

# KIC 002425057

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
002425057-01	OBS	No	0.570587	131.938277	246.7	2.000	7.4	-1.0	4.31	7861	6.84	216485.54
002425057-02	OBS	No	0.570546	131.670578	9.0	4.296	8.9	6.6	4.31	7861	1.30	0.00

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
002425057-01	OBS	FP	0.00	1	0	0	0	<del>LPP_DV</del> <del>LPP_ALT</del> <del>CENT_NOFITS</del>
002425057-02	OBS	FP	0.00	1	0	0	0	<del>LPP_DV</del> <del>SAME_NTL_PERIOD</del> <del>CENT_FEW_DIFFS</del>

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

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

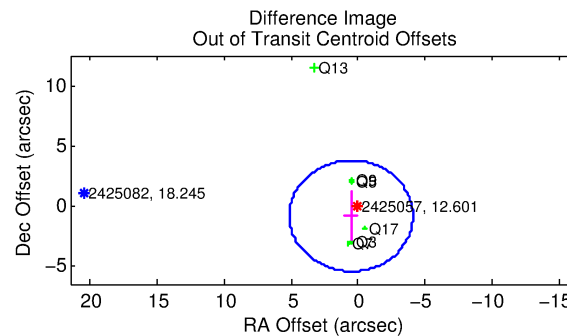
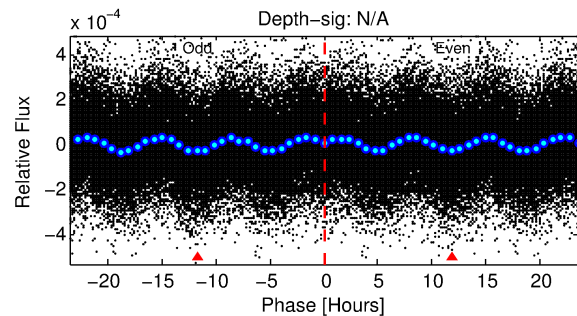
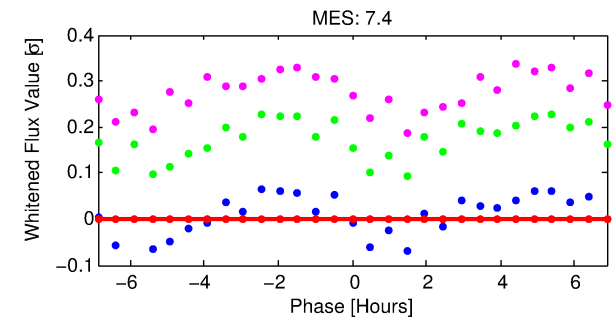
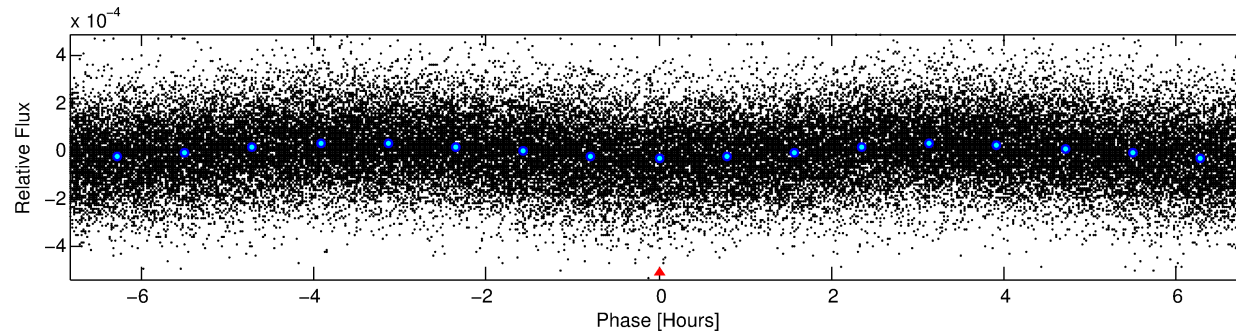
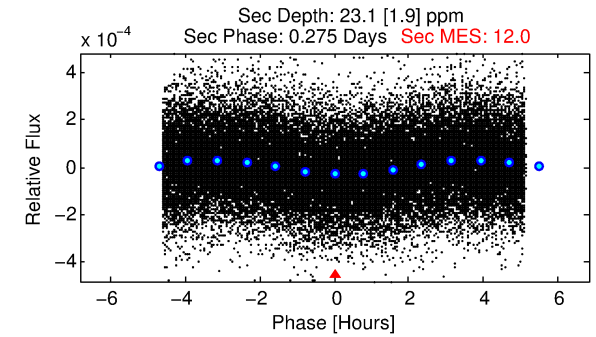
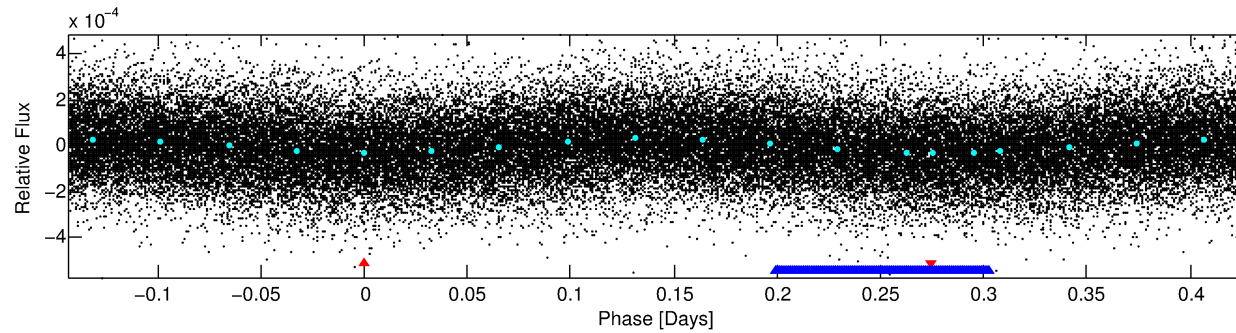
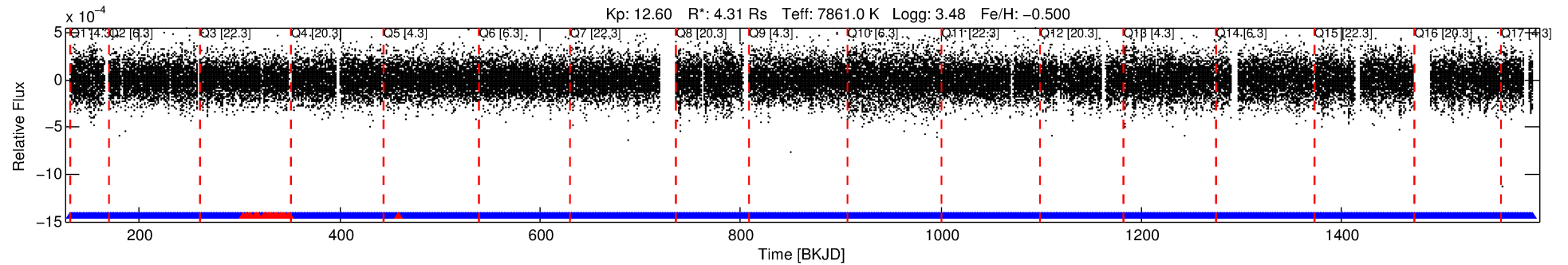
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 002425057-01

No Significant Match Found

# DV One-Page Summary

KIC: 2425057 Candidate: 1 of 2 Period: 0.571 d



TPS TCE Results:

Period = 0.57059 d  
Epoch = 131.9383 BKJD

**DV fit results are unavailable**

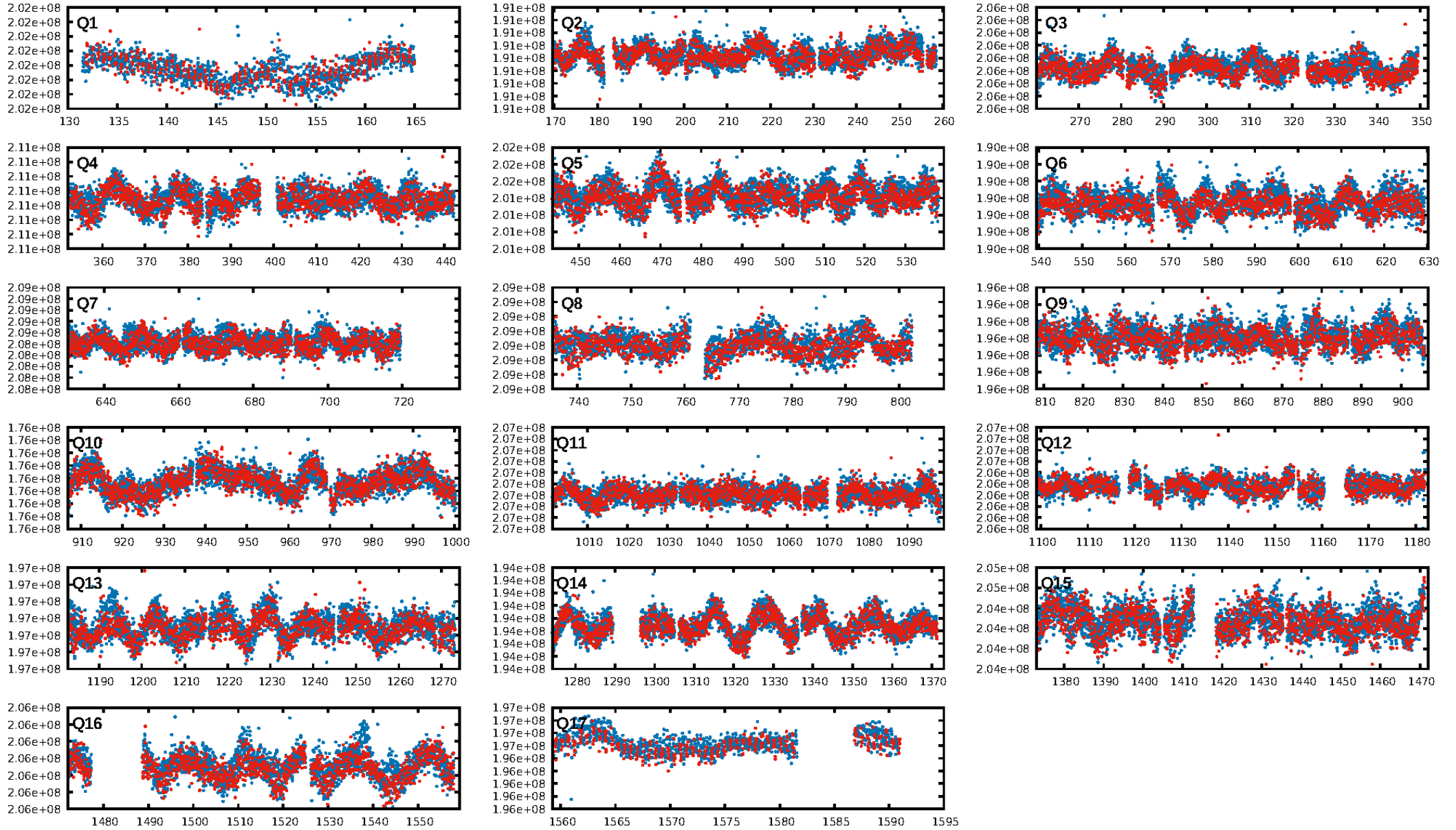
DV Diagnostic Results:

**ShortPeriod-sig: 0.0% [0.00σ]**  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 0.98 [2212/2247]  
GhostDiagnostic-chr: 2.611  
Centroid-sig: 14.0%  
Centroid-so: 0.901 arcsec [2.73σ]  
OotOffset-rm: 0.987 arcsec [0.64σ]  
KicOffset-rm: 1.136 arcsec [0.54σ]  
OotOffset-st: 0/2/0/4 [6]  
KicOffset-st: 0/2/0/4 [6]  
DiffImageQuality-fgm: 0.67 [4/6]  
DiffImageOverlap-fno: 0.00 [0/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 06:30:13 Z

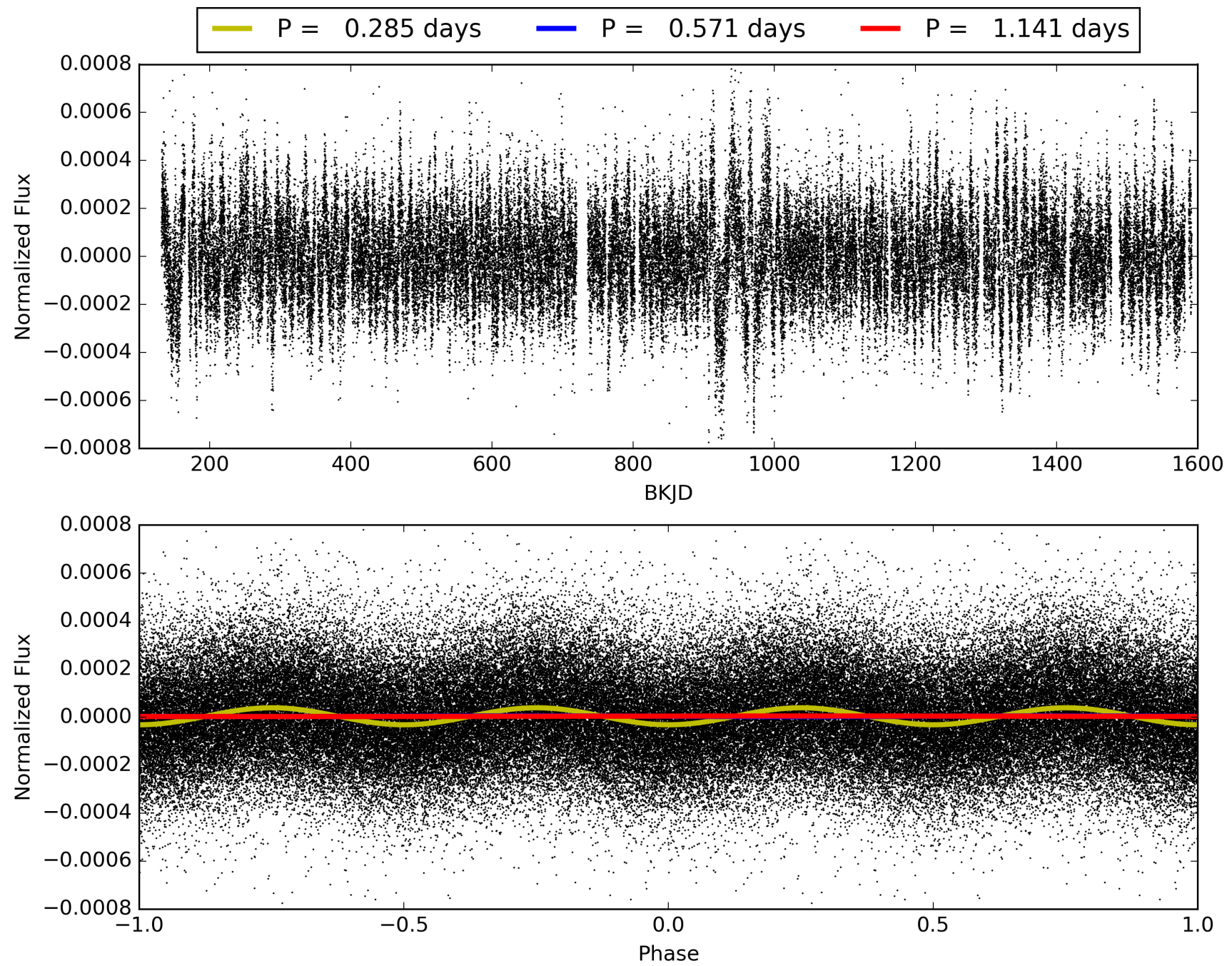
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 002425057-01, PDC Light Curves



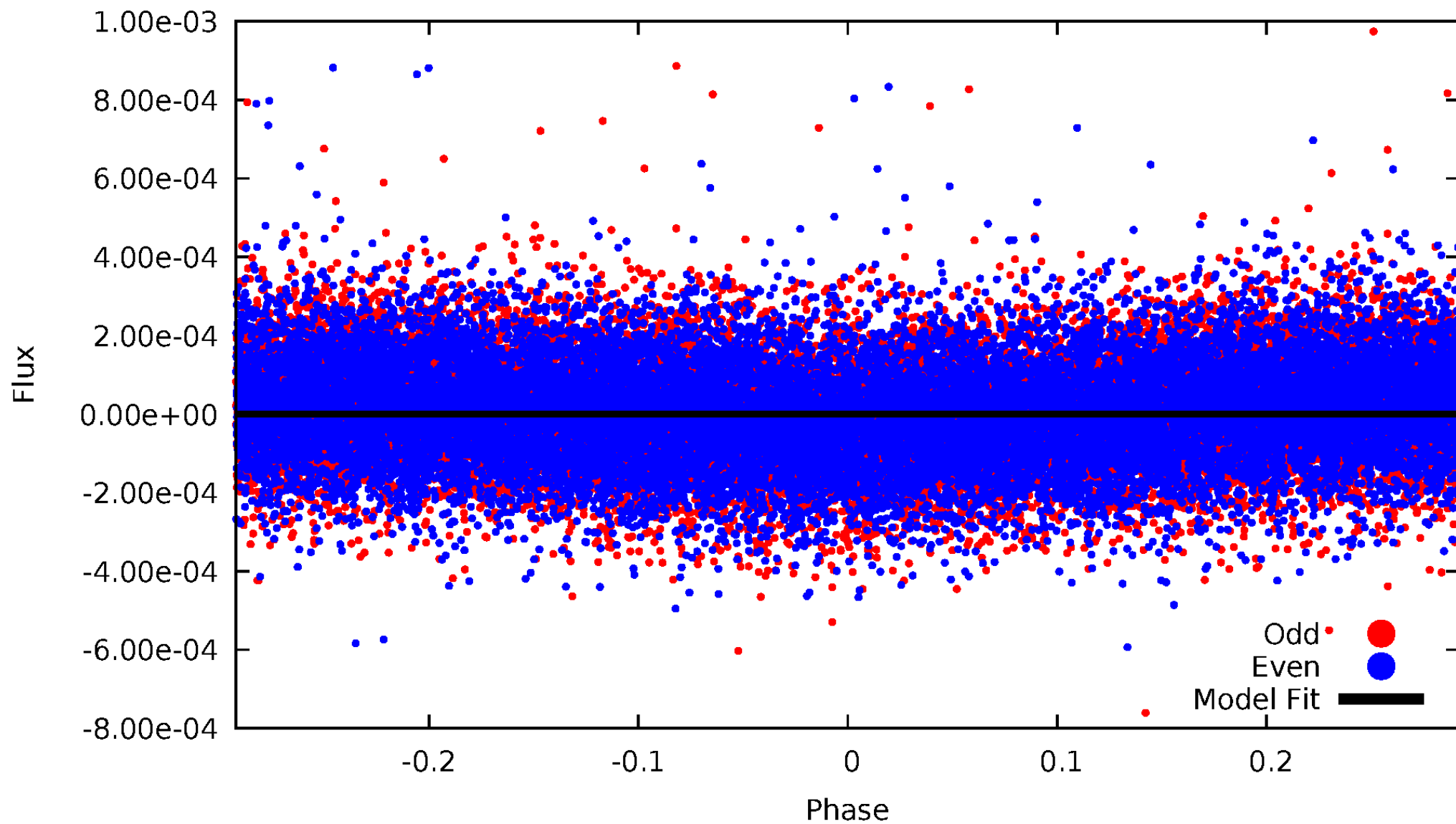


TCE 002425057-01



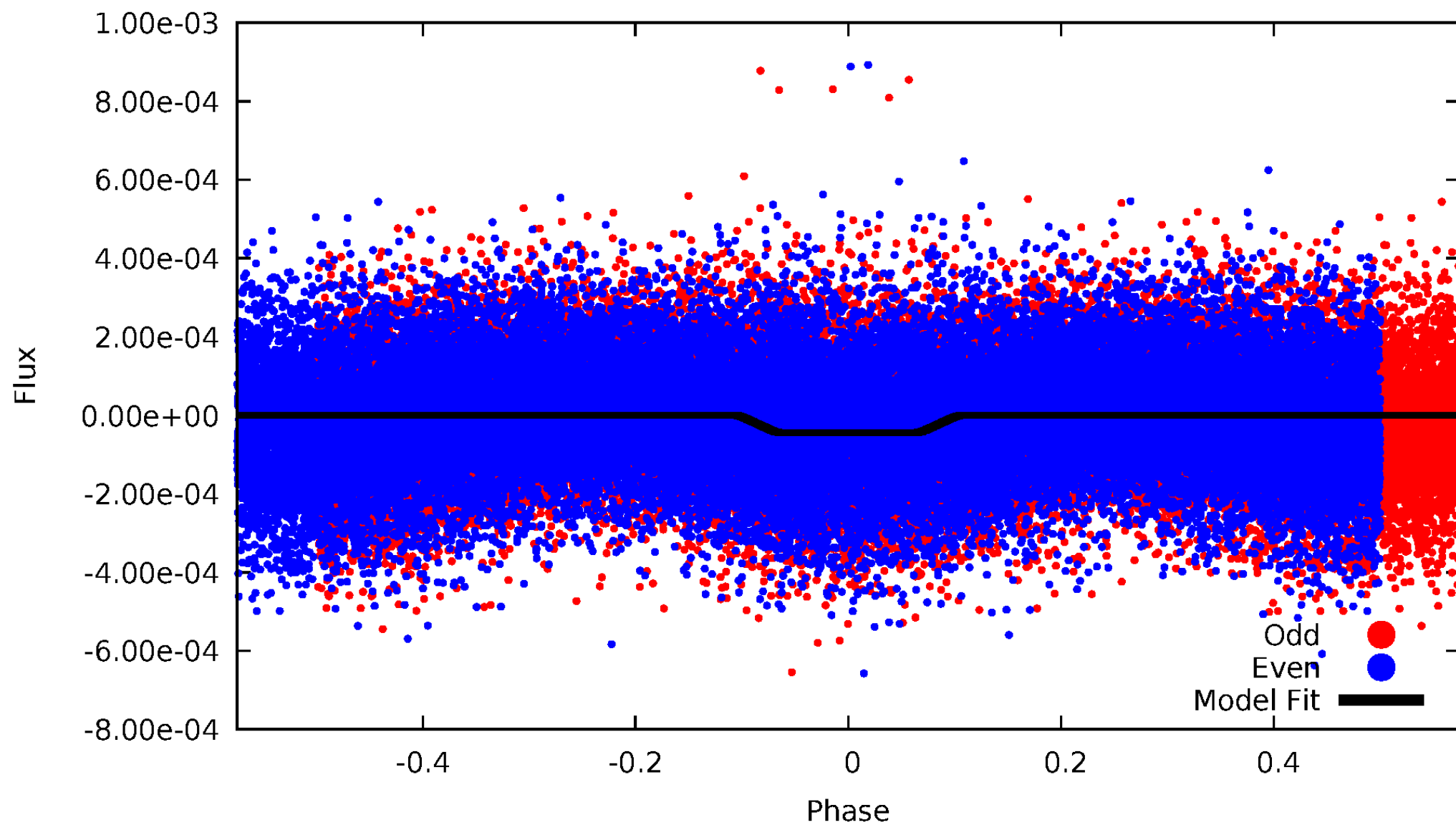
# DV Odd/Even

TCE 002425057-01

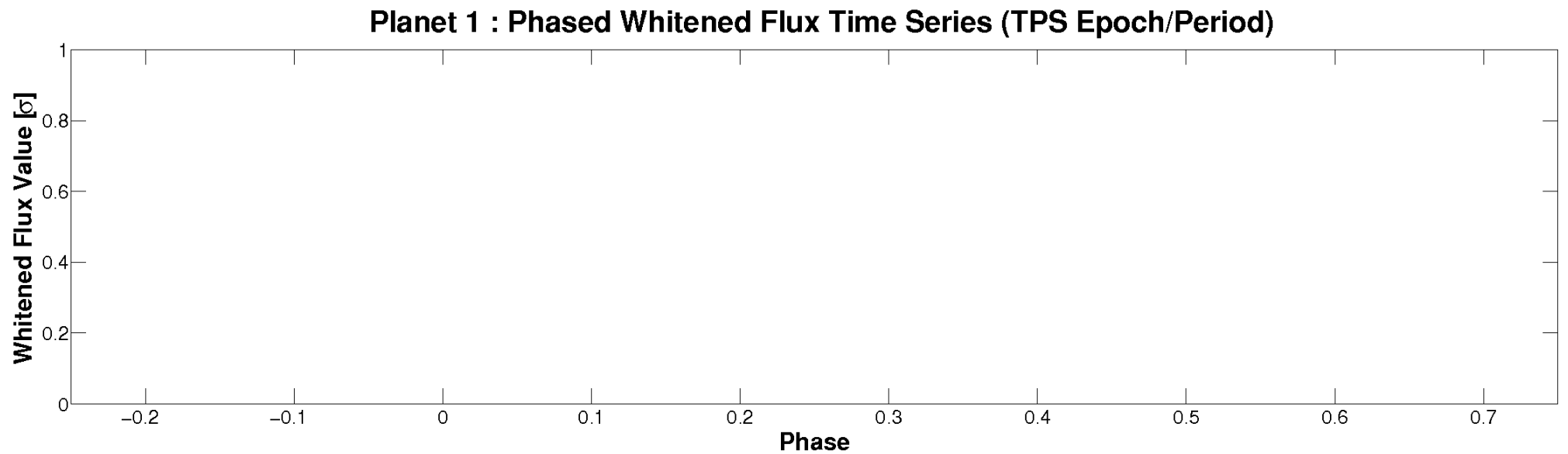
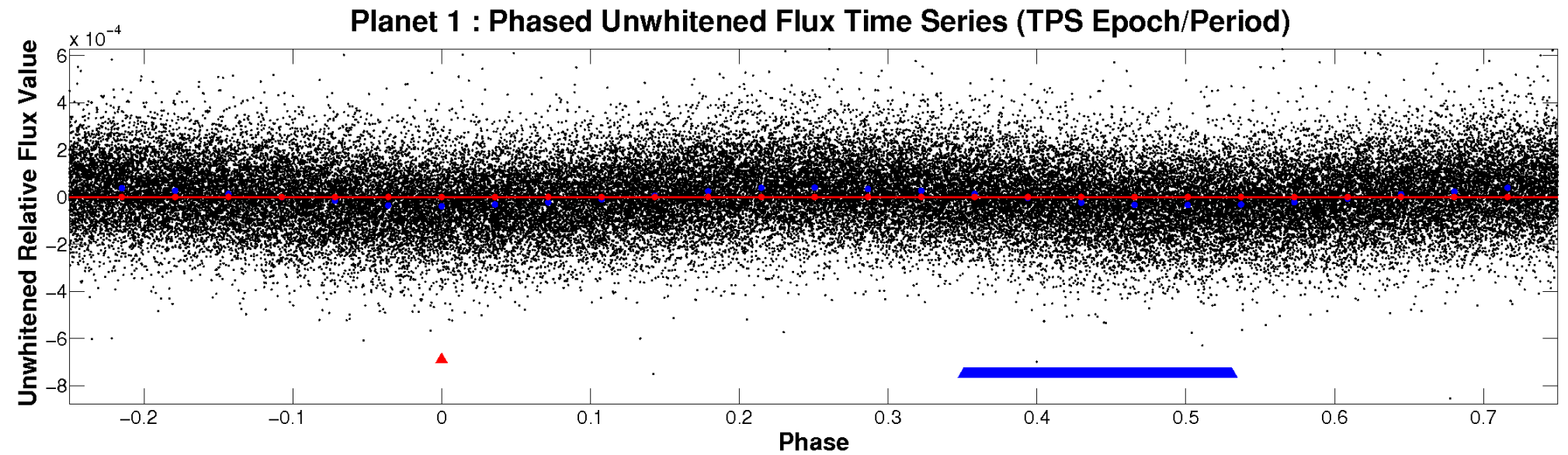


# ALT Odd/Even

TCE 002425057-01



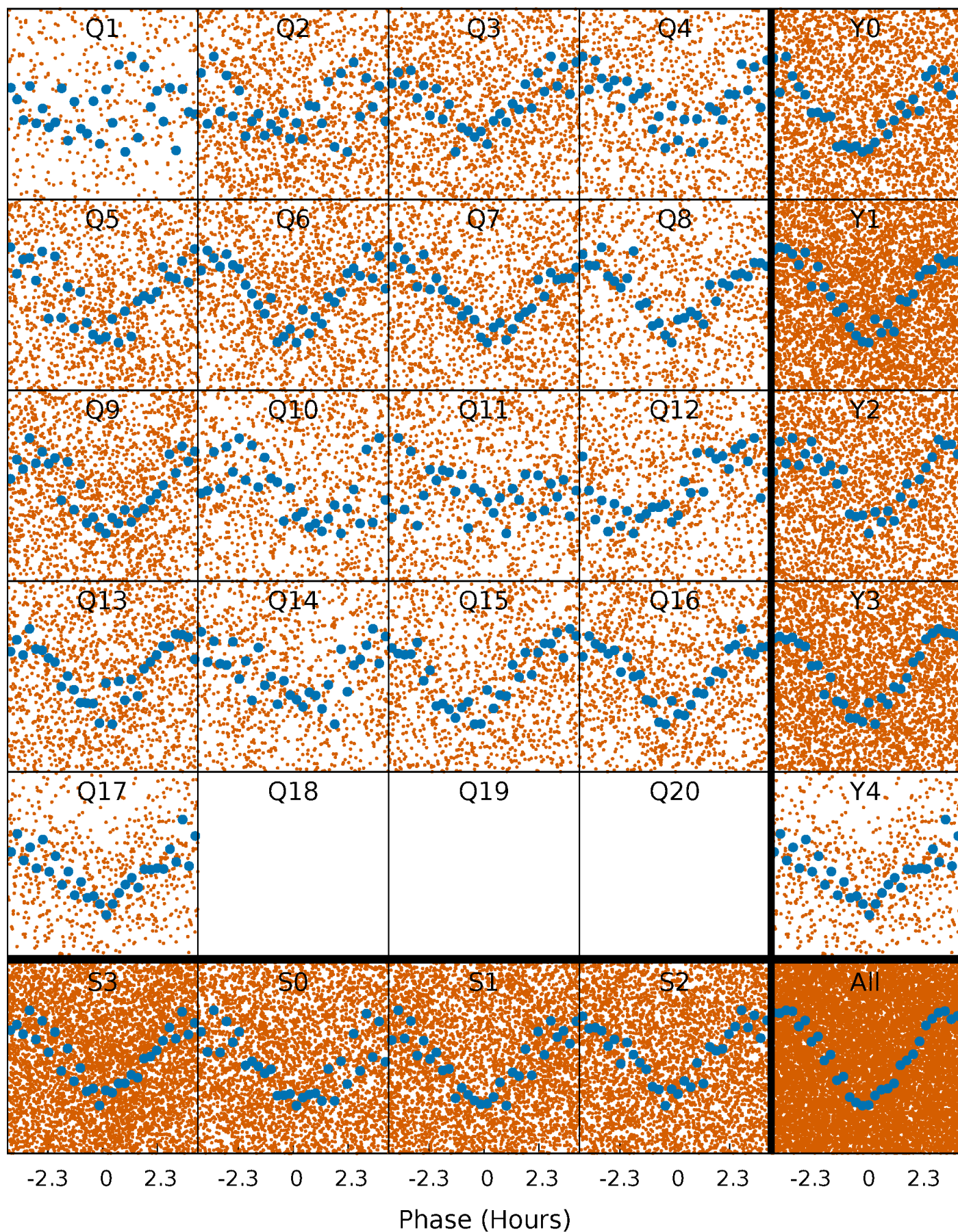
# Non-Whitened Vs. Whitened Light Curve





# PDC Quarter-Phased Transit Curves

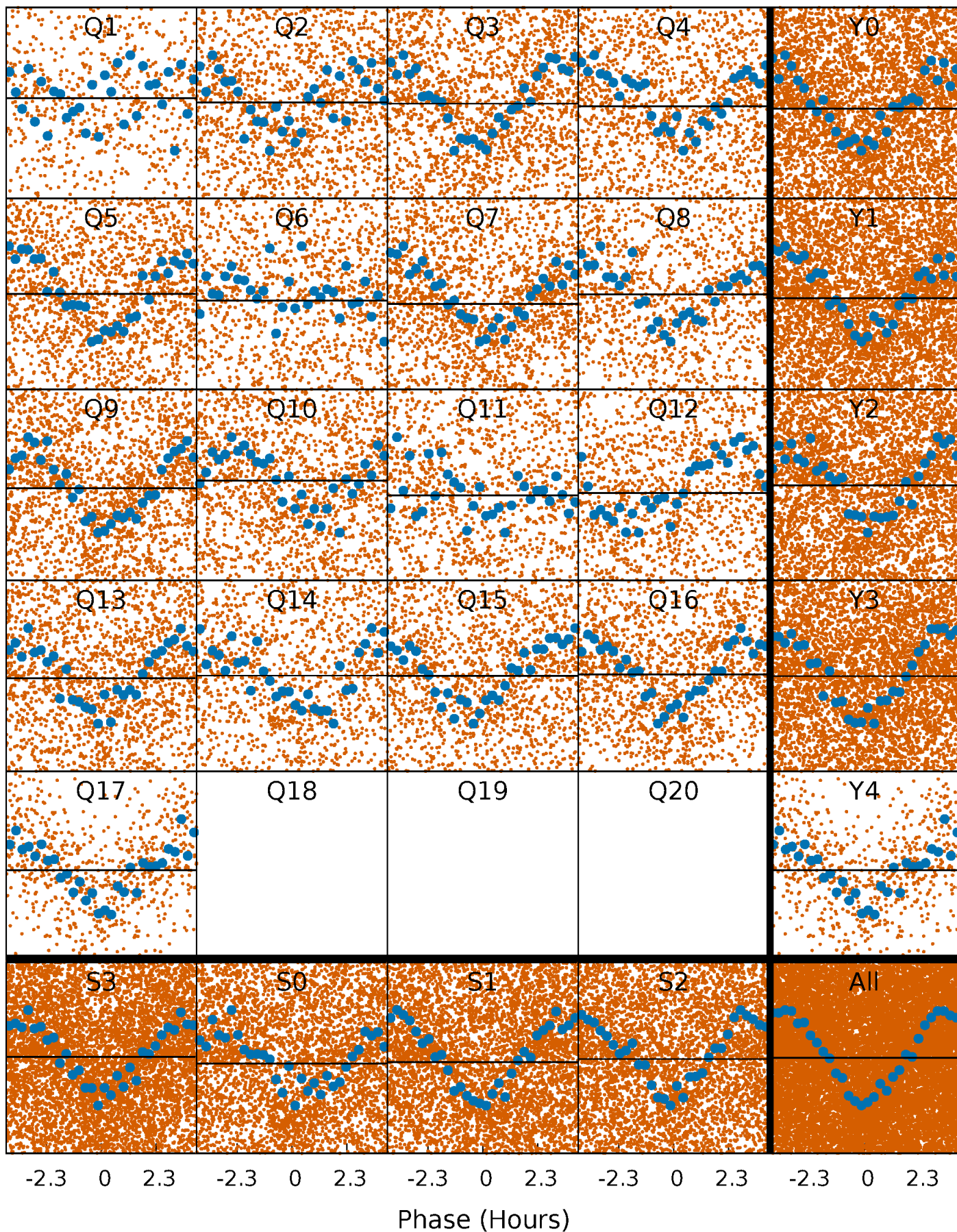
TCE 002425057-01   P= 0.570587 Days    $T_0=131.938277$  (BKJD)





# DV Quarter-Phased Transit Curves

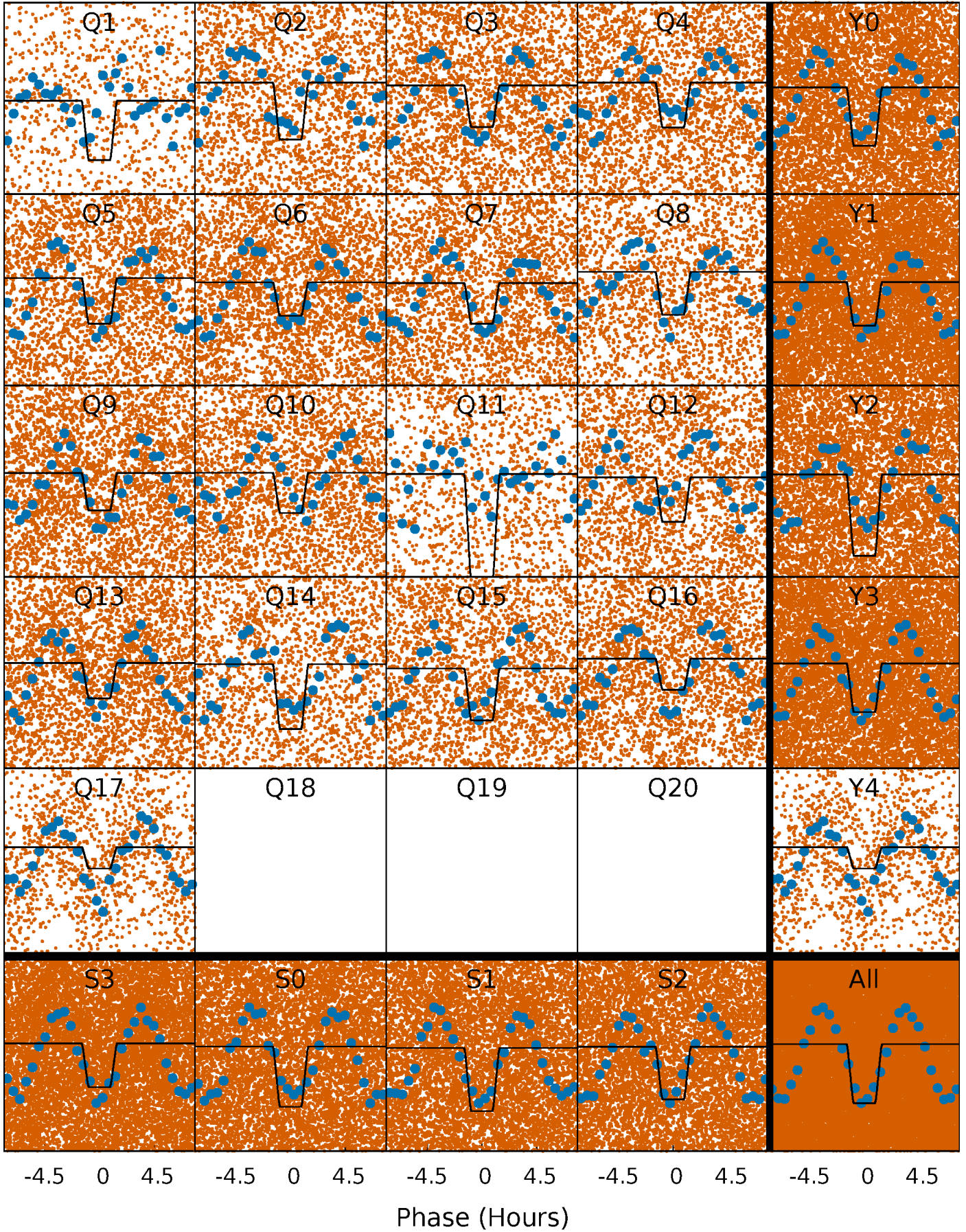
TCE 002425057-01   P= 0.570587 Days    $T_0=131.938277$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

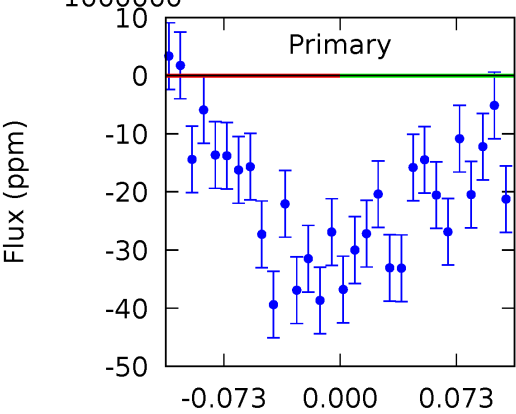
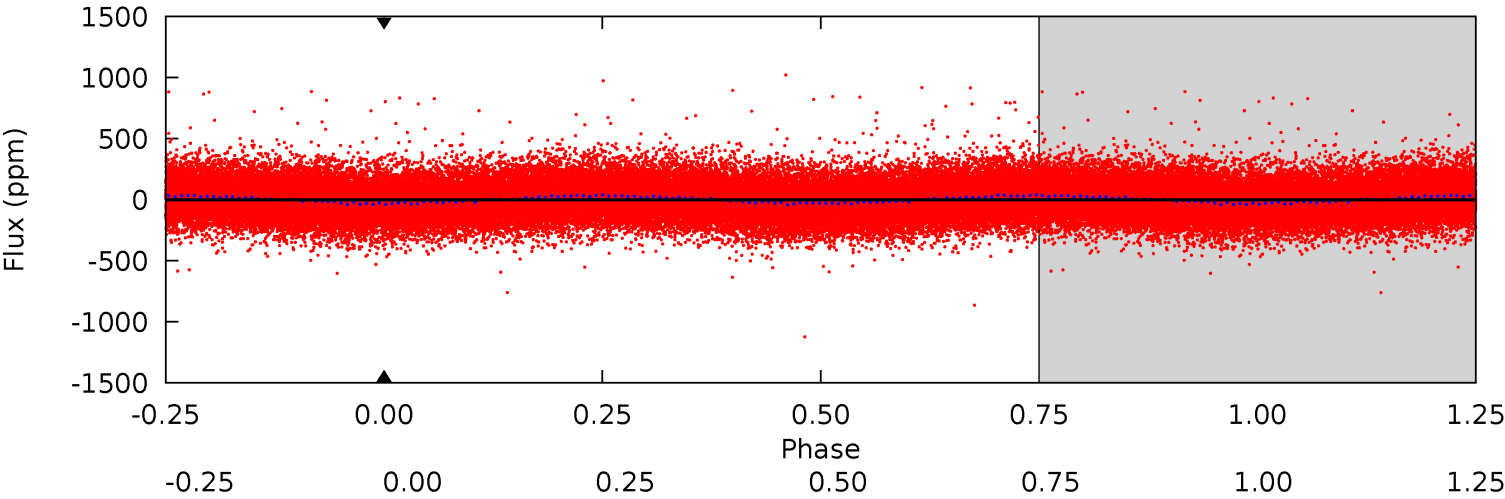
TCE 002425057-01 P= 0.570587 Days  $T_0=131.938803$  (BKJD)



# DV Model-Shift Uniqueness Test

002425057-01, P = 0.570587 Days, E = 131.367690 Days

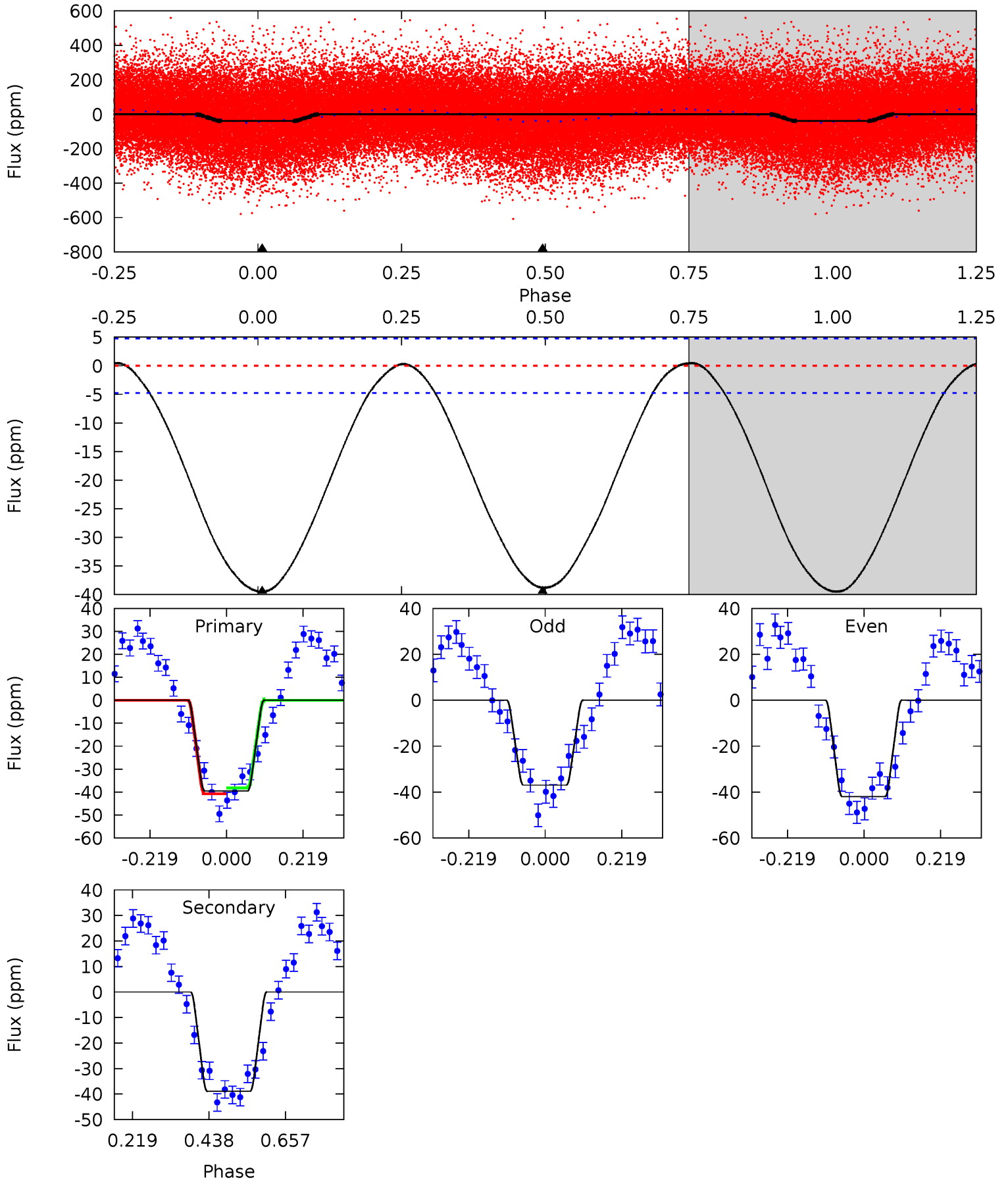
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



# Alt Model-Shift Uniqueness Test

002425057-01, P = 0.570587 Days, E = 131.368216 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
36.5	35.9	0	0	4.40	1.23	0.45	36.5	36.5	35.9	35.9	2.33	1.04	0.01	1.05





### Stellar Parameters For KIC 002425057

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$7861^{+249}_{-304}$	$3.483^{+0.671}_{-0.118}$	$-0.500^{+0.250}_{-0.250}$	$4.311^{+0.487}_{-2.599}$	$2.061^{+0.308}_{-0.667}$	$0.036^{+0.407}_{-0.010}$
	+3%/-4%	+19%/-3%	+50%/-50%	+11%/-60%	+15%/-32%	+1123%/-26%
Source	KIC0	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 002425057-01 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$0 \pm 1000000$	$31.95^{+32.69}_{-22.87}$	$7507^{+517}_{-1233}$	$-5391^{+47631}_{-31696}$	$0.079^{+30.942}_{-23.010}$
Alt.	$-39 \pm 1$	$28.89^{+35.42}_{-21.44}$	$7484^{+531}_{-1128}$	$-5821^{+1397}_{-500}$	$0.008^{+0.103}_{-0.006}$

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

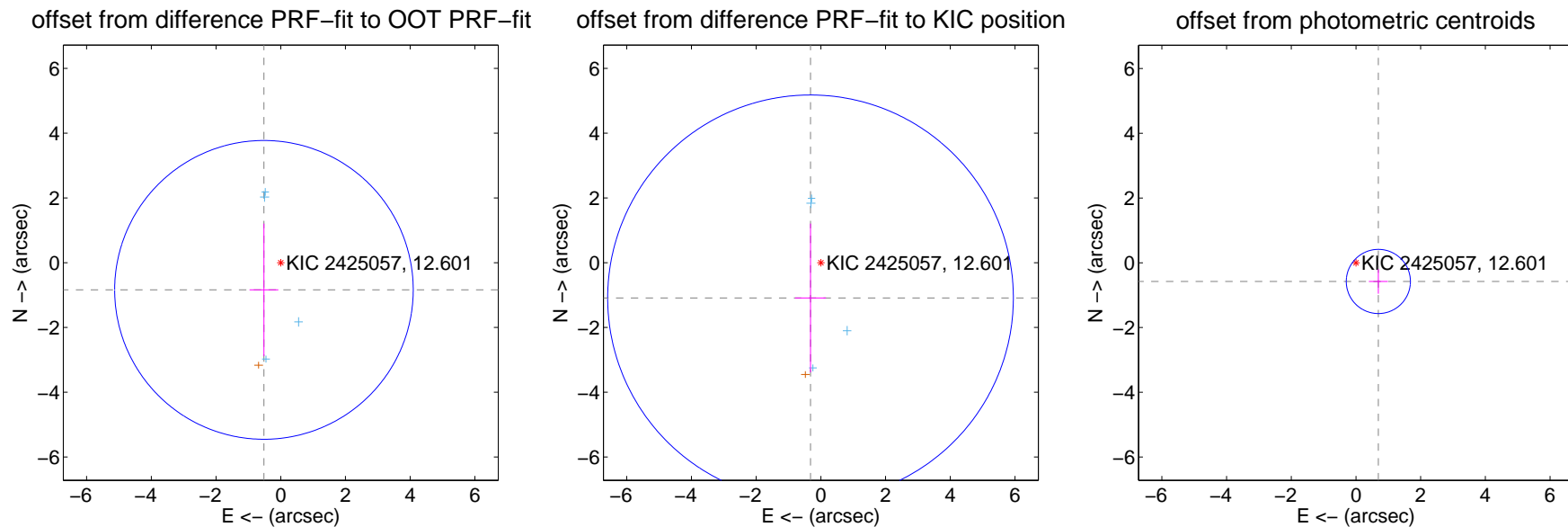
## DV Centroid Data

Supplemental centroid analysis for 002425057-01. Kepler magnitude: 12.60. Transit SNR -1.00

There are 4 quarters with good PRF difference image offsets

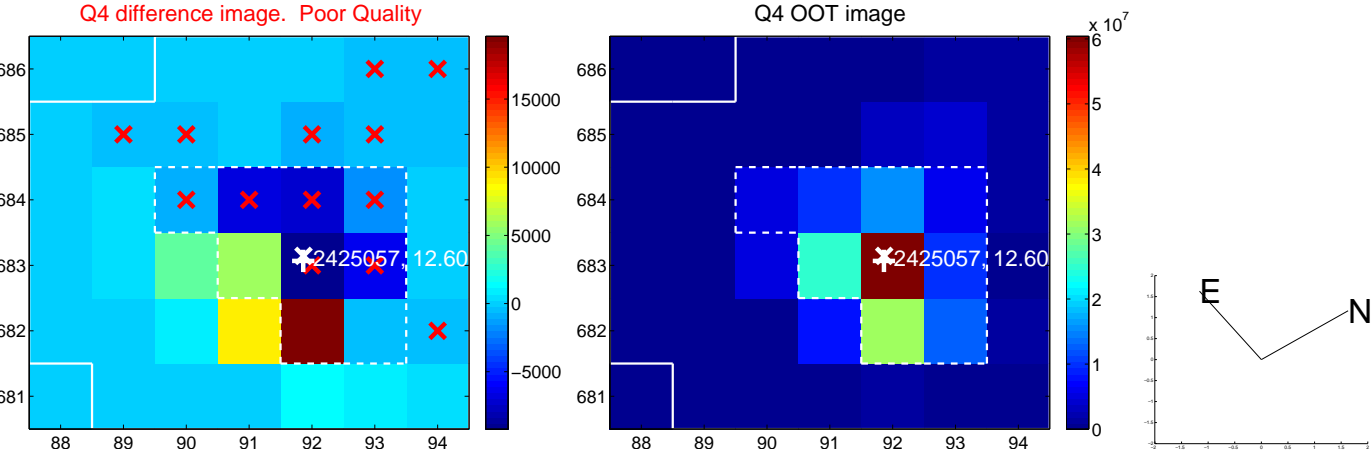
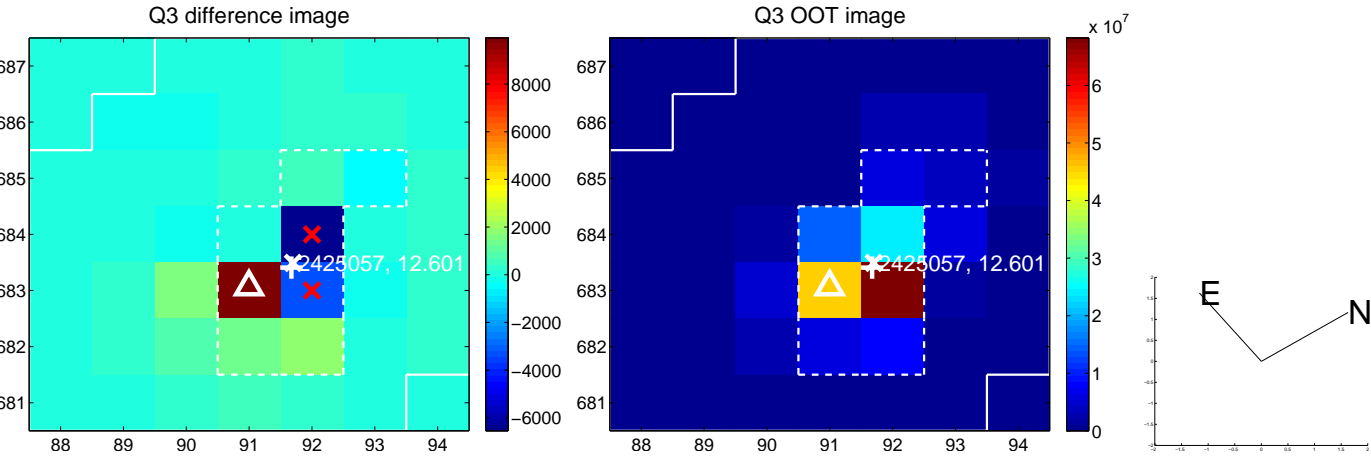
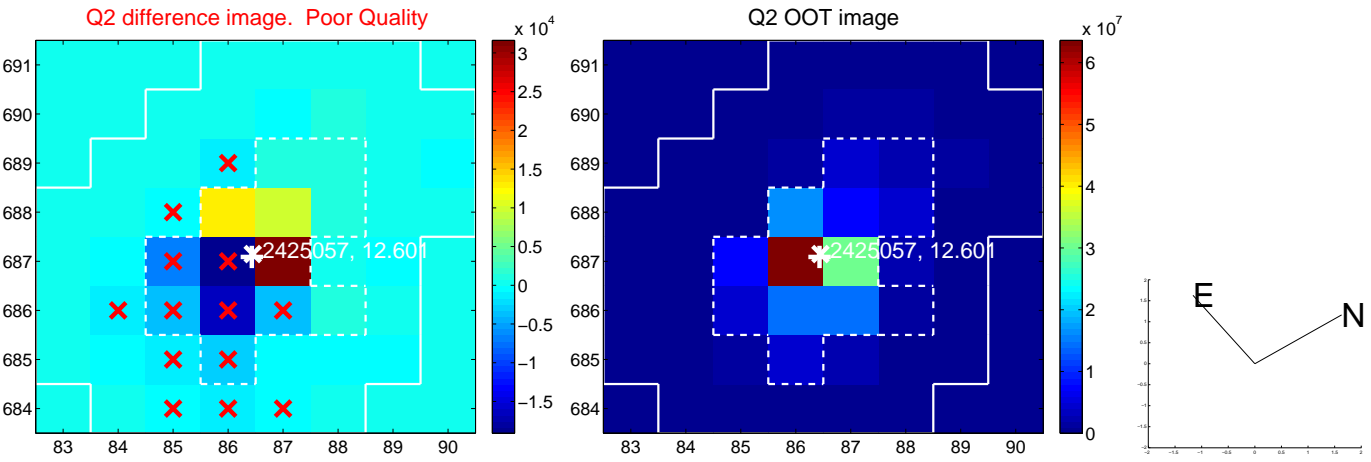
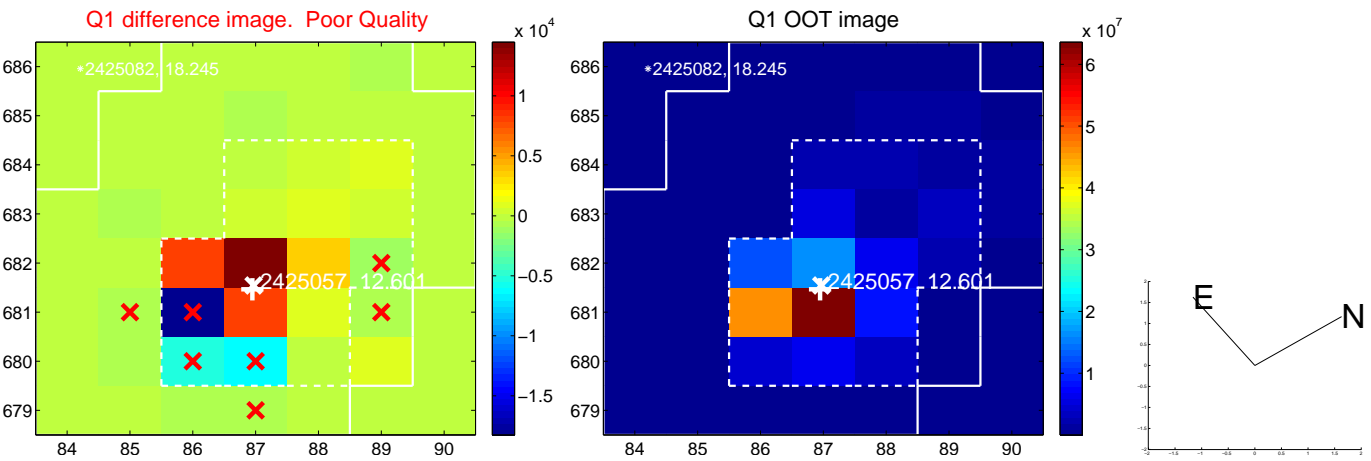
The direct PRF centroid is offset from the target star catalog position by about 0.38 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.987 \pm 1.537$	0.64	$0.519 \pm 0.445$	$-0.839 \pm 2.045$
PRF-fit source offset from KIC position	$1.136 \pm 2.089$	0.54	$0.320 \pm 0.479$	$-1.090 \pm 2.295$
photometric centroid source offset	$0.90 \pm 0.33$	2.73	$-0.69 \pm 0.29$	$-0.58 \pm 0.38$



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.

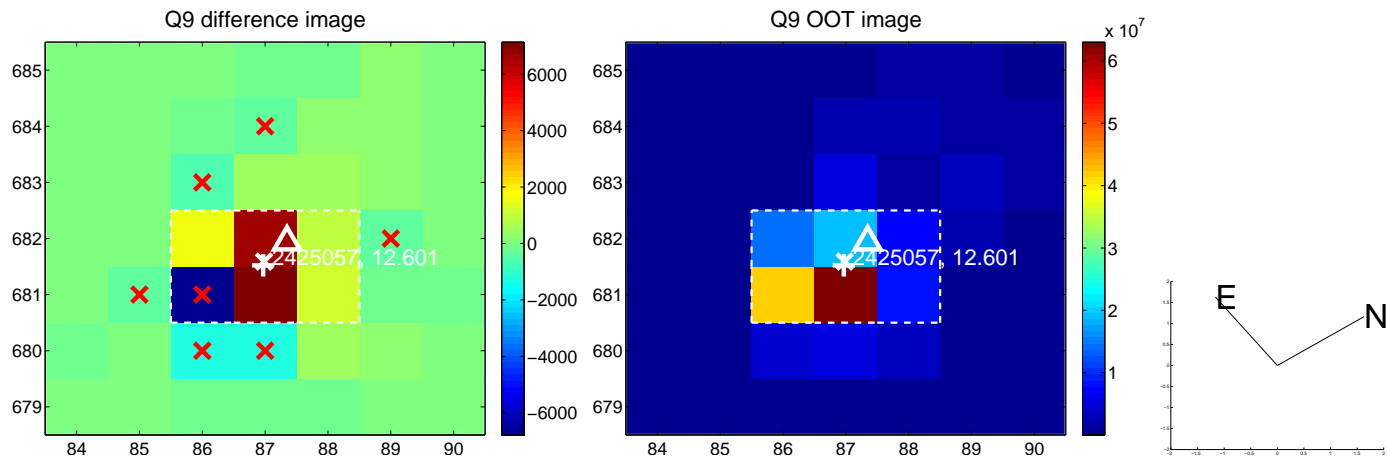
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



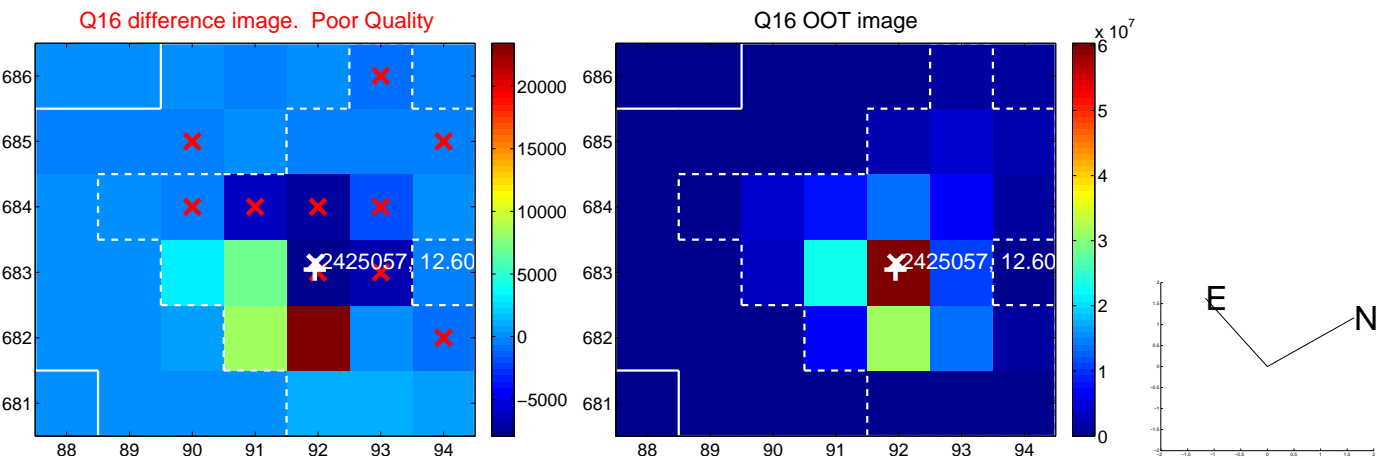
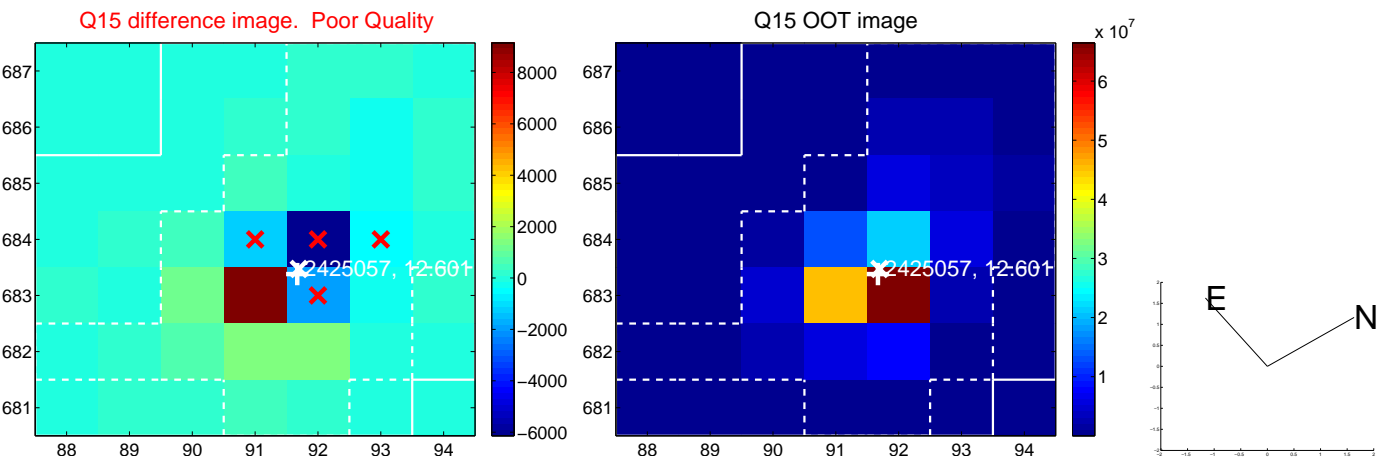
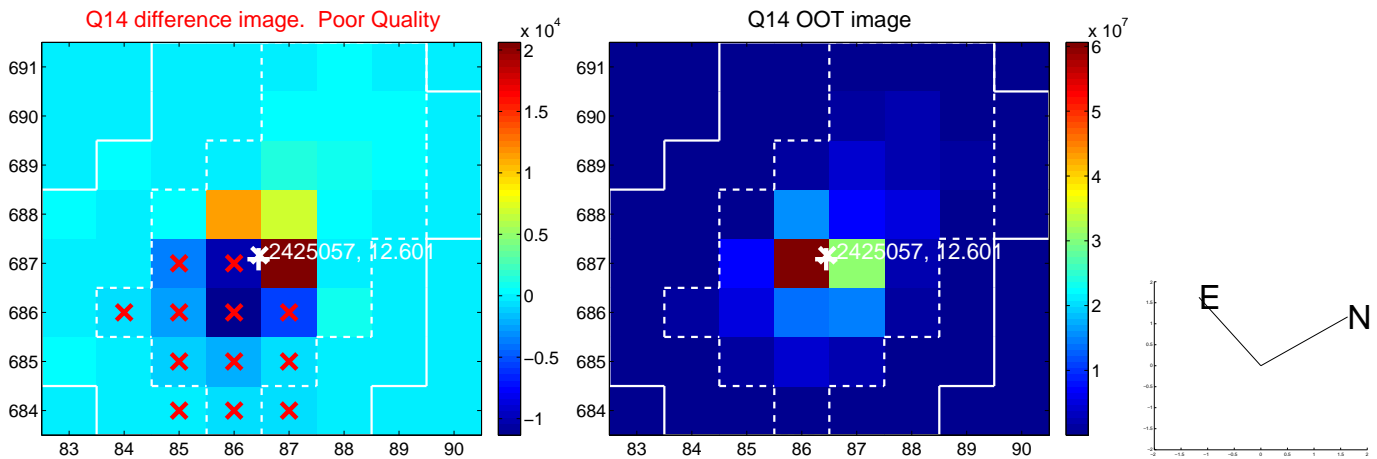
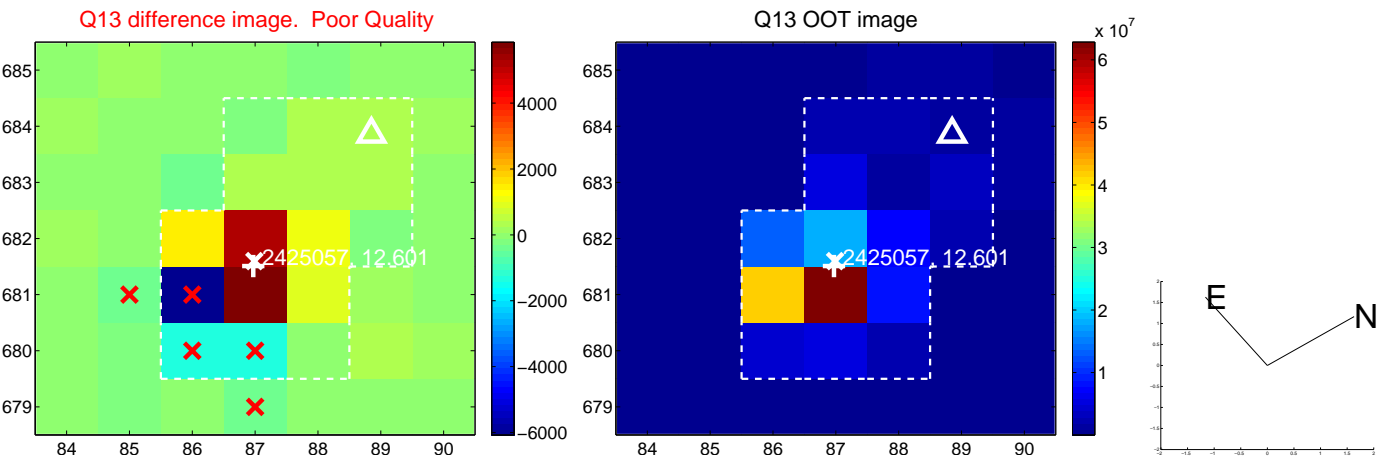




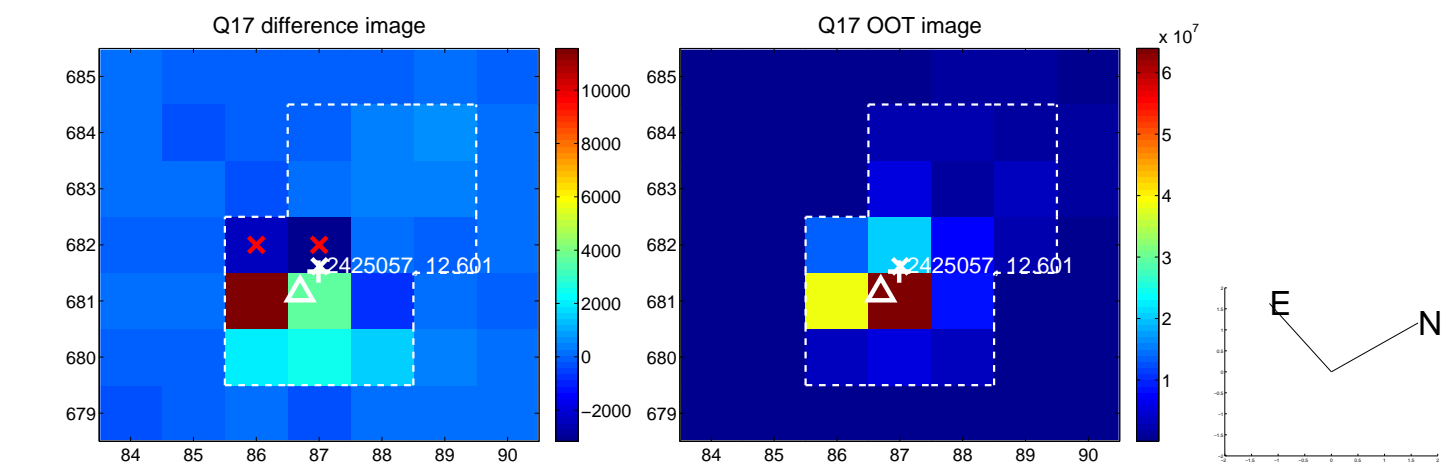
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



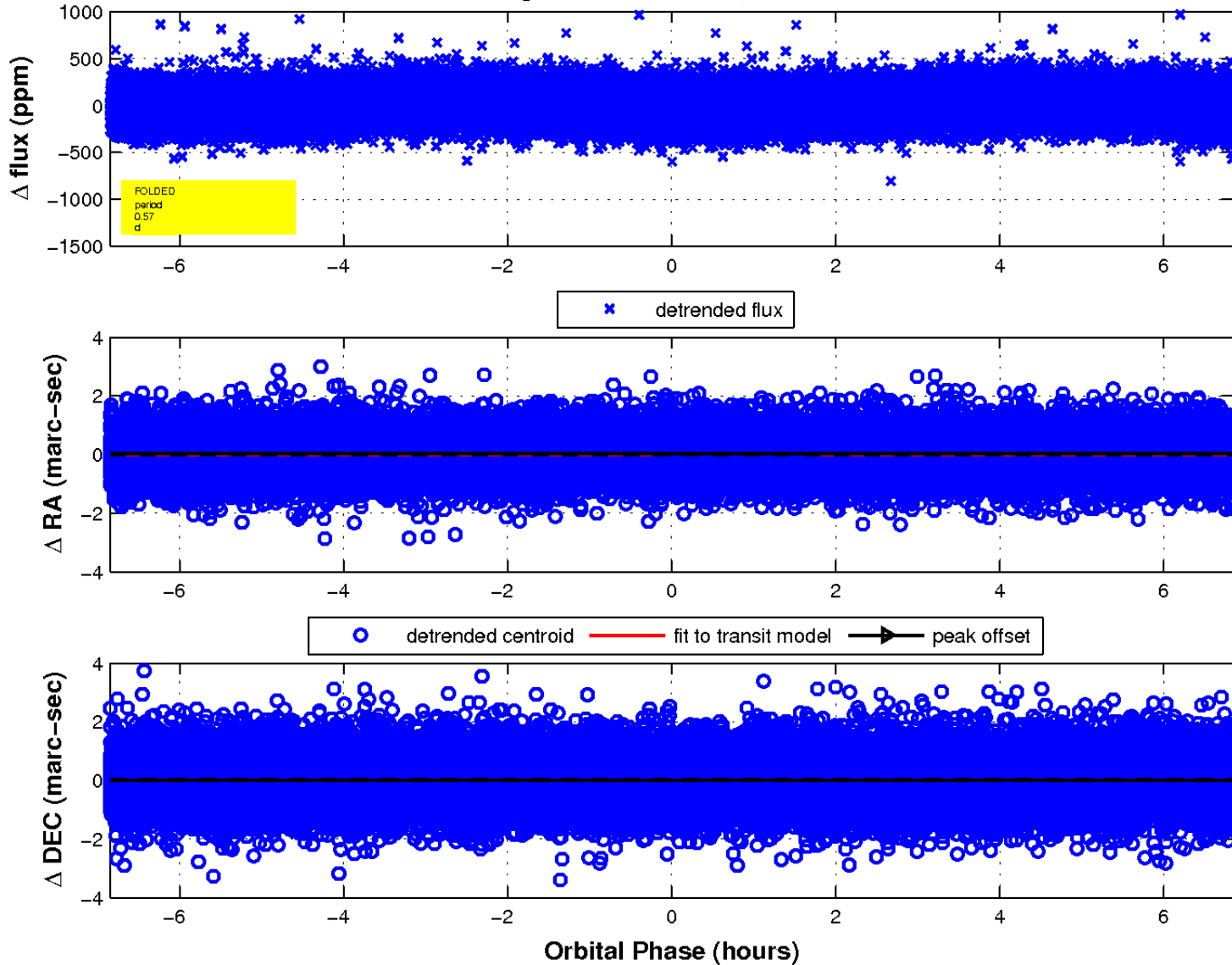
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

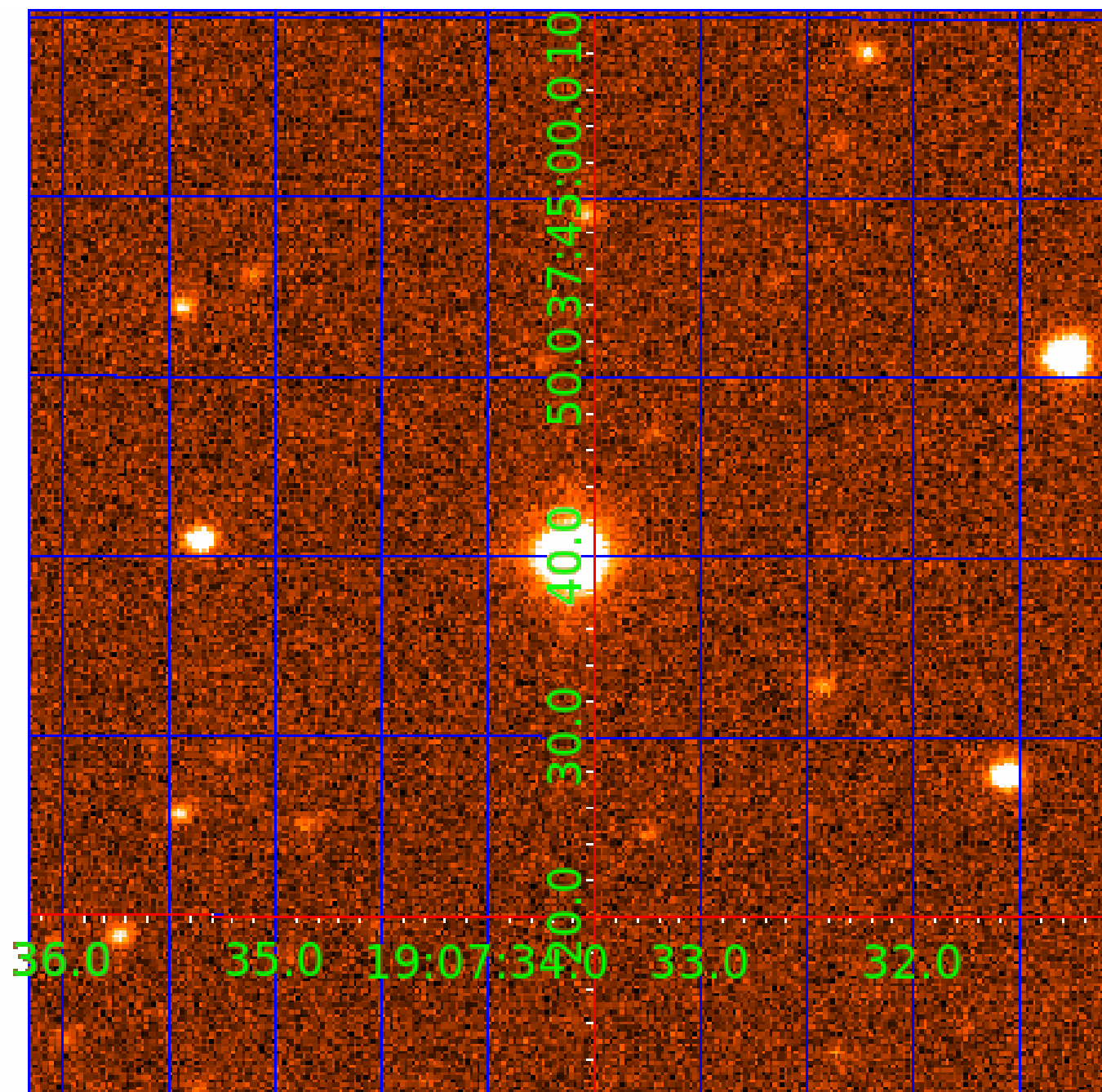


fluxWeightedCentroids, Planet 1 of 2



UKIRT Image

Declination





# KIC 002425057

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
002425057-01	OBS	No	0.570587	131.938277	246.7	2.000	7.4	-1.0	4.31	7861	6.84	216485.54
002425057-02	OBS	No	0.570546	131.670578	9.0	4.296	8.9	6.6	4.31	7861	1.30	0.00

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
002425057-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—CENT_NOFITS
002425057-02	OBS	FP	0.00	1	0	0	0	LPP_DV—SAME_NTL_PERIOD—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.

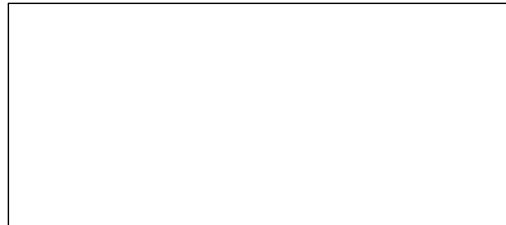
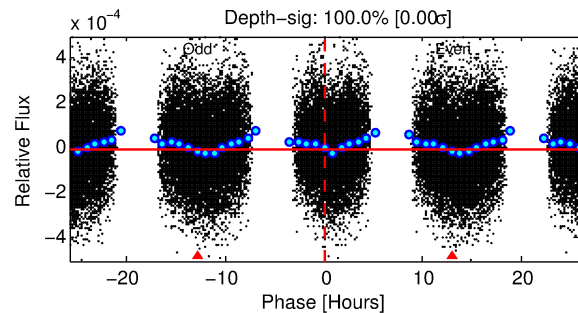
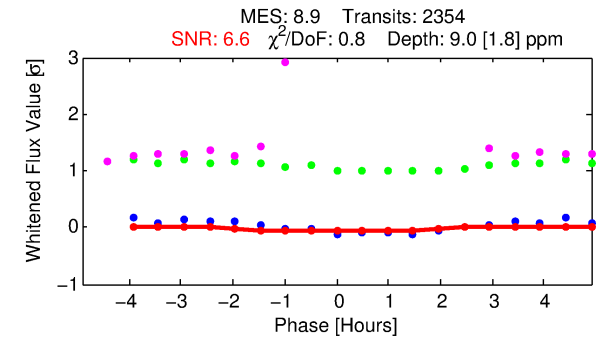
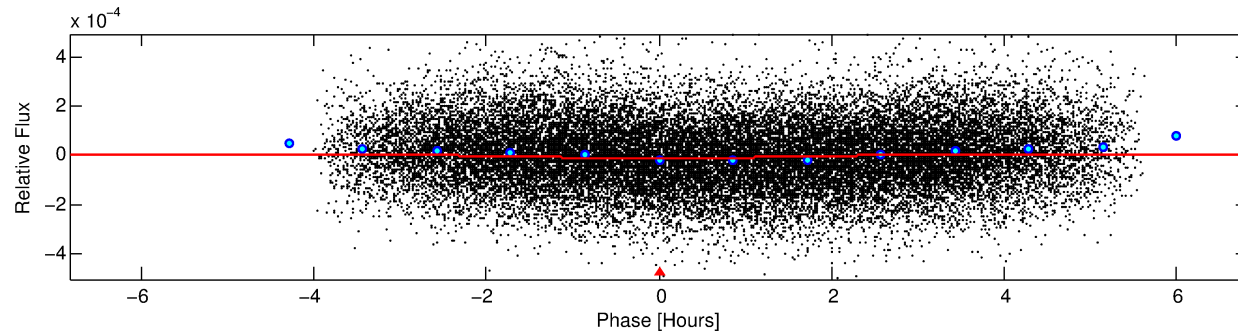
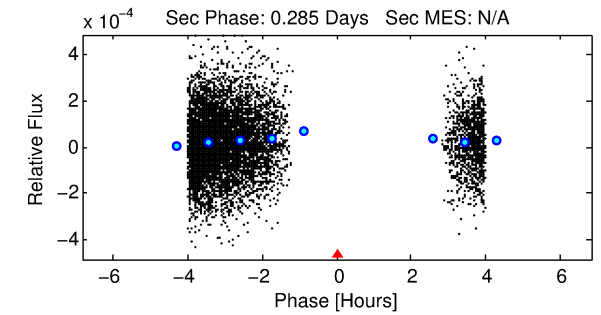
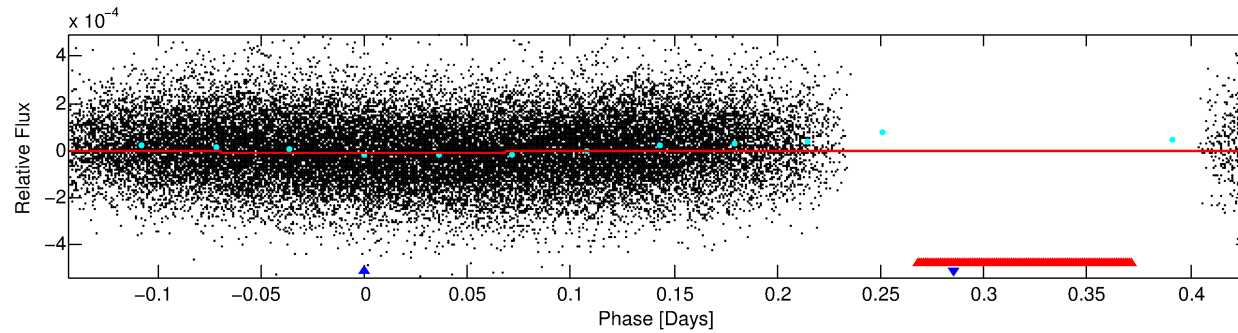
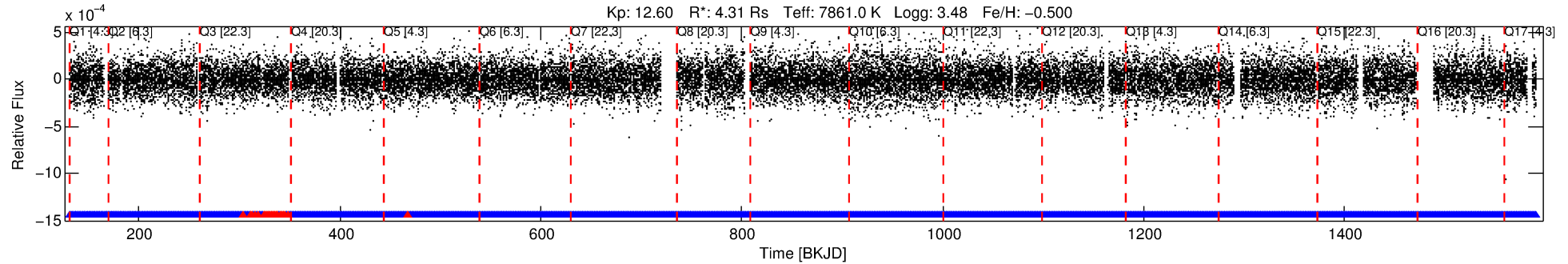
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 002425057-02

No Significant Match Found

# DV One-Page Summary

KIC: 2425057 Candidate: 2 of 2 Period: 0.571 d



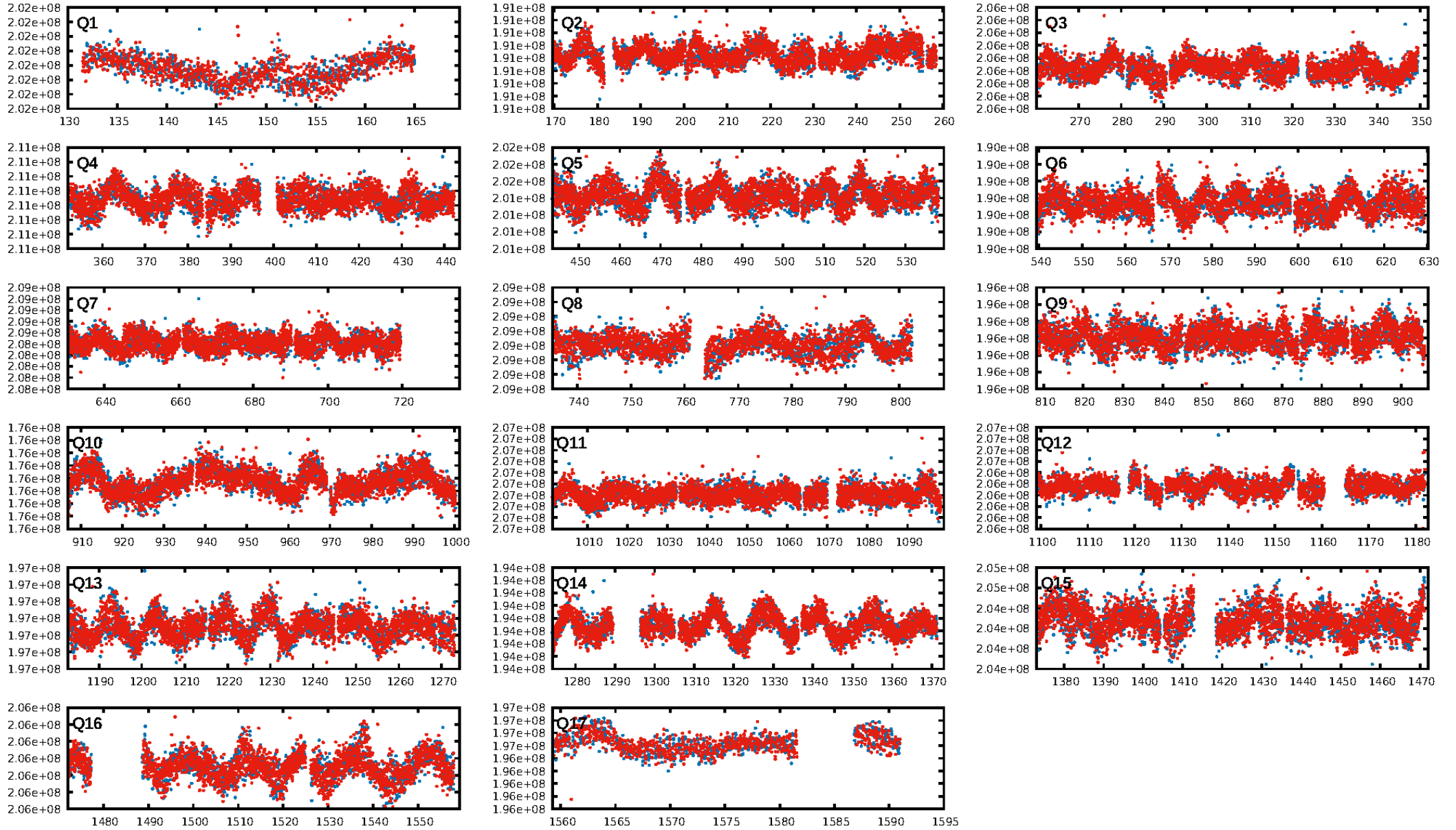
## DV Fit Results:

Period = 0.57055 [0.00002] d  
Epoch = 131.6706 [0.0058] BKJD  
Rp/R\* = 0.0028 [0.0039]  
a/R\* = 1.20 [2.90]  
b = 0.10 [78.75]  
Seff = N/A  
Teq = N/A  
Rp = 1.30 [2.01] Re  
a = N/A

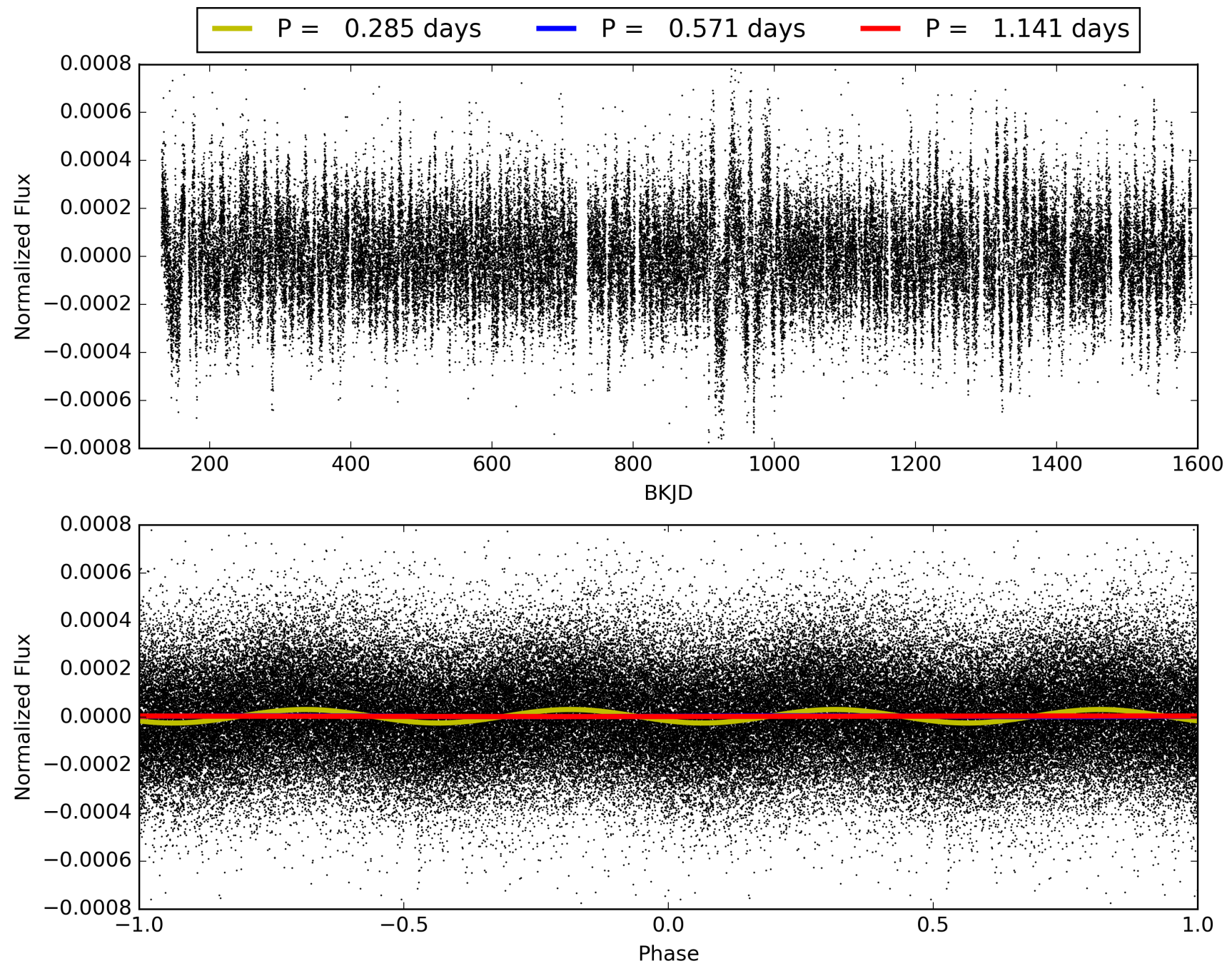
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 0.0% [0.00σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGoF-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 0.99 [2220/2248]  
GhostDiagnostic-chr: 1.901  
Centroid-sig: 44.5%  
Centroid-so: 1.263 arcsec [1.05σ]  
OotOffset-rm: N/A  
KicOffset-rm: N/A  
OotOffset-st: 0/0/0/0 [0]  
KicOffset-st: 0/0/0/0 [0]  
DiffImageQuality-fgm: N/A  
DiffImageOverlap-fno: 0.00 [0/17]

# TCE 002425057-02, PDC Light Curves



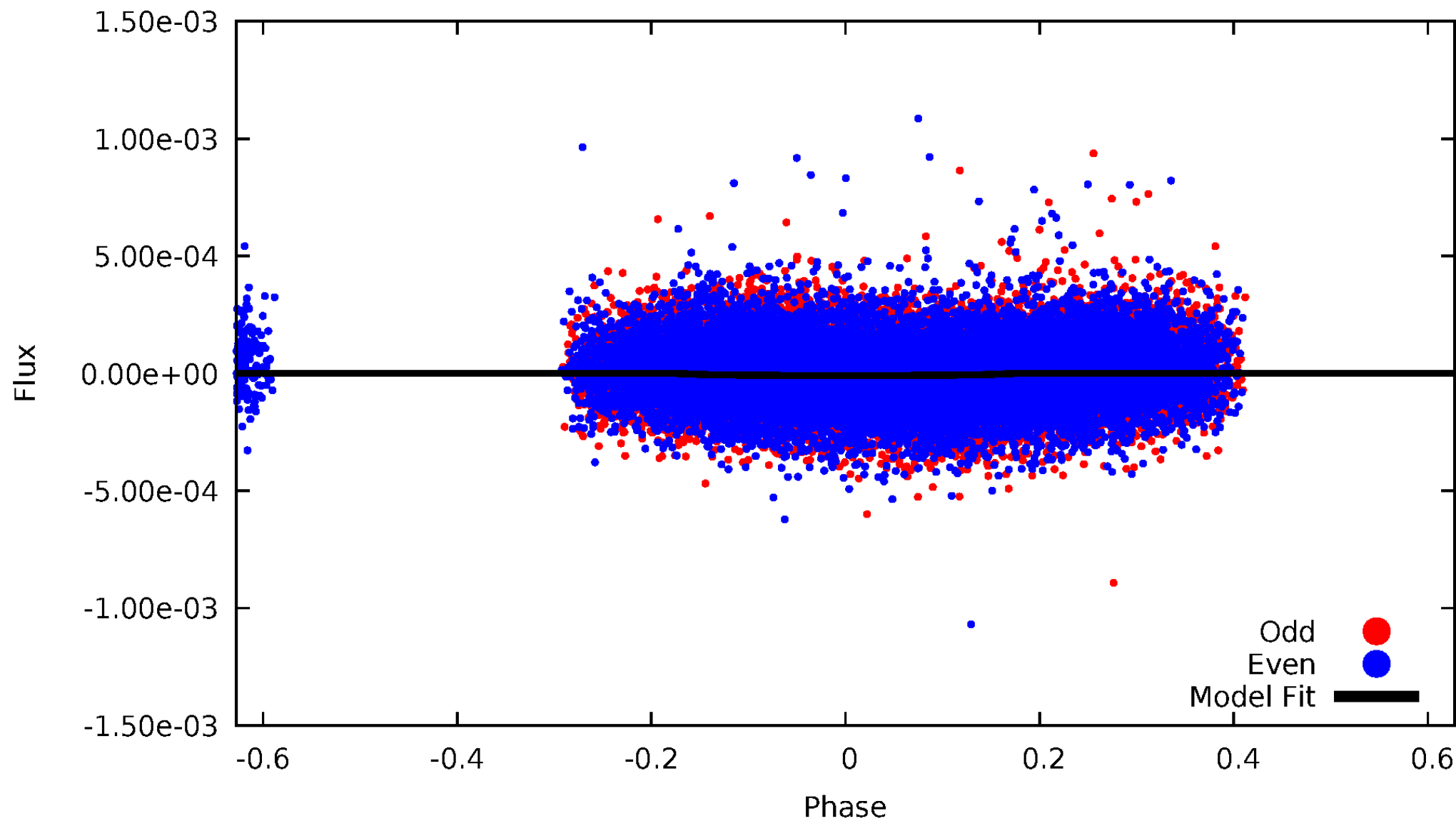
TCE 002425057-02





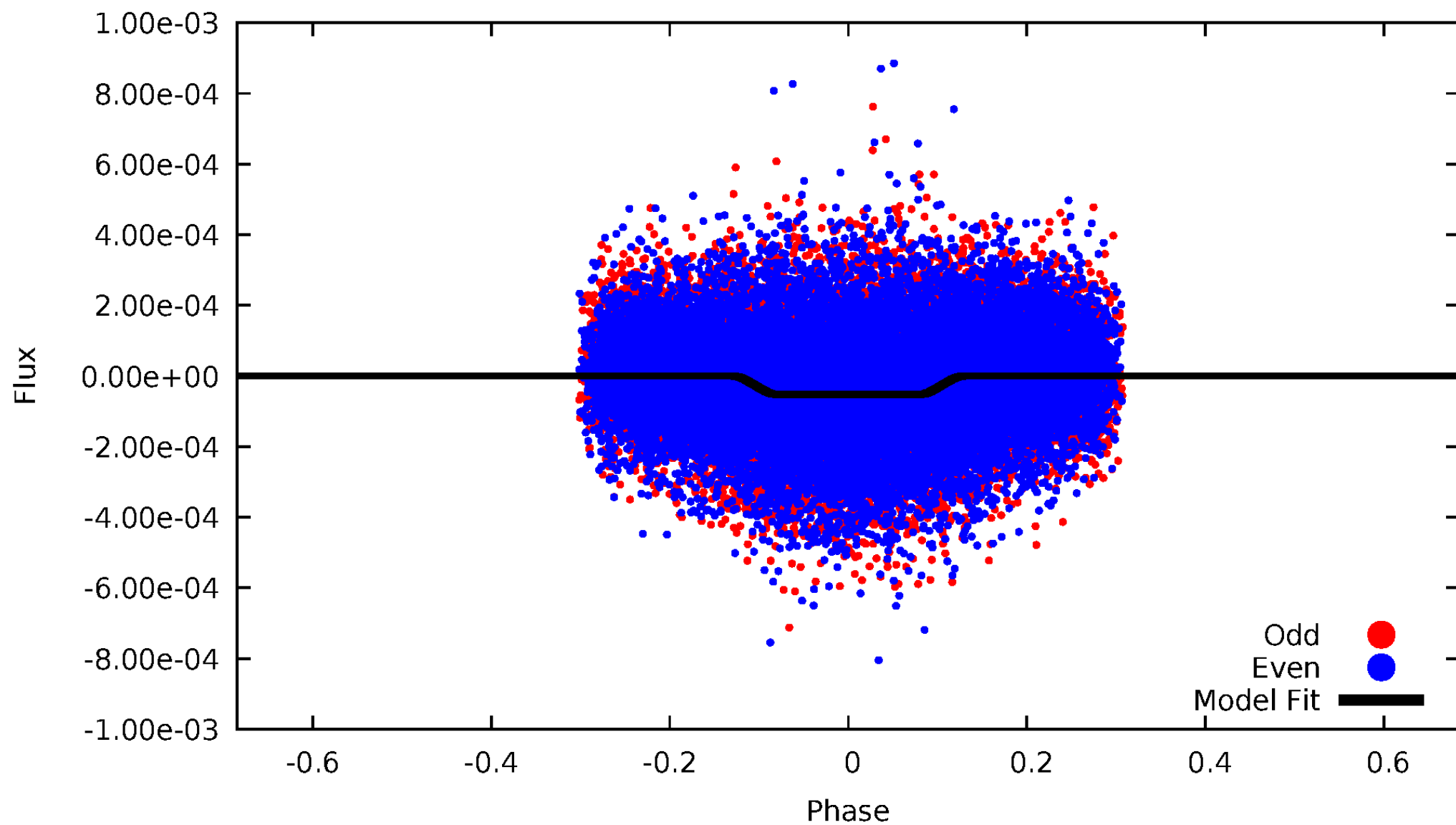
DV Odd/Even

TCE 002425057-02



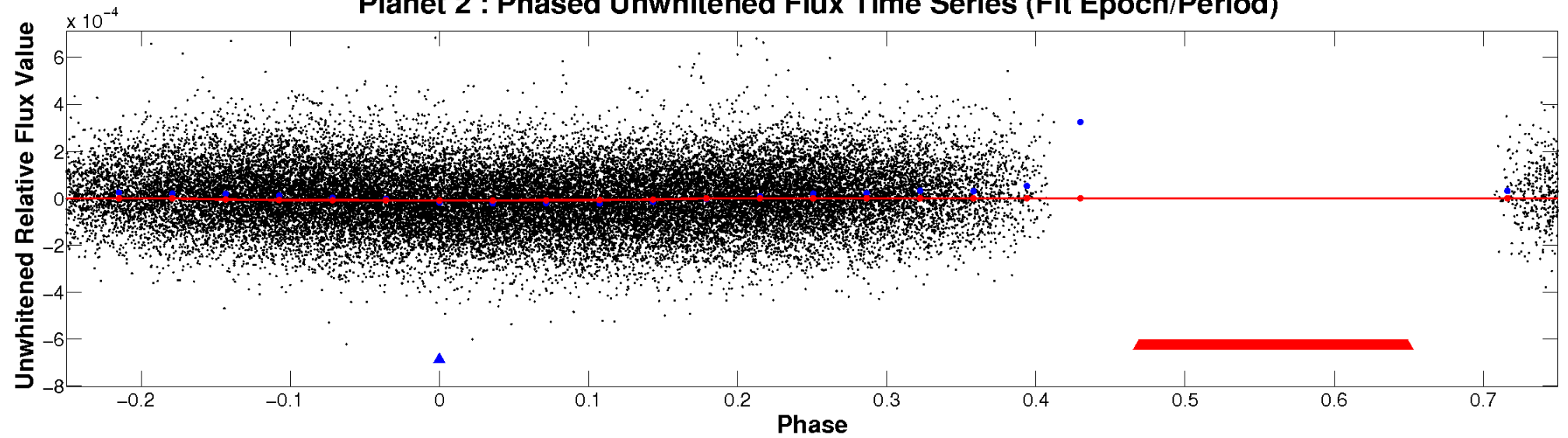
# ALT Odd/Even

TCE 002425057-02

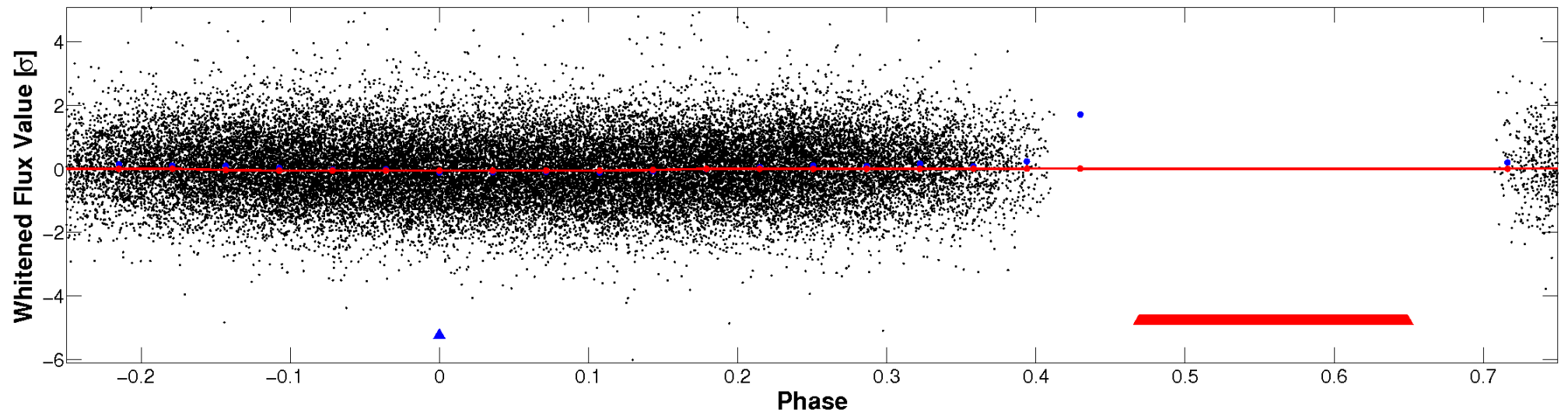


# Non-Whitened Vs. Whitened Light Curve

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

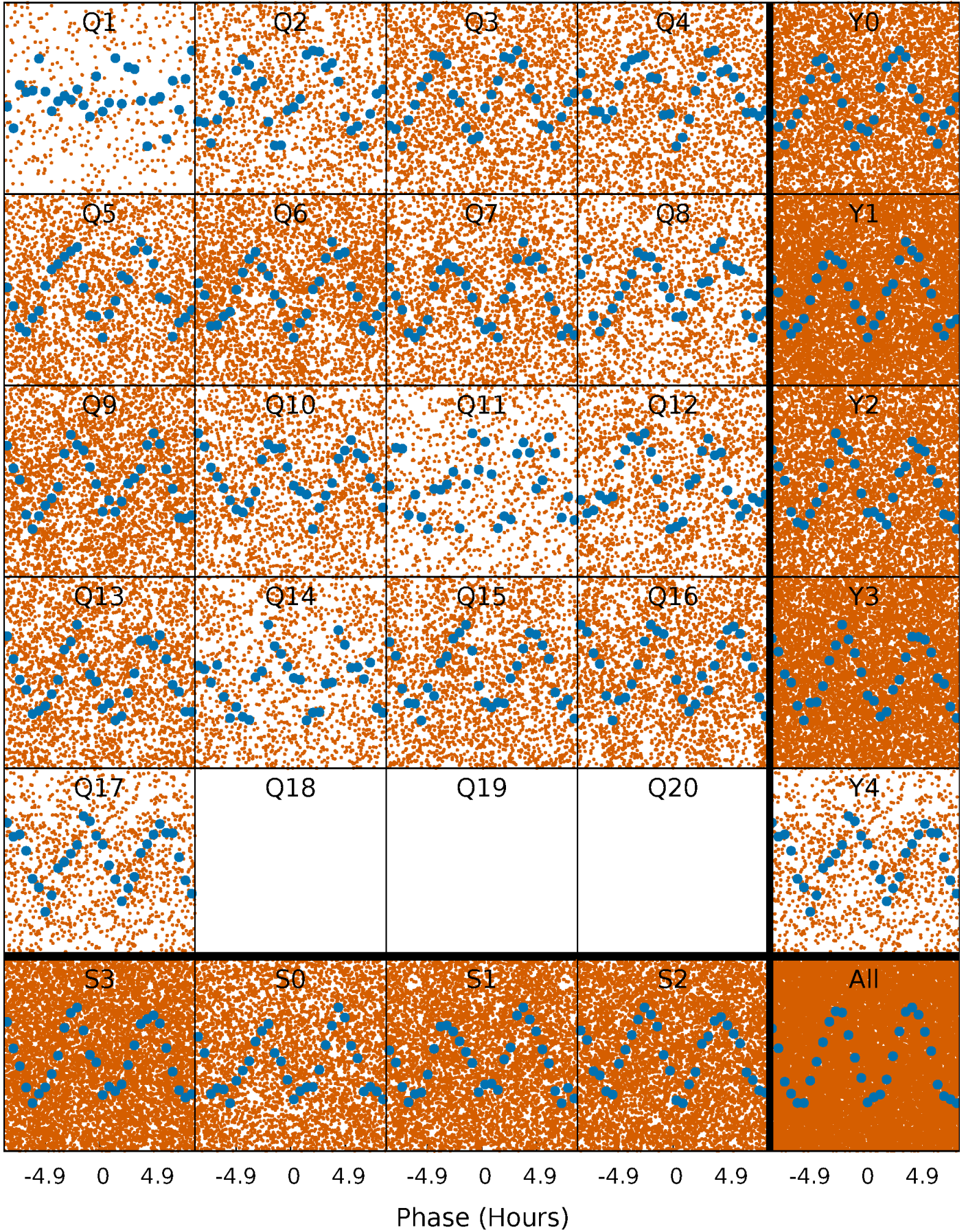


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

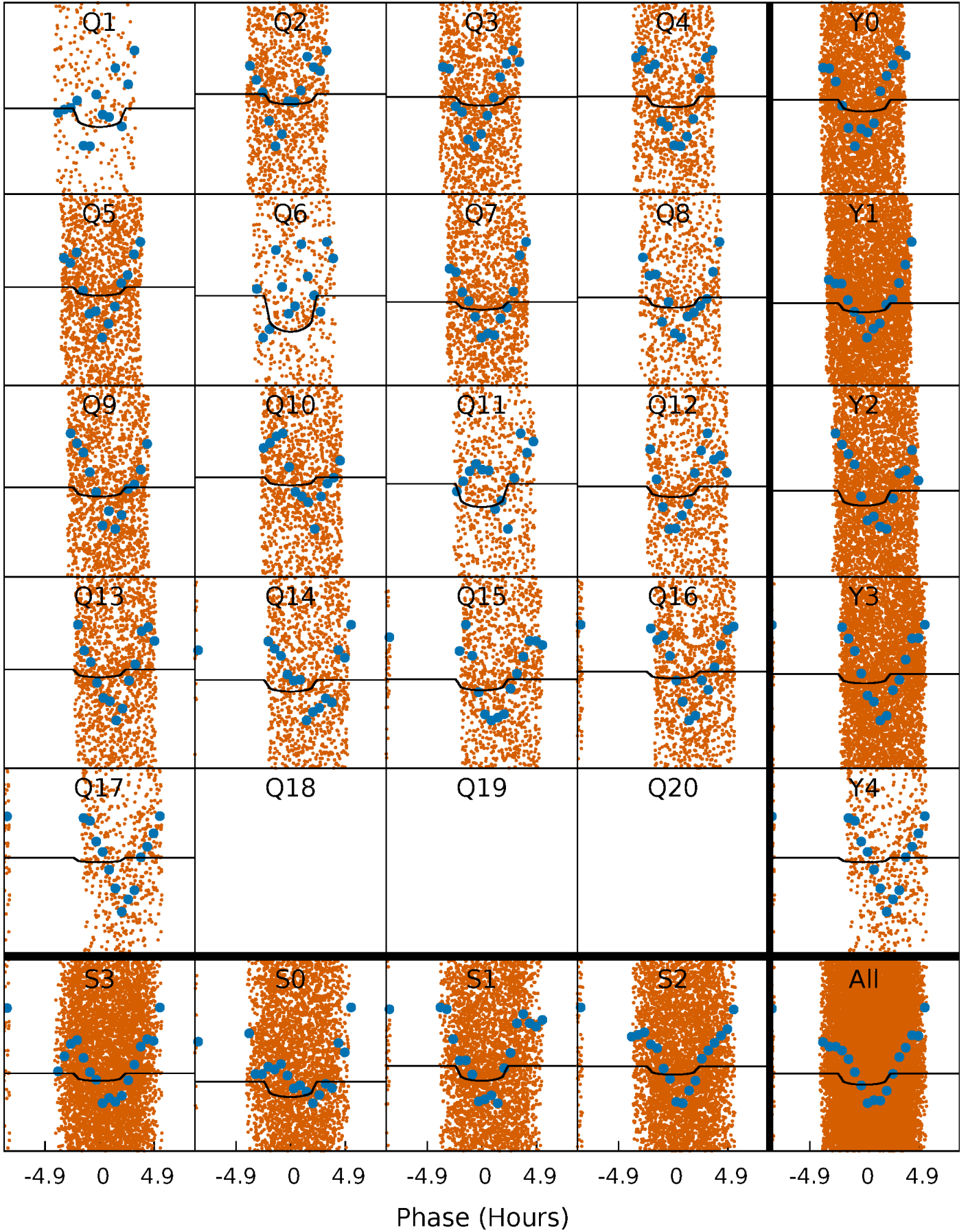
TCE 002425057-02   P= 0.570546 Days    $T_0=131.670578$  (BKJD)





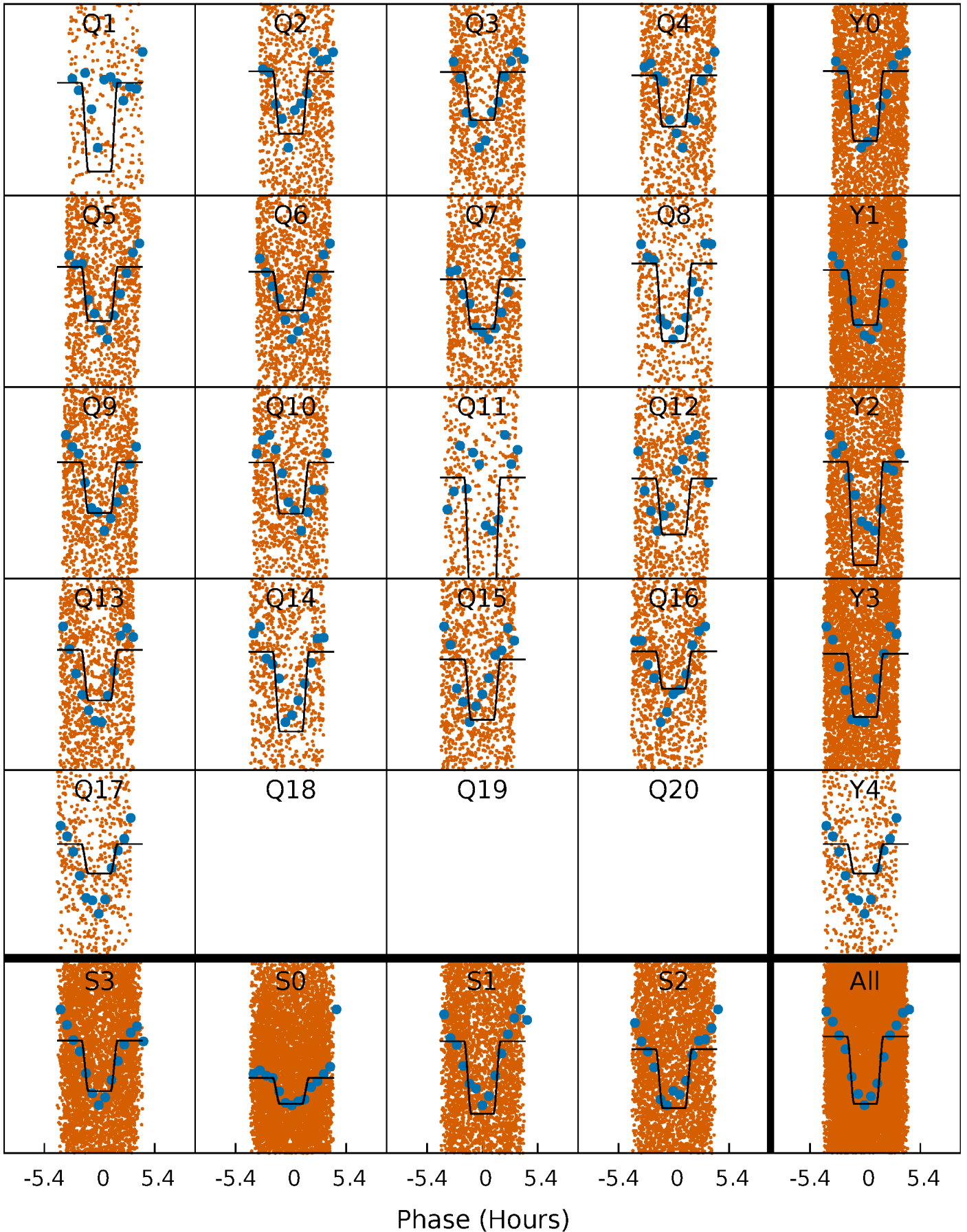
# DV Quarter-Phased Transit Curves

TCE 002425057-02   P= 0.570546 Days    $T_0=131.670578$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 002425057-02    P= 0.570606 Days     $T_0=131.626679$  (BKJD)

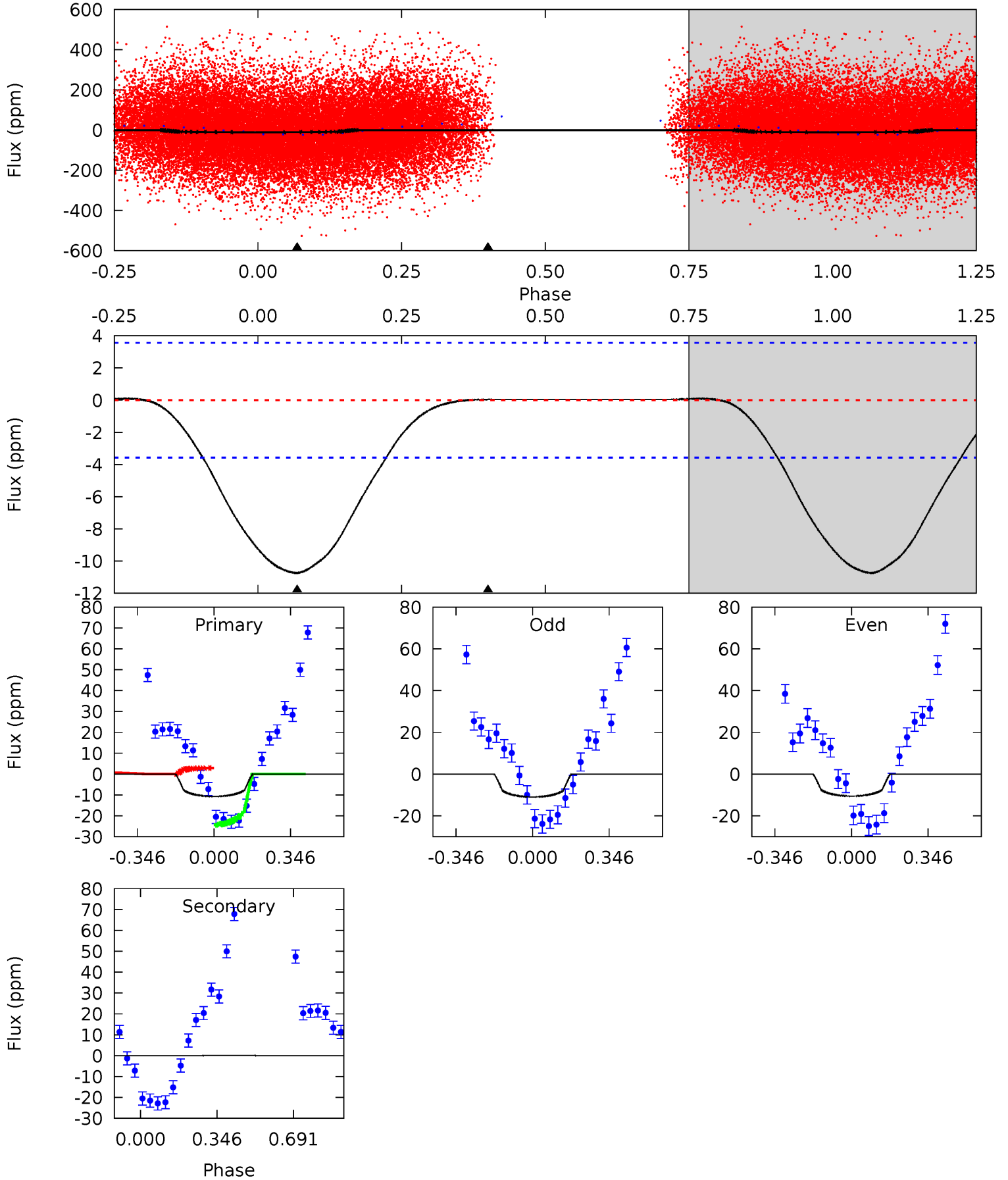




# DV Model-Shift Uniqueness Test

002425057-02, P = 0.570546 Days, E = 131.100032 Days

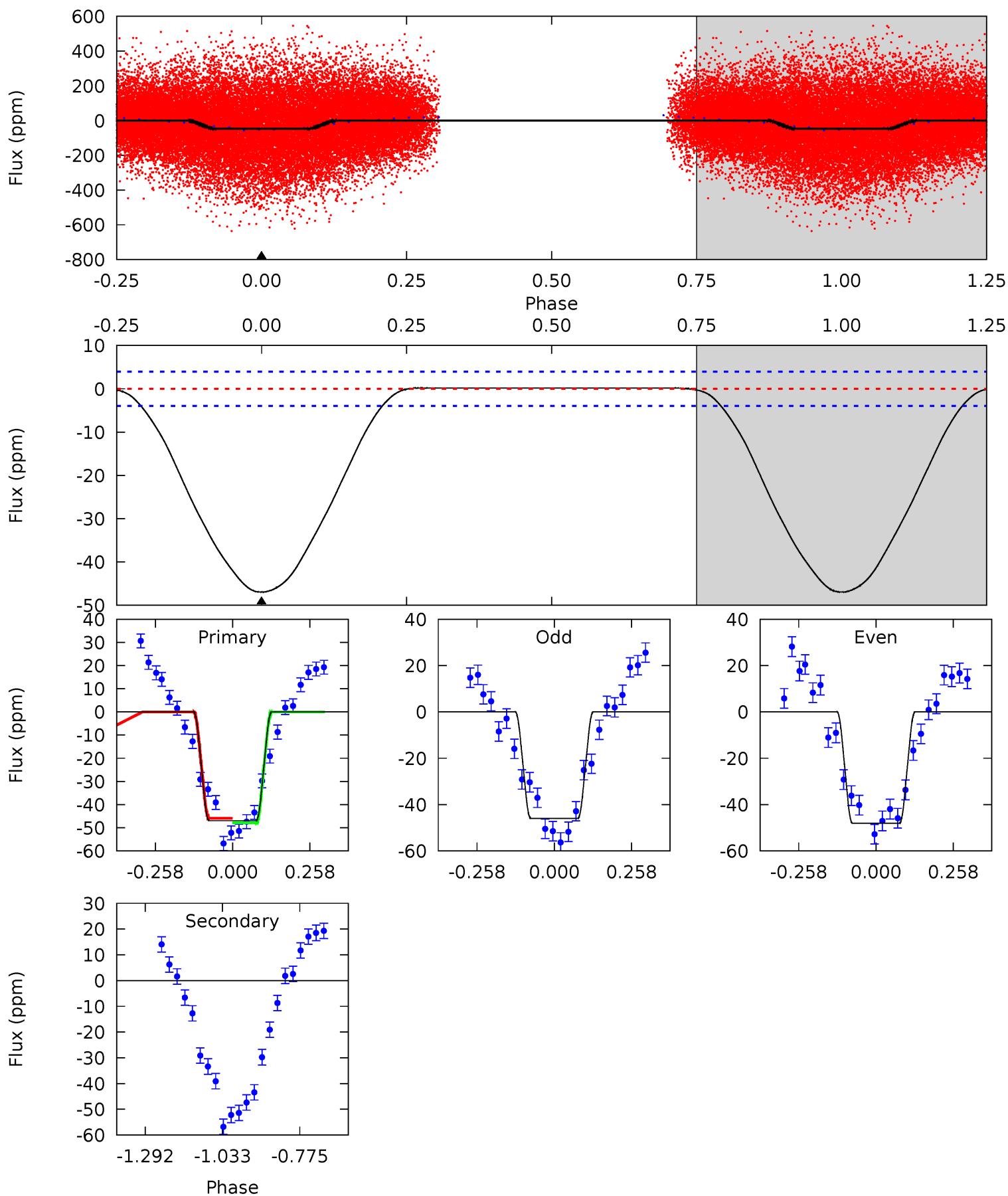
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.0	-0.05	0	0	4.30	0.94	0.28	13.0	13.0	-0.05	-0.05	0.27	1.13	0.01	12.7



# Alt Model-Shift Uniqueness Test

002425057-02, P = 0.570606 Days, E = 131.056073 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
51.6	0	0	0	4.36	1.13	0.29	51.6	51.6	0	0	1.13	1.02	0.00	0.84



### Stellar Parameters For KIC 002425057

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$7861^{+249}_{-304}$	$3.483^{+0.671}_{-0.118}$	$-0.500^{+0.250}_{-0.250}$	$4.311^{+0.487}_{-2.599}$	$2.061^{+0.308}_{-0.667}$	$0.036^{+0.407}_{-0.010}$
	+3%/-4%	+19%/-3%	+50%/-50%	+11%/-60%	+15%/-32%	+1123%/-26%
Source	KIC0	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 002425057-02 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$0 \pm 1$	$1.60^{+1.69}_{-1.05}$	$7509^{+487}_{-1122}$	$-5969^{+1210}_{-636}$	$0.001^{+0.084}_{-0.076}$
Alt.	$0 \pm 1$	$2.95^{+2.15}_{-1.57}$	$7506^{+547}_{-1158}$	$-6006^{+909}_{-478}$	$0.000^{+0.021}_{-0.021}$

$T_{\text{max}}$  = 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

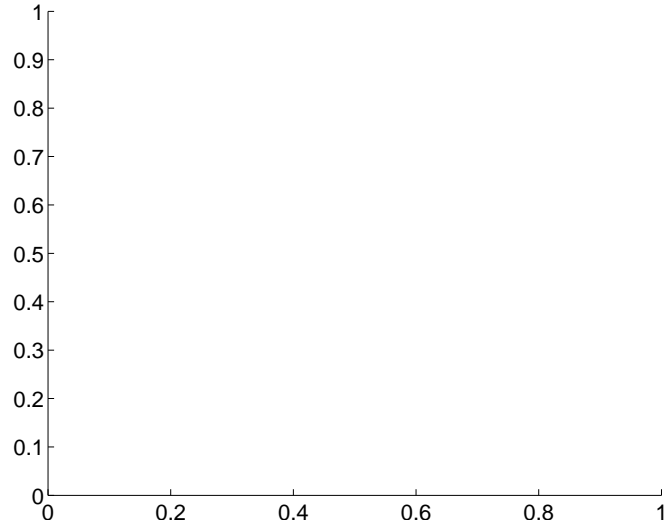
Supplemental centroid analysis for 002425057-02. Kepler magnitude: 12.60. Transit SNR 6.62

There are 0 quarters with good PRF difference image offsets

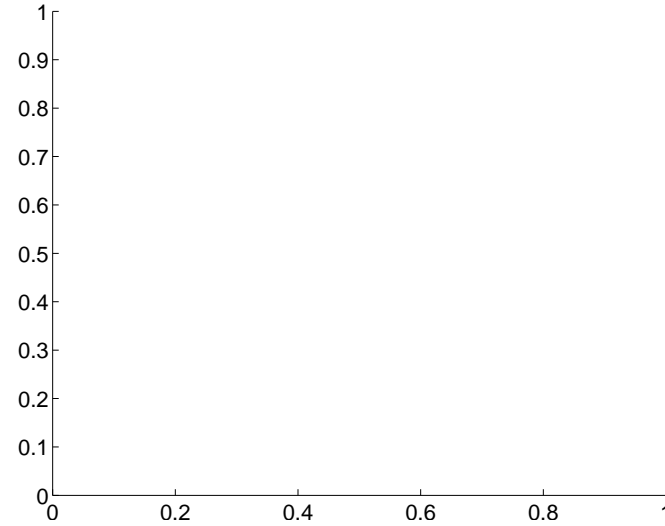
The direct PRF centroid is offset from the target star catalog position by about NaN arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	—	—	—	—
PRF-fit source offset from KIC position	—	—	—	—
photometric centroid source offset	$1.26 \pm 1.20$	1.05	$-1.25 \pm 1.19$	$0.17 \pm 1.56$

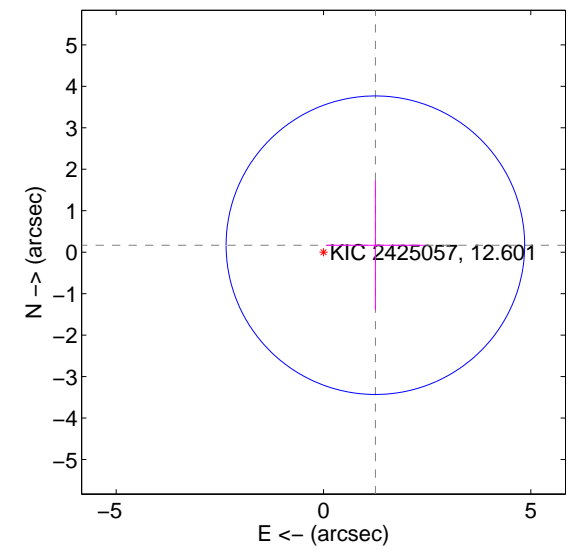
There is no PRF-fit offset from OOT-fit



There is no PRF-fit offset from KIC

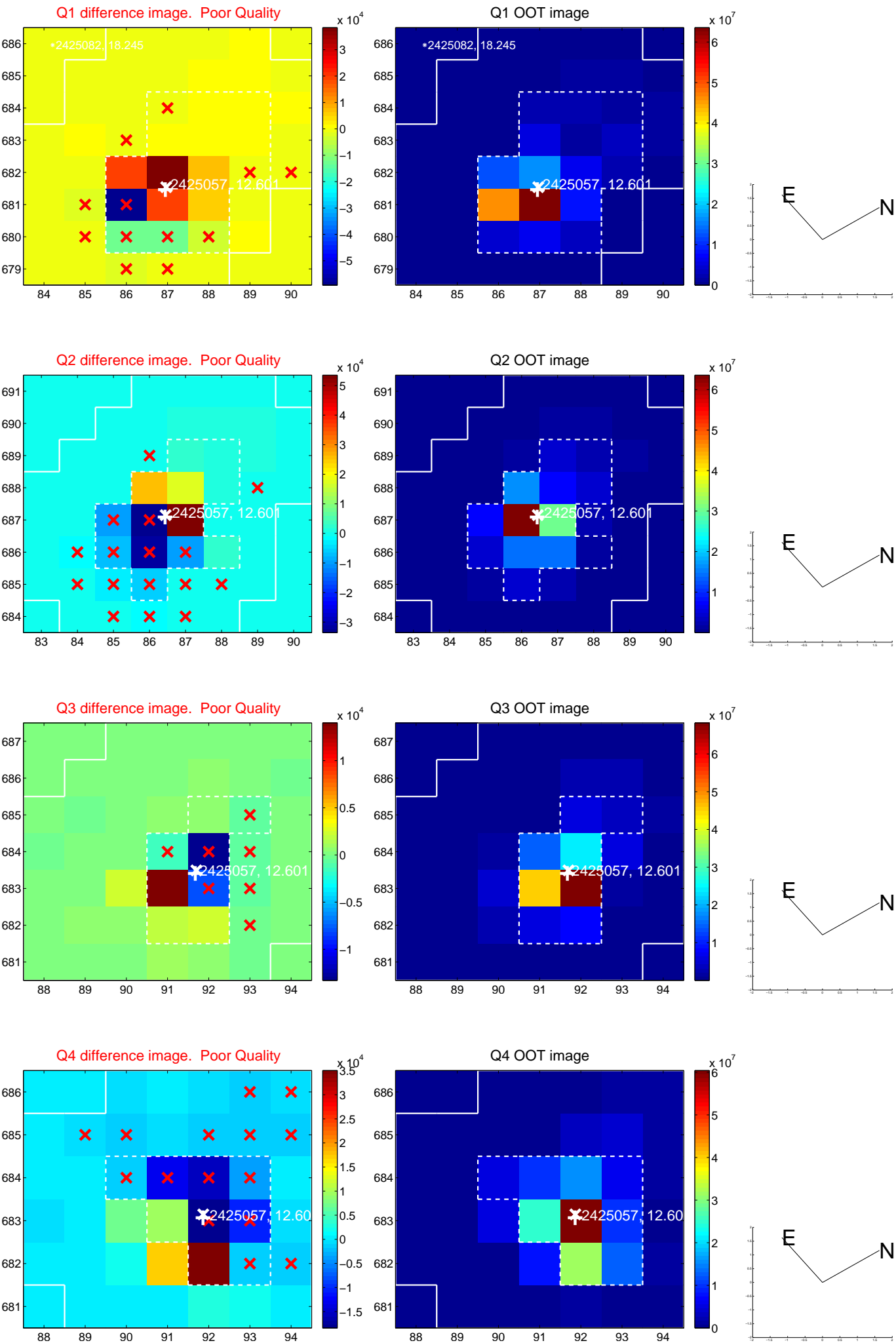


offset from photometric centroids

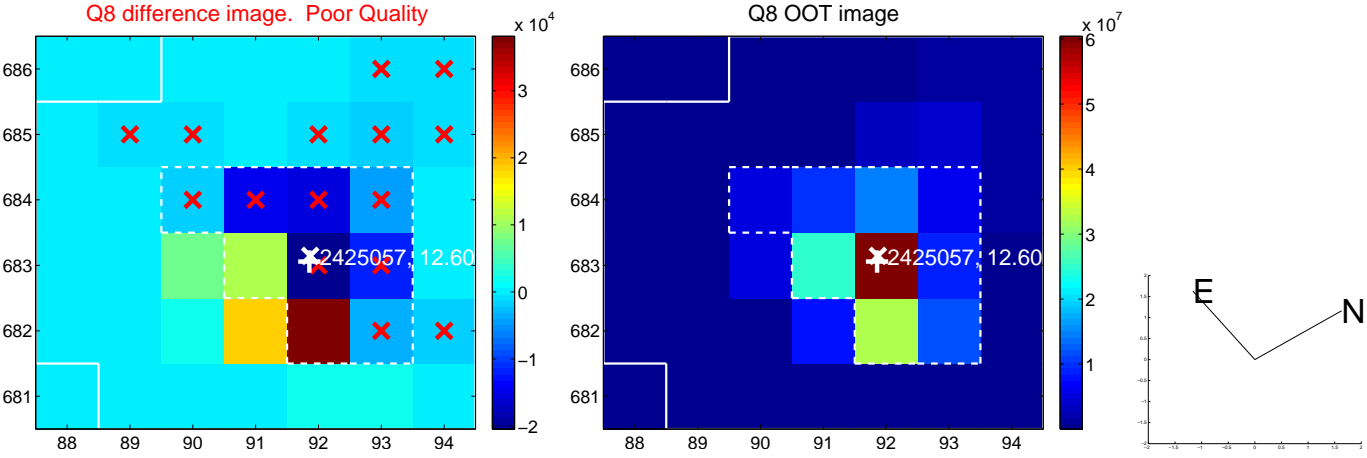
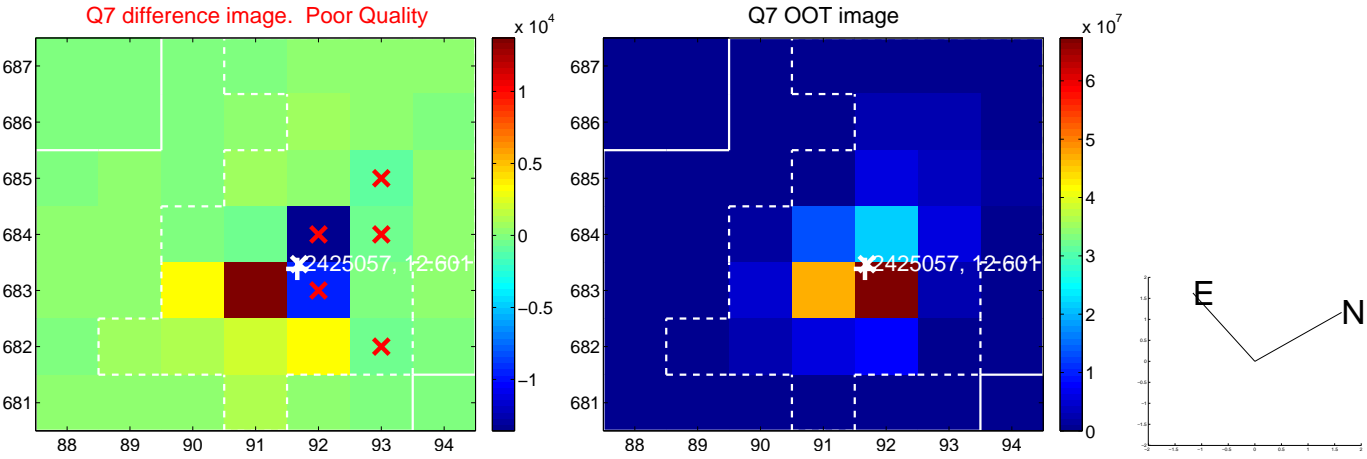
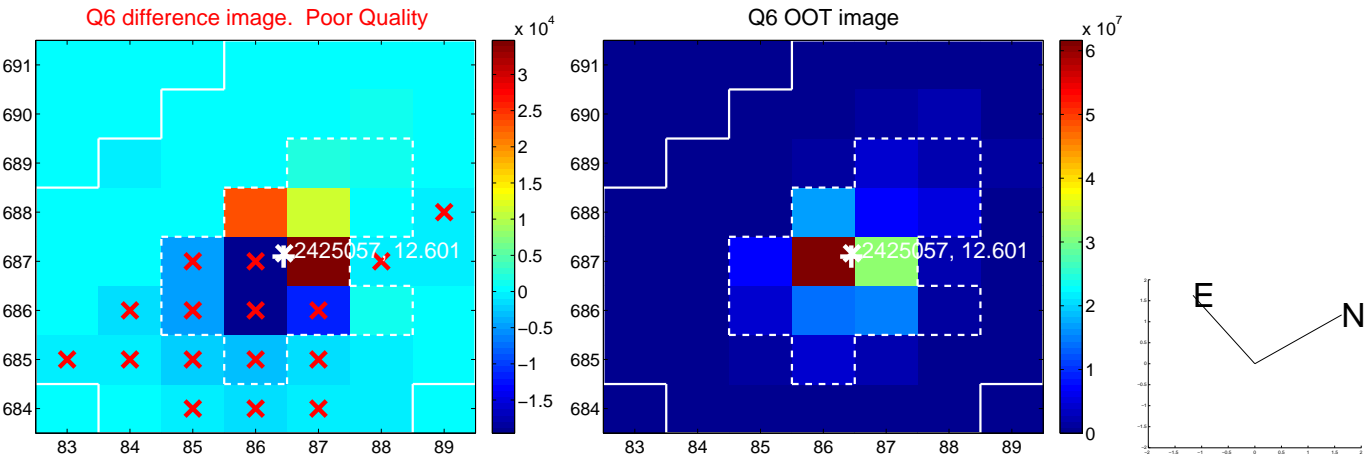
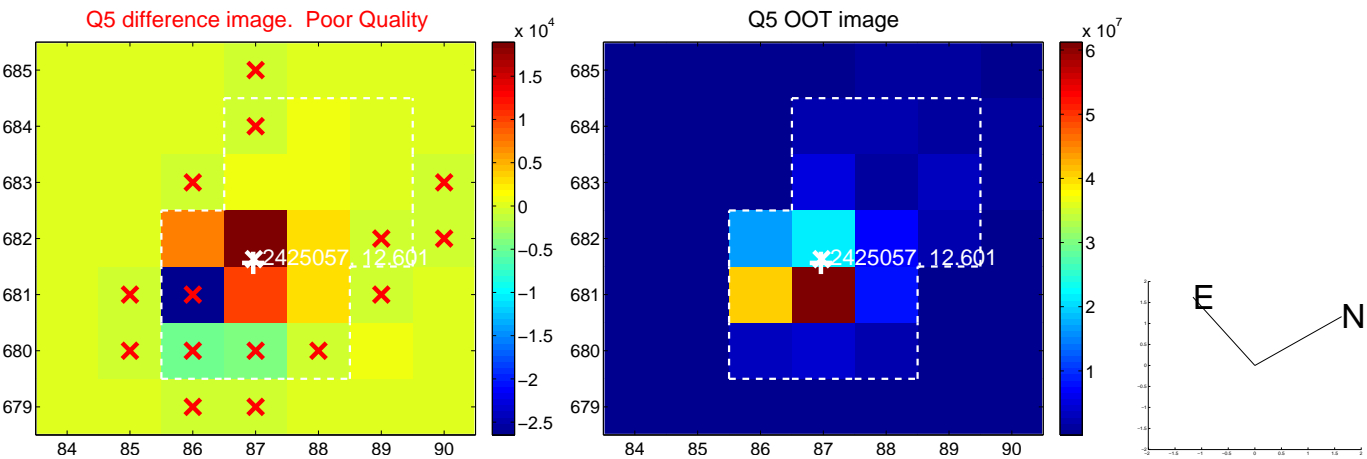


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

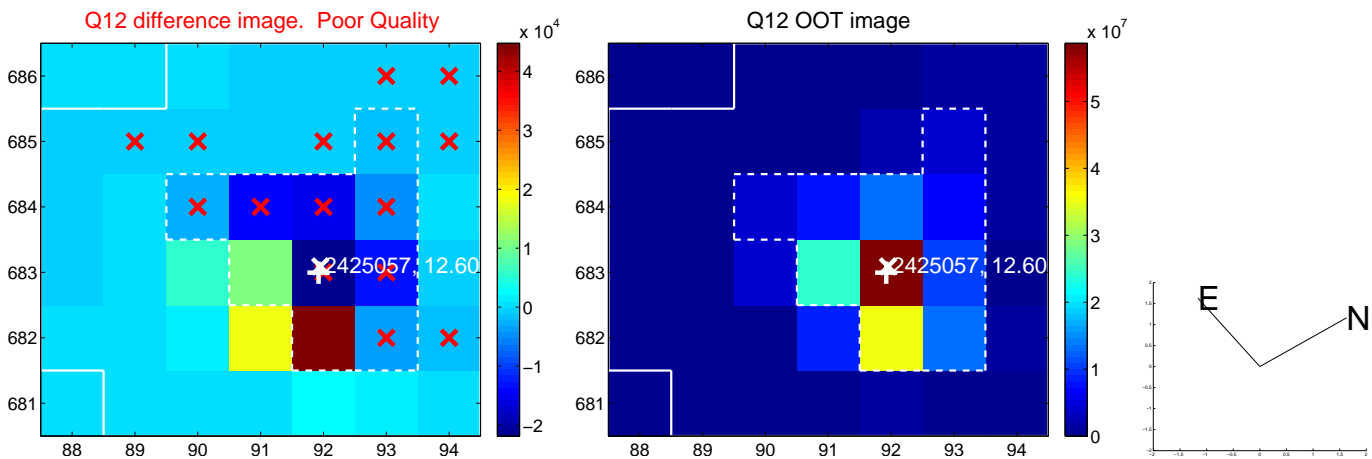
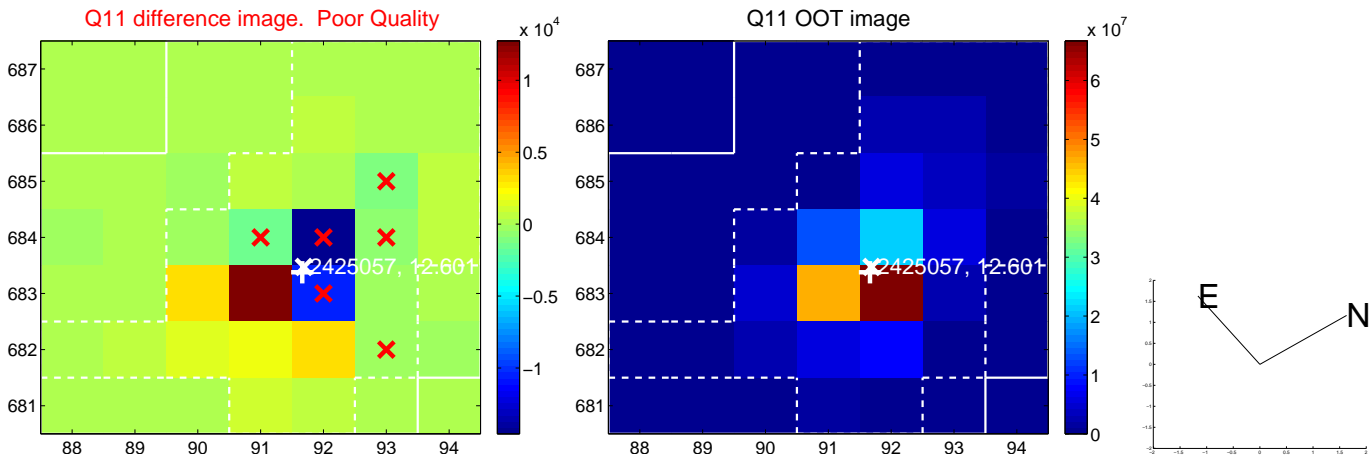
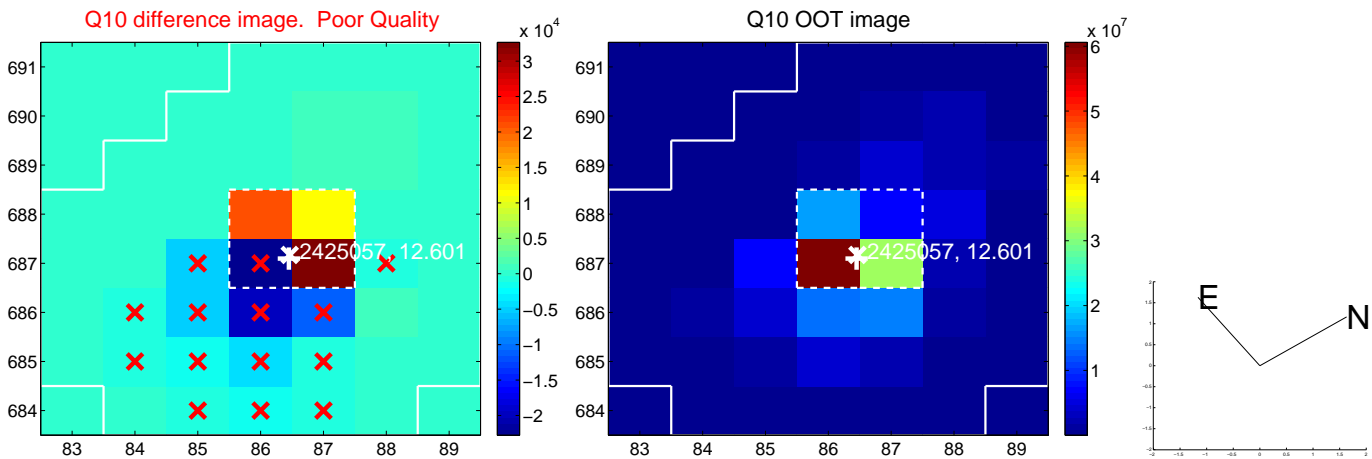
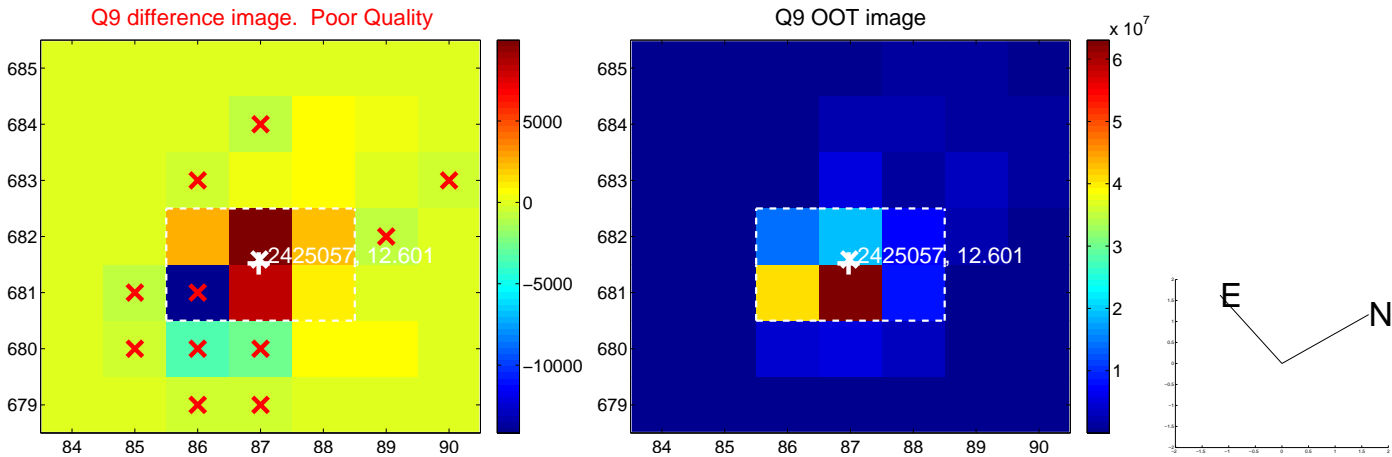


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

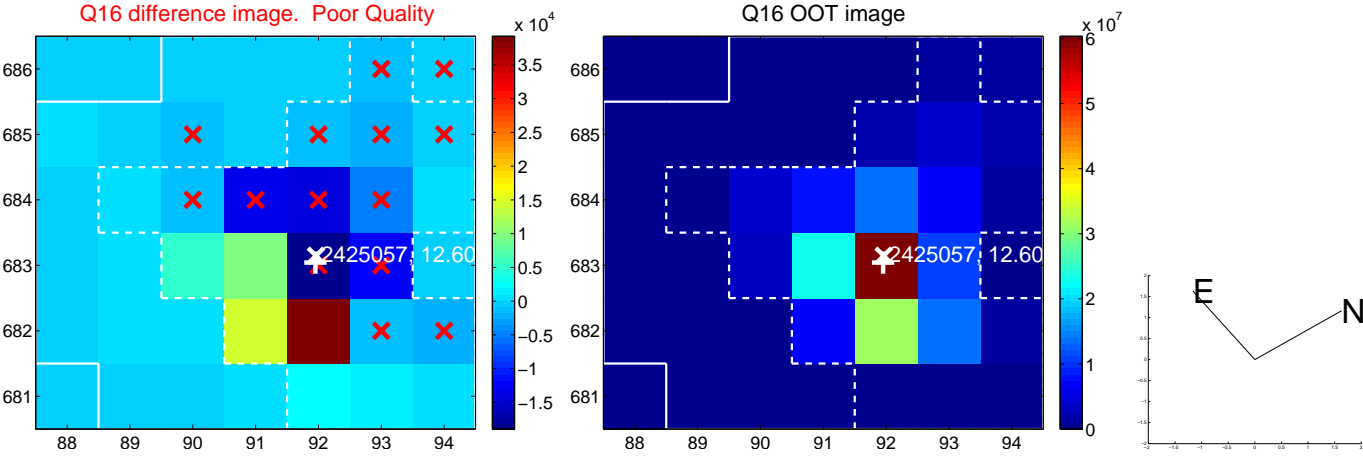
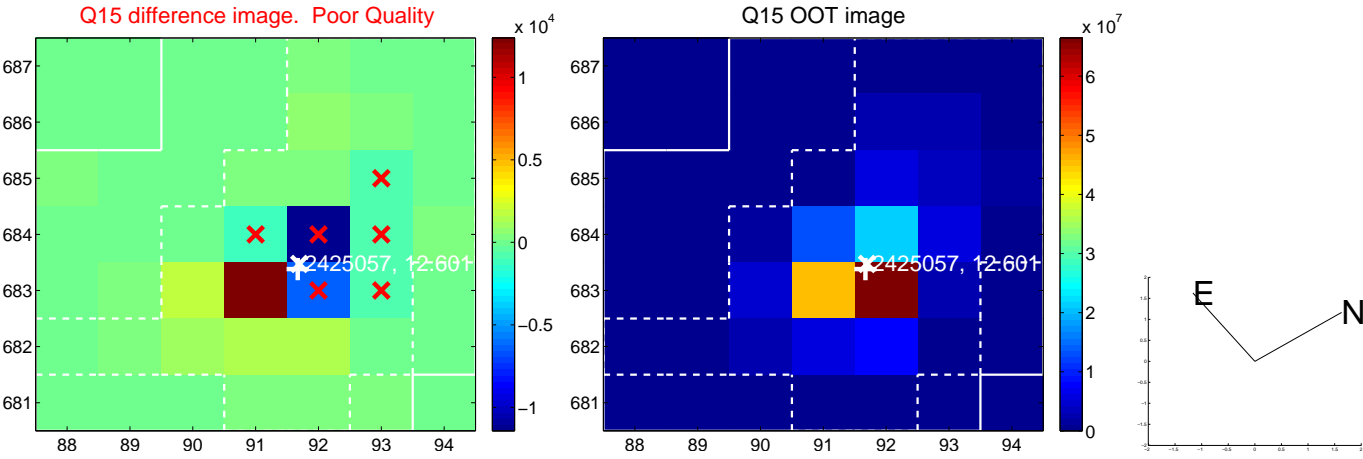
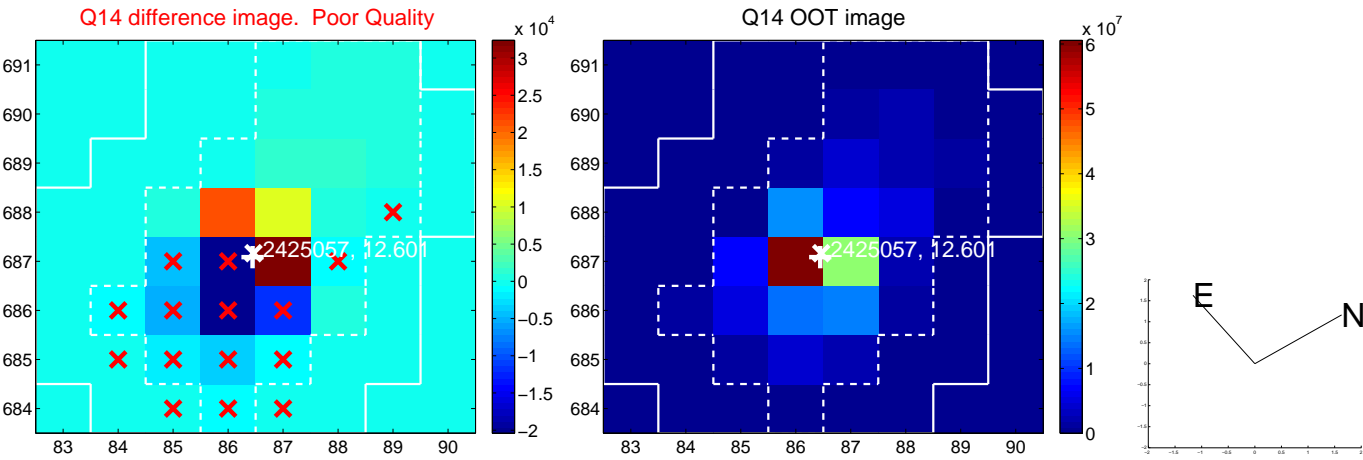
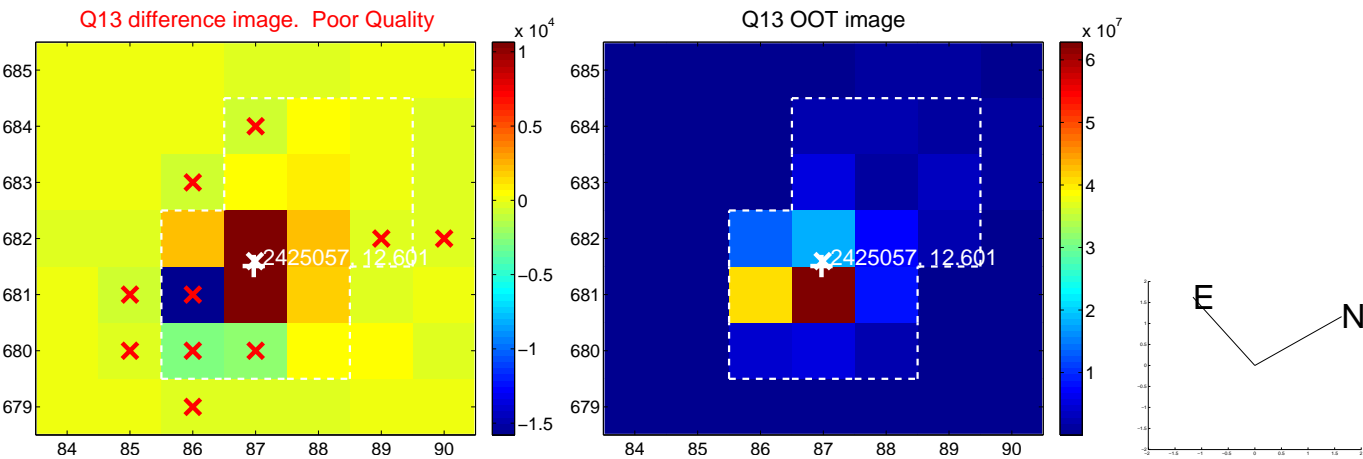




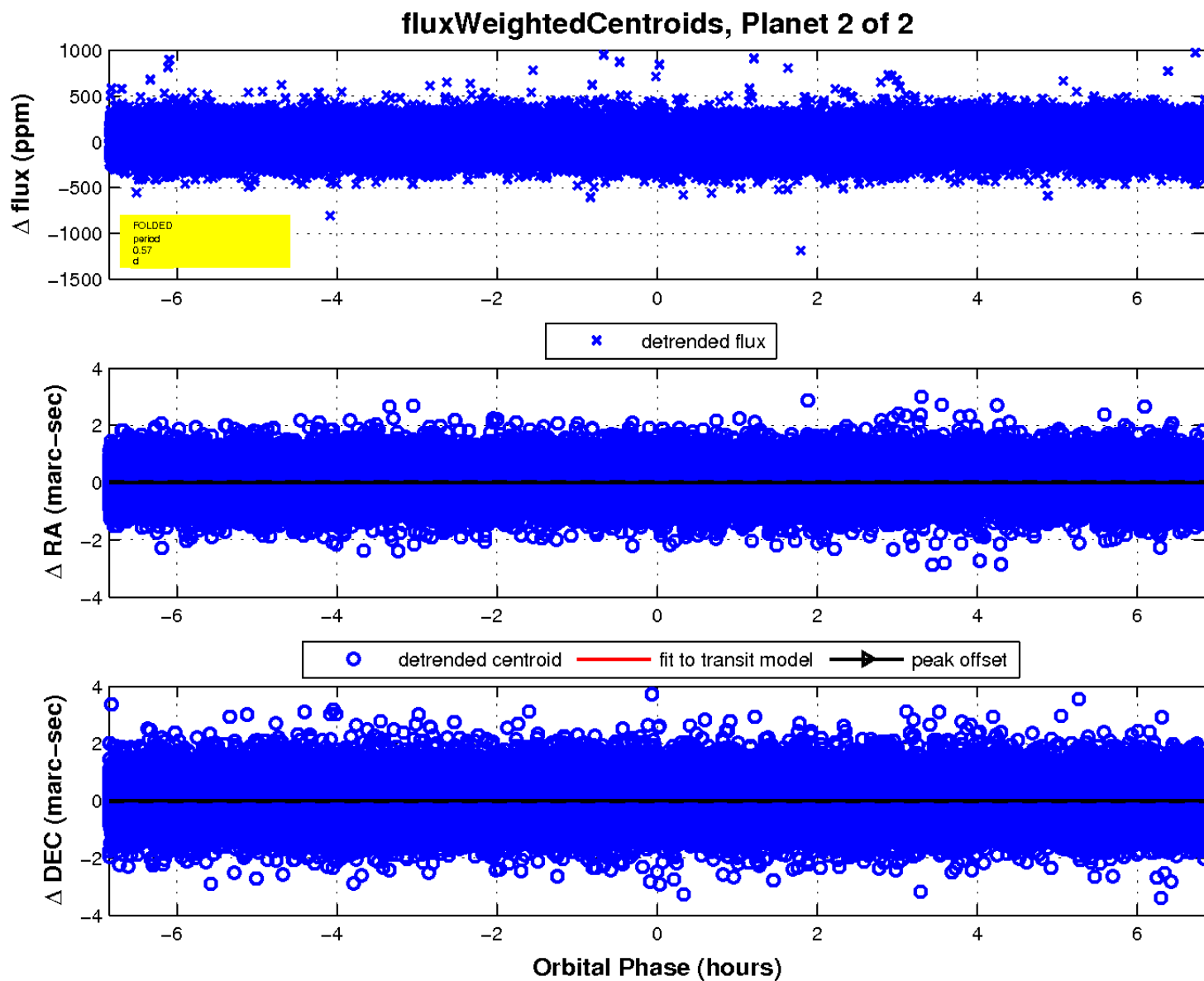
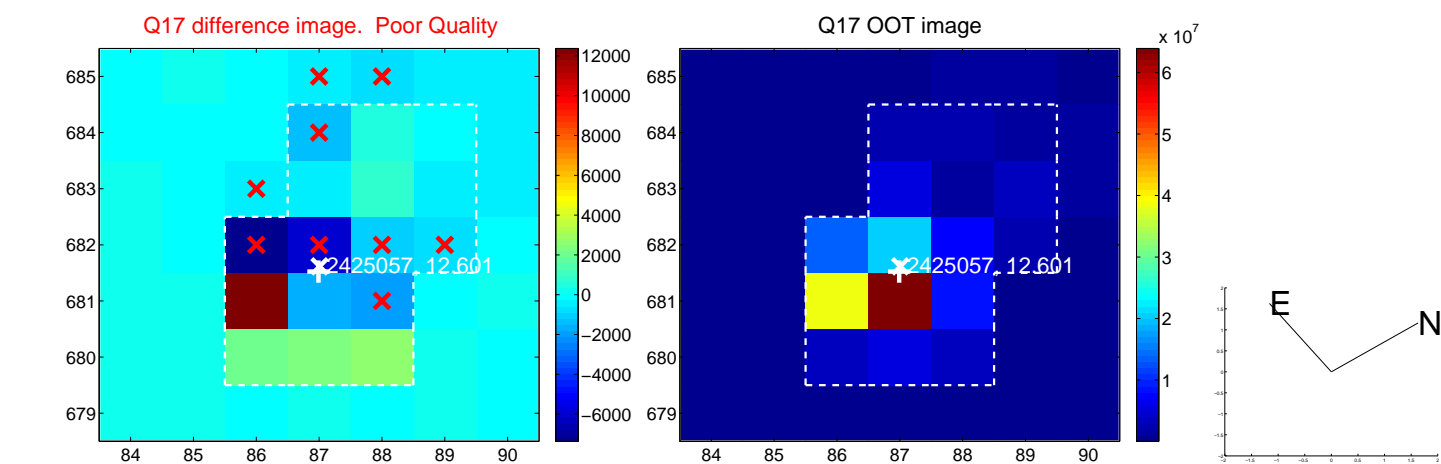
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

