

# KIC 007741987

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007741987-01	OBS	No	1.259365	131.617515	10.2	9.143	14.0	0.5	0.25	3360	0.08	35.70
007741987-02	OBS	No	15.876596	141.074101	314.7	11.660	10.5	2.9	0.25	3360	0.46	1.22
007741987-04	OBS	No	15.584793	146.416289	752.0	4.167	9.1	5.3	0.25	3360	1.19	1.25
007741987-05	OBS	No	4.115441	133.440295	415.1	5.104	8.7	6.1	0.25	3360	0.59	7.36
007741987-06	OBS	No	9.997179	139.073486	1343.7	1.821	7.8	8.9	0.25	3360	0.92	2.25

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007741987-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—CENT_KIC_POS
007741987-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_ZUMA_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_KIC_POS
007741987-04	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_KIC_POS—HALO_GHOST
007741987-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_KIC_POS
007741987-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_KIC_POS

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

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

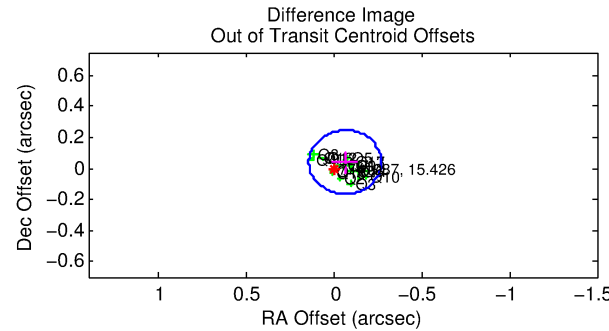
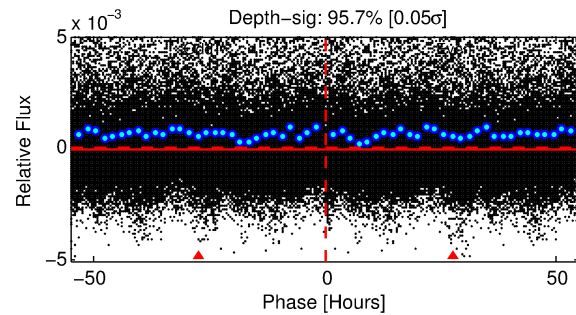
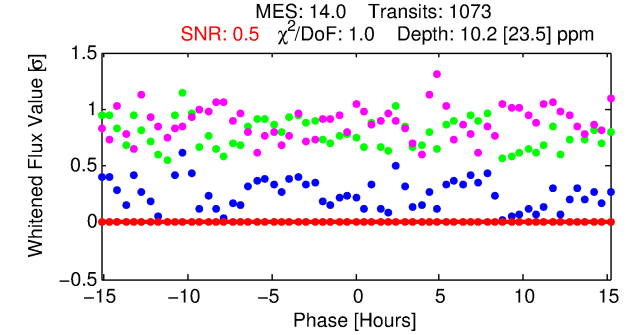
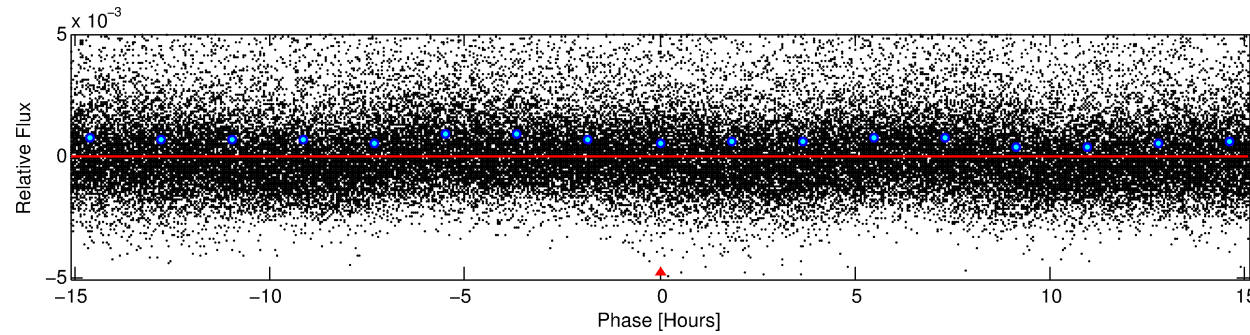
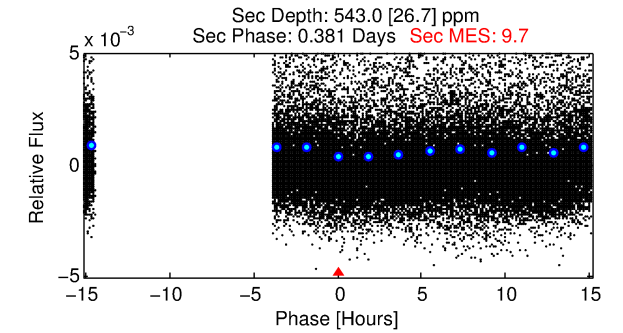
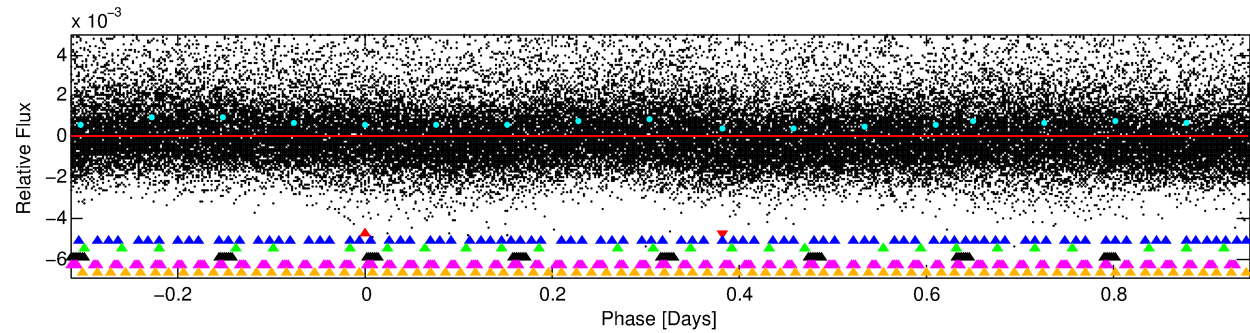
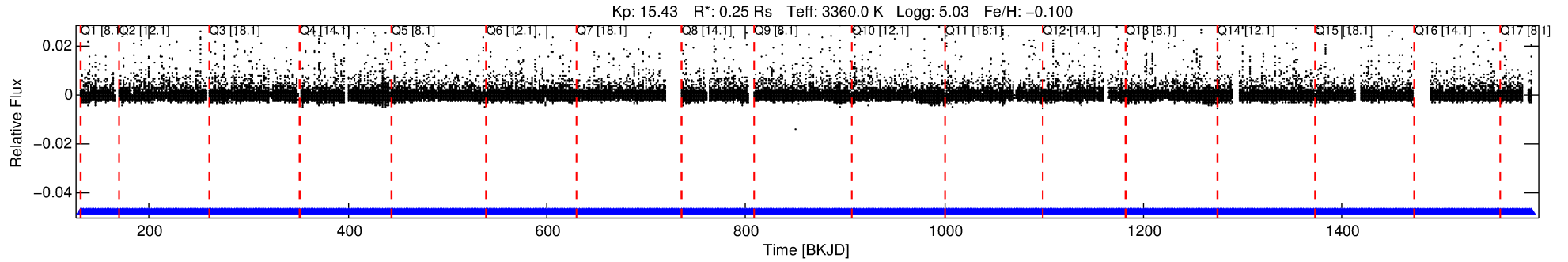
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 007741987-01

No Significant Match Found

# DV One-Page Summary

KIC: 7741987 Candidate: 1 of 6 Period: 1.259 d



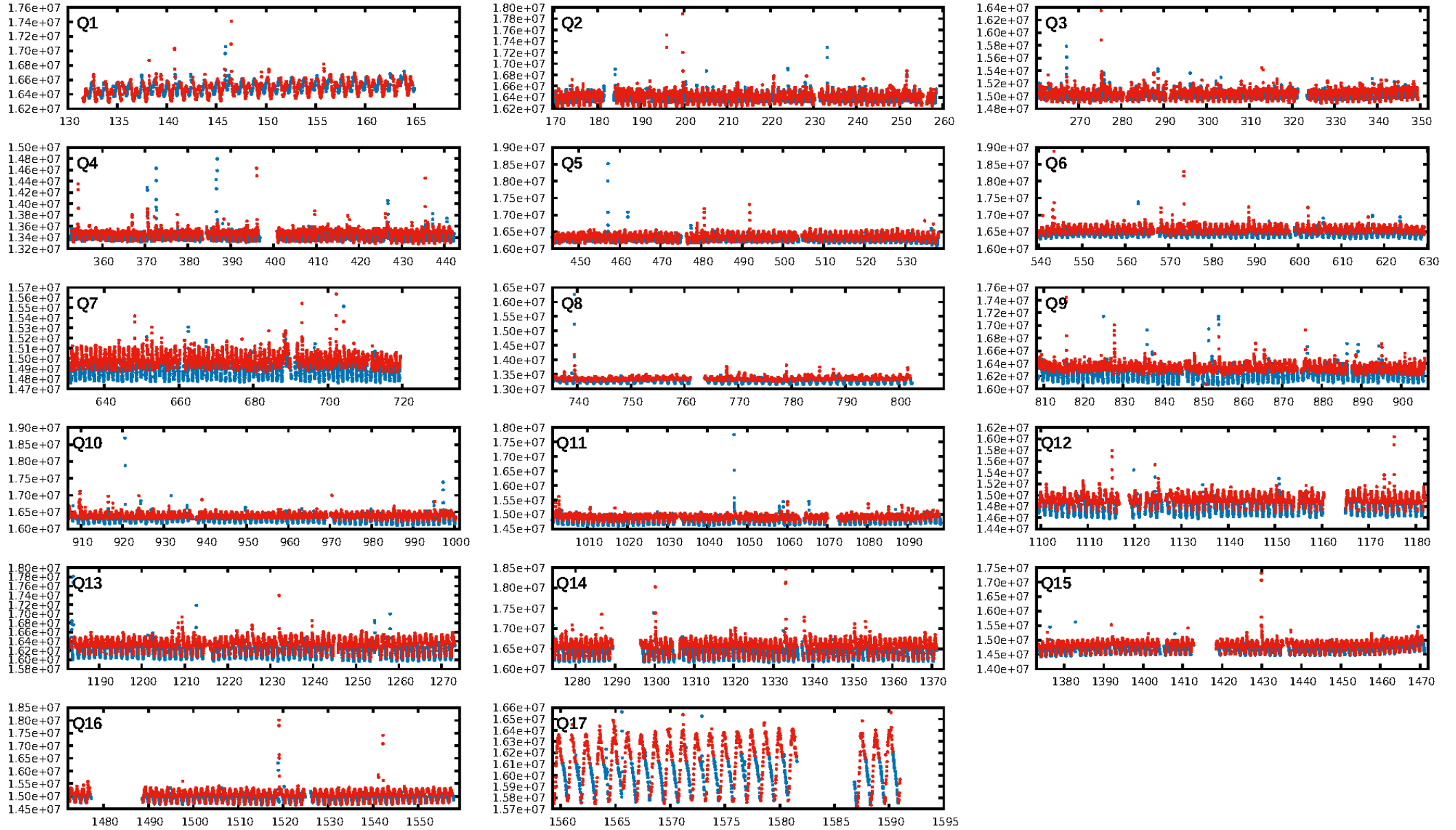
## DV Fit Results:

Period = 1.25936 [0.00032] d  
Epoch = 131.6175 [0.0814] BKJD  
Rp/R\* = 0.0029 [0.0442]  
a/R\* = 1.21 [25.70]  
b = 0.34 [175.55]  
Seff = 35.69 [4.23]  
Teff = 623 [18] K  
Rp = 0.08 [1.22] Re  
a = 0.0144 [0.0013] AU  
Ag = 9372.46 [282853.77] [0.03σ]  
Teffp = 9482 [71537] K [0.12σ]

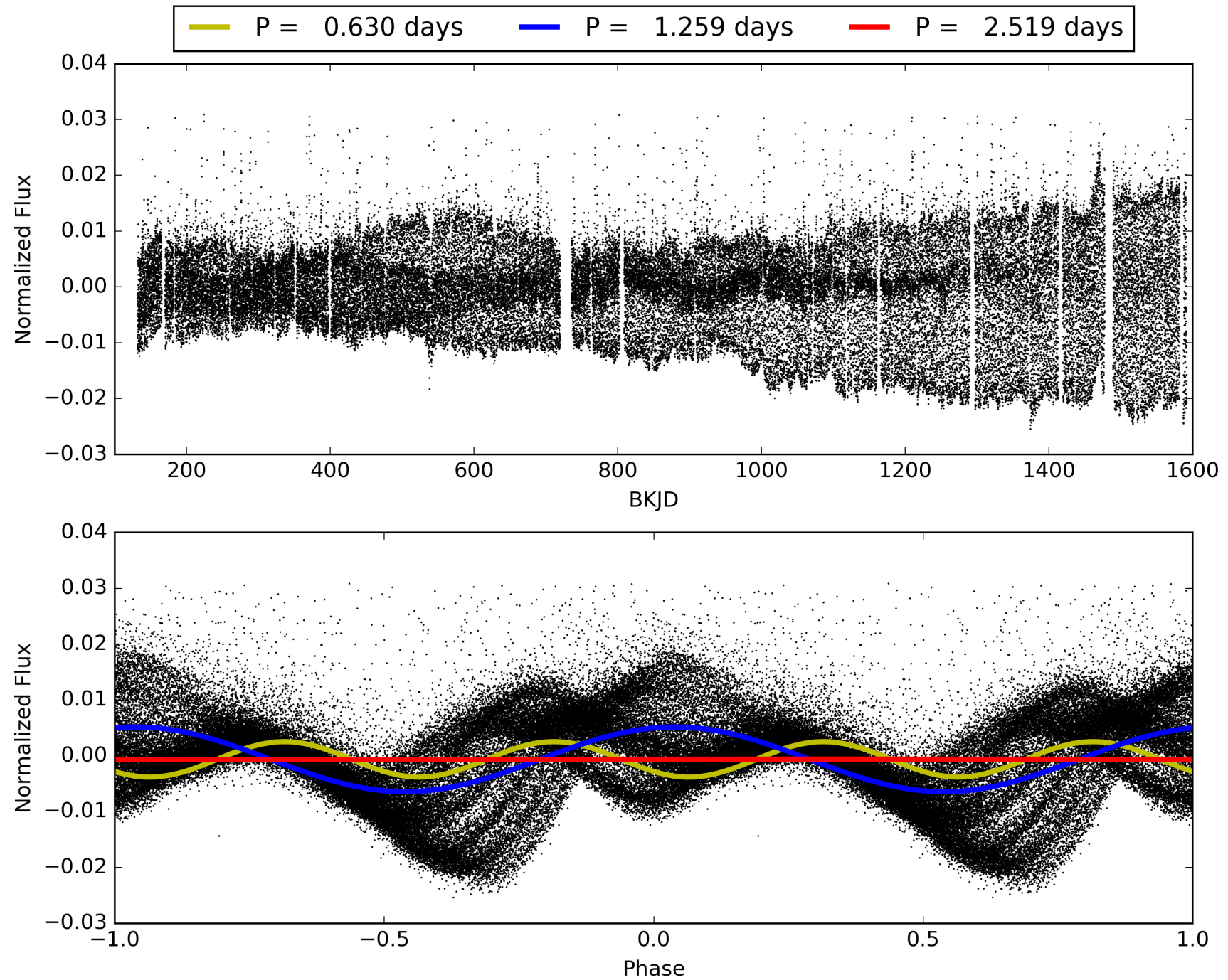
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [6.55σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGoF-sig: N/A  
Bootstrap-pfa: 9.40e-33  
RollingBand-fgt: 1.00 [1025/1025]  
**GhostDiagnostic-chr: 1.314**  
Centroid-sig: 22.8%  
Centroid-so: 6.033 arcsec [1.02σ]  
OotOffset-rm: 0.075 arcsec [1.10σ]  
**KicOffset-rm: 1.048 arcsec [14.76σ]**  
OotOffset-st: 4/4/4/5 [17]  
KicOffset-st: 4/4/4/5 [17]  
DiffImageQuality-fgm: 0.29 [5/17]  
DiffImageOverlap-fno: 1.00 [17/17]

# TCE 007741987-01, PDC Light Curves



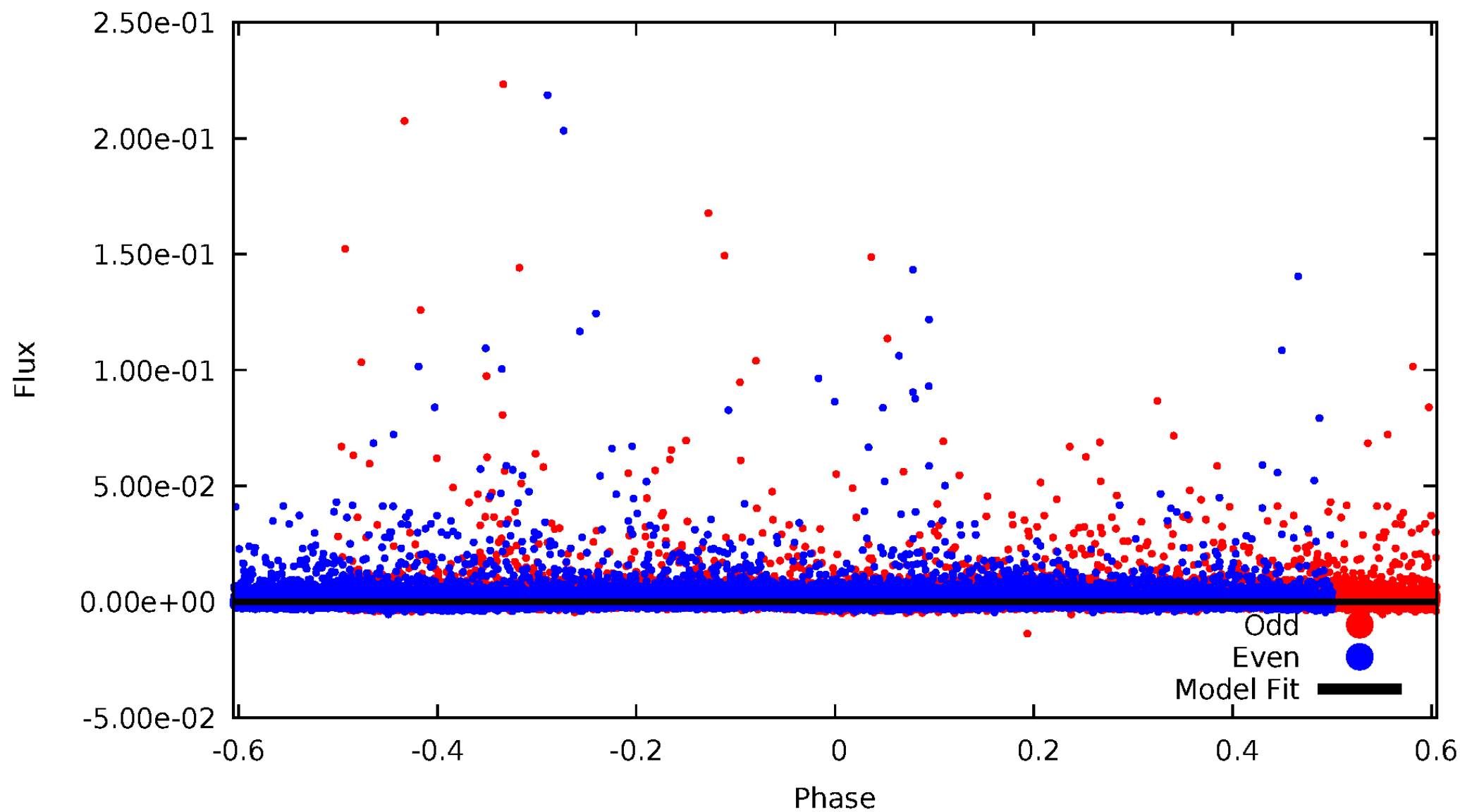
TCE 007741987-01





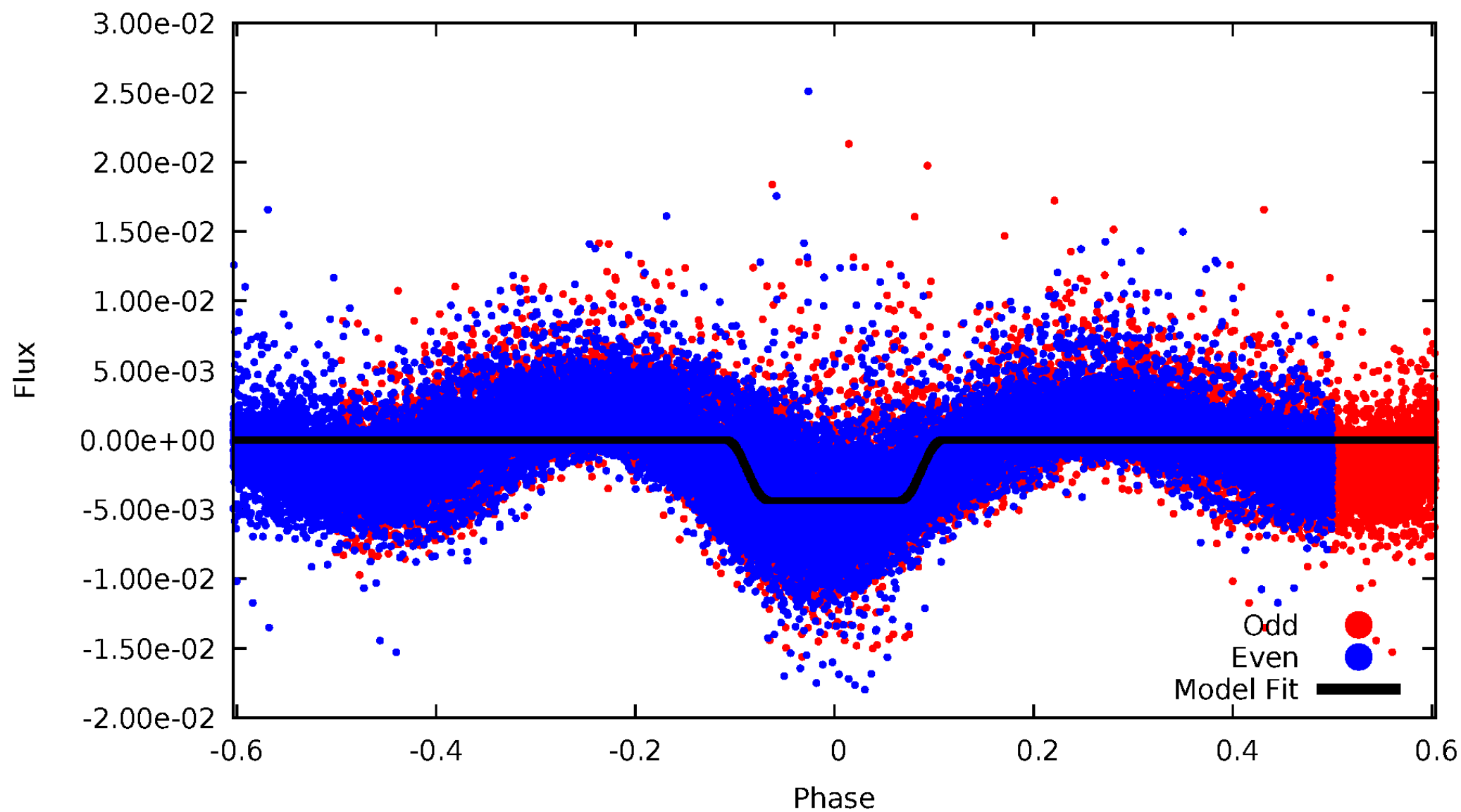
# DV Odd/Even

TCE 007741987-01



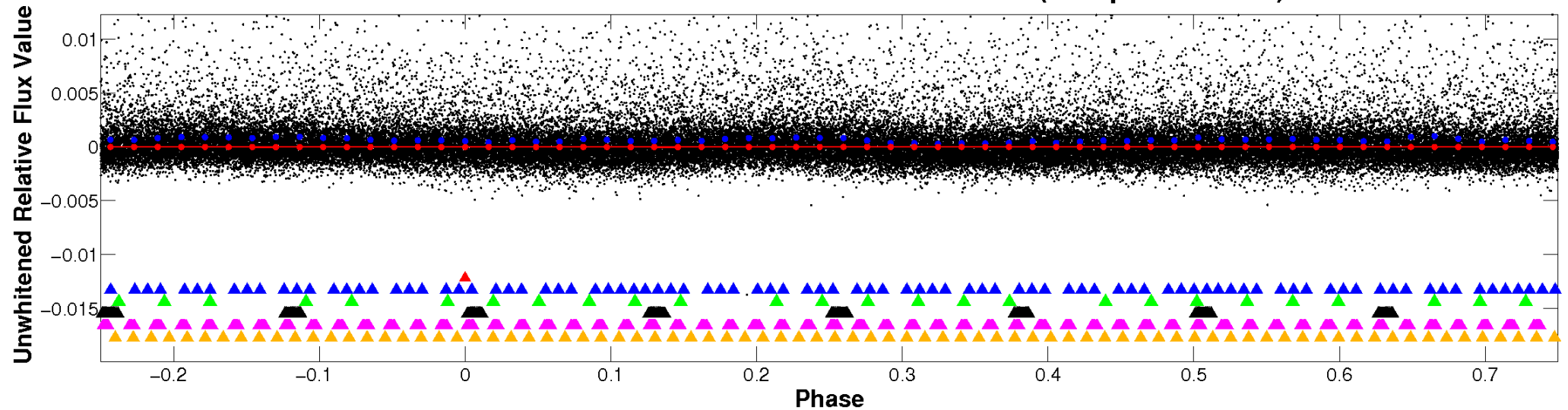
# ALT Odd/Even

TCE 007741987-01

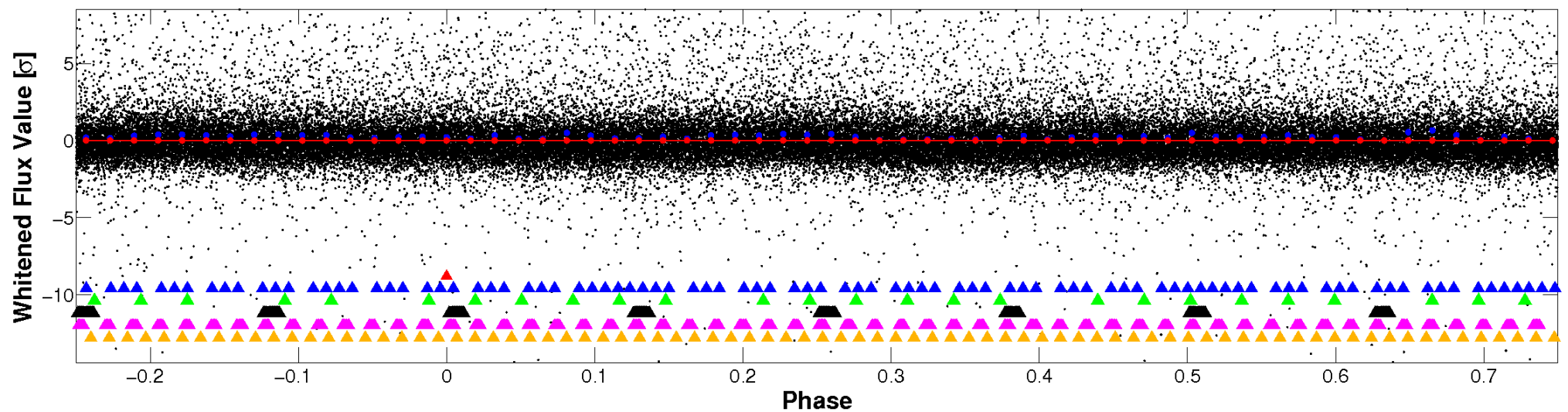


# Non-Whitened Vs. Whitened Light Curve

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

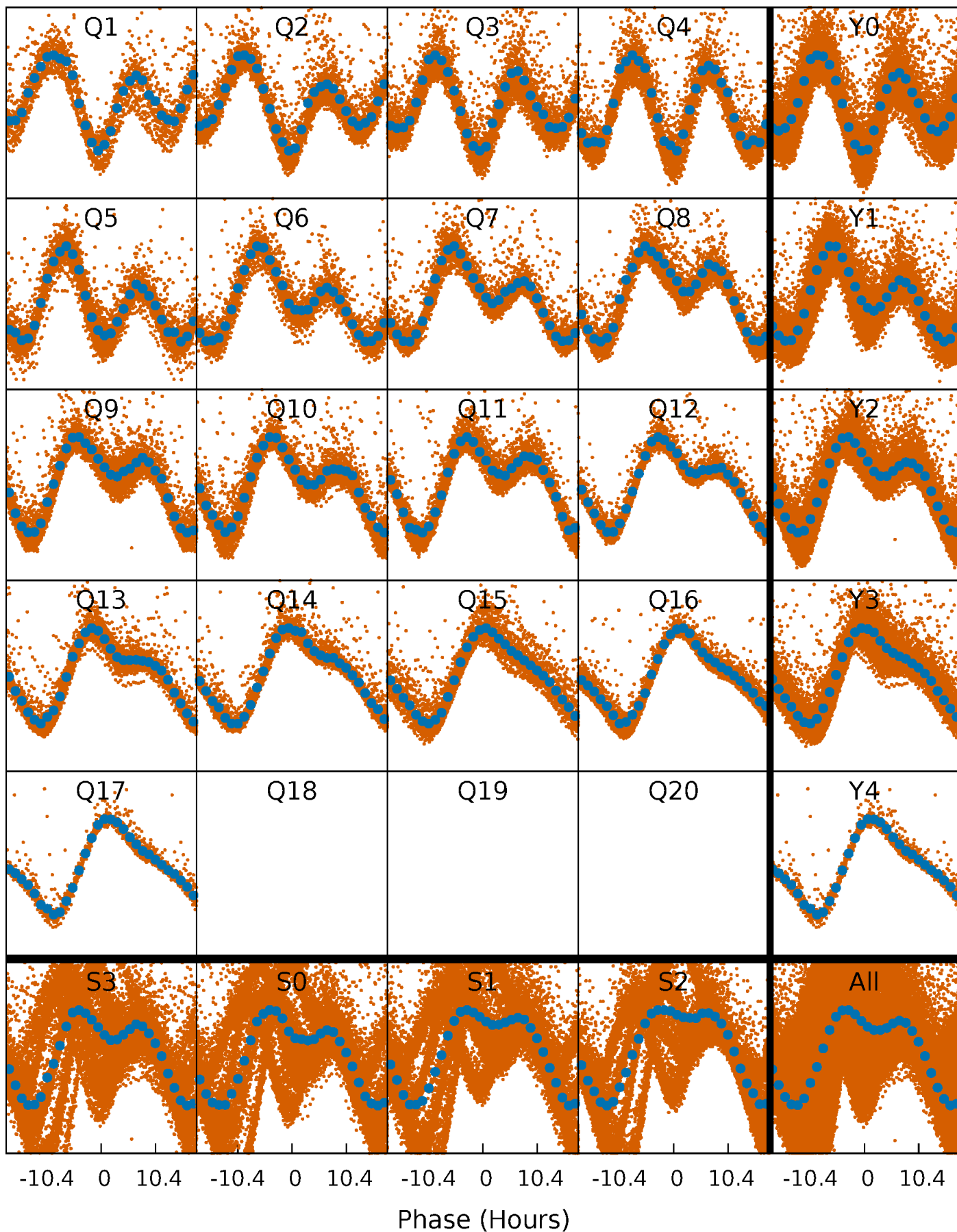


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

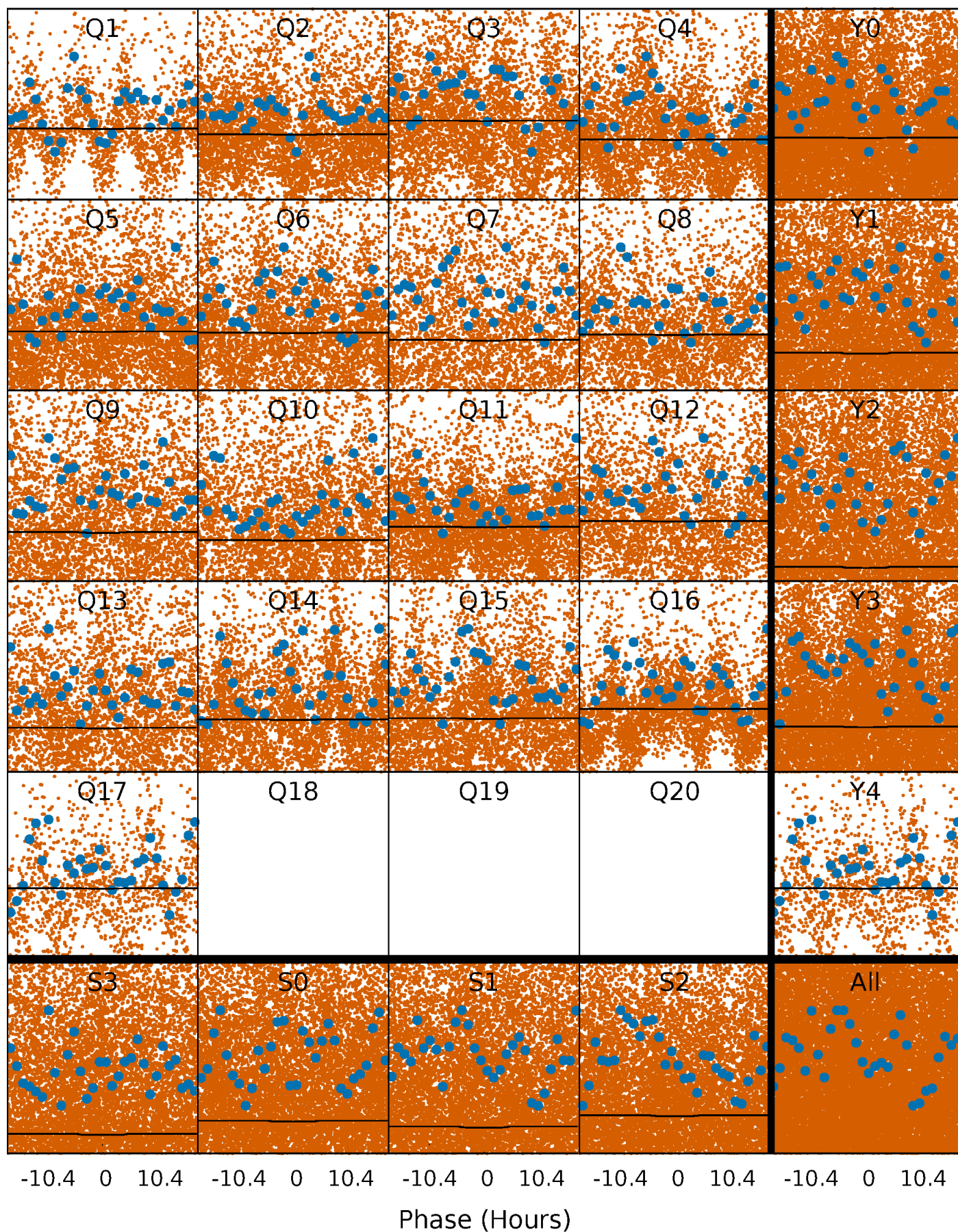
TCE 007741987-01   P= 1.259365 Days    $T_0=131.617515$  (BKJD)





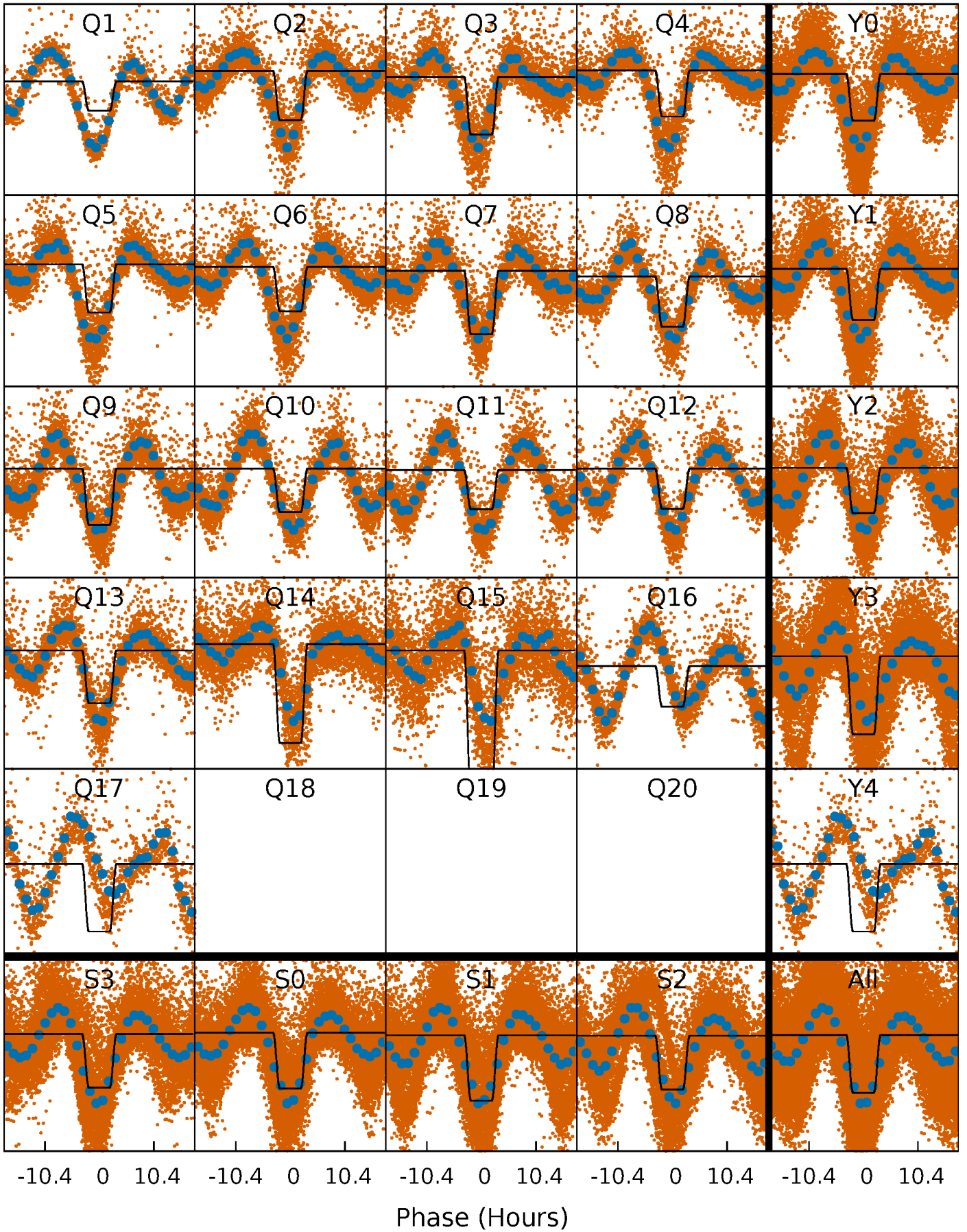
# DV Quarter-Phased Transit Curves

TCE 007741987-01 P= 1.259365 Days  $T_0=131.617515$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

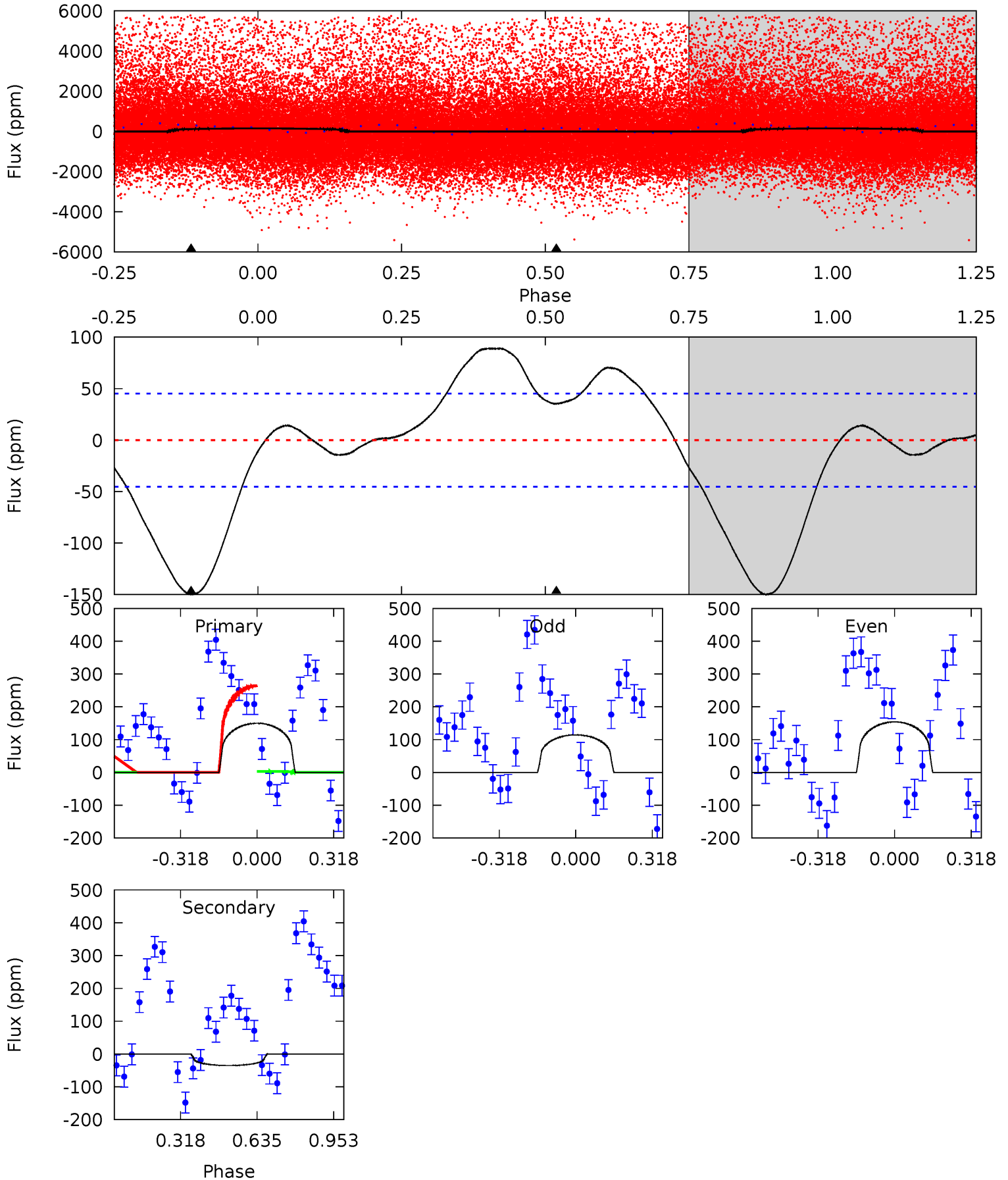
TCE 007741987-01 P= 1.259516 Days  $T_0=131.620252$  (BKJD)



# DV Model-Shift Uniqueness Test

007741987-01, P = 1.259365 Days, E = 130.358150 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
14.3	-3.36	0	0	4.32	1.00	0.56	14.3	14.3	-3.36	-3.36	1.91	2.19	0.37	12.7

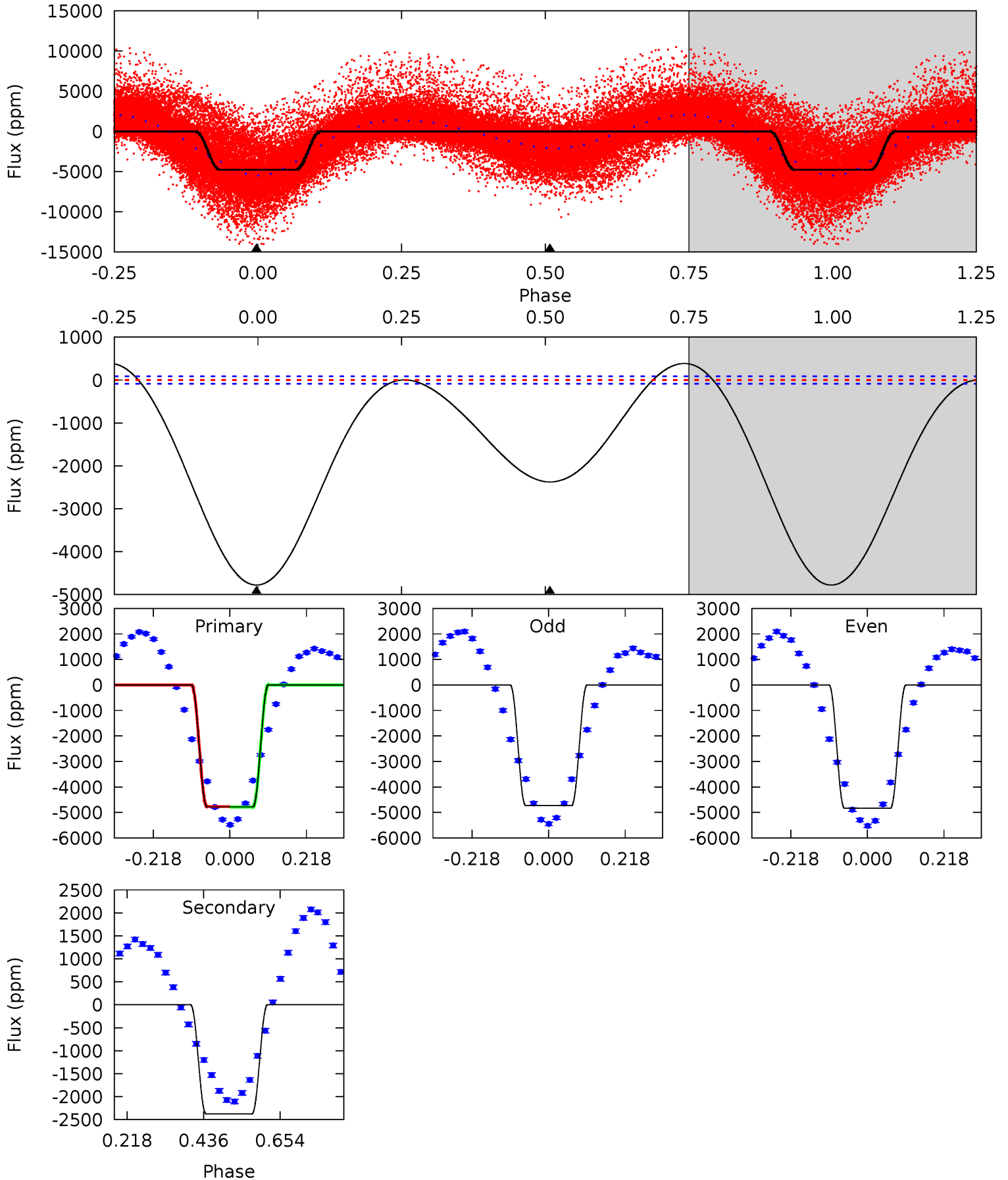




# Alt Model-Shift Uniqueness Test

007741987-01, P = 1.259516 Days, E = 130.360736 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
244.9	121.7	0	0	4.40	1.23	10.00	244.9	244.9	121.7	121.7	2.77	0.96	0.07	0.43





### Stellar Parameters For KIC 007741987

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$3360^{+40}_{-43}$	$5.025^{+0.036}_{-0.045}$	$-0.100^{+0.100}_{-0.100}$	$0.254^{+0.031}_{-0.031}$	$0.249^{+0.038}_{-0.038}$	$21.530^{+4.952}_{-4.384}$
	+1%/-1%	+1%/-1%	+100%/-100%	+12%/-12%	+15%/-15%	+23%/-20%
Source	PHO2	PHO2	PHO2	DSEP		

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

### Secondary Eclipse Parameters for KIC 007741987-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$35 \pm 10$	$0.89^{+0.91}_{-0.59}$	$872^{+20}_{-19}$	$-2196^{+282}_{-656}$	$-5.159^{+4.014}_{-41.405}$
Alt.	$-2375 \pm 20$	$1.92^{+1.17}_{-1.02}$	$873^{+18}_{-20}$	$3030^{+788}_{-369}$	$74^{+246}_{-46}$

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

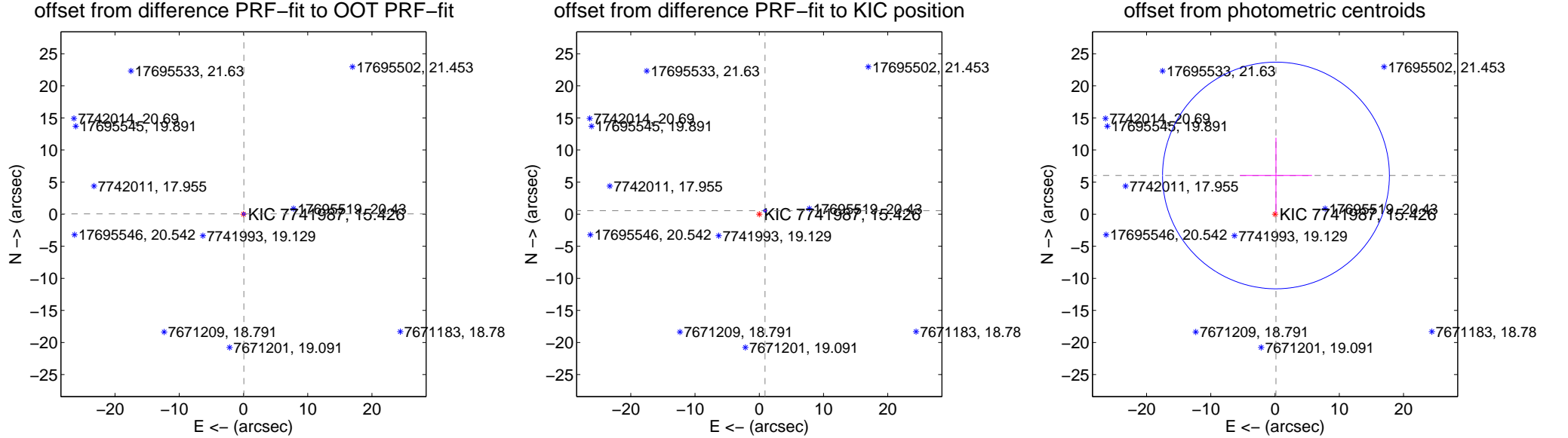
## DV Centroid Data

Supplemental centroid analysis for 007741987-01. Kepler magnitude: 15.43. Transit SNR 0.50

There are 5 quarters with good PRF difference image offsets

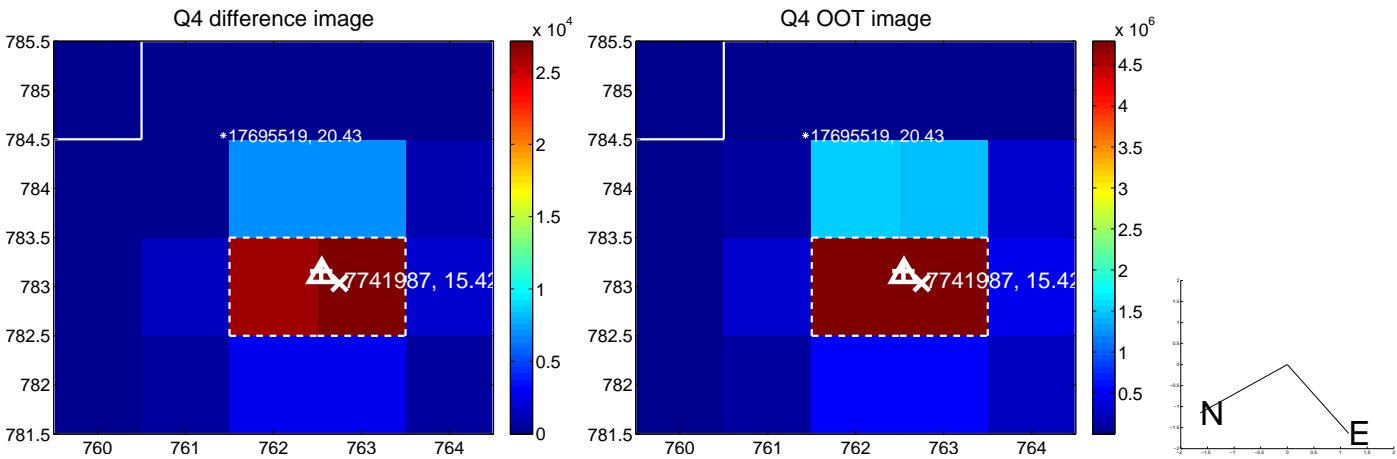
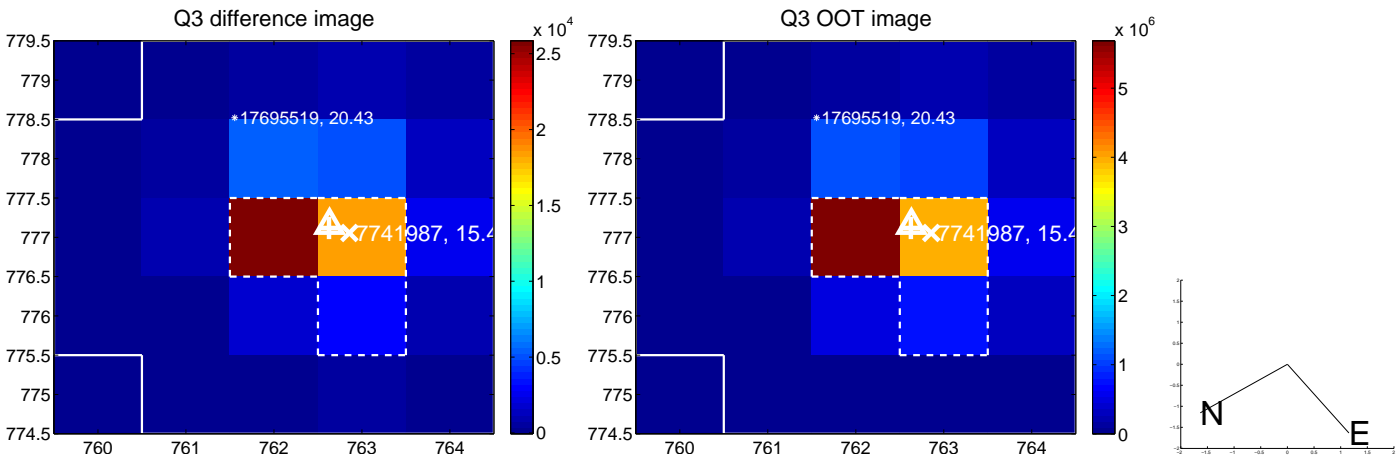
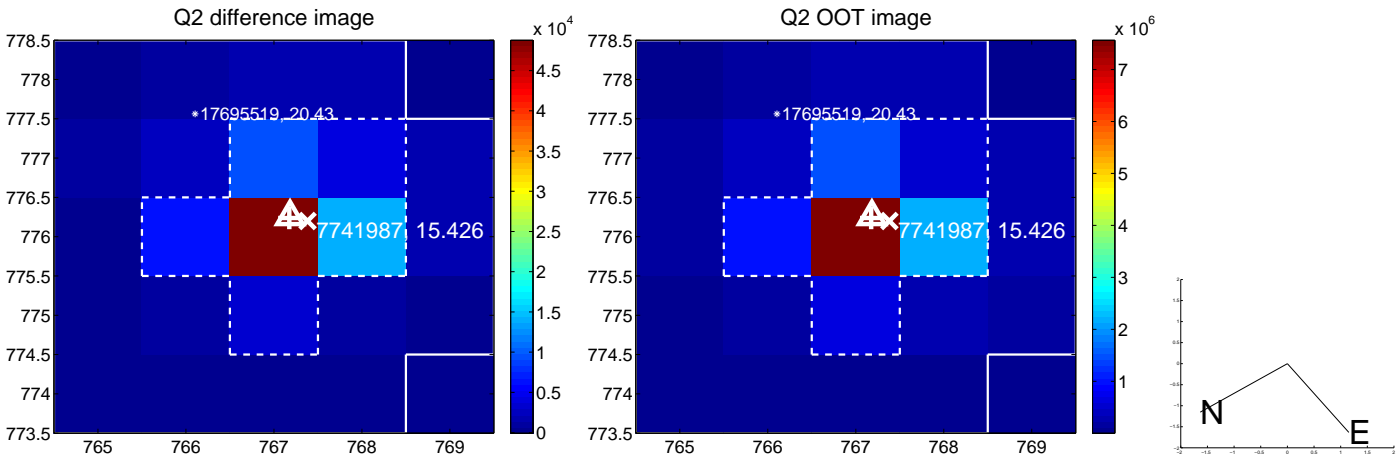
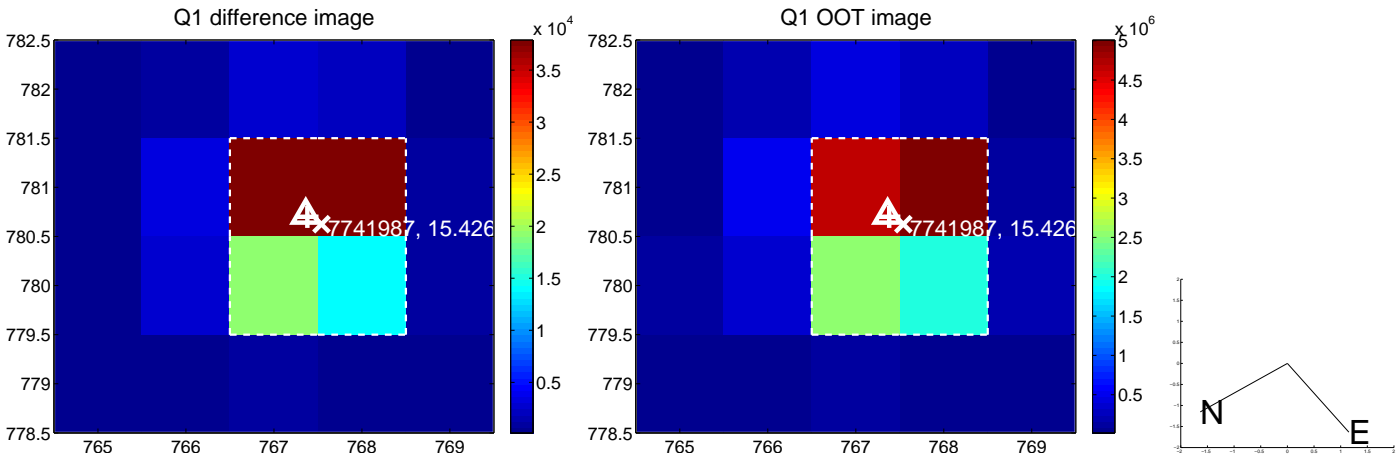
The direct PRF centroid is offset from the target star catalog position by about 0.99 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.075 \pm 0.069$	1.10	$-0.063 \pm 0.069$	$0.041 \pm 0.067$
PRF-fit source offset from KIC position	$1.048 \pm 0.071$	14.76	$-0.897 \pm 0.070$	$0.541 \pm 0.069$
photometric centroid source offset	$6.03 \pm 5.89$	1.02	$-0.14 \pm 5.61$	$6.03 \pm 5.89$

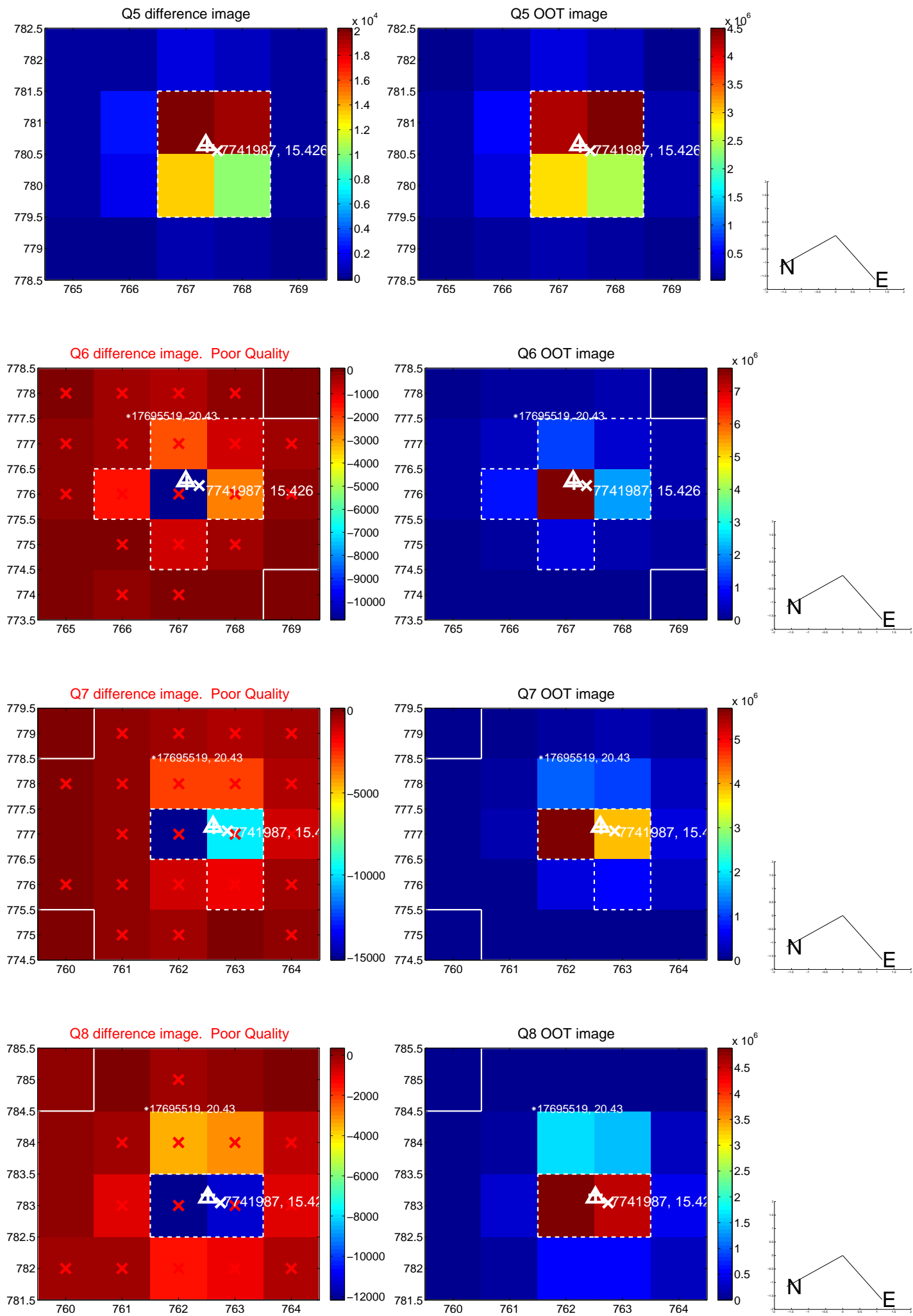


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

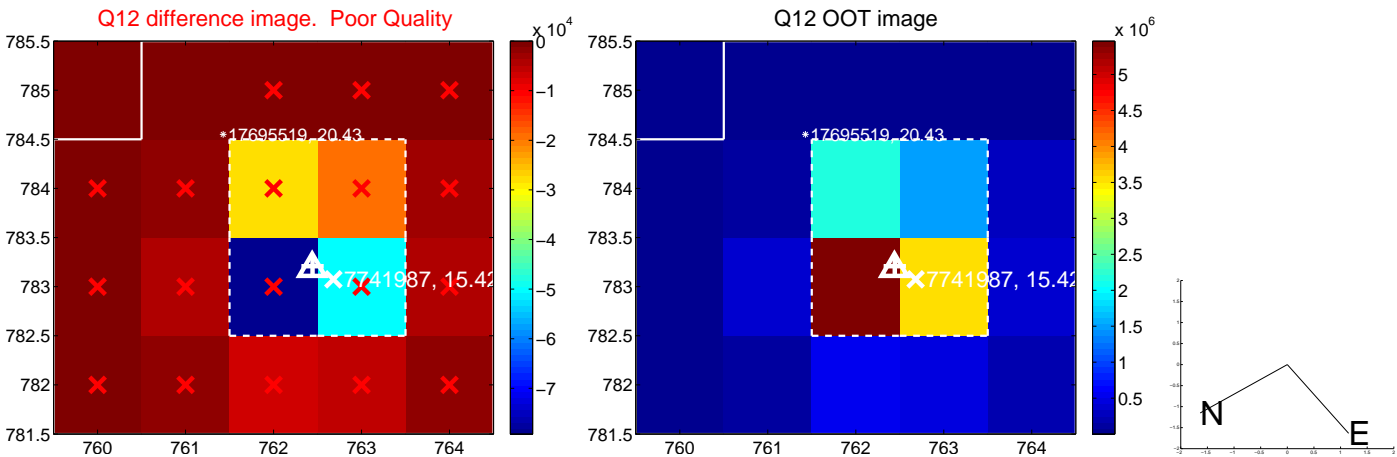
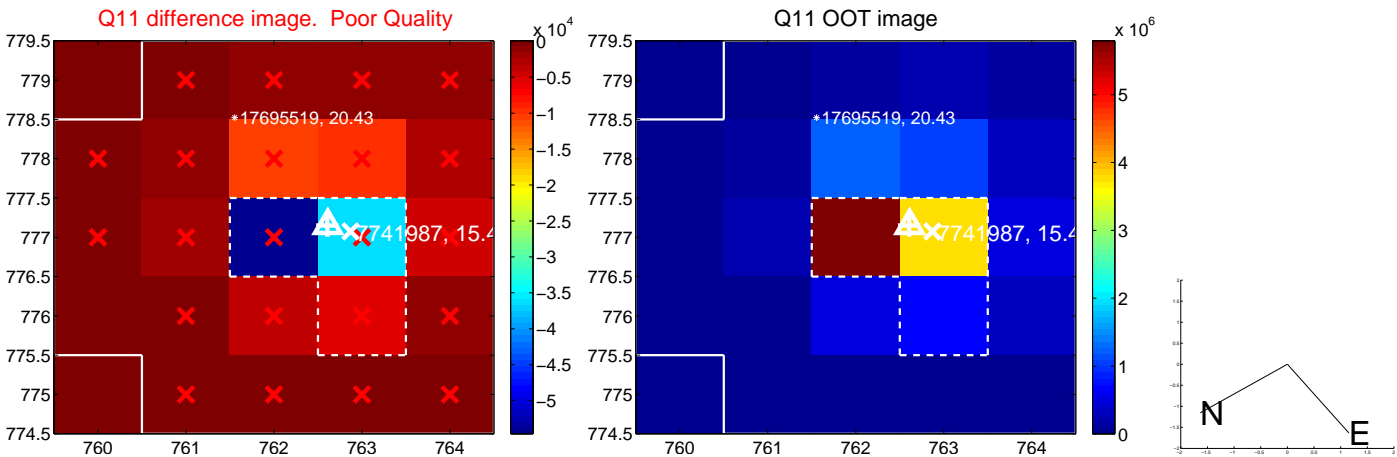
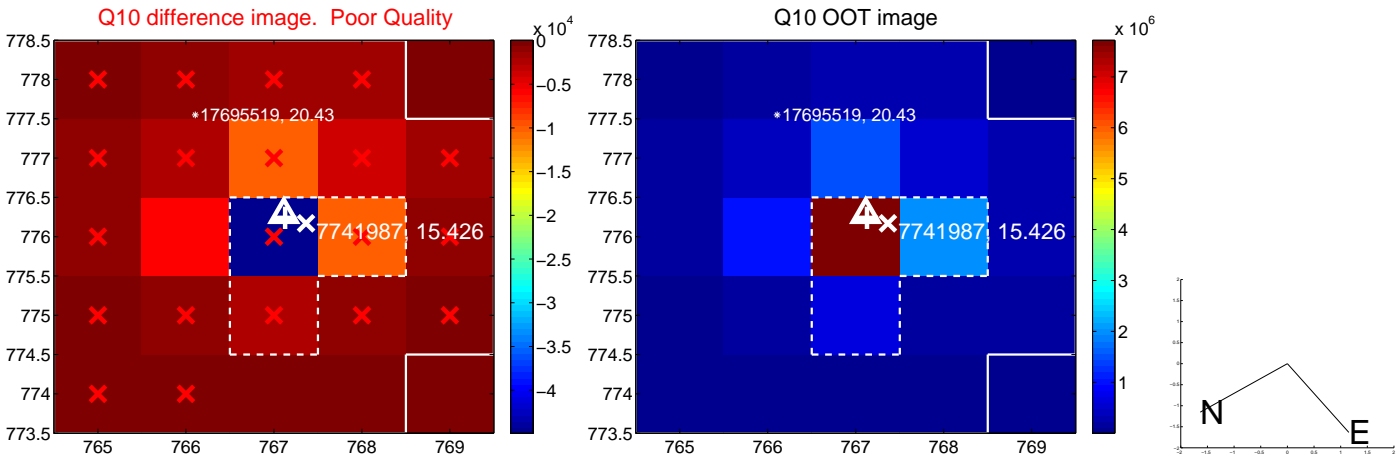
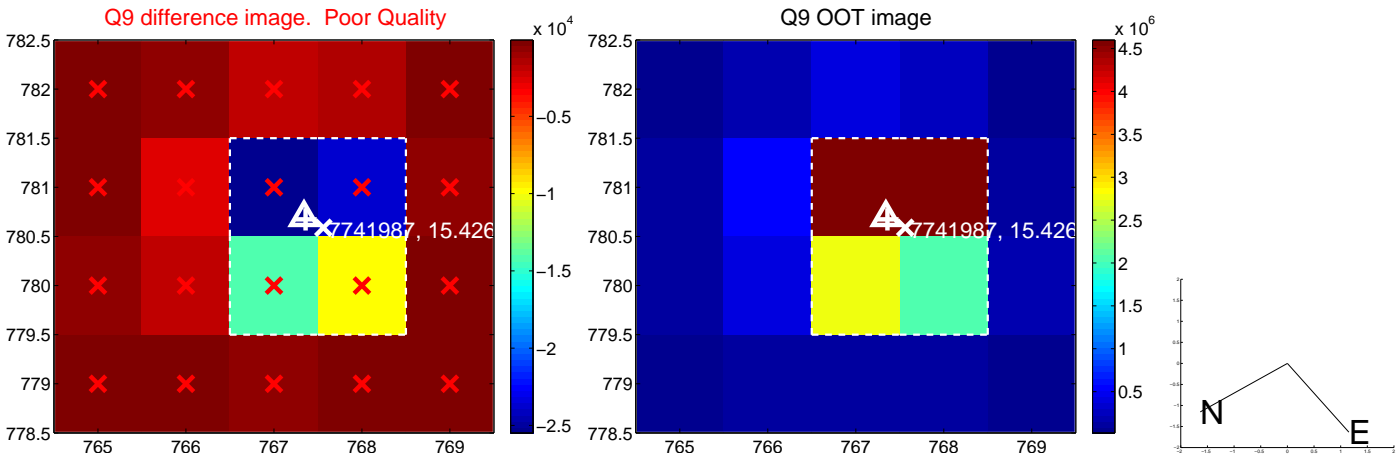


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

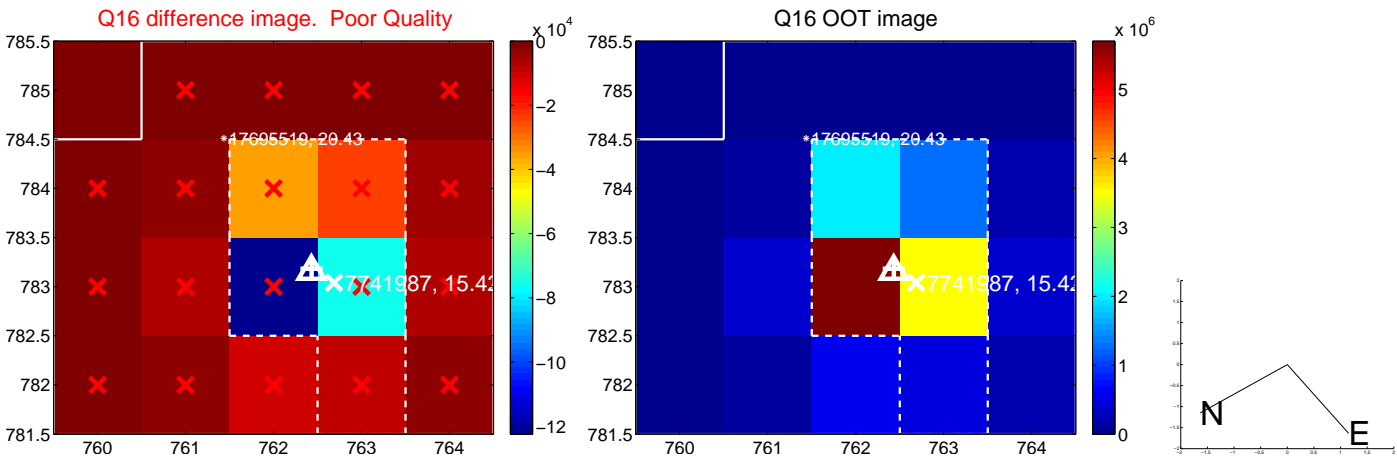
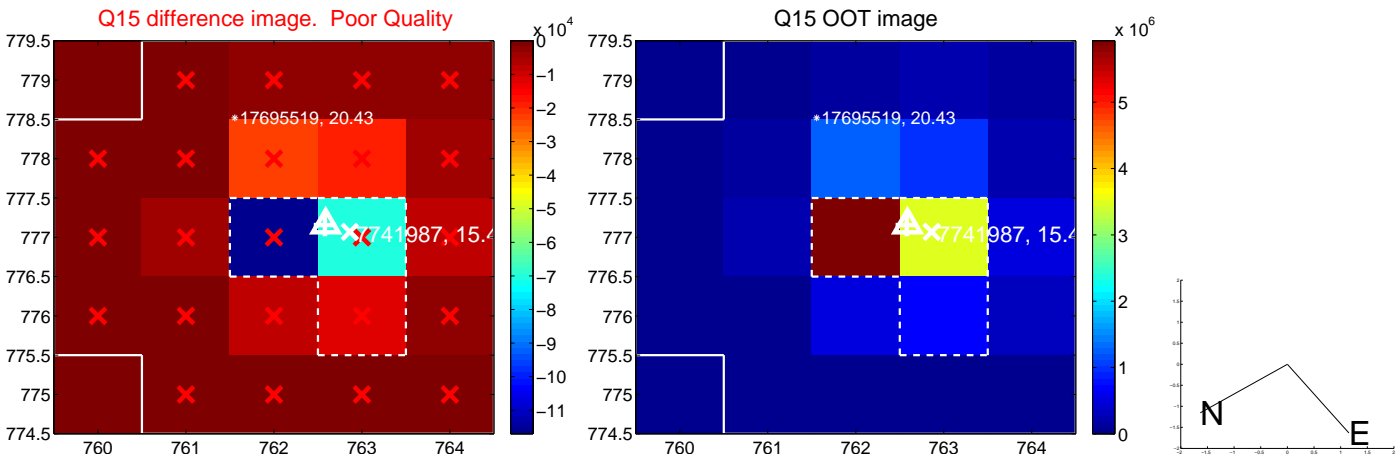
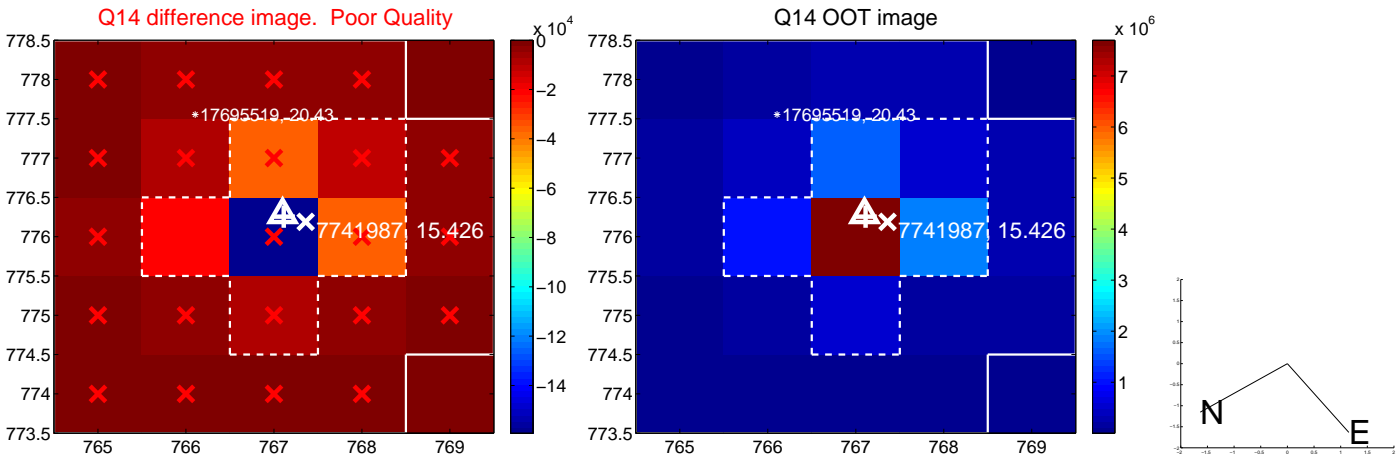
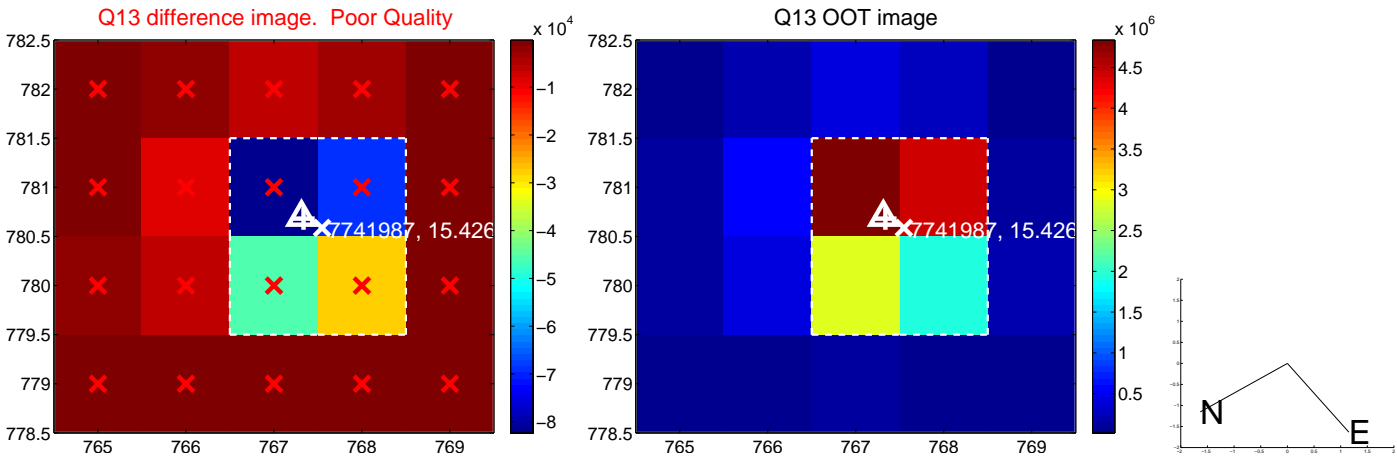




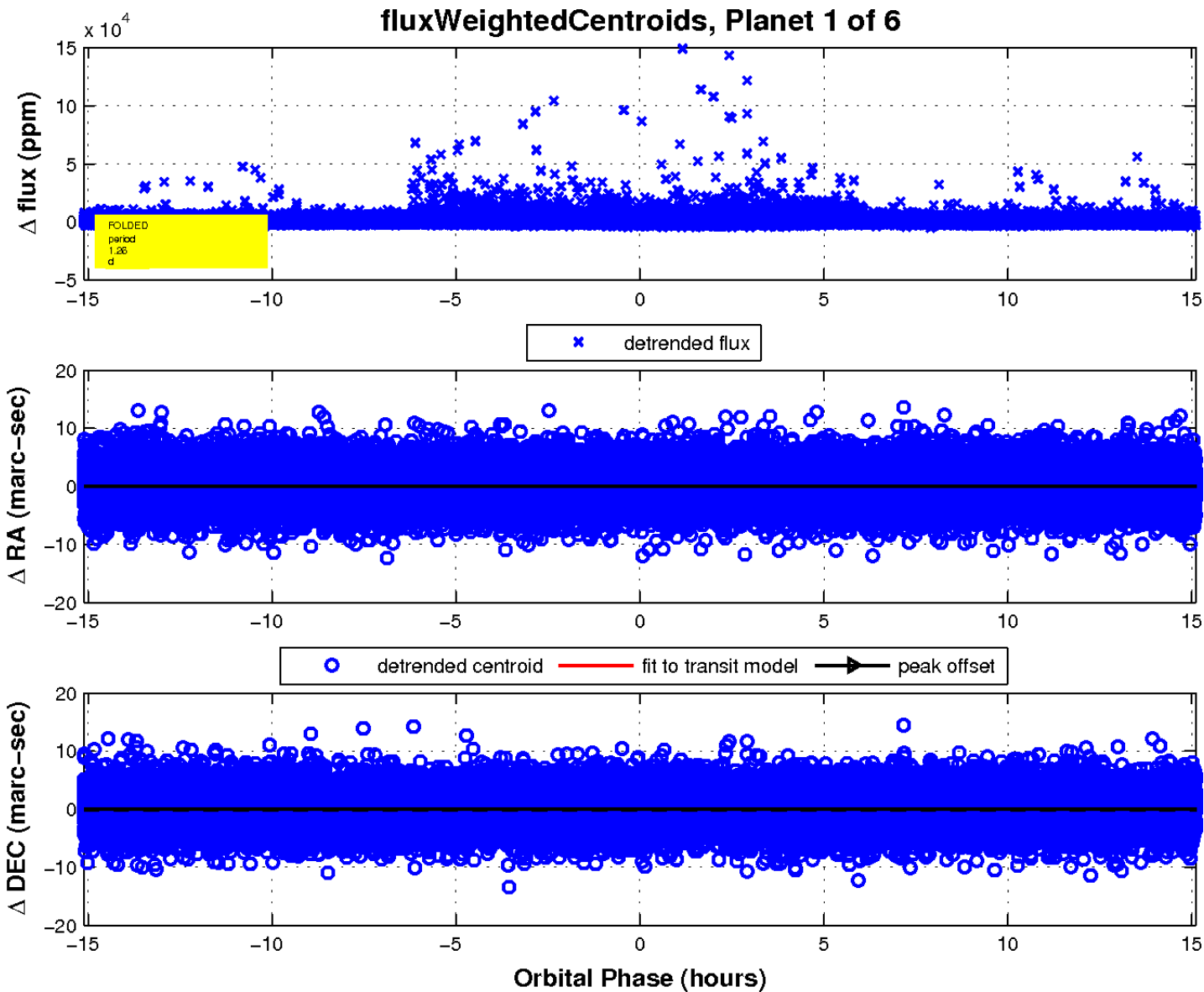
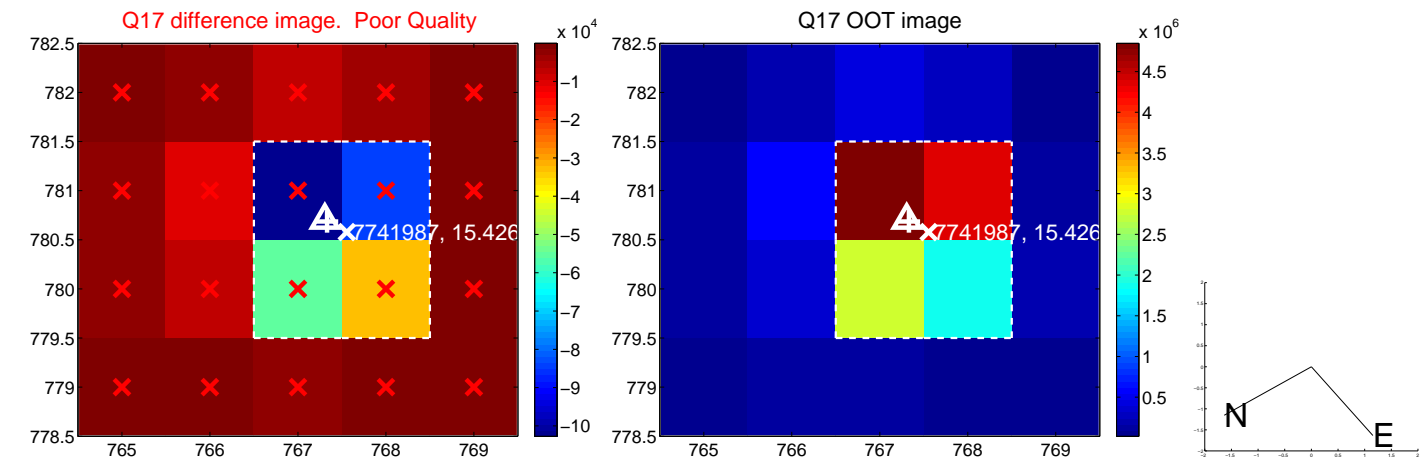
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

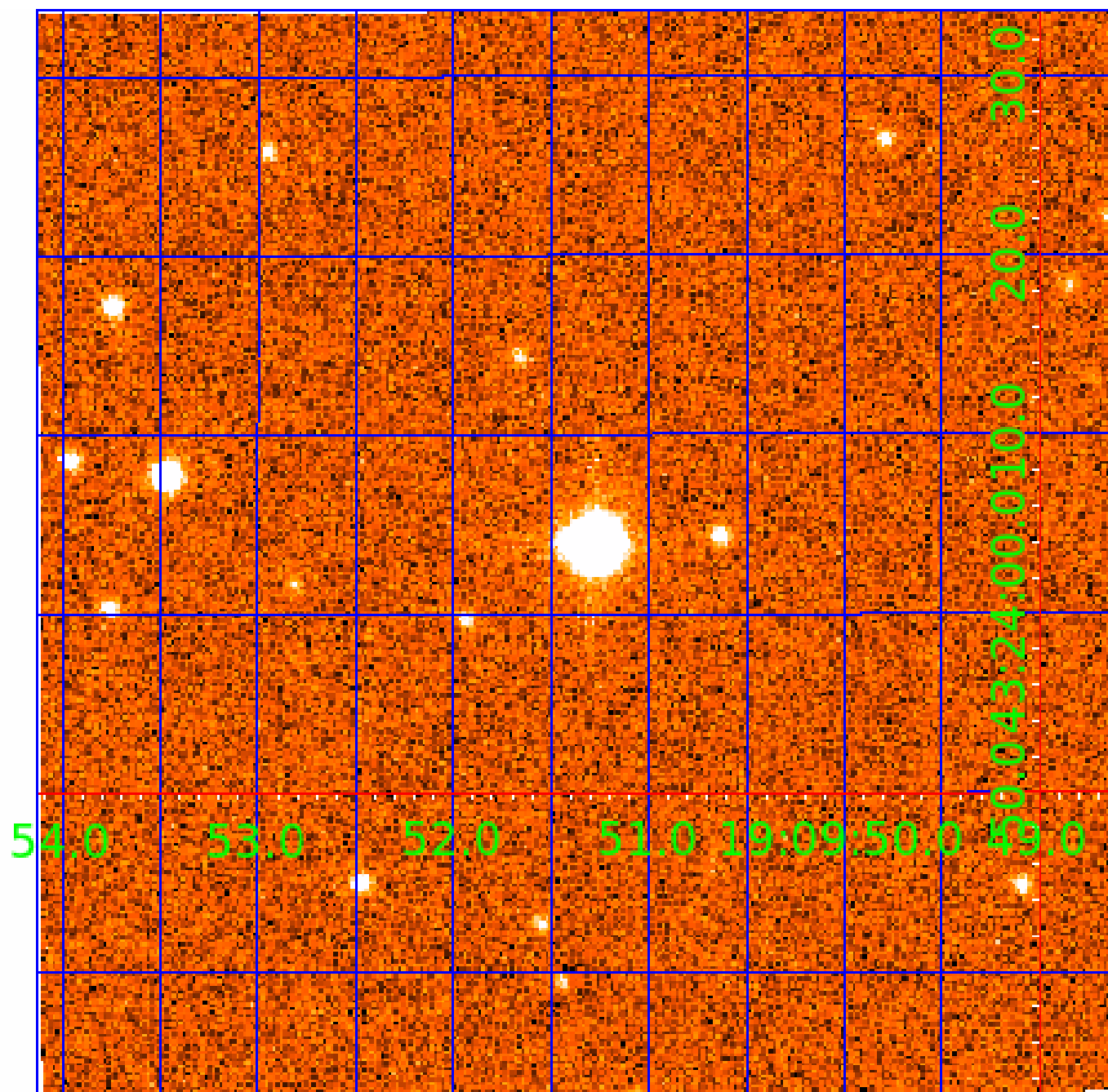


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



# UKIRT Image

Declination





# KIC 007741987

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
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## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
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007741987-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_ZUMA_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_KIC_POS
007741987-04	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_KIC_POS—HALO_GHOST
007741987-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_KIC_POS
007741987-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_KIC_POS

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

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

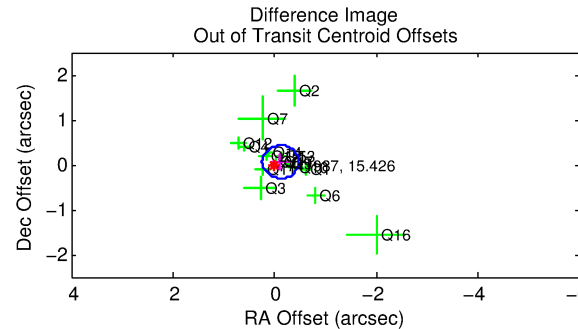
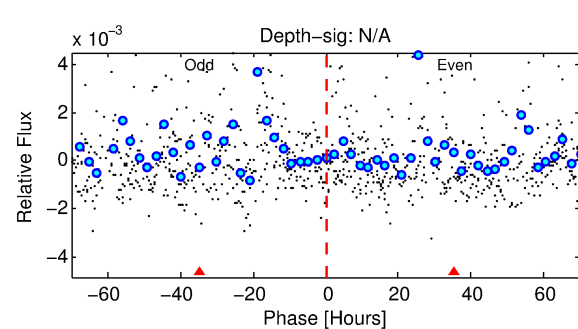
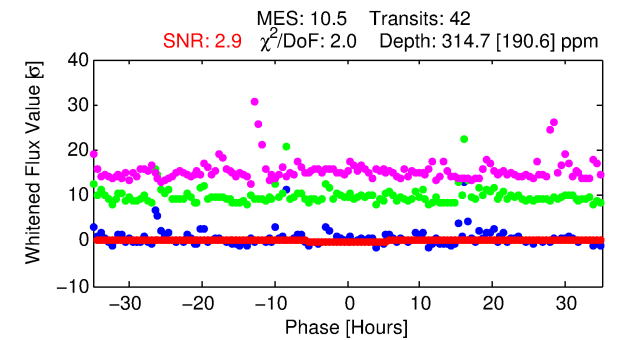
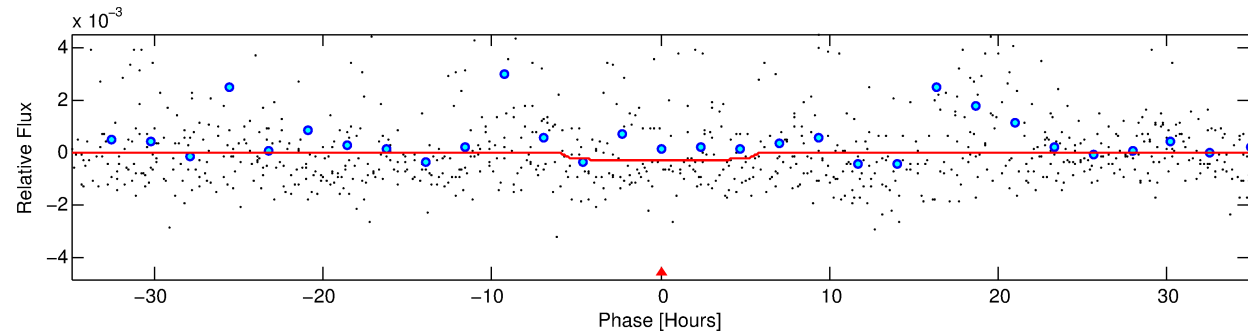
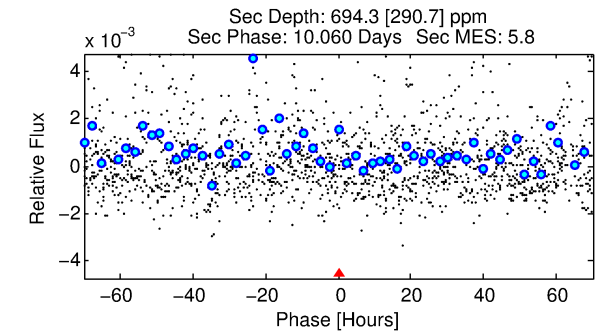
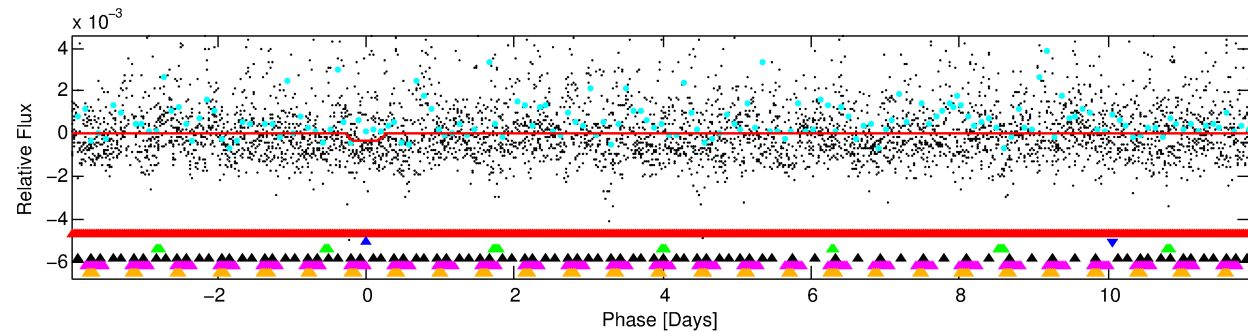
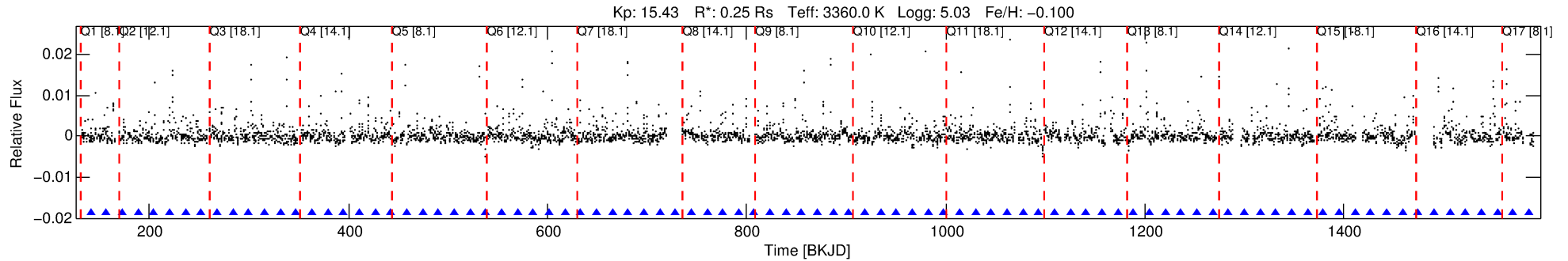
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 007741987-02

No Significant Match Found

# DV One-Page Summary

KIC: 7741987 Candidate: 2 of 6 Period: 15.877 d



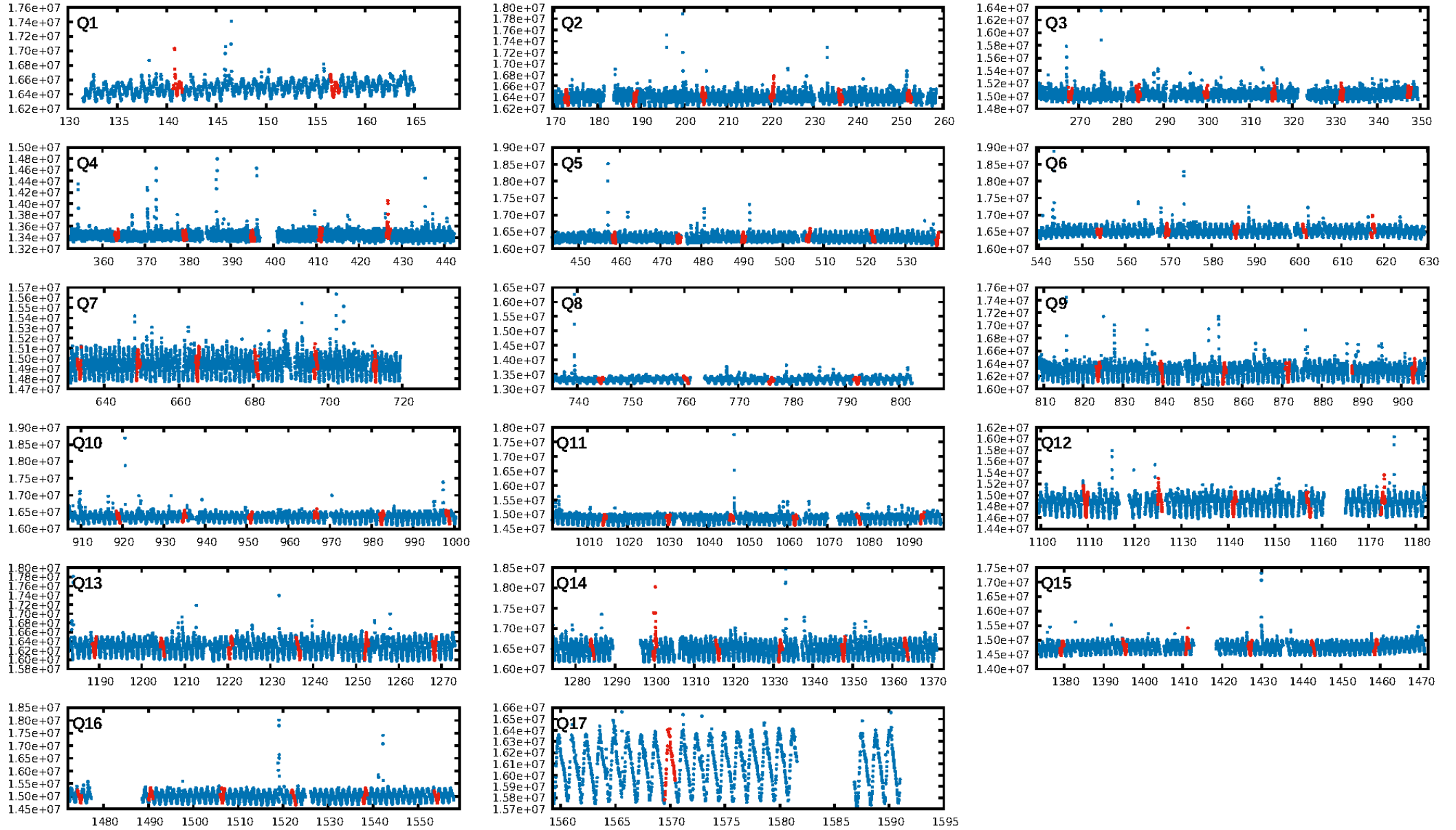
## DV Fit Results:

Period = 15.87660 [0.00159] d  
Epoch = 141.0741 [0.0713] BKJD  
Rp/R\* = 0.0165 [0.0825]  
a/R\* = 9.44 [207.51]  
b = 0.46 [37.83]  
Seff = 1.22 [0.14]  
Teq = 268 [8] K  
Rp = 0.46 [2.29] Re  
a = 0.0778 [0.0069] AU  
Ag = 11062.96 [110764.66] [0.10σ]  
Teffp = 4246 [10628] K [0.3σ]

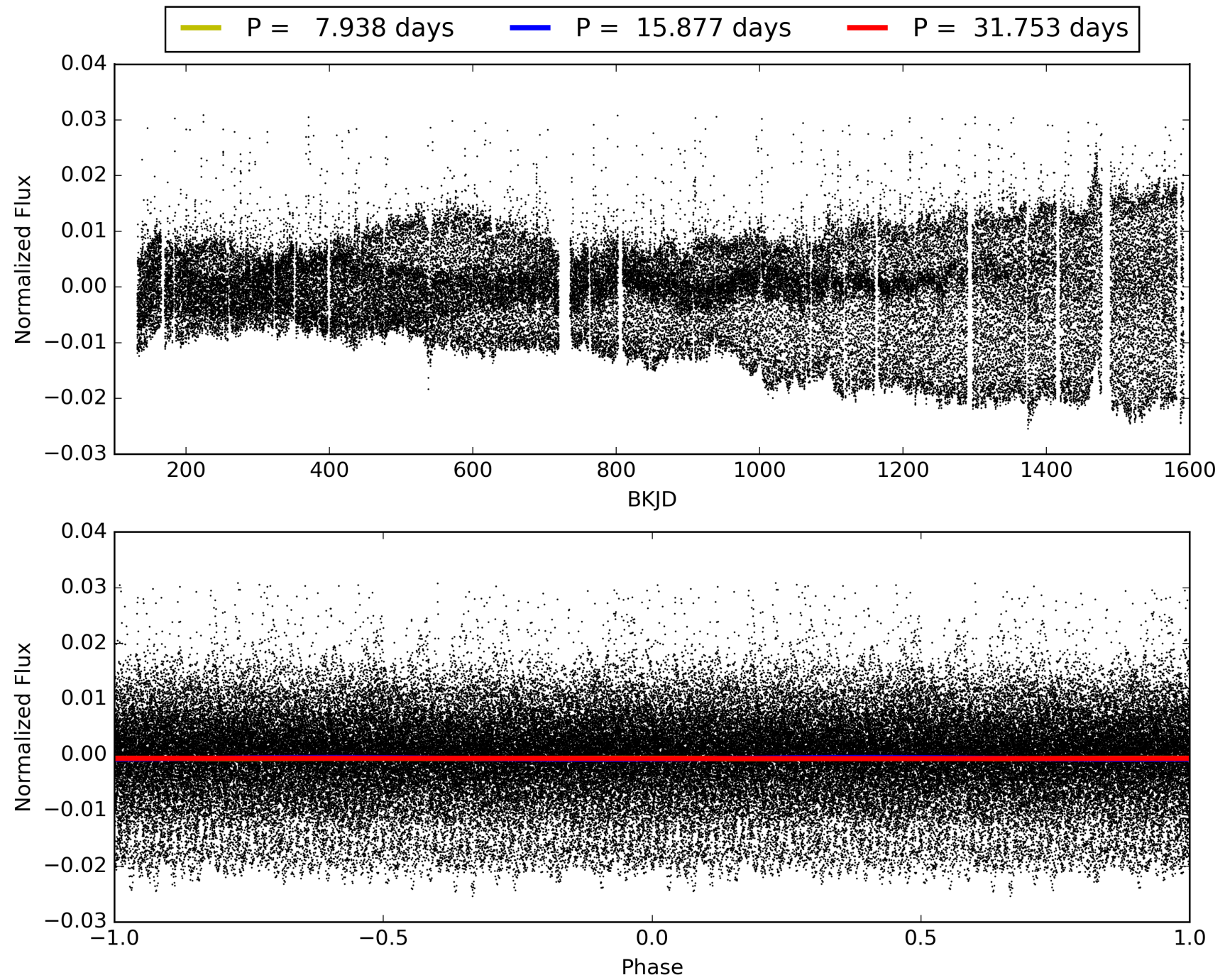
## DV Diagnostic Results:

ShortPeriod-sig: 42.8% [0.57σ]  
LongPeriod-sig: 100.0% [77.72σ]  
ModelChiSquare2-sig: 0.0%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 3.56e-78  
RollingBand-fgt: 1.00 [41/41]  
GhostDiagnostic-chr: -2.202  
Centroid-sig: 21.2%  
Centroid-so: 1.536 arcsec [2.74σ]  
OotOffset-rm: 0.127 arcsec [1.04σ]  
OotOffset-st: 4/4/4/5 [17]  
KicOffset-rm: 1.101 arcsec [9.31σ]  
KicOffset-st: 4/4/4/5 [17]  
DiffImageQuality-fgm: 0.35 [6/17]  
DiffImageOverlap-fno: 0.00 [0/17]

# TCE 007741987-02, PDC Light Curves

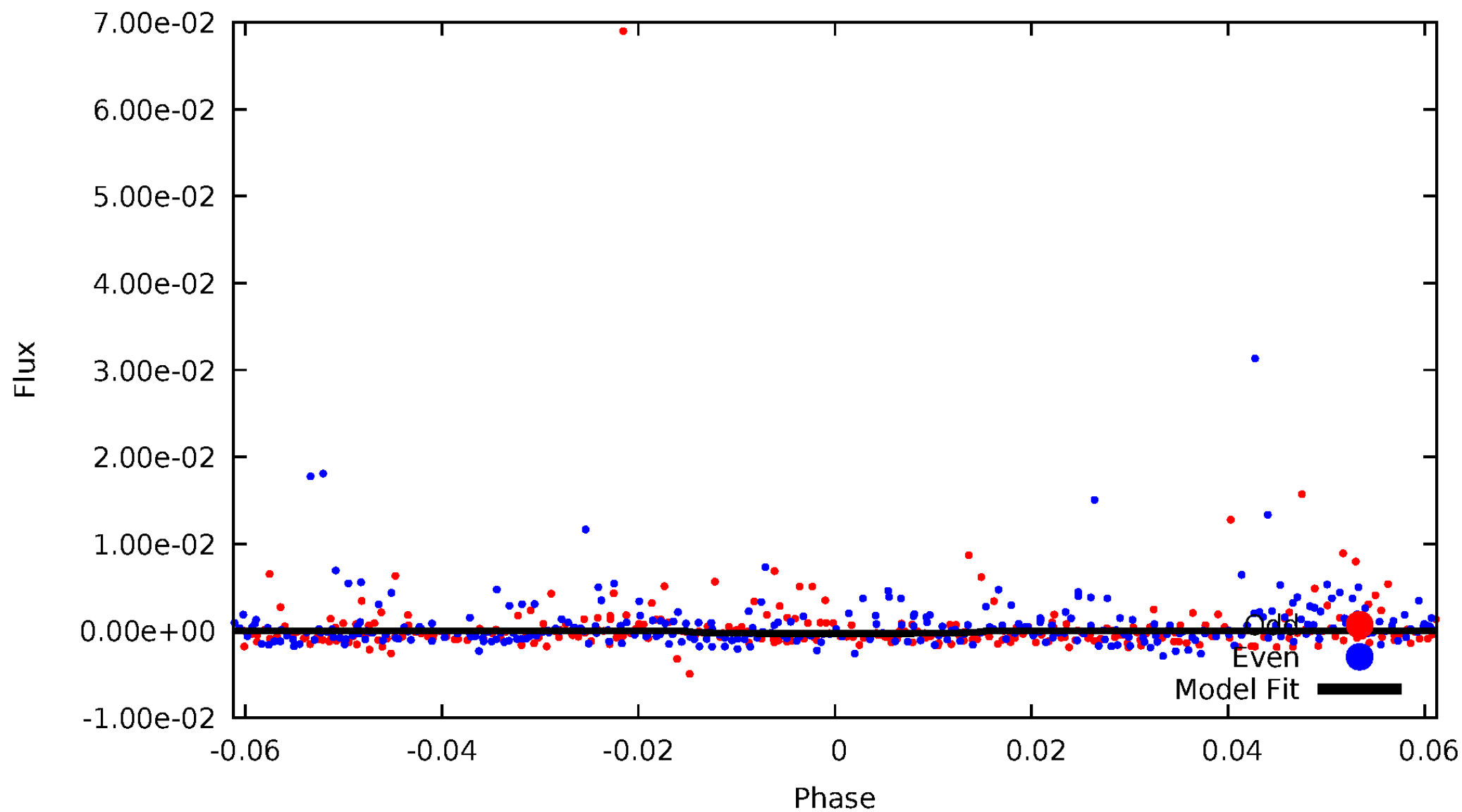


# TCE 007741987-02



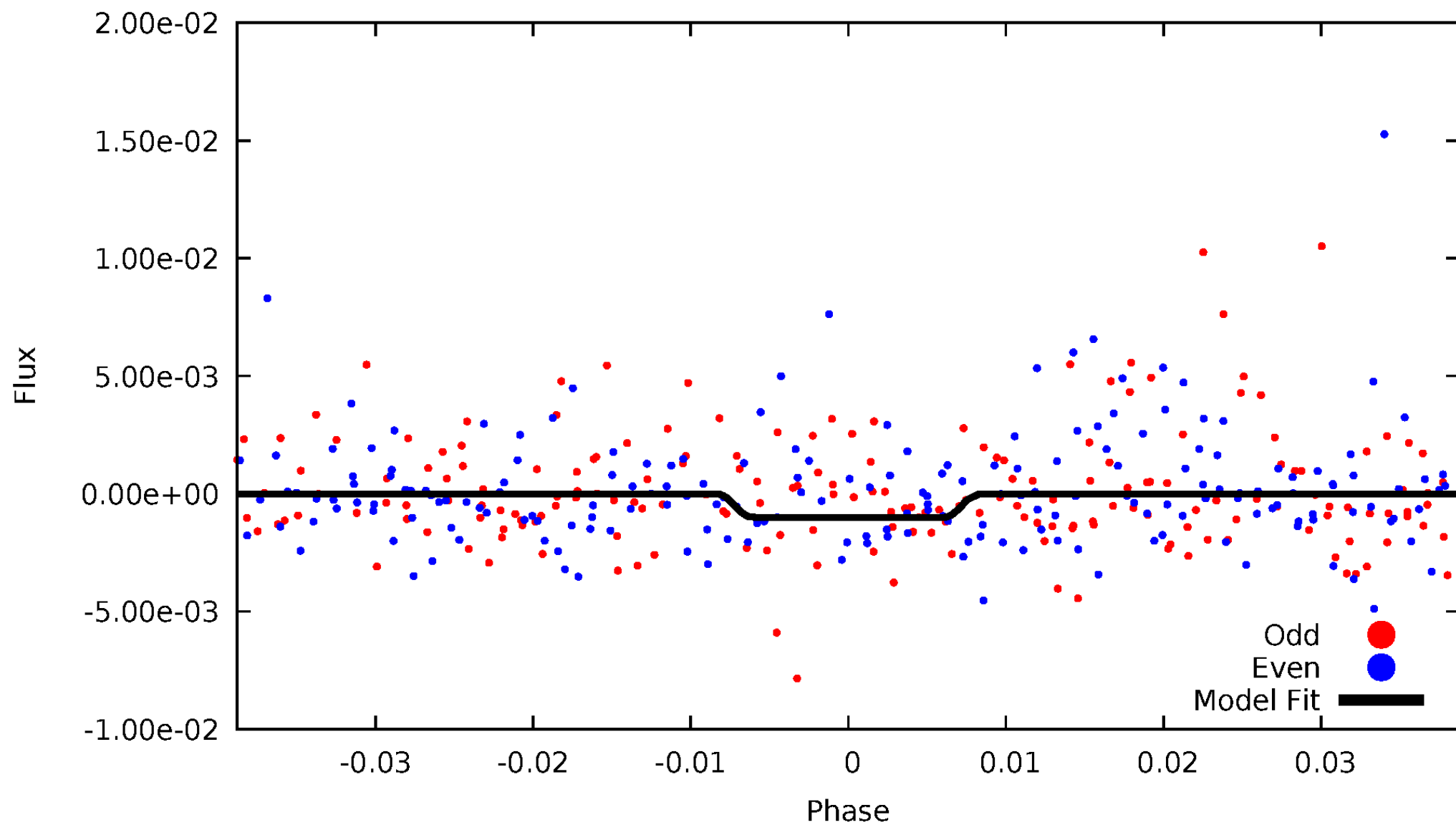
# DV Odd/Even

TCE 007741987-02



# ALT Odd/Even

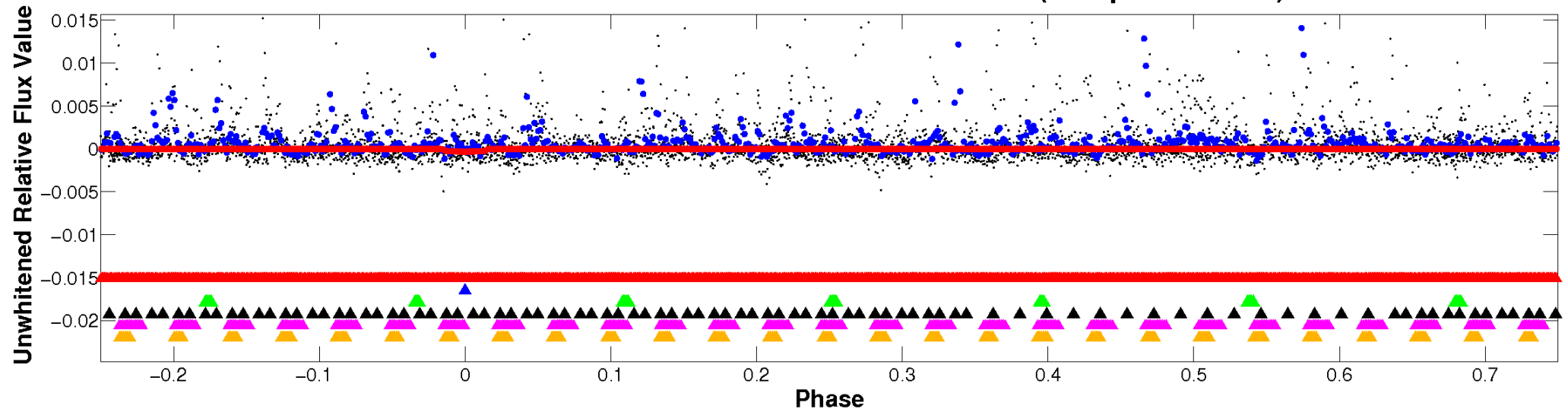
TCE 007741987-02



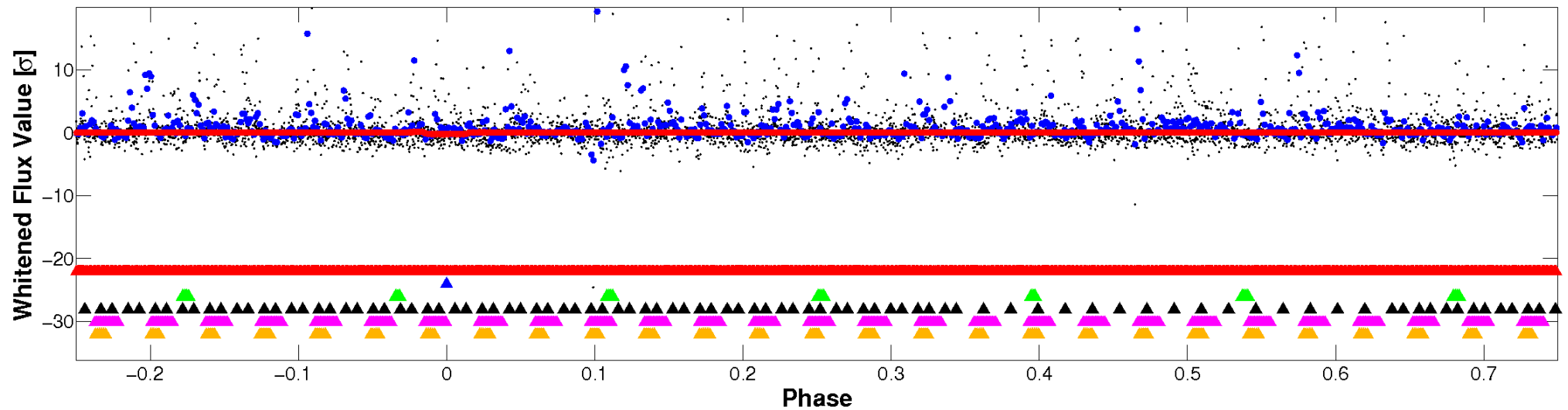


# Non-Whitened Vs. Whitened Light Curve

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

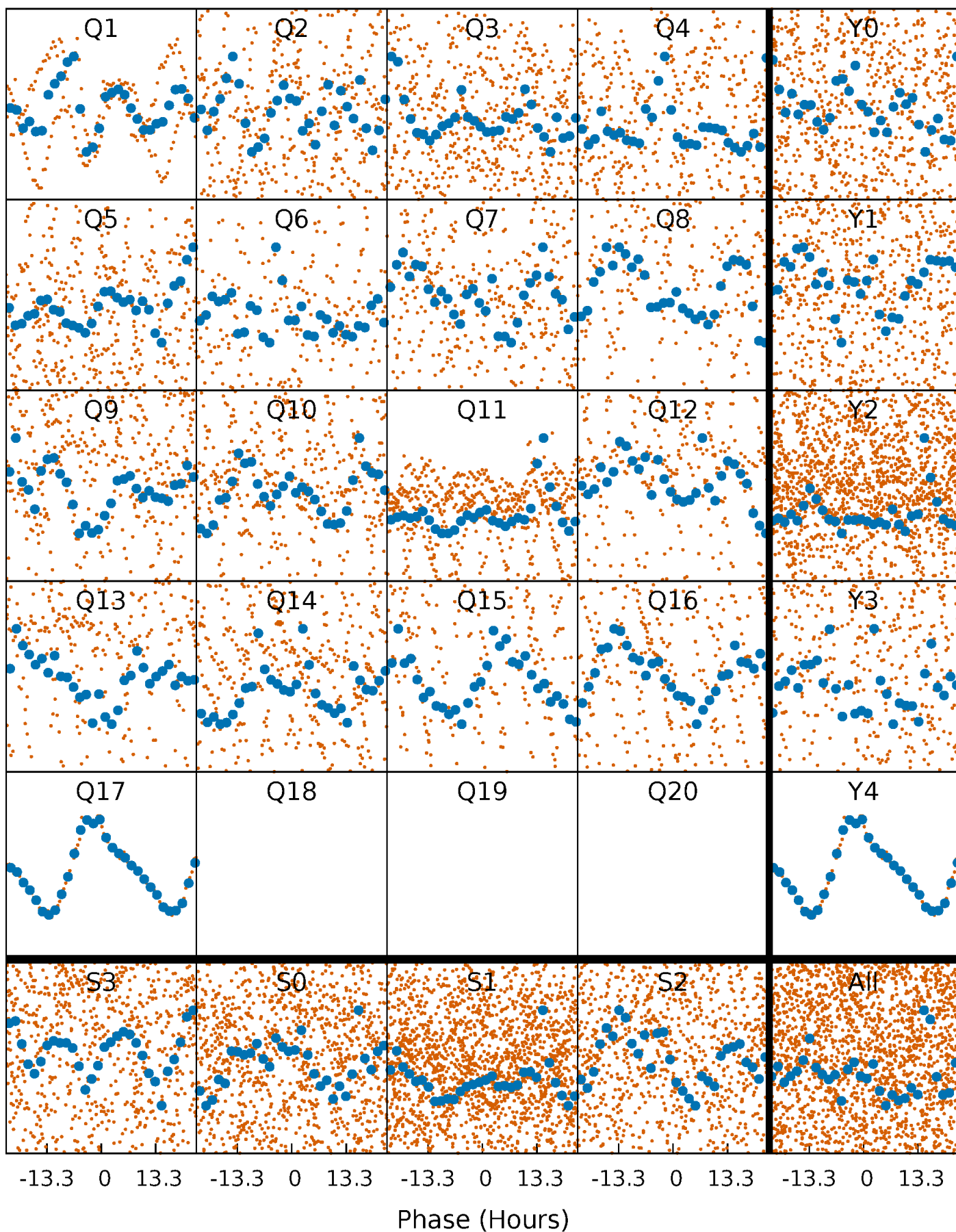


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



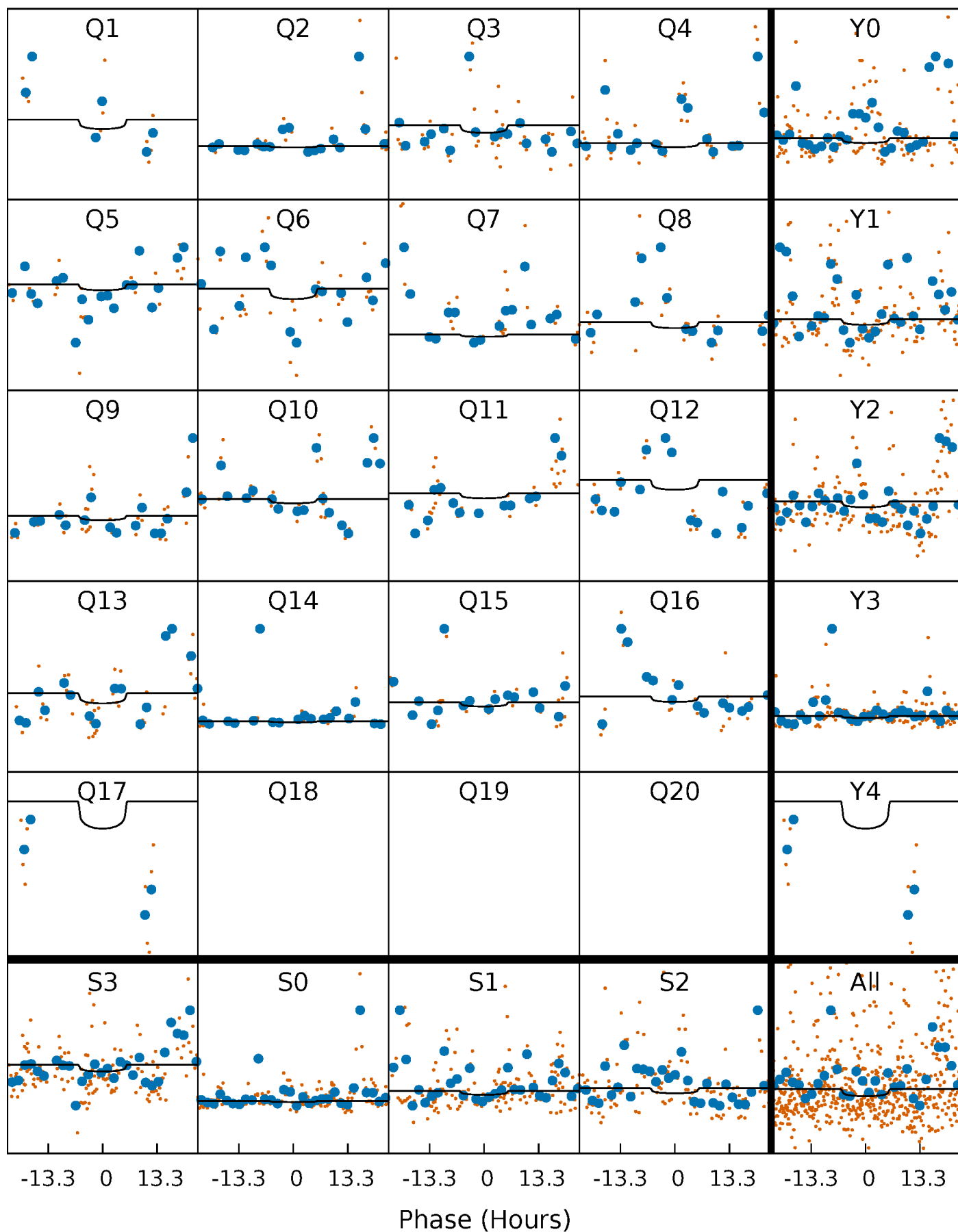
# PDC Quarter-Phased Transit Curves

TCE 007741987-02 P= 15.876596 Days  $T_0=141.074101$  (BKJD)



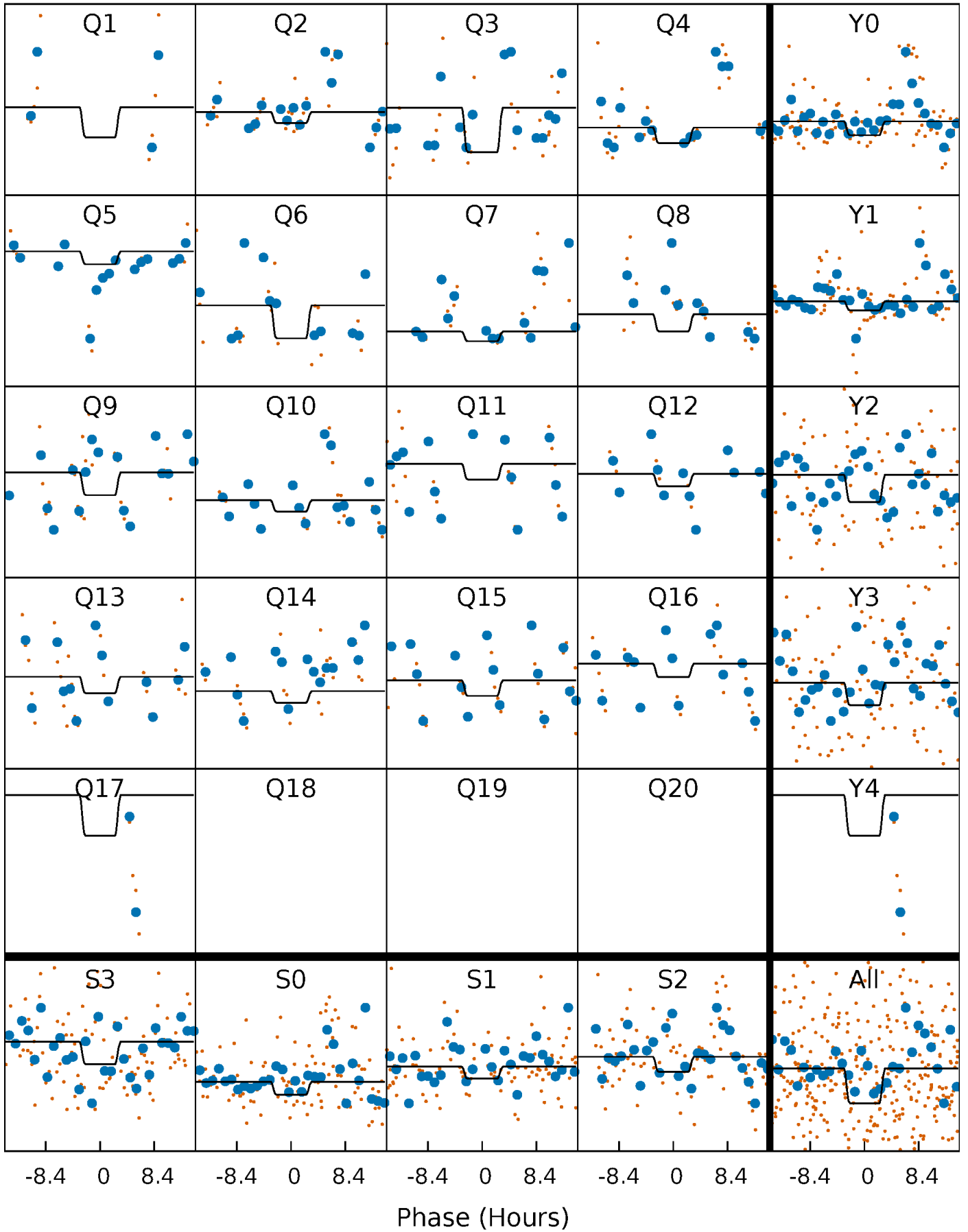
# DV Quarter-Phased Transit Curves

TCE 007741987-02   P= 15.876596 Days    $T_0=141.074101$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

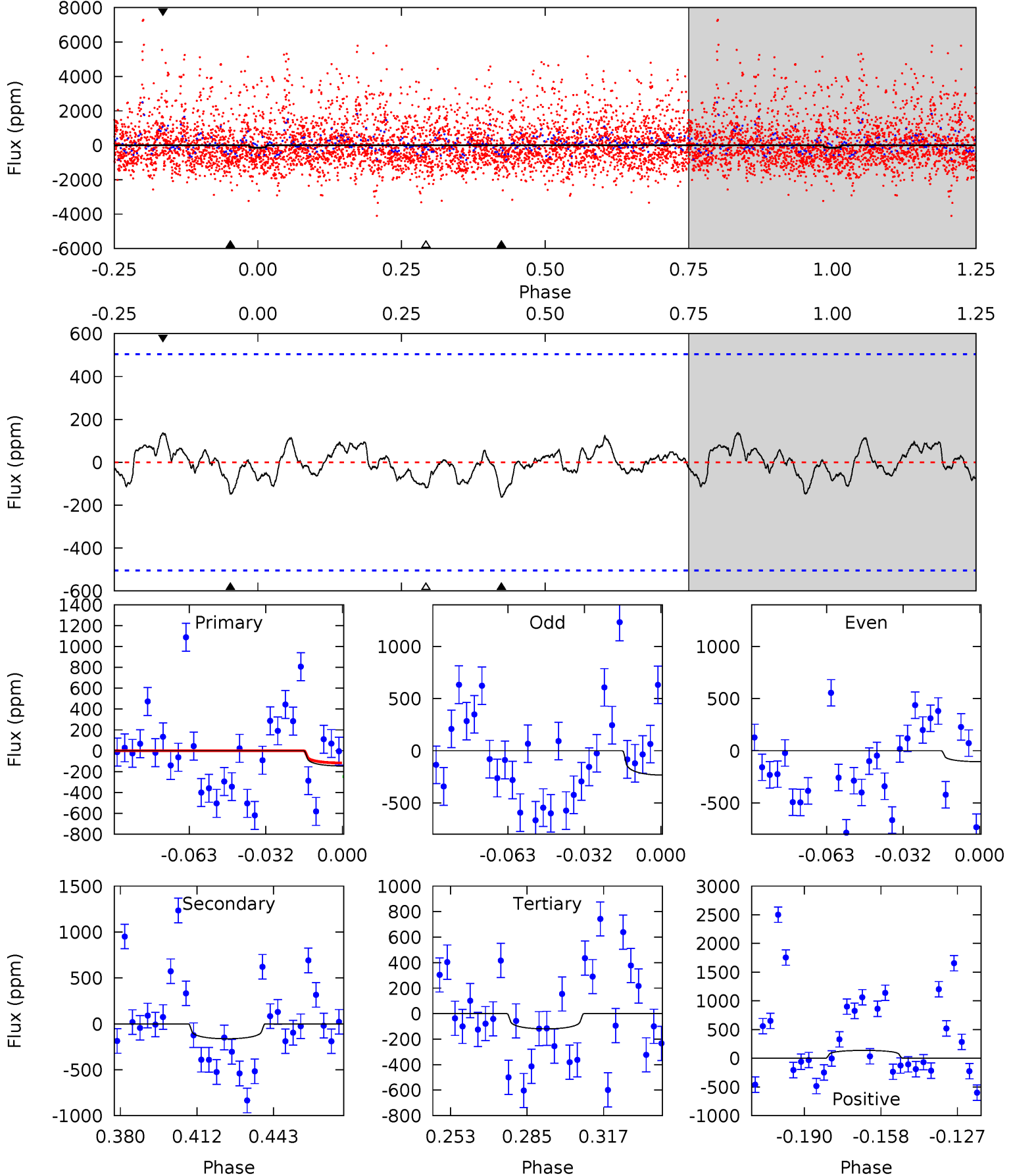
TCE 007741987-02   P= 15.883500 Days    $T_0=140.718411$  (BKJD)



# DV Model-Shift Uniqueness Test

007741987-02, P = 15.876596 Days, E = 125.197505 Days

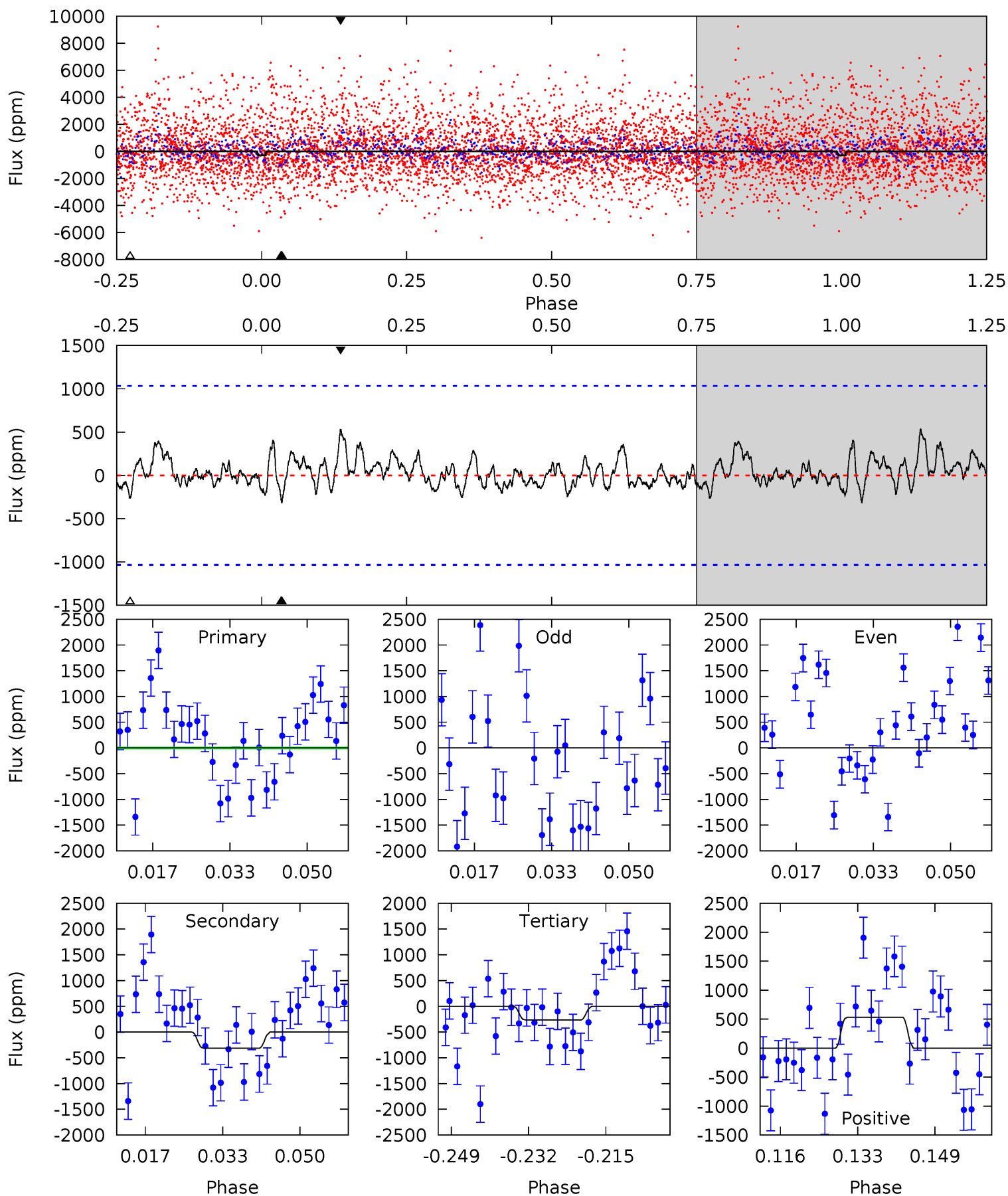
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1.39	1.55	1.14	1.30	4.80	2.15	0.53	0.25	0.09	0.41	0.24	0.58	-0.56	0.46	0.64



# Alt Model-Shift Uniqueness Test

007741987-02, P = 15.883500 Days, E = 124.834911 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1.35	1.51	1.27	2.55	4.93	2.40	0.66	0.08	-1.21	0.24	-1.05	0.77	0.94	0.63	0.84





### Stellar Parameters For KIC 007741987

	$T_{\text{eff}} (K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$3360^{+40}_{-43}$	$5.025^{+0.036}_{-0.045}$	$-0.100^{+0.100}_{-0.100}$	$0.254^{+0.031}_{-0.031}$	$0.249^{+0.038}_{-0.038}$	$21.530^{+4.952}_{-4.384}$
	+1%/-1%	+1%/-1%	+100%/-100%	+12%/-12%	+15%/-15%	+23%/-20%
Source	PHO2	PHO2	PHO2	DSEP		

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

### Secondary Eclipse Parameters for KIC 007741987-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-163 \pm 105$	$1.70^{+1.89}_{-1.16}$	$376^{+9}_{-9}$	$2197^{+725}_{-360}$	$166^{+1442}_{-139}$
Alt.	$-315 \pm 210$	$2.01^{+1.82}_{-1.39}$	$375^{+9}_{-9}$	$2272^{+765}_{-377}$	$223^{+1889}_{-183}$

$T_{\text{max}}$  = 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

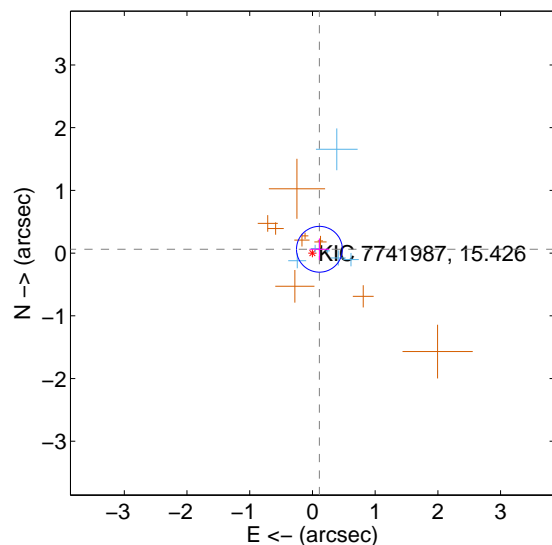
Supplemental centroid analysis for 007741987-02. Kepler magnitude: 15.43. Transit SNR 2.94

There are 6 quarters with good PRF difference image offsets

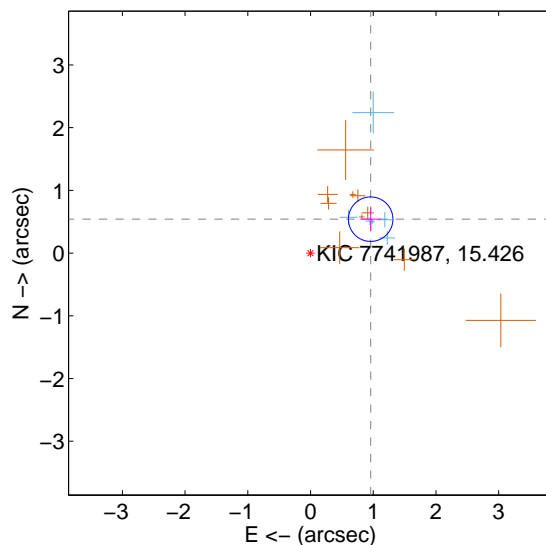
The direct PRF centroid is offset from the target star catalog position by about 0.99 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.127 \pm 0.122$	1.04	$-0.111 \pm 0.158$	$0.061 \pm 0.172$
PRF-fit source offset from KIC position	<b><math>1.101 \pm 0.118</math></b>	<b>9.31</b>	$-0.959 \pm 0.166$	$0.541 \pm 0.188$
photometric centroid source offset	$1.54 \pm 0.56$	2.74	$-1.01 \pm 0.55$	$1.15 \pm 0.56$

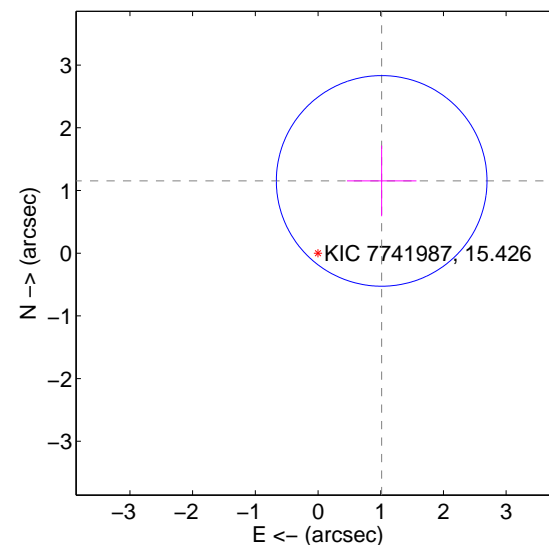
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

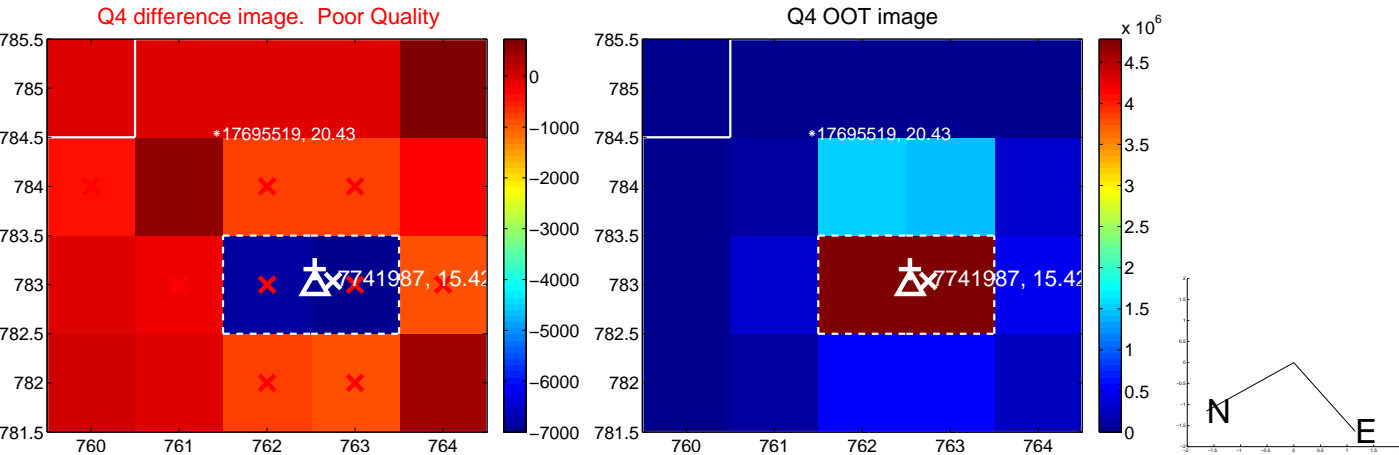
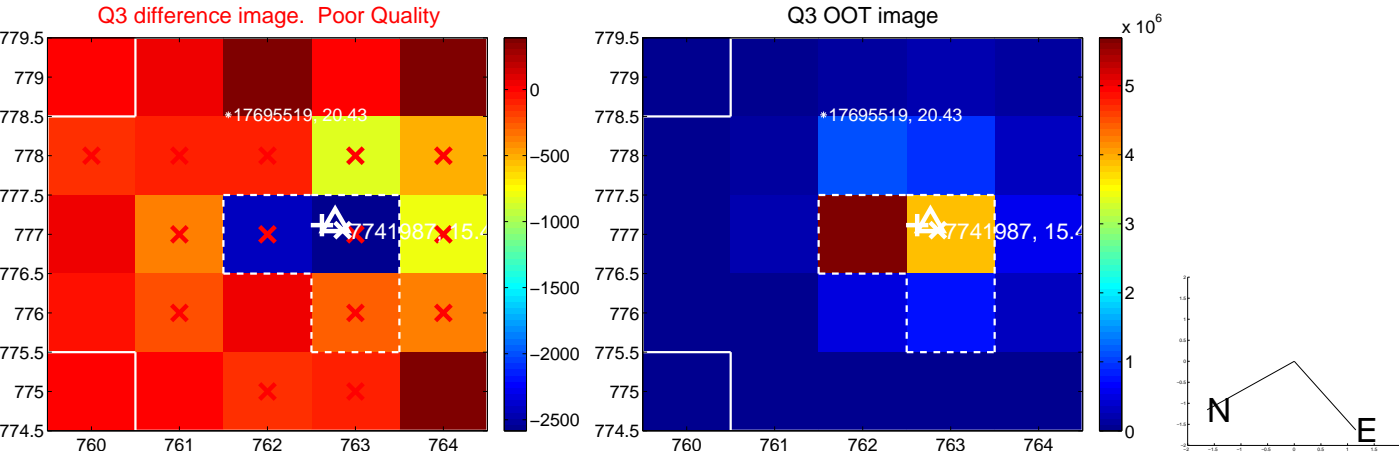
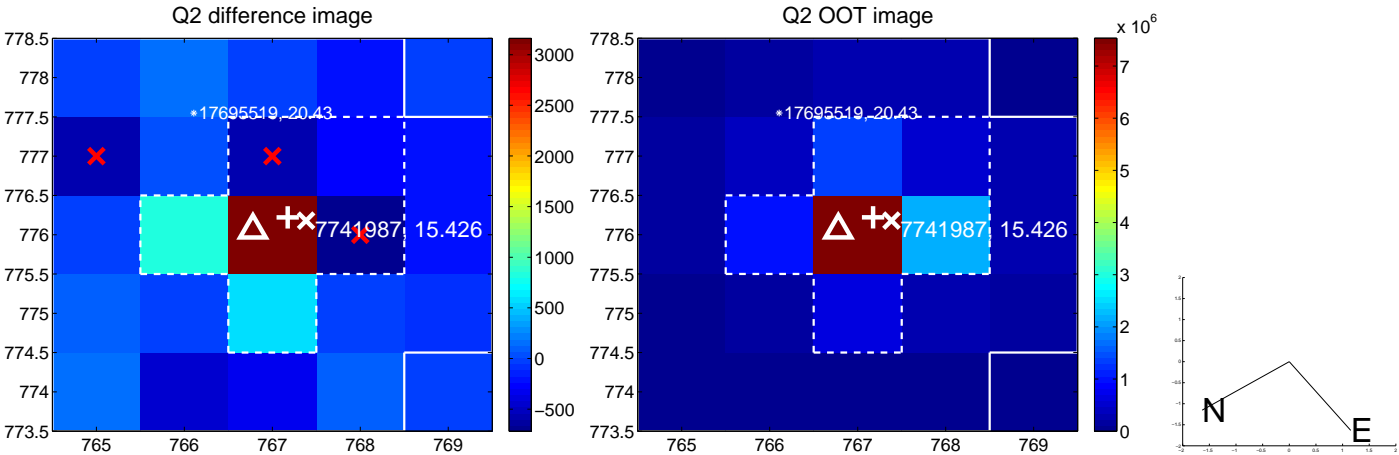
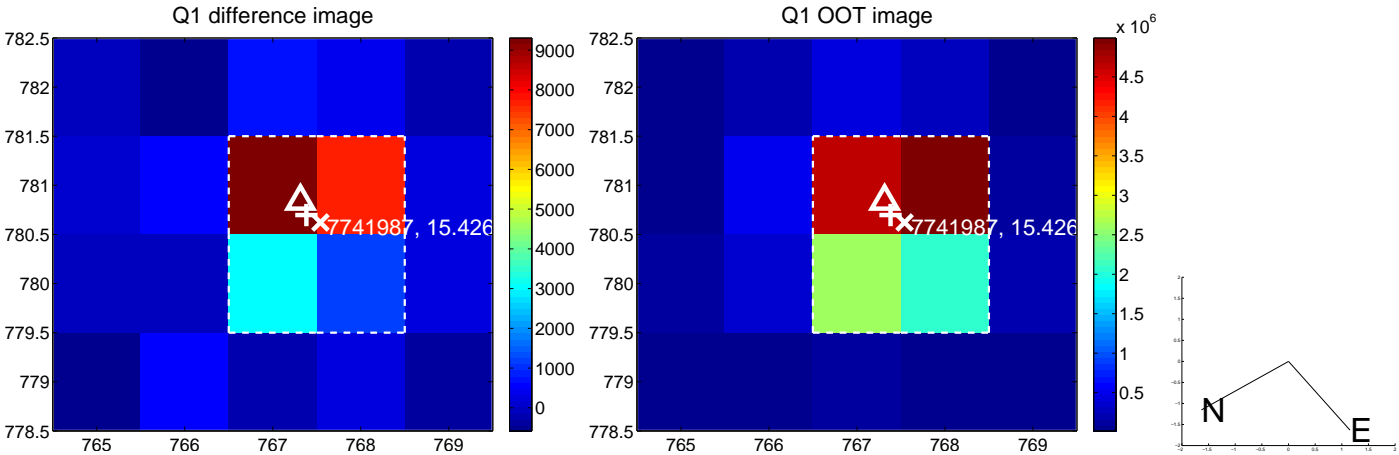


offset from photometric centroids

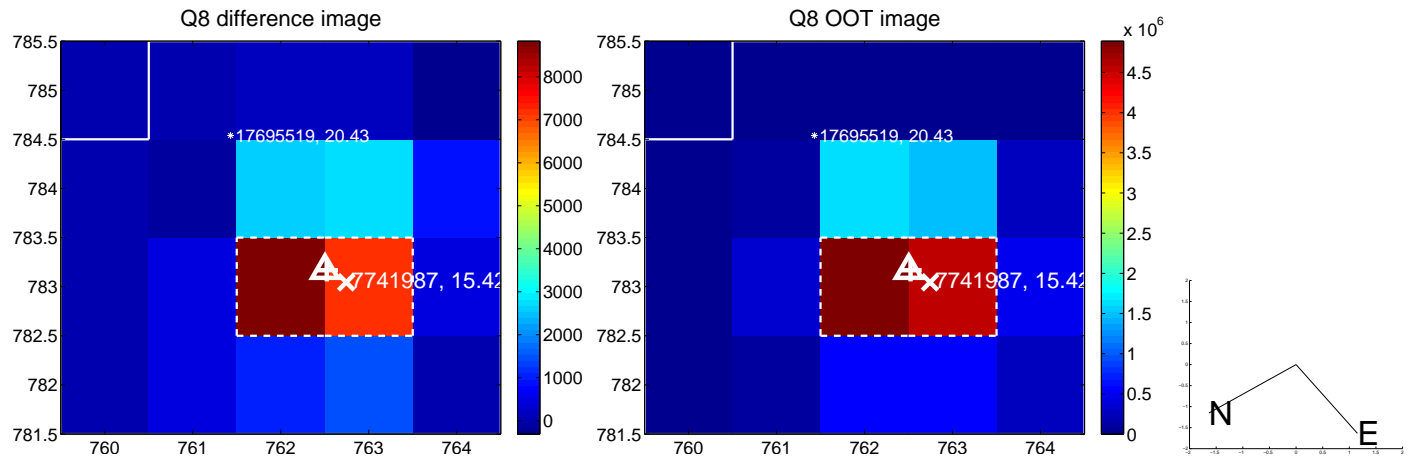
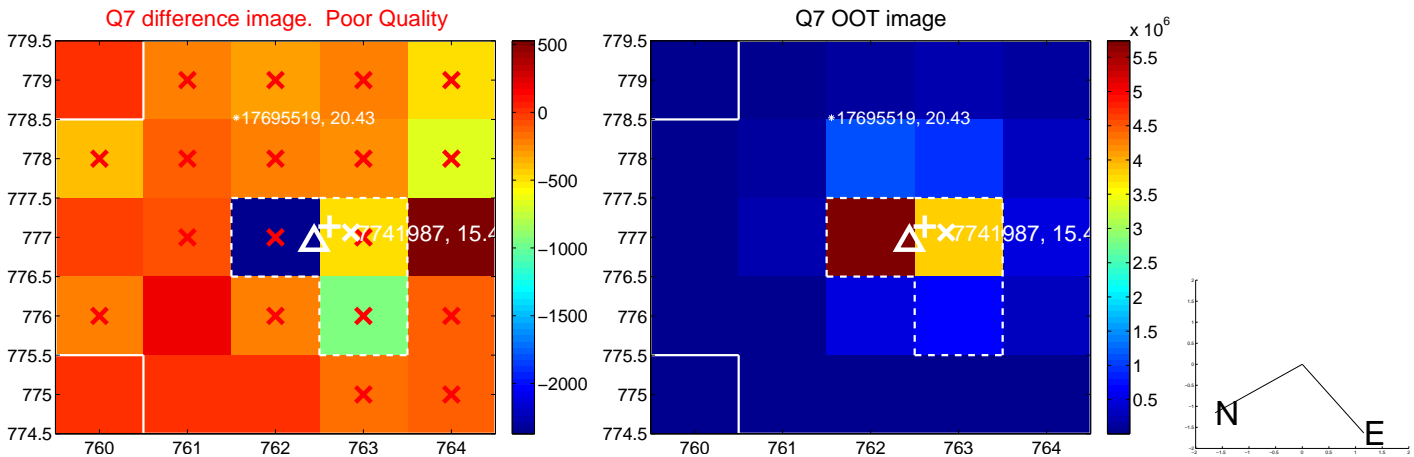
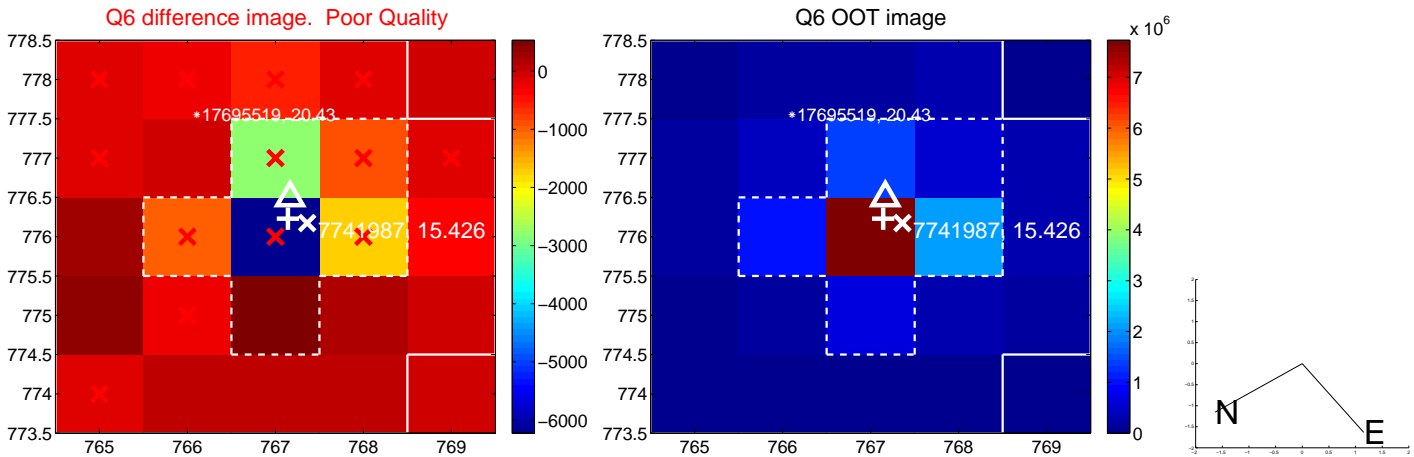
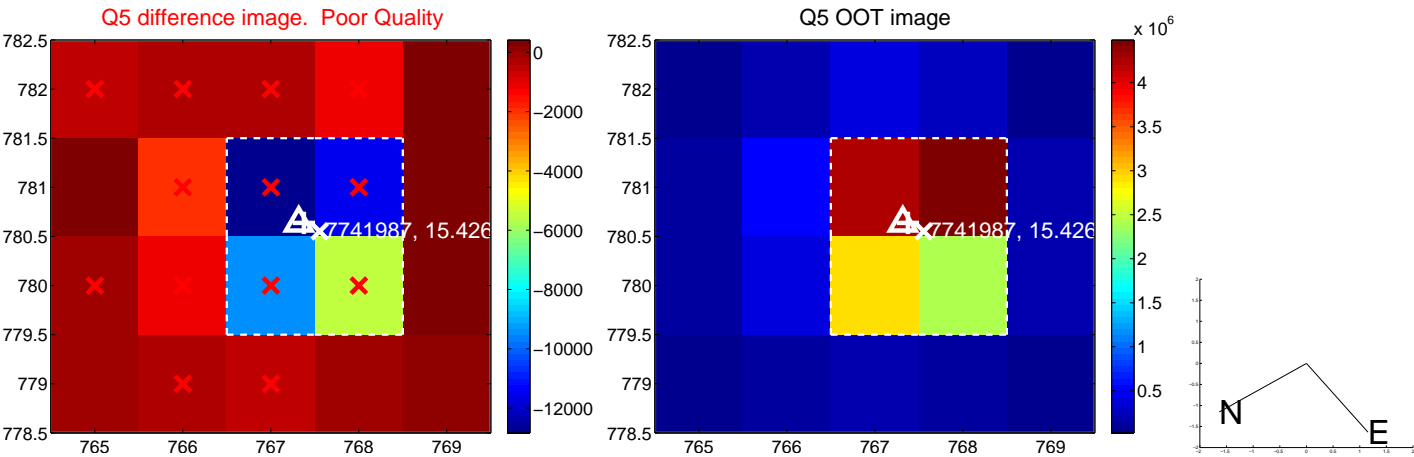


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

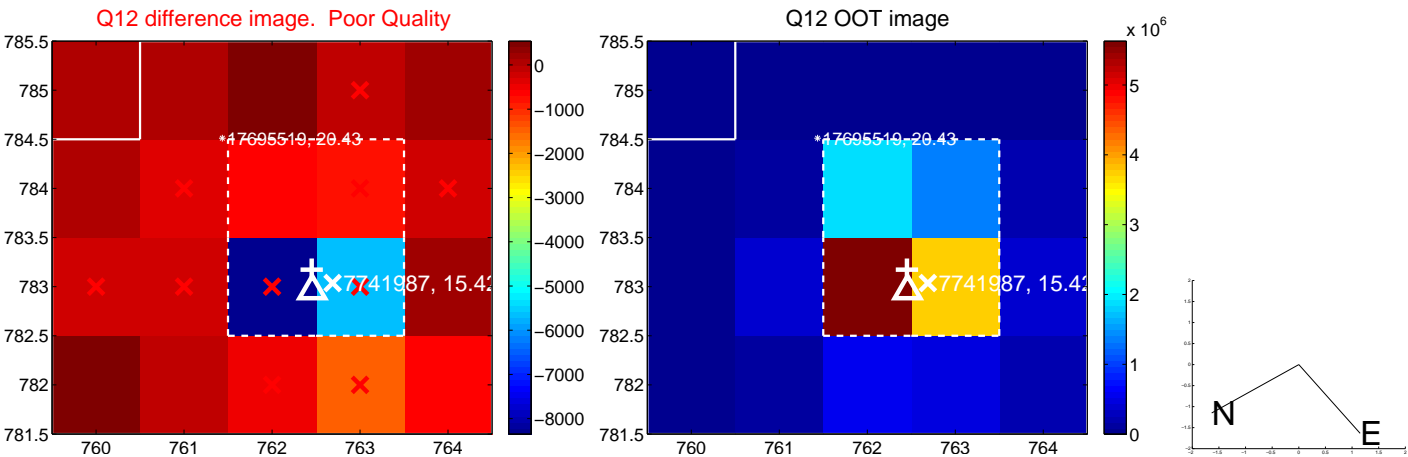
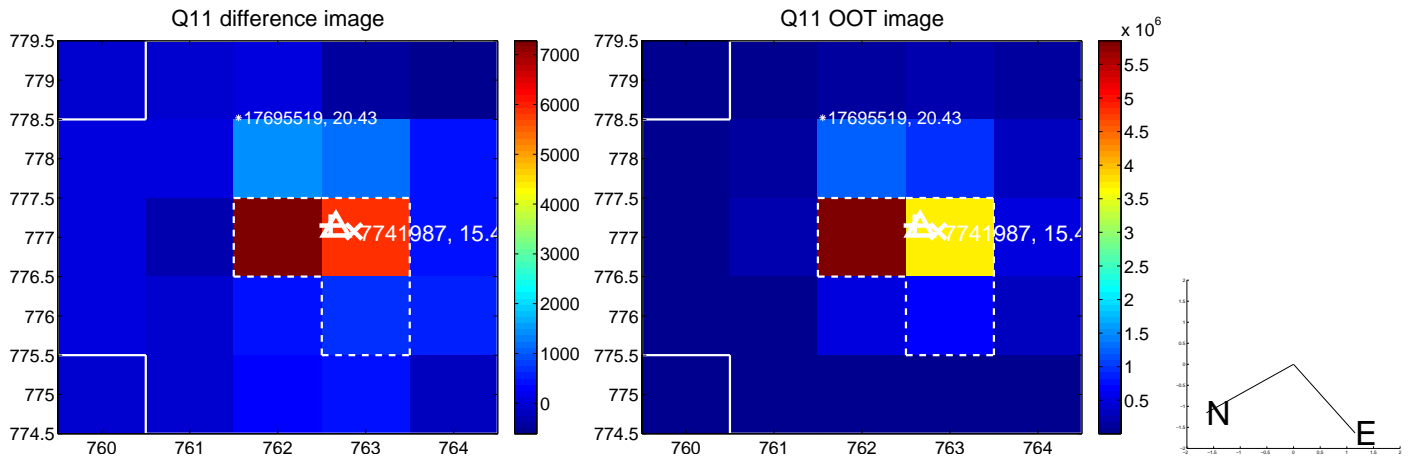
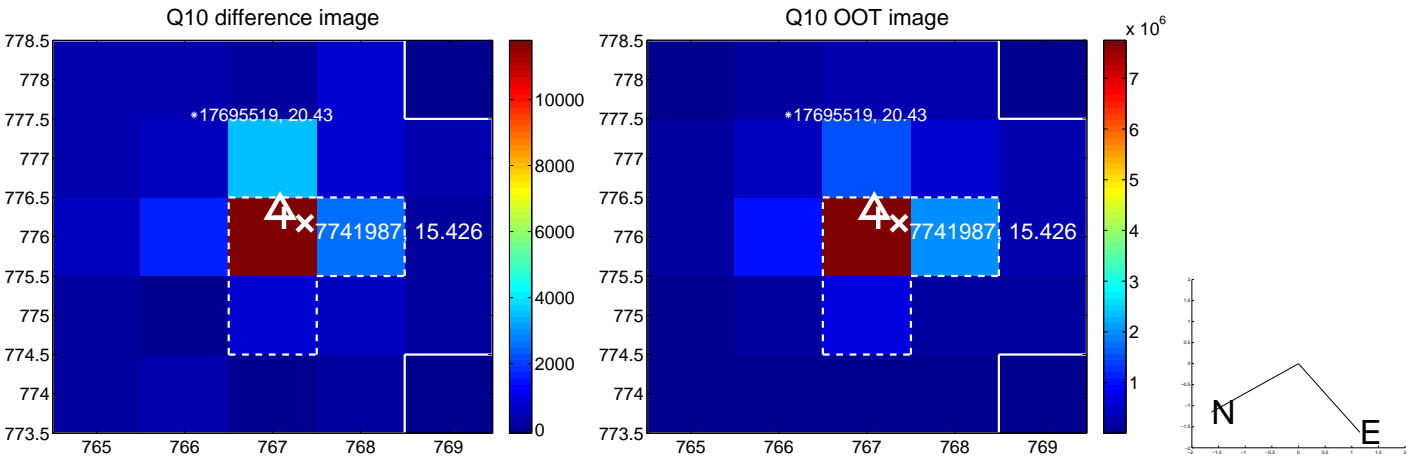
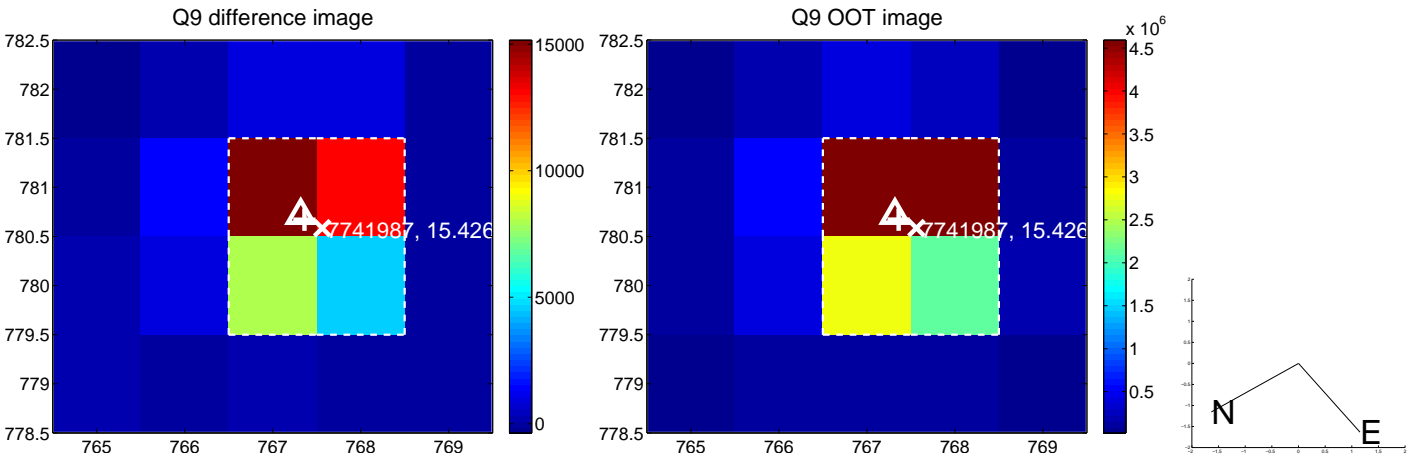
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



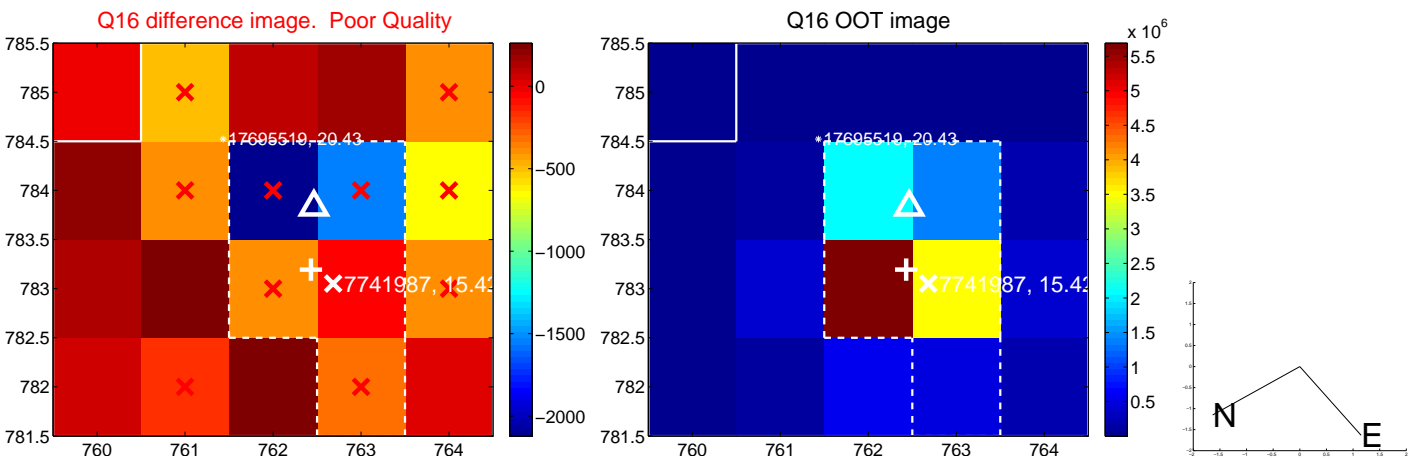
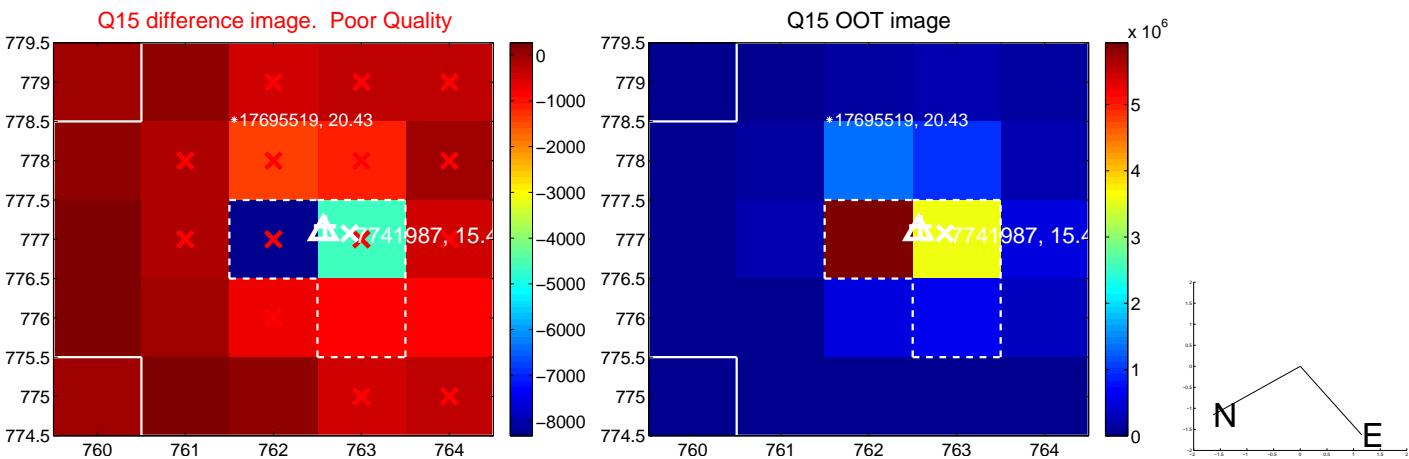
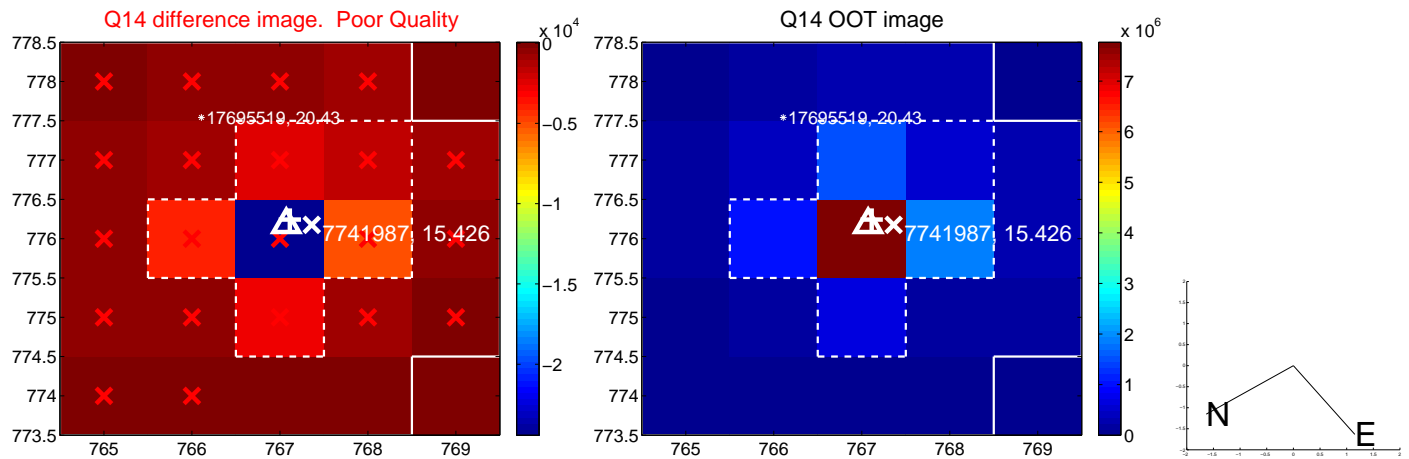
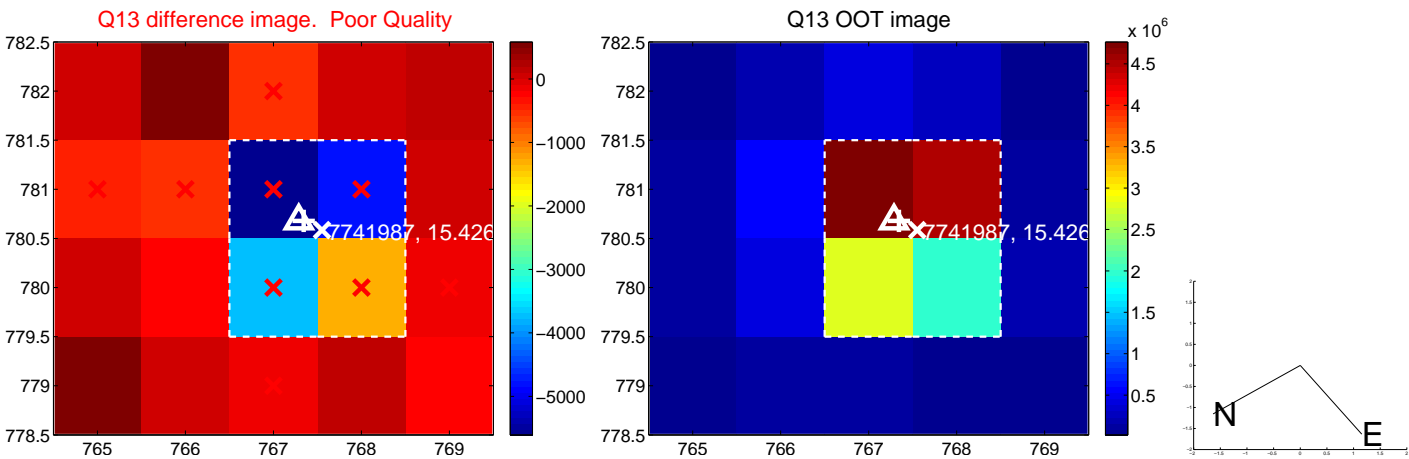
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

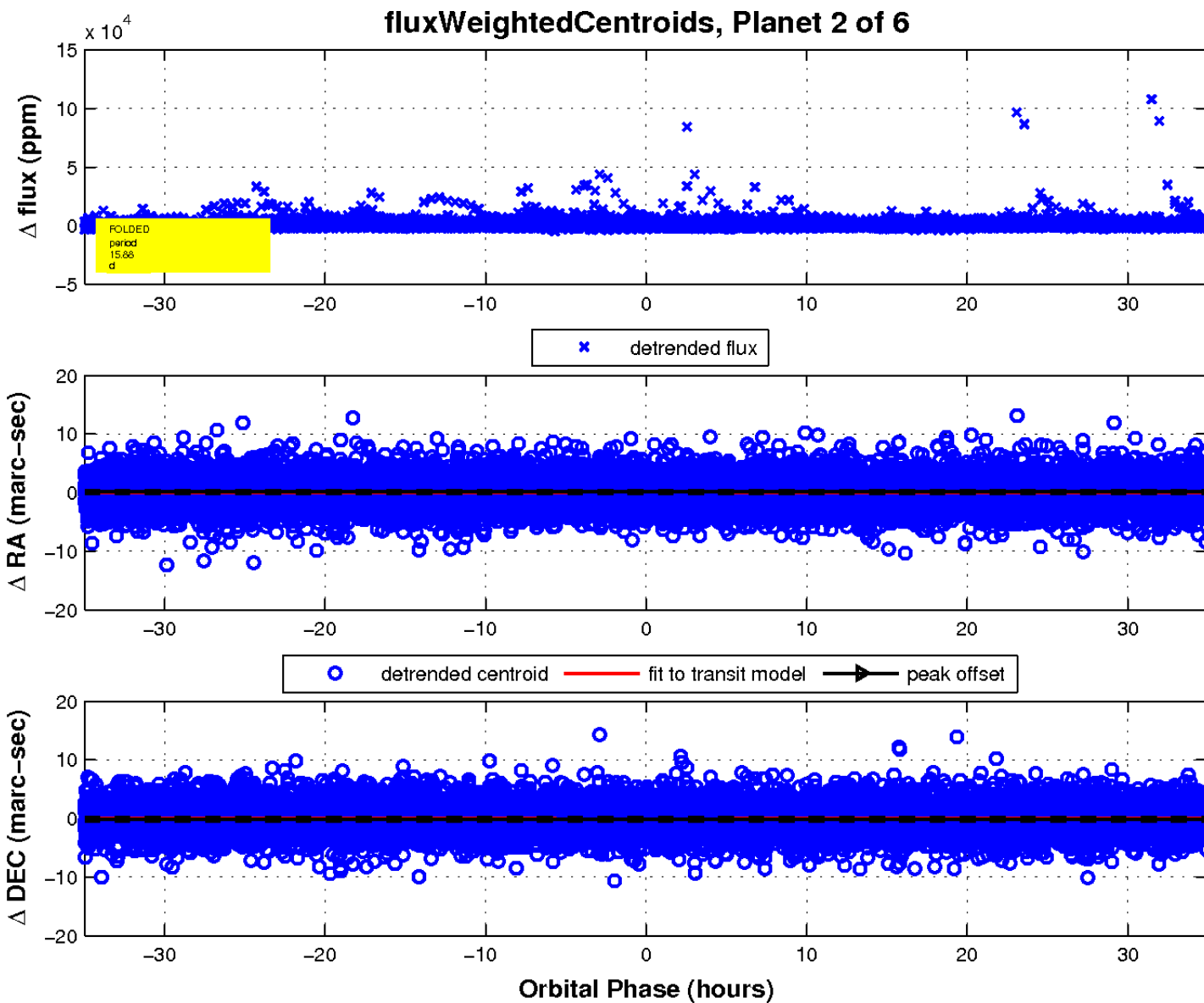
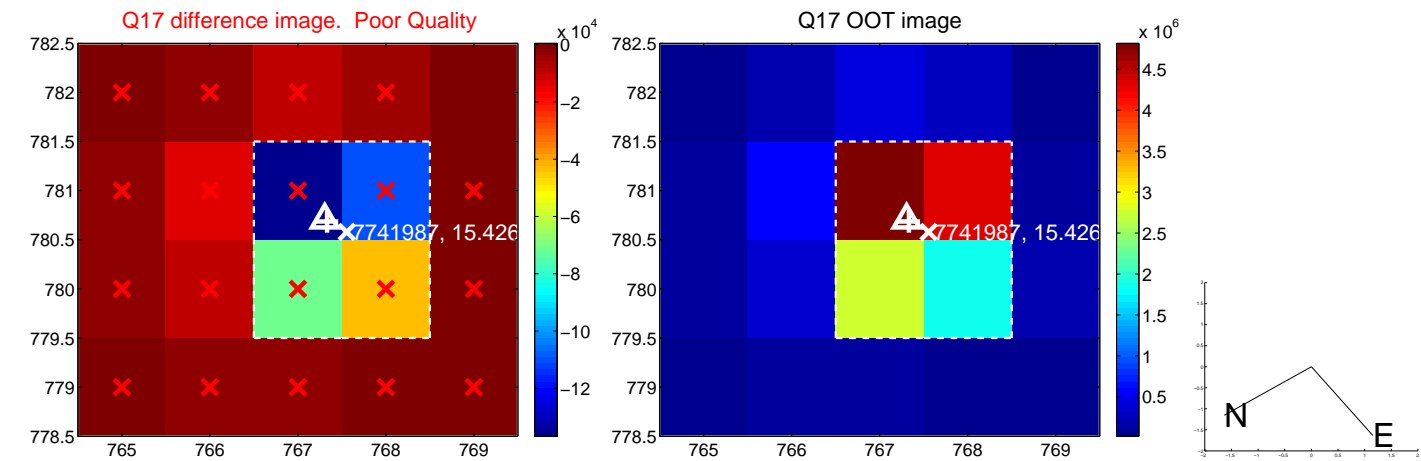


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



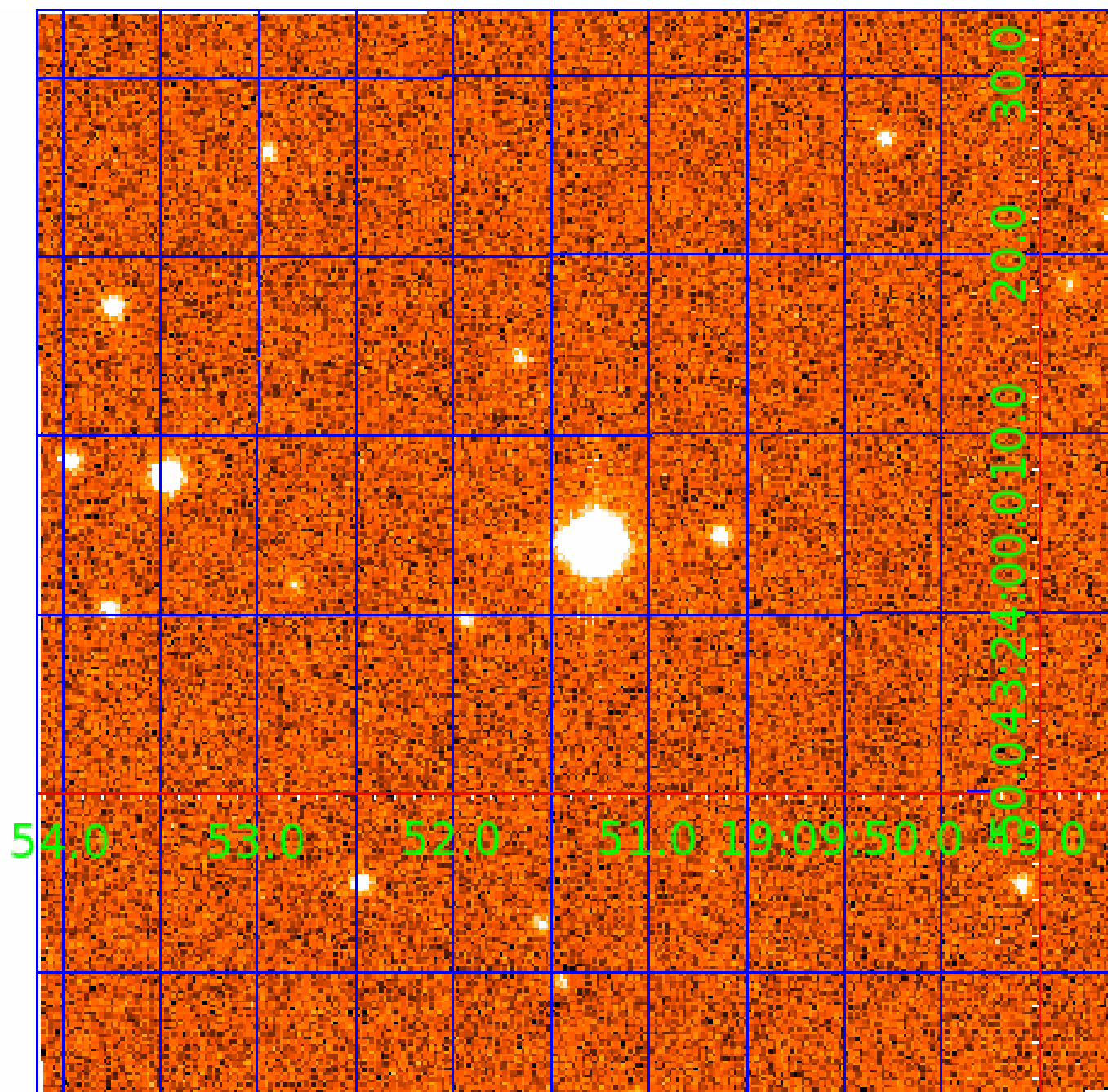


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



# UKIRT Image

Declination



# KIC 007741987

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007741987-01	OBS	No	1.259365	131.617515	10.2	9.143	14.0	0.5	0.25	3360	0.08	35.70
007741987-02	OBS	No	15.876596	141.074101	314.7	11.660	10.5	2.9	0.25	3360	0.46	1.22
007741987-04	OBS	No	15.584793	146.416289	752.0	4.167	9.1	5.3	0.25	3360	1.19	1.25
007741987-05	OBS	No	4.115441	133.440295	415.1	5.104	8.7	6.1	0.25	3360	0.59	7.36
007741987-06	OBS	No	9.997179	139.073486	1343.7	1.821	7.8	8.9	0.25	3360	0.92	2.25

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007741987-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—CENT_KIC_POS
007741987-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_ZUMA_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_KIC_POS
007741987-04	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_KIC_POS—HALO_GHOST
007741987-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_KIC_POS
007741987-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_KIC_POS

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

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

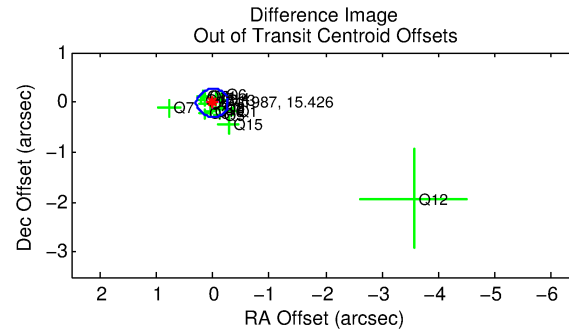
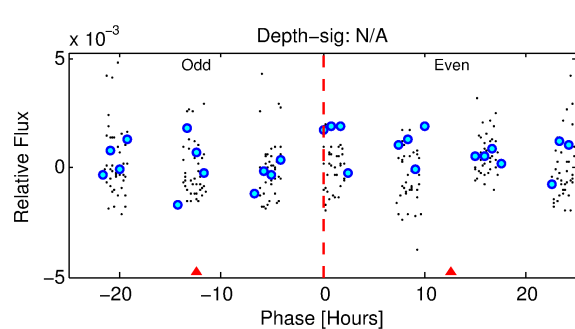
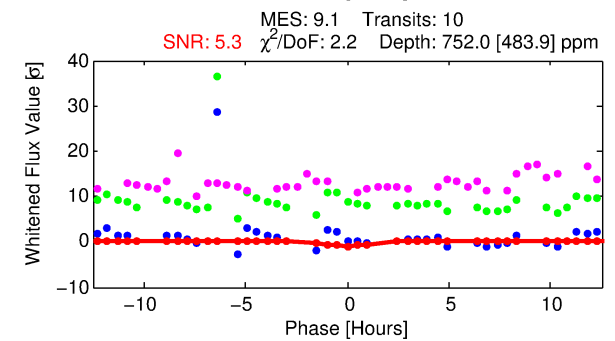
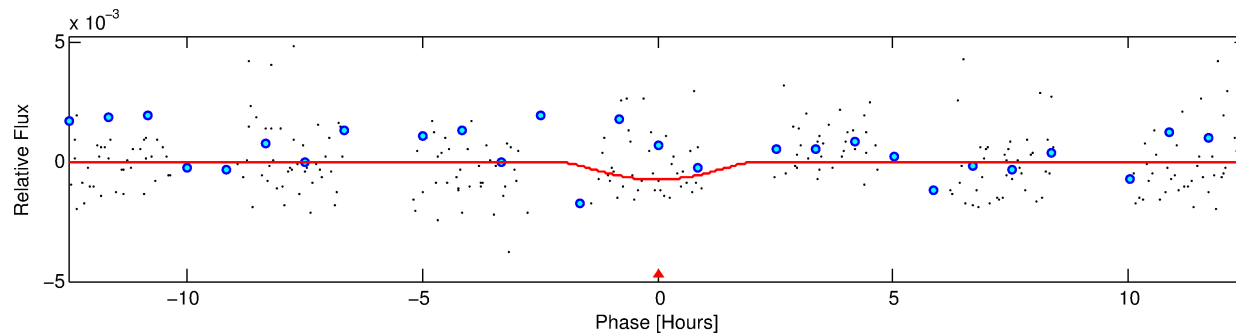
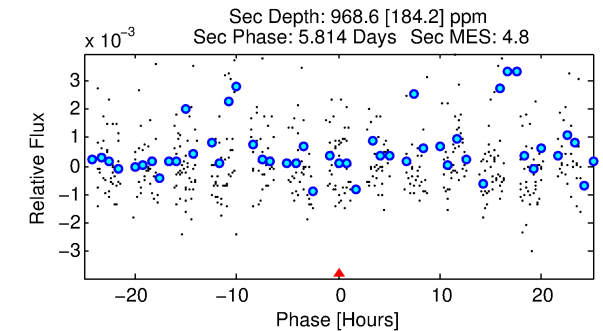
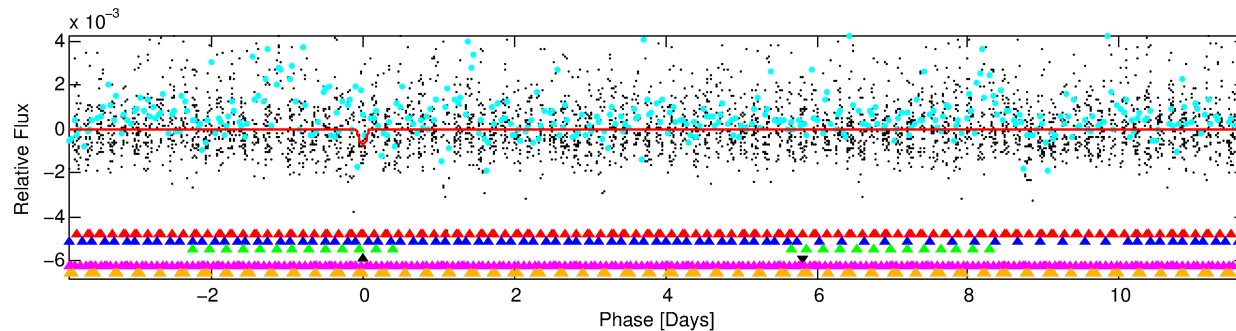
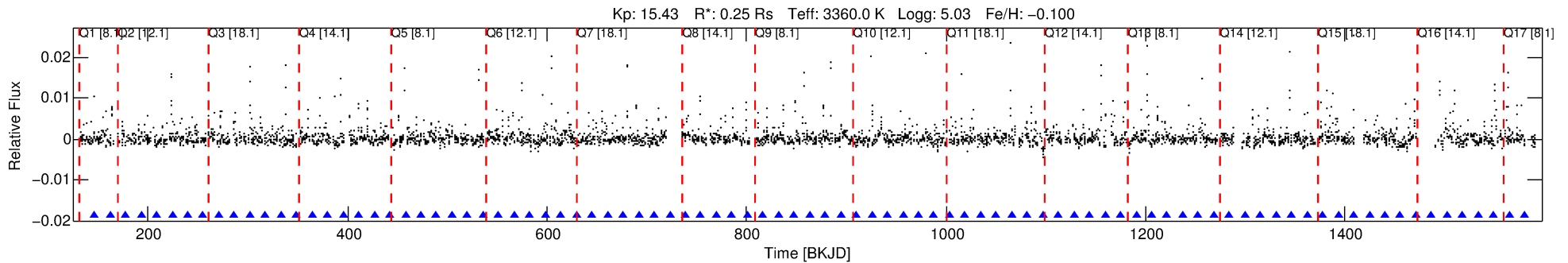
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 007741987-04

No Significant Match Found

# DV One-Page Summary

KIC: 7741987 Candidate: 4 of 6 Period: 15.585 d



## DV Fit Results:

Period = 15.58479 [0.00118] d  
Epoch = 146.4163 [0.0571] BKJD  
Rp/R\* = 0.0431 [0.9779]  
a/R\* = 9.62 [83.65]  
b = 0.99 [1.67]  
Seff = 1.25 [0.15]  
Teq = 269 [8] K  
Rp = 1.19 [27.11] Re  
a = 0.0769 [0.0068] AU  
Ag = 2211.01 [100448.66] [0.02σ]  
Teffp = 2857 [32447] K [0.08σ]

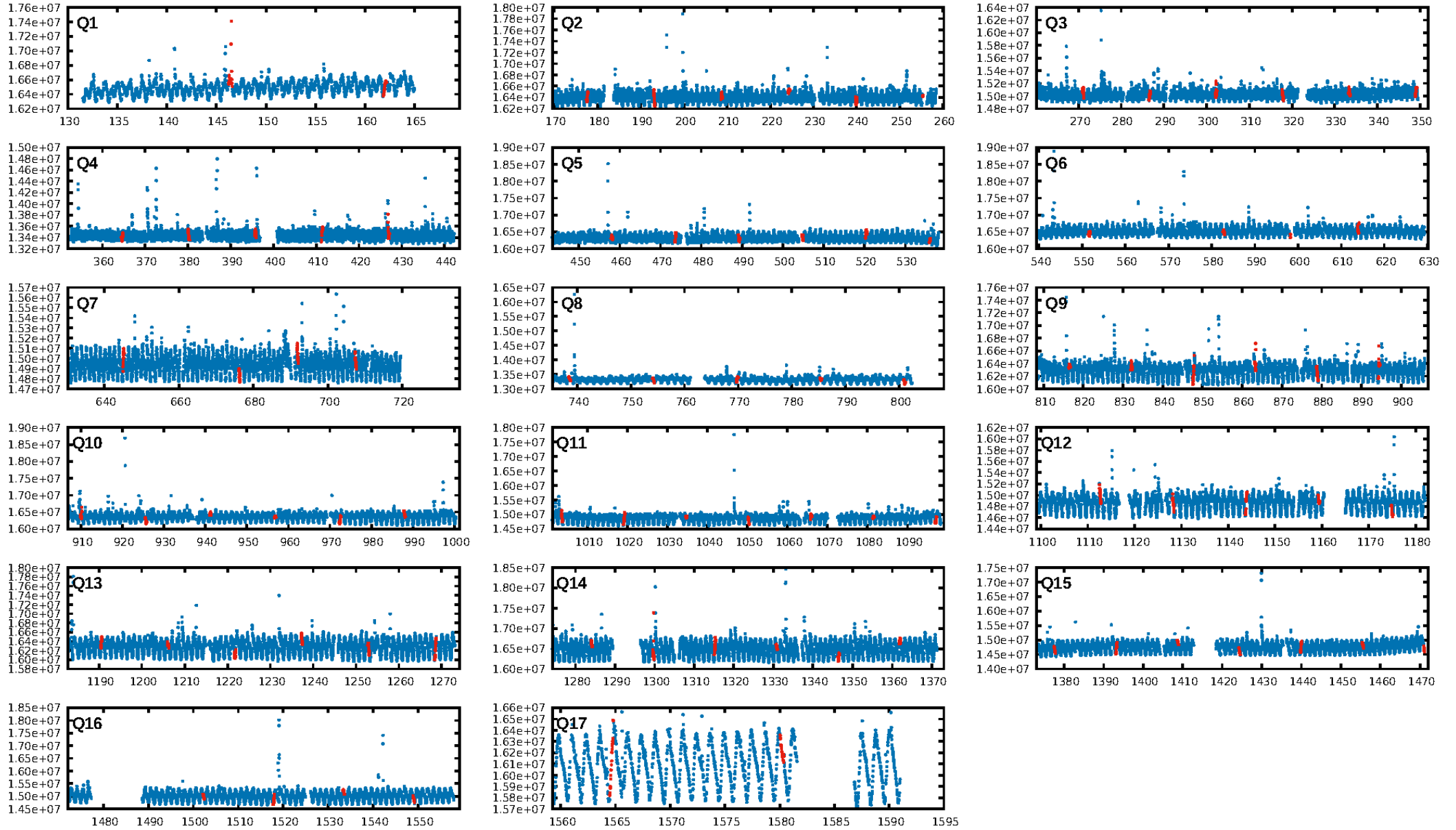
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [29.49σ]  
LongPeriod-sig: 42.8% [0.57σ]  
ModelChiSquare2-sig: 0.0%  
ModelChiSquareGof-sig: 99.8%  
Bootstrap-pfa: 7.41e-29  
RollingBand-fgt: 1.00 [10/10]  
GhostDiagnostic-chr: 0.2333  
Centroid-sig: 2.8%  
Centroid-so: 0.917 arcsec [1.80σ]  
OotOffset-rm: 0.012 arcsec [0.13σ]  
KicOffset-rm: 0.960 arcsec [5.93σ]  
OotOffset-st: 4/4/4/4 [16]  
KicOffset-st: 4/4/4/4 [16]  
DiffImageQuality-fgm: 0.50 [8/16]  
DiffImageOverlap-fno: 0.35 [6/17]

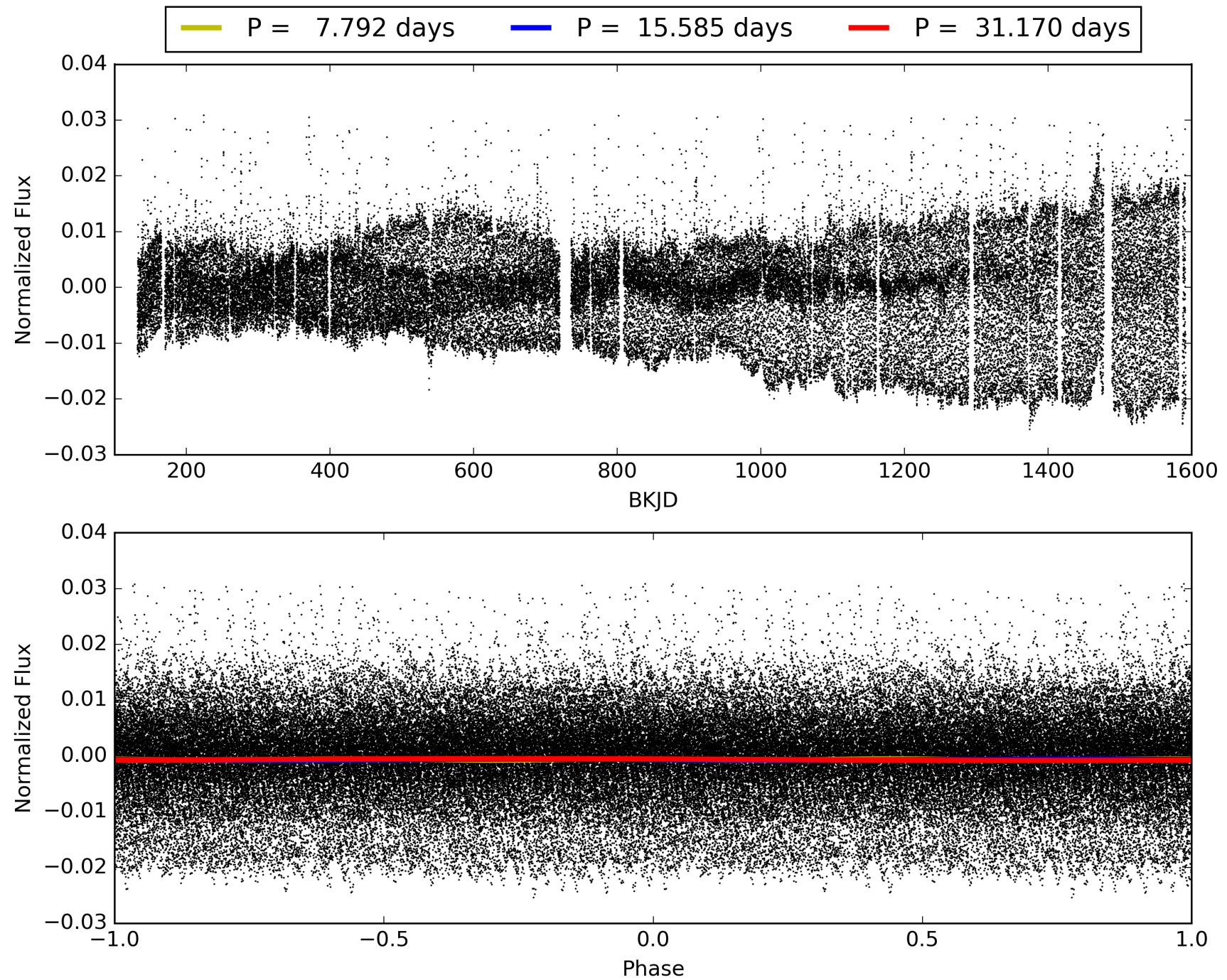
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 02:27:37 Z

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

# TCE 007741987-04, PDC Light Curves



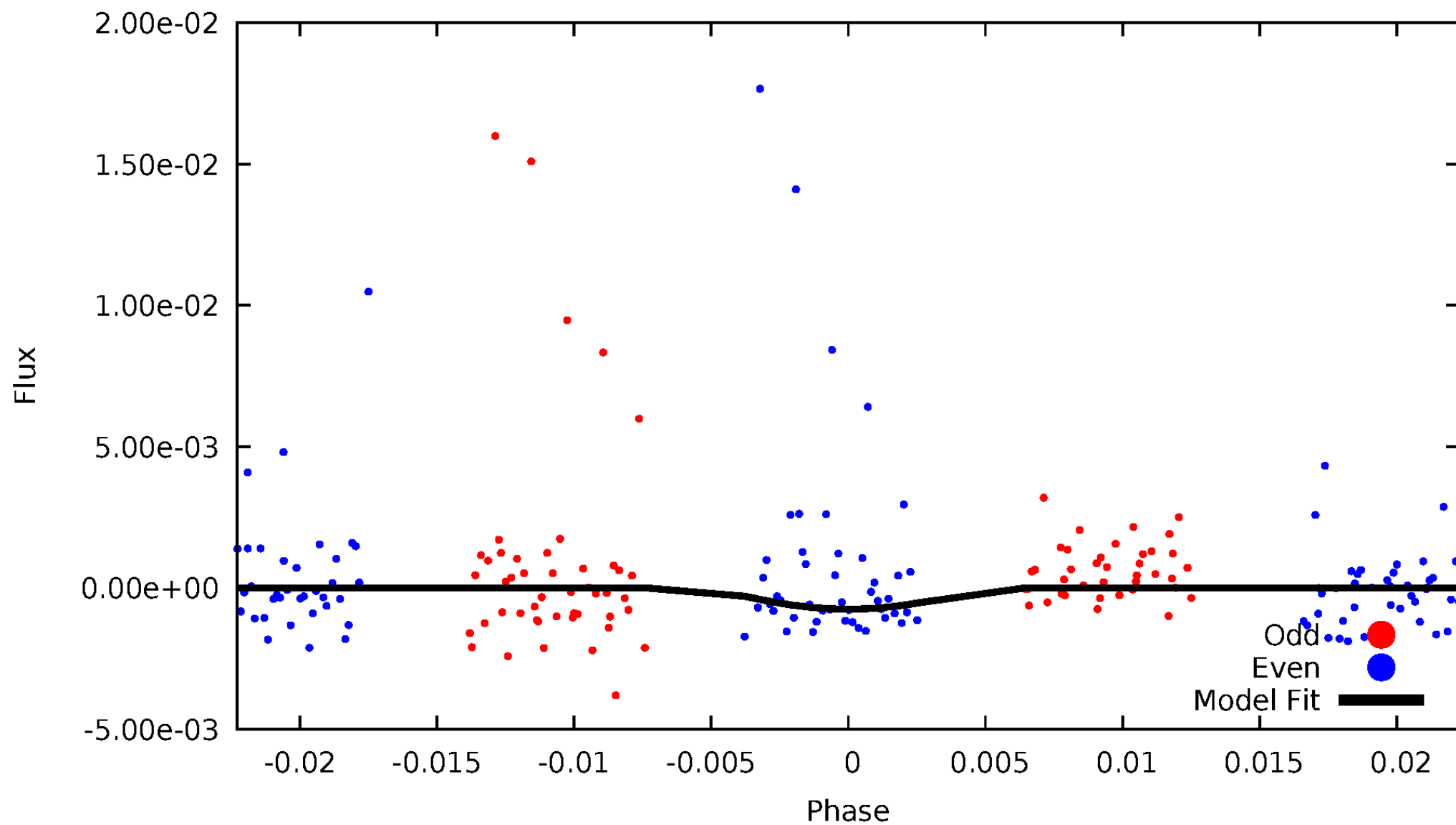
# TCE 007741987-04





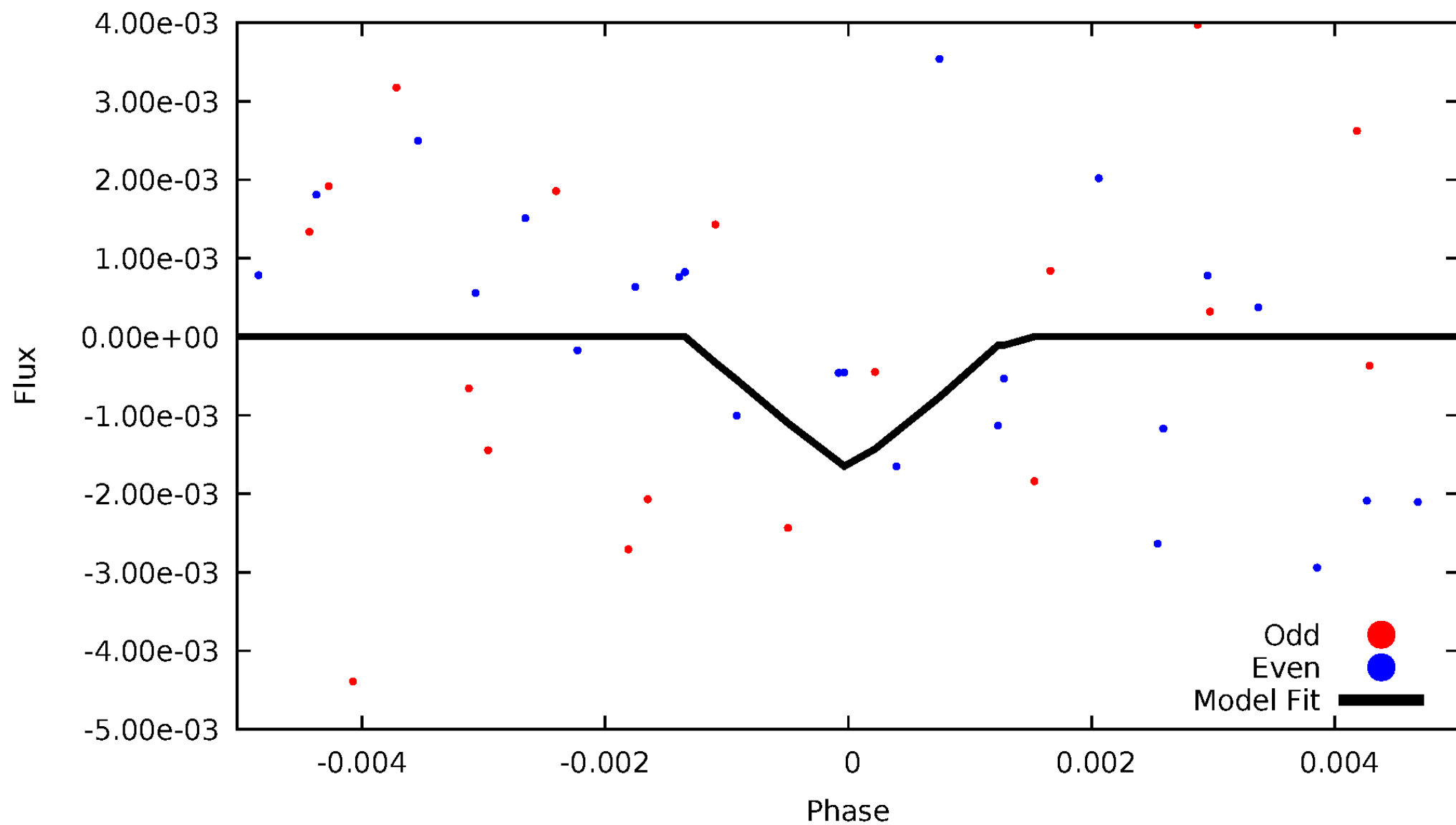
# DV Odd/Even

TCE 007741987-04



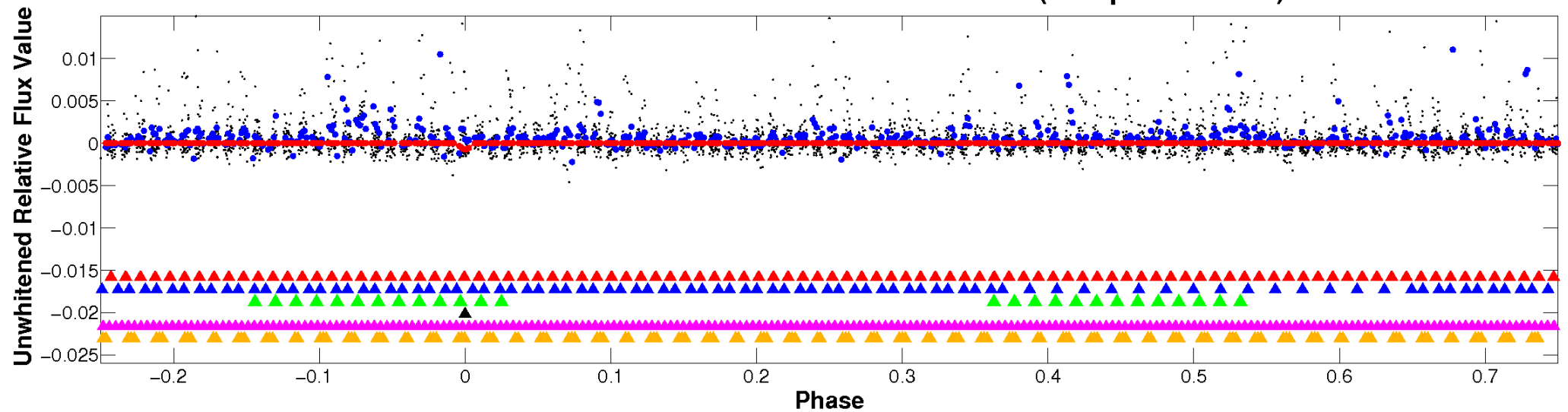
# ALT Odd/Even

TCE 007741987-04

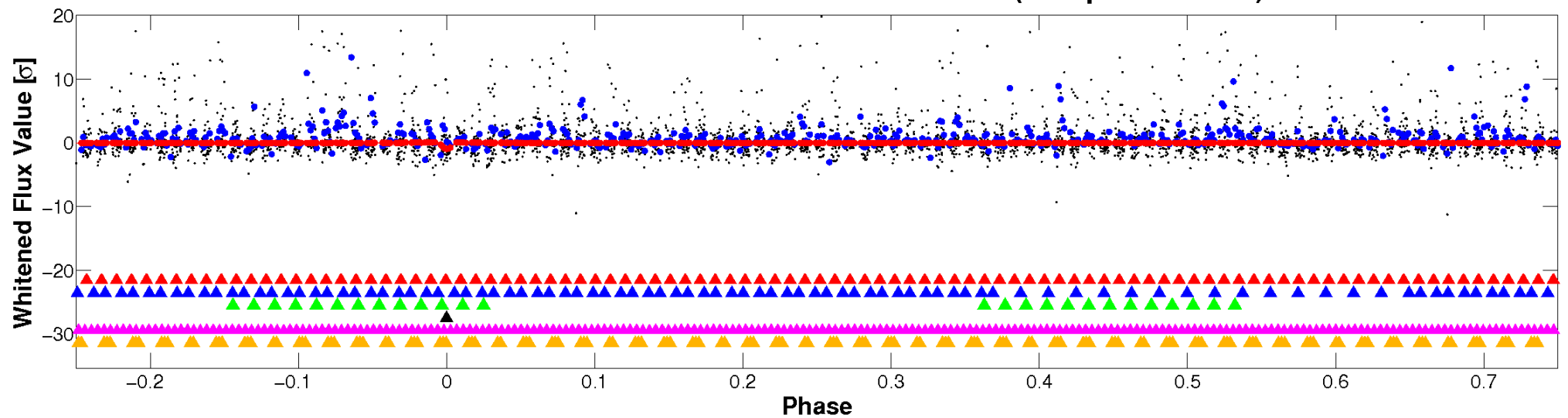


# Non-Whitened Vs. Whitened Light Curve

## Planet 4 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

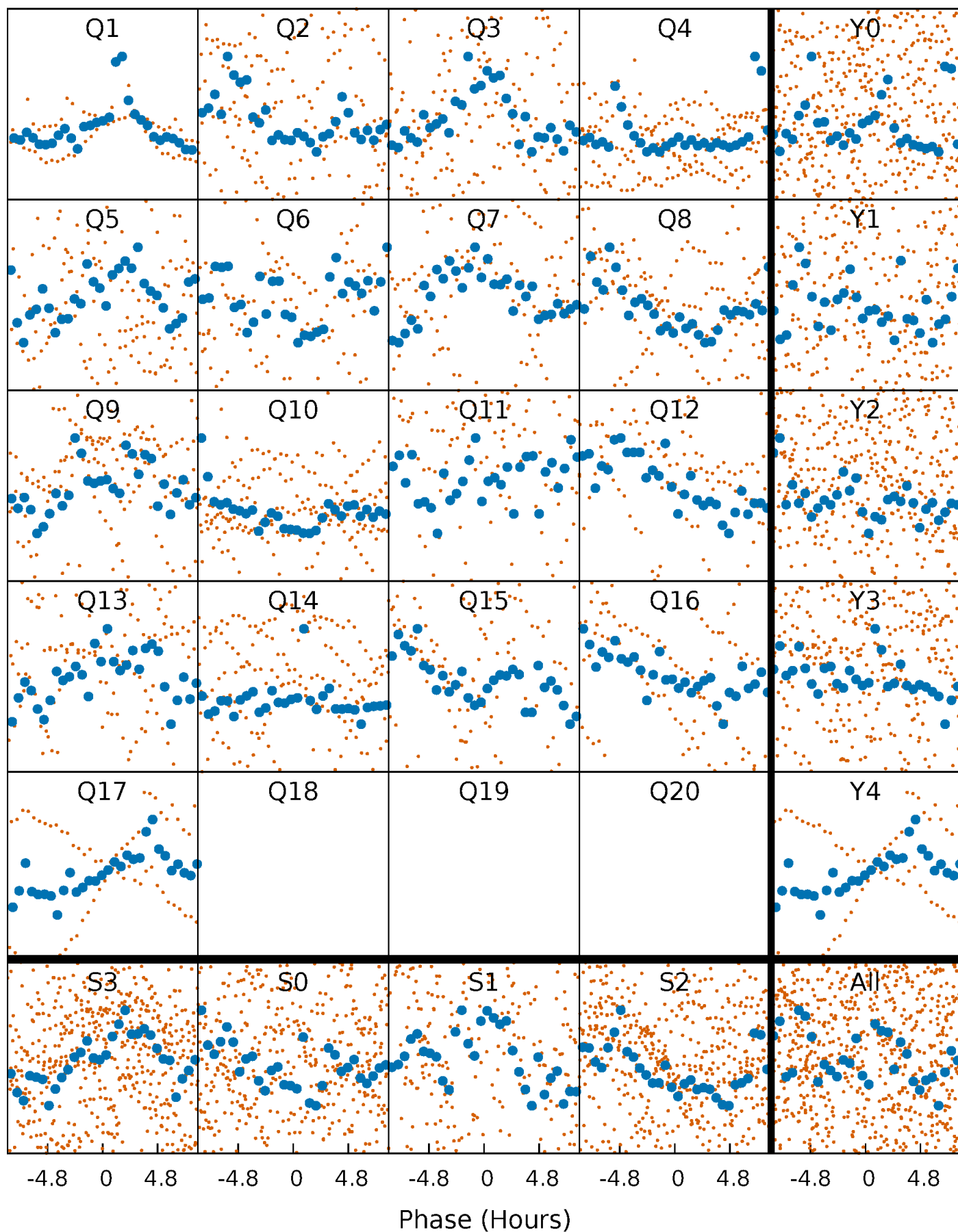


## Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



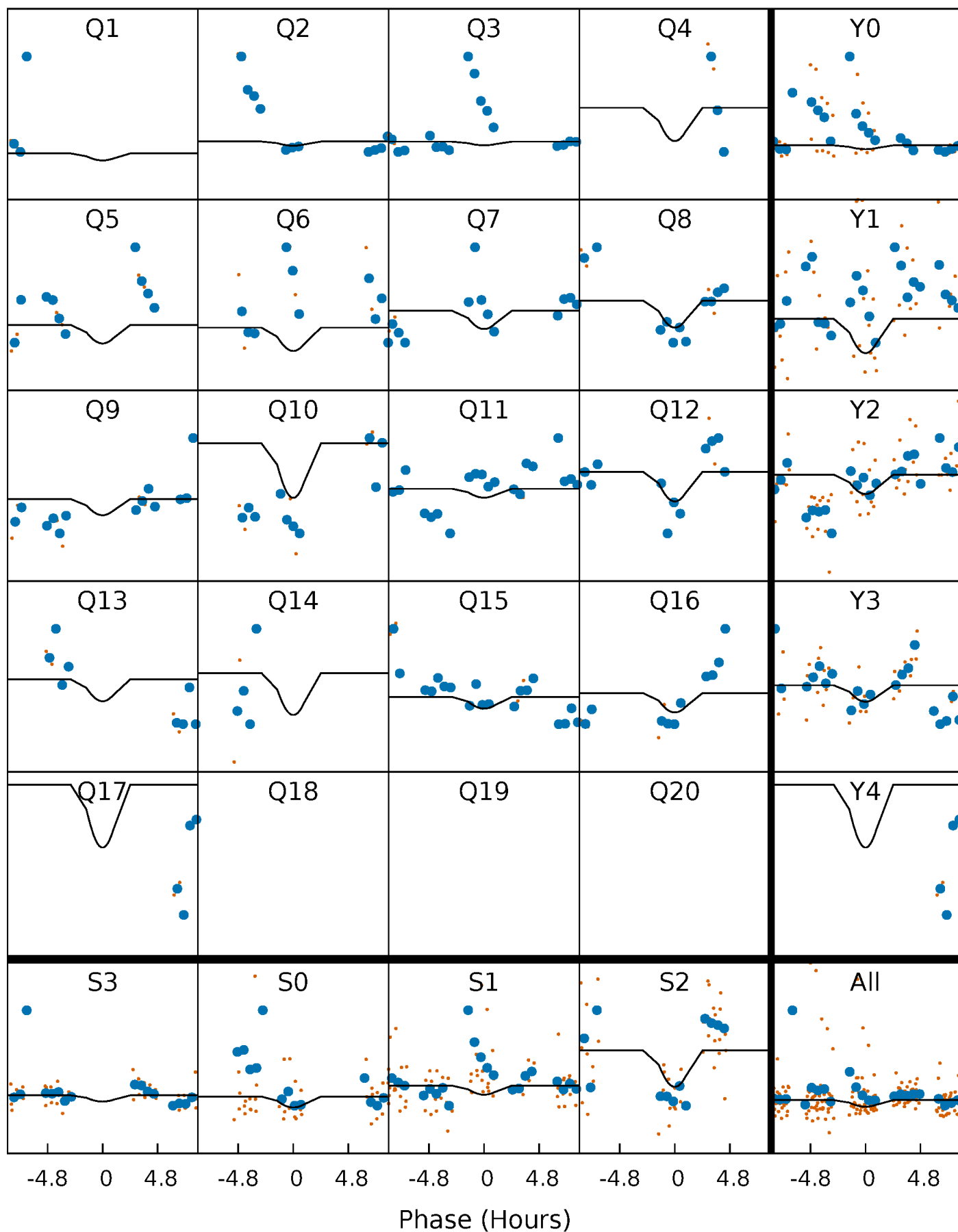
# PDC Quarter-Phased Transit Curves

TCE 007741987-04 P= 15.584793 Days  $T_0=146.416289$  (BKJD)



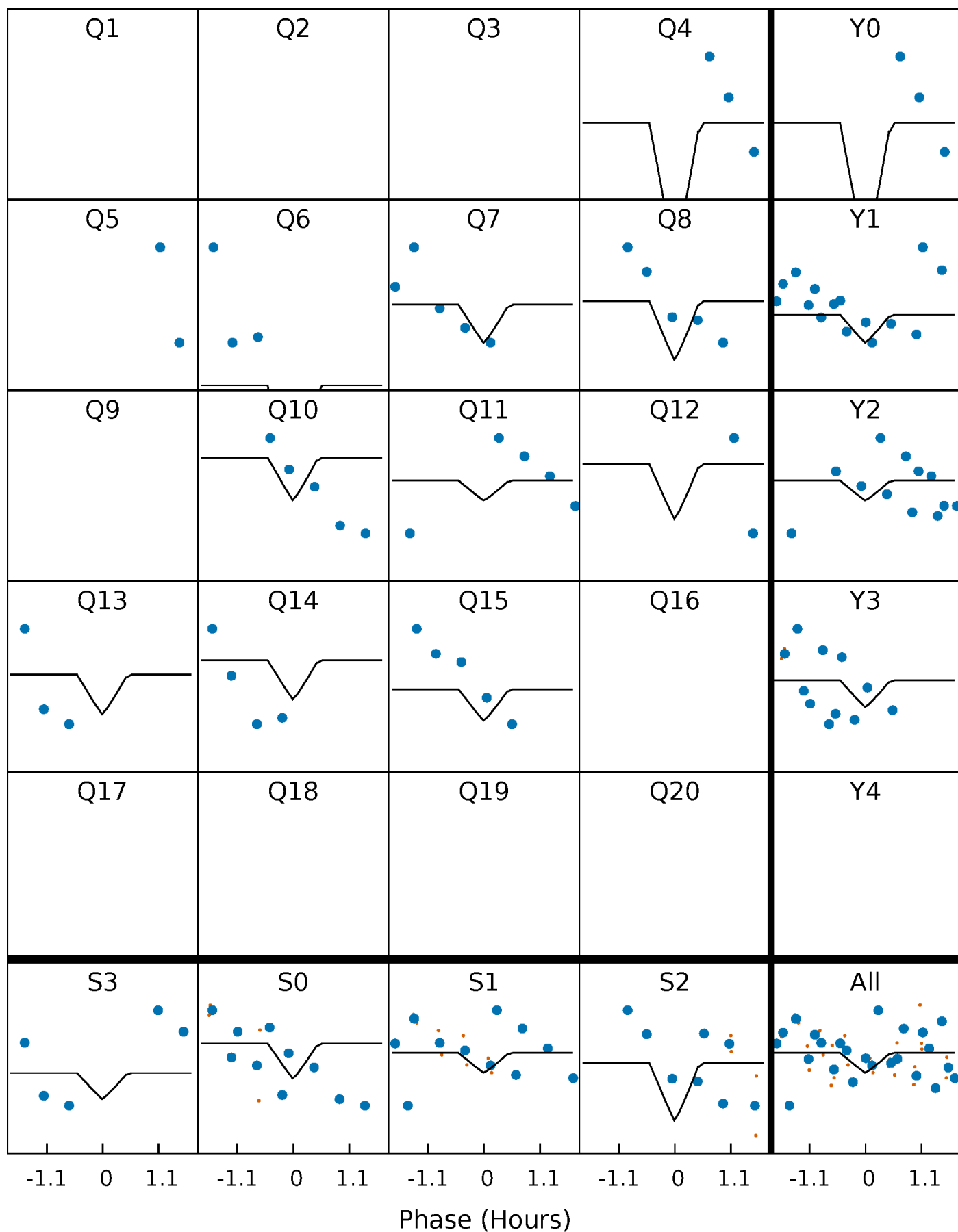
# DV Quarter-Phased Transit Curves

TCE 007741987-04 P= 15.584793 Days  $T_0=146.416289$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 007741987-04 P= 15.581238 Days  $T_0=146.564372$  (BKJD)

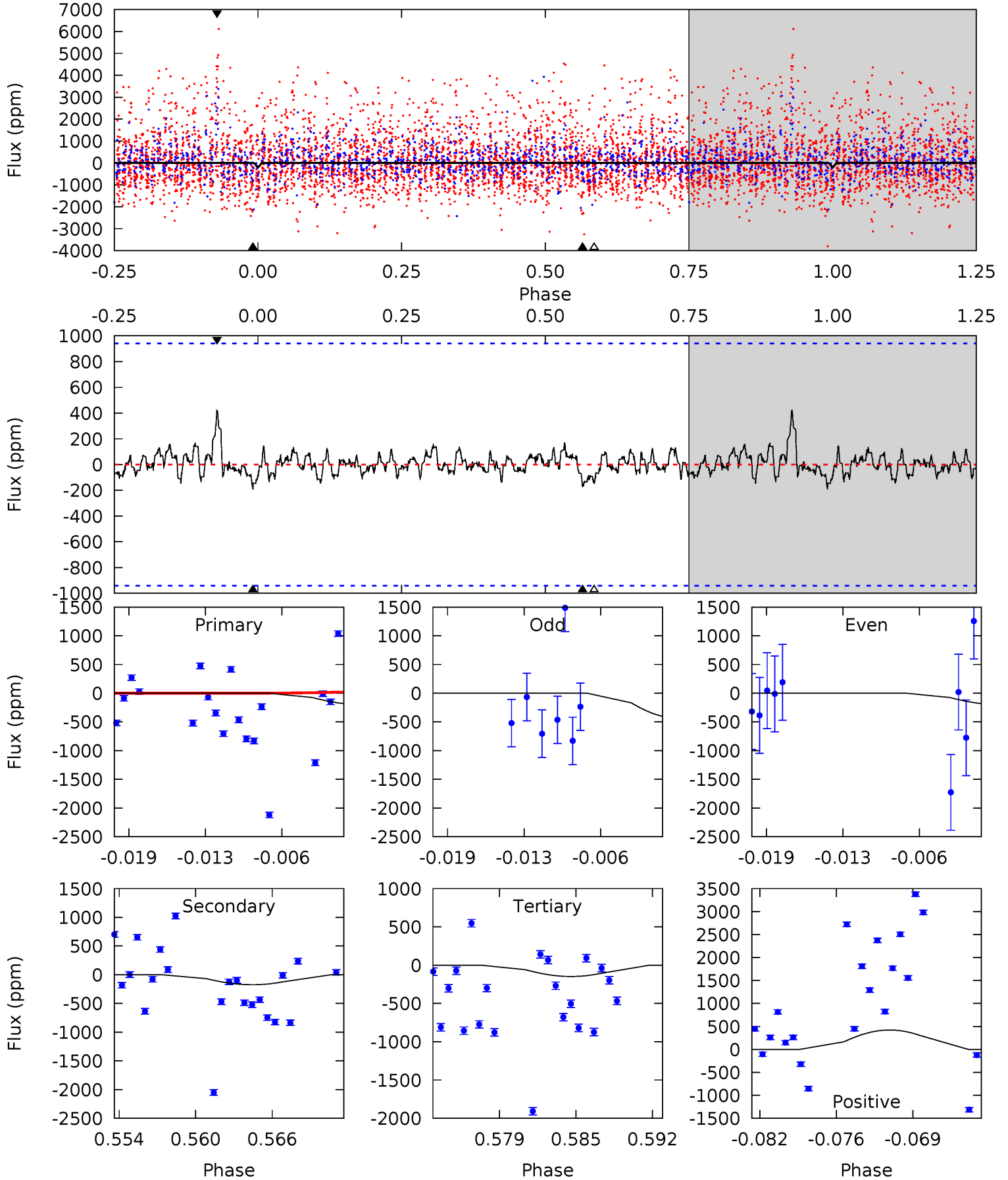




# DV Model-Shift Uniqueness Test

007741987-04, P = 15.584793 Days, E = 130.831496 Days

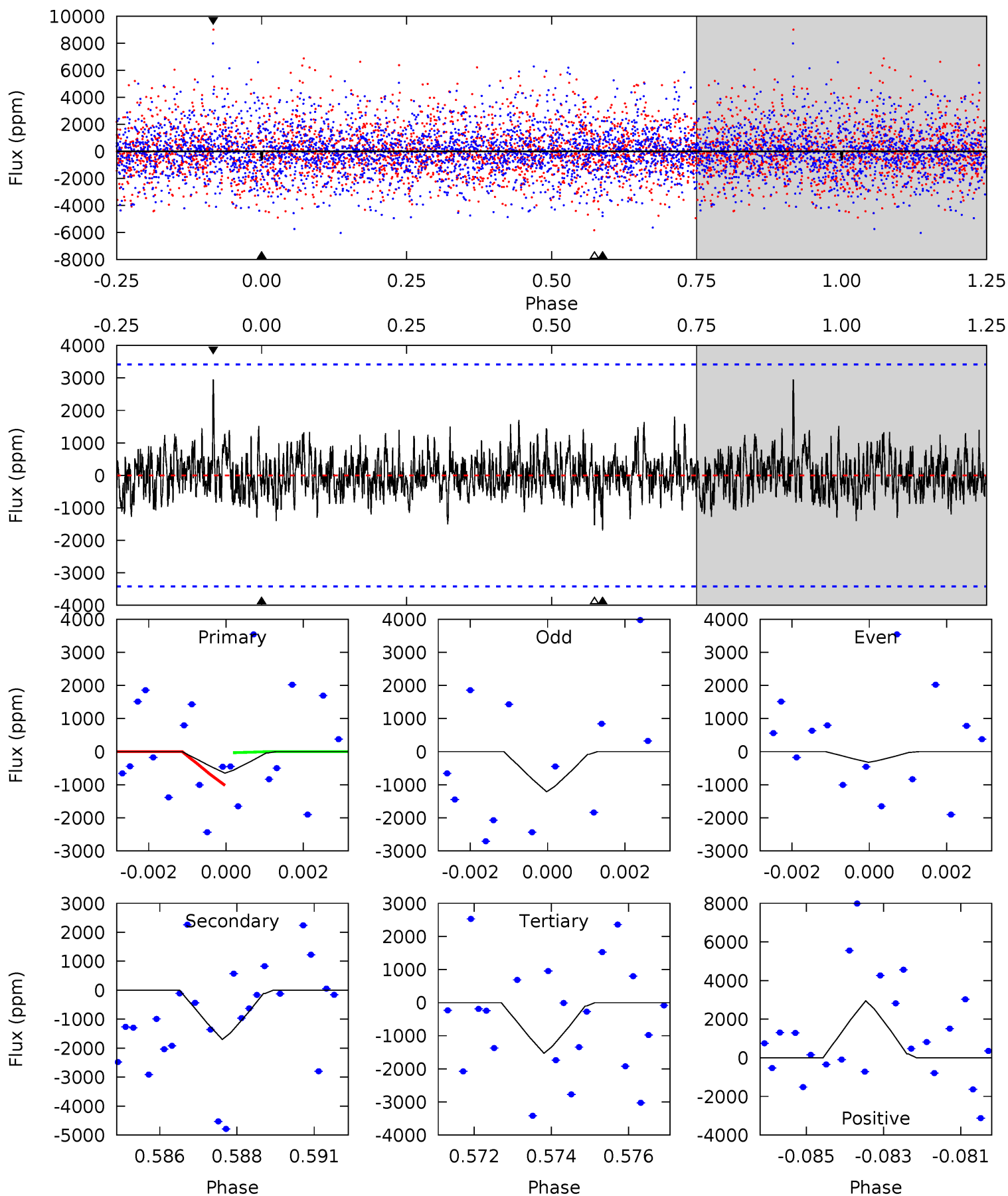
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1.05	0.95	0.80	2.29	5.11	2.73	0.39	0.25	-1.24	0.14	-1.34	0.76	-1.35	0.69	1.15



# Alt Model-Shift Uniqueness Test

007741987-04, P = 15.581238 Days, E = 130.983134 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1.01	2.64	2.37	4.58	5.30	3.04	0.82	-1.36	-3.57	0.27	-1.94	0.58	1.71	0.63	0.77



### Stellar Parameters For KIC 007741987

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$3360^{+40}_{-43}$	$5.025^{+0.036}_{-0.045}$	$-0.100^{+0.100}_{-0.100}$	$0.254^{+0.031}_{-0.031}$	$0.249^{+0.038}_{-0.038}$	$21.530^{+4.952}_{-4.384}$
	+1%/-1%	+1%/-1%	+100%/-100%	+12%/-12%	+15%/-15%	+23%/-20%
Source	PHO2	PHO2	PHO2	DSEP		

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

### Secondary Eclipse Parameters for KIC 007741987-04 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-174 \pm 184$	$18.44^{+20.33}_{-12.82}$	$377^{+8}_{-8}$	$1364^{+329}_{-2653}$	$1.109^{+9.649}_{-1.159}$
Alt.	$-1701 \pm 645$	$19.60^{+19.57}_{-13.58}$	$378^{+9}_{-9}$	$1729^{+453}_{-214}$	$14^{+132}_{-11}$

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

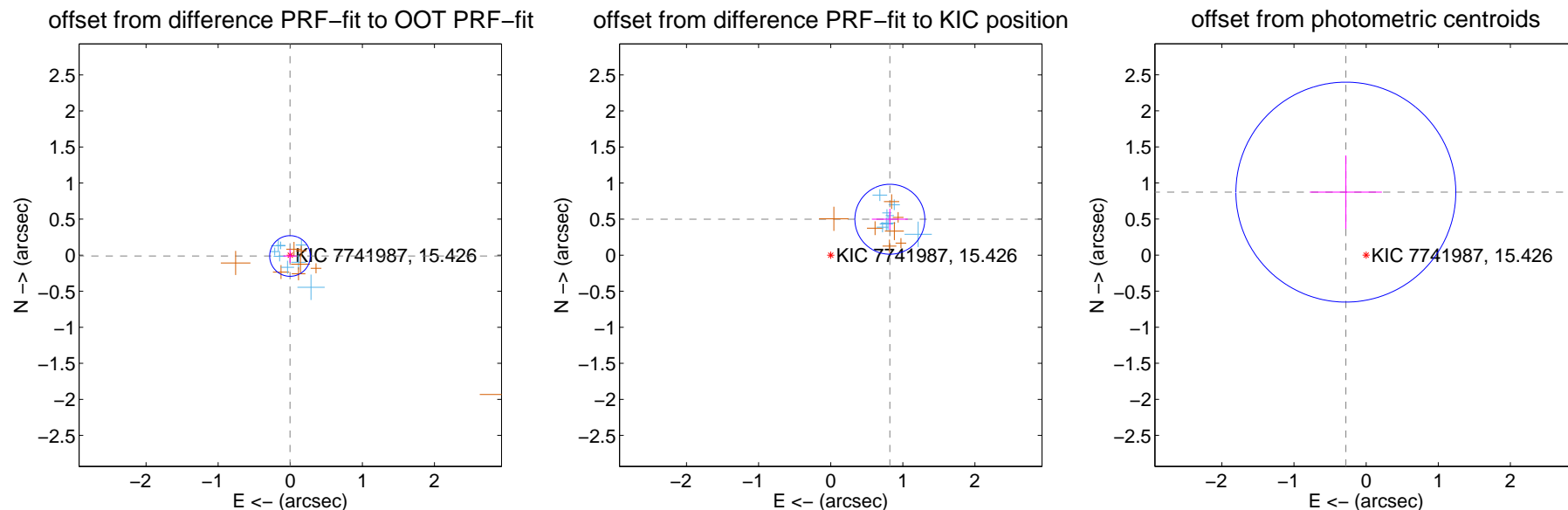
## DV Centroid Data

Supplemental centroid analysis for 007741987-04. Kepler magnitude: 15.43. Transit SNR 5.34

There are 8 quarters with good PRF difference image offsets

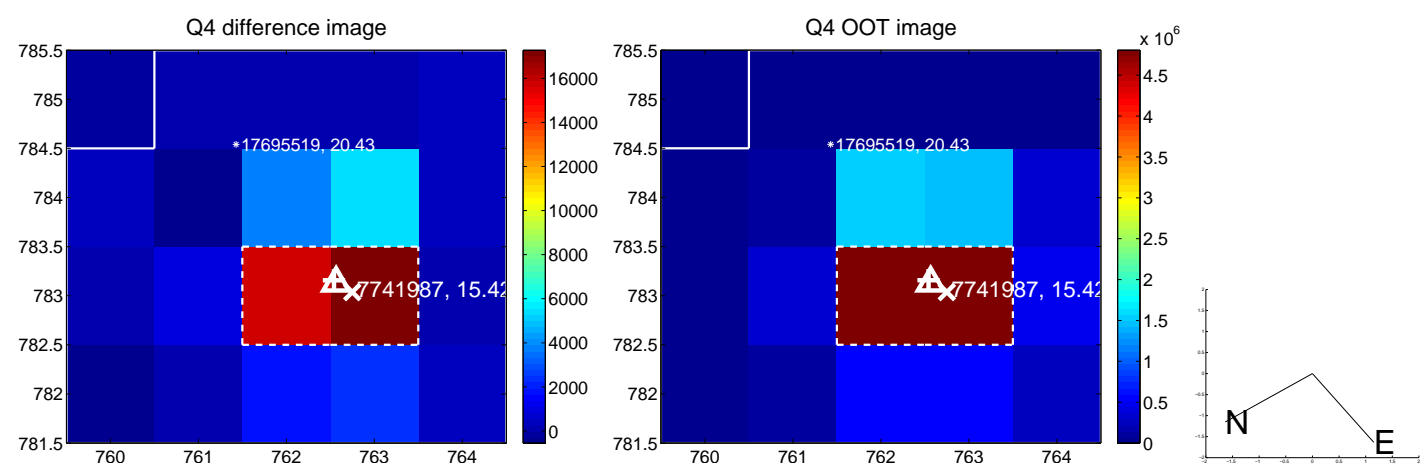
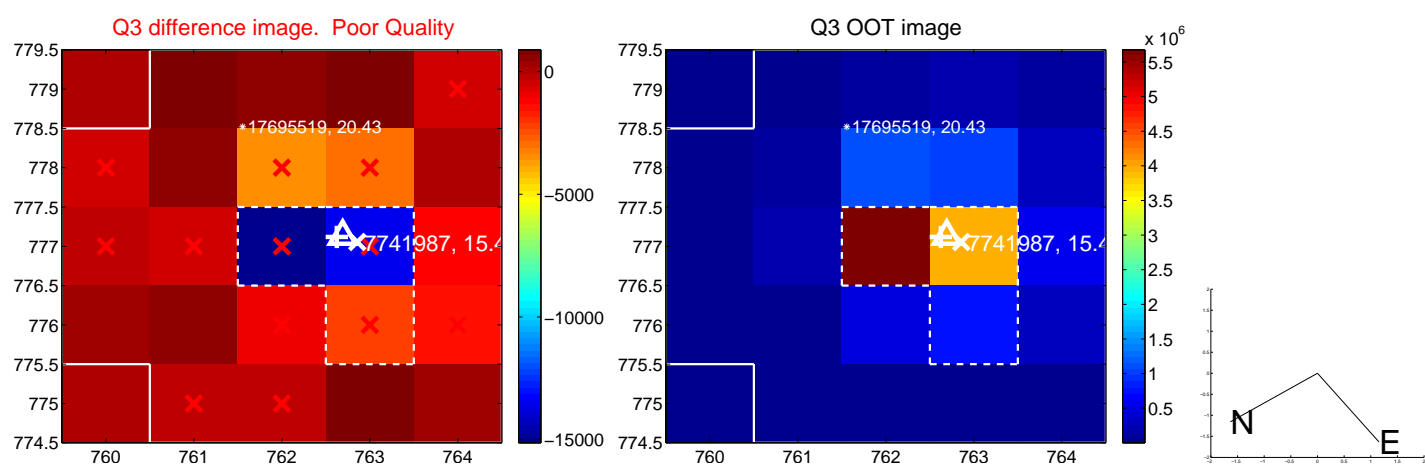
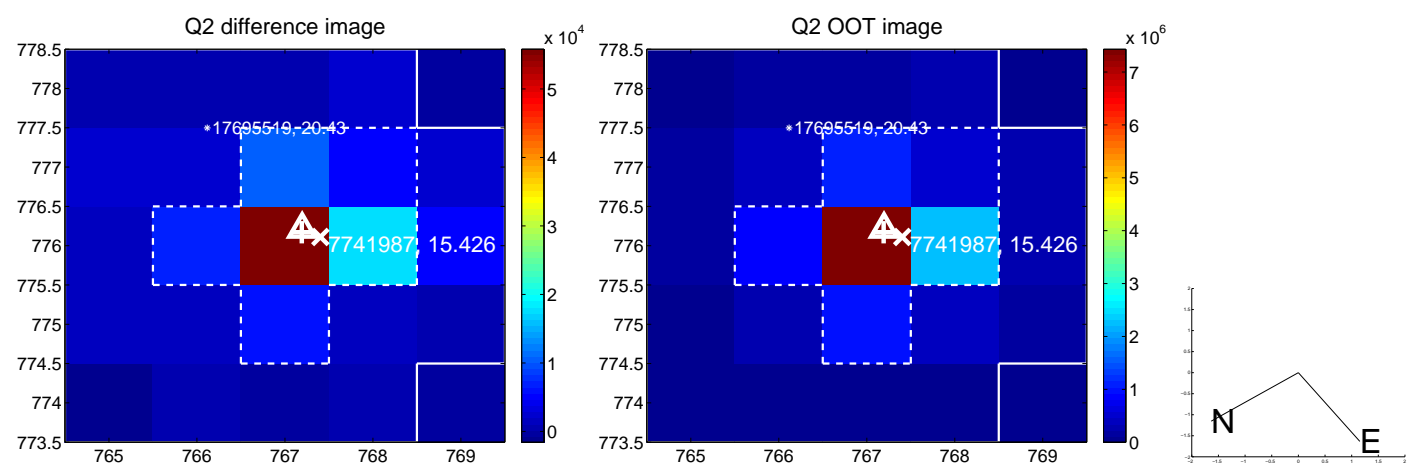
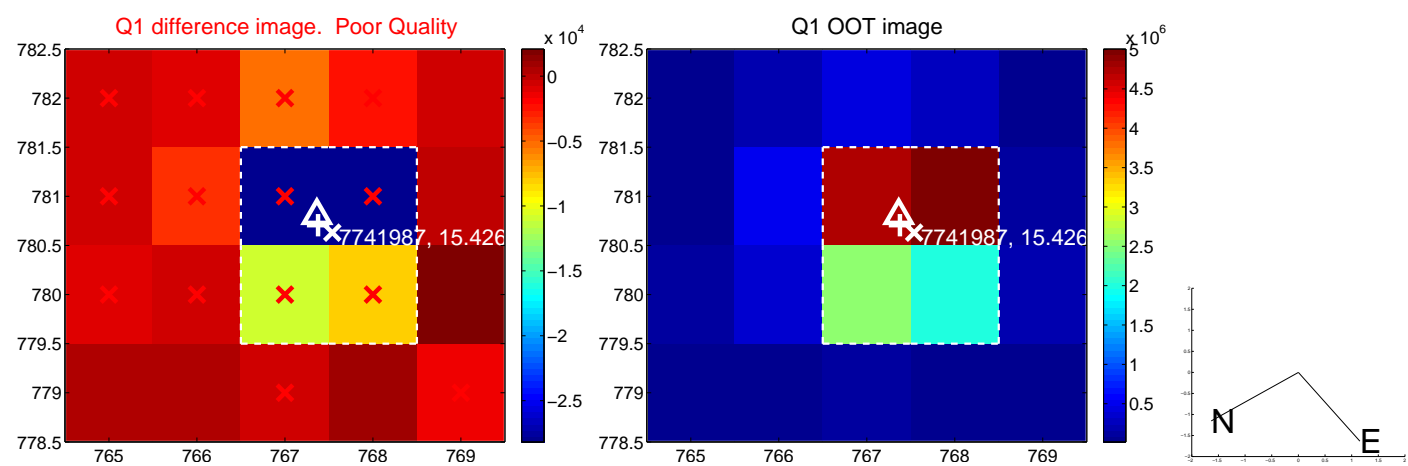
The direct PRF centroid is offset from the target star catalog position by about 1.15 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.012 \pm 0.094$	0.13	$0.004 \pm 0.093$	$-0.012 \pm 0.094$
PRF-fit source offset from KIC position	$0.960 \pm 0.162$	5.93	$-0.820 \pm 0.250$	$0.498 \pm 0.144$
photometric centroid source offset	$0.92 \pm 0.51$	1.80	$0.28 \pm 0.50$	$0.87 \pm 0.51$

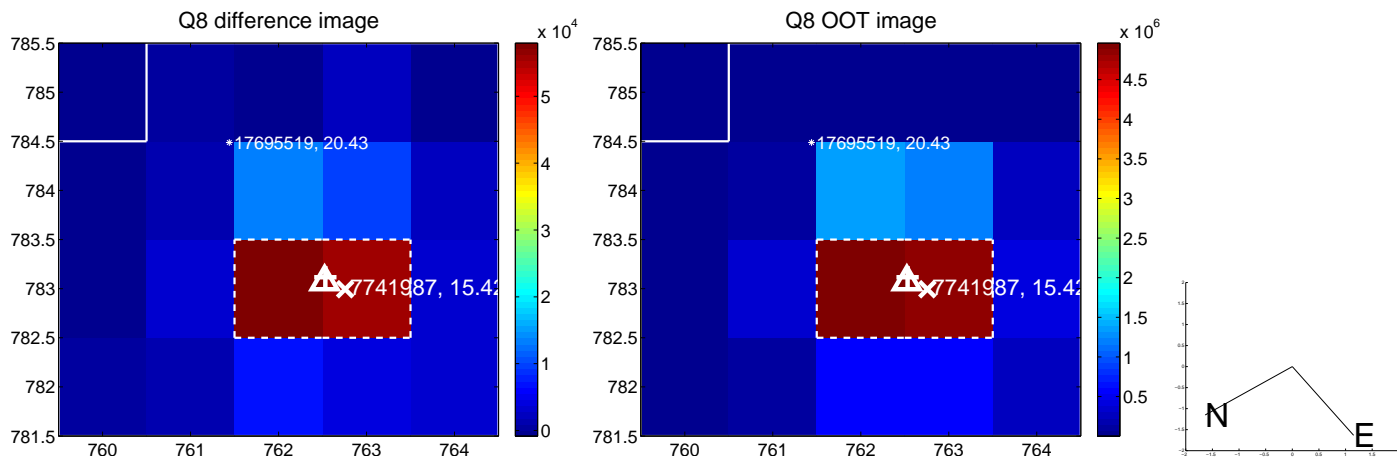
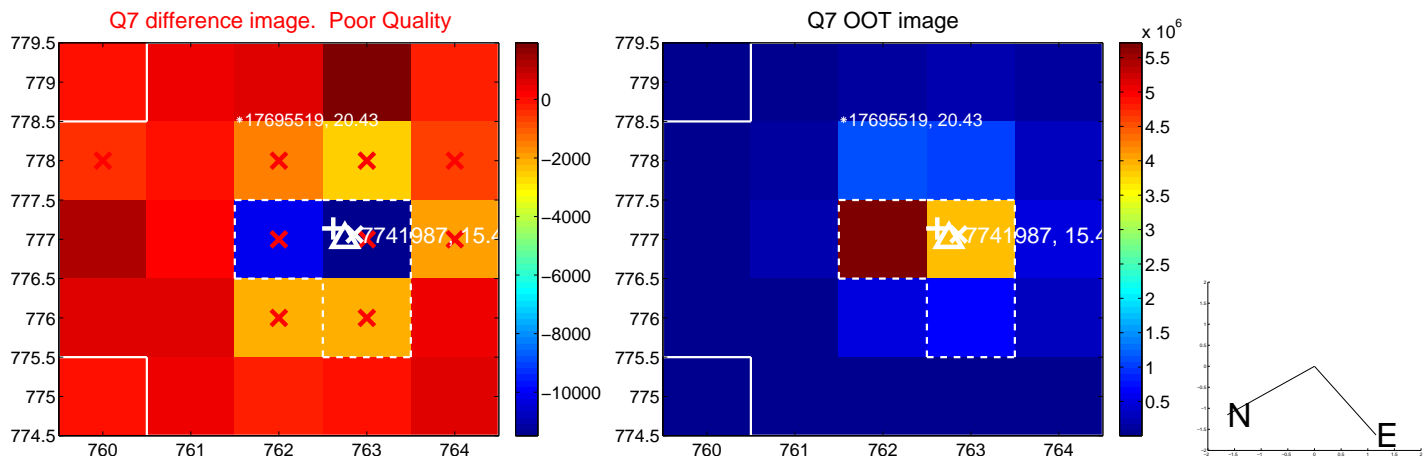
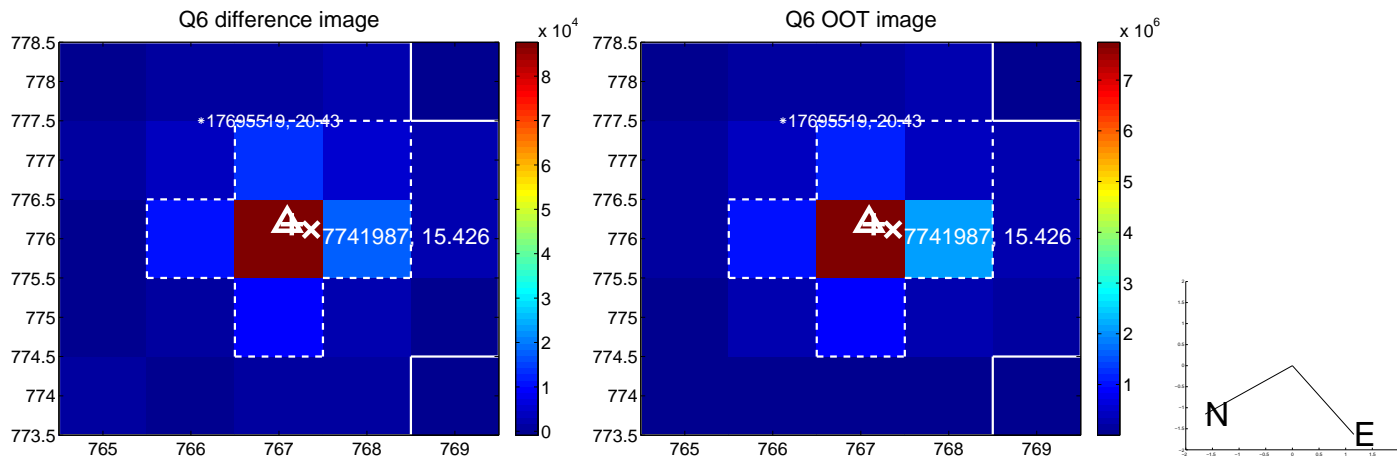
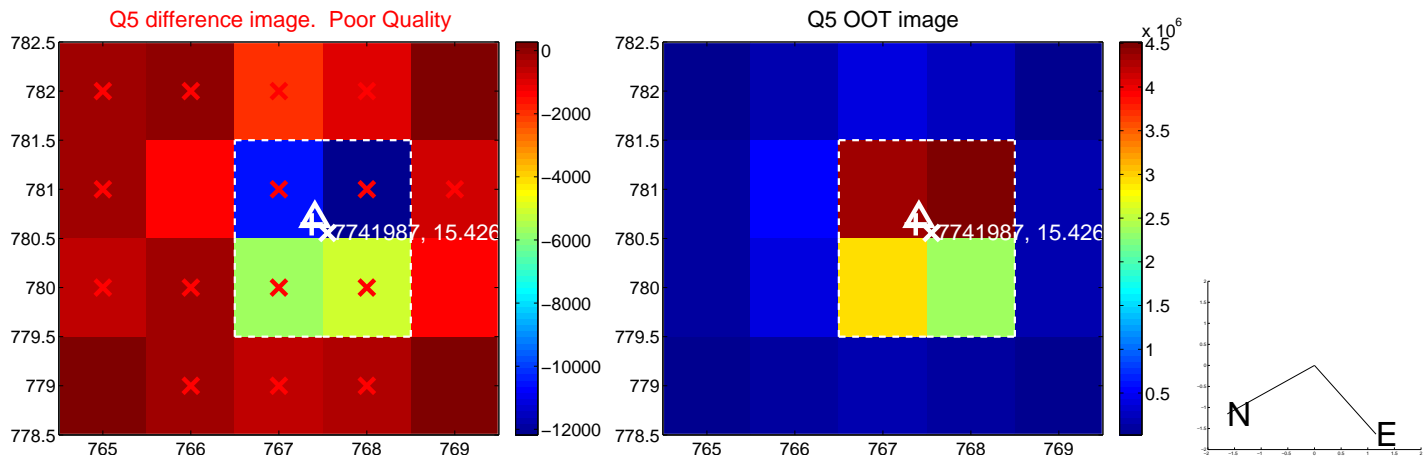


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

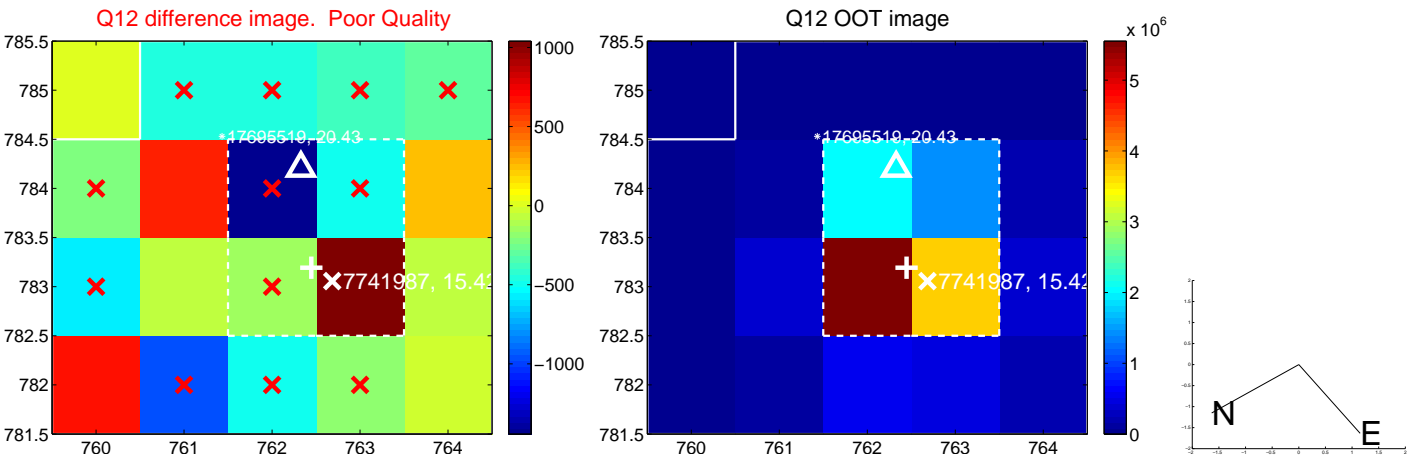
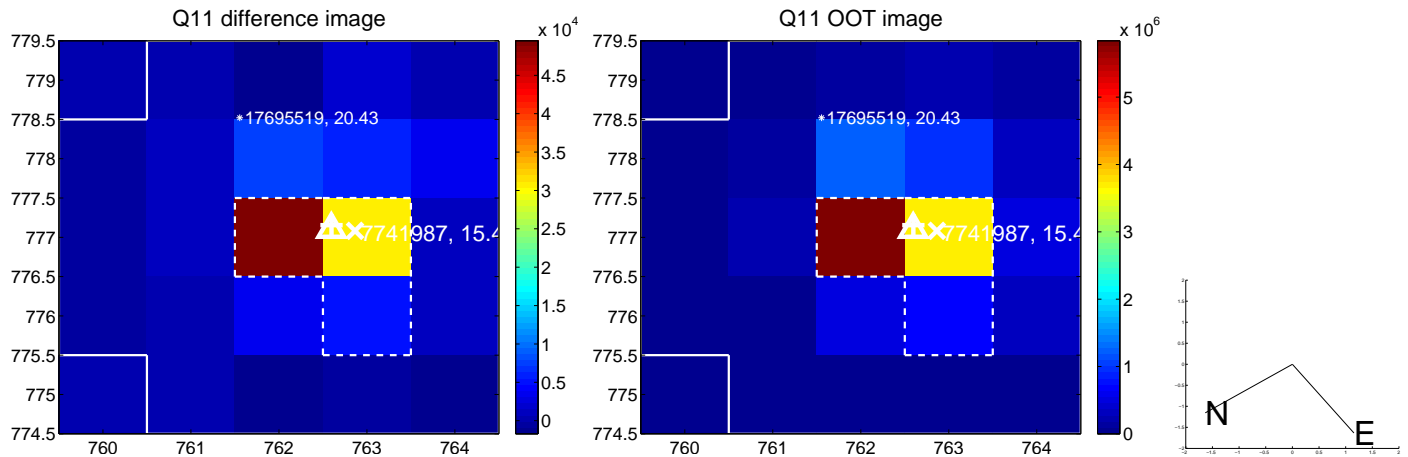
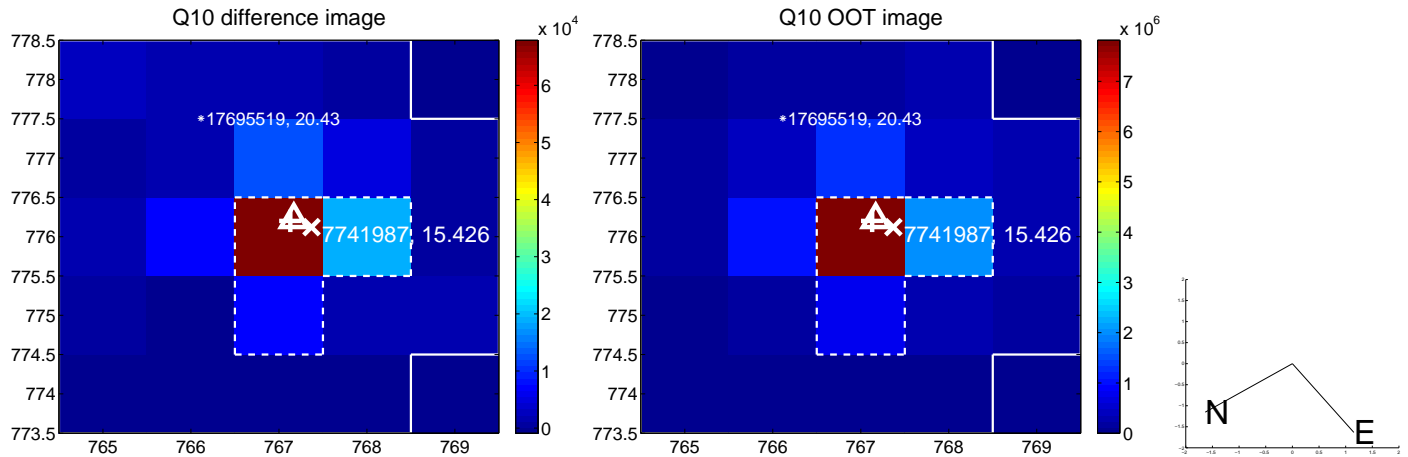
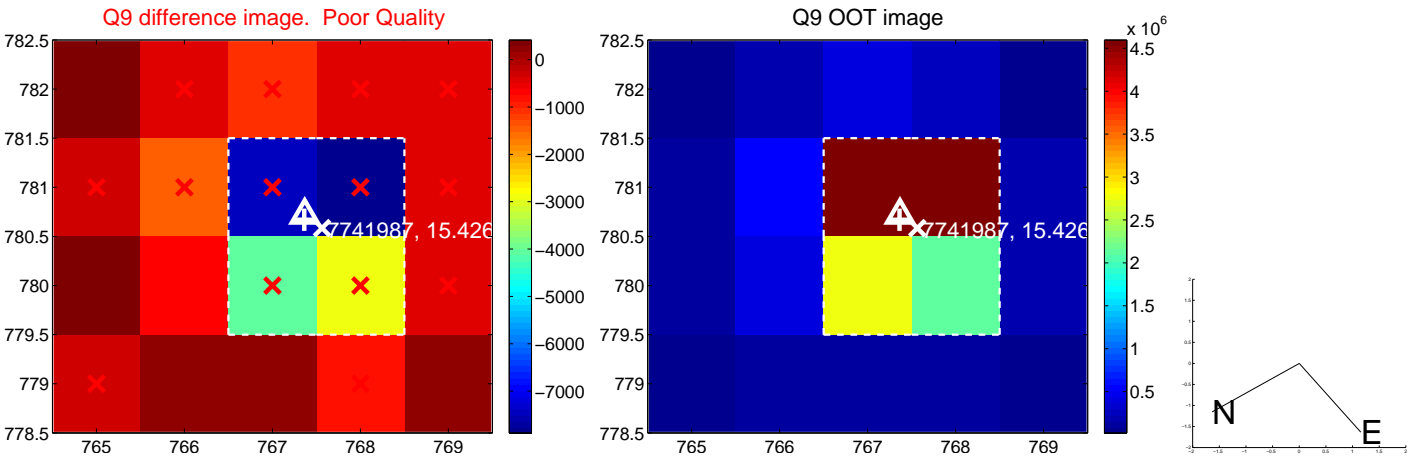
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

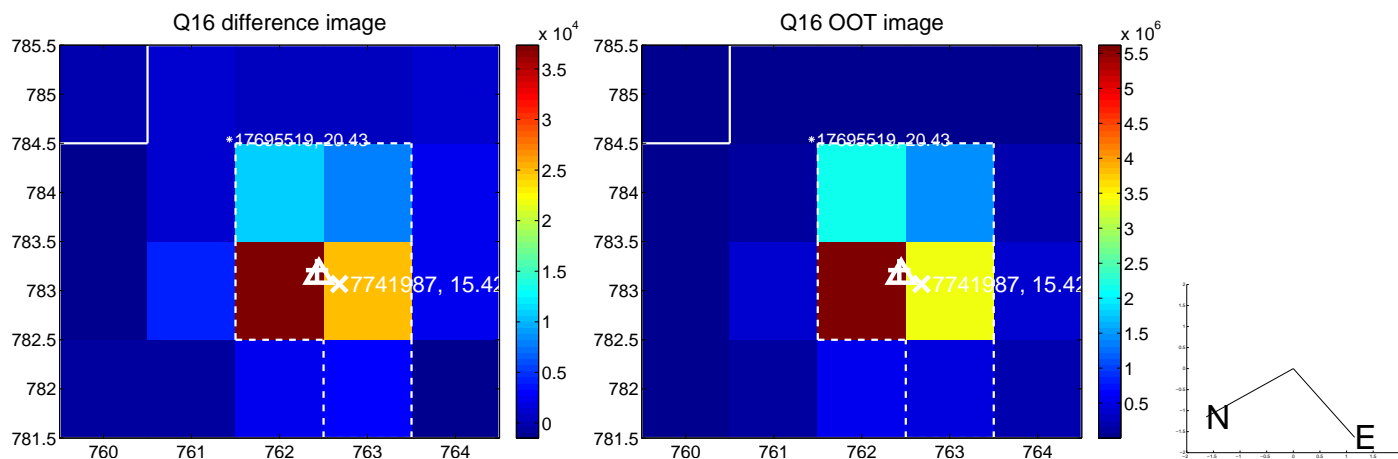
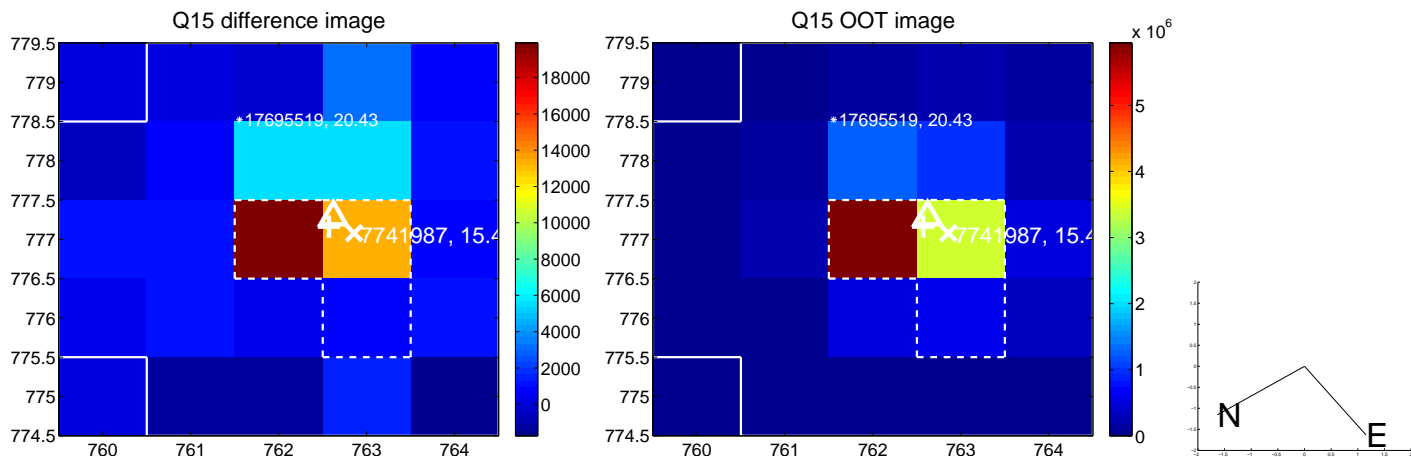
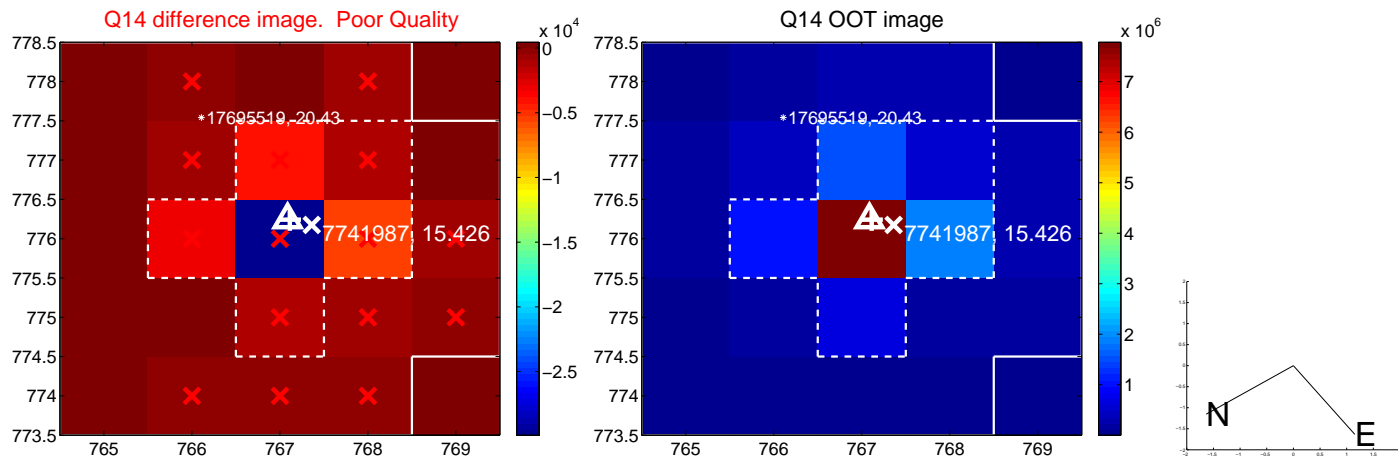
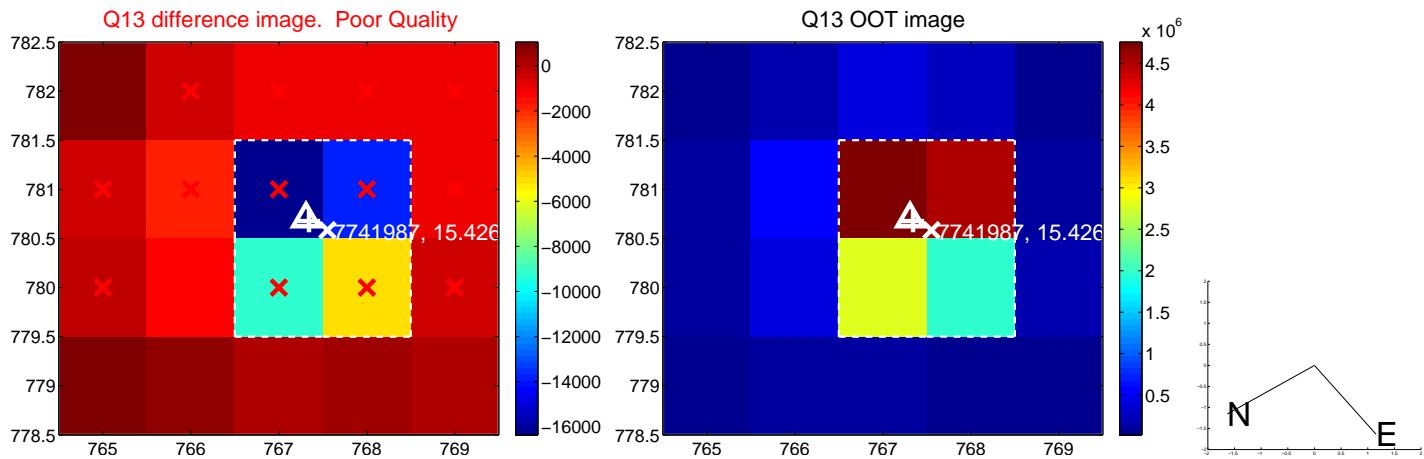


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

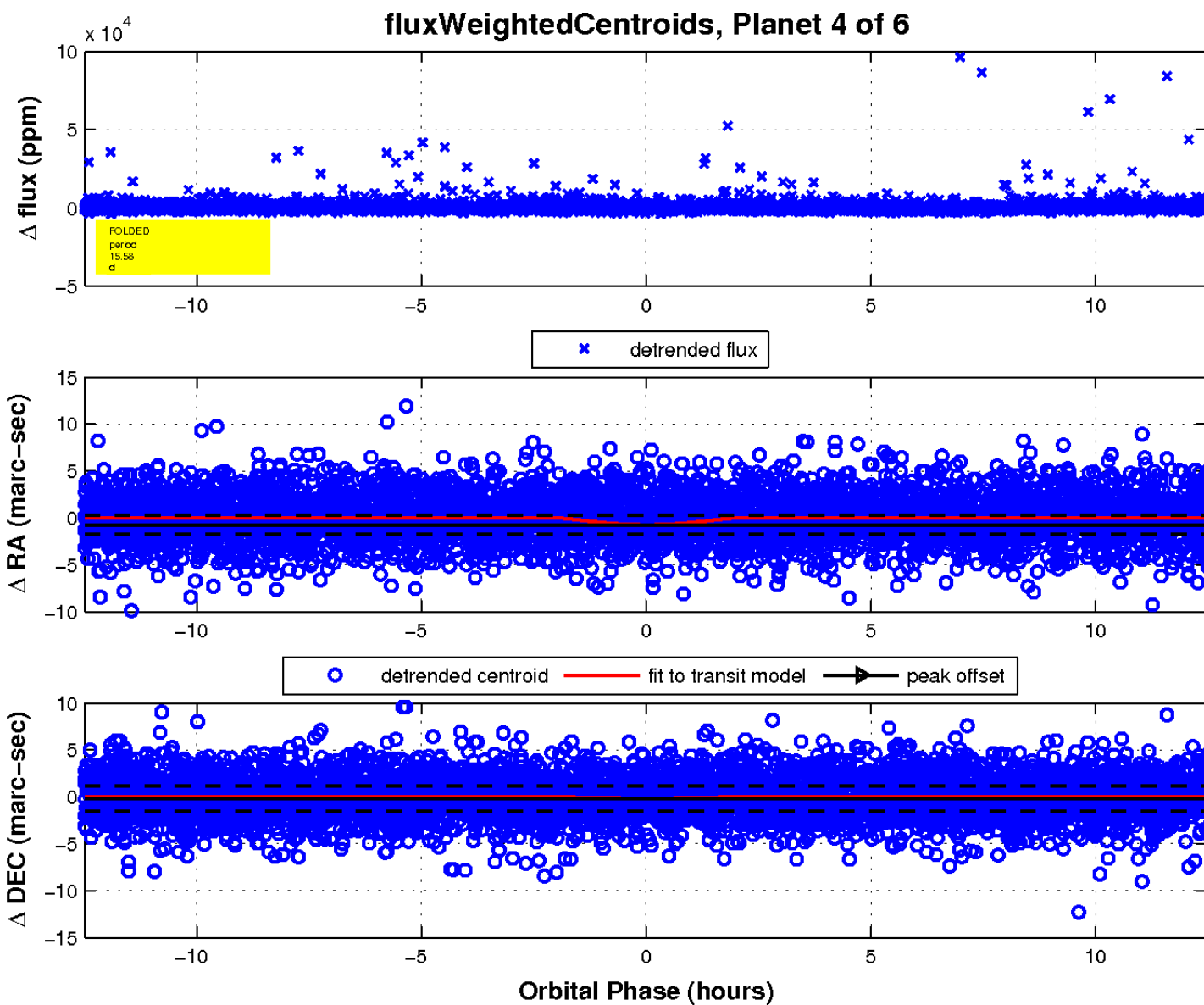
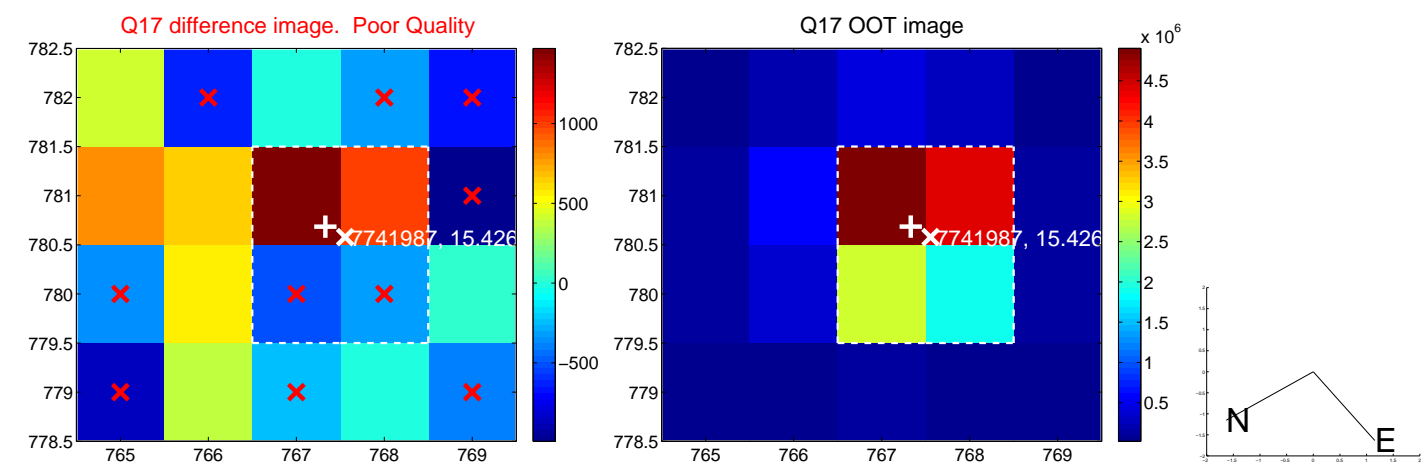




white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

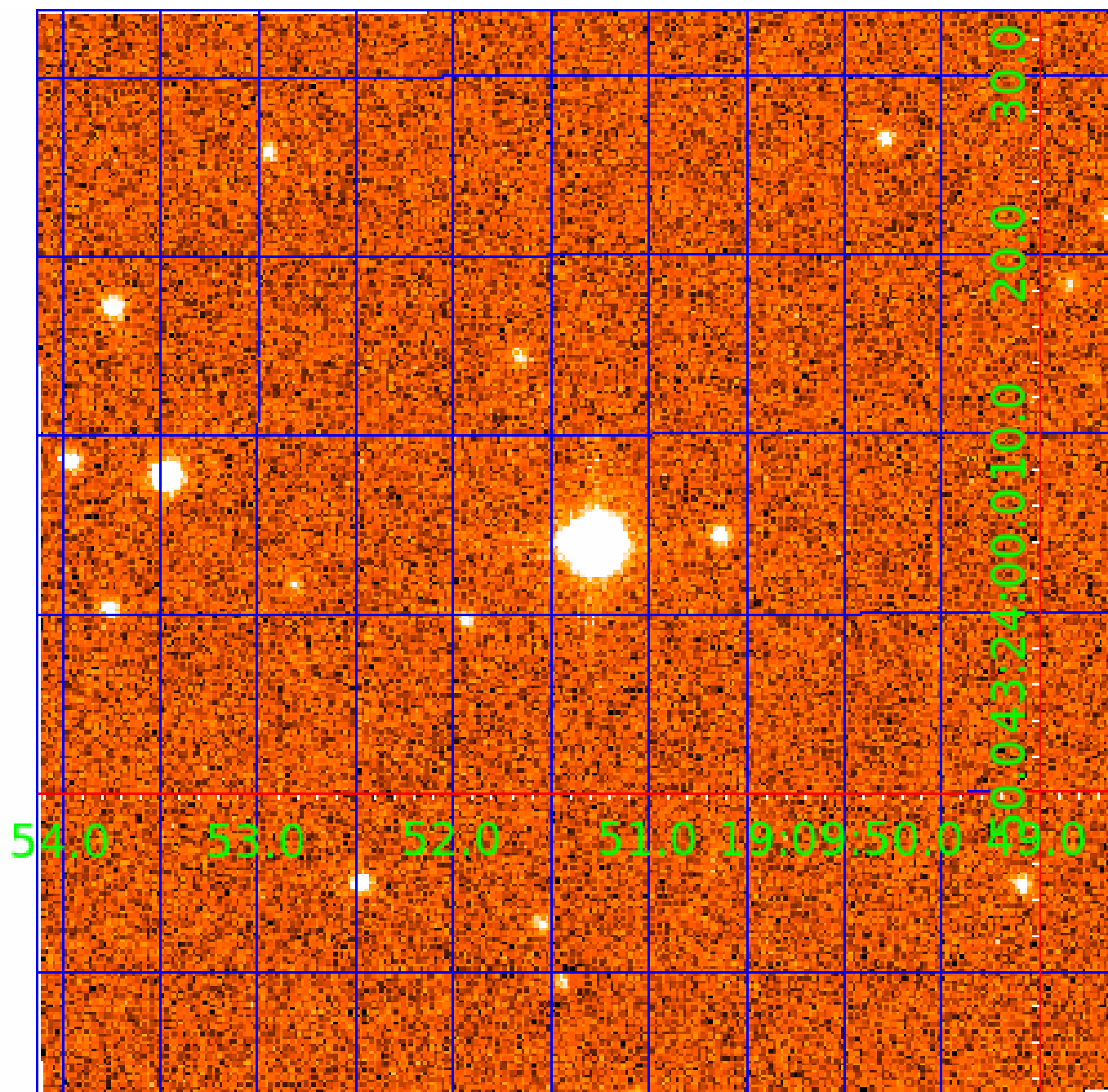


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



# UKIRT Image

Declination



# KIC 007741987

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007741987-01	OBS	No	1.259365	131.617515	10.2	9.143	14.0	0.5	0.25	3360	0.08	35.70
007741987-02	OBS	No	15.876596	141.074101	314.7	11.660	10.5	2.9	0.25	3360	0.46	1.22
007741987-04	OBS	No	15.584793	146.416289	752.0	4.167	9.1	5.3	0.25	3360	1.19	1.25
007741987-05	OBS	No	4.115441	133.440295	415.1	5.104	8.7	6.1	0.25	3360	0.59	7.36
007741987-06	OBS	No	9.997179	139.073486	1343.7	1.821	7.8	8.9	0.25	3360	0.92	2.25

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007741987-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—CENT_KIC_POS
007741987-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_ZUMA_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_KIC_POS
007741987-04	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_KIC_POS—HALO_GHOST
007741987-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_KIC_POS
007741987-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_KIC_POS

**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.

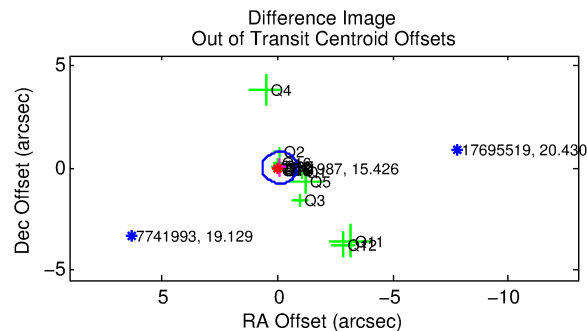
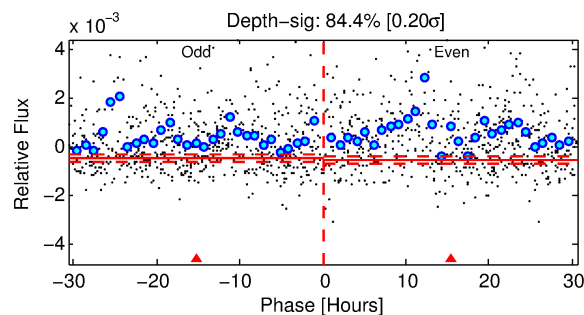
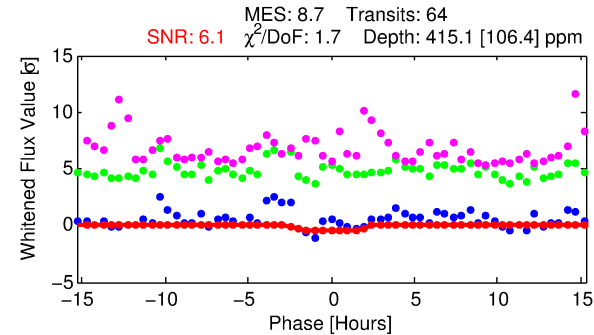
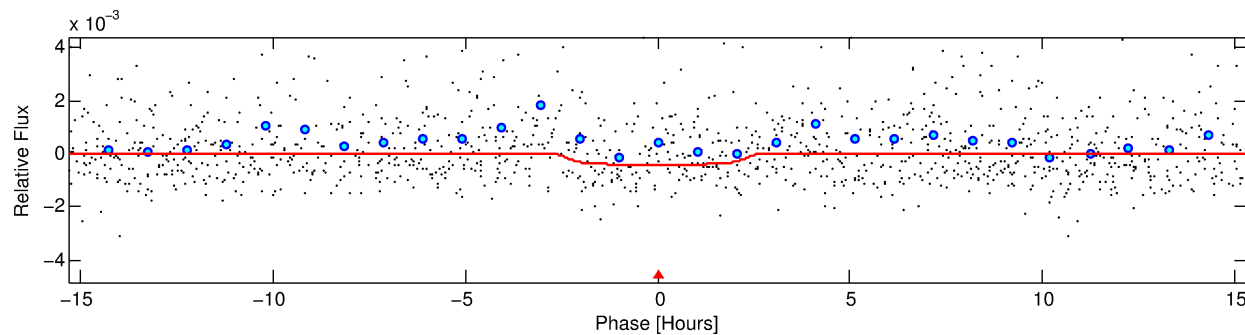
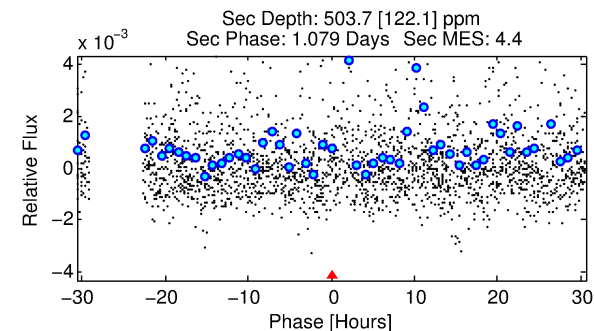
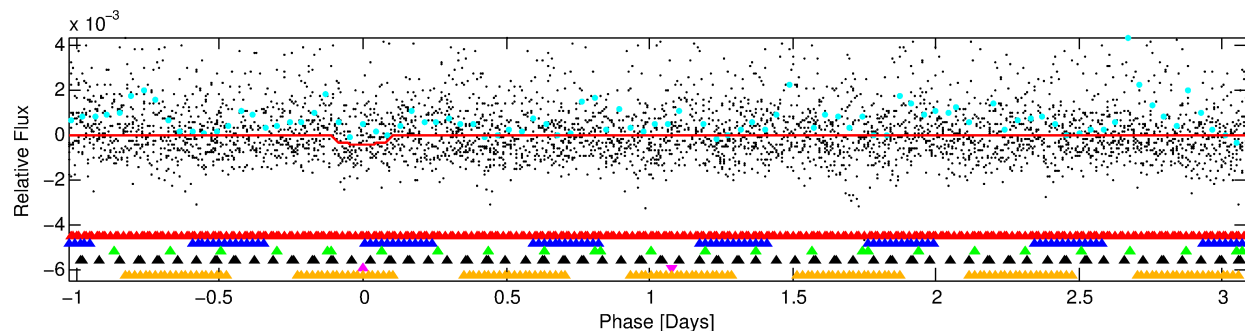
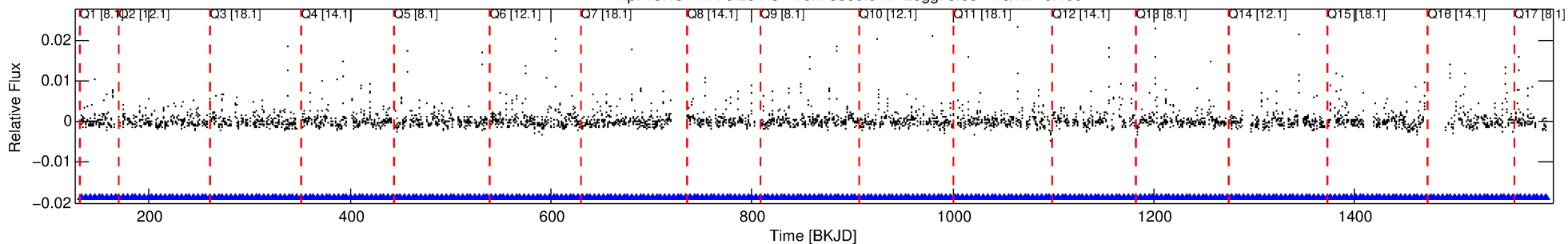
Ephemeris Match Information For 007741987-05

No Significant Match Found

# DV One-Page Summary

KIC: 7741987 Candidate: 5 of 6 Period: 4.115 d

Kp: 15.43 R\*: 0.25 Rs Teff: 3360.0 K Logg: 5.03 Fe/H: -0.100



## DV Fit Results:

Period = 4.11544 [0.00010] d  
Epoch = 133.4403 [0.0153] BKJD  
Rp/R\* = 0.0212 [0.0188]  
a/R\* = 3.63 [12.88]  
b = 0.85 [1.29]  
Seff = 7.36 [0.87]  
Teq = 420 [12] K  
Rp = 0.59 [0.53] Re  
a = 0.0316 [0.0028] AU  
Ag = 800.90 [1437.22] [0.56σ]  
Teffp = 3455 [1548] K [1.96σ]

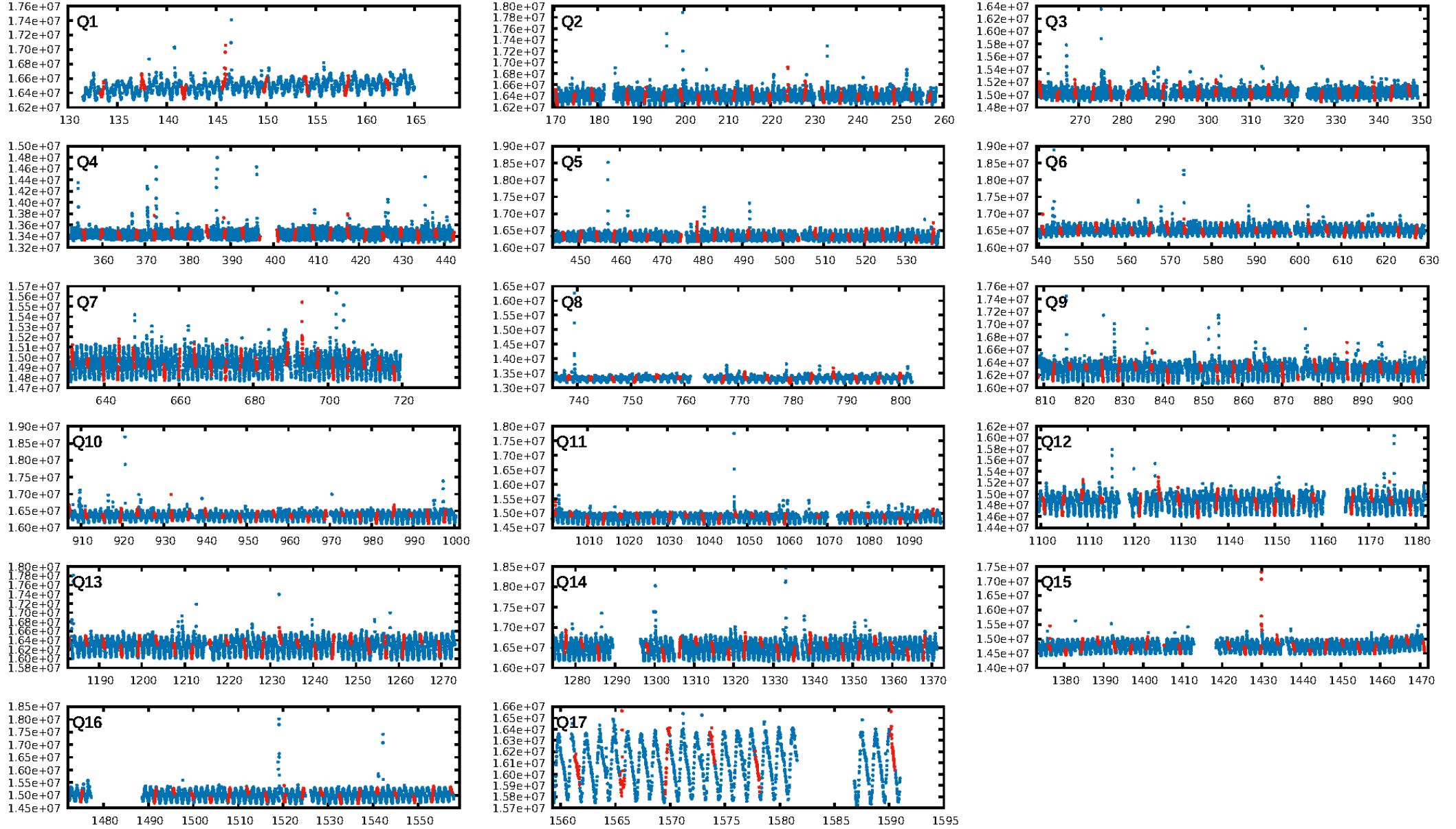
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [6.55σ]  
LongPeriod-sig: 100.0% [26.05σ]  
ModelChiSquare2-sig: 0.0%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 1.30e-08  
RollingBand-fgt: 1.00 [60/60]  
GhostDiagnostic-chr: 0.8996  
Centroid-sig: 0.1%  
Centroid-so: 0.967 arcsec [2.88σ]  
OotOffset-rm: 0.099 arcsec [0.39σ]  
OotOffset-st: 4/4/4/5 [17]  
KicOffset-rm: 1.054 arcsec [8.87σ]  
KicOffset-st: 4/4/4/5 [17]  
DiffImageQuality-fgm: 0.41 [7/17]  
DiffImageOverlap-fno: 0.00 [0/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 02:27:45 Z

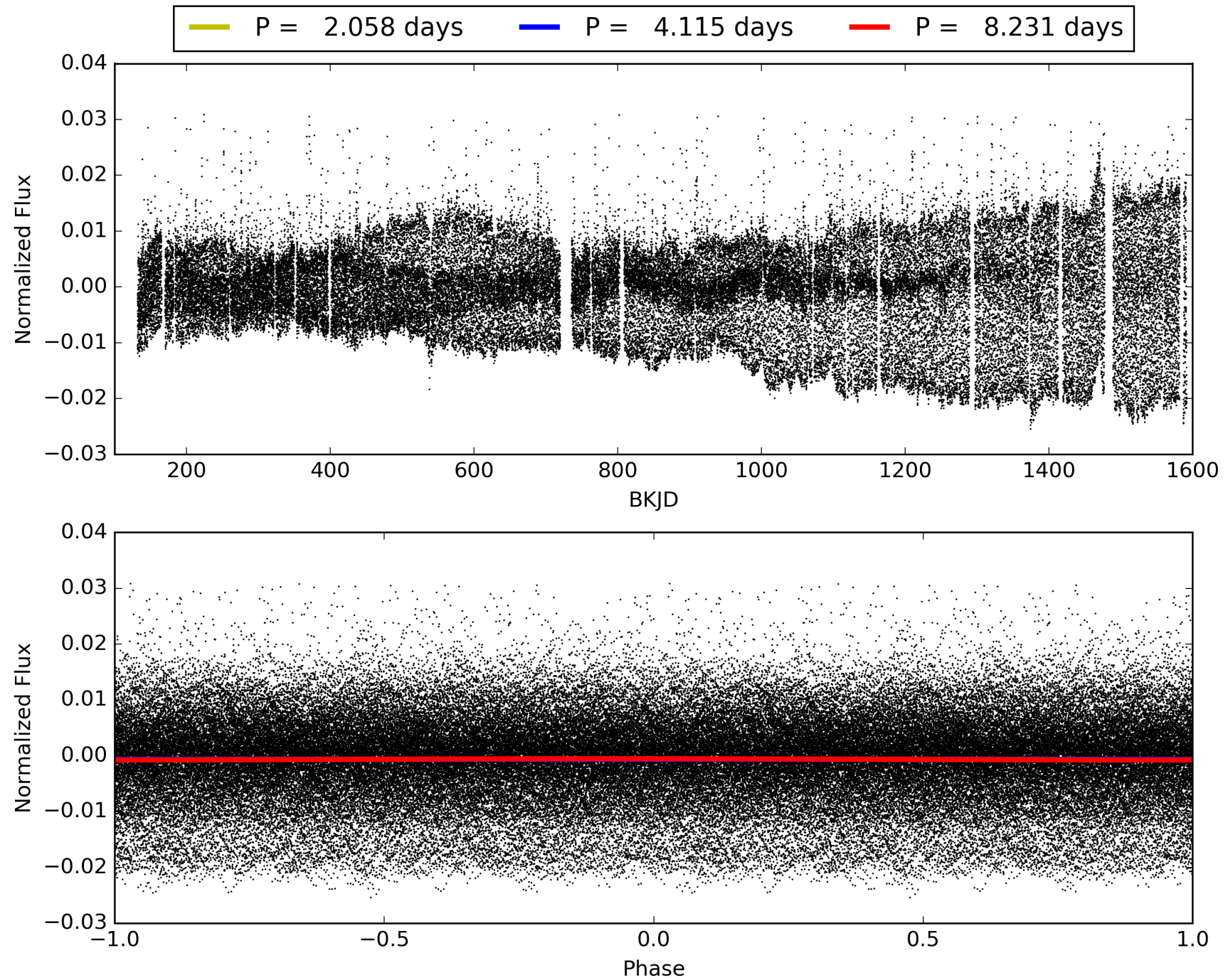
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 007741987-05, PDC Light Curves





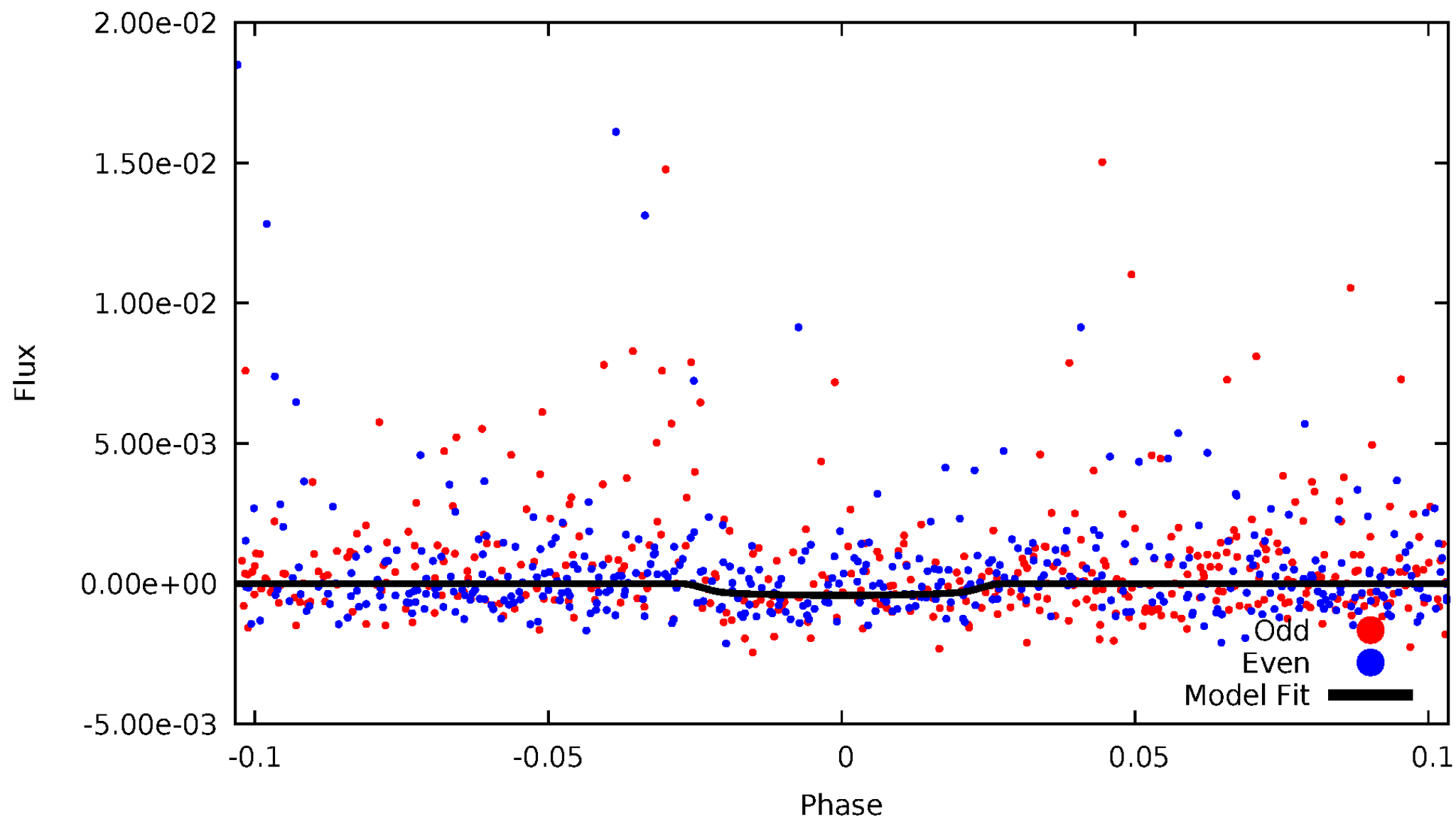
TCE 007741987-05





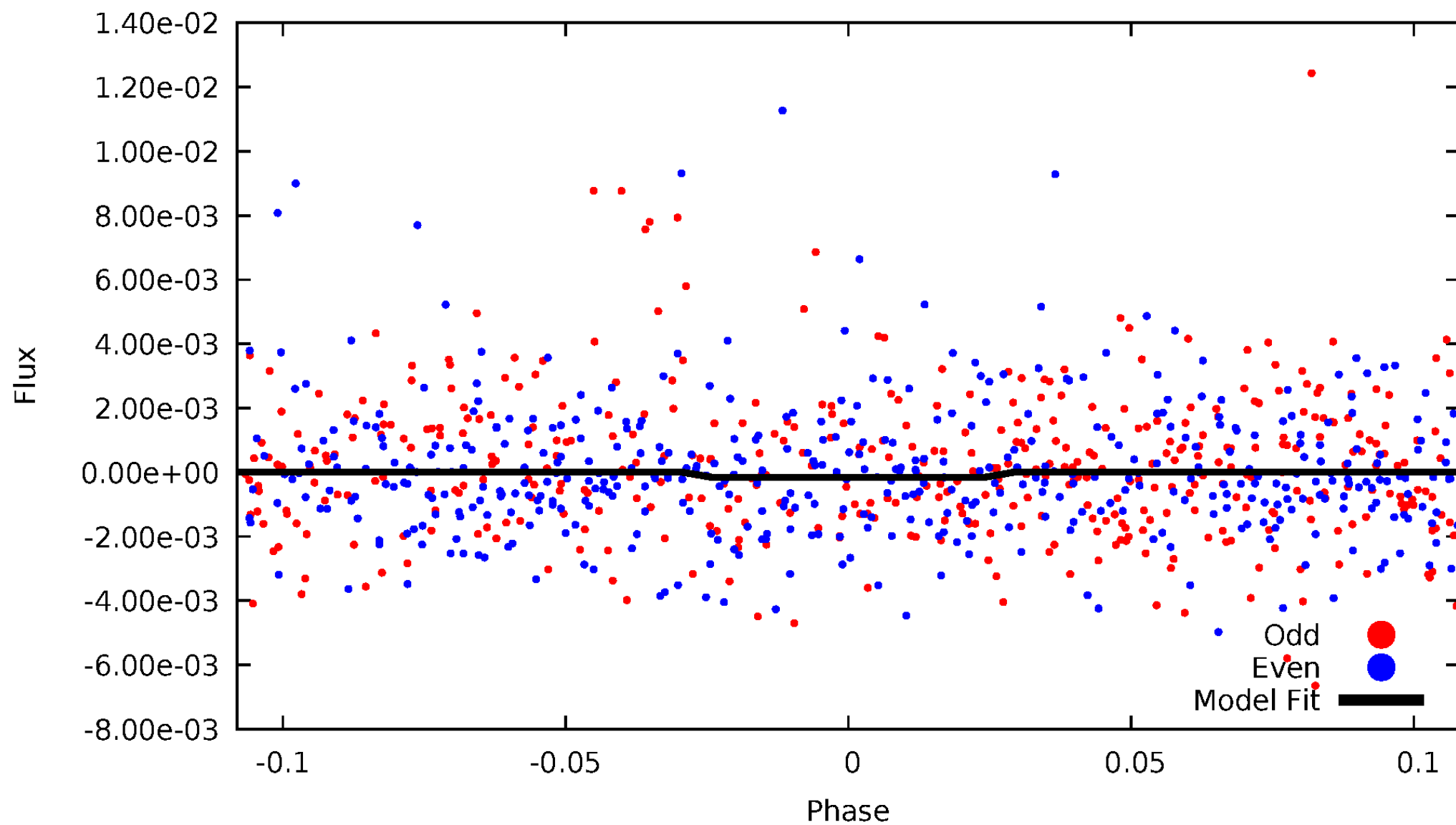
# DV Odd/Even

TCE 007741987-05



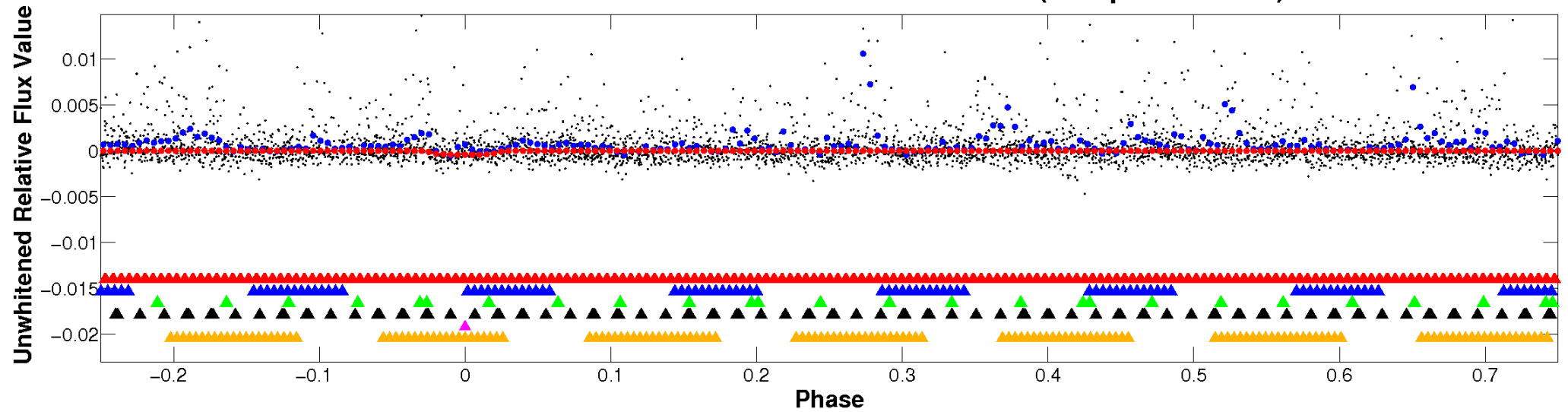
# ALT Odd/Even

TCE 007741987-05

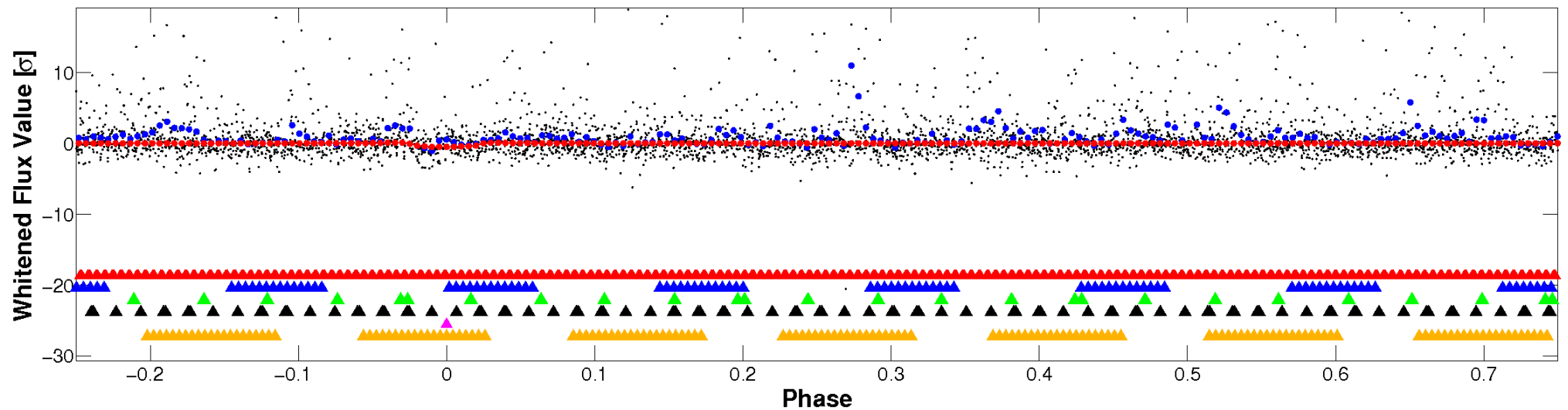


# Non-Whitened Vs. Whitened Light Curve

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

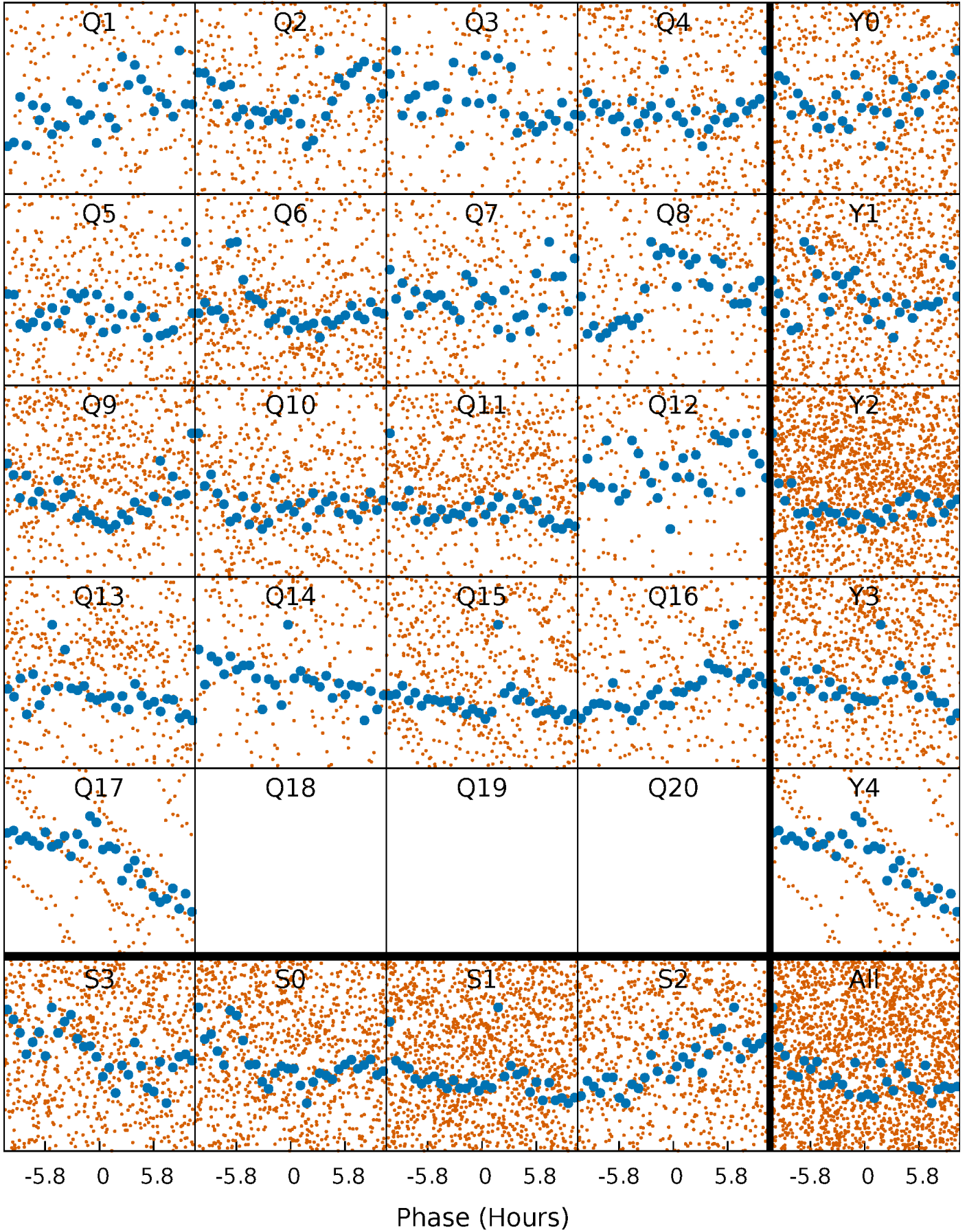


## Planet 5 : Phased Whitened Flux Time Series (Fit Epoch/Period)



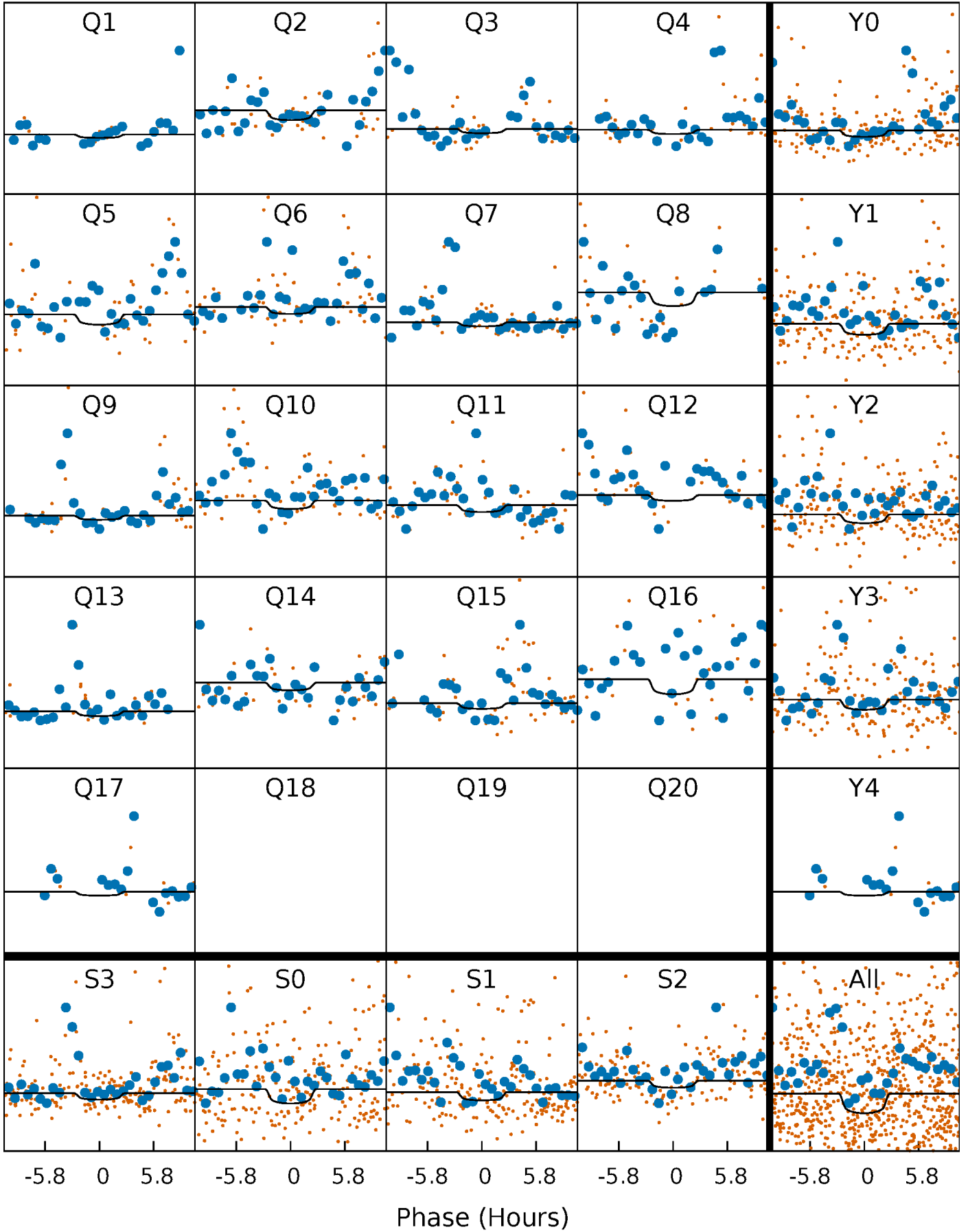
# PDC Quarter-Phased Transit Curves

TCE 007741987-05     $P = 4.115441$  Days     $T_0 = 133.440295$  (BKJD)



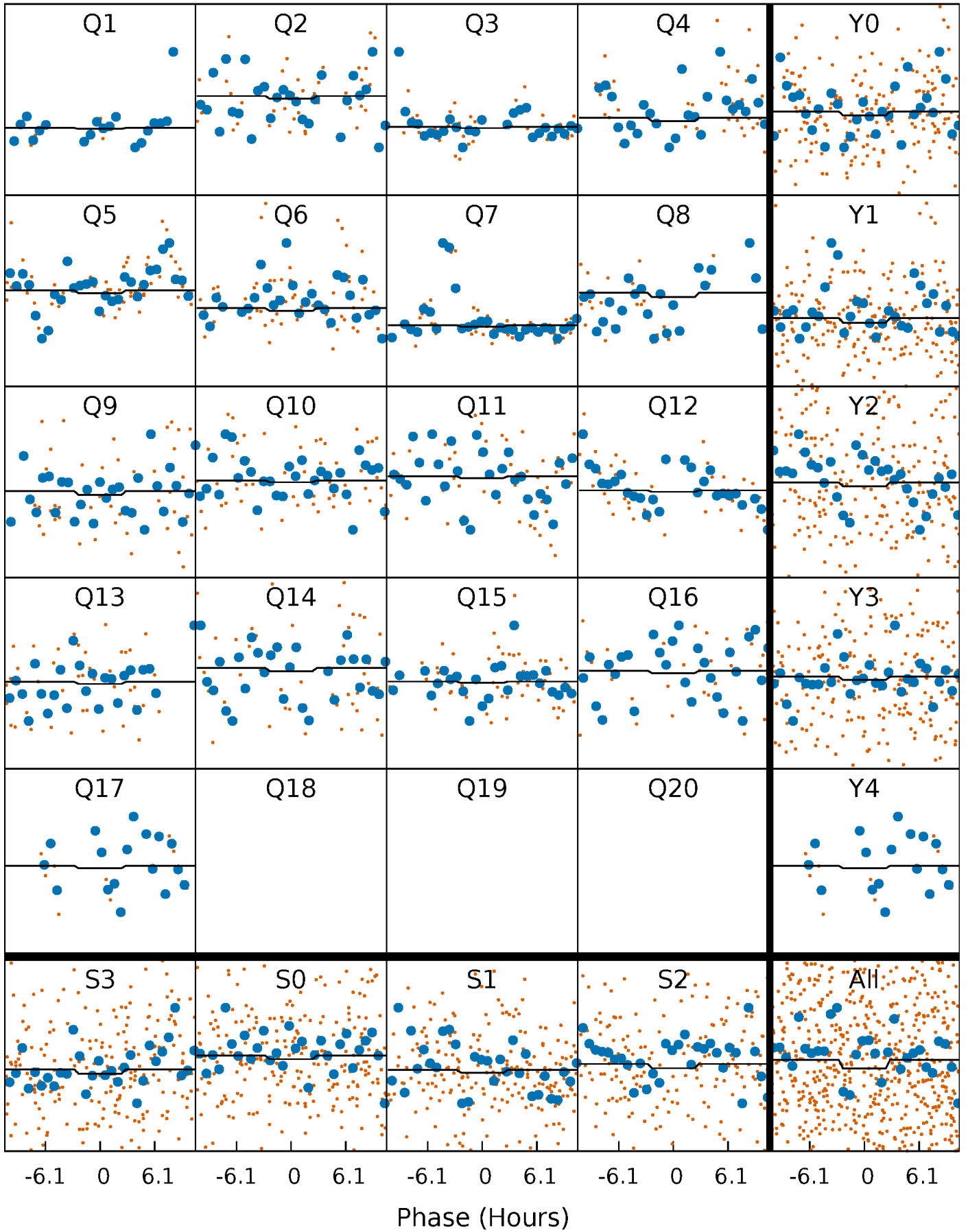
# DV Quarter-Phased Transit Curves

TCE 007741987-05   P= 4.115441 Days    $T_0=133.440295$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

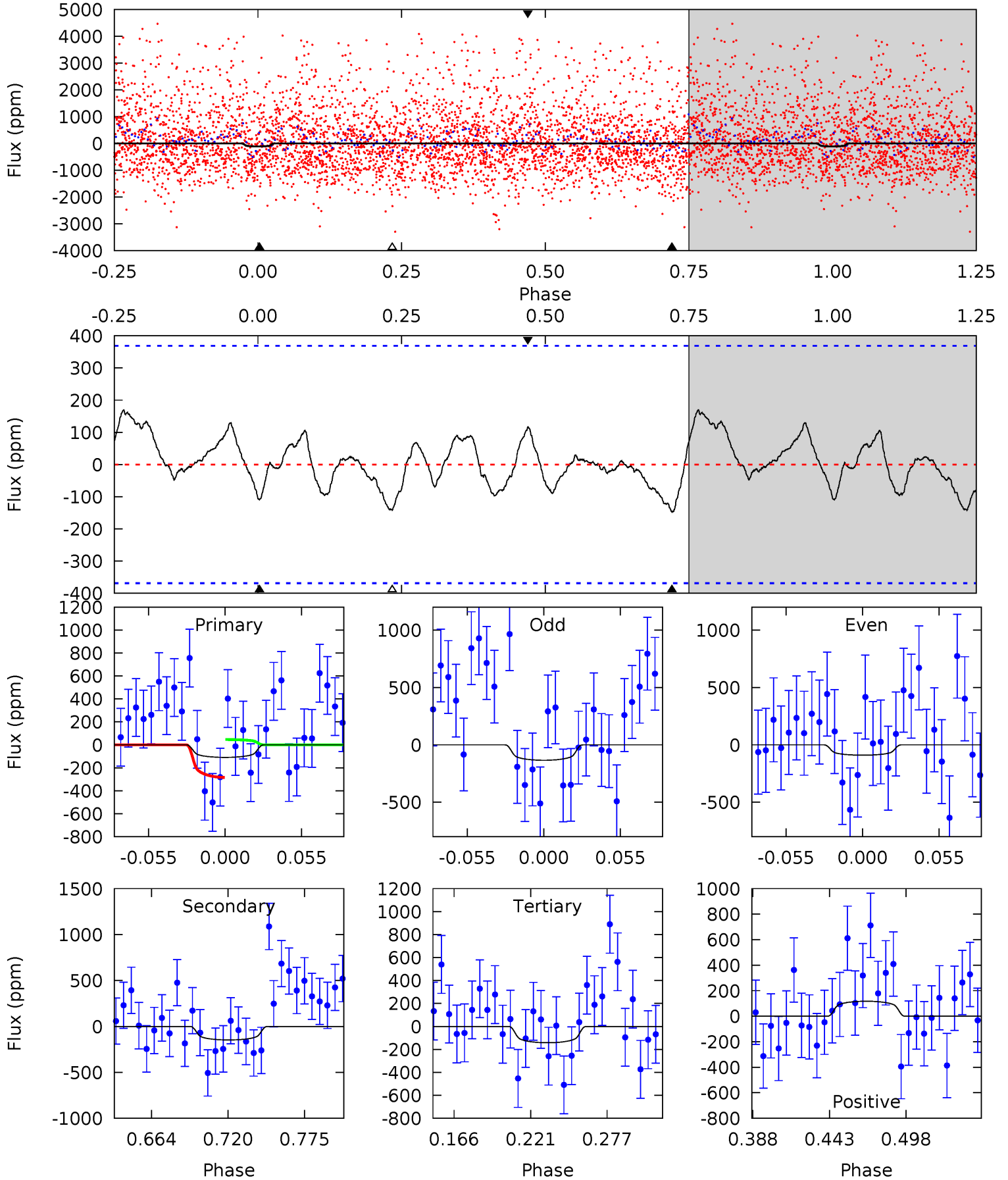
TCE 007741987-05 P= 4.115432 Days  $T_0=133.460118$  (BKJD)



# DV Model-Shift Uniqueness Test

007741987-05, P = 4.115441 Days, E = 129.324854 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1.39	1.87	1.80	1.49	4.69	1.92	0.78	-0.42	-0.10	0.07	0.38	0.28	-0.74	0.54	1.51

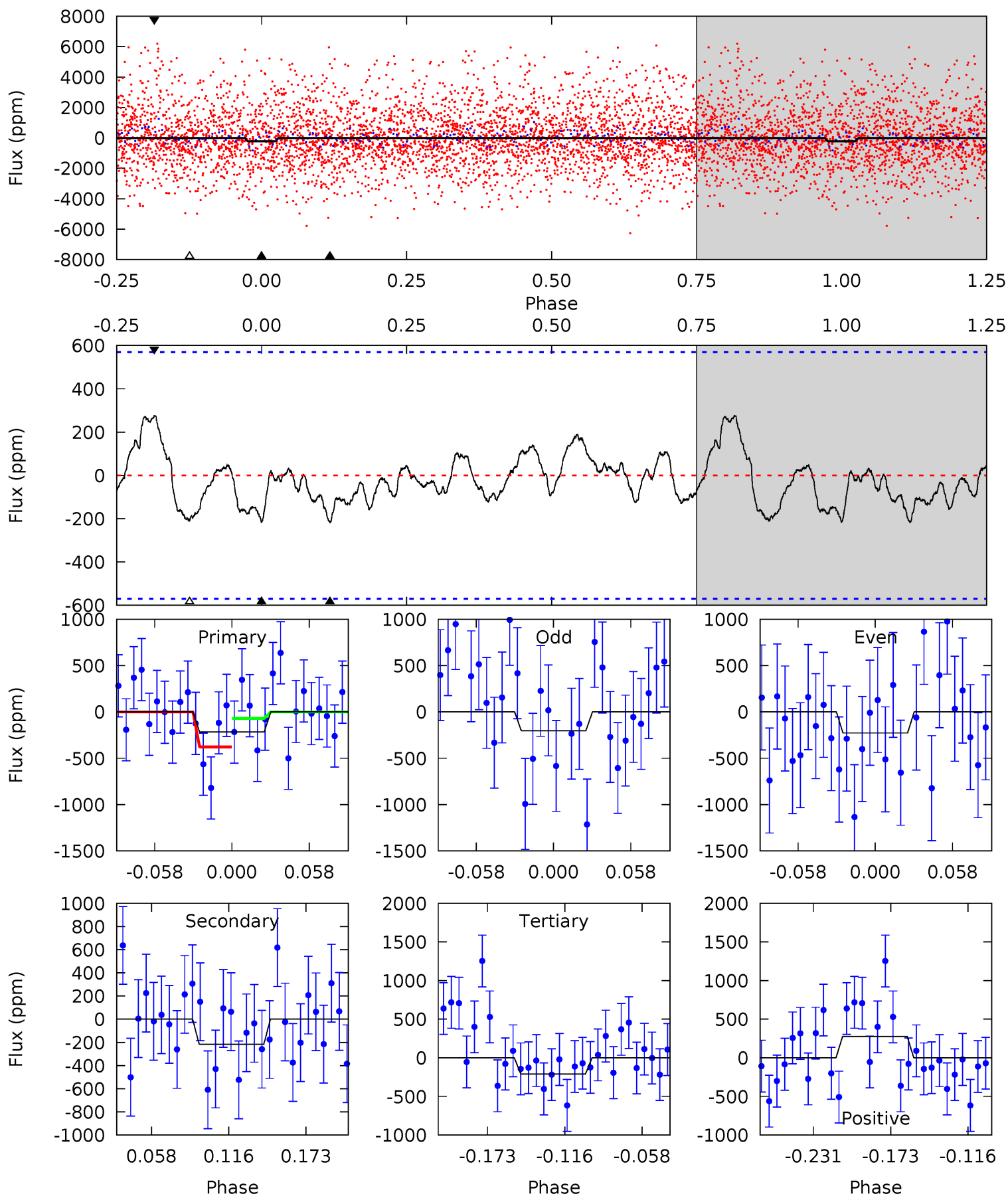




# Alt Model-Shift Uniqueness Test

007741987-05, P = 4.115432 Days, E = 129.344686 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1.78	1.78	1.73	2.27	4.68	1.90	0.84	0.05	-0.48	0.05	-0.49	0.10	0.68	0.56	1.28



### Stellar Parameters For KIC 007741987

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$3360^{+40}_{-43}$	$5.025^{+0.036}_{-0.045}$	$-0.100^{+0.100}_{-0.100}$	$0.254^{+0.031}_{-0.031}$	$0.249^{+0.038}_{-0.038}$	$21.530^{+4.952}_{-4.384}$
	+1%/-1%	+1%/-1%	+100%/-100%	+12%/-12%	+15%/-15%	+23%/-20%
Source	PHO2	PHO2	PHO2	DSEP		

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

### Secondary Eclipse Parameters for KIC 007741987-05 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-147 \pm 79$	$0.70^{+0.44}_{-0.42}$	$588^{+14}_{-13}$	$2704^{+825}_{-395}$	$151^{+857}_{-109}$
Alt.	$-217 \pm 122$	$0.51^{+0.50}_{-0.32}$	$588^{+13}_{-13}$	$3076^{+1355}_{-561}$	$410^{+3148}_{-321}$

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

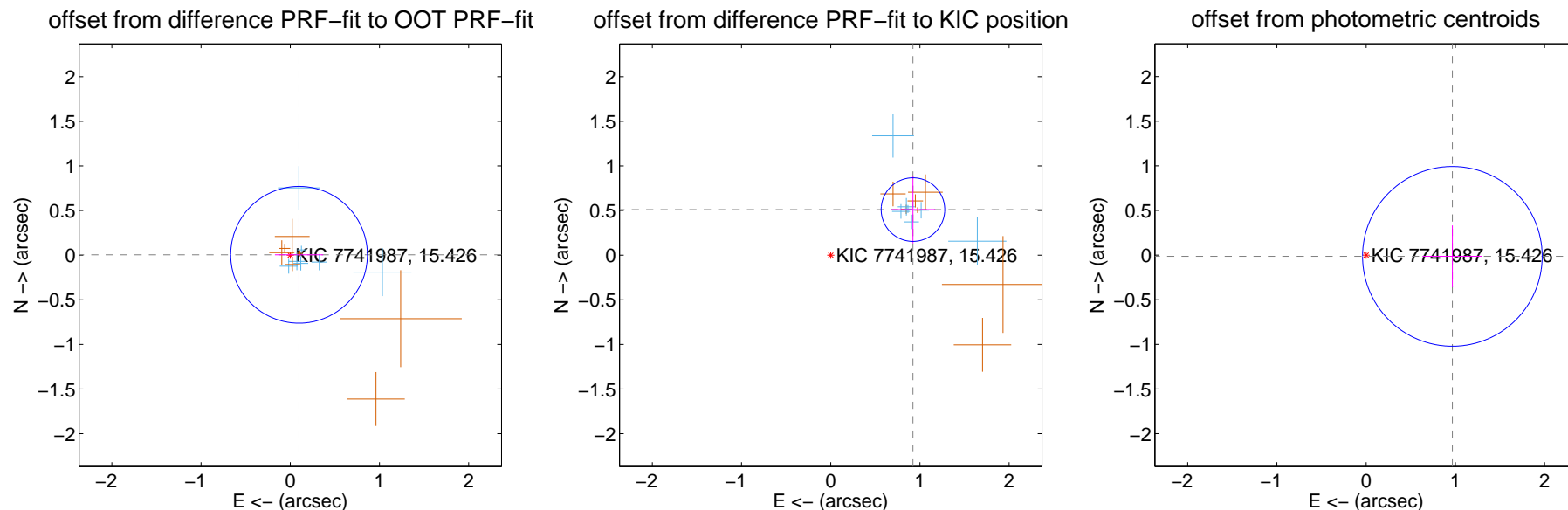
## DV Centroid Data

Supplemental centroid analysis for 007741987-05. Kepler magnitude: 15.43. Transit SNR 6.07

There are 7 quarters with good PRF difference image offsets

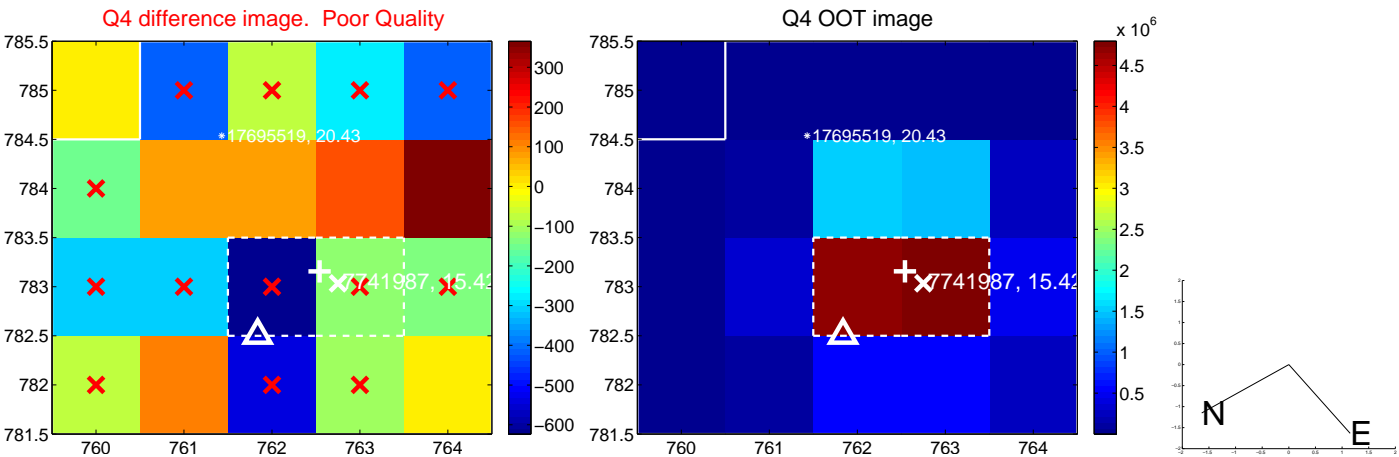
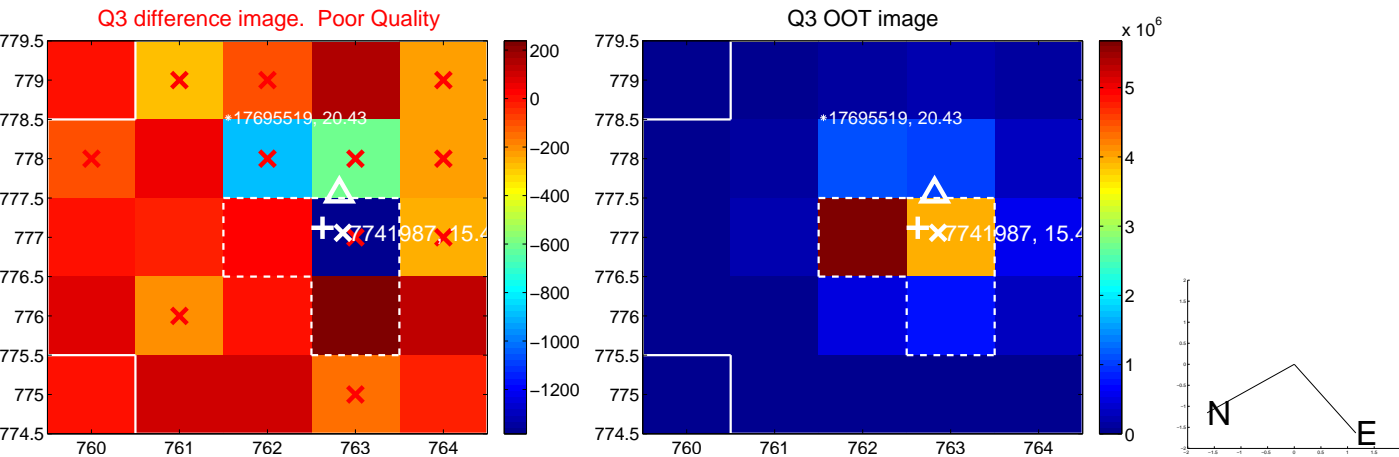
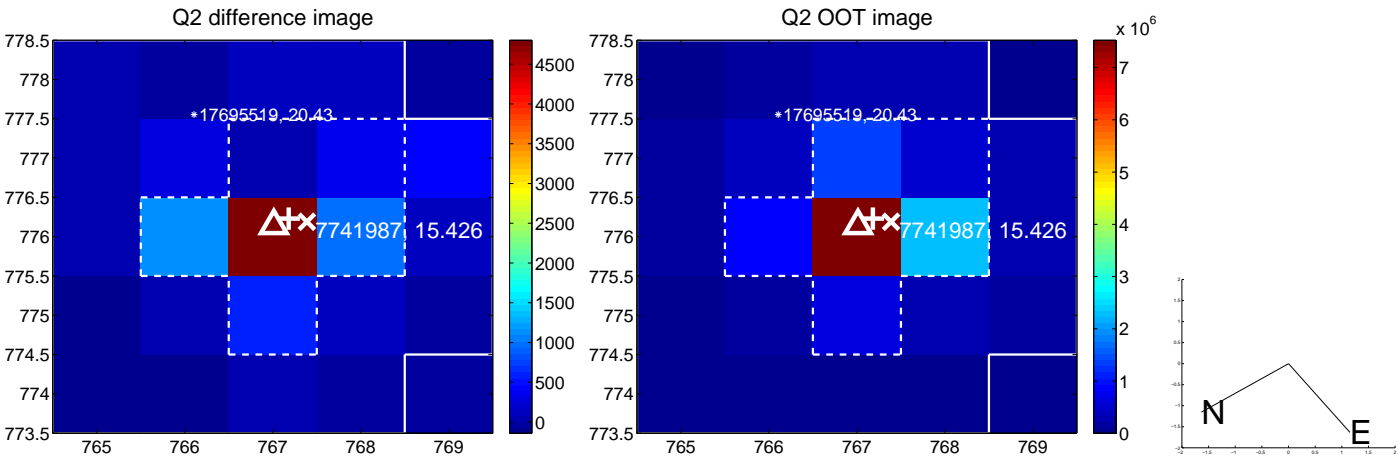
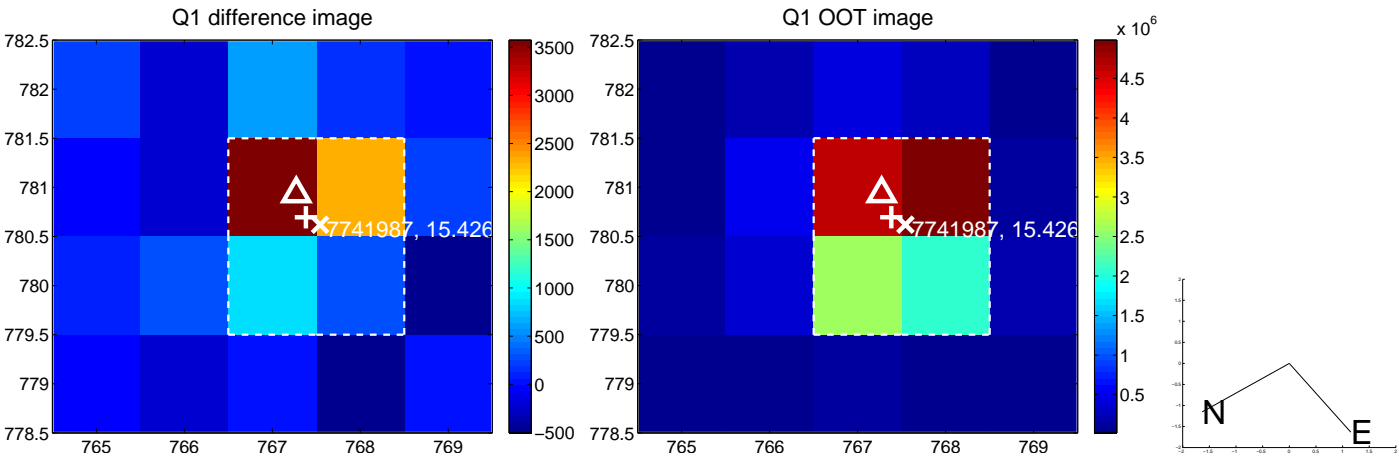
The direct PRF centroid is offset from the target star catalog position by about 0.99 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.099 \pm 0.255$	0.39	$-0.098 \pm 0.270$	$0.004 \pm 0.412$
PRF-fit source offset from KIC position	$1.054 \pm 0.119$	8.87	$-0.922 \pm 0.249$	$0.511 \pm 0.379$
photometric centroid source offset	$0.97 \pm 0.34$	2.88	$-0.97 \pm 0.34$	$-0.01 \pm 0.35$

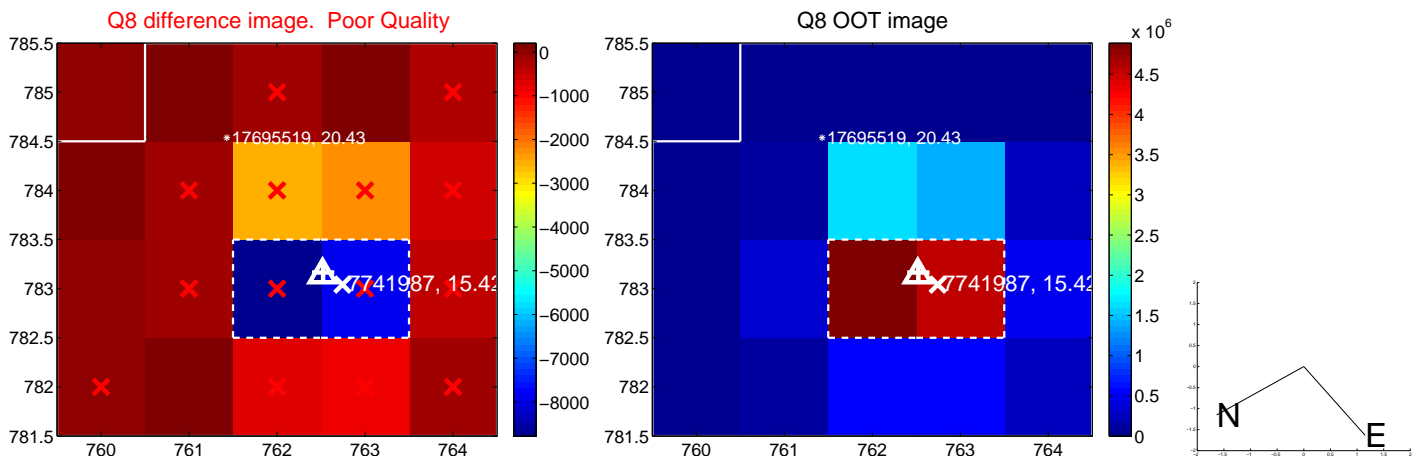
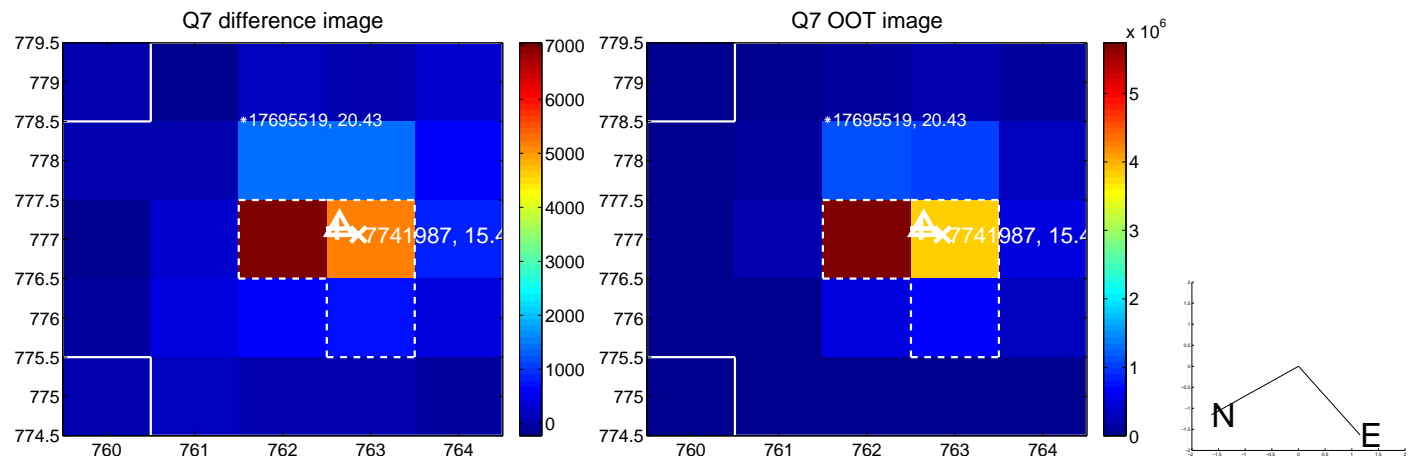
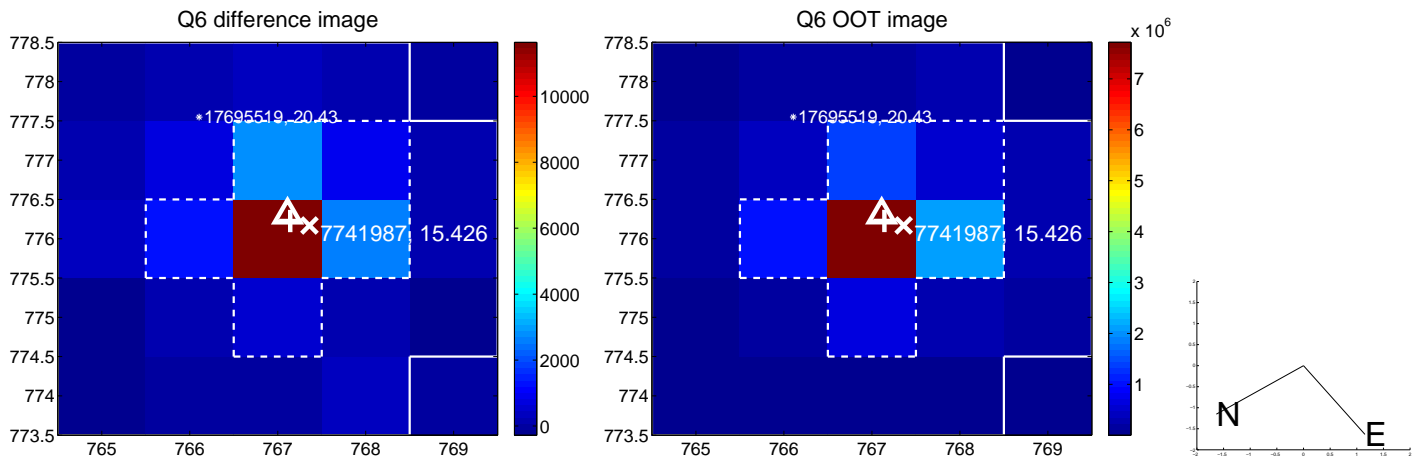
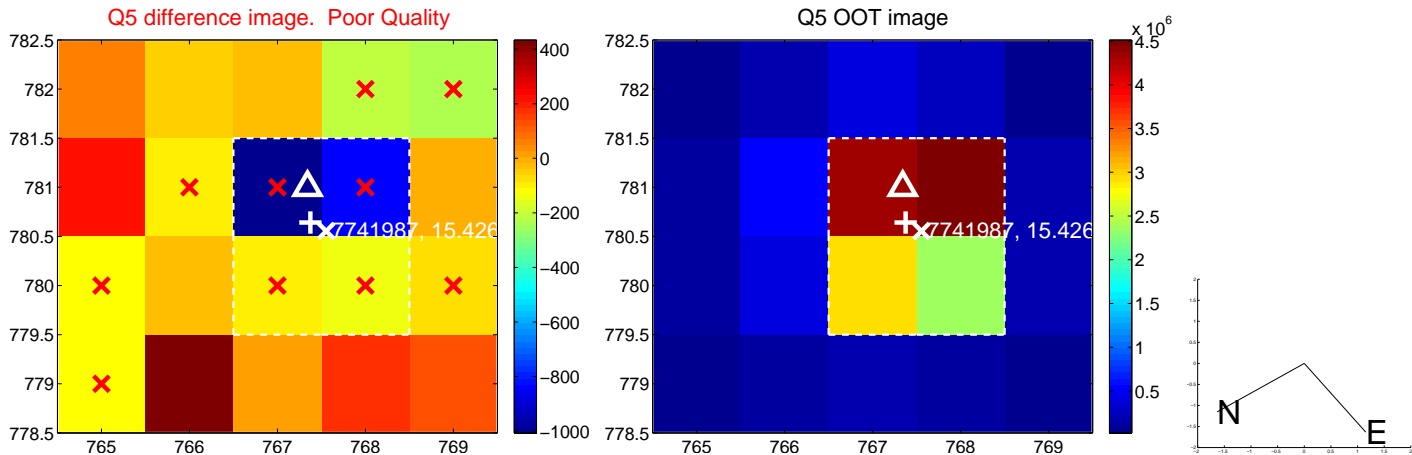


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

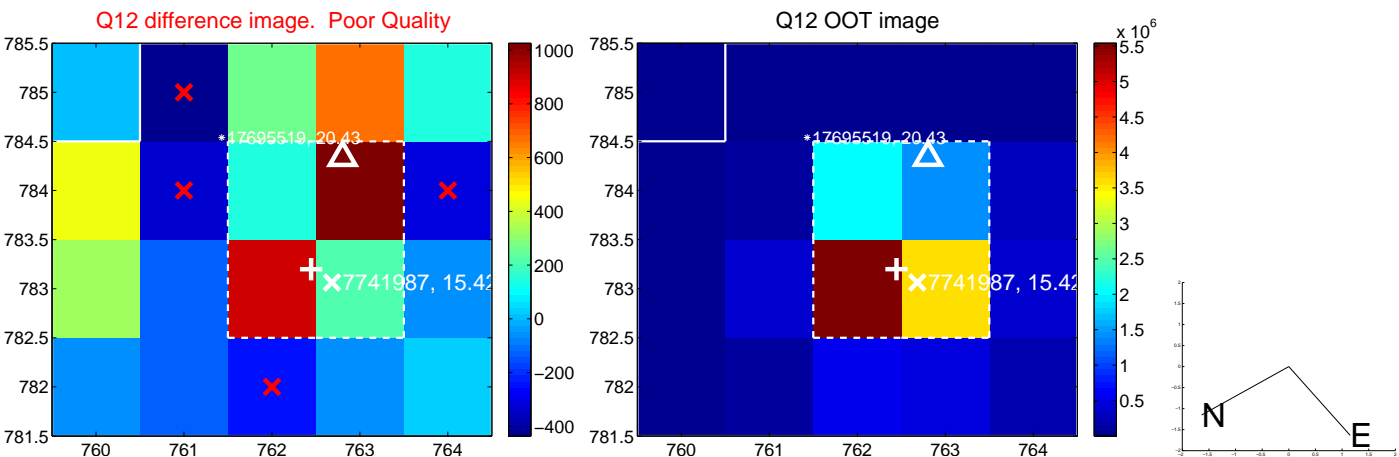
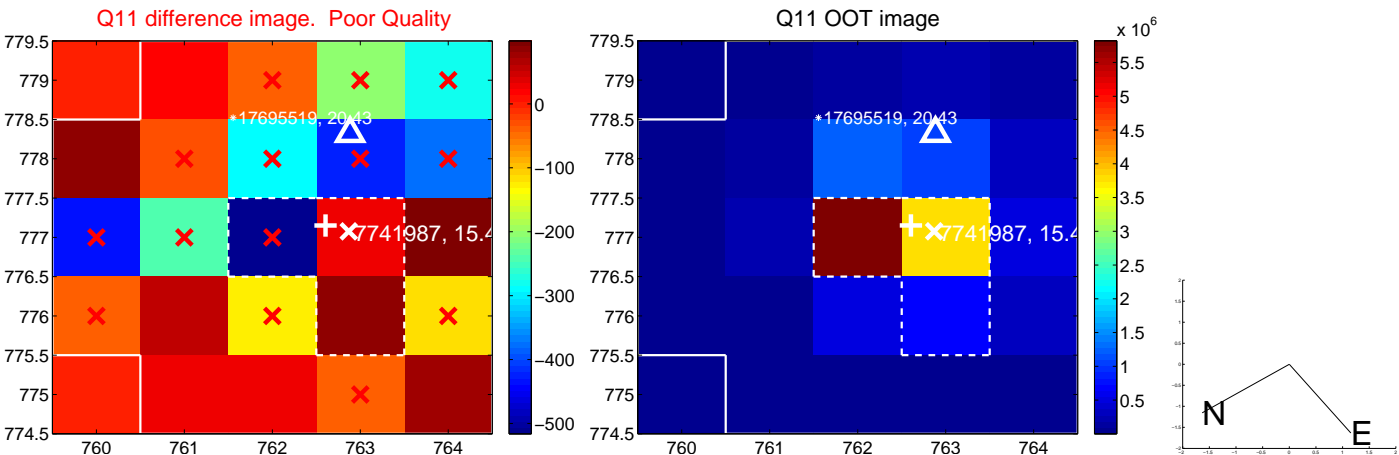
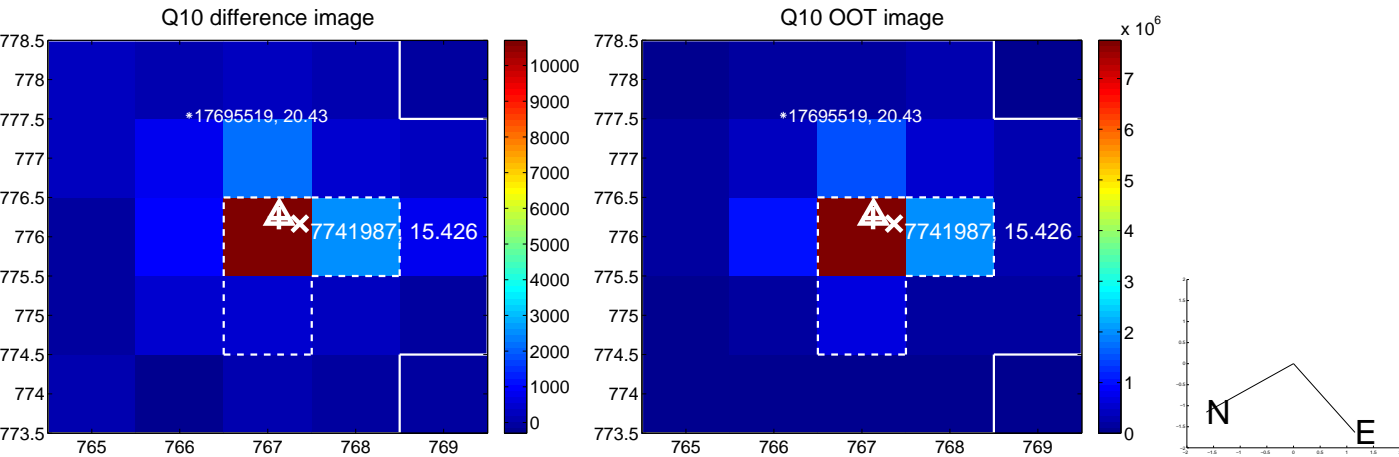
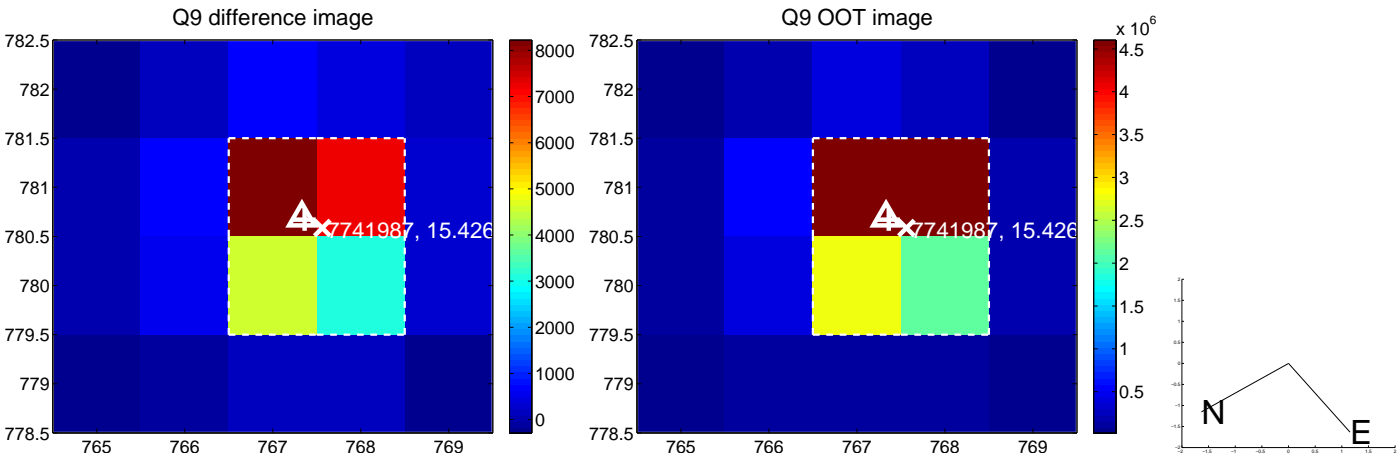
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



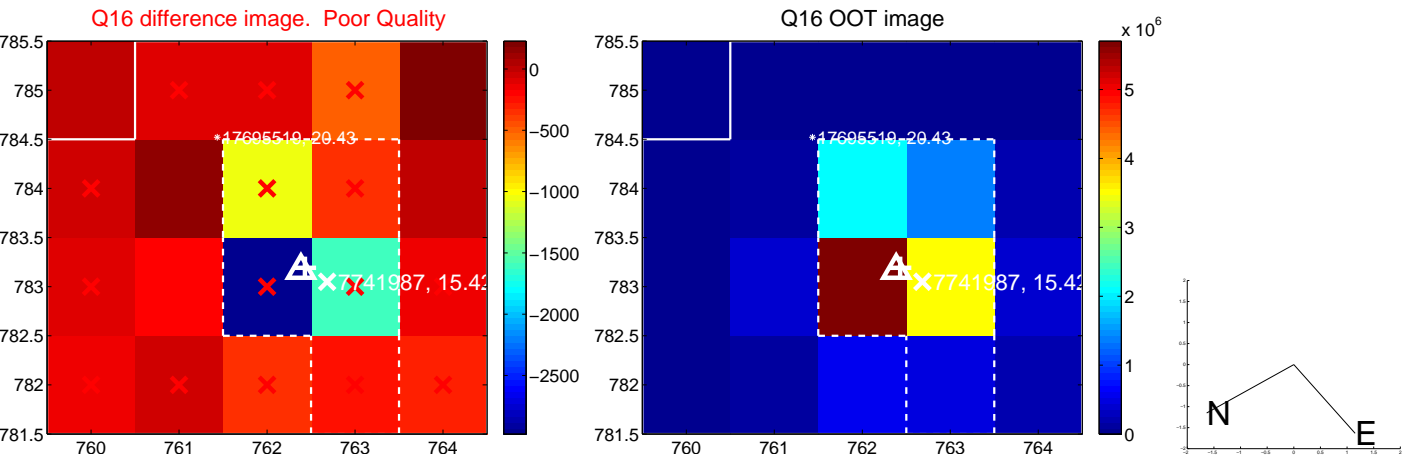
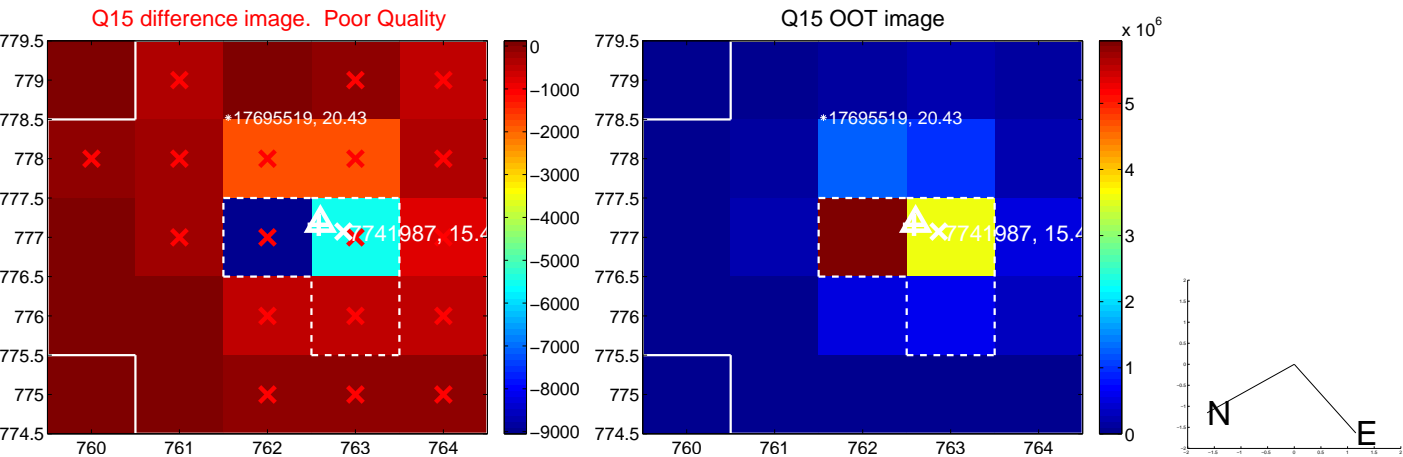
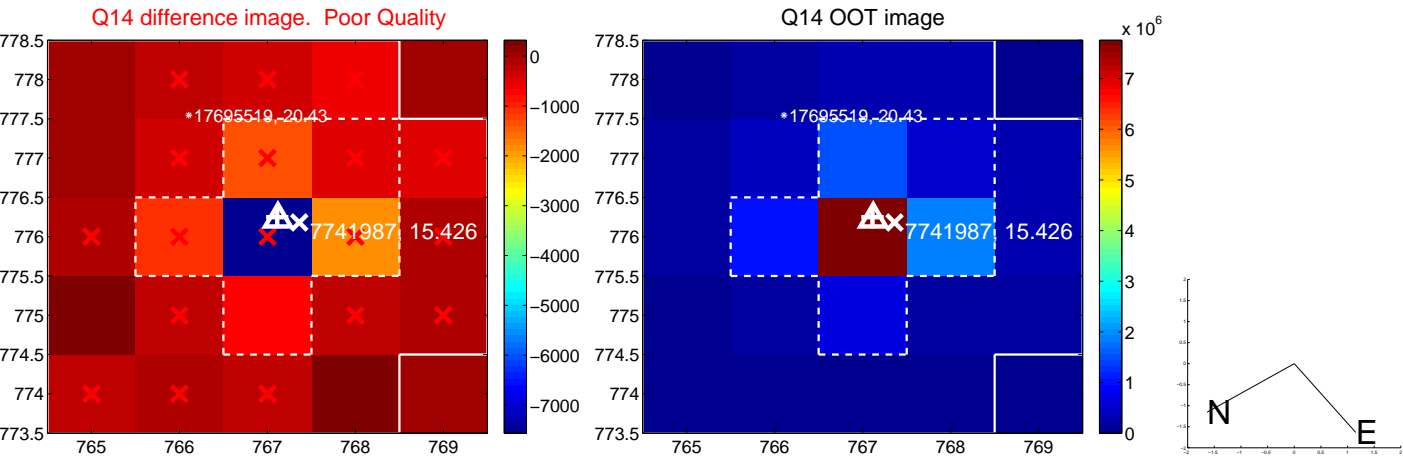
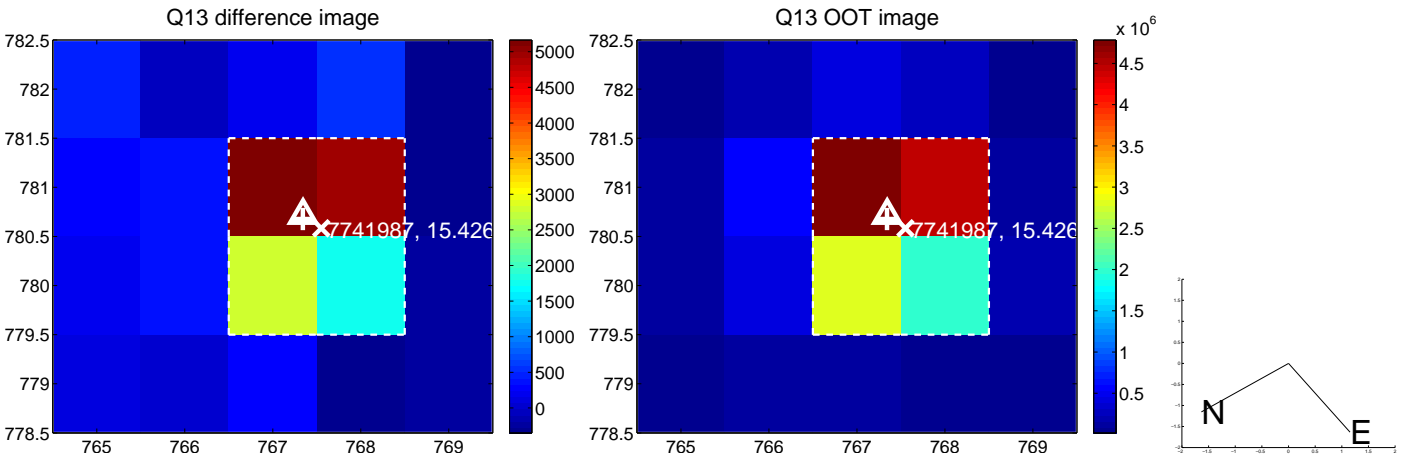
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

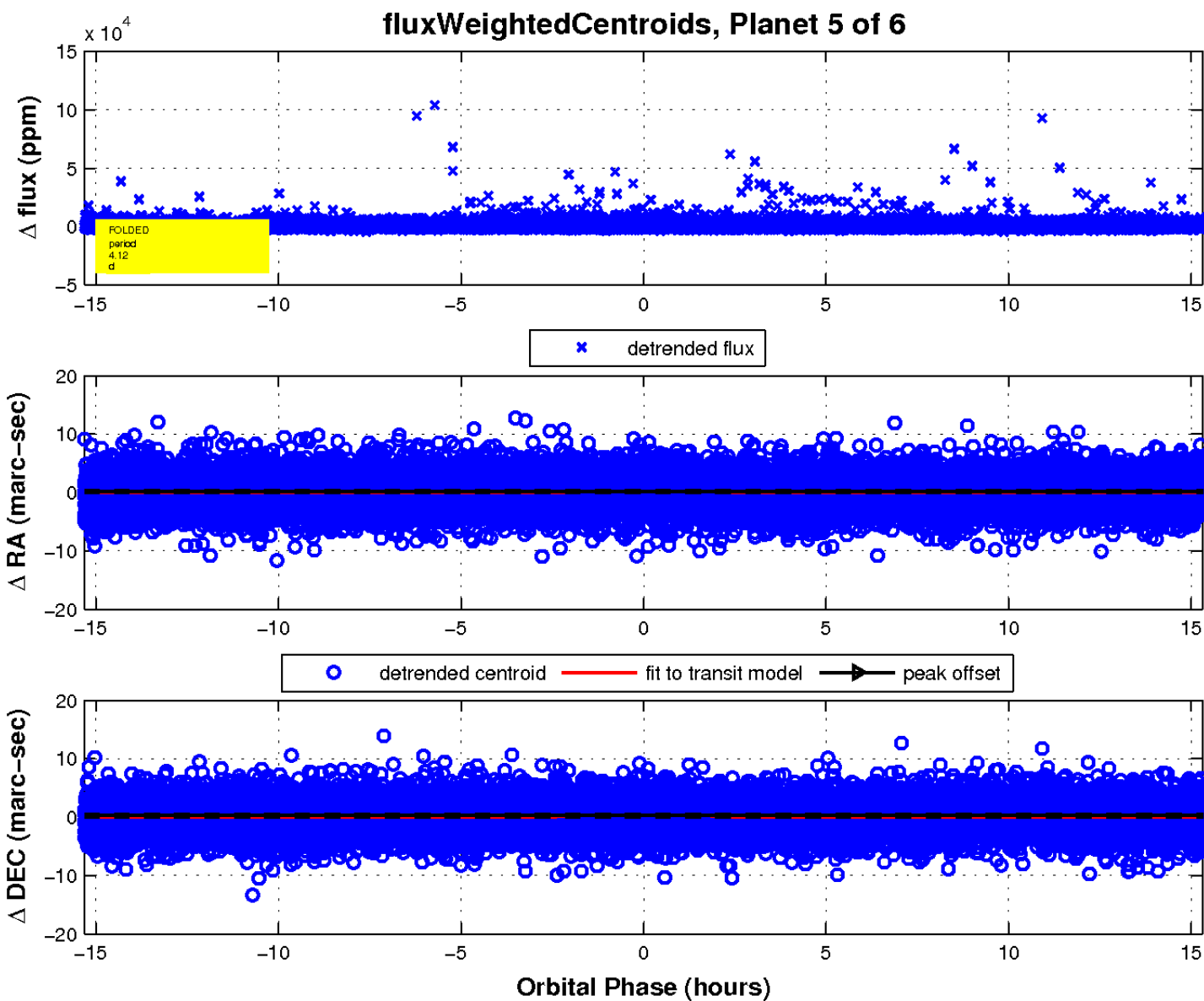
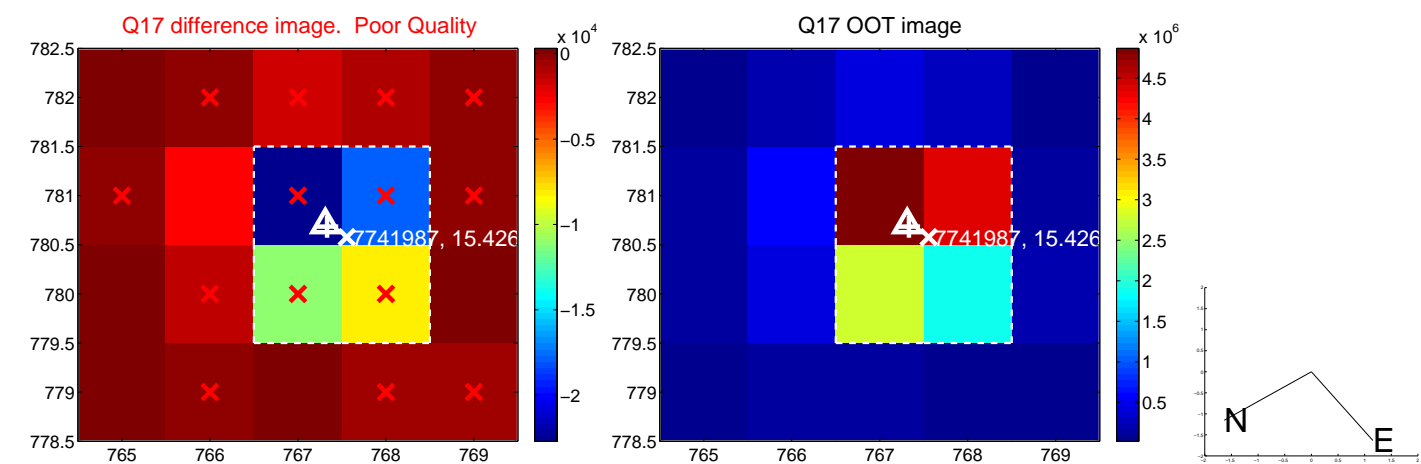


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



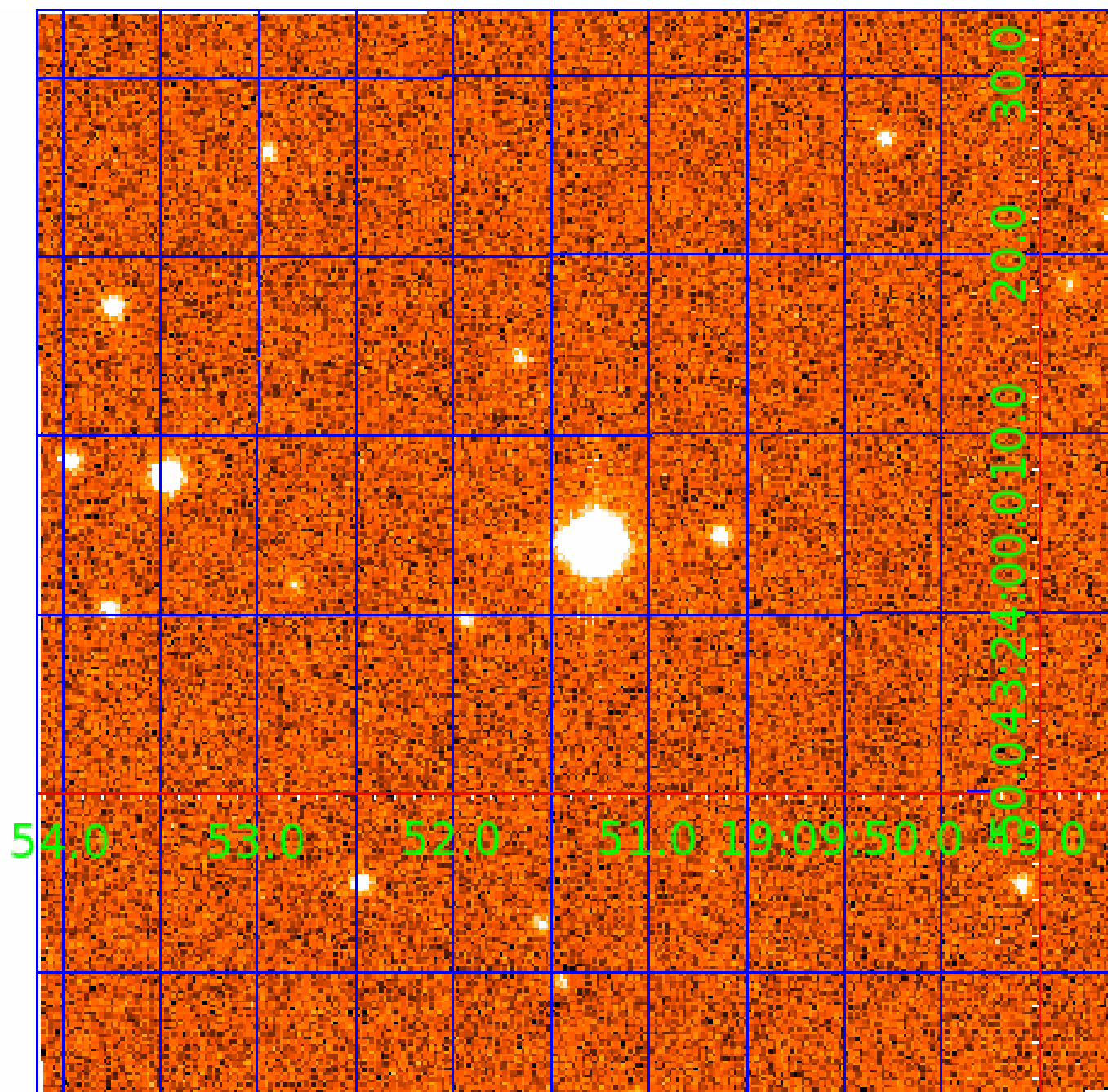


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



# UKIRT Image

Declination



# KIC 007741987

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007741987-01	OBS	No	1.259365	131.617515	10.2	9.143	14.0	0.5	0.25	3360	0.08	35.70
007741987-02	OBS	No	15.876596	141.074101	314.7	11.660	10.5	2.9	0.25	3360	0.46	1.22
007741987-04	OBS	No	15.584793	146.416289	752.0	4.167	9.1	5.3	0.25	3360	1.19	1.25
007741987-05	OBS	No	4.115441	133.440295	415.1	5.104	8.7	6.1	0.25	3360	0.59	7.36
007741987-06	OBS	No	9.997179	139.073486	1343.7	1.821	7.8	8.9	0.25	3360	0.92	2.25

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007741987-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—CENT_KIC_POS
007741987-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_ZUMA_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_KIC_POS
007741987-04	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_KIC_POS—HALO_GHOST
007741987-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_KIC_POS
007741987-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_KIC_POS

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

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

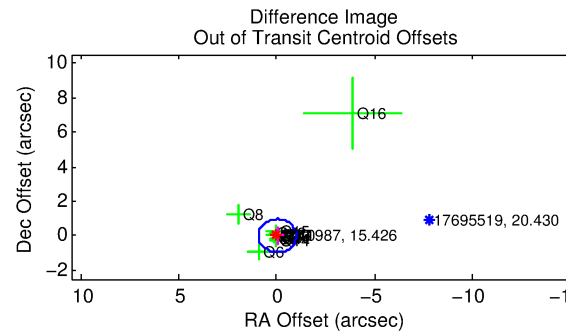
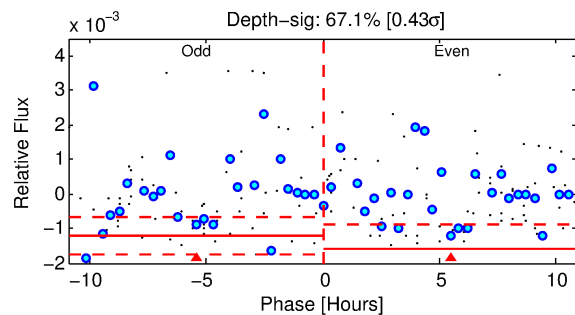
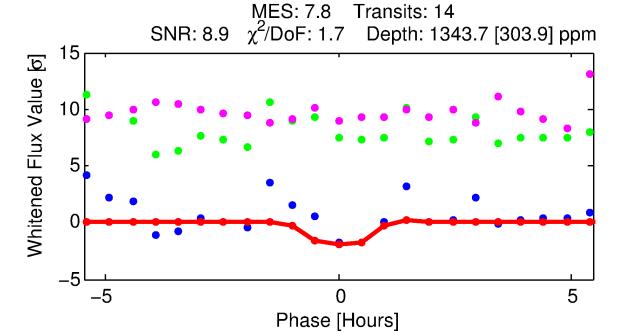
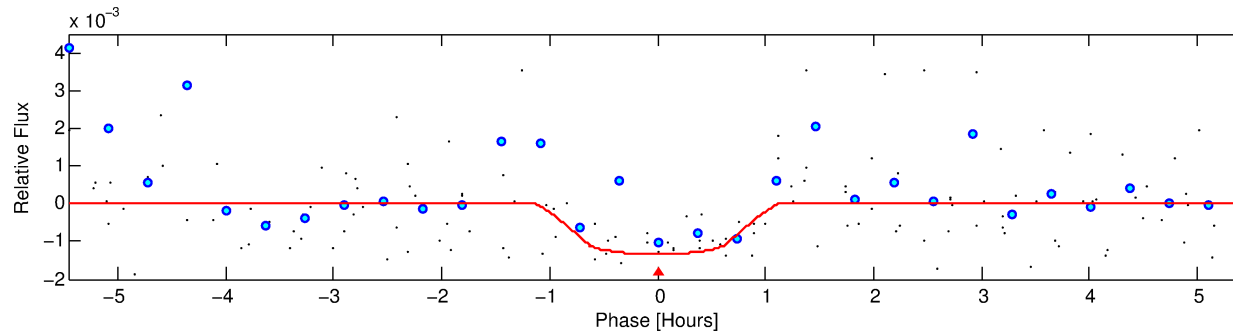
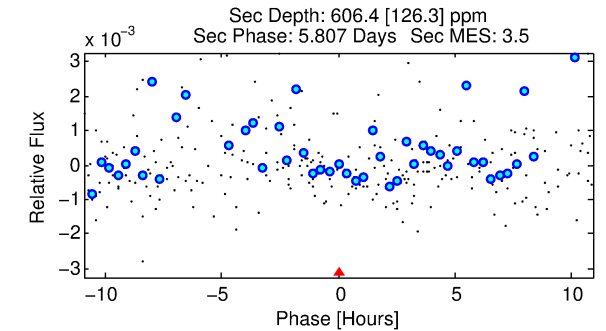
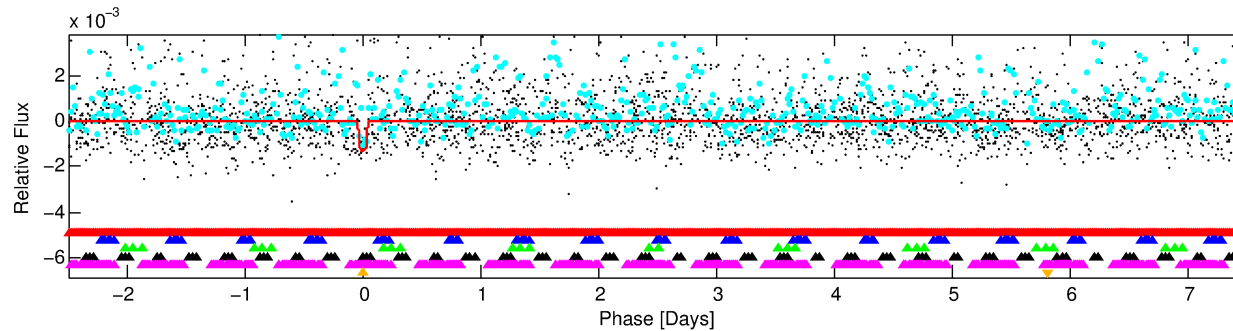
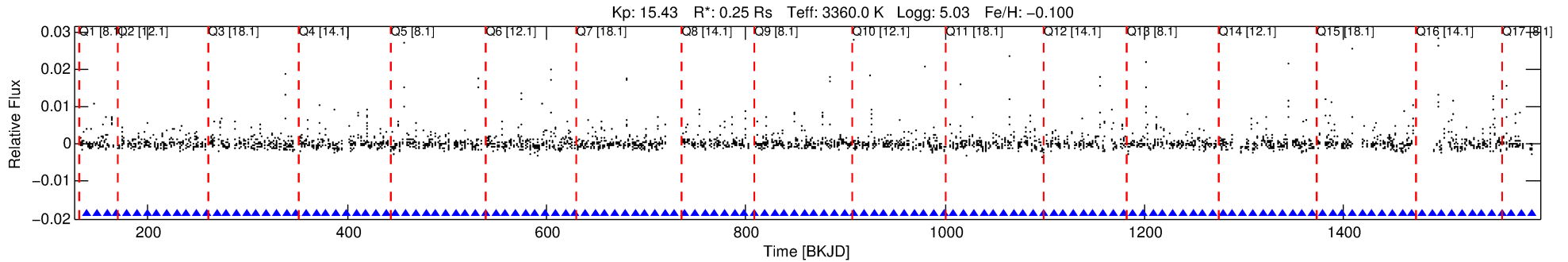
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 007741987-06

No Significant Match Found

# DV One-Page Summary

KIC: 7741987 Candidate: 6 of 6 Period: 9.997 d



## DV Fit Results:

Period = 9.99718 [0.00014] d  
Epoch = 139.0735 [0.0091] BKJD  
Rp/R\* = 0.0333 [0.0874]  
a/R\* = 43.34 [508.21]  
b = 0.02 [620.41]  
Seff = 2.25 [0.27]  
Teq = 312 [9] K  
Rp = 0.92 [2.42] Re  
a = 0.0572 [0.0051] AU  
Ag = 1280.65 [6729.55] [0.19σ]  
Teffp = 2890 [3796] K [0.68σ]

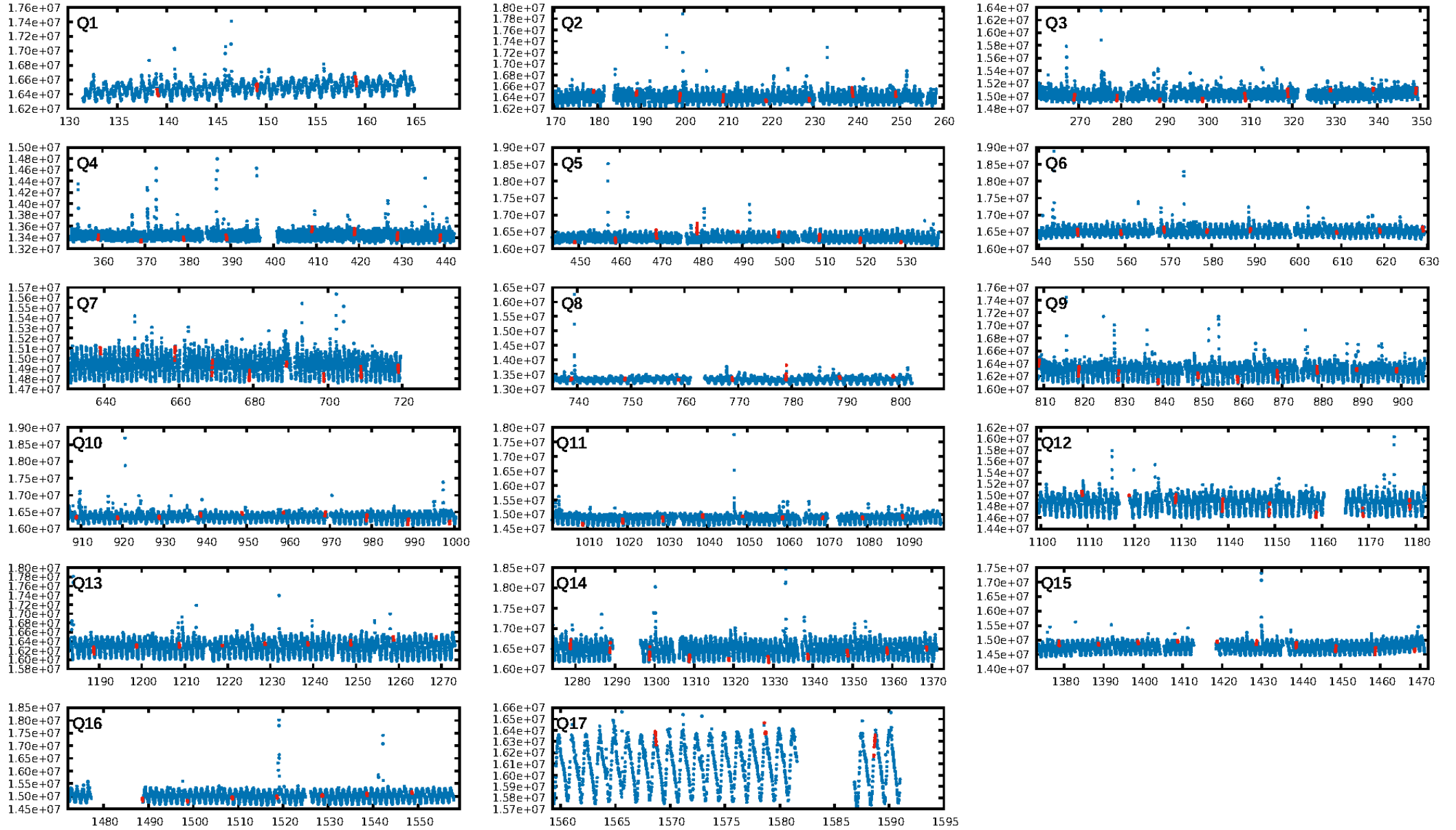
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [26.05σ]  
LongPeriod-sig: 100.0% [29.49σ]  
ModelChiSquare2-sig: 70.0%  
ModelChiSquareGof-sig: 100.0%  
**Bootstrap-pfa: 5.38e-07**  
RollingBand-fgt: 1.00 [14/14]  
**GhostDiagnostic-chr: -0.5295**  
Centroid-sig: 9.1%  
Centroid-so: 0.675 arcsec [2.51σ]  
OotOffset-rm: 0.033 arcsec [0.10σ]  
KicOffset-rm: 0.955 arcsec [2.07σ]  
OotOffset-st: 4/4/4/4 [16]  
KicOffset-st: 4/4/4/4 [16]  
DiffImageQuality-fgm: 0.62 [10/16]  
DiffImageOverlap-fno: 0.59 [10/17]

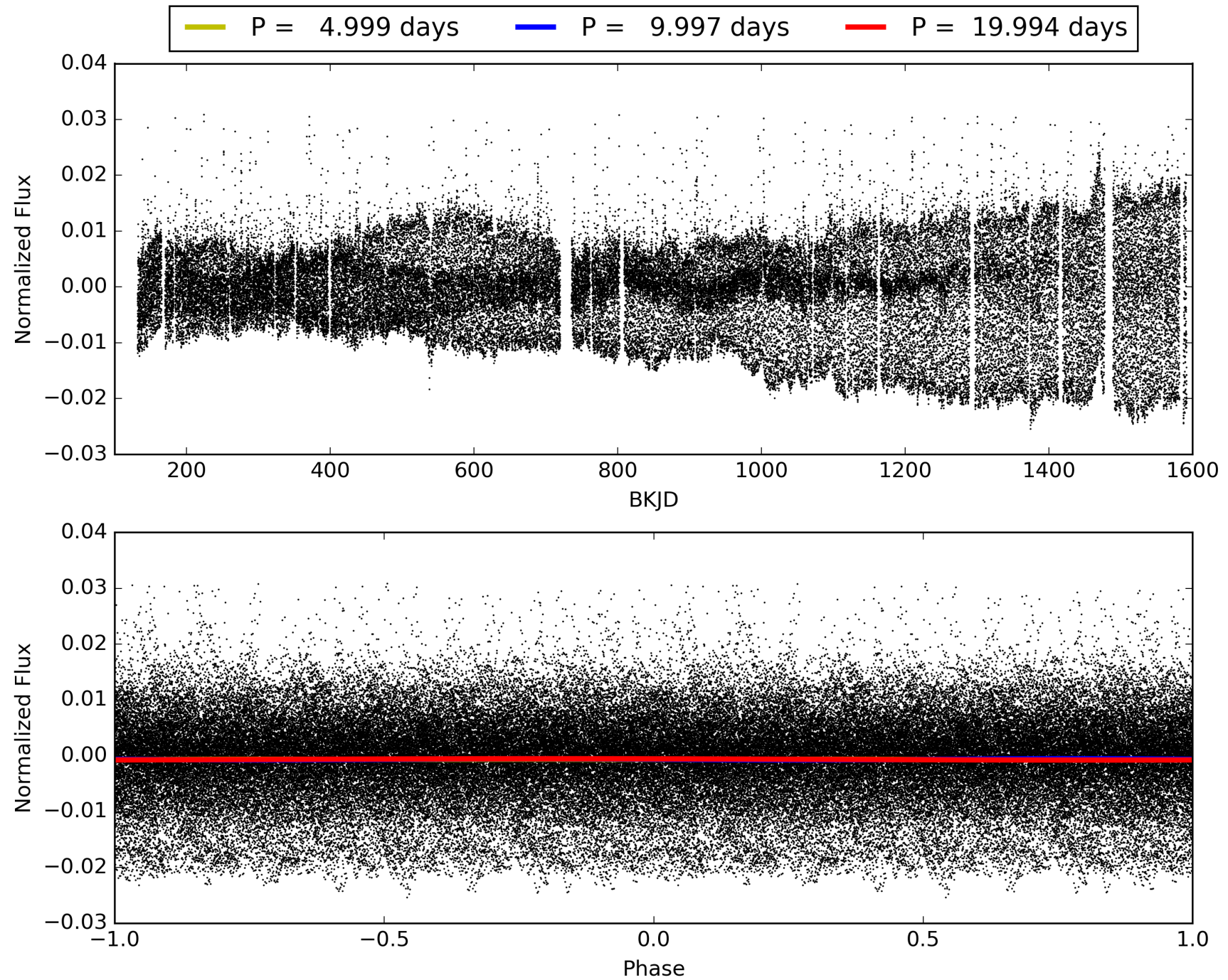
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 02:27:50 Z

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

# TCE 007741987-06, PDC Light Curves

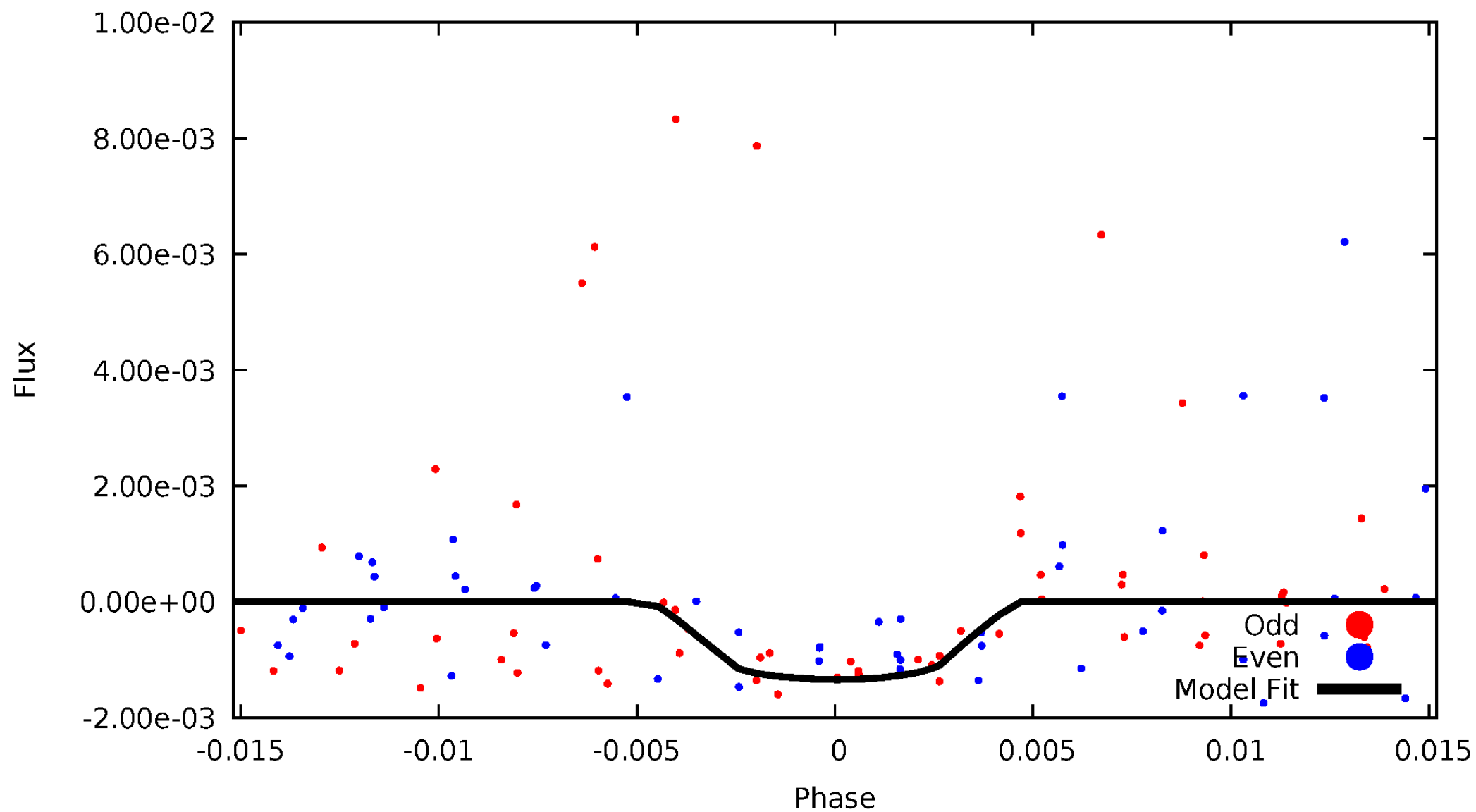


# TCE 007741987-06



# DV Odd/Even

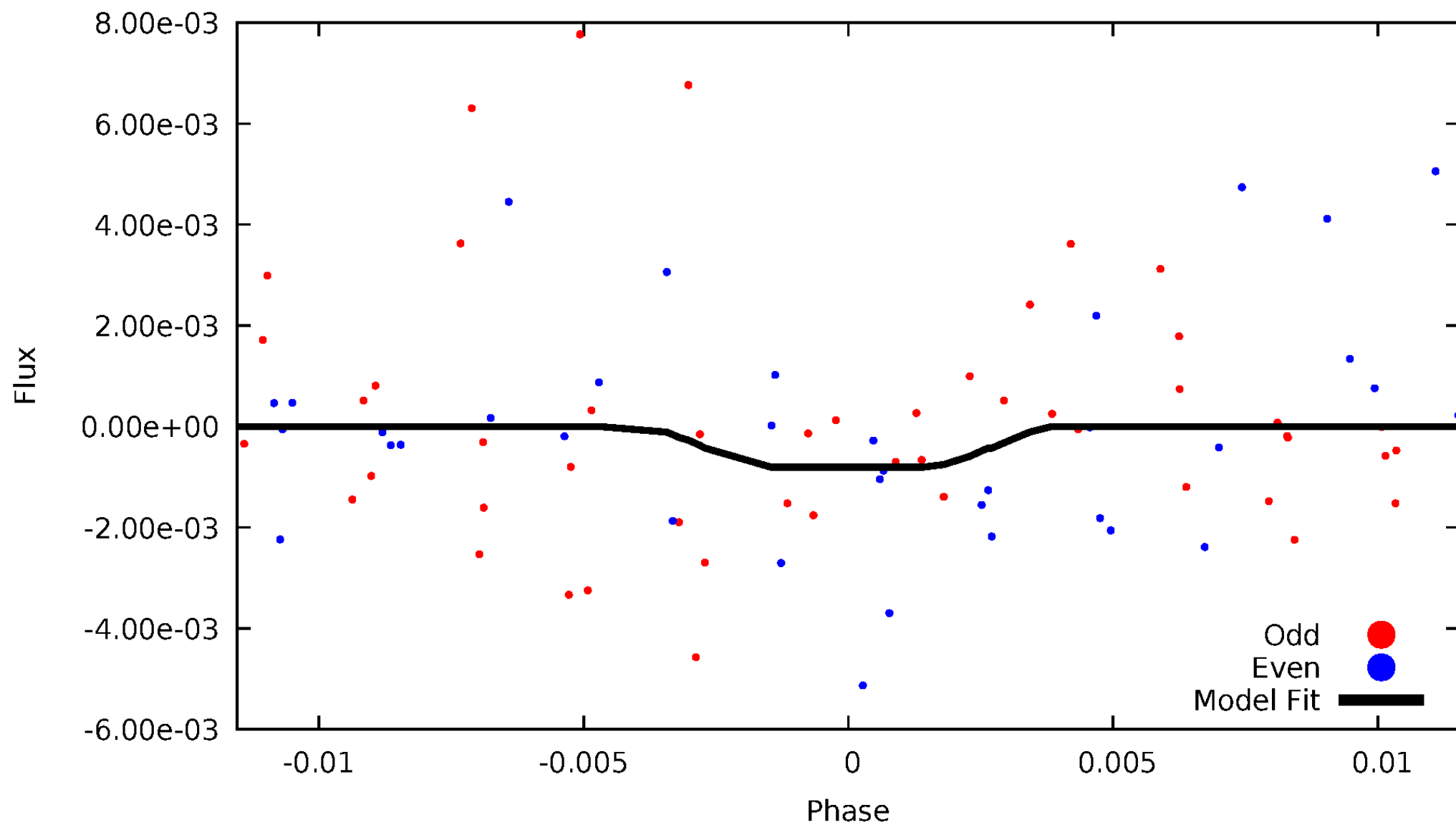
TCE 007741987-06





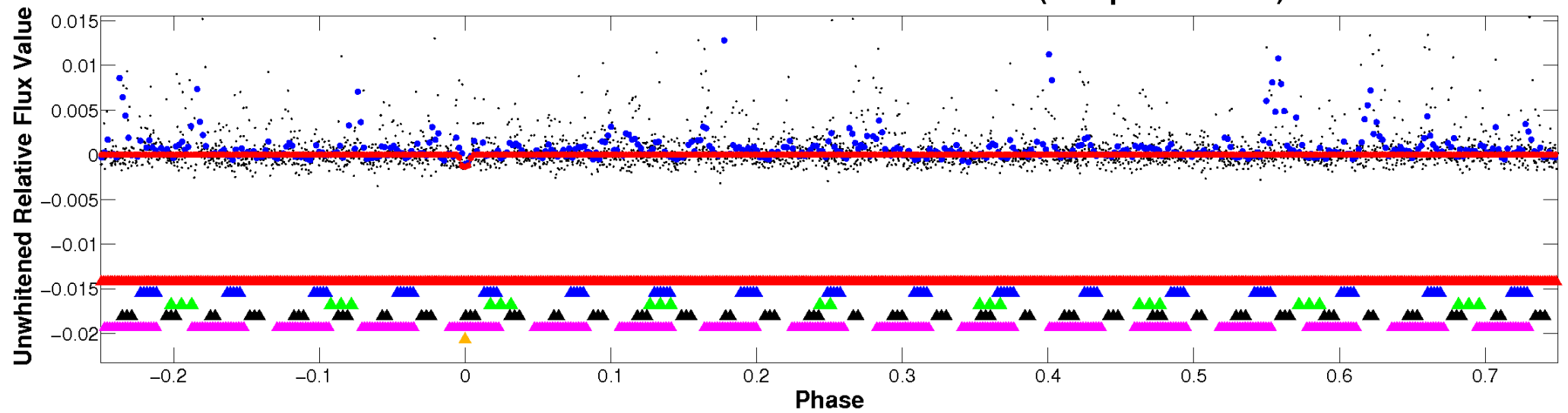
# ALT Odd/Even

TCE 007741987-06

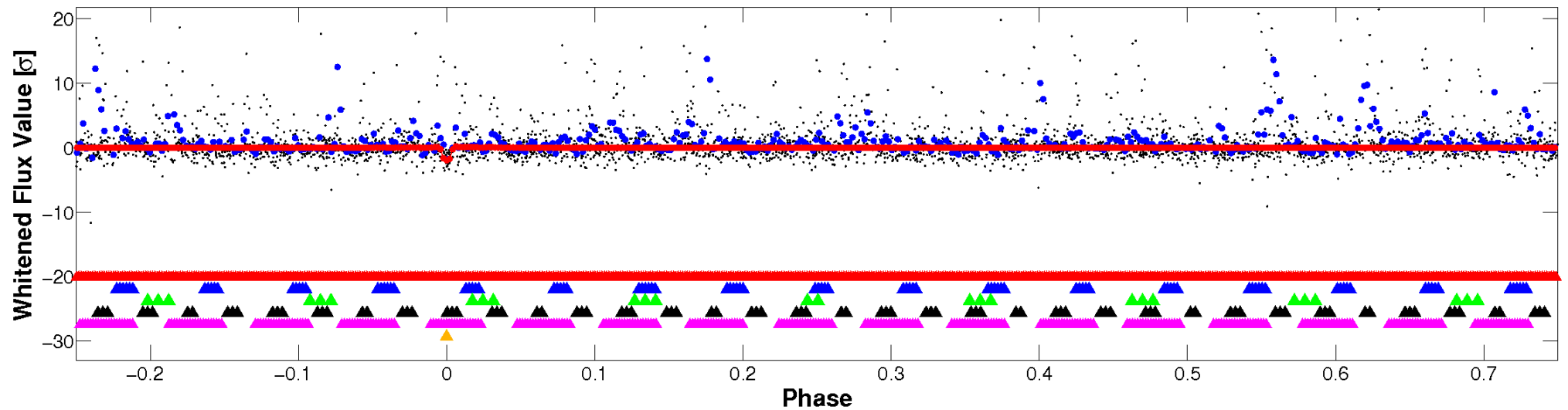


# Non-Whitened Vs. Whitened Light Curve

## Planet 6 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

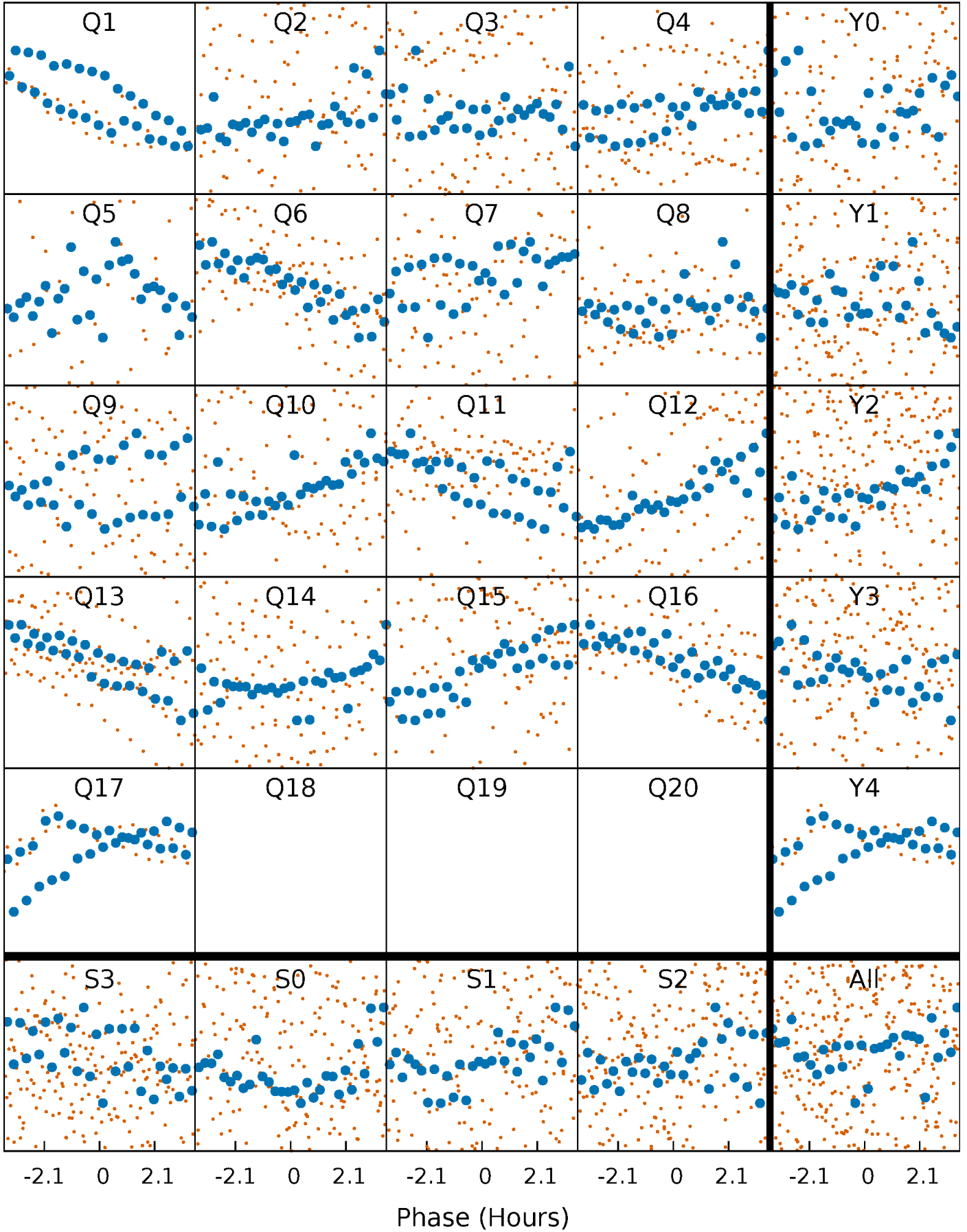


## Planet 6 : Phased Whitened Flux Time Series (Fit Epoch/Period)



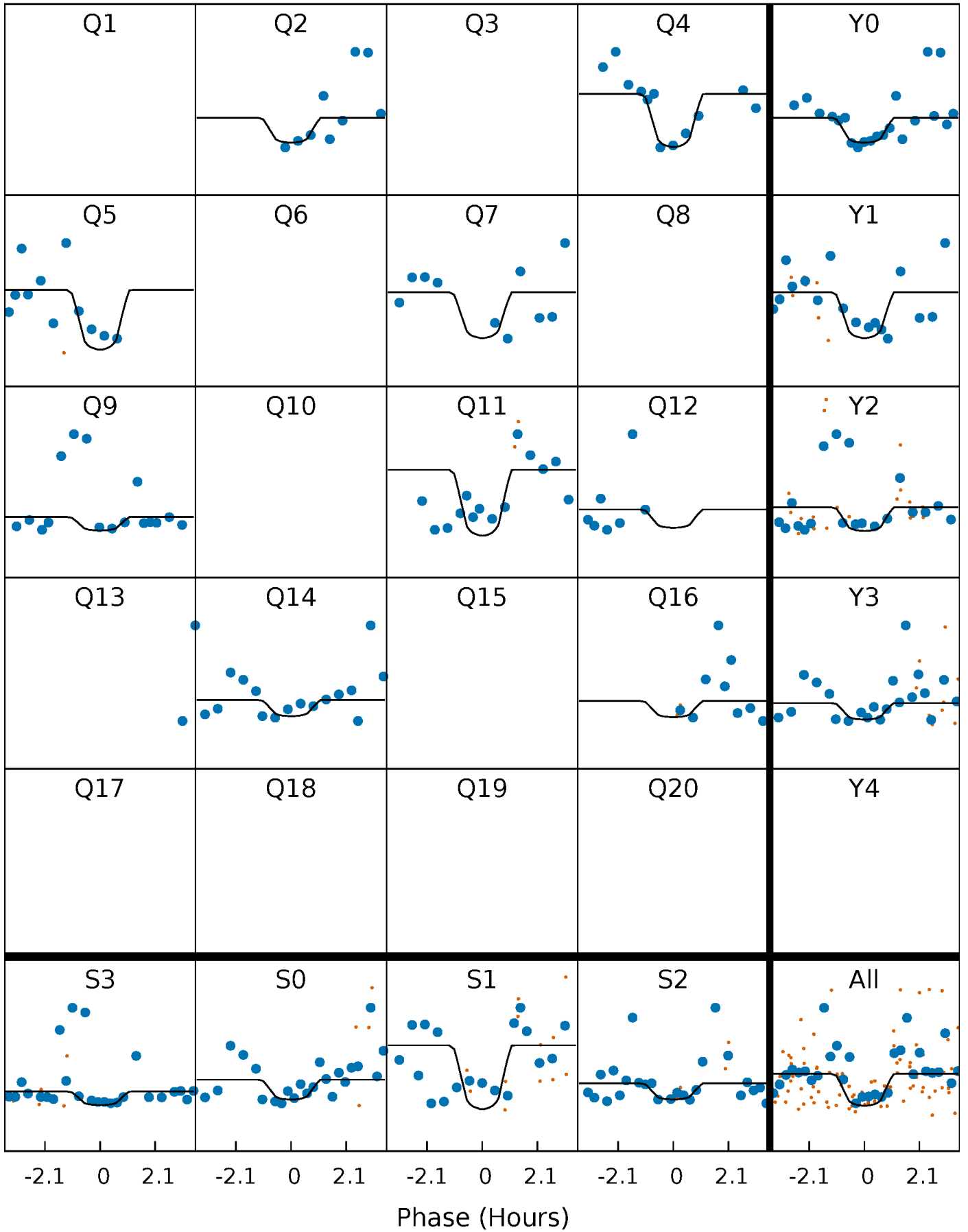
# PDC Quarter-Phased Transit Curves

TCE 007741987-06 P= 9.997179 Days  $T_0=139.073486$  (BKJD)



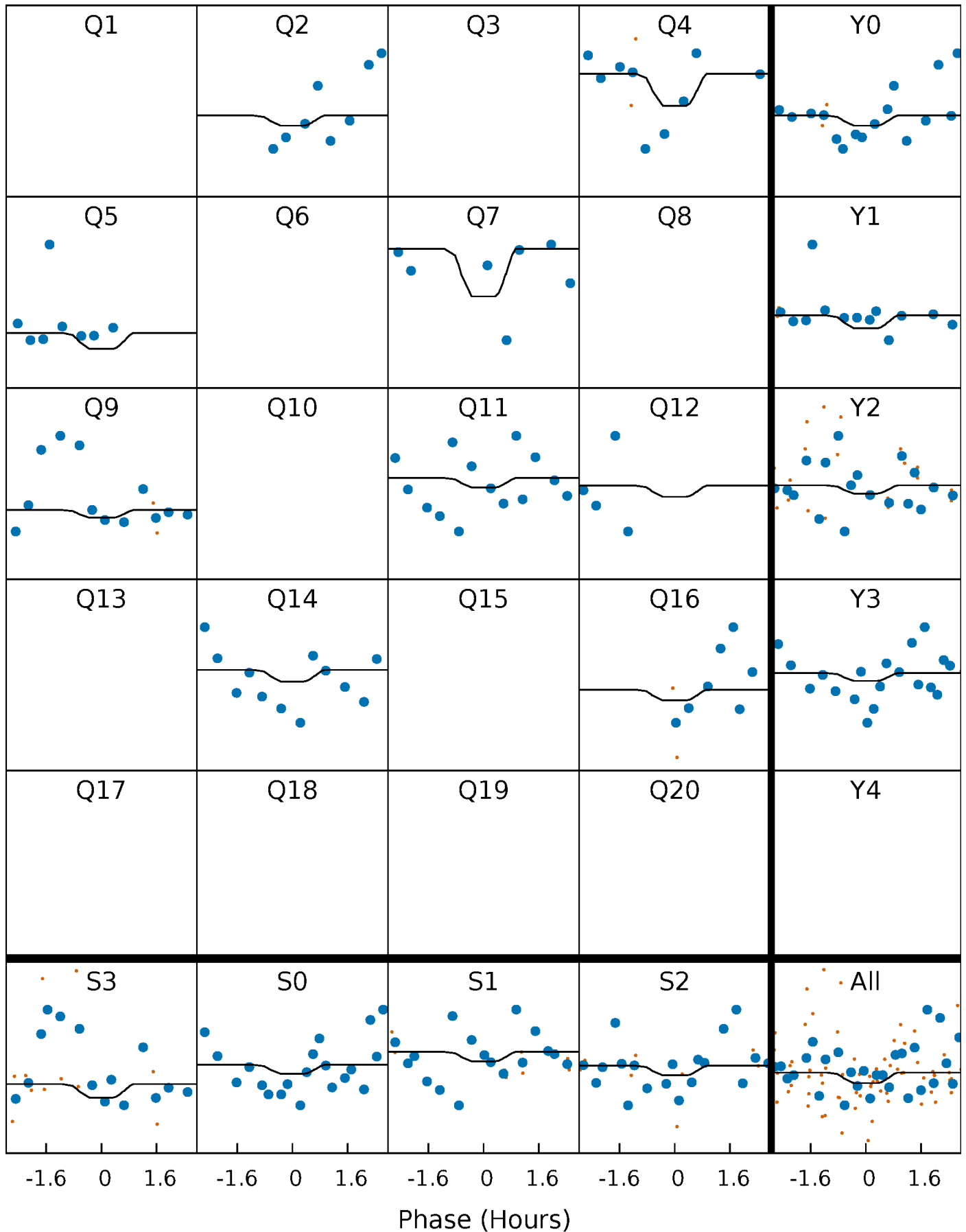
# DV Quarter-Phased Transit Curves

TCE 007741987-06 P= 9.997179 Days  $T_0=139.073486$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

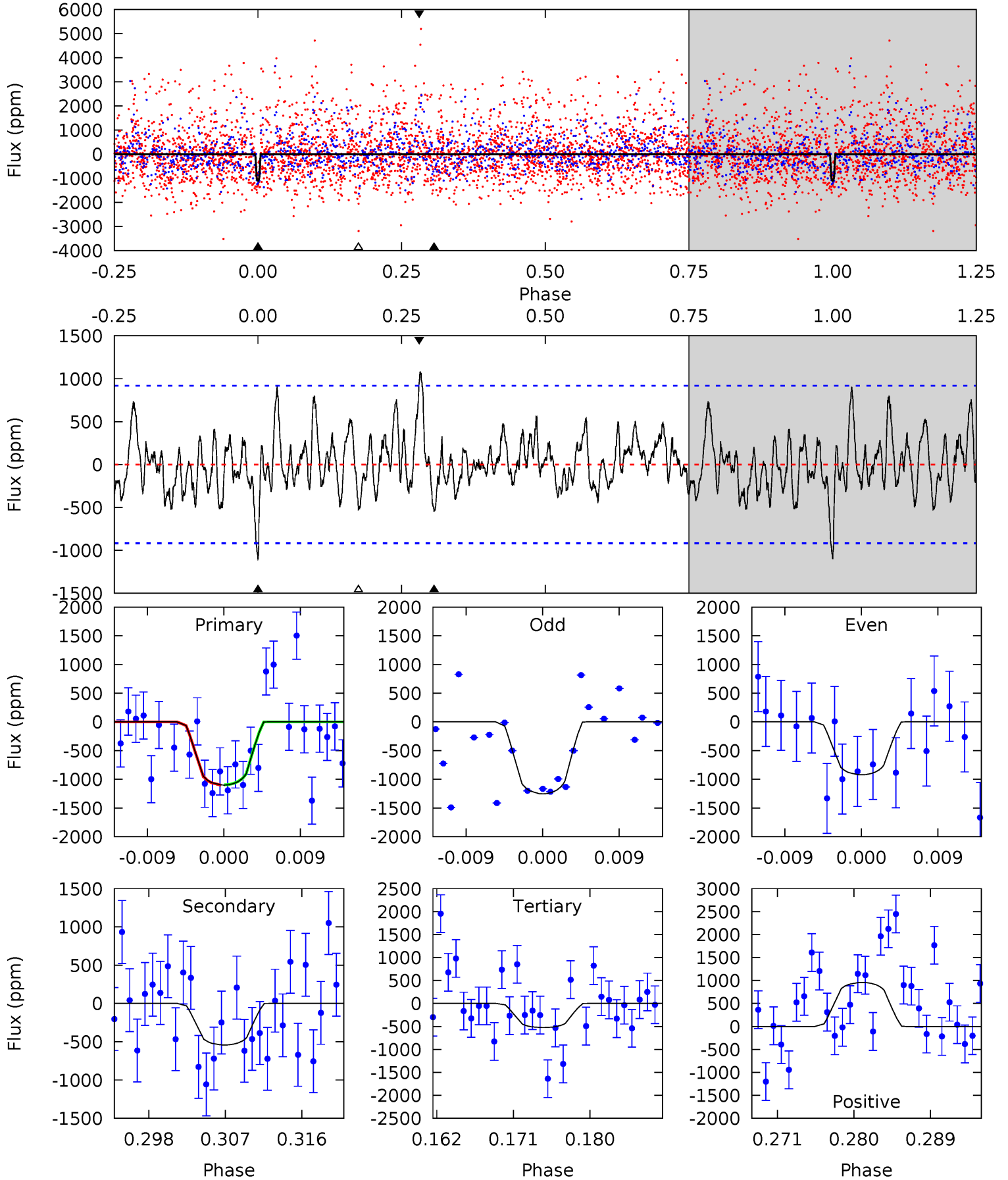
TCE 007741987-06 P= 9.997146 Days  $T_0=139.086326$  (BKJD)



# DV Model-Shift Uniqueness Test

007741987-06, P = 9.997179 Days, E = 129.076307 Days

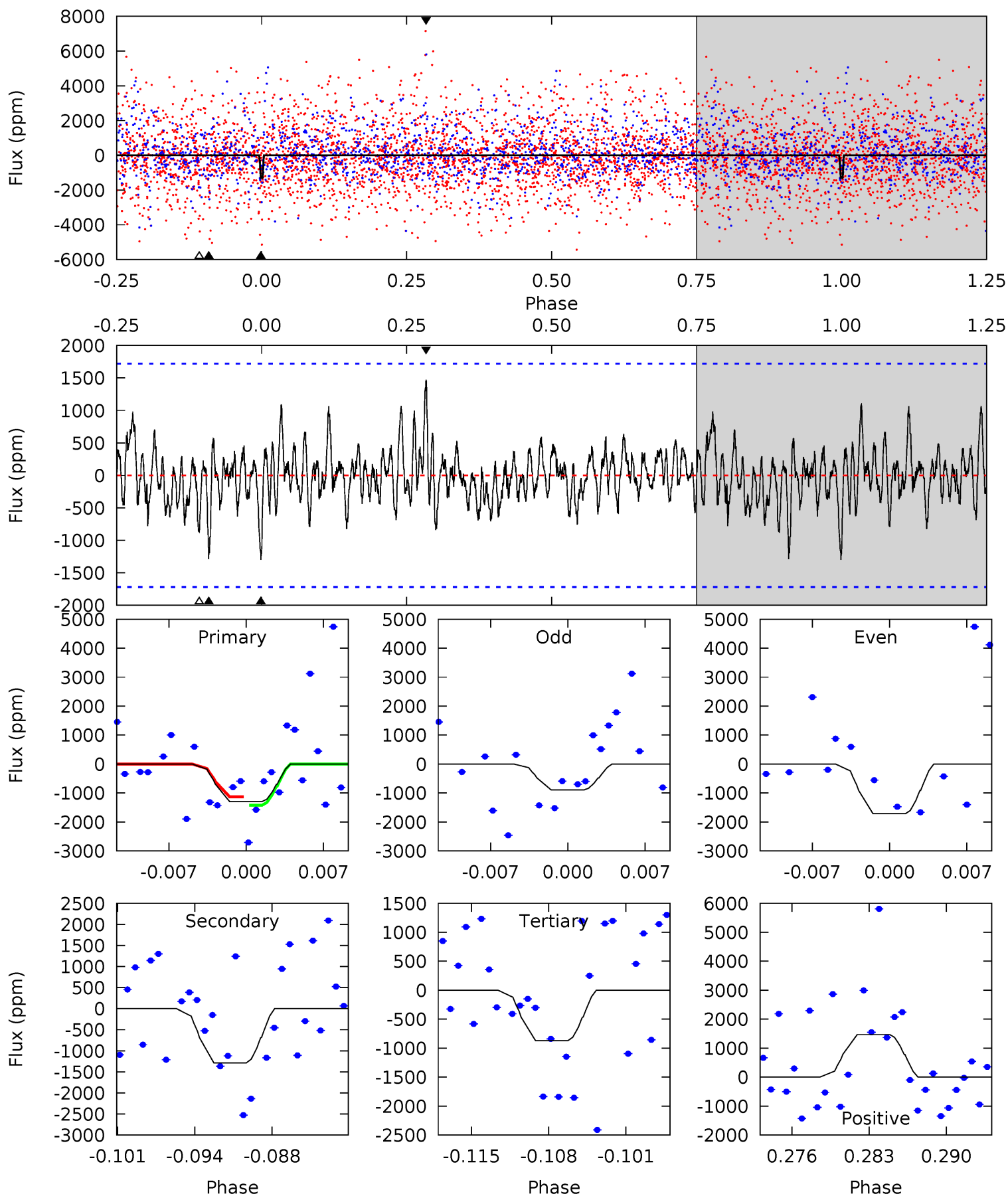
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.05	2.98	2.89	5.27	5.05	2.61	1.48	3.16	0.78	0.09	-2.28	0.84	0.04	0.50	0.01



# Alt Model-Shift Uniqueness Test

007741987-06, P = 9.997146 Days, E = 129.089180 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
3.85	3.82	2.58	4.36	5.10	2.71	1.01	1.27	-0.51	1.24	-0.54	1.18	1.30	0.53	0.43



### Stellar Parameters For KIC 007741987

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$3360^{+40}_{-43}$	$5.025^{+0.036}_{-0.045}$	$-0.100^{+0.100}_{-0.100}$	$0.254^{+0.031}_{-0.031}$	$0.249^{+0.038}_{-0.038}$	$21.530^{+4.952}_{-4.384}$
	+1%/-1%	+1%/-1%	+100%/-100%	+12%/-12%	+15%/-15%	+23%/-20%
Source	PHO2	PHO2	PHO2	DSEP		

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

### Secondary Eclipse Parameters for KIC 007741987-06 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-543 \pm 182$	$2.04^{+2.09}_{-1.37}$	$438^{+9}_{-10}$	$2453^{+935}_{-371}$	$231^{+2202}_{-176}$
Alt.	$-1287 \pm 337$	$2.02^{+2.01}_{-1.39}$	$437^{+10}_{-10}$	$2740^{+1162}_{-426}$	$566^{+5218}_{-431}$

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



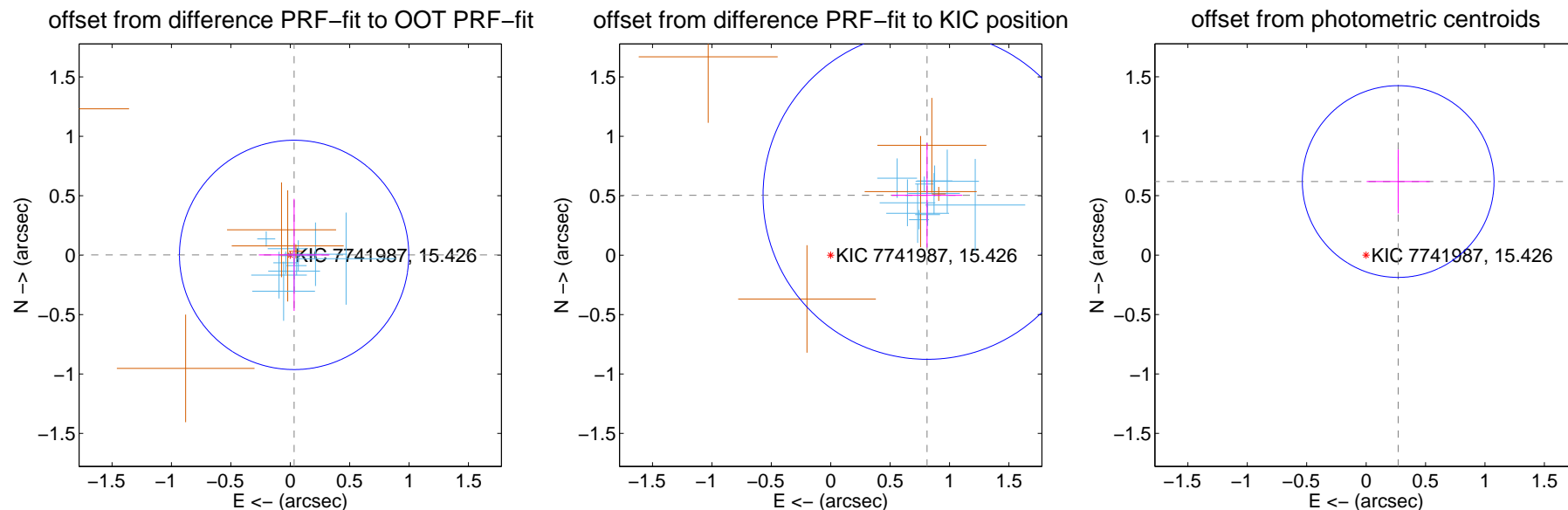
## DV Centroid Data

Supplemental centroid analysis for 007741987-06. Kepler magnitude: 15.43. Transit SNR 8.91

There are 10 quarters with good PRF difference image offsets

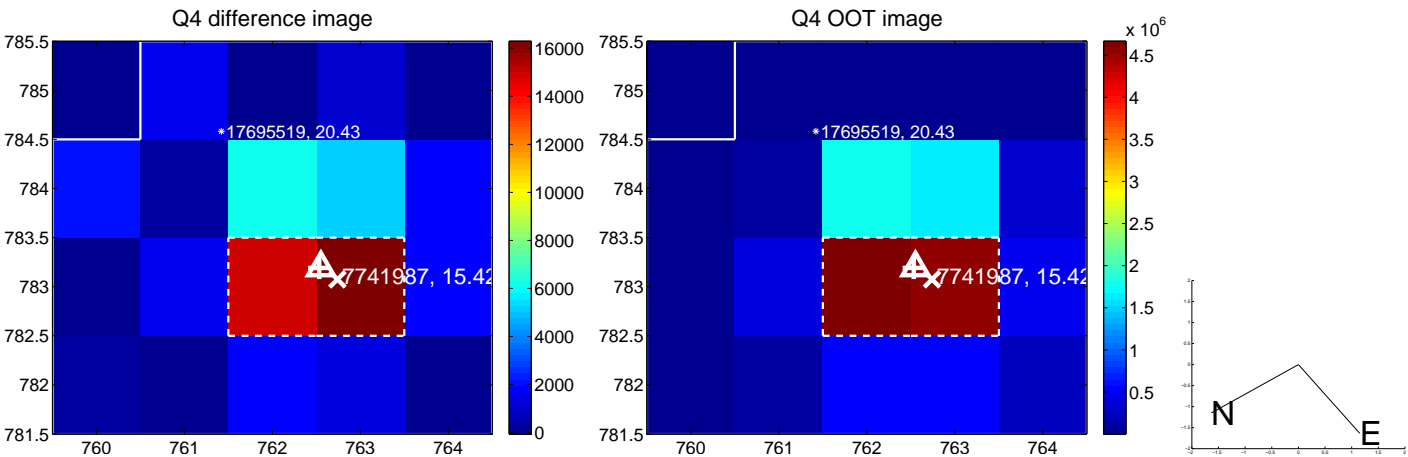
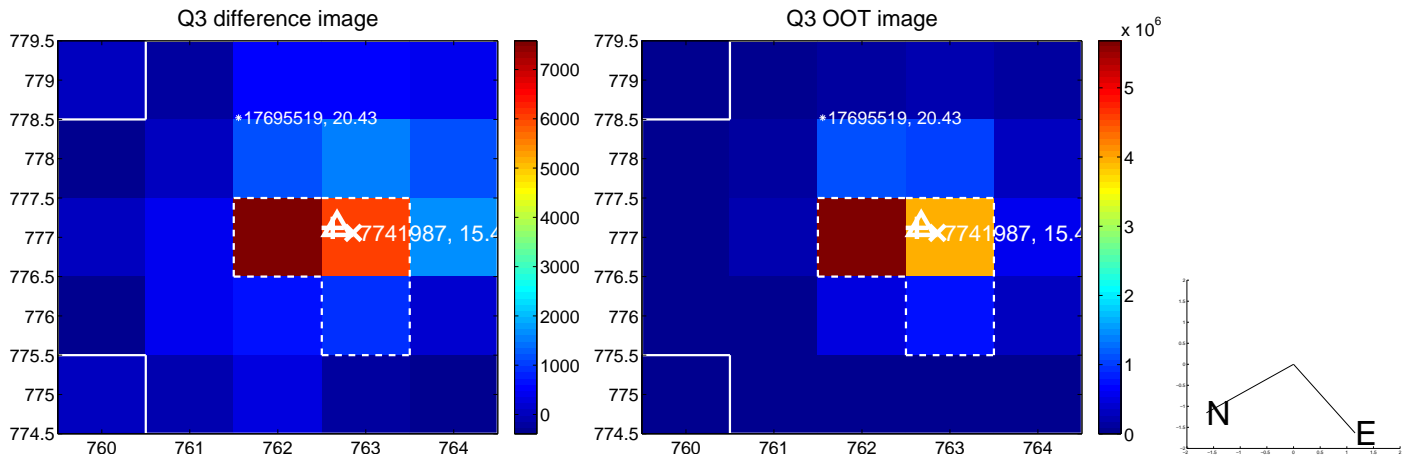
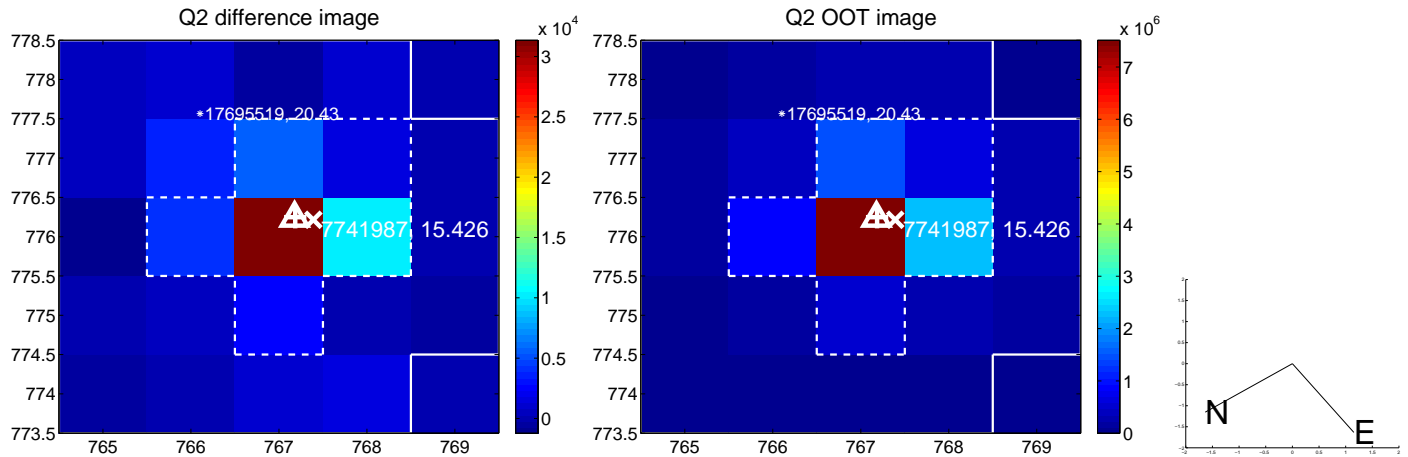
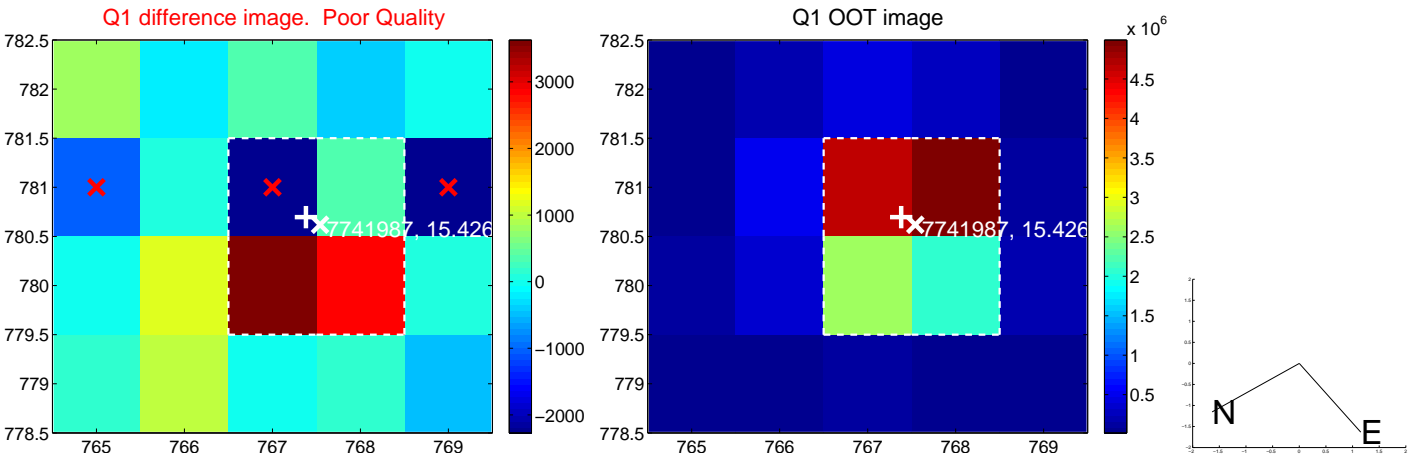
The direct PRF centroid is offset from the target star catalog position by about 0.99 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.033 \pm 0.322$	0.10	$-0.033 \pm 0.297$	$0.002 \pm 0.472$
PRF-fit source offset from KIC position	$0.955 \pm 0.460$	2.07	$-0.811 \pm 0.297$	$0.504 \pm 0.439$
photometric centroid source offset	$0.68 \pm 0.27$	2.51	$-0.27 \pm 0.27$	$0.62 \pm 0.27$

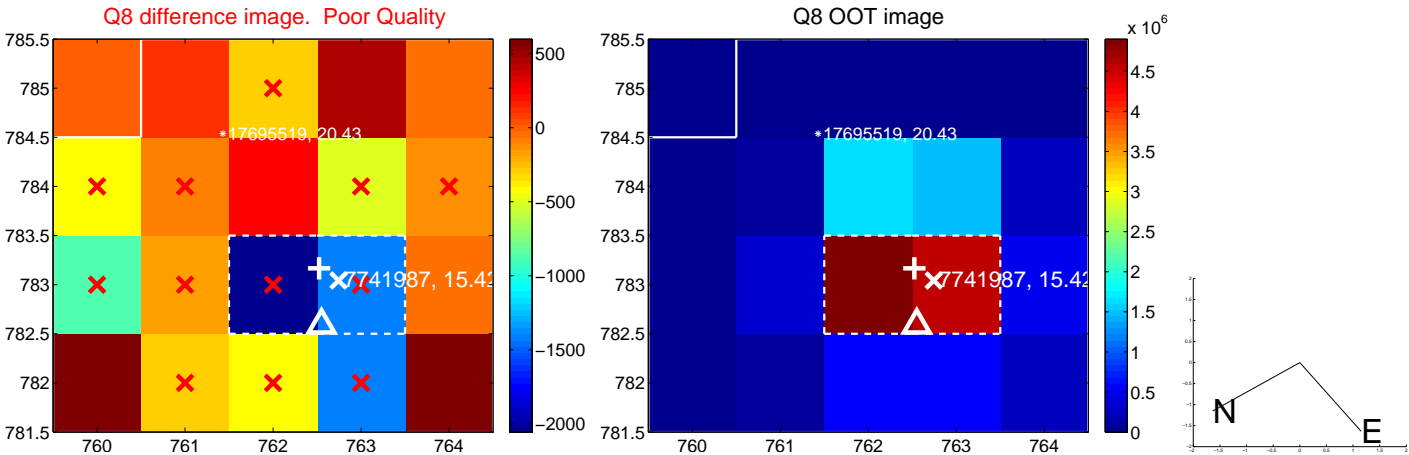
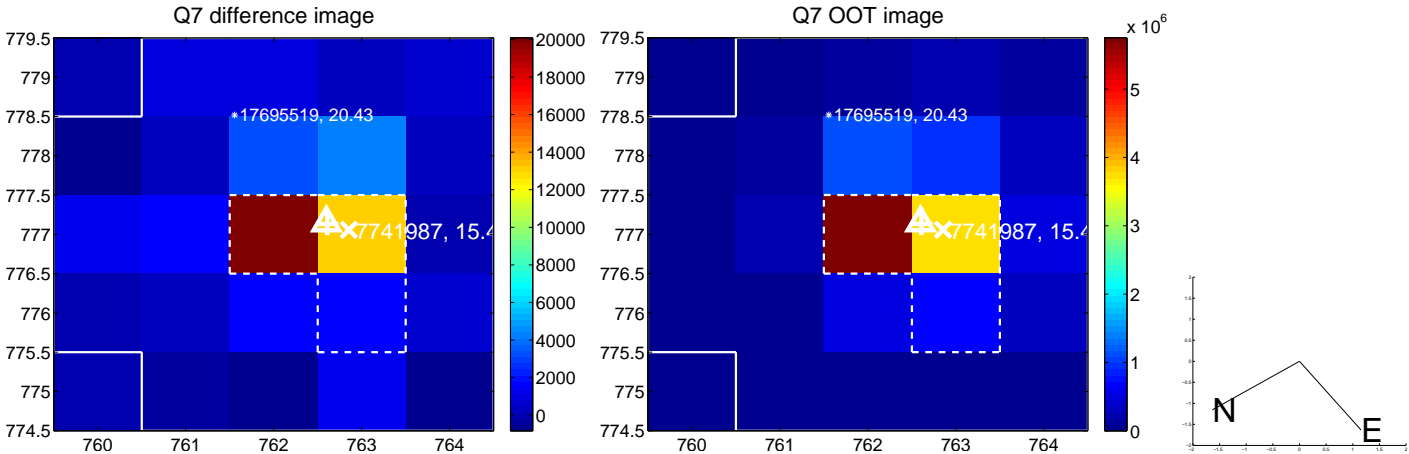
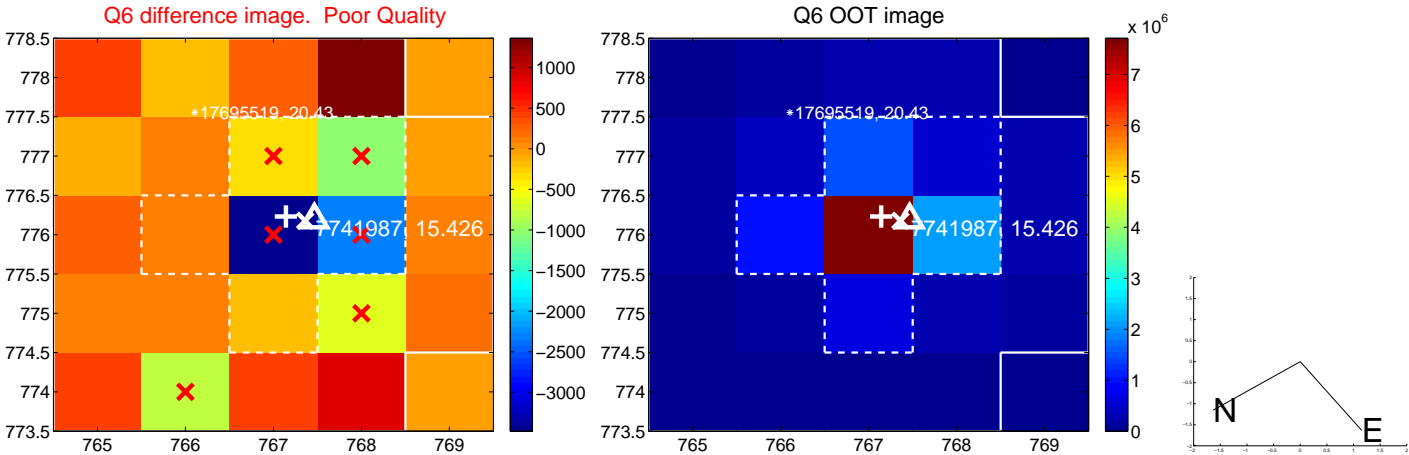
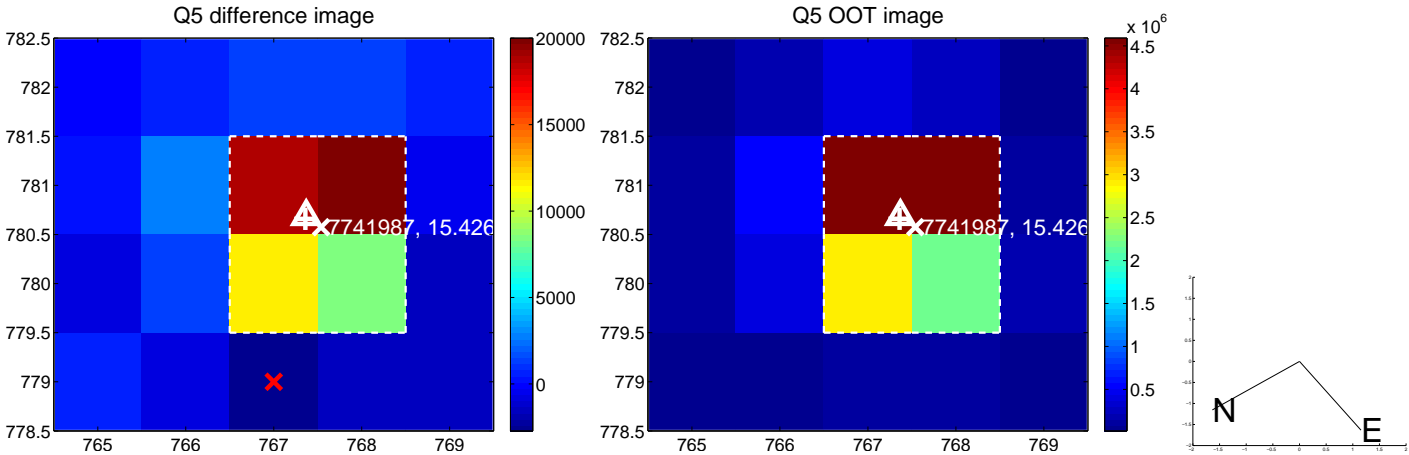


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

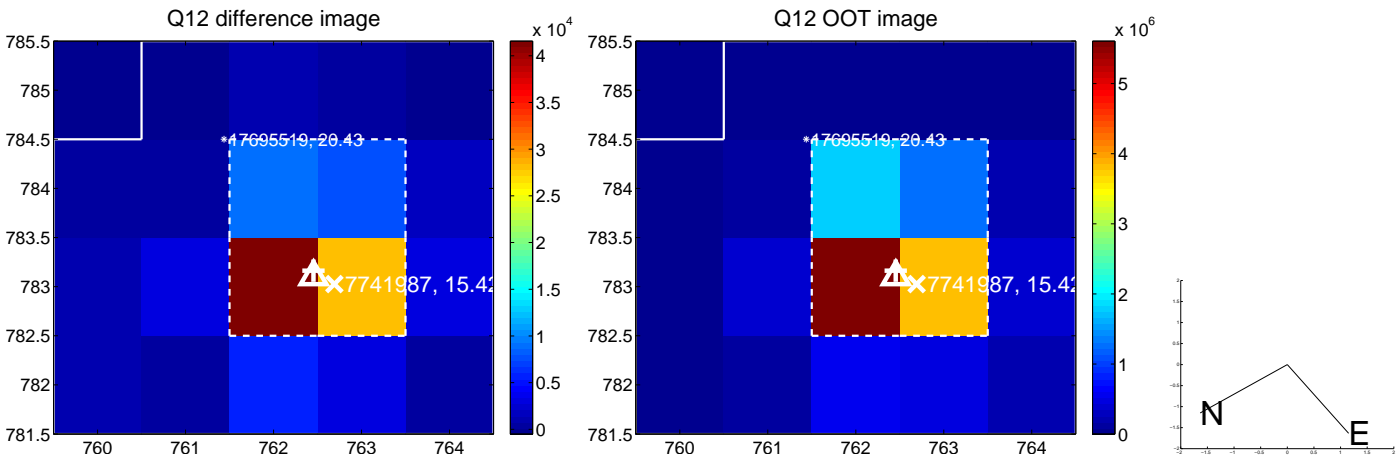
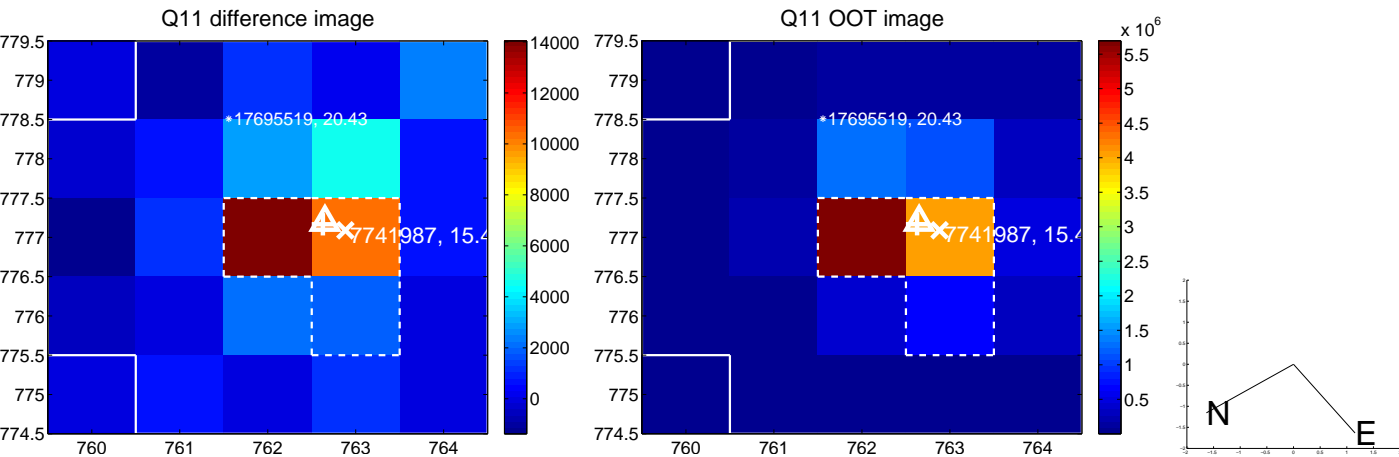
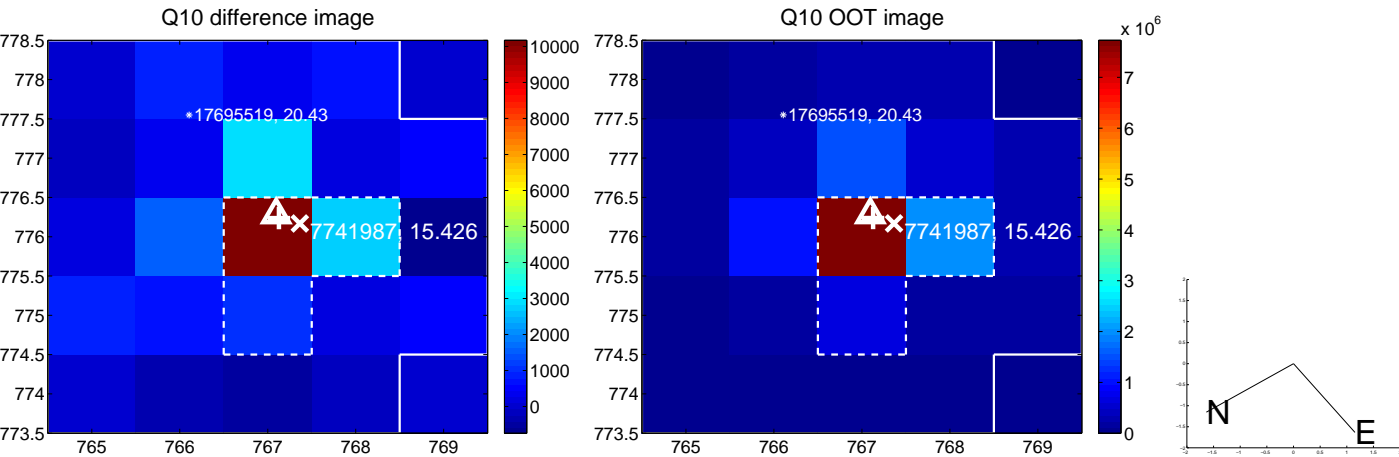
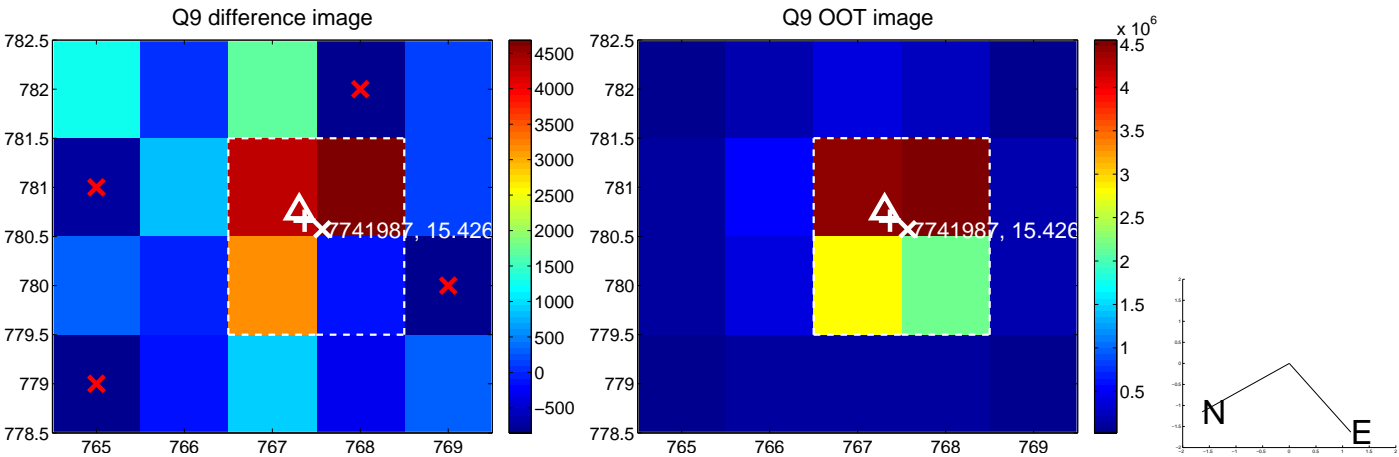
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



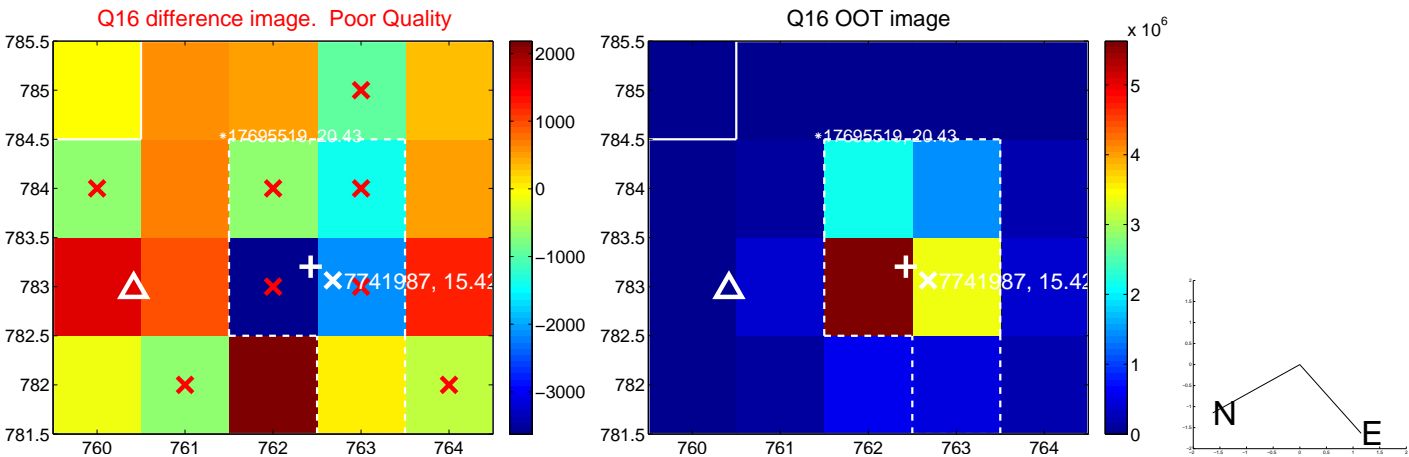
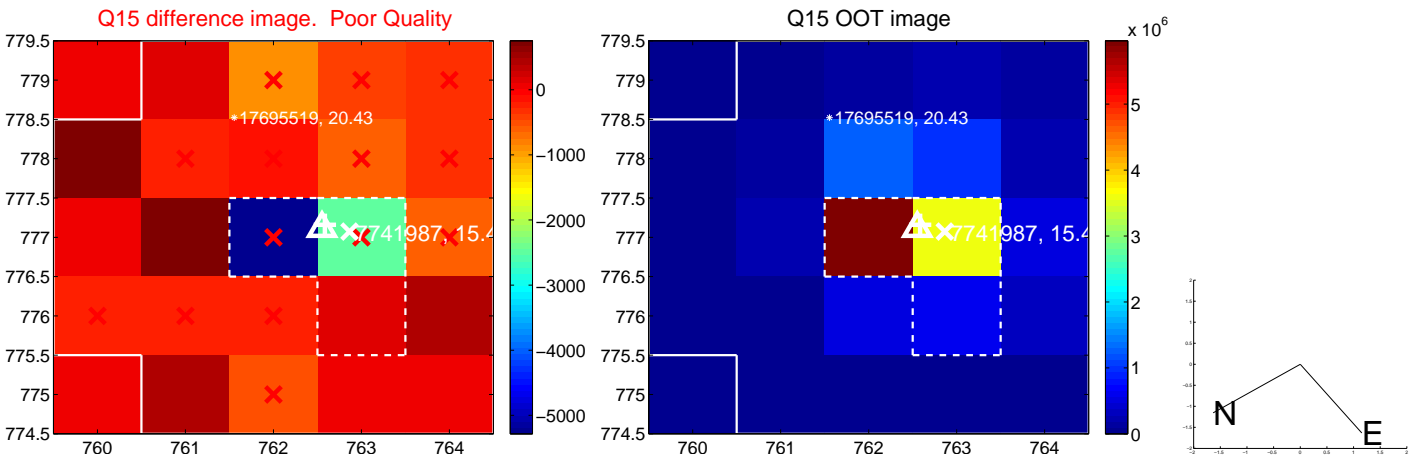
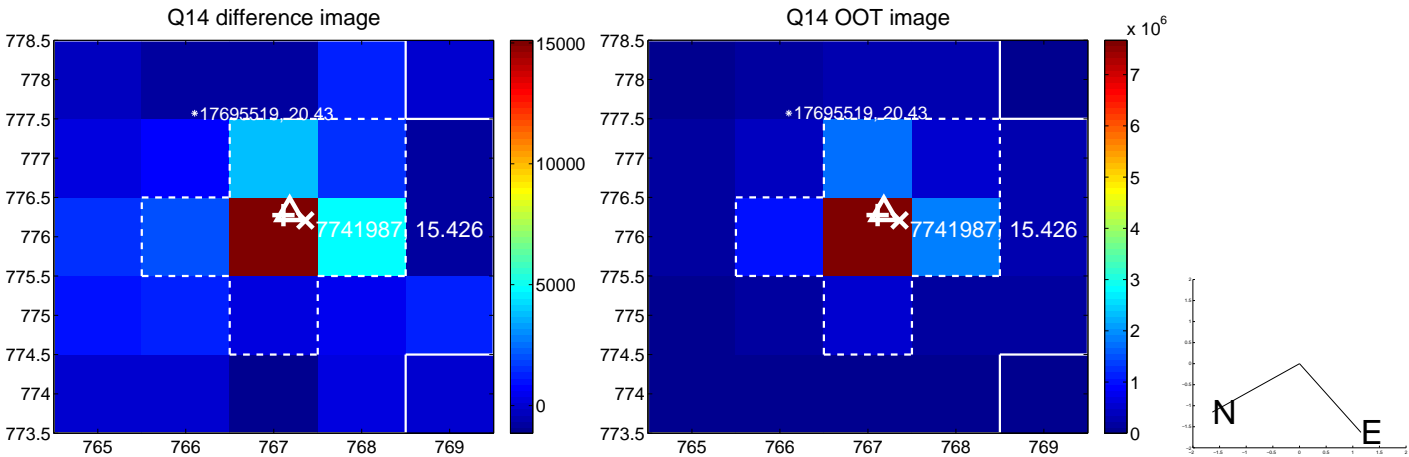
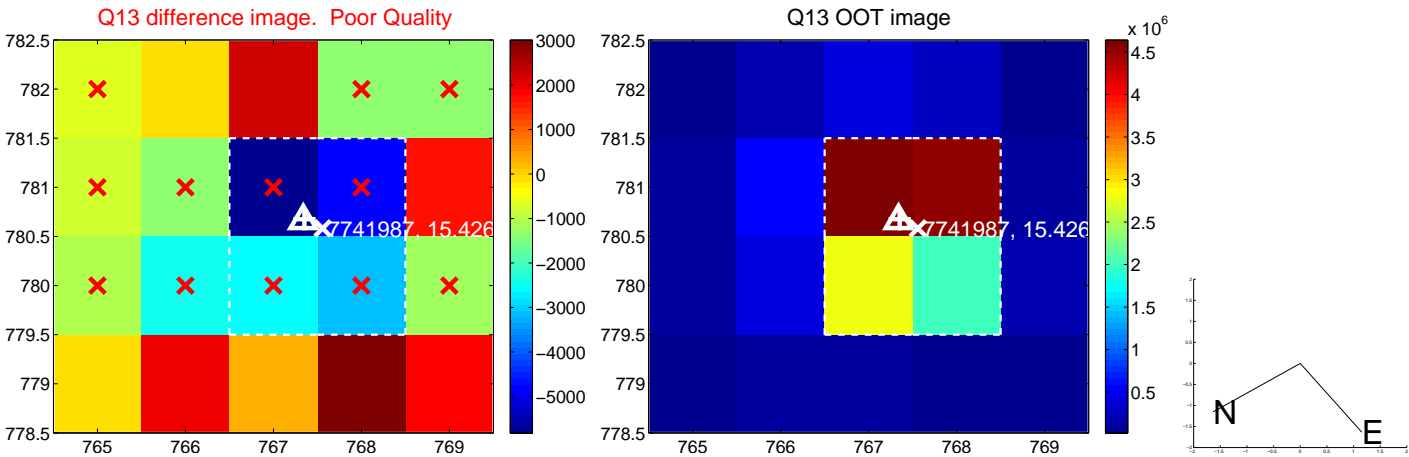
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



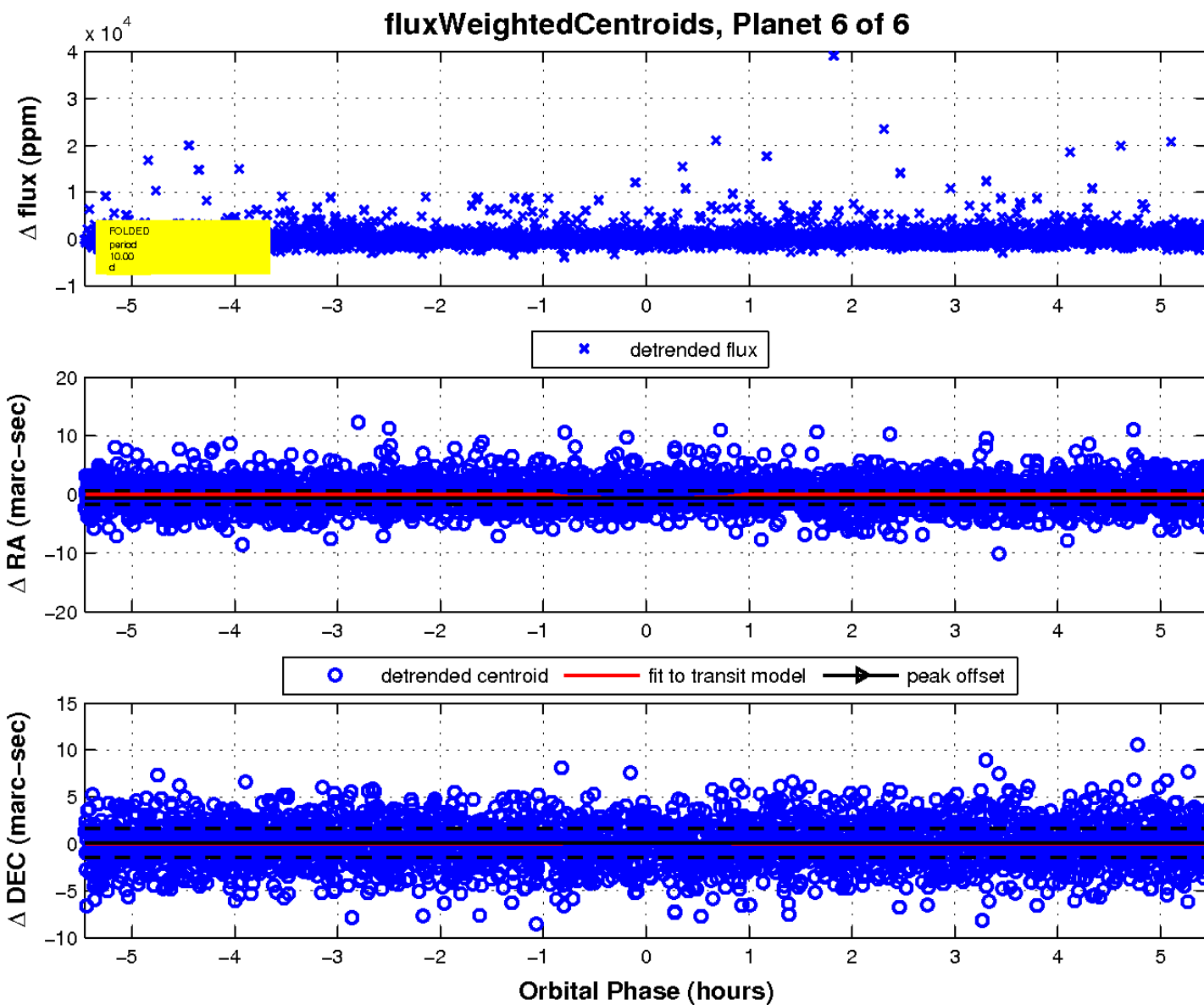
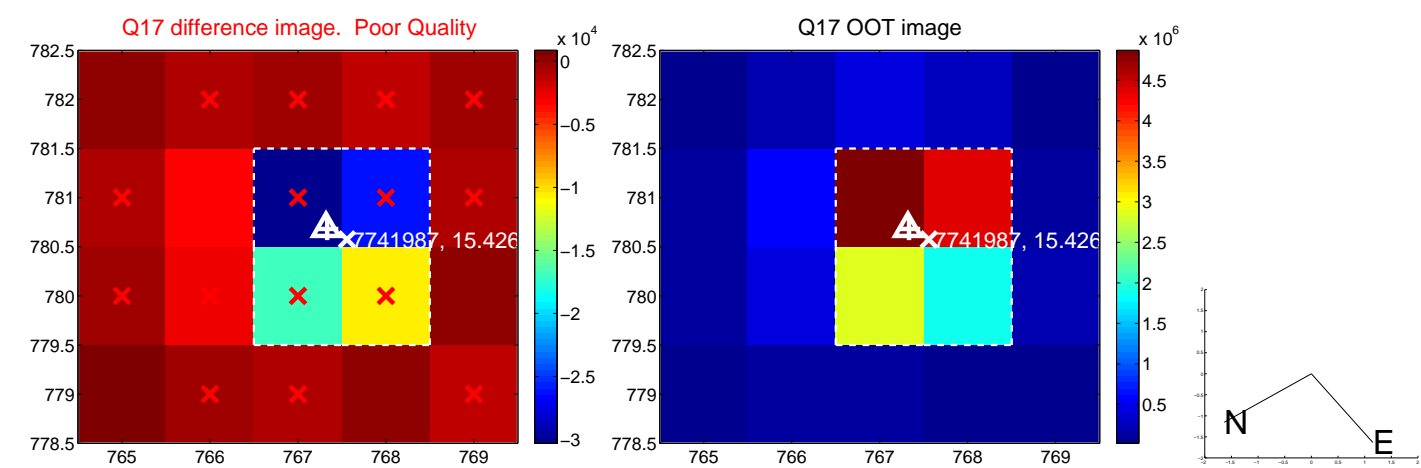
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

