

# KIC 003557532

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
003557532-01	OBS	No	386.212983	466.613621	1398.5	7.921	14.0	4.4	0.67	5383	2.55	0.41
003557532-02	OBS	No	453.410921	194.757058	332.5	0.840	13.2	1.5	0.67	5383	1.48	0.33
003557532-03	OBS	No	312.264700	327.452636	1018.7	2.939	13.0	4.7	0.67	5383	2.29	0.54
003557532-04	OBS	No	464.779871	277.930759	1182.3	4.025	16.2	4.2	0.67	5383	2.37	0.32
003557532-05	OBS	No	0.590590	131.535994	1374.7	1.500	12.2	-1.0	0.67	5383	2.47	2307.43

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003557532-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
003557532-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_POS_ALT
003557532-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS
003557532-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV
003557532-05	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_ALT—CENT_NOFITS

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

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

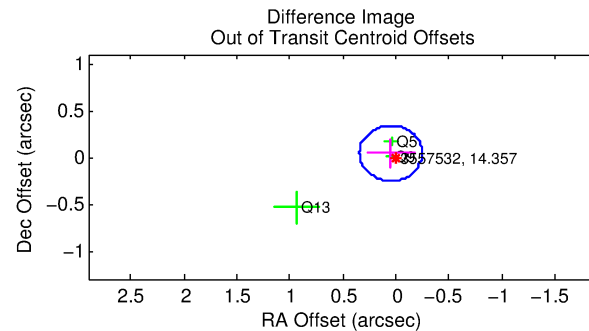
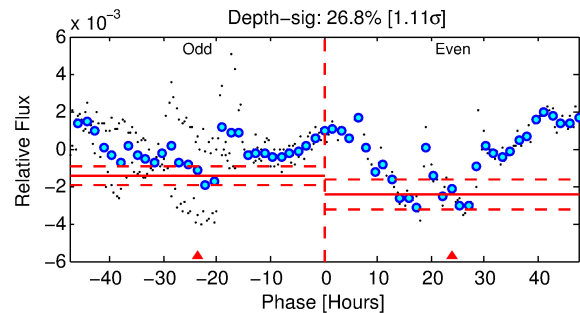
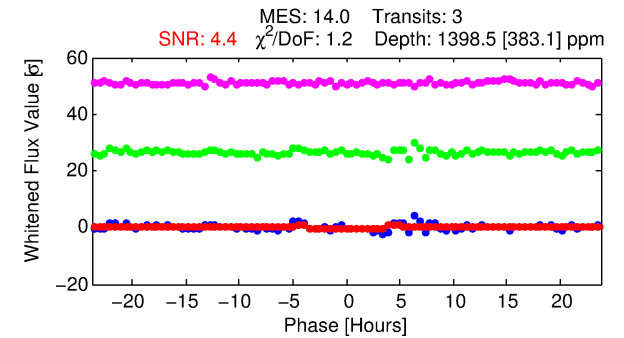
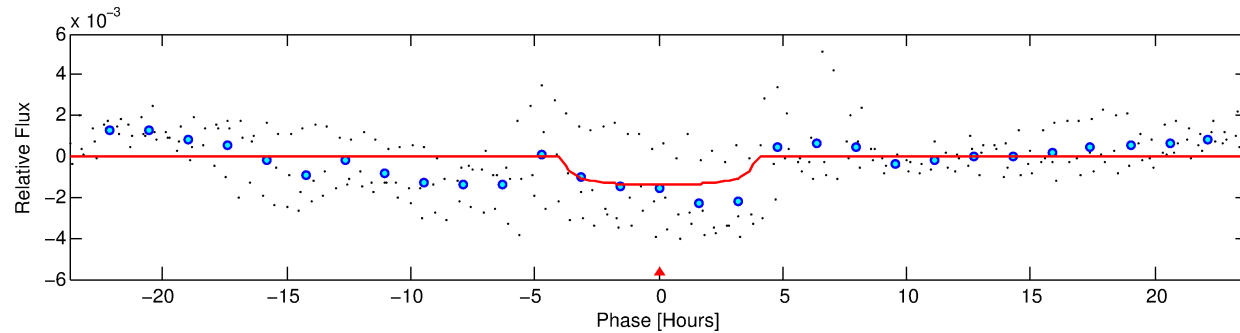
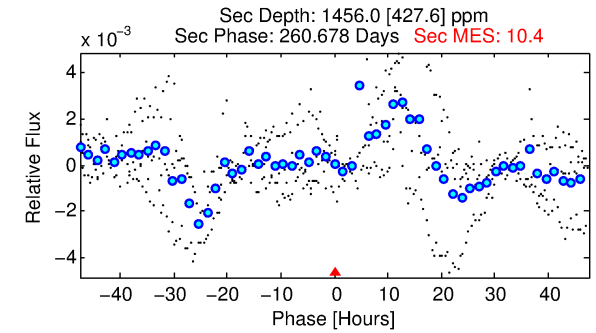
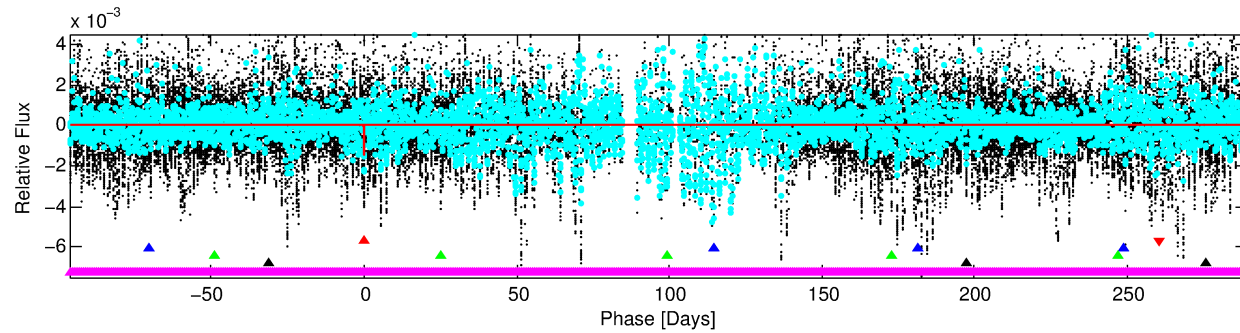
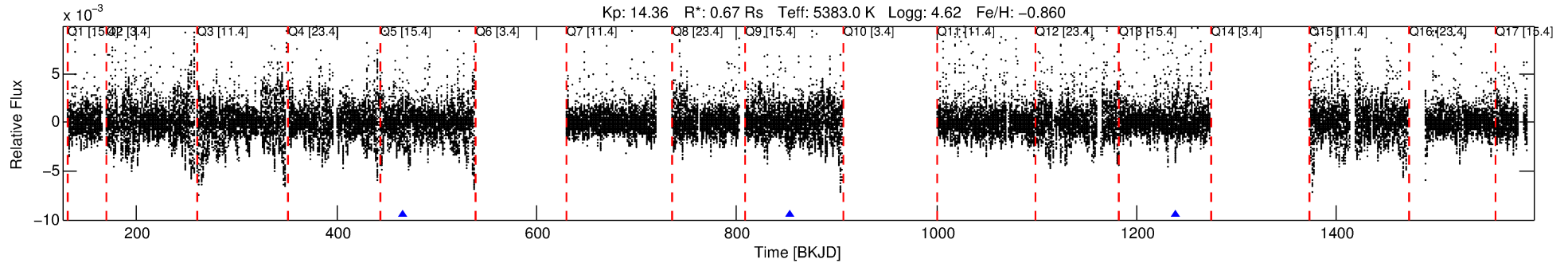
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 003557532-01

No Significant Match Found

# DV One-Page Summary

KIC: 3557532 Candidate: 1 of 5 Period: 386.213 d



## DV Fit Results:

Period = 386.21298 [0.00809] d  
Epoch = 466.6136 [0.0090] BKJD  
Rp/R\* = 0.0350 [0.0241]  
a/R\* = 338.70 [982.34]  
b = 0.49 [4.44]  
Seff = 0.41 [0.07]  
Teq = 204 [8] K  
Rp = 2.55 [1.78] Re  
a = 0.9087 [0.0760] AU  
Ag = 101411.62 [143238.23] [0.71 $\sigma$ ]  
Teffp = 5618 [1984] K [2.73 $\sigma$ ]

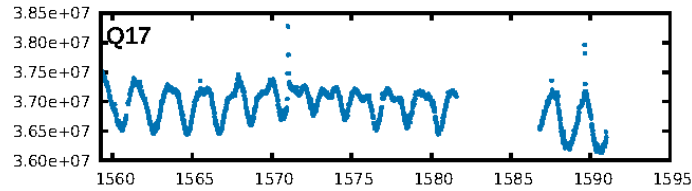
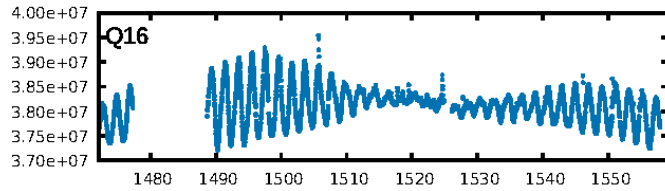
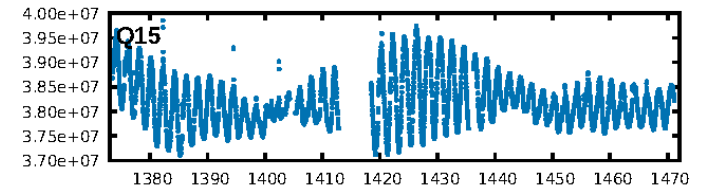
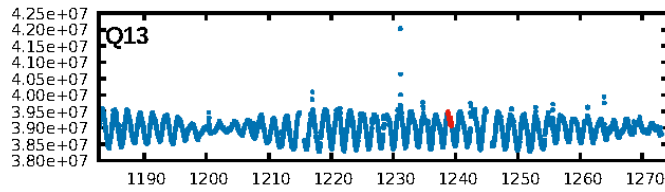
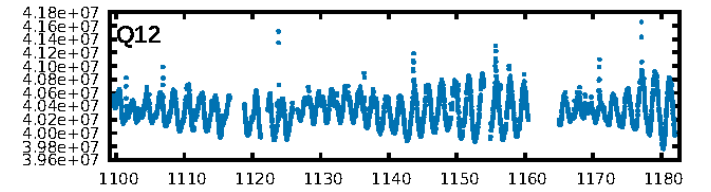
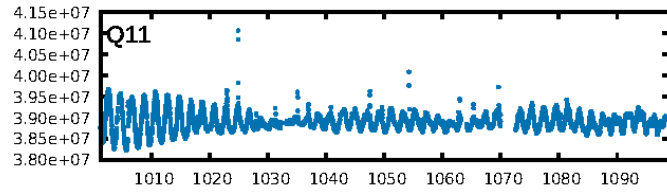
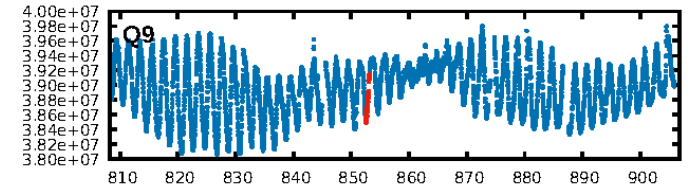
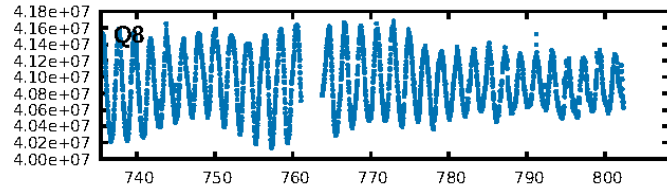
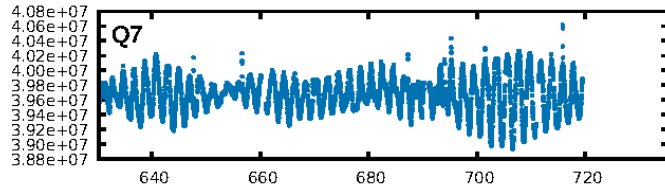
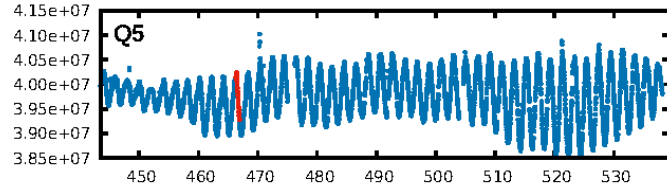
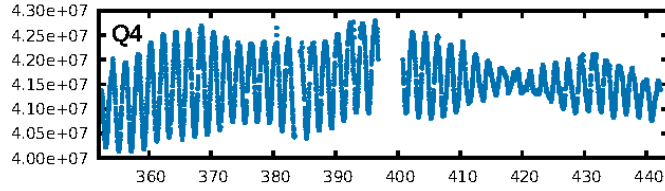
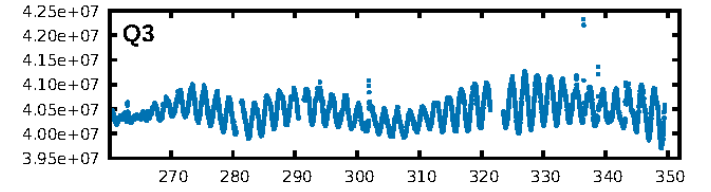
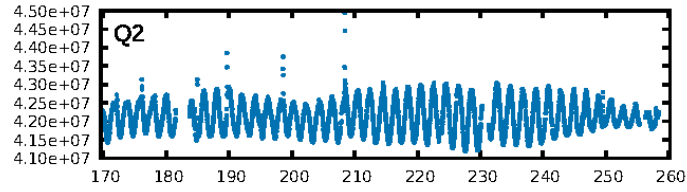
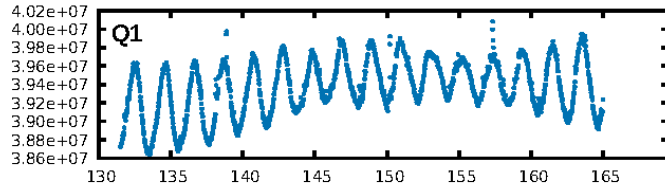
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [210.05 $\sigma$ ]  
LongPeriod-sig: 100.0% [202.46 $\sigma$ ]  
ModelChiSquare2-sig: 26.0%  
ModelChiSquareGof-sig: 81.8%  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [3/3]  
**GhostDiagnostic-chr: 0.6926**  
Centroid-sig: 1.7%  
Centroid-so: 0.878 arcsec [1.32 $\sigma$ ]  
OotOffset-rm: 0.063 arcsec [0.64 $\sigma$ ]  
OotOffset-st: 0/0/0/3 [3]  
KicOffset-rm: 0.089 arcsec [0.42 $\sigma$ ]  
KicOffset-st: 0/0/0/3 [3]  
DiffImageQuality-fgm: 0.33 [1/3]  
DiffImageOverlap-fno: 0.00 [0/3]

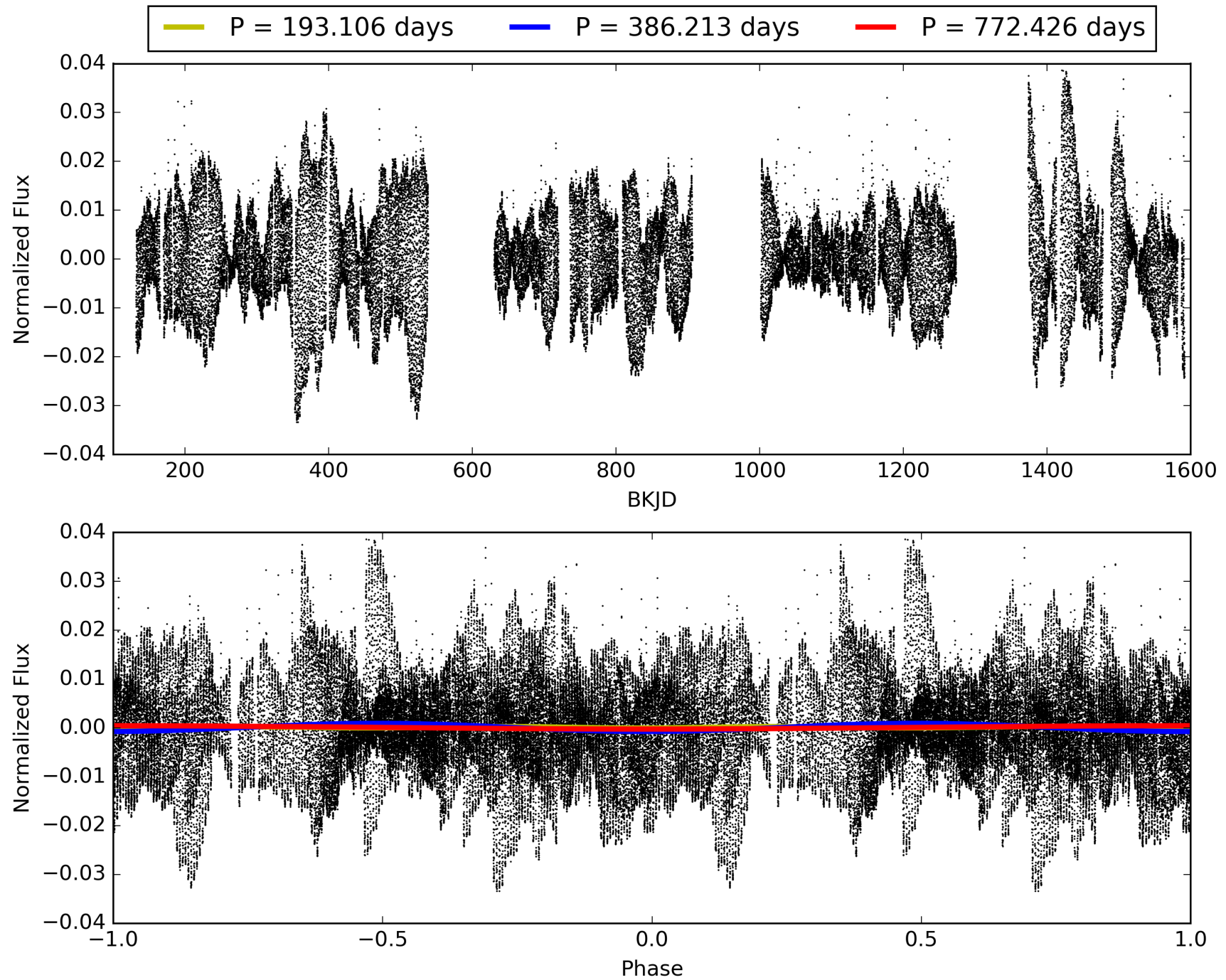
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 22:00:07 Z

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

# TCE 003557532-01, PDC Light Curves



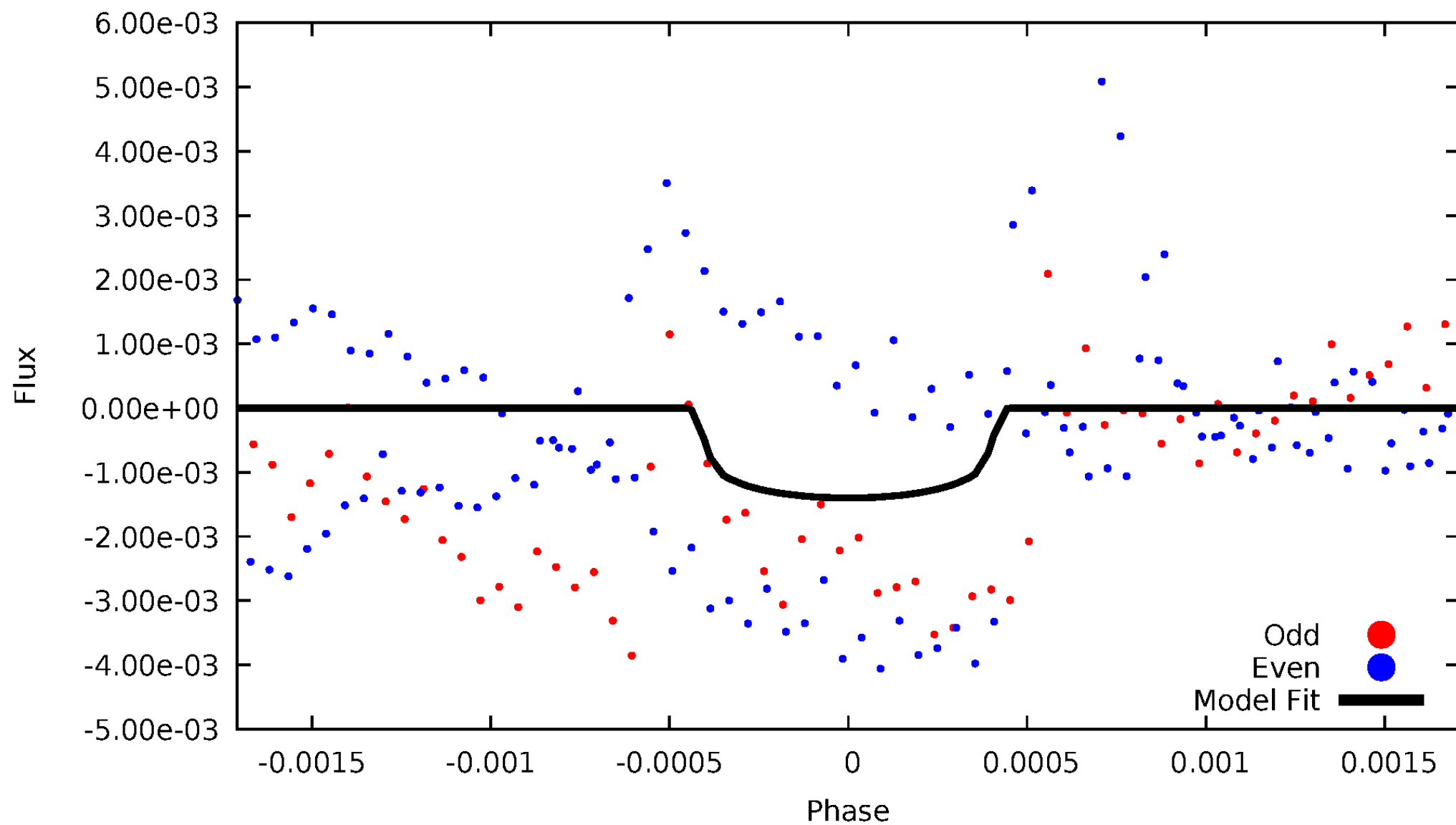
TCE 003557532-01





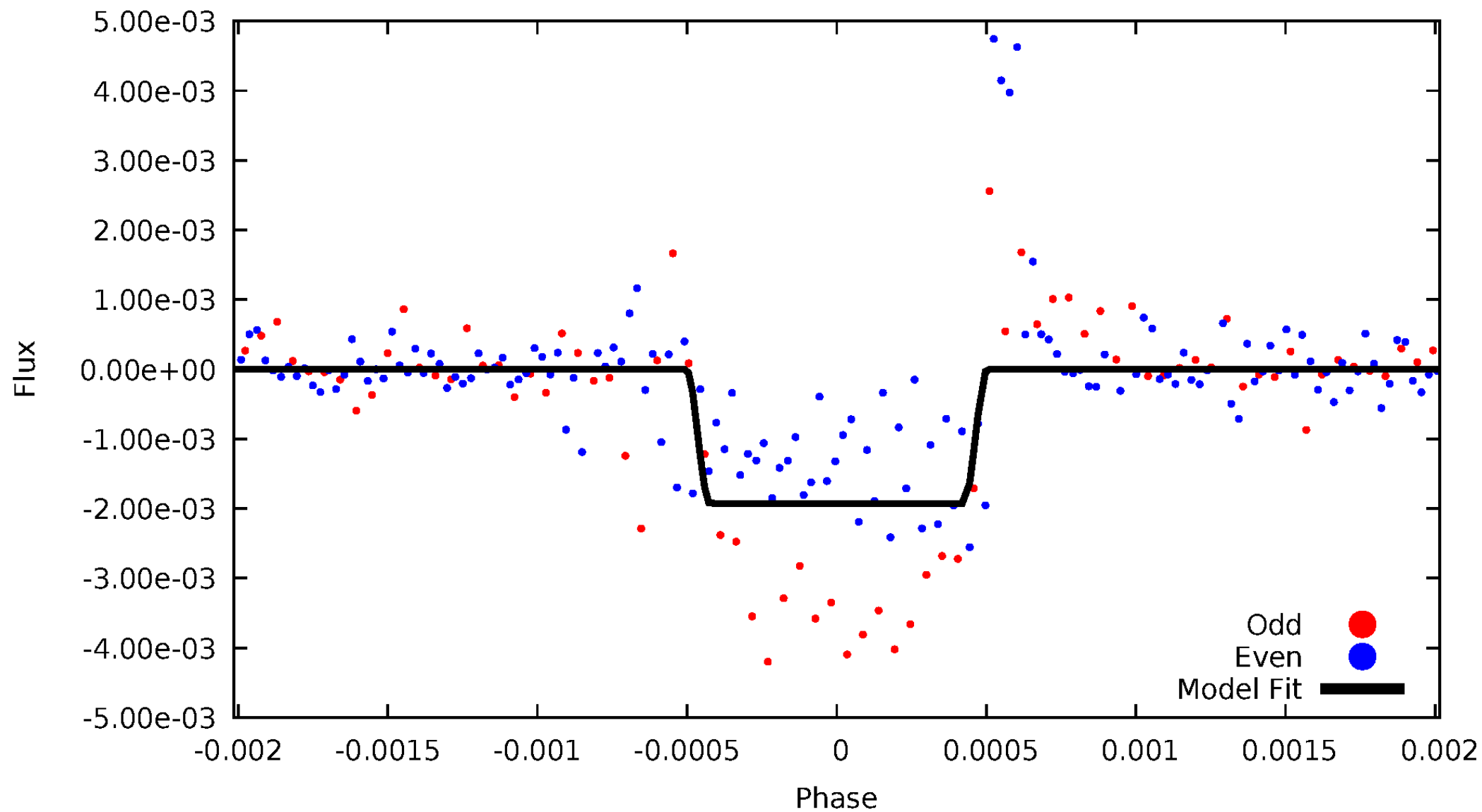
# DV Odd/Even

TCE 003557532-01



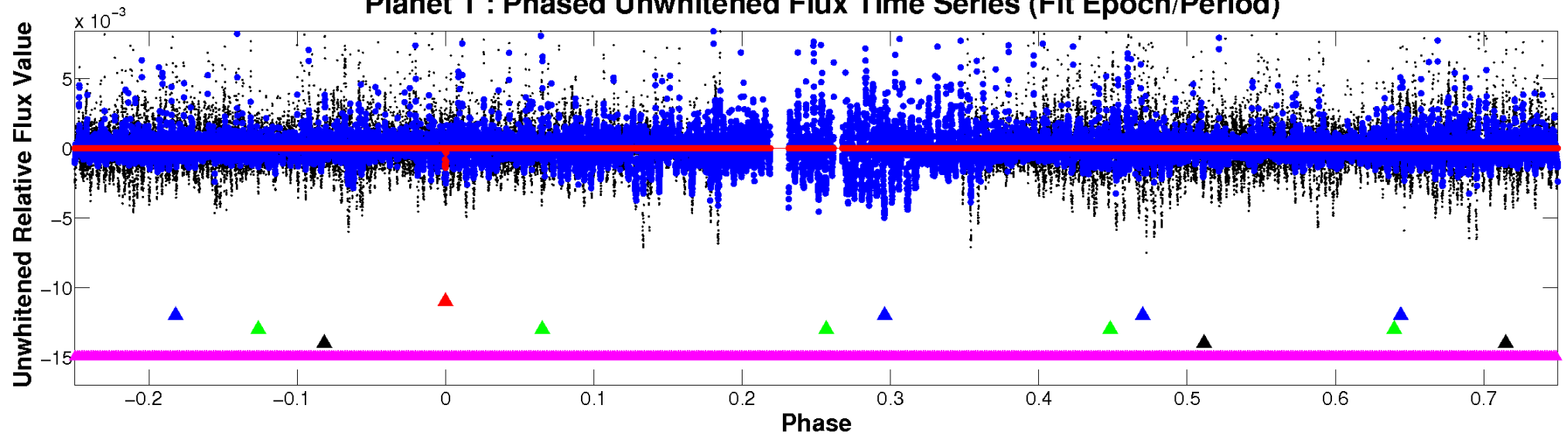
# ALT Odd/Even

TCE 003557532-01

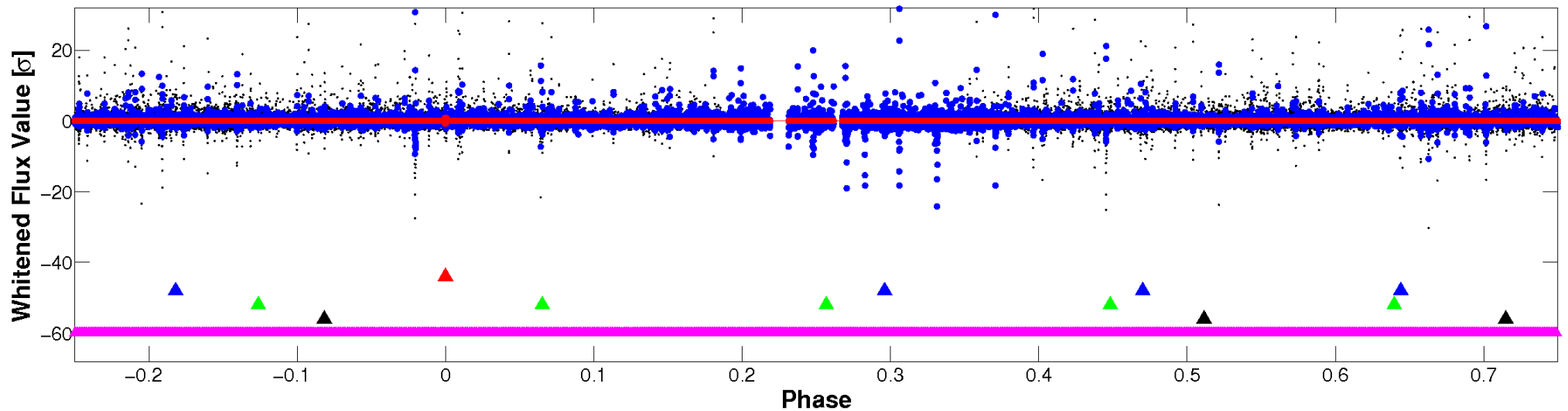


# Non-Whitened Vs. Whitened Light Curve

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

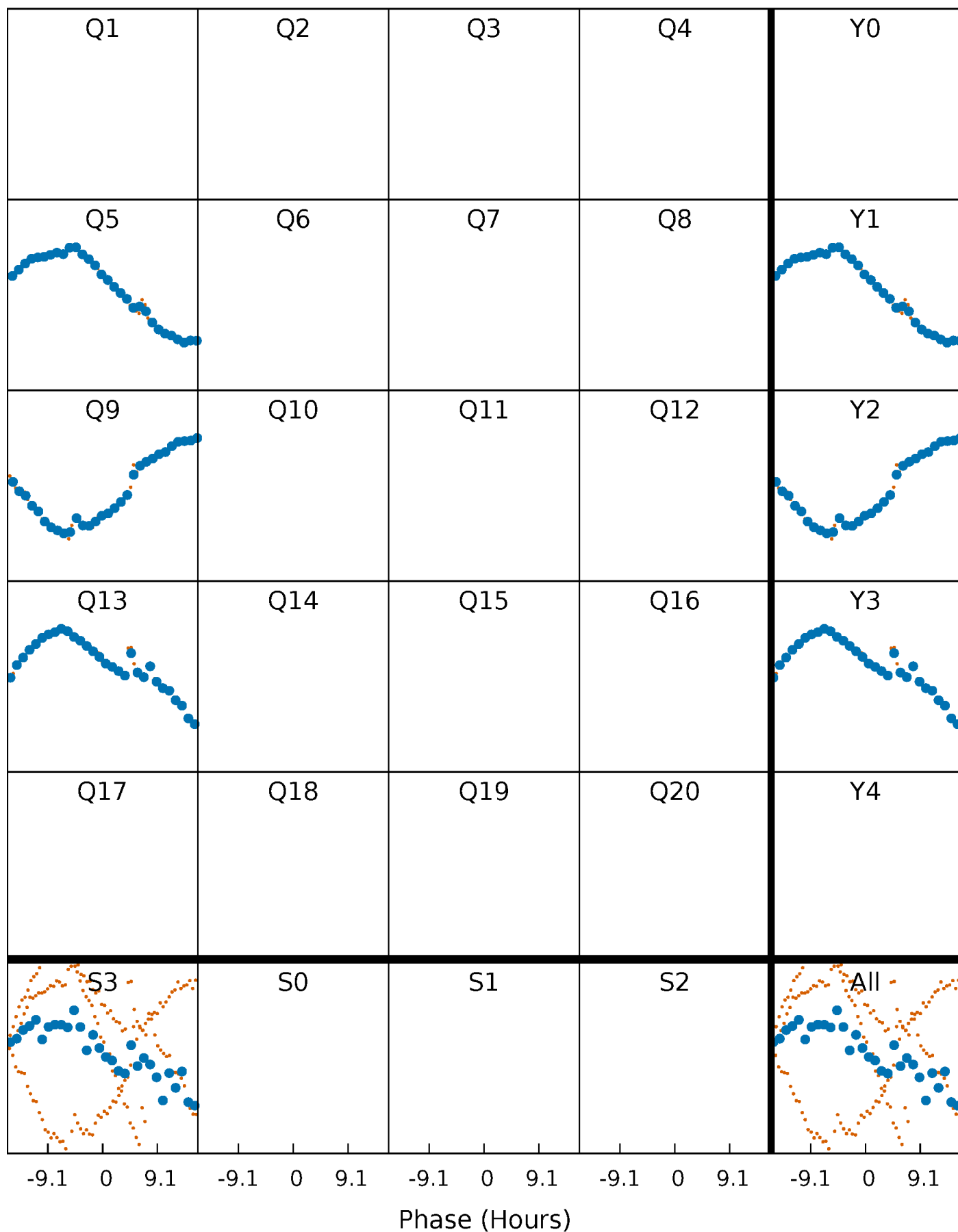


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



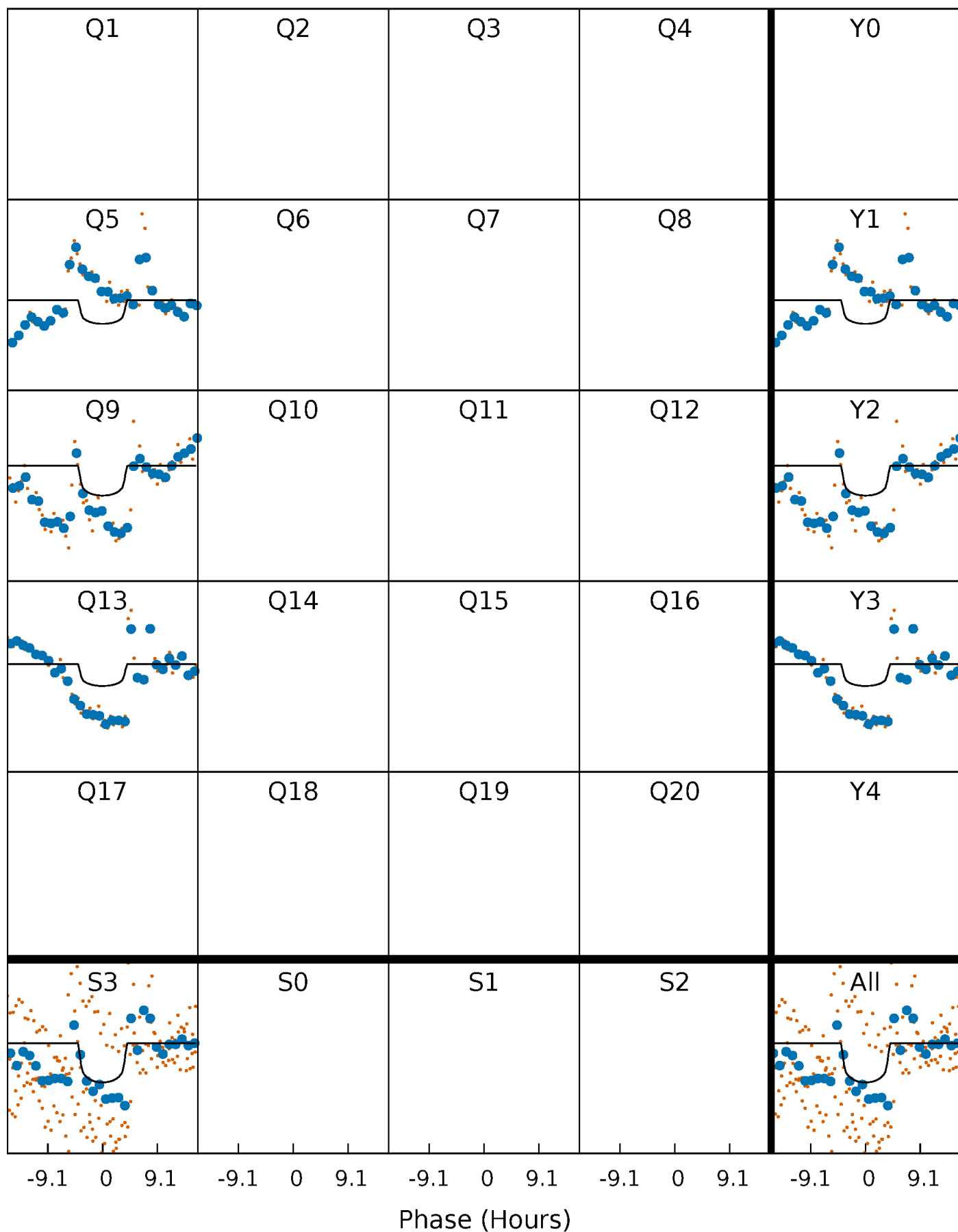
# PDC Quarter-Phased Transit Curves

TCE 003557532-01 P=386.212983 Days  $T_0=466.613621$  (BKJD)



# DV Quarter-Phased Transit Curves

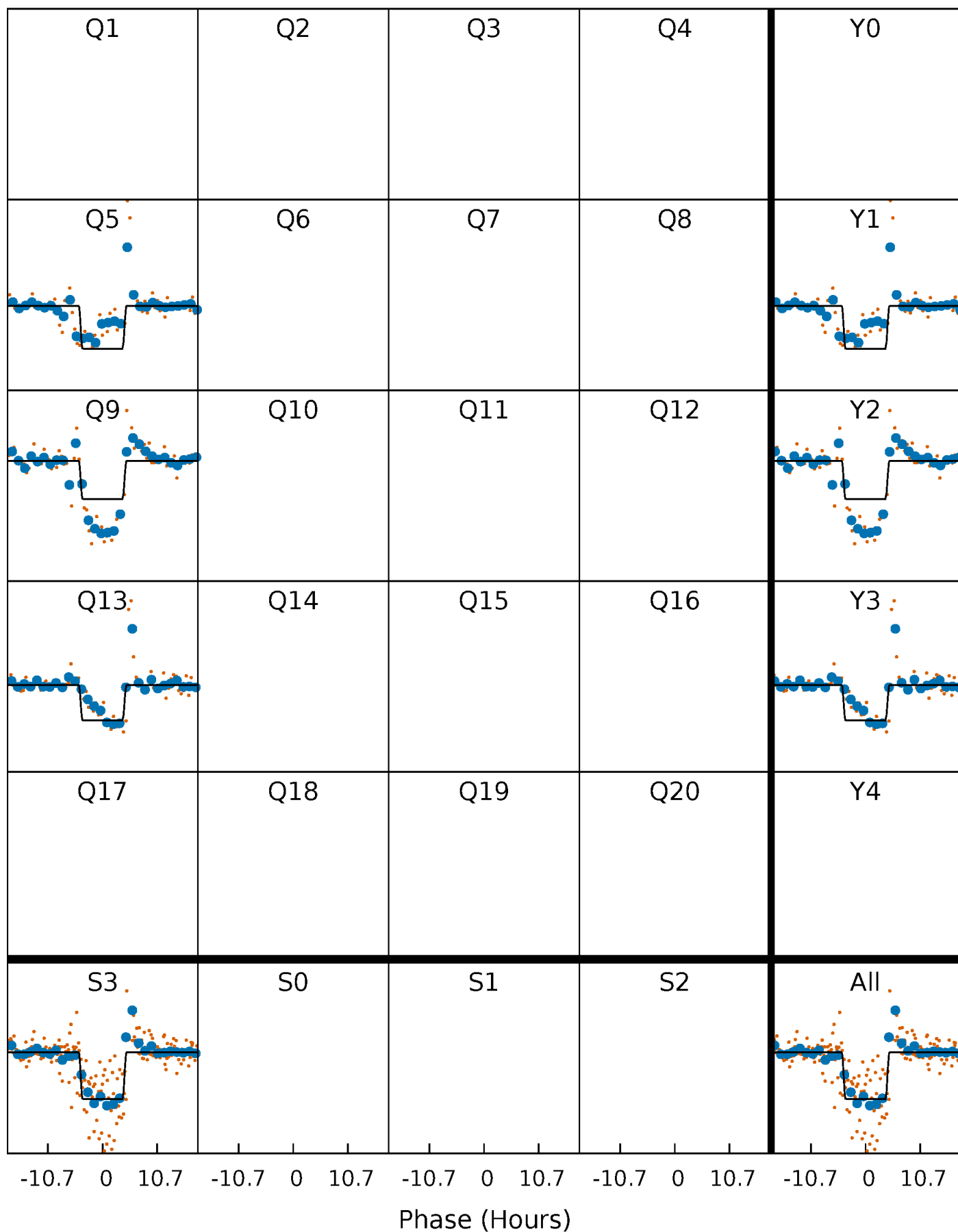
TCE 003557532-01 P=386.212983 Days  $T_0=466.613621$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

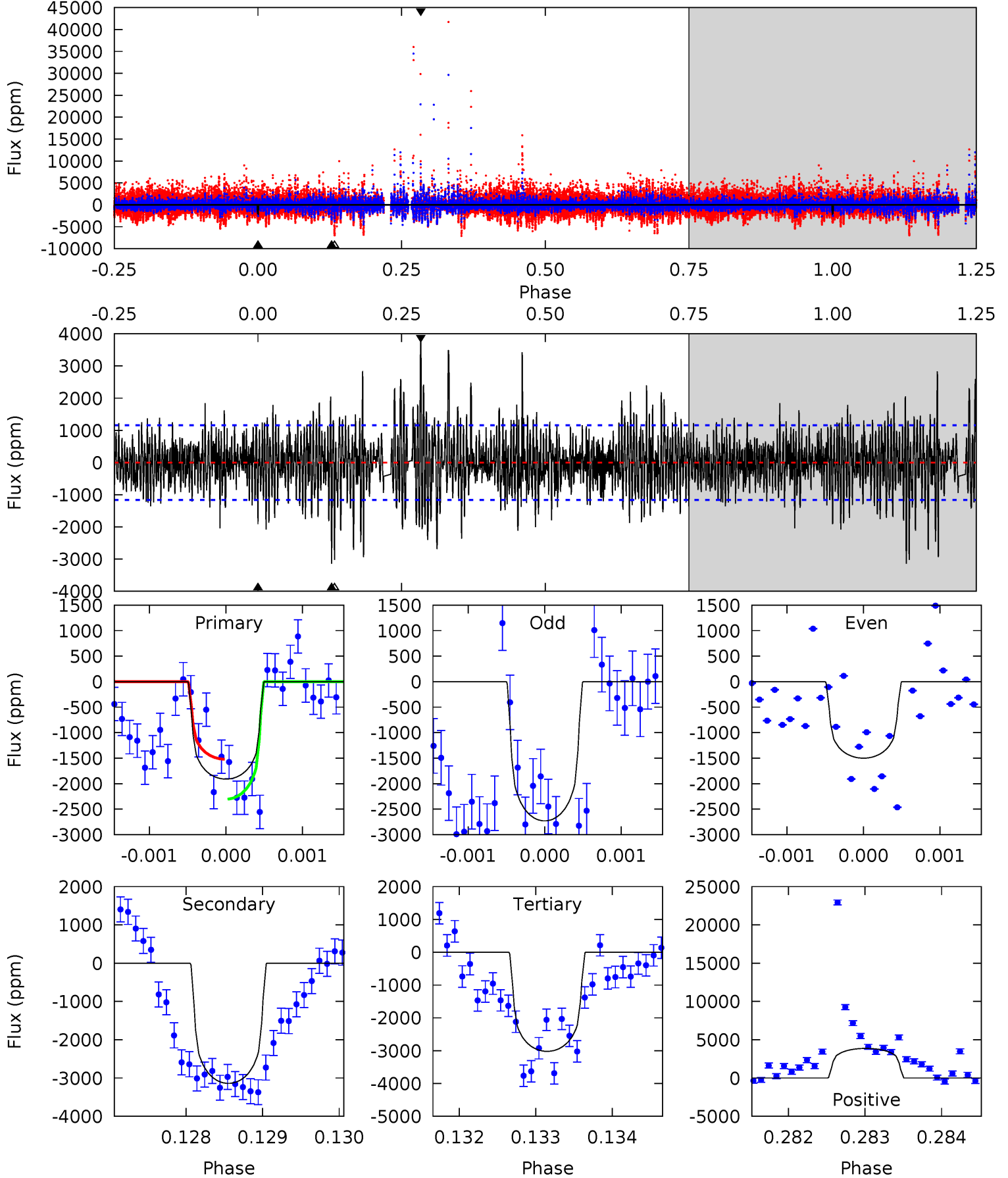
TCE 003557532-01 P=386.160228 Days  $T_0=466.684676$  (BKJD)



# DV Model-Shift Uniqueness Test

003557532-01,  $P = 386.212983$  Days,  $E = 80.400638$  Days

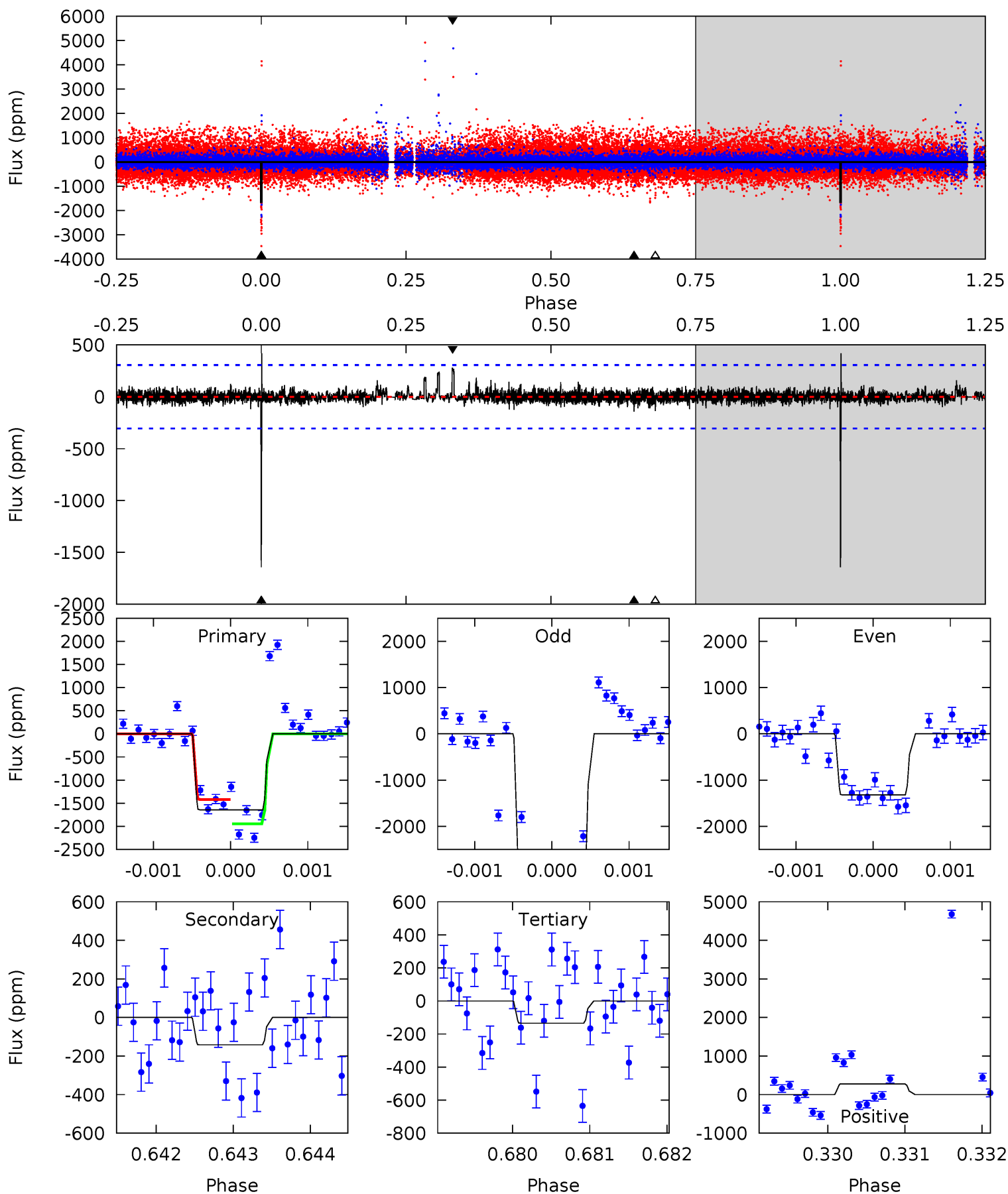
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.99	14.8	14.2	18.2	5.47	3.32	3.42	-5.23	-9.21	0.56	-3.42	2.49	0.70	0.55	1.80



# Alt Model-Shift Uniqueness Test

003557532-01, P = 386.160228 Days, E = 80.524448 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
29.3	2.53	2.40	4.97	5.45	3.29	0.61	26.9	24.4	0.13	-2.44	17.5	1.24	0.20	4.65



### Stellar Parameters For KIC 003557532

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5383^{+160}_{-160}$	$4.615^{+0.060}_{-0.060}$	$-0.860^{+0.350}_{-0.300}$	$0.668^{+0.070}_{-0.052}$	$0.671^{+0.062}_{-0.033}$	$3.172^{+0.772}_{-0.621}$
	+3%/-3%	+1%/-1%	+41%/-35%	+10%/-8%	+9%/-5%	+24%/-20%
Source	PHO1	KIC0	KIC0	DSEP		

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

### Secondary Eclipse Parameters for KIC 003557532-01 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-3139 \pm 212$	$2.71^{+1.65}_{-1.56}$	$285^{+10}_{-12}$	$6578^{+4909}_{-1344}$	$198884^{+871255}_{-124962}$
Alt.	$-142 \pm 56$	$3.20^{+1.76}_{-1.61}$	$284^{+11}_{-11}$	$3300^{+925}_{-429}$	$6107^{+20091}_{-3776}$

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

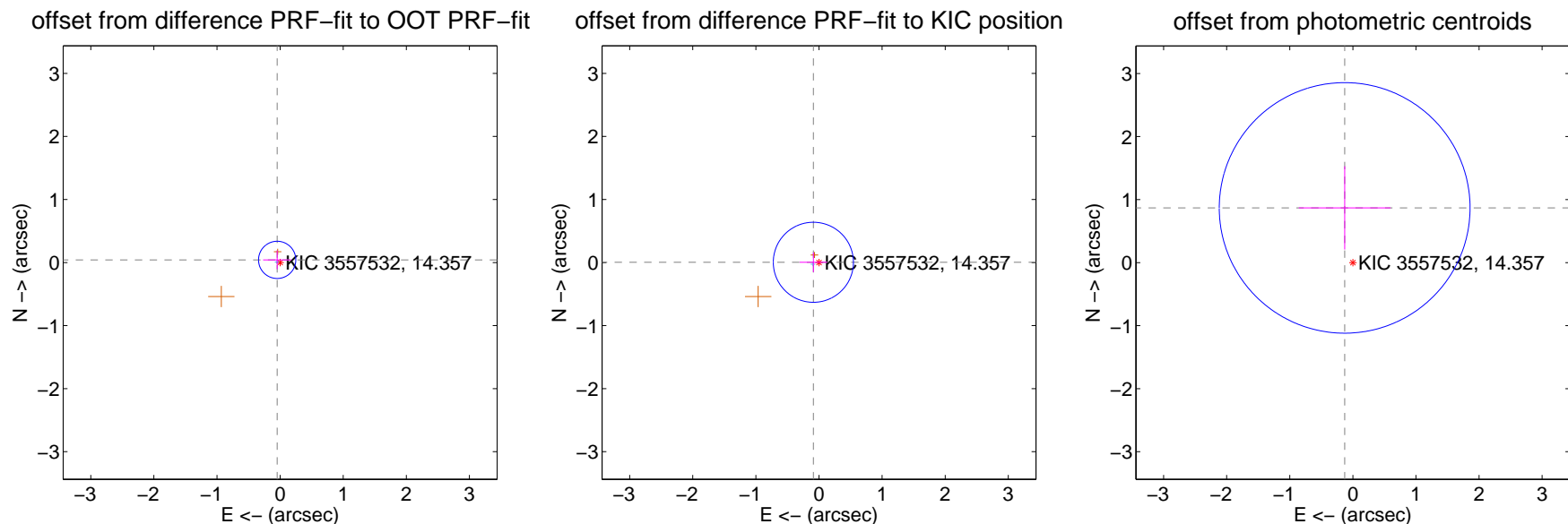
## DV Centroid Data

Supplemental centroid analysis for 003557532-01. Kepler magnitude: 14.36. Transit SNR 4.38

There are 1 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.03 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.063 \pm 0.098$	0.64	$0.046 \pm 0.224$	$0.042 \pm 0.149$
PRF-fit source offset from KIC position	$0.089 \pm 0.212$	0.42	$0.089 \pm 0.218$	$0.004 \pm 0.156$
photometric centroid source offset	$0.88 \pm 0.66$	1.32	$0.13 \pm 0.73$	$0.87 \pm 0.66$



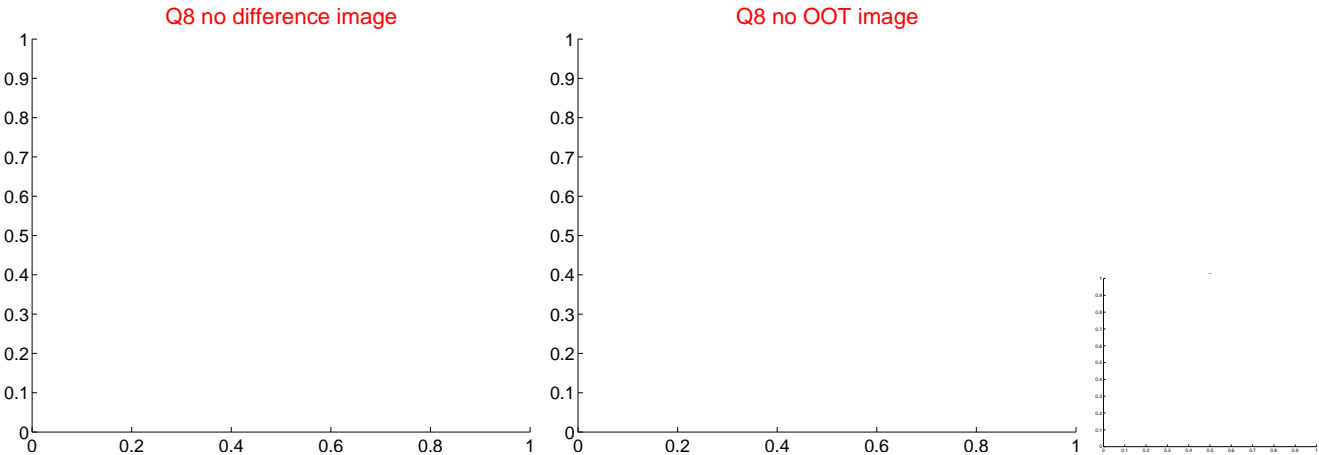
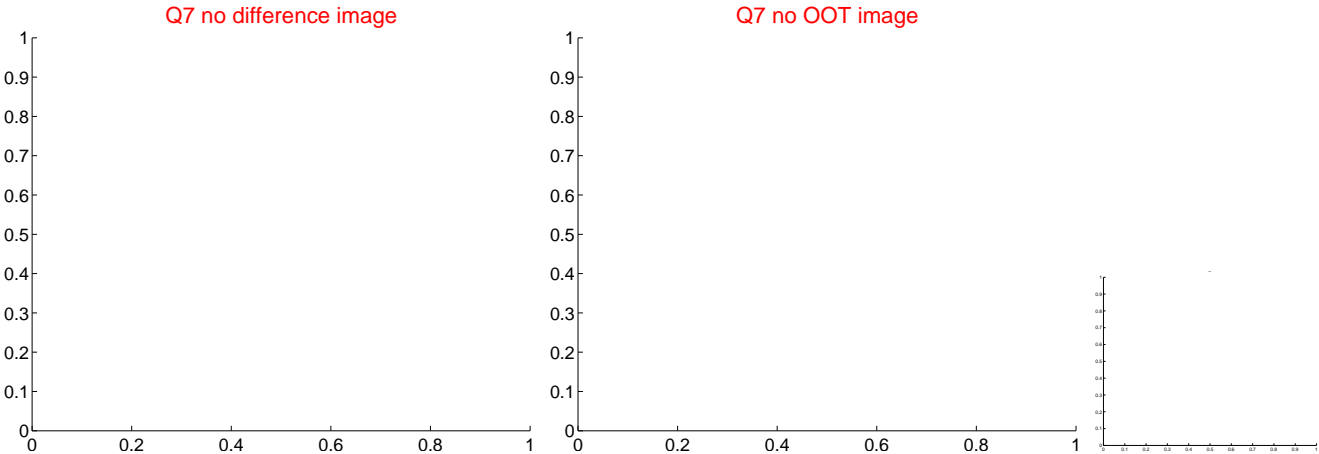
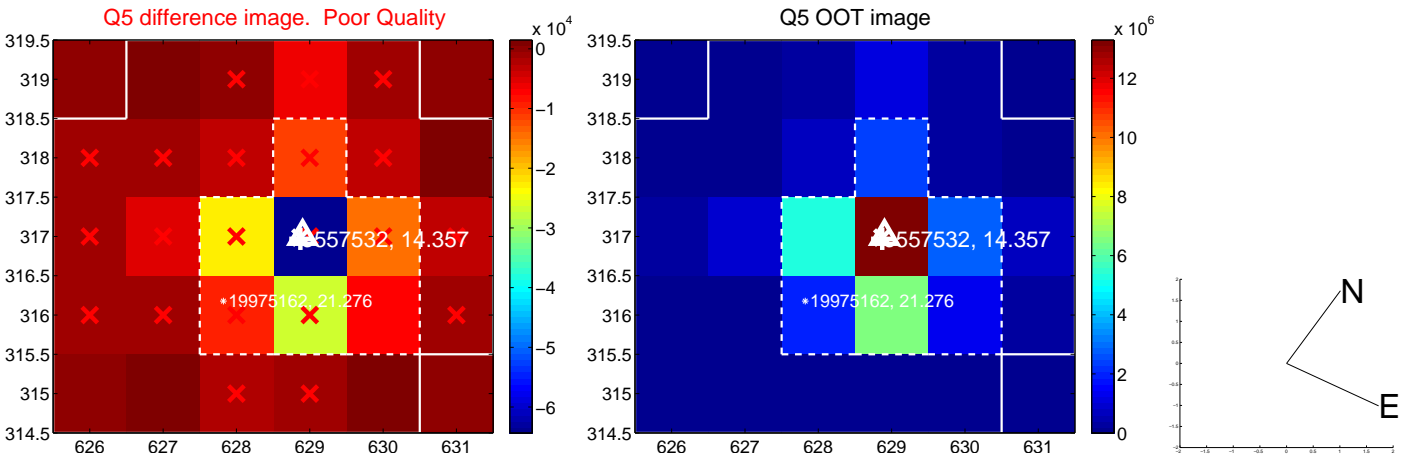
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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



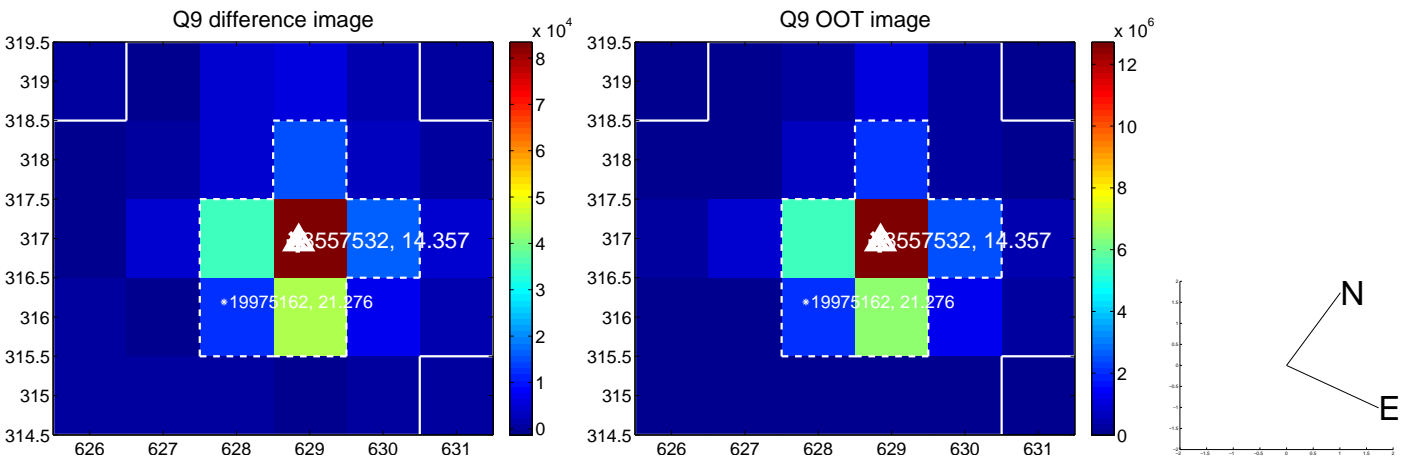
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



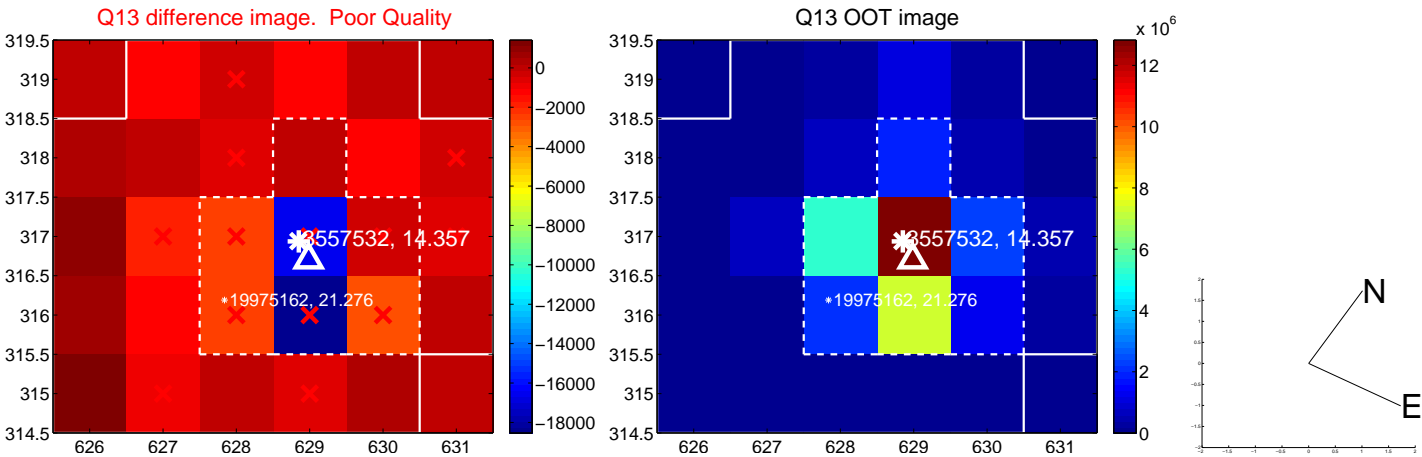
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



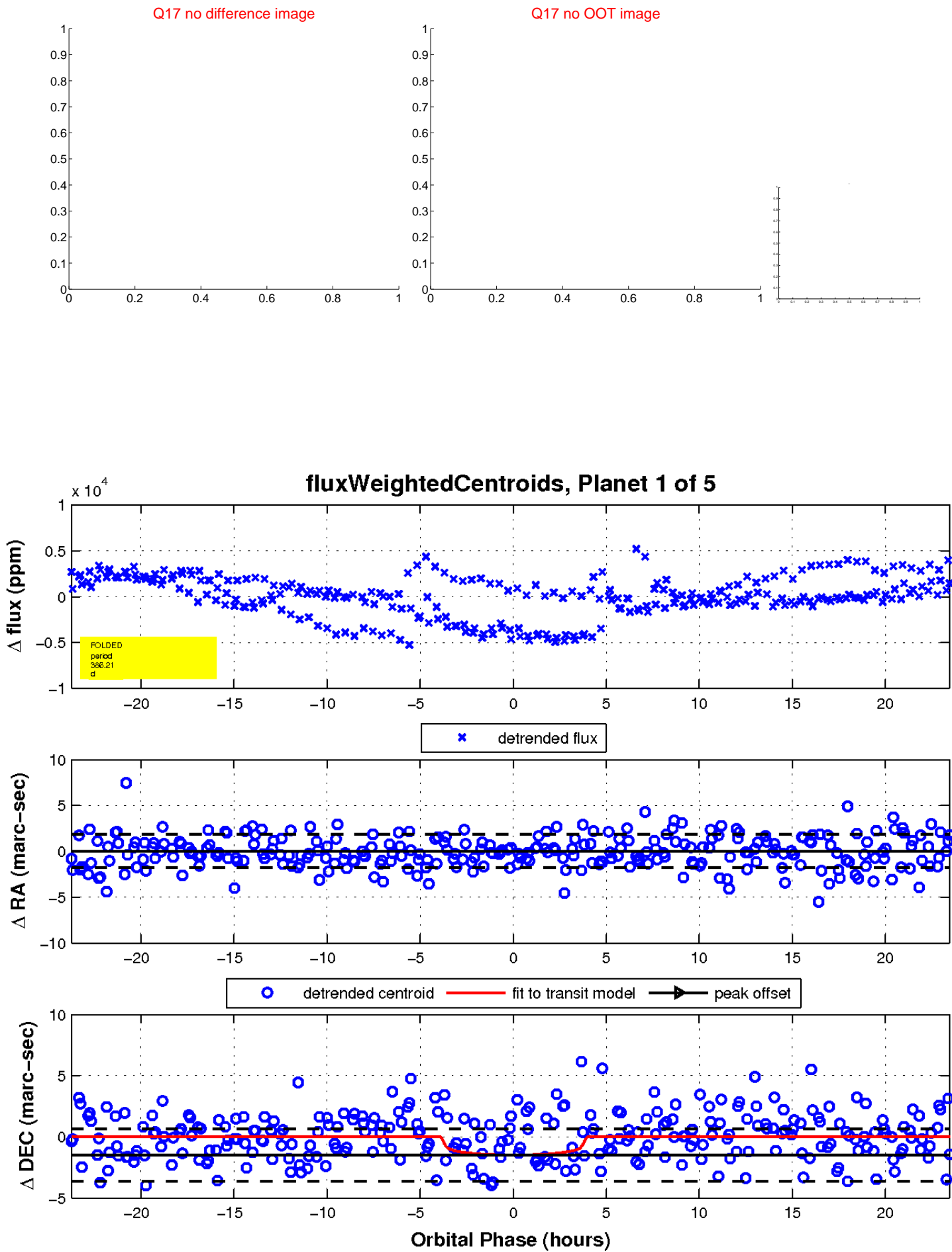
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



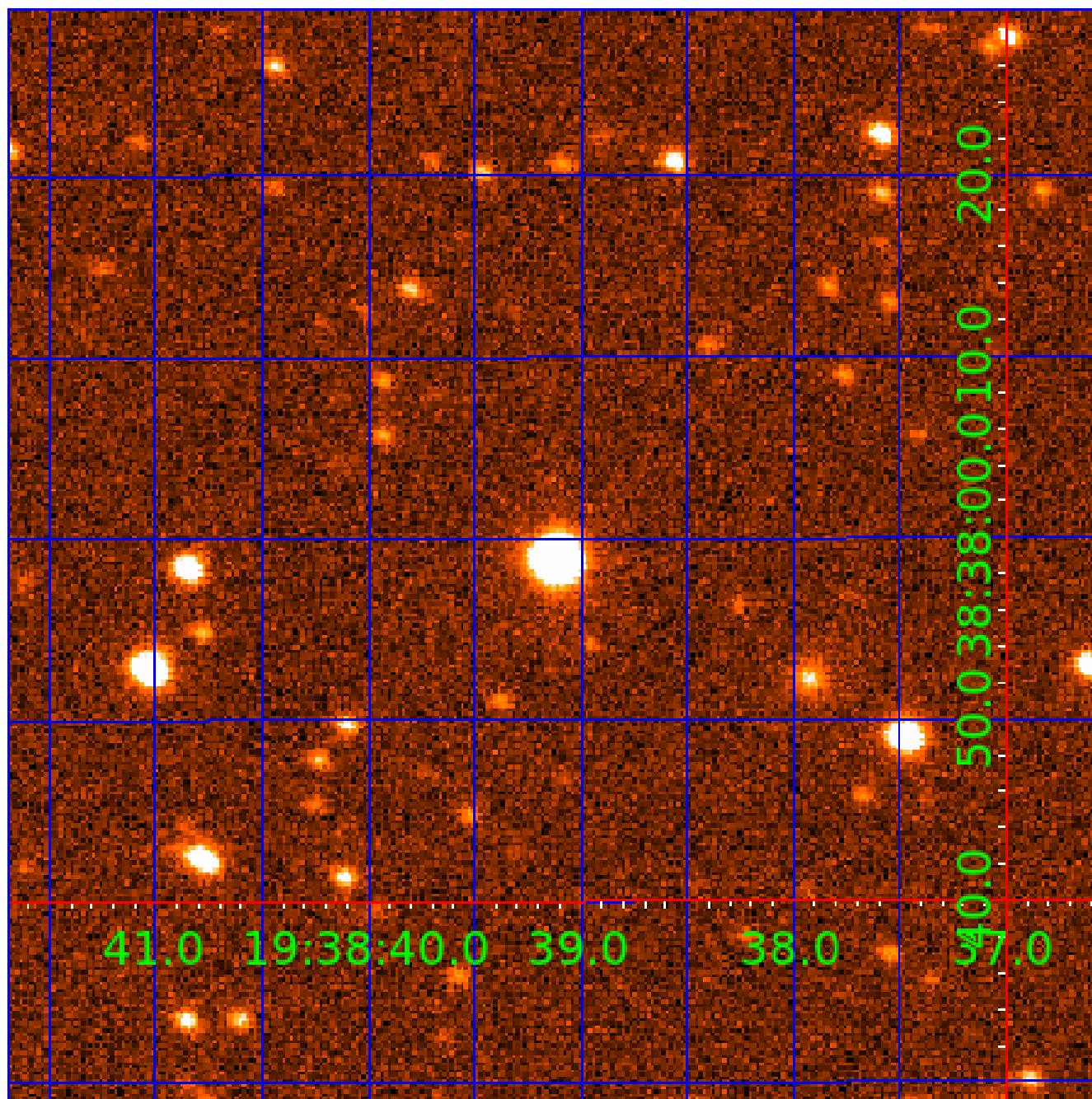
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\Delta$ : difference centroid. red  $\times$ : large negative pixel value.





UKIRT Image

Declination



# KIC 003557532

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
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## Robovetter Results

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003557532-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_POS_ALT
003557532-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS
003557532-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV
003557532-05	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_ALT—CENT_NOFITS

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

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

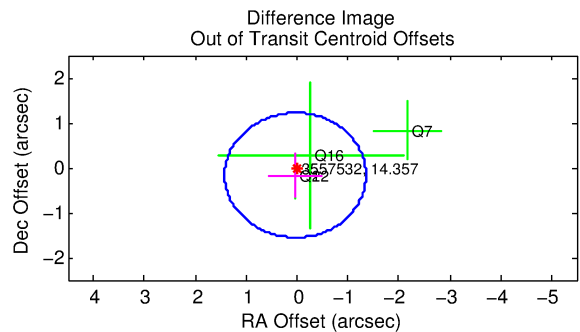
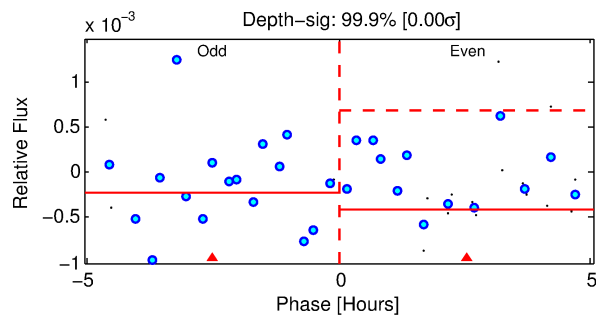
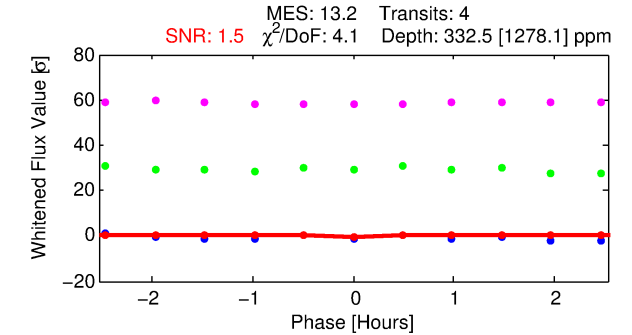
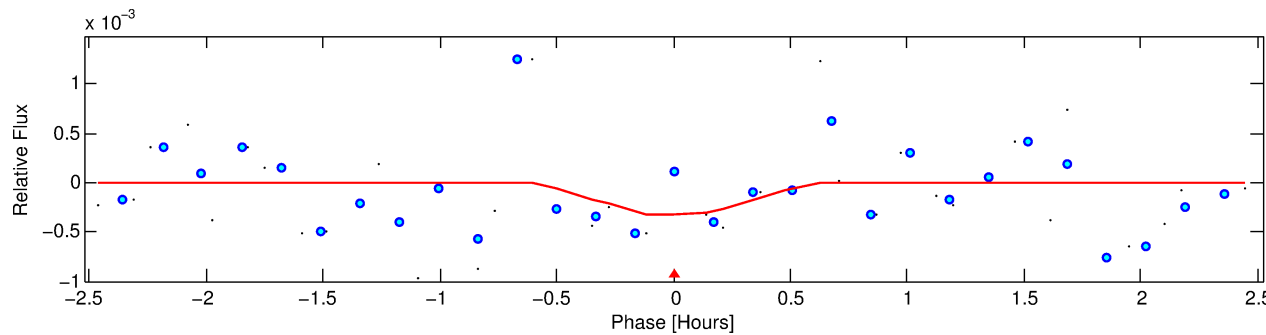
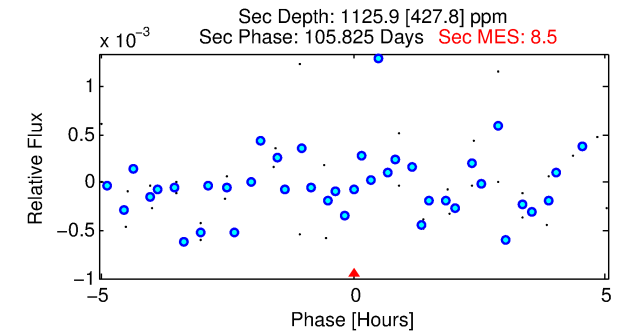
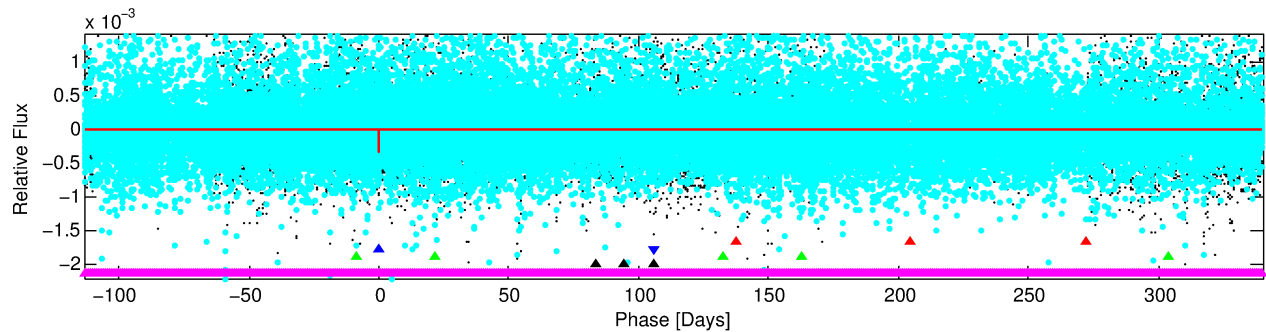
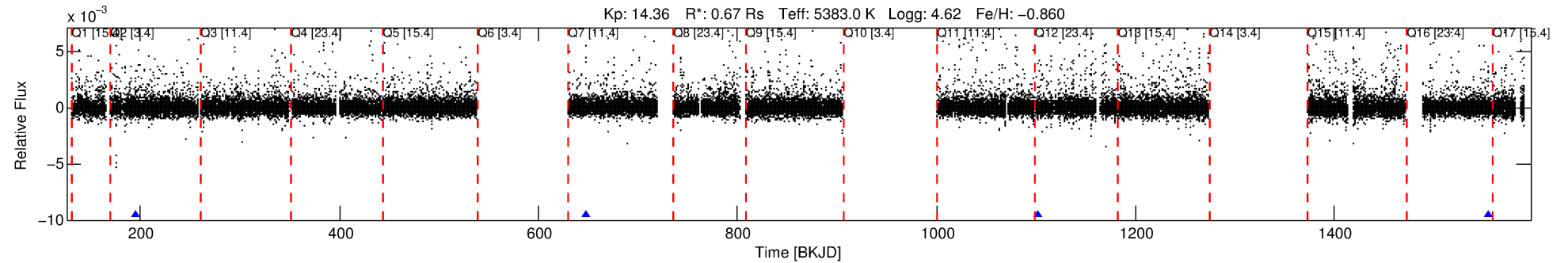
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 003557532-02

No Significant Match Found

# DV One-Page Summary

KIC: 3557532 Candidate: 2 of 5 Period: 453.411 d



## DV Fit Results:

Period = 453.41092 [0.02213] d  
Epoch = 194.7571 [0.0447] BKJD  
Rp/R\* = 0.0203 [0.2556]  
a/R\* = 1917.27 [104889.41]  
b = 0.91 [11.01]  
Seff = 0.33 [0.05]  
Teq = 193 [8] K  
Rp = 1.48 [18.63] Re  
a = 1.0113 [0.0846] AU  
Ag = 289380.44 [7290013.15] [0.04σ]  
Teffp = 6921 [43589] K [0.15σ]

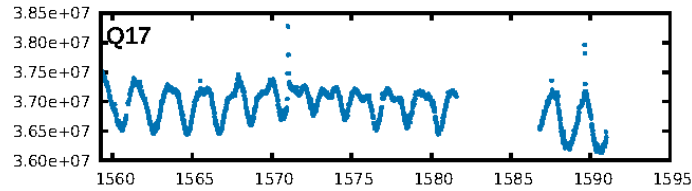
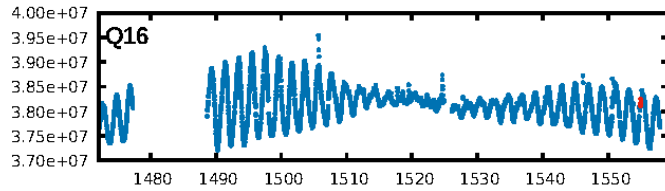
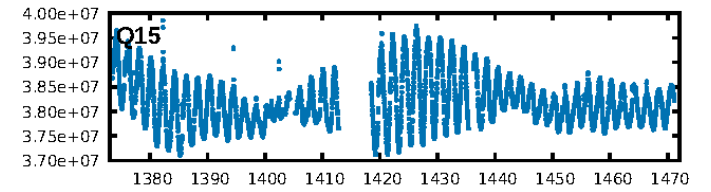
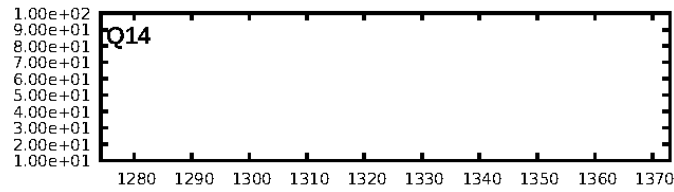
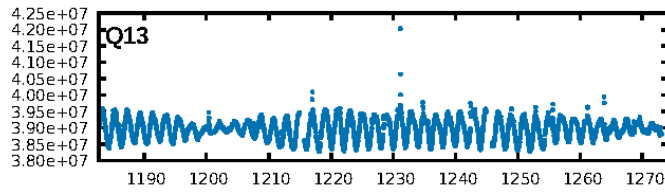
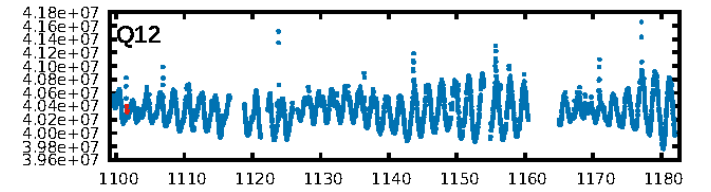
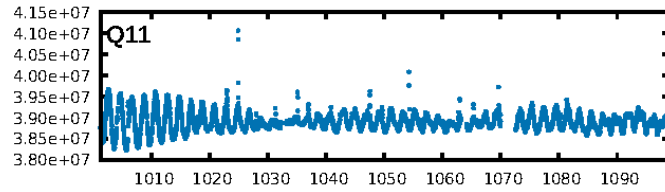
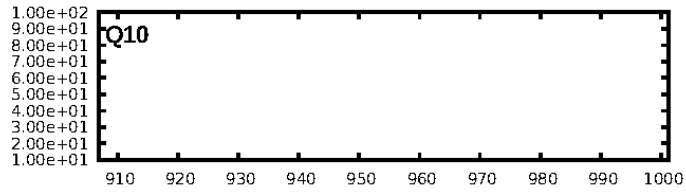
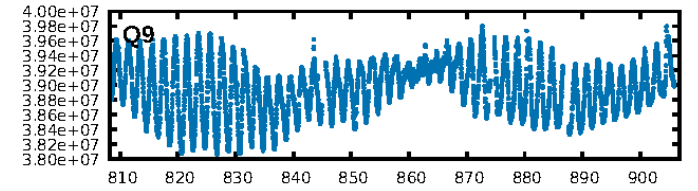
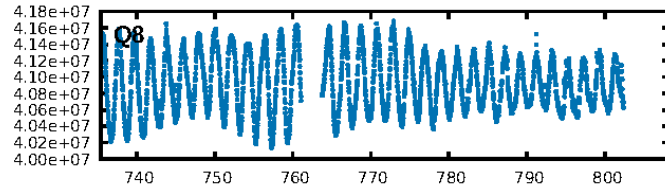
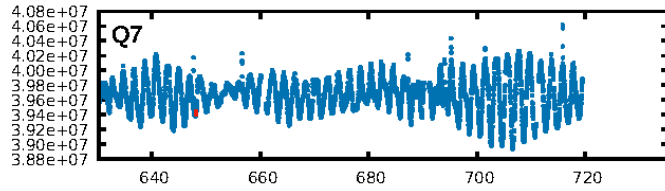
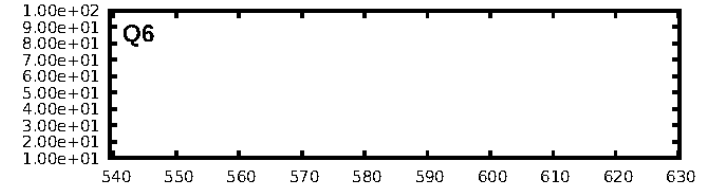
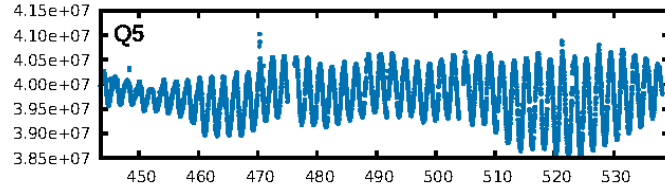
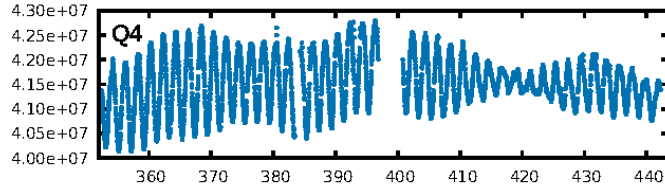
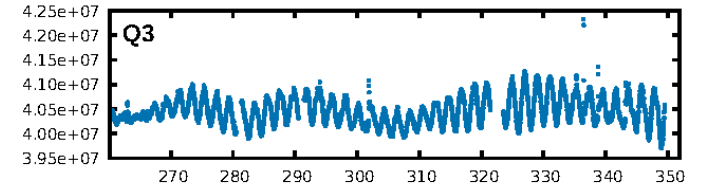
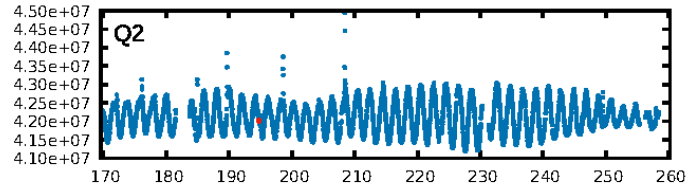
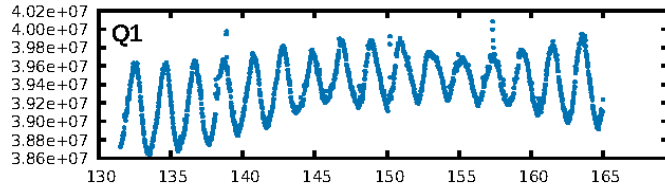
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [202.46σ]  
LongPeriod-sig: 100.0% [66.36σ]  
ModelChiSquare2-sig: 74.3%  
ModelChiSquareGof-sig: 9.7%  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [4/4]  
GhostDiagnostic-chr: -11.6  
Centroid-sig: 13.0%  
Centroid-so: 6.356 arcsec [0.96σ]  
OotOffset-rm: 0.171 arcsec [0.37σ]  
KicOffset-rm: 0.207 arcsec [0.44σ]  
OotOffset-st: 1/1/2/0 [4]  
KicOffset-st: 1/1/2/0 [4]  
DiffImageQuality-fgm: 0.50 [2/4]  
DiffImageOverlap-fno: 0.25 [1/4]

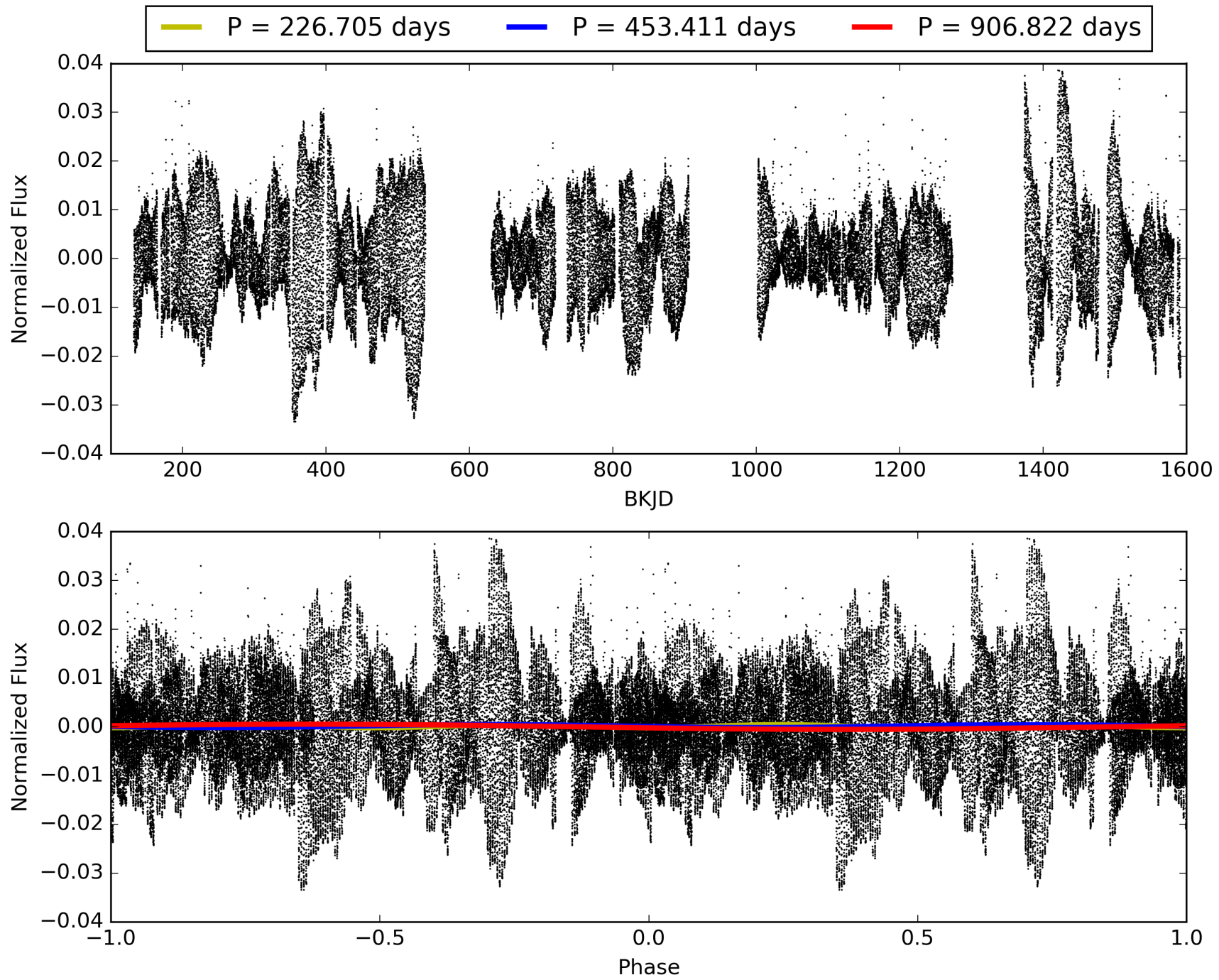
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 22:00:56 Z

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

# TCE 003557532-02, PDC Light Curves



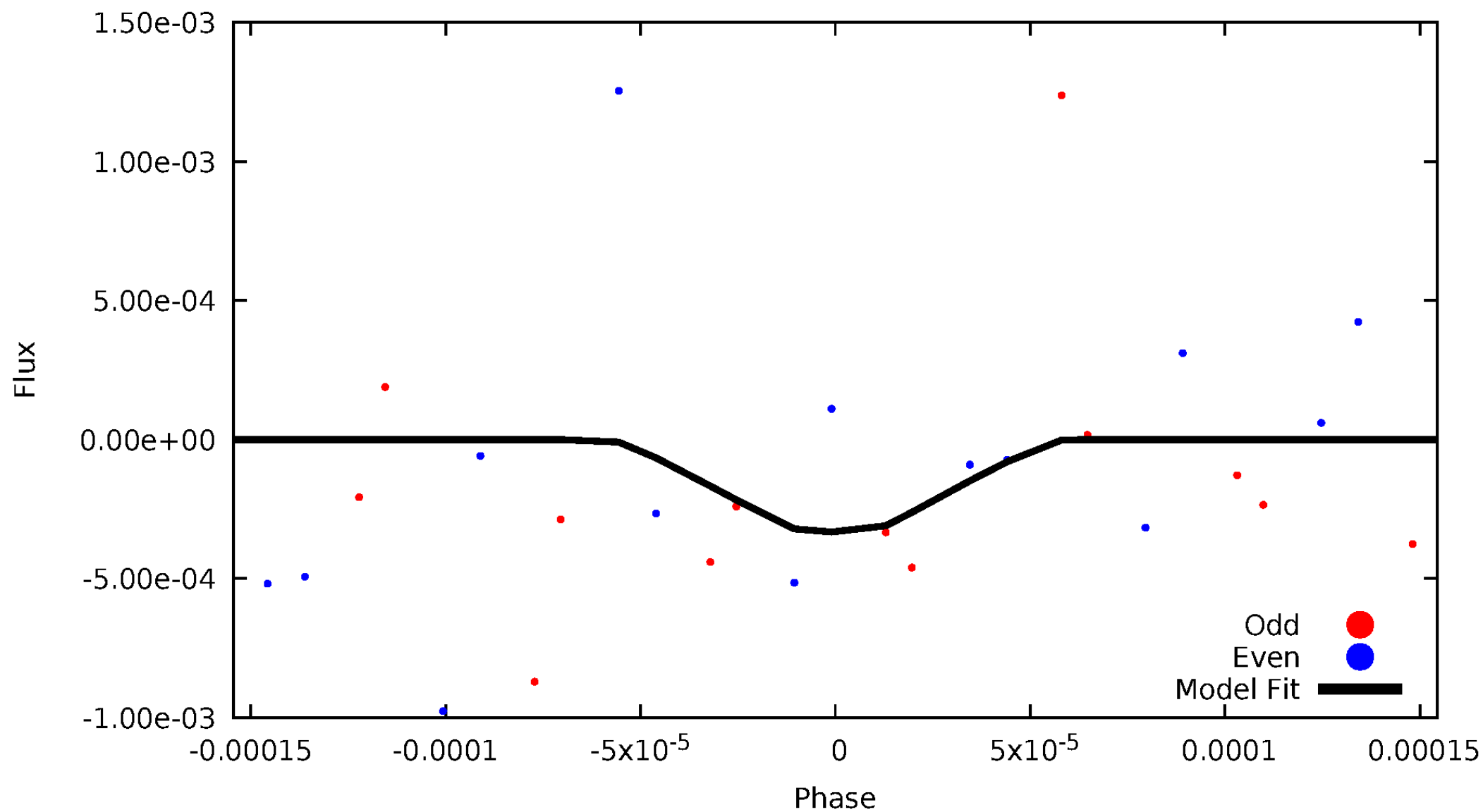
TCE 003557532-02





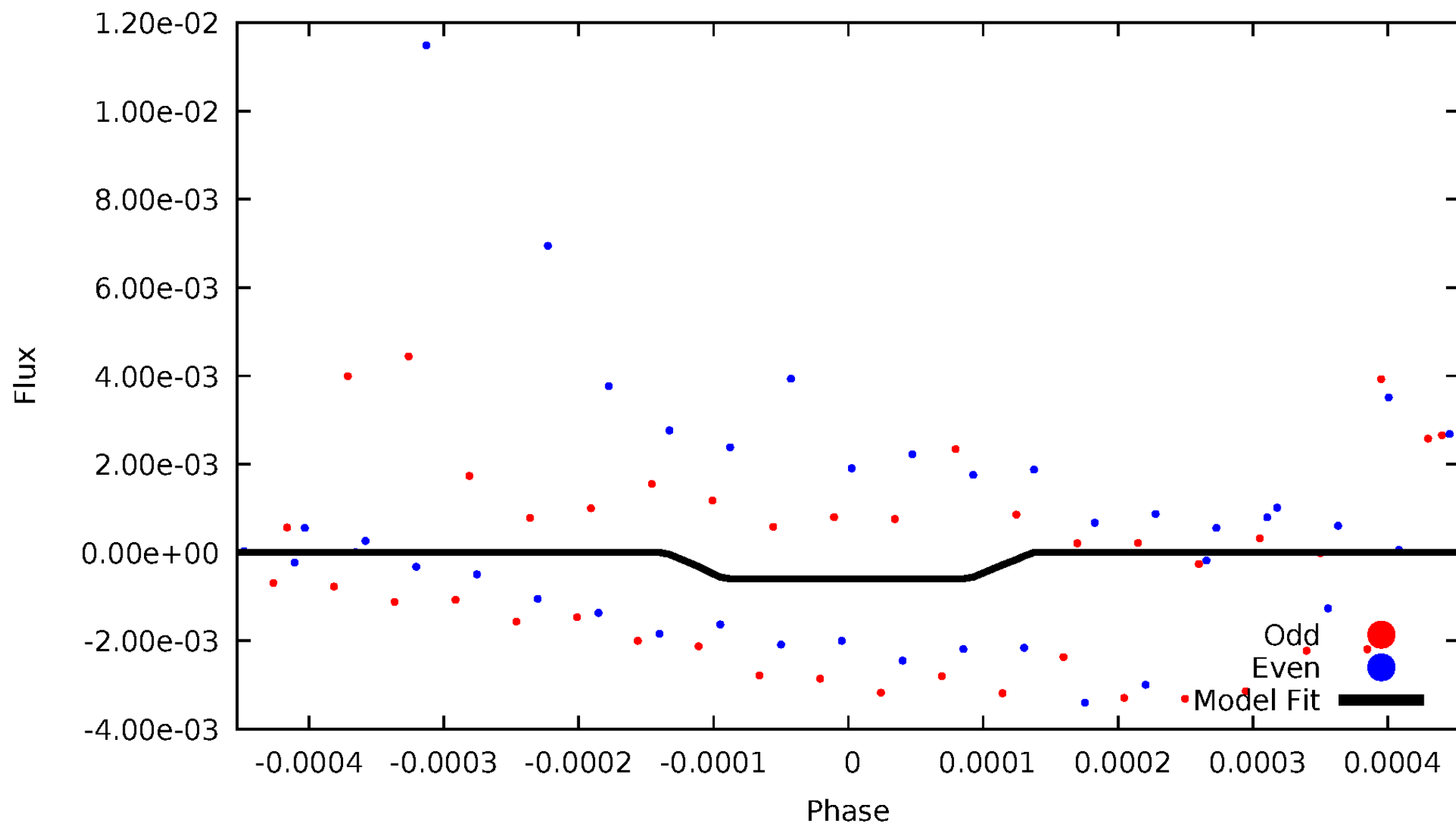
# DV Odd/Even

TCE 003557532-02



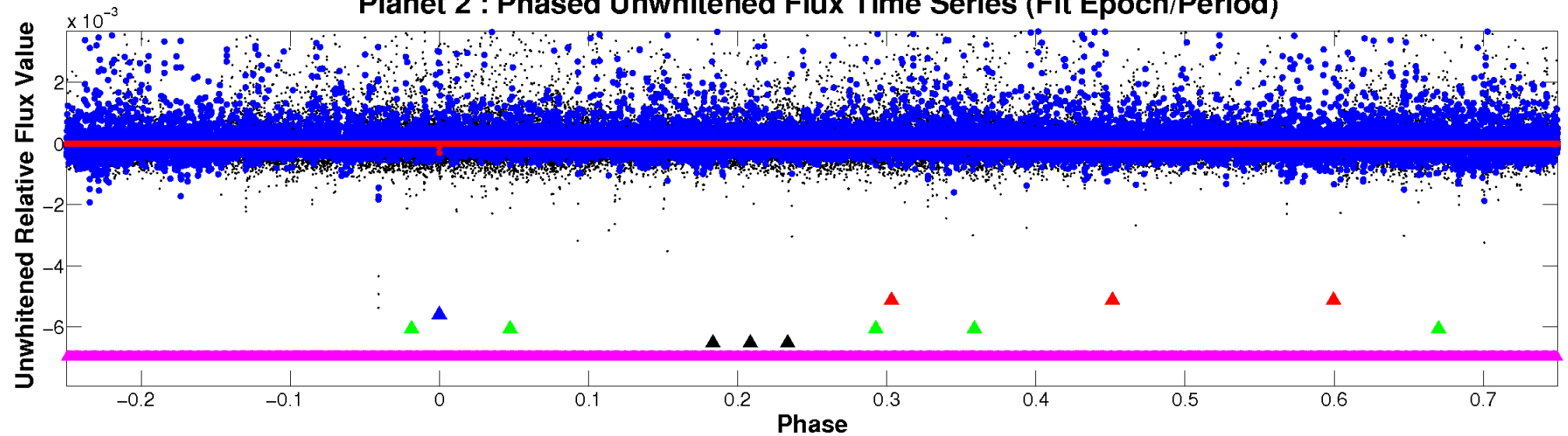
# ALT Odd/Even

TCE 003557532-02

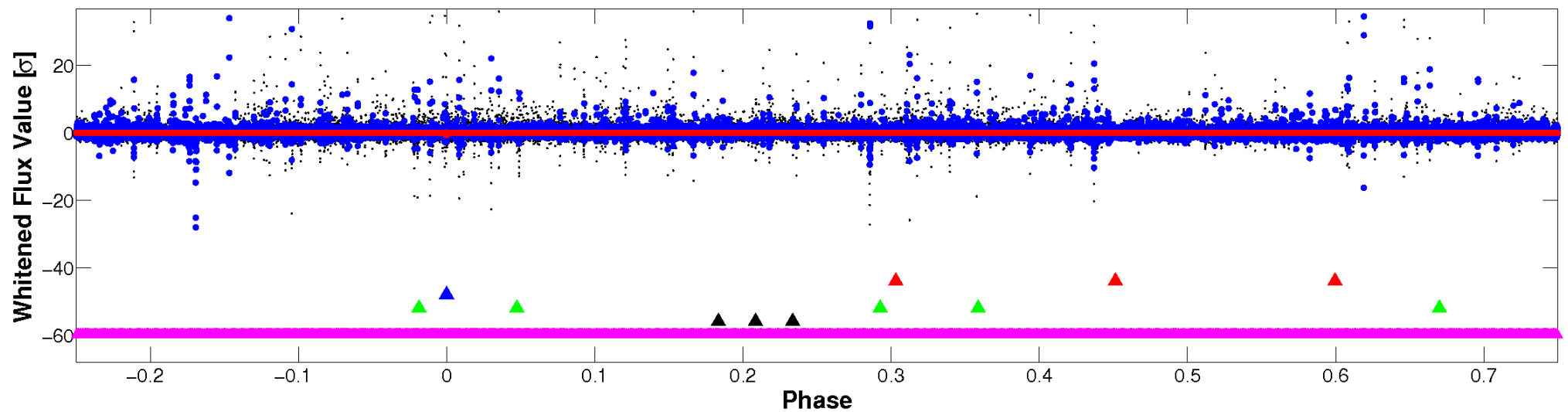


# Non-Whitened Vs. Whitened Light Curve

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



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



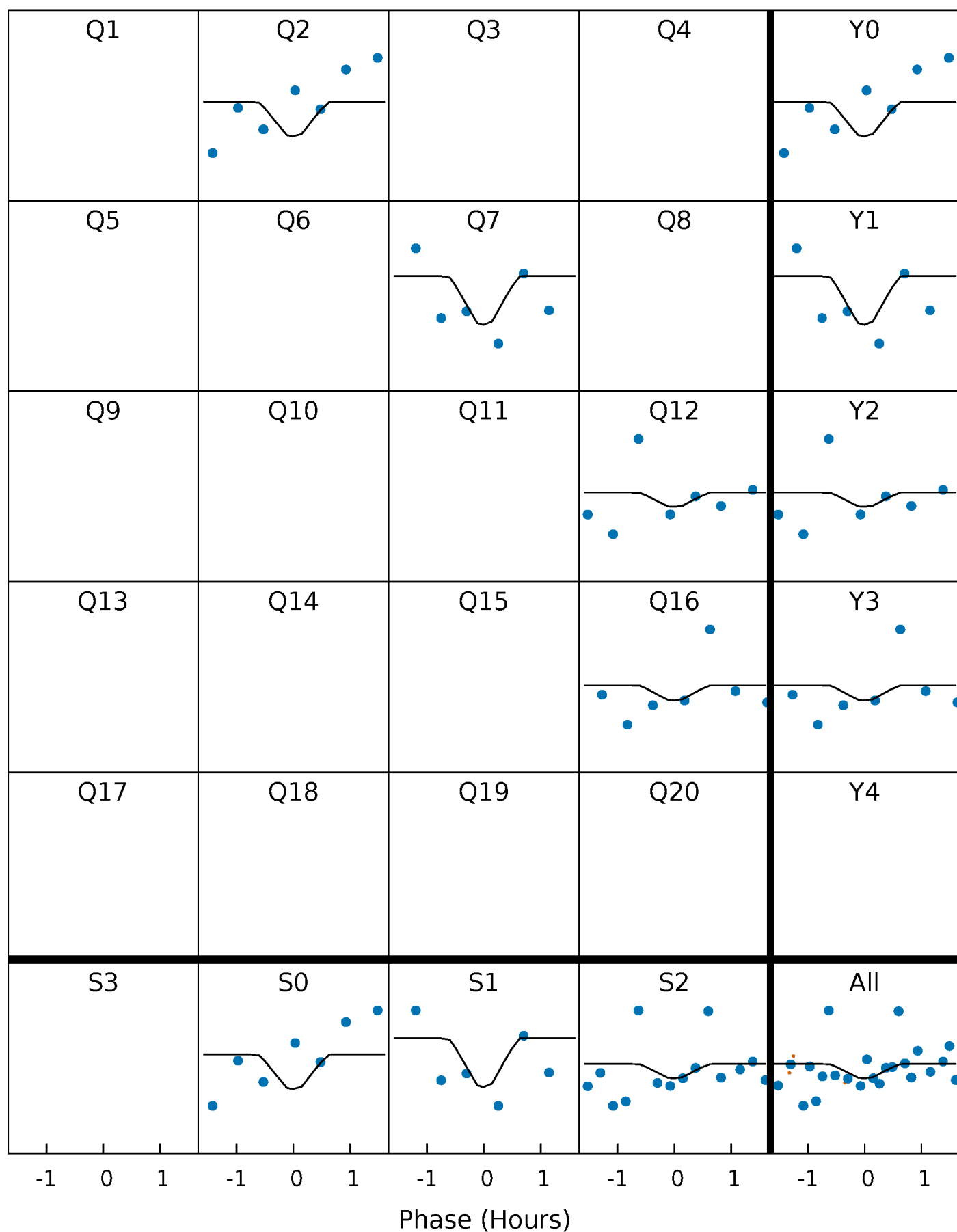
# PDC Quarter-Phased Transit Curves

TCE 003557532-02 P=453.410921 Days  $T_0=194.757058$  (BKJD)



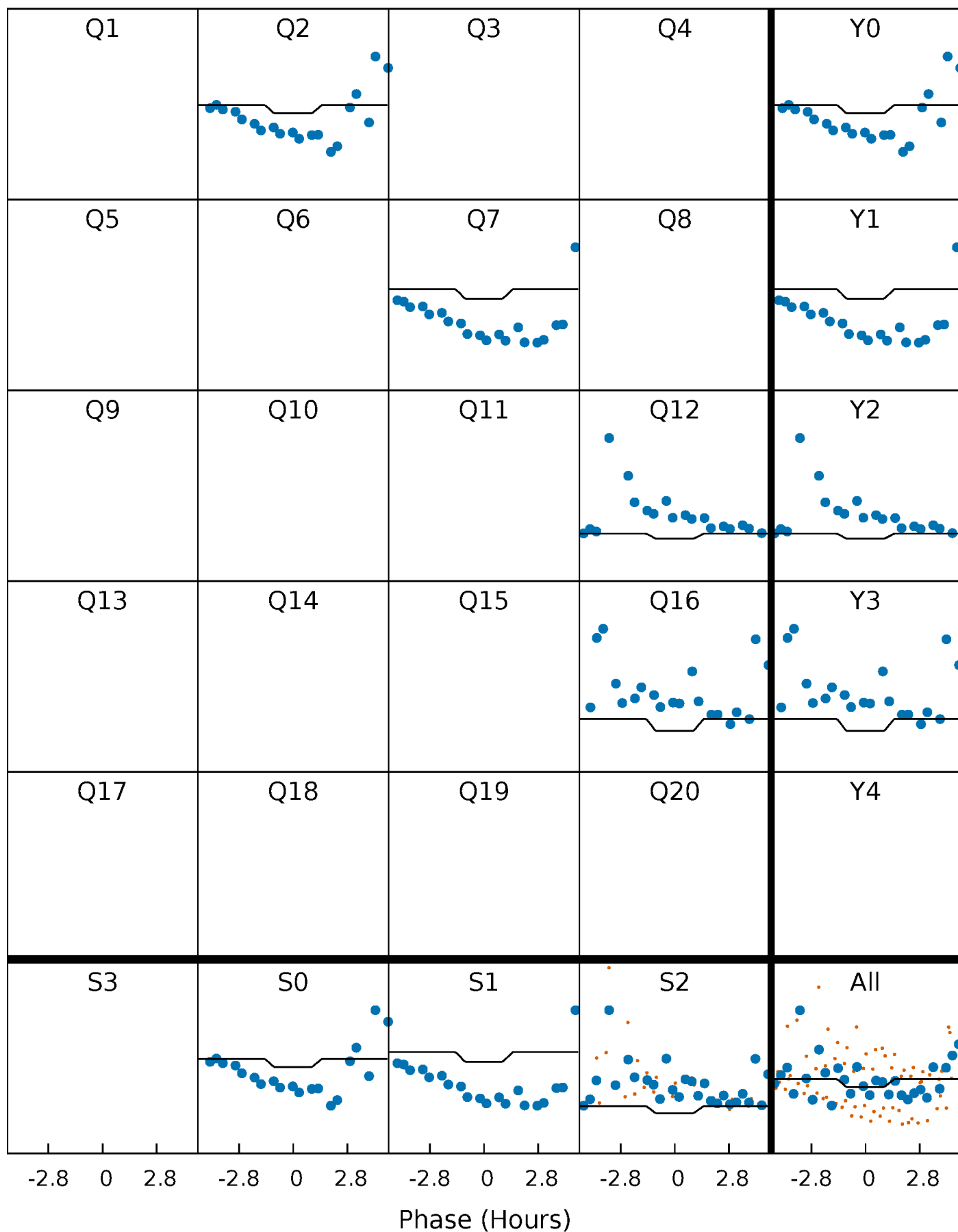
# DV Quarter-Phased Transit Curves

TCE 003557532-02 P=453.410921 Days  $T_0=194.757058$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

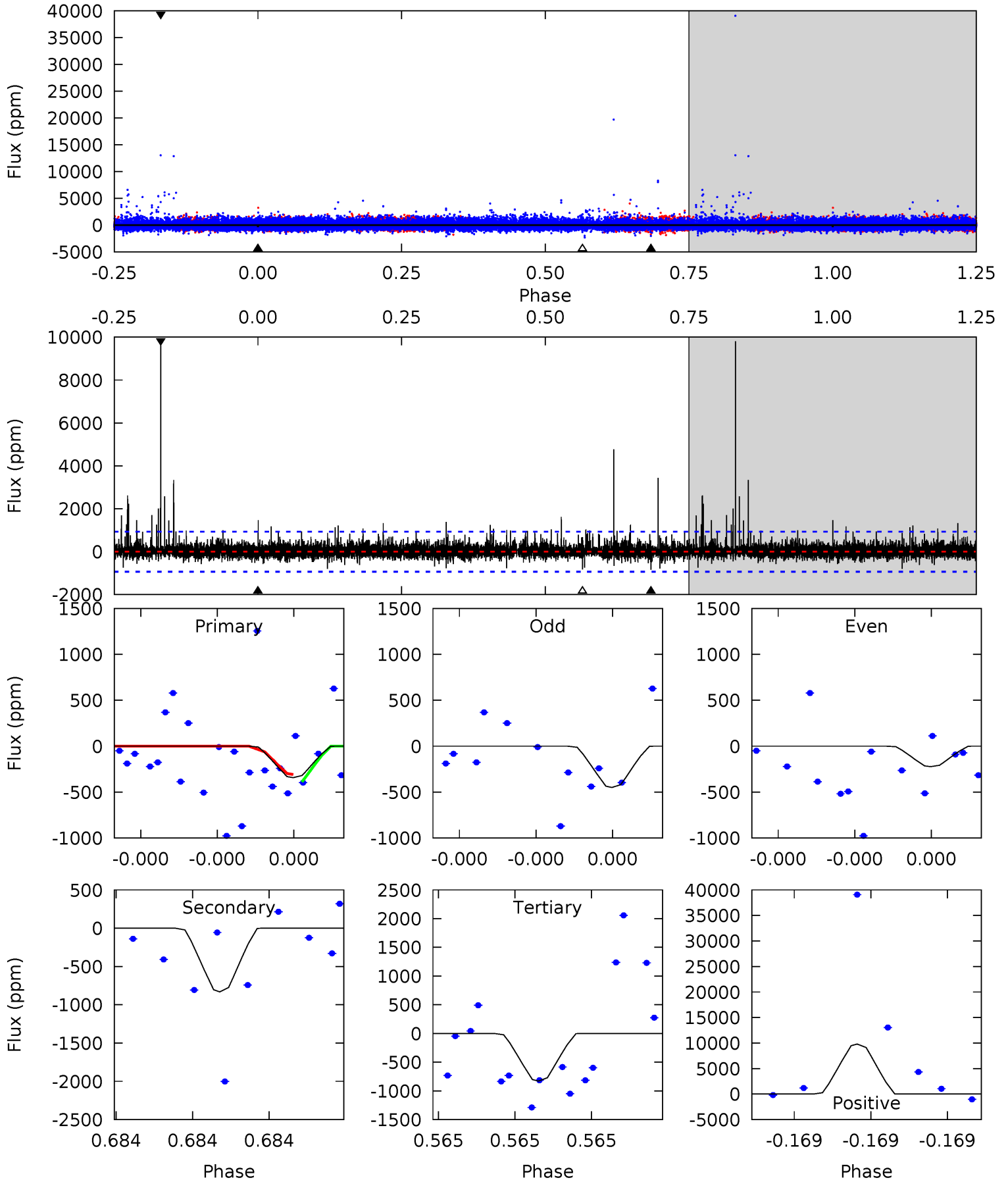
TCE 003557532-02 P=453.407074 Days  $T_0=194.758840$  (BKJD)



# DV Model-Shift Uniqueness Test

003557532-02, P = 453.410921 Days, E = 194.757058 Days

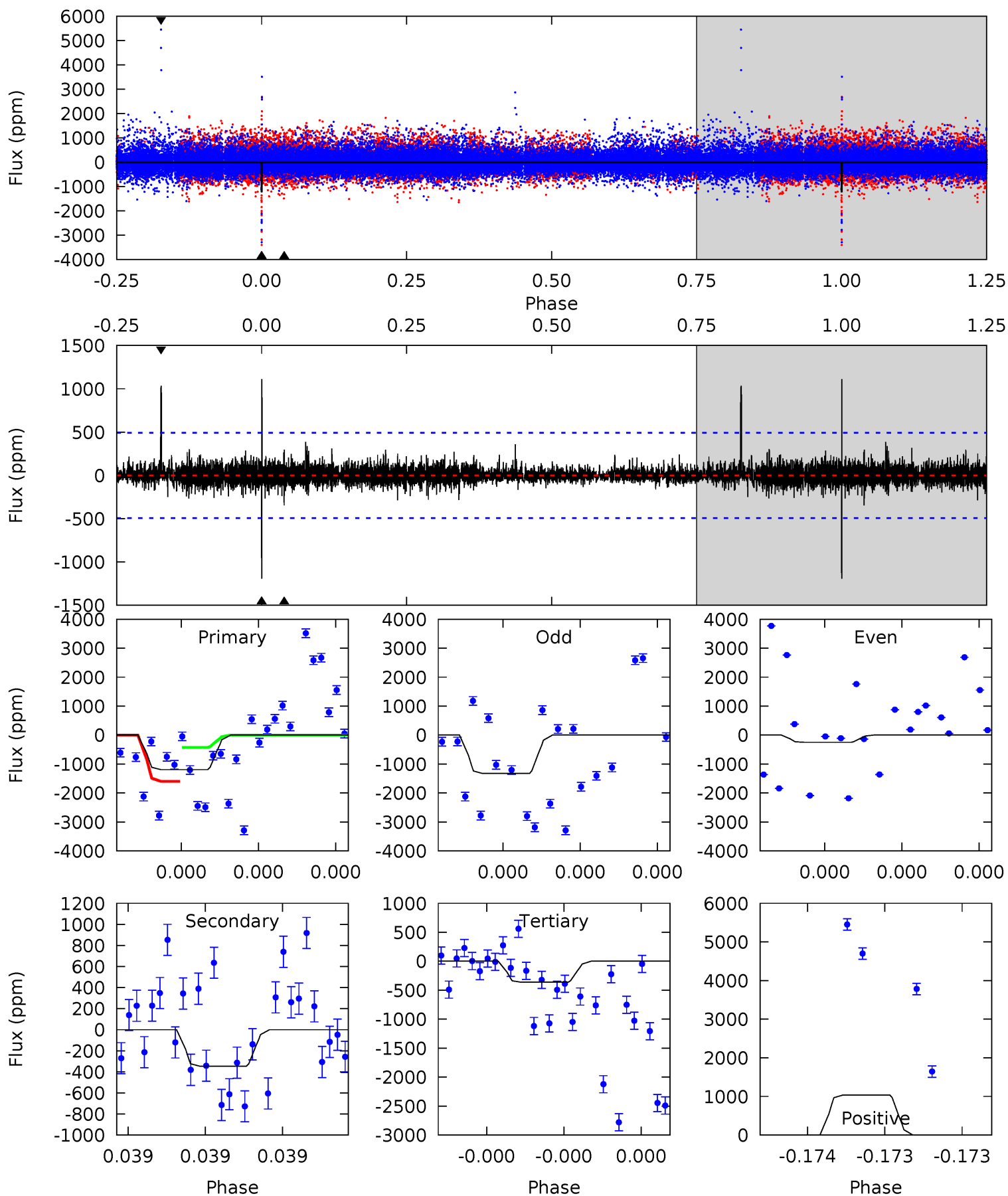
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2.14	5.17	5.16	61.0	5.82	3.85	1.38	-3.02	-58.9	0.01	-55.8	0.59	0.75	0.92	0.25



# Alt Model-Shift Uniqueness Test

003557532-02, P = 453.407074 Days, E = 194.758840 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
13.8	4.00	4.18	12.0	5.69	3.66	0.79	9.62	1.83	-0.18	-7.97	6.59	0.84	0.48	6.20





### Stellar Parameters For KIC 003557532

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5383^{+160}_{-160}$	$4.615^{+0.060}_{-0.060}$	$-0.860^{+0.350}_{-0.300}$	$0.668^{+0.070}_{-0.052}$	$0.671^{+0.062}_{-0.033}$	$3.172^{+0.772}_{-0.621}$
	+3%/-3%	+1%/-1%	+41%/-35%	+10%/-8%	+9%/-5%	+24%/-20%
Source	PHO1	KIC0	KIC0	DSEP		

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

### Secondary Eclipse Parameters for KIC 003557532-02 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-831 \pm 161$	$13.19^{+14.22}_{-9.23}$	$270^{+10}_{-10}$	$2847^{+1316}_{-472}$	$2577^{+26262}_{-1950}$
Alt.	$-346 \pm 87$	$13.39^{+15.00}_{-9.47}$	$269^{+10}_{-11}$	$2558^{+1020}_{-441}$	$1087^{+11014}_{-855}$

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

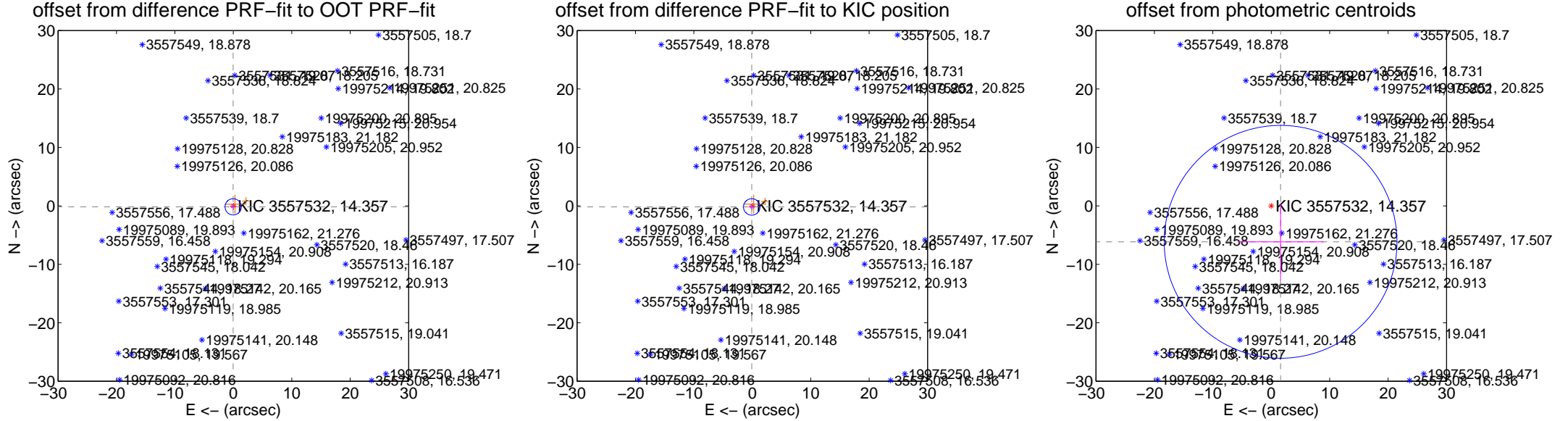
## DV Centroid Data

Supplemental centroid analysis for 003557532-02. Kepler magnitude: 14.36. Transit SNR 1.50

There are 2 quarters with good PRF difference image offsets

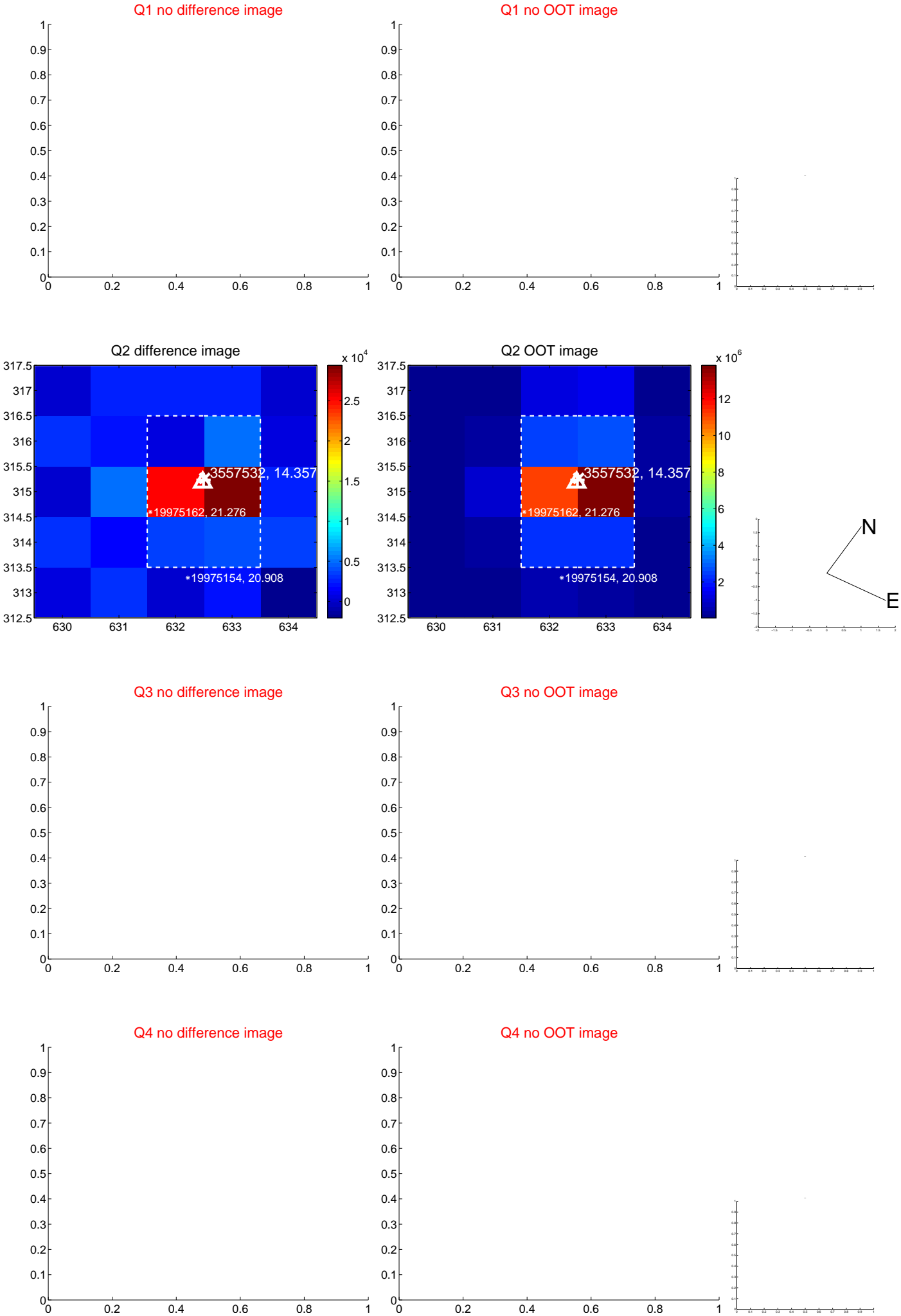
The direct PRF centroid is offset from the target star catalog position by about 0.03 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.171 \pm 0.463$	0.37	$0.033 \pm 0.500$	$-0.168 \pm 0.461$
PRF-fit source offset from KIC position	$0.207 \pm 0.469$	0.44	$0.094 \pm 0.500$	$-0.184 \pm 0.461$
photometric centroid source offset	$6.36 \pm 6.64$	0.96	$-1.60 \pm 7.35$	$-6.15 \pm 6.59$

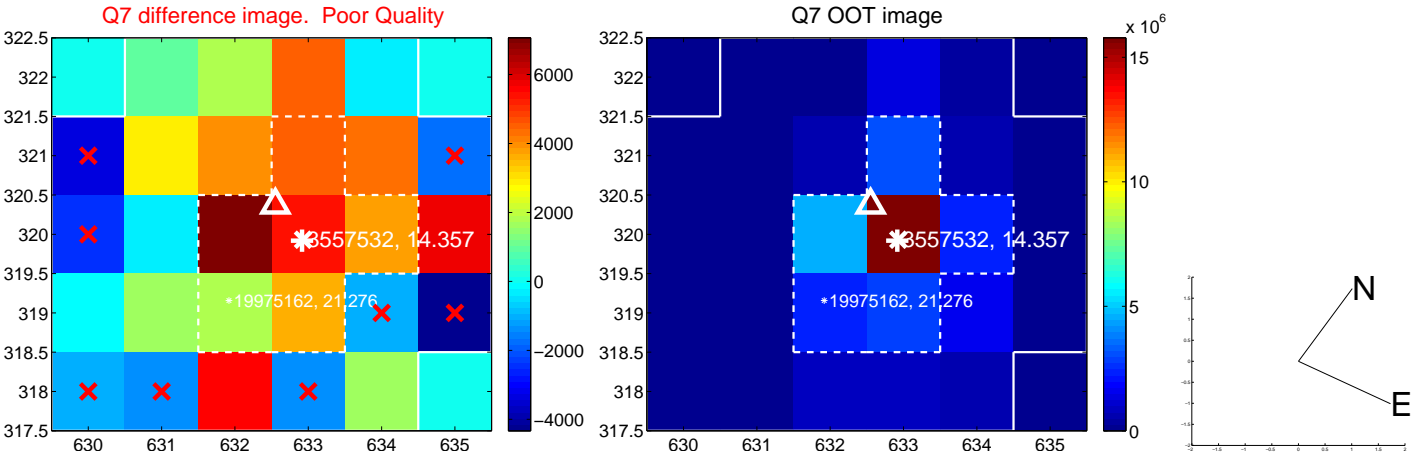


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

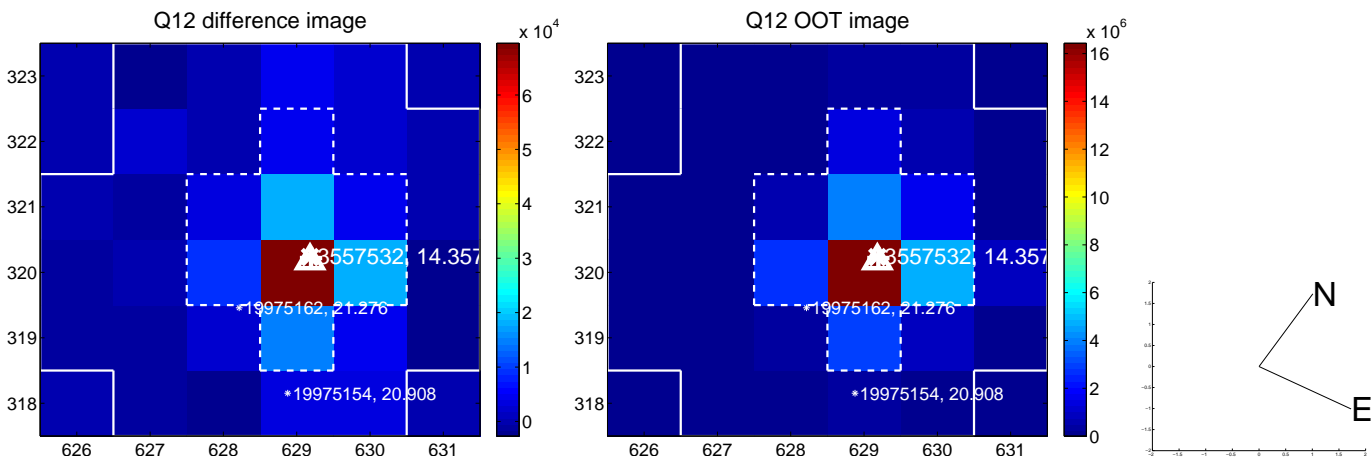
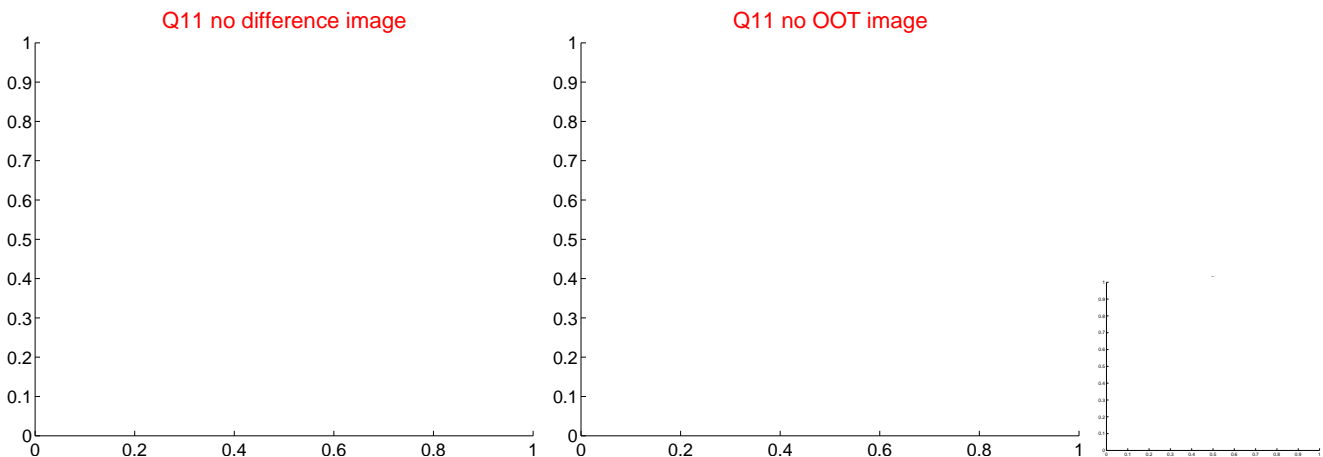
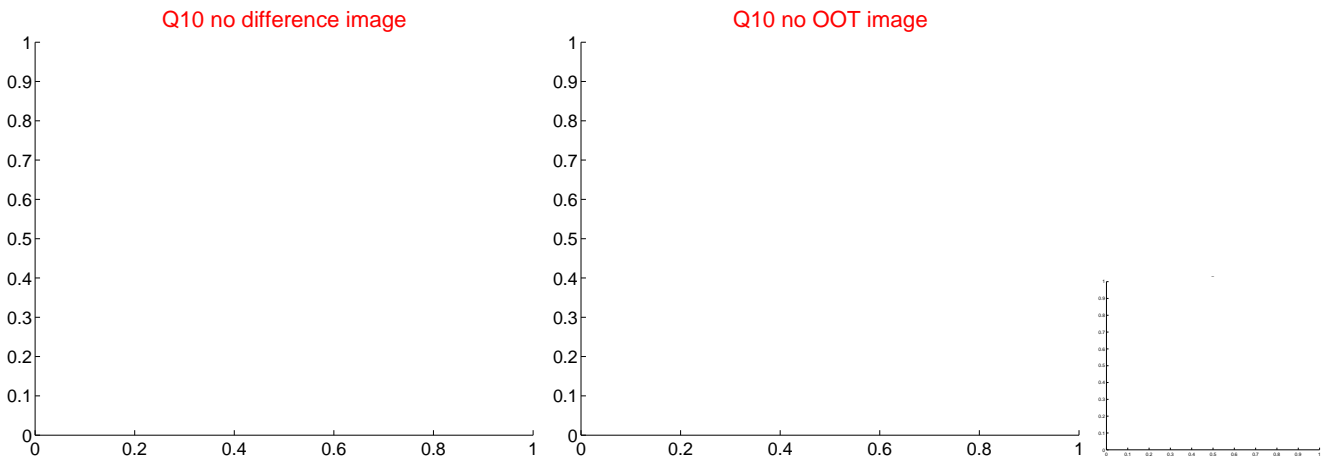
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



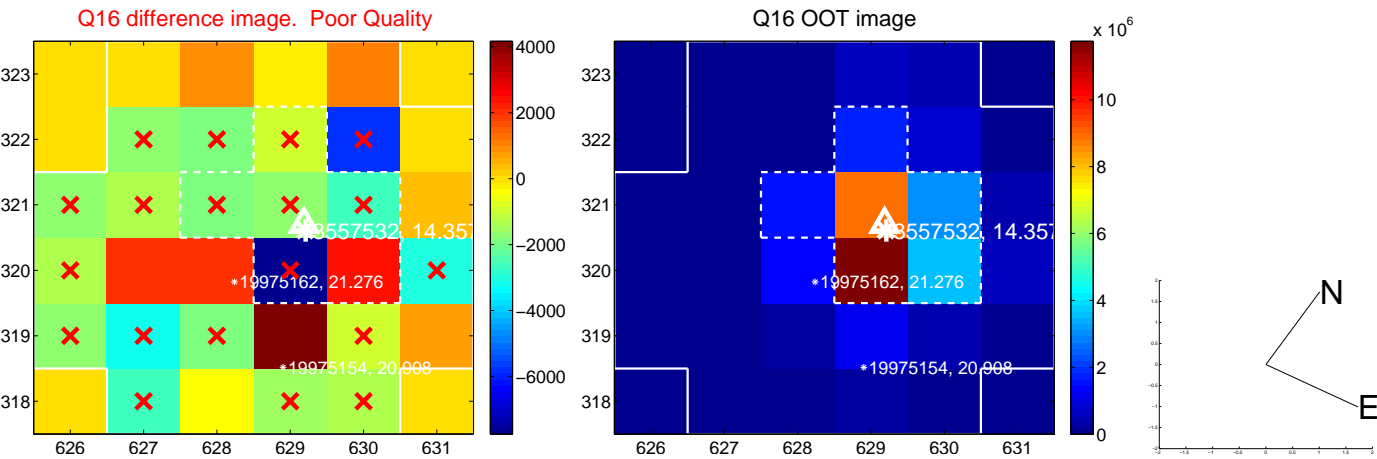
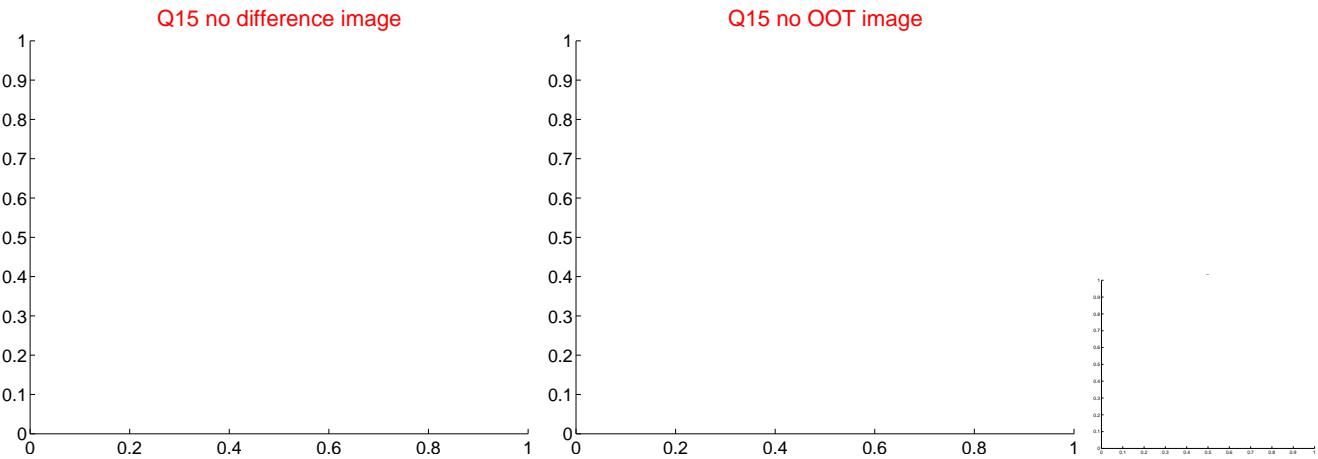
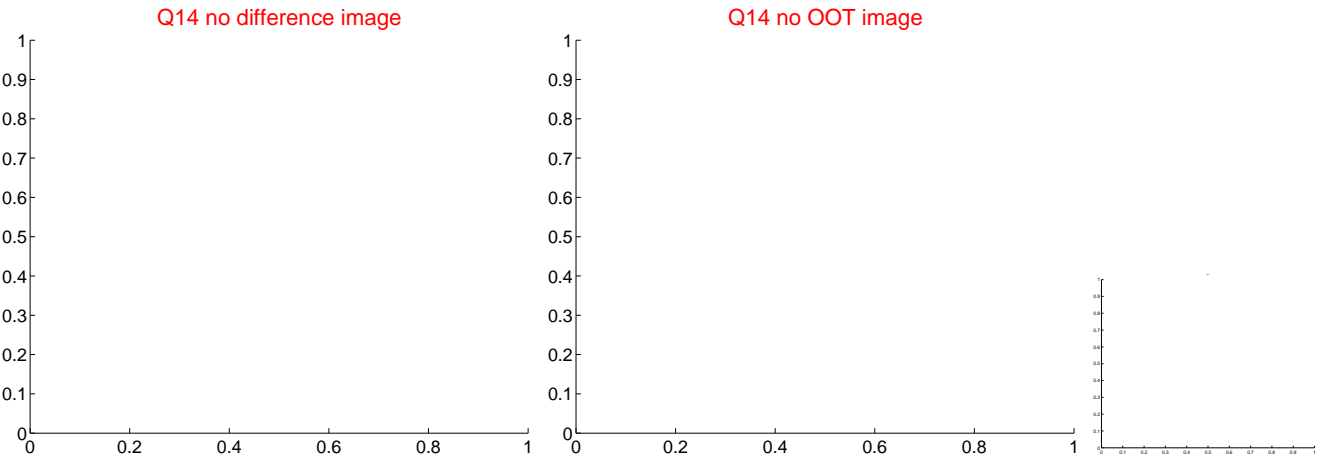
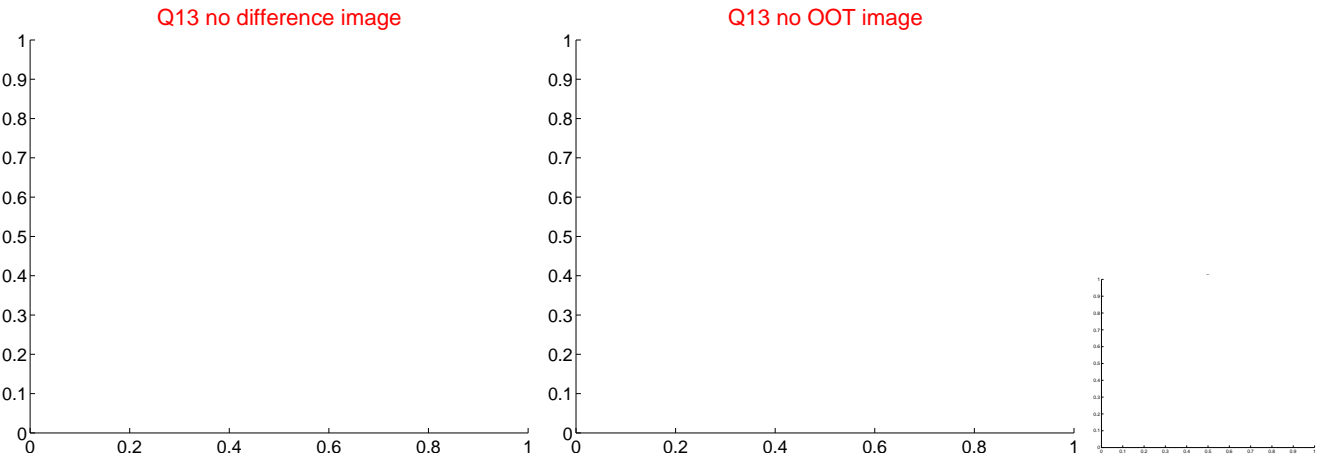
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



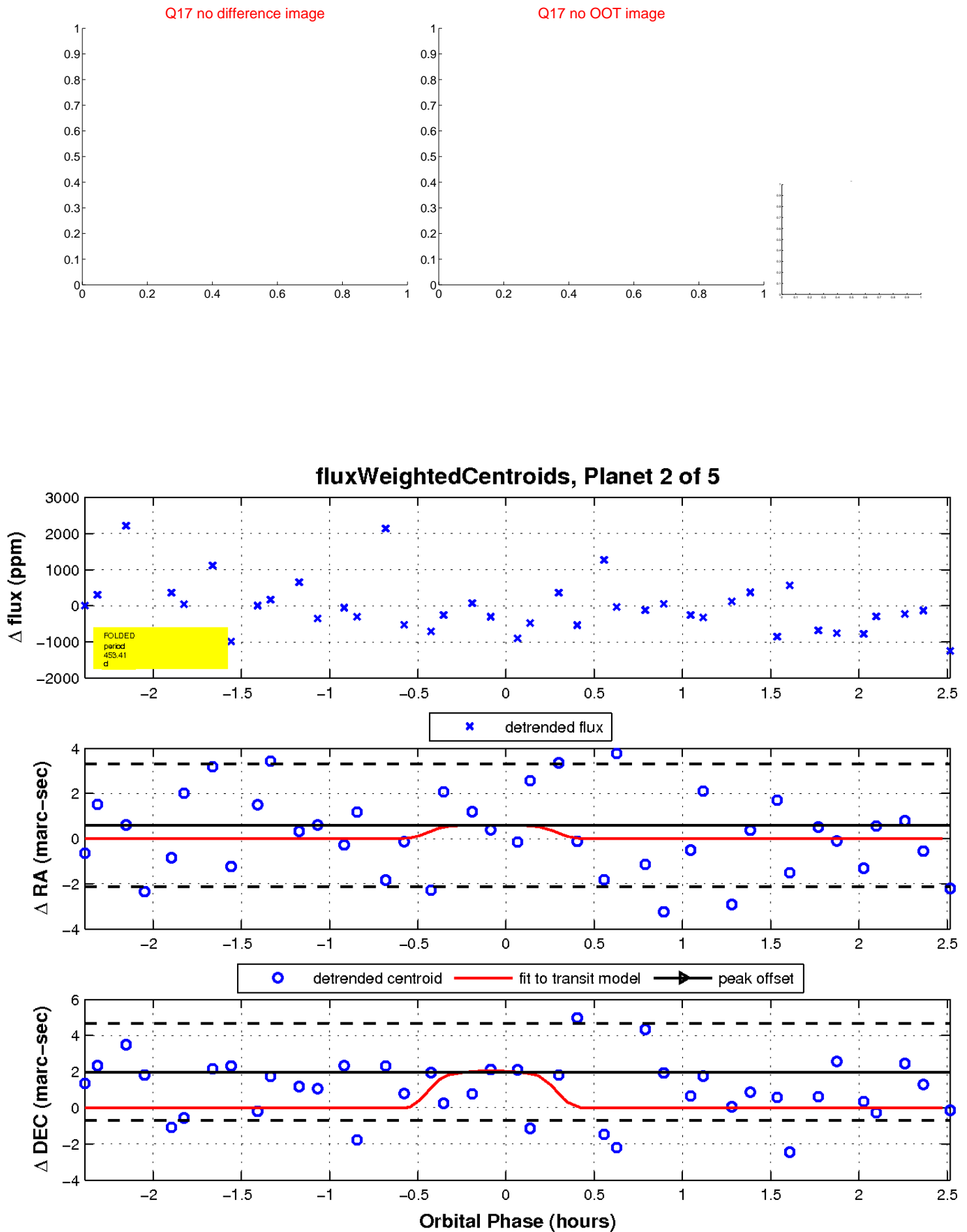
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value



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

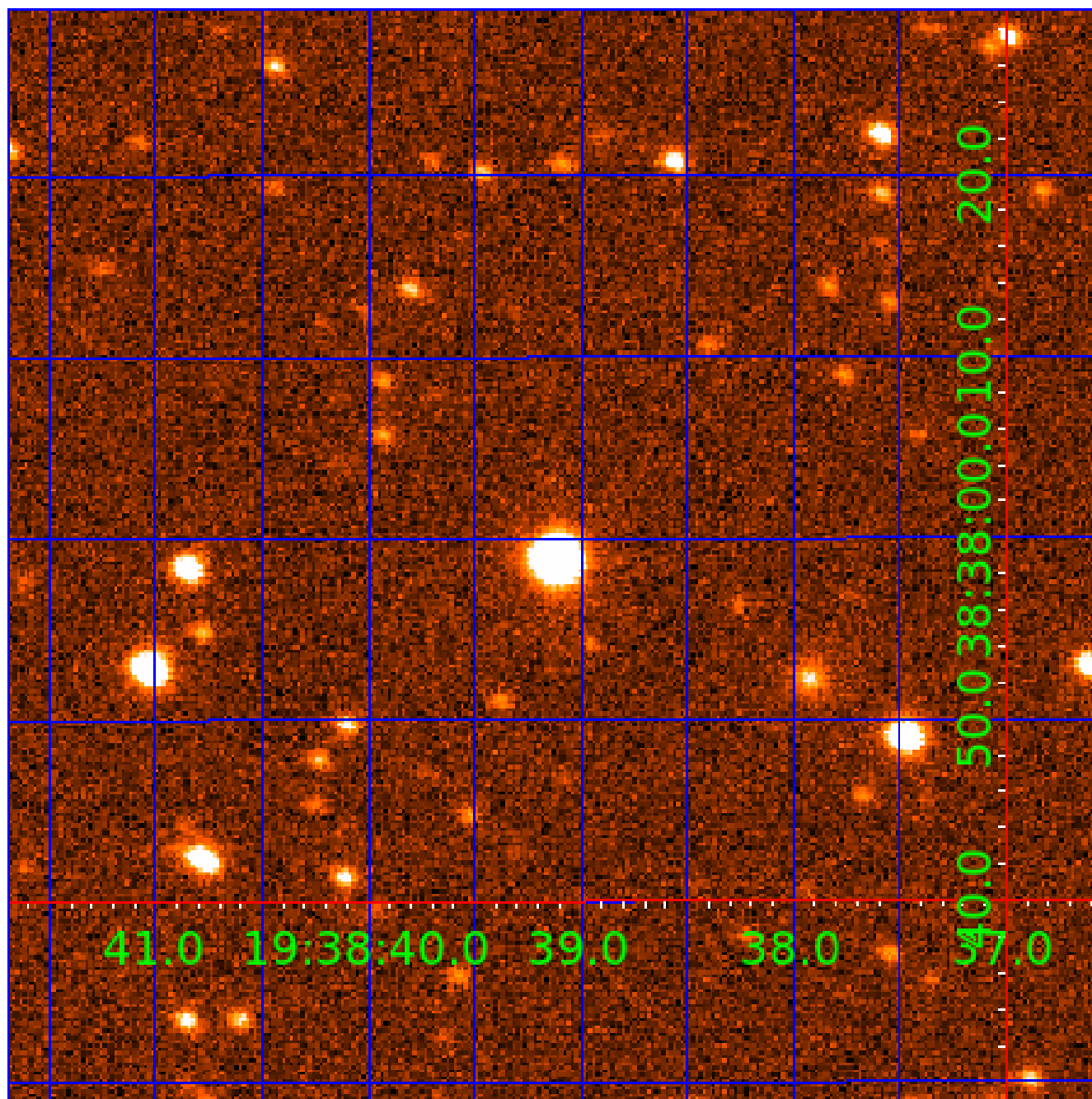


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination





# KIC 003557532

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
003557532-01	OBS	No	386.212983	466.613621	1398.5	7.921	14.0	4.4	0.67	5383	2.55	0.41
003557532-02	OBS	No	453.410921	194.757058	332.5	0.840	13.2	1.5	0.67	5383	1.48	0.33
003557532-03	OBS	No	312.264700	327.452636	1018.7	2.939	13.0	4.7	0.67	5383	2.29	0.54
003557532-04	OBS	No	464.779871	277.930759	1182.3	4.025	16.2	4.2	0.67	5383	2.37	0.32
003557532-05	OBS	No	0.590590	131.535994	1374.7	1.500	12.2	-1.0	0.67	5383	2.47	2307.43

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003557532-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
003557532-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_POS_ALT
003557532-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS
003557532-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV
003557532-05	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_ALT—CENT_NOFITS

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

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

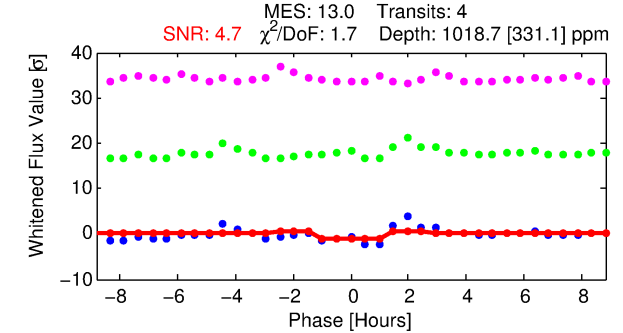
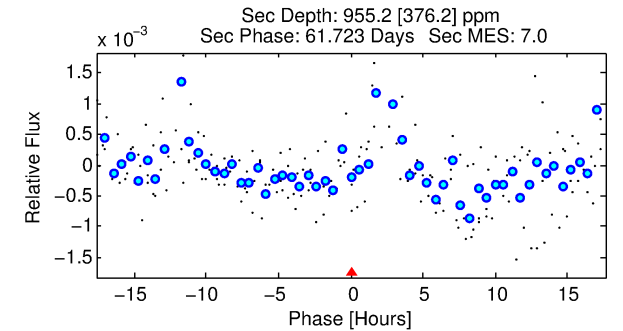
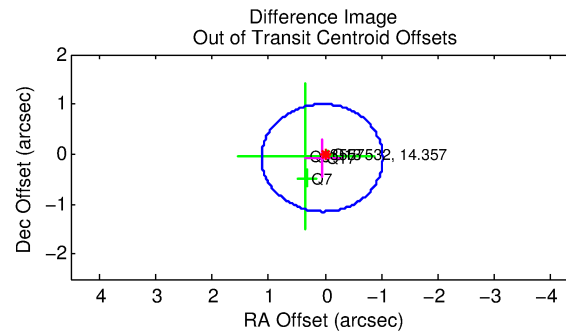
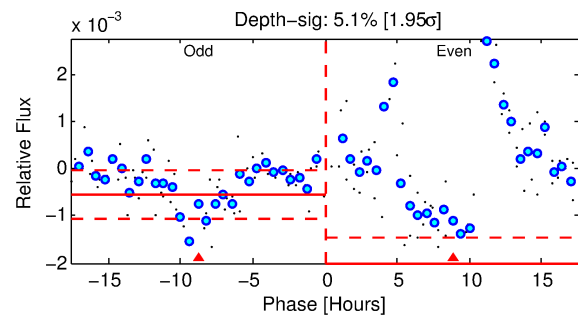
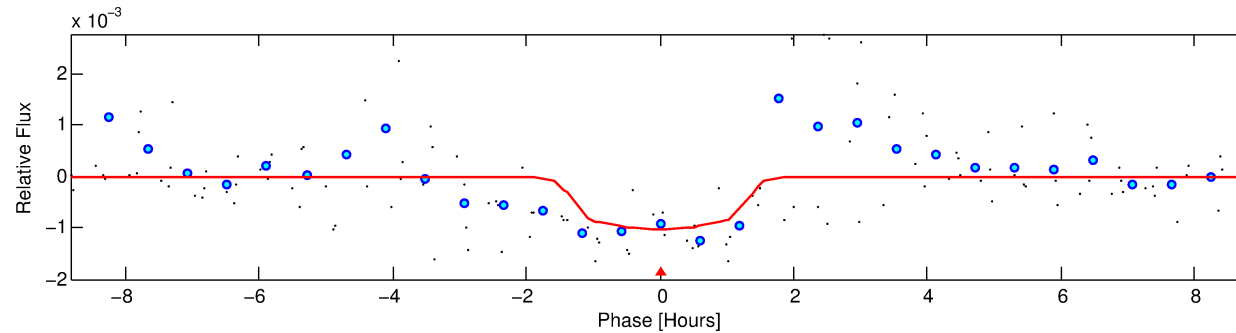
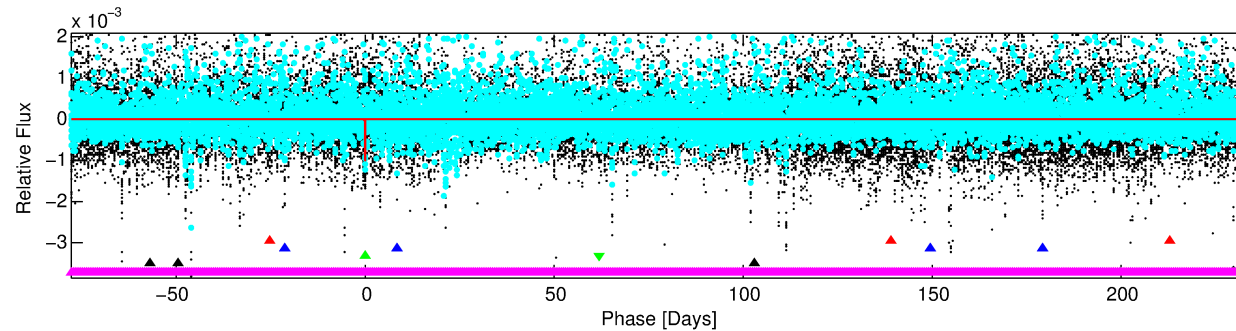
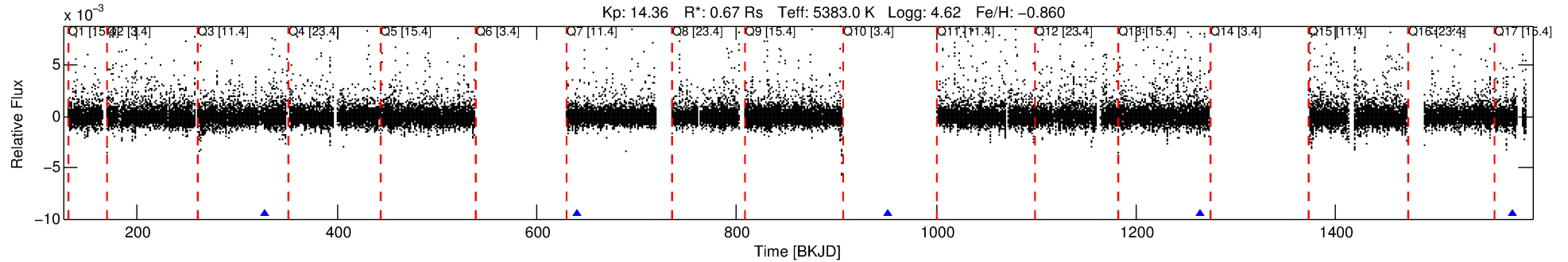
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 003557532-03

No Significant Match Found

# DV One-Page Summary

KIC: 3557532 Candidate: 3 of 5 Period: 312.265 d



## DV Fit Results:

Period = 312.26470 [0.00459] d  
Epoch = 327.4526 [0.0111] BKJD  
Rp/R\* = 0.0314 [0.0852]  
a/R\* = 600.57 [7290.72]  
b = 0.72 [8.31]  
Seff = 0.54 [0.09]  
Teq = 219 [9] K  
Rp = 2.29 [6.22] Re  
a = 0.7887 [0.0660] AU  
Ag = 62275.14 [338804.10] [0.18σ]  
Teffp = 5338 [7260] K [0.71σ]

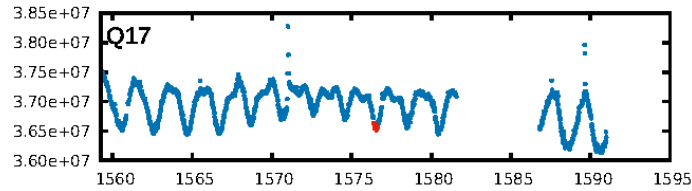
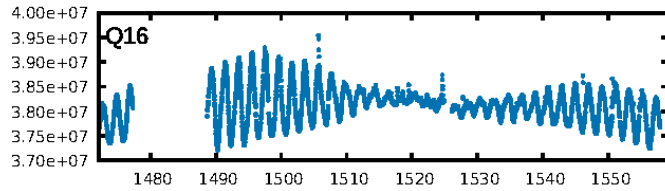
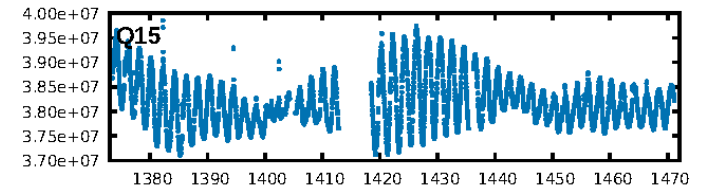
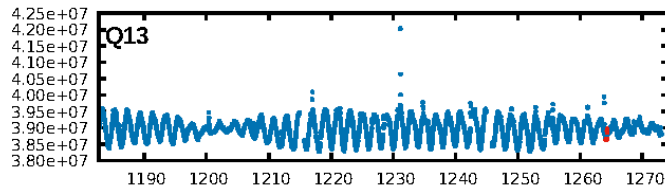
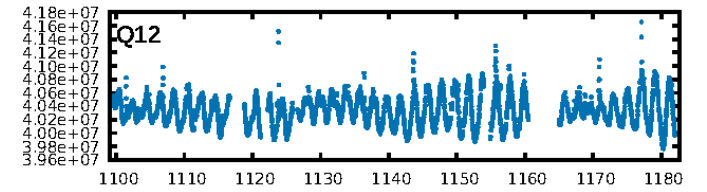
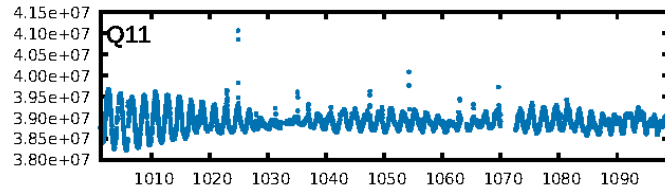
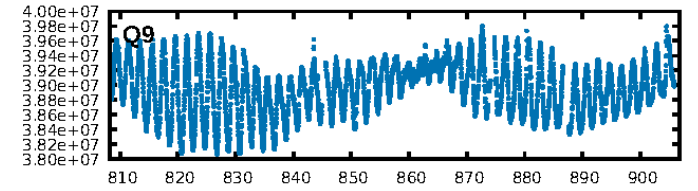
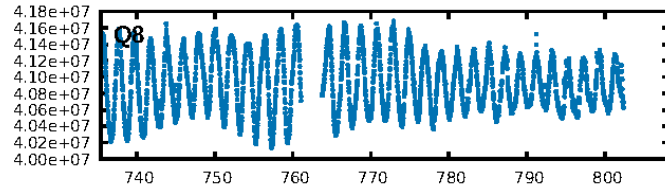
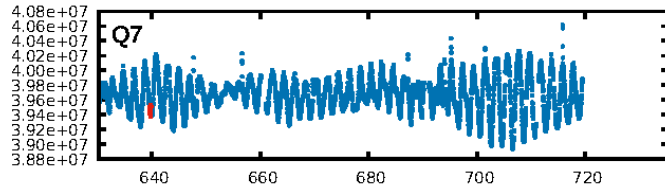
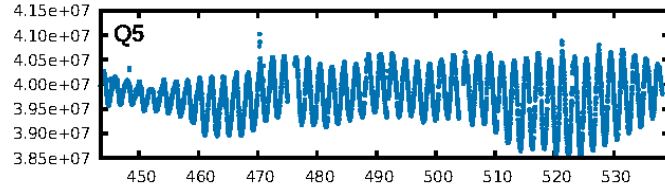
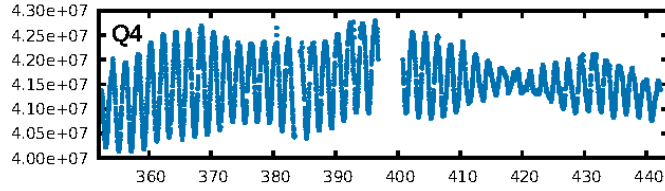
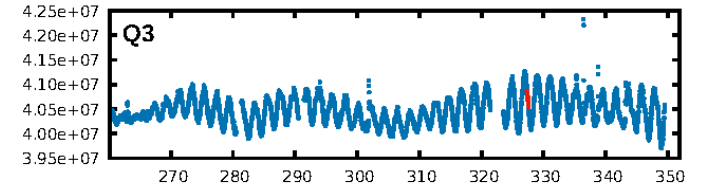
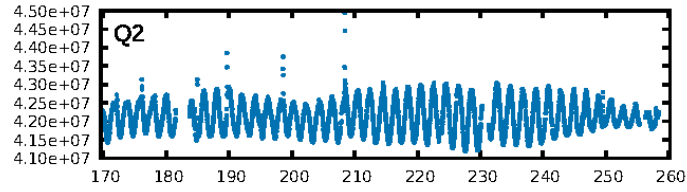
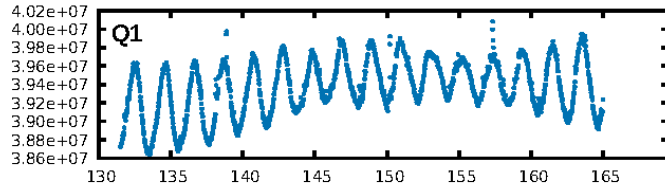
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [2266.64σ]  
LongPeriod-sig: 100.0% [210.05σ]  
ModelChiSquare2-sig: 16.1%  
ModelChiSquareGof-sig: 57.7%  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: 9.993  
Centroid-sig: 21.9%  
Centroid-so: 1.543 arcsec [1.14σ]  
OotOffset-rm: 0.089 arcsec [0.25σ]  
OotOffset-st: 0/2/0/2 [4]  
KicOffset-rm: 0.130 arcsec [0.38σ]  
KicOffset-st: 0/2/0/2 [4]  
DiffImageQuality-fgm: 0.75 [3/4]  
DiffImageOverlap-fno: 0.00 [0/4]

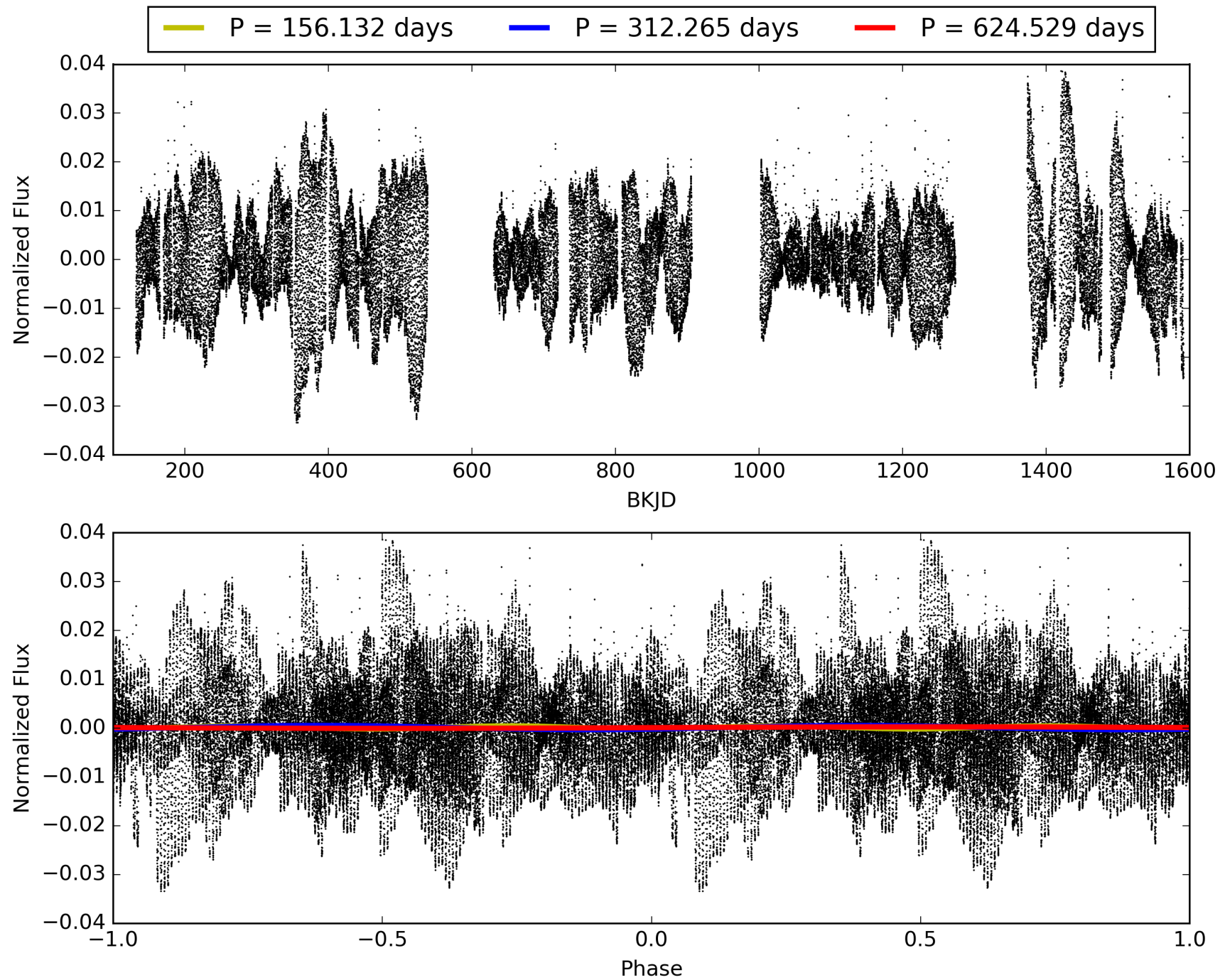
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 22:01:11 Z

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

# TCE 003557532-03, PDC Light Curves

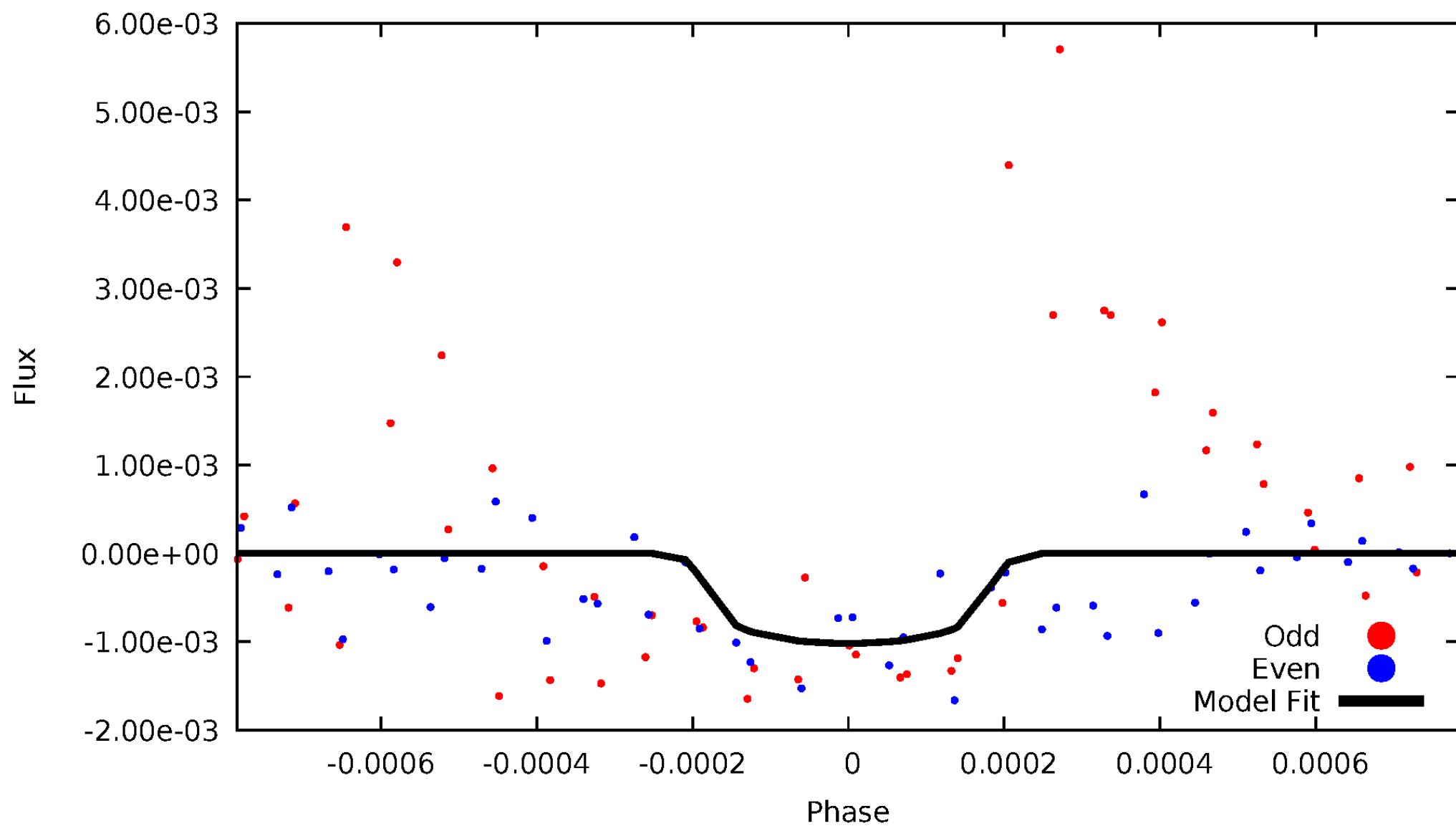


TCE 003557532-03



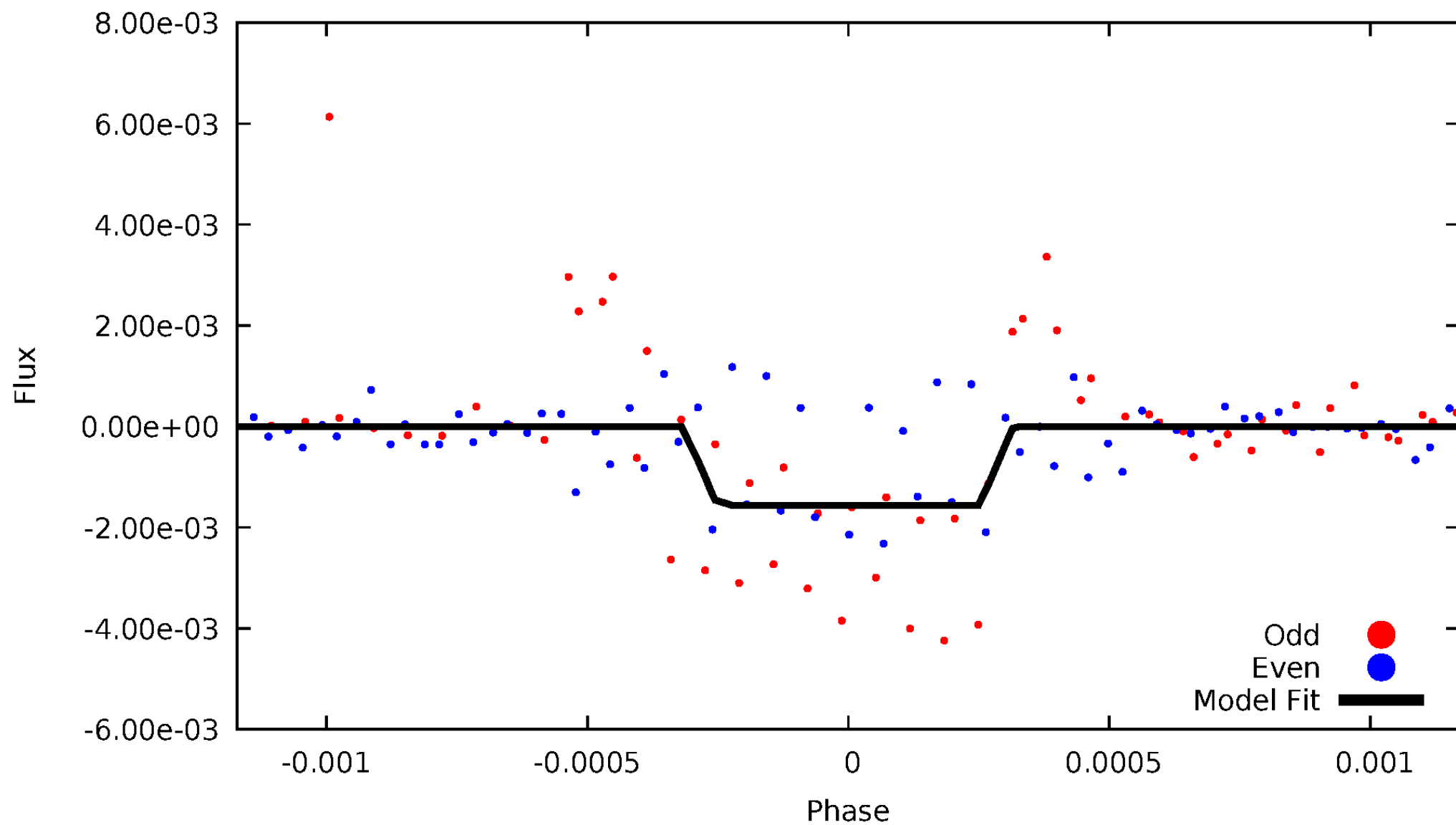
# DV Odd/Even

TCE 003557532-03



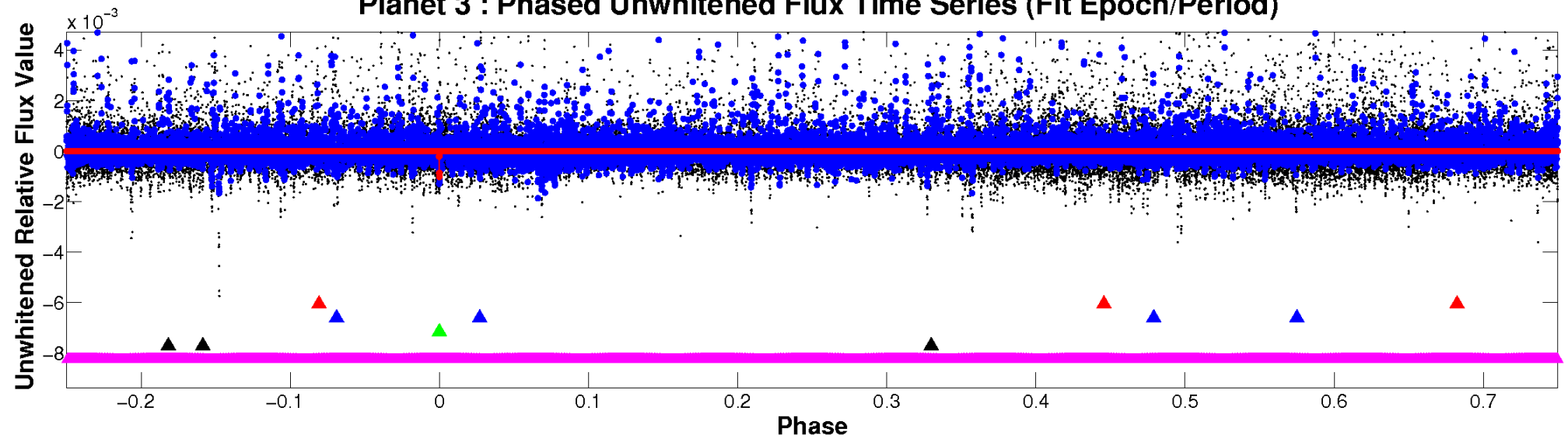
# ALT Odd/Even

TCE 003557532-03

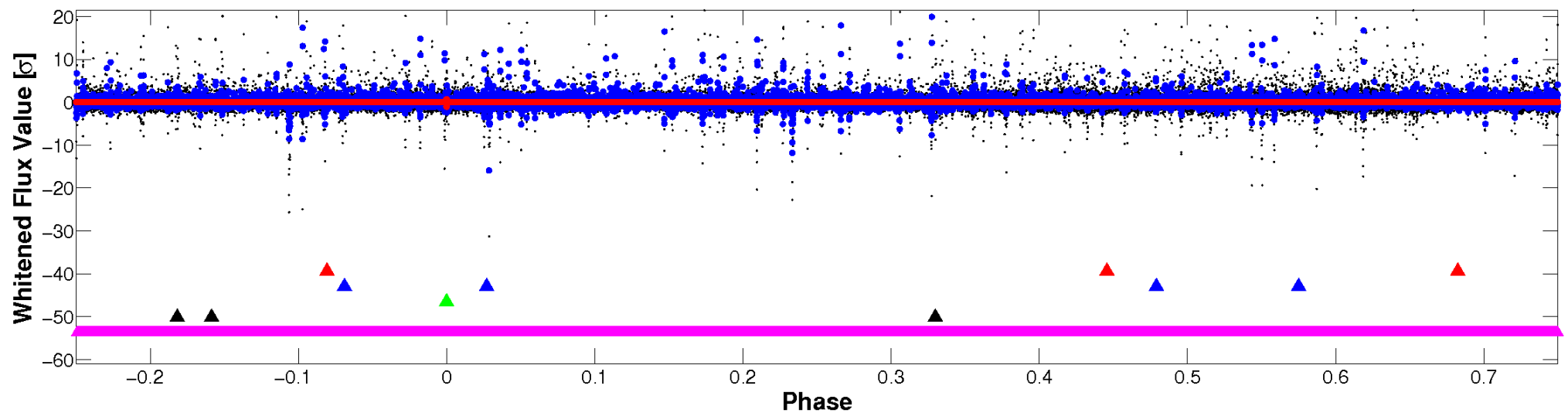


# Non-Whitened Vs. Whitened Light Curve

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

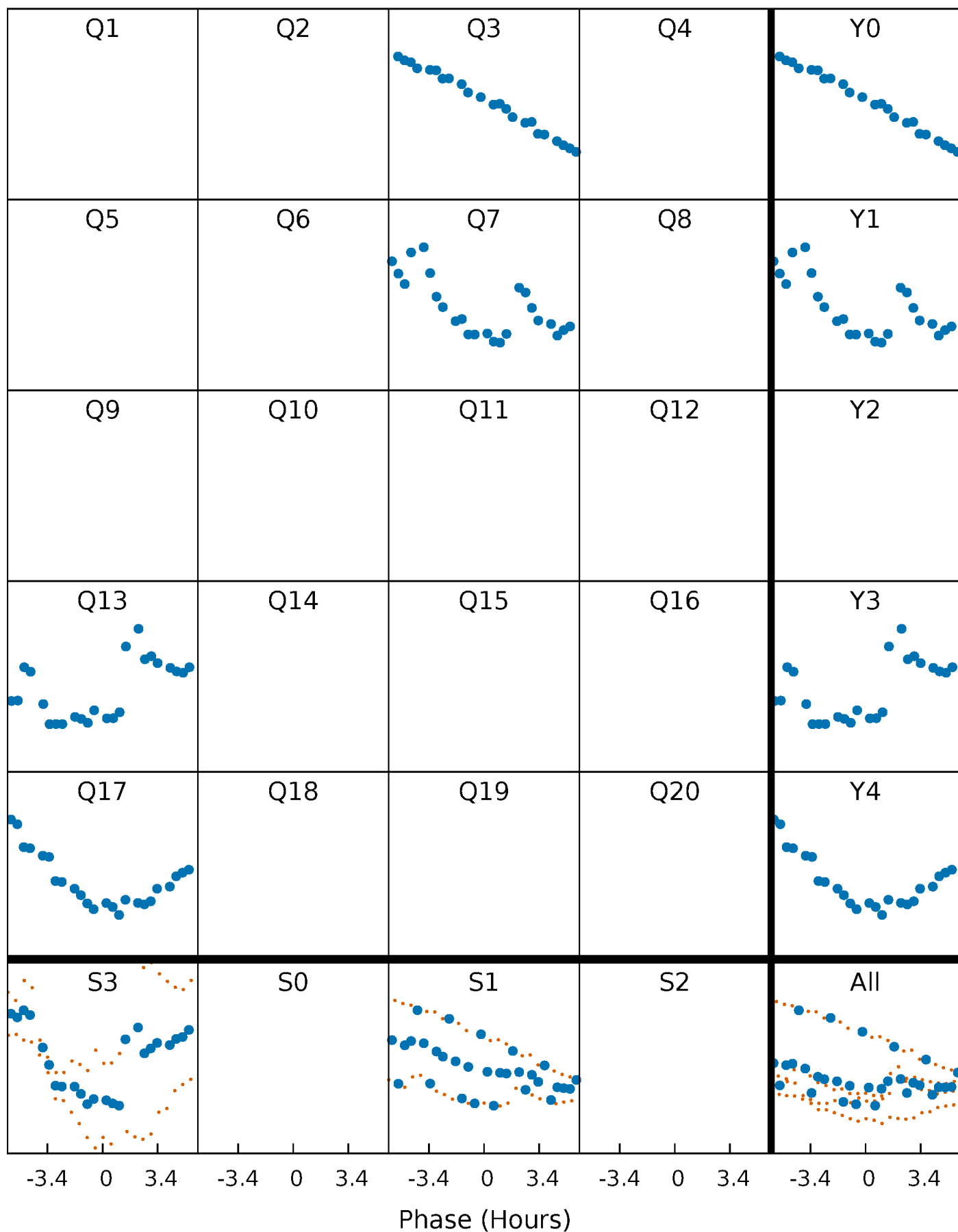


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

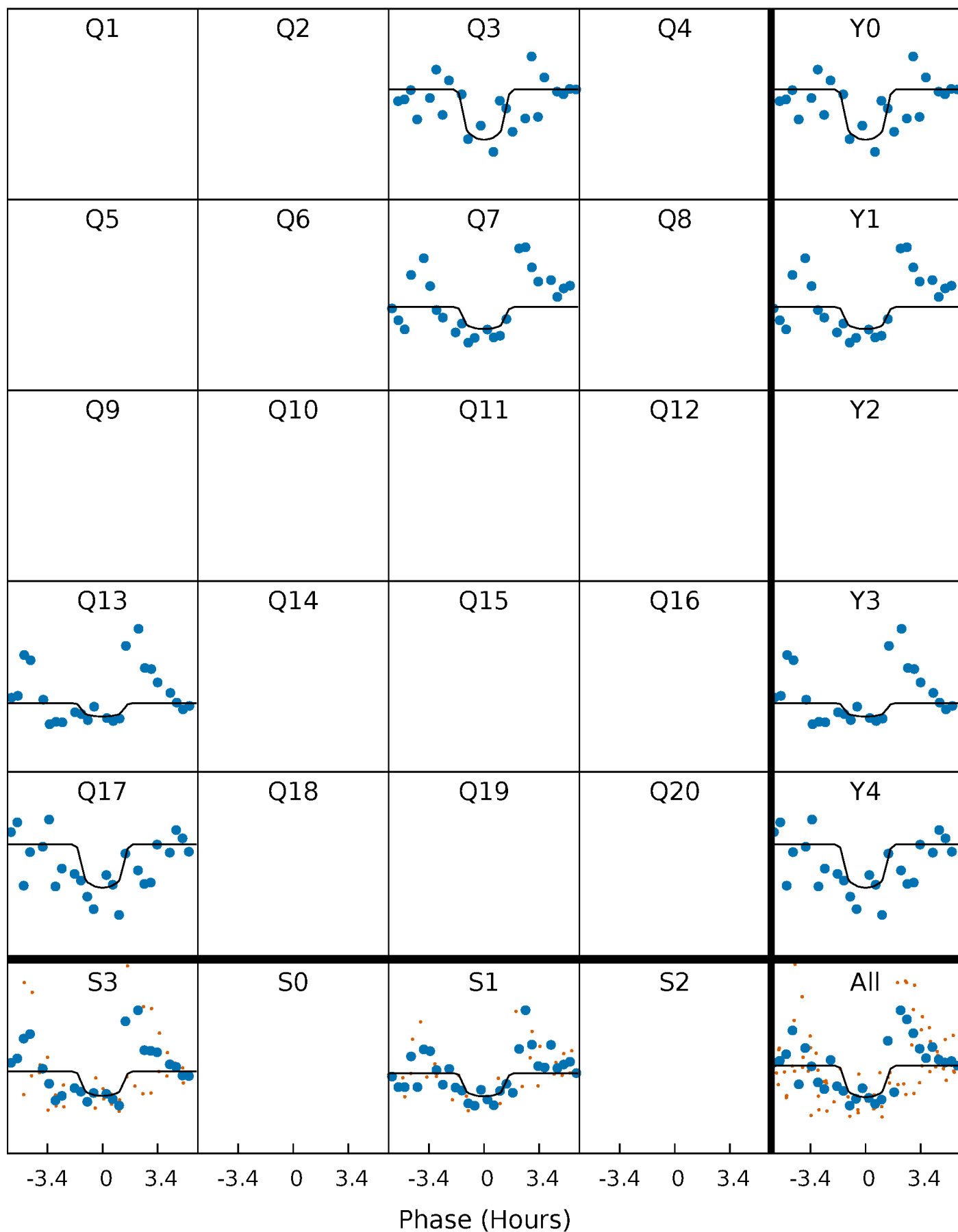
TCE 003557532-03     $P=312.264700$  Days     $T_0=327.452636$  (BKJD)





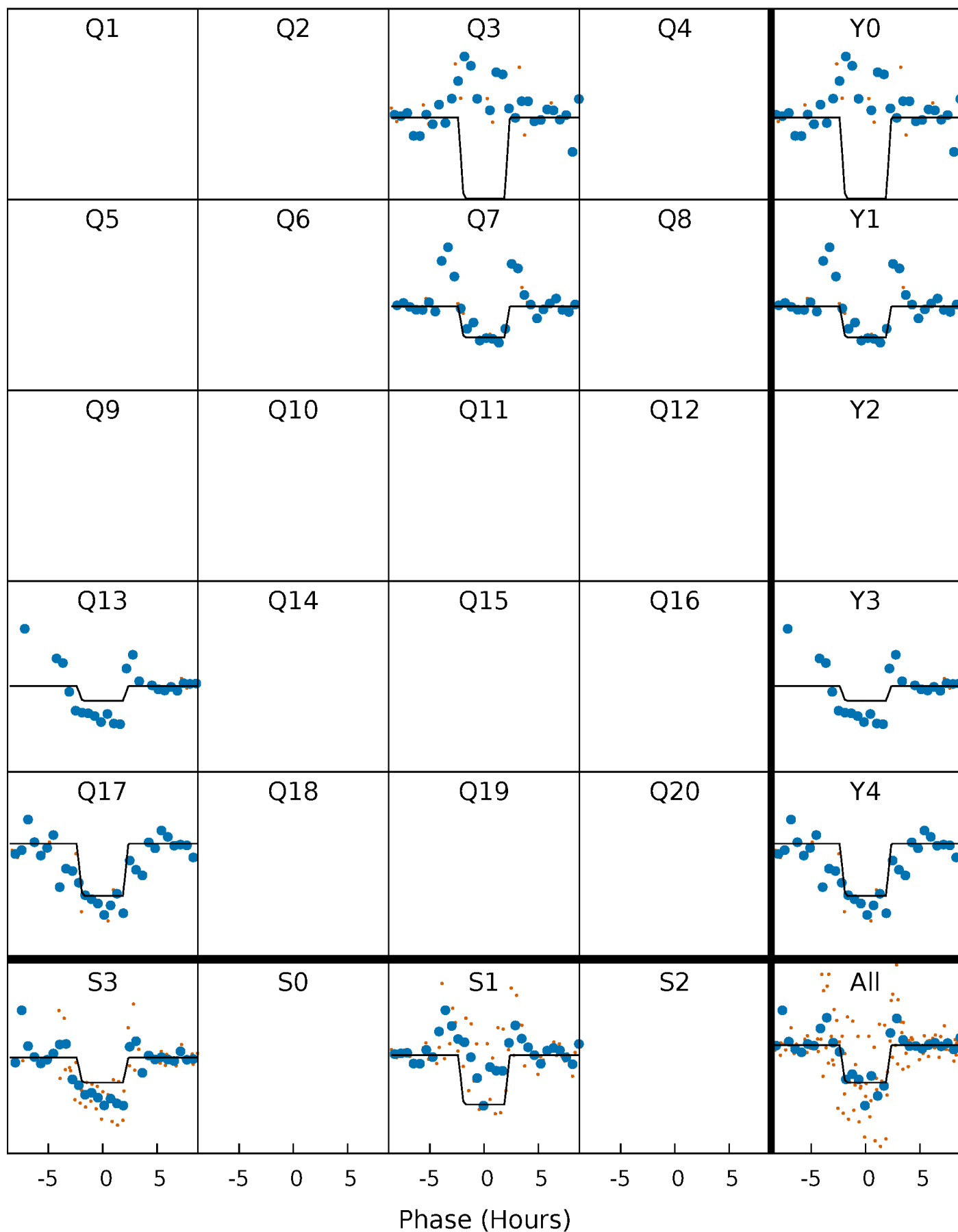
# DV Quarter-Phased Transit Curves

TCE 003557532-03     $P=312.264700$  Days     $T_0=327.452636$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

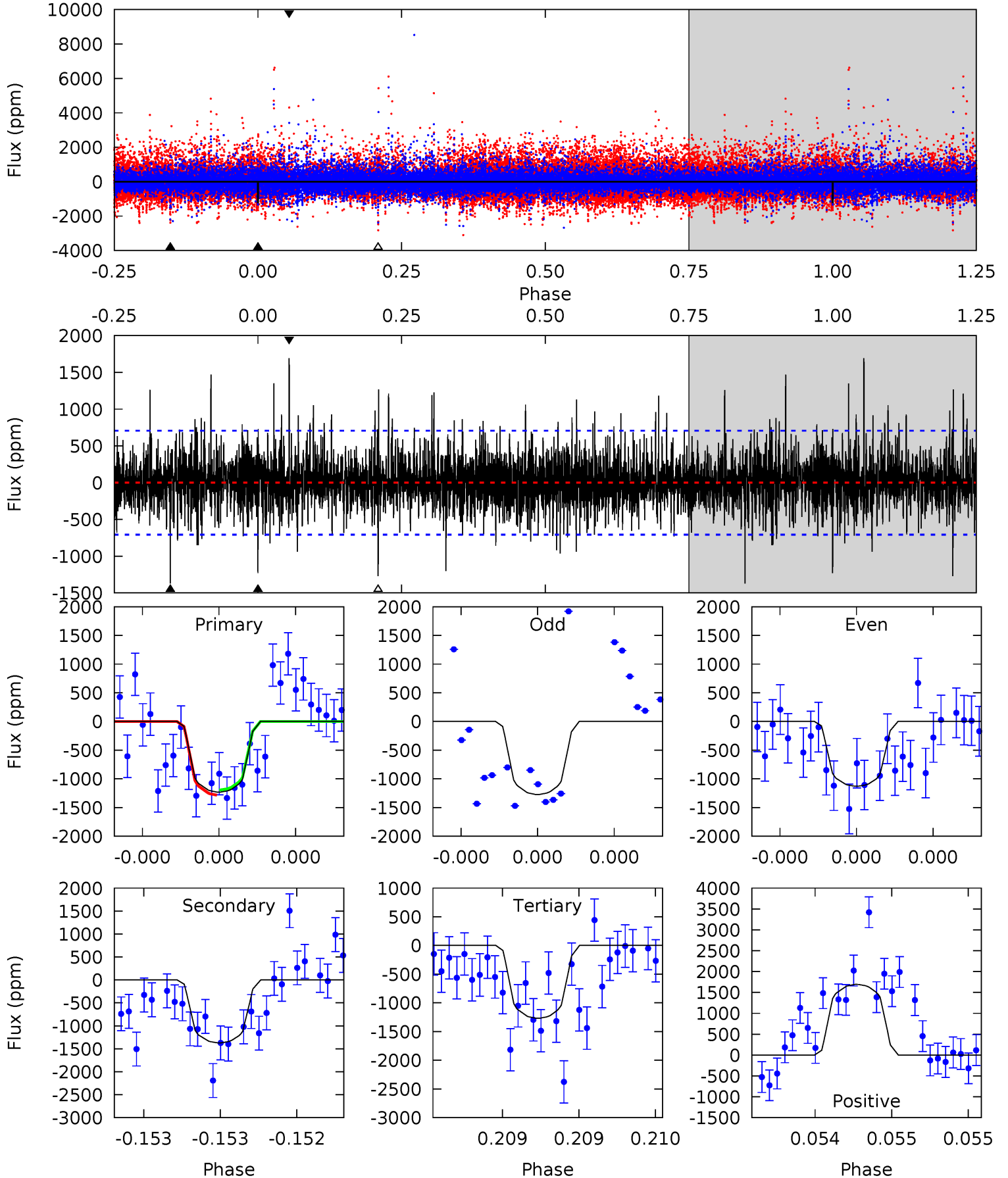
TCE 003557532-03     $P=312.258853$  Days     $T_0=327.436302$  (BKJD)



# DV Model-Shift Uniqueness Test

003557532-03, P = 312.264700 Days, E = 15.187936 Days

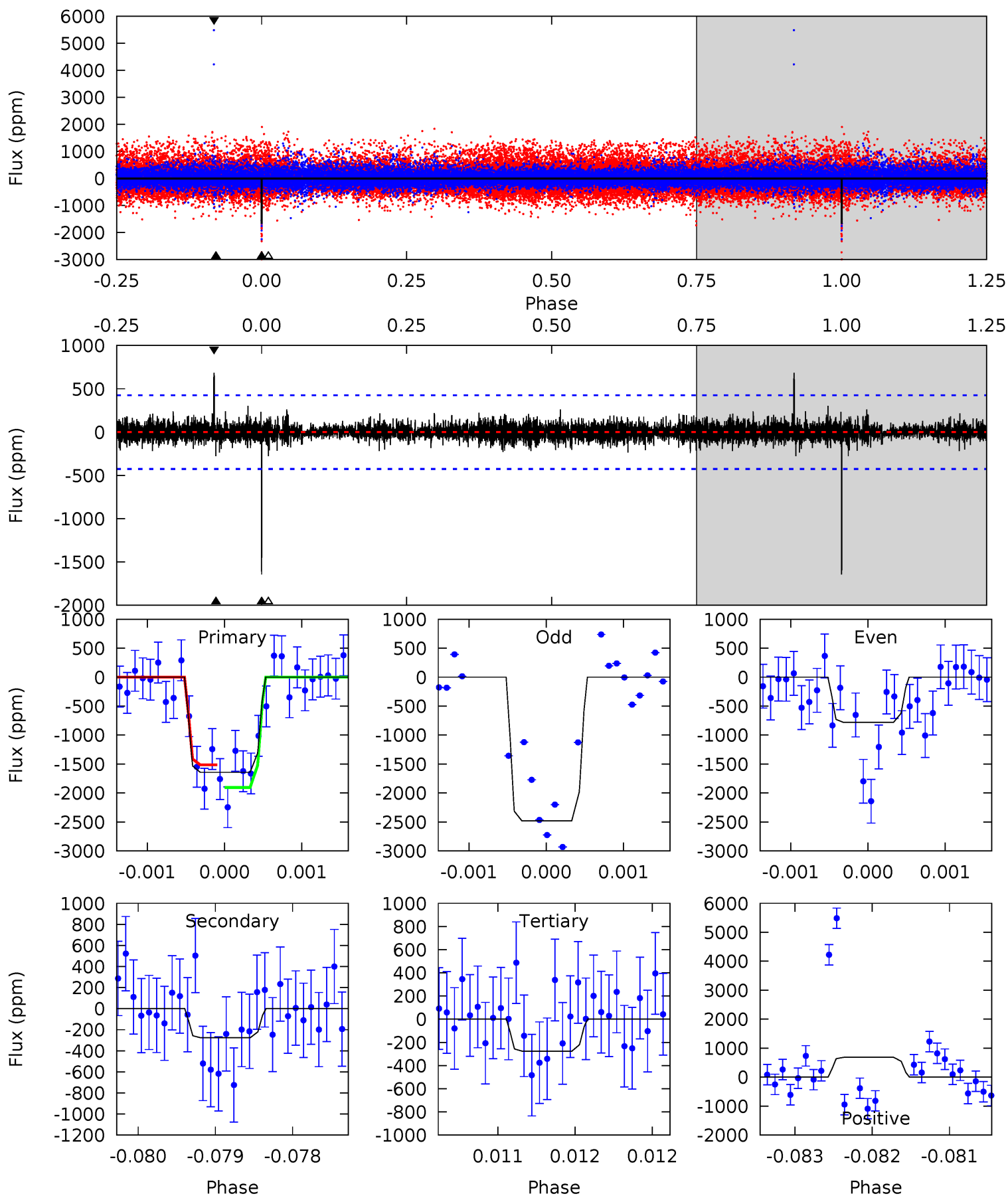
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.74	10.8	10.0	13.4	5.59	3.50	2.11	-0.30	-3.65	0.81	-2.54	0.39	1.00	0.55	0.36



# Alt Model-Shift Uniqueness Test

003557532-03, P = 312.258853 Days, E = 15.177449 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
21.3	3.58	3.58	8.87	5.54	3.42	0.79	17.8	12.5	0.00	-5.29	13.0	0.94	0.29	0



### Stellar Parameters For KIC 003557532

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5383^{+160}_{-160}$	$4.615^{+0.060}_{-0.060}$	$-0.860^{+0.350}_{-0.300}$	$0.668^{+0.070}_{-0.052}$	$0.671^{+0.062}_{-0.033}$	$3.172^{+0.772}_{-0.621}$
	+3%/-3%	+1%/-1%	+41%/-35%	+10%/-8%	+9%/-5%	+24%/-20%
Source	PHO1	KIC0	KIC0	DSEP		

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

### Secondary Eclipse Parameters for KIC 003557532-03 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-1371 \pm 126$	$5.27^{+5.12}_{-3.68}$	$306^{+11}_{-12}$	$4146^{+2830}_{-853}$	$17568^{+168417}_{-13148}$
Alt.	$-276 \pm 77$	$5.47^{+5.19}_{-3.73}$	$305^{+12}_{-11}$	$3125^{+1363}_{-525}$	$3047^{+24403}_{-2265}$

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

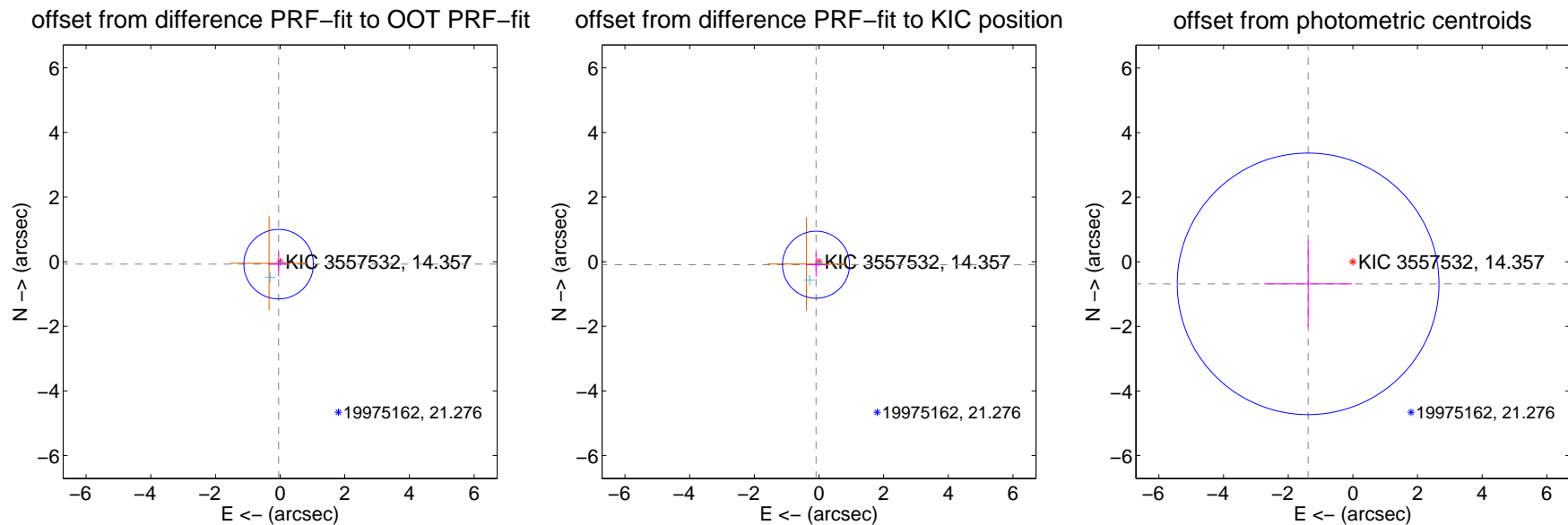
## DV Centroid Data

Supplemental centroid analysis for 003557532-03. Kepler magnitude: 14.36. Transit SNR 4.73

There are 3 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.05 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.089 \pm 0.358$	0.25	$0.046 \pm 0.314$	$-0.076 \pm 0.373$
PRF-fit source offset from KIC position	$0.130 \pm 0.346$	0.38	$0.091 \pm 0.314$	$-0.094 \pm 0.373$
photometric centroid source offset	$1.54 \pm 1.35$	1.14	$1.38 \pm 1.35$	$-0.68 \pm 1.33$



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

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

Q1 no difference image



Q1 no OOT image



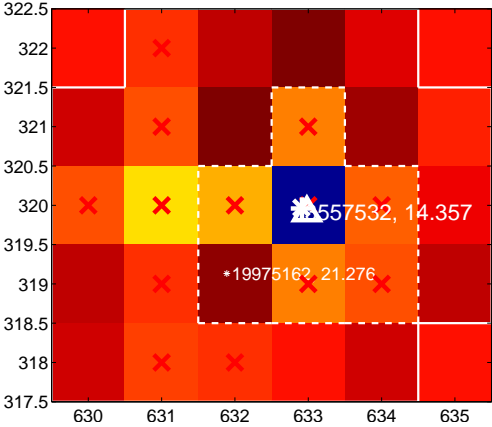
Q2 no difference image



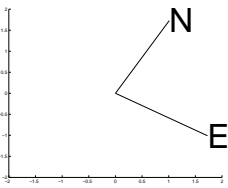
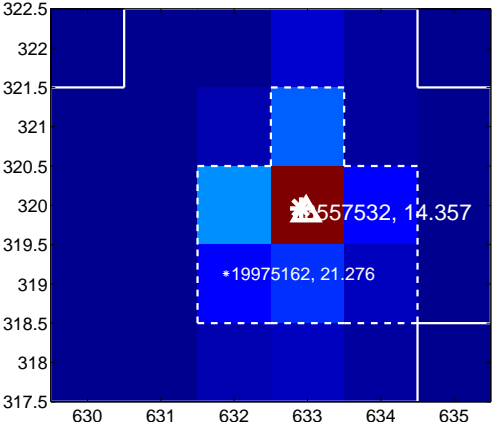
Q2 no OOT image



Q3 difference image. Poor Quality



Q3 OOT image



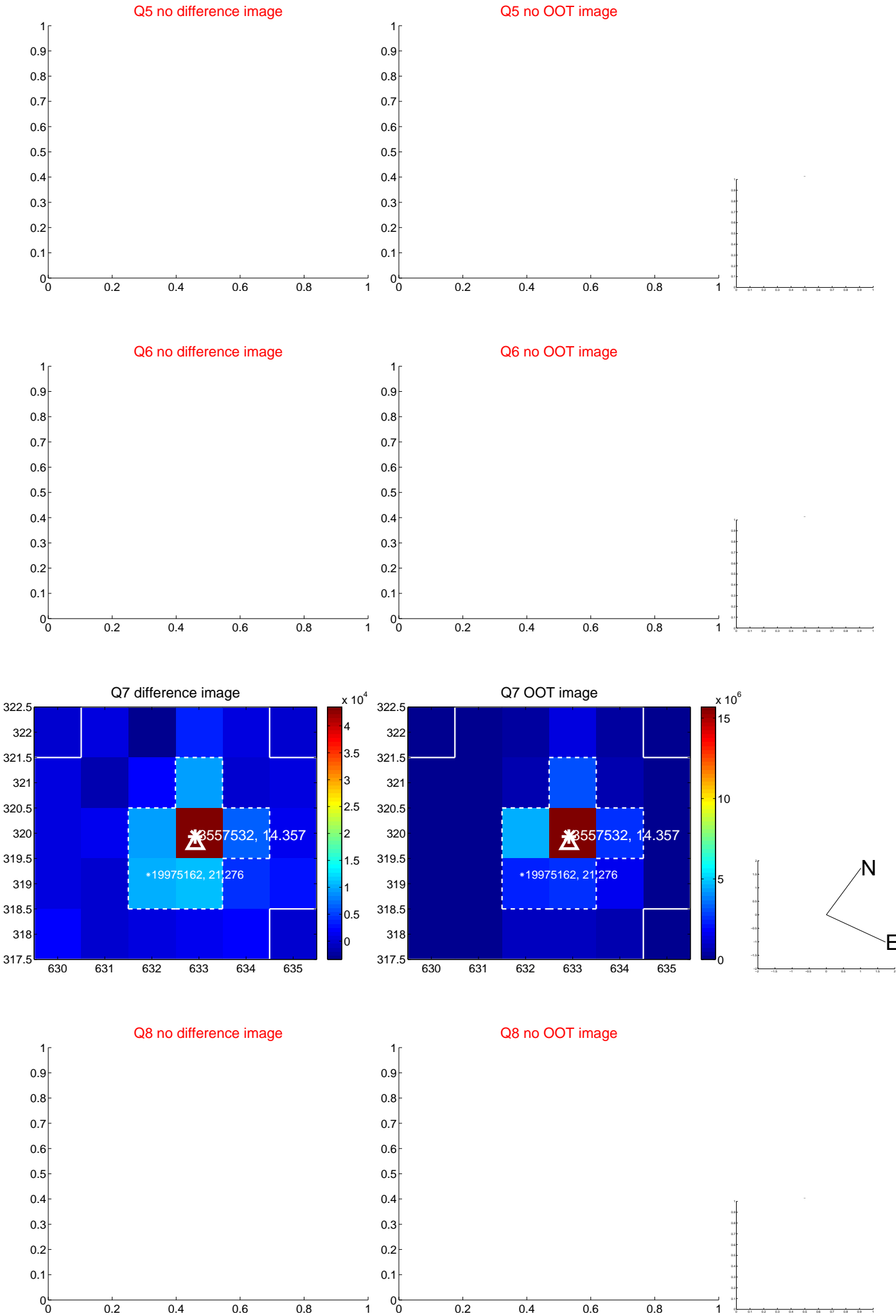
Q4 no difference image



Q4 no OOT image



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

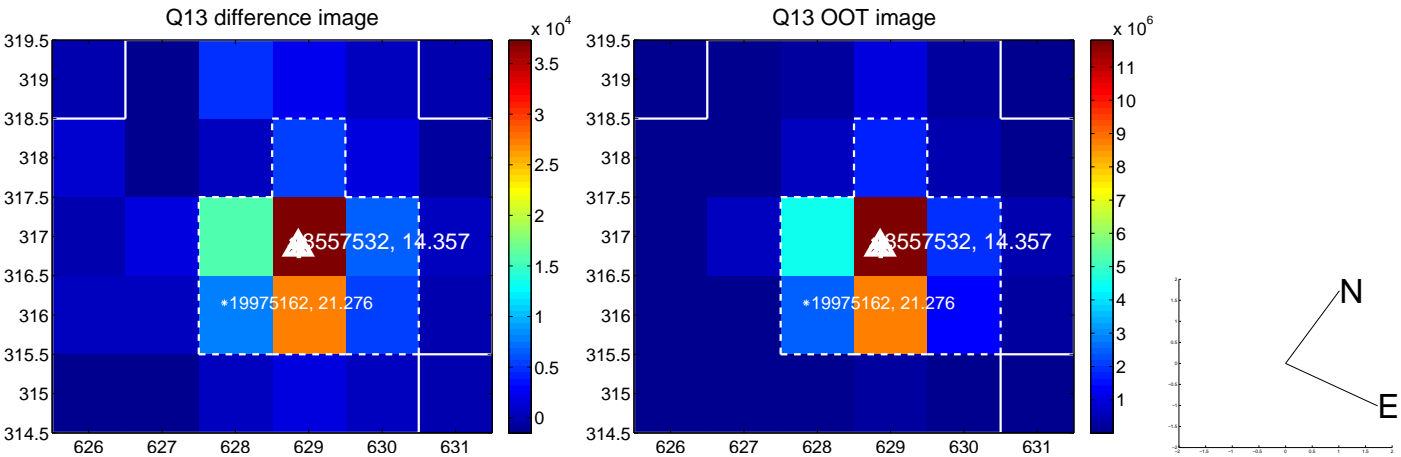




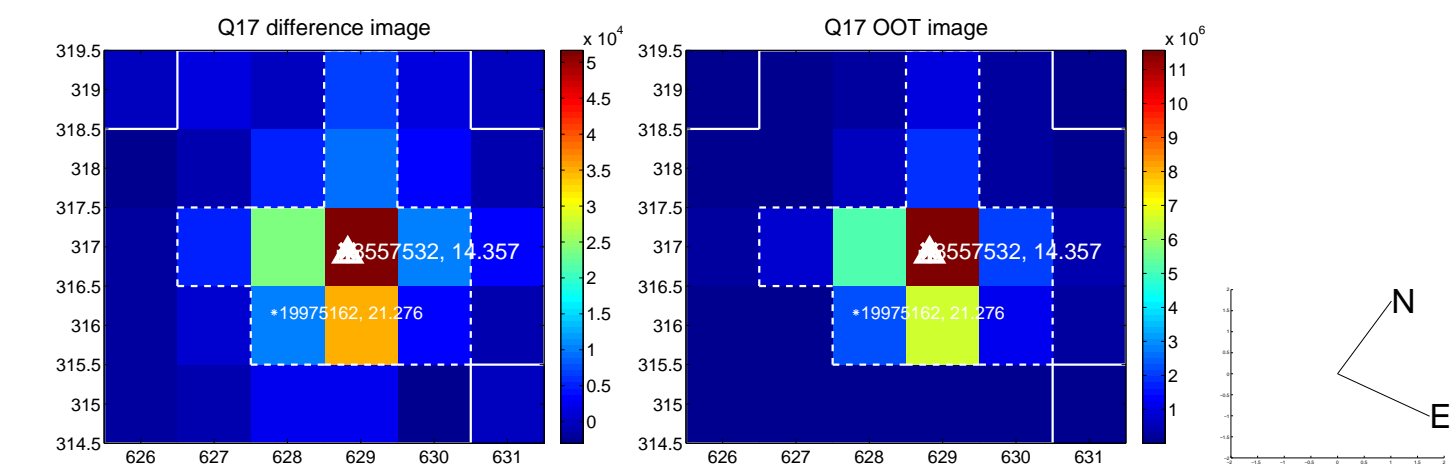
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



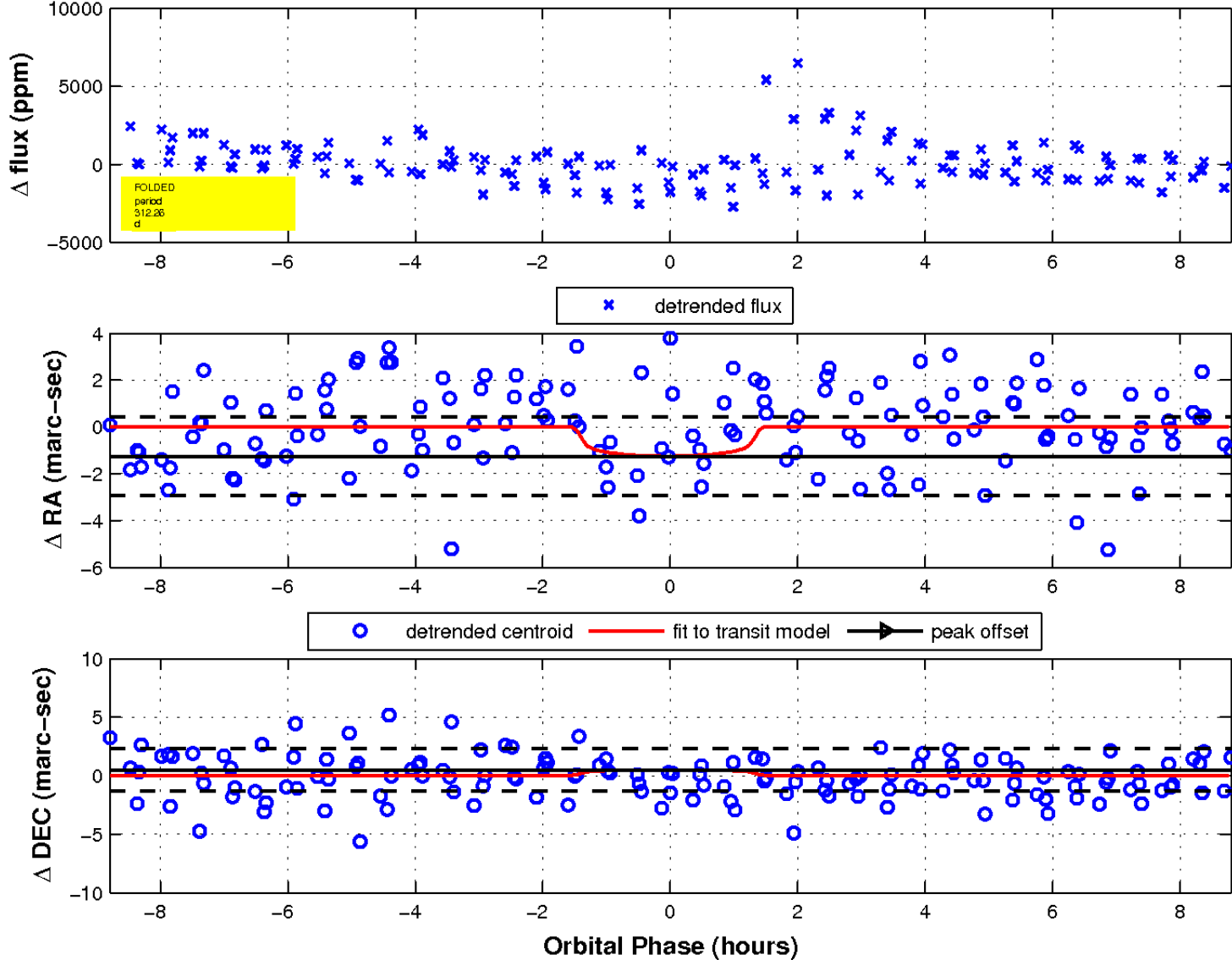
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

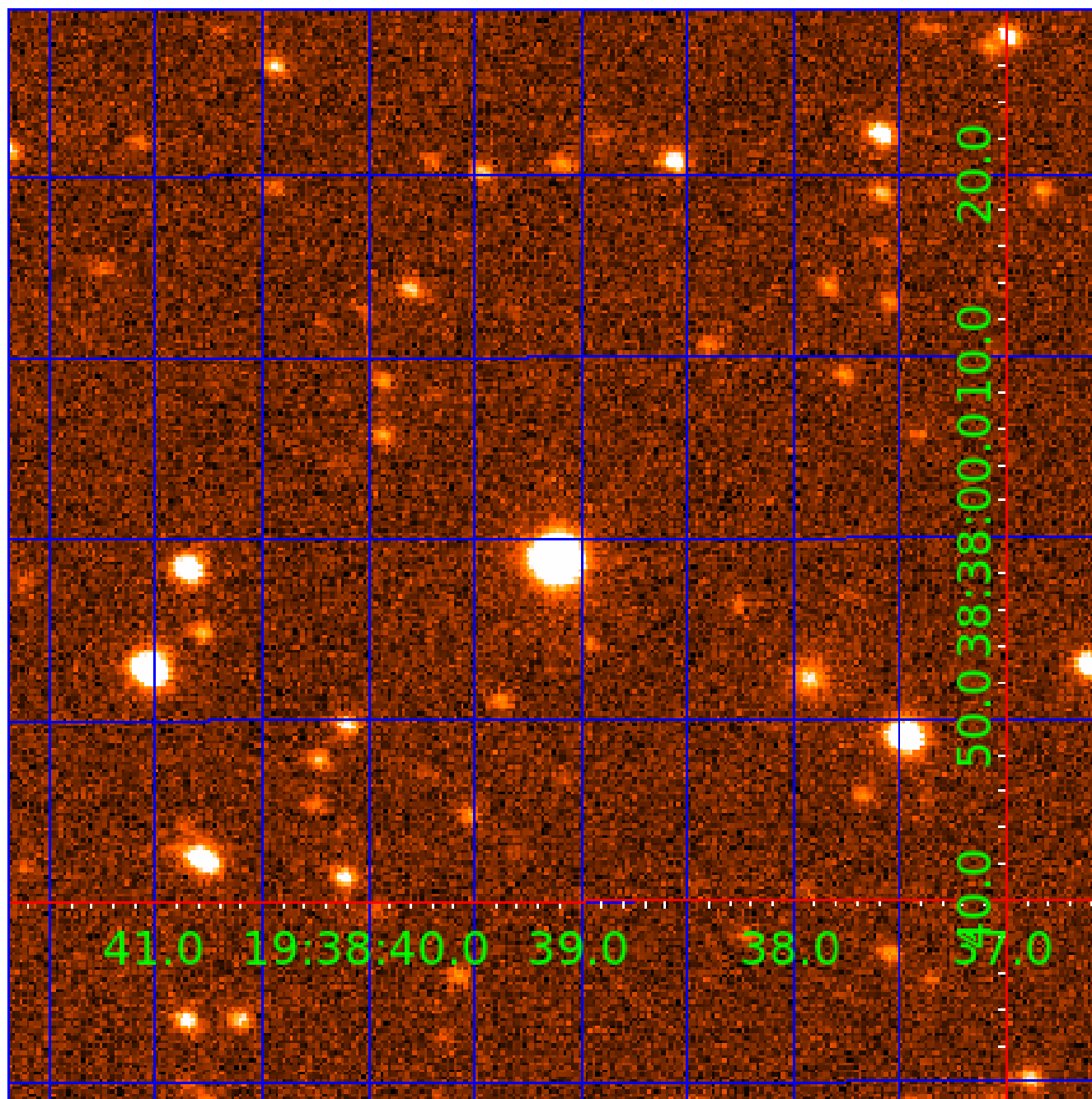


fluxWeightedCentroids, Planet 3 of 5



UKIRT Image

Declination



# KIC 003557532

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
003557532-01	OBS	No	386.212983	466.613621	1398.5	7.921	14.0	4.4	0.67	5383	2.55	0.41
003557532-02	OBS	No	453.410921	194.757058	332.5	0.840	13.2	1.5	0.67	5383	1.48	0.33
003557532-03	OBS	No	312.264700	327.452636	1018.7	2.939	13.0	4.7	0.67	5383	2.29	0.54
003557532-04	OBS	No	464.779871	277.930759	1182.3	4.025	16.2	4.2	0.67	5383	2.37	0.32
003557532-05	OBS	No	0.590590	131.535994	1374.7	1.500	12.2	-1.0	0.67	5383	2.47	2307.43

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003557532-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
003557532-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_POS_ALT
003557532-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS
003557532-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV
003557532-05	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_ALT—CENT_NOFITS

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

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

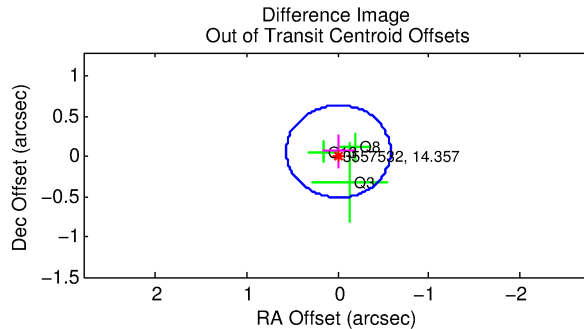
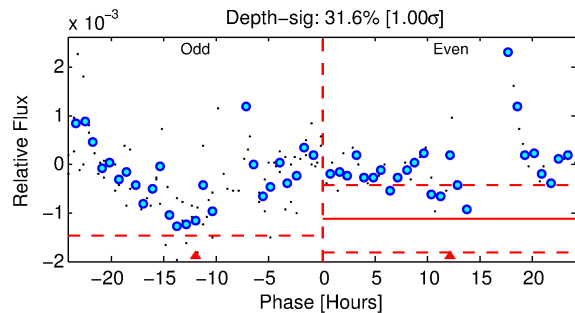
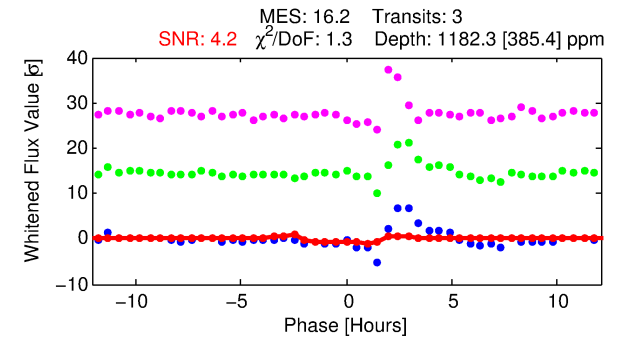
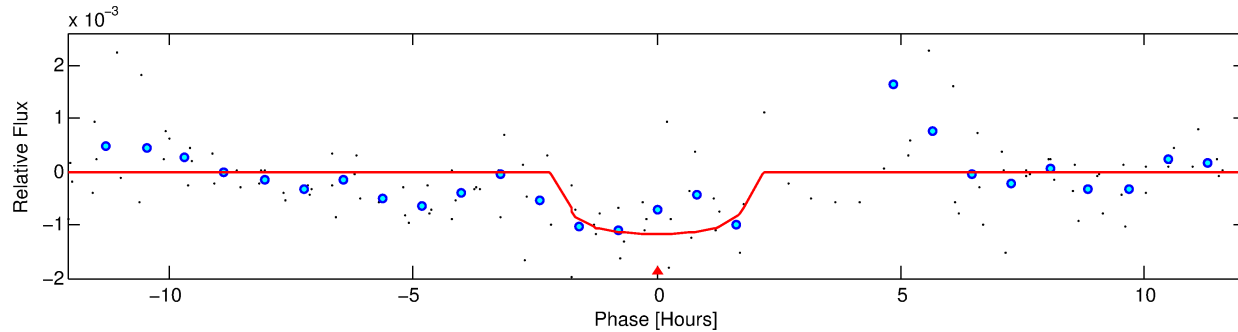
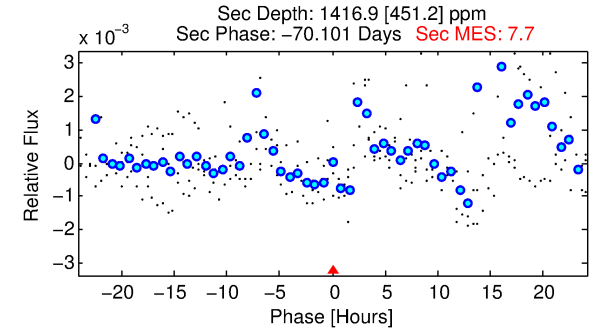
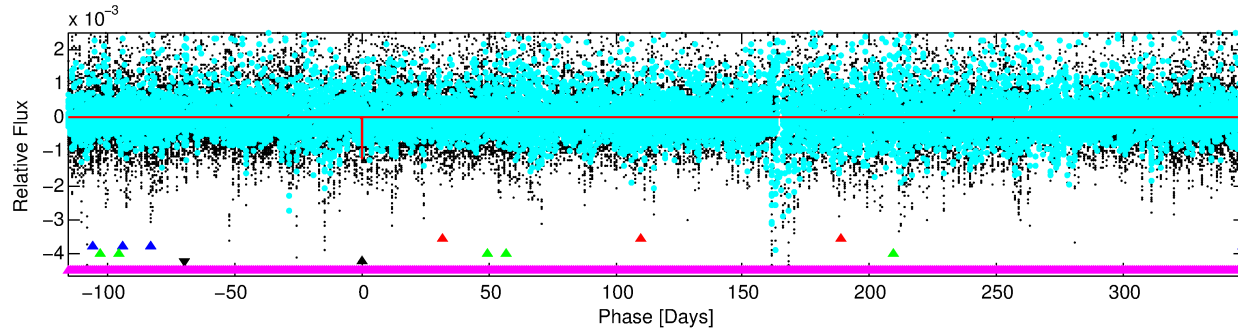
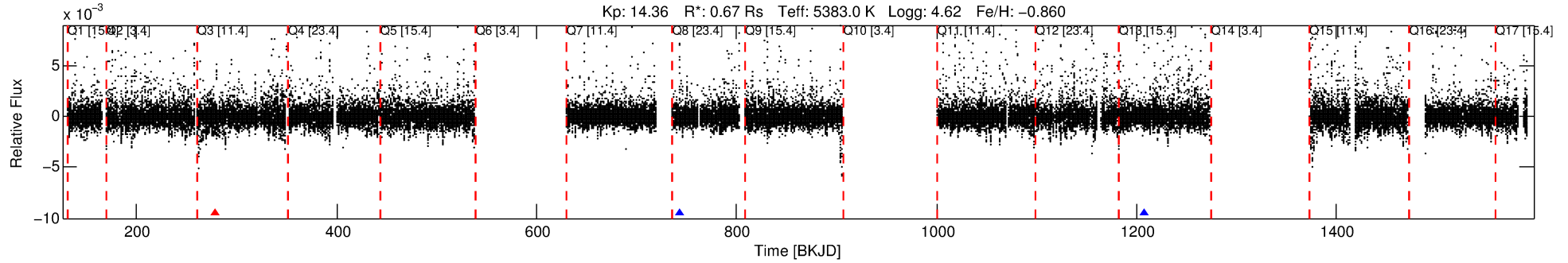
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 003557532-04

No Significant Match Found

# DV One-Page Summary

KIC: 3557532 Candidate: 4 of 5 Period: 464.780 d



## DV Fit Results:

Period = 464.77987 [0.00927] d  
Epoch = 277.9308 [0.0121] BKJD  
Rp/R\* = 0.0325 [0.0375]  
a/R\* = 777.34 [3864.82]  
b = 0.54 [6.60]  
Seff = 0.32 [0.05]  
Teq = 191 [8] K  
Rp = 2.37 [2.74] Re  
a = 1.0281 [0.0860] AU  
Ag = 146996.40 [343048.93] [0.43 $\sigma$ ]  
Teffp = 5795 [3381] K [1.66 $\sigma$ ]

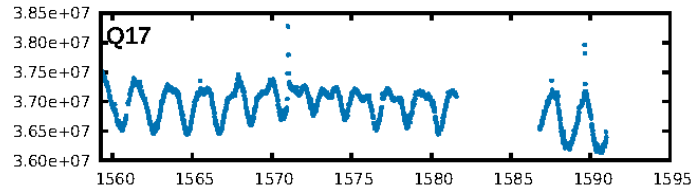
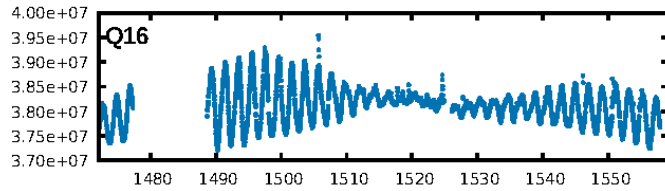
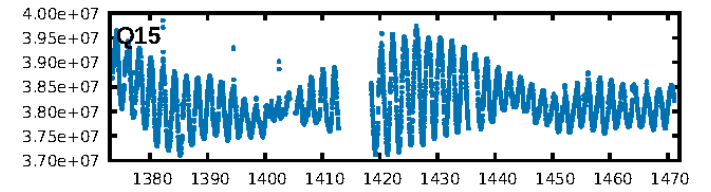
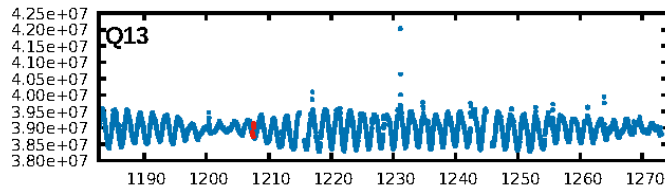
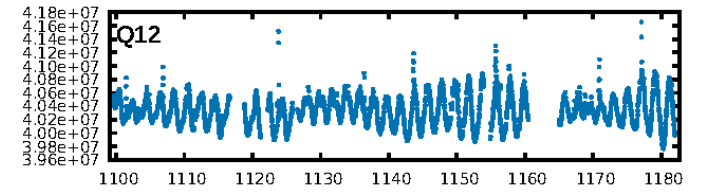
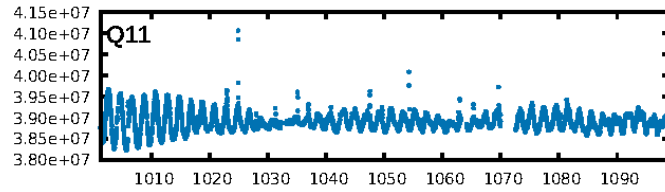
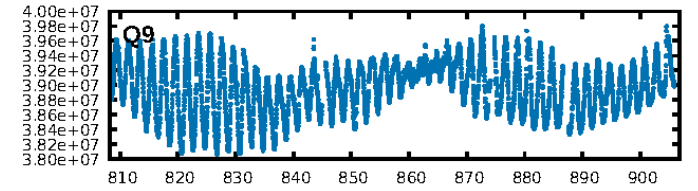
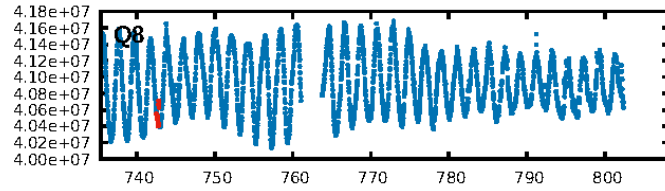
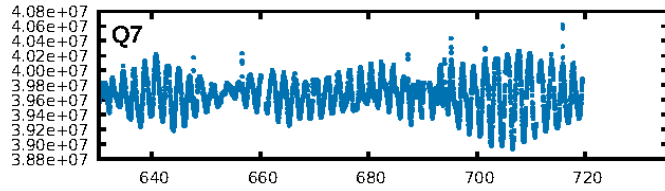
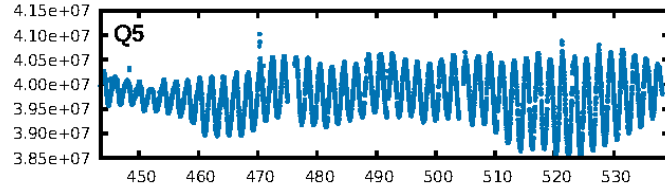
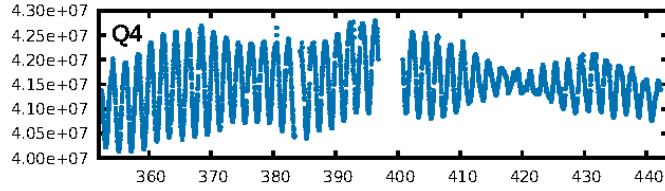
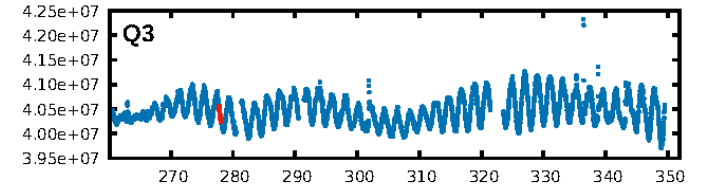
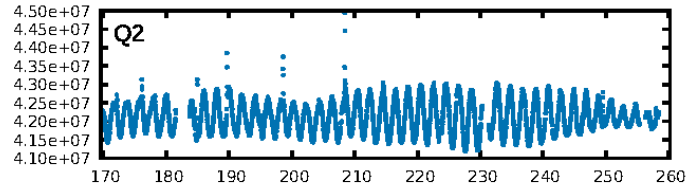
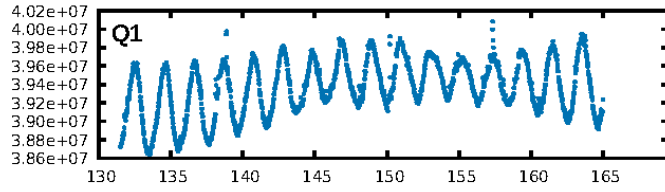
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [66.36 $\sigma$ ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 47.1%  
ModelChiSquareGof-sig: 71.8%  
Bootstrap-pfa: N/A  
RollingBand-fgt: 0.67 [2/3]  
GhostDiagnostic-chr: 3.877  
Centroid-sig: 78.8%  
Centroid-so: 0.359 arcsec [0.39 $\sigma$ ]  
OotOffset-rm: 0.065 arcsec [0.34 $\sigma$ ]  
OotOffset-st: 0/1/1/1 [3]  
KicOffset-rm: 0.055 arcsec [0.30 $\sigma$ ]  
KicOffset-st: 0/1/1/1 [3]  
DiffImageQuality-fgm: 1.00 [3/3]  
DiffImageOverlap-fno: 0.00 [0/3]

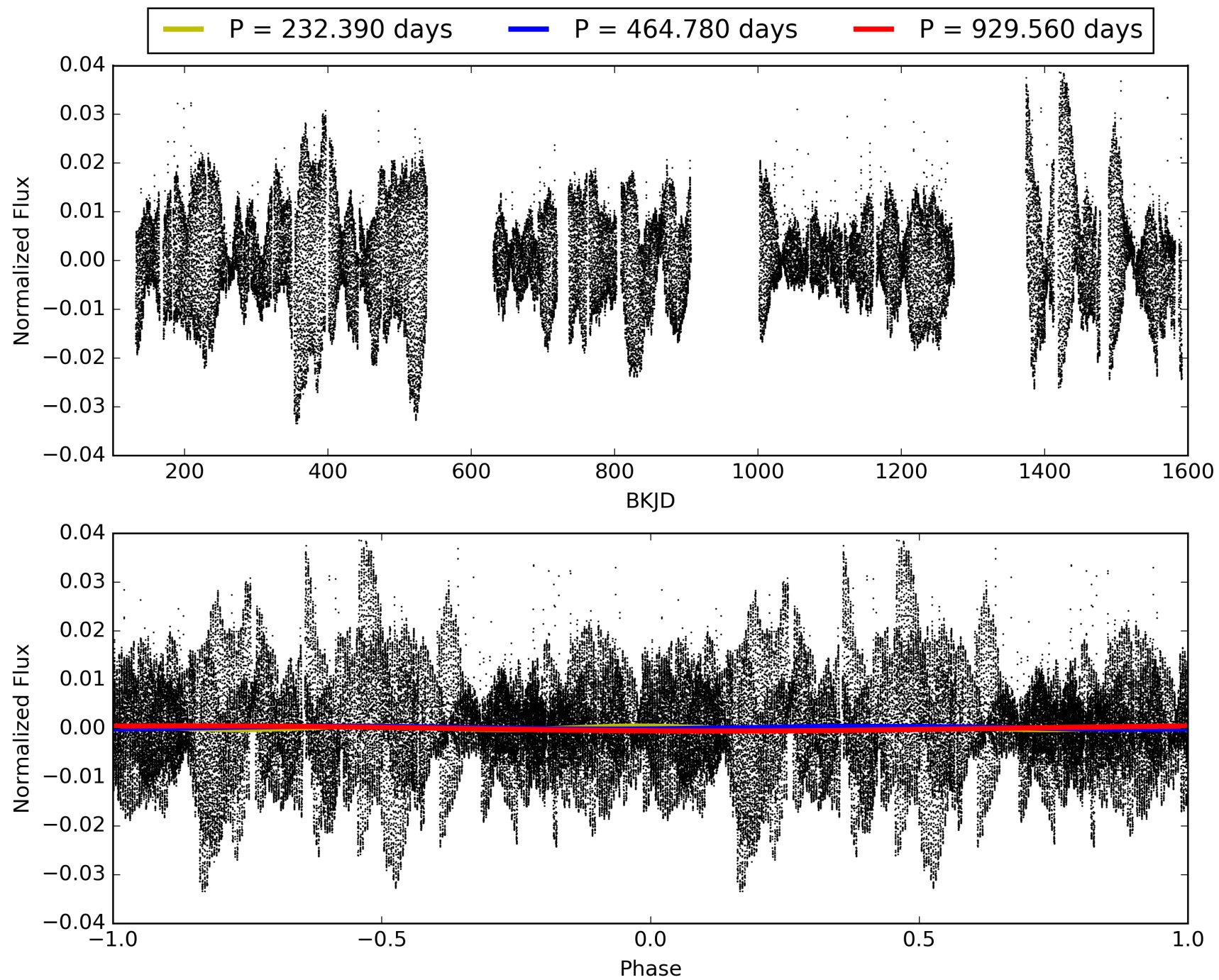
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 22:01:26 Z

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

# TCE 003557532-04, PDC Light Curves



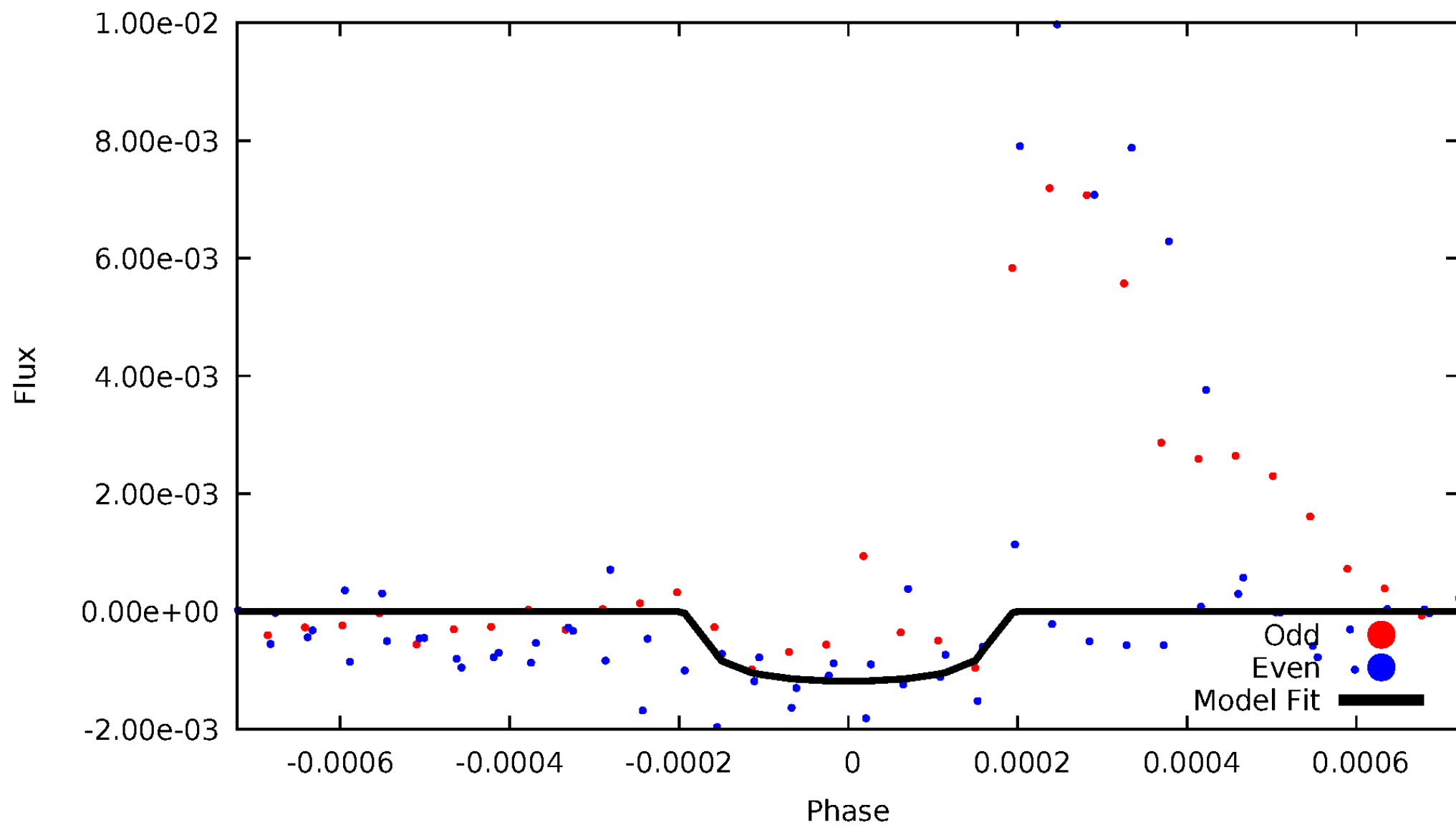
TCE 003557532-04





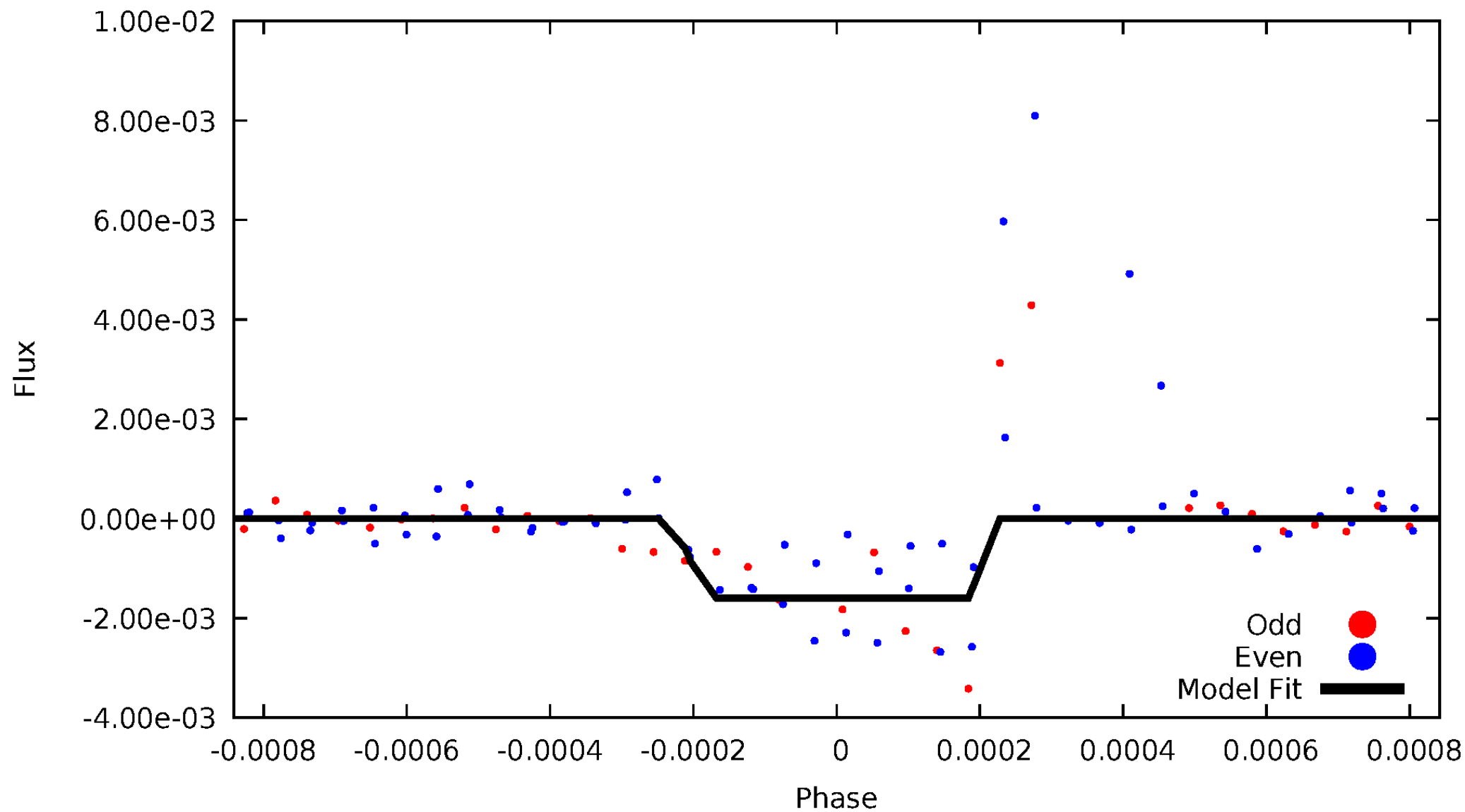
# DV Odd/Even

TCE 003557532-04



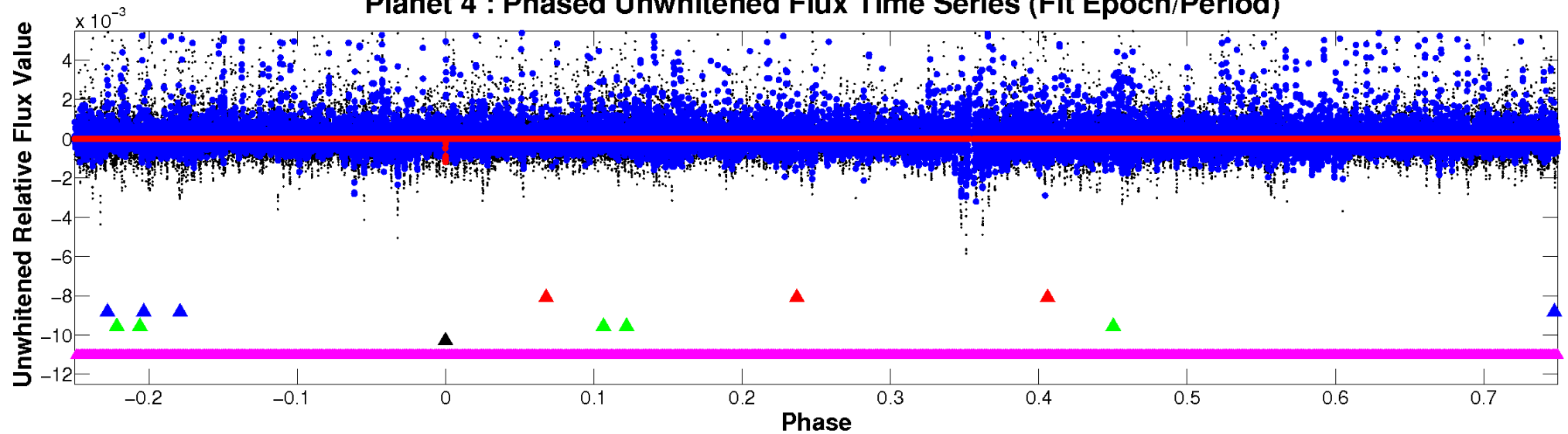
# ALT Odd/Even

TCE 003557532-04

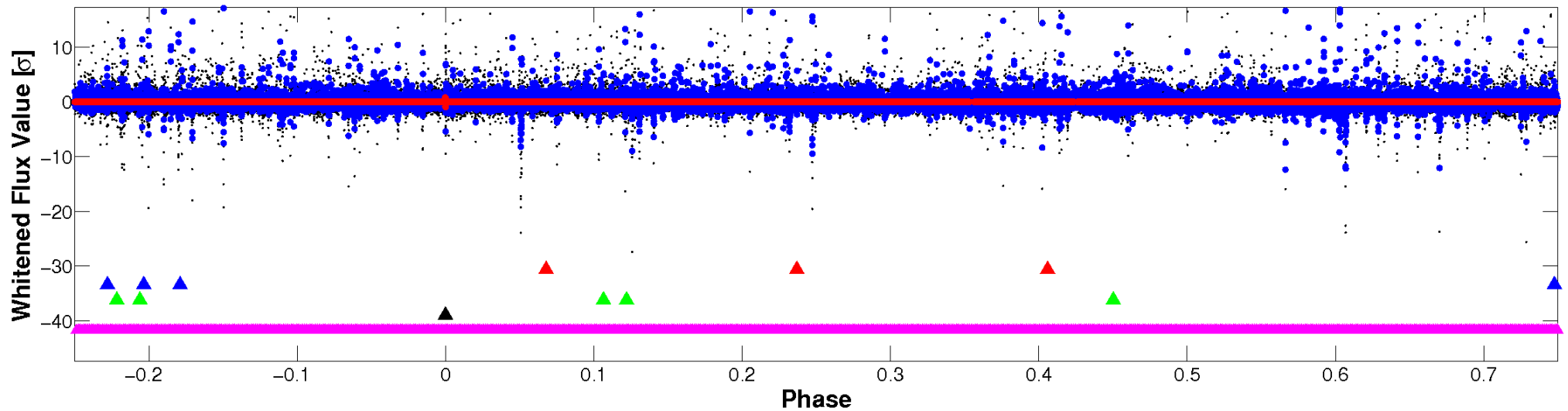


# Non-Whitened Vs. Whitened Light Curve

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

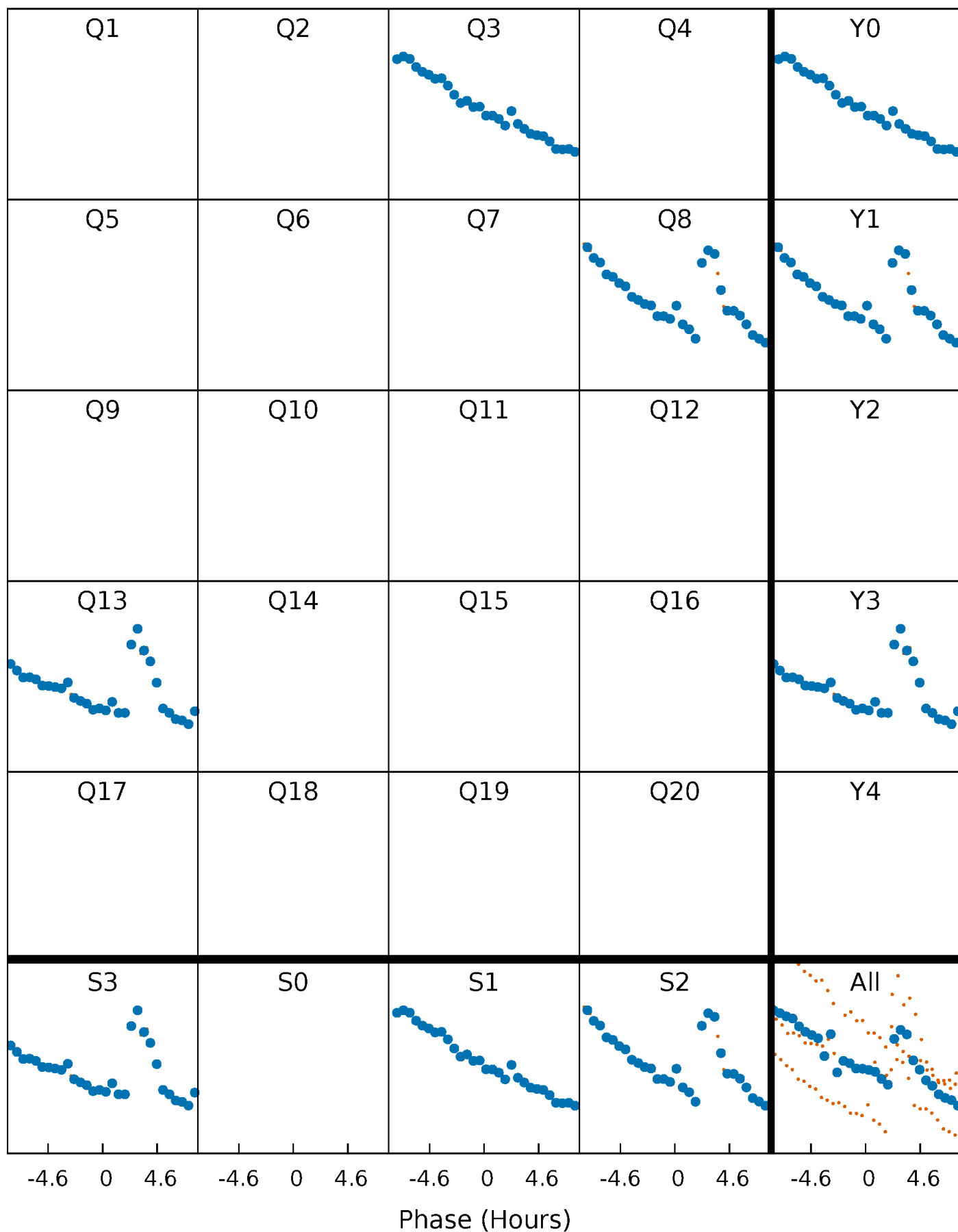


## Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



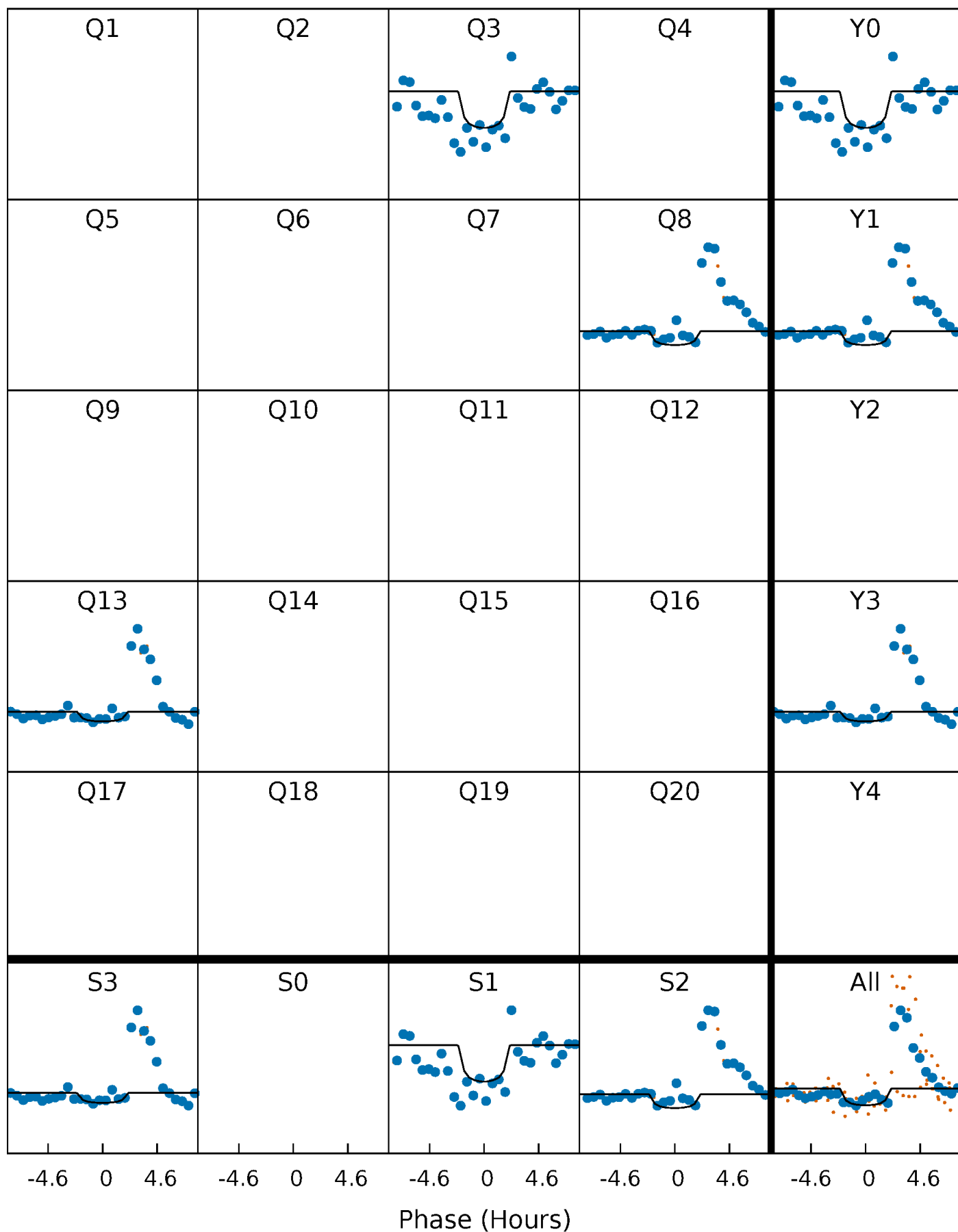
# PDC Quarter-Phased Transit Curves

TCE 003557532-04 P=464.779871 Days  $T_0=277.930759$  (BKJD)



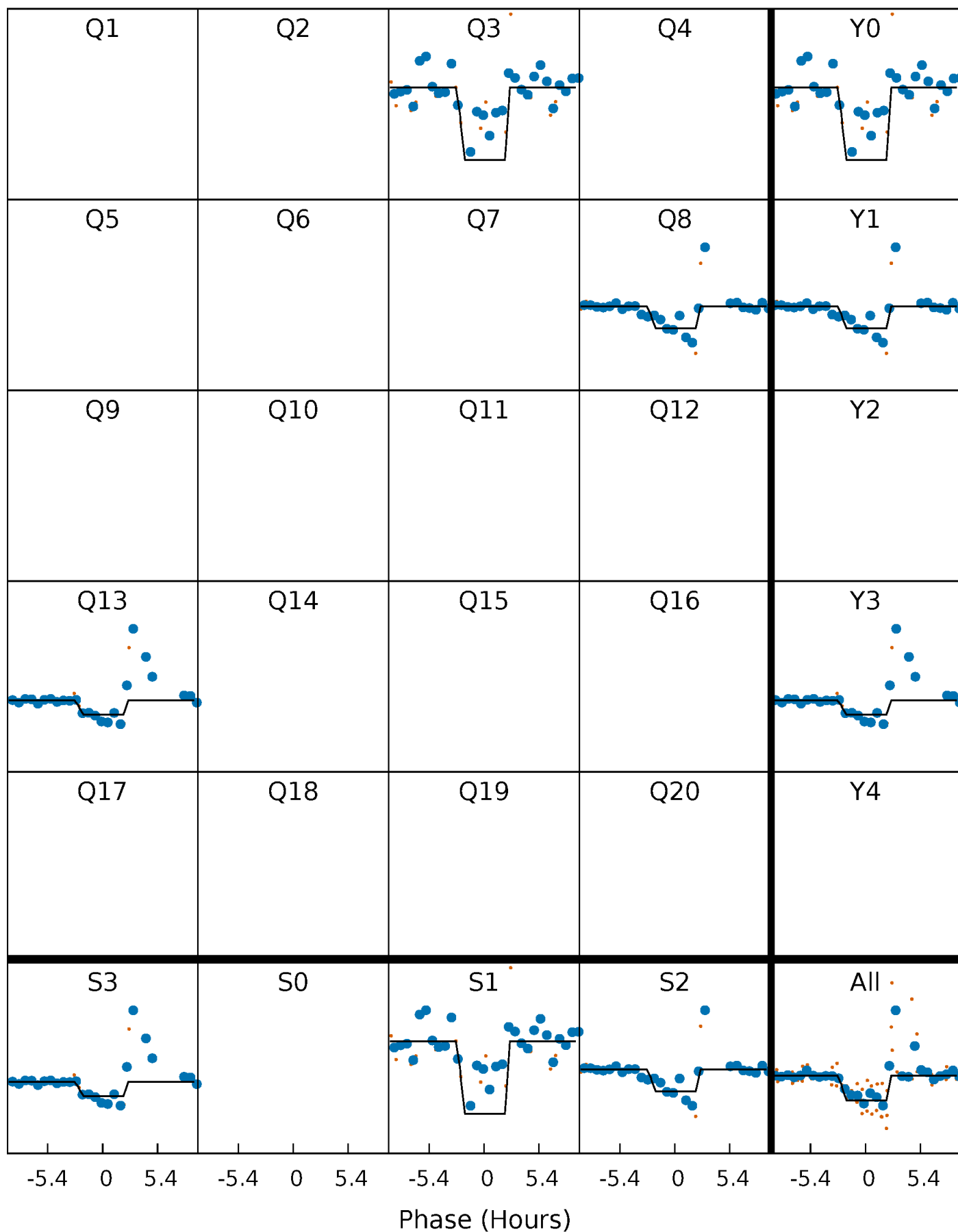
# DV Quarter-Phased Transit Curves

TCE 003557532-04 P=464.779871 Days  $T_0=277.930759$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

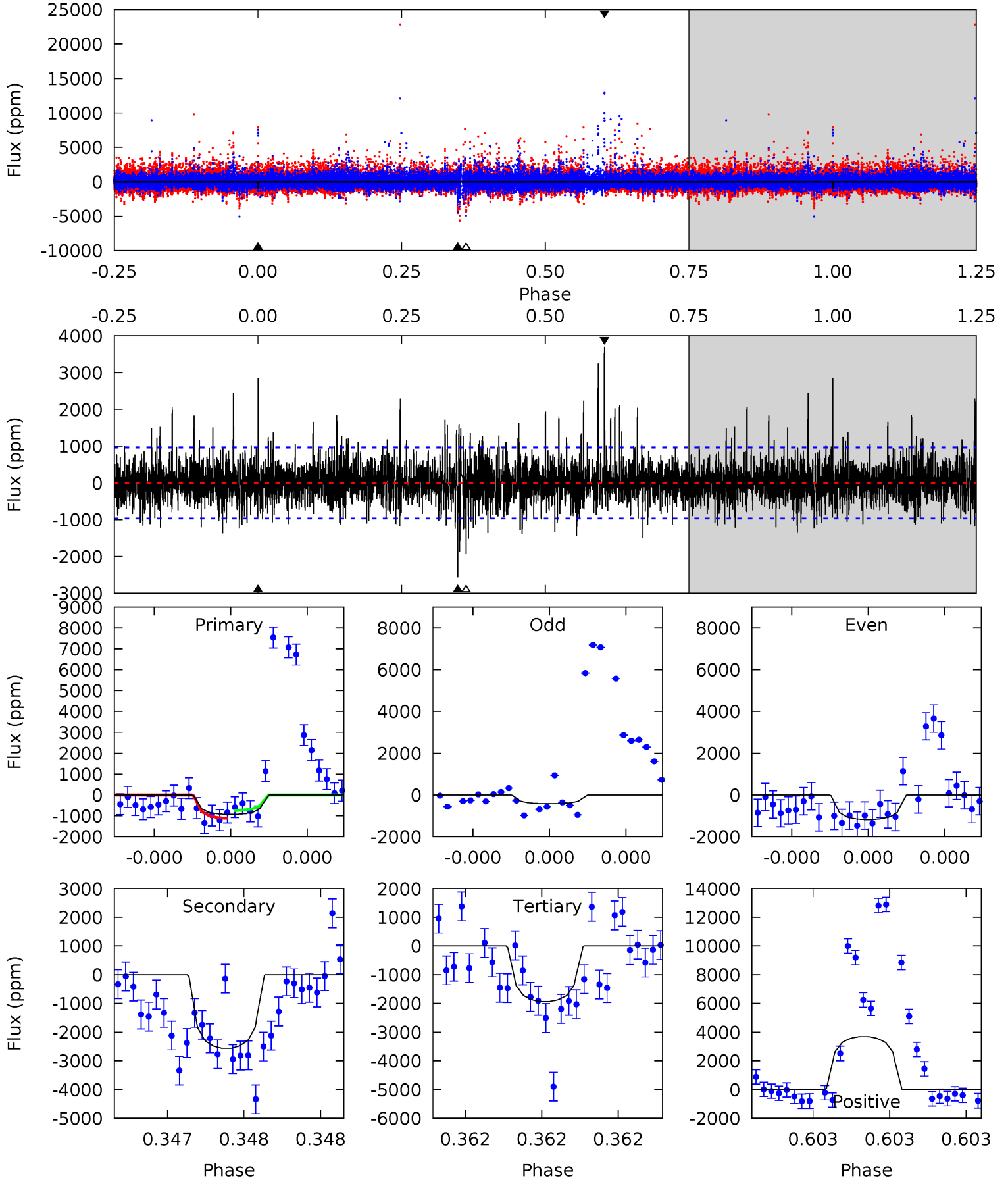
TCE 003557532-04 P=464.781756 Days  $T_0=277.912967$  (BKJD)



# DV Model-Shift Uniqueness Test

003557532-04, P = 464.779871 Days, E = 277.930759 Days

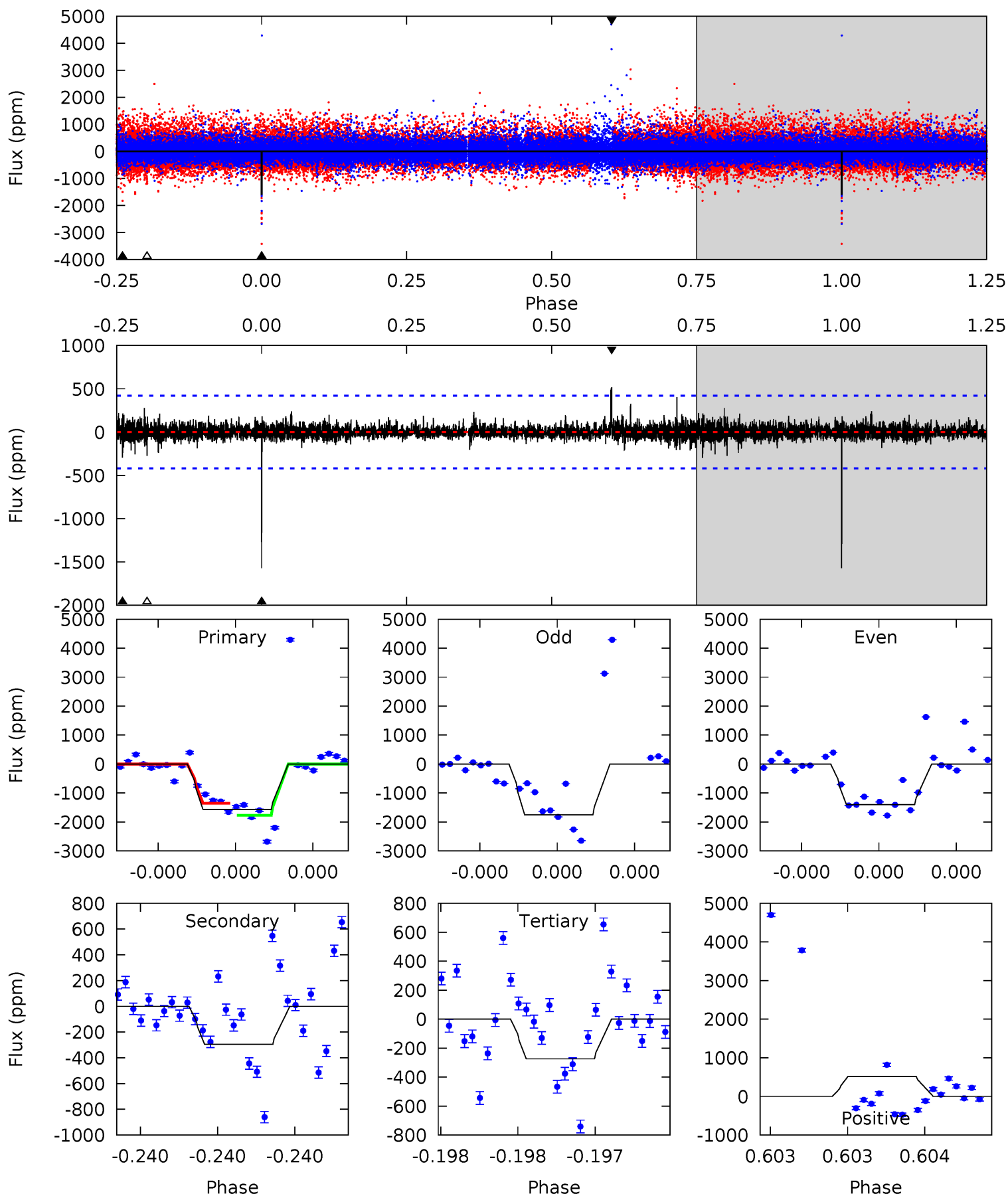
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.44	14.9	11.3	21.5	5.61	3.54	2.48	-5.81	-16.0	3.67	-6.57	1.87	1.19	0.59	1.11



# Alt Model-Shift Uniqueness Test

003557532-04, P = 464.781756 Days, E = 277.912967 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
21.0	3.95	3.66	6.92	5.61	3.54	0.68	17.3	14.0	0.28	-2.97	2.28	0.88	0.25	2.79





### Stellar Parameters For KIC 003557532

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5383^{+160}_{-160}$	$4.615^{+0.060}_{-0.060}$	$-0.860^{+0.350}_{-0.300}$	$0.668^{+0.070}_{-0.052}$	$0.671^{+0.062}_{-0.033}$	$3.172^{+0.772}_{-0.621}$
	+3%/-3%	+1%/-1%	+41%/-35%	+10%/-8%	+9%/-5%	+24%/-20%
Source	PHO1	KIC0	KIC0	DSEP		

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

### Secondary Eclipse Parameters for KIC 003557532-04 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-2566 \pm 172$	$3.06^{+2.50}_{-1.81}$	$268^{+10}_{-10}$	$5847^{+4158}_{-1294}$	$163781^{+834104}_{-114641}$
Alt.	$-295 \pm 75$	$3.39^{+2.47}_{-2.11}$	$267^{+11}_{-9}$	$3697^{+1565}_{-624}$	$15249^{+83634}_{-10527}$

$T_{\text{max}}$  = 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

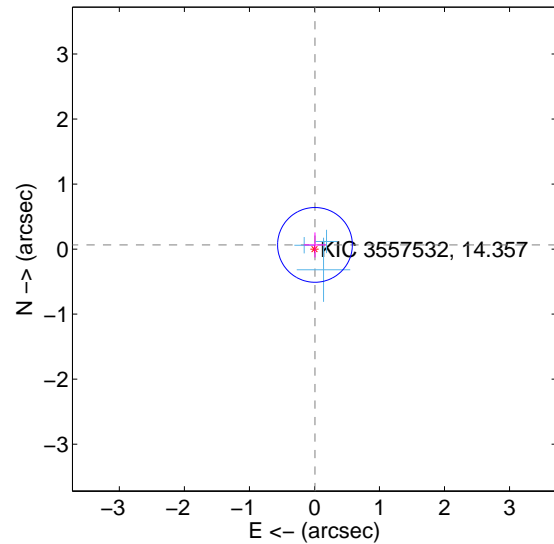
Supplemental centroid analysis for 003557532-04. Kepler magnitude: 14.36. Transit SNR 4.24

There are 3 quarters with good PRF difference image offsets

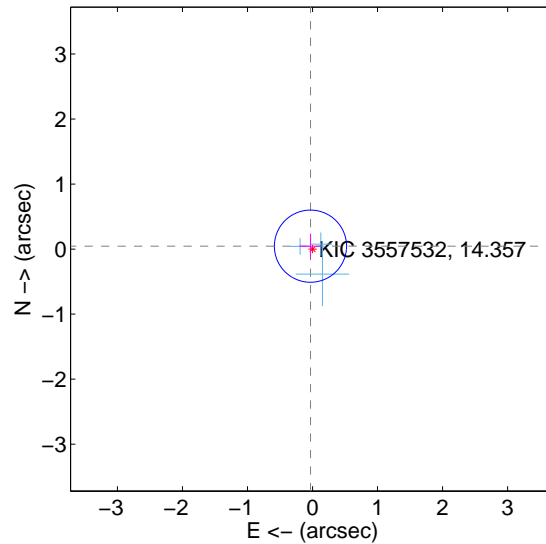
The direct PRF centroid is offset from the target star catalog position by about 0.04 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.065 \pm 0.192$	0.34	$-0.008 \pm 0.170$	$0.065 \pm 0.192$
PRF-fit source offset from KIC position	$0.055 \pm 0.185$	0.30	$0.032 \pm 0.170$	$0.045 \pm 0.192$
photometric centroid source offset	$0.36 \pm 0.91$	0.39	$-0.25 \pm 0.94$	$-0.26 \pm 0.89$

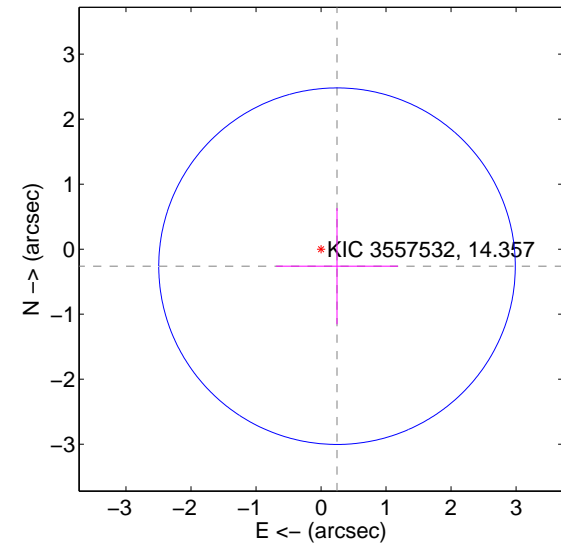
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

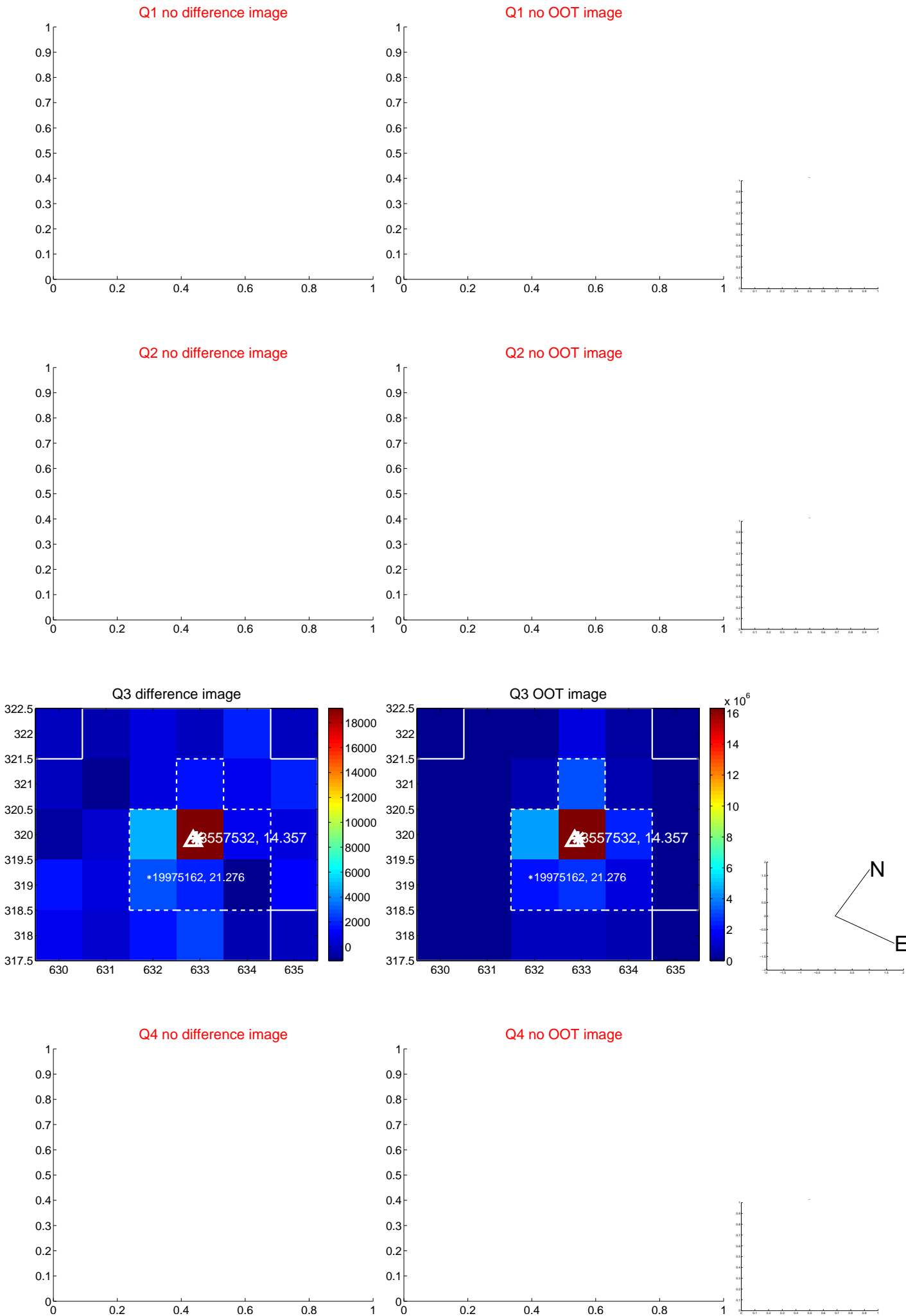


offset from photometric centroids

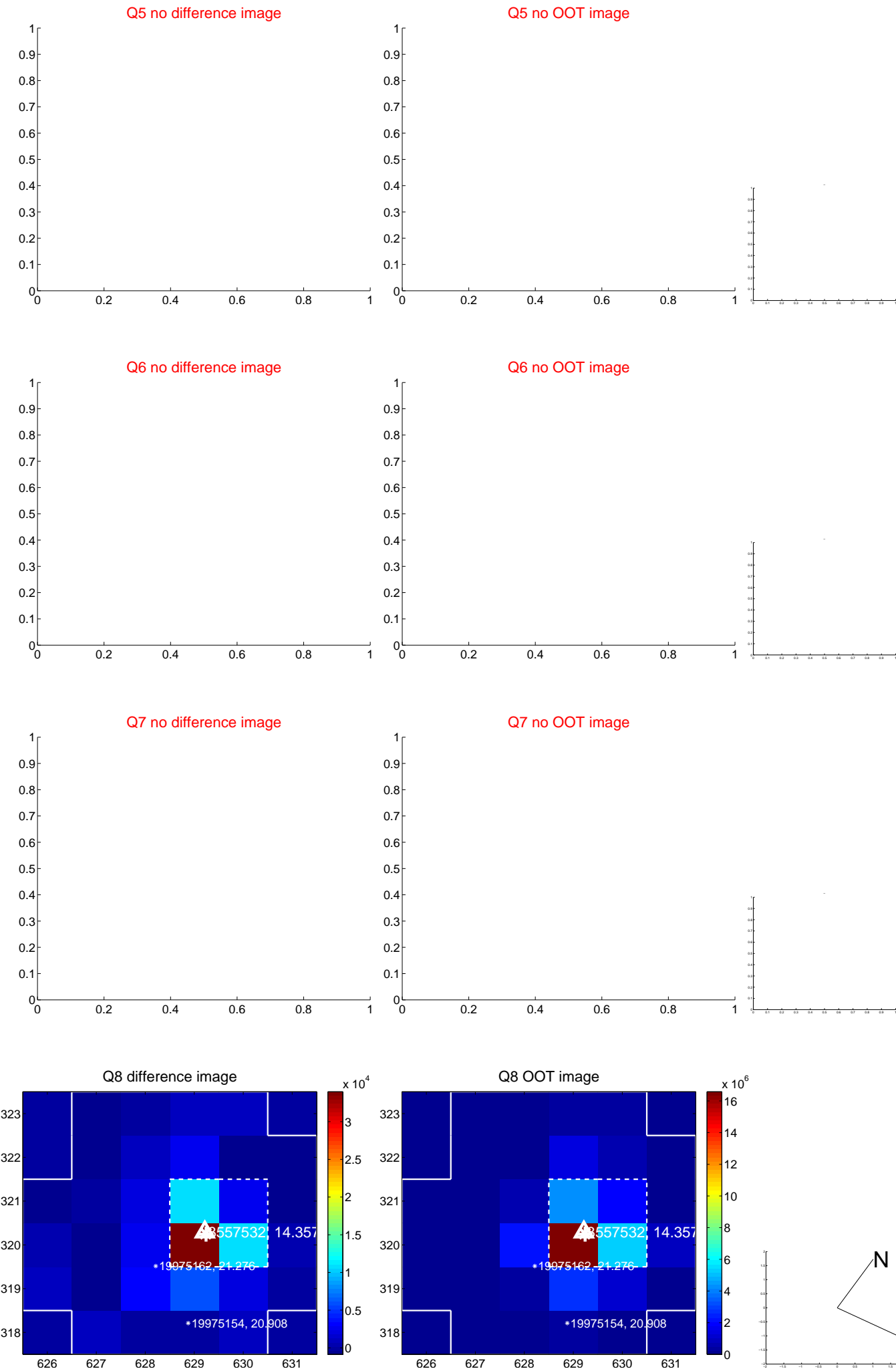


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

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



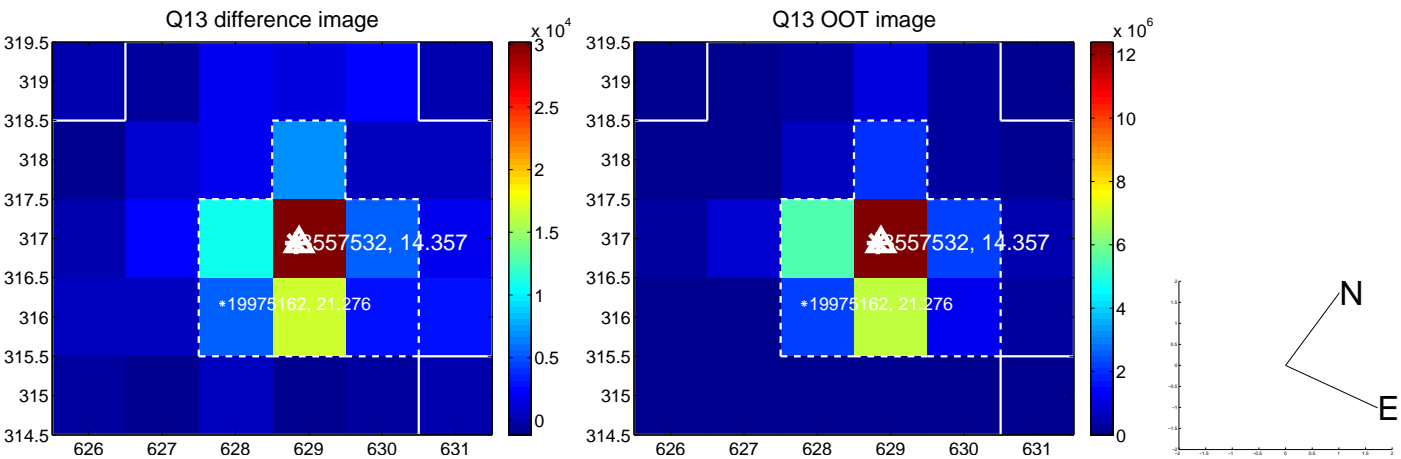
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



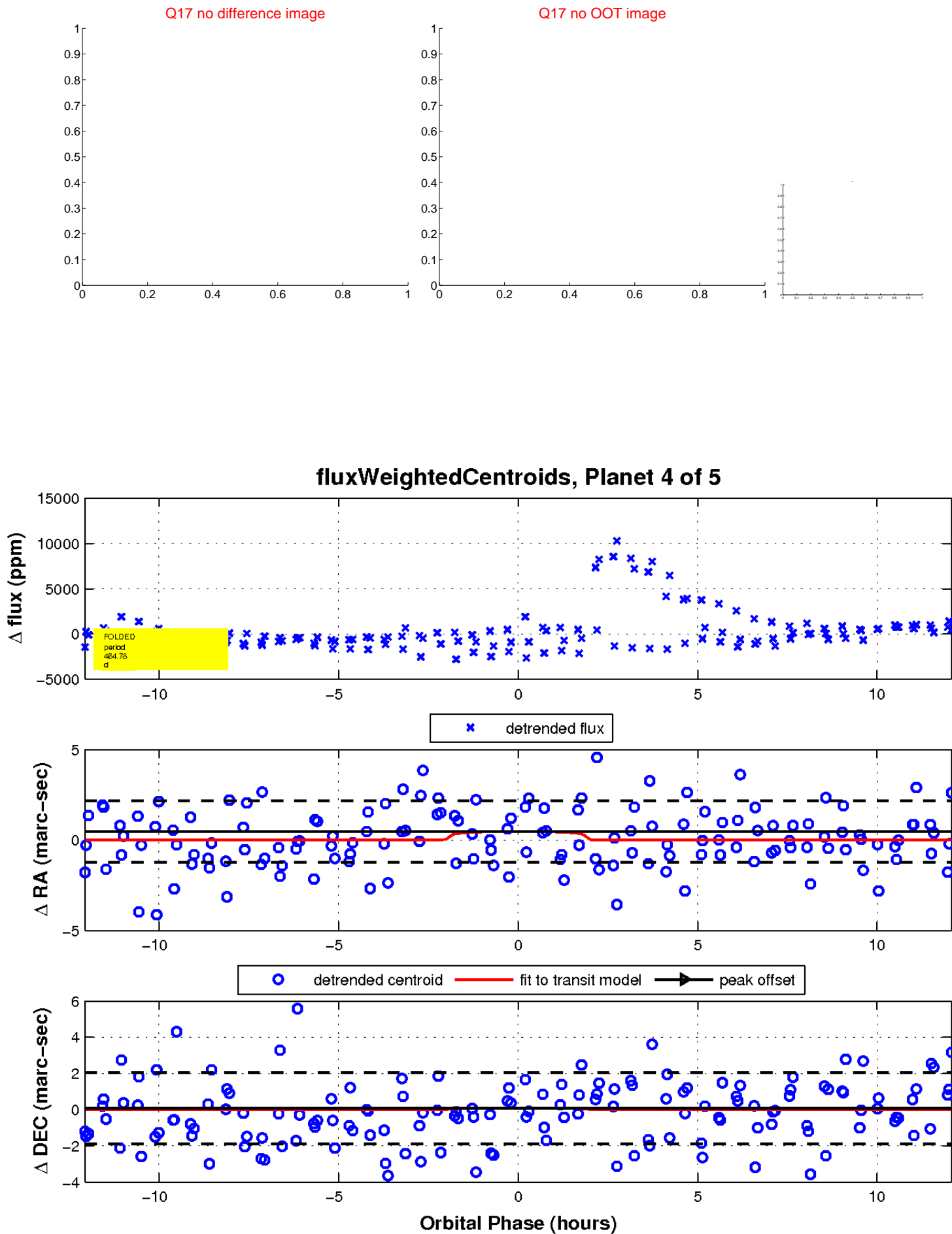
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

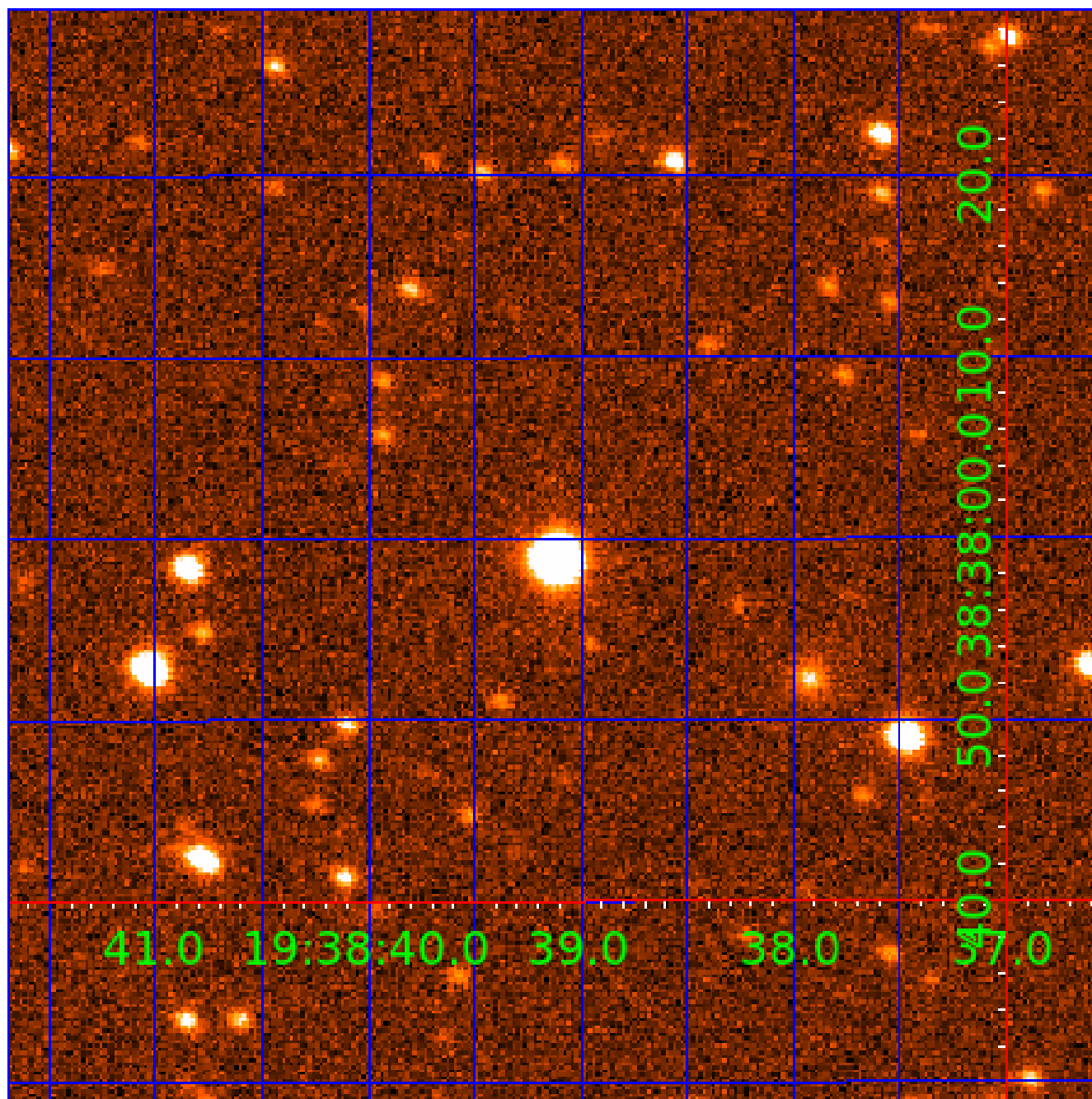


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination





# KIC 003557532

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
003557532-01	OBS	No	386.212983	466.613621	1398.5	7.921	14.0	4.4	0.67	5383	2.55	0.41
003557532-02	OBS	No	453.410921	194.757058	332.5	0.840	13.2	1.5	0.67	5383	1.48	0.33
003557532-03	OBS	No	312.264700	327.452636	1018.7	2.939	13.0	4.7	0.67	5383	2.29	0.54
003557532-04	OBS	No	464.779871	277.930759	1182.3	4.025	16.2	4.2	0.67	5383	2.37	0.32
003557532-05	OBS	No	0.590590	131.535994	1374.7	1.500	12.2	-1.0	0.67	5383	2.47	2307.43

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003557532-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
003557532-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_POS_ALT
003557532-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS
003557532-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV
003557532-05	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_ALT—CENT_NOFITS

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

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

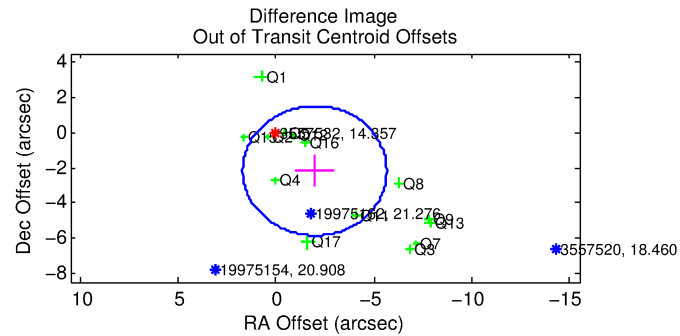
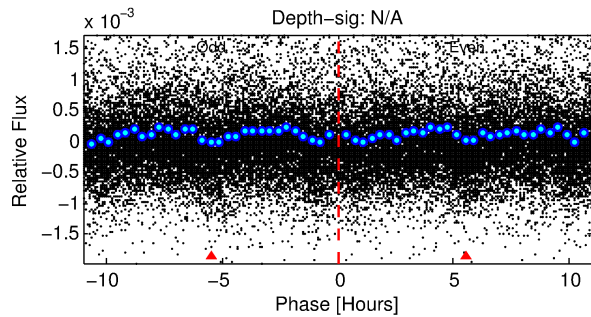
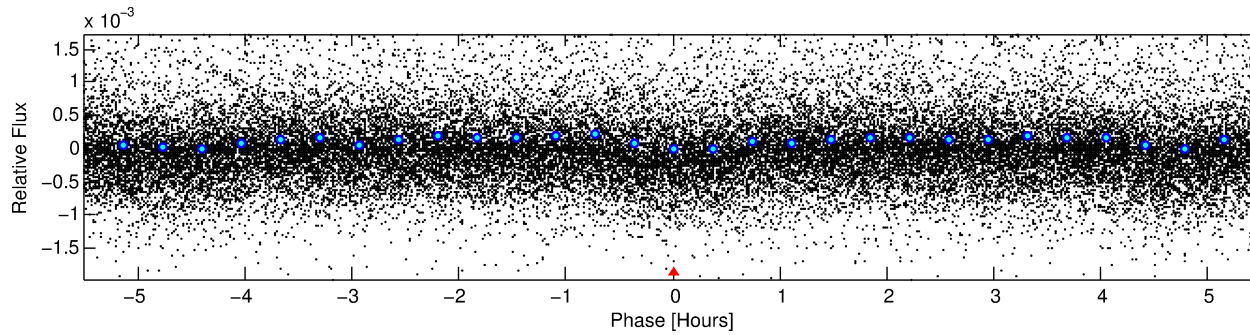
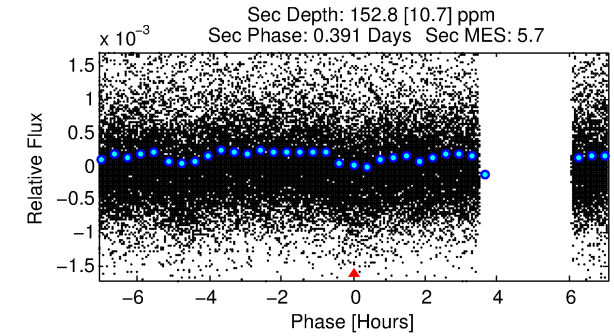
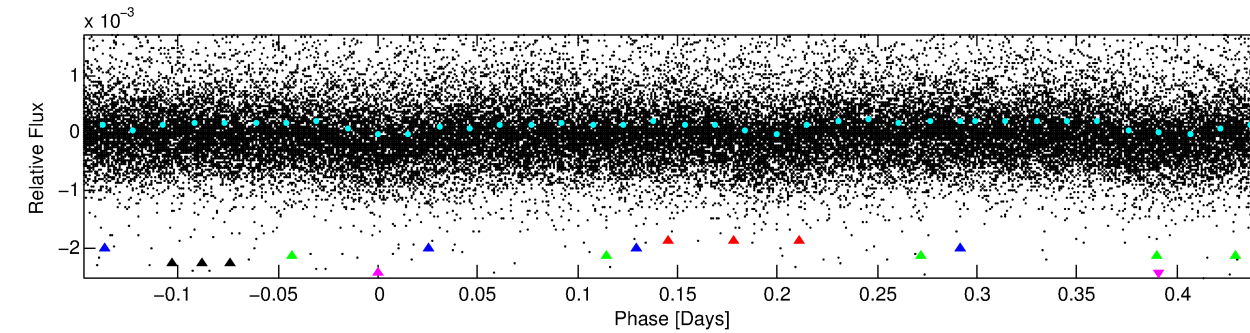
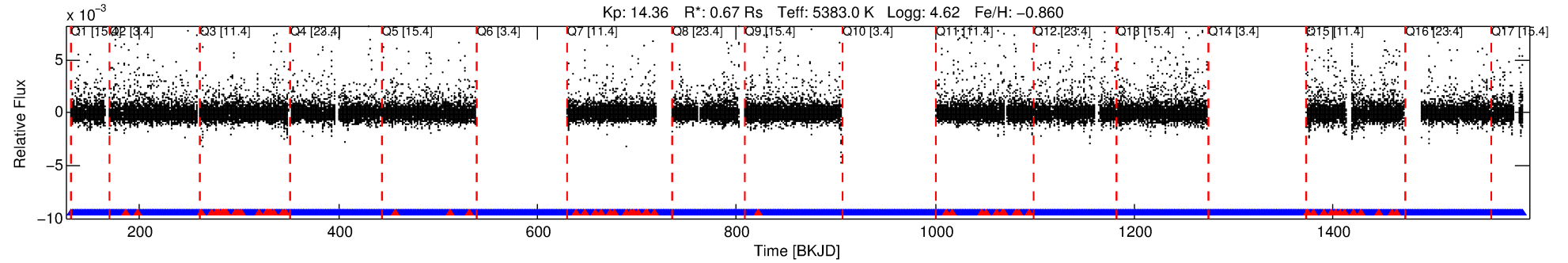
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 003557532-05

No Significant Match Found

# DV One-Page Summary

KIC: 3557532 Candidate: 5 of 5 Period: 0.591 d



## TPS TCE Results:

Period = 0.59059 d  
Epoch = 131.5360 BKJD

DV fit results are unavailable

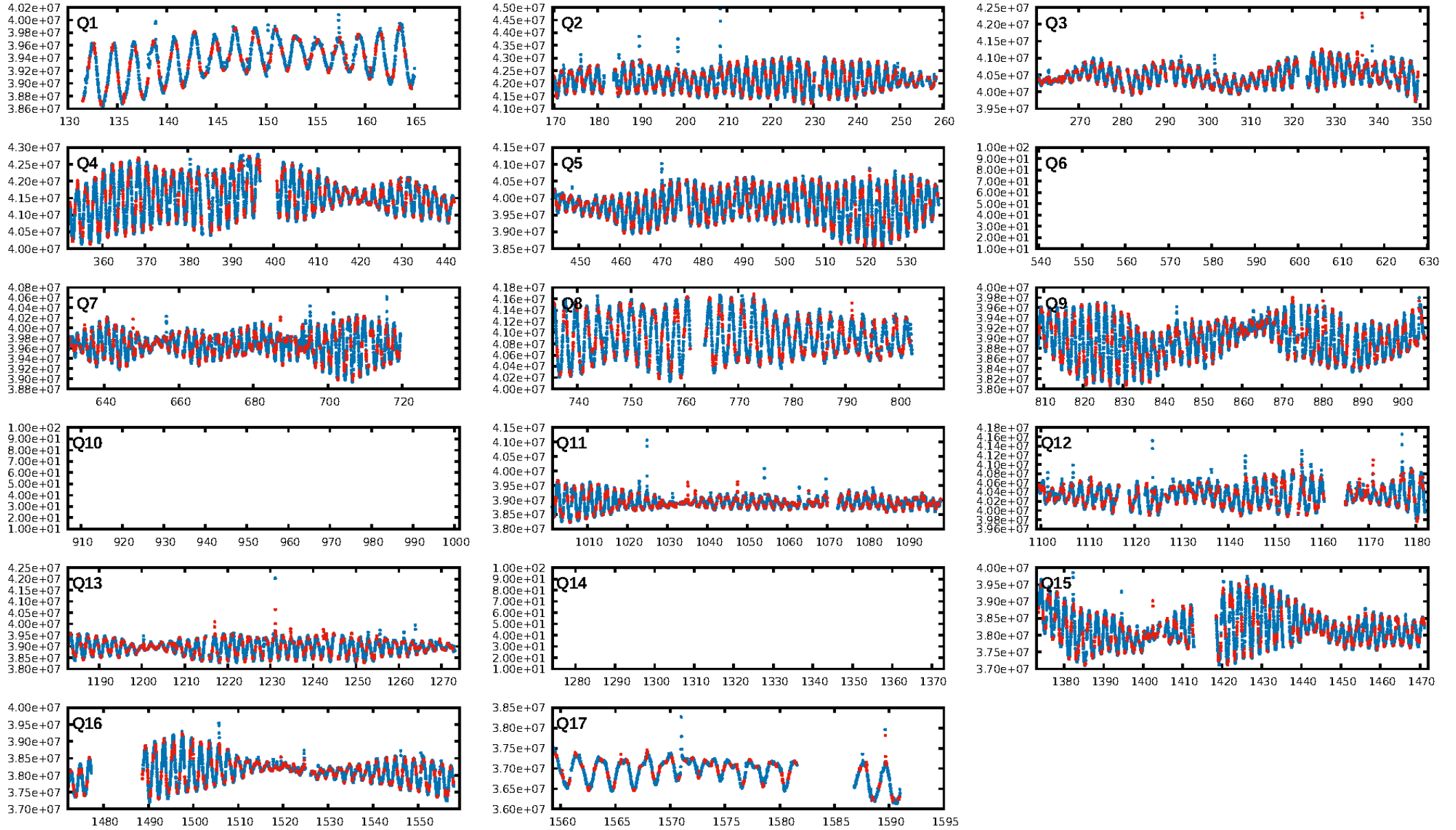
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [2266.64σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 0.96 [1635/1701]  
GhostDiagnostic-chr: 0.9632  
Centroid-sig: 77.2%  
Centroid-so: 0.295 arcsec [0.80σ]  
OotOffset-rm: 2.937 arcsec [2.39σ]  
KicOffset-rm: 2.952 arcsec [2.58σ]  
OotOffset-st: 1/4/4/5 [14]  
KicOffset-st: 1/4/4/5 [14]  
DiffImageQuality-fgm: 0.36 [5/14]  
DiffImageOverlap-fno: 1.00 [14/14]

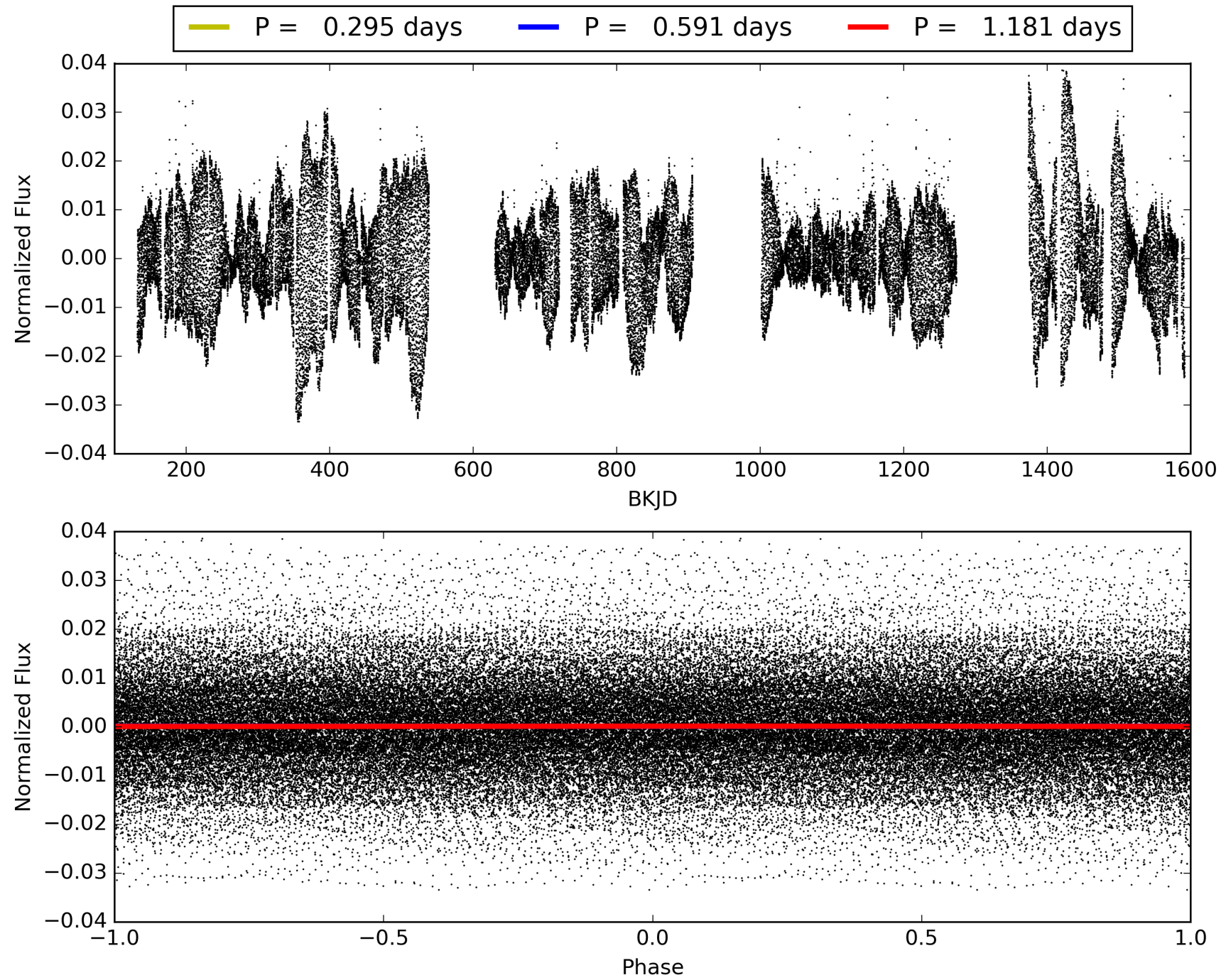
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 22:01:33 Z

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

# TCE 003557532-05, PDC Light Curves

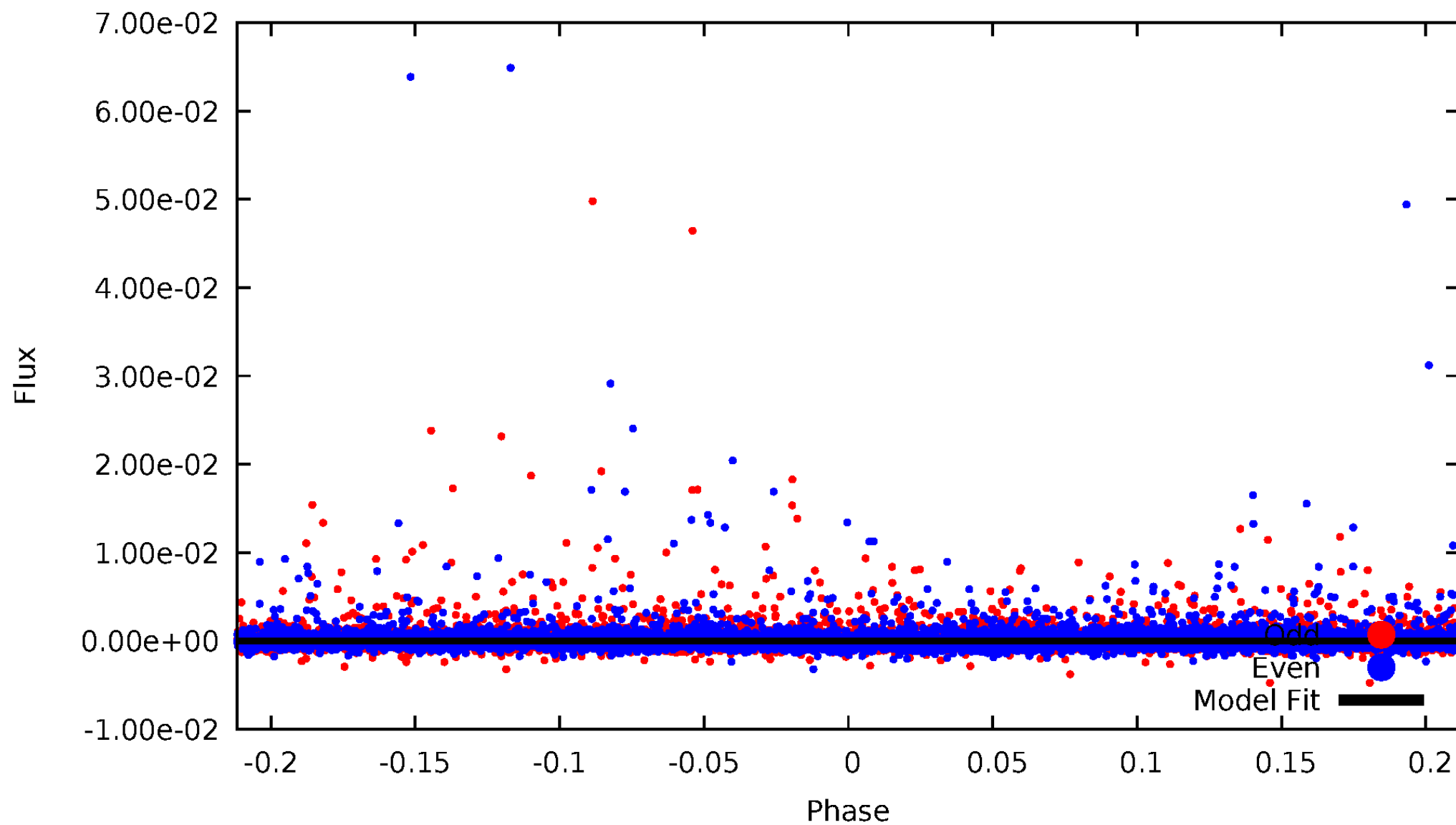


TCE 003557532-05



# DV Odd/Even

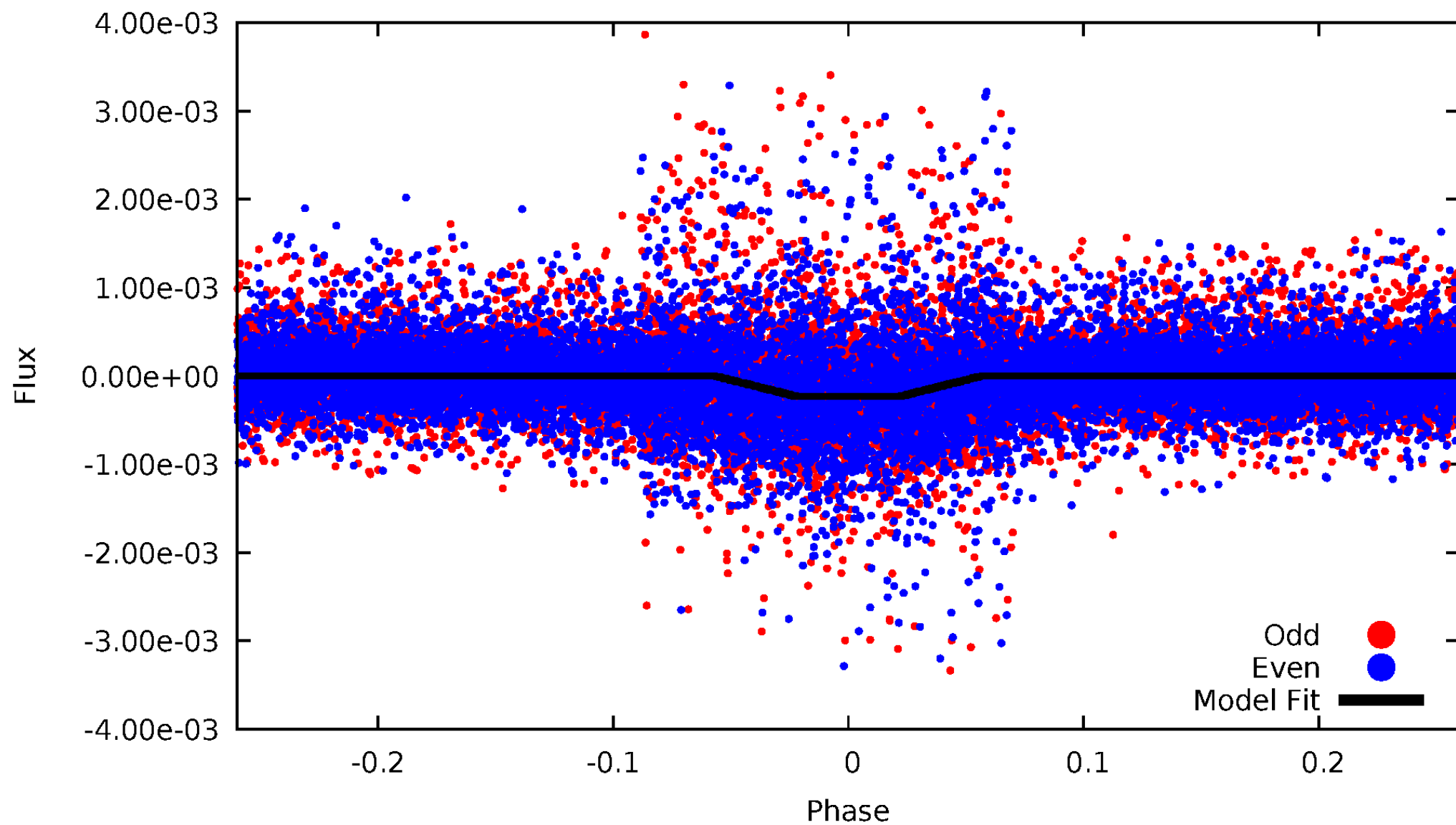
TCE 003557532-05





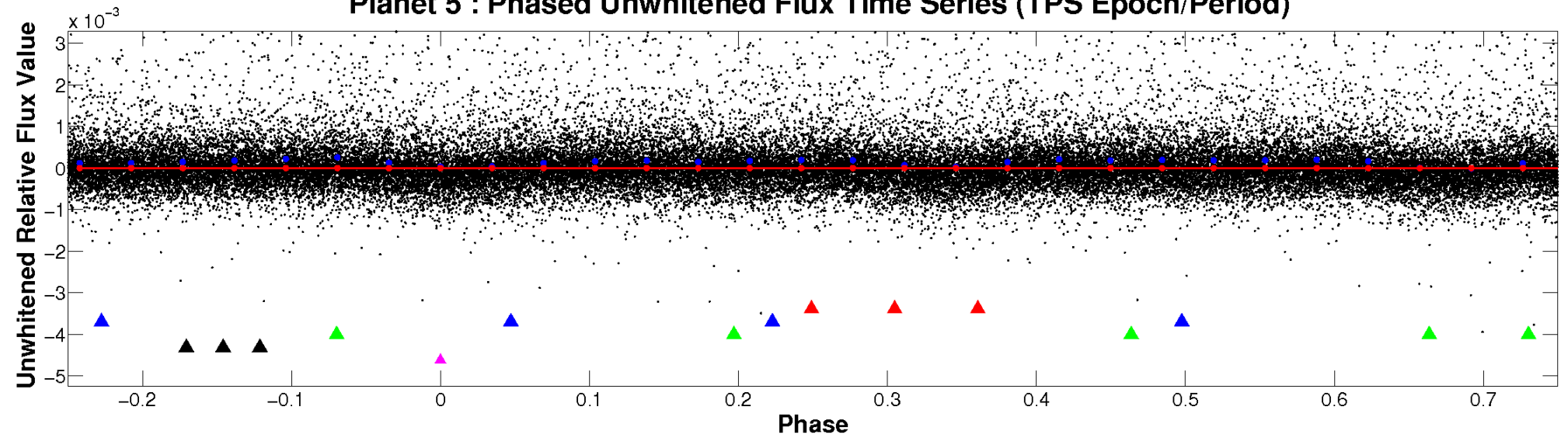
# ALT Odd/Even

TCE 003557532-05

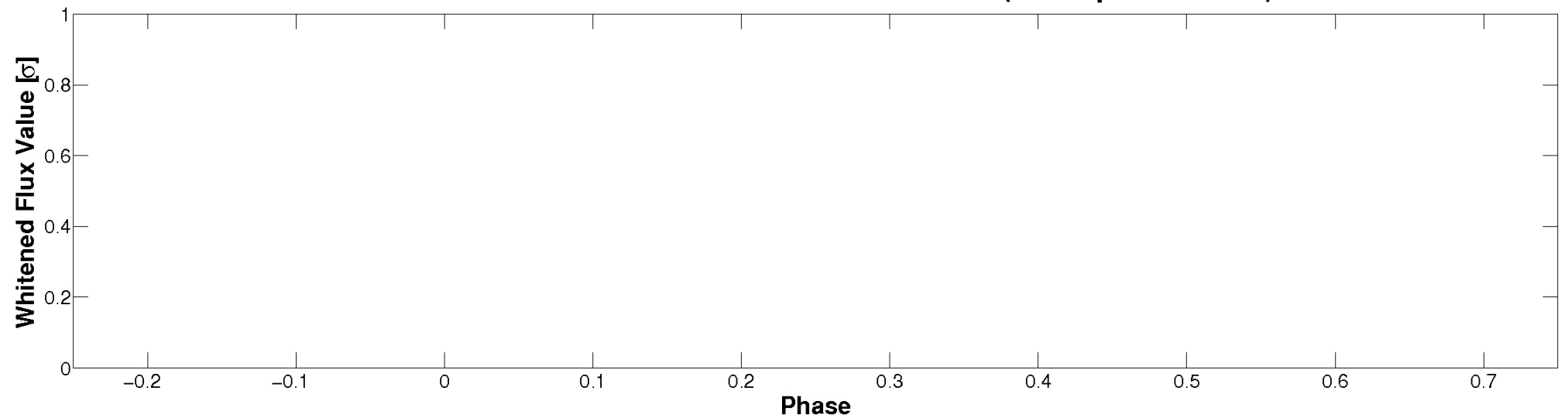


# Non-Whitened Vs. Whitened Light Curve

**Planet 5 : Phased Unwhitened Flux Time Series (TPS Epoch/Period)**

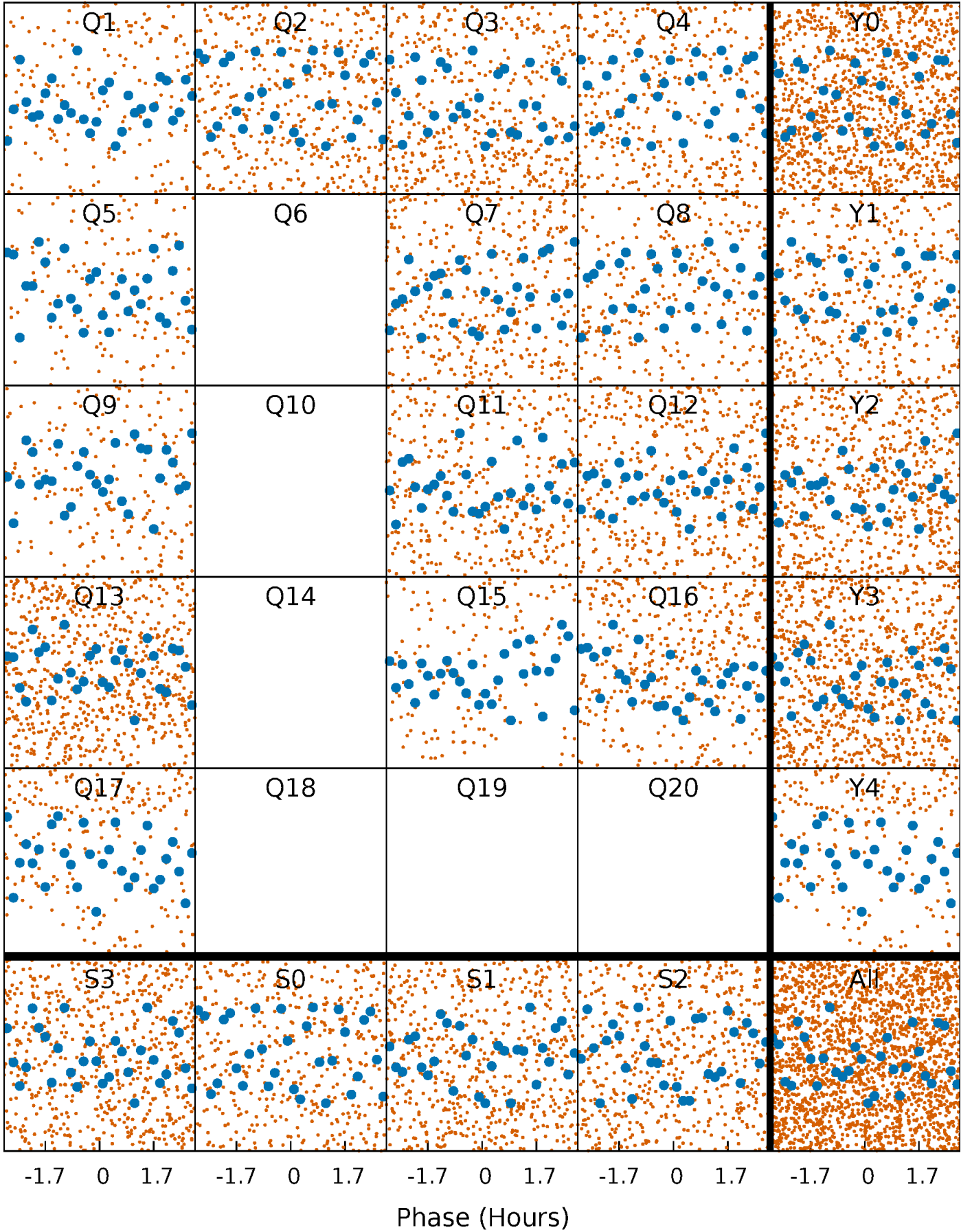


**Planet 5 : Phased Whitened Flux Time Series (TPS Epoch/Period)**



# PDC Quarter-Phased Transit Curves

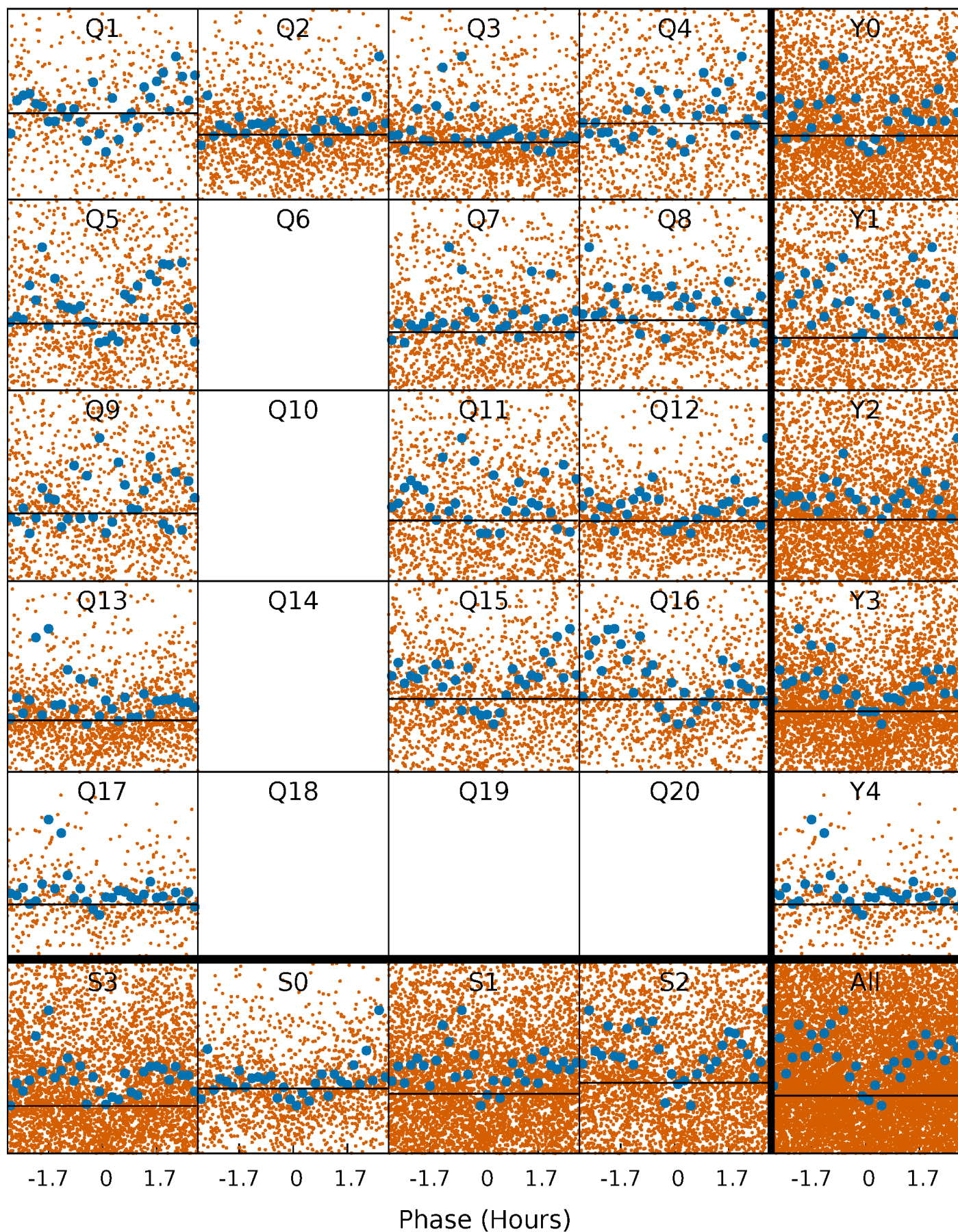
TCE 003557532-05    P= 0.590590 Days     $T_0=131.535994$  (BKJD)





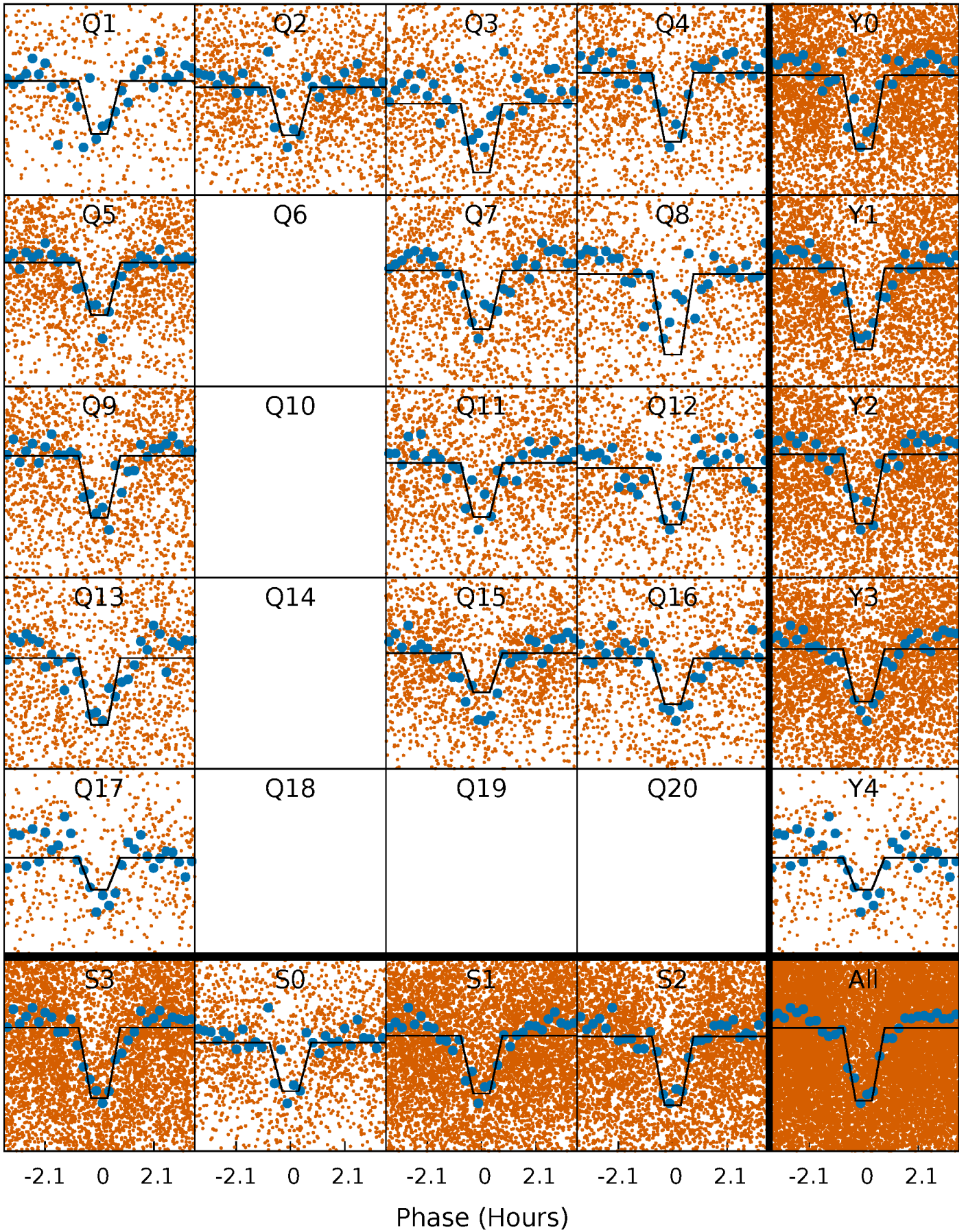
# DV Quarter-Phased Transit Curves

TCE 003557532-05     $P = 0.590590$  Days     $T_0 = 131.535994$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

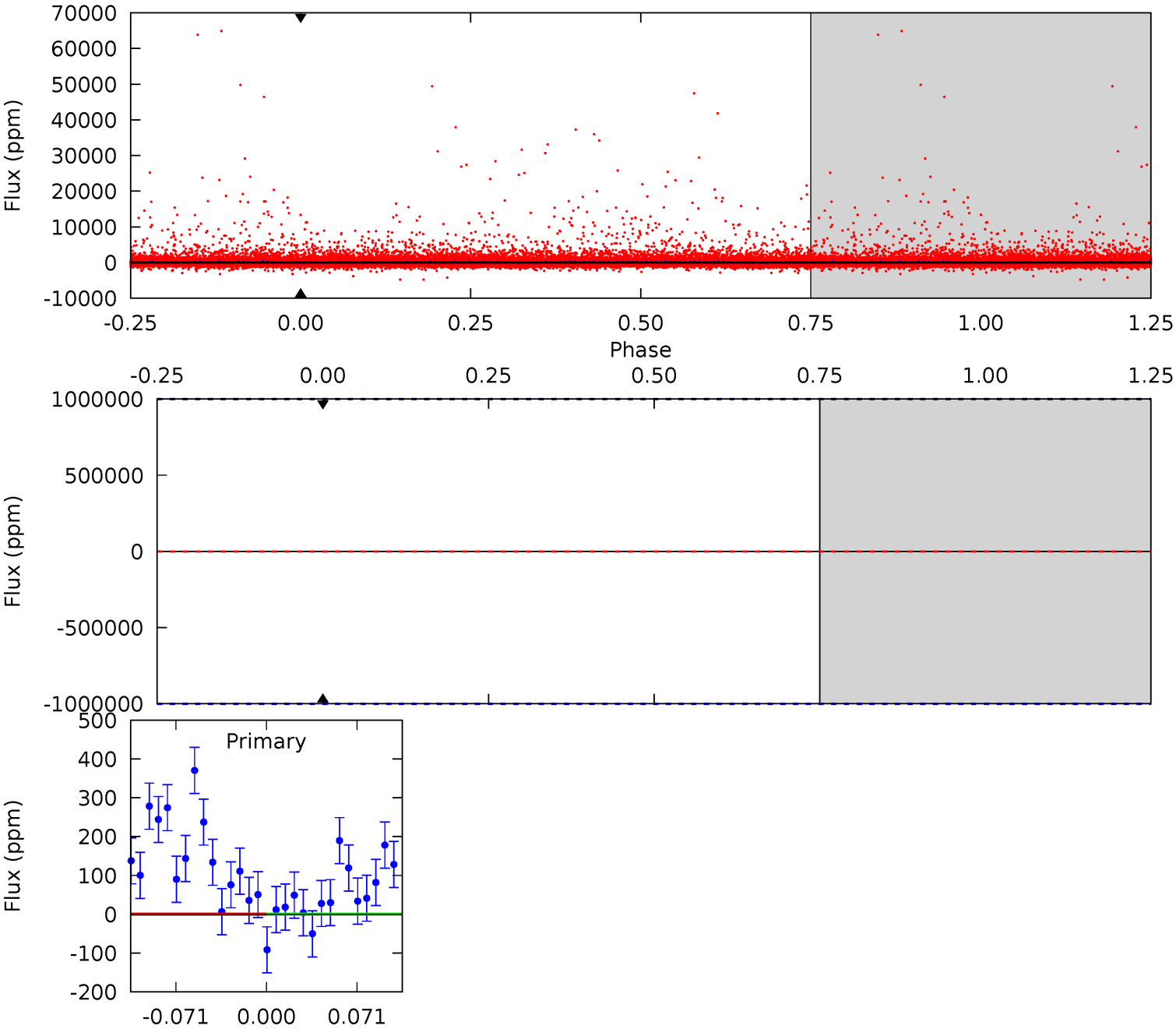
TCE 003557532-05   P= 0.590590 Days    $T_0=131.538192$  (BKJD)



# DV Model-Shift Uniqueness Test

003557532-05, P = 0.590590 Days, E = 130.945404 Days

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

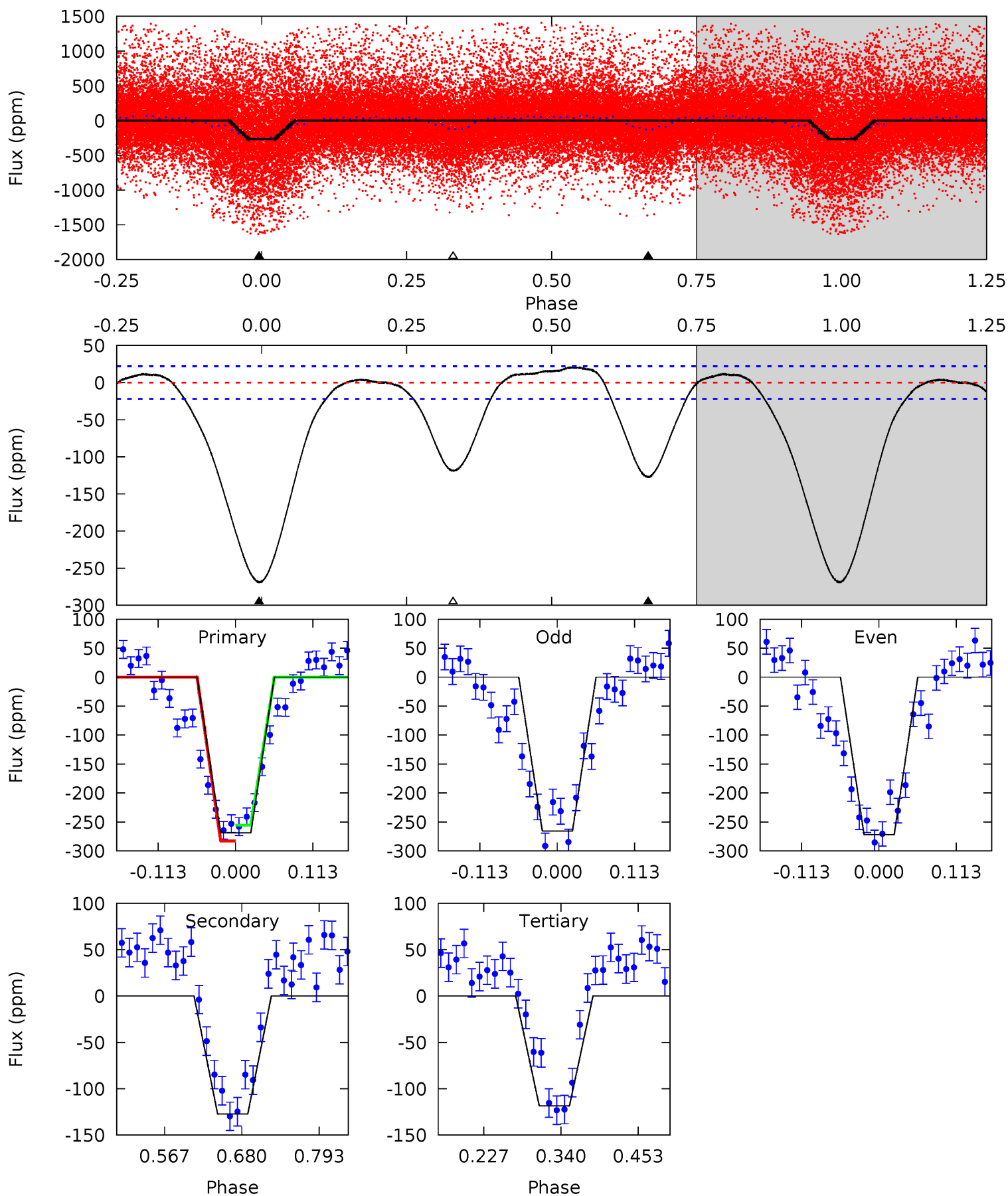




# Alt Model-Shift Uniqueness Test

003557532-05, P = 0.590590 Days, E = 130.947602 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
55.7	26.4	24.6	0	4.54	1.58	8.06	31.1	55.7	1.78	26.4	0.64	0.91	0.07	0



### Stellar Parameters For KIC 003557532

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5383^{+160}_{-160}$	$4.615^{+0.060}_{-0.060}$	$-0.860^{+0.350}_{-0.300}$	$0.668^{+0.070}_{-0.052}$	$0.671^{+0.062}_{-0.033}$	$3.172^{+0.772}_{-0.621}$
	+3%/-3%	+1%/-1%	+41%/-35%	+10%/-8%	+9%/-5%	+24%/-20%
Source	PHO1	KIC0	KIC0	DSEP		

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

### Secondary Eclipse Parameters for KIC 003557532-05 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$0 \pm 1000000$	$5.83^{+5.87}_{-3.77}$	$2469^{+91}_{-92}$	$-3107^{+19857}_{-11240}$	$-0.484^{+437.544}_{-328.884}$
Alt.	$-127 \pm 5$	$5.03^{+5.39}_{-3.42}$	$2470^{+90}_{-90}$	$2422^{+1640}_{-5058}$	$0.402^{+3.491}_{-0.307}$

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

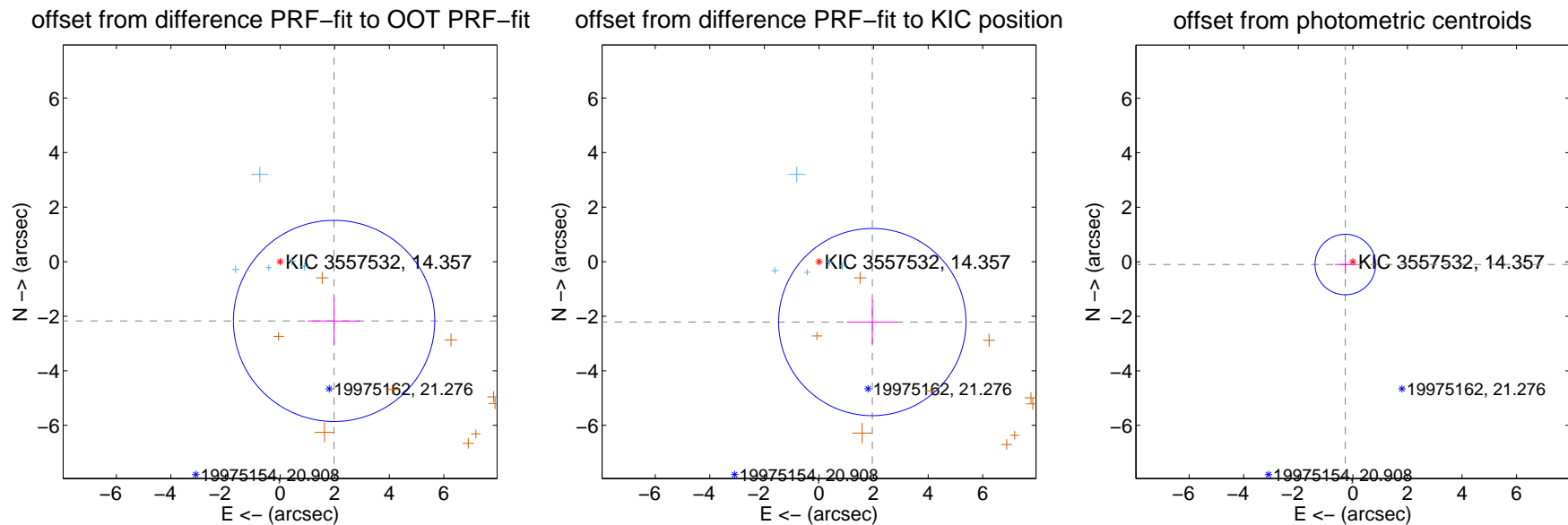
## DV Centroid Data

Supplemental centroid analysis for 003557532-05. Kepler magnitude: 14.36. Transit SNR -1.00

There are 5 quarters with good PRF difference image offsets

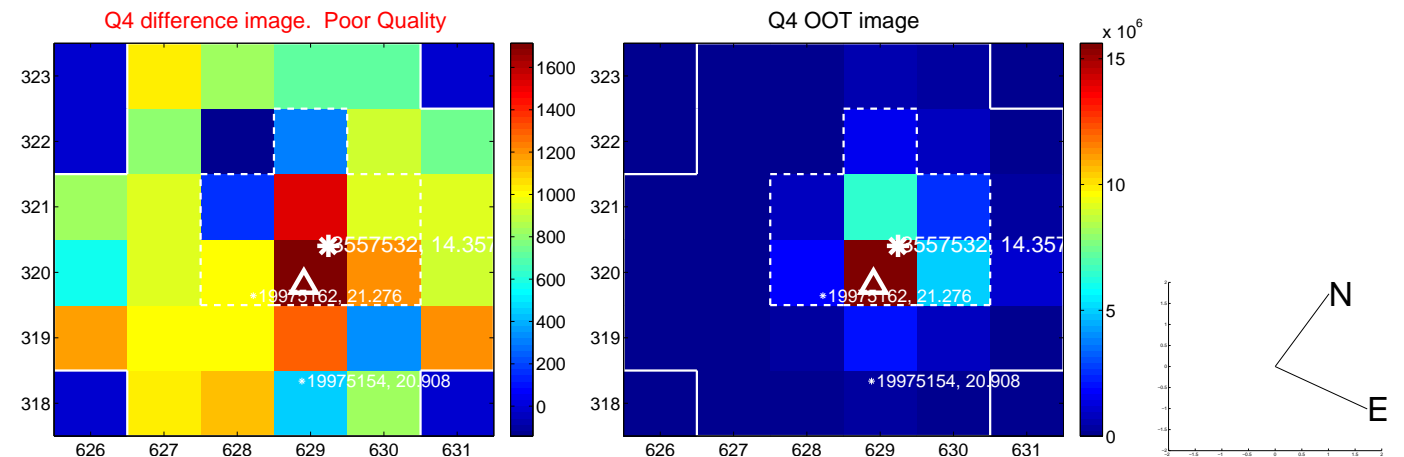
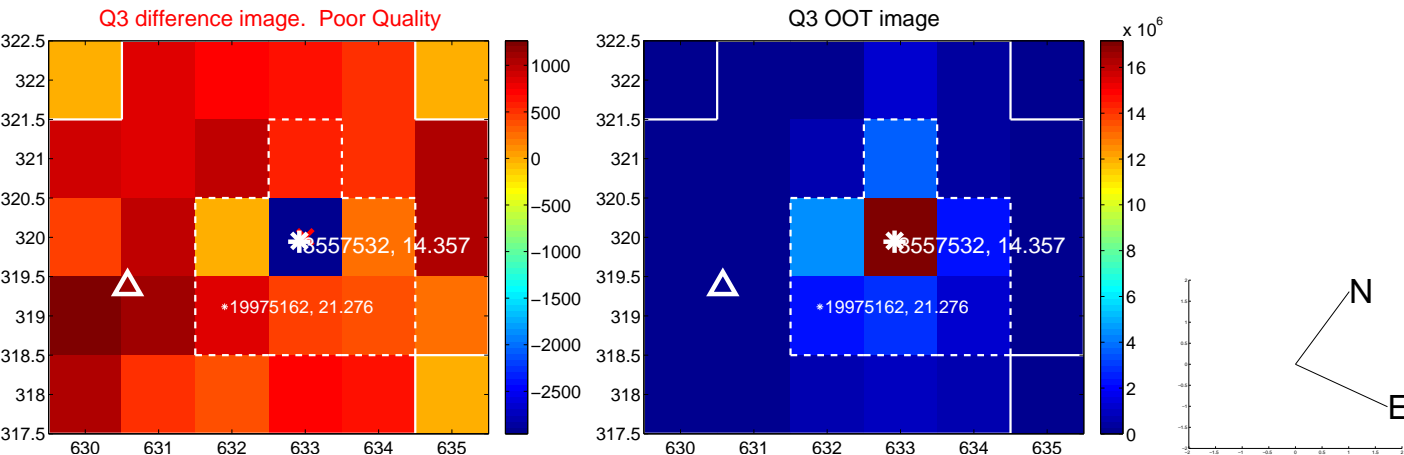
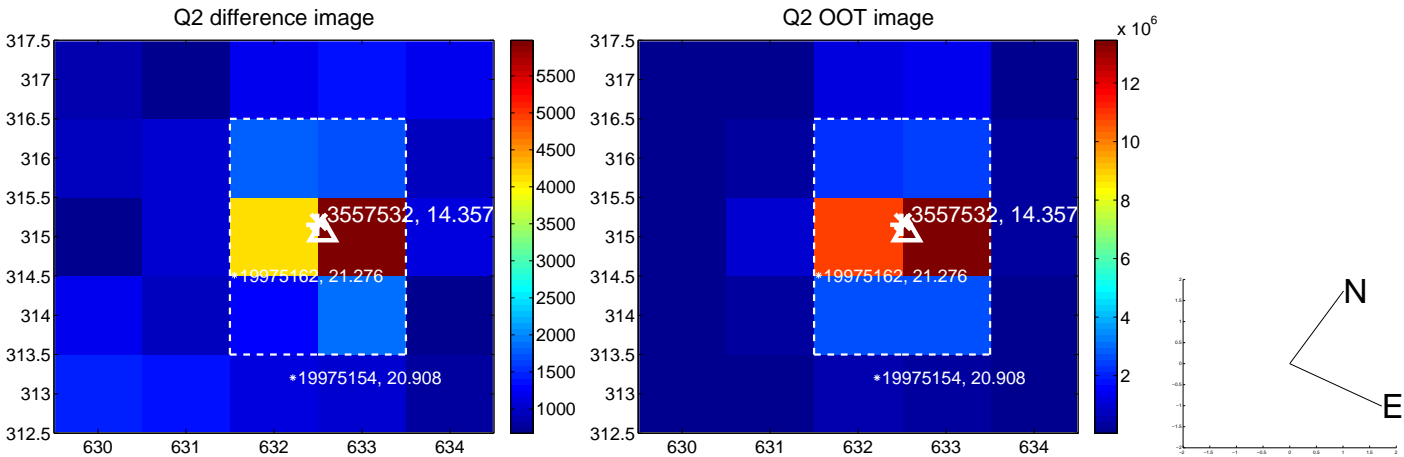
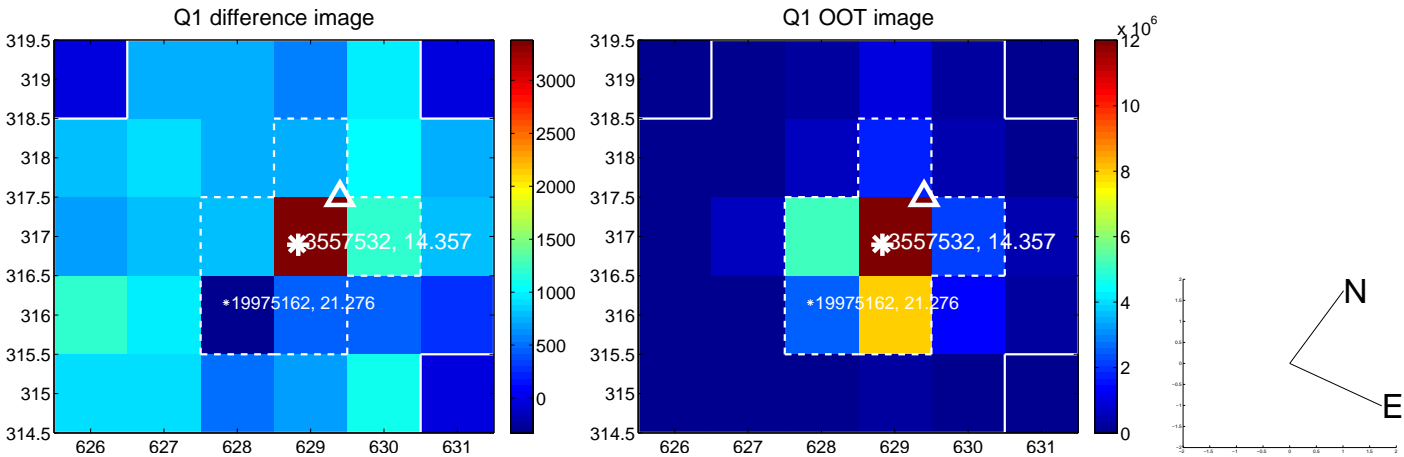
The direct PRF centroid is offset from the target star catalog position by about 0.05 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$2.937 \pm 1.229$	2.39	$-1.977 \pm 0.958$	$-2.172 \pm 0.887$
PRF-fit source offset from KIC position	$2.952 \pm 1.144$	2.58	$-1.953 \pm 0.923$	$-2.213 \pm 0.809$
photometric centroid source offset	$0.29 \pm 0.37$	0.80	$0.28 \pm 0.37$	$-0.10 \pm 0.34$

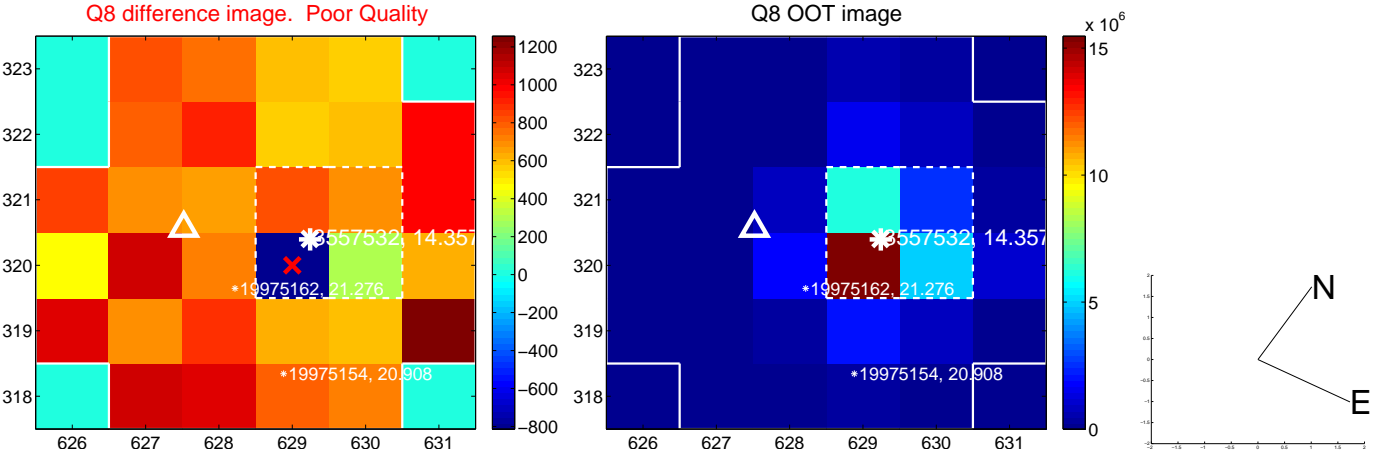
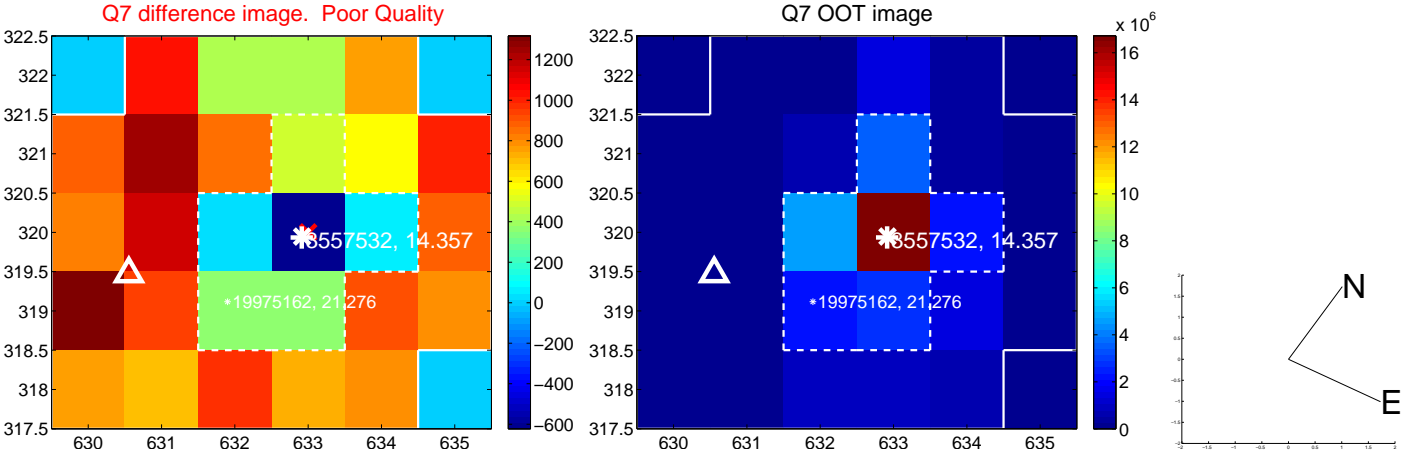
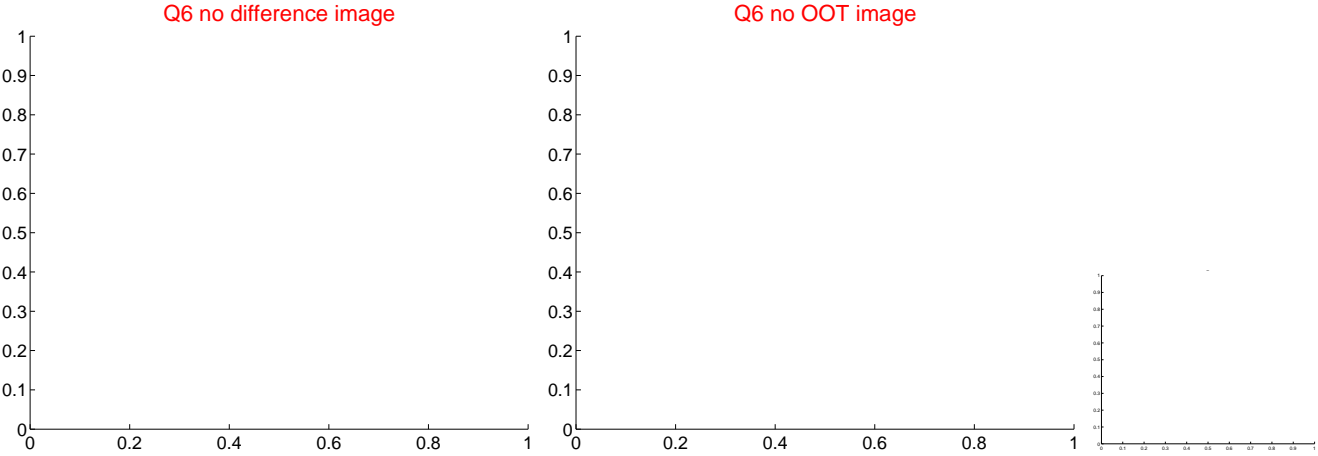
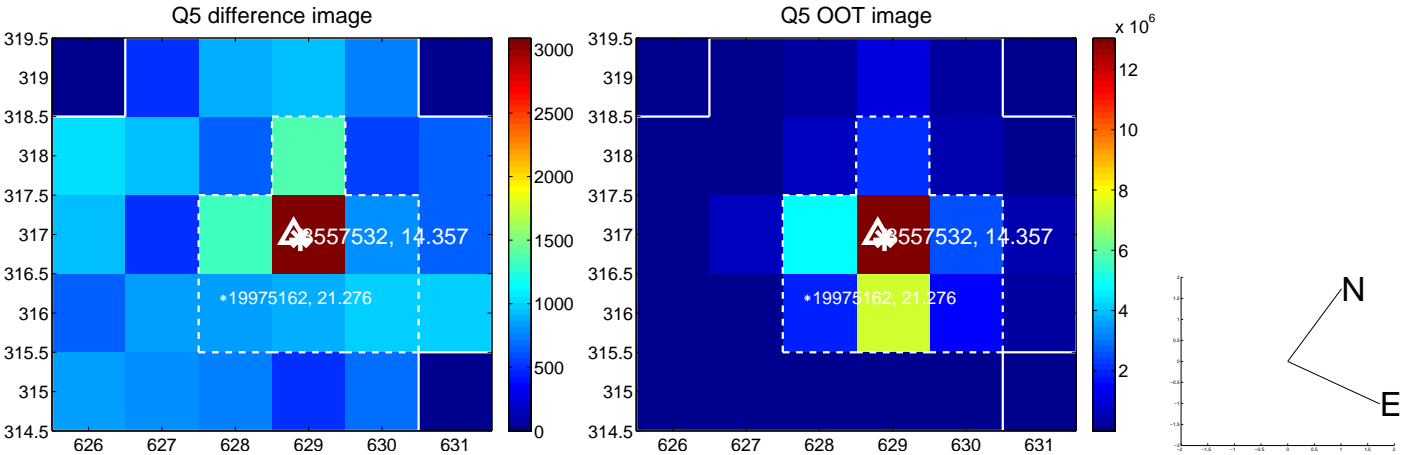


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

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

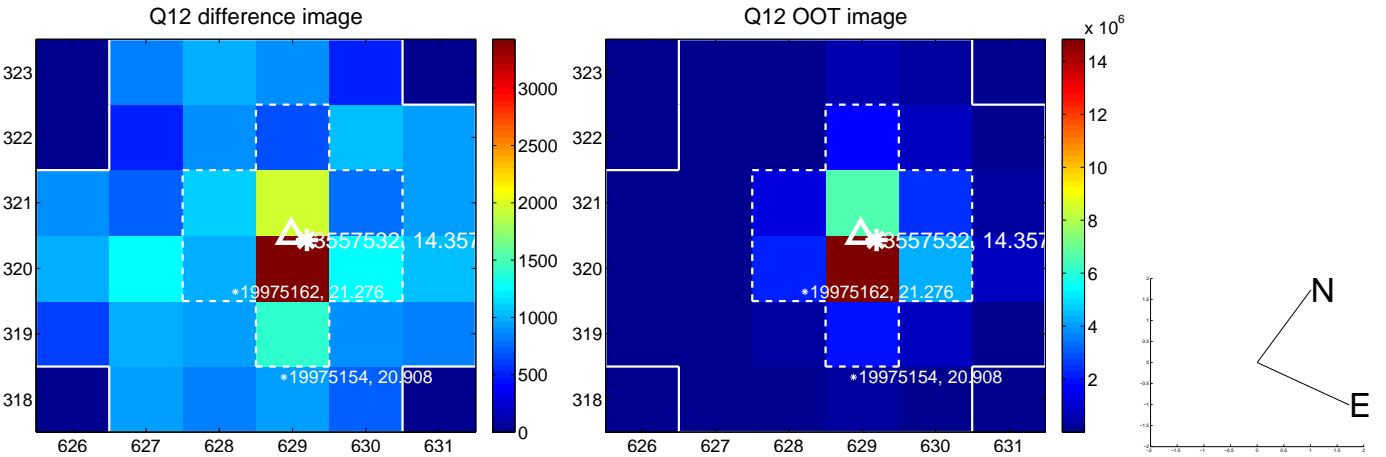
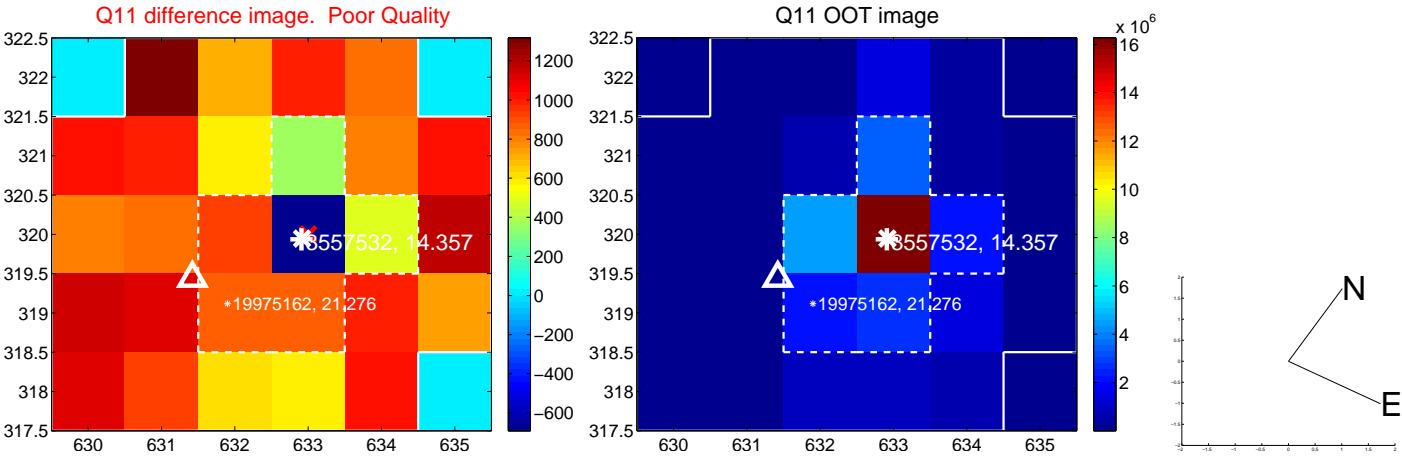
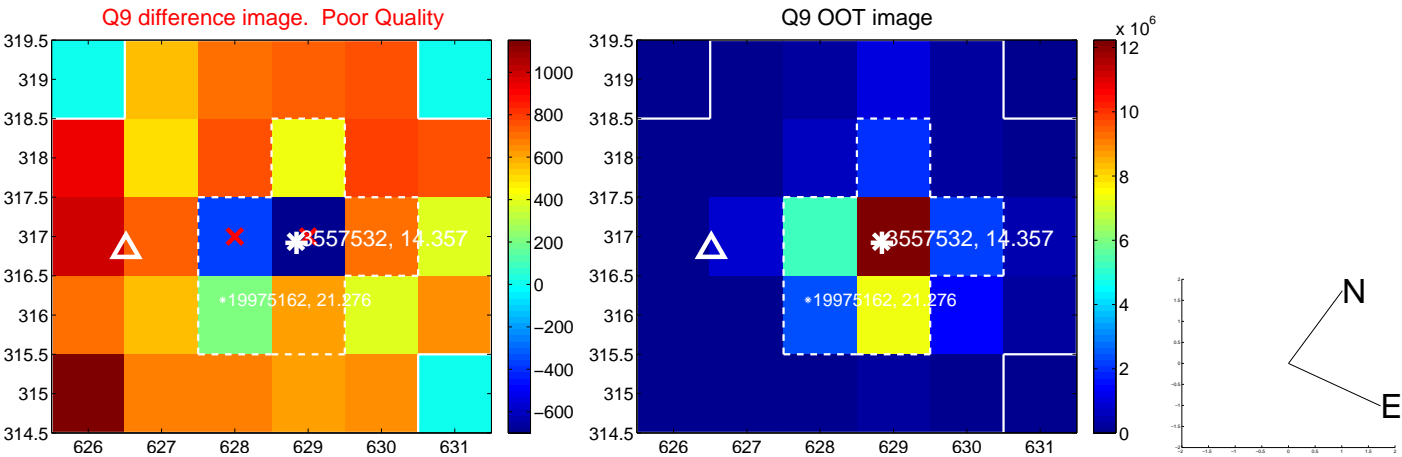


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

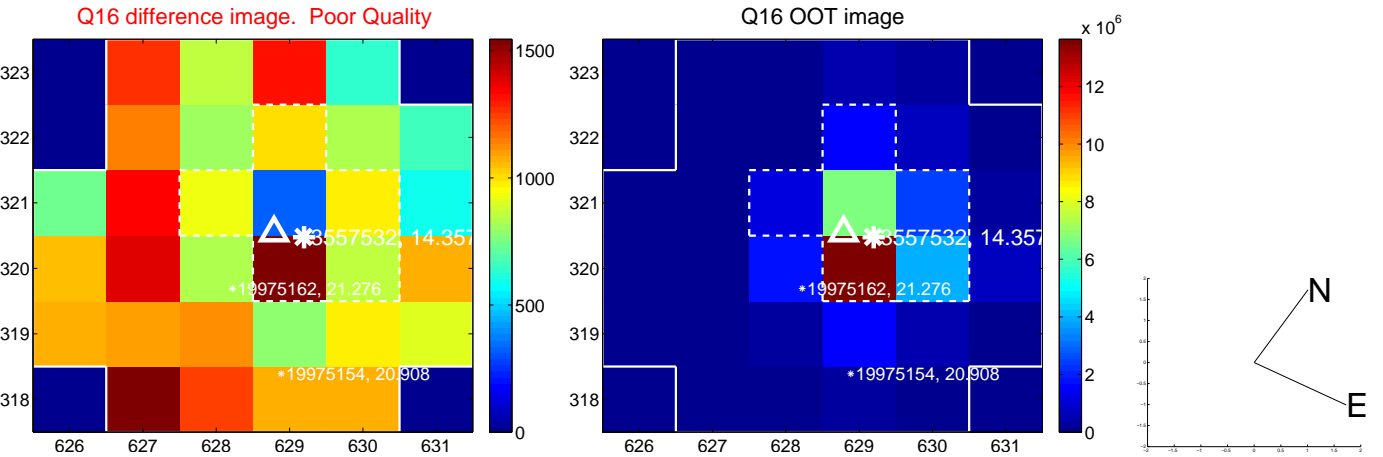
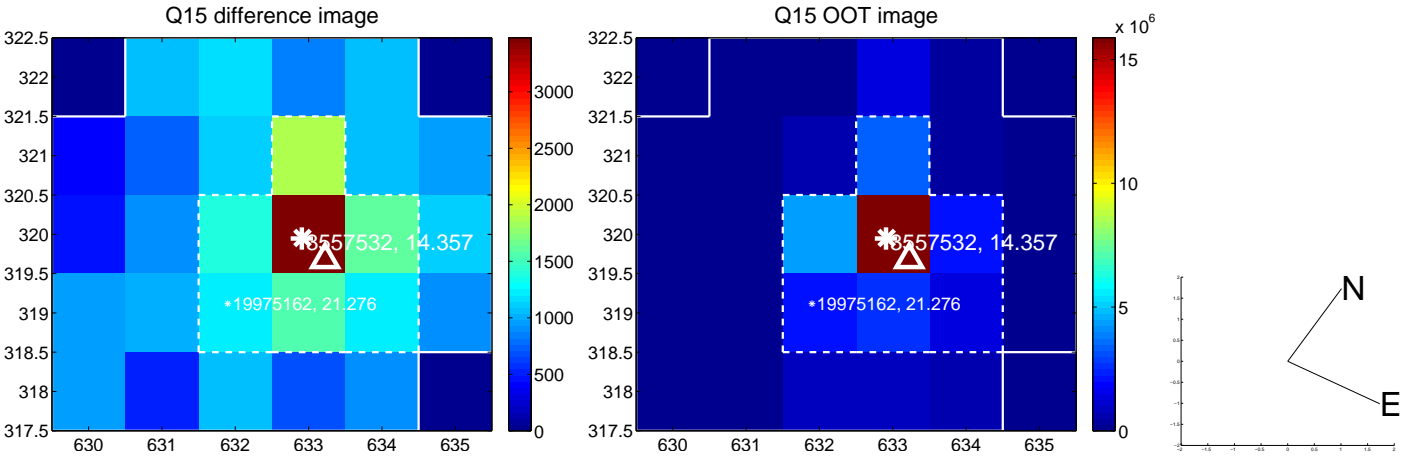
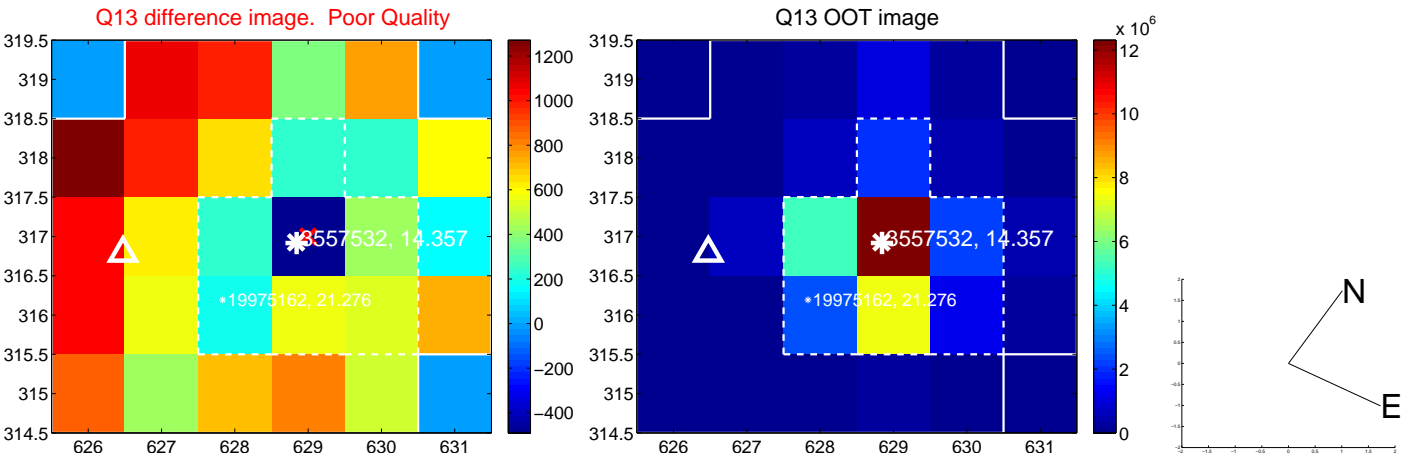




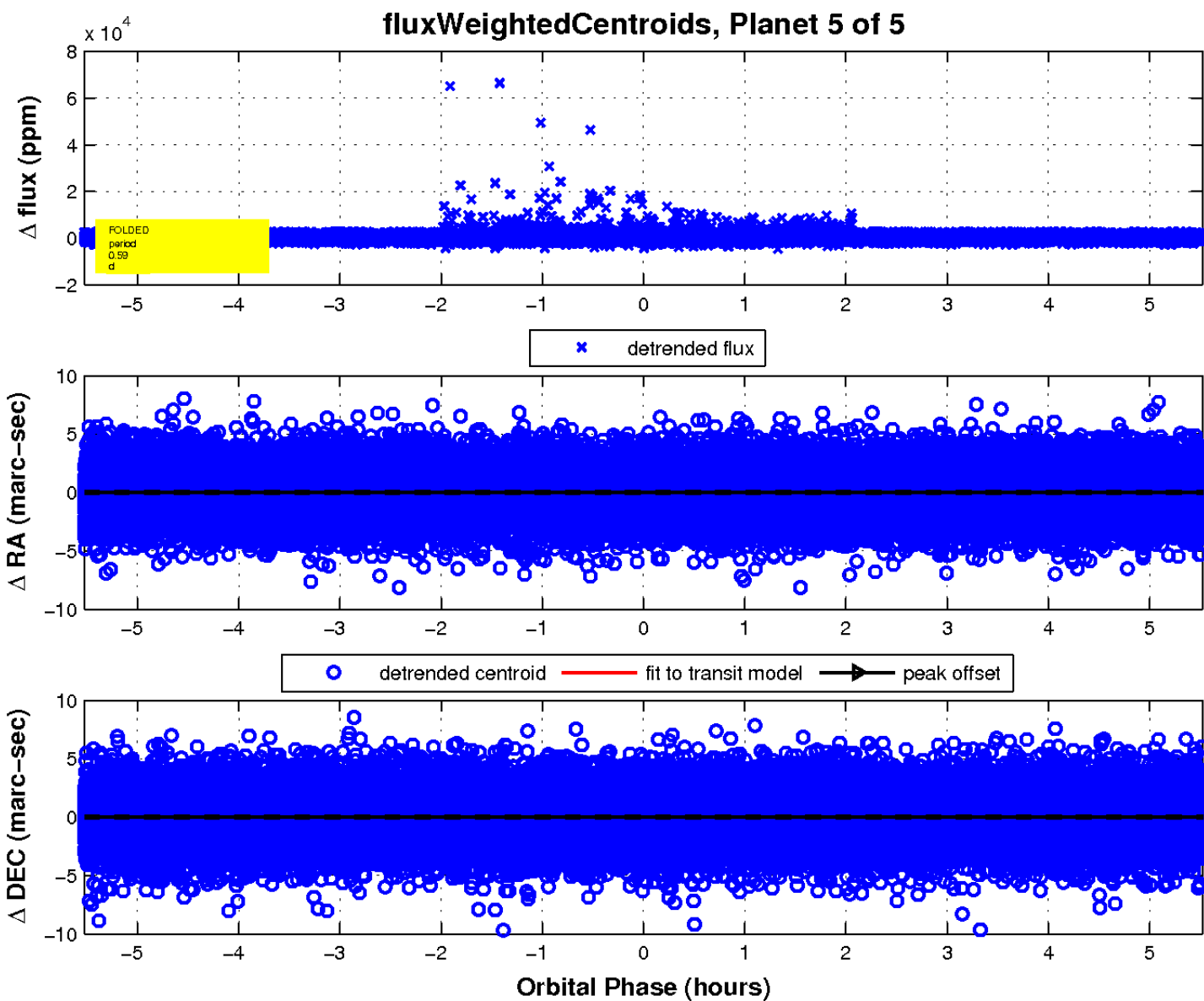
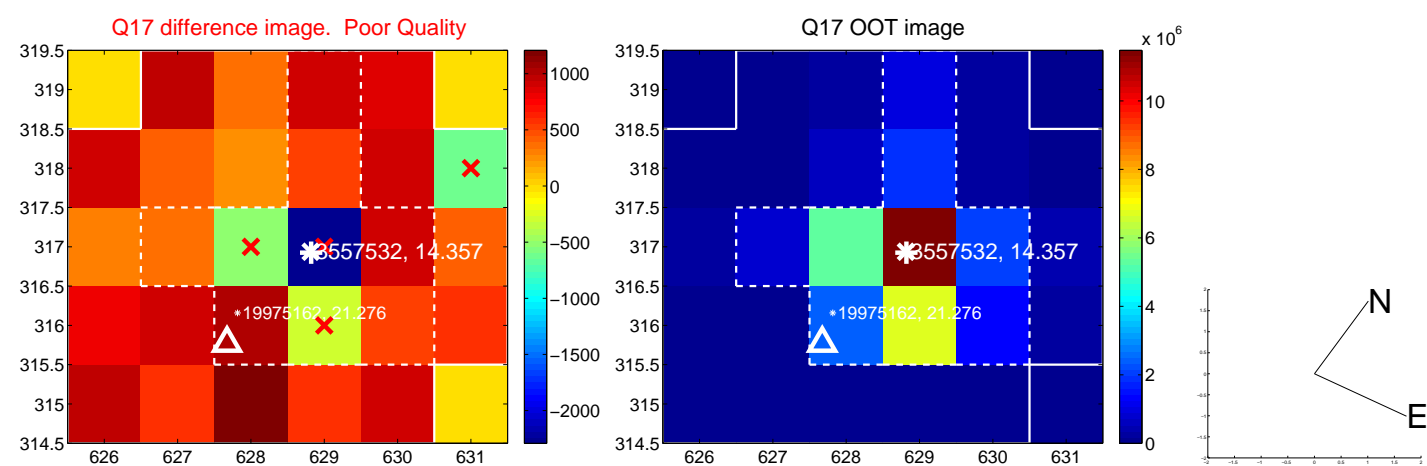
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



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



UKIRT Image

Declination

