

# KIC 008429450

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008429450-01	OBS	7039.01	1.352577	132.038277	315707.7	3.000	23853.9	-1.0	2.41	6881	80.40	15976.50
008429450-02	OBS	No	5.410582	134.930210	10689.2	15.000	3420.1	-1.0	2.41	6881	25.13	2515.97
008429450-03	OBS	No	27.051450	131.785994	24773.9	1.500	591.7	-1.0	2.41	6881	38.45	294.29
008429450-04	OBS	No	82.958179	143.100780	17021.9	2.000	430.8	-1.0	2.41	6881	31.80	66.05

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008429450-01	OBS	FP	0.00	0	1	0	0	DEPTH_ODDEVEN_DV—DEPTH_ODDEVEN_ALT—MOD_ODDEVEN_ALT—HAS_SEC_TCE—CENT_NOFITS
008429450-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—RESIDUAL_TCE—CENT_NOFITS
008429450-03	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—RESIDUAL_TCE—CENT_NOFITS
008429450-04	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_NOFITS

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

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

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

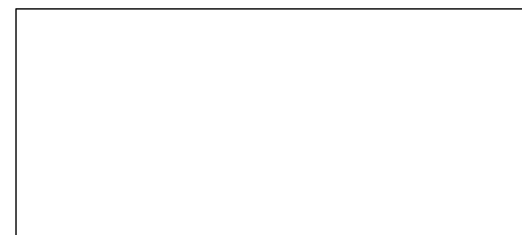
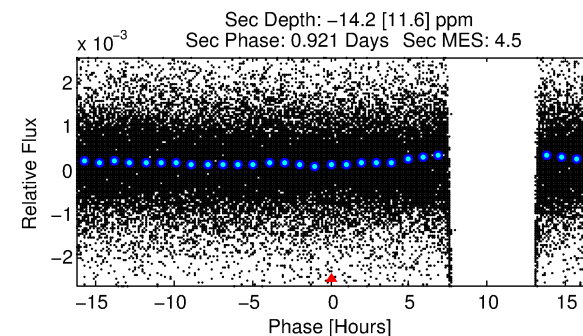
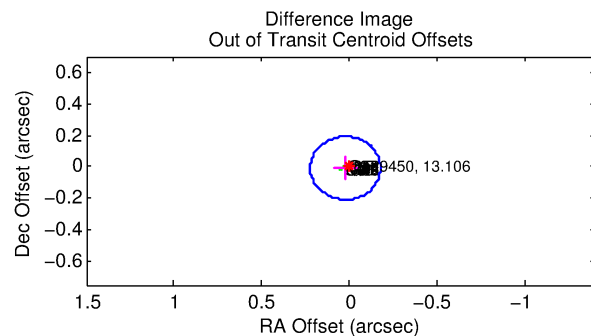
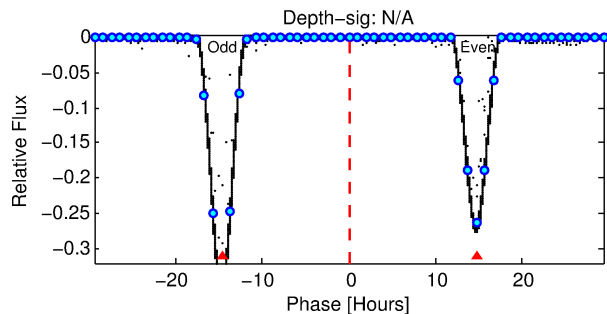
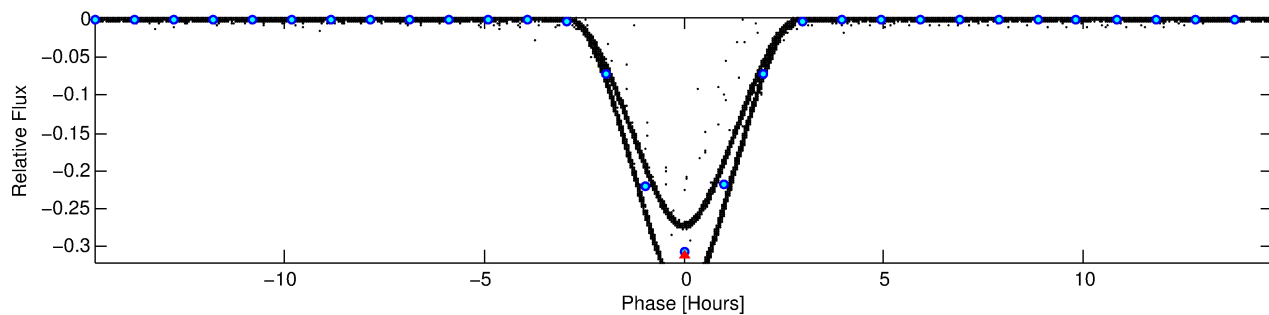
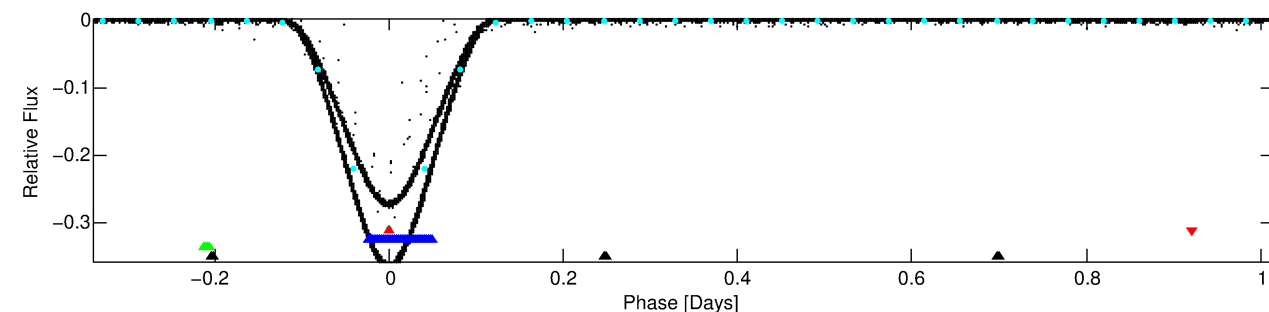
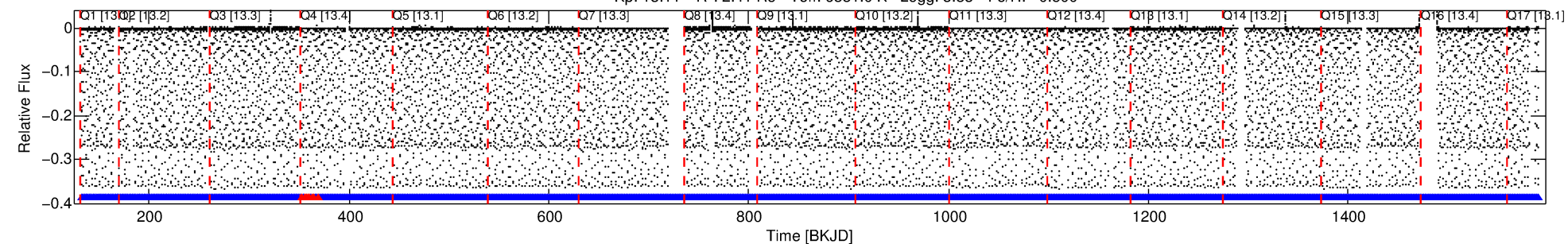
Ephemeris Match Information For 008429450-01

No Significant Match Found

# DV One-Page Summary

KIC: 8429450 Candidate: 1 of 4 Period: 1.353 d  
KOI: K07039 Corr: No Ephemeris Match

Kp: 13.11 R\*: 2.41 Rs Teff: 6881.0 K Logg: 3.83 Fe/H: -0.500



## TPS TCE Results:

Period = 1.35258 d  
Epoch = 132.0383 BKJD

DV fit results are unavailable

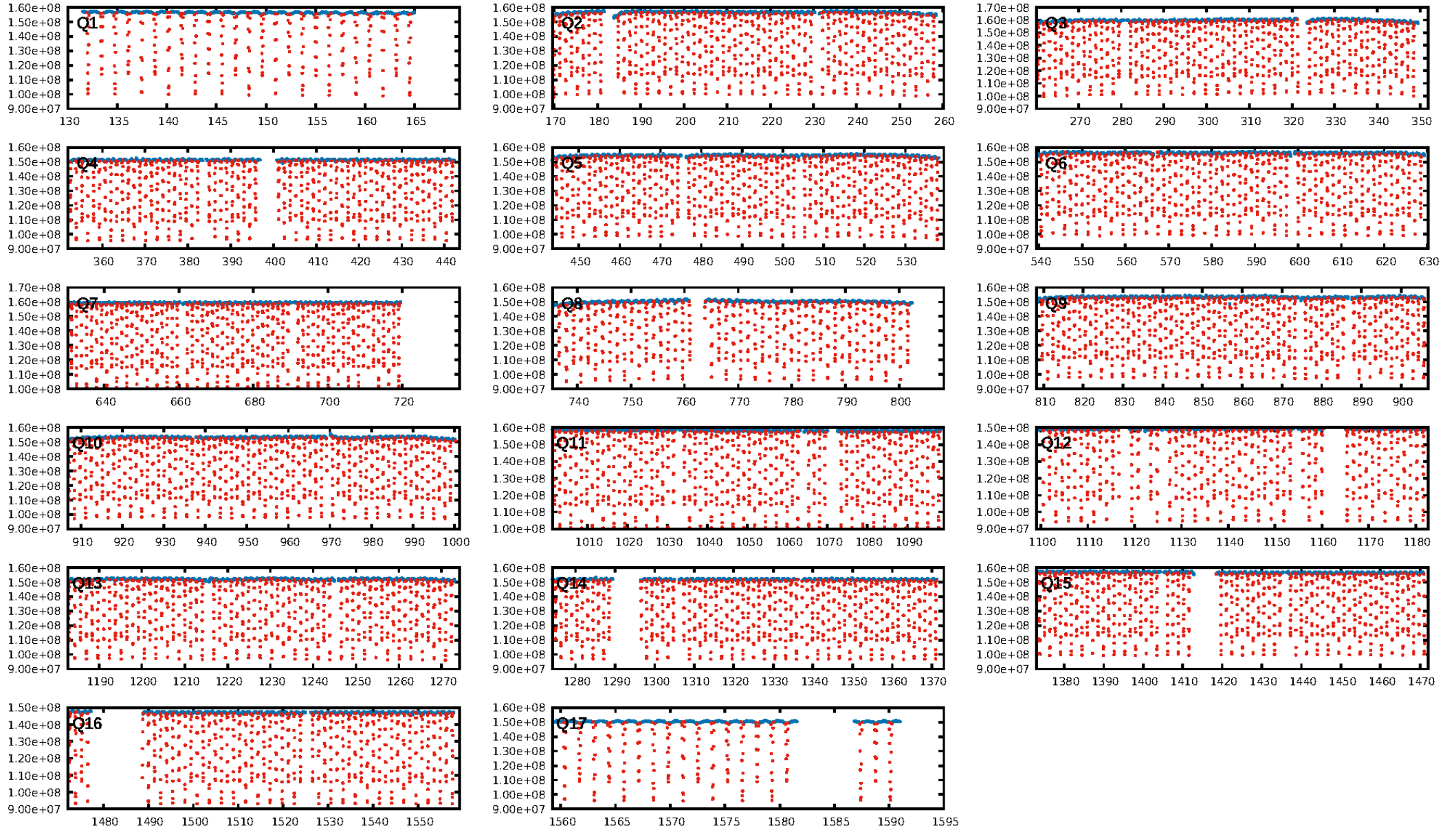
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [6.37 $\sigma$ ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 0.99 [937/945]  
GhostDiagnostic-chr: 1.317  
Centroid-sig: N/A  
Centroid-so: 0.668 arcsec [2712.96 $\sigma$ ]  
OotOffset-rm: 0.026 arcsec [0.39 $\sigma$ ]  
KicOffset-rm: 0.585 arcsec [8.67 $\sigma$ ]  
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]

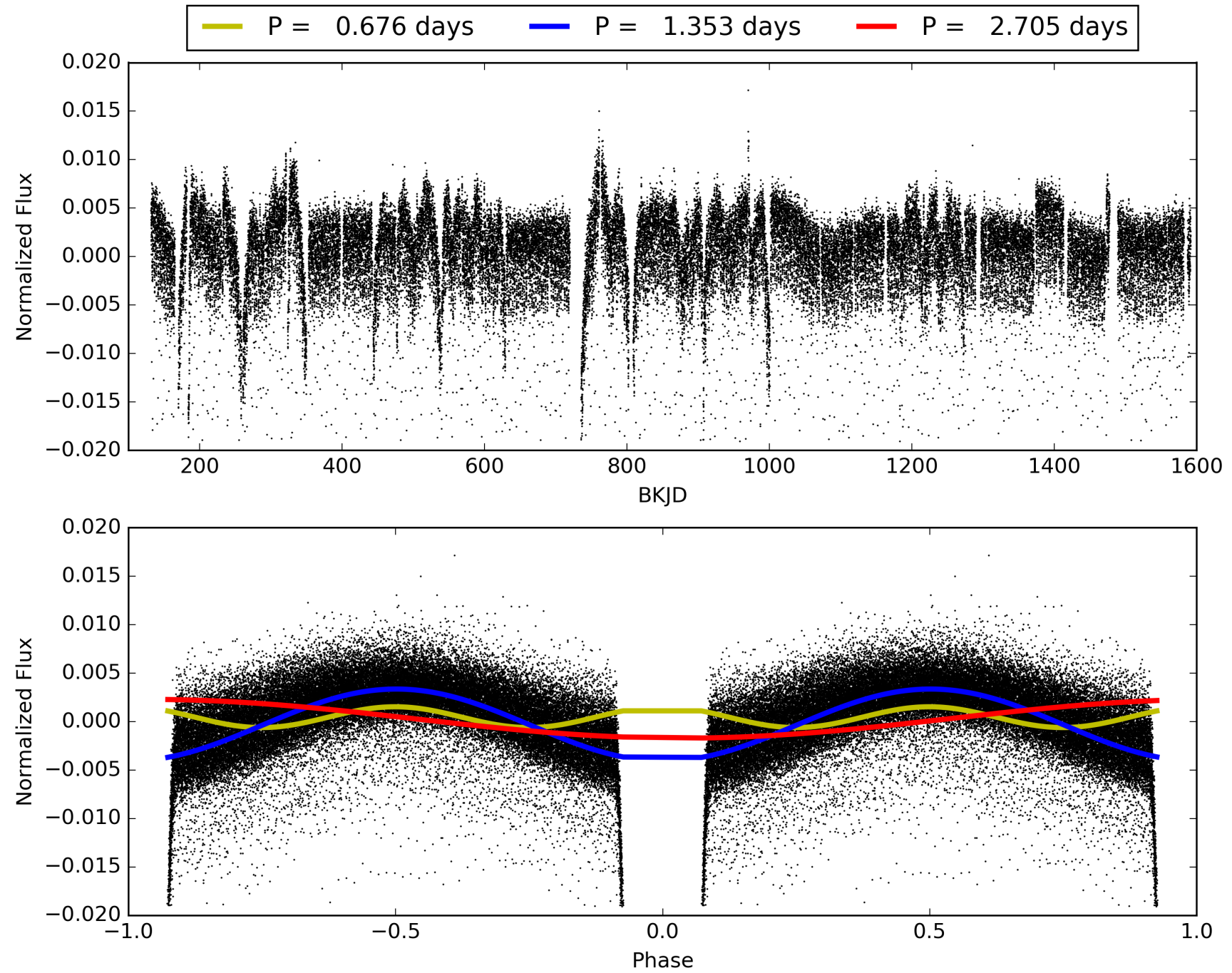
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 19:54:39 Z

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

# TCE 008429450-01, PDC Light Curves



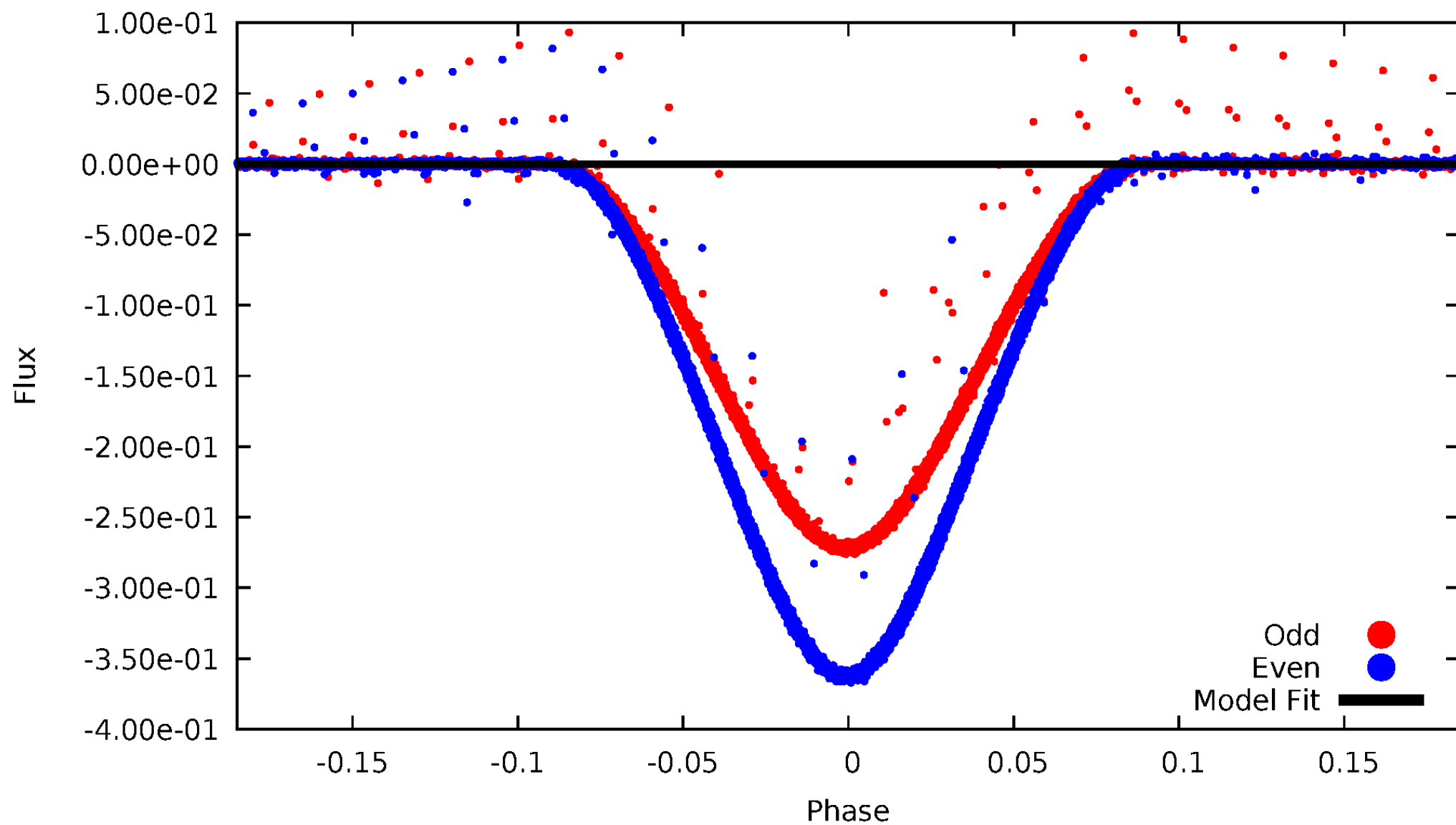
# TCE 008429450-01





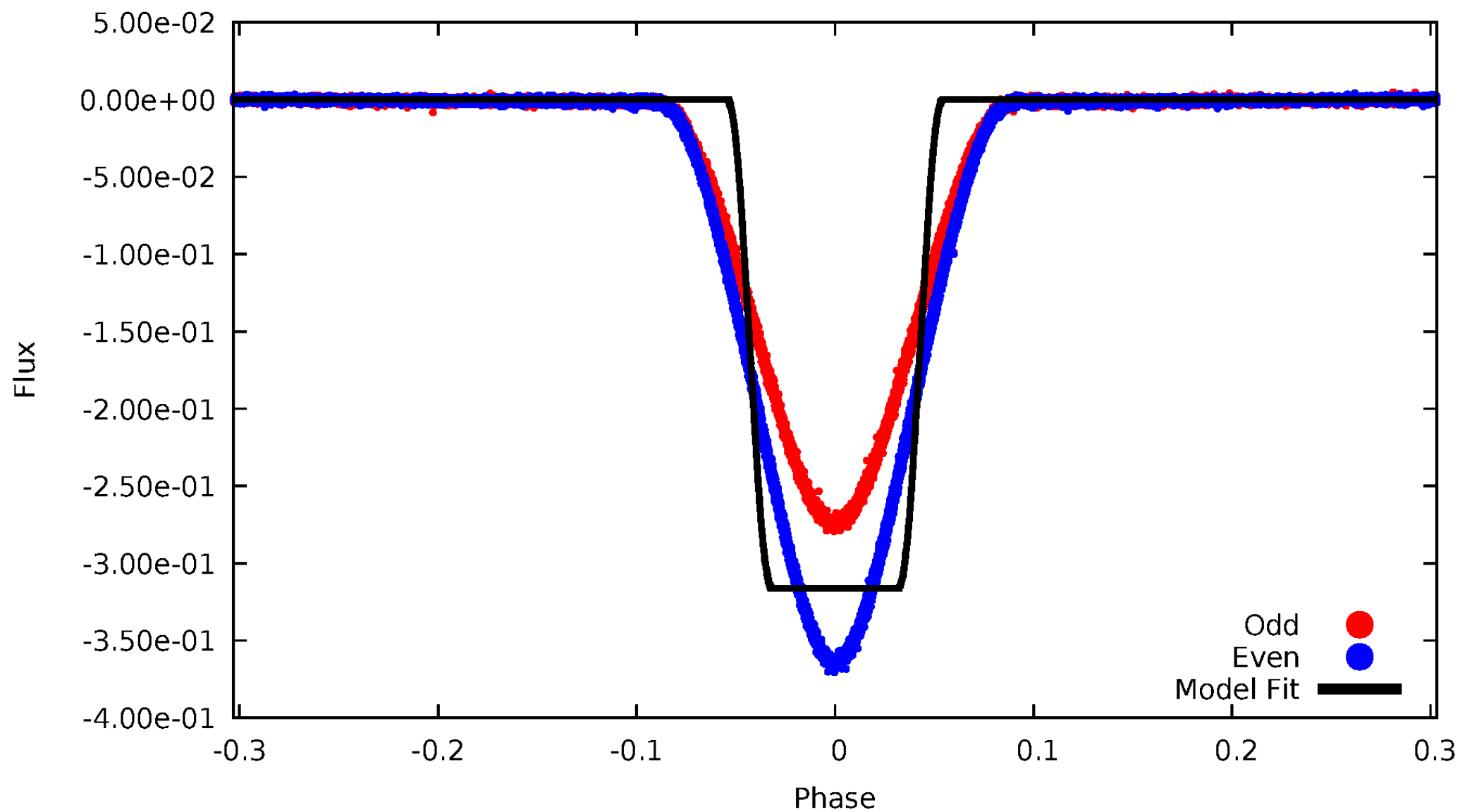
# DV Odd/Even

TCE 008429450-01



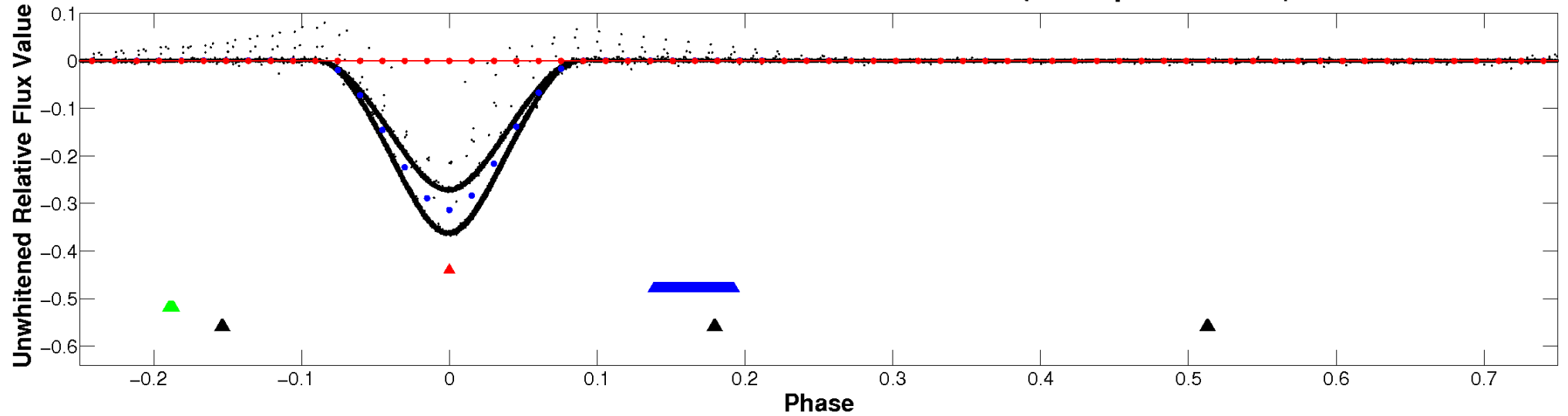
# ALT Odd/Even

TCE 008429450-01



# Non-Whitened Vs. Whitened Light Curve

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

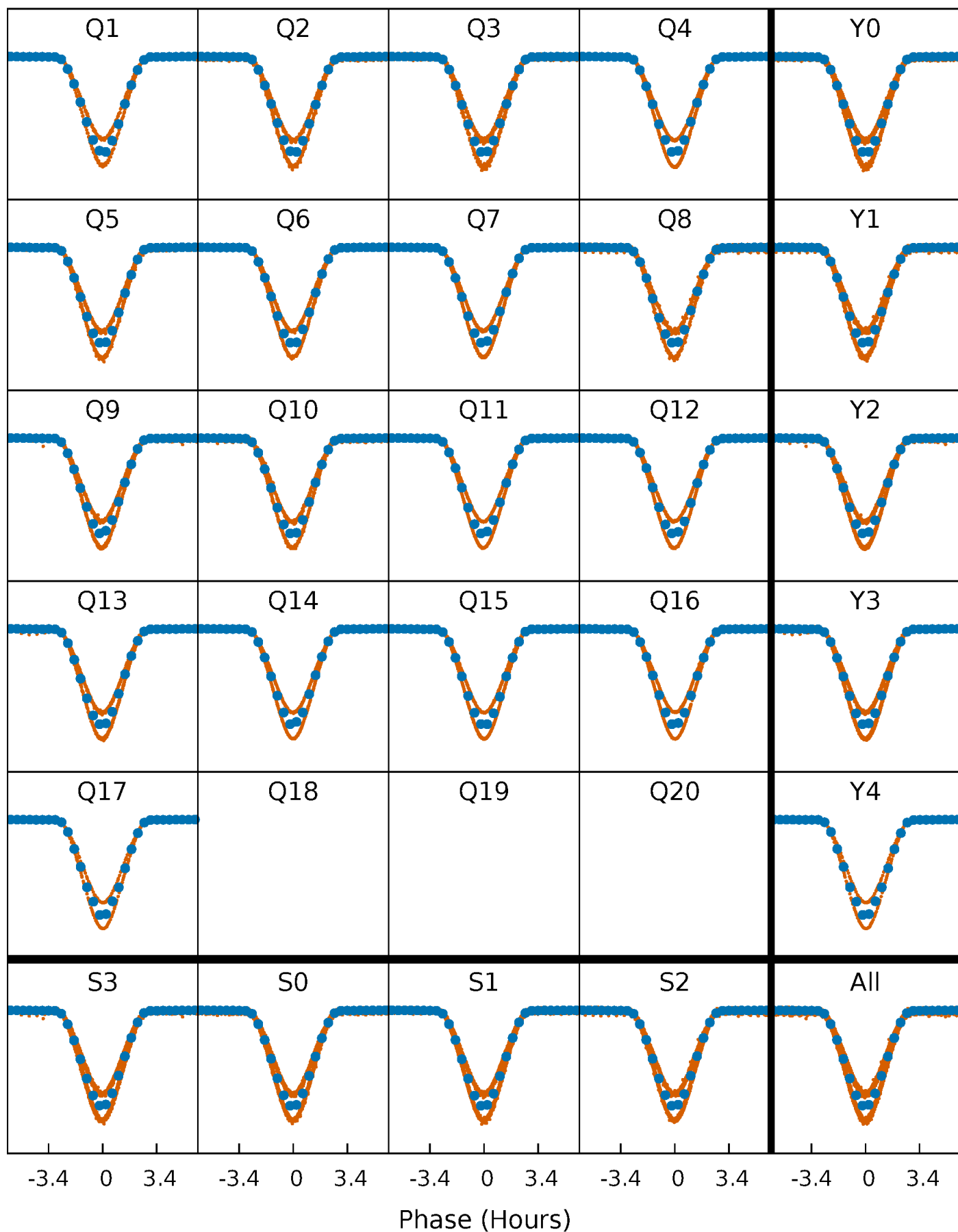


**Planet 1 : Phased Whitened Flux Time Series (TPS Epoch/Period)**



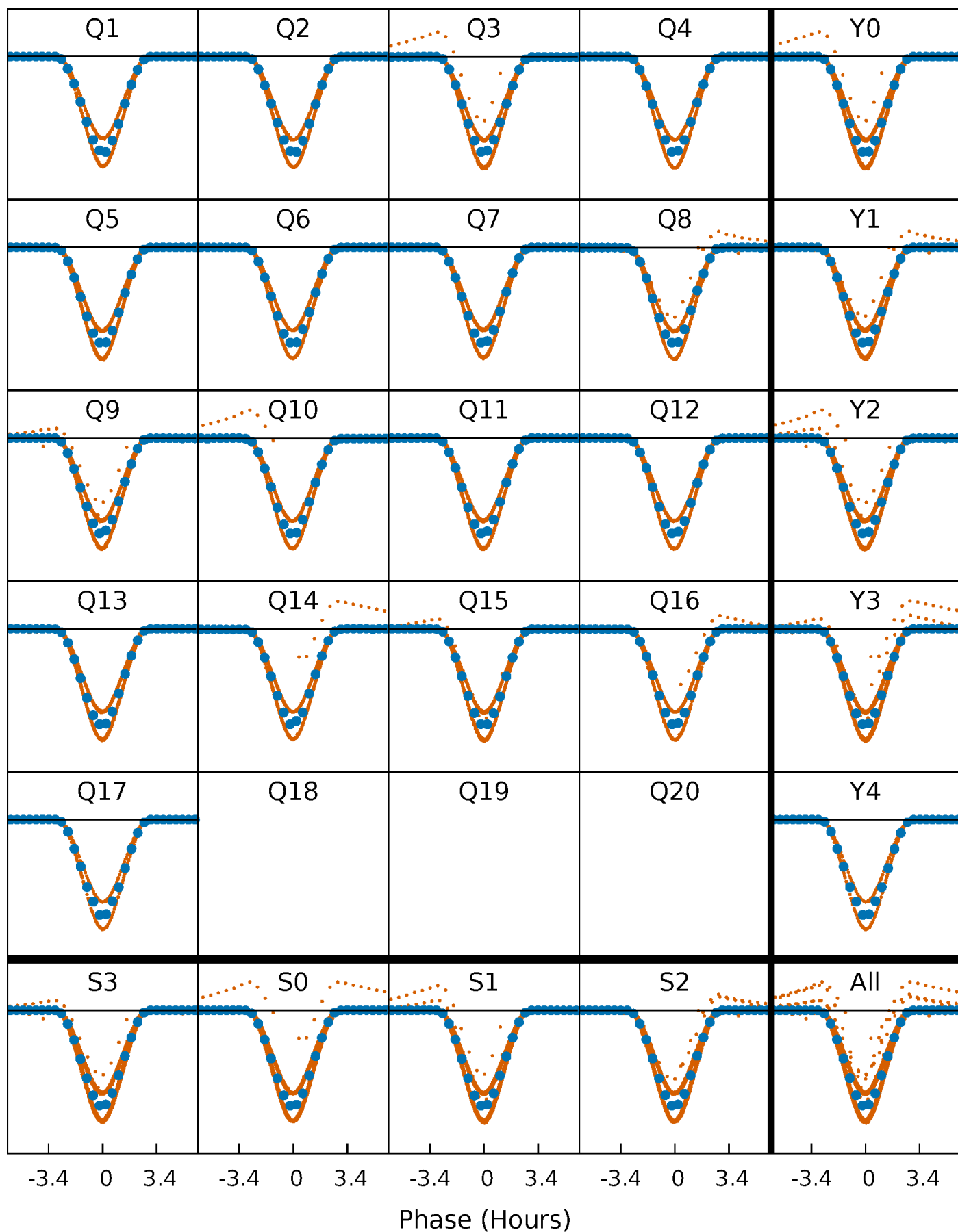
# PDC Quarter-Phased Transit Curves

TCE 008429450-01 P= 1.352577 Days  $T_0=132.038277$  (BKJD)



# DV Quarter-Phased Transit Curves

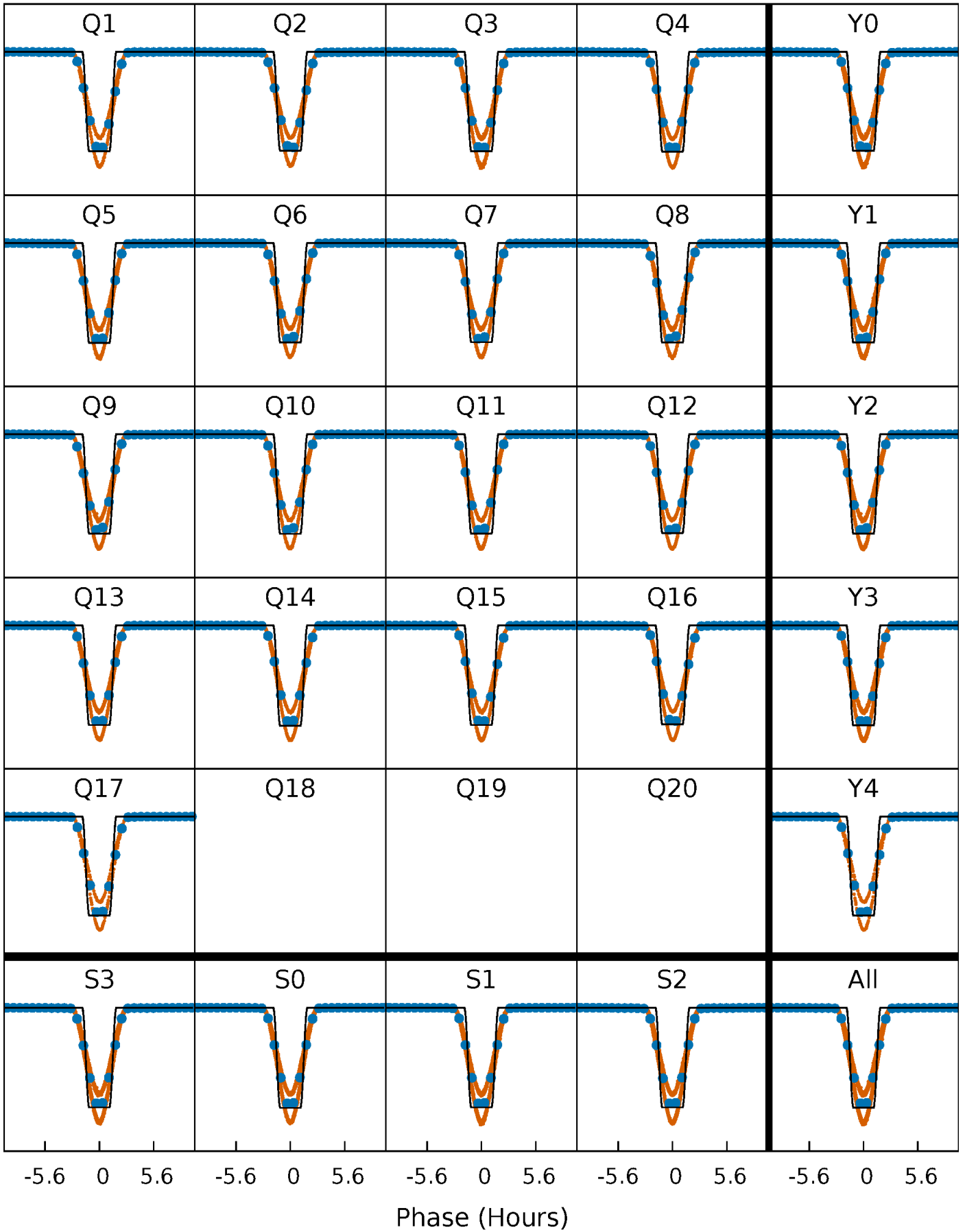
TCE 008429450-01 P= 1.352577 Days  $T_0=132.038277$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

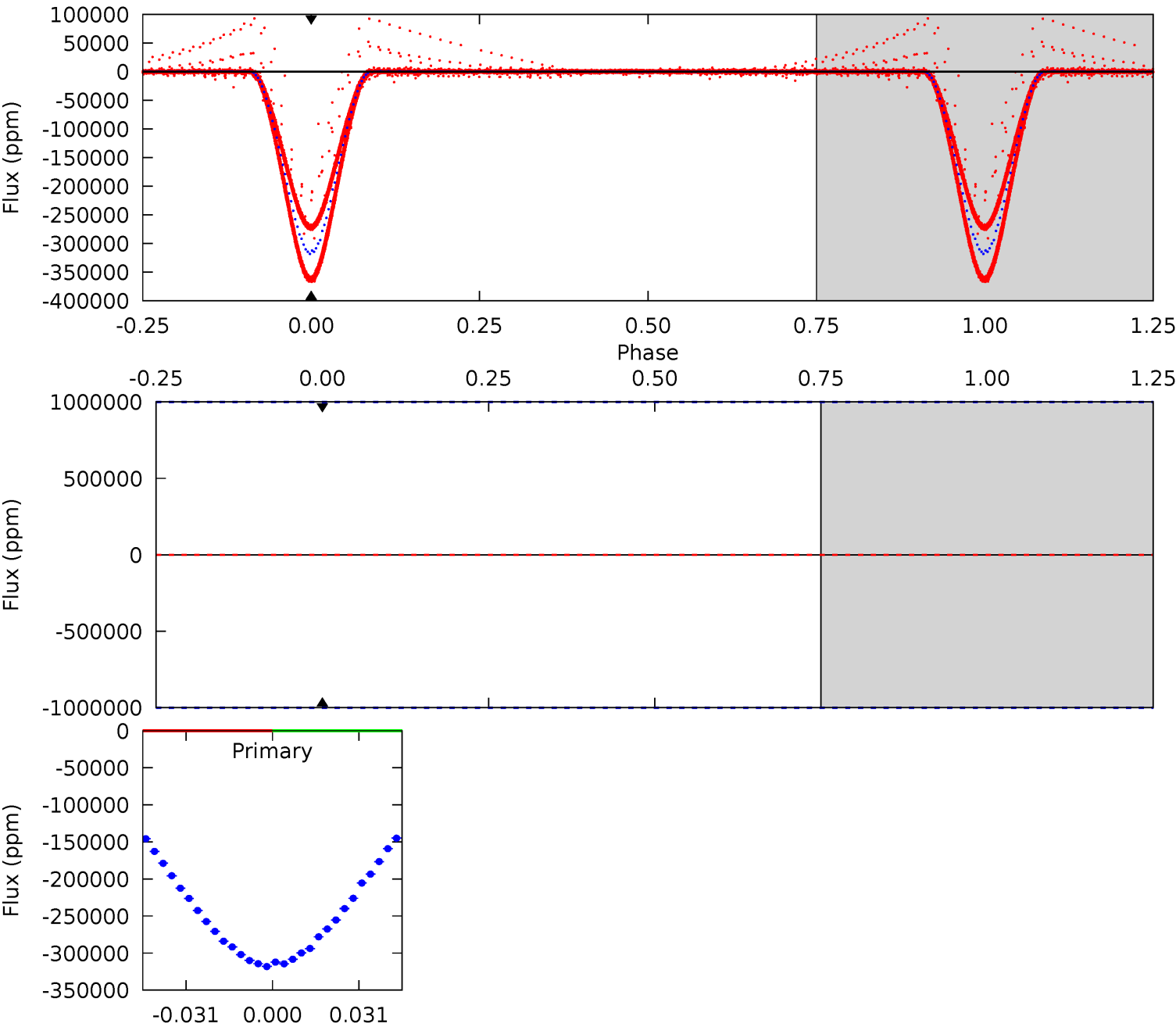
TCE 008429450-01   P= 1.352577 Days    $T_0=132.037396$  (BKJD)



# DV Model-Shift Uniqueness Test

008429450-01, P = 1.352577 Days, E = 130.685700 Days

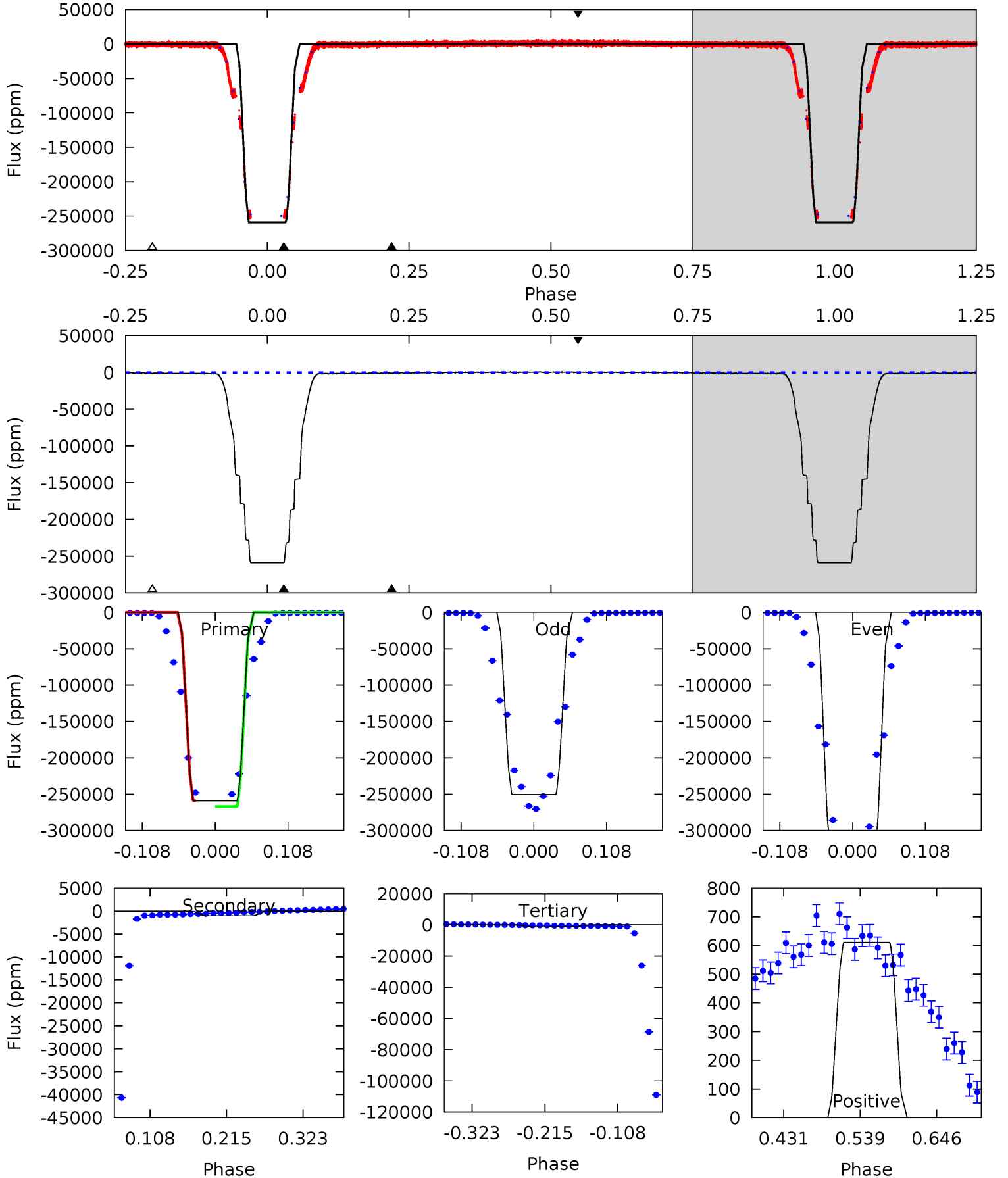
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



# Alt Model-Shift Uniqueness Test

008429450-01, P = 1.352577 Days, E = 130.684819 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
3167	12.6	14.4	7.47	4.55	1.61	12.4	3152	3159	-1.81	5.10	1951	0.94	0.00	0



### Stellar Parameters For KIC 008429450

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$6881^{+214}_{-285}$	$3.831^{+0.456}_{-0.114}$	$-0.500^{+0.250}_{-0.300}$	$2.406^{+0.487}_{-1.136}$	$1.430^{+0.199}_{-0.369}$	$0.145^{+0.674}_{-0.052}$
	+3%/-4%	+12%/-3%	+50%/-60%	+20%/-47%	+14%/-26%	+466%/-36%
Source	PHO54	PHO54	PHO54	DSEP		

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

### Secondary Eclipse Parameters for KIC 008429450-01 / KOI 7039.01

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$0 \pm 1000000$	$72.67^{+32.24}_{-29.40}$	$3866^{+324}_{-474}$	$-4282^{+11464}_{-2919}$	$-0.447^{+10.136}_{-7.950}$
Alt.	$-1029 \pm 82$	$136.35^{+38.05}_{-35.39}$	$3889^{+302}_{-454}$	$-3564^{+286}_{-193}$	$0.022^{+0.016}_{-0.008}$

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

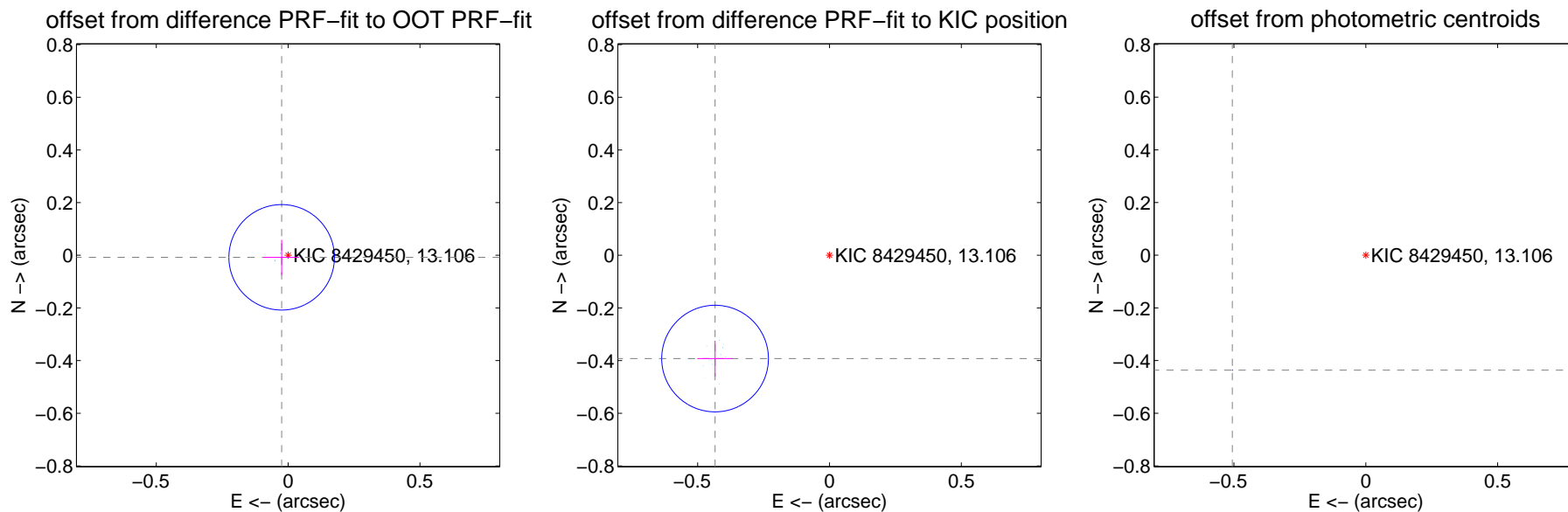
## DV Centroid Data

Supplemental centroid analysis for 008429450-01. Kepler magnitude: 13.11. 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 0.54 arcsec

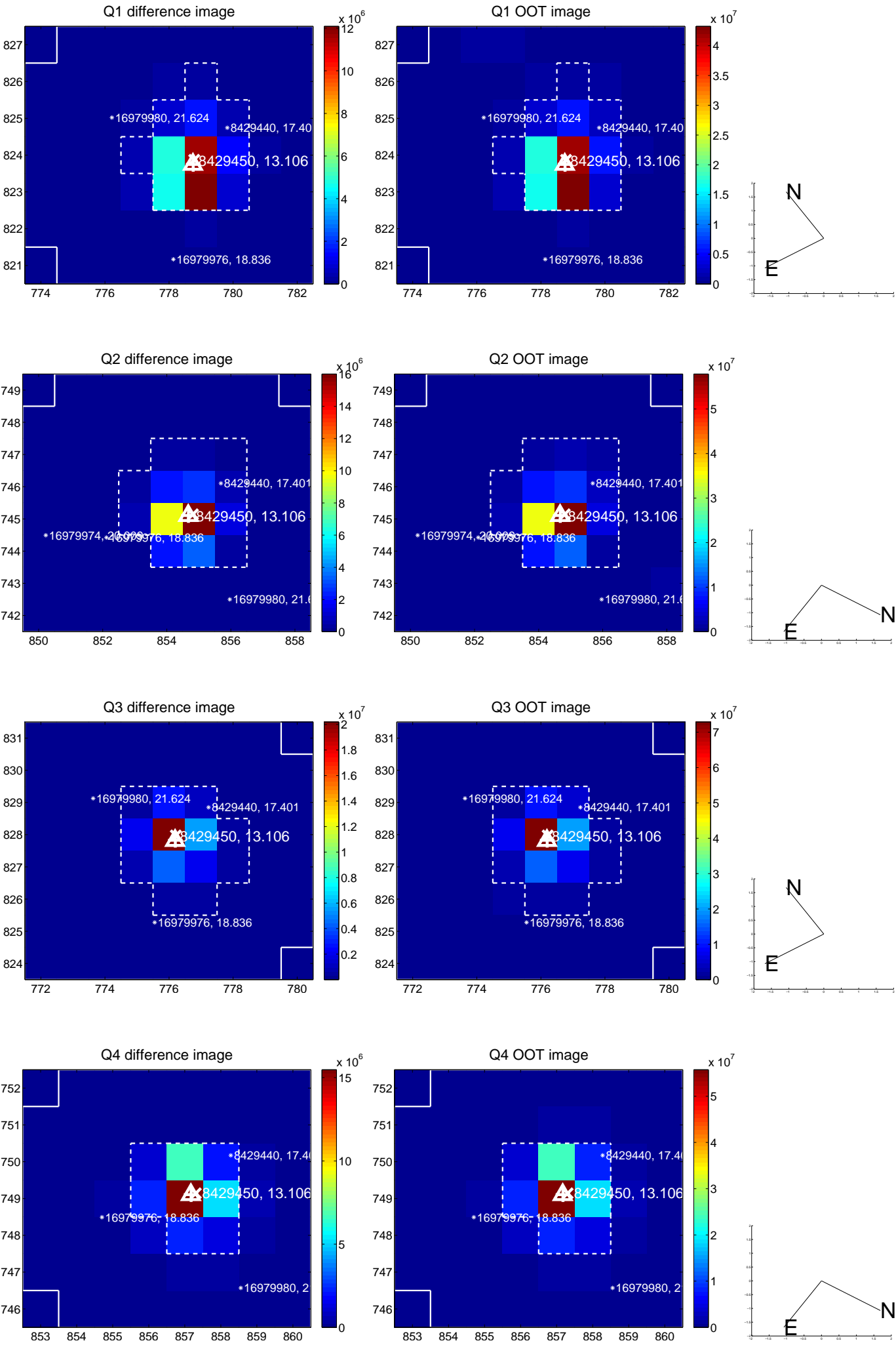
	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.026 \pm 0.067$	0.39	$0.025 \pm 0.067$	$-0.008 \pm 0.067$
PRF-fit source offset from KIC position	$0.585 \pm 0.067$	8.67	$0.434 \pm 0.067$	$-0.392 \pm 0.068$
photometric centroid source offset	$0.67 \pm 0.00$	2712.96	$0.51 \pm 0.00$	$-0.44 \pm 0.00$



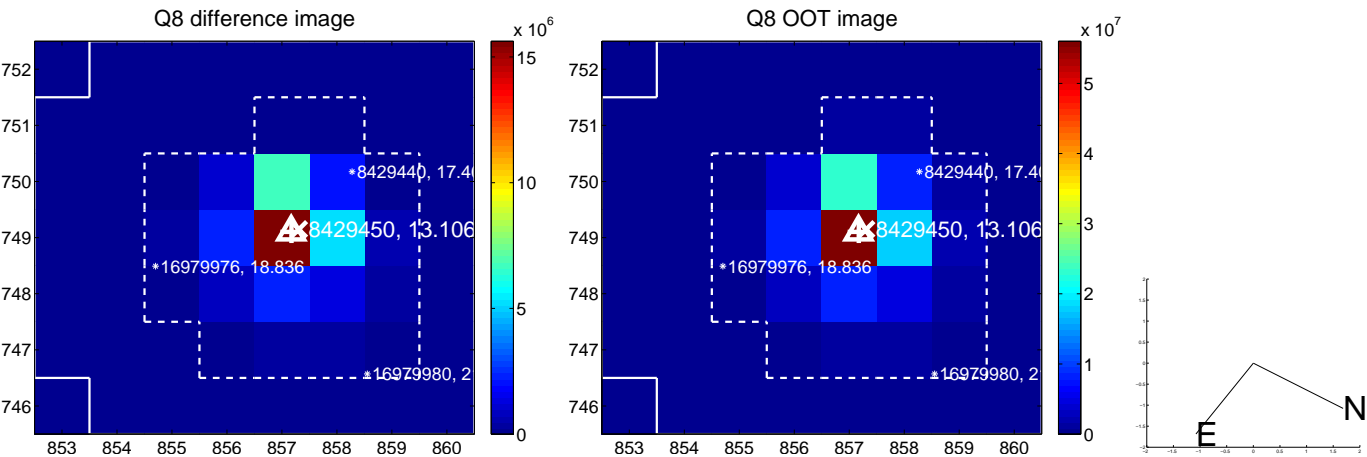
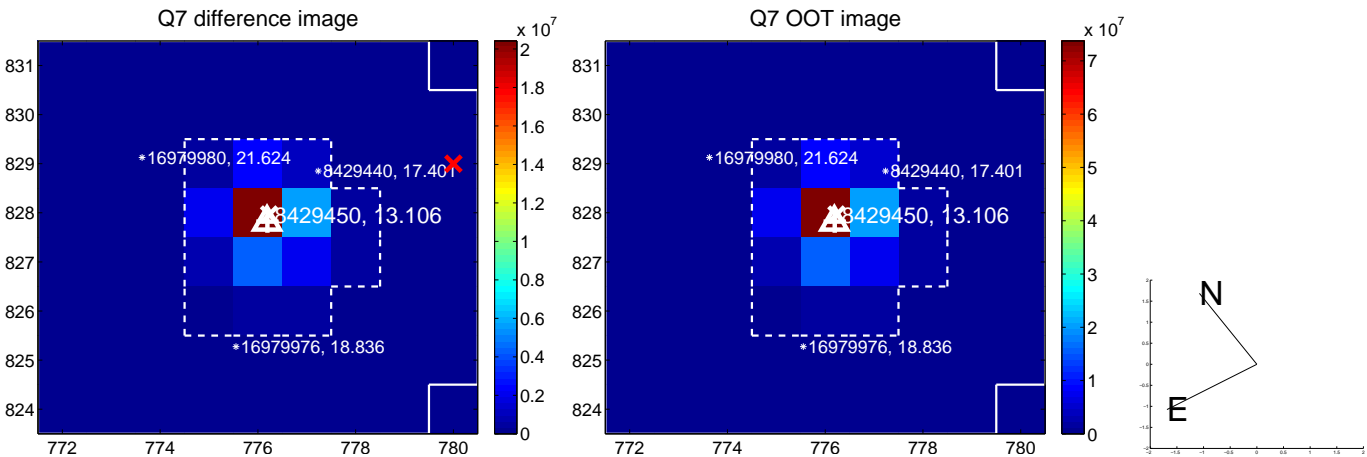
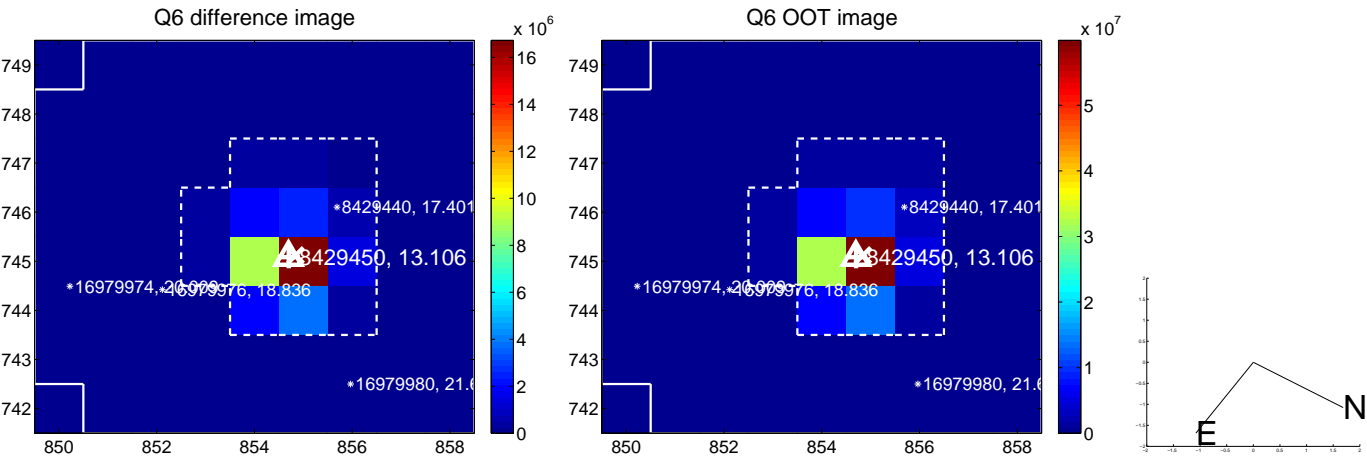
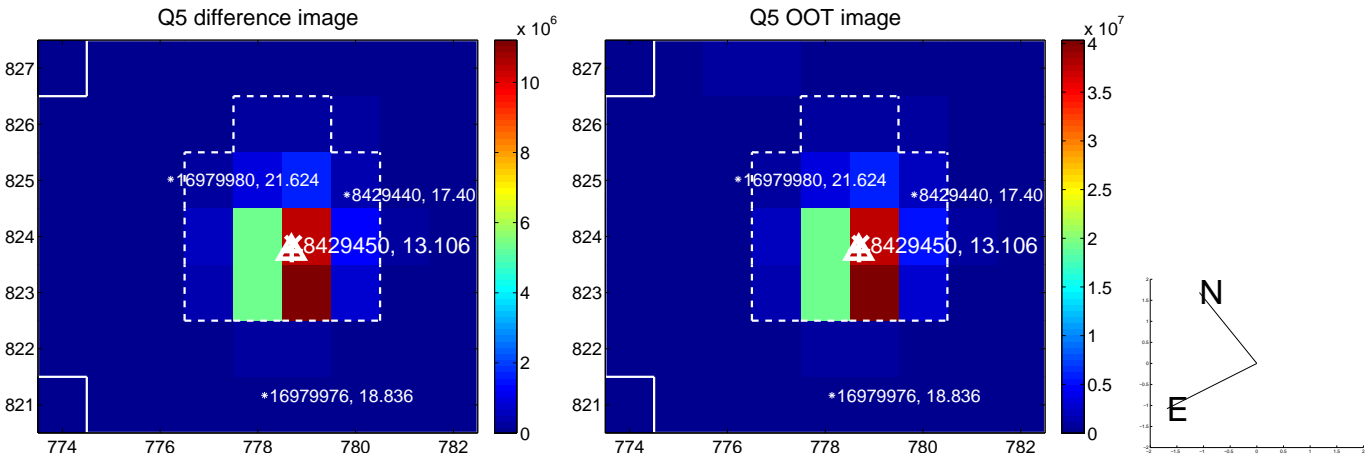
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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



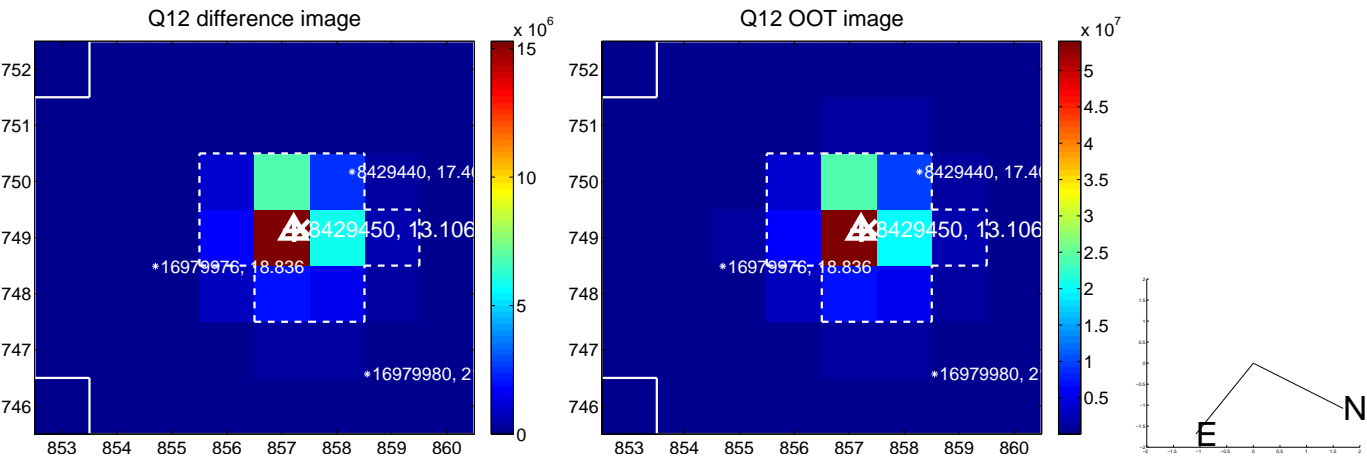
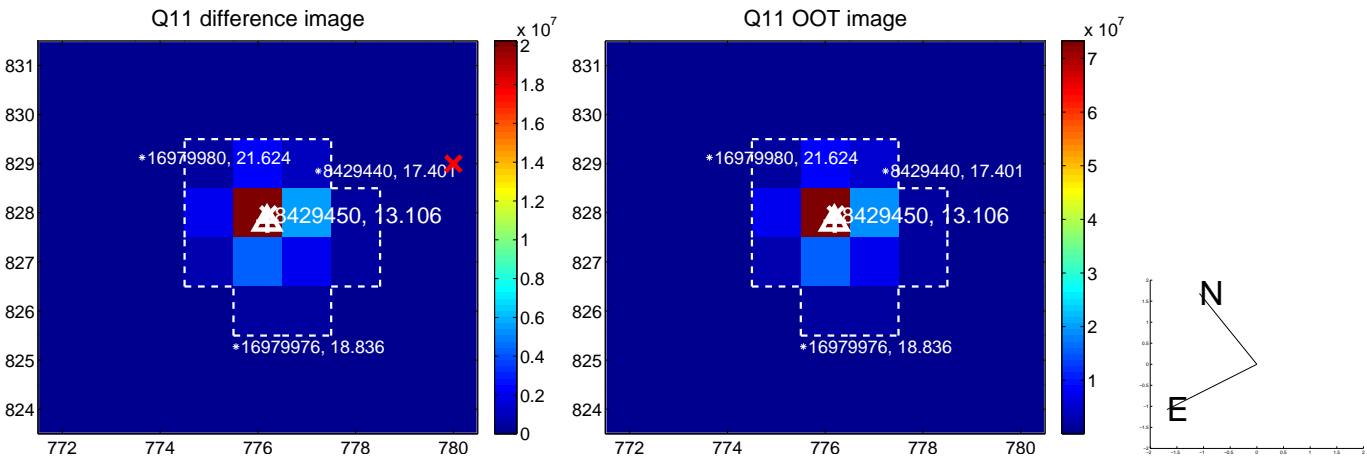
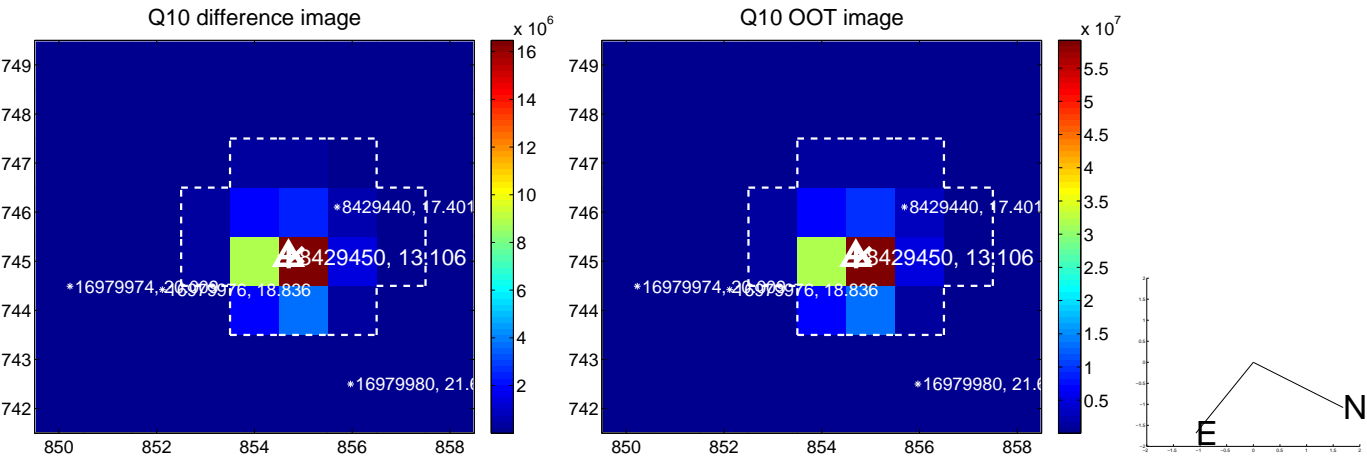
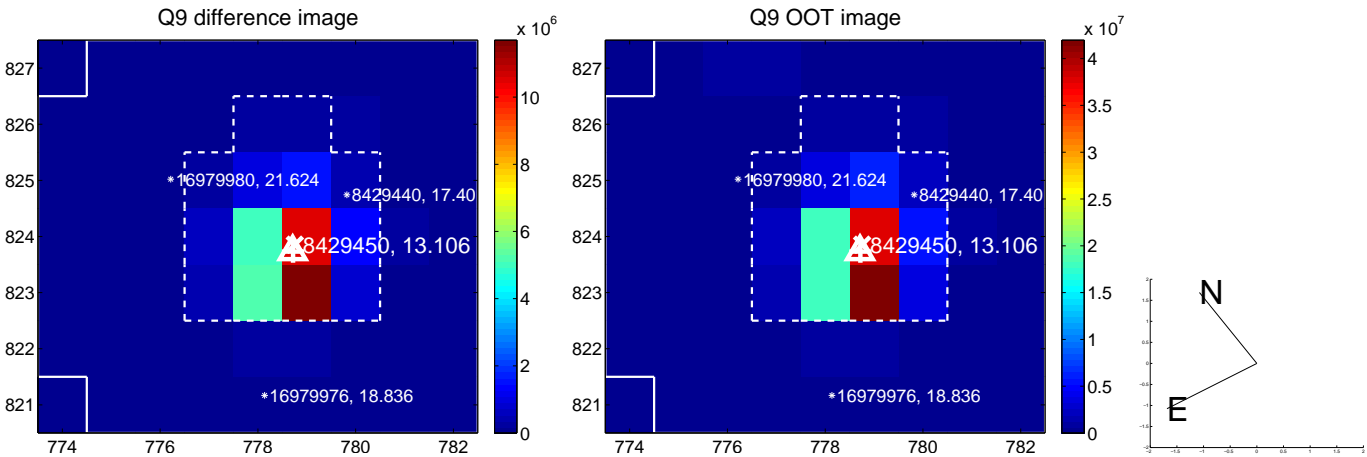
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



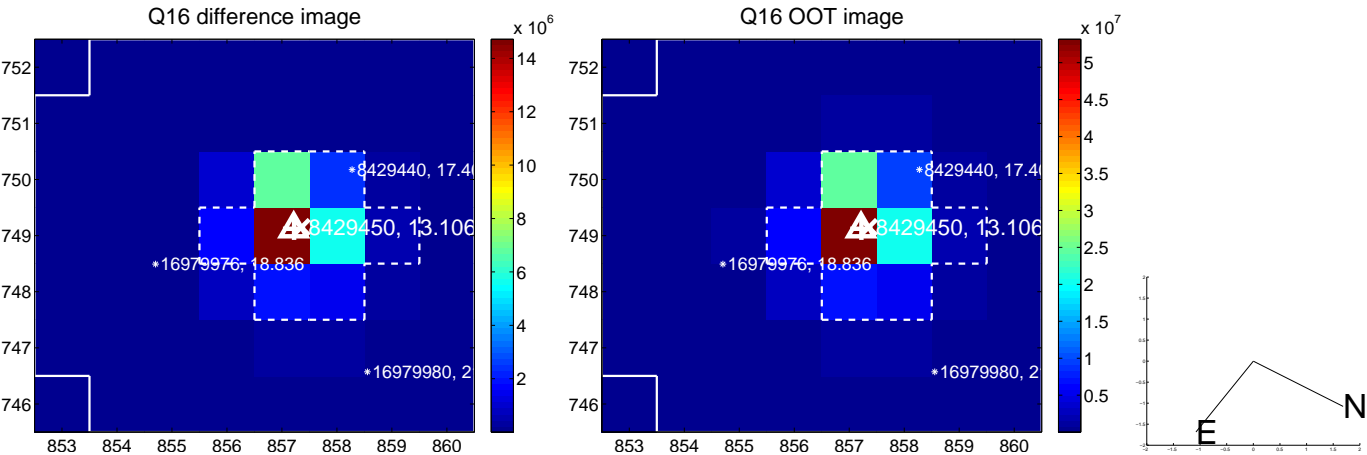
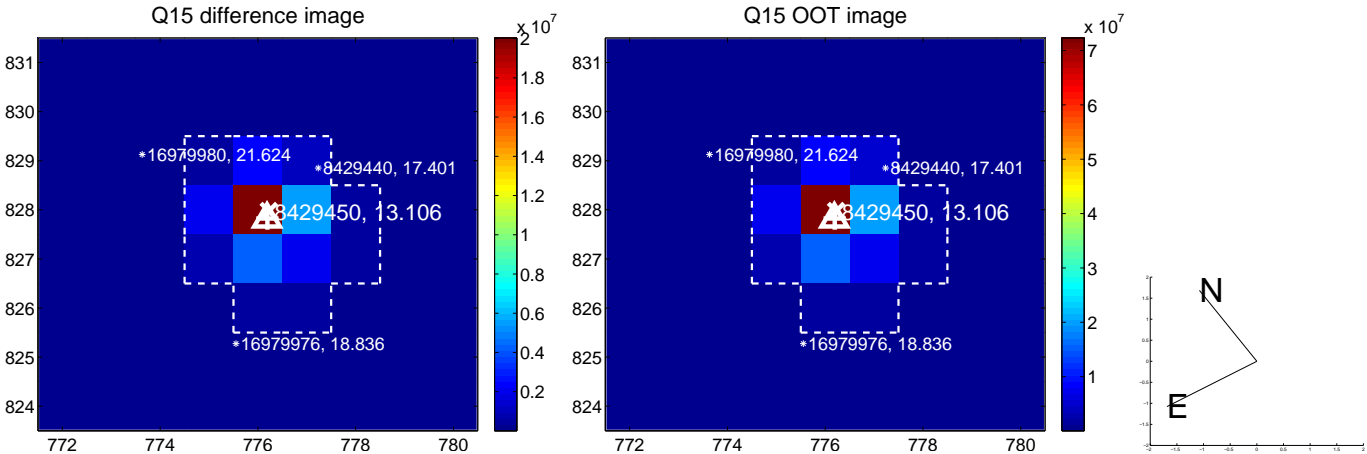
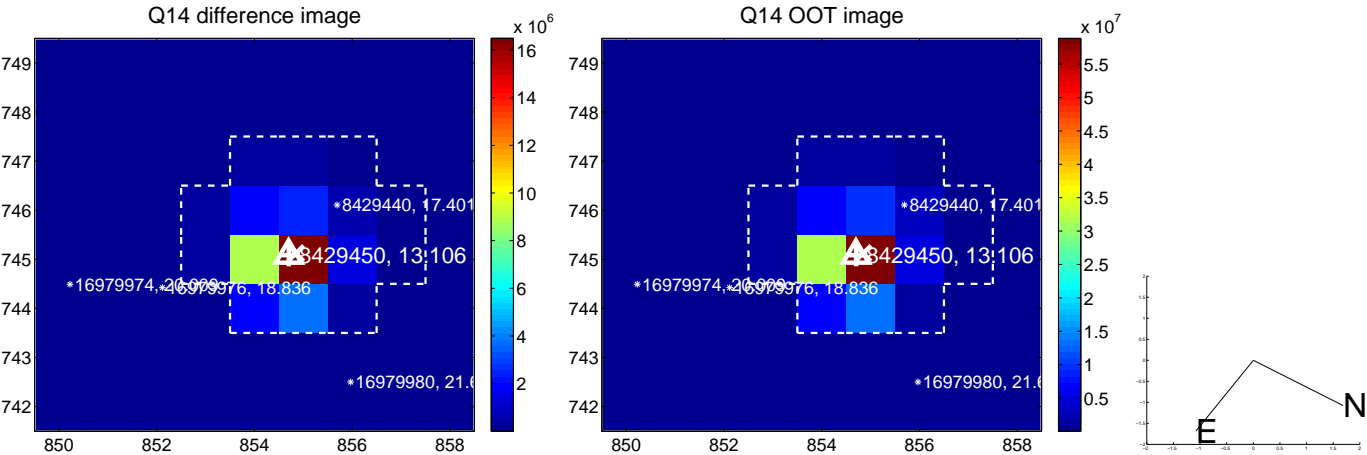
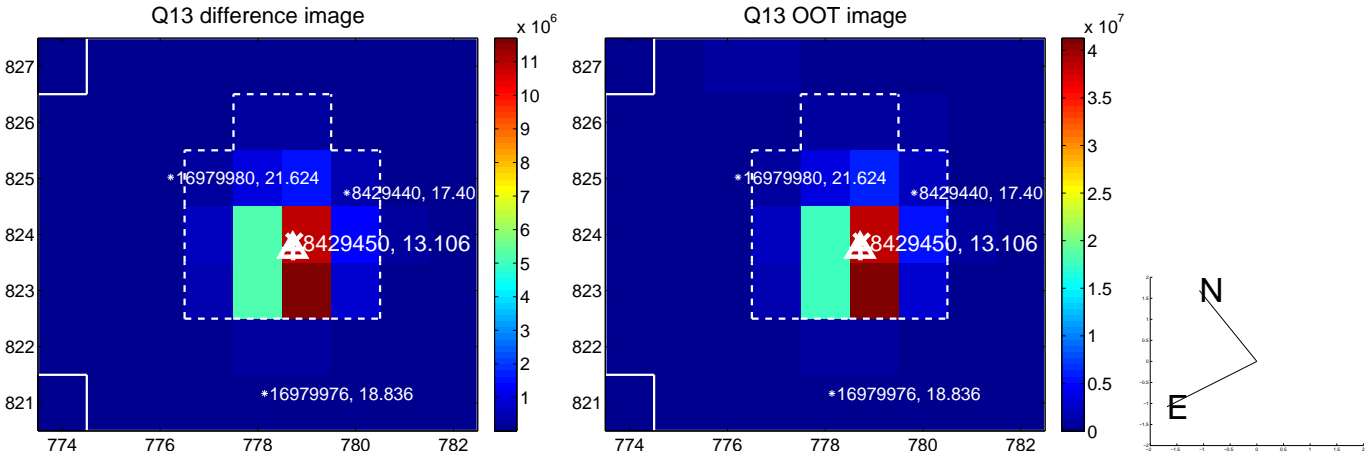
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



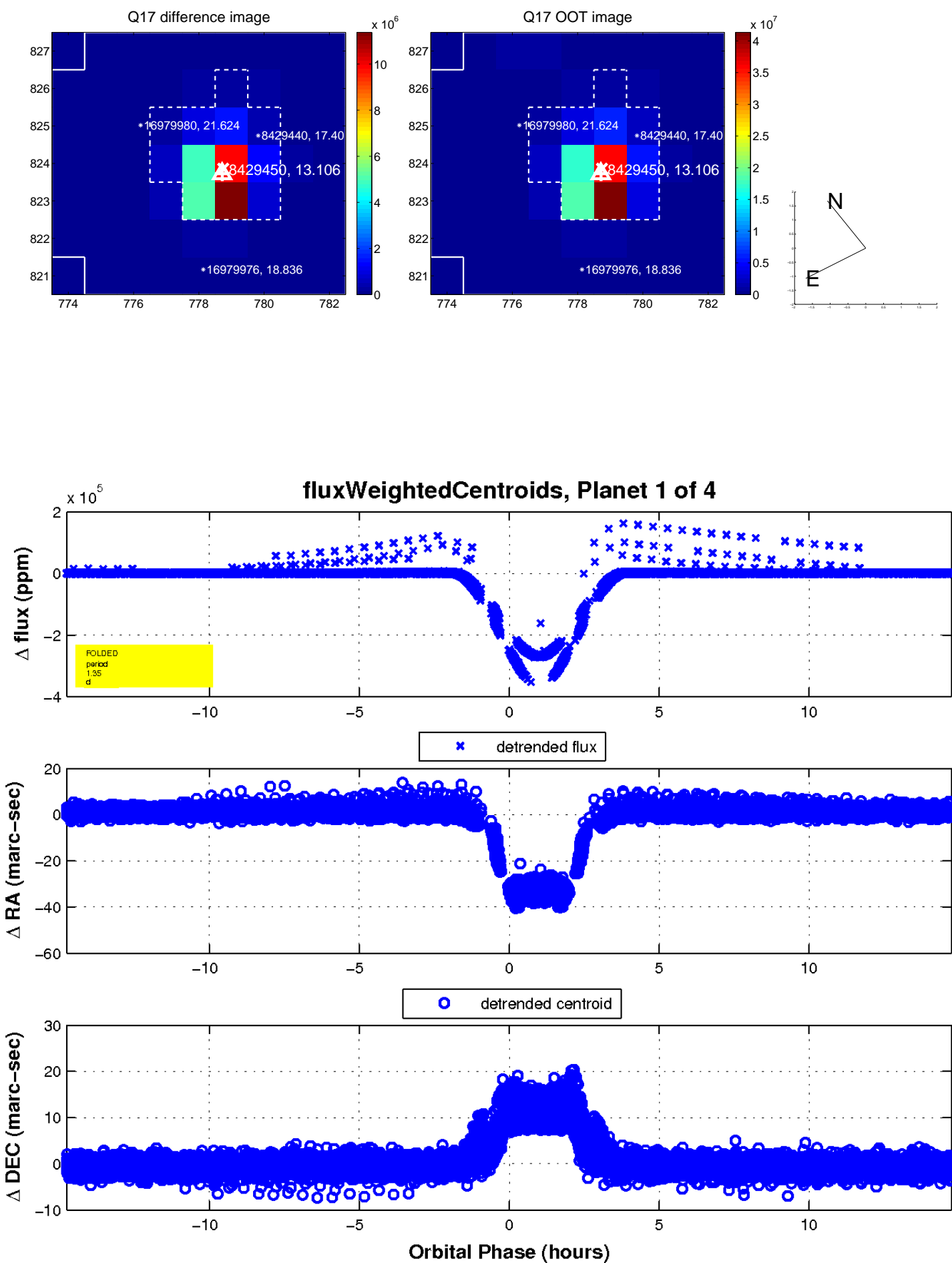
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



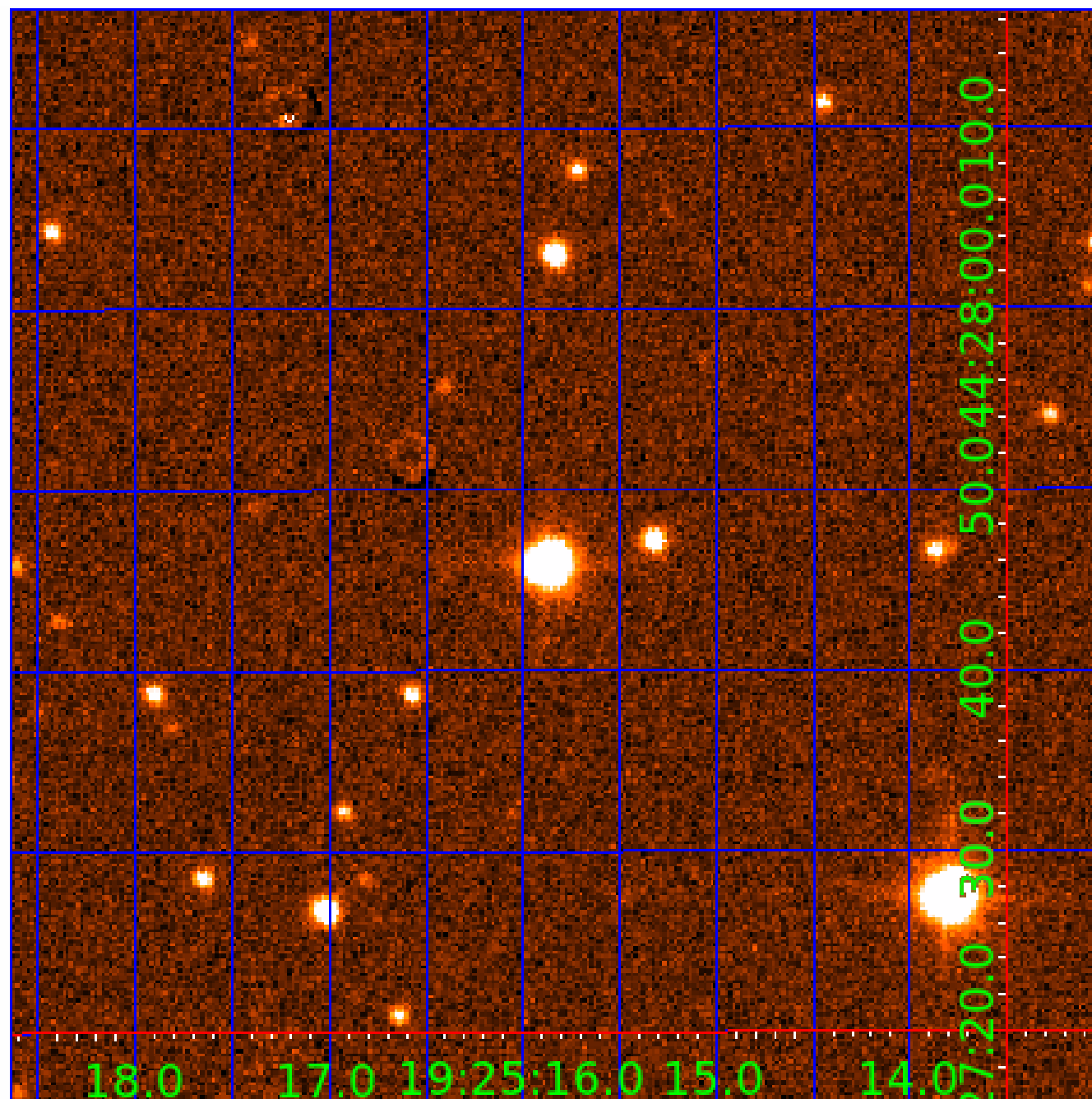
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.





UKIRT Image

Declination



# KIC 008429450

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008429450-01	OBS	7039.01	1.352577	132.038277	315707.7	3.000	23853.9	-1.0	2.41	6881	80.40	15976.50
008429450-02	OBS	No	5.410582	134.930210	10689.2	15.000	3420.1	-1.0	2.41	6881	25.13	2515.97
008429450-03	OBS	No	27.051450	131.785994	24773.9	1.500	591.7	-1.0	2.41	6881	38.45	294.29
008429450-04	OBS	No	82.958179	143.100780	17021.9	2.000	430.8	-1.0	2.41	6881	31.80	66.05

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008429450-01	OBS	FP	0.00	0	1	0	0	DEPTH_ODDEVEN_DV—DEPTH_ODDEVEN_ALT—MOD_ODDEVEN_ALT—HAS_SEC_TCE—CENT_NOFITS
008429450-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—RESIDUAL_TCE—CENT_NOFITS
008429450-03	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—RESIDUAL_TCE—CENT_NOFITS
008429450-04	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_NOFITS

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

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

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

Ephemeris Match Information For 008429450-02

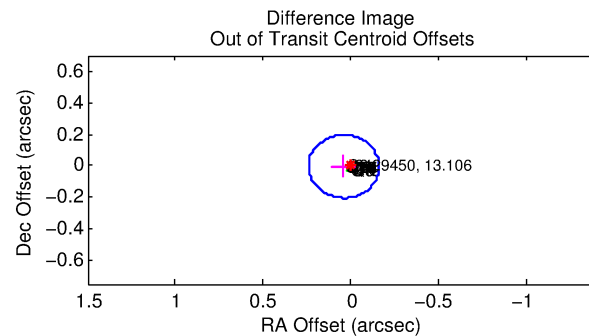
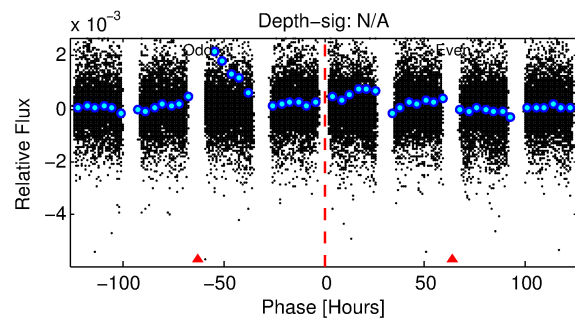
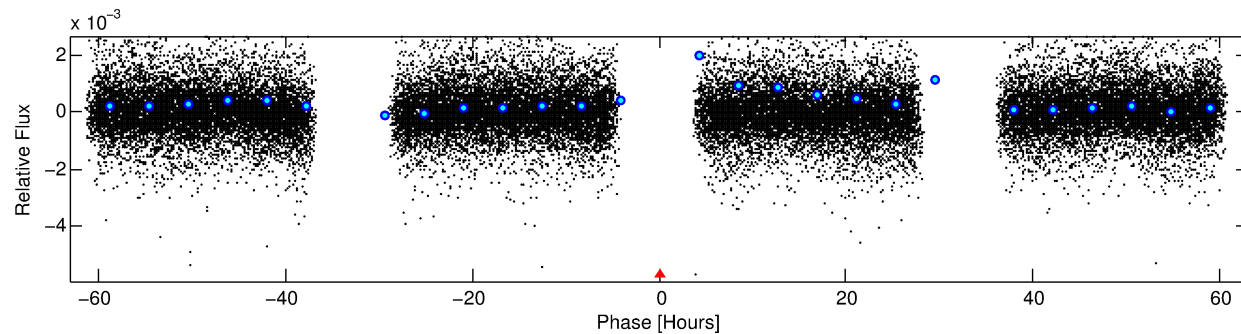
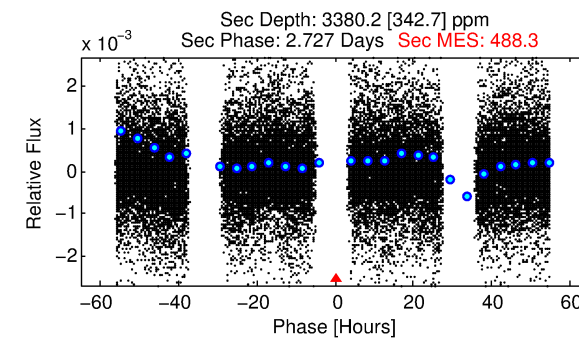
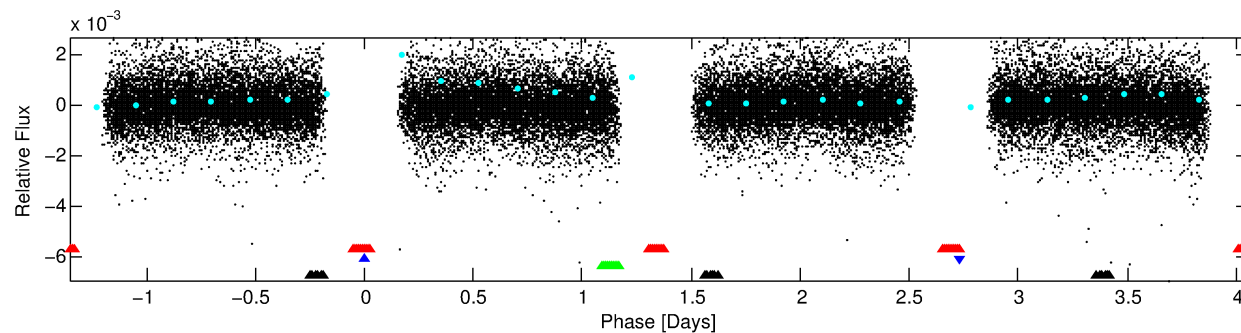
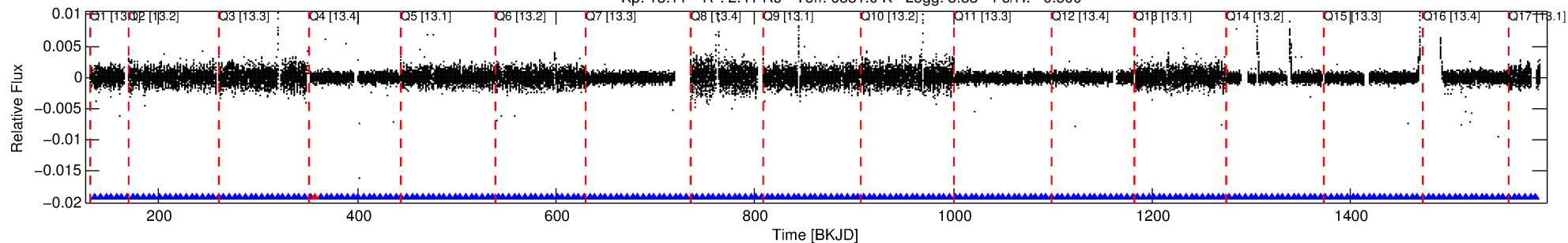
No Significant Match Found

# DV One-Page Summary

KIC: 8429450 Candidate: 2 of 4 Period: 5.411 d

KOI: K07039 Corr: No Ephemeris Match

Kp: 13.11 R\*: 2.41 Rs Teff: 6881.0 K Logg: 3.83 Fe/H: -0.500



## TPS TCE Results:

Period = 5.41058 d  
Epoch = 134.9302 BKJD

DV fit results are unavailable

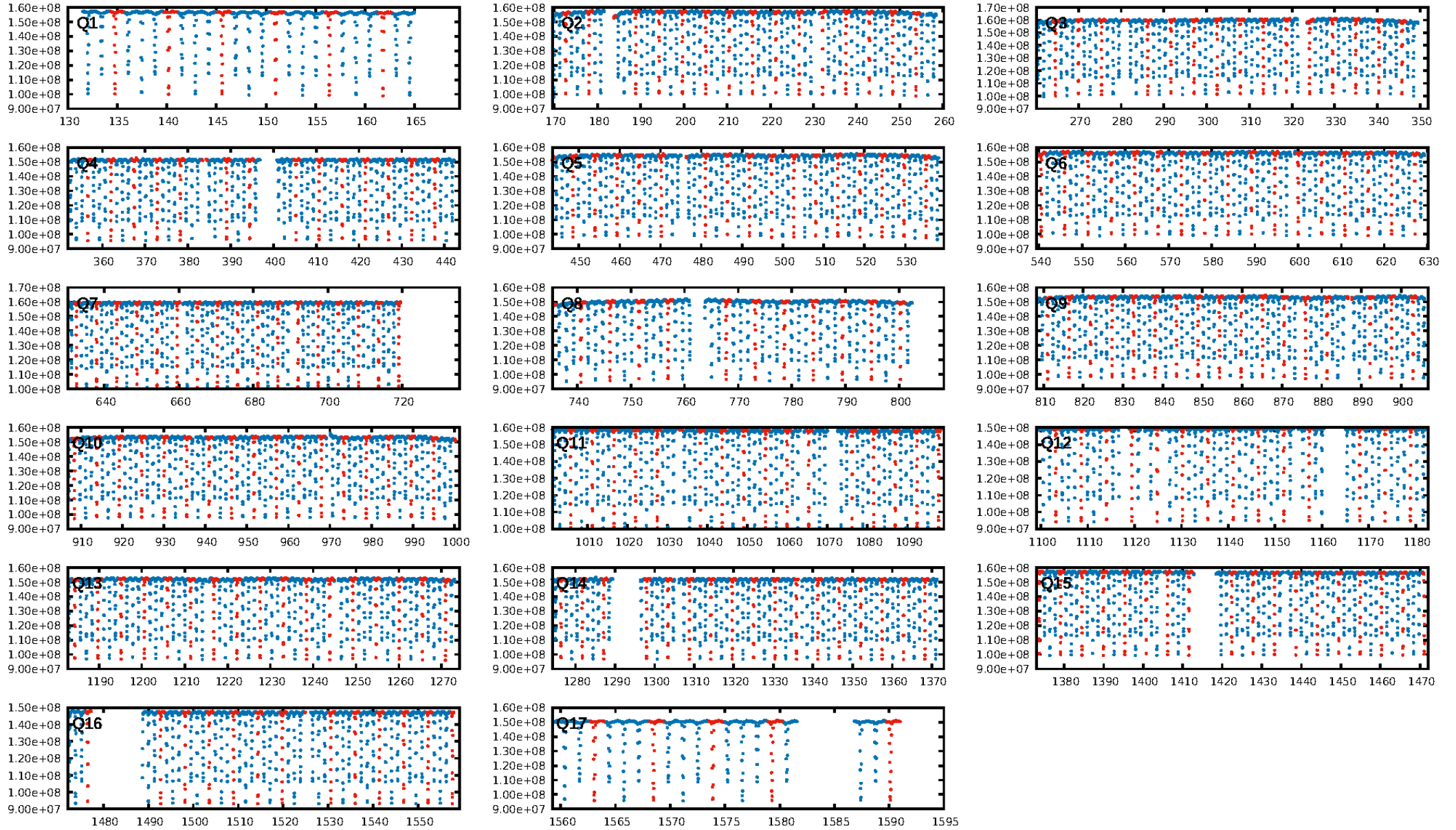
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [6.37 $\sigma$ ]  
LongPeriod-sig: 100.0% [34.45 $\sigma$ ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGoF-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [245/246]  
GhostDiagnostic-chr: 2.97  
Centroid-sig: N/A  
Centroid-so: 0.679 arcsec [62.87 $\sigma$ ]  
OotOffset-rm: 0.041 arcsec [0.62 $\sigma$ ]  
KicOffset-rm: 0.591 arcsec [8.79 $\sigma$ ]  
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]

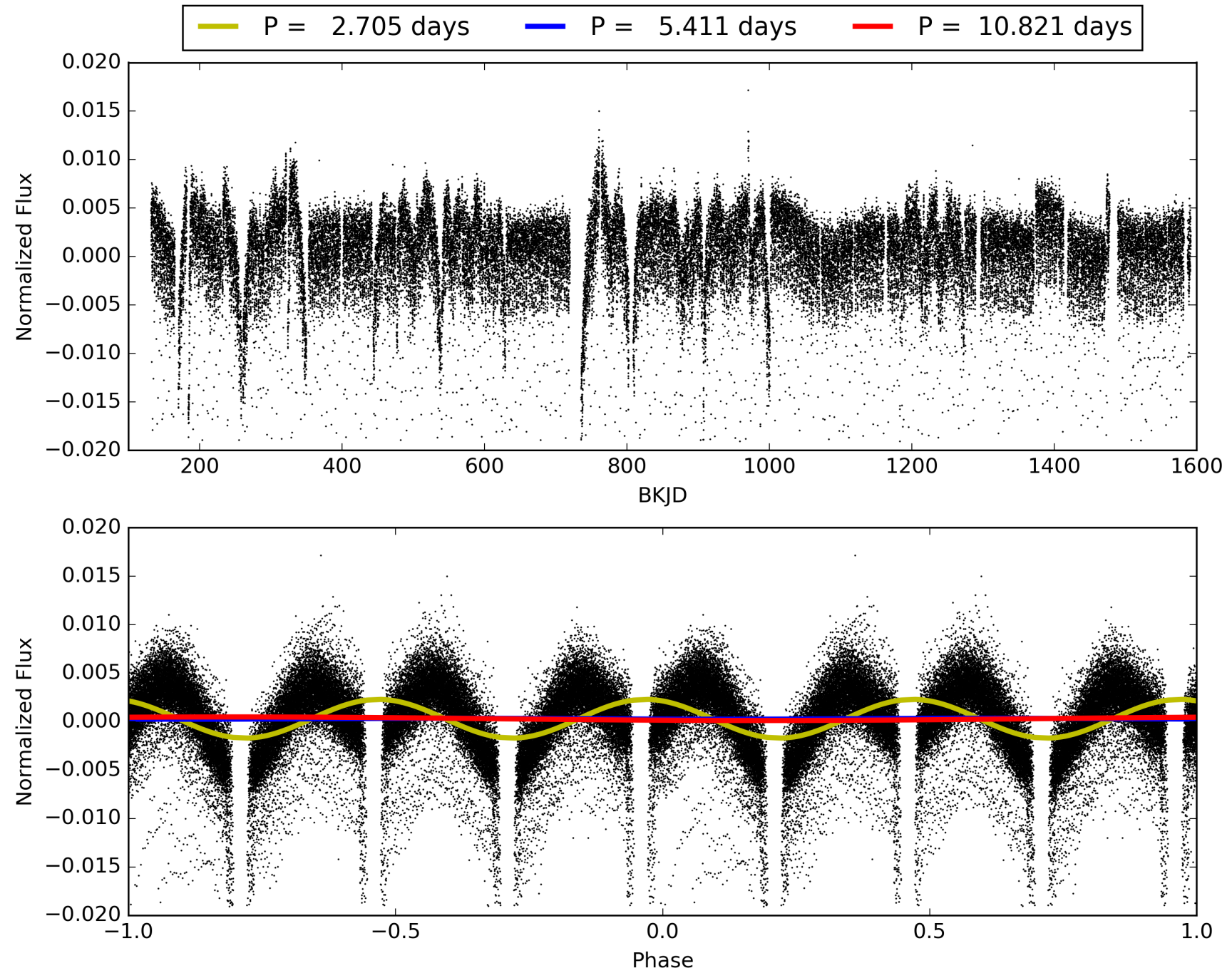
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 19:54:48 Z

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

# TCE 008429450-02, PDC Light Curves



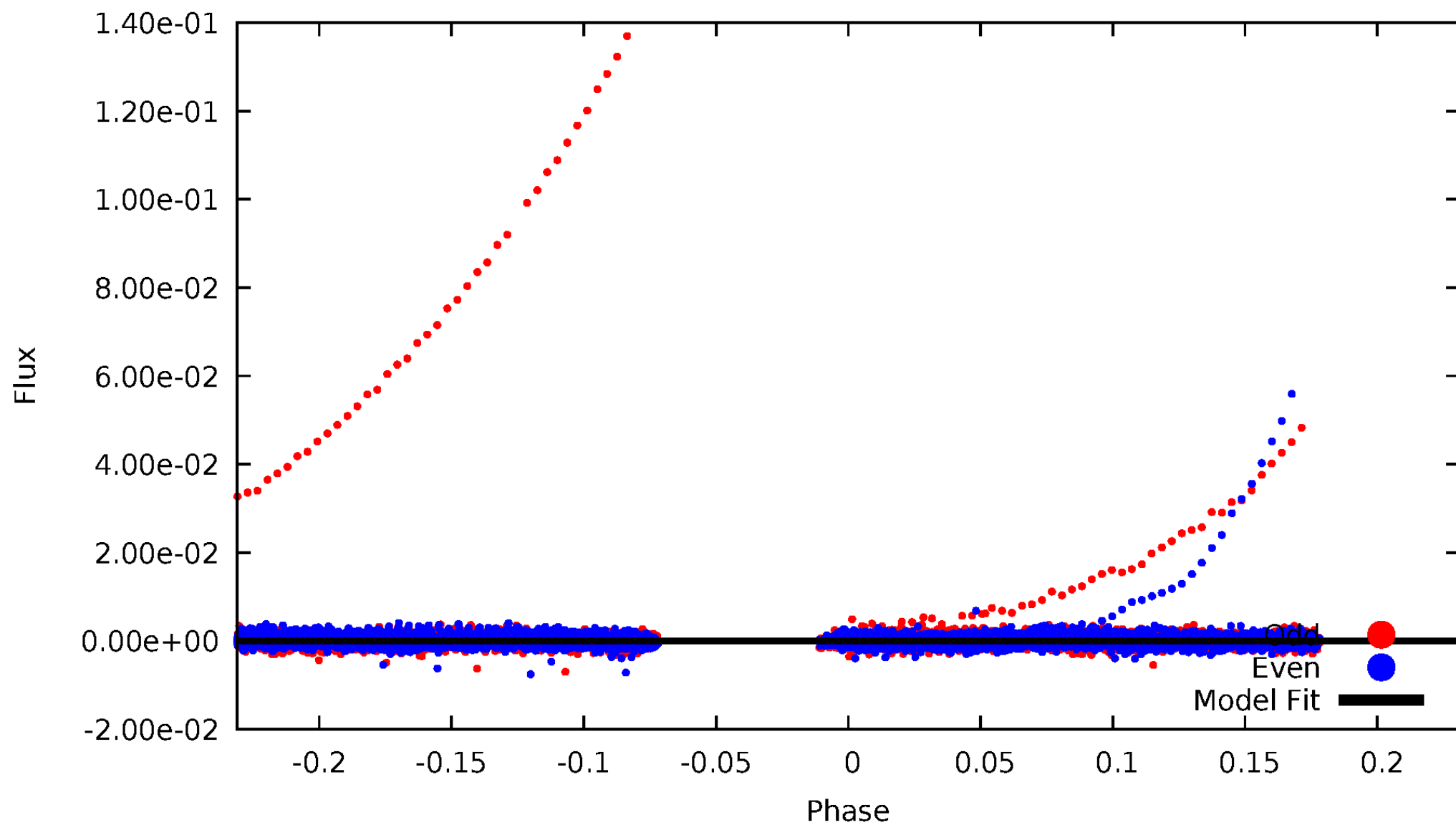
# TCE 008429450-02





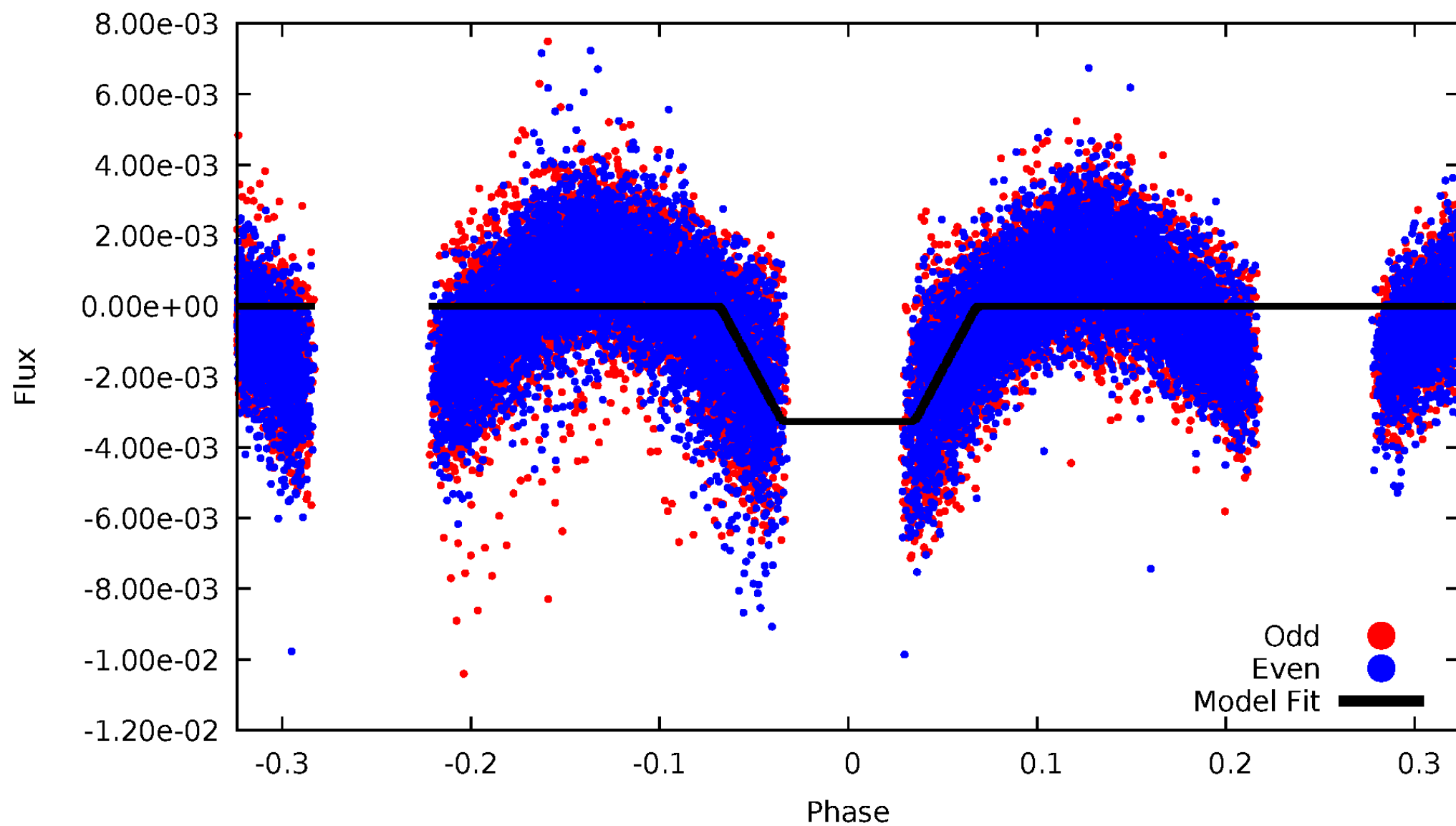
# DV Odd/Even

TCE 008429450-02



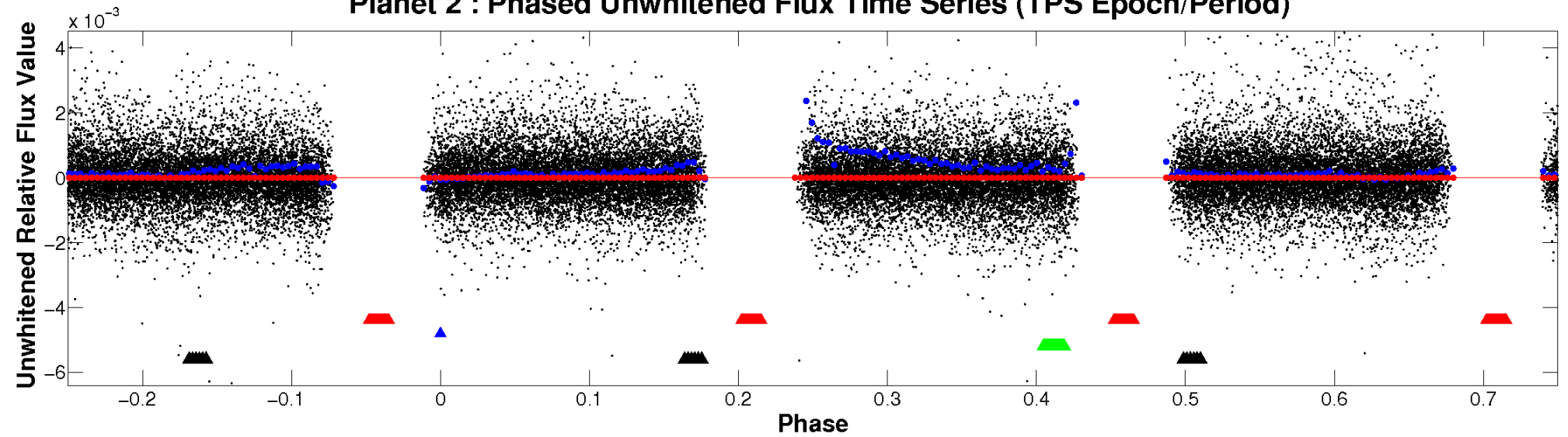
# ALT Odd/Even

TCE 008429450-02



# Non-Whitened Vs. Whitened Light Curve

**Planet 2 : Phased Unwhitened Flux Time Series (TPS Epoch/Period)**

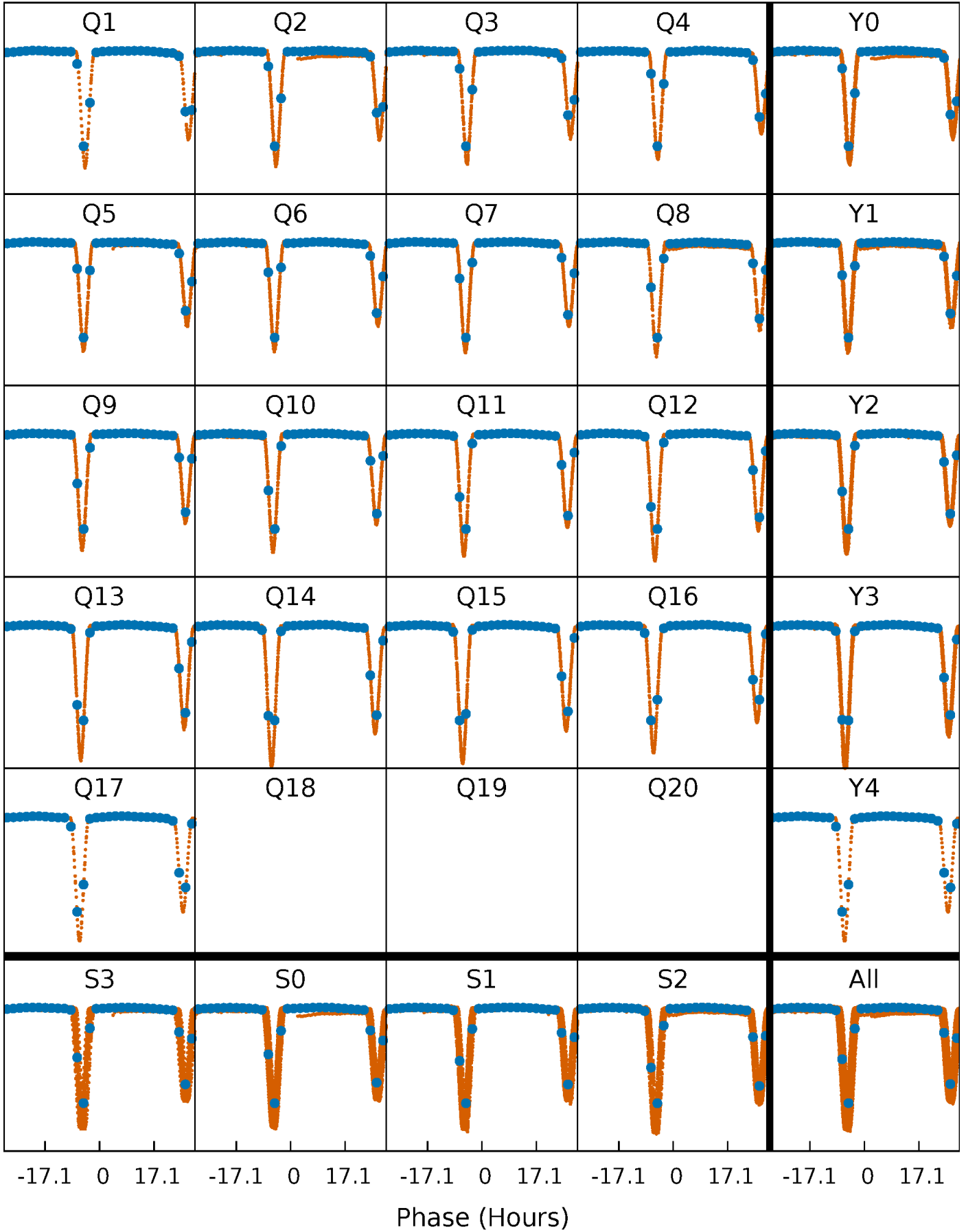


**Planet 2 : Phased Whitened Flux Time Series (TPS Epoch/Period)**



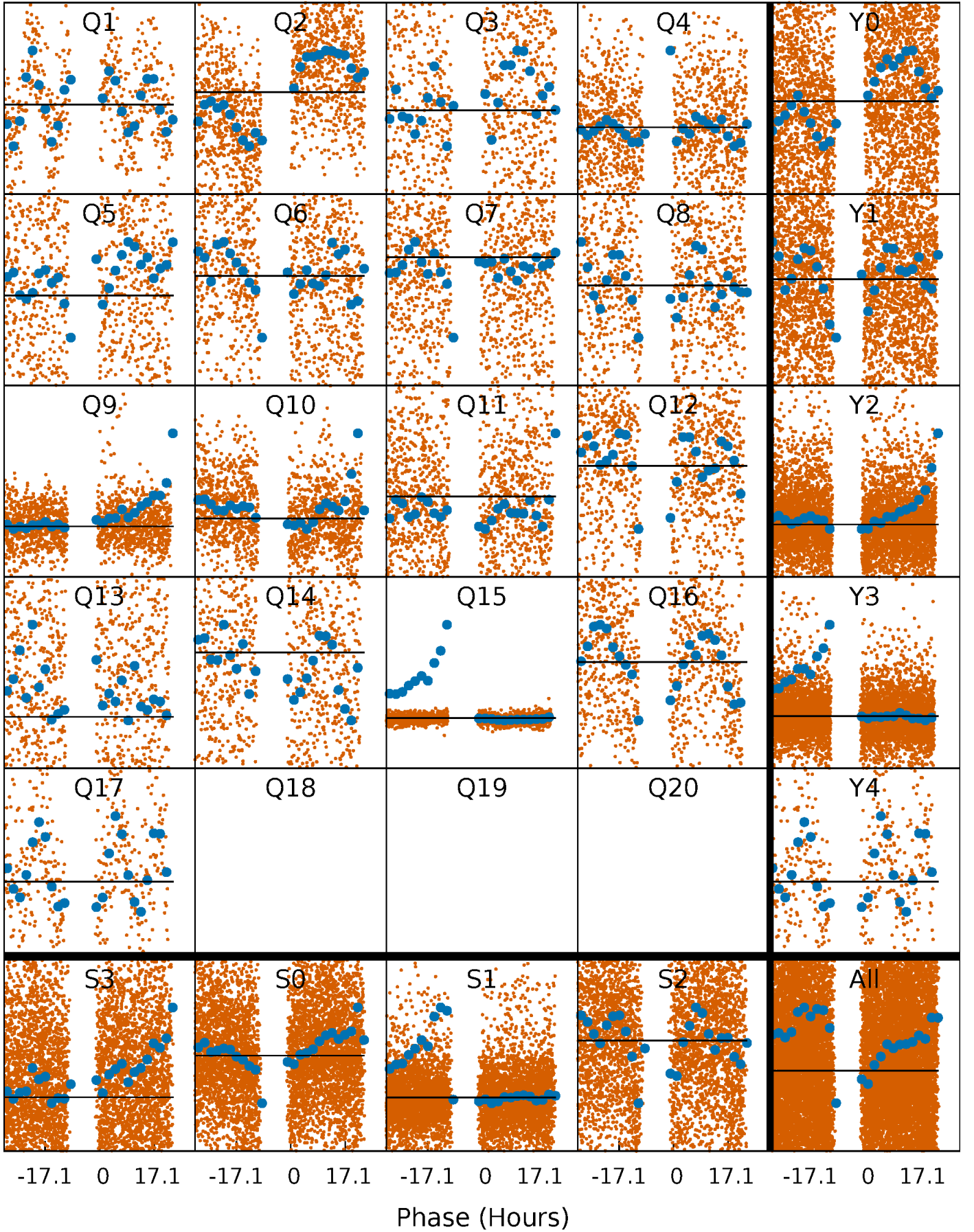
# PDC Quarter-Phased Transit Curves

TCE 008429450-02   P= 5.410582 Days    $T_0=134.930209$  (BKJD)



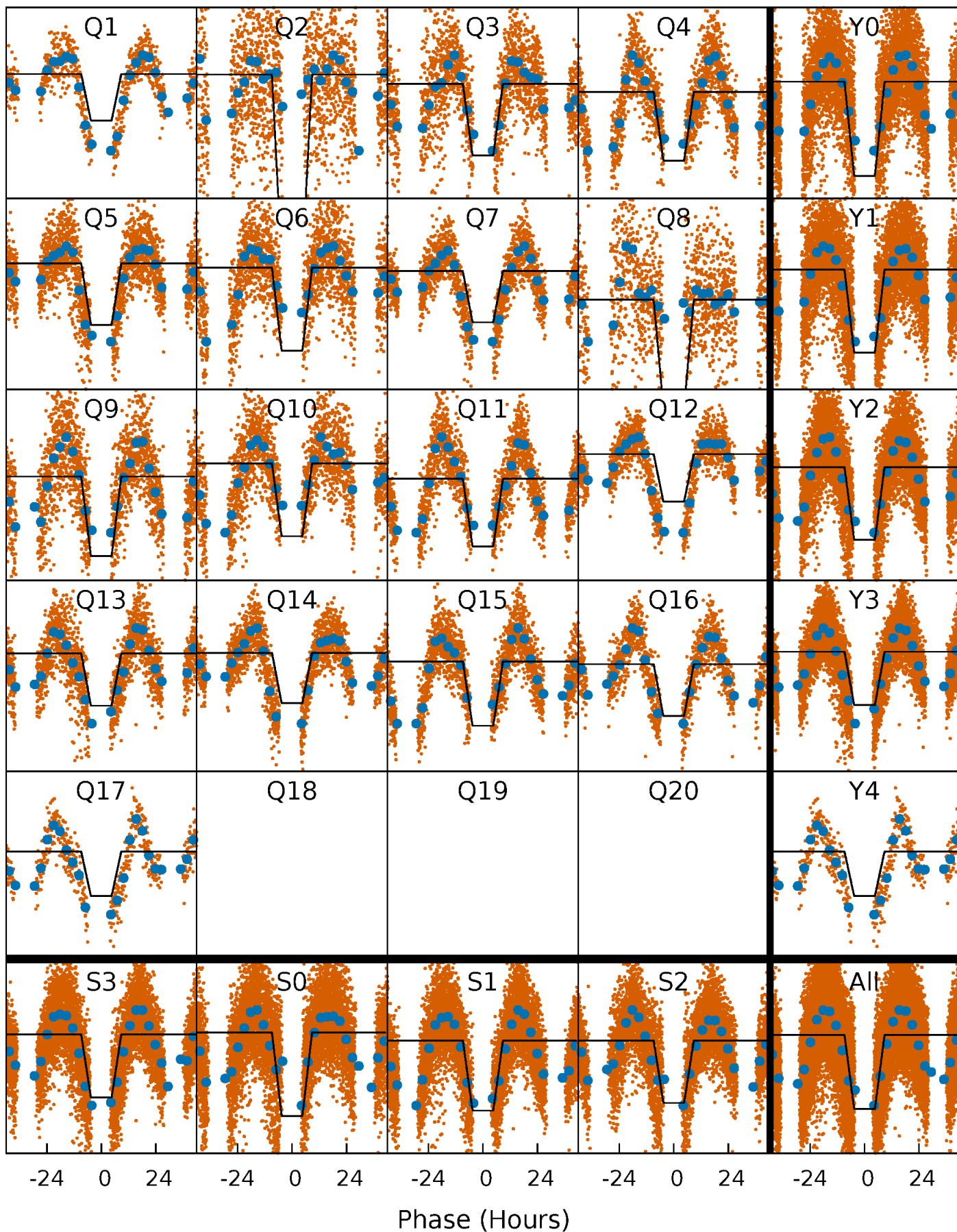
# DV Quarter-Phased Transit Curves

TCE 008429450-02   P= 5.410582 Days    $T_0=134.930209$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

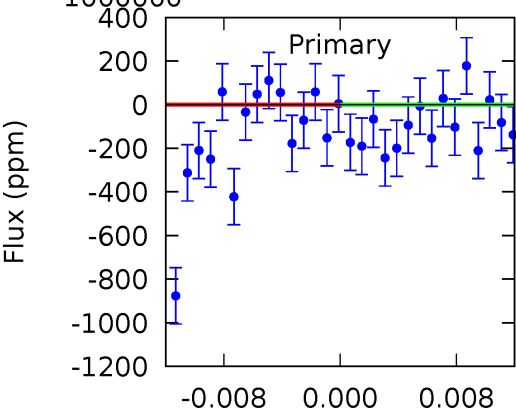
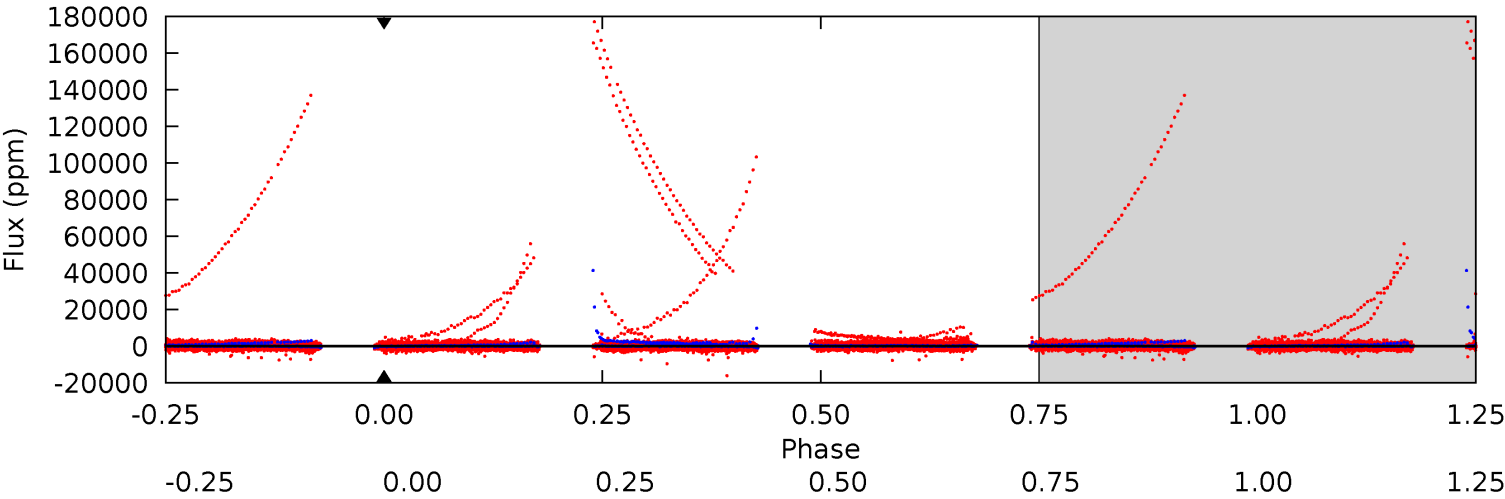
TCE 008429450-02   P= 5.410582 Days    $T_0=136.071224$  (BKJD)



# DV Model-Shift Uniqueness Test

008429450-02, P = 5.410582 Days, E = 129.519627 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

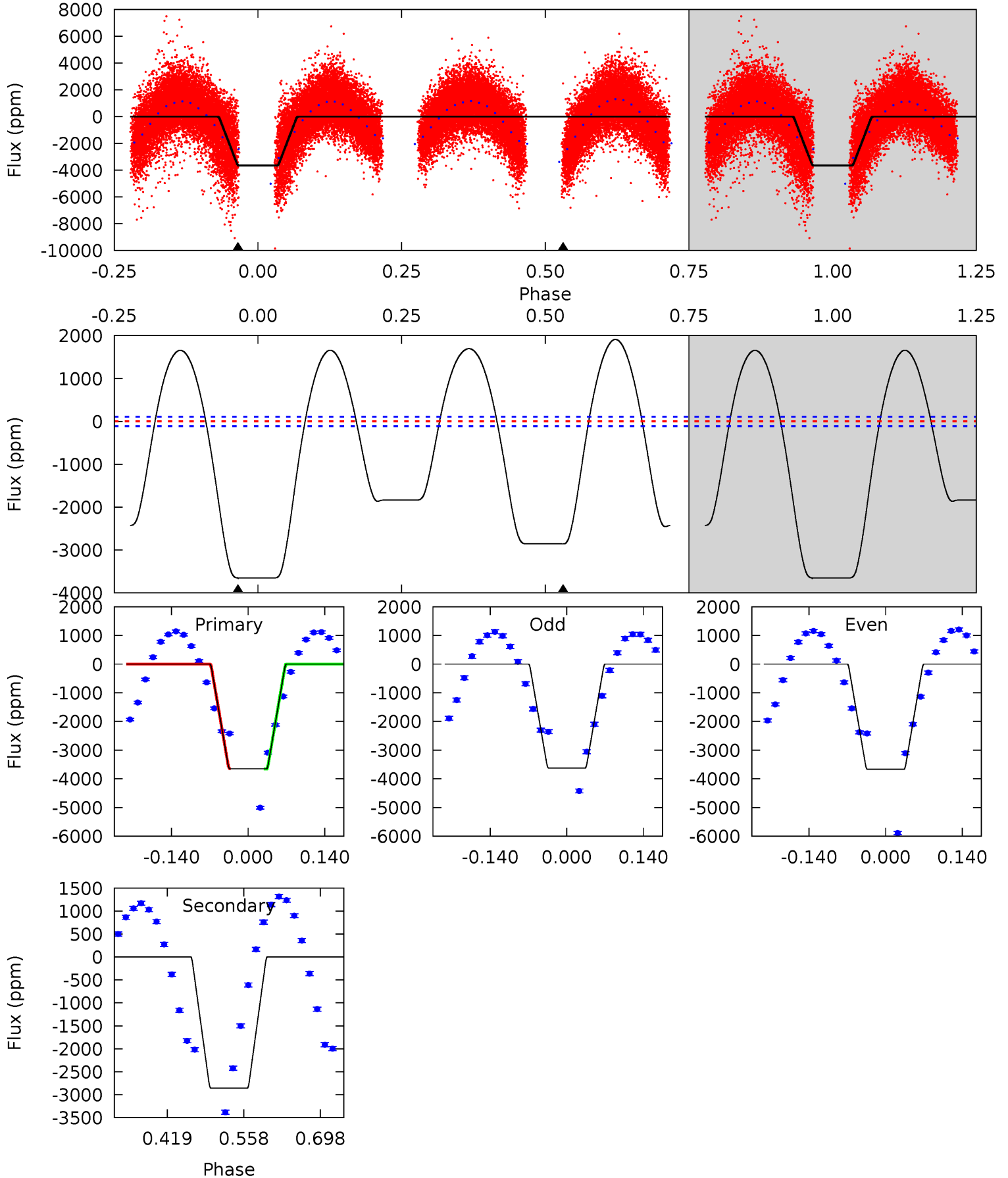




# Alt Model-Shift Uniqueness Test

008429450-02, P = 5.410582 Days, E = 130.660642 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
150.0	117.4	0	0	4.49	1.48	57.7	150.0	150.0	117.4	117.4	0.98	1.17	0.34	0.18





### Stellar Parameters For KIC 008429450

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$6881^{+214}_{-285}$	$3.831^{+0.456}_{-0.114}$	$-0.500^{+0.250}_{-0.300}$	$2.406^{+0.487}_{-1.136}$	$1.430^{+0.199}_{-0.369}$	$0.145^{+0.674}_{-0.052}$
	+3%/-4%	+12%/-3%	+50%/-60%	+20%/-47%	+14%/-26%	+466%/-36%
Source	PHO54	PHO54	PHO54	DSEP		

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

### Secondary Eclipse Parameters for KIC 008429450-02 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$0 \pm 1000000$	$27.75^{+23.29}_{-17.50}$	$2451^{+208}_{-269}$	$4691^{+13213}_{-20418}$	$8.417^{+568.238}_{-445.399}$
Alt.	$-2857 \pm 24$	$20.92^{+21.79}_{-13.64}$	$2466^{+185}_{-310}$	$5254^{+4038}_{-1224}$	$16^{+119}_{-12}$

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

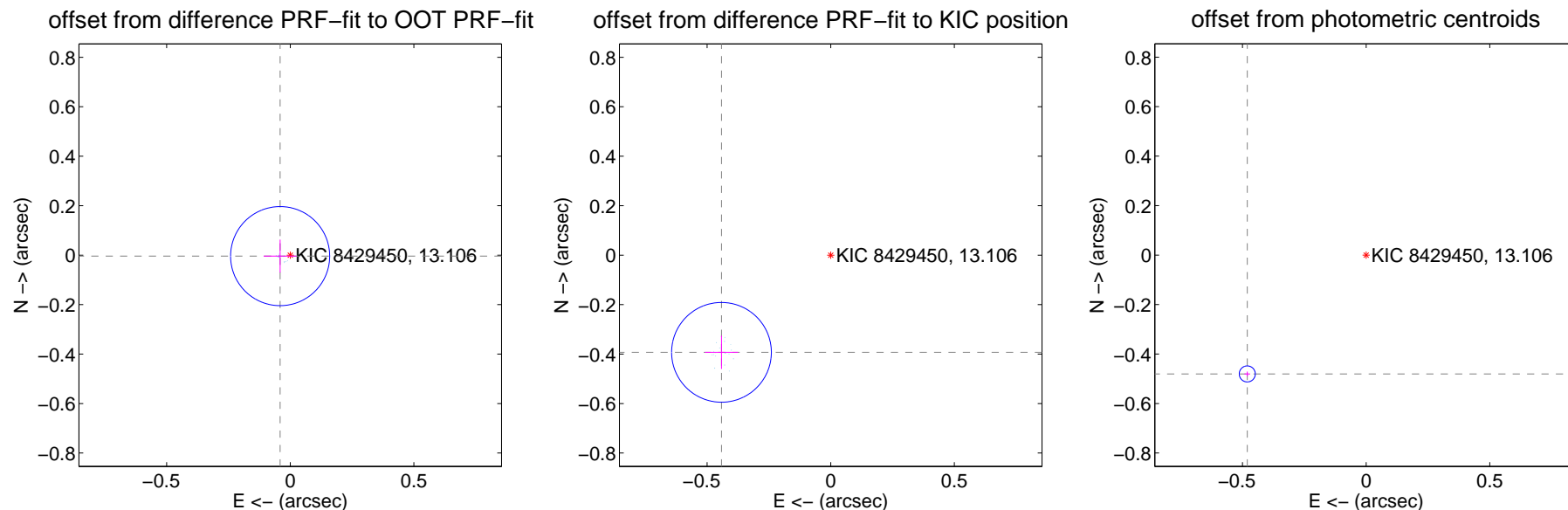
## DV Centroid Data

Supplemental centroid analysis for 008429450-02. Kepler magnitude: 13.11. Transit SNR -1.00

There are 17 quarters with good PRF difference image offsets

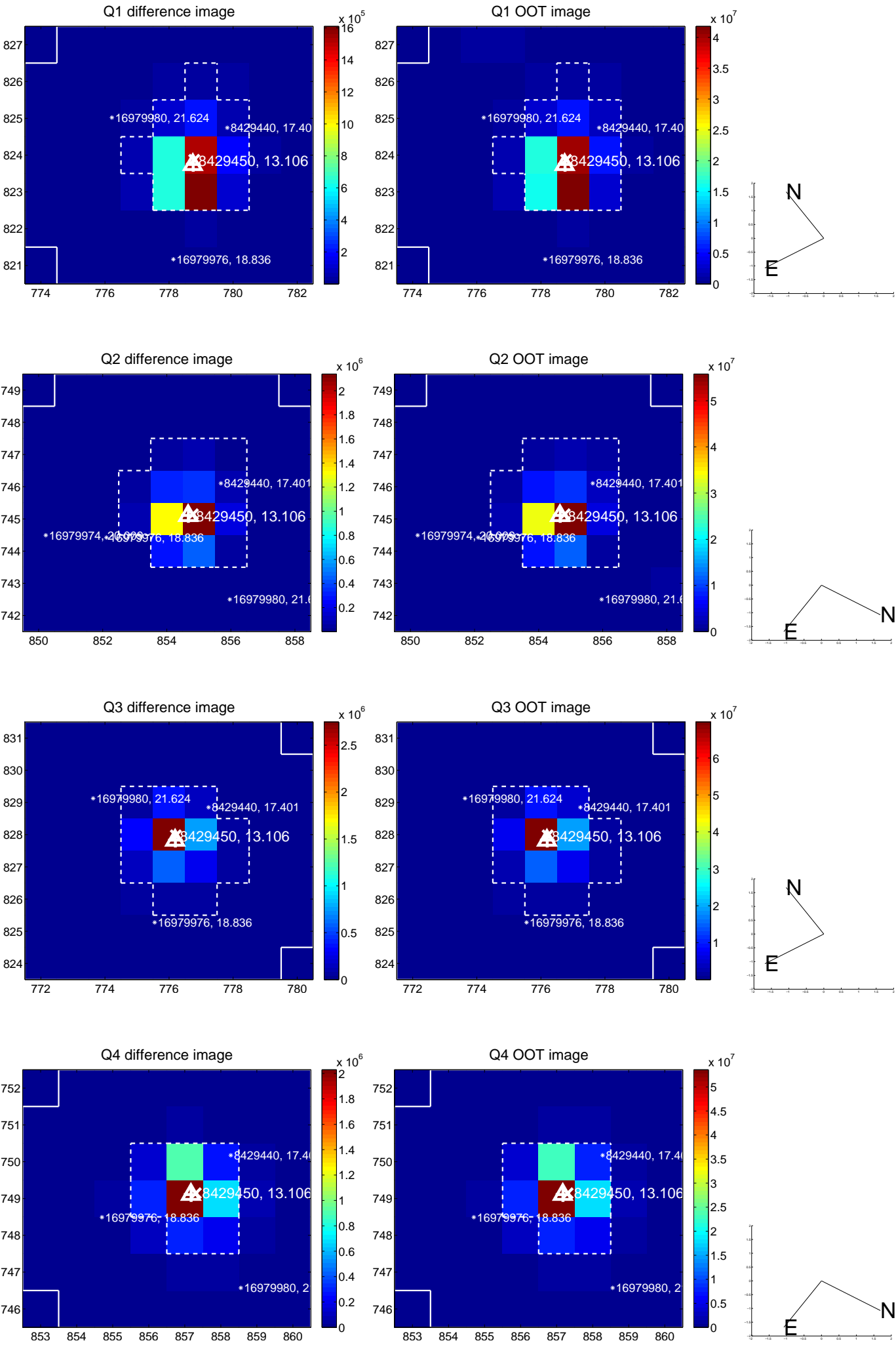
The direct PRF centroid is offset from the target star catalog position by about 0.54 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.041 \pm 0.067$	0.62	$0.041 \pm 0.067$	$-0.004 \pm 0.067$
PRF-fit source offset from KIC position	$0.591 \pm 0.067$	8.79	$0.442 \pm 0.067$	$-0.393 \pm 0.067$
photometric centroid source offset	$0.68 \pm 0.01$	62.87	$0.48 \pm 0.01$	$-0.48 \pm 0.01$

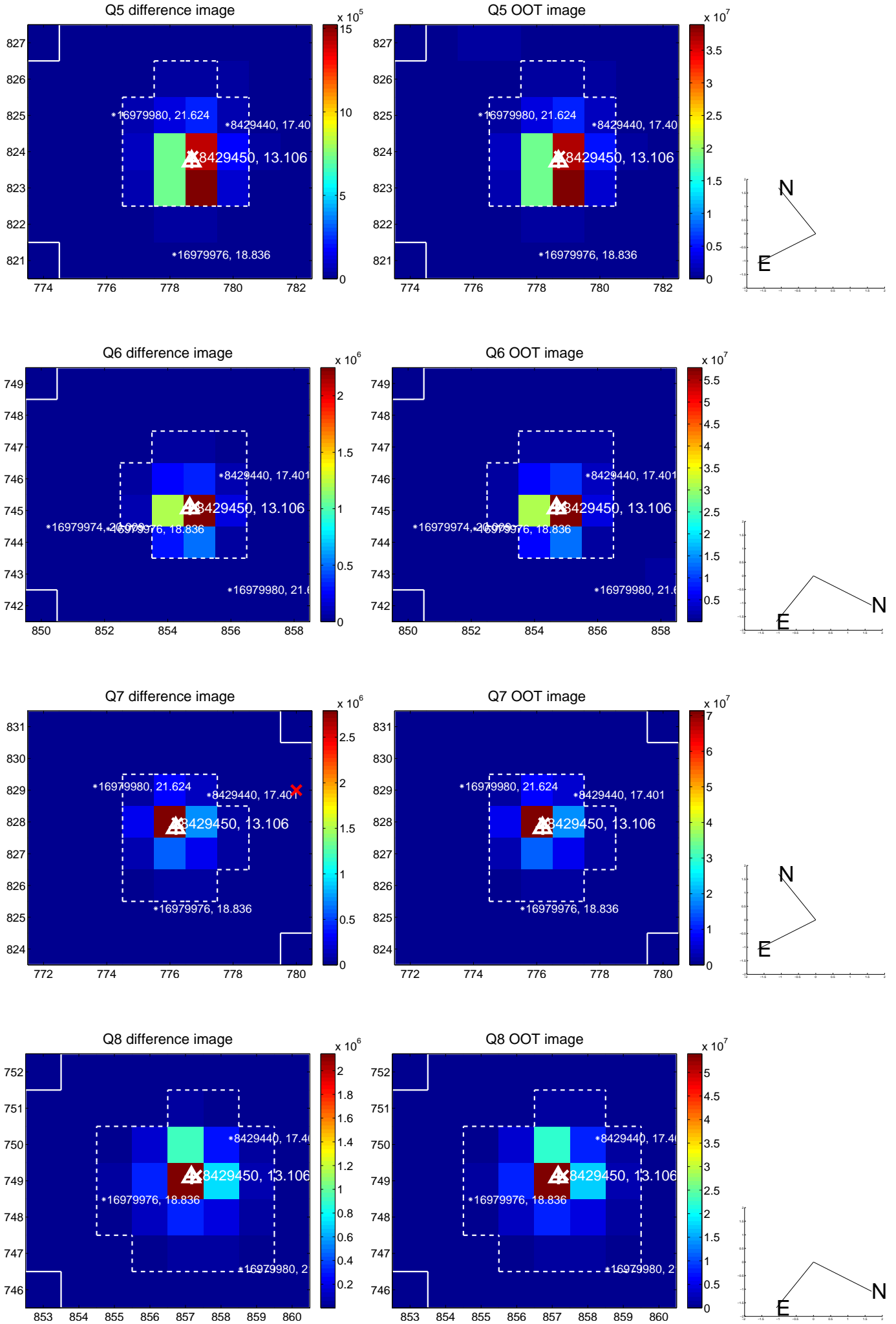


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

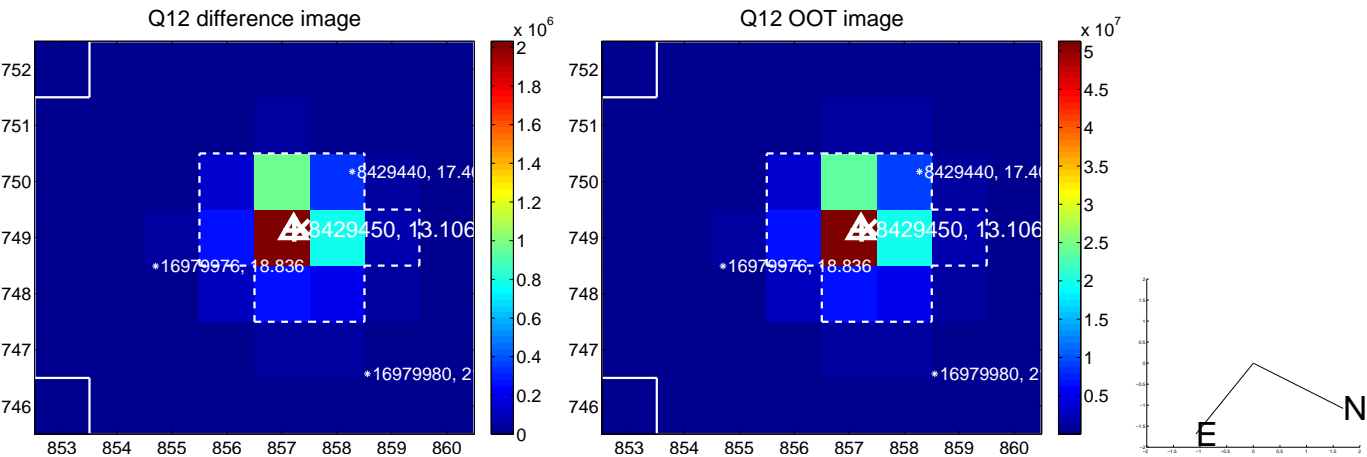
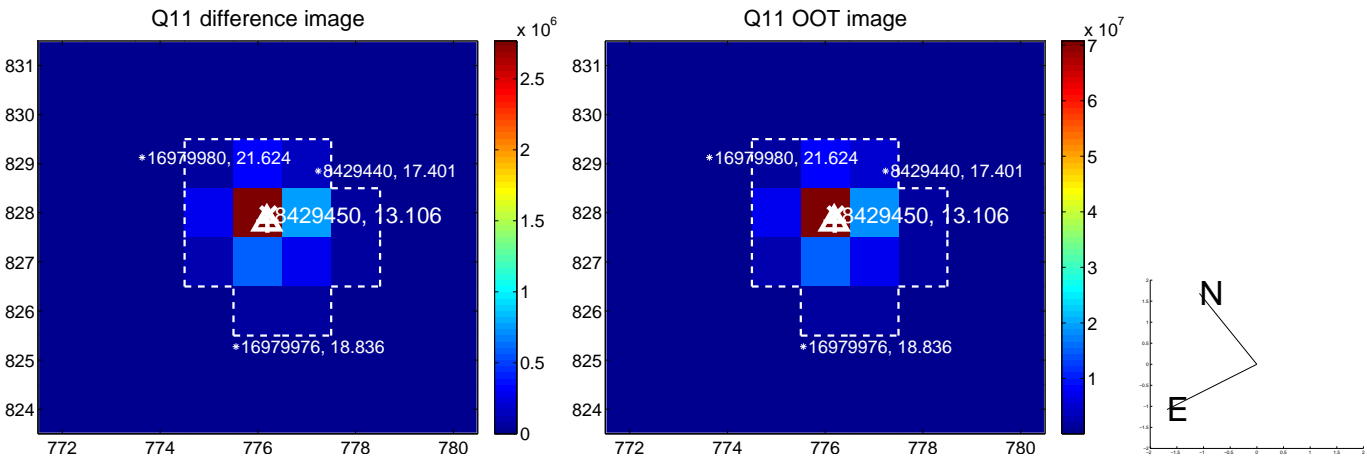
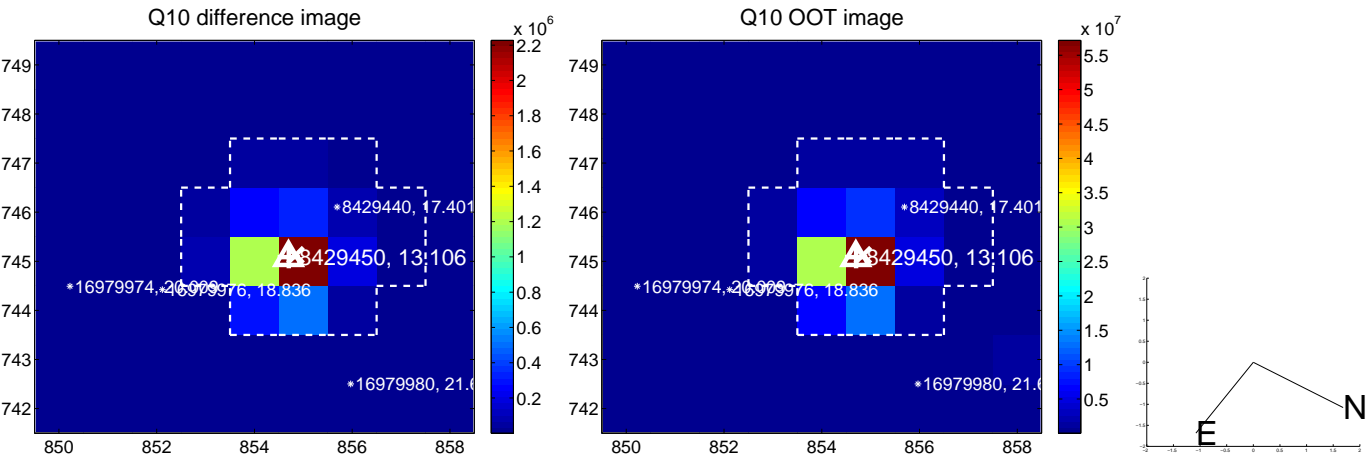
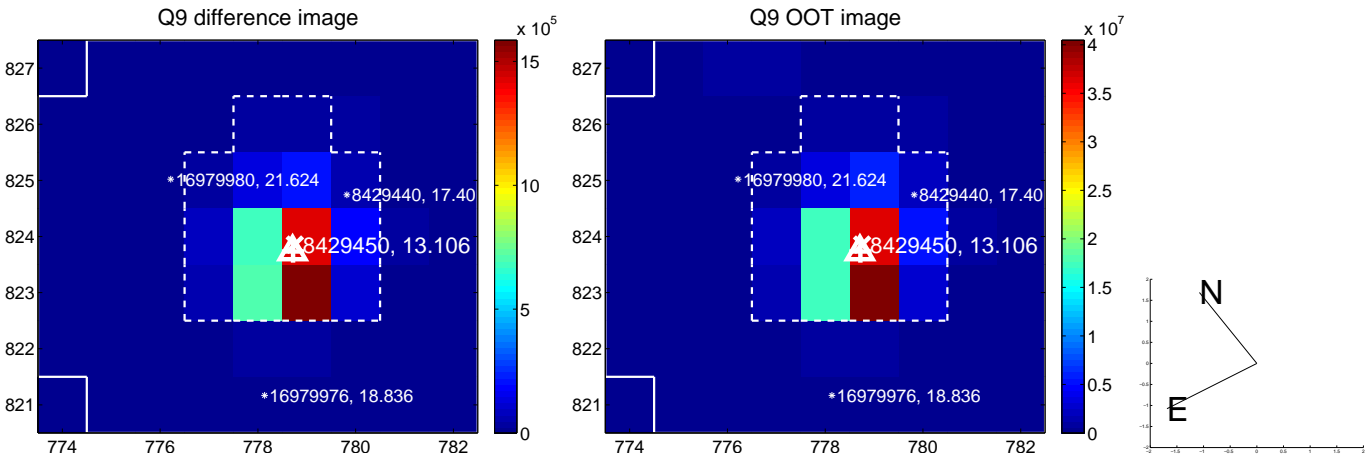
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



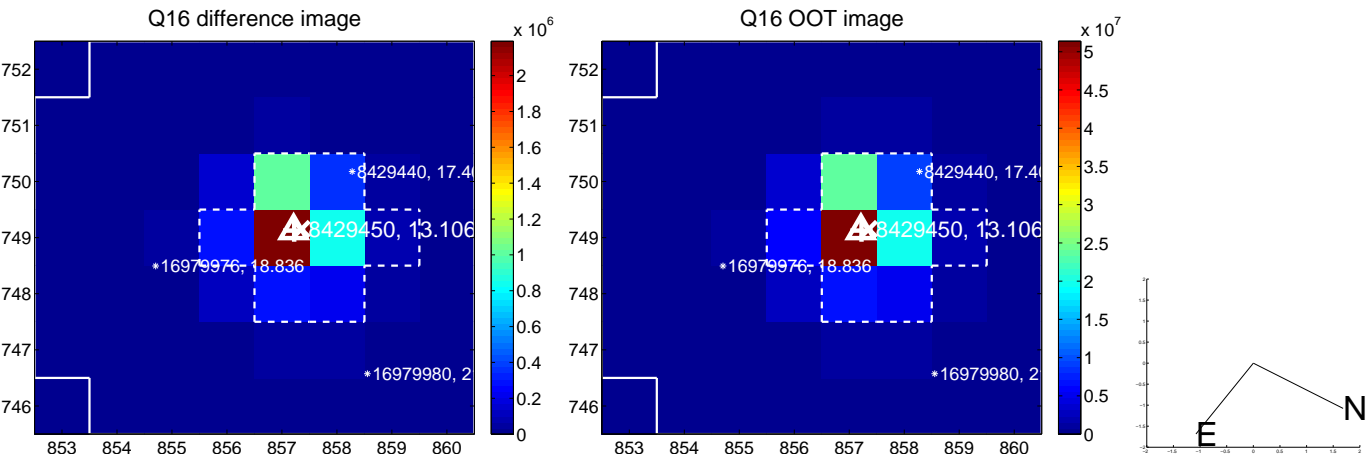
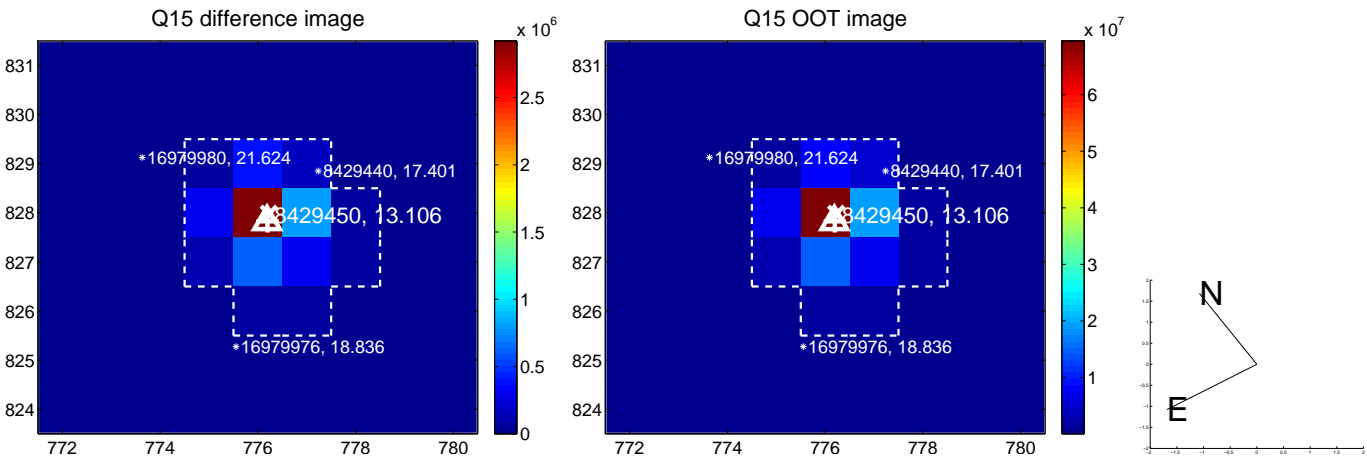
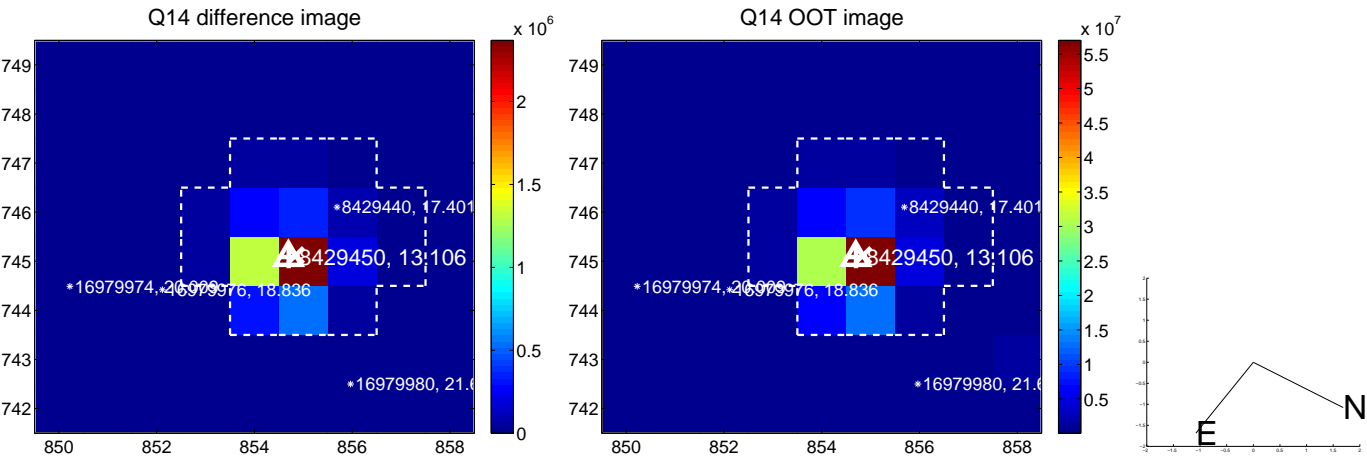
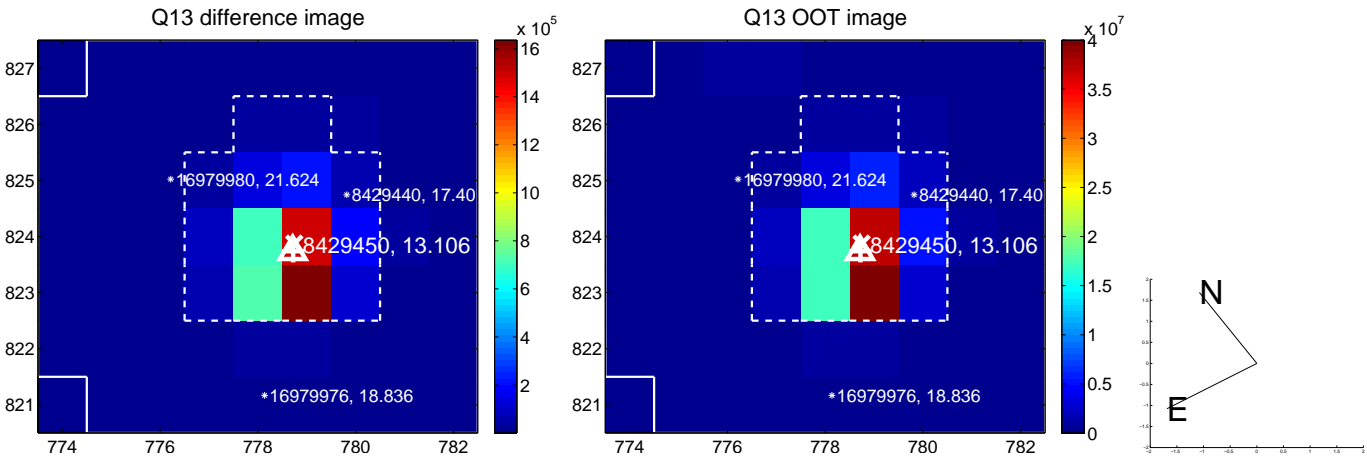
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



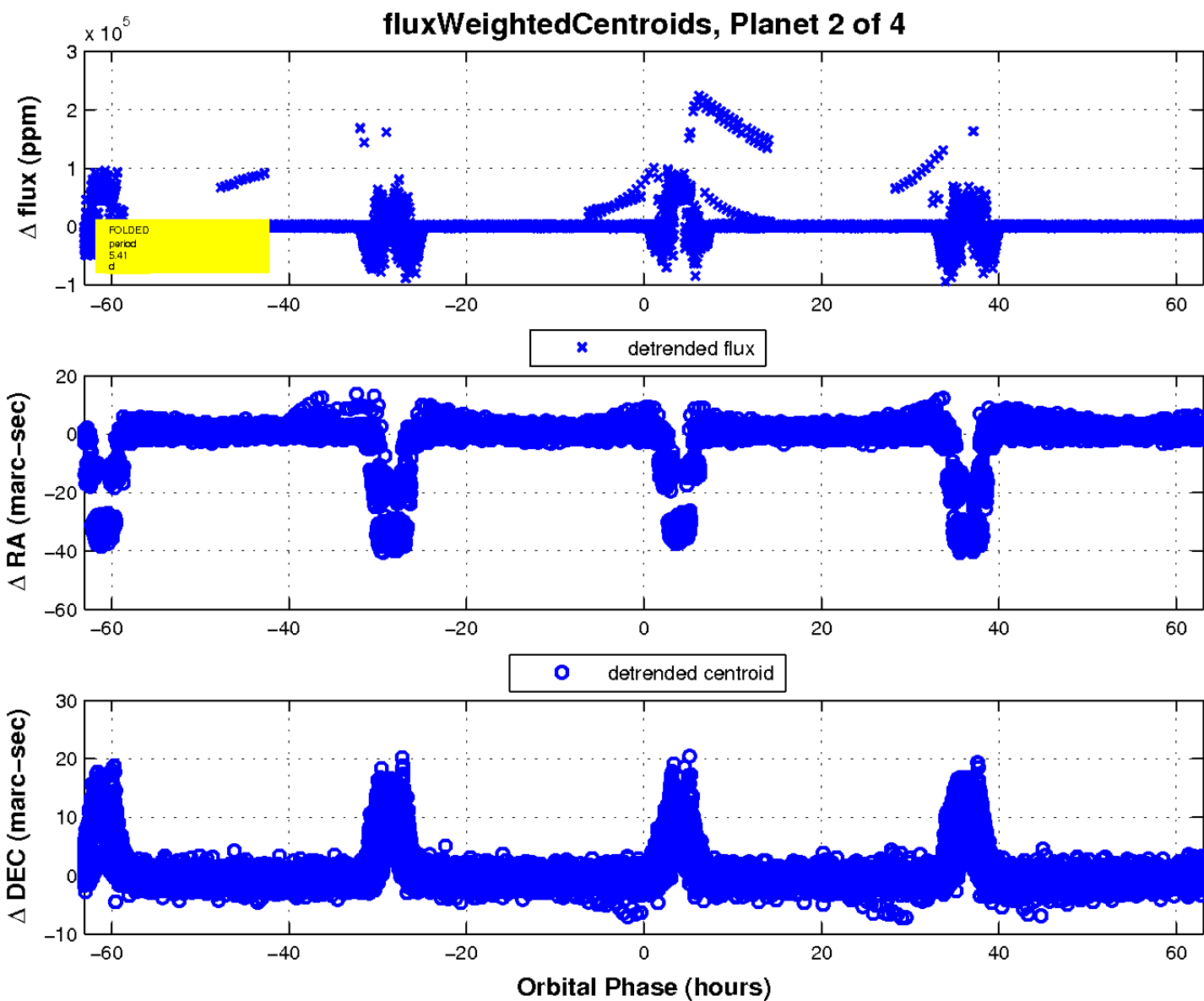
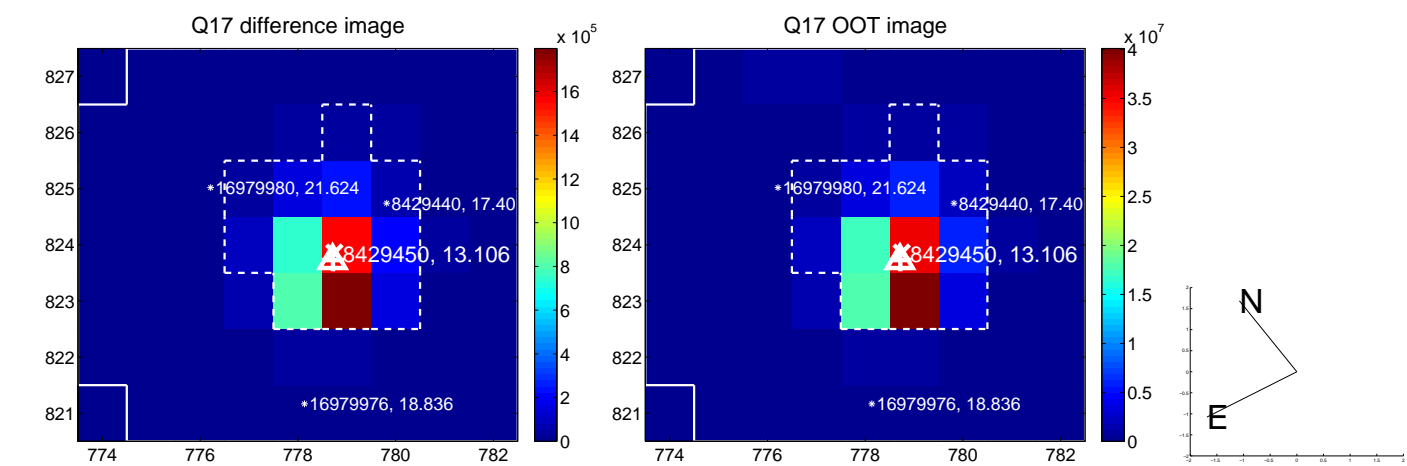
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

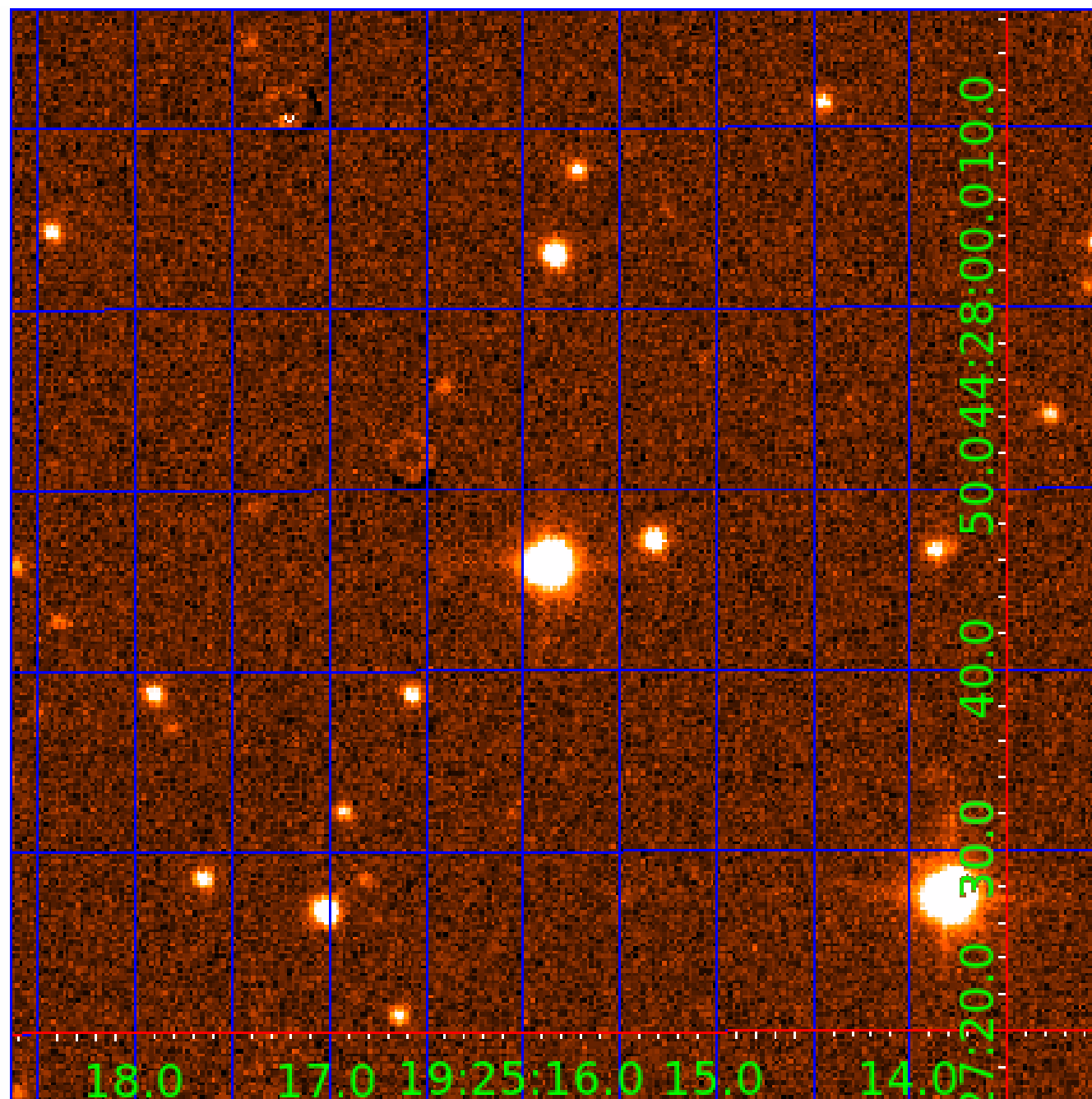


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination





# KIC 008429450

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008429450-01	OBS	7039.01	1.352577	132.038277	315707.7	3.000	23853.9	-1.0	2.41	6881	80.40	15976.50
008429450-02	OBS	No	5.410582	134.930210	10689.2	15.000	3420.1	-1.0	2.41	6881	25.13	2515.97
008429450-03	OBS	No	27.051450	131.785994	24773.9	1.500	591.7	-1.0	2.41	6881	38.45	294.29
008429450-04	OBS	No	82.958179	143.100780	17021.9	2.000	430.8	-1.0	2.41	6881	31.80	66.05

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008429450-01	OBS	FP	0.00	0	1	0	0	DEPTH_ODDEVEN_DV—DEPTH_ODDEVEN_ALT—MOD_ODDEVEN_ALT—HAS_SEC_TCE—CENT_NOFITS
008429450-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—RESIDUAL_TCE—CENT_NOFITS
008429450-03	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—RESIDUAL_TCE—CENT_NOFITS
008429450-04	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_NOFITS

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

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

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

Ephemeris Match Information For 008429450-03

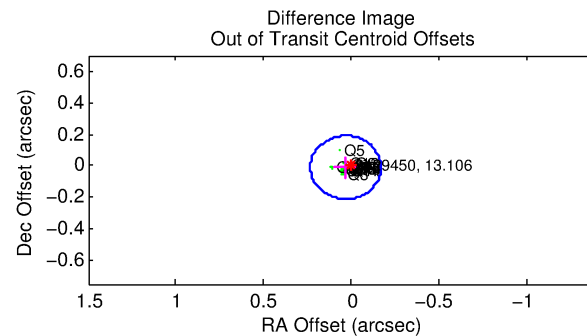
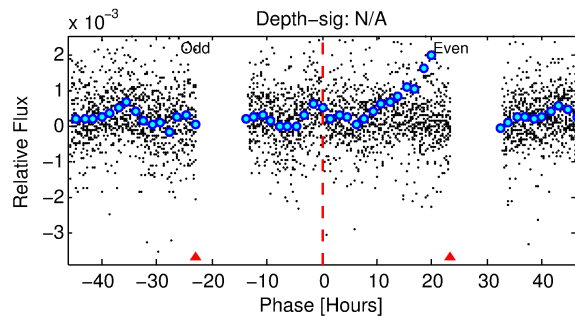
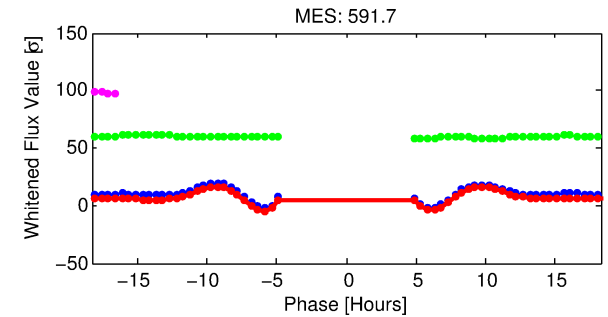
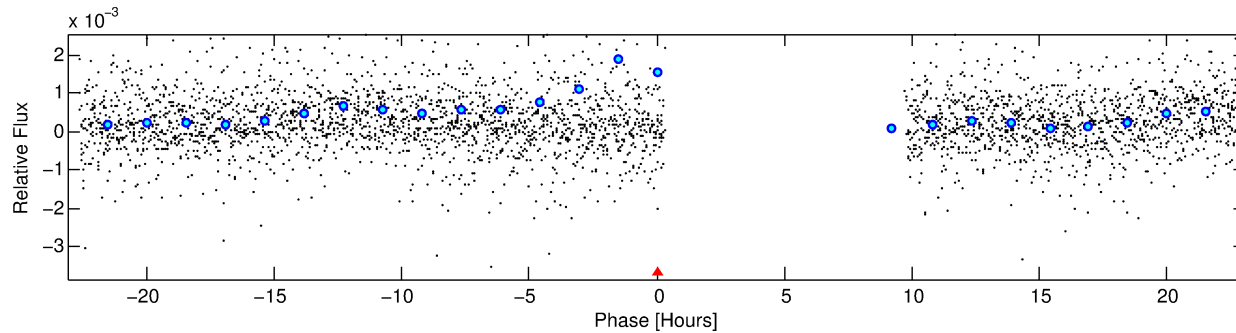
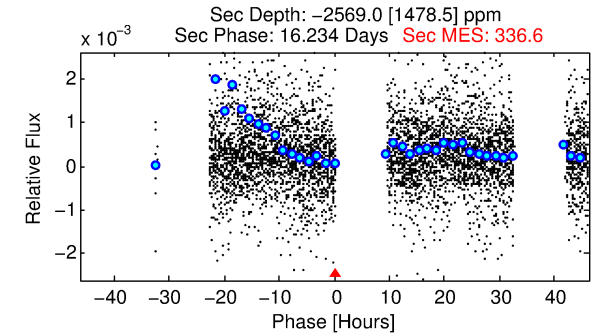
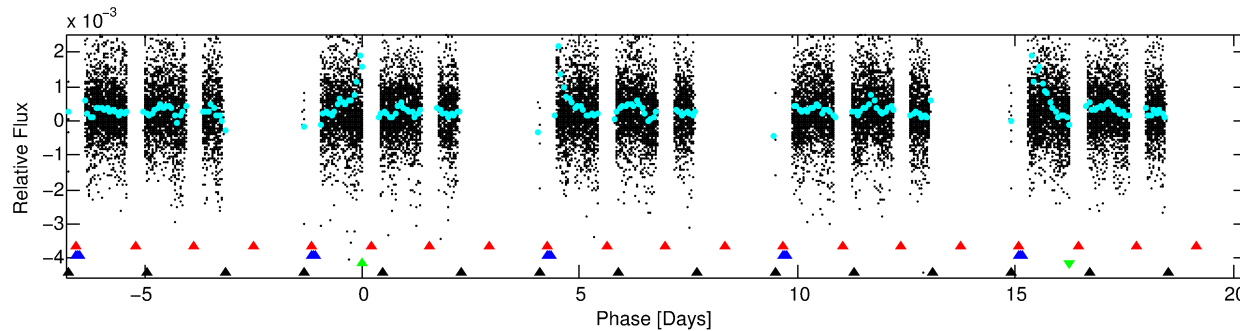
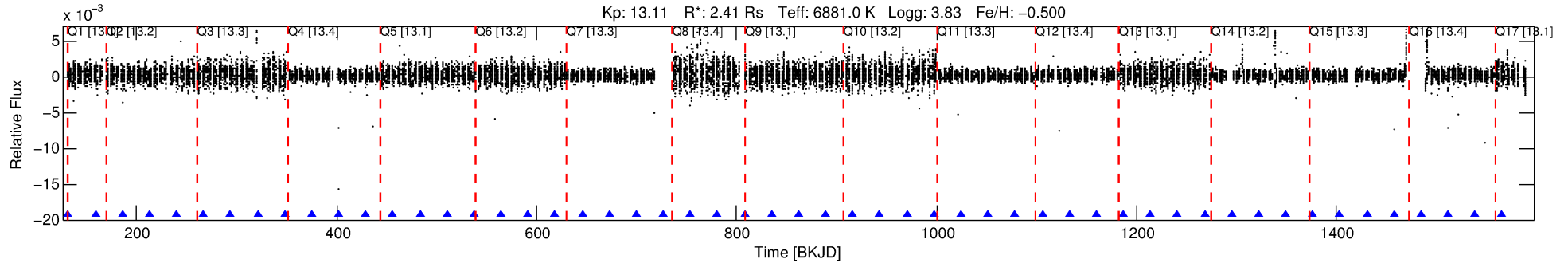
No Significant Match Found

# DV One-Page Summary

KIC: 8429450 Candidate: 3 of 4 Period: 27.051 d

KOI: K07039 Corr: No Ephemeris Match

Kp: 13.11 R\*: 2.41 Rs Teff: 6881.0 K Logg: 3.83 Fe/H: -0.500



## TPS TCE Results:

Period = 27.05145 d  
Epoch = 131.7860 BKJD

DV fit results are unavailable

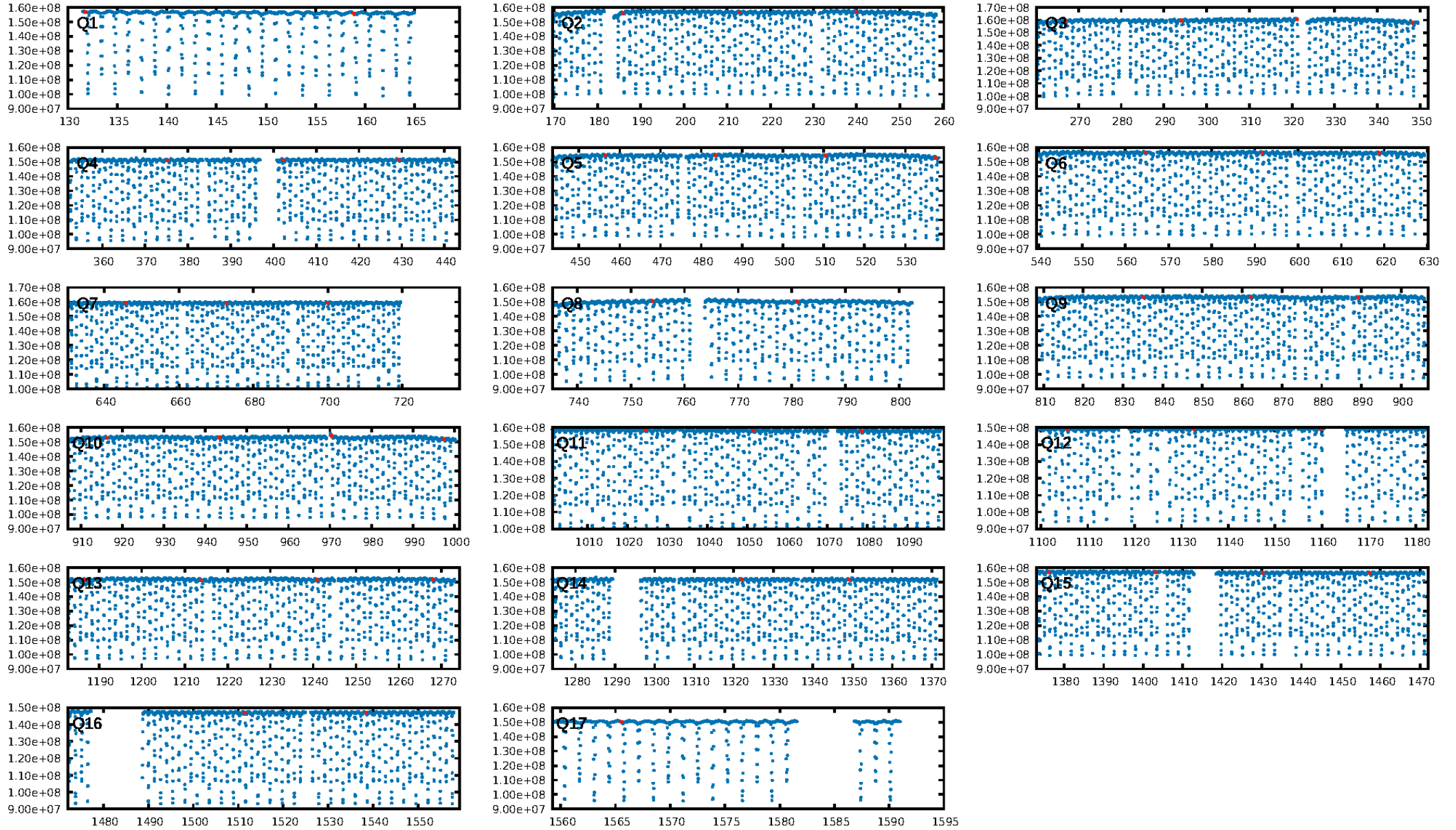
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [34.45σ]  
LongPeriod-sig: 100.0% [536.70σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [47/47]  
GhostDiagnostic-chr: 1.907  
Centroid-sig: N/A  
Centroid-so: 0.417 arcsec [5.27σ]  
OotOffset-rm: 0.035 arcsec [0.52σ]  
KicOffset-rm: 0.593 arcsec [8.75σ]  
OotOffset-st: 4/4/4/5 [17]  
KicOffset-st: 4/4/4/5 [17]  
DiffImageQuality-fgm: 0.00 [0/17]  
DiffImageOverlap-fno: 0.00 [0/17]

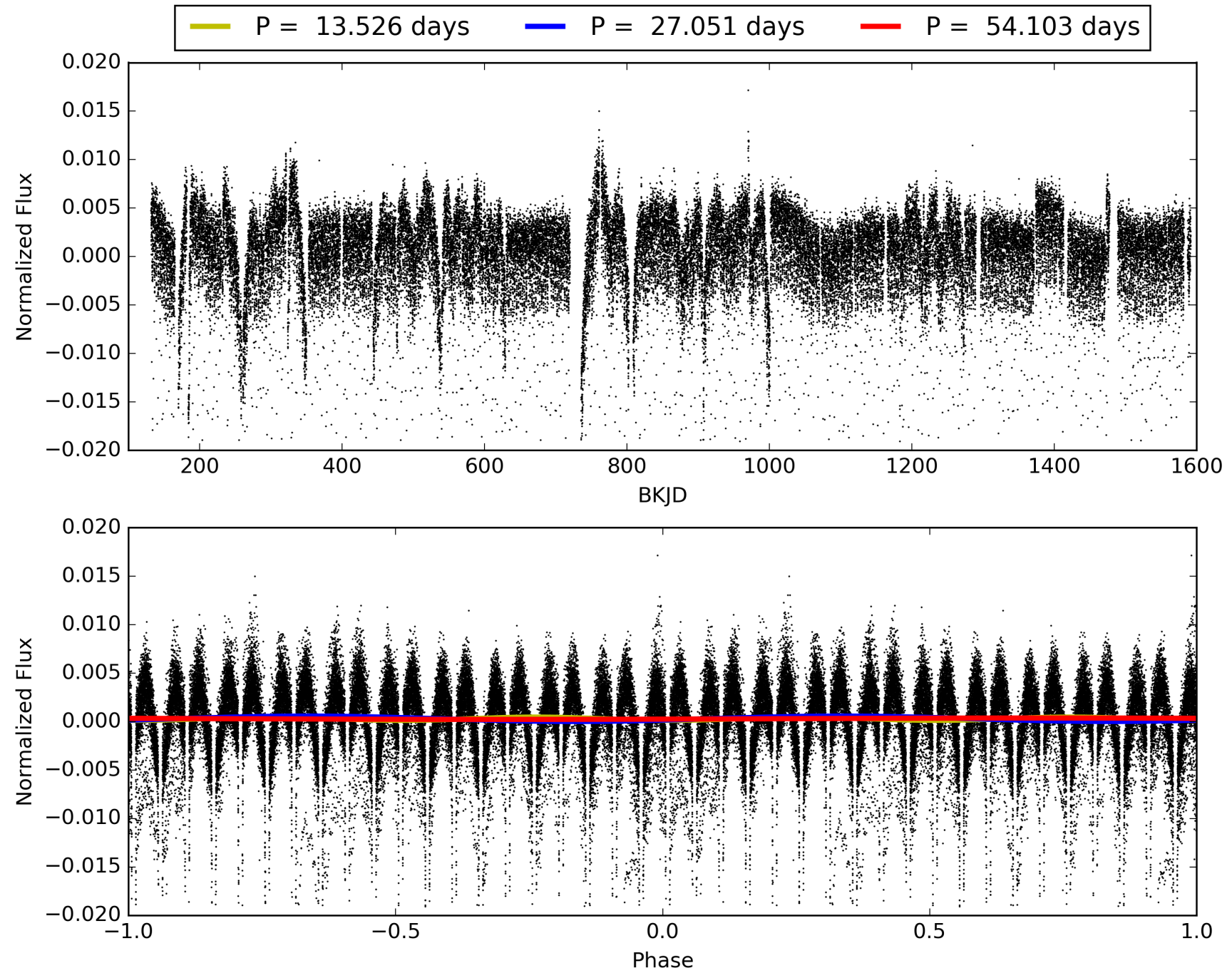
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 19:54:56 Z

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

# TCE 008429450-03, PDC Light Curves

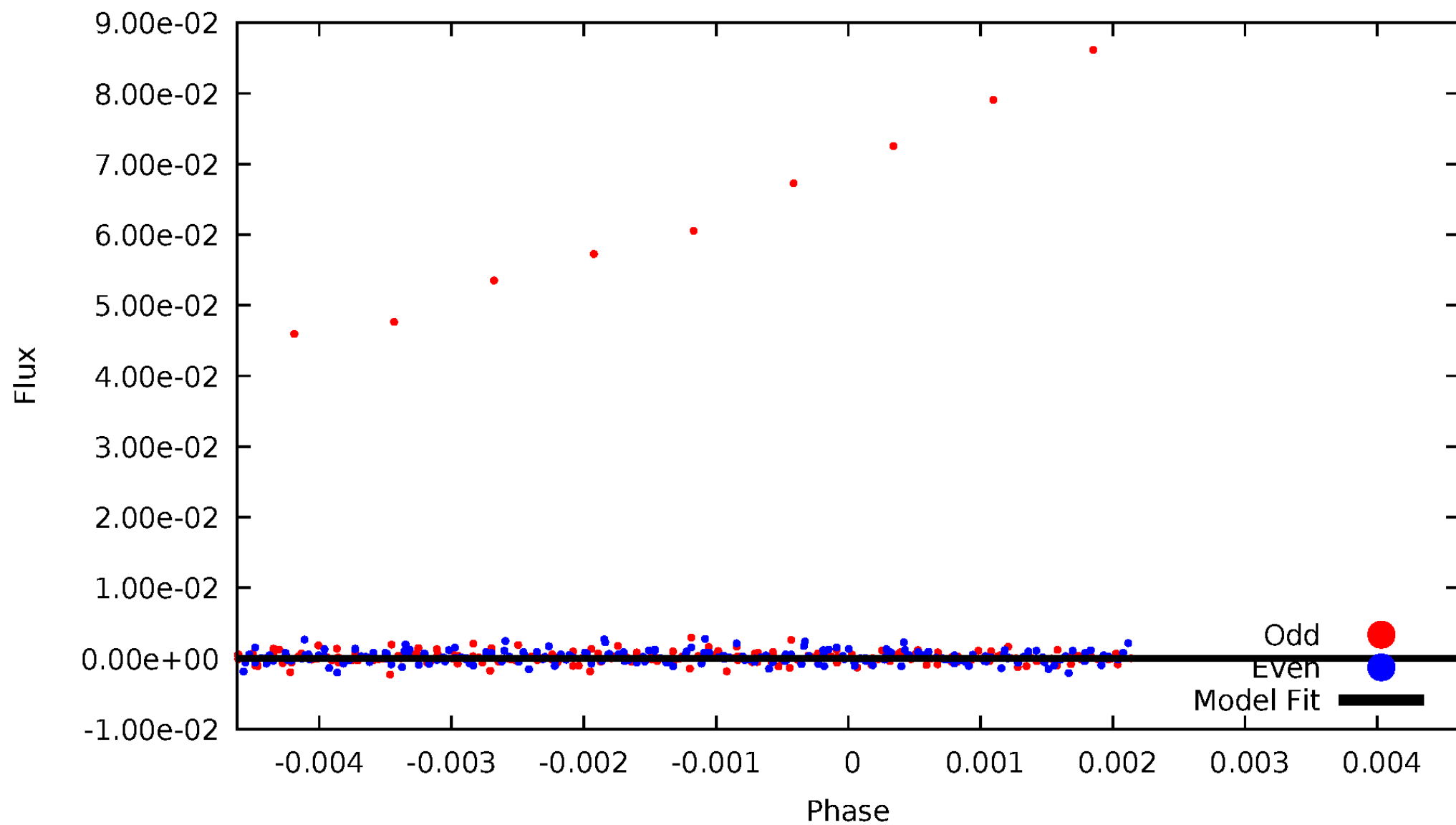


TCE 008429450-03



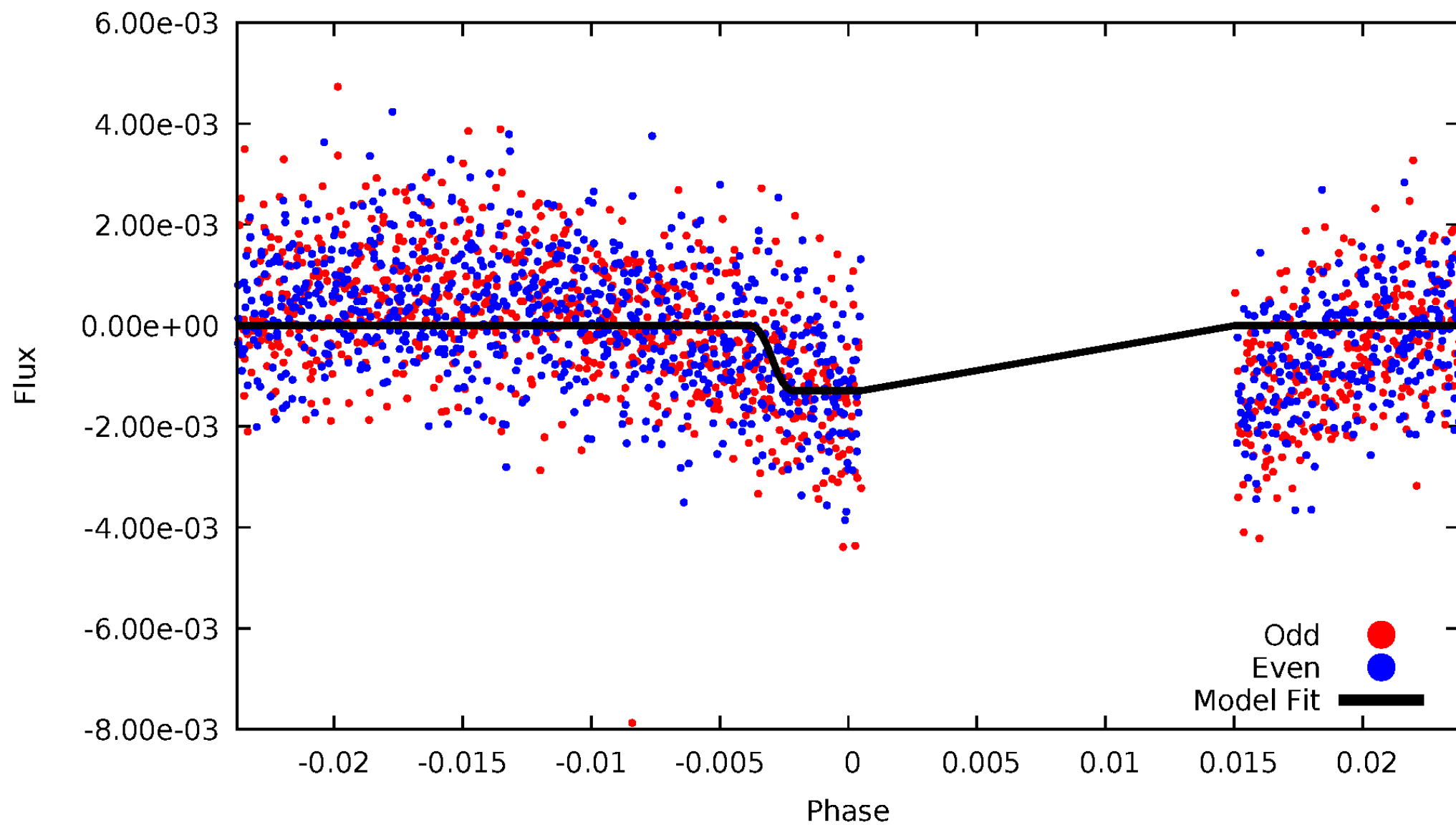
# DV Odd/Even

TCE 008429450-03



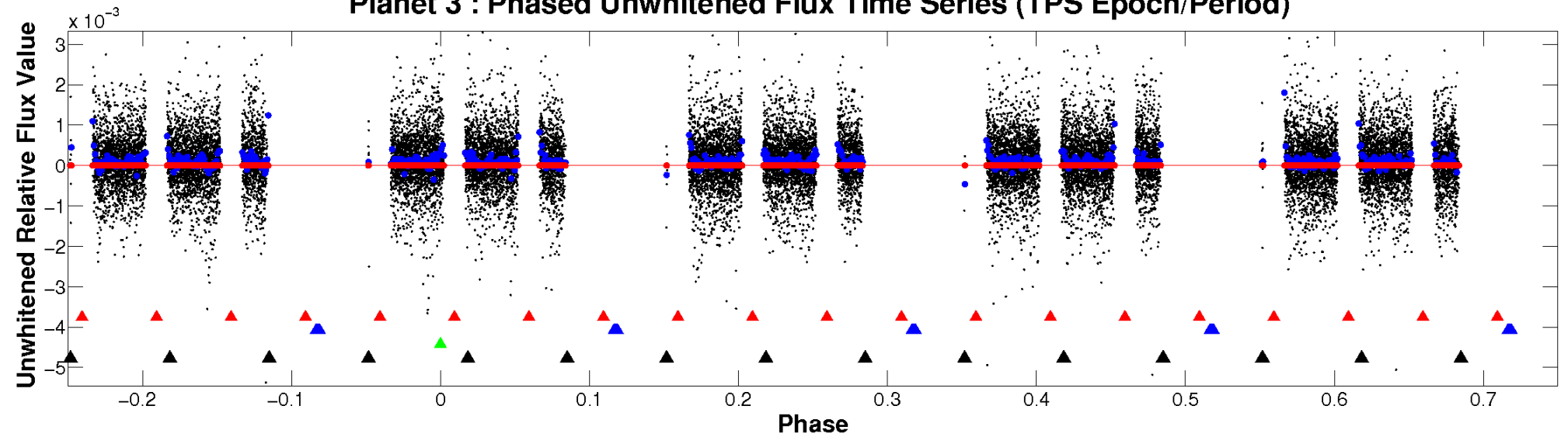
# ALT Odd/Even

TCE 008429450-03



# Non-Whitened Vs. Whitened Light Curve

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



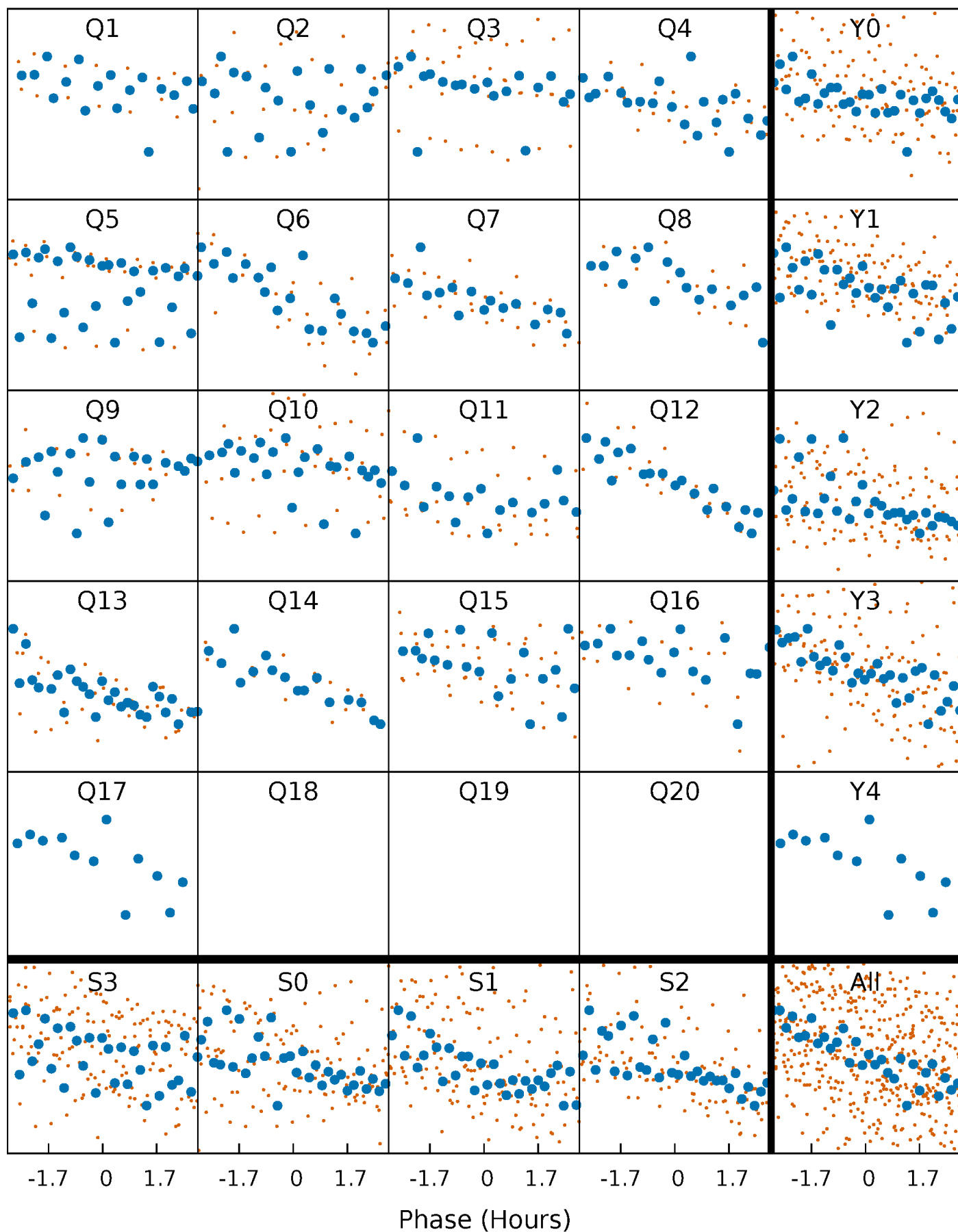
**Planet 3 : Phased Whitened Flux Time Series (TPS Epoch/Period)**





# PDC Quarter-Phased Transit Curves

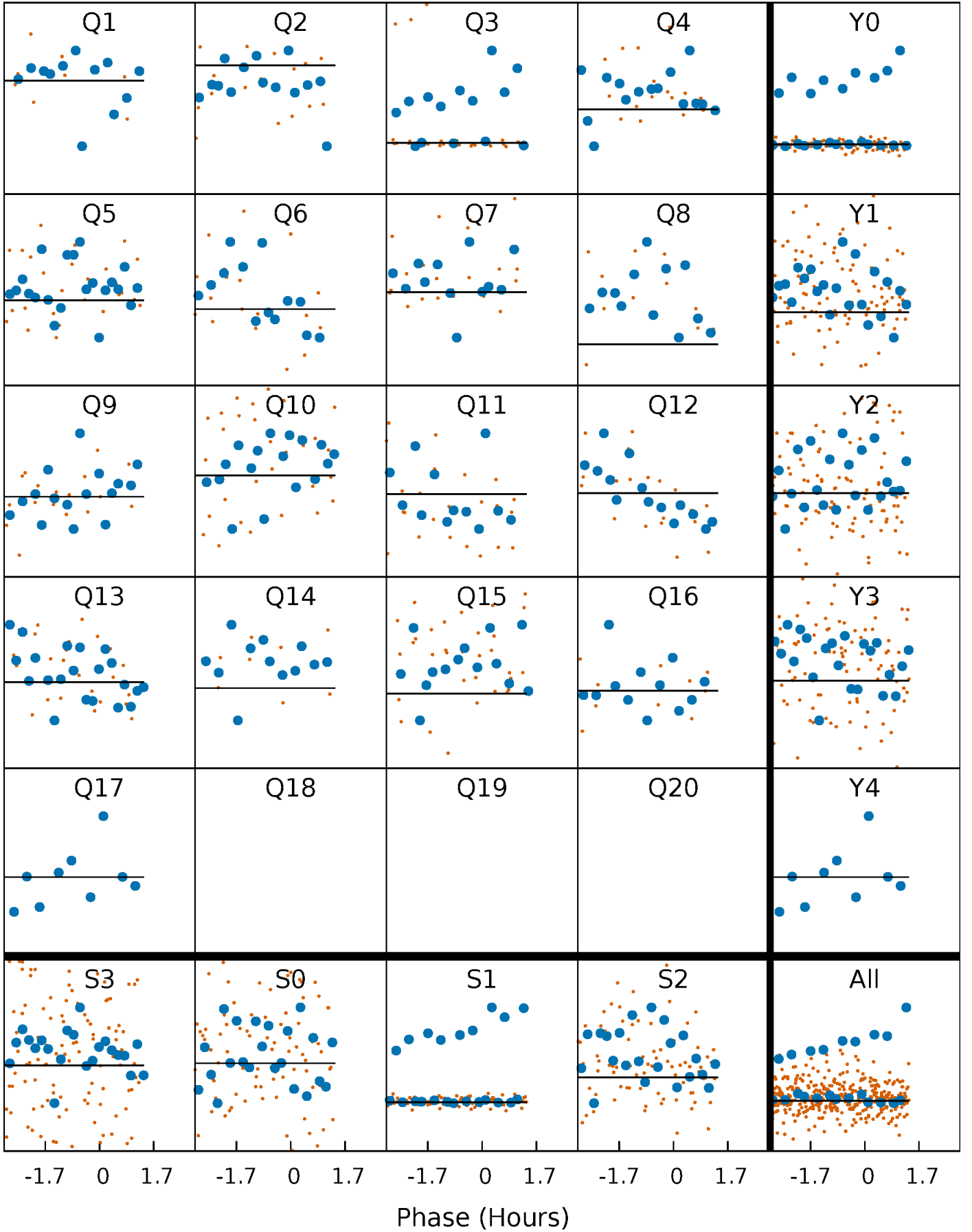
TCE 008429450-03 P= 27.051450 Days  $T_0=131.785994$  (BKJD)





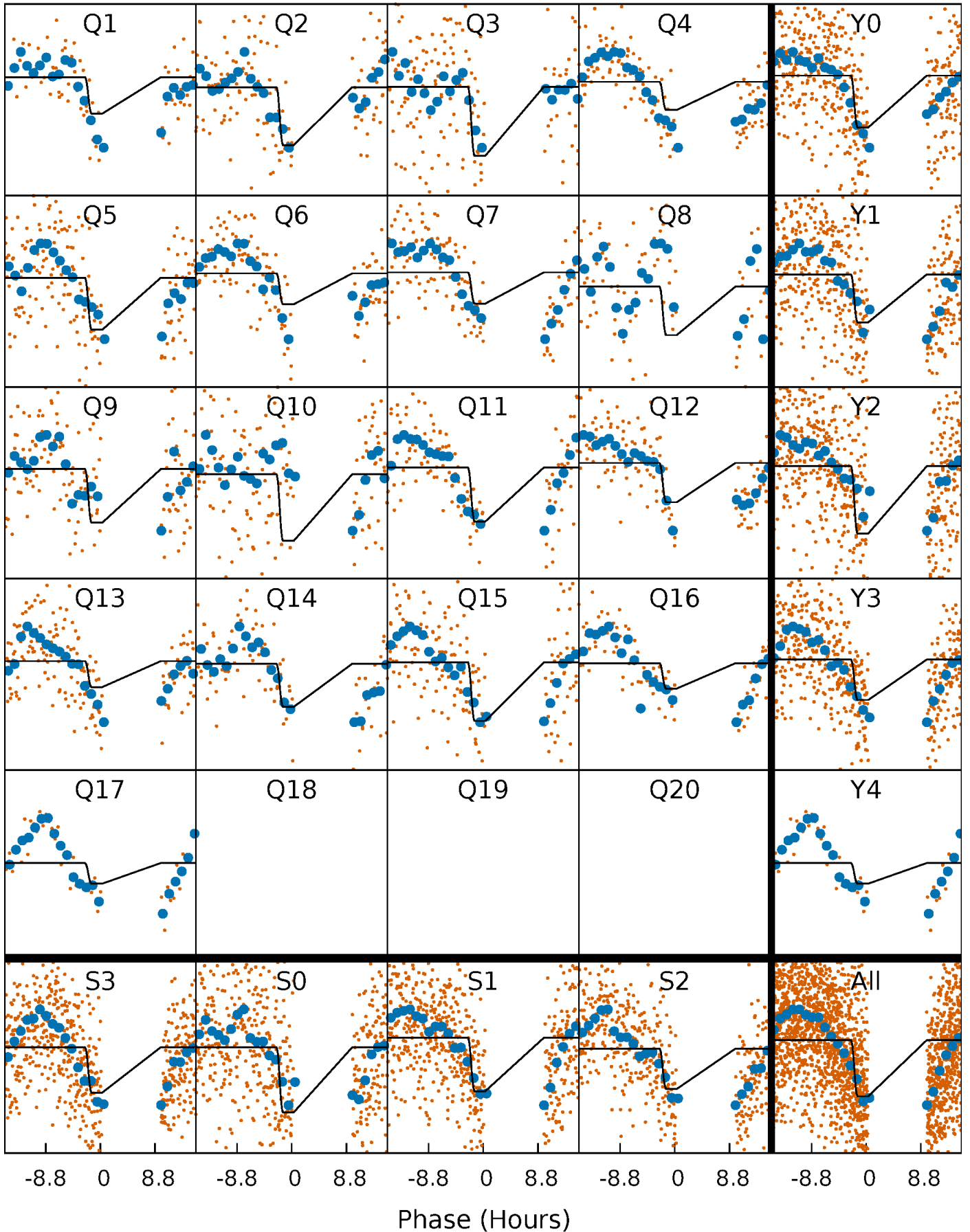
# DV Quarter-Phased Transit Curves

TCE 008429450-03   P= 27.051450 Days    $T_0=131.785994$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

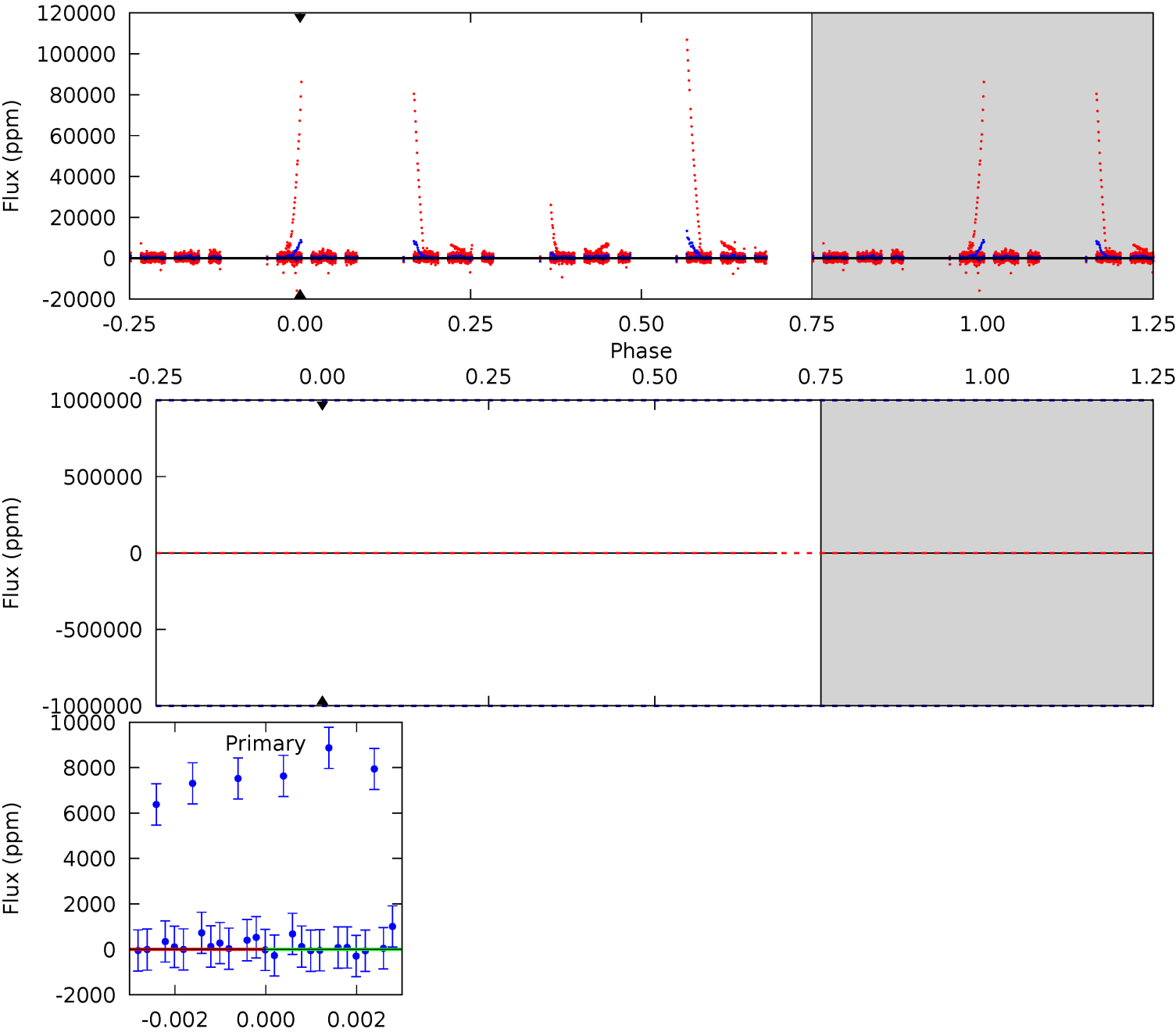
TCE 008429450-03 P= 27.051450 Days  $T_0=131.830271$  (BKJD)



# DV Model-Shift Uniqueness Test

008429450-03, P = 27.051450 Days, E = 104.734544 Days

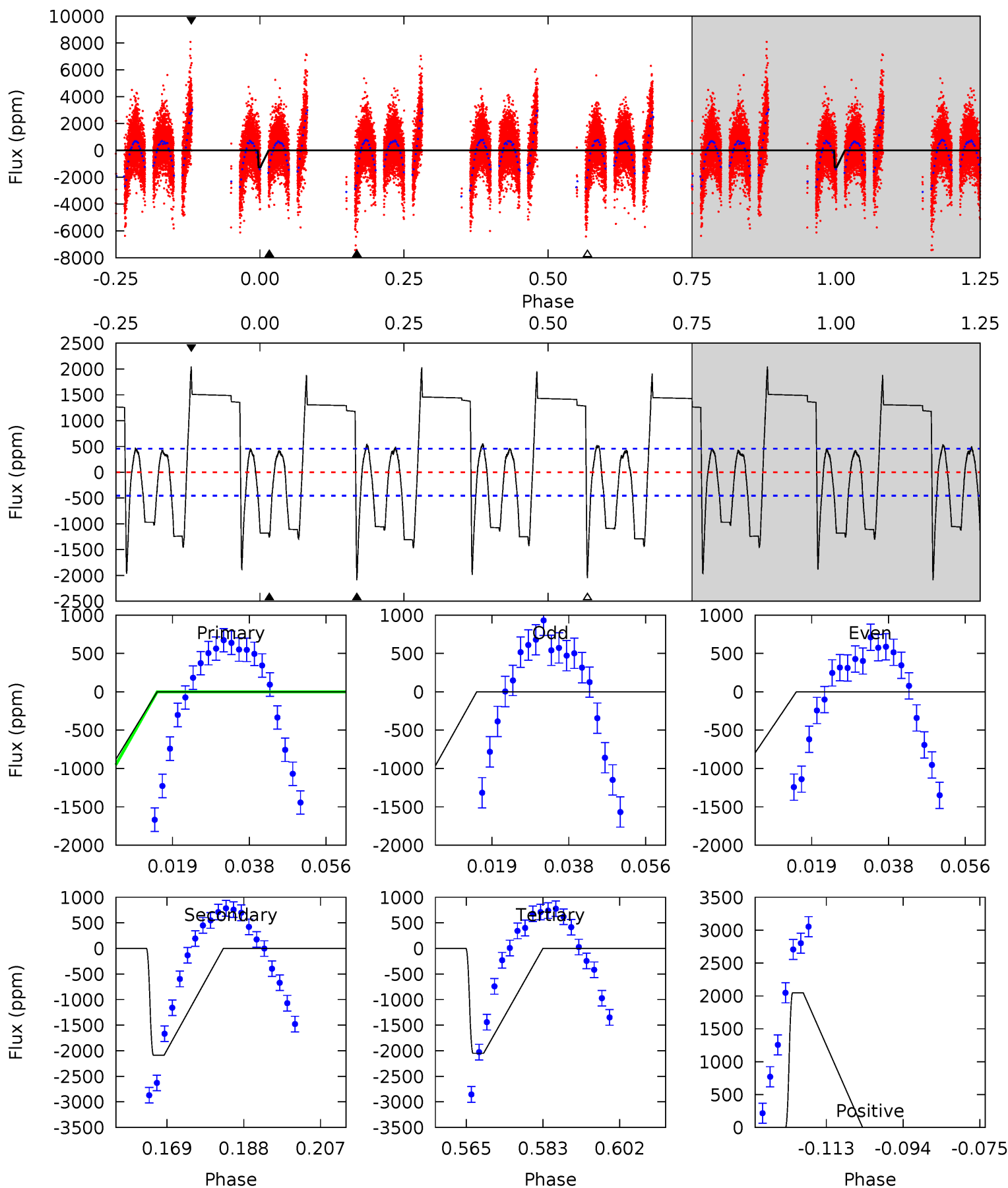
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



# Alt Model-Shift Uniqueness Test

008429450-03, P = 27.051450 Days, E = 104.778821 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.6	22.4	22.0	22.0	4.90	2.35	8.04	-8.45	-8.42	0.40	0.44	1.28	1.04	0.50	0.42



### Stellar Parameters For KIC 008429450

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$6881^{+214}_{-285}$	$3.831^{+0.456}_{-0.114}$	$-0.500^{+0.250}_{-0.300}$	$2.406^{+0.487}_{-1.136}$	$1.430^{+0.199}_{-0.369}$	$0.145^{+0.674}_{-0.052}$
	+3%/-4%	+12%/-3%	+50%/-60%	+20%/-47%	+14%/-26%	+466%/-36%
Source	PHO54	PHO54	PHO54	DSEP		

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

### Secondary Eclipse Parameters for KIC 008429450-03 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$0 \pm 1000000$	$37.05^{+25.03}_{-21.32}$	$1437^{+111}_{-181}$	$-3514^{+16024}_{-8515}$	$-12.742^{+2451.369}_{-2254.601}$
Alt.	$-2088 \pm 93$	$20.02^{+21.60}_{-13.32}$	$1436^{+109}_{-166}$	$5128^{+3867}_{-1270}$	$115^{+886}_{-89}$

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

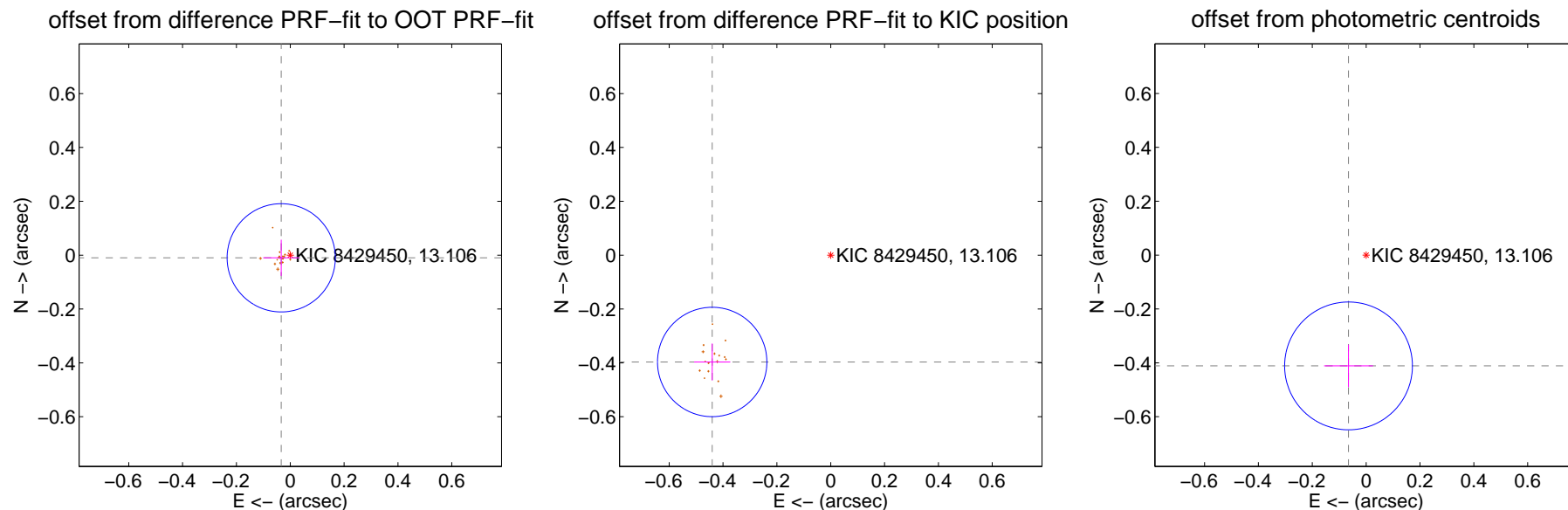
## DV Centroid Data

Supplemental centroid analysis for 008429450-03. Kepler magnitude: 13.11. Transit SNR -1.00

There are 0 quarters with good PRF difference image offsets

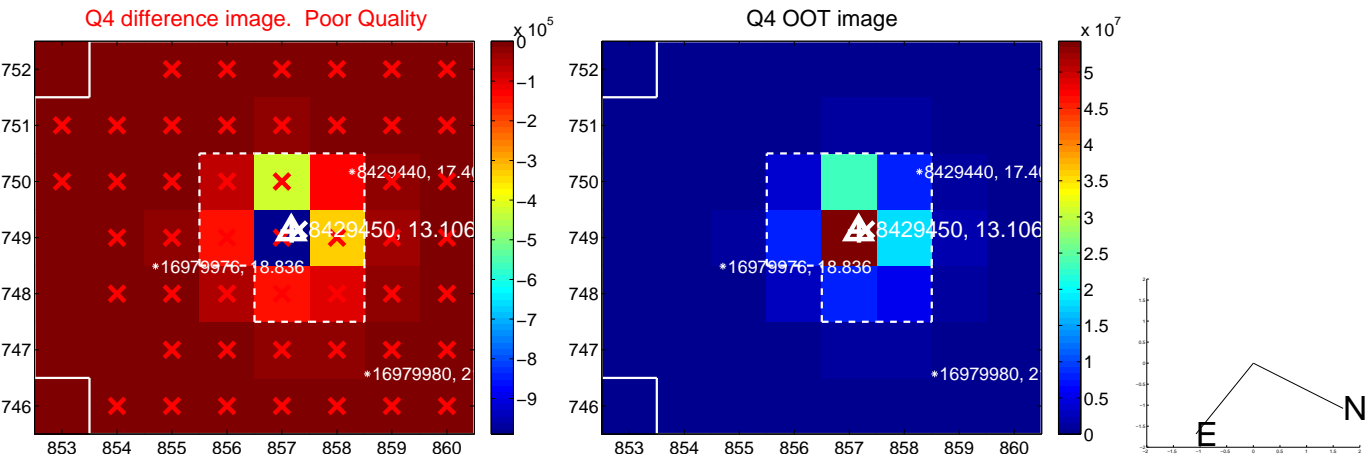
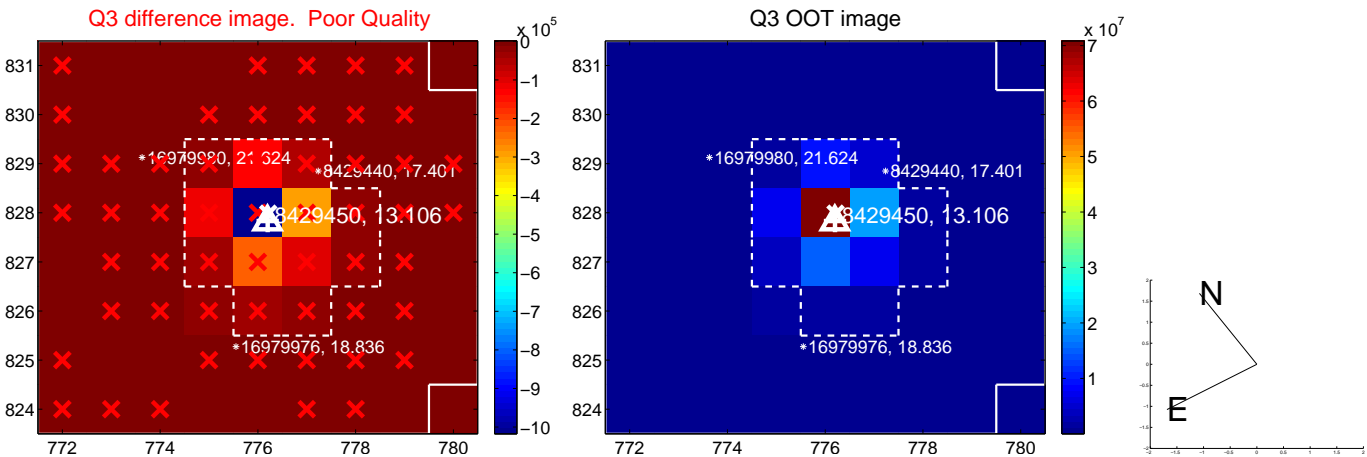
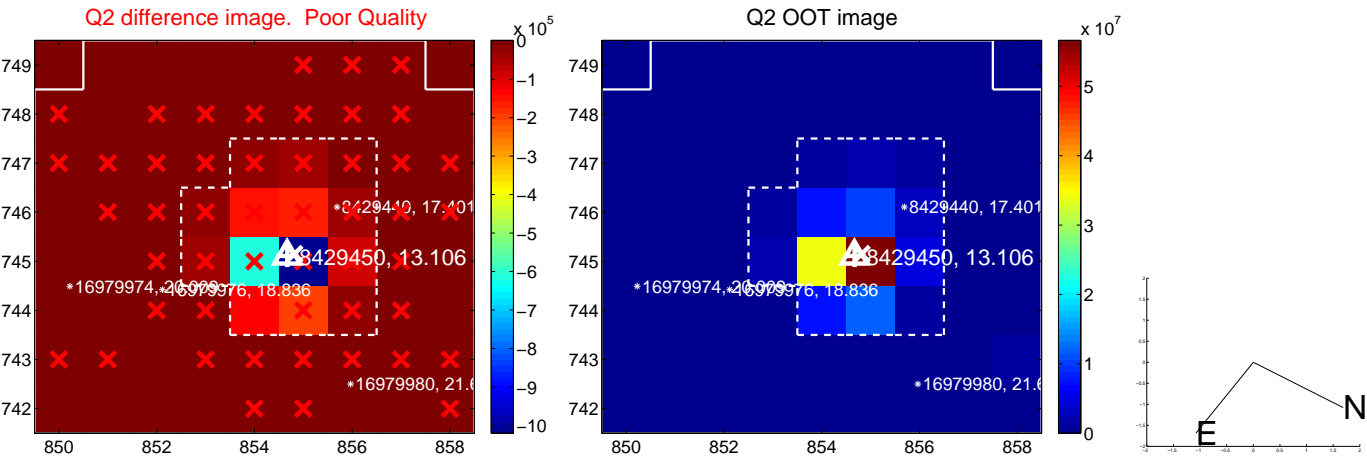
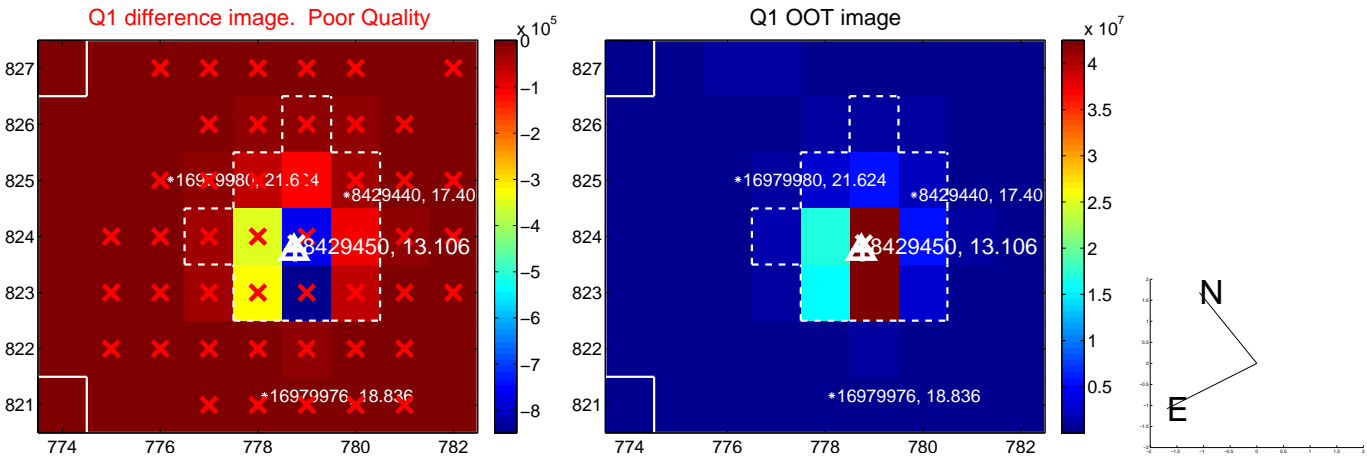
The direct PRF centroid is offset from the target star catalog position by about 0.54 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.035 \pm 0.067$	0.52	$0.034 \pm 0.067$	$-0.010 \pm 0.067$
PRF-fit source offset from KIC position	$0.593 \pm 0.068$	8.75	$0.440 \pm 0.067$	$-0.397 \pm 0.068$
photometric centroid source offset	$0.42 \pm 0.08$	5.27	$0.07 \pm 0.09$	$-0.41 \pm 0.08$

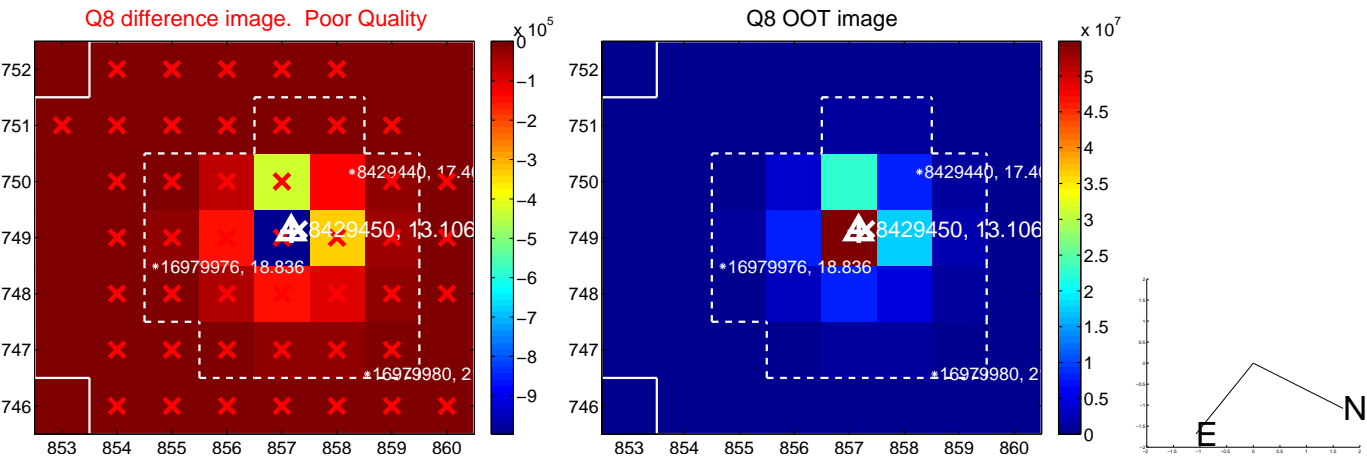
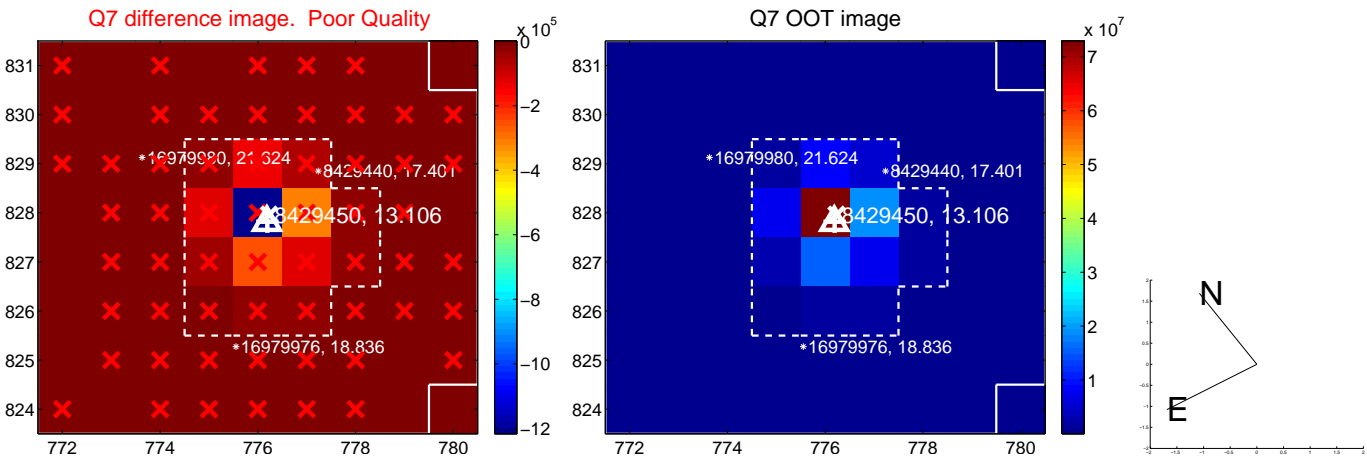
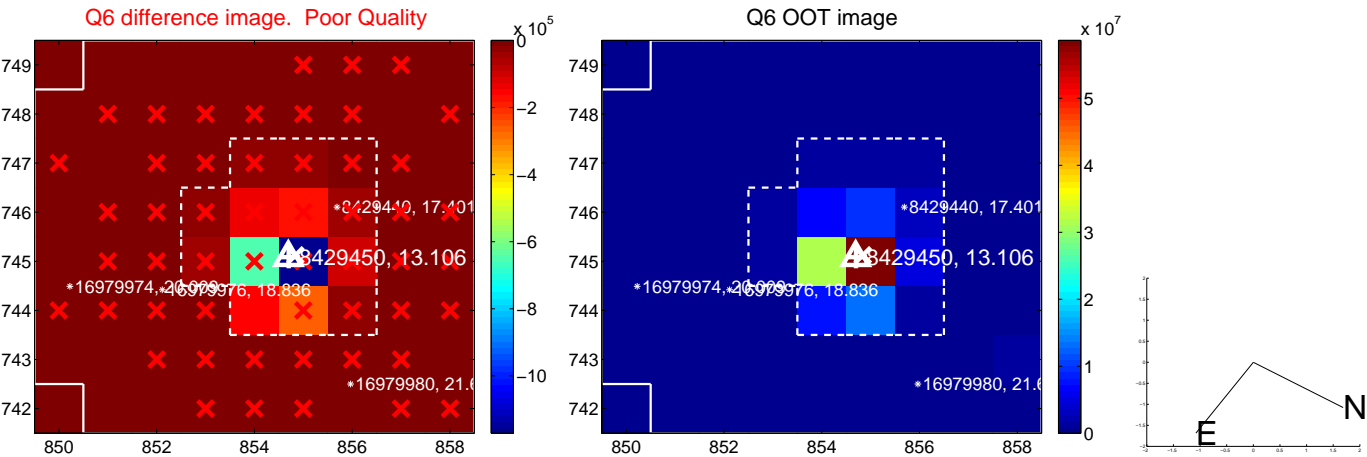
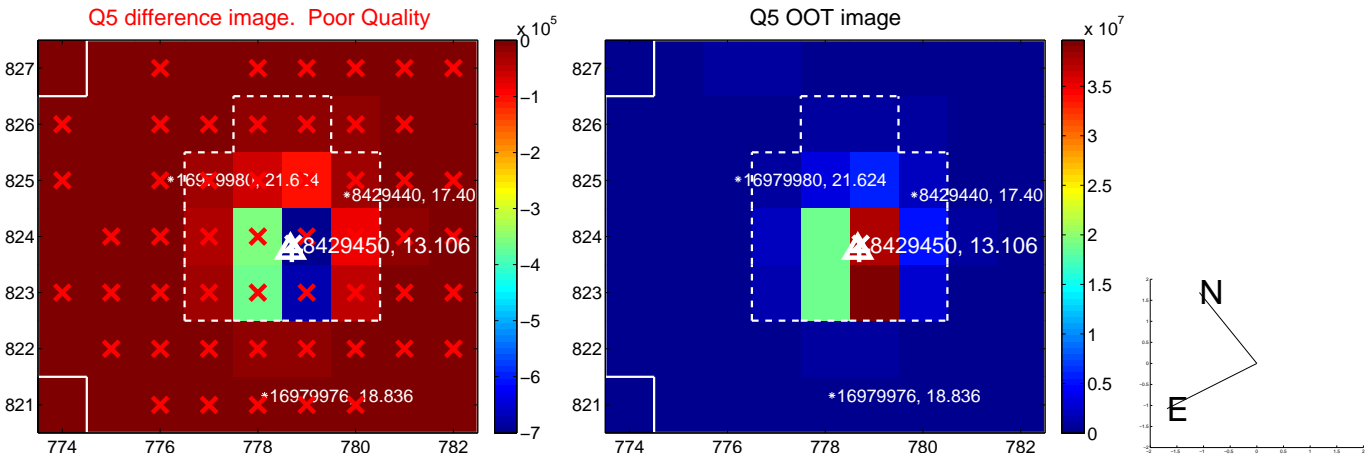


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

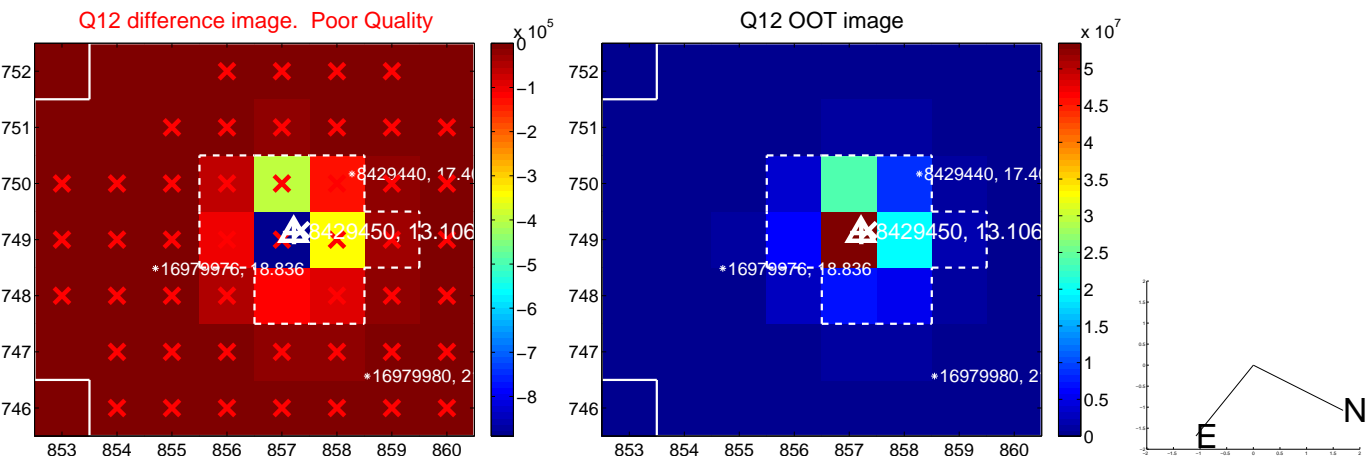
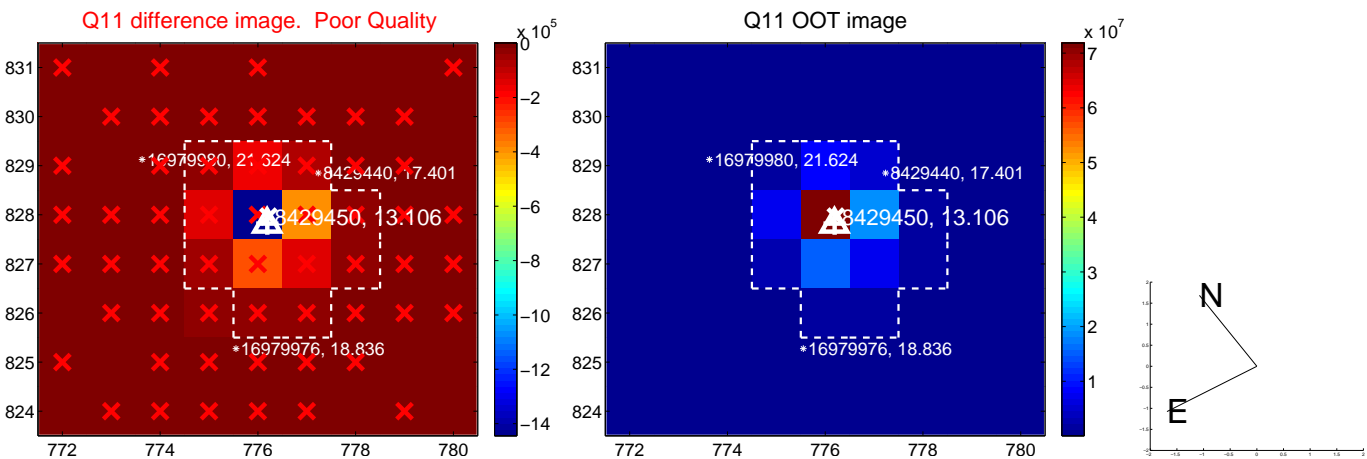
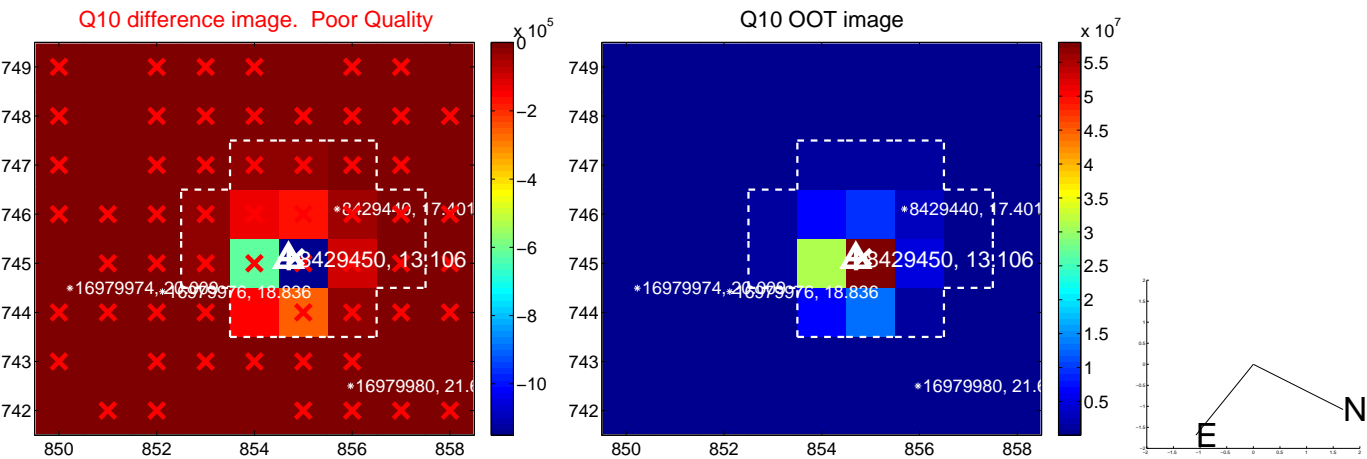
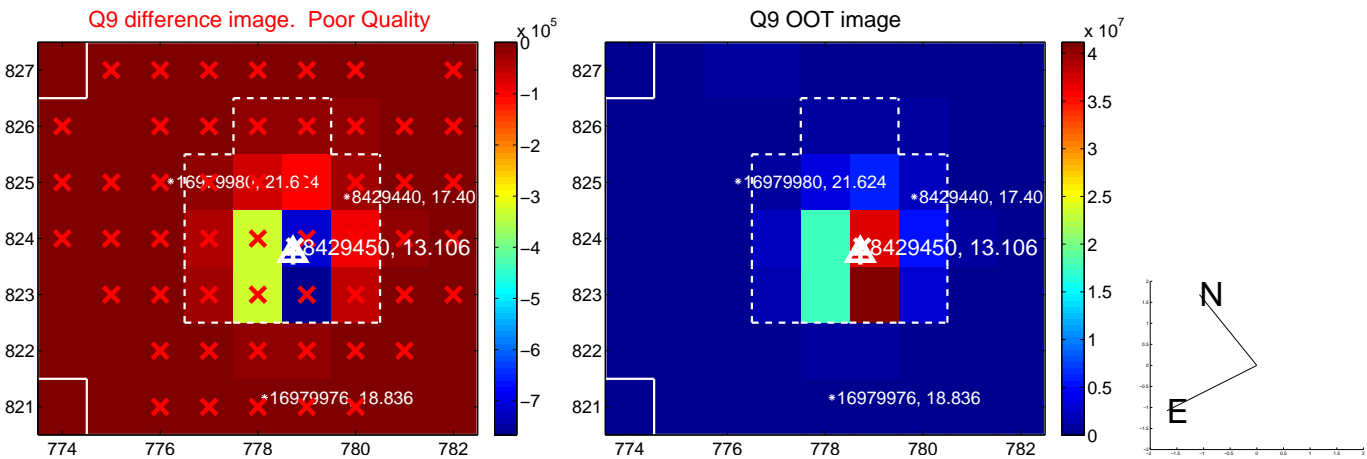


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

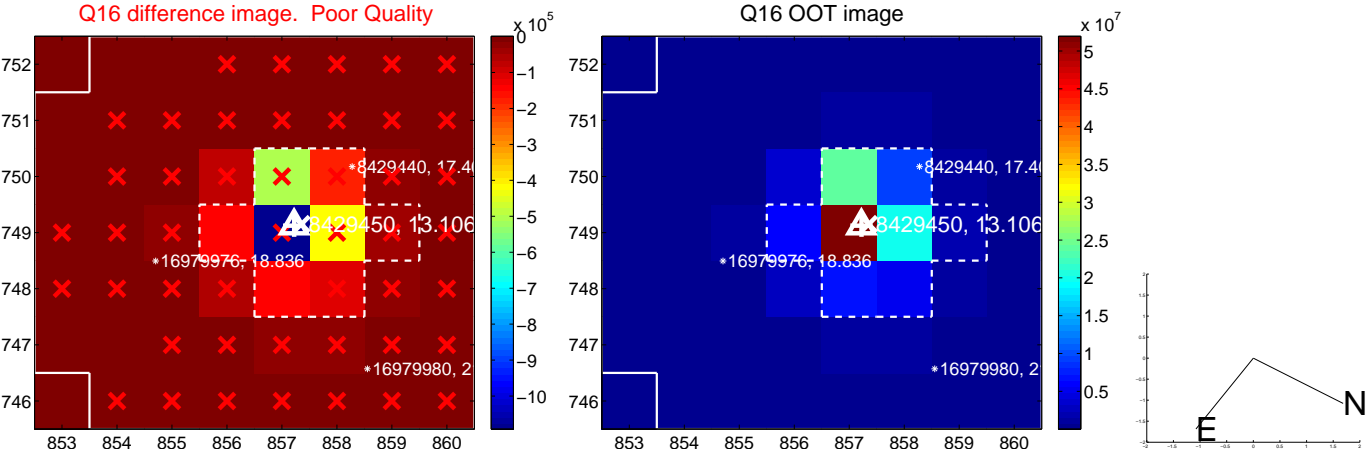
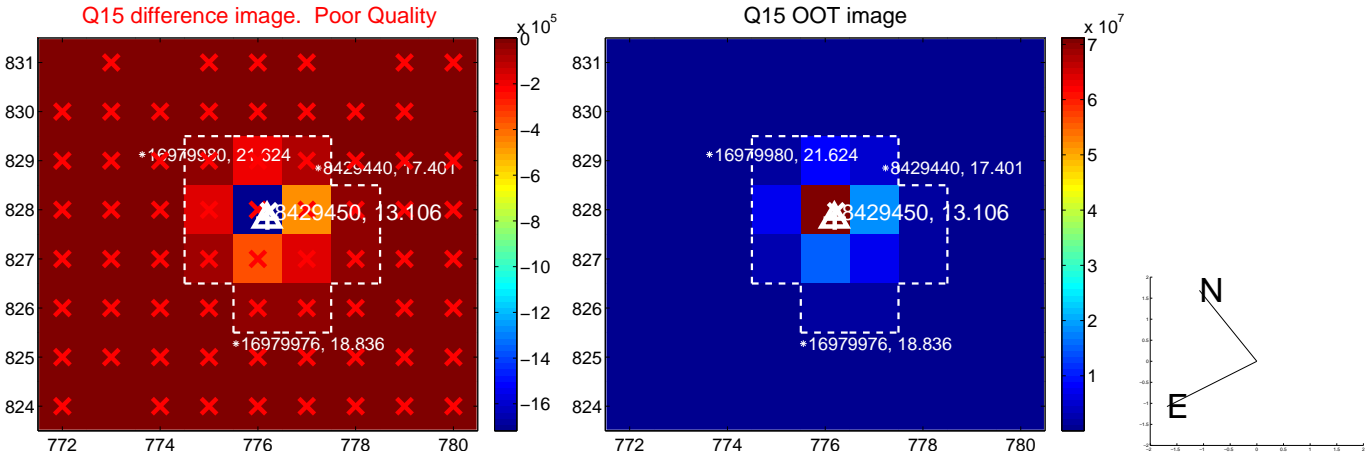
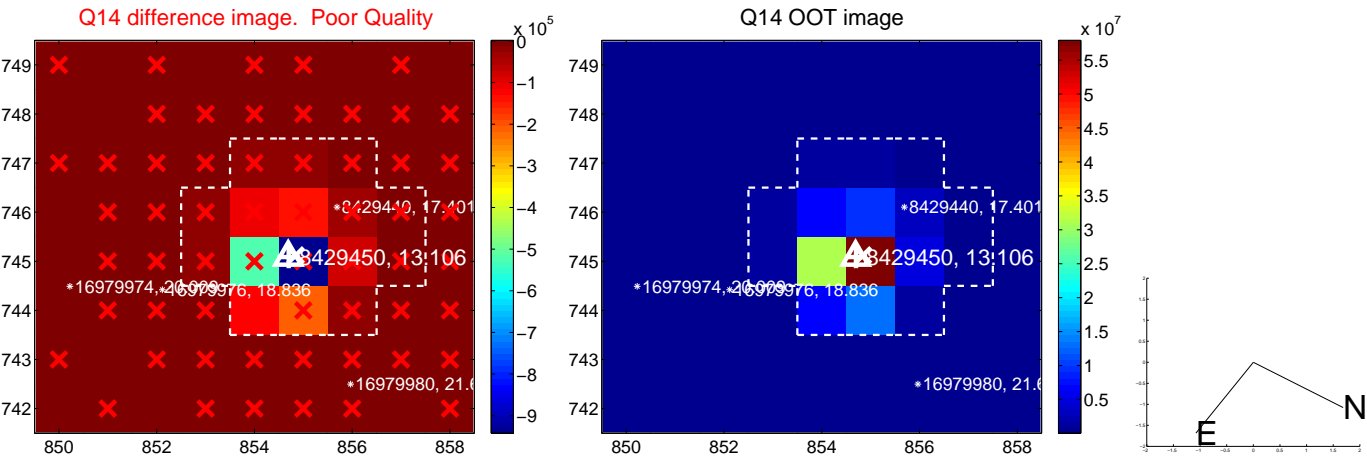
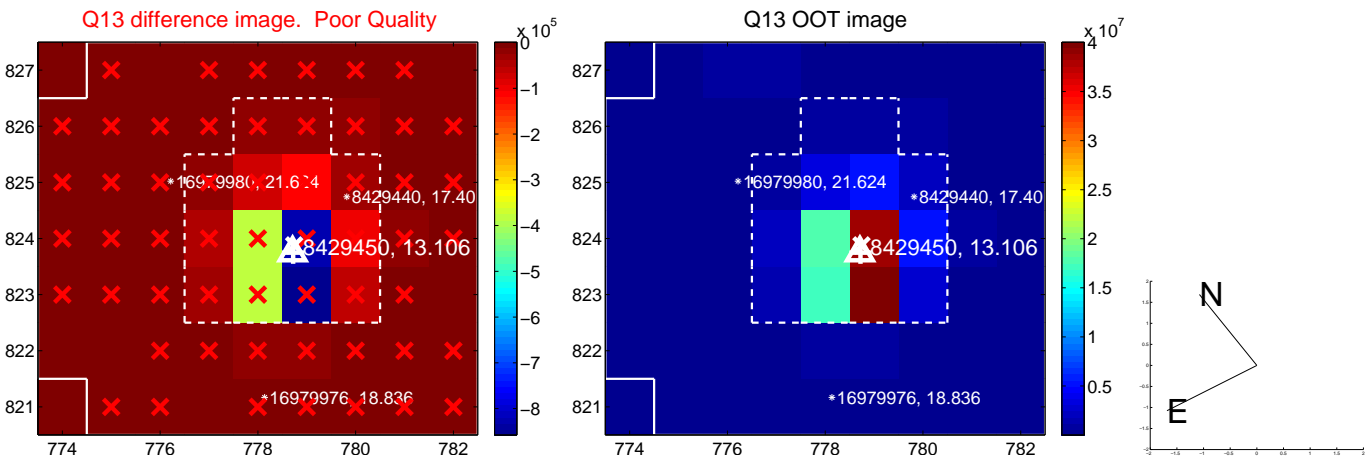




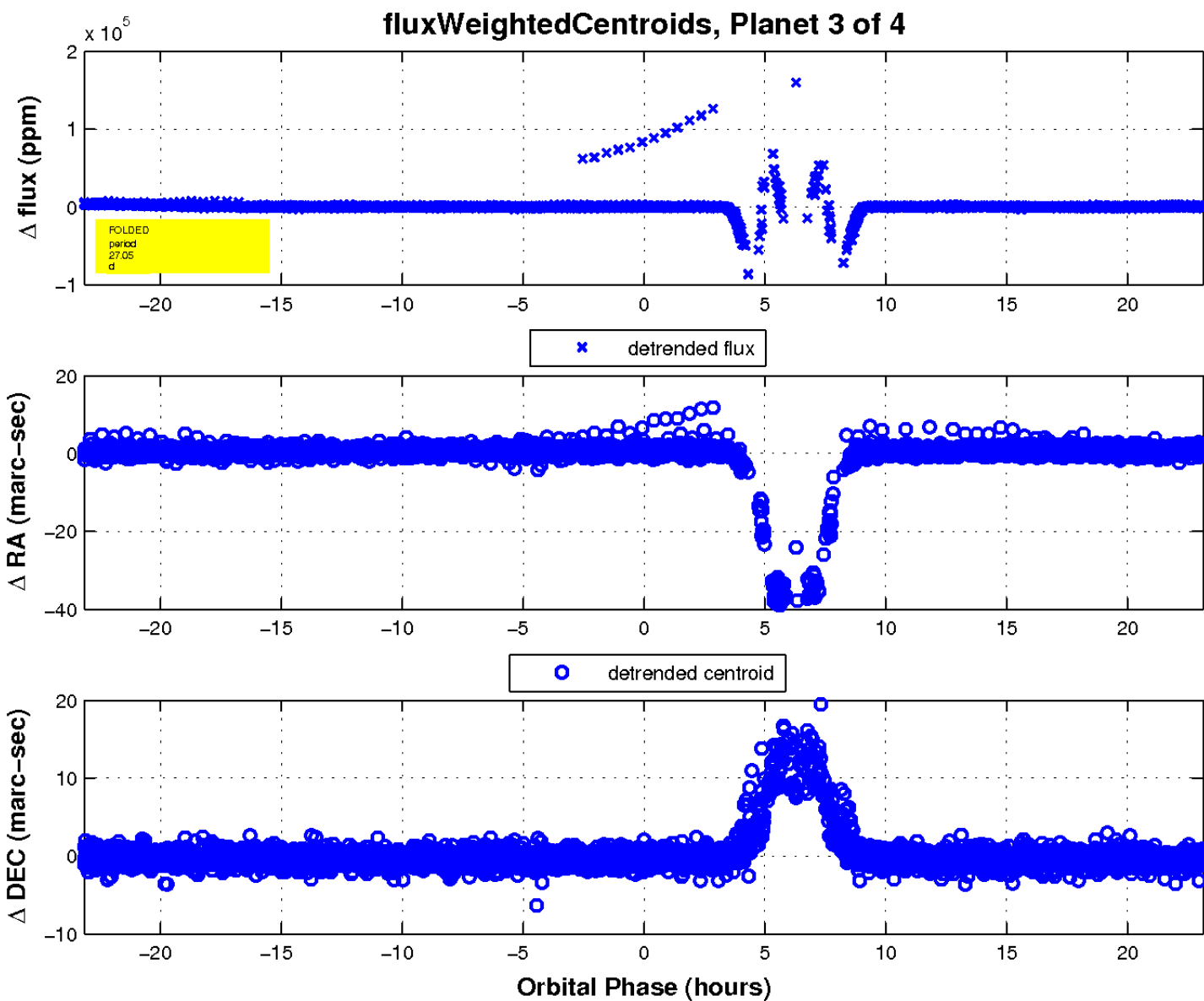
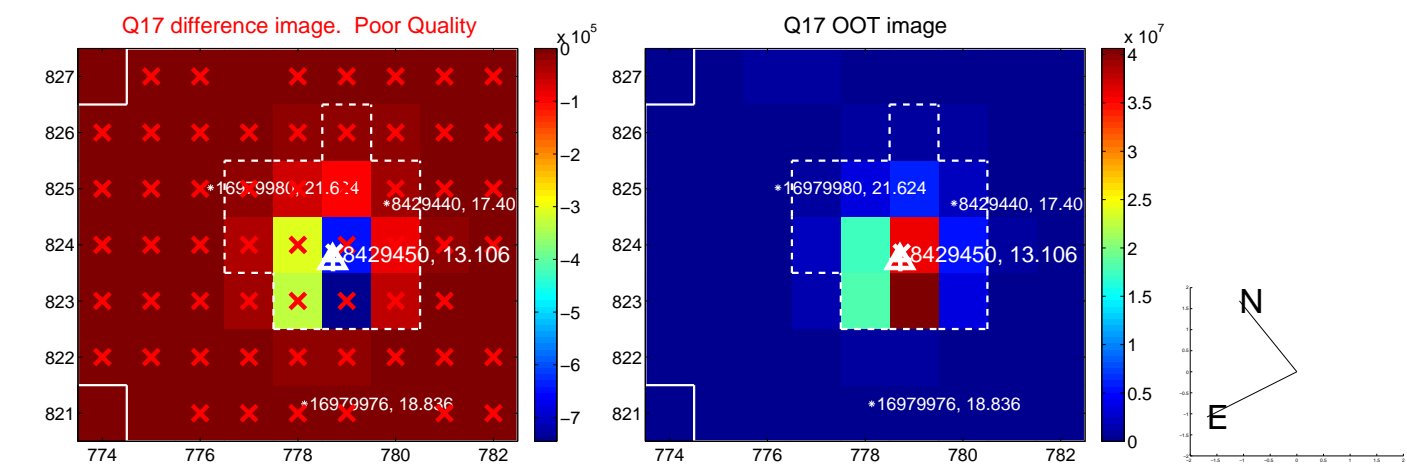
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

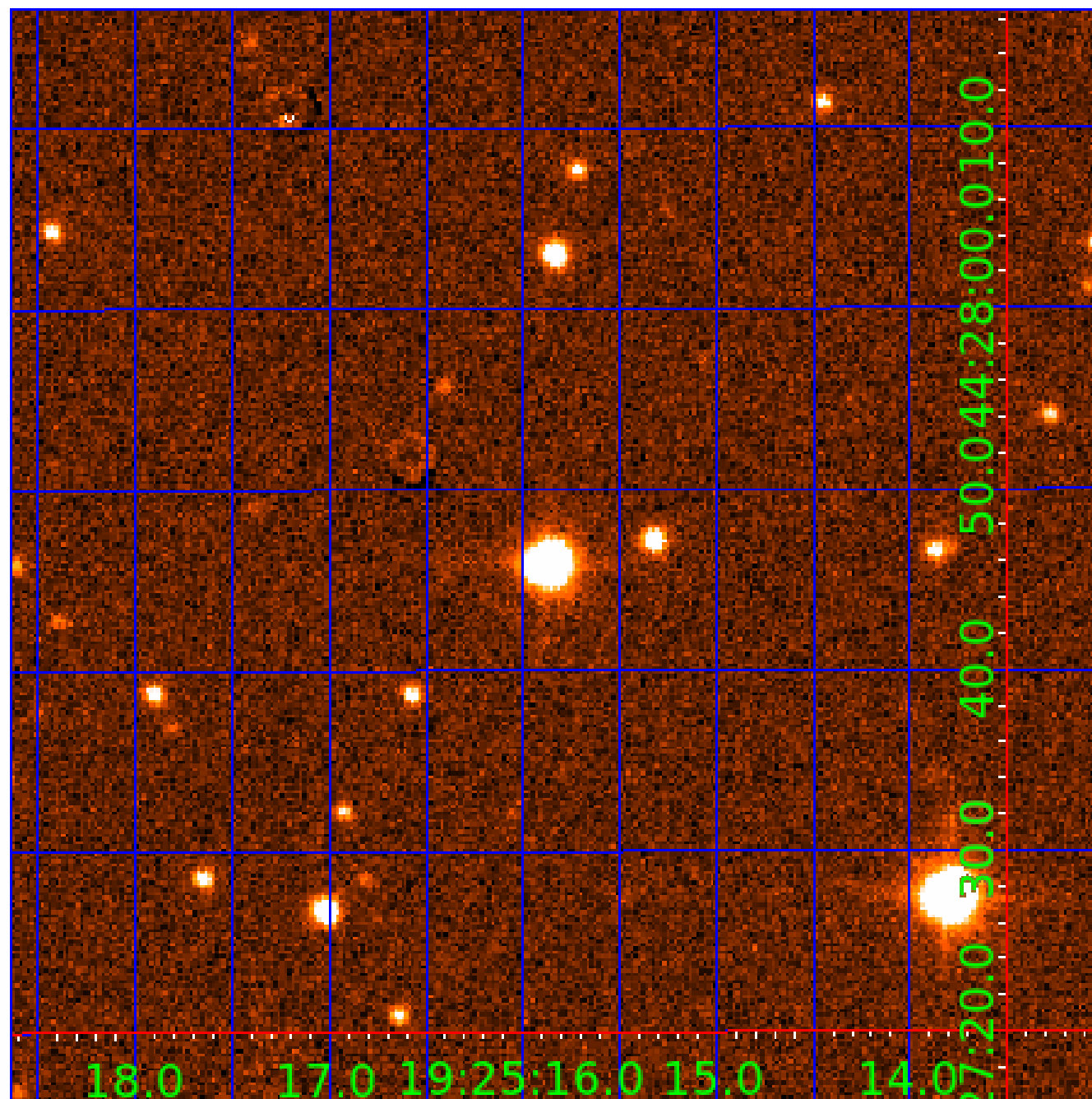


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 008429450

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008429450-01	OBS	7039.01	1.352577	132.038277	315707.7	3.000	23853.9	-1.0	2.41	6881	80.40	15976.50
008429450-02	OBS	No	5.410582	134.930210	10689.2	15.000	3420.1	-1.0	2.41	6881	25.13	2515.97
008429450-03	OBS	No	27.051450	131.785994	24773.9	1.500	591.7	-1.0	2.41	6881	38.45	294.29
008429450-04	OBS	No	82.958179	143.100780	17021.9	2.000	430.8	-1.0	2.41	6881	31.80	66.05

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008429450-01	OBS	FP	0.00	0	1	0	0	DEPTH_ODDEVEN_DV—DEPTH_ODDEVEN_ALT—MOD_ODDEVEN_ALT—HAS_SEC_TCE—CENT_NOFITS
008429450-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—RESIDUAL_TCE—CENT_NOFITS
008429450-03	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—RESIDUAL_TCE—CENT_NOFITS
008429450-04	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_NOFITS

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

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

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

Ephemeris Match Information For 008429450-04

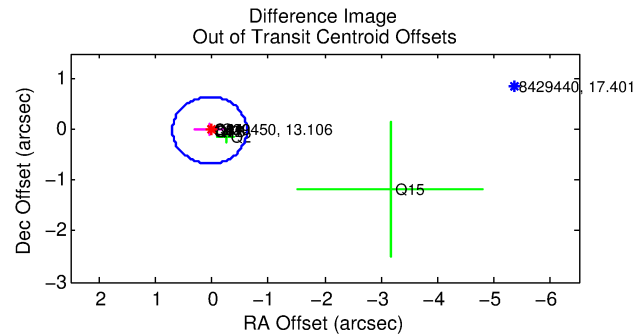
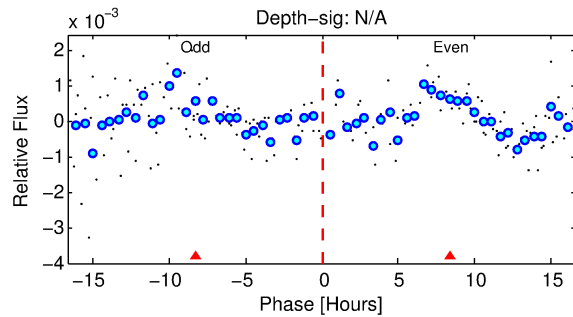
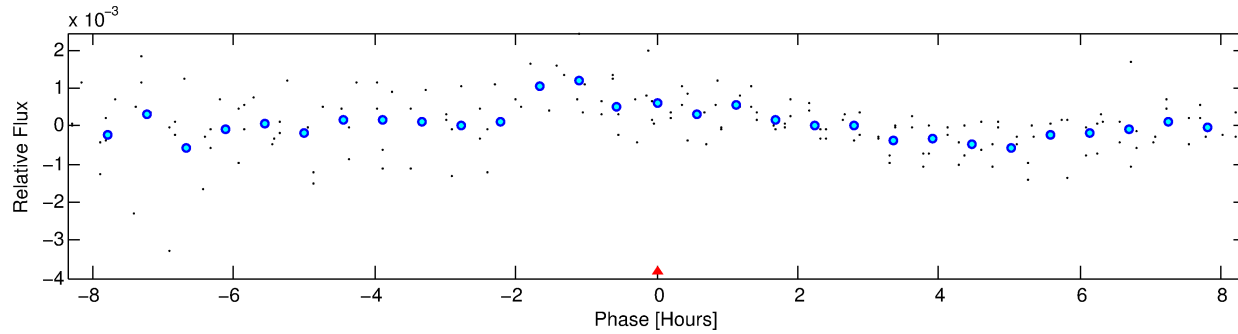
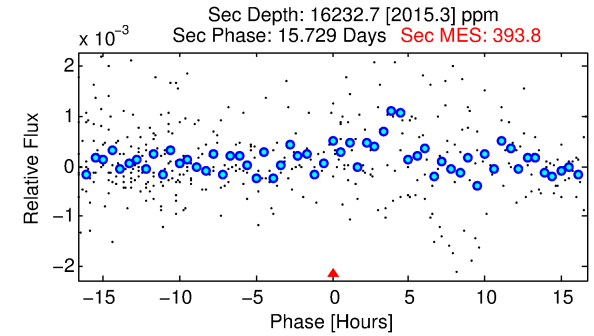
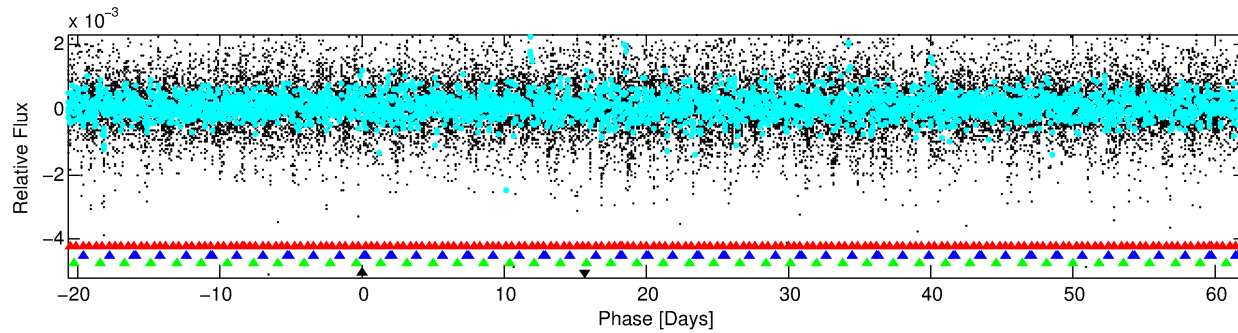
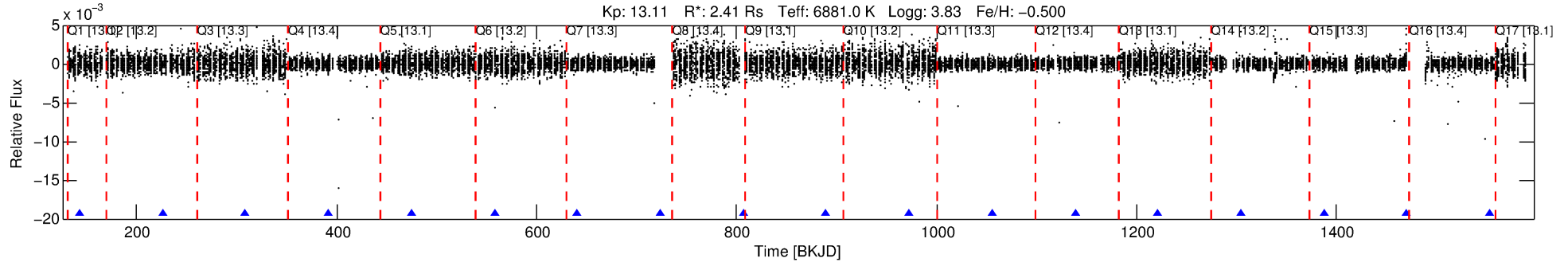
No Significant Match Found

# DV One-Page Summary

KIC: 8429450 Candidate: 4 of 4 Period: 82.958 d

KOI: K07039 Corr: No Ephemeris Match

Kp: 13.11 R\*: 2.41 Rs Teff: 6881.0 K Logg: 3.83 Fe/H: -0.500



## TPS TCE Results:

Period = 82.95818 d  
Epoch = 143.1008 BKJD

DV fit results are unavailable

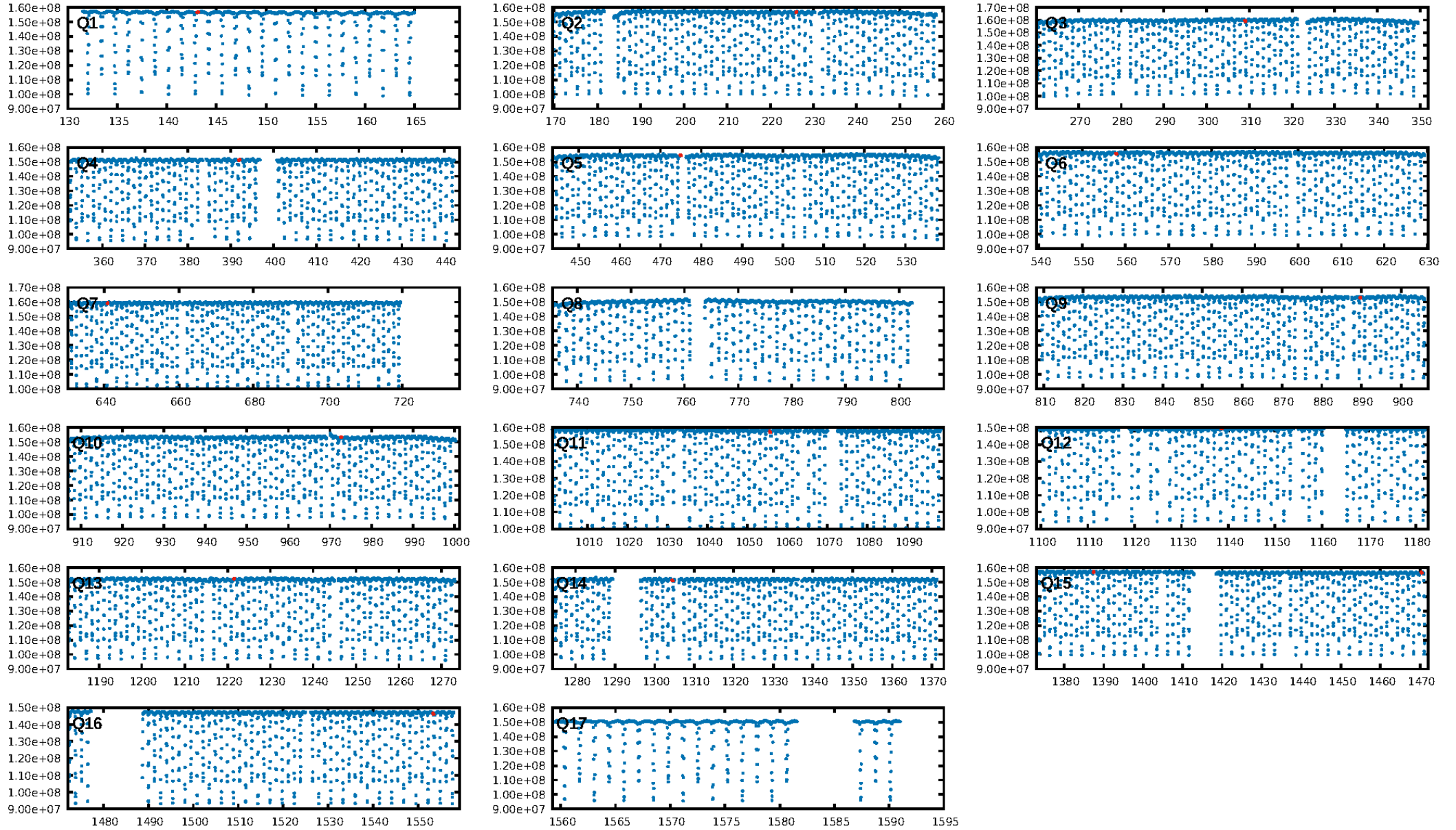
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [536.70σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [9/9]  
GhostDiagnostic-chr: -0.3775  
Centroid-sig: N/A  
Centroid-so: 0.626 arcsec [5.65σ]  
OotOffset-rm: 0.037 arcsec [0.17σ]  
KicOffset-rm: 0.582 arcsec [4.34σ]  
OotOffset-st: 4/4/3/2 [13]  
KicOffset-st: 4/4/3/2 [13]  
DiffImageQuality-fgm: 0.08 [1/13]  
DiffImageOverlap-fno: 0.29 [4/14]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 19:55:02 Z

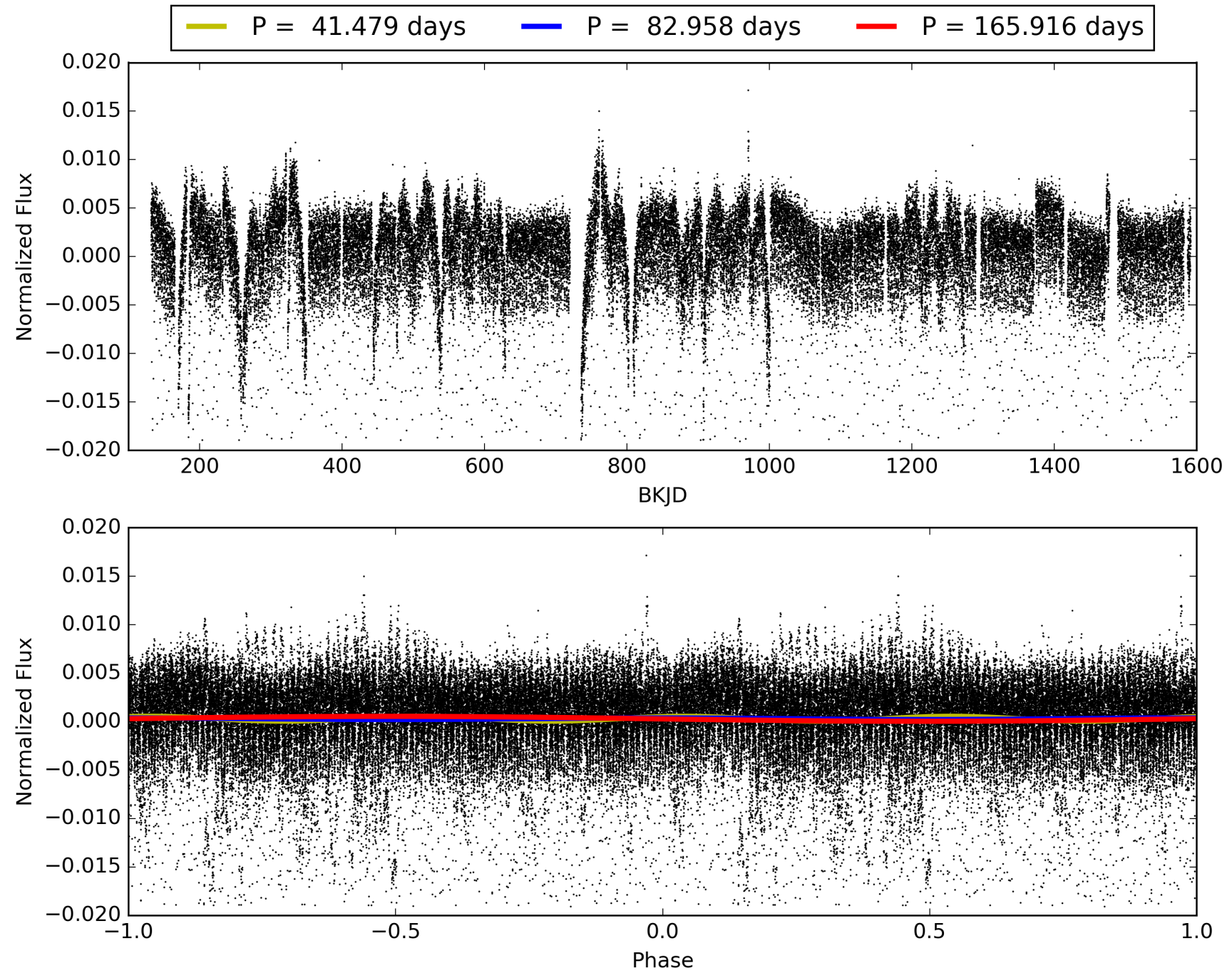
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 008429450-04, PDC Light Curves





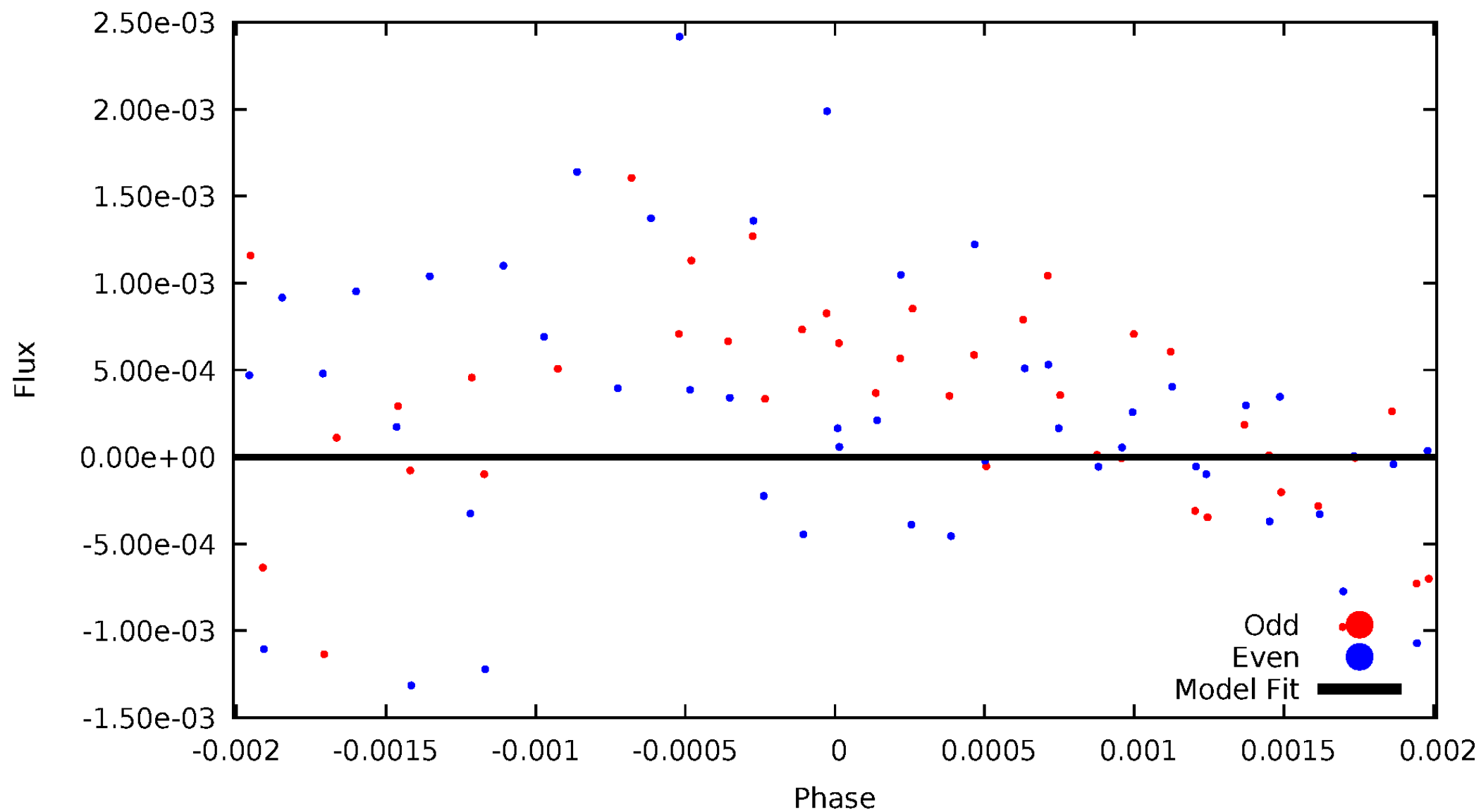
TCE 008429450-04





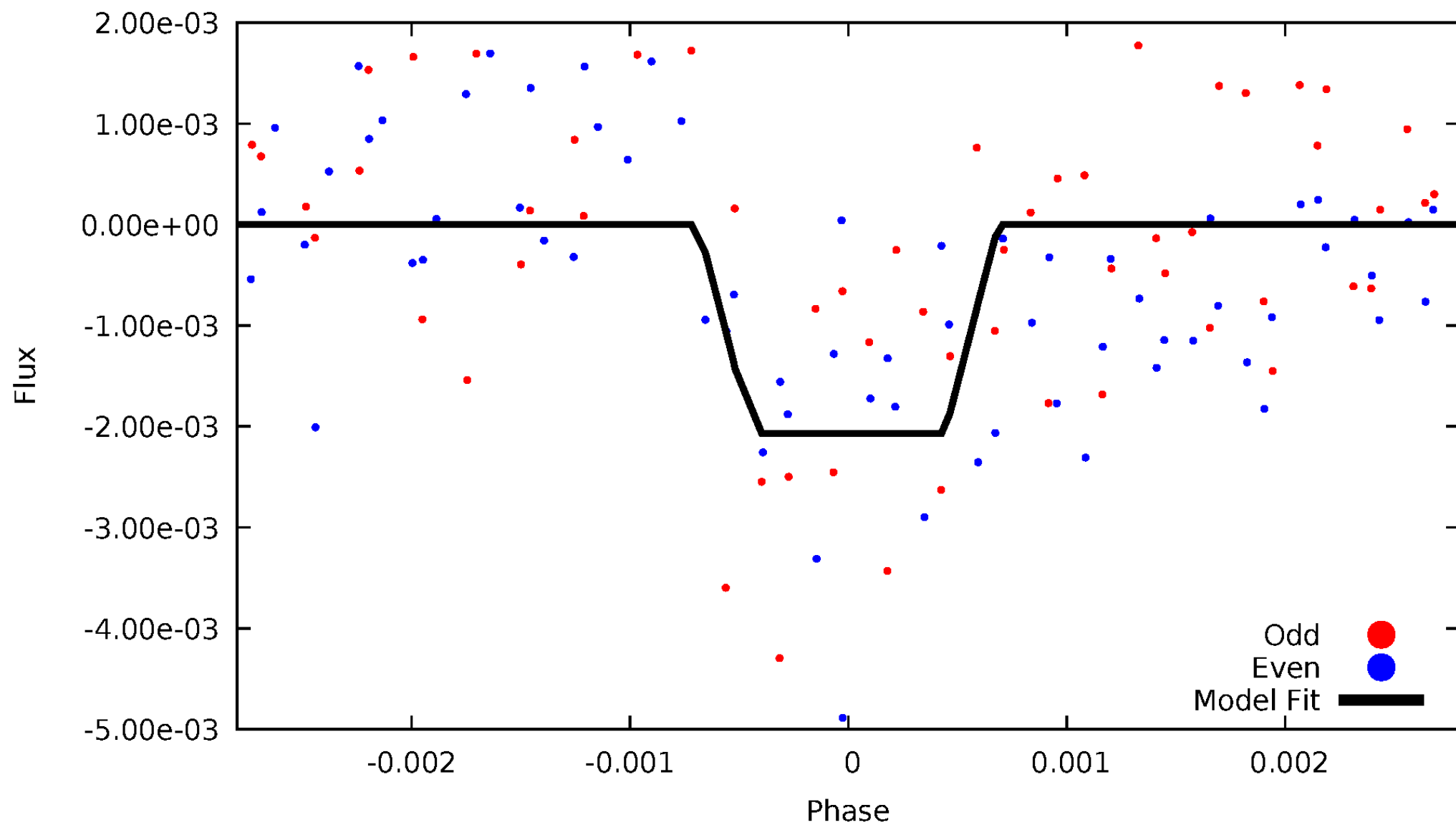
# DV Odd/Even

TCE 008429450-04



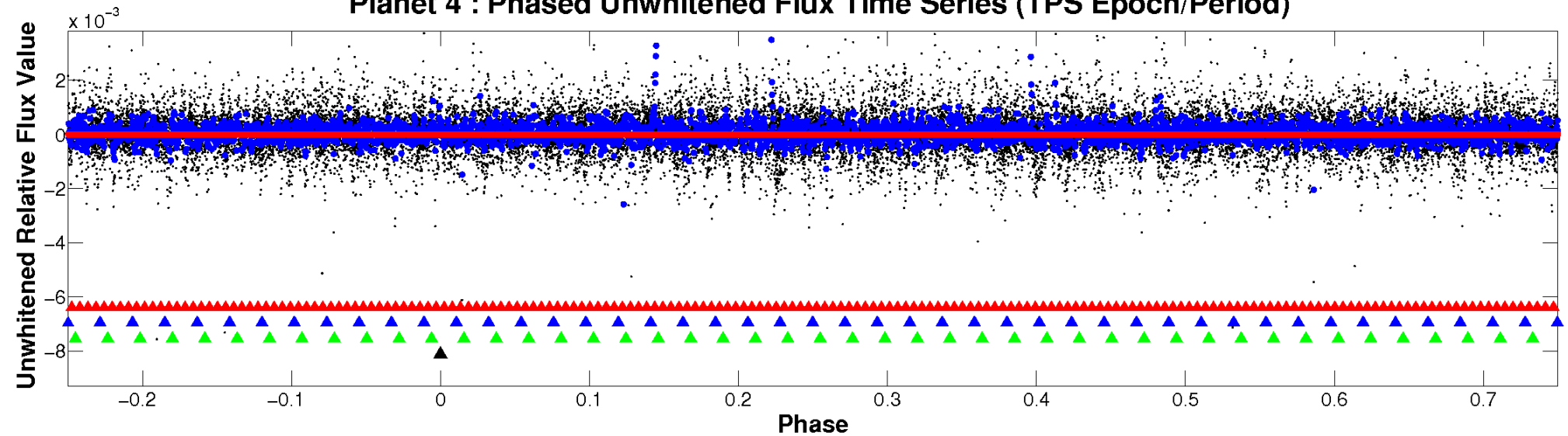
# ALT Odd/Even

TCE 008429450-04



# Non-Whitened Vs. Whitened Light Curve

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

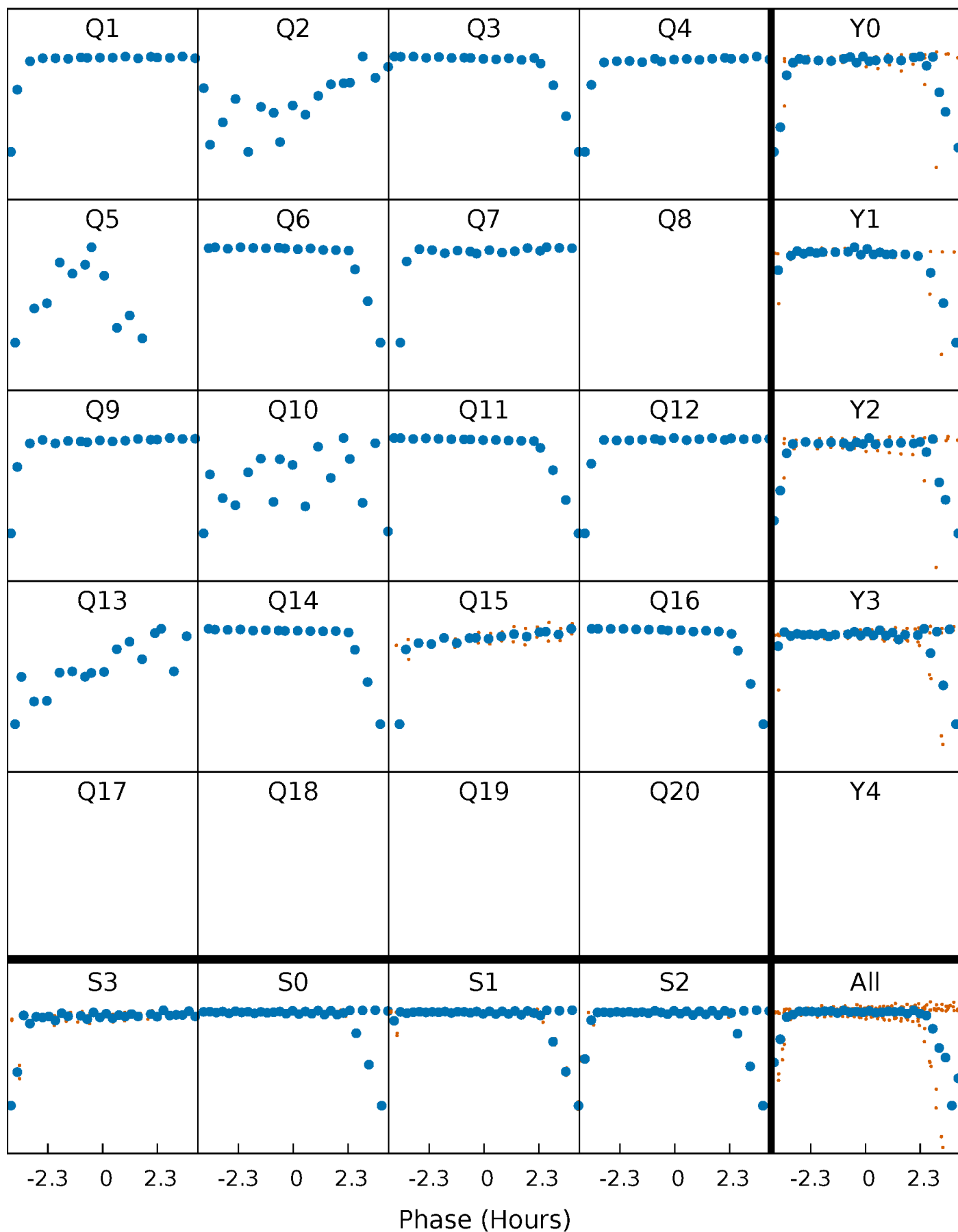


**Planet 4 : Phased Whitened Flux Time Series (TPS Epoch/Period)**



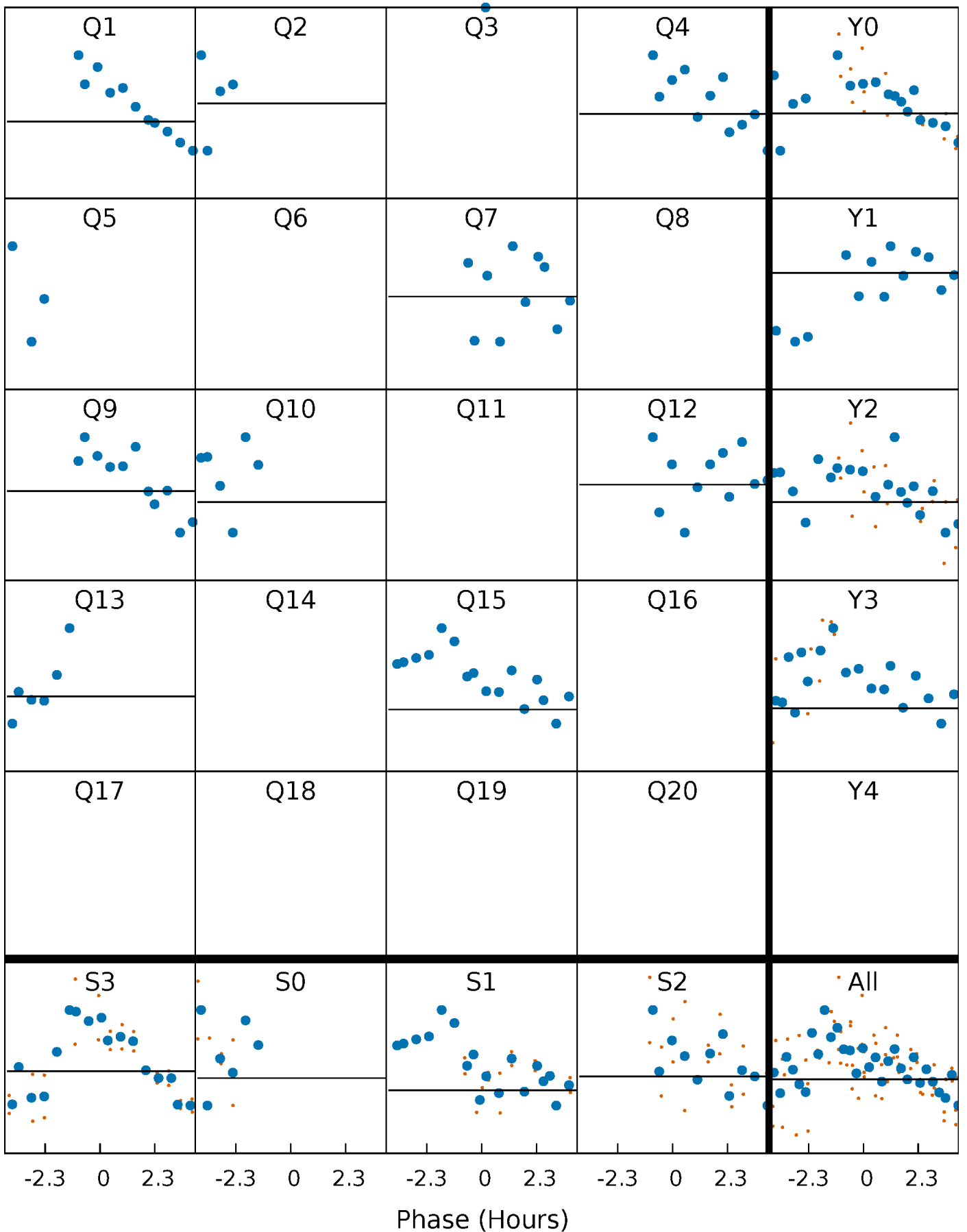
# PDC Quarter-Phased Transit Curves

TCE 008429450-04 P= 82.958179 Days  $T_0=143.100780$  (BKJD)



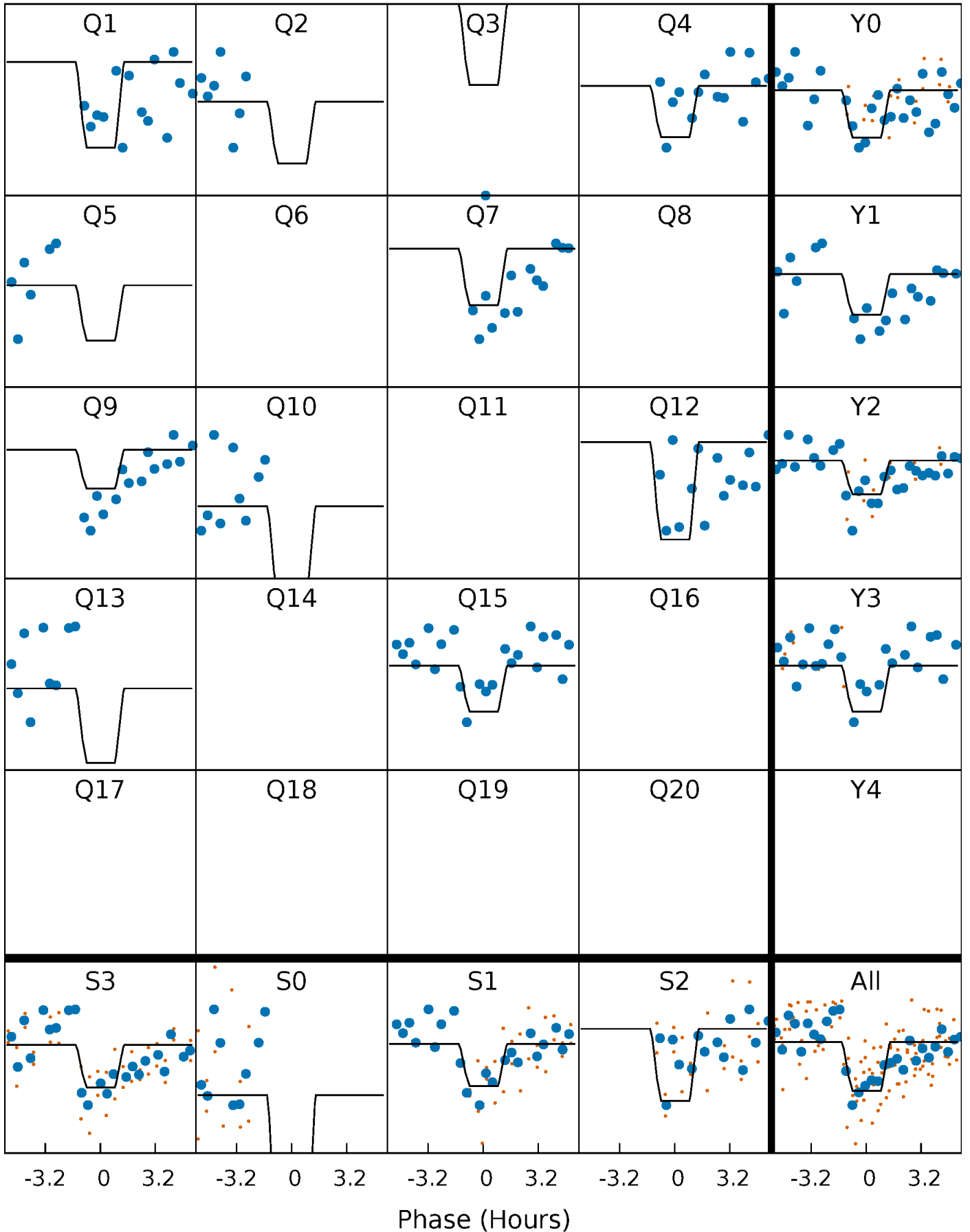
# DV Quarter-Phased Transit Curves

TCE 008429450-04    P= 82.958179 Days     $T_0=143.100780$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

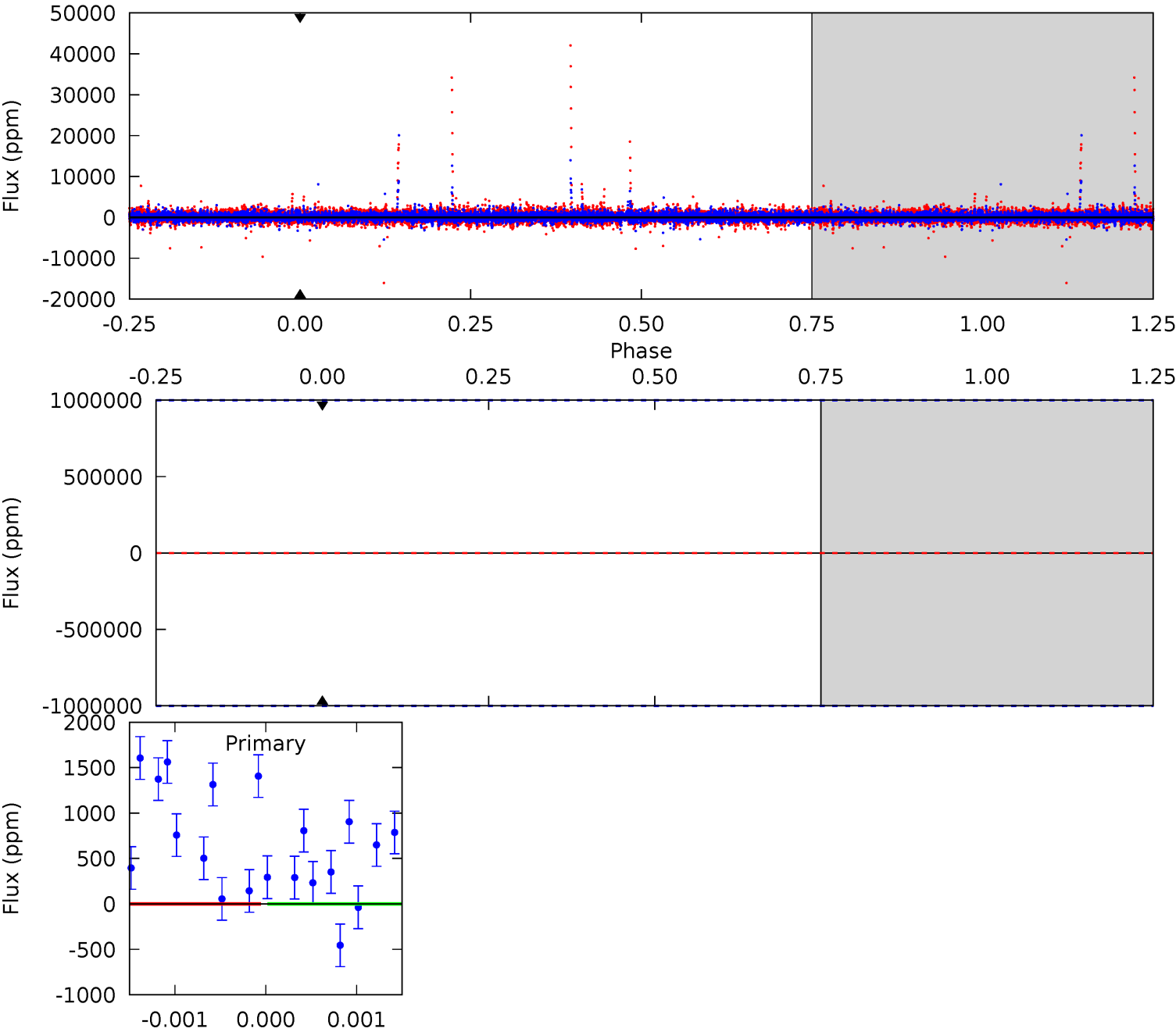
TCE 008429450-04 P= 82.958179 Days  $T_0=143.104089$  (BKJD)



# DV Model-Shift Uniqueness Test

008429450-04, P = 82.958179 Days, E = 60.142601 Days

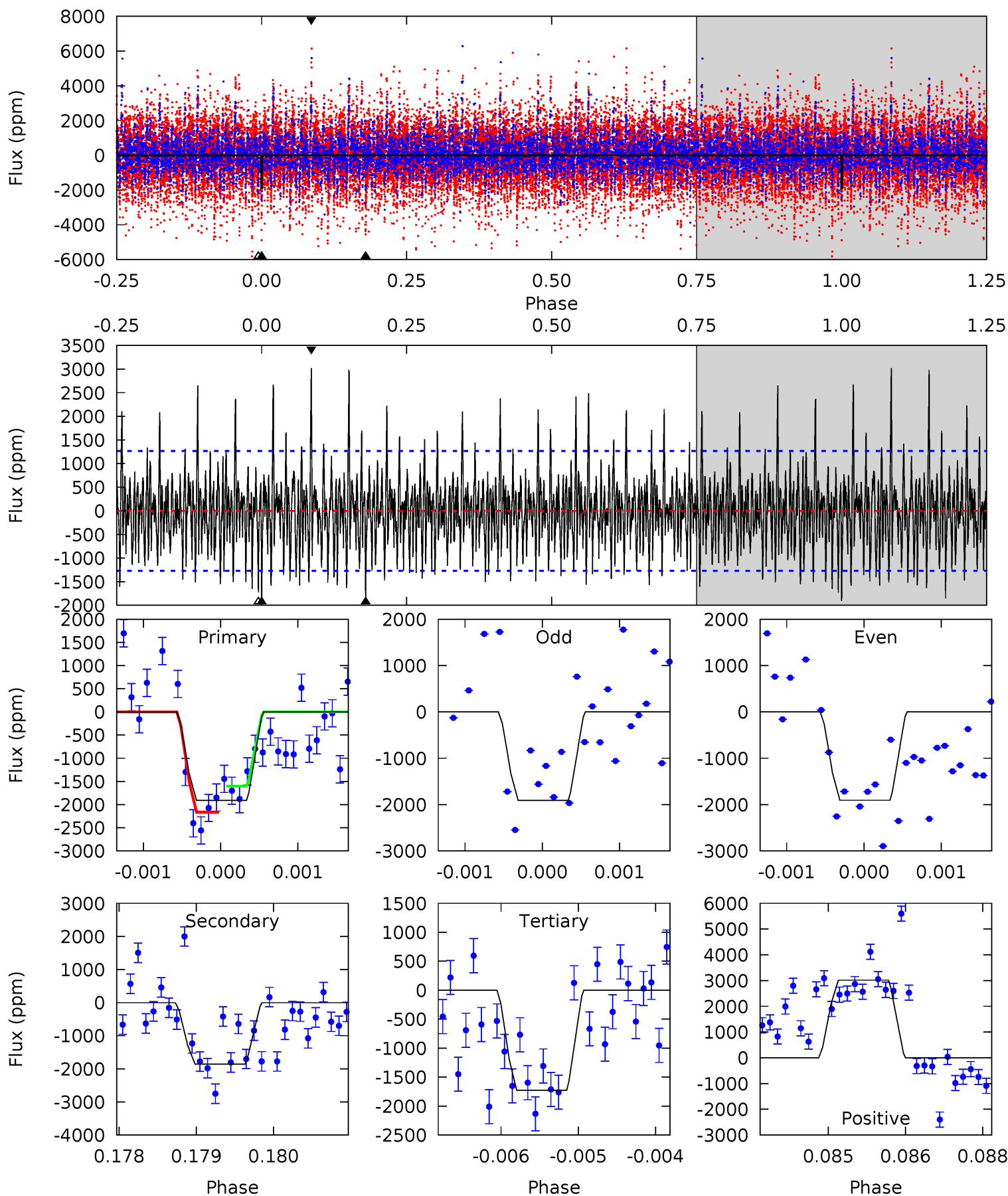
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



# Alt Model-Shift Uniqueness Test

008429450-04, P = 82.958179 Days, E = 60.145910 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
8.14	7.92	7.36	12.9	5.41	3.22	2.53	0.78	-4.72	0.55	-4.94	0.01	1.49	0.61	1.20





### Stellar Parameters For KIC 008429450

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$6881^{+214}_{-285}$	$3.831^{+0.456}_{-0.114}$	$-0.500^{+0.250}_{-0.300}$	$2.406^{+0.487}_{-1.136}$	$1.430^{+0.199}_{-0.369}$	$0.145^{+0.674}_{-0.052}$
	+3%/-4%	+12%/-3%	+50%/-60%	+20%/-47%	+14%/-26%	+466%/-36%
Source	PHO54	PHO54	PHO54	DSEP		

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

### Secondary Eclipse Parameters for KIC 008429450-04 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$0 \pm 1000000$	$31.98^{+24.47}_{-20.94}$	$988^{+79}_{-123}$	$4235^{+12137}_{-19530}$	$194^{+17160}_{-15675}$
Alt.	$-1857 \pm 234$	$20.95^{+18.92}_{-14.67}$	$984^{+79}_{-114}$	$4925^{+4342}_{-1032}$	$404^{+4068}_{-287}$

$T_{max}$  = 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

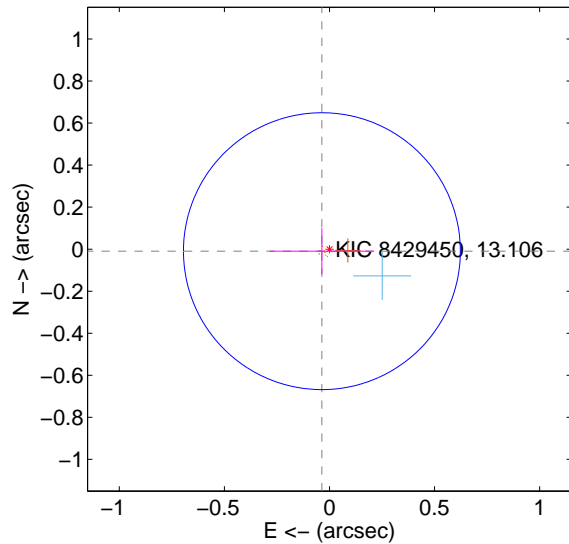
Supplemental centroid analysis for 008429450-04. Kepler magnitude: 13.11. Transit SNR -1.00

There are 1 quarters with good PRF difference image offsets

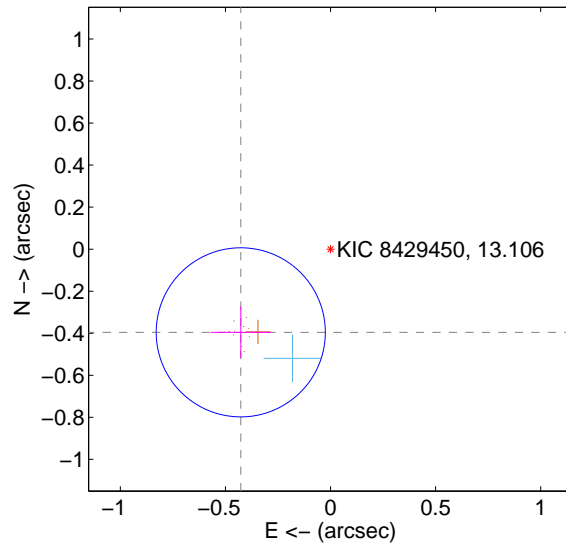
The direct PRF centroid is offset from the target star catalog position by about 0.54 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.037 \pm 0.220$	0.17	$0.036 \pm 0.248$	$-0.010 \pm 0.110$
PRF-fit source offset from KIC position	$0.582 \pm 0.134$	4.34	$0.427 \pm 0.143$	$-0.396 \pm 0.122$
photometric centroid source offset	$0.63 \pm 0.11$	5.65	$0.39 \pm 0.12$	$-0.49 \pm 0.11$

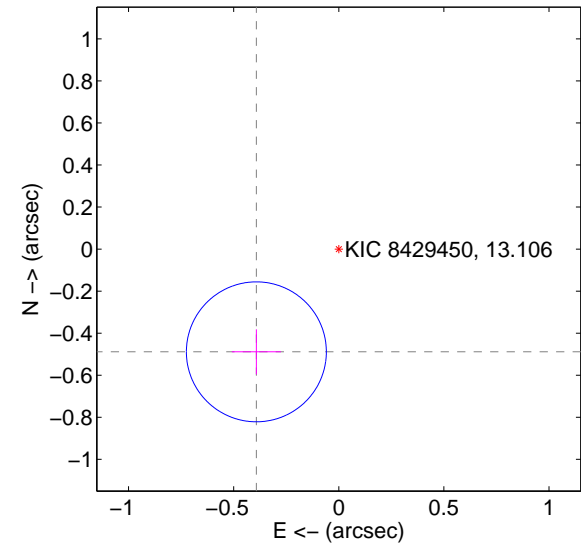
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

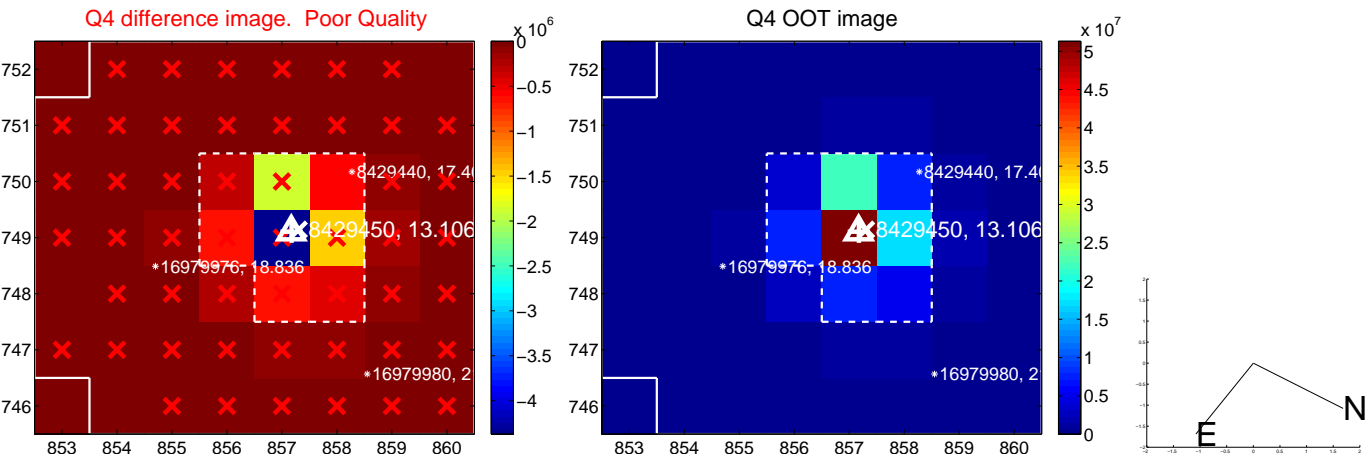
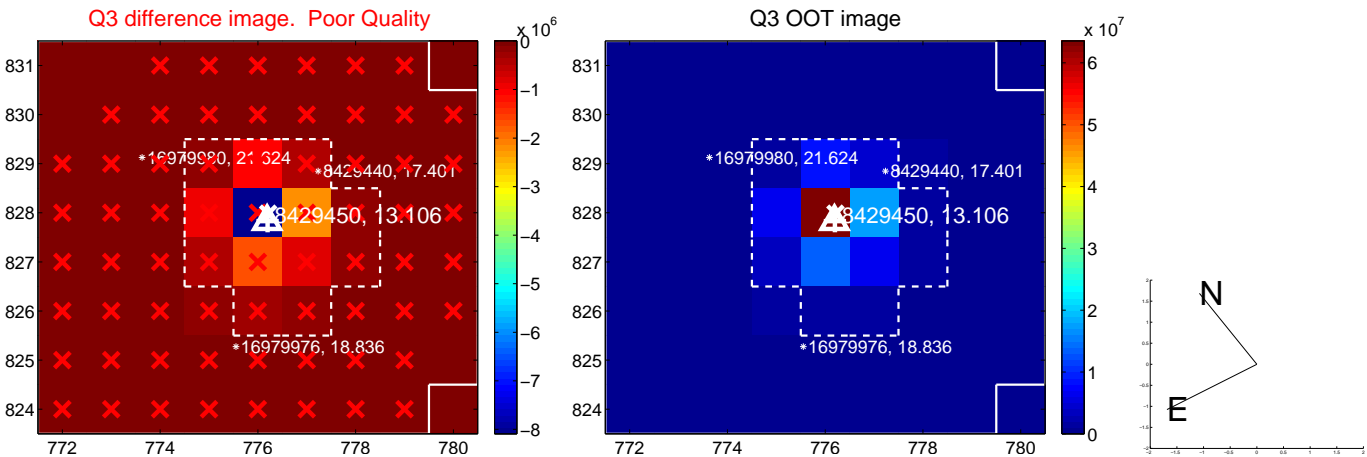
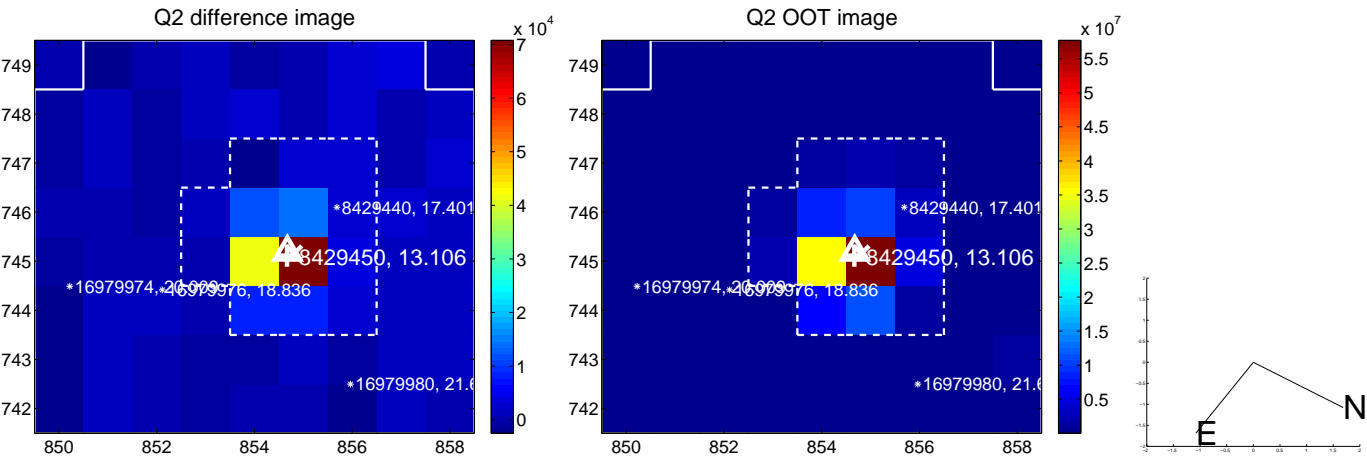
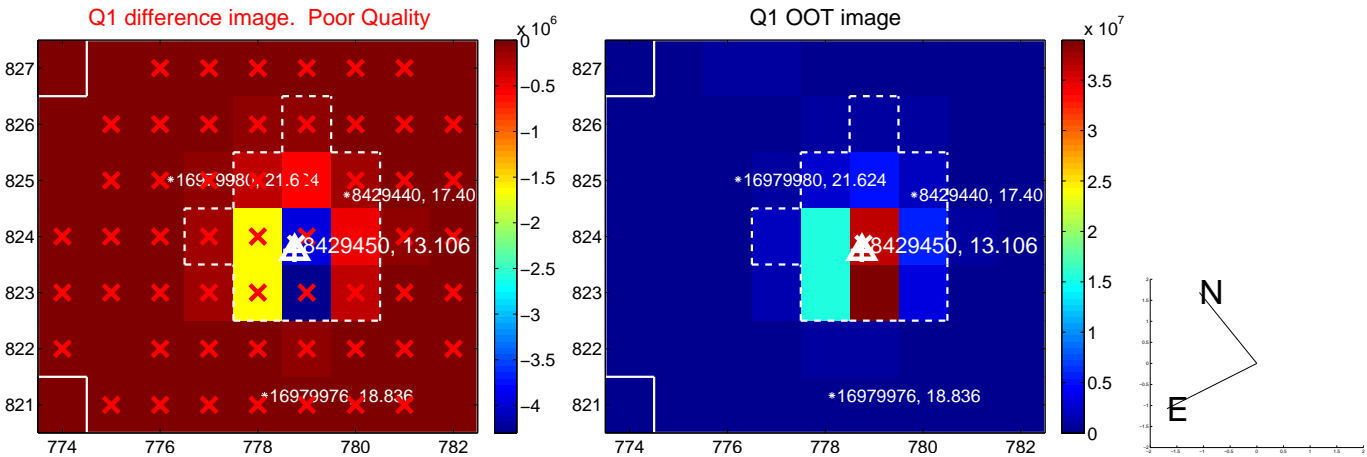


offset from photometric centroids

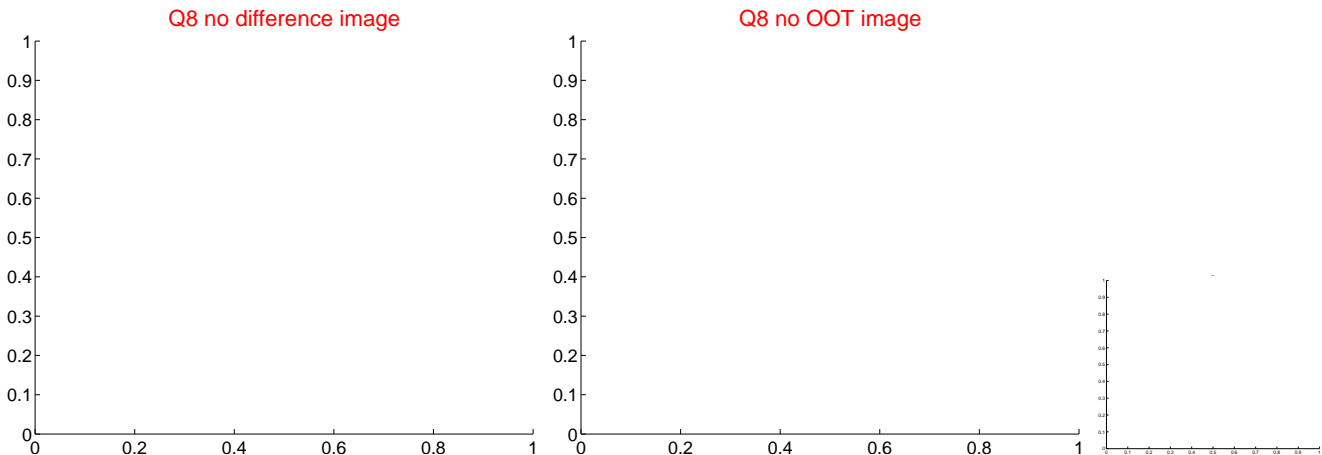
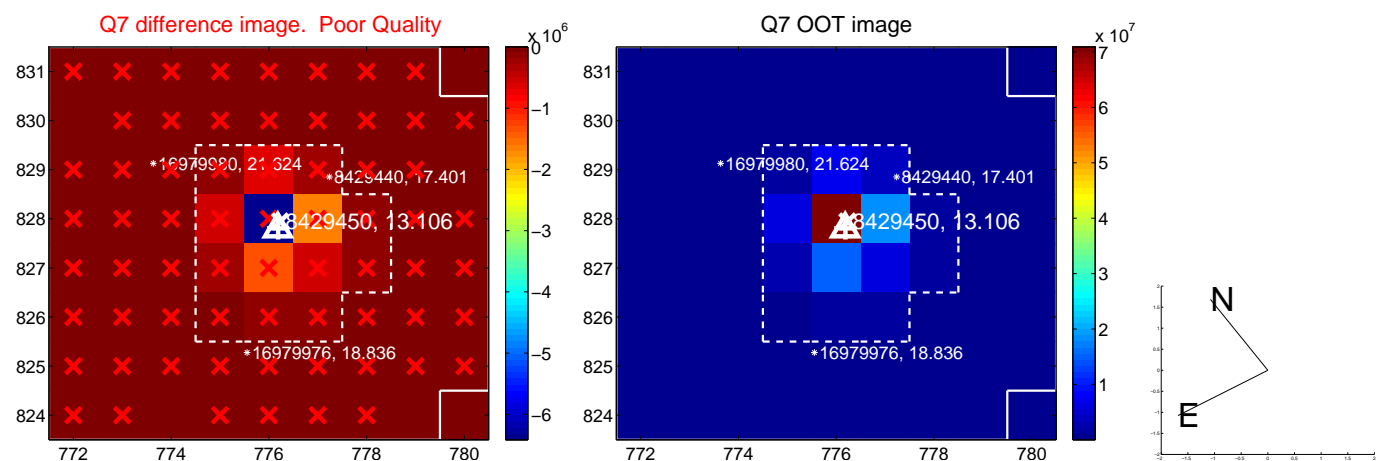
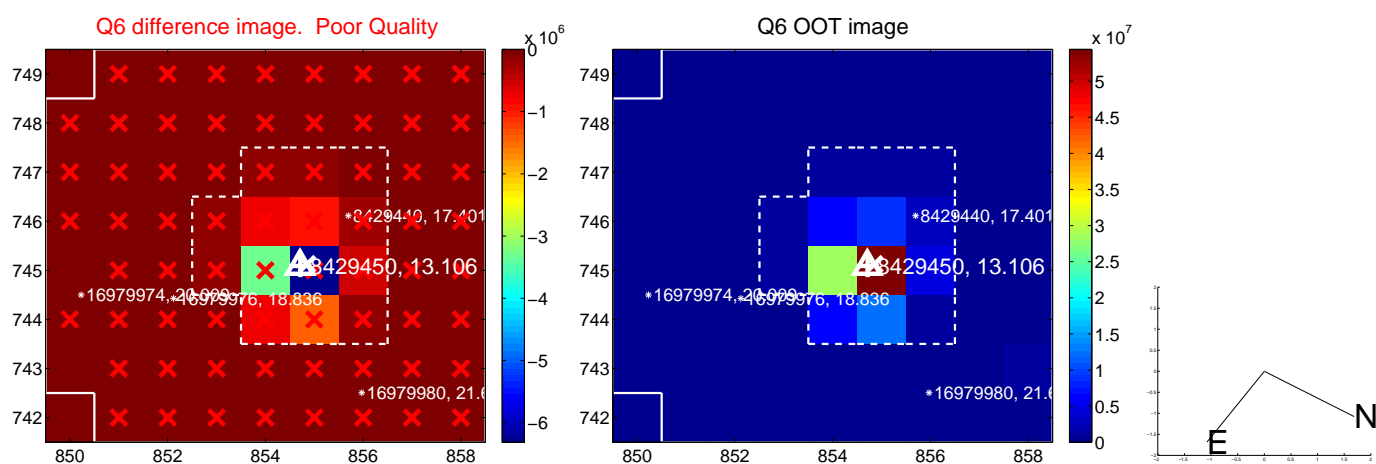
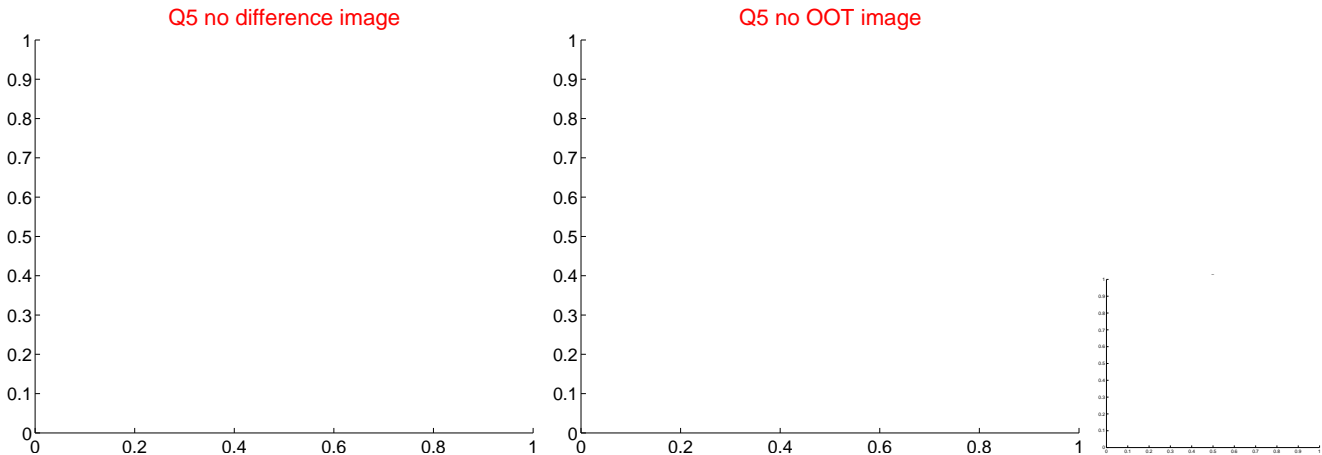


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

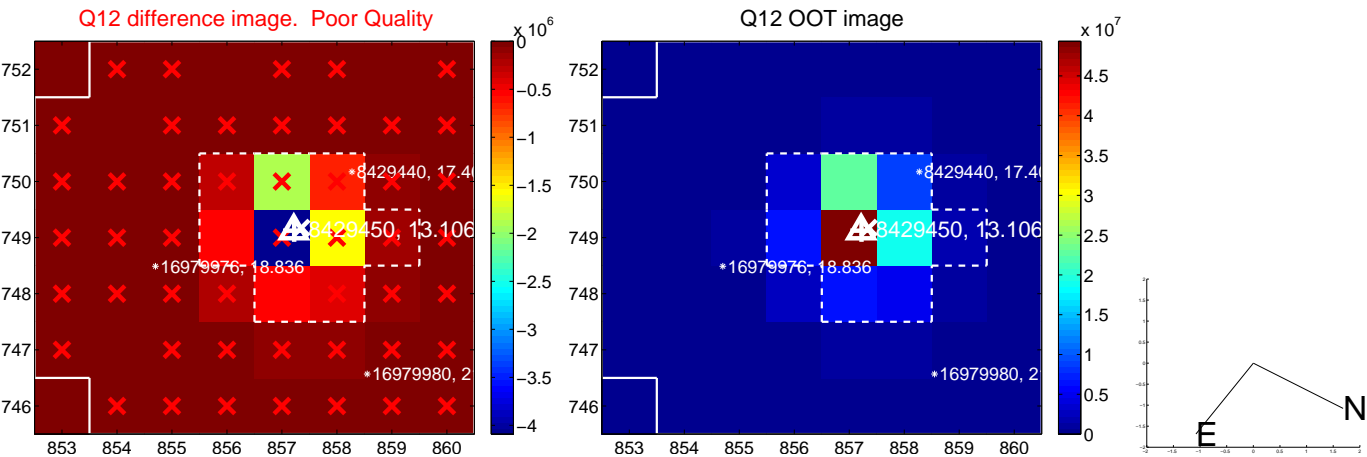
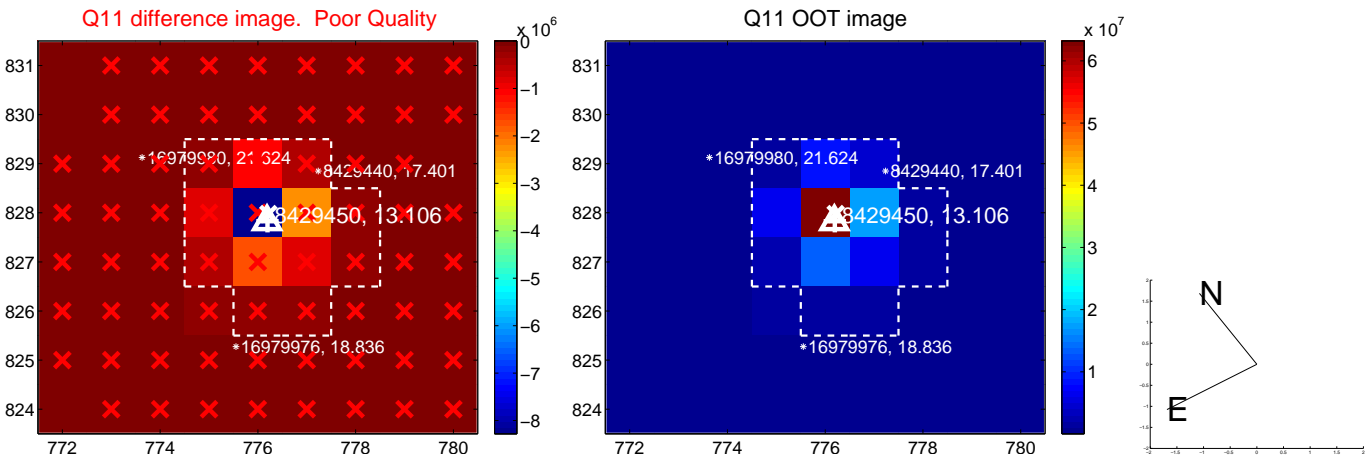
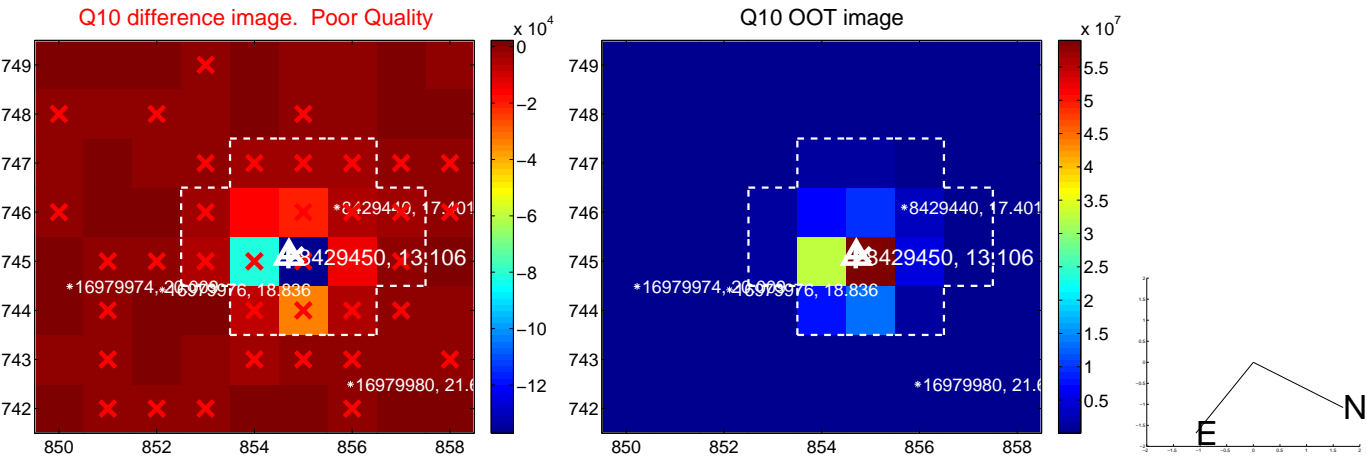
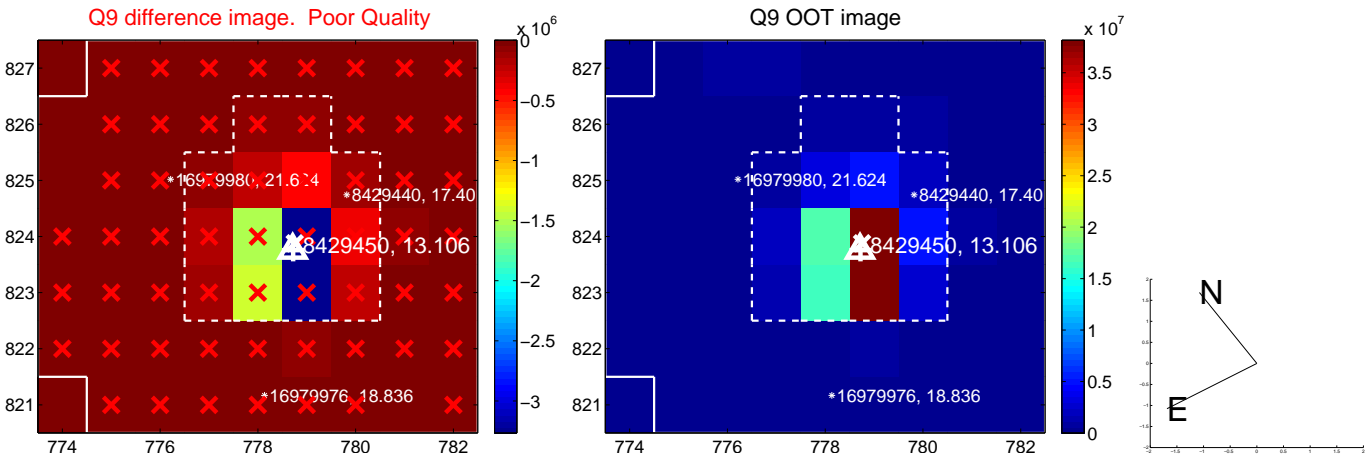
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



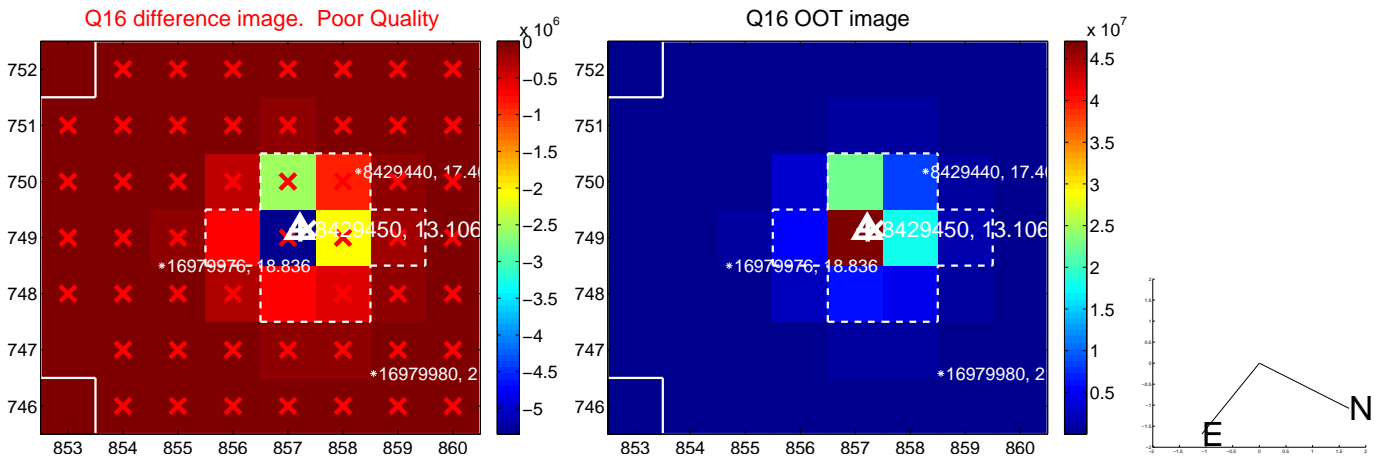
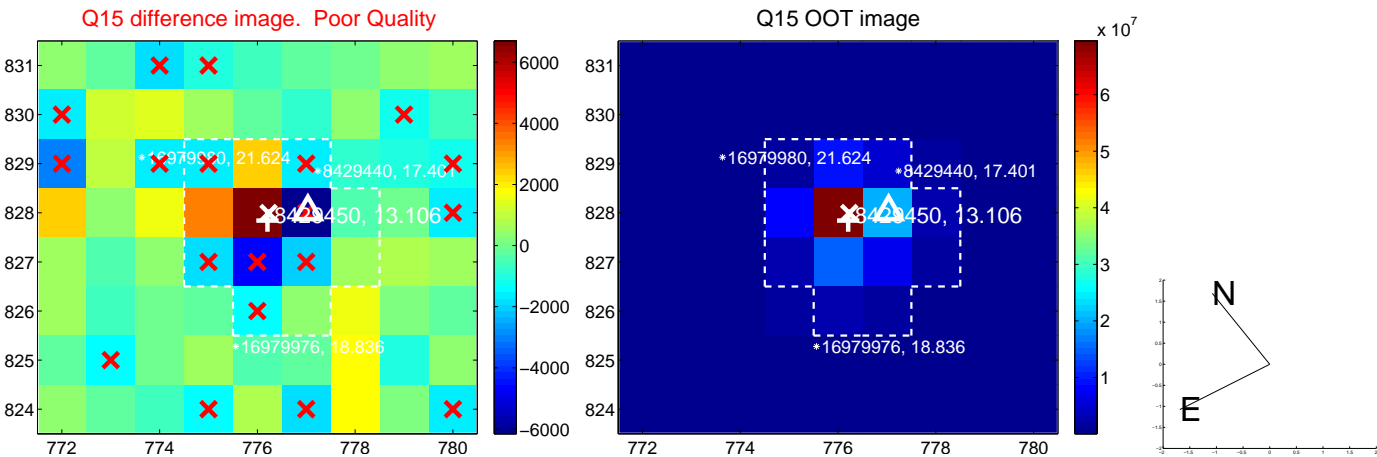
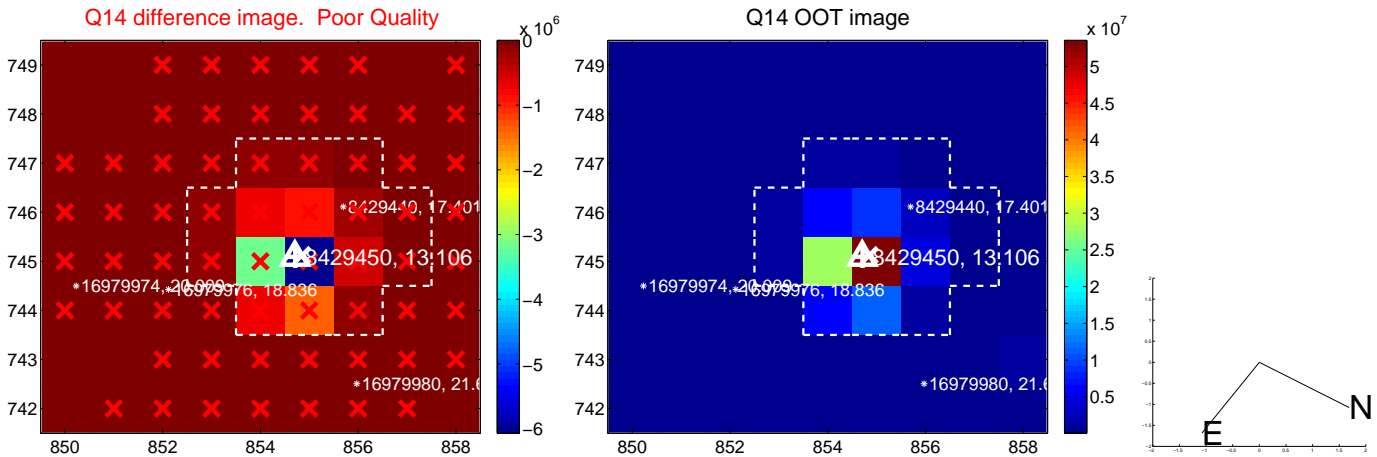
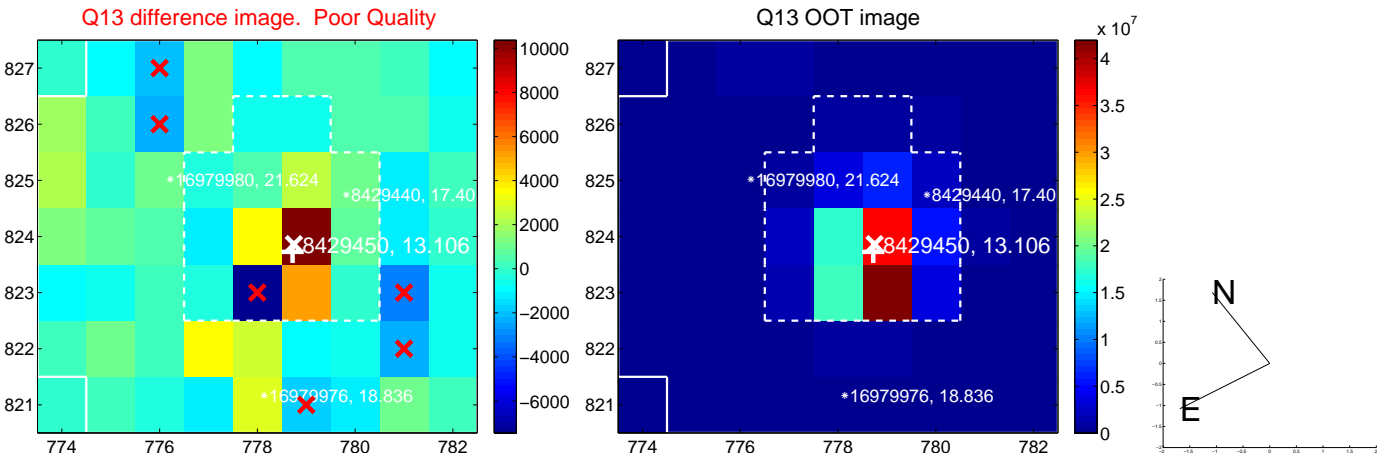
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value



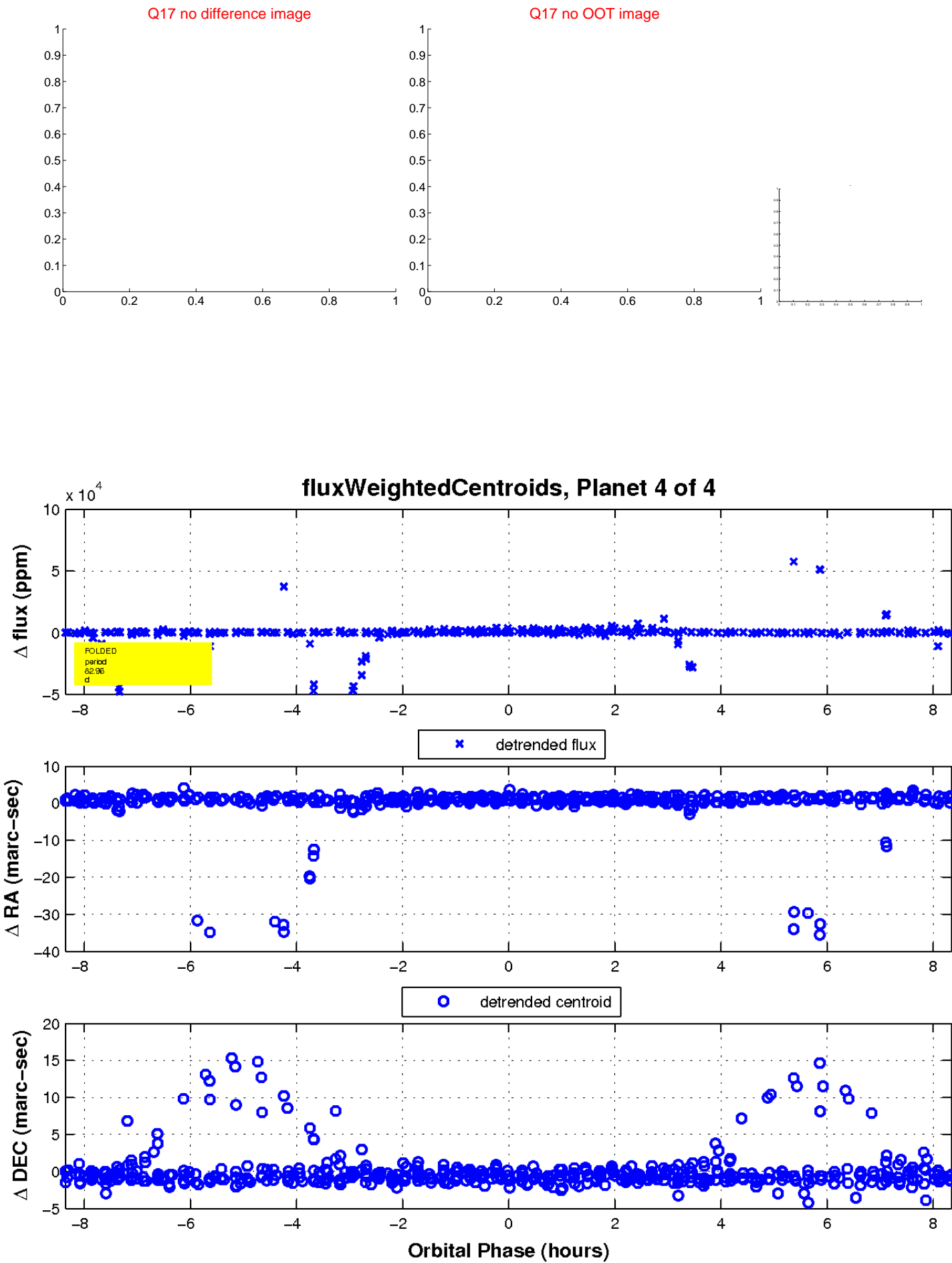
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

