

# KIC 006229130

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
006229130-01	OBS	No	1.063127	132.307733	231.6	4.196	9.6	11.0	4.99	7507	13.69	95350.34
006229130-02	OBS	No	2.388008	131.908003	309.5	23.881	8.5	15.4	4.99	7507	8.85	32413.15

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006229130-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
006229130-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—TRANS_GAPPED—LPP_DV—LPP_ALT—CENT_SATURATED

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

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

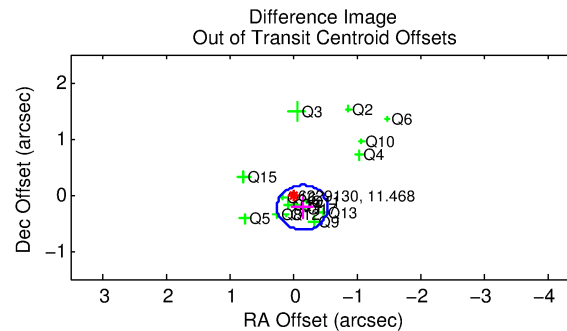
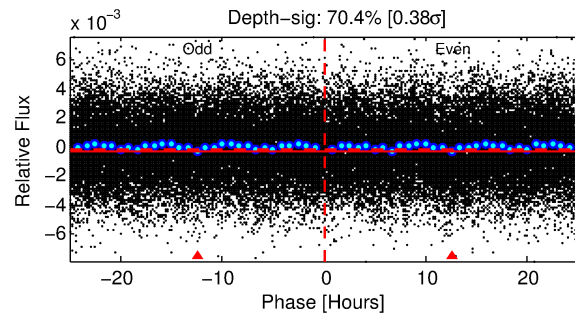
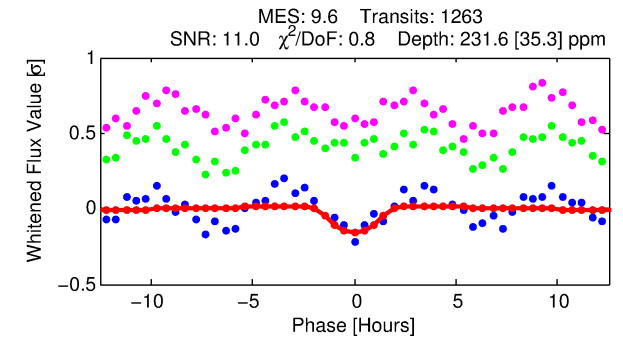
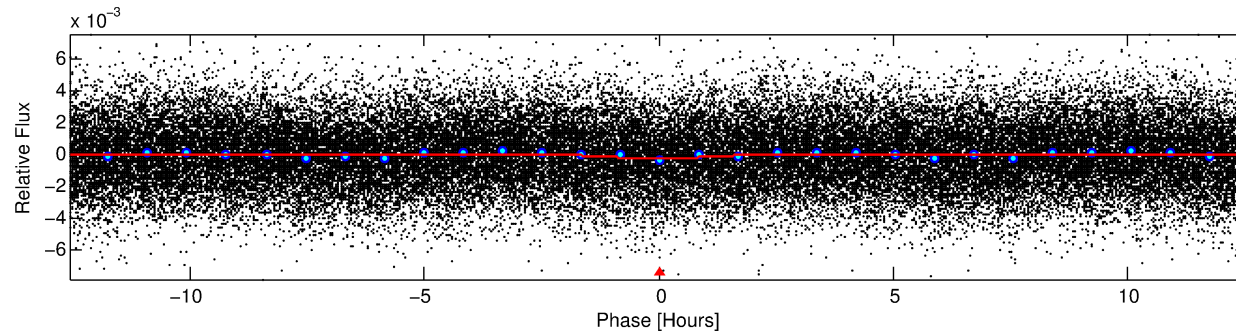
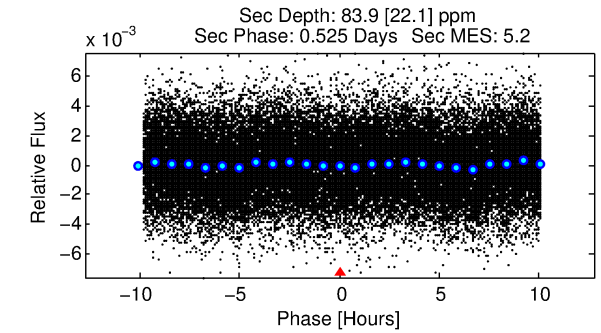
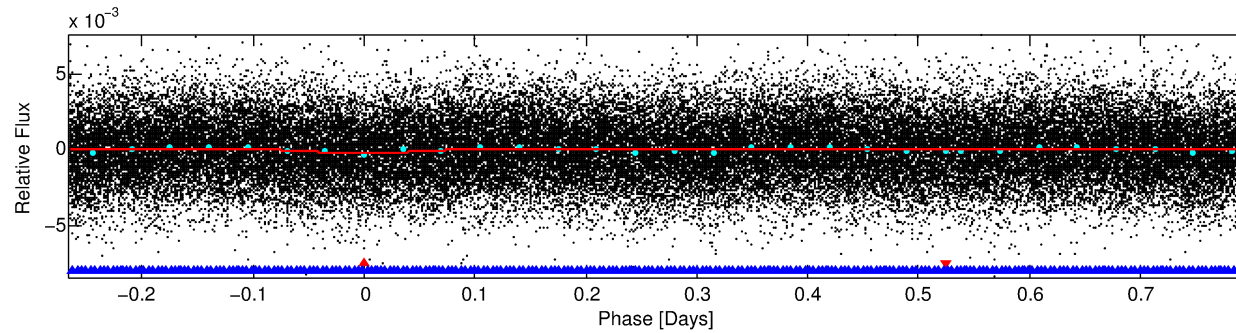
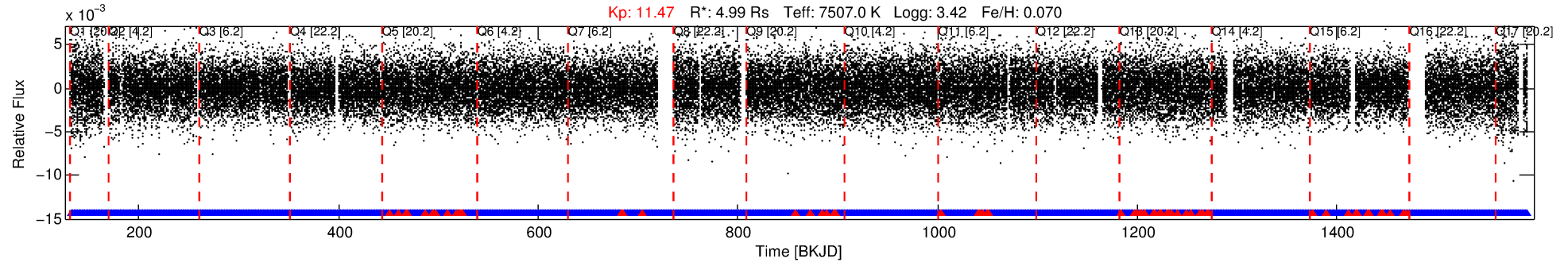
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 006229130-01

No Significant Match Found

# DV One-Page Summary

KIC: 6229130 Candidate: 1 of 2 Period: 1.063 d



## DV Fit Results:

Period = 1.06313 [0.00001] d  
Epoch = 132.3077 [0.0052] BKJD  
Rp/R\* = 0.0251 [0.0949]  
a/R\* = 1.11 [0.11]  
b = 1.00 [0.15]  
Seff = 95350.34 [100573.63]  
Teq = 4481 [1182] K  
Rp = 13.69 [52.36] Re  
a = 0.0273 [0.0171] AU  
Ag = 0.18 [1.40] [-0.59σ]  
Teffp = 4531 [8564] K [0.01σ]

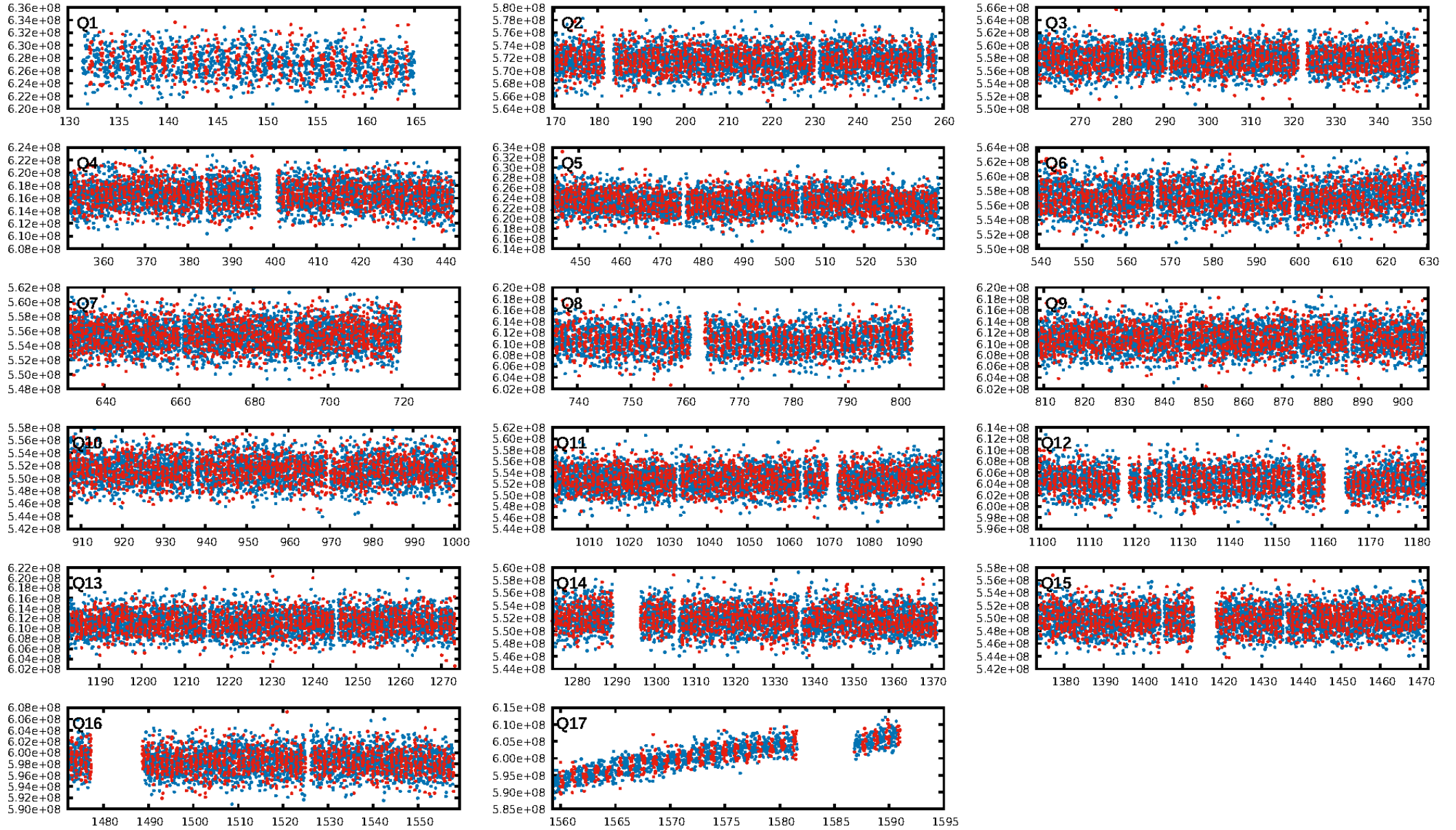
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 81.0% [1.31σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 0.95 [1141/1207]  
GhostDiagnostic-chr: 1.434  
Centroid-sig: 3.2%  
Centroid-so: 0.191 arcsec [3.16σ]  
OotOffset-rm: 0.274 arcsec [2.06σ]  
KicOffset-rm: 0.295 arcsec [2.38σ]  
OotOffset-st: 4/4/4 [16]  
KicOffset-st: 4/4/4 [16]  
DiffImageQuality-fgm: 0.75 [12/16]  
DiffImageOverlap-fno: 1.00 [17/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 18:28:18 Z

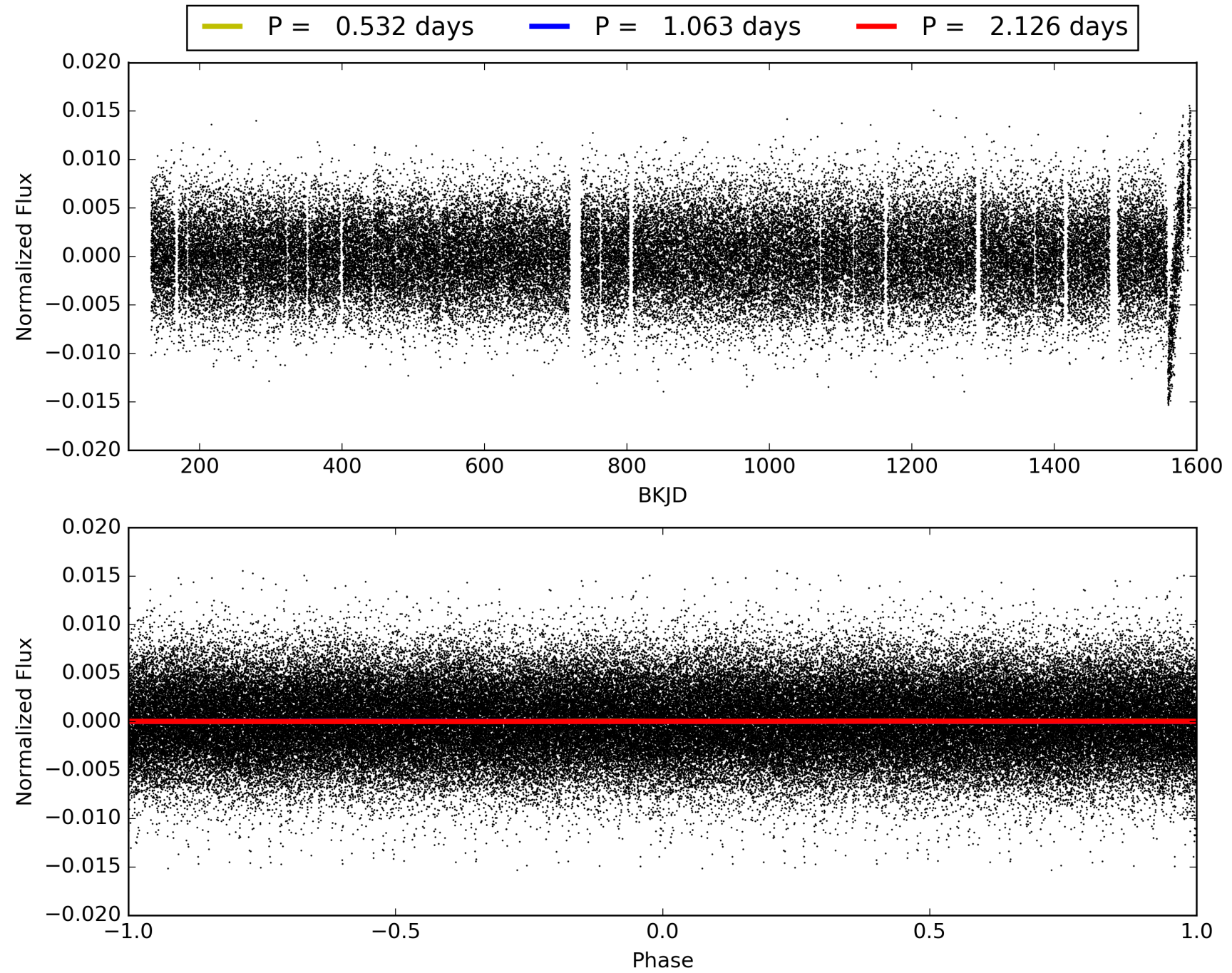
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 006229130-01, PDC Light Curves



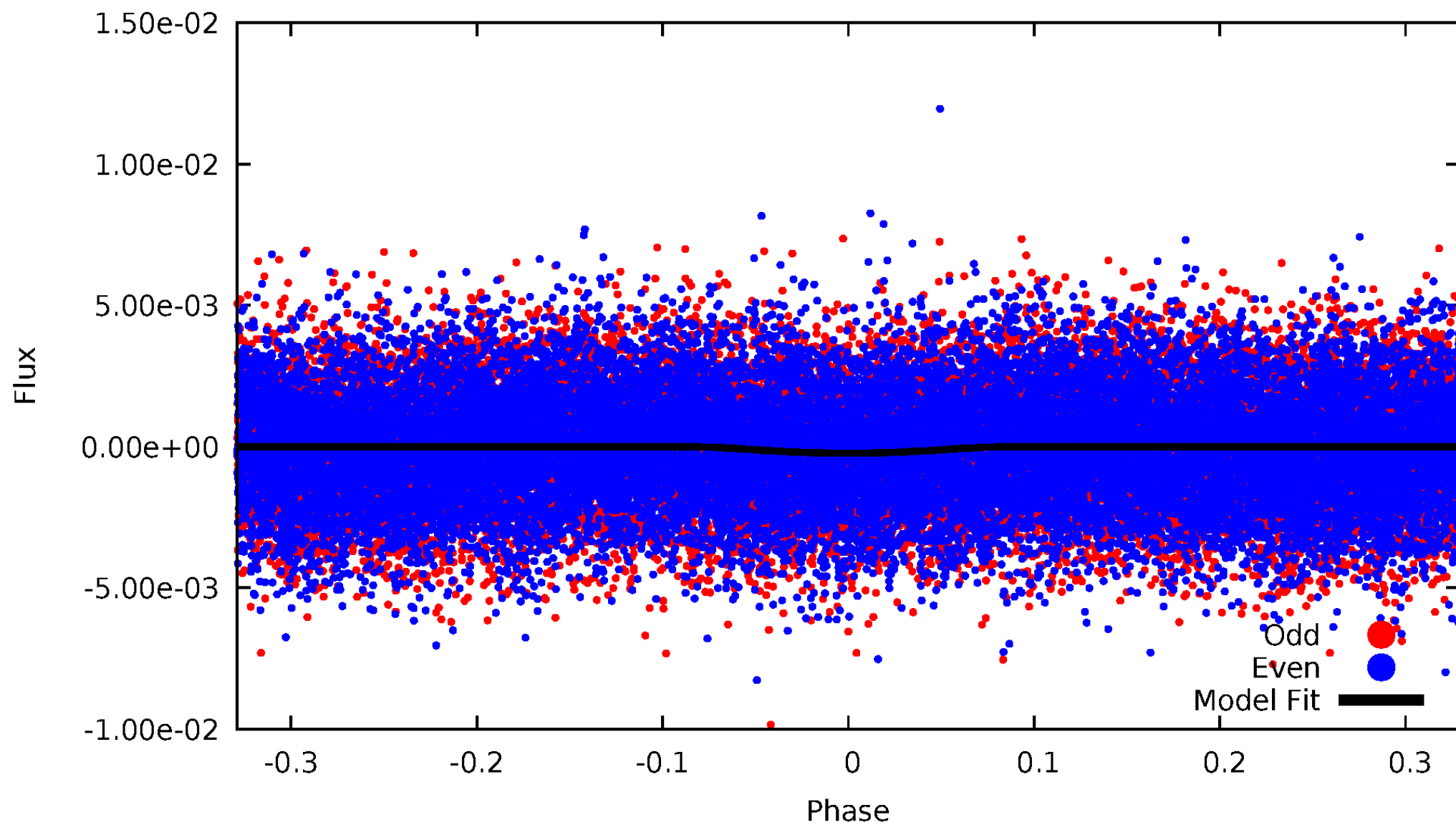


TCE 006229130-01



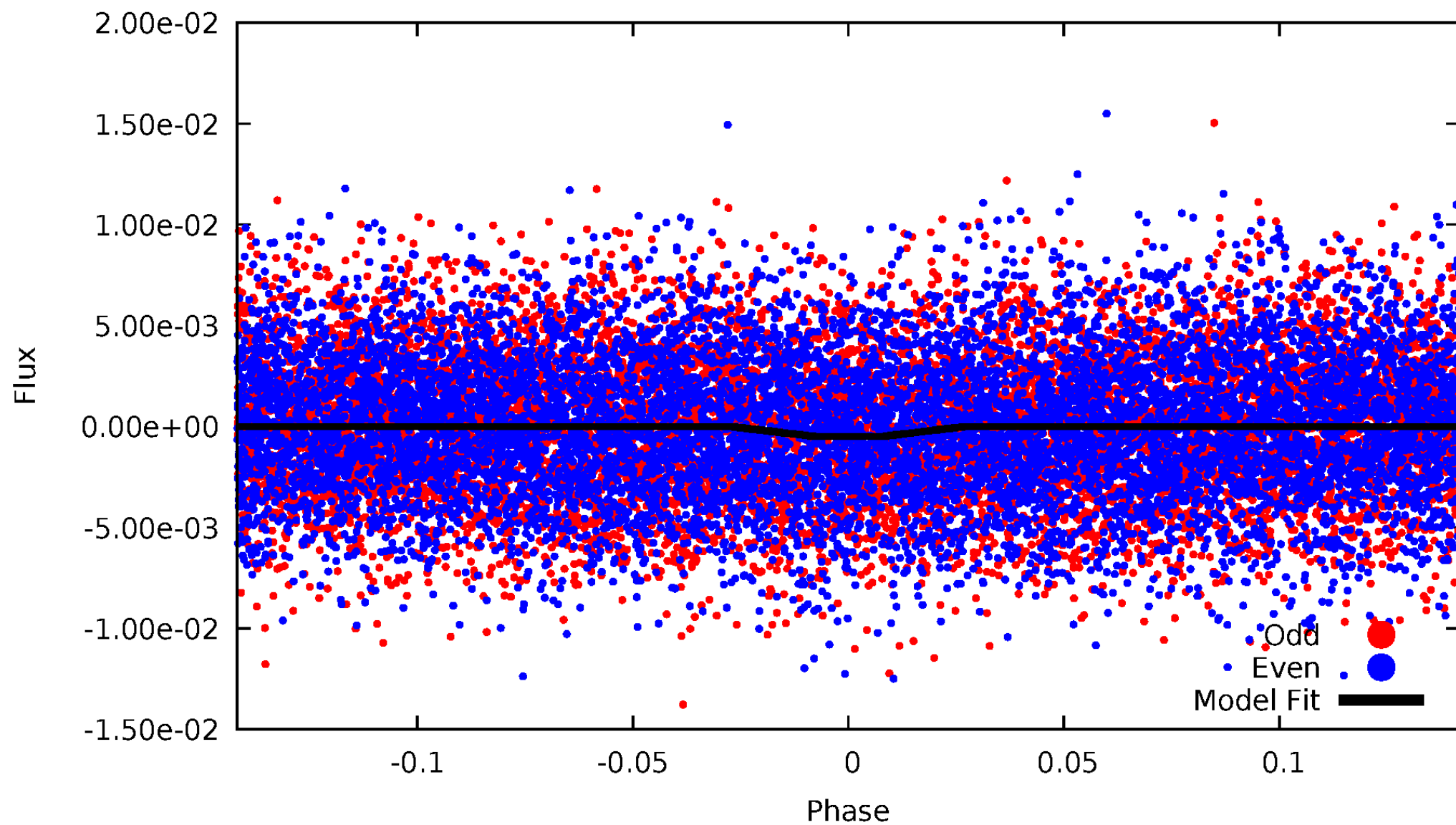
# DV Odd/Even

TCE 006229130-01

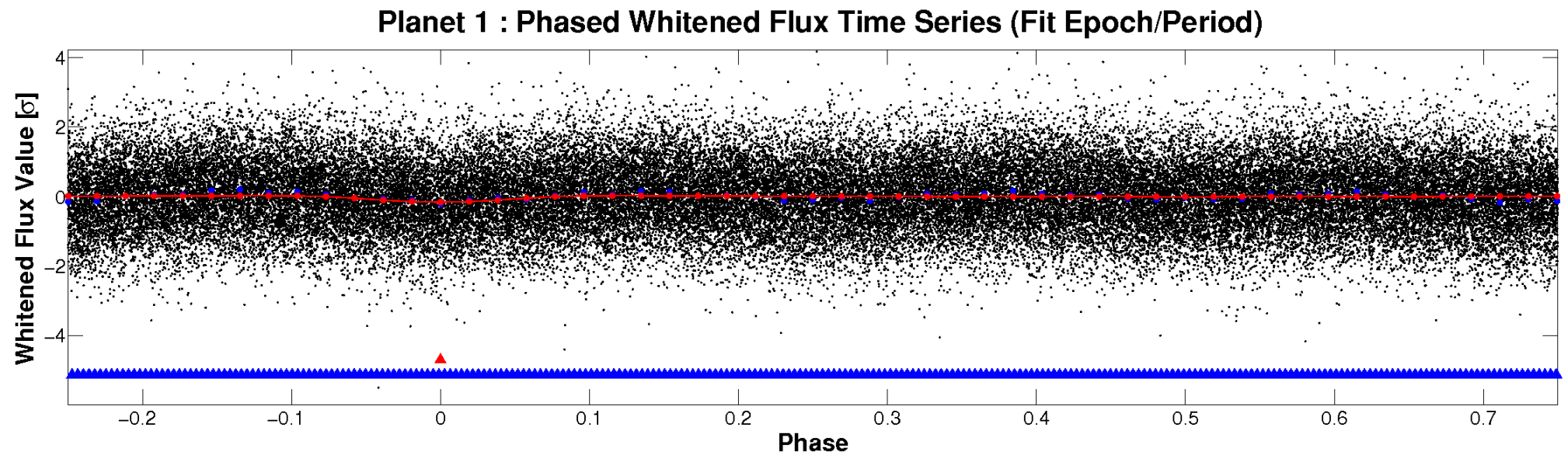
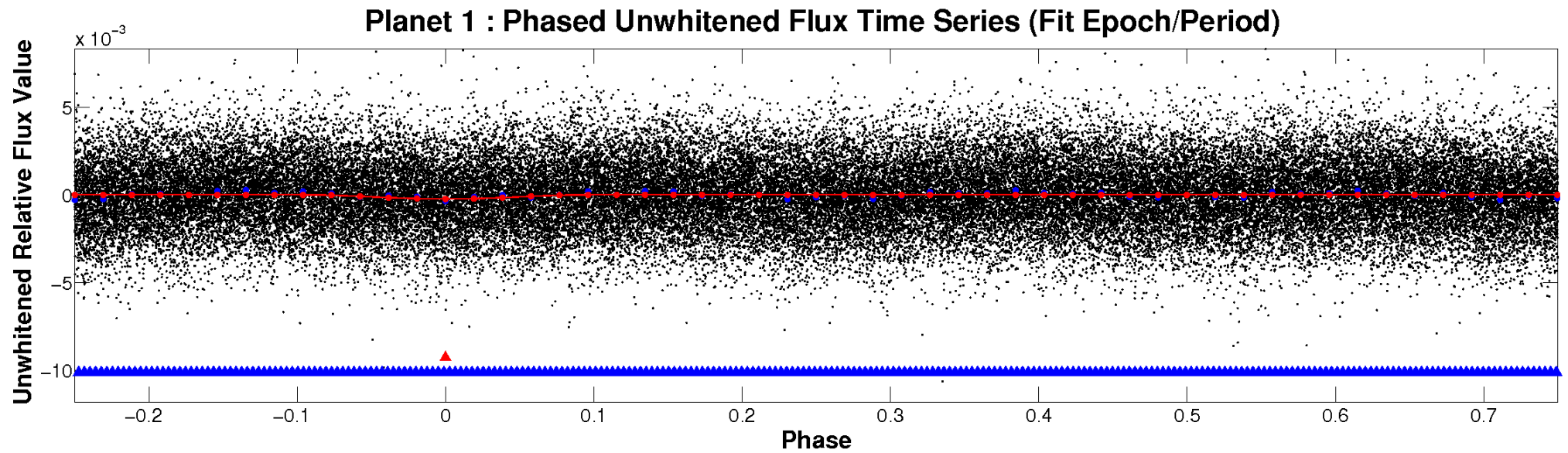


# ALT Odd/Even

TCE 006229130-01



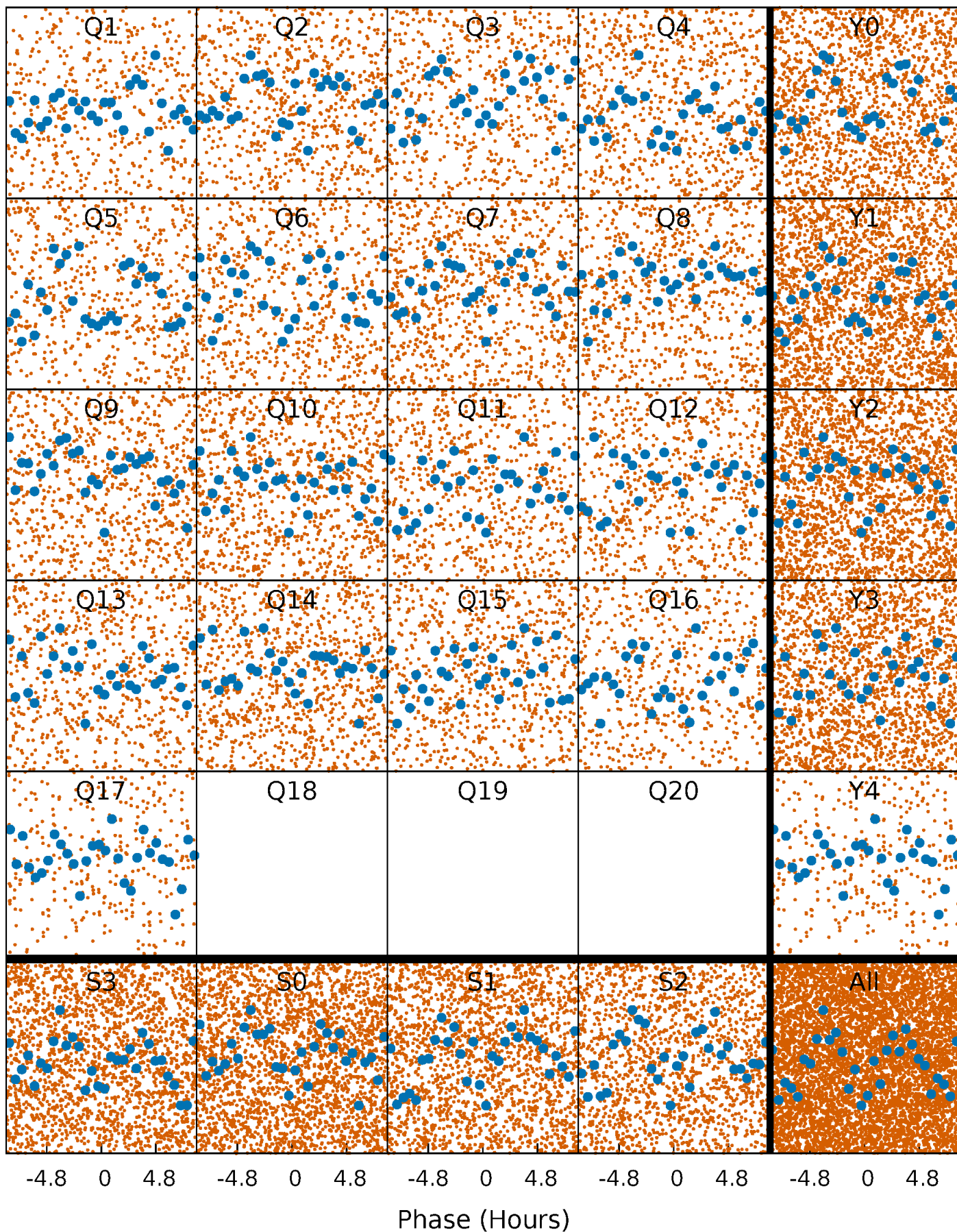
# Non-Whitened Vs. Whitened Light Curve





# PDC Quarter-Phased Transit Curves

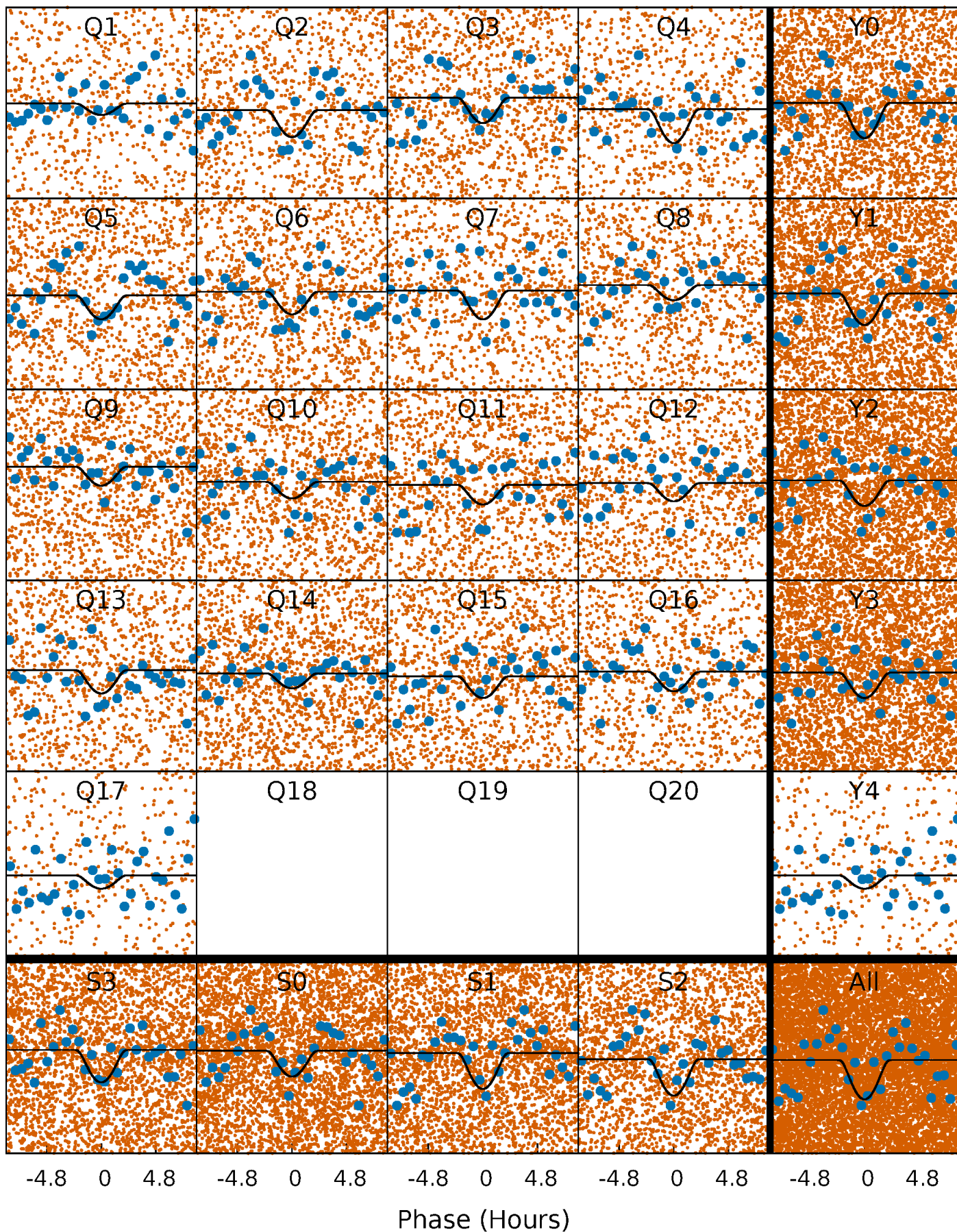
TCE 006229130-01 P= 1.063127 Days  $T_0=132.307733$  (BKJD)





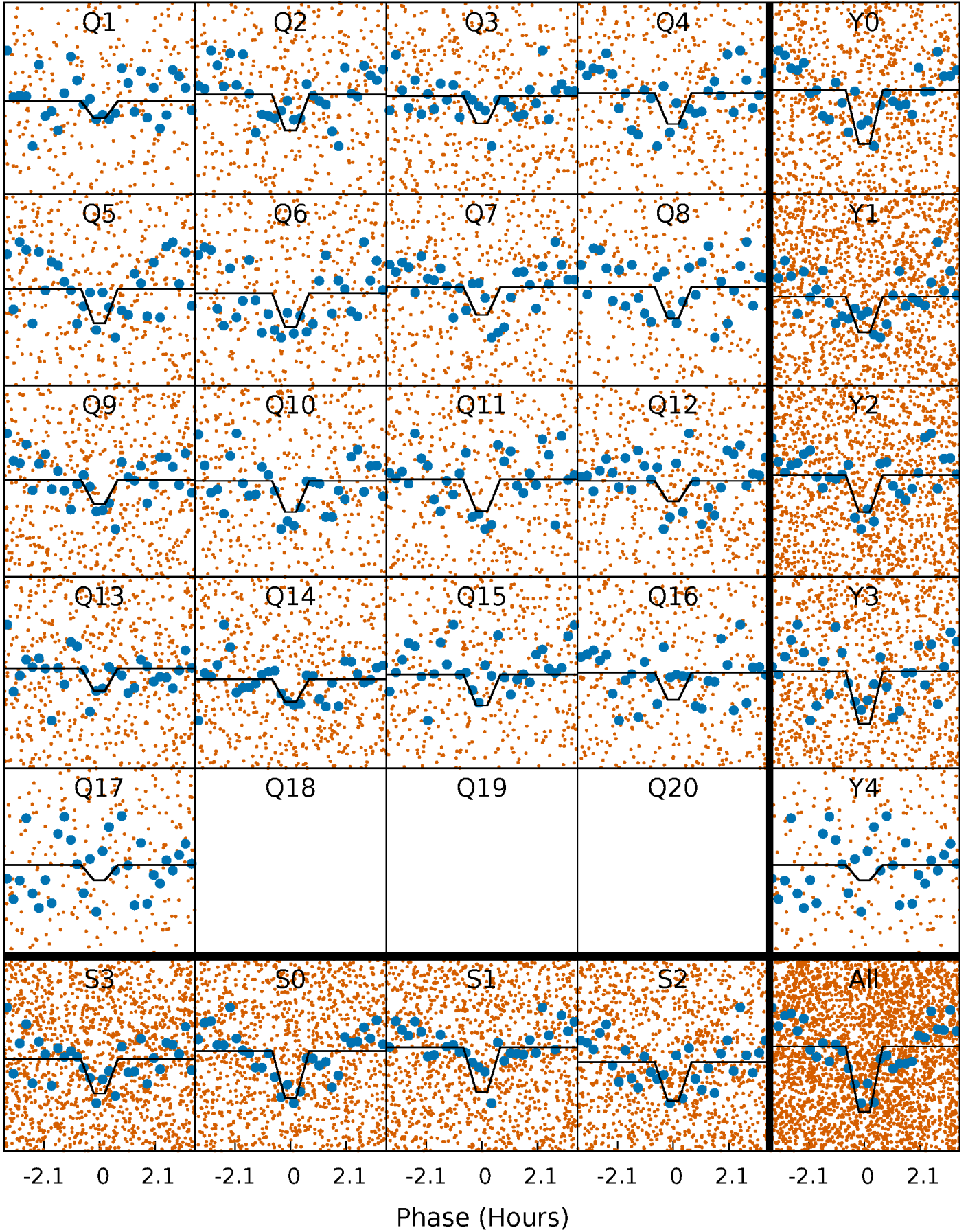
# DV Quarter-Phased Transit Curves

TCE 006229130-01 P= 1.063127 Days  $T_0=132.307733$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

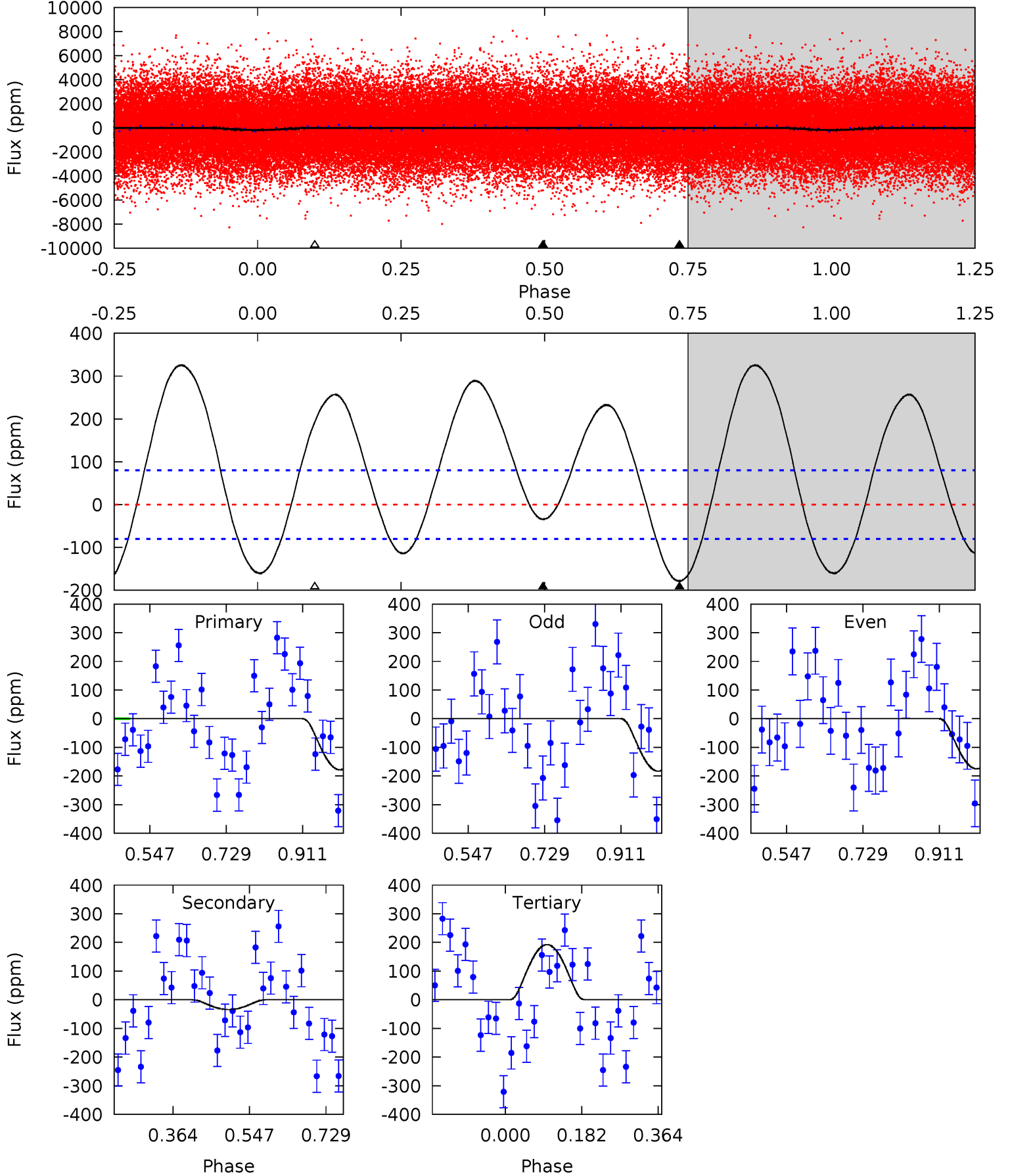
TCE 006229130-01 P= 1.063147 Days  $T_0=132.290670$  (BKJD)



# DV Model-Shift Uniqueness Test

006229130-01, P = 1.063127 Days, E = 131.244606 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
9.91	1.90	-10.7	0	4.44	1.33	7.36	20.6	9.91	12.6	1.90	0.23	0.95	0.65	0.04

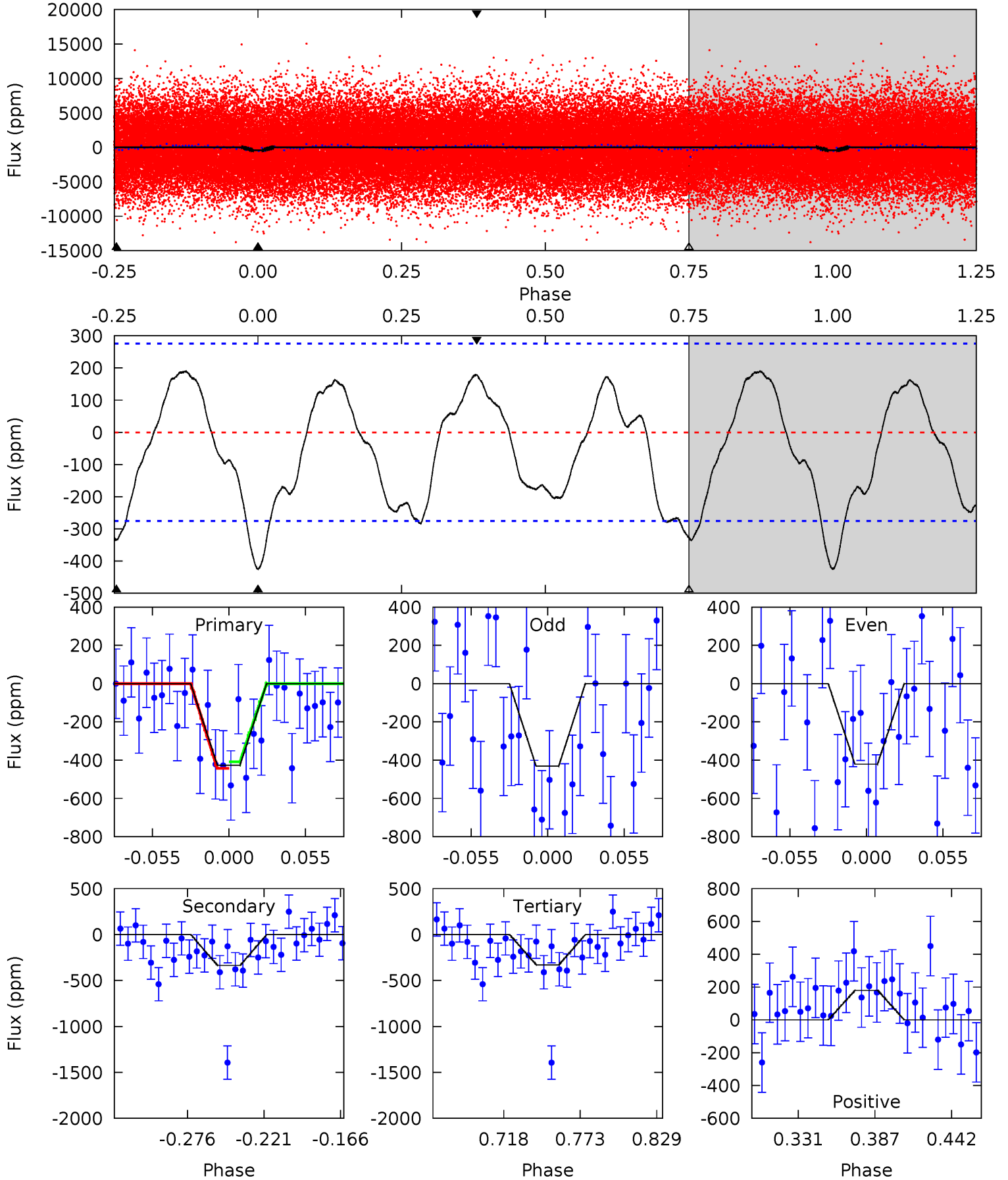




# Alt Model-Shift Uniqueness Test

006229130-01, P = 1.063147 Days, E = 131.227523 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
7.25	5.72	5.61	3.06	4.69	1.92	2.51	1.65	4.19	0.11	2.66	0.09	1.26	0.31	0.29





### Stellar Parameters For KIC 006229130

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$7507^{+209}_{-339}$	$3.420^{+0.623}_{-0.208}$	$0.070^{+0.200}_{-0.300}$	$4.989^{+1.639}_{-3.043}$	$2.387^{+0.196}_{-0.783}$	$0.027^{+0.253}_{-0.014}$
	+3%/-5%	+18%/-6%	+286%/-429%	+33%/-61%	+8%/-33%	+935%/-53%
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 006229130-01 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-34 \pm 18$	$35.73^{+38.23}_{-24.52}$	$6091^{+652}_{-997}$	$-4850^{+916}_{-516}$	$0.009^{+0.088}_{-0.008}$
Alt.	$-336 \pm 59$	$35.41^{+37.71}_{-25.23}$	$6072^{+700}_{-982}$	$-4340^{+10601}_{-805}$	$0.103^{+1.143}_{-0.079}$

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

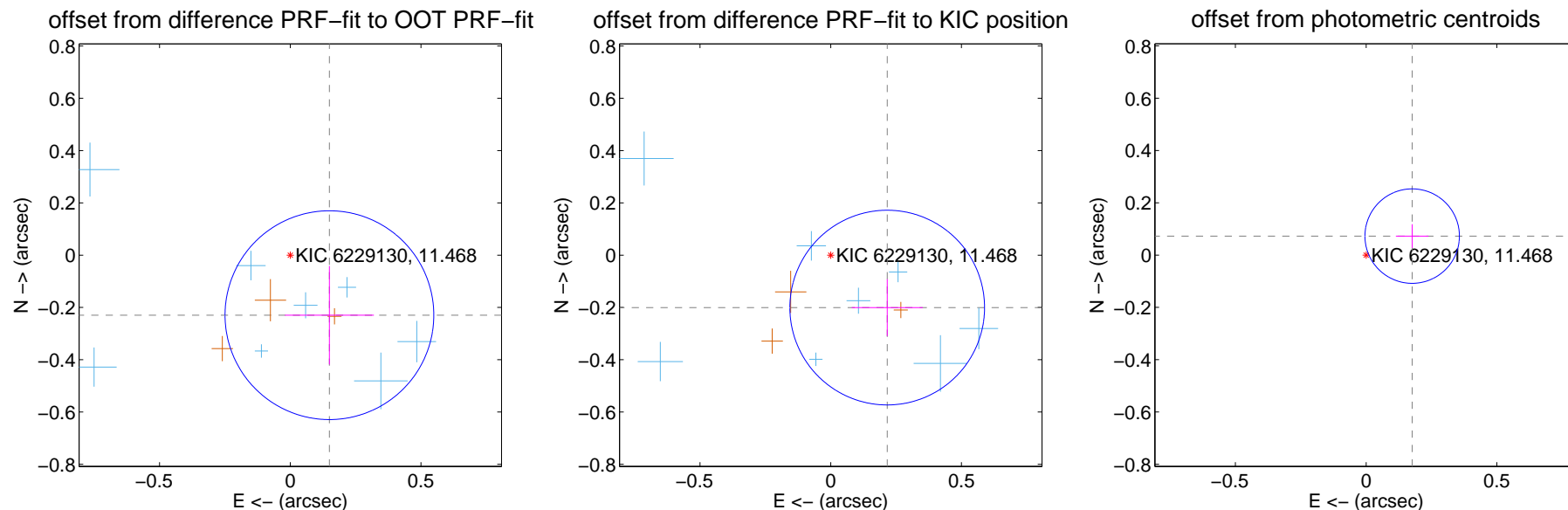
## DV Centroid Data

Supplemental centroid analysis for 006229130-01. **Kepler magnitude: 11.47.** Transit SNR 11.00

There are 12 quarters with good PRF difference image offsets

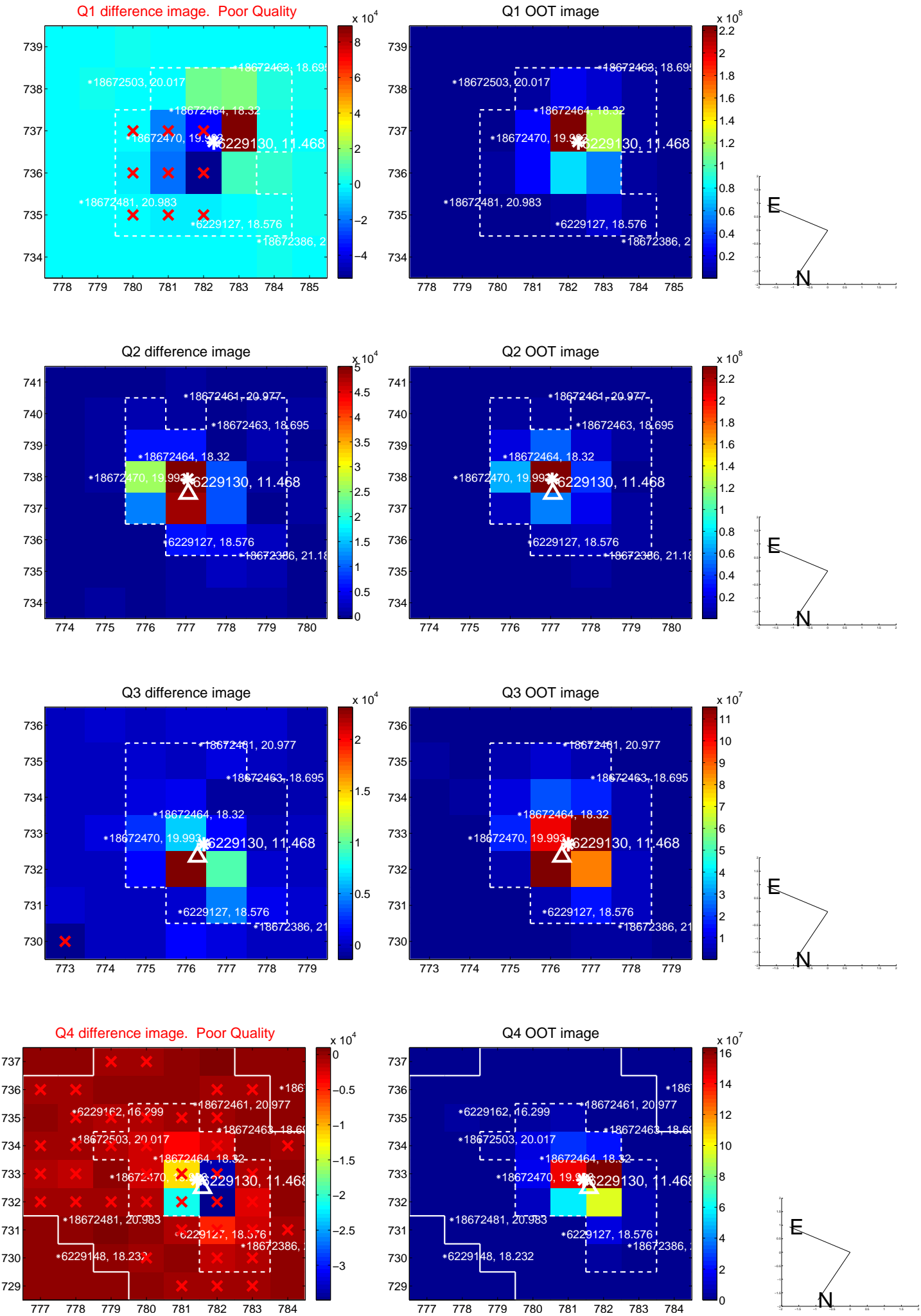
The direct PRF centroid is offset from the target star catalog position by about 0.10 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.274 \pm 0.133$	2.06	$-0.150 \pm 0.170$	$-0.230 \pm 0.188$
PRF-fit source offset from KIC position	$0.295 \pm 0.124$	2.38	$-0.216 \pm 0.136$	$-0.201 \pm 0.109$
photometric centroid source offset	$0.19 \pm 0.06$	<b>3.16</b>	$-0.18 \pm 0.06$	$0.07 \pm 0.05$

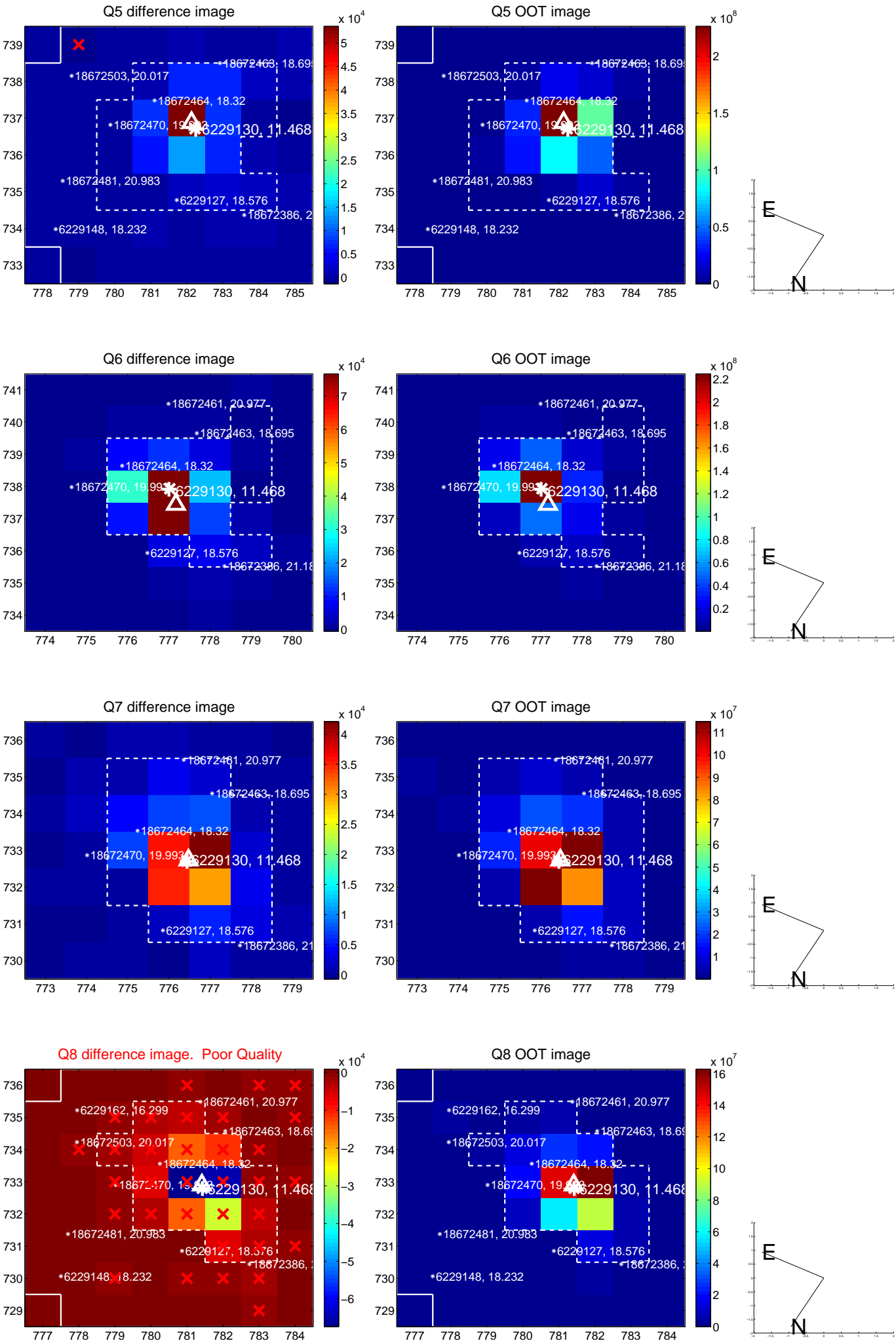


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

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

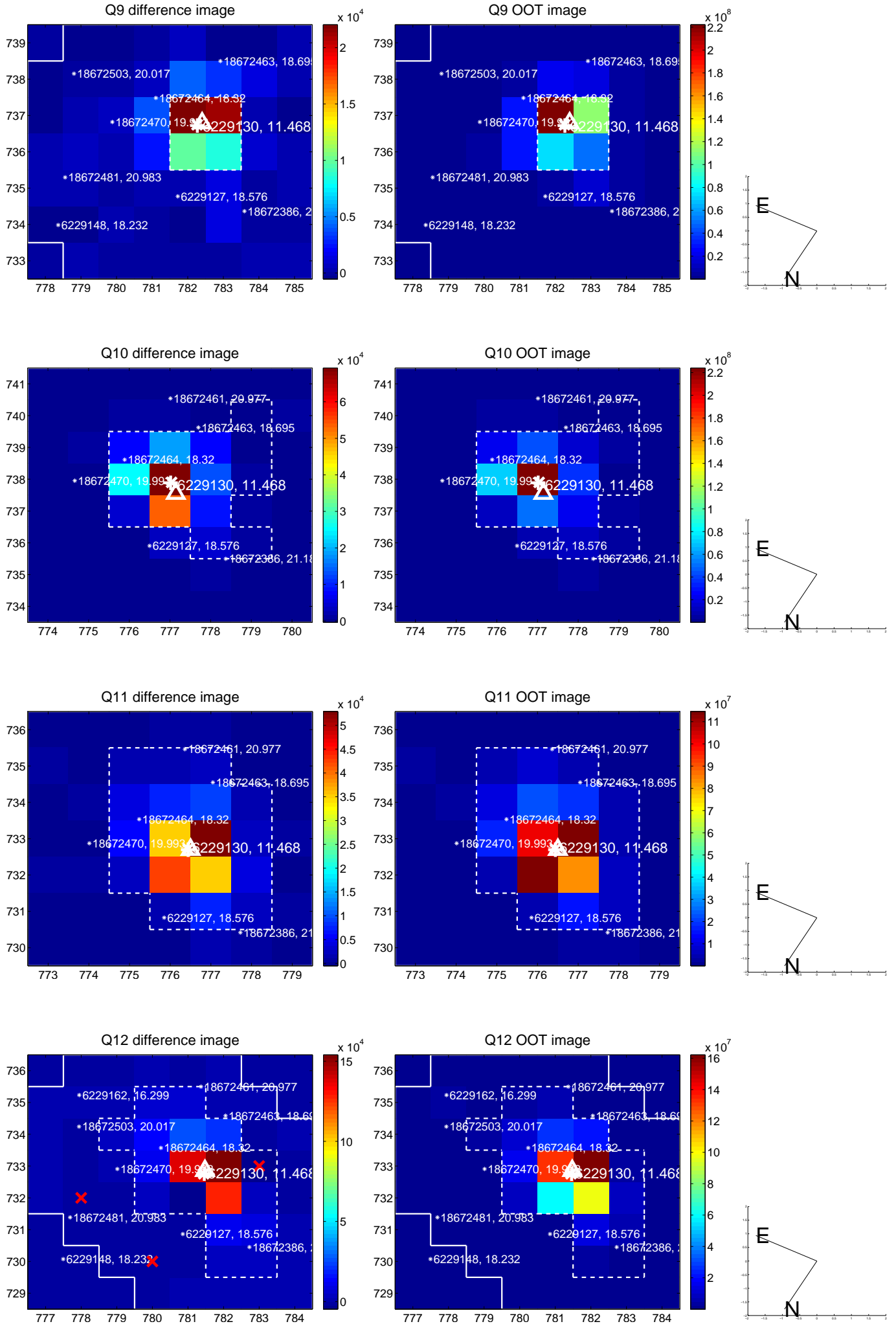


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

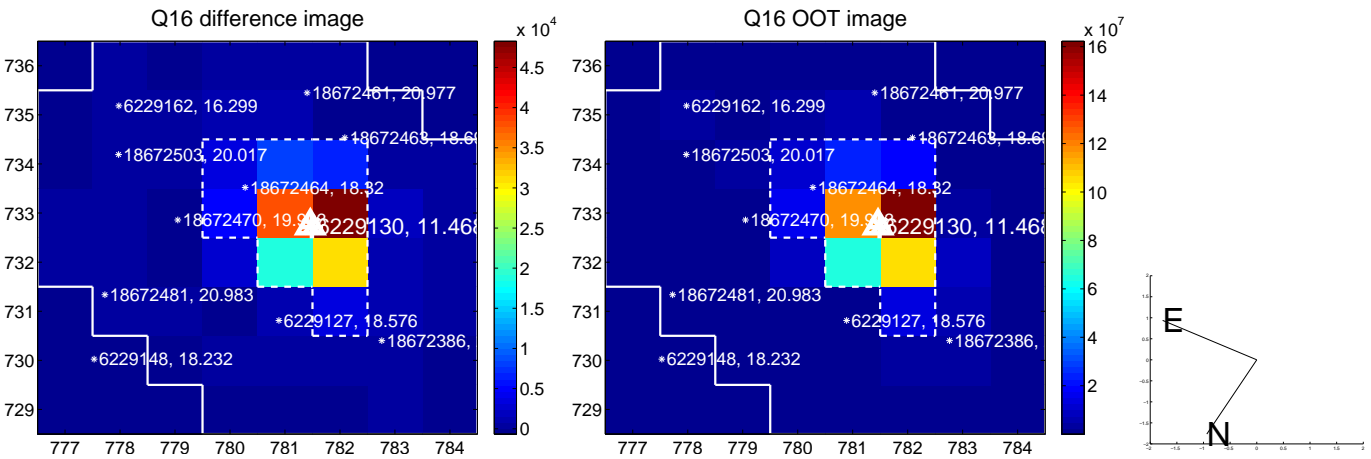
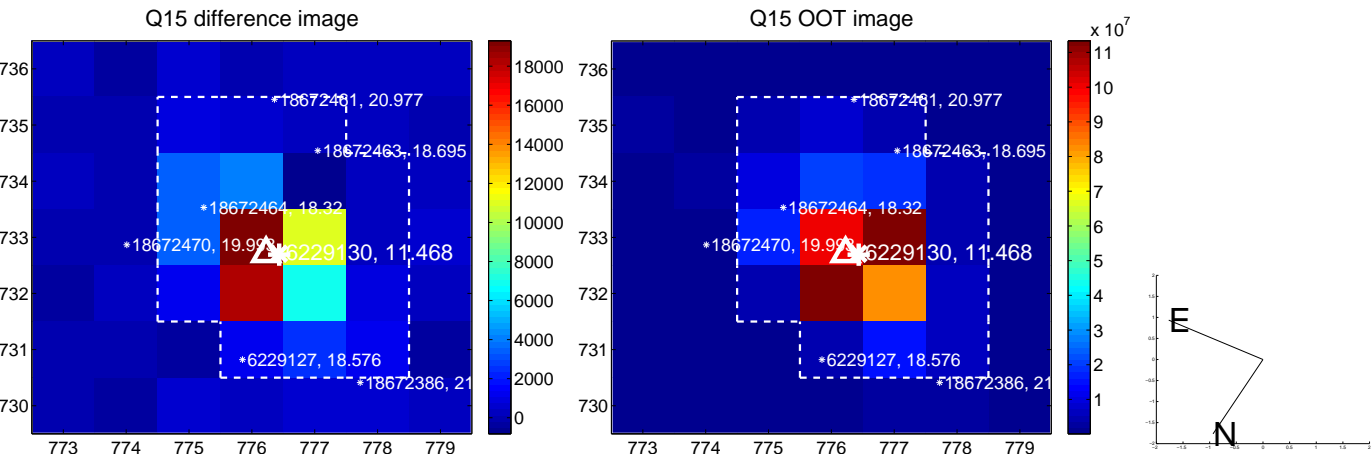
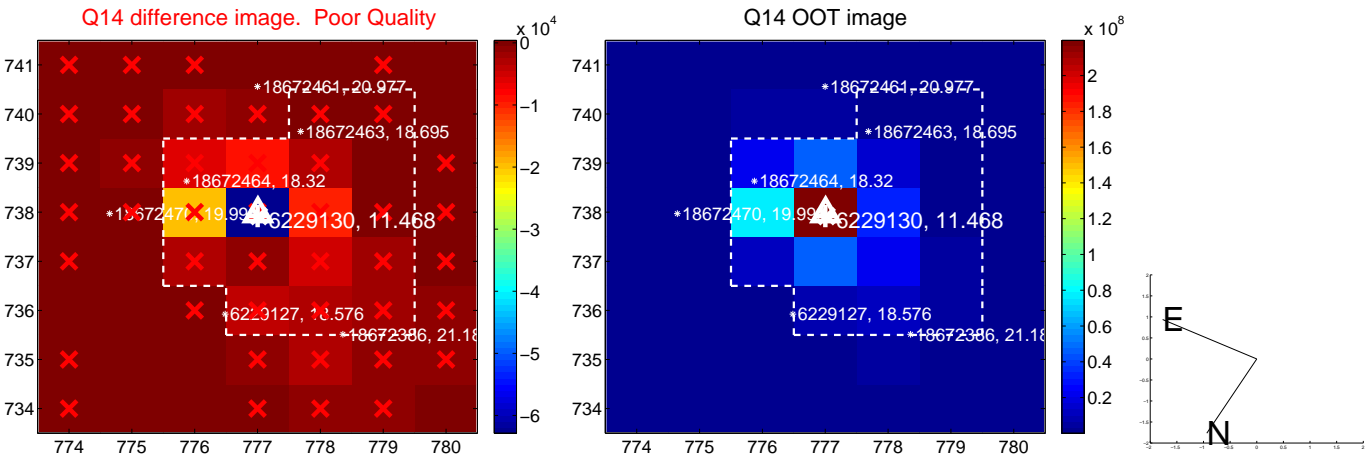
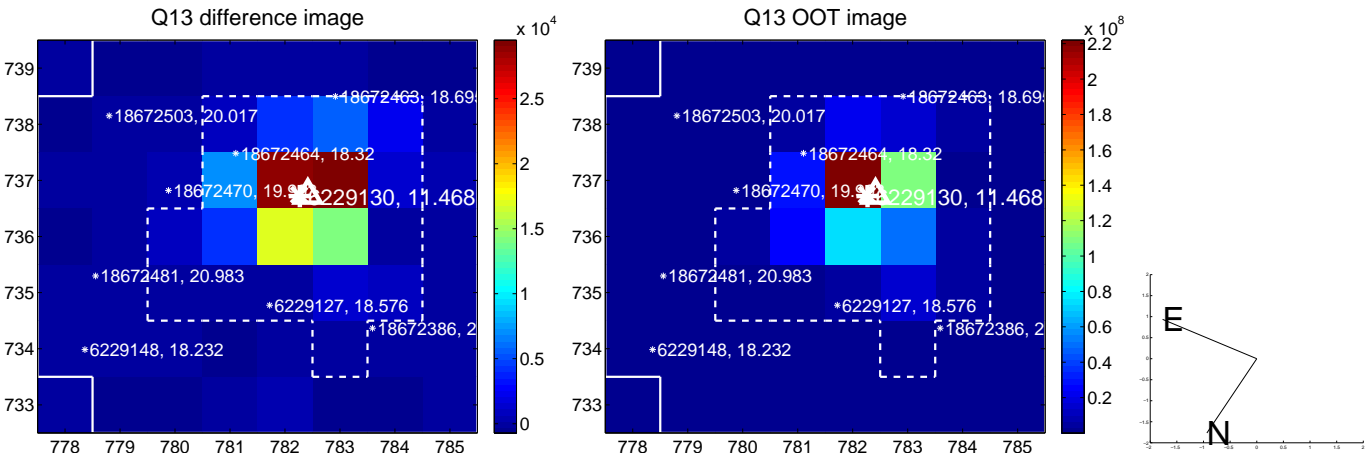




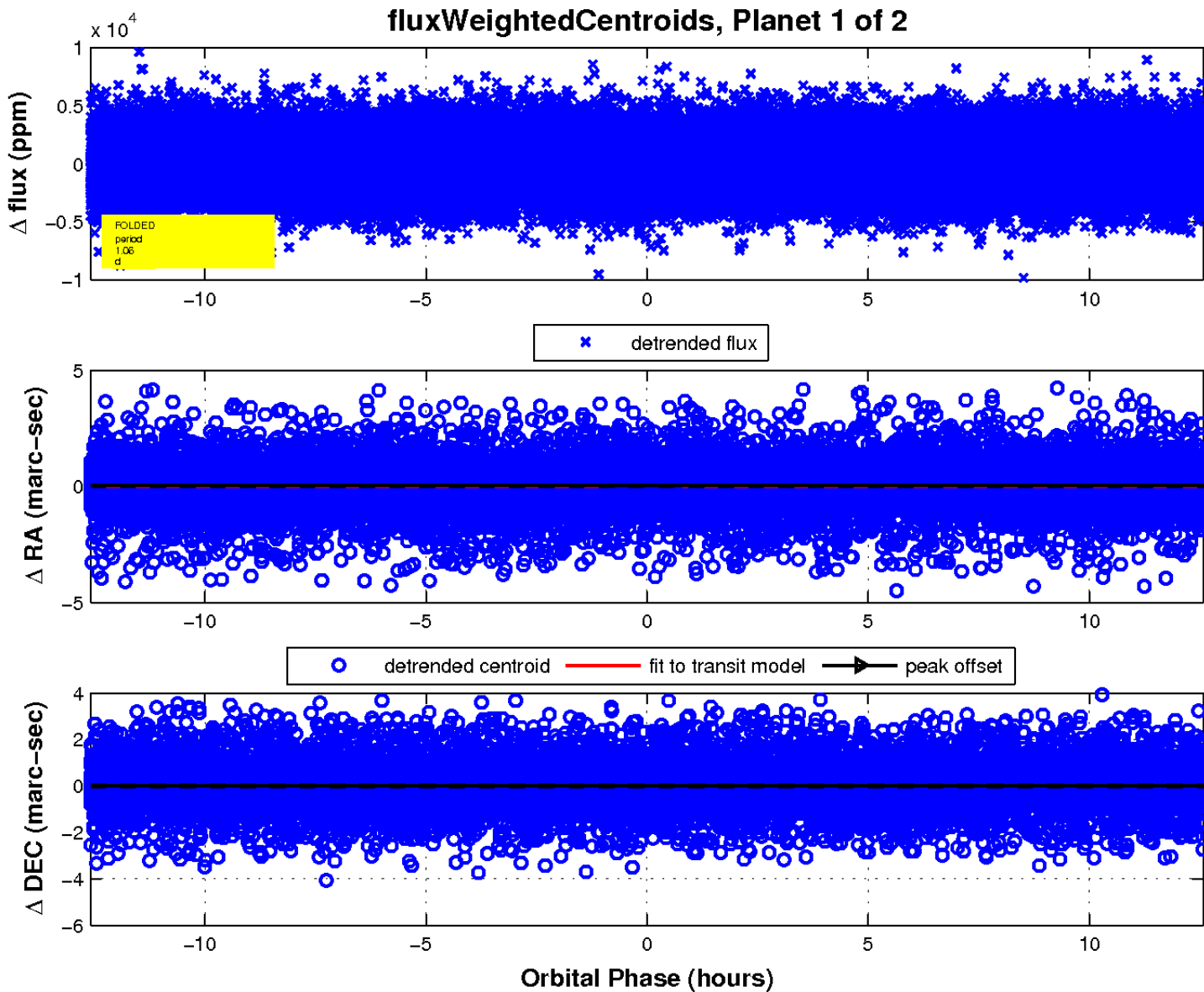
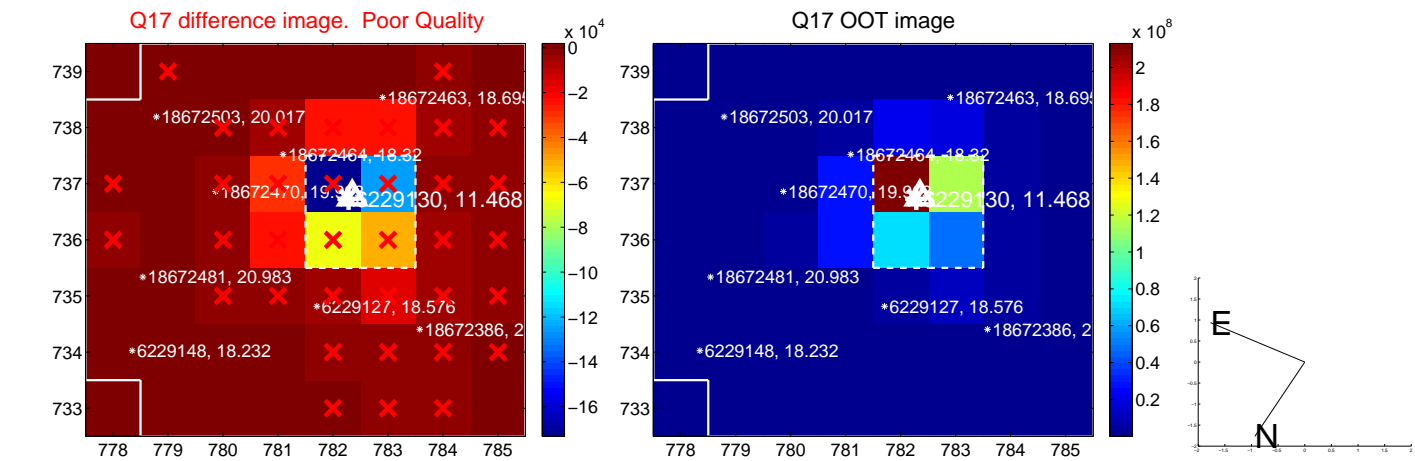
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white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

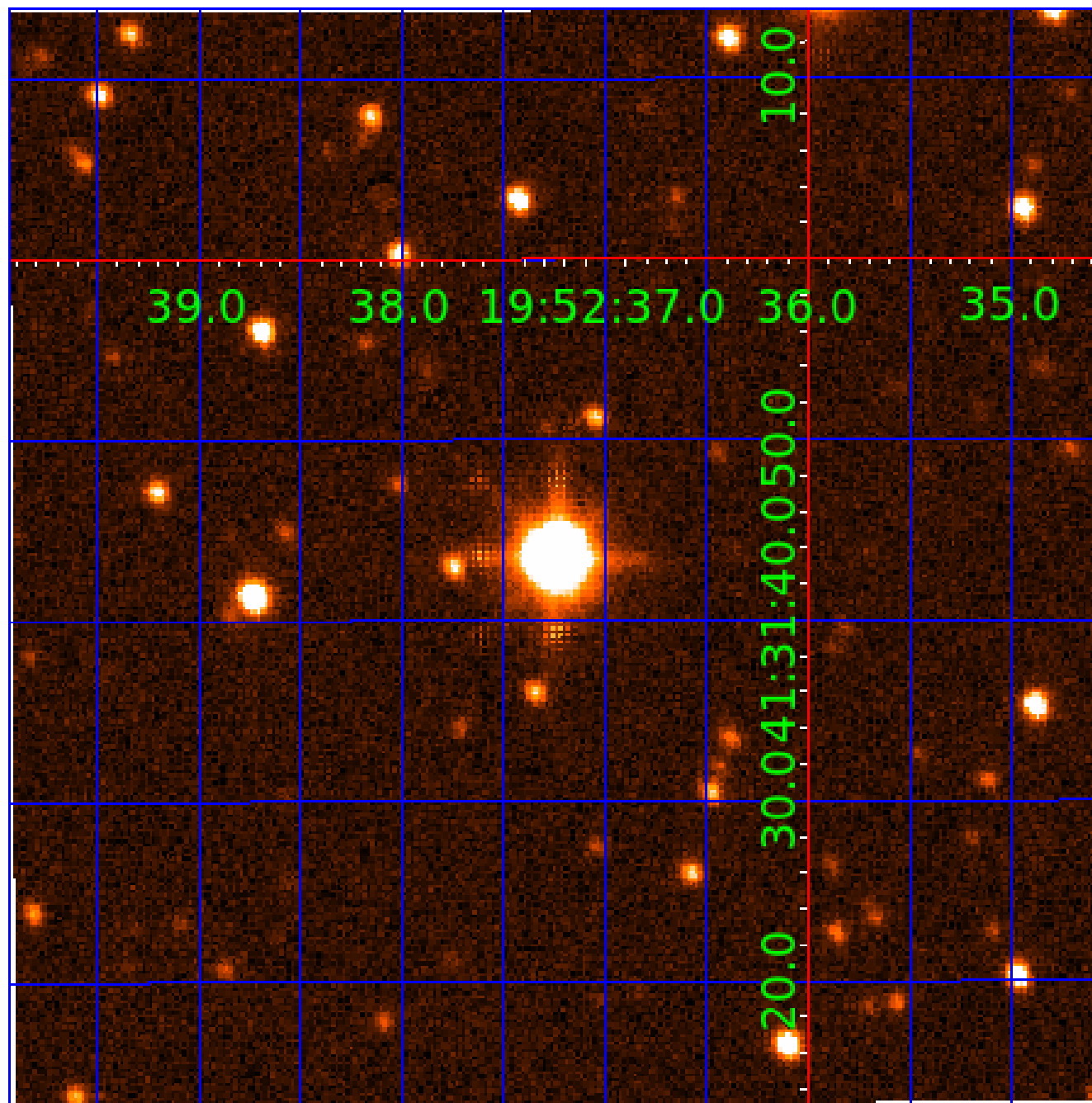


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination





# KIC 006229130

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
006229130-01	OBS	No	1.063127	132.307733	231.6	4.196	9.6	11.0	4.99	7507	13.69	95350.34
006229130-02	OBS	No	2.388008	131.908003	309.5	23.881	8.5	15.4	4.99	7507	8.85	32413.15

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006229130-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
006229130-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—TRANS_GAPPED—LPP_DV—LPP_ALT—CENT_SATURATED

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

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

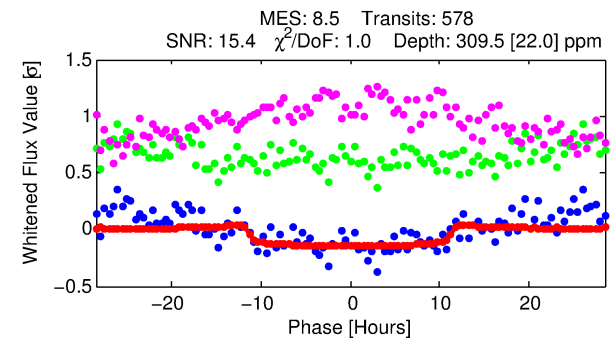
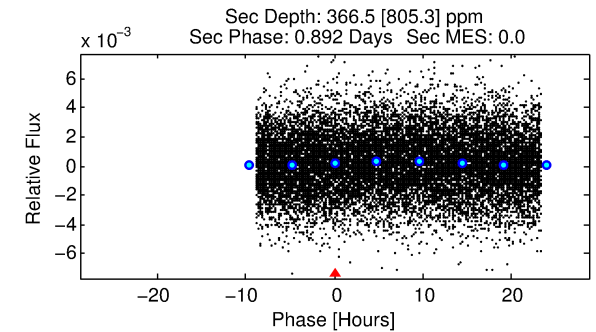
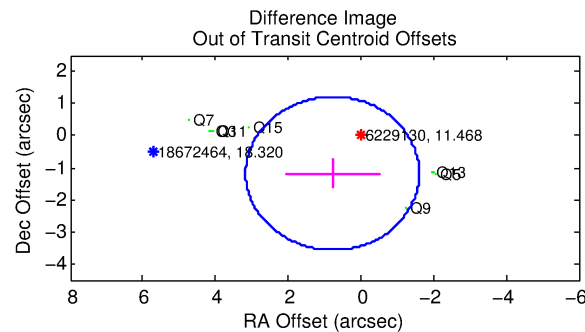
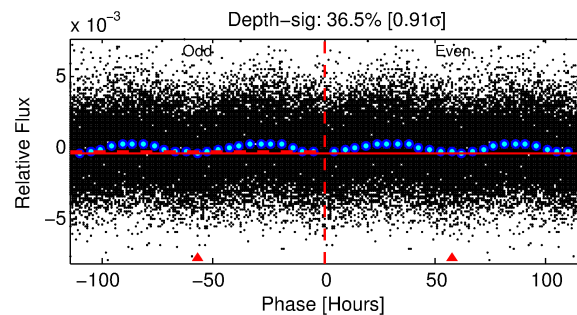
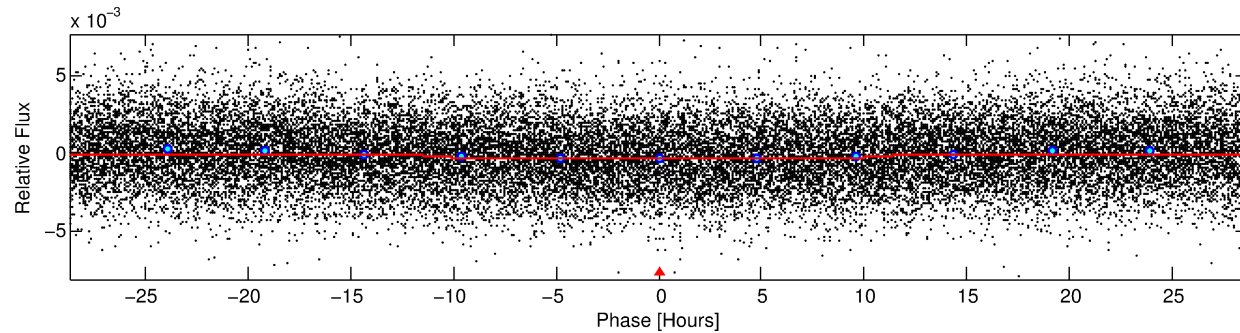
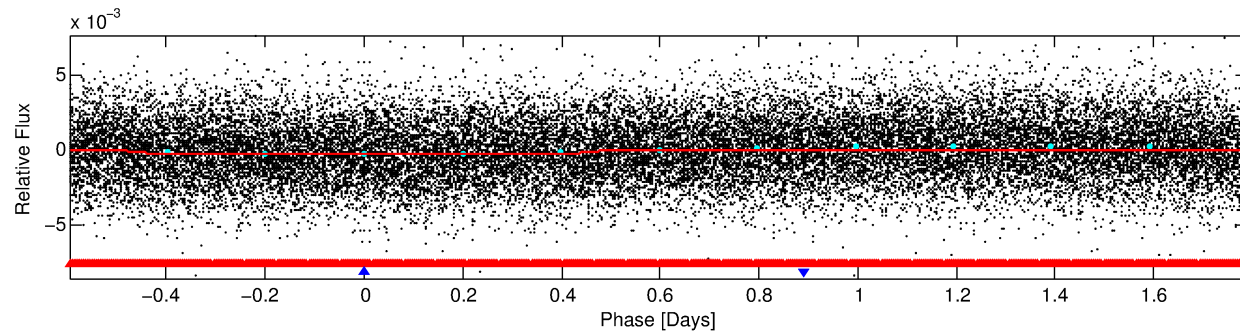
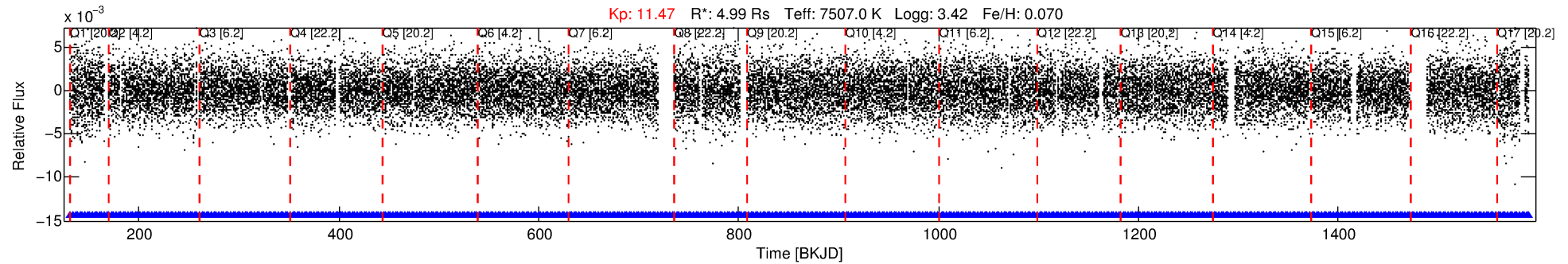
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 006229130-02

No Significant Match Found

# DV One-Page Summary

KIC: 6229130 Candidate: 2 of 2 Period: 2.388 d



## DV Fit Results:

Period = 2.38801 [0.00005] d  
Epoch = 131.9080 [0.0162] BKJD  
 $R_p/R^* = 0.0162$  [0.0036]  
 $a/R^* = 1.05$  [0.12]  
 $b = 0.05$  [22.76]  
 $S_{\text{eff}} = 32413.15$  [34188.74]  
 $T_{\text{eq}} = 3421$  [902] K  
 $R_p = 8.85$  [5.73]  $R_e$   
 $a = 0.0467$  [0.0293] AU  
 $A_g = 5.63$  [13.91] [0.33 $\sigma$ ]  
 $T_{\text{eff}} = 8149$  [4579] K [1.01 $\sigma$ ]

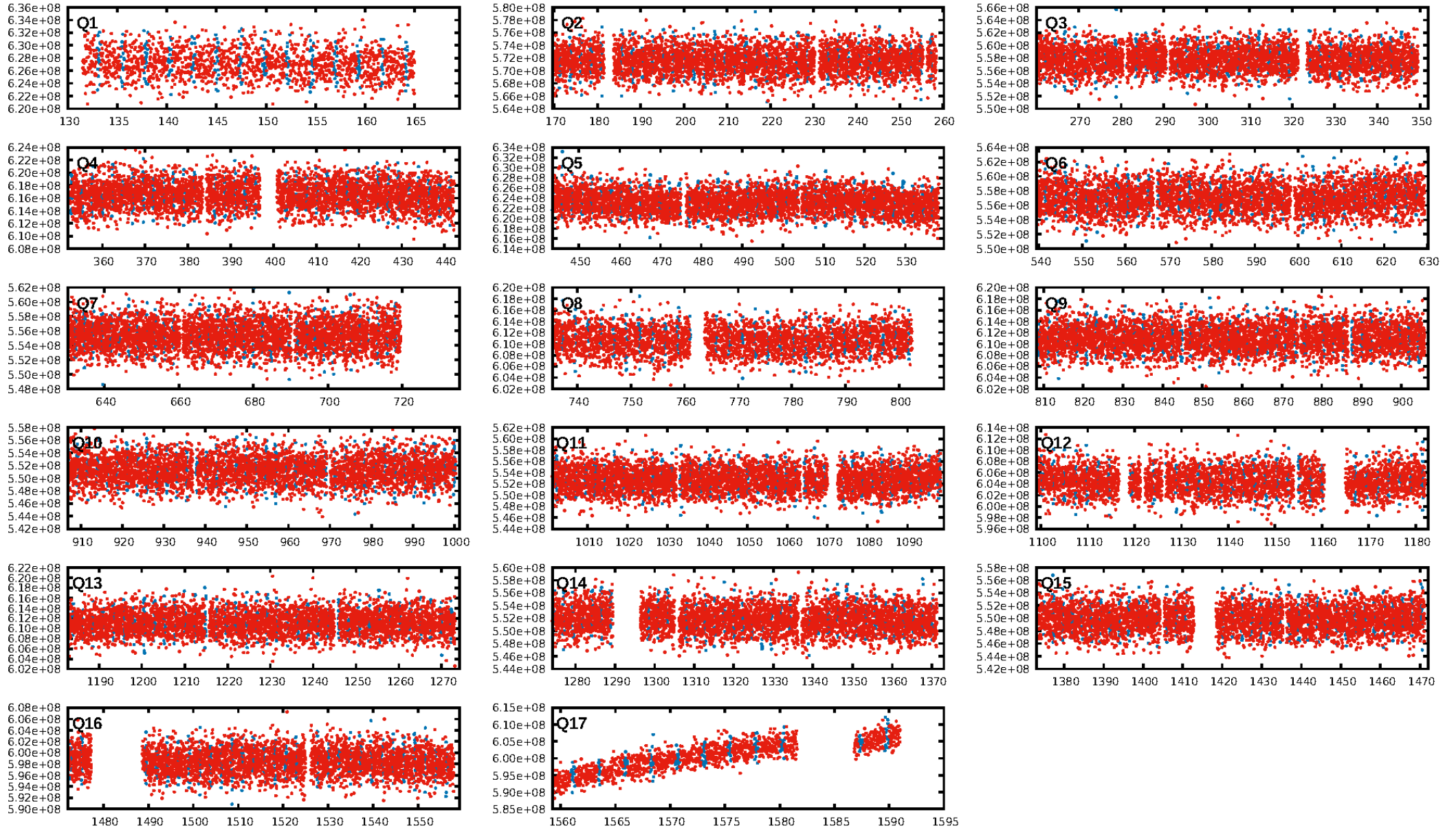
## DV Diagnostic Results:

ShortPeriod-sig: 81.0% [1.31 $\sigma$ ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [551/551]  
GhostDiagnostic-chr: 1.103  
Centroid-sig: 0.0%  
Centroid-so: 0.173 arcsec [6.43 $\sigma$ ]  
OotOffset-rm: 1.416 arcsec [1.78 $\sigma$ ]  
KicOffset-rm: 1.342 arcsec [1.73 $\sigma$ ]  
OotOffset-st: 0/4/0/3 [7]  
KicOffset-st: 0/4/0/3 [7]  
DiffImageQuality-fgm: 0.14 [1/7]  
DiffImageOverlap-fno: 0.00 [0/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 18:28:35 Z

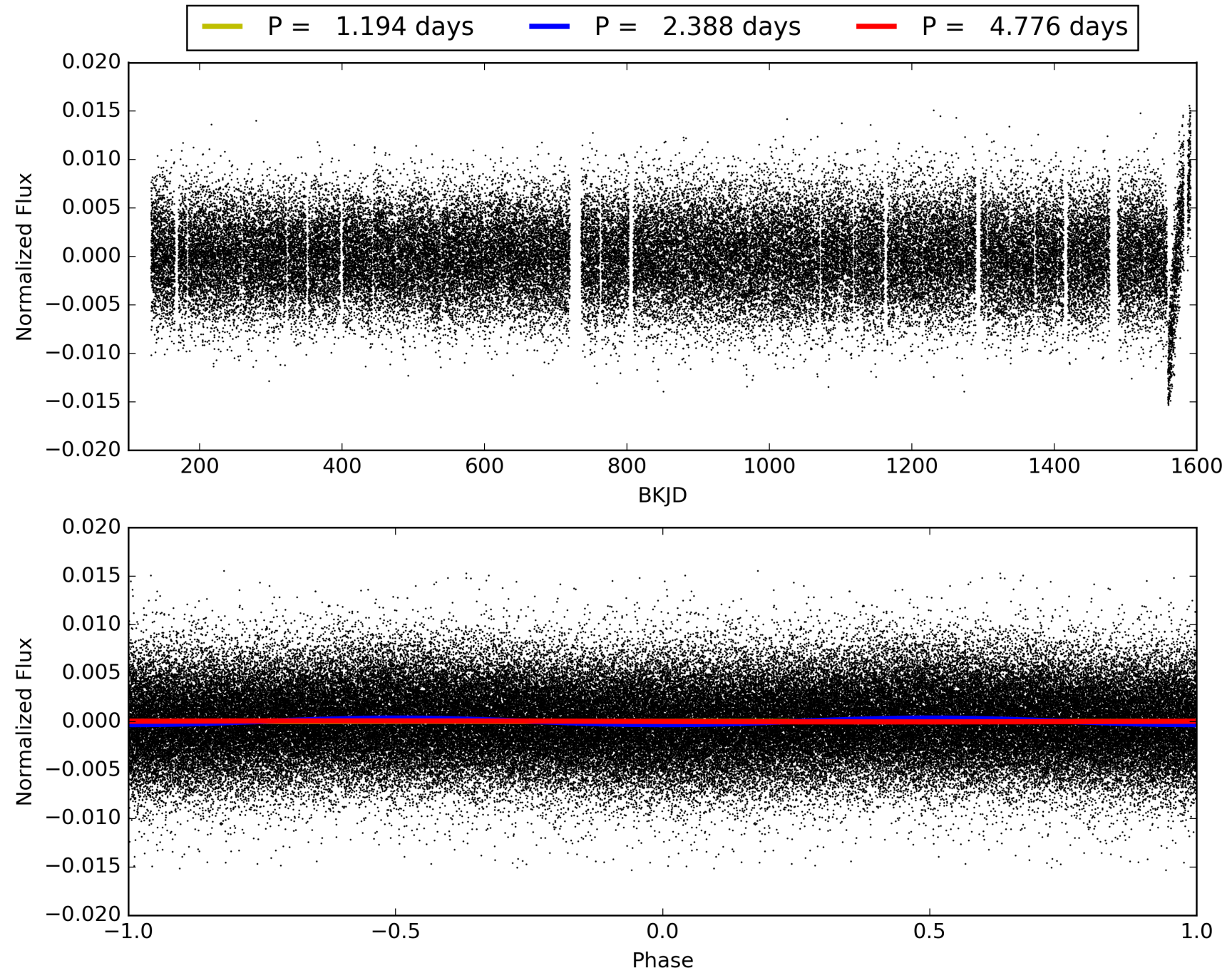
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 006229130-02, PDC Light Curves





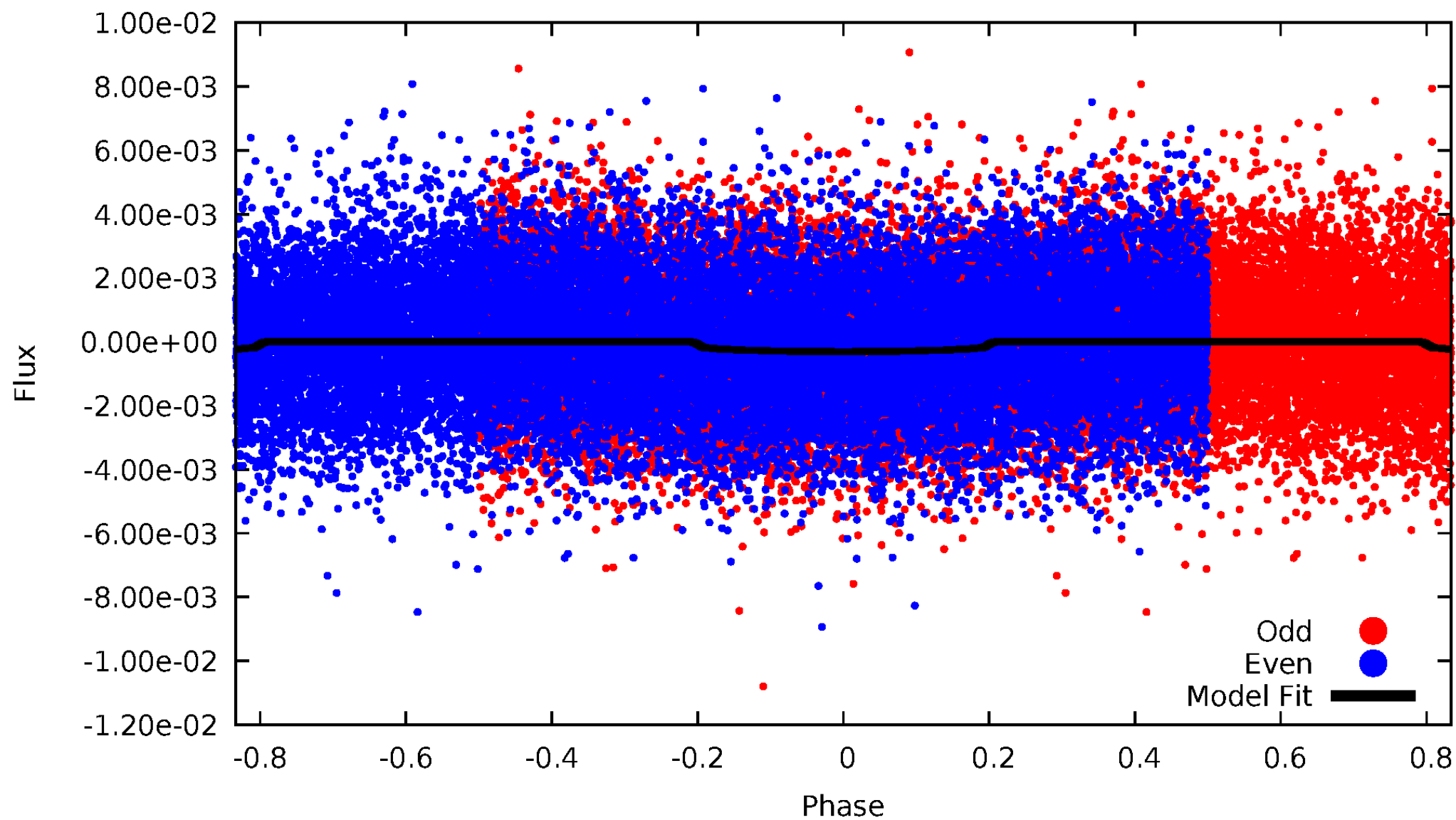
# TCE 006229130-02





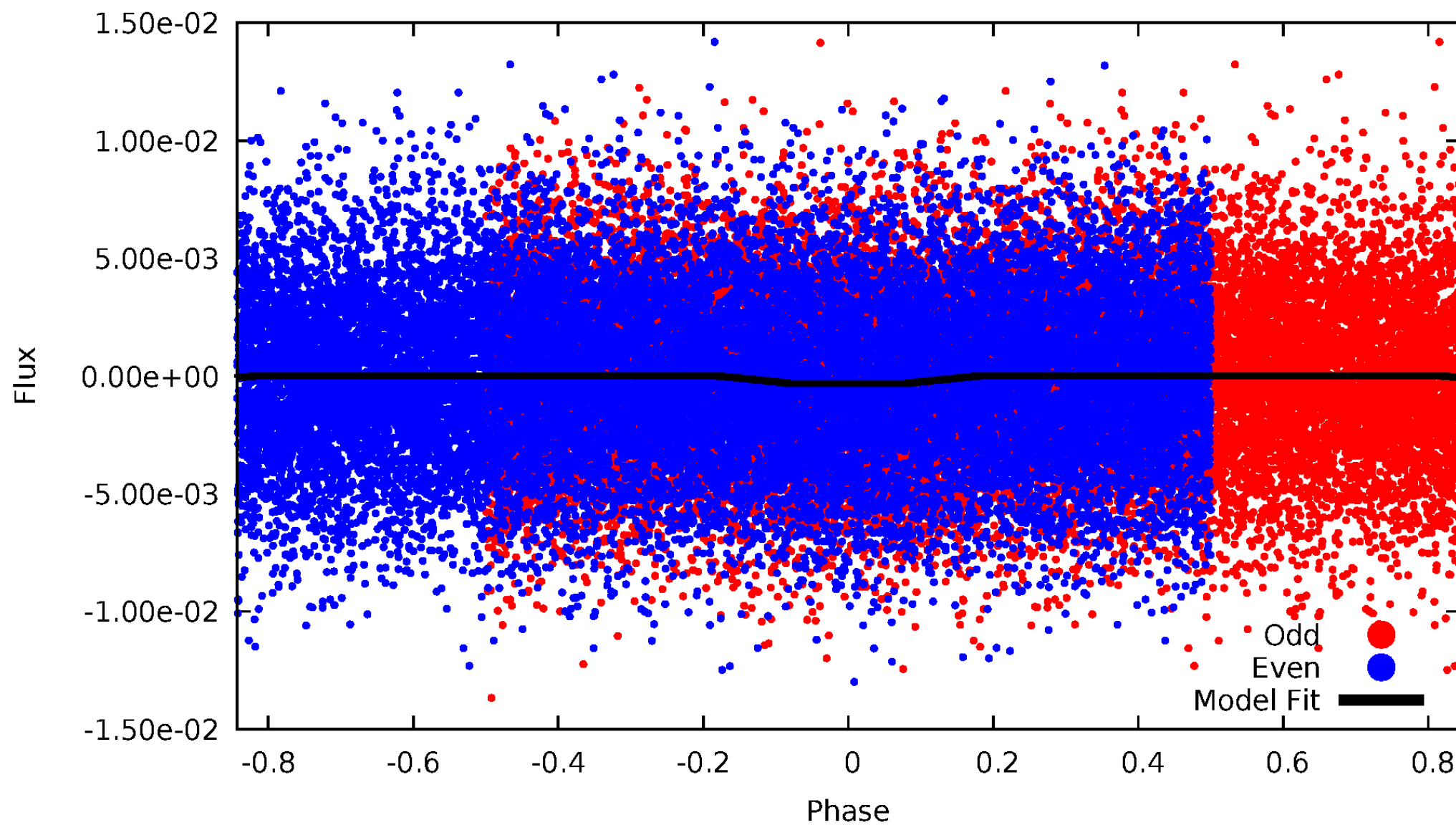
DV Odd/Even

TCE 006229130-02



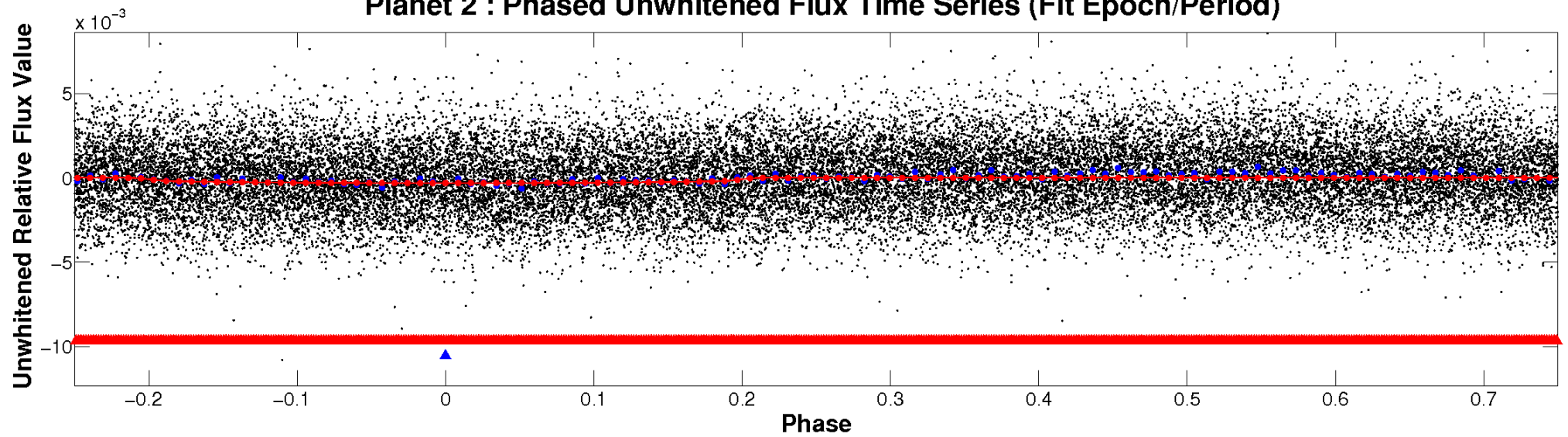
# ALT Odd/Even

TCE 006229130-02

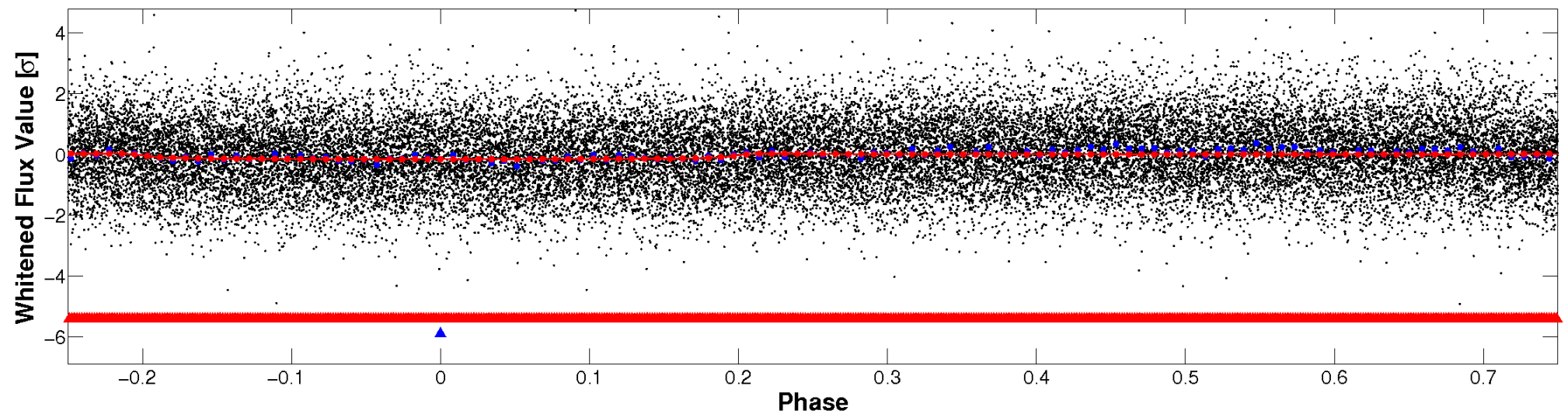


# Non-Whitened Vs. Whitened Light Curve

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

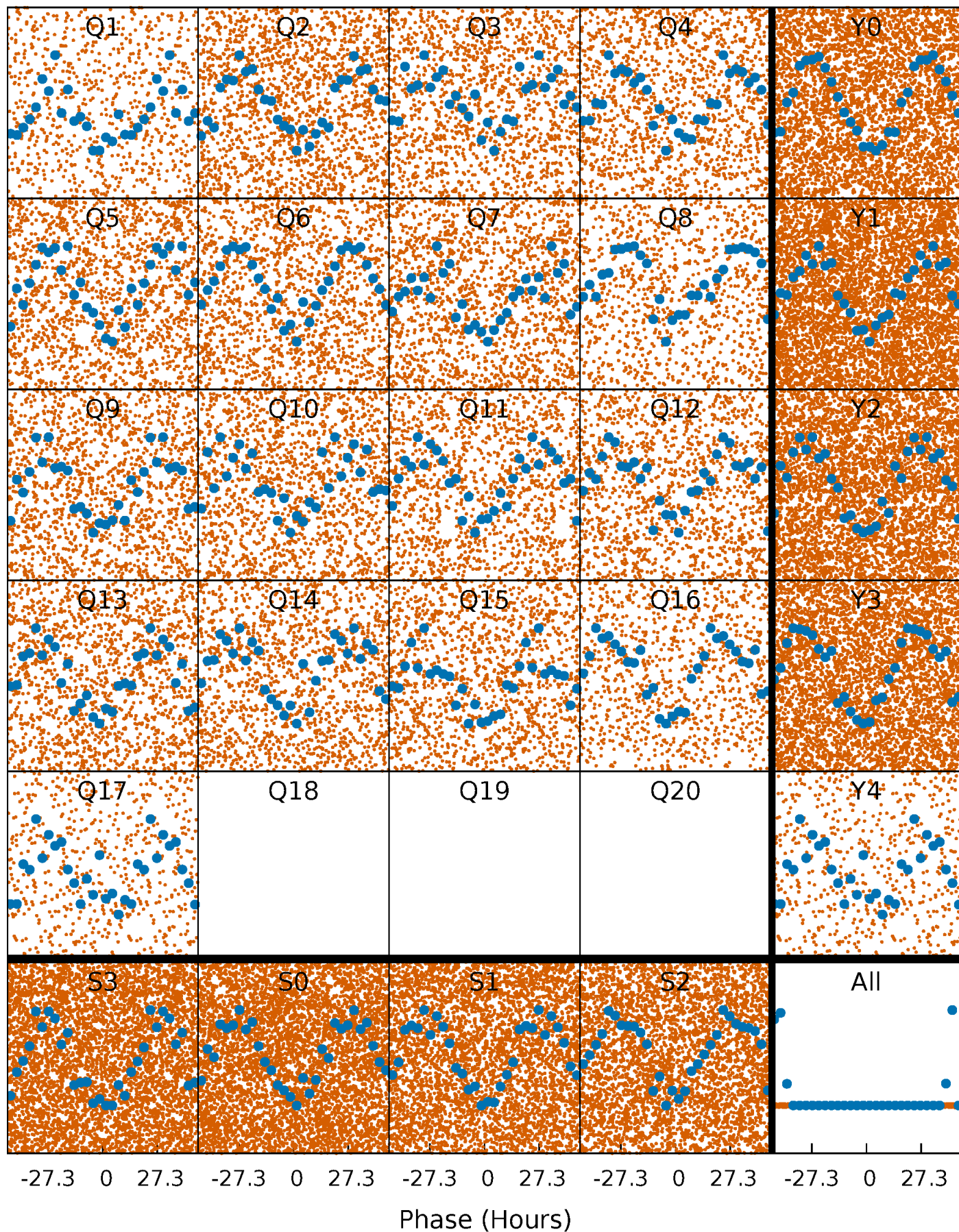


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

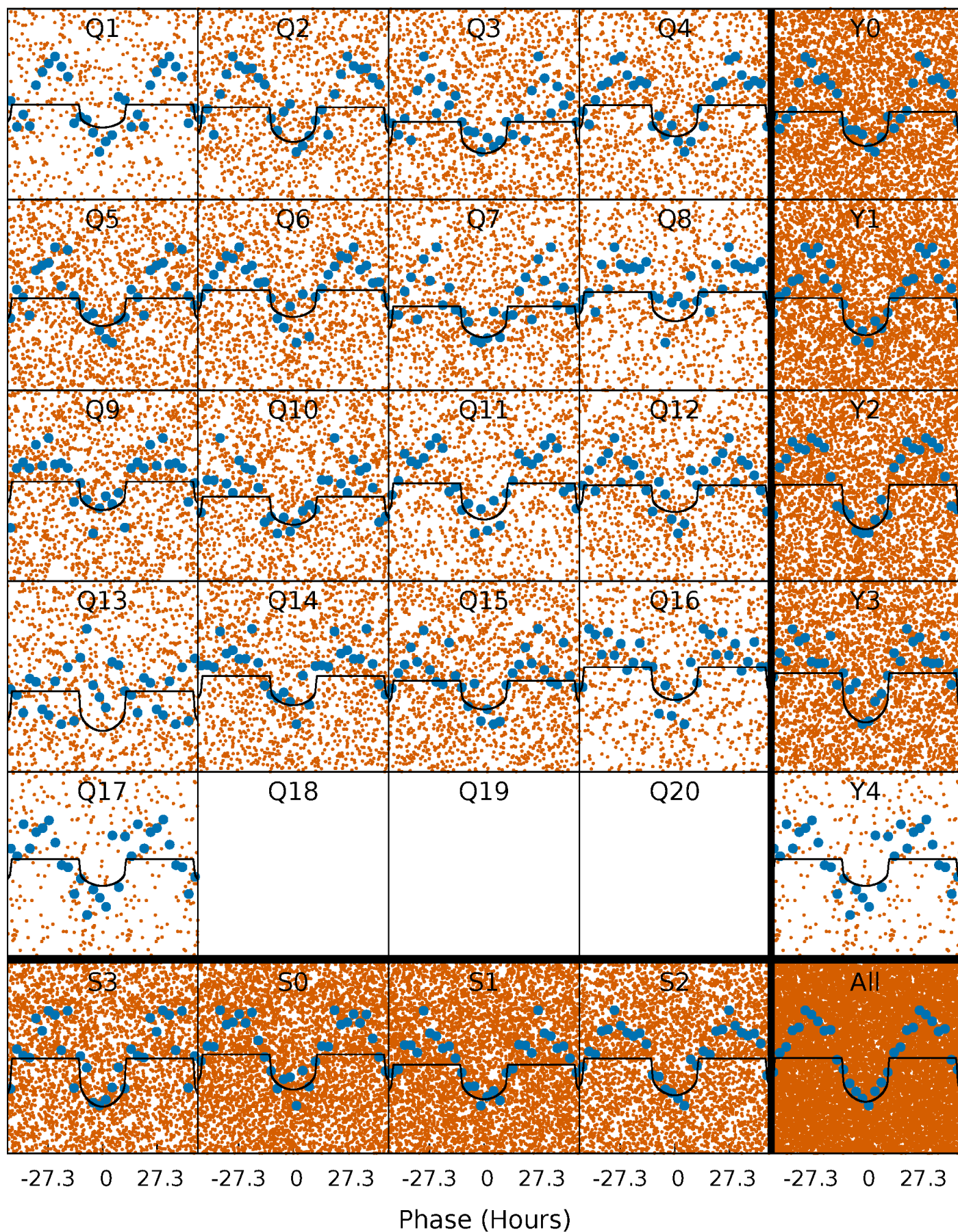
TCE 006229130-02 P= 2.388008 Days  $T_0=131.908003$  (BKJD)





# DV Quarter-Phased Transit Curves

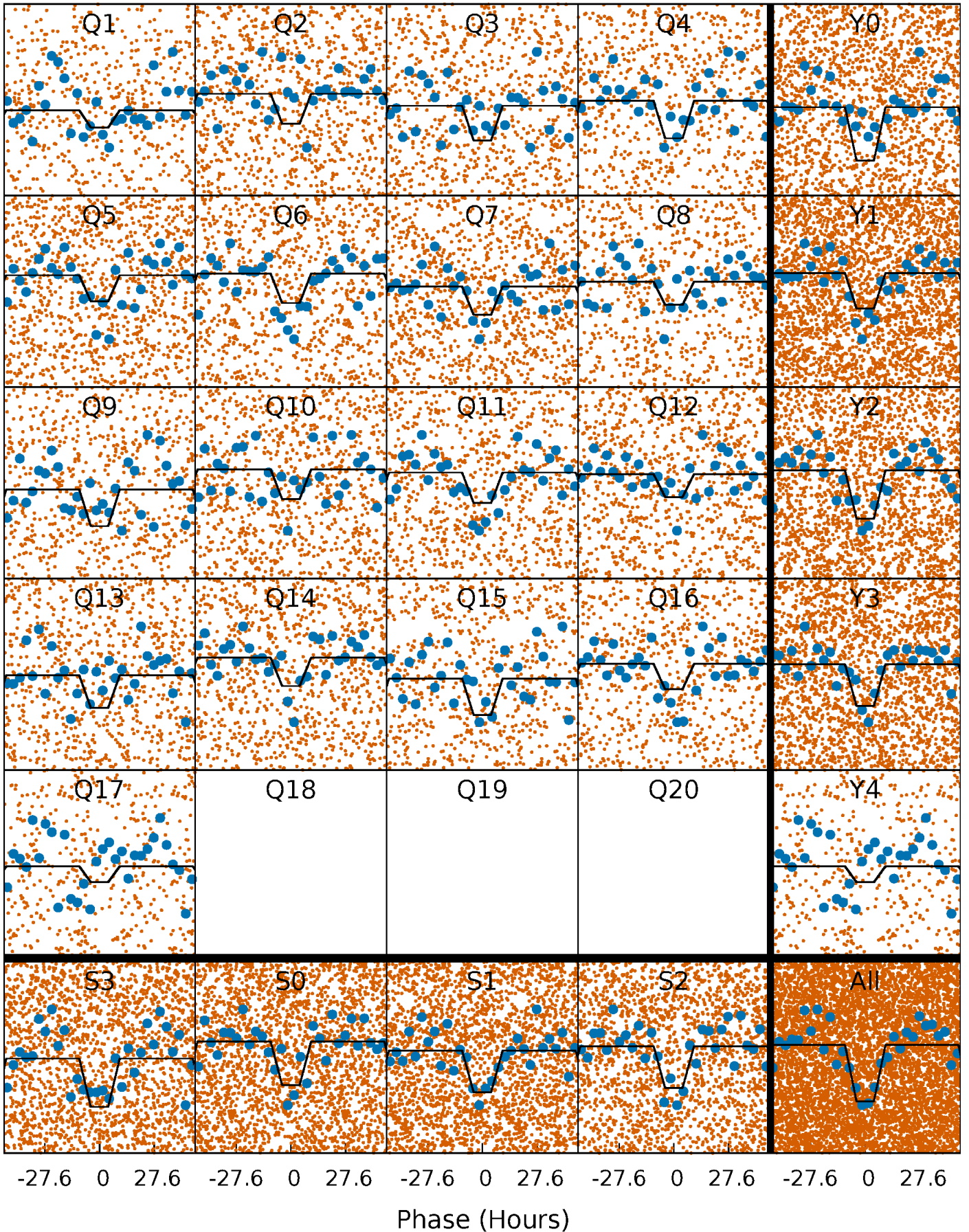
TCE 006229130-02 P= 2.388008 Days  $T_0=131.908003$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

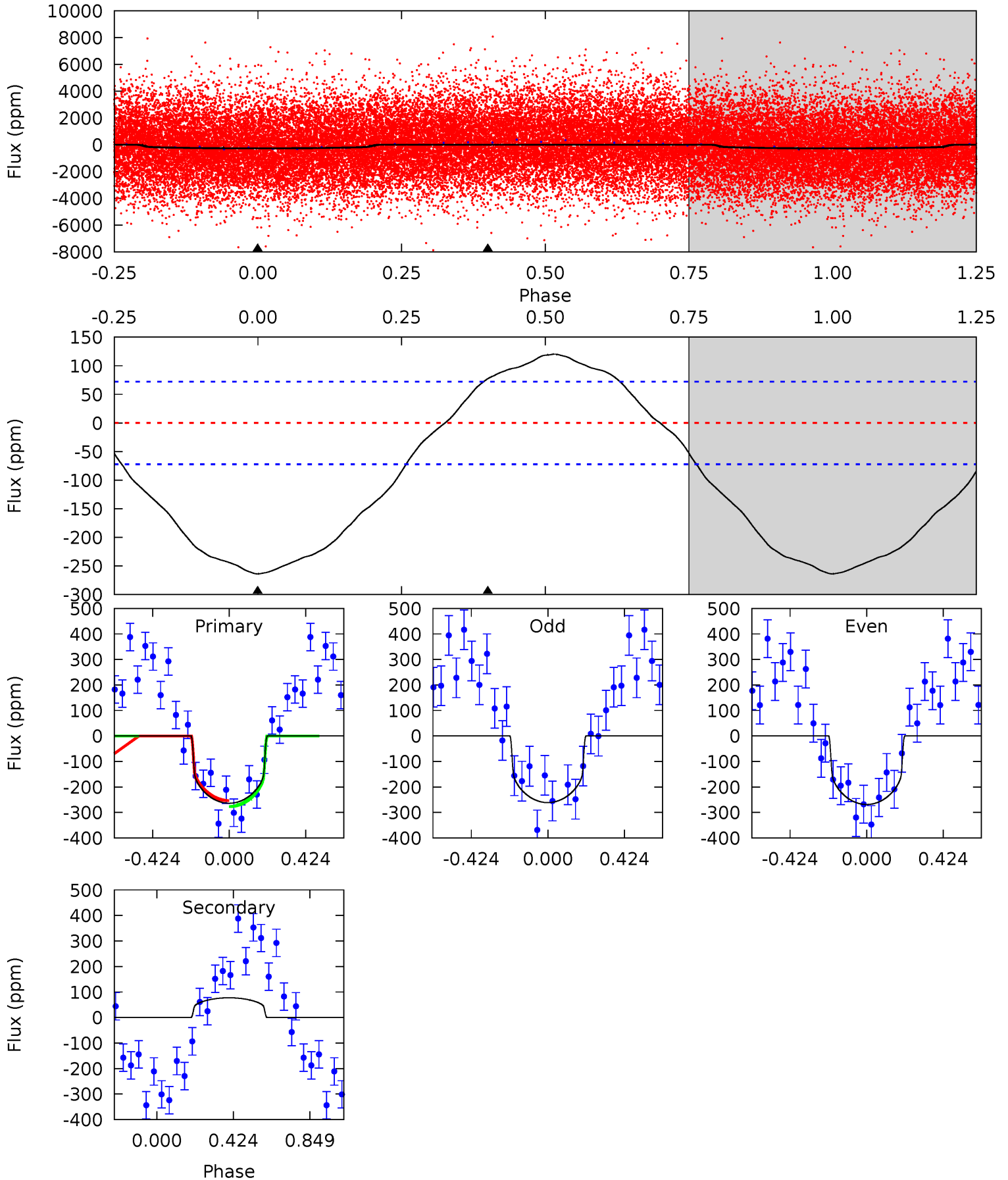
TCE 006229130-02 P= 2.388088 Days  $T_0=131.859742$  (BKJD)



# DV Model-Shift Uniqueness Test

006229130-02, P = 2.388008 Days, E = 129.519995 Days

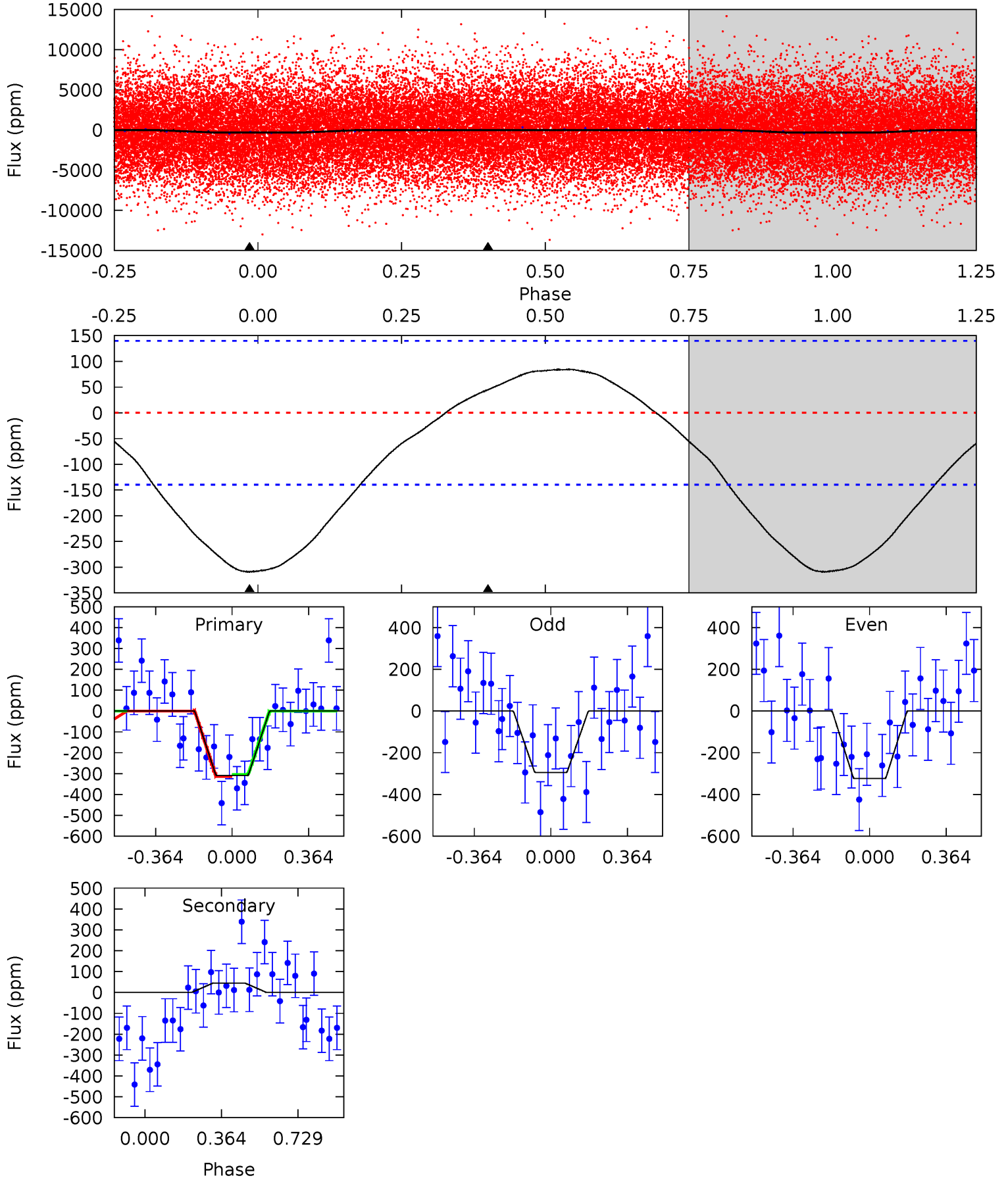
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
15.6	-4.57	0	0	4.25	0.80	1.68	15.6	15.6	-4.57	-4.57	0.22	1.00	0.31	0.72



# Alt Model-Shift Uniqueness Test

006229130-02, P = 2.388088 Days, E = 129.471654 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
9.47	-1.37	0	0	4.29	0.91	0.79	9.47	9.47	-1.37	-1.37	0.44	0.95	0.21	0.16



### Stellar Parameters For KIC 006229130

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$7507^{+209}_{-339}$	$3.420^{+0.623}_{-0.208}$	$0.070^{+0.200}_{-0.300}$	$4.989^{+1.639}_{-3.043}$	$2.387^{+0.196}_{-0.783}$	$0.027^{+0.253}_{-0.014}$
	+3%/-5%	+18%/-6%	+286%/-429%	+33%/-61%	+8%/-33%	+935%/-53%
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 006229130-02 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$77 \pm 17$	$7.86^{+3.05}_{-2.77}$	$4641^{+572}_{-732}$	$-5778^{+529}_{-674}$	$-1.428^{+0.710}_{-1.789}$
Alt.	$45 \pm 33$	$8.92^{+3.23}_{-2.91}$	$4684^{+472}_{-738}$	$-5004^{+688}_{-730}$	$-0.589^{+0.464}_{-0.890}$

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

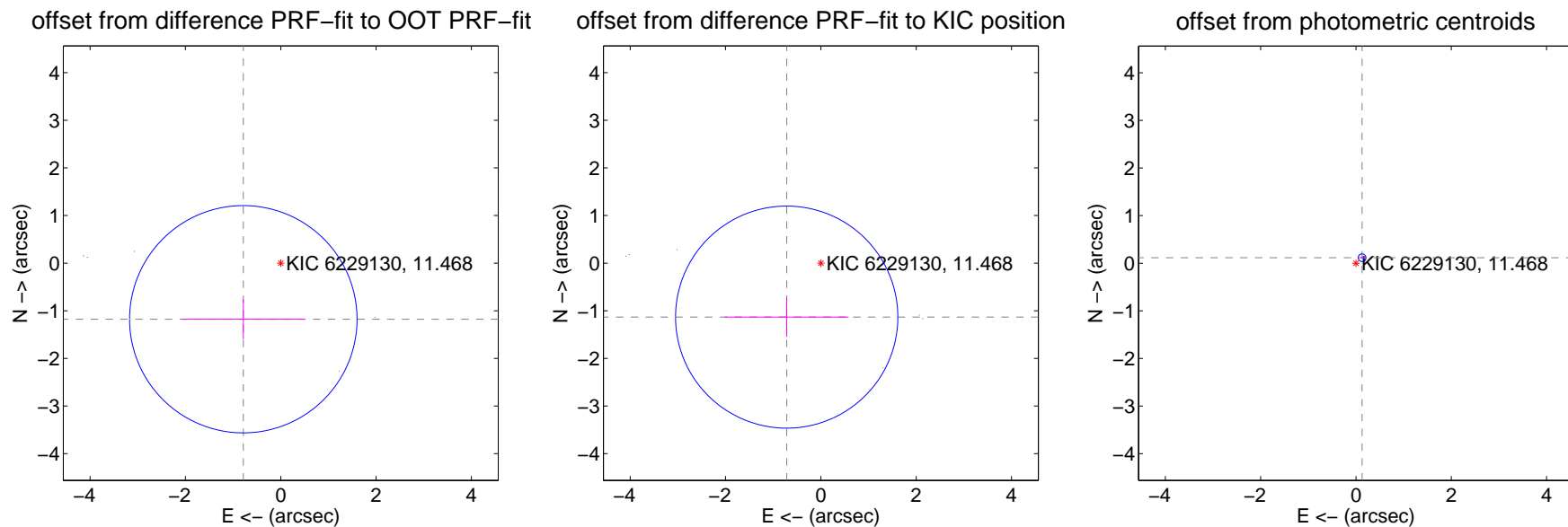
## DV Centroid Data

Supplemental centroid analysis for 006229130-02. **Kepler magnitude: 11.47.** Transit SNR 15.42

**There are 1 quarters with good PRF difference image offsets**

The direct PRF centroid is offset from the target star catalog position by about 0.06 arcsec

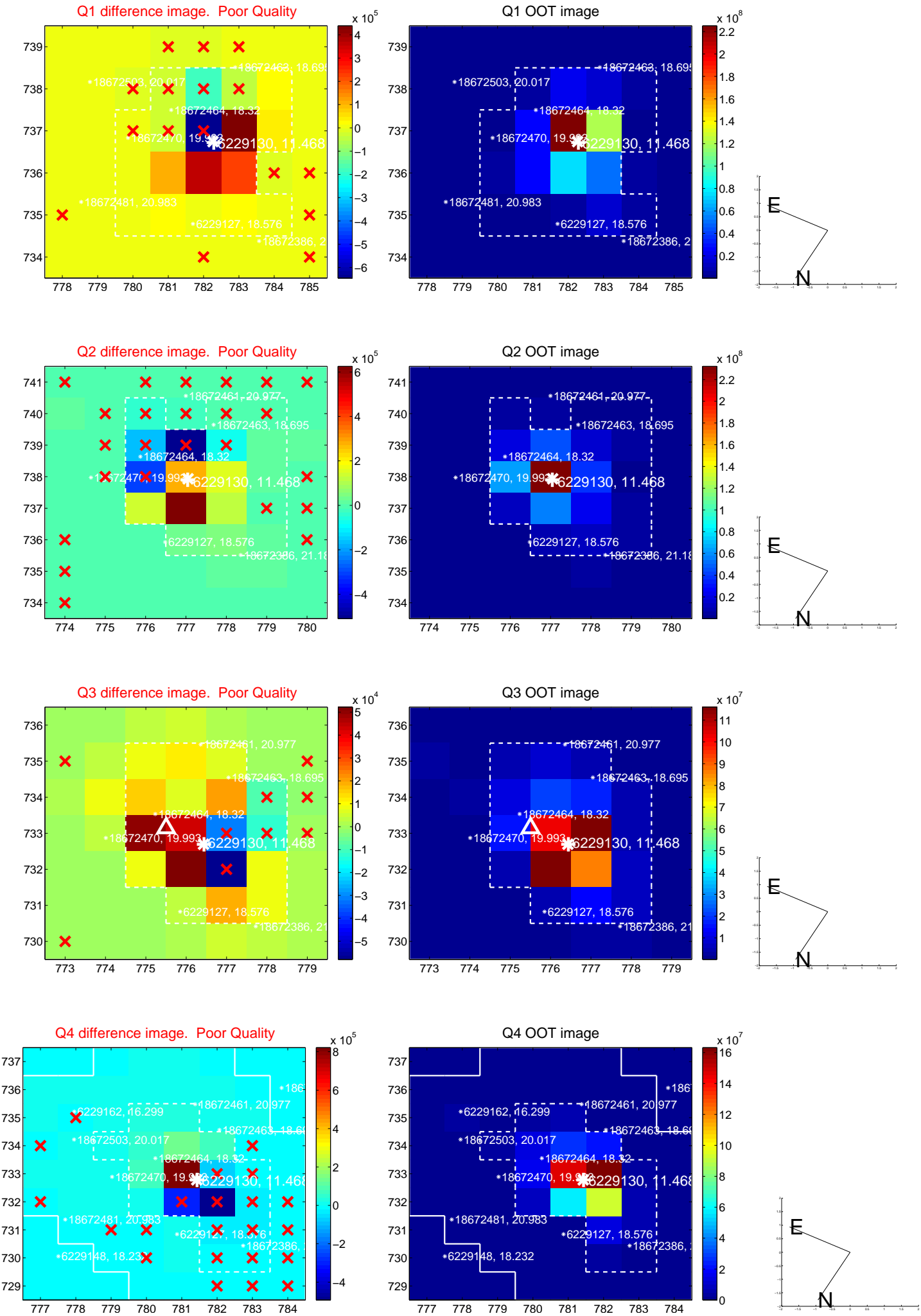
	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.416 \pm 0.796$	1.78	$0.785 \pm 1.290$	$-1.178 \pm 0.418$
PRF-fit source offset from KIC position	$1.342 \pm 0.777$	1.73	$0.717 \pm 1.300$	$-1.134 \pm 0.413$
photometric centroid source offset	<b><math>0.17 \pm 0.03</math></b>	<b>6.43</b>	$-0.13 \pm 0.03$	$0.12 \pm 0.02$



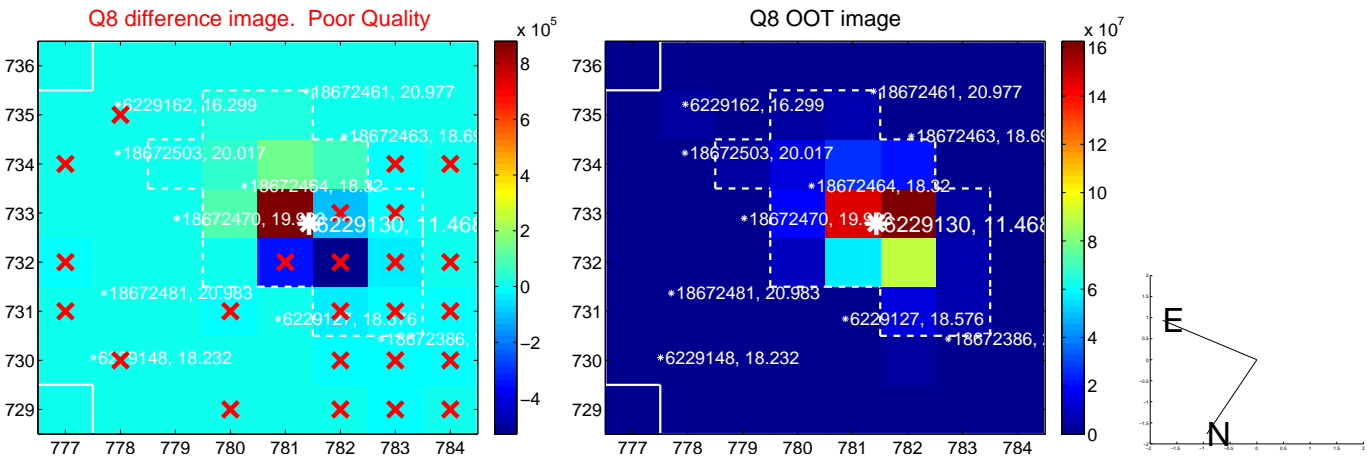
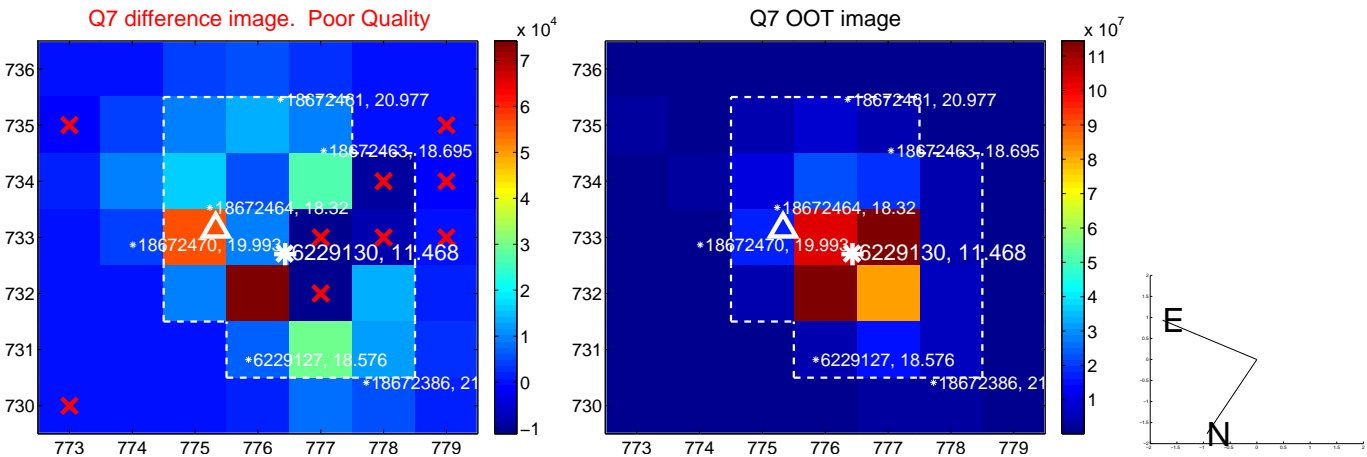
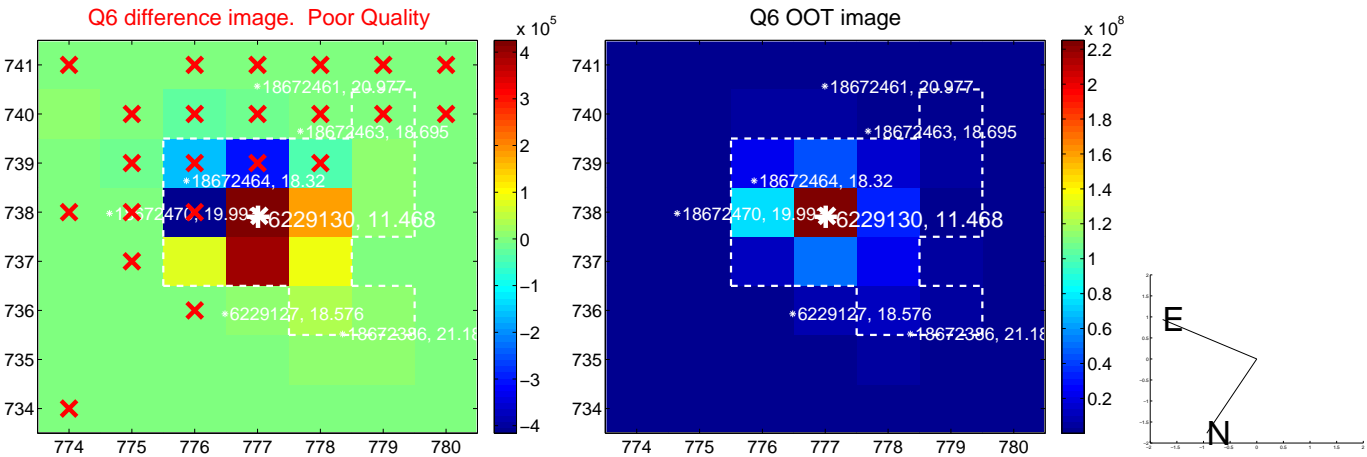
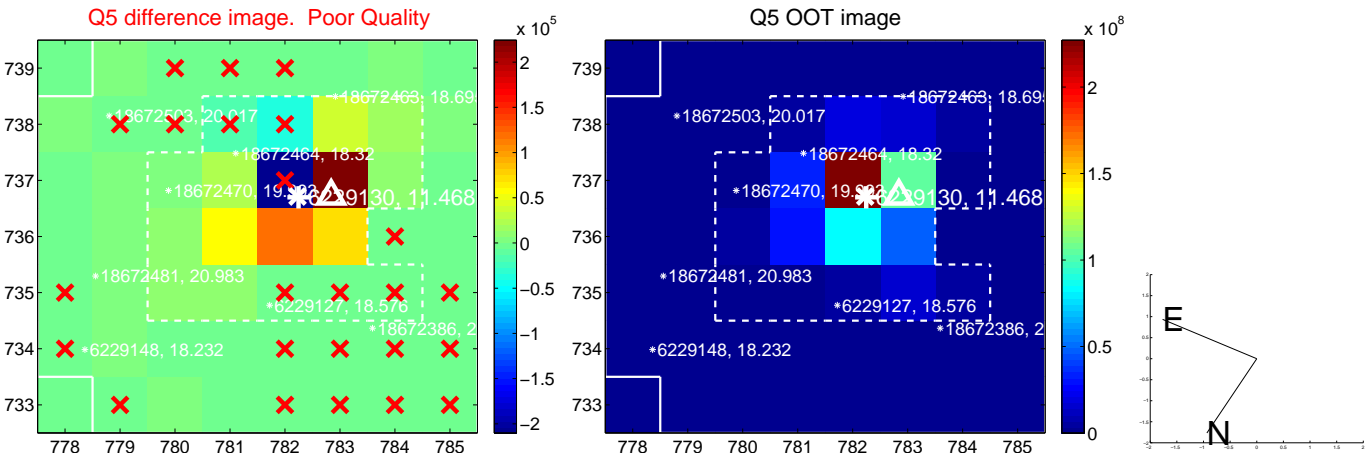
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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



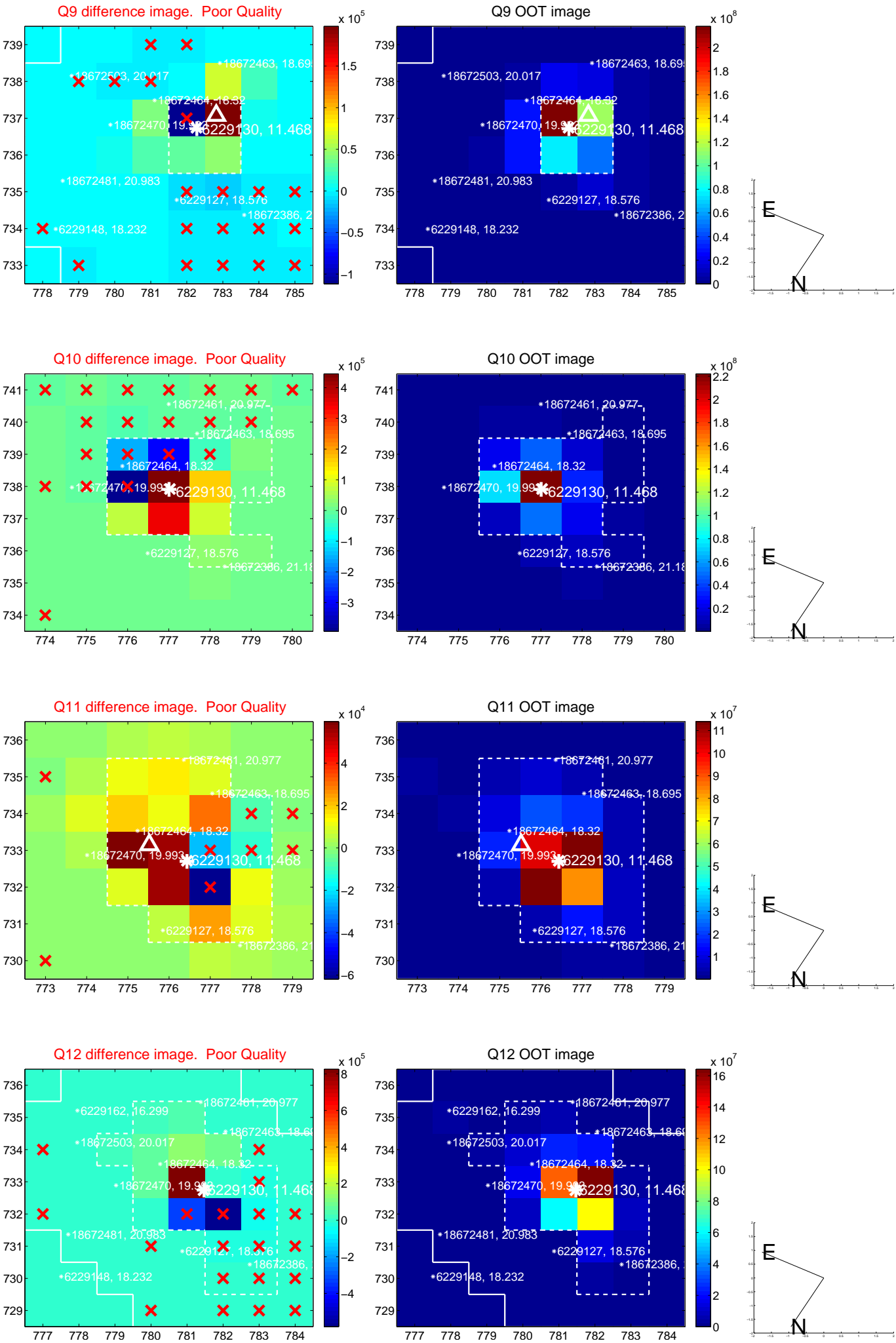
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



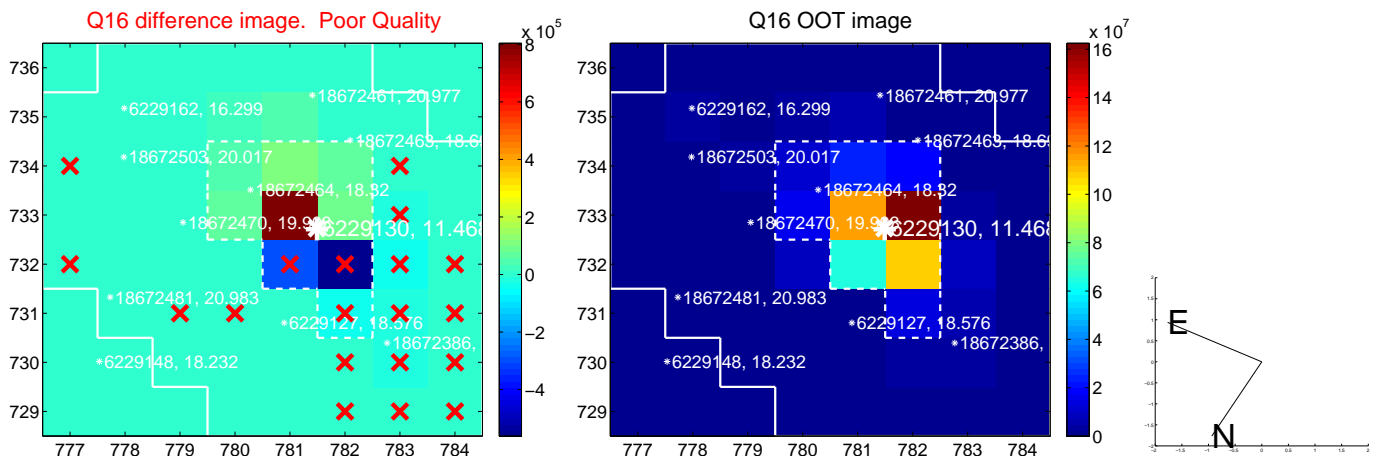
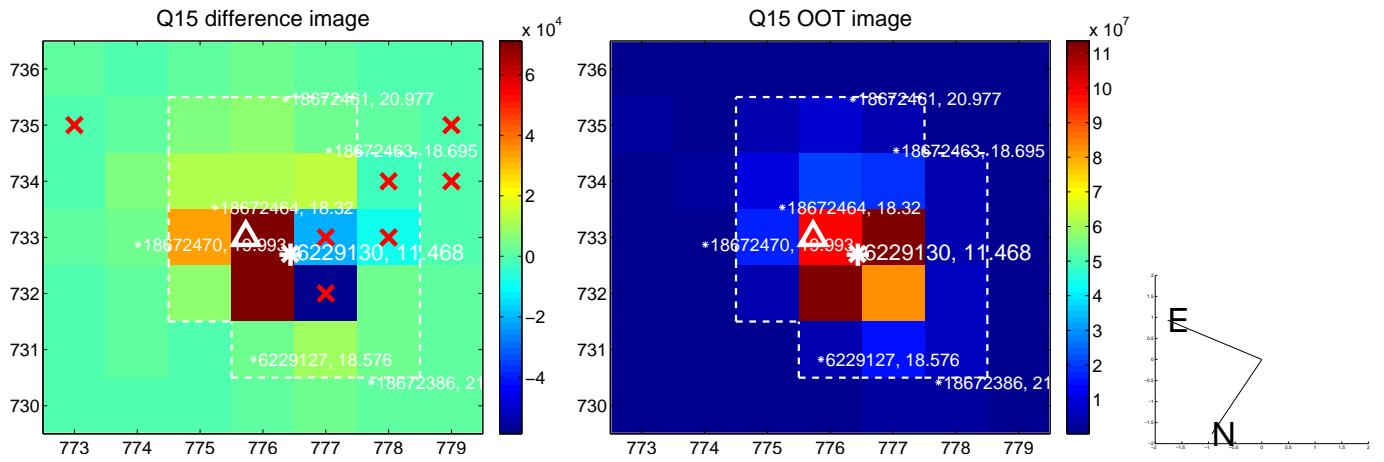
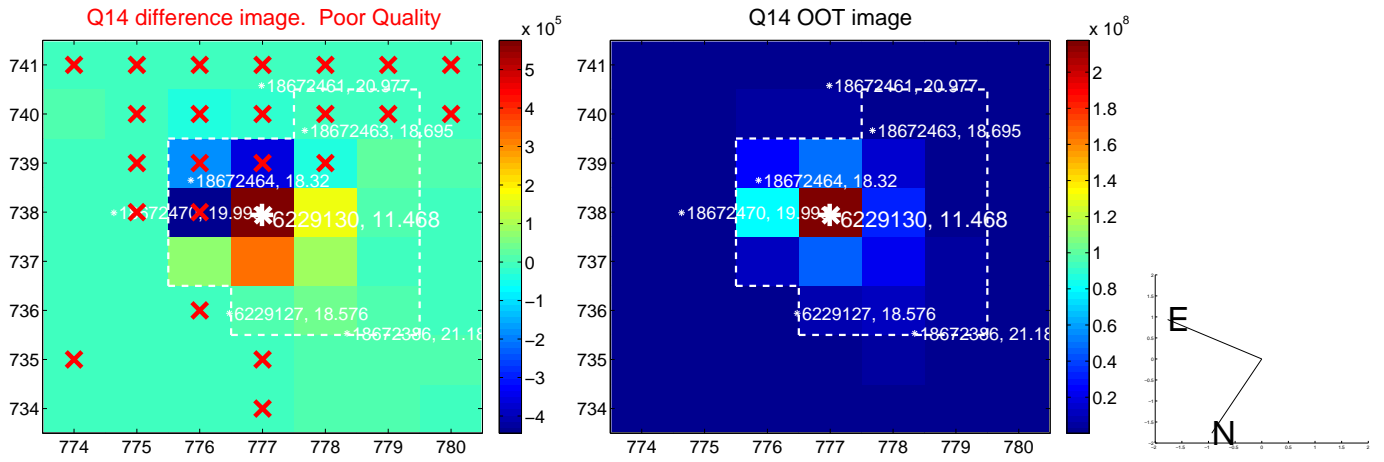
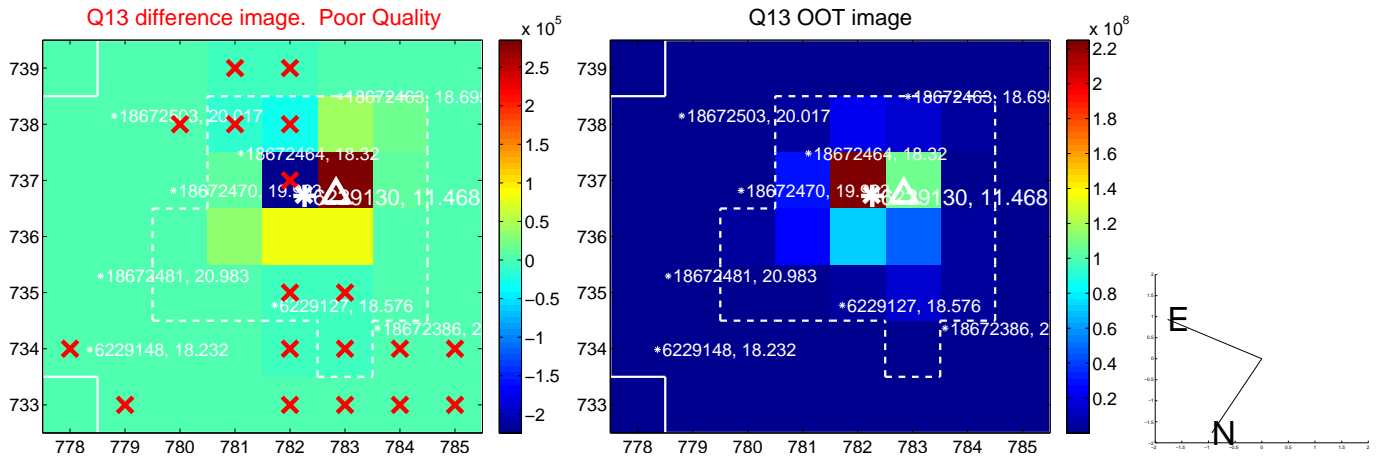
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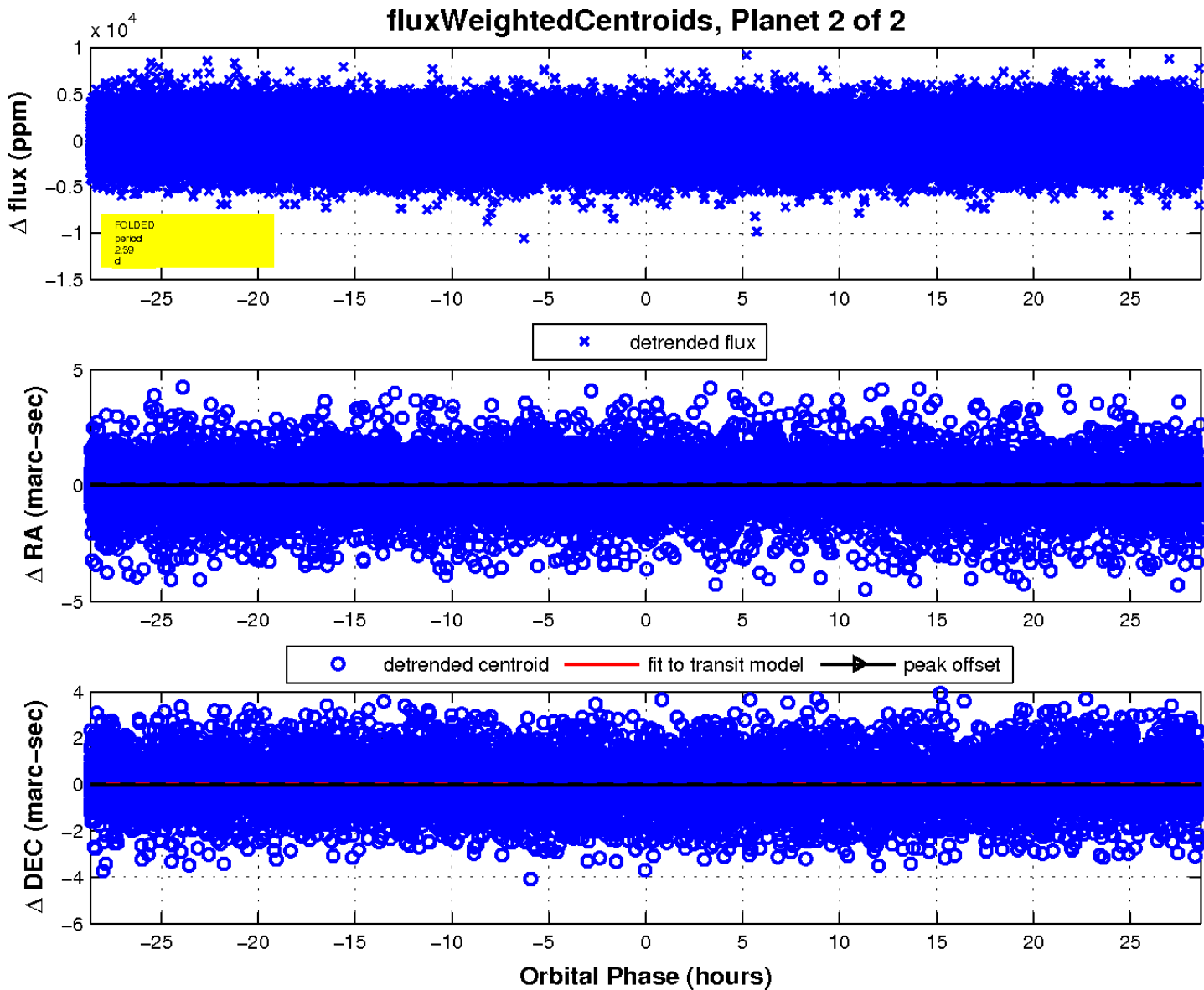
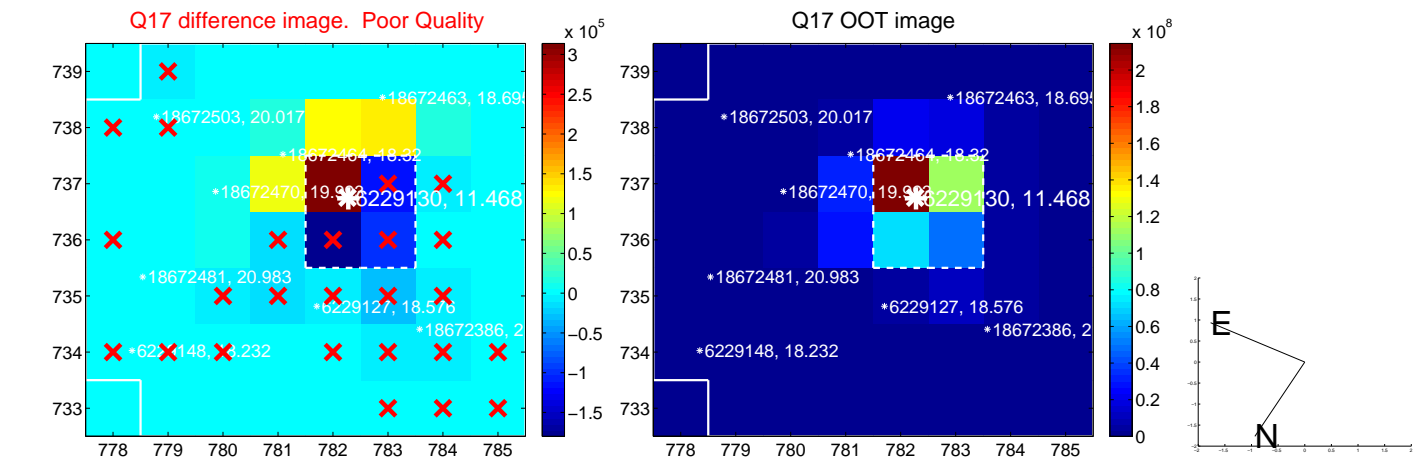
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UKIRT Image

Declination

