

# KIC 006525209

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
006525209-01	OBS	3479.01	75.131913	184.429704	121322.9	20.849	2783.9	2515.3	0.73	5365	26.11	3.94
006525209-02	OBS	No	75.131959	200.780609	39668.5	9.040	1015.7	697.0	0.73	5365	14.89	3.94
006525209-03	OBS	No	446.061223	201.700012	773.5	7.758	23.6	8.9	0.73	5365	2.21	0.37
006525209-04	OBS	3479.02	1.710283	131.619614	139.9	2.900	16.4	18.2	0.73	5365	1.05	611.27
006525209-05	OBS	No	324.201148	165.189190	687.8	11.997	10.5	8.7	0.73	5365	2.07	0.56

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006525209-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_DV—MOD_SEC_ALT—HAS_SEC_TCE
006525209-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE
006525209-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_TER_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
006525209-04	OBS	FP	0.00	0	0	1	1	CENT_UNRESOLVED_OFFSET—HALO_GHOST—EPHEM_MATCH
006525209-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_MEAS

**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 006525209-01

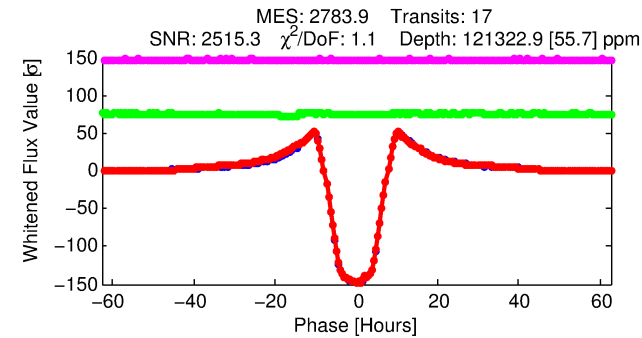
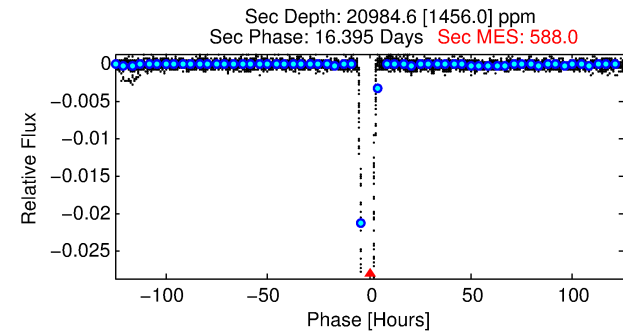
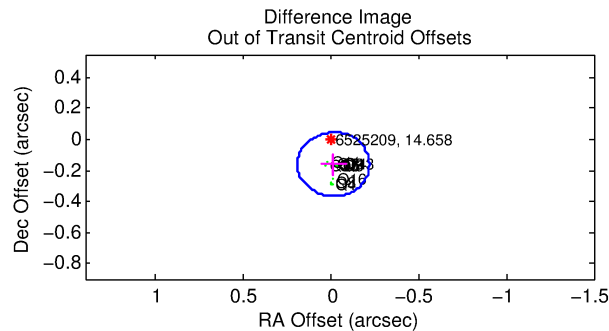
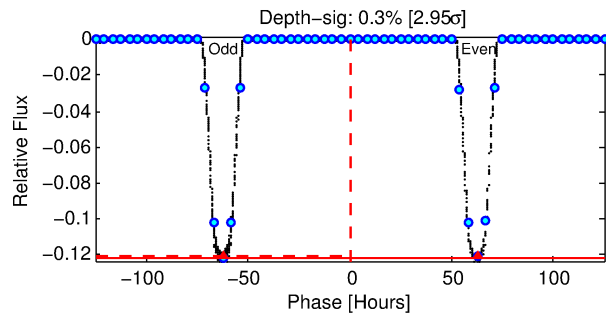
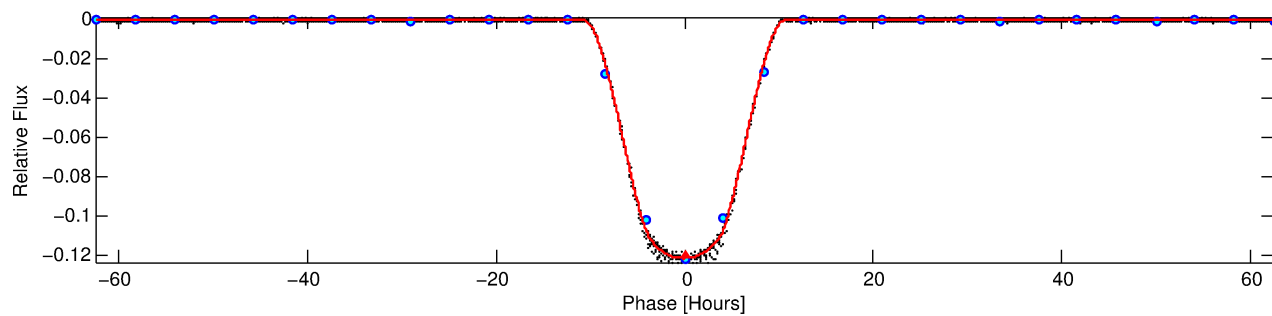
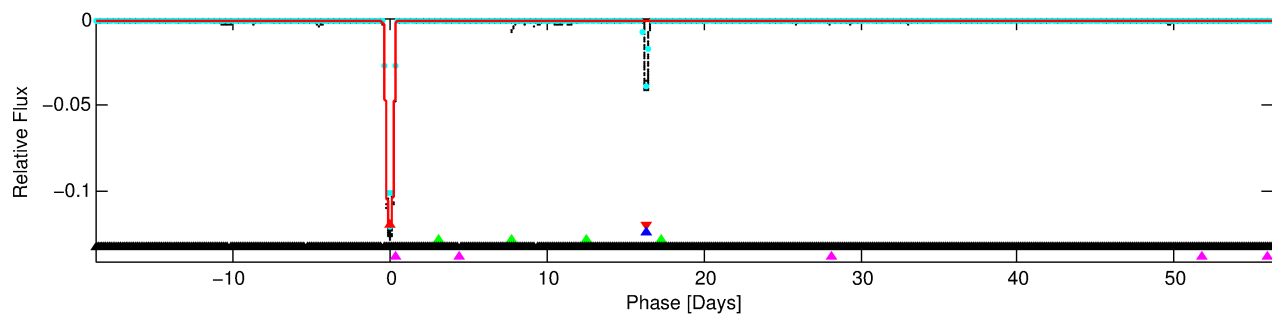
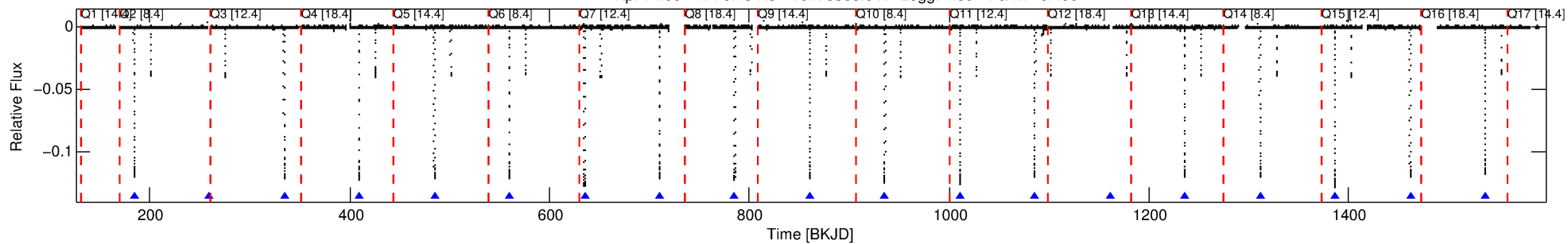
No Significant Match Found

# DV One-Page Summary

KIC: 6525209 Candidate: 1 of 5 Period: 75.132 d

KOI: K03479.01 Corr: 0.999

Kp: 14.66 R\*: 0.73 Rs Teff: 5365.0 K Logg: 4.59 Fe/H: -0.460



## DV Fit Results:

Period = 75.13191 [0.00001] d  
Epoch = 184.4297 [0.0001] BKJD  
Rp/R\* = 0.3282 [0.0001]  
a/R\* = 34.01 [0.02]  
b = 0.49 [0.00]  
Seff = 3.94 [0.76]  
Teff = 359 [17] K  
Rp = 26.11 [3.73] Re  
a = 0.3163 [0.0355] AU  
Ag = 1693.66 [284.40] [5.95σ]  
Teffp = 3564 [123] K [25.80σ]

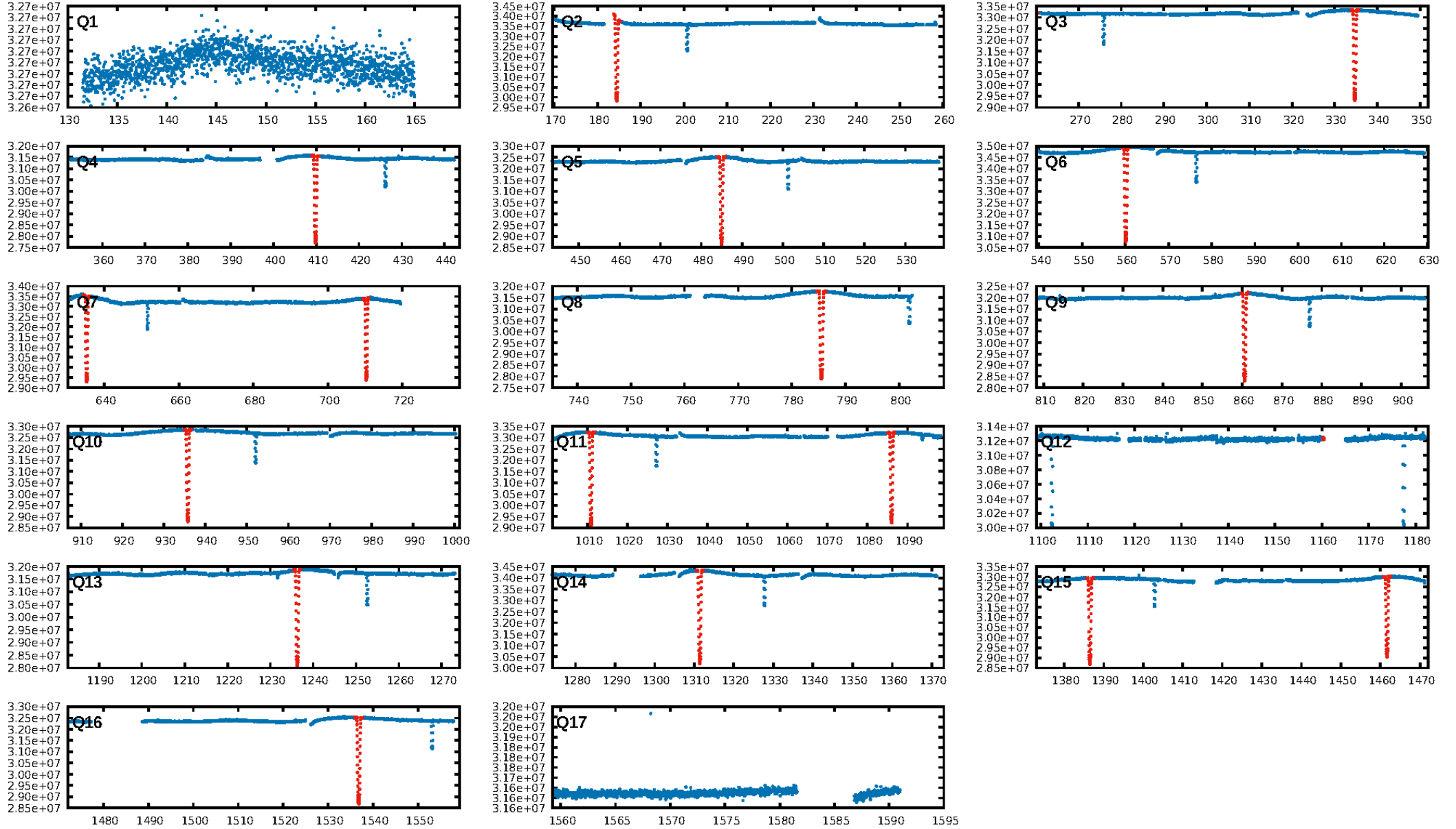
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [83.71σ]  
LongPeriod-sig: 0.0% [0.00σ]  
ModelChiSquare2-sig: 0.0%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 0.00e+00  
RollingBand-fgt: 1.00 [17/17]  
GhostDiagnostic-chr: 5.766  
Centroid-sig: 0.0%  
Centroid-so: 0.025 arcsec [12.16σ]  
OotOffset-rm: 0.161 arcsec [2.34σ]  
KicOffset-rm: 0.112 arcsec [1.61σ]  
OotOffset-st: 2/3/3/3 [11]  
KicOffset-st: 2/3/3/3 [11]  
DiffImageQuality-fgm: 1.00 [11/11]  
DiffImageOverlap-fno: 0.00 [0/11]

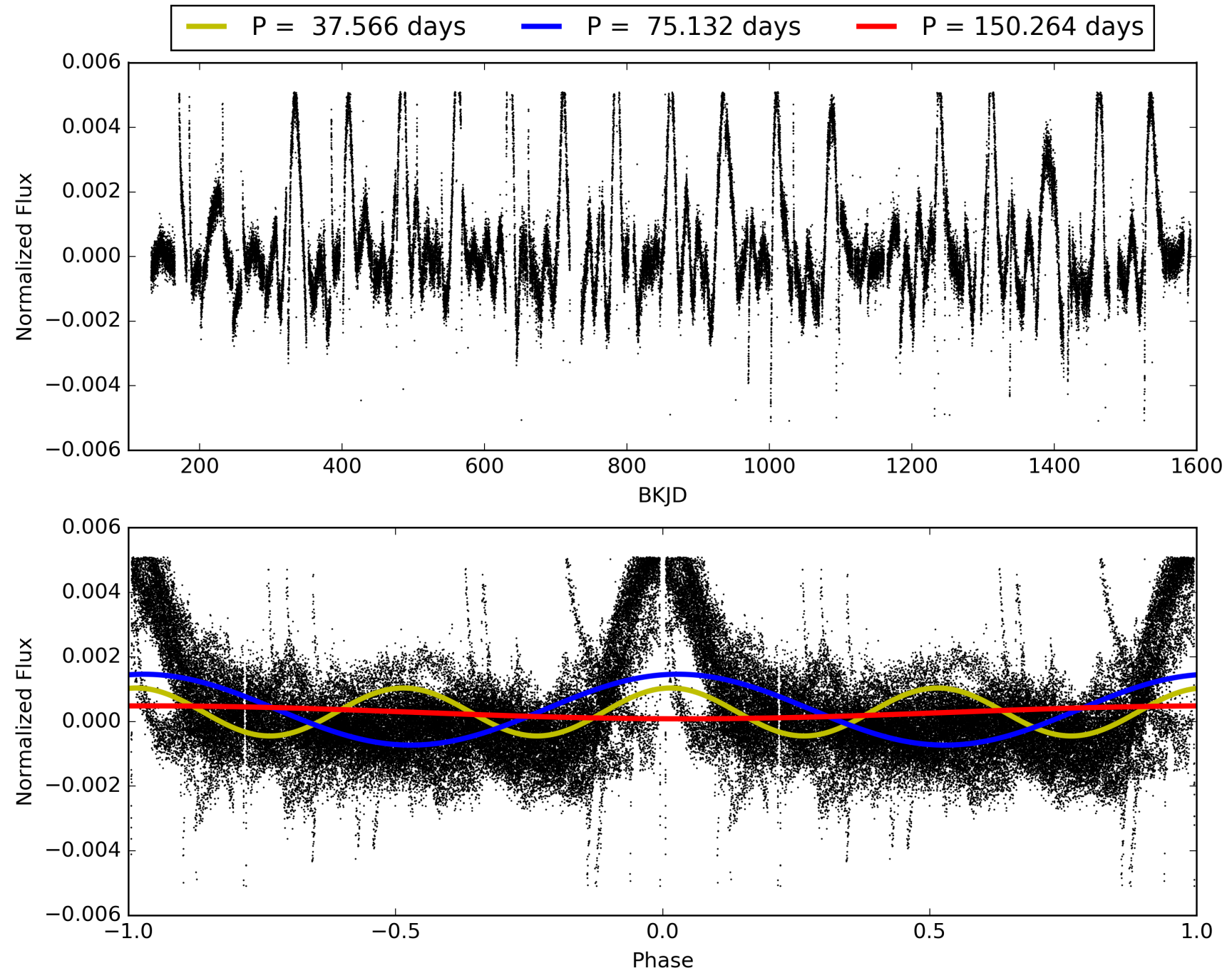
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 03-Feb-2016 07:28:36 Z

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

# TCE 006525209-01, PDC Light Curves



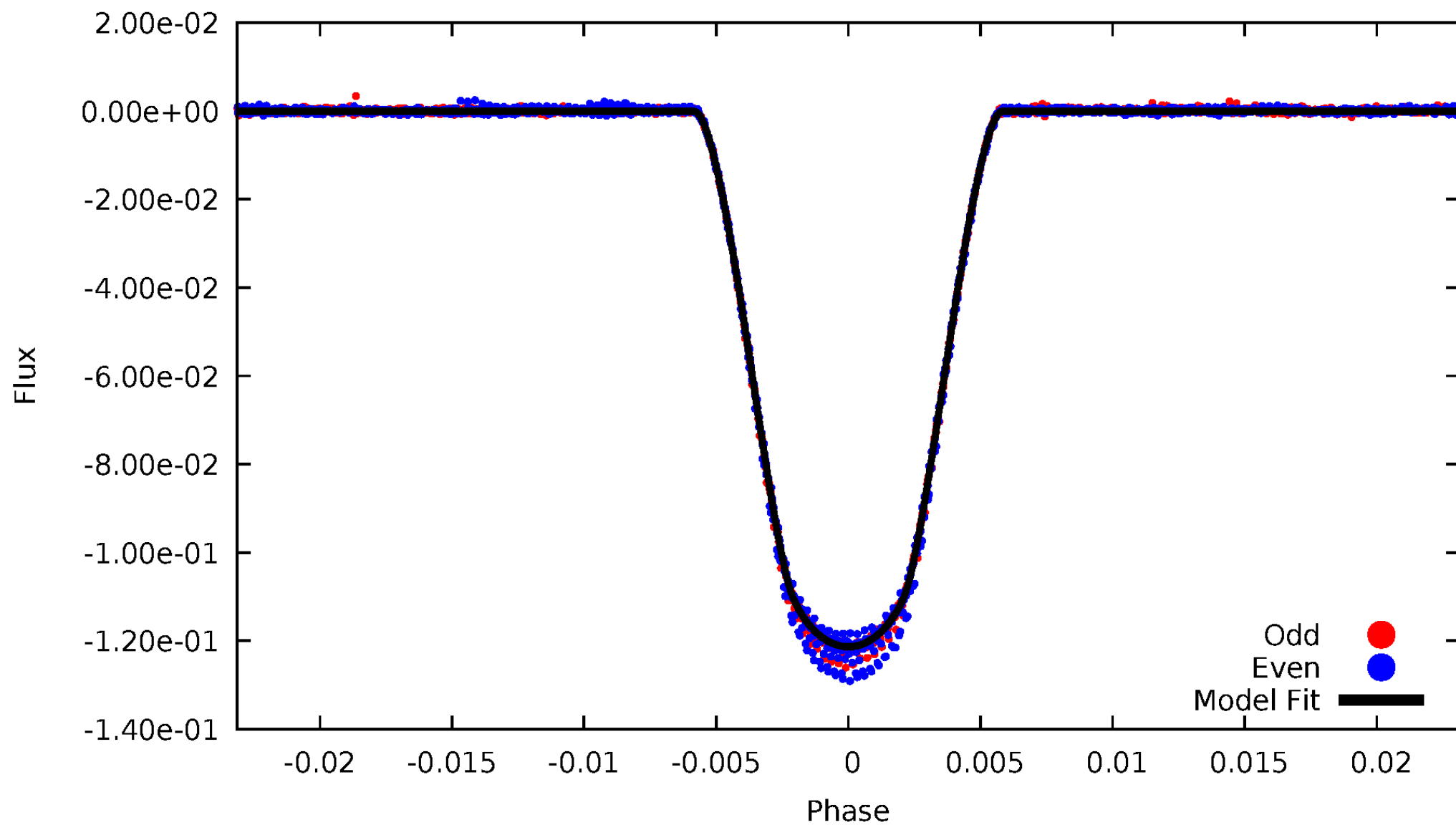
TCE 006525209-01





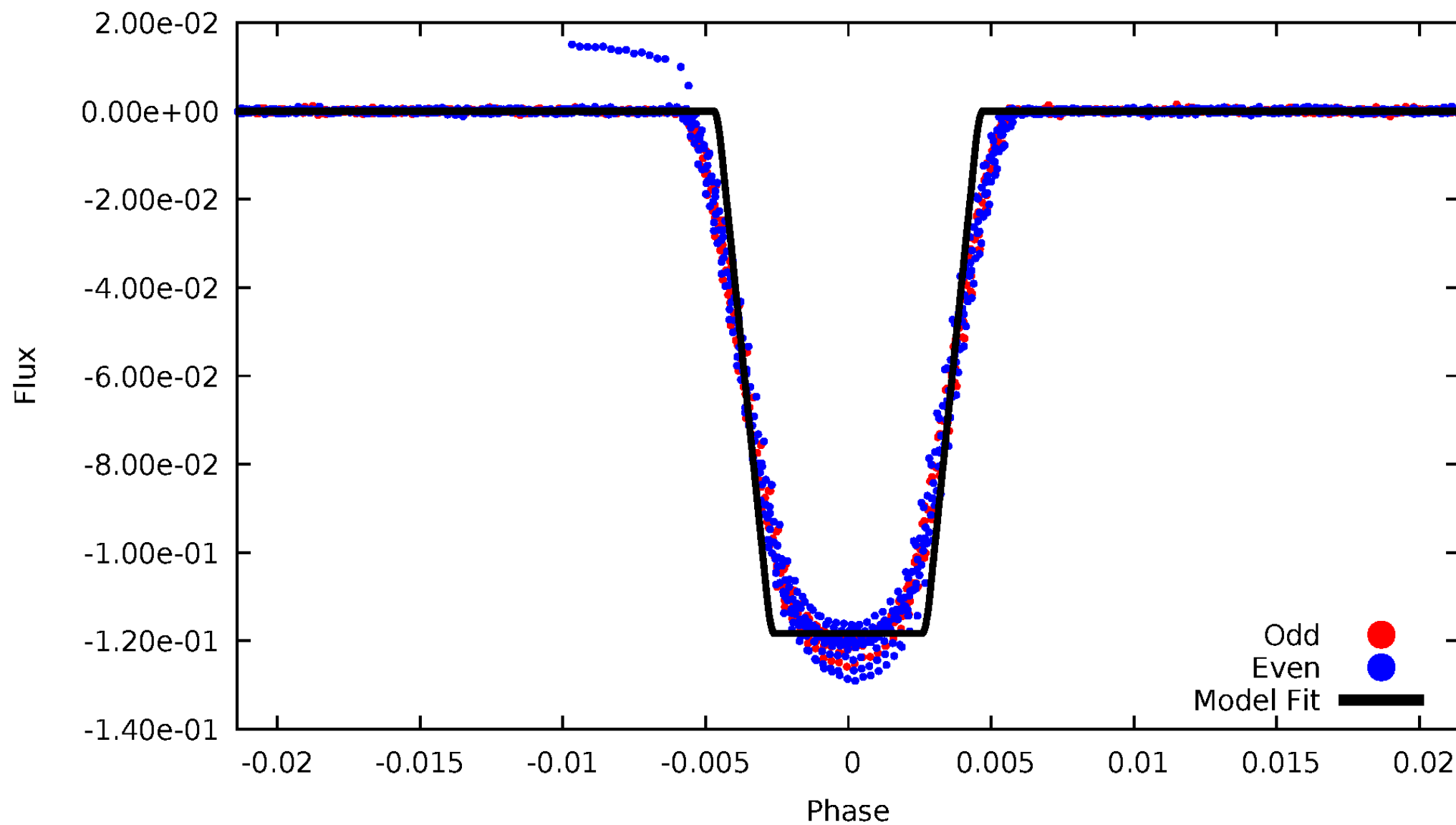
# DV Odd/Even

TCE 006525209-01



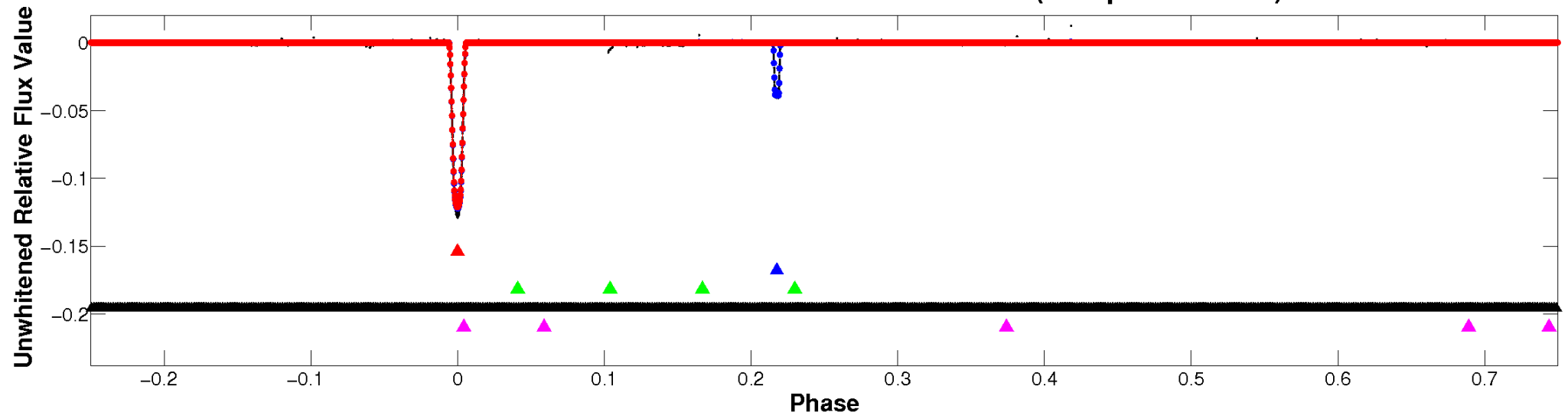
# ALT Odd/Even

TCE 006525209-01

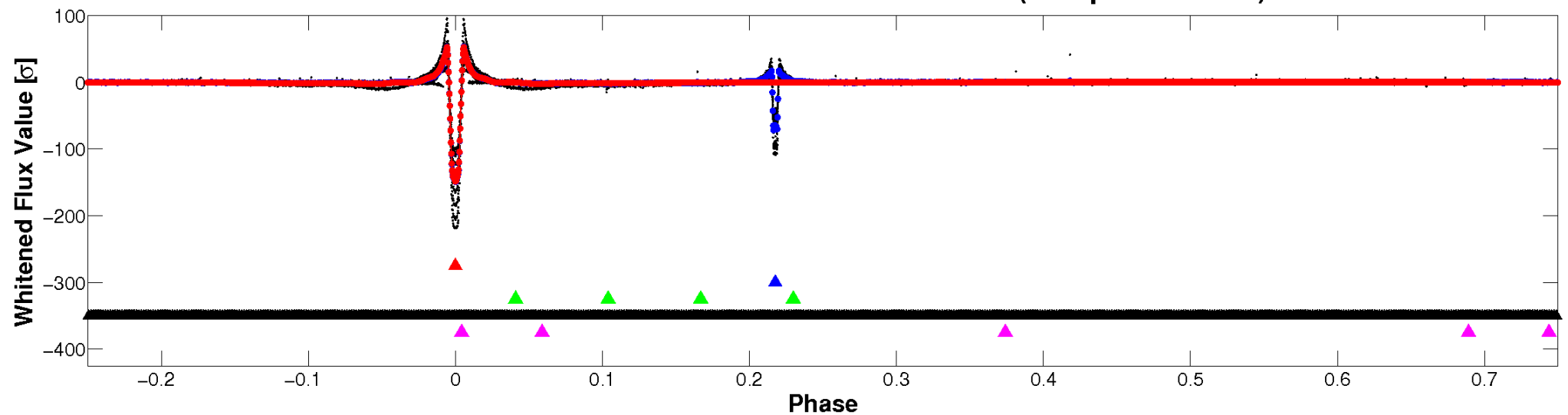


# Non-Whitened Vs. Whitened Light Curve

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

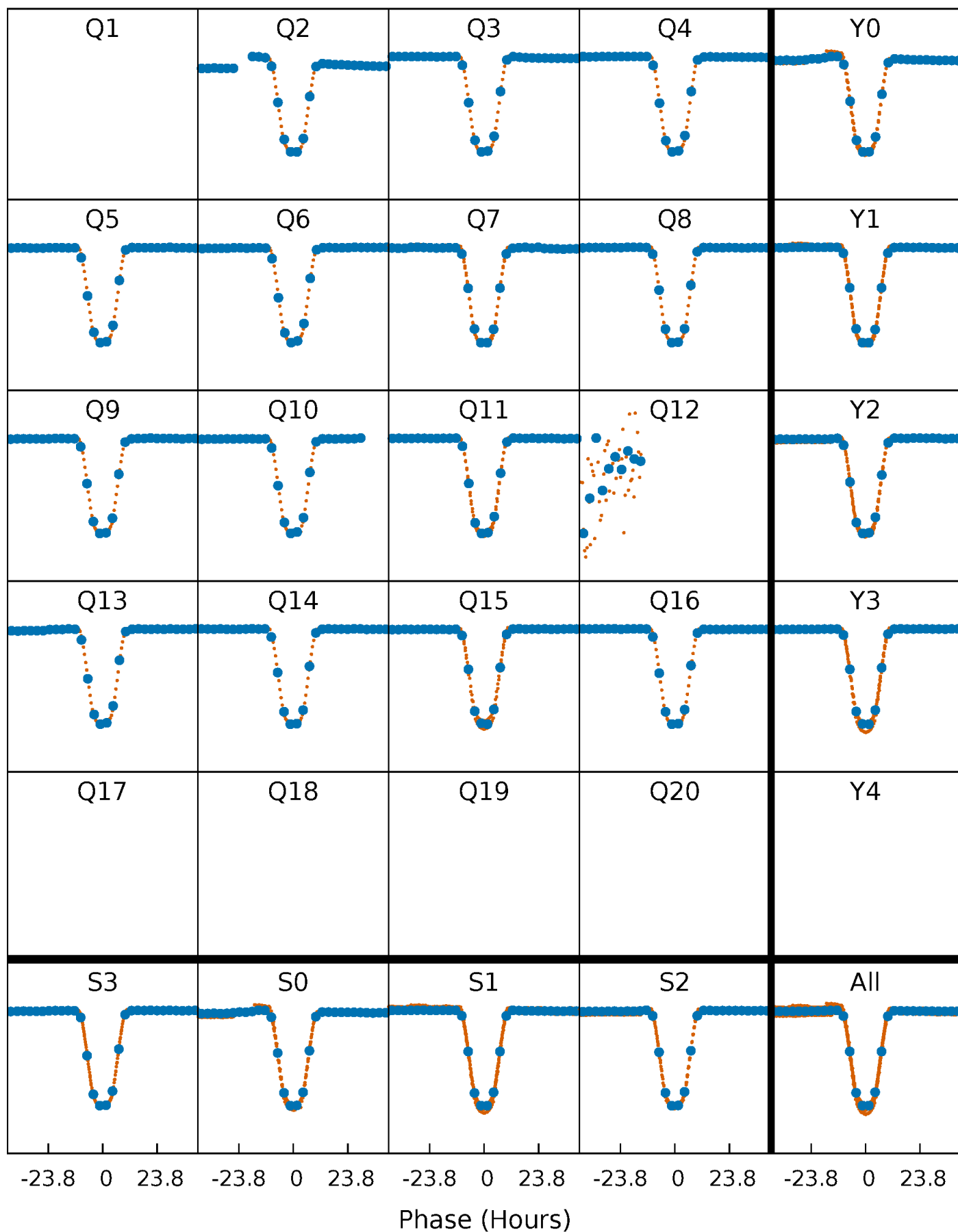


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



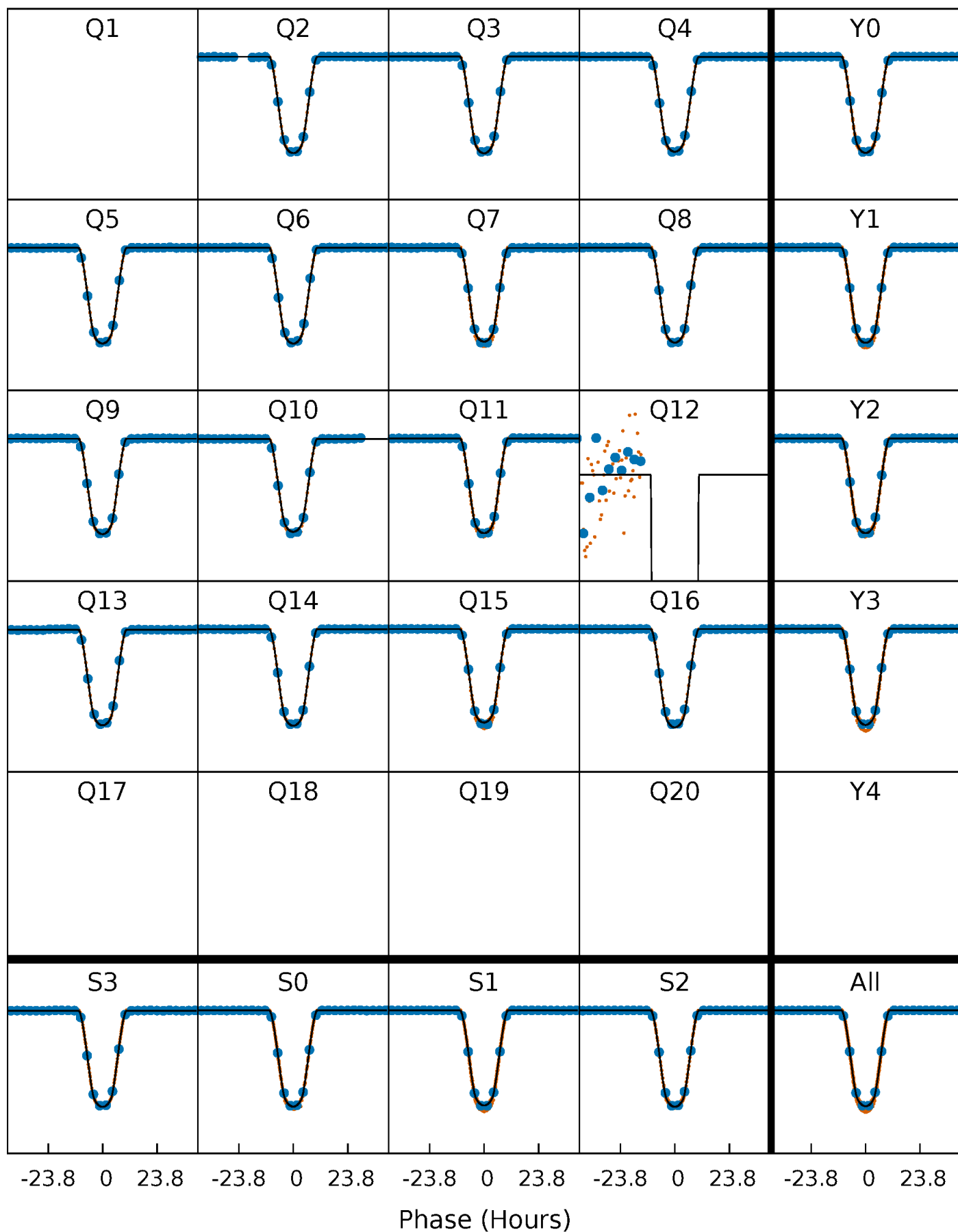
# PDC Quarter-Phased Transit Curves

TCE 006525209-01 P= 75.131913 Days  $T_0=184.429704$  (BKJD)



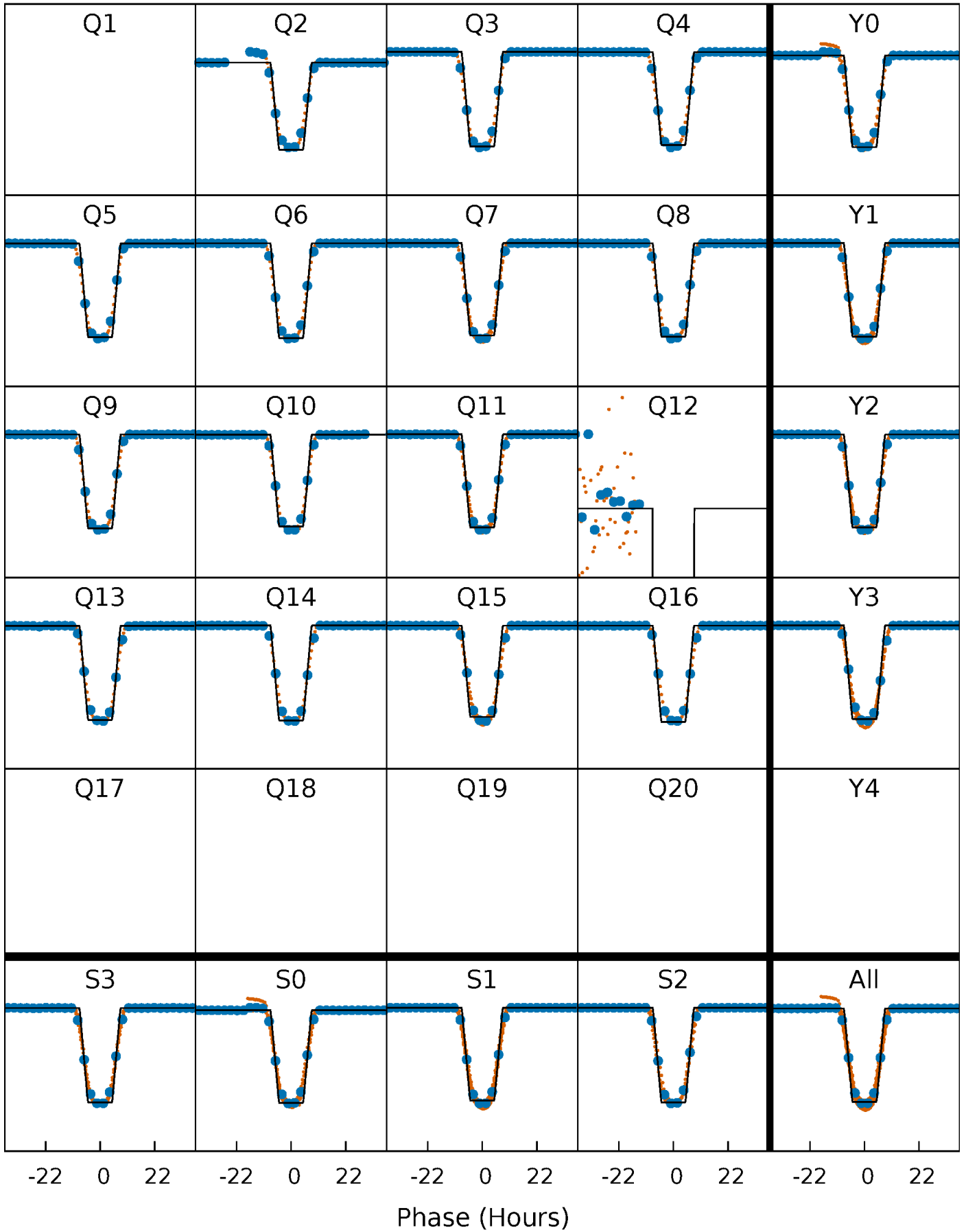
# DV Quarter-Phased Transit Curves

TCE 006525209-01 P= 75.131913 Days  $T_0=184.429704$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 006525209-01 P= 75.129851 Days  $T_0=184.449035$  (BKJD)

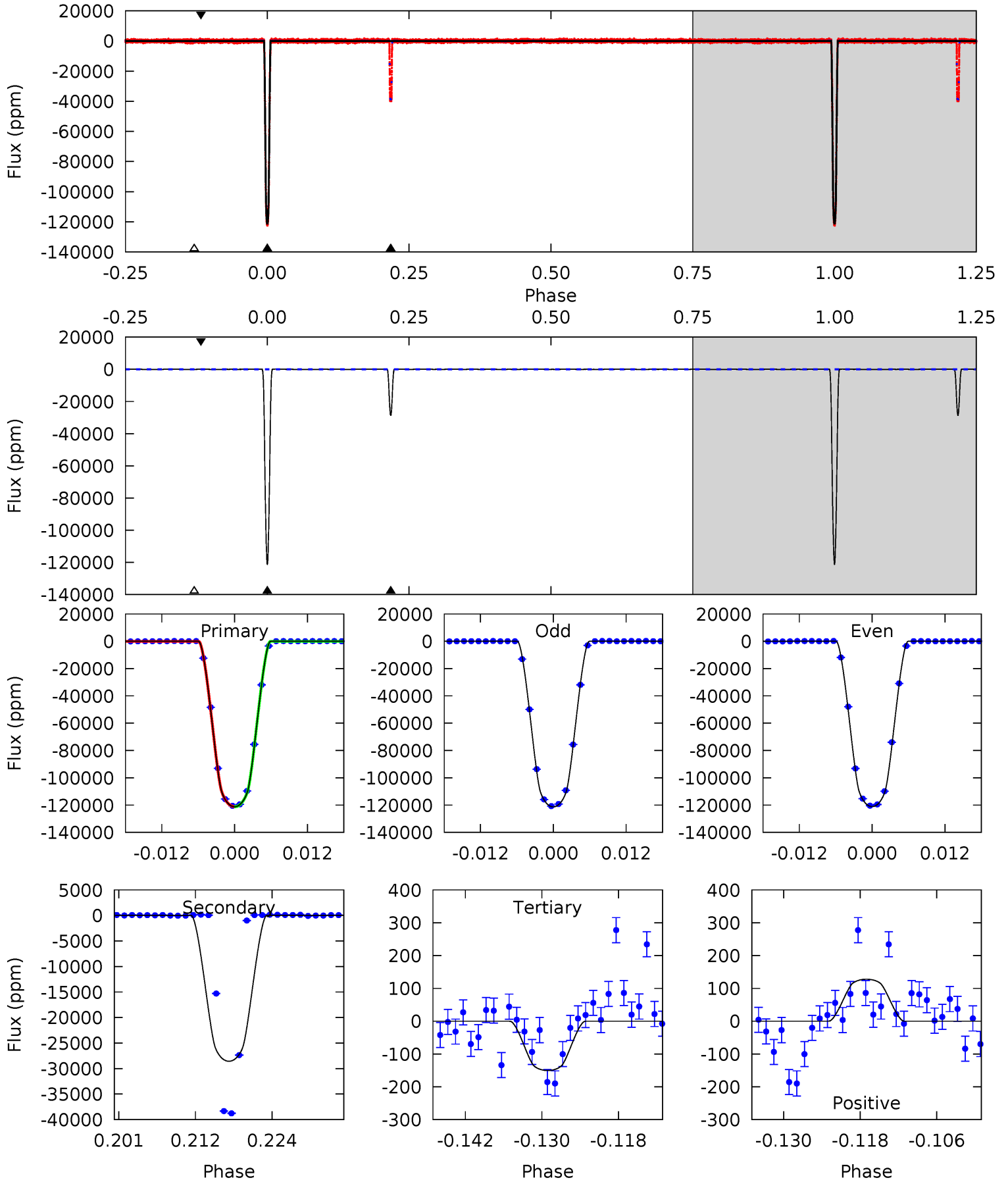




# DV Model-Shift Uniqueness Test

006525209-01, P = 75.131913 Days, E = 109.297791 Days

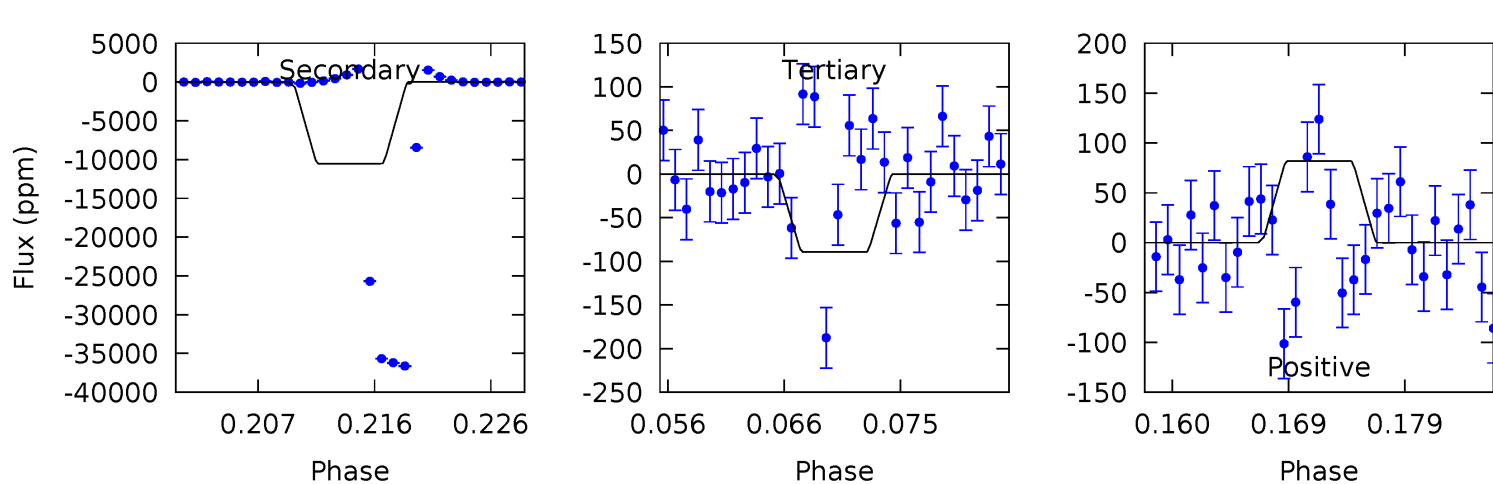
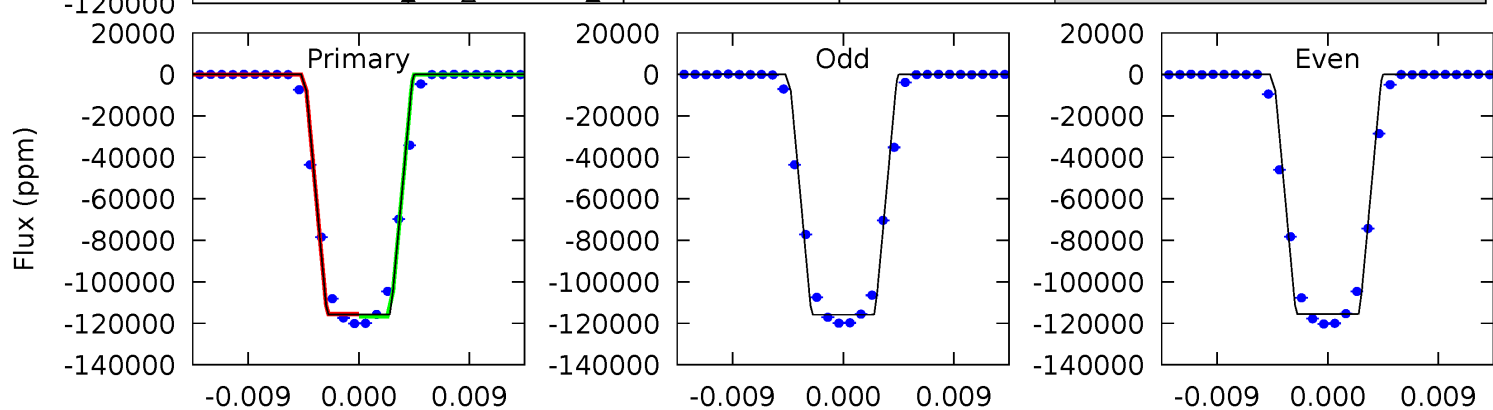
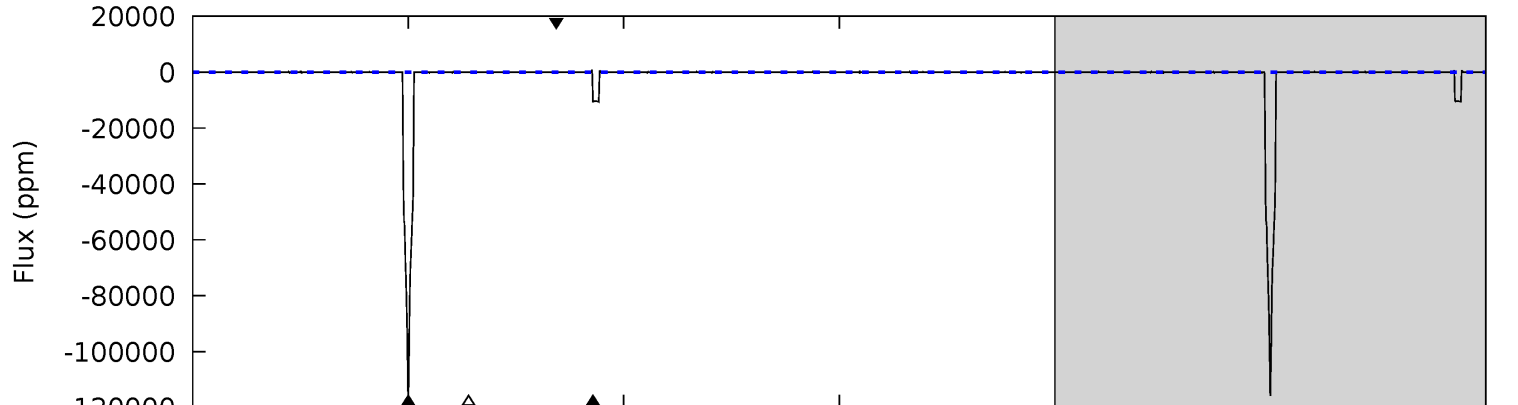
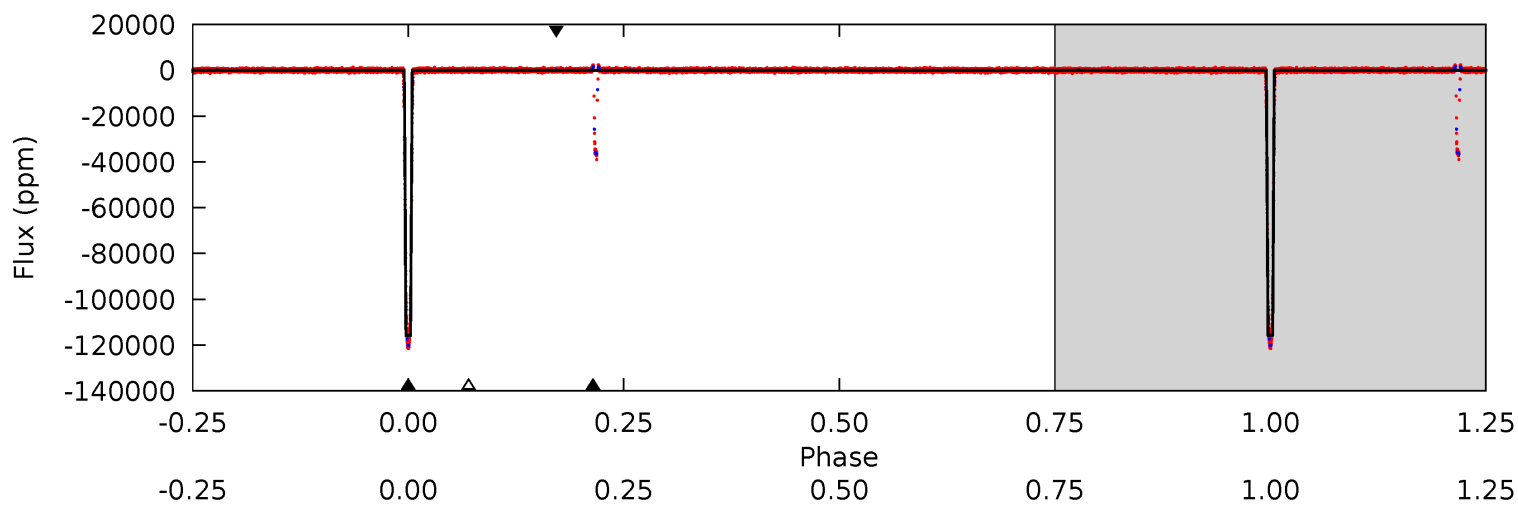
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7774	1832	9.65	8.20	4.99	2.52	3.57	7764	7765	1823	1824	5.77	1.01	0.00	0.51



# Alt Model-Shift Uniqueness Test

006525209-01, P = 75.129851 Days, E = 109.319184 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
5221	474.4	4.02	3.69	5.04	2.60	1.03	5217	5218	470.4	470.7	5.85	1.00	0.01	6.72



### Stellar Parameters For KIC 006525209

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5365^{+160}_{-144}$	$4.586^{+0.052}_{-0.078}$	$-0.460^{+0.300}_{-0.300}$	$0.729^{+0.104}_{-0.064}$	$0.747^{+0.092}_{-0.054}$	$2.714^{+0.645}_{-0.744}$
	+3%/-3%	+1%/-2%	+65%/-65%	+14%/-9%	+12%/-7%	+24%/-27%
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 006525209-01 / KOI 3479.01

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-28566 \pm 16$	$26.40^{+1.94}_{-1.30}$	$505^{+20}_{-19}$	$4126^{+106}_{-89}$	$2333^{+204}_{-249}$
Alt.	$-10521 \pm 22$	$27.49^{+2.07}_{-1.40}$	$504^{+20}_{-19}$	$3426^{+72}_{-62}$	$773^{+73}_{-81}$

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

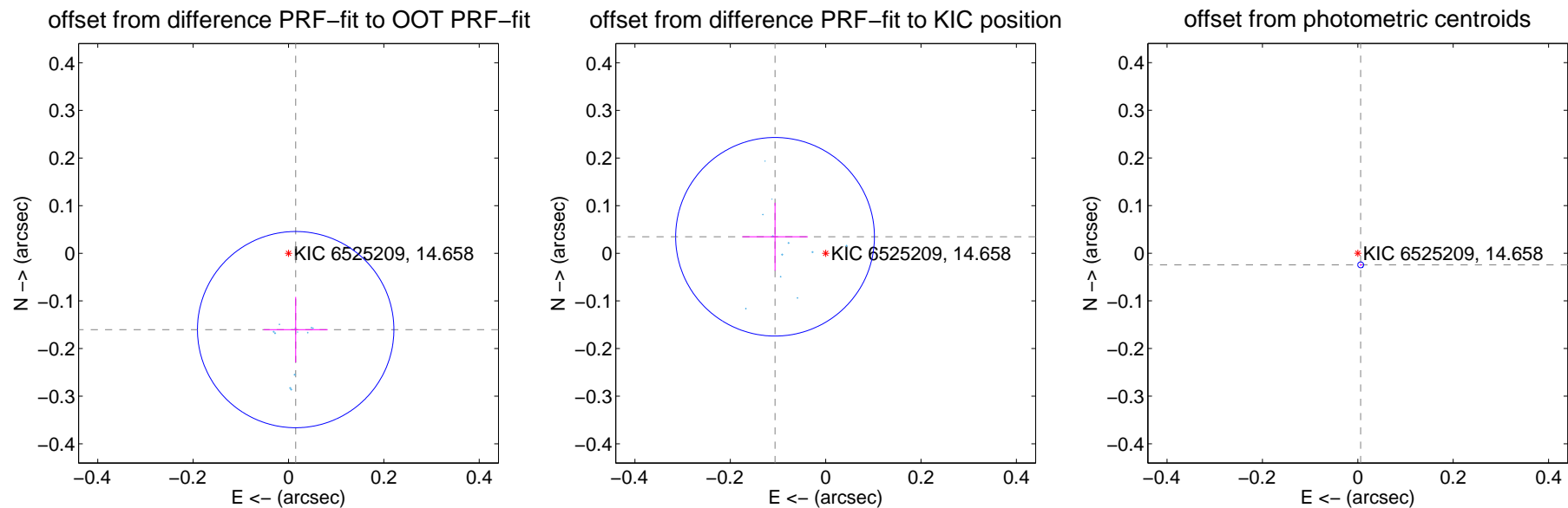
## DV Centroid Data

Supplemental centroid analysis for 006525209-01. Kepler magnitude: 14.66. Transit SNR 2515.30

There are 11 quarters with good PRF difference image offsets

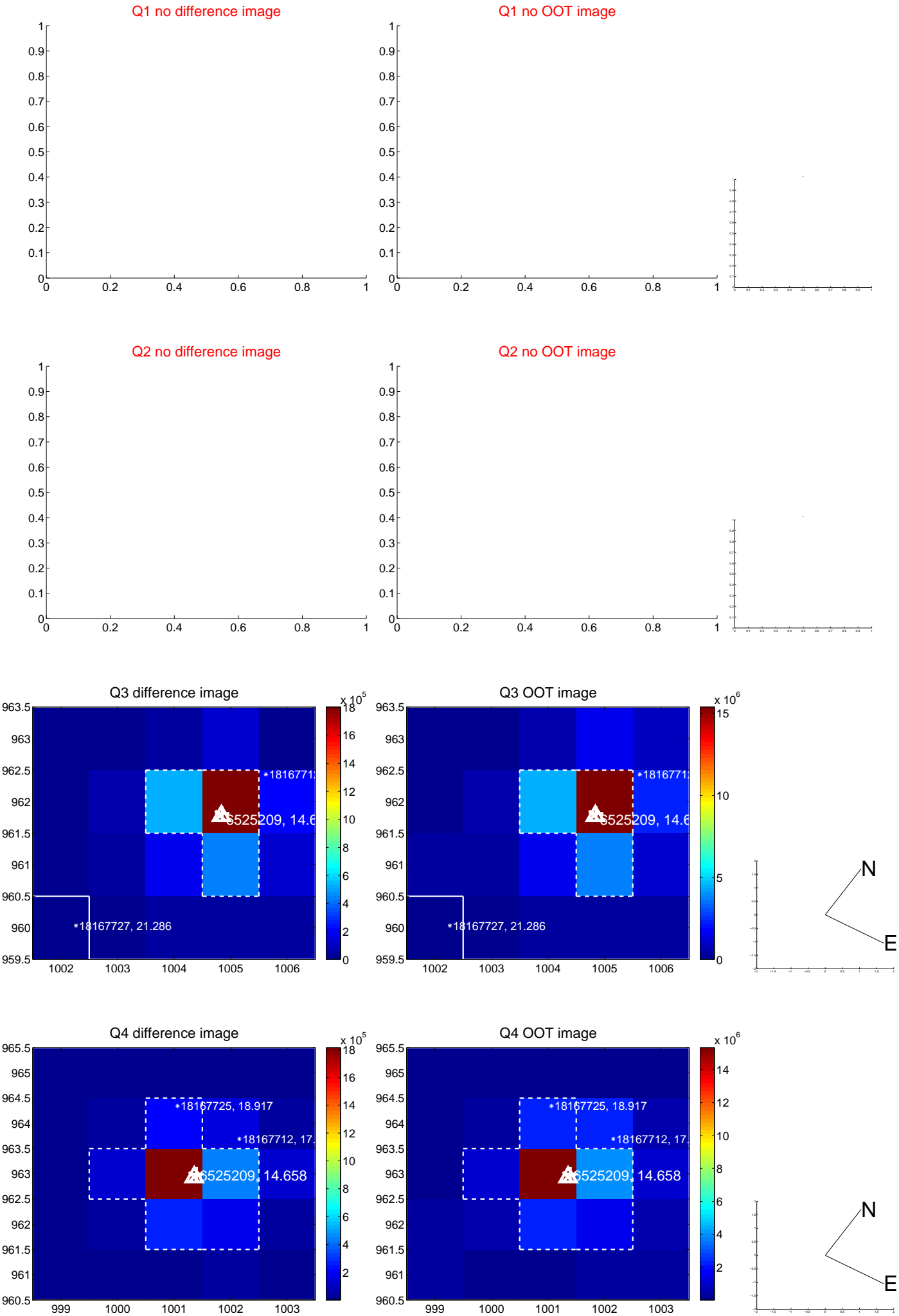
The direct PRF centroid is offset from the target star catalog position by about 0.27 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.161 \pm 0.069$	2.34	$-0.015 \pm 0.067$	$-0.160 \pm 0.069$
PRF-fit source offset from KIC position	$0.112 \pm 0.069$	1.61	$0.106 \pm 0.069$	$0.035 \pm 0.071$
photometric centroid source offset	$0.03 \pm 0.00$	12.16	$-0.01 \pm 0.00$	$-0.02 \pm 0.00$

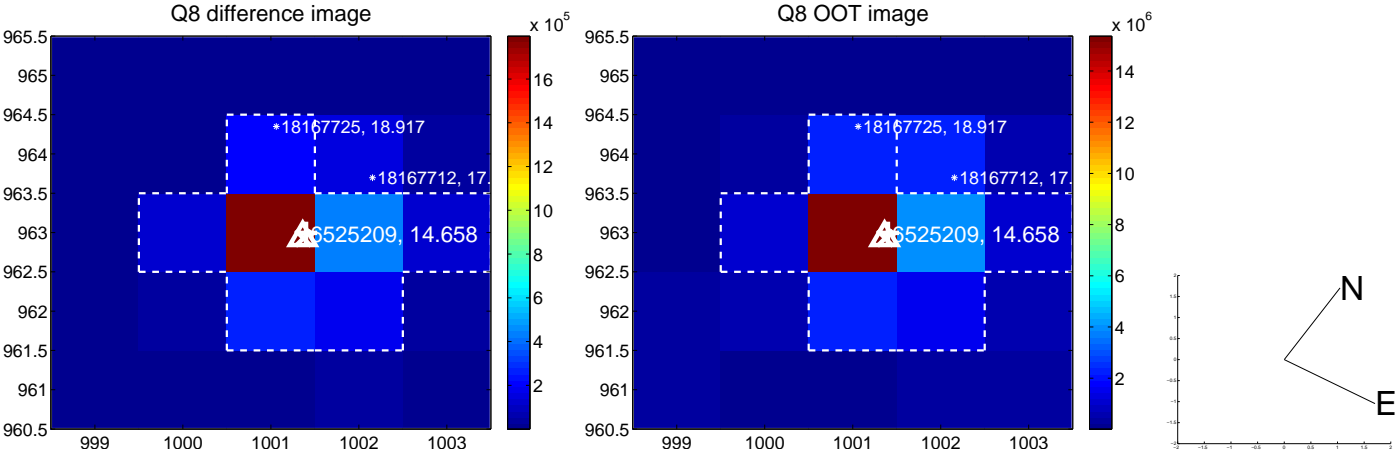
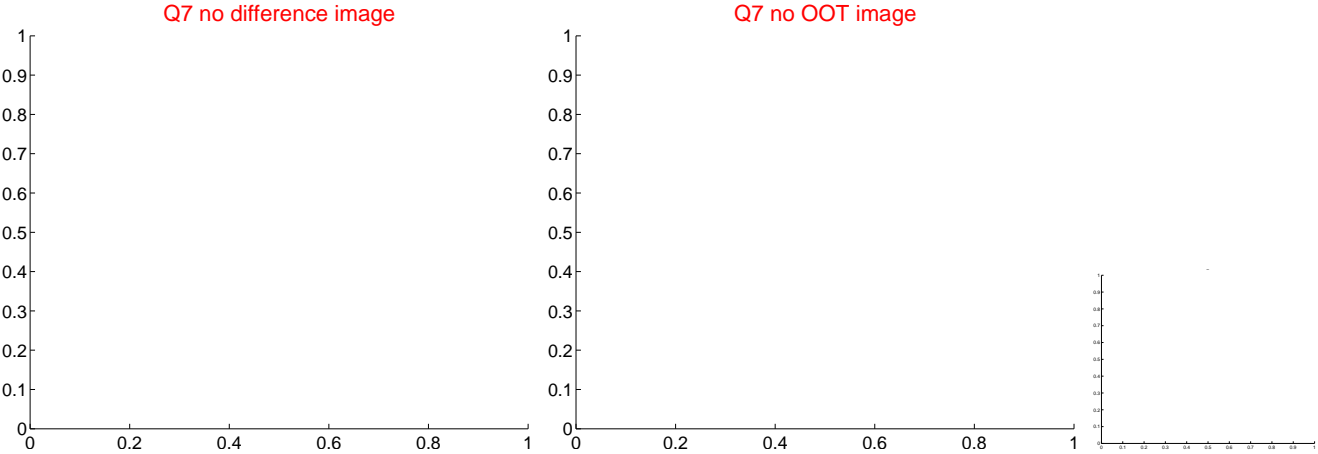
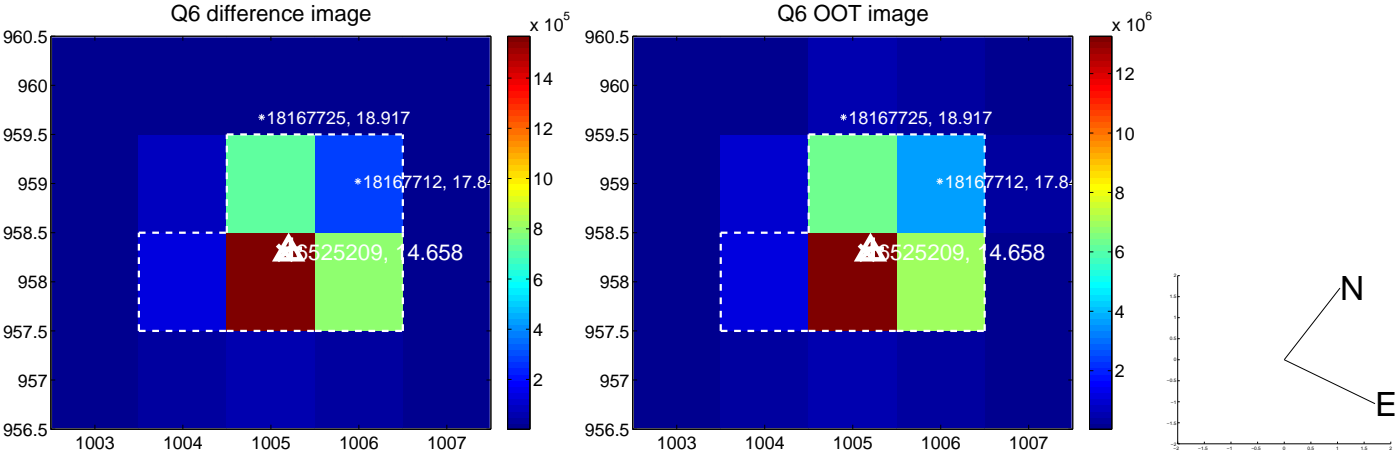
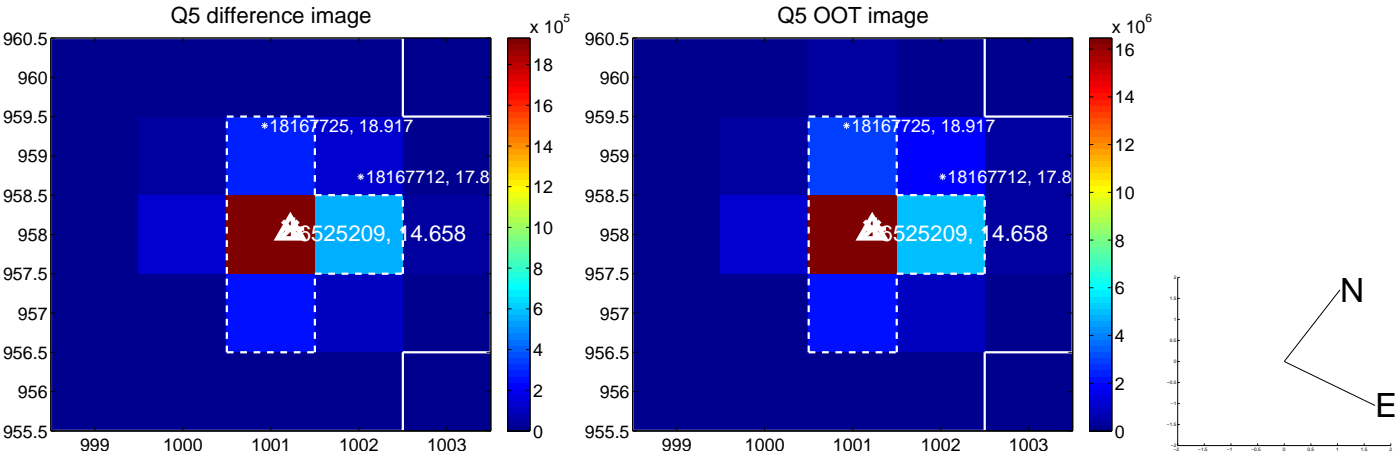


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

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

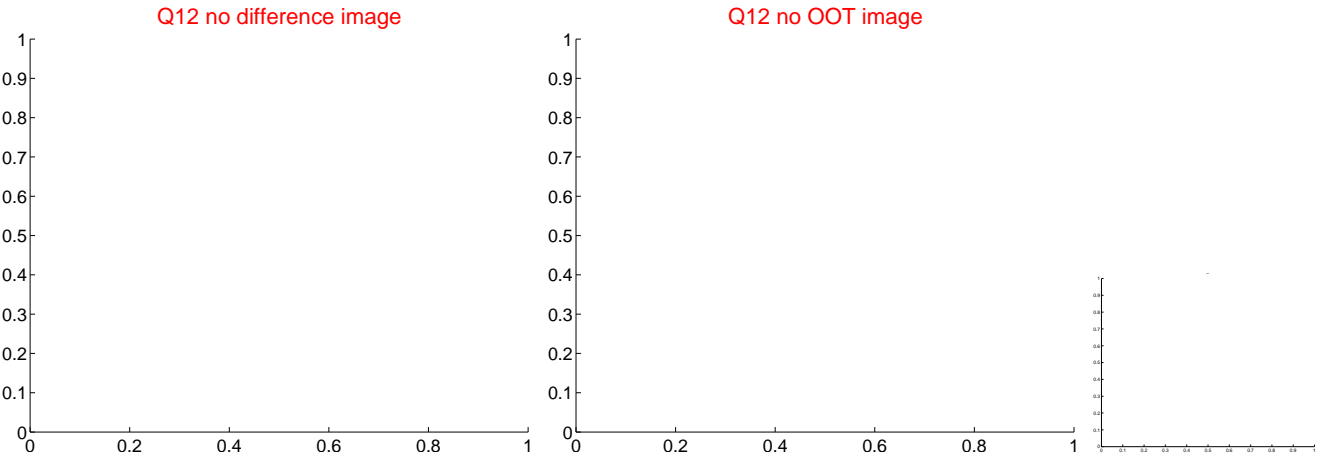
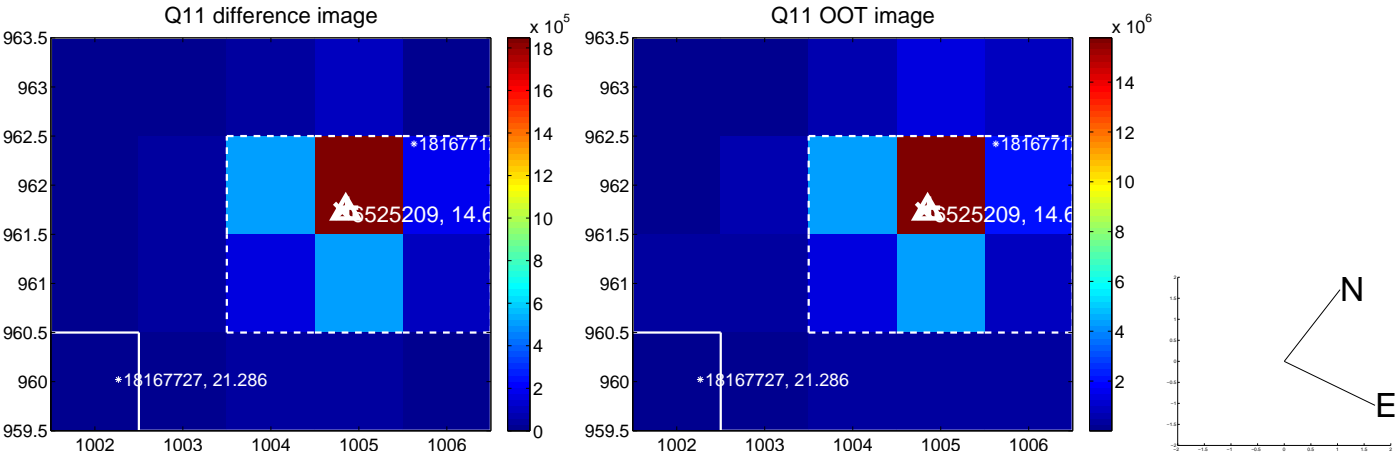
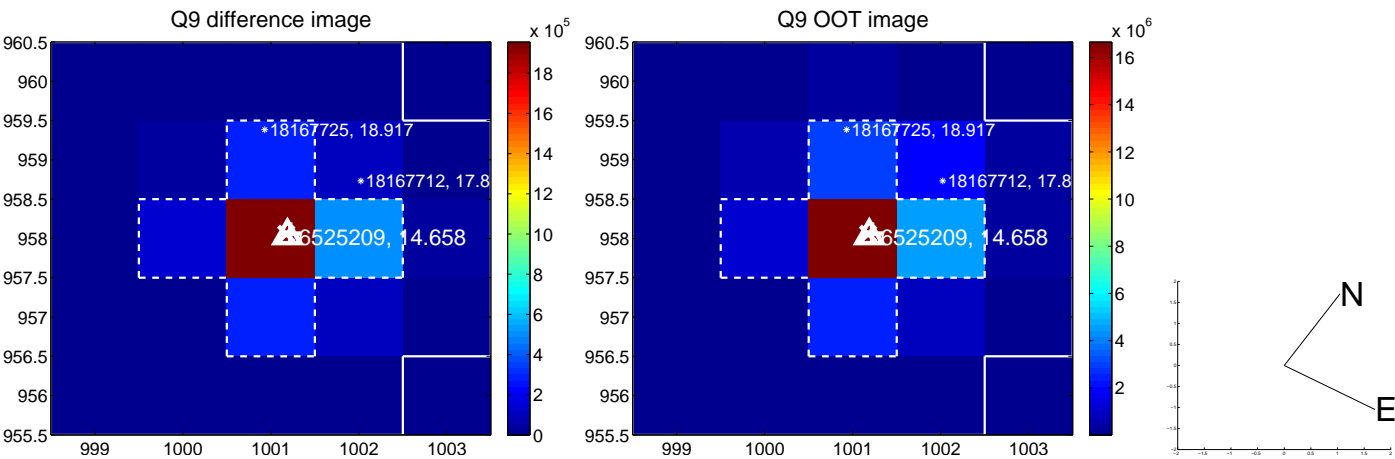


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

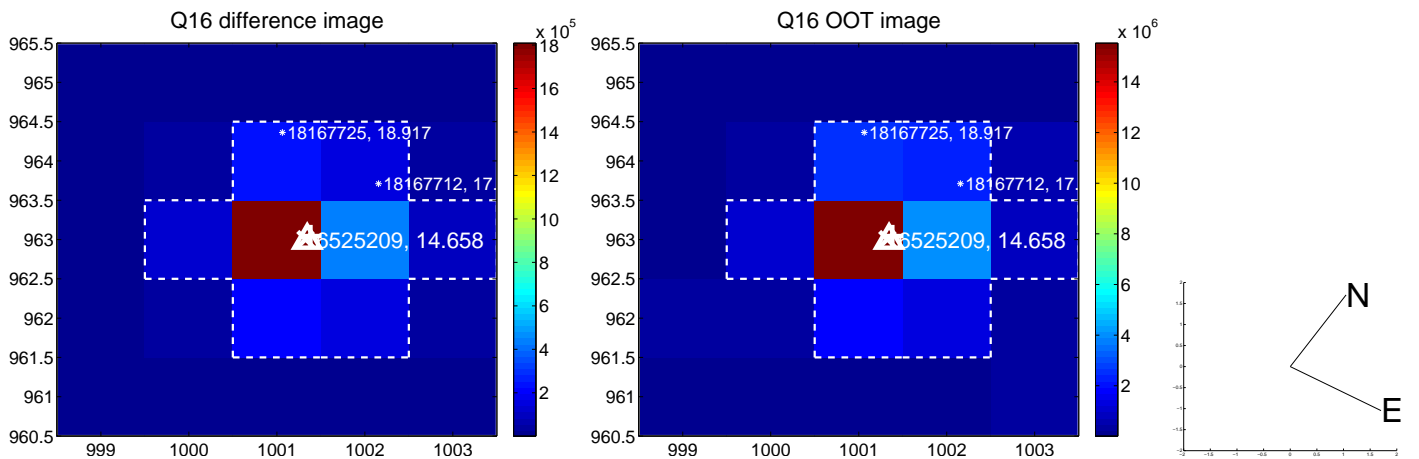
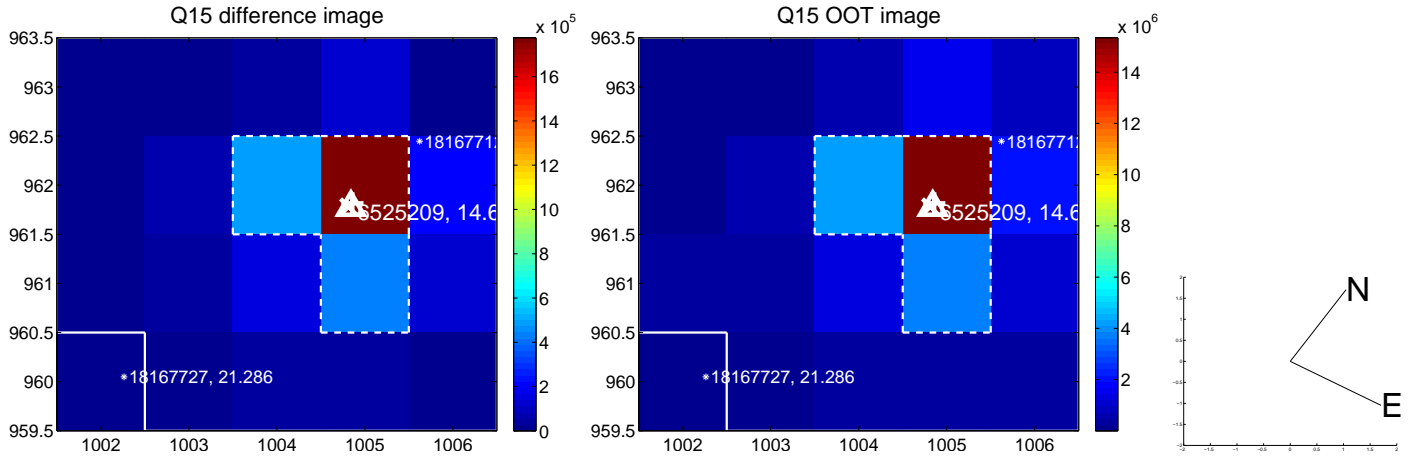
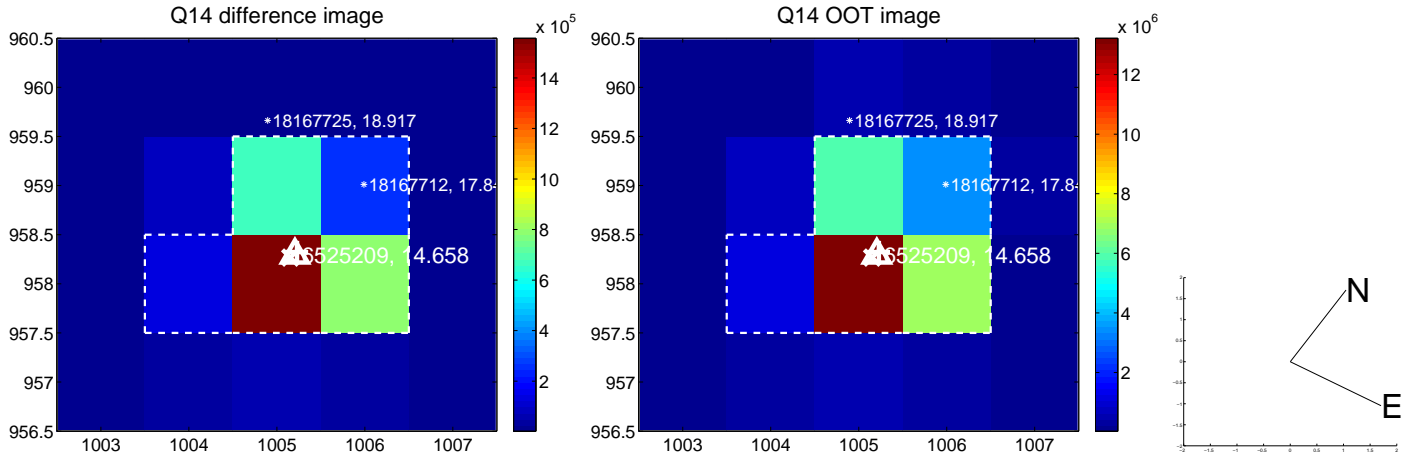
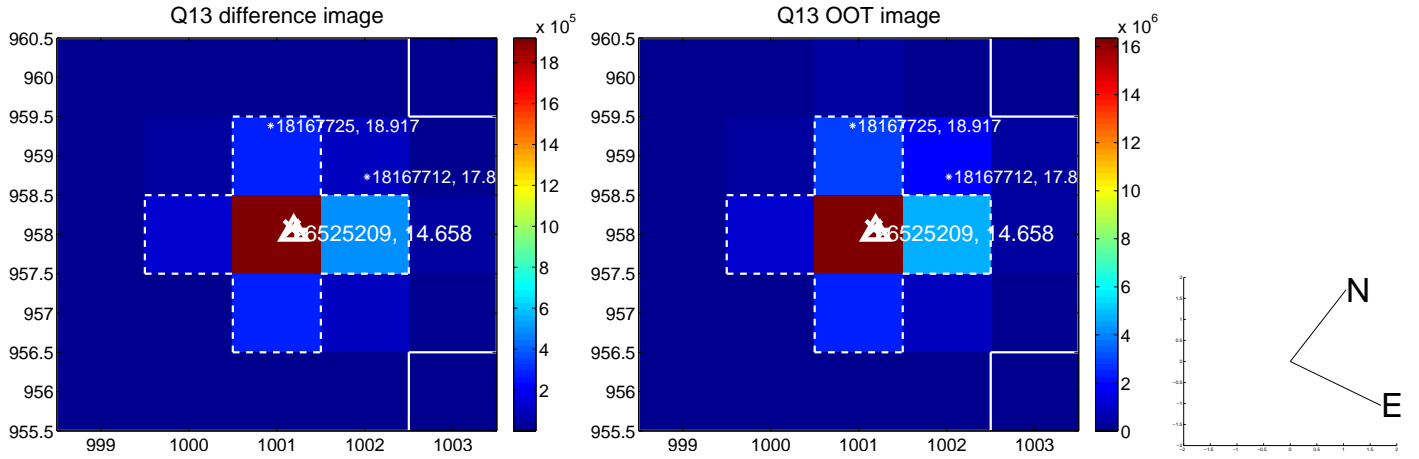




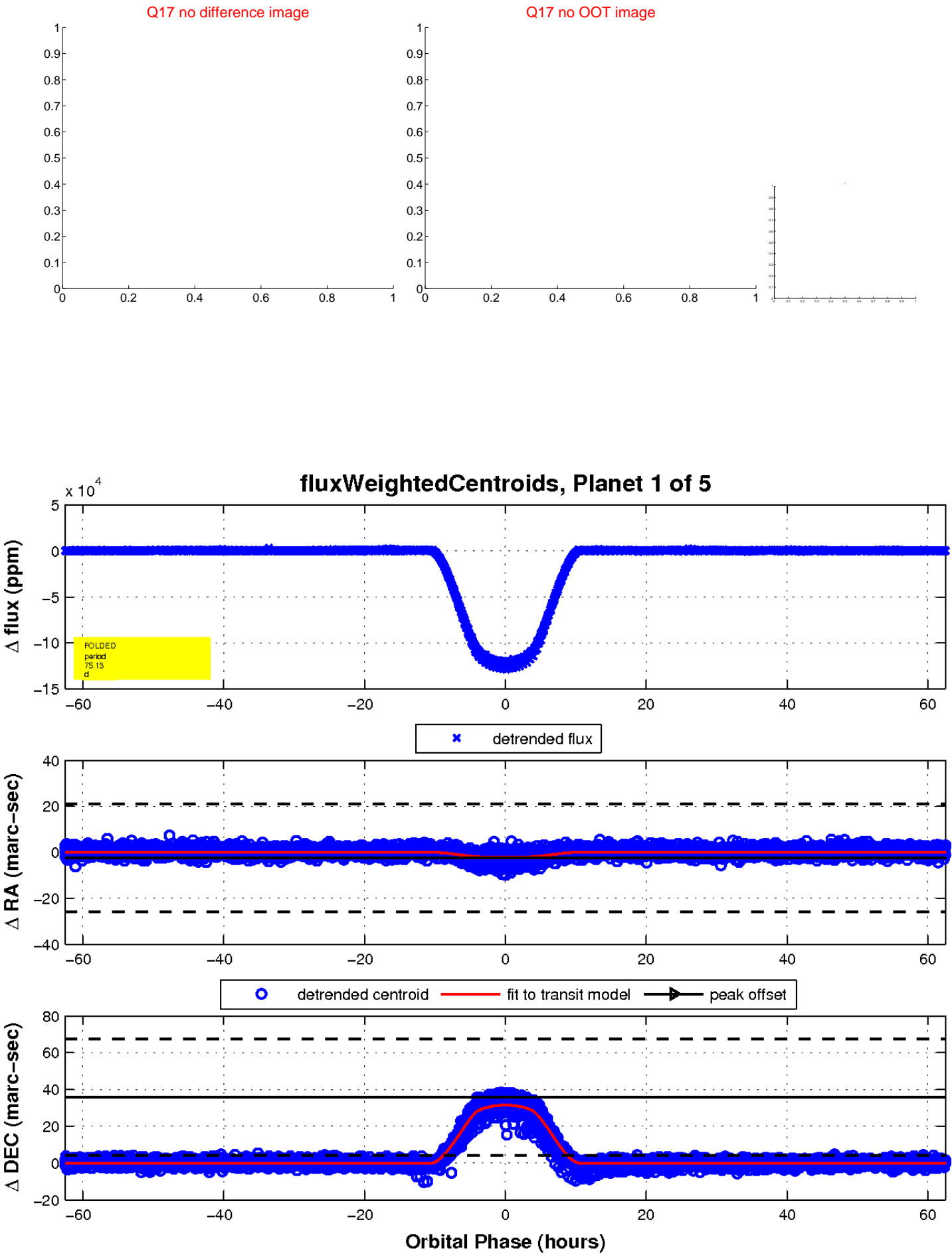
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

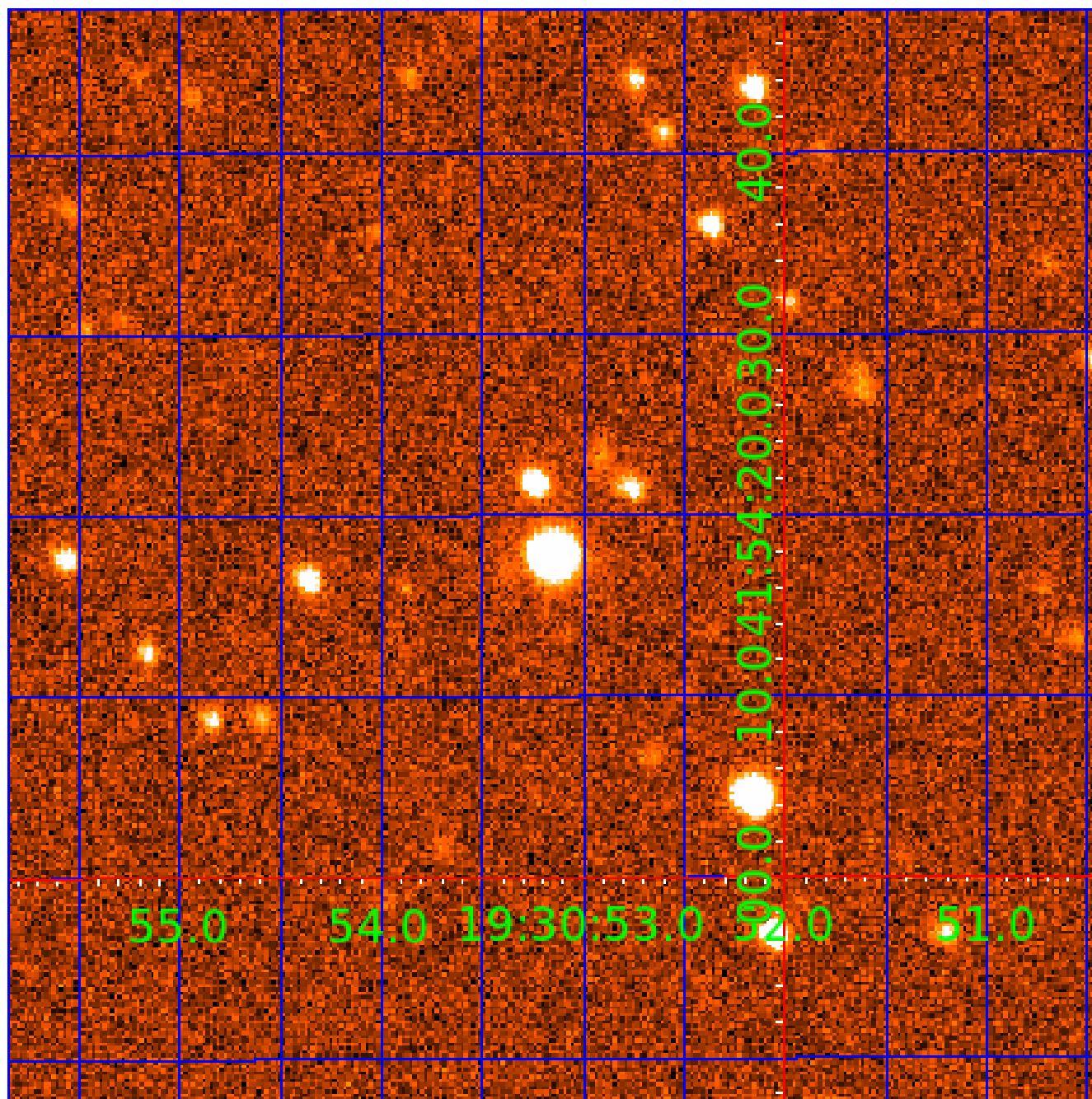


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 006525209

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
006525209-01	OBS	3479.01	75.131913	184.429704	121322.9	20.849	2783.9	2515.3	0.73	5365	26.11	3.94
006525209-02	OBS	No	75.131959	200.780609	39668.5	9.040	1015.7	697.0	0.73	5365	14.89	3.94
006525209-03	OBS	No	446.061223	201.700012	773.5	7.758	23.6	8.9	0.73	5365	2.21	0.37
006525209-04	OBS	3479.02	1.710283	131.619614	139.9	2.900	16.4	18.2	0.73	5365	1.05	611.27
006525209-05	OBS	No	324.201148	165.189190	687.8	11.997	10.5	8.7	0.73	5365	2.07	0.56

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006525209-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_DV—MOD_SEC_ALT—HAS_SEC_TCE
006525209-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE
006525209-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_TER_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
006525209-04	OBS	FP	0.00	0	0	1	1	CENT_UNRESOLVED_OFFSET—HALO_GHOST—EPHEM_MATCH
006525209-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_MEAS

**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.

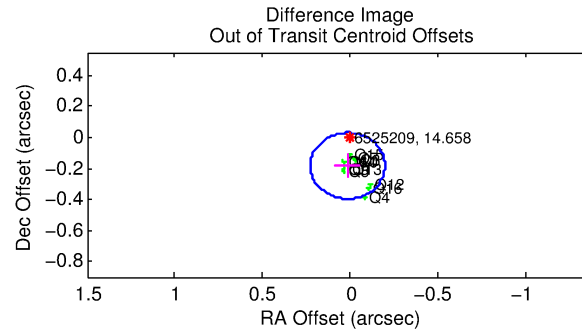
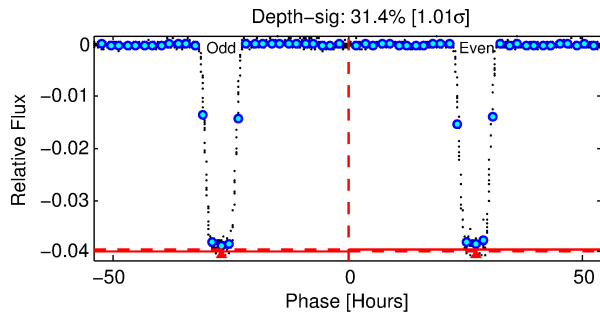
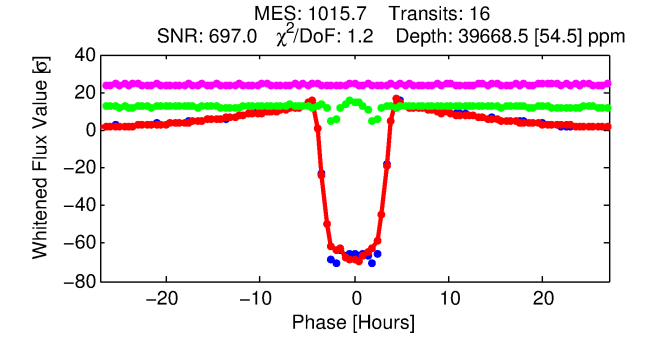
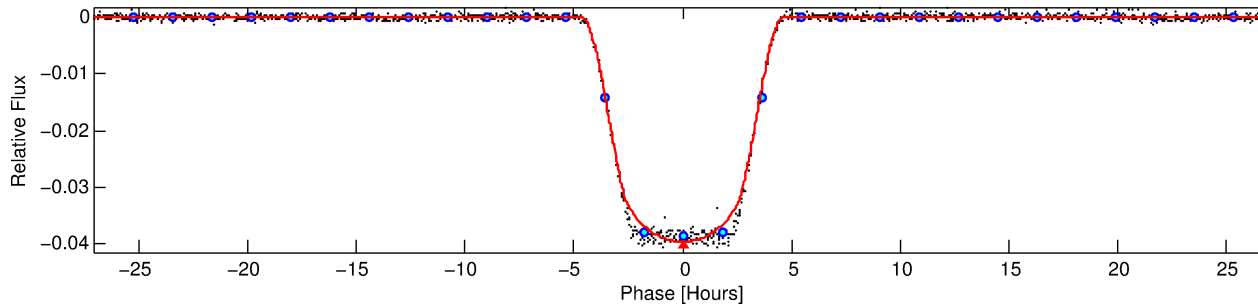
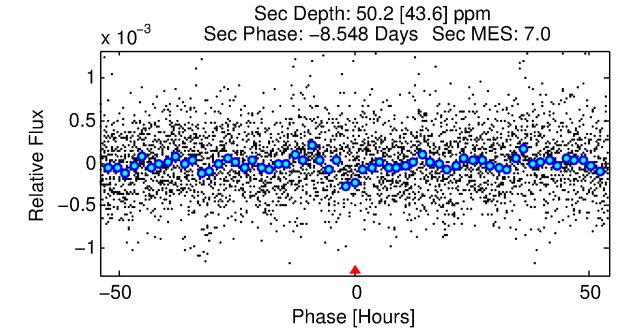
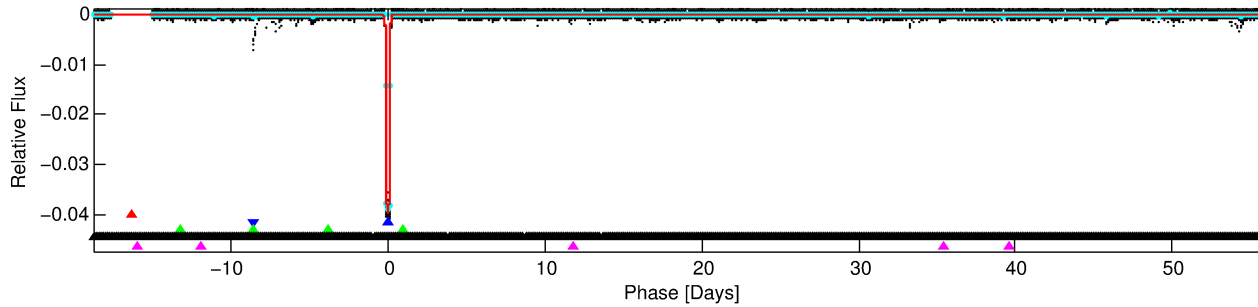
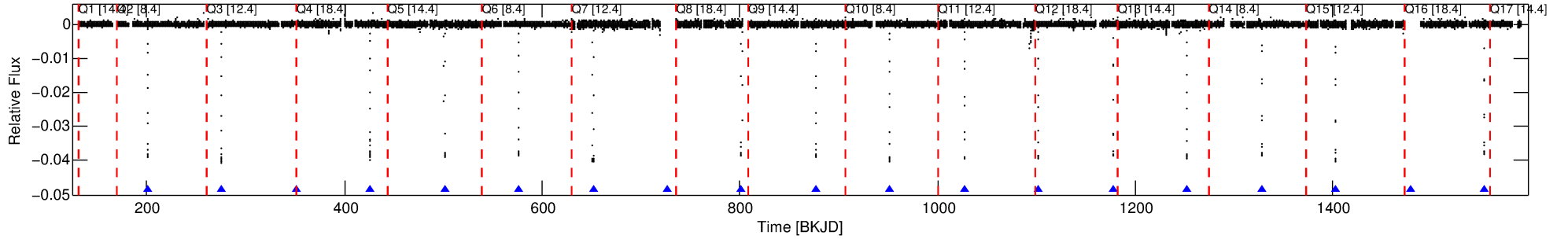
## Ephemeris Match Information For 006525209-02

No Significant Match Found

# DV One-Page Summary

KIC: 6525209 Candidate: 2 of 5 Period: 75.132 d  
KOI: K03479 Corr: No Ephemeris Match

Kp: 14.66 R\*: 0.73 Rs Teff: 5365.0 K Logg: 4.59 Fe/H: -0.460



## DV Fit Results:

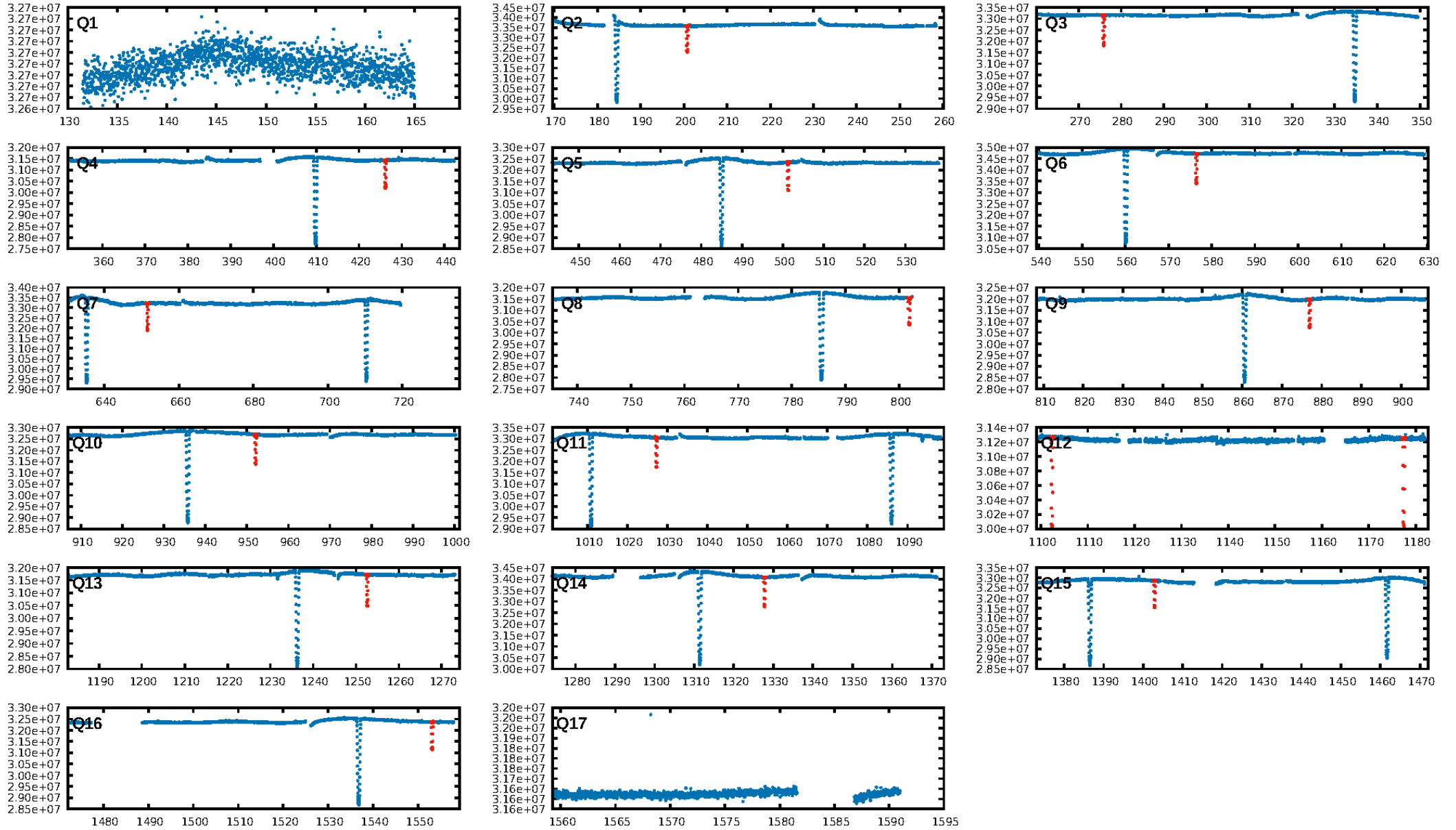
Period = 75.13196 [0.00002] d  
Epoch = 200.7806 [0.0002] BKJD  
Rp/R\* = 0.1872 [0.0002]  
a/R\* = 67.80 [0.21]  
b = 0.52 [0.00]  
Seff = 3.94 [0.76]  
Teq = 359 [17] K  
Rp = 14.89 [2.12] Re  
a = 0.3163 [0.0355] AU  
Ag = 12.46 [10.98] [1.04σ]  
Teffp = 1044 [229] K [2.99σ]

## DV Diagnostic Results:

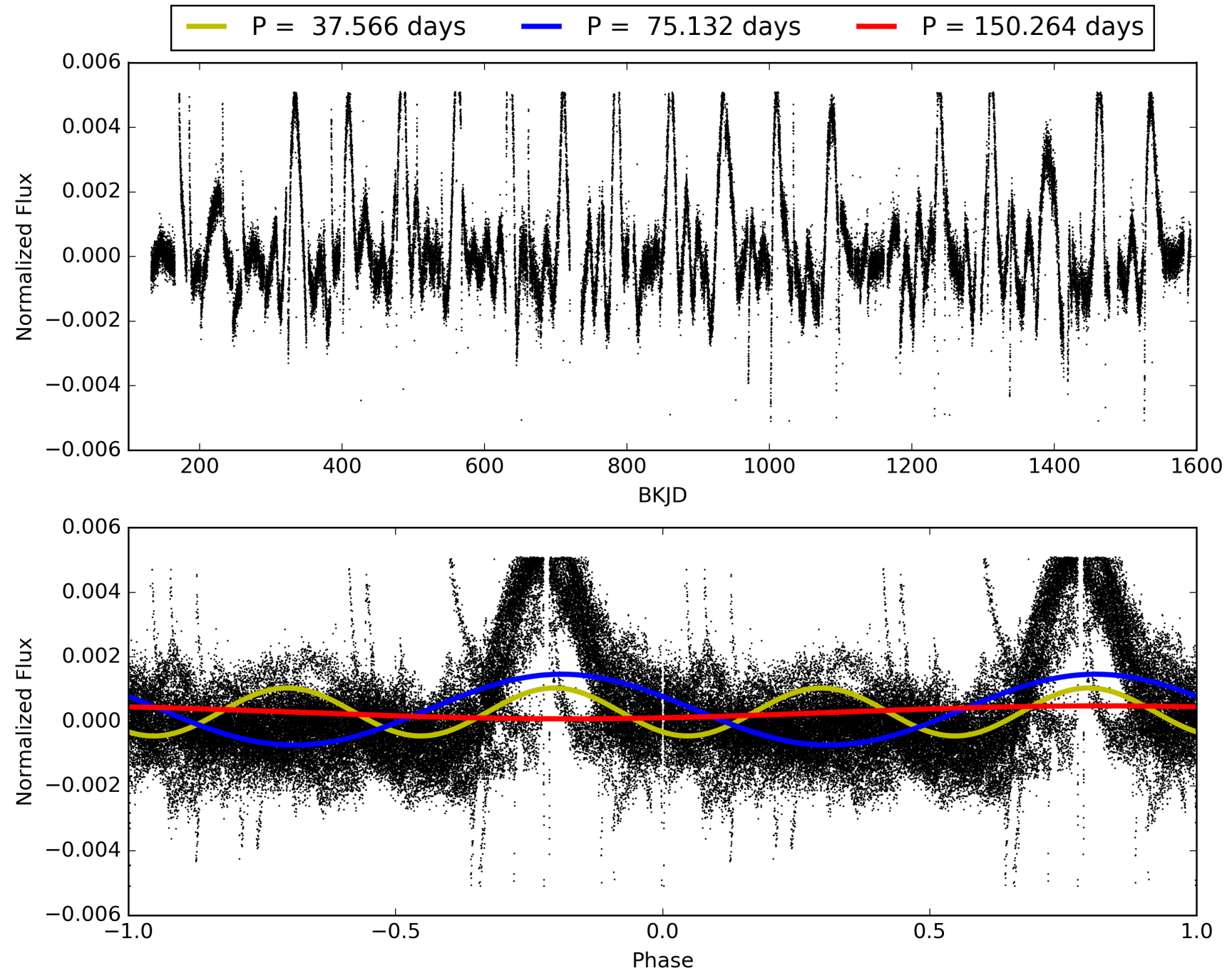
ShortPeriod-sig: 0.0% [0.00σ]  
LongPeriod-sig: 100.0% [397.92σ]  
ModelChiSquare2-sig: 0.0%  
ModelChiSquareGof-sig: 0.5%  
Bootstrap-pfa: 0.00e+00  
RollingBand-fgt: 1.00 [16/16]  
GhostDiagnostic-chr: 3.144  
Centroid-sig: 0.0%  
Centroid-so: 0.017 arcsec [2.06σ]  
OotOffset-rm: 0.183 arcsec [2.57σ]  
KicOffset-rm: 0.159 arcsec [2.15σ]  
OotOffset-st: 3/3/3 [12]  
KicOffset-st: 3/3/3 [12]  
DiffImageQuality-fgm: 1.00 [12/12]  
DiffImageOverlap-fno: 0.08 [1/12]



# TCE 006525209-02, PDC Light Curves

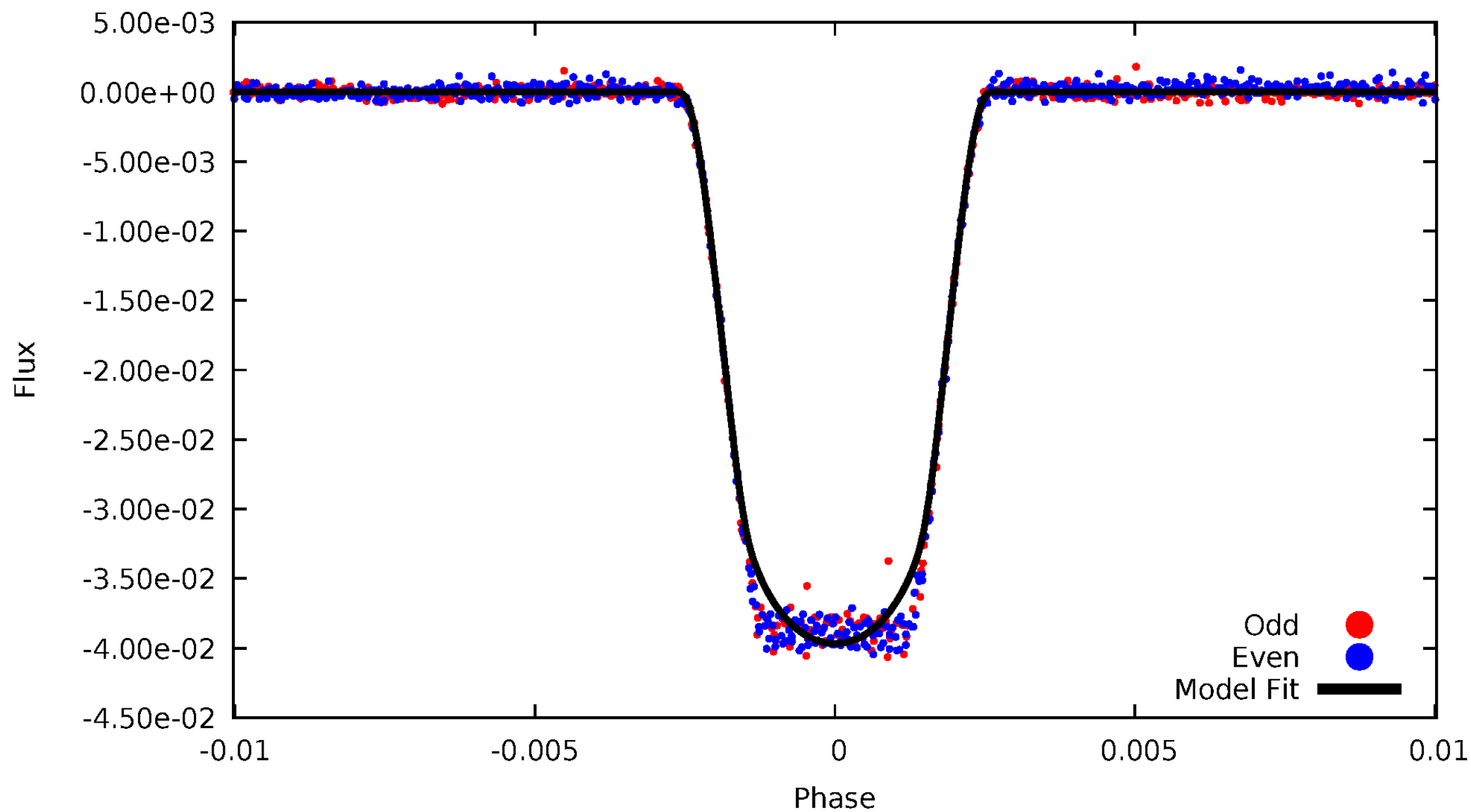


TCE 006525209-02



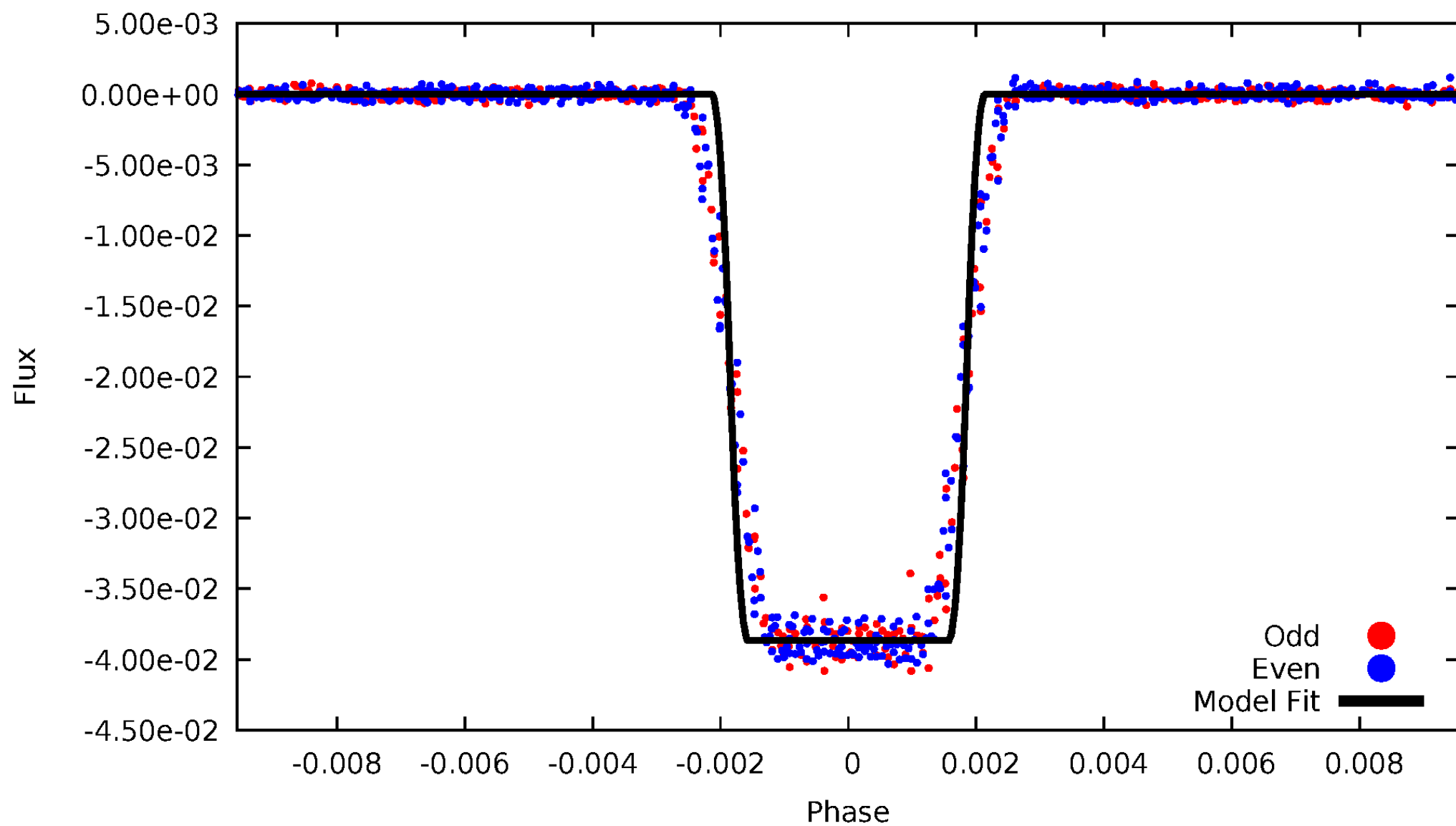
# DV Odd/Even

TCE 006525209-02



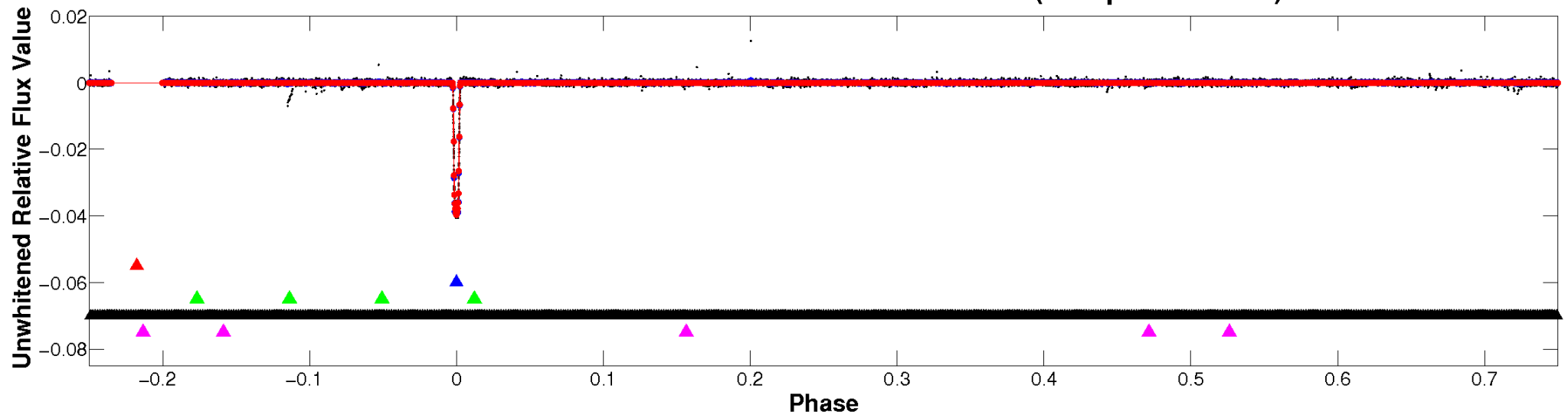
# ALT Odd/Even

TCE 006525209-02

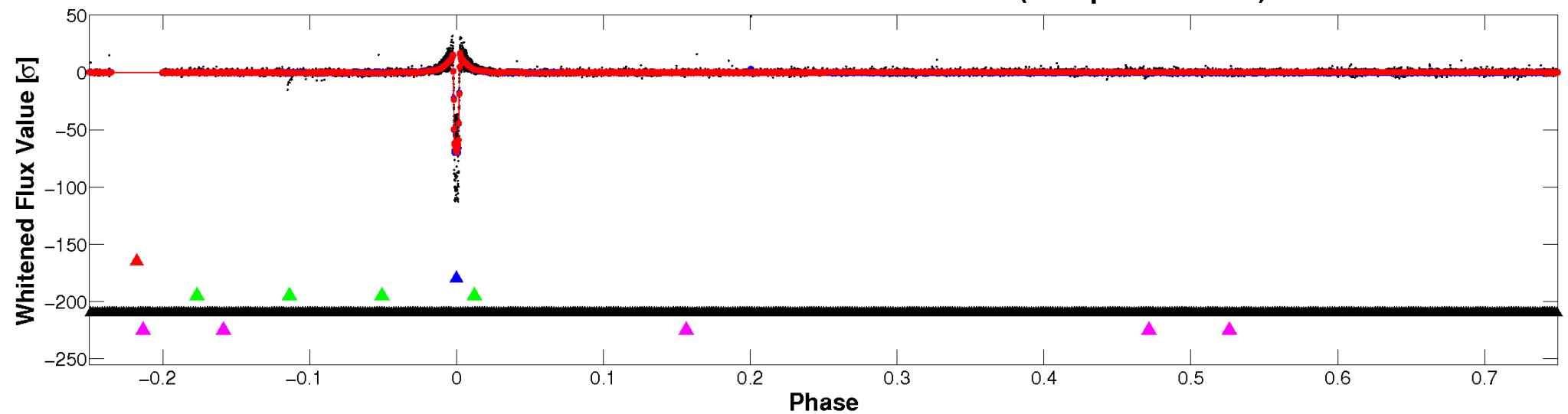


# Non-Whitened Vs. Whitened Light Curve

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

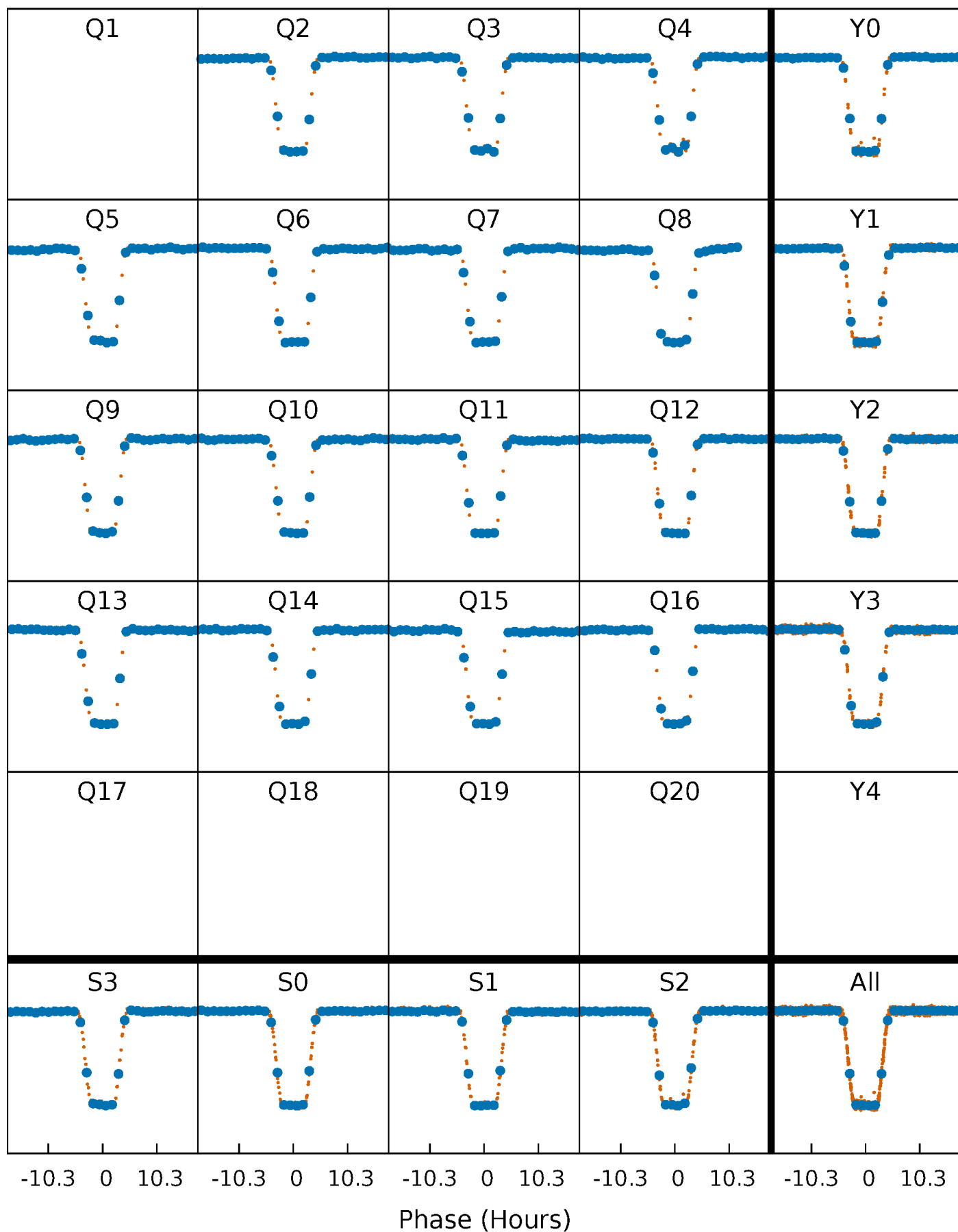


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

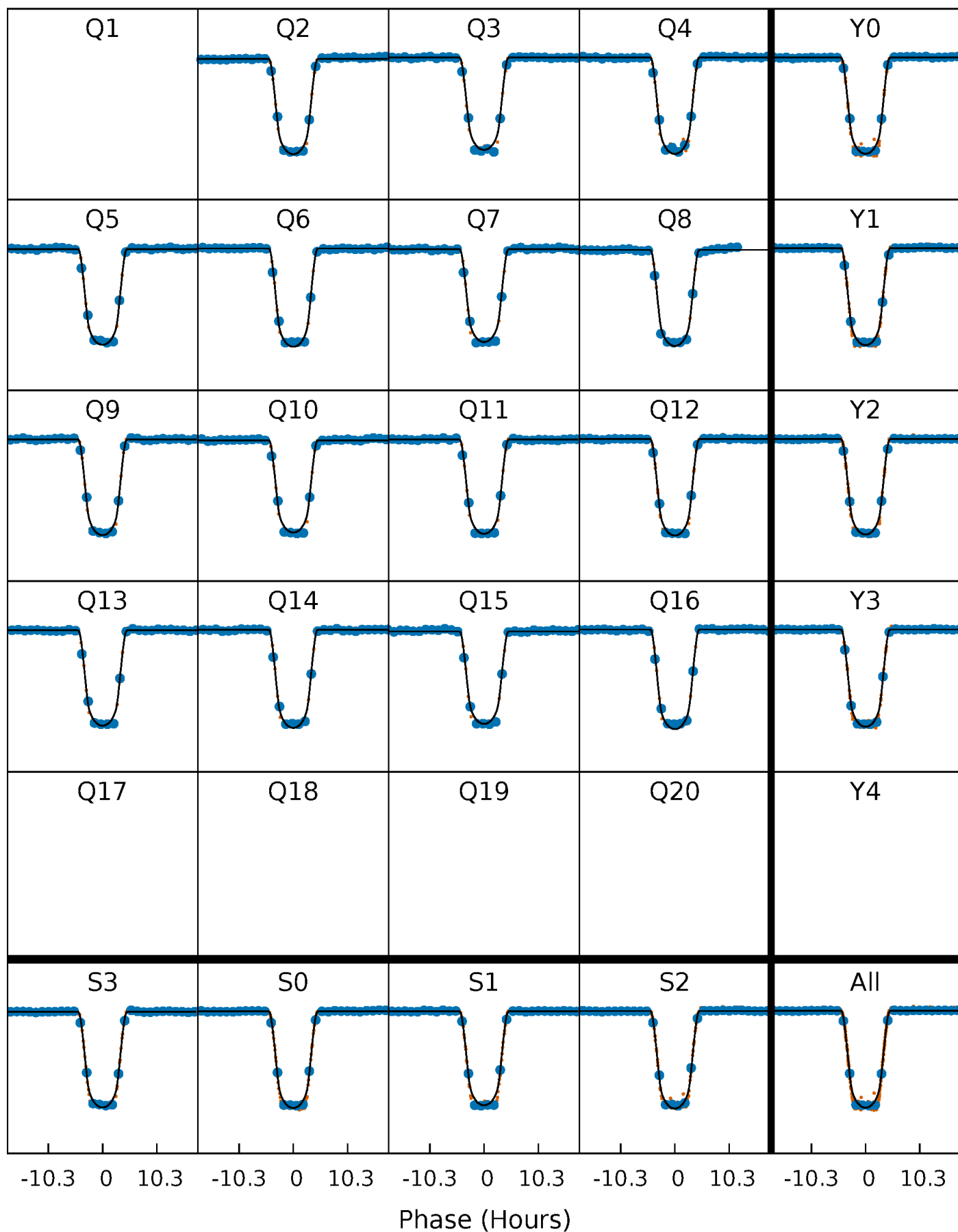
TCE 006525209-02 P= 75.131959 Days  $T_0=200.780609$  (BKJD)





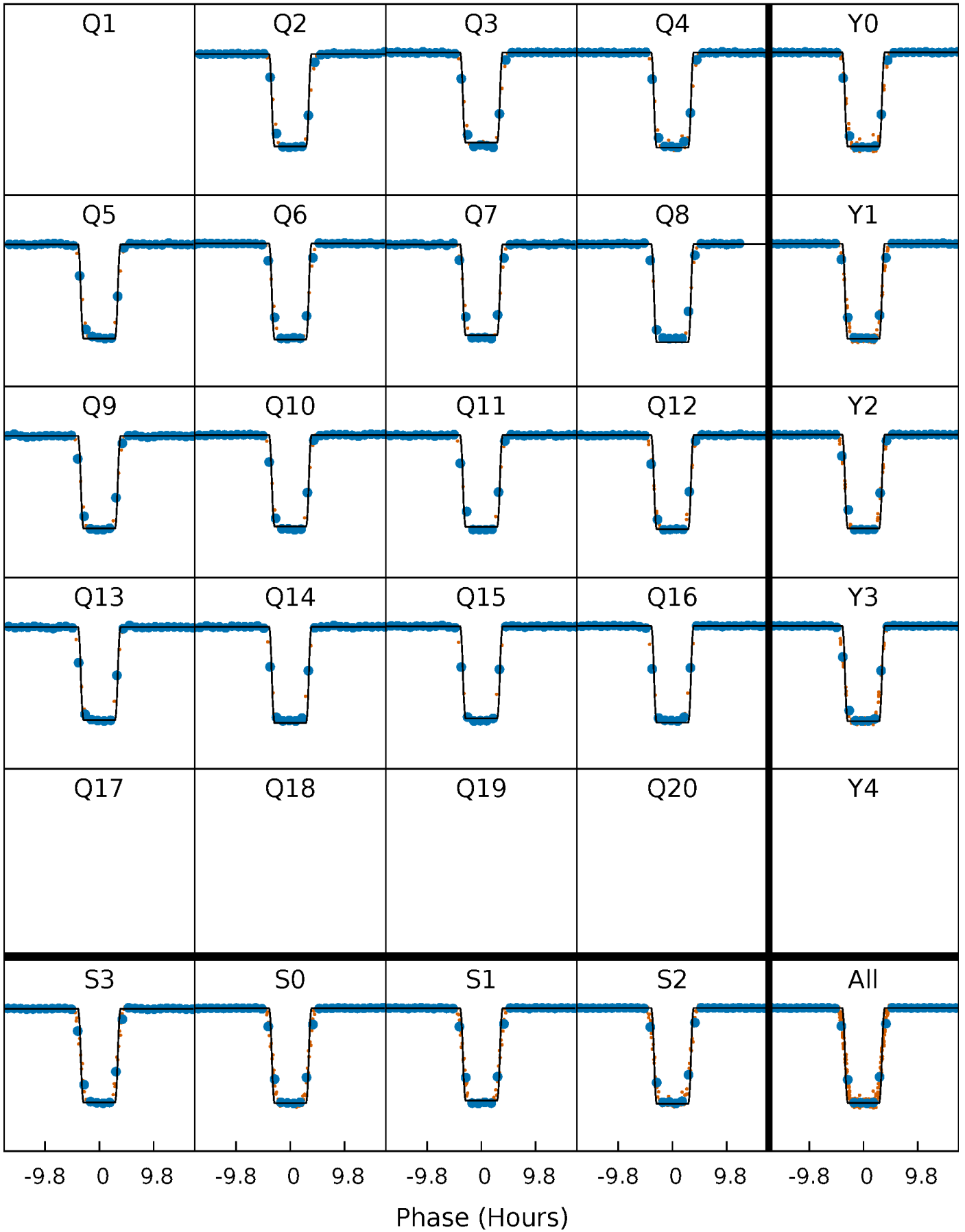
# DV Quarter-Phased Transit Curves

TCE 006525209-02     $P = 75.131959$  Days     $T_0 = 200.780609$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

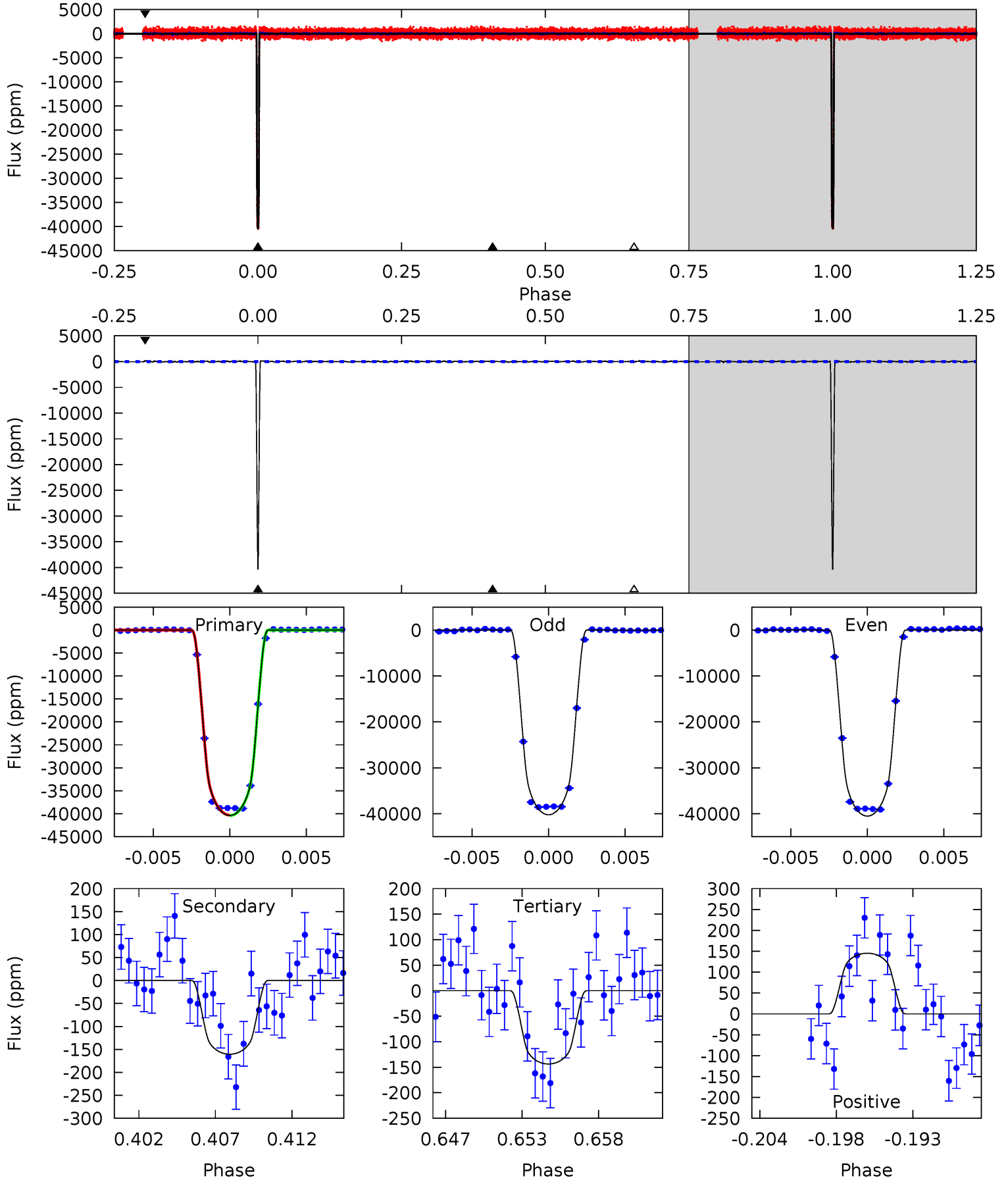
TCE 006525209-02 P= 75.132965 Days  $T_0=200.771734$  (BKJD)



# DV Model-Shift Uniqueness Test

006525209-02, P = 75.131959 Days, E = 125.648650 Days

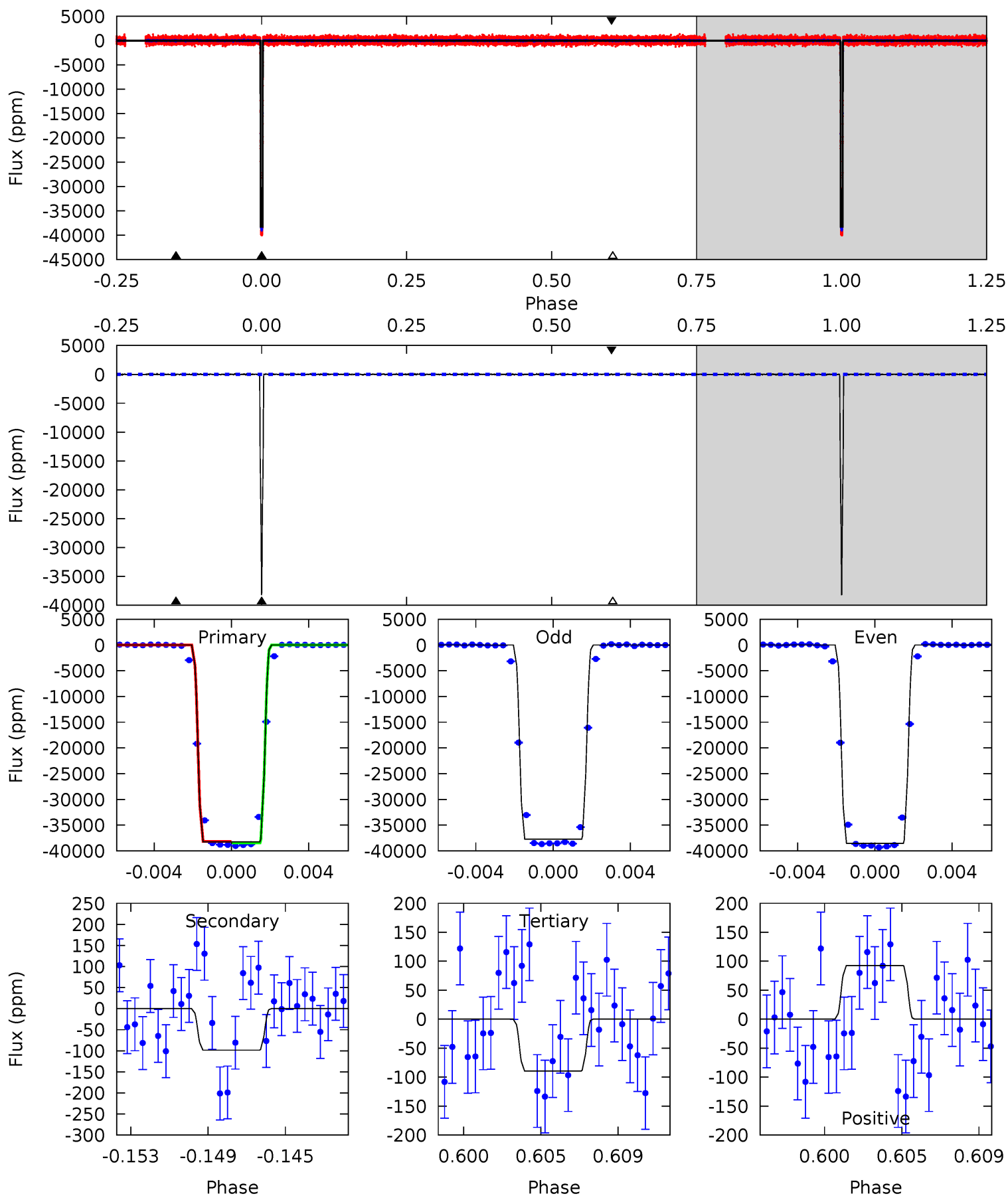
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1921	7.64	6.83	6.91	5.15	2.79	2.17	1915	1915	0.80	0.72	6.76	1.00	0.00	2.50



# Alt Model-Shift Uniqueness Test

006525209-02, P = 75.132965 Days, E = 125.638769 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
1615	4.16	3.77	3.91	5.19	2.86	1.01	1611	1611	0.39	0.25	16.6	1.00	0.00	5.38



### Stellar Parameters For KIC 006525209

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5365^{+160}_{-144}$	$4.586^{+0.052}_{-0.078}$	$-0.460^{+0.300}_{-0.300}$	$0.729^{+0.104}_{-0.064}$	$0.747^{+0.092}_{-0.054}$	$2.714^{+0.645}_{-0.744}$
	+3%/-3%	+1%/-2%	+65%/-65%	+14%/-9%	+12%/-7%	+24%/-27%
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 006525209-02 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-160 \pm 21$	$15.06^{+1.18}_{-0.79}$	$506^{+21}_{-20}$	$2306^{+46}_{-53}$	$39^{+7}_{-6}$
Alt.	$-99 \pm 24$	$15.71^{+1.32}_{-0.77}$	$505^{+21}_{-18}$	$2159^{+60}_{-71}$	$21^{+6}_{-6}$

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

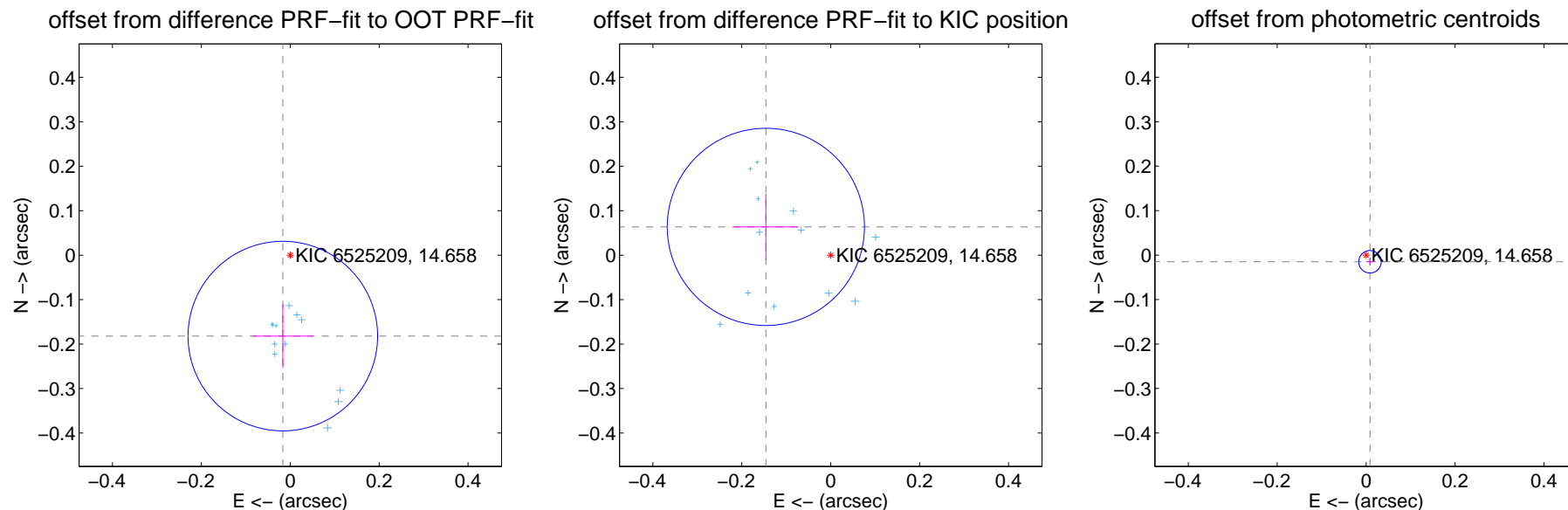
## DV Centroid Data

Supplemental centroid analysis for 006525209-02. Kepler magnitude: 14.66. Transit SNR 697.05

There are 12 quarters with good PRF difference image offsets

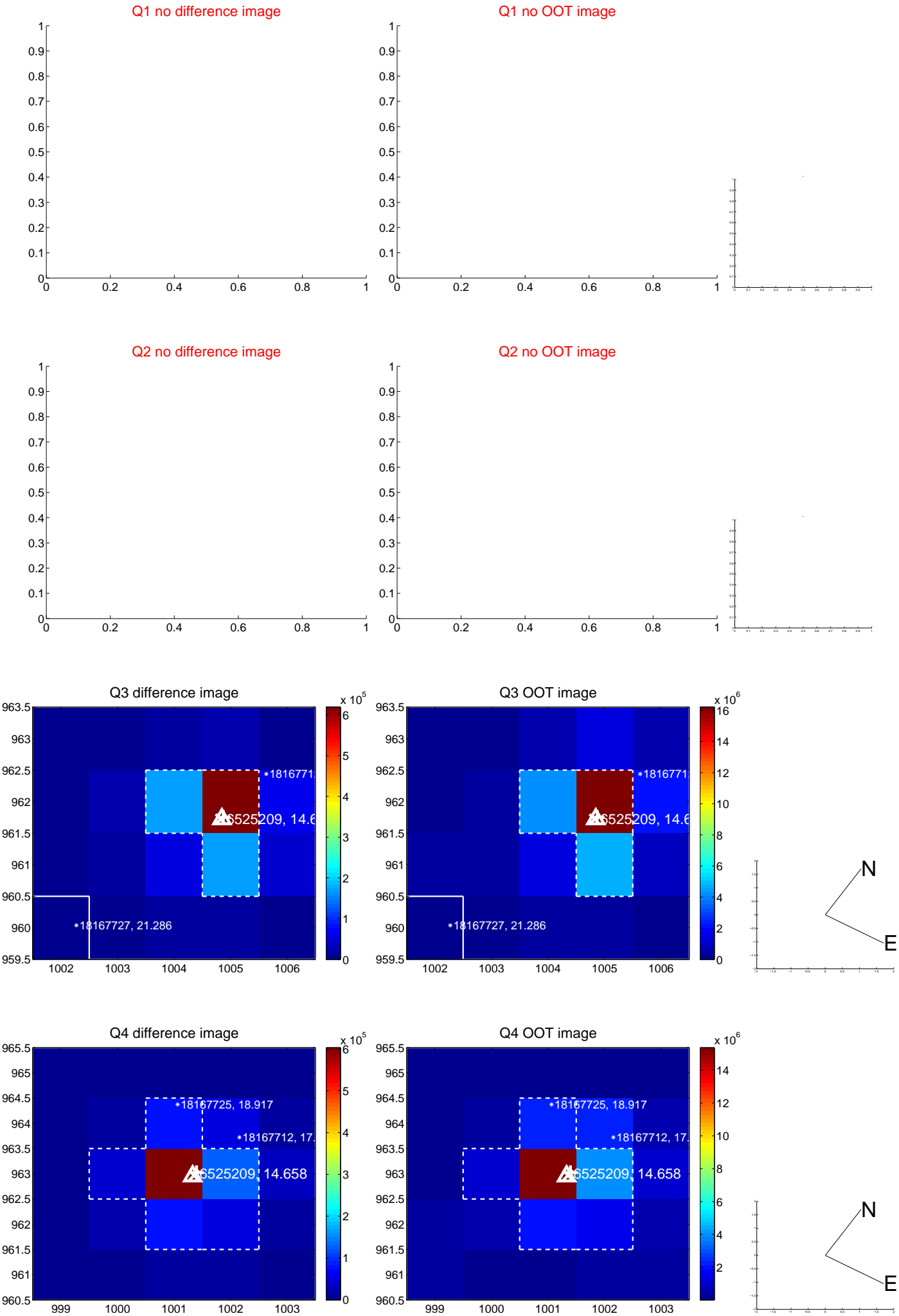
The direct PRF centroid is offset from the target star catalog position by about 0.27 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.183 \pm 0.071$	2.57	$0.017 \pm 0.069$	$-0.182 \pm 0.072$
PRF-fit source offset from KIC position	$0.159 \pm 0.074$	2.15	$0.146 \pm 0.073$	$0.064 \pm 0.075$
photometric centroid source offset	$0.02 \pm 0.01$	2.06	$-0.01 \pm 0.01$	$-0.02 \pm 0.01$

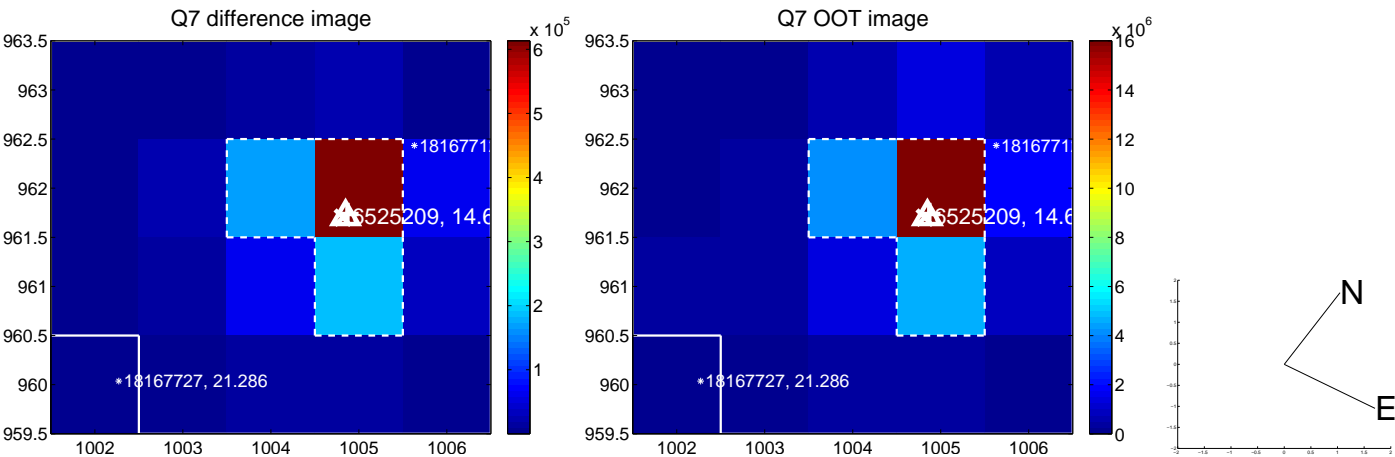
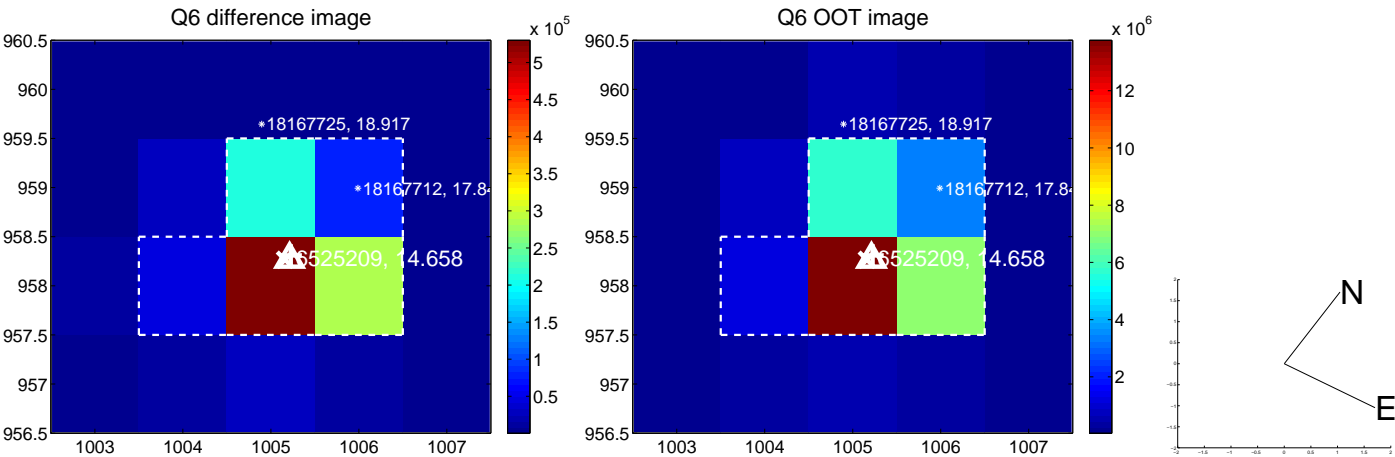
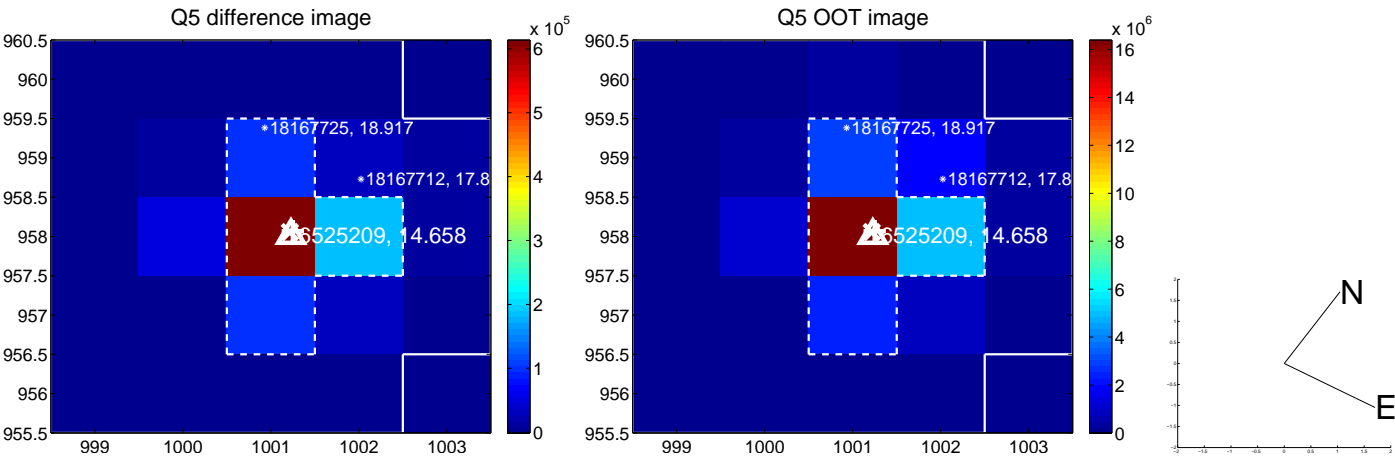


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

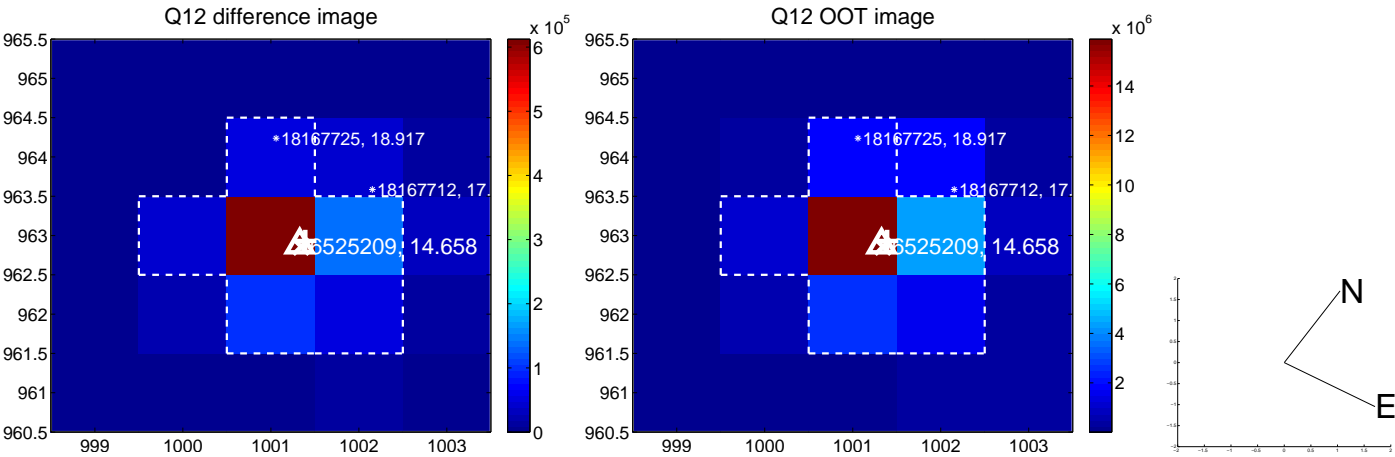
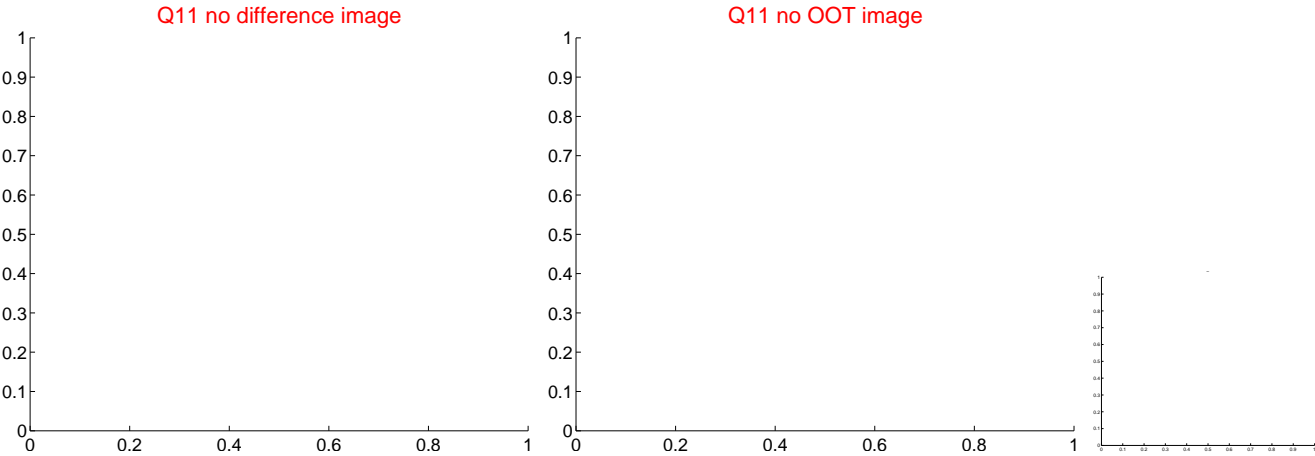
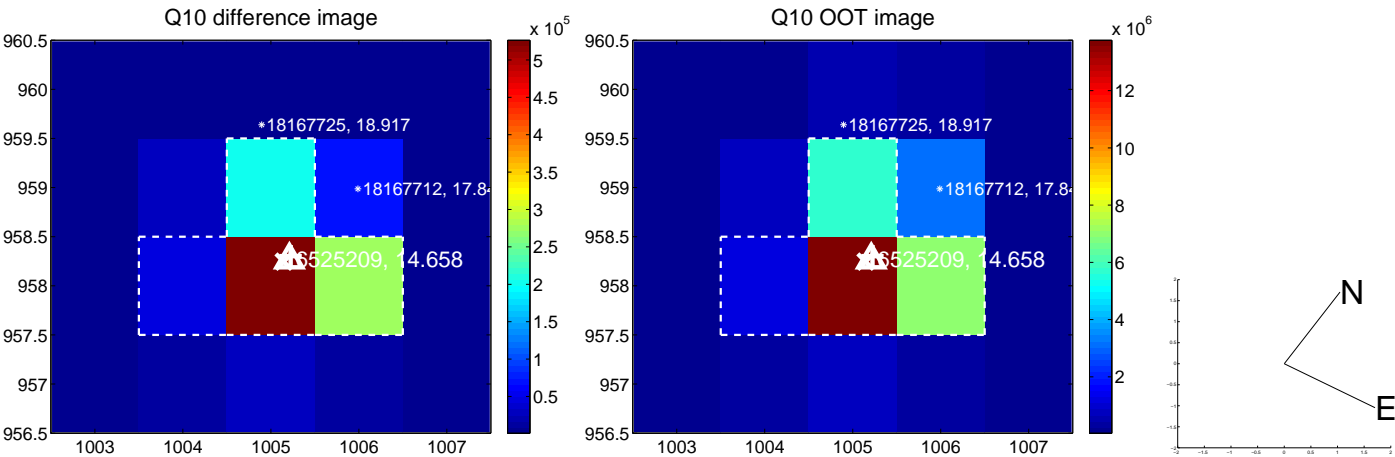
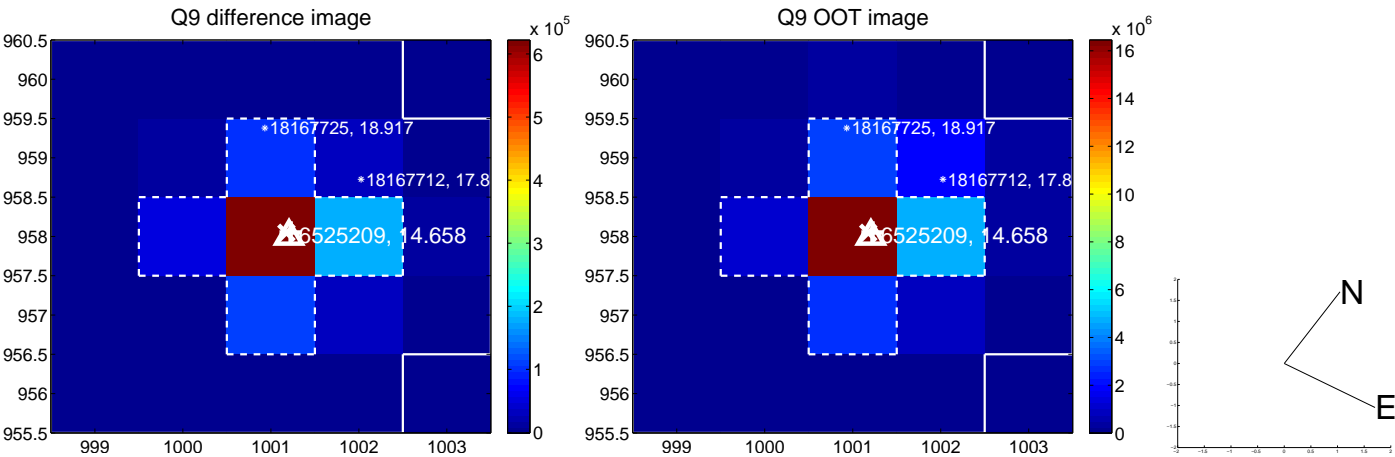


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

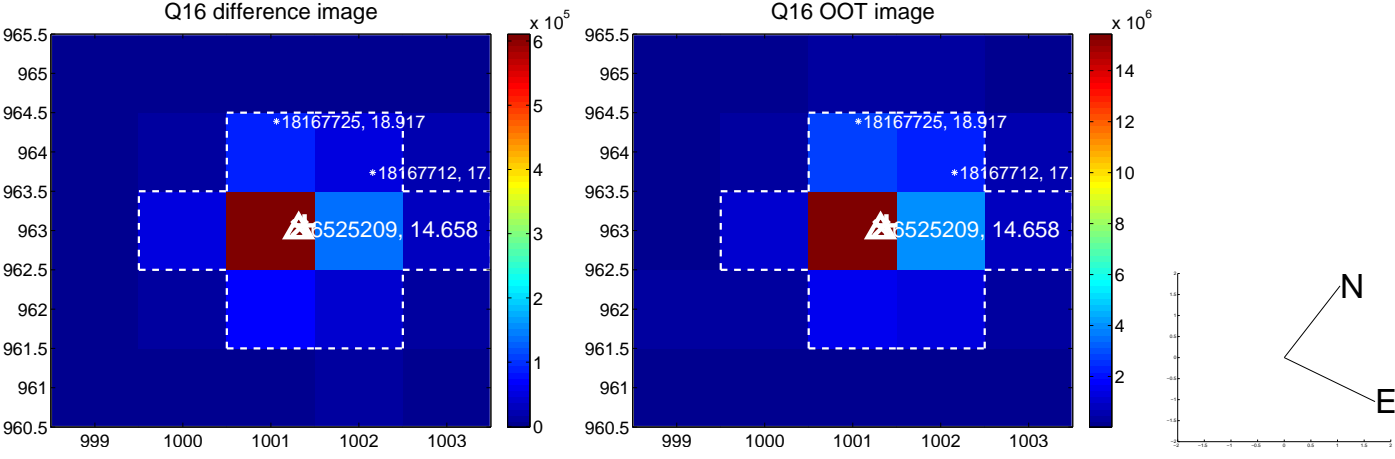
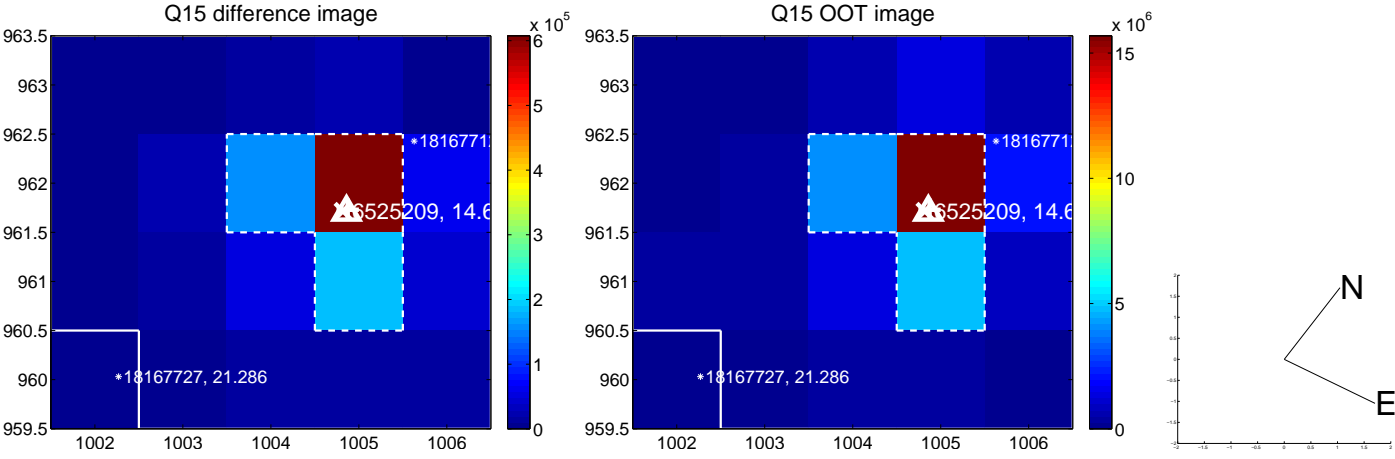
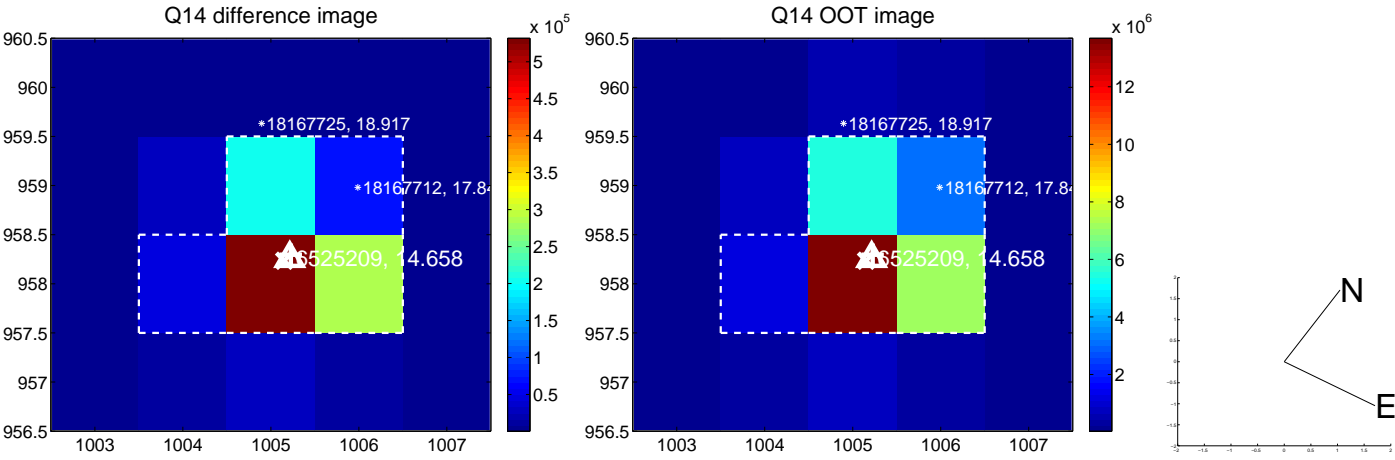
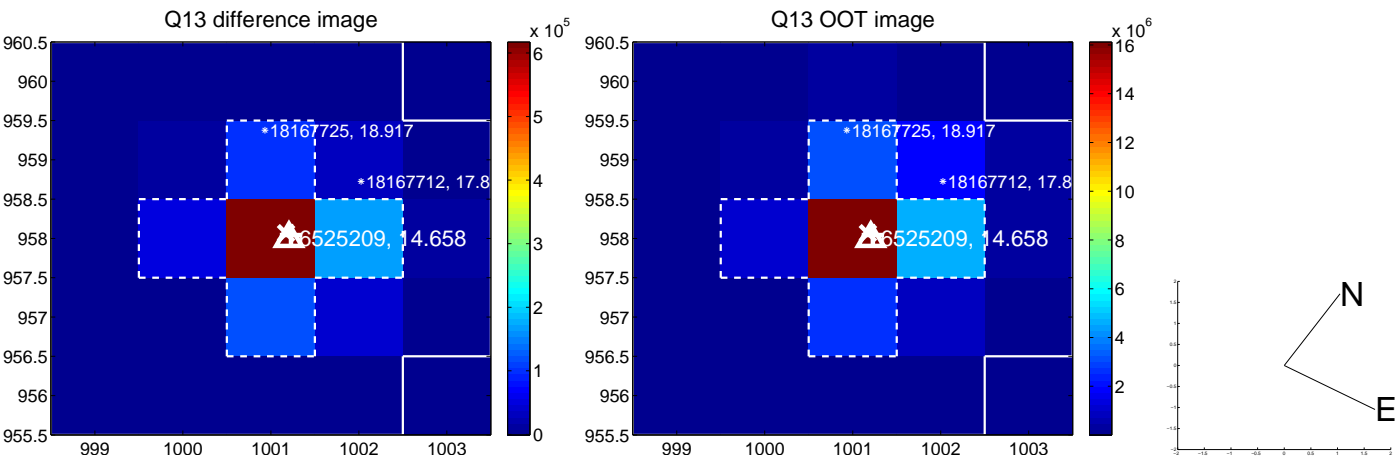




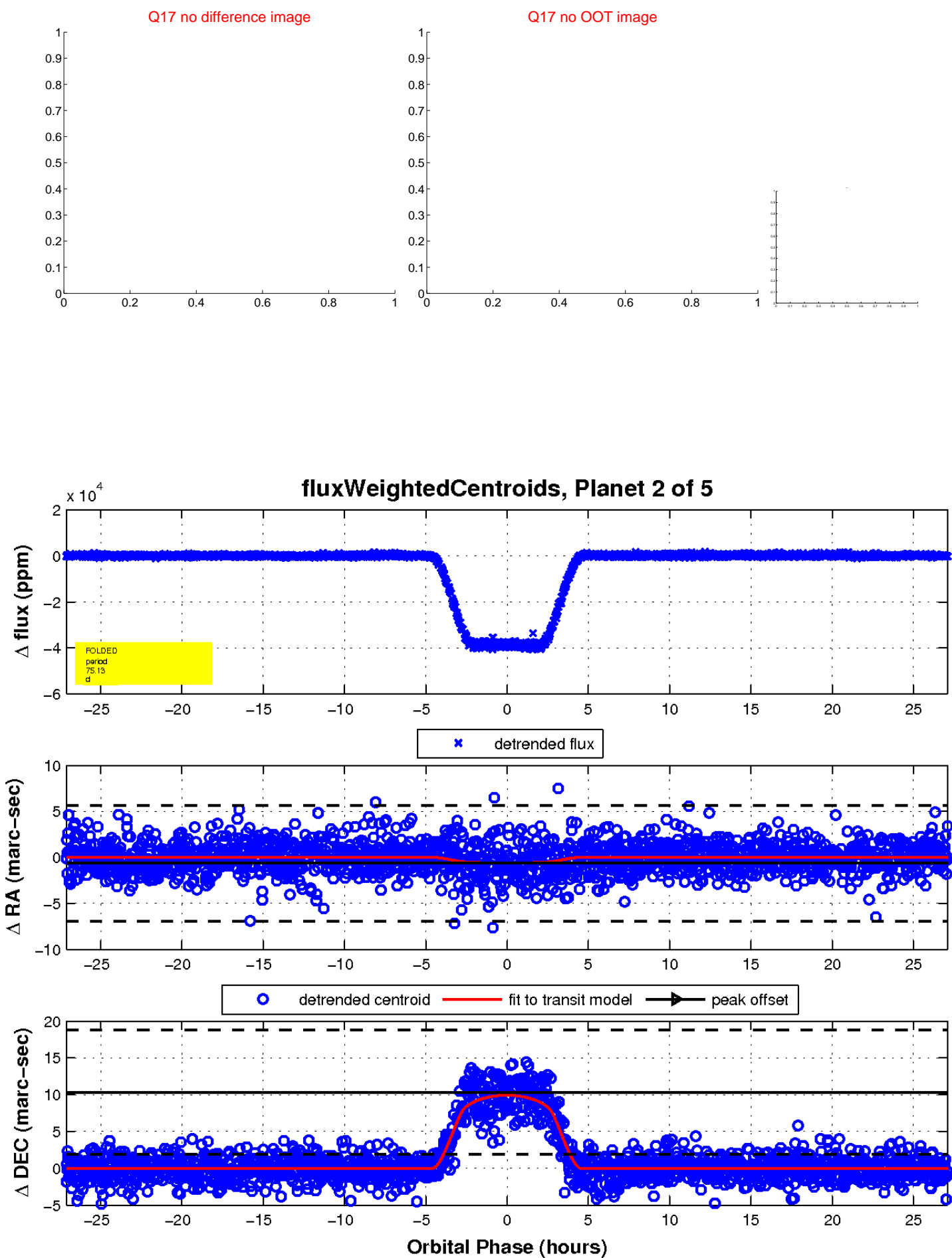
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

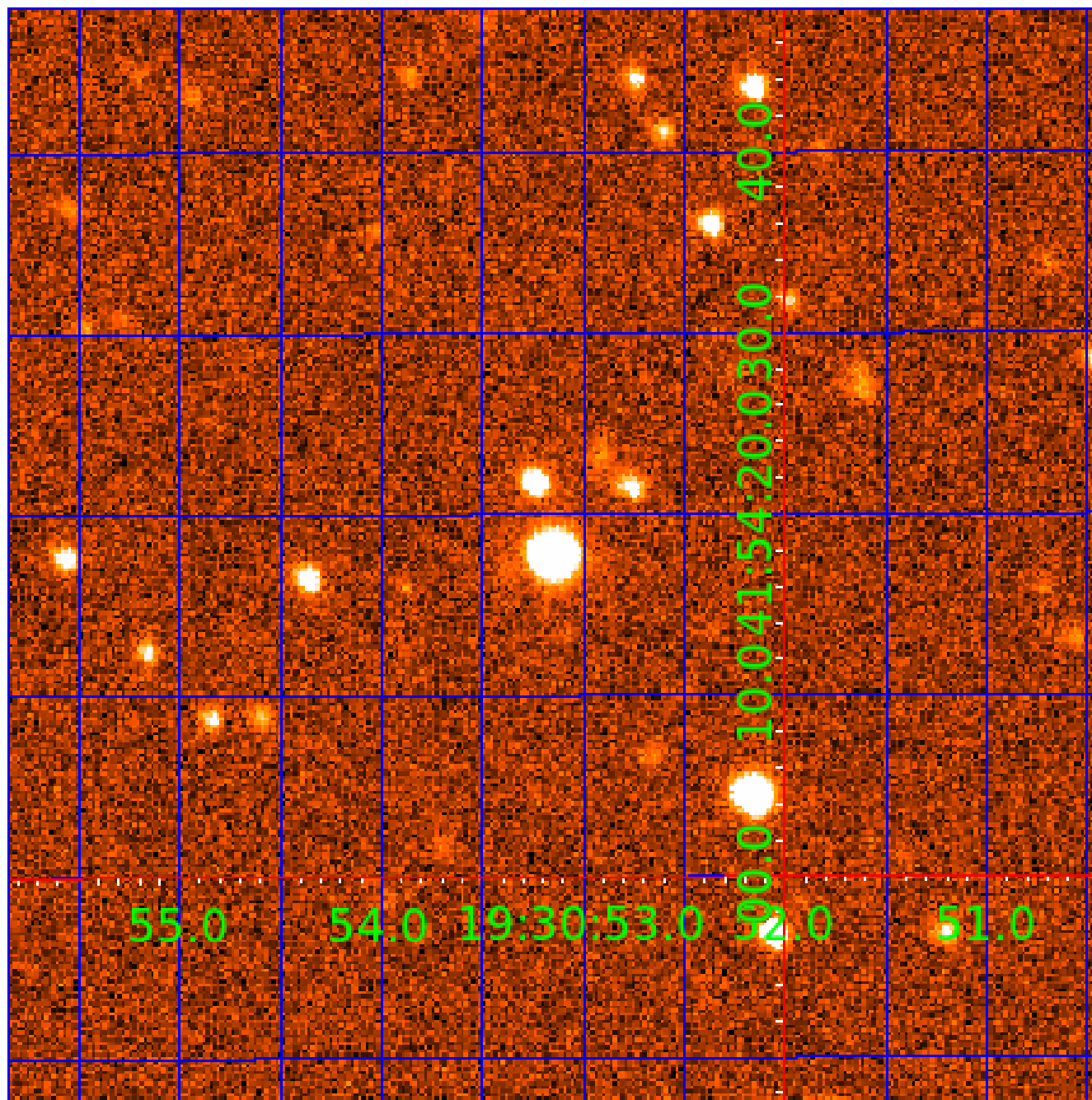


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 006525209

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
006525209-01	OBS	3479.01	75.131913	184.429704	121322.9	20.849	2783.9	2515.3	0.73	5365	26.11	3.94
006525209-02	OBS	No	75.131959	200.780609	39668.5	9.040	1015.7	697.0	0.73	5365	14.89	3.94
006525209-03	OBS	No	446.061223	201.700012	773.5	7.758	23.6	8.9	0.73	5365	2.21	0.37
006525209-04	OBS	3479.02	1.710283	131.619614	139.9	2.900	16.4	18.2	0.73	5365	1.05	611.27
006525209-05	OBS	No	324.201148	165.189190	687.8	11.997	10.5	8.7	0.73	5365	2.07	0.56

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006525209-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_DV—MOD_SEC_ALT—HAS_SEC_TCE
006525209-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE
006525209-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_TER_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
006525209-04	OBS	FP	0.00	0	0	1	1	CENT_UNRESOLVED_OFFSET—HALO_GHOST—EPHEM_MATCH
006525209-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_MEAS

**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 006525209-03

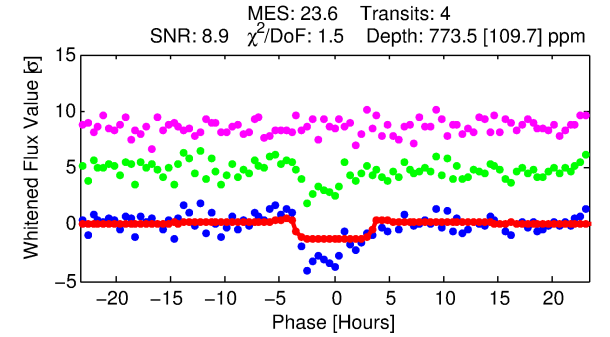
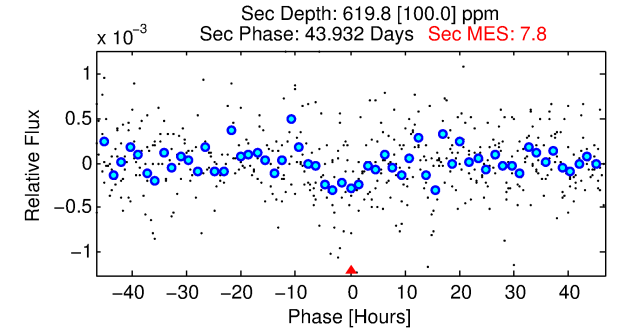
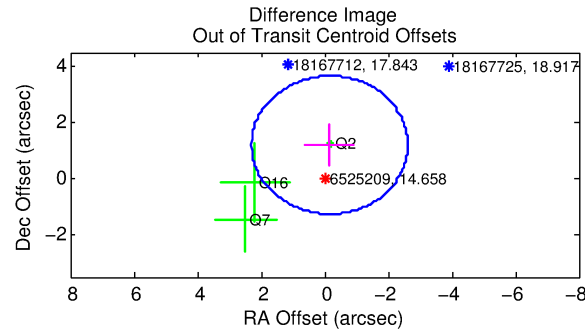
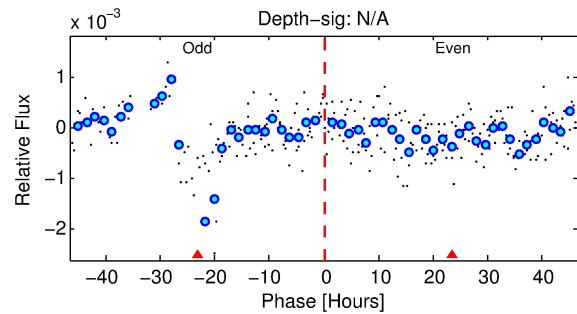
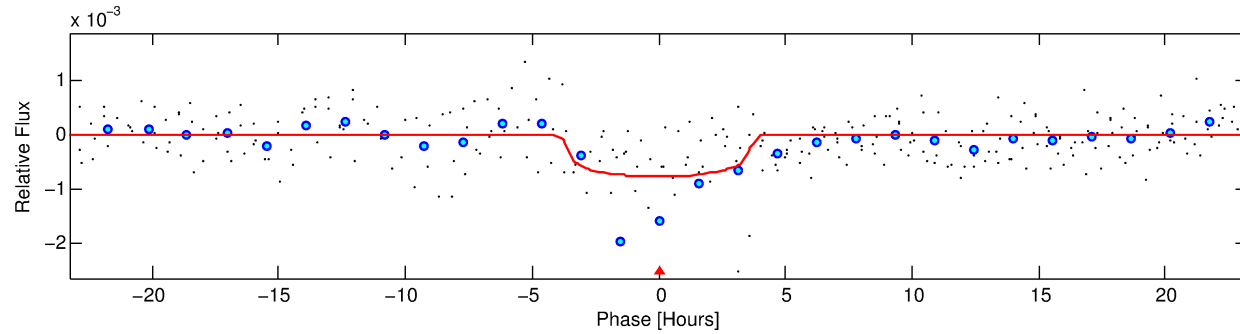
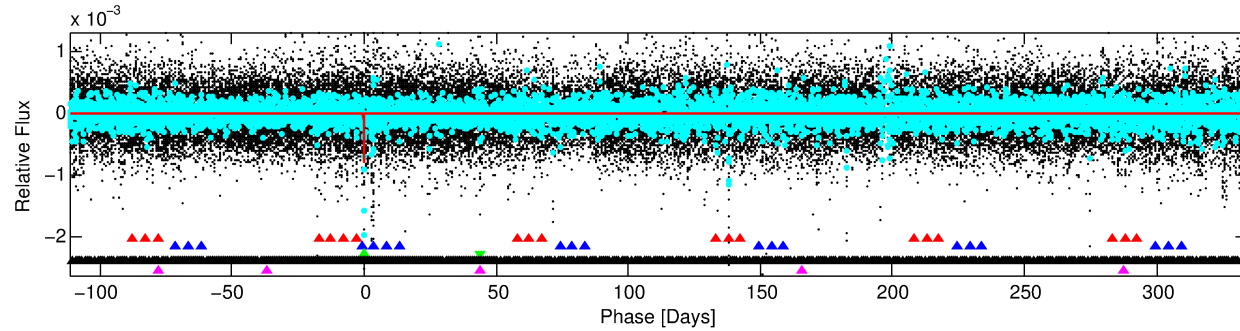
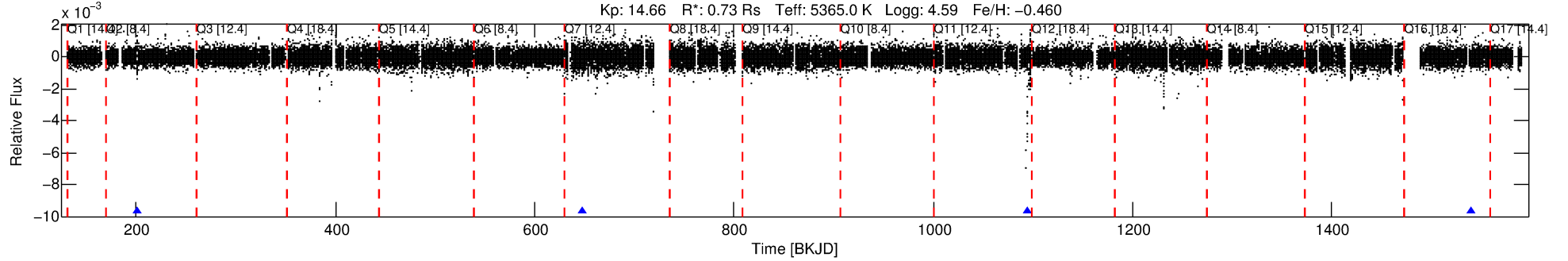
No Significant Match Found

# DV One-Page Summary

KIC: 6525209 Candidate: 3 of 5 Period: 446.061 d

KOI: K03479 Corr: No Ephemeris Match

Kp: 14.66 R\*: 0.73 Rs Teff: 5365.0 K Logg: 4.59 Fe/H: -0.460



## DV Fit Results:

Period = 446.06122 [0.00608] d  
Epoch = 201.7000 [0.0122] BKJD  
Rp/R\* = 0.0277 [0.0155]  
a/R\* = 307.31 [706.71]  
b = 0.75 [1.35]  
Seff = 0.37 [0.07]  
Teq = 198 [10] K  
Rp = 2.21 [1.28] Re  
a = 1.0370 [0.1165] AU  
Ag = 75392.70 [86219.81] [0.87σ]  
Teffp = 5084 [1448] K [3.37σ]

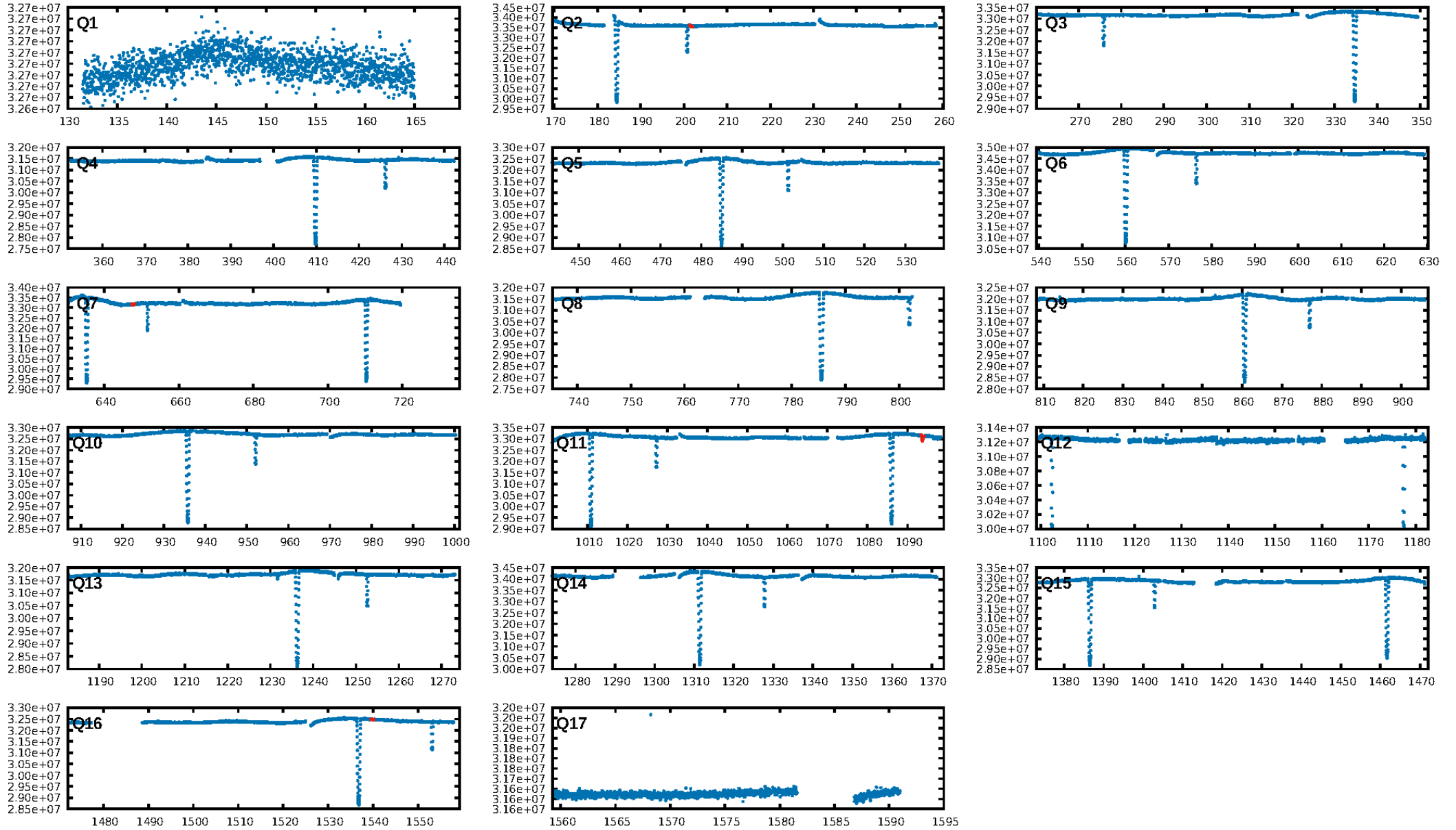
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [204.70σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 0.0%  
ModelChiSquareGof-sig: 59.1%  
Bootstrap-pfa: 3.31e-51  
RollingBand-fgt: 1.00 [4/4]  
GhostDiagnostic-chr: 2.026  
Centroid-sig: 0.8%  
Centroid-so: 1.983 arcsec [2.17σ]  
OotOffset-rm: 1.211 arcsec [1.48σ]  
KicOffset-rm: 1.484 arcsec [1.65σ]  
OotOffset-st: 1/1/1/0 [3]  
KicOffset-st: 1/1/1/0 [3]  
DiffImageQuality-fgm: 0.33 [1/3]  
DiffImageOverlap-fno: 0.33 [1/3]

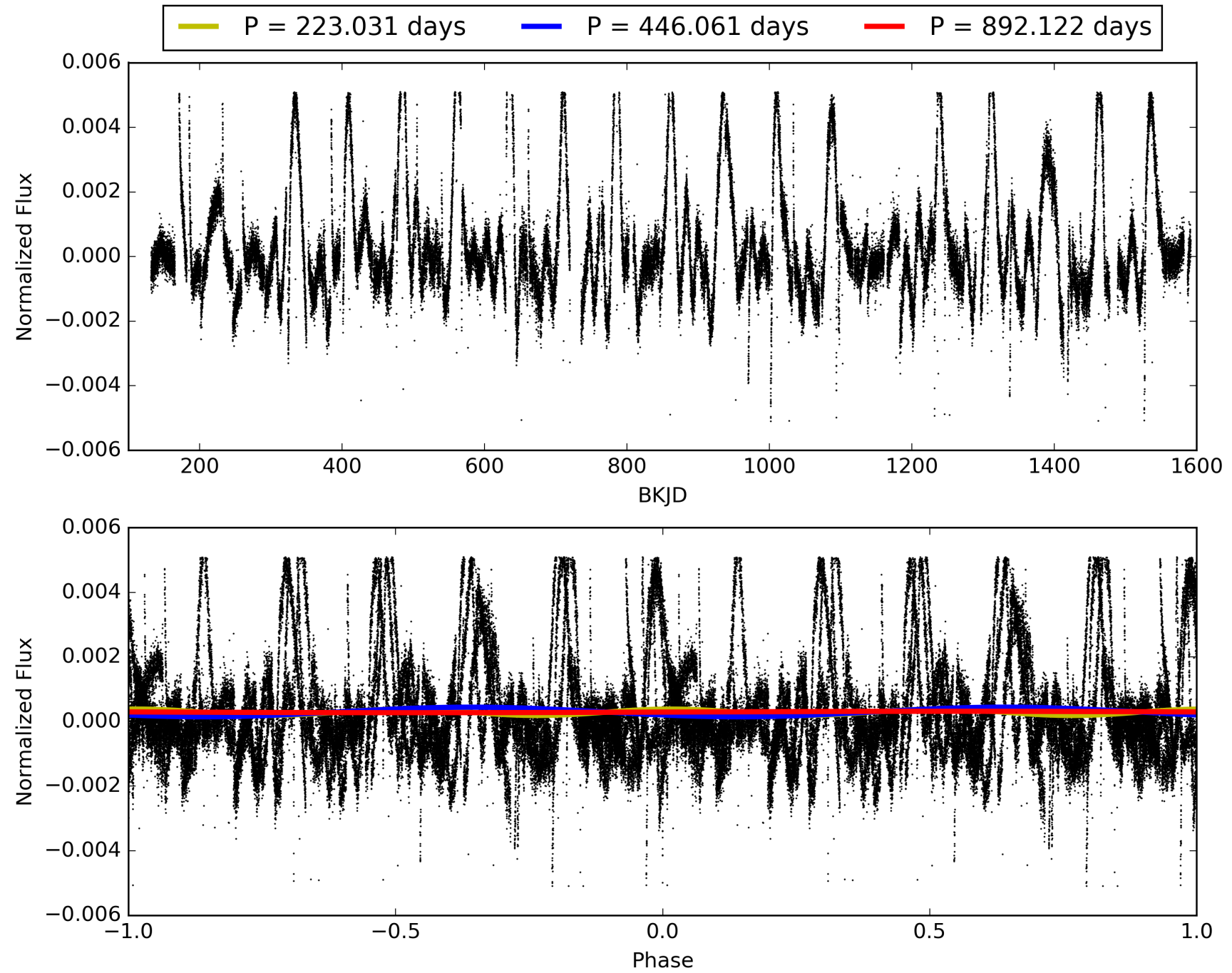
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 03-Feb-2016 07:28:51 Z

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

# TCE 006525209-03, PDC Light Curves



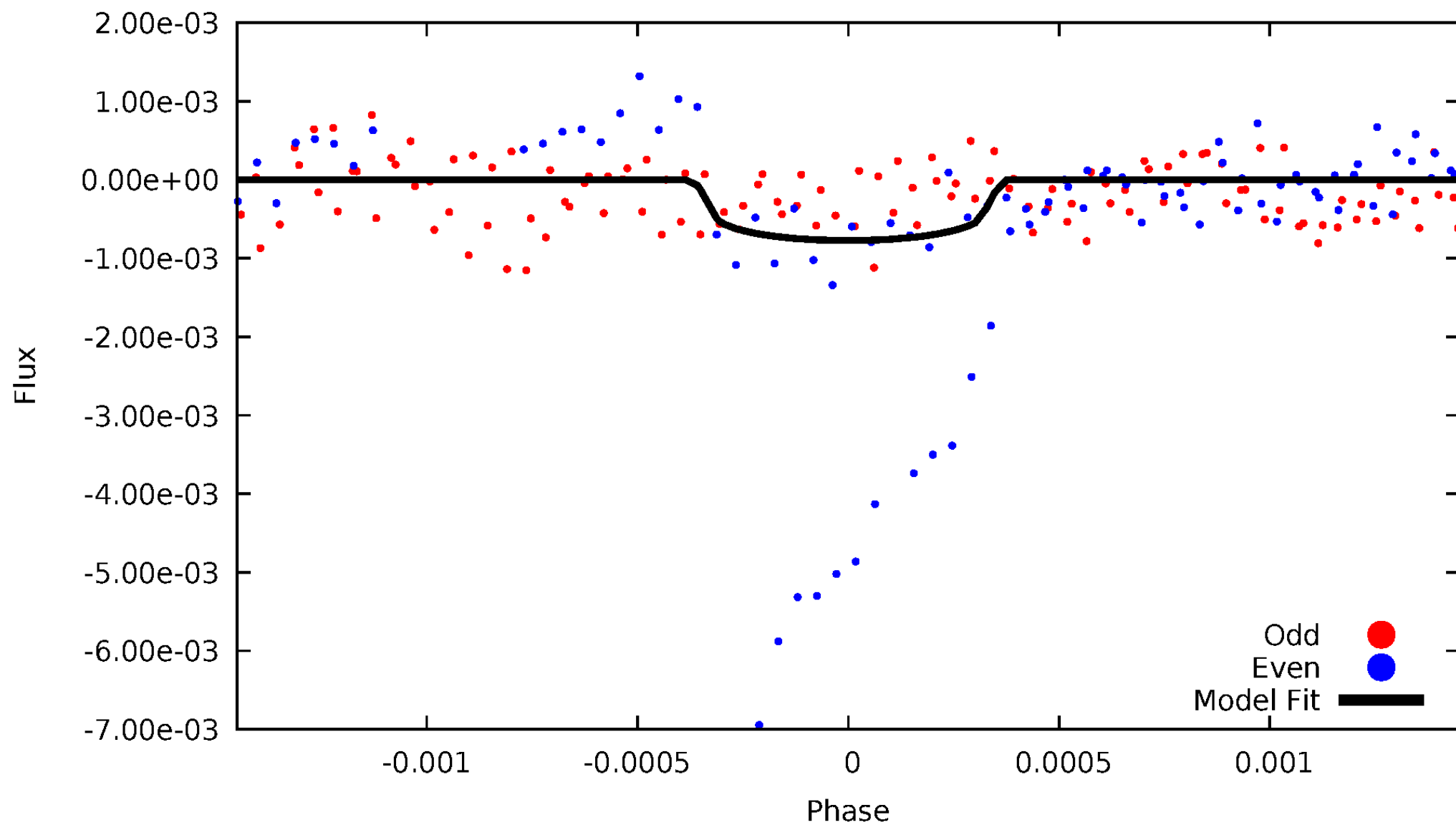
TCE 006525209-03





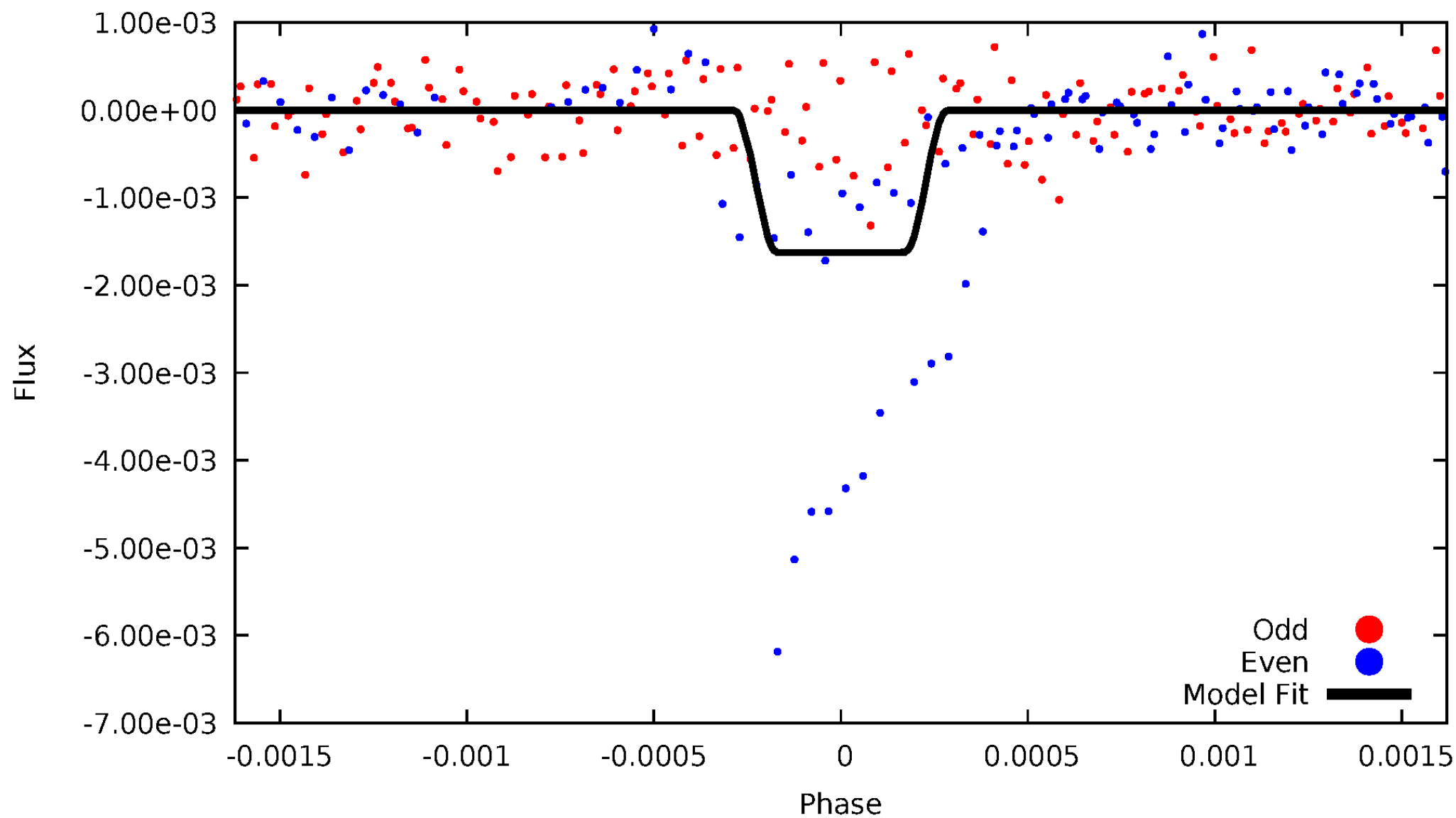
# DV Odd/Even

TCE 006525209-03



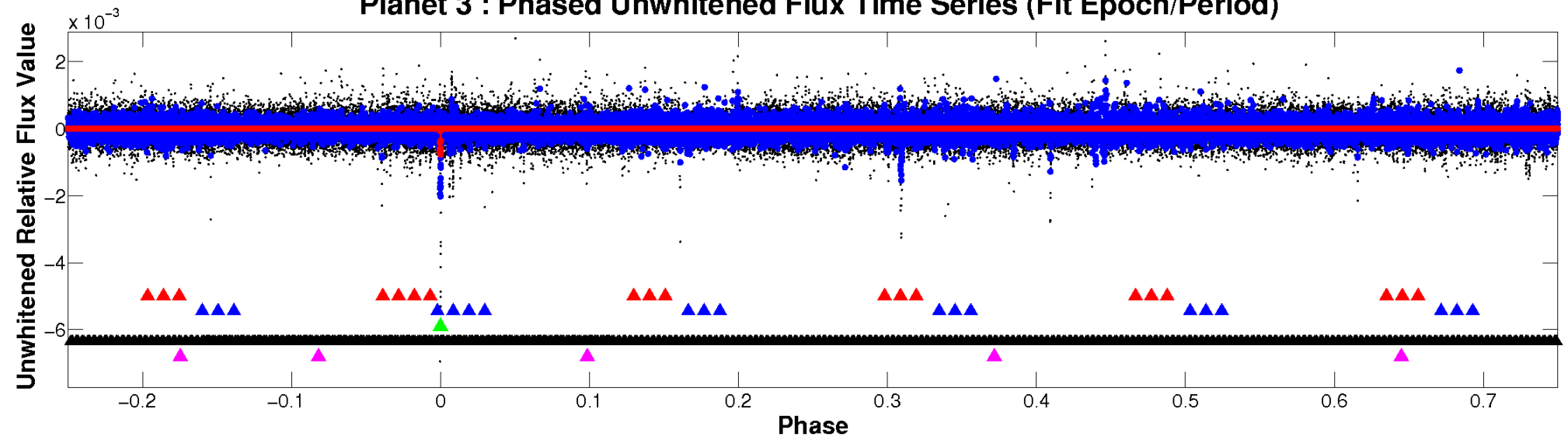
# ALT Odd/Even

TCE 006525209-03

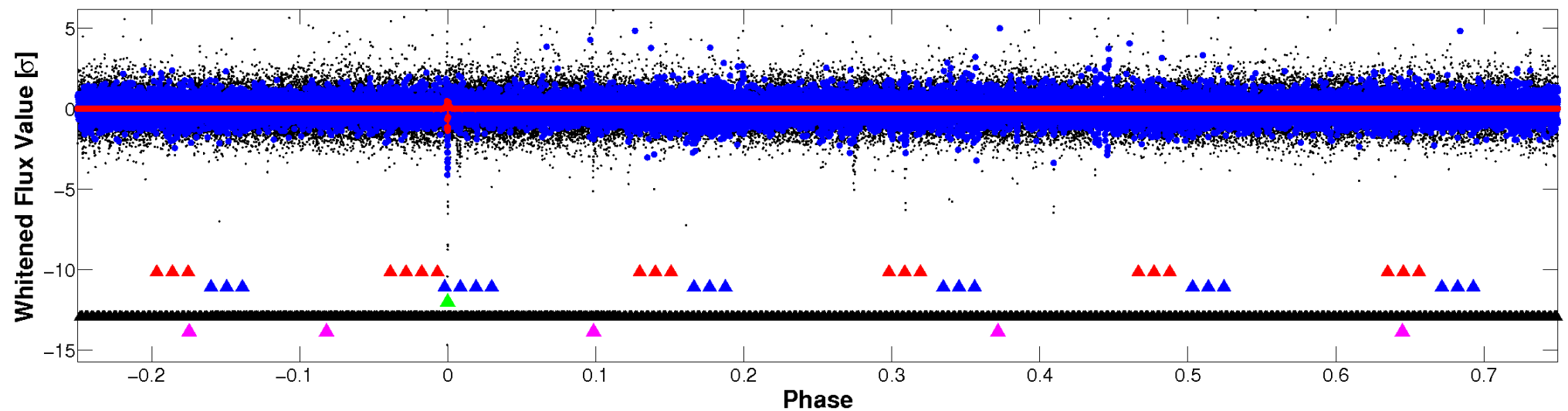


# Non-Whitened Vs. Whitened Light Curve

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

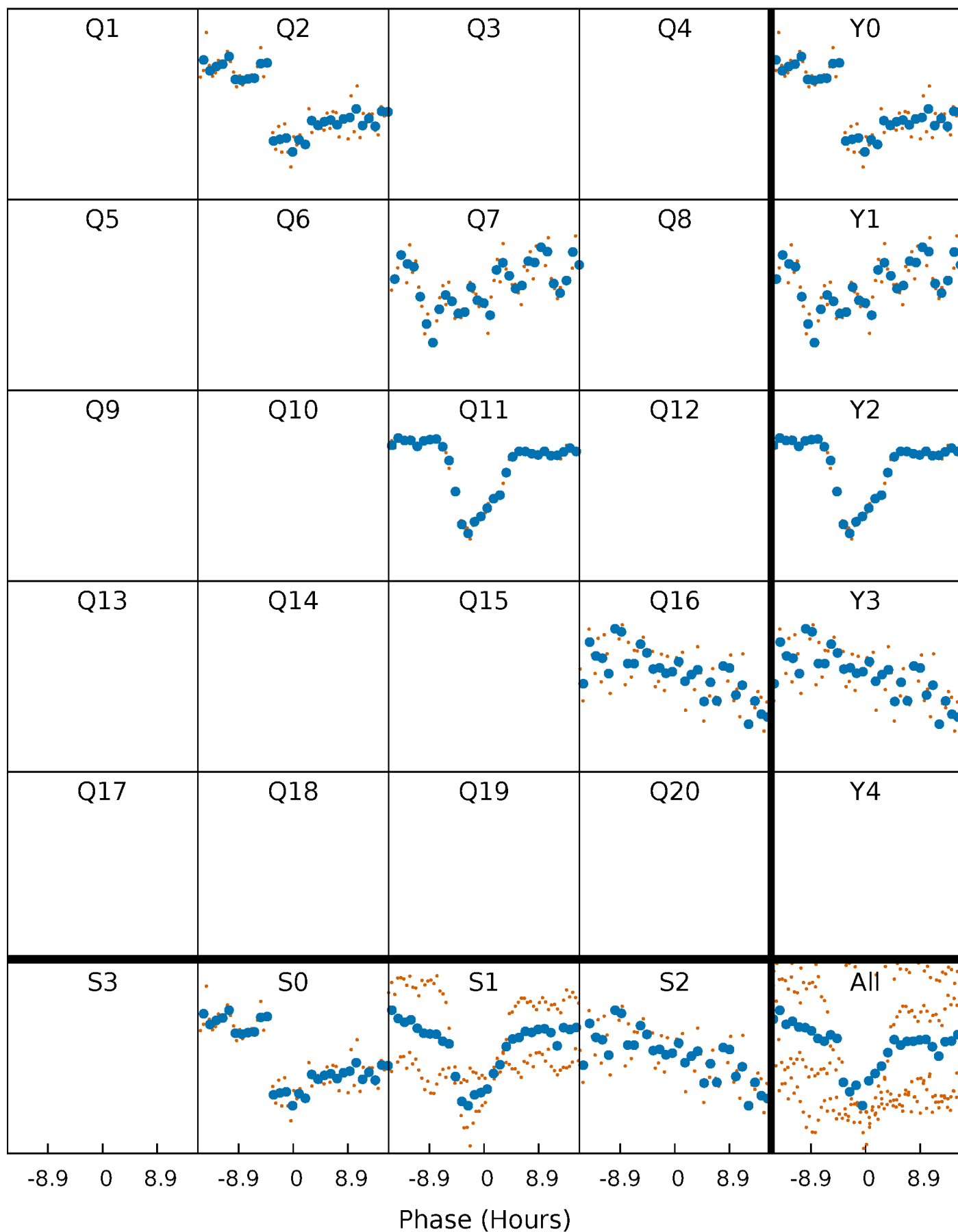


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



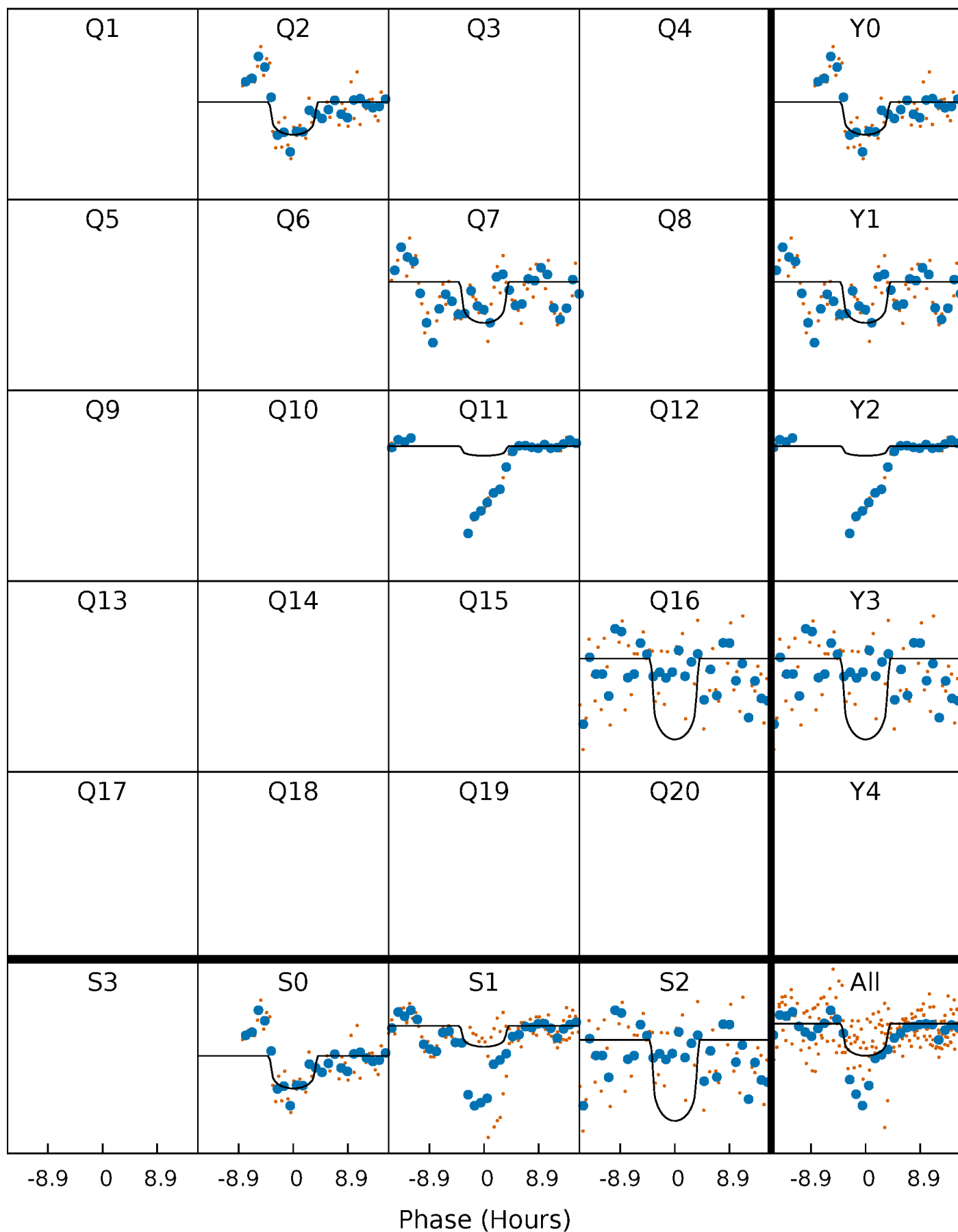
# PDC Quarter-Phased Transit Curves

TCE 006525209-03 P=446.061223 Days  $T_0=201.700012$  (BKJD)



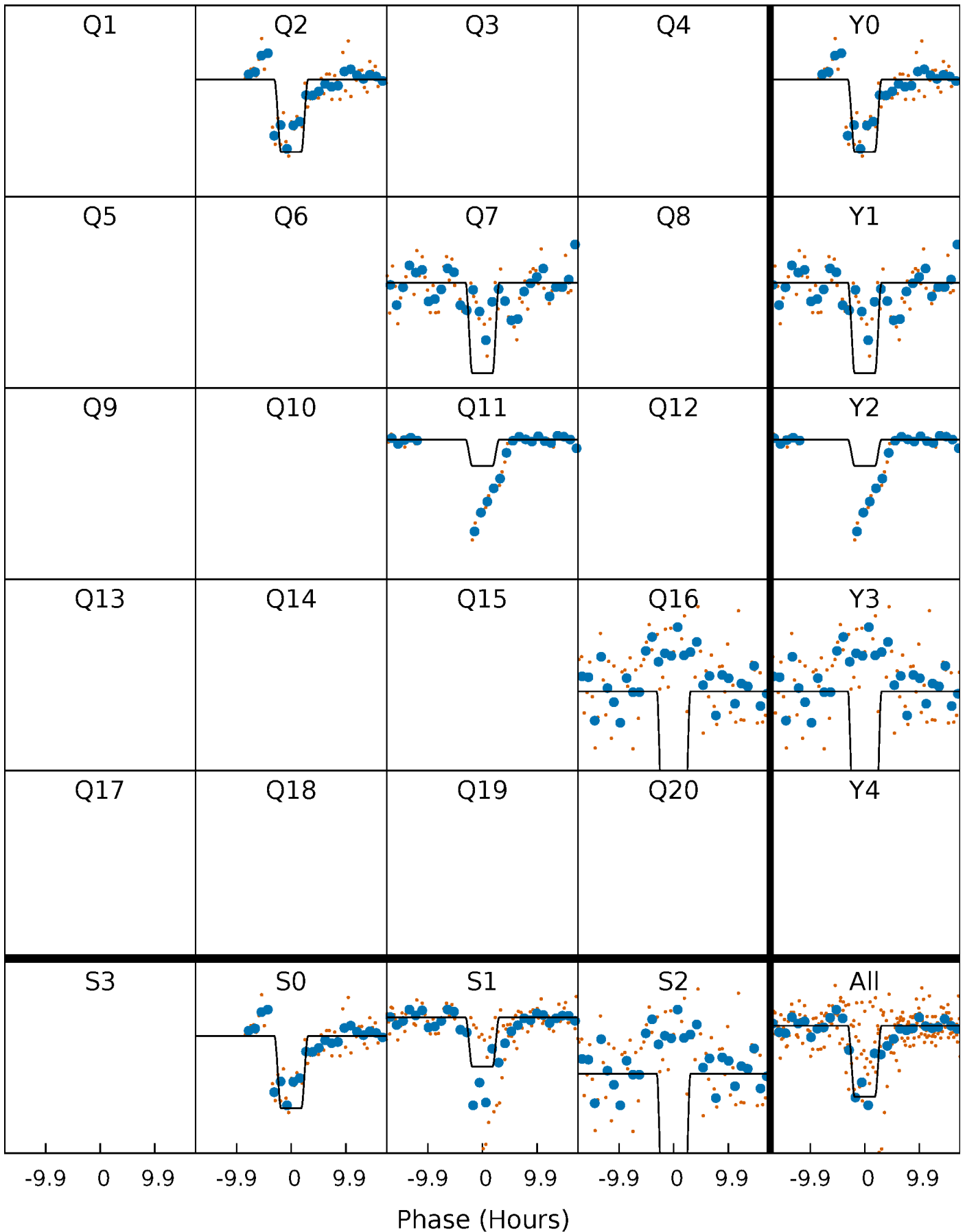
# DV Quarter-Phased Transit Curves

TCE 006525209-03 P=446.061223 Days  $T_0=201.700012$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

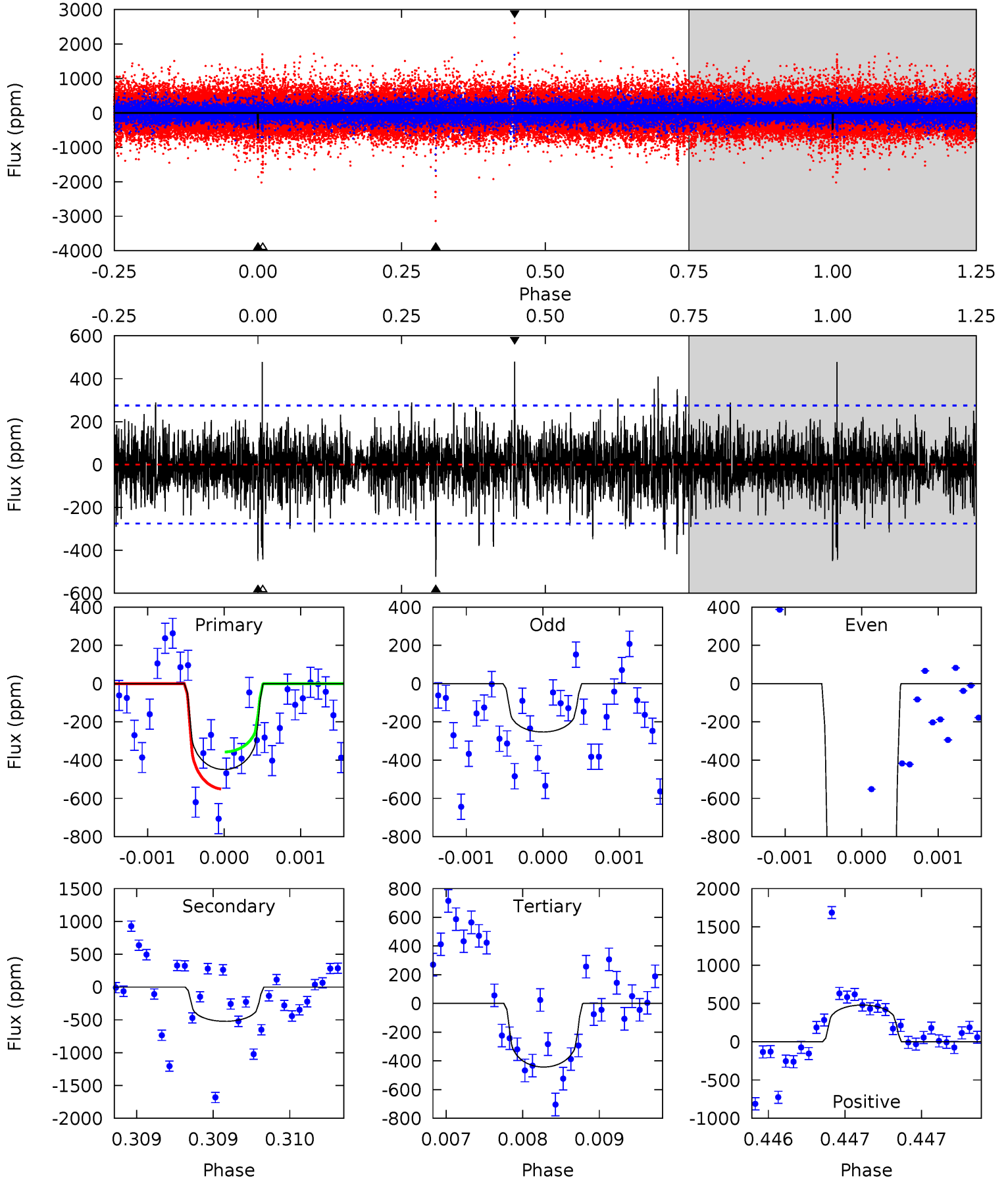
TCE 006525209-03     $P=446.050992$  Days     $T_0=201.701988$  (BKJD)



# DV Model-Shift Uniqueness Test

006525209-03, P = 446.061223 Days, E = 201.700012 Days

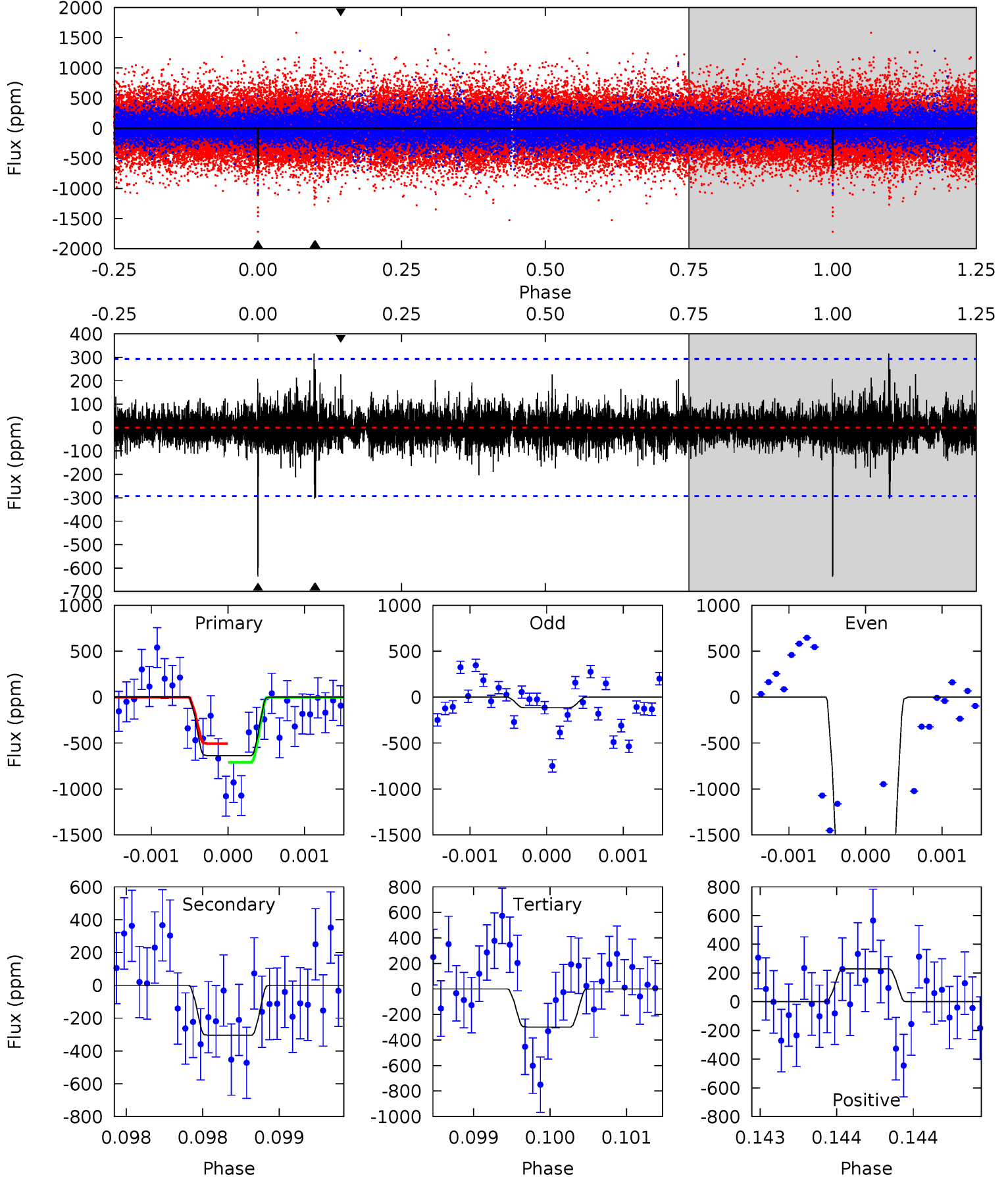
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.98	10.4	8.86	9.59	5.50	3.37	1.85	0.12	-0.60	1.59	0.86	22.5	2.71	0.48	0



# Alt Model-Shift Uniqueness Test

006525209-03, P = 446.050992 Days, E = 201.701988 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
12.1	5.77	5.66	4.33	5.55	3.45	0.91	6.42	7.76	0.11	1.44	25.0	1.74	0.33	1.97





### Stellar Parameters For KIC 006525209

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5365^{+160}_{-144}$	$4.586^{+0.052}_{-0.078}$	$-0.460^{+0.300}_{-0.300}$	$0.729^{+0.104}_{-0.064}$	$0.747^{+0.092}_{-0.054}$	$2.714^{+0.645}_{-0.744}$
	+3%/-3%	+1%/-2%	+65%/-65%	+14%/-9%	+12%/-7%	+24%/-27%
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 006525209-03 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-522 \pm 50$	$2.29^{+1.29}_{-1.15}$	$279^{+10}_{-11}$	$4903^{+1912}_{-772}$	$58750^{+174076}_{-34408}$
Alt.	$-304 \pm 53$	$3.29^{+1.26}_{-1.20}$	$279^{+12}_{-10}$	$3860^{+749}_{-406}$	$17023^{+25530}_{-8437}$

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

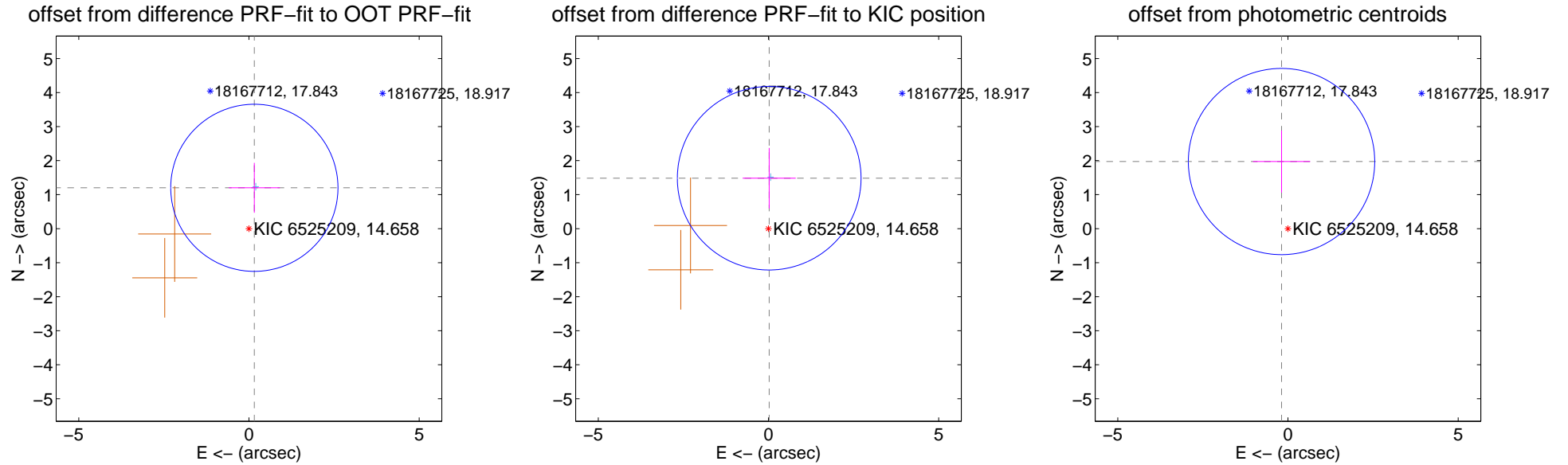
## DV Centroid Data

Supplemental centroid analysis for 006525209-03. Kepler magnitude: 14.66. Transit SNR 8.93

There are 1 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.27 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.211 \pm 0.819$	1.48	$-0.157 \pm 0.751$	$1.201 \pm 0.734$
PRF-fit source offset from KIC position	$1.484 \pm 0.900$	1.65	$-0.021 \pm 0.780$	$1.483 \pm 0.889$
photometric centroid source offset	$1.98 \pm 0.91$	2.17	$0.19 \pm 0.84$	$1.97 \pm 0.91$



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.

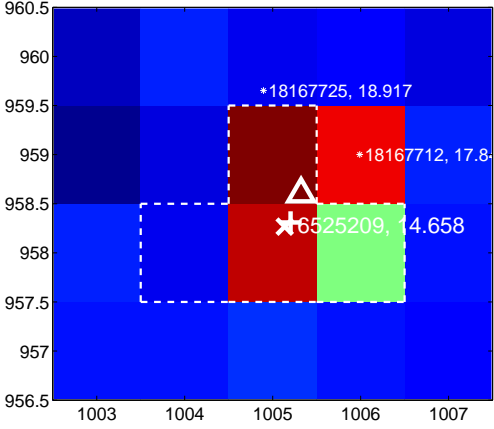
Q1 no difference image



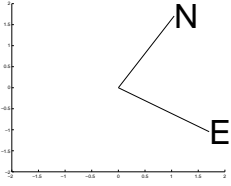
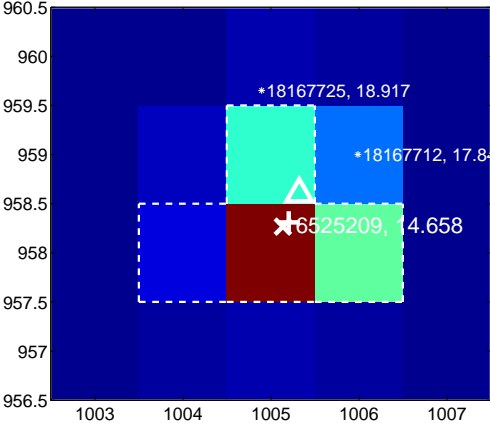
Q1 no OOT image



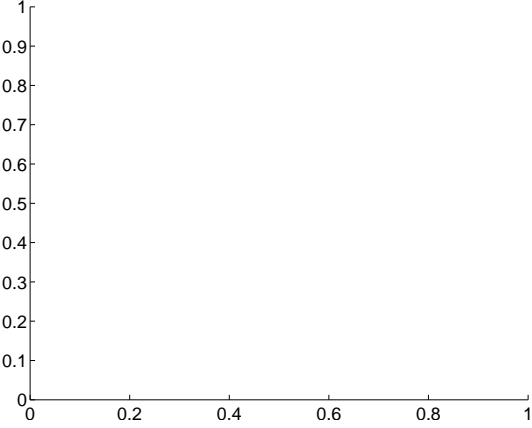
Q2 difference image



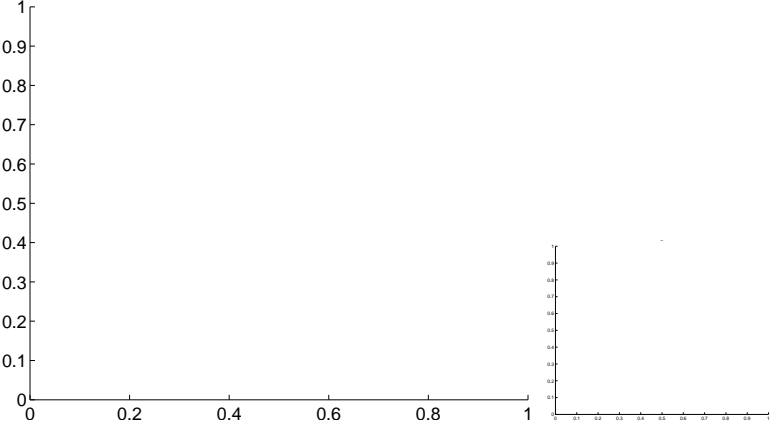
Q2 OOT image



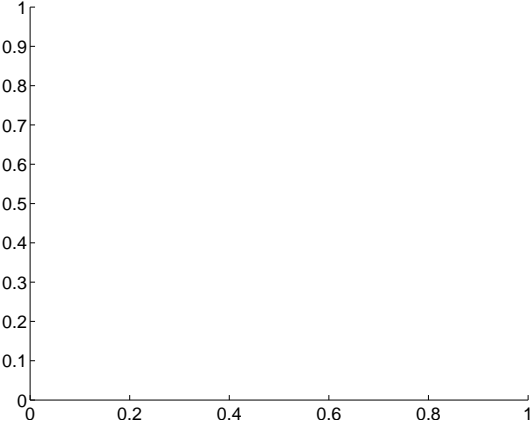
Q3 no difference image



Q3 no 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.

Q5 no difference image



Q5 no OOT image



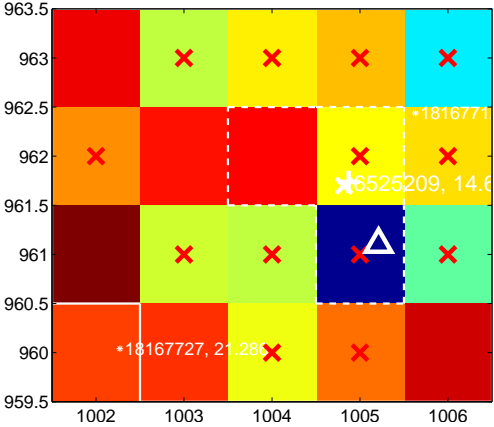
Q6 no difference image



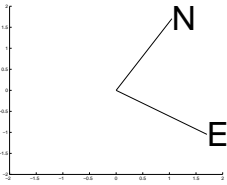
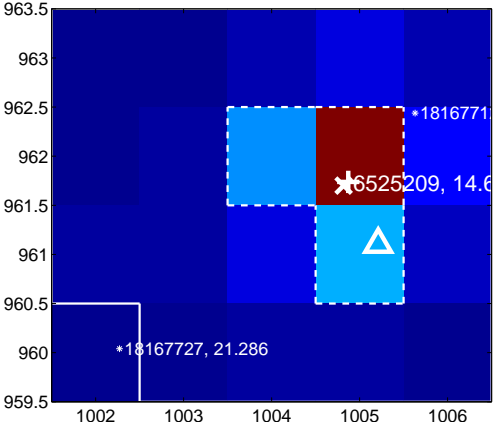
Q6 no OOT image



Q7 difference image. Poor Quality



Q7 OOT image



Q8 no difference image



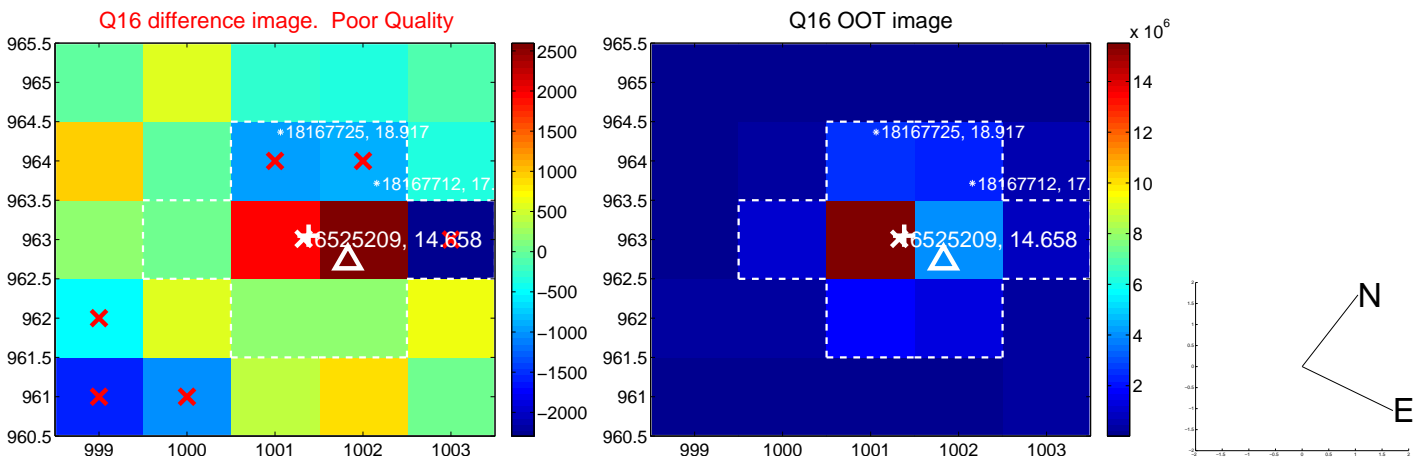
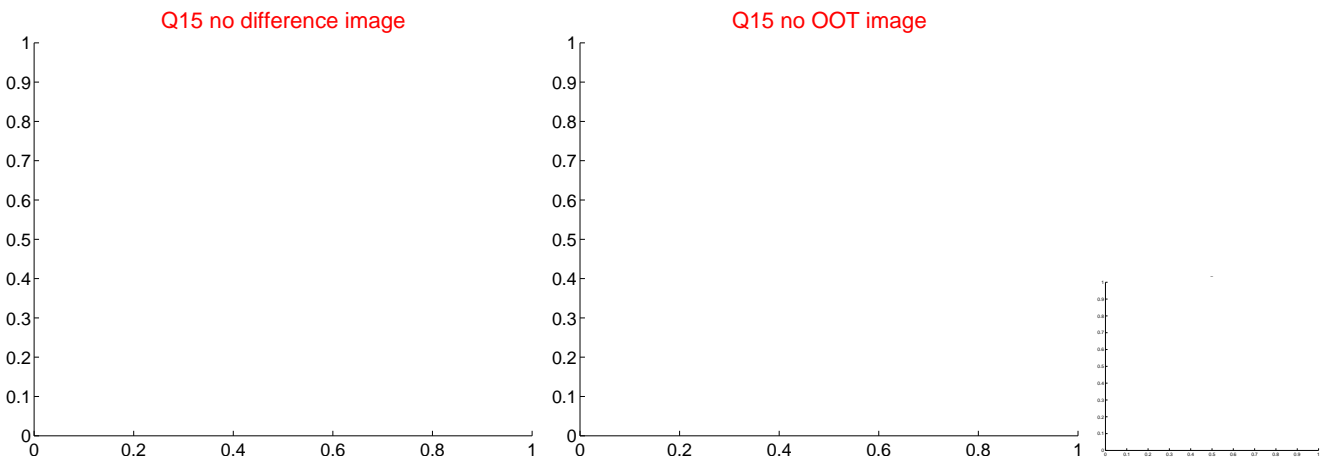
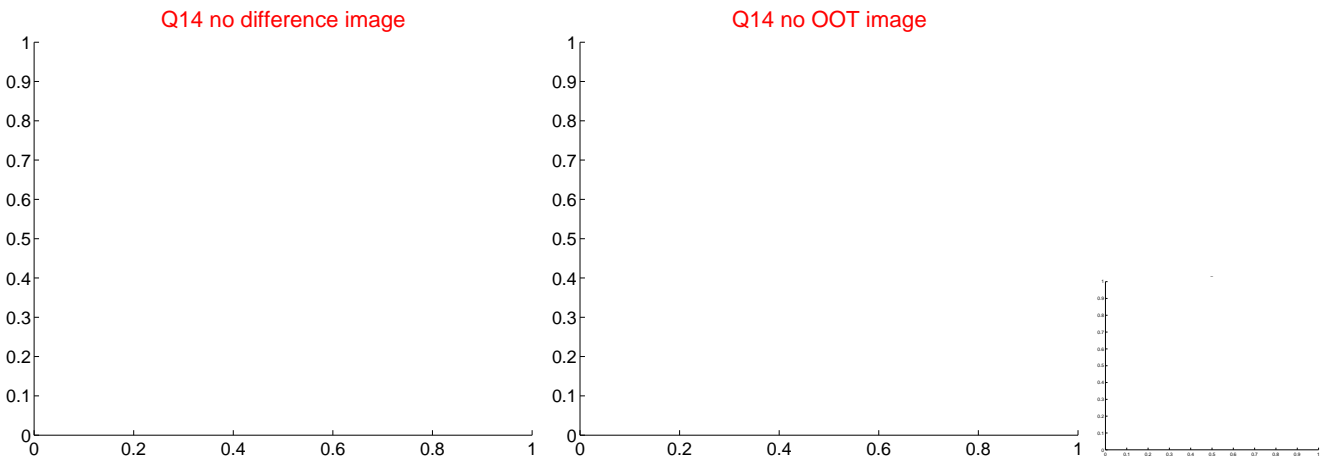
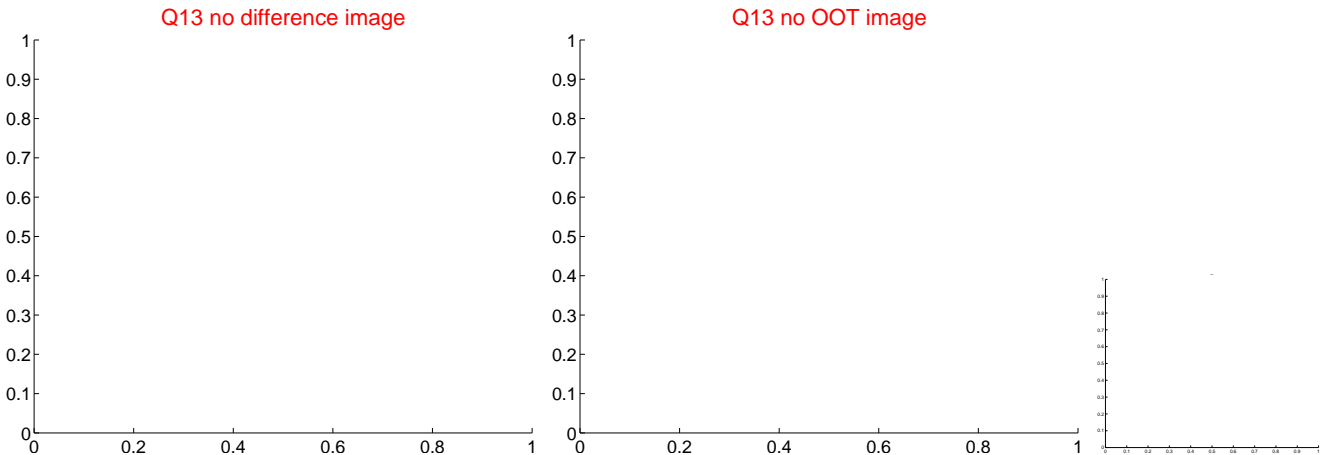
Q8 no OOT image



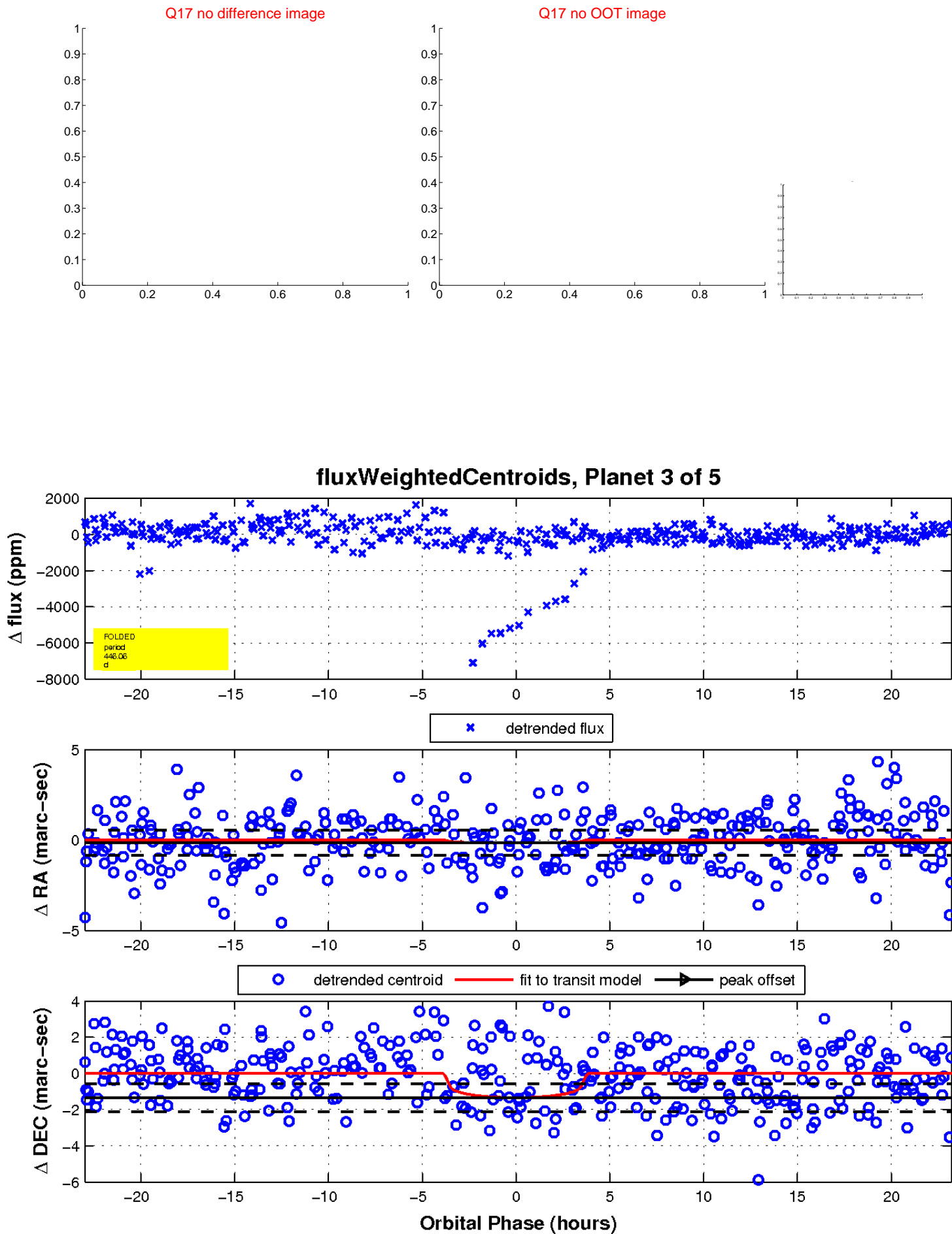
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

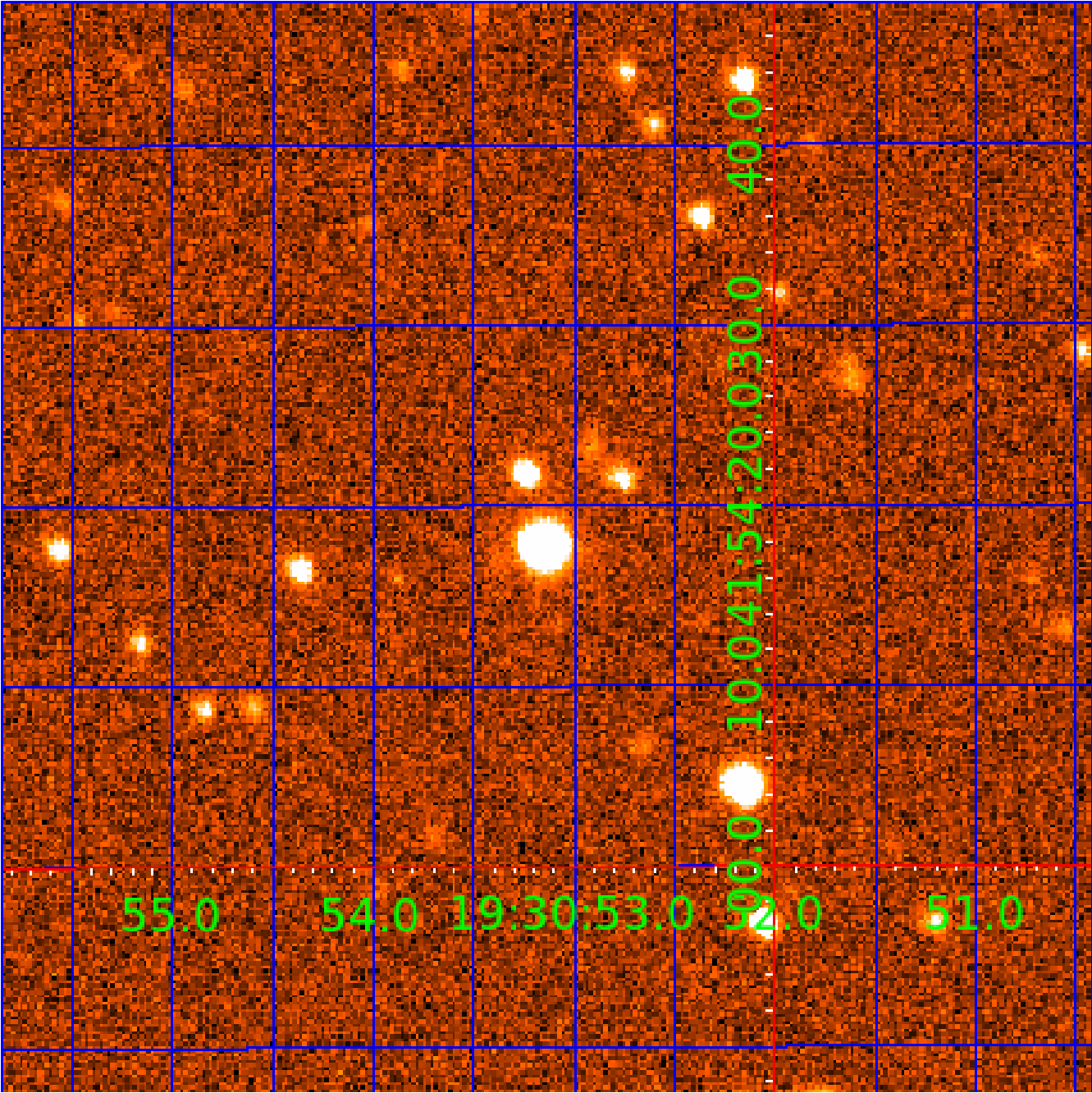


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination





# KIC 006525209

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
006525209-01	OBS	3479.01	75.131913	184.429704	121322.9	20.849	2783.9	2515.3	0.73	5365	26.11	3.94
006525209-02	OBS	No	75.131959	200.780609	39668.5	9.040	1015.7	697.0	0.73	5365	14.89	3.94
006525209-03	OBS	No	446.061223	201.700012	773.5	7.758	23.6	8.9	0.73	5365	2.21	0.37
006525209-04	OBS	3479.02	1.710283	131.619614	139.9	2.900	16.4	18.2	0.73	5365	1.05	611.27
006525209-05	OBS	No	324.201148	165.189190	687.8	11.997	10.5	8.7	0.73	5365	2.07	0.56

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006525209-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_DV—MOD_SEC_ALT—HAS_SEC_TCE
006525209-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE
006525209-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_TER_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
006525209-04	OBS	FP	0.00	0	0	1	1	CENT_UNRESOLVED_OFFSET—HALO_GHOST—EPHEM_MATCH
006525209-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_MEAS

**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.

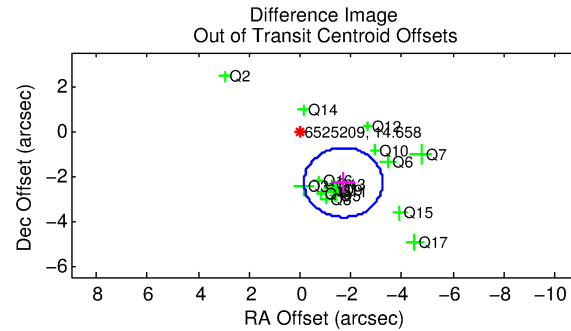
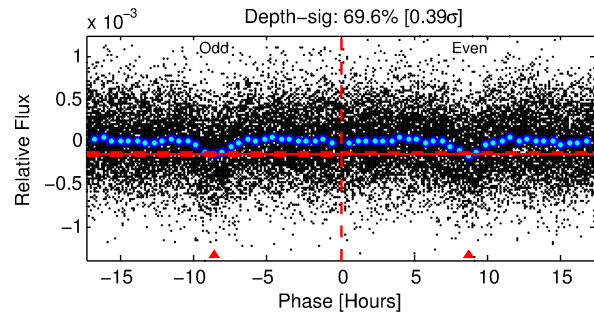
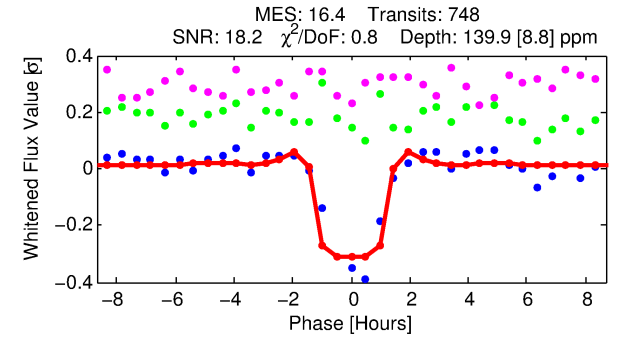
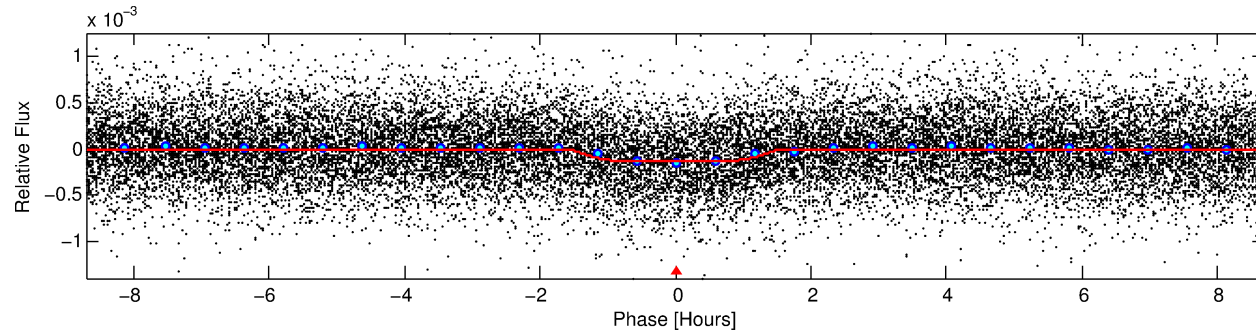
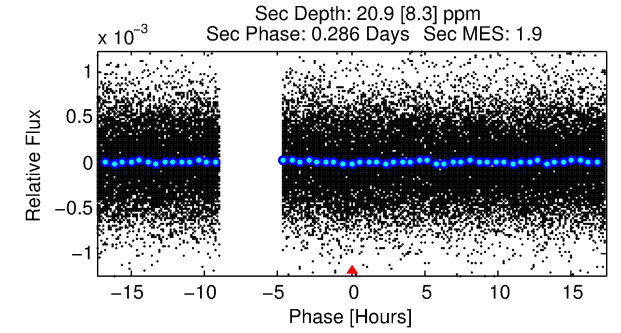
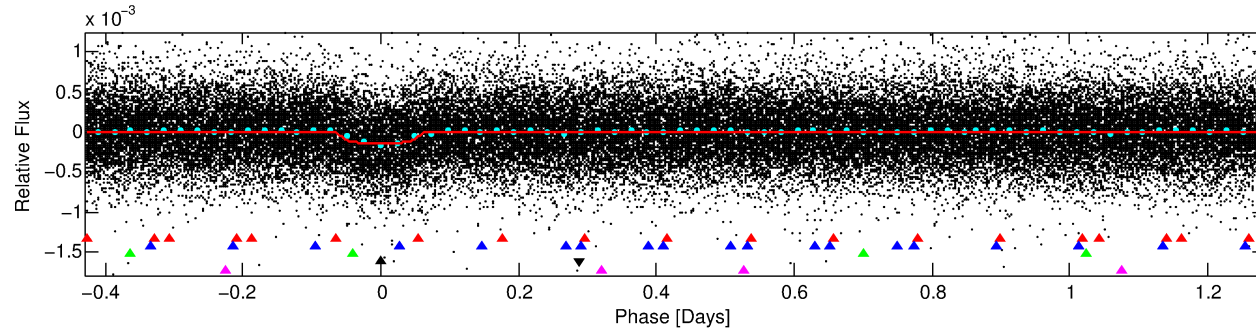
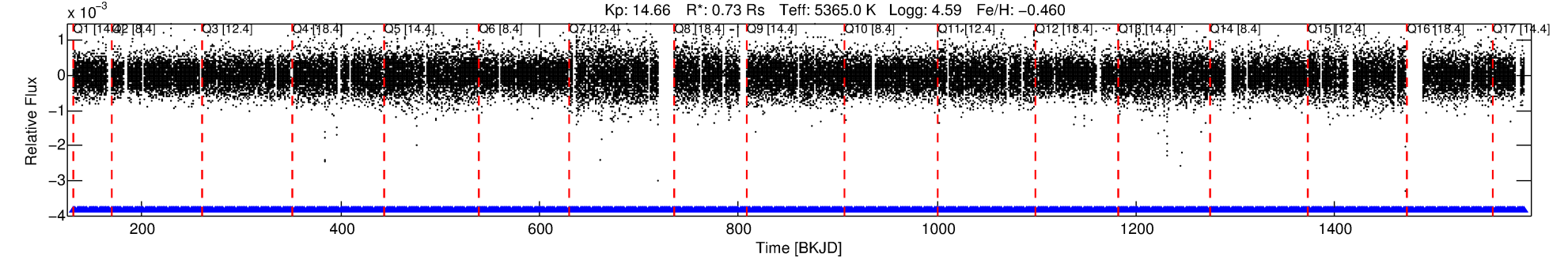
## Ephemeris Match Information For 006525209-04

TCE (1)	KIC	Parent (2)	Parent KIC	$P_1:P_2$	Dist ( $''$ )	$\Delta$ Row	$\Delta$ Col	$m_2$	$m_1$	$D_2/D_1$	Mechanism	Flag	$\sigma_P$	$\sigma_T$
006525209-04	6525209	5293.01	6525196	1:1	63.8	-15	-7	10.15	14.65	1125.30	Direct-PRF	0	0.68	0.25

**Notes:**  $P_1:P_2$  is the period ratio. Dist is the distance in arcseconds.  $\Delta$ Row and  $\Delta$ Col are the number of pixels apart in row and column.  $m_2$  and  $m_1$  are the magnitudes of the parent and child.  $D_2/D_1$  is the parent's transit depth divided by the child's.  $\sigma_P$  and  $\sigma_T$  are the significance of the match in period and epoch. For a match to be considered significant  $\sigma_P < 5.0$  and  $\sigma_T < 5.0$ . Matches which have  $\sigma_P$  and  $\sigma_T$  very close to this cutoff should receive extra scrutiny, especially if the period ratio is very large.

# DV One-Page Summary

KIC: 6525209 Candidate: 4 of 5 Period: 1.710 d  
KOI: K03479.02 Corr: 0.973



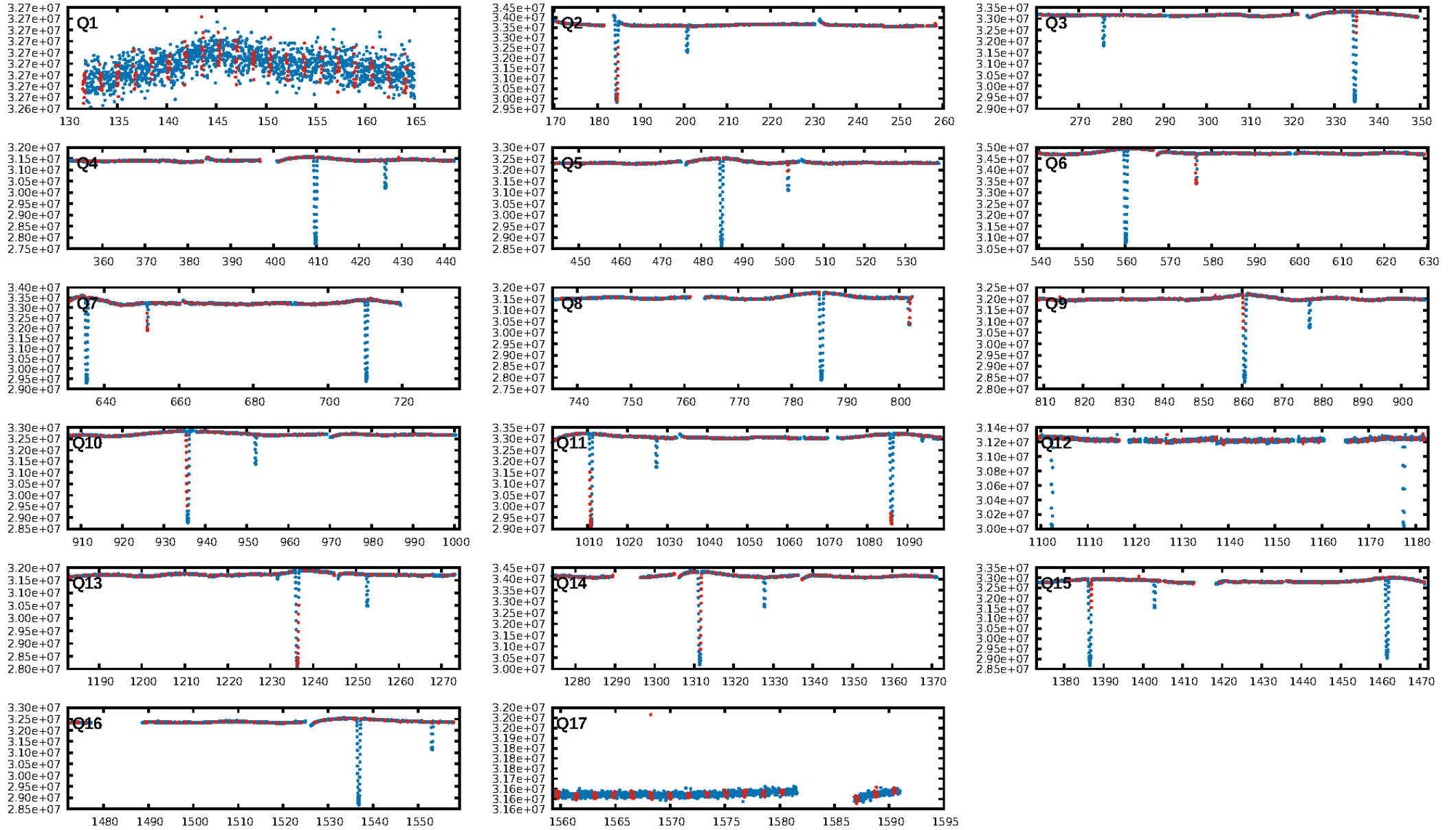
## DV Fit Results:

Period = 1.71028 [0.00001] d  
Epoch = 131.6196 [0.0017] BKJD  
Rp/R\* = 0.0132 [0.0030]  
a/R\* = 2.18 [1.79]  
b = 0.92 [0.19]  
Seff = 611.27 [118.55]  
Teff = 1268 [61] K  
Rp = 1.05 [0.28] Re  
a = 0.0254 [0.0029] AU  
Ag = 6.75 [4.21] [1.37 $\sigma$ ]  
Teffp = 3159 [487] K [3.86 $\sigma$ ]

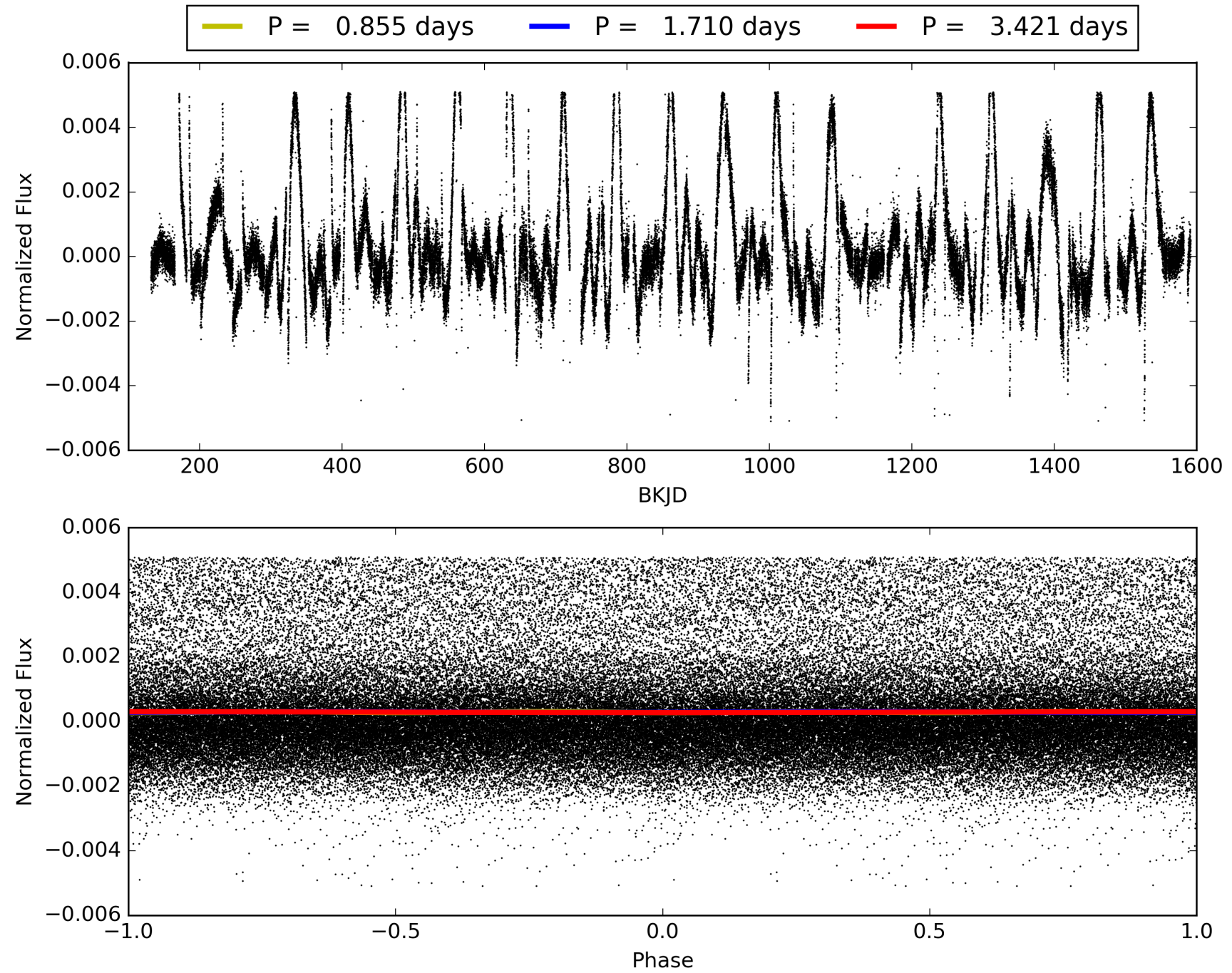
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [83.71 $\sigma$ ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 1.02e-51  
RollingBand-fgt: 1.00 [712/712]  
GhostDiagnostic-chr: 0.1236  
Centroid-sig: 0.0%  
Centroid-so: 1.616 arcsec [3.16 $\sigma$ ]  
OotOffset-rm: 2.853 arcsec [5.55 $\sigma$ ]  
KicOffset-rm: 2.878 arcsec [4.83 $\sigma$ ]  
OotOffset-st: 4/4/4/5 [17]  
KicOffset-st: 4/4/4/5 [17]  
DiffImageQuality-fgm: 0.24 [4/17]  
DiffImageOverlap-fno: 1.00 [17/17]

# TCE 006525209-04, PDC Light Curves

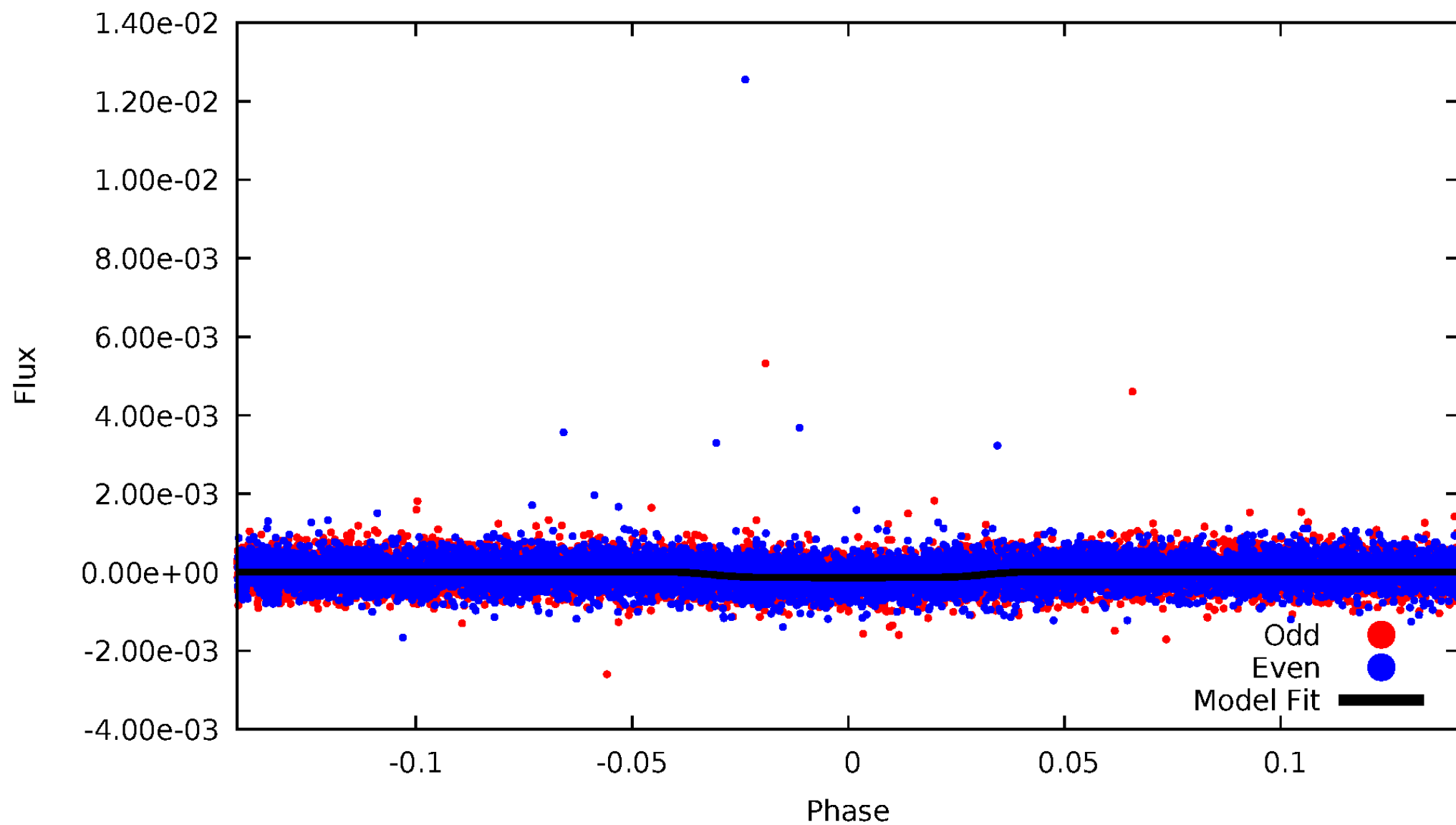


TCE 006525209-04



# DV Odd/Even

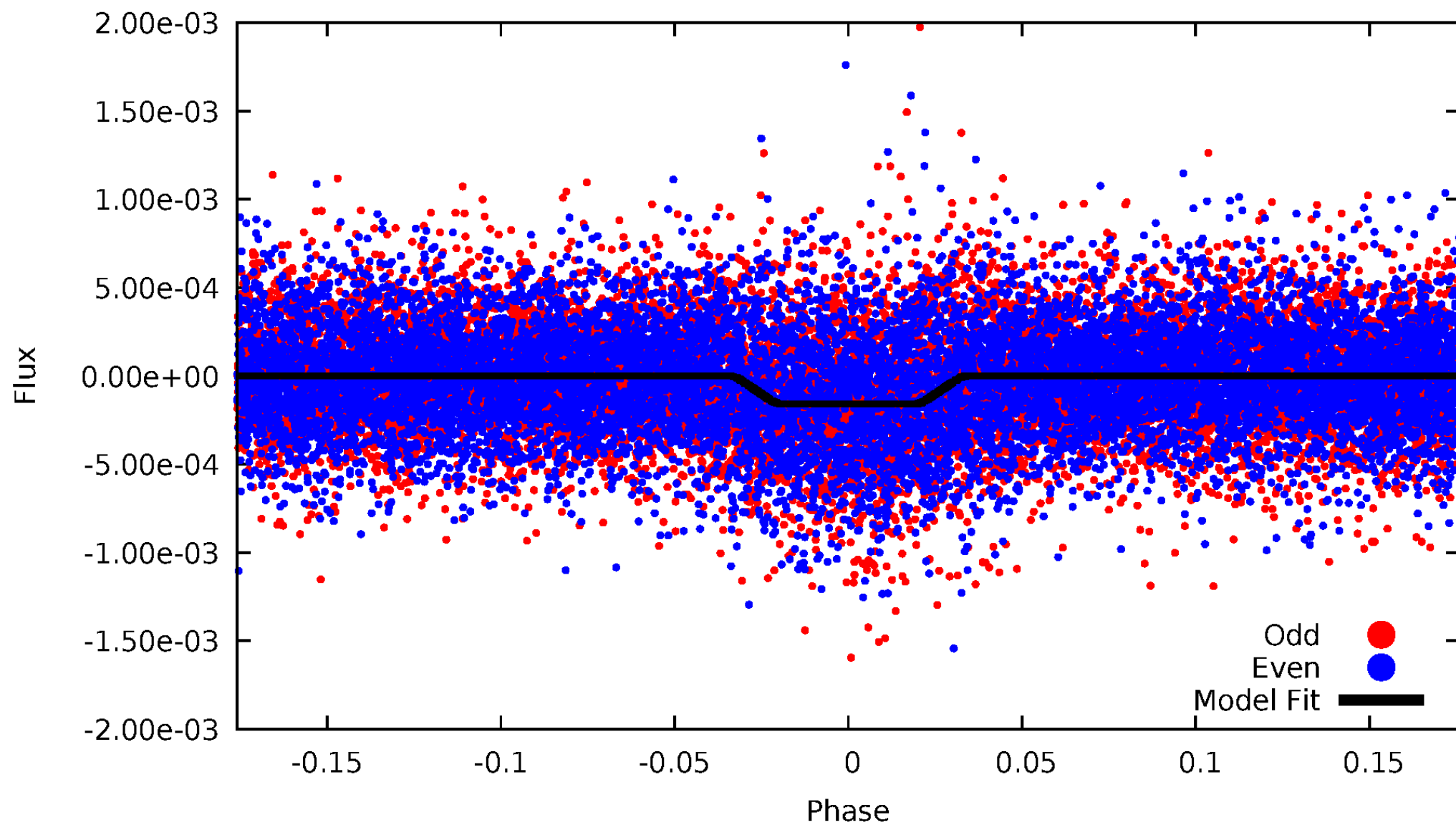
TCE 006525209-04





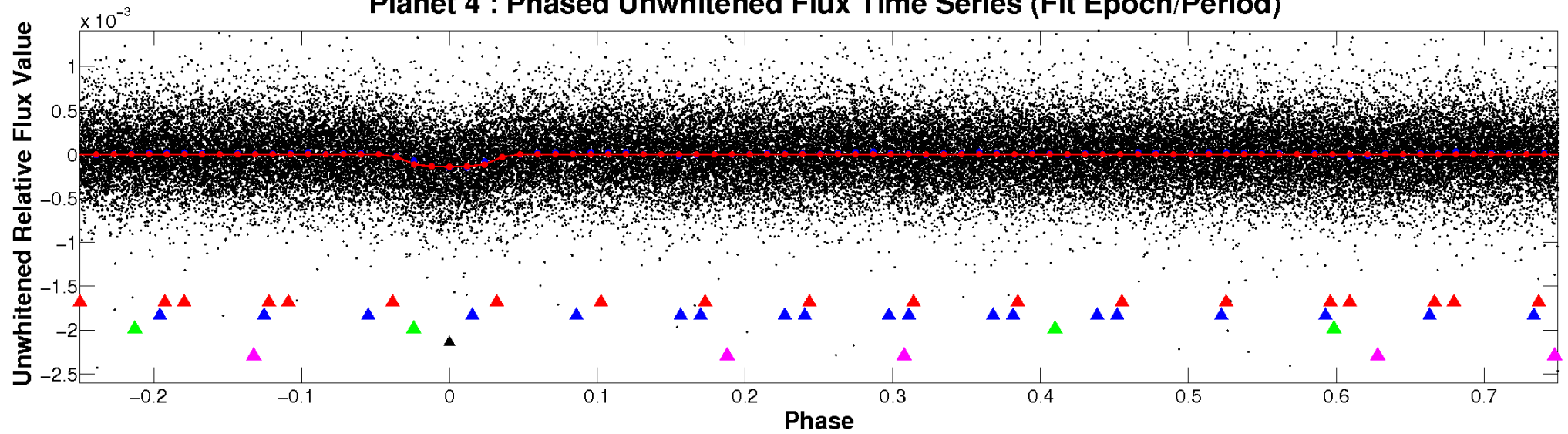
# ALT Odd/Even

TCE 006525209-04

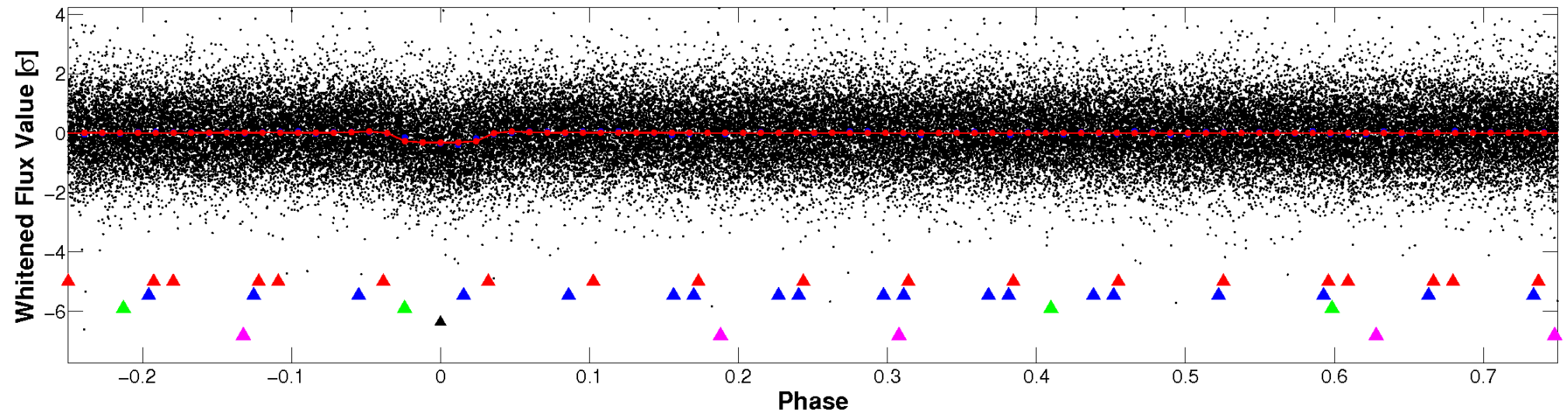


# Non-Whitened Vs. Whitened Light Curve

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

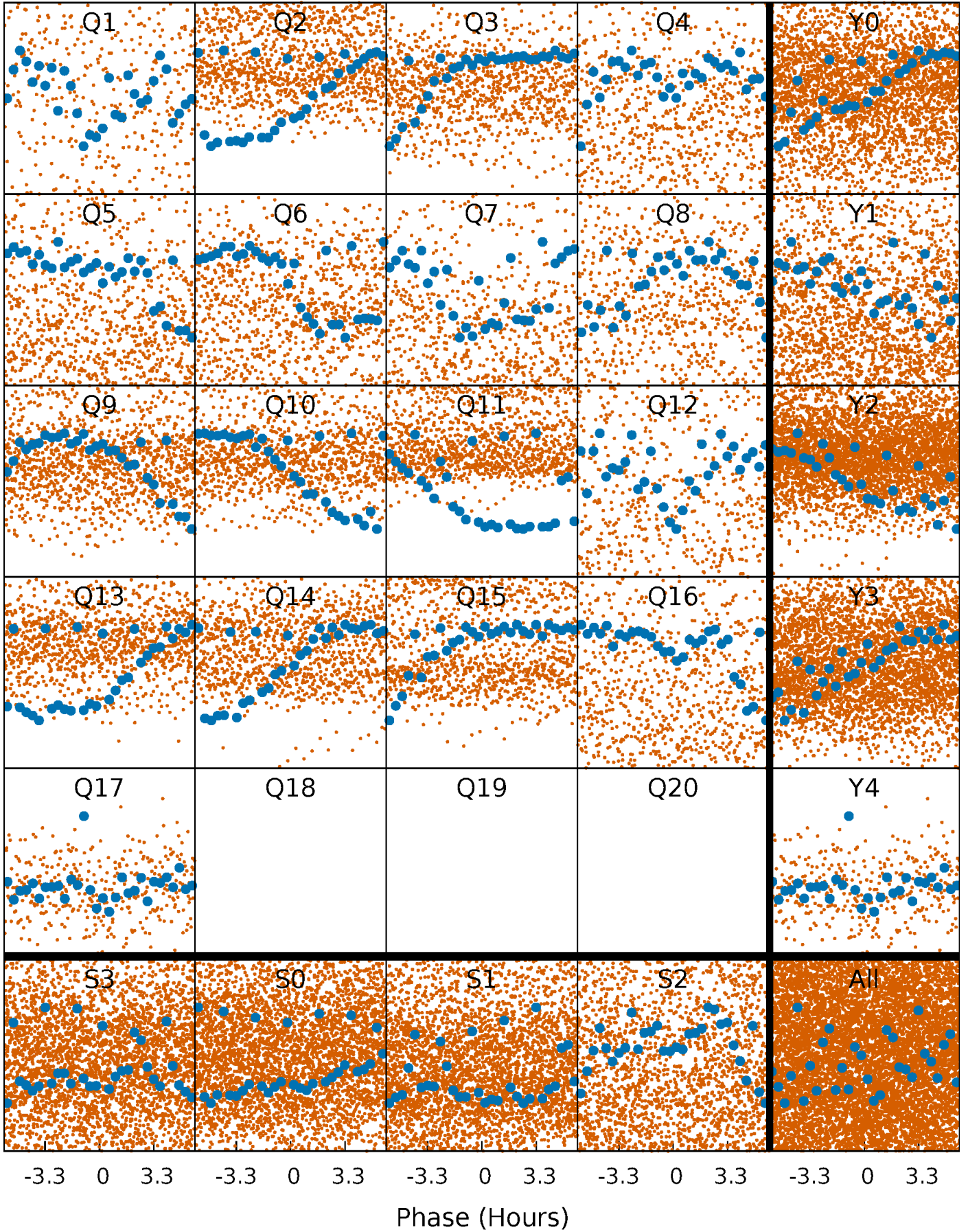


## Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

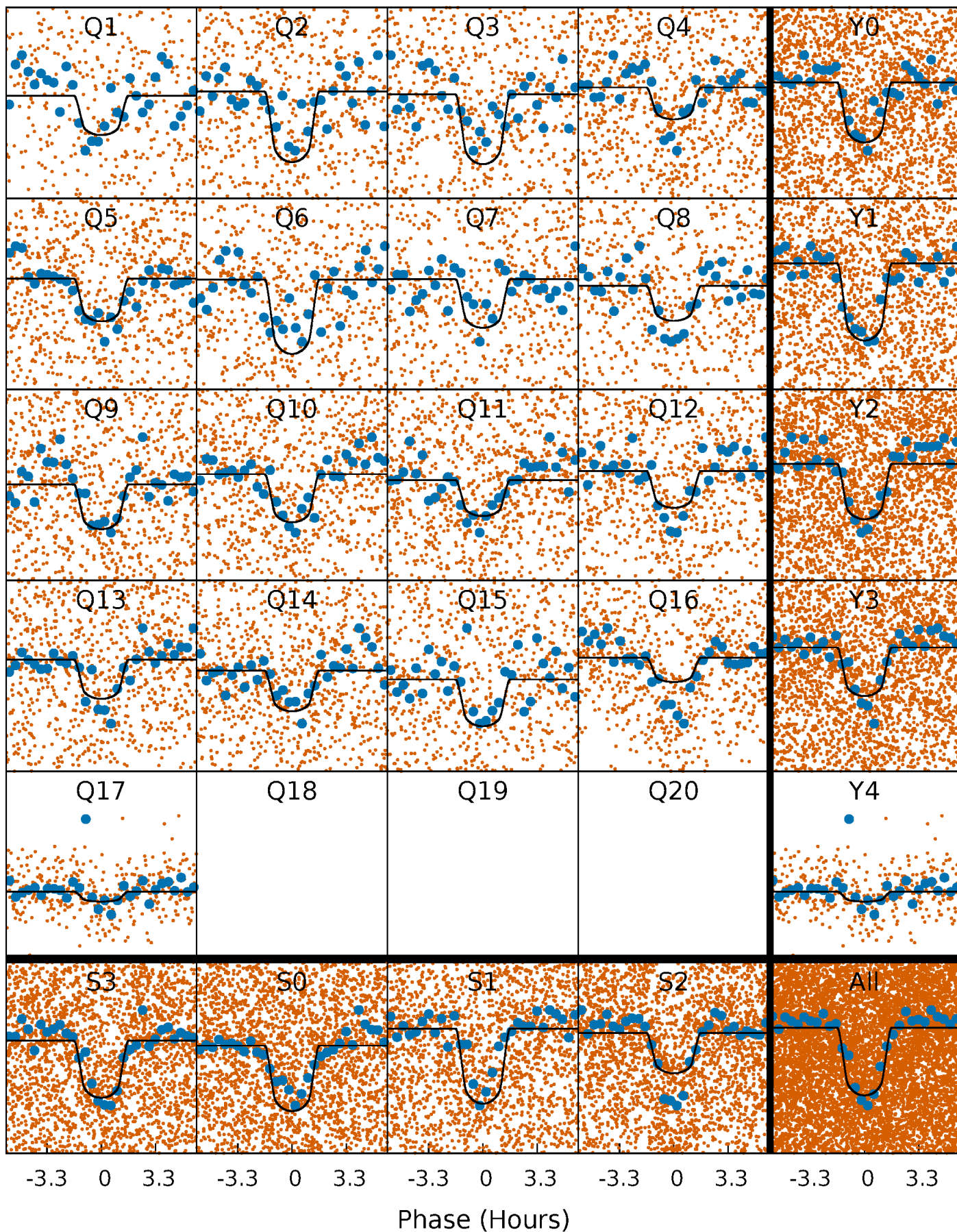
TCE 006525209-04   P= 1.710283 Days    $T_0=131.619614$  (BKJD)





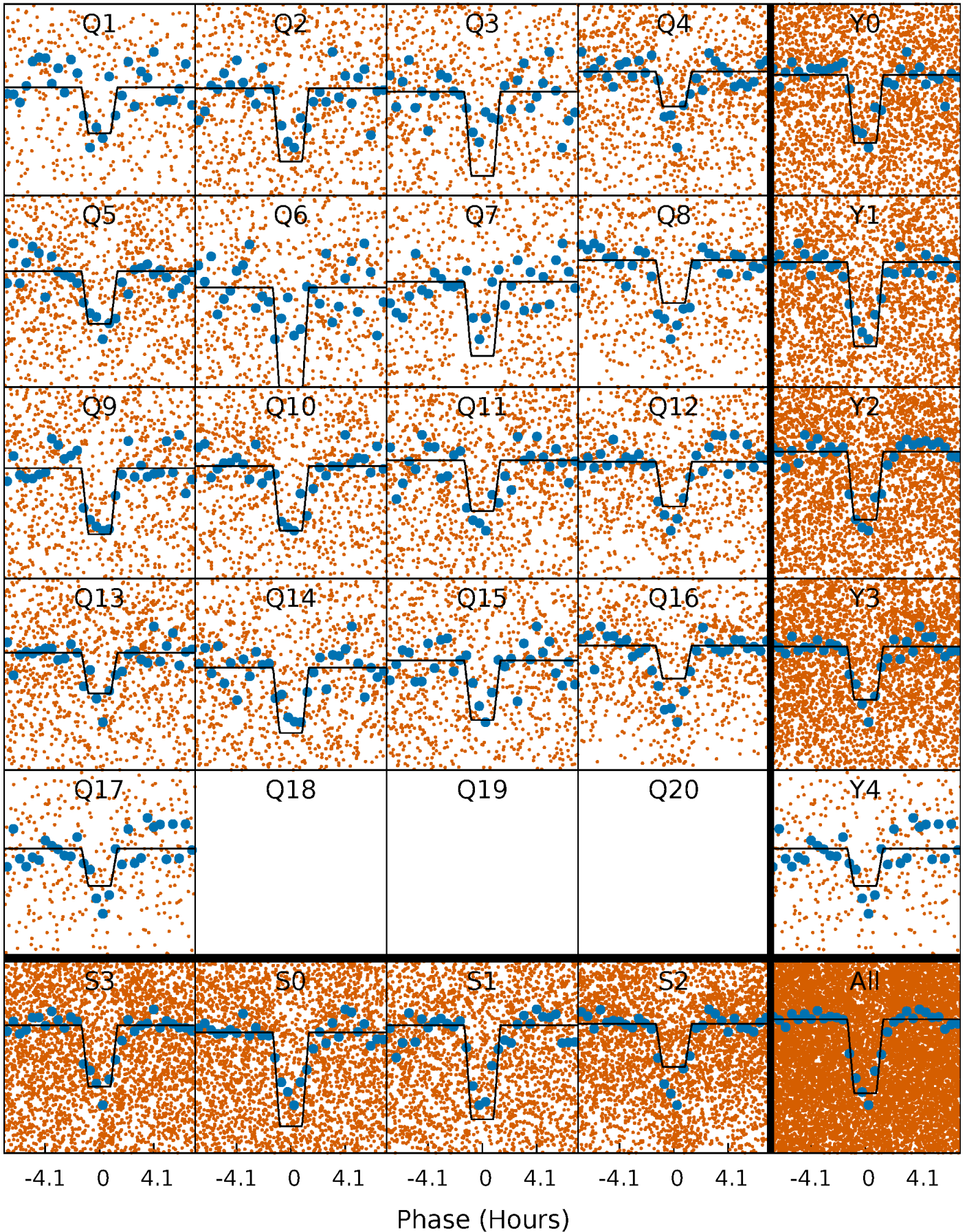
# DV Quarter-Phased Transit Curves

TCE 006525209-04 P= 1.710283 Days  $T_0=131.619614$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 006525209-04   P= 1.710303 Days    $T_0=131.611410$  (BKJD)

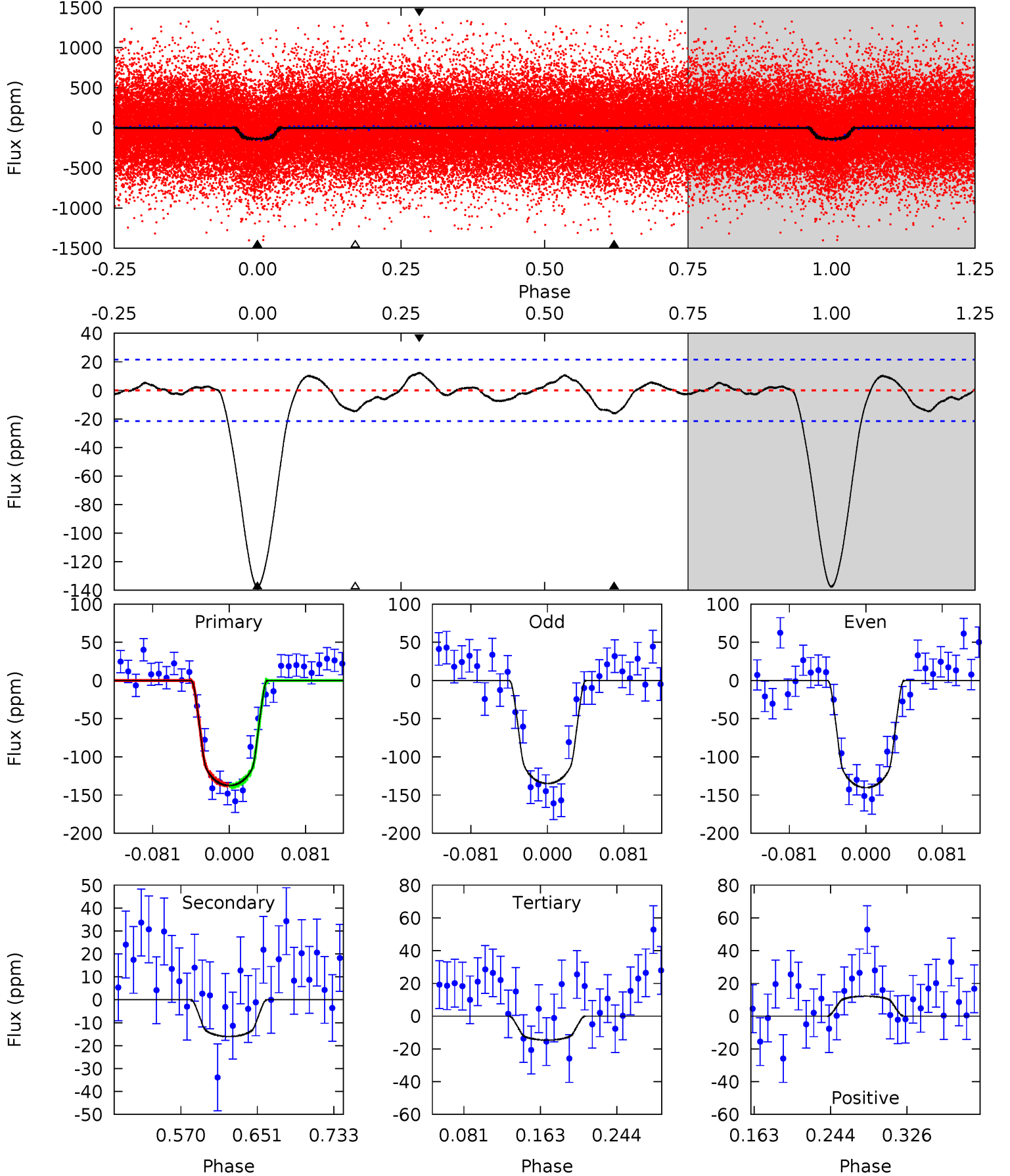




# DV Model-Shift Uniqueness Test

006525209-04, P = 1.710283 Days, E = 129.909331 Days

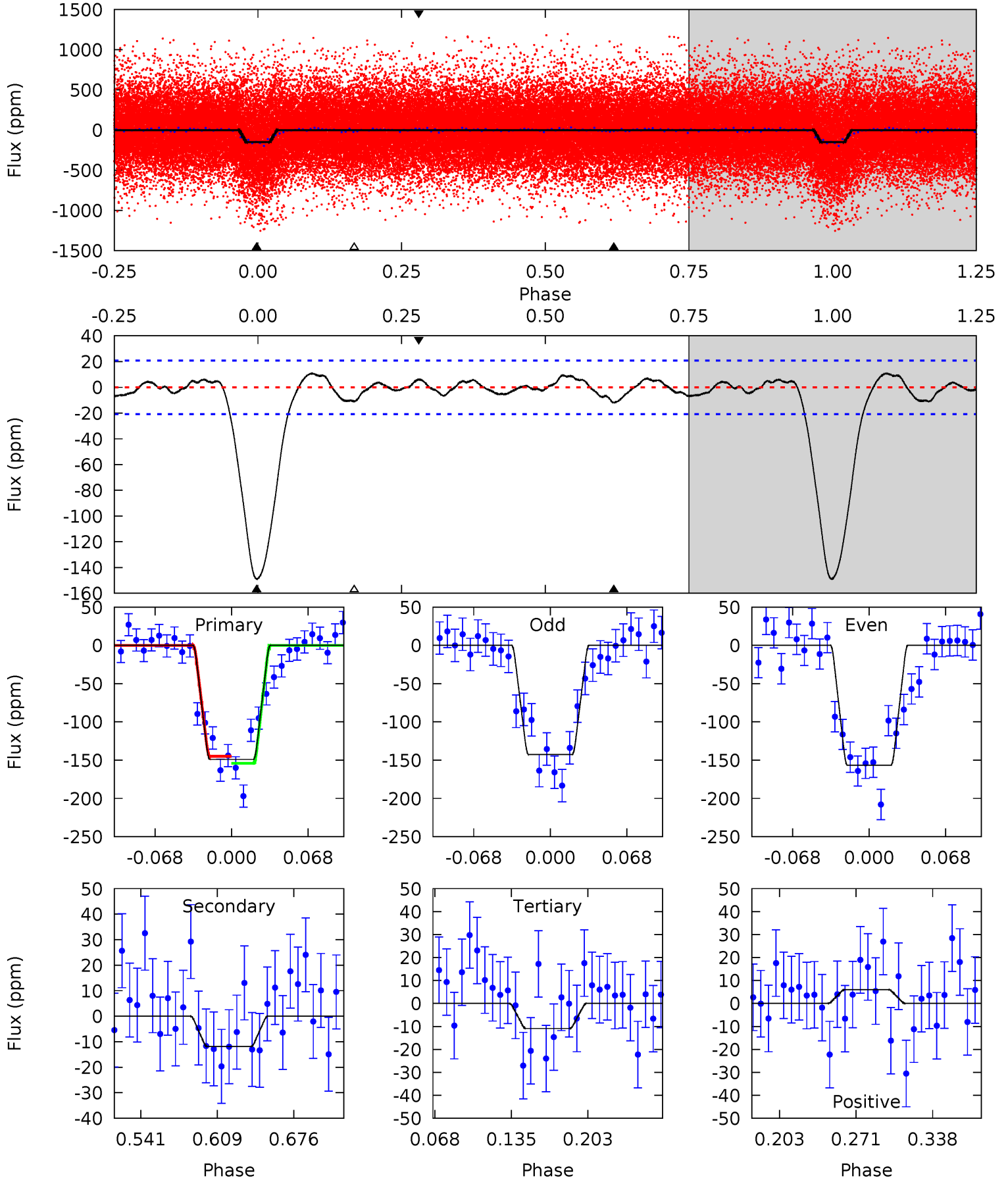
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
29.4	3.42	3.13	2.60	4.61	1.74	1.23	26.2	26.8	0.29	0.82	0.59	0.96	0.08	0.17



# Alt Model-Shift Uniqueness Test

006525209-04, P = 1.710303 Days, E = 129.901107 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
33.3	2.65	2.44	1.34	4.65	1.83	1.08	30.8	31.9	0.21	1.31	1.57	1.04	0.07	1.02



### Stellar Parameters For KIC 006525209

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5365^{+160}_{-144}$	$4.586^{+0.052}_{-0.078}$	$-0.460^{+0.300}_{-0.300}$	$0.729^{+0.104}_{-0.064}$	$0.747^{+0.092}_{-0.054}$	$2.714^{+0.645}_{-0.744}$
	+3%/-3%	+1%/-2%	+65%/-65%	+14%/-9%	+12%/-7%	+24%/-27%
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 006525209-04 / KOI 3479.02

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-16 \pm 5$	$1.05^{+0.26}_{-0.27}$	$1785^{+77}_{-69}$	$3442^{+366}_{-311}$	$5.323^{+4.115}_{-2.308}$
Alt.	$-12 \pm 4$	$1.02^{+0.26}_{-0.24}$	$1783^{+72}_{-62}$	$3285^{+367}_{-320}$	$4.003^{+3.547}_{-1.880}$

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

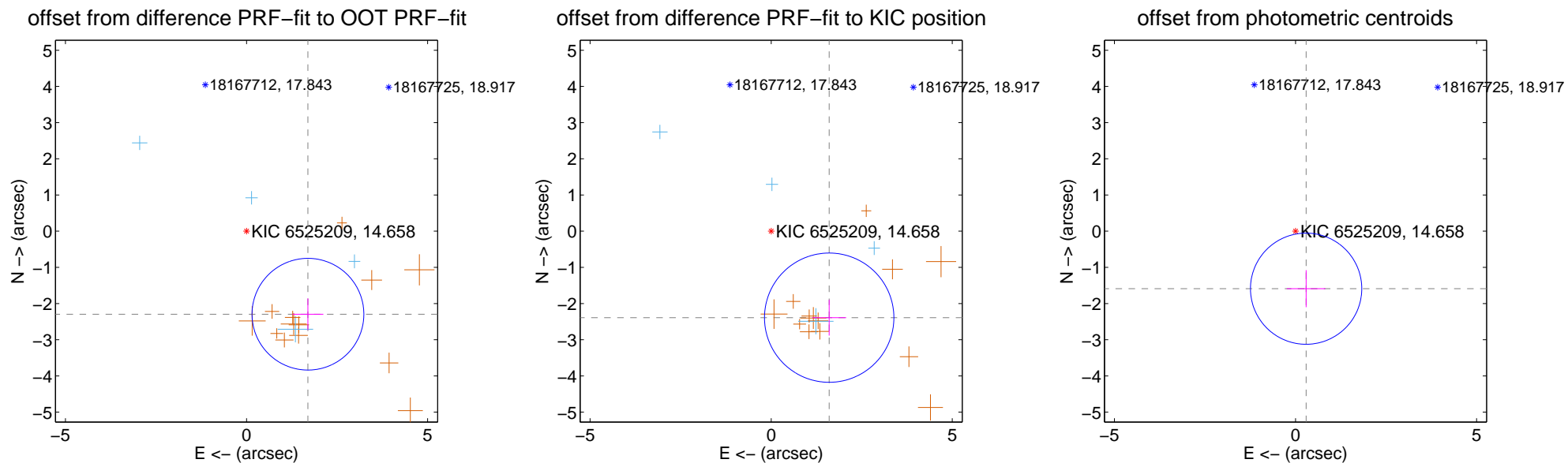
## DV Centroid Data

Supplemental centroid analysis for 006525209-04. Kepler magnitude: 14.66. Transit SNR 18.22

There are 4 quarters with good PRF difference image offsets

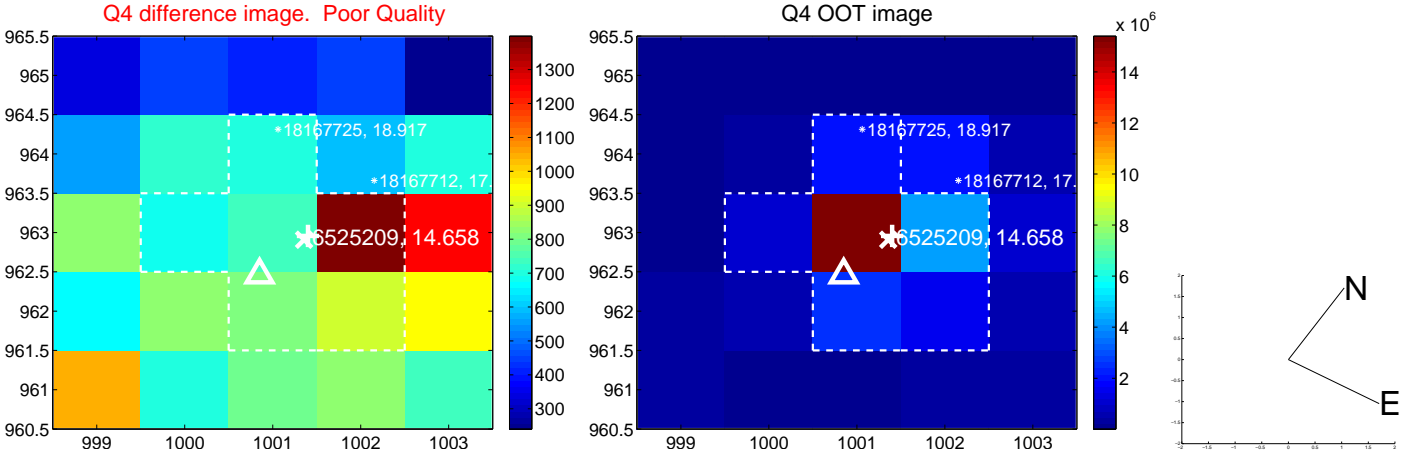
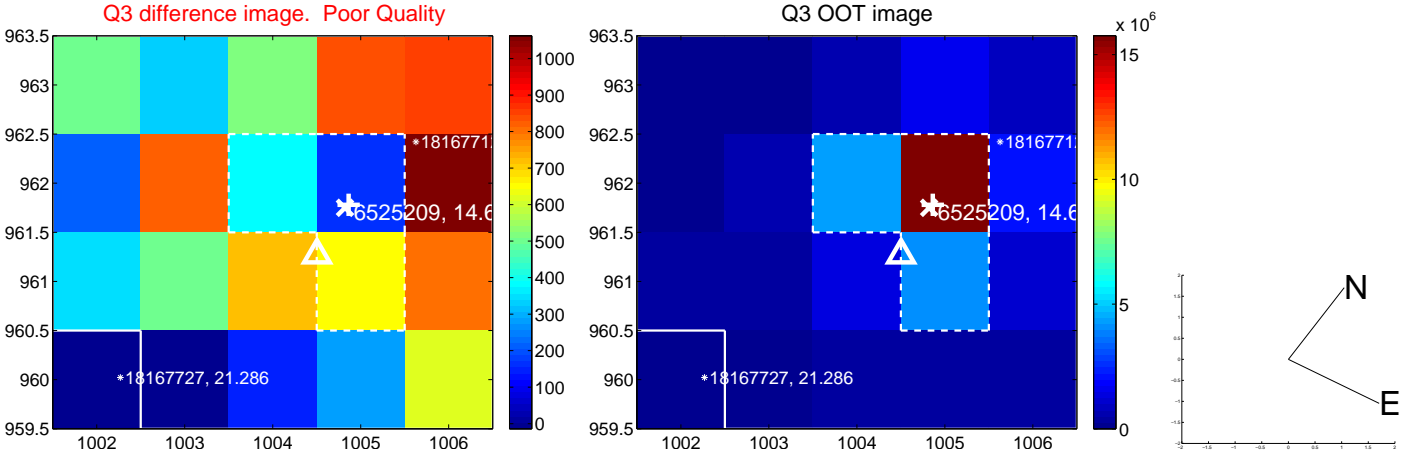
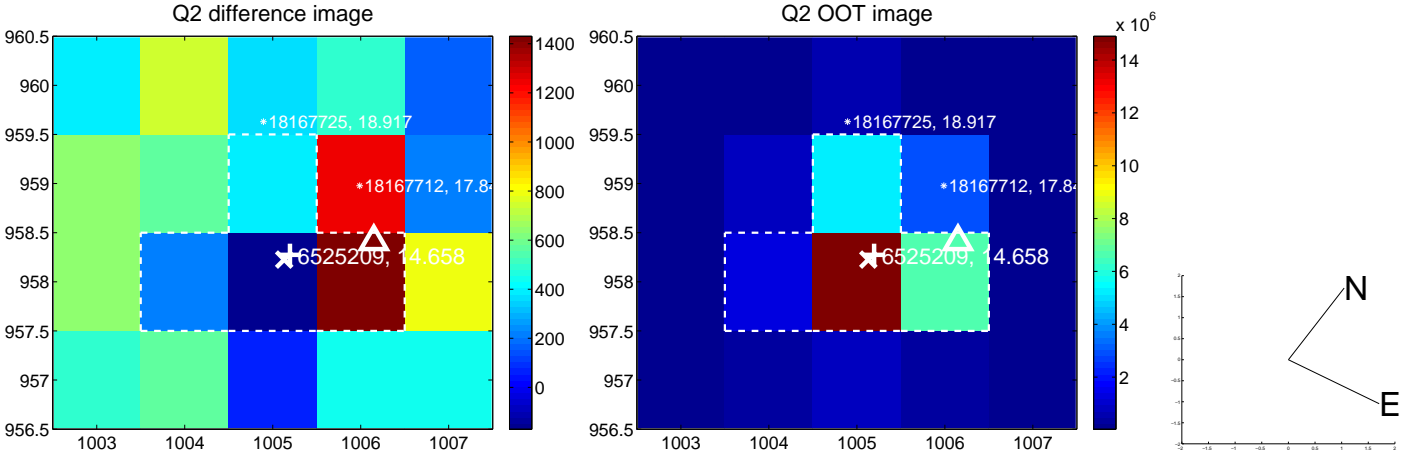
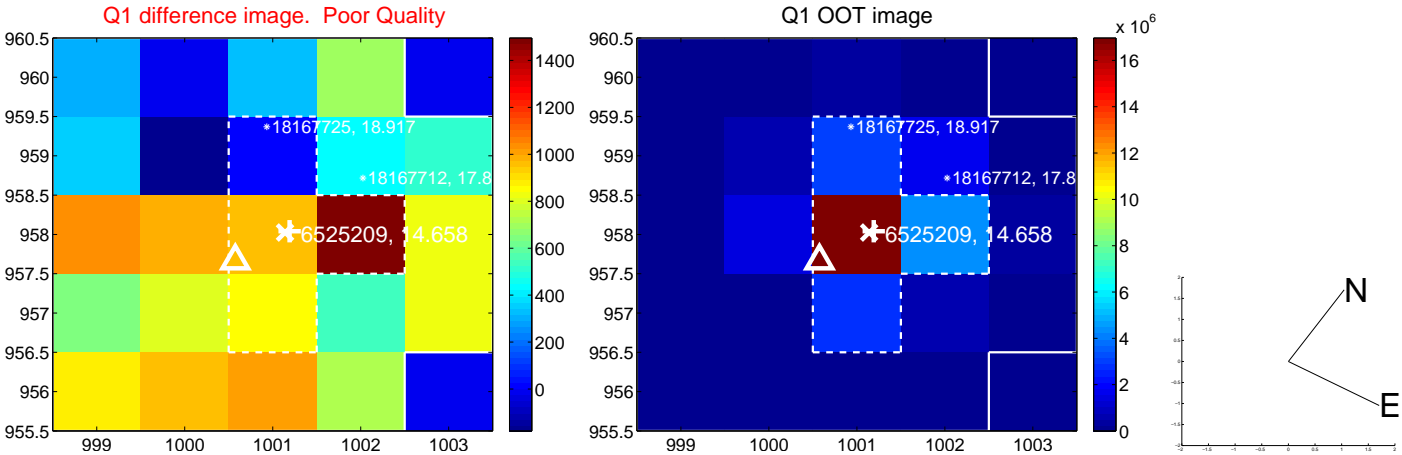
The direct PRF centroid is offset from the target star catalog position by about 0.15 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$2.853 \pm 0.514$	$5.55$	$-1.695 \pm 0.425$	$-2.295 \pm 0.435$
PRF-fit source offset from KIC position	$2.878 \pm 0.595$	$4.83$	$-1.602 \pm 0.469$	$-2.390 \pm 0.494$
photometric centroid source offset	$1.62 \pm 0.51$	$3.16$	$-0.29 \pm 0.53$	$-1.59 \pm 0.51$

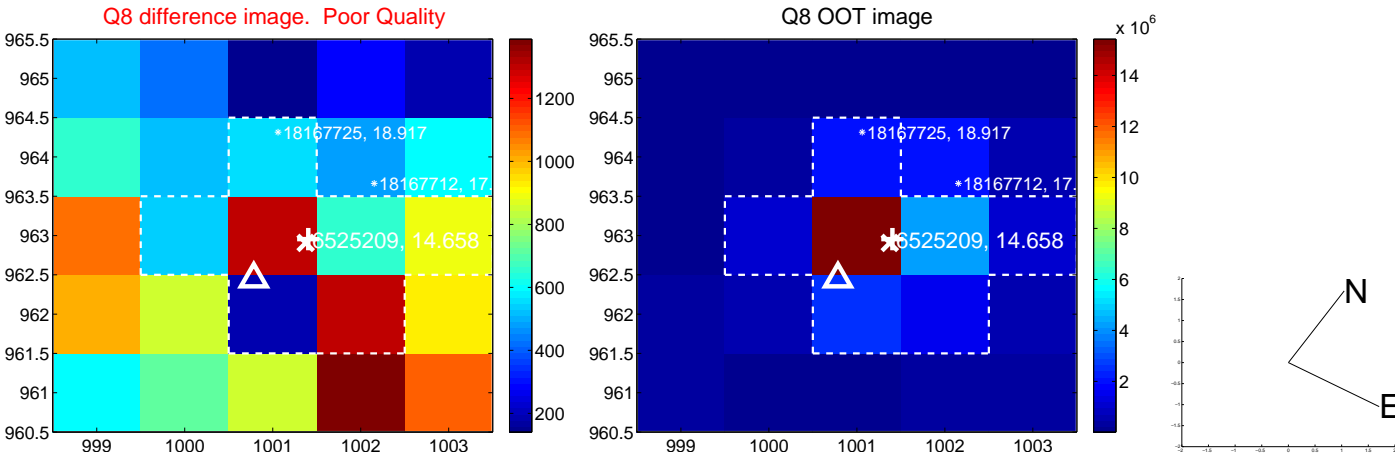
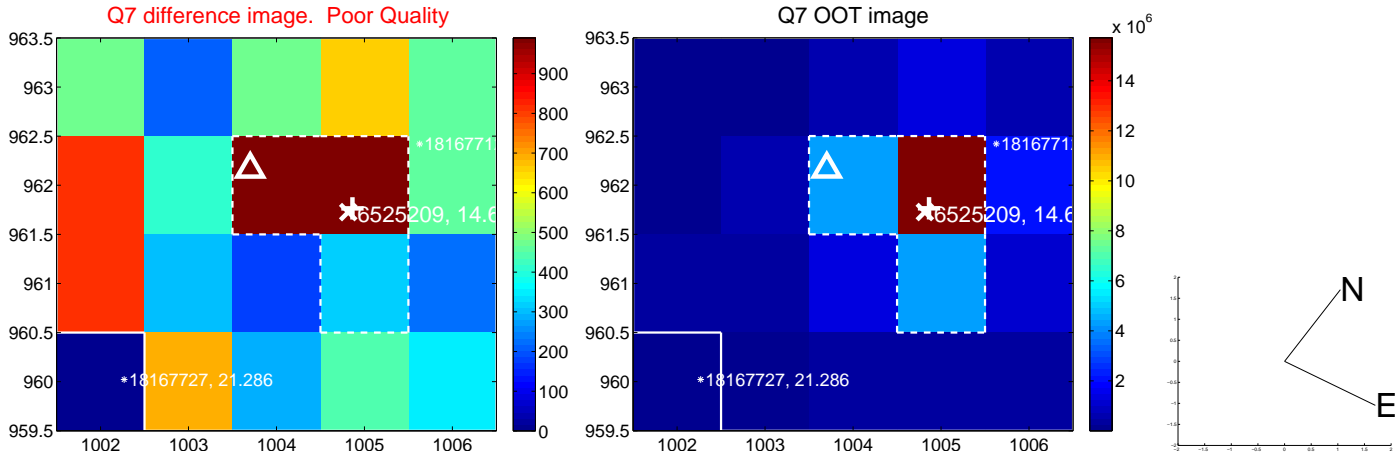
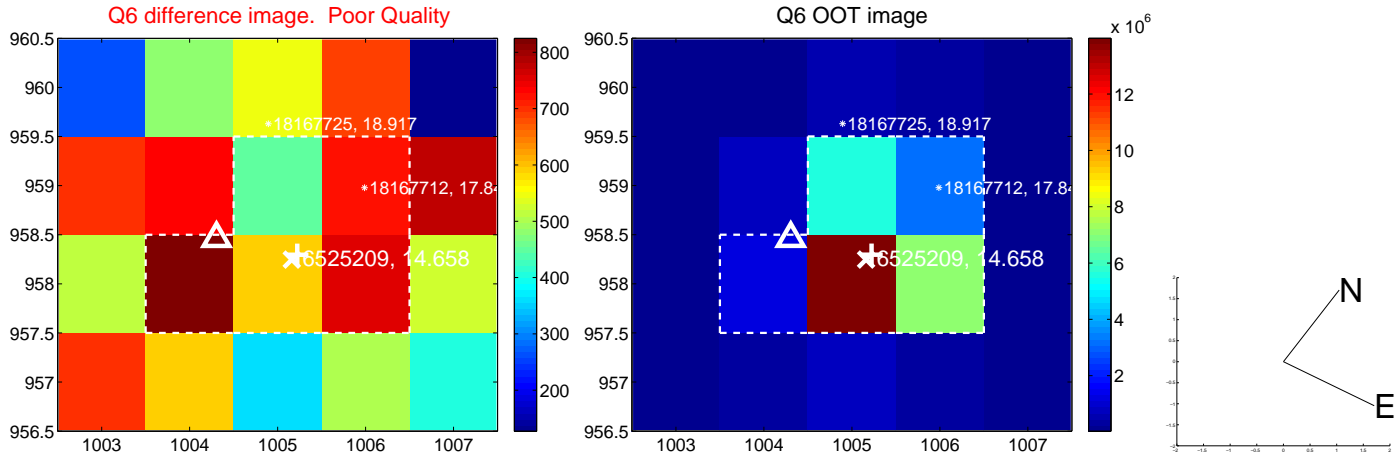
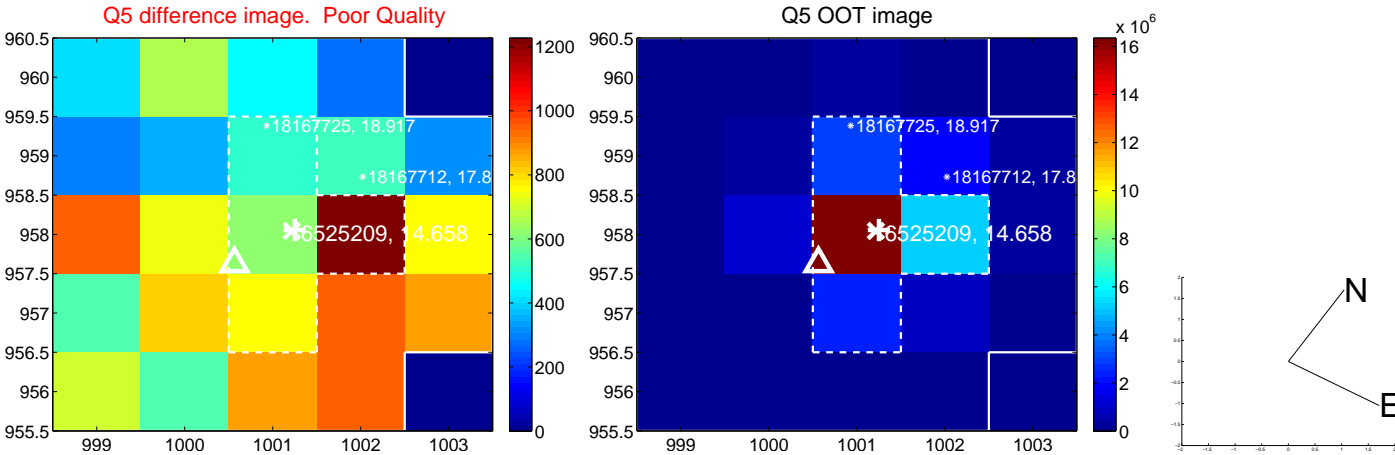


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

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

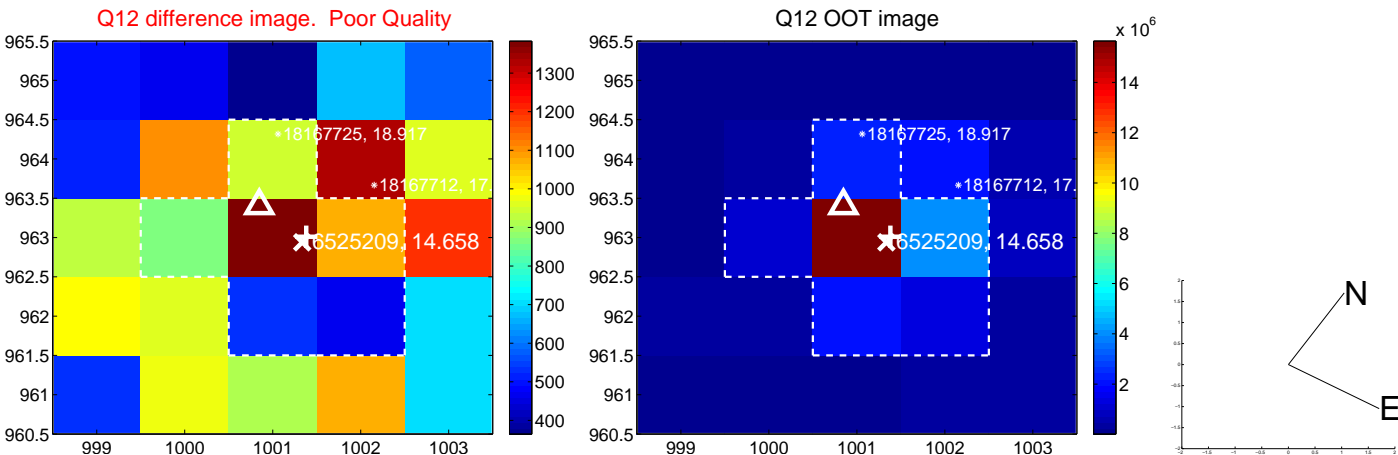
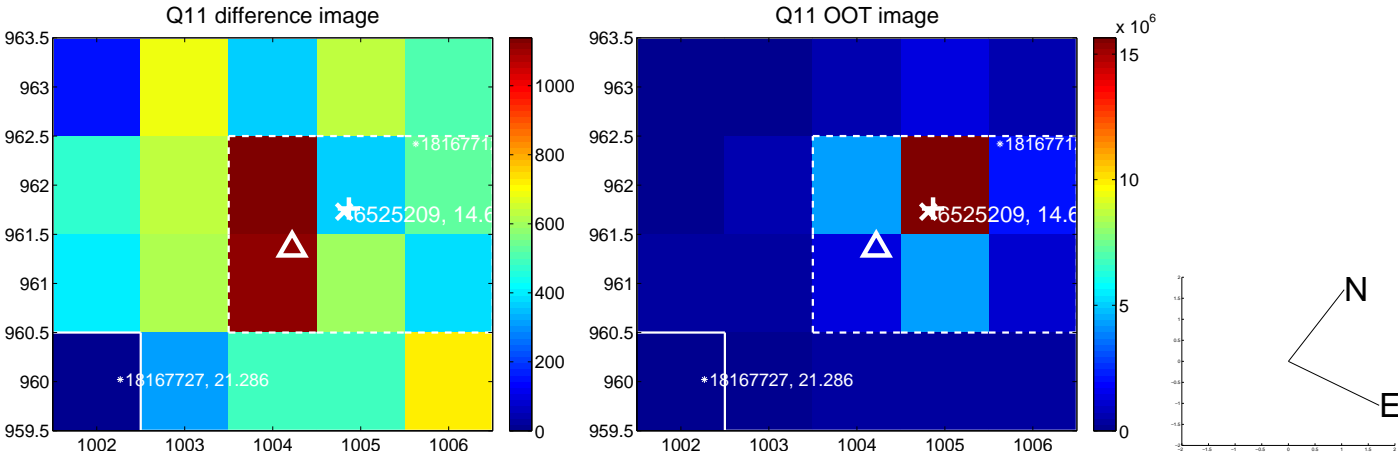
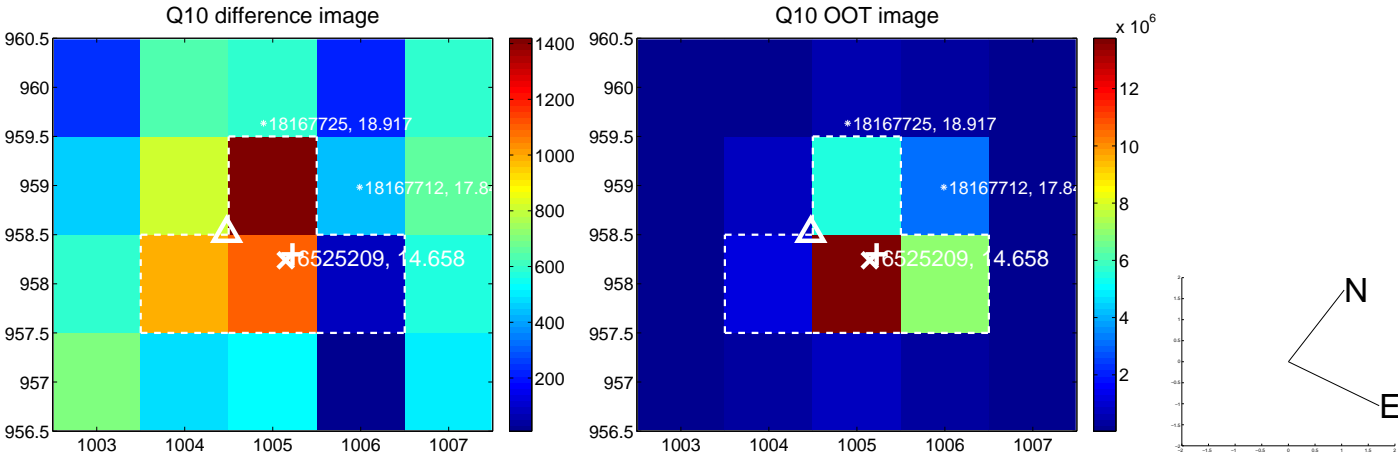
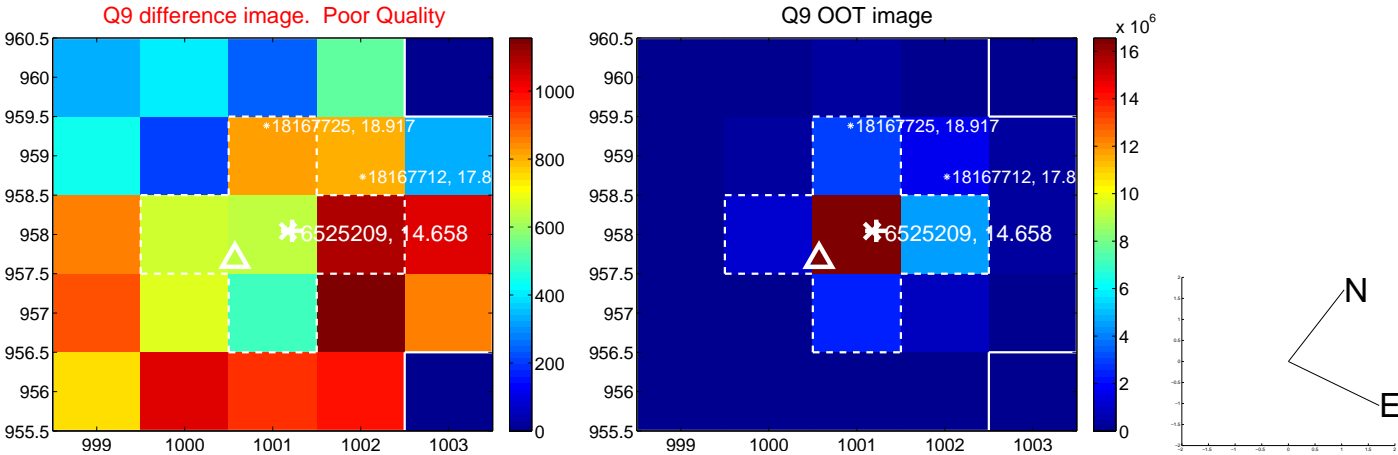


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

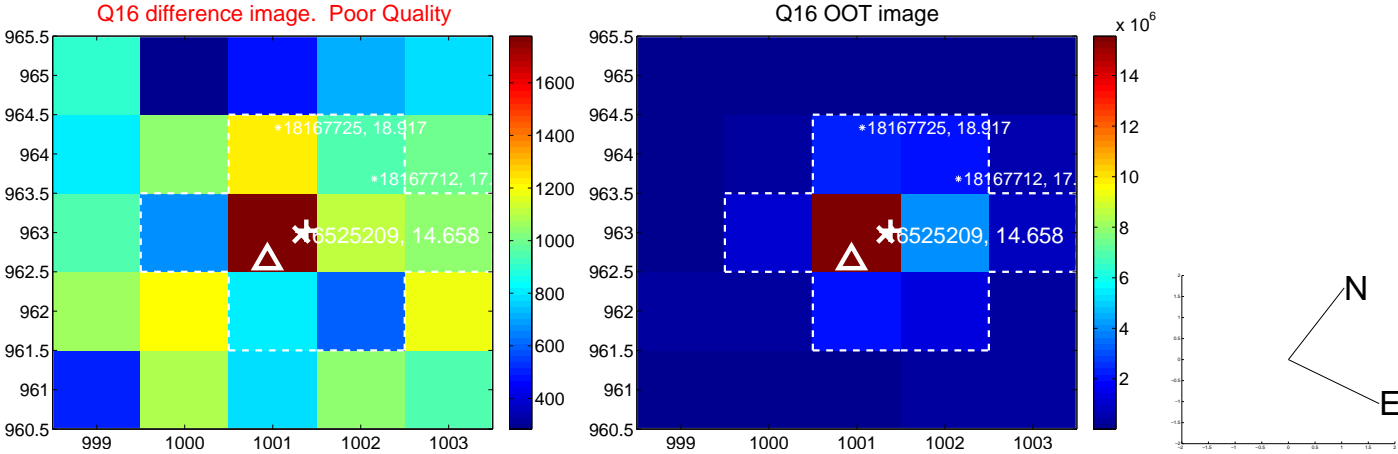
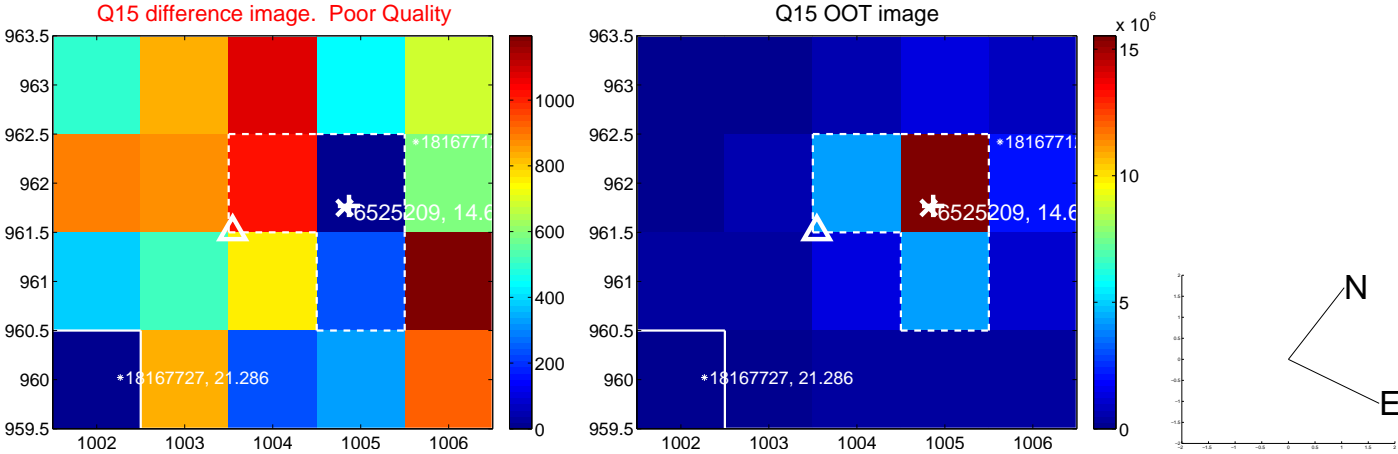
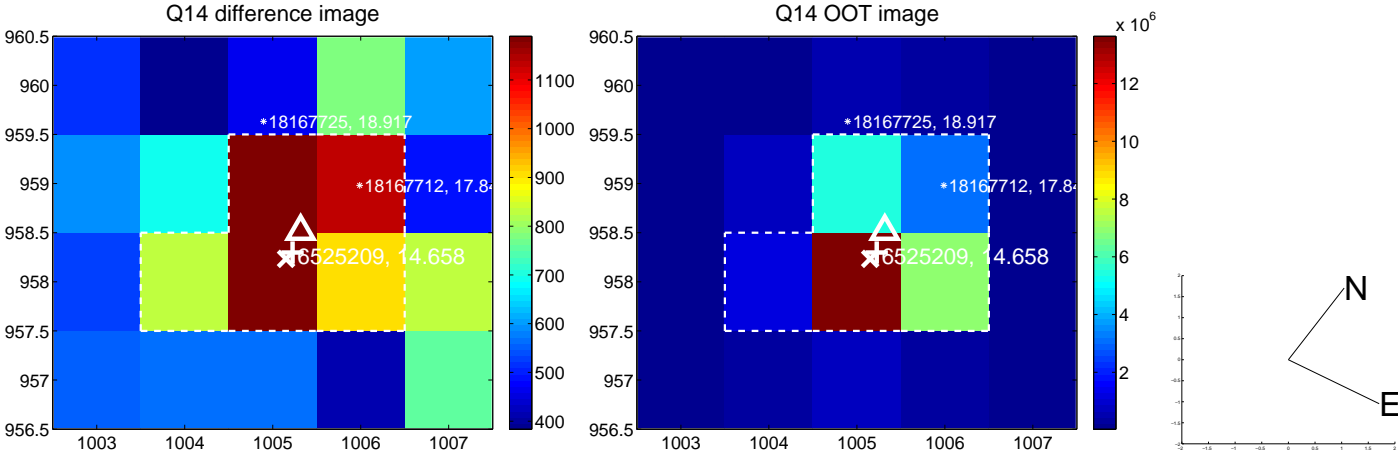
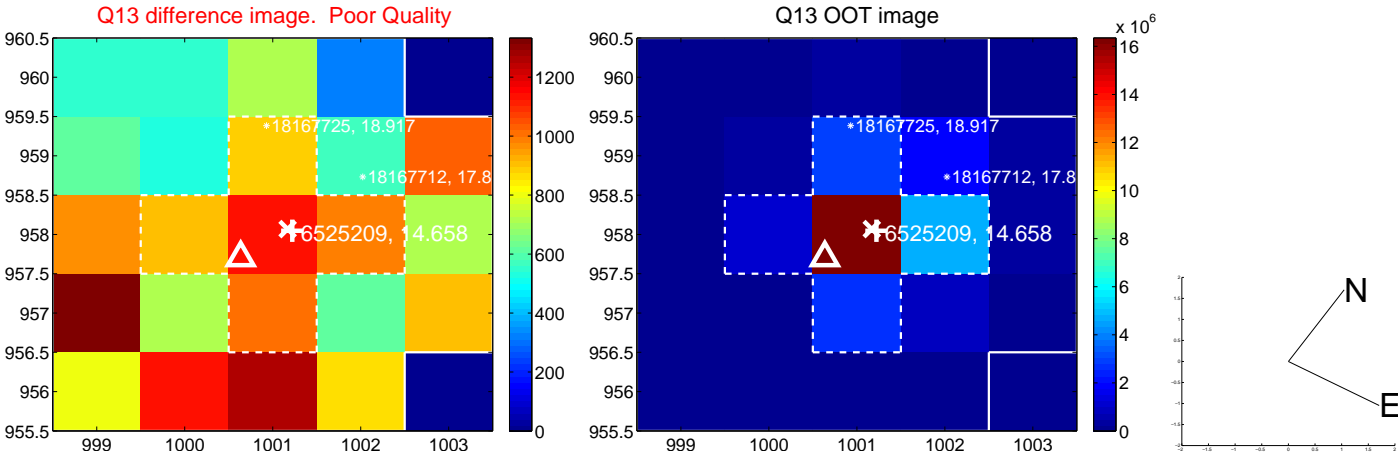




white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



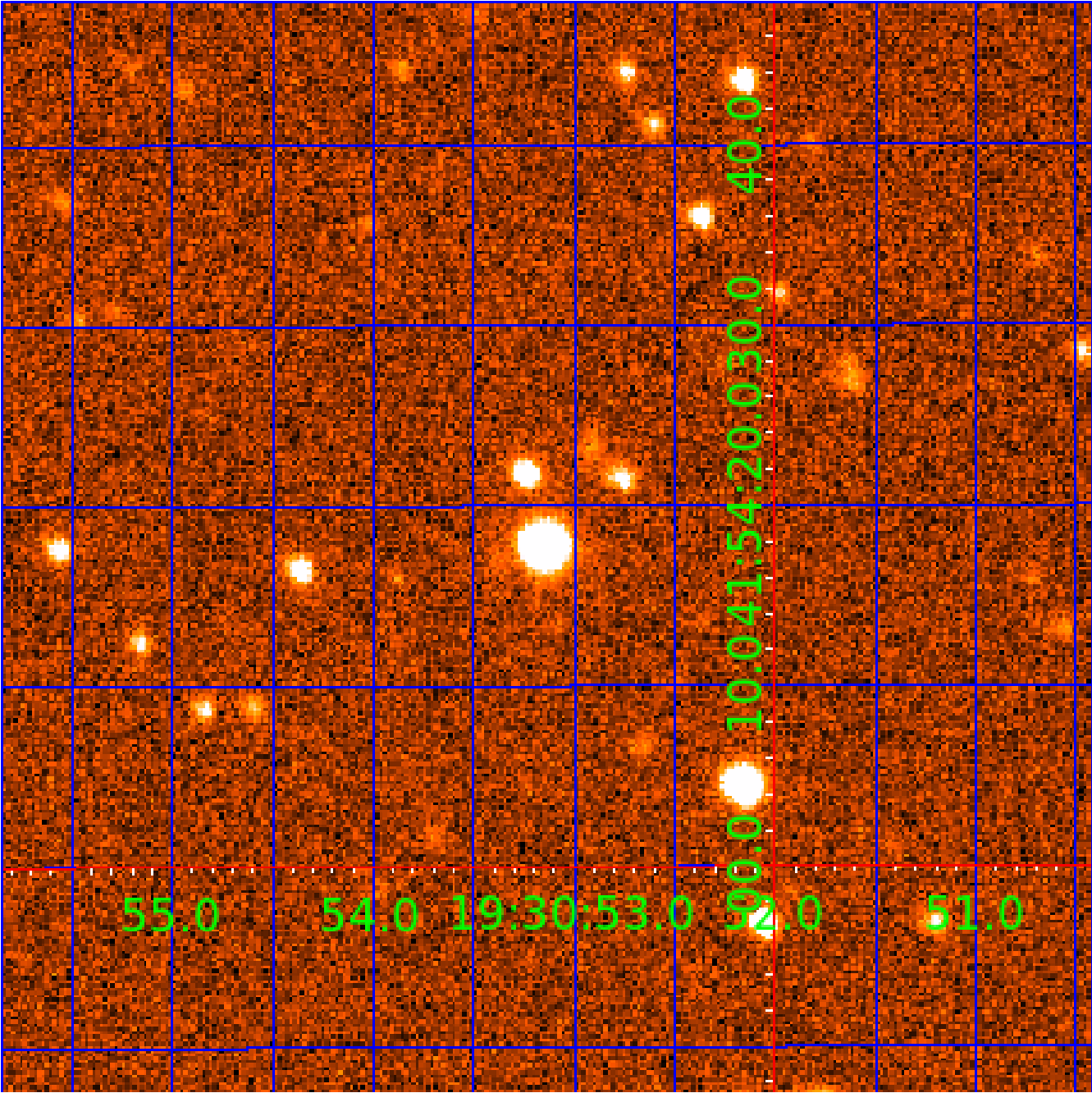
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.





UKIRT Image

Declination



# KIC 006525209

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
006525209-01	OBS	3479.01	75.131913	184.429704	121322.9	20.849	2783.9	2515.3	0.73	5365	26.11	3.94
006525209-02	OBS	No	75.131959	200.780609	39668.5	9.040	1015.7	697.0	0.73	5365	14.89	3.94
006525209-03	OBS	No	446.061223	201.700012	773.5	7.758	23.6	8.9	0.73	5365	2.21	0.37
006525209-04	OBS	3479.02	1.710283	131.619614	139.9	2.900	16.4	18.2	0.73	5365	1.05	611.27
006525209-05	OBS	No	324.201148	165.189190	687.8	11.997	10.5	8.7	0.73	5365	2.07	0.56

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006525209-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_DV—MOD_SEC_ALT—HAS_SEC_TCE
006525209-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE
006525209-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_TER_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
006525209-04	OBS	FP	0.00	0	0	1	1	CENT_UNRESOLVED_OFFSET—HALO_GHOST—EPHEM_MATCH
006525209-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_MEAS

**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 006525209-05

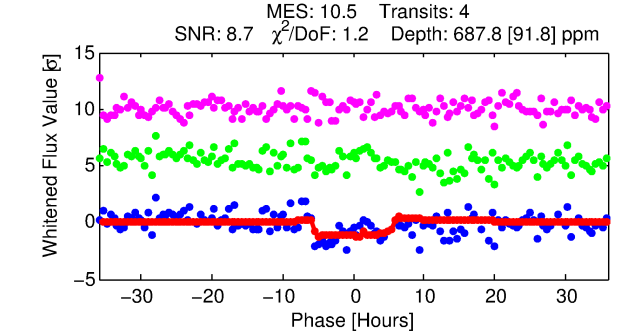
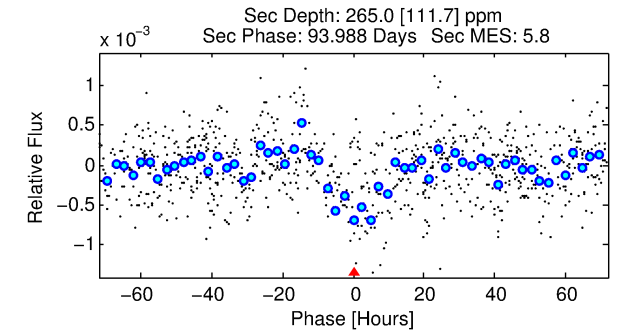
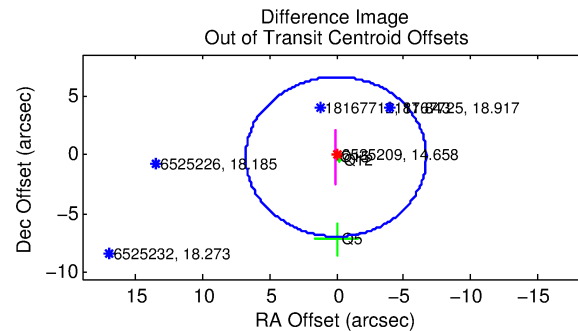
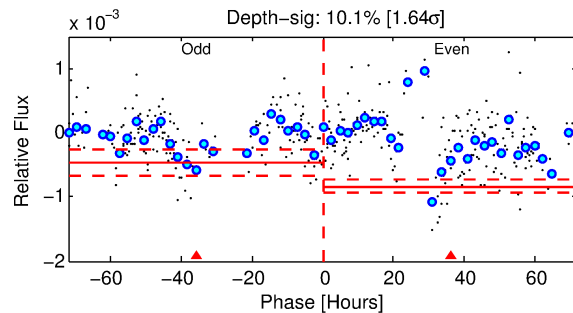
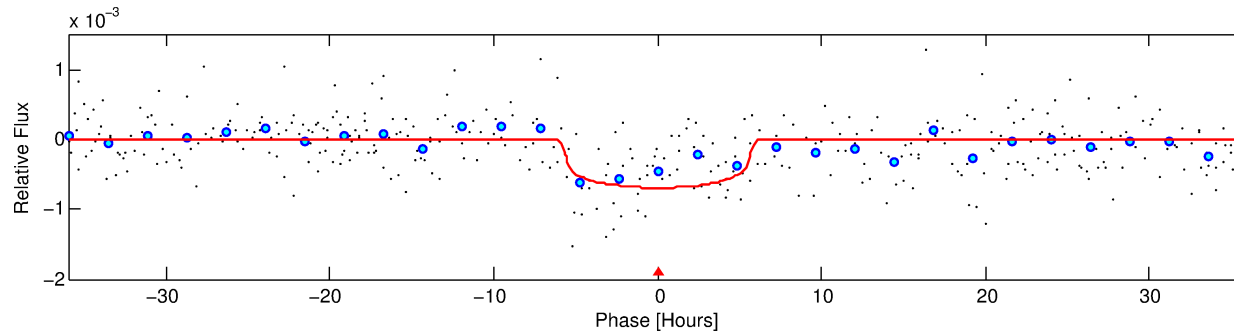
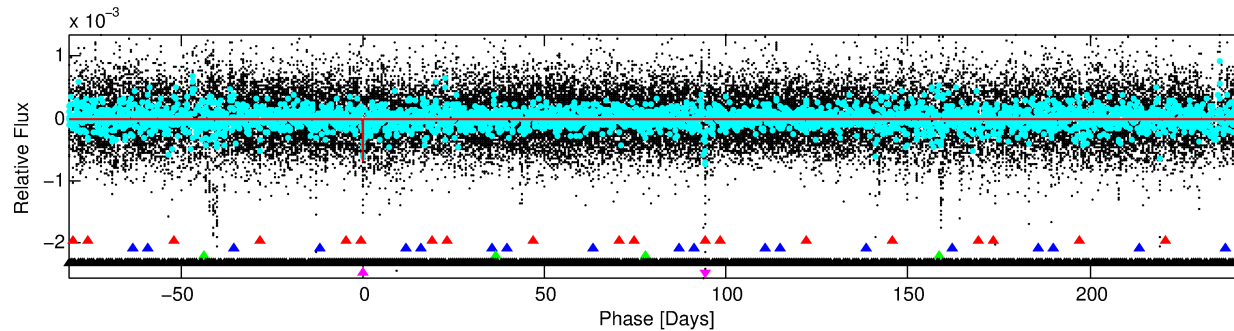
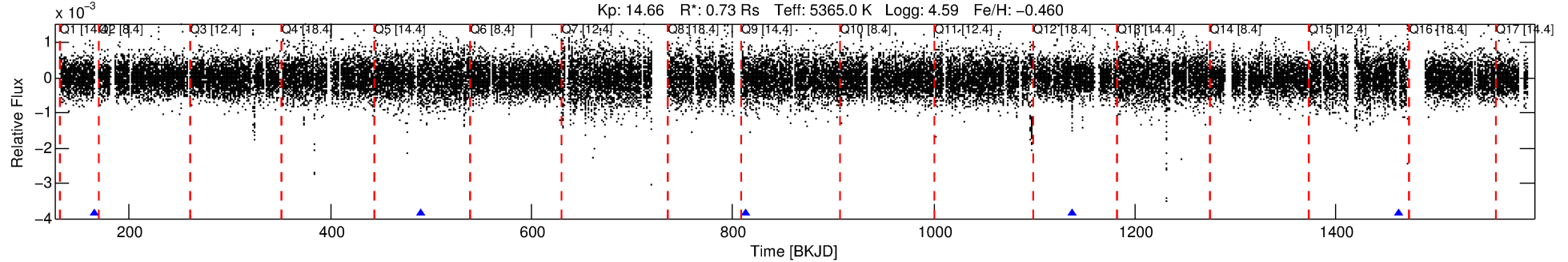
No Significant Match Found

# DV One-Page Summary

KIC: 6525209 Candidate: 5 of 5 Period: 324.201 d

KOI: K03479 Corr: No Ephemeris Match

Kp: 14.66 R\*: 0.73 Rs Teff: 5365.0 K Logg: 4.59 Fe/H: -0.460



## DV Fit Results:

Period = 324.20115 [0.01022] d  
Epoch = 165.1892 [0.0192] BKJD  
Rp/R\* = 0.0261 [0.0068]  
a/R\* = 145.49 [151.86]  
b = 0.75 [0.63]  
Seff = 0.56 [0.11]  
Teq = 221 [11] K  
Rp = 2.07 [0.62] Re  
a = 0.8383 [0.0942] AU  
Ag = 23834.93 [16392.69] [1.45σ]  
Teffp = 4240 [722] K [5.57σ]

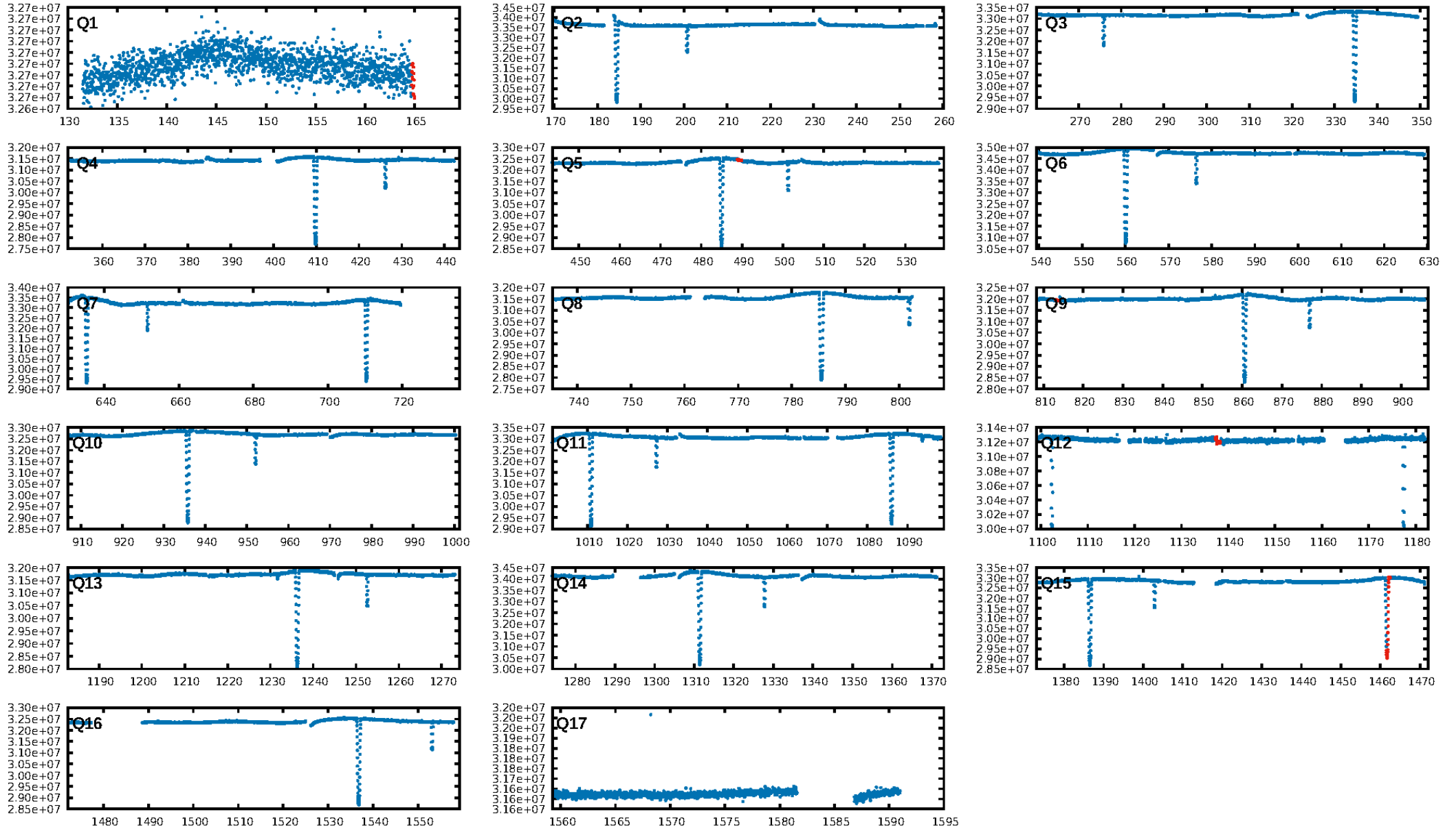
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [397.92σ]  
LongPeriod-sig: 100.0% [204.70σ]  
ModelChiSquare2-sig: 0.0%  
ModelChiSquareGof-sig: 99.9%  
Bootstrap-pfa: 3.83e-11  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: -1.986  
Centroid-sig: 37.6%  
Centroid-so: 0.833 arcsec [1.06σ]  
OotOffset-rm: 0.169 arcsec [0.08σ]  
OotOffset-st: 0/1/1/1 [3]  
KicOffset-rm: 0.123 arcsec [0.13σ]  
KicOffset-st: 0/1/1/1 [3]  
DiffImageQuality-fgm: 0.67 [2/3]  
DiffImageOverlap-fno: 0.00 [0/4]

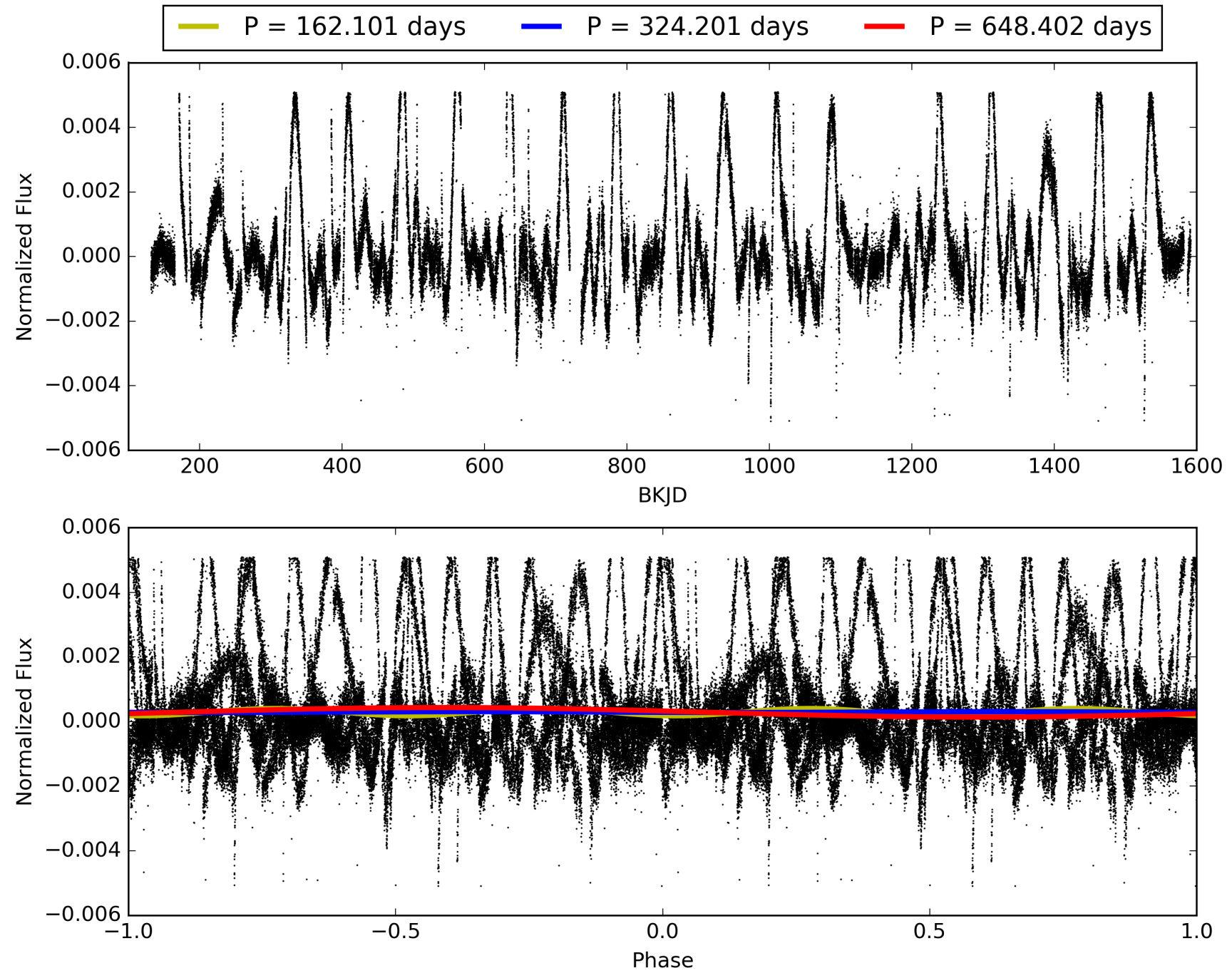
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 03-Feb-2016 07:29:09 Z

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

# TCE 006525209-05, PDC Light Curves



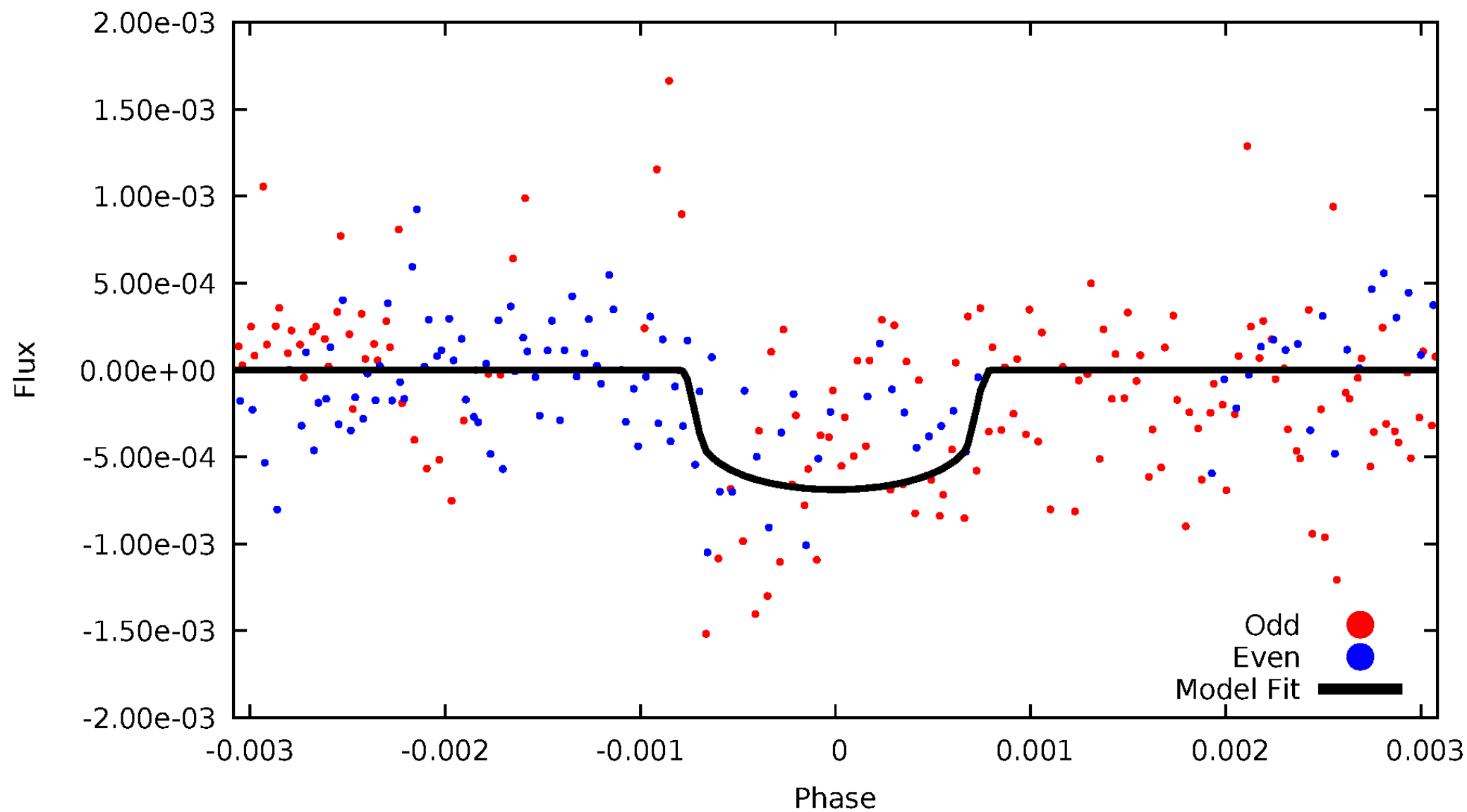
TCE 006525209-05





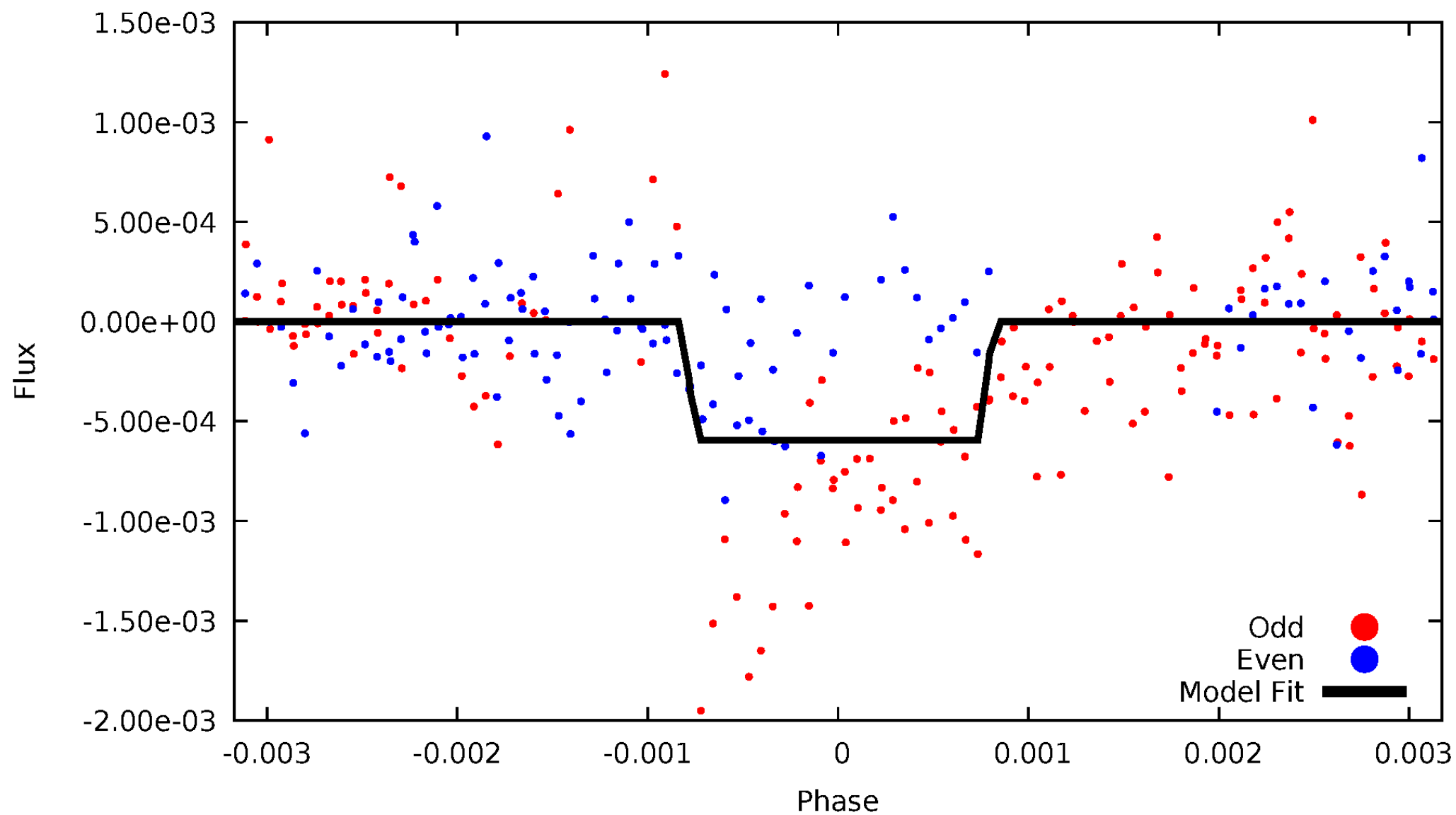
# DV Odd/Even

TCE 006525209-05



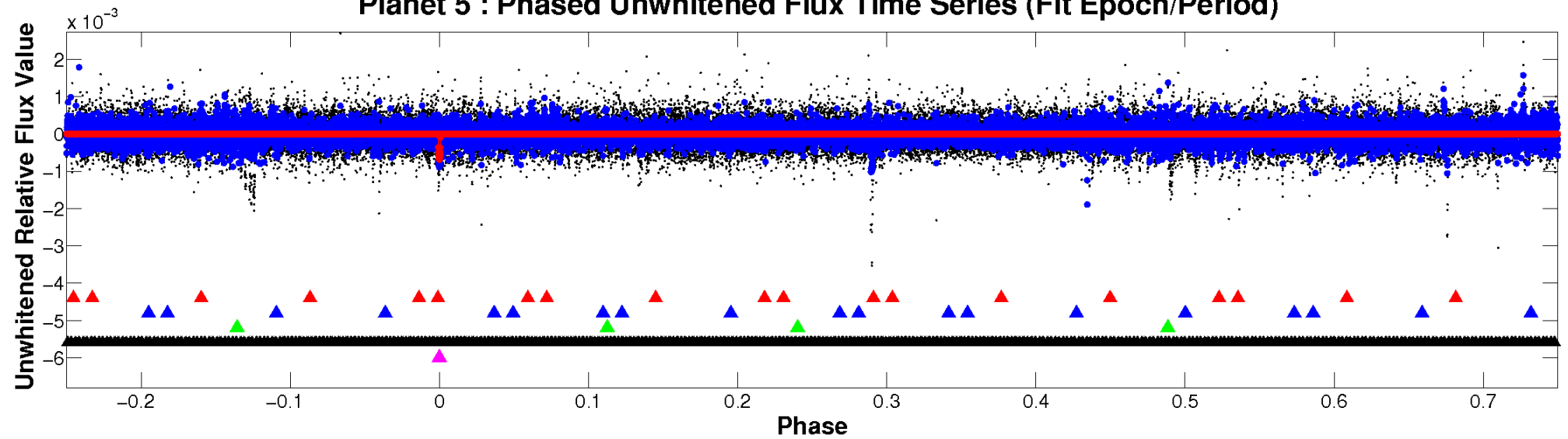
# ALT Odd/Even

TCE 006525209-05

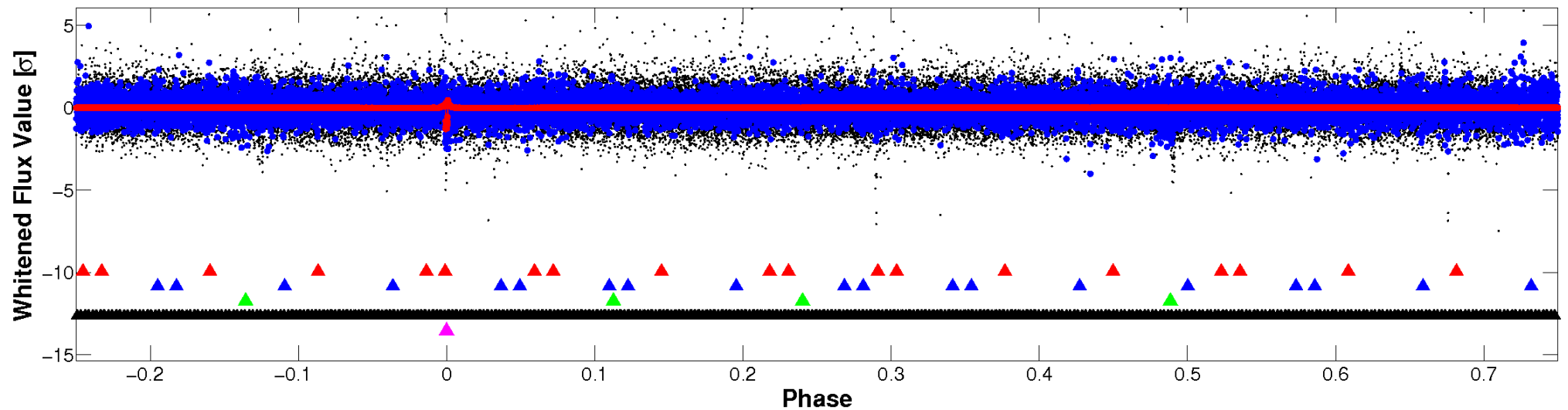


# Non-Whitened Vs. Whitened Light Curve

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

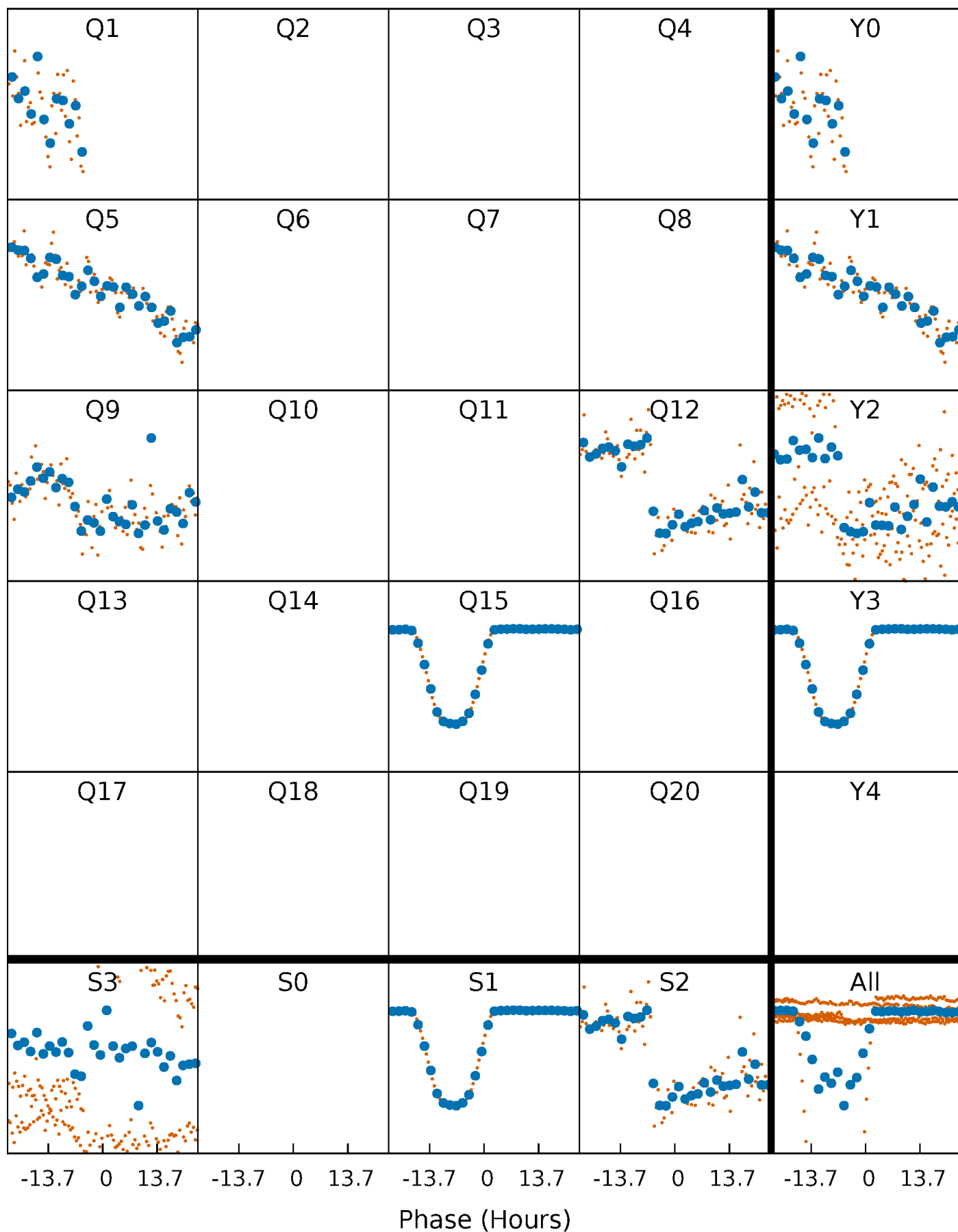


Planet 5 : Phased Whitened Flux Time Series (Fit Epoch/Period)



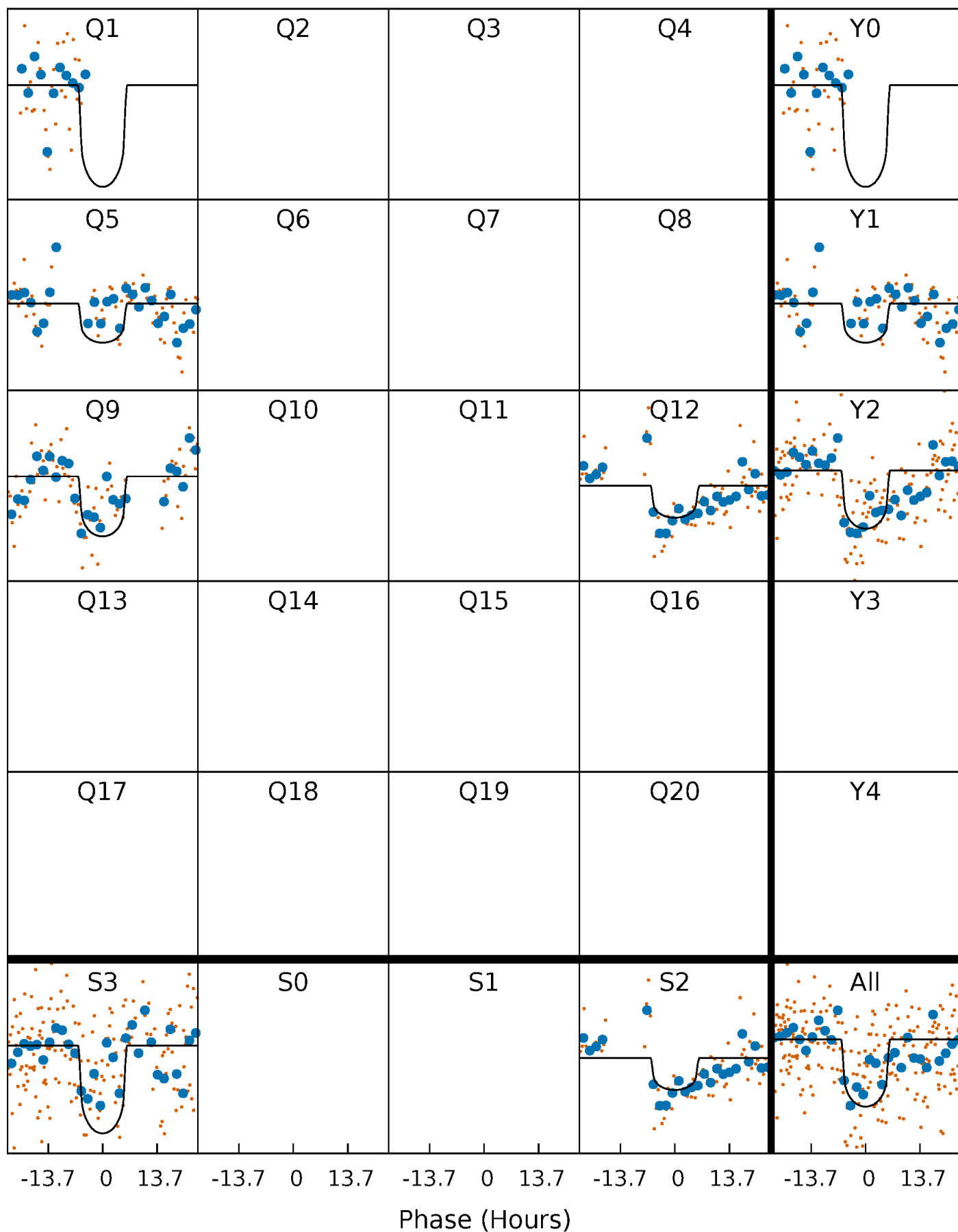
# PDC Quarter-Phased Transit Curves

TCE 006525209-05     $P=324.201148$  Days     $T_0=165.189190$  (BKJD)



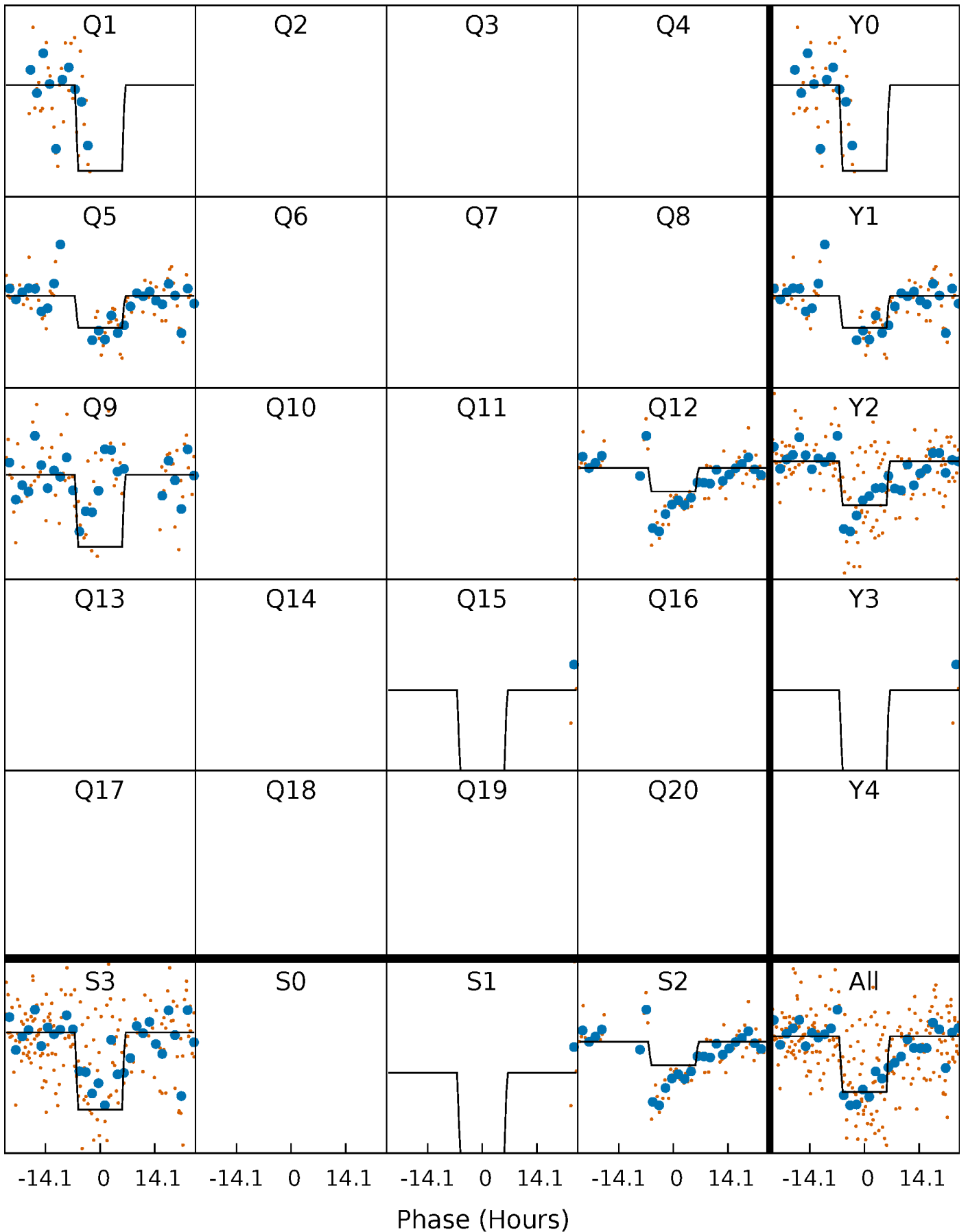
# DV Quarter-Phased Transit Curves

TCE 006525209-05     $P=324.201148$  Days     $T_0=165.189190$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

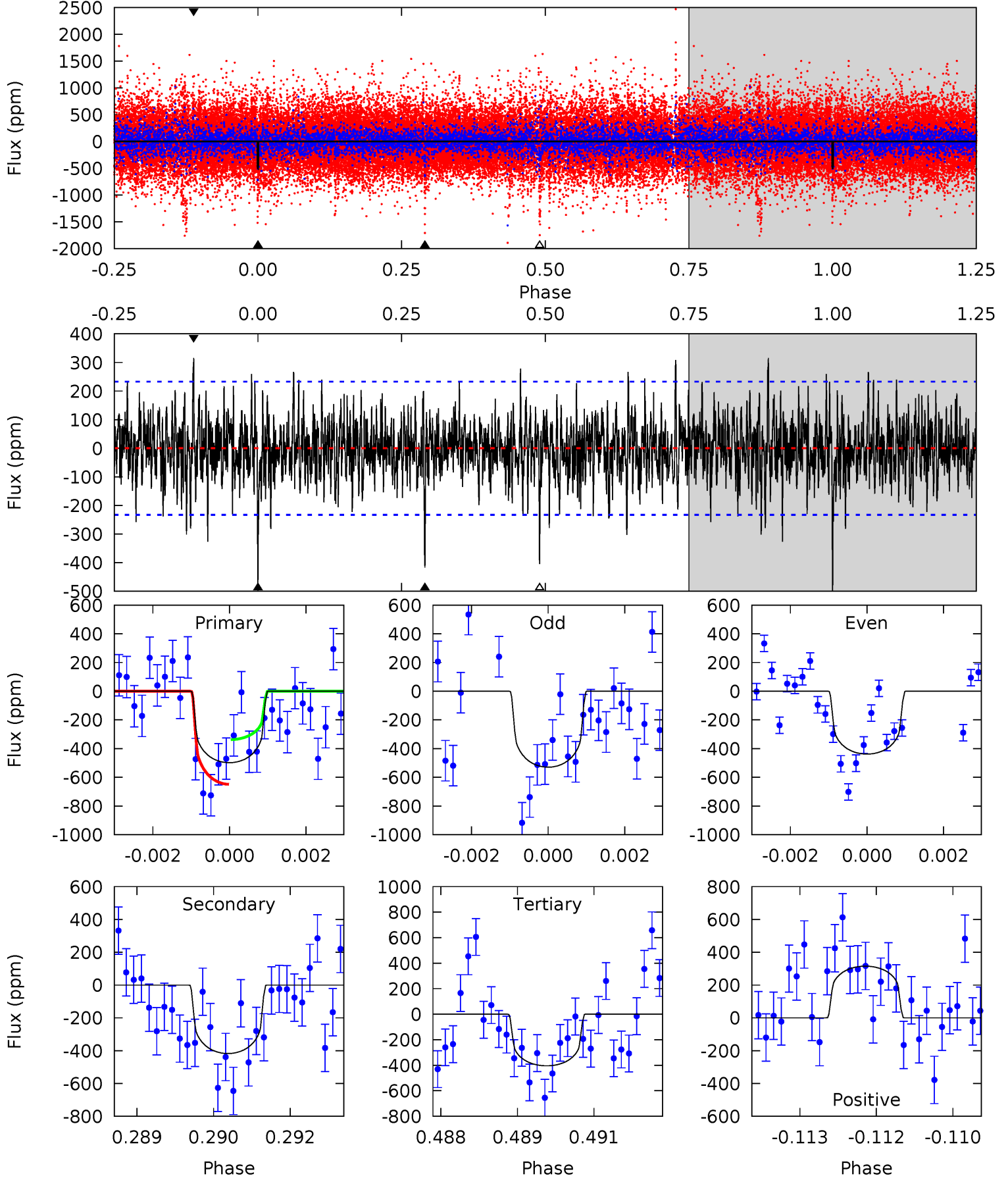
TCE 006525209-05     $P=324.239730$  Days     $T_0=165.092083$  (BKJD)



# DV Model-Shift Uniqueness Test

006525209-05, P = 324.201148 Days, E = 165.189190 Days

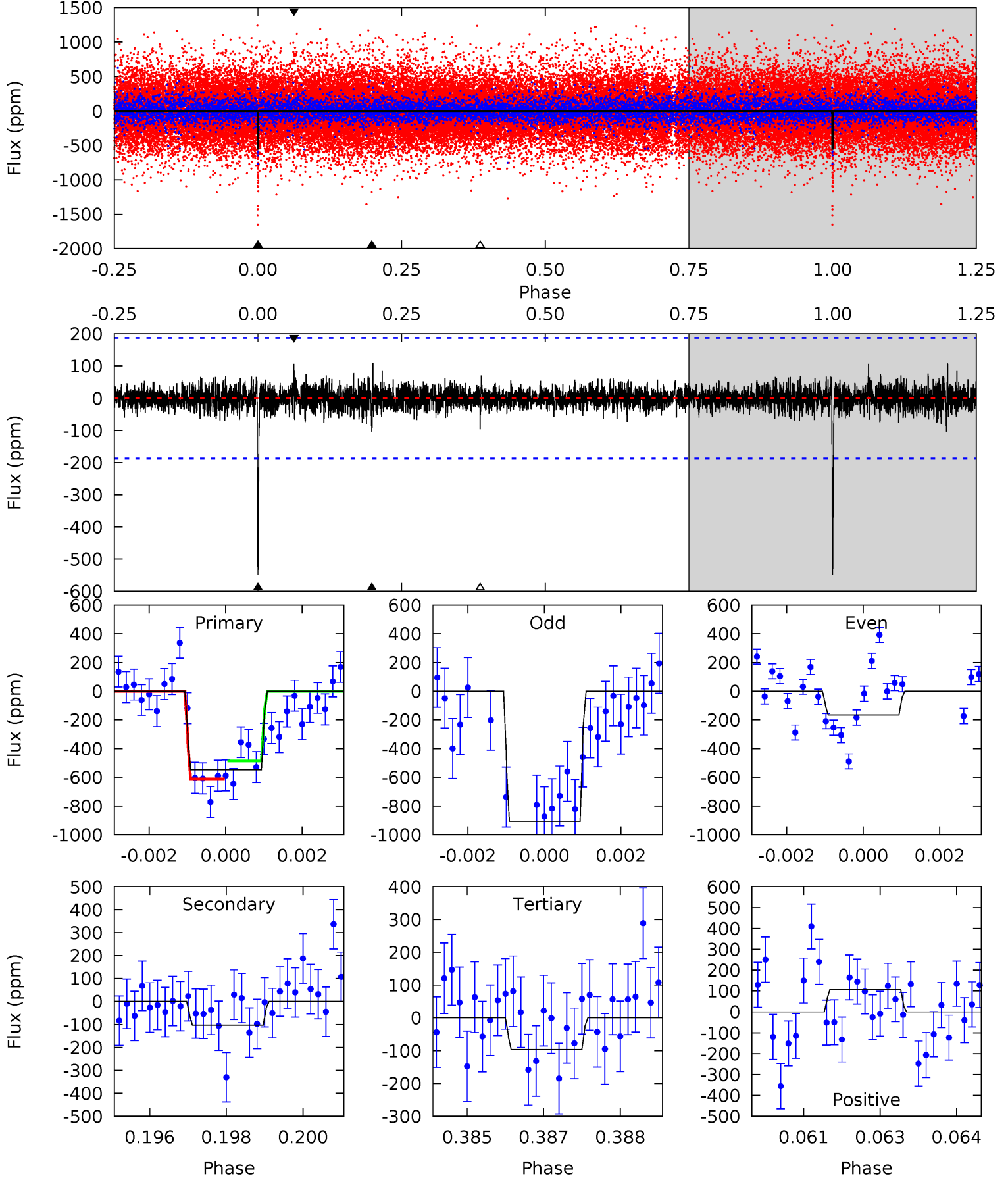
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.5	9.63	9.33	7.27	5.37	3.16	1.92	2.16	4.22	0.30	2.36	1.02	1.28	0.39	3.58



# Alt Model-Shift Uniqueness Test

006525209-05,  $P = 324.239730$  Days,  $E = 165.092083$  Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
15.7	2.96	2.76	3.06	5.37	3.16	0.61	12.9	12.7	0.19	-0.10	10.7	1.15	0.17	1.78





### Stellar Parameters For KIC 006525209

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5365^{+160}_{-144}$	$4.586^{+0.052}_{-0.078}$	$-0.460^{+0.300}_{-0.300}$	$0.729^{+0.104}_{-0.064}$	$0.747^{+0.092}_{-0.054}$	$2.714^{+0.645}_{-0.744}$
	+3%/-3%	+1%/-2%	+65%/-65%	+14%/-9%	+12%/-7%	+24%/-27%
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 006525209-05 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-417 \pm 43$	$2.14^{+0.53}_{-0.59}$	$311^{+12}_{-11}$	$4798^{+730}_{-429}$	$35814^{+30927}_{-13923}$
Alt.	$-103 \pm 35$	$1.97^{+0.54}_{-0.55}$	$310^{+13}_{-11}$	$3802^{+511}_{-353}$	$10096^{+10468}_{-4510}$

$T_{\text{max}}$  = 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

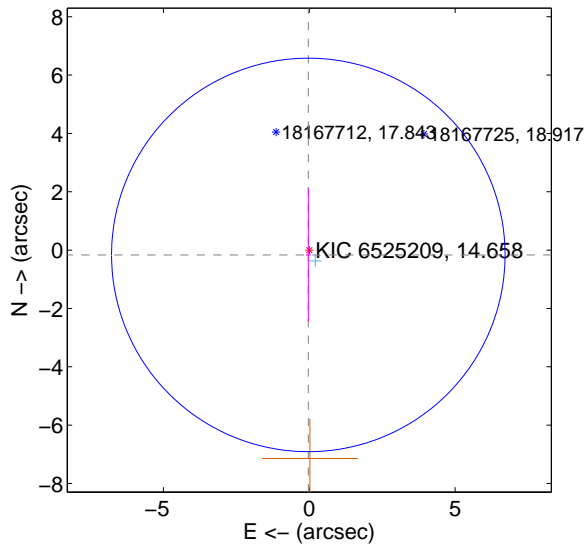
Supplemental centroid analysis for 006525209-05. Kepler magnitude: 14.66. Transit SNR 8.72

There are 2 quarters with good PRF difference image offsets

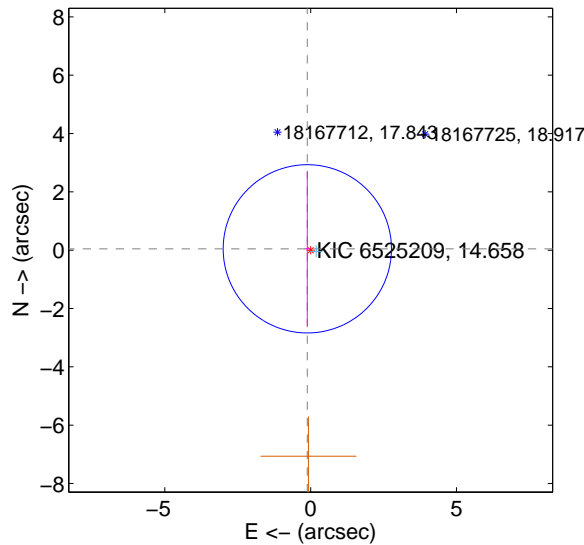
The direct PRF centroid is offset from the target star catalog position by about 0.23 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.169 \pm 2.248$	0.08	$0.033 \pm 0.083$	$-0.166 \pm 2.288$
PRF-fit source offset from KIC position	$0.123 \pm 0.962$	0.13	$0.114 \pm 0.092$	$0.046 \pm 2.638$
photometric centroid source offset	$0.83 \pm 0.79$	1.06	$-0.77 \pm 0.78$	$0.31 \pm 0.82$

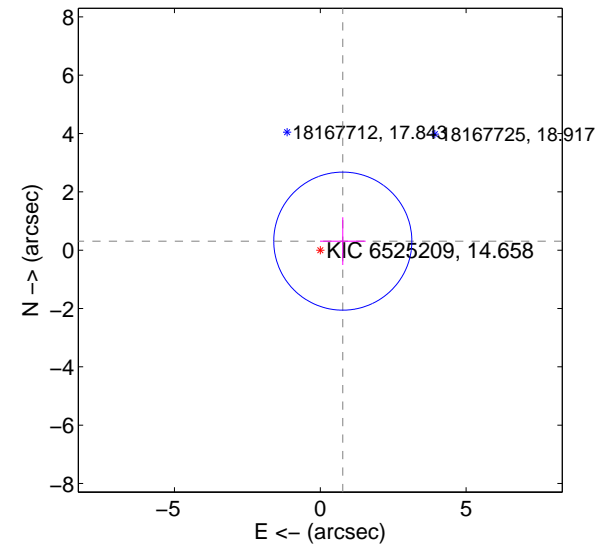
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



offset from photometric centroids

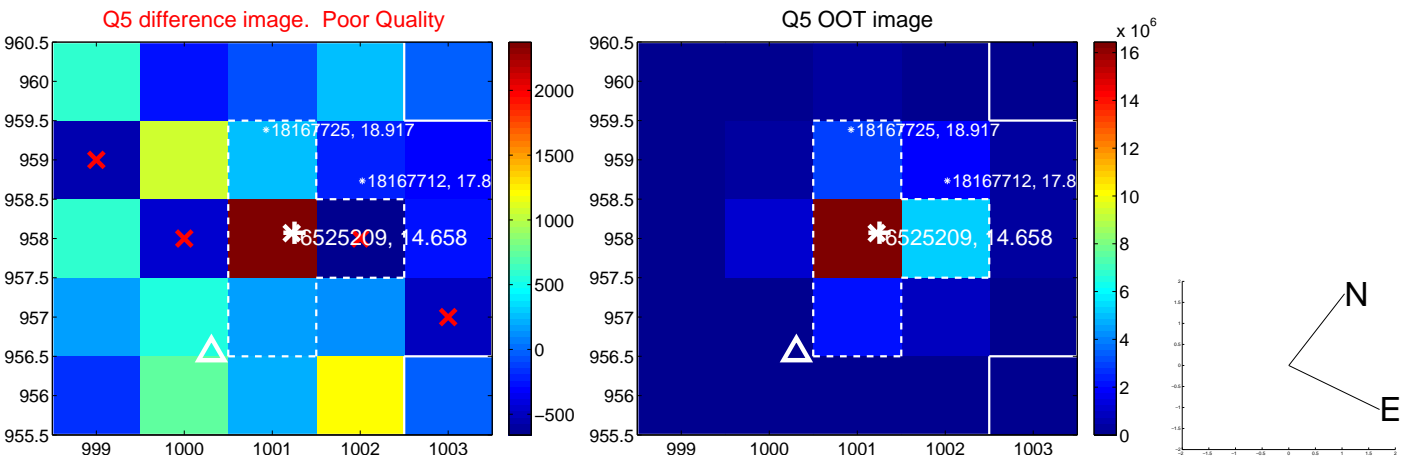


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

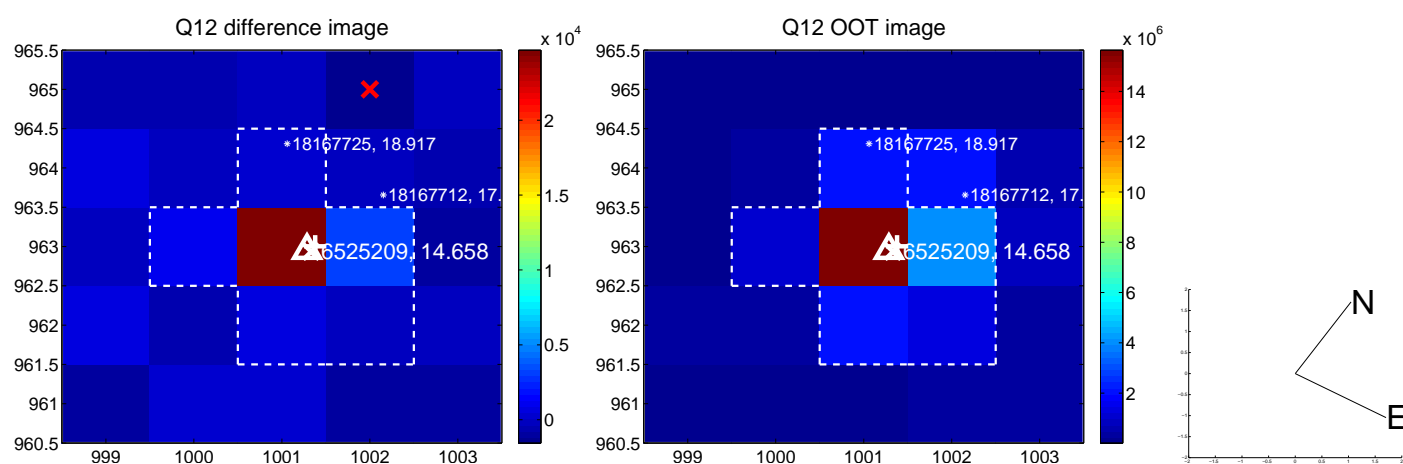
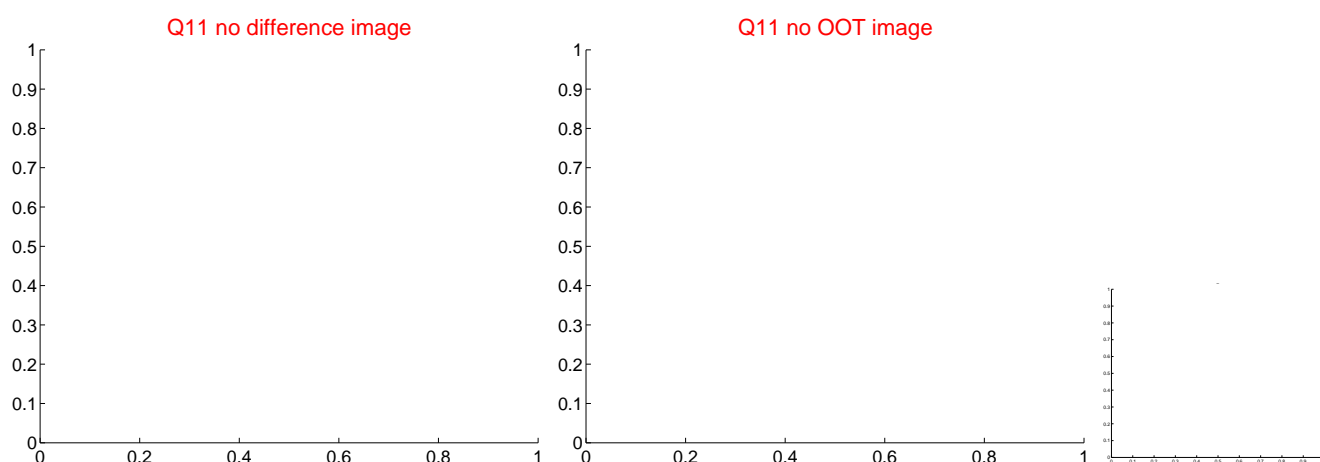
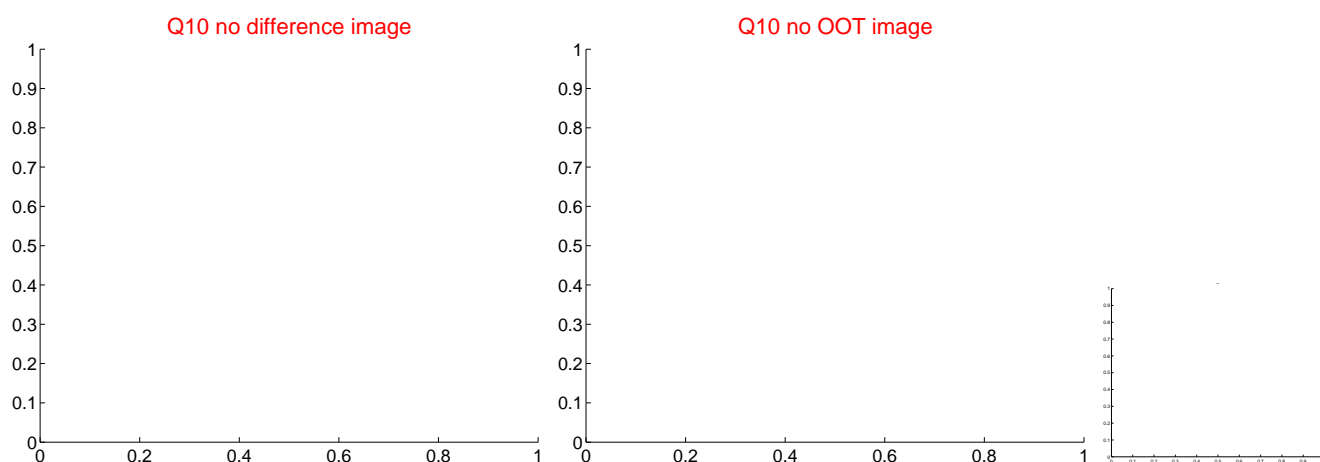
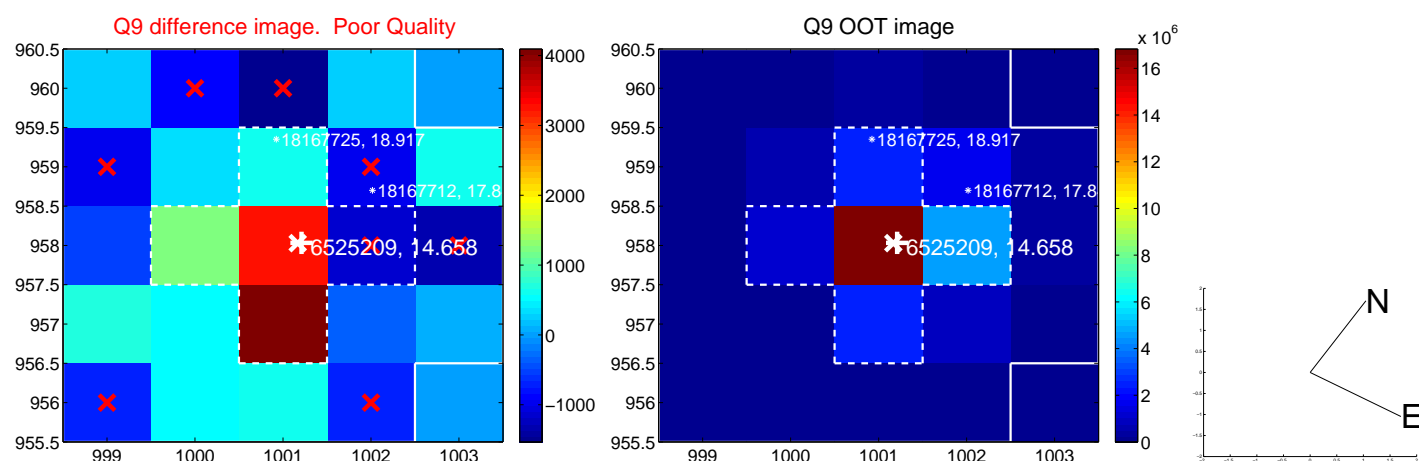
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



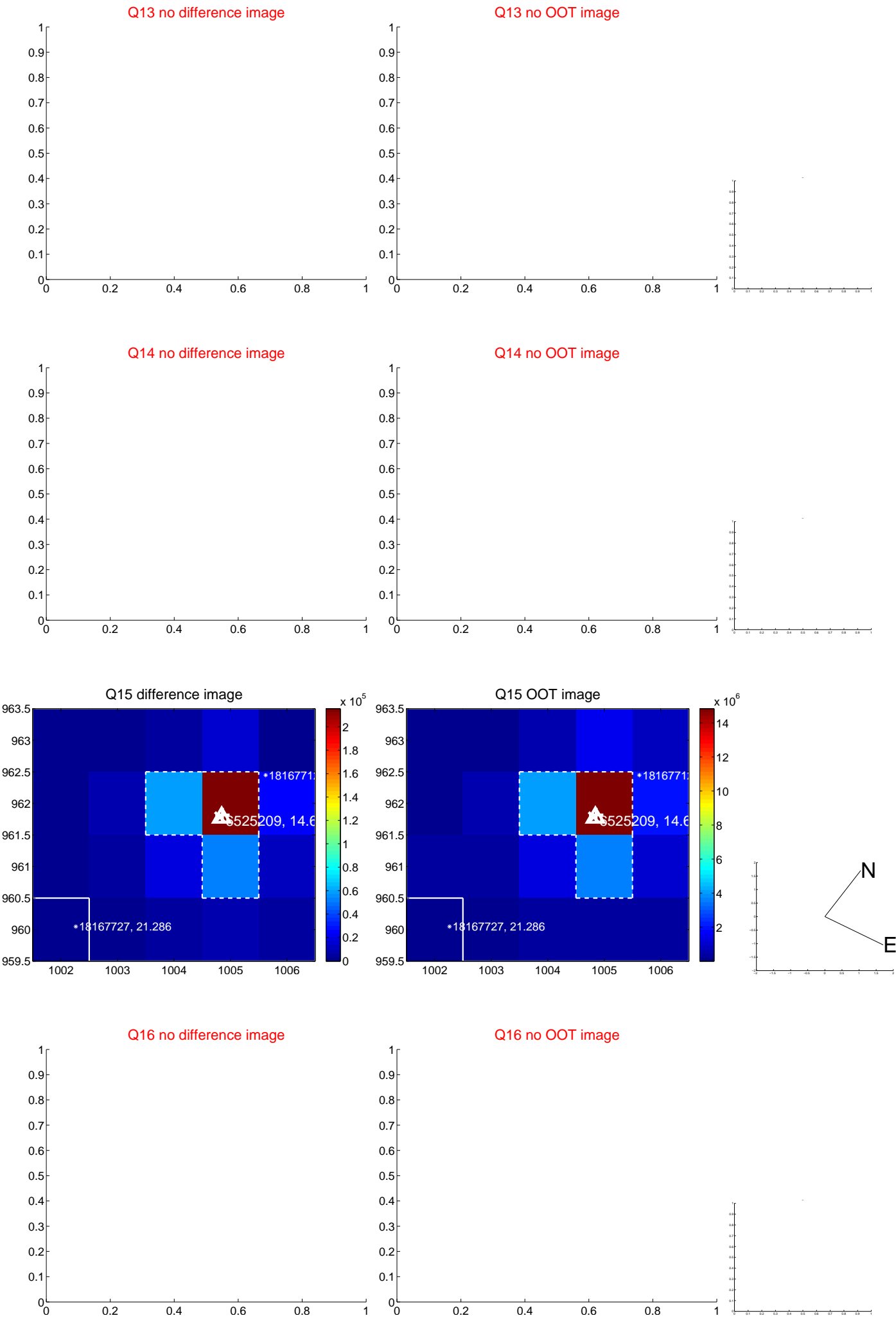
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



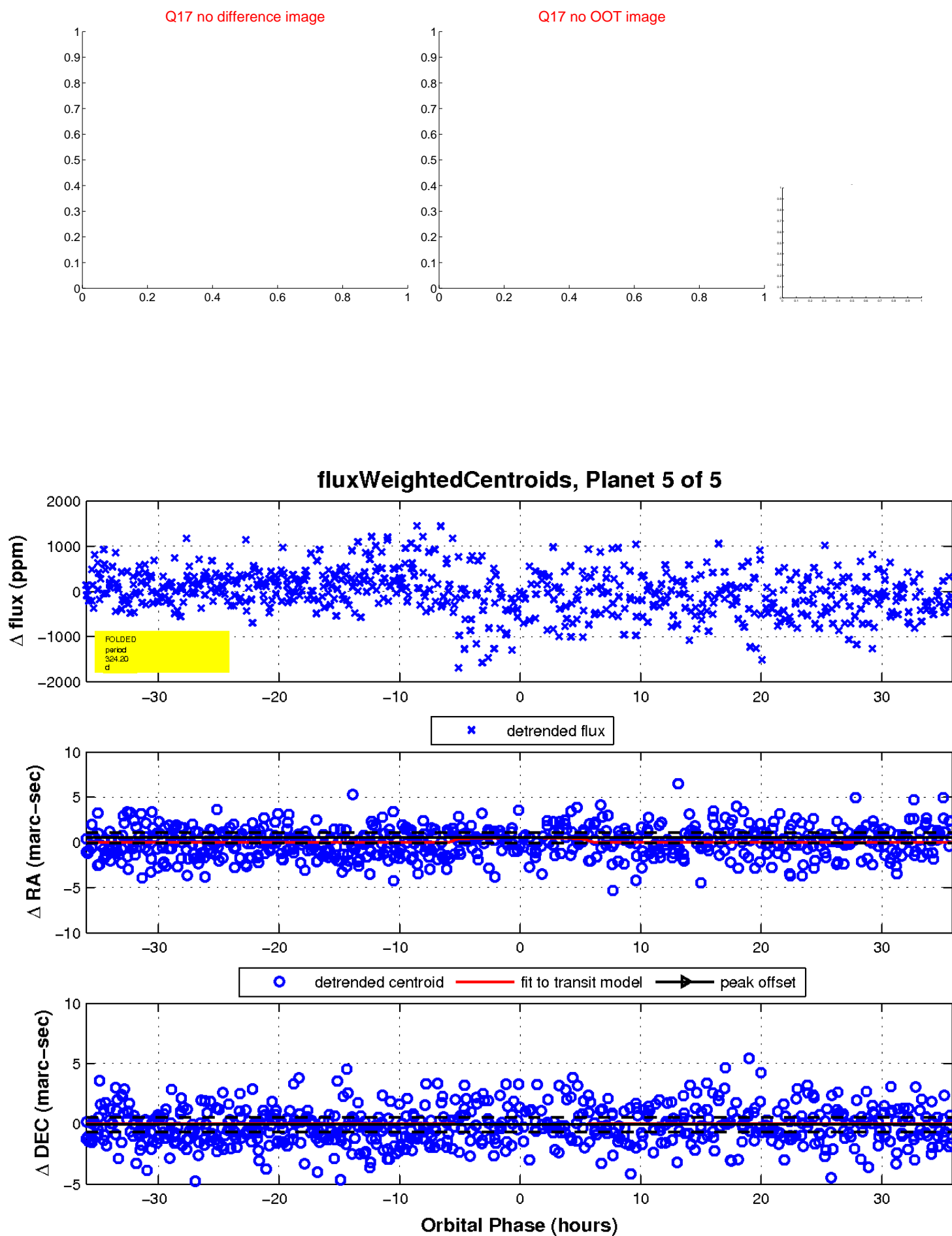
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

