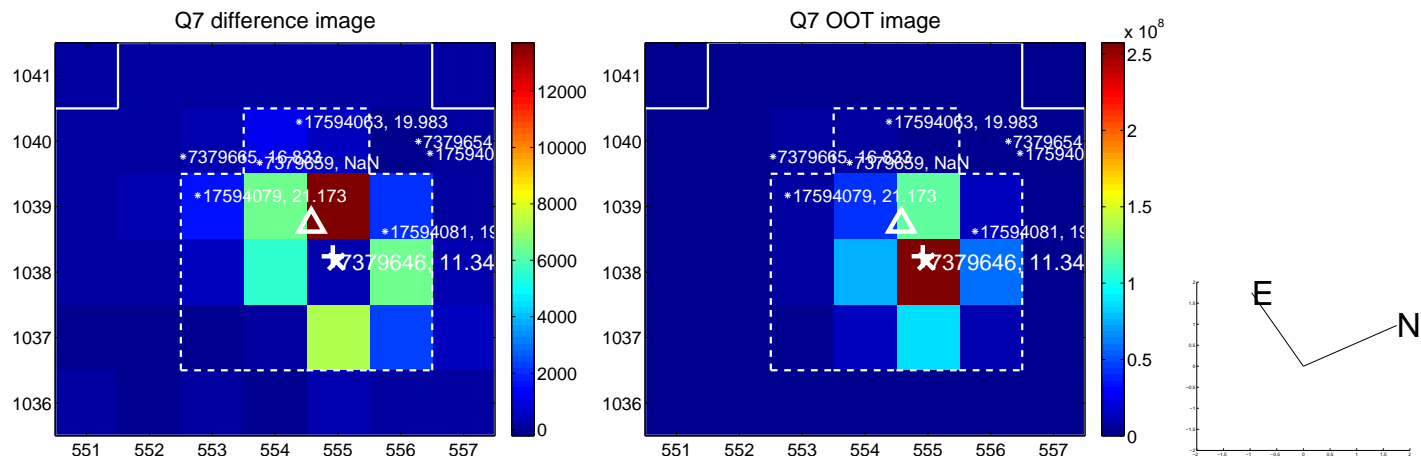
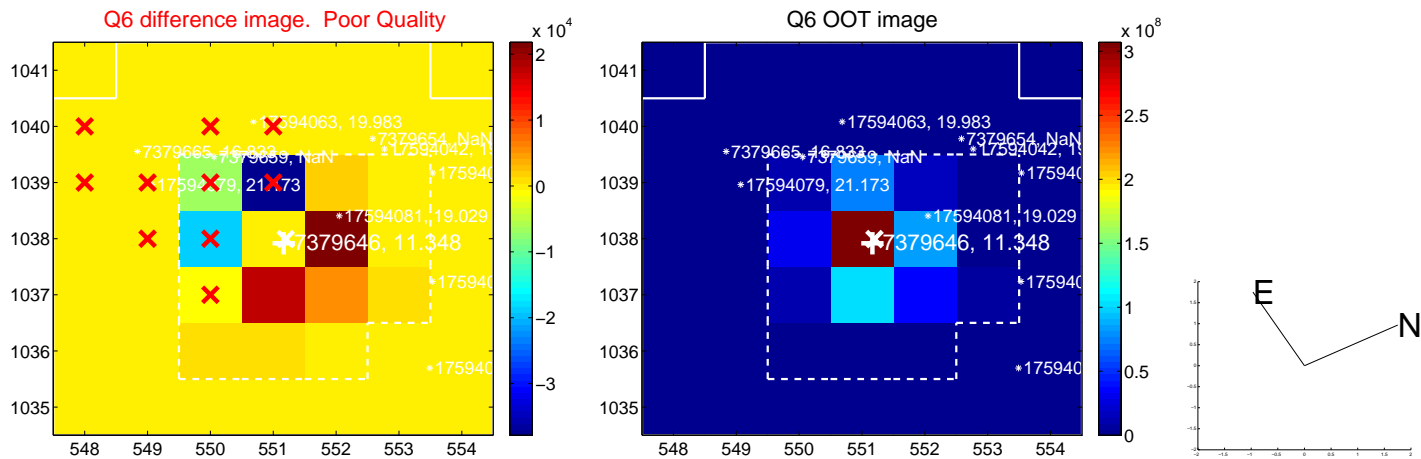
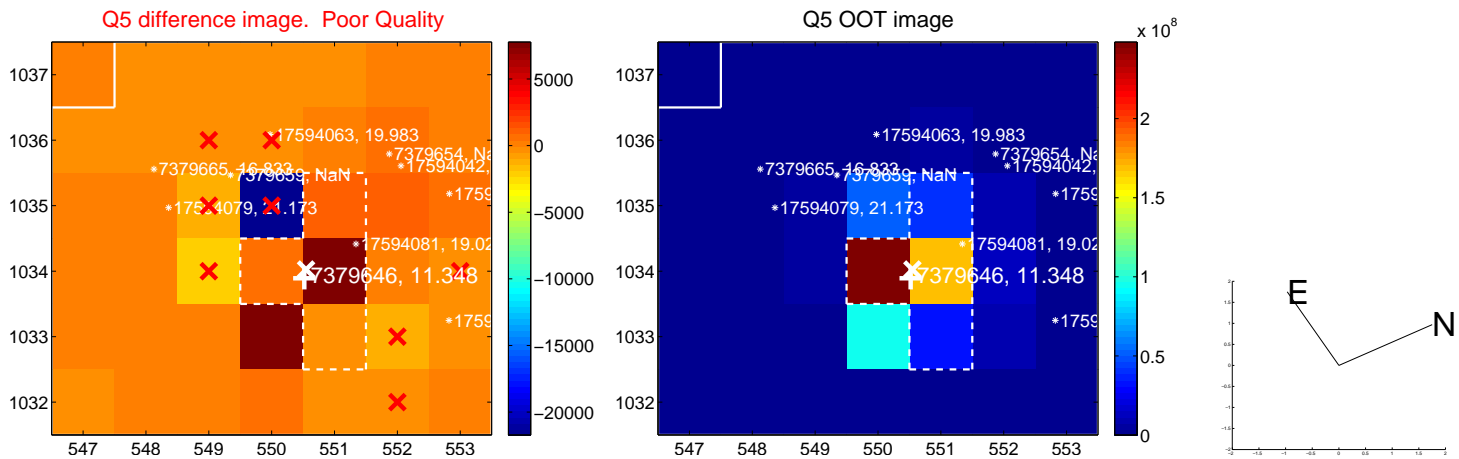


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

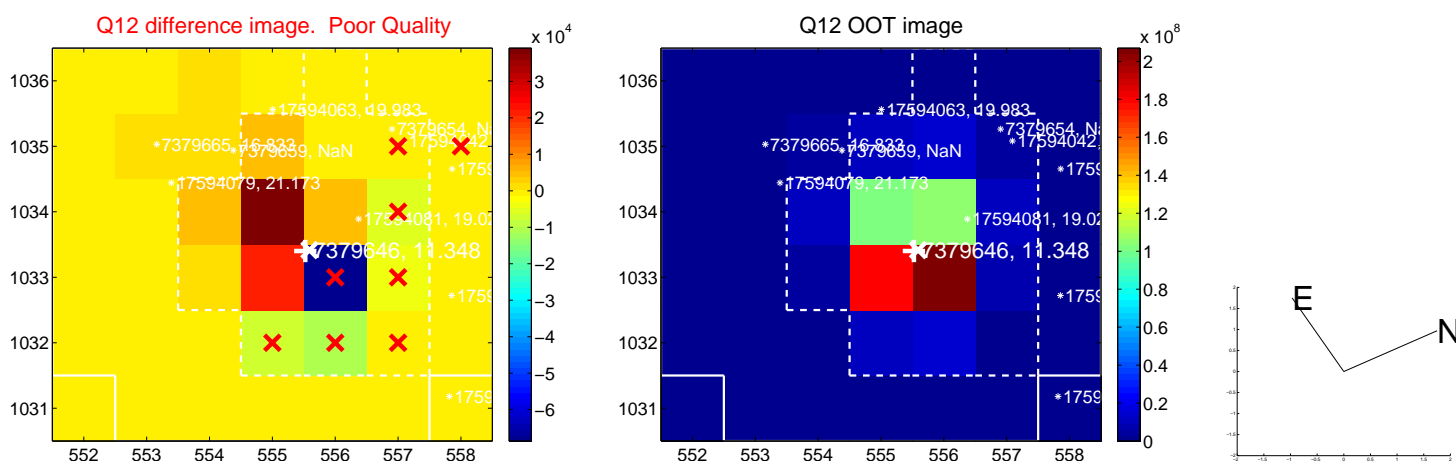
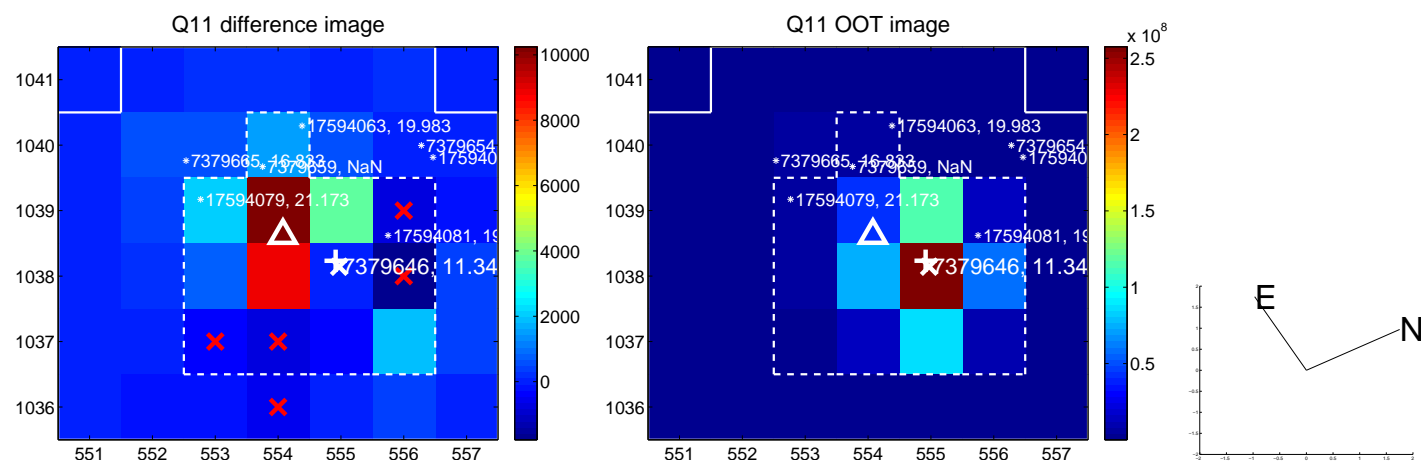
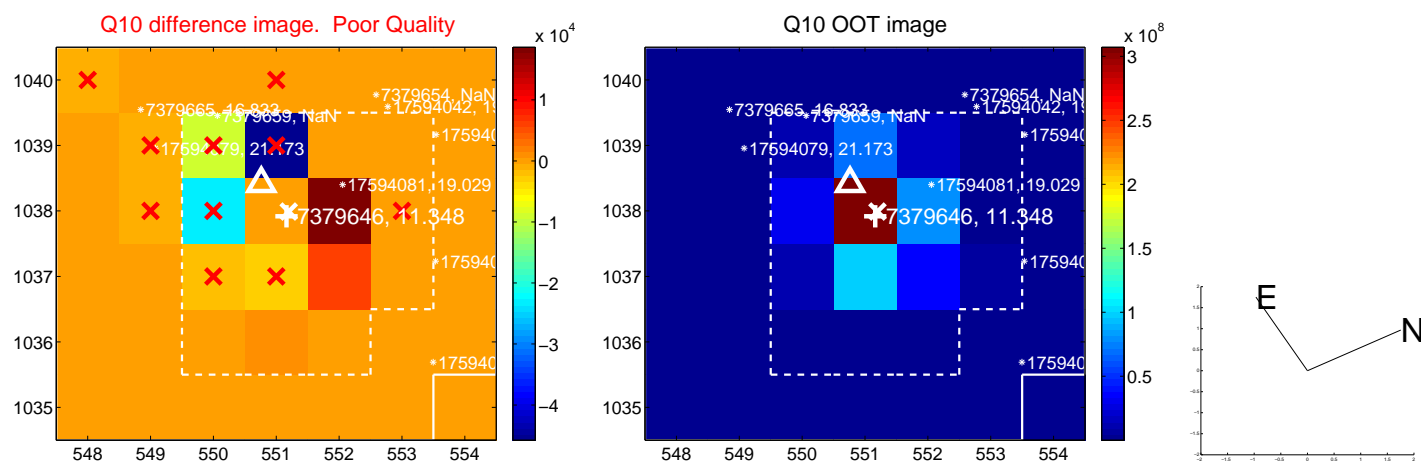
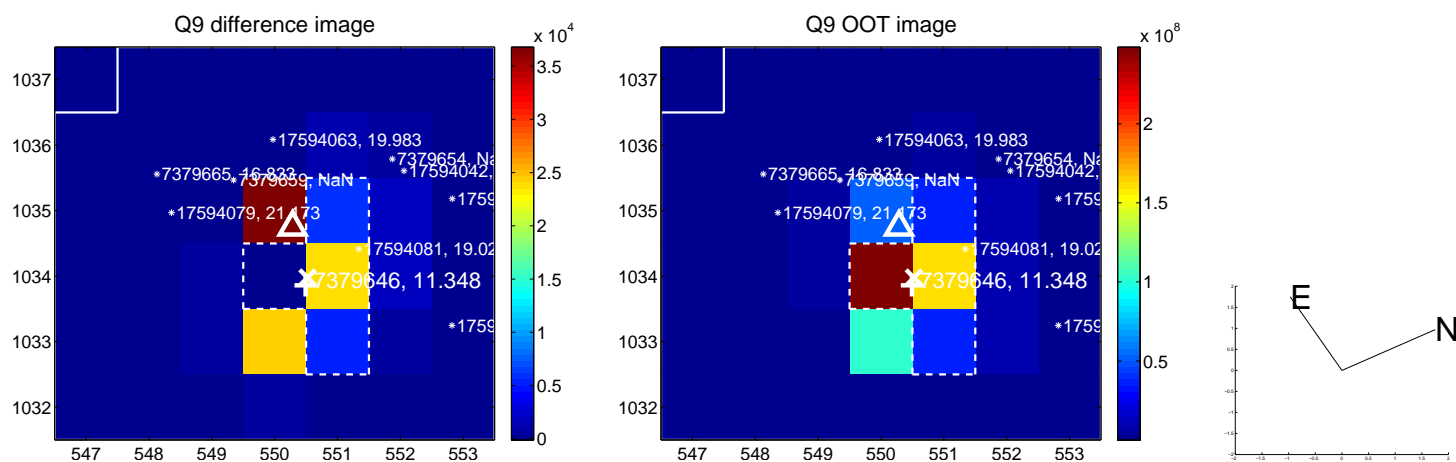


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



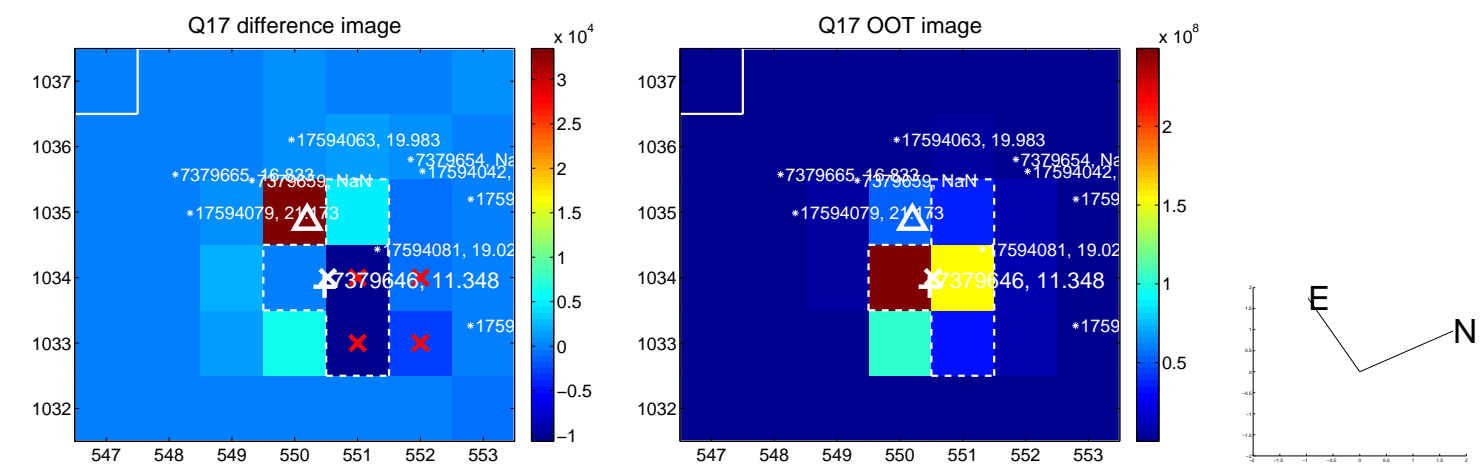


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

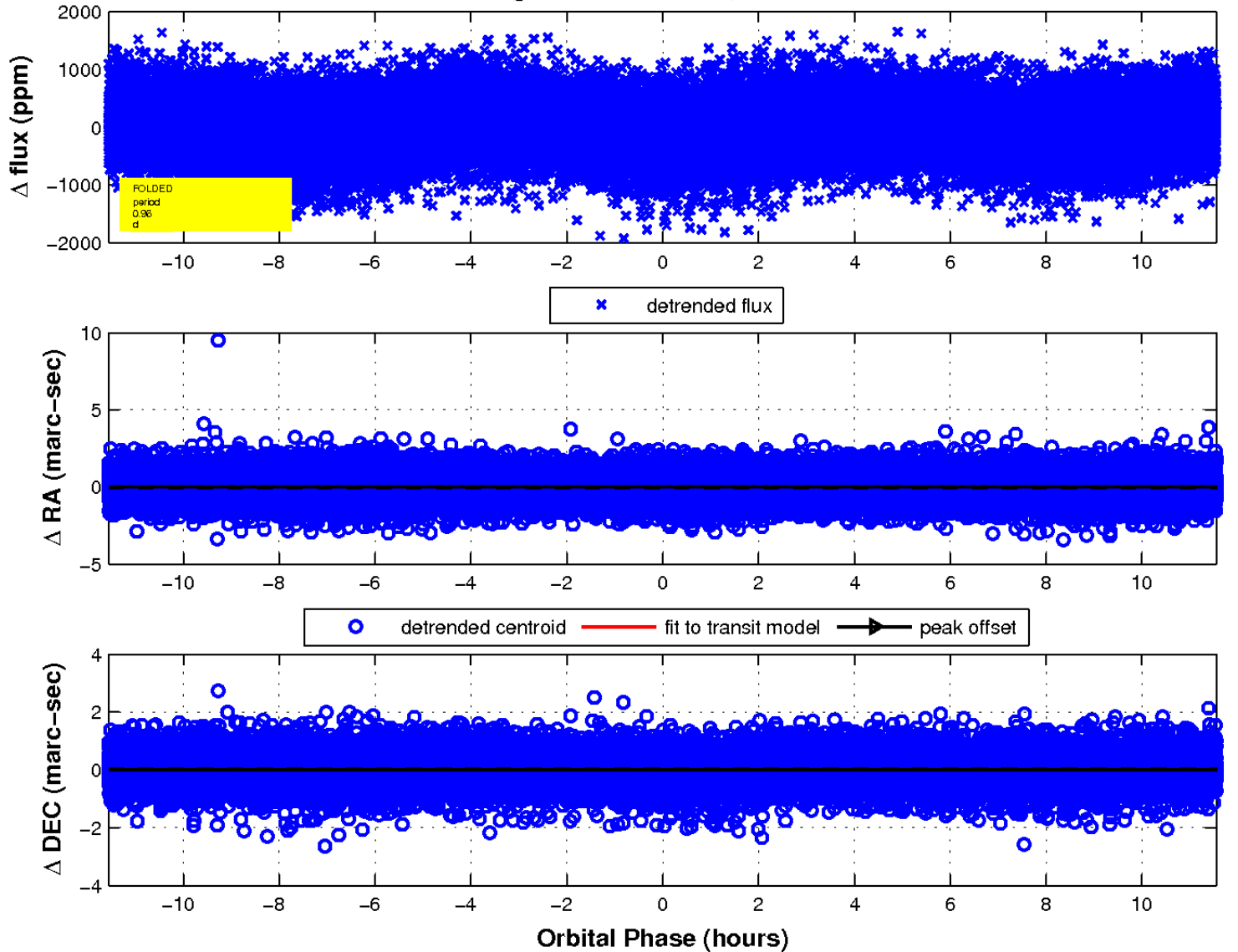




white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

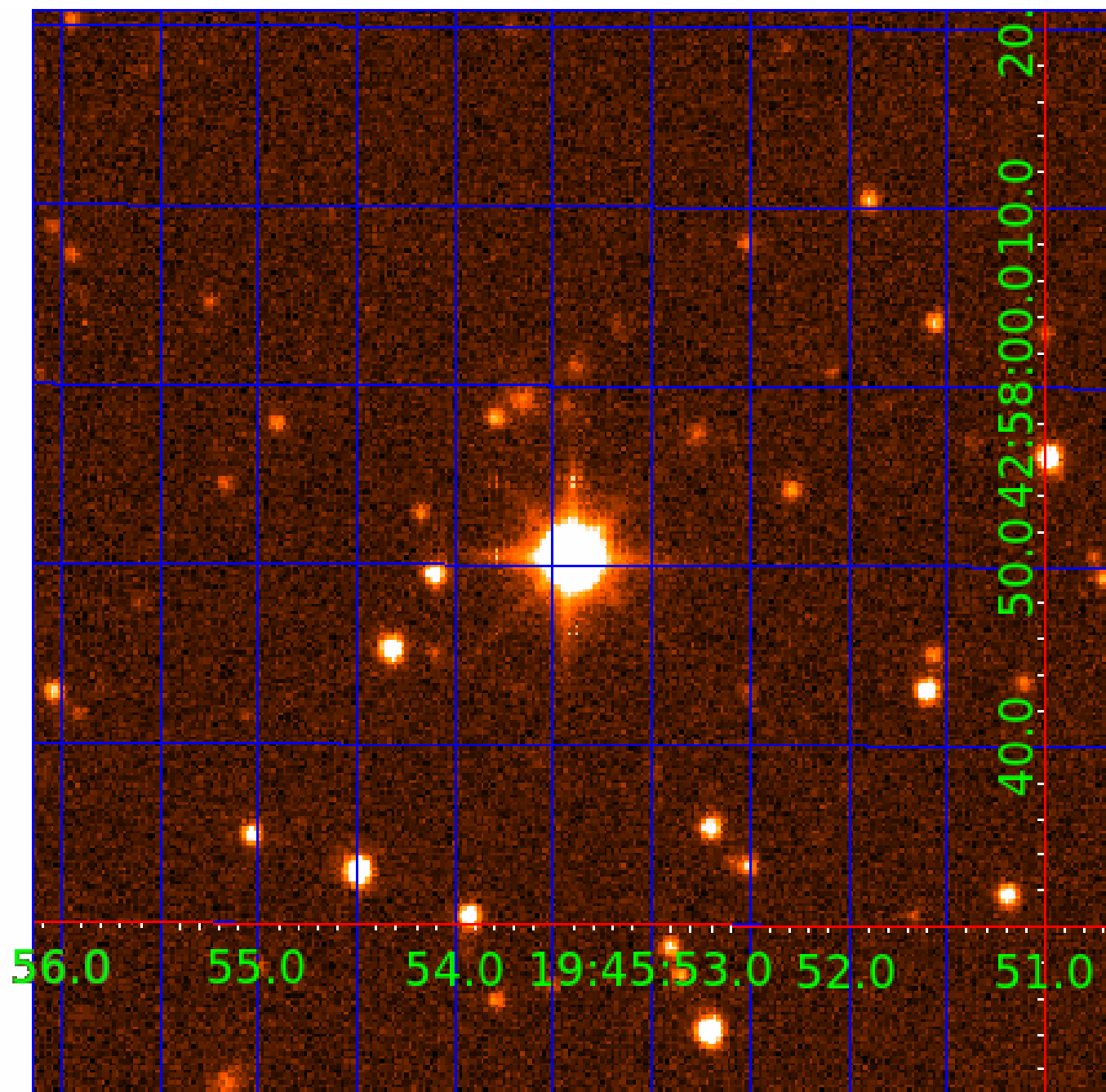


fluxWeightedCentroids, Planet 1 of 4



UKIRT Image

Declination



# KIC 007379646

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007379646-01	OBS	No	0.963456	131.826779	14.8	7.011	9.7	4.1	4.04	7358	1.57	72699.24
007379646-02	OBS	No	97.295571	149.665891	534.9	1.765	10.5	11.4	4.04	7358	9.90	154.59
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007379646-04	OBS	No	28.272278	137.439401	394.9	1.607	7.3	8.0	4.04	7358	8.98	803.20

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007379646-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
007379646-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
007379646-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
007379646-04	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED—HALO_GHOST

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

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

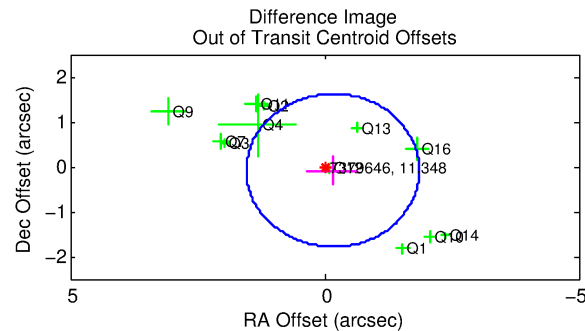
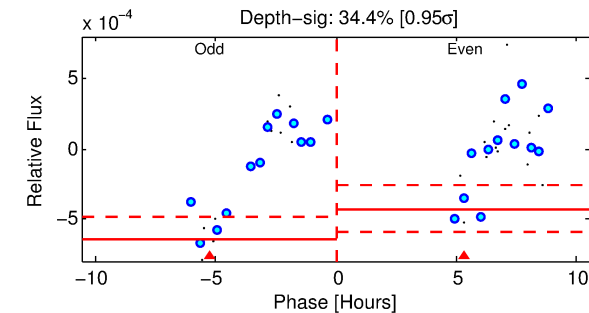
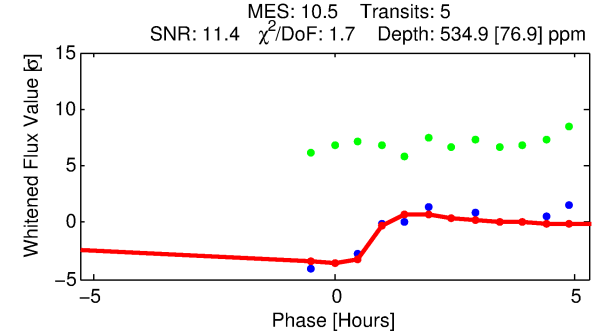
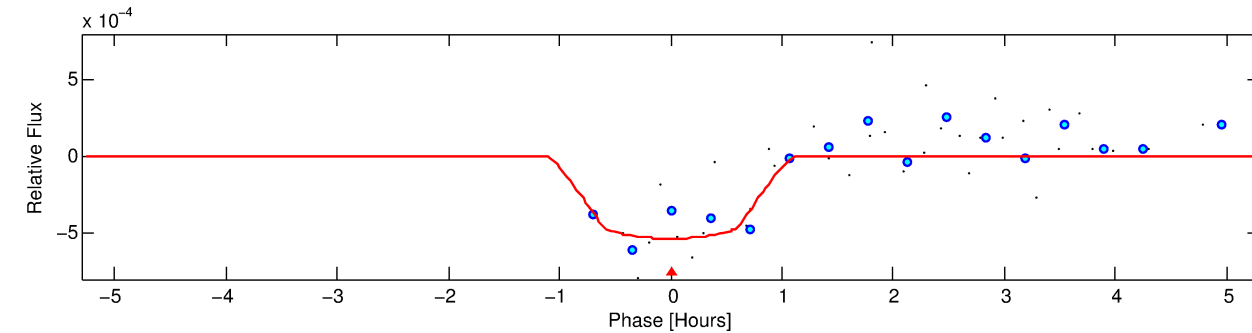
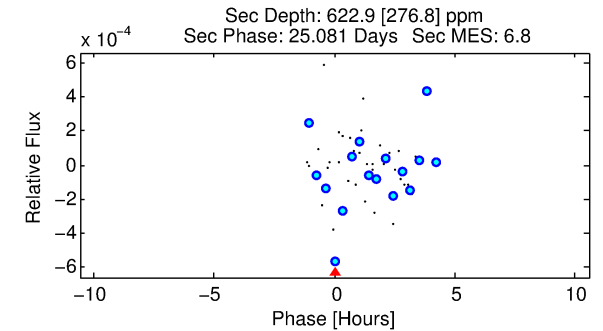
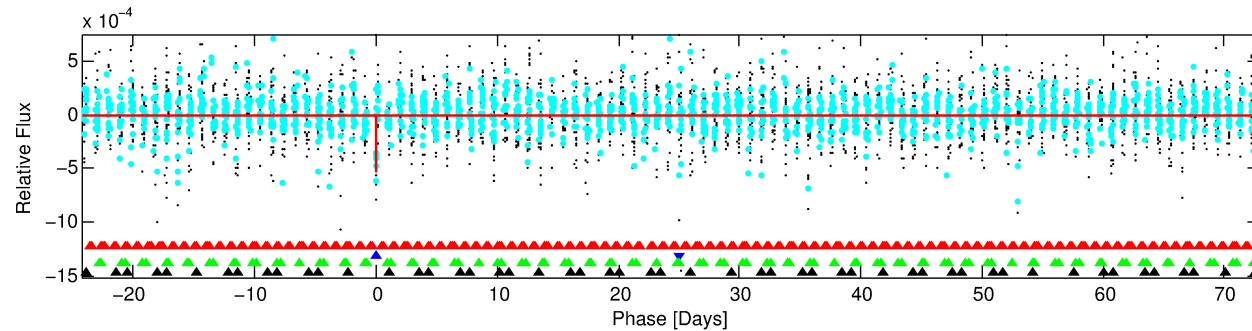
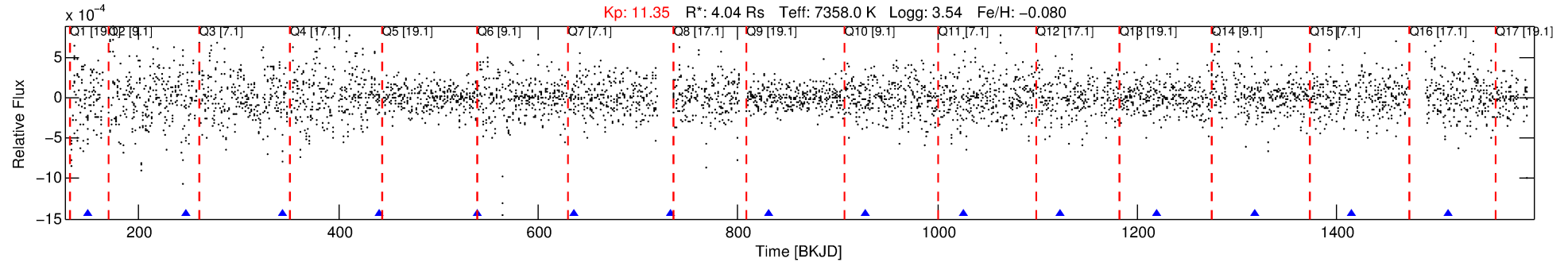
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 007379646-02

No Significant Match Found

# DV One-Page Summary

KIC: 7379646 Candidate: 2 of 4 Period: 97.296 d



## DV Fit Results:

Period = 97.29557 [0.00316] d  
Epoch = 149.6659 [0.0065] BKJD  
Rp/R\* = 0.0225 [0.0427]  
a/R\* = 338.05 [3789.64]  
b = 0.63 [10.85]  
Seff = 154.59 [151.29]  
Teq = 899 [220] K  
Rp = 9.90 [19.62] Re  
a = 0.5262 [0.3047] AU  
Ag = 968.66 [3826.87] [0.25σ]  
Teffp = 7755 [7435] K [0.92σ]

## DV Diagnostic Results:

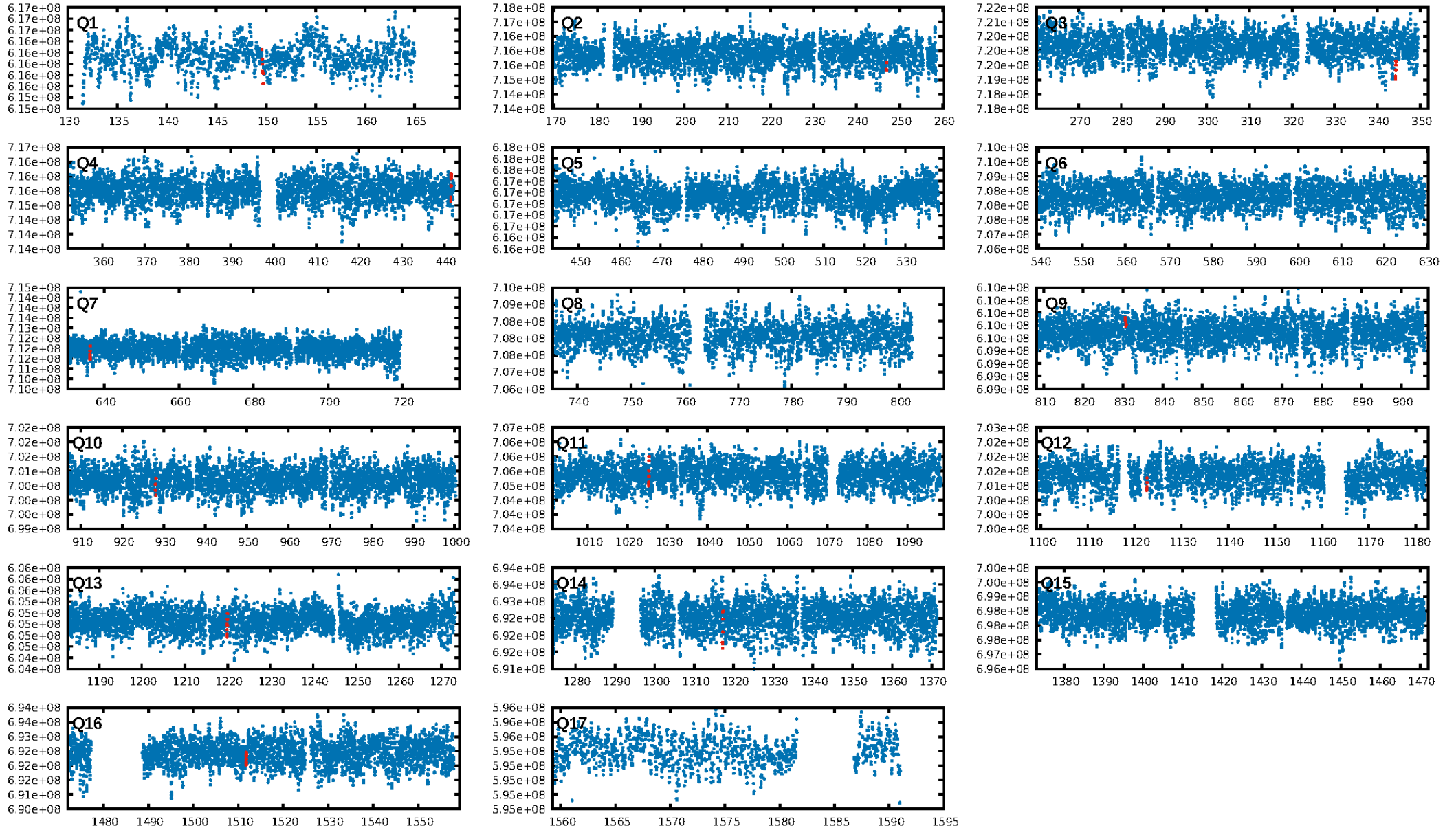
ShortPeriod-sig: 100.0% [693.97σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 2.1%  
ModelChiSquareGof-sig: 98.4%  
**Bootstrap-pfa: 1.78e-11**  
RollingBand-fgt: 1.00 [4/4]  
**GhostDiagnostic-chr: 0.4685**  
Centroid-sig: 22.2%  
Centroid-so: 0.319 arcsec [1.09σ]  
OotOffset-rm: 0.182 arcsec [0.32σ]  
OotOffset-st: 3/3/3/3 [12]  
KicOffset-rm: 0.366 arcsec [0.66σ]  
KicOffset-st: 3/3/3/3 [12]  
DiffImageQuality-fgm: 0.42 [5/12]  
DiffImageOverlap-fno: 0.50 [6/12]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 10:19:28 Z

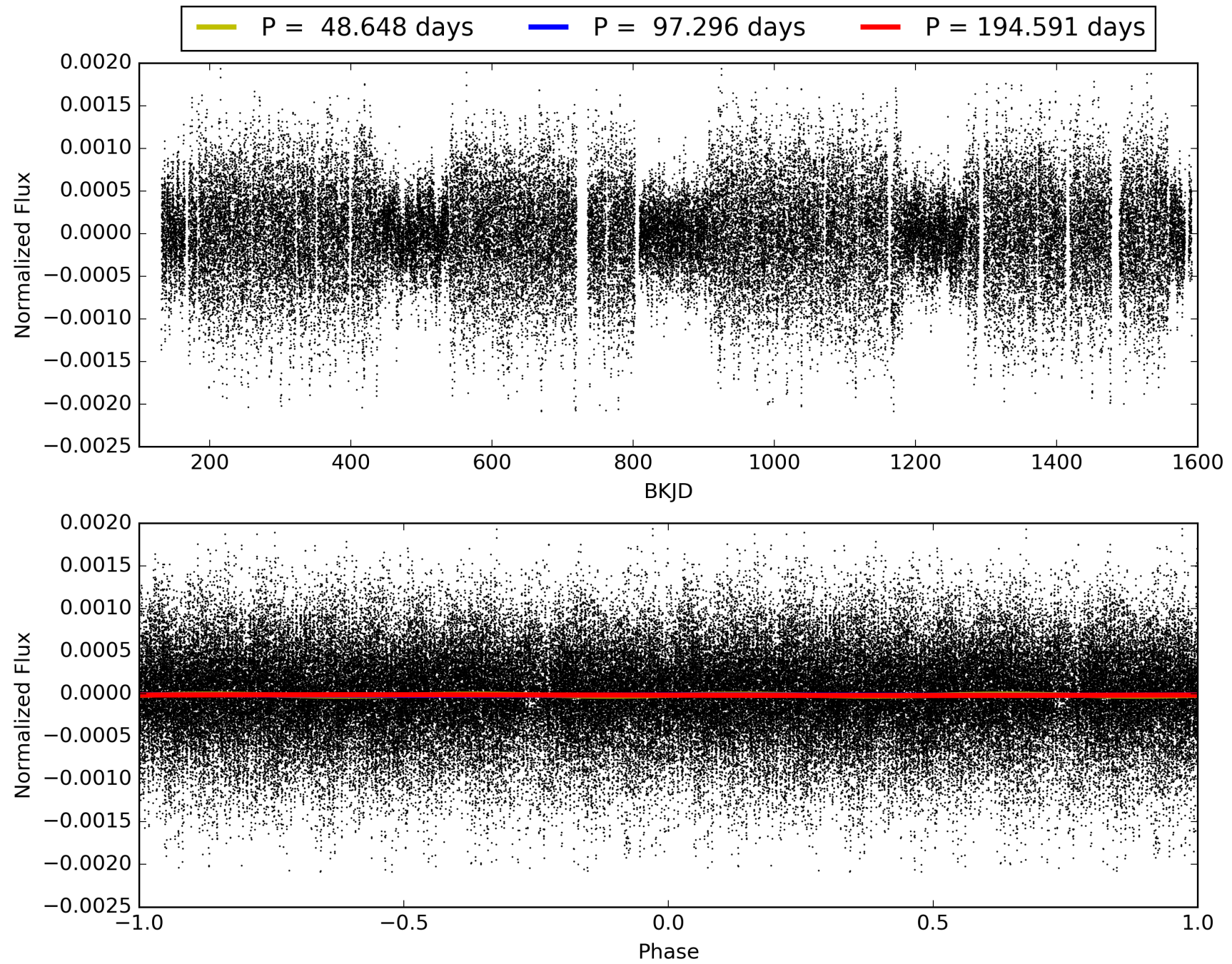
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center



# TCE 007379646-02, PDC Light Curves

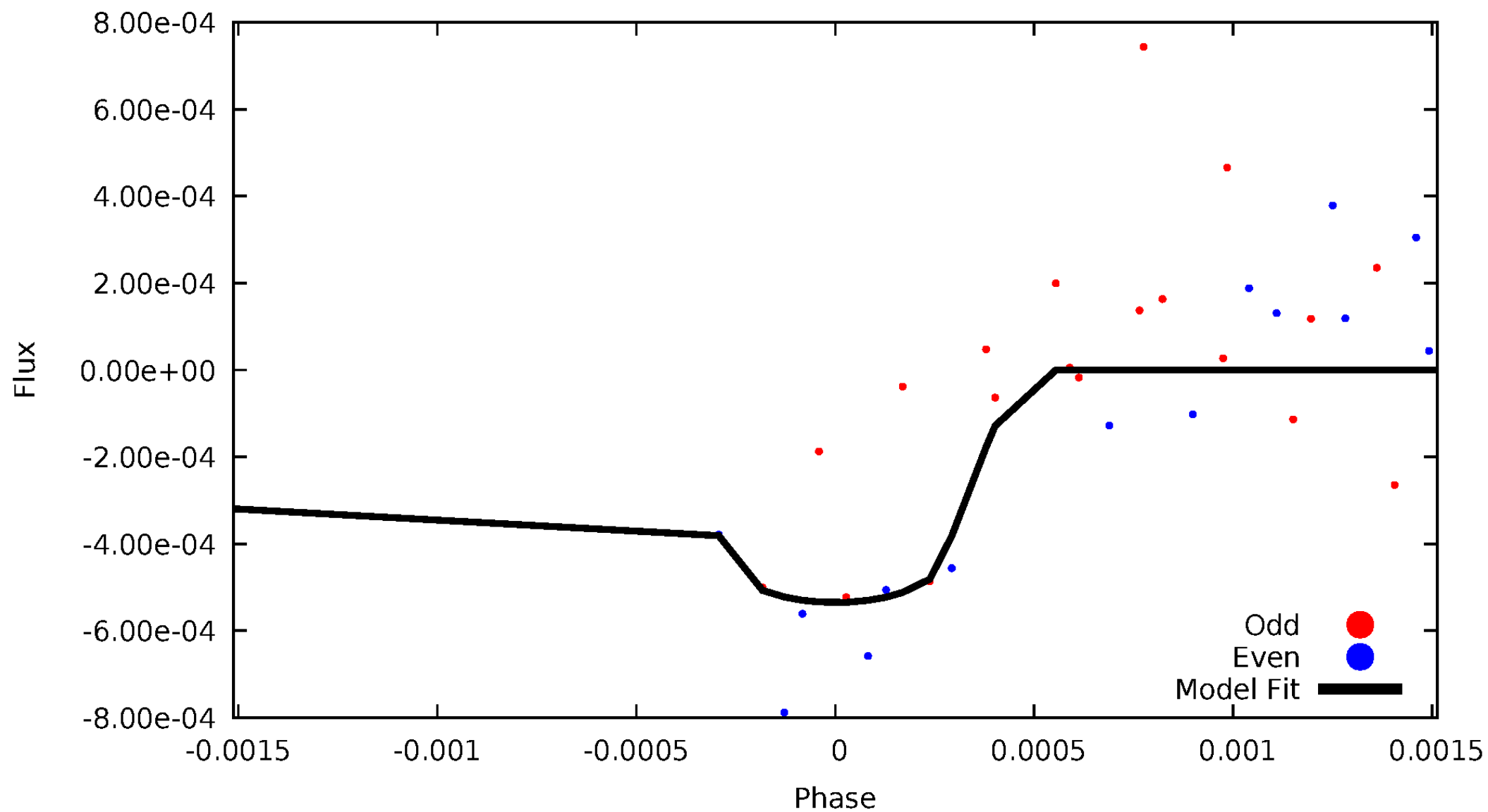


TCE 007379646-02



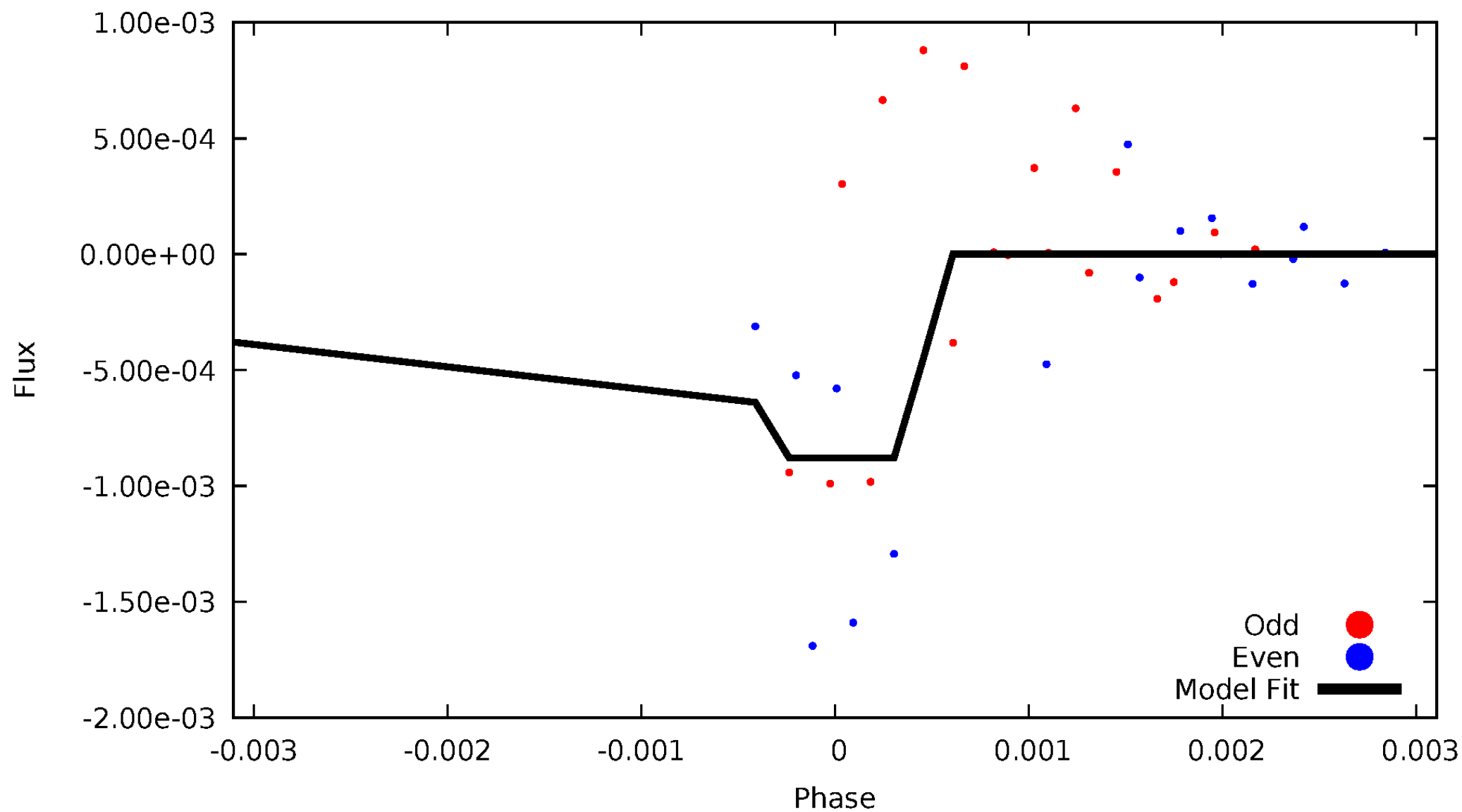
# DV Odd/Even

TCE 007379646-02



# ALT Odd/Even

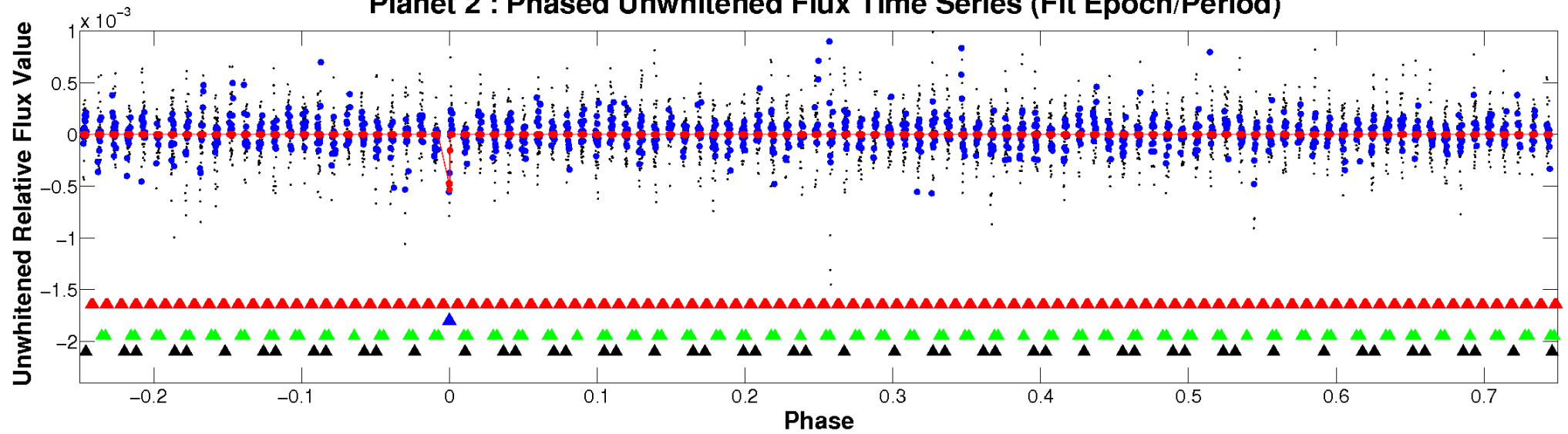
TCE 007379646-02



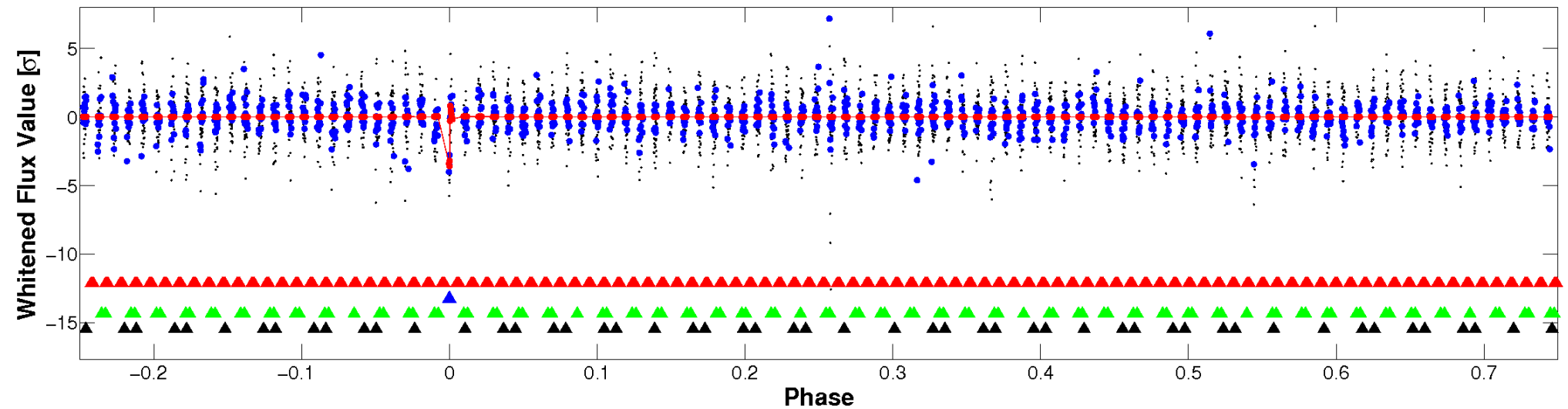


# Non-Whitened Vs. Whitened Light Curve

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

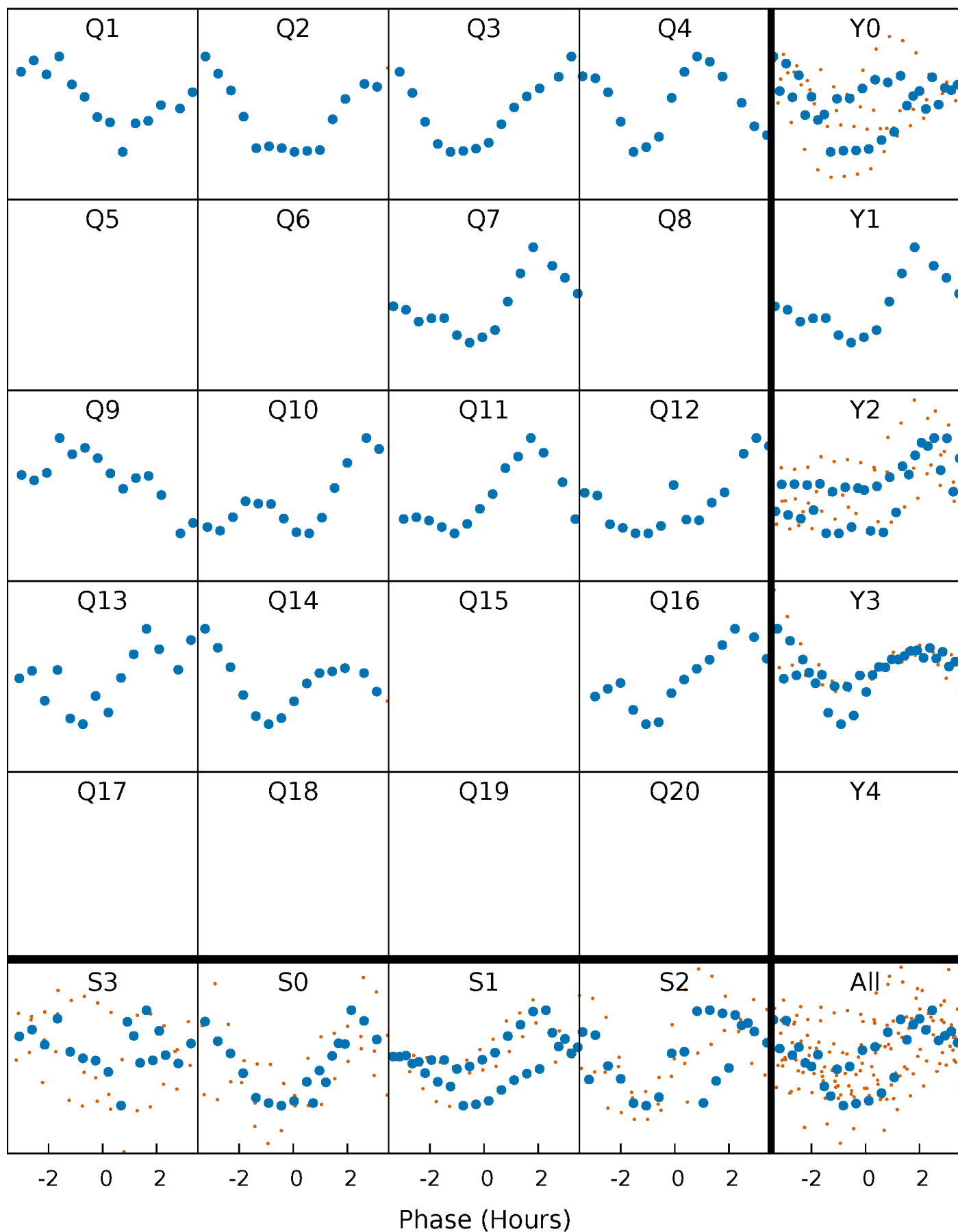


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



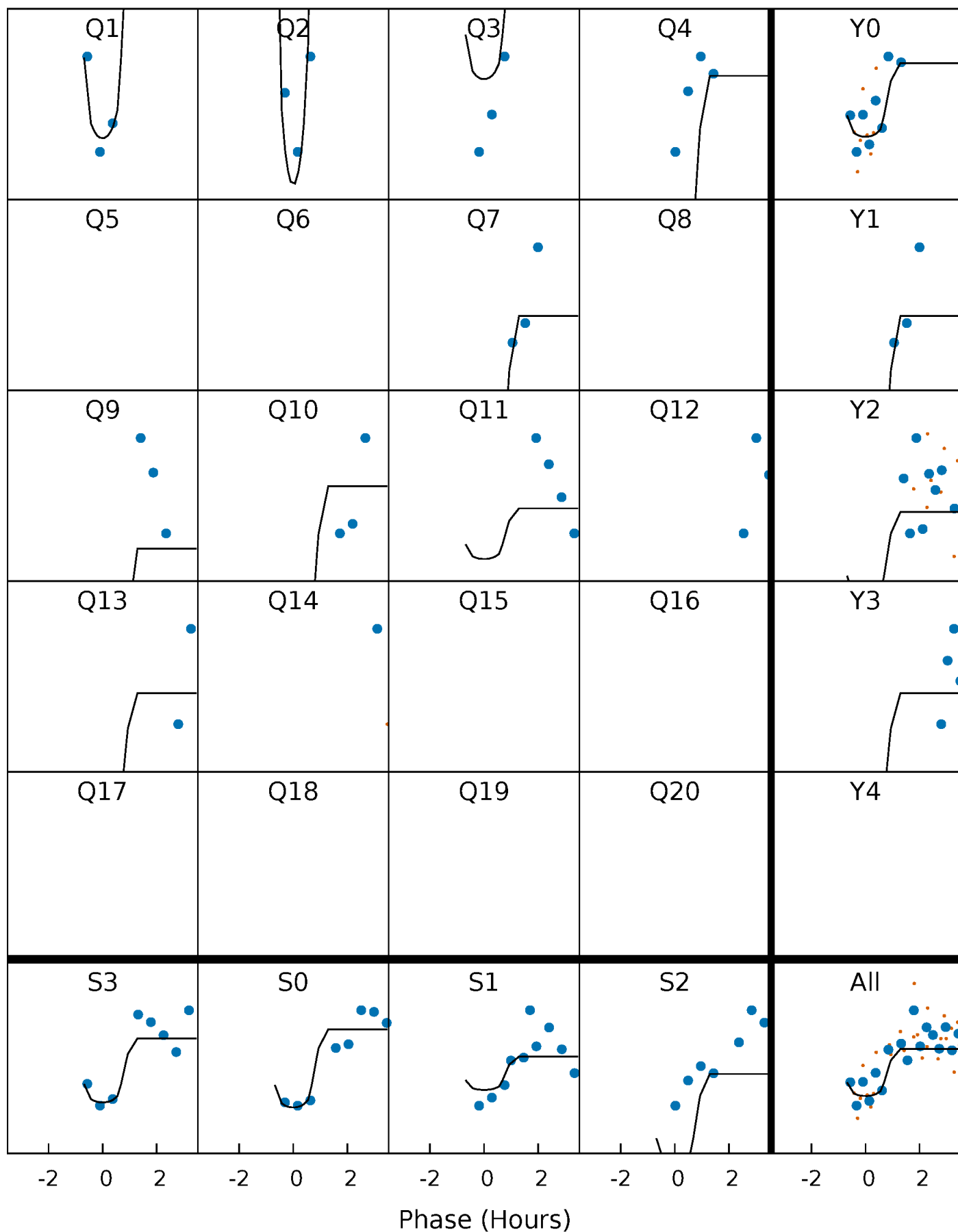
# PDC Quarter-Phased Transit Curves

TCE 007379646-02 P= 97.295571 Days  $T_0=149.665891$  (BKJD)



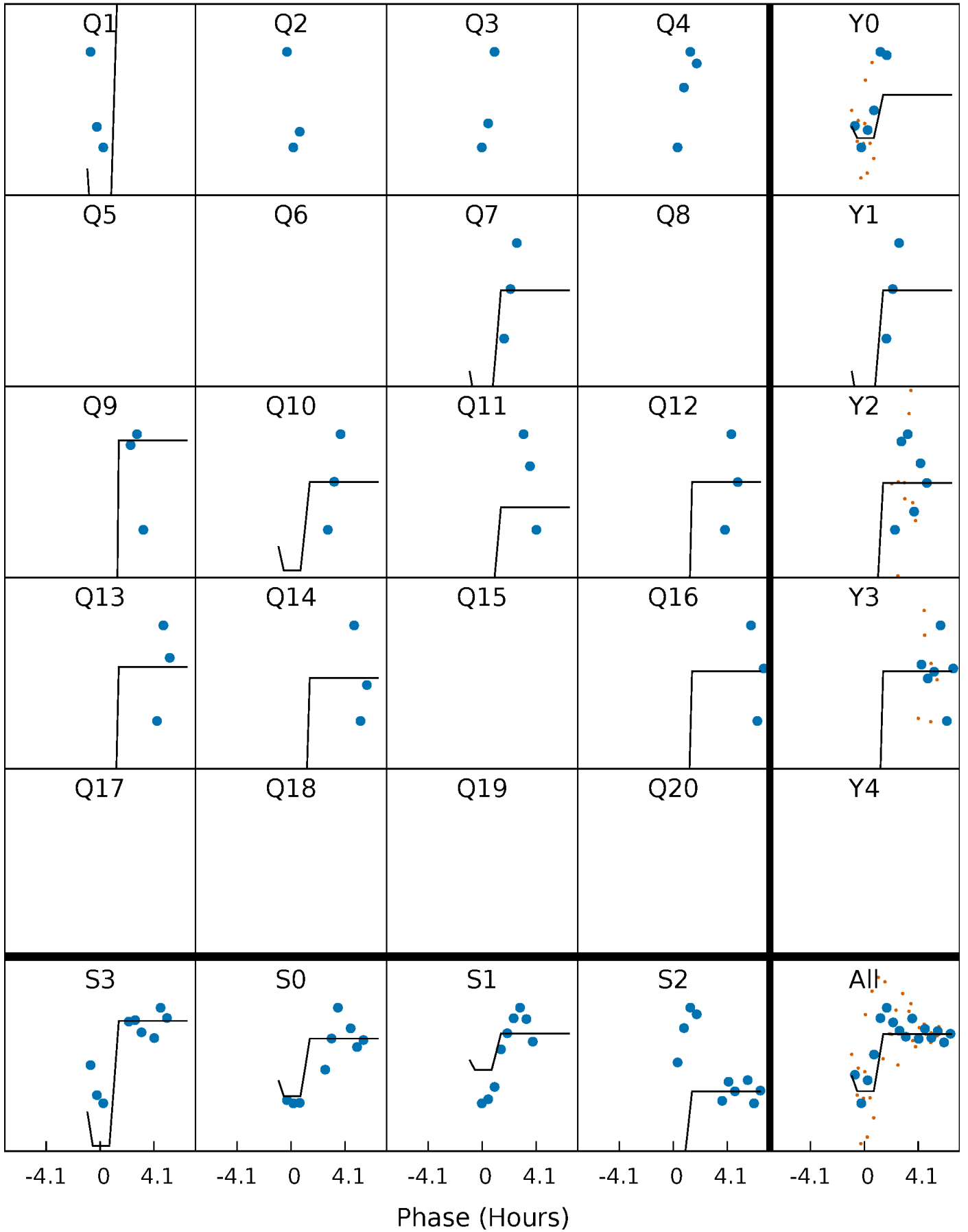
# DV Quarter-Phased Transit Curves

TCE 007379646-02     $P = 97.295571$  Days     $T_0 = 149.665891$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 007379646-02 P= 97.289231 Days  $T_0=149.677398$  (BKJD)

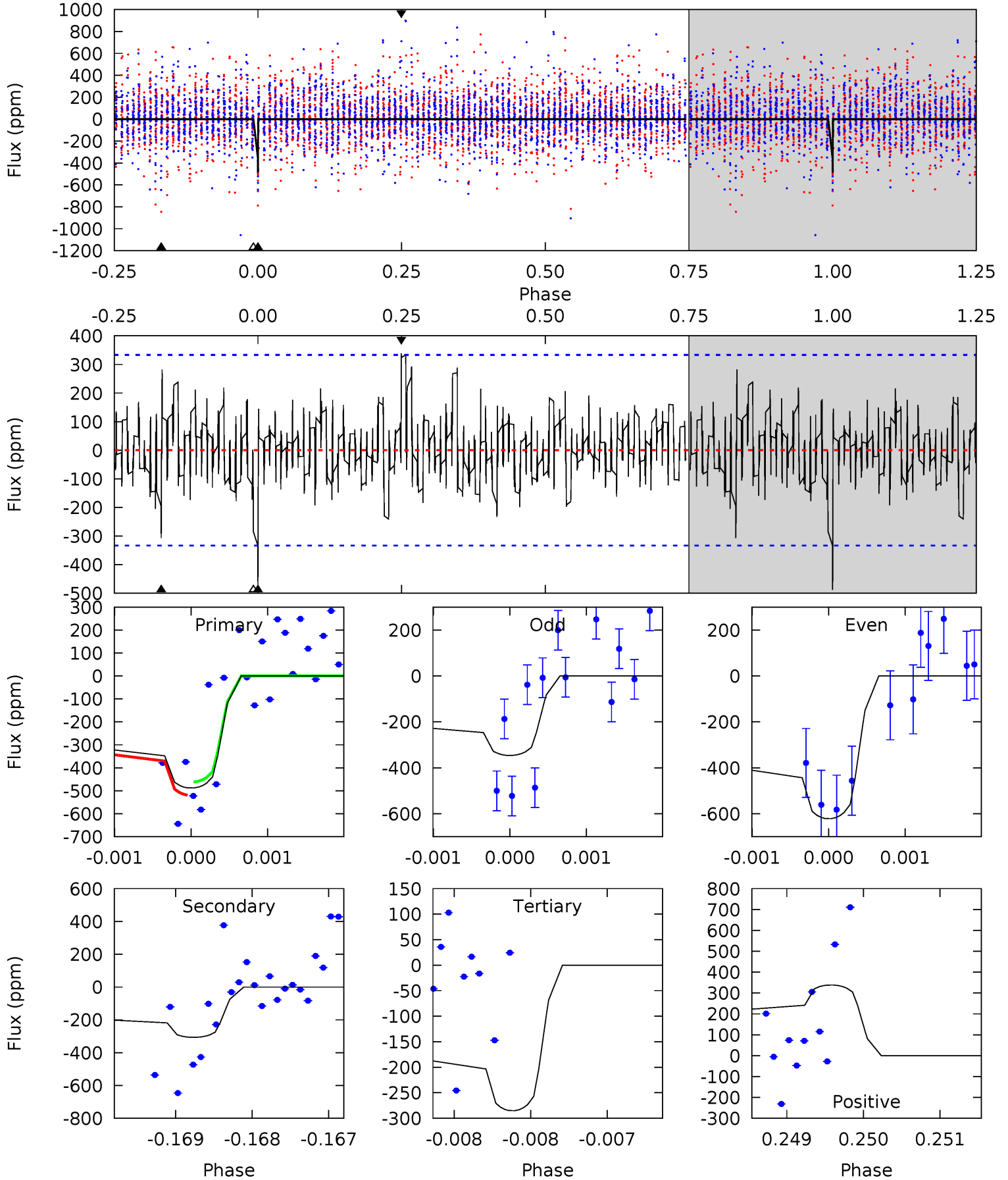




# DV Model-Shift Uniqueness Test

007379646-02, P = 97.295571 Days, E = 52.370320 Days

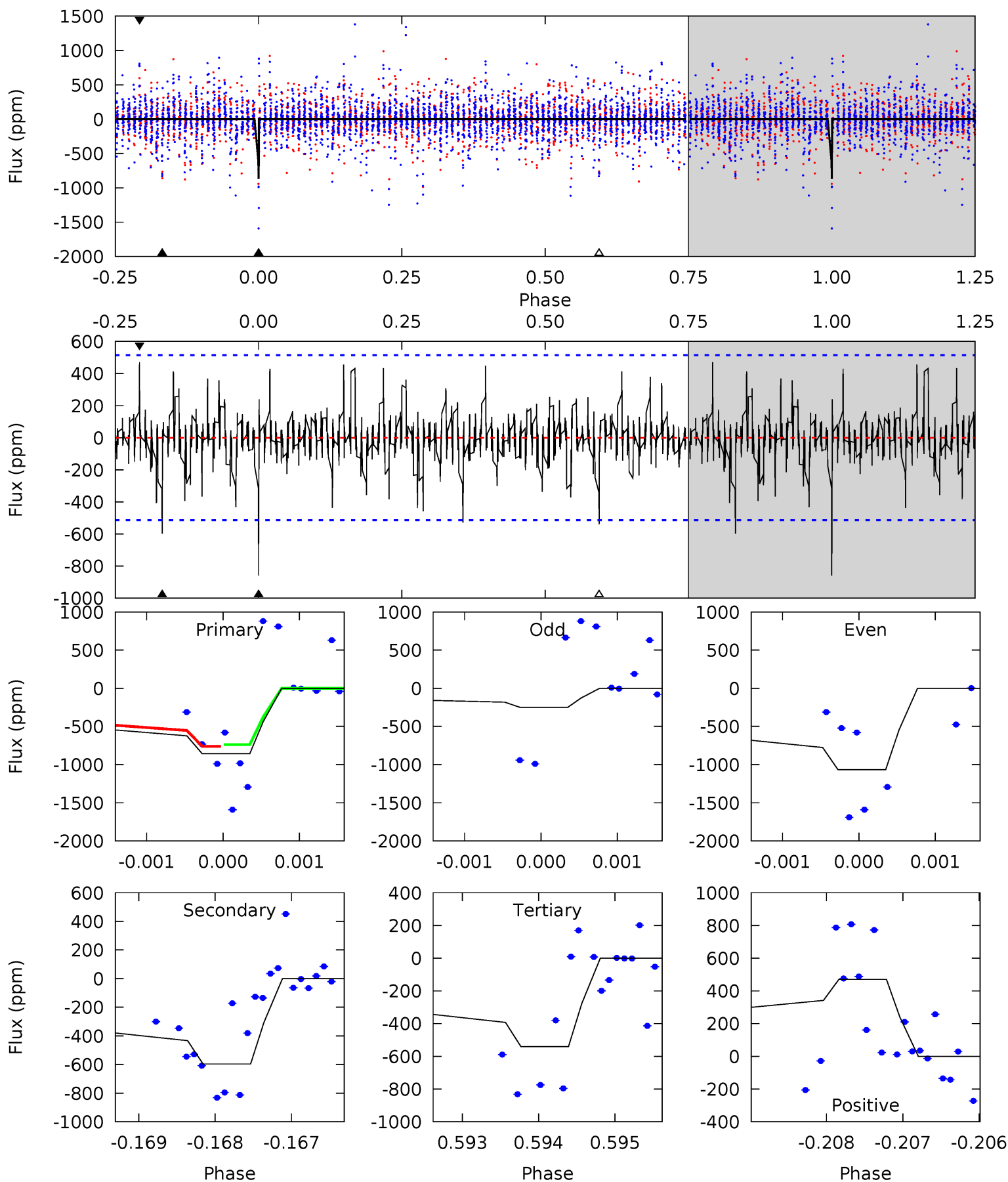
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.03	5.04	4.69	5.57	5.48	3.34	1.30	3.34	2.46	0.35	-0.52	2.33	0.88	0.41	0.45



# Alt Model-Shift Uniqueness Test

007379646-02, P = 97.289231 Days, E = 52.388167 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
9.13	6.35	5.75	5.01	5.48	3.33	1.15	3.37	4.12	0.60	1.34	4.15	0.80	0.35	0.11



### Stellar Parameters For KIC 007379646

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$7358^{+205}_{-308}$	$3.538^{+0.580}_{-0.061}$	$-0.080^{+0.250}_{-0.300}$	$4.037^{+0.396}_{-2.242}$	$2.054^{+0.134}_{-0.570}$	$0.044^{+0.322}_{-0.010}$
	+3%/-4%	+16%/-2%	+312%/-375%	+10%/-56%	+7%/-28%	+733%/-22%
Source	KIC0	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 007379646-02 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-307 \pm 61$	$15.24^{+14.07}_{-10.00}$	$1210^{+82}_{-170}$	$4880^{+3596}_{-1023}$	$195^{+1652}_{-142}$
Alt.	$-596 \pm 94$	$16.14^{+16.54}_{-10.93}$	$1207^{+78}_{-158}$	$5447^{+4745}_{-1251}$	$344^{+2890}_{-259}$

$T_{\text{max}}$  = Theoretical Maximum Planetary Temperature

$T_{\text{obs}}$  = Observed Planetary Temperature (Assuming  $A=0.3$ )

$A_{\text{obs}}$  = Observed Albedo (Assuming  $T=0$ )

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

## DV Centroid Data

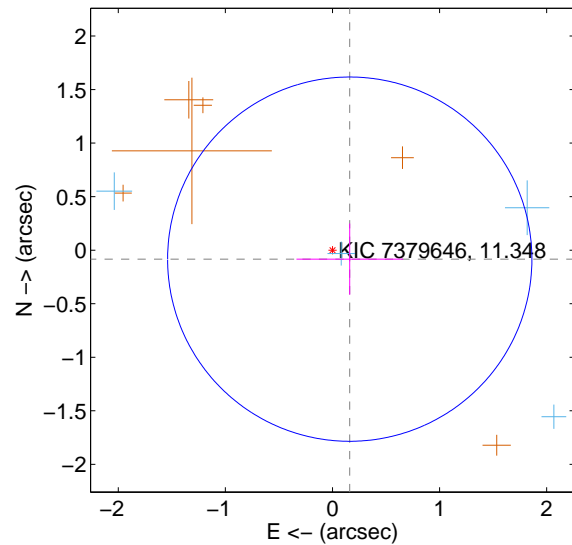
Supplemental centroid analysis for 007379646-02. **Kepler magnitude: 11.35.** Transit SNR 11.36

There are 5 quarters with good PRF difference image offsets

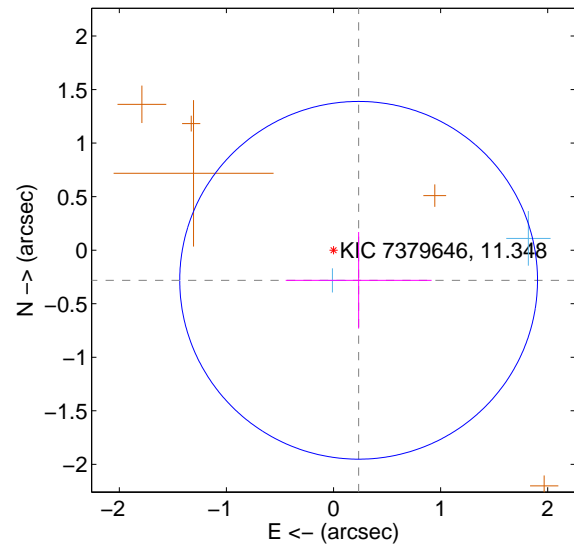
The direct PRF centroid is offset from the target star catalog position by about 0.29 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.182 \pm 0.567$	0.32	$-0.161 \pm 0.498$	$-0.084 \pm 0.332$
PRF-fit source offset from KIC position	$0.366 \pm 0.557$	0.66	$-0.235 \pm 0.681$	$-0.281 \pm 0.451$
photometric centroid source offset	$0.32 \pm 0.29$	1.09	$-0.26 \pm 0.31$	$-0.18 \pm 0.24$

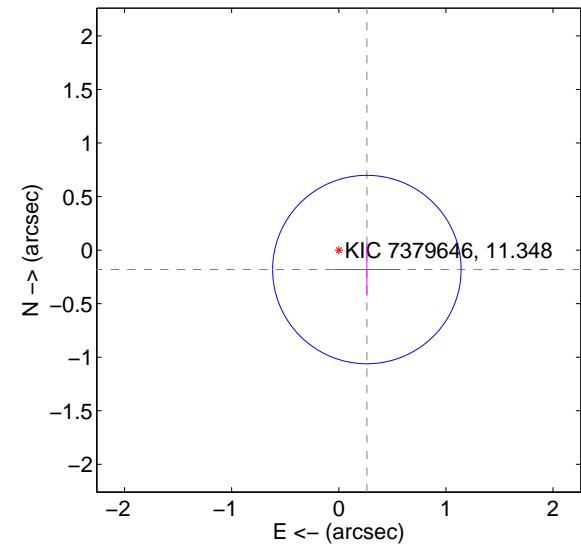
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



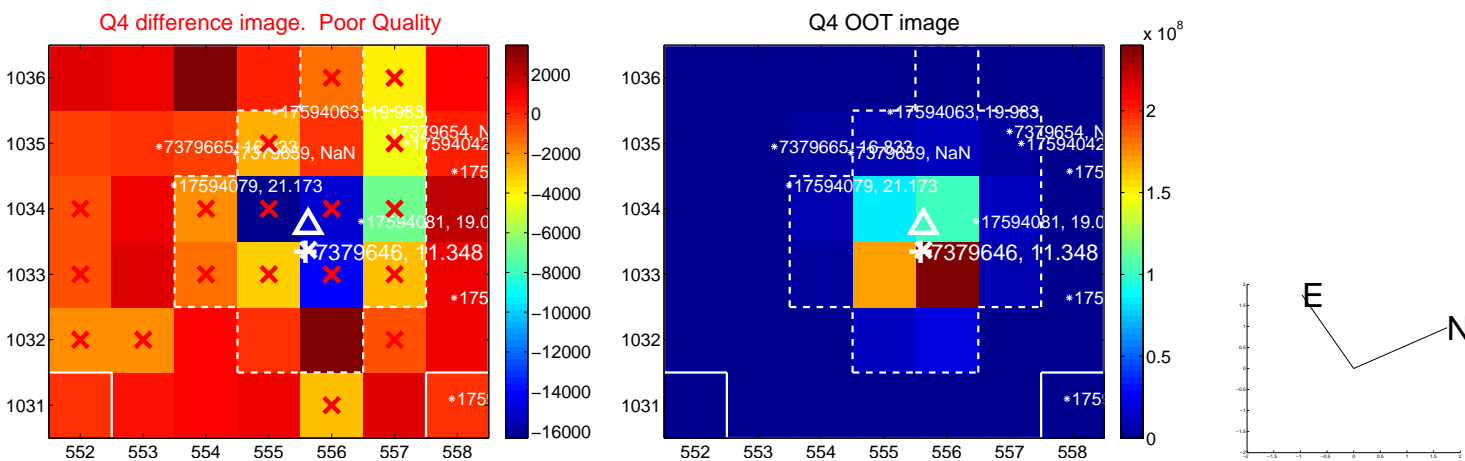
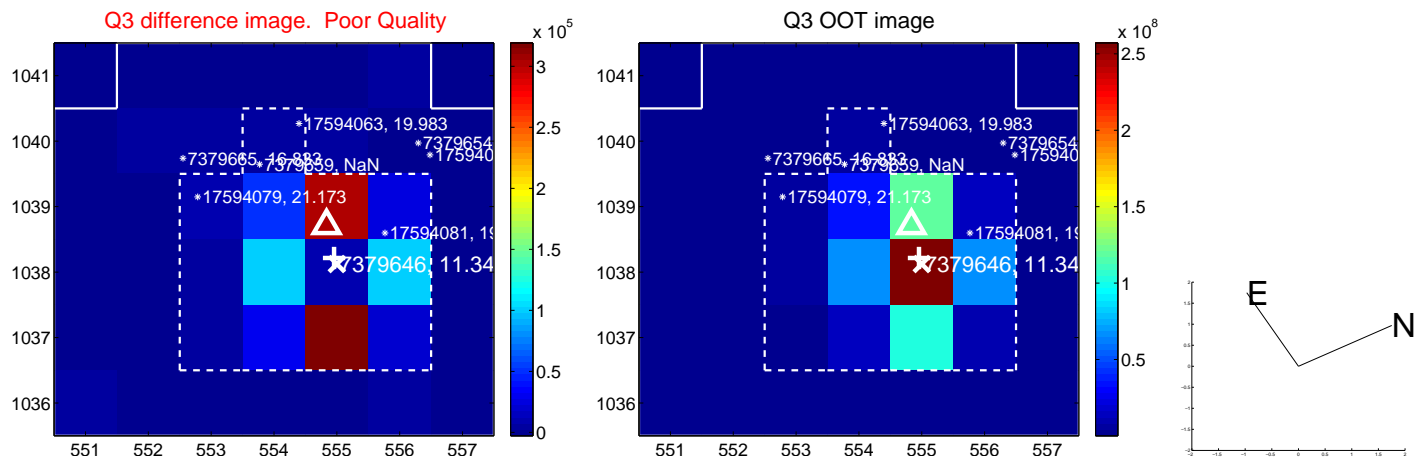
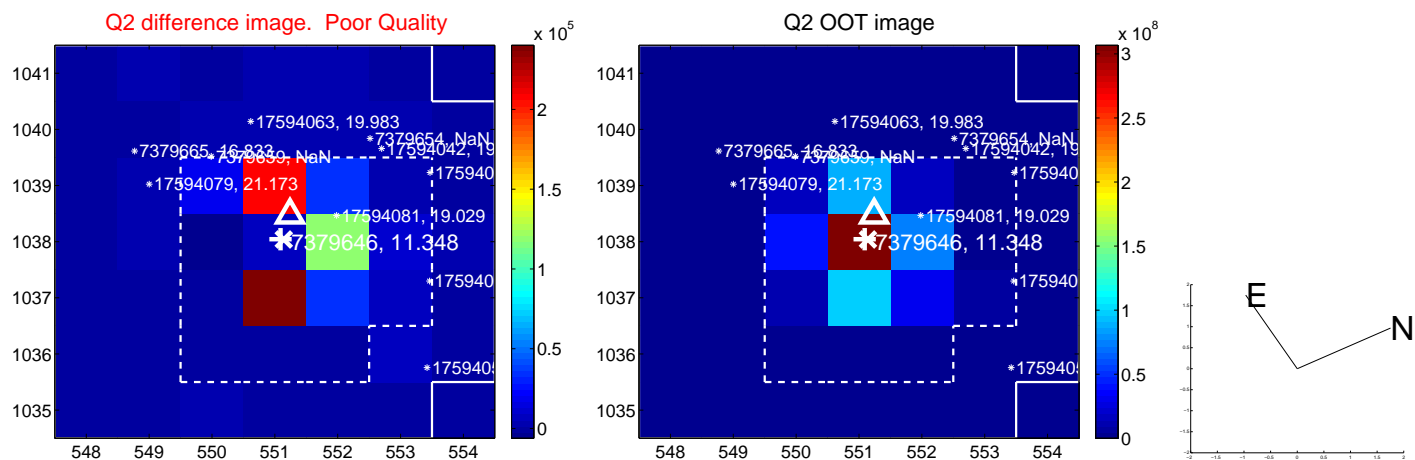
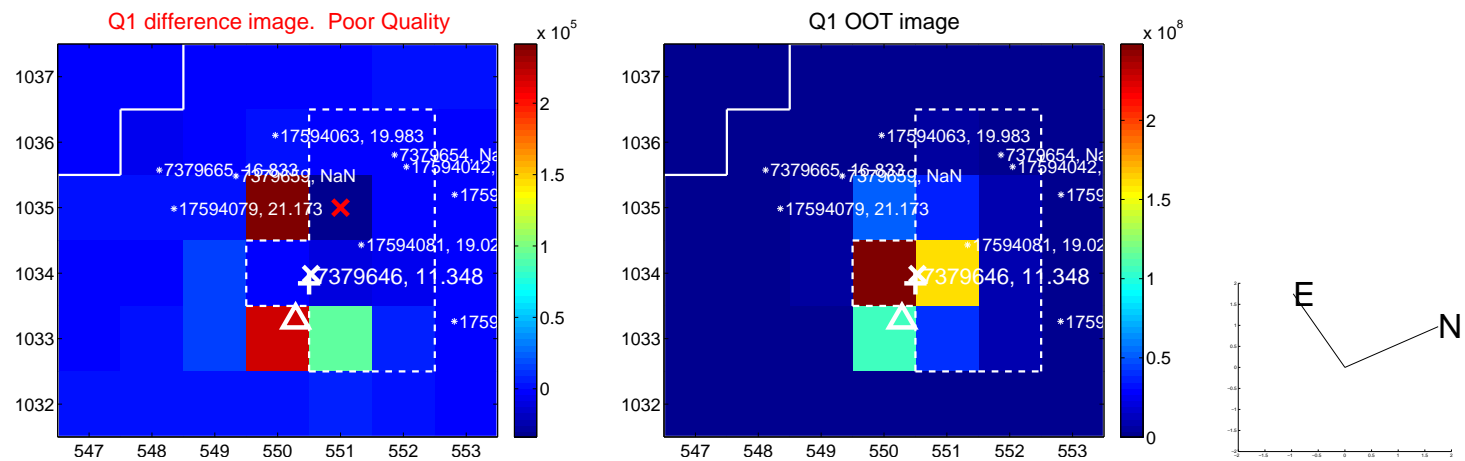
offset from photometric centroids



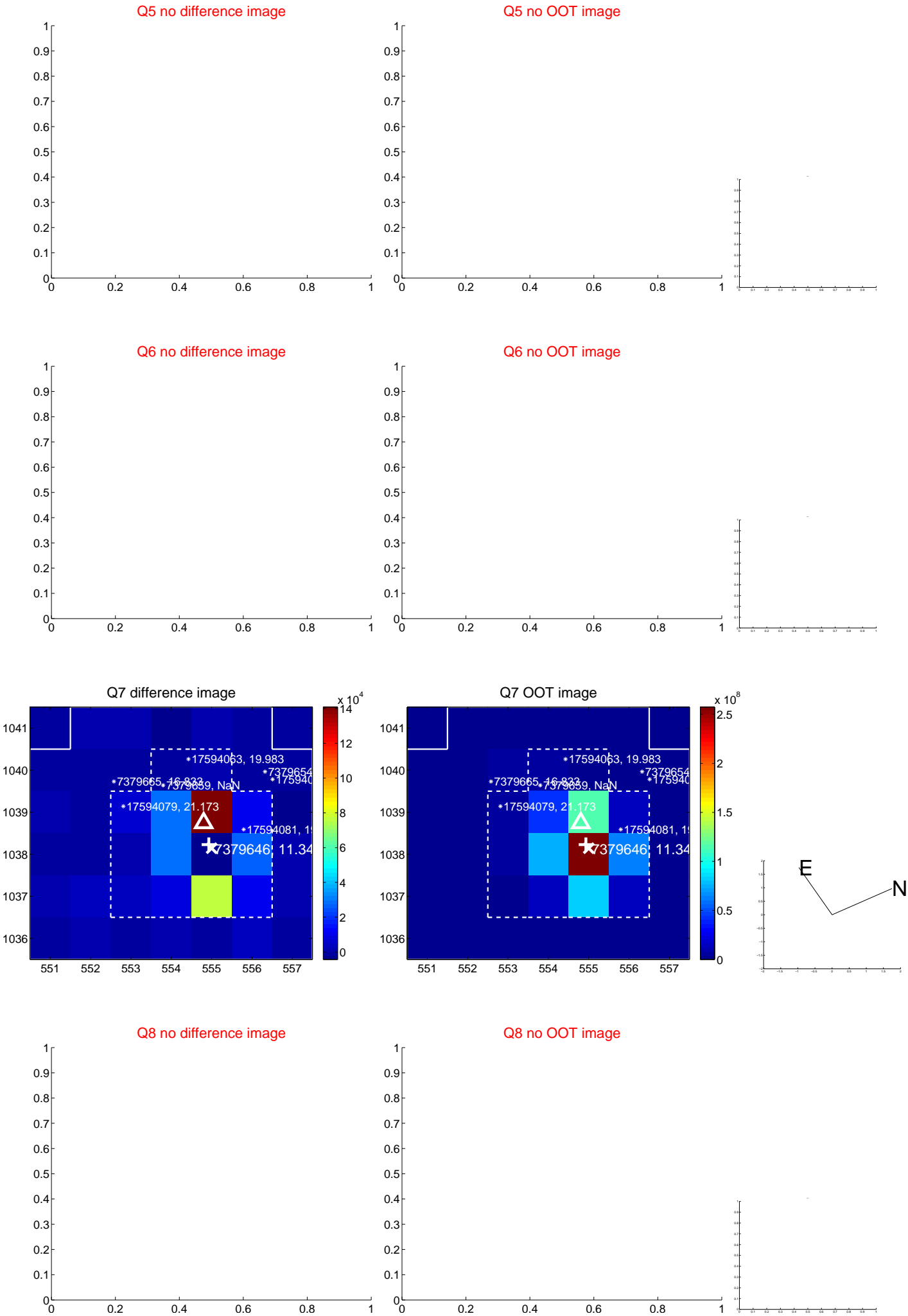
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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



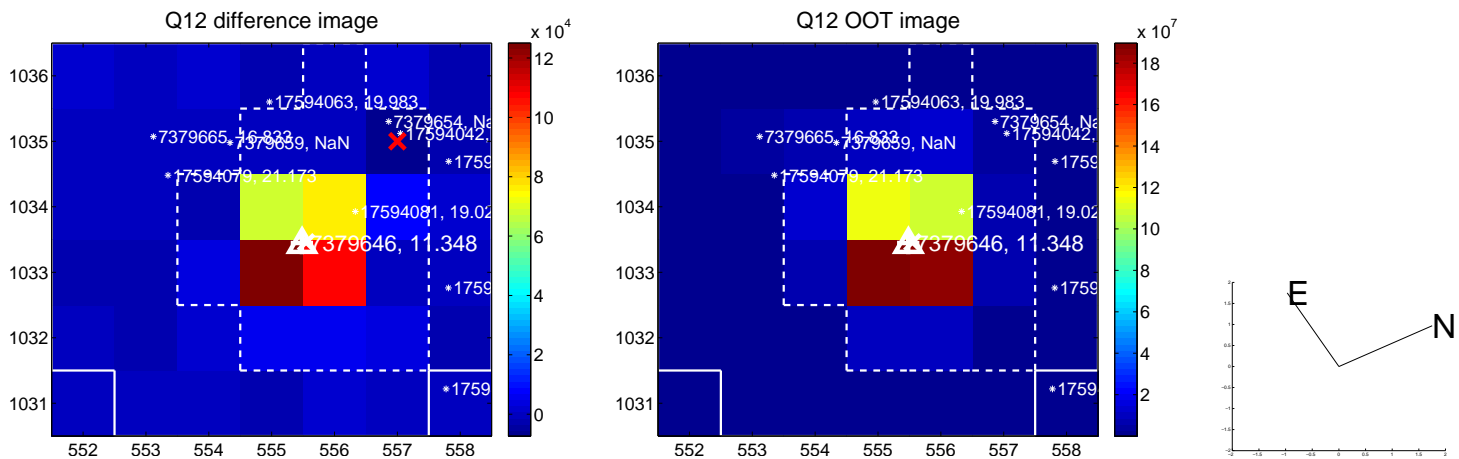
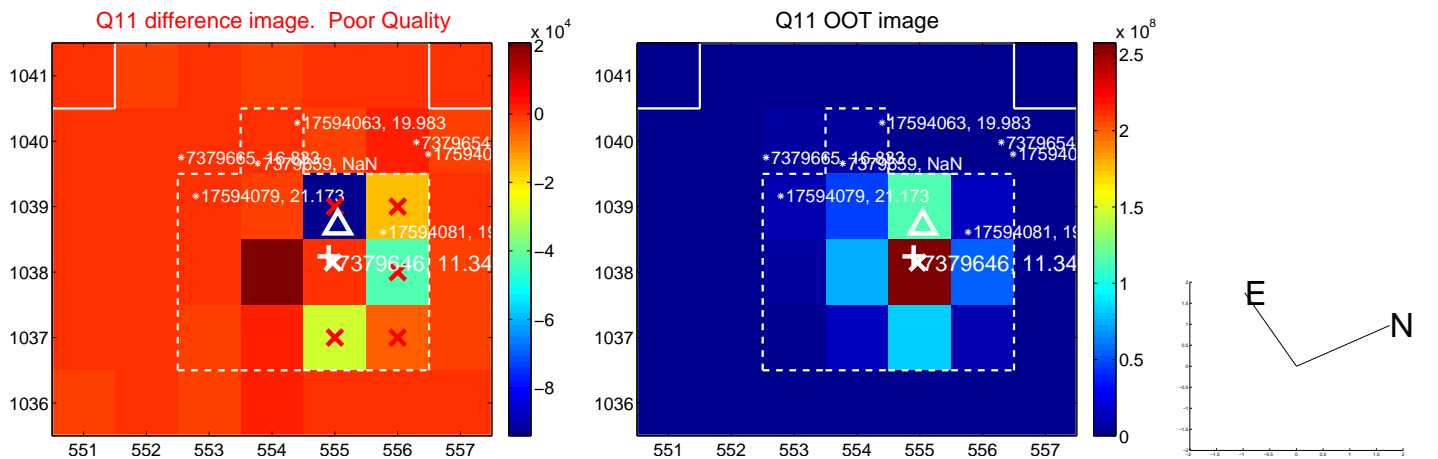
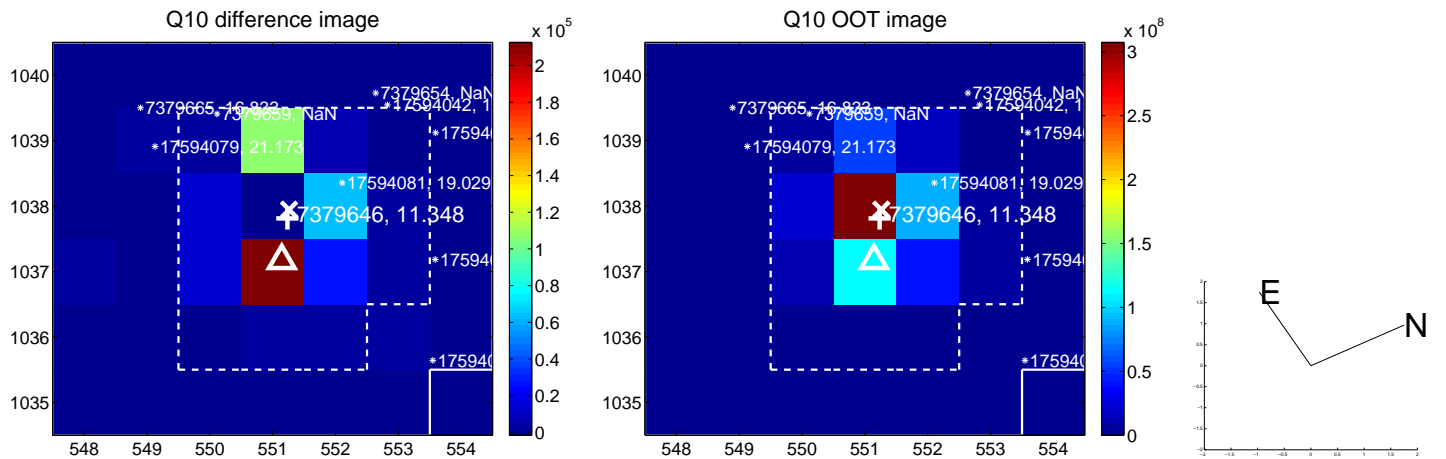
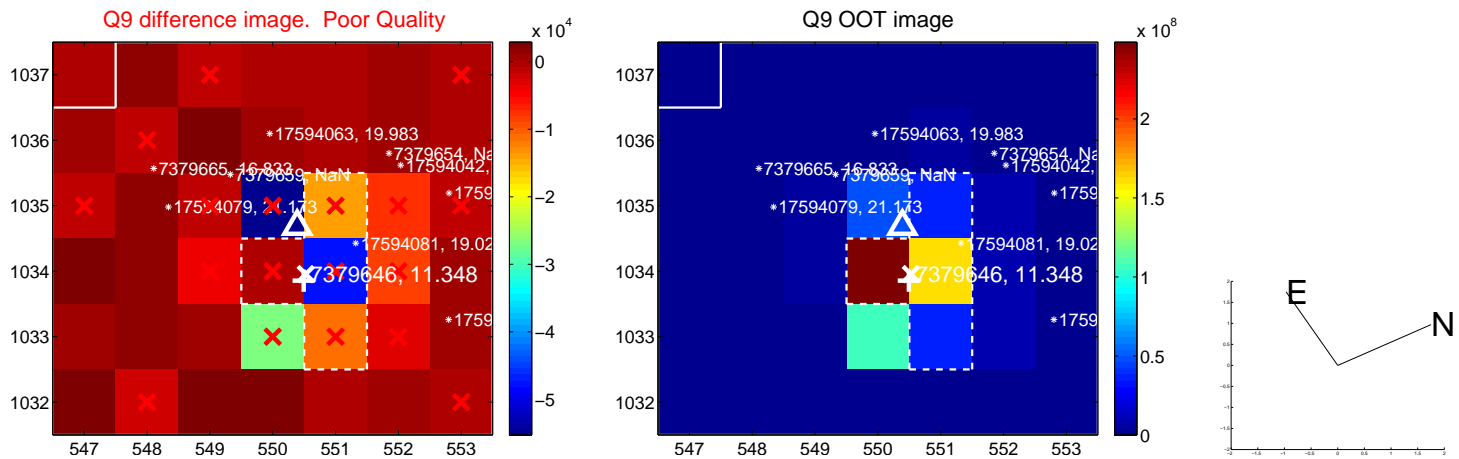
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



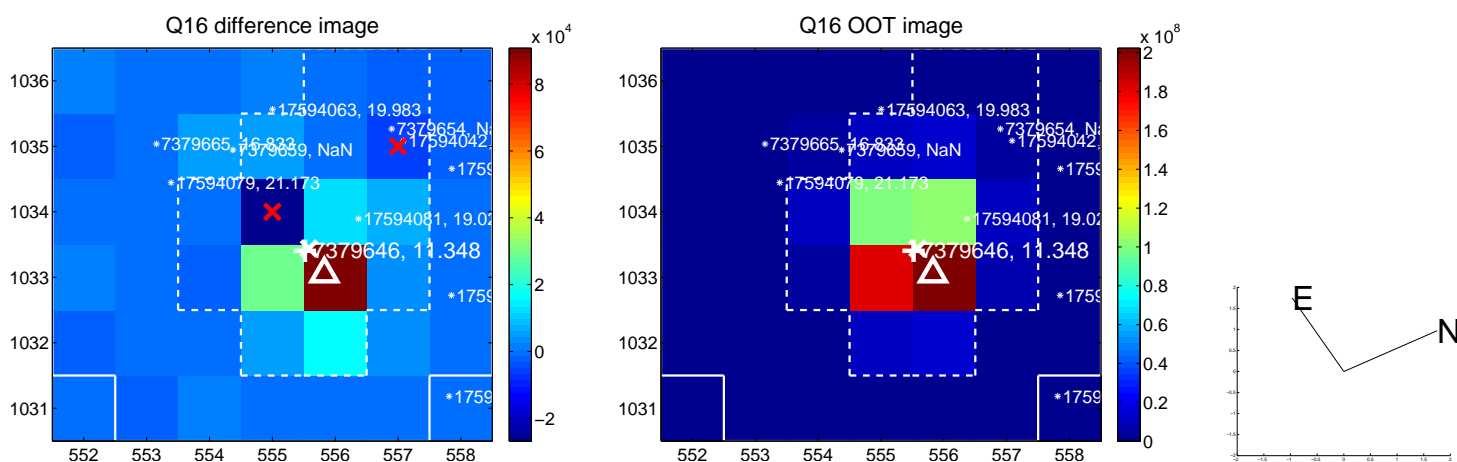
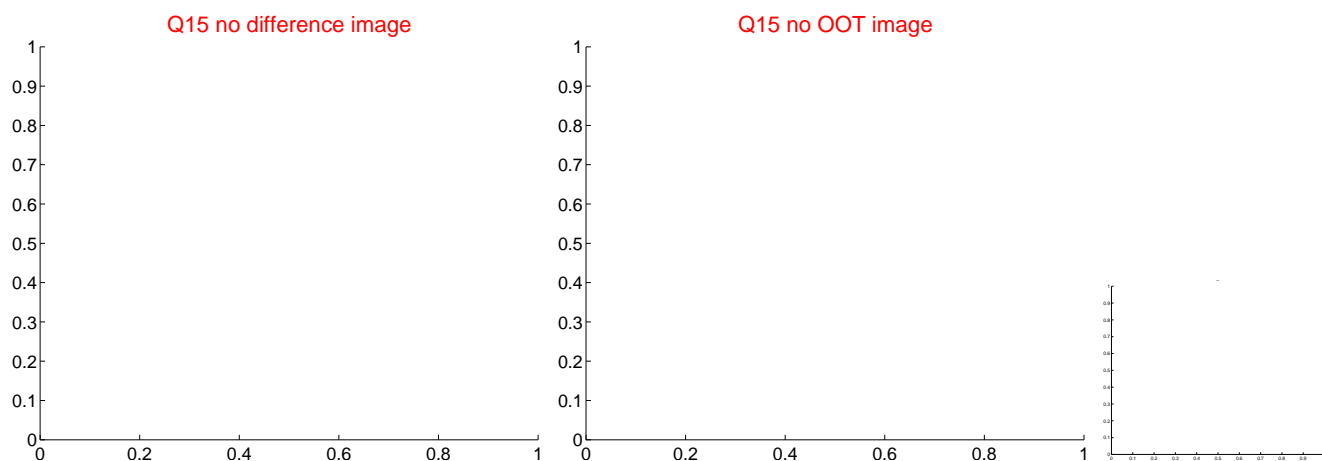
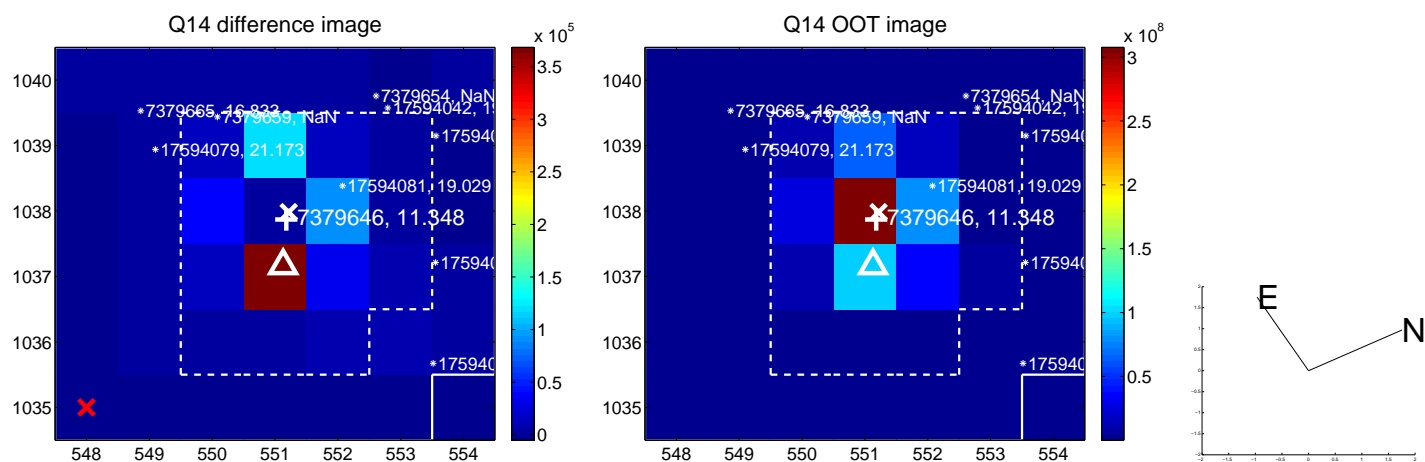
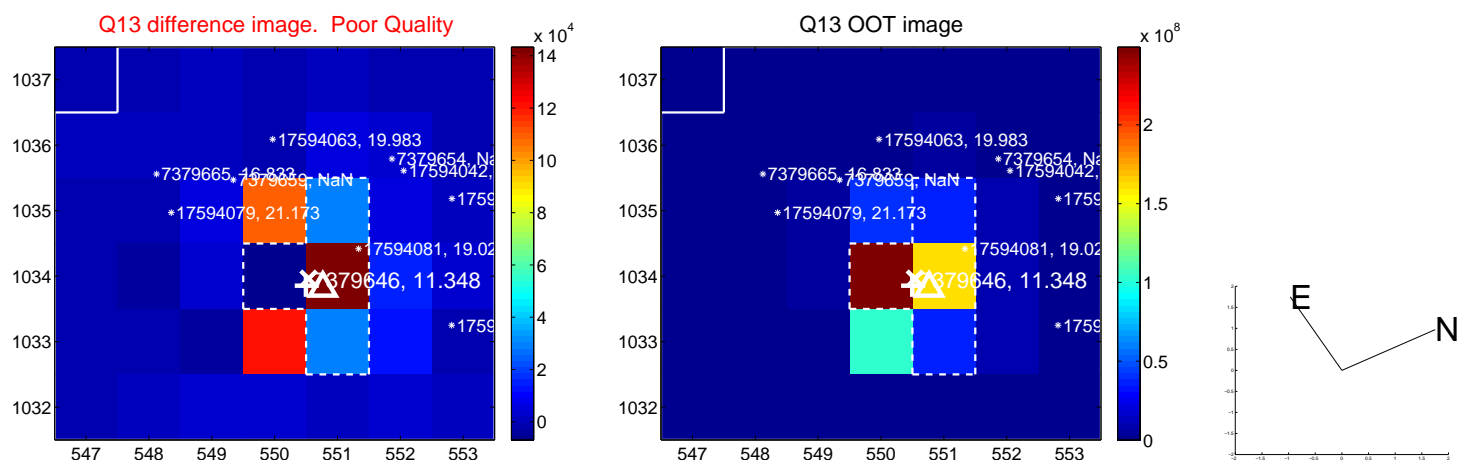
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



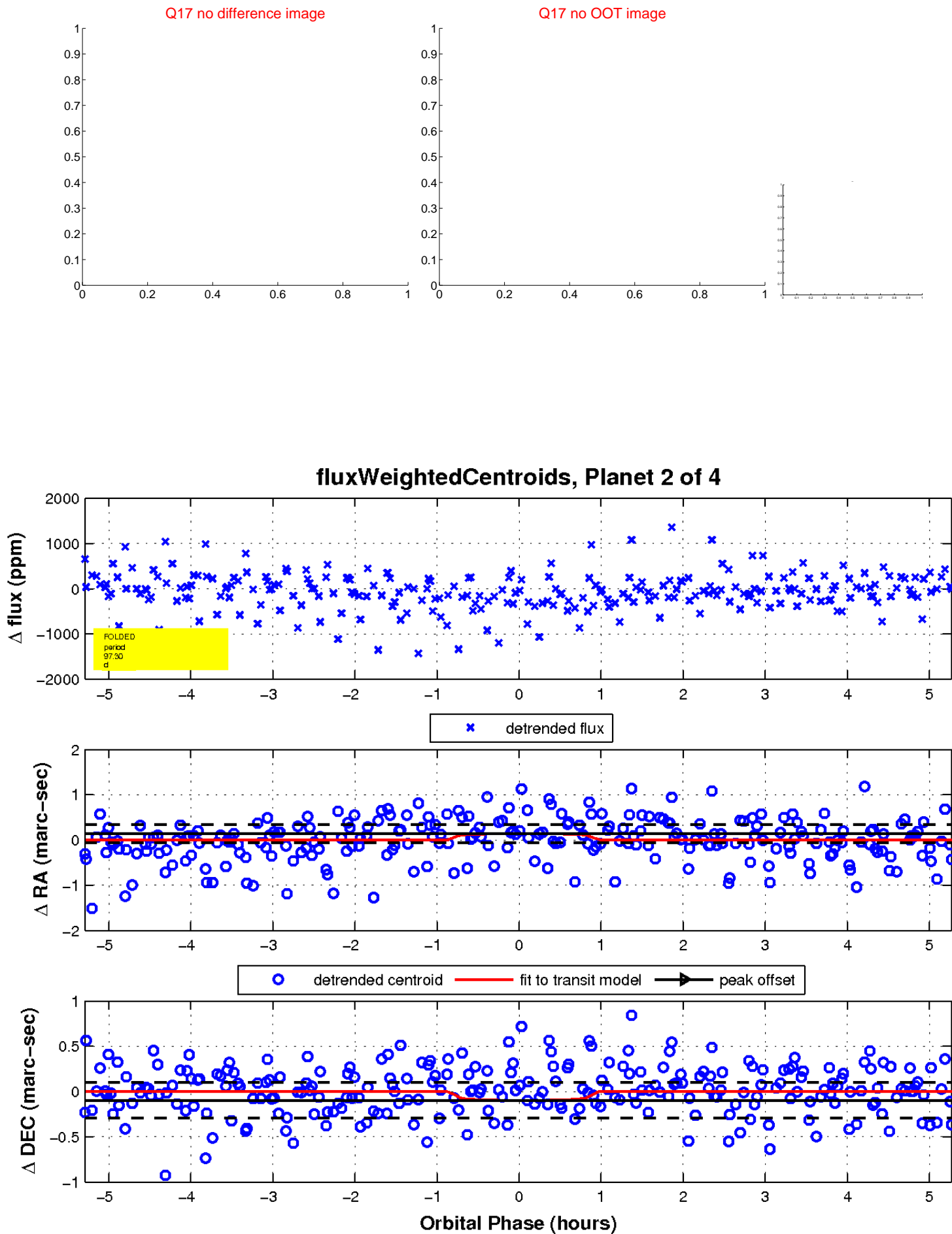
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

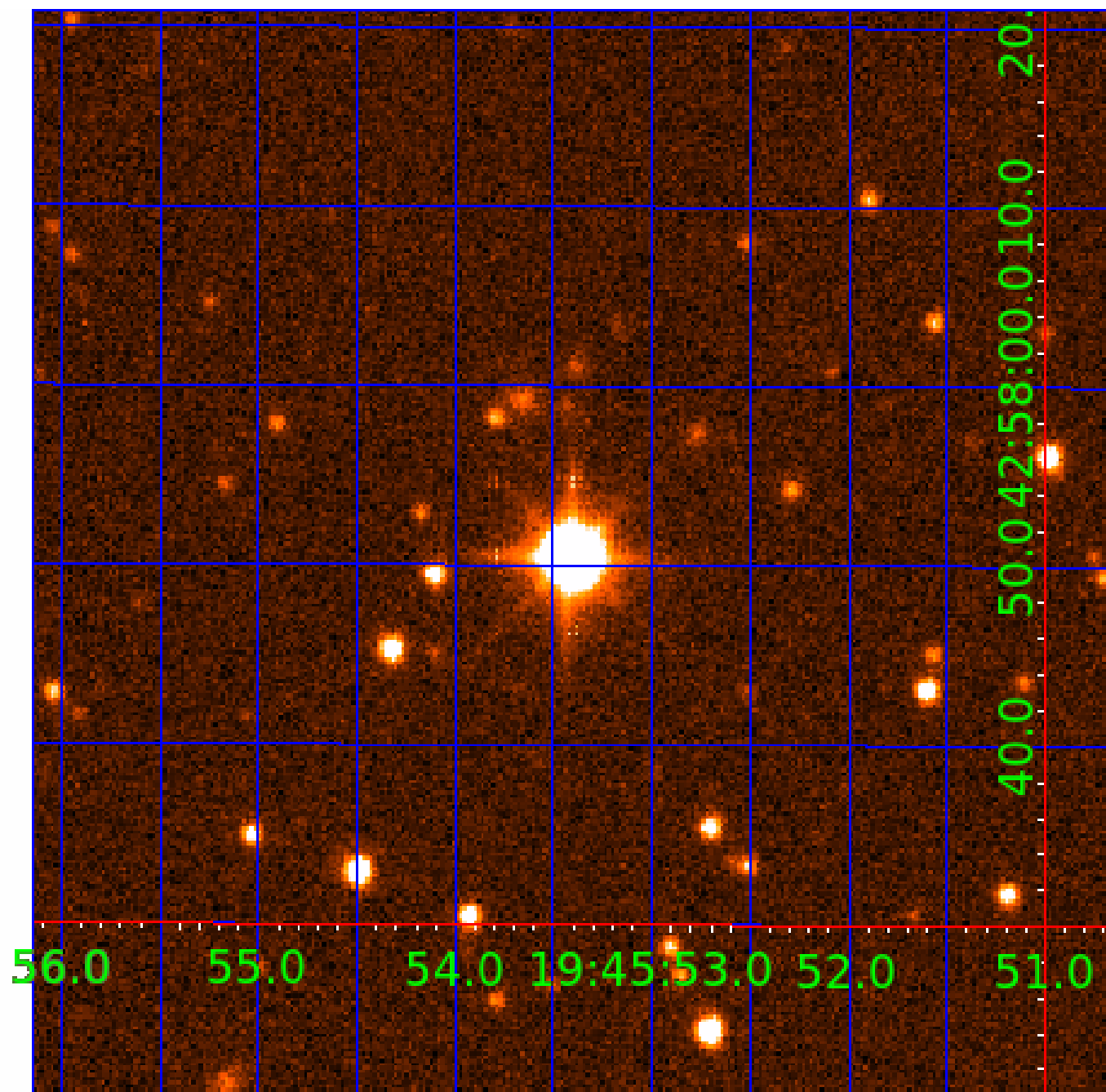


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination





# KIC 007379646

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007379646-01	OBS	No	0.963456	131.826779	14.8	7.011	9.7	4.1	4.04	7358	1.57	72699.24
007379646-02	OBS	No	97.295571	149.665891	534.9	1.765	10.5	11.4	4.04	7358	9.90	154.59
007379646-03	OBS	No	14.690897	133.994480	397.5	1.265	7.5	8.6	4.04	7358	8.39	1922.68
007379646-04	OBS	No	28.272278	137.439401	394.9	1.607	7.3	8.0	4.04	7358	8.98	803.20

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007379646-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
007379646-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
007379646-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
007379646-04	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED—HALO_GHOST

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

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

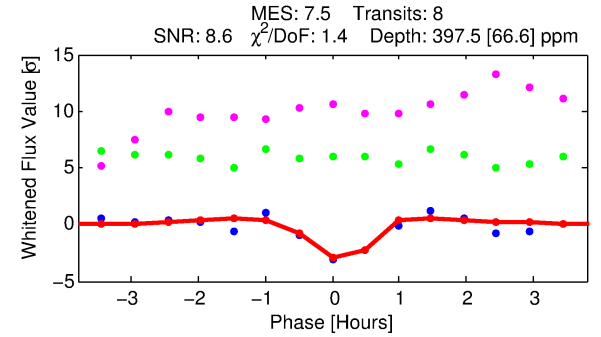
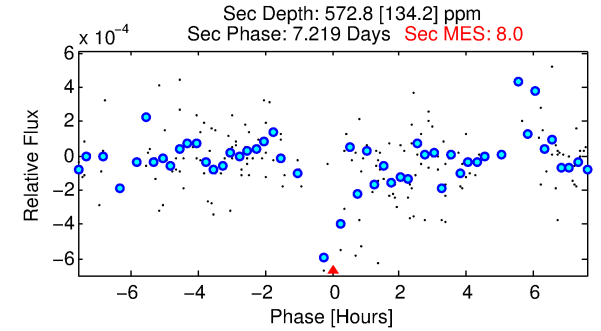
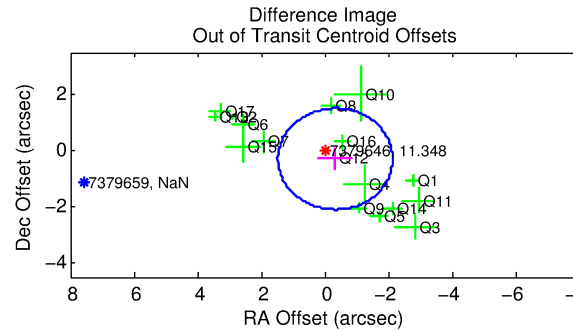
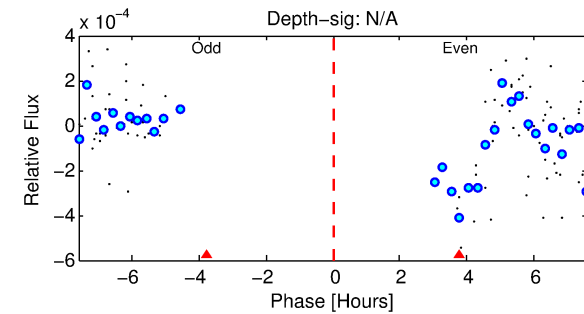
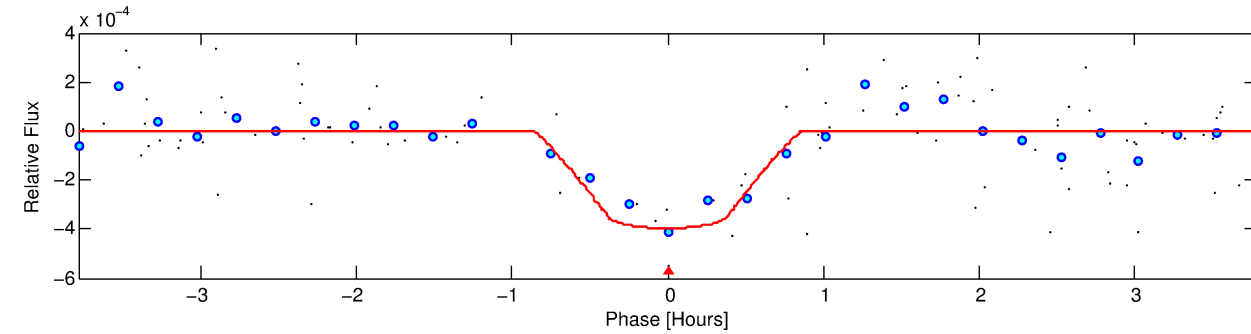
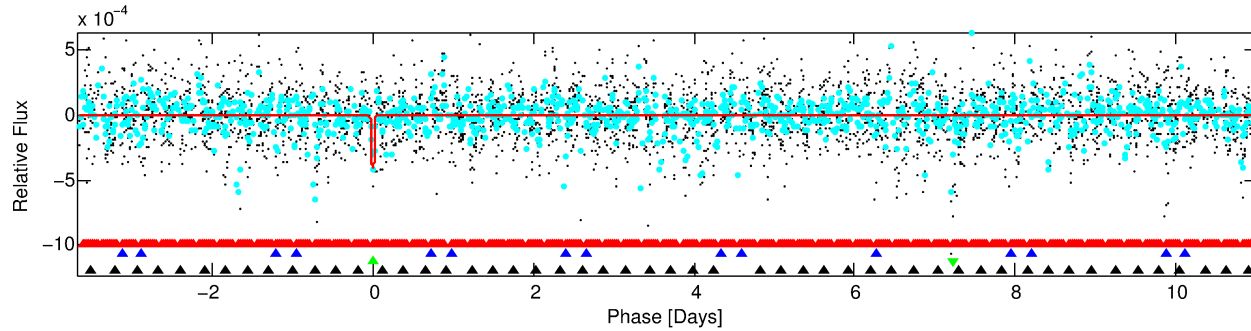
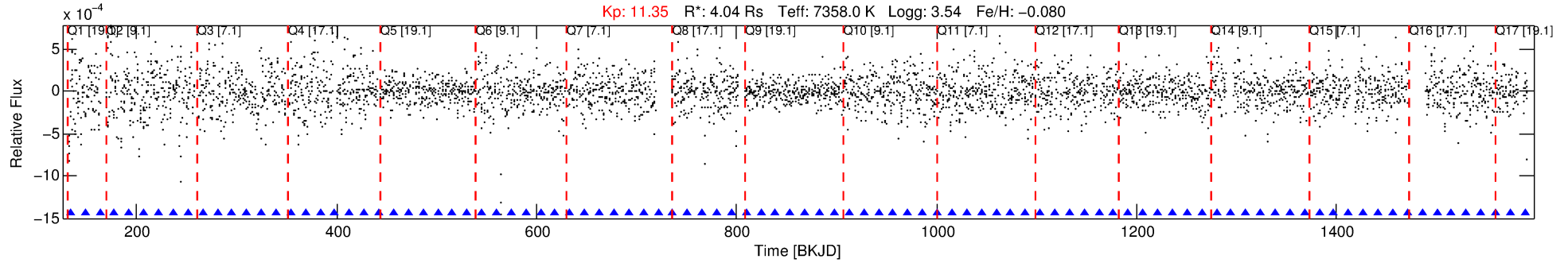
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 007379646-03

No Significant Match Found

# DV One-Page Summary

KIC: 7379646 Candidate: 3 of 4 Period: 14.691 d



## DV Fit Results:

Period = 14.69090 [0.00021] d  
Epoch = 133.9945 [0.0042] BKJD  
Rp/R\* = 0.0191 [0.0154]  
a/R\* = 78.55 [362.37]  
b = 0.50 [6.86]  
Seff = 1922.69 [1881.69]  
Teq = 1689 [413] K  
Rp = 8.39 [8.23] Re  
a = 0.1492 [0.0864] AU  
Ag = 99.60 [188.84] [0.52] $\sigma$   
Teffp = 8247 [3384] K [1.92] $\sigma$

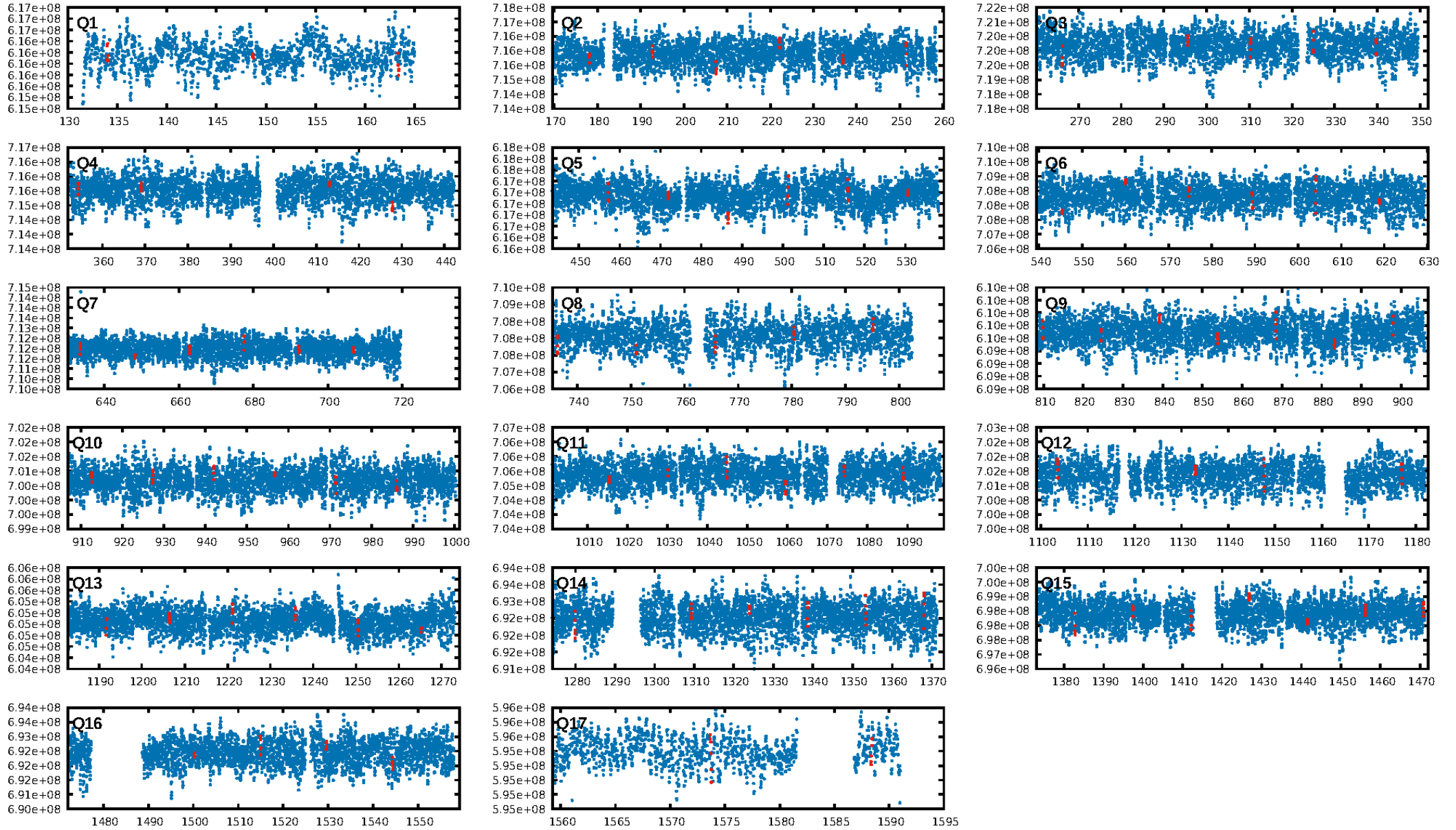
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [46.24] $\sigma$   
LongPeriod-sig: 100.0% [159.37] $\sigma$   
ModelChiSquare2-sig: 51.6%  
ModelChiSquareGof-sig: 99.6%  
Bootstrap-pfa: 6.79e-09  
RollingBand-fgt: 1.00 [6/6]  
GhostDiagnostic-chr: -1.358  
Centroid-sig: 16.6%  
Centroid-so: 0.429 arcsec [2.88] $\sigma$   
OotOffset-rm: 0.446 arcsec [0.74] $\sigma$   
KicOffset-rm: 0.610 arcsec [1.25] $\sigma$   
OotOffset-st: 4/4/4/5 [17]  
KicOffset-st: 4/4/4/5 [17]  
DiffImageQuality-fgm: 0.24 [4/17]  
DiffImageOverlap-fno: 0.82 [14/17]

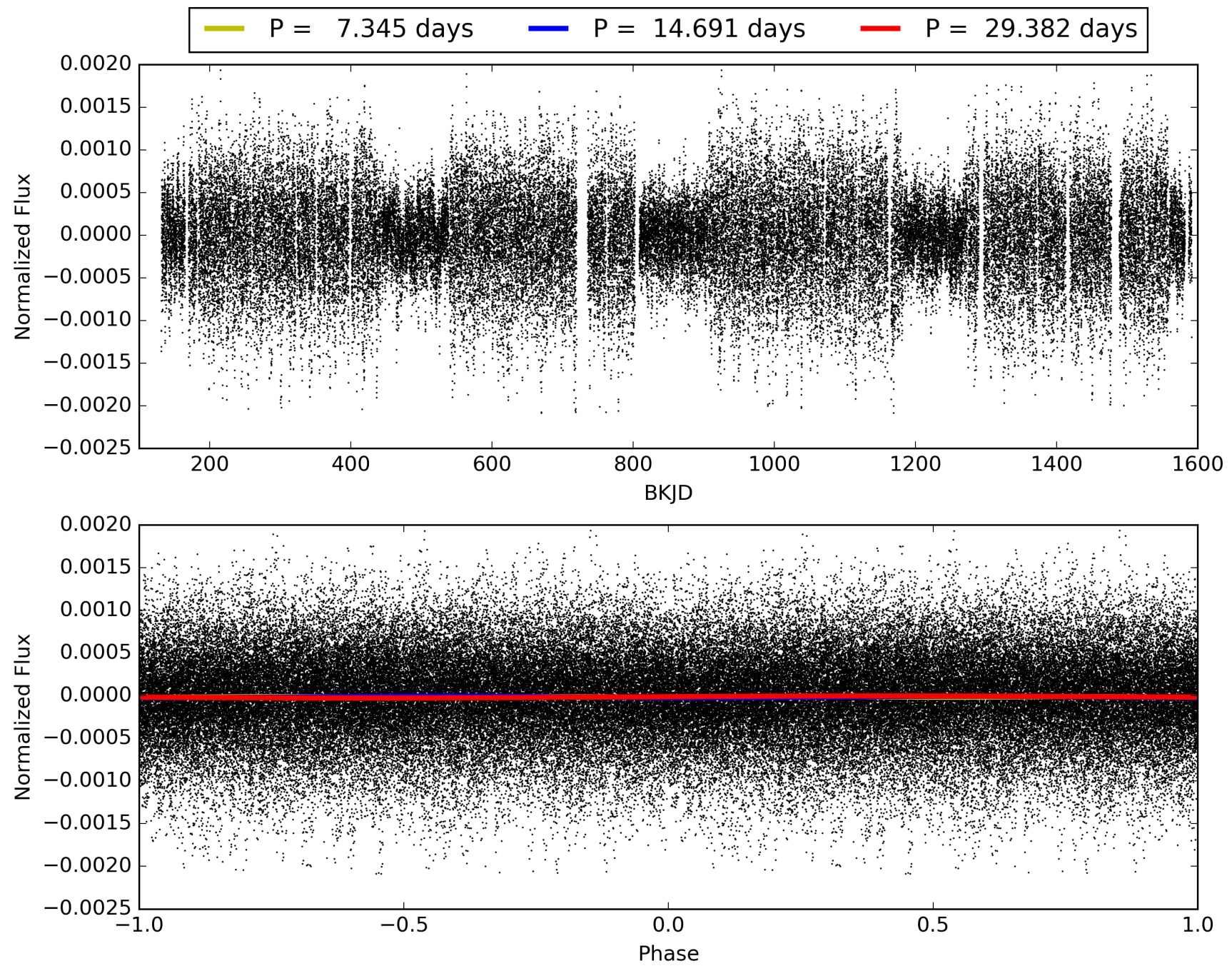
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 10:19:34 Z

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

# TCE 007379646-03, PDC Light Curves

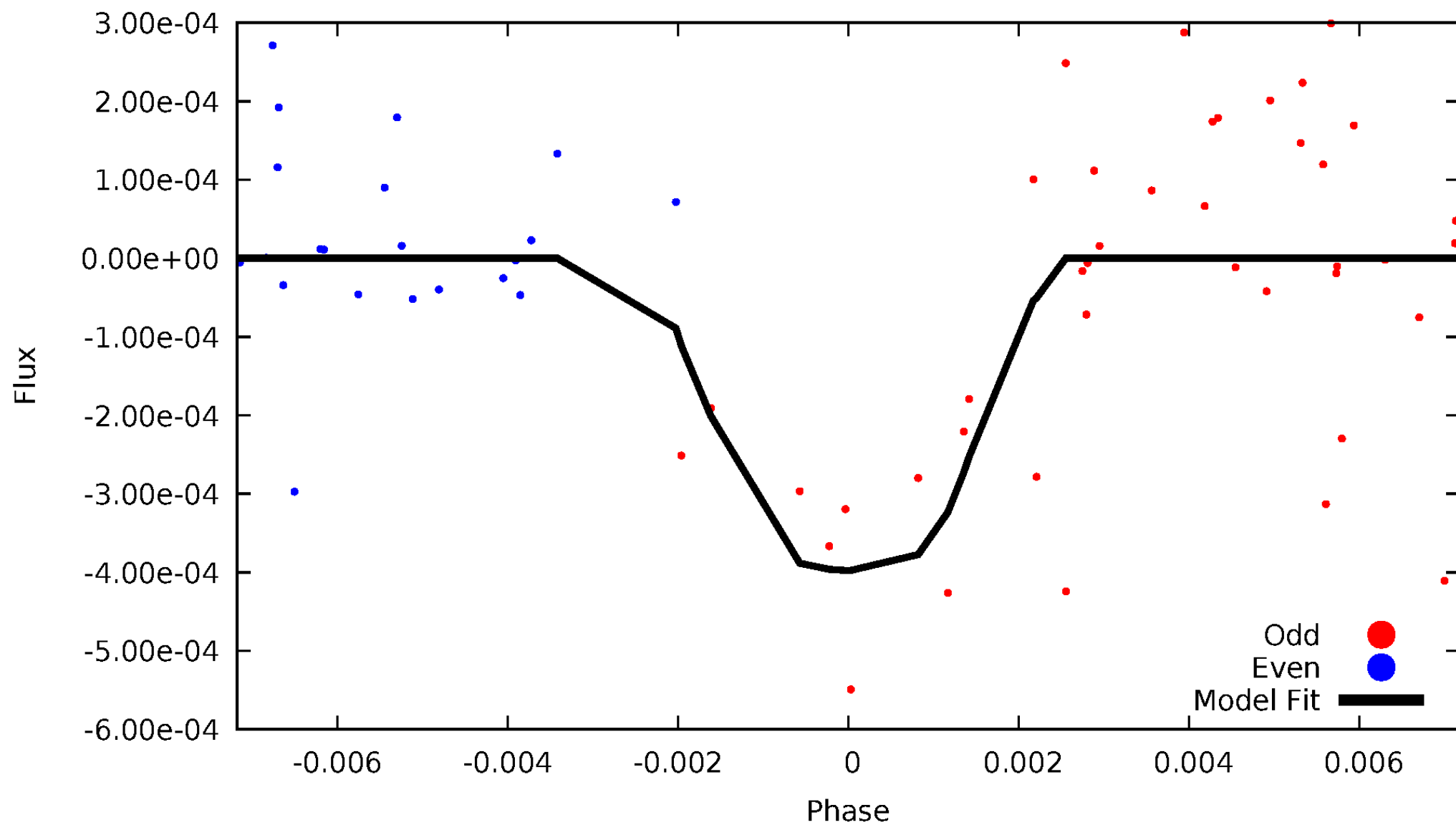


TCE 007379646-03



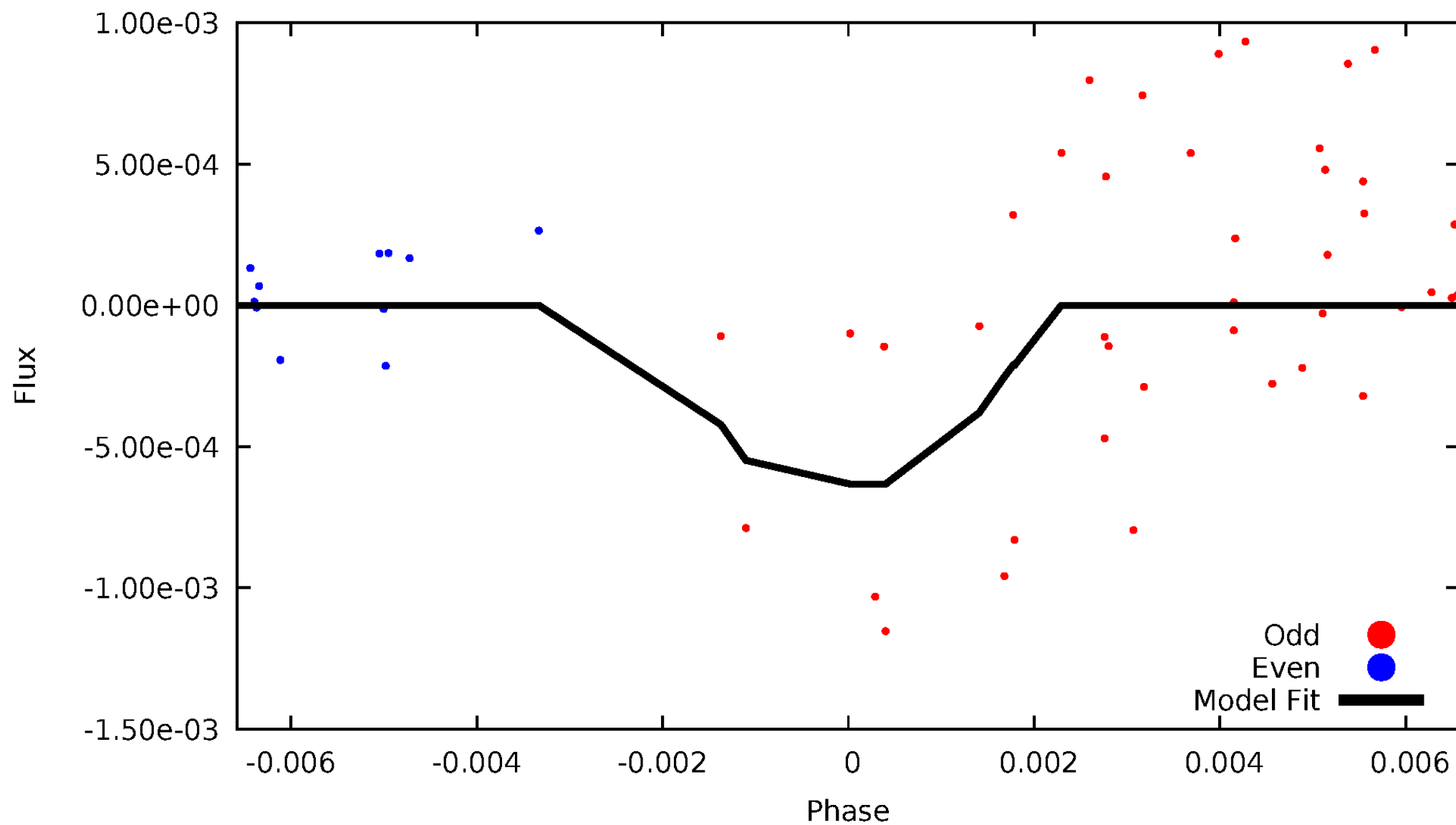
# DV Odd/Even

TCE 007379646-03



# ALT Odd/Even

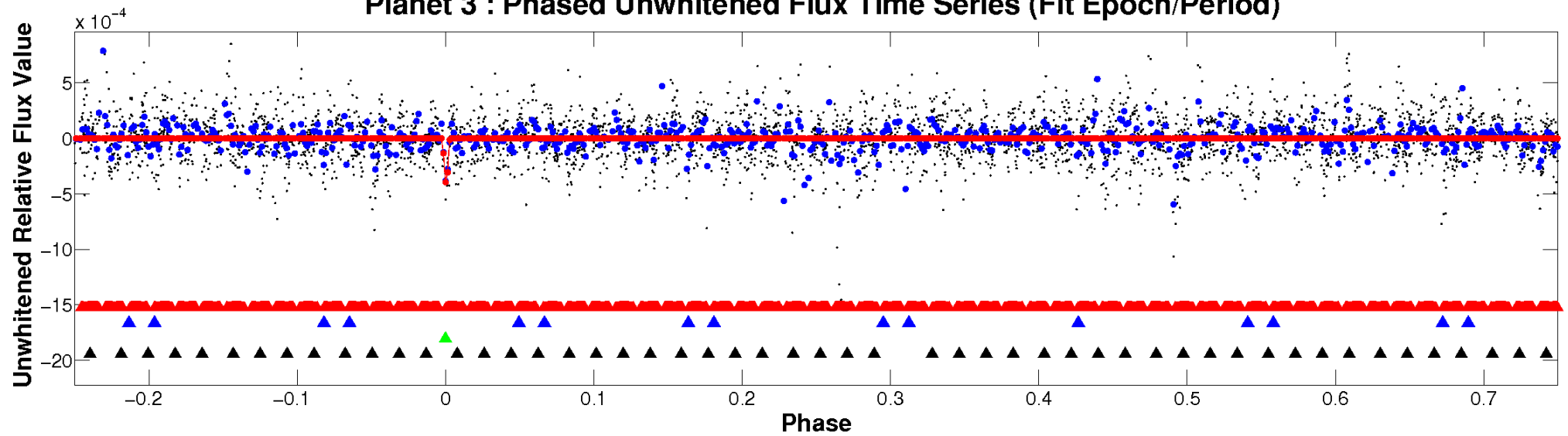
TCE 007379646-03



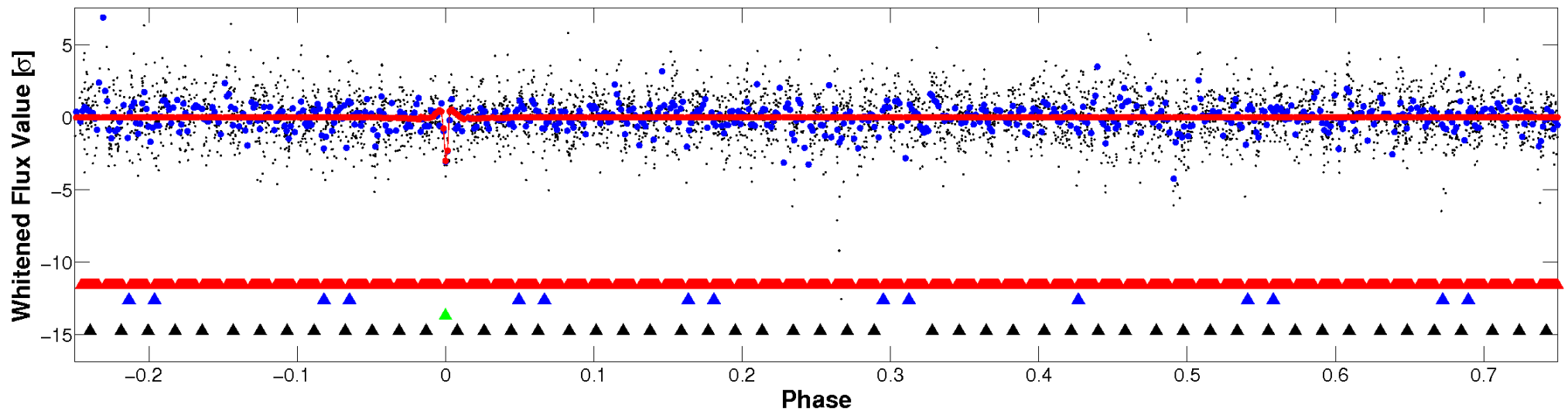


# Non-Whitened Vs. Whitened Light Curve

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

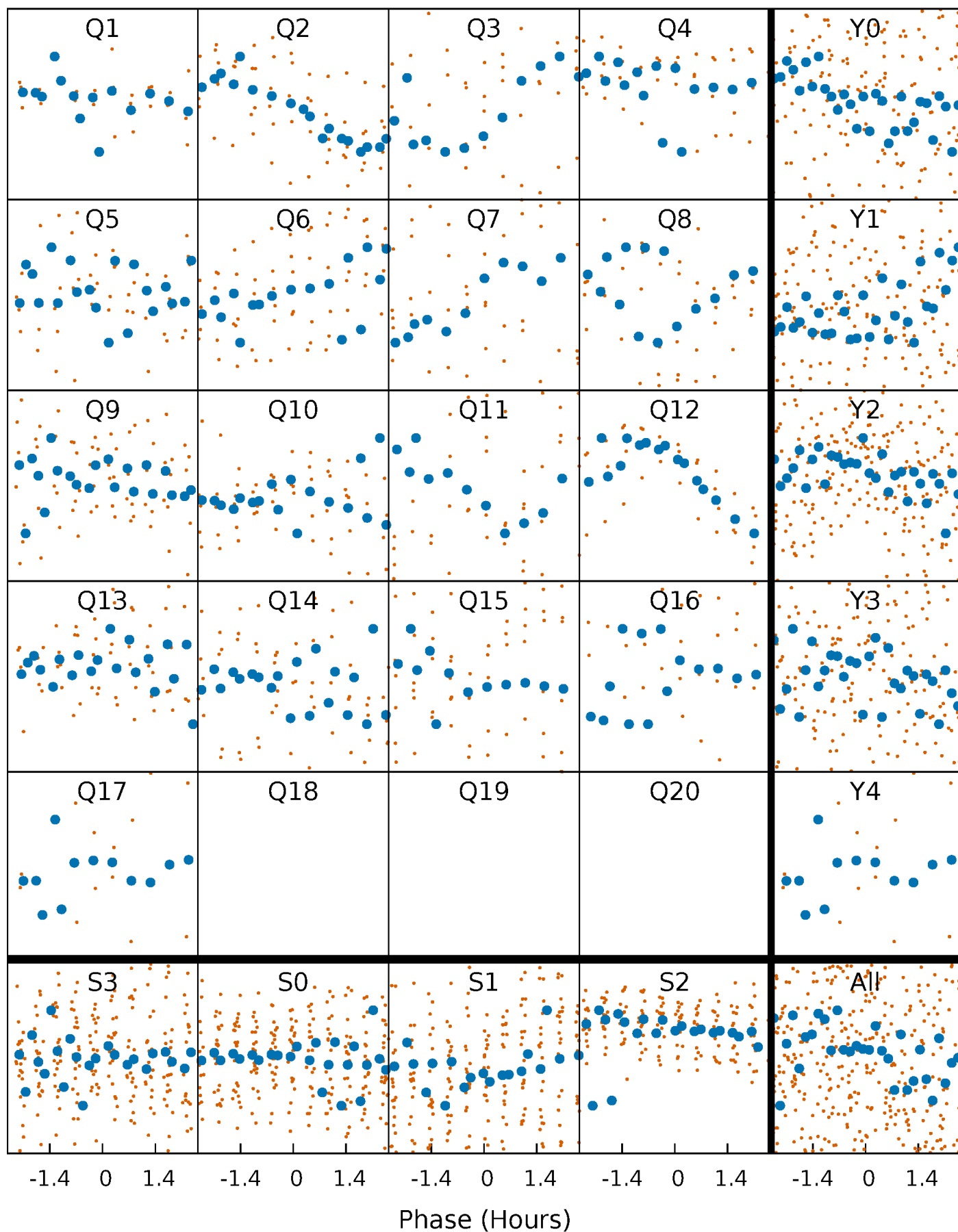


## Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



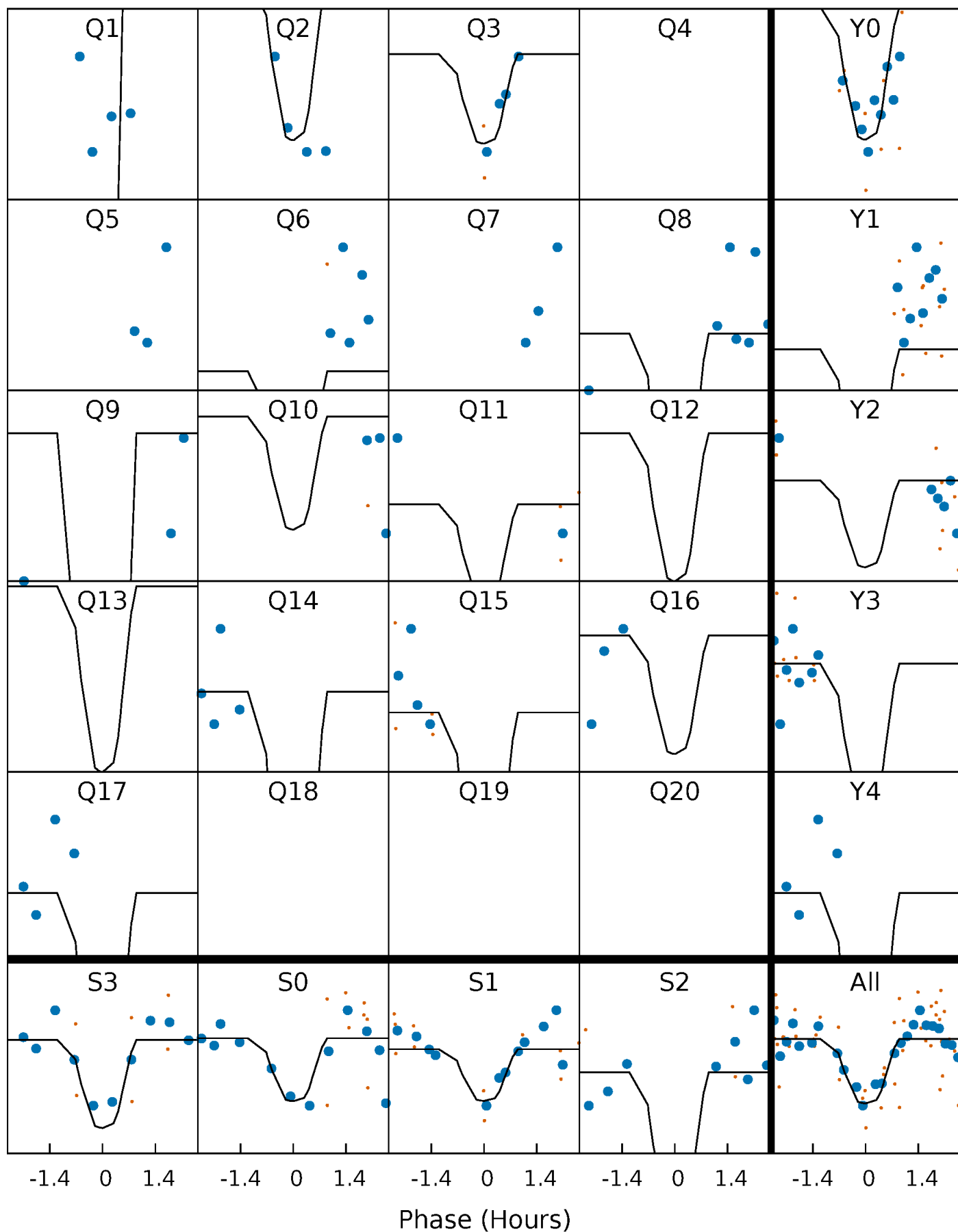
# PDC Quarter-Phased Transit Curves

TCE 007379646-03 P= 14.690897 Days  $T_0=133.994480$  (BKJD)



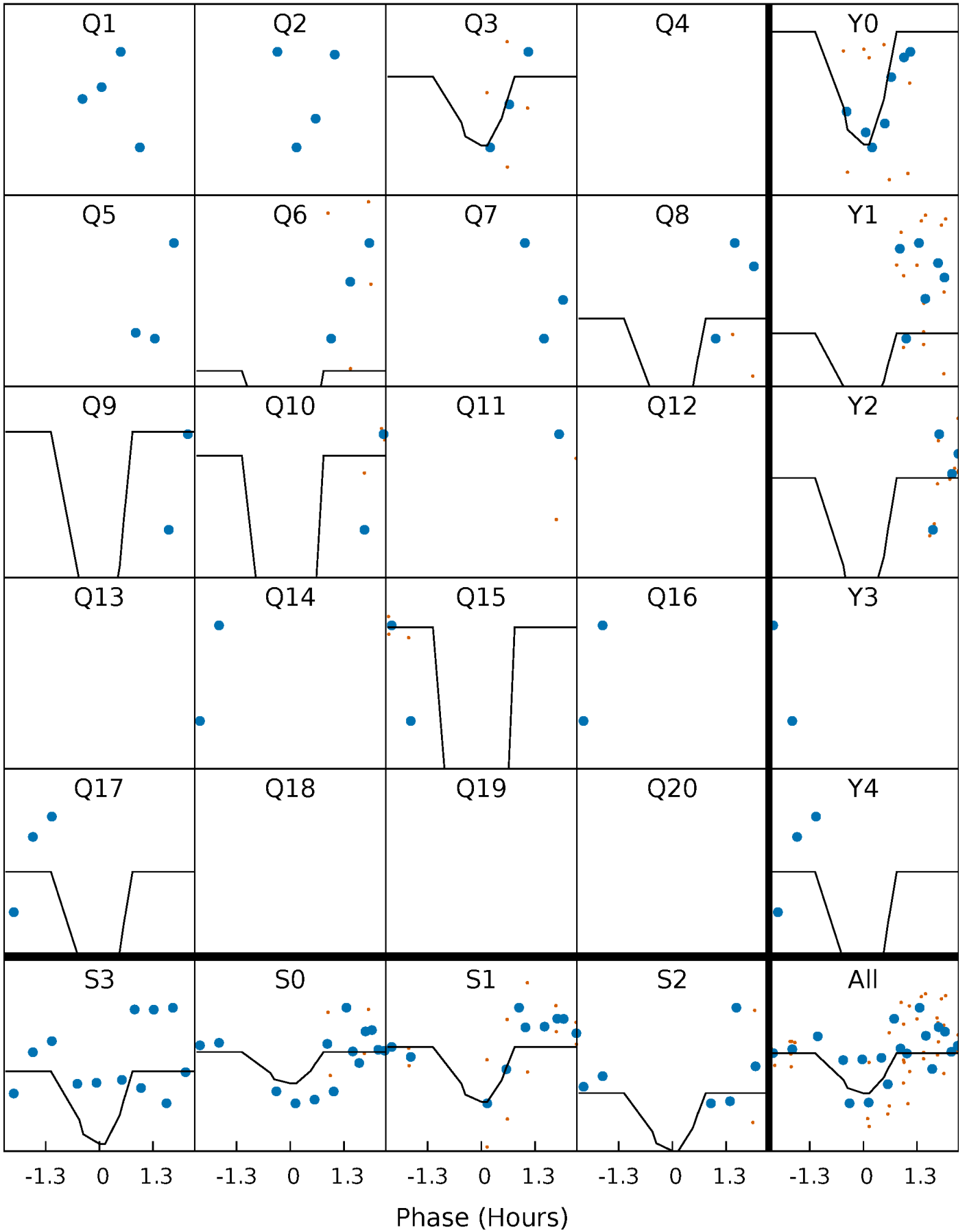
# DV Quarter-Phased Transit Curves

TCE 007379646-03 P= 14.690897 Days  $T_0=133.994480$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

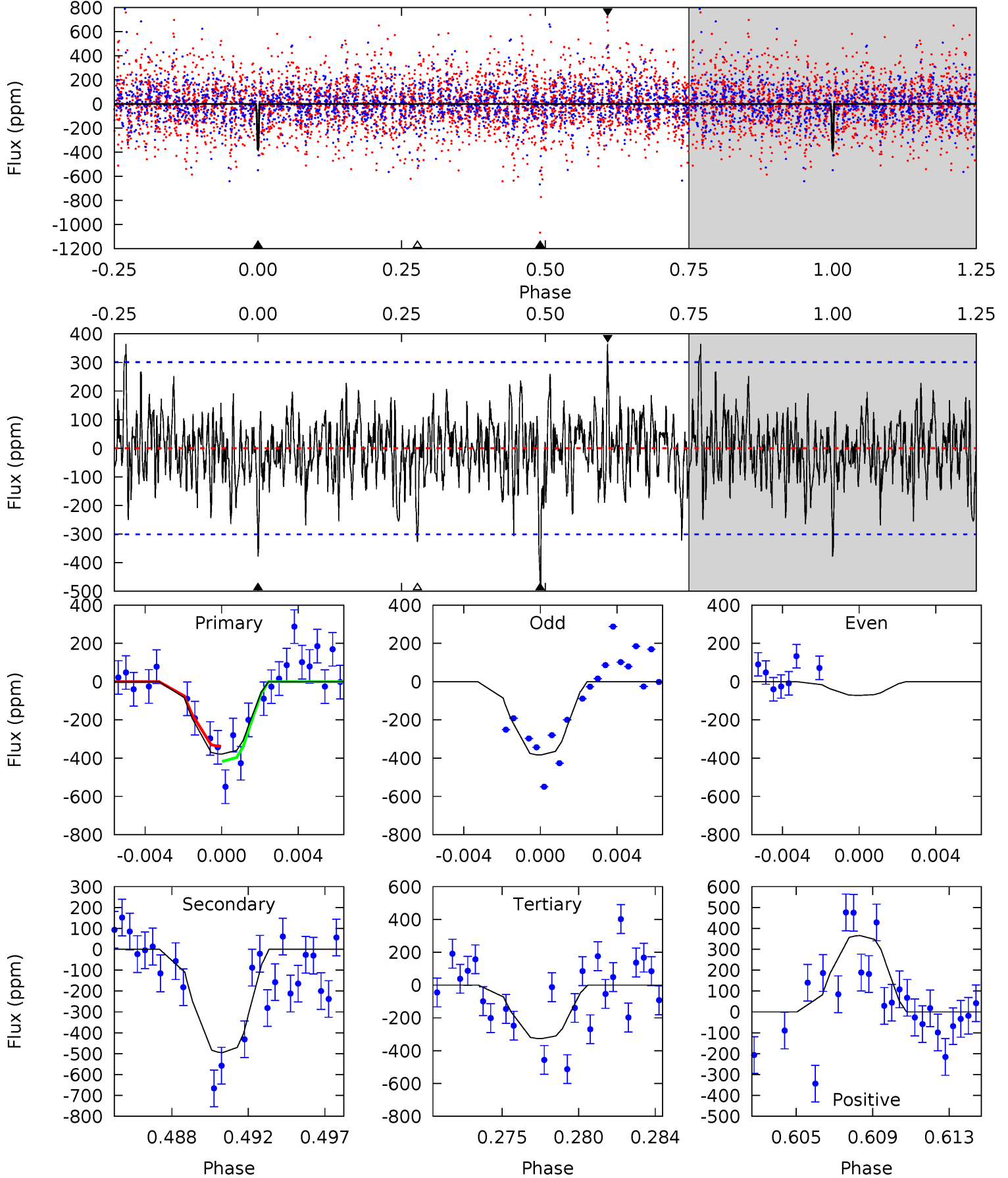
TCE 007379646-03     $P = 14.691184$  Days     $T_0 = 133.985523$  (BKJD)



# DV Model-Shift Uniqueness Test

007379646-03, P = 14.690897 Days, E = 119.303583 Days

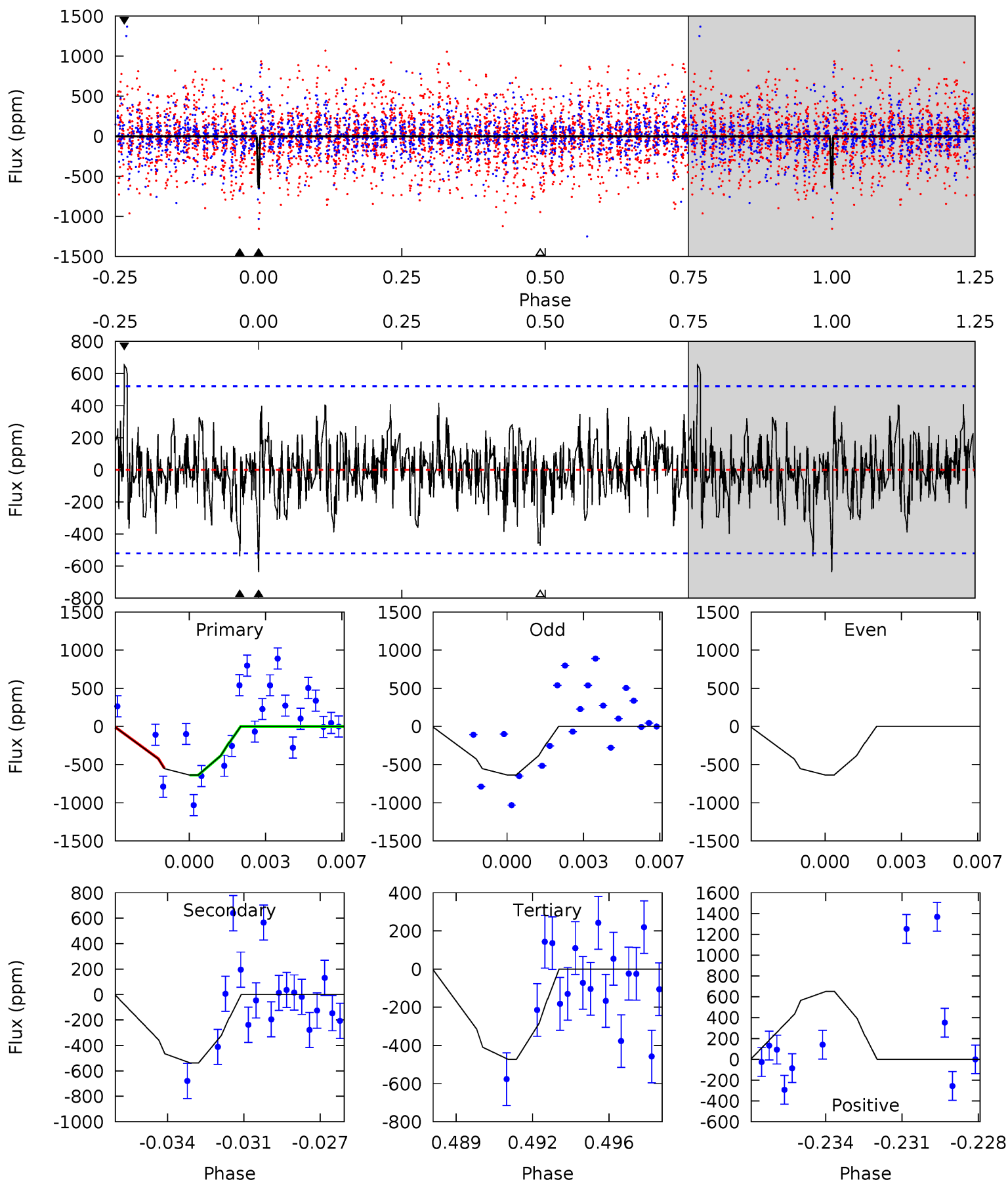
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.52	8.53	5.63	6.30	5.19	2.86	1.55	0.89	0.23	2.90	2.23	3.79	1.02	0.42	0.67



# Alt Model-Shift Uniqueness Test

007379646-03, P = 14.691184 Days, E = 119.294339 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.41	5.40	4.75	6.56	5.23	2.93	1.28	1.65	-0.15	0.65	-1.16	0	1.04	0.51	0.00





### Stellar Parameters For KIC 007379646

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$7358^{+205}_{-308}$	$3.538^{+0.580}_{-0.061}$	$-0.080^{+0.250}_{-0.300}$	$4.037^{+0.396}_{-2.242}$	$2.054^{+0.134}_{-0.570}$	$0.044^{+0.322}_{-0.010}$
	+3%/-4%	+16%/-2%	+312%/-375%	+10%/-56%	+7%/-28%	+733%/-22%
Source	KIC0	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 007379646-03 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-495 \pm 58$	$7.97^{+6.51}_{-4.86}$	$2268^{+157}_{-317}$	$7619^{+6535}_{-1996}$	$96^{+523}_{-69}$
Alt.	$-537 \pm 99$	$10.07^{+6.80}_{-5.48}$	$2247^{+165}_{-304}$	$6638^{+4075}_{-1300}$	$62^{+252}_{-39}$

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

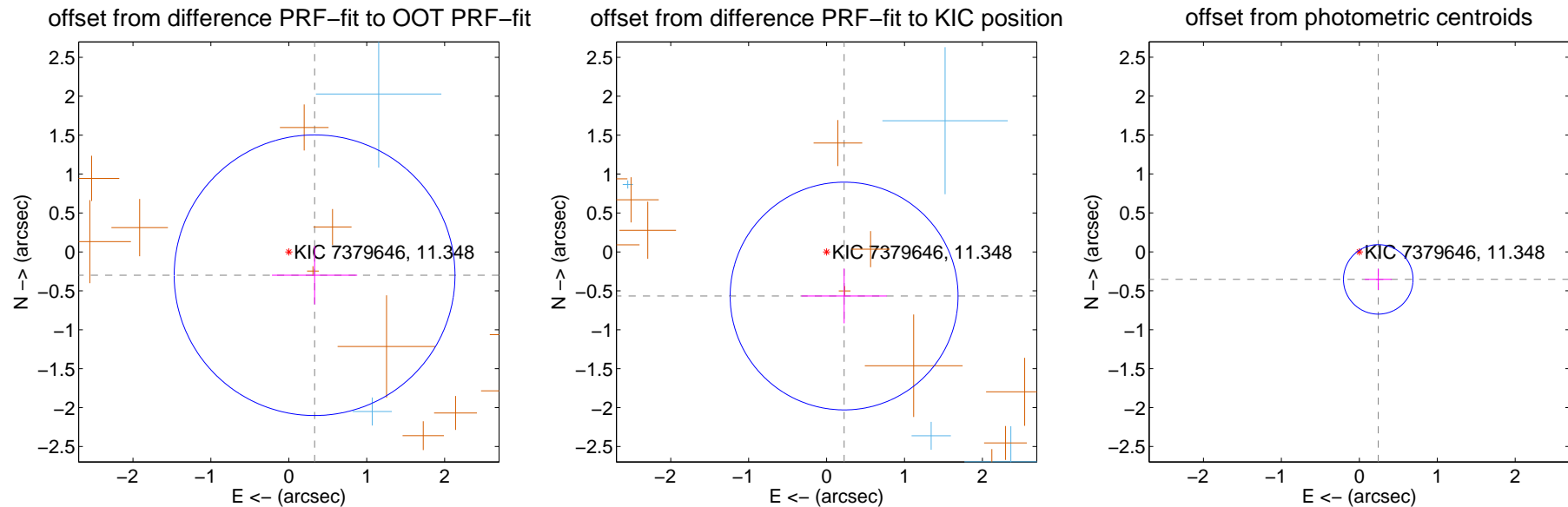
## DV Centroid Data

Supplemental centroid analysis for 007379646-03. **Kepler magnitude: 11.35.** Transit SNR 8.56

There are 4 quarters with good PRF difference image offsets

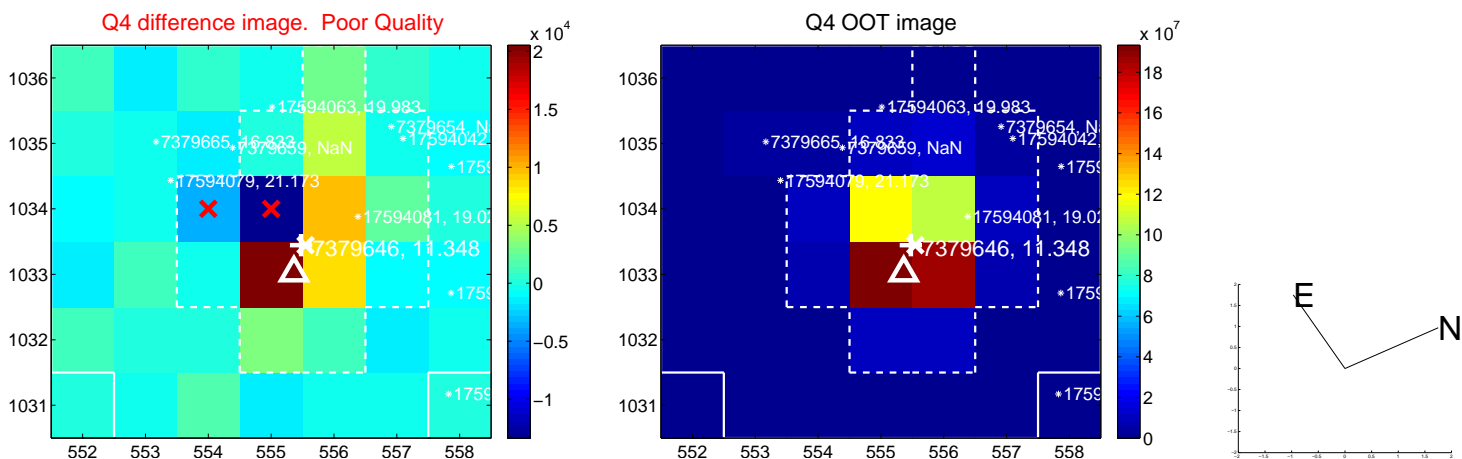
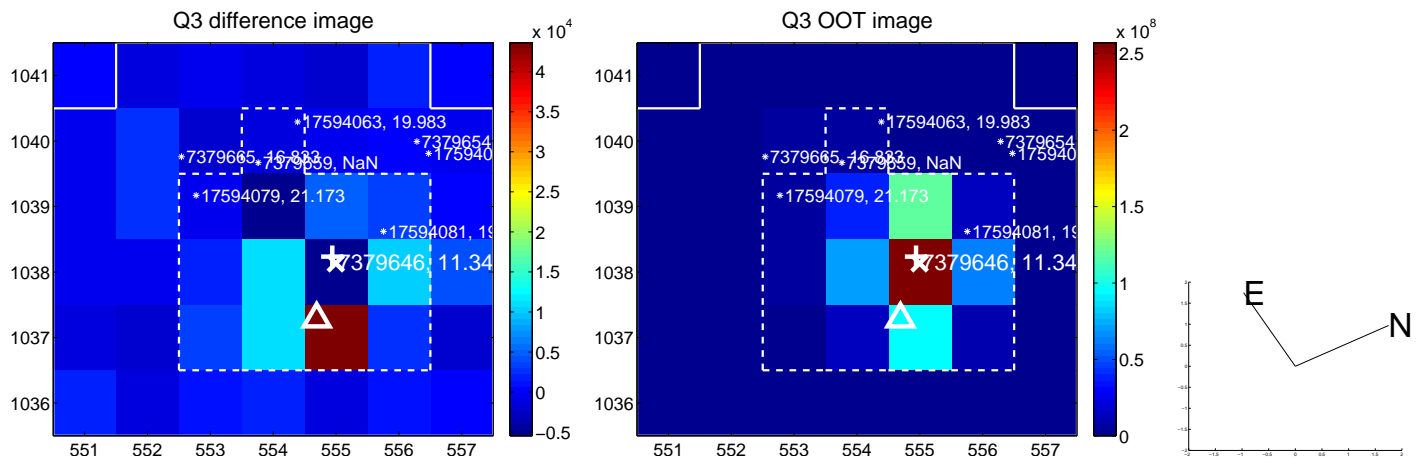
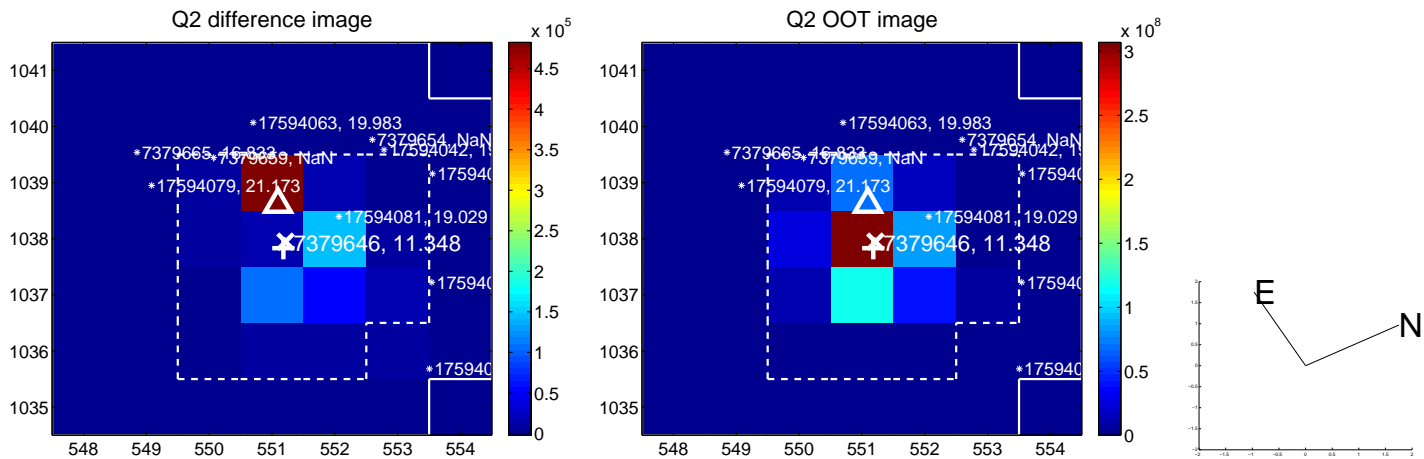
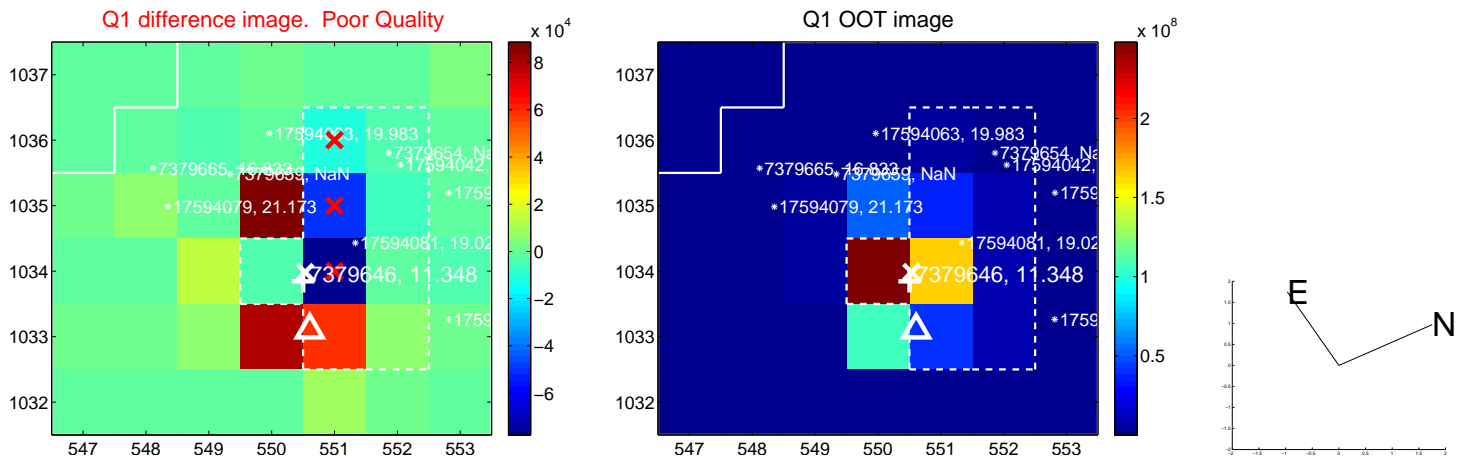
The direct PRF centroid is offset from the target star catalog position by about 0.61 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.446 \pm 0.601$	0.74	$-0.331 \pm 0.547$	$-0.299 \pm 0.374$
PRF-fit source offset from KIC position	$0.610 \pm 0.488$	1.25	$-0.225 \pm 0.548$	$-0.567 \pm 0.351$
photometric centroid source offset	$0.43 \pm 0.15$	2.88	$-0.24 \pm 0.17$	$-0.35 \pm 0.14$

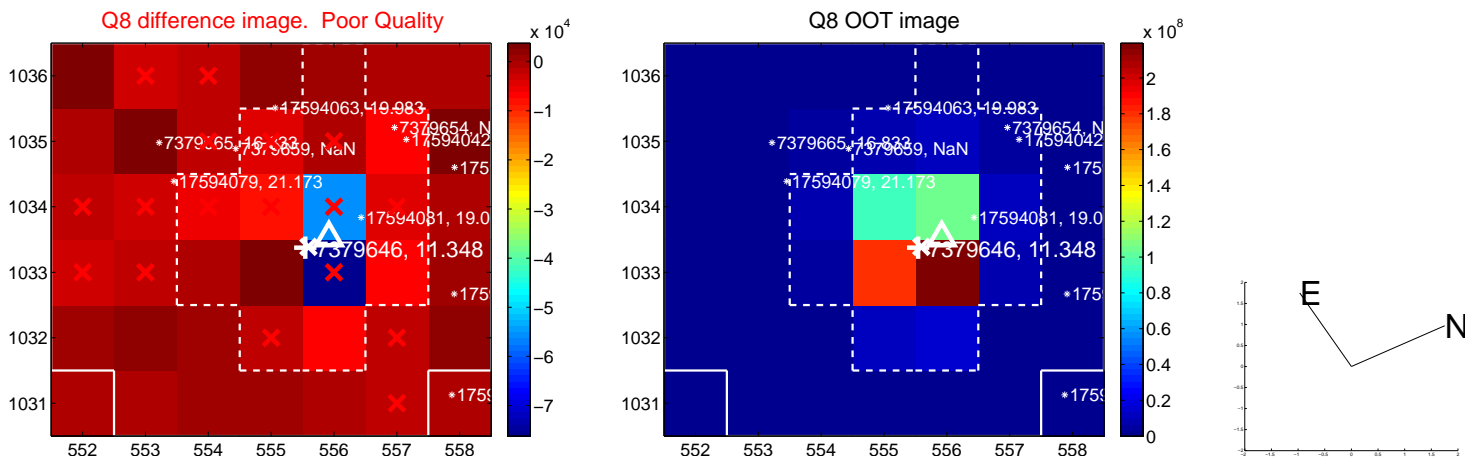
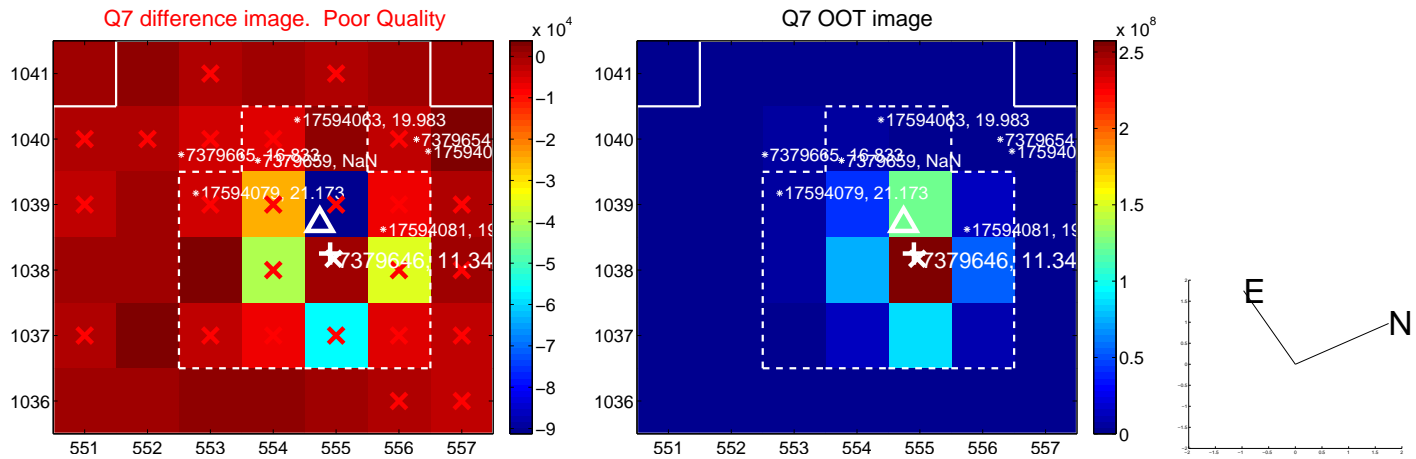
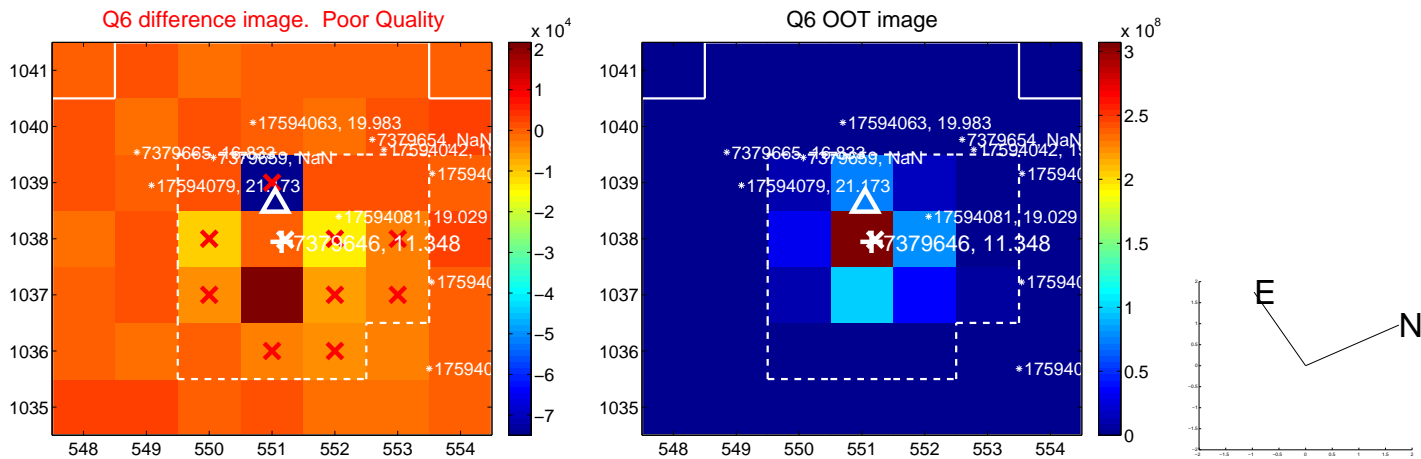
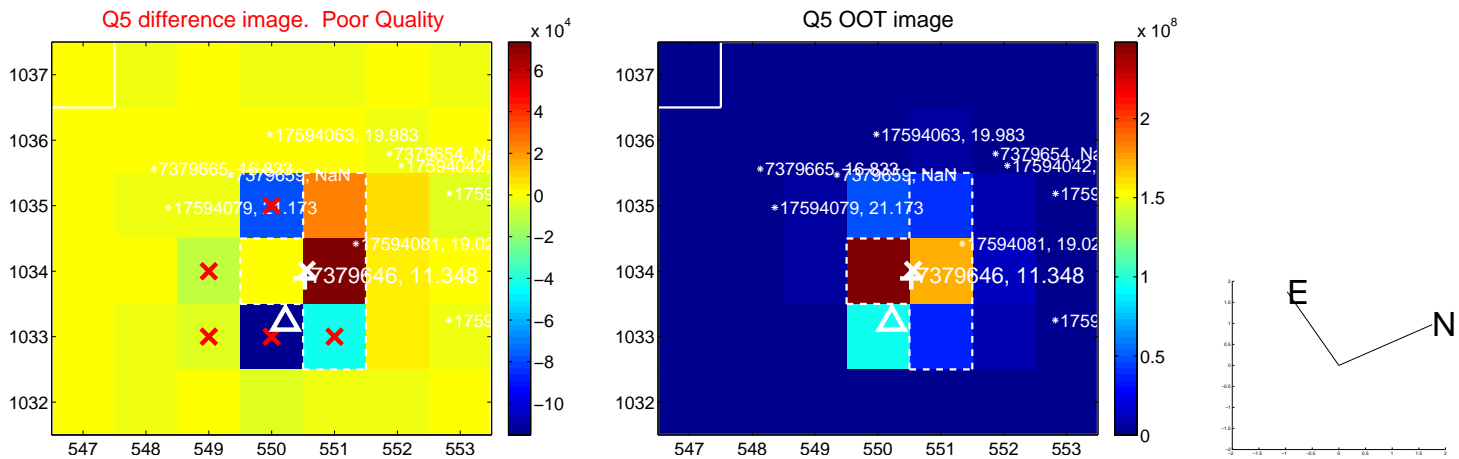


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

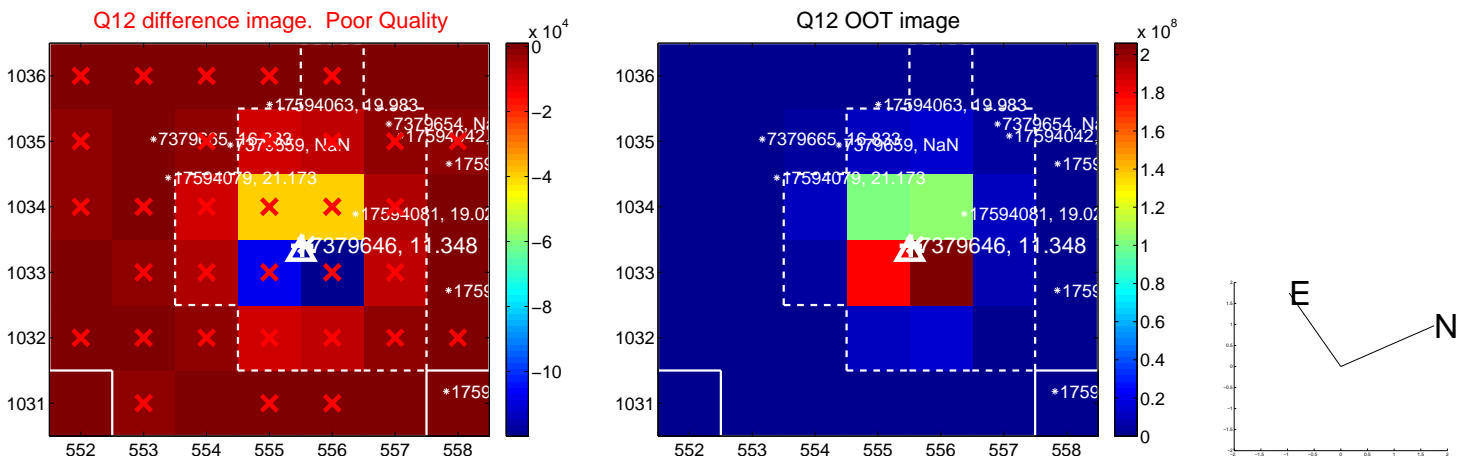
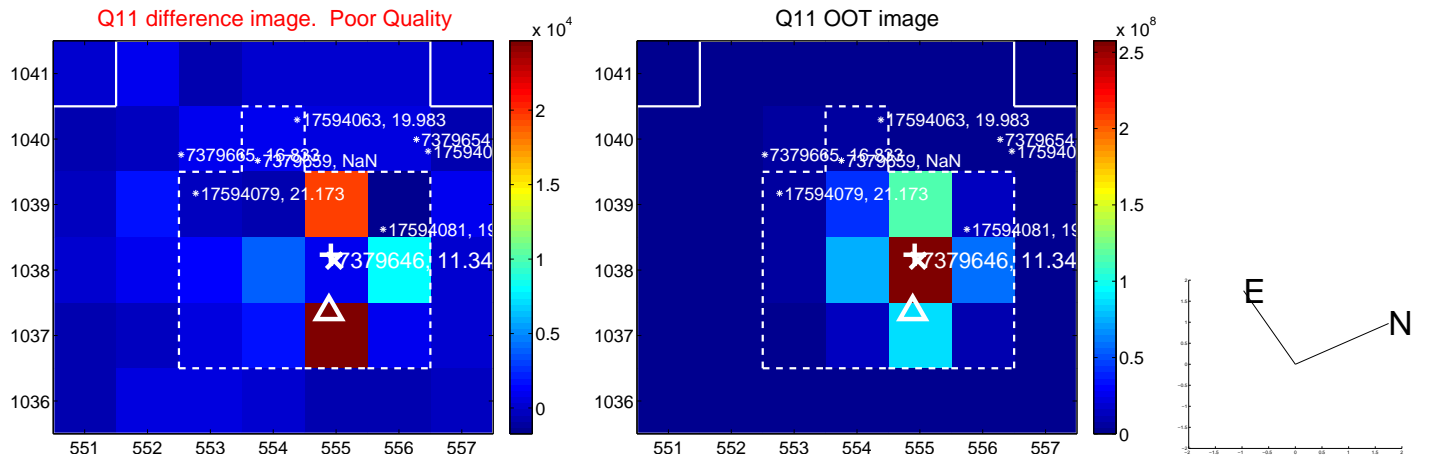
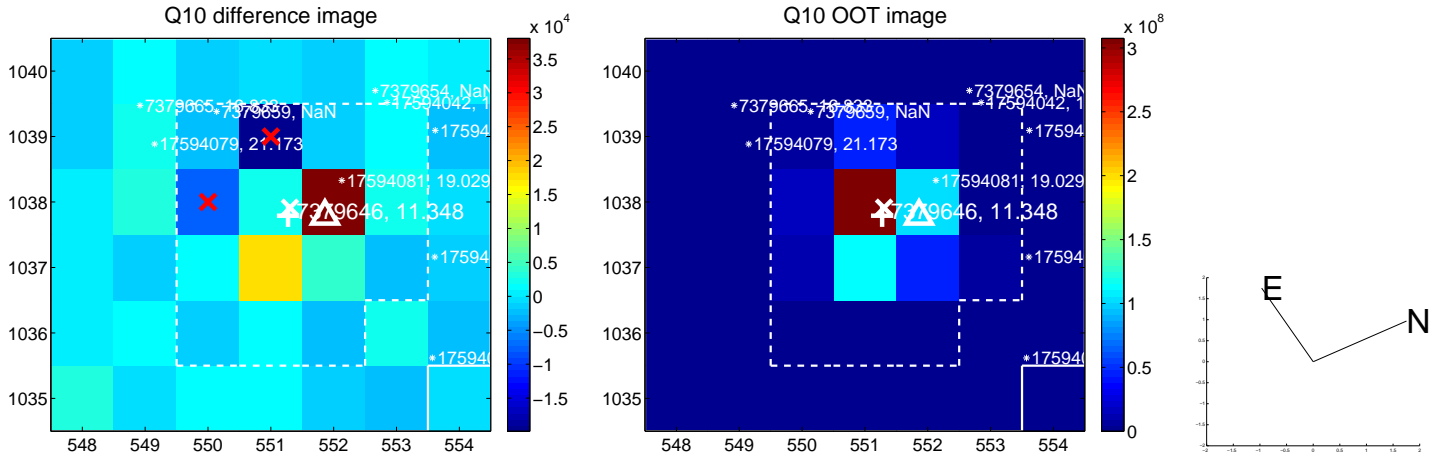
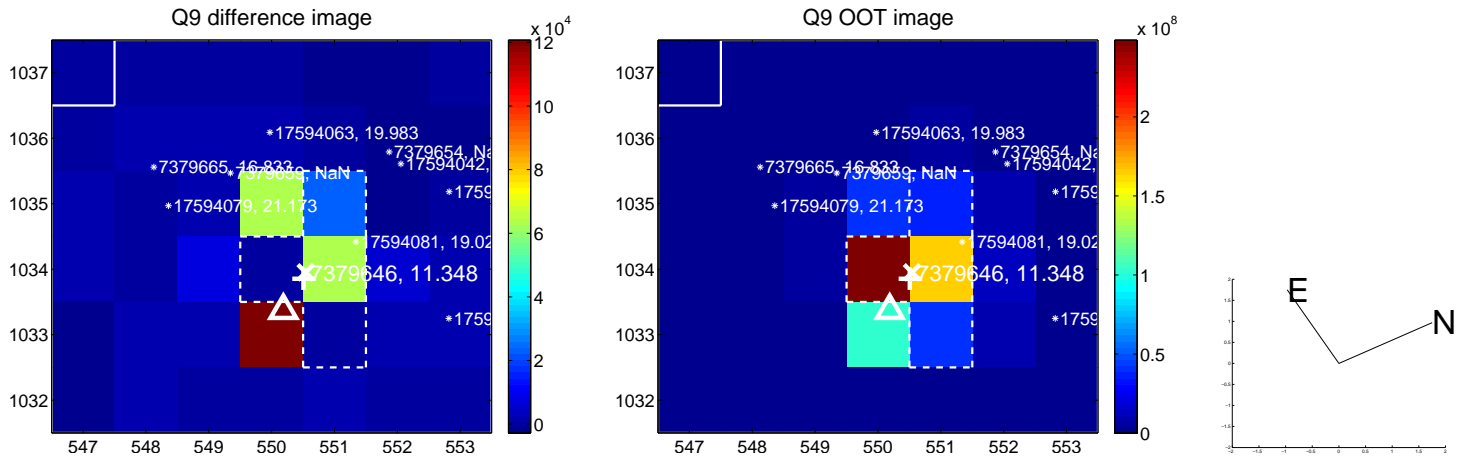
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



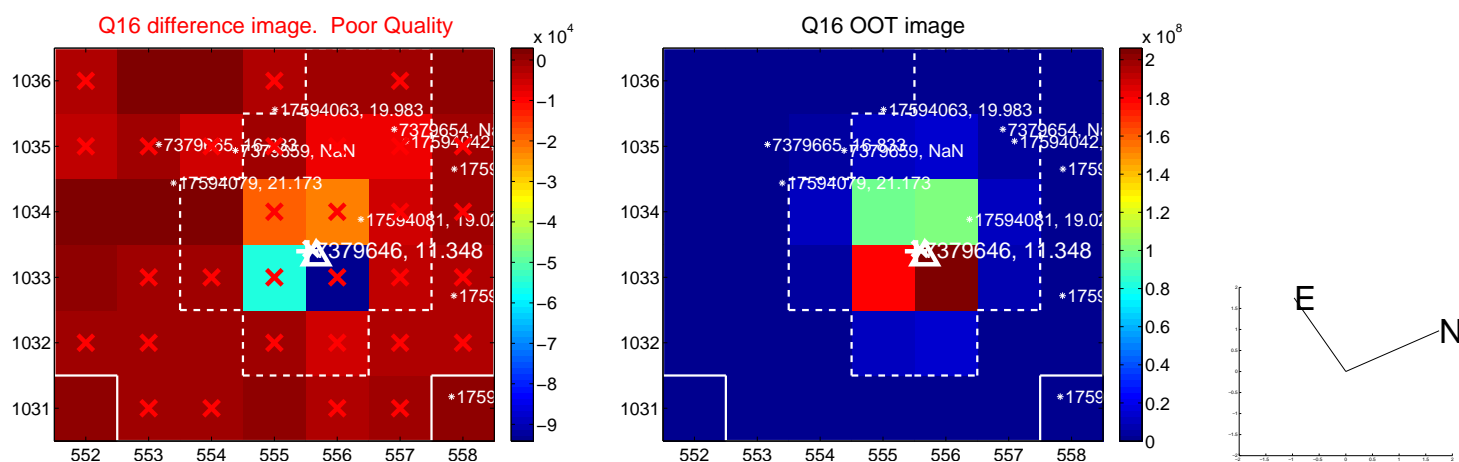
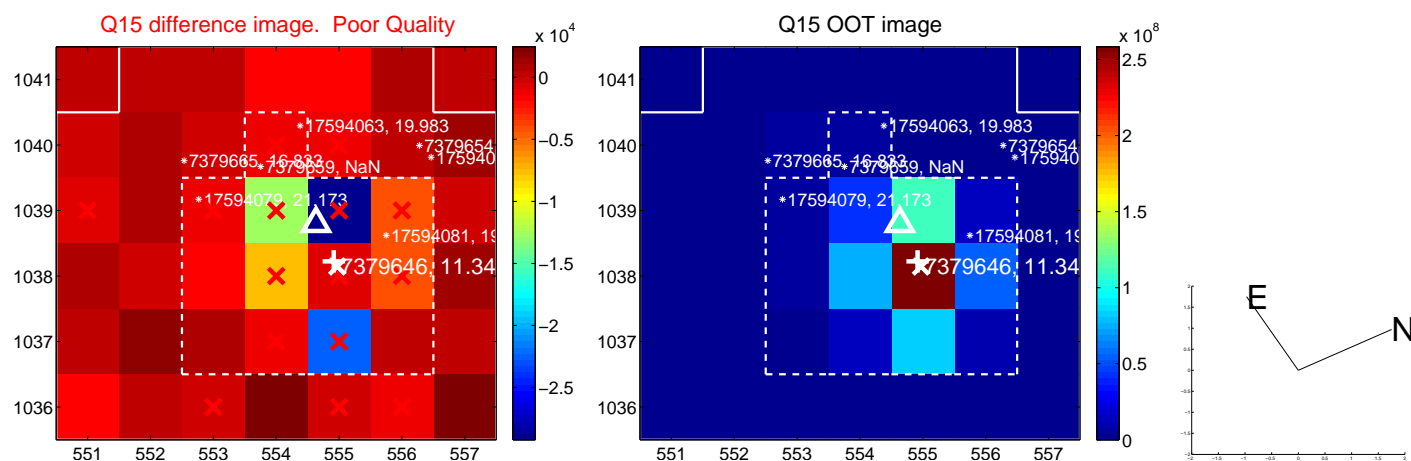
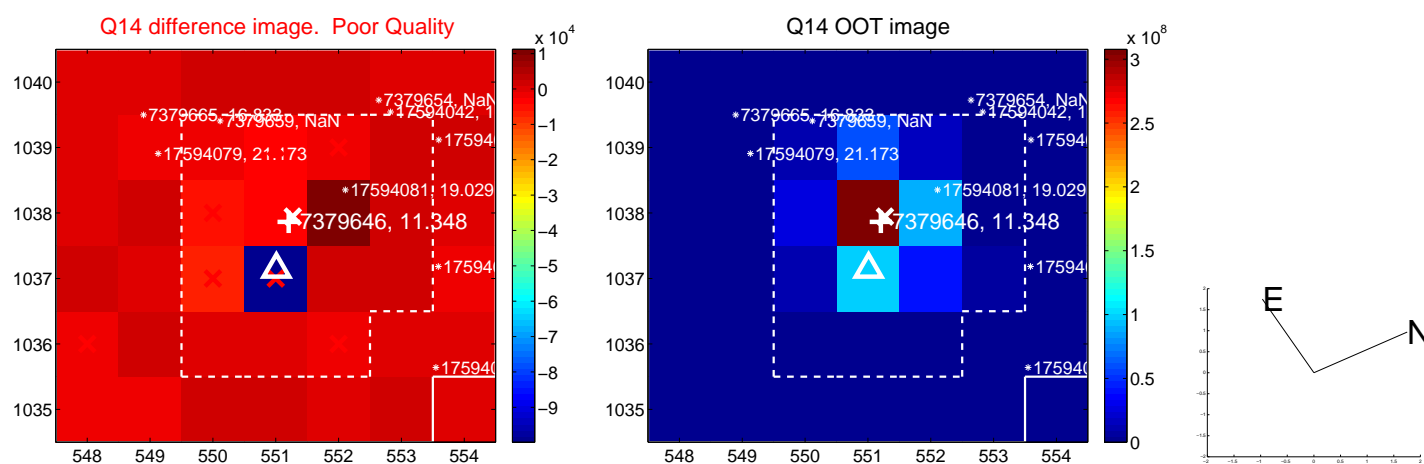
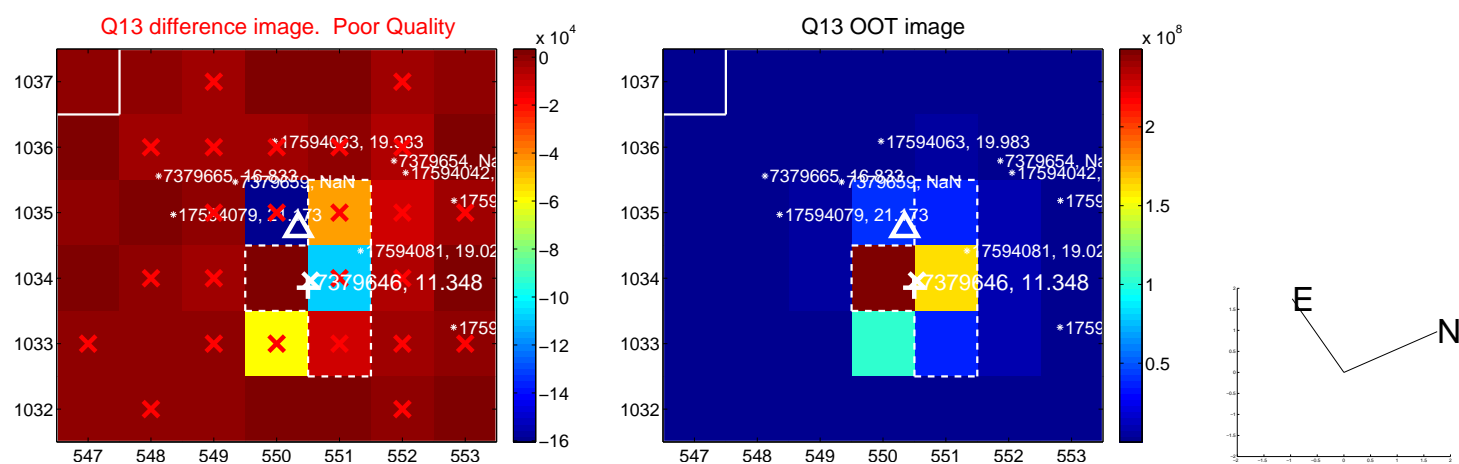
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

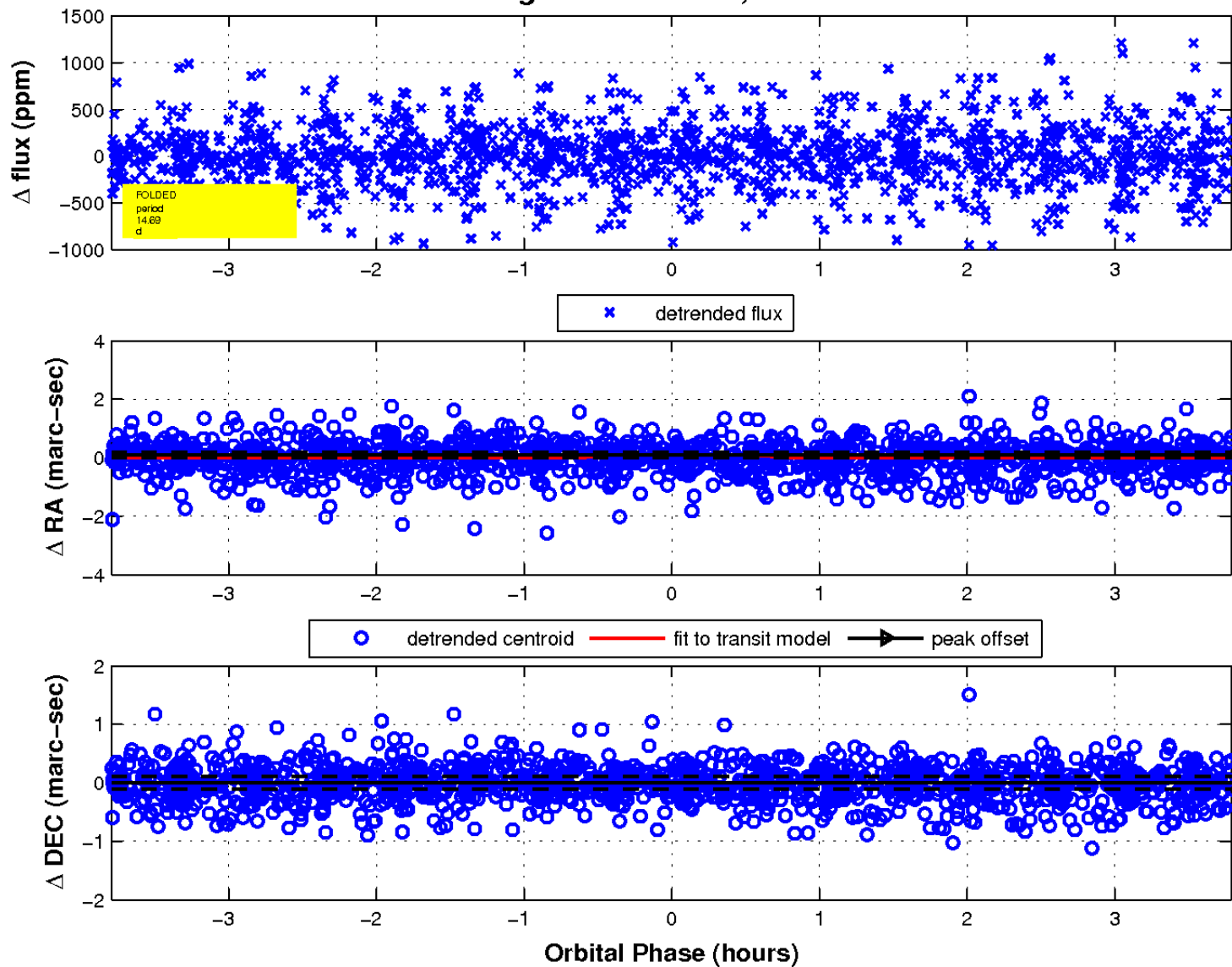
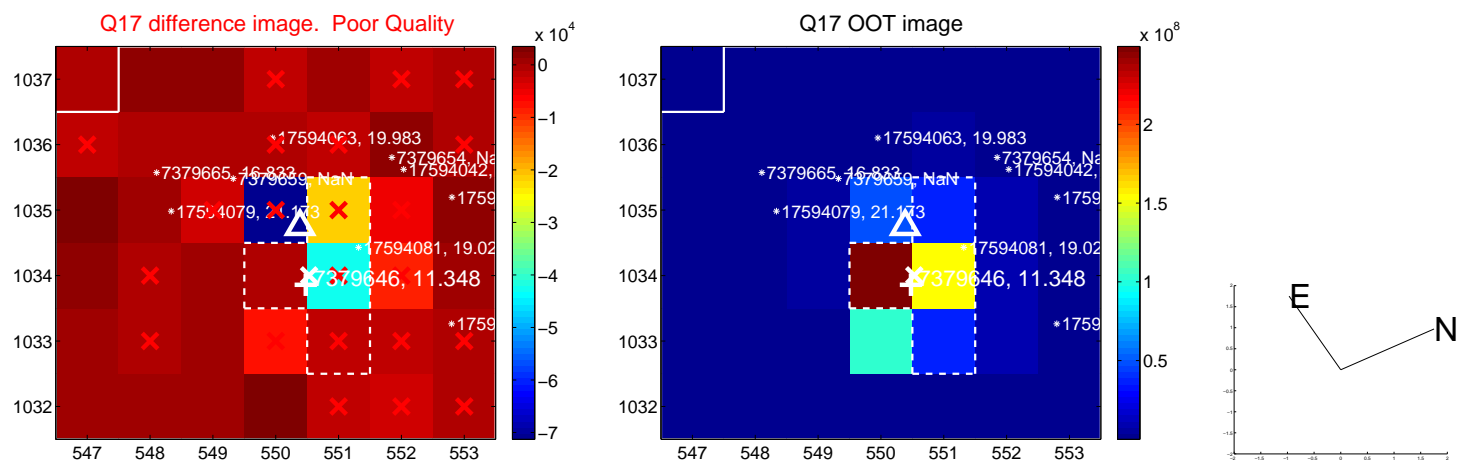


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



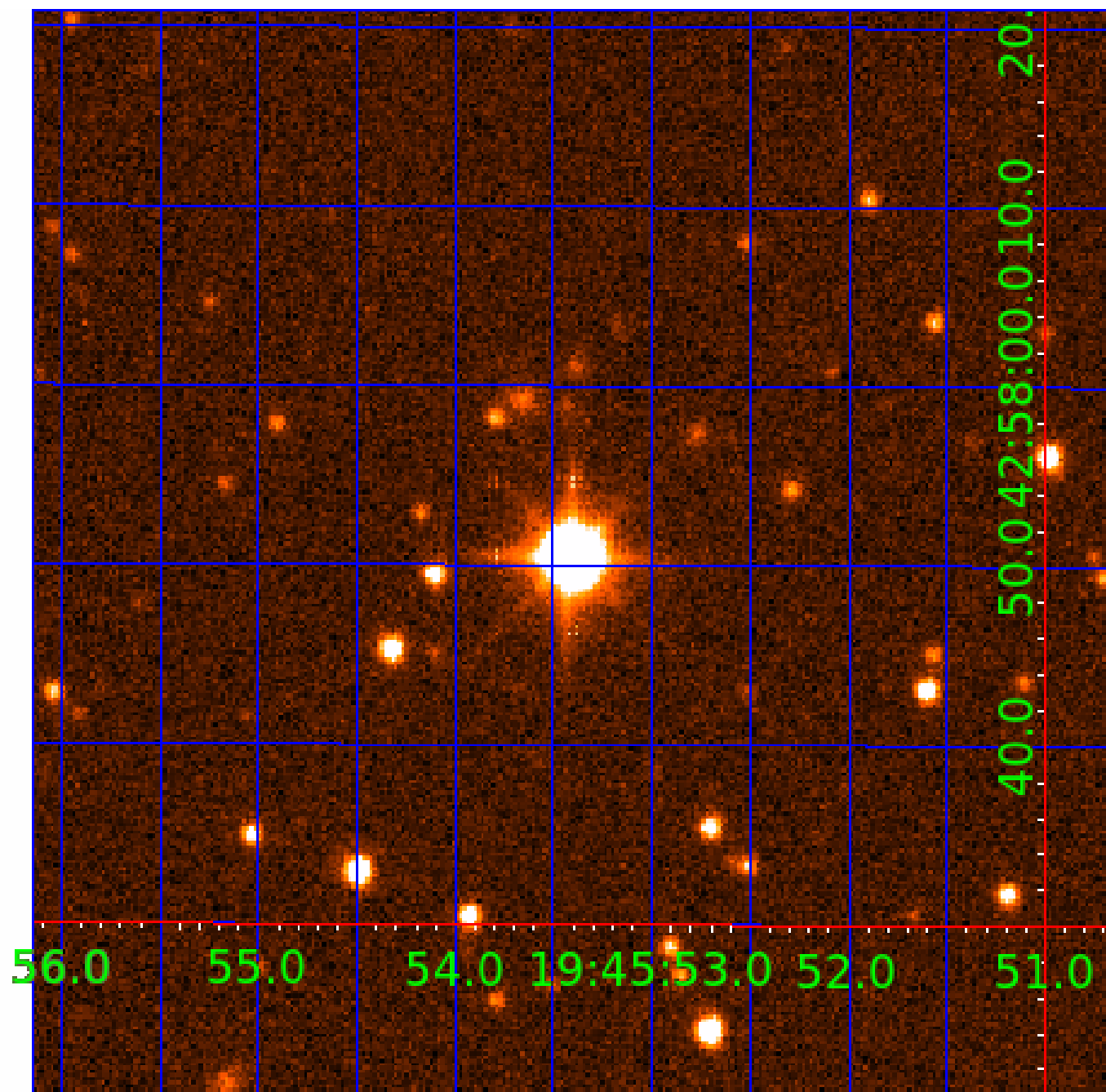


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 007379646

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007379646-01	OBS	No	0.963456	131.826779	14.8	7.011	9.7	4.1	4.04	7358	1.57	72699.24
007379646-02	OBS	No	97.295571	149.665891	534.9	1.765	10.5	11.4	4.04	7358	9.90	154.59
007379646-03	OBS	No	14.690897	133.994480	397.5	1.265	7.5	8.6	4.04	7358	8.39	1922.68
007379646-04	OBS	No	28.272278	137.439401	394.9	1.607	7.3	8.0	4.04	7358	8.98	803.20

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007379646-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
007379646-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
007379646-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
007379646-04	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED—HALO_GHOST

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

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

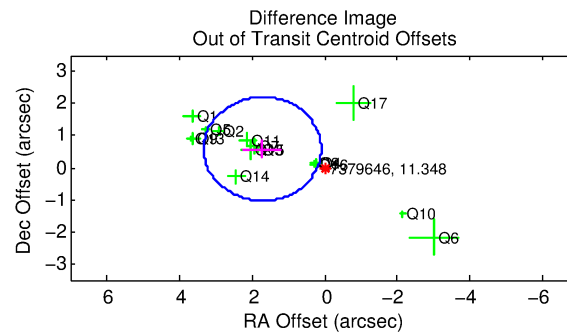
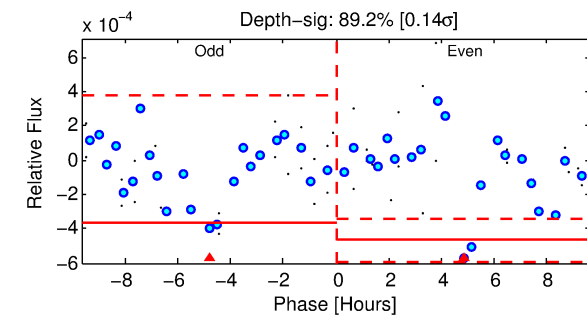
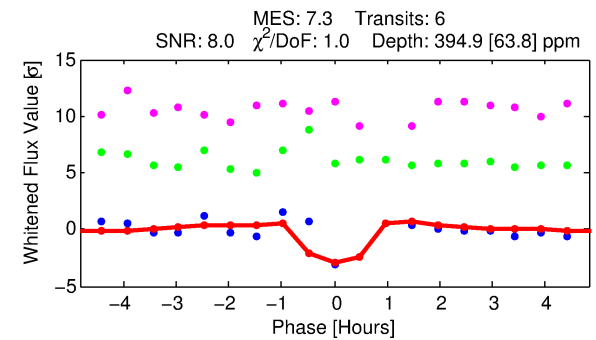
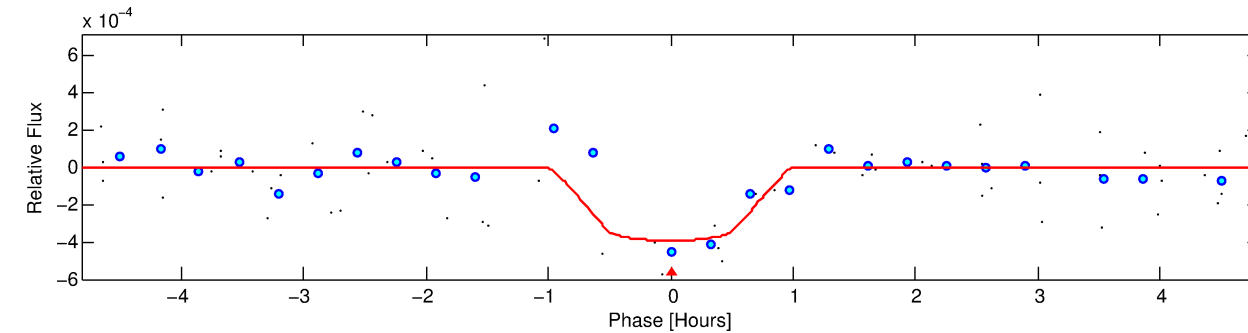
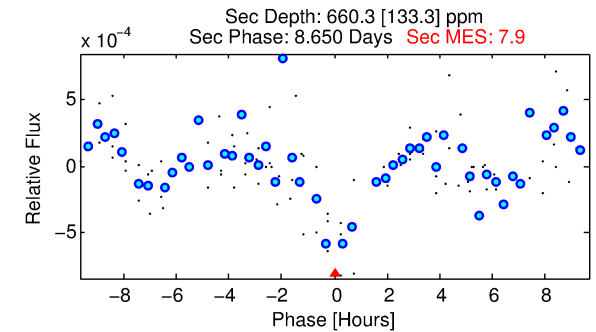
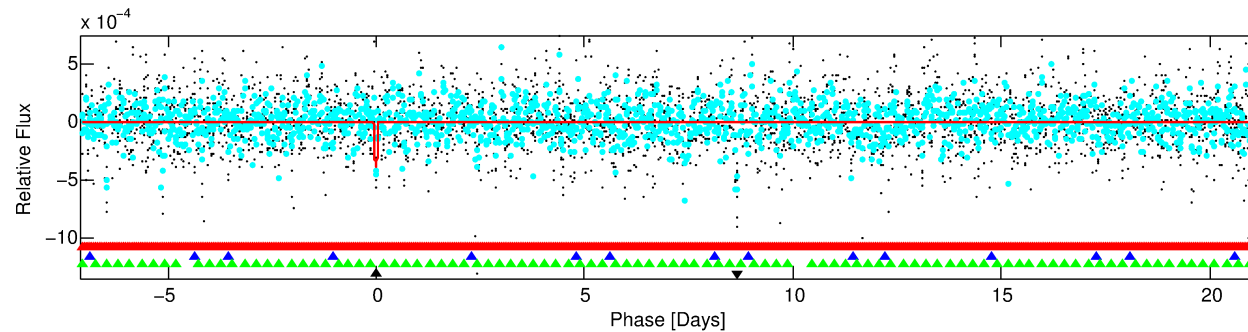
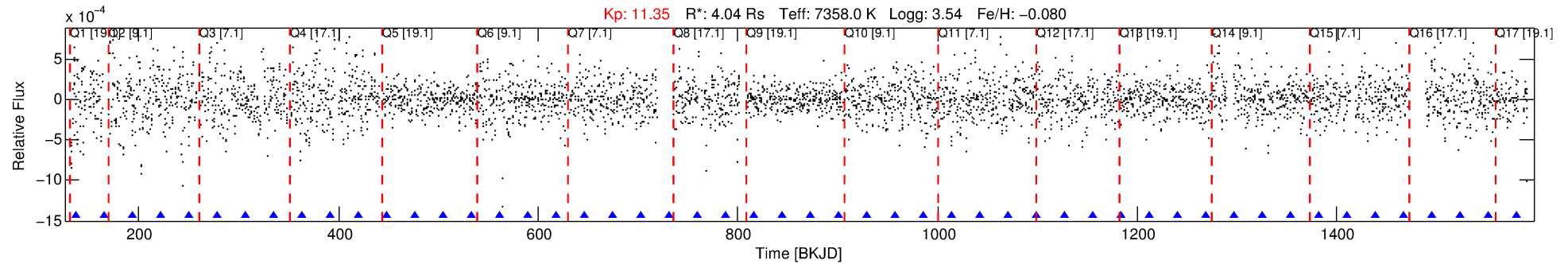
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 007379646-04

No Significant Match Found

# DV One-Page Summary

KIC: 7379646 Candidate: 4 of 4 Period: 28.272 d



## DV Fit Results:

Period = 28.27228 [0.00032] d  
Epoch = 137.4394 [0.0083] BKJD  
Rp/R\* = 0.0204 [0.0230]  
a/R\* = 79.40 [554.21]  
b = 0.83 [2.63]  
Seff = 803.20 [786.07]  
Teq = 1357 [332] K  
Rp = 8.99 [11.29] Re  
a = 0.2308 [0.1337] AU  
Ag = 239.75 [589.88] [0.40σ]  
Teffp = 8259 [4686] K [1.47σ]

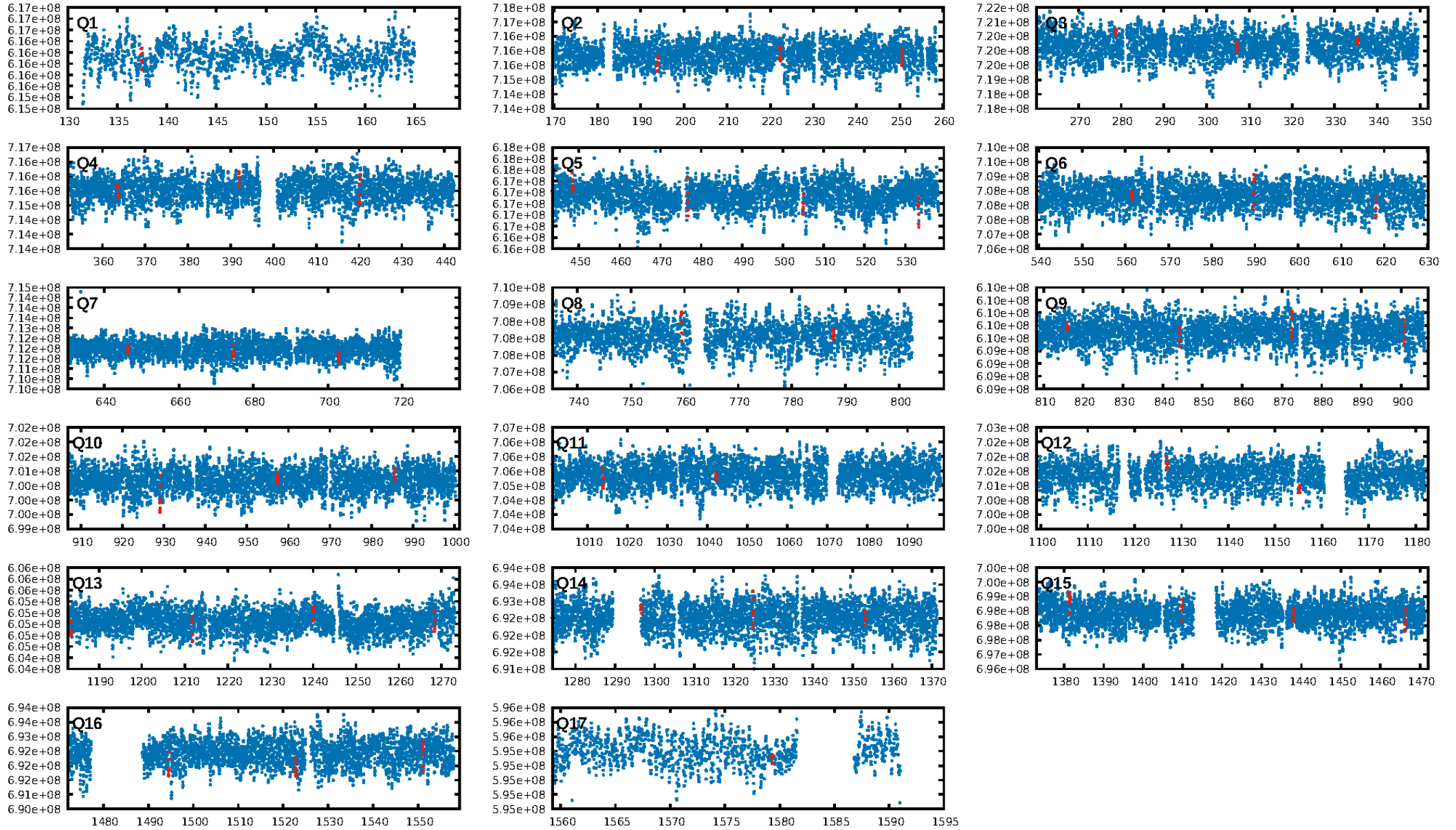
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [159.37σ]  
LongPeriod-sig: 100.0% [693.97σ]  
ModelChiSquare2-sig: 97.3%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 3.45e-07  
RollingBand-fgt: 1.00 [6/6]  
GhostDiagnostic-chr: -0.05549  
Centroid-sig: 2.5%  
Centroid-so: 0.626 arcsec [3.21σ]  
OotOffset-rm: 1.809 arcsec [3.36σ]  
KicOffset-rm: 2.043 arcsec [3.61σ]  
OotOffset-st: 4/4/3/5 [16]  
KicOffset-st: 4/4/3/5 [16]  
DiffImageQuality-fgm: 0.62 [10/16]  
DiffImageOverlap-fno: 0.50 [8/16]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 10:19:39 Z

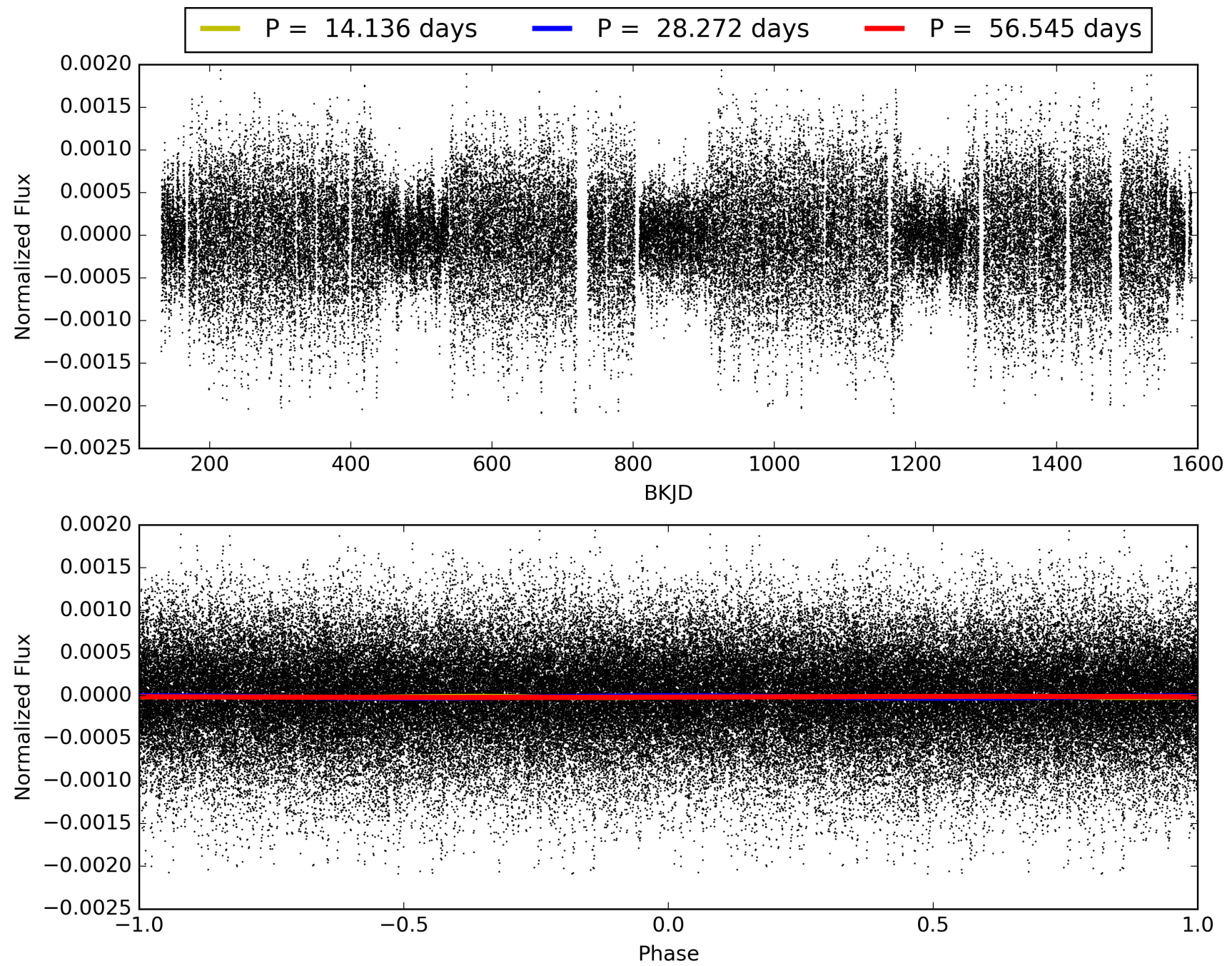
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 007379646-04, PDC Light Curves





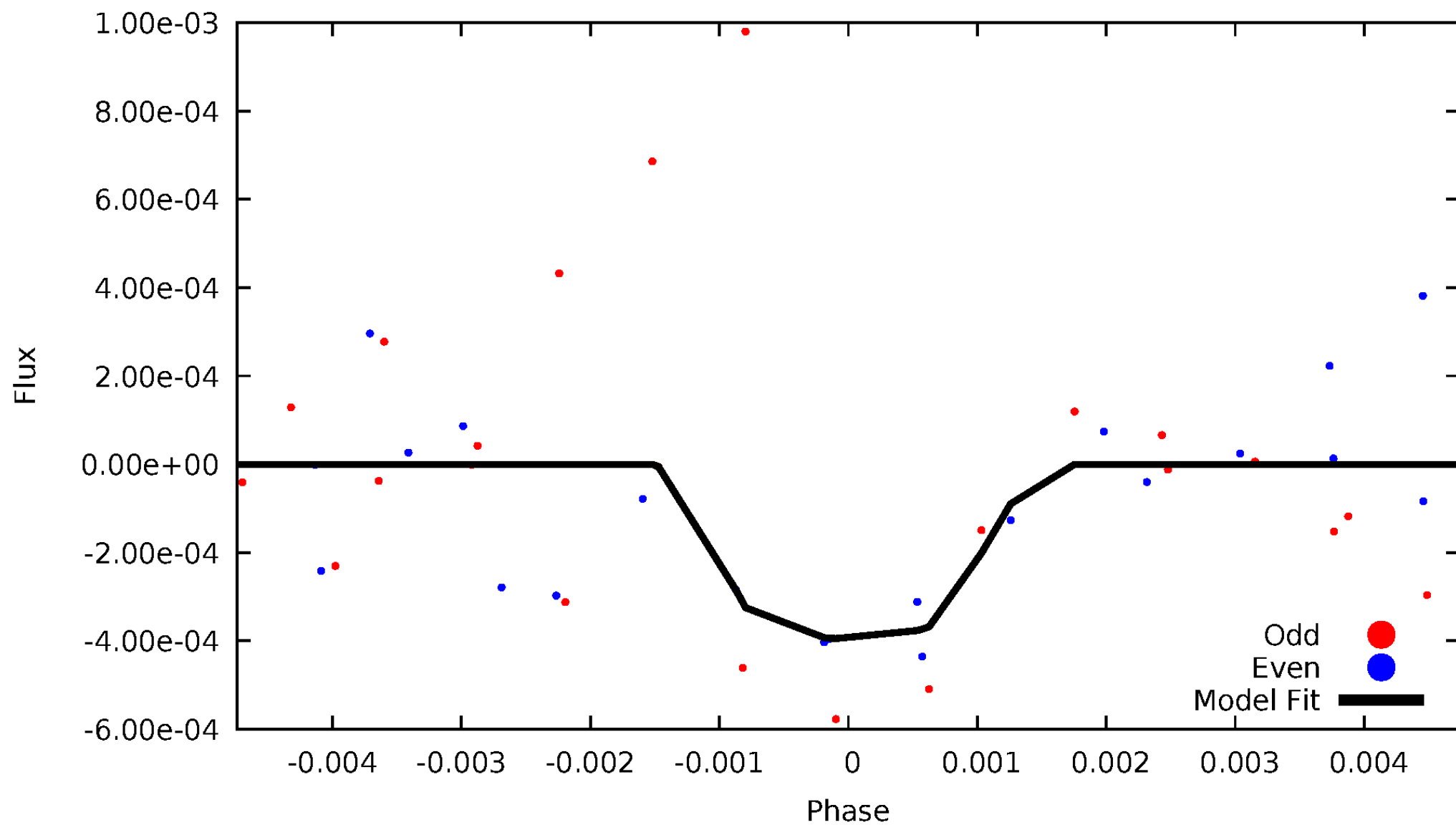
TCE 007379646-04





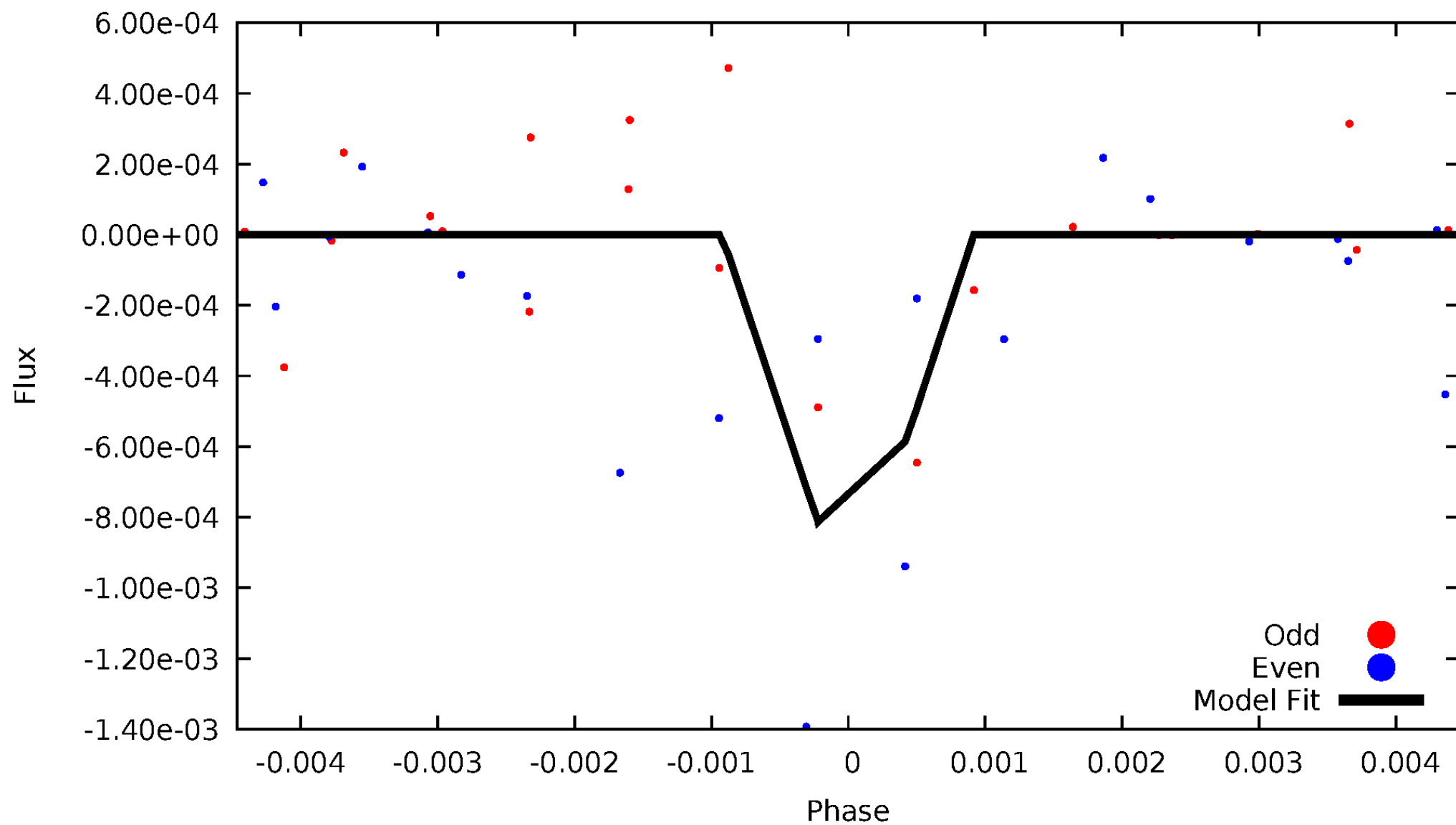
# DV Odd/Even

TCE 007379646-04



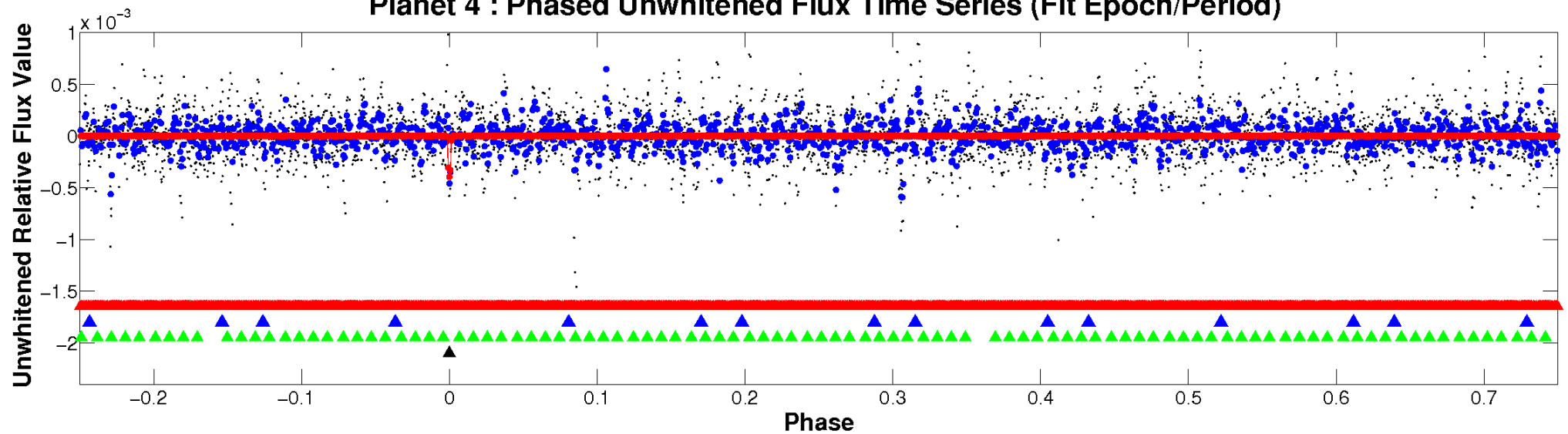
# ALT Odd/Even

TCE 007379646-04

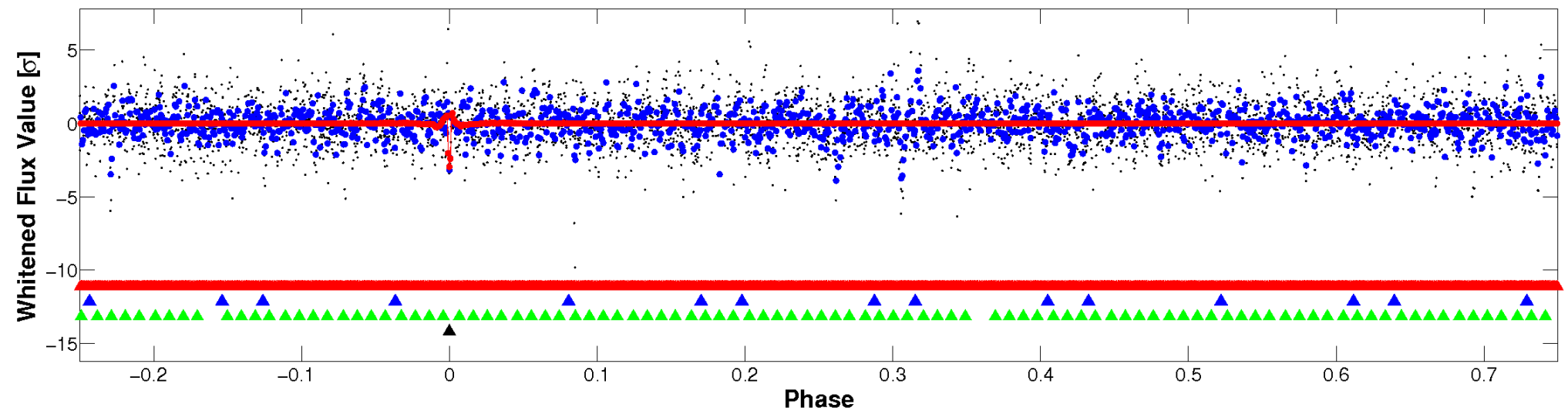


# Non-Whitened Vs. Whitened Light Curve

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

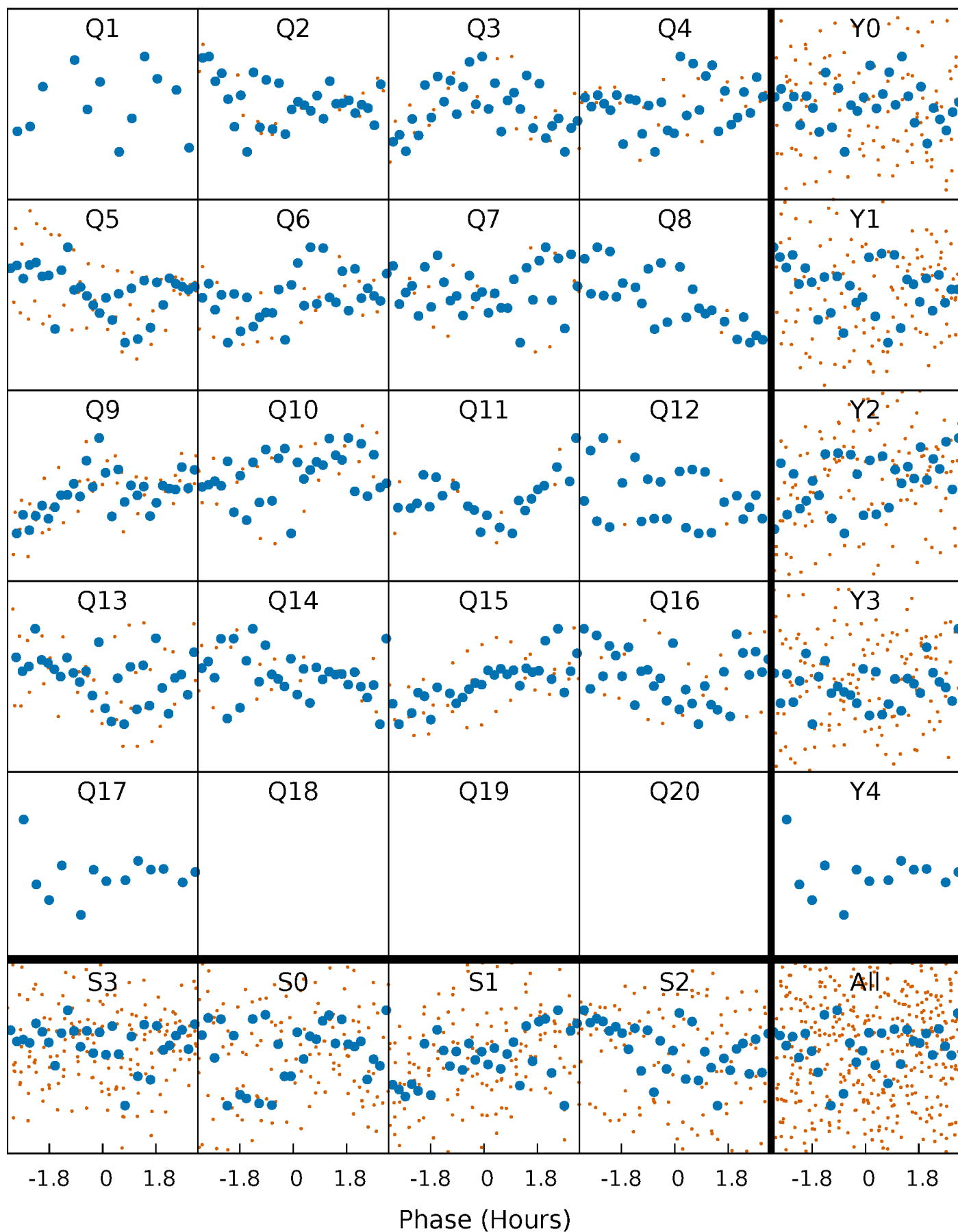


## Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



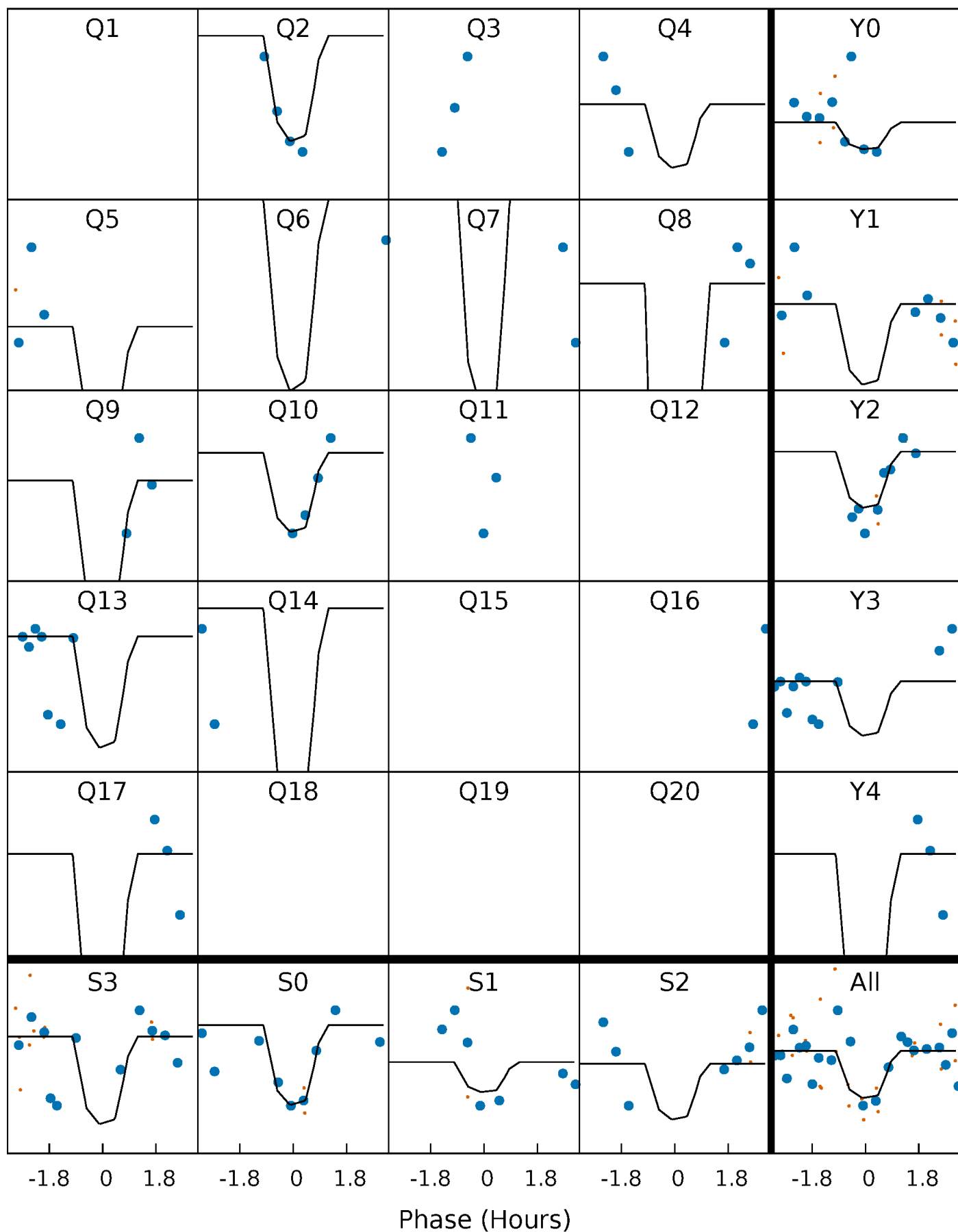
# PDC Quarter-Phased Transit Curves

TCE 007379646-04   P= 28.272278 Days    $T_0=137.439401$  (BKJD)



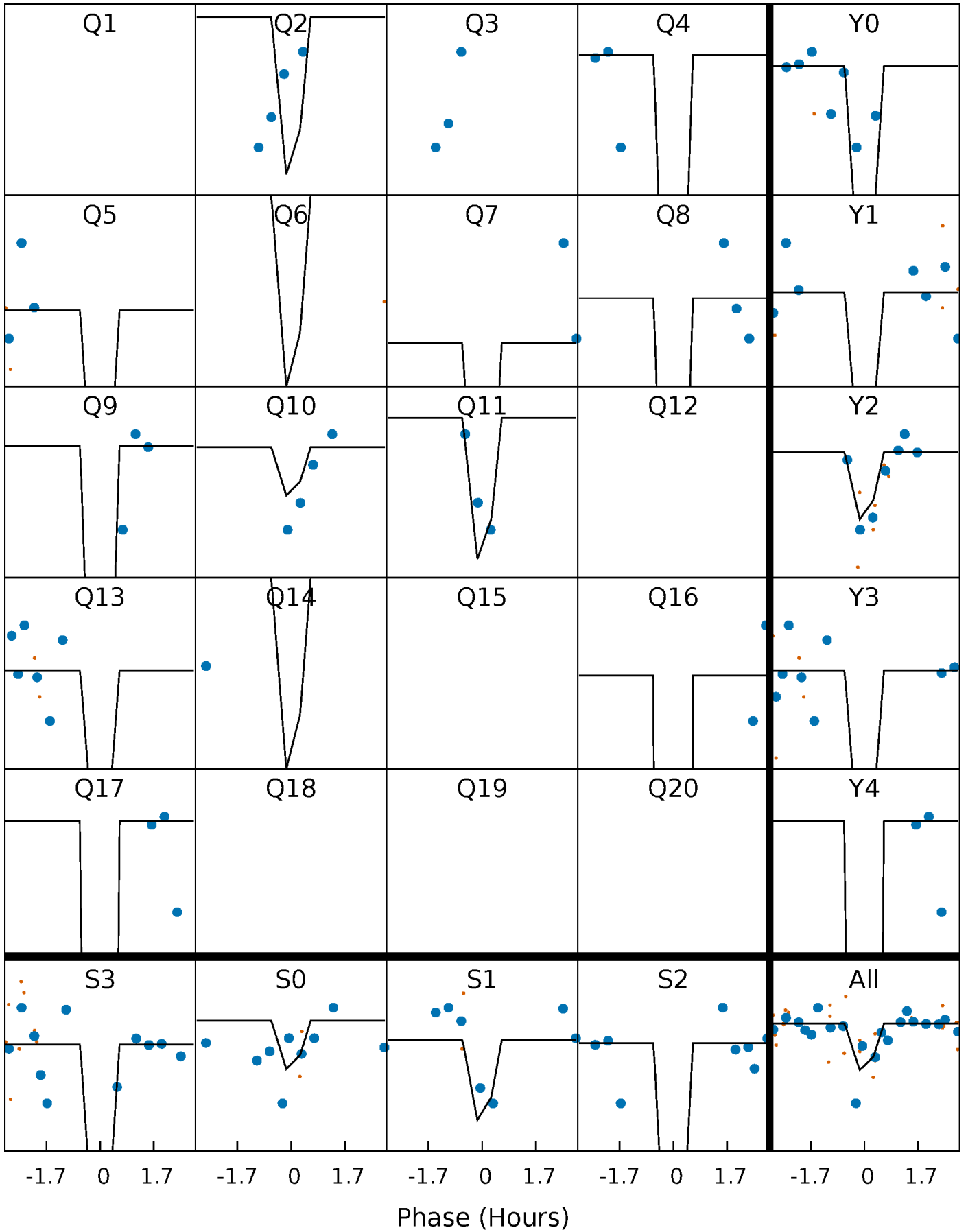
# DV Quarter-Phased Transit Curves

TCE 007379646-04   P= 28.272278 Days    $T_0=137.439401$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 007379646-04   P= 28.272328 Days    $T_0=137.441375$  (BKJD)

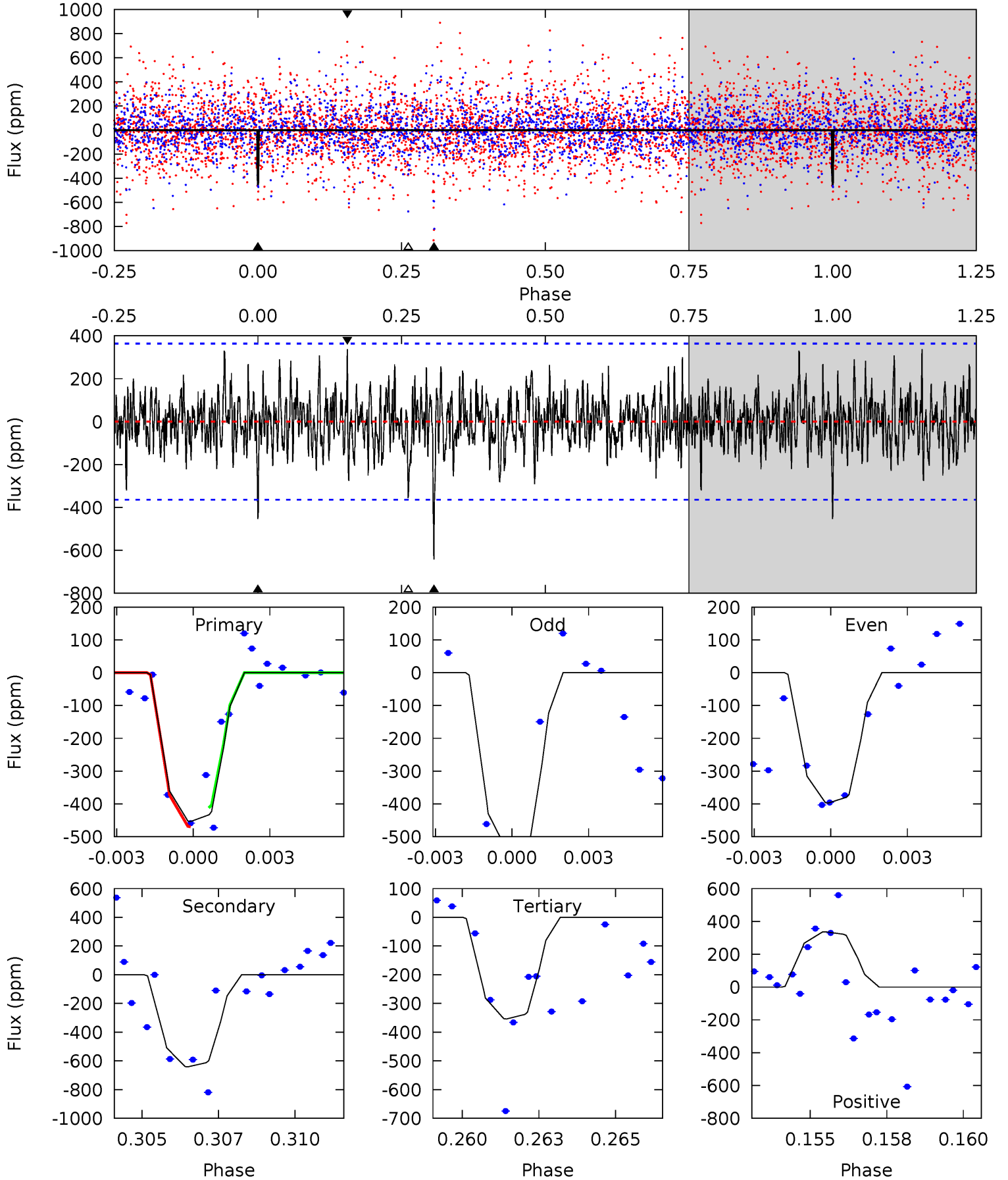




# DV Model-Shift Uniqueness Test

007379646-04, P = 28.272278 Days, E = 109.167123 Days

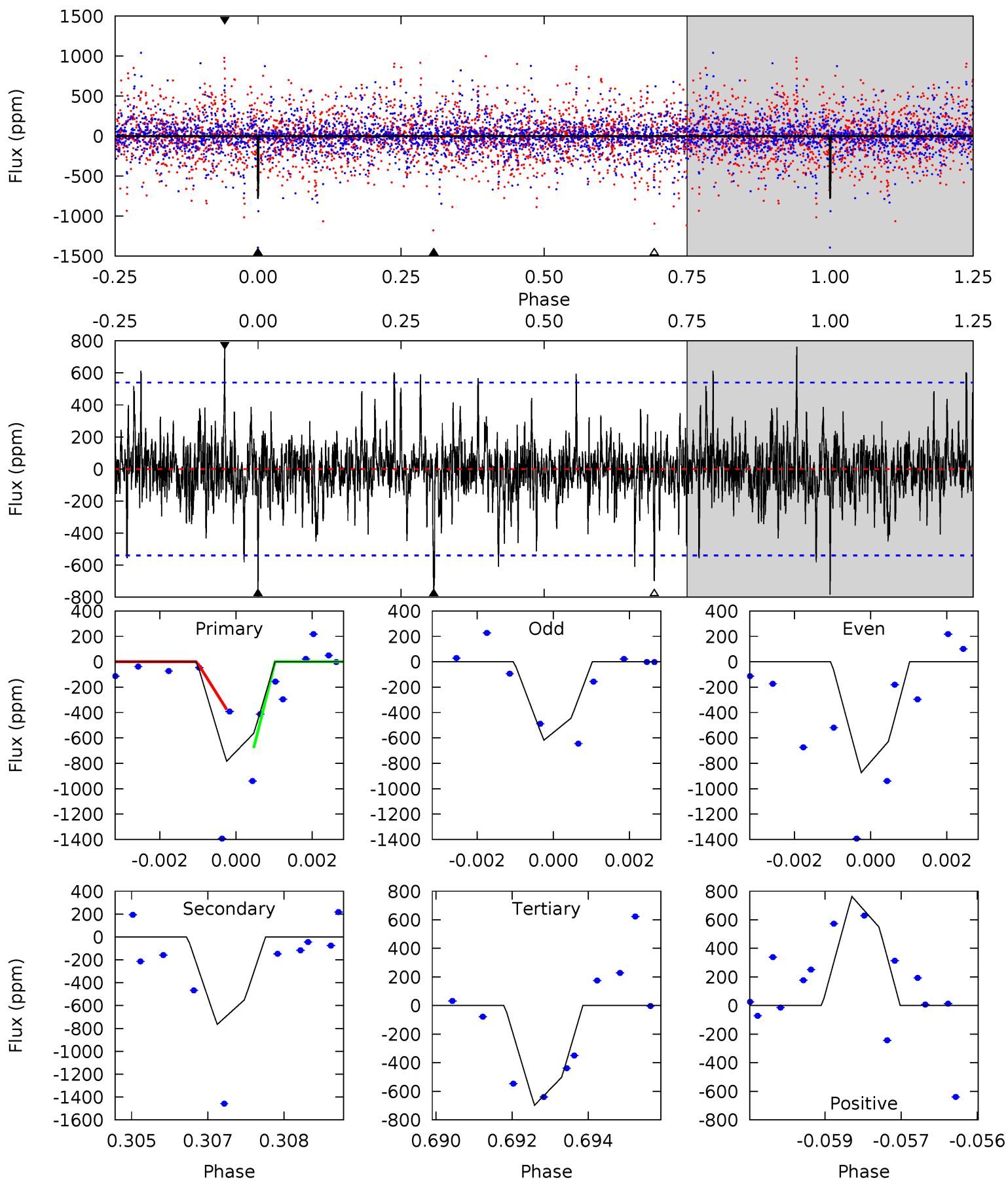
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.59	9.31	5.14	4.89	5.28	3.01	1.47	1.44	1.70	4.17	4.42	1.03	1.08	0.34	0.42



# Alt Model-Shift Uniqueness Test

007379646-04, P = 28.272328 Days, E = 109.169047 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.76	7.58	6.91	7.56	5.35	3.12	1.48	0.85	0.20	0.67	0.02	1.01	1.25	0.49	1.37



### Stellar Parameters For KIC 007379646

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$7358^{+205}_{-308}$	$3.538^{+0.580}_{-0.061}$	$-0.080^{+0.250}_{-0.300}$	$4.037^{+0.396}_{-2.242}$	$2.054^{+0.134}_{-0.570}$	$0.044^{+0.322}_{-0.010}$
	+3%/-4%	+16%/-2%	+312%/-375%	+10%/-56%	+7%/-28%	+733%/-22%
Source	KIC0	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 007379646-04 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-642 \pm 69$	$9.88^{+8.58}_{-6.33}$	$1825^{+118}_{-248}$	$7254^{+6910}_{-1927}$	$194^{+1312}_{-139}$
Alt.	$-765 \pm 101$	$11.39^{+9.65}_{-6.69}$	$1818^{+137}_{-258}$	$6940^{+5667}_{-1720}$	$169^{+858}_{-118}$

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

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

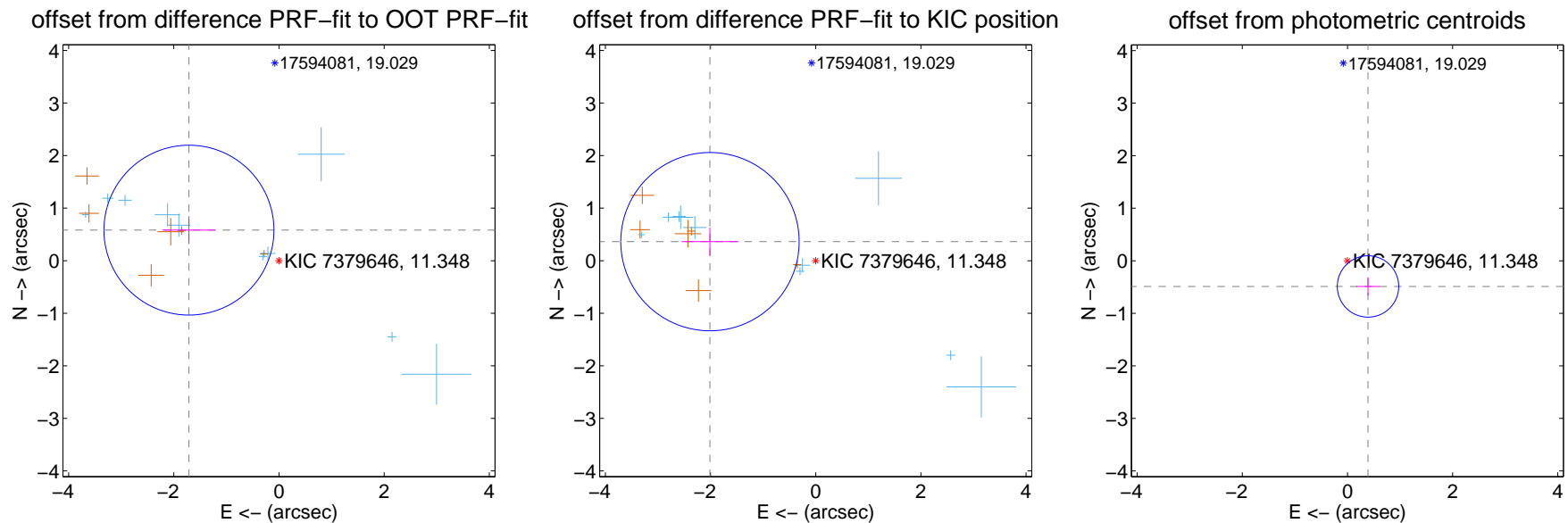
## DV Centroid Data

Supplemental centroid analysis for 007379646-04. **Kepler magnitude: 11.35.** Transit SNR 8.01

There are 10 quarters with good PRF difference image offsets

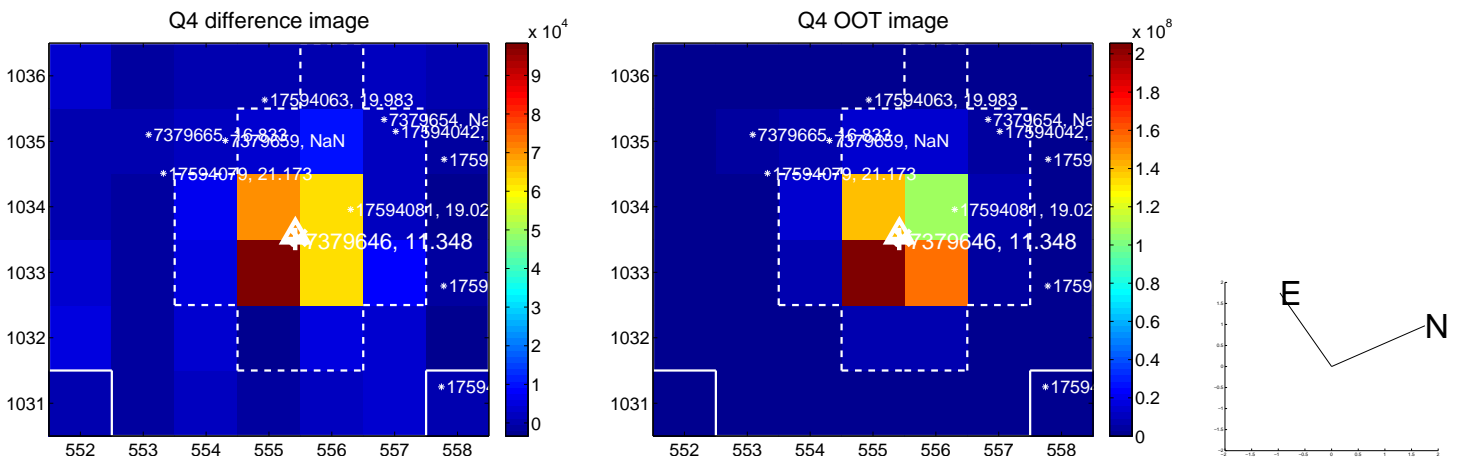
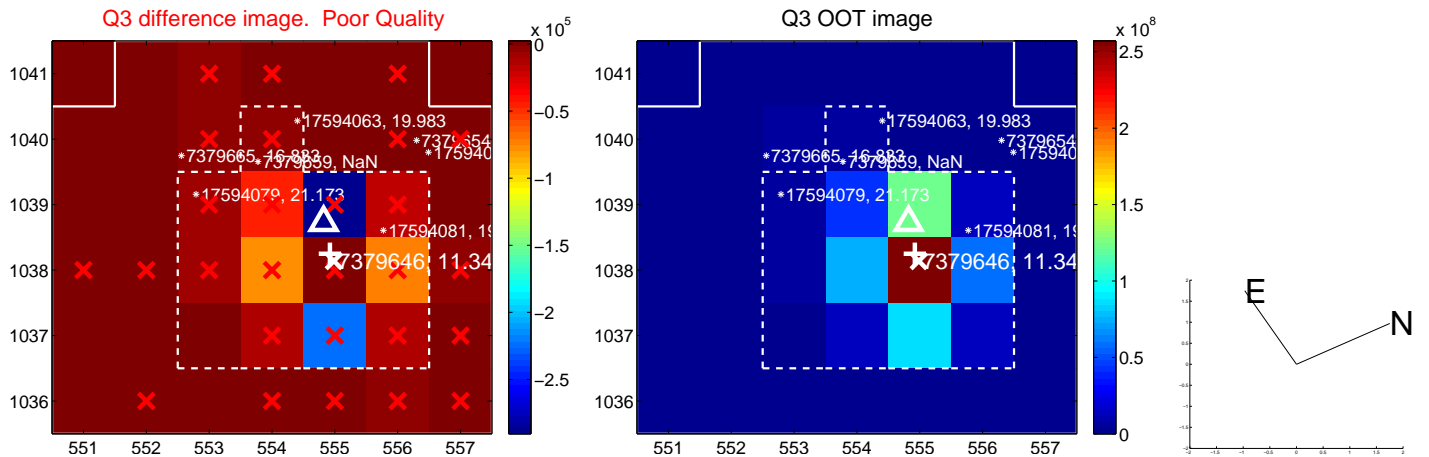
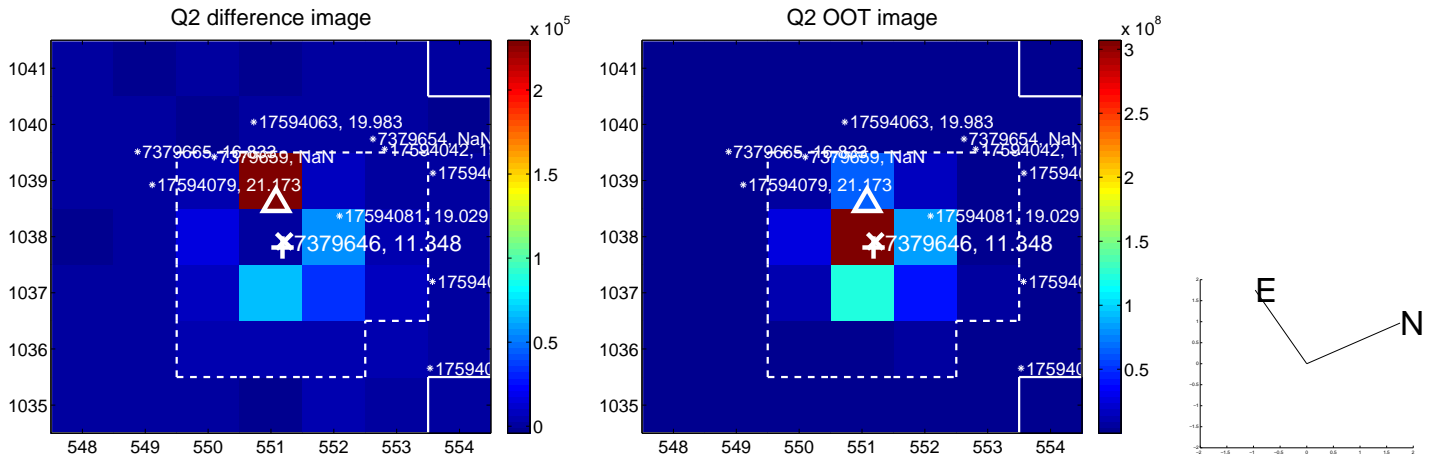
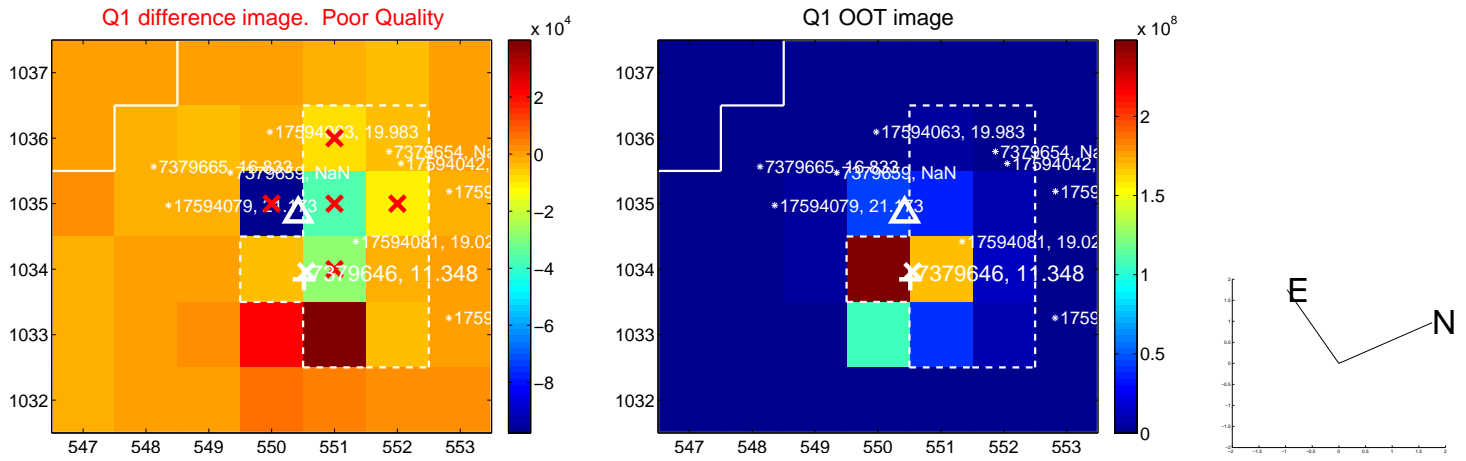
The direct PRF centroid is offset from the target star catalog position by about 0.60 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	<b><math>1.809 \pm 0.539</math></b>	<b>3.36</b>	$1.712 \pm 0.505$	$0.582 \pm 0.264$
PRF-fit source offset from KIC position	<b><math>2.043 \pm 0.565</math></b>	<b>3.61</b>	$2.011 \pm 0.539$	$0.362 \pm 0.268$
photometric centroid source offset	<b><math>0.63 \pm 0.19</math></b>	<b>3.21</b>	$-0.39 \pm 0.22$	$-0.49 \pm 0.17$

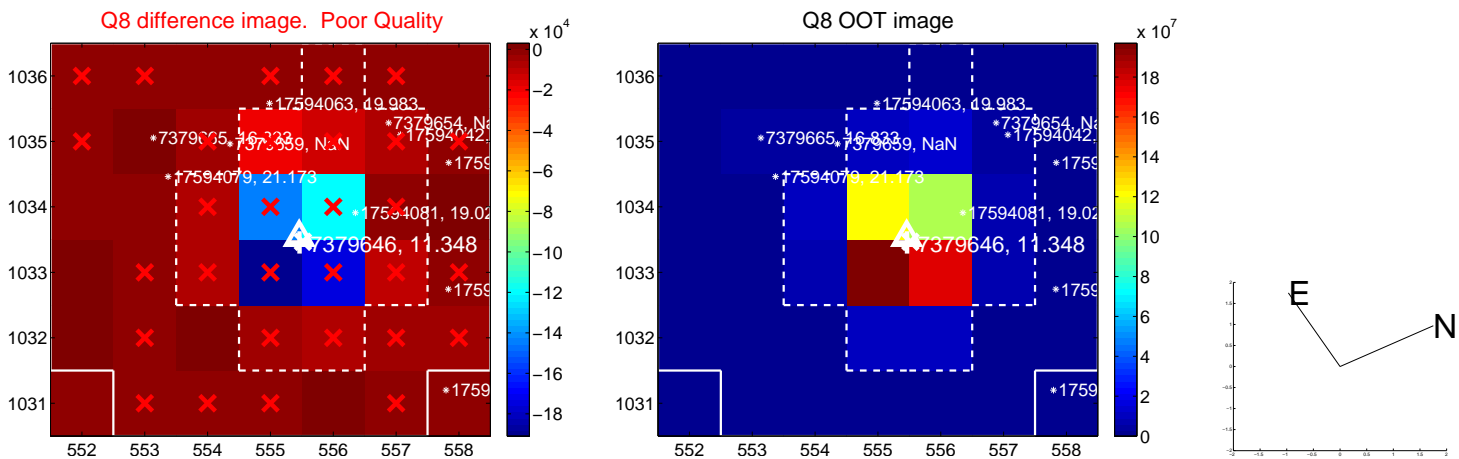
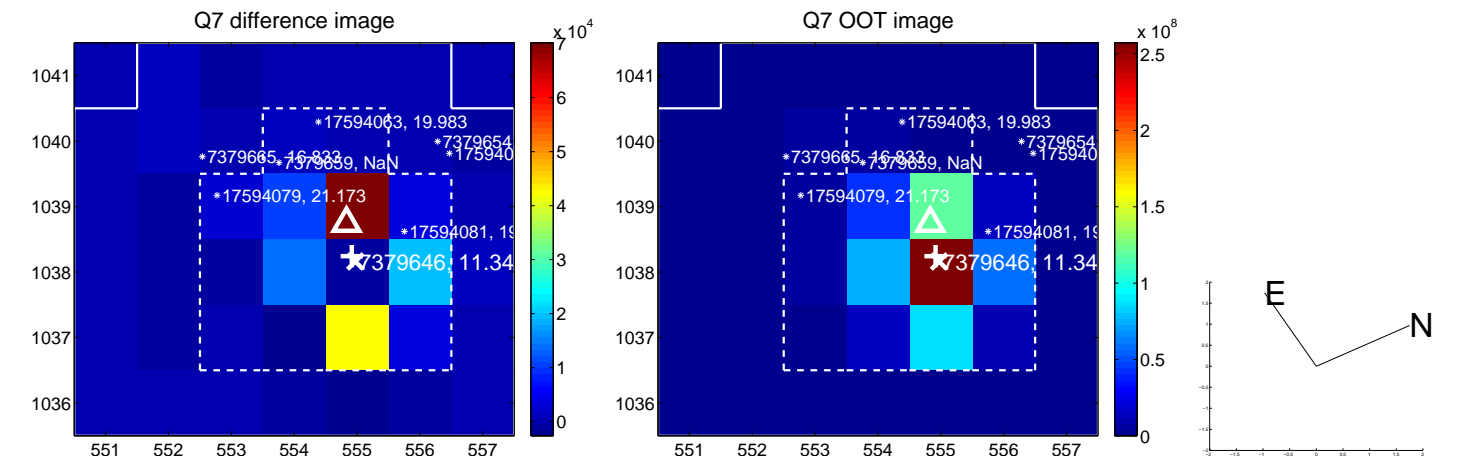
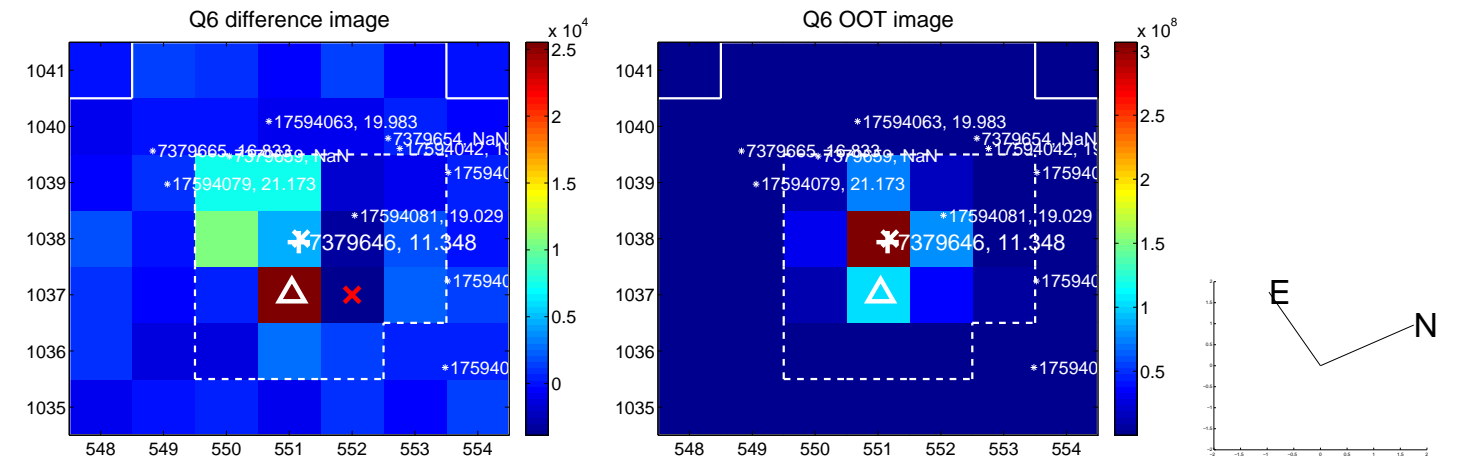
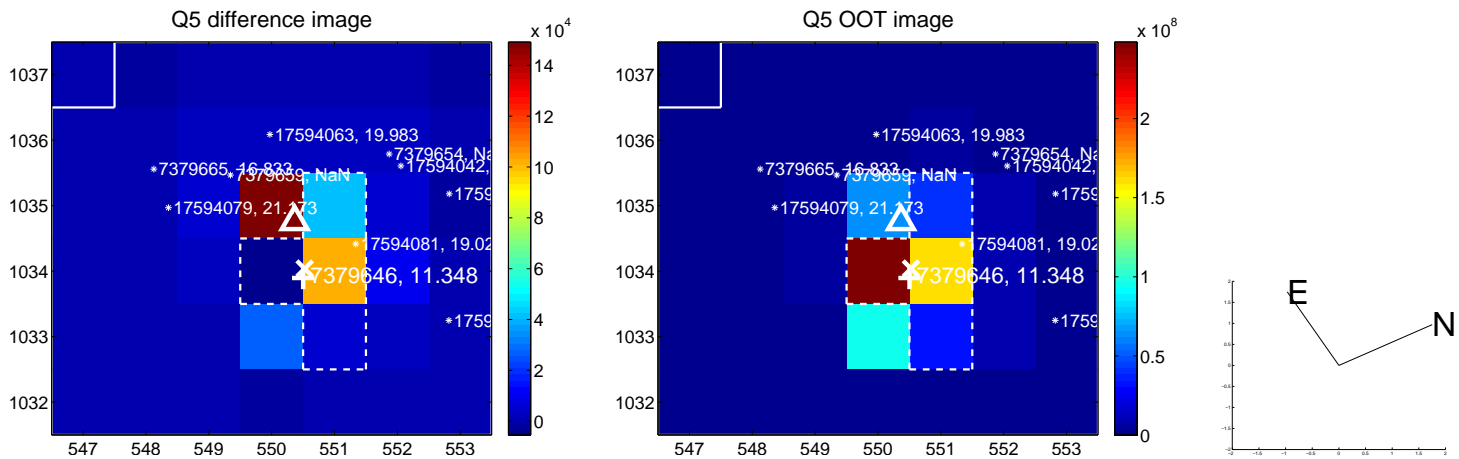


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

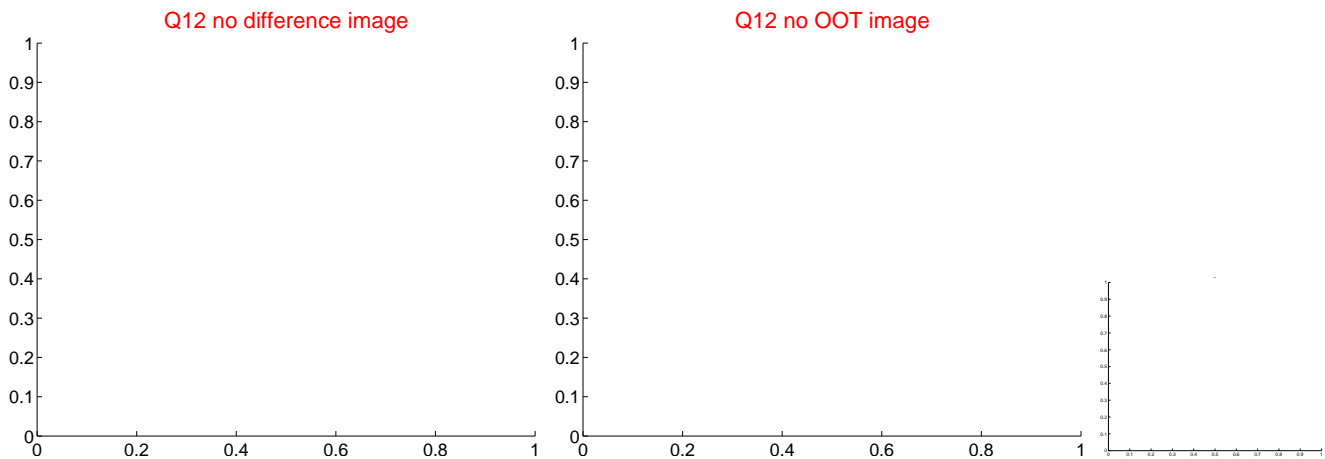
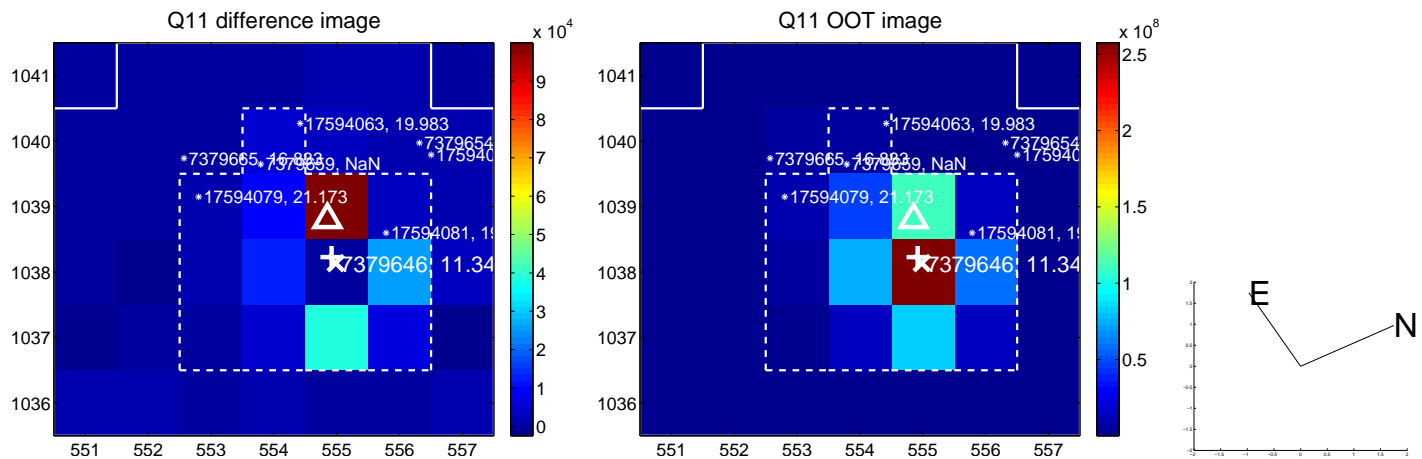
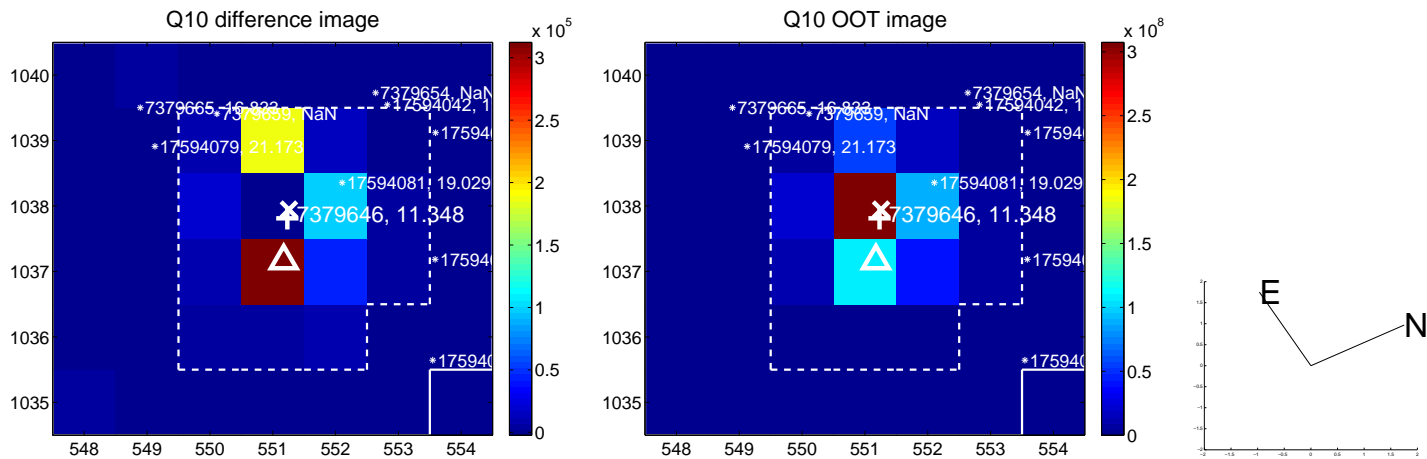
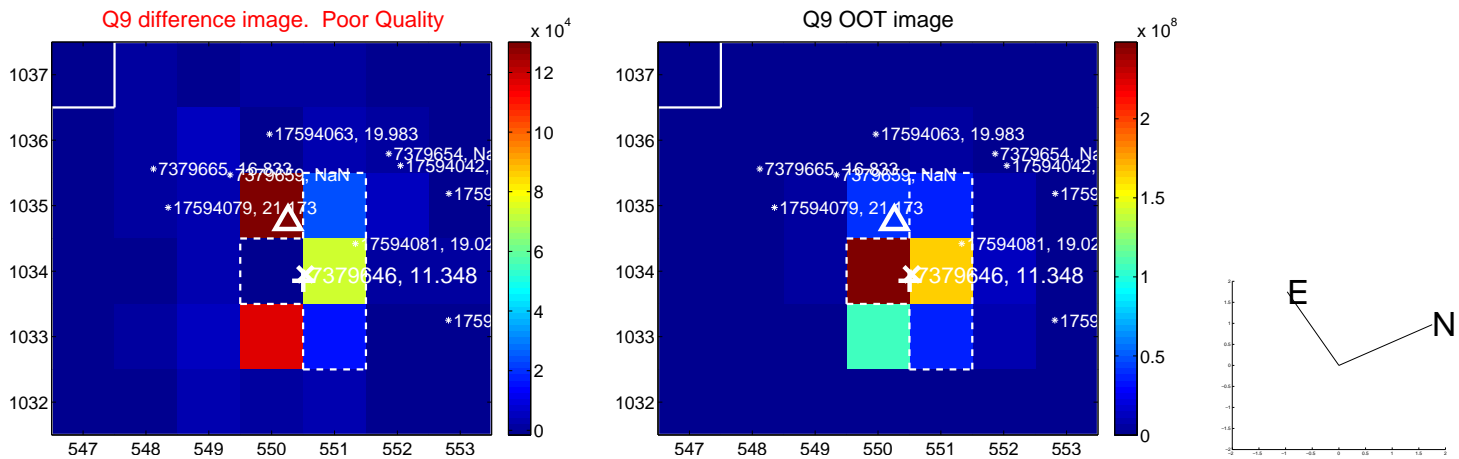


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

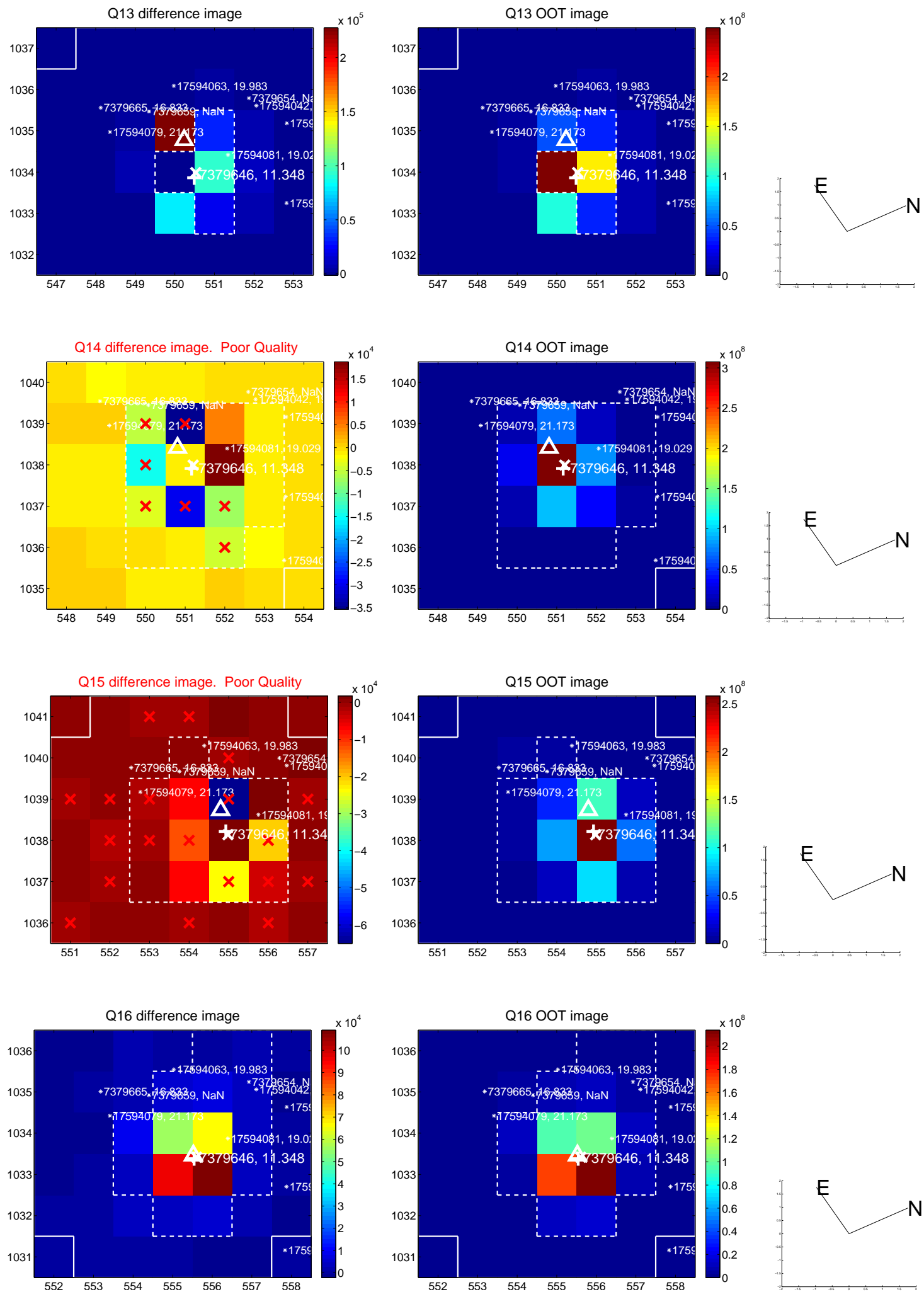




white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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





UKIRT Image

Declination

