

# KIC 005219530

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005219530-01	OBS	No	0.732247	131.806965	22.7	5.353	7.4	8.7	0.78	5491	0.37	2283.95
005219530-02	OBS	No	11.664707	137.810854	408.7	0.916	11.9	12.7	0.78	5491	1.70	56.98

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005219530-01	OBS	FP	0.00	1	0	1	0	LPP_DV—CENT_FEW_DIFFS—HALO_GHOST
005219530-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—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.

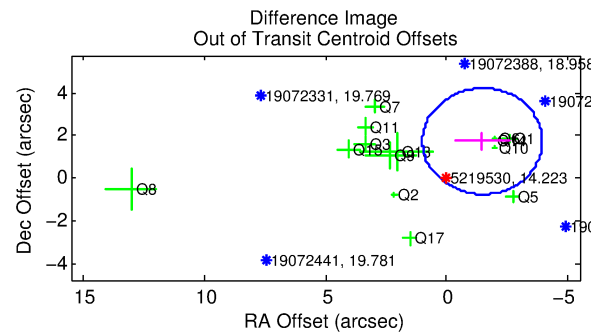
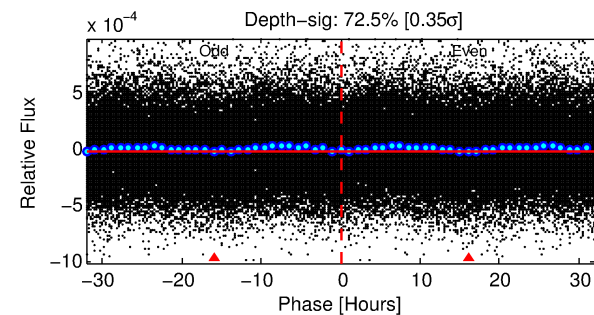
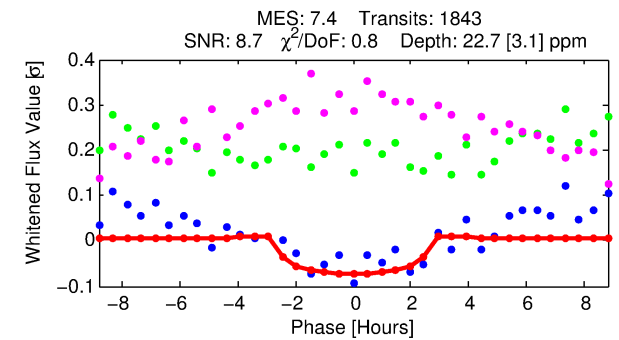
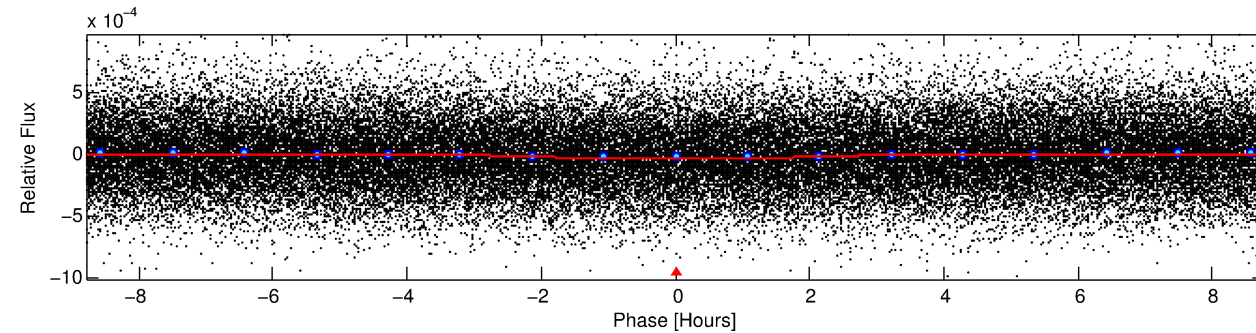
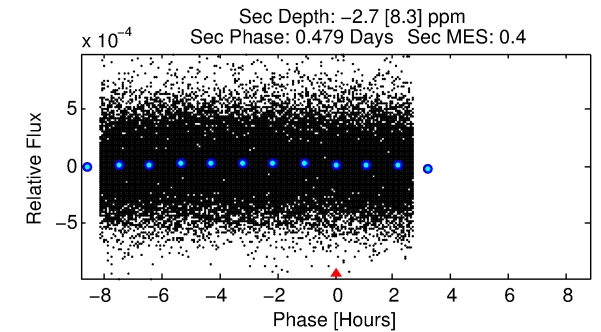
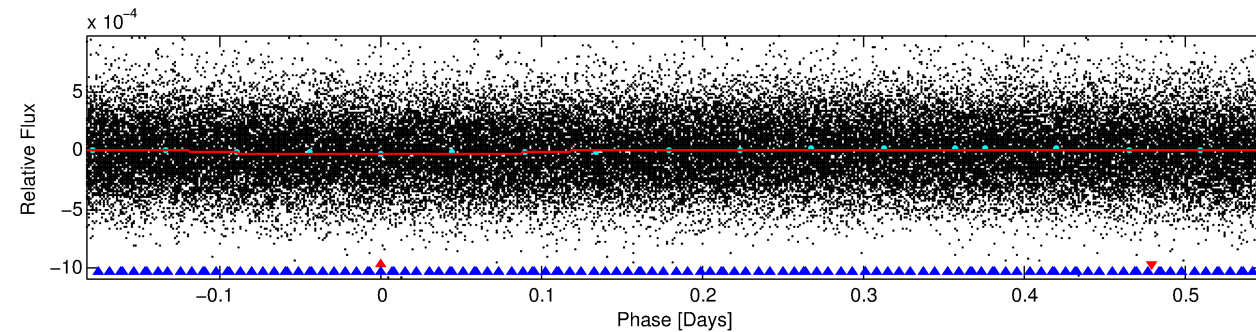
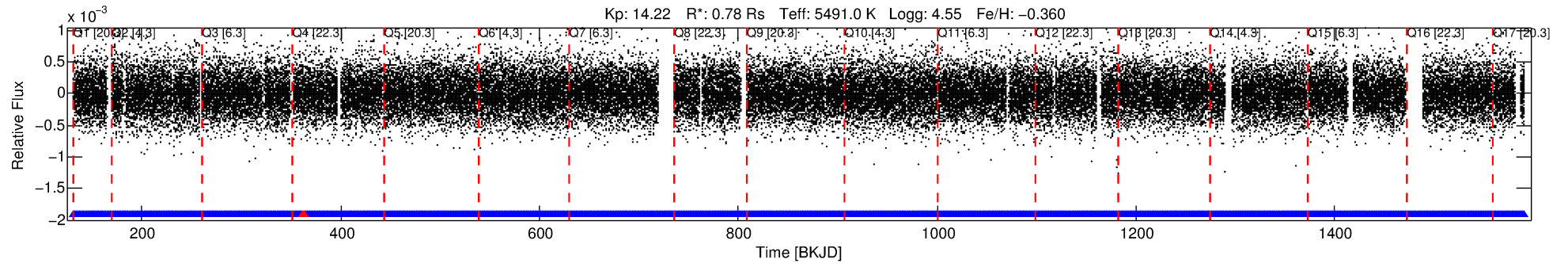
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 005219530-01

No Significant Match Found

# DV One-Page Summary

KIC: 5219530 Candidate: 1 of 2 Period: 0.732 d



## DV Fit Results:

Period = 0.73225 [0.00001] d  
Epoch = 131.8070 [0.0064] BKJD  
Rp/R\* = 0.0044 [0.0058]  
a/R\* = 1.20 [2.06]  
b = 0.38 [13.02]  
Seff = 2283.95 [560.09]  
Teff = 1763 [108] K  
Rp = 0.37 [0.50] Re  
a = 0.0147 [0.0023] AU  
Ag = N/A  
Teffp = N/A

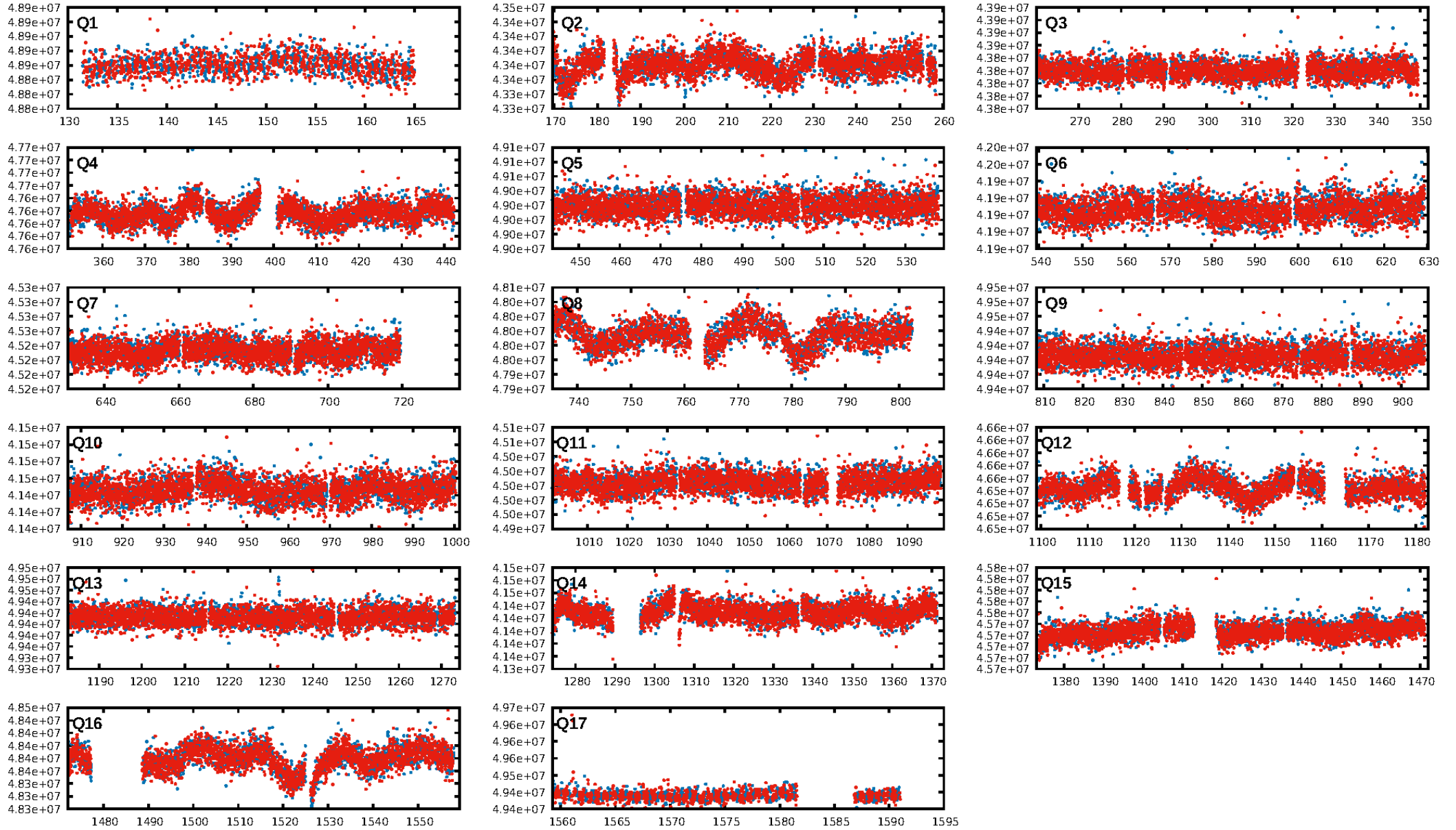
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [48.31 $\sigma$ ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
**Bootstrap-pfa: 2.02e-10**  
RollingBand-fgt: 1.00 [1758/1760]  
**GhostDiagnostic-chr: 0.1248**  
Centroid-sig: 11.4%  
Centroid-so: 2.017 arcsec [1.52 $\sigma$ ]  
OotOffset-rm: 2.278 arcsec [2.76 $\sigma$ ]  
**KicOffset-rm: 2.813 arcsec [3.62 $\sigma$ ]**  
OotOffset-st: 4/4/1/5 [14]  
KicOffset-st: 4/4/1/5 [14]  
DiffImageQuality-fgm: 0.00 [0/14]  
DiffImageOverlap-fno: 1.00 [17/17]

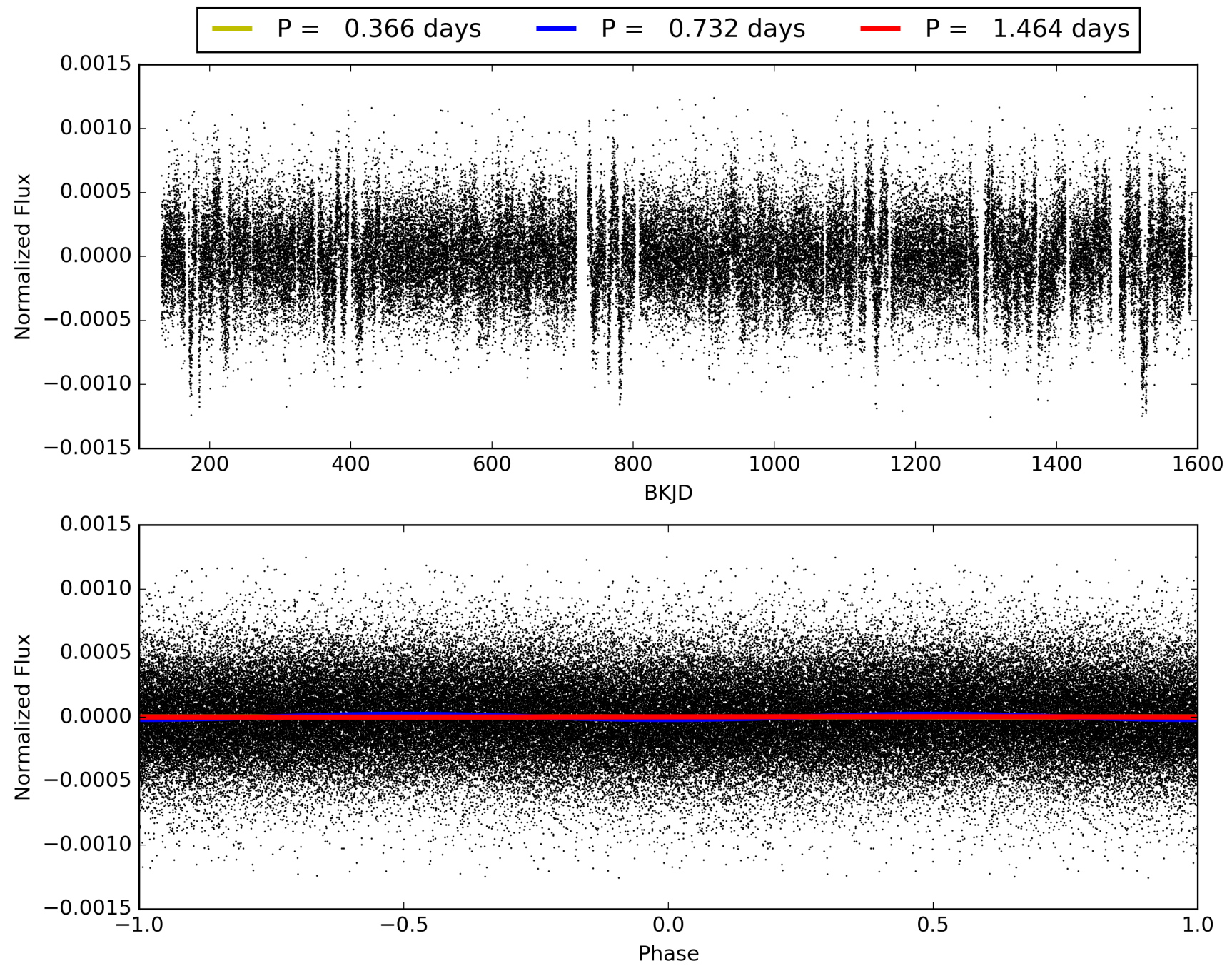
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 18:00:19 Z

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

# TCE 005219530-01, PDC Light Curves



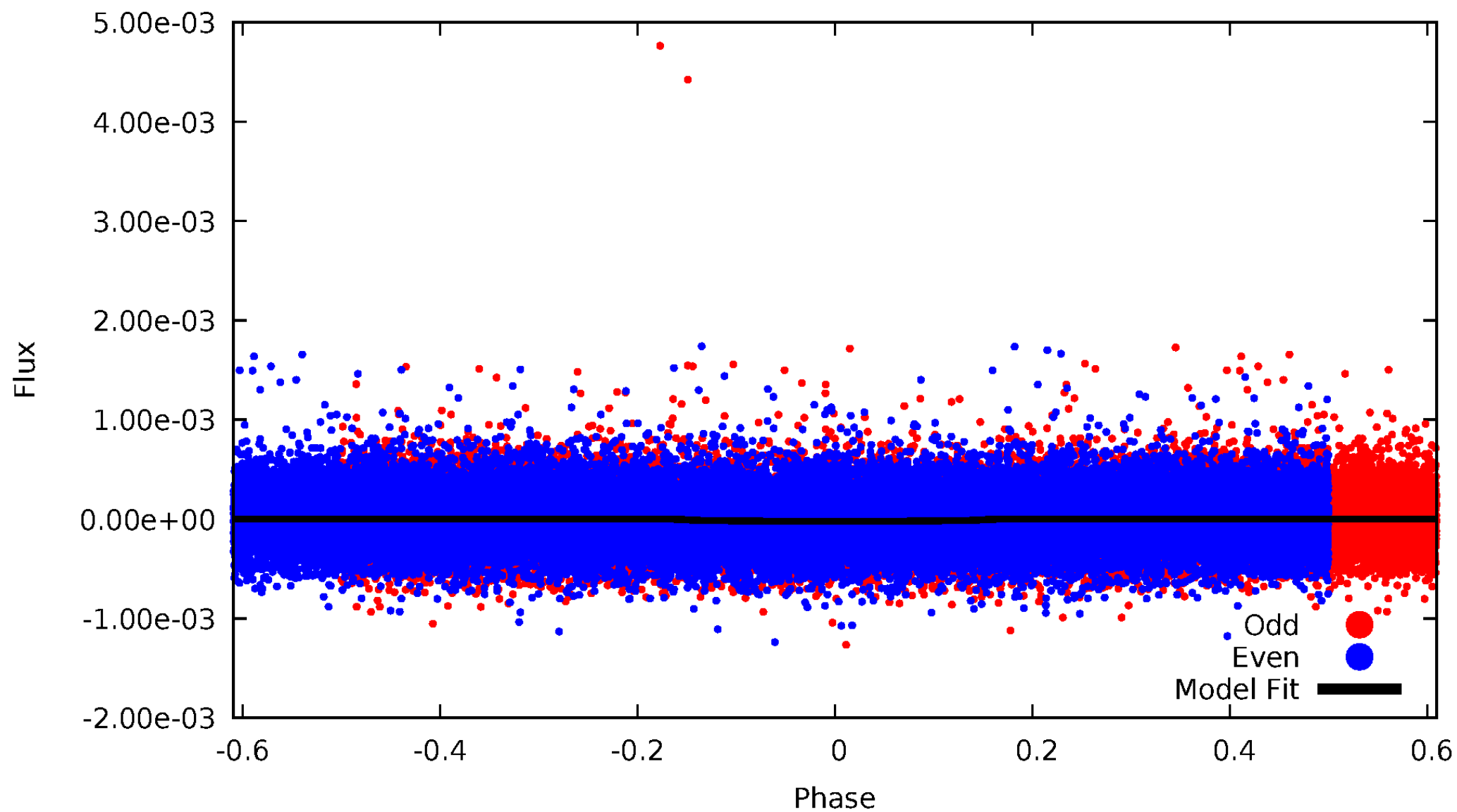
TCE 005219530-01





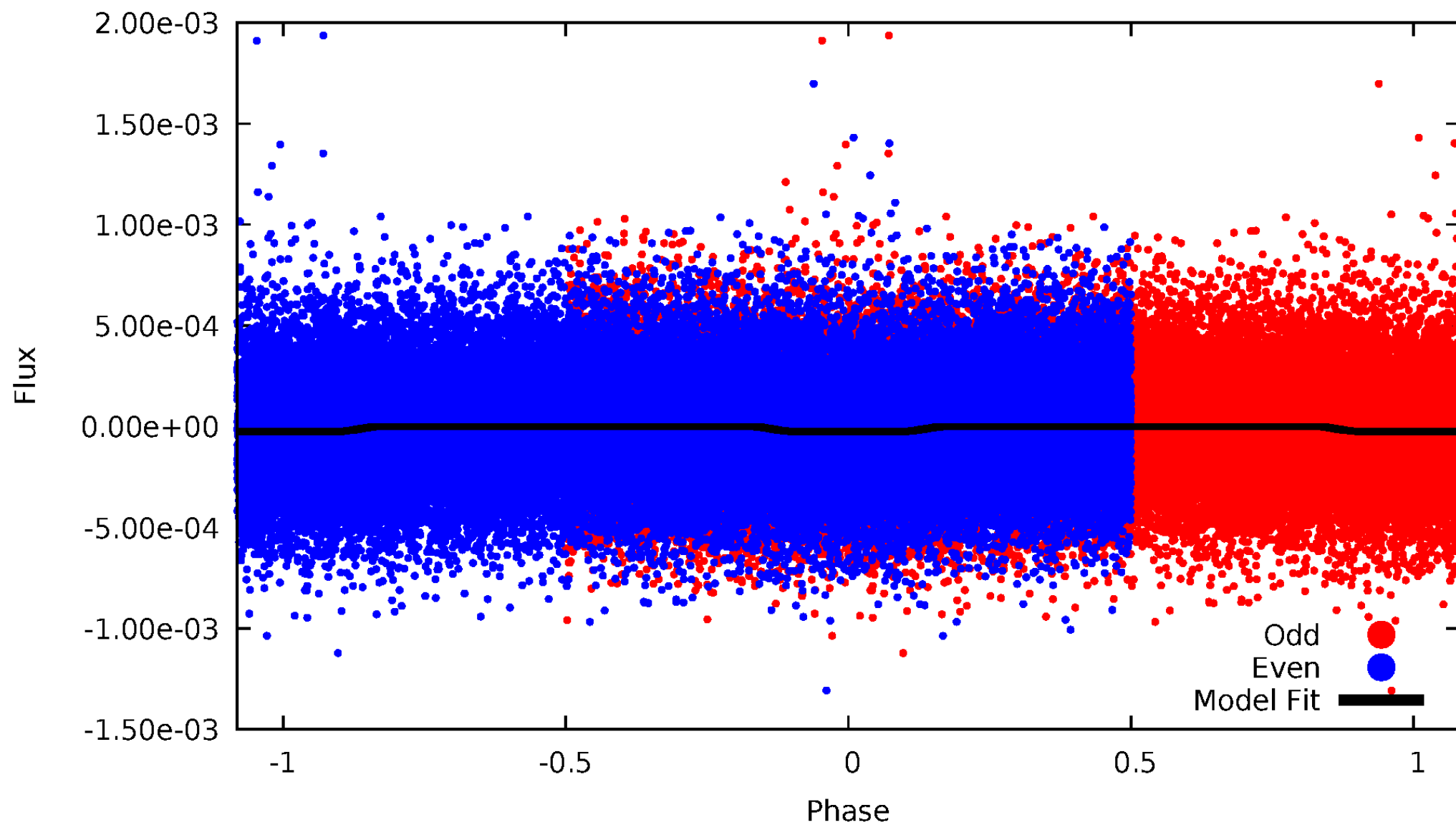
# DV Odd/Even

TCE 005219530-01



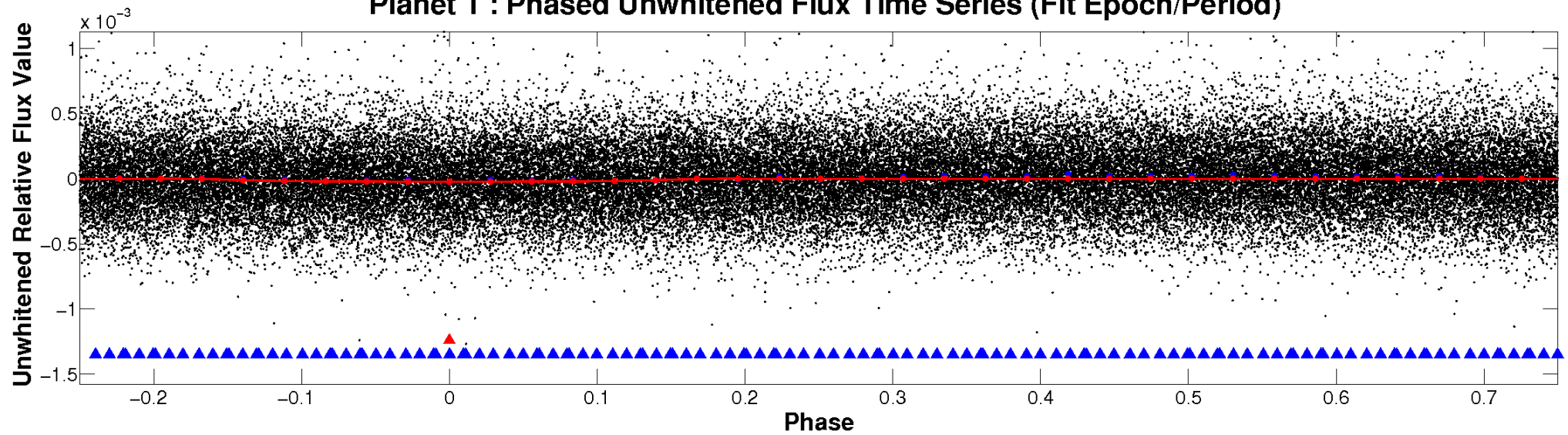
# ALT Odd/Even

TCE 005219530-01

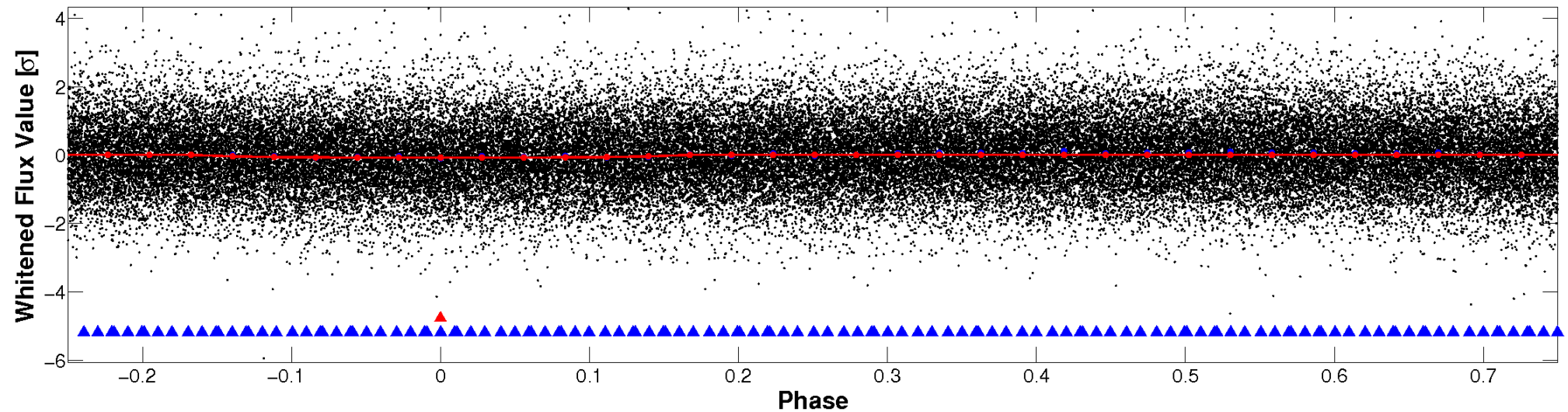


# Non-Whitened Vs. Whitened Light Curve

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

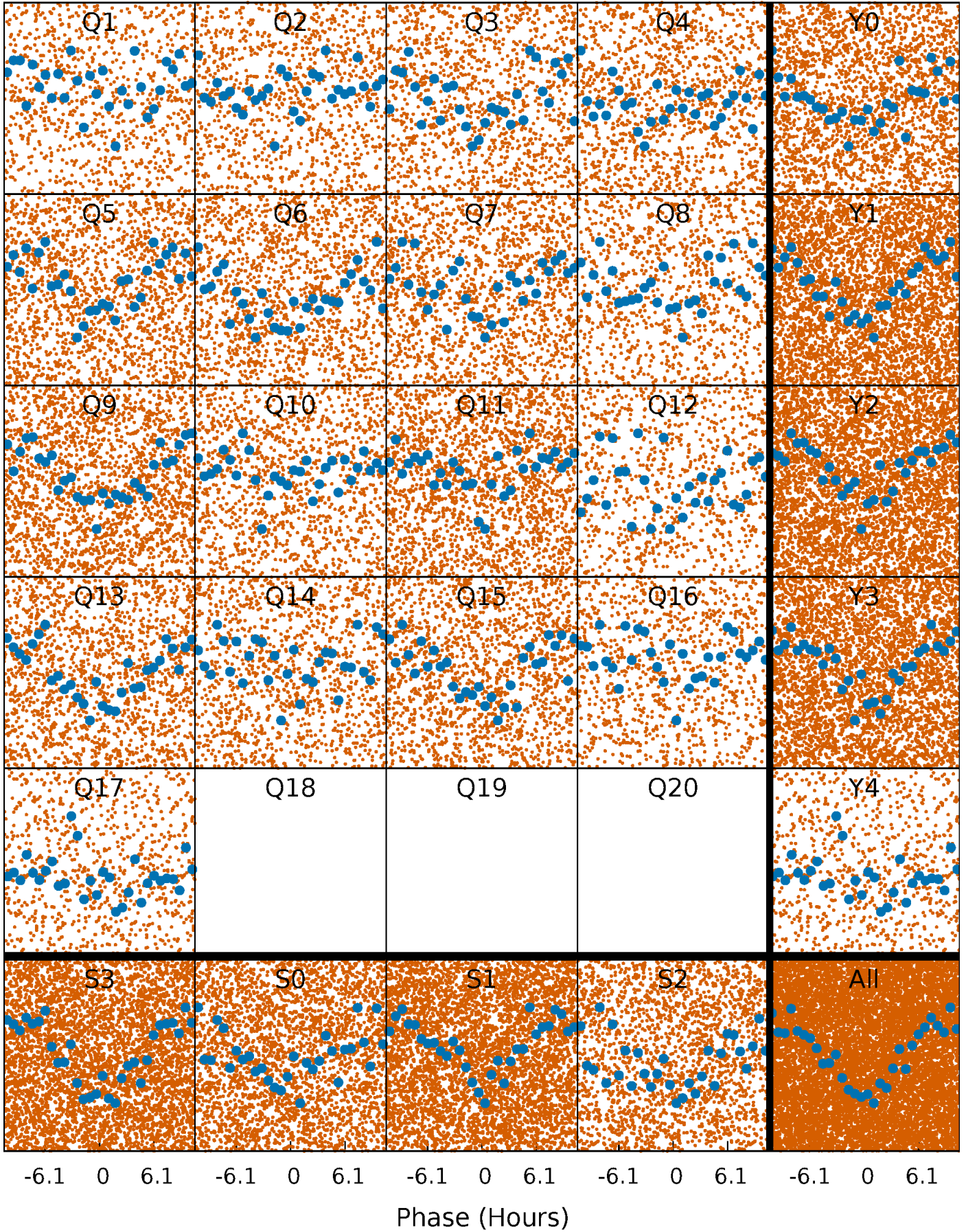


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

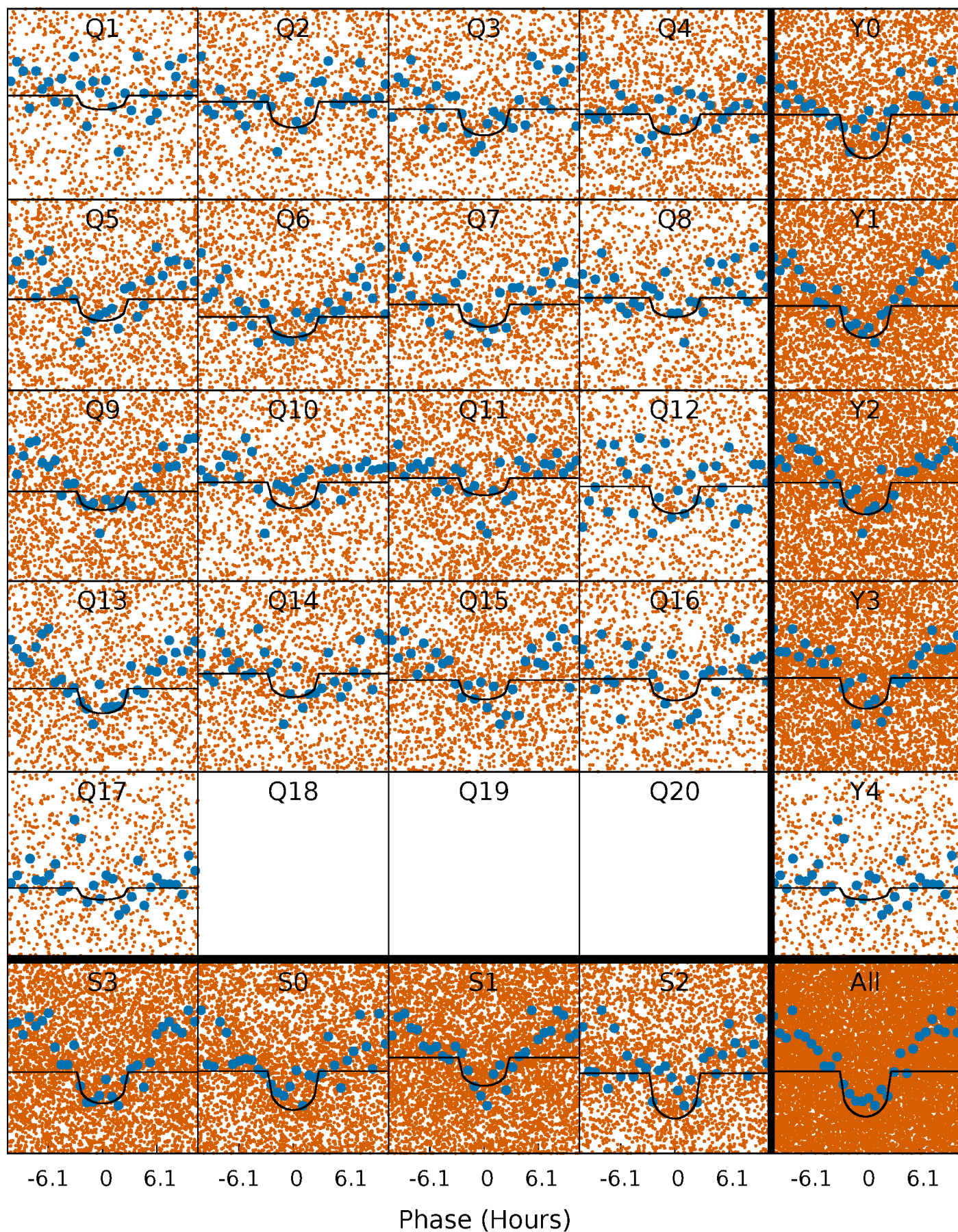
TCE 005219530-01 P= 0.732247 Days  $T_0=131.806965$  (BKJD)





# DV Quarter-Phased Transit Curves

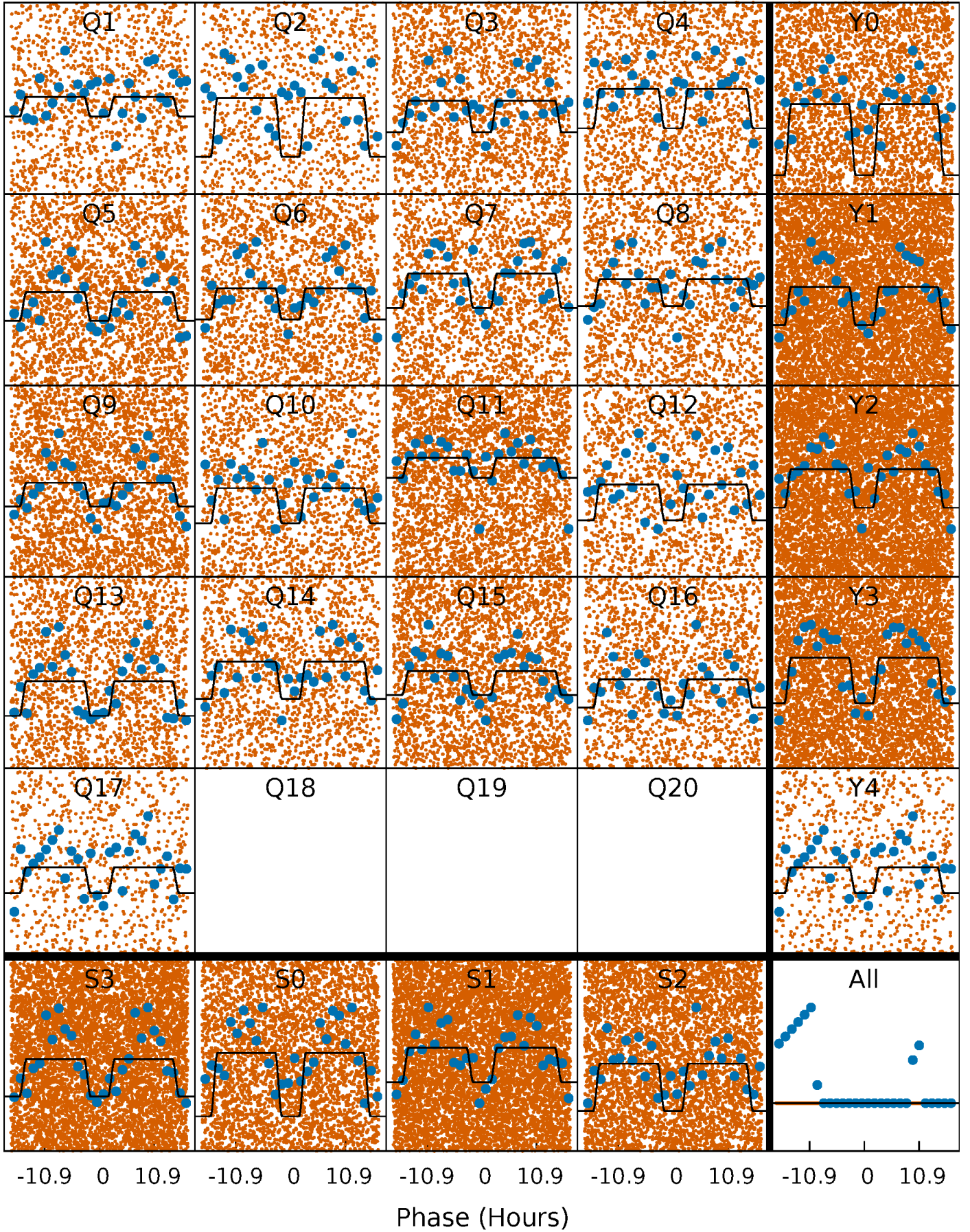
TCE 005219530-01 P= 0.732247 Days  $T_0=131.806965$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

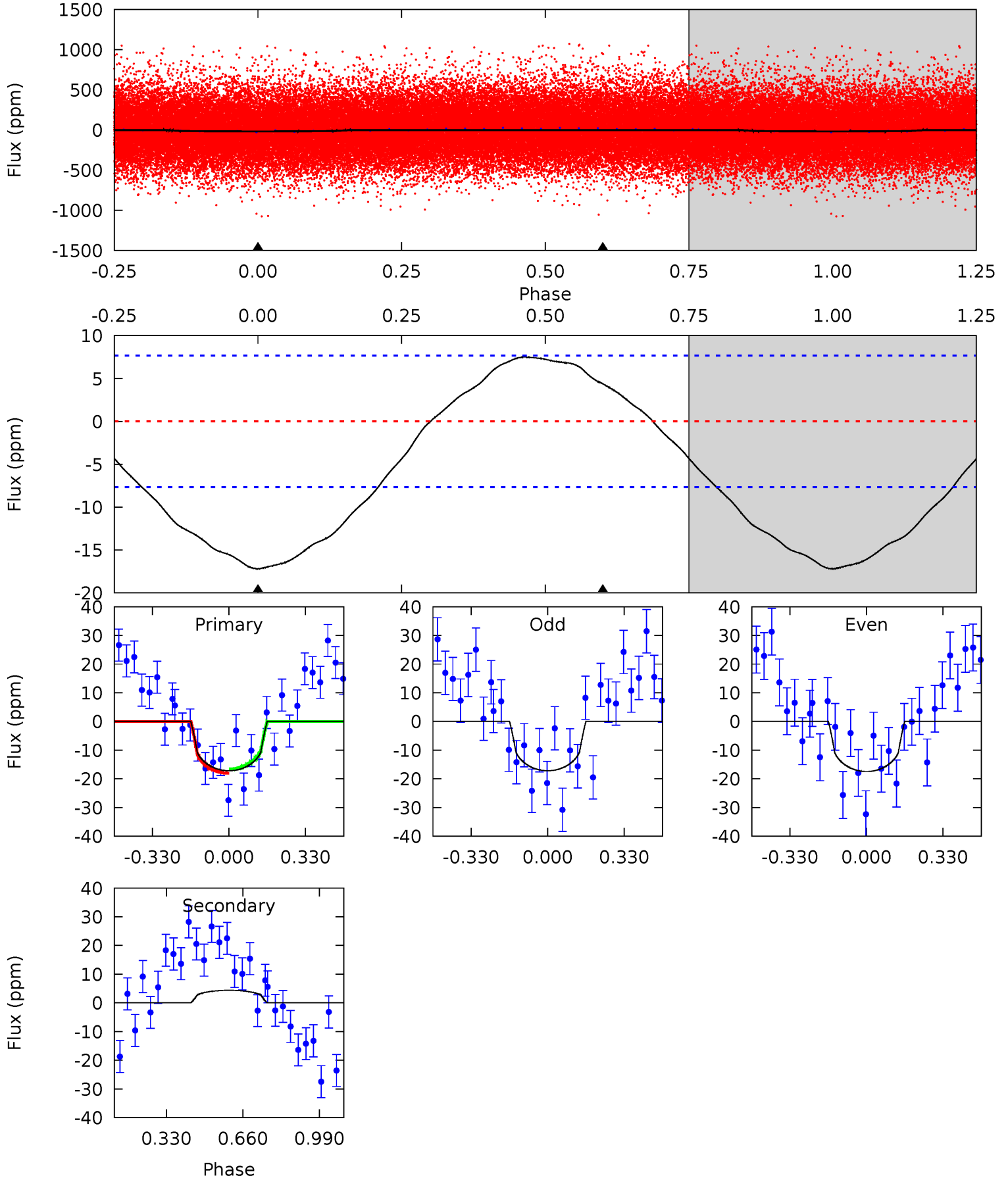
TCE 005219530-01 P= 0.732333 Days  $T_0=131.719755$  (BKJD)



# DV Model-Shift Uniqueness Test

005219530-01, P = 0.732247 Days, E = 131.074718 Days

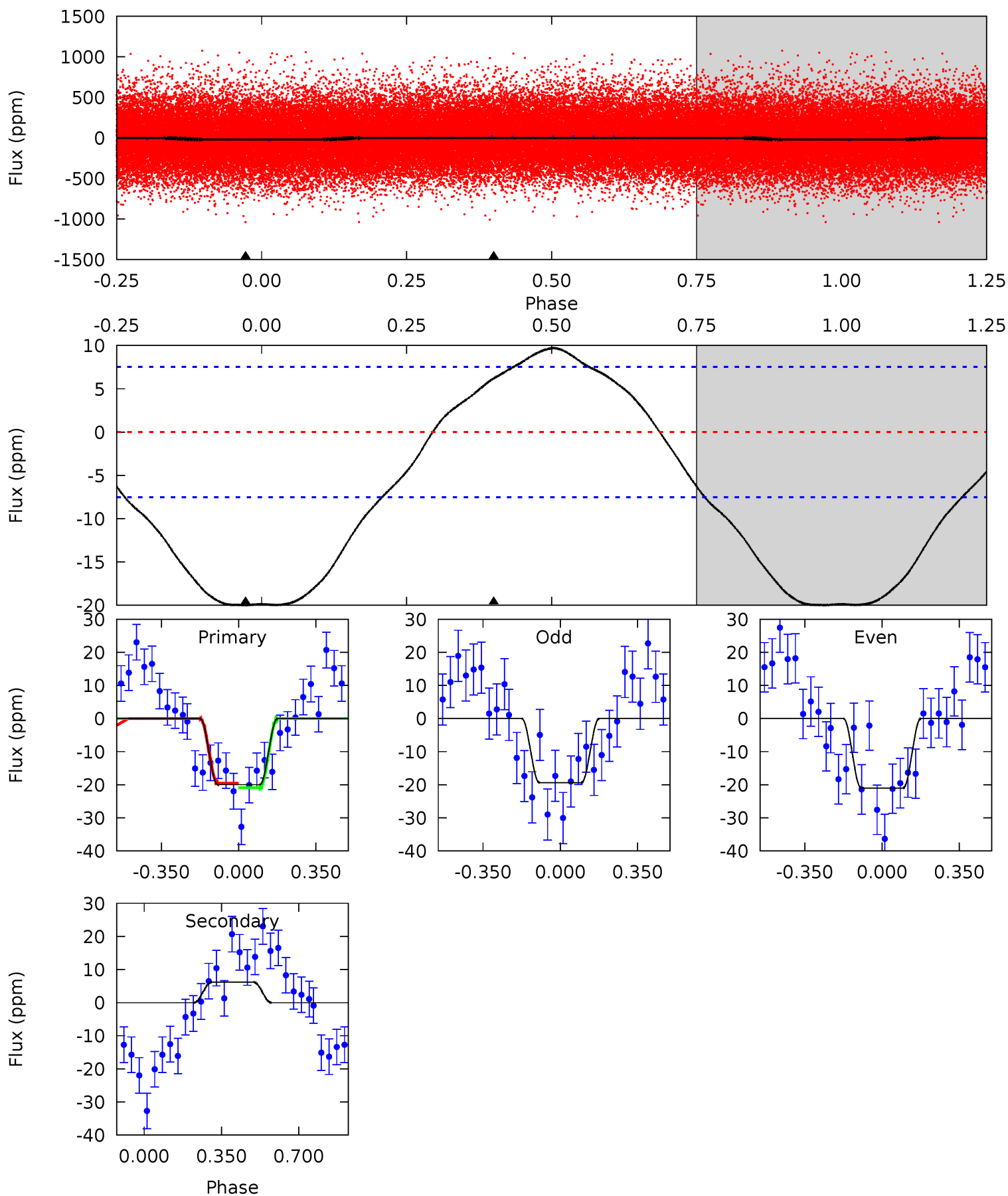
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.66	-2.46	0	0	4.31	0.97	1.19	9.66	9.66	-2.46	-2.46	0.08	1.09	0.30	0.43



# Alt Model-Shift Uniqueness Test

005219530-01, P = 0.732333 Days, E = 130.987422 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.4	-3.53	0	0	4.29	0.93	1.56	11.4	11.4	-3.53	-3.53	0.46	1.16	0.33	0.39





### Stellar Parameters For KIC 005219530

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5491^{+165}_{-148}$	$4.554^{+0.060}_{-0.111}$	$-0.360^{+0.300}_{-0.300}$	$0.780^{+0.151}_{-0.070}$	$0.796^{+0.105}_{-0.065}$	$2.359^{+0.611}_{-0.817}$
	+3%/-3%	+1%/-2%	+83%/-83%	+19%/-9%	+13%/-8%	+26%/-35%
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 005219530-01 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$4 \pm 2$	$0.52^{+0.45}_{-0.34}$	$2478^{+116}_{-96}$	$-3706^{+518}_{-1753}$	$-1.852^{+1.372}_{-12.814}$
Alt.	$6 \pm 2$	$0.56^{+0.43}_{-0.37}$	$2478^{+120}_{-100}$	$-3818^{+546}_{-1994}$	$-2.179^{+1.508}_{-17.245}$

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

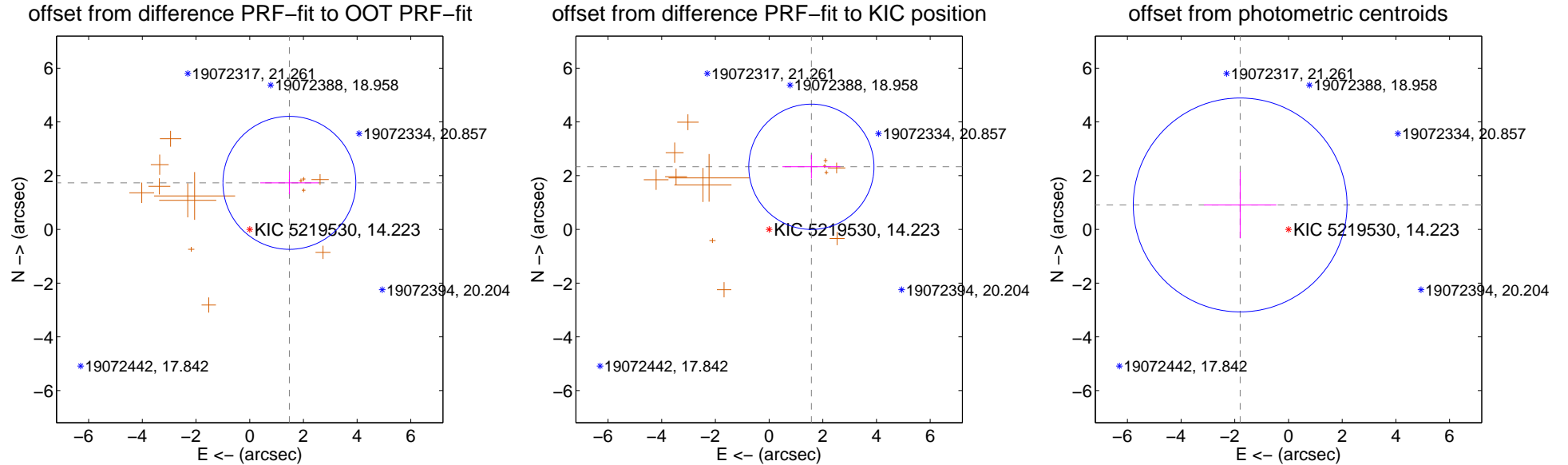
## DV Centroid Data

Supplemental centroid analysis for 005219530-01. Kepler magnitude: 14.22. Transit SNR 8.69

There are 0 quarters with good PRF difference image offsets

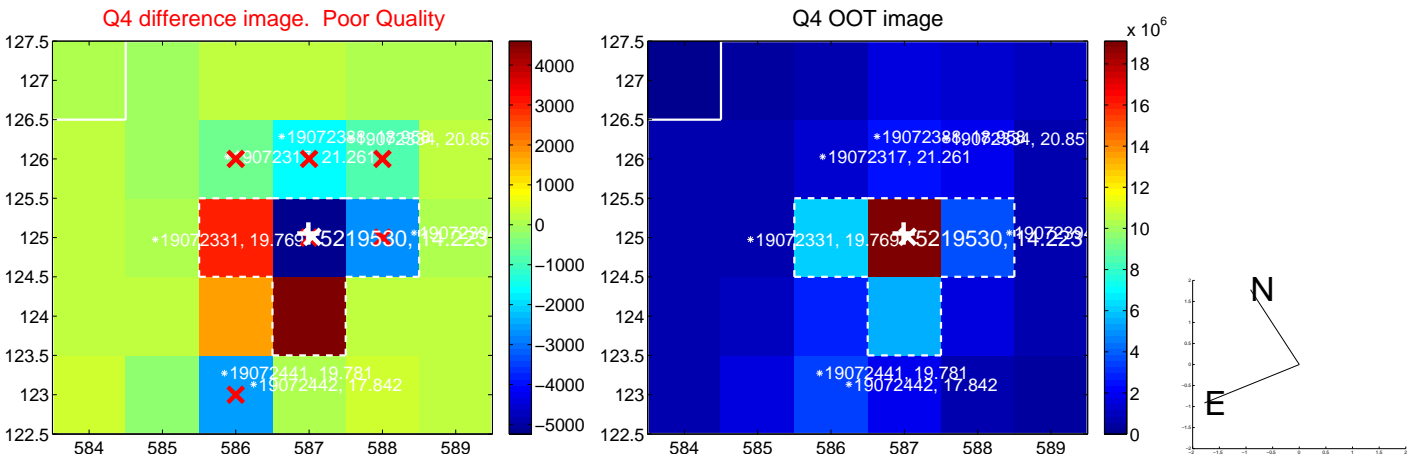
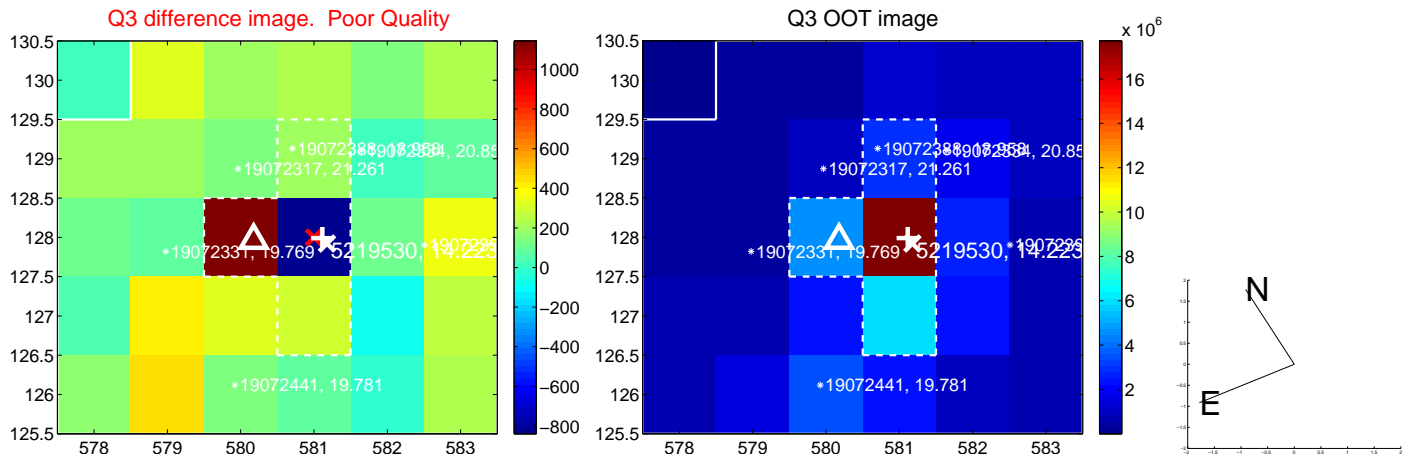
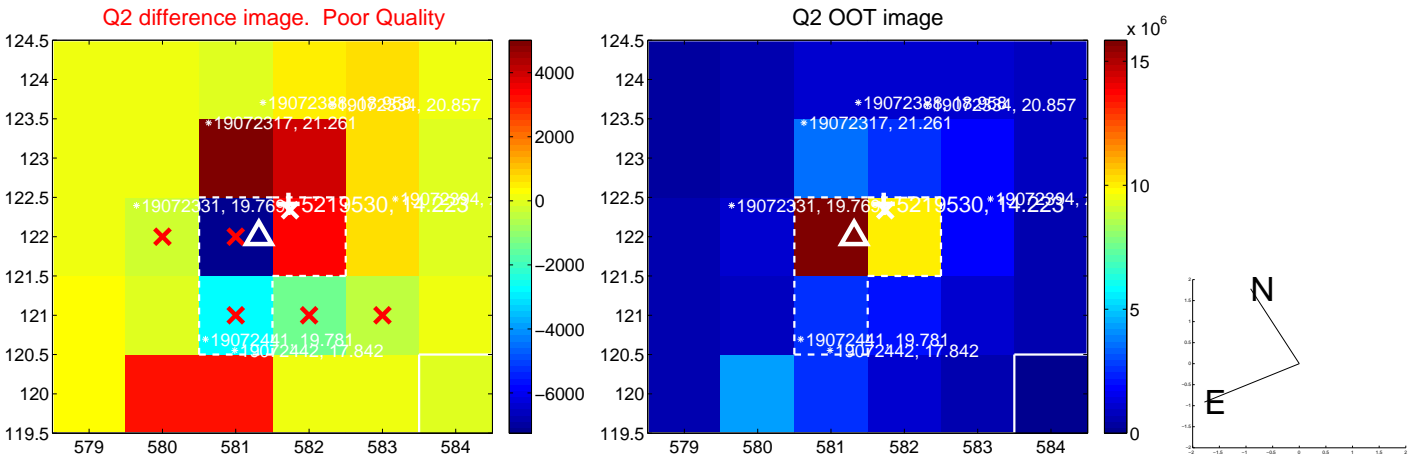
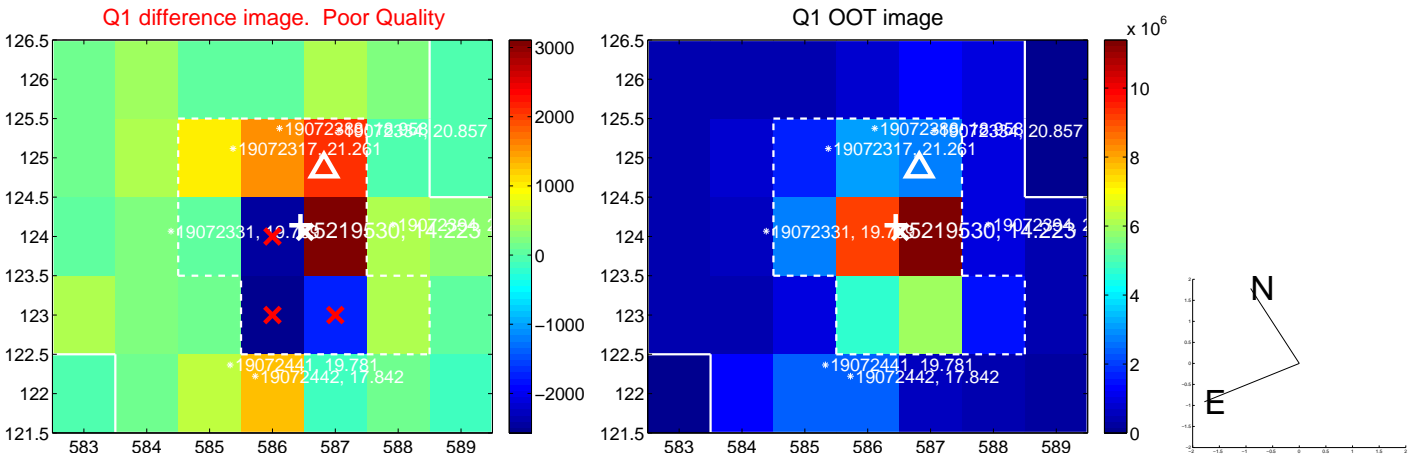
The direct PRF centroid is offset from the target star catalog position by about 0.59 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$2.278 \pm 0.825$	2.76	$-1.478 \pm 1.089$	$1.733 \pm 0.418$
PRF-fit source offset from KIC position	$2.813 \pm 0.777$	3.62	$-1.575 \pm 1.079$	$2.331 \pm 0.442$
photometric centroid source offset	$2.02 \pm 1.33$	1.52	$1.80 \pm 1.35$	$0.91 \pm 1.23$

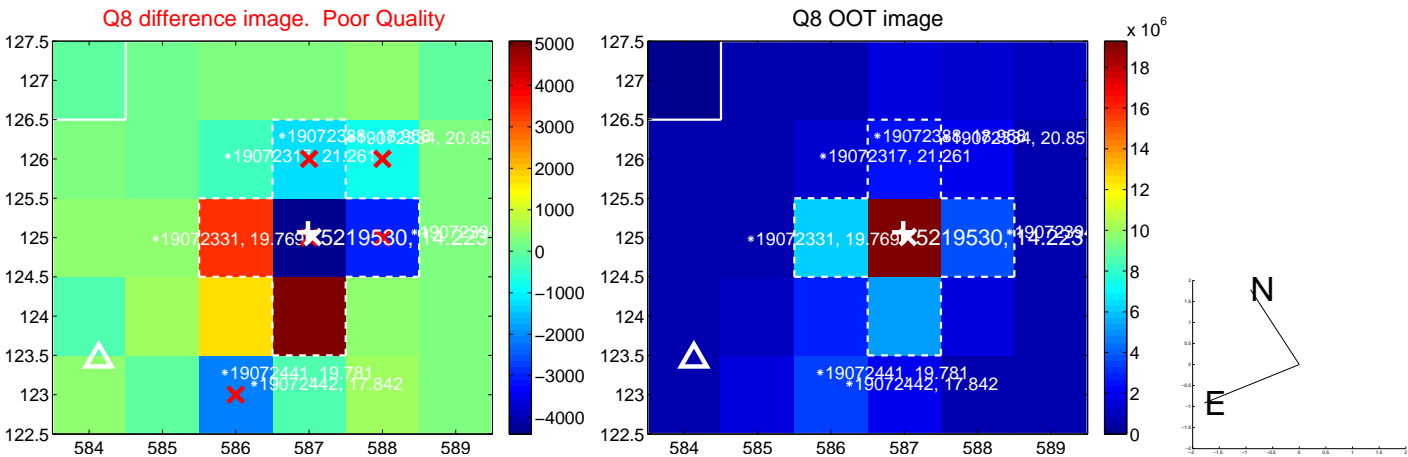
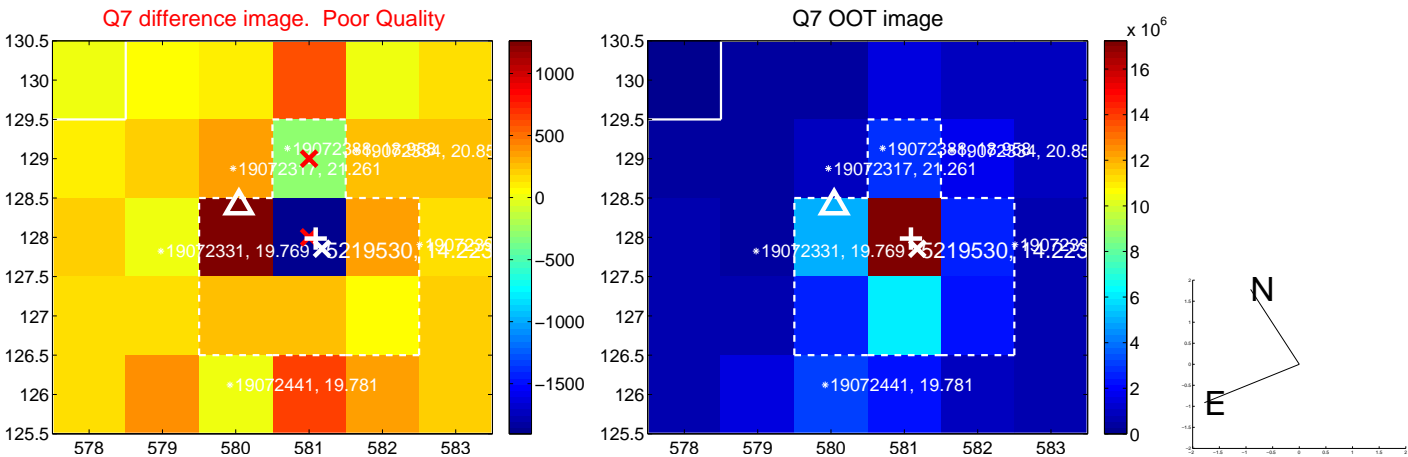
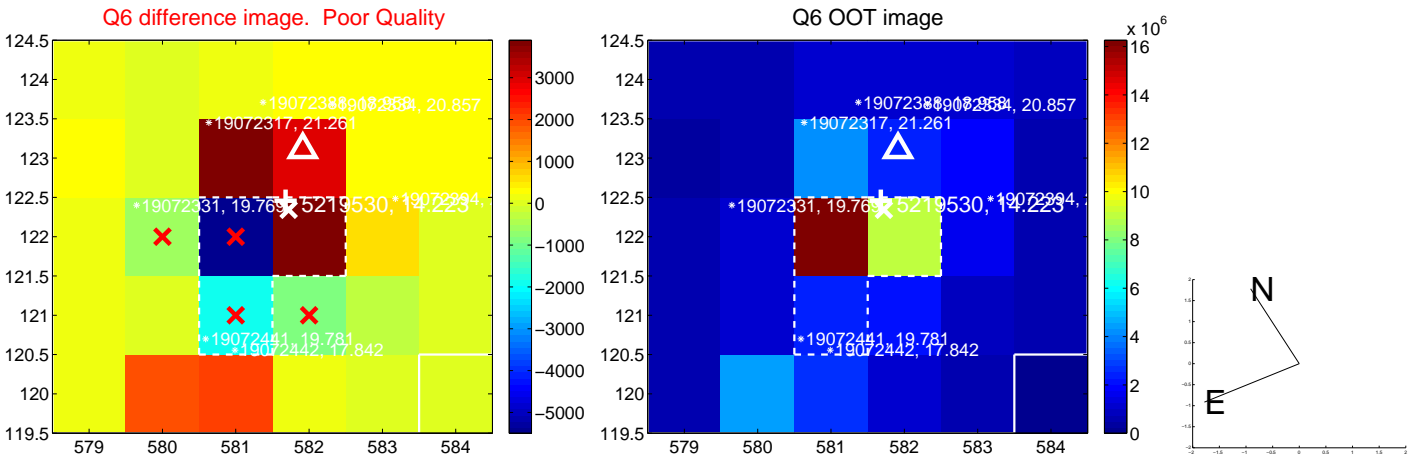
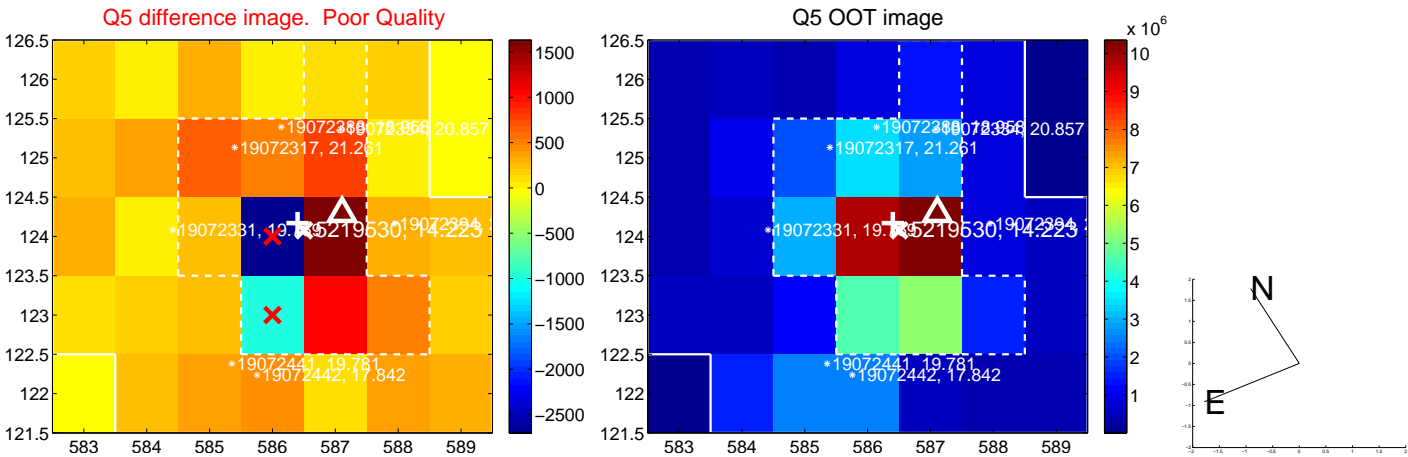


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

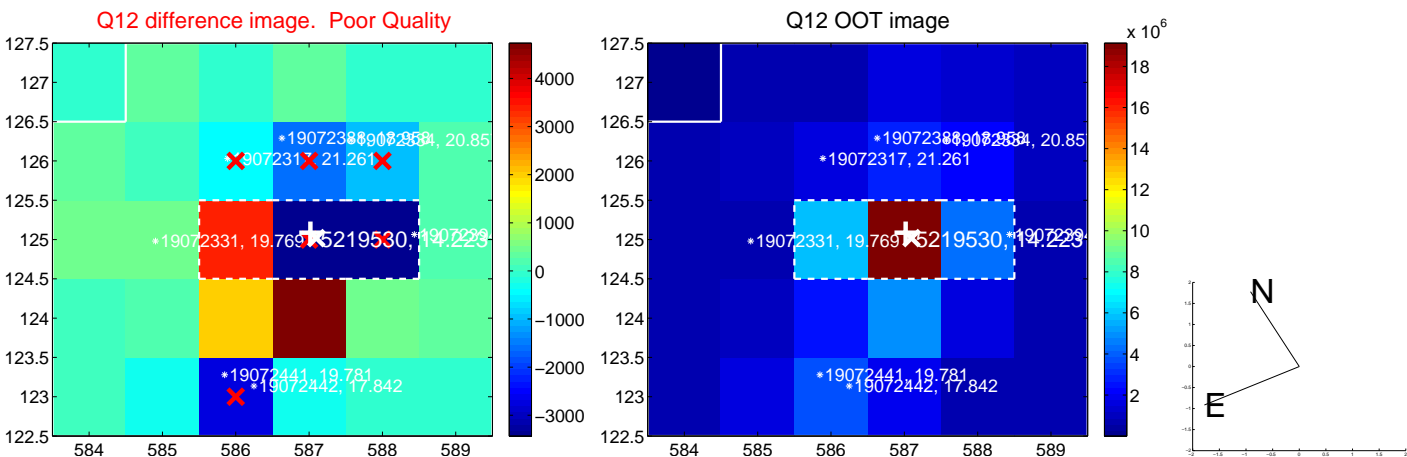
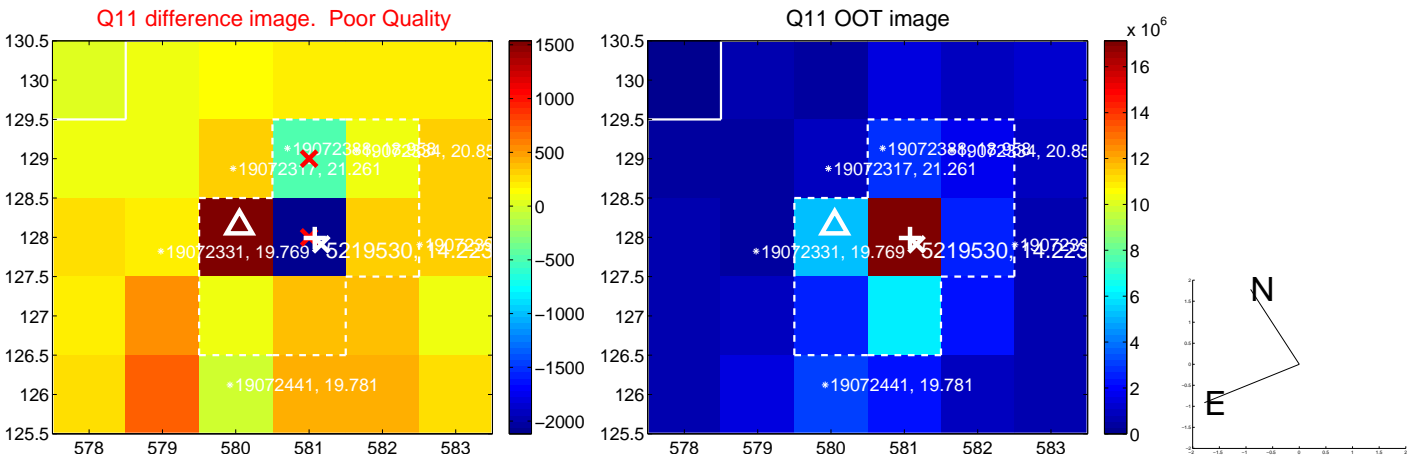
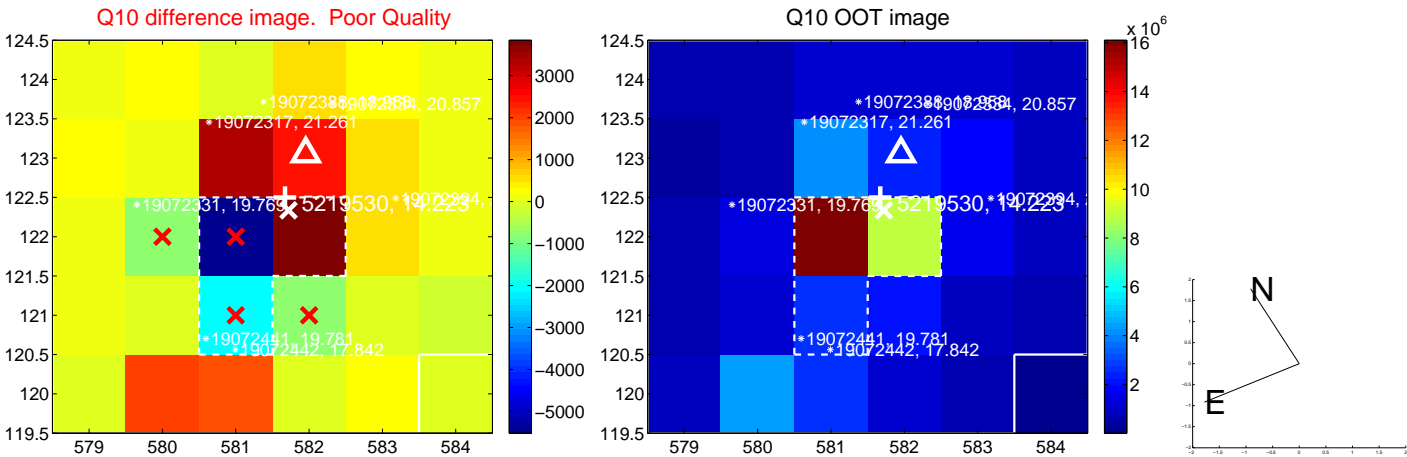
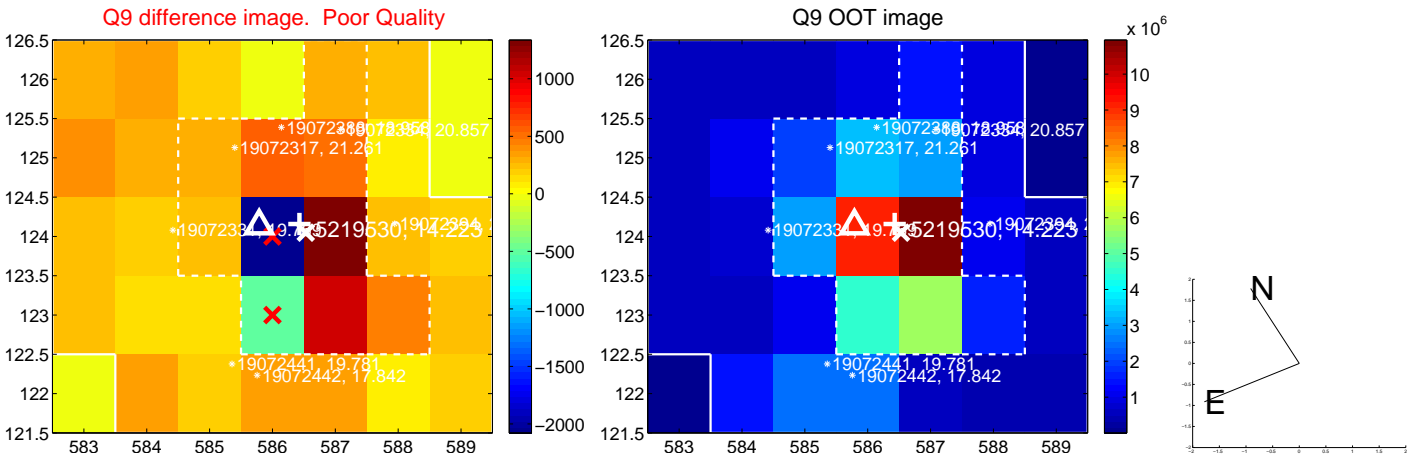


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

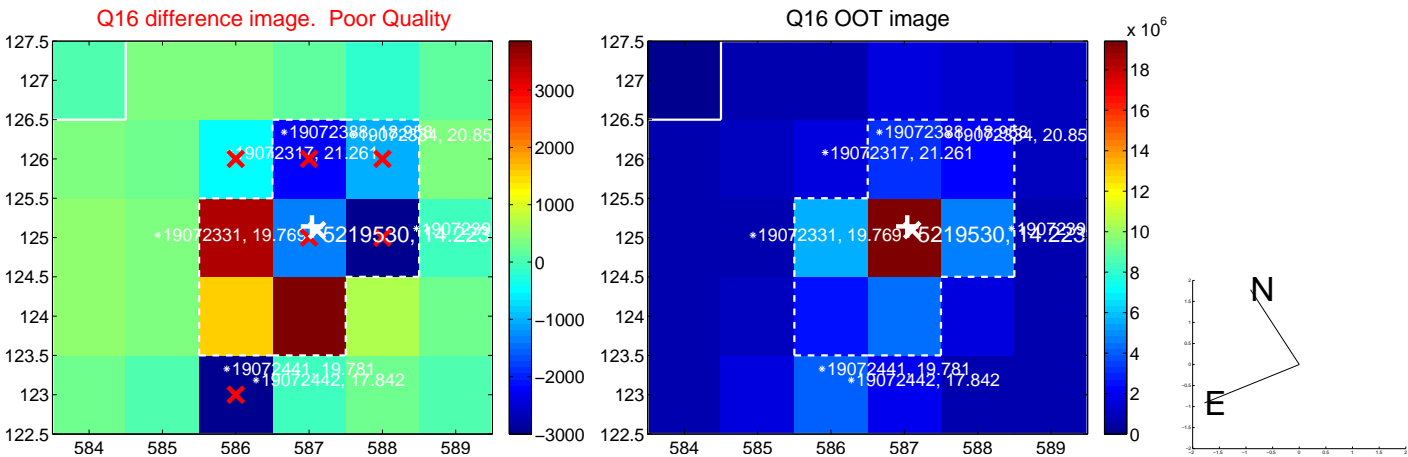
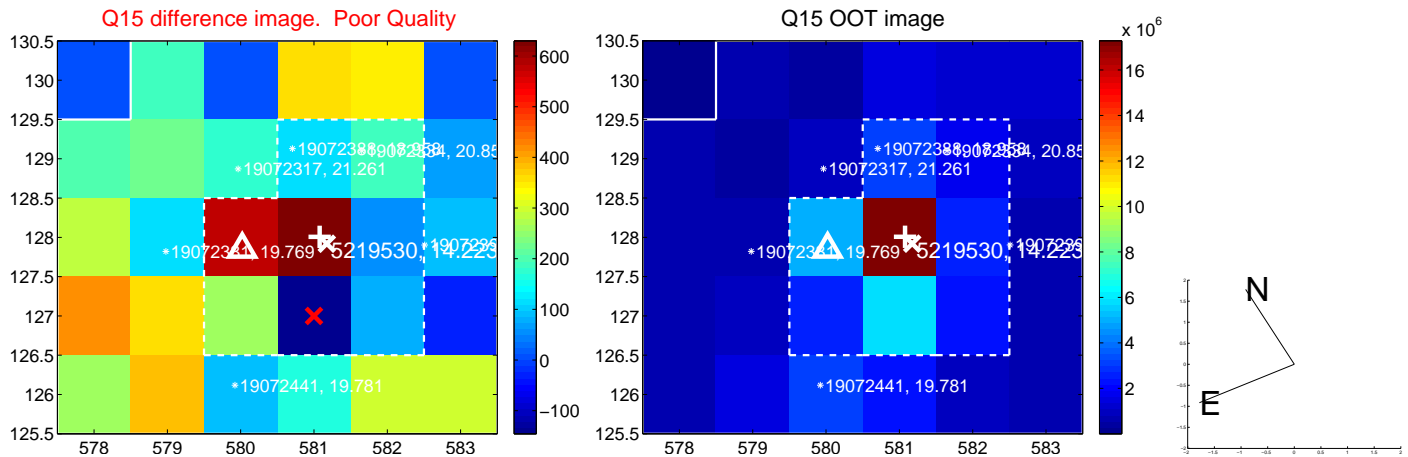
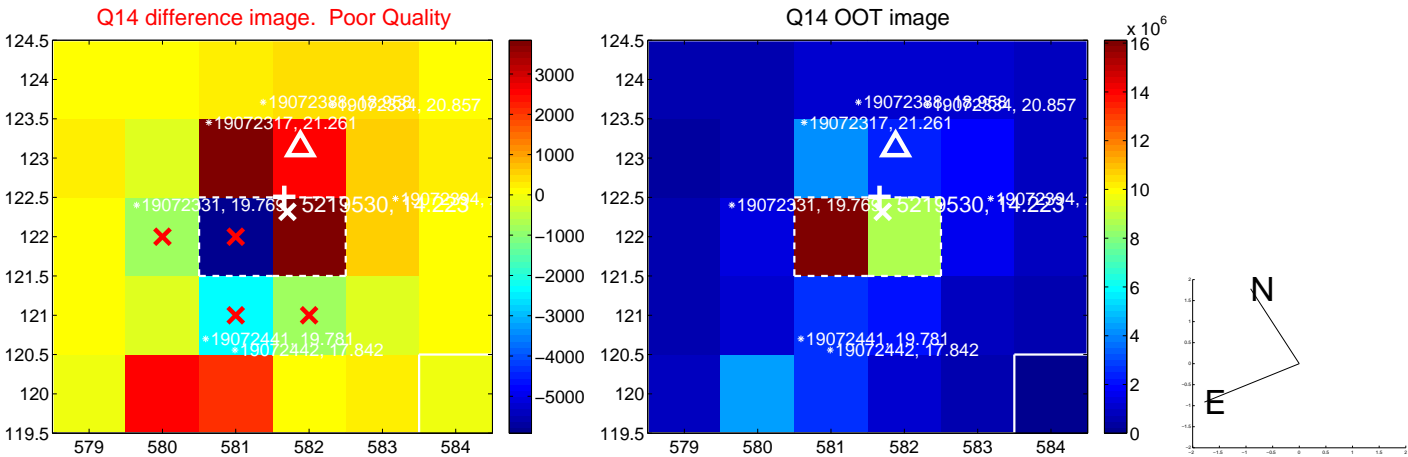
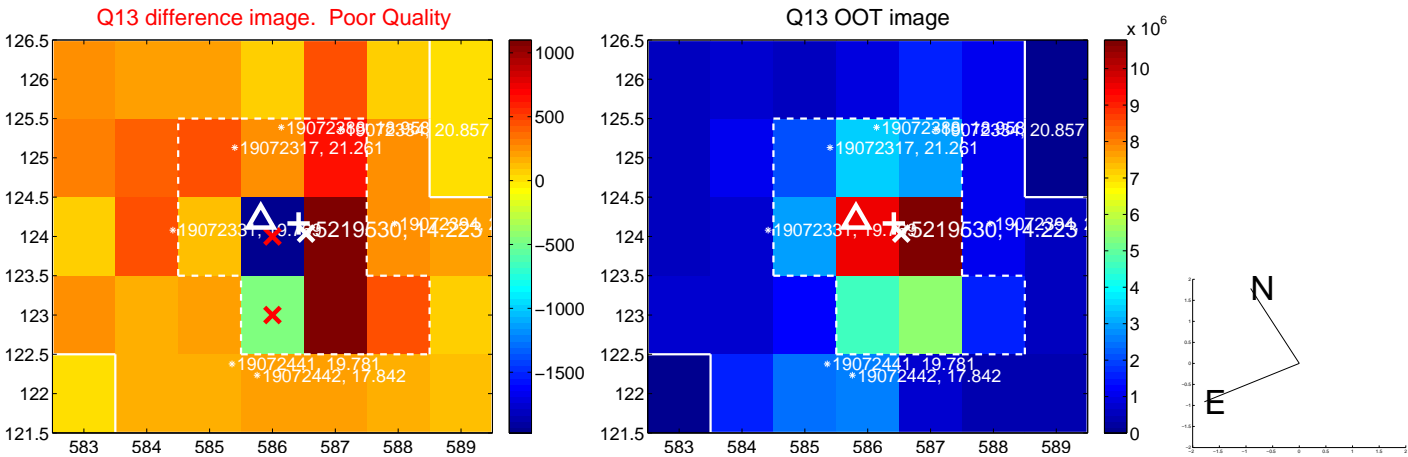




white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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





This astronomical image displays a field of stars against a dark background. A blue grid is overlaid on the image, with green numerical labels indicating the coordinates. The horizontal axis (Right Ascension) is labeled at the bottom with values 12.0, 11.0, 19:57, 10.0, 09.0, 08.0, and 07. The vertical axis (Declination) is labeled on the right side with values 50.0, 40.0, 21:00.0, 10.0, 20.0, and 30.0. The stars are concentrated in the upper left and lower right quadrants of the grid.



# KIC 005219530

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005219530-01	OBS	No	0.732247	131.806965	22.7	5.353	7.4	8.7	0.78	5491	0.37	2283.95
005219530-02	OBS	No	11.664707	137.810854	408.7	0.916	11.9	12.7	0.78	5491	1.70	56.98

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005219530-01	OBS	FP	0.00	1	0	1	0	LPP_DV—CENT_FEW_DIFFS—HALO_GHOST
005219530-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—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.

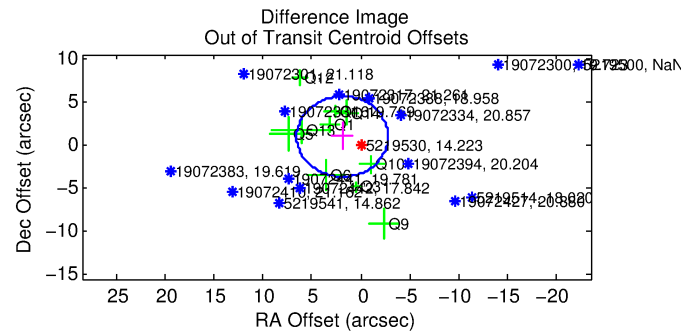
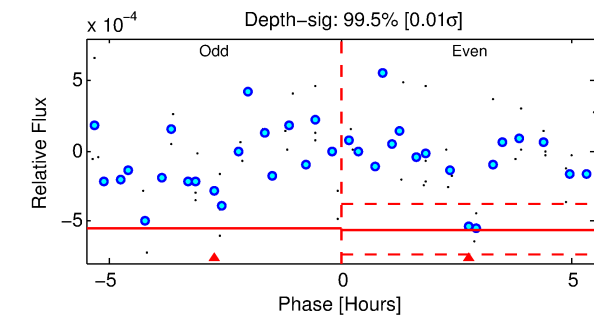
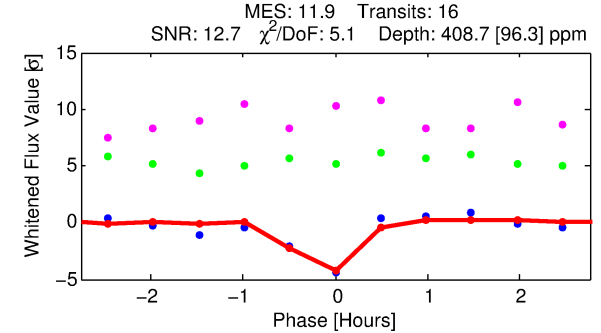
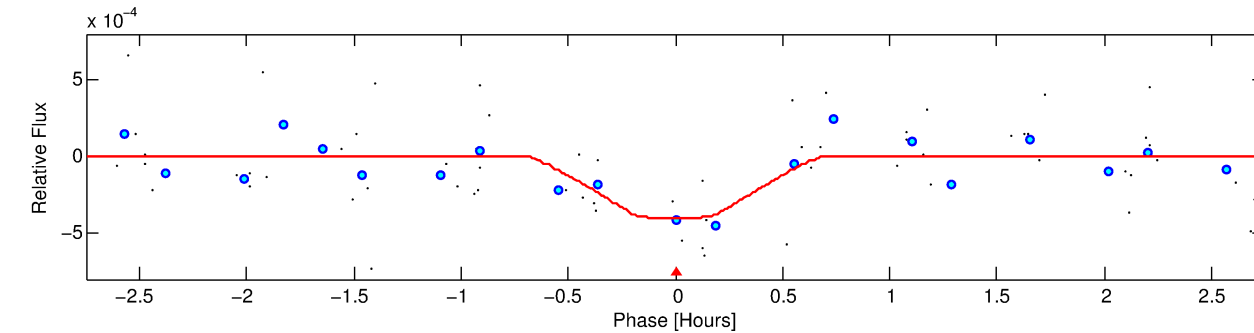
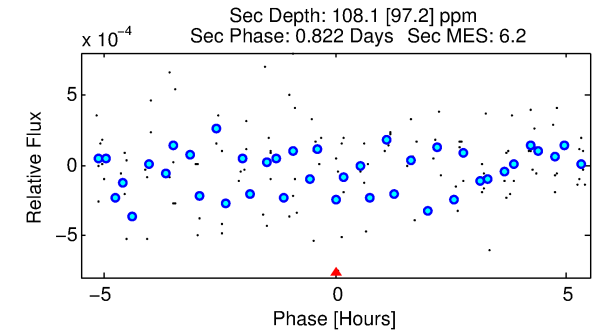
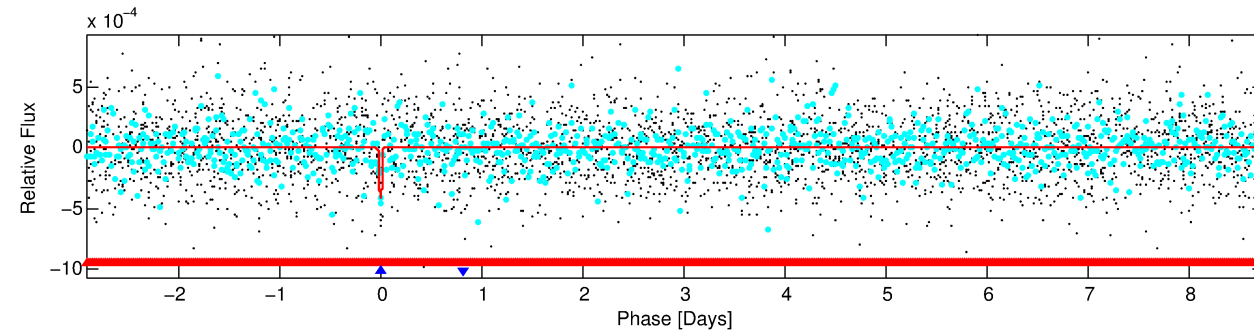
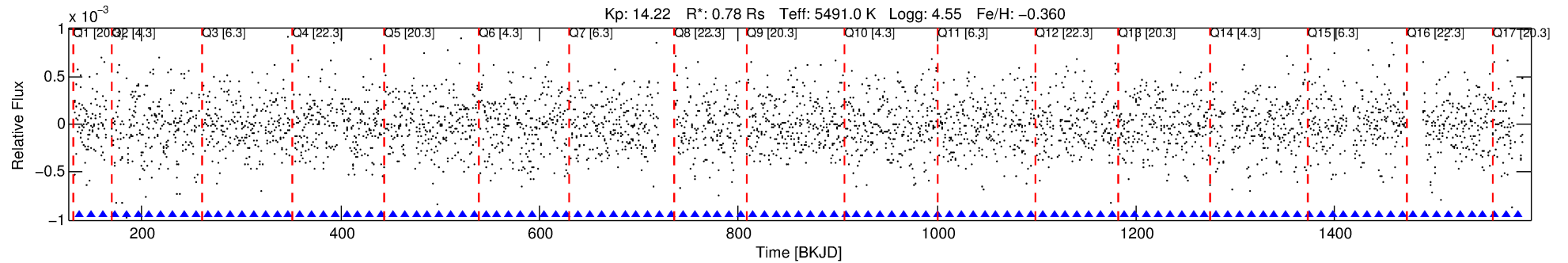
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 005219530-02

No Significant Match Found

# DV One-Page Summary

KIC: 5219530 Candidate: 2 of 2 Period: 11.665 d



## DV Fit Results:

Period = 11.66471 [0.00011] d  
Epoch = 137.8109 [0.0077] BKJD  
Rp/R\* = 0.0200 [0.0285]  
a/R\* = 72.28 [437.29]  
b = 0.70 [4.54]  
Seff = 56.98 [13.97]  
Teff = 701 [43] K  
Rp = 1.70 [2.45] Re  
a = 0.0933 [0.0144] AU  
Ag = 178.32 [534.46] [0.33 $\sigma$ ]  
Teffp = 3958 [2961] K [1.10 $\sigma$ ]

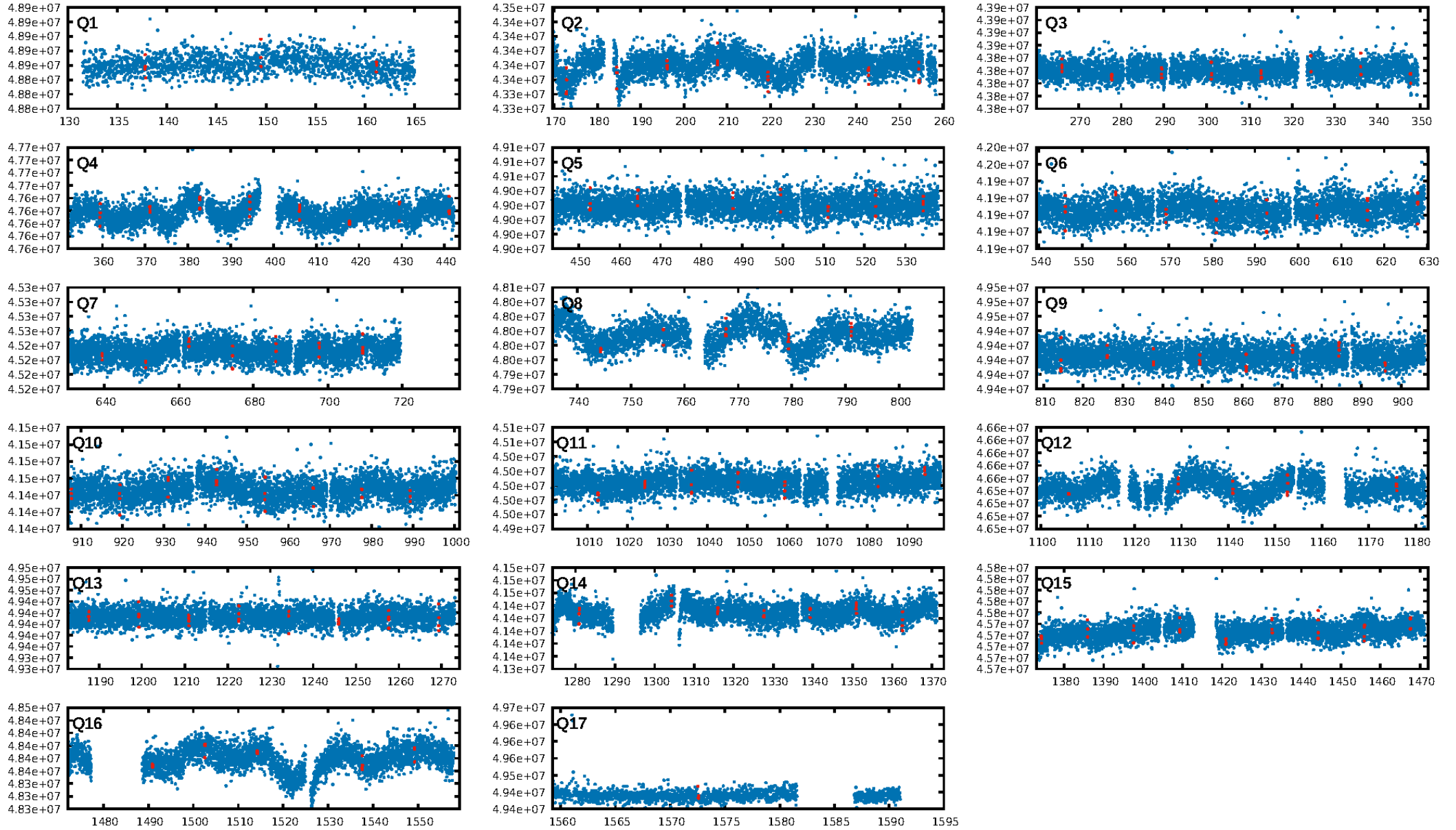
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [48.31 $\sigma$ ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 0.2%  
ModelChiSquareGof-sig: 10.0%  
Bootstrap-pfa: 1.69e-11  
RollingBand-fgt: 1.00 [16/16]  
GhostDiagnostic-chr: -3.463  
Centroid-sig: 58.5%  
Centroid-so: 1.824 arcsec [2.60 $\sigma$ ]  
OotOffset-rm: 2.146 arcsec [1.38 $\sigma$ ]  
KicOffset-rm: 2.514 arcsec [1.58 $\sigma$ ]  
OotOffset-st: 3/1/2/4 [10]  
KicOffset-st: 3/1/2/4 [10]  
DiffImageQuality-fgm: 0.10 [1/10]  
DiffImageOverlap-fno: 0.41 [7/17]

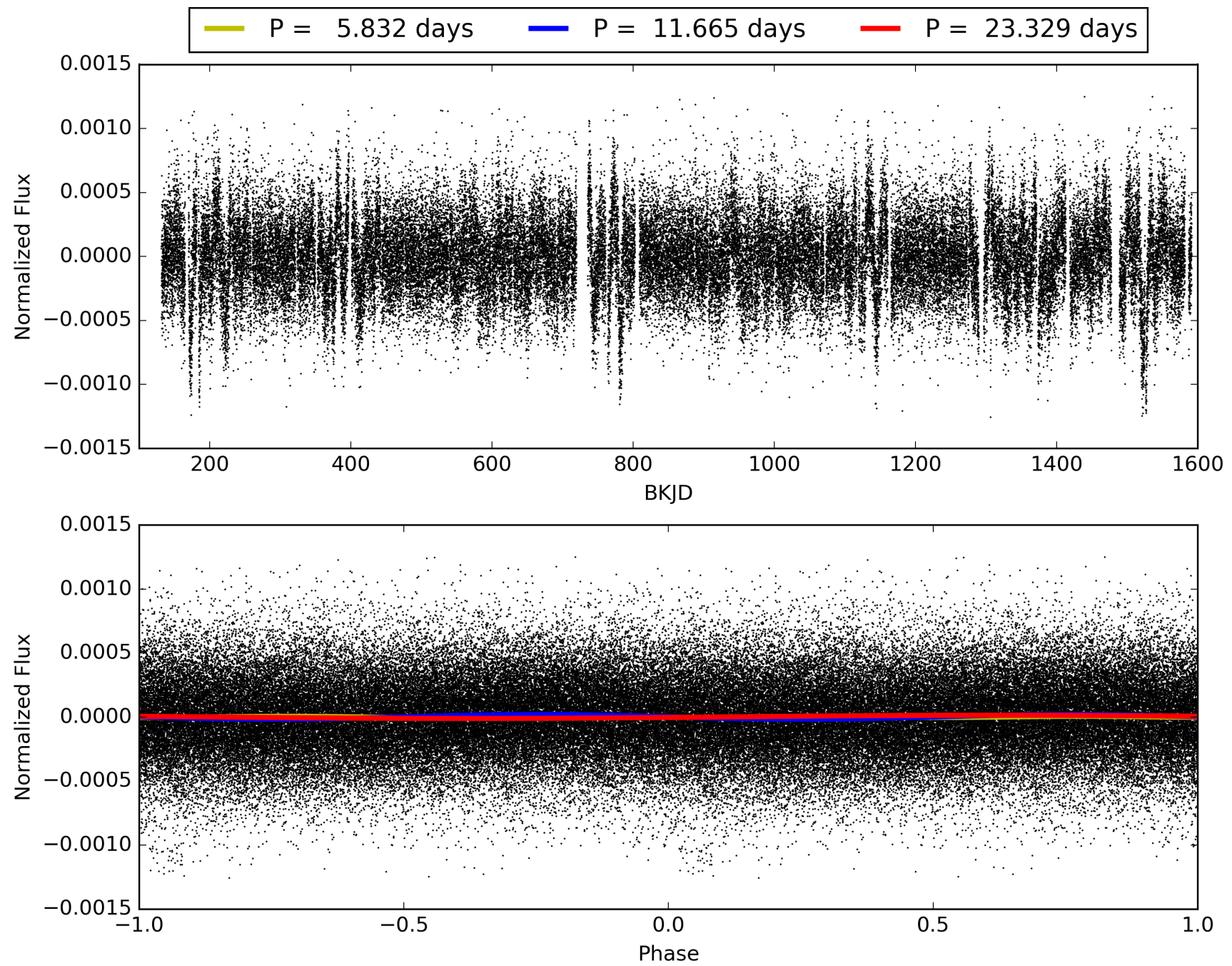
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 18:00:30 Z

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

# TCE 005219530-02, PDC Light Curves

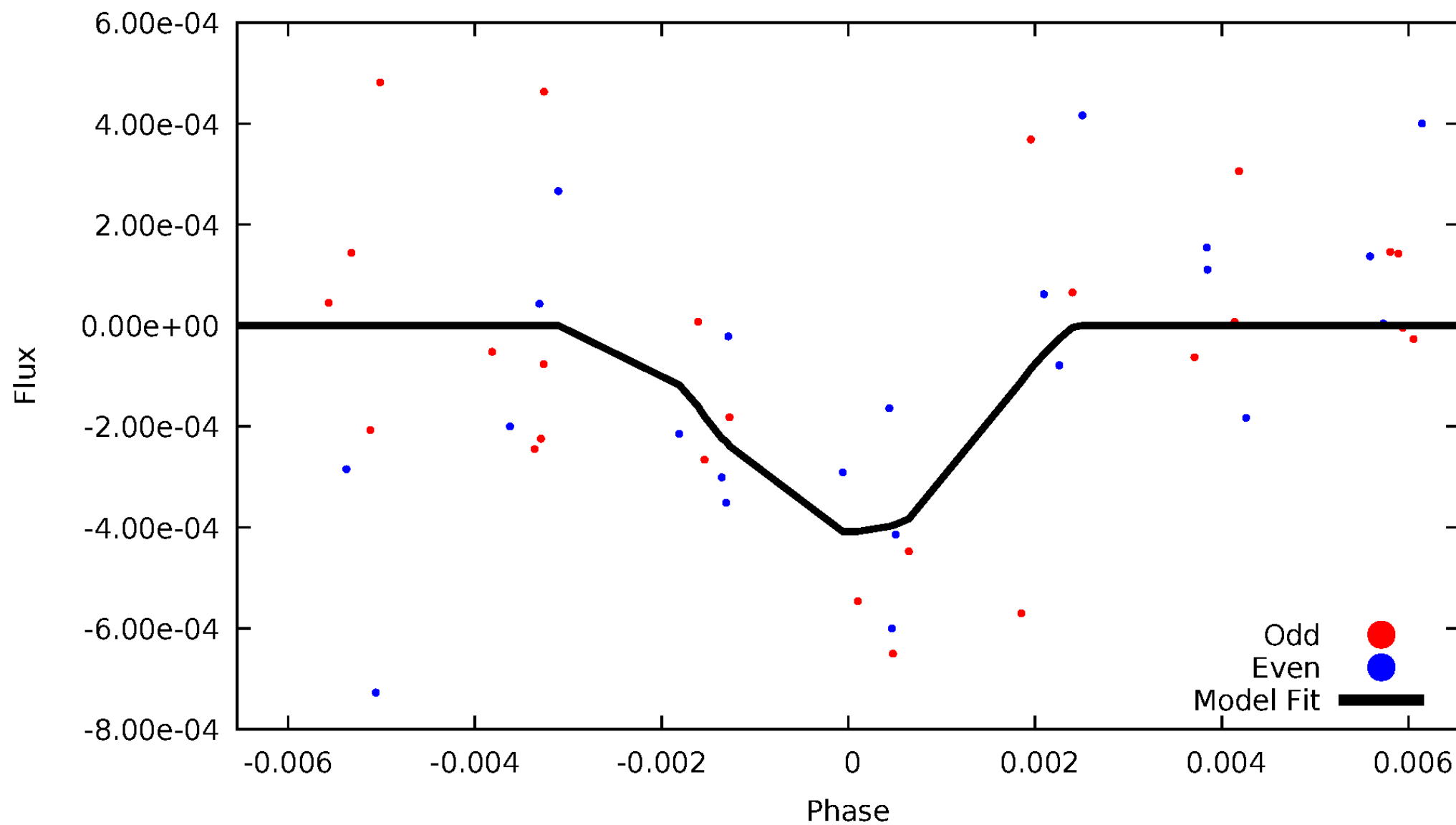


TCE 005219530-02



# DV Odd/Even

TCE 005219530-02





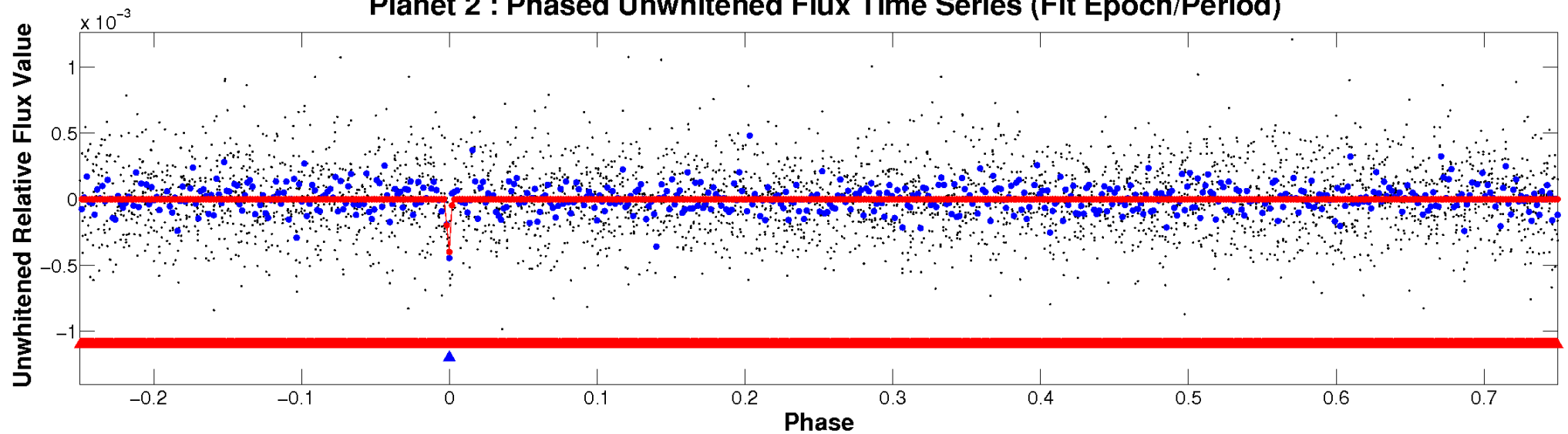


ALT Odd/Even

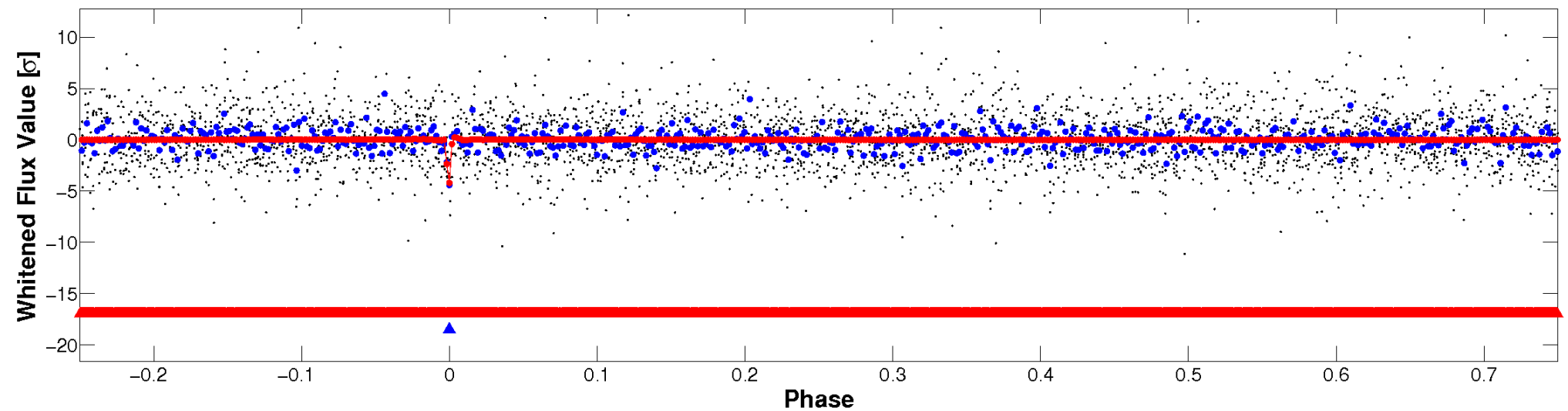
This plot does not exist for this TCE.

# Non-Whitened Vs. Whitened Light Curve

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

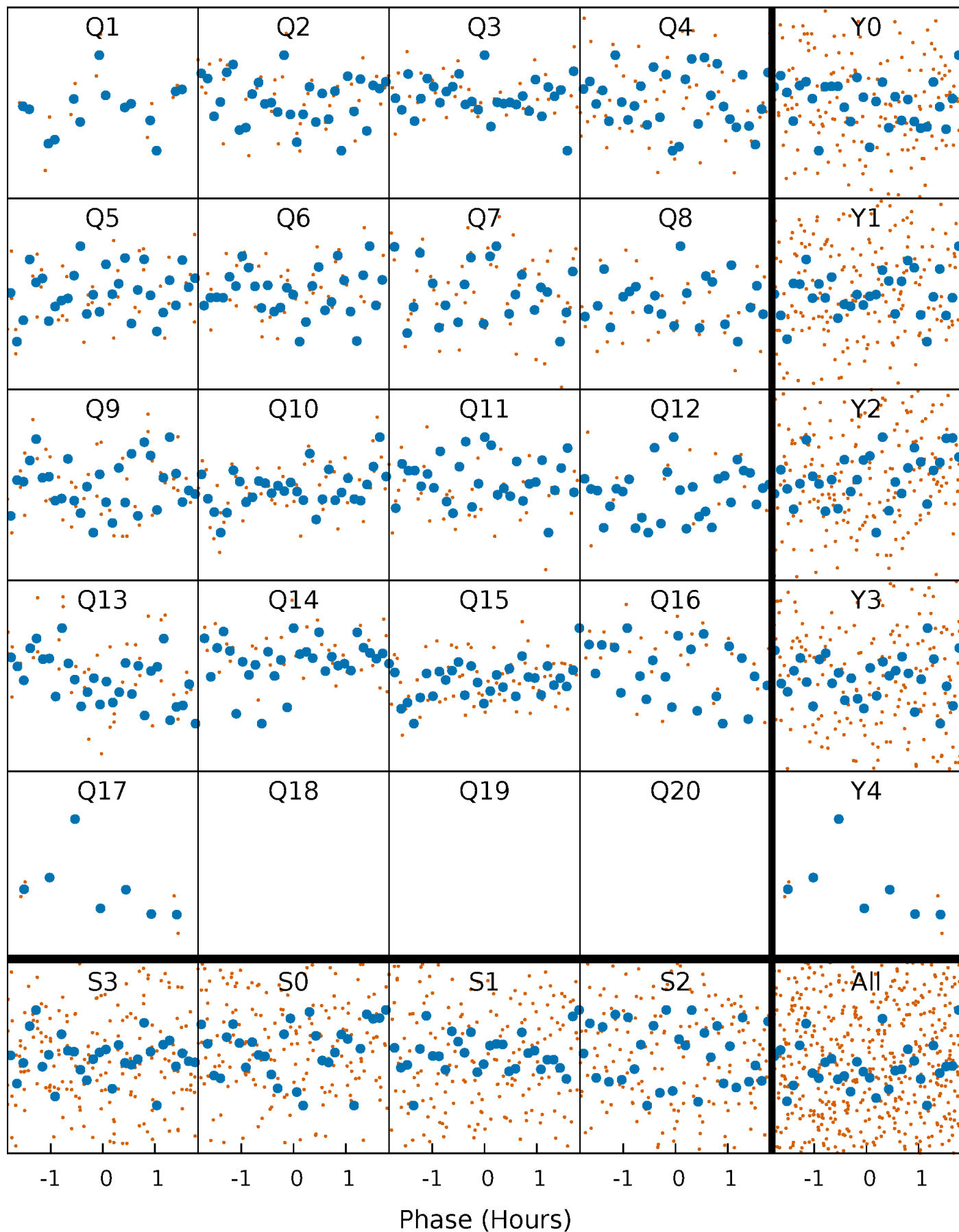


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



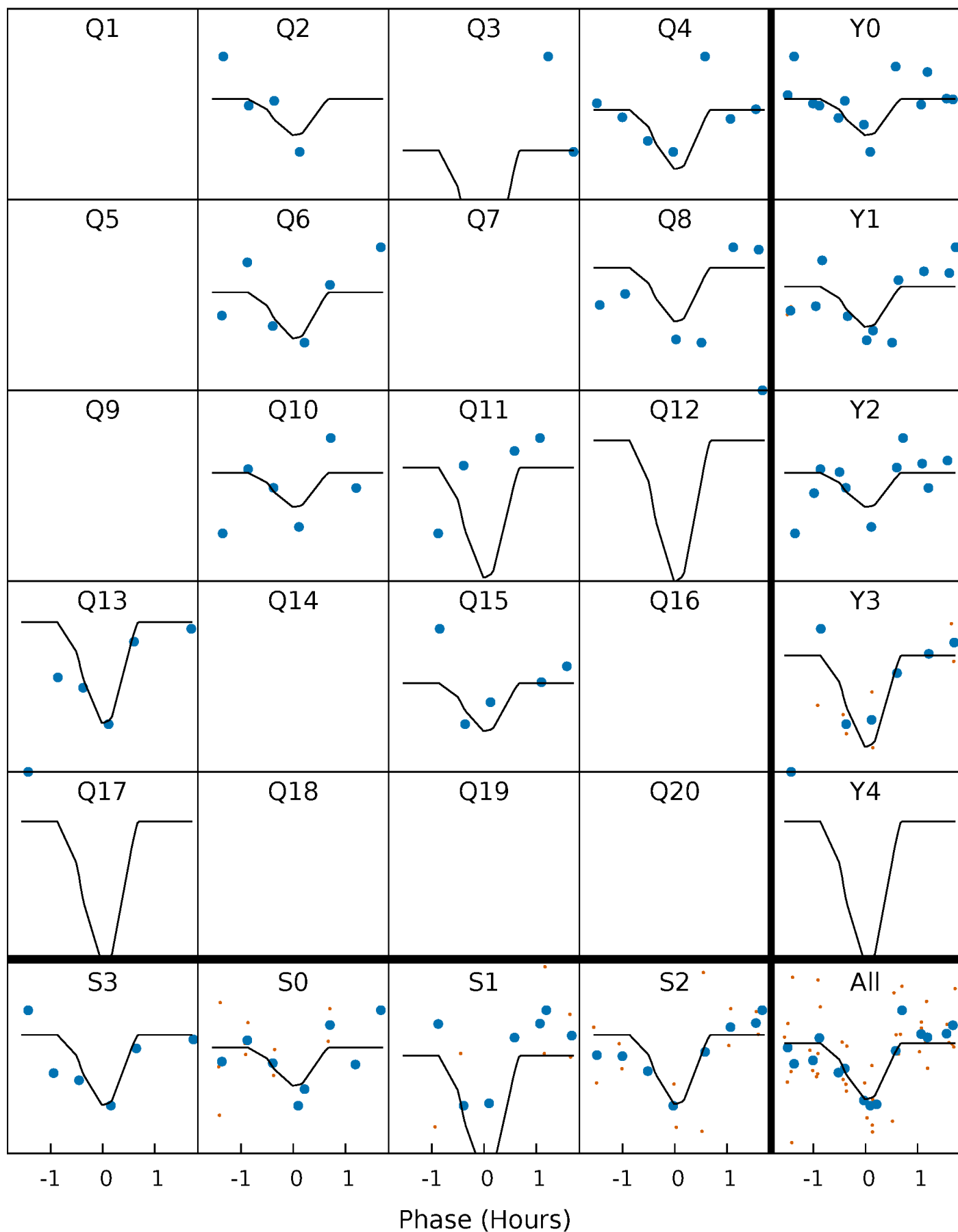
# PDC Quarter-Phased Transit Curves

TCE 005219530-02 P= 11.664707 Days  $T_0=137.810854$  (BKJD)



# DV Quarter-Phased Transit Curves

TCE 005219530-02 P= 11.664707 Days  $T_0=137.810854$  (BKJD)



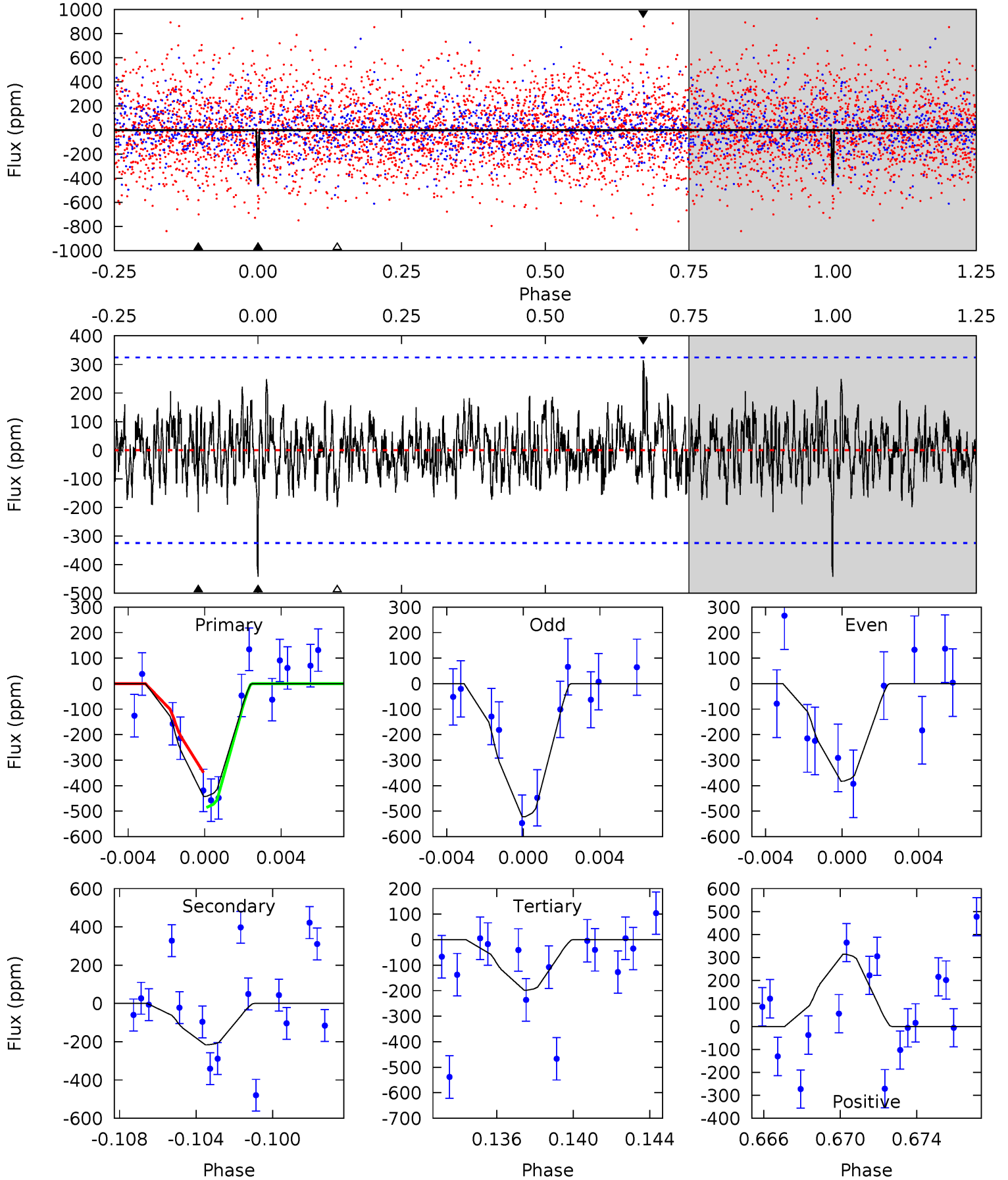


This plot does not exist for this TCE.

# DV Model-Shift Uniqueness Test

005219530-02, P = 11.664707 Days, E = 126.146147 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
7.09	3.47	3.18	5.05	5.20	2.88	1.22	3.91	2.05	0.29	-1.58	1.11	0.98	0.42	1.07



## Alt Model-Shift Uniqueness Test

This plot does not exist for this TCE.

### Stellar Parameters For KIC 005219530

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5491^{+165}_{-148}$	$4.554^{+0.060}_{-0.111}$	$-0.360^{+0.300}_{-0.300}$	$0.780^{+0.151}_{-0.070}$	$0.796^{+0.105}_{-0.065}$	$2.359^{+0.611}_{-0.817}$
	+3%/-3%	+1%/-2%	+83%/-83%	+19%/-9%	+13%/-8%	+26%/-35%
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 005219530-02 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-216 \pm 62$	$2.60^{+2.04}_{-1.79}$	$986^{+47}_{-38}$	$4078^{+2681}_{-701}$	$144^{+1352}_{-99}$
Alt.	N/A	N/A	N/A	N/A	N/A

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

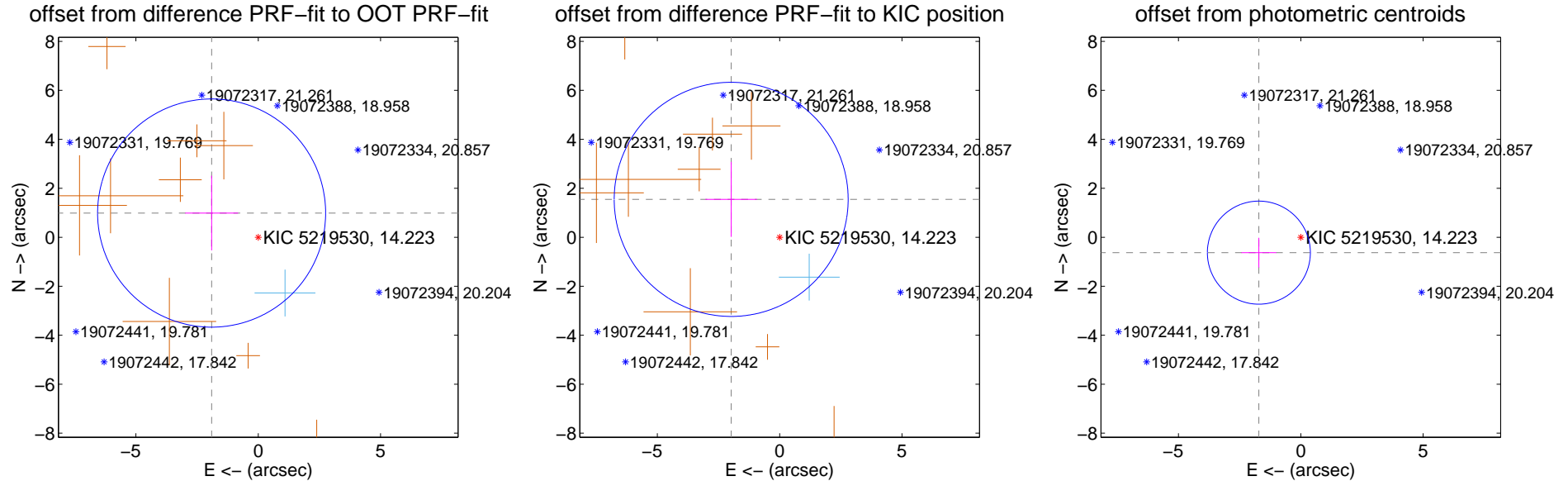
## DV Centroid Data

Supplemental centroid analysis for 005219530-02. Kepler magnitude: 14.22. Transit SNR 12.71

There are 1 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.36 arcsec

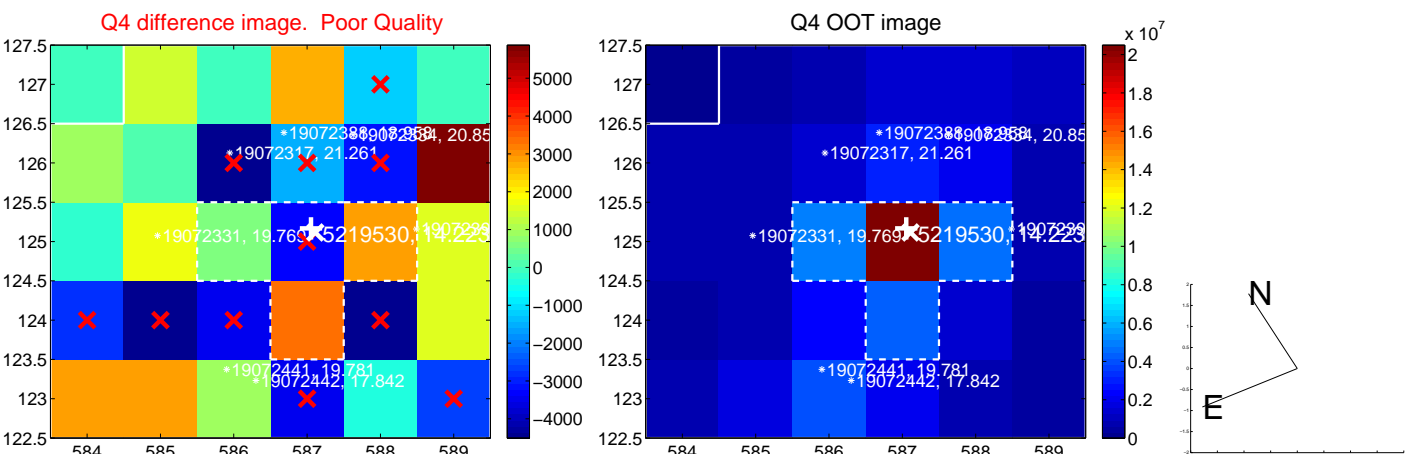
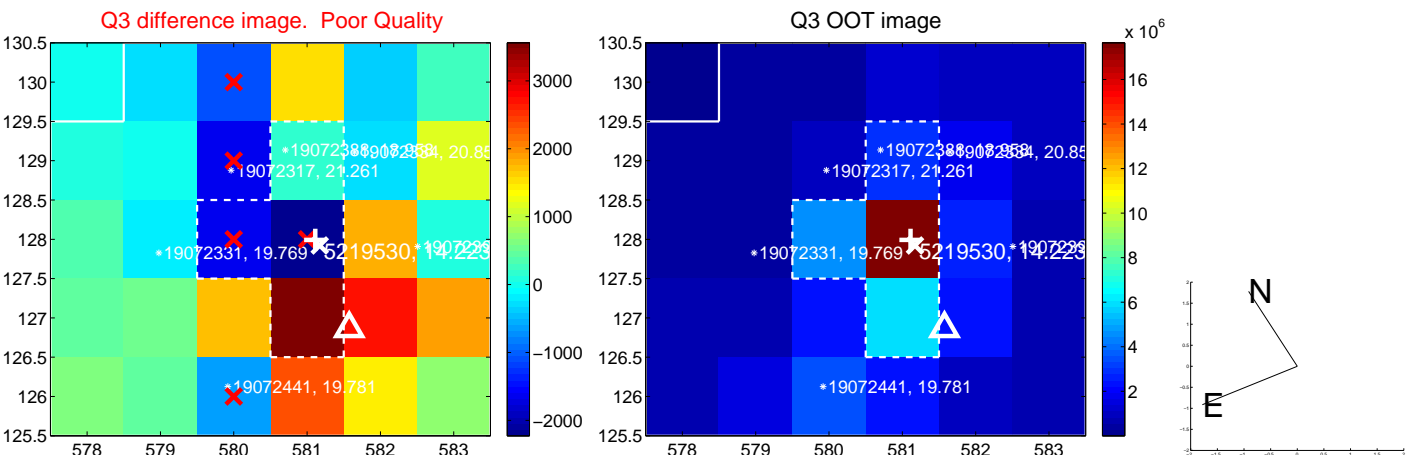
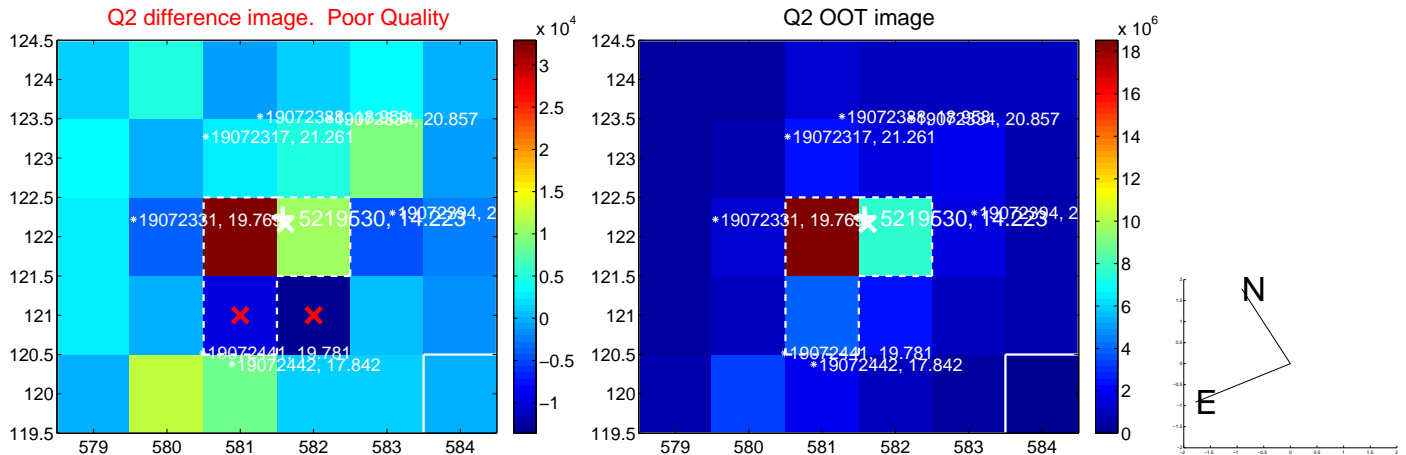
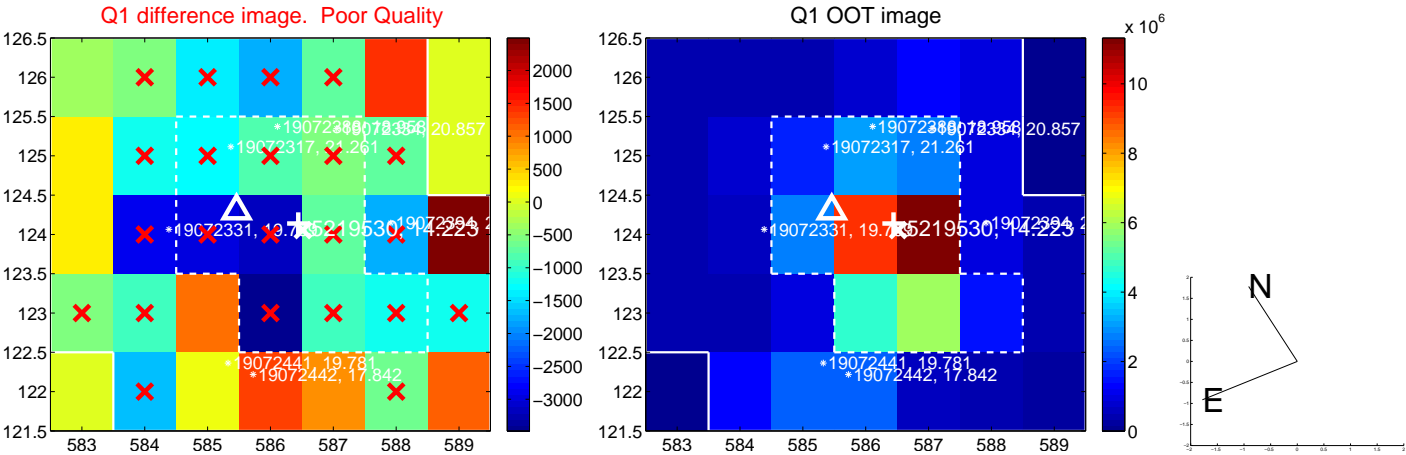
	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$2.146 \pm 1.553$	1.38	$1.905 \pm 1.082$	$0.989 \pm 1.525$
PRF-fit source offset from KIC position	$2.514 \pm 1.593$	1.58	$1.981 \pm 1.052$	$1.548 \pm 1.531$
photometric centroid source offset	$1.82 \pm 0.70$	2.60	$1.71 \pm 0.71$	$-0.63 \pm 0.61$



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.

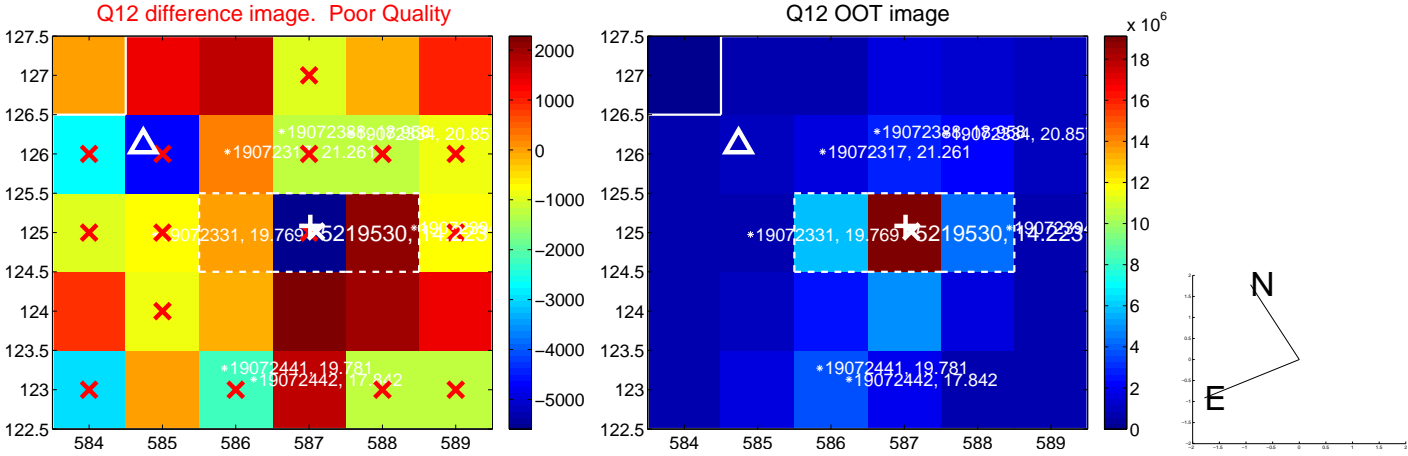
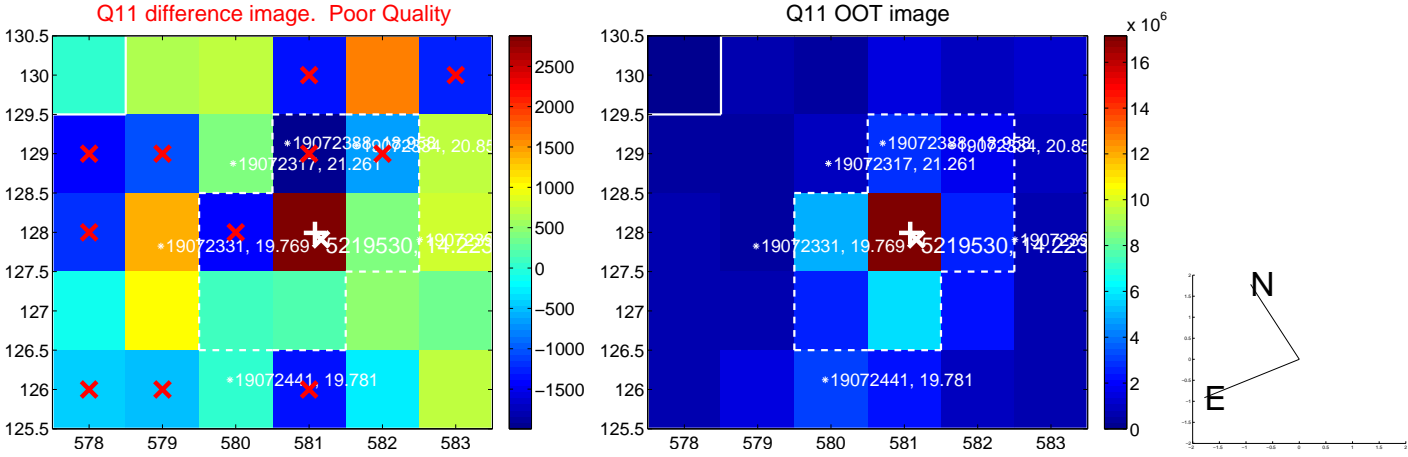
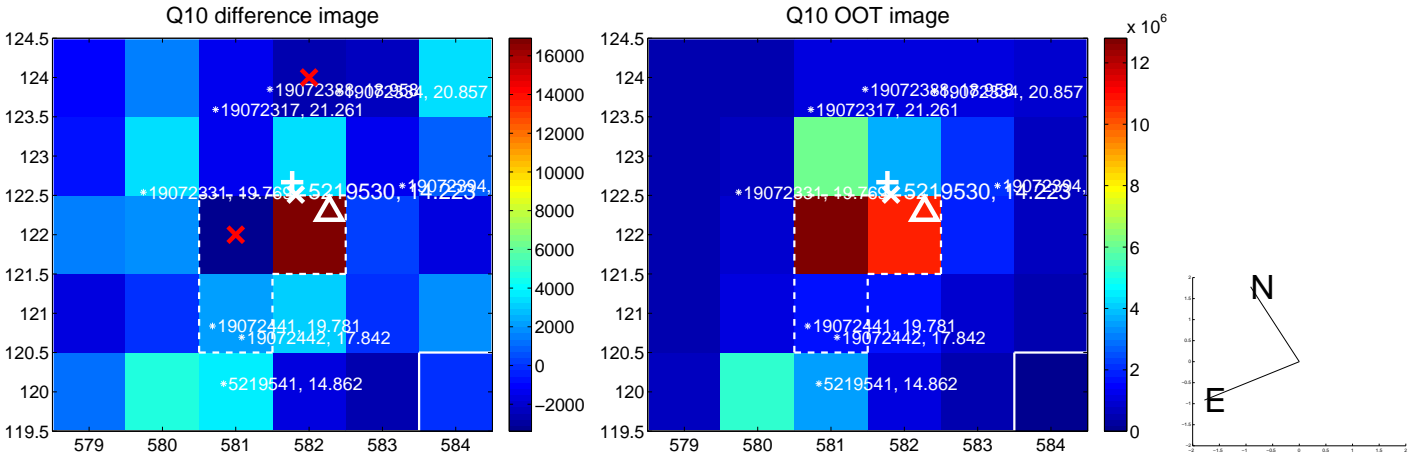
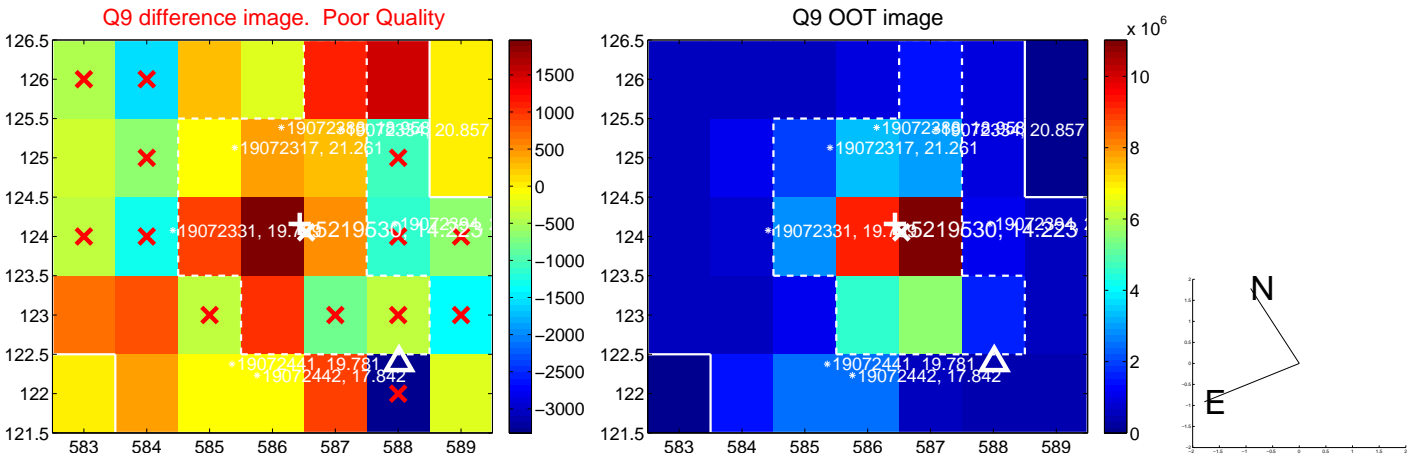


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

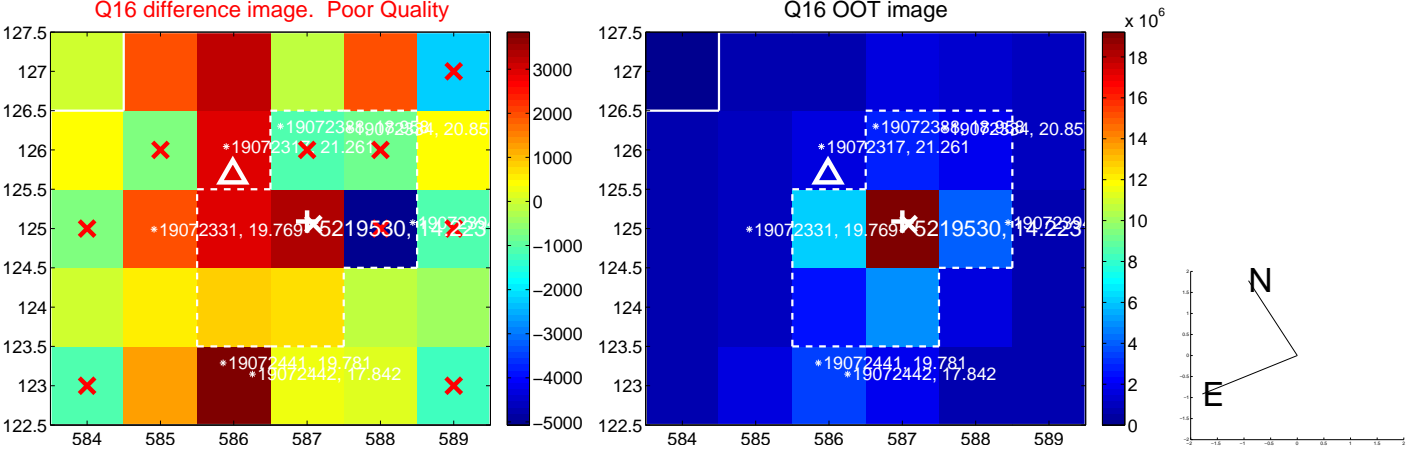
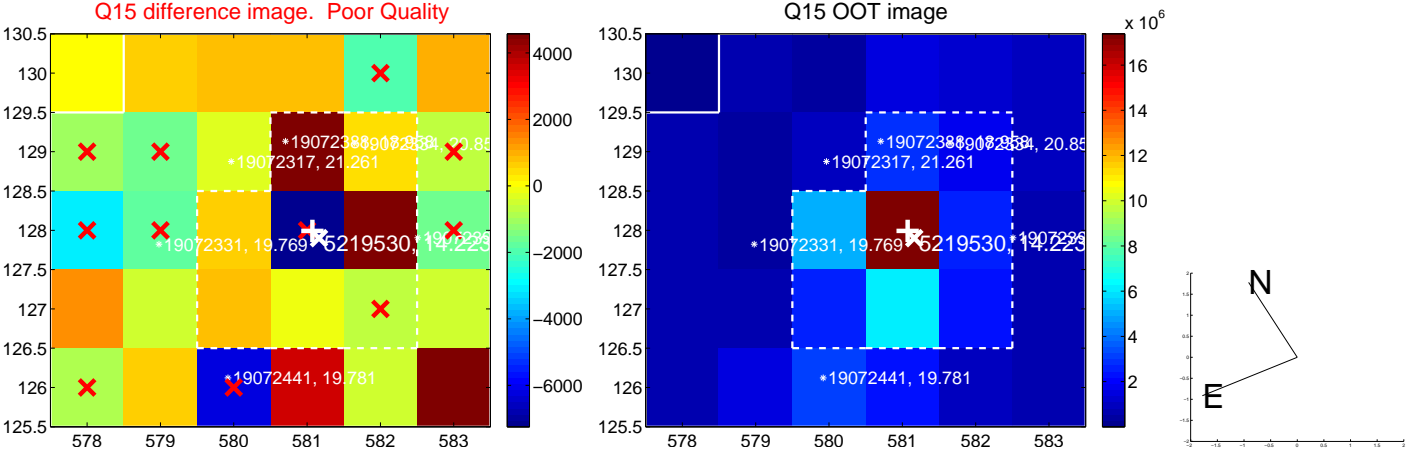
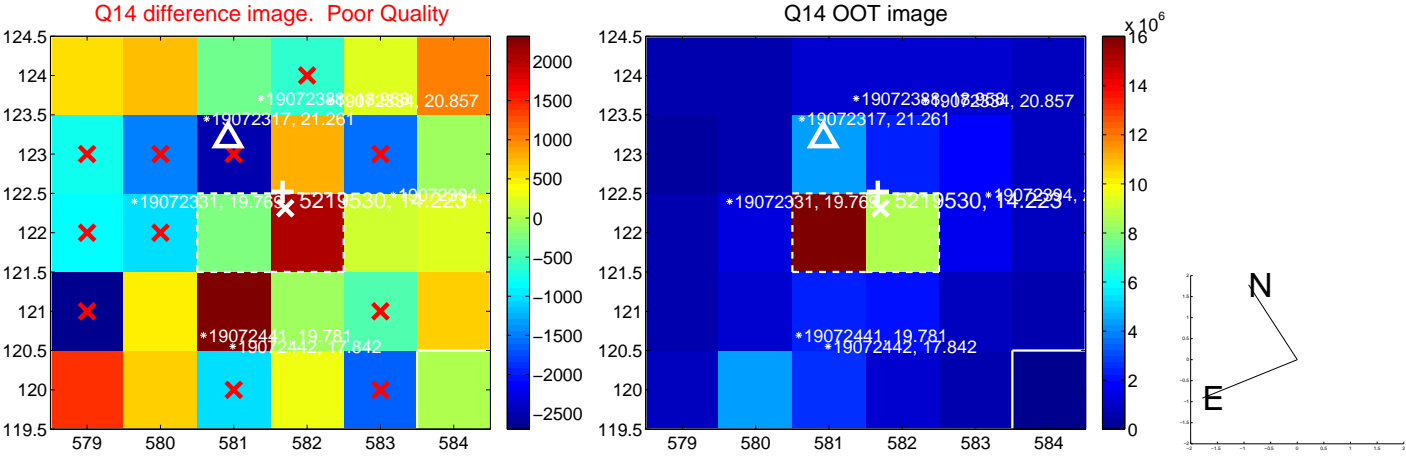
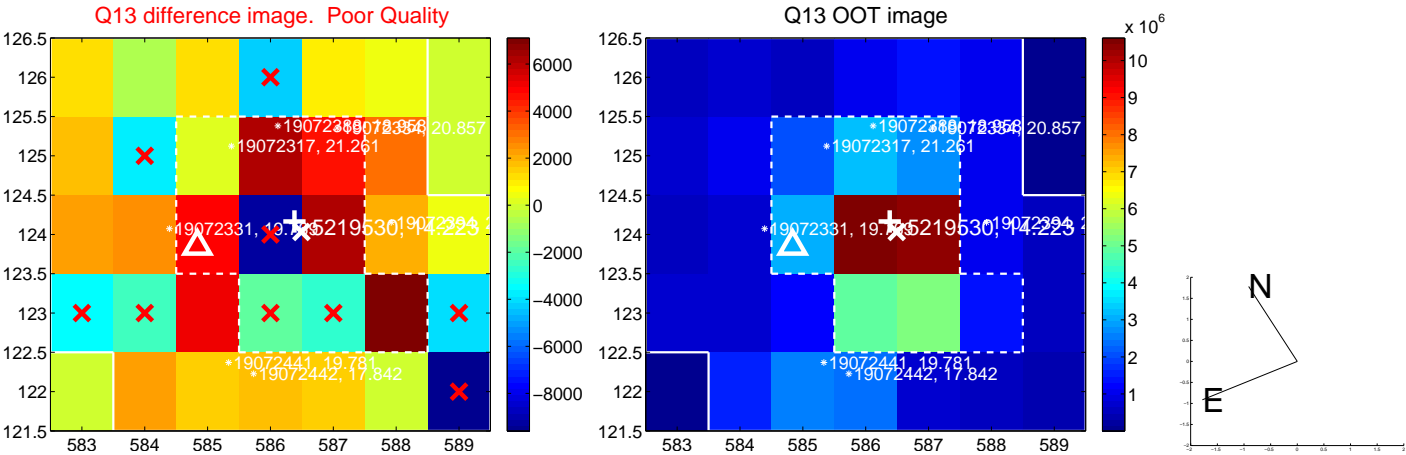




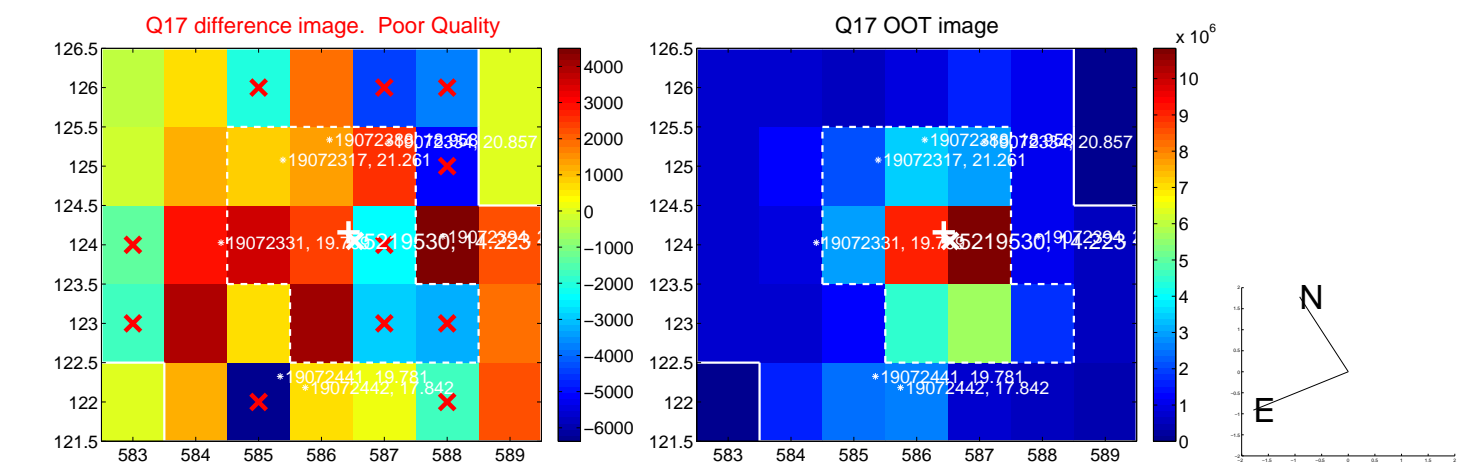
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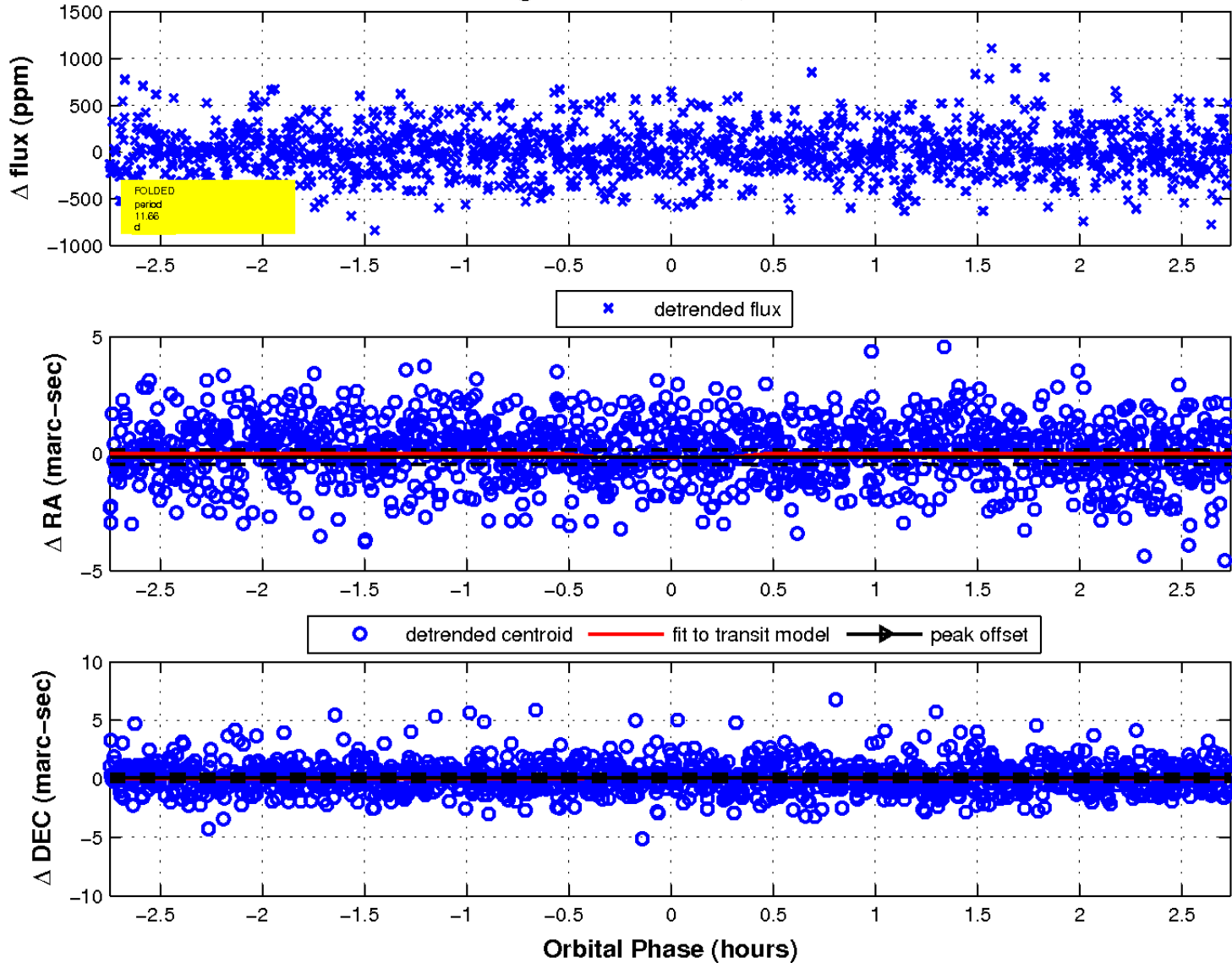
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fluxWeightedCentroids, Planet 2 of 2





UKIRT Image

Declination

