

# KIC 005530881

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005530881-01	OBS	6594.01	5.082481	132.961777	276103.5	3.500	20876.7	-1.0	1.15	6507	50.05	607.46
005530881-02	OBS	No	2.541261	132.959692	49897.4	4.982	4335.0	3541.5	1.15	6507	27.66	1530.70
005530881-03	OBS	No	297.182757	292.592257	12.4	1.000	23.2	0.1	1.15	6507	0.47	2.68
005530881-04	OBS	No	297.199319	292.013202	605.6	12.000	22.4	-1.0	1.15	6507	2.84	2.68
005530881-05	OBS	No	288.361459	324.183884	584.5	9.481	8.9	7.1	1.15	6507	2.98	2.79

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005530881-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_ALT—MOD_ODDEVEN_ALT—HAS_SEC_TCE—CENT_NOFITS
005530881-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE
005530881-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE_ZUMA_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005530881-04	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_POS_ALT—INCONSISTENT_TRANS—SAME_NTL_PERIOD—CENT_NOFITS
005530881-05	OBS	FP	0.00	1	0	0	0	LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS

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

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

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

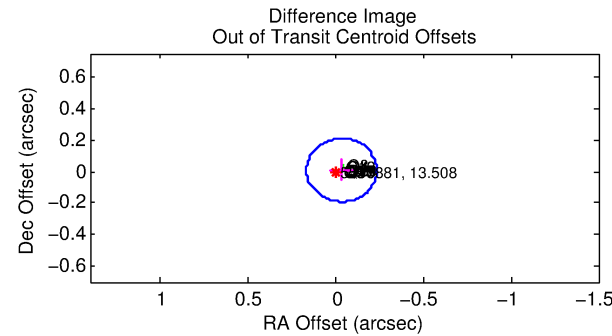
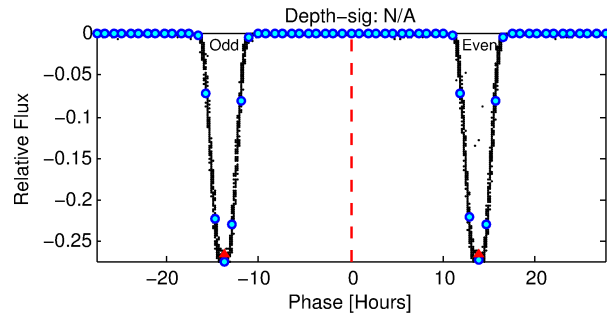
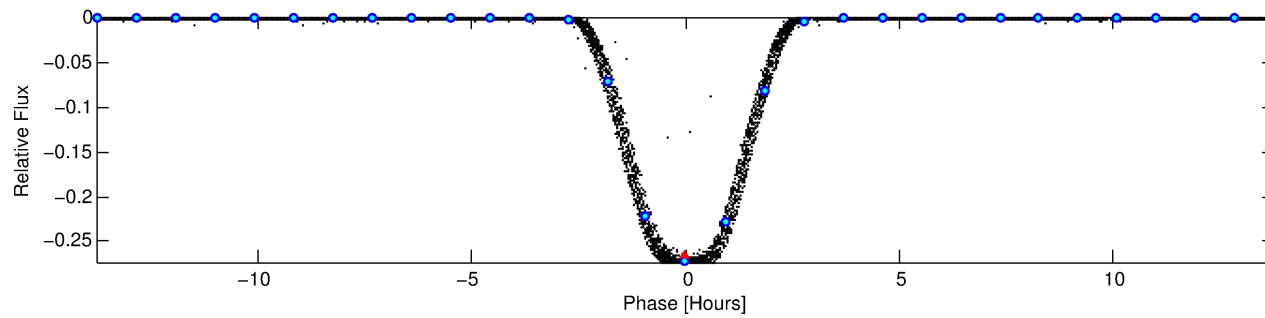
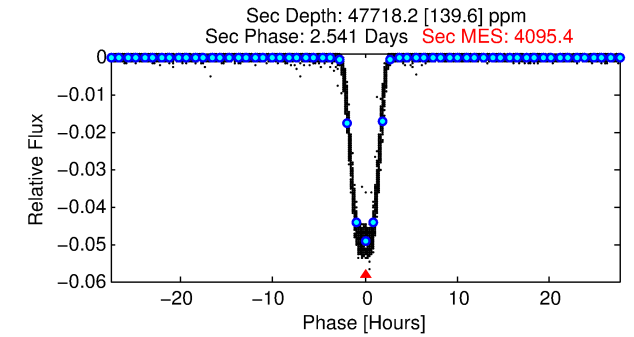
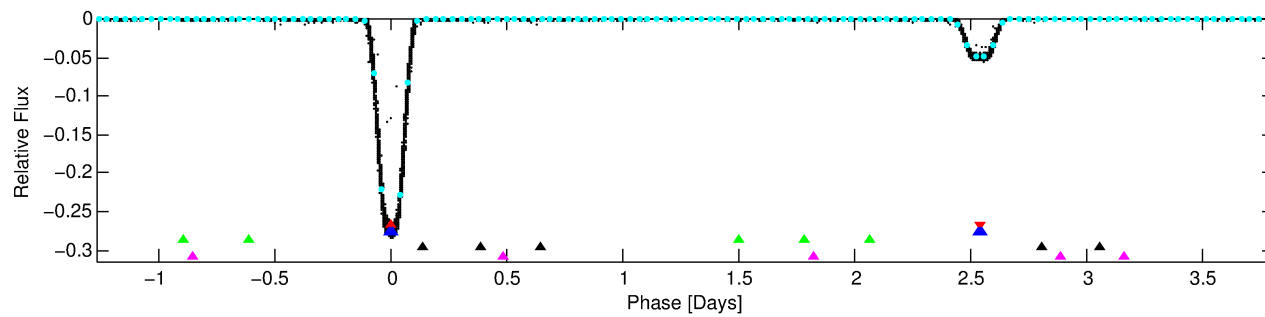
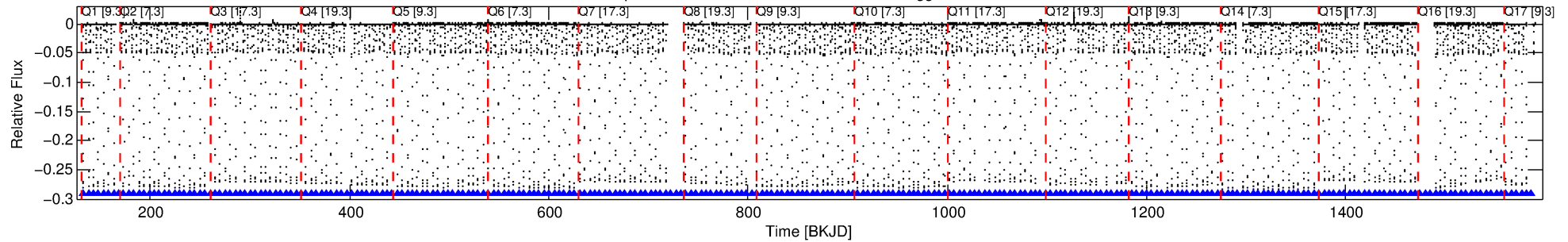
## Ephemeris Match Information For 005530881-01

No Significant Match Found

# DV One-Page Summary

KIC: 5530881 Candidate: 1 of 5 Period: 5.082 d  
KOI: K06594.01 Corr: 0.823

Kp: 13.51 R\*: 1.15 Rs Teff: 6507.0 K Logg: 4.34 Fe/H: -0.380



## TPS TCE Results:

Period = 5.08248 d  
Epoch = 132.9618 BKJD

DV fit results are unavailable

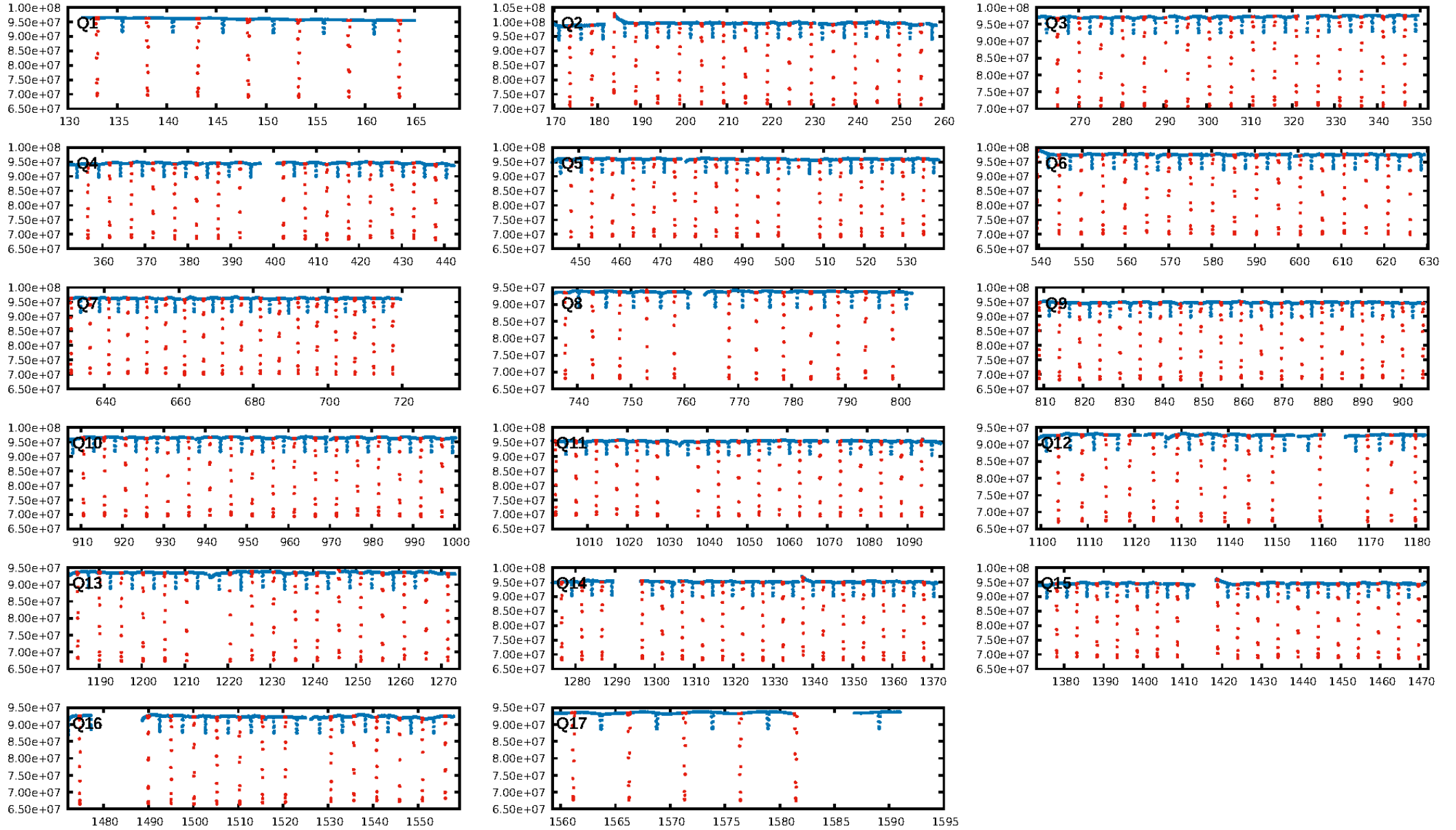
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [10.02 $\sigma$ ]  
LongPeriod-sig: 100.0% [672.72 $\sigma$ ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [251/251]  
GhostDiagnostic-chr: 1.89  
Centroid-sig: N/A  
Centroid-so: 0.086 arcsec [270.52 $\sigma$ ]  
OotOffset-rm: 0.036 arcsec [0.54 $\sigma$ ]  
KicOffset-rm: 0.058 arcsec [0.87 $\sigma$ ]  
OotOffset-st: 4/4/4/5 [17]  
KicOffset-st: 4/4/4/5 [17]  
DiffImageQuality-fgm: 1.00 [17/17]  
DiffImageOverlap-fno: 0.00 [0/17]

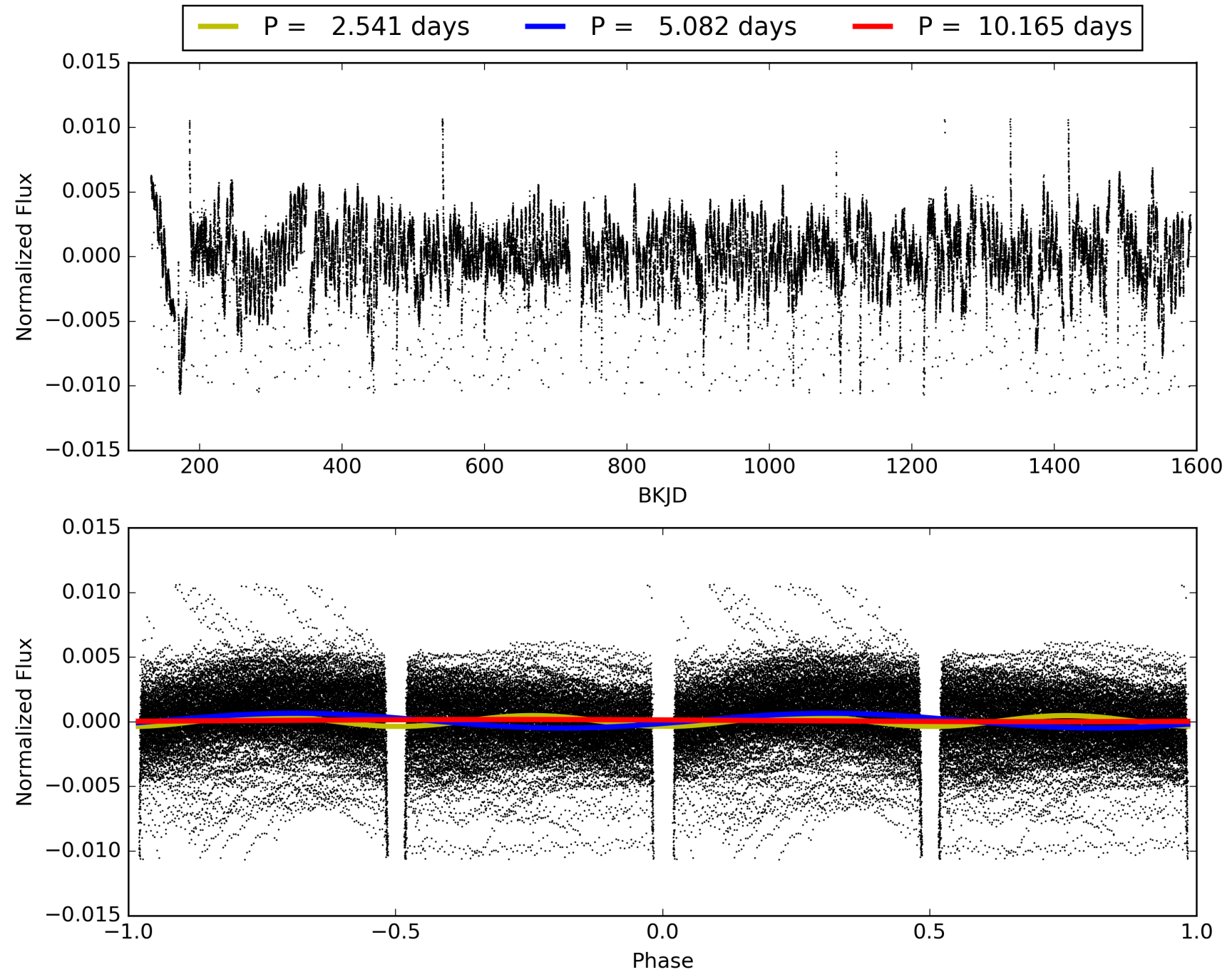
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 14:18:31 Z

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

# TCE 005530881-01, PDC Light Curves



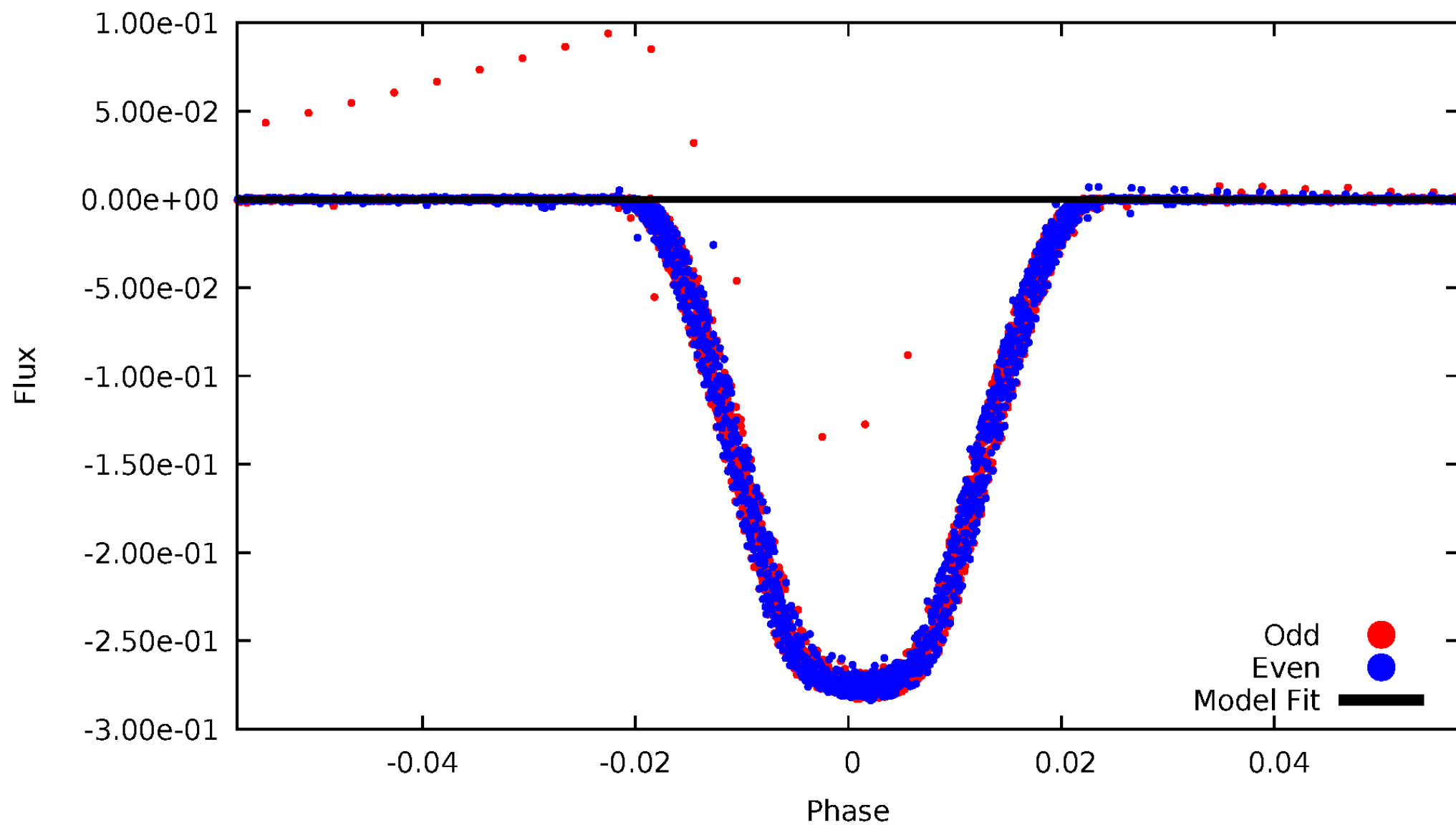
TCE 005530881-01





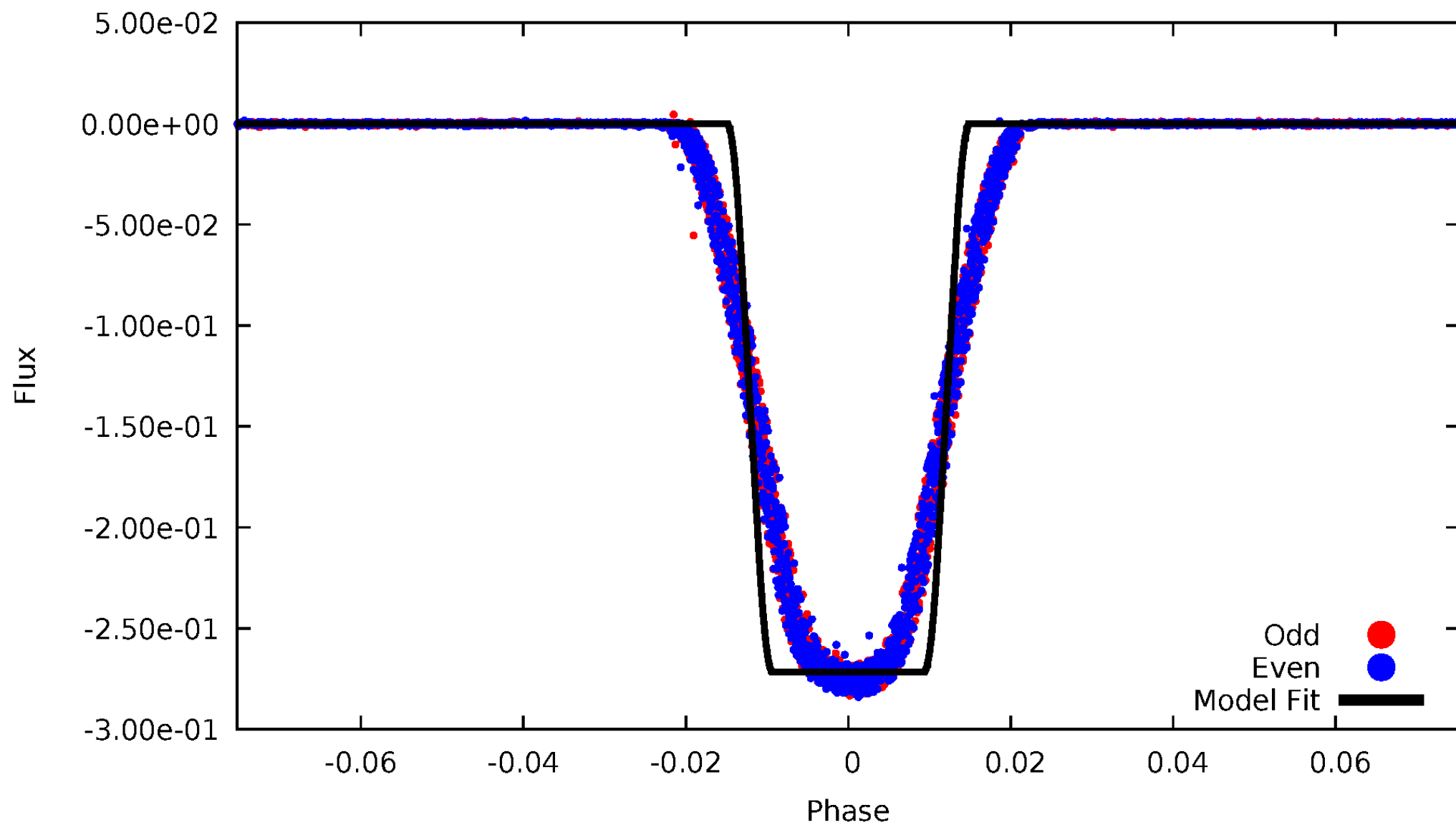
# DV Odd/Even

TCE 005530881-01



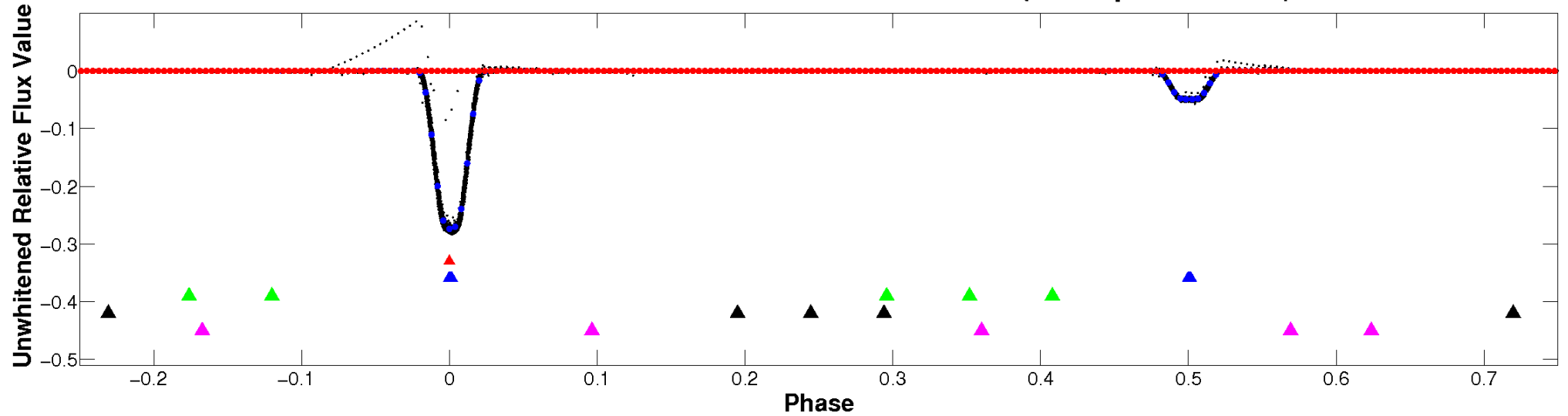
# ALT Odd/Even

TCE 005530881-01



# Non-Whitened Vs. Whitened Light Curve

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

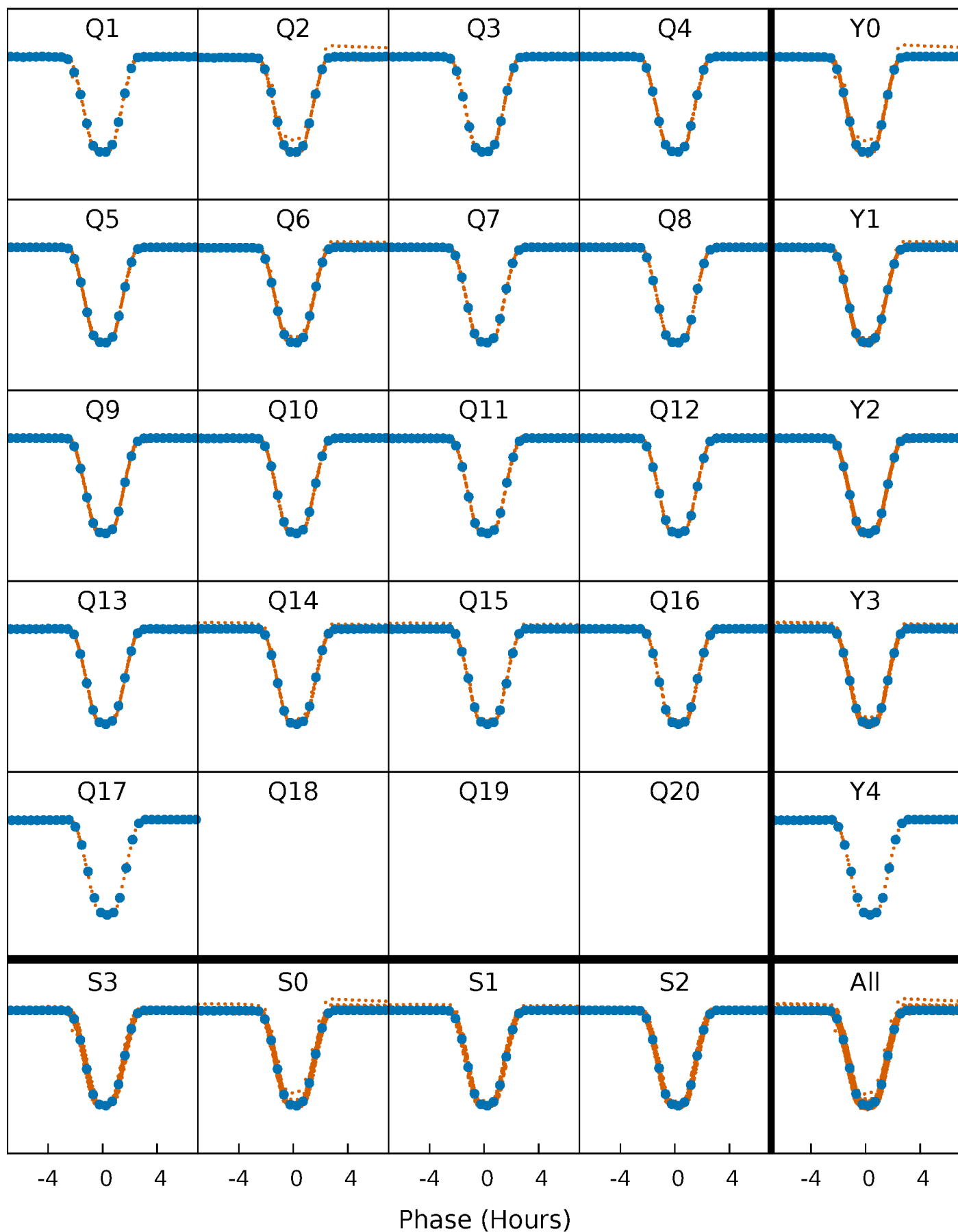


Planet 1 : Phased Whitened Flux Time Series (TPS Epoch/Period)



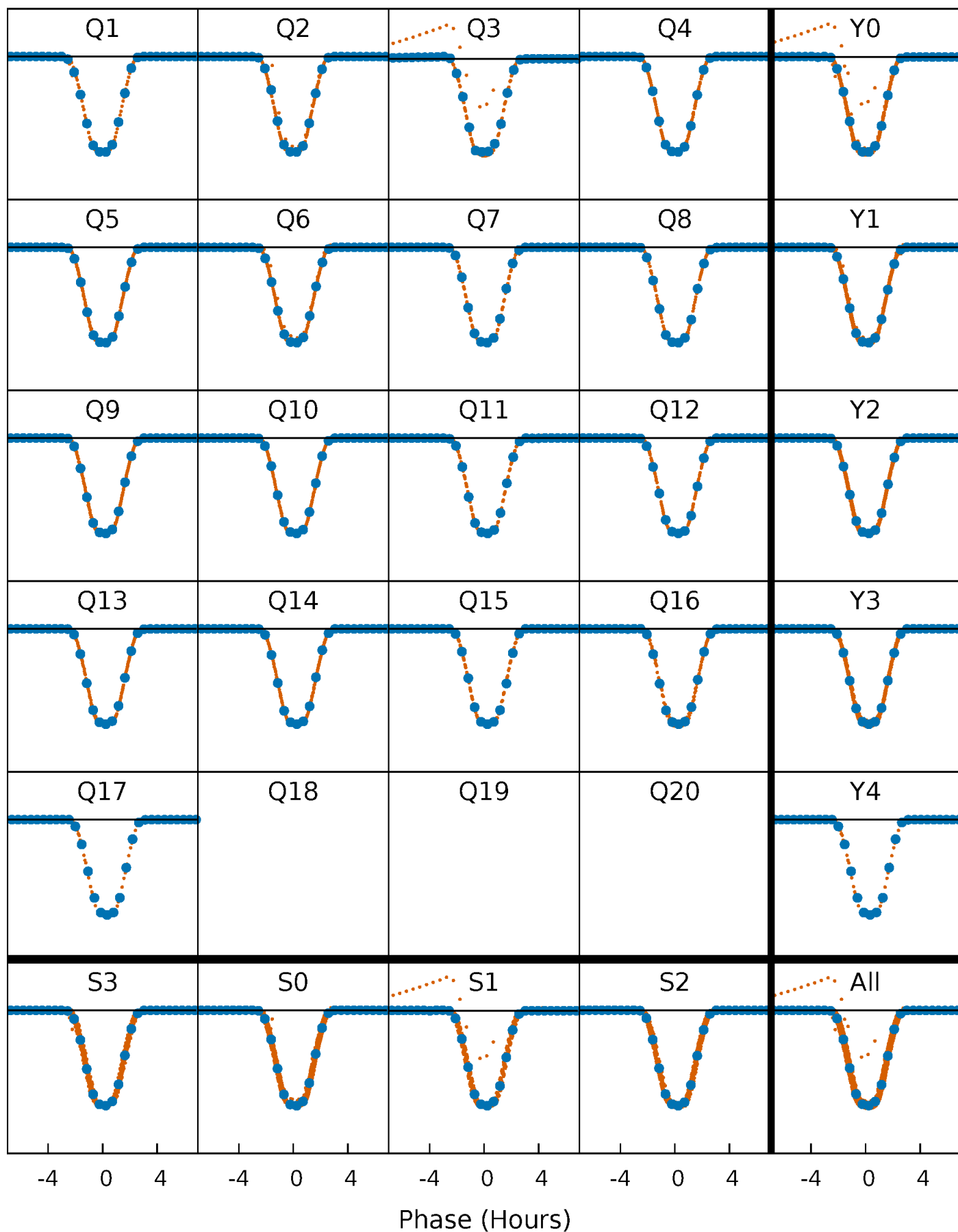
# PDC Quarter-Phased Transit Curves

TCE 005530881-01 P= 5.082481 Days  $T_0=132.961777$  (BKJD)



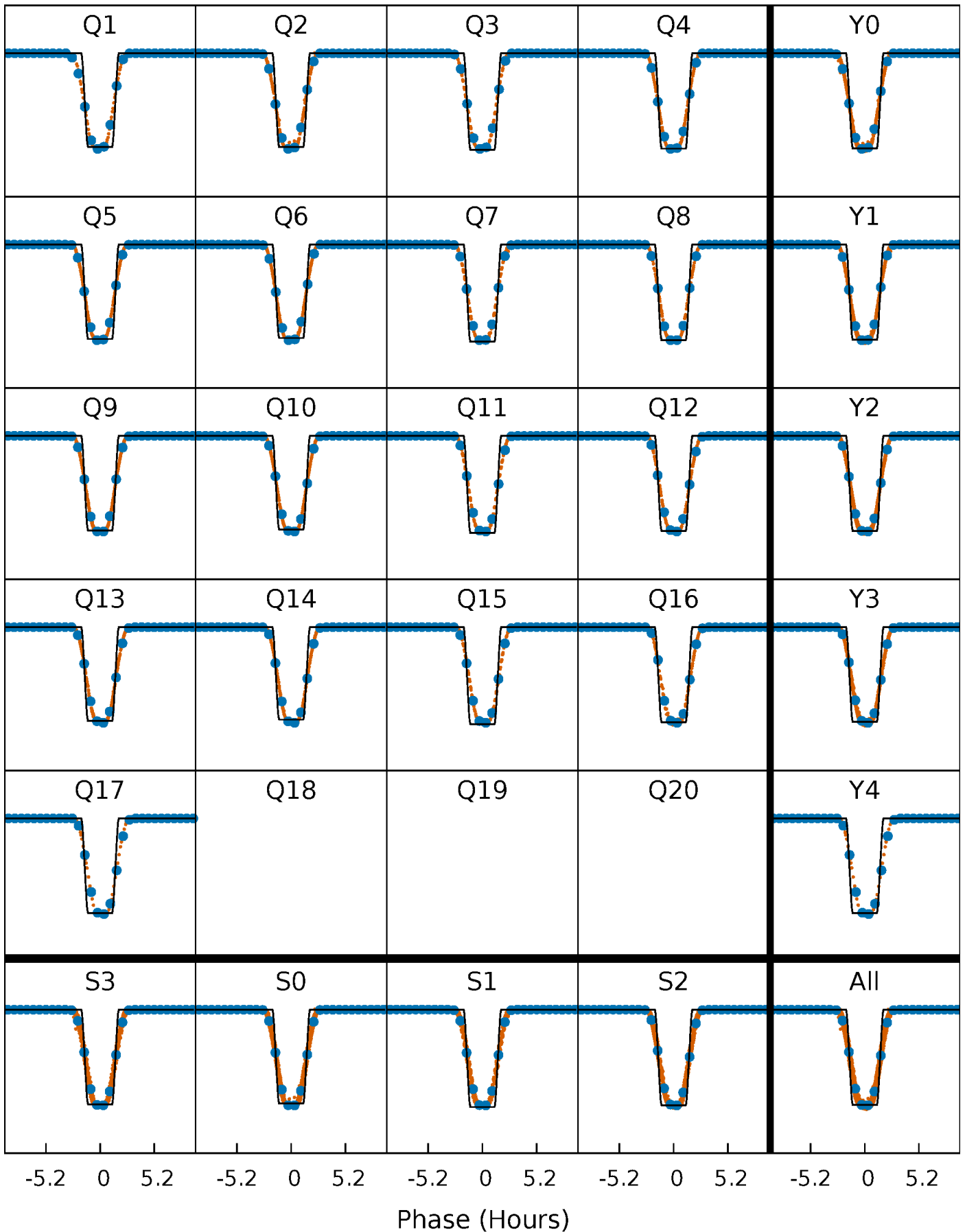
# DV Quarter-Phased Transit Curves

TCE 005530881-01 P= 5.082481 Days  $T_0=132.961777$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 005530881-01 P= 5.082481 Days  $T_0=132.966116$  (BKJD)

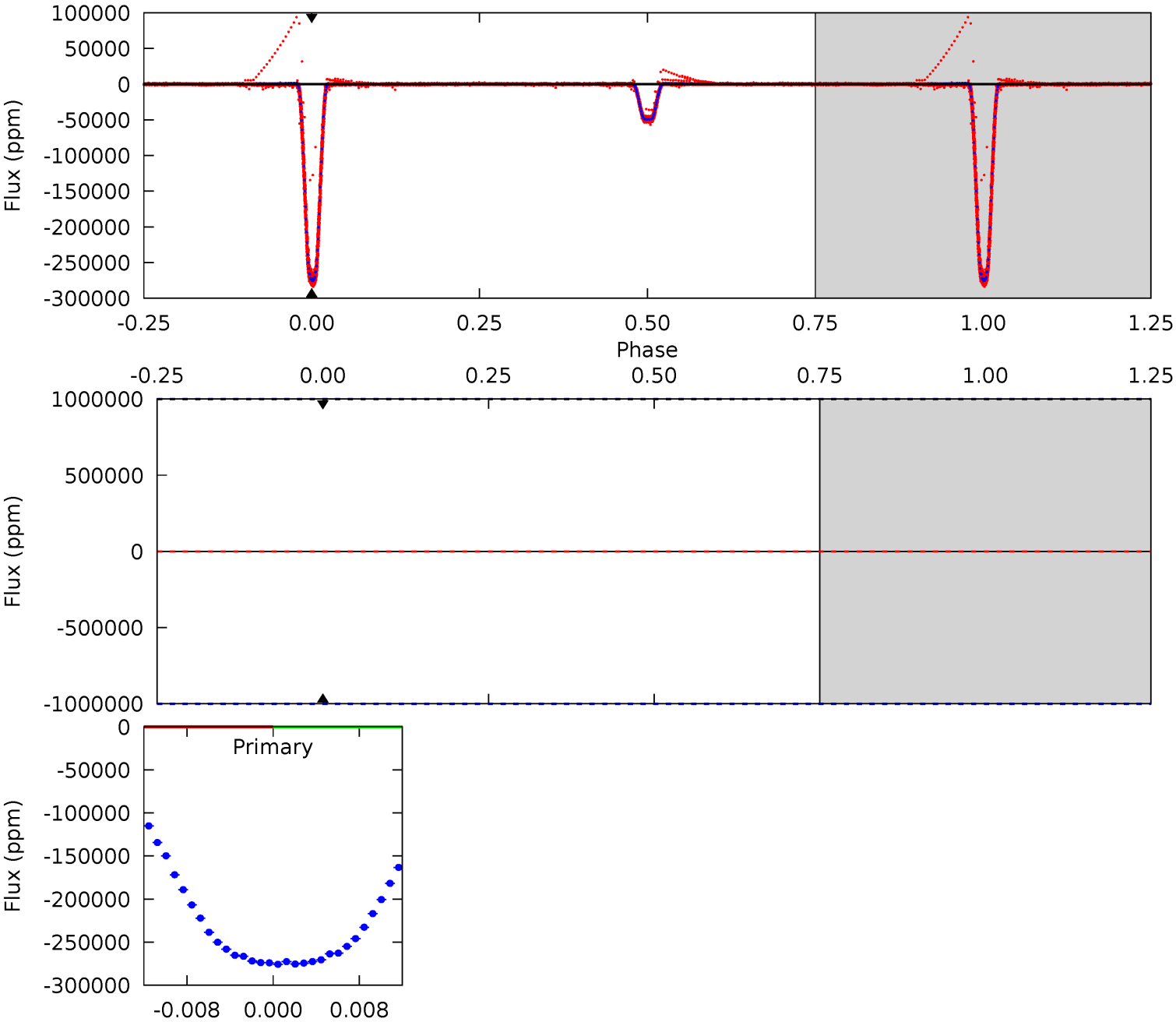




# DV Model-Shift Uniqueness Test

005530881-01, P = 5.082481 Days, E = 127.879296 Days

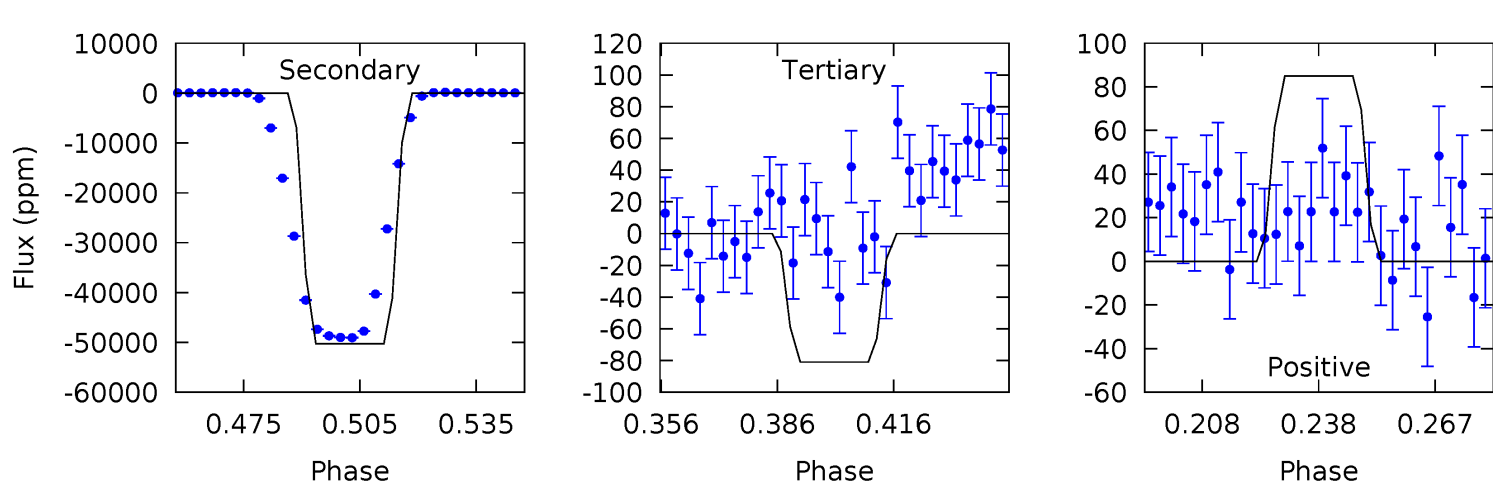
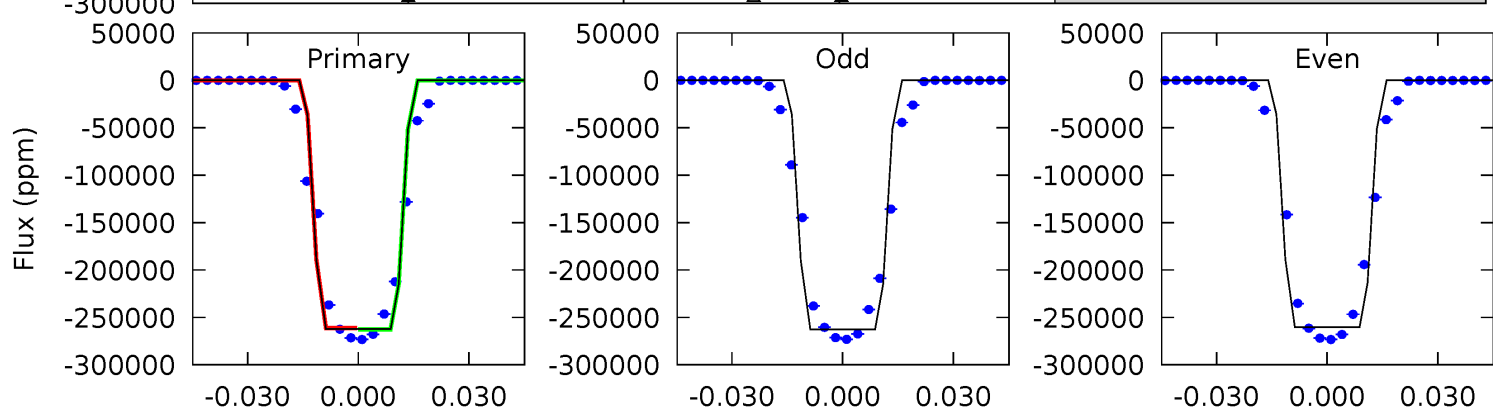
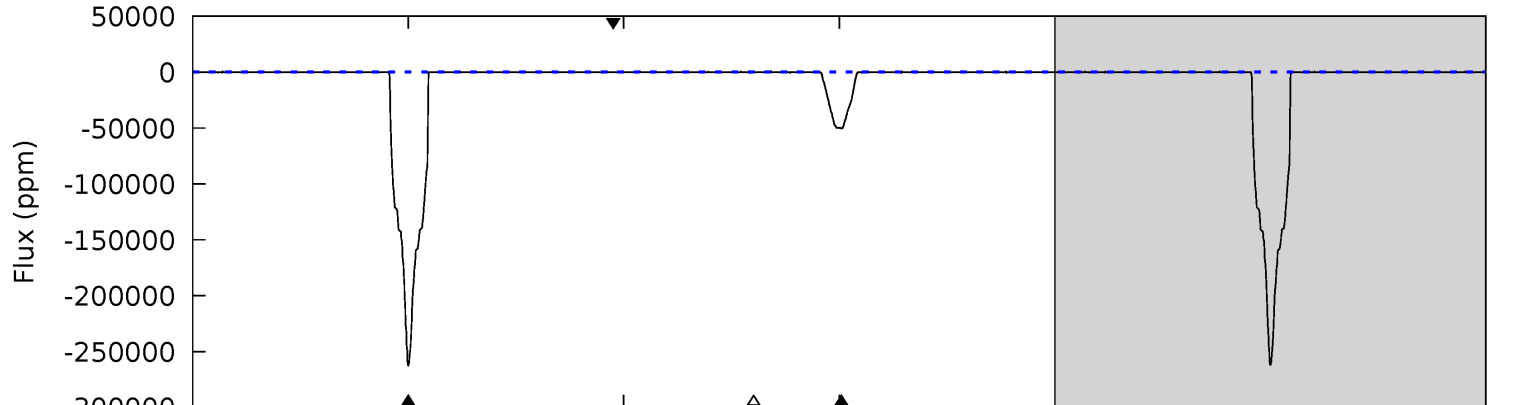
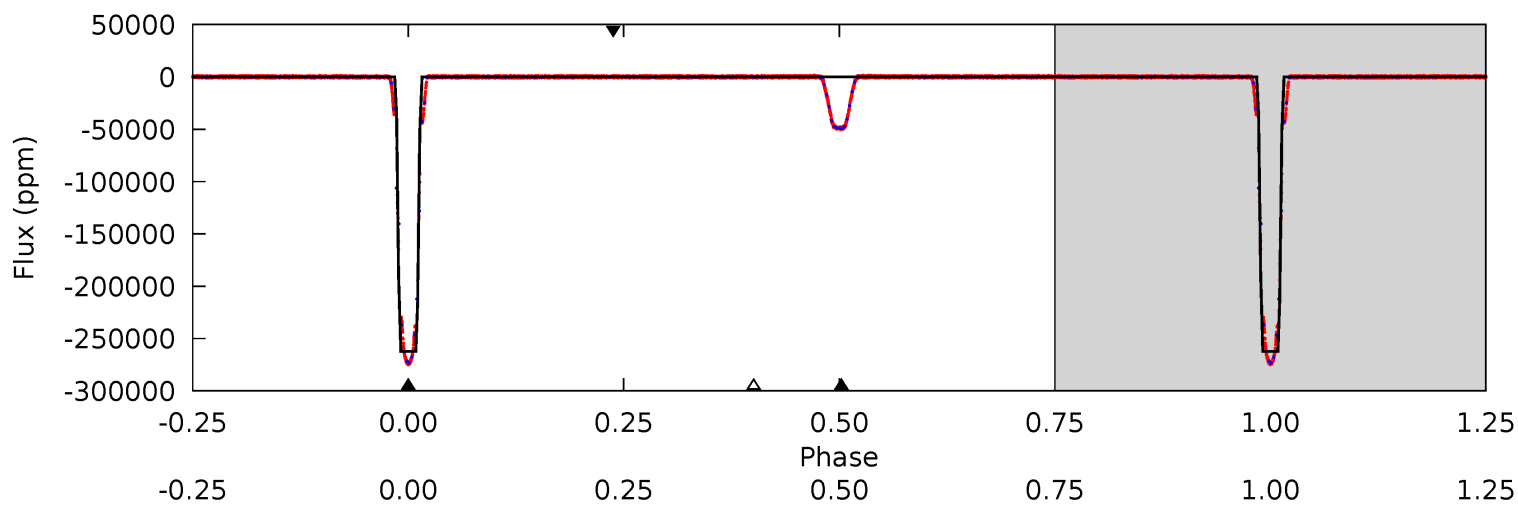
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



# Alt Model-Shift Uniqueness Test

005530881-01, P = 5.082481 Days, E = 127.883635 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
10991	2106	3.39	3.56	4.81	2.17	1.27	10988	10987	2103	2103	48.8	1.00	0.00	0



### Stellar Parameters For KIC 005530881

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6507^{+146}_{-194}$	$4.343^{+0.101}_{-0.188}$	$-0.380^{+0.250}_{-0.300}$	$1.145^{+0.330}_{-0.152}$	$1.049^{+0.160}_{-0.117}$	$0.984^{+0.452}_{-0.496}$
	+2%/-3%	+2%/-4%	+66%/-79%	+29%/-13%	+15%/-11%	+46%/-50%
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 005530881-01 / KOI 6594.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$0 \pm 1000000$	$51.38^{+15.60}_{-13.36}$	$1782^{+127}_{-95}$	$-3316^{+9214}_{-2502}$	$-3.318^{+83.493}_{-70.138}$
Alt.	$-50284 \pm 24$	$67.33^{+16.77}_{-14.60}$	$1781^{+121}_{-91}$	$4465^{+409}_{-296}$	$22^{+13}_{-8}$

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

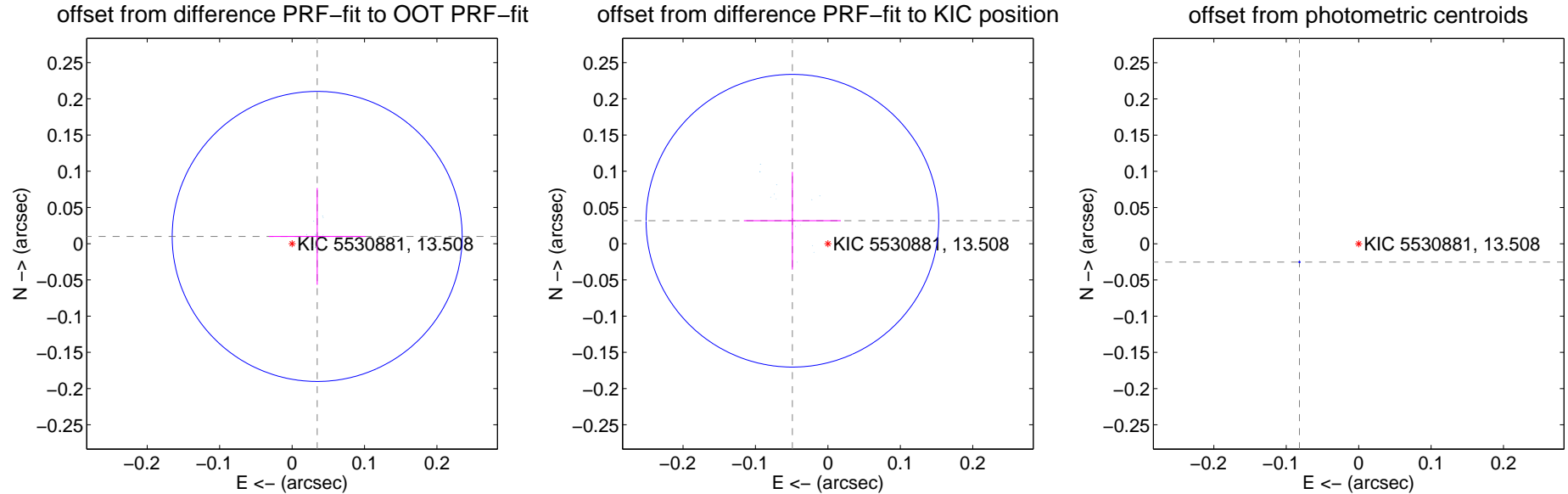
## DV Centroid Data

Supplemental centroid analysis for 005530881-01. Kepler magnitude: 13.51. Transit SNR -1.00

There are 17 quarters with good PRF difference image offsets

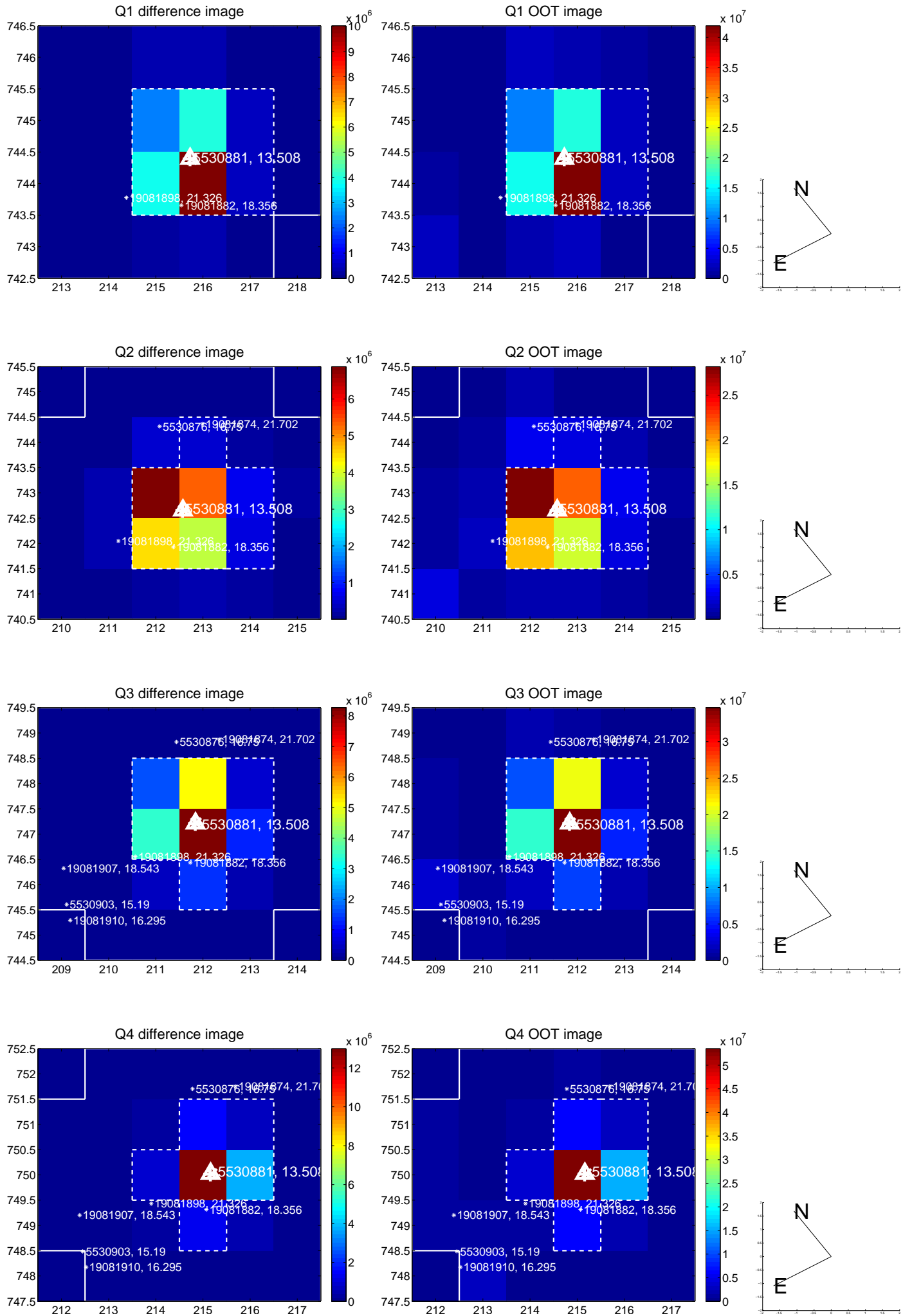
The direct PRF centroid is offset from the target star catalog position by about 0.16 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.036 \pm 0.067$	0.54	$-0.035 \pm 0.067$	$0.010 \pm 0.067$
PRF-fit source offset from KIC position	$0.058 \pm 0.067$	0.87	$0.049 \pm 0.067$	$0.032 \pm 0.067$
photometric centroid source offset	$0.09 \pm 0.00$	270.52	$0.08 \pm 0.00$	$-0.03 \pm 0.00$

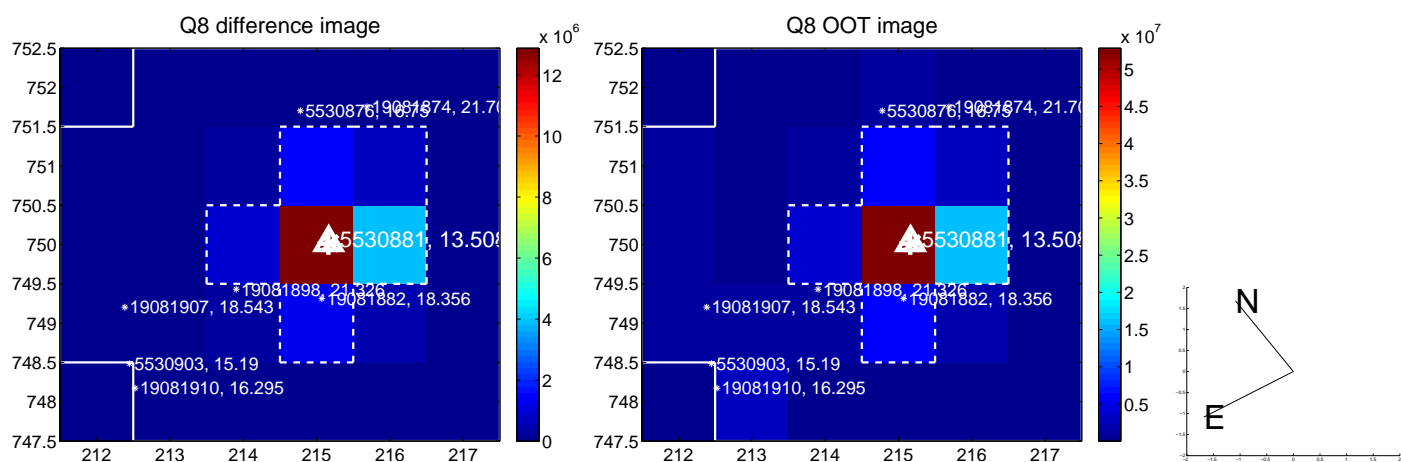
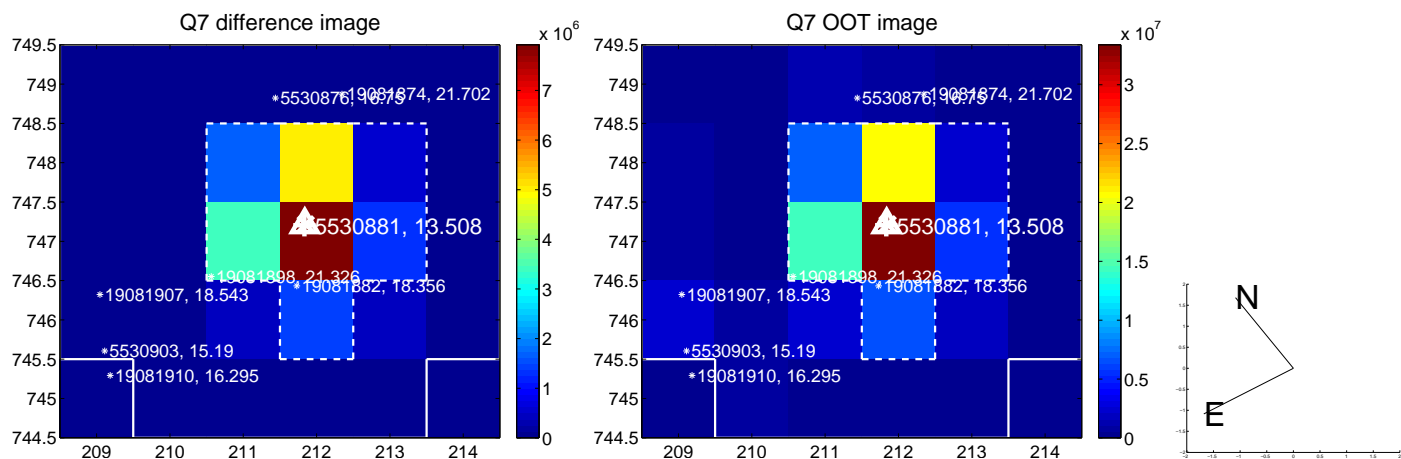
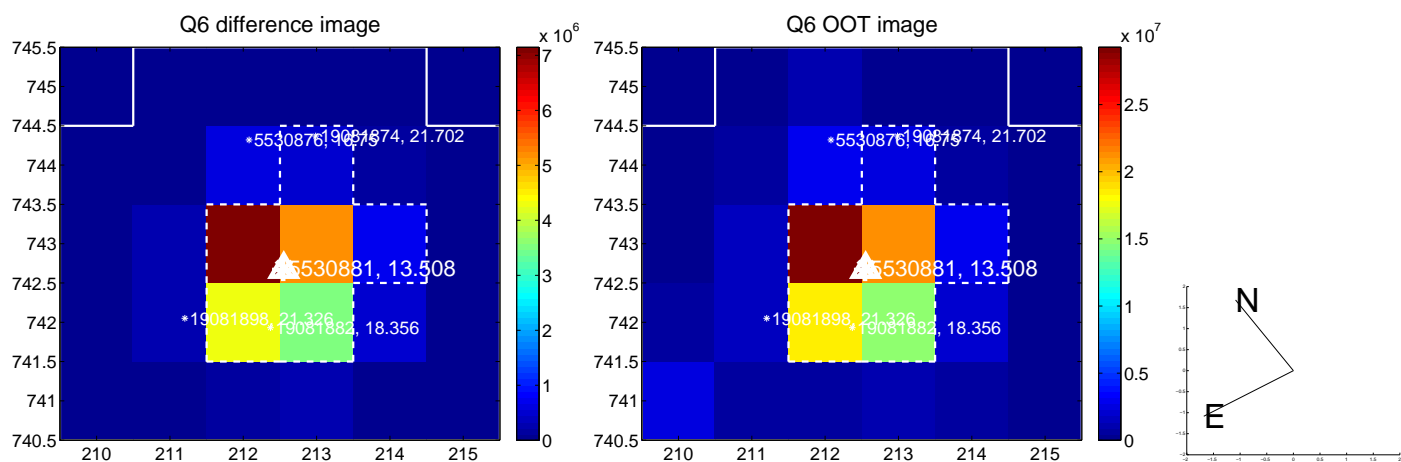
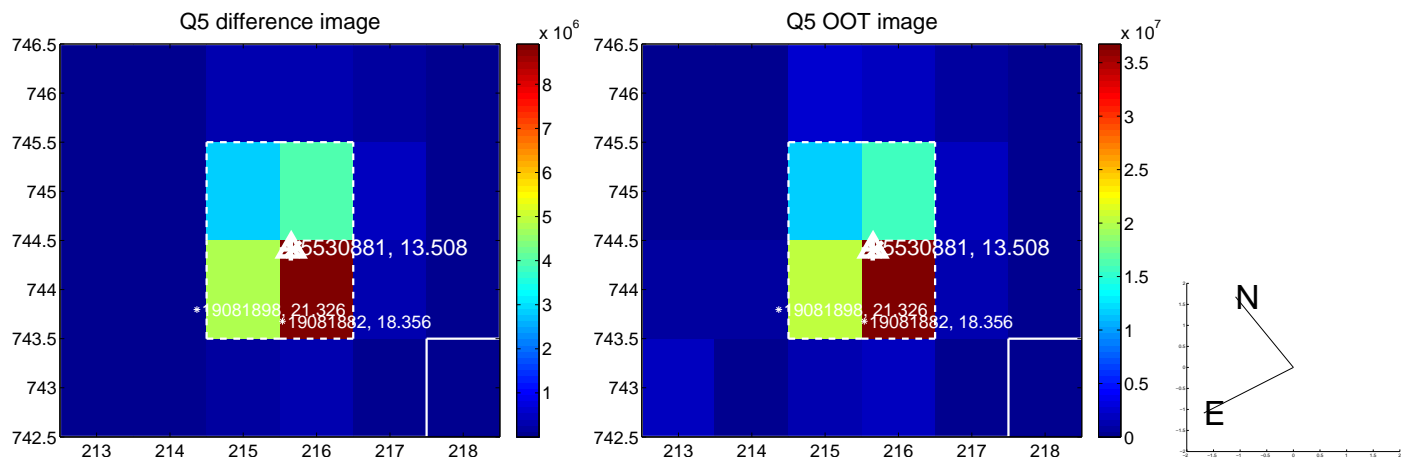


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

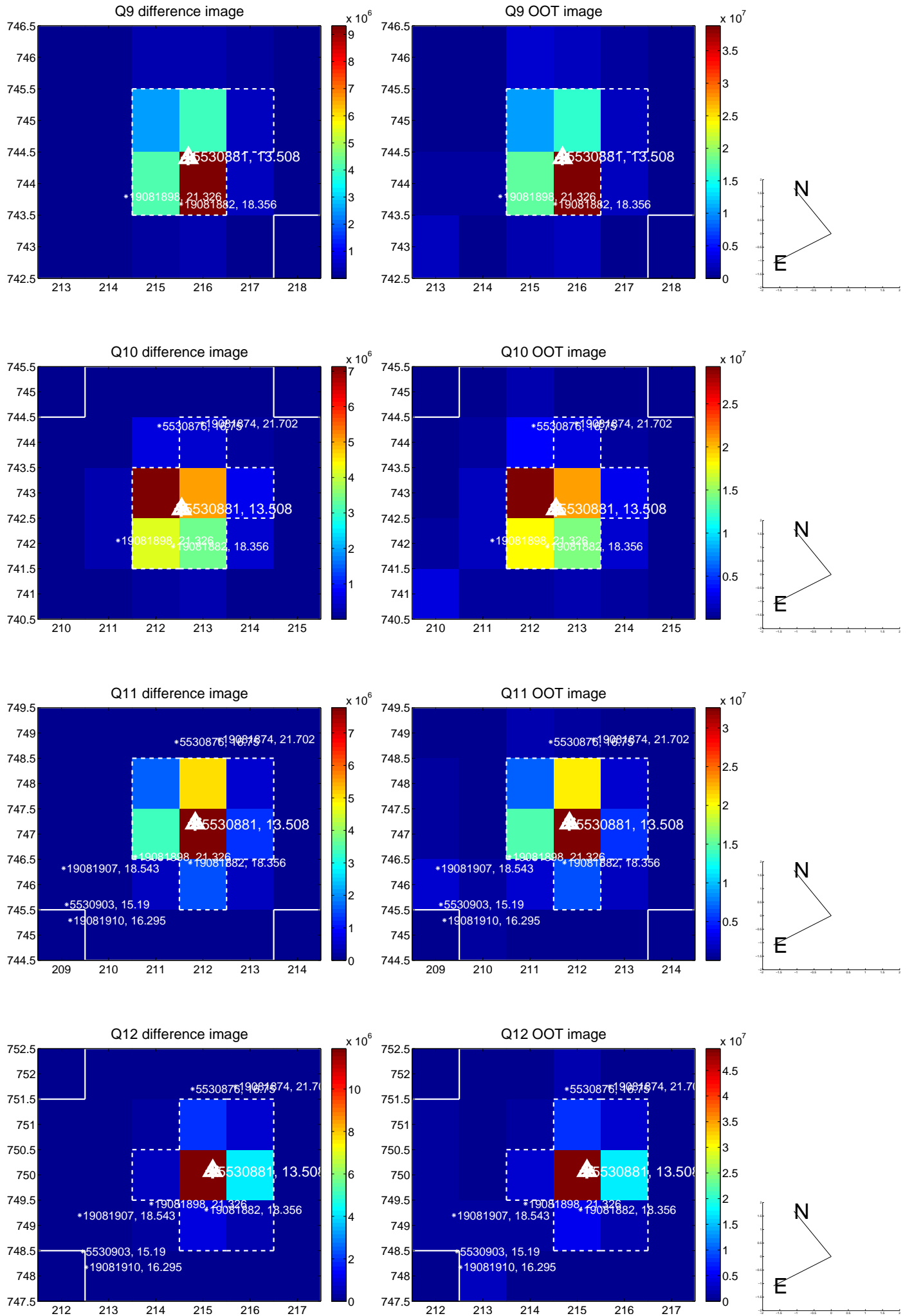


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

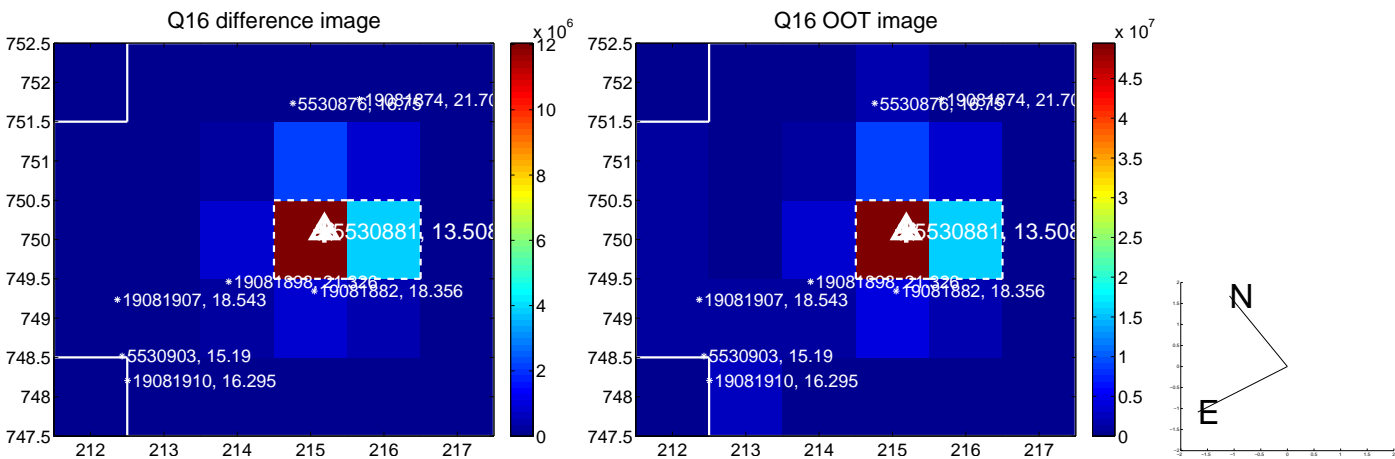
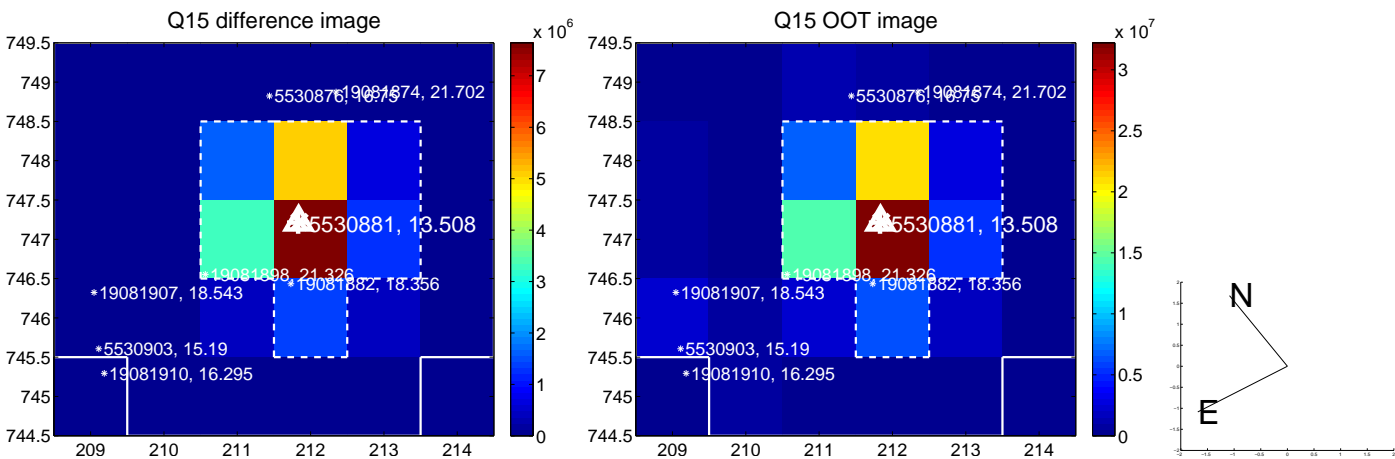
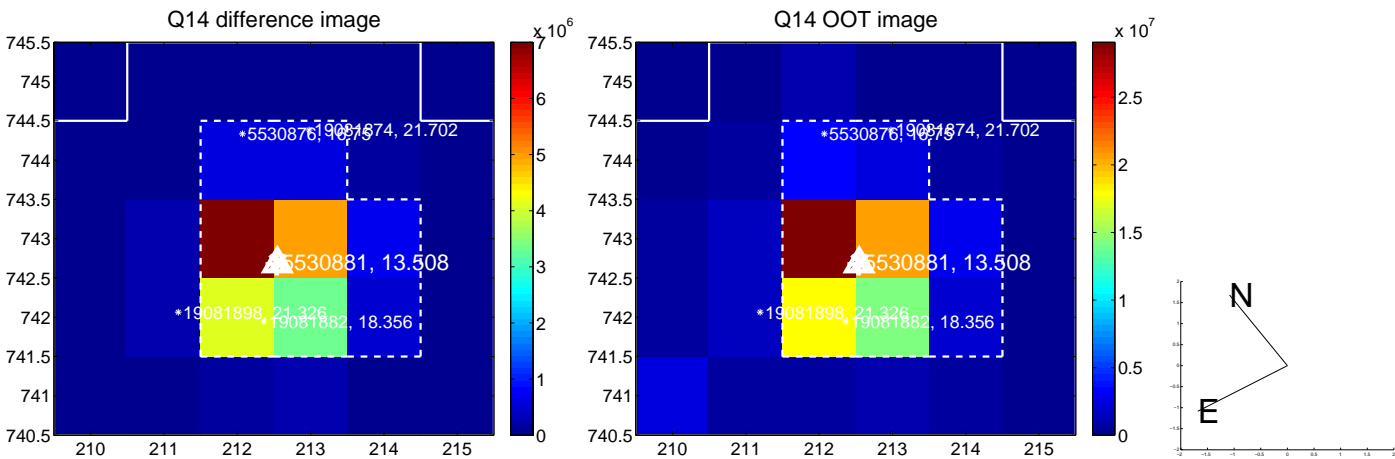
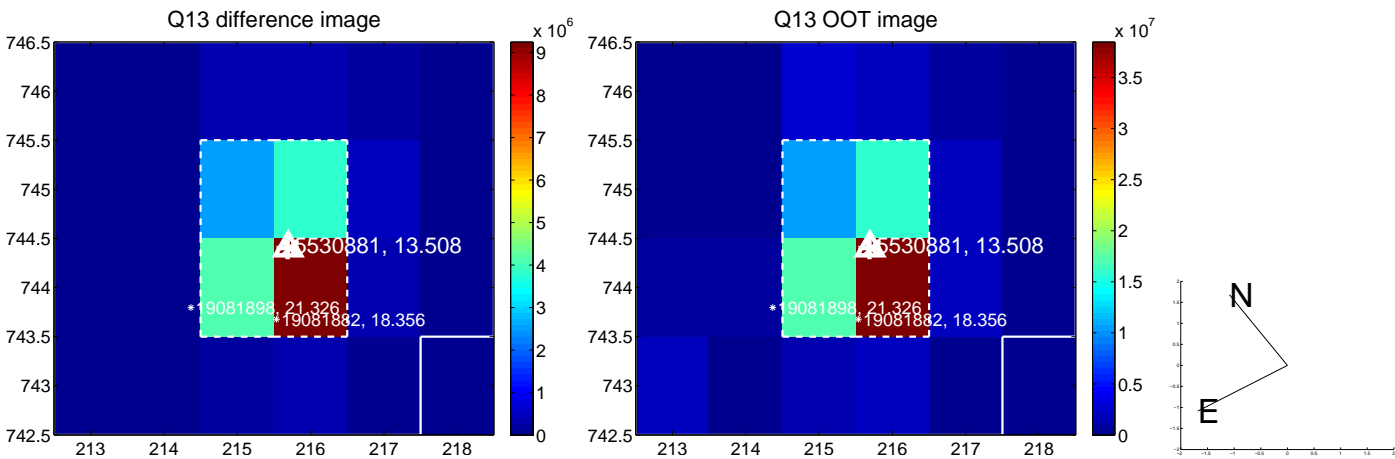




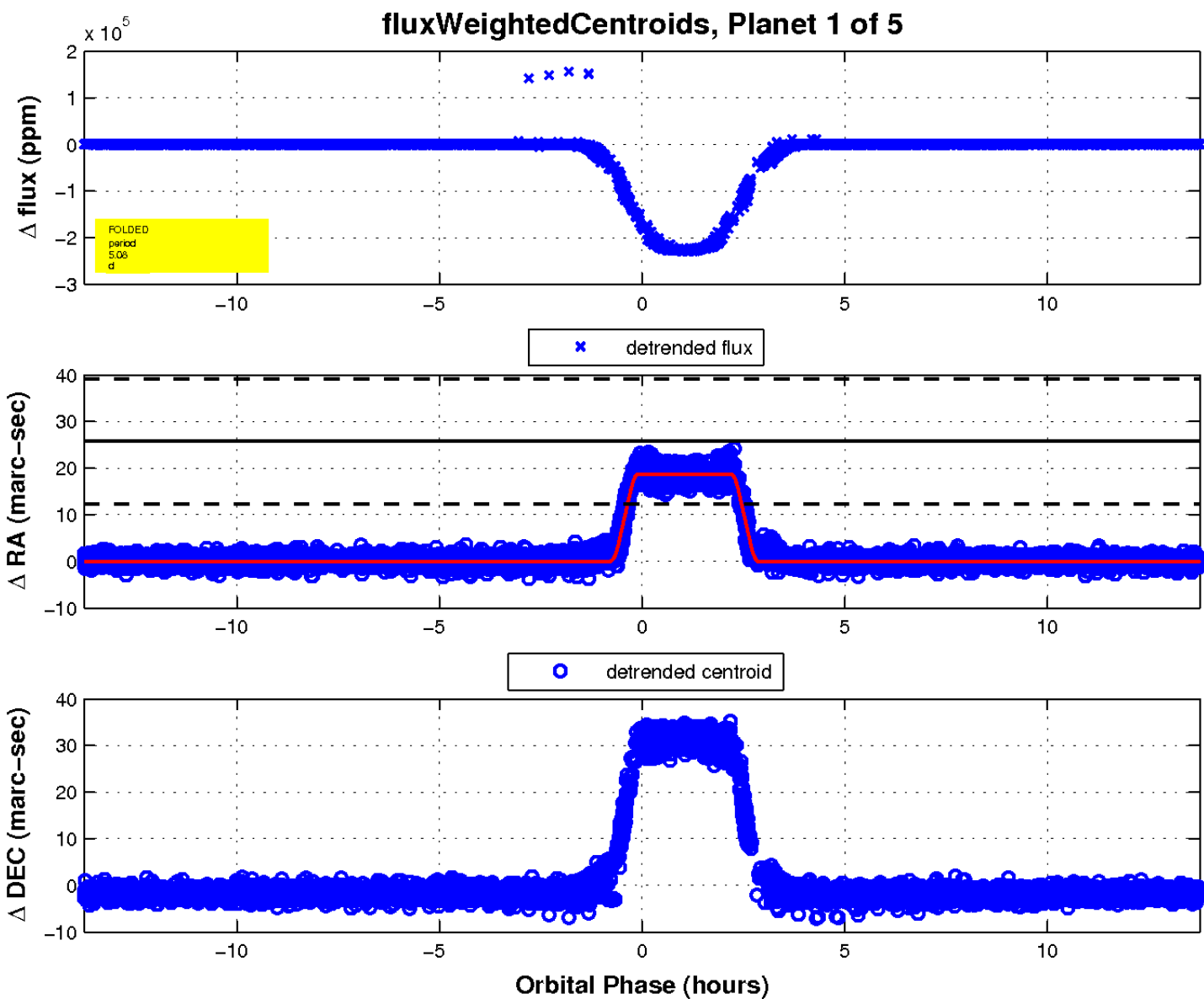
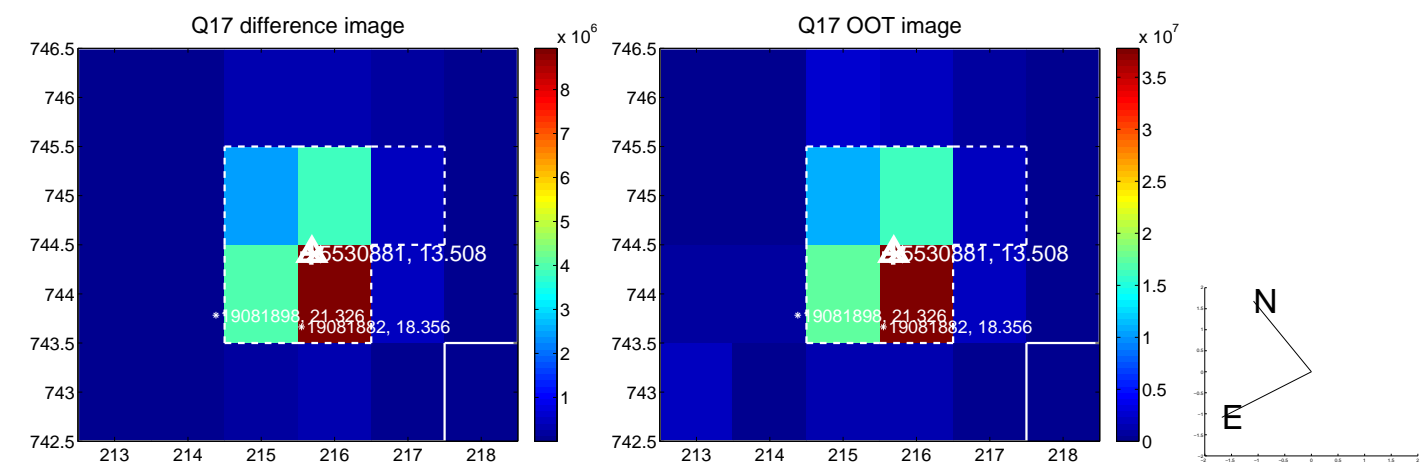
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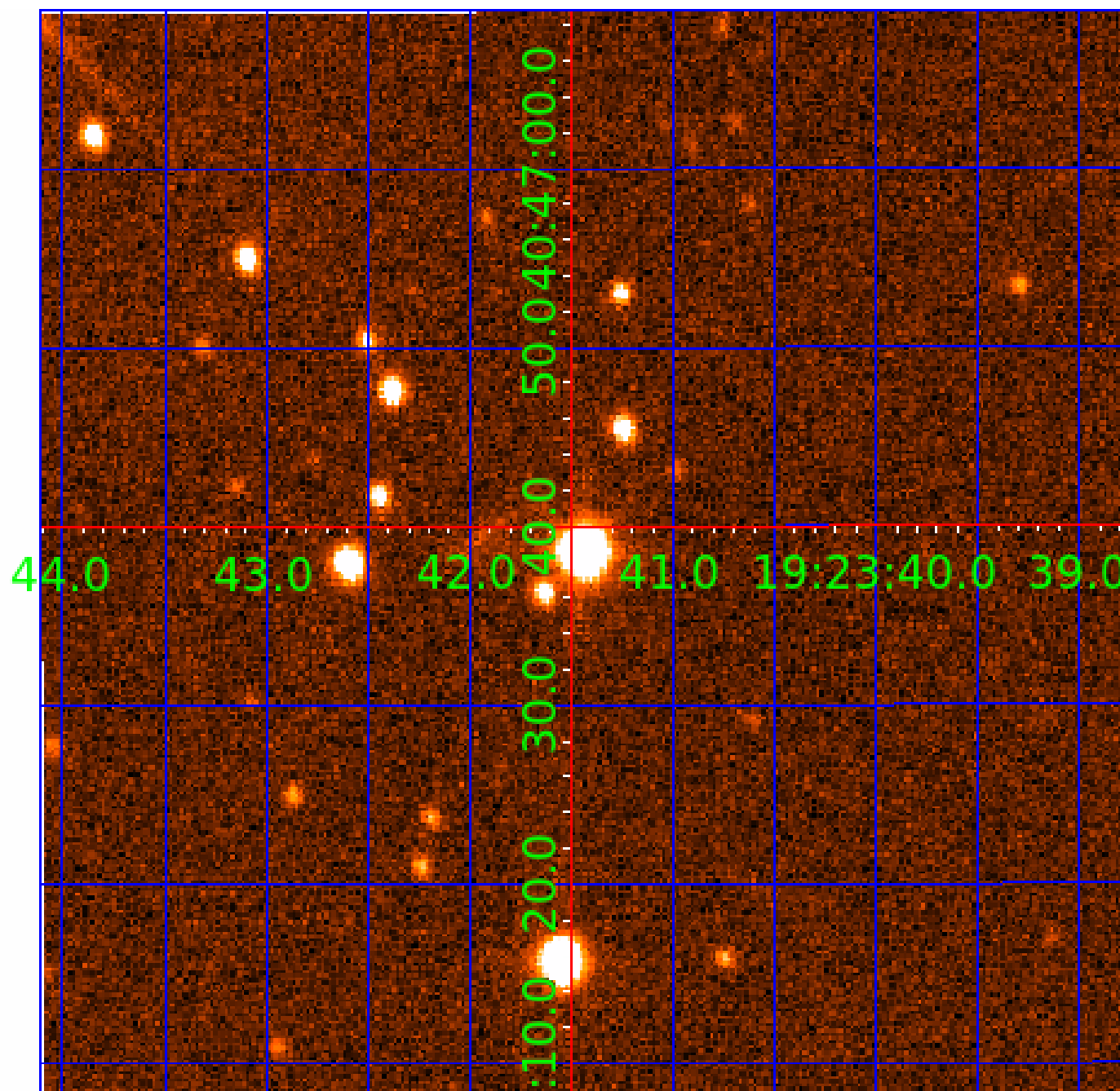


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 005530881

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005530881-01	OBS	6594.01	5.082481	132.961777	276103.5	3.500	20876.7	-1.0	1.15	6507	50.05	607.46
005530881-02	OBS	No	2.541261	132.959692	49897.4	4.982	4335.0	3541.5	1.15	6507	27.66	1530.70
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005530881-04	OBS	No	297.199319	292.013202	605.6	12.000	22.4	-1.0	1.15	6507	2.84	2.68
005530881-05	OBS	No	288.361459	324.183884	584.5	9.481	8.9	7.1	1.15	6507	2.98	2.79

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005530881-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_ALT—MOD_ODDEVEN_ALT—HAS_SEC_TCE—CENT_NOFITS
005530881-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE
005530881-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE_ZUMA_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005530881-04	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_POS_ALT—INCONSISTENT_TRANS—SAME_NTL_PERIOD—CENT_NOFITS
005530881-05	OBS	FP	0.00	1	0	0	0	LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS

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

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

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

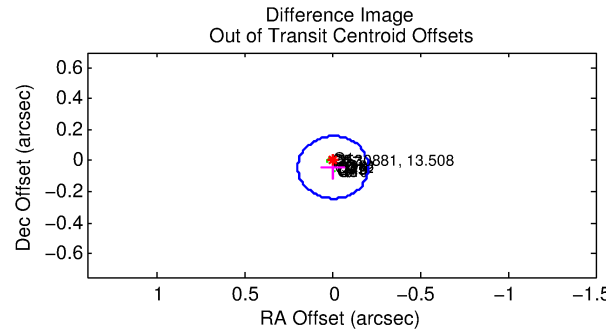
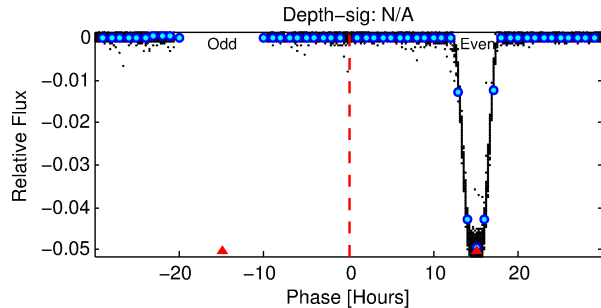
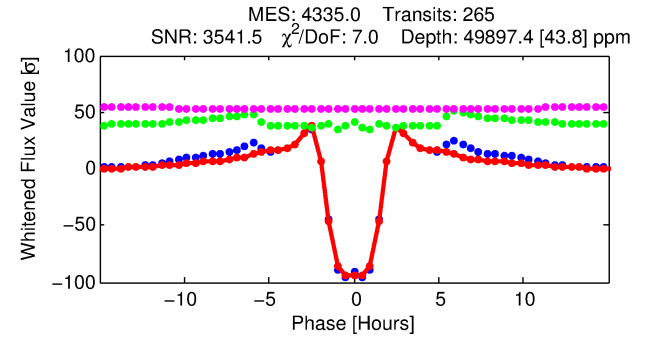
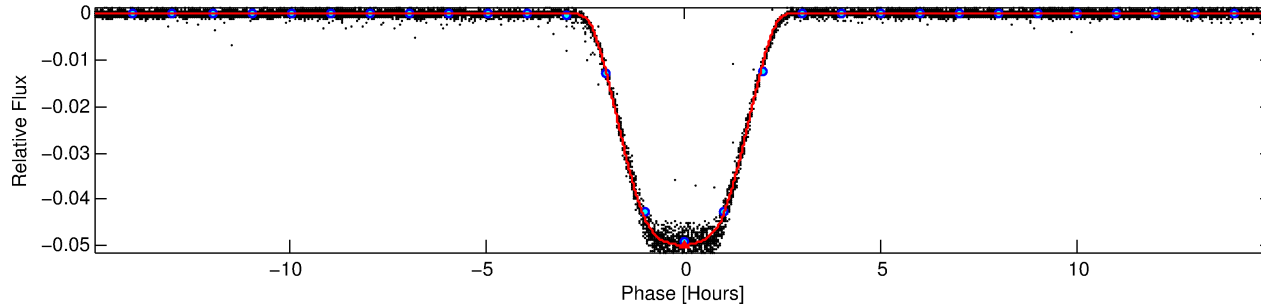
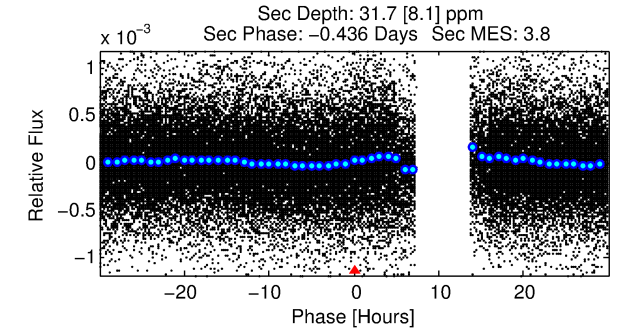
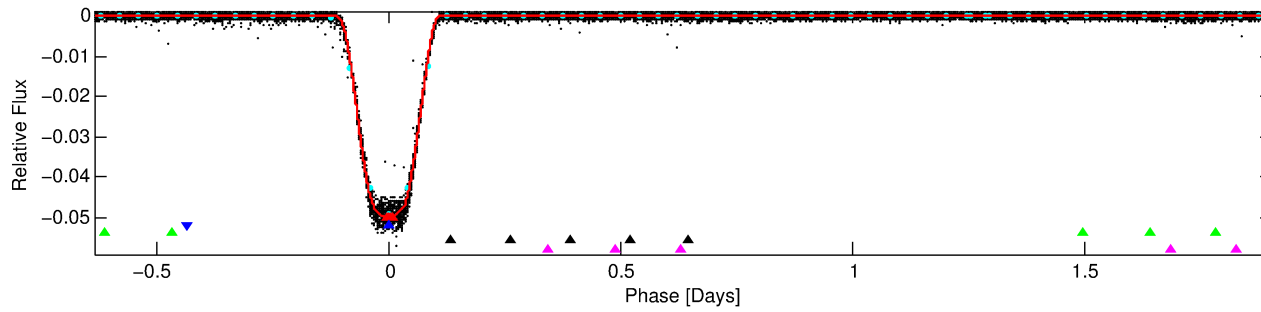
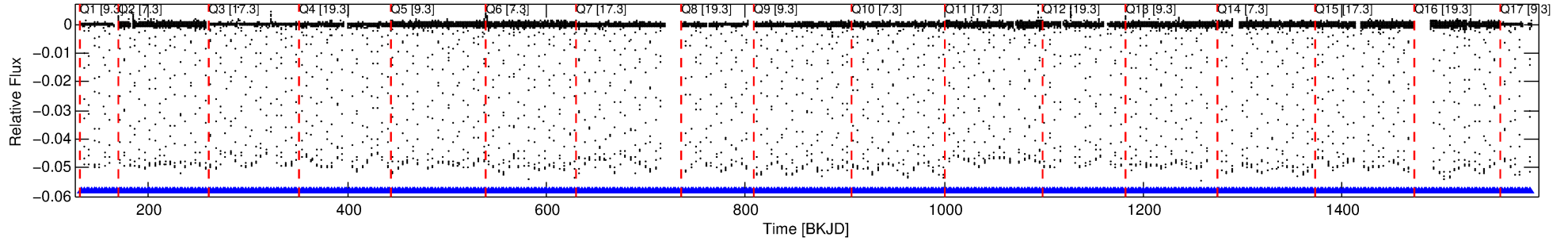
## Ephemeris Match Information For 005530881-02

No Significant Match Found

# DV One-Page Summary

KIC: 5530881 Candidate: 2 of 5 Period: 2.541 d  
KOI: K06594 Corr: No Ephemeris Match

Kp: 13.51 R\*: 1.15 Rs Teff: 6507.0 K Logg: 4.34 Fe/H: -0.380



## DV Fit Results:

Period = 2.54126 [0.00000] d  
Epoch = 132.9597 [0.0000] BKJD  
Rp/R\* = 0.2214 [0.0001]  
a/R\* = 3.99 [0.00]  
b = 0.71 [0.00]  
Seff = 1530.70 [561.21]  
Teff = 1595 [146] K  
Rp = 27.66 [7.97] Re  
a = 0.0371 [0.0089] AU  
Ag = 0.03 [0.01] [-71.71σ]  
Teffp = 1037 [73] K [-3.41σ]

## DV Diagnostic Results:

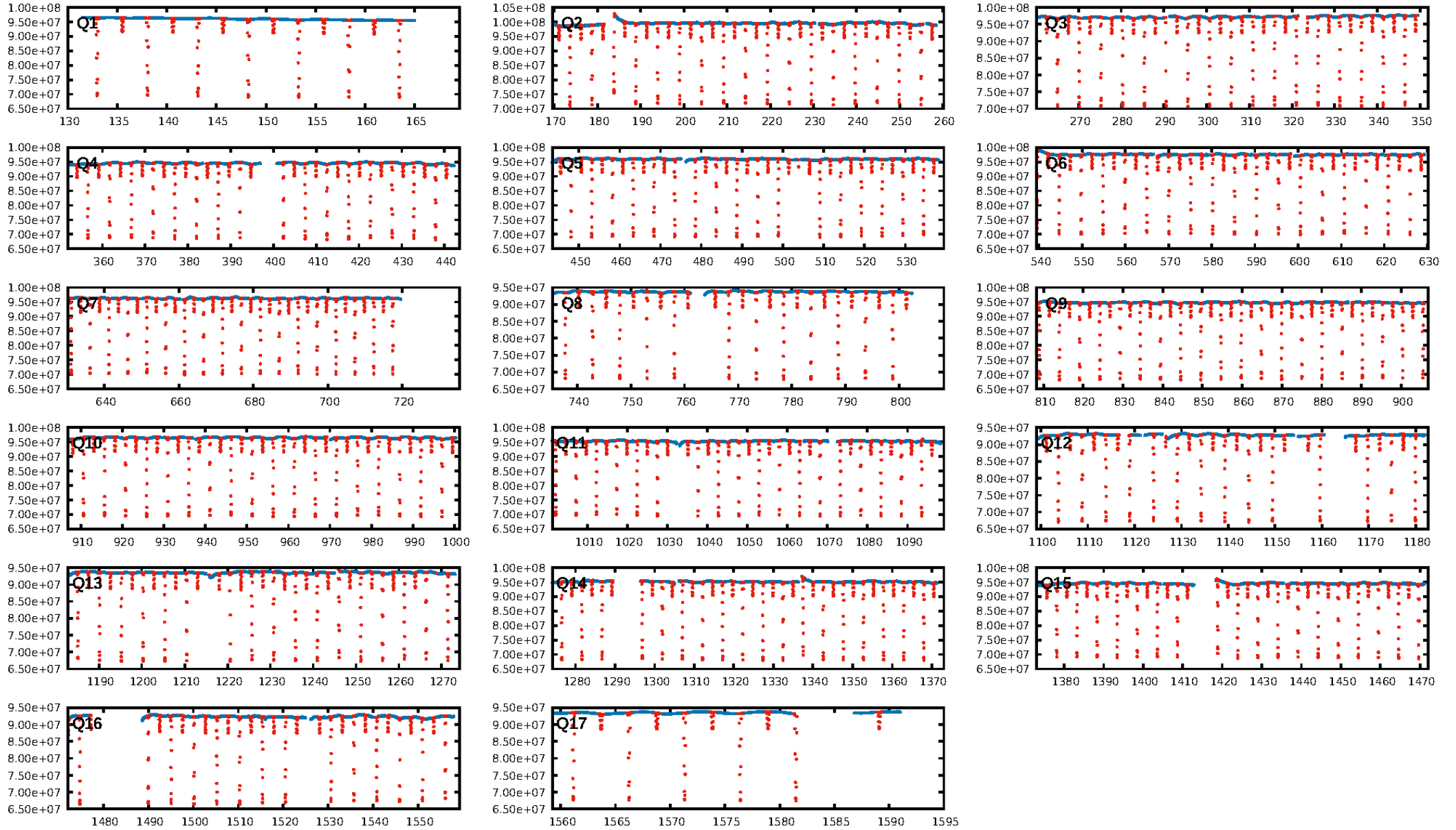
ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [10.02σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [254/254]  
GhostDiagnostic-chr: 2.431  
Centroid-sig: N/A  
Centroid-so: 0.126 arcsec [124.61σ]  
OotOffset-rm: 0.043 arcsec [0.64σ]  
KicOffset-rm: 0.080 arcsec [1.19σ]  
OotOffset-st: 4/4/4/5 [17]  
KicOffset-st: 4/4/4/5 [17]  
DiffImageQuality-fgm: 1.00 [17/17]  
DiffImageOverlap-fno: 1.00 [17/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 14:18:36 Z

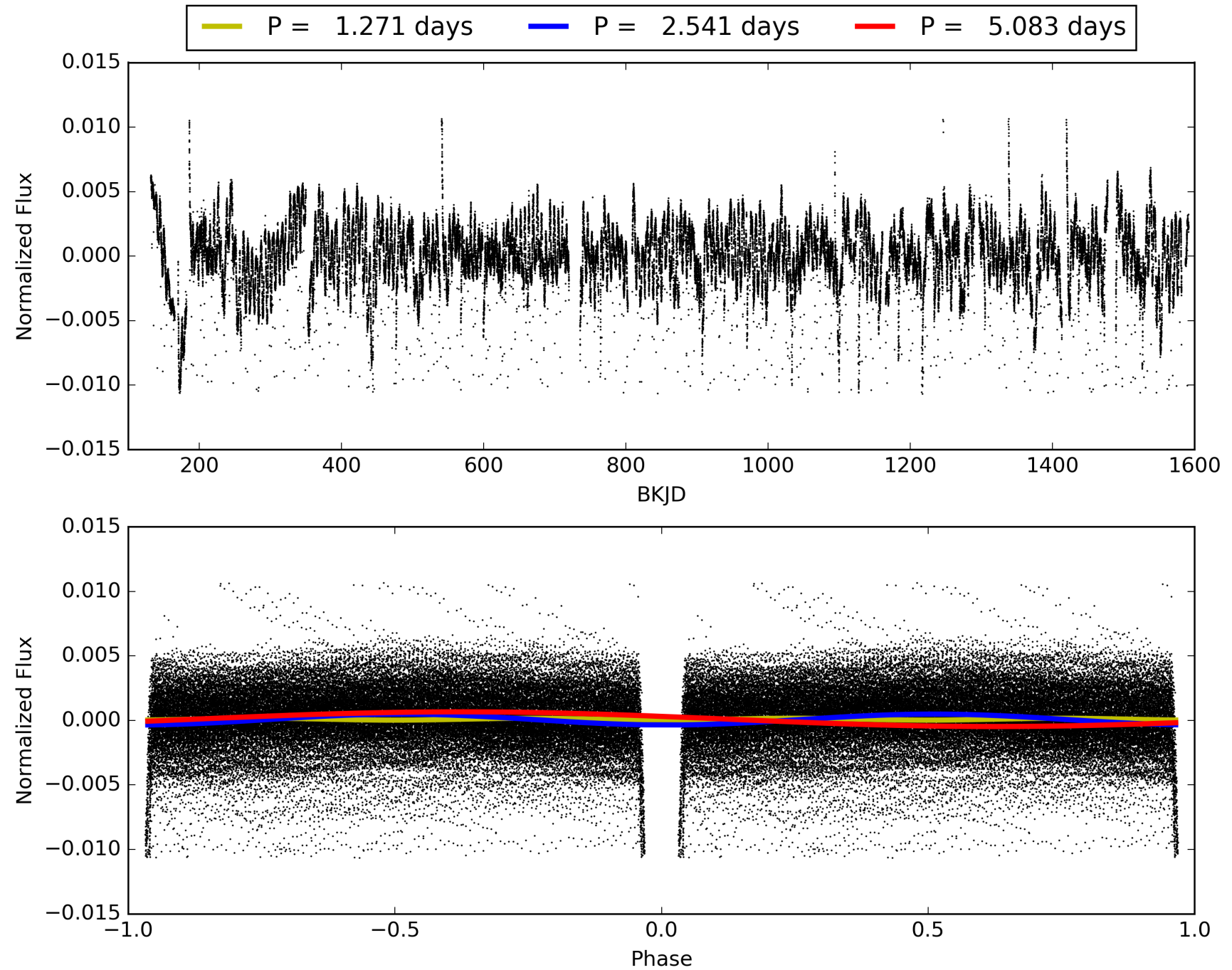
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center



# TCE 005530881-02, PDC Light Curves

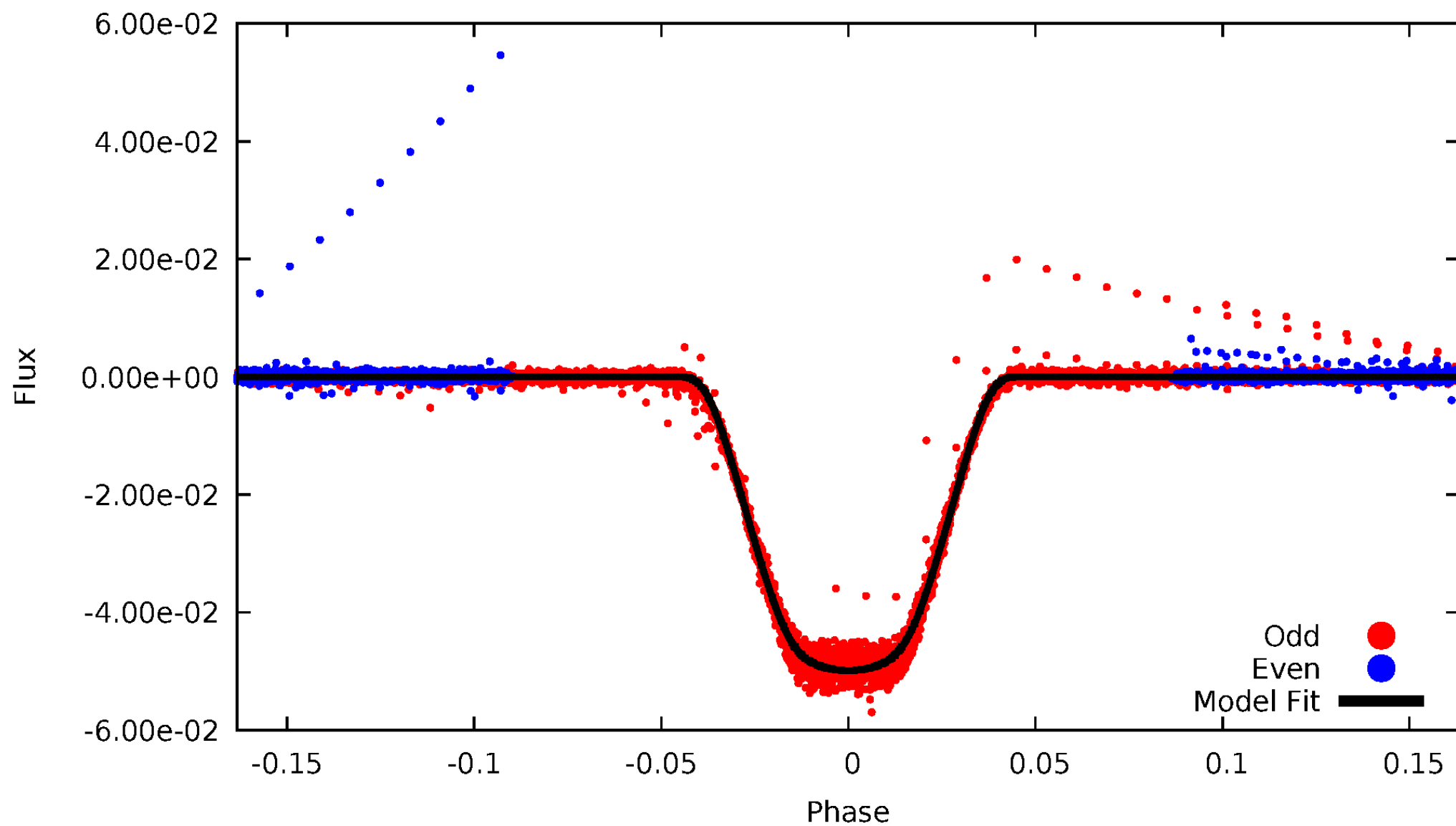


# TCE 005530881-02



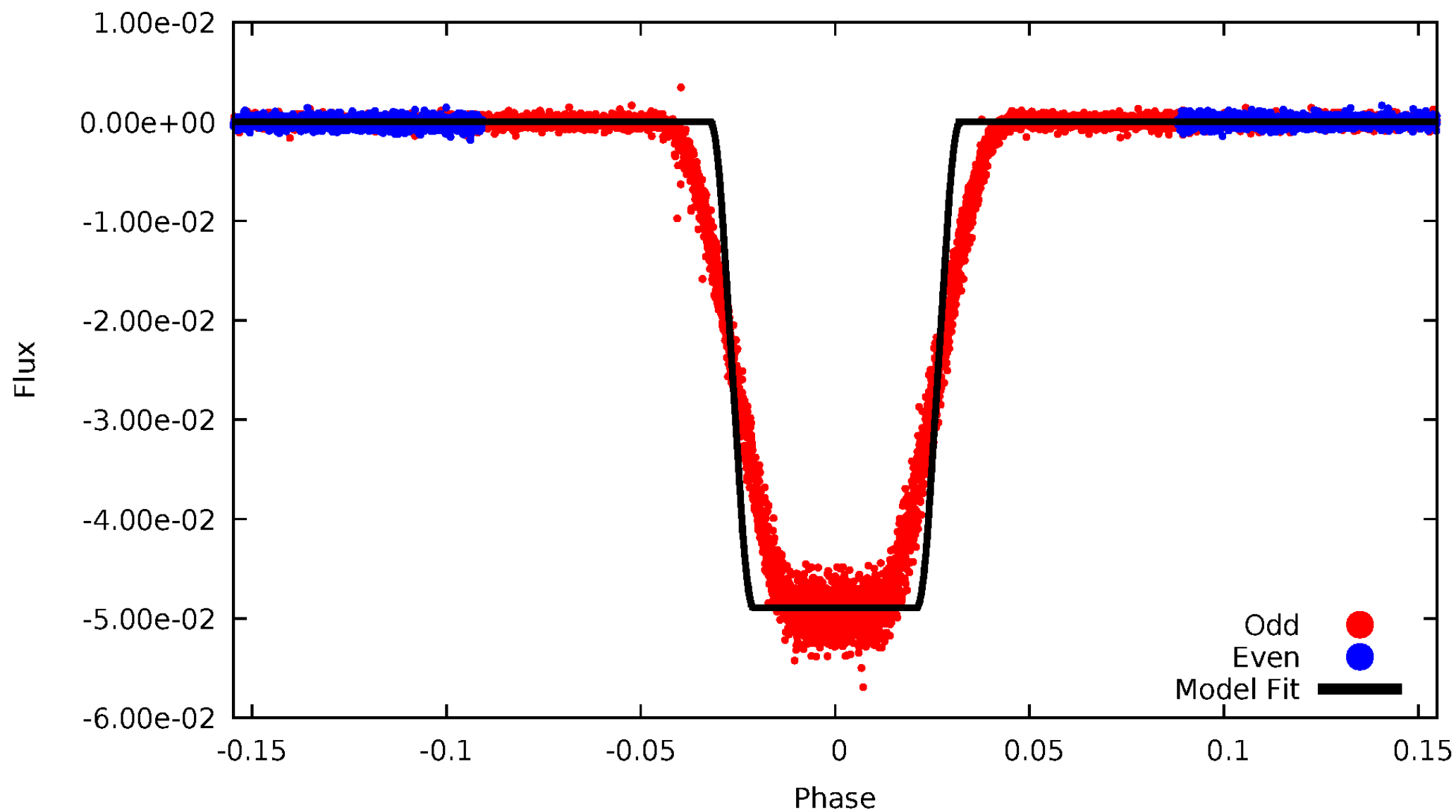
# DV Odd/Even

TCE 005530881-02



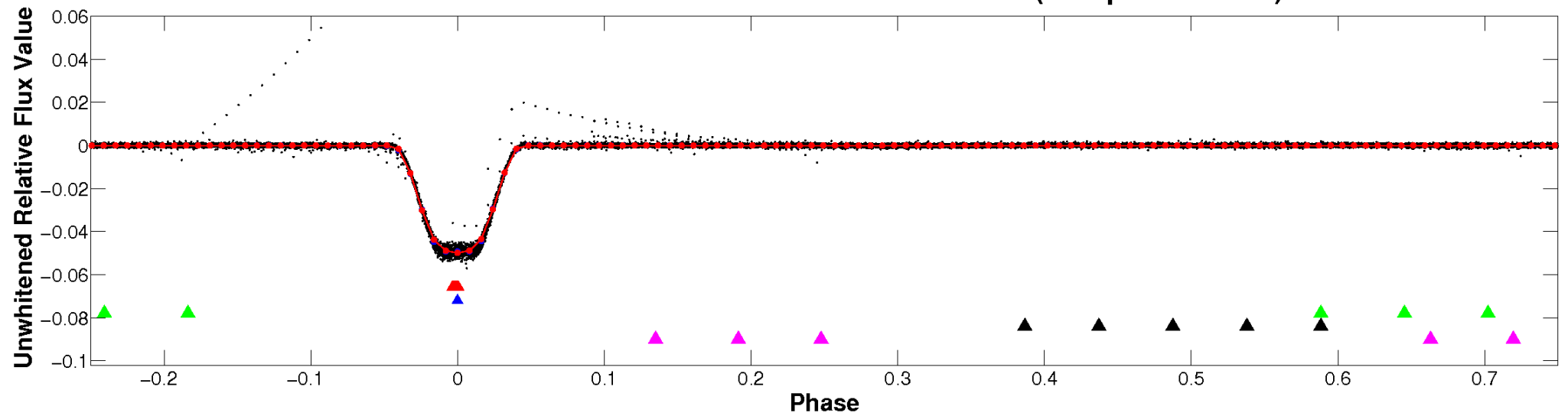
# ALT Odd/Even

TCE 005530881-02

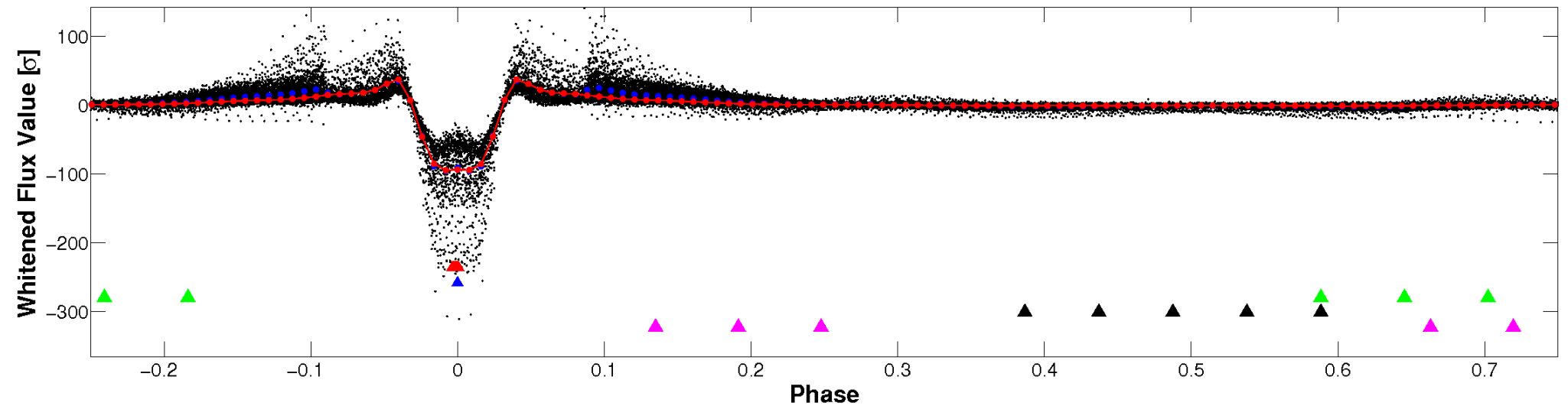


# Non-Whitened Vs. Whitened Light Curve

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

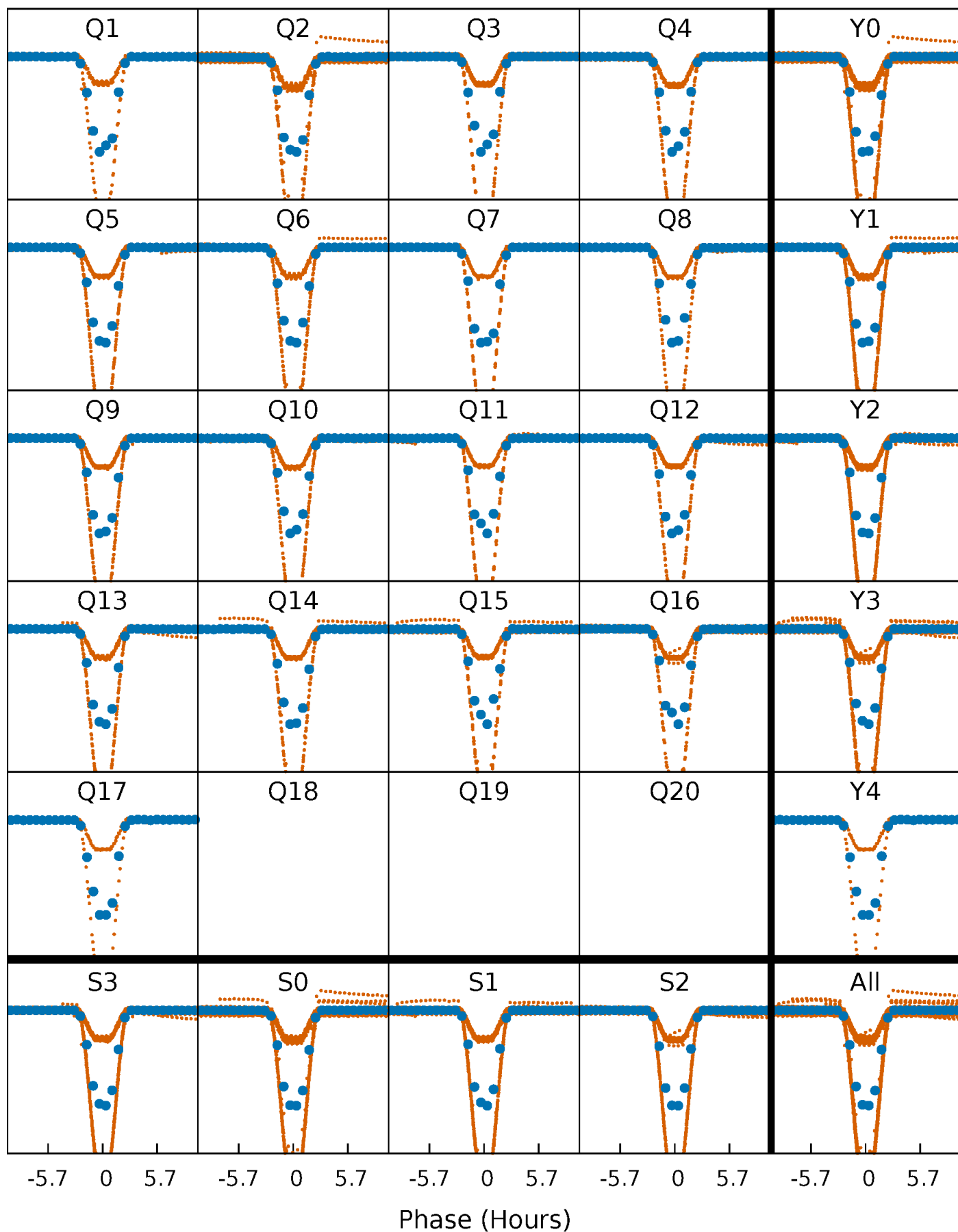


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

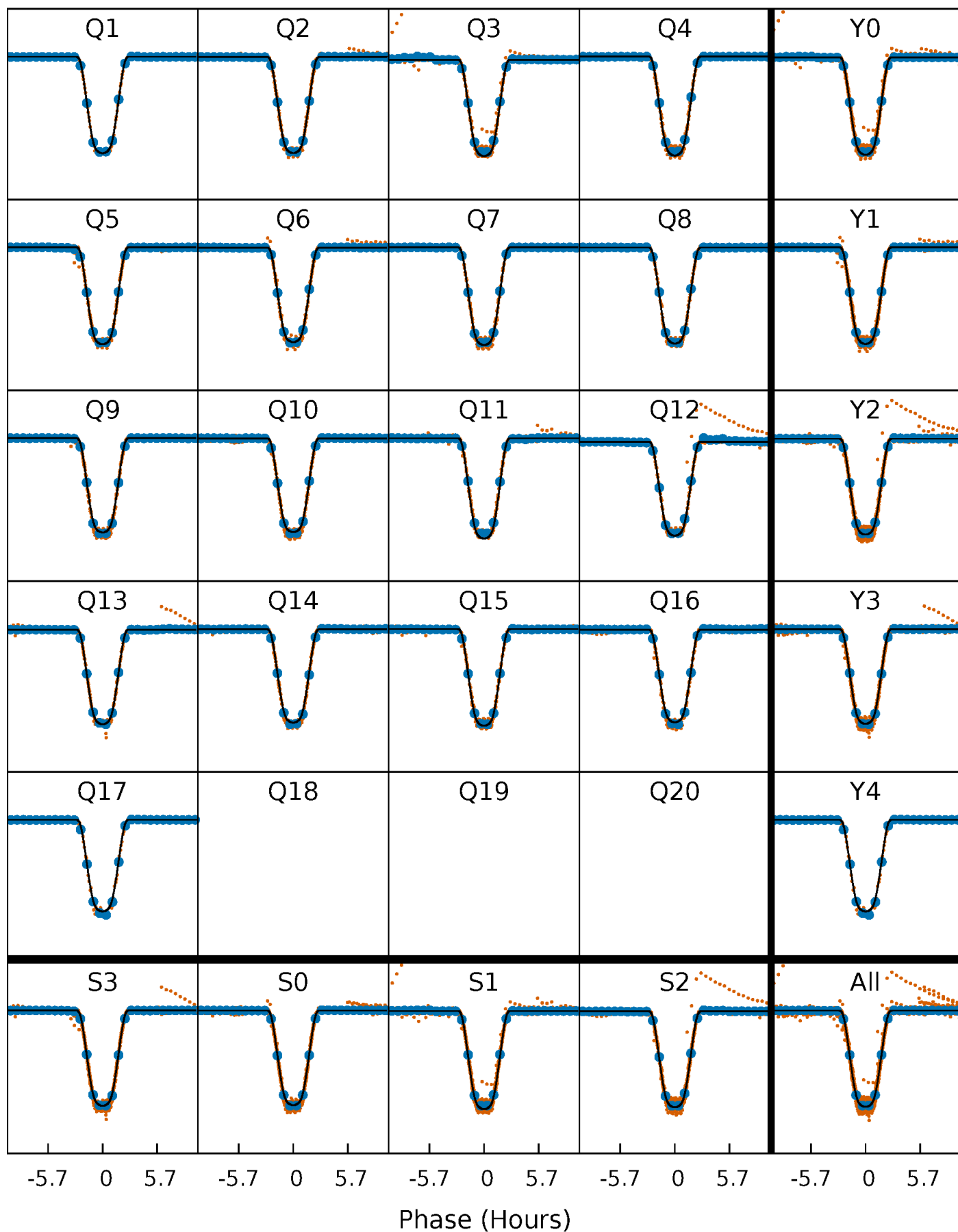
TCE 005530881-02 P= 2.541261 Days  $T_0=132.959692$  (BKJD)





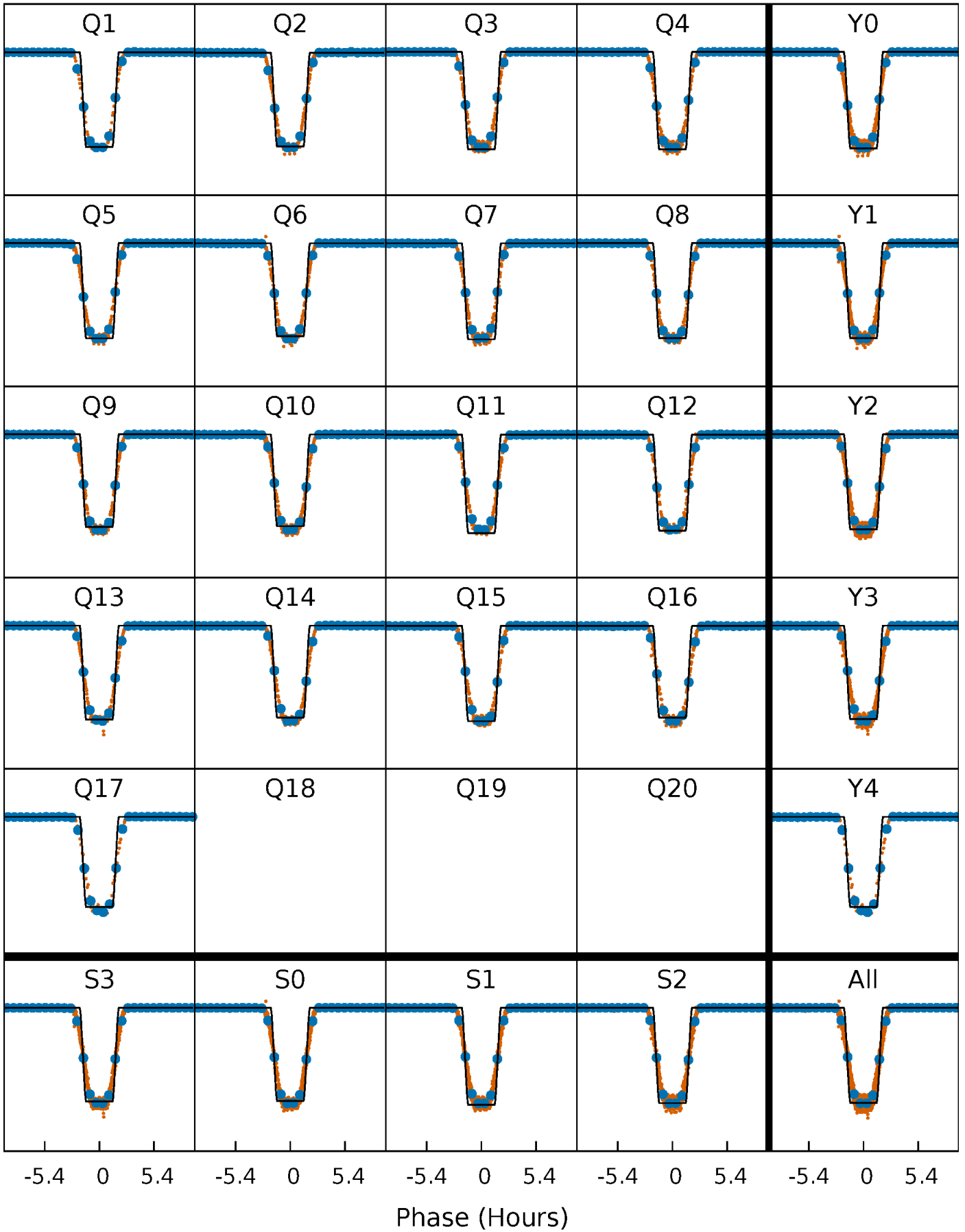
# DV Quarter-Phased Transit Curves

TCE 005530881-02 P= 2.541261 Days  $T_0=132.959692$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

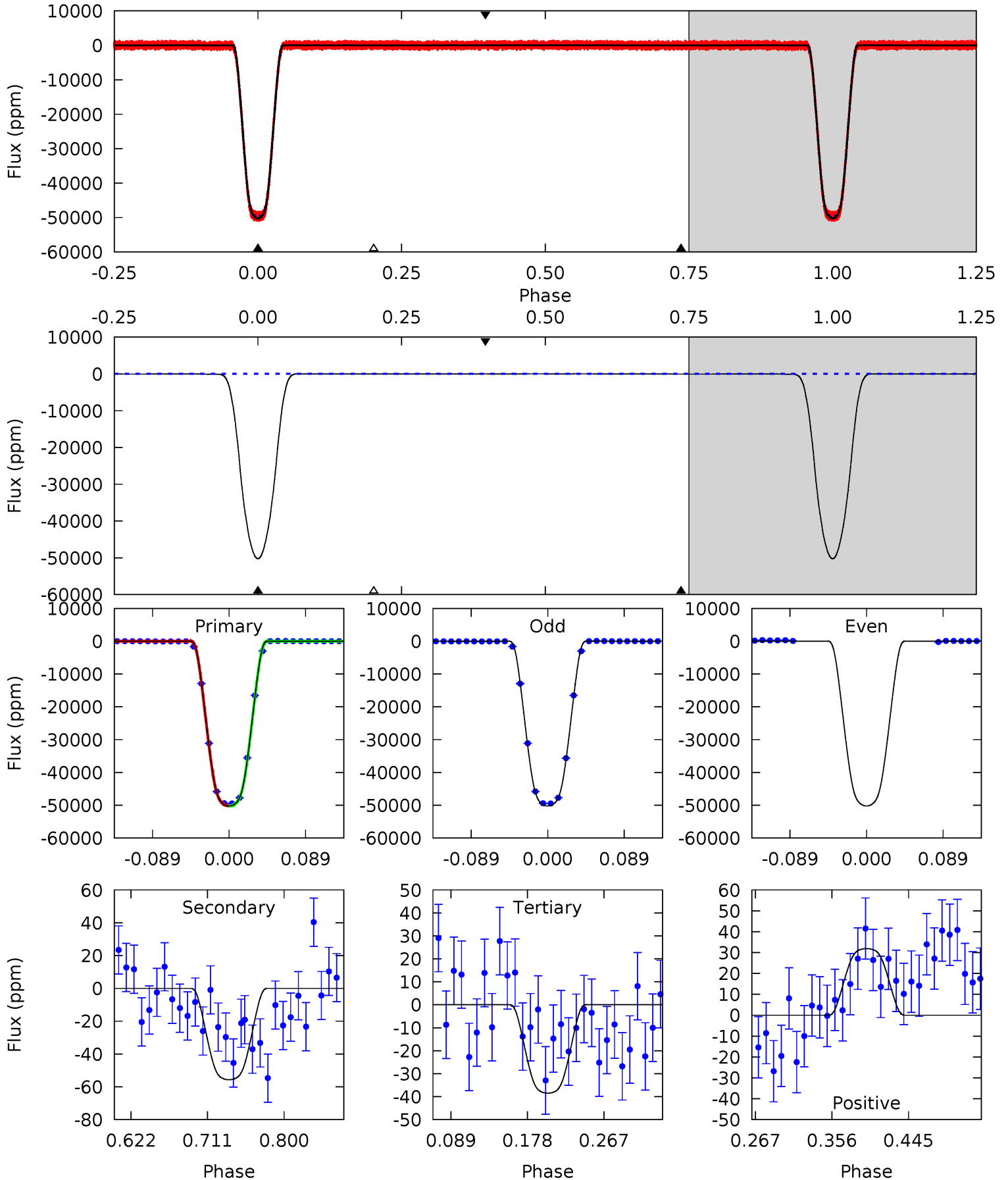
TCE 005530881-02 P= 2.541249 Days  $T_0=132.962238$  (BKJD)



# DV Model-Shift Uniqueness Test

005530881-02, P = 2.541261 Days, E = 130.418431 Days

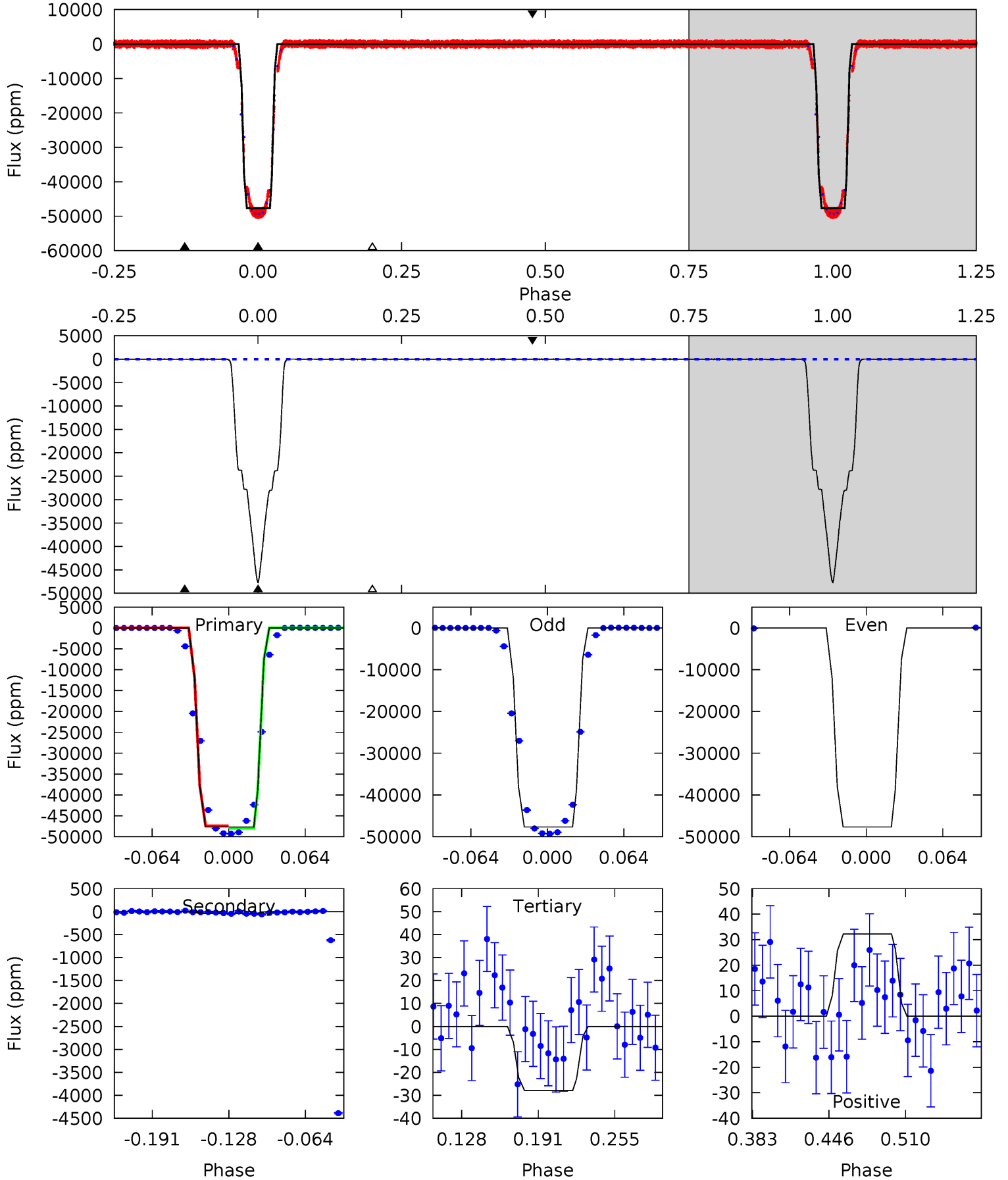
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6558	7.27	5.03	4.16	4.59	1.70	2.90	6553	6554	2.25	3.11	0	0.99	0.00	0



# Alt Model-Shift Uniqueness Test

005530881-02, P = 2.541249 Days, E = 130.420989 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
4096	3.56	2.40	2.77	4.66	1.85	1.04	4093	4093	1.16	0.79	0	1.00	0.00	0



### Stellar Parameters For KIC 005530881

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6507^{+146}_{-194}$	$4.343^{+0.101}_{-0.188}$	$-0.380^{+0.250}_{-0.300}$	$1.145^{+0.330}_{-0.152}$	$1.049^{+0.160}_{-0.117}$	$0.984^{+0.452}_{-0.496}$
	+2%/-3%	+2%/-4%	+66%/-79%	+29%/-13%	+15%/-11%	+46%/-50%
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 005530881-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-56 \pm 8$	$27.68^{+4.43}_{-2.16}$	$2242^{+151}_{-106}$	$-2572^{+70}_{-106}$	$0.053^{+0.014}_{-0.013}$
Alt.	$-41 \pm 12$	$28.14^{+4.30}_{-2.44}$	$2248^{+157}_{-113}$	$-2597^{+73}_{-104}$	$0.038^{+0.014}_{-0.012}$

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

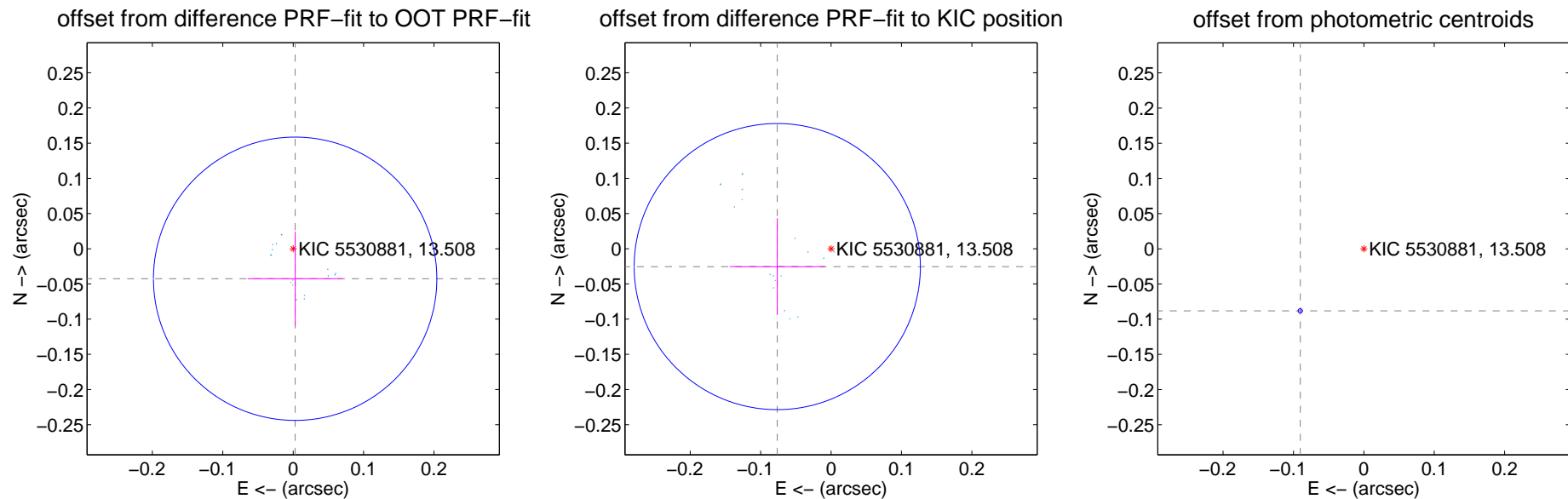
## DV Centroid Data

Supplemental centroid analysis for 005530881-02. Kepler magnitude: 13.51. Transit SNR 3541.53

There are 17 quarters with good PRF difference image offsets

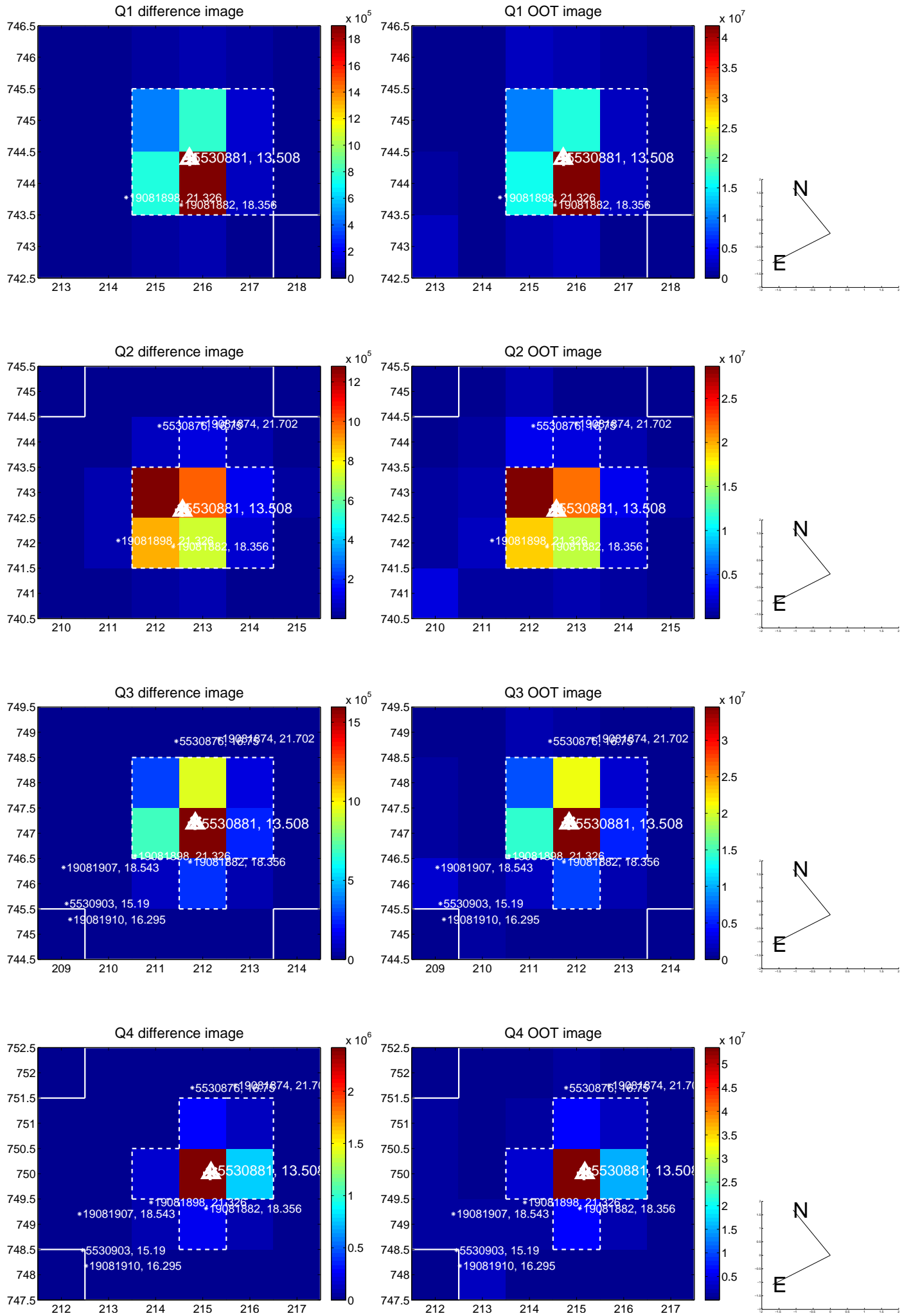
The direct PRF centroid is offset from the target star catalog position by about 0.16 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.043 \pm 0.067$	0.64	$-0.003 \pm 0.067$	$-0.043 \pm 0.067$
PRF-fit source offset from KIC position	$0.080 \pm 0.068$	1.19	$0.076 \pm 0.068$	$-0.025 \pm 0.069$
photometric centroid source offset	$0.13 \pm 0.00$	124.61	$0.09 \pm 0.00$	$-0.09 \pm 0.00$

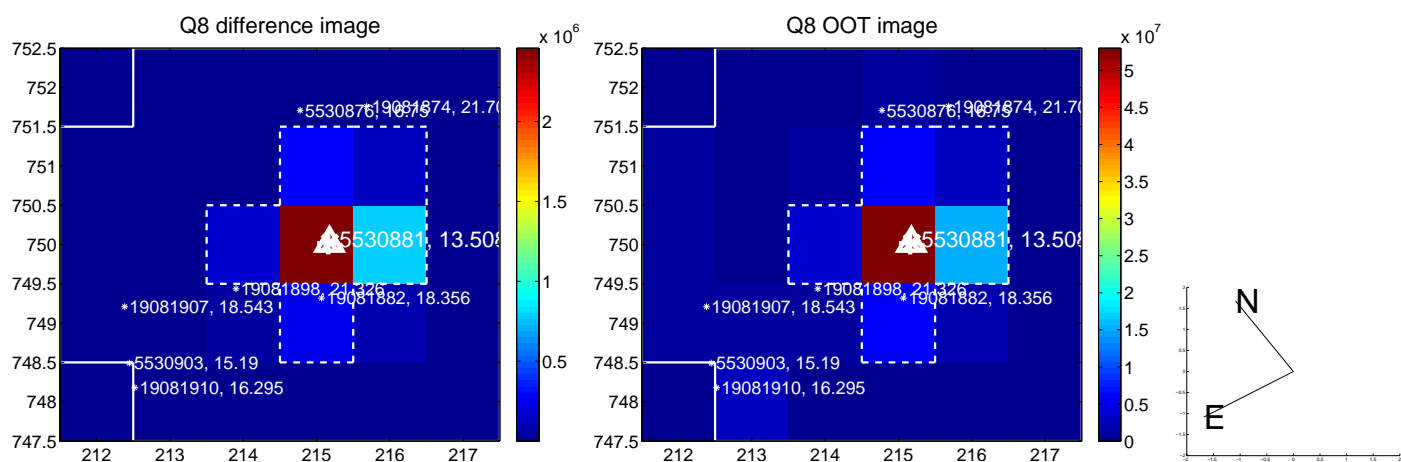
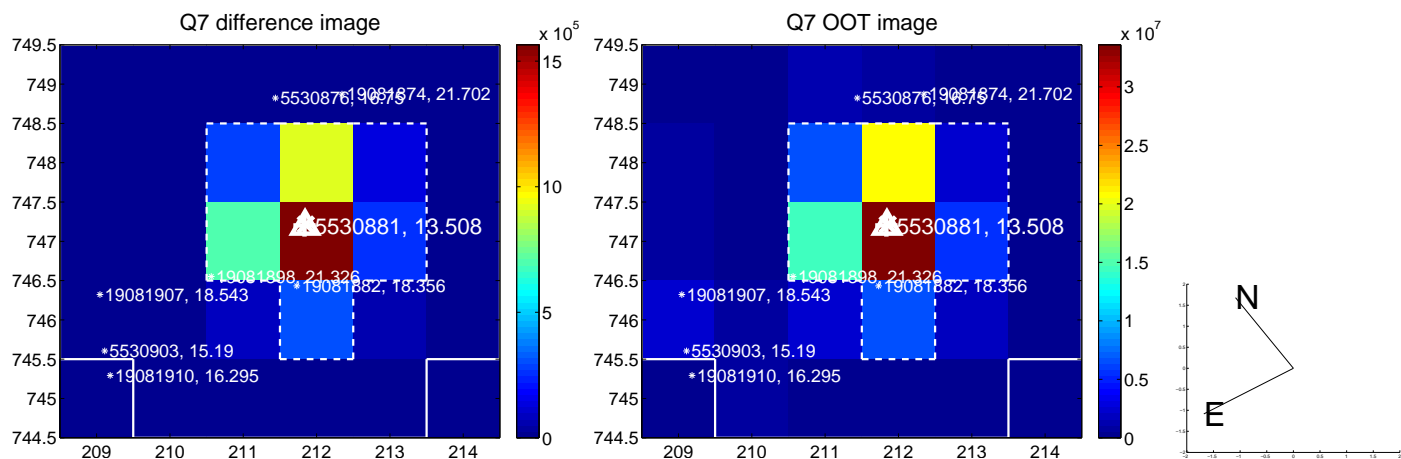
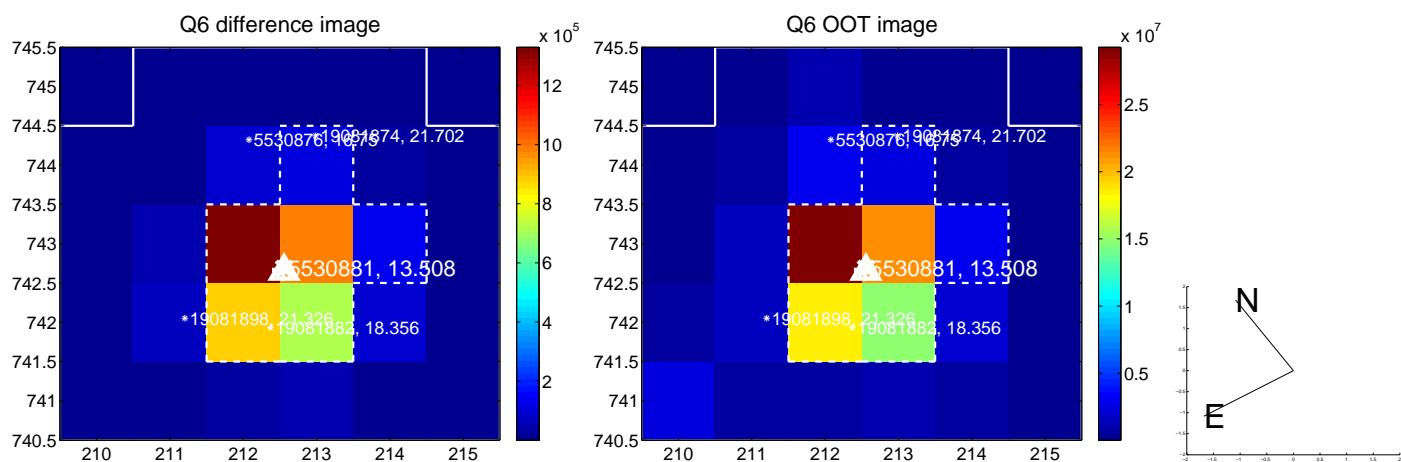
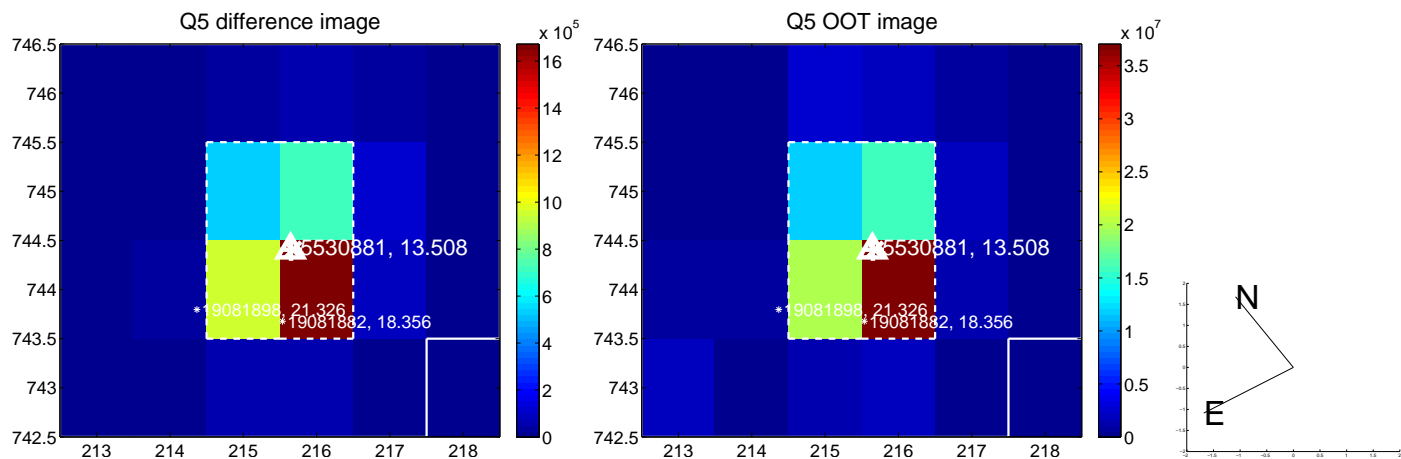


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

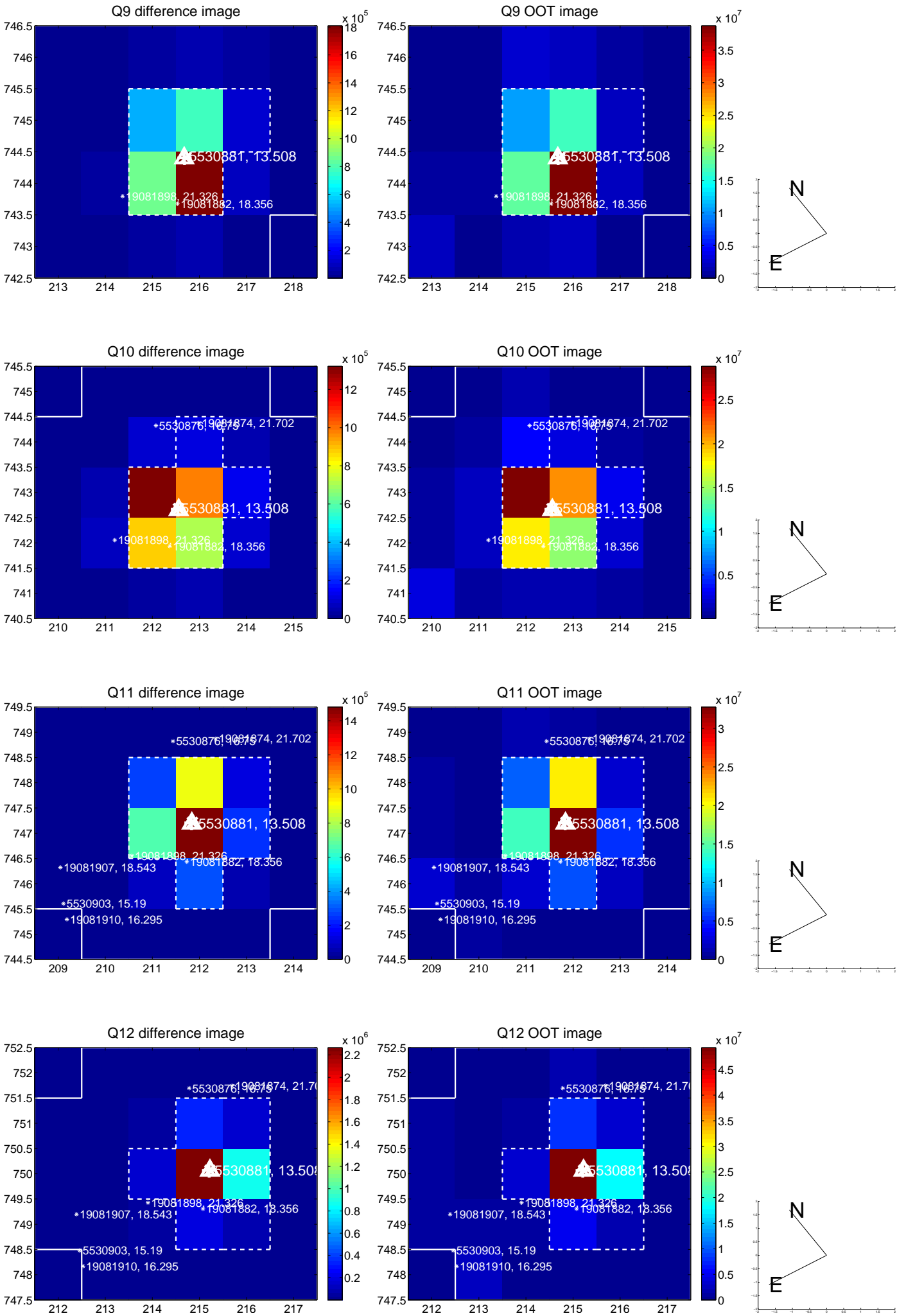


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

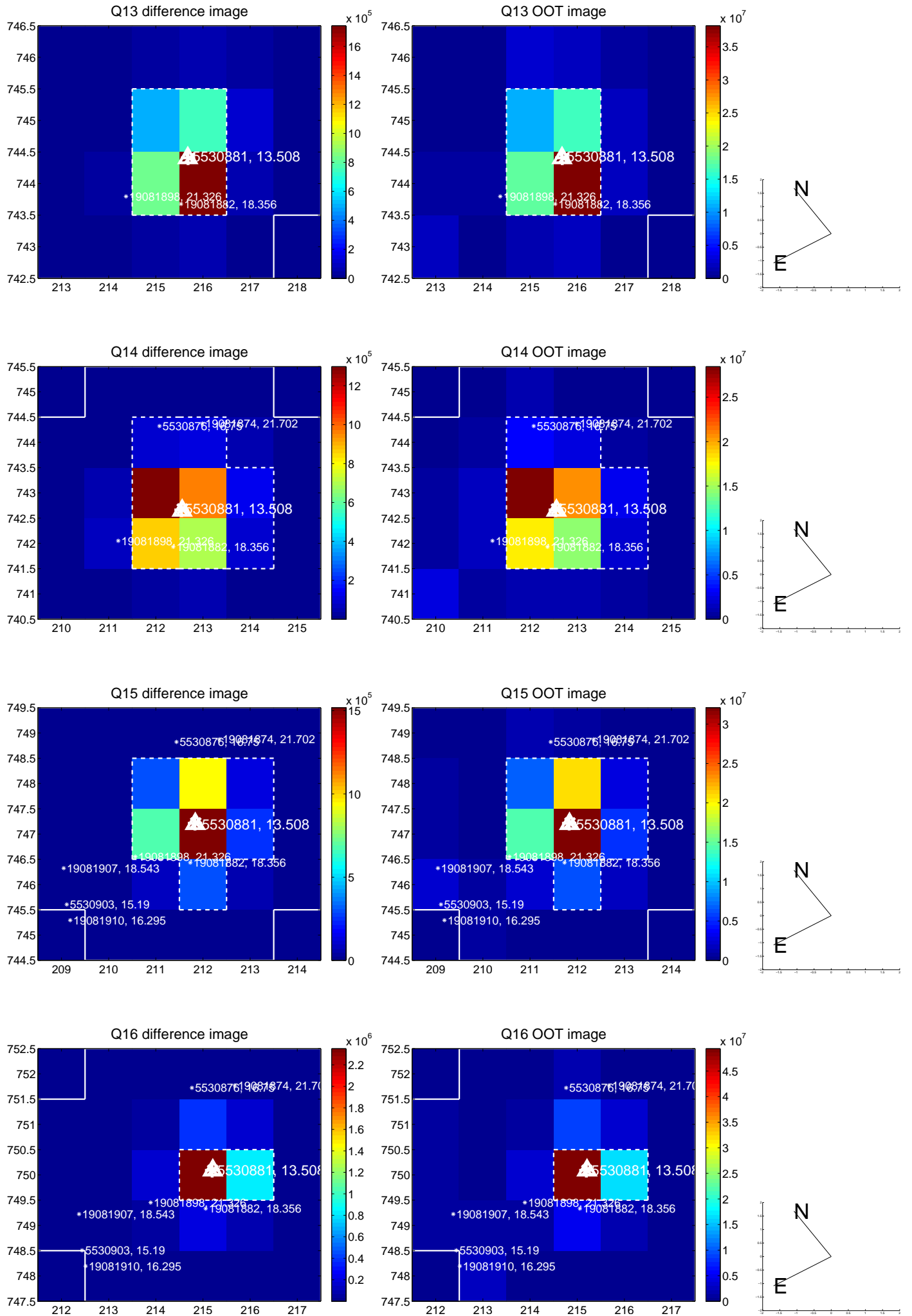




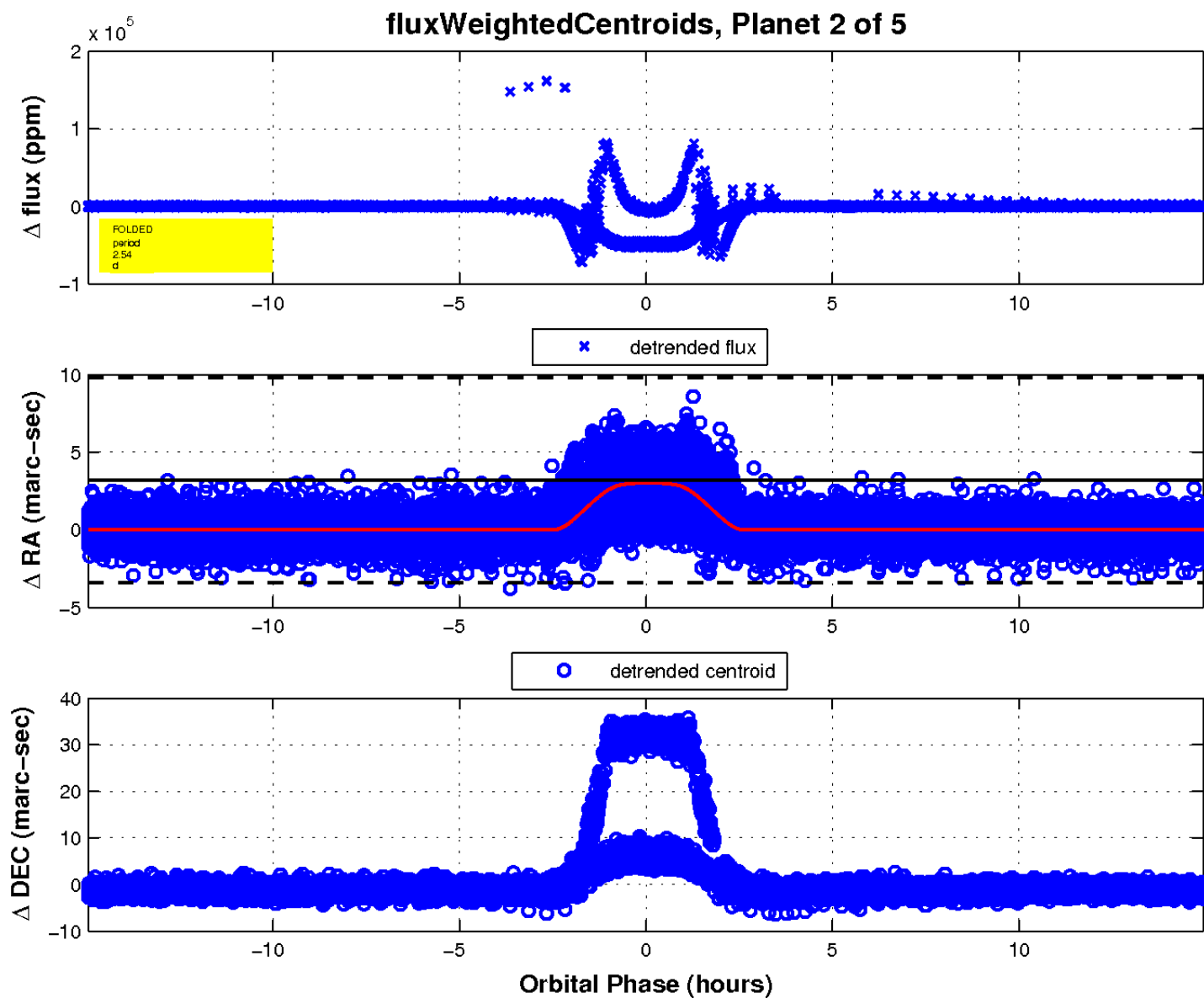
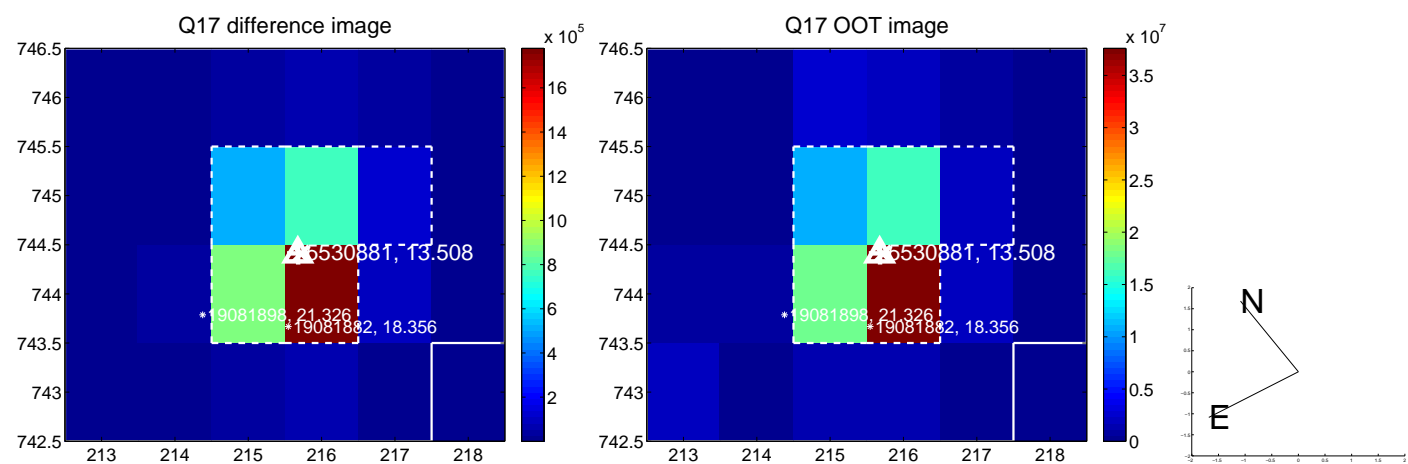
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

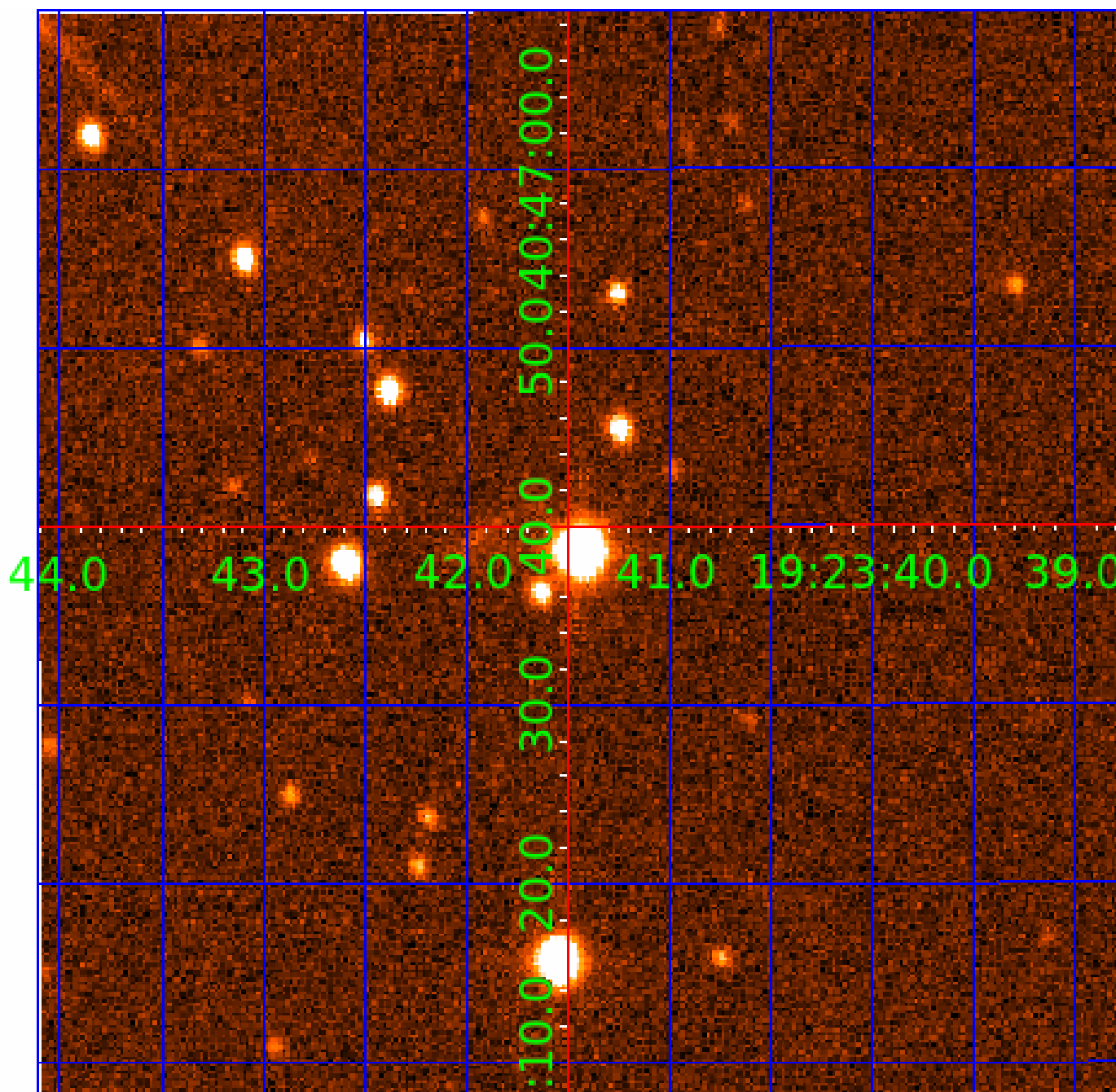


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 005530881

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005530881-01	OBS	6594.01	5.082481	132.961777	276103.5	3.500	20876.7	-1.0	1.15	6507	50.05	607.46
005530881-02	OBS	No	2.541261	132.959692	49897.4	4.982	4335.0	3541.5	1.15	6507	27.66	1530.70
005530881-03	OBS	No	297.182757	292.592257	12.4	1.000	23.2	0.1	1.15	6507	0.47	2.68
005530881-04	OBS	No	297.199319	292.013202	605.6	12.000	22.4	-1.0	1.15	6507	2.84	2.68
005530881-05	OBS	No	288.361459	324.183884	584.5	9.481	8.9	7.1	1.15	6507	2.98	2.79

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005530881-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_ALT—MOD_ODDEVEN_ALT—HAS_SEC_TCE—CENT_NOFITS
005530881-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE
005530881-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE_ZUMA_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005530881-04	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_POS_ALT—INCONSISTENT_TRANS—SAME_NTL_PERIOD—CENT_NOFITS
005530881-05	OBS	FP	0.00	1	0	0	0	LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS

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

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

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

## Ephemeris Match Information For 005530881-03

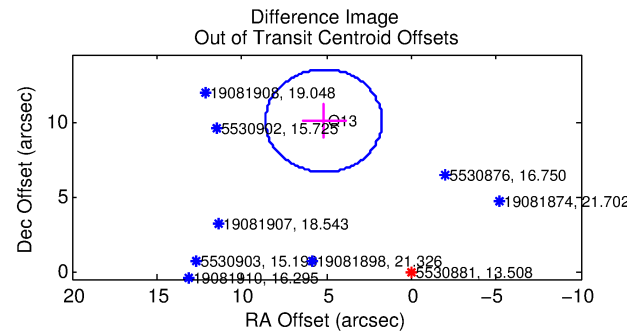
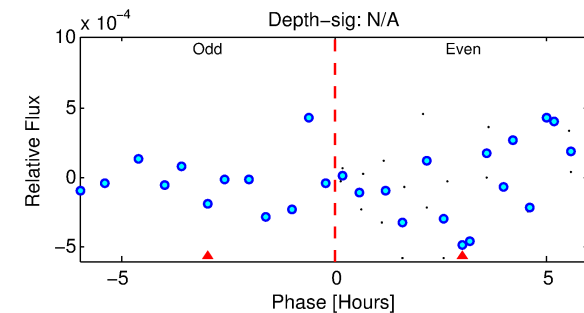
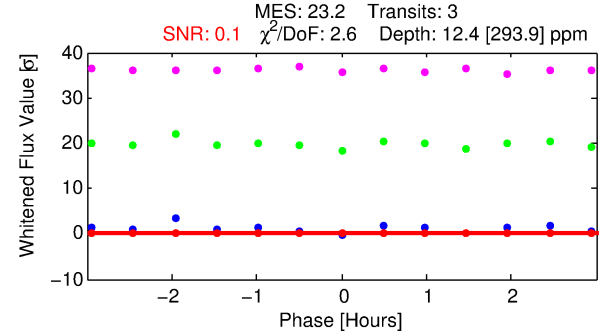
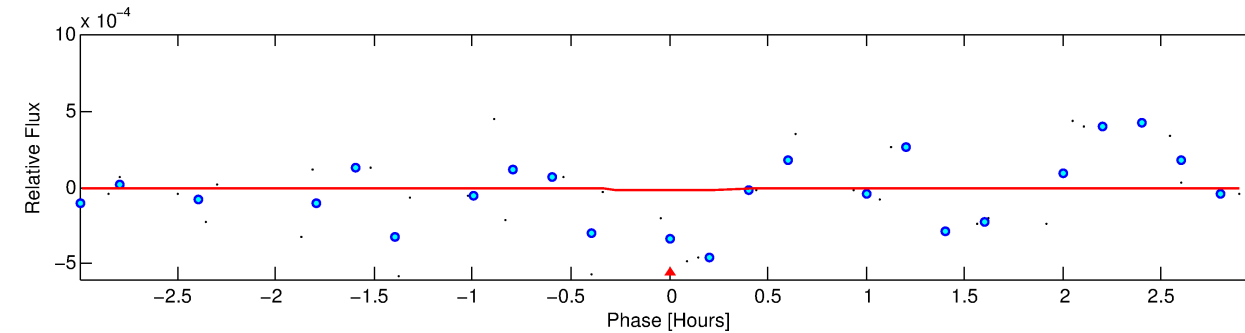
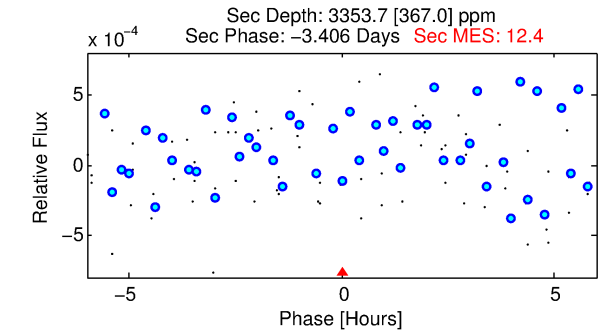
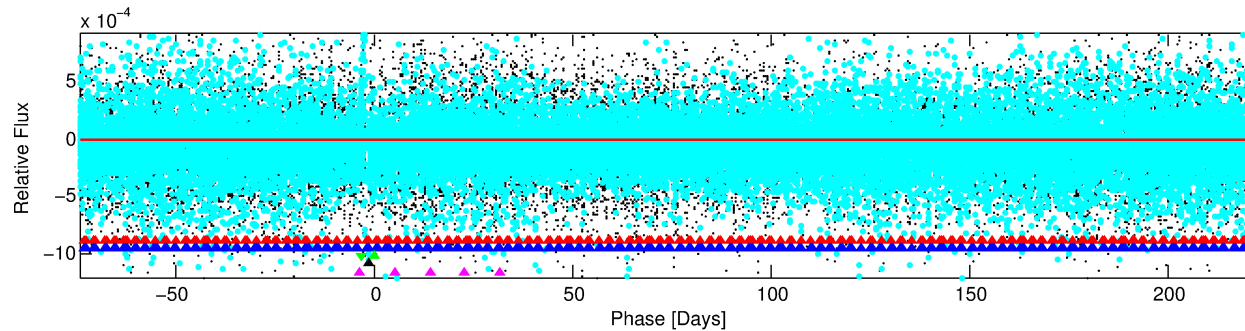
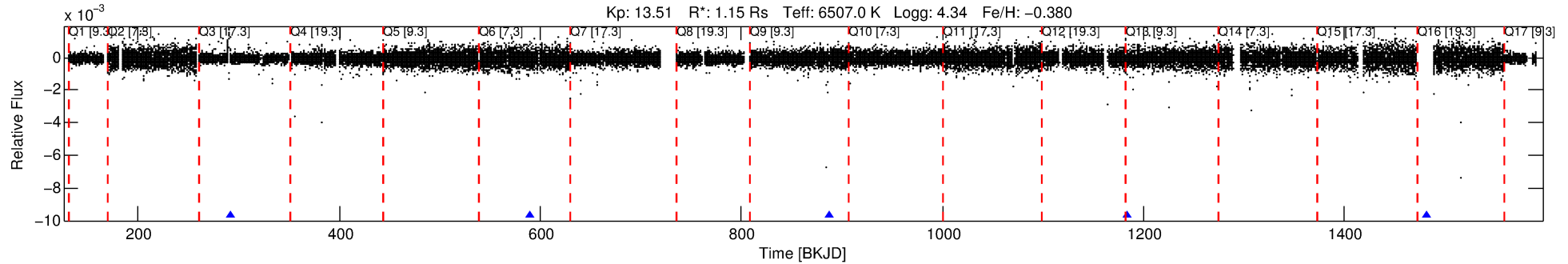
No Significant Match Found

# DV One-Page Summary

KIC: 5530881 Candidate: 3 of 5 Period: 297.183 d

KOI: K06594 Corr: No Ephemeris Match

Kp: 13.51 R\*: 1.15 Rs Teff: 6507.0 K Logg: 4.34 Fe/H: -0.380



## DV Fit Results:

Period = 297.18276 [0.44507] d  
Epoch = 292.5923 [0.4685] BKJD  
Rp/R\* = 0.0038 [0.3551]  
a/R\* = 1069.32 [592387.00]  
b = 0.89 [134.93]  
Seff = 2.68 [0.98]  
Teq = 326 [30] K  
Rp = 0.47 [44.37] Re  
a = 0.8870 [0.2131] AU  
Ag = 6586328.35 [1244936976.75] [0.016]  
Teff = 25546 [1207161] K [0.025]

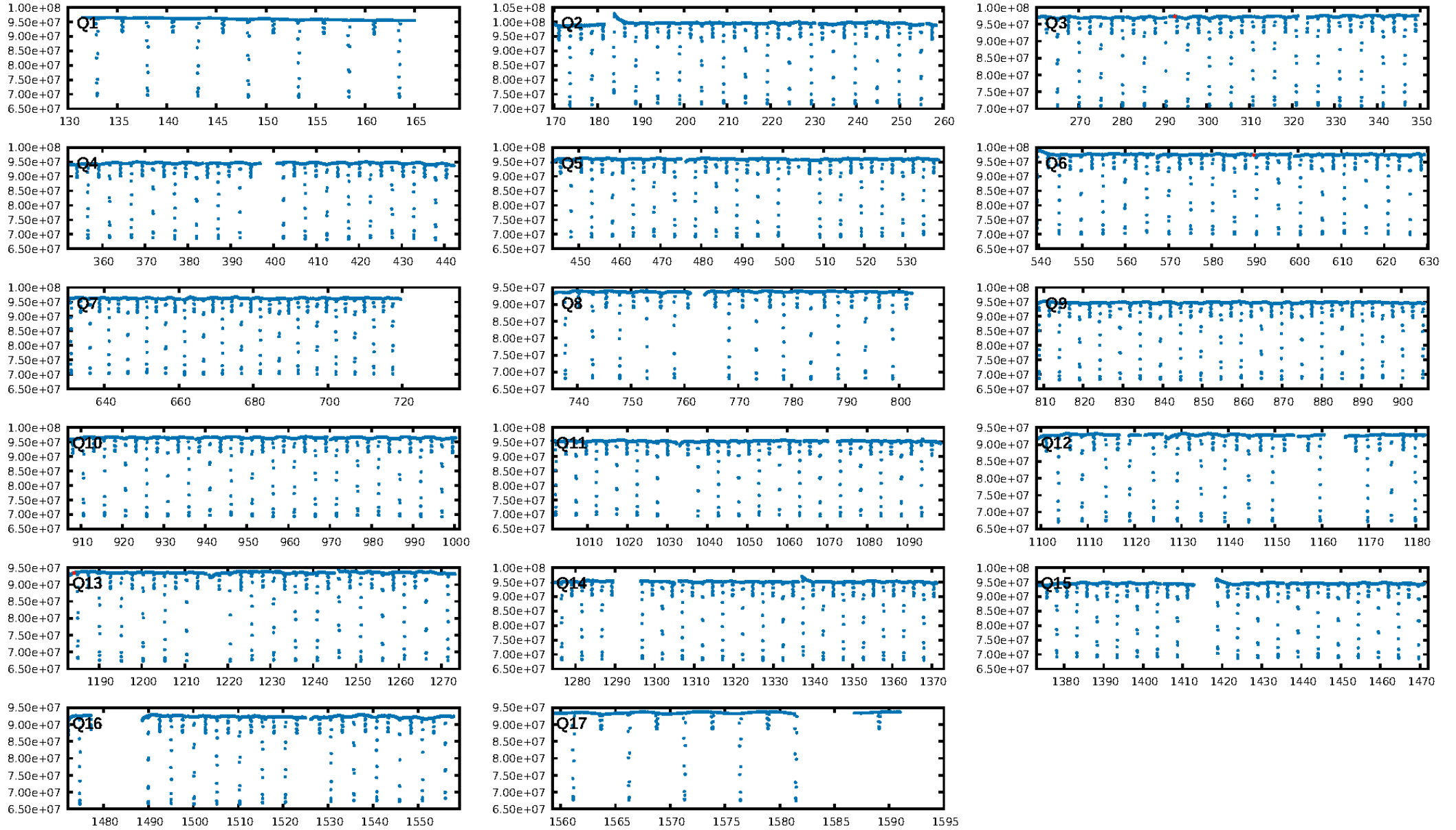
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [22.21σ]  
LongPeriod-sig: 2.6% [0.03σ]  
ModelChiSquare2-sig: 1.4%  
ModelChiSquareGof-sig: 26.6%  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: -96.24  
Centroid-sig: N/A  
Centroid-so: 79.656 arcsec [1.20σ]  
OotOffset-rm: 11.309 arcsec [9.89σ]  
OotOffset-st: 0/0/0/1 [1]  
KicOffset-rm: 11.412 arcsec [9.98σ]  
KicOffset-st: 0/0/0/1 [1]  
DiffImageQuality-fgm: 0.00 [0/1]  
DiffImageOverlap-fno: 1.00 [3/3]

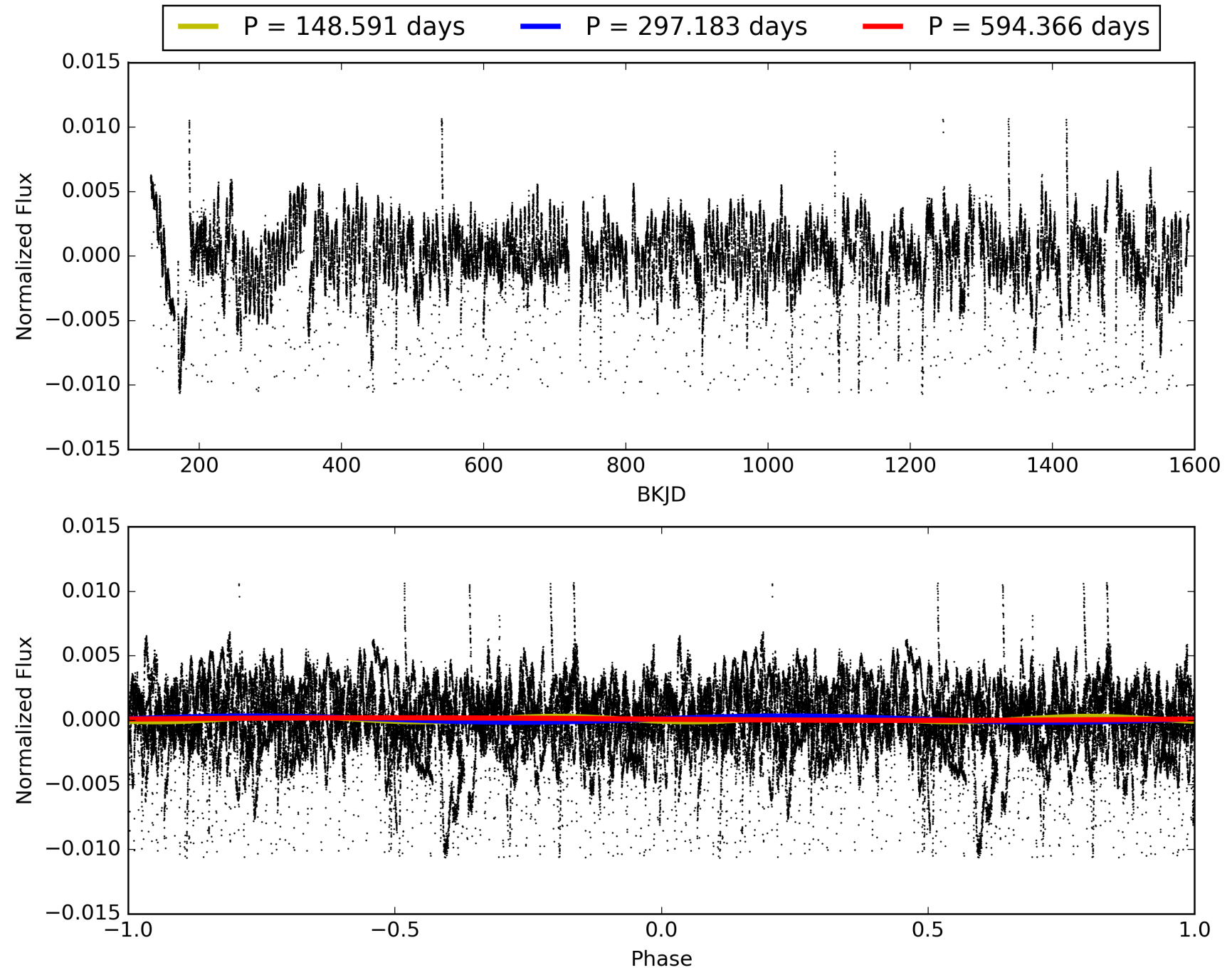
Software Revision: svn-ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 14:19:04 Z

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

# TCE 005530881-03, PDC Light Curves



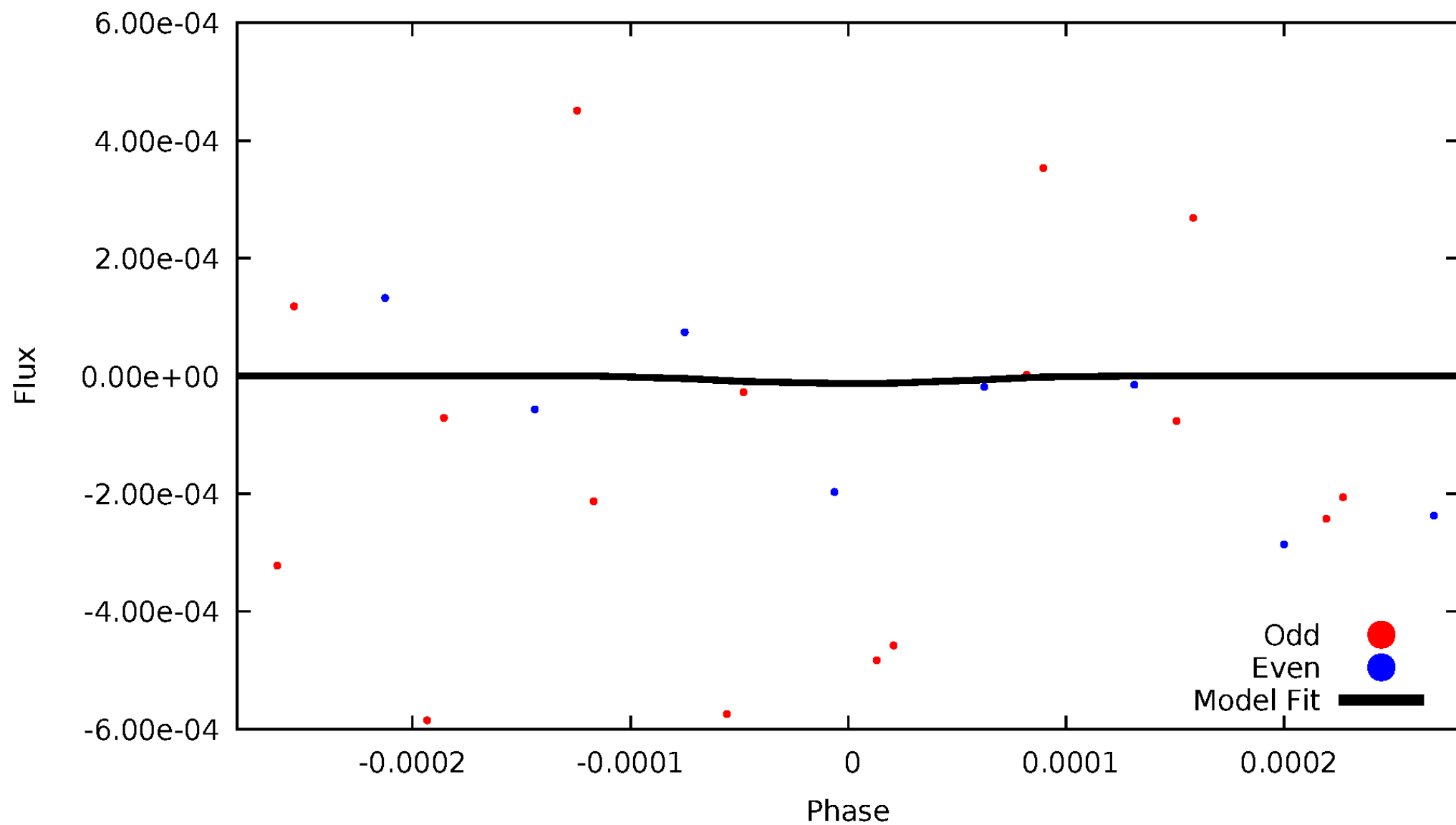
# TCE 005530881-03





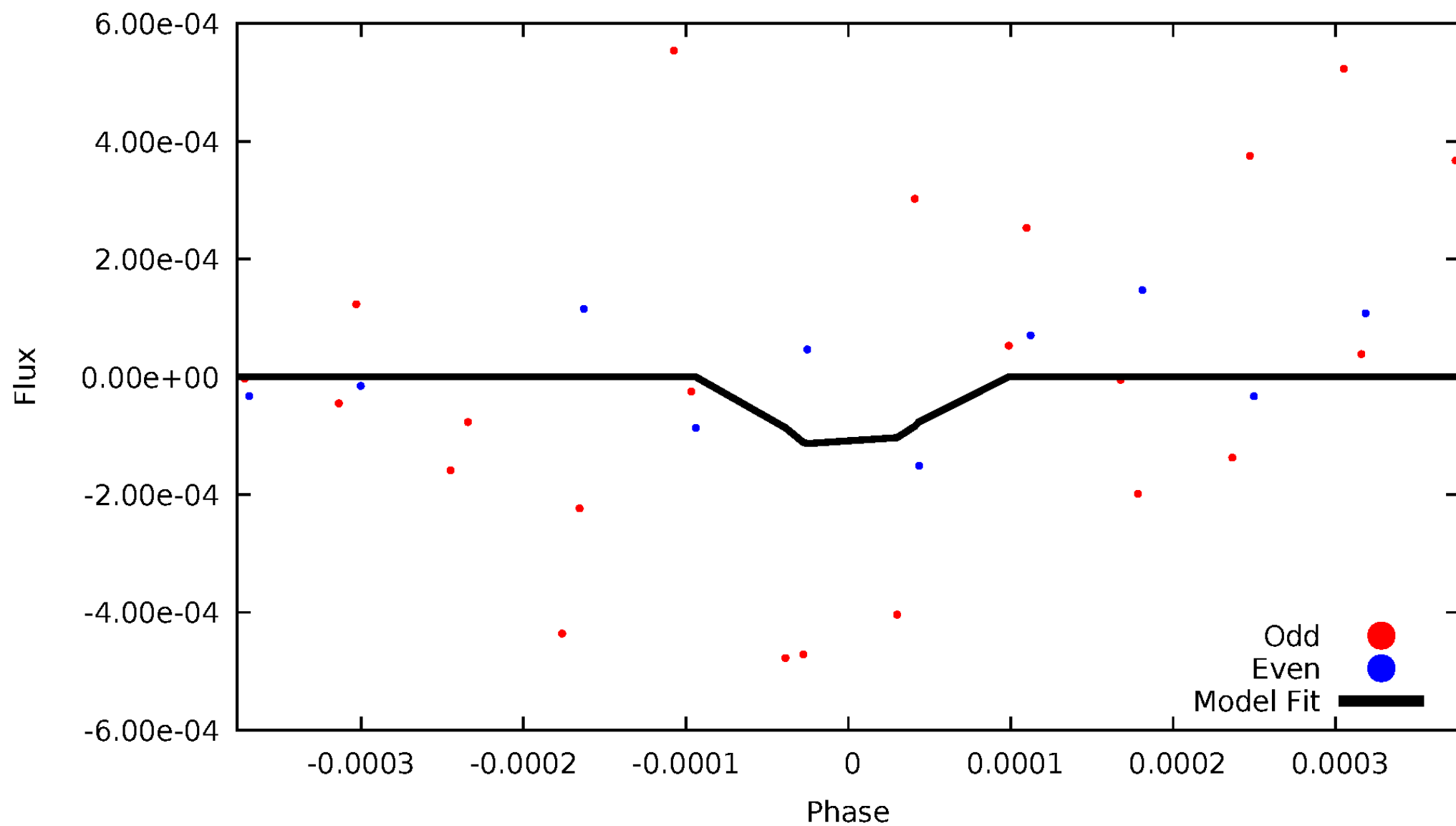
# DV Odd/Even

TCE 005530881-03

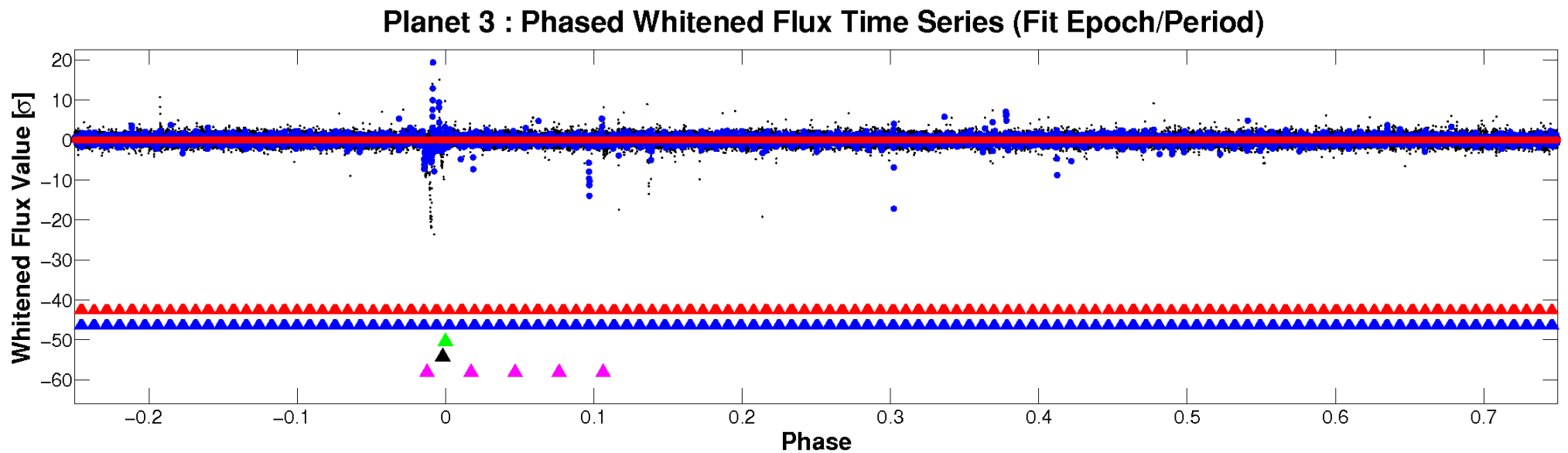
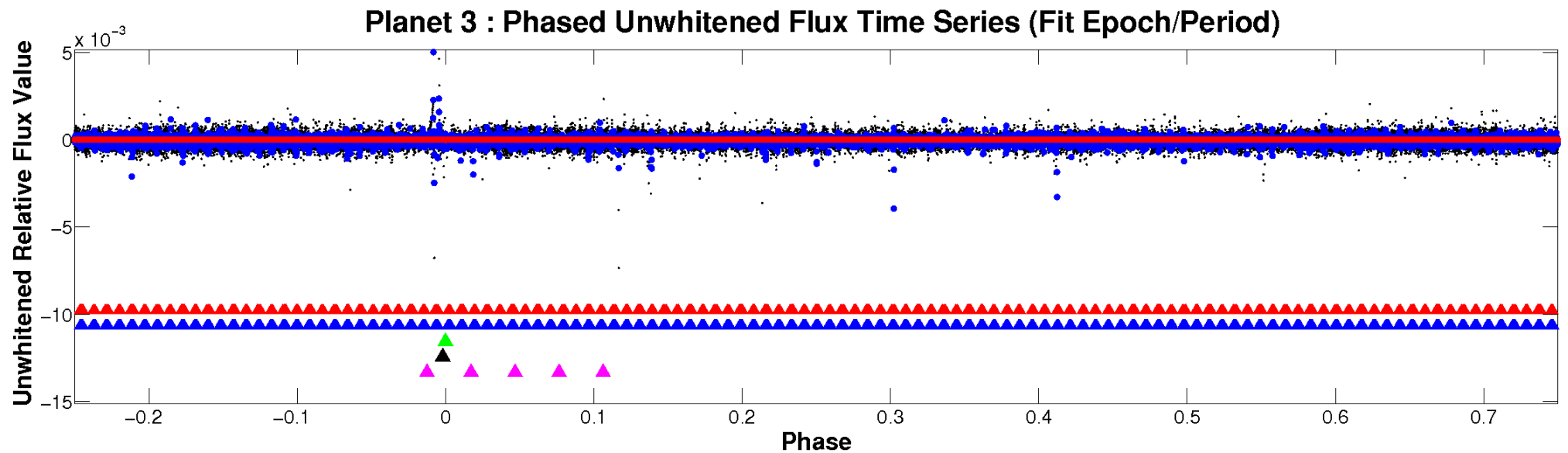


# ALT Odd/Even

TCE 005530881-03



# Non-Whitened Vs. Whitened Light Curve



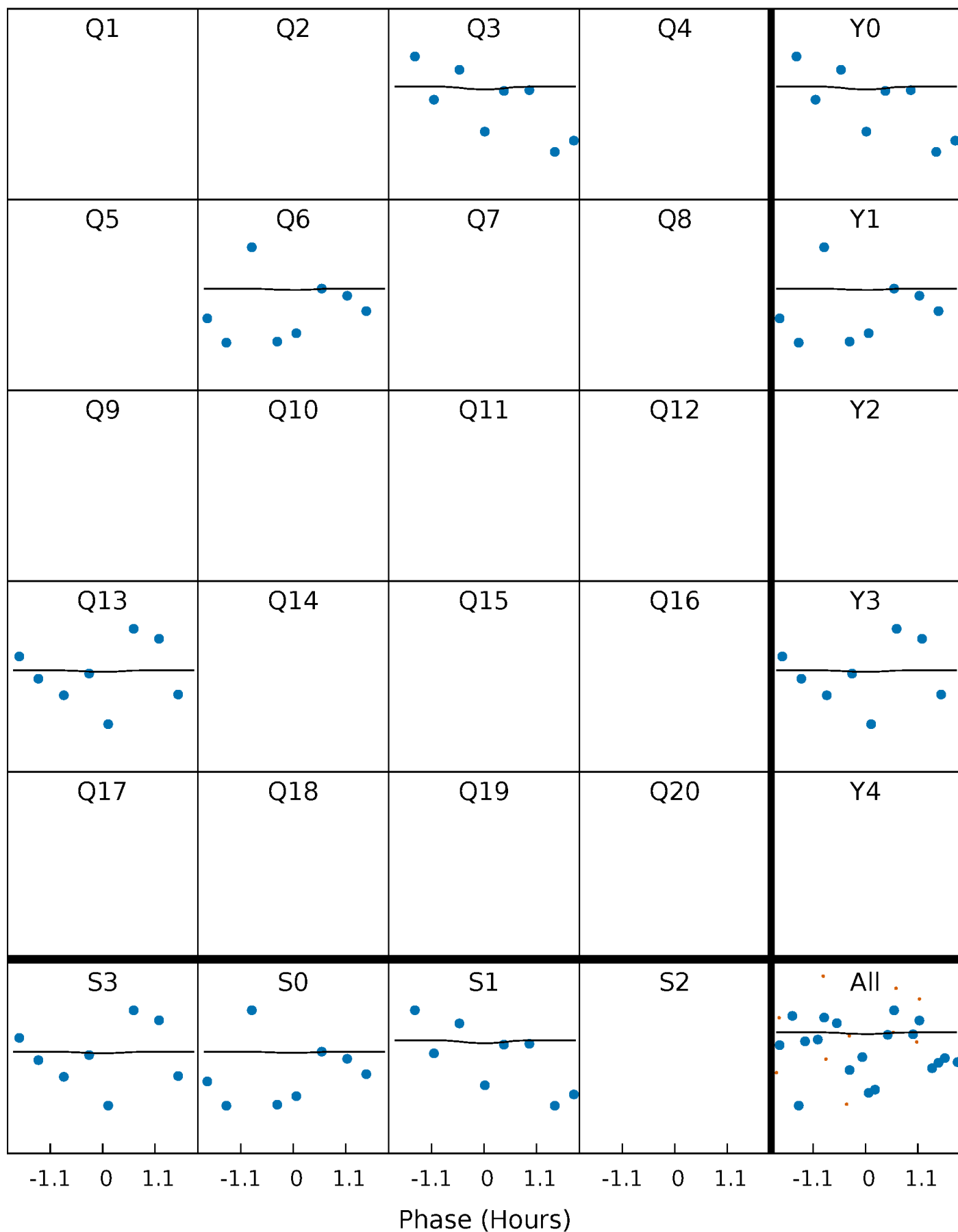
# PDC Quarter-Phased Transit Curves

TCE 005530881-03     $P=297.182757$  Days     $T_0=292.592257$  (BKJD)



# DV Quarter-Phased Transit Curves

TCE 005530881-03     $P=297.182757$  Days     $T_0=292.592257$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

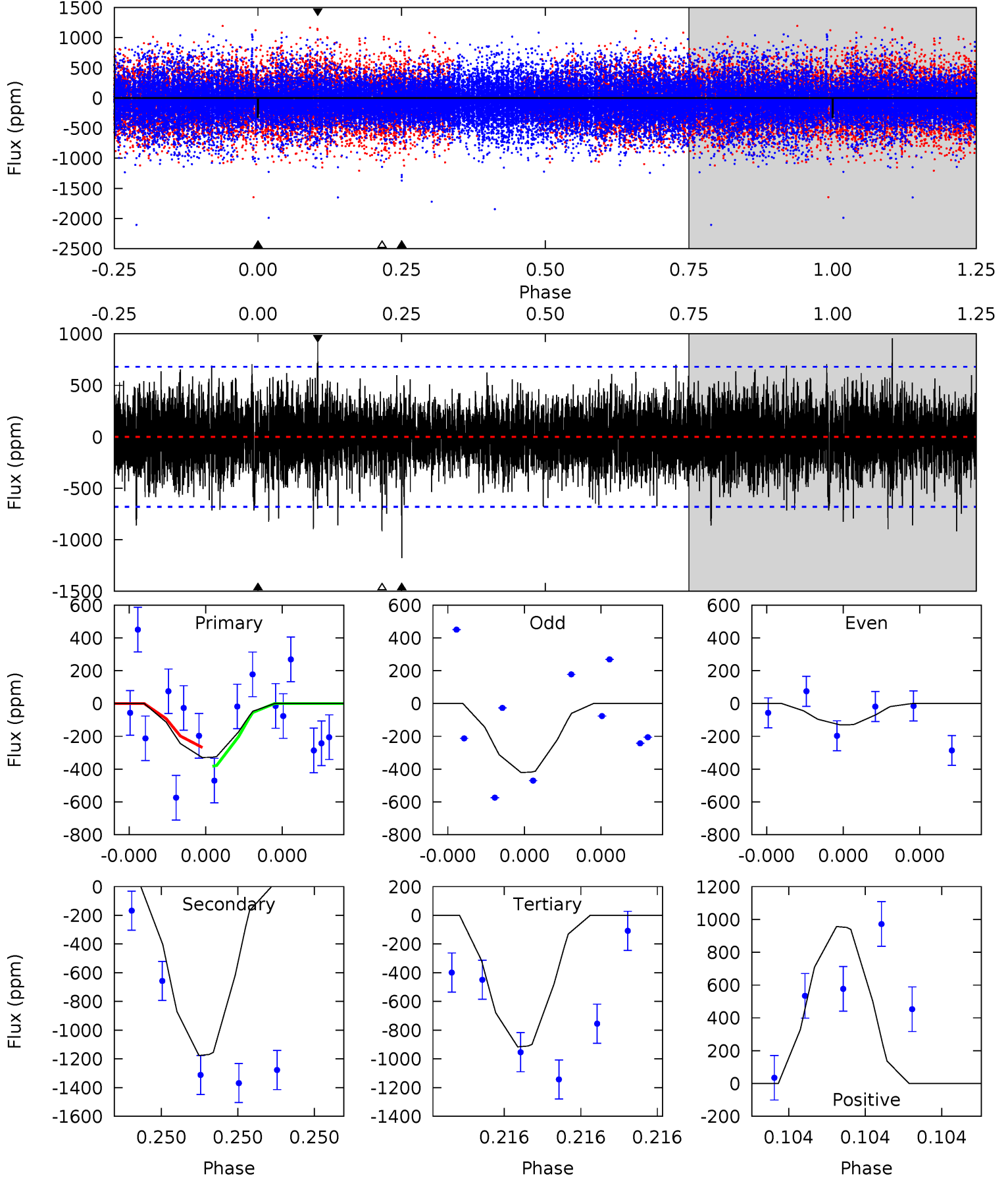
TCE 005530881-03 P=297.192508 Days  $T_0=292.577448$  (BKJD)



# DV Model-Shift Uniqueness Test

005530881-03, P = 297.182757 Days, E = 292.592257 Days

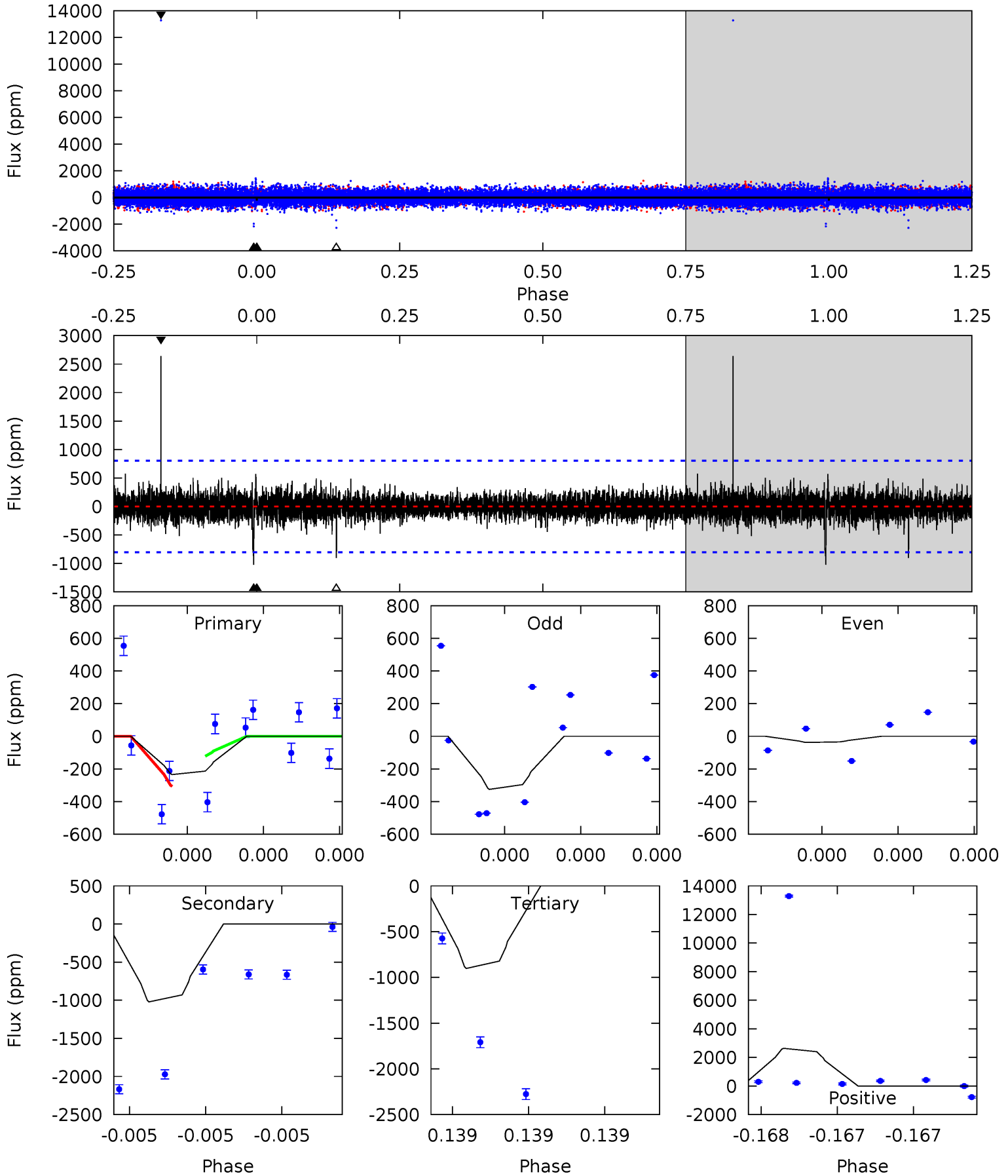
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2.81	10.0	7.80	8.14	5.78	3.80	1.46	-4.99	-5.34	2.22	1.87	1.17	1.20	0.45	0.45



# Alt Model-Shift Uniqueness Test

005530881-03, P = 297.192508 Days, E = 292.577448 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
1.69	7.38	6.51	19.0	5.81	3.83	0.81	-4.82	-17.4	0.86	-11.7	0.60	1.51	0.72	0.55





### Stellar Parameters For KIC 005530881

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6507^{+146}_{-194}$	$4.343^{+0.101}_{-0.188}$	$-0.380^{+0.250}_{-0.300}$	$1.145^{+0.330}_{-0.152}$	$1.049^{+0.160}_{-0.117}$	$0.984^{+0.452}_{-0.496}$
	+2%/-3%	+2%/-4%	+66%/-79%	+29%/-13%	+15%/-11%	+46%/-50%
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 005530881-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-1176 \pm 117$	$30.27^{+34.23}_{-22.01}$	$459^{+31}_{-24}$	$3094^{+1643}_{-556}$	$534^{+6541}_{-415}$
Alt.	$-1022 \pm 139$	$31.48^{+36.78}_{-21.77}$	$459^{+30}_{-22}$	$3015^{+1399}_{-548}$	$454^{+4287}_{-361}$

$T_{\text{max}}$  = 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

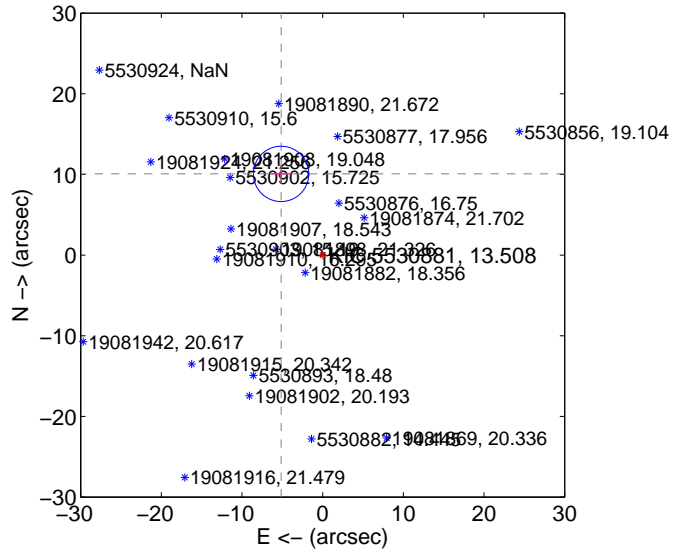
Supplemental centroid analysis for 005530881-03. Kepler magnitude: 13.51. Transit SNR 0.08

There are 0 quarters with good PRF difference image offsets

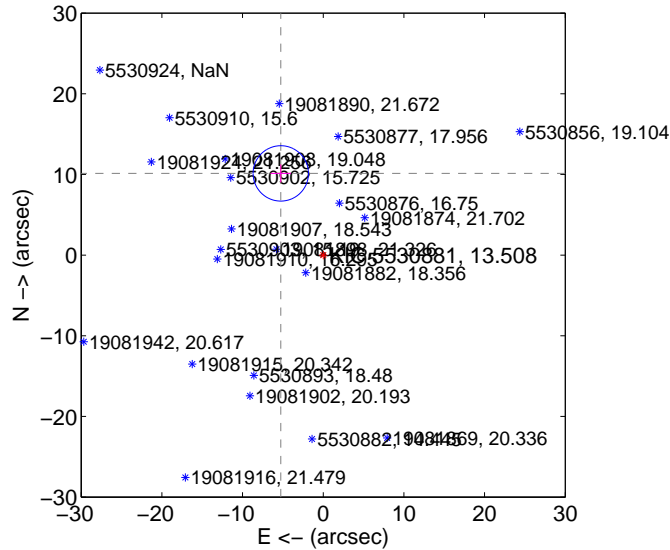
The direct PRF centroid is offset from the target star catalog position by about 0.12 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	11.309 $\pm$ 1.143	9.89	5.152 $\pm$ 1.268	10.068 $\pm$ 1.108
PRF-fit source offset from KIC position	11.412 $\pm$ 1.144	9.98	5.260 $\pm$ 1.268	10.128 $\pm$ 1.108
photometric centroid source offset	79.66 $\pm$ 66.13	1.20	51.37 $\pm$ 63.36	-60.89 $\pm$ 68.04

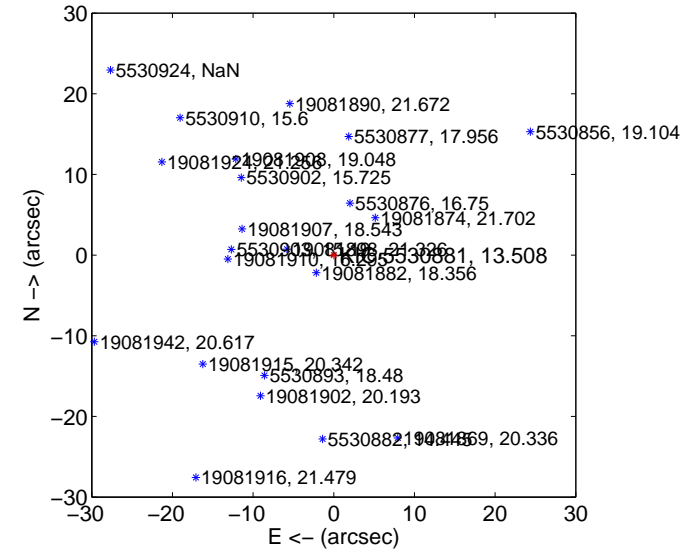
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

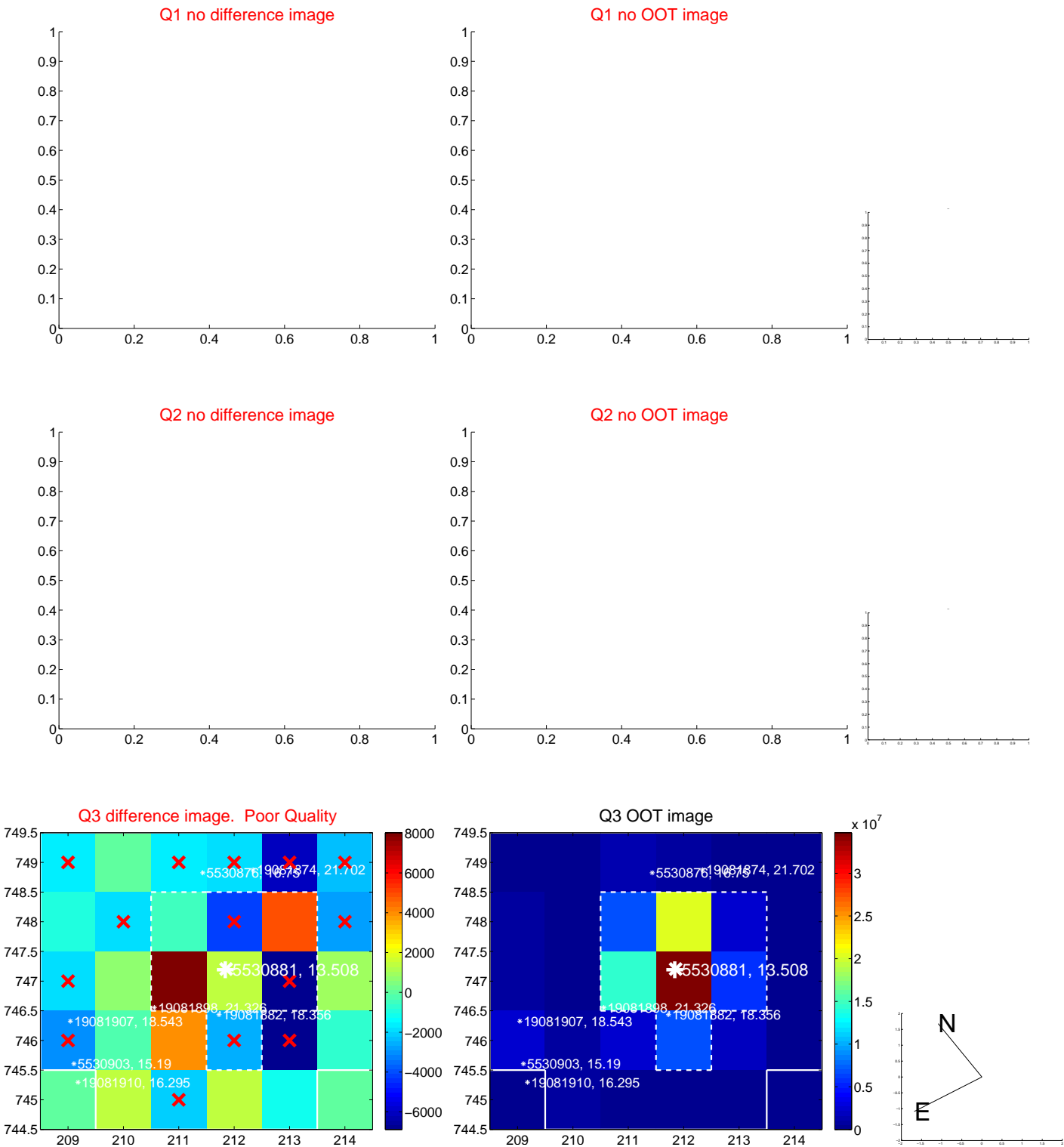


offset from photometric centroids

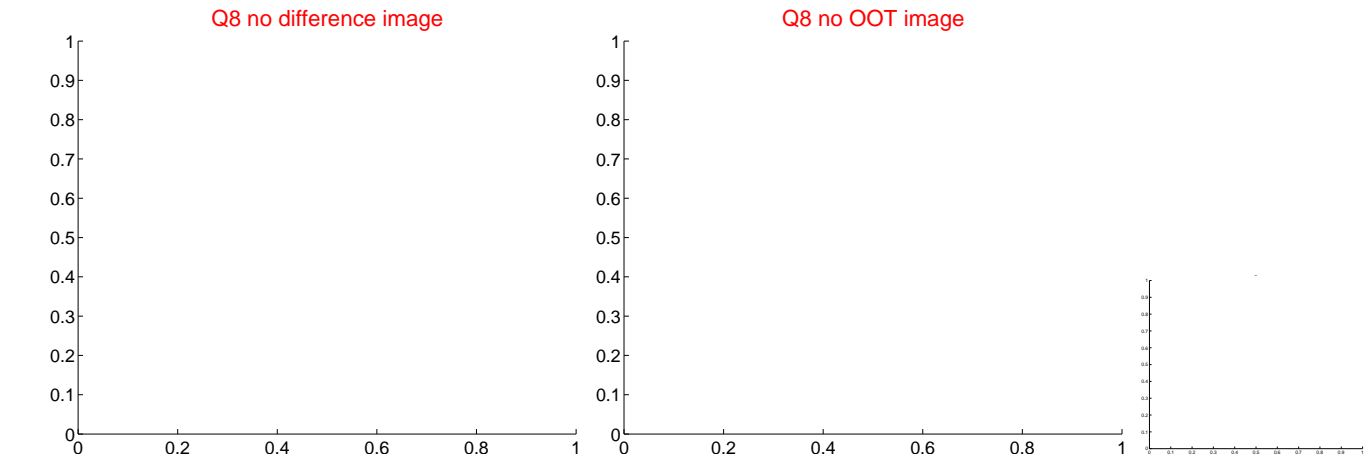
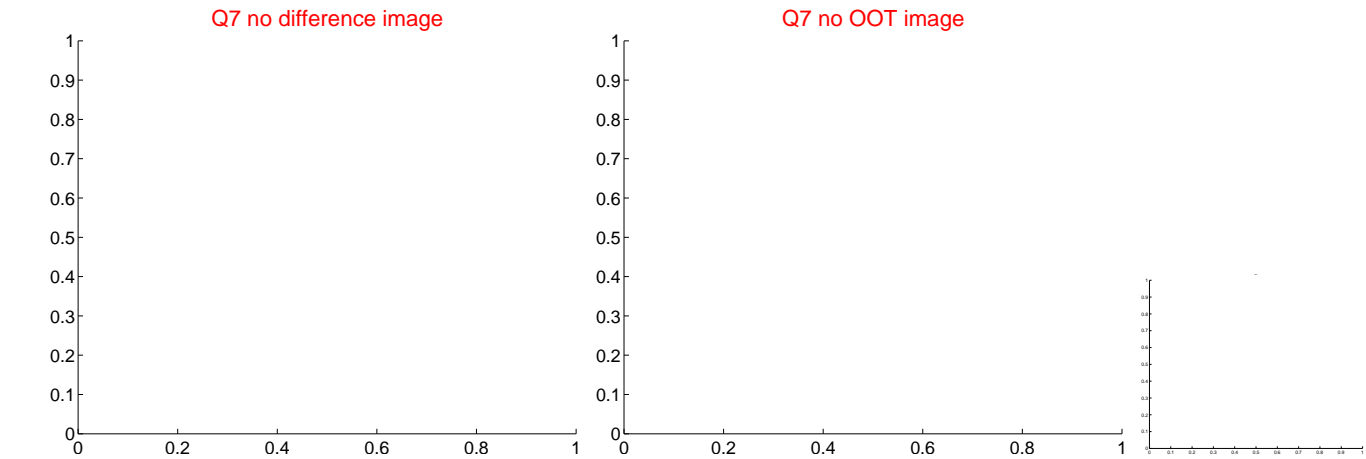
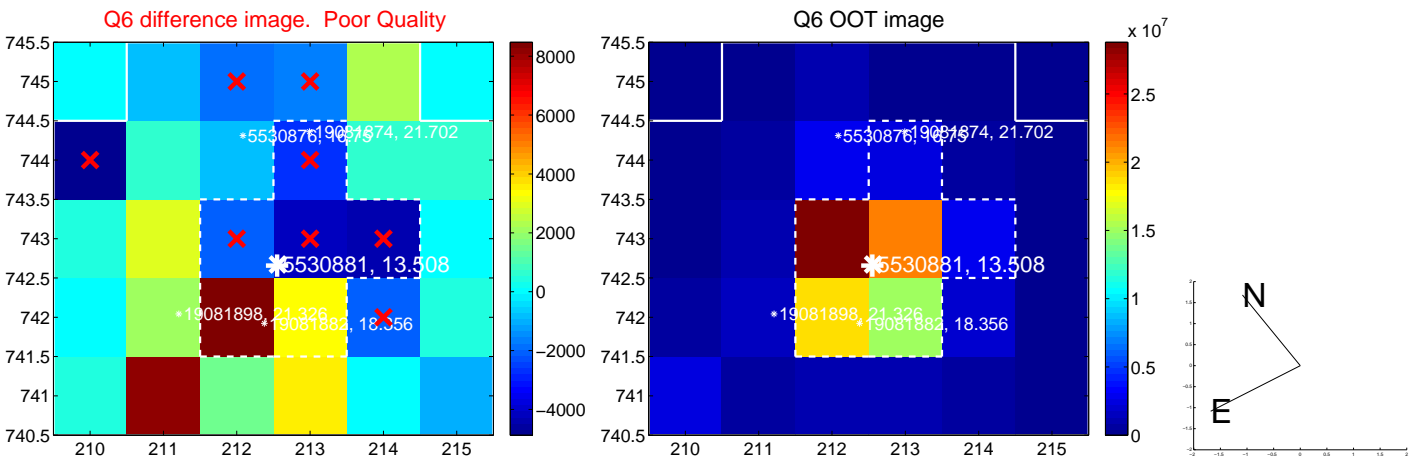
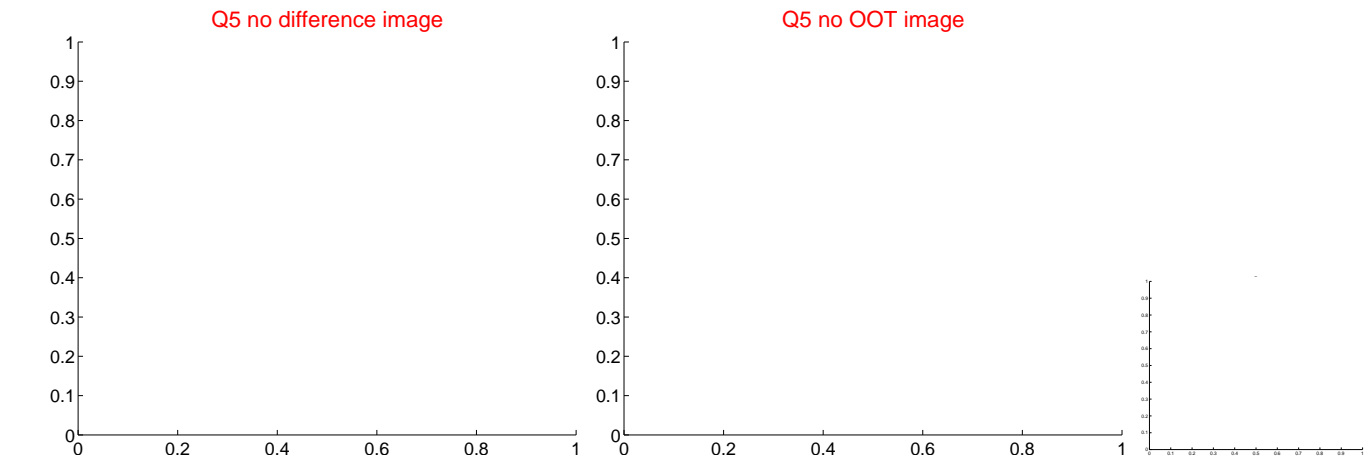


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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



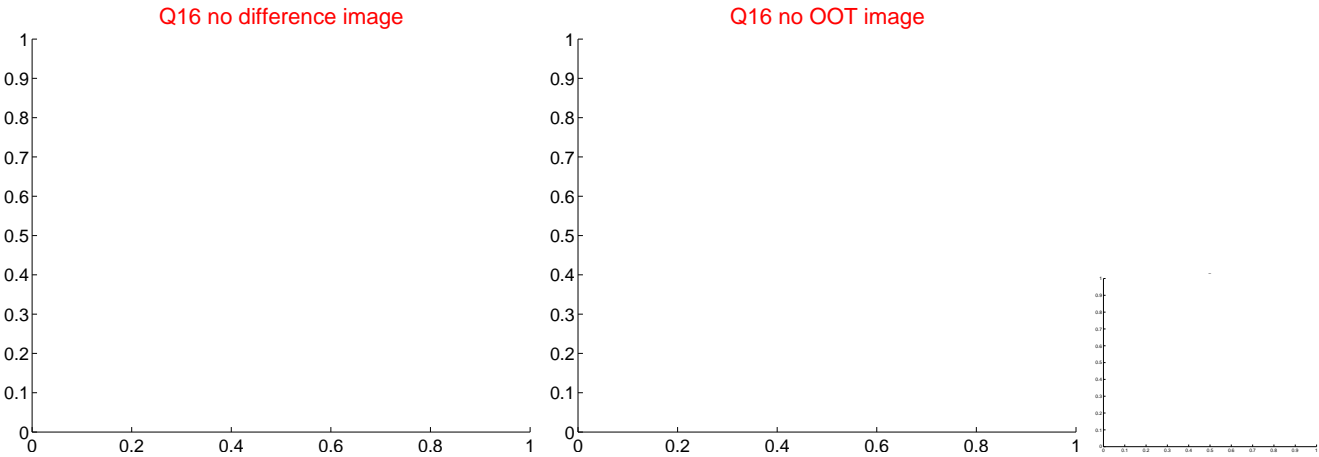
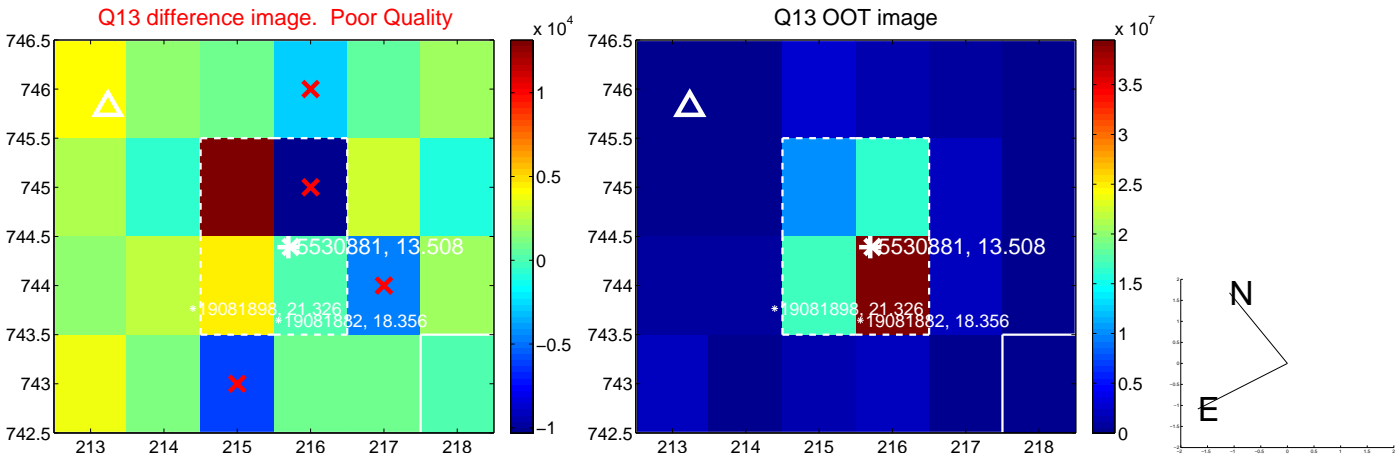
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



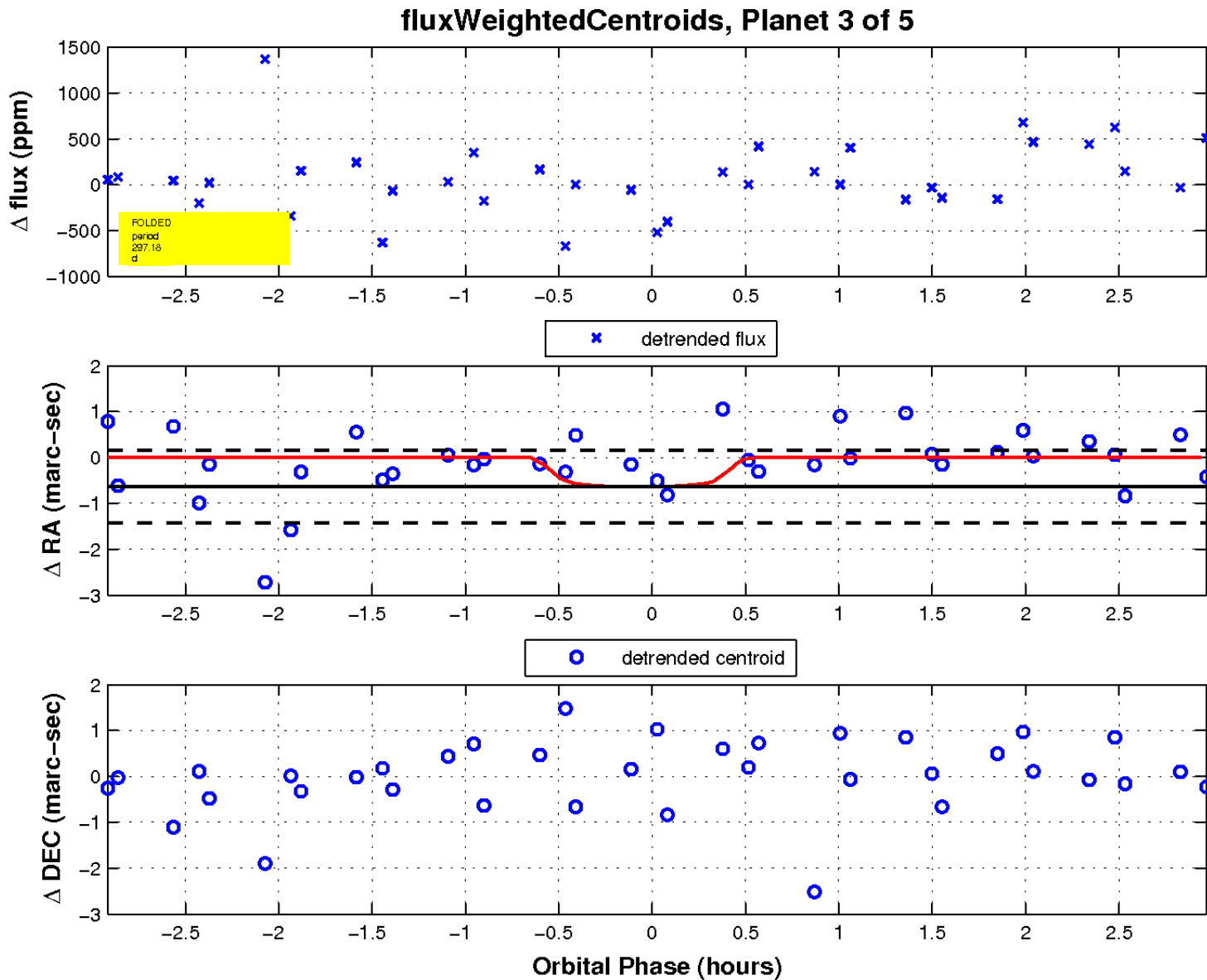
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

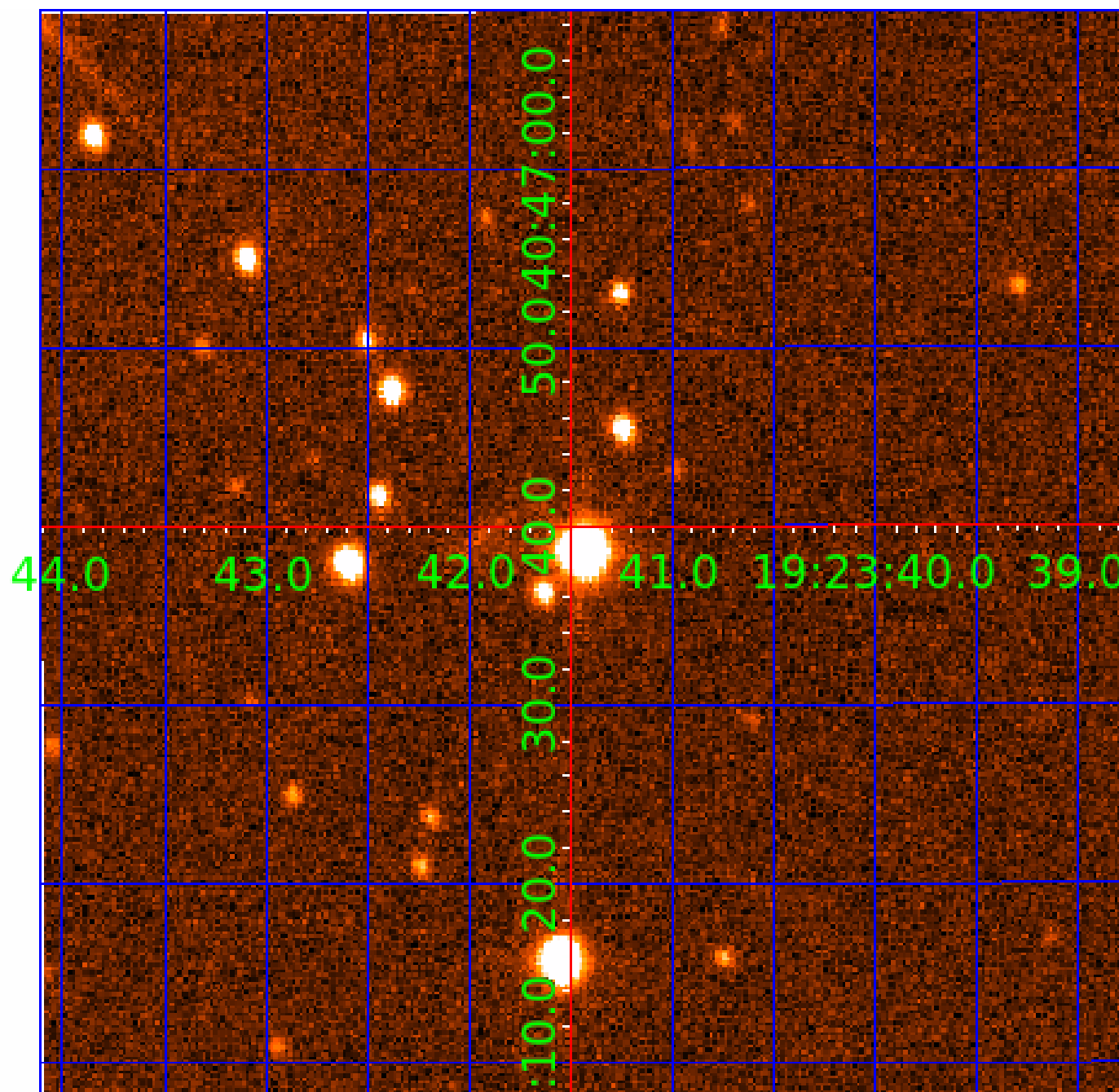


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination





# KIC 005530881

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005530881-01	OBS	6594.01	5.082481	132.961777	276103.5	3.500	20876.7	-1.0	1.15	6507	50.05	607.46
005530881-02	OBS	No	2.541261	132.959692	49897.4	4.982	4335.0	3541.5	1.15	6507	27.66	1530.70
005530881-03	OBS	No	297.182757	292.592257	12.4	1.000	23.2	0.1	1.15	6507	0.47	2.68
005530881-04	OBS	No	297.199319	292.013202	605.6	12.000	22.4	-1.0	1.15	6507	2.84	2.68
005530881-05	OBS	No	288.361459	324.183884	584.5	9.481	8.9	7.1	1.15	6507	2.98	2.79

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005530881-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_ALT—MOD_ODDEVEN_ALT—HAS_SEC_TCE—CENT_NOFITS
005530881-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE
005530881-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE_ZUMA_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005530881-04	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_POS_ALT—INCONSISTENT_TRANS—SAME_NTL_PERIOD—CENT_NOFITS
005530881-05	OBS	FP	0.00	1	0	0	0	LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS

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

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

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

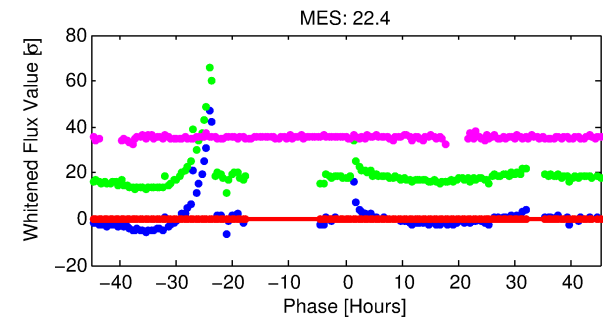
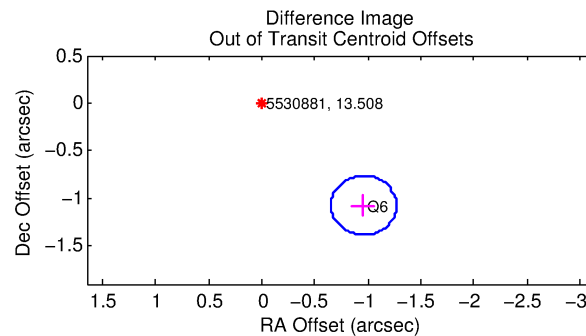
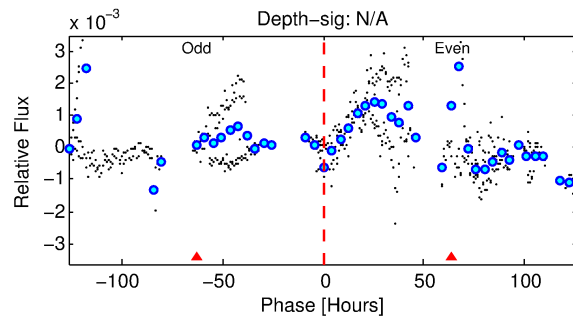
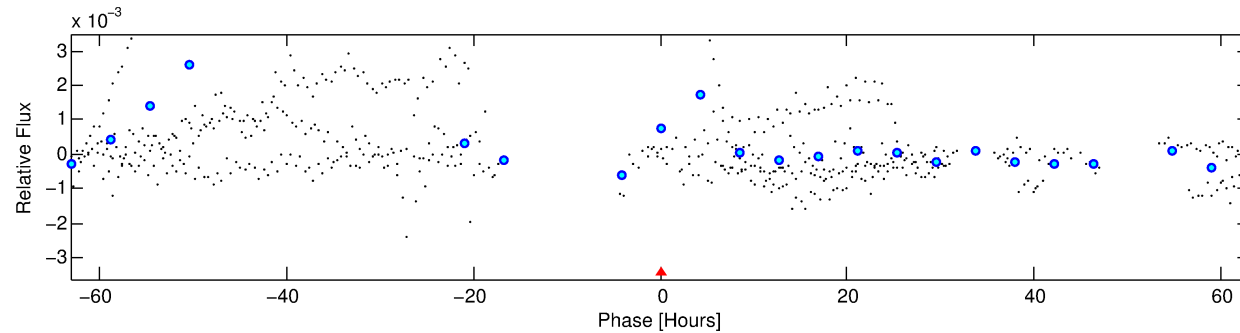
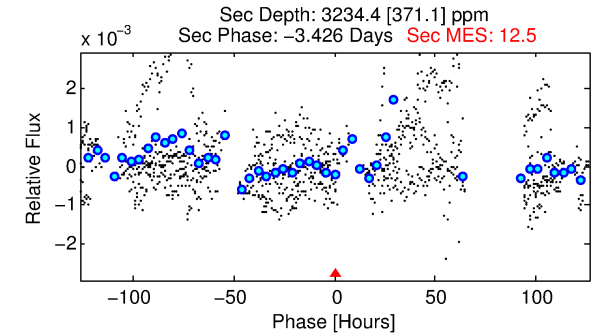
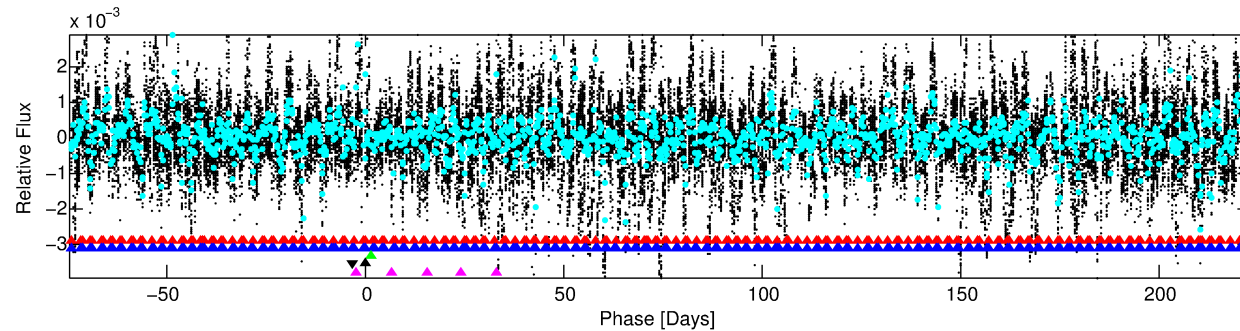
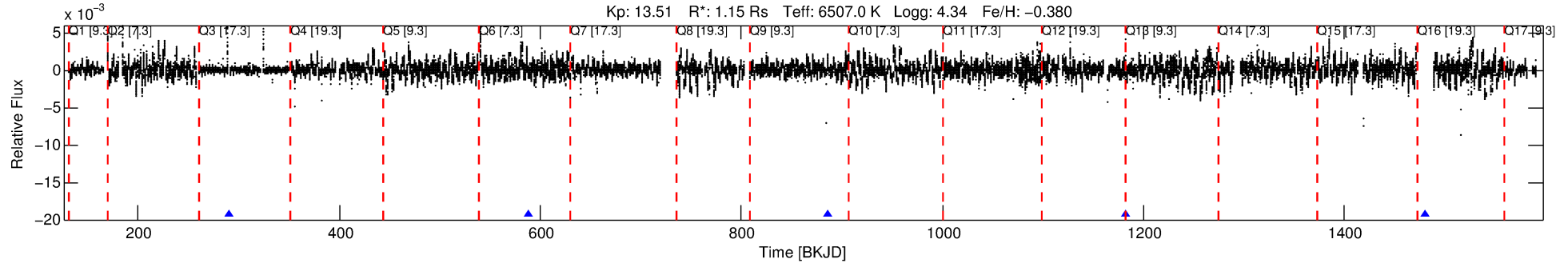
## Ephemeris Match Information For 005530881-04

No Significant Match Found

# DV One-Page Summary

KIC: 5530881 Candidate: 4 of 5 Period: 297.199 d  
KOI: K06594 Corr: No Ephemeris Match

Kp: 13.51 R\*: 1.15 Rs Teff: 6507.0 K Logg: 4.34 Fe/H: -0.380



TPS TCE Results:

Period = 297.19932 d  
Epoch = 292.0132 BKJD

DV fit results are unavailable

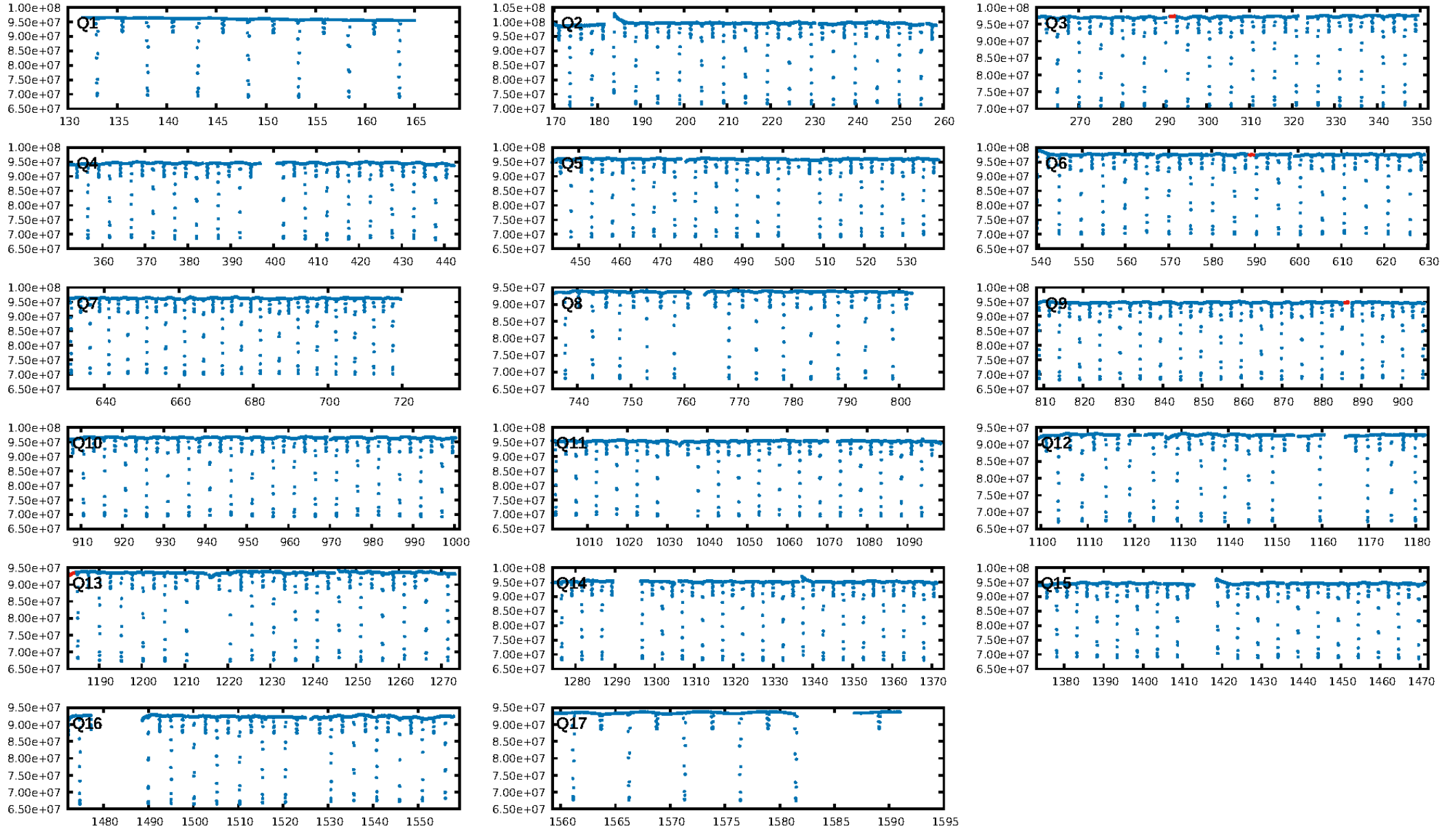
DV Diagnostic Results:

ShortPeriod-sig: 2.6% [0.03σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [4/4]  
GhostDiagnostic-chr: 8.993  
Centroid-sig: N/A  
Centroid-so: 1.330 arcsec [0.61σ]  
OotOffset-rm: 1.439 arcsec [13.88σ]  
KicOffset-rm: 1.415 arcsec [13.68σ]  
OotOffset-st: 1/0/0/0 [1]  
KicOffset-st: 1/0/0/0 [1]  
DiffImageQuality-fgm: 0.00 [0/1]  
DiffImageOverlap-fno: 0.00 [0/1]

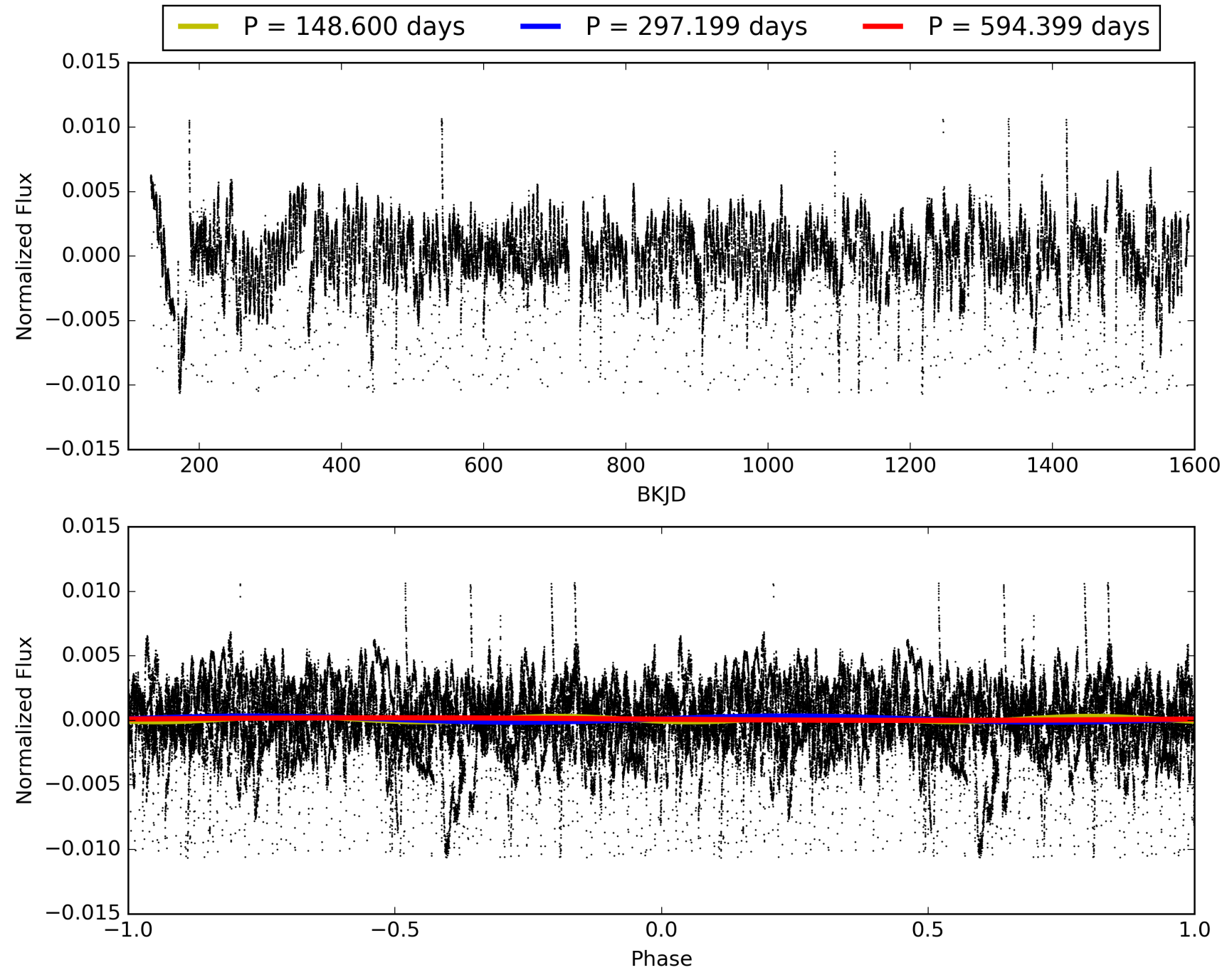
Software Revision: svn-ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 14:19:11 Z

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

# TCE 005530881-04, PDC Light Curves

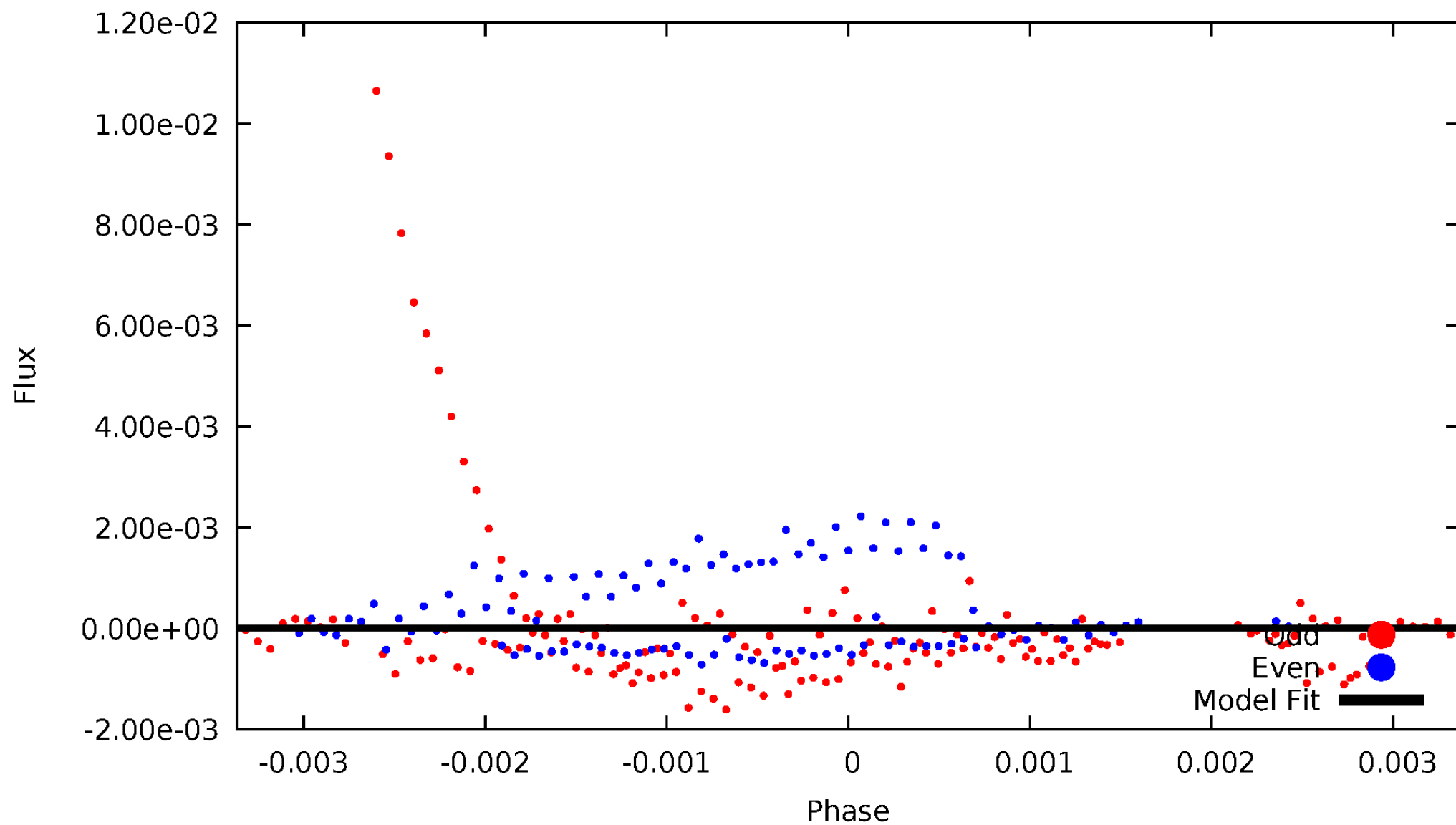


# TCE 005530881-04



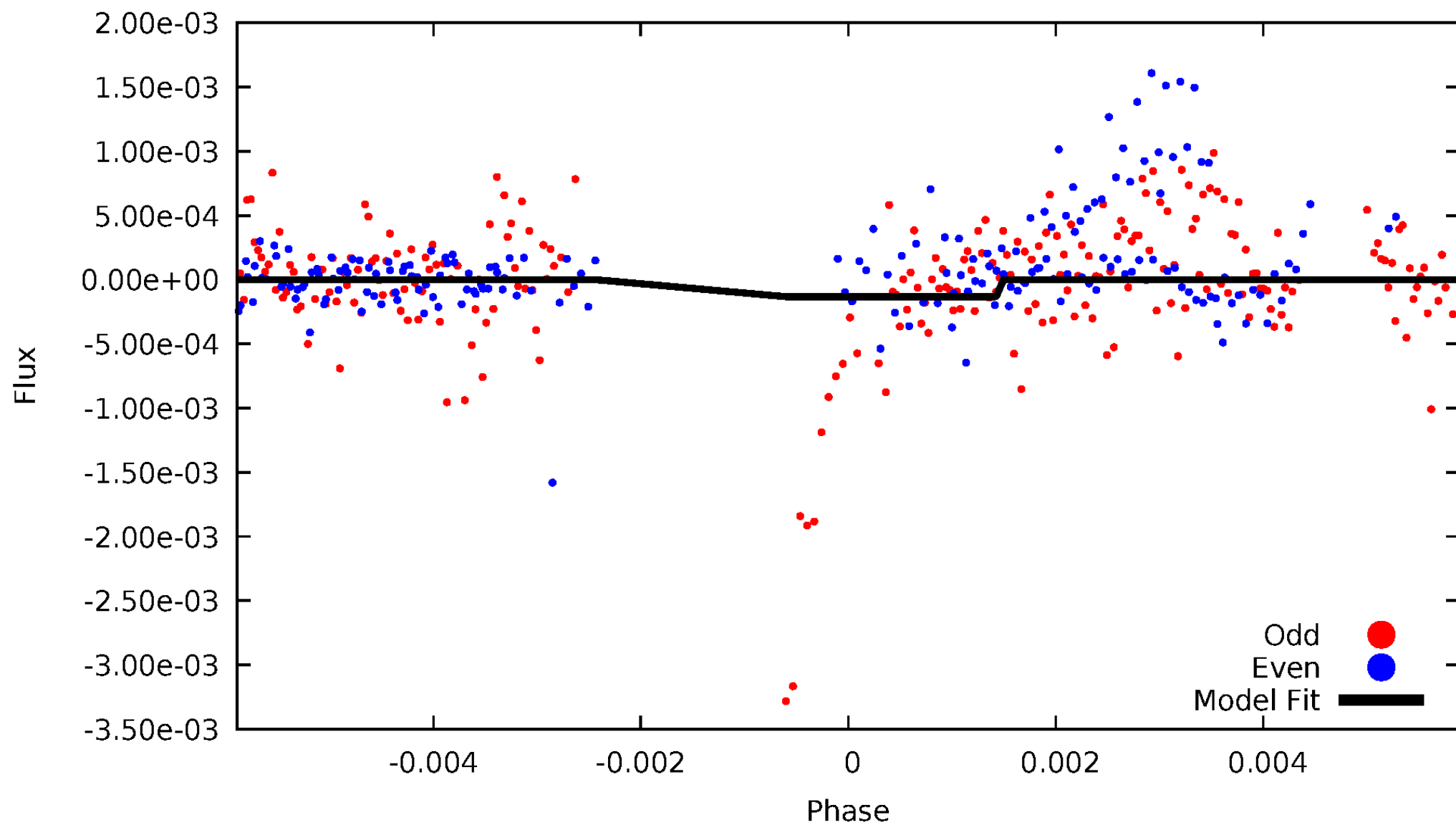
# DV Odd/Even

TCE 005530881-04



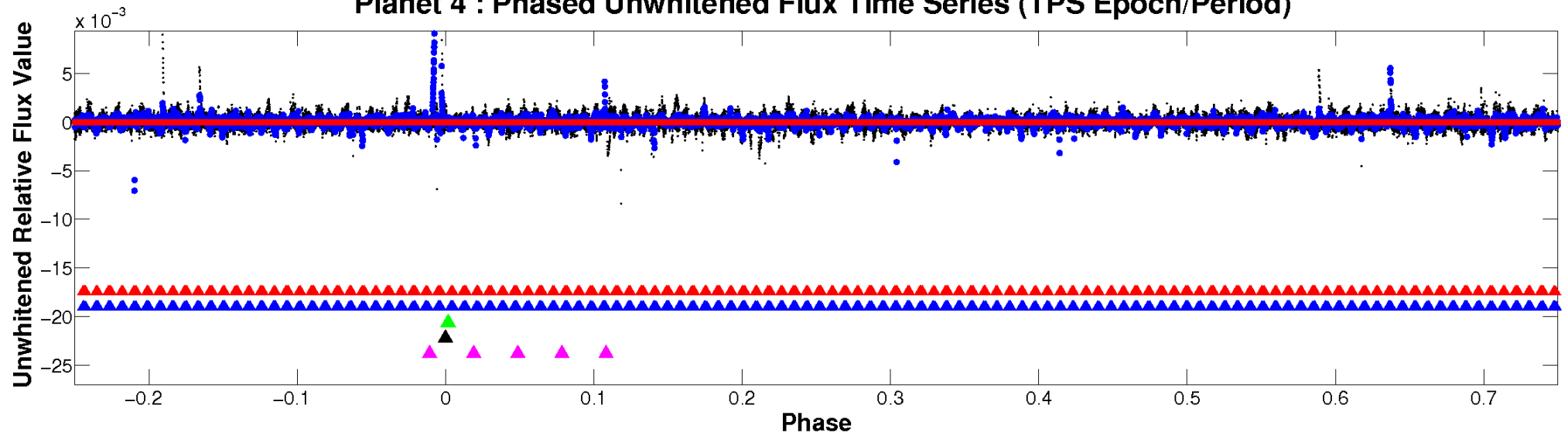
# ALT Odd/Even

TCE 005530881-04

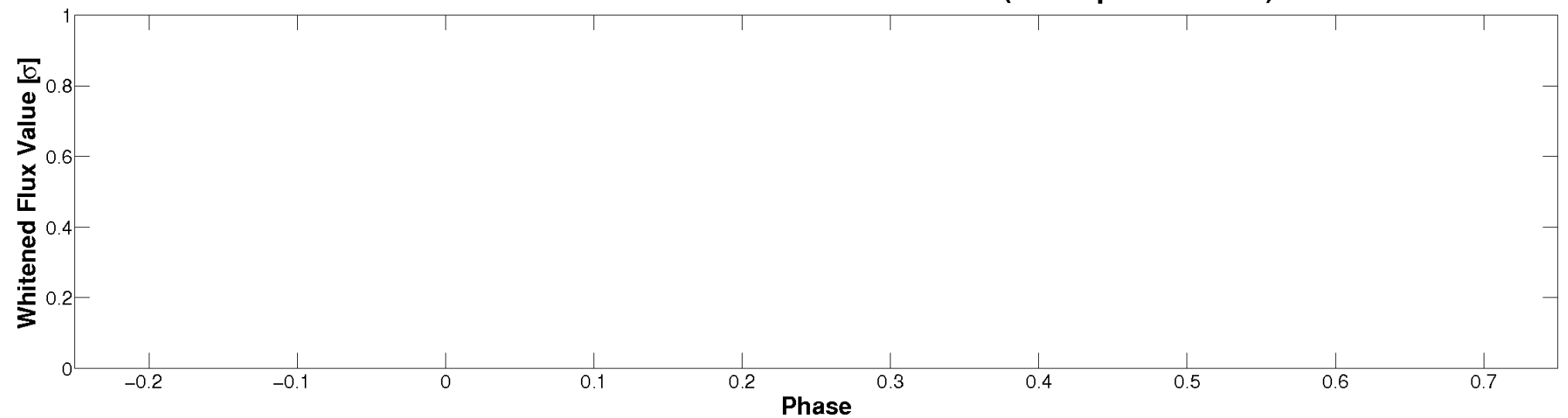


# Non-Whitened Vs. Whitened Light Curve

**Planet 4 : Phased Unwhitened Flux Time Series (TPS Epoch/Period)**

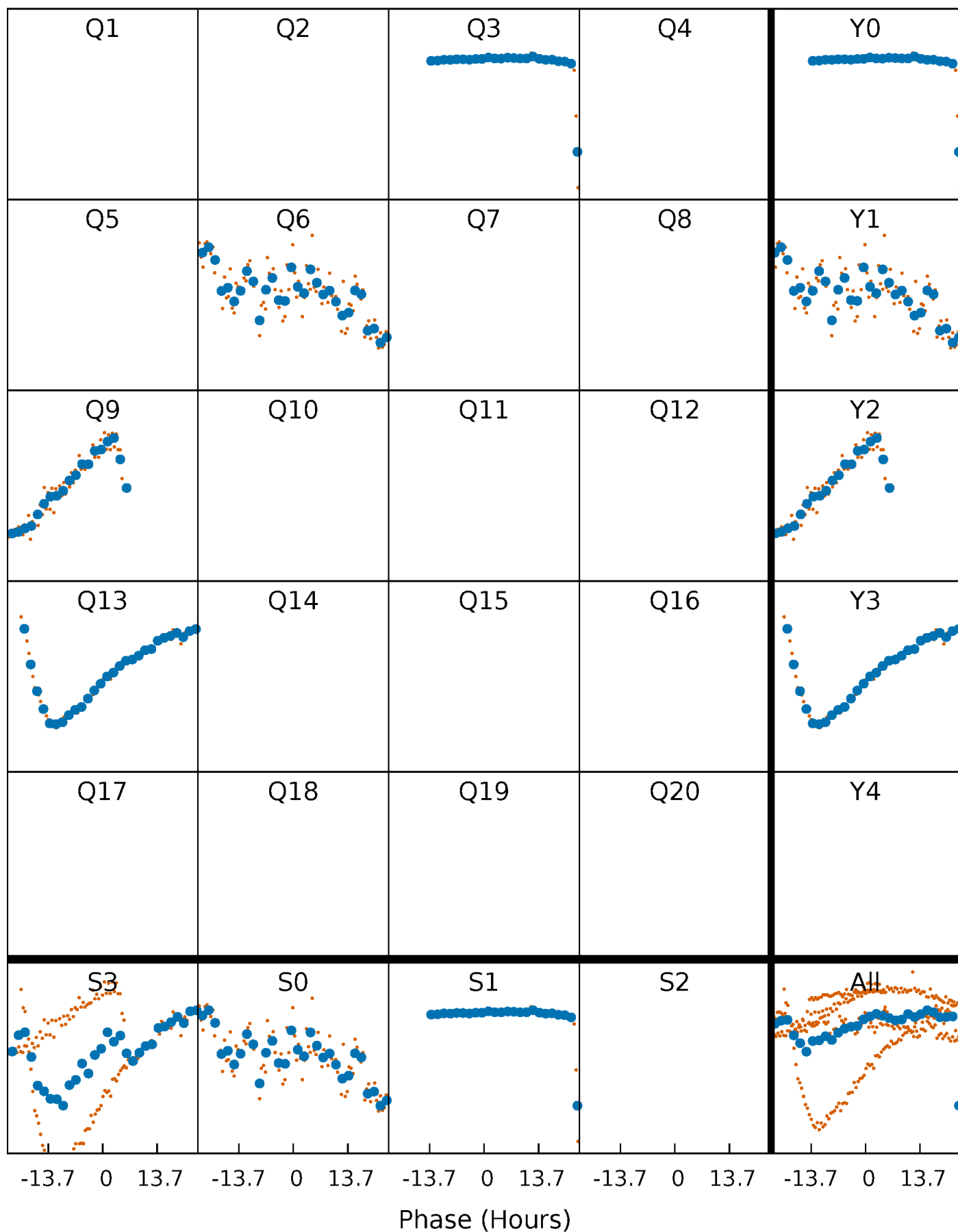


**Planet 4 : Phased Whitened Flux Time Series (TPS Epoch/Period)**



# PDC Quarter-Phased Transit Curves

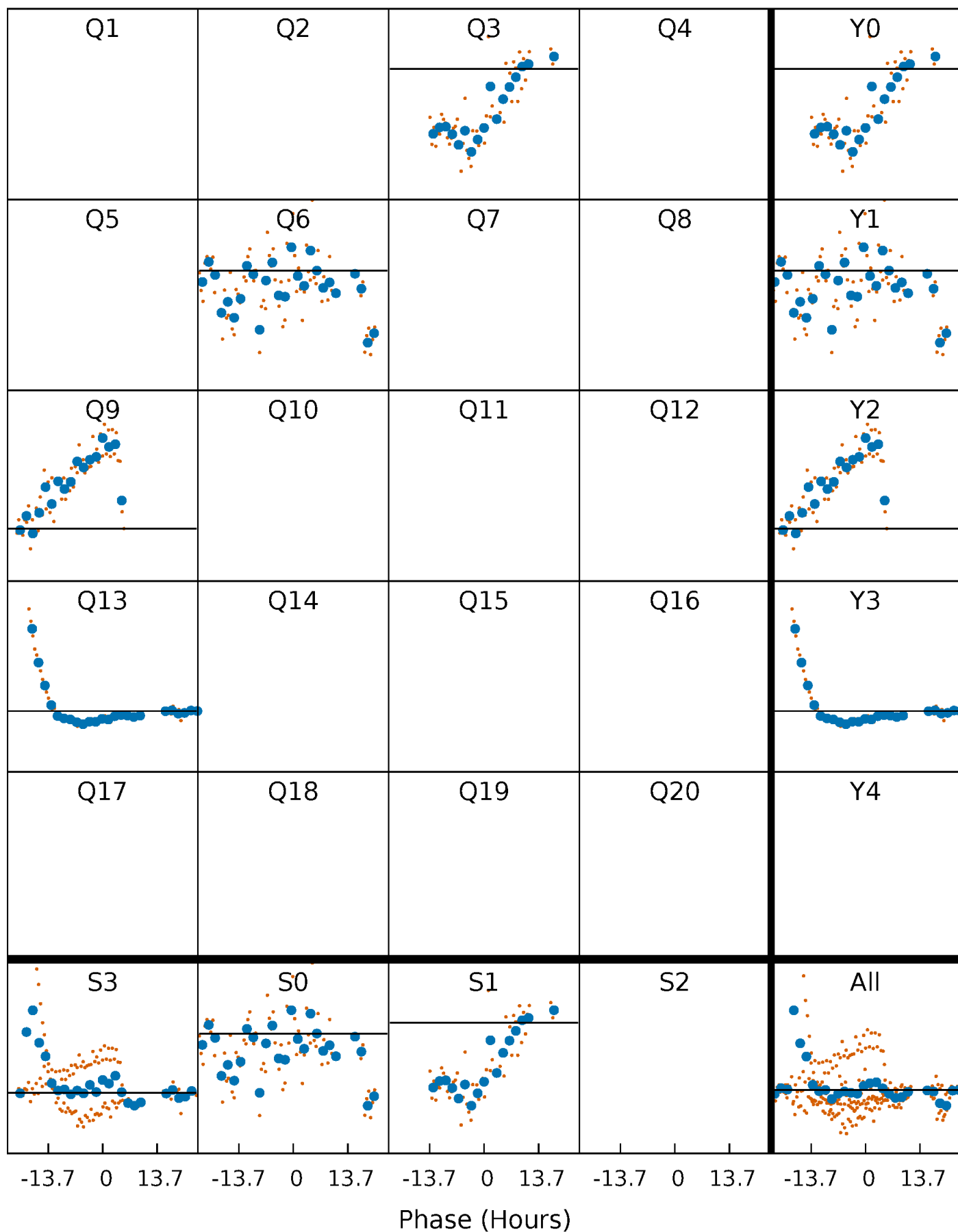
TCE 005530881-04     $P=297.199319$  Days     $T_0=292.013202$  (BKJD)





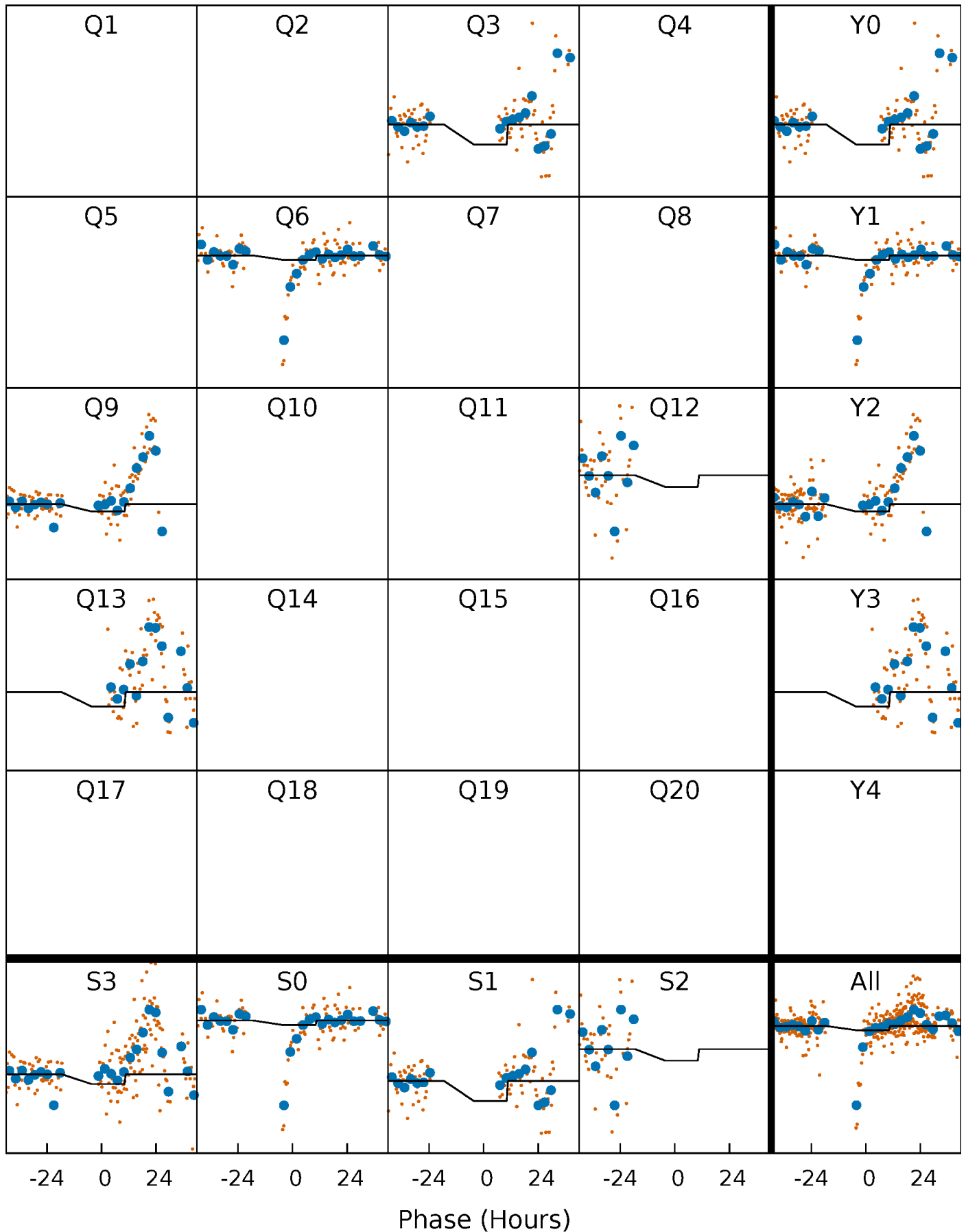
# DV Quarter-Phased Transit Curves

TCE 005530881-04     $P=297.199319$  Days     $T_0=292.013202$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

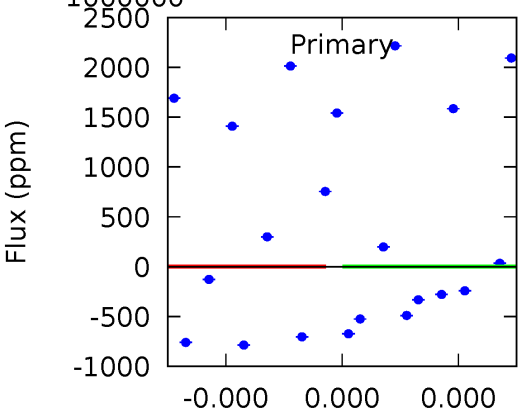
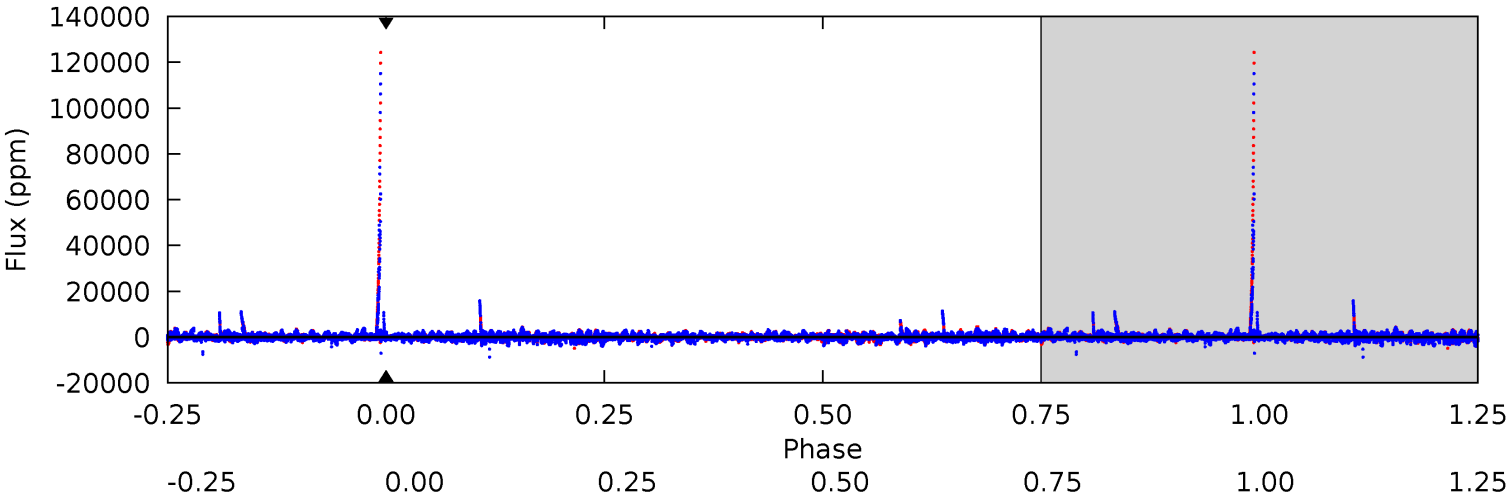
TCE 005530881-04     $P=297.199319$  Days     $T_0=291.164870$  (BKJD)



# DV Model-Shift Uniqueness Test

005530881-04, P = 297.199319 Days, E = 292.013202 Days

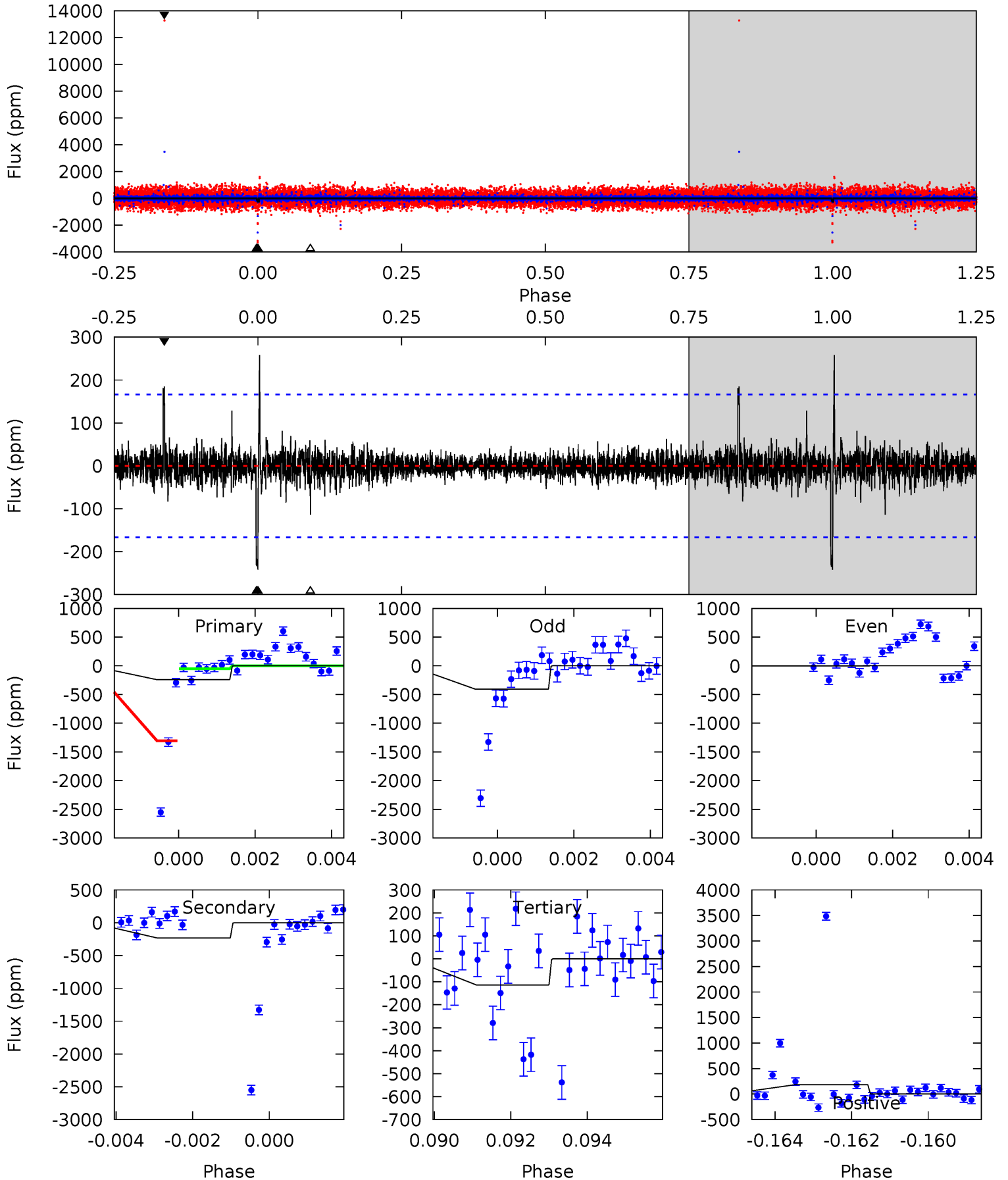
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



# Alt Model-Shift Uniqueness Test

005530881-04, P = 297.199319 Days, E = 291.164870 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.71	7.46	3.63	5.89	5.32	3.07	0.58	4.09	1.83	3.83	1.57	4.31	13.0	0.52	13.2



### Stellar Parameters For KIC 005530881

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6507^{+146}_{-194}$	$4.343^{+0.101}_{-0.188}$	$-0.380^{+0.250}_{-0.300}$	$1.145^{+0.330}_{-0.152}$	$1.049^{+0.160}_{-0.117}$	$0.984^{+0.452}_{-0.496}$
	+2%/-3%	+2%/-4%	+66%/-79%	+29%/-13%	+15%/-11%	+46%/-50%
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 005530881-04 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$0 \pm 1000000$	$9.94^{+10.39}_{-6.90}$	$460^{+30}_{-24}$	$-4774^{+31037}_{-22020}$	$-6687.533^{+747601.092}_{-803554.874}$
Alt.	$-234 \pm 31$	$9.44^{+10.27}_{-6.79}$	$457^{+35}_{-24}$	$3430^{+1991}_{-638}$	$1144^{+12746}_{-890}$

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

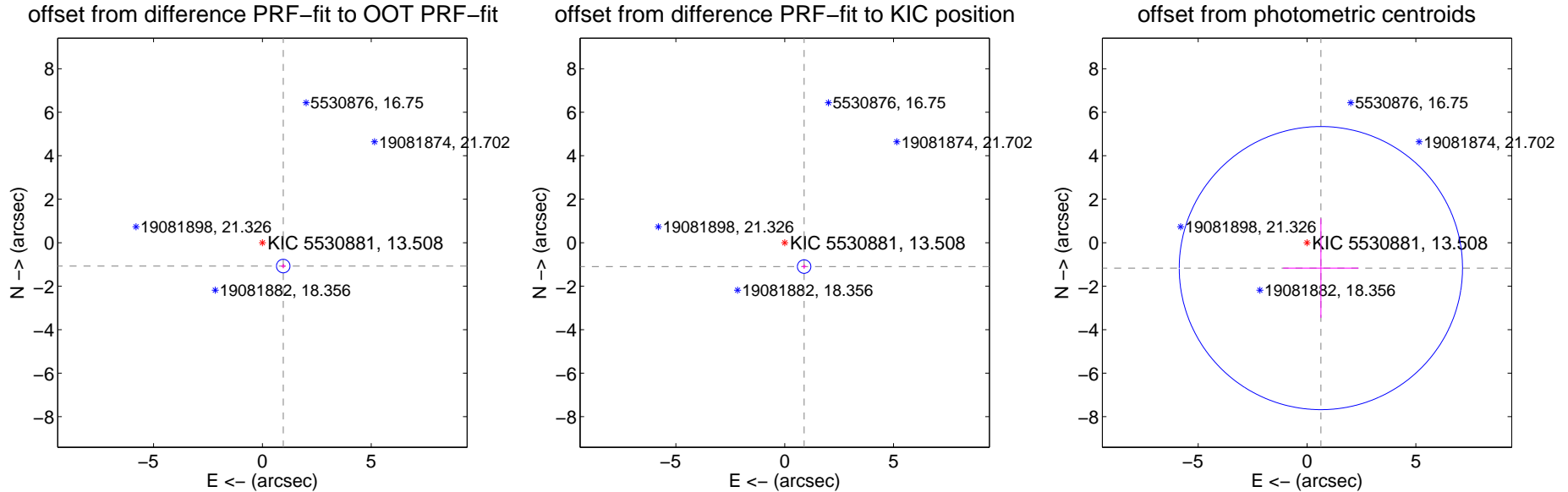
## DV Centroid Data

Supplemental centroid analysis for 005530881-04. Kepler magnitude: 13.51. Transit SNR -1.00

There are 0 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.07 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.439 \pm 0.104$	13.88	$-0.957 \pm 0.107$	$-1.074 \pm 0.101$
PRF-fit source offset from KIC position	$1.415 \pm 0.103$	13.68	$-0.892 \pm 0.107$	$-1.098 \pm 0.101$
photometric centroid source offset	$1.33 \pm 2.17$	0.61	$-0.64 \pm 1.73$	$-1.17 \pm 2.28$

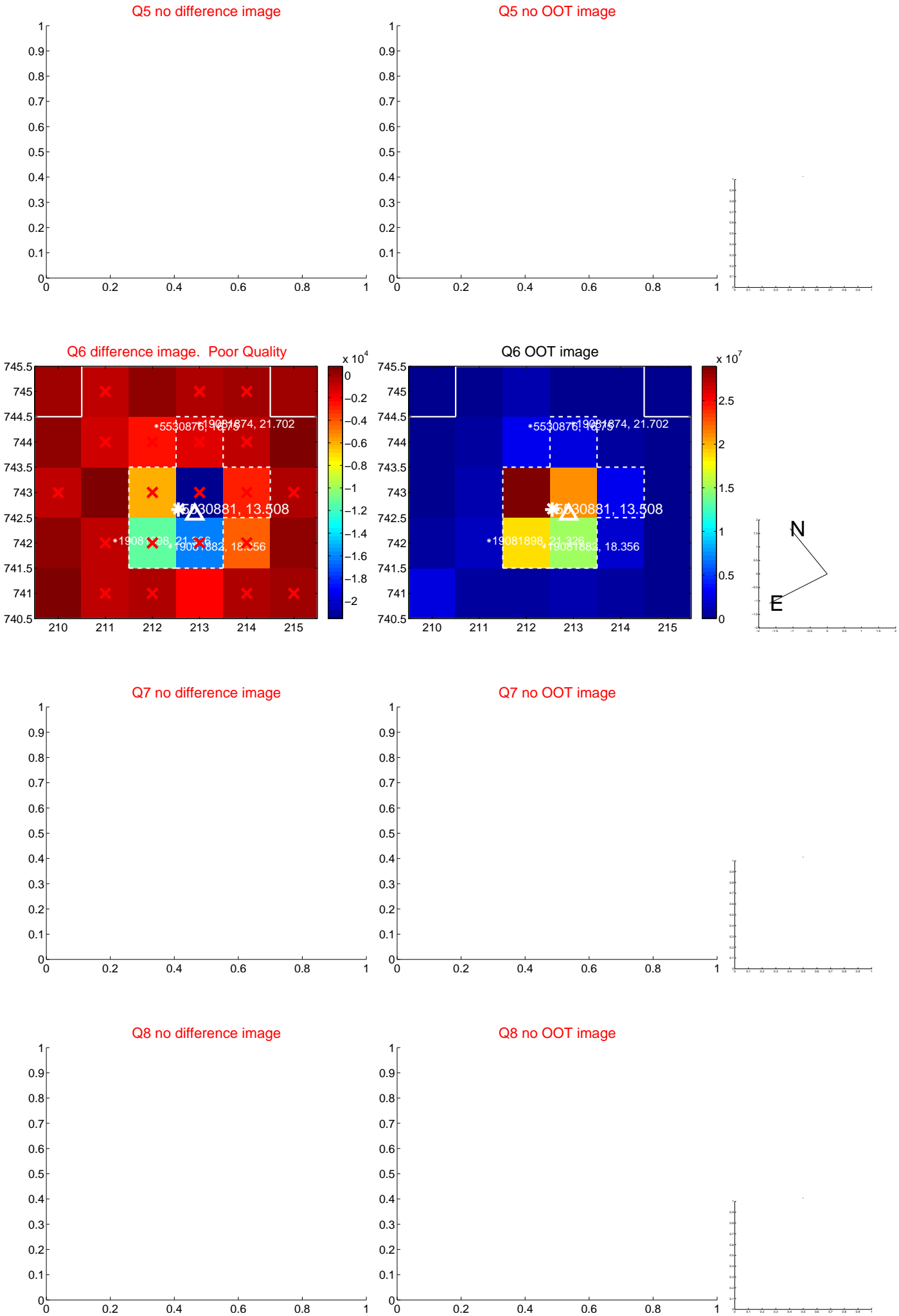


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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





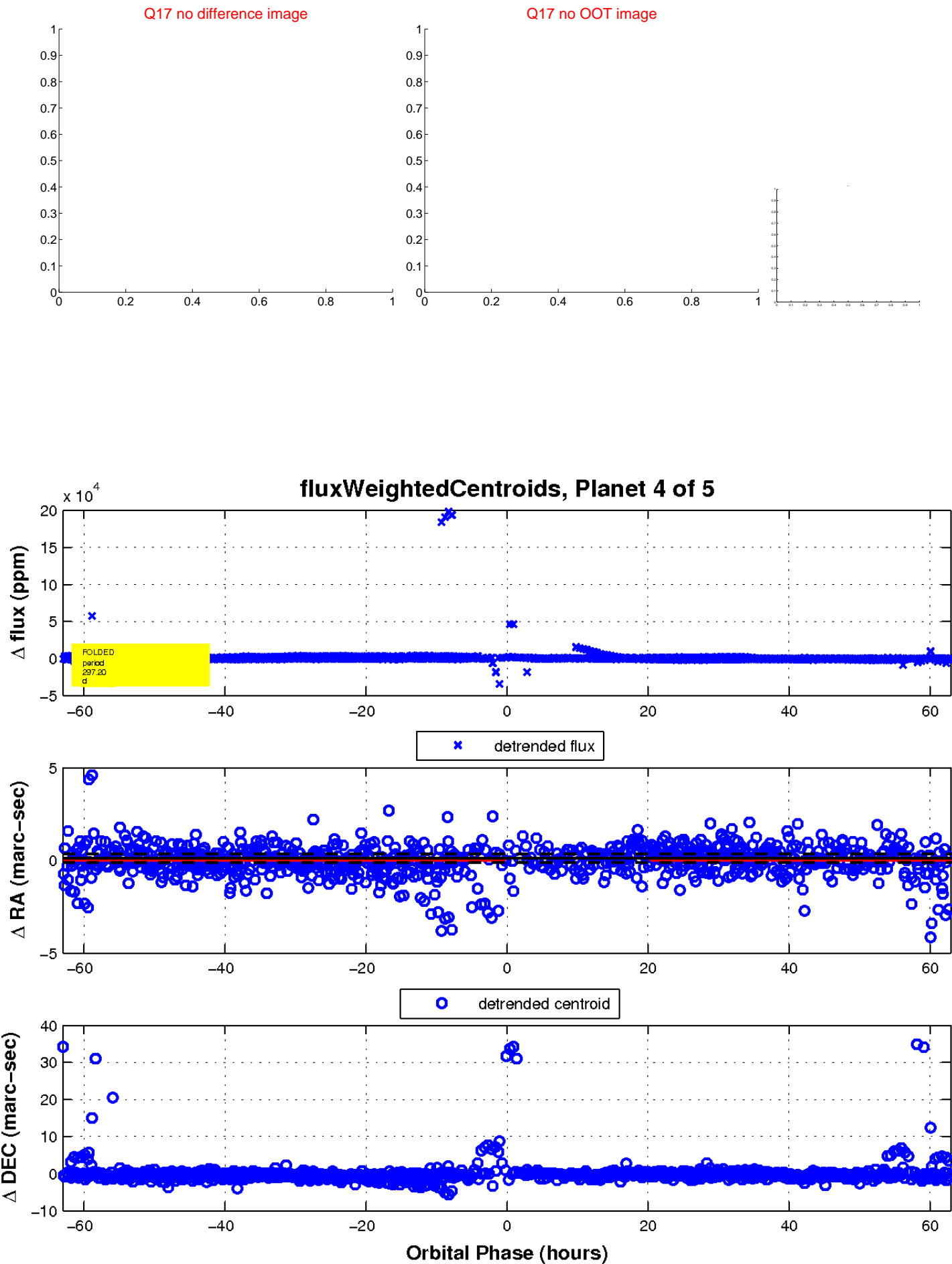
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

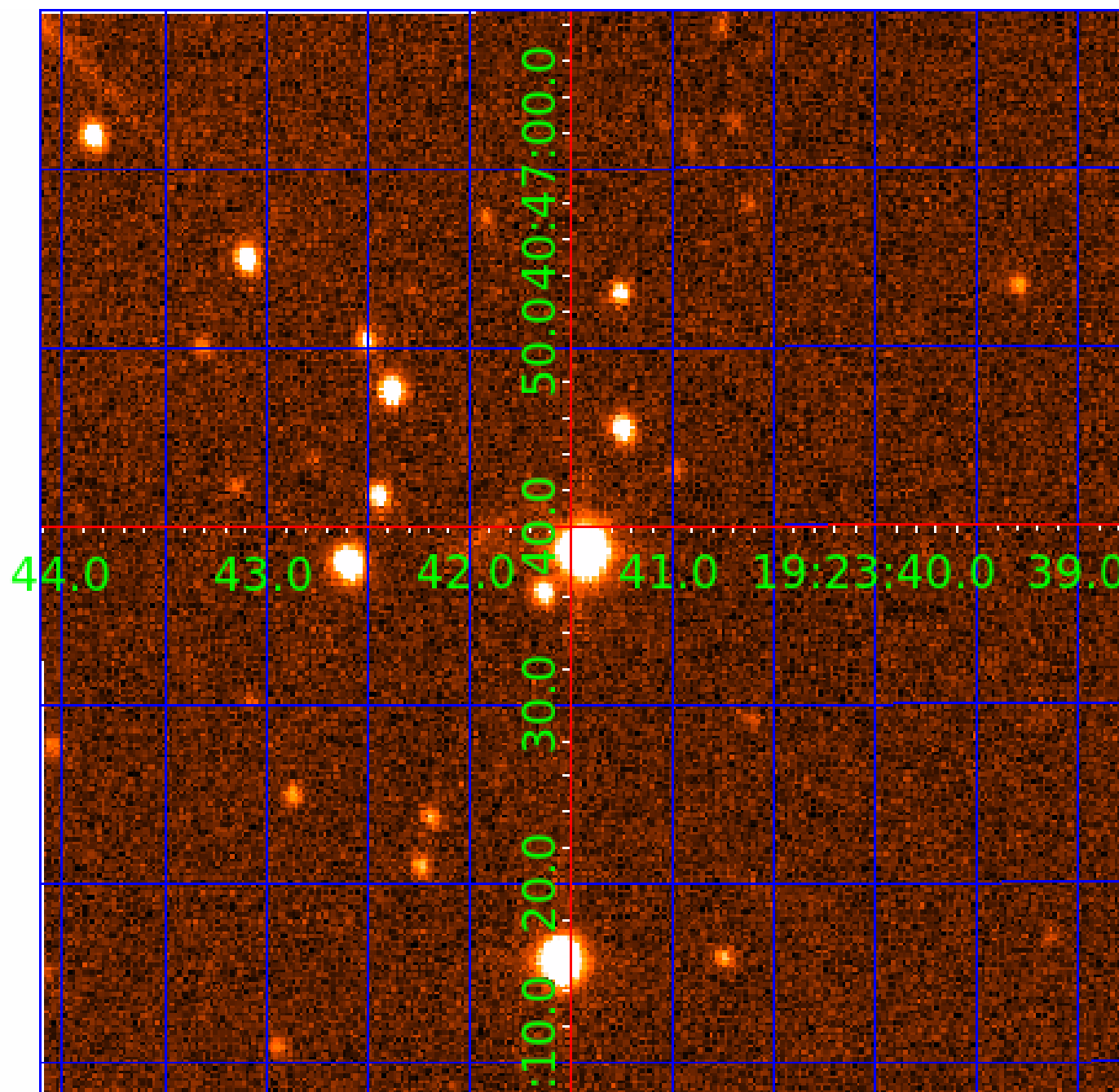


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 005530881

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005530881-01	OBS	6594.01	5.082481	132.961777	276103.5	3.500	20876.7	-1.0	1.15	6507	50.05	607.46
005530881-02	OBS	No	2.541261	132.959692	49897.4	4.982	4335.0	3541.5	1.15	6507	27.66	1530.70
005530881-03	OBS	No	297.182757	292.592257	12.4	1.000	23.2	0.1	1.15	6507	0.47	2.68
005530881-04	OBS	No	297.199319	292.013202	605.6	12.000	22.4	-1.0	1.15	6507	2.84	2.68
005530881-05	OBS	No	288.361459	324.183884	584.5	9.481	8.9	7.1	1.15	6507	2.98	2.79

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005530881-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_ALT—MOD_ODDEVEN_ALT—HAS_SEC_TCE—CENT_NOFITS
005530881-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE
005530881-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE_ZUMA_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV— MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005530881-04	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_POS_ALT—INCONSISTENT_TRANS—SAME_NTL_PERIOD—CENT_NOFITS
005530881-05	OBS	FP	0.00	1	0	0	0	LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS

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

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

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

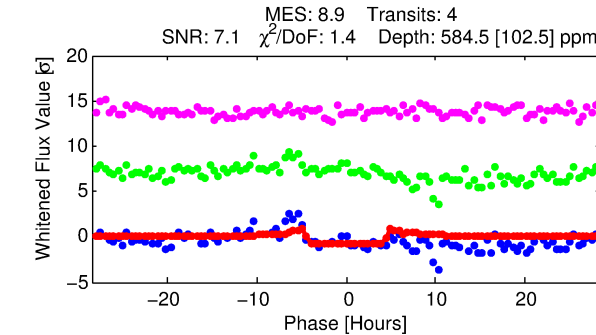
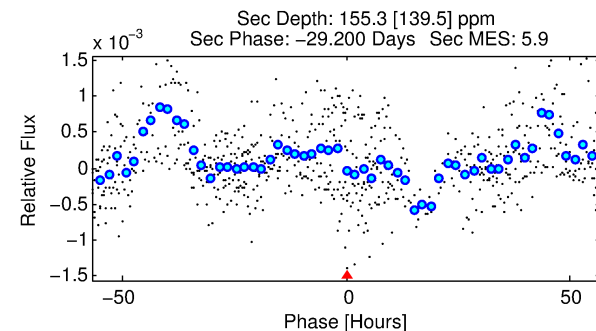
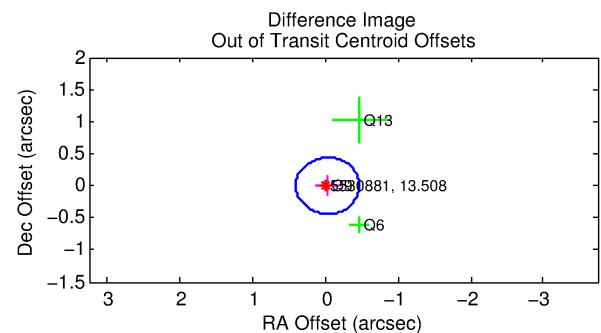
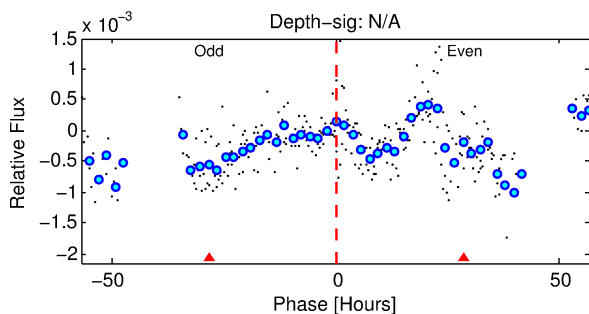
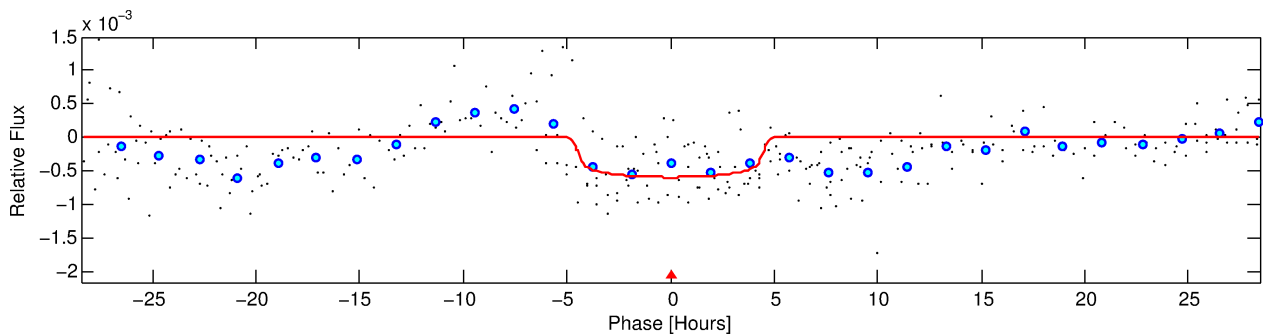
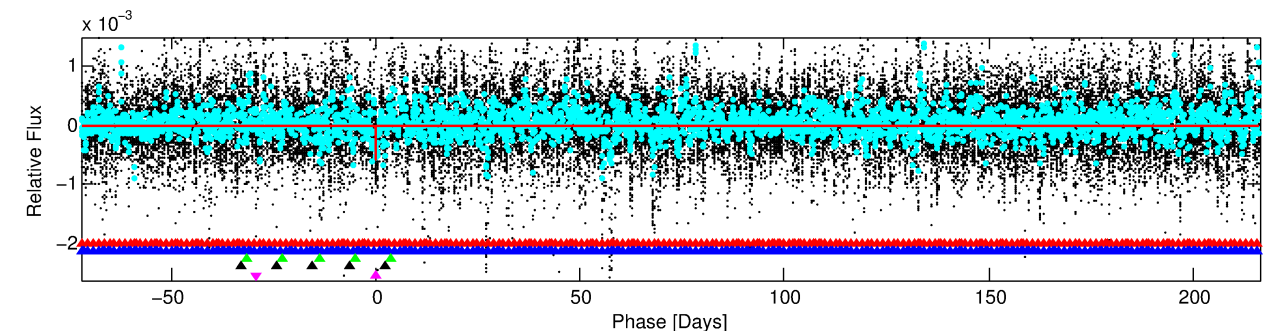
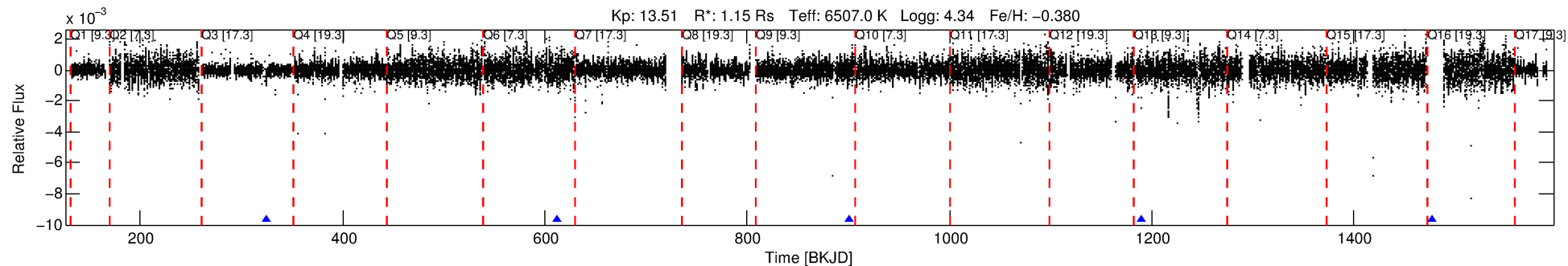
## Ephemeris Match Information For 005530881-05

No Significant Match Found

# DV One-Page Summary

KIC: 5530881 Candidate: 5 of 5 Period: 288.361 d  
KOI: K06594 Corr: No Ephemeris Match

Kp: 13.51 R\*: 1.15 Rs Teff: 6507.0 K Logg: 4.34 Fe/H: -0.380



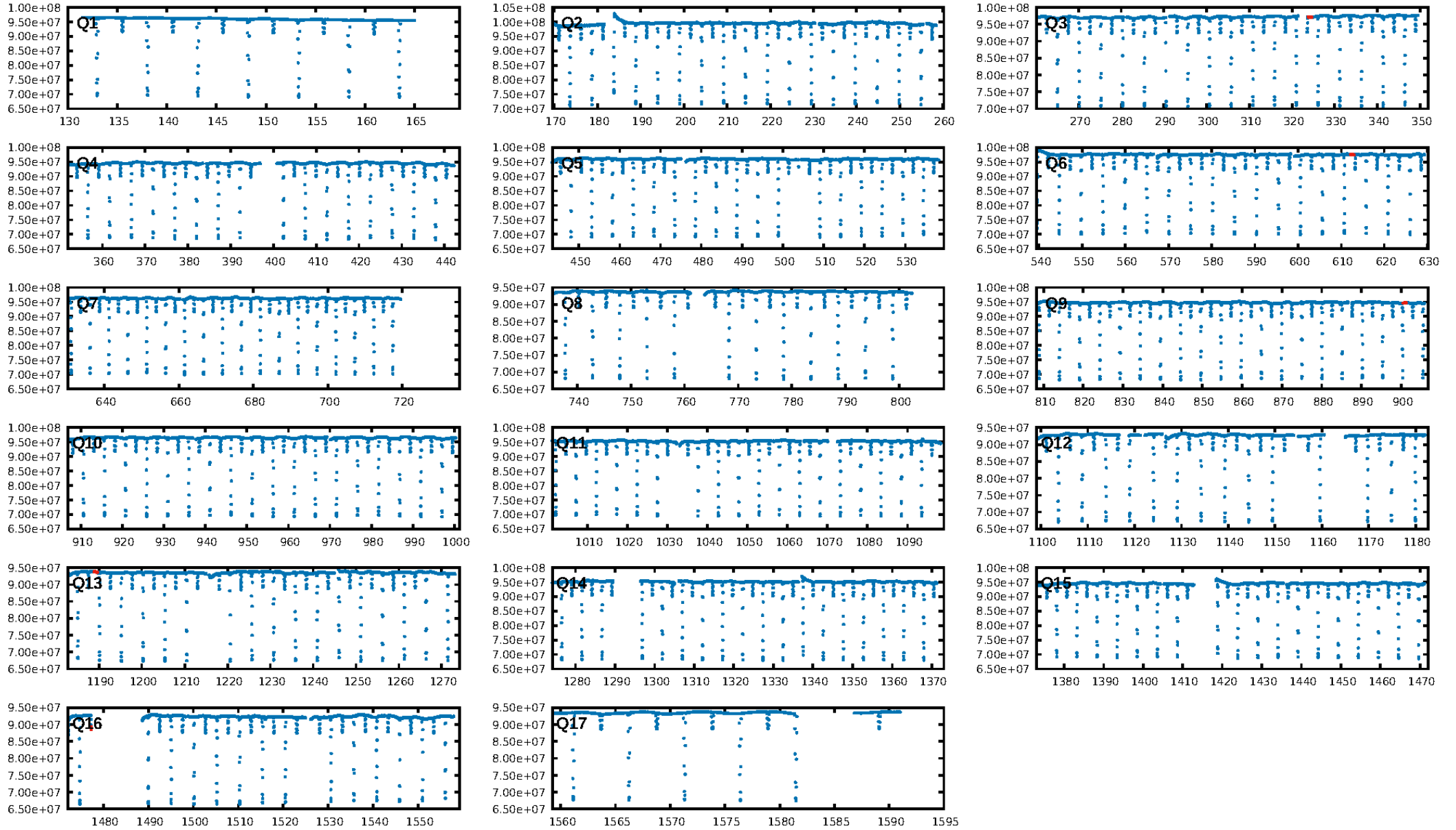
## DV Fit Results:

Period = 288.36146 [0.00645] d  
Epoch = 324.1839 [0.0096] BKJD  
Rp/R\* = 0.0239 [0.0065]  
a/R\* = 167.39 [225.91]  
b = 0.73 [0.88]  
Seff = 2.79 [1.02]  
Teff = 329 [30] K  
Rp = 2.98 [1.18] Re  
a = 0.8693 [0.2089] AU  
Ag = 7247.99 [8023.28] [0.90σ]  
Teffp = 4700 [1243] K [3.51σ]

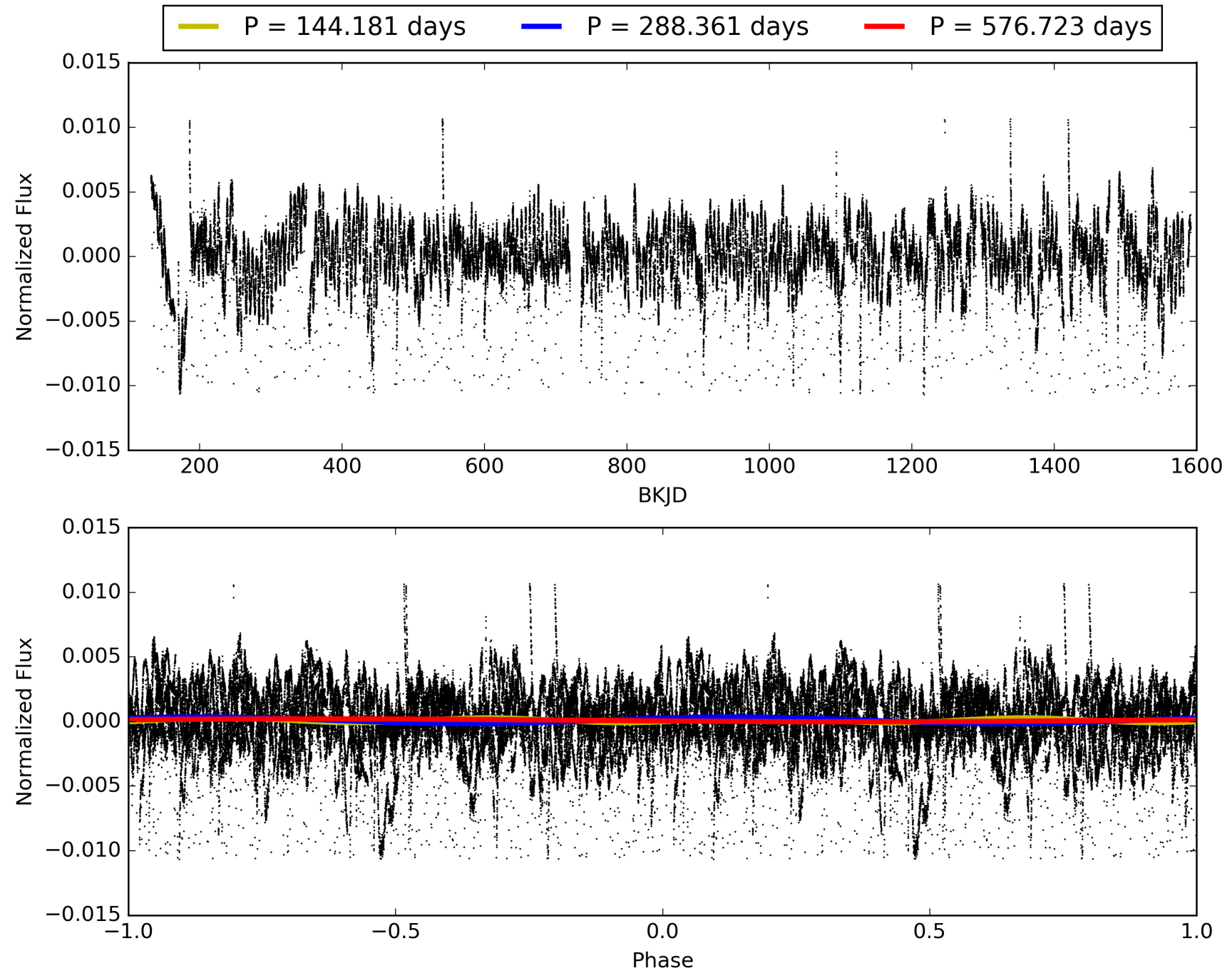
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [672.72σ]  
LongPeriod-sig: 100.0% [22.21σ]  
ModelChiSquare2-sig: 31.0%  
ModelChiSquareGof-sig: 98.5%  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [4/4]  
GhostDiagnostic-chr: 1.336  
Centroid-sig: N/A  
Centroid-so: 0.340 arcsec [0.58σ]  
OotOffset-rm: 0.028 arcsec [0.19σ]  
KicOffset-rm: 0.105 arcsec [0.36σ]  
OotOffset-st: 1/0/0/2 [3]  
KicOffset-st: 1/0/0/2 [3]  
DiffImageQuality-fgm: 0.00 [0/3]  
DiffImageOverlap-fno: 0.33 [1/3]

# TCE 005530881-05, PDC Light Curves



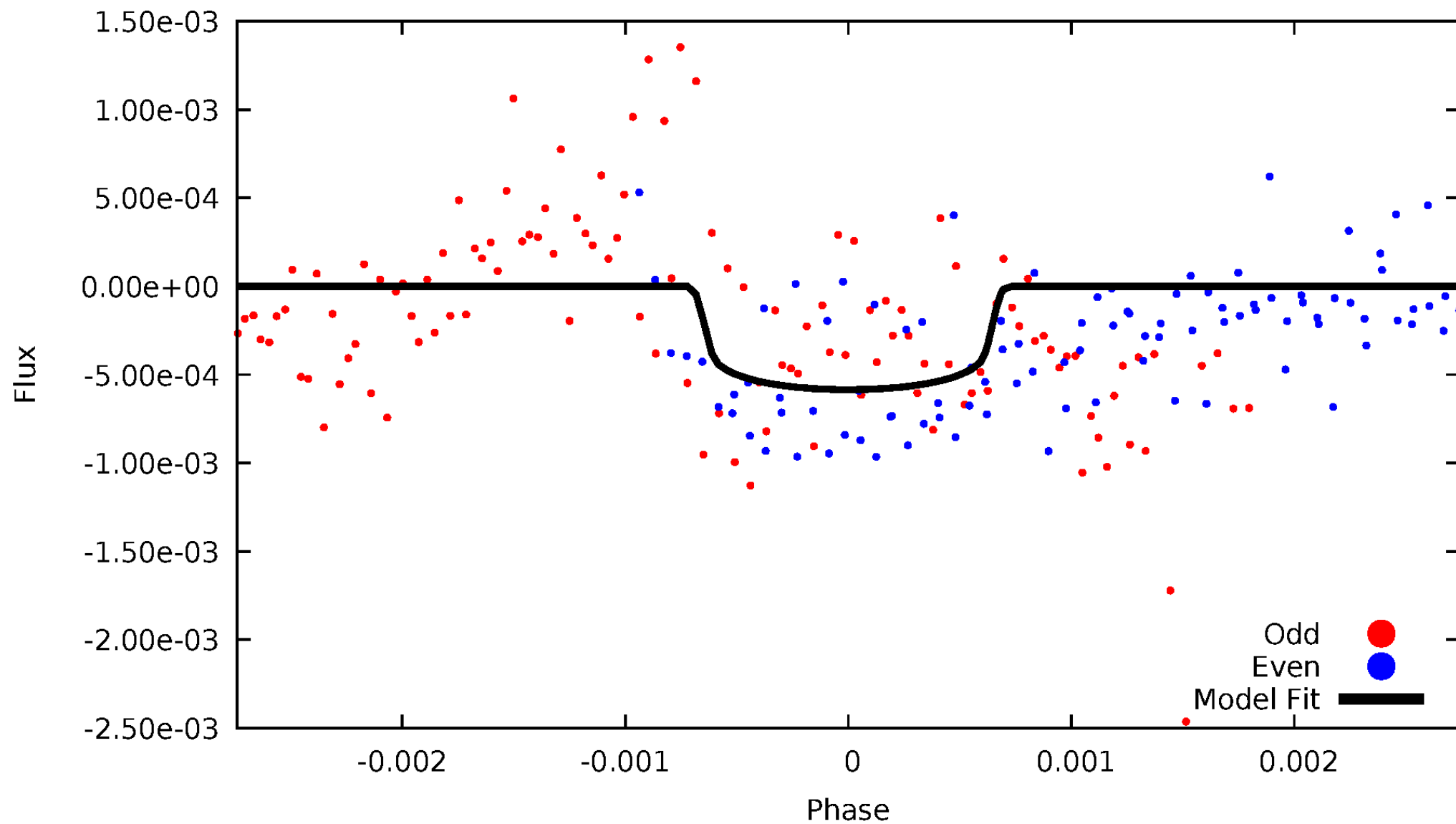
TCE 005530881-05





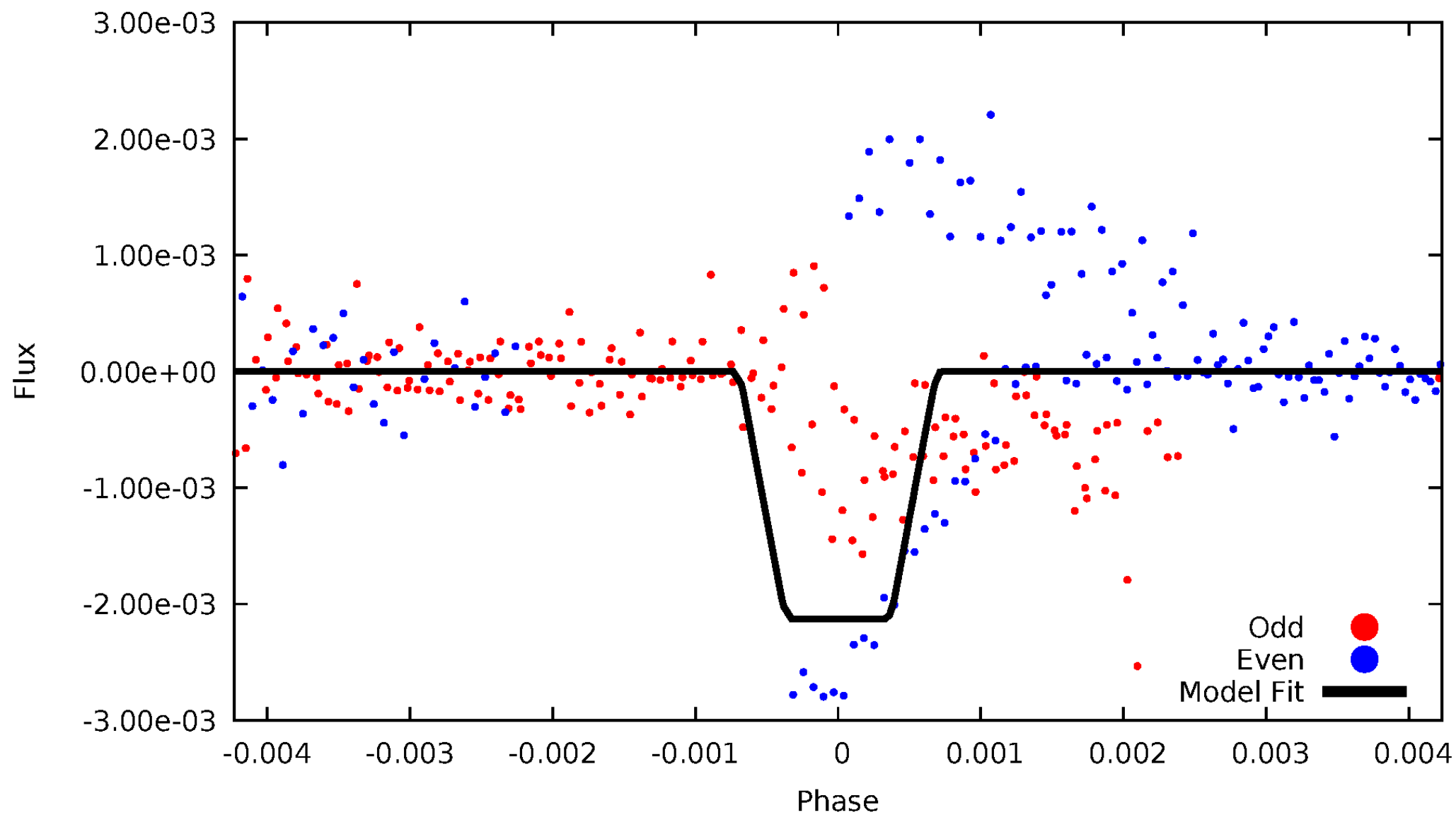
# DV Odd/Even

TCE 005530881-05



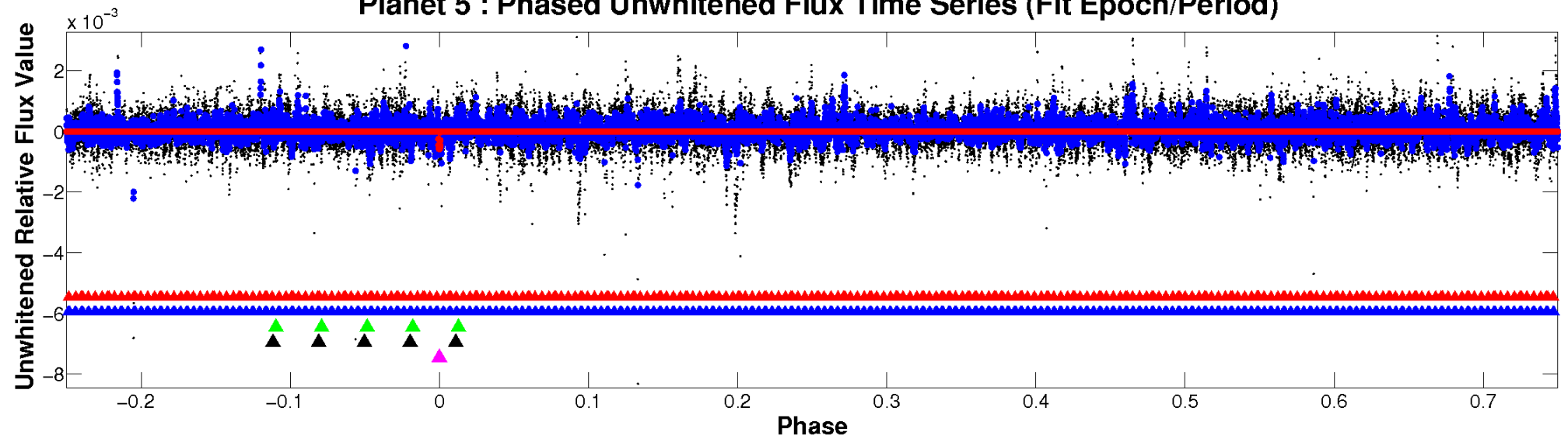
# ALT Odd/Even

TCE 005530881-05

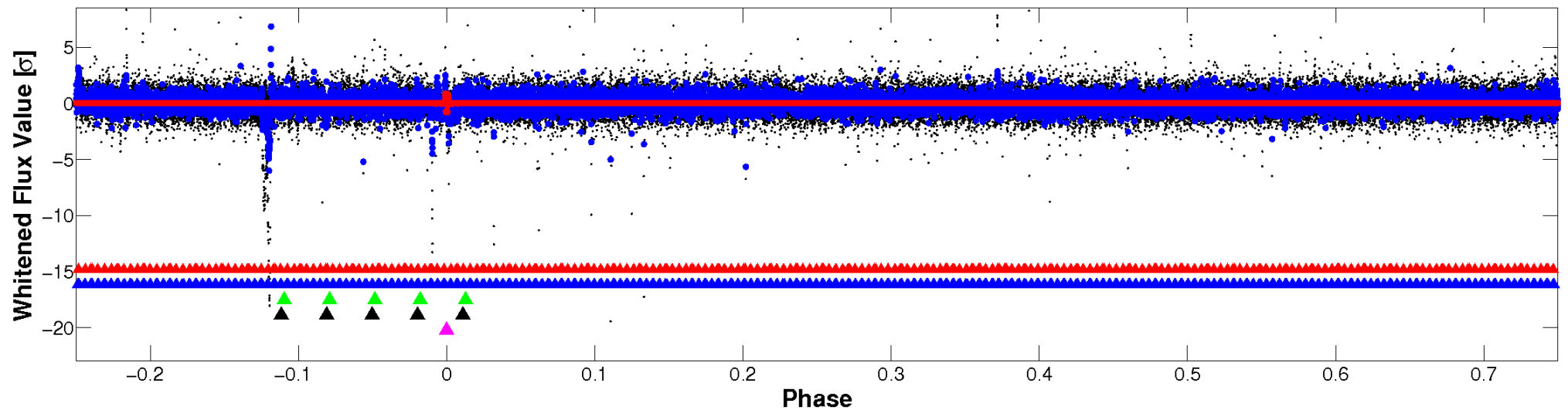


# Non-Whitened Vs. Whitened Light Curve

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

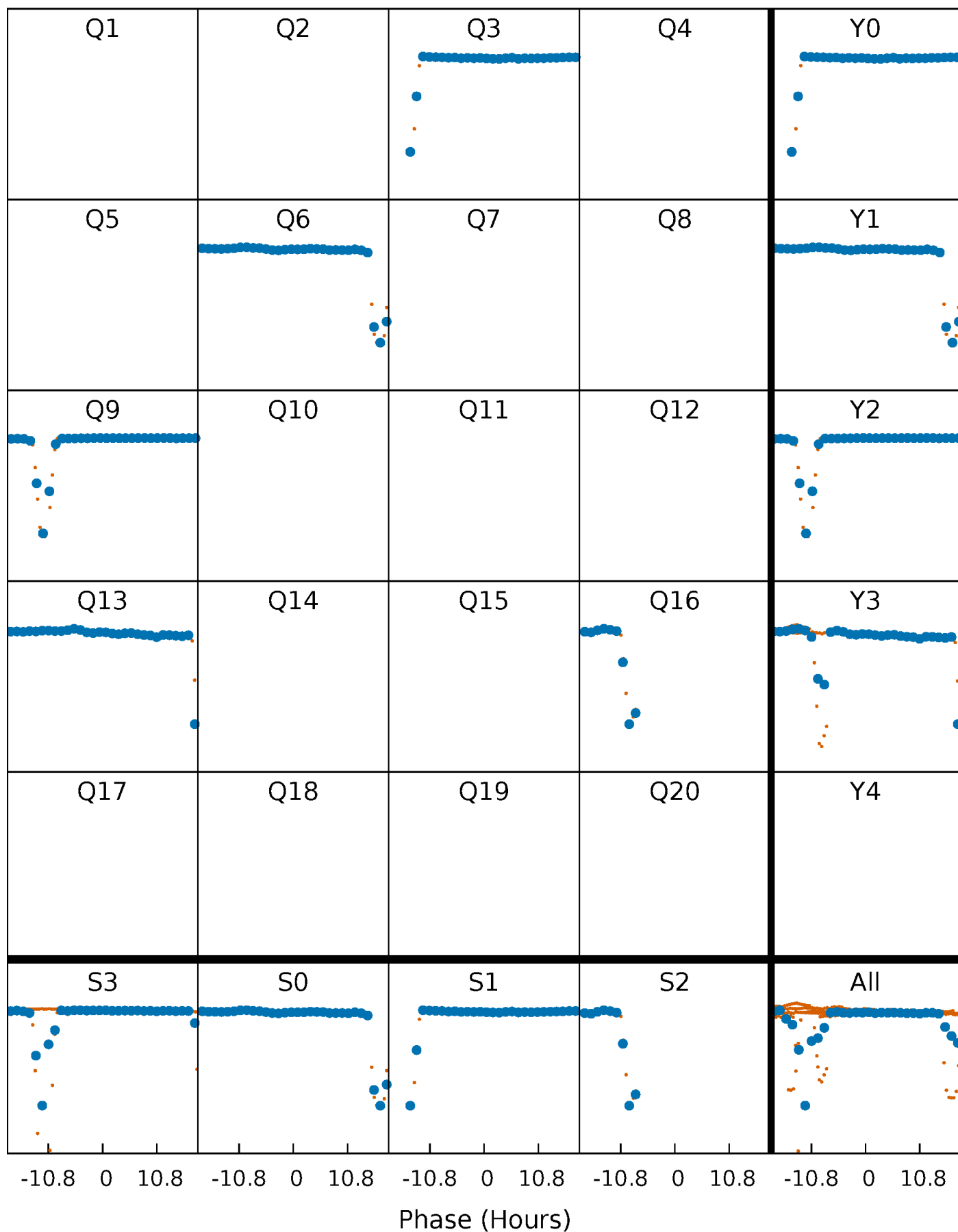


## Planet 5 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

TCE 005530881-05     $P=288.361459$  Days     $T_0=324.183884$  (BKJD)



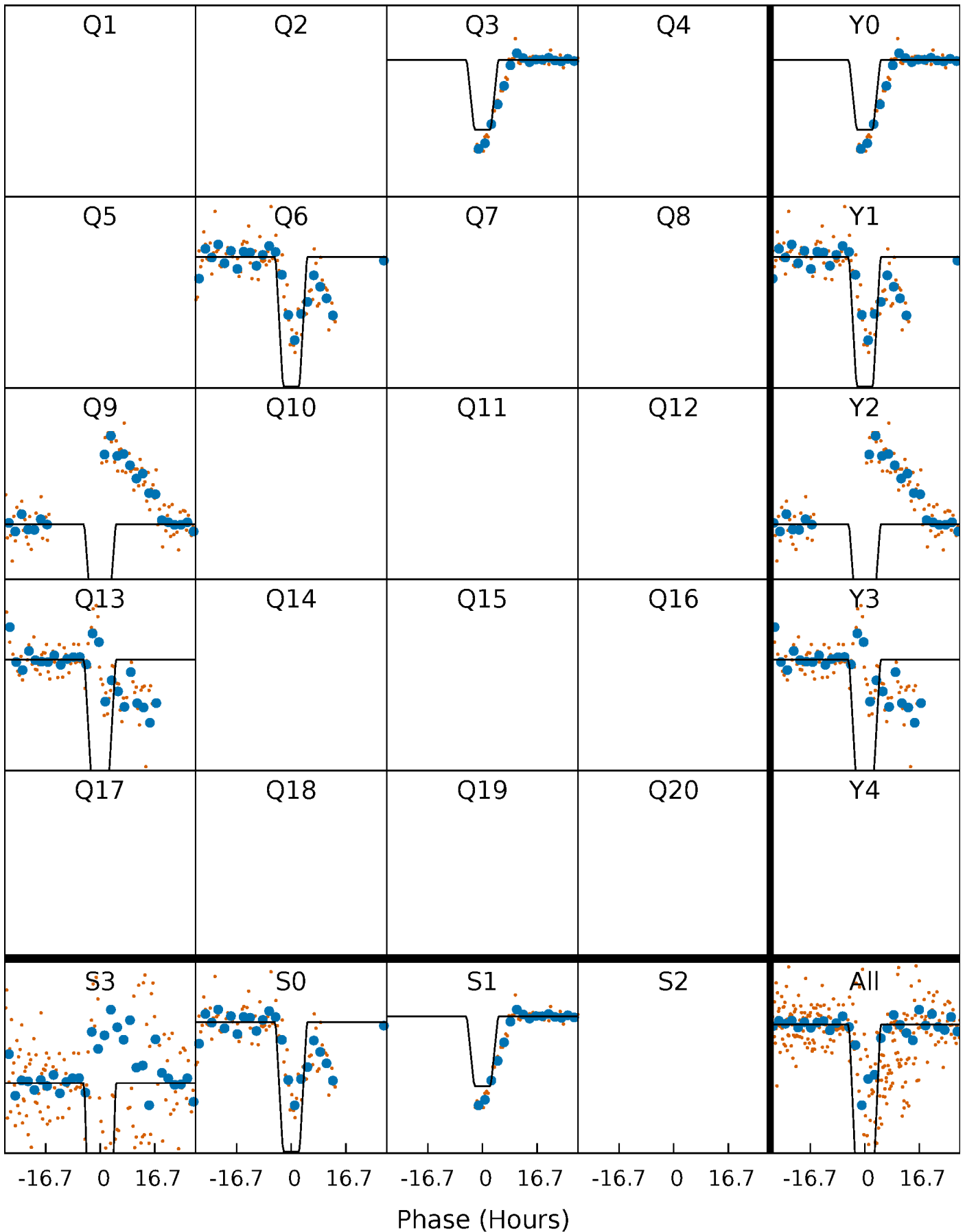
# DV Quarter-Phased Transit Curves

TCE 005530881-05     $P=288.361459$  Days     $T_0=324.183884$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

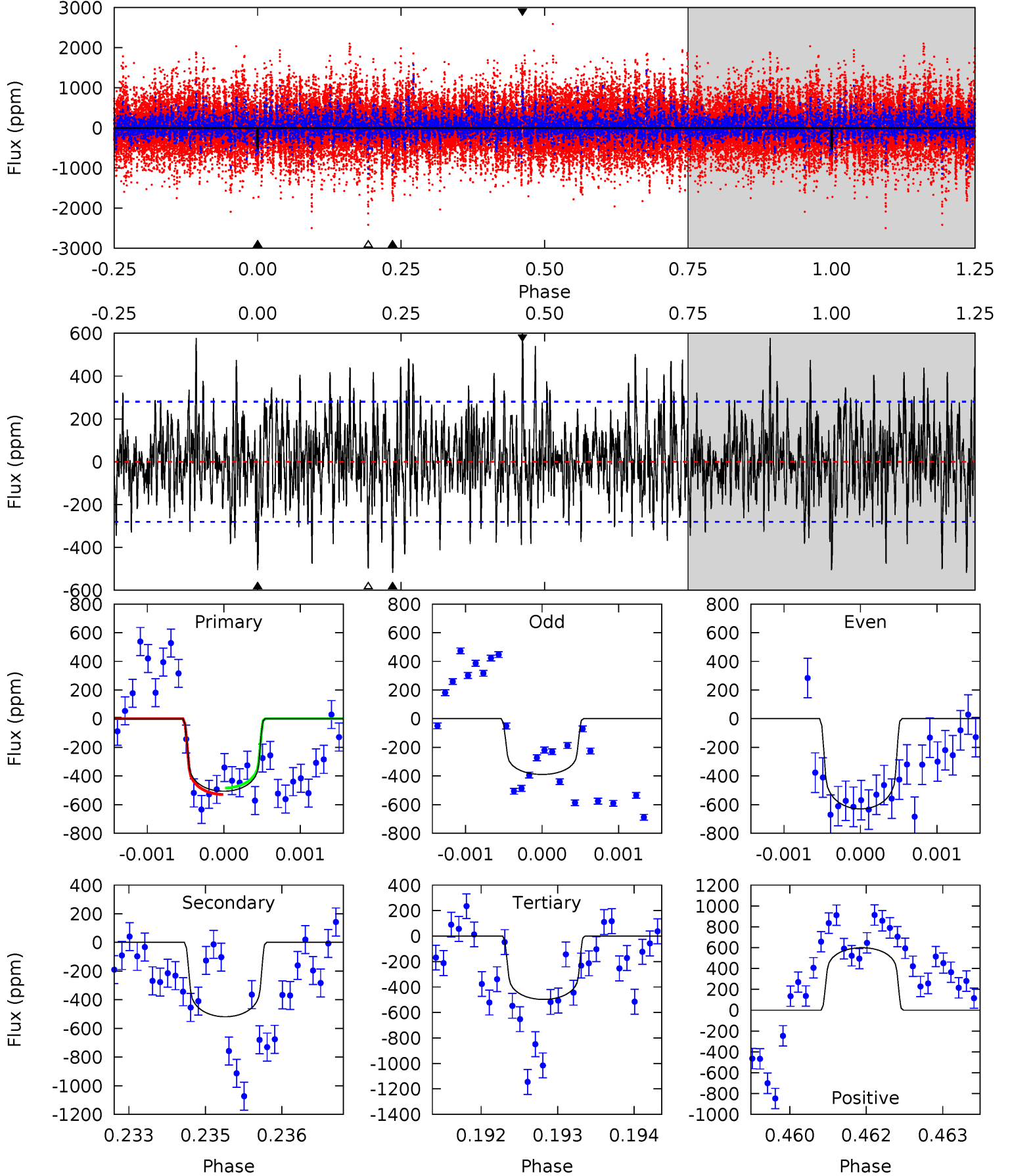
TCE 005530881-05     $P=288.365210$  Days     $T_0=324.004165$  (BKJD)



# DV Model-Shift Uniqueness Test

005530881-05,  $P = 288.361459$  Days,  $E = 35.822425$  Days

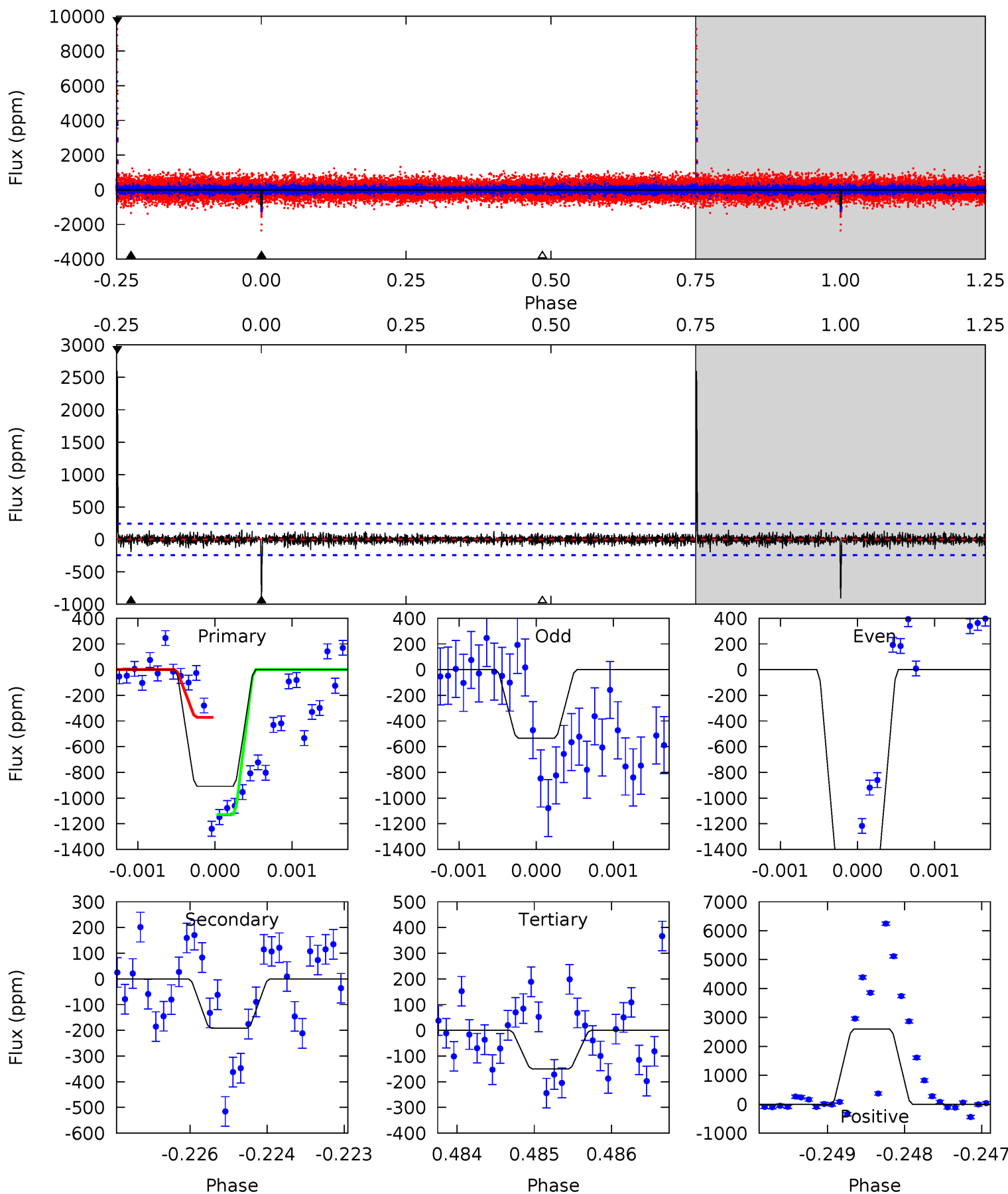
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.75	9.98	9.58	11.5	5.40	3.21	2.87	0.17	-1.78	0.40	-1.55	2.20	1.10	0.54	0.44



# Alt Model-Shift Uniqueness Test

005530881-05, P = 288.365210 Days, E = 35.638955 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
20.2	4.24	3.34	57.6	5.39	3.20	1.47	16.8	-37.5	0.90	-53.4	10.3	0.83	0.74	7.86





### Stellar Parameters For KIC 005530881

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6507^{+146}_{-194}$	$4.343^{+0.101}_{-0.188}$	$-0.380^{+0.250}_{-0.300}$	$1.145^{+0.330}_{-0.152}$	$1.049^{+0.160}_{-0.117}$	$0.984^{+0.452}_{-0.496}$
	+2%/-3%	+2%/-4%	+66%/-79%	+29%/-13%	+15%/-11%	+46%/-50%
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 005530881-05 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-519 \pm 52$	$3.10^{+0.97}_{-0.87}$	$462^{+30}_{-23}$	$6303^{+1164}_{-708}$	$22470^{+22278}_{-9564}$
Alt.	$-191 \pm 45$	$5.85^{+1.29}_{-0.93}$	$463^{+32}_{-24}$	$3875^{+286}_{-240}$	$2199^{+1110}_{-820}$

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

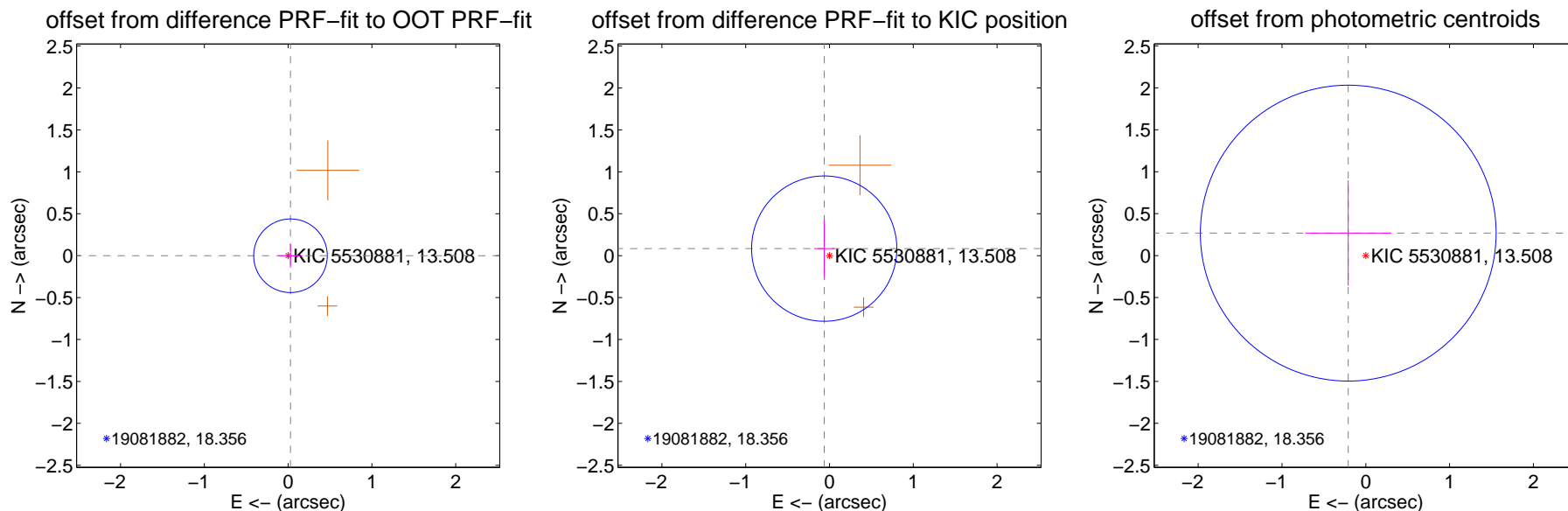
## DV Centroid Data

Supplemental centroid analysis for 005530881-05. Kepler magnitude: 13.51. Transit SNR 7.14

There are 0 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.13 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.028 \pm 0.146$	0.19	$-0.028 \pm 0.146$	$-0.001 \pm 0.142$
PRF-fit source offset from KIC position	$0.105 \pm 0.289$	0.36	$0.063 \pm 0.121$	$0.084 \pm 0.345$
photometric centroid source offset	$0.34 \pm 0.59$	0.58	$0.21 \pm 0.51$	$0.27 \pm 0.63$



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.

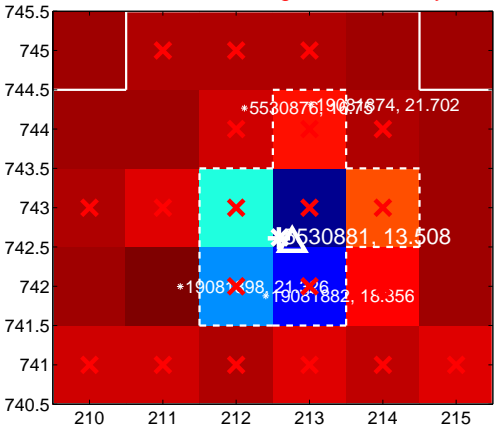
Q5 no difference image



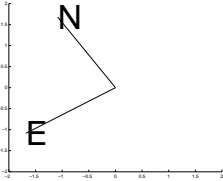
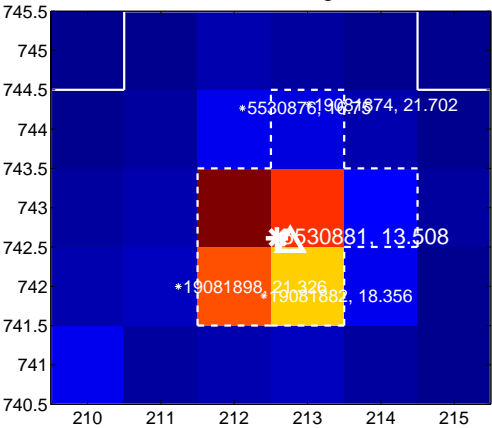
Q5 no OOT image



Q6 difference image. Poor Quality



Q6 OOT image



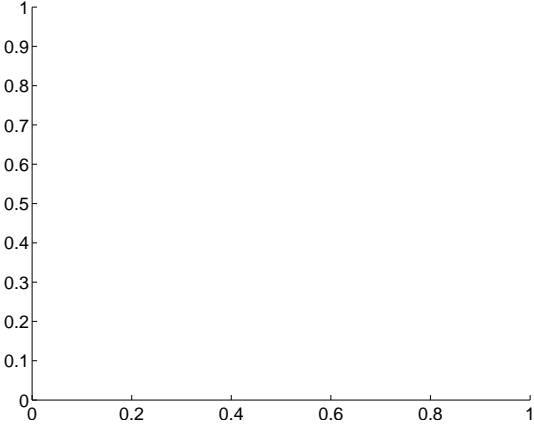
Q7 no difference image



Q7 no OOT image



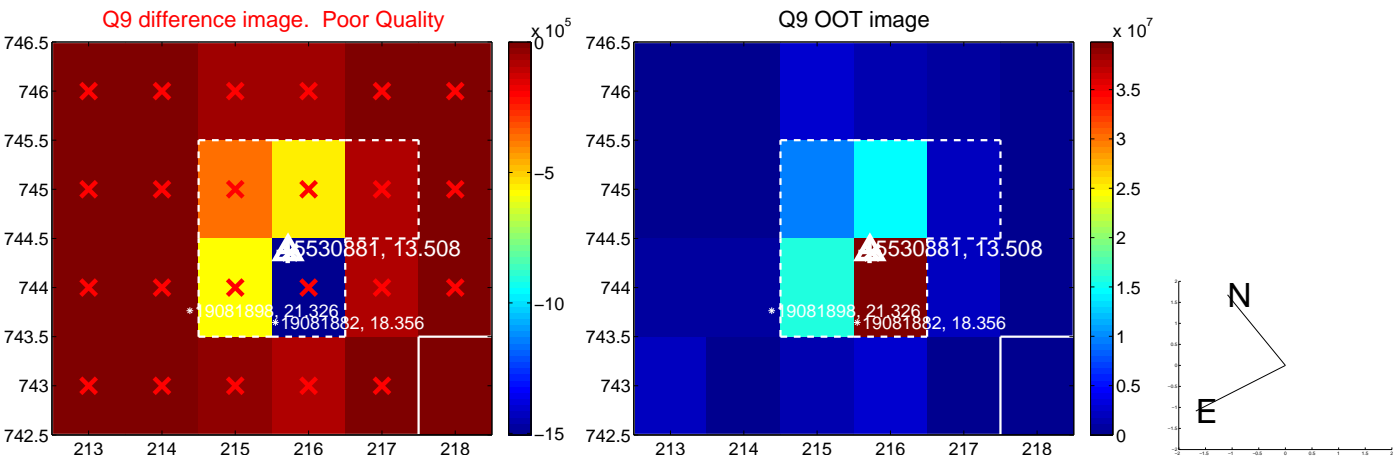
Q8 no difference image



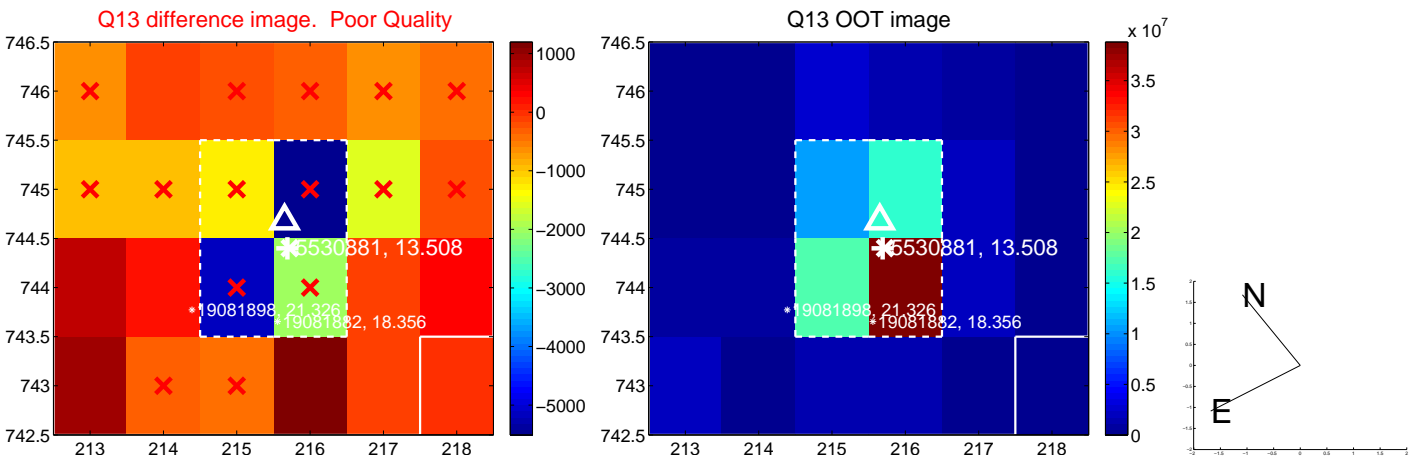
Q8 no OOT image



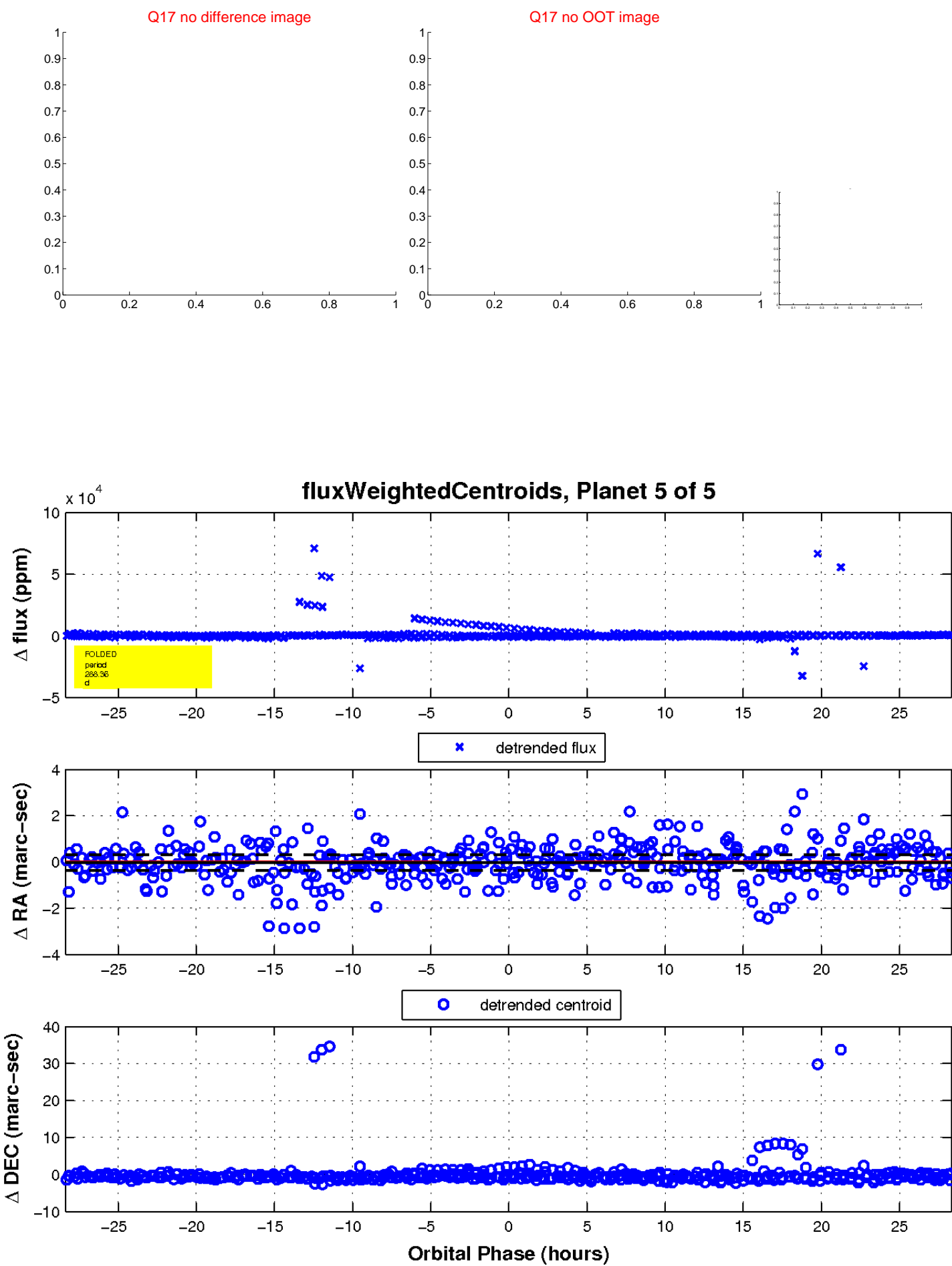
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

