

# KIC 008950568

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008950568-01	OBS	2038.01	8.305420	139.745523	420.9	4.939	21.8	24.0	0.87	5435	3.33	101.52
008950568-02	OBS	2038.02	12.513612	139.420604	417.8	5.559	19.9	21.3	0.87	5435	2.46	58.77
008950568-03	OBS	2038.04	25.214978	152.690045	187.8	5.908	8.7	8.5	0.87	5435	1.32	23.09
008950568-04	OBS	2038.03	17.913233	135.532507	195.3	4.577	8.3	8.9	0.87	5435	1.42	36.43
008950568-05	OBS	No	431.234865	214.846382	401.3	15.935	9.3	4.6	0.87	5435	1.94	0.52

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008950568-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT
008950568-02	OBS	PC	1.00	0	0	0	0	NO_COMMENT
008950568-03	OBS	PC	1.00	0	0	0	0	NO_COMMENT
008950568-04	OBS	PC	0.89	0	0	0	0	NO_COMMENT
008950568-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT— INCONSISTENT_TRANS—CENT_FEW_DIFFS

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

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

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

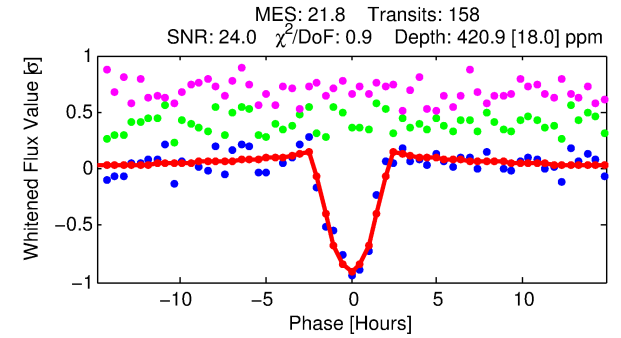
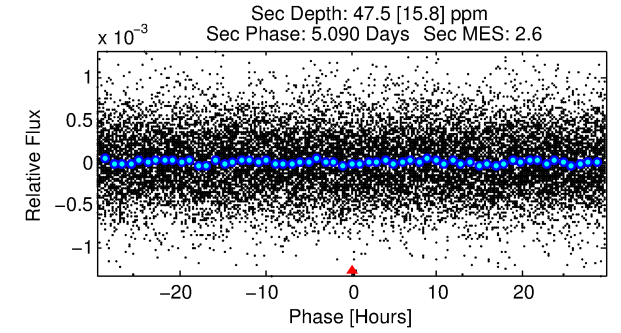
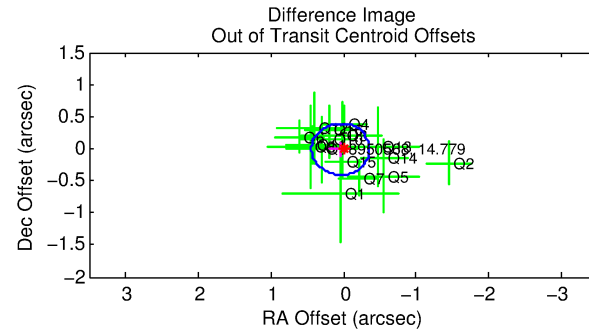
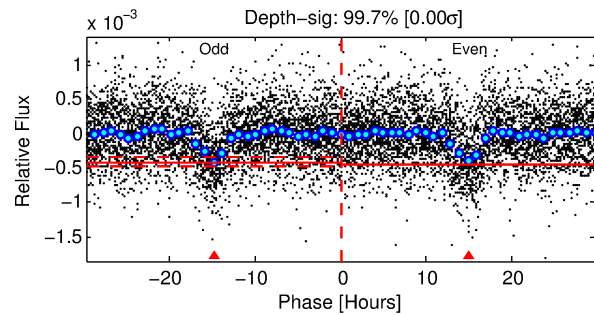
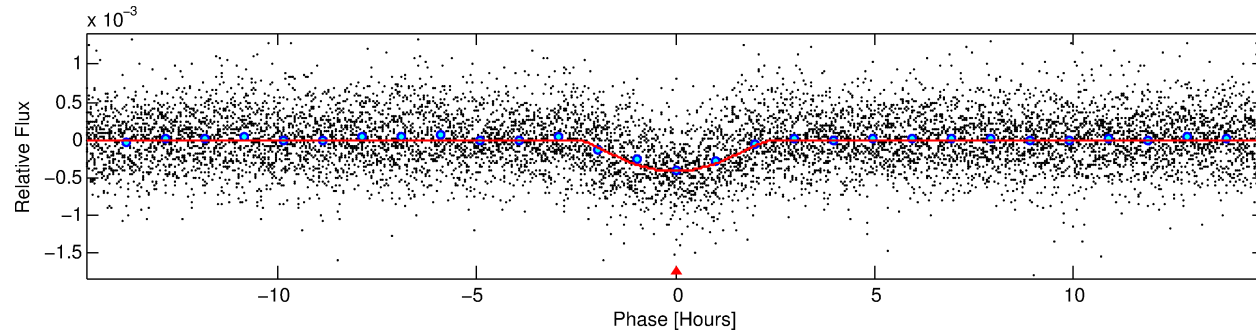
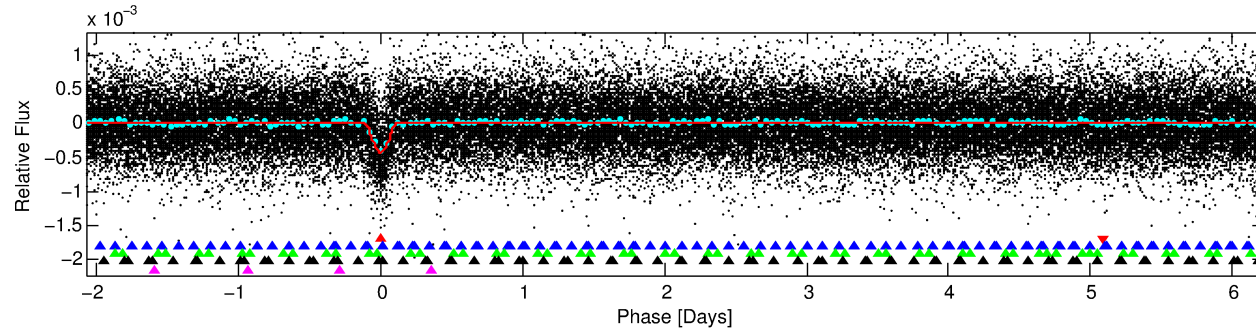
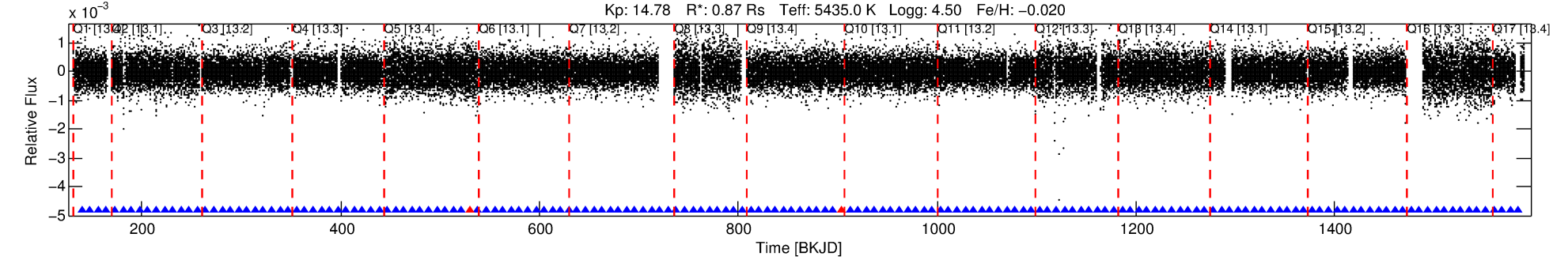
## Ephemeris Match Information For 008950568-01

No Significant Match Found

# DV One-Page Summary

KIC: 8950568 Candidate: 1 of 5 Period: 8.305 d  
KOI: K02038.01 Name: Kepler-85b Corr: 0.886

Kp: 14.78 R\*: 0.87 Rs Teff: 5435.0 K Logg: 4.50 Fe/H: -0.020



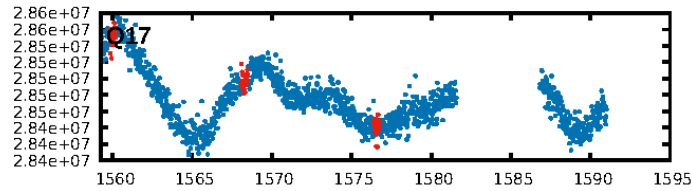
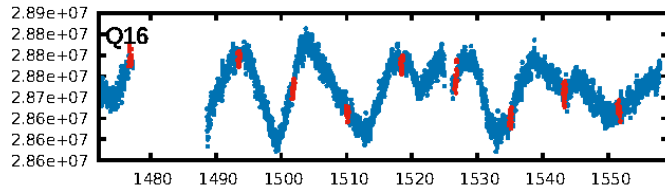
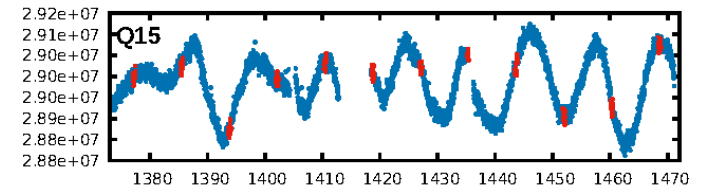
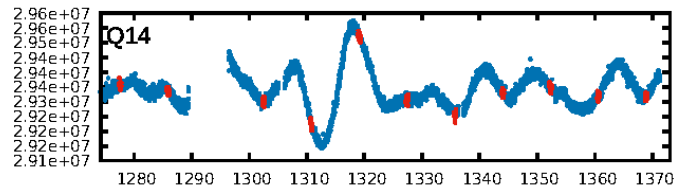
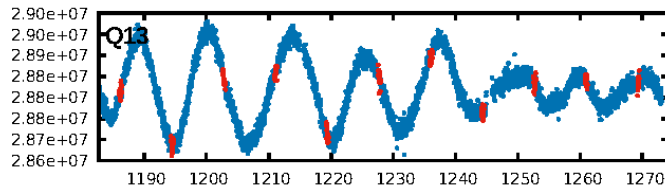
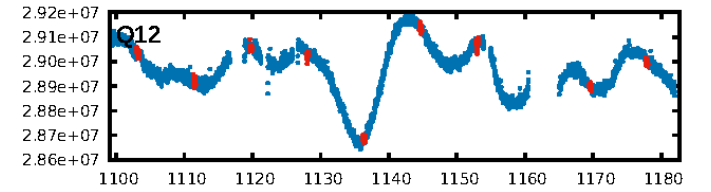
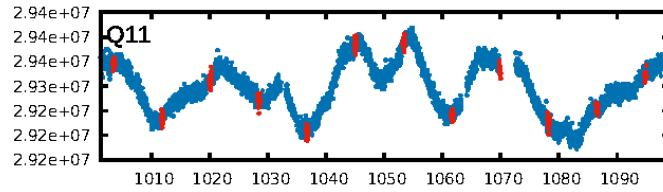
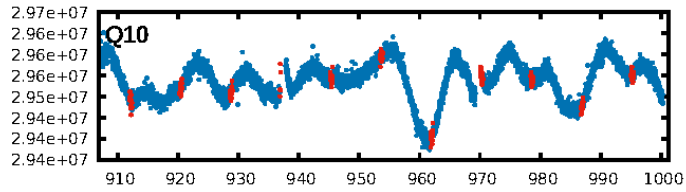
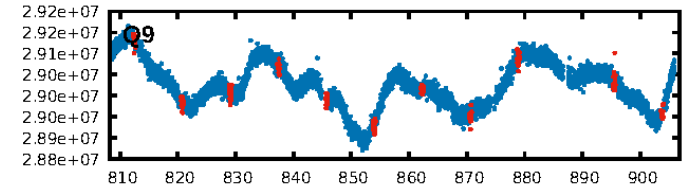
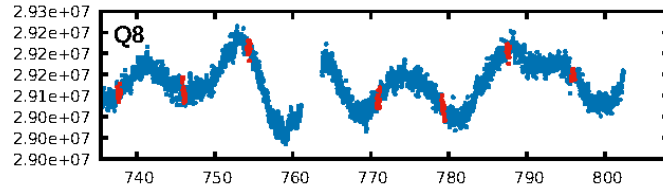
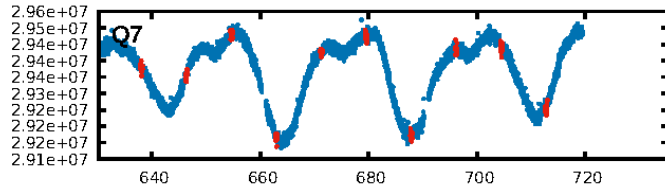
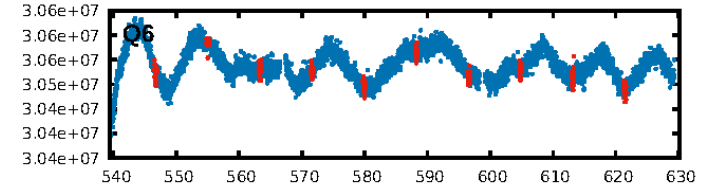
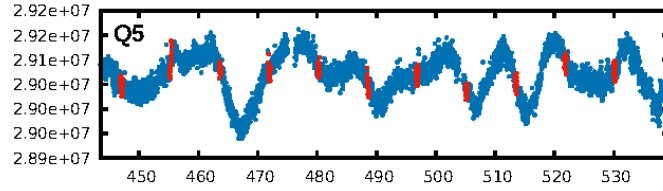
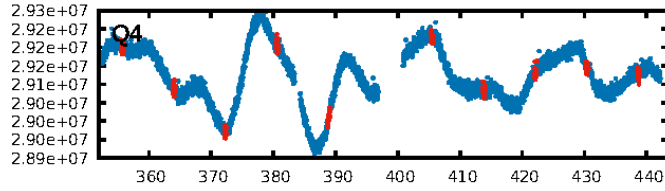
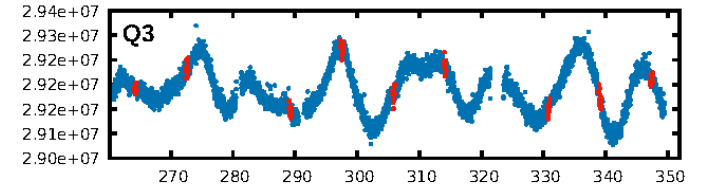
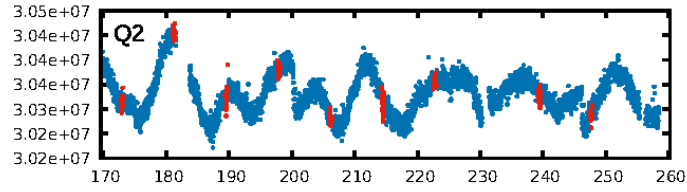
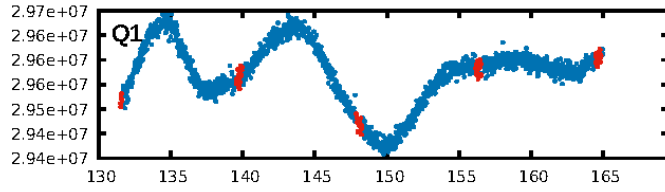
## DV Fit Results:

Period = 8.30542 [0.00005] d  
Epoch = 139.7455 [0.0043] BKJD  
Rp/R\* = 0.0350 [0.0308]  
a/R\* = 3.82 [0.90]  
b = 0.99 [0.05]  
Seff = 101.52 [16.09]  
Teff = 809 [32] K  
Rp = 3.33 [2.95] Re  
a = 0.0766 [0.0069] AU  
Ag = 13.81 [24.78] [0.52σ]  
Teffp = 2413 [1080] K [1.48σ]

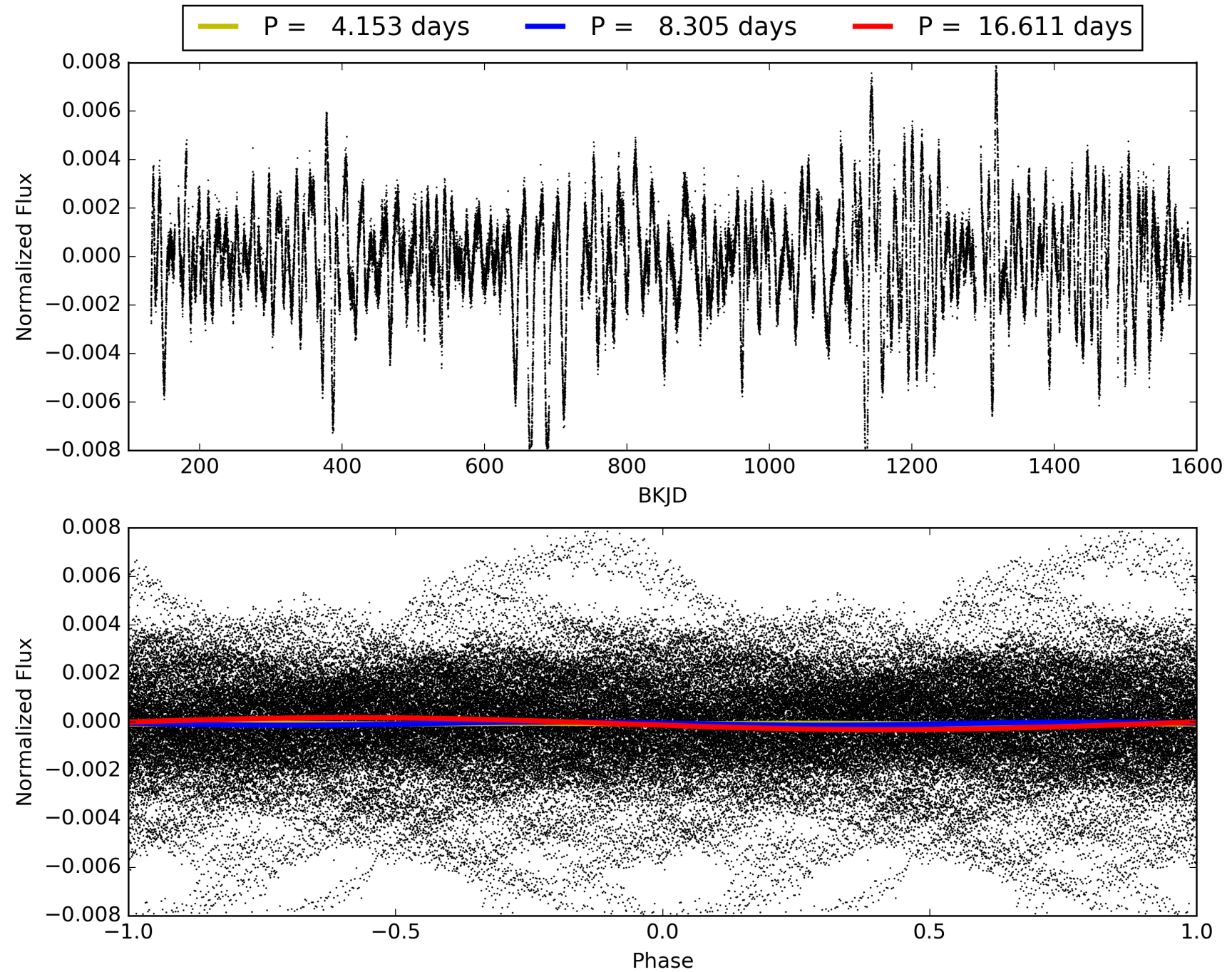
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [13.58σ]  
ModelChiSquare2-sig: 98.4%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 5.42e-94  
RollingBand-fgt: 0.99 [148/150]  
GhostDiagnostic-chr: 3.192  
Centroid-sig: 1.3%  
Centroid-so: 0.501 arcsec [1.26σ]  
OotOffset-rm: 0.042 arcsec [0.32σ]  
KicOffset-rm: 0.146 arcsec [1.11σ]  
OotOffset-st: 4/4/4/4 [16]  
KicOffset-st: 4/4/4/4 [16]  
DiffImageQuality-fgm: 0.94 [15/16]  
DiffImageOverlap-fno: 1.00 [17/17]

# TCE 008950568-01, PDC Light Curves



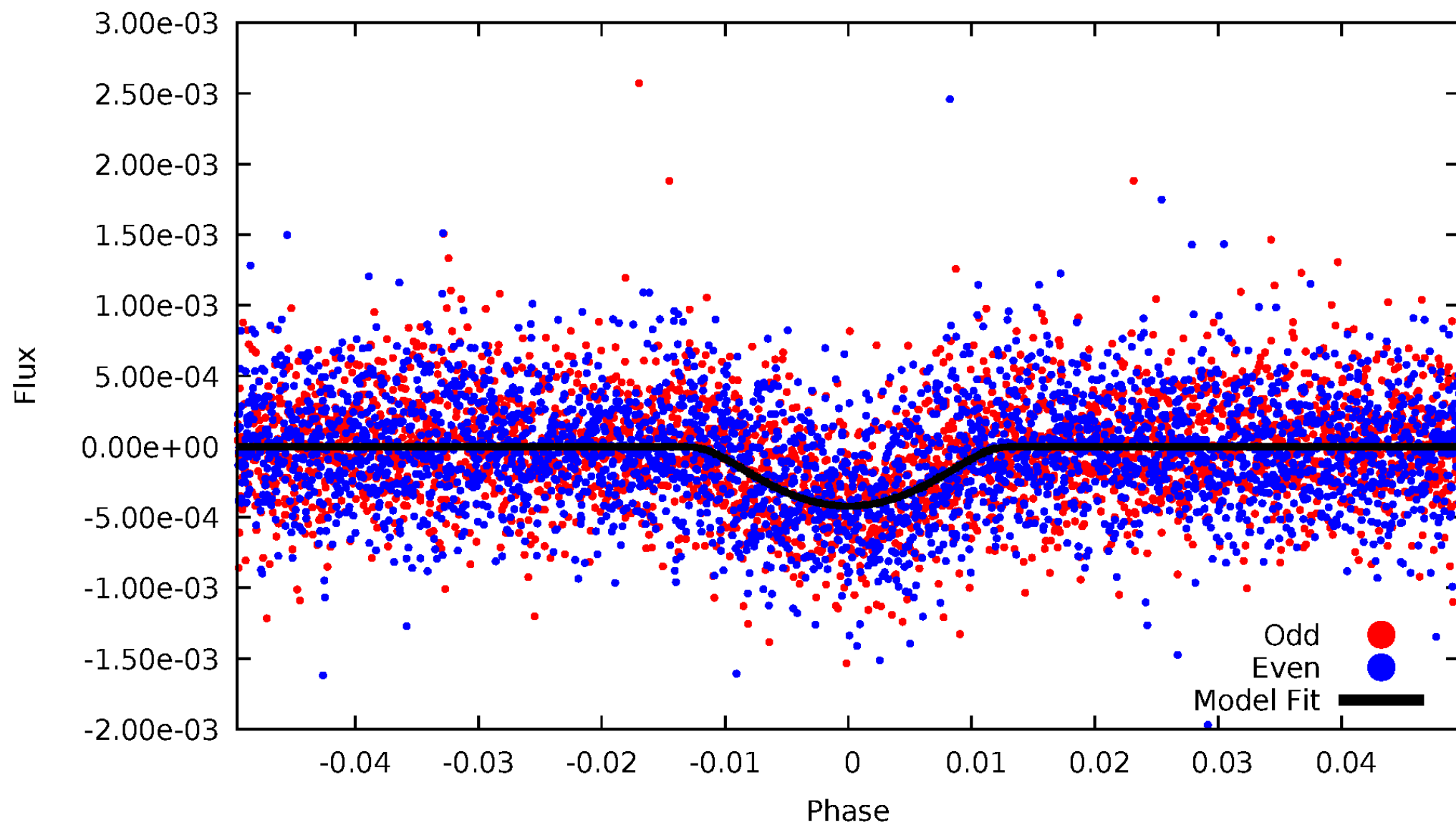
TCE 008950568-01





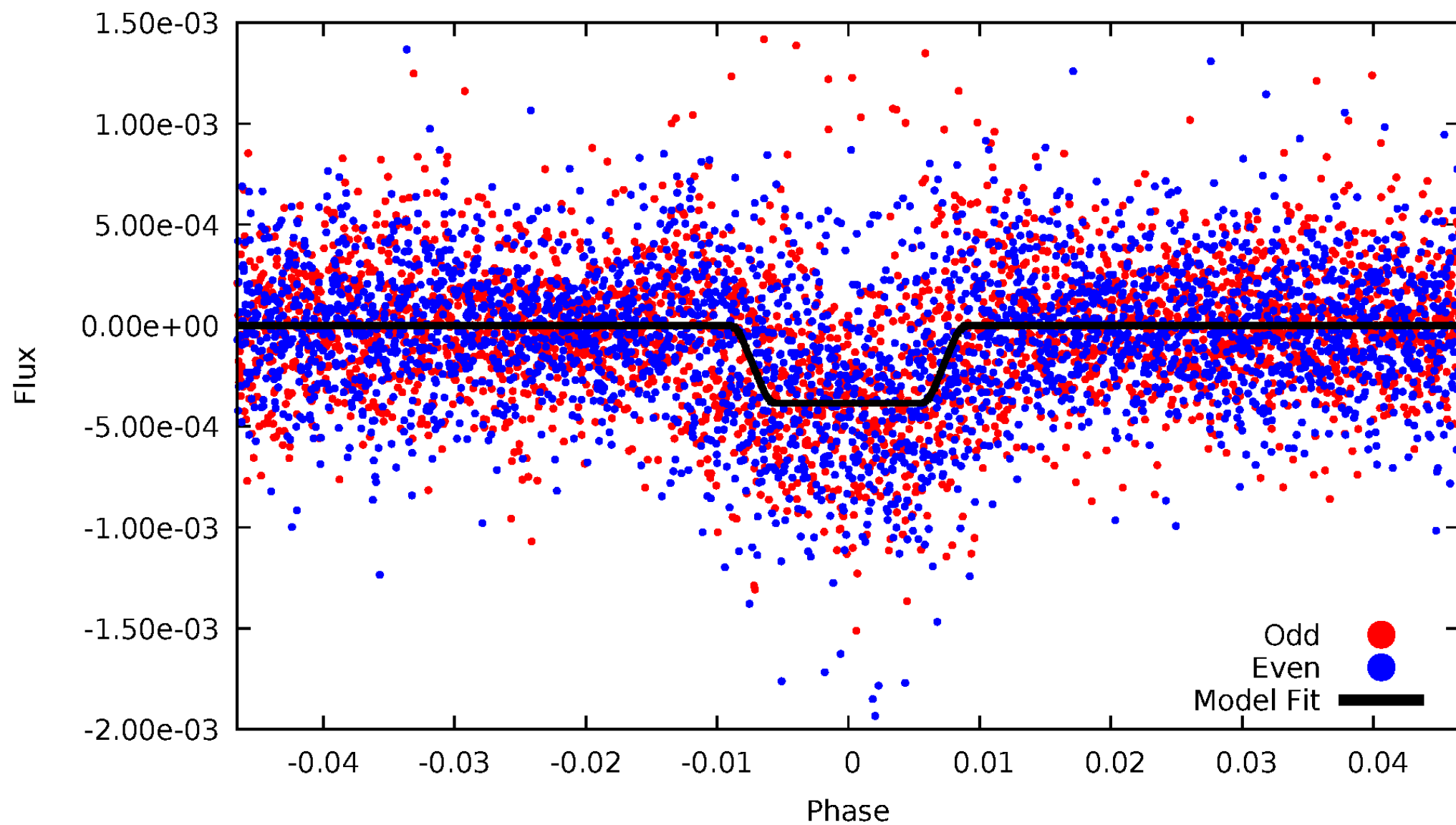
# DV Odd/Even

TCE 008950568-01



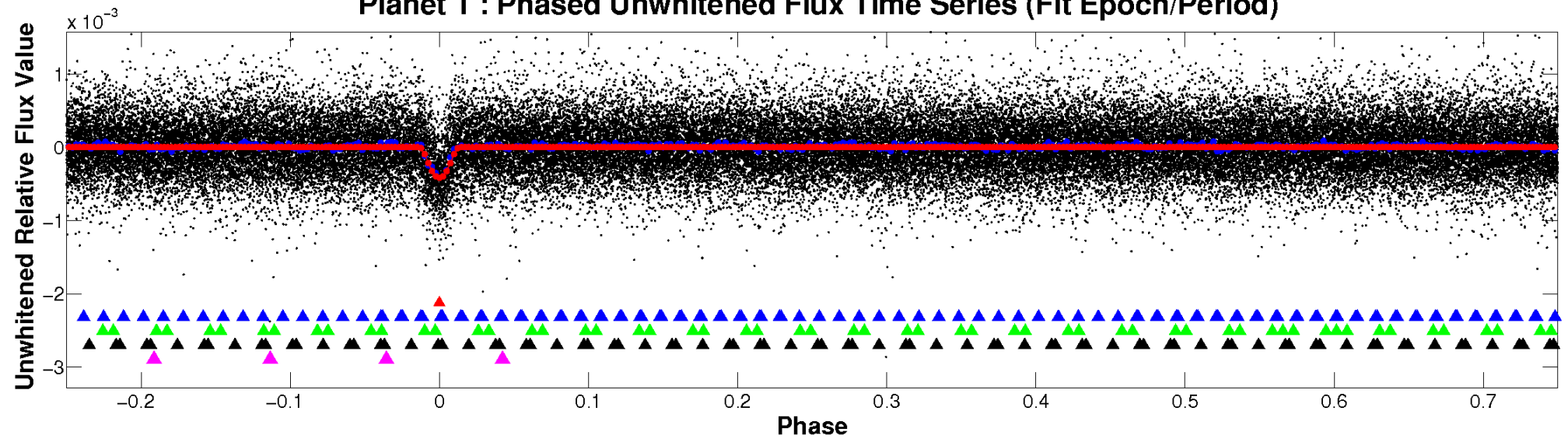
# ALT Odd/Even

TCE 008950568-01

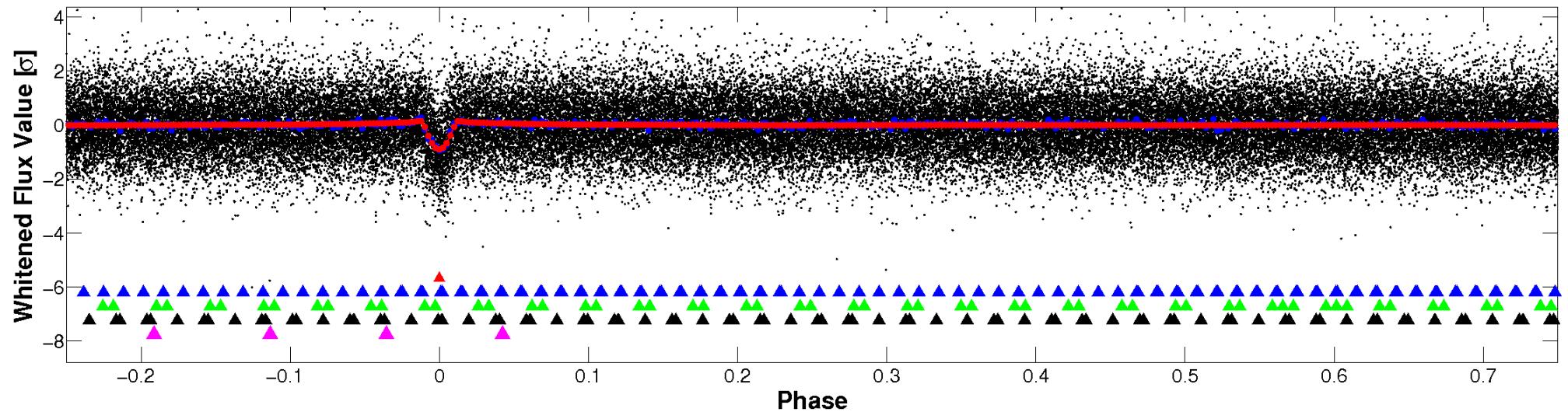


# Non-Whitened Vs. Whitened Light Curve

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

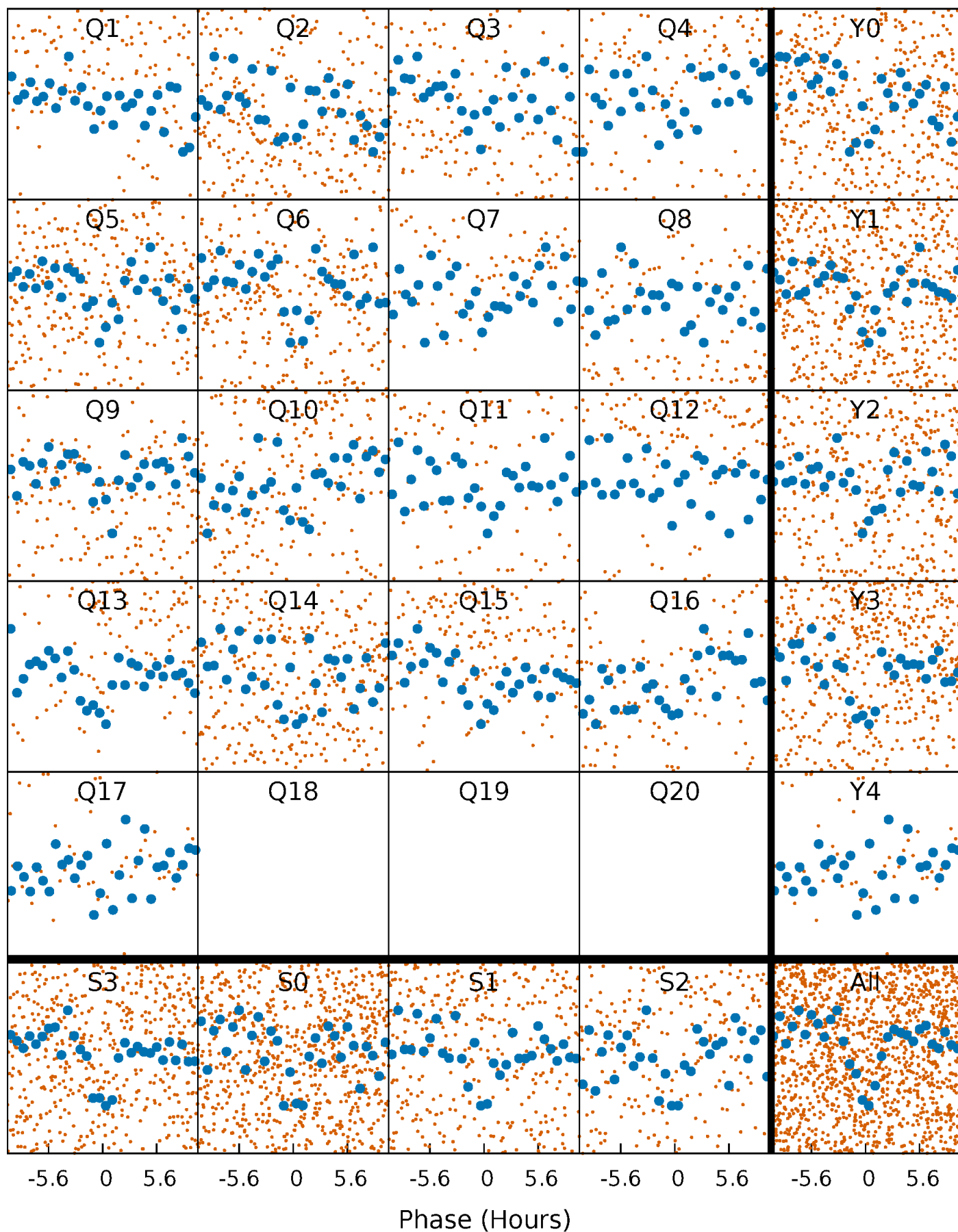


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

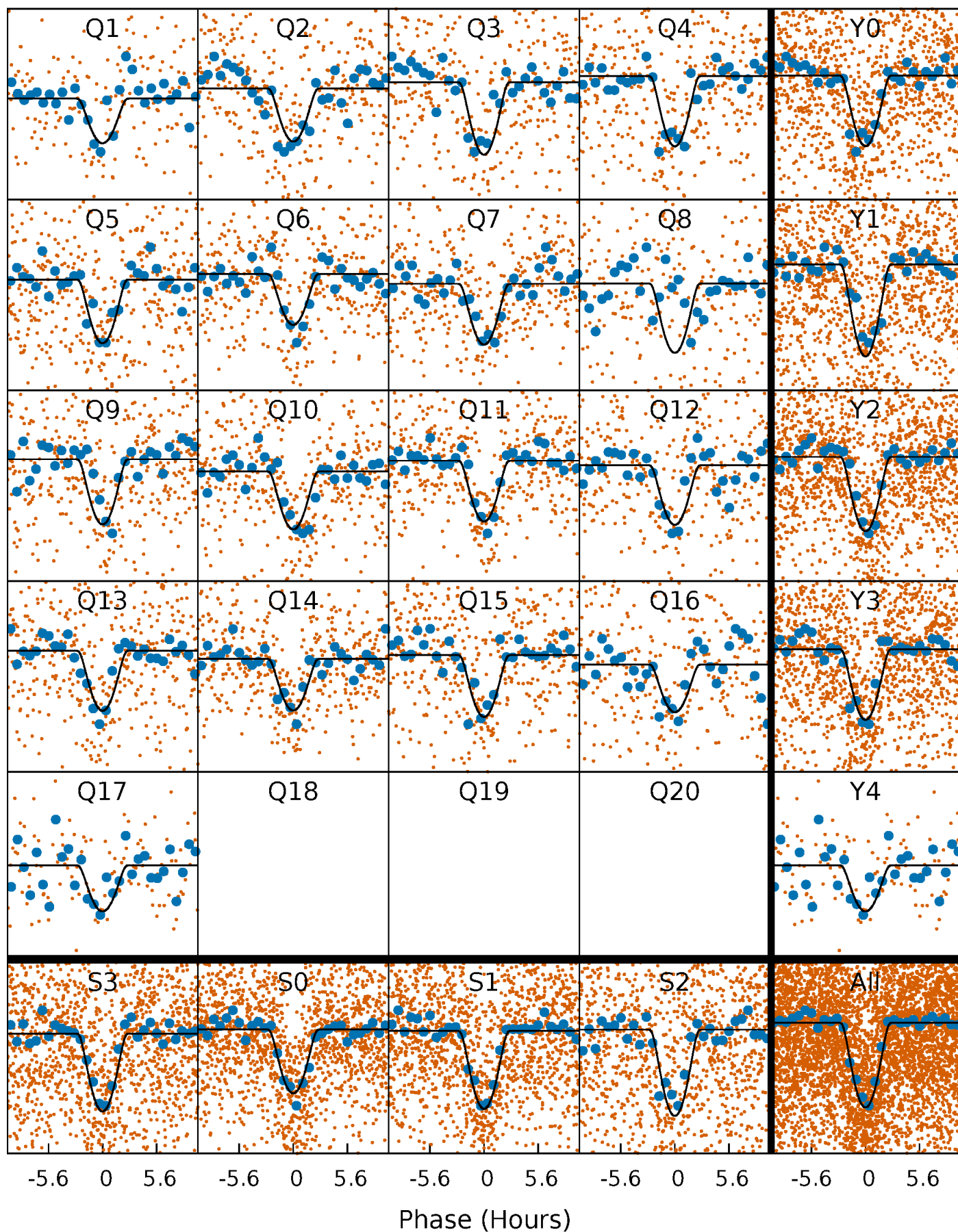
TCE 008950568-01 P= 8.305420 Days  $T_0=139.745523$  (BKJD)





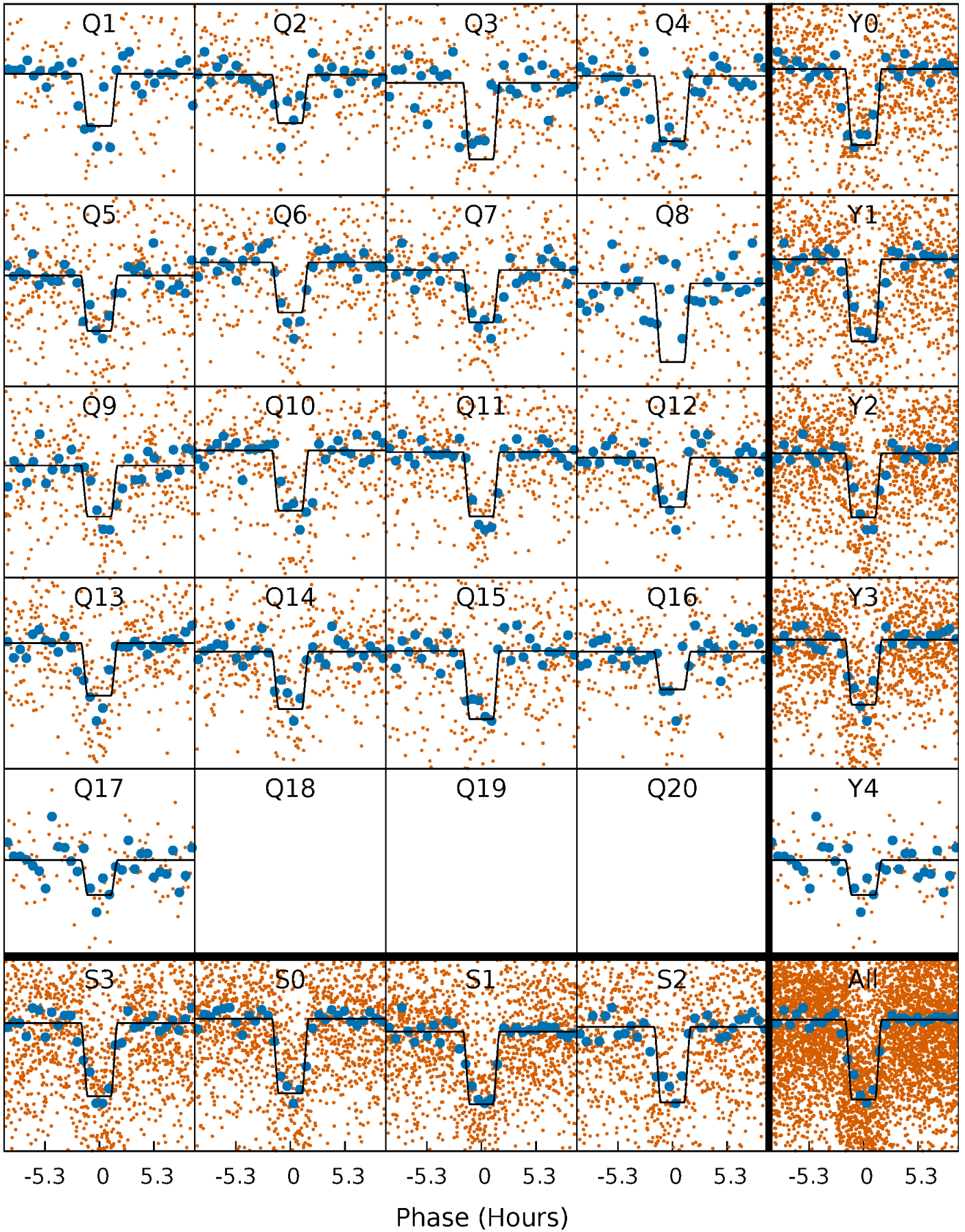
# DV Quarter-Phased Transit Curves

TCE 008950568-01 P= 8.305420 Days  $T_0=139.745523$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

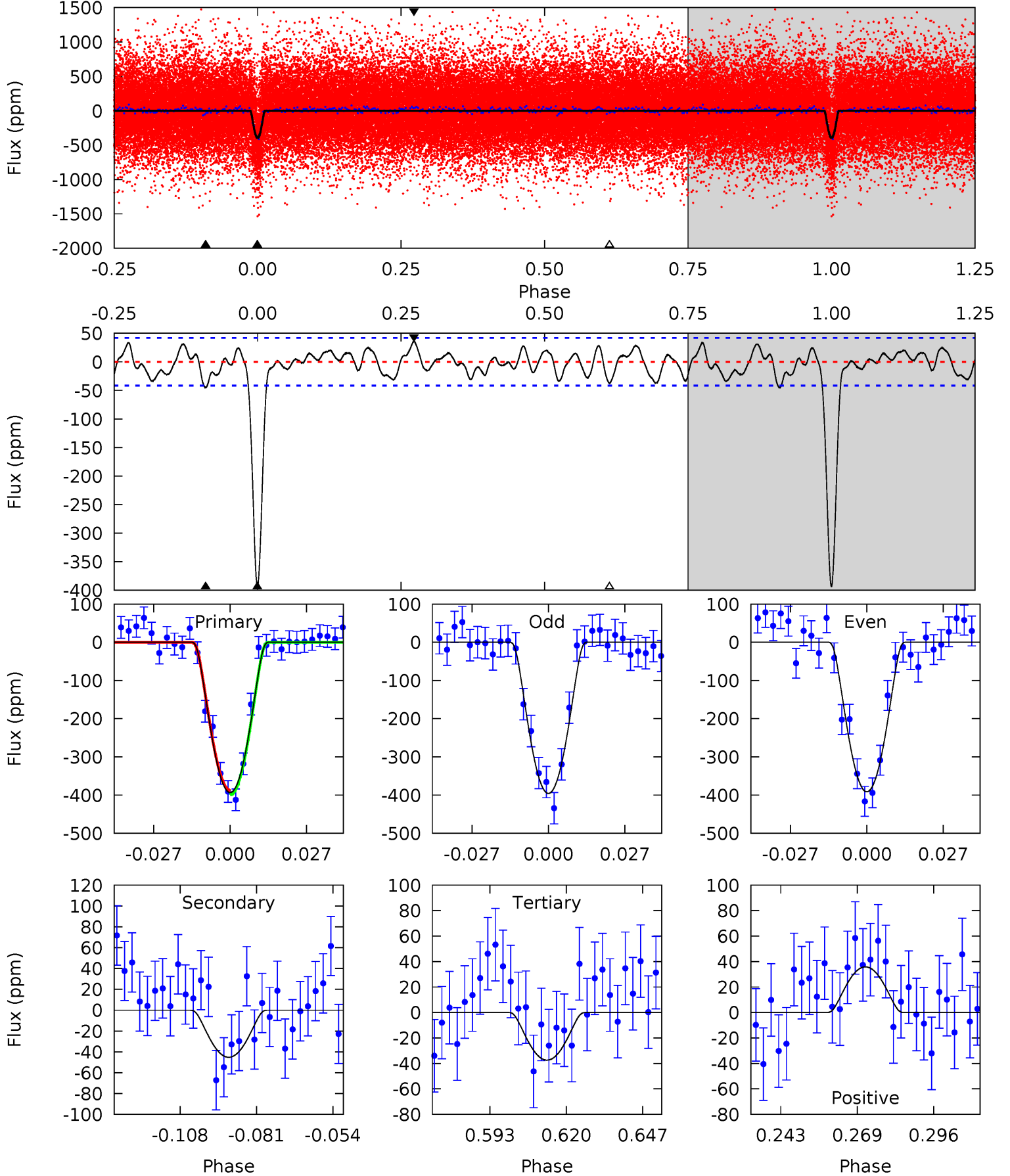
TCE 008950568-01 P= 8.305313 Days  $T_0=139.752181$  (BKJD)



# DV Model-Shift Uniqueness Test

008950568-01, P = 8.305420 Days, E = 131.440103 Days

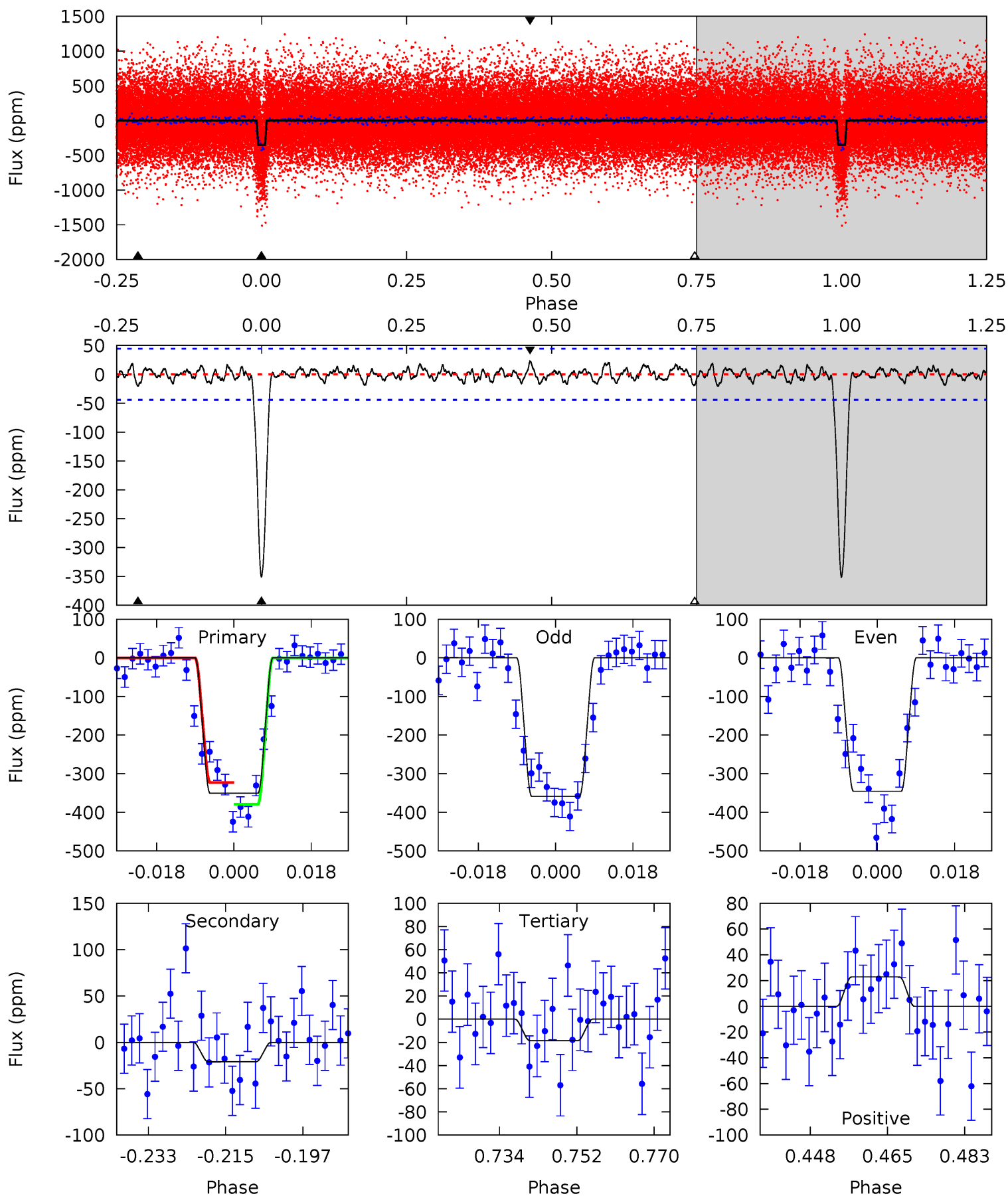
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
45.5	5.22	4.32	4.14	4.83	2.21	1.92	41.2	41.3	0.90	1.09	0.25	0.97	0.08	0.66



# Alt Model-Shift Uniqueness Test

008950568-01, P = 8.305313 Days, E = 131.446868 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
38.9	2.32	2.05	2.53	4.91	2.37	0.88	36.9	36.4	0.26	-0.22	0.73	0.91	0.06	3.12





### Stellar Parameters For KIC 008950568

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (g \cdot \text{cm}^{-3})$
	$5435^{+109}_{-109}$	$4.495^{+0.063}_{-0.077}$	$-0.020^{+0.150}_{-0.150}$	$0.873^{+0.090}_{-0.068}$	$0.870^{+0.055}_{-0.049}$	$1.840^{+0.446}_{-0.428}$
	+2%/-2%	+1%/-2%	+750%/-750%	+10%/-8%	+6%/-6%	+24%/-23%
Source	SPE58	SPE58	SPE58	DSEP		

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

### Secondary Eclipse Parameters for KIC 008950568-01 / KOI 2038.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-45 \pm 9$	$3.81^{+2.82}_{-2.40}$	$1134^{+37}_{-33}$	$2927^{+1015}_{-431}$	$10^{+66}_{-7}$
Alt.	$-21 \pm 9$	$2.85^{+2.39}_{-1.89}$	$1133^{+36}_{-35}$	$2813^{+1125}_{-494}$	$7.749^{+60.421}_{-5.918}$

$T_{max}$  = 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

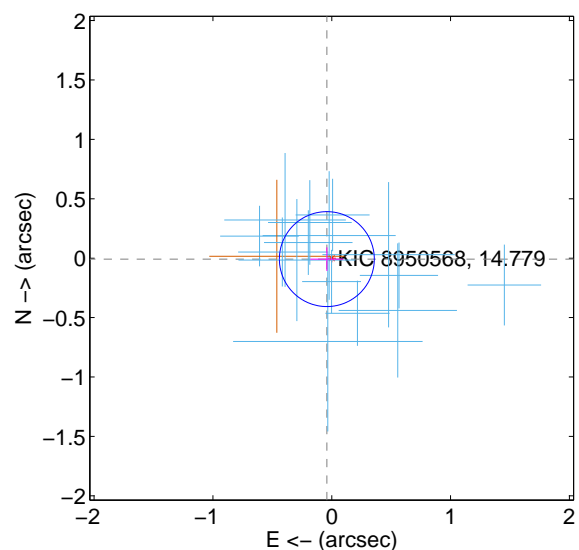
Supplemental centroid analysis for 008950568-01. Kepler magnitude: 14.78. Transit SNR 23.97

There are 15 quarters with good PRF difference image offsets

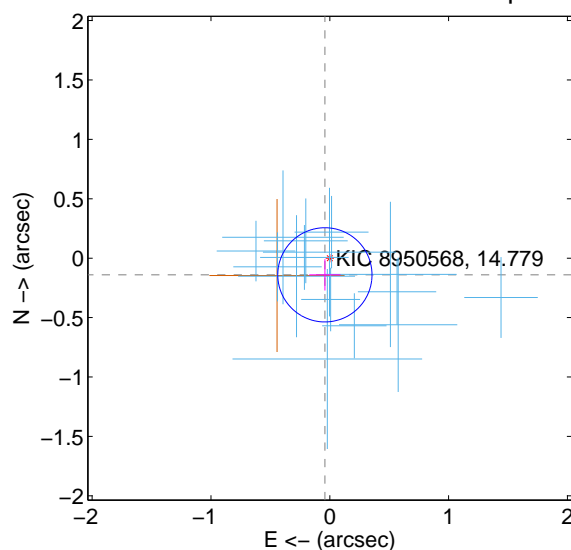
The direct PRF centroid is offset from the target star catalog position by about 0.16 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.042 \pm 0.133$	0.32	$0.041 \pm 0.140$	$-0.008 \pm 0.099$
PRF-fit source offset from KIC position	$0.146 \pm 0.132$	1.11	$0.041 \pm 0.131$	$-0.140 \pm 0.132$
photometric centroid source offset	$0.50 \pm 0.40$	1.26	$-0.25 \pm 0.39$	$0.43 \pm 0.40$

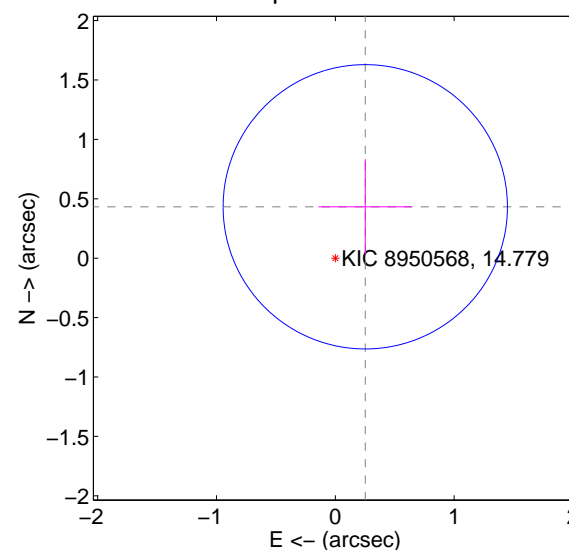
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

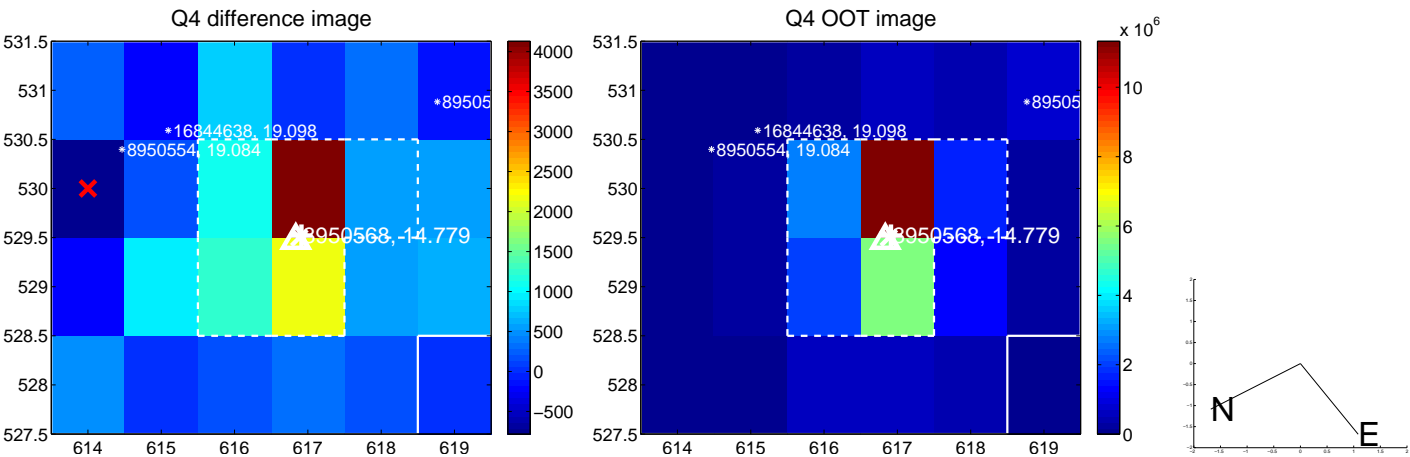
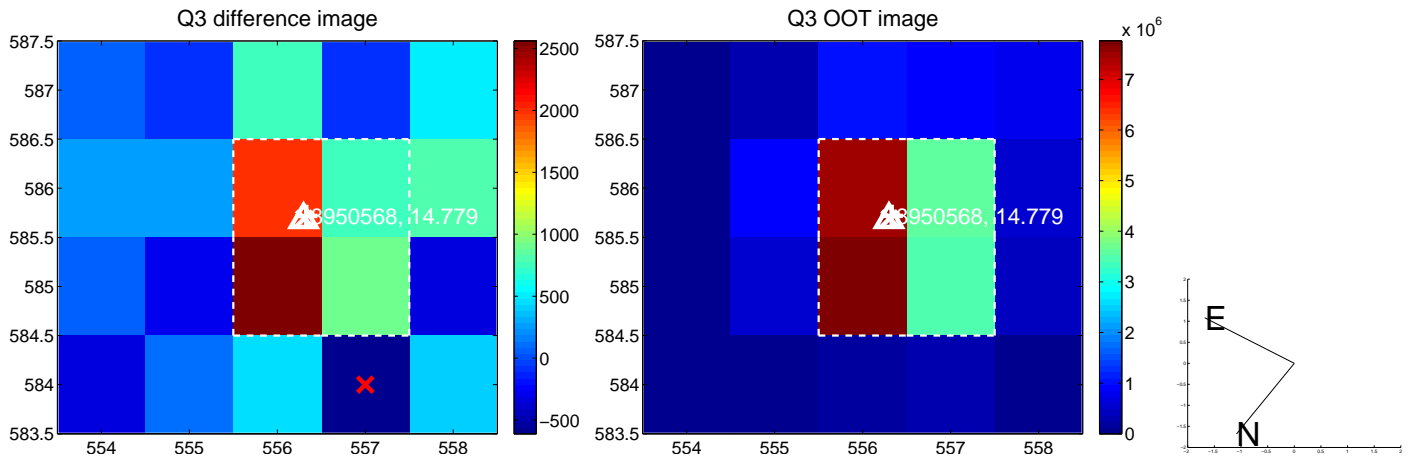
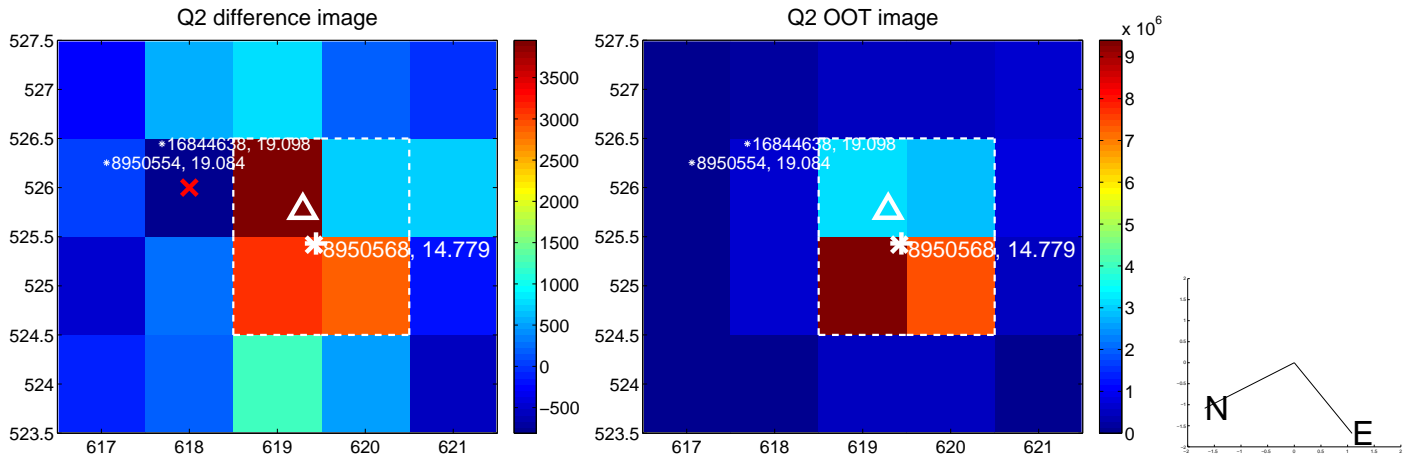
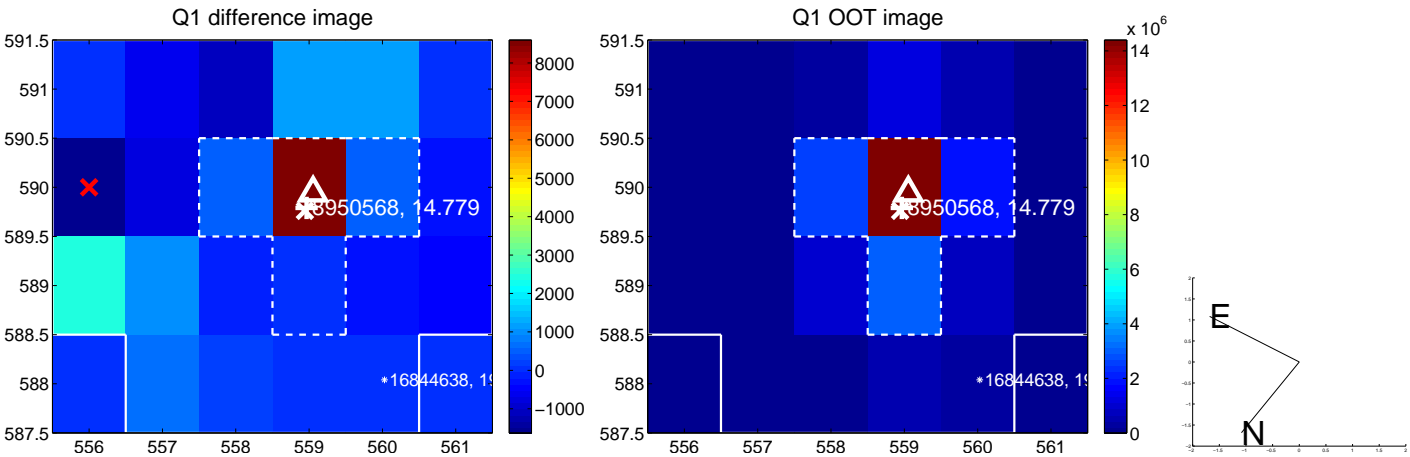


offset from photometric centroids

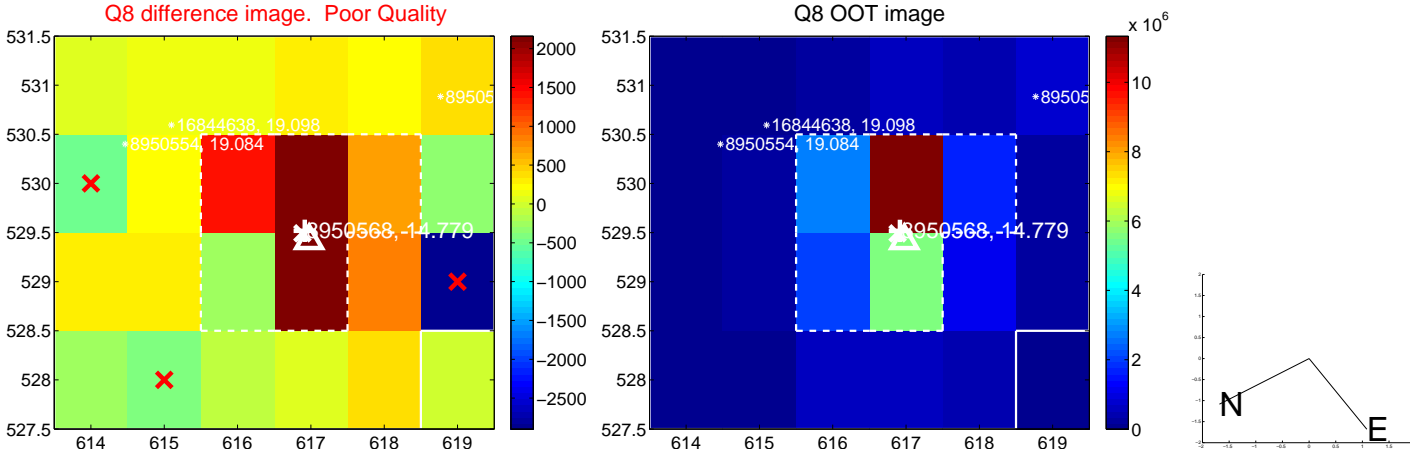
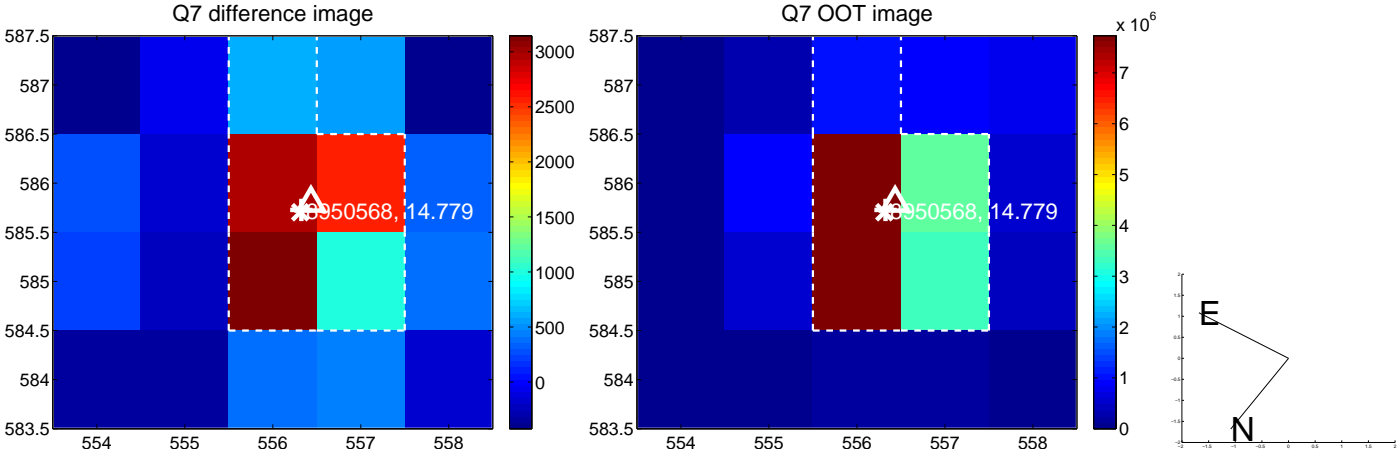
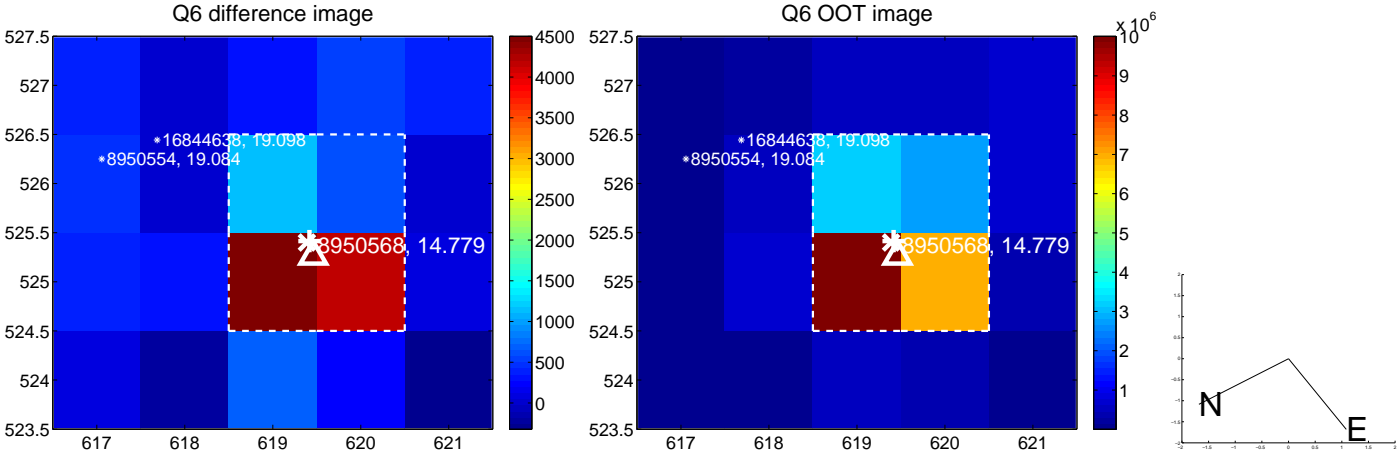
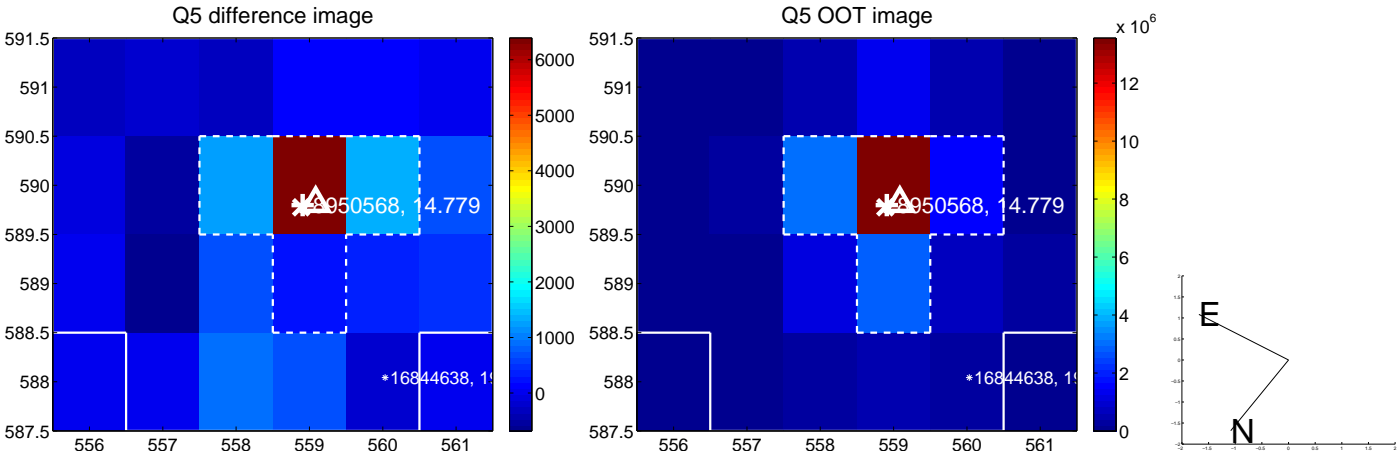


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

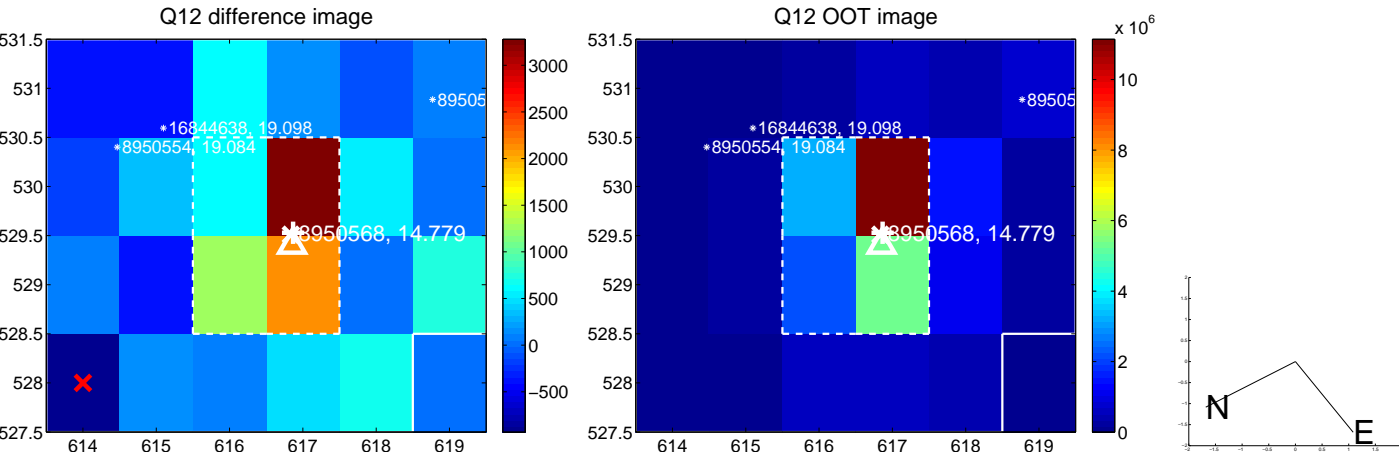
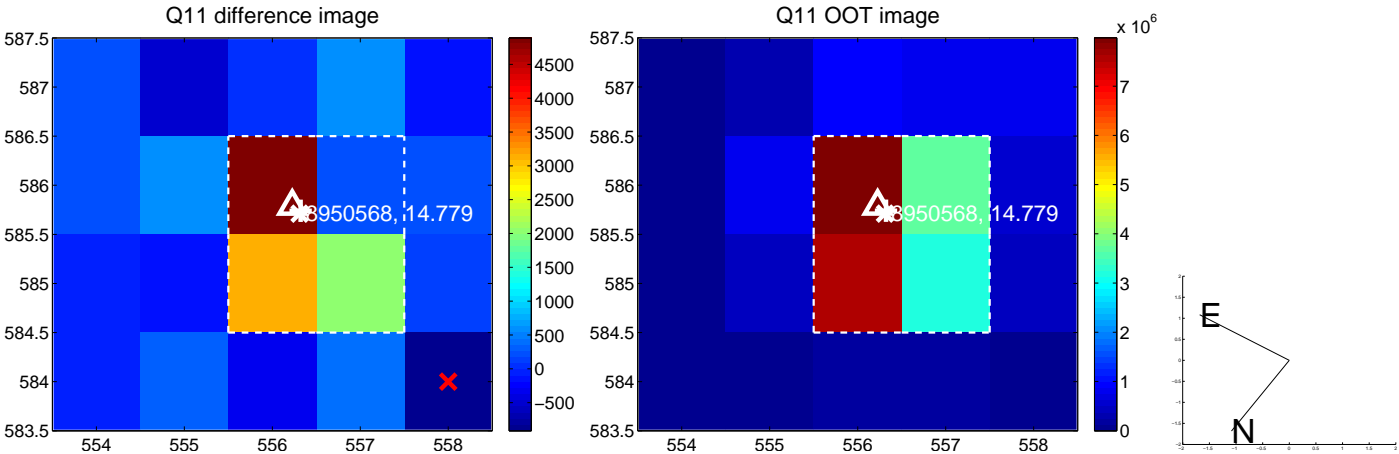
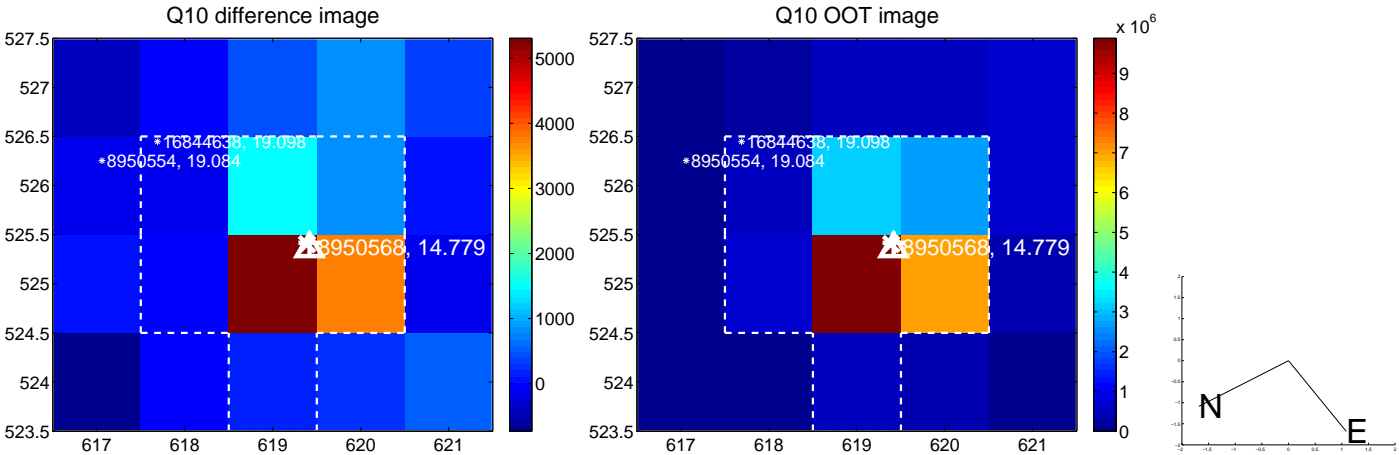
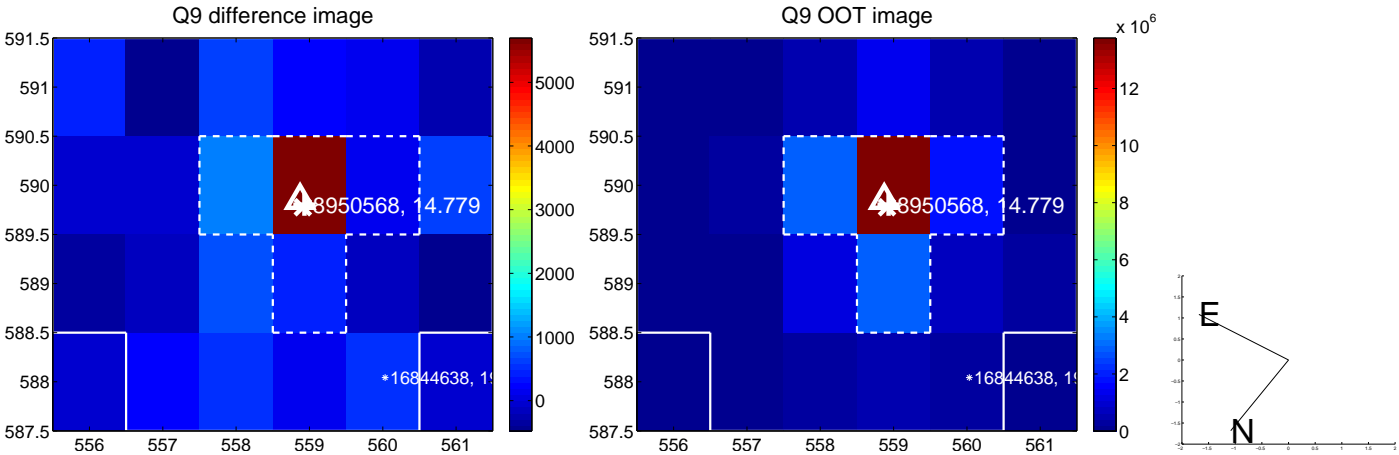


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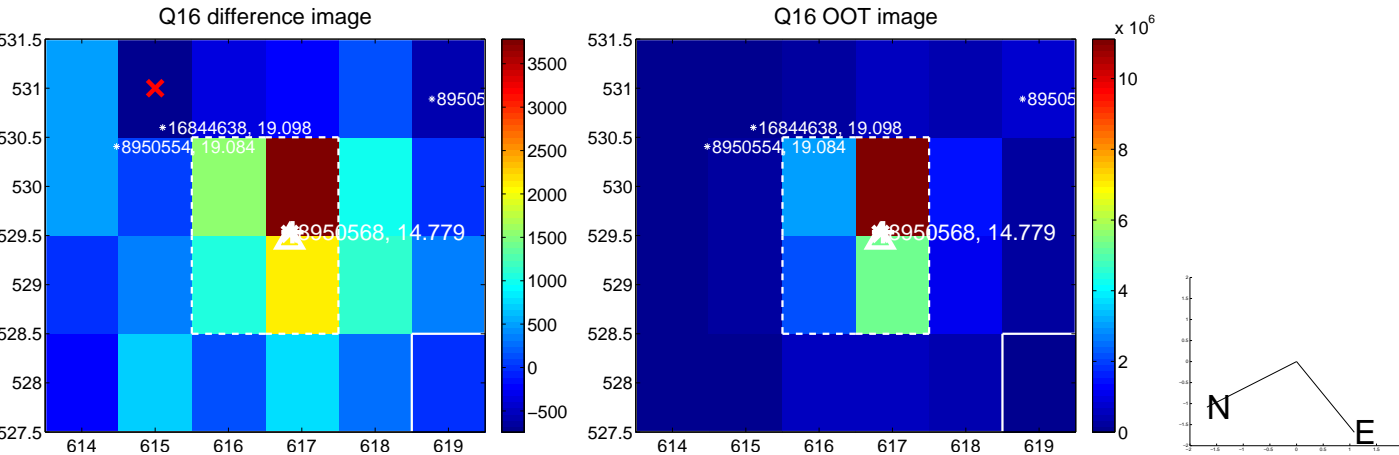
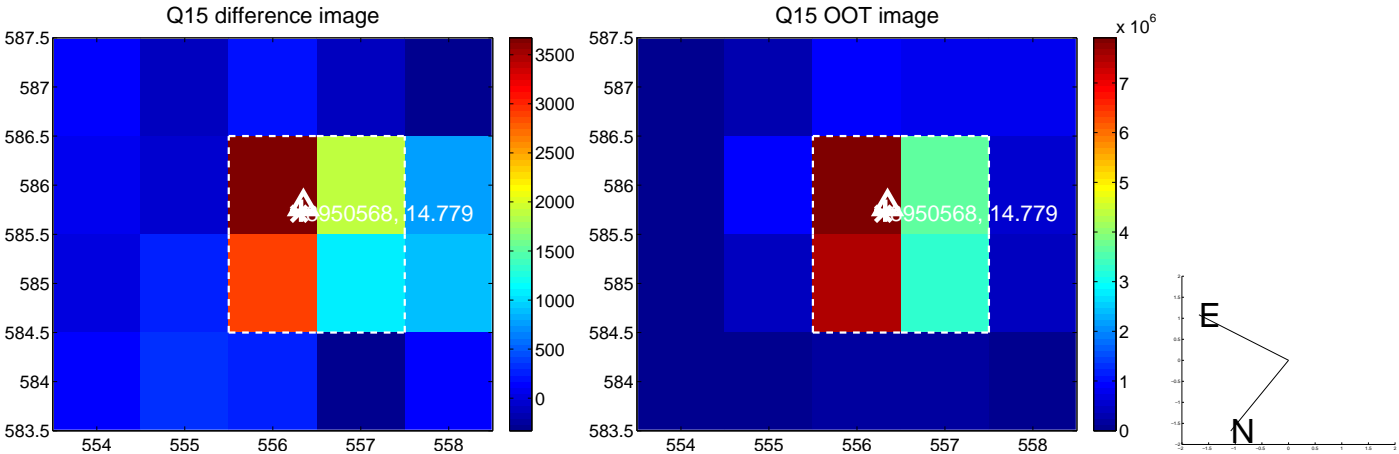
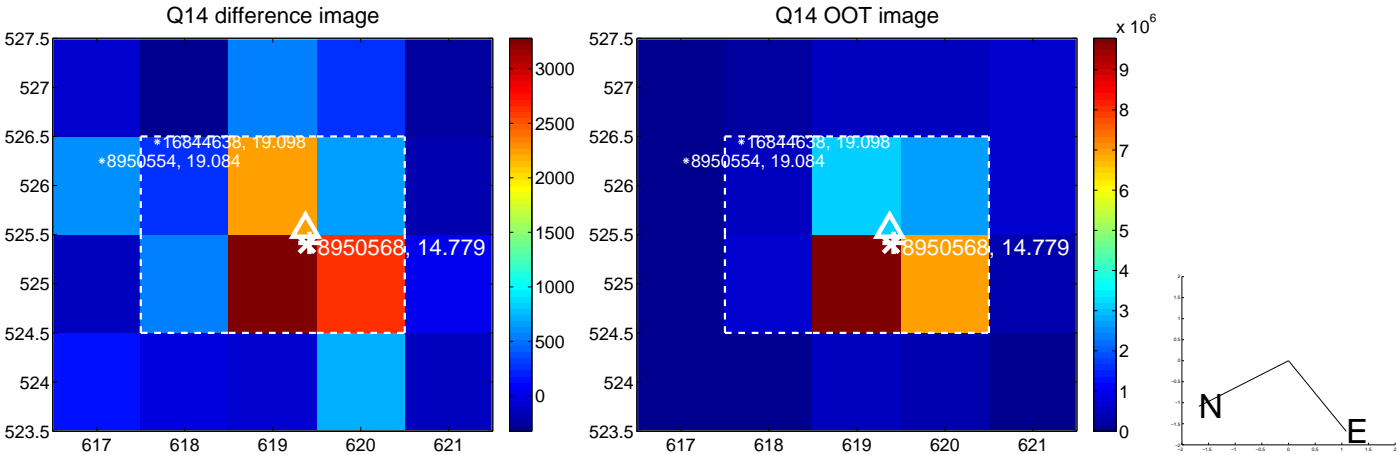
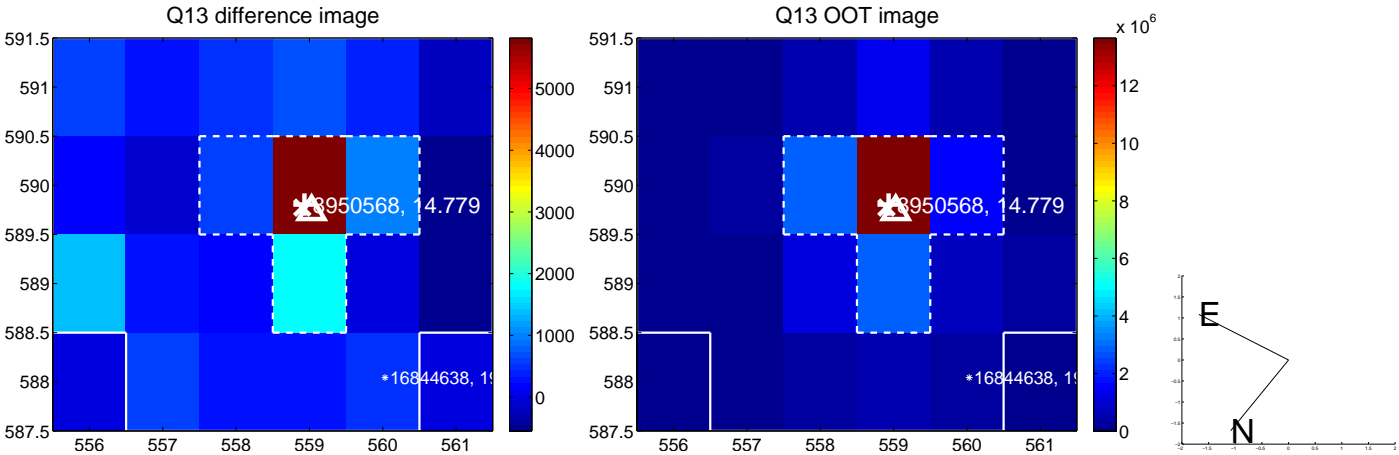




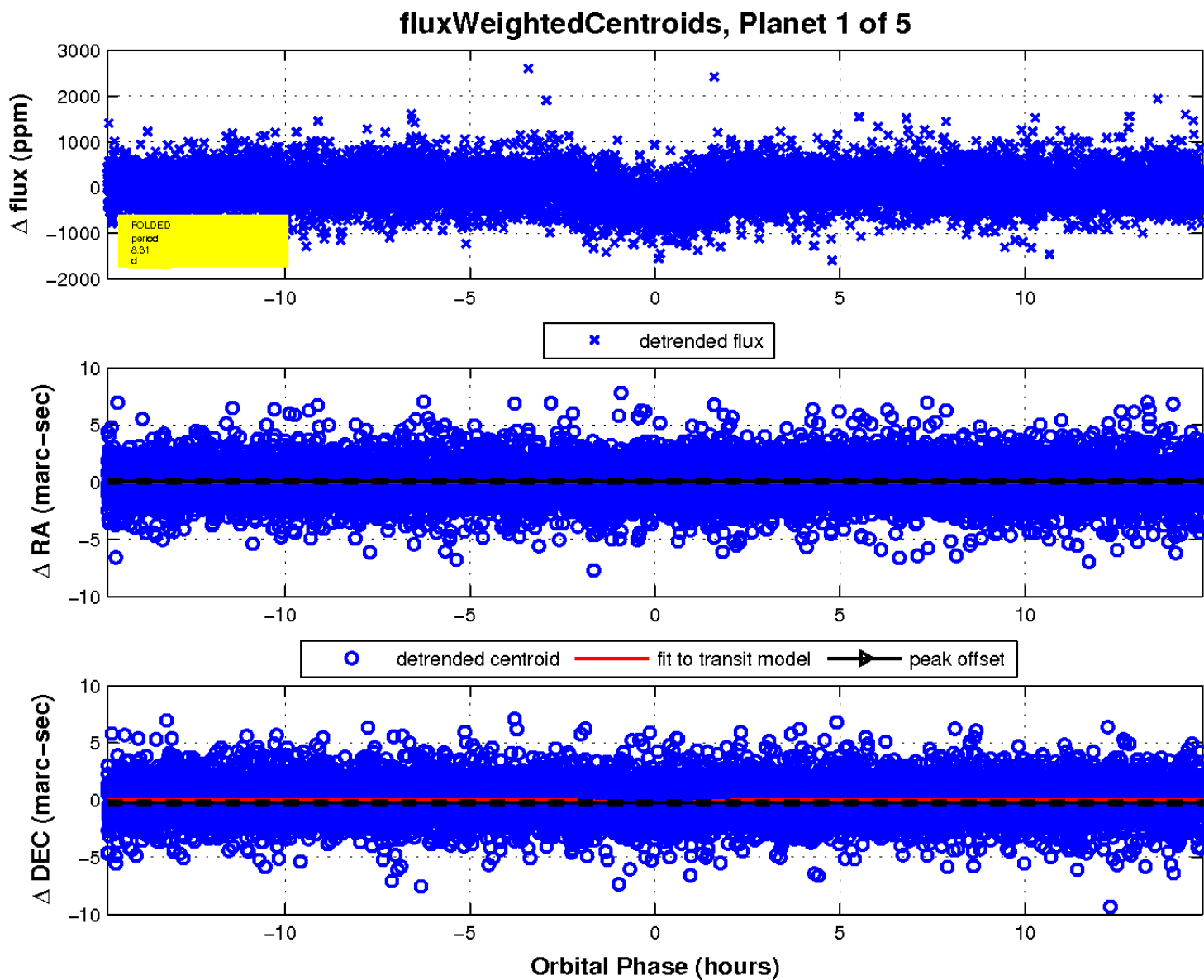
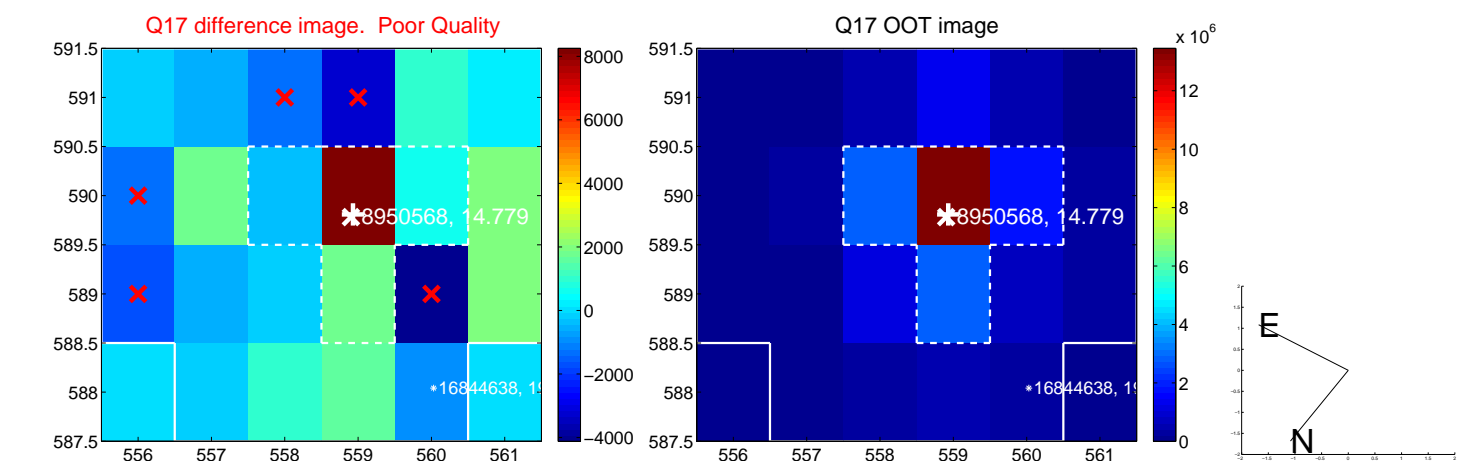
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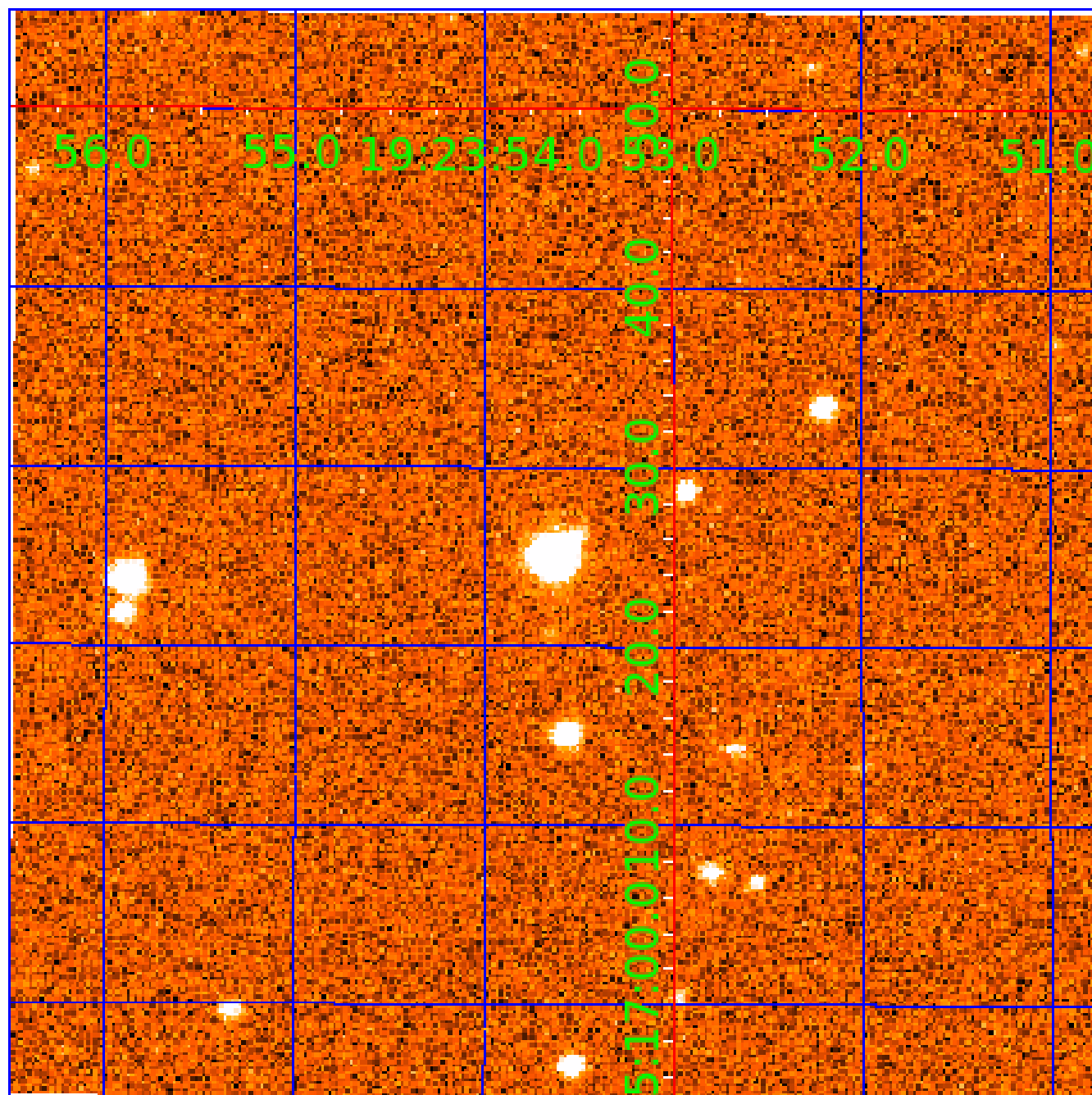


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UKIRT Image

Declination





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008950568-02	OBS	PC	1.00	0	0	0	0	NO_COMMENT
008950568-03	OBS	PC	1.00	0	0	0	0	NO_COMMENT
008950568-04	OBS	PC	0.89	0	0	0	0	NO_COMMENT
008950568-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT— INCONSISTENT_TRANS—CENT_FEW_DIFFS

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

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

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

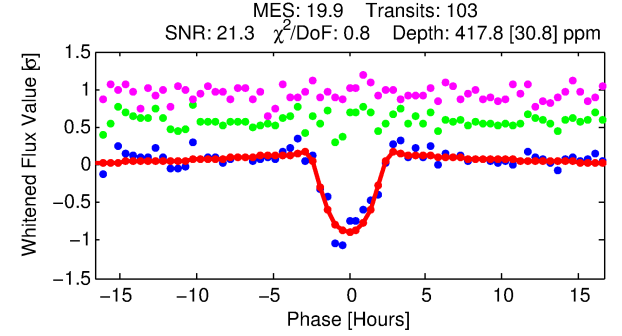
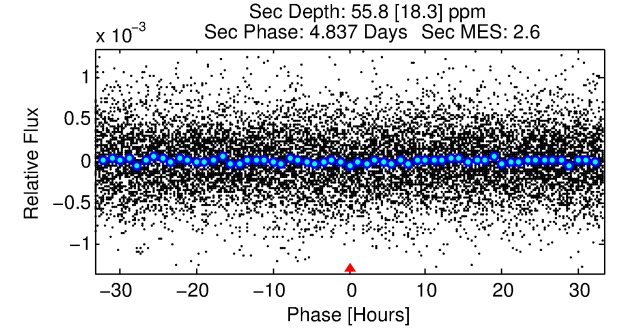
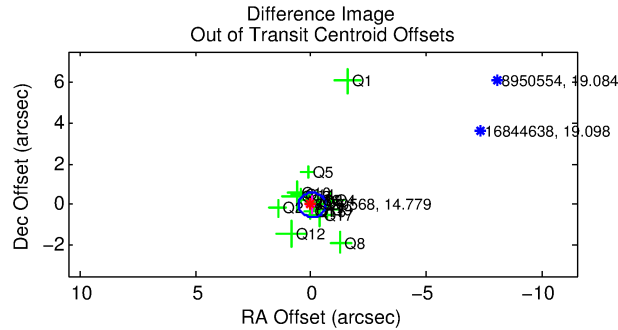
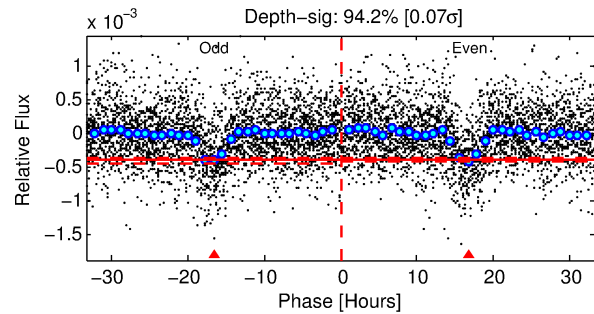
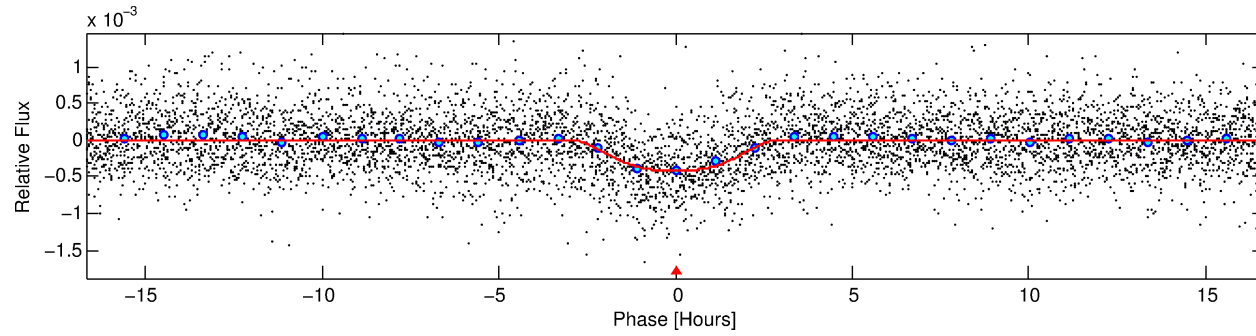
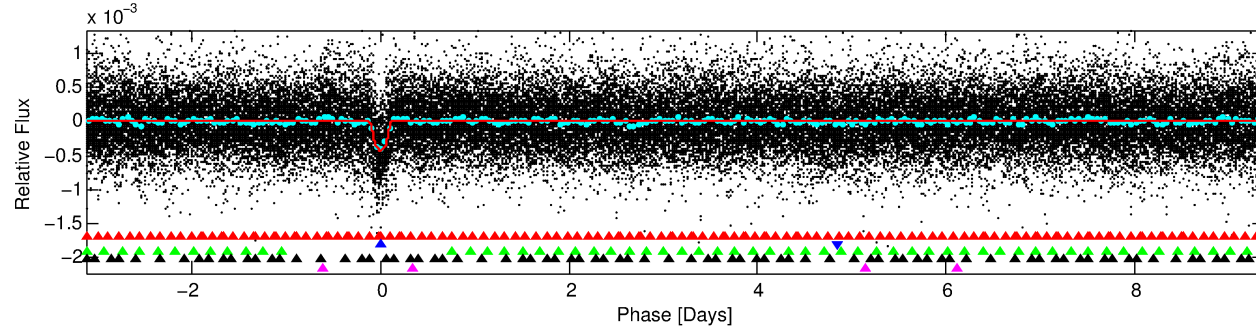
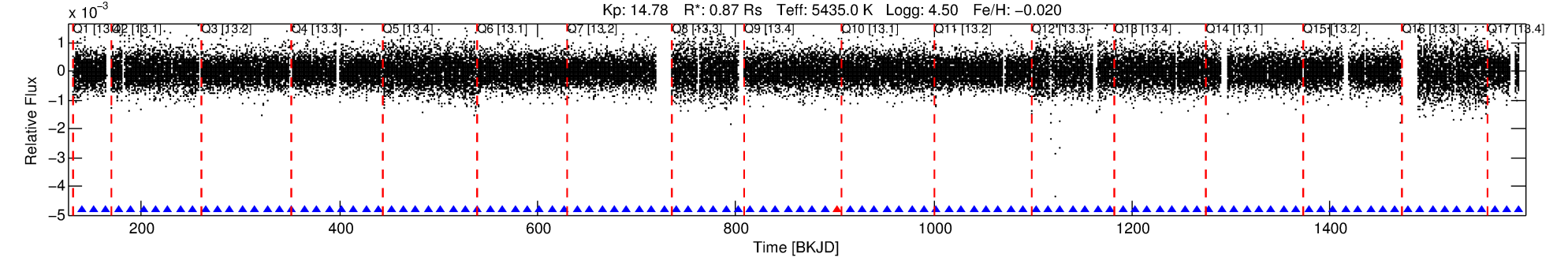
## Ephemeris Match Information For 008950568-02

No Significant Match Found

# DV One-Page Summary

KIC: 8950568 Candidate: 2 of 5 Period: 12.514 d  
KOI: K02038.02 Name: Kepler-85c Corr: 0.907

Kp: 14.78 R\*: 0.87 Rs Teff: 5435.0 K Logg: 4.50 Fe/H: -0.020



## DV Fit Results:

Period = 12.51361 [0.00009] d  
Epoch = 139.4206 [0.0056] BKJD  
Rp/R\* = 0.0258 [0.0014]  
a/R\* = 5.65 [0.44]  
b = 0.97 [0.01]  
Seff = 58.77 [9.32]  
Teq = 706 [28] K  
Rp = 2.46 [0.29] Re  
a = 0.1007 [0.0091] AU  
Ag = 51.63 [19.23] [2.63σ]  
Teffp = 2926 [260] K [8.49σ]

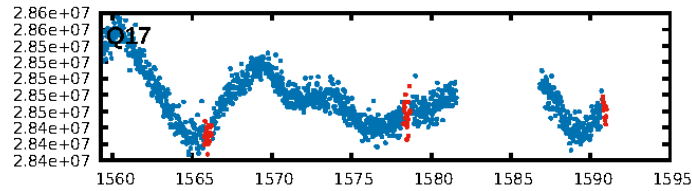
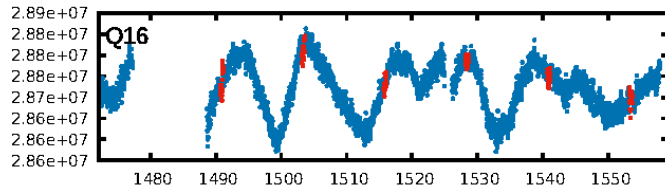
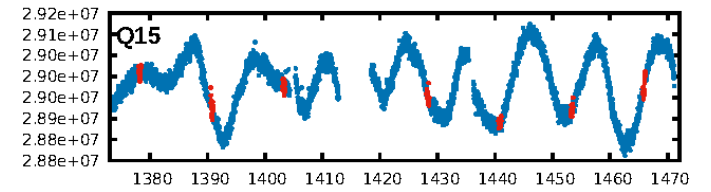
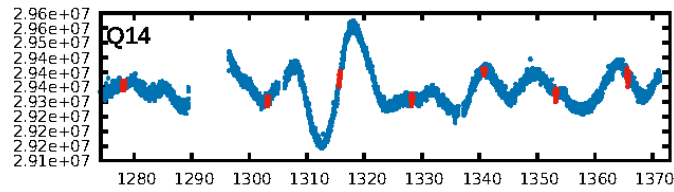
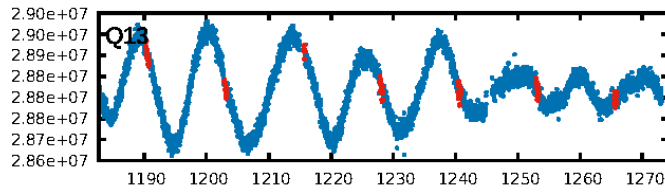
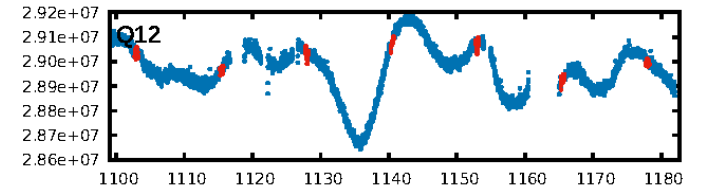
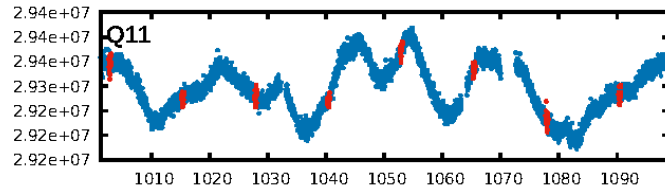
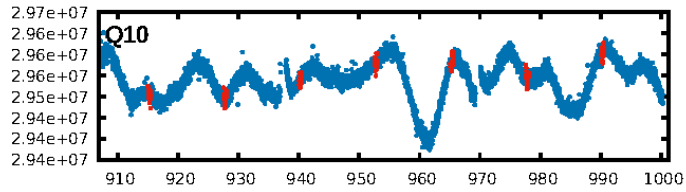
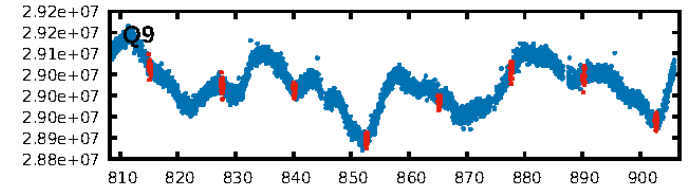
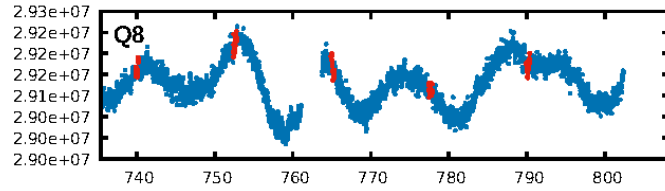
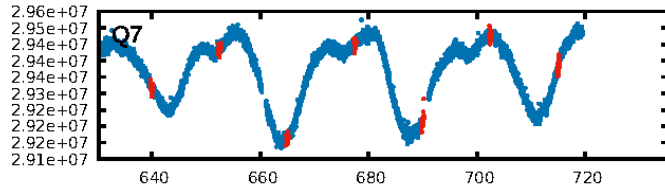
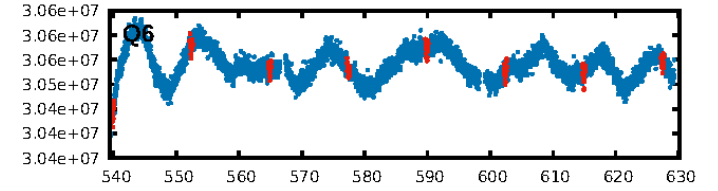
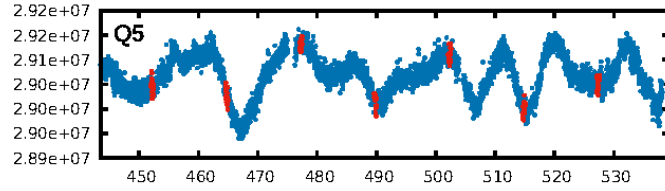
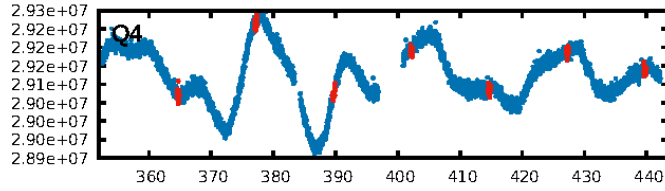
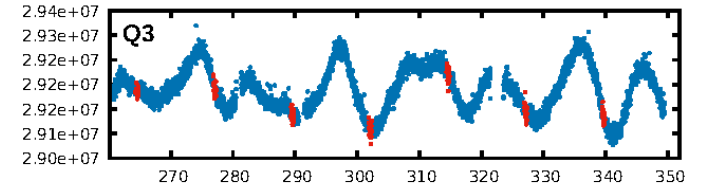
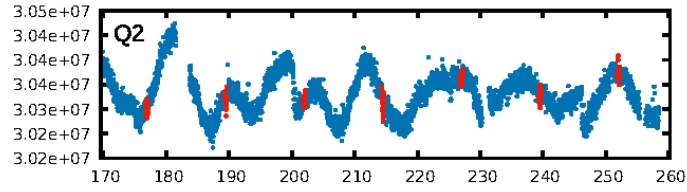
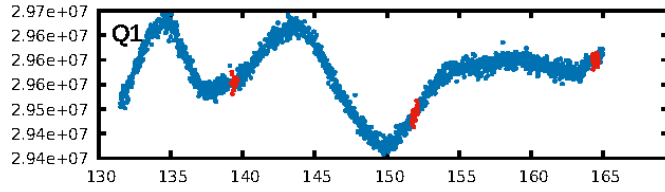
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [13.58σ]  
LongPeriod-sig: 100.0% [18.00σ]  
ModelChiSquare2-sig: 99.8%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 2.72e-78  
RollingBand-fgt: 0.99 [96/97]  
GhostDiagnostic-chr: 1.821  
Centroid-sig: 45.5%  
Centroid-so: 0.540 arcsec [1.28σ]  
OotOffset-rm: 0.056 arcsec [0.29σ]  
KicOffset-rm: 0.173 arcsec [0.46σ]  
OotOffset-st: 4/4/4/5 [17]  
KicOffset-st: 4/4/4/5 [17]  
DiffImageQuality-fgm: 0.94 [16/17]  
DiffImageOverlap-fno: 1.00 [17/17]

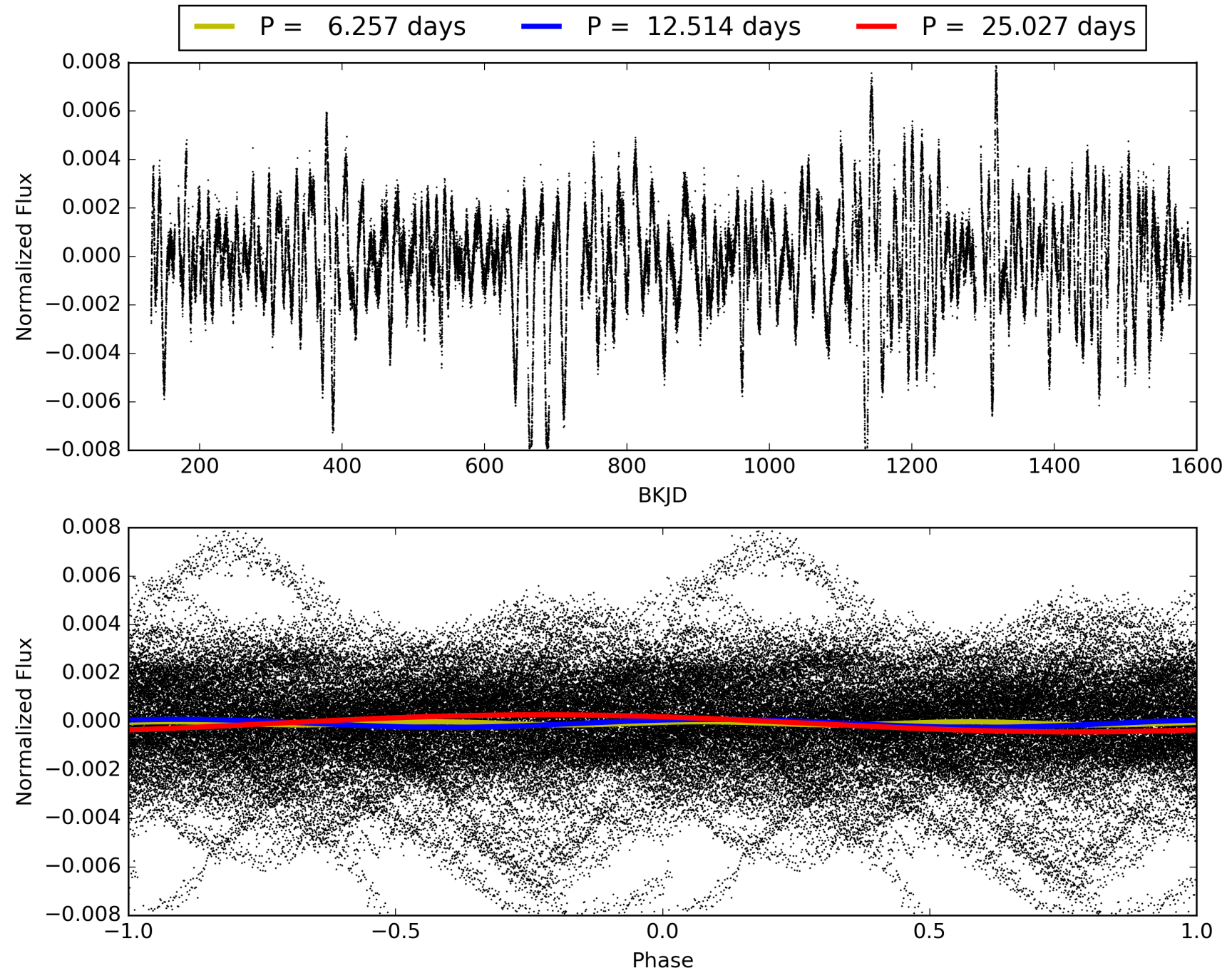
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 11:31:40 Z

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

# TCE 008950568-02, PDC Light Curves

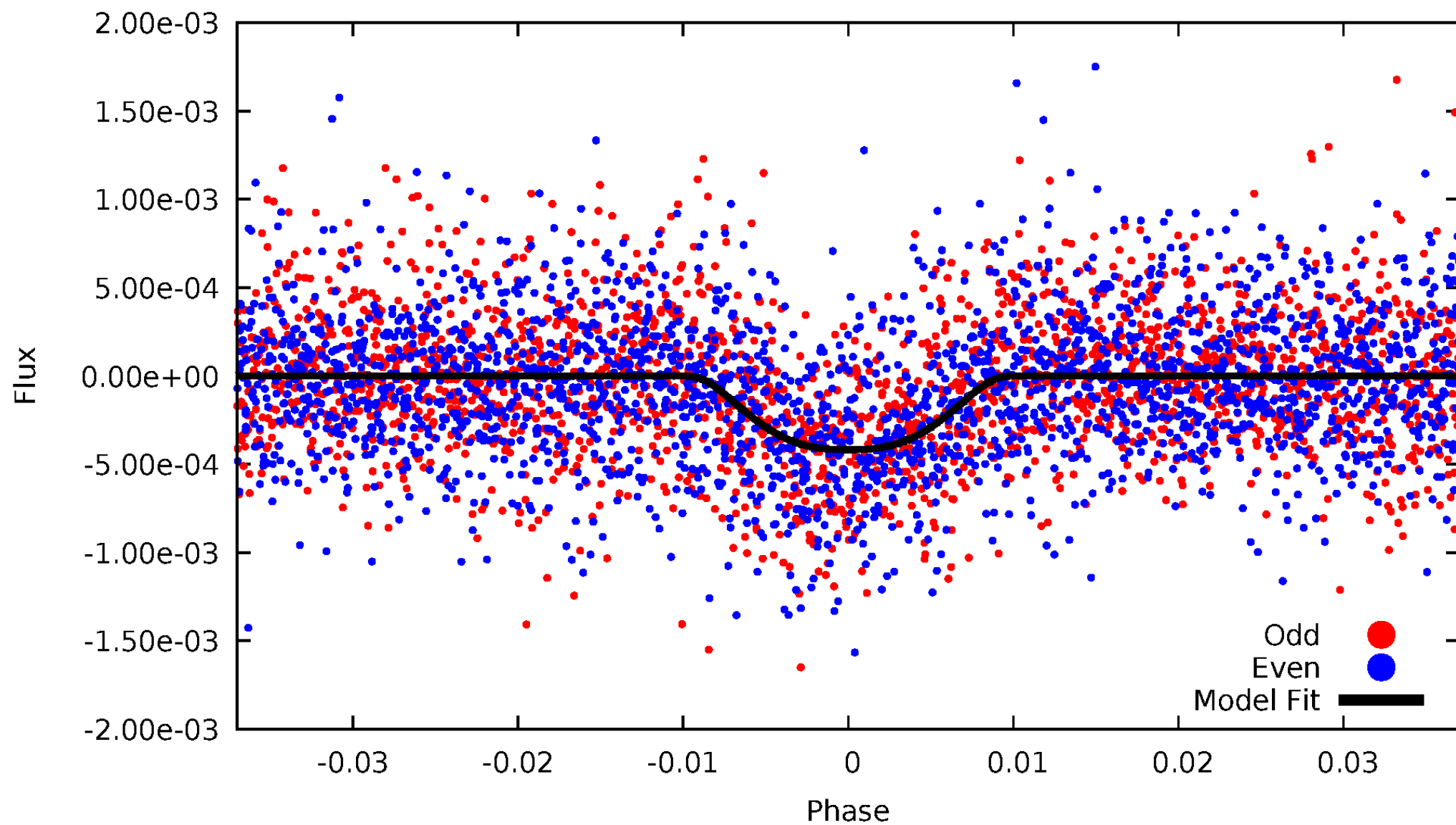


TCE 008950568-02



# DV Odd/Even

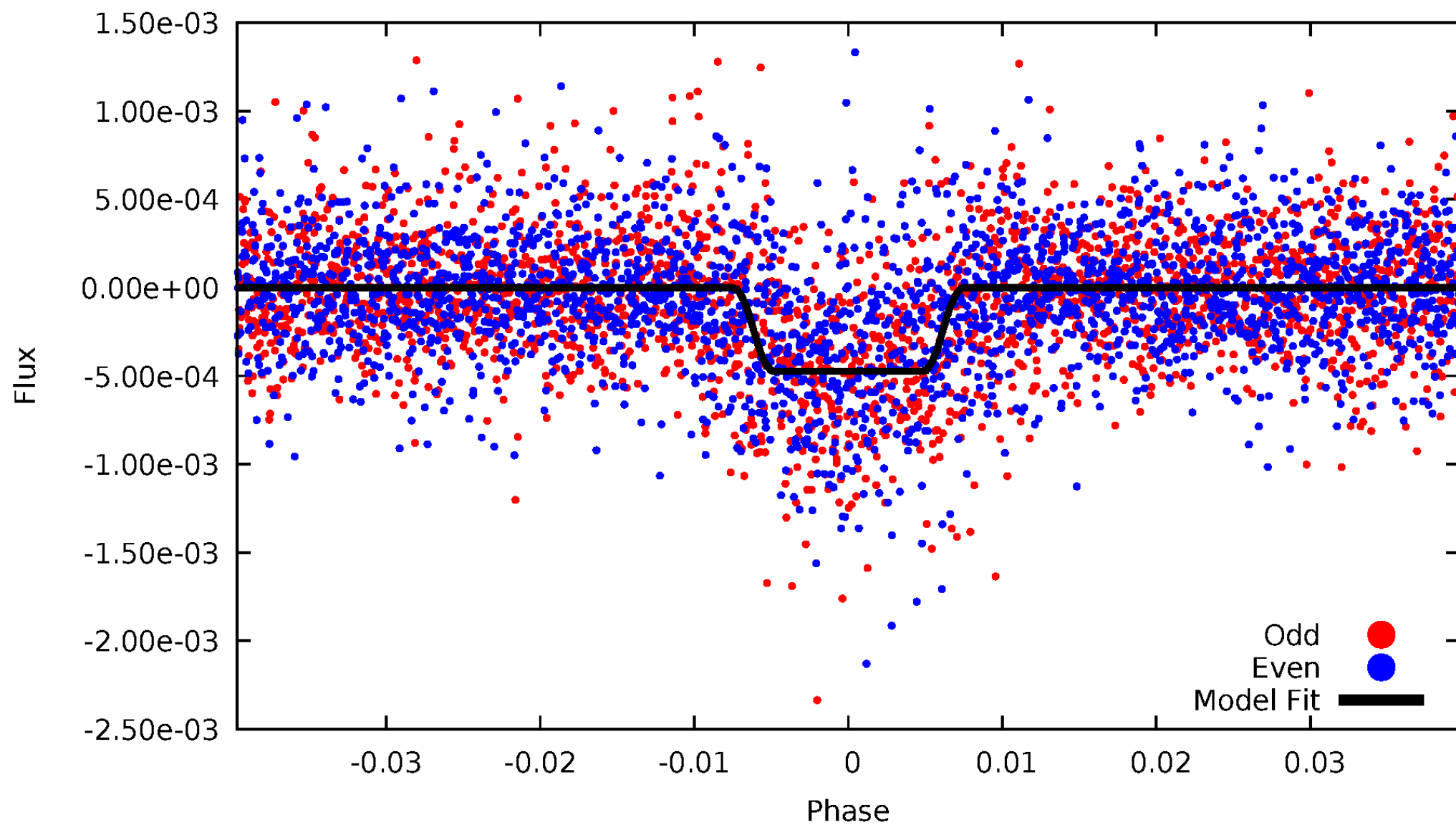
TCE 008950568-02





# ALT Odd/Even

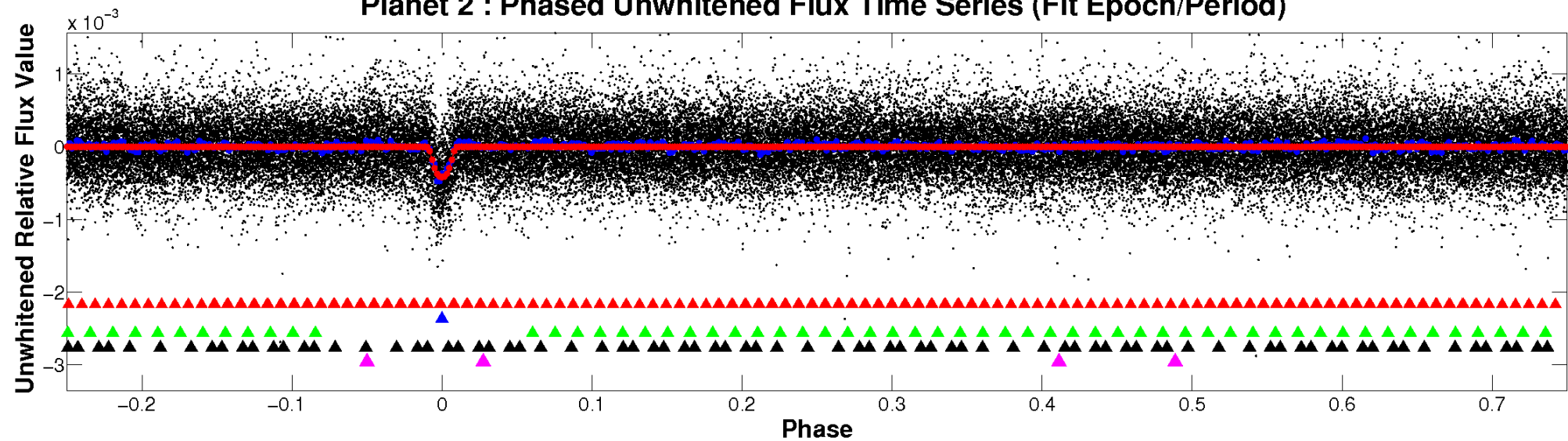
TCE 008950568-02



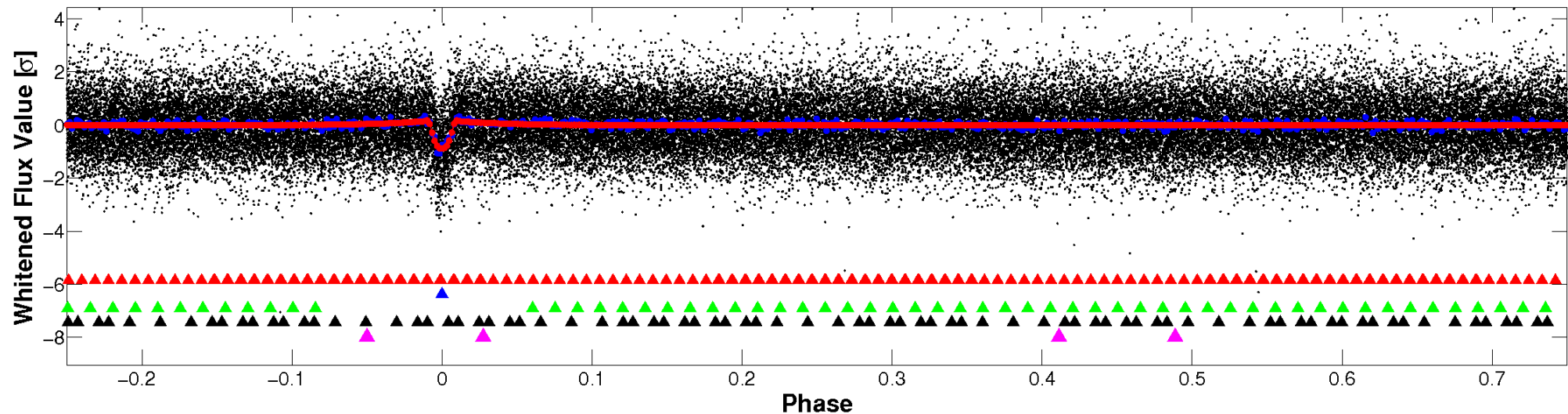


# Non-Whitened Vs. Whitened Light Curve

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

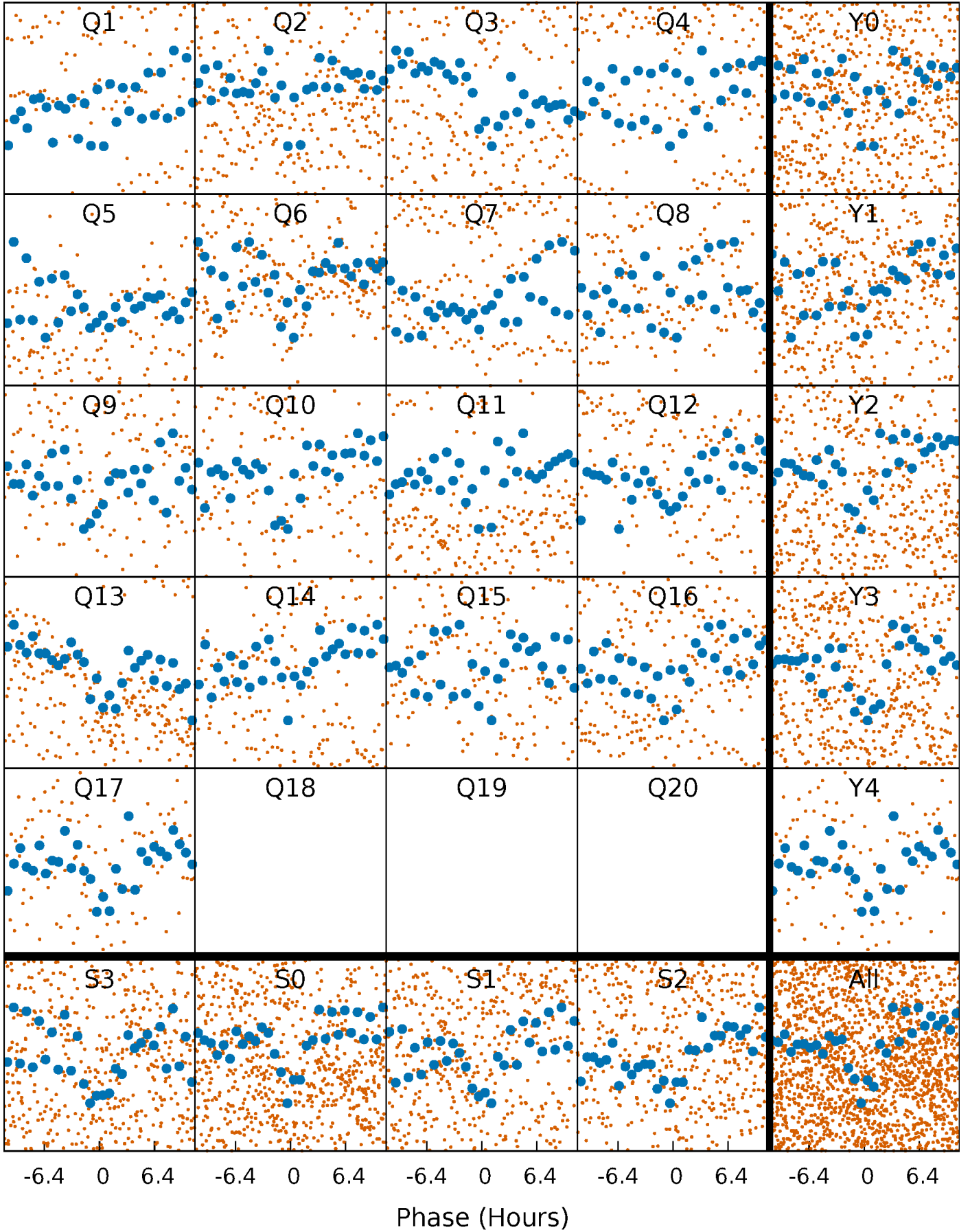


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



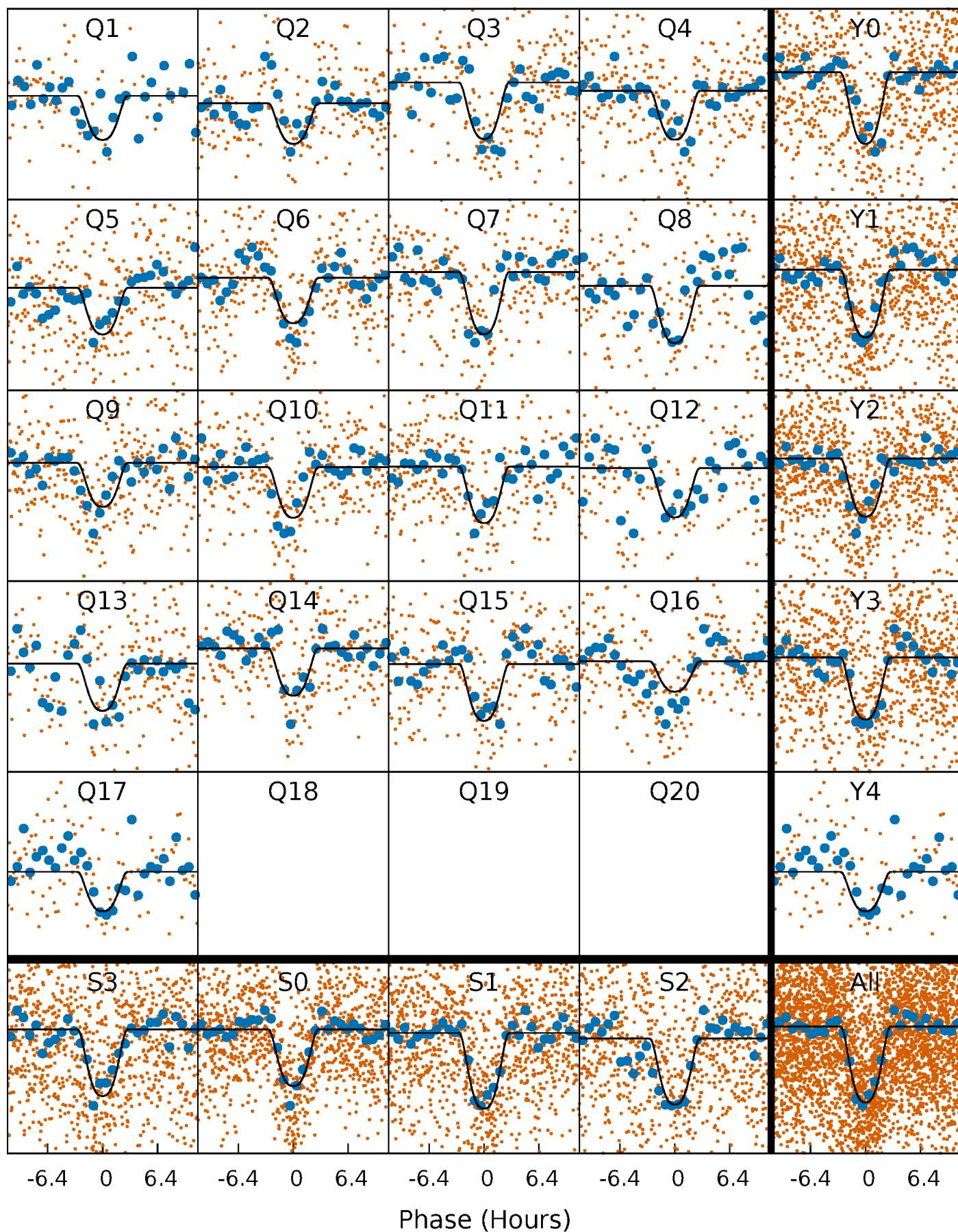
# PDC Quarter-Phased Transit Curves

TCE 008950568-02 P= 12.513612 Days  $T_0=139.420604$  (BKJD)



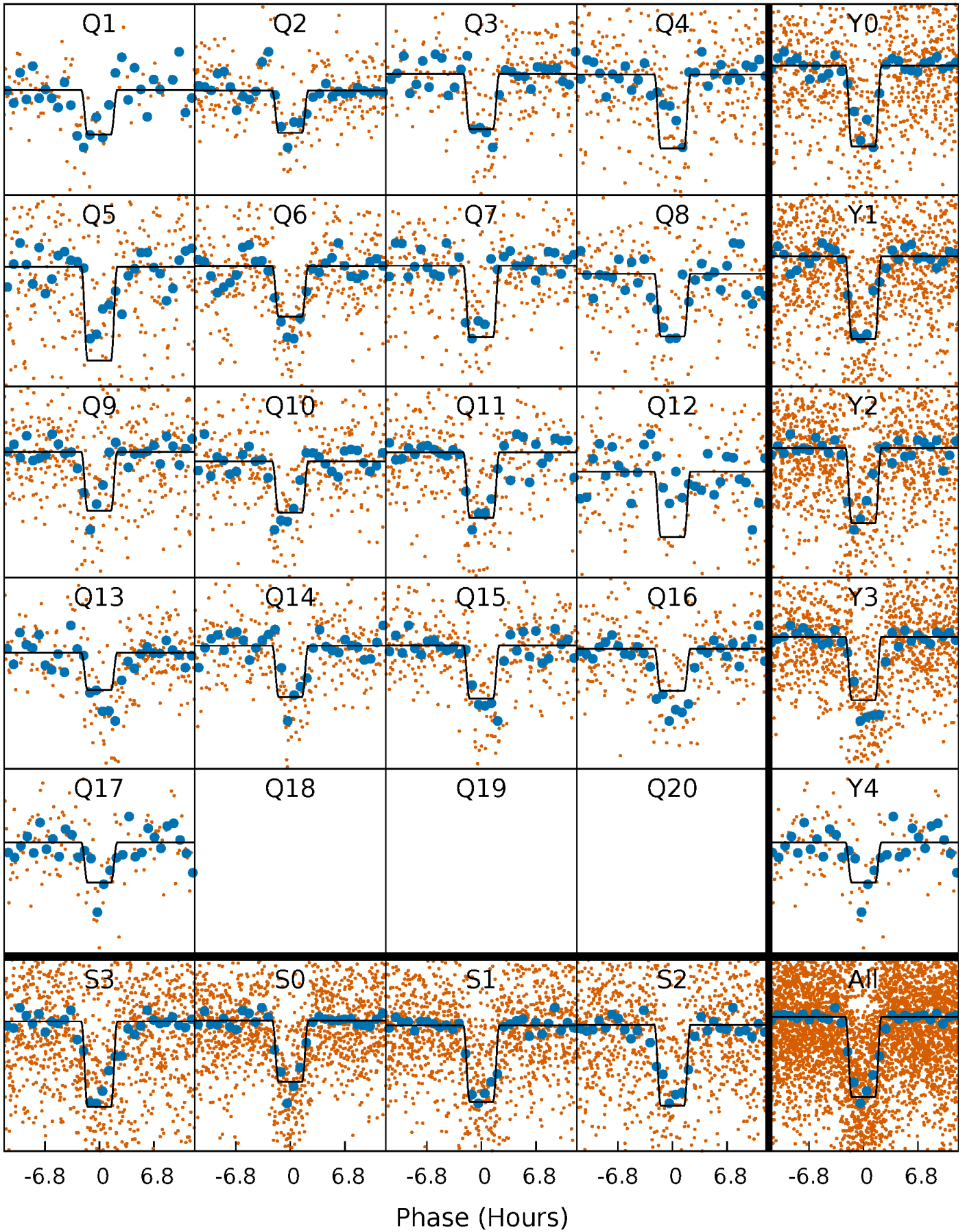
# DV Quarter-Phased Transit Curves

TCE 008950568-02 P= 12.513612 Days  $T_0=139.420604$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 008950568-02 P= 12.513431 Days  $T_0=139.430328$  (BKJD)

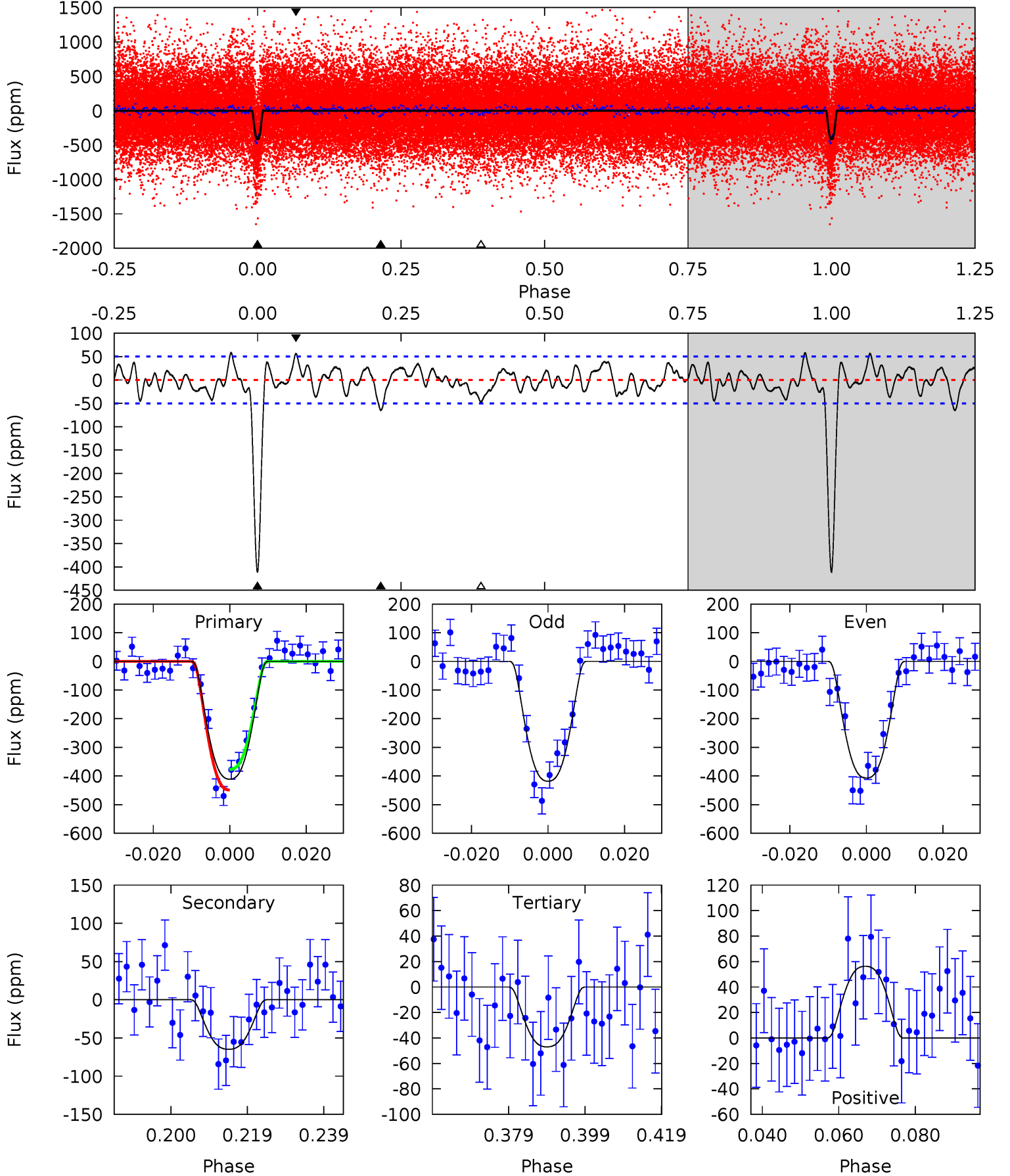




# DV Model-Shift Uniqueness Test

008950568-02, P = 12.513612 Days, E = 126.906992 Days

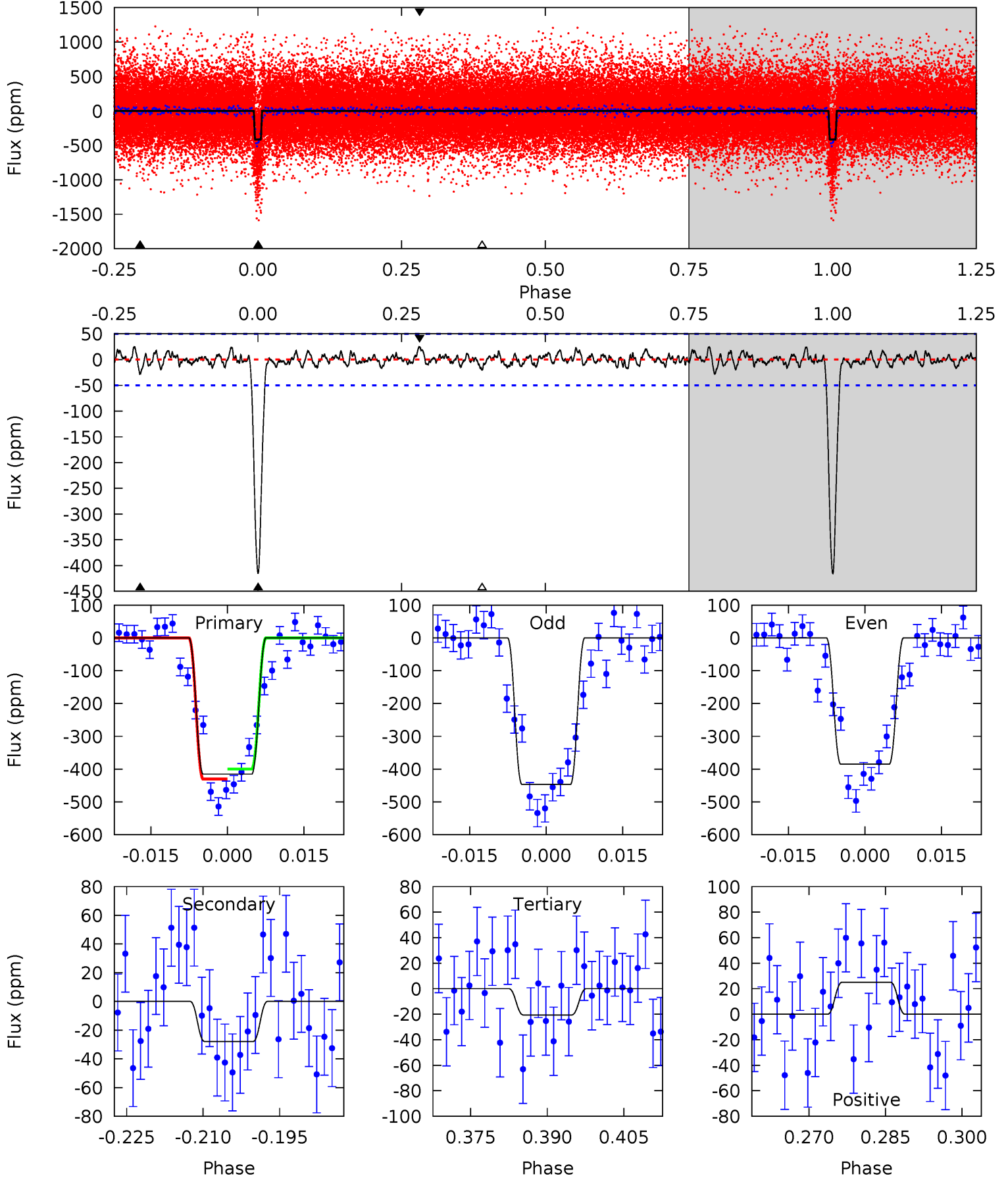
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
40.0	6.31	4.57	5.48	4.89	2.33	1.96	35.4	34.5	1.73	0.83	0.53	1.02	0.12	3.53



# Alt Model-Shift Uniqueness Test

008950568-02,  $P = 12.513431$  Days,  $E = 126.916897$  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
41.1	2.76	2.03	2.48	4.95	2.43	0.80	39.1	38.6	0.73	0.28	3.06	1.08	0.06	1.52





### Stellar Parameters For KIC 008950568

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5435^{+109}_{-109}$	$4.495^{+0.063}_{-0.077}$	$-0.020^{+0.150}_{-0.150}$	$0.873^{+0.090}_{-0.068}$	$0.870^{+0.055}_{-0.049}$	$1.840^{+0.446}_{-0.428}$
	+2%/-2%	+1%/-2%	+750%/-750%	+10%/-8%	+6%/-6%	+24%/-23%
Source	SPE58	SPE58	SPE58	DSEP		

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

### Secondary Eclipse Parameters for KIC 008950568-02 / KOI 2038.02

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-65 \pm 10$	$2.46^{+0.19}_{-0.17}$	$987^{+32}_{-28}$	$3508^{+117}_{-126}$	$60^{+14}_{-11}$
Alt.	$-28 \pm 10$	$2.07^{+0.19}_{-0.15}$	$989^{+34}_{-30}$	$3237^{+169}_{-220}$	$36^{+13}_{-14}$

$T_{max}$  = Theoretical Maximum Planetary Temperature

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

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

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

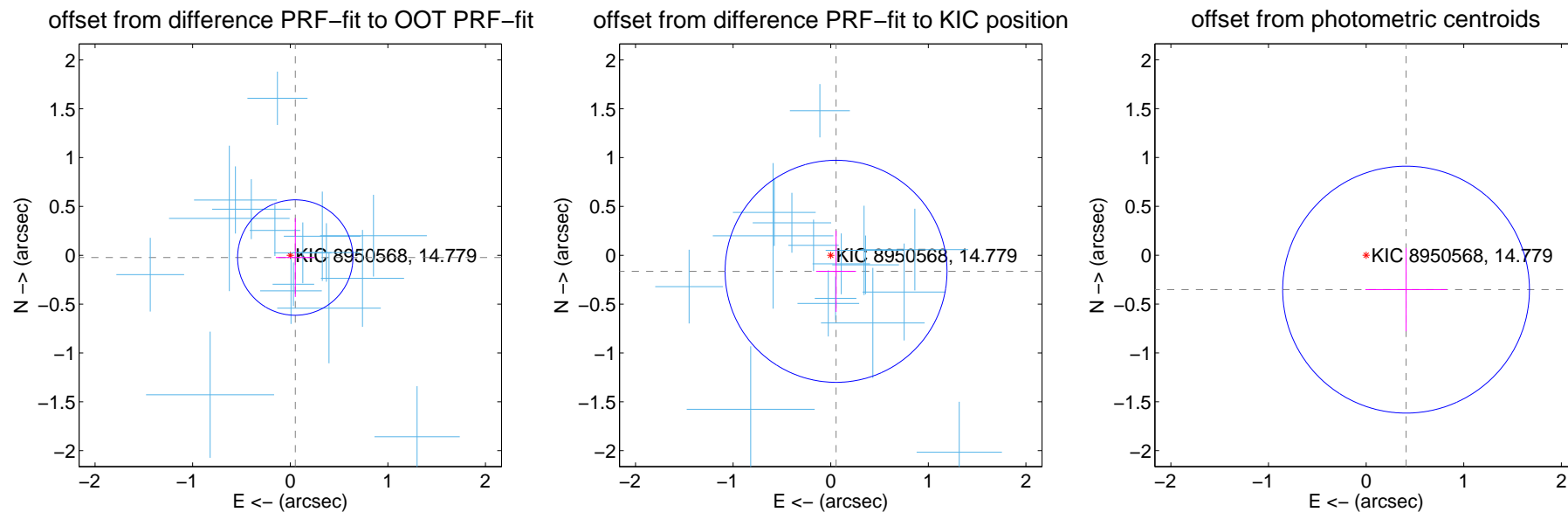
## DV Centroid Data

Supplemental centroid analysis for 008950568-02. Kepler magnitude: 14.78. Transit SNR 21.26

There are 16 quarters with good PRF difference image offsets

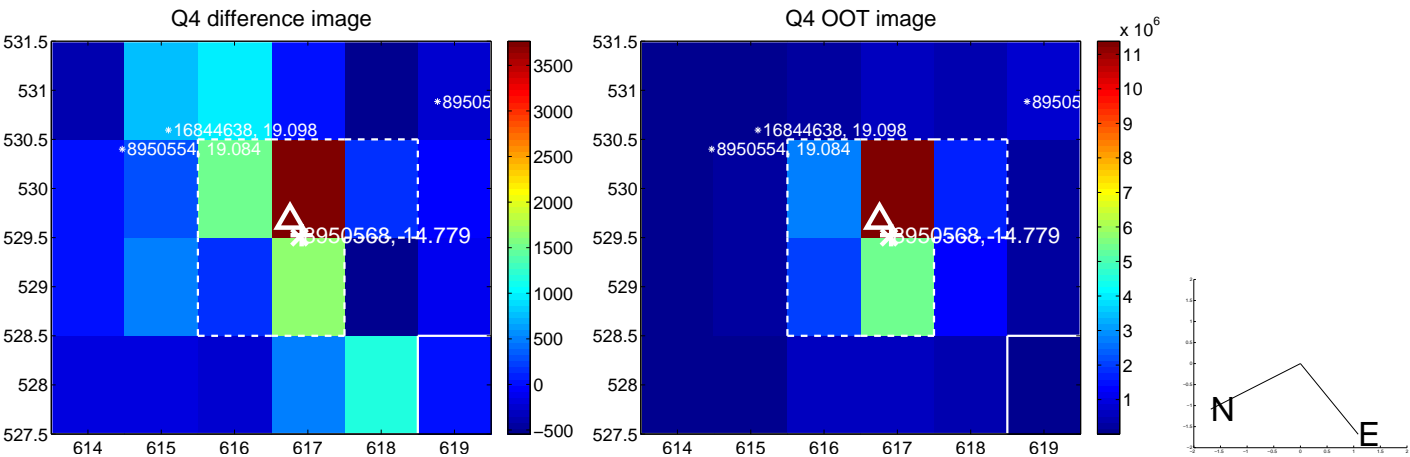
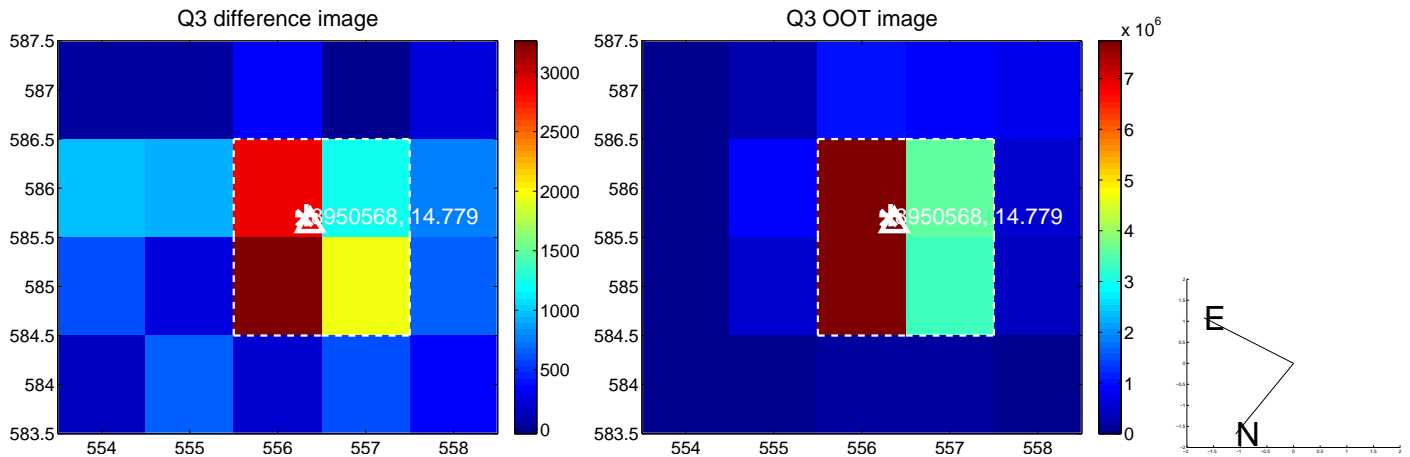
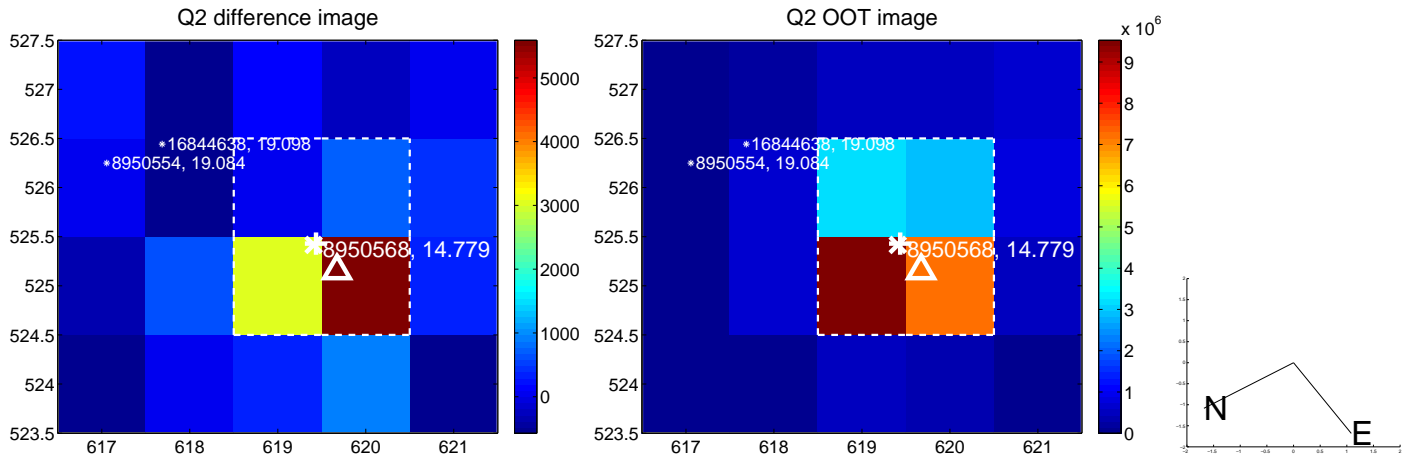
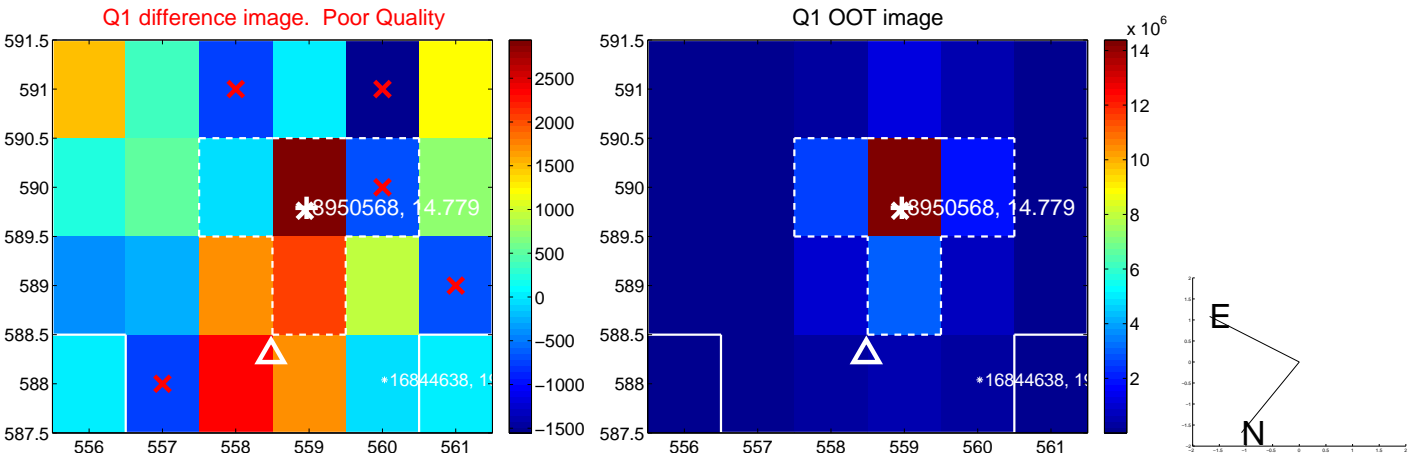
The direct PRF centroid is offset from the target star catalog position by about 0.16 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.056 \pm 0.197$	0.29	$-0.051 \pm 0.199$	$-0.023 \pm 0.404$
PRF-fit source offset from KIC position	$0.173 \pm 0.379$	0.46	$-0.055 \pm 0.204$	$-0.164 \pm 0.416$
photometric centroid source offset	$0.54 \pm 0.42$	1.28	$-0.41 \pm 0.42$	$-0.35 \pm 0.43$

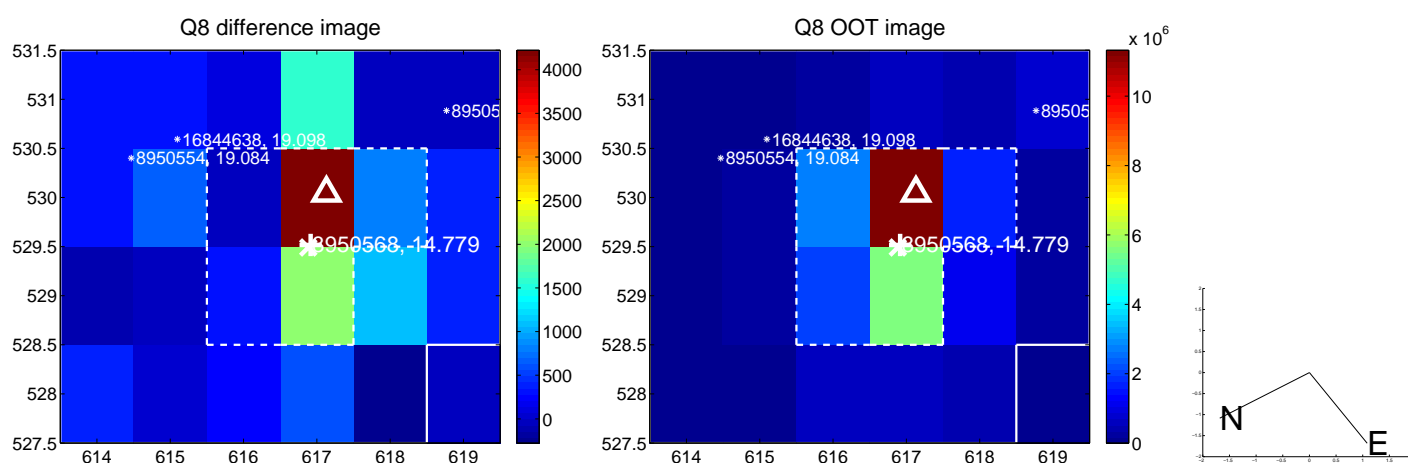
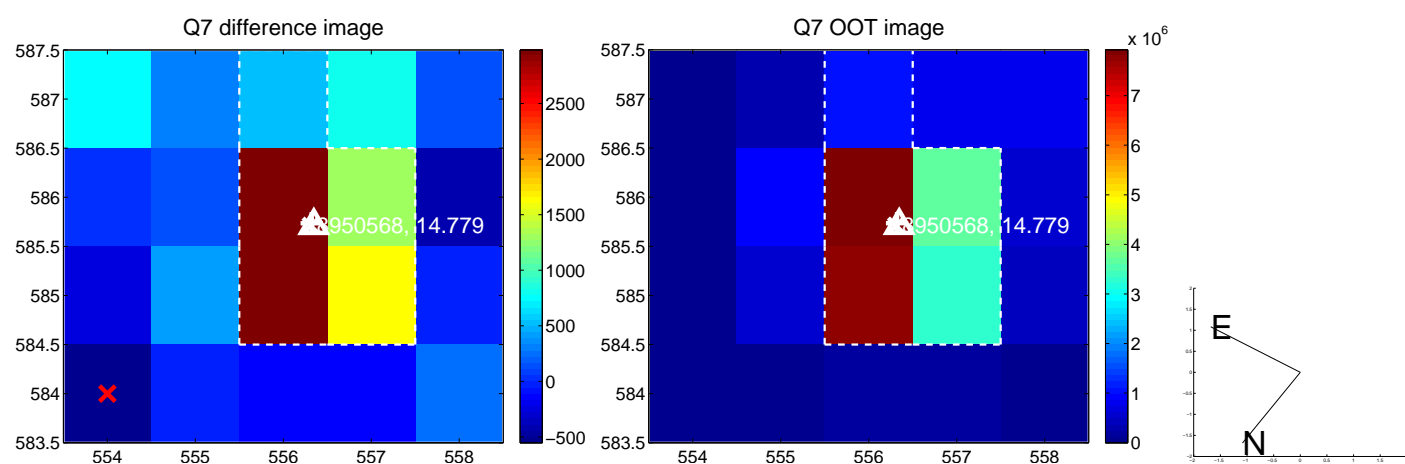
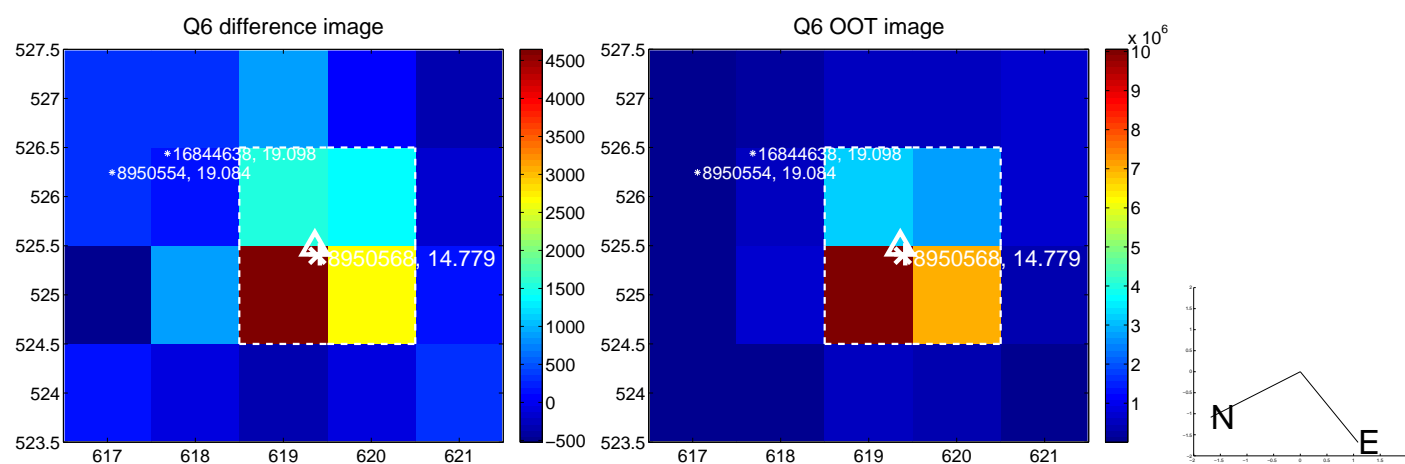
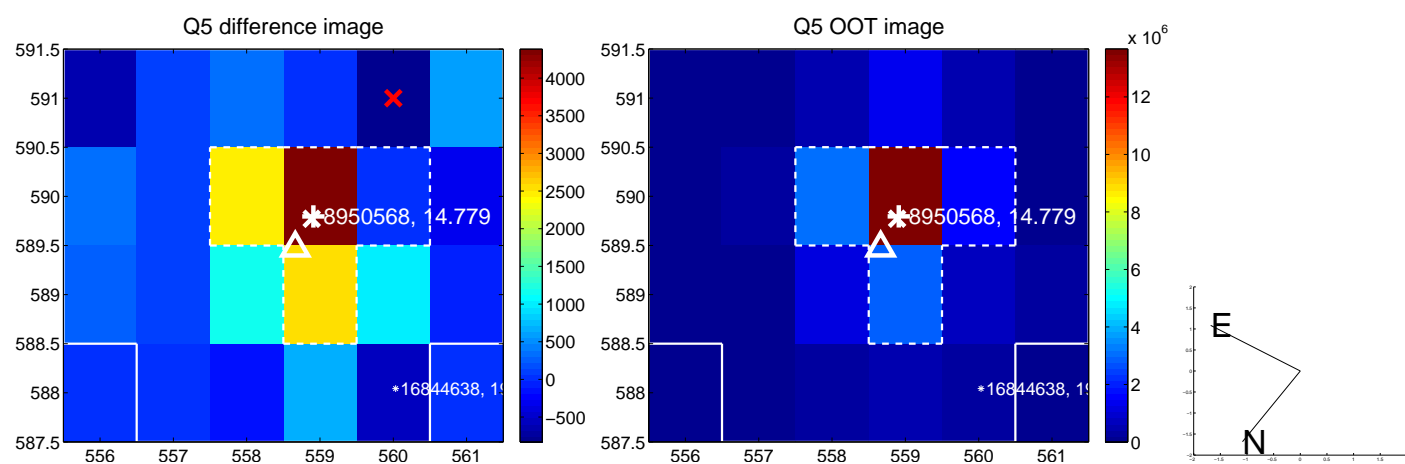


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

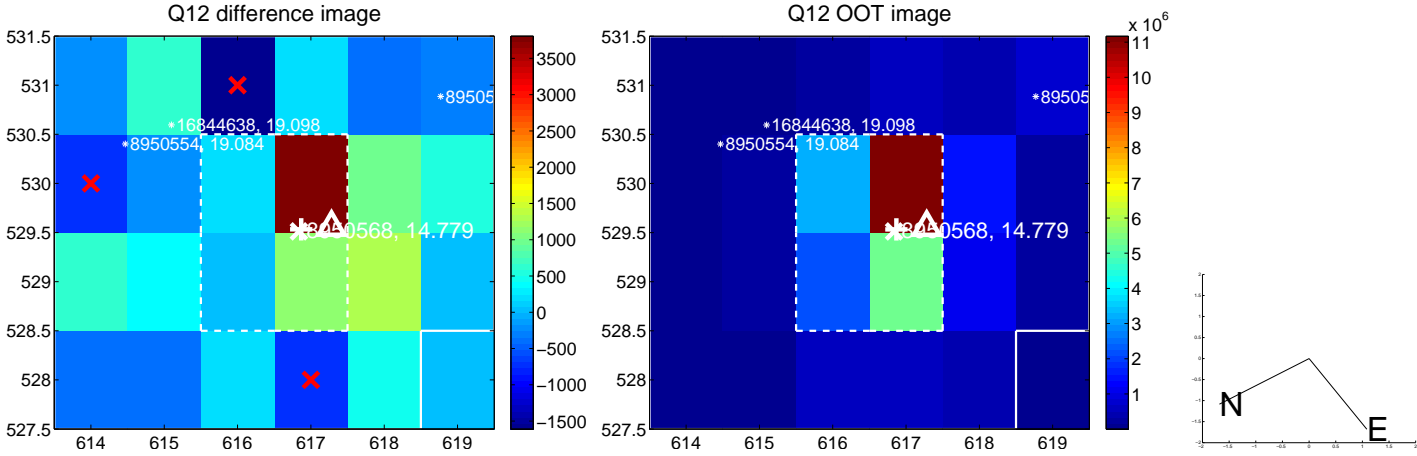
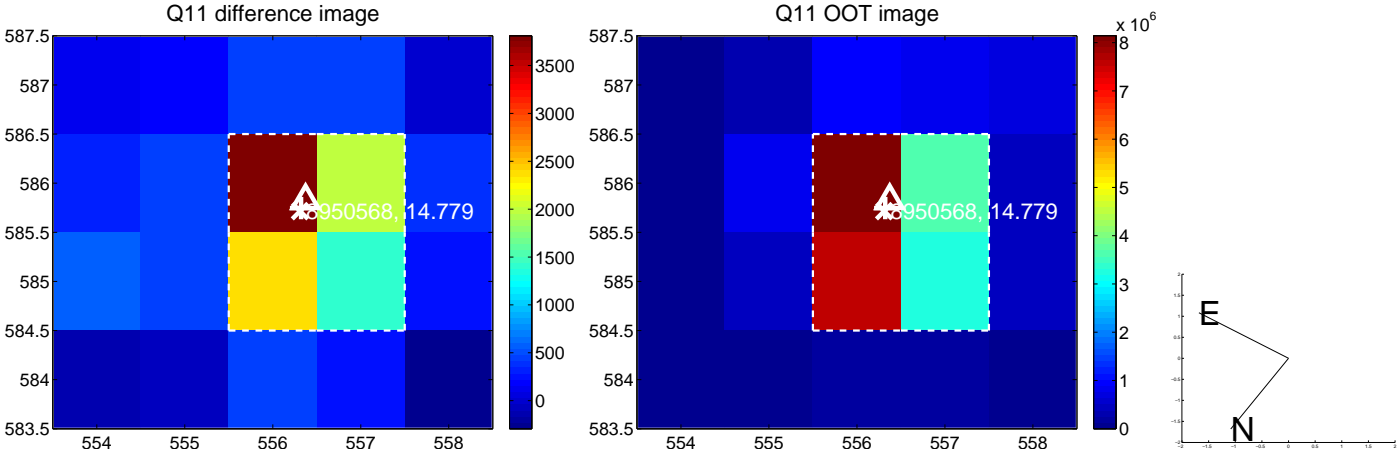
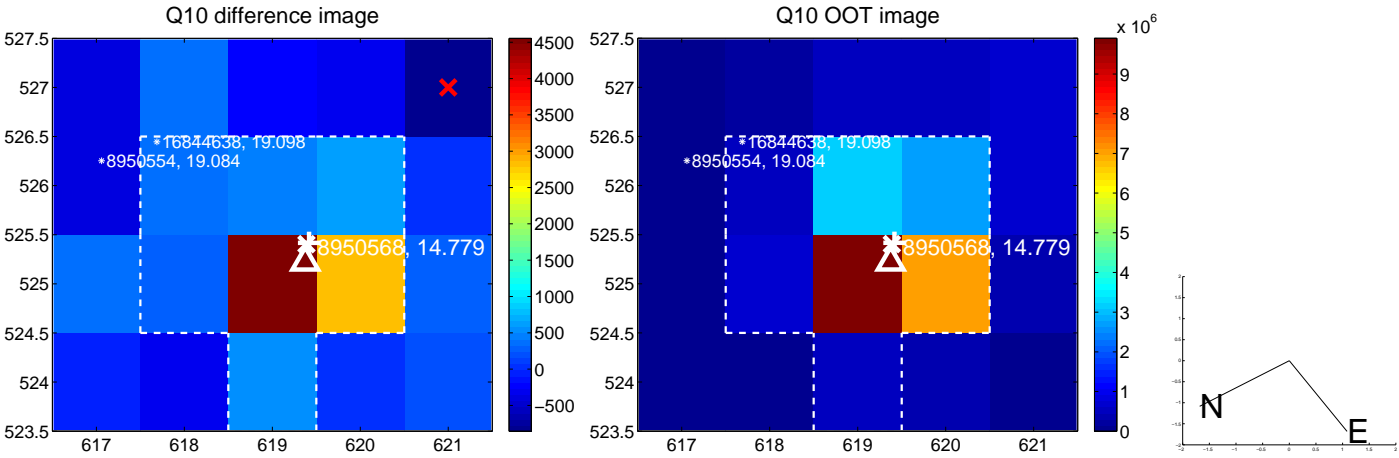
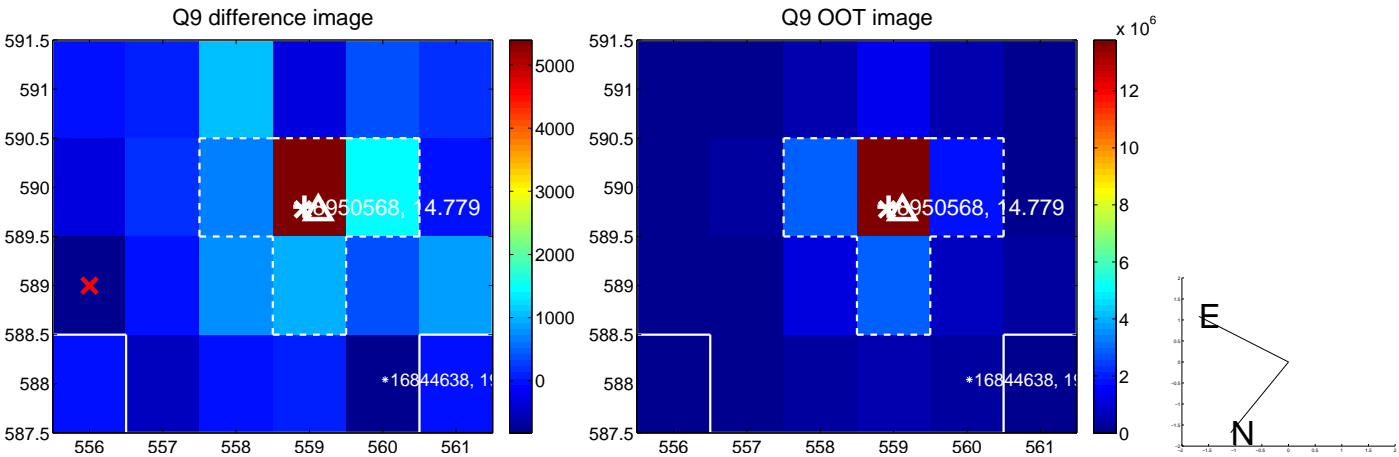
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



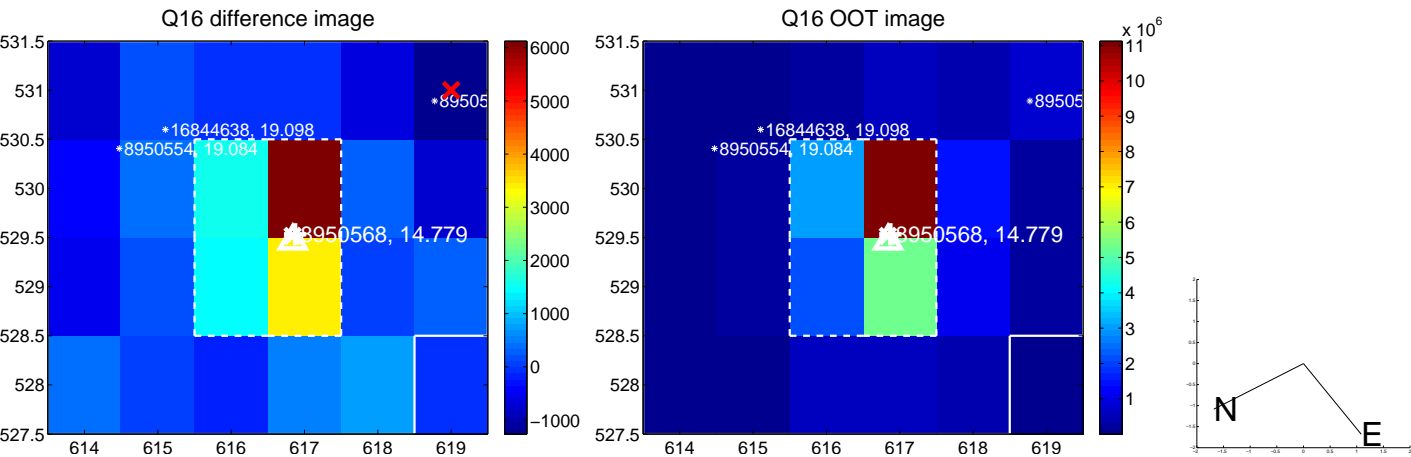
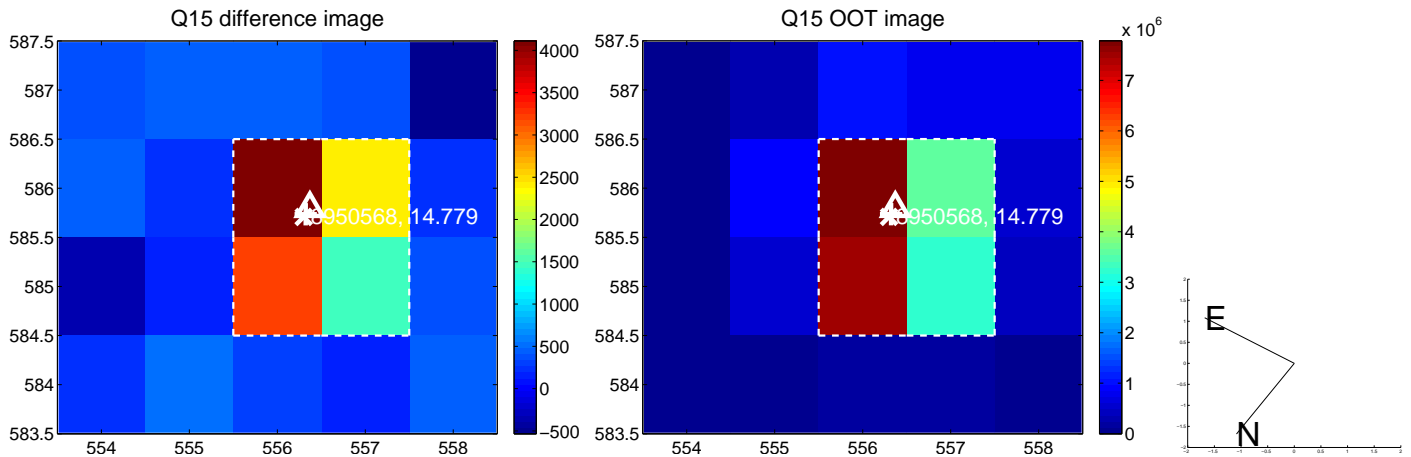
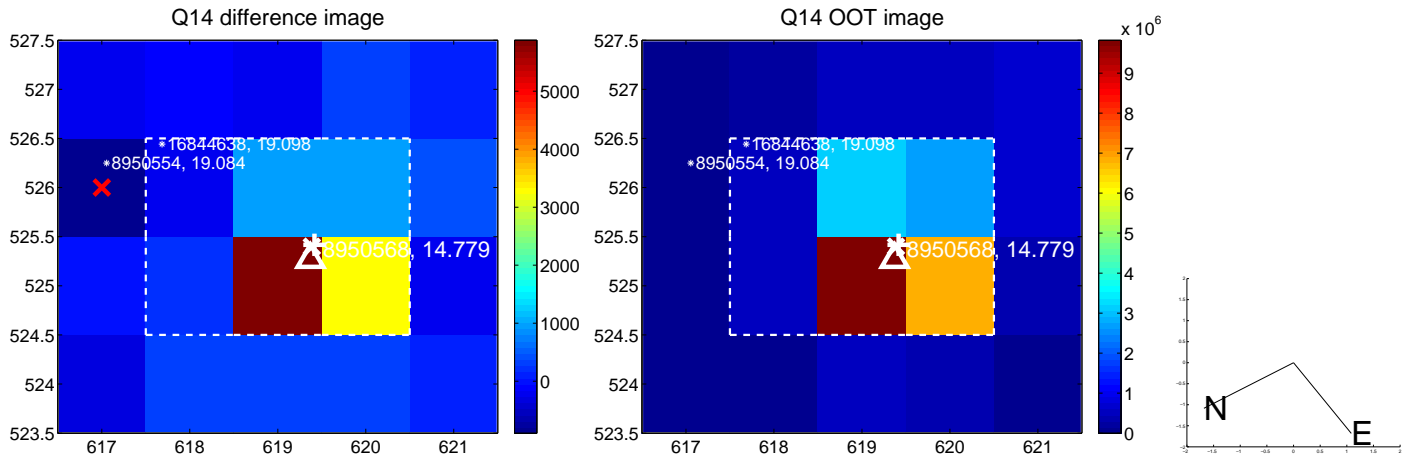
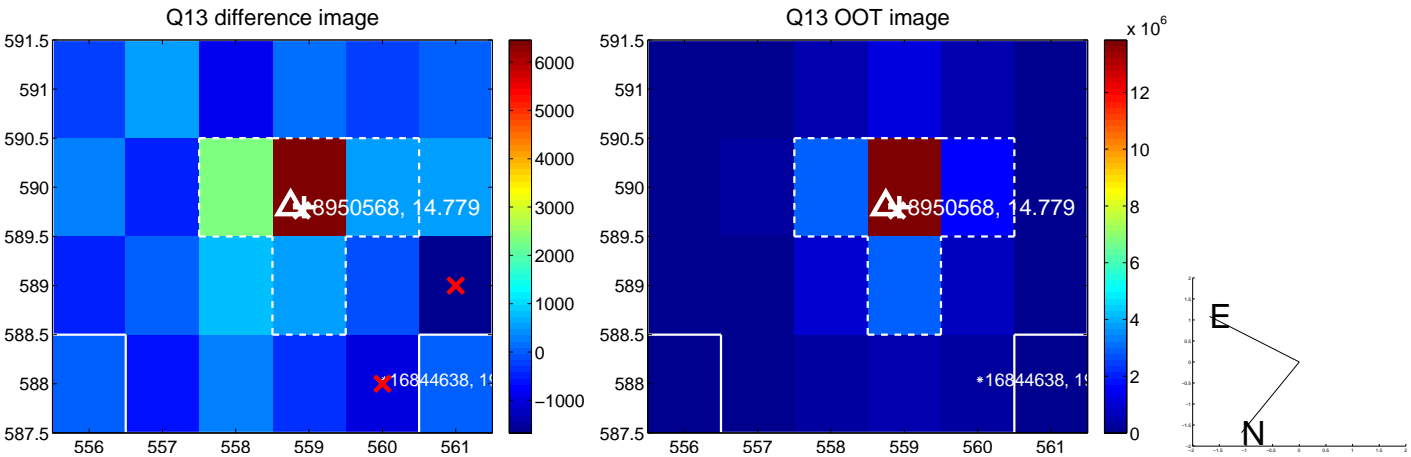
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

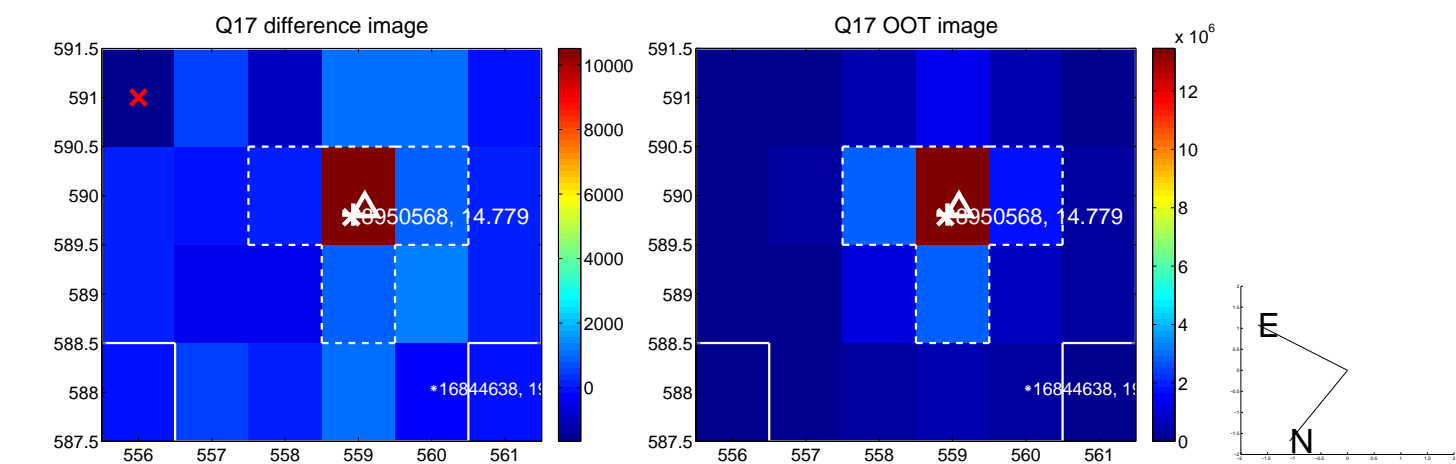


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

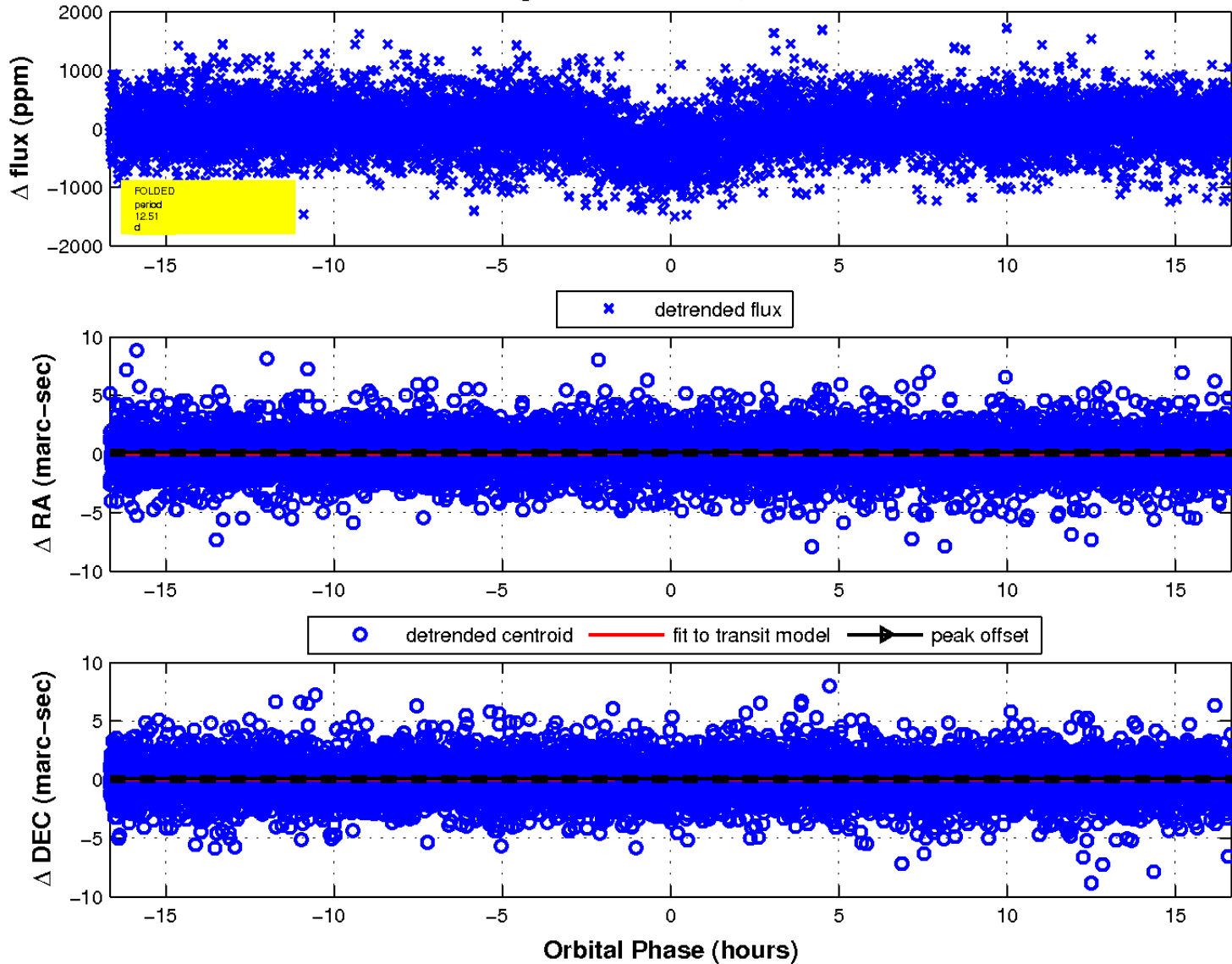




white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

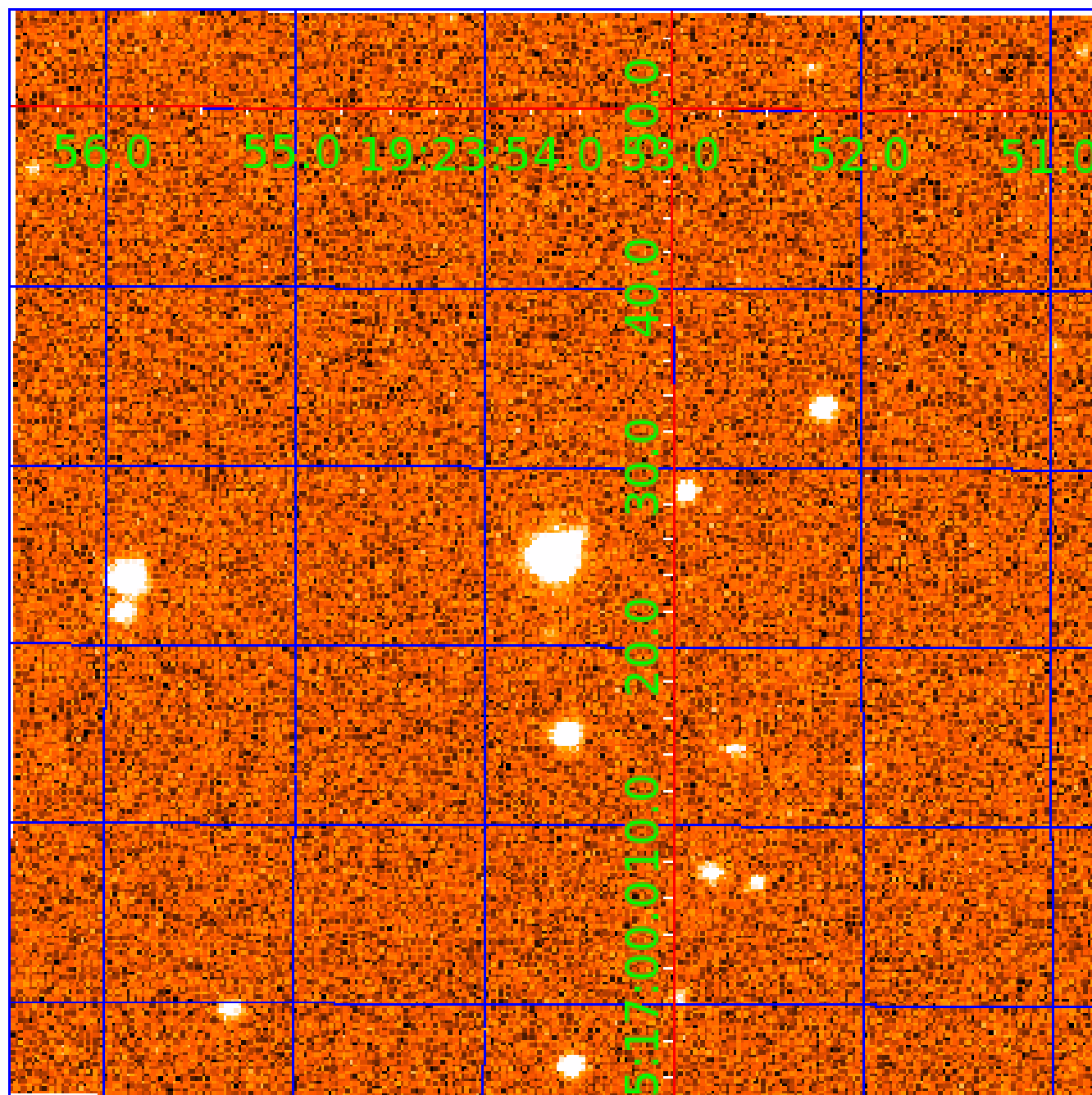


fluxWeightedCentroids, Planet 2 of 5



UKIRT Image

Declination



# KIC 008950568

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008950568-01	OBS	2038.01	8.305420	139.745523	420.9	4.939	21.8	24.0	0.87	5435	3.33	101.52
008950568-02	OBS	2038.02	12.513612	139.420604	417.8	5.559	19.9	21.3	0.87	5435	2.46	58.77
008950568-03	OBS	2038.04	25.214978	152.690045	187.8	5.908	8.7	8.5	0.87	5435	1.32	23.09
008950568-04	OBS	2038.03	17.913233	135.532507	195.3	4.577	8.3	8.9	0.87	5435	1.42	36.43
008950568-05	OBS	No	431.234865	214.846382	401.3	15.935	9.3	4.6	0.87	5435	1.94	0.52

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008950568-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT
008950568-02	OBS	PC	1.00	0	0	0	0	NO_COMMENT
008950568-03	OBS	PC	1.00	0	0	0	0	NO_COMMENT
008950568-04	OBS	PC	0.89	0	0	0	0	NO_COMMENT
008950568-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT— INCONSISTENT_TRANS—CENT_FEW_DIFFS

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

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

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

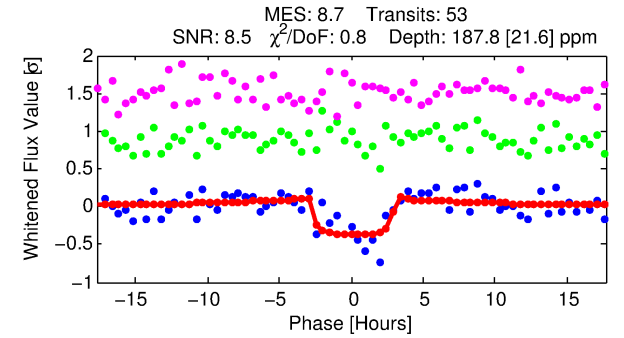
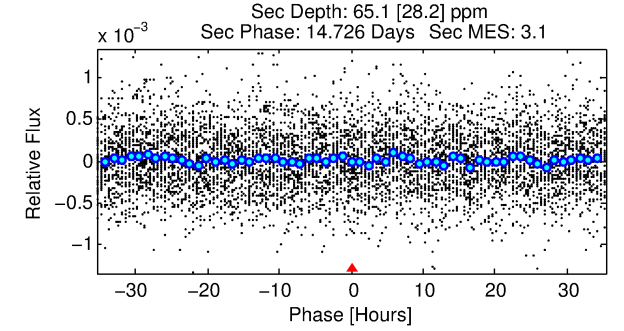
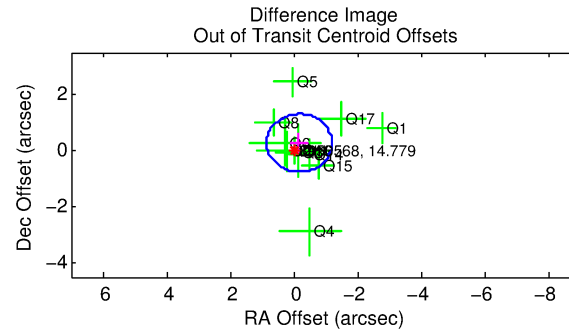
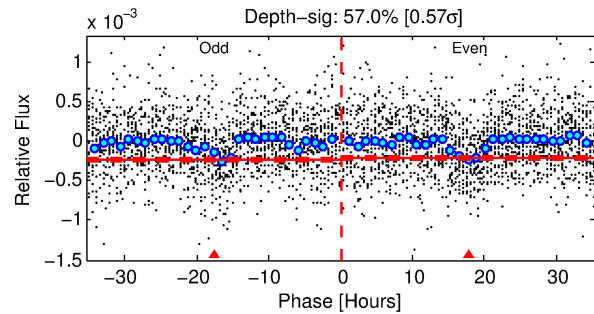
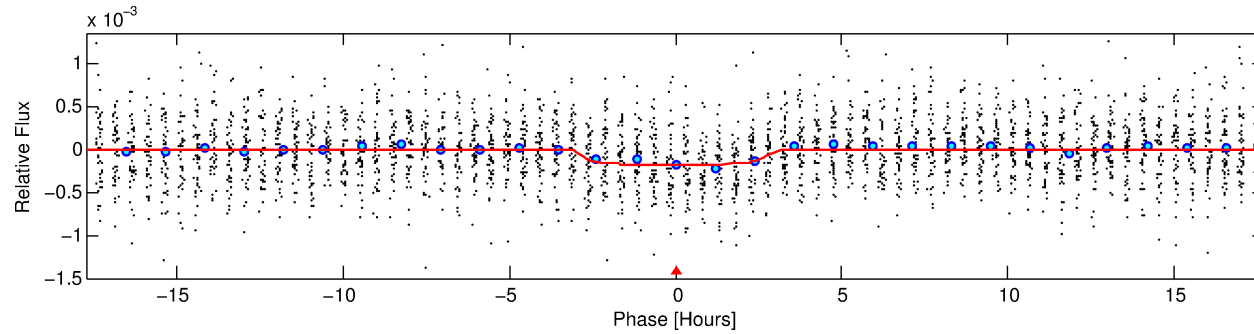
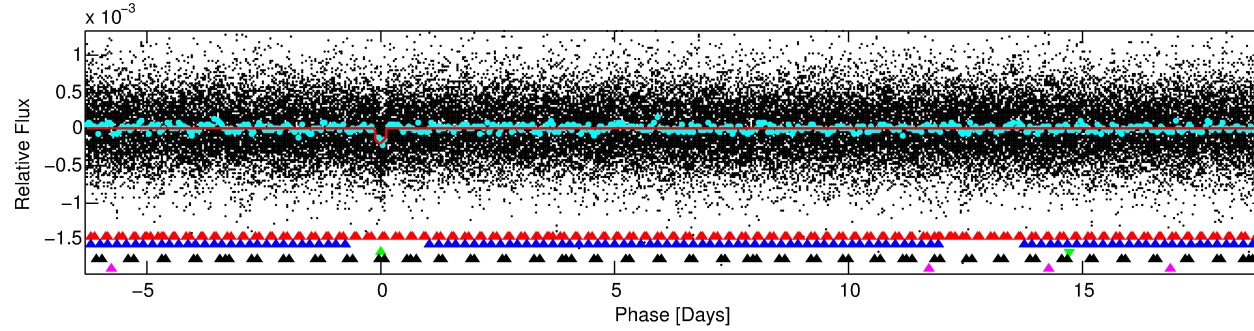
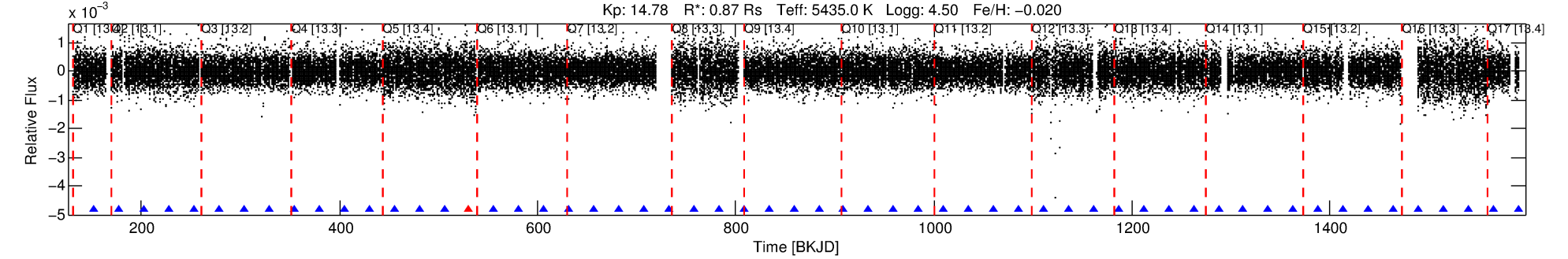
## Ephemeris Match Information For 008950568-03

No Significant Match Found

# DV One-Page Summary

KIC: 8950568 Candidate: 3 of 5 Period: 25.215 d  
KOI: K02038.04 Name: Kepler-85e Corr: 0.874

Kp: 14.78 R\*: 0.87 Rs Teff: 5435.0 K Logg: 4.50 Fe/H: -0.020



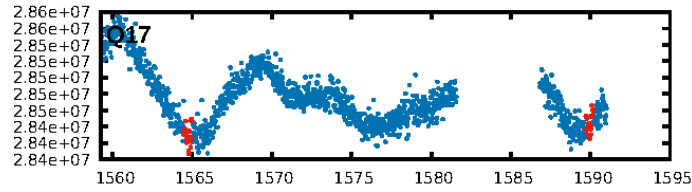
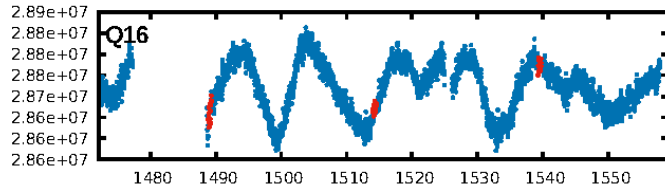
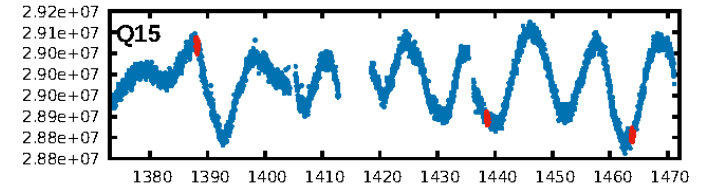
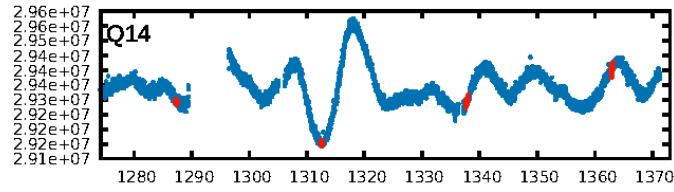
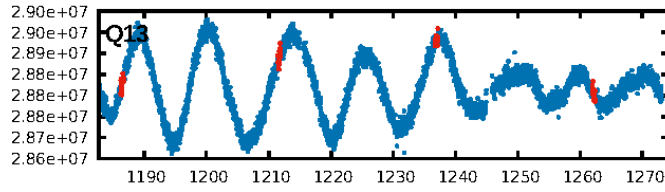
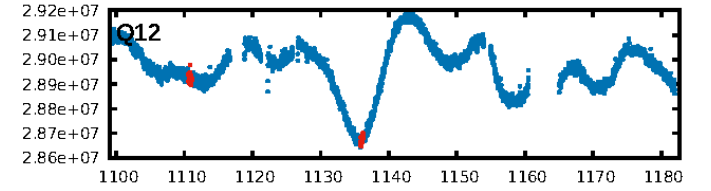
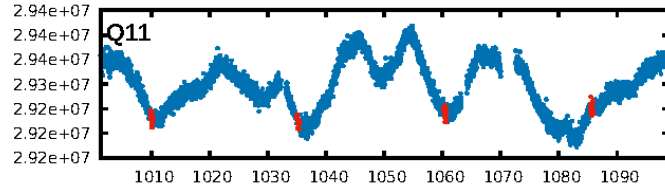
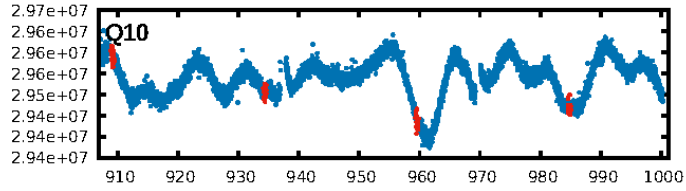
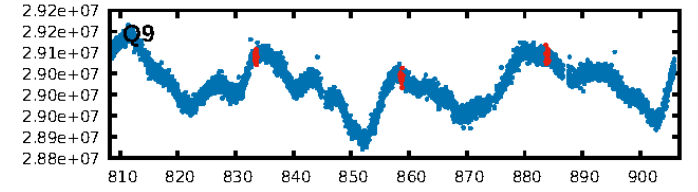
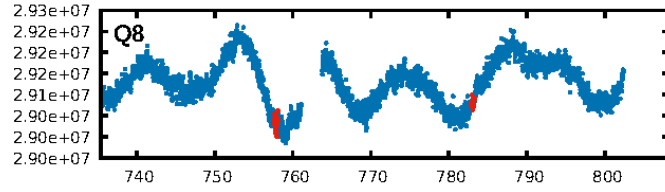
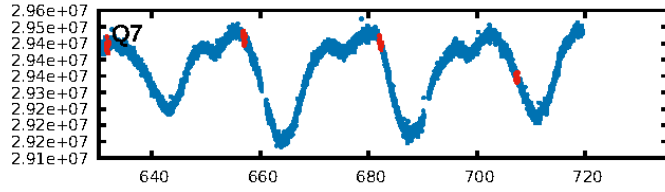
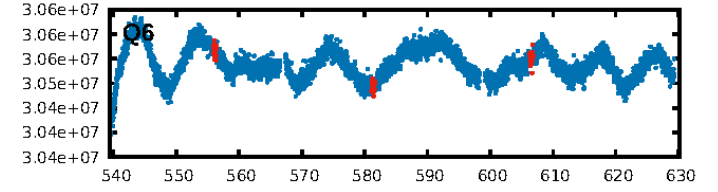
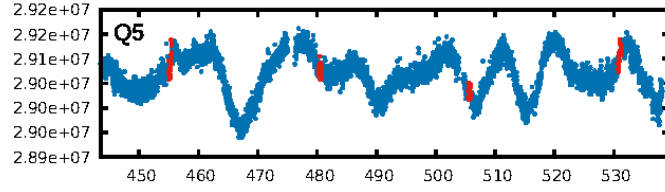
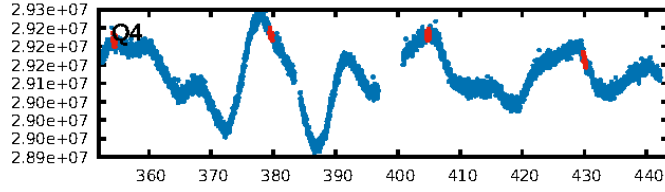
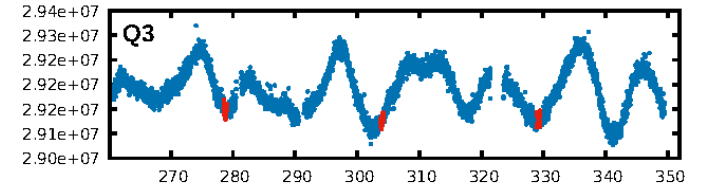
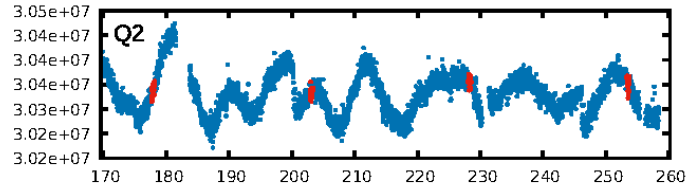
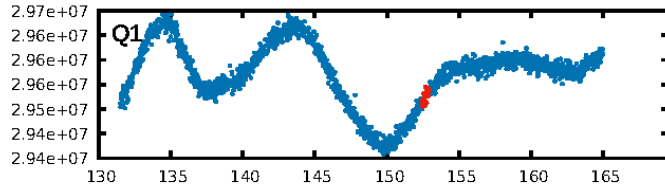
## DV Fit Results:

Period = 25.21498 [0.00031] d  
Epoch = 152.6900 [0.0101] BKJD  
Rp/R\* = 0.0138 [0.0094]  
a/R\* = 21.17 [58.14]  
b = 0.78 [1.41]  
Seff = 23.09 [3.66]  
Teff = 559 [22] K  
Rp = 1.32 [0.90] Re  
a = 0.1606 [0.0146] AU  
Ag = 531.98 [758.94] [0.70σ]  
Teffp = 4151 [1476] K [2.43σ]

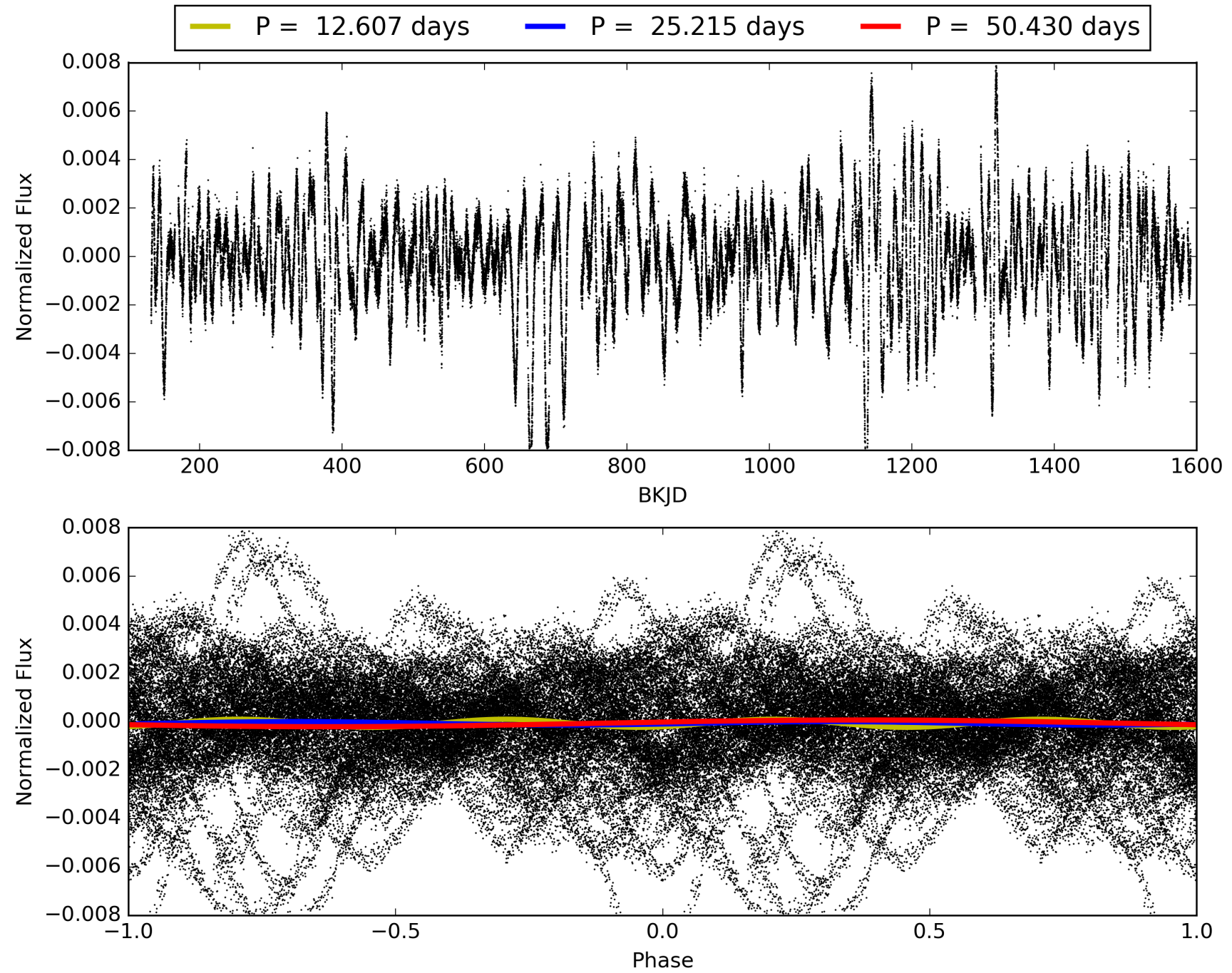
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [23.45σ]  
LongPeriod-sig: 100.0% [573.36σ]  
ModelChiSquare2-sig: 99.0%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 2.30e-16  
RollingBand-fgt: 0.98 [49/50]  
GhostDiagnostic-chr: 1.179  
Centroid-sig: 16.1%  
Centroid-so: 1.000 arcsec [0.91σ]  
OotOffset-rm: 0.321 arcsec [0.93σ]  
KicOffset-rm: 0.225 arcsec [0.69σ]  
OotOffset-st: 3/3/3/3 [12]  
KicOffset-st: 3/3/3/3 [12]  
DiffImageQuality-fgm: 0.67 [8/12]  
DiffImageOverlap-fno: 1.00 [17/17]

# TCE 008950568-03, PDC Light Curves



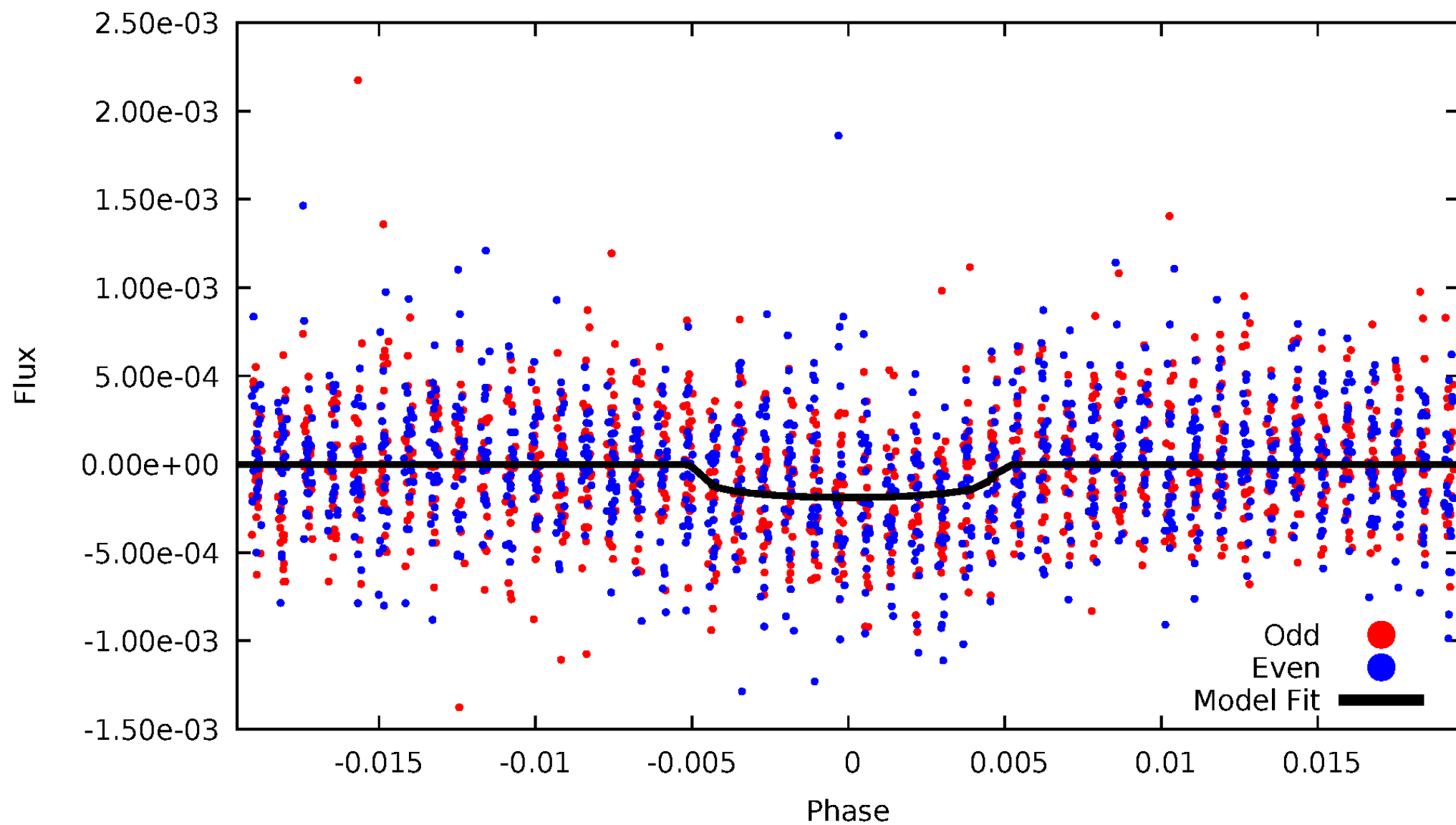
TCE 008950568-03





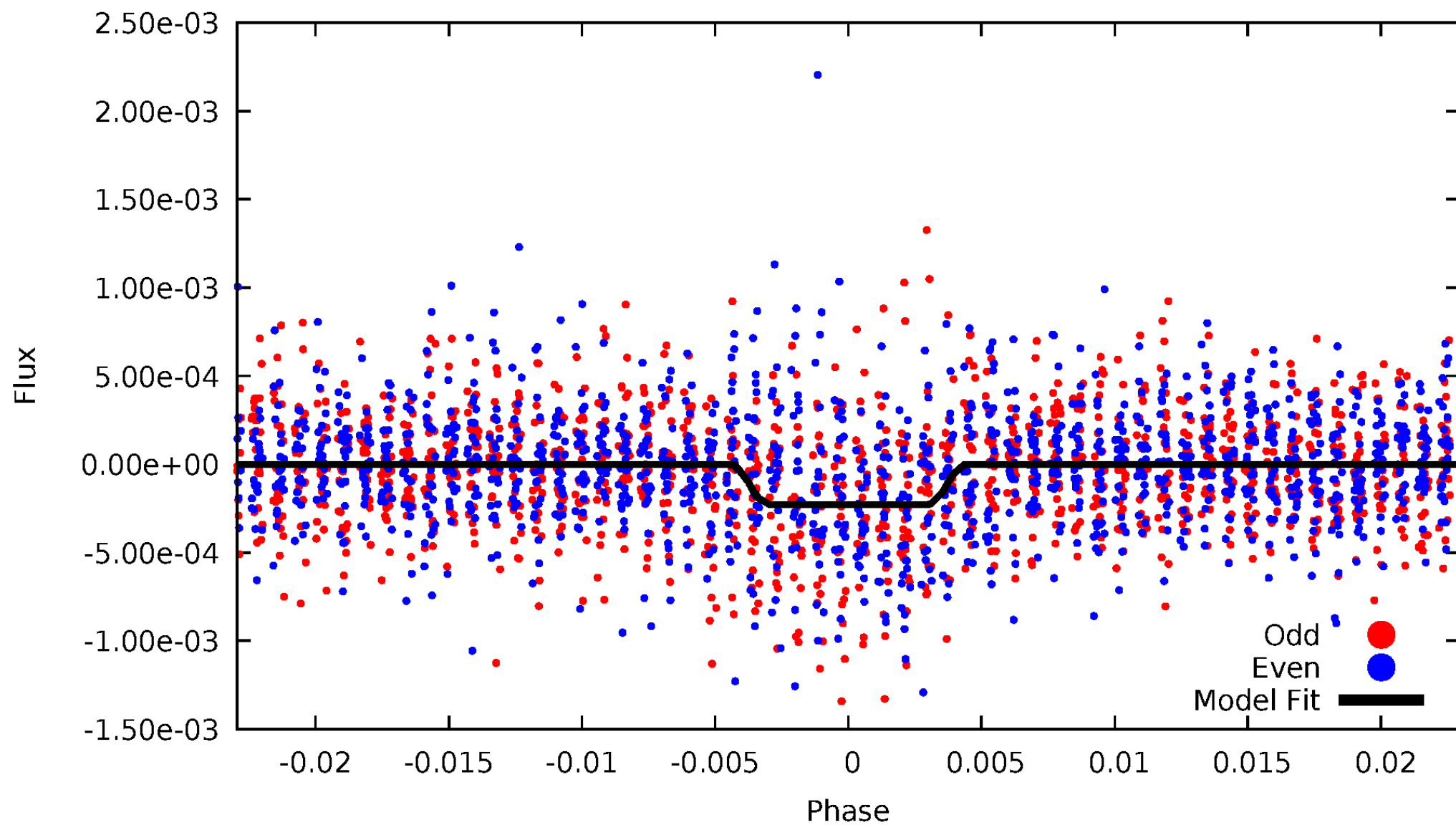
DV Odd/Even

TCE 008950568-03

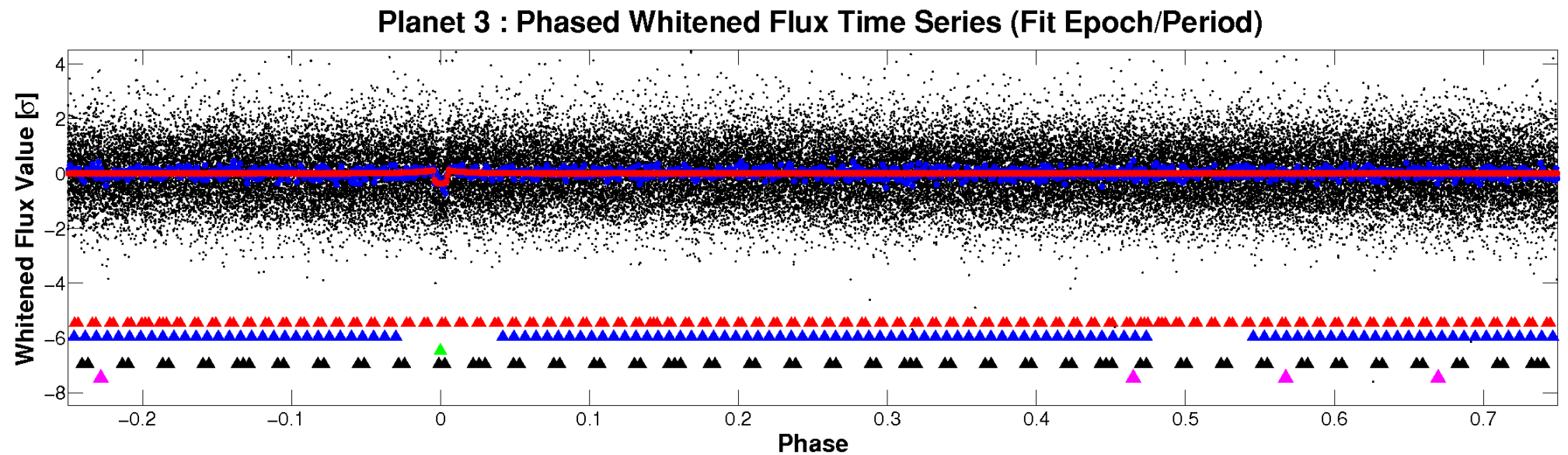
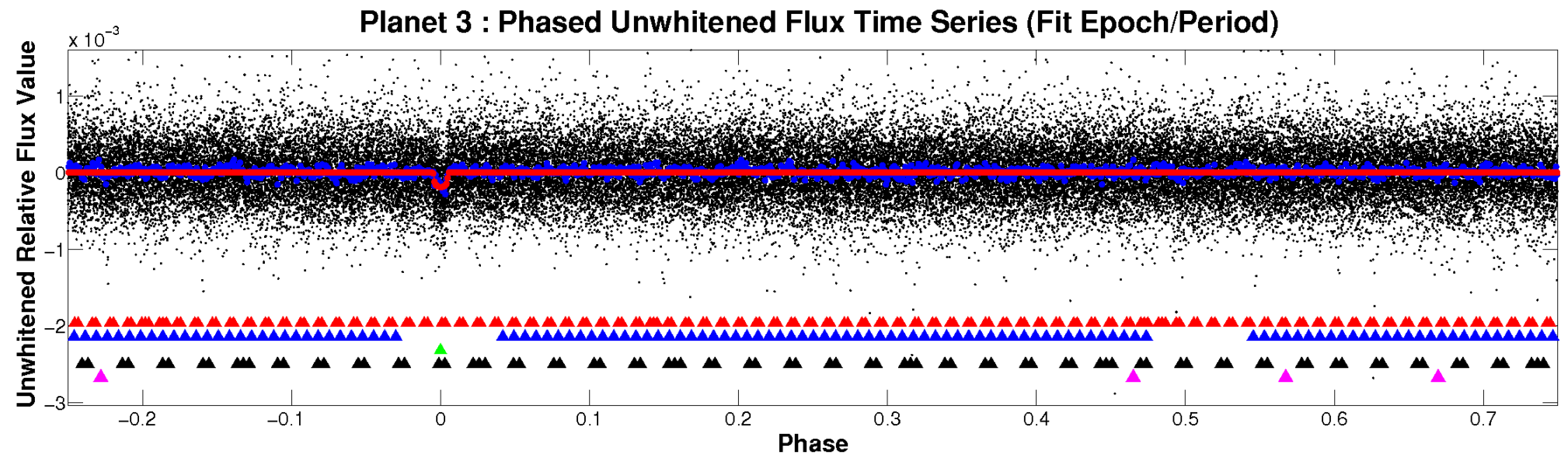


# ALT Odd/Even

TCE 008950568-03

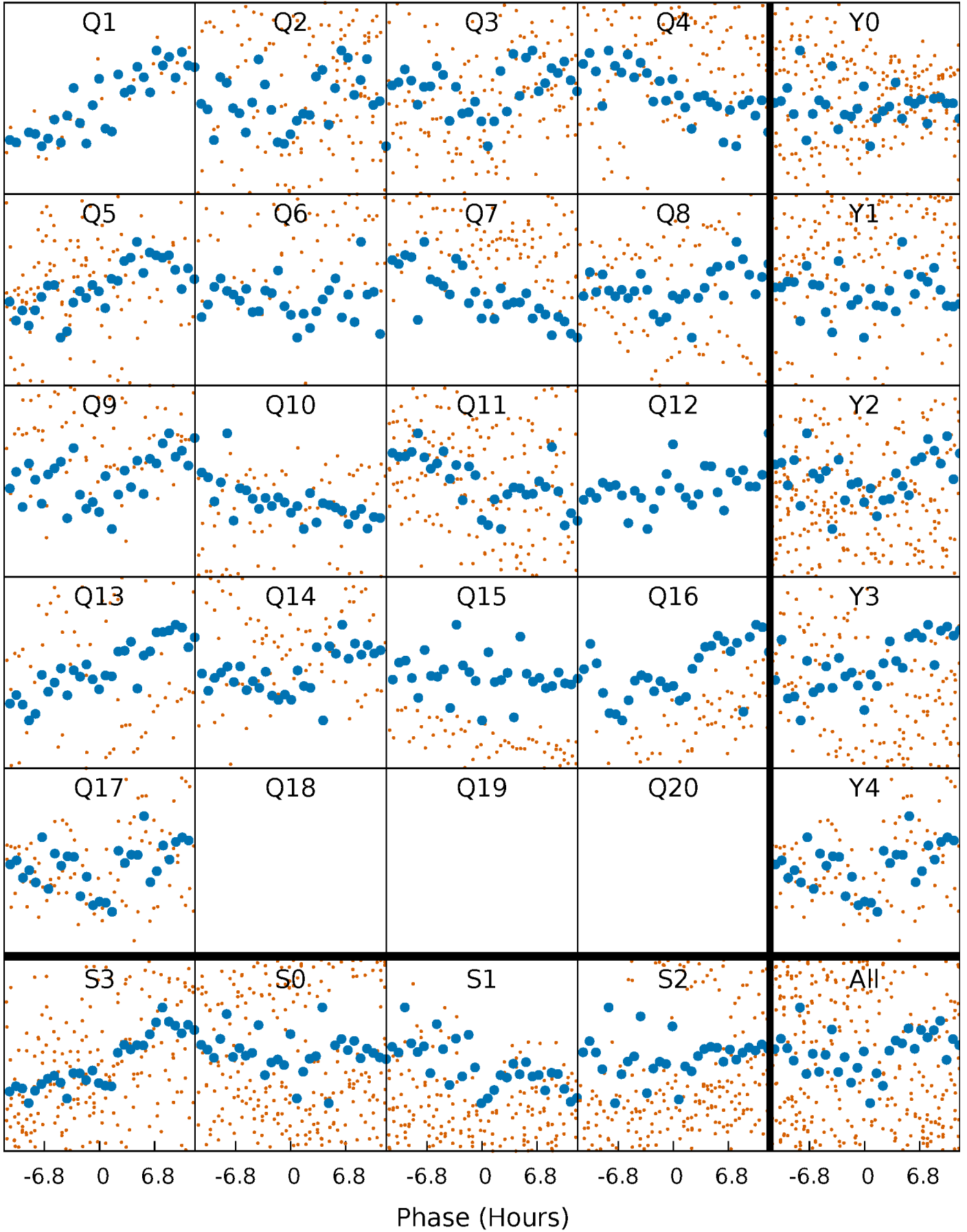


# Non-Whitened Vs. Whitened Light Curve



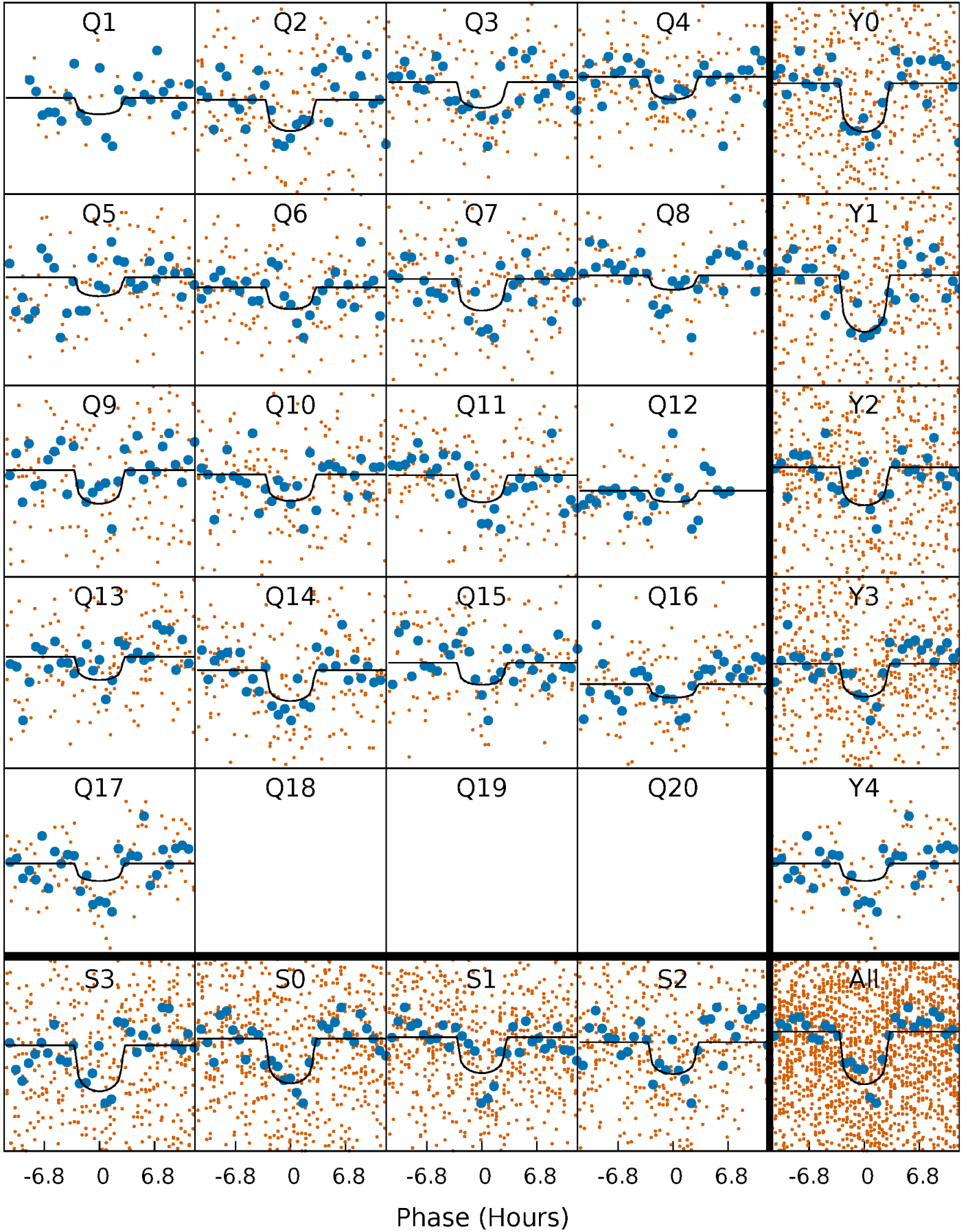
# PDC Quarter-Phased Transit Curves

TCE 008950568-03 P= 25.214978 Days  $T_0=152.690045$  (BKJD)



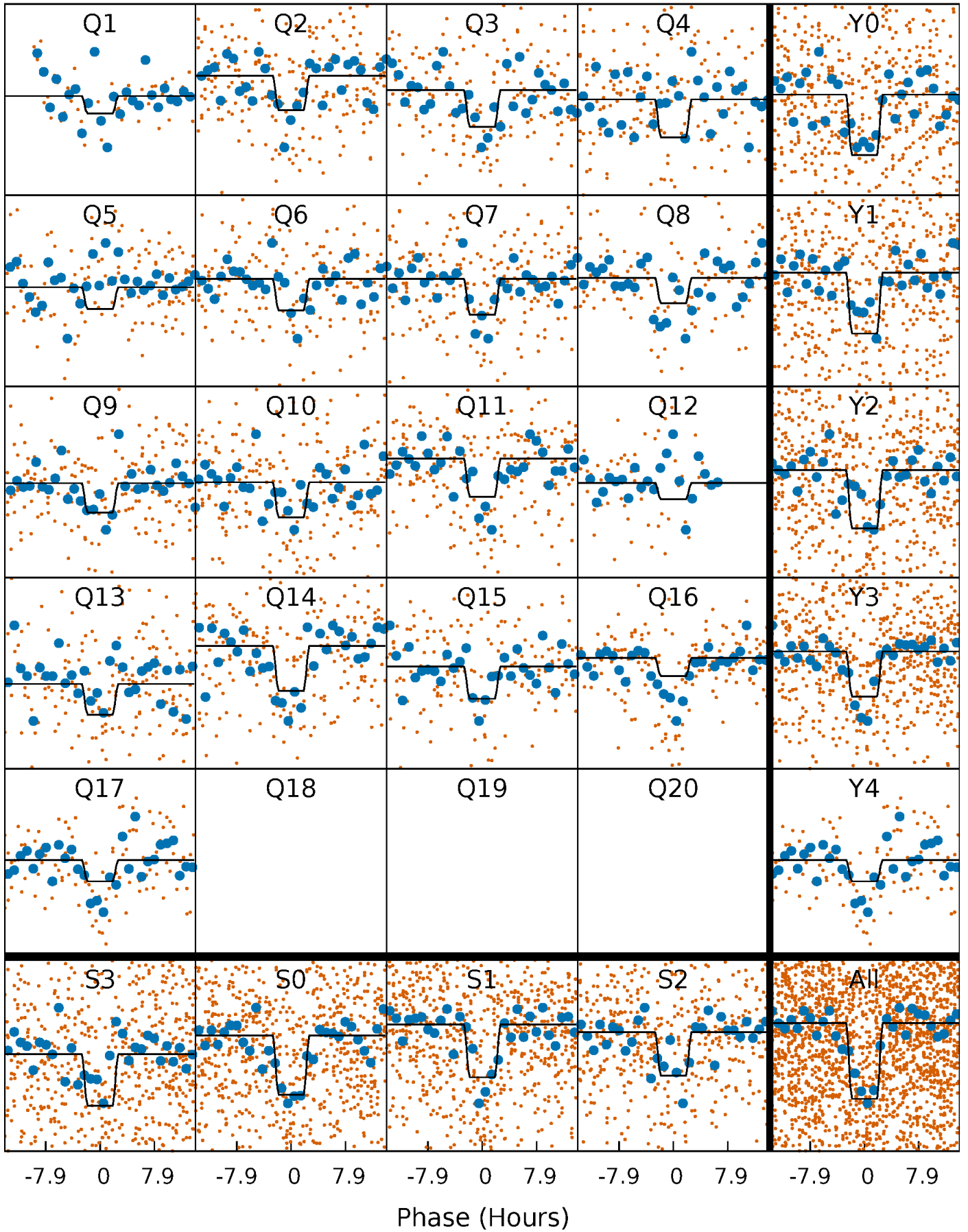
# DV Quarter-Phased Transit Curves

TCE 008950568-03   P= 25.214978 Days    $T_0=152.690045$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 008950568-03 P= 25.214910 Days  $T_0=152.713537$  (BKJD)

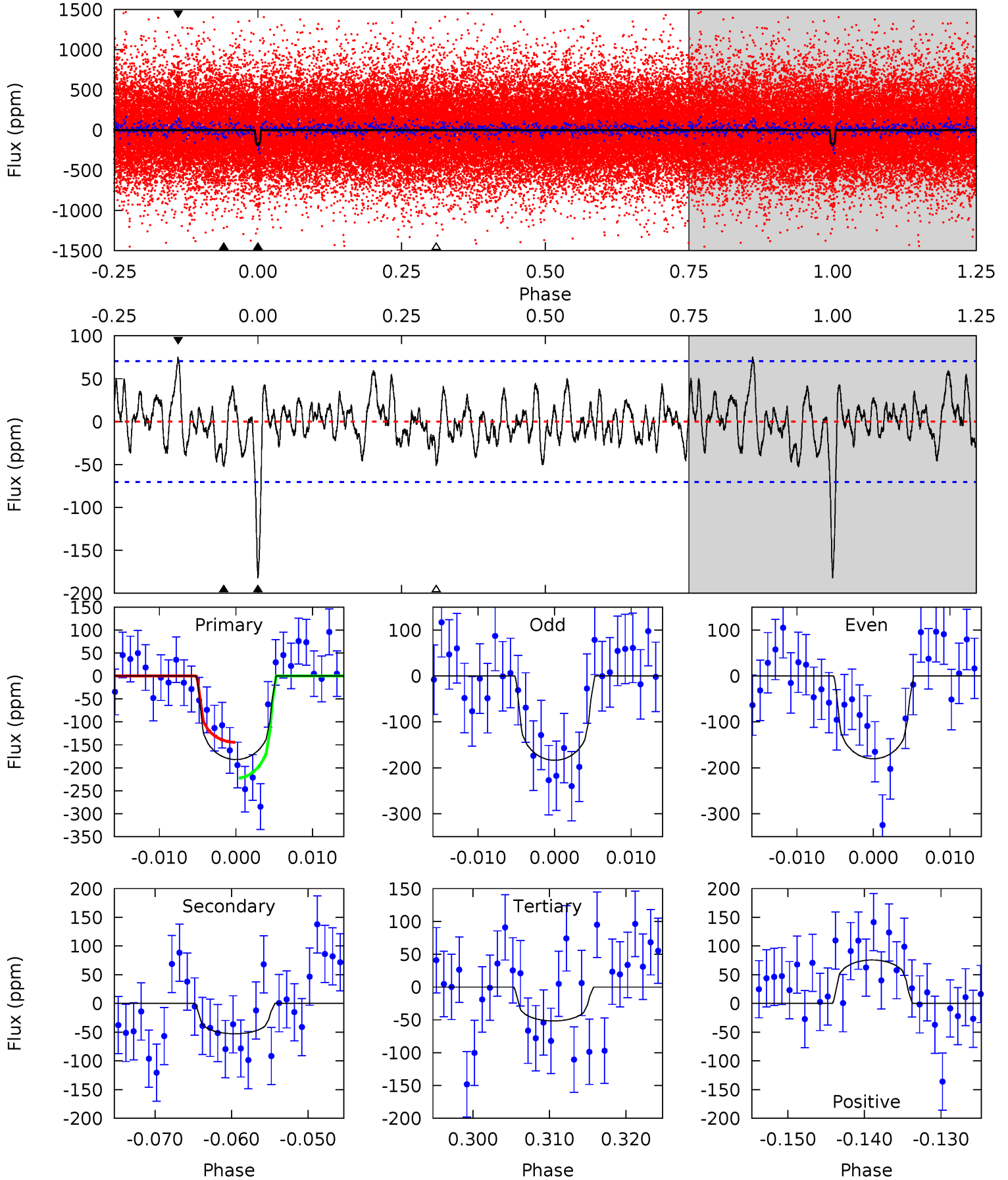




# DV Model-Shift Uniqueness Test

008950568-03,  $P = 25.214978$  Days,  $E = 127.475067$  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
13.0	3.77	3.69	5.40	5.03	2.58	1.50	9.30	7.58	0.08	-1.64	0.12	0.96	0.29	2.79

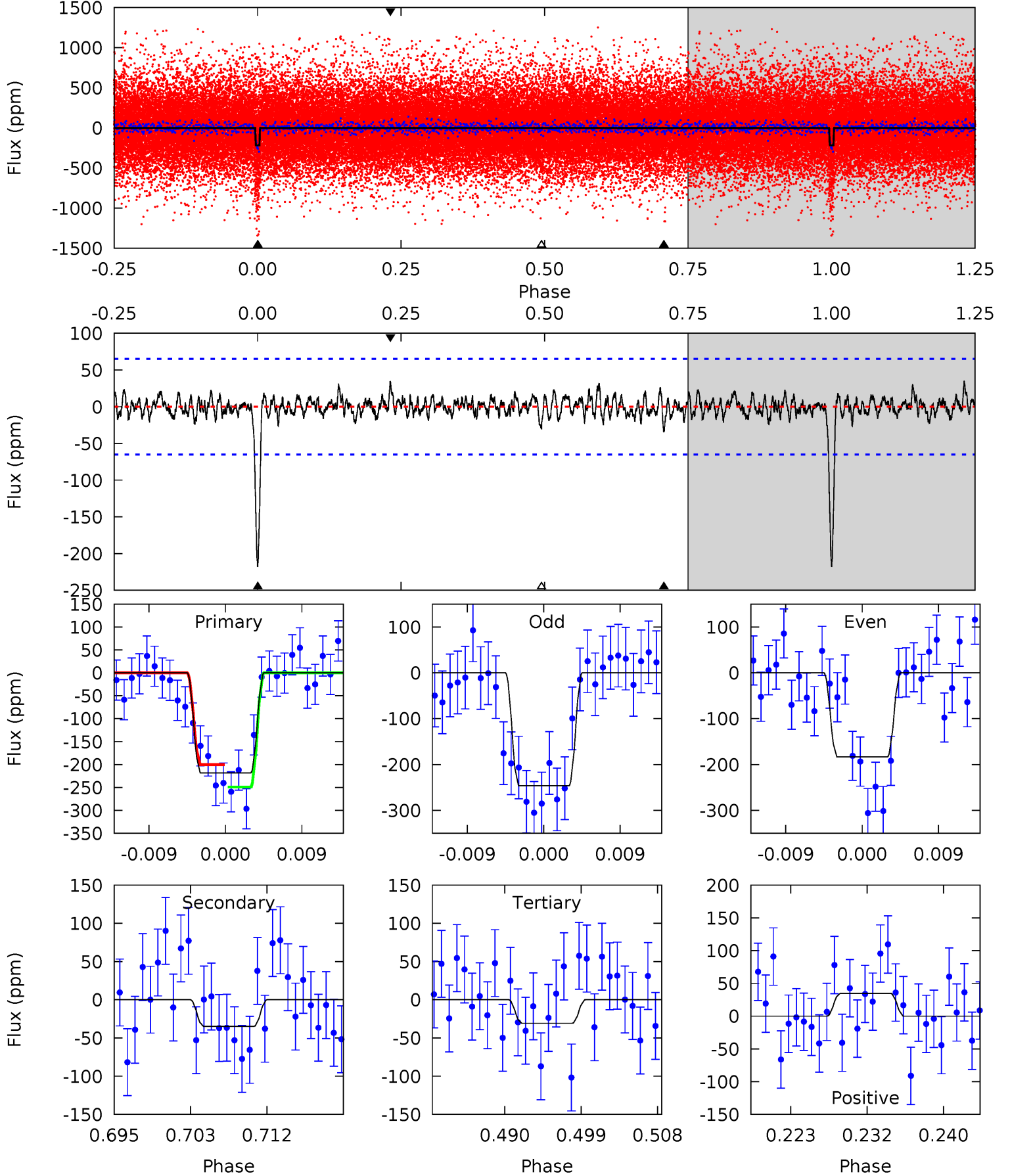




# Alt Model-Shift Uniqueness Test

008950568-03, P = 25.214910 Days, E = 127.498627 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
16.9	2.69	2.38	2.69	5.05	2.62	0.76	14.5	14.2	0.31	0.00	2.43	1.02	0.14	1.89



### Stellar Parameters For KIC 008950568

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5435^{+109}_{-109}$	$4.495^{+0.063}_{-0.077}$	$-0.020^{+0.150}_{-0.150}$	$0.873^{+0.090}_{-0.068}$	$0.870^{+0.055}_{-0.049}$	$1.840^{+0.446}_{-0.428}$
	+2%/-2%	+1%/-2%	+750%/-750%	+10%/-8%	+6%/-6%	+24%/-23%
Source	SPE58	SPE58	SPE58	DSEP		

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

### Secondary Eclipse Parameters for KIC 008950568-03 / KOI 2038.04

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-53 \pm 14$	$1.39^{+0.93}_{-0.81}$	$783^{+28}_{-24}$	$4122^{+1777}_{-707}$	$391^{+1713}_{-260}$
Alt.	$-35 \pm 13$	$1.49^{+0.84}_{-0.76}$	$781^{+27}_{-26}$	$3745^{+1061}_{-576}$	$226^{+679}_{-149}$

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

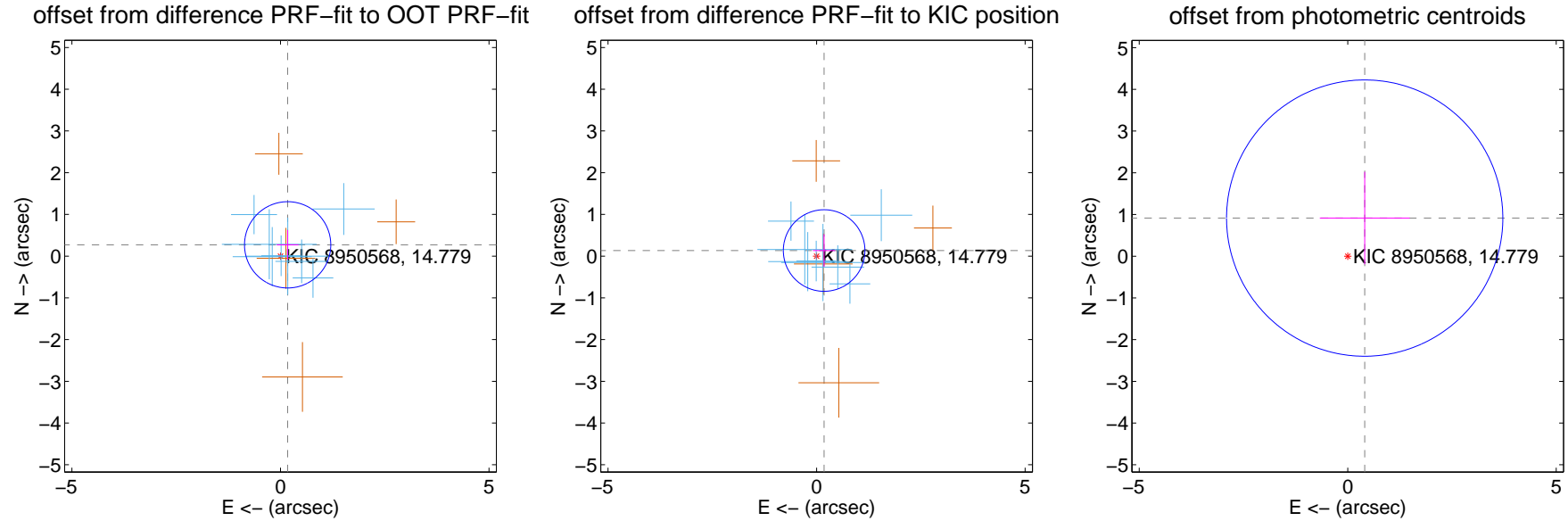
## DV Centroid Data

Supplemental centroid analysis for 008950568-03. Kepler magnitude: 14.78. Transit SNR 8.47

There are 8 quarters with good PRF difference image offsets

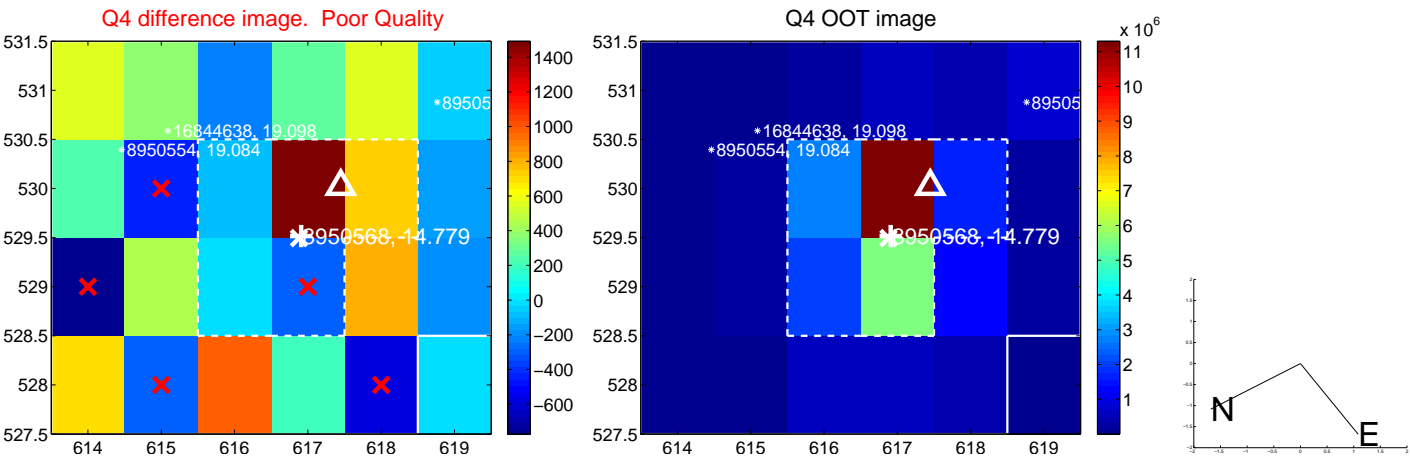
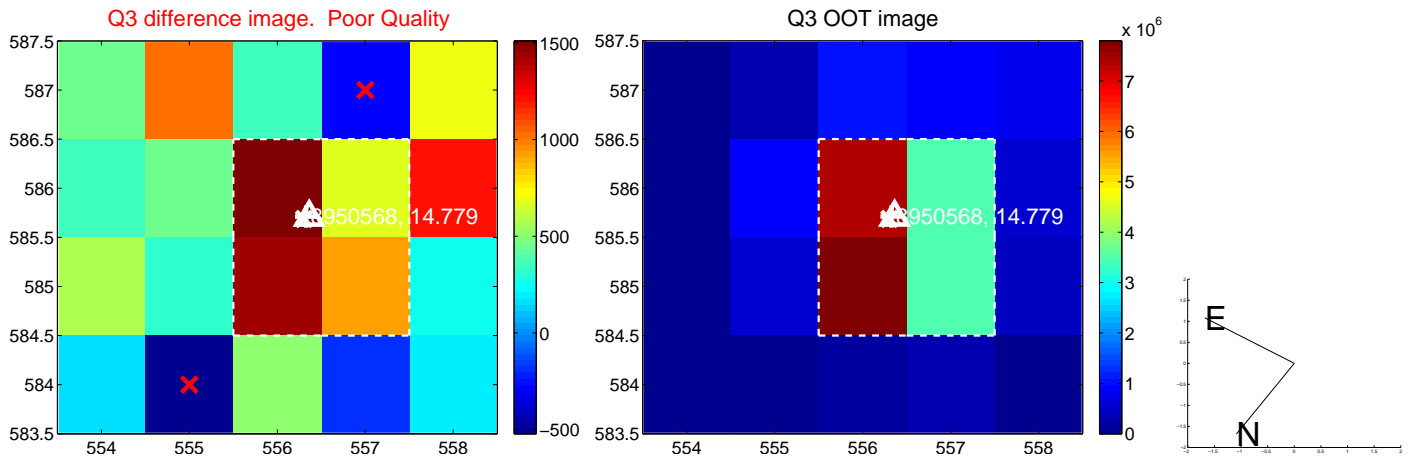
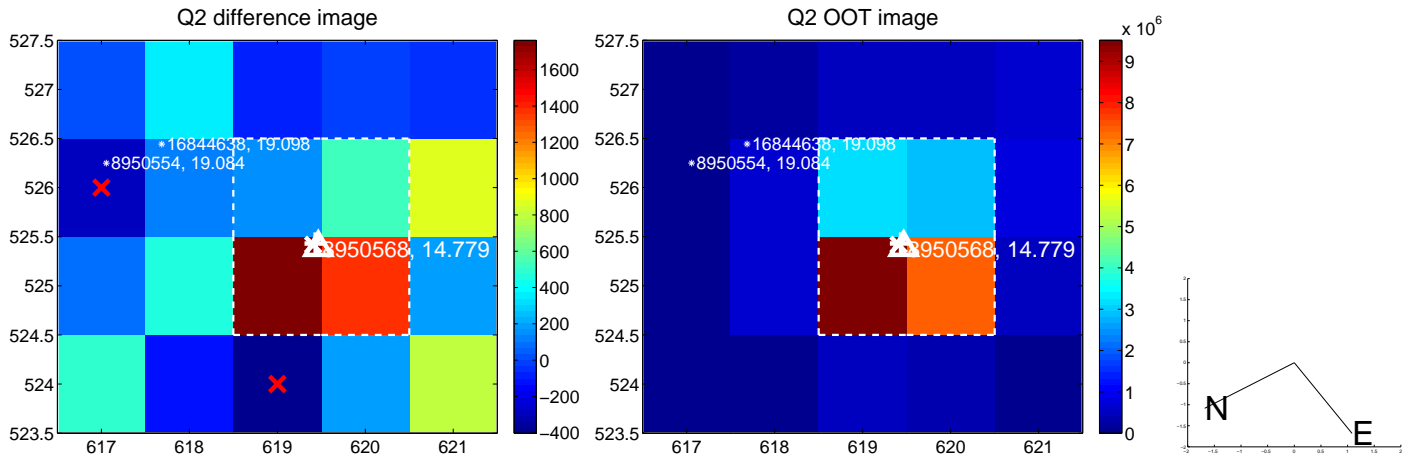
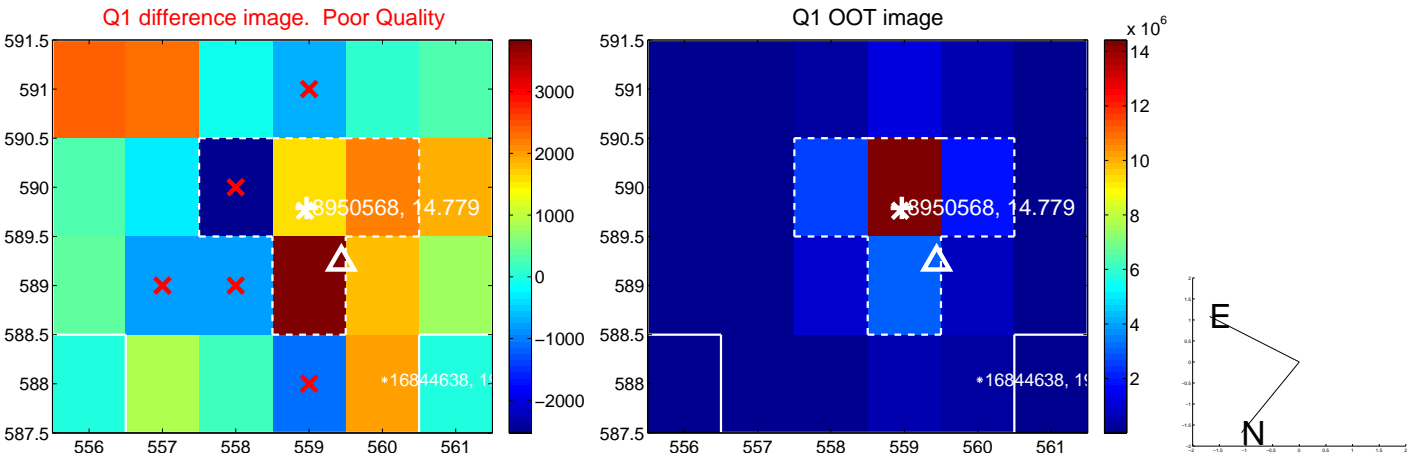
The direct PRF centroid is offset from the target star catalog position by about 0.15 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.321 \pm 0.345$	0.93	$-0.172 \pm 0.261$	$0.271 \pm 0.352$
PRF-fit source offset from KIC position	$0.225 \pm 0.326$	0.69	$-0.181 \pm 0.267$	$0.134 \pm 0.388$
photometric centroid source offset	$1.00 \pm 1.10$	0.91	$-0.41 \pm 1.08$	$0.91 \pm 1.11$

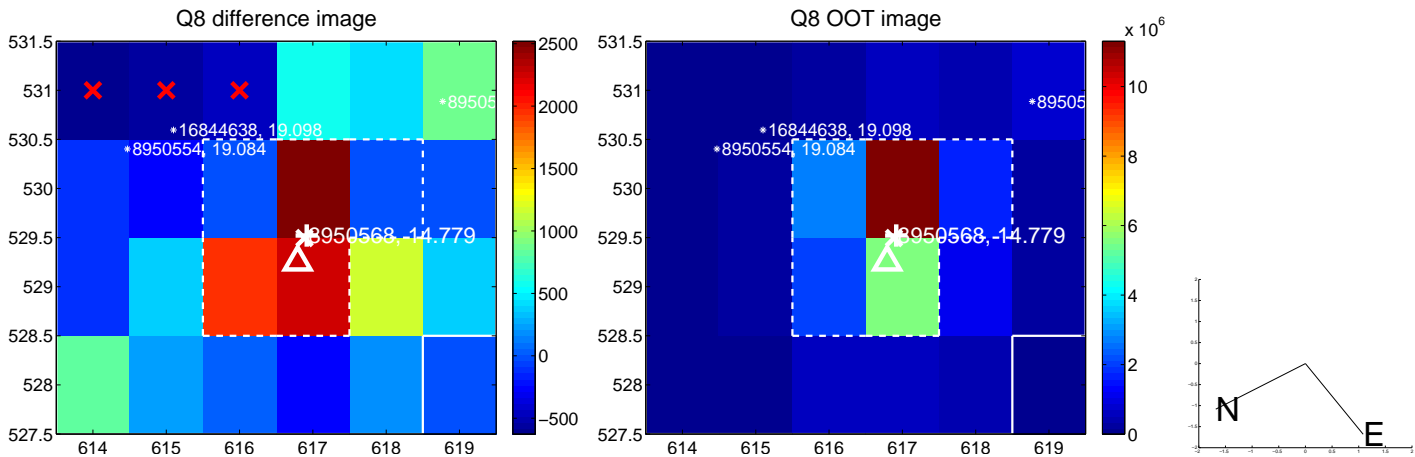
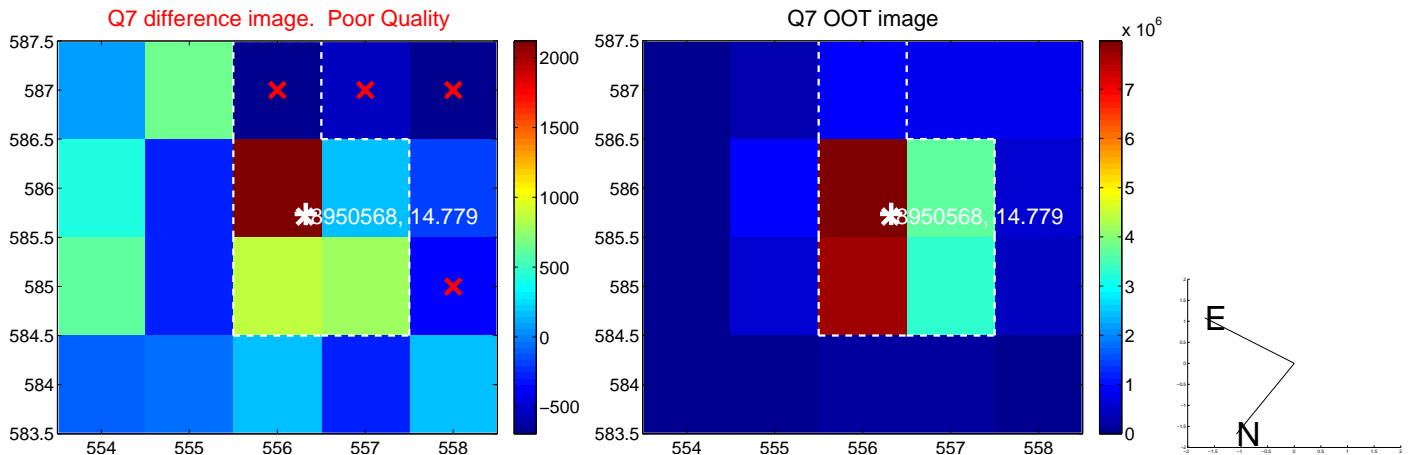
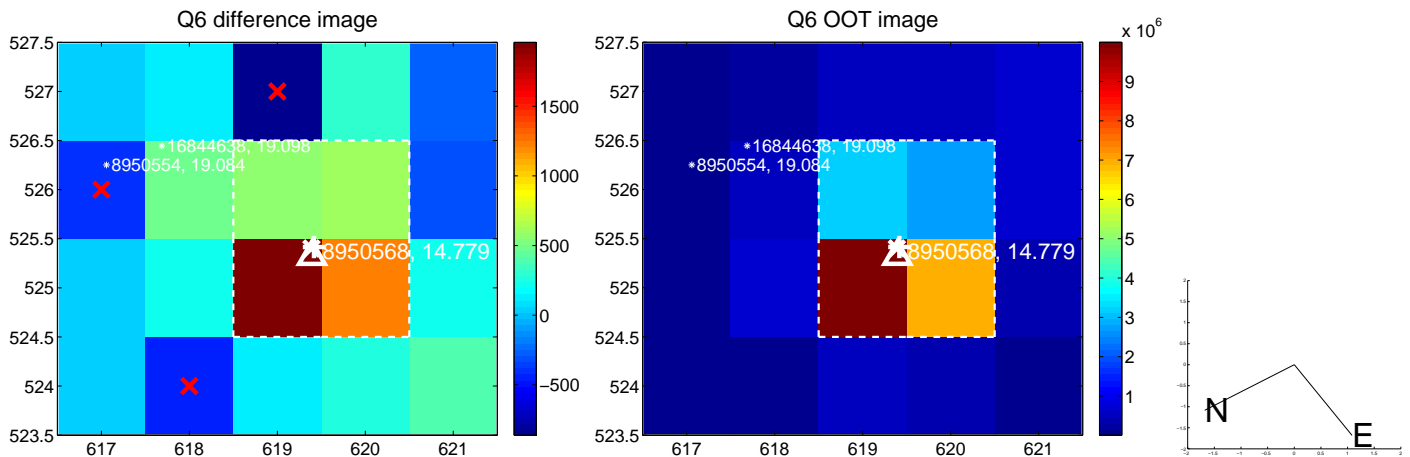
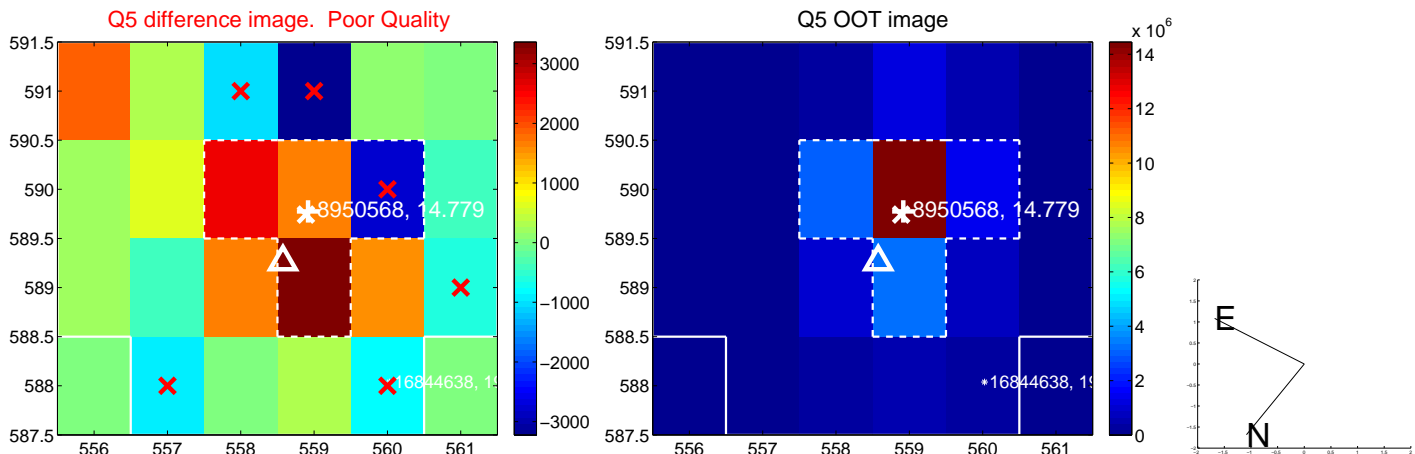


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

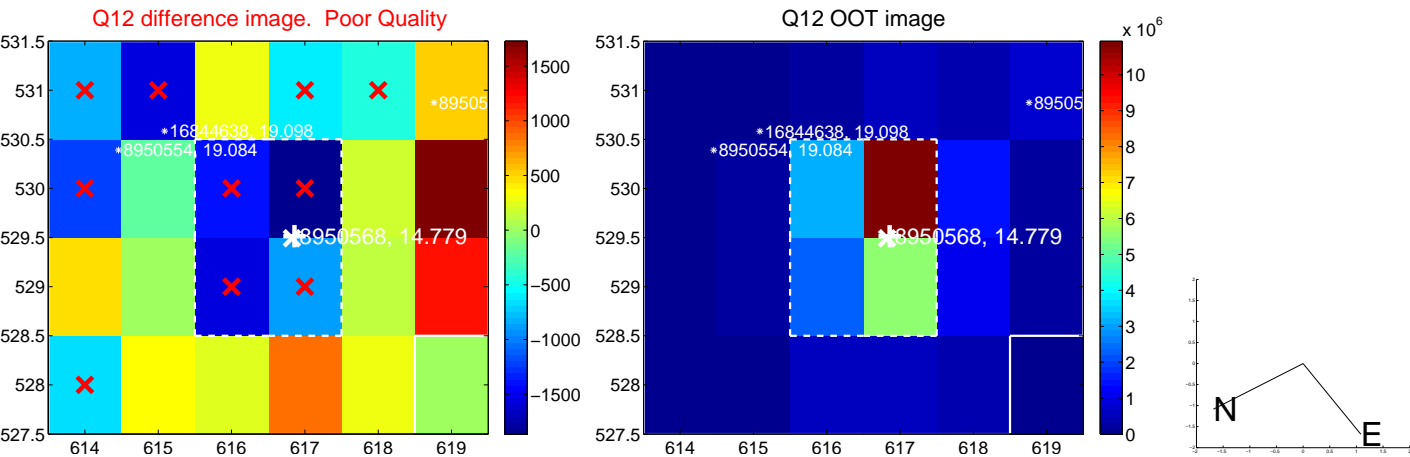
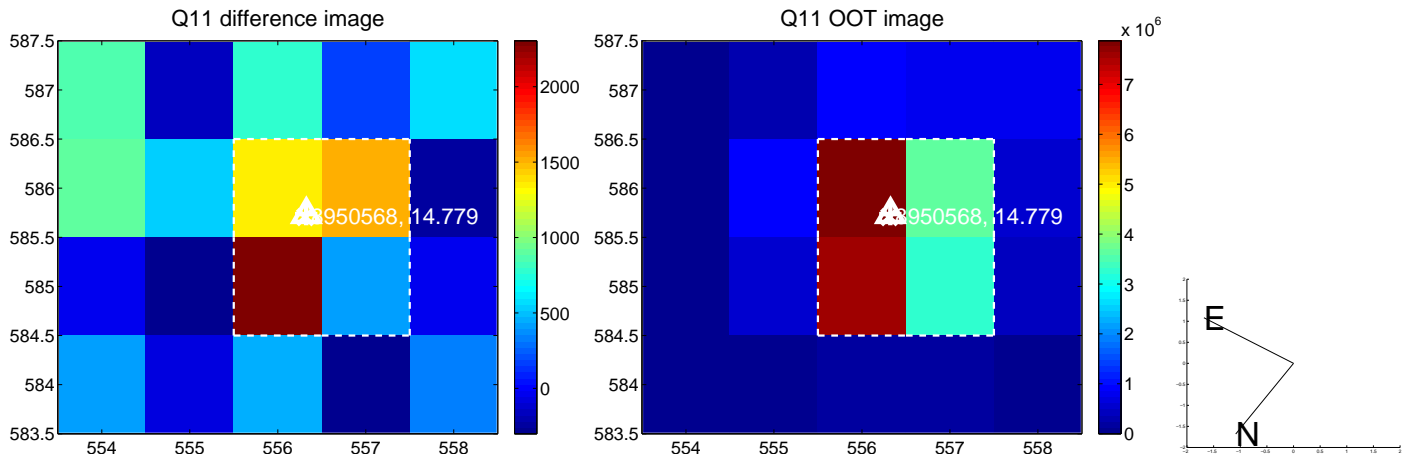
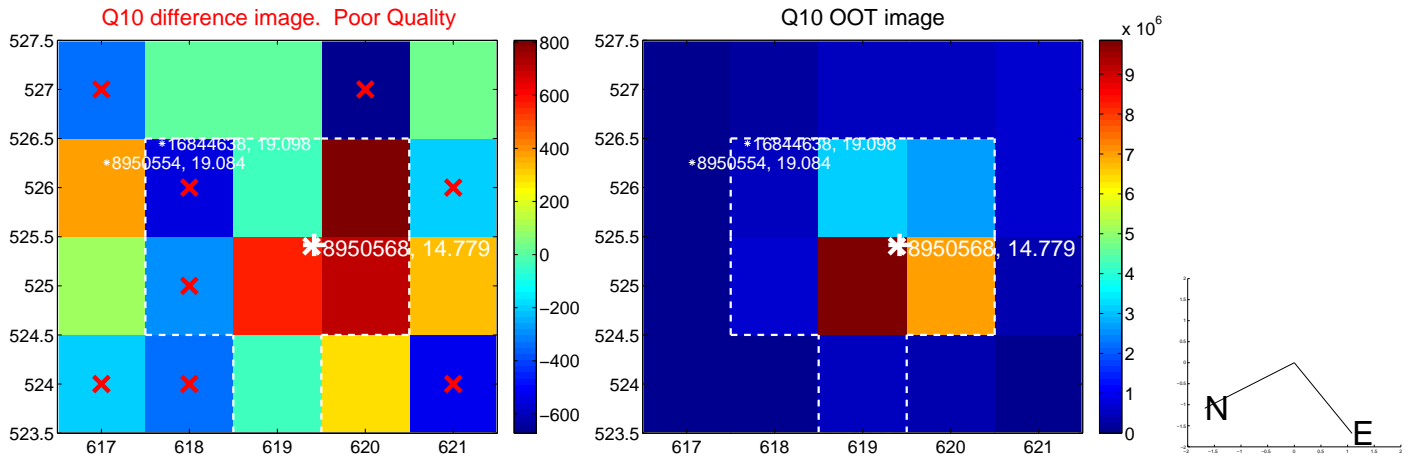
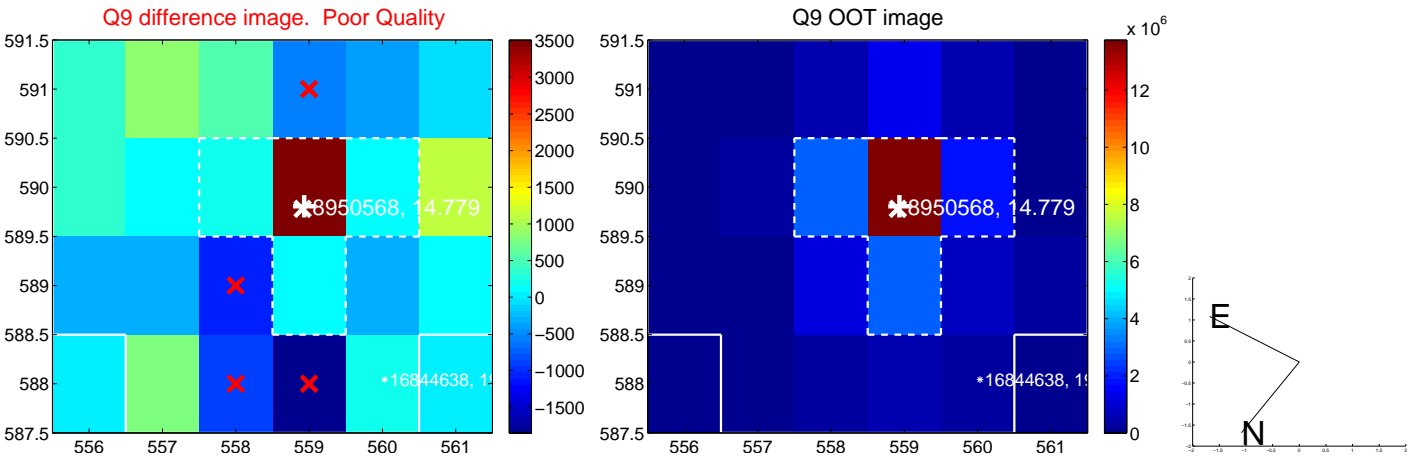
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



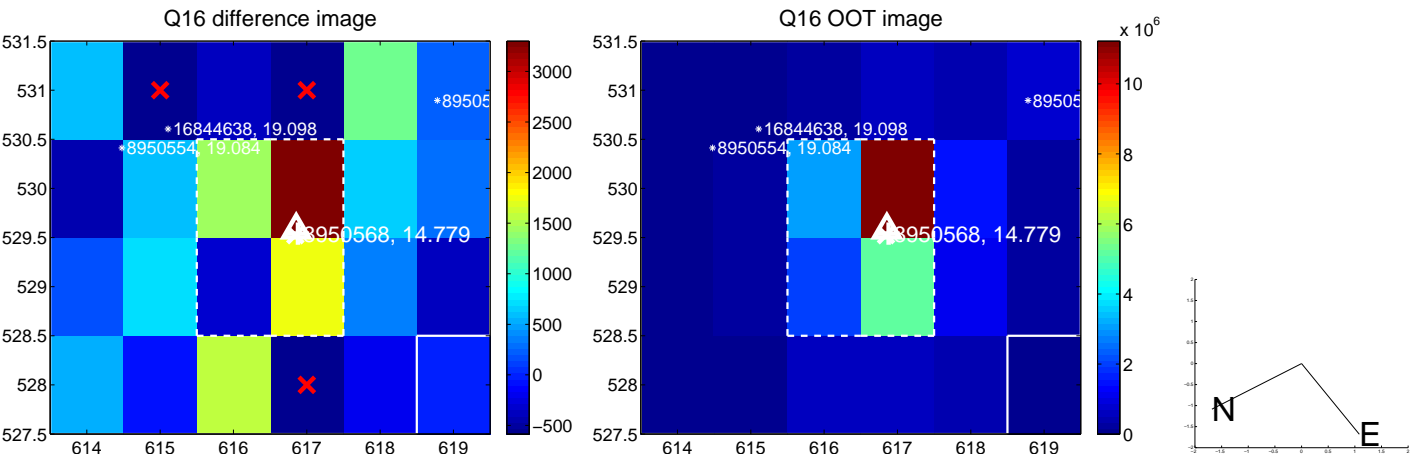
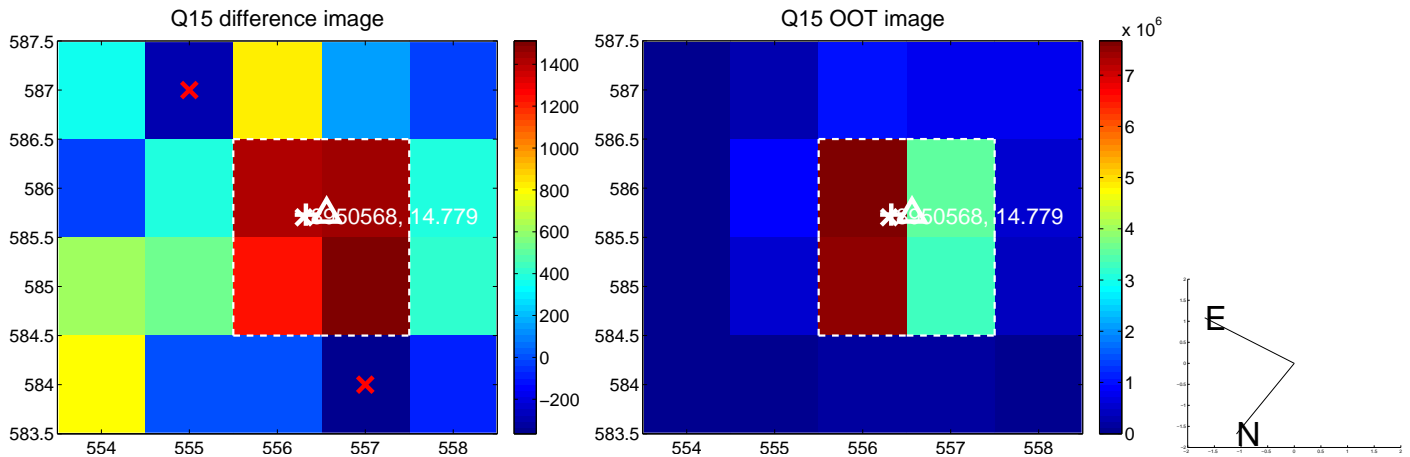
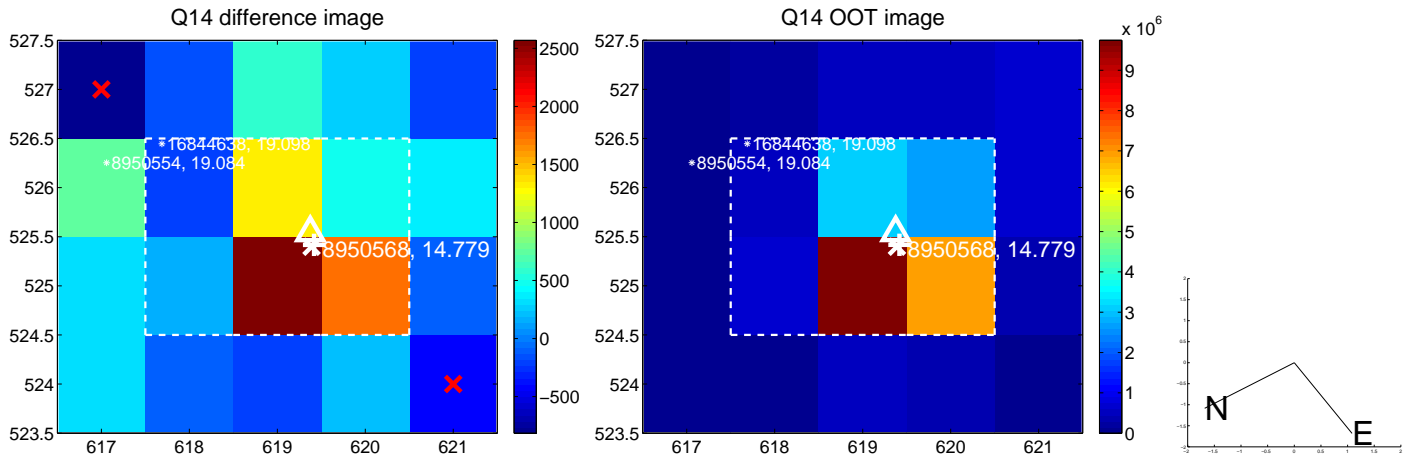
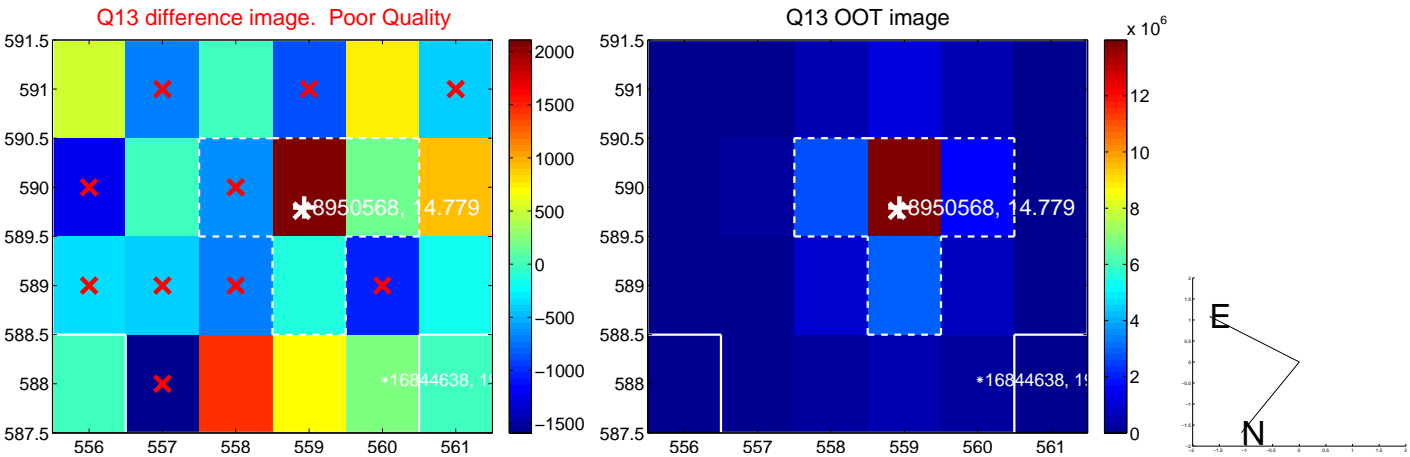
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

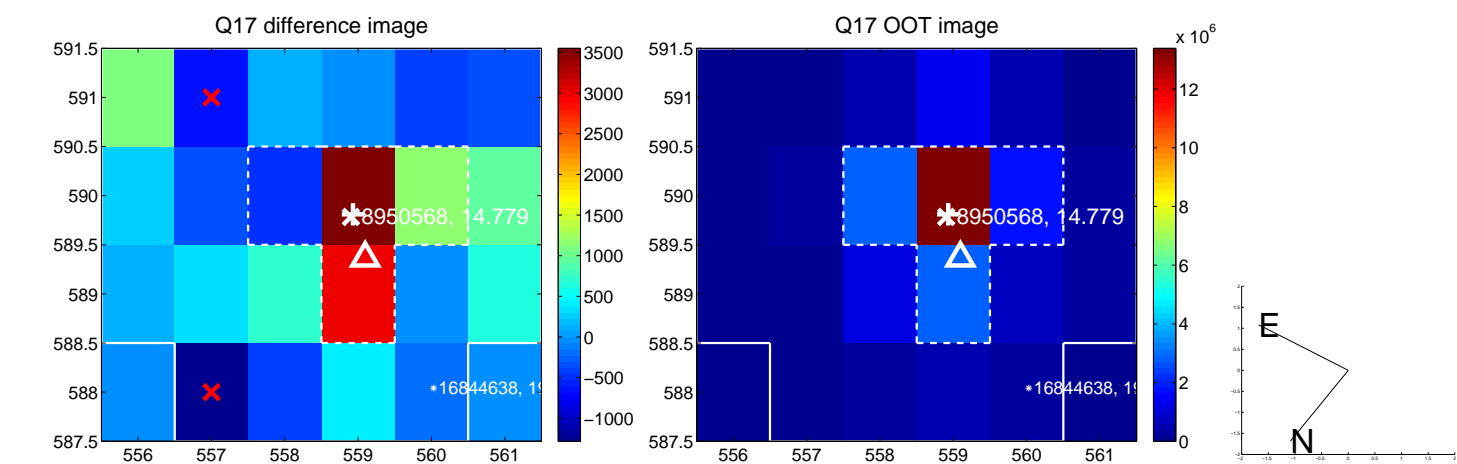


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

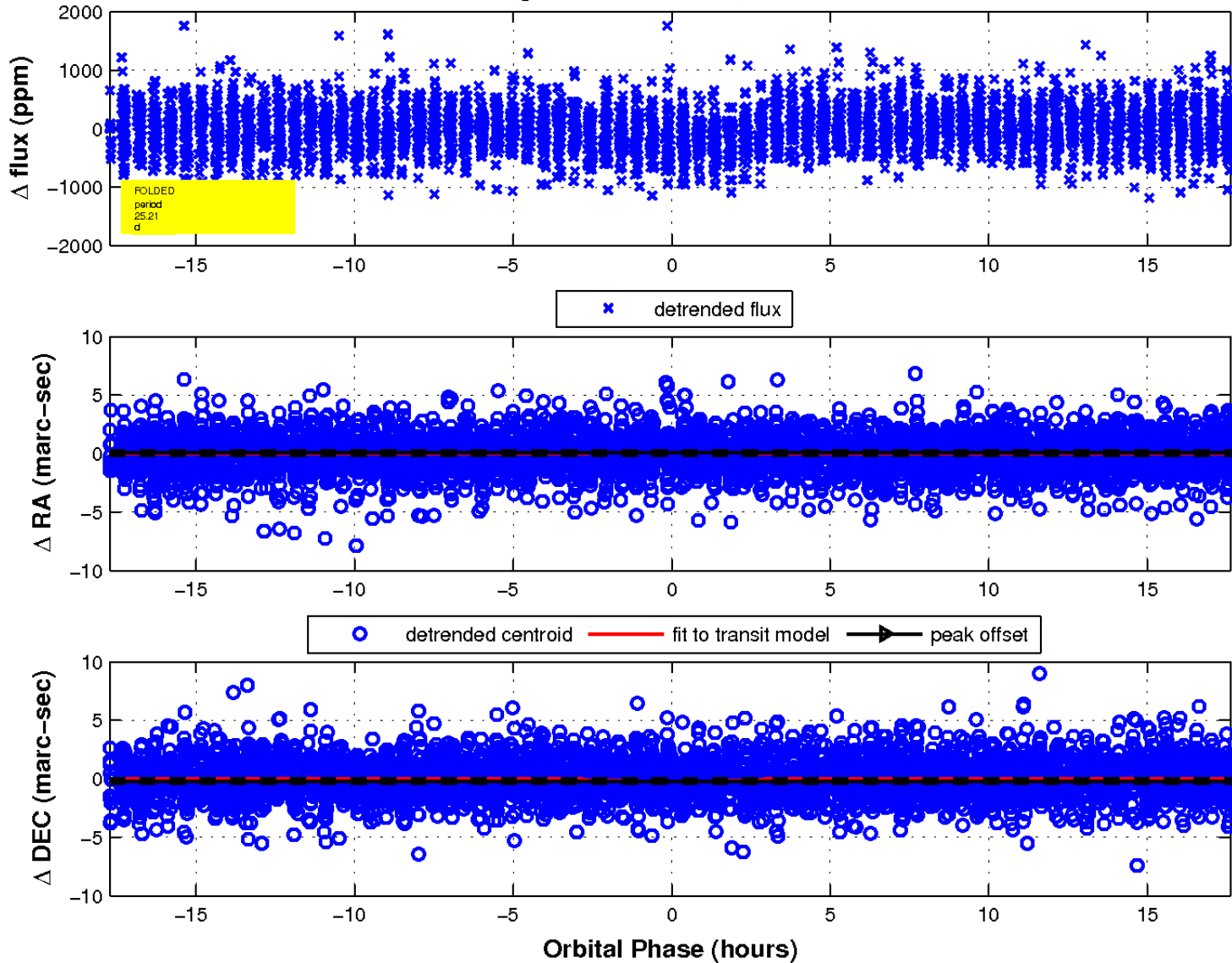




white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

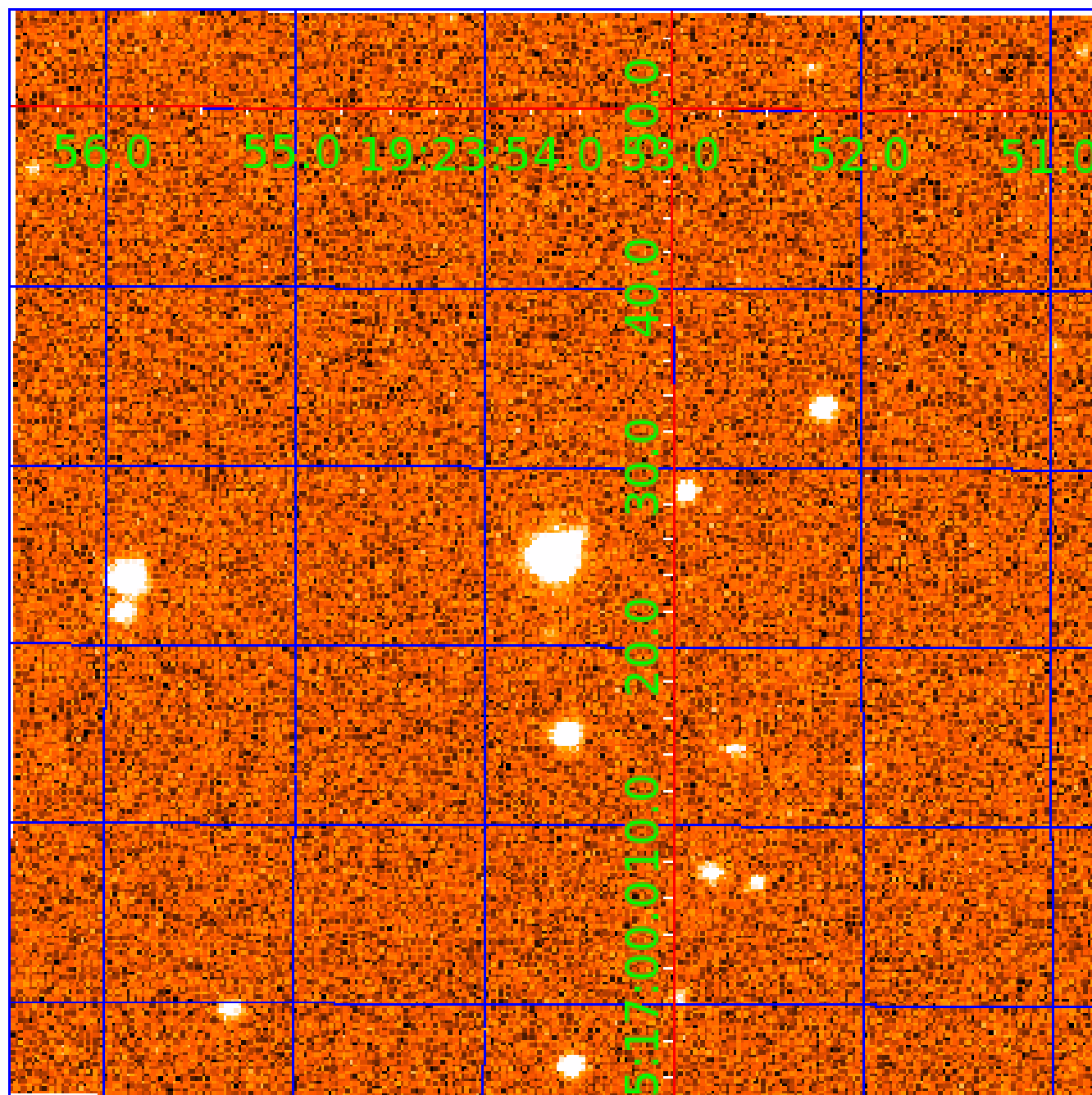


fluxWeightedCentroids, Planet 3 of 5



UKIRT Image

Declination



# KIC 008950568

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008950568-01	OBS	2038.01	8.305420	139.745523	420.9	4.939	21.8	24.0	0.87	5435	3.33	101.52
008950568-02	OBS	2038.02	12.513612	139.420604	417.8	5.559	19.9	21.3	0.87	5435	2.46	58.77
008950568-03	OBS	2038.04	25.214978	152.690045	187.8	5.908	8.7	8.5	0.87	5435	1.32	23.09
008950568-04	OBS	2038.03	17.913233	135.532507	195.3	4.577	8.3	8.9	0.87	5435	1.42	36.43
008950568-05	OBS	No	431.234865	214.846382	401.3	15.935	9.3	4.6	0.87	5435	1.94	0.52

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008950568-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT
008950568-02	OBS	PC	1.00	0	0	0	0	NO_COMMENT
008950568-03	OBS	PC	1.00	0	0	0	0	NO_COMMENT
008950568-04	OBS	PC	0.89	0	0	0	0	NO_COMMENT
008950568-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT— INCONSISTENT_TRANS—CENT_FEW_DIFFS

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

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

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

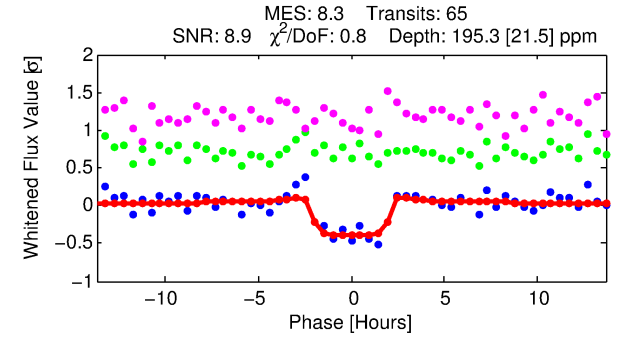
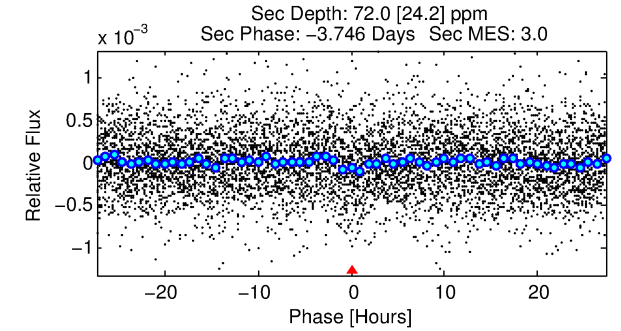
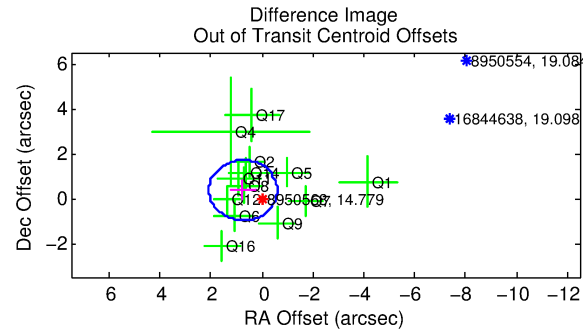
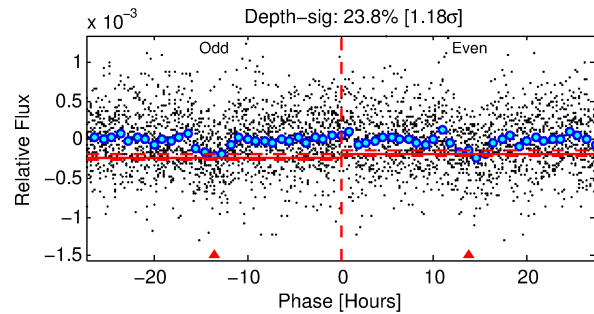
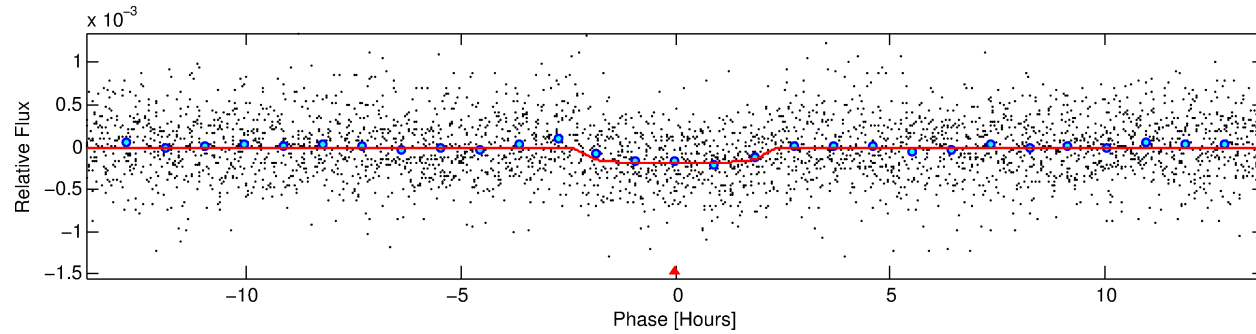
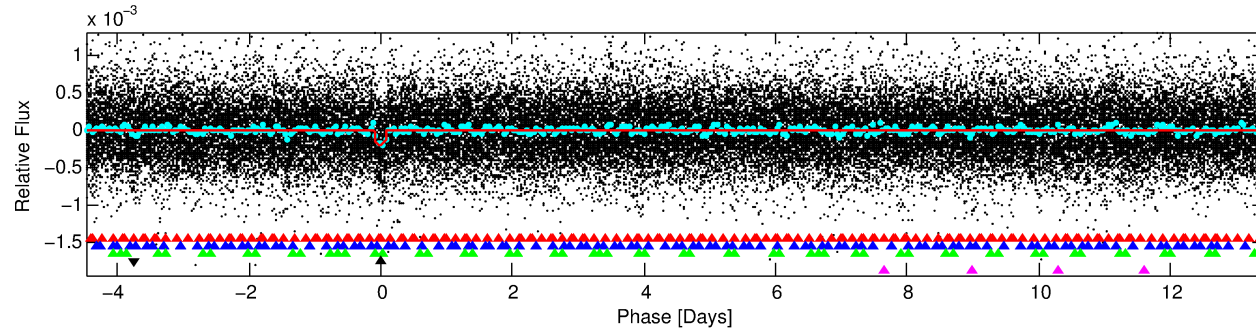
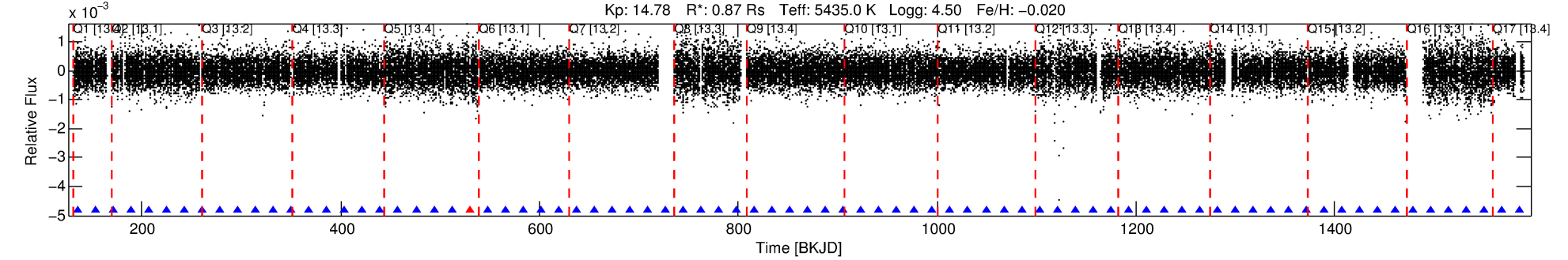
## Ephemeris Match Information For 008950568-04

No Significant Match Found

# DV One-Page Summary

KIC: 8950568 Candidate: 4 of 5 Period: 17.913 d  
KOI: K02038.03 Name: Kepler-85d Corr: 0.978

Kp: 14.78 R\*: 0.87 Rs Teff: 5435.0 K Logg: 4.50 Fe/H: -0.020



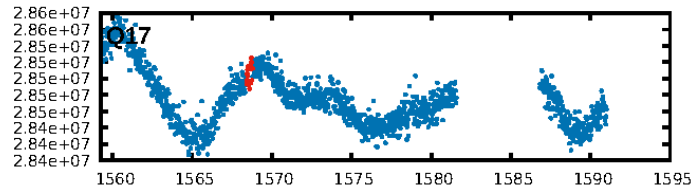
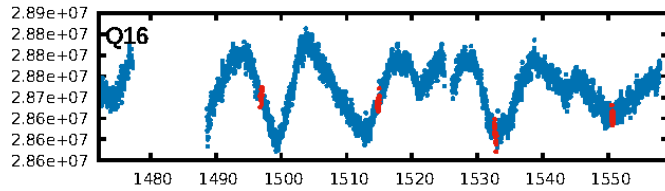
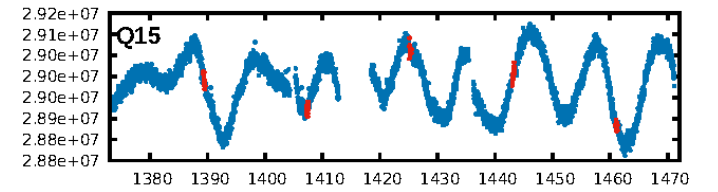
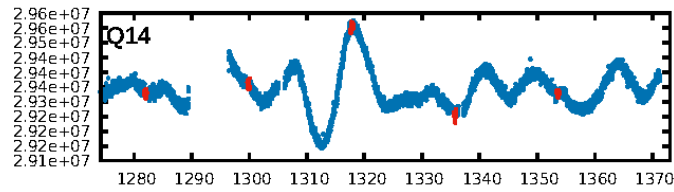
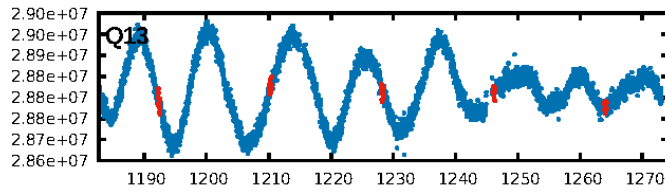
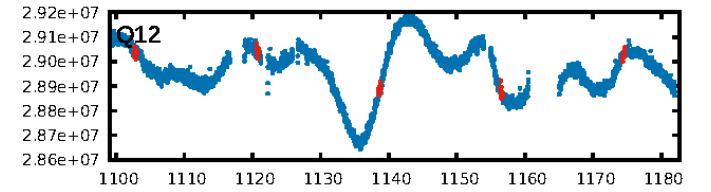
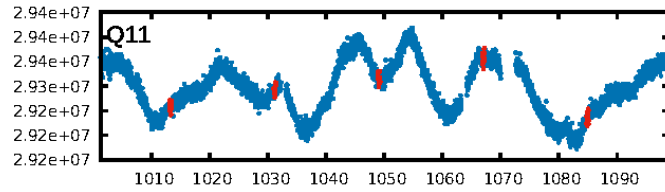
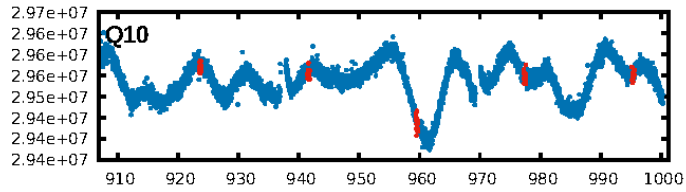
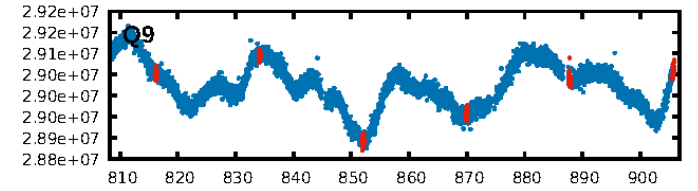
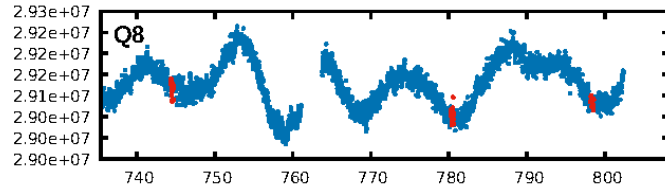
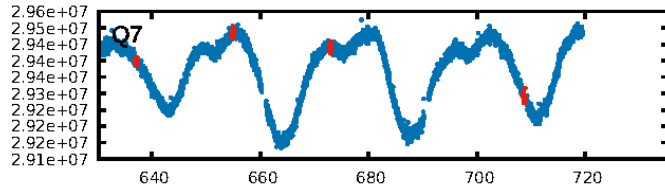
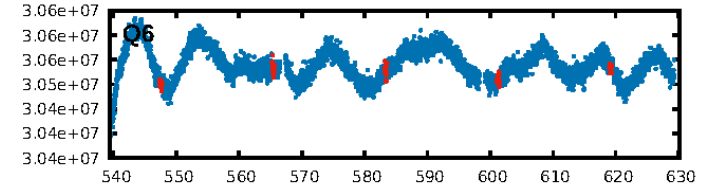
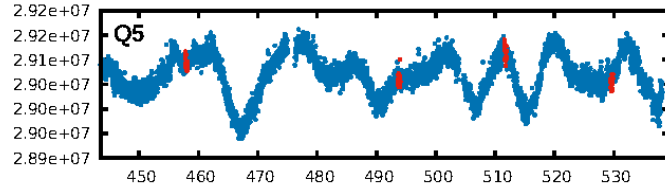
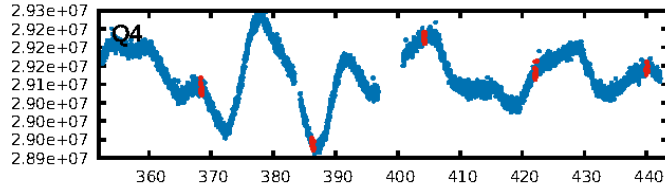
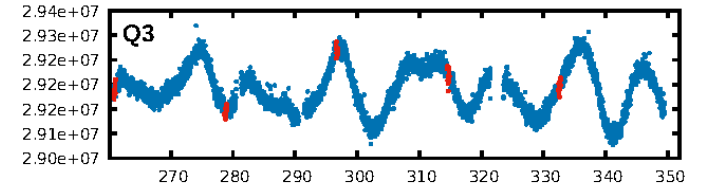
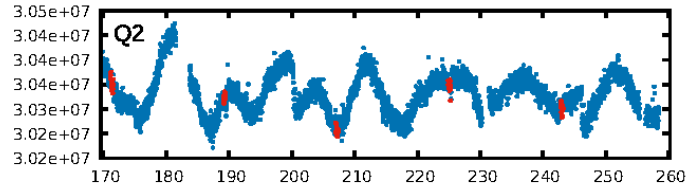
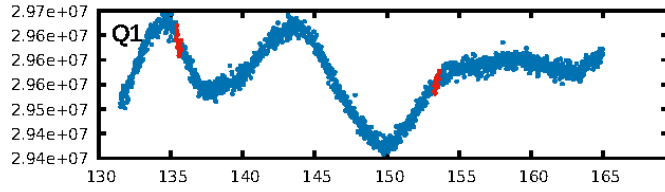
## DV Fit Results:

Period = 17.91323 [0.00020] d  
Epoch = 135.5325 [0.0089] BKJD  
Rp/R\* = 0.0149 [0.0081]  
a/R\* = 15.82 [36.70]  
b = 0.87 [0.68]  
Seff = 36.43 [5.78]  
Teq = 626 [25] K  
Rp = 1.42 [0.79] Re  
a = 0.1279 [0.0116] AU  
Ag = 321.39 [369.50] [0.87σ]  
Teffp = 4101 [1173] K [2.96σ]

## DV Diagnostic Results:

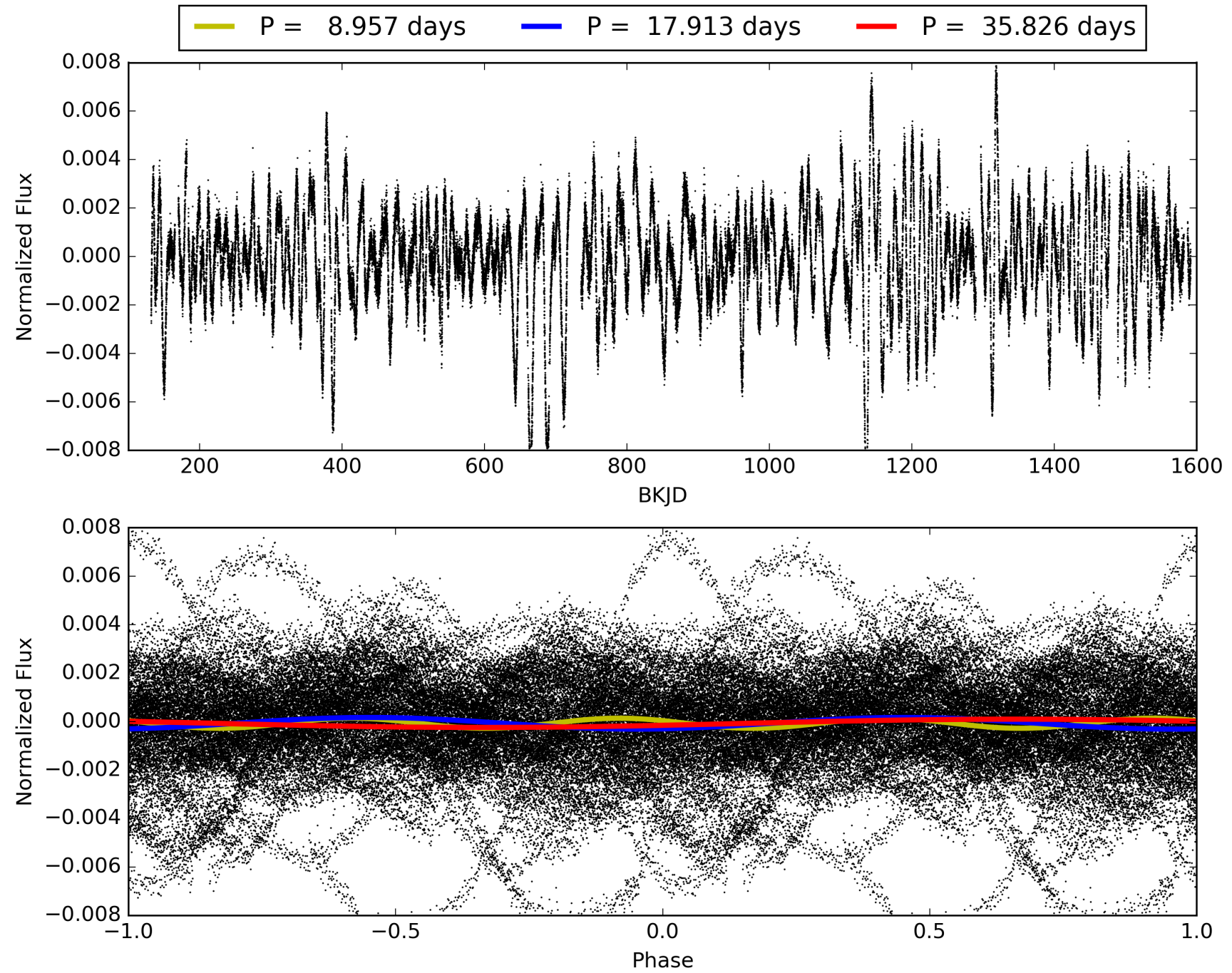
ShortPeriod-sig: 100.0% [18.00σ]  
LongPeriod-sig: 100.0% [23.45σ]  
ModelChiSquare2-sig: 99.3%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 8.28e-15  
RollingBand-fgt: 0.98 [61/62]  
GhostDiagnostic-chr: 1.93  
Centroid-sig: 70.4%  
Centroid-so: 0.447 arcsec [0.44σ]  
OotOffset-rm: 0.820 arcsec [1.83σ]  
KicOffset-rm: 0.781 arcsec [1.74σ]  
OotOffset-st: 3/2/4/4 [13]  
KicOffset-st: 3/2/4/4 [13]  
DiffImageQuality-fgm: 0.77 [10/13]  
DiffImageOverlap-fno: 0.94 [16/17]

# TCE 008950568-04, PDC Light Curves





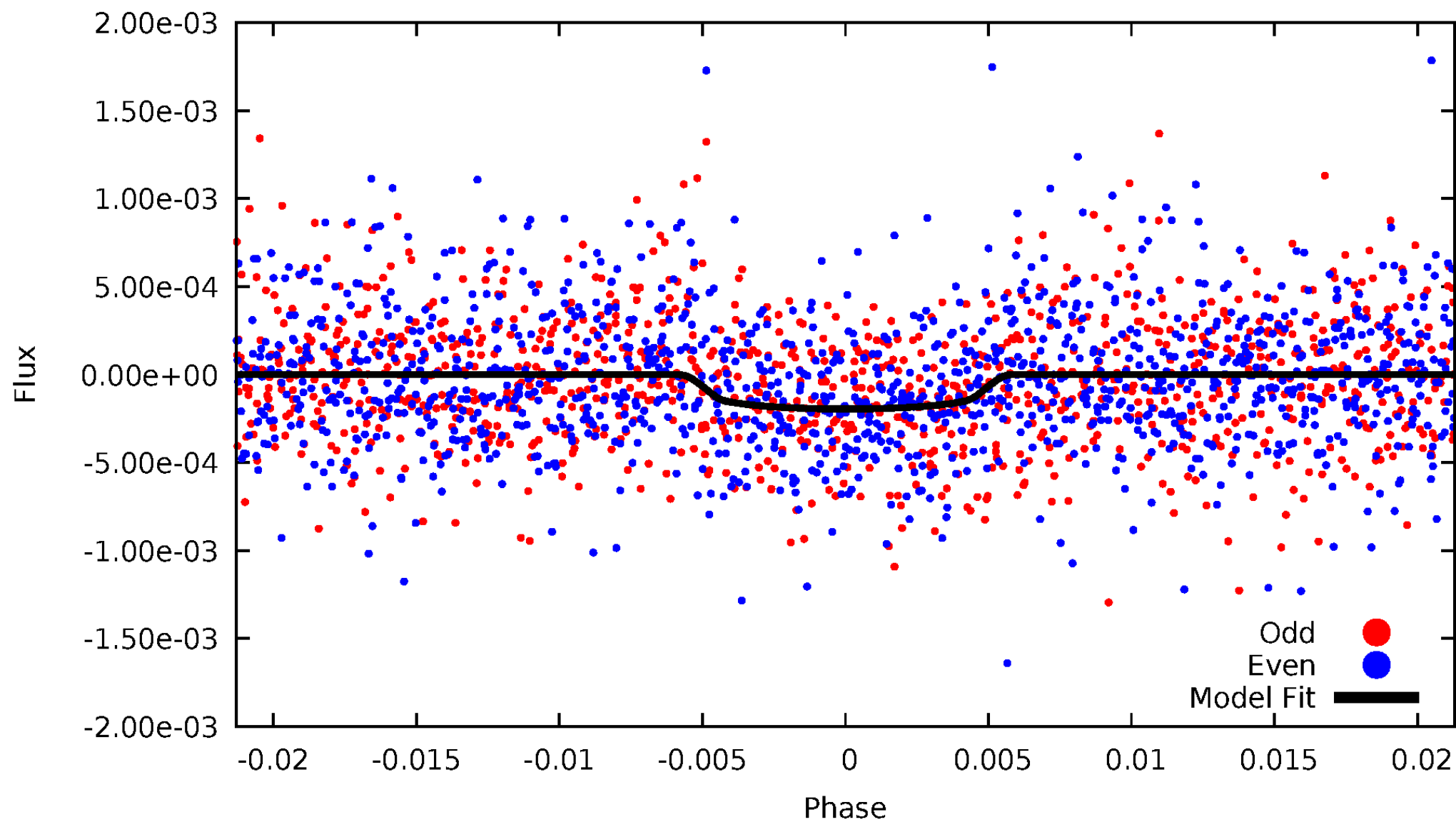
TCE 008950568-04





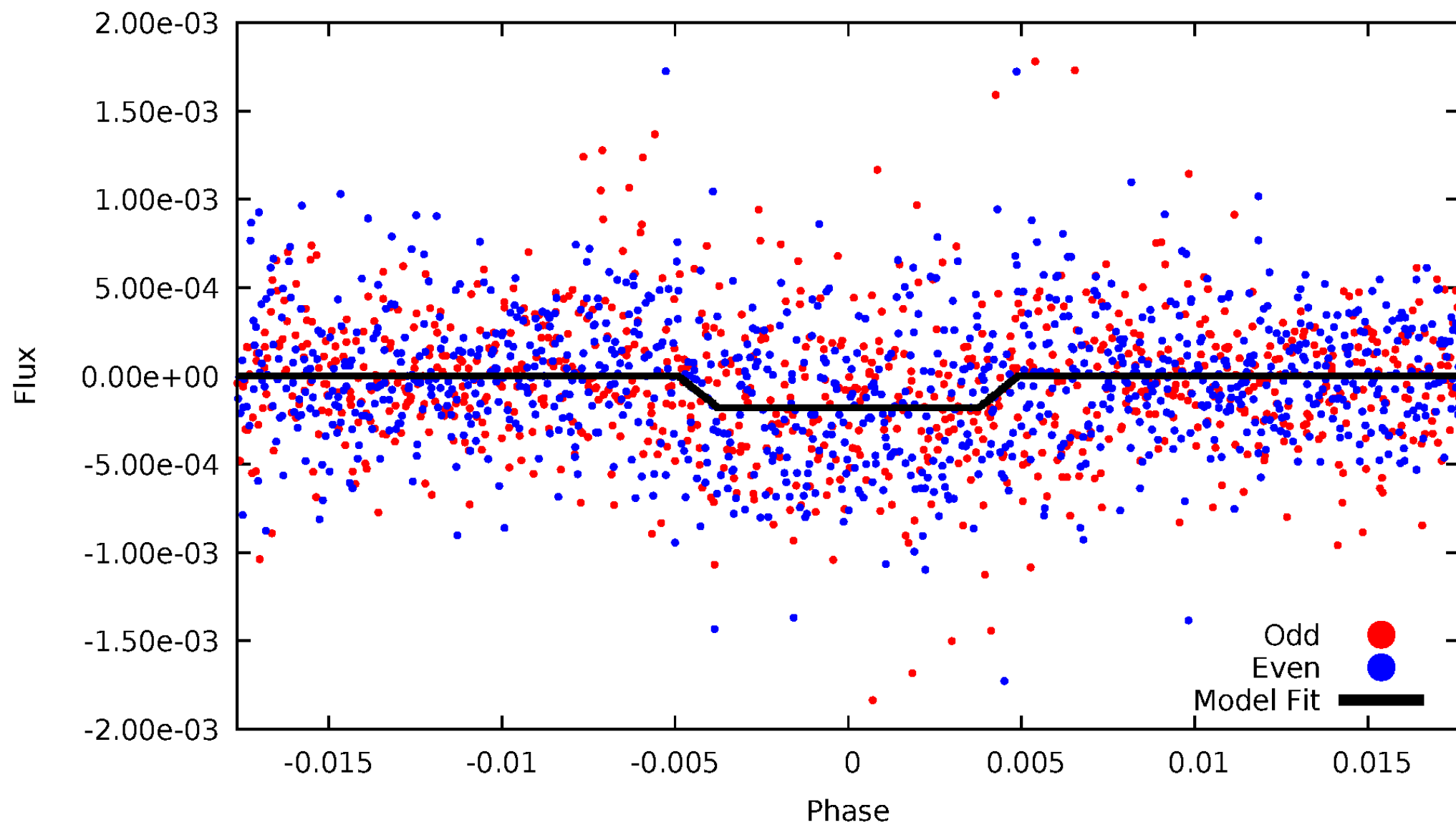
# DV Odd/Even

TCE 008950568-04



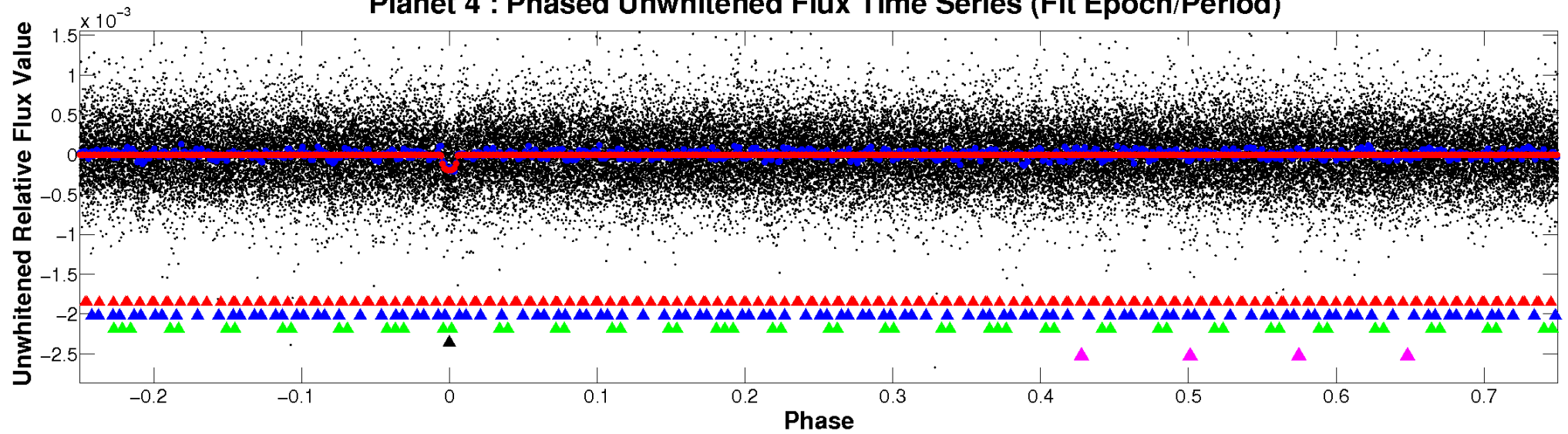
# ALT Odd/Even

TCE 008950568-04

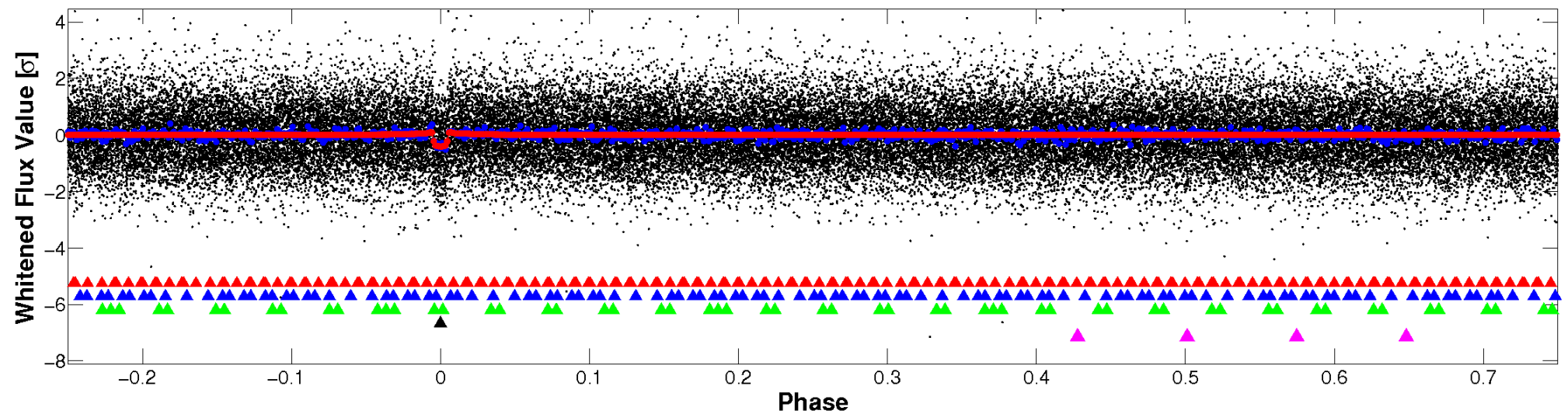


# Non-Whitened Vs. Whitened Light Curve

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

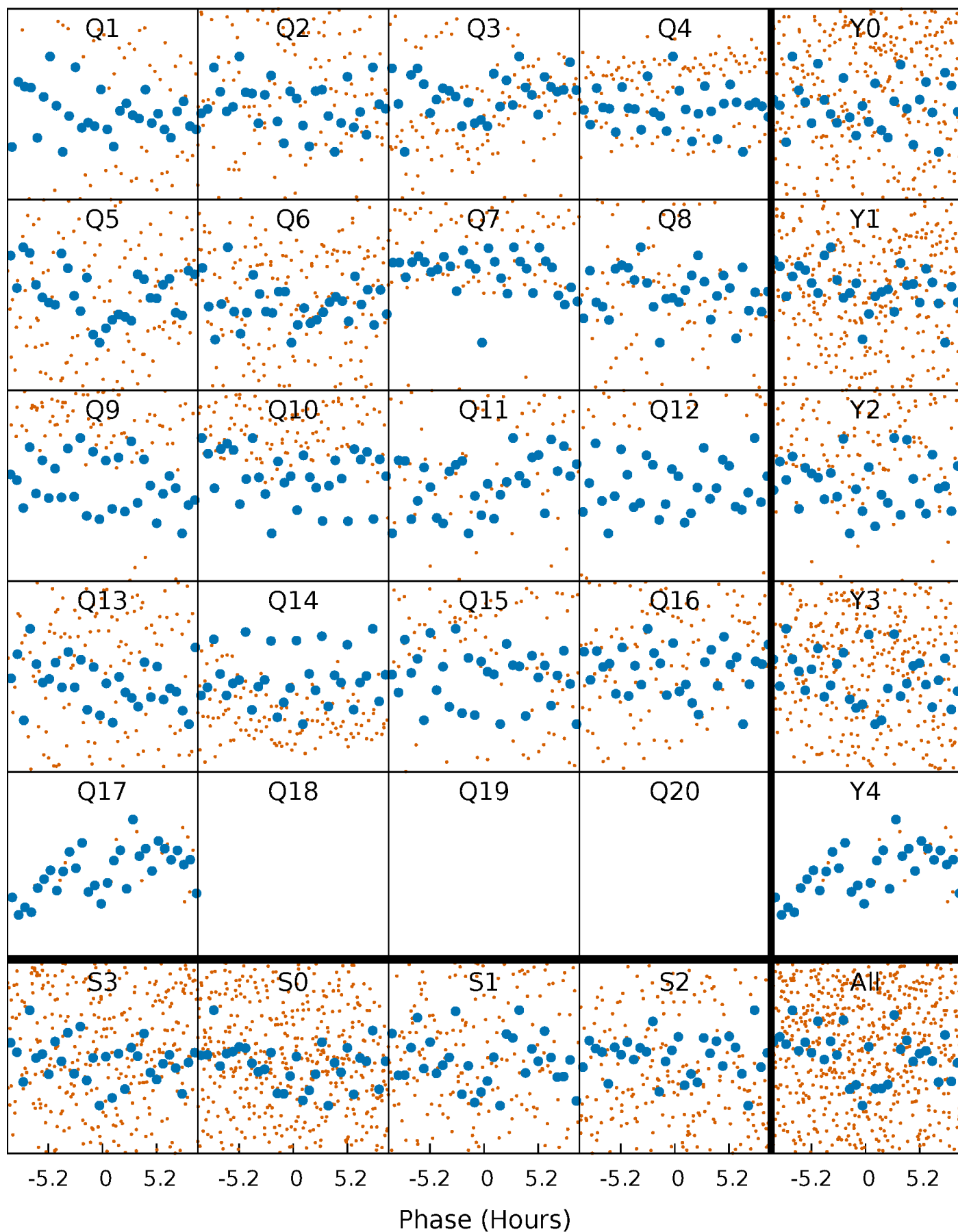


## Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



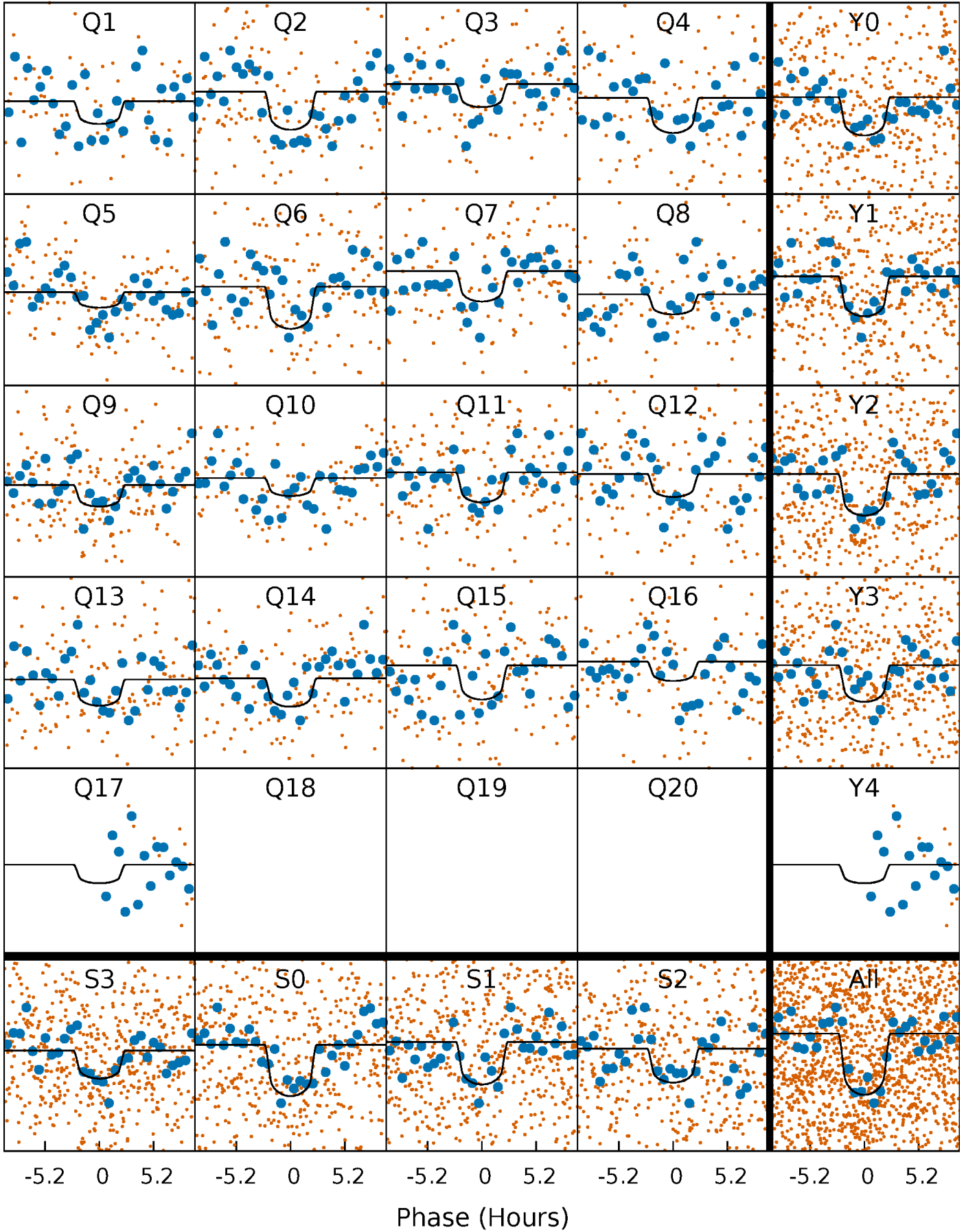
# PDC Quarter-Phased Transit Curves

TCE 008950568-04 P= 17.913233 Days  $T_0=135.532507$  (BKJD)



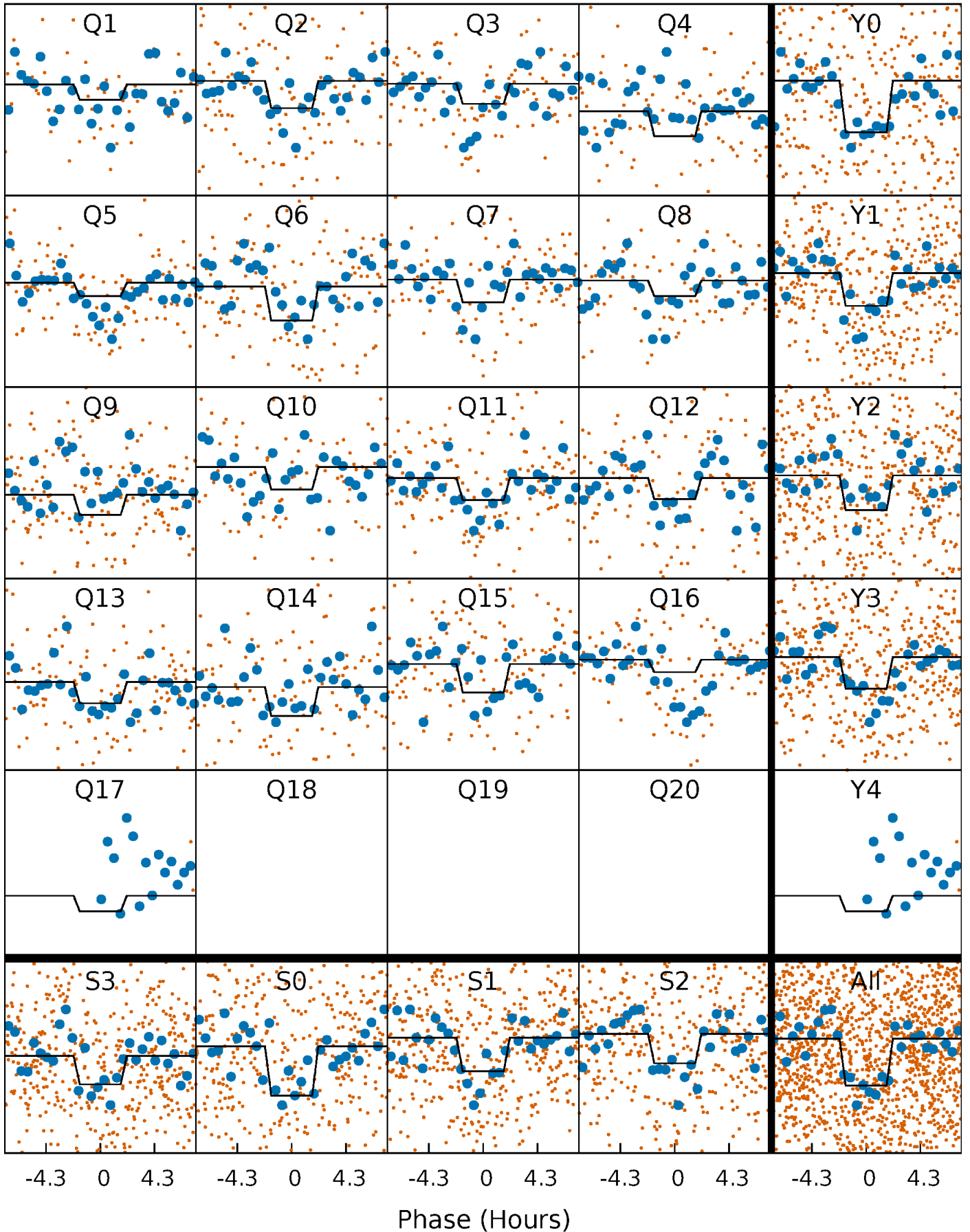
# DV Quarter-Phased Transit Curves

TCE 008950568-04 P= 17.913233 Days  $T_0=135.532507$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 008950568-04 P= 17.913607 Days  $T_0=135.524112$  (BKJD)

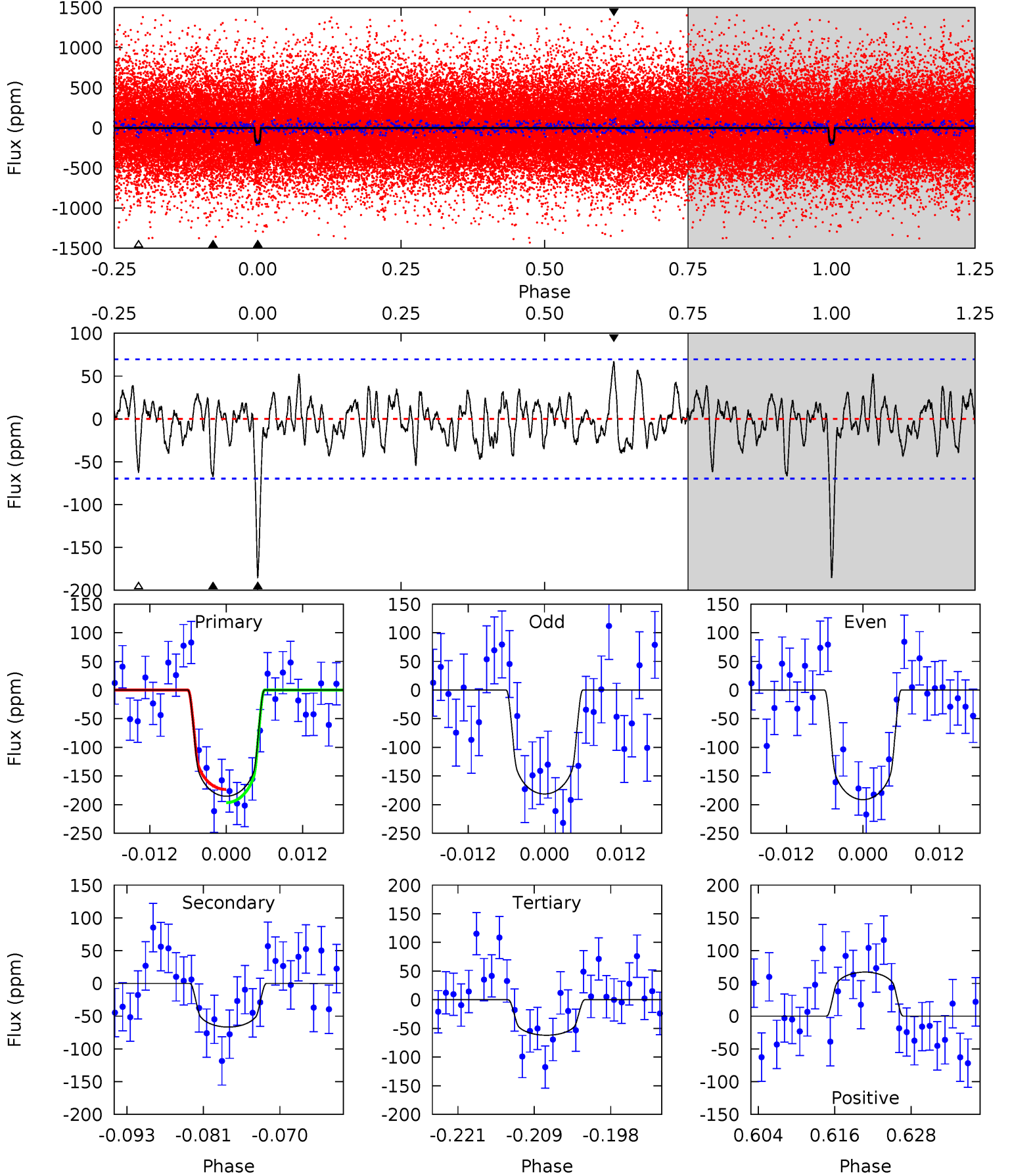




# DV Model-Shift Uniqueness Test

008950568-04, P = 17.913233 Days, E = 117.619274 Days

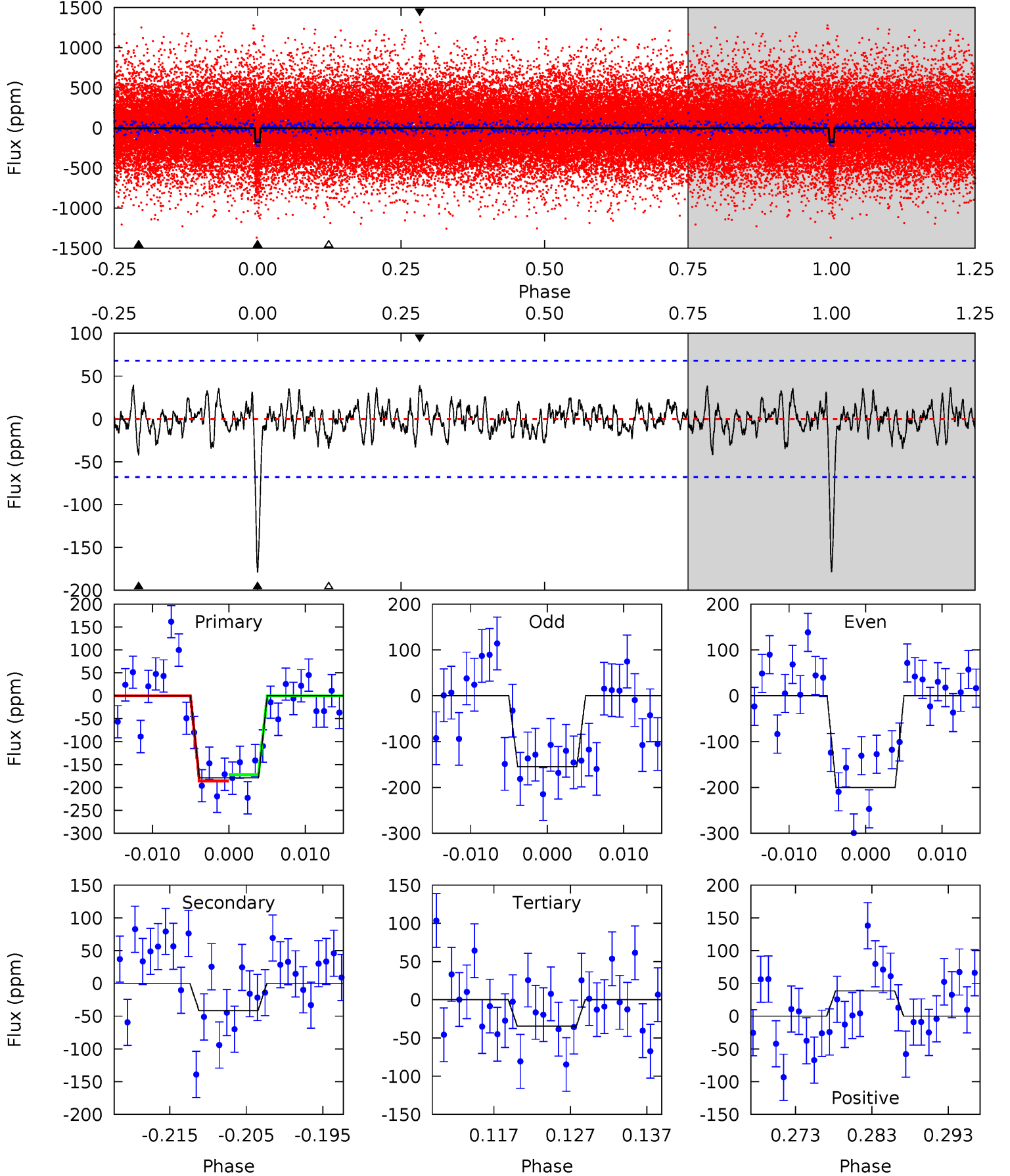
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.3	4.78	4.44	4.82	5.00	2.52	1.47	8.85	8.47	0.34	-0.04	0.35	1.03	0.27	0.82



# Alt Model-Shift Uniqueness Test

008950568-04,  $P = 17.913607$  Days,  $E = 117.610505$  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
13.3	3.10	2.57	2.86	5.03	2.58	0.96	10.7	10.4	0.54	0.24	1.68	0.88	0.18	0.50



### Stellar Parameters For KIC 008950568

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5435^{+109}_{-109}$	$4.495^{+0.063}_{-0.077}$	$-0.020^{+0.150}_{-0.150}$	$0.873^{+0.090}_{-0.068}$	$0.870^{+0.055}_{-0.049}$	$1.840^{+0.446}_{-0.428}$
	+2%/-2%	+1%/-2%	+750%/-750%	+10%/-8%	+6%/-6%	+24%/-23%
Source	SPE58	SPE58	SPE58	DSEP		

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

### Secondary Eclipse Parameters for KIC 008950568-04 / KOI 2038.03

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-67 \pm 14$	$1.41^{+0.72}_{-0.72}$	$878^{+29}_{-29}$	$4273^{+1454}_{-617}$	$298^{+970}_{-174}$
Alt.	$-42 \pm 13$	$1.32^{+0.76}_{-0.69}$	$876^{+29}_{-28}$	$3981^{+1411}_{-596}$	$206^{+764}_{-127}$

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

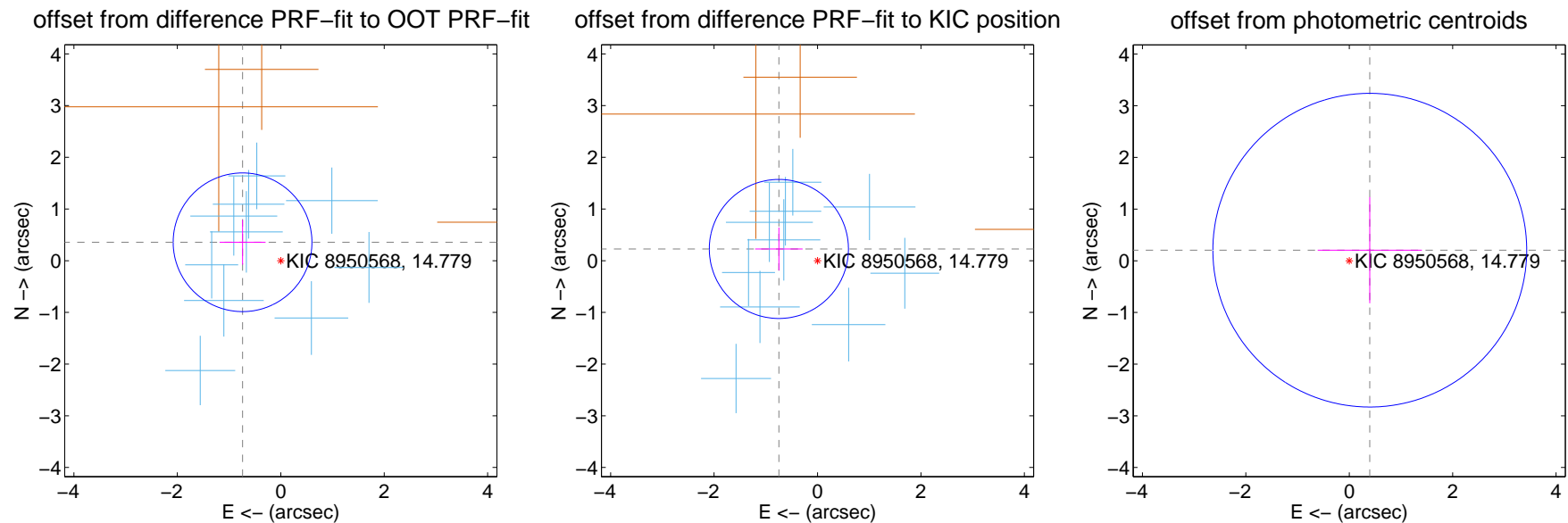
## DV Centroid Data

Supplemental centroid analysis for 008950568-04. Kepler magnitude: 14.78. Transit SNR 8.92

There are 10 quarters with good PRF difference image offsets

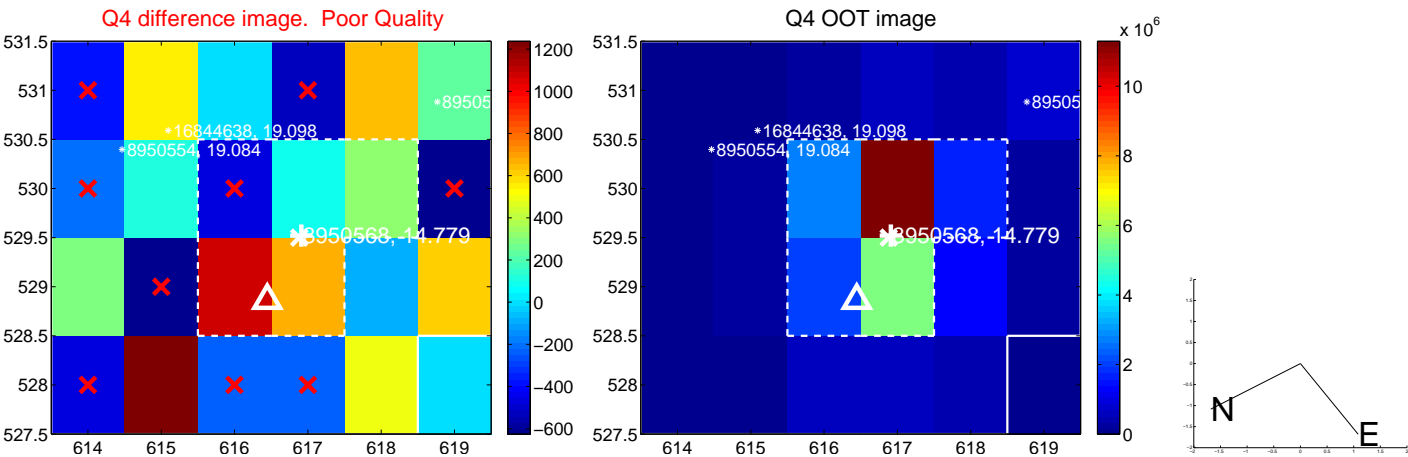
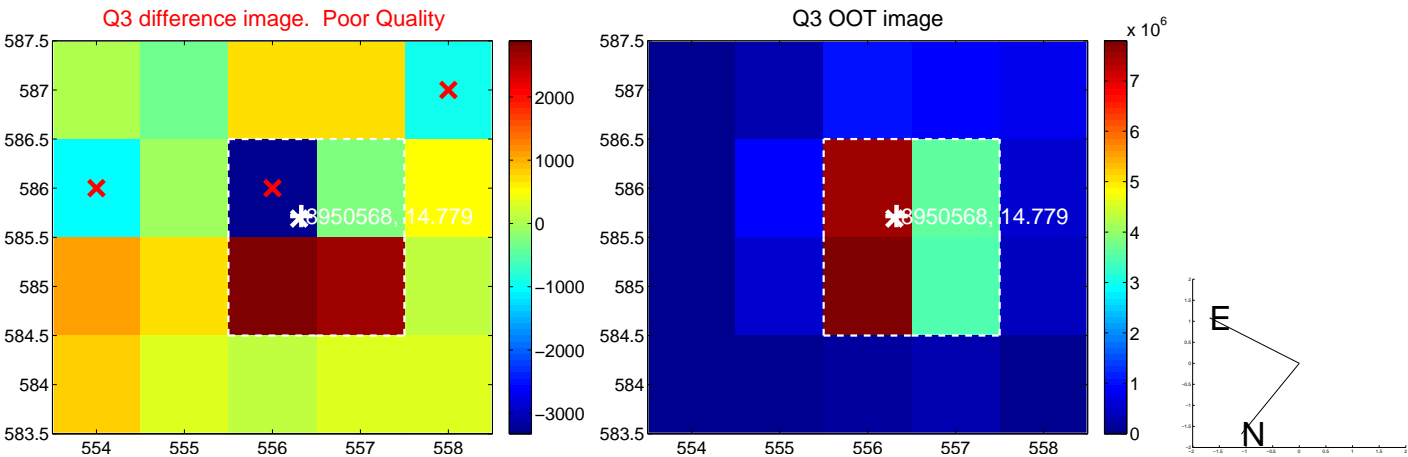
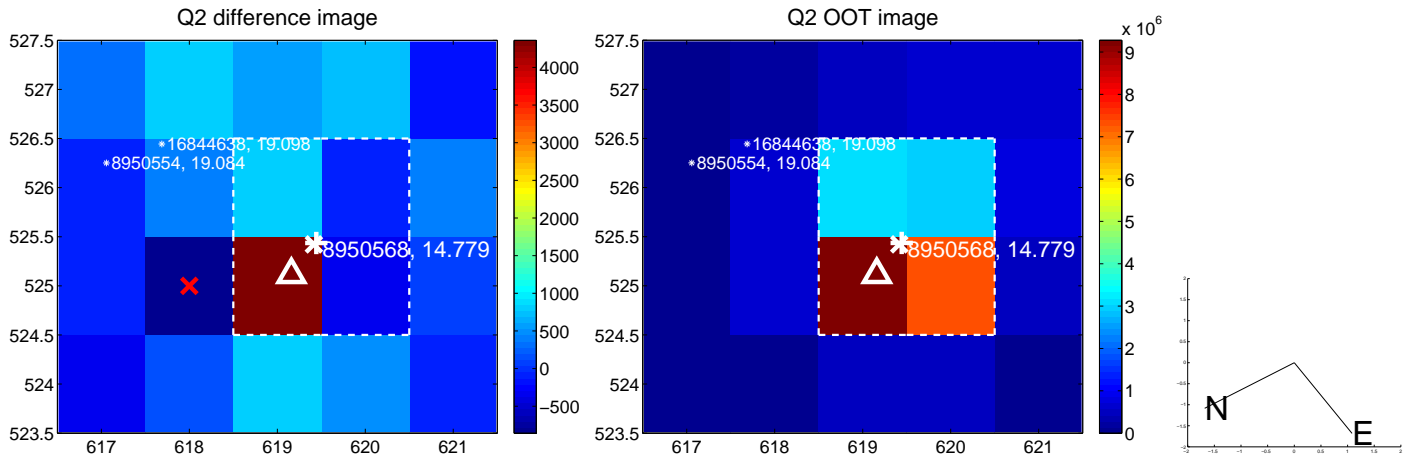
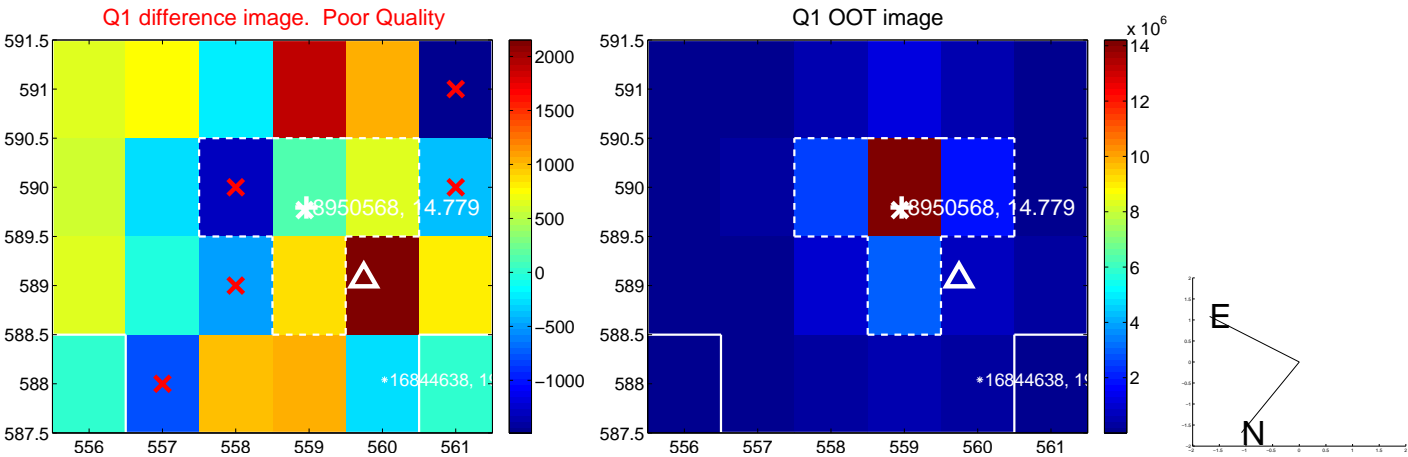
The direct PRF centroid is offset from the target star catalog position by about 0.16 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.820 \pm 0.447$	1.83	$0.739 \pm 0.446$	$0.356 \pm 0.432$
PRF-fit source offset from KIC position	$0.781 \pm 0.448$	1.74	$0.747 \pm 0.459$	$0.227 \pm 0.415$
photometric centroid source offset	$0.45 \pm 1.01$	0.44	$-0.40 \pm 1.01$	$0.20 \pm 1.03$

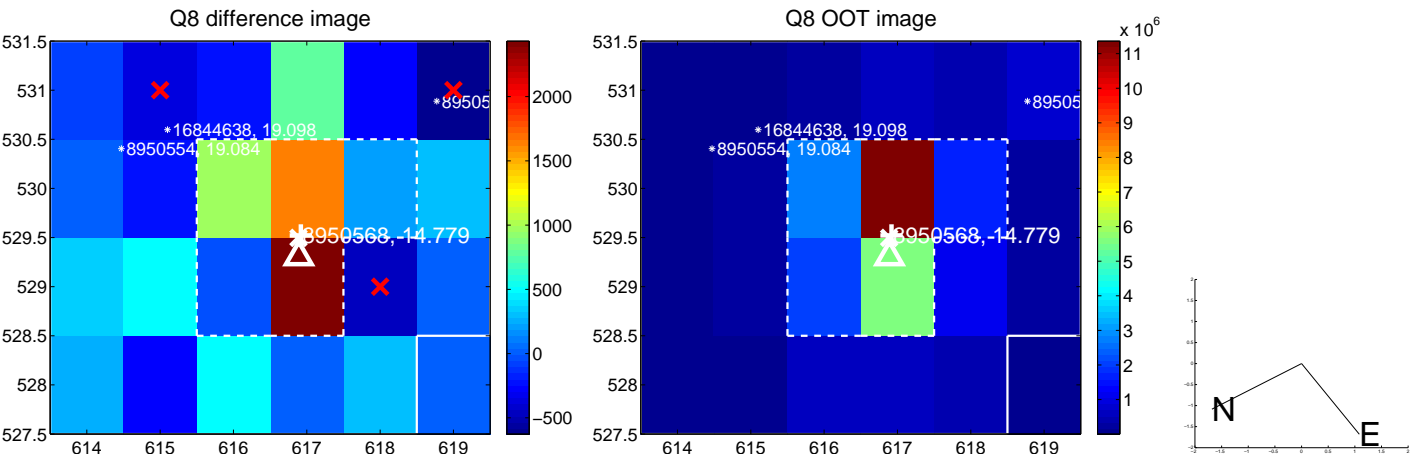
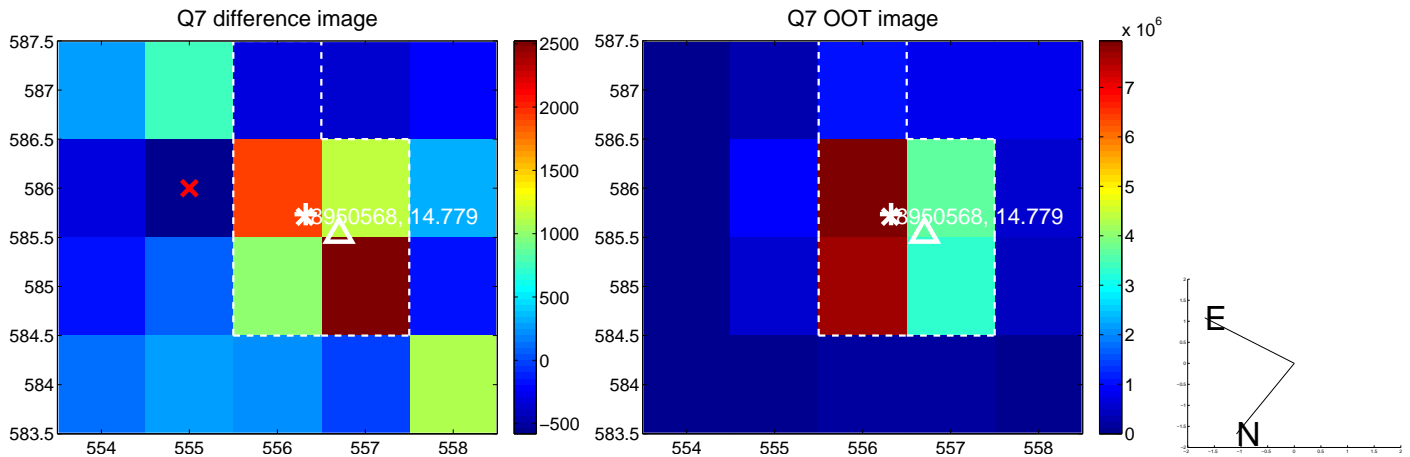
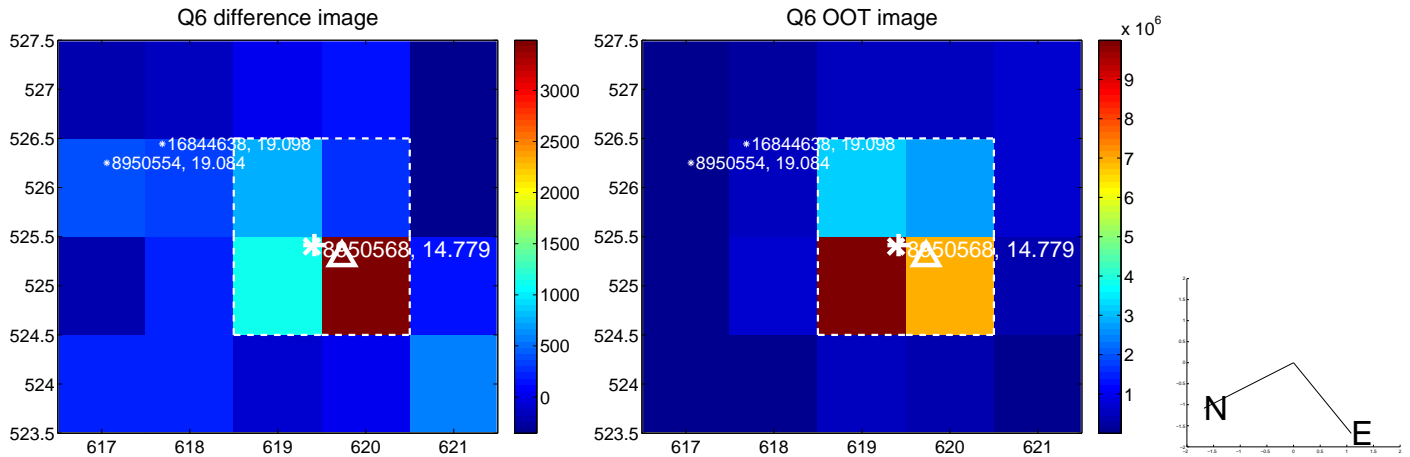
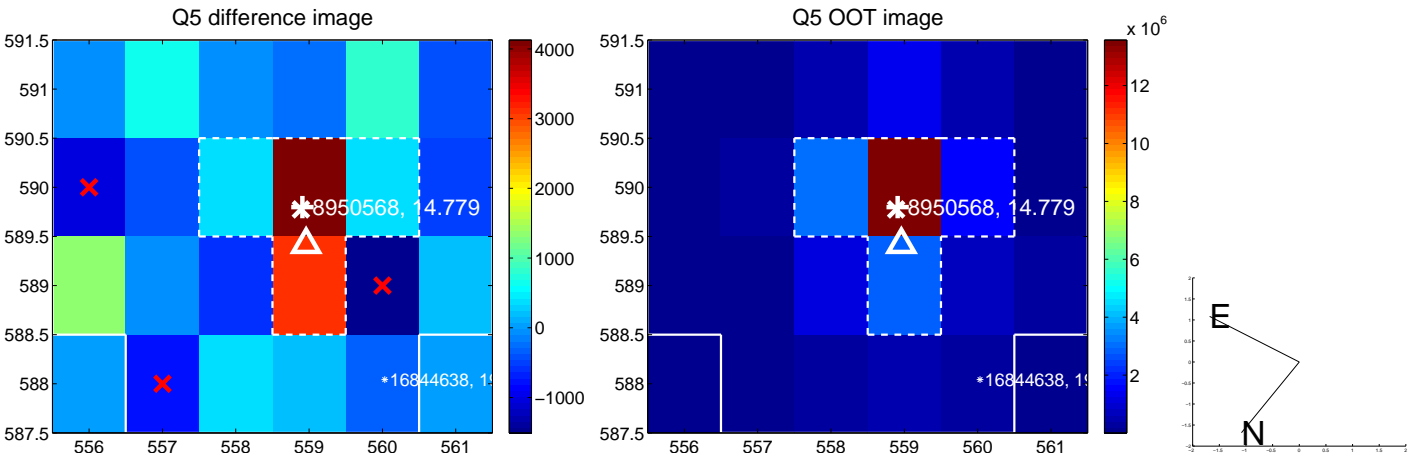


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

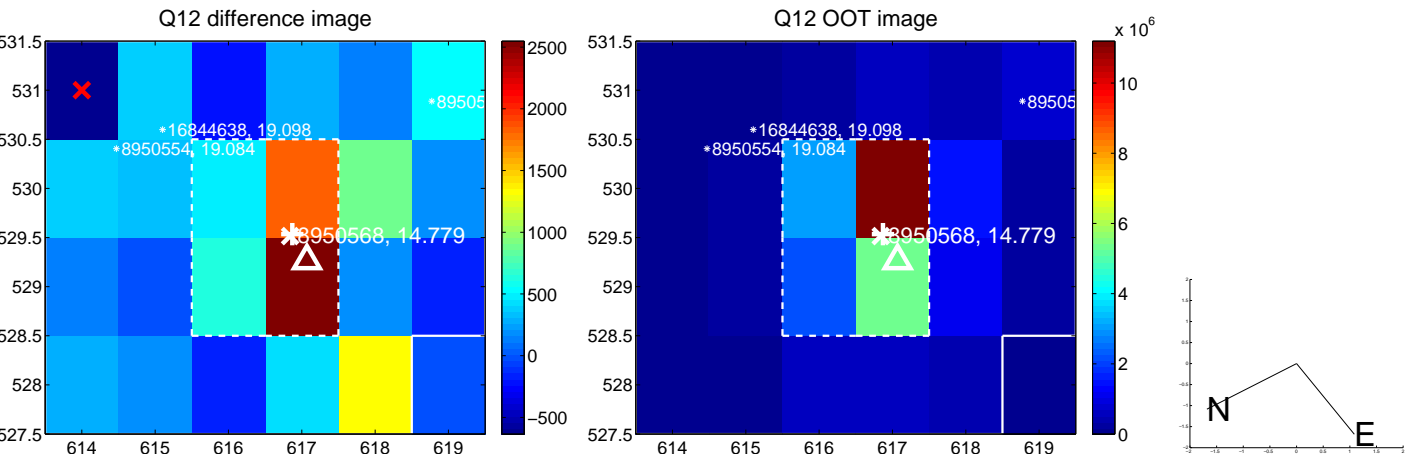
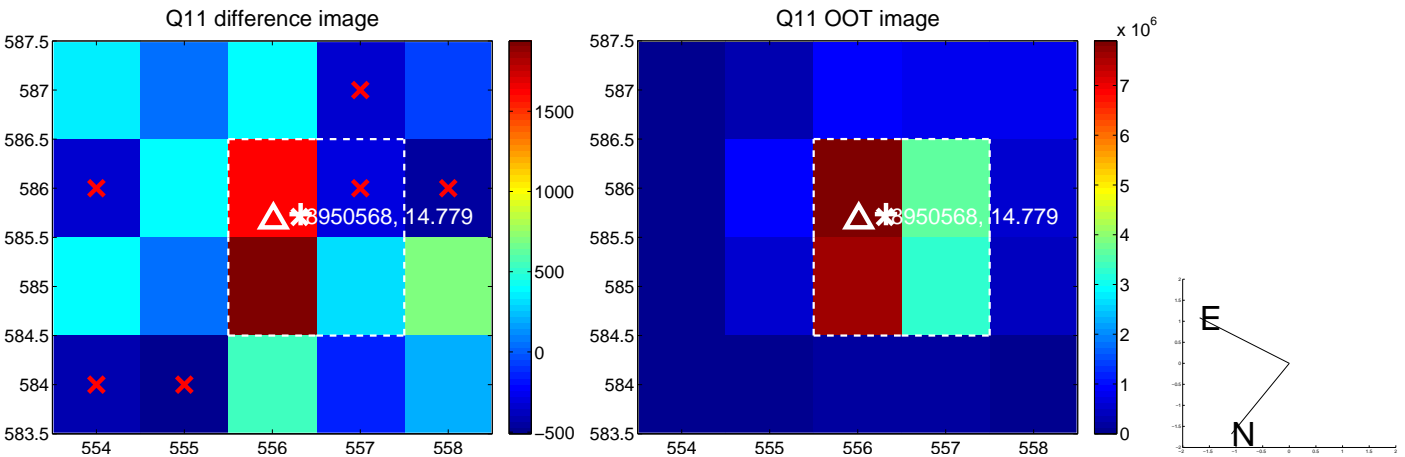
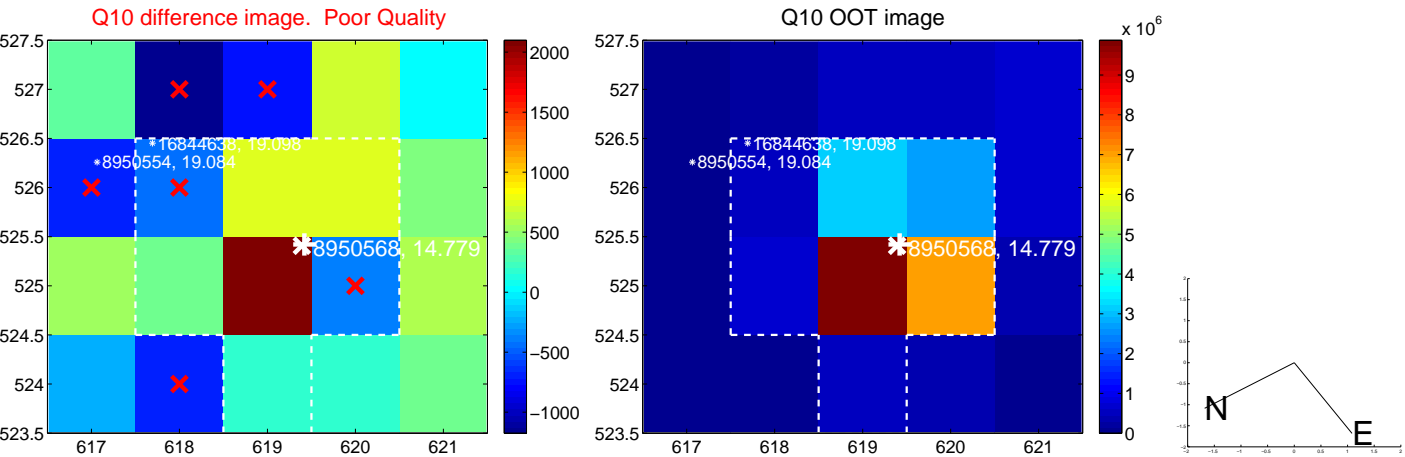
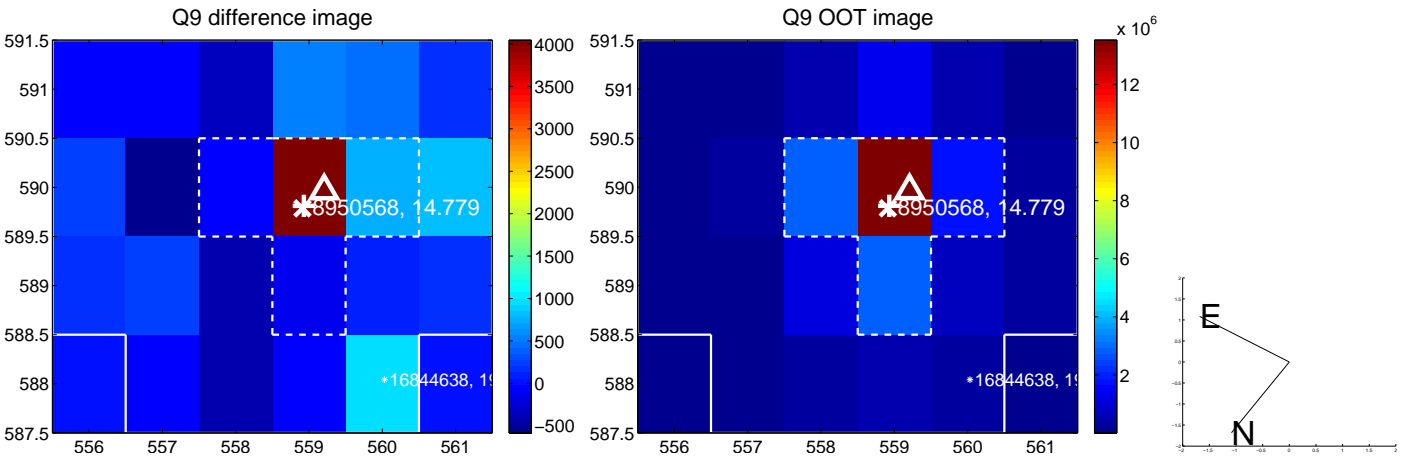


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

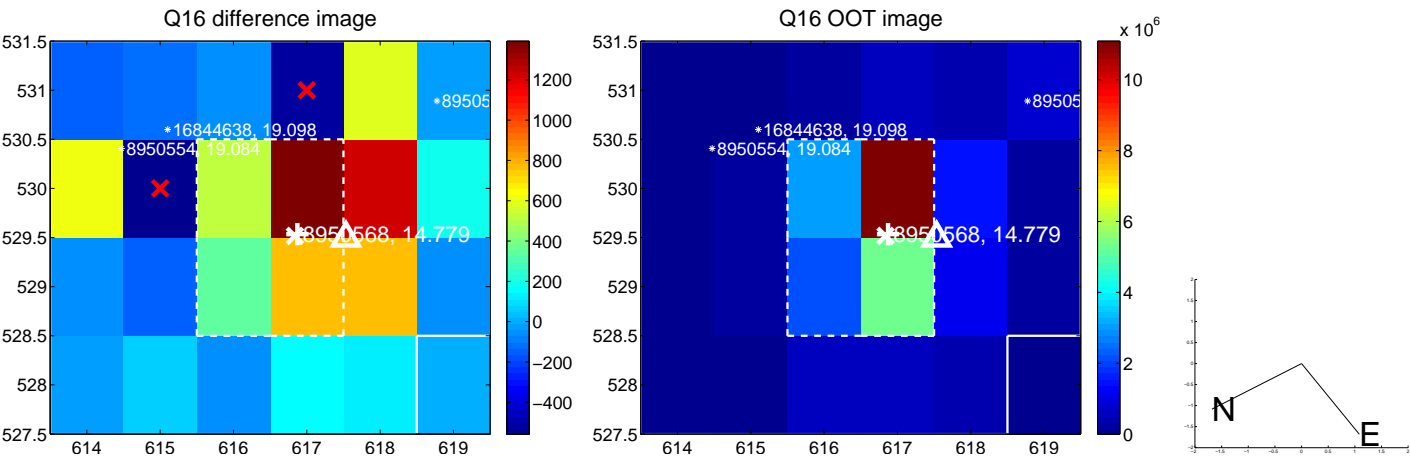
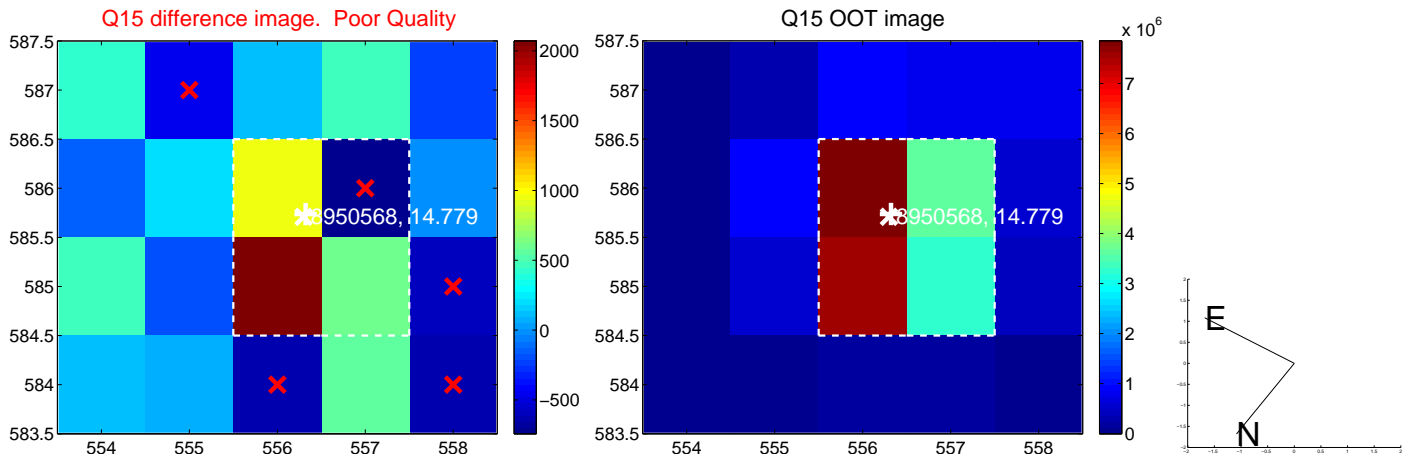
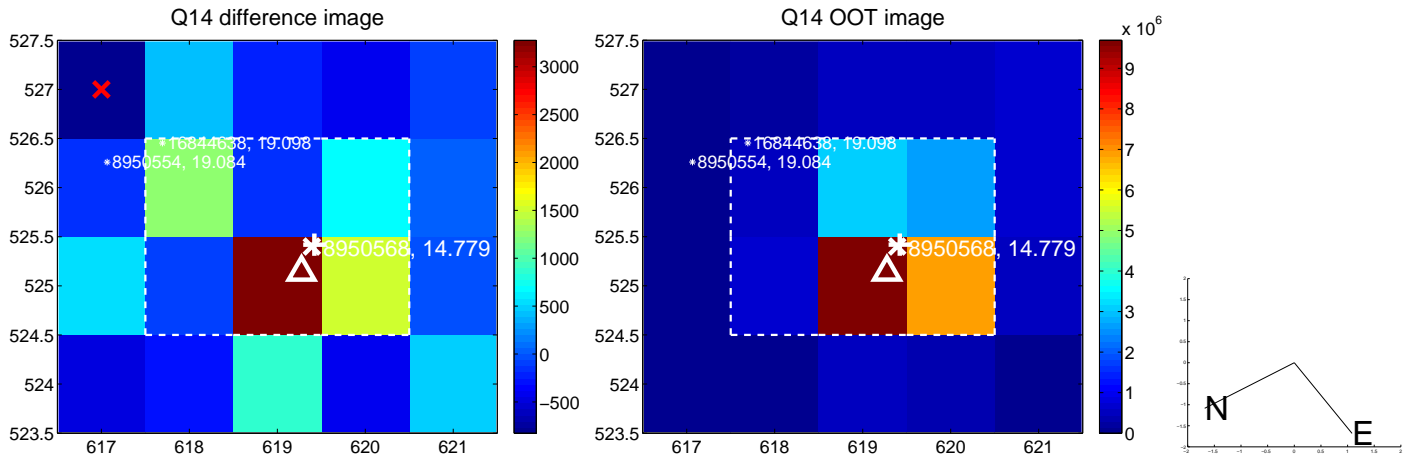
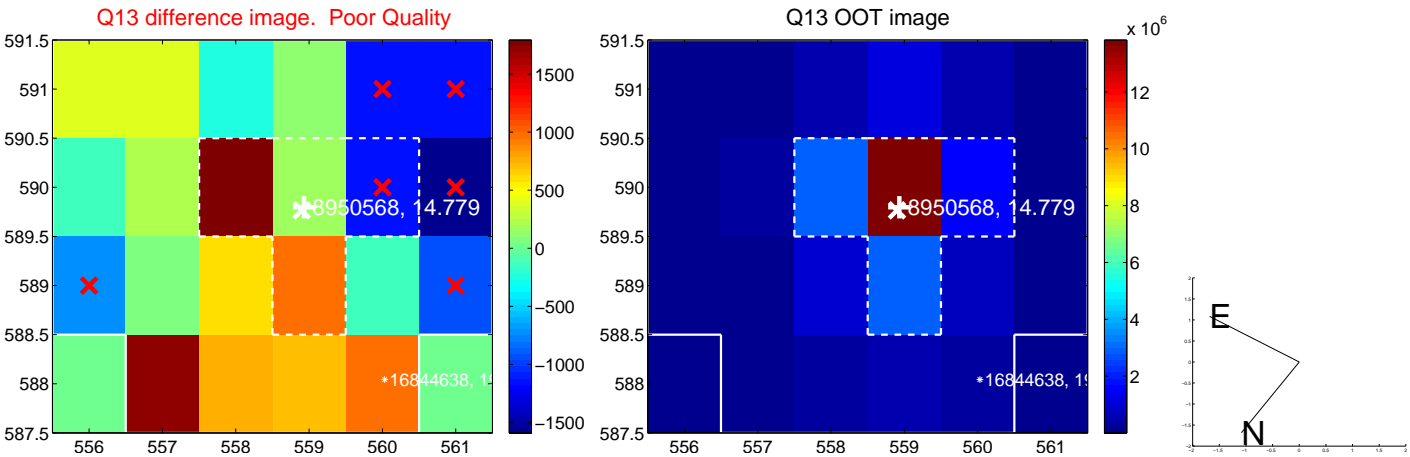




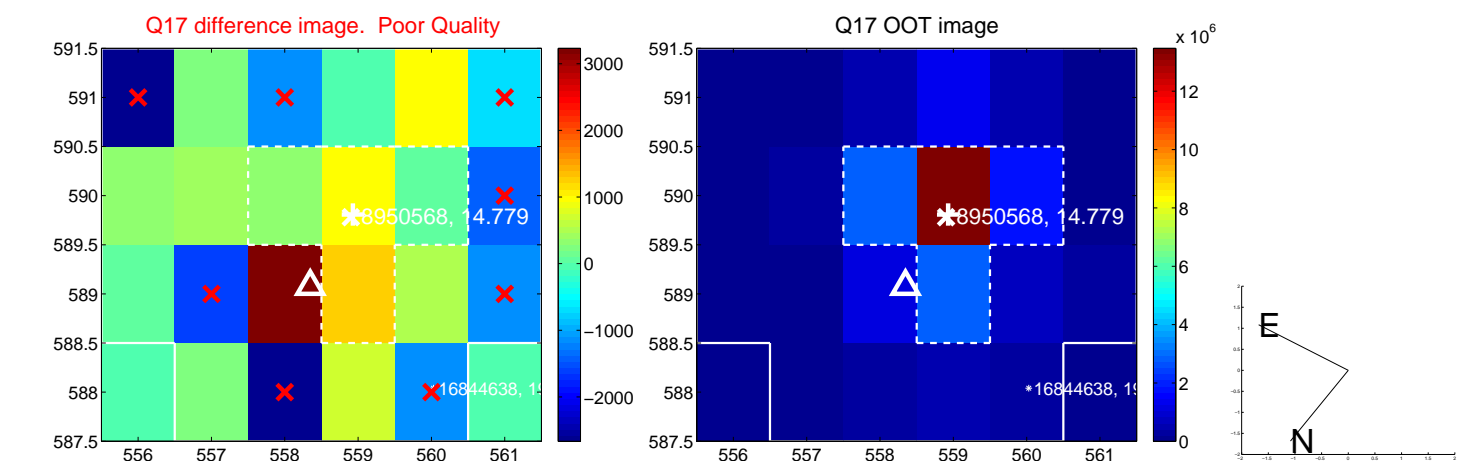
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



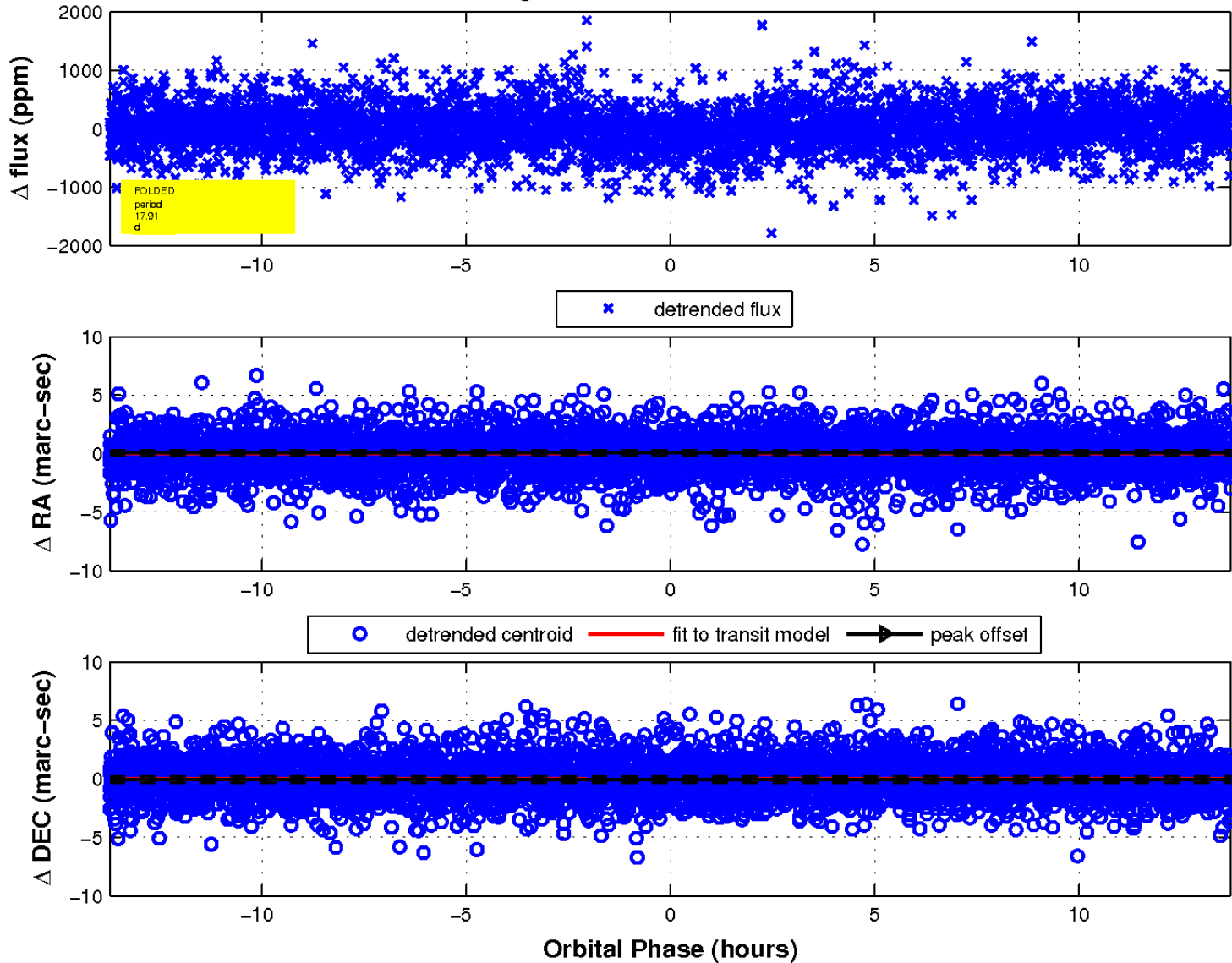
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

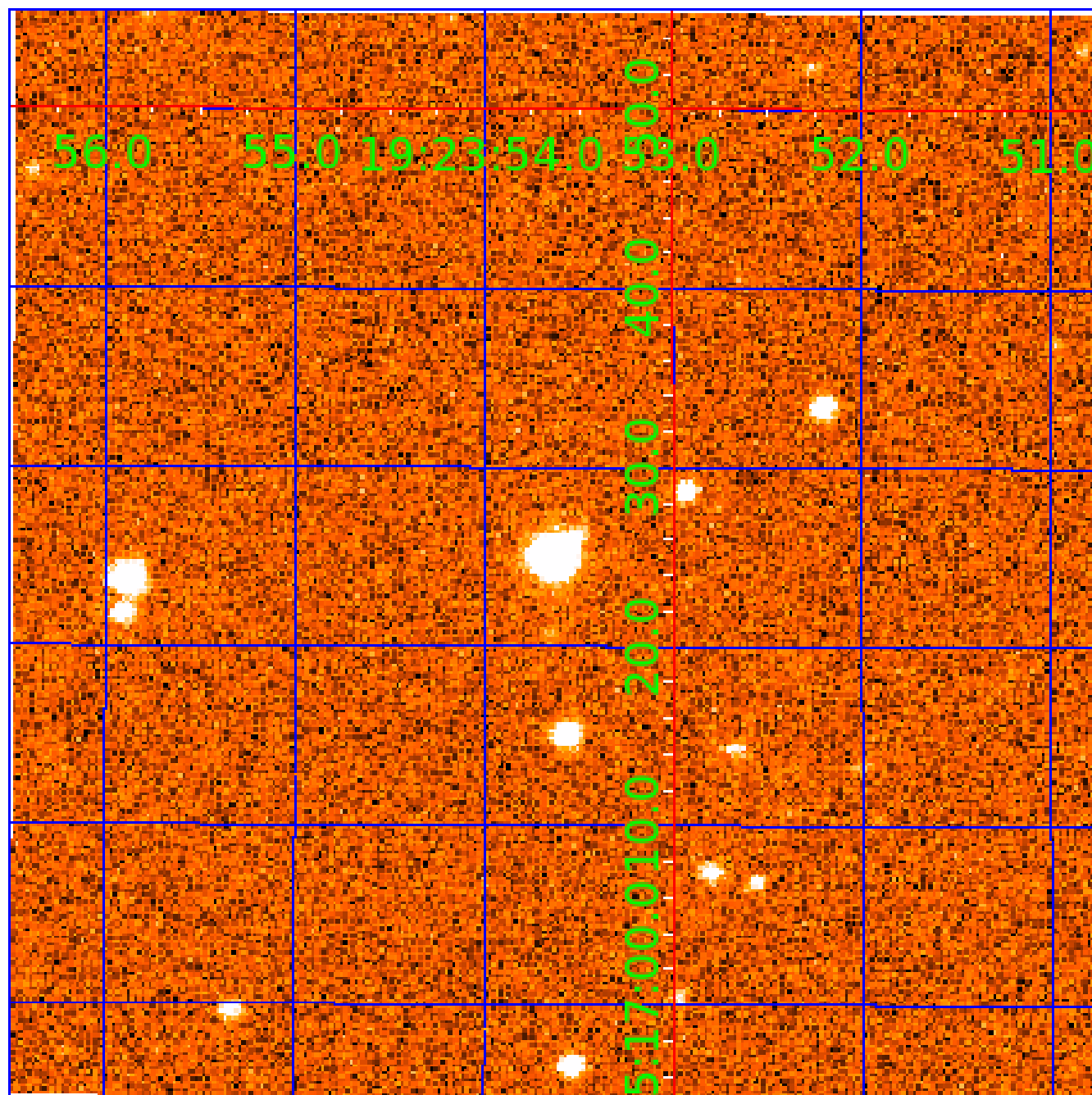


fluxWeightedCentroids, Planet 4 of 5



UKIRT Image

Declination



# KIC 008950568

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008950568-01	OBS	2038.01	8.305420	139.745523	420.9	4.939	21.8	24.0	0.87	5435	3.33	101.52
008950568-02	OBS	2038.02	12.513612	139.420604	417.8	5.559	19.9	21.3	0.87	5435	2.46	58.77
008950568-03	OBS	2038.04	25.214978	152.690045	187.8	5.908	8.7	8.5	0.87	5435	1.32	23.09
008950568-04	OBS	2038.03	17.913233	135.532507	195.3	4.577	8.3	8.9	0.87	5435	1.42	36.43
008950568-05	OBS	No	431.234865	214.846382	401.3	15.935	9.3	4.6	0.87	5435	1.94	0.52

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008950568-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT
008950568-02	OBS	PC	1.00	0	0	0	0	NO_COMMENT
008950568-03	OBS	PC	1.00	0	0	0	0	NO_COMMENT
008950568-04	OBS	PC	0.89	0	0	0	0	NO_COMMENT
008950568-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT— INCONSISTENT_TRANS—CENT_FEW_DIFFS

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

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

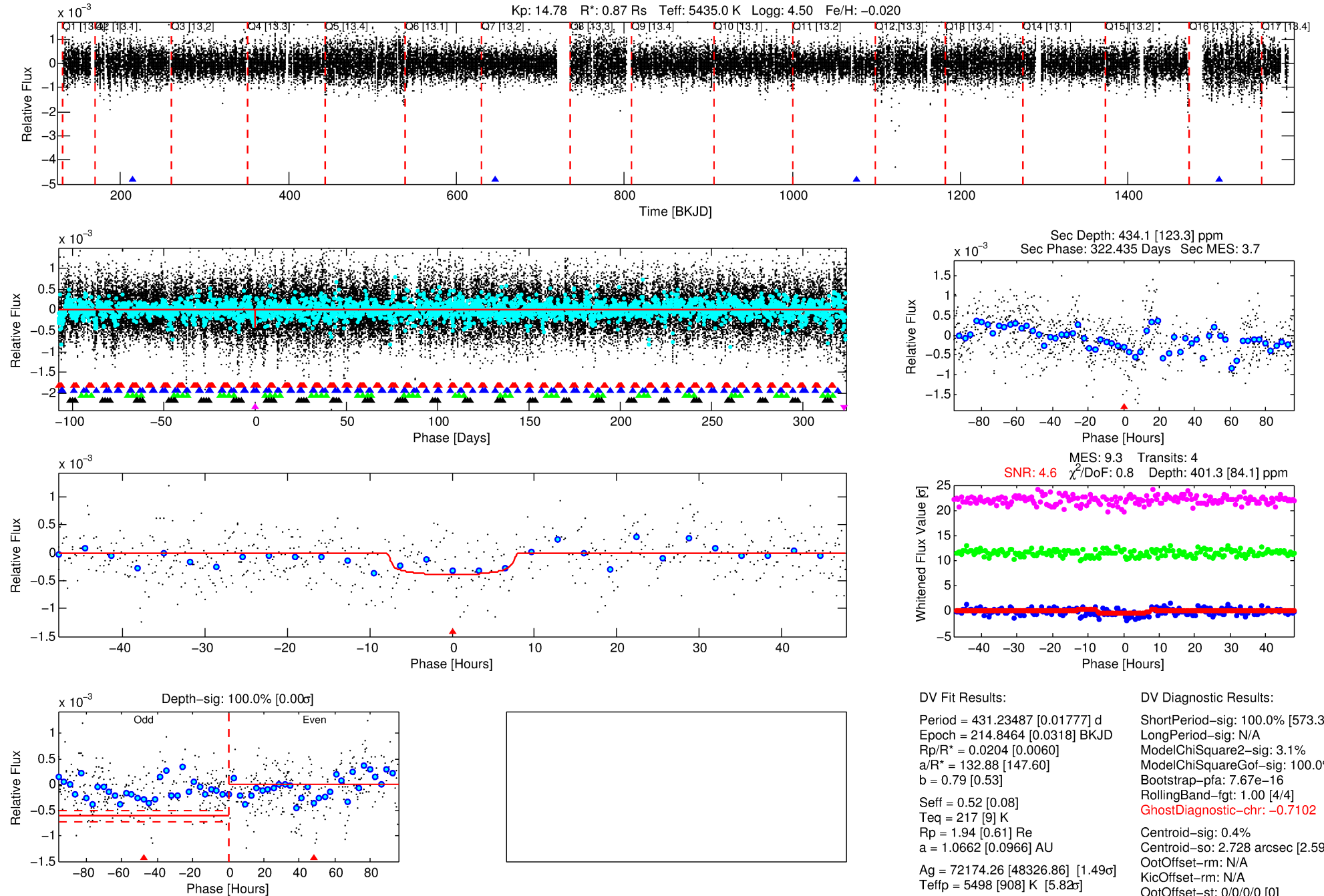
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 008950568-05

No Significant Match Found

# DV One-Page Summary

KIC: 8950568 Candidate: 5 of 5 Period: 431.235 d  
KOI: K02038 Name: Kepler-85 Corr: No Ephemeris Match



## DV Fit Results:

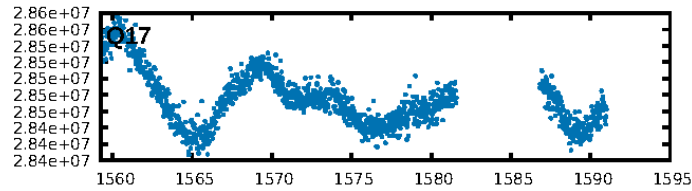
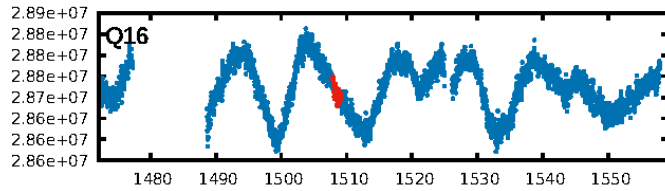
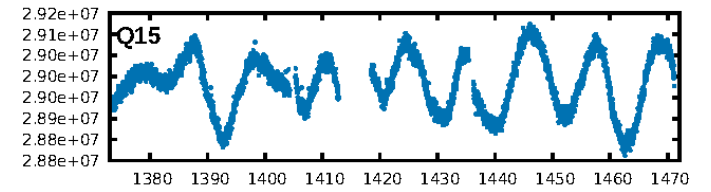
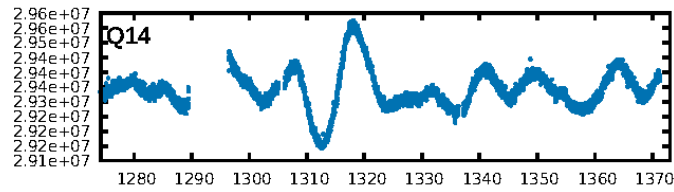
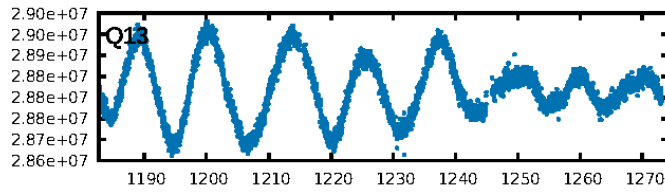
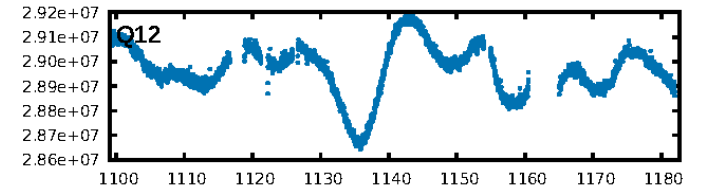
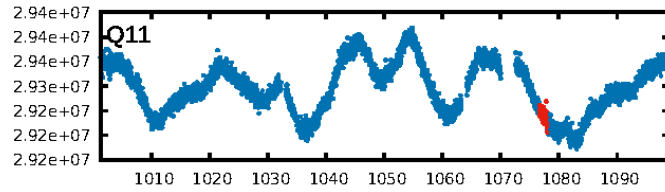
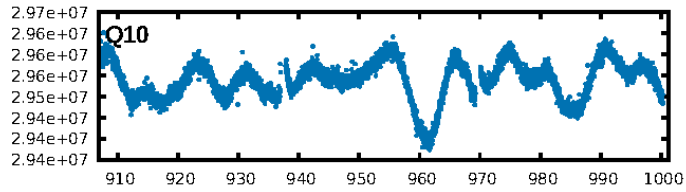
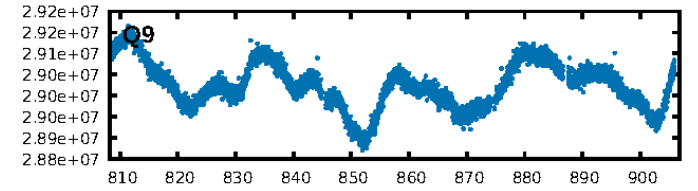
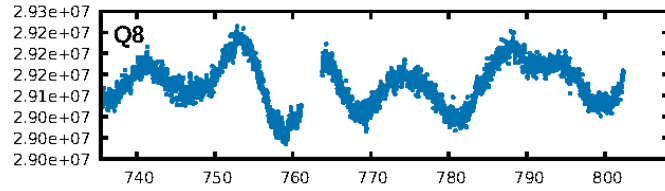
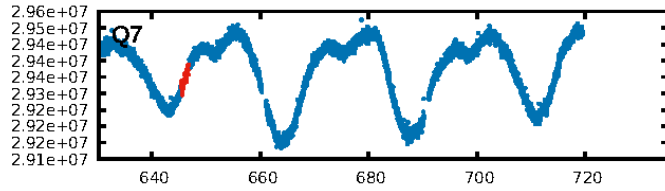
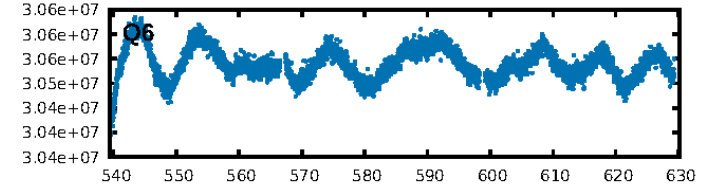
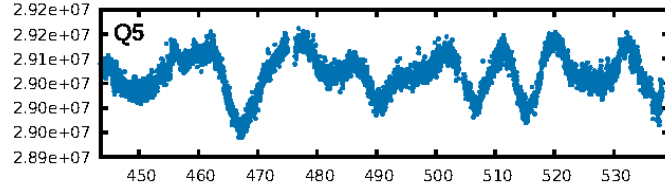
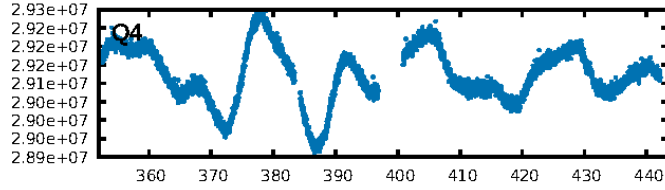
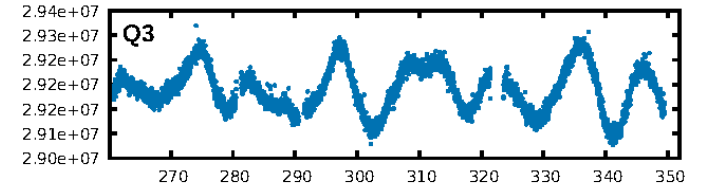
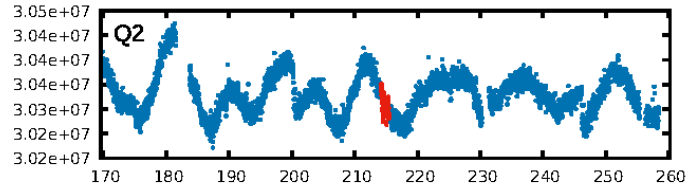
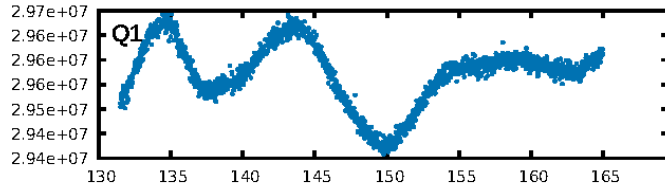
Period = 431.23487 [0.01777] d  
Epoch = 214.8464 [0.0318] BKJD  
Rp/R\* = 0.0204 [0.0060]  
a/R\* = 132.88 [147.60]  
b = 0.79 [0.53]  
Seff = 0.52 [0.08]  
Teq = 217 [9] K  
Rp = 1.94 [0.61] Re  
a = 1.0662 [0.0966] AU  
Ag = 72174.26 [48326.86] [1.49 $\sigma$ ]  
Teffp = 5498 [908] K [5.82 $\sigma$ ]

## DV Diagnostic Results:

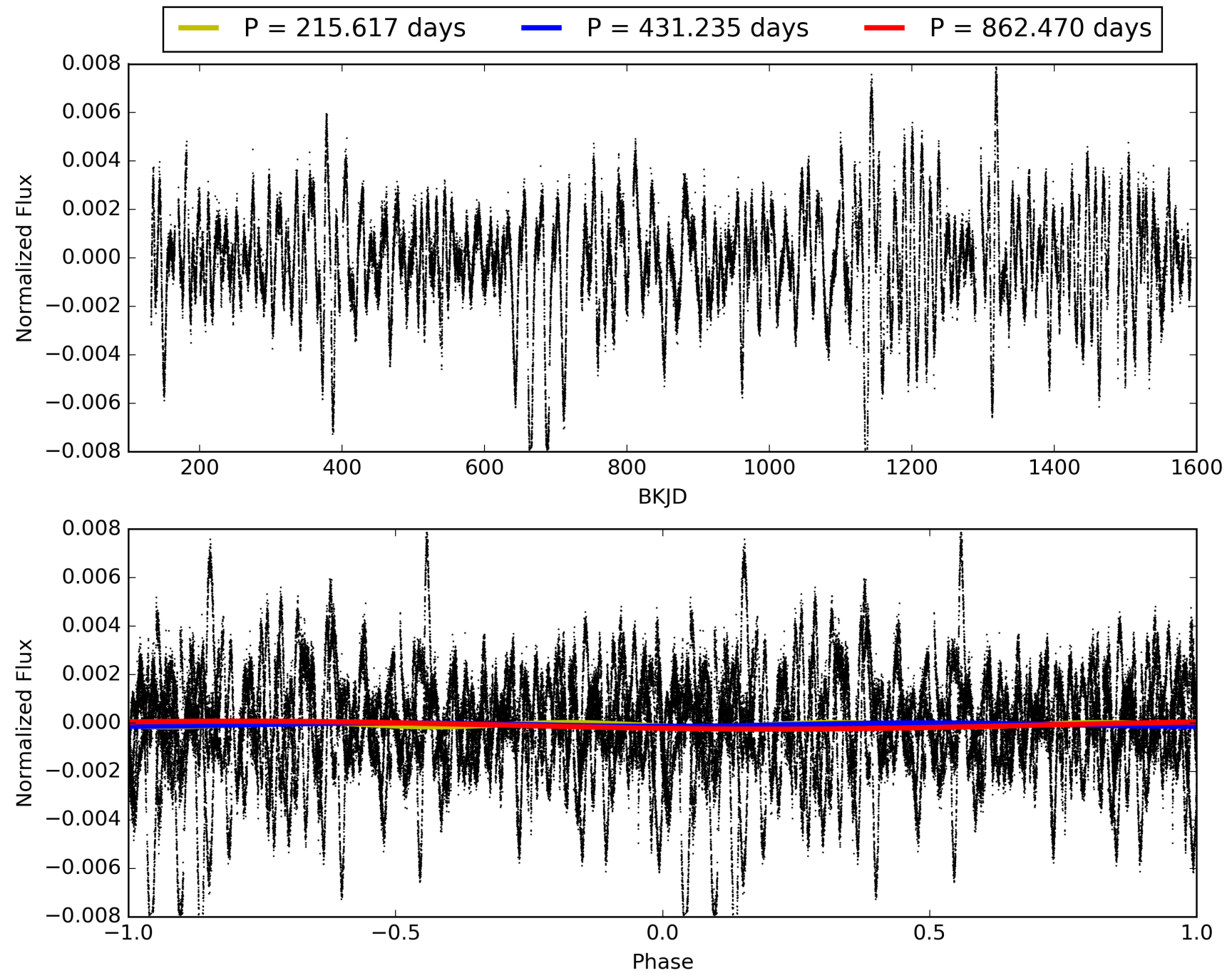
ShortPeriod-sig: 100.0% [573.36 $\sigma$ ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 3.1%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 7.67e-16  
RollingBand-fgt: 1.00 [4/4]  
GhostDiagnostic-chr: -0.7102  
Centroid-sig: 0.4%  
Centroid-so: 2.728 arcsec [2.59 $\sigma$ ]  
OotOffset-rm: N/A  
KicOffset-rm: N/A  
OotOffset-st: 0/0/0 [0]  
KicOffset-st: 0/0/0 [0]  
DiffImageQuality-fgm: N/A  
DiffImageOverlap-fno: 0.25 [1/4]



# TCE 008950568-05, PDC Light Curves

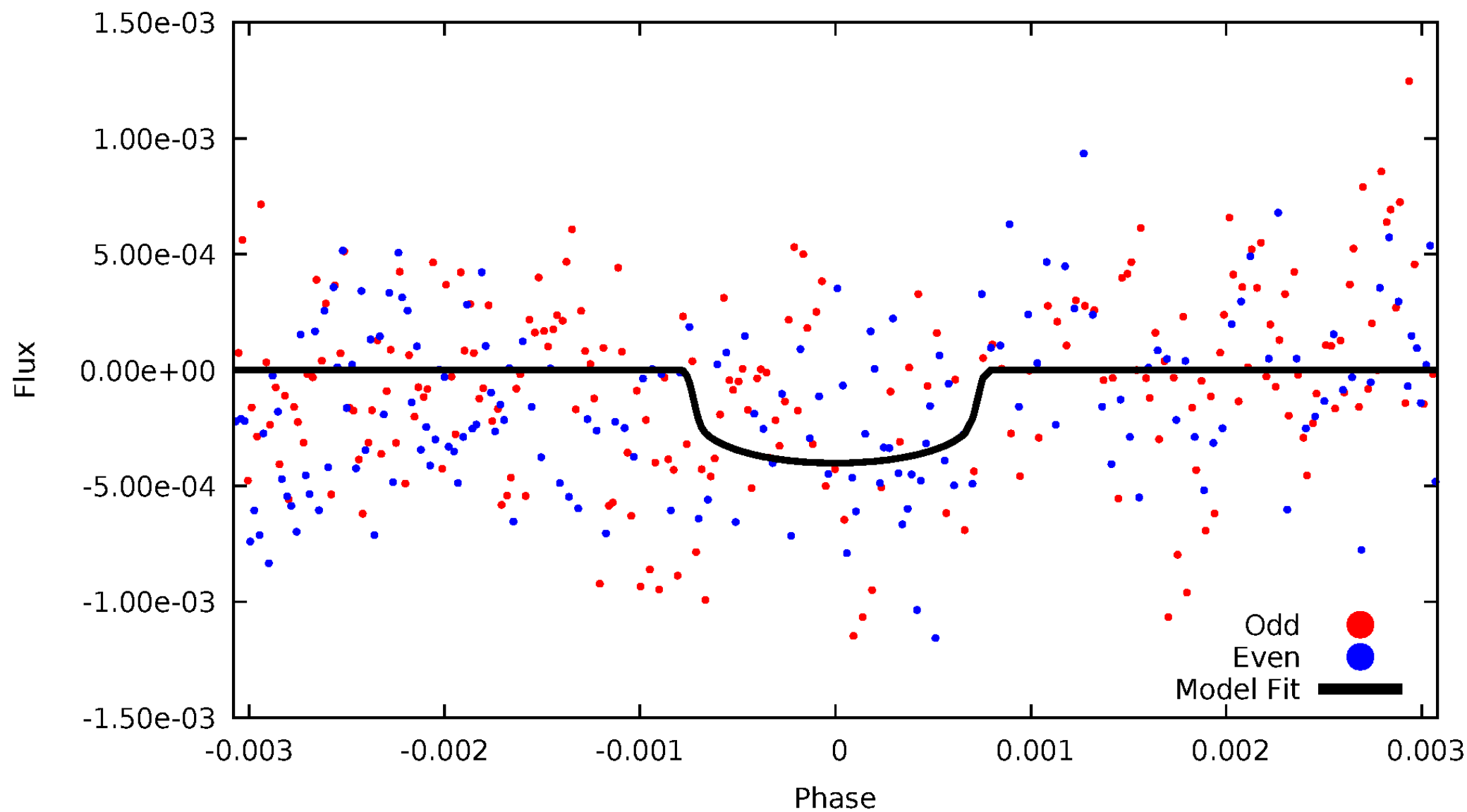


TCE 008950568-05



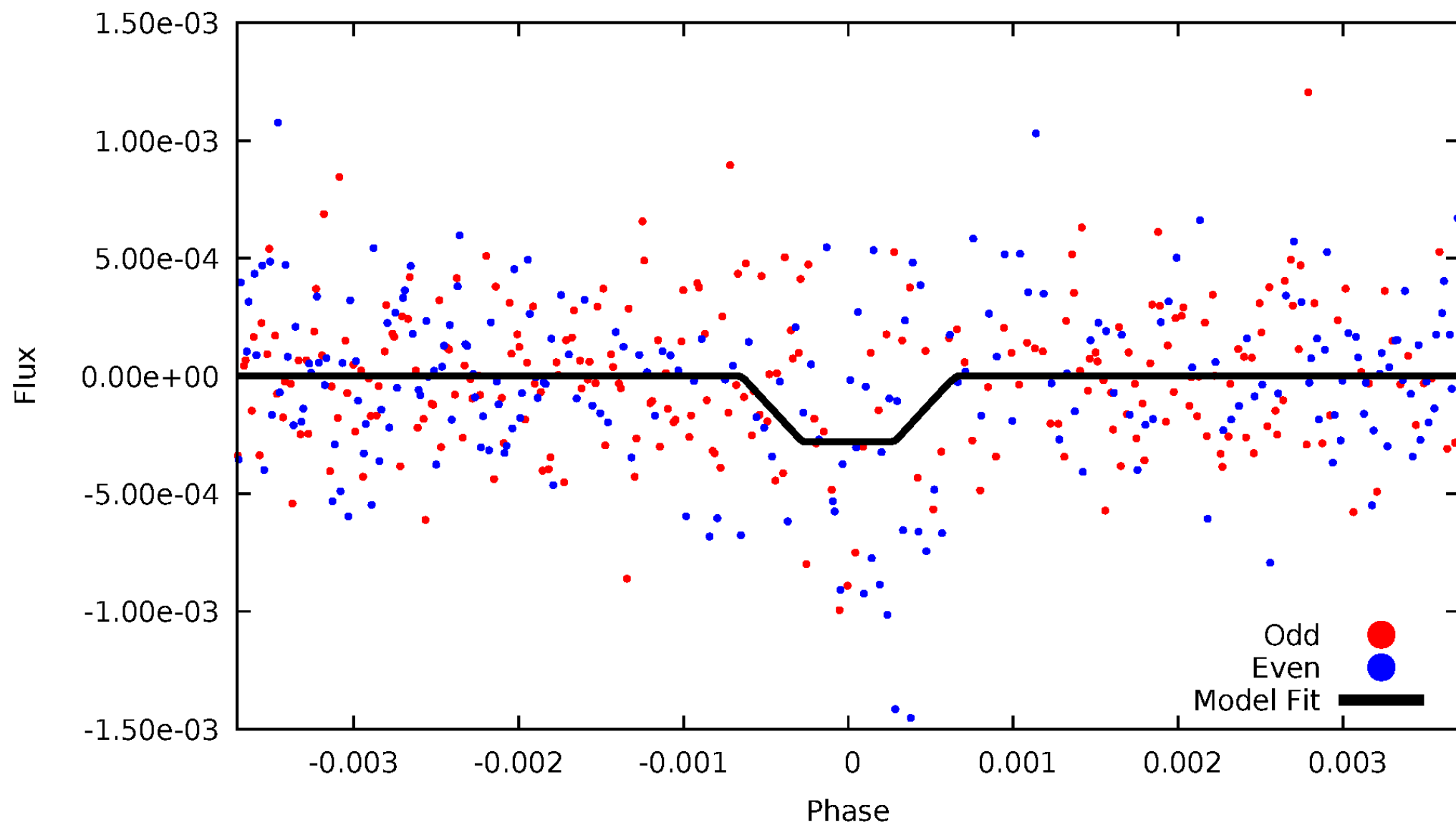
# DV Odd/Even

TCE 008950568-05

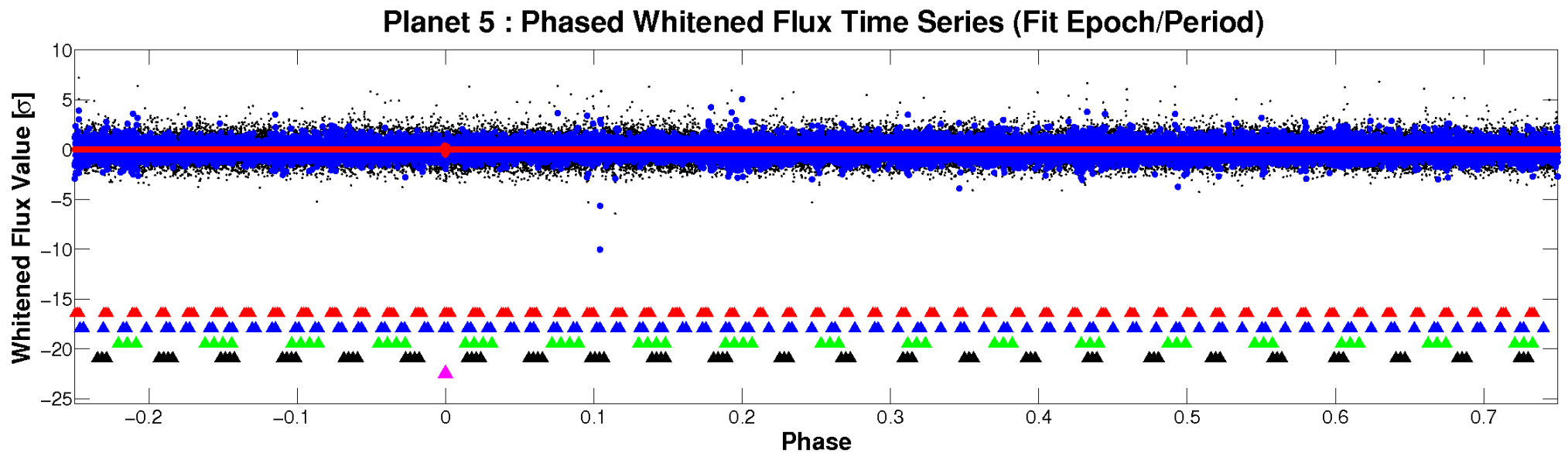
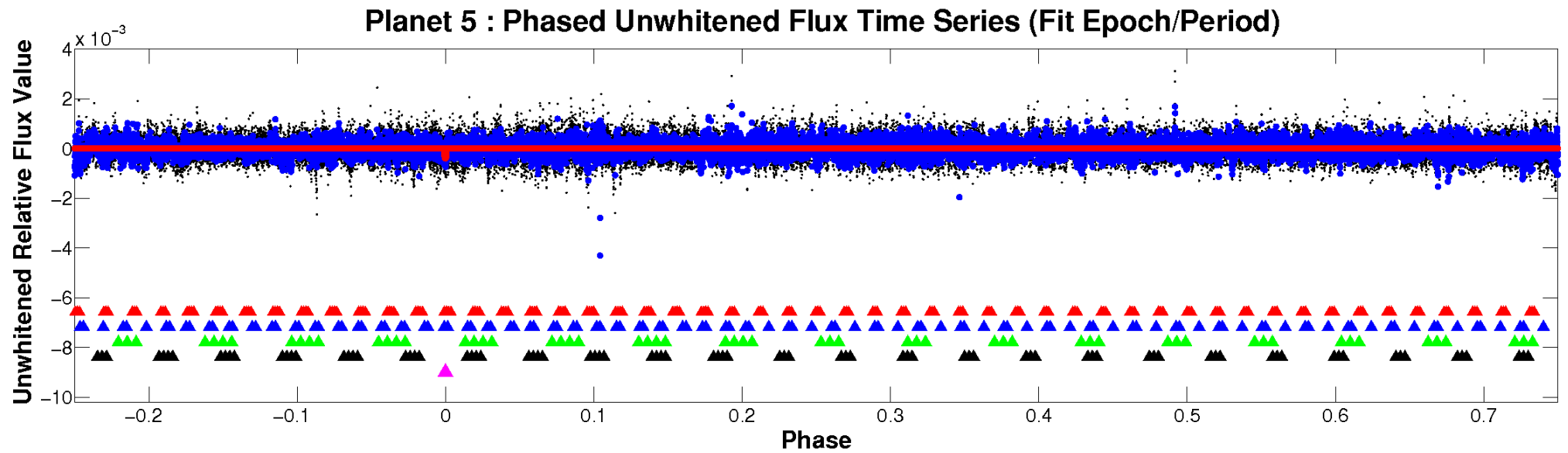


# ALT Odd/Even

TCE 008950568-05

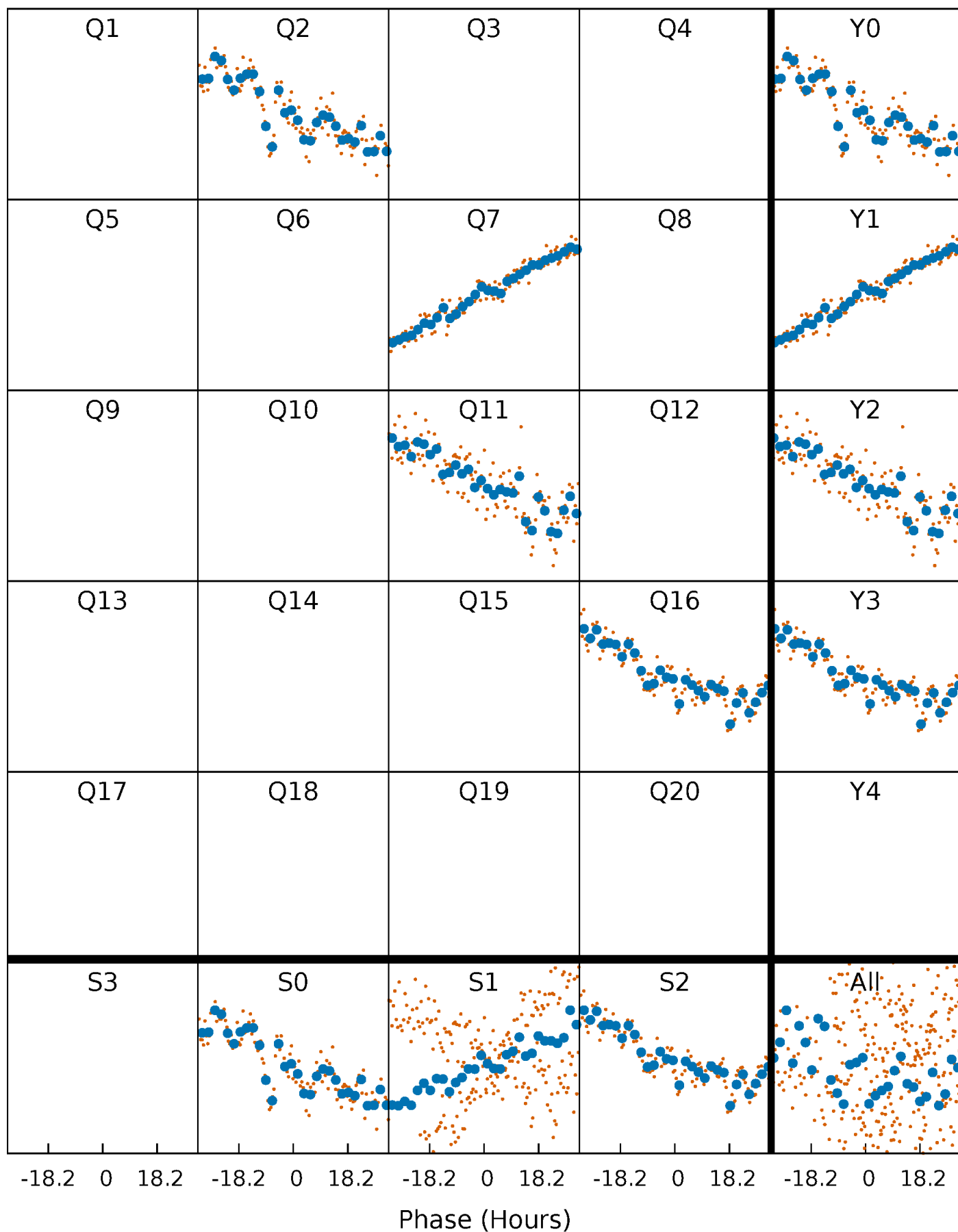


# Non-Whitened Vs. Whitened Light Curve



# PDC Quarter-Phased Transit Curves

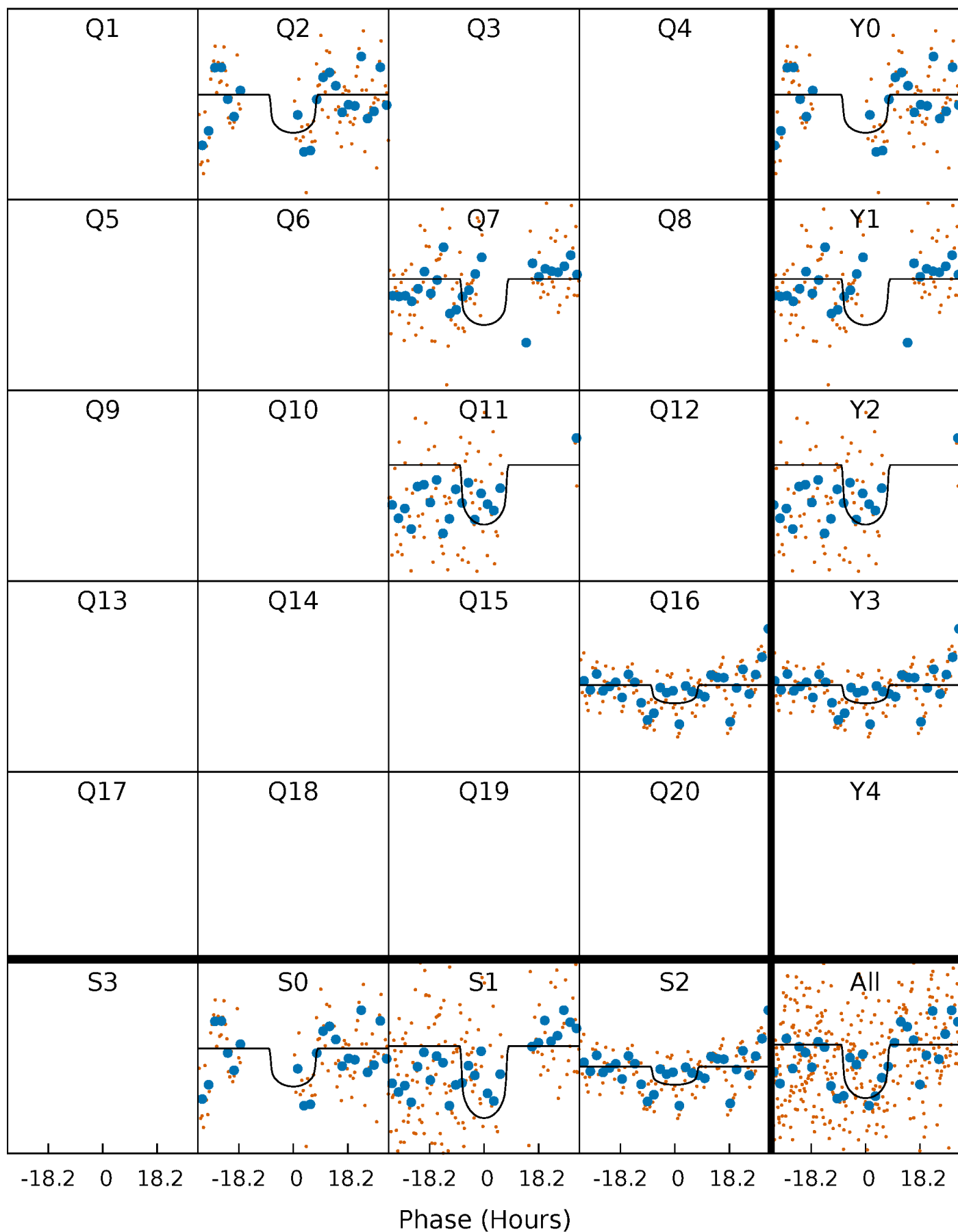
TCE 008950568-05     $P=431.234865$  Days     $T_0=214.846382$  (BKJD)





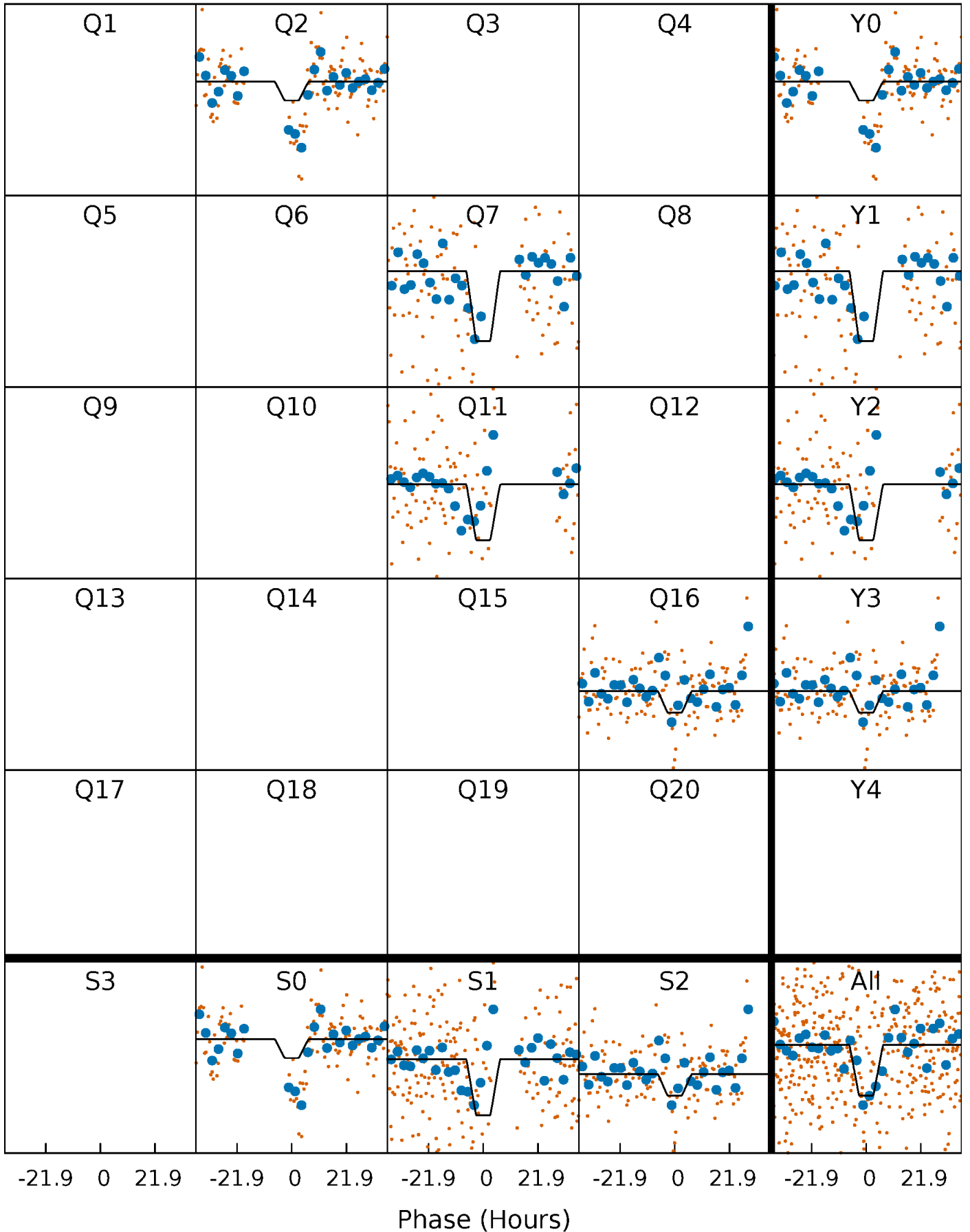
# DV Quarter-Phased Transit Curves

TCE 008950568-05     $P=431.234865$  Days     $T_0=214.846382$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

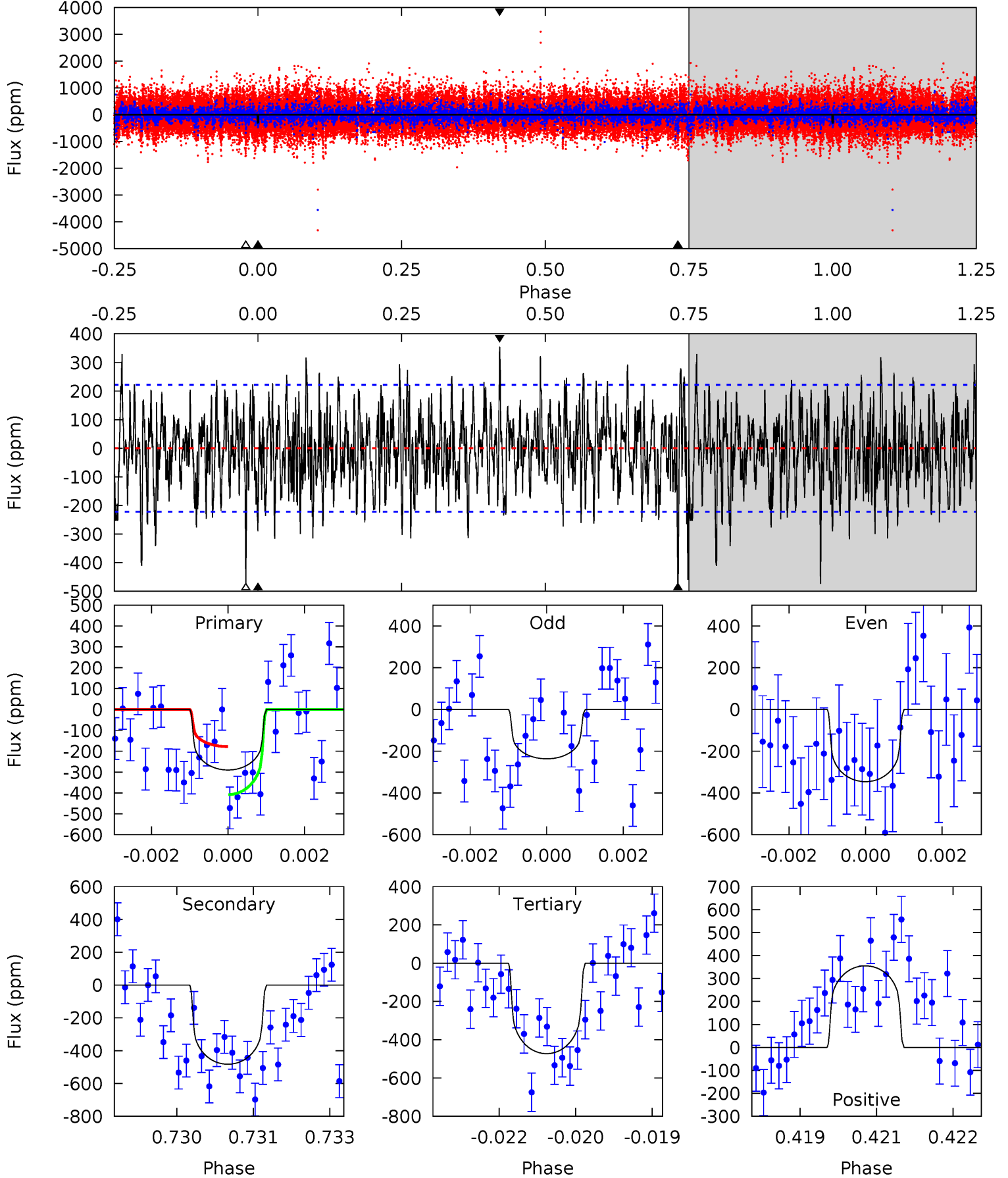
TCE 008950568-05     $P=431.236661$  Days     $T_0=214.903753$  (BKJD)



# DV Model-Shift Uniqueness Test

008950568-05, P = 431.234865 Days, E = 214.846382 Days

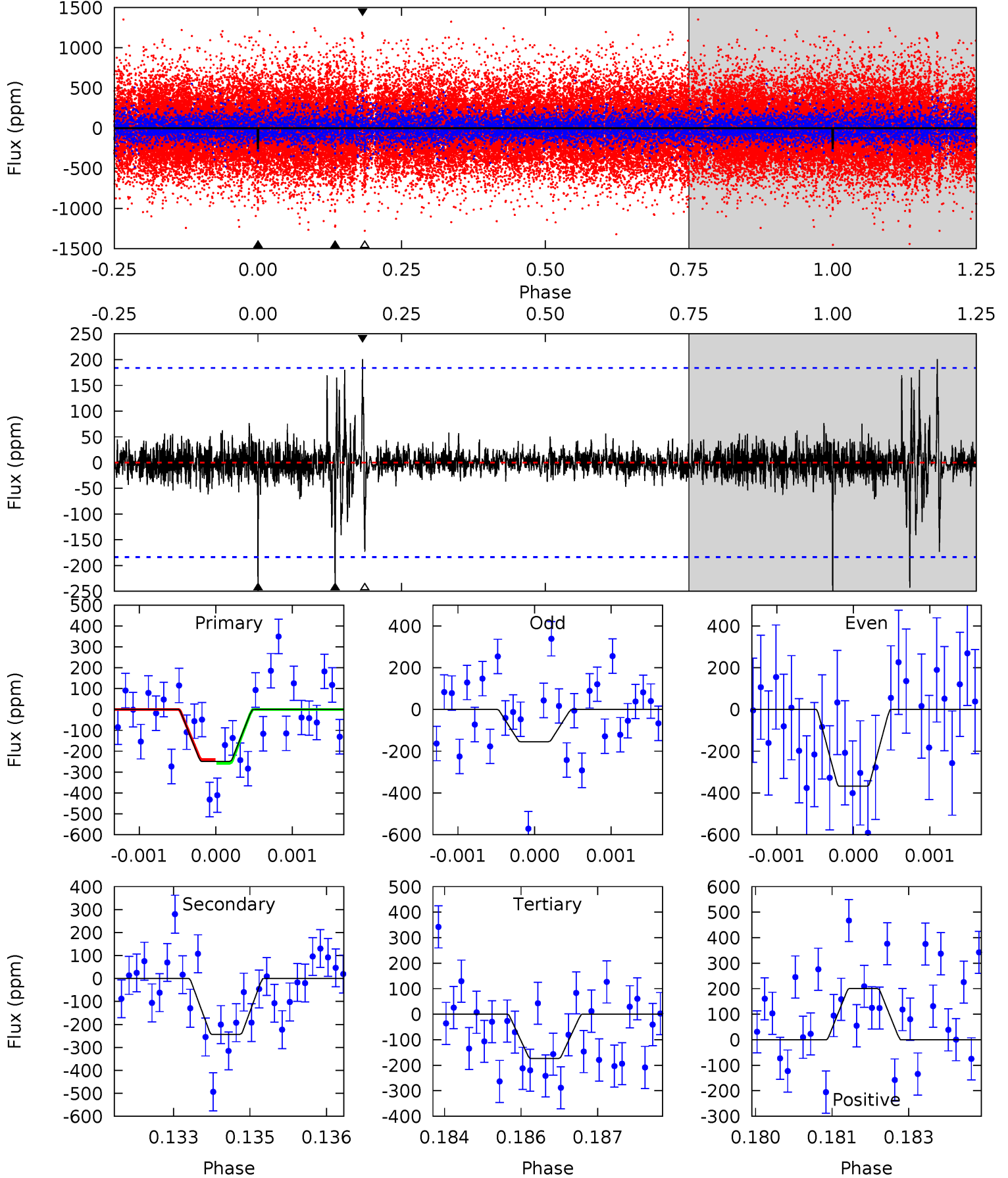
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.02	11.7	11.4	8.60	5.37	3.16	2.76	-4.42	-1.57	0.24	3.09	1.32	0.93	0.42	2.79



# Alt Model-Shift Uniqueness Test

008950568-05, P = 431.236661 Days, E = 214.903753 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
7.30	7.15	5.09	5.89	5.39	3.20	0.72	2.21	1.41	2.06	1.26	3.15	1.64	0.45	0.27



### Stellar Parameters For KIC 008950568

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (g \cdot \text{cm}^{-3})$
	$5435^{+109}_{-109}$	$4.495^{+0.063}_{-0.077}$	$-0.020^{+0.150}_{-0.150}$	$0.873^{+0.090}_{-0.068}$	$0.870^{+0.055}_{-0.049}$	$1.840^{+0.446}_{-0.428}$
	+2%/-2%	+1%/-2%	+750%/-750%	+10%/-8%	+6%/-6%	+24%/-23%
Source	SPE58	SPE58	SPE58	DSEP		

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

### Secondary Eclipse Parameters for KIC 008950568-05 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-483 \pm 41$	$1.98^{+0.60}_{-0.60}$	$303^{+10}_{-9}$	$5630^{+1062}_{-661}$	$77595^{+82239}_{-32773}$
Alt.	$-243 \pm 34$	$1.60^{+0.56}_{-0.55}$	$304^{+9}_{-9}$	$5280^{+1170}_{-655}$	$59735^{+79297}_{-28497}$

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

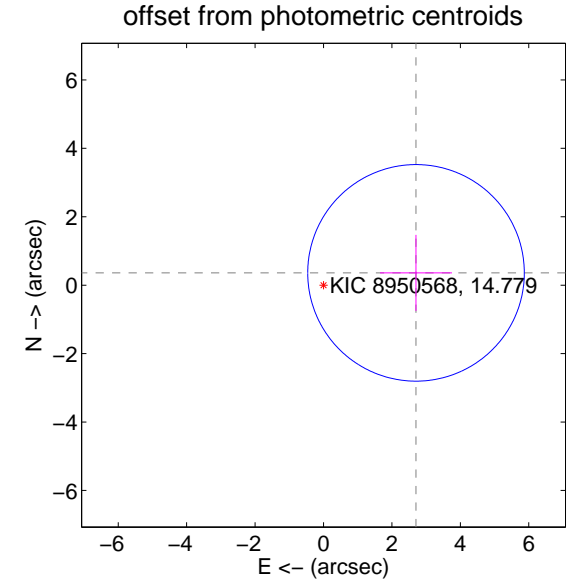
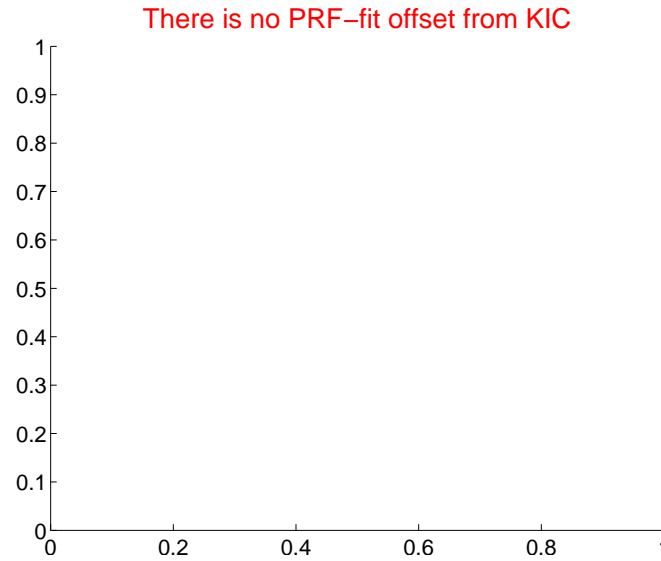
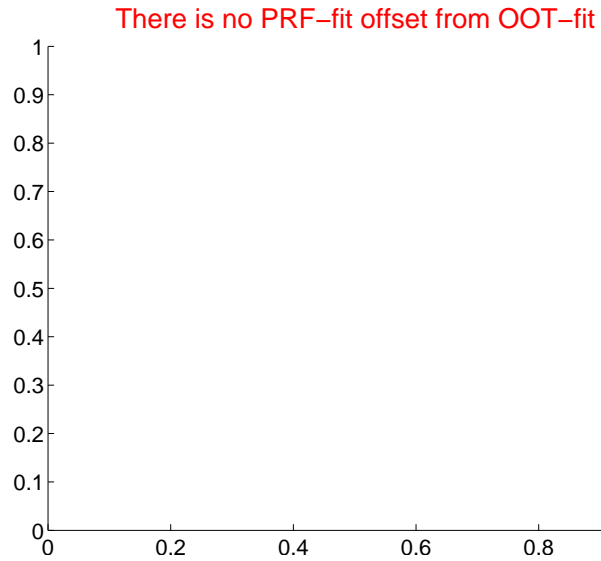
## DV Centroid Data

Supplemental centroid analysis for 008950568-05. Kepler magnitude: 14.78. Transit SNR 4.65

There are 0 quarters with good PRF difference image offsets

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

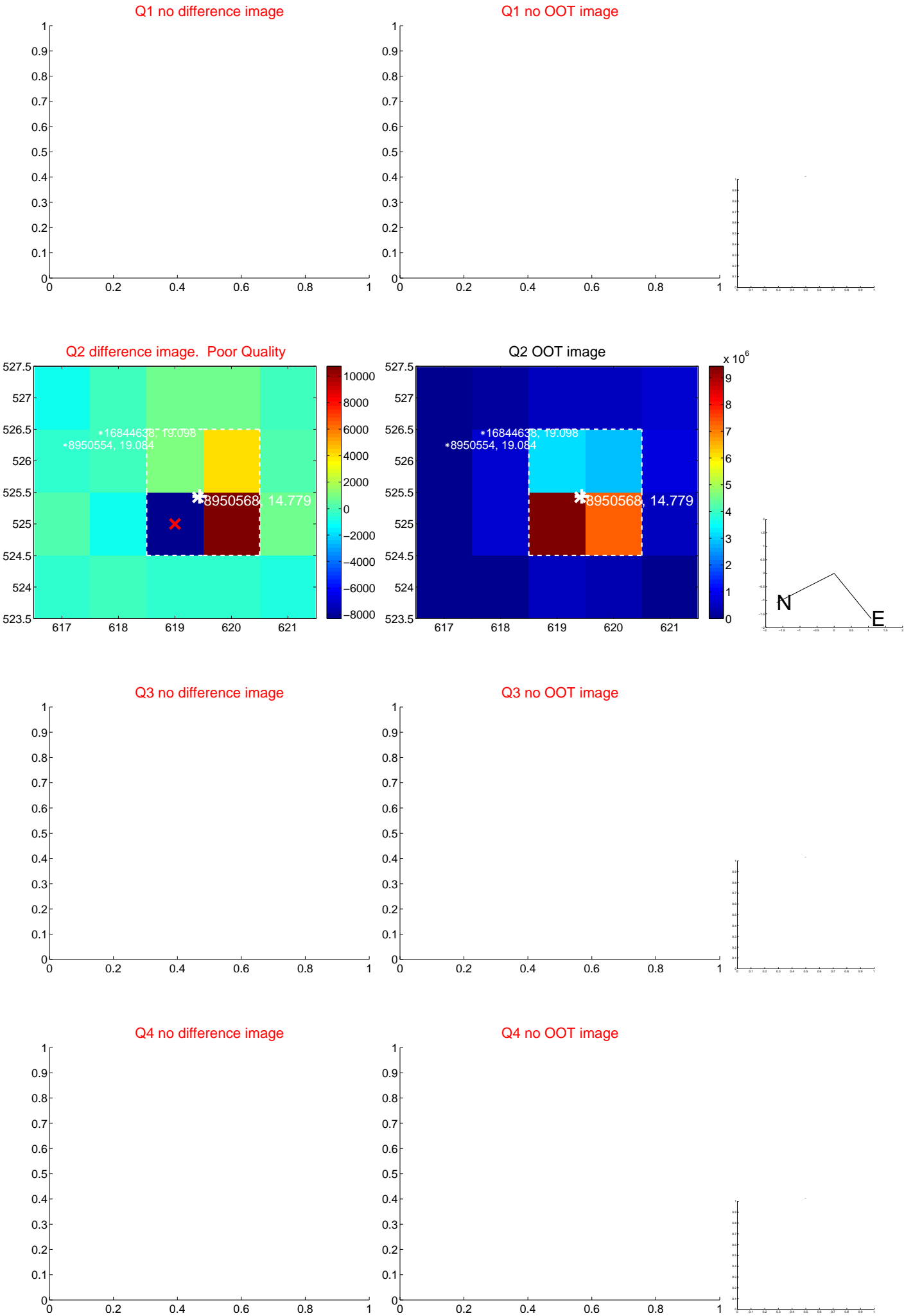
	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	—	—	—	—
PRF-fit source offset from KIC position	—	—	—	—
photometric centroid source offset	$2.73 \pm 1.06$	2.59	$-2.70 \pm 1.05$	$0.36 \pm 1.11$



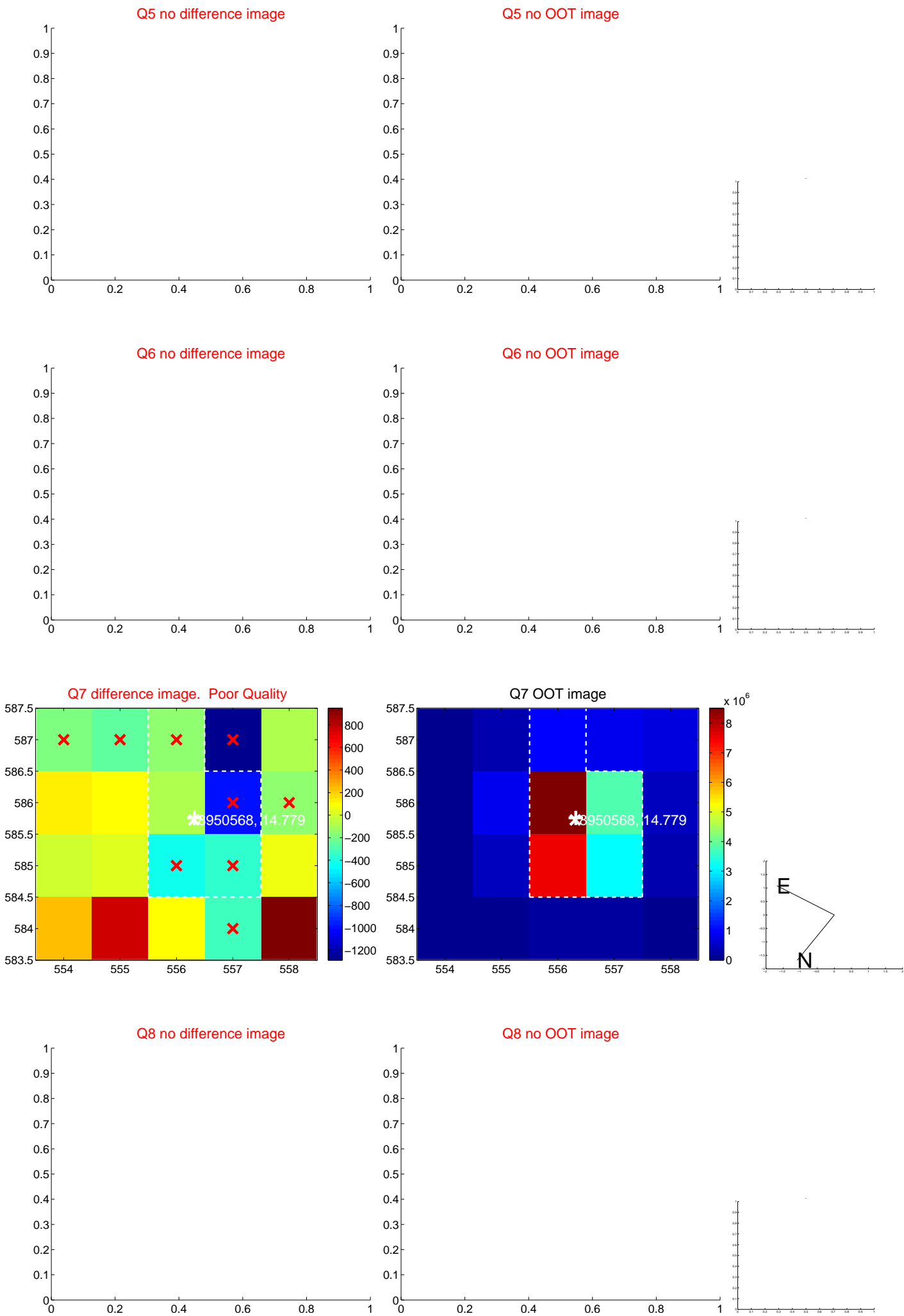
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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



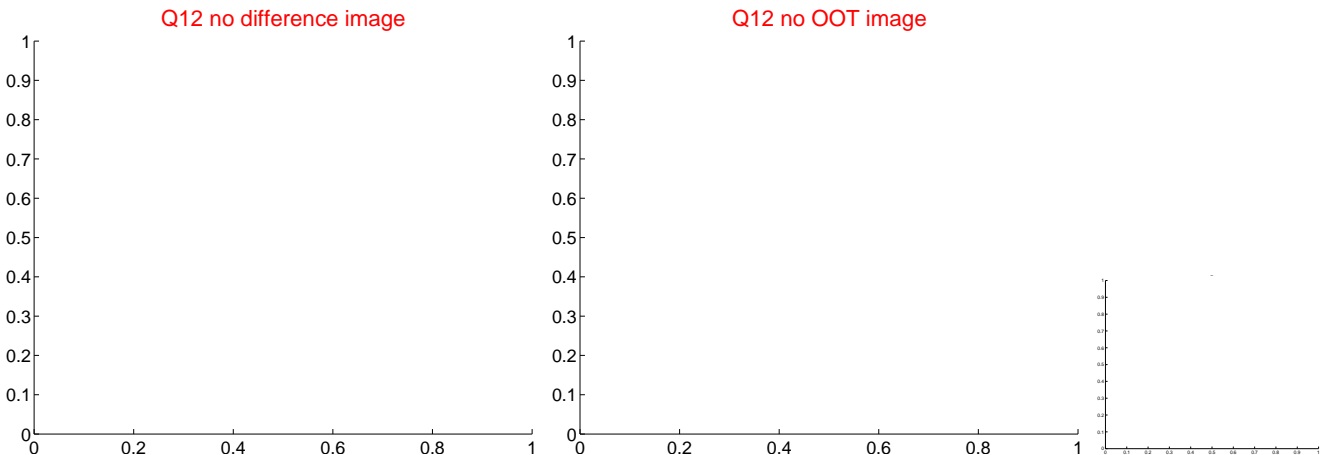
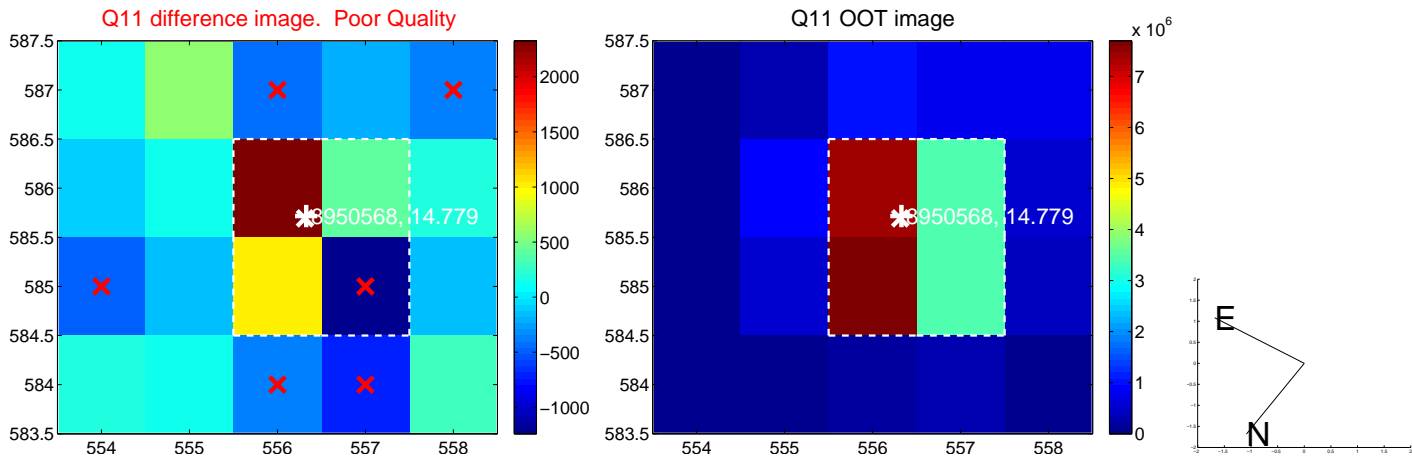
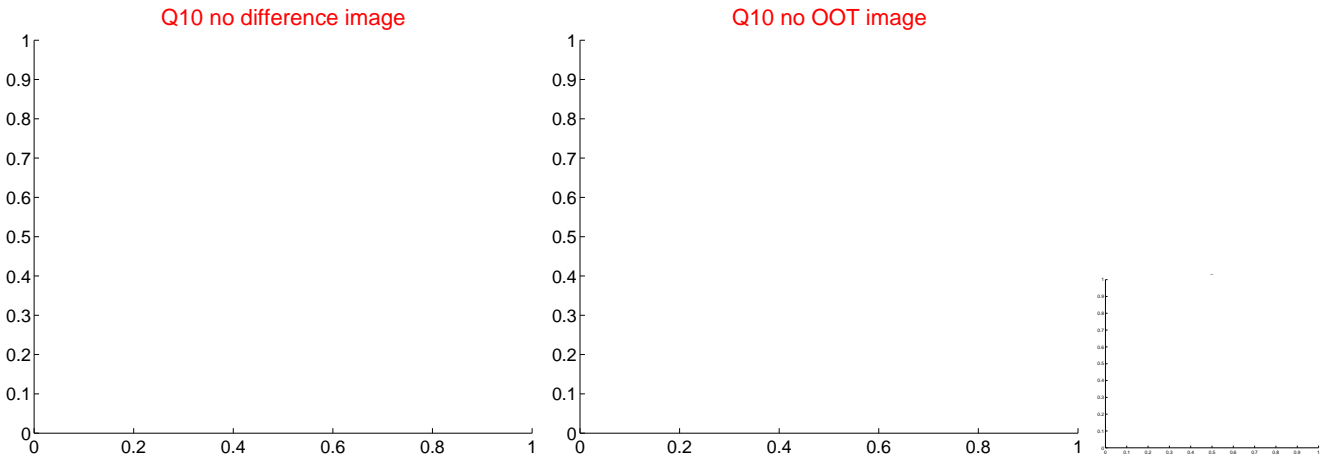
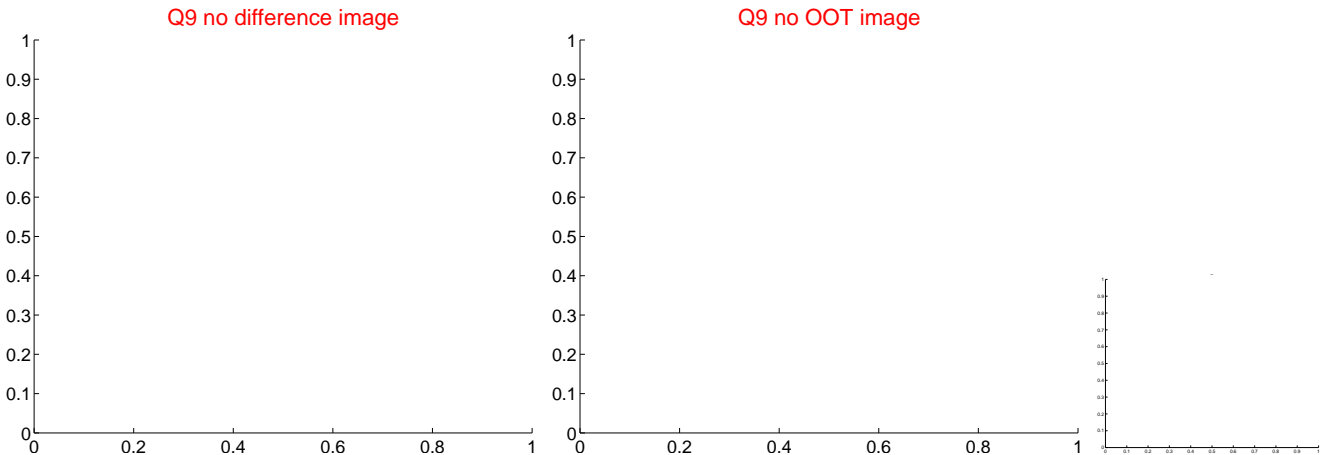
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



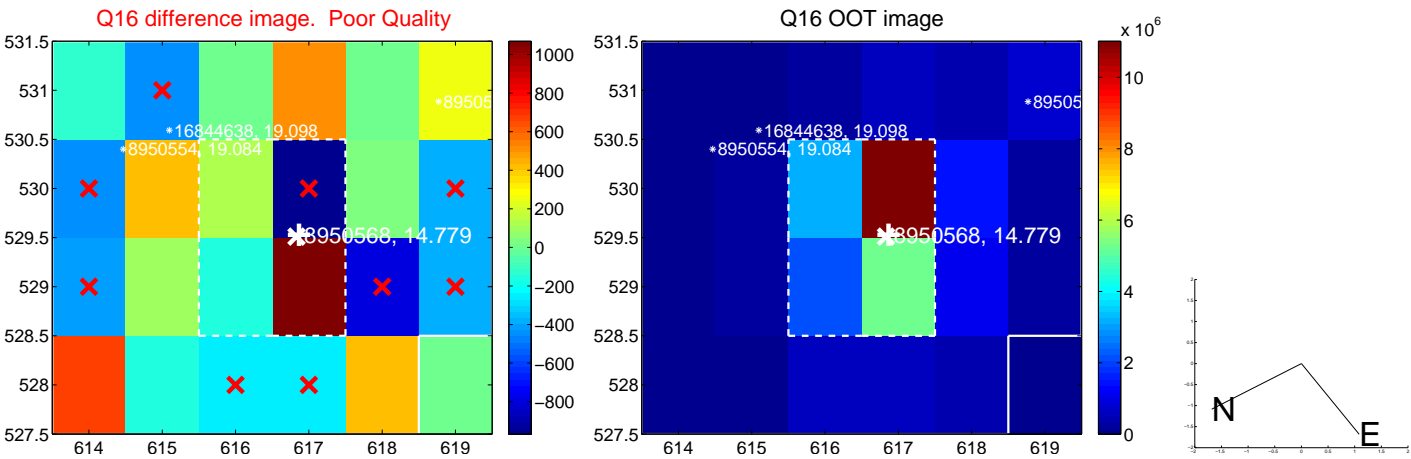
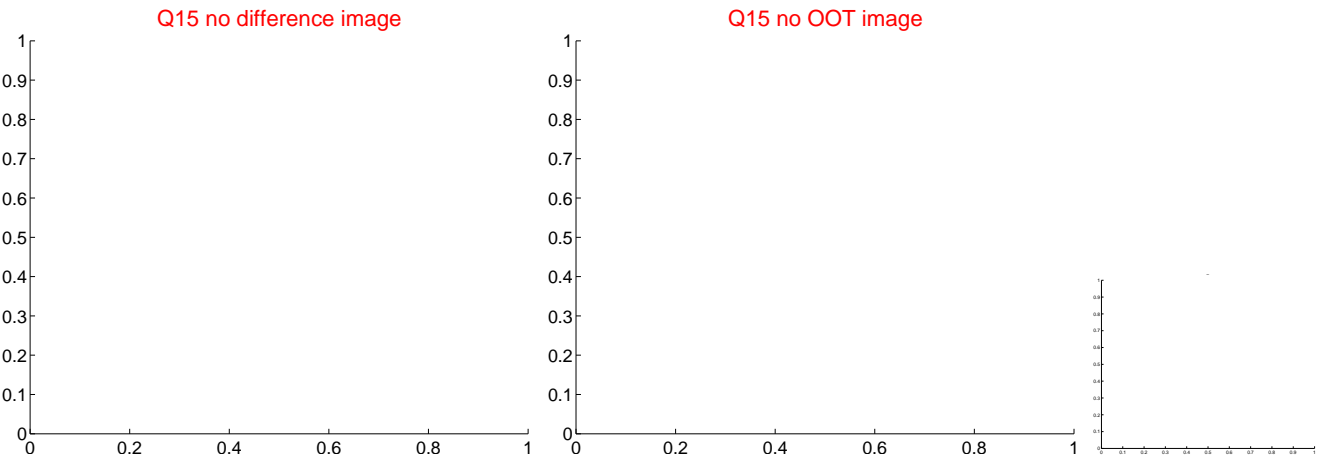
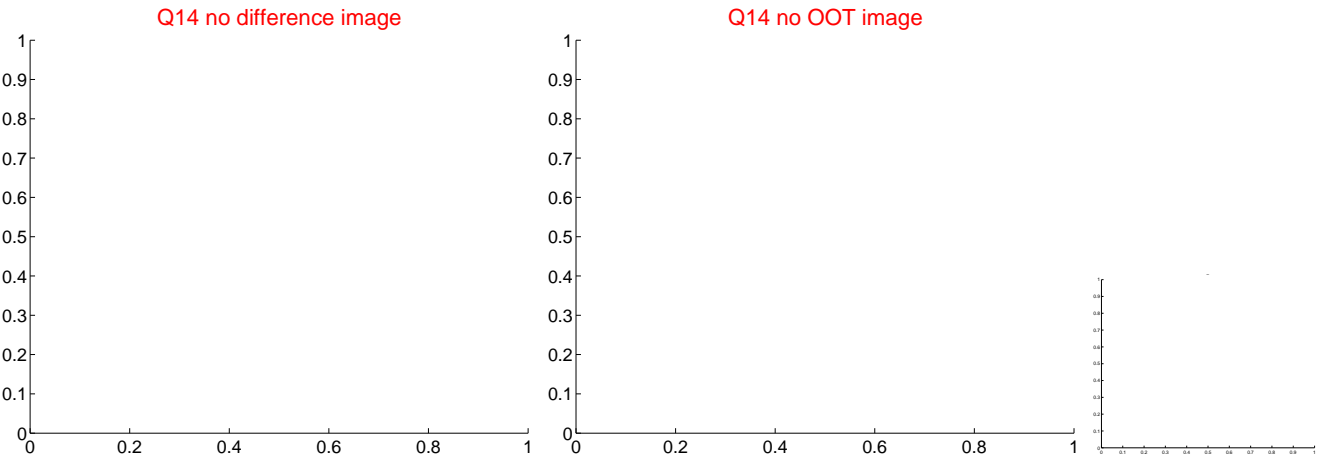
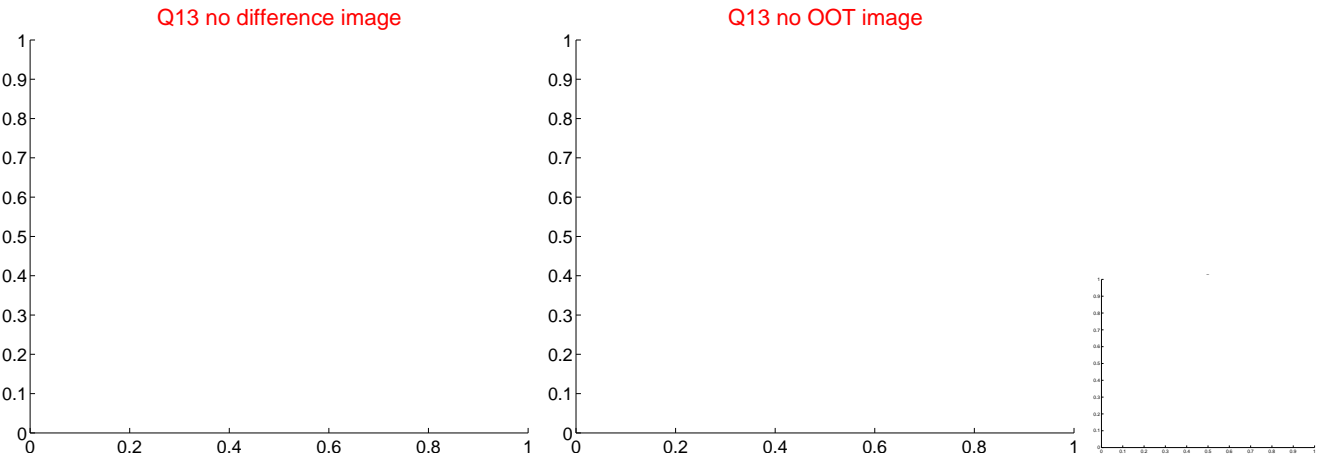
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



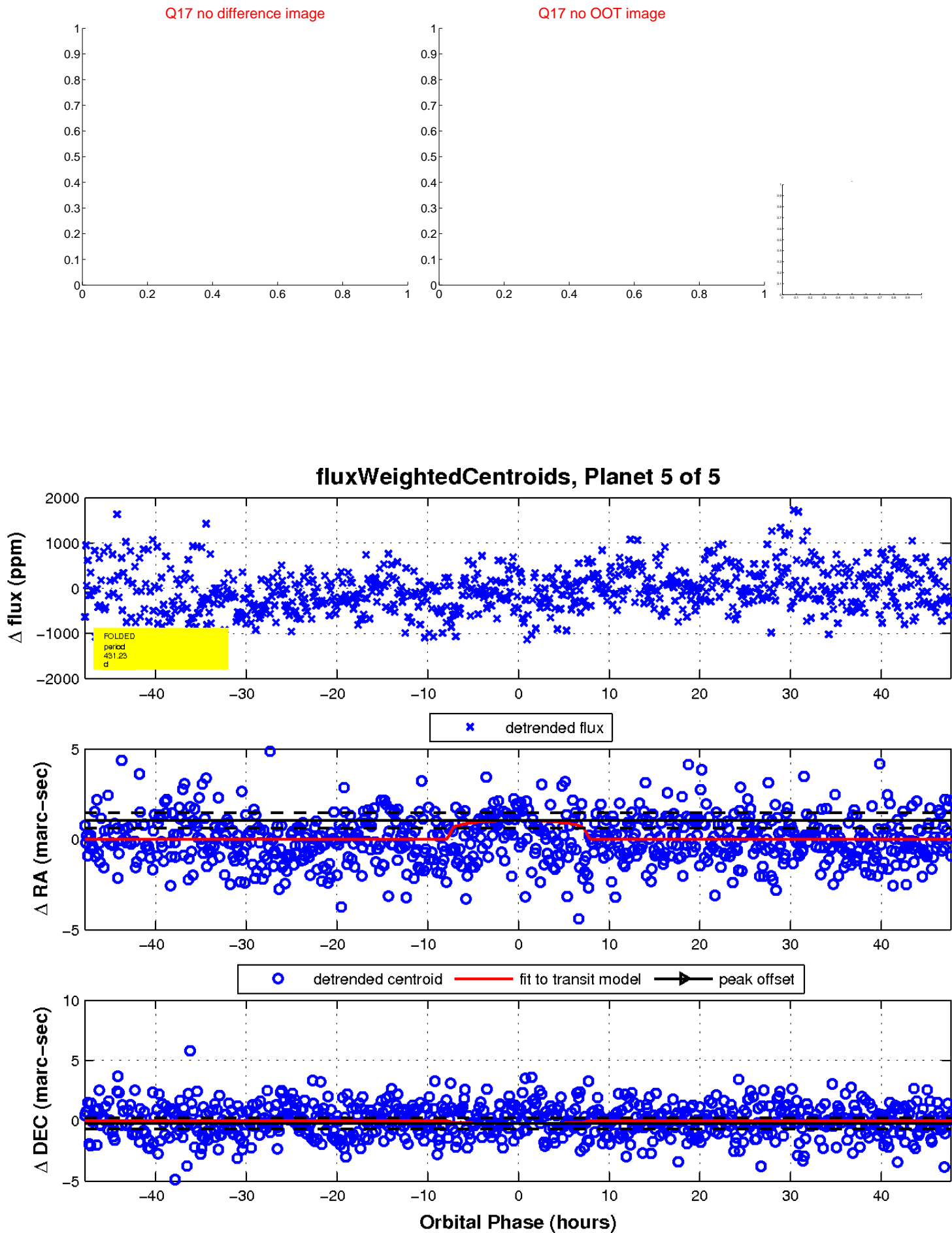
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value



white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



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



UKIRT Image

Declination

