

# KIC 003456198

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
003456198-01	OBS	No	0.842770	131.744226	53.5	3.055	9.0	10.5	3.44	7892	2.92	83813.76
003456198-02	OBS	No	0.779860	132.074120	52.9	1.237	9.5	7.0	3.44	7892	2.91	92947.67
003456198-03	OBS	No	2.028035	133.076809	25.0	14.407	9.1	4.6	3.44	7892	2.15	25991.22

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003456198-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
003456198-02	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
003456198-03	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—CENT_FEW_MEAS—HALO_GHOST

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

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

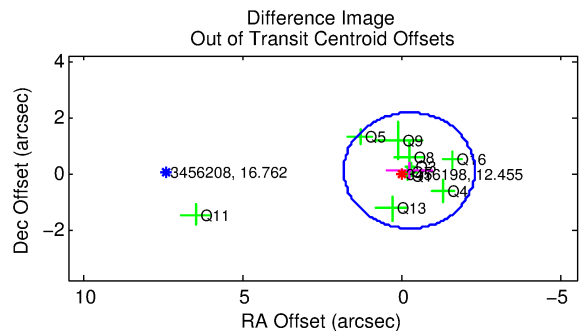
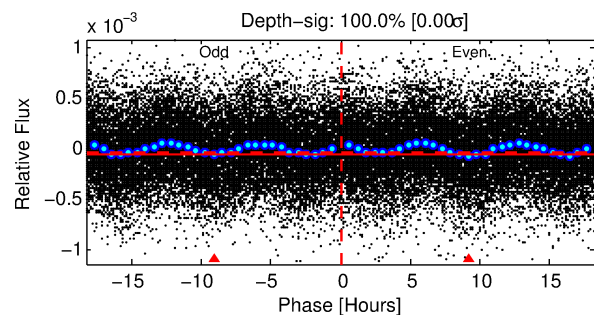
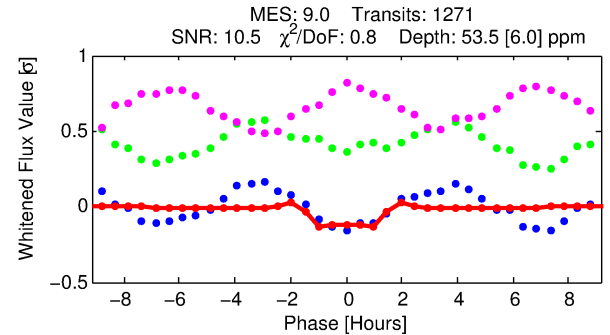
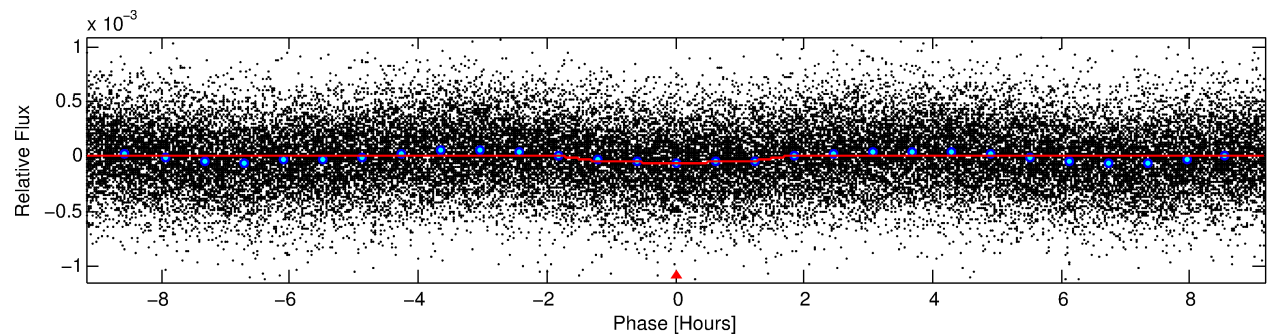
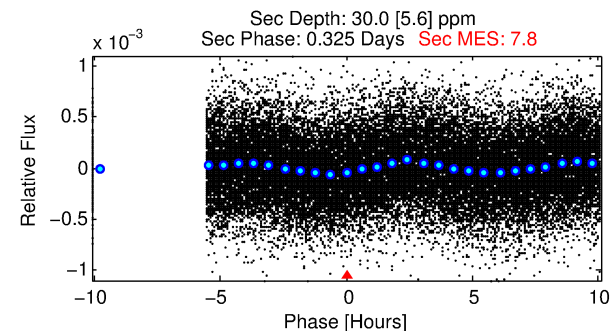
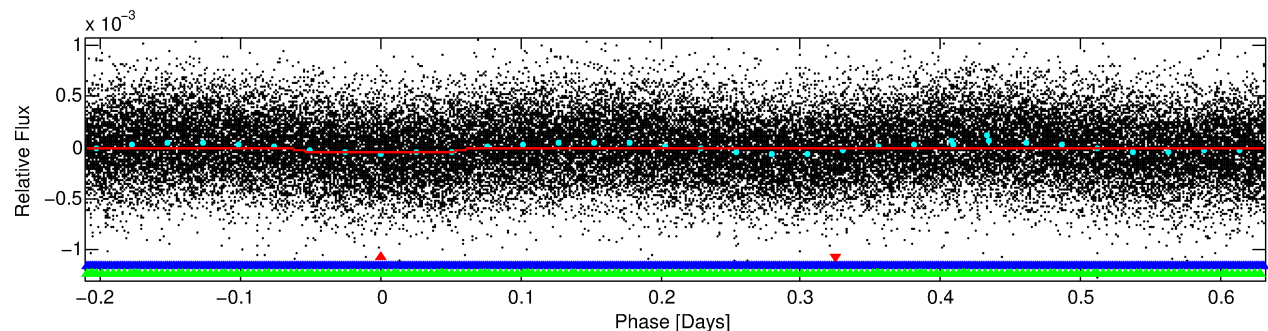
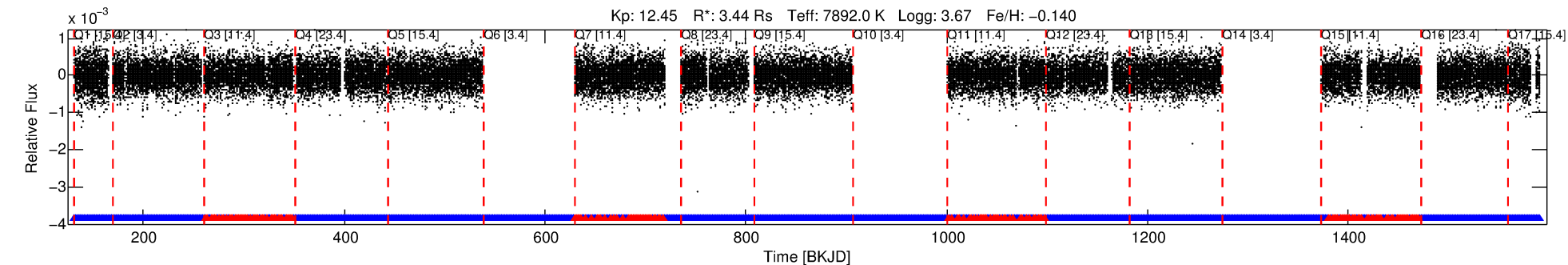
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 003456198-01

No Significant Match Found

# DV One-Page Summary

KIC: 3456198 Candidate: 1 of 3 Period: 0.843 d



## DV Fit Results:

Period = 0.84277 [0.00001] d  
Epoch = 131.7442 [0.0023] BKJD  
Rp/R\* = 0.0078 [0.0021]  
a/R\* = 1.34 [1.00]  
b = 0.90 [0.36]  
Seff = 83813.76 [64070.17]  
Teq = 4339 [829] K  
Rp = 2.93 [1.61] Re  
a = 0.0221 [0.0103] AU  
Ag = 0.94 [0.89] [-0.06σ]  
Teffp = 6611 [995] K [1.75σ]

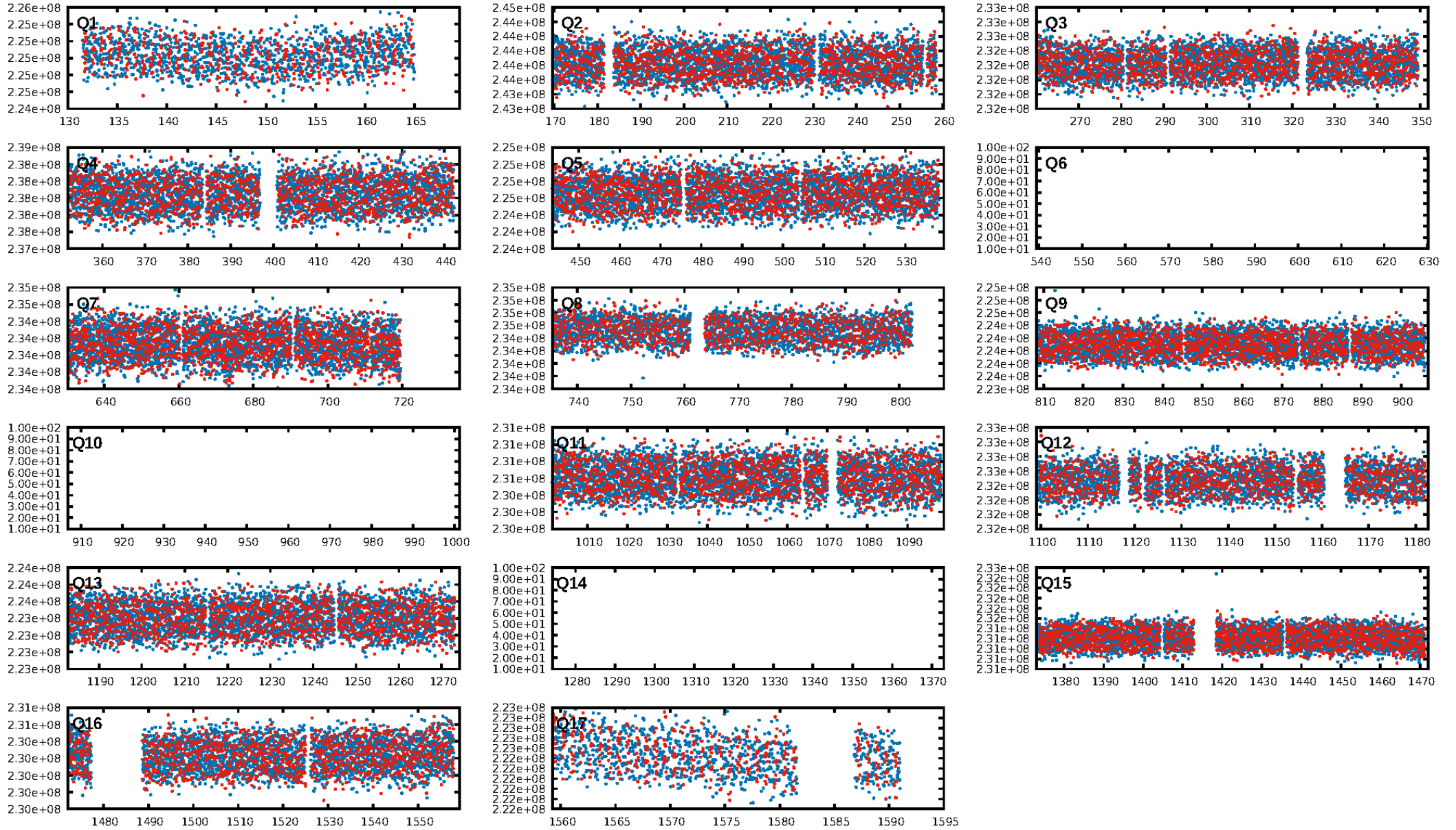
## DV Diagnostic Results:

ShortPeriod-sig: 35.3% [0.46σ]  
LongPeriod-sig: 94.7% [1.93σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
**Bootstrap-pfa: 2.05e-05**  
RollingBand-fgt: 0.84 [1006/1199]  
GhostDiagnostic-chr: 3.194  
Centroid-sig: 16.1%  
Centroid-so: 0.501 arcsec [1.24σ]  
OotOffset-rm: 0.272 arcsec [0.40σ]  
KicOffset-rm: 0.400 arcsec [0.69σ]  
OotOffset-st: 0/3/3/4 [10]  
KicOffset-st: 0/3/3/4 [10]  
DiffImageQuality-fgm: 0.60 [6/10]  
DiffImageOverlap-fno: 1.00 [14/14]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 07:41:06 Z

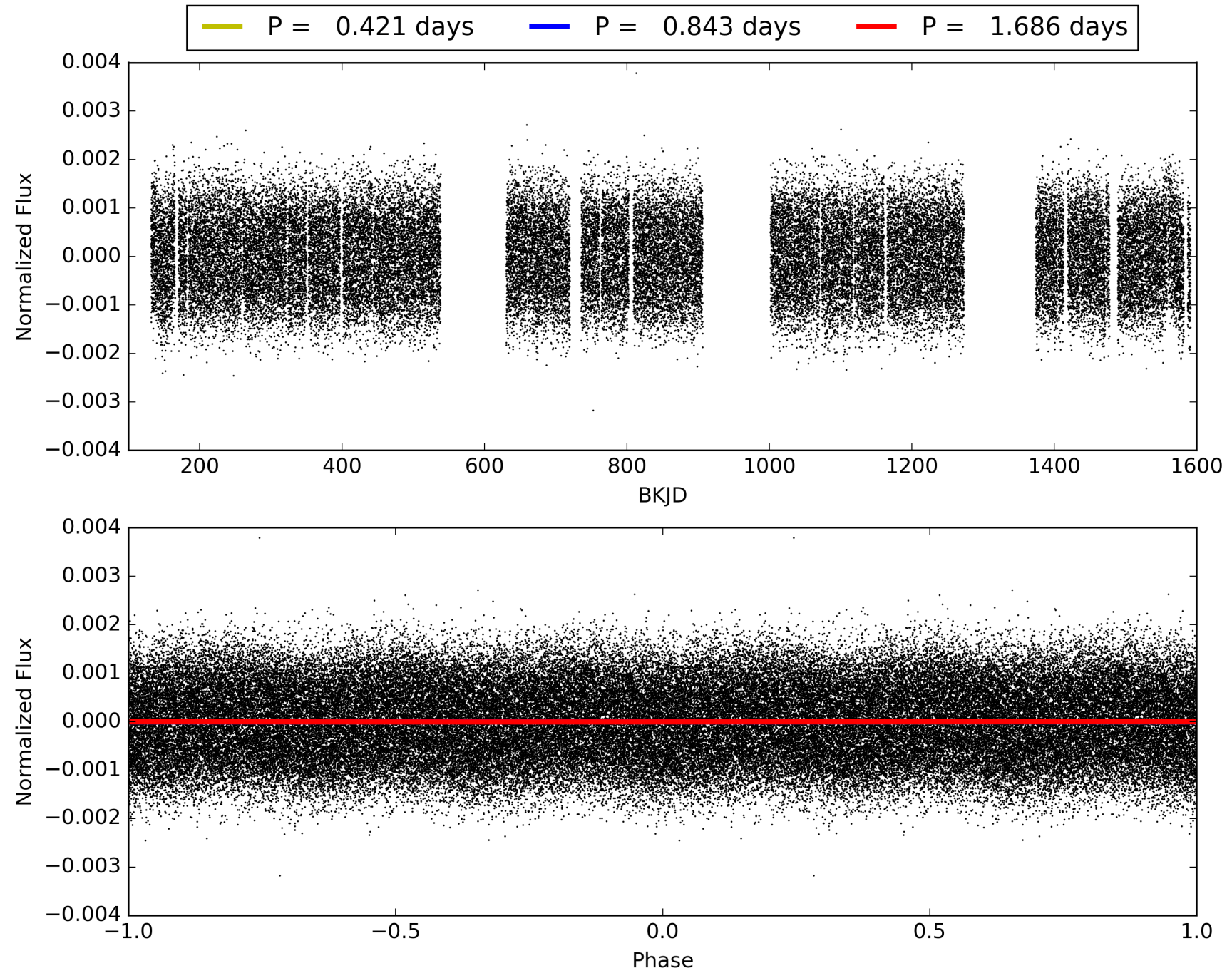
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 003456198-01, PDC Light Curves





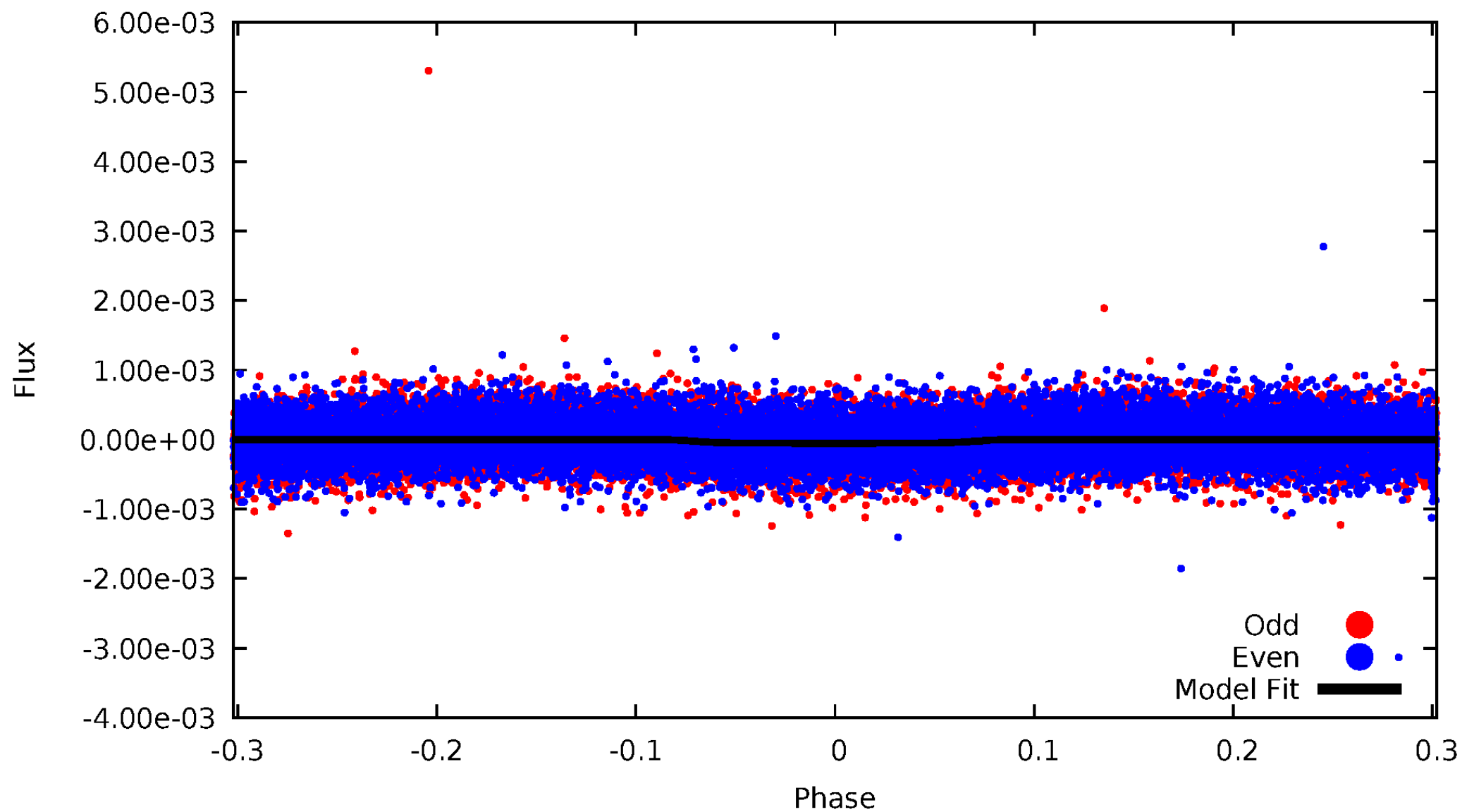
TCE 003456198-01





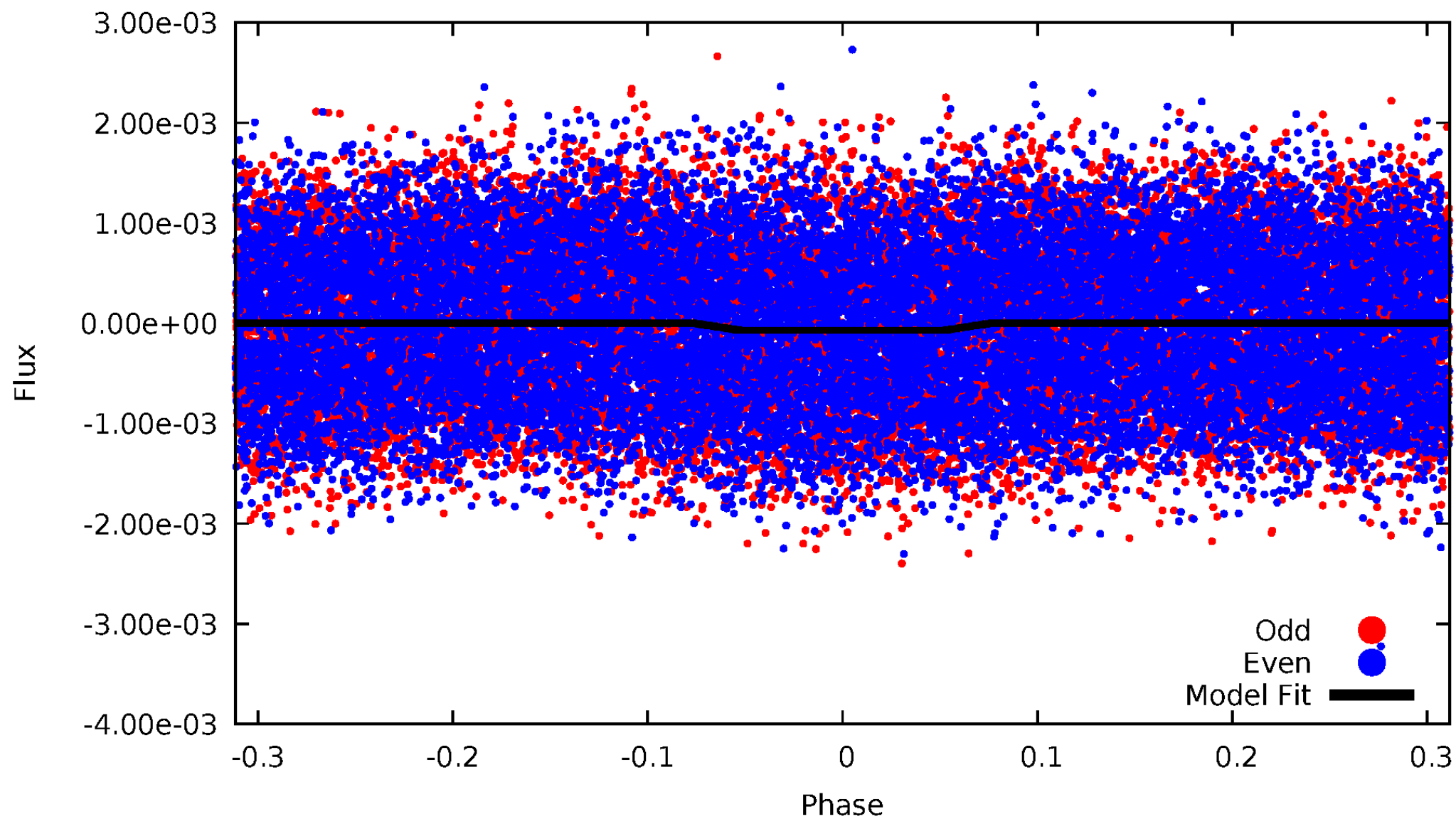
# DV Odd/Even

TCE 003456198-01

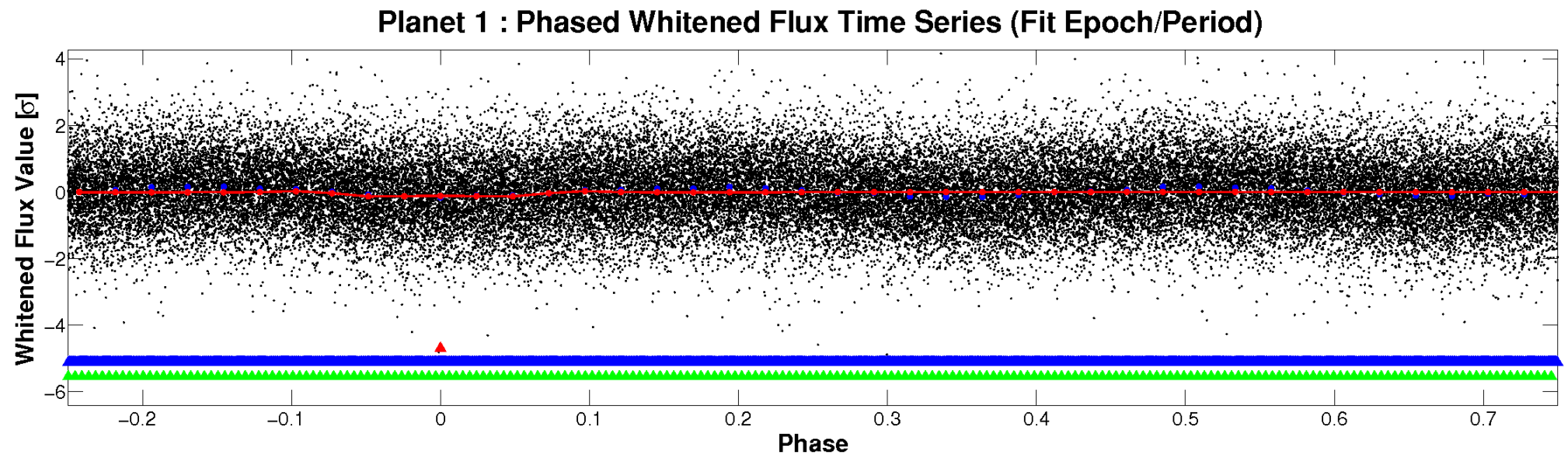
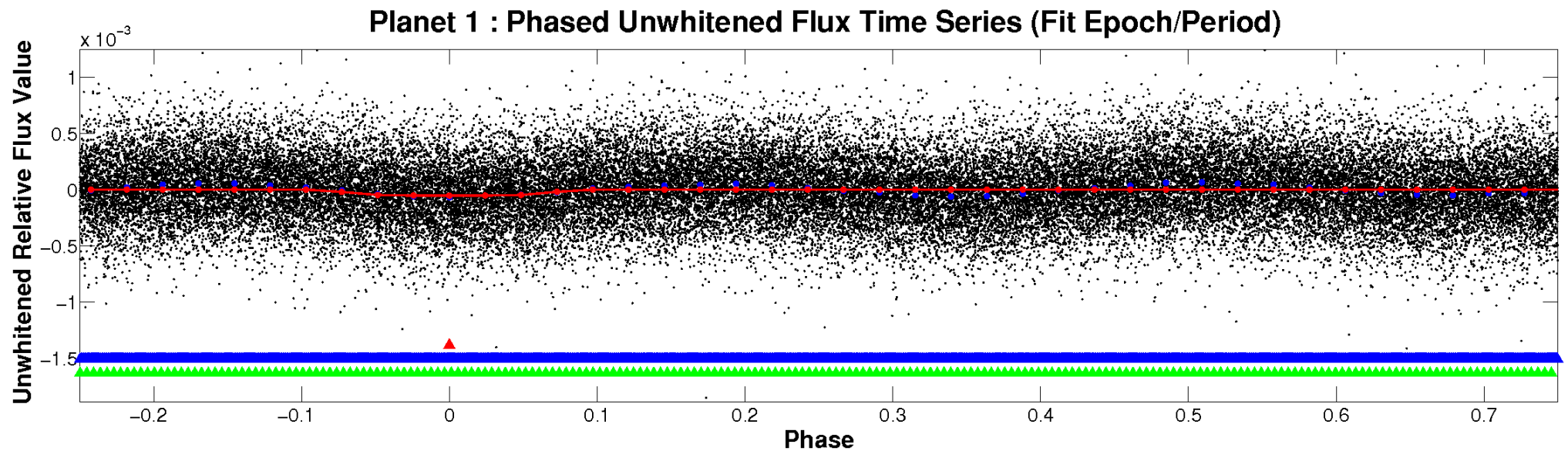


# ALT Odd/Even

TCE 003456198-01



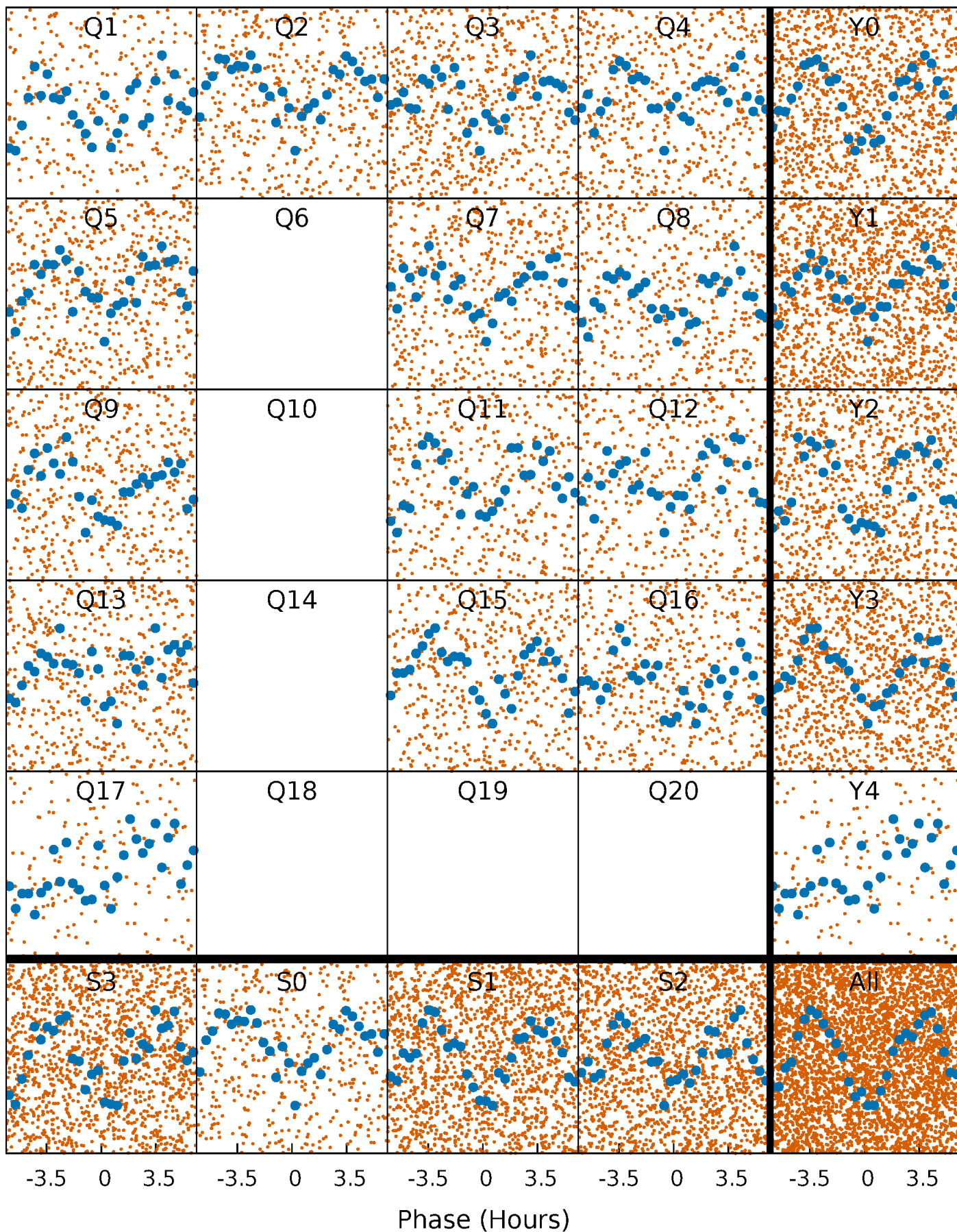
# Non-Whitened Vs. Whitened Light Curve





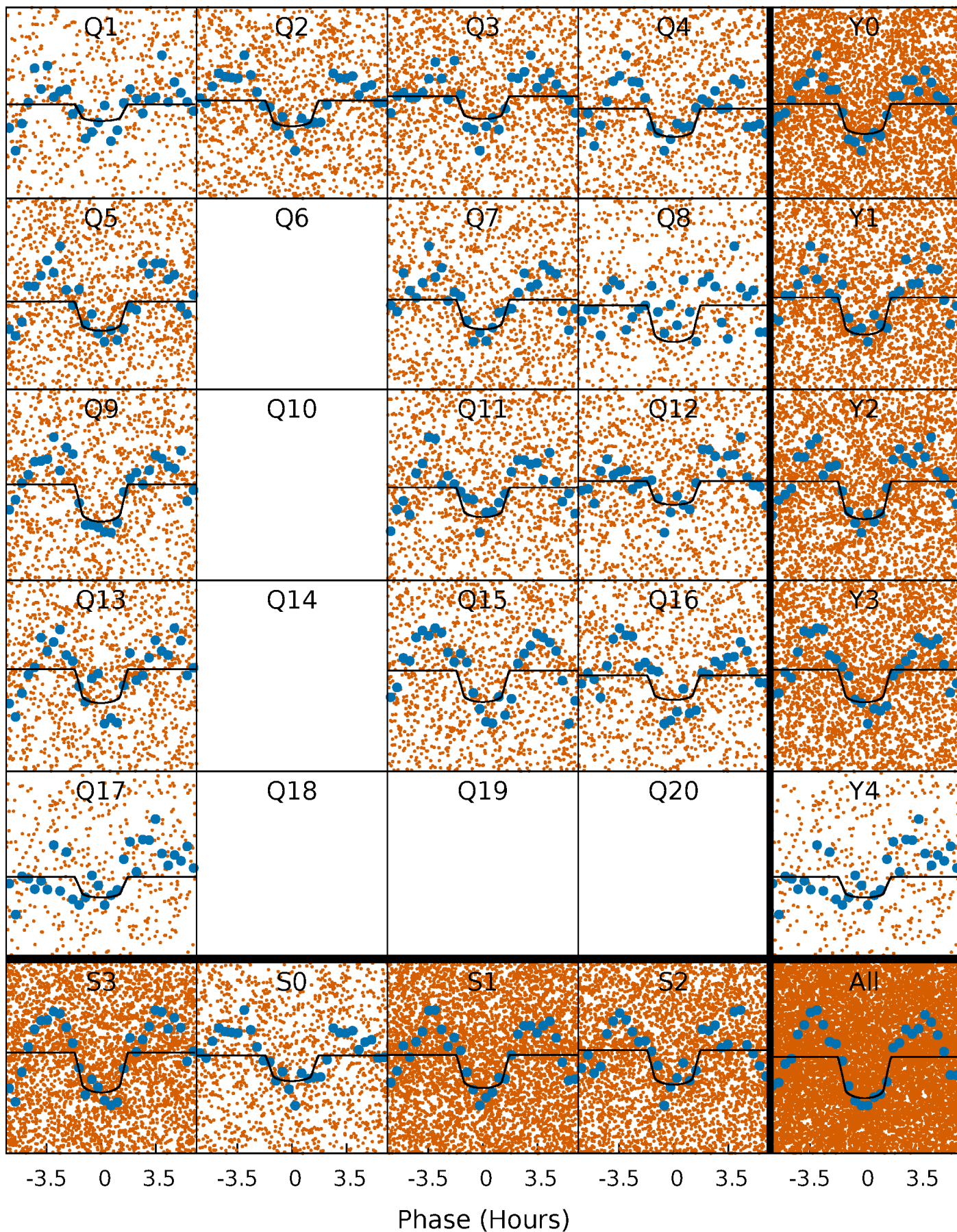
# PDC Quarter-Phased Transit Curves

TCE 003456198-01   P= 0.842770 Days    $T_0=131.744226$  (BKJD)



# DV Quarter-Phased Transit Curves

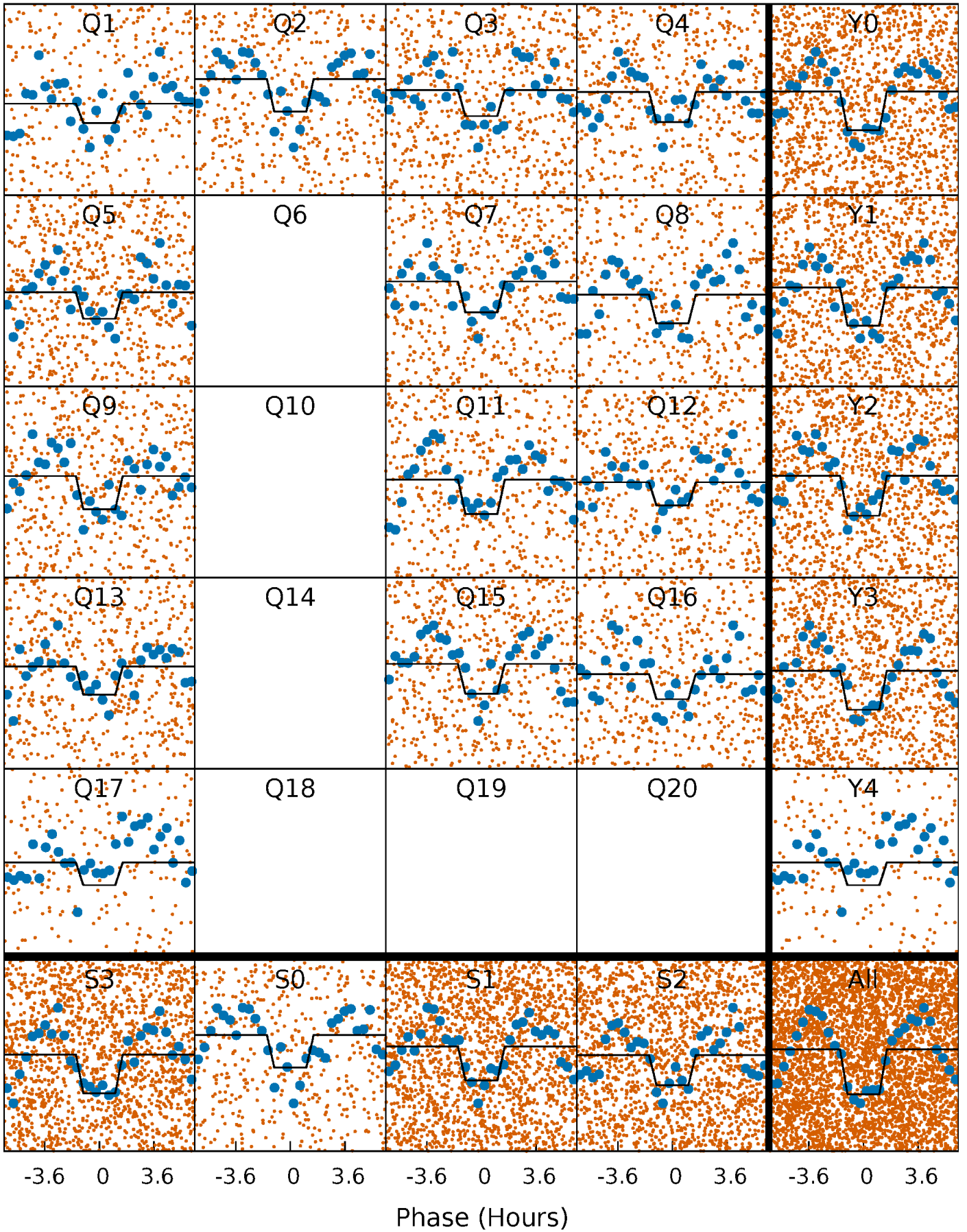
TCE 003456198-01   P= 0.842770 Days    $T_0=131.744226$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

TCE 003456198-01   P= 0.842778 Days    $T_0=131.743559$  (BKJD)

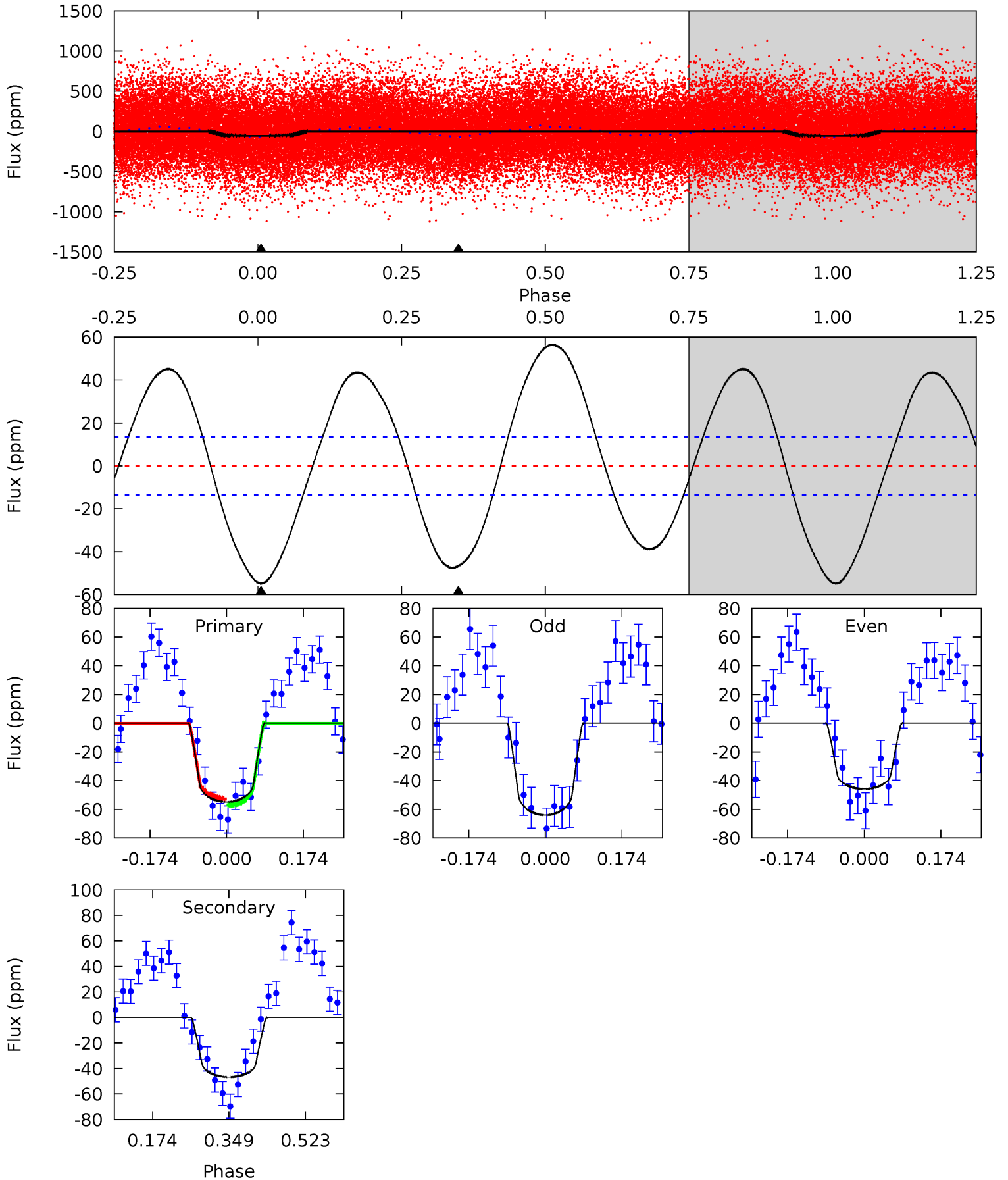




# DV Model-Shift Uniqueness Test

003456198-01, P = 0.842770 Days, E = 130.901456 Days

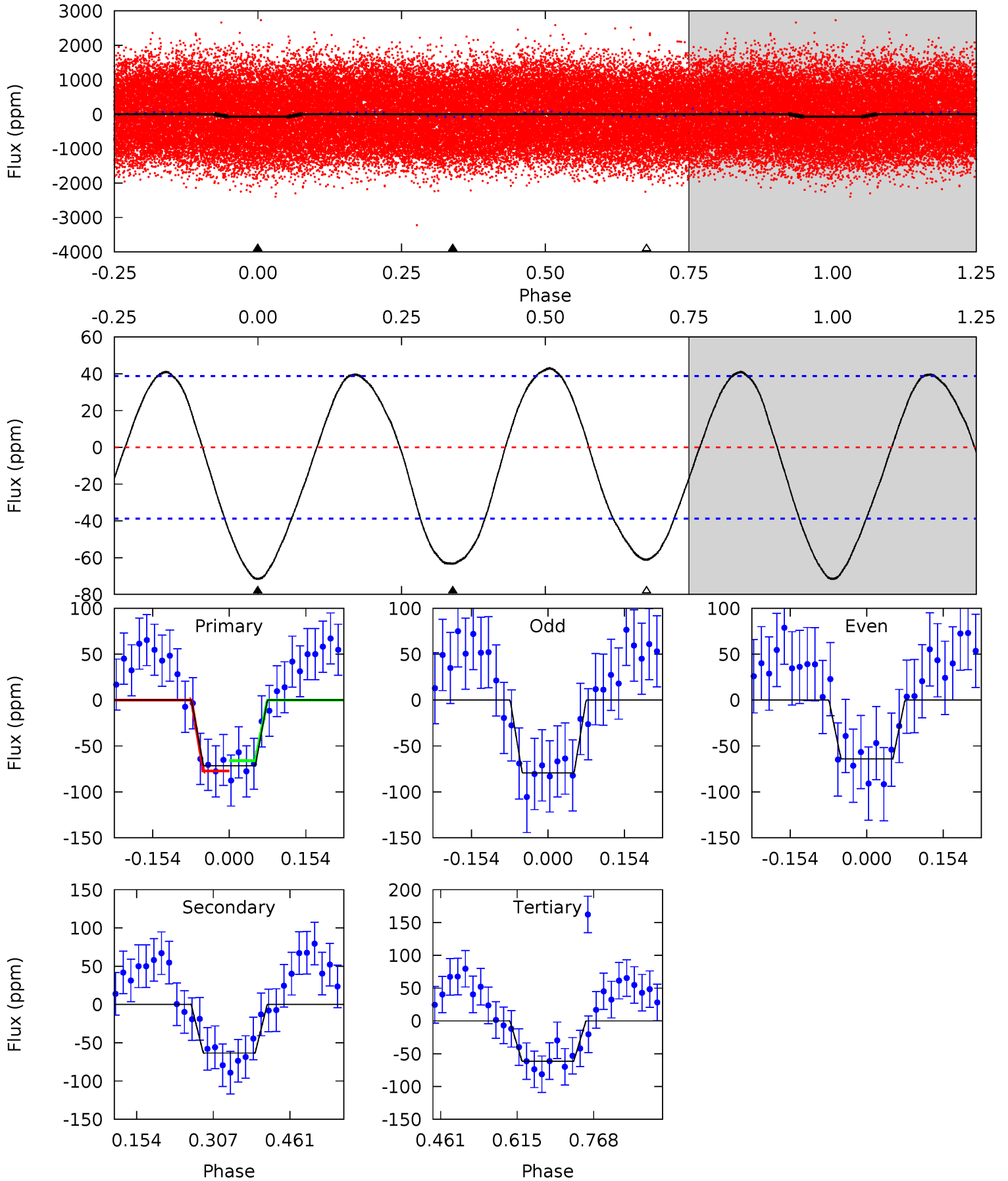
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
18.1	15.4	0	0	4.45	1.36	10.1	18.1	18.1	15.4	15.4	3.01	1.13	0.51	0.70



# Alt Model-Shift Uniqueness Test

003456198-01, P = 0.842778 Days, E = 130.900781 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
8.26	7.32	7.07	0	4.47	1.43	4.36	1.19	8.26	0.25	7.32	0.88	0.99	0.38	0.65



### Stellar Parameters For KIC 003456198

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$7892^{+218}_{-327}$	$3.674^{+0.440}_{-0.110}$	$-0.140^{+0.200}_{-0.300}$	$3.435^{+0.818}_{-1.635}$	$2.032^{+0.342}_{-0.470}$	$0.071^{+0.285}_{-0.023}$
	+3%/-4%	+12%/-3%	+143%/-214%	+24%/-48%	+17%/-23%	+403%/-32%
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 003456198-01 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-47 \pm 3$	$2.65^{+0.99}_{-0.90}$	$5866^{+457}_{-746}$	$6902^{+1613}_{-1082}$	$1.811^{+2.195}_{-0.842}$
Alt.	$-63 \pm 9$	$2.85^{+1.05}_{-0.93}$	$5828^{+509}_{-722}$	$7253^{+1538}_{-1194}$	$2.101^{+2.649}_{-0.983}$

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



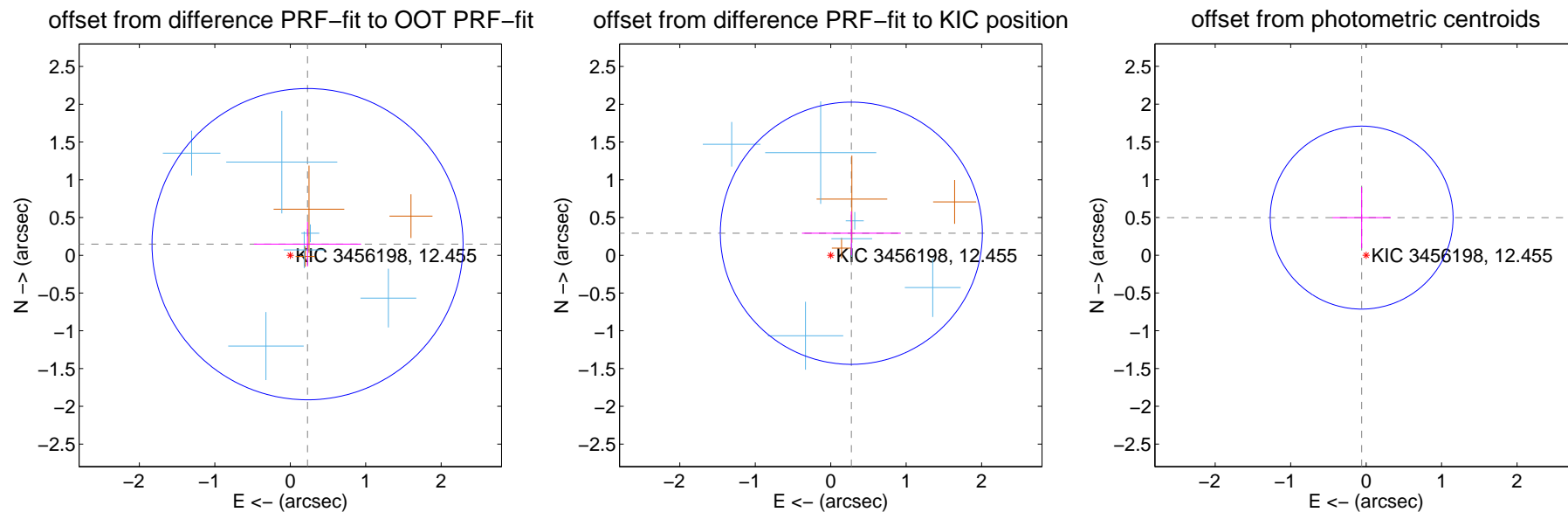
## DV Centroid Data

Supplemental centroid analysis for 003456198-01. Kepler magnitude: 12.46. Transit SNR 10.47

There are 6 quarters with good PRF difference image offsets

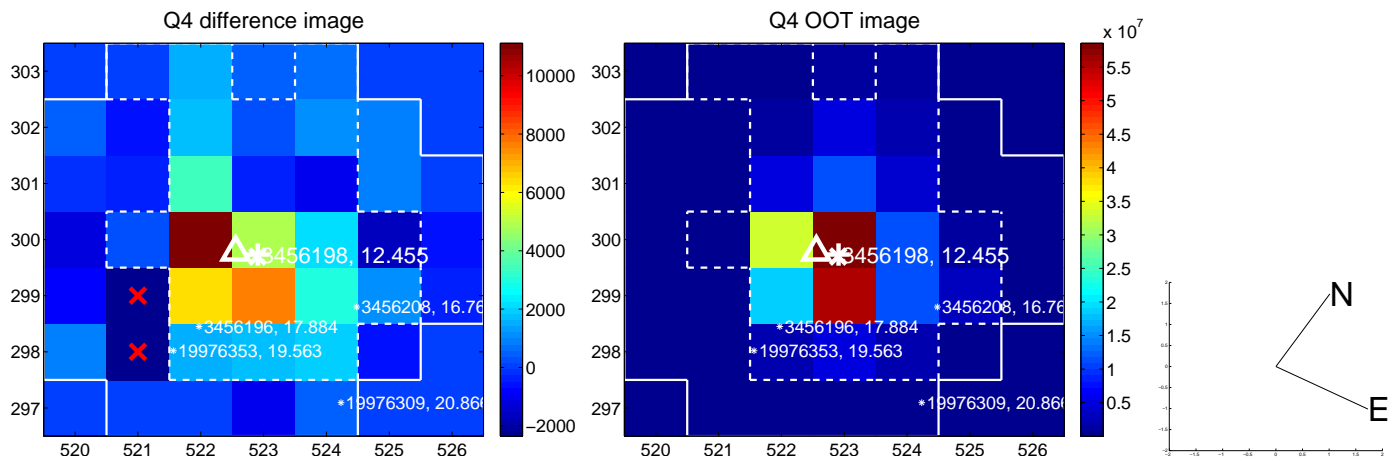
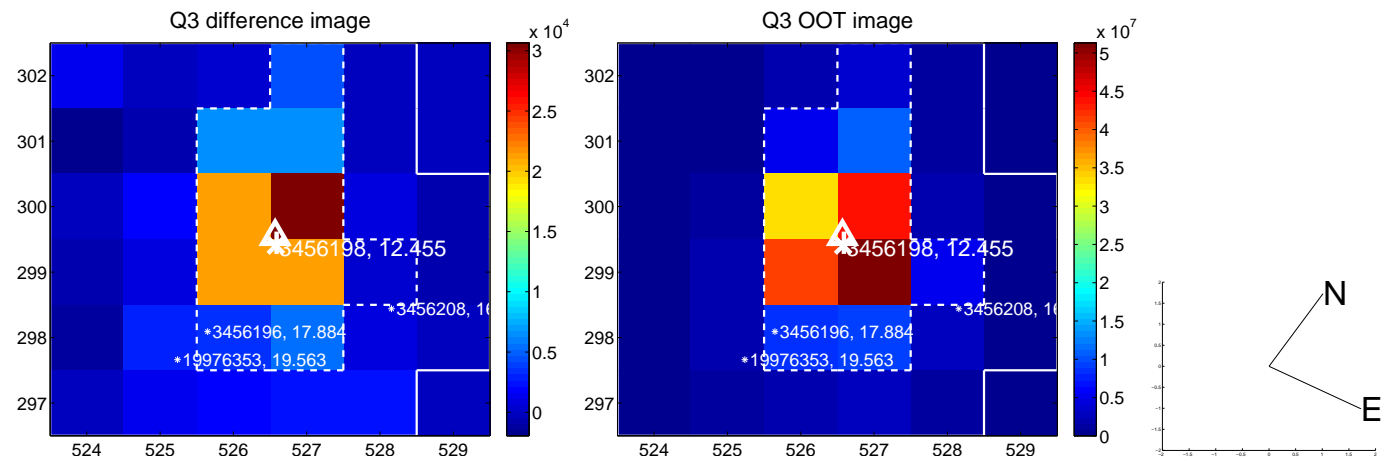
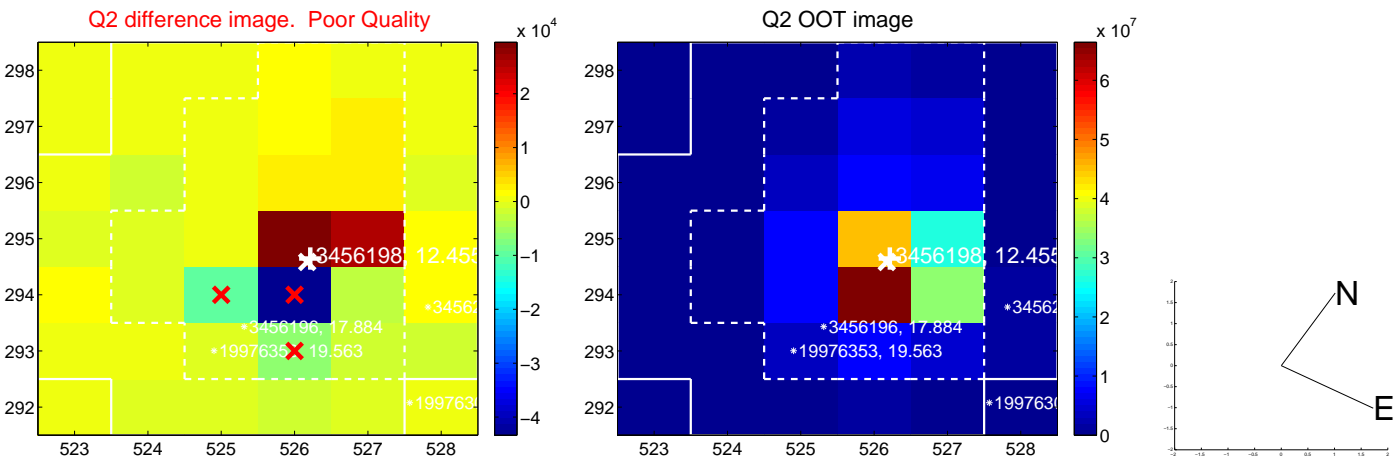
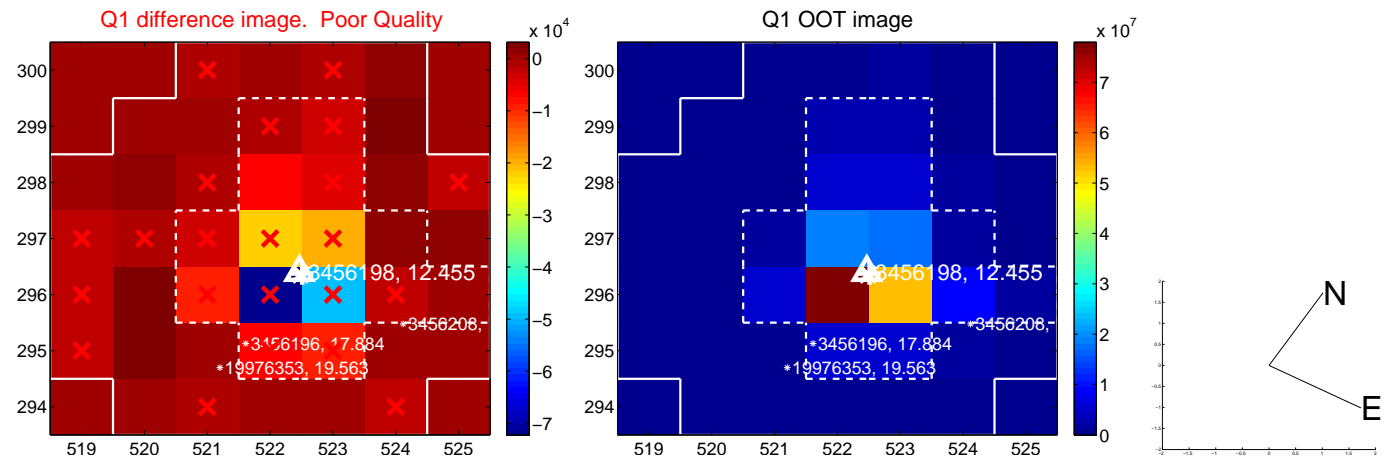
The direct PRF centroid is offset from the target star catalog position by about 0.19 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.272 \pm 0.687$	0.40	$-0.229 \pm 0.710$	$0.147 \pm 0.295$
PRF-fit source offset from KIC position	$0.400 \pm 0.579$	0.69	$-0.273 \pm 0.654$	$0.292 \pm 0.291$
photometric centroid source offset	$0.50 \pm 0.40$	1.24	$0.06 \pm 0.39$	$0.50 \pm 0.40$

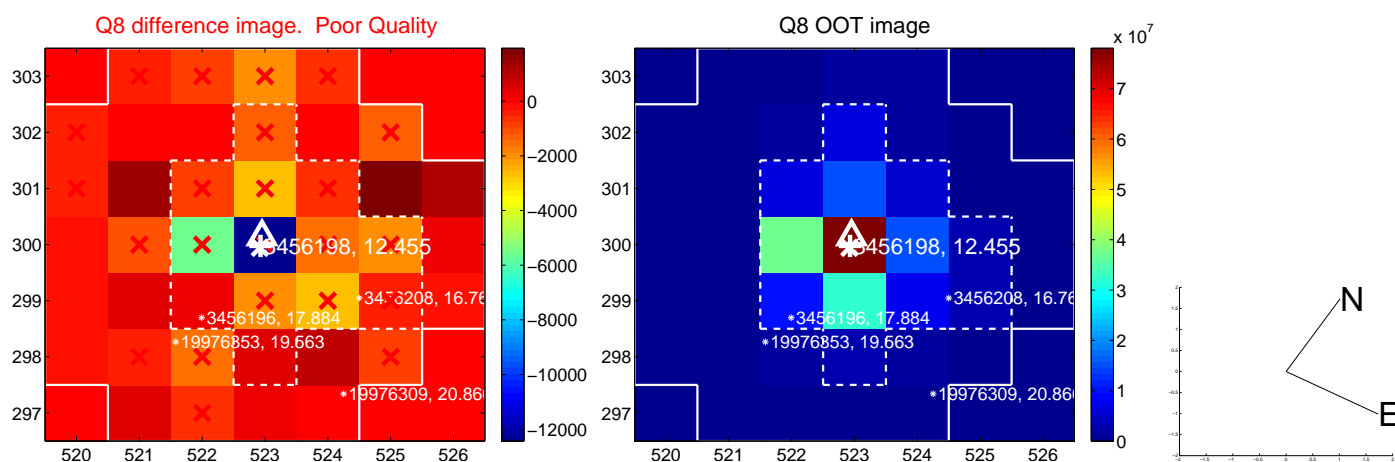
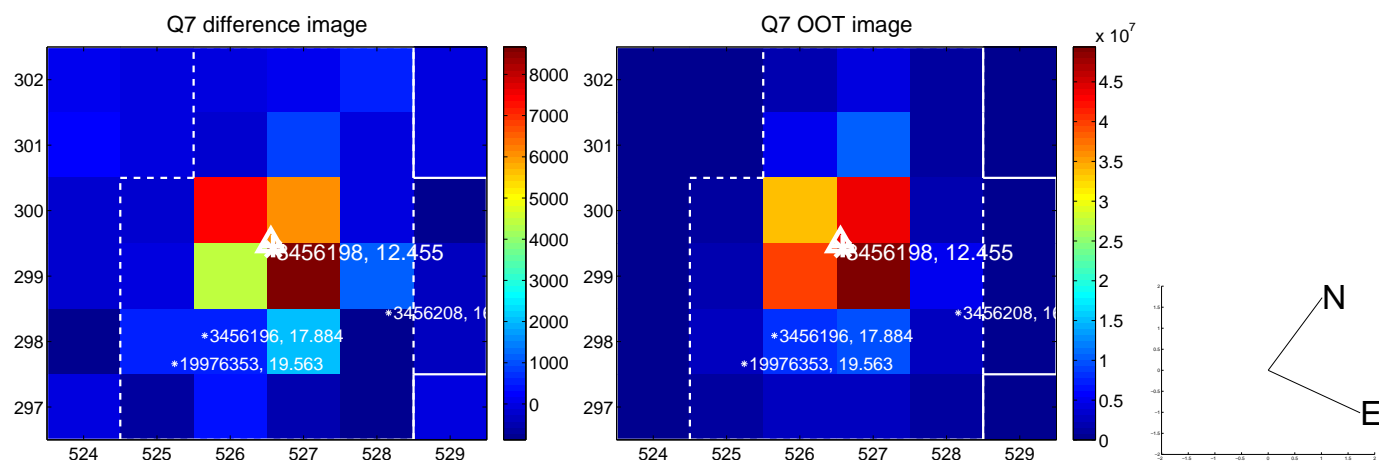
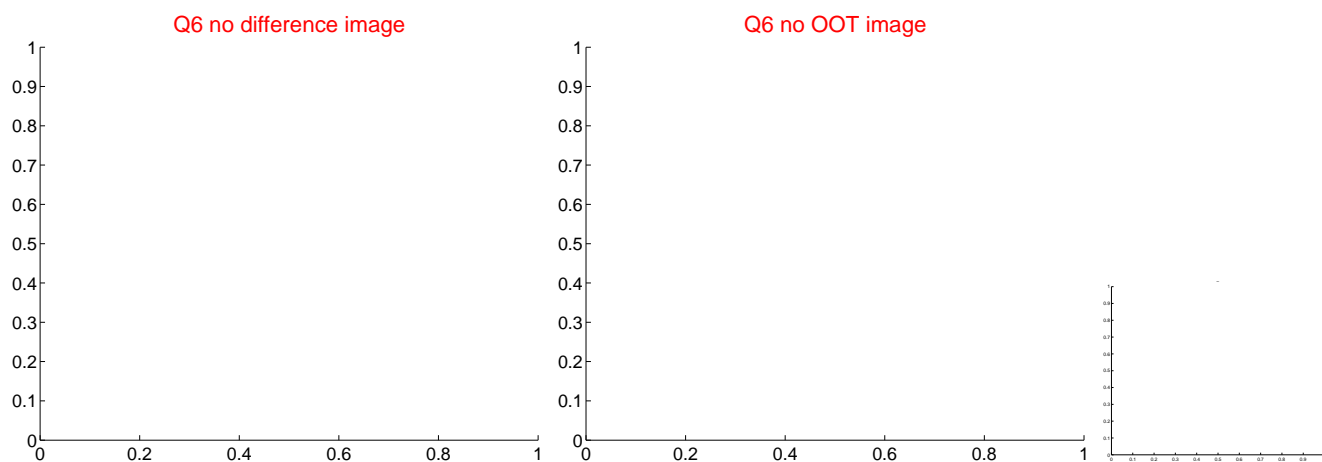
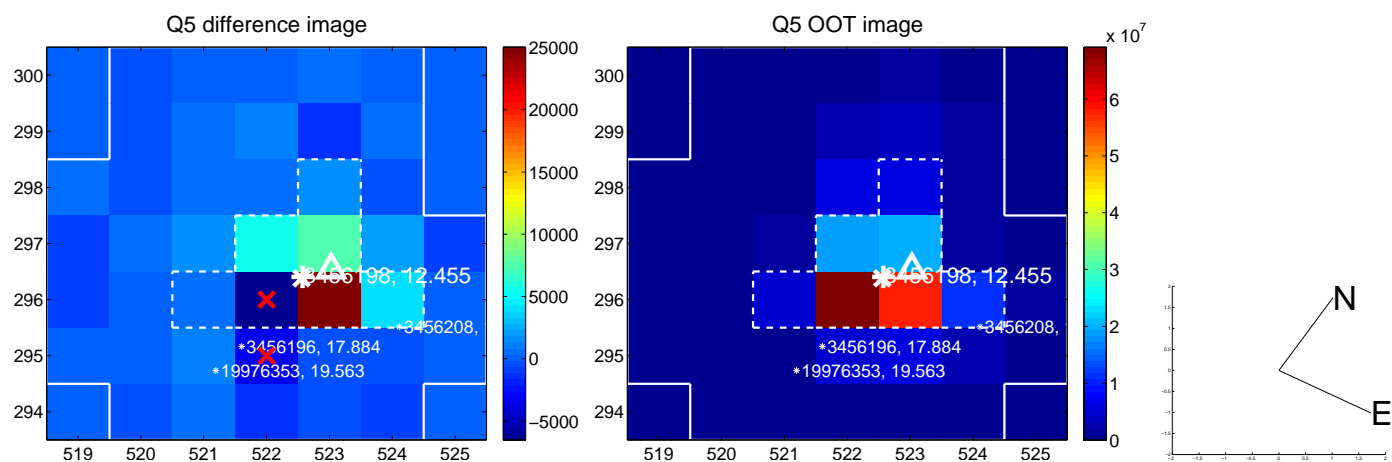


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

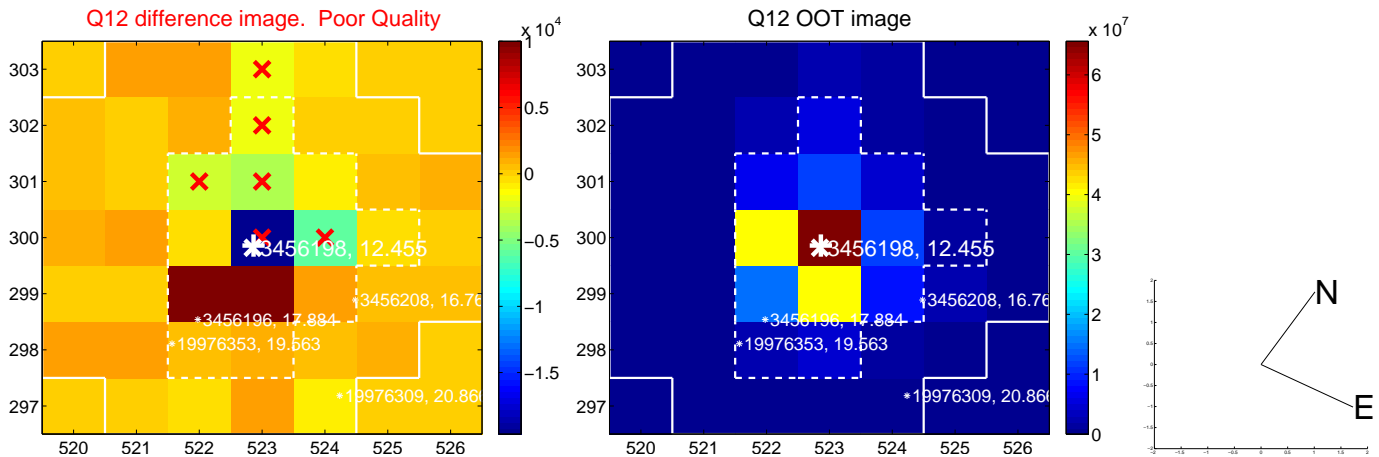
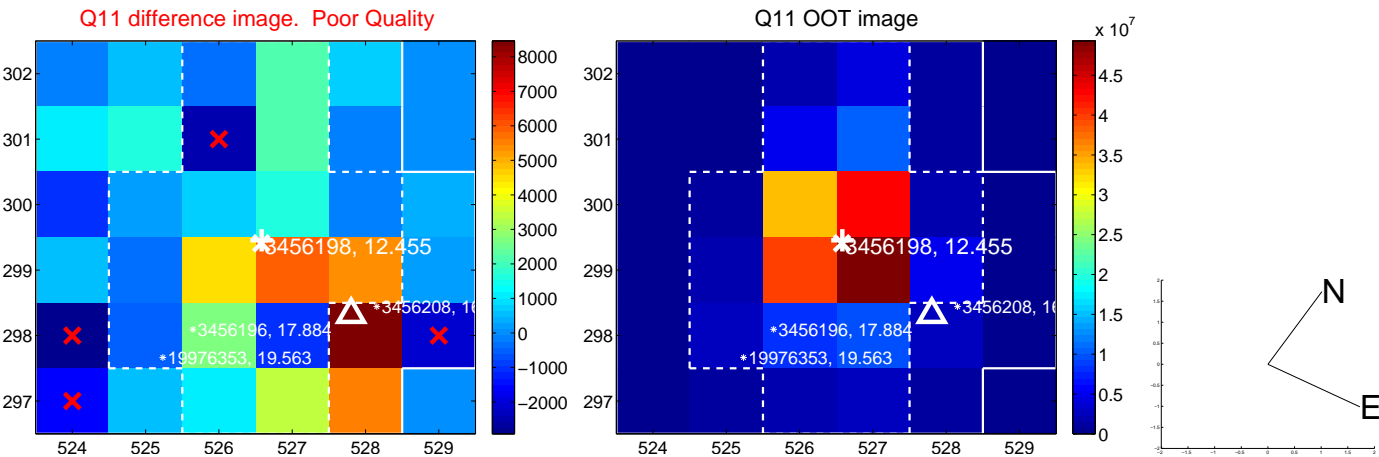
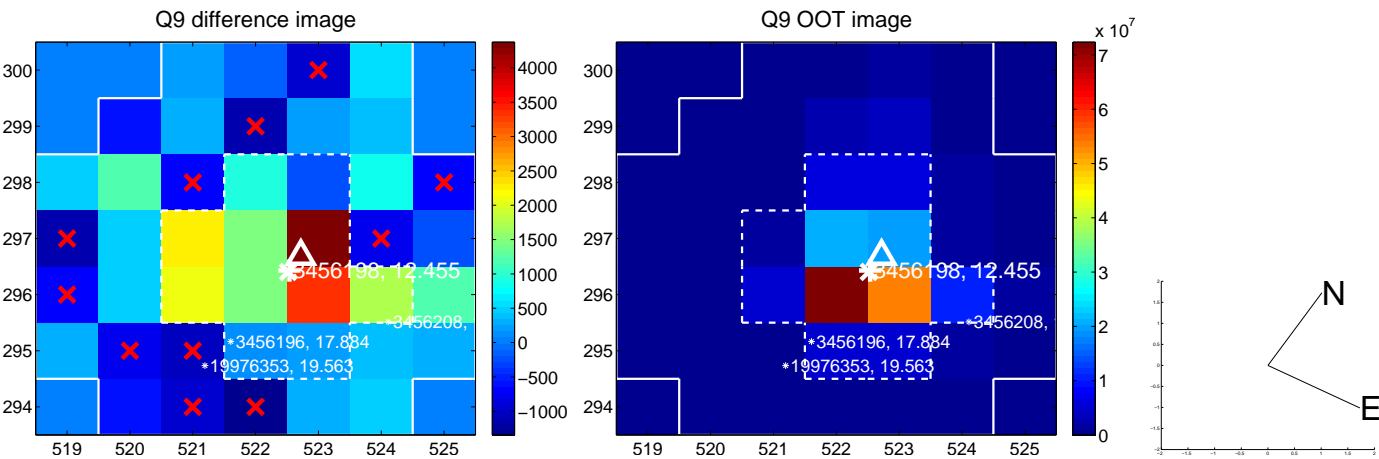


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

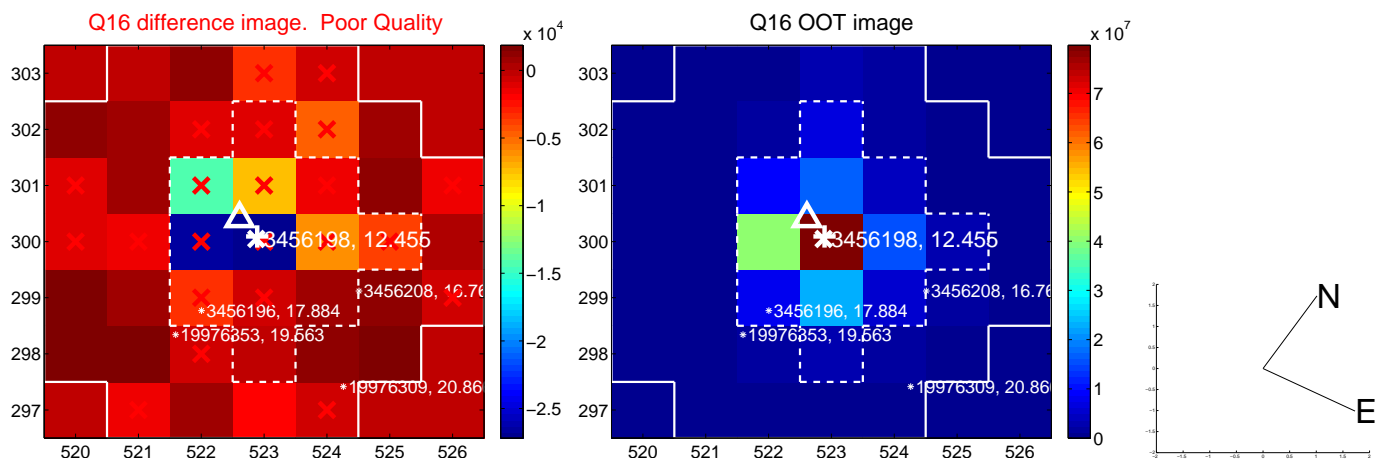
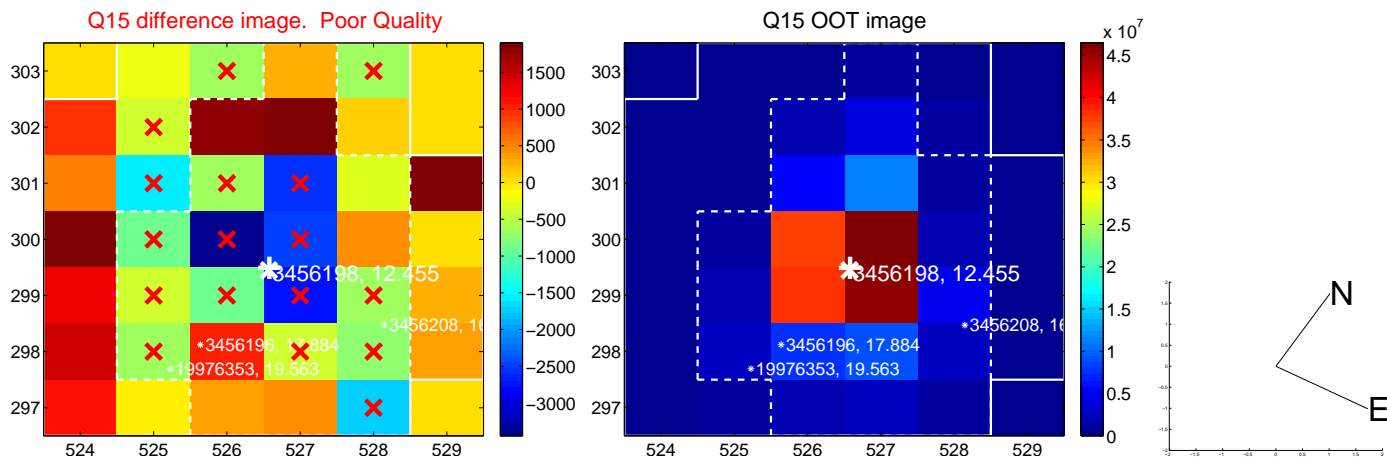
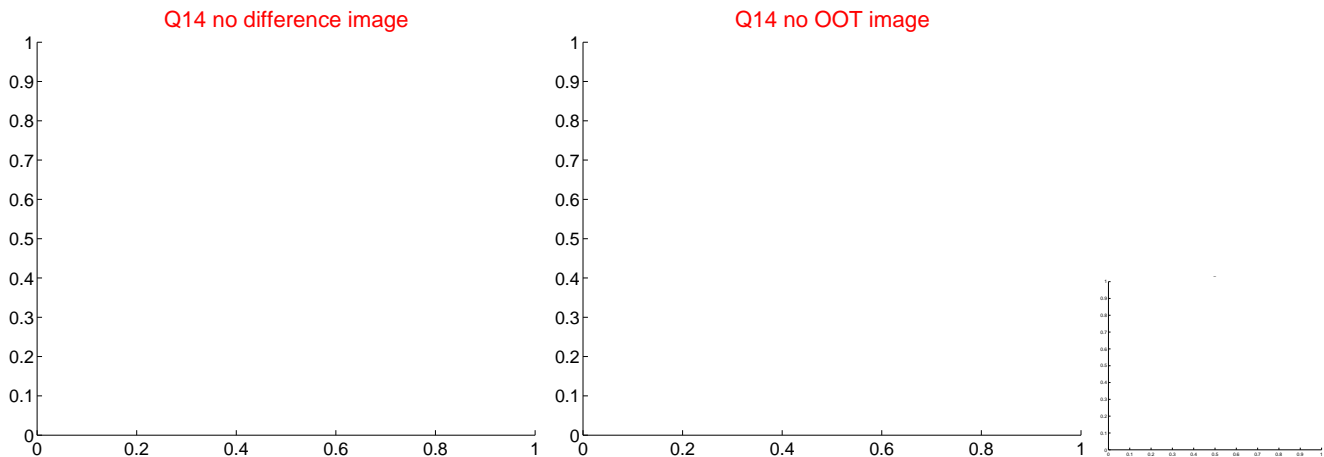
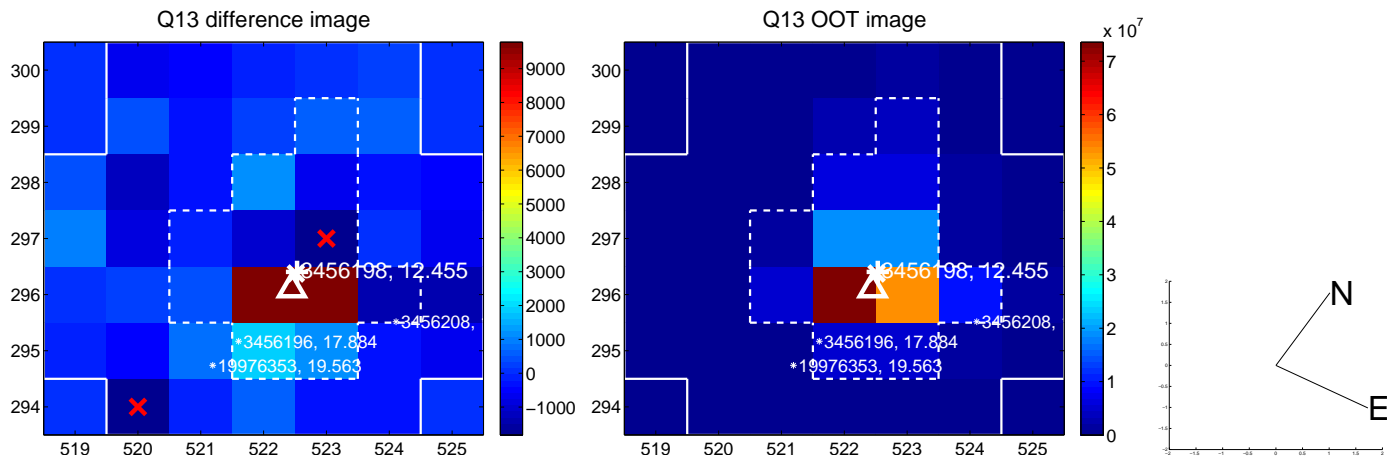




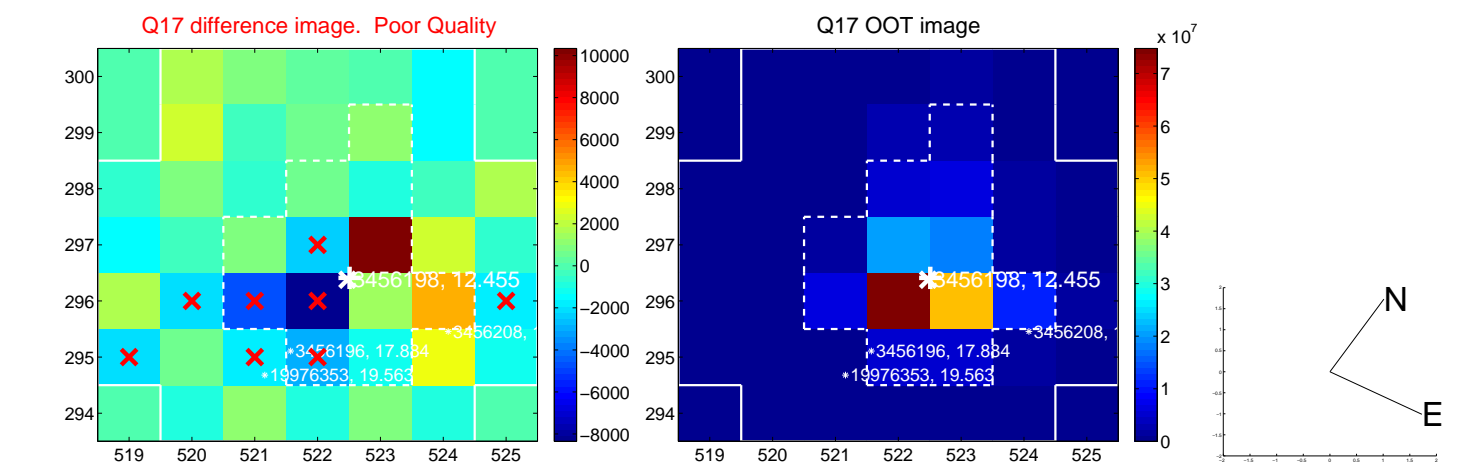
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



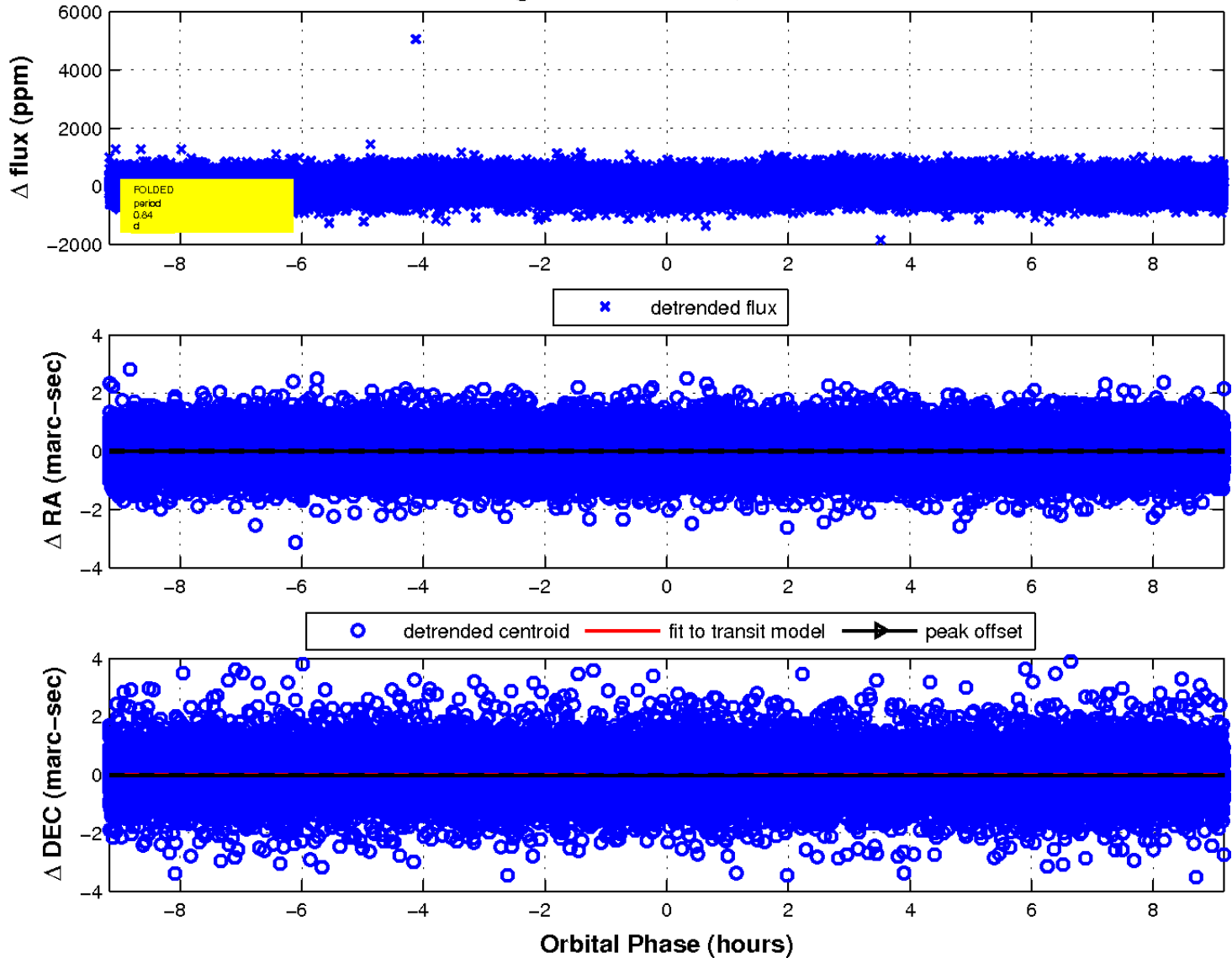
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



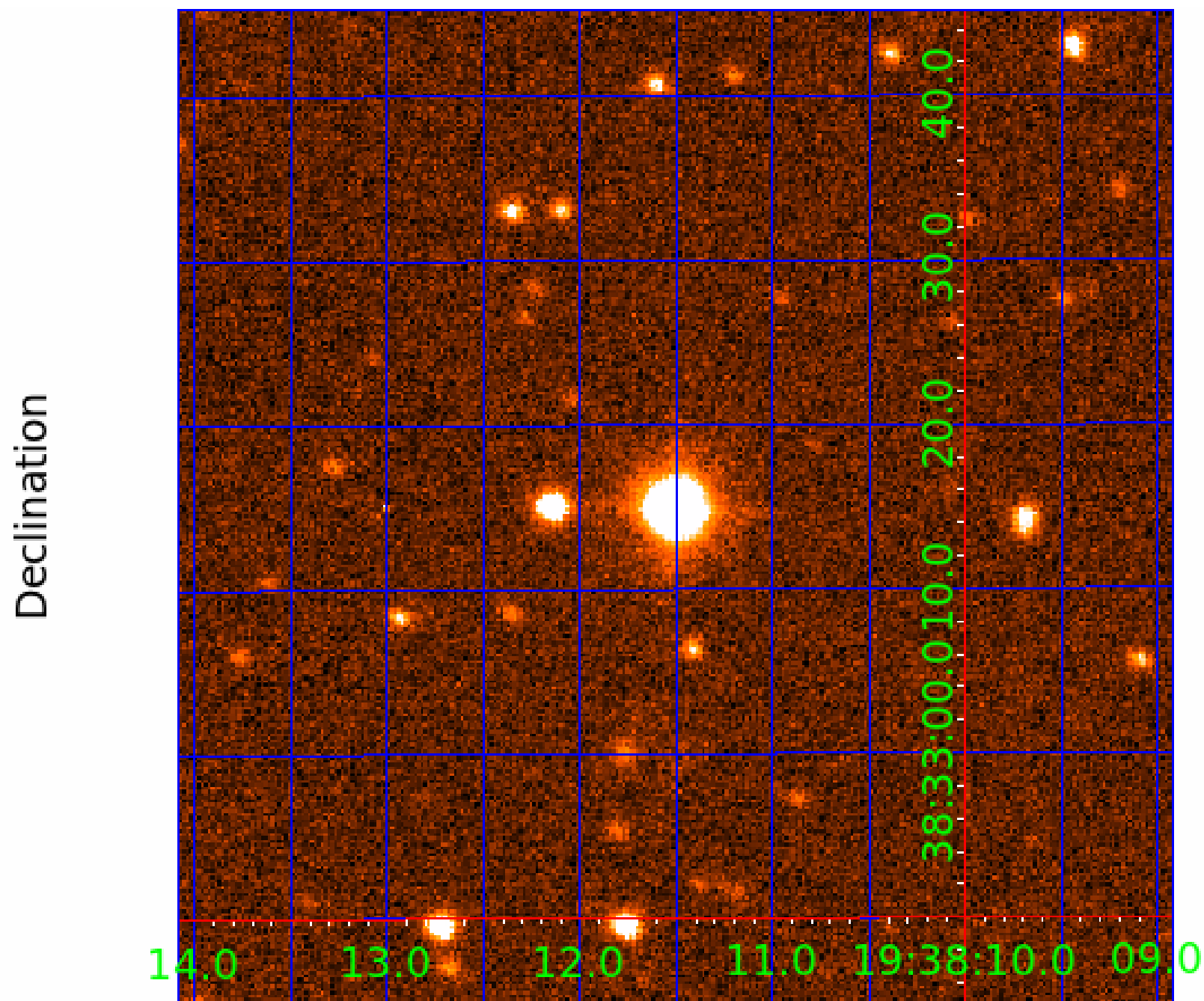
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



fluxWeightedCentroids, Planet 1 of 3



UKIRT Image





# KIC 003456198

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
003456198-01	OBS	No	0.842770	131.744226	53.5	3.055	9.0	10.5	3.44	7892	2.92	83813.76
003456198-02	OBS	No	0.779860	132.074120	52.9	1.237	9.5	7.0	3.44	7892	2.91	92947.67
003456198-03	OBS	No	2.028035	133.076809	25.0	14.407	9.1	4.6	3.44	7892	2.15	25991.22

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003456198-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
003456198-02	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
003456198-03	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—CENT_FEW_MEAS—HALO_GHOST

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

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

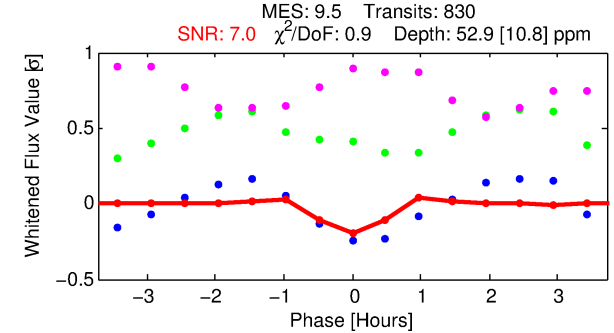
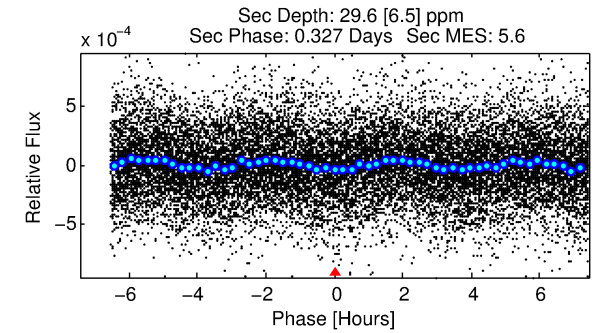
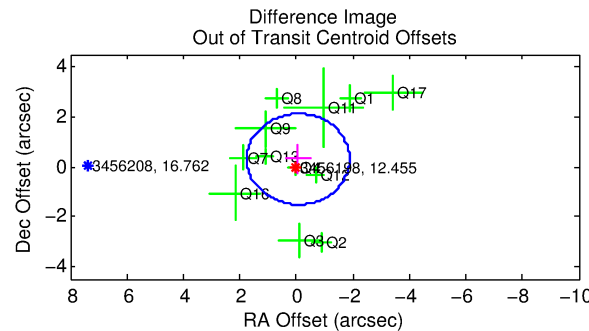
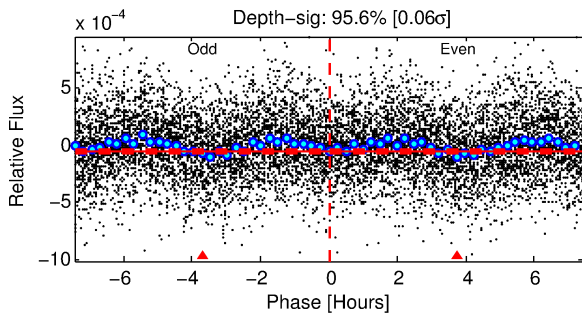
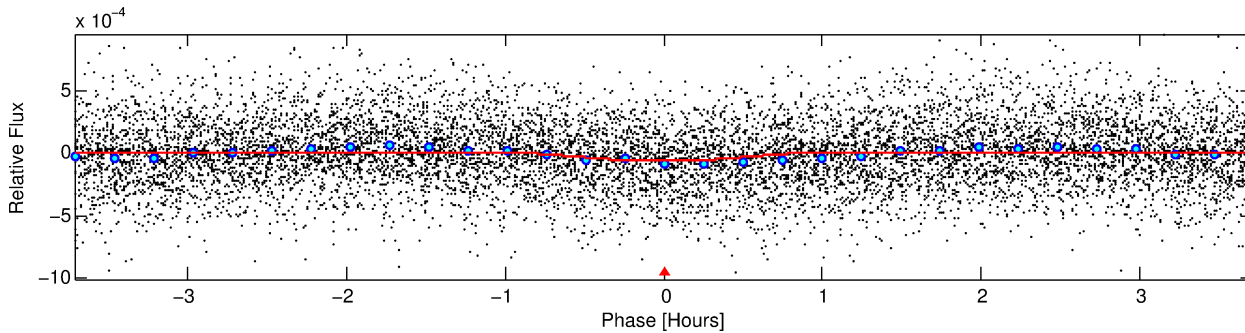
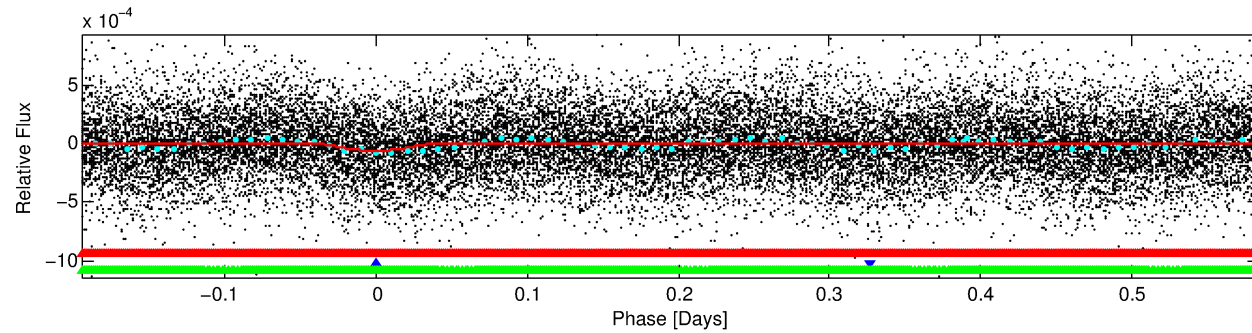
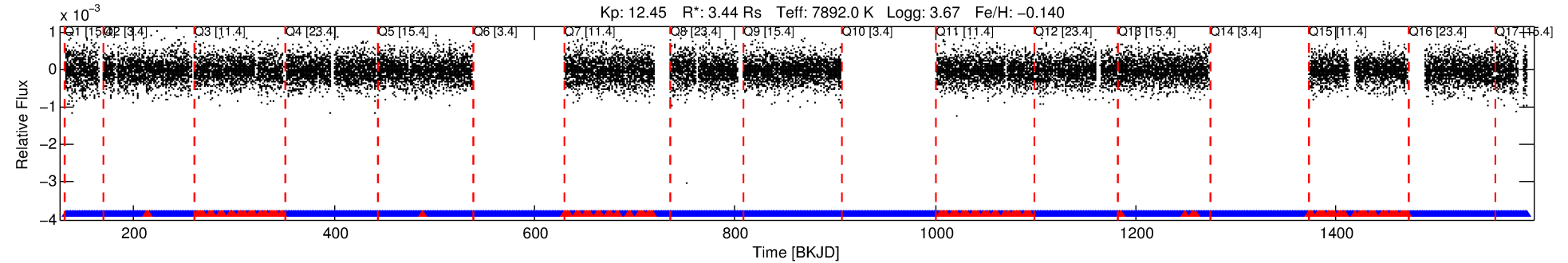
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 003456198-02

No Significant Match Found

# DV One-Page Summary

KIC: 3456198 Candidate: 2 of 3 Period: 0.780 d



## DV Fit Results:

Period = 0.77986 [0.00002] d  
 Epoch = 132.0741 [0.0026] BKJD  
 Rp/R\* = 0.0078 [0.0032]  
 a/R\* = 2.43 [4.93]  
 b = 0.89 [0.56]  
 Seff = 92947.67 [71052.45]  
 Teq = 4452 [851] K  
 Rp = 2.91 [1.82] Re  
 a = 0.0210 [0.0097] AU  
 Ag = 0.85 [0.96] [-0.16 $\sigma$ ]  
 Tefp = 6610 [1427] K [1.30 $\sigma$ ]

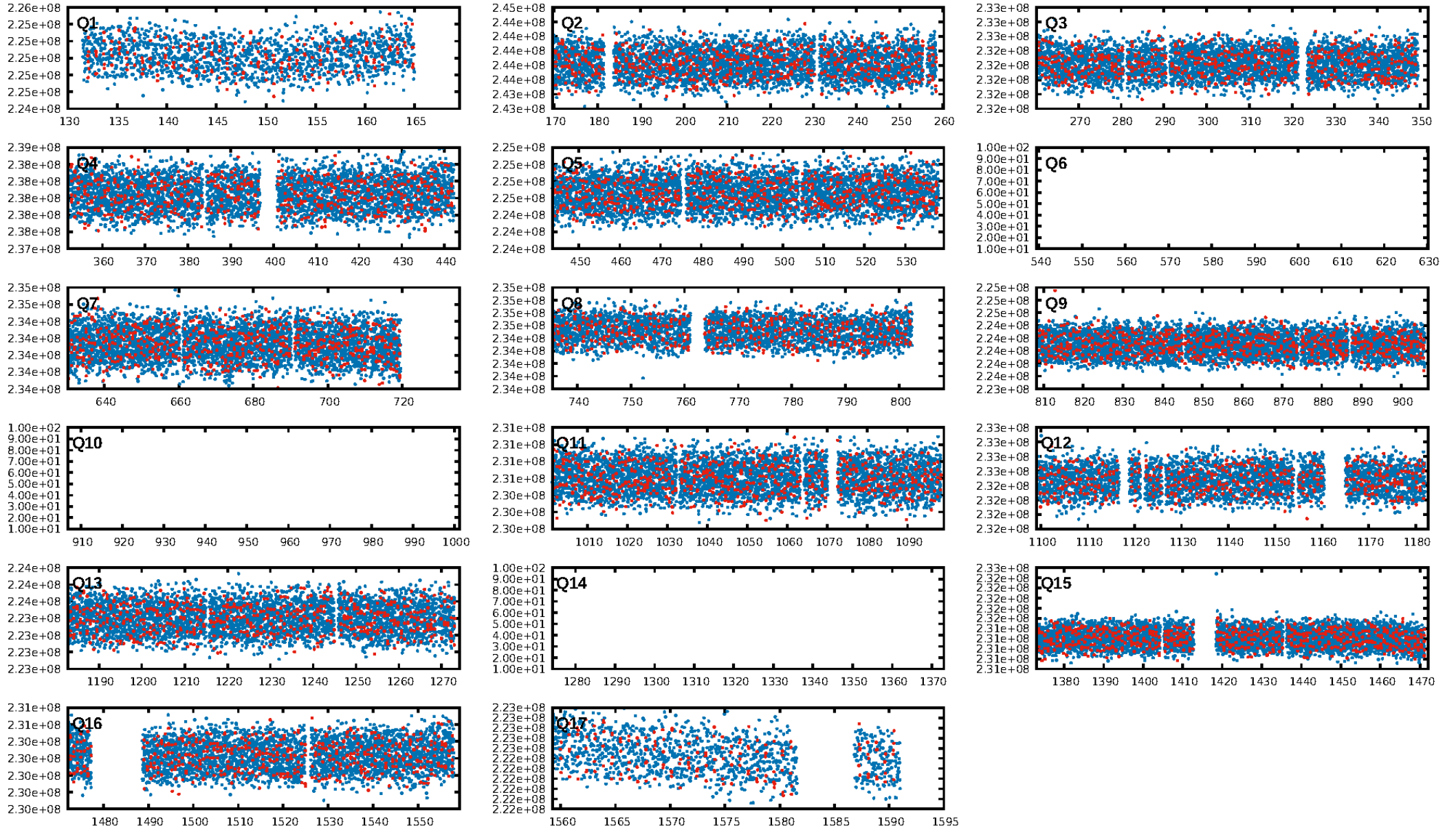
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
 LongPeriod-sig: 35.3% [0.46 $\sigma$ ]  
 ModelChiSquare2-sig: N/A  
 ModelChiSquareGof-sig: N/A  
 Bootstrap-pfa: 5.87e-06  
 RollingBand-fgt: 0.75 [591/785]  
 GhostDiagnostic-chr: 2.761  
 Centroid-sig: 0.0%  
 Centroid-so: 1.588 arcsec [2.67 $\sigma$ ]  
 OotOffset-rm: 0.307 arcsec [0.51 $\sigma$ ]  
 KicOffset-rm: 0.415 arcsec [0.72 $\sigma$ ]  
 OotOffset-st: 1/3/4/4 [12]  
 KicOffset-st: 1/3/4/4 [12]  
 DiffImageQuality-fgm: 0.42 [5/12]  
 DiffImageOverlap-fno: 1.00 [14/14]

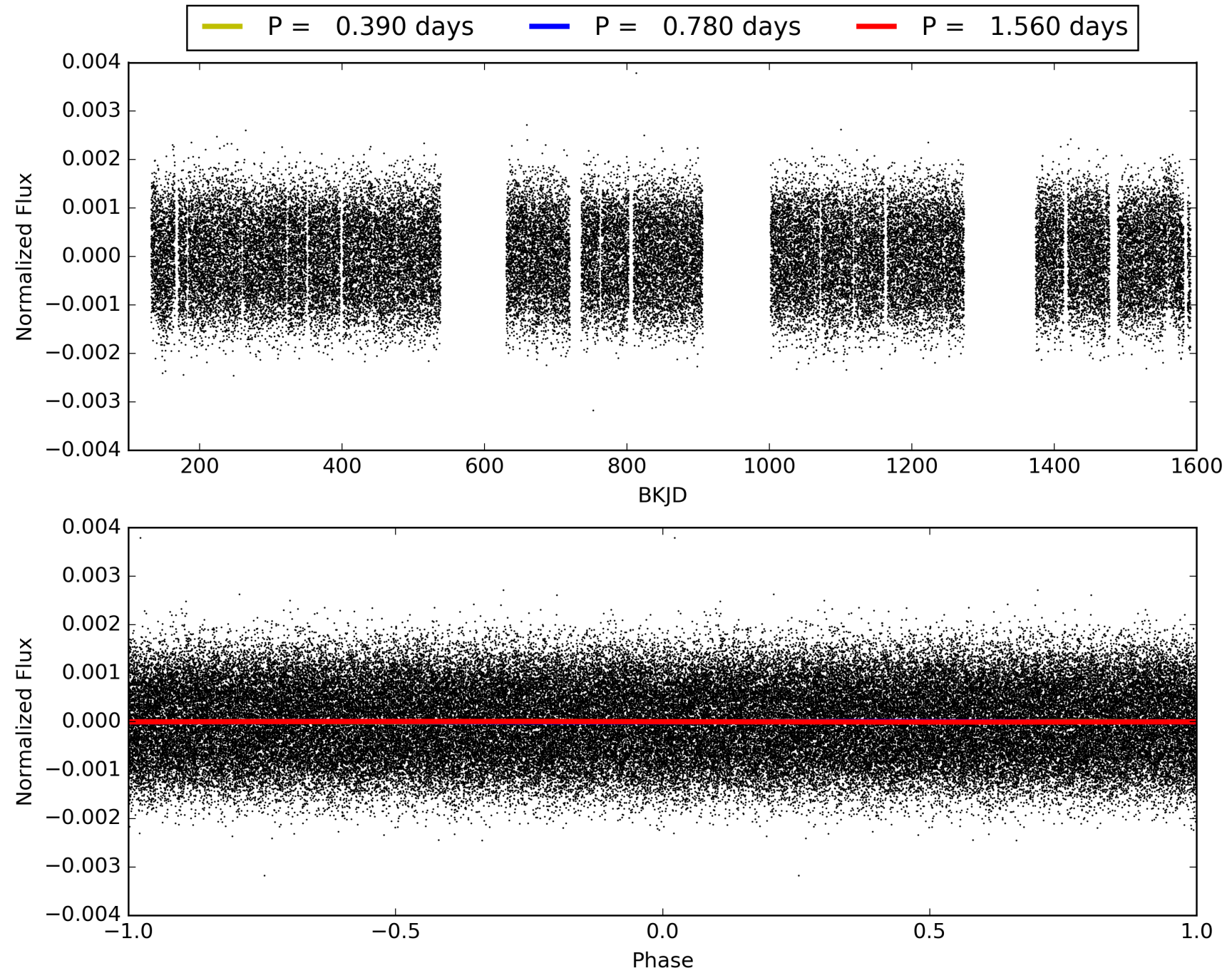
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 07:41:17 Z

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

# TCE 003456198-02, PDC Light Curves



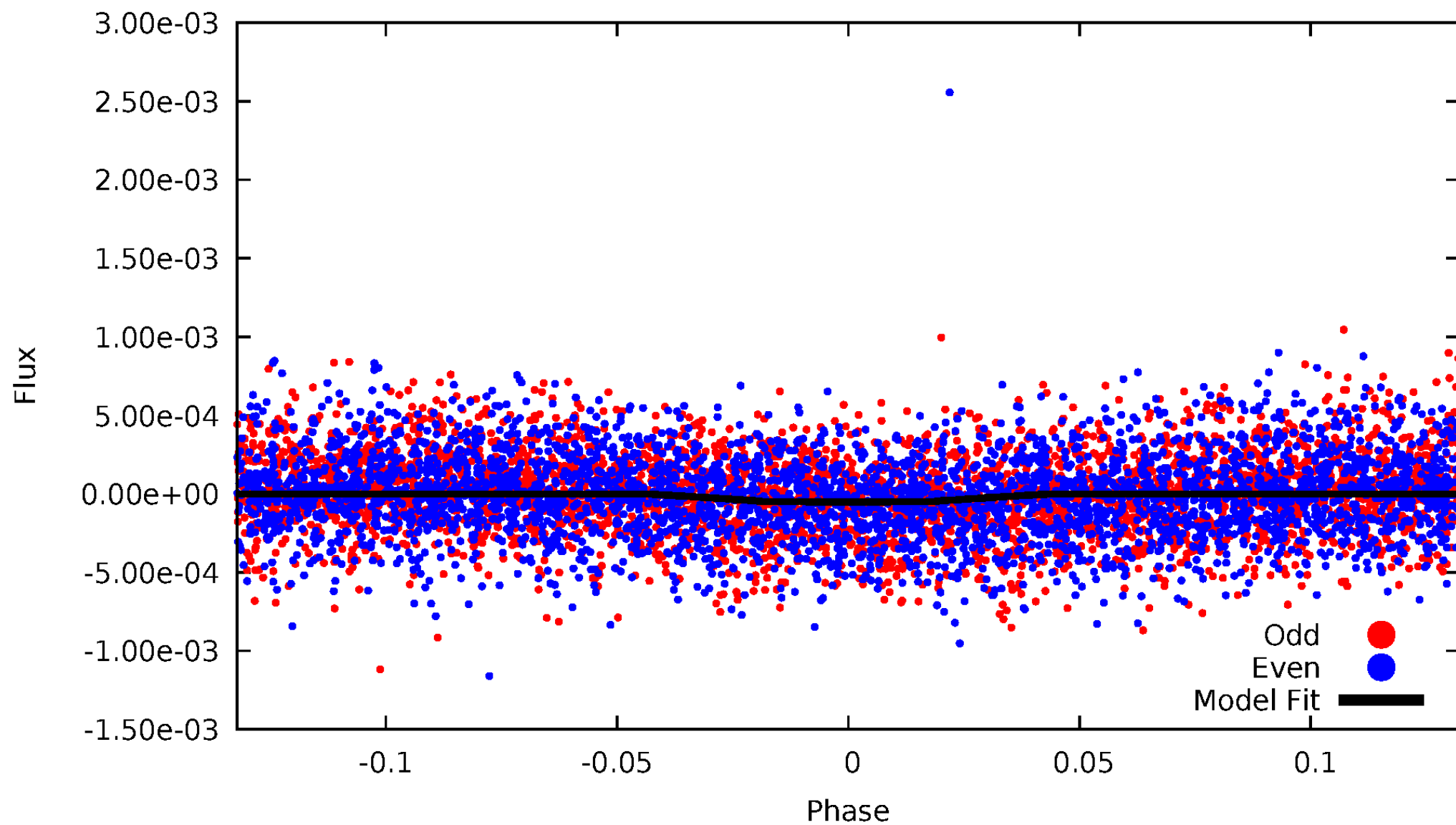
TCE 003456198-02





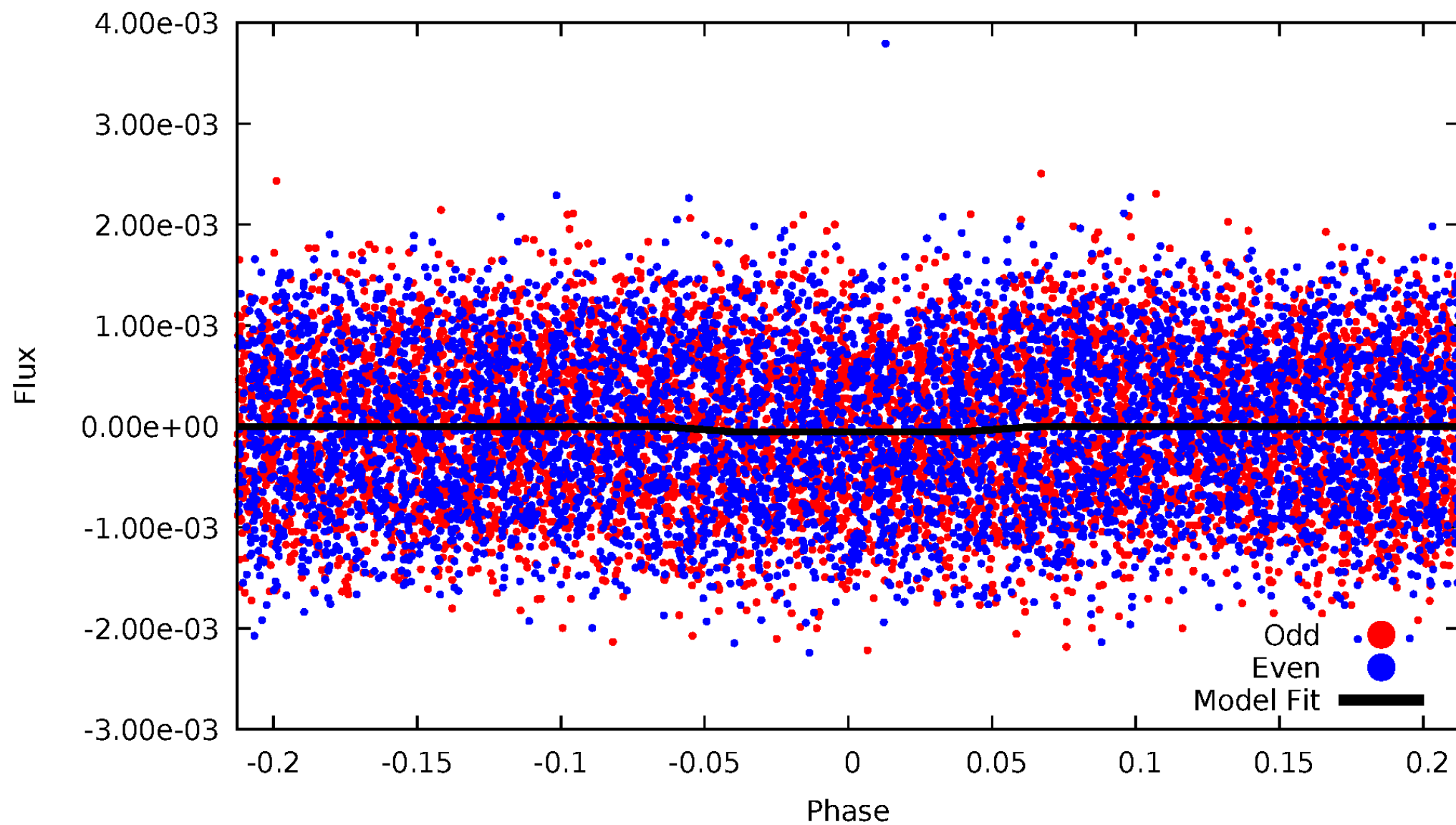
# DV Odd/Even

TCE 003456198-02



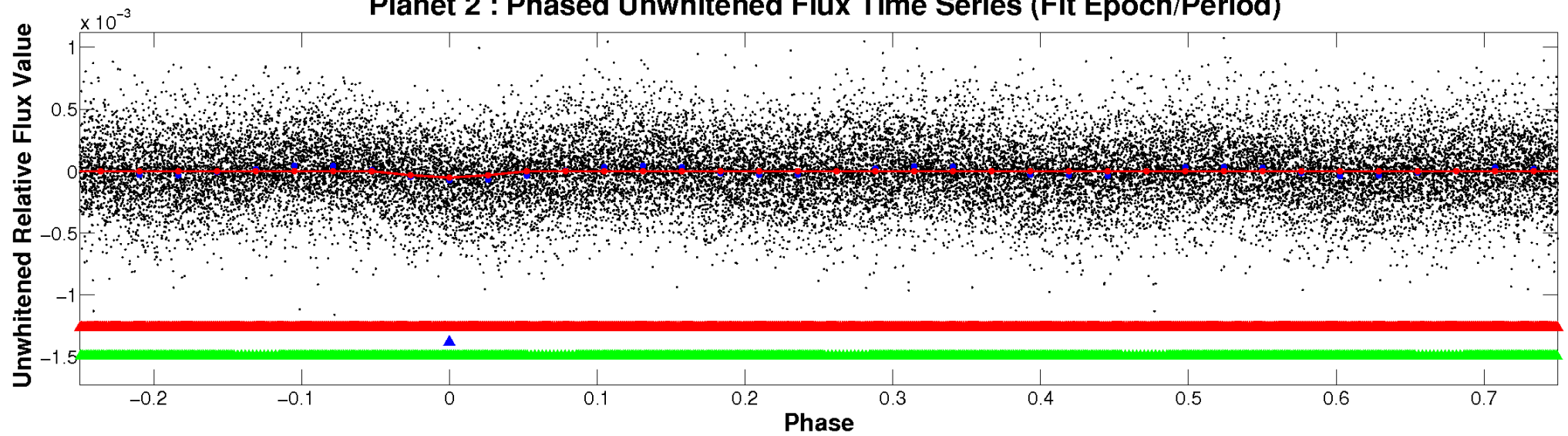
# ALT Odd/Even

TCE 003456198-02

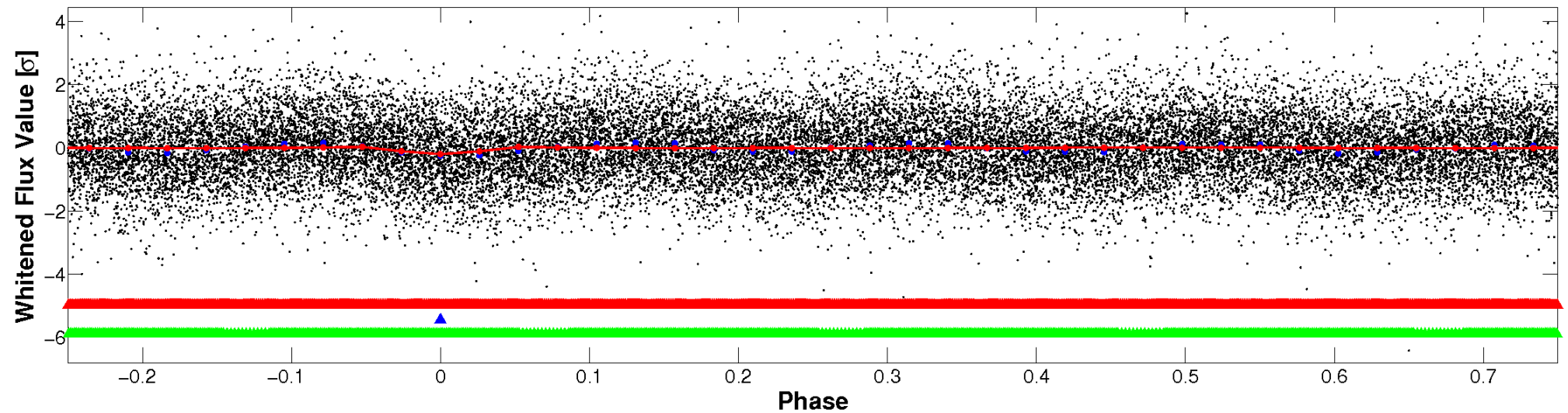


# Non-Whitened Vs. Whitened Light Curve

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

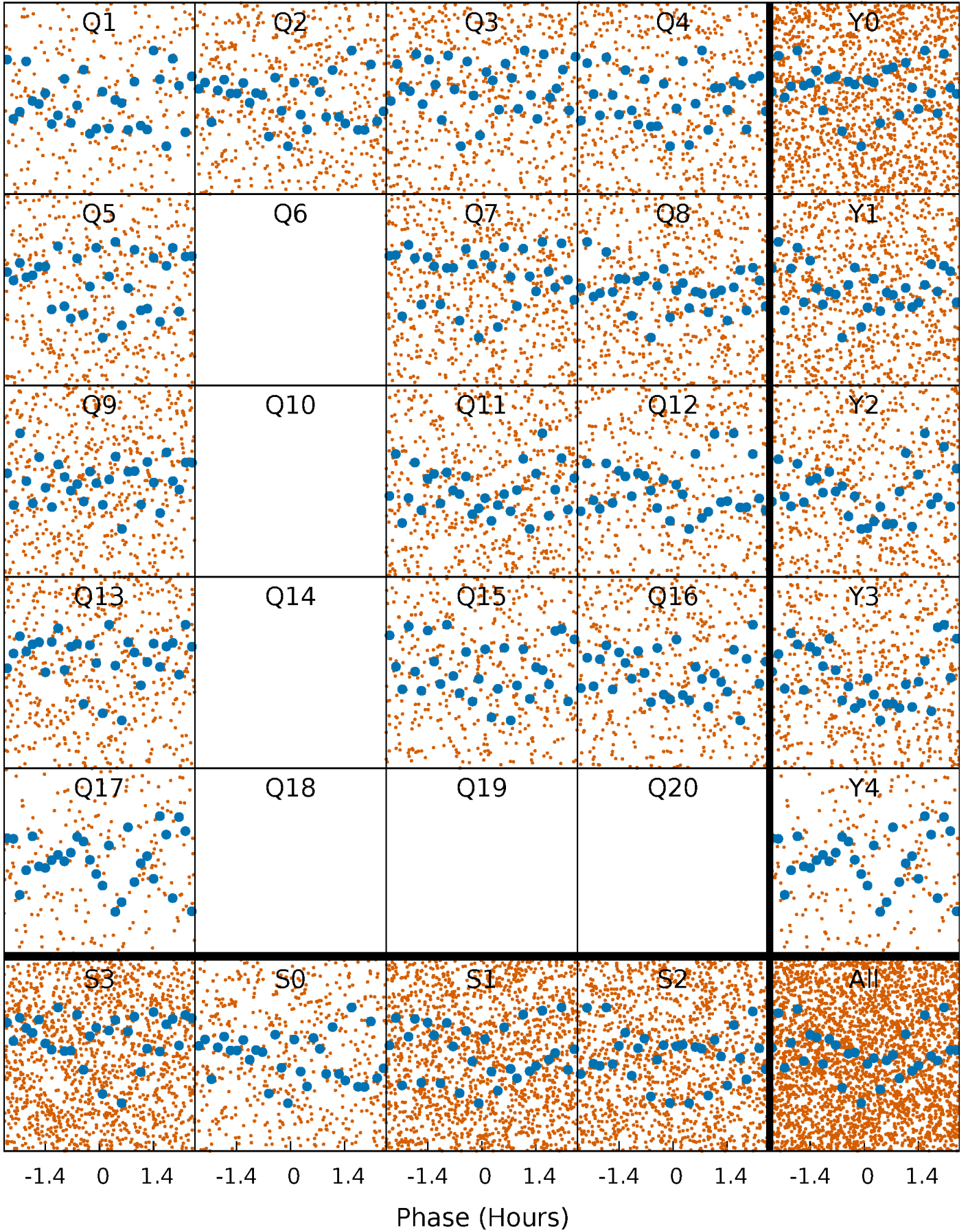


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

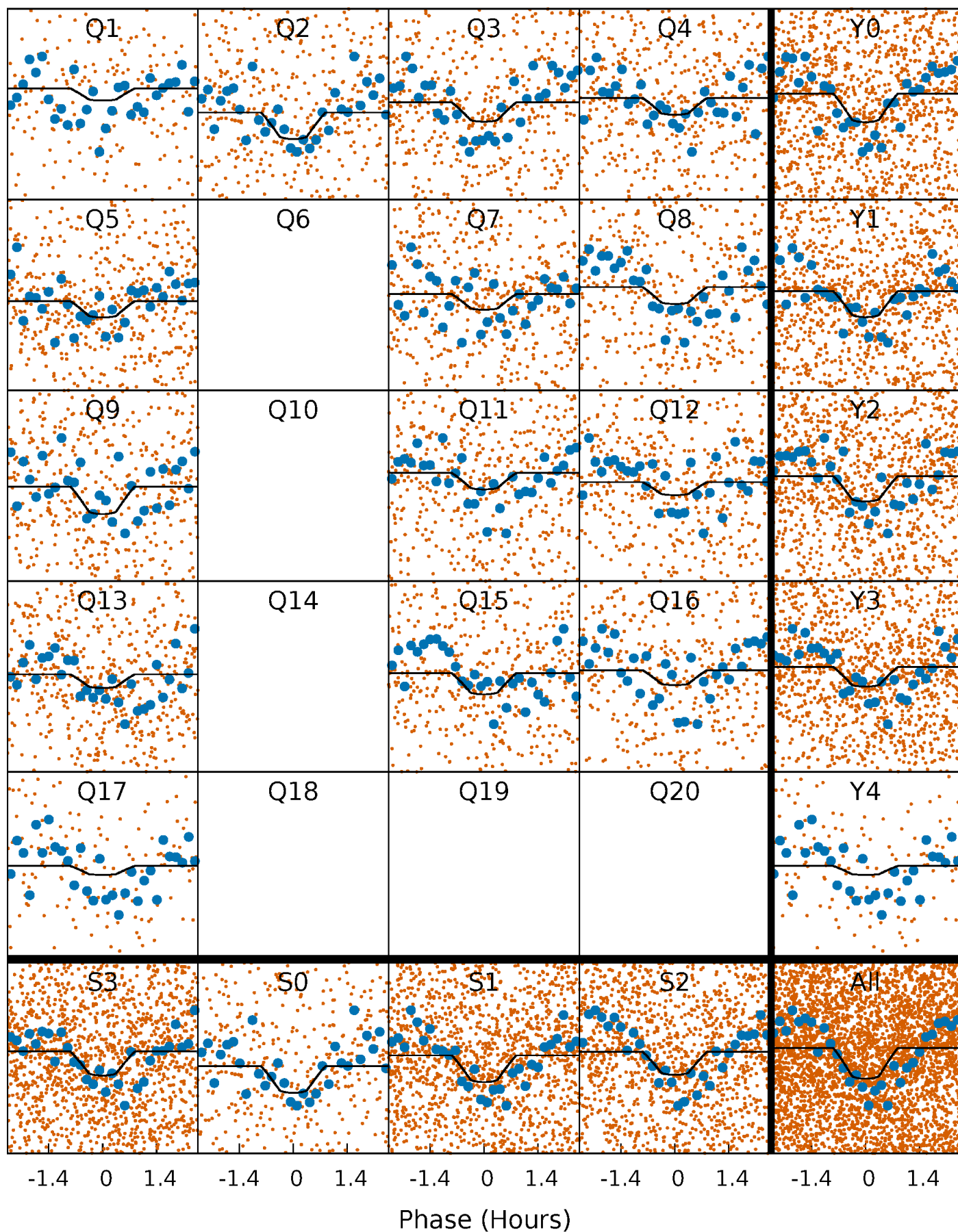
TCE 003456198-02   P= 0.779860 Days    $T_0=132.074120$  (BKJD)





# DV Quarter-Phased Transit Curves

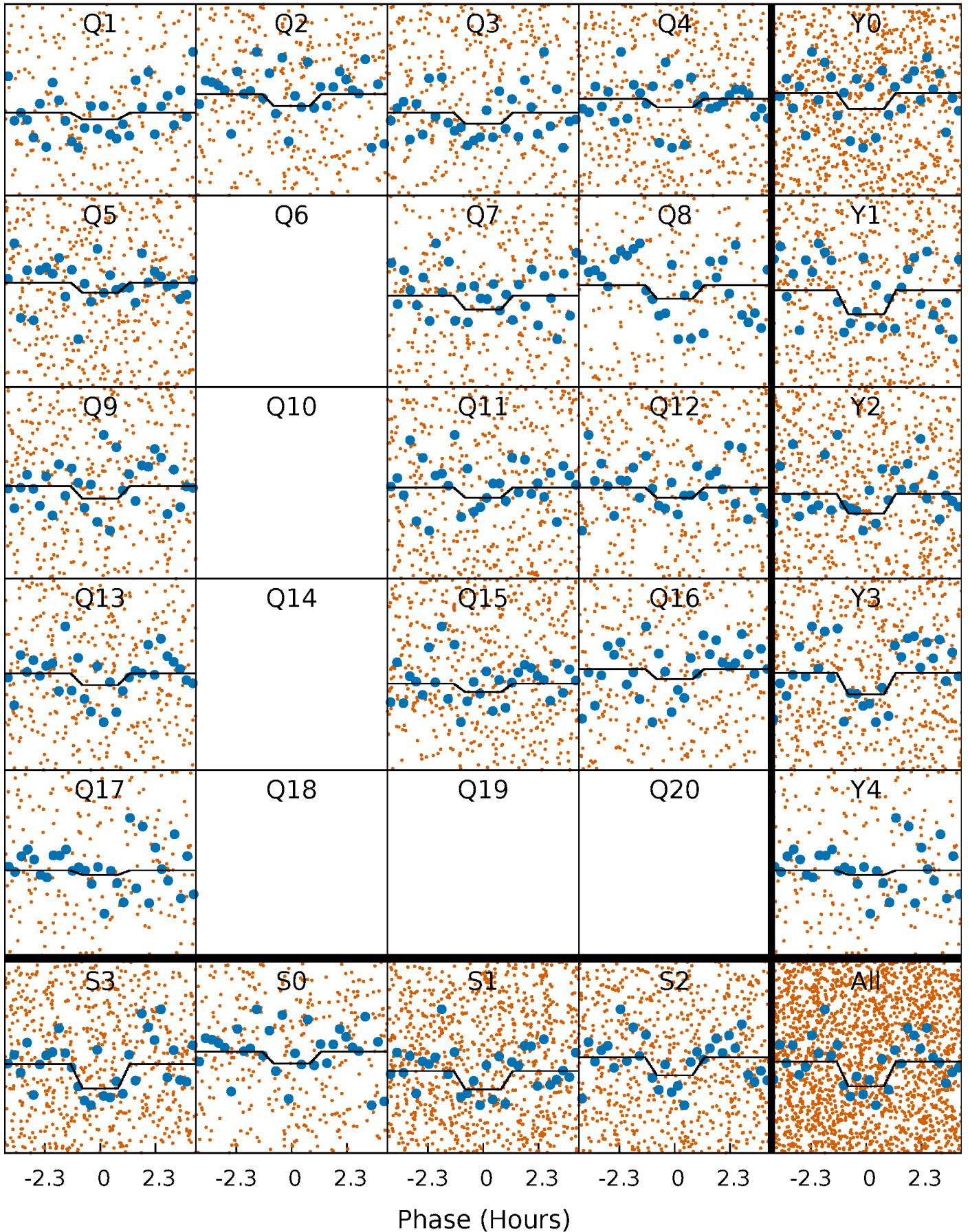
TCE 003456198-02   P= 0.779860 Days    $T_0=132.074120$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

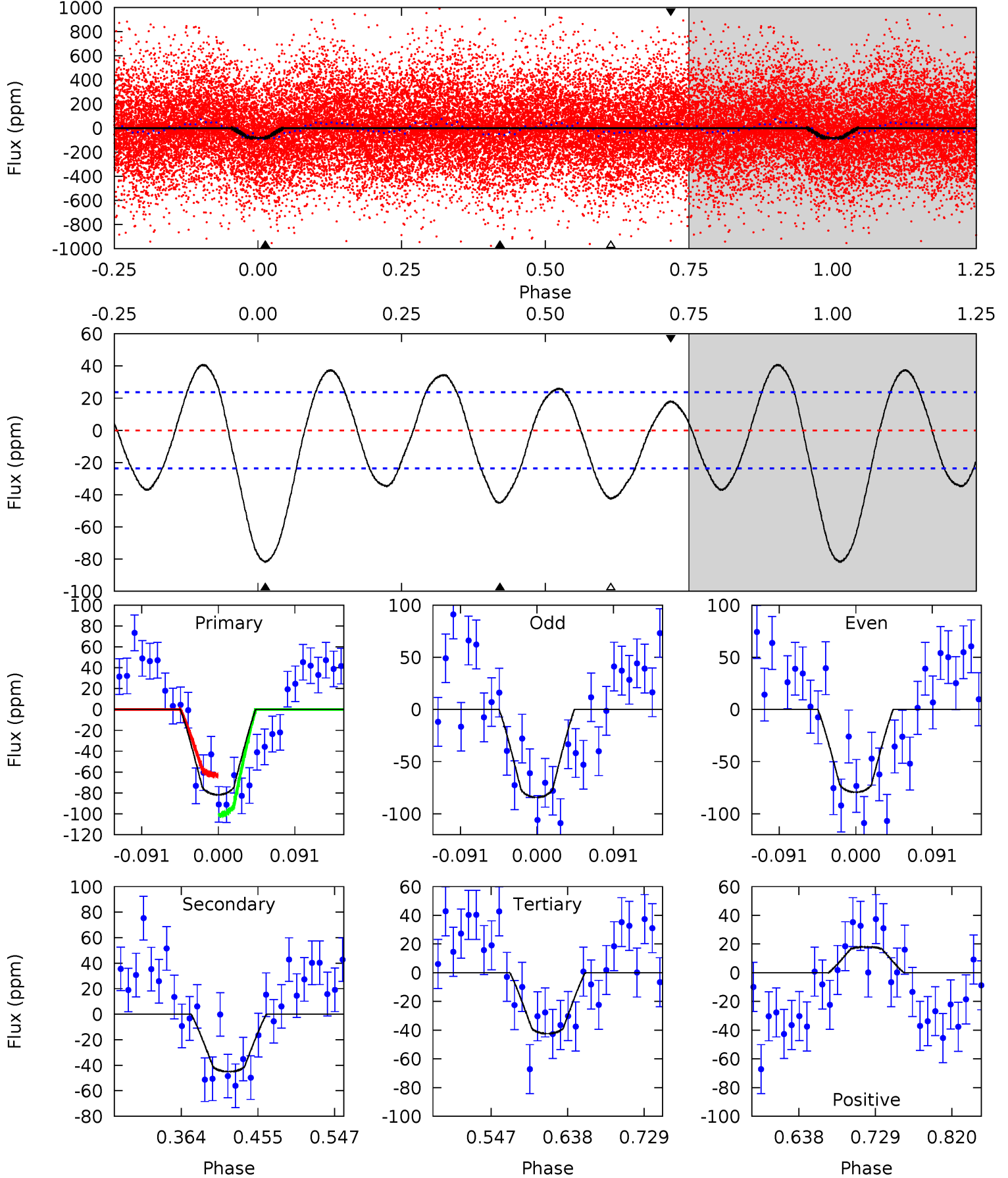
TCE 003456198-02   P= 0.779869 Days    $T_0=132.073133$  (BKJD)



# DV Model-Shift Uniqueness Test

003456198-02, P = 0.779860 Days, E = 131.294260 Days

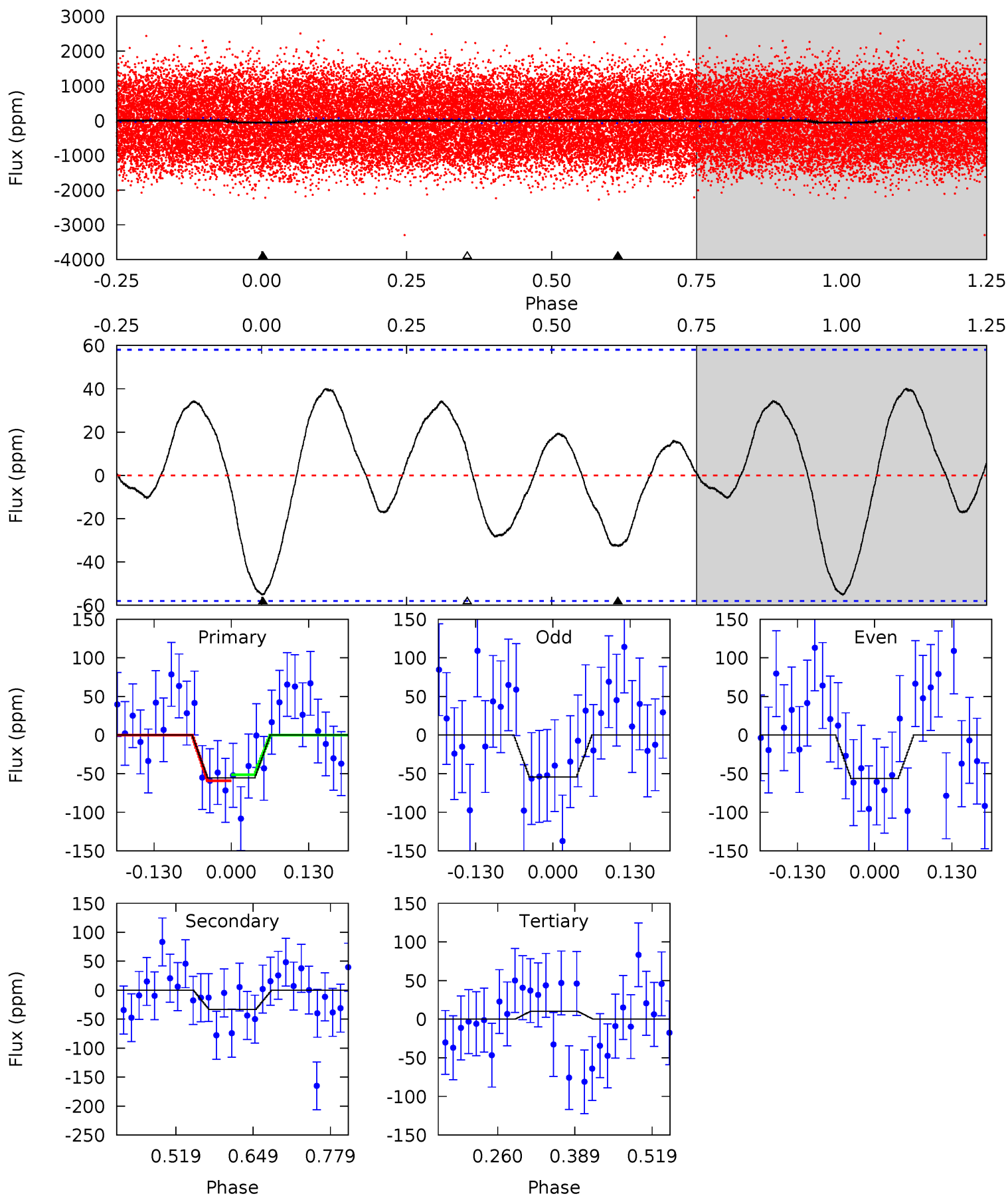
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
15.8	8.72	8.22	3.50	4.58	1.69	4.97	7.61	12.3	0.51	5.23	0.48	0.98	0.33	3.67



# Alt Model-Shift Uniqueness Test

003456198-02, P = 0.779869 Days, E = 131.293264 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4.30	2.56	-0.80	0	4.51	1.52	1.39	5.10	4.30	3.36	2.56	0.08	0.73	0.42	0.30



### Stellar Parameters For KIC 003456198

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$7892^{+218}_{-327}$	$3.674^{+0.440}_{-0.110}$	$-0.140^{+0.200}_{-0.300}$	$3.435^{+0.818}_{-1.635}$	$2.032^{+0.342}_{-0.470}$	$0.071^{+0.285}_{-0.023}$
	+3%/-4%	+12%/-3%	+143%/-214%	+24%/-48%	+17%/-23%	+403%/-32%
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 003456198-02 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-45 \pm 5$	$2.57^{+1.40}_{-1.10}$	$5987^{+493}_{-773}$	$6790^{+2969}_{-1533}$	$1.626^{+3.533}_{-0.926}$
Alt.	$-33 \pm 13$	$2.48^{+1.25}_{-1.12}$	$5986^{+491}_{-724}$	$6171^{+2962}_{-1674}$	$1.232^{+2.994}_{-0.745}$

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

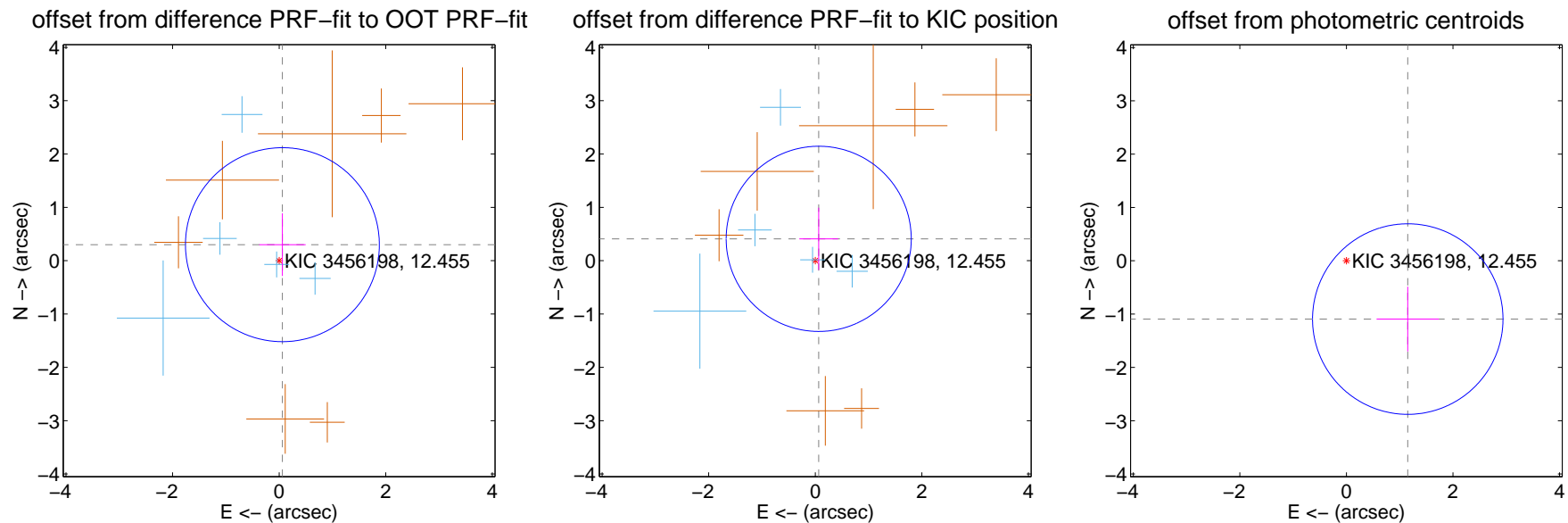
## DV Centroid Data

Supplemental centroid analysis for 003456198-02. Kepler magnitude: 12.46. Transit SNR 6.97

There are 5 quarters with good PRF difference image offsets

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

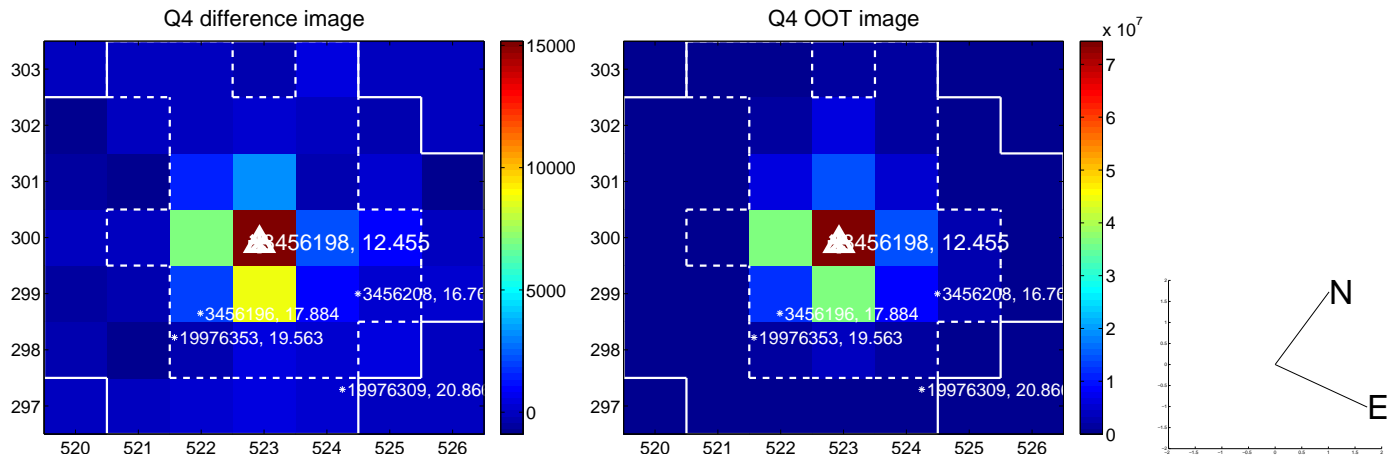
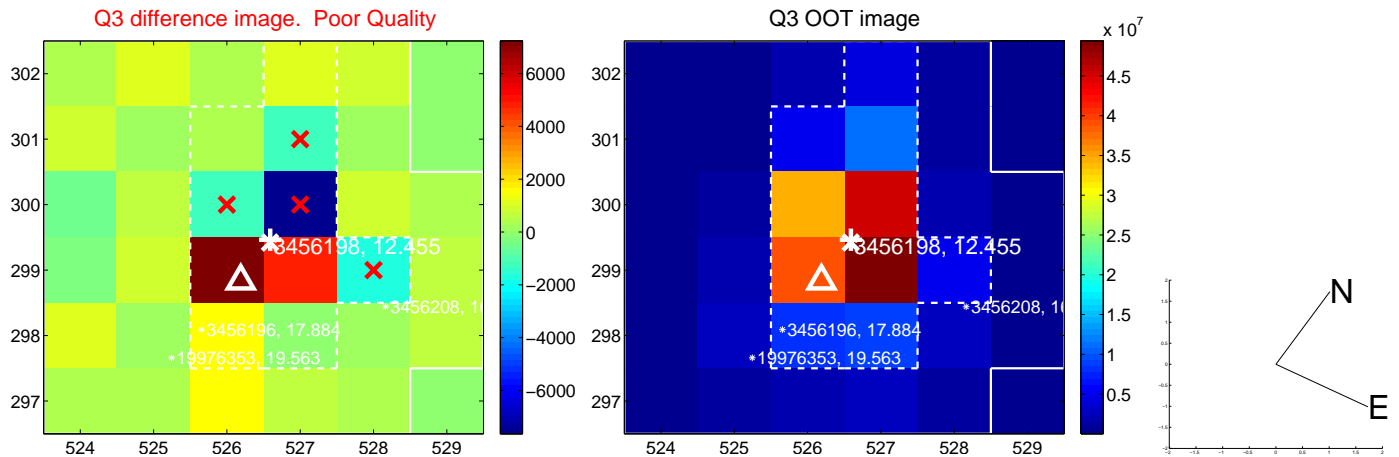
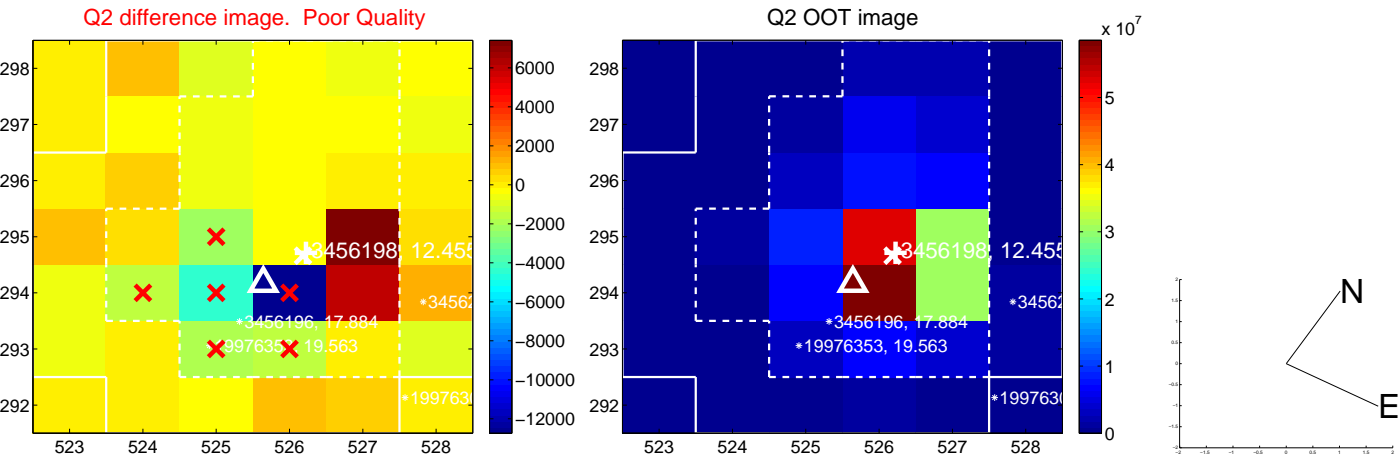
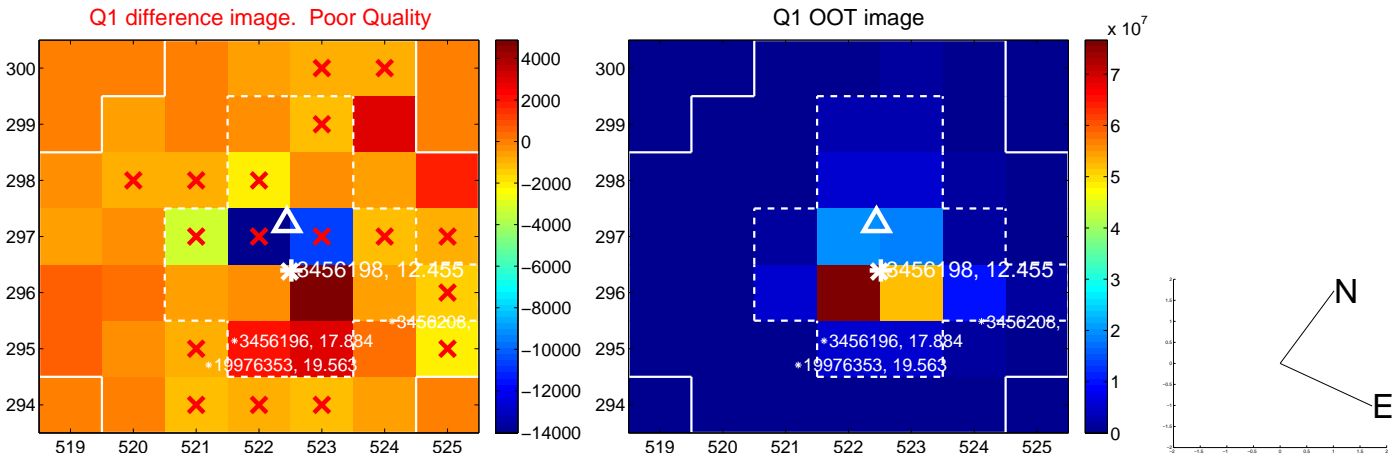
	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.307 \pm 0.606$	0.51	$-0.061 \pm 0.436$	$0.301 \pm 0.588$
PRF-fit source offset from KIC position	$0.415 \pm 0.579$	0.72	$-0.065 \pm 0.364$	$0.410 \pm 0.583$
photometric centroid source offset	$1.59 \pm 0.60$	2.67	$-1.15 \pm 0.58$	$-1.09 \pm 0.61$



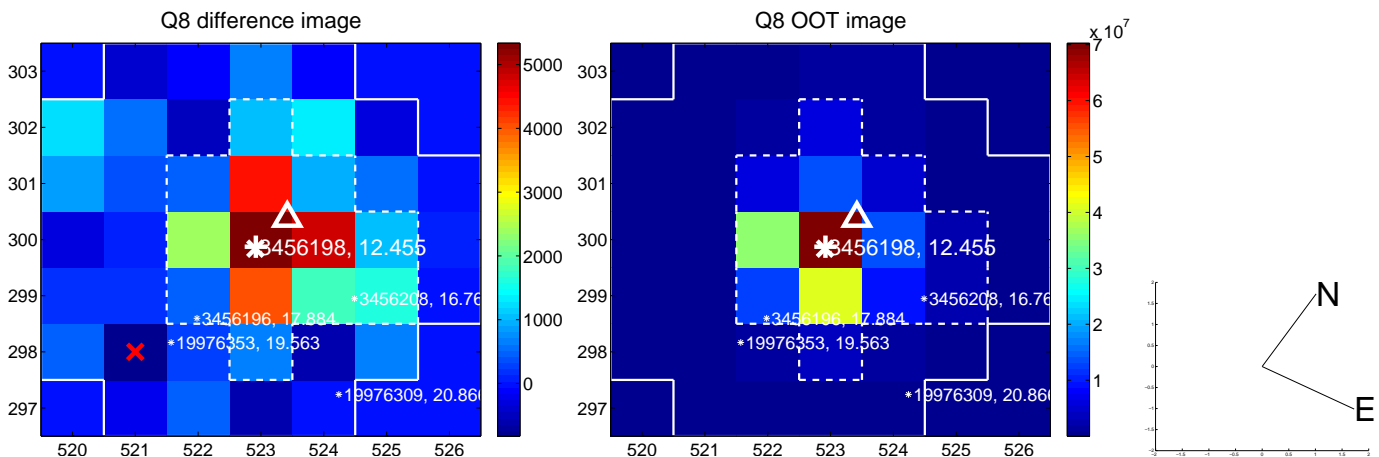
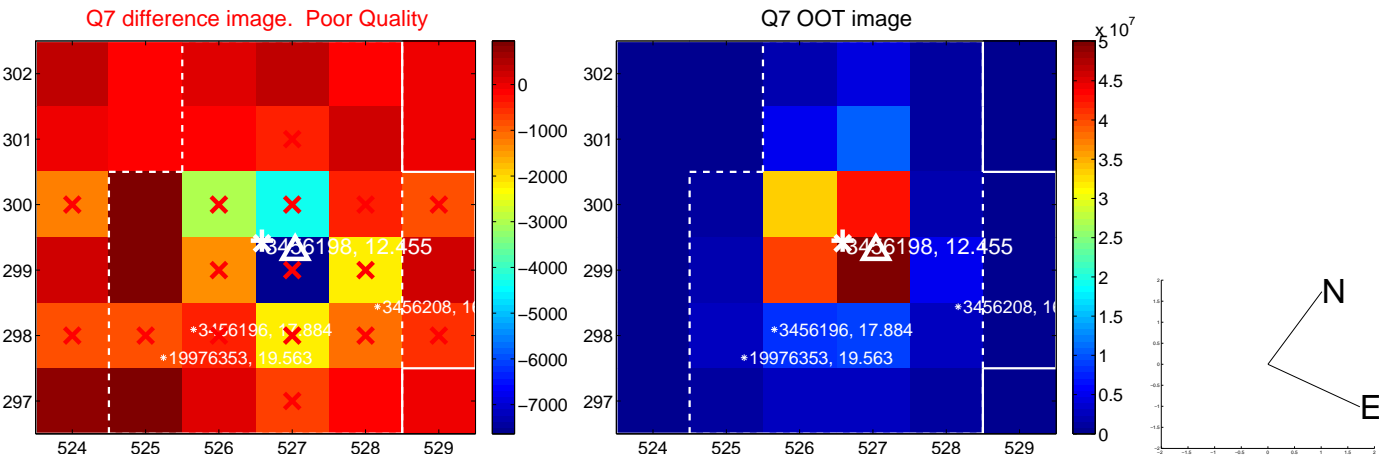
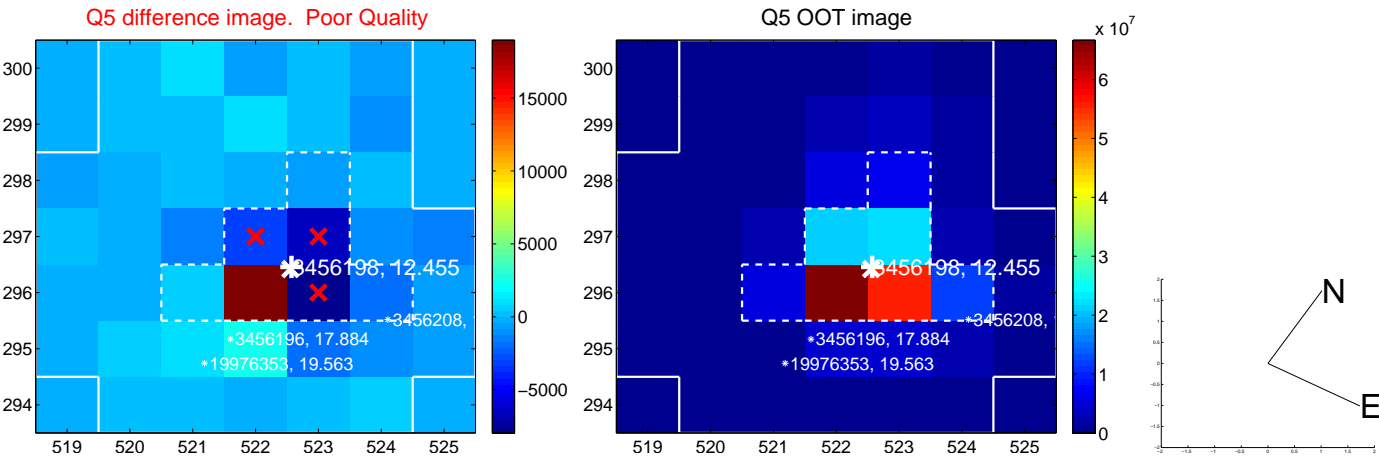
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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



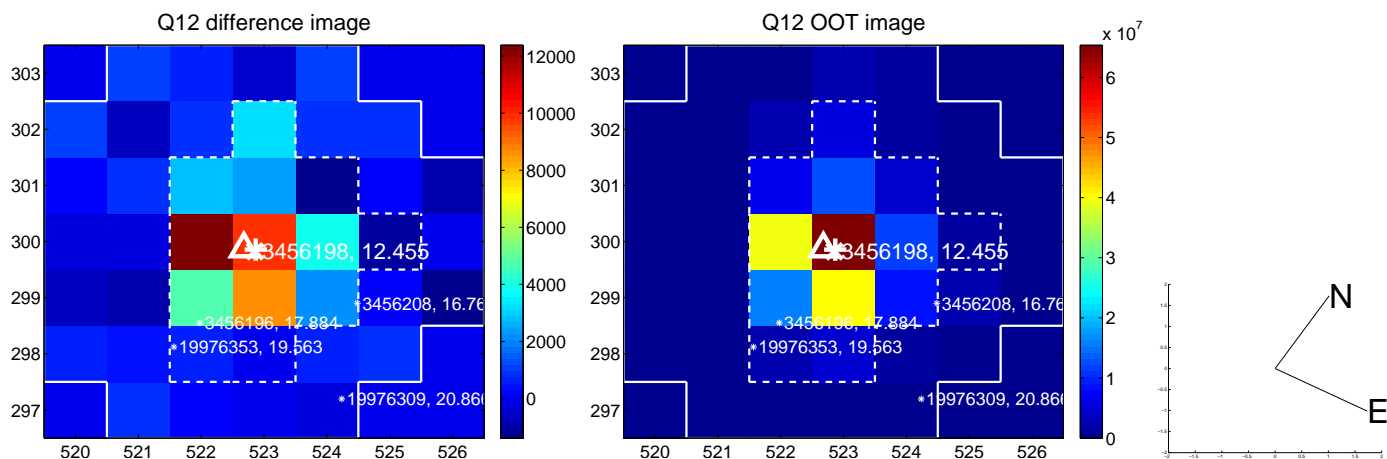
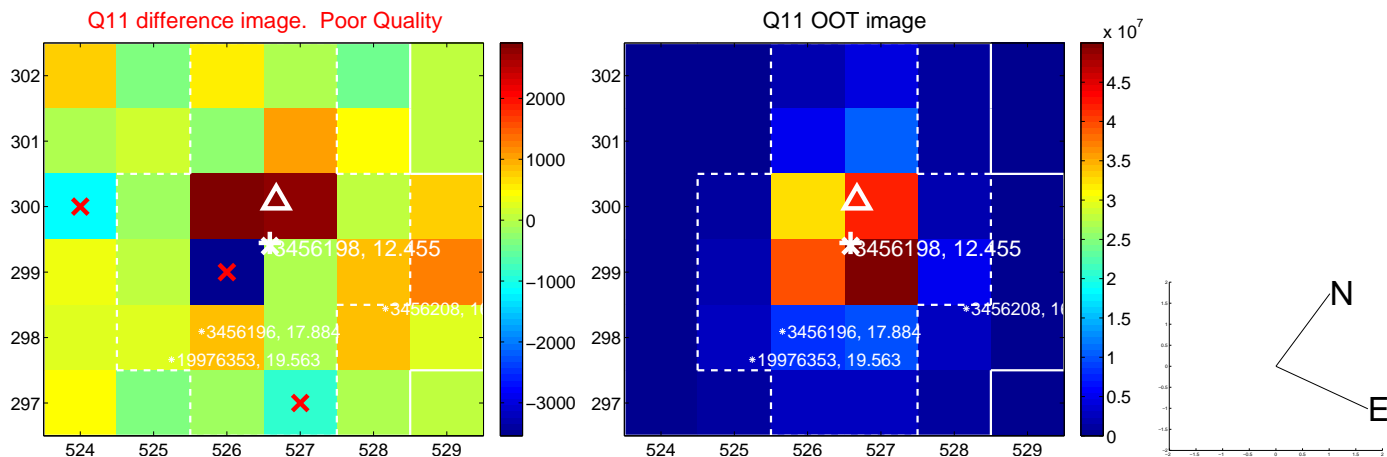
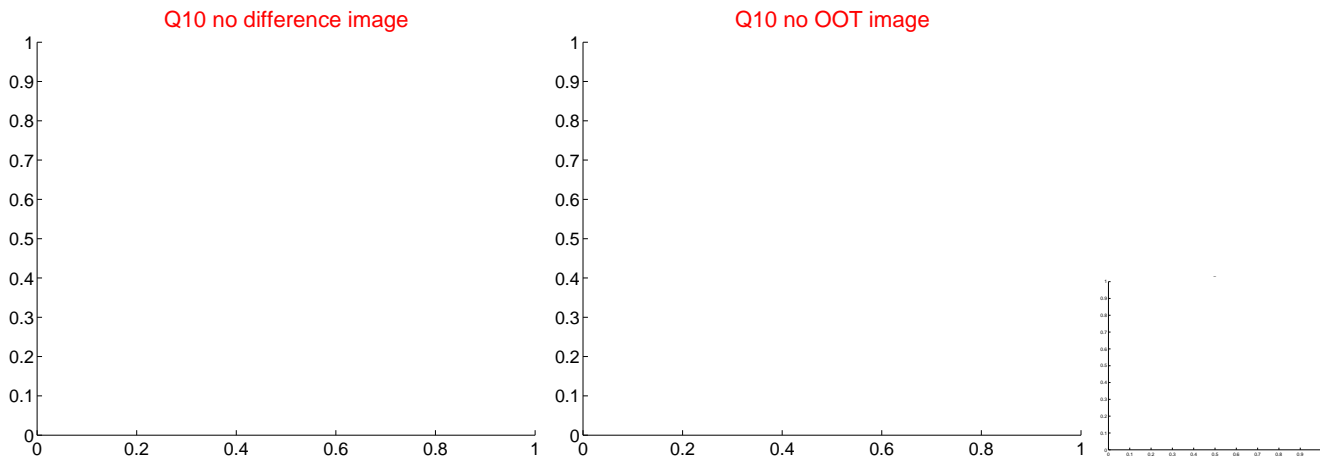
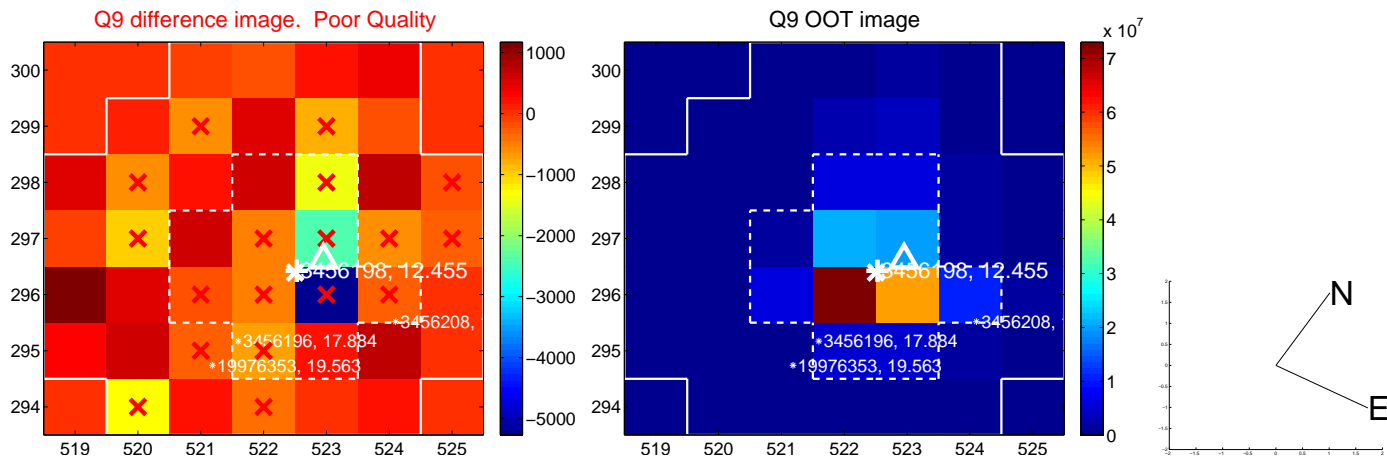
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



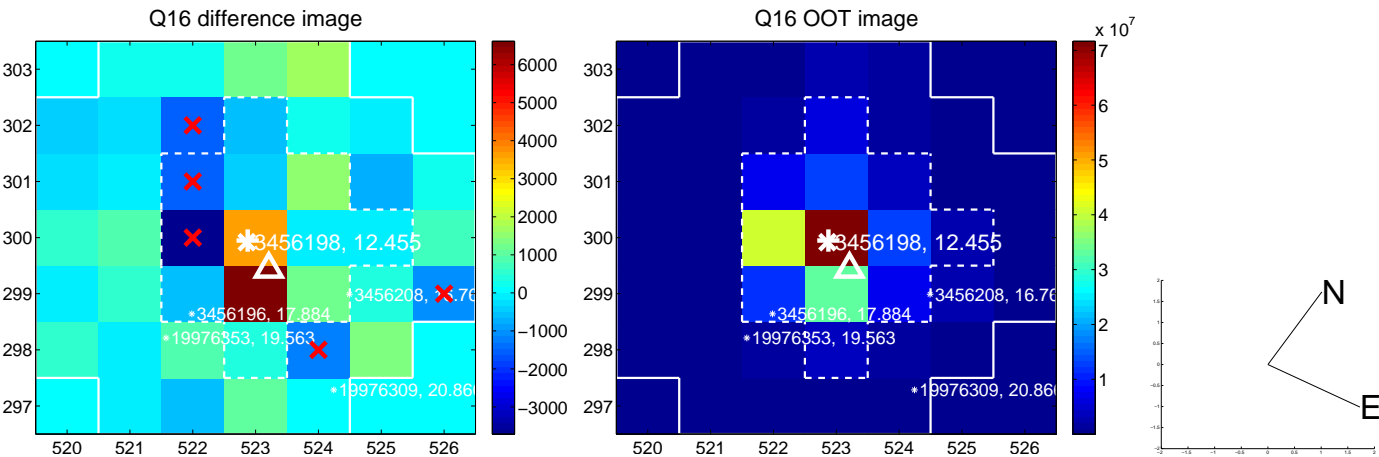
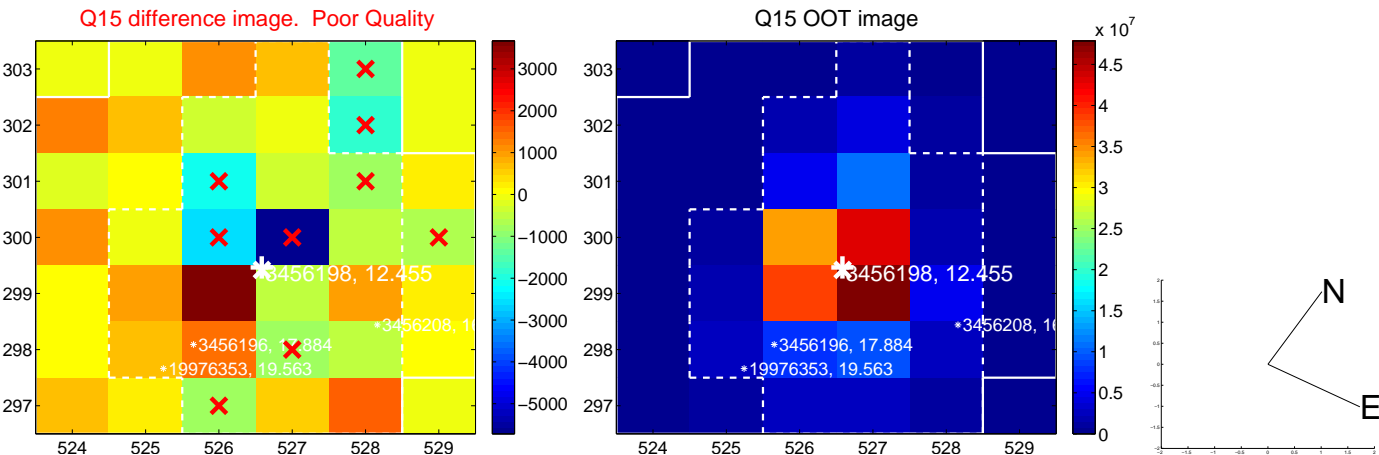
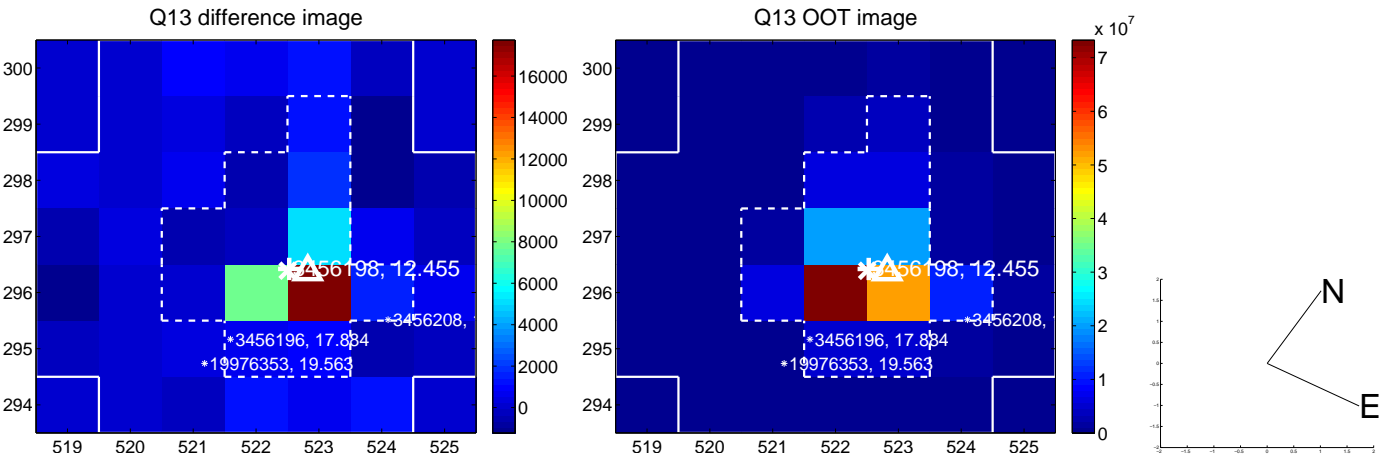
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



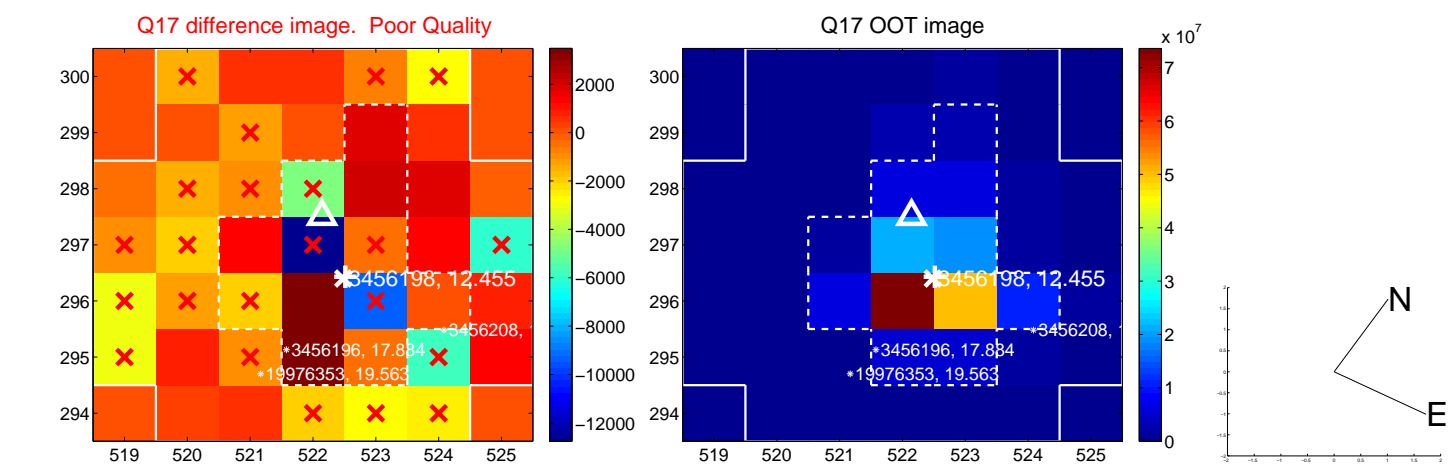
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



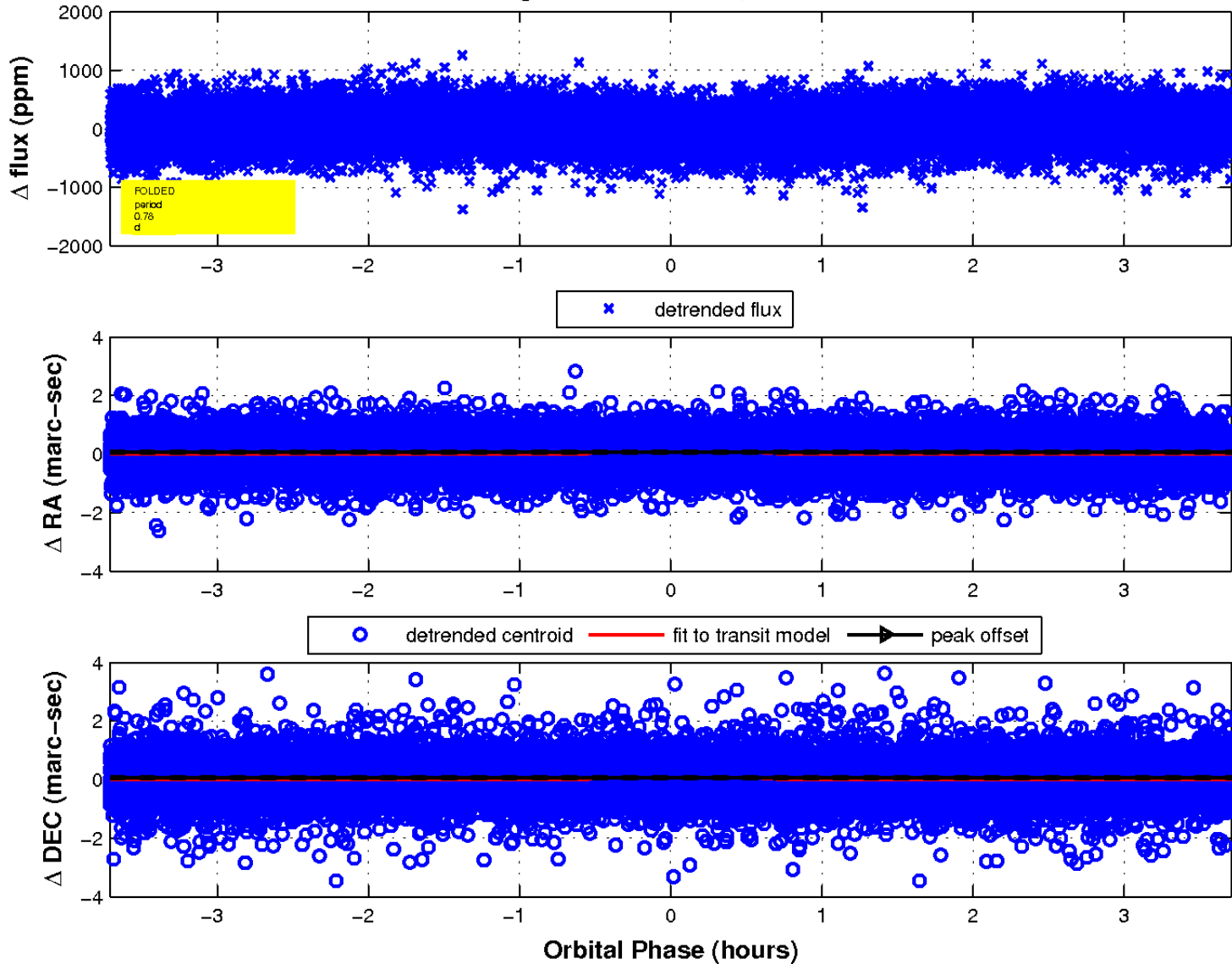
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

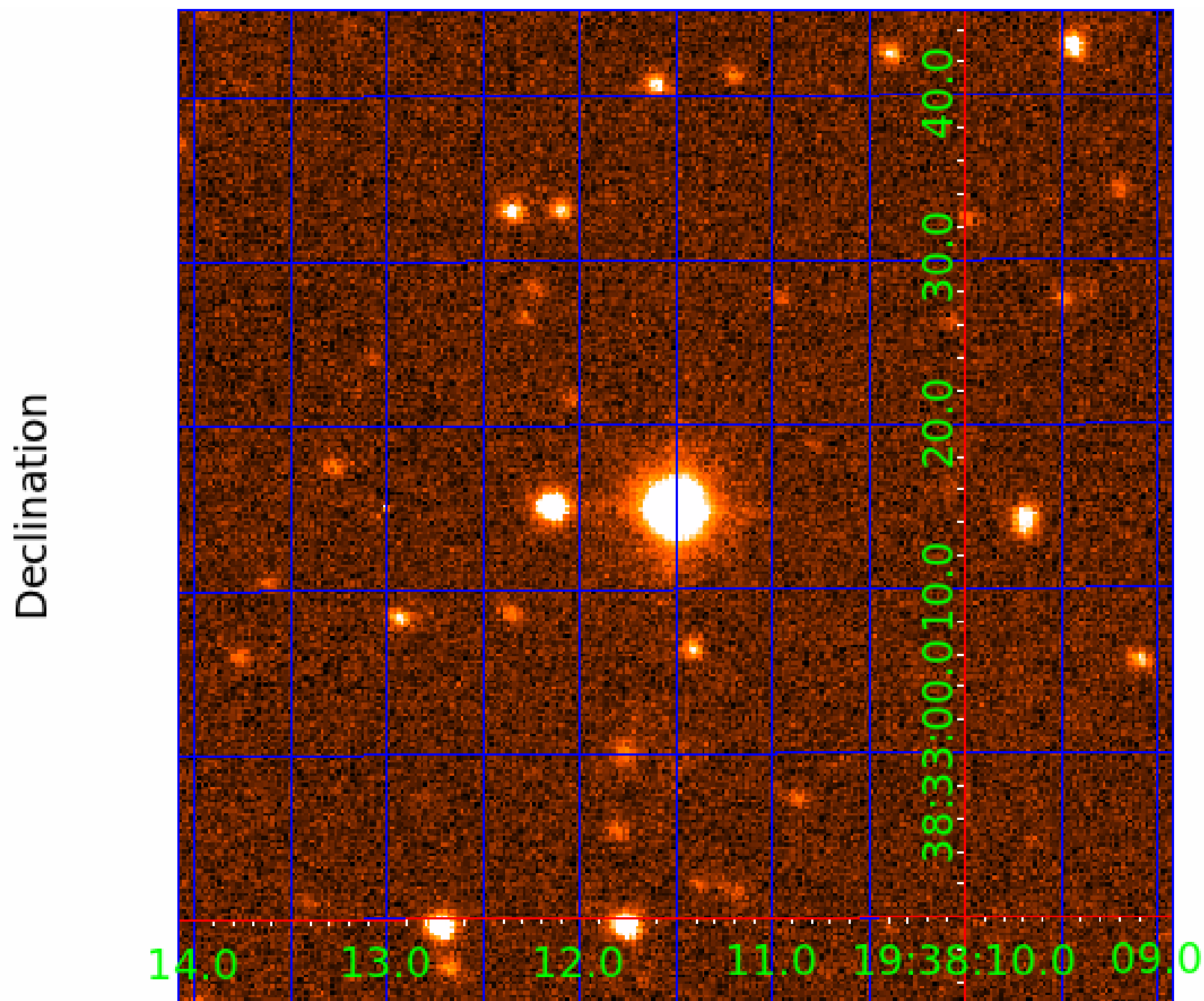


fluxWeightedCentroids, Planet 2 of 3





UKIRT Image



# KIC 003456198

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
003456198-01	OBS	No	0.842770	131.744226	53.5	3.055	9.0	10.5	3.44	7892	2.92	83813.76
003456198-02	OBS	No	0.779860	132.074120	52.9	1.237	9.5	7.0	3.44	7892	2.91	92947.67
003456198-03	OBS	No	2.028035	133.076809	25.0	14.407	9.1	4.6	3.44	7892	2.15	25991.22

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003456198-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
003456198-02	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
003456198-03	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—CENT_FEW_MEAS—HALO_GHOST

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

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

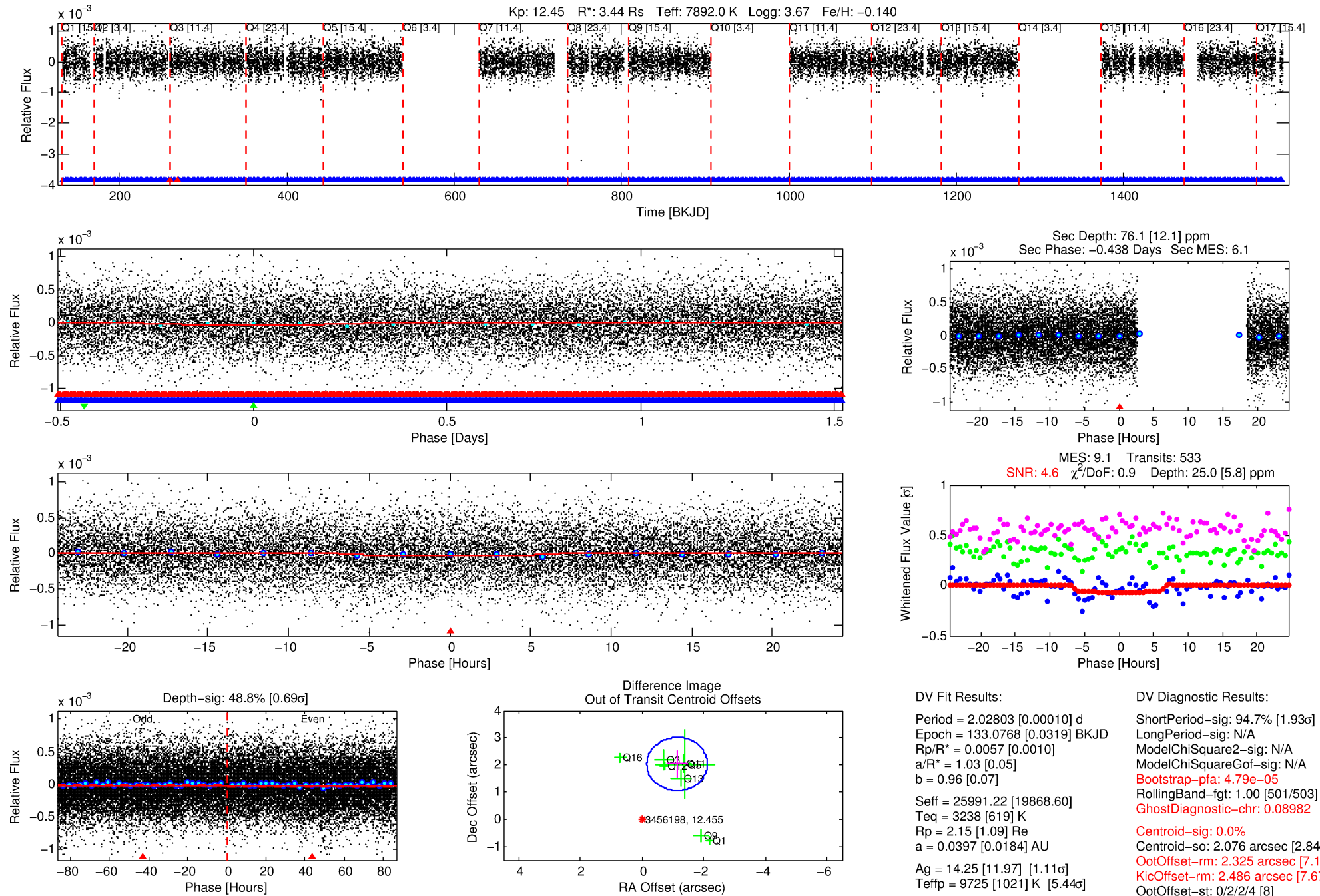
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 003456198-03

No Significant Match Found

# DV One-Page Summary

KIC: 3456198 Candidate: 3 of 3 Period: 2.028 d



## DV Fit Results:

Period = 2.02803 [0.00010] d  
Epoch = 133.0768 [0.0319] BKJD  
Rp/R\* = 0.0057 [0.0010]  
a/R\* = 1.03 [0.05]  
b = 0.96 [0.07]  
Seff = 25991.22 [19868.60]  
Teff = 3238 [619] K  
Rp = 2.15 [1.09] Re  
a = 0.0397 [0.0184] AU  
Ag = 14.25 [11.97] [1.11 $\sigma$ ]  
Teffp = 9725 [1021] K [5.44 $\sigma$ ]

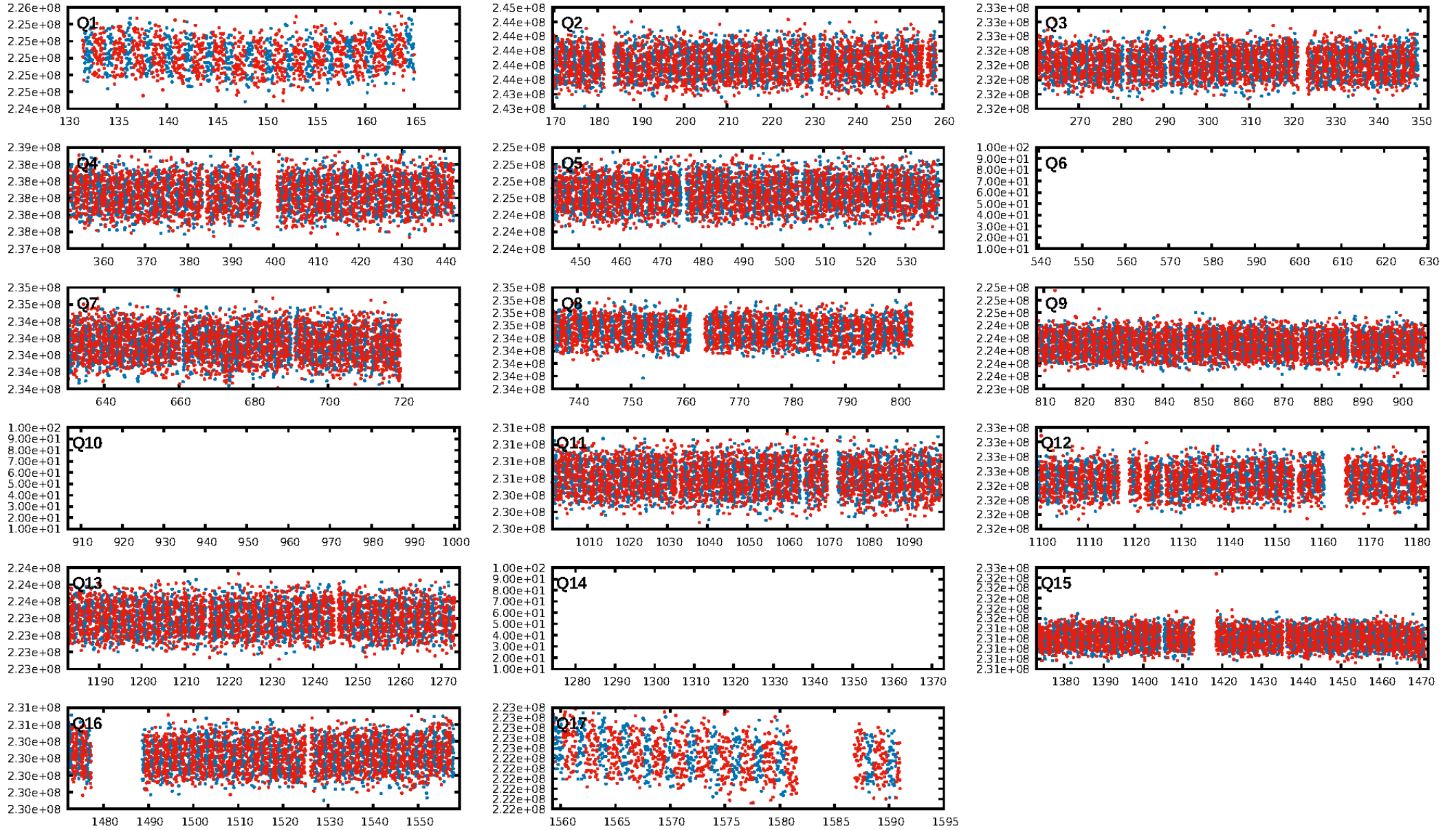
## DV Diagnostic Results:

ShortPeriod-sig: 94.7% [1.93 $\sigma$ ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 4.79e-05  
RollingBand-fgt: 1.00 [501/503]  
GhostDiagnostic-chr: 0.08982  
Centroid-sig: 0.0%  
Centroid-so: 2.076 arcsec [2.84 $\sigma$ ]  
OotOffset-rm: 2.325 arcsec [7.11 $\sigma$ ]  
KicOffset-rm: 2.486 arcsec [7.67 $\sigma$ ]  
OotOffset-st: 0/2/2/4 [8]  
KicOffset-st: 0/2/2/4 [8]  
DiffImageQuality-fgm: 0.50 [4/8]  
DiffImageOverlap-fno: 0.00 [0/14]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 07:41:27 Z

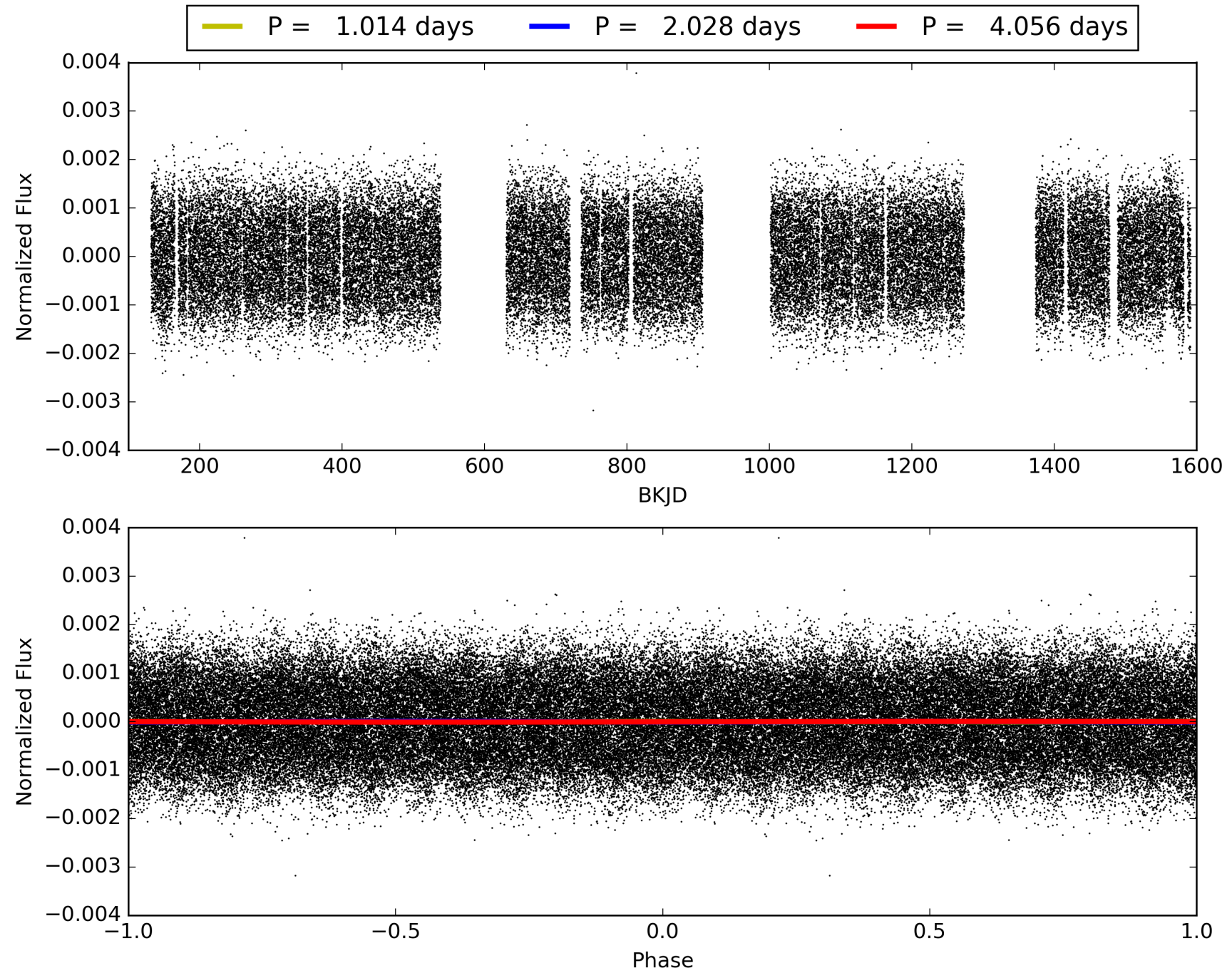
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 003456198-03, PDC Light Curves





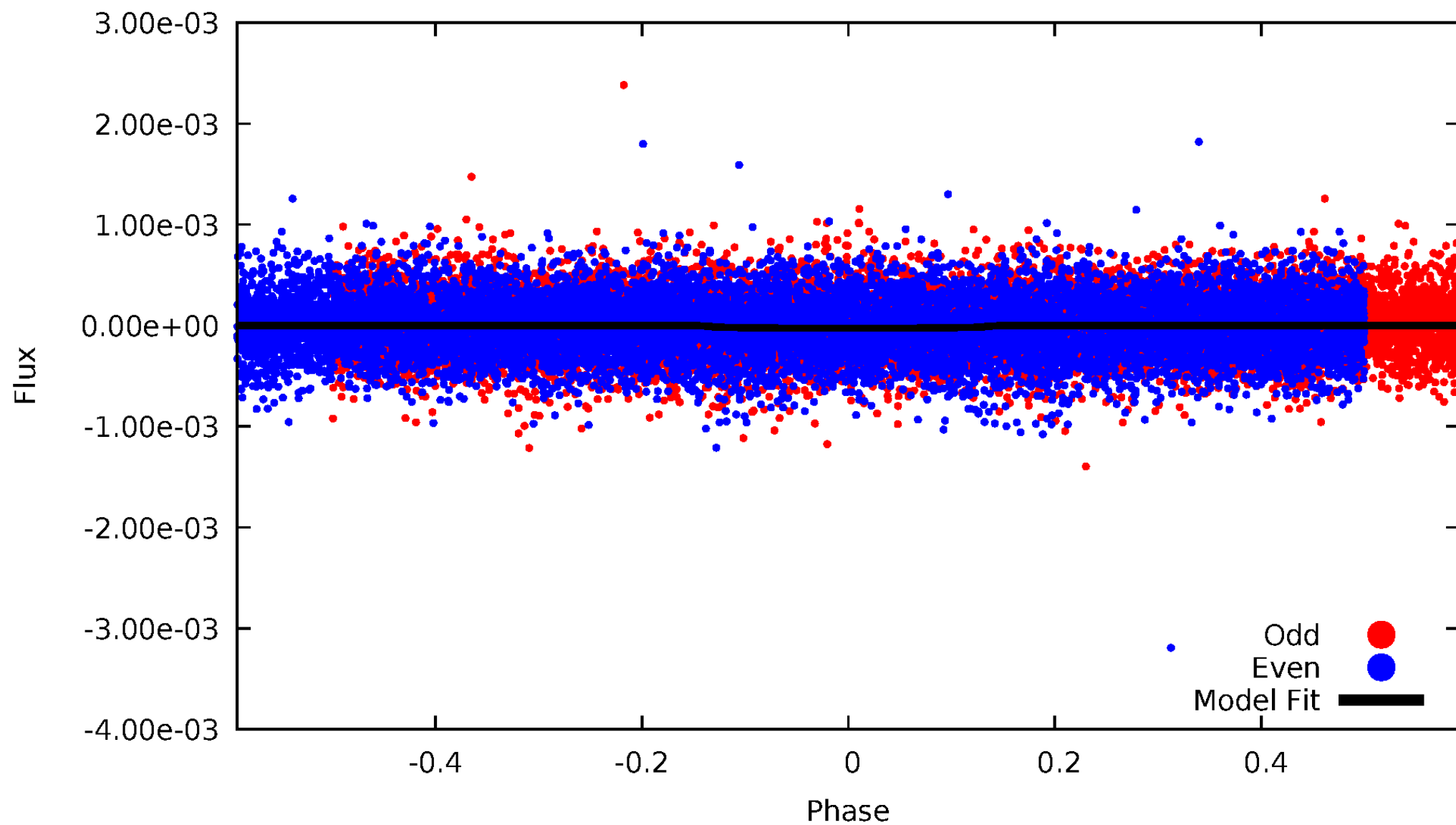
TCE 003456198-03





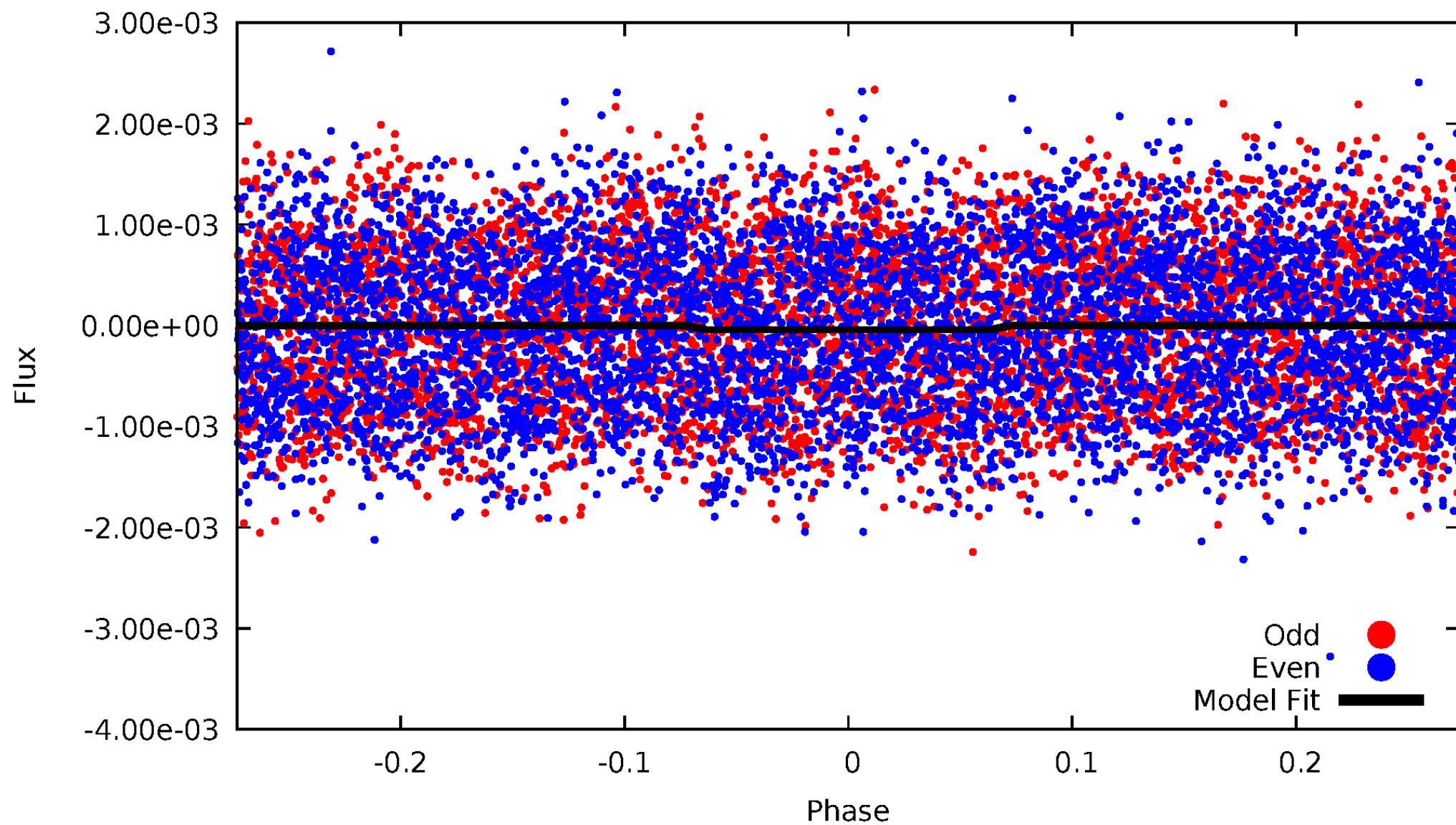
DV Odd/Even

TCE 003456198-03

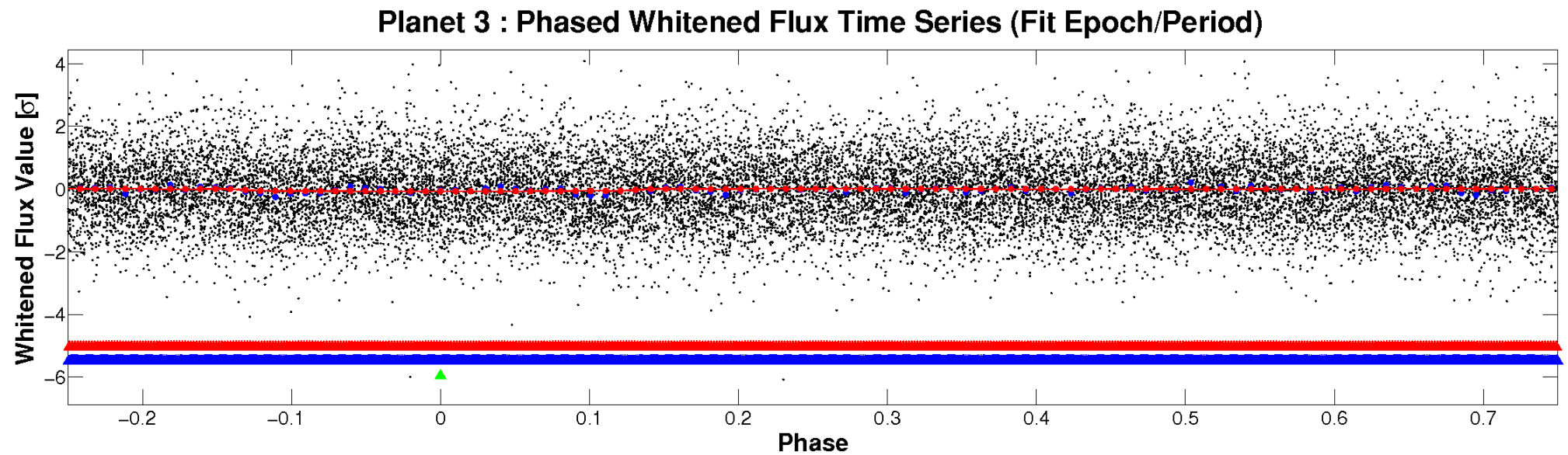
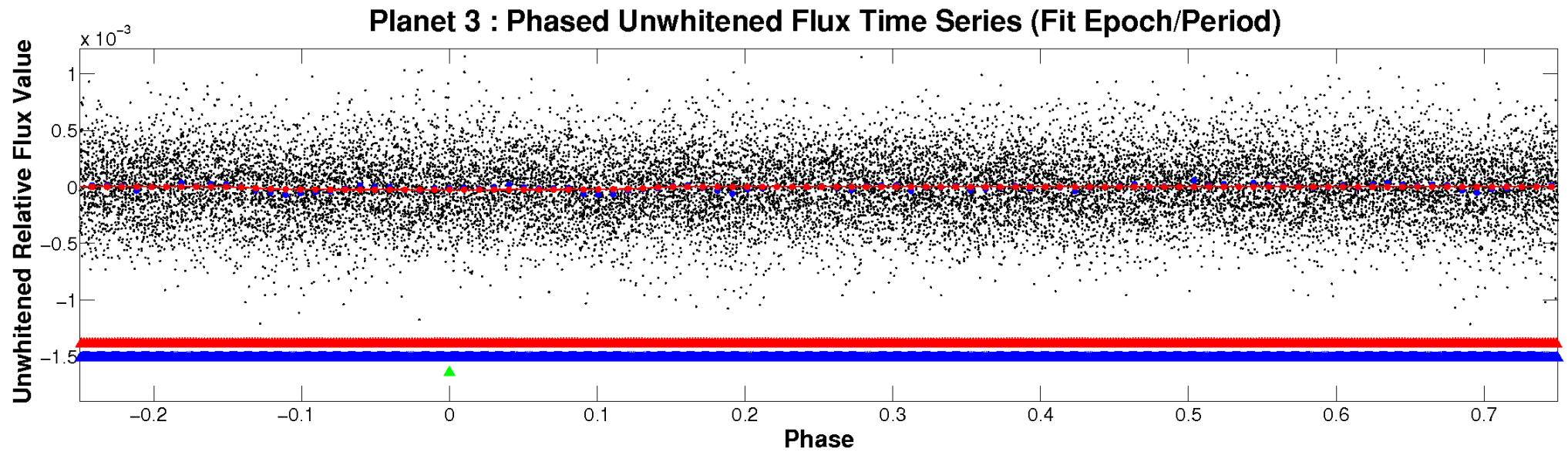


# ALT Odd/Even

TCE 003456198-03

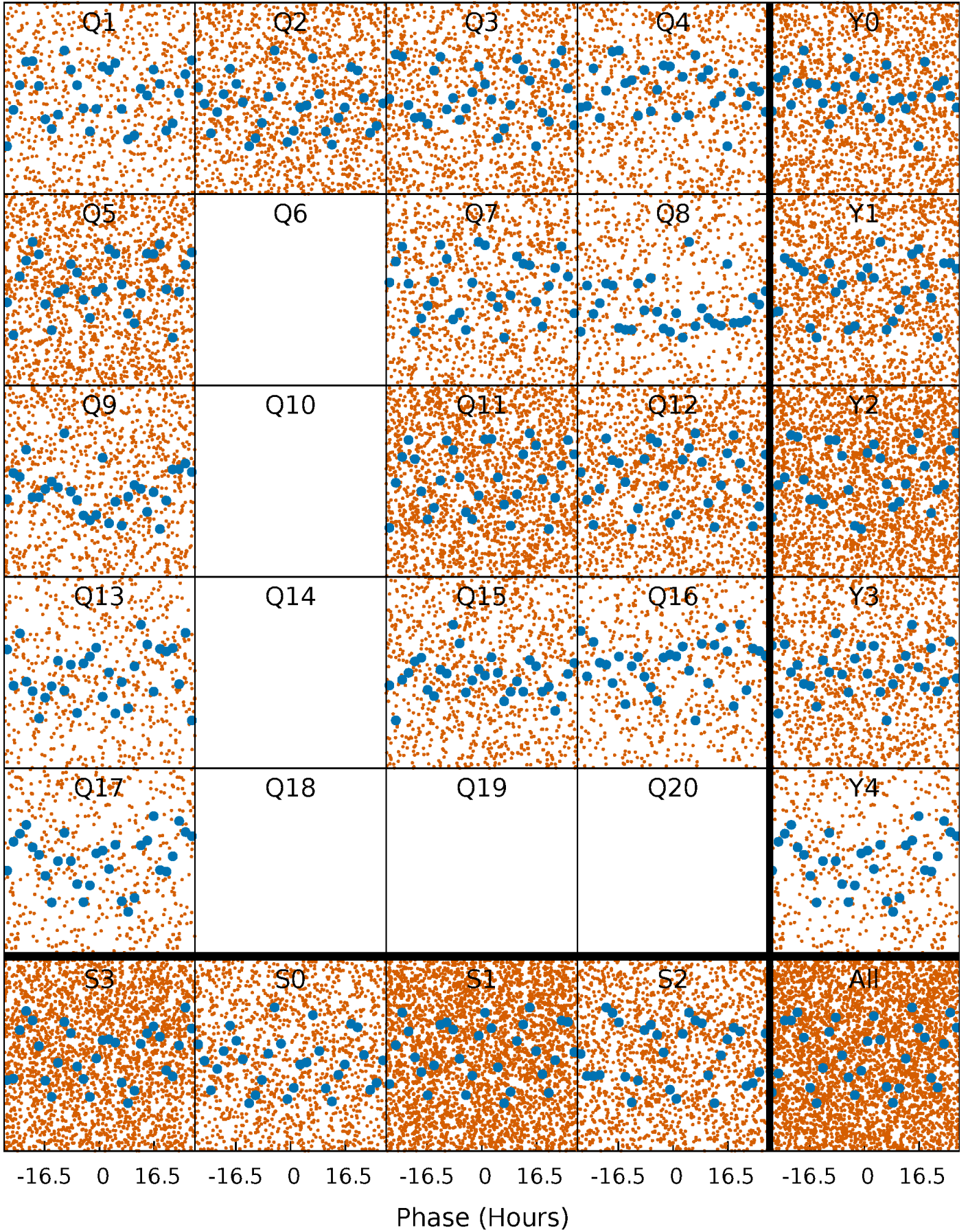


# Non-Whitened Vs. Whitened Light Curve



# PDC Quarter-Phased Transit Curves

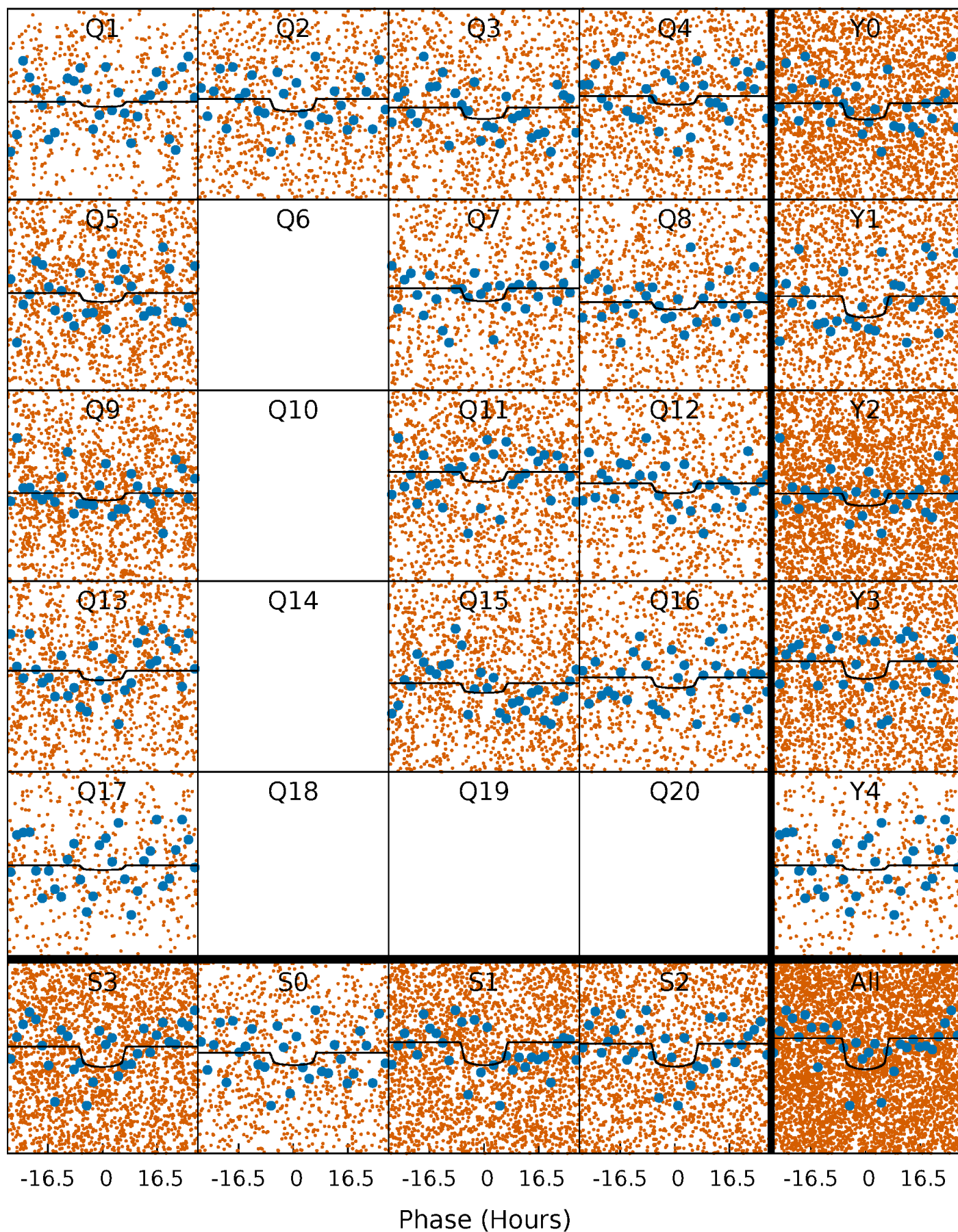
TCE 003456198-03    P= 2.028035 Days     $T_0=133.076809$  (BKJD)





# DV Quarter-Phased Transit Curves

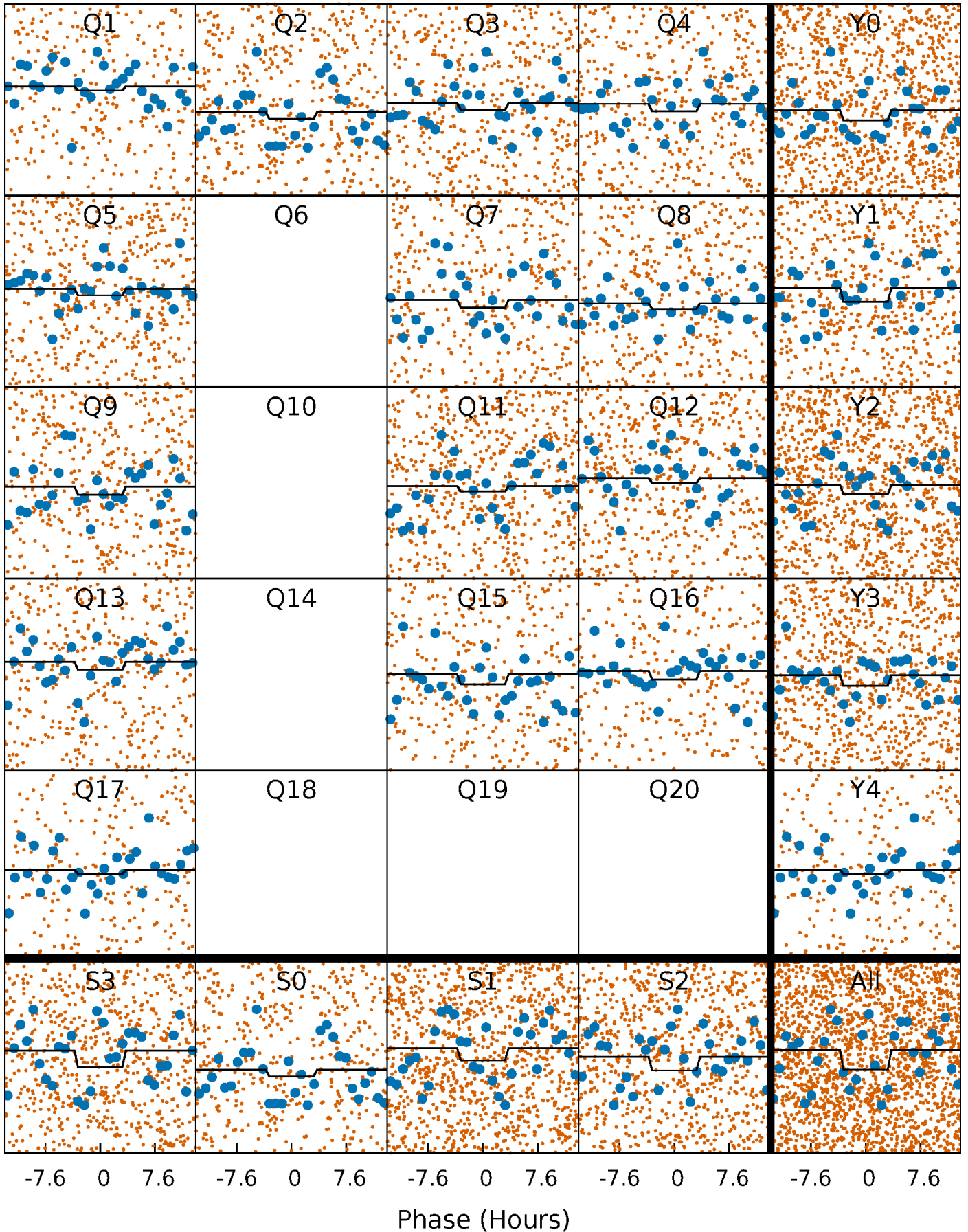
TCE 003456198-03 P= 2.028035 Days  $T_0=133.076809$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

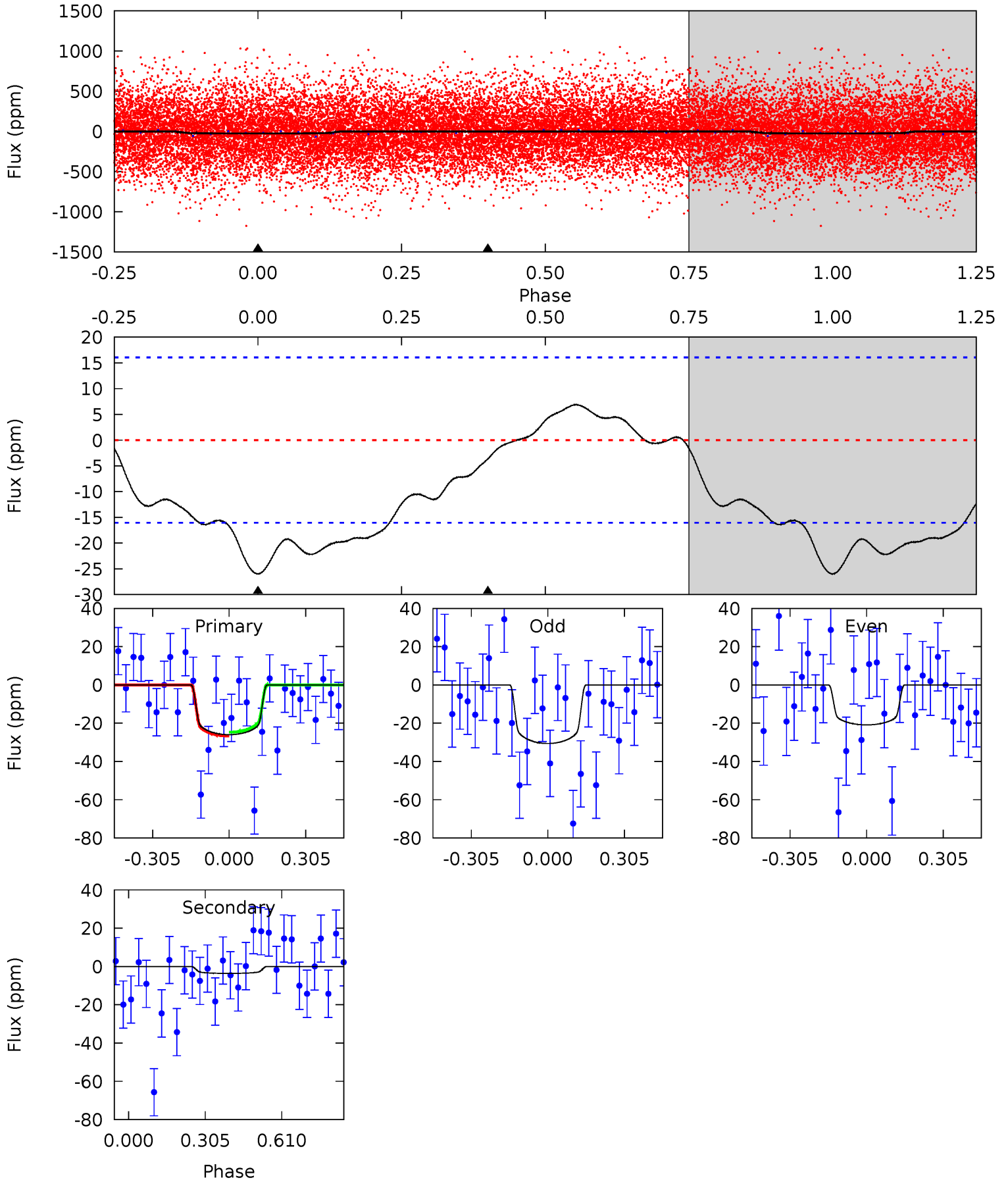
TCE 003456198-03 P= 2.028583 Days  $T_0=133.106745$  (BKJD)



# DV Model-Shift Uniqueness Test

003456198-03, P = 2.028035 Days, E = 131.048774 Days

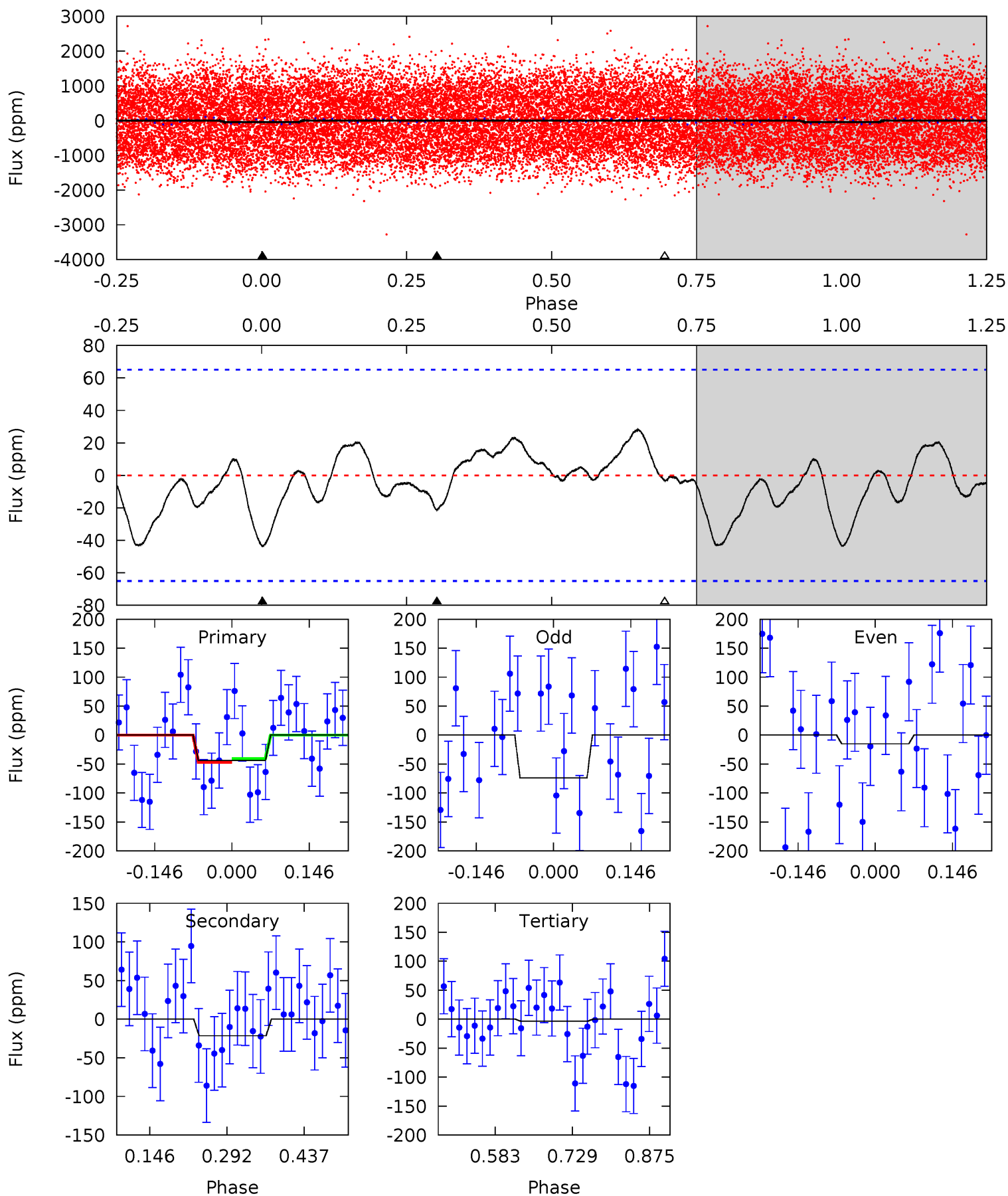
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.01	0.98	0	0	4.33	1.03	0.23	7.01	7.01	0.98	0.98	1.30	1.25	0.21	0.27



# Alt Model-Shift Uniqueness Test

003456198-03, P = 2.028583 Days, E = 131.078162 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
3.02	1.47	0.24	0	4.49	1.45	1.18	2.78	3.02	1.23	1.47	2.02	1.27	0.39	0.23



### Stellar Parameters For KIC 003456198

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$7892^{+218}_{-327}$	$3.674^{+0.440}_{-0.110}$	$-0.140^{+0.200}_{-0.300}$	$3.435^{+0.818}_{-1.635}$	$2.032^{+0.342}_{-0.470}$	$0.071^{+0.285}_{-0.023}$
	+3%/-4%	+12%/-3%	+143%/-214%	+24%/-48%	+17%/-23%	+403%/-32%
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 003456198-03 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-4 \pm 4$	$1.97^{+0.57}_{-0.50}$	$4370^{+352}_{-524}$	$4152^{+1049}_{-7996}$	$0.776^{+1.131}_{-0.761}$
Alt.	$-21 \pm 15$	$2.26^{+0.60}_{-0.59}$	$4374^{+330}_{-522}$	$6274^{+1276}_{-1671}$	$3.473^{+4.398}_{-2.435}$

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

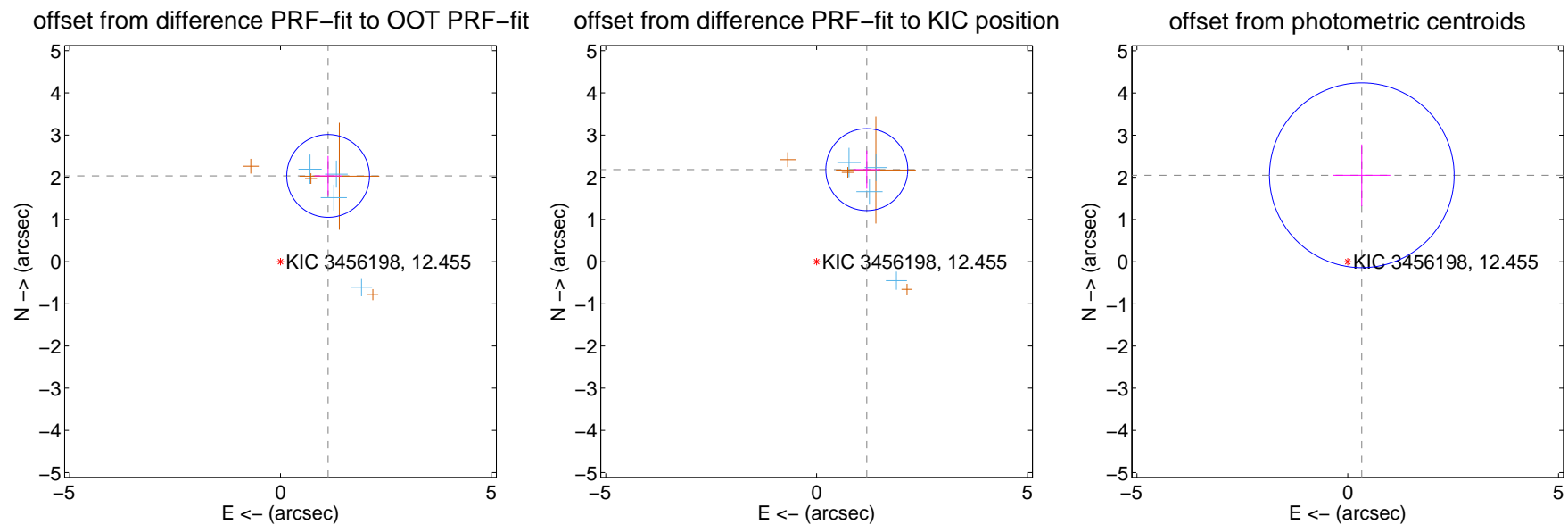
## DV Centroid Data

Supplemental centroid analysis for 003456198-03. Kepler magnitude: 12.46. Transit SNR 4.65

There are 4 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.16 arcsec

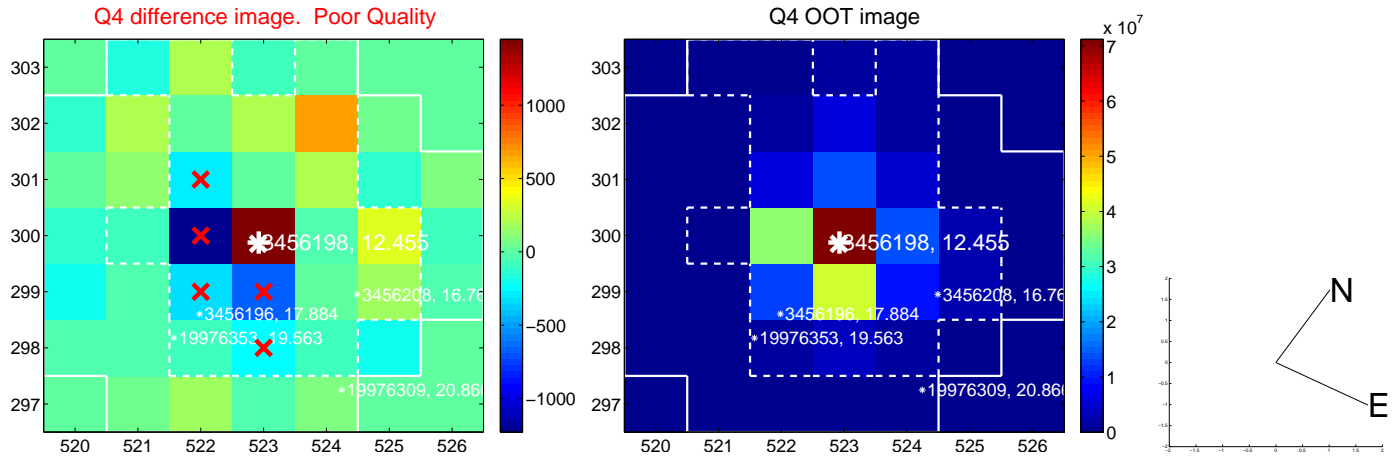
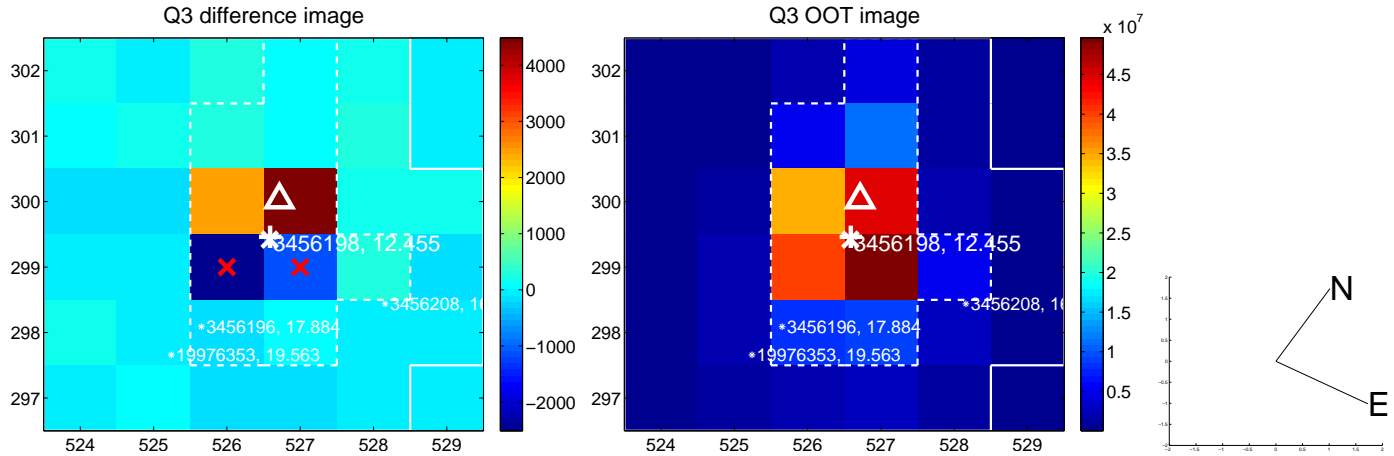
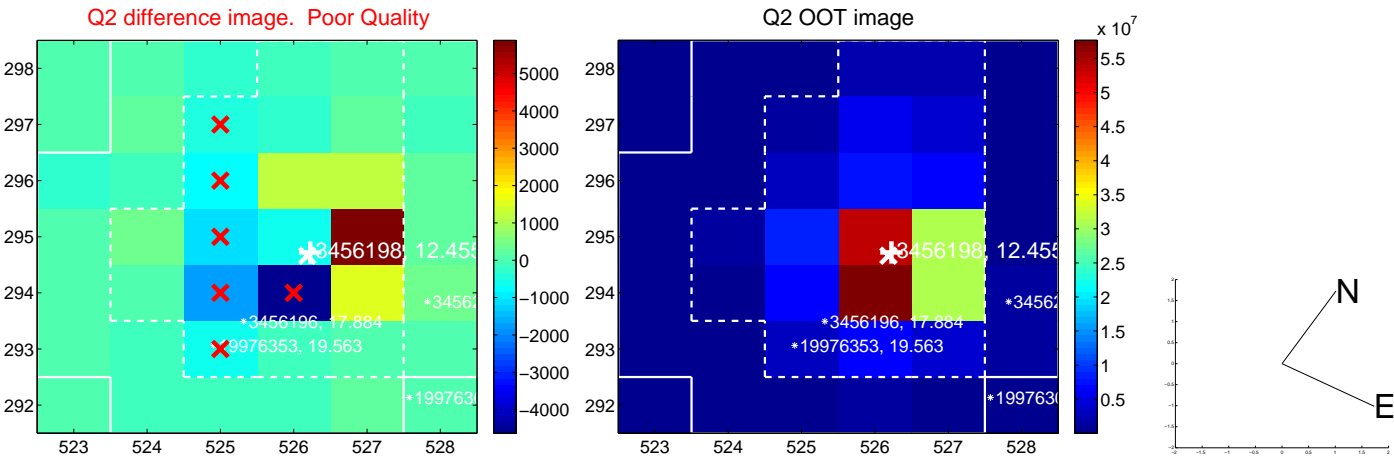
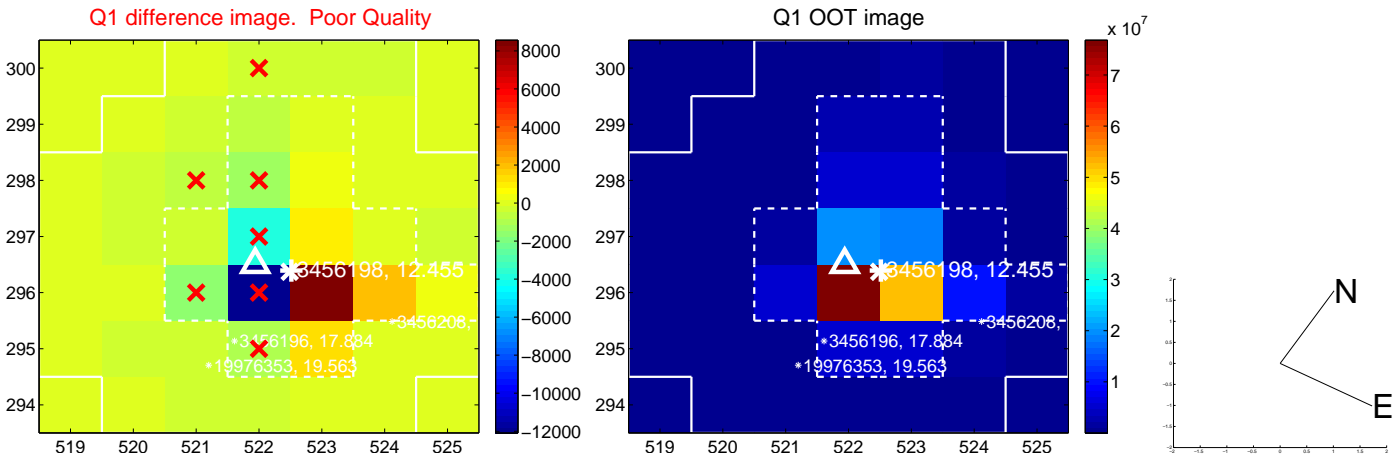
	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$2.325 \pm 0.327$	7.11	$-1.131 \pm 0.322$	$2.031 \pm 0.474$
PRF-fit source offset from KIC position	$2.486 \pm 0.324$	7.67	$-1.191 \pm 0.319$	$2.182 \pm 0.453$
photometric centroid source offset	$2.08 \pm 0.73$	2.84	$-0.33 \pm 0.68$	$2.05 \pm 0.73$



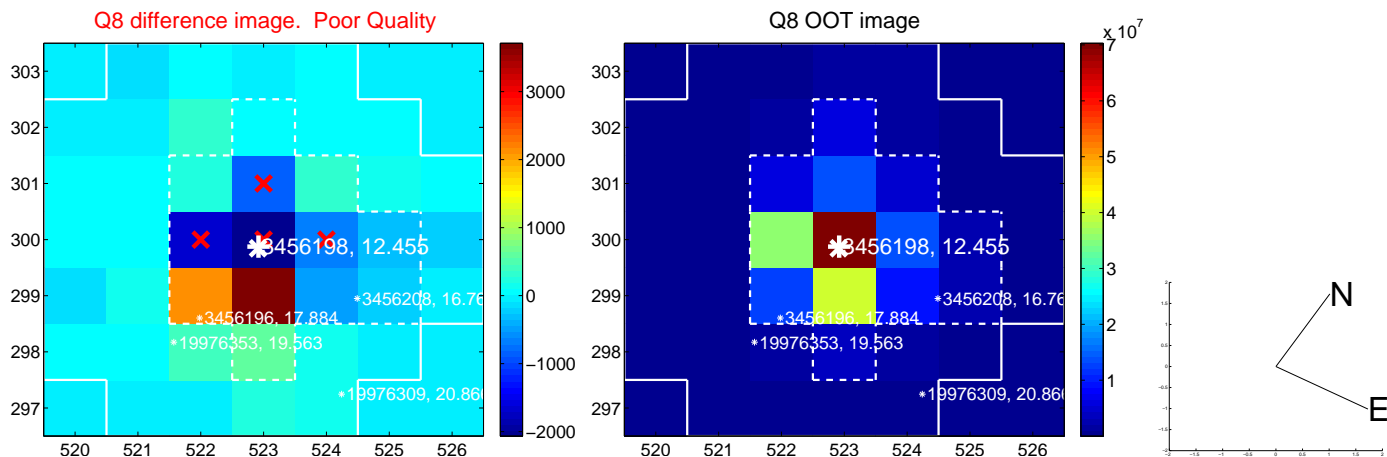
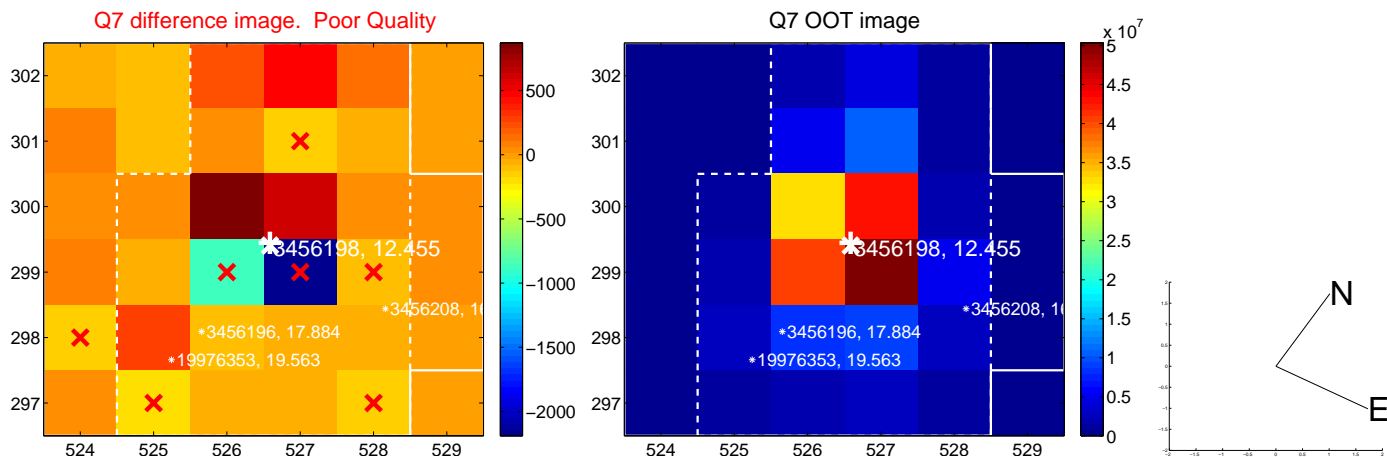
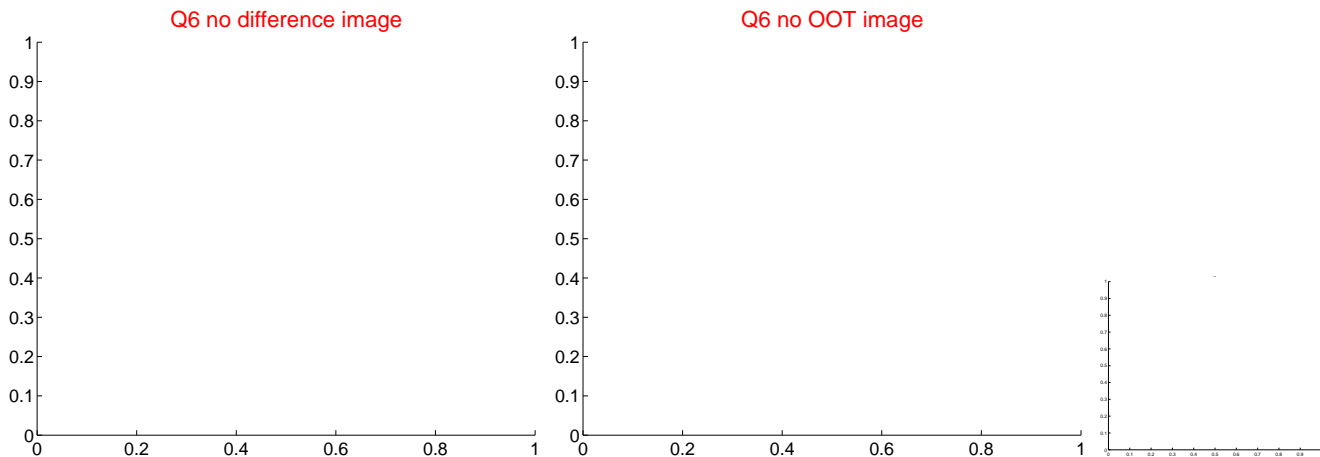
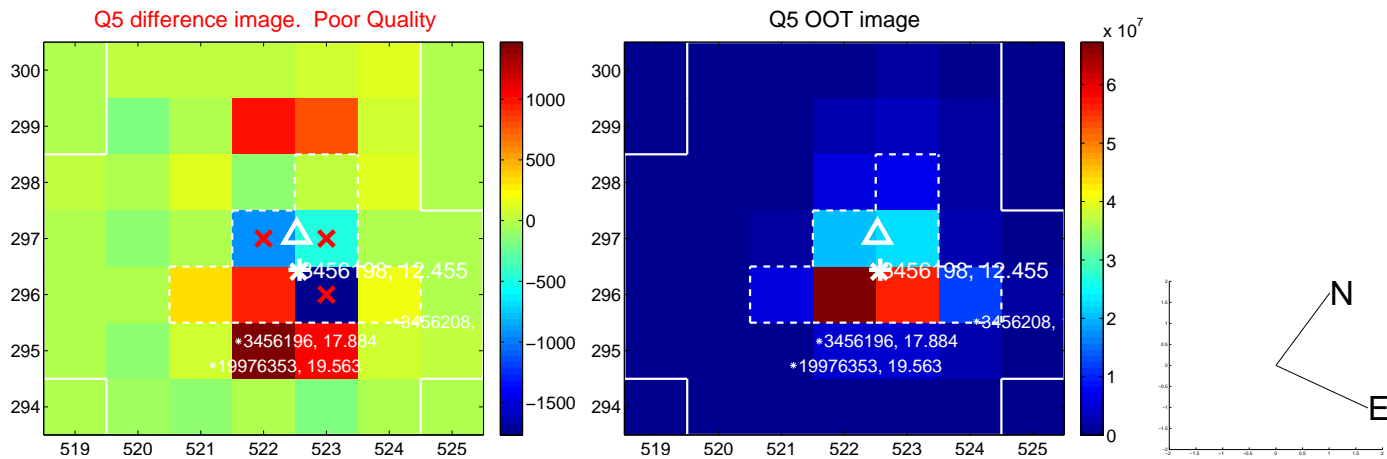
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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



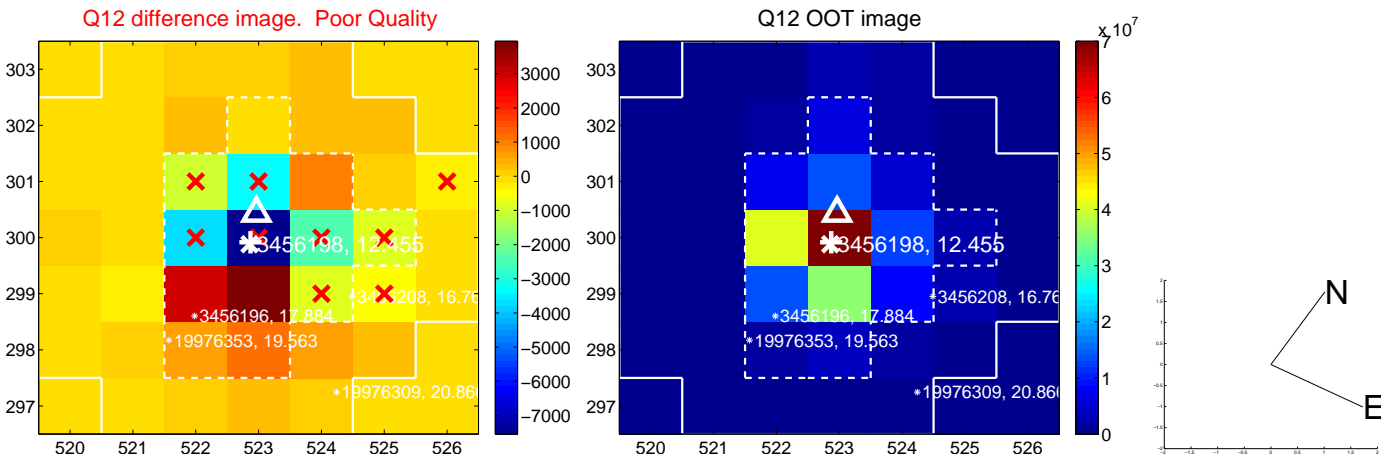
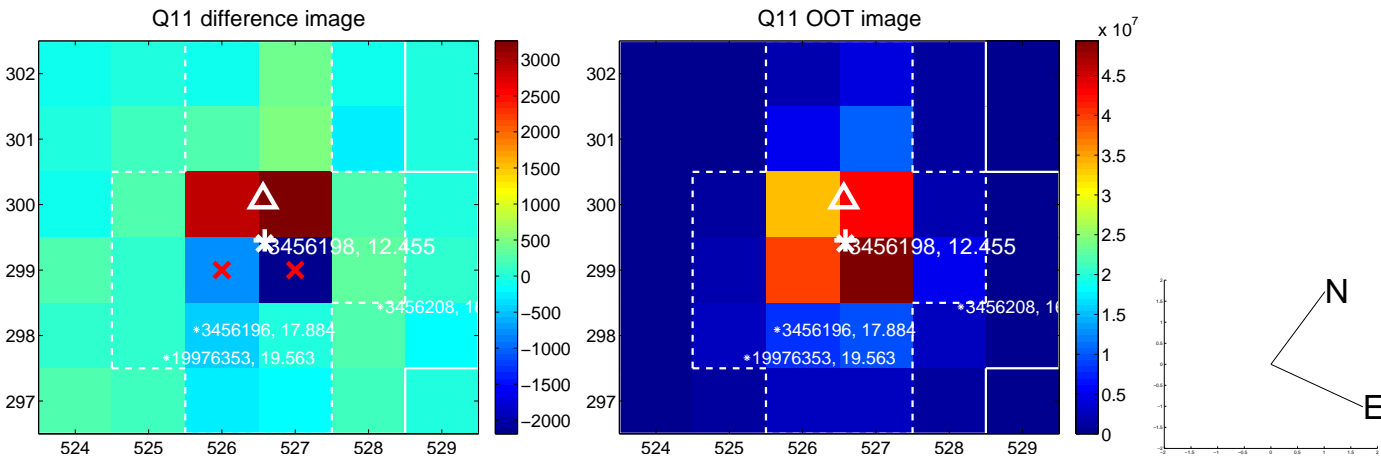
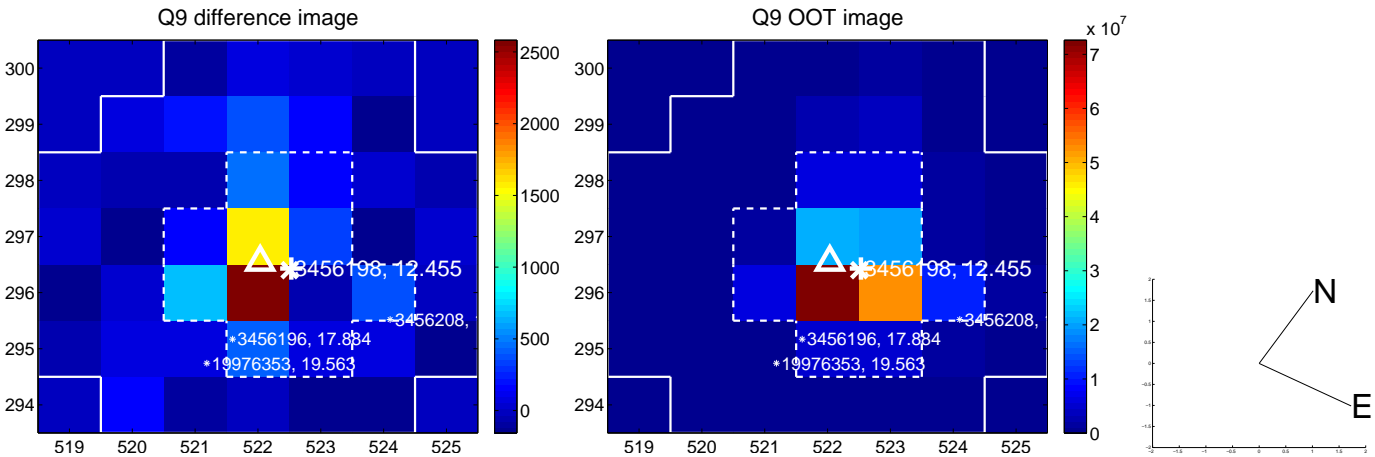
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



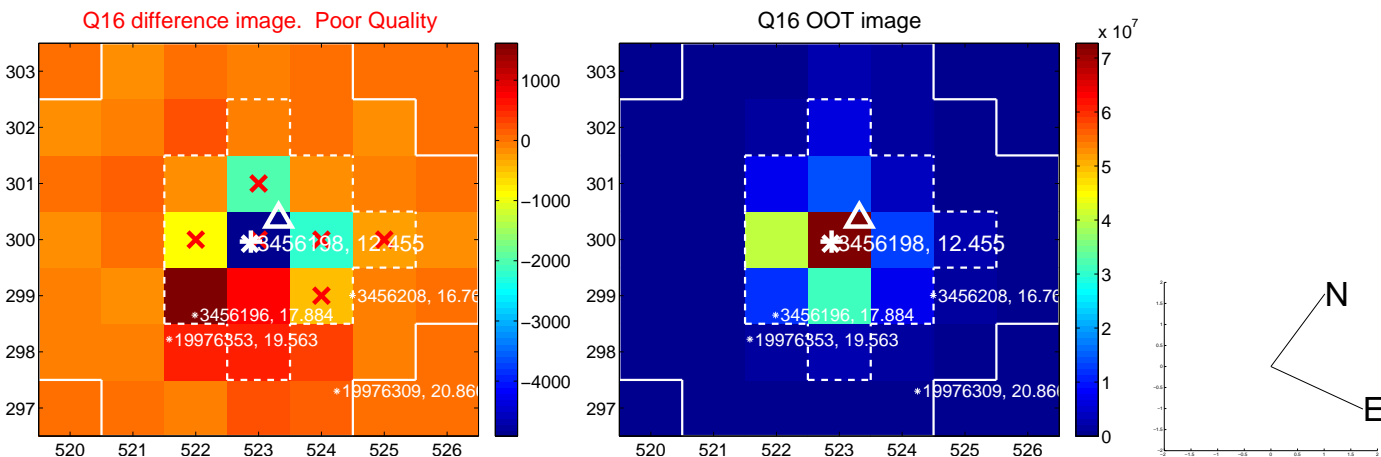
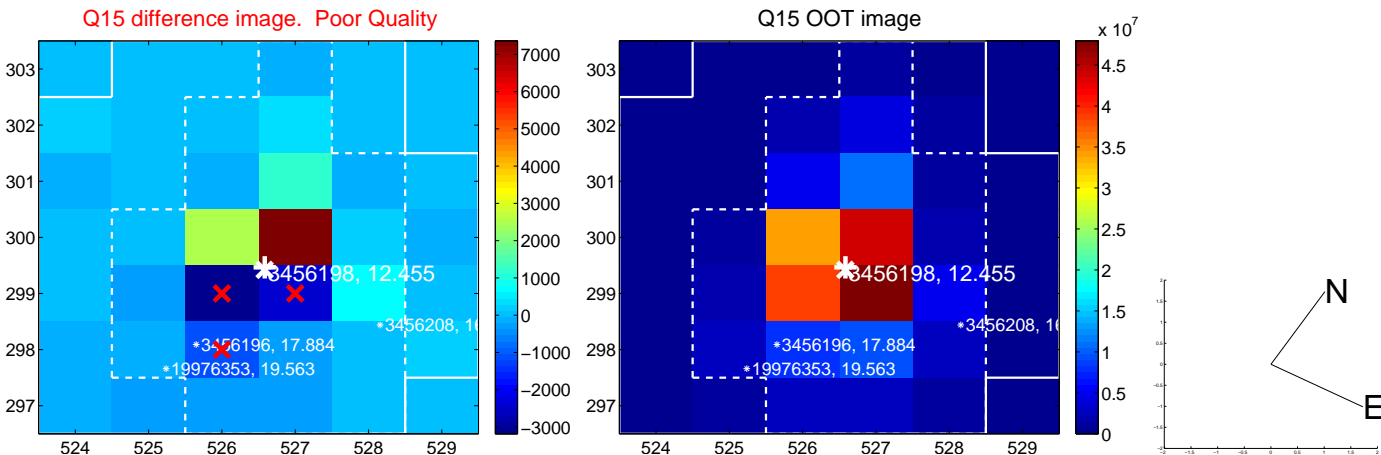
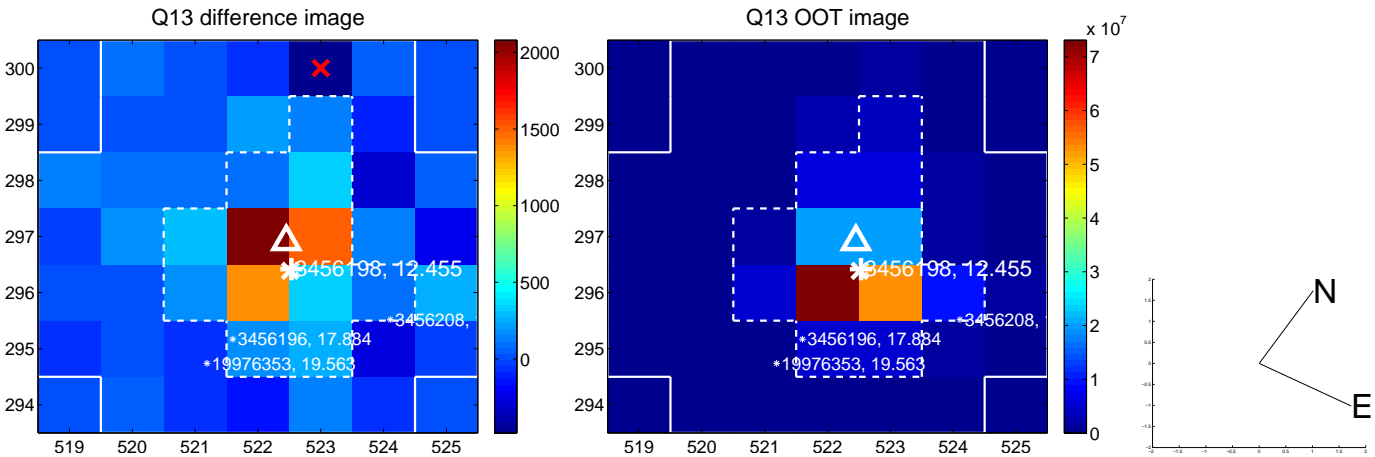
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



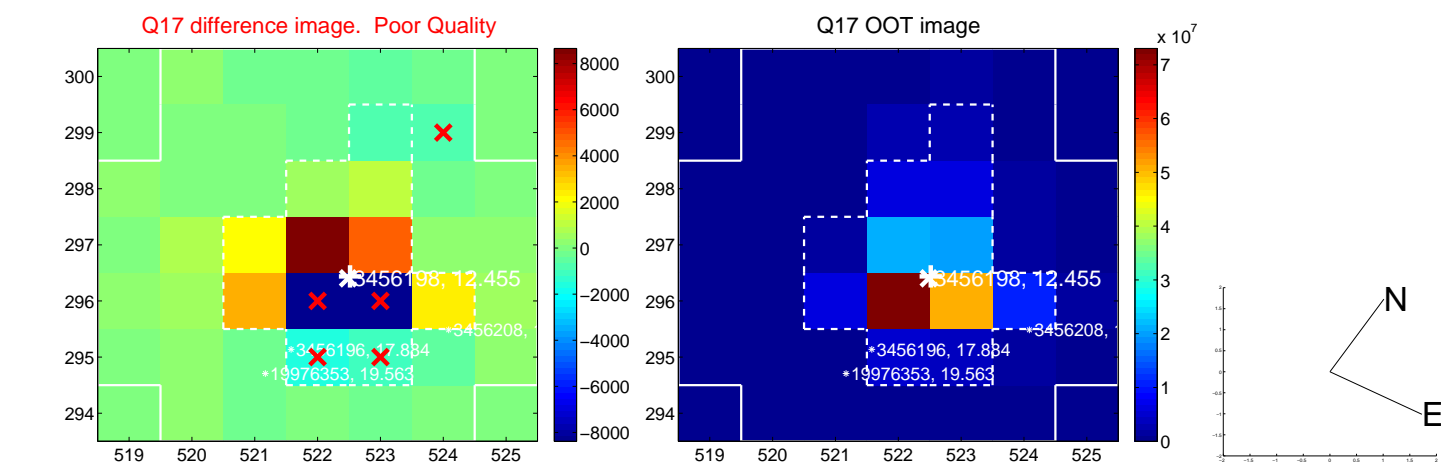
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



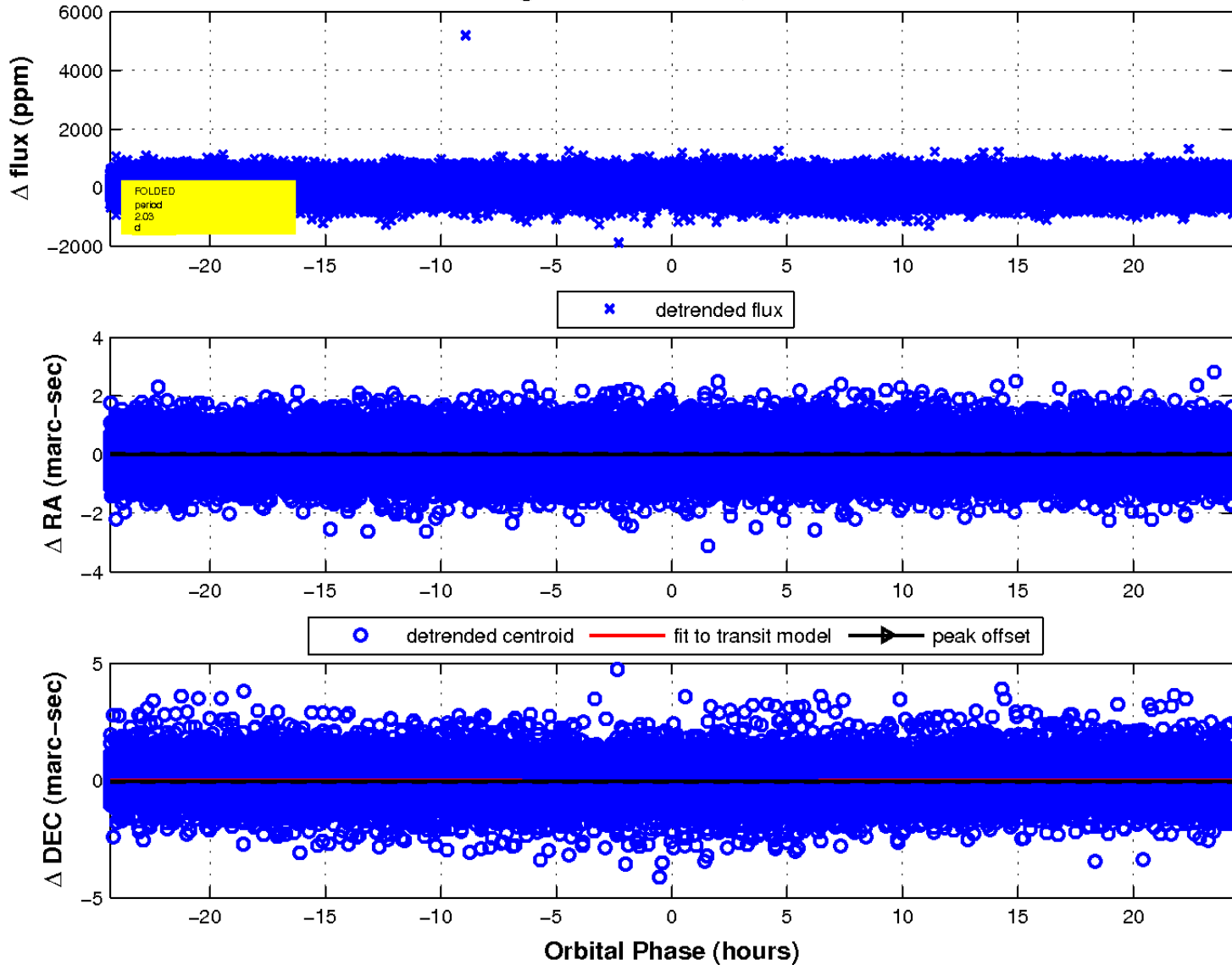
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



fluxWeightedCentroids, Planet 3 of 3





UKIRT Image

