

# KIC 005622707

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005622707-01	OBS	No	1.697454	132.864002	18.1	3.748	9.7	5.9	1.99	6880	0.99	7517.72
005622707-02	OBS	No	1.697262	132.097959	5.0	16.186	9.3	3.1	1.99	6880	0.52	7518.86

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005622707-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT
005622707-02	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD

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

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

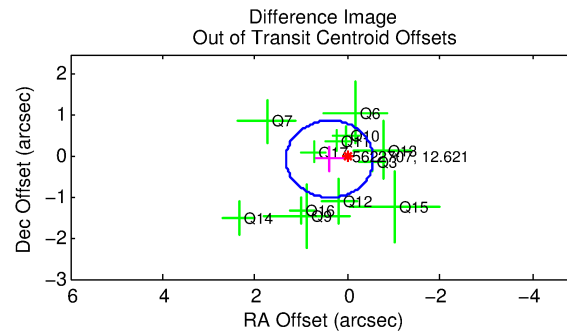
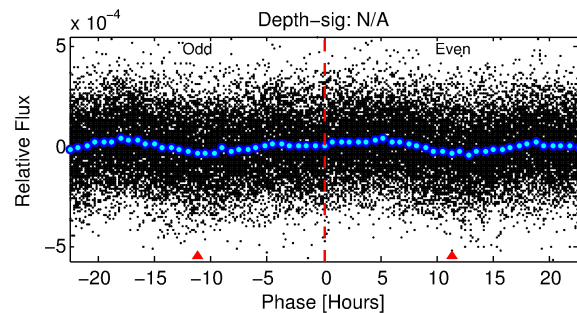
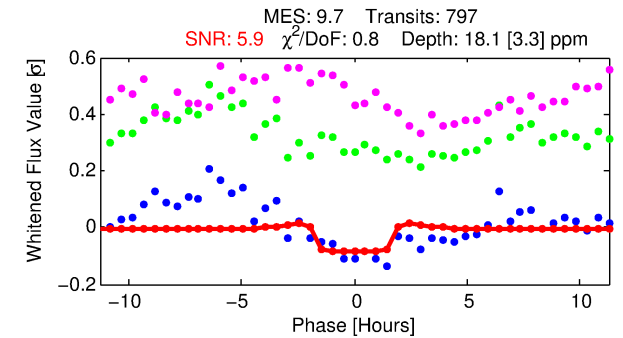
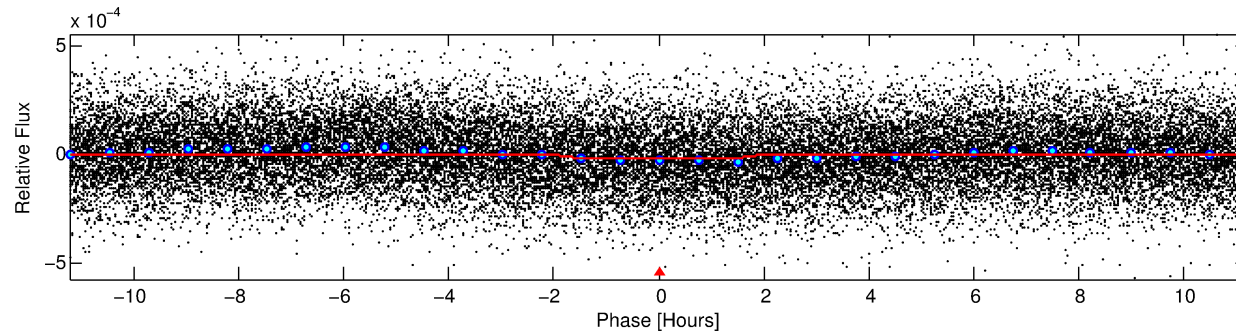
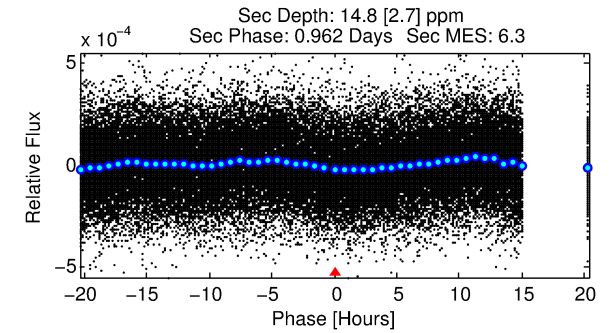
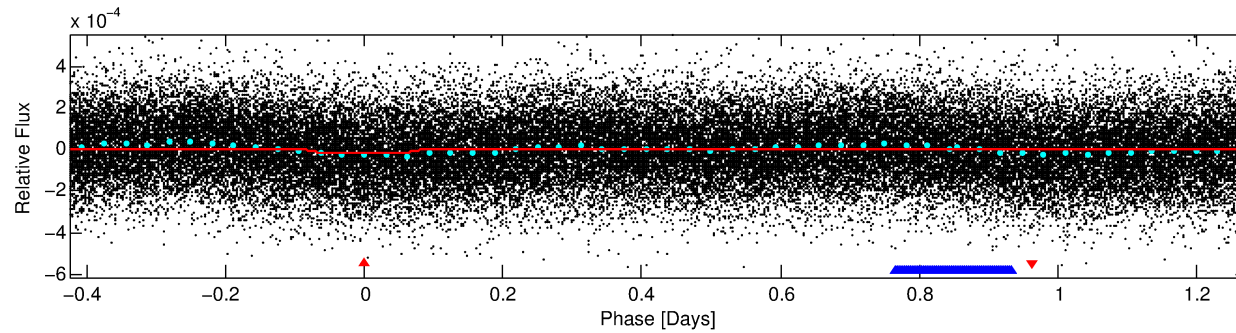
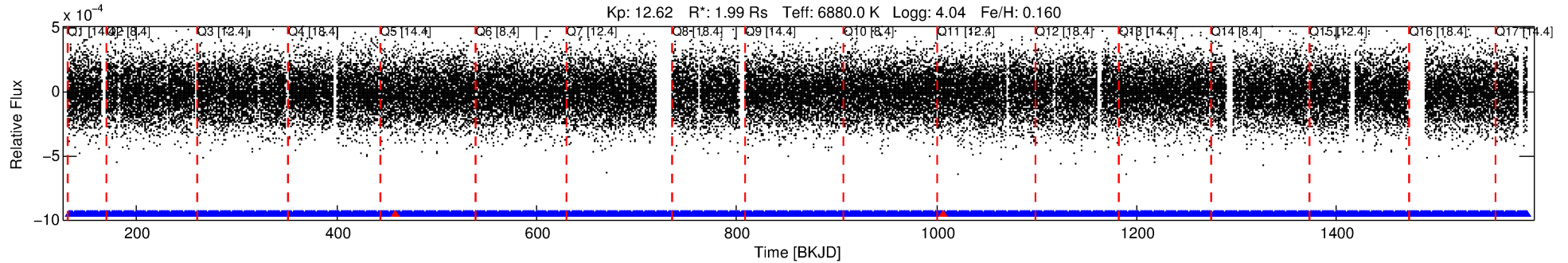
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 005622707-01

No Significant Match Found

# DV One-Page Summary

KIC: 5622707 Candidate: 1 of 2 Period: 1.697 d



## DV Fit Results:

Period = 1.69745 [0.00002] d  
Epoch = 132.8640 [0.0052] BKJD  
Rp/R\* = 0.0046 [0.0018]  
a/R\* = 1.77 [2.79]  
b = 0.91 [0.46]  
Seff = 7517.72 [1774.27]  
Teff = 2374 [140] K  
Rp = 0.99 [0.42] Re  
a = 0.0325 [0.0049] AU  
Ag = 8.73 [7.28] [1.06σ]  
Teffp = 6311 [1266] K [3.09σ]

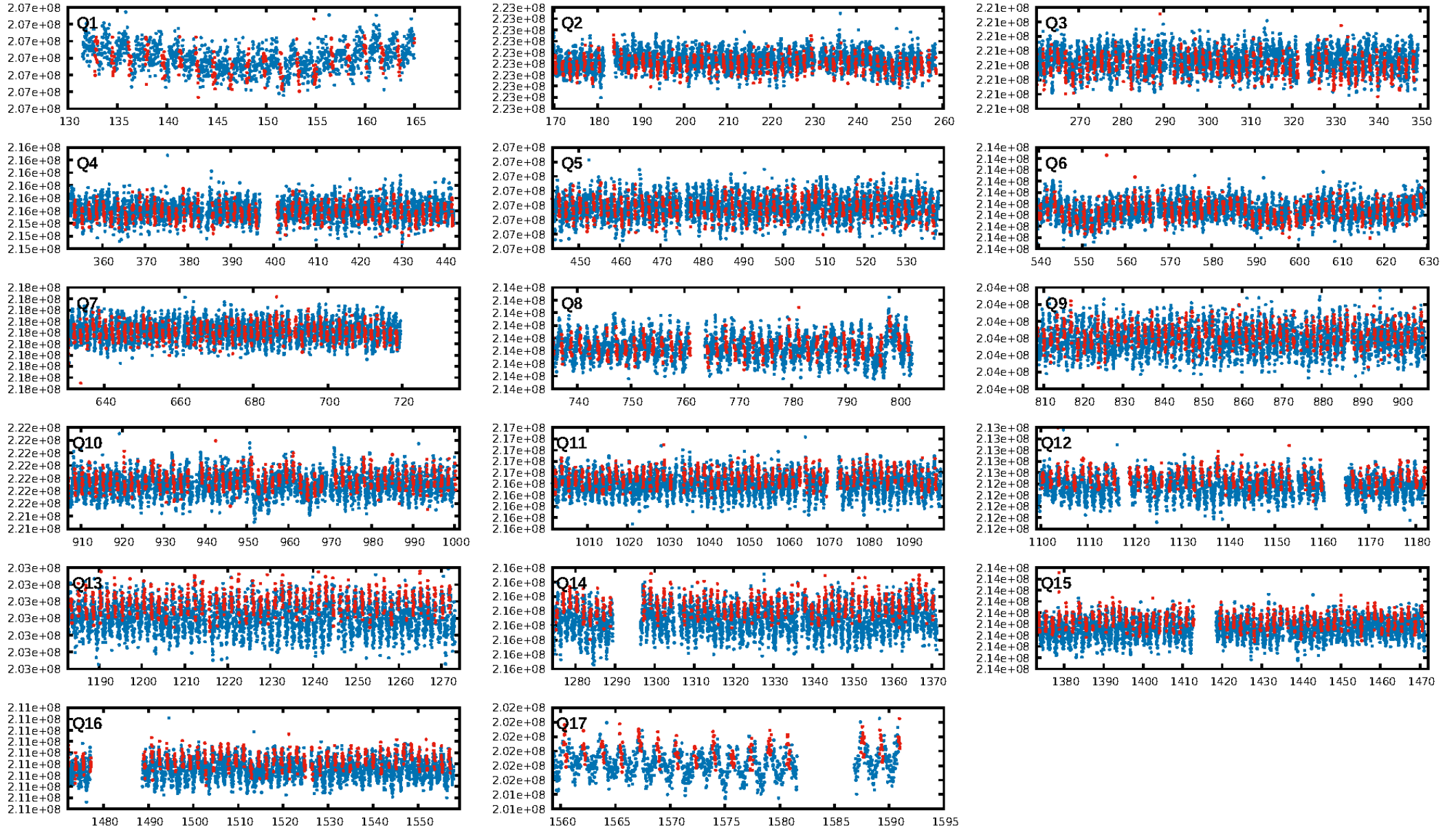
## DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [760/762]  
GhostDiagnostic-chr: -2.73  
Centroid-sig: 7.8%  
Centroid-so: 1.056 arcsec [1.22σ]  
OotOffset-rm: 0.397 arcsec [1.26σ]  
KicOffset-rm: 0.371 arcsec [1.23σ]  
OotOffset-st: 3/4/2/3 [12]  
KicOffset-st: 3/4/2/3 [12]  
DiffImageQuality-fgm: 0.50 [6/12]  
DiffImageOverlap-fno: 1.00 [17/17]

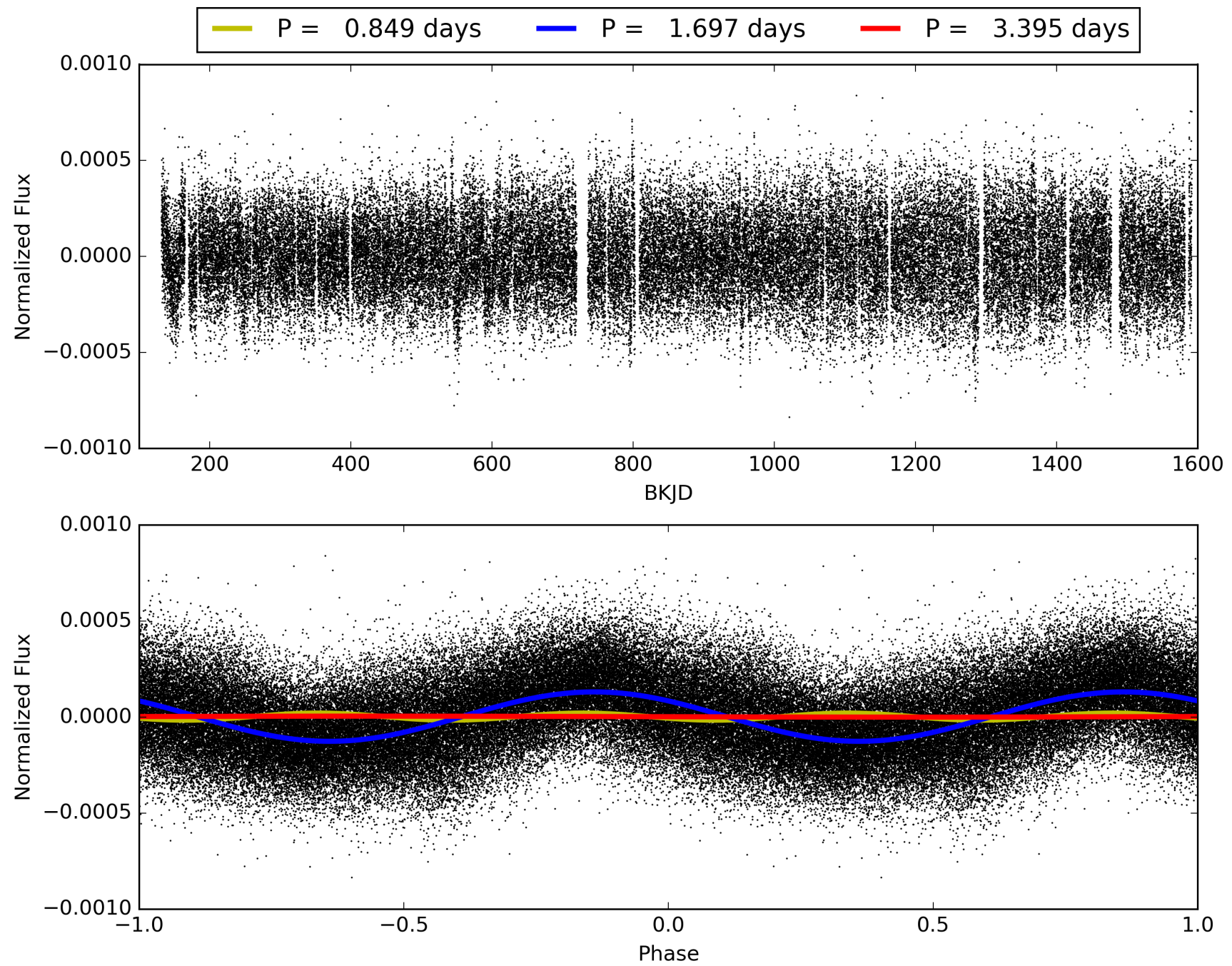
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 22:45:58 Z

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

# TCE 005622707-01, PDC Light Curves



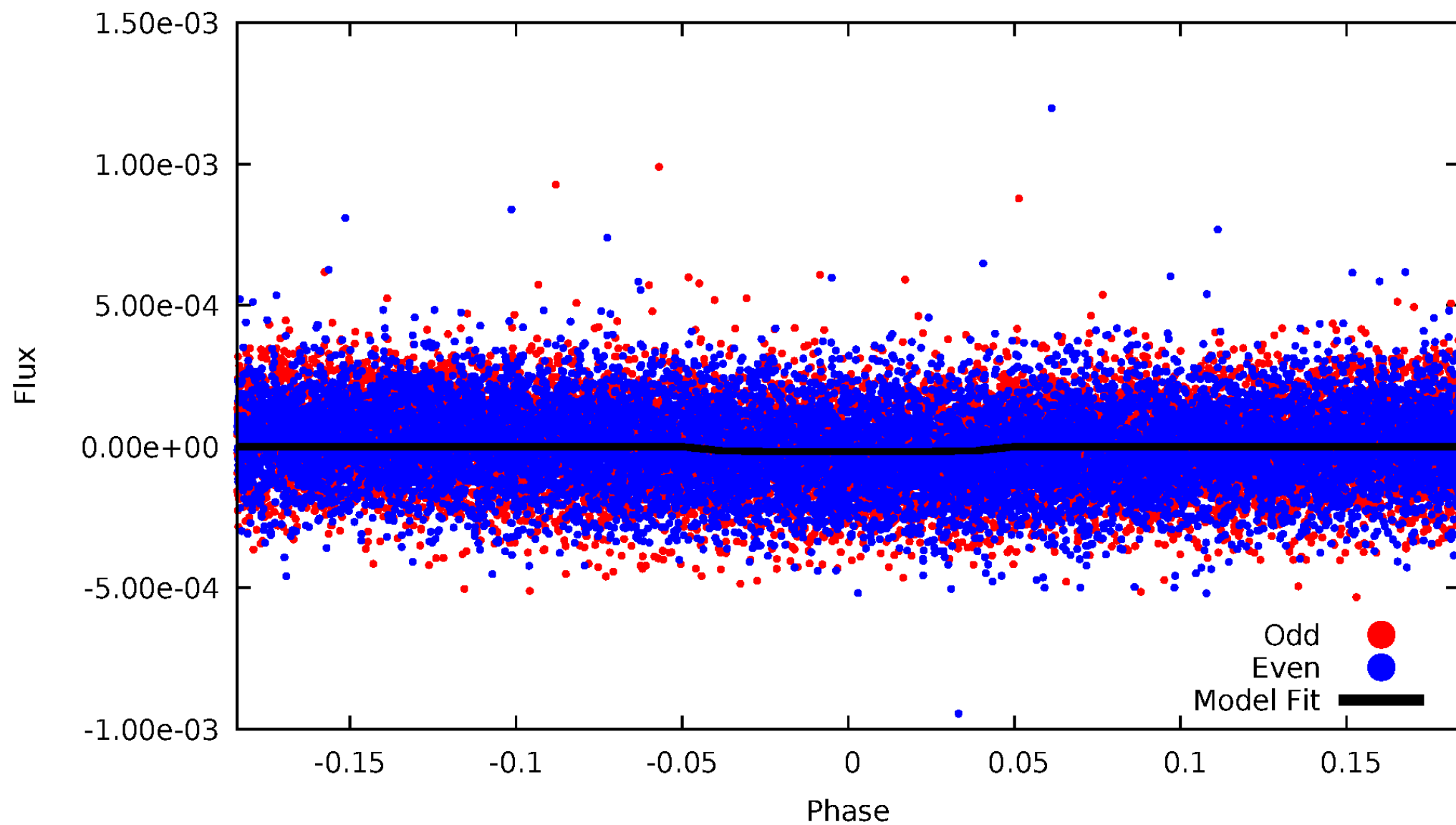
TCE 005622707-01





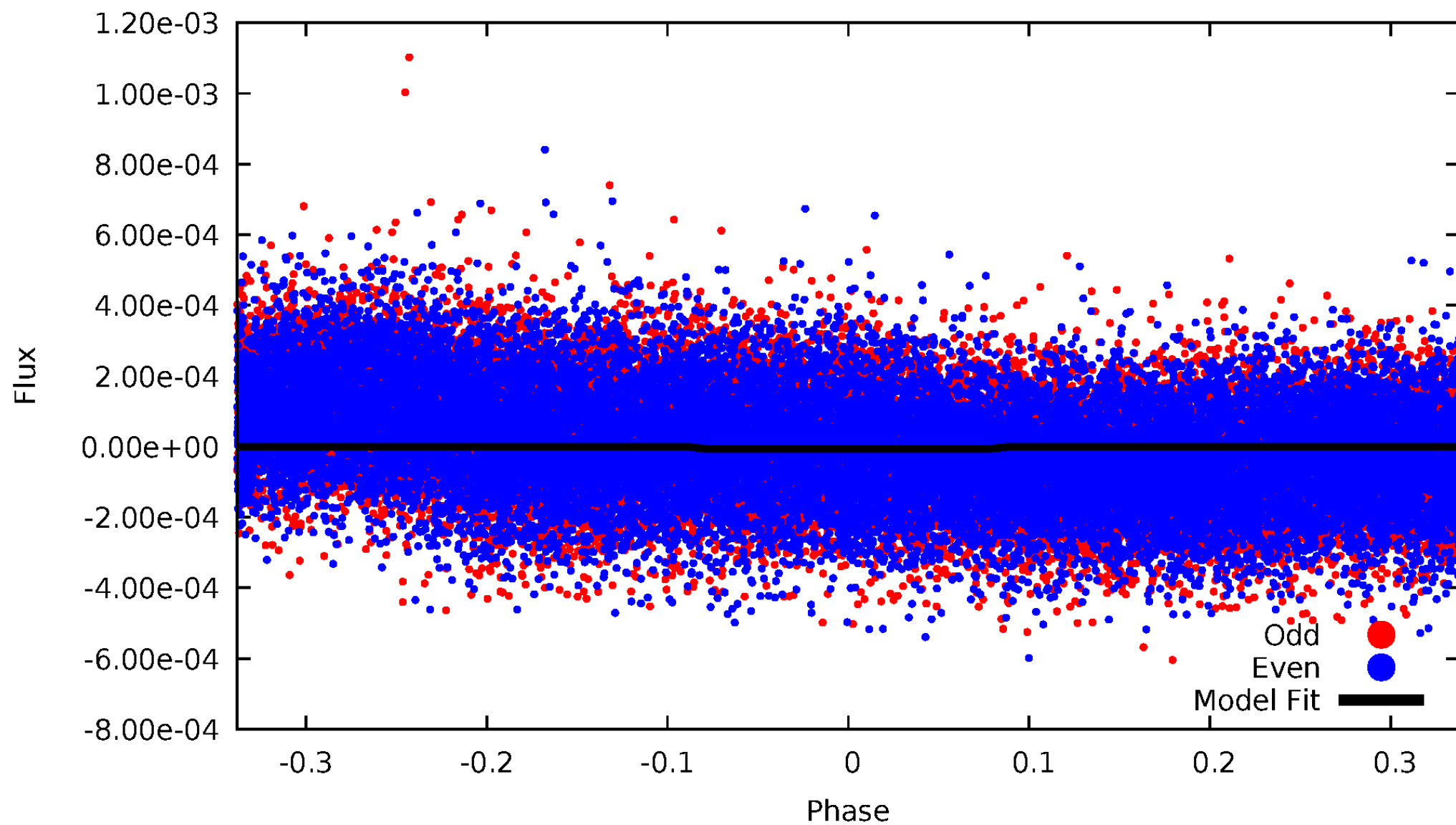
# DV Odd/Even

TCE 005622707-01



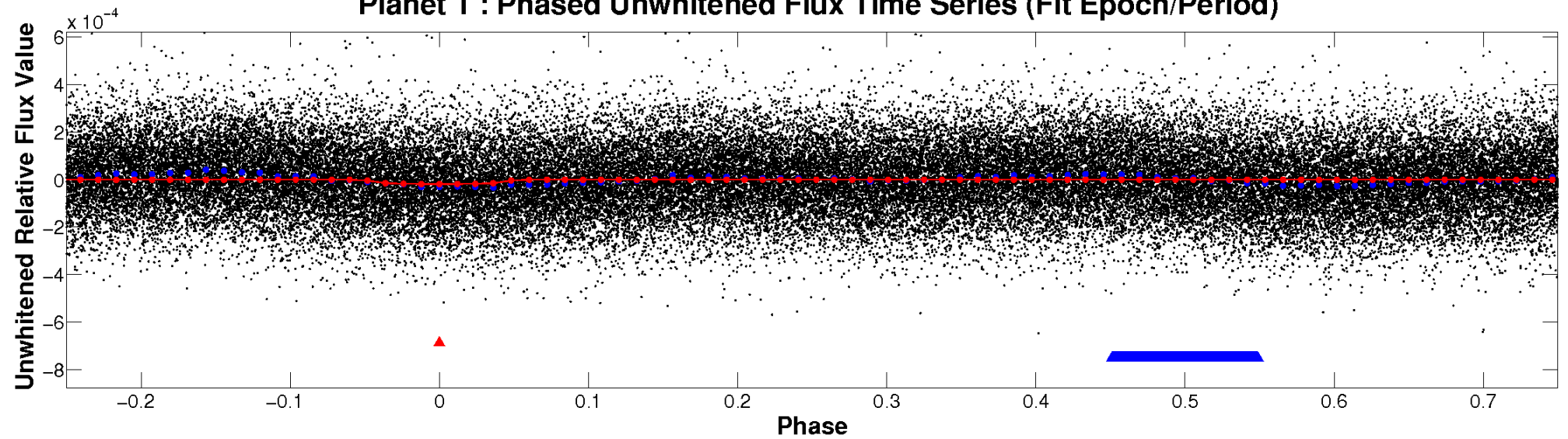
# ALT Odd/Even

TCE 005622707-01

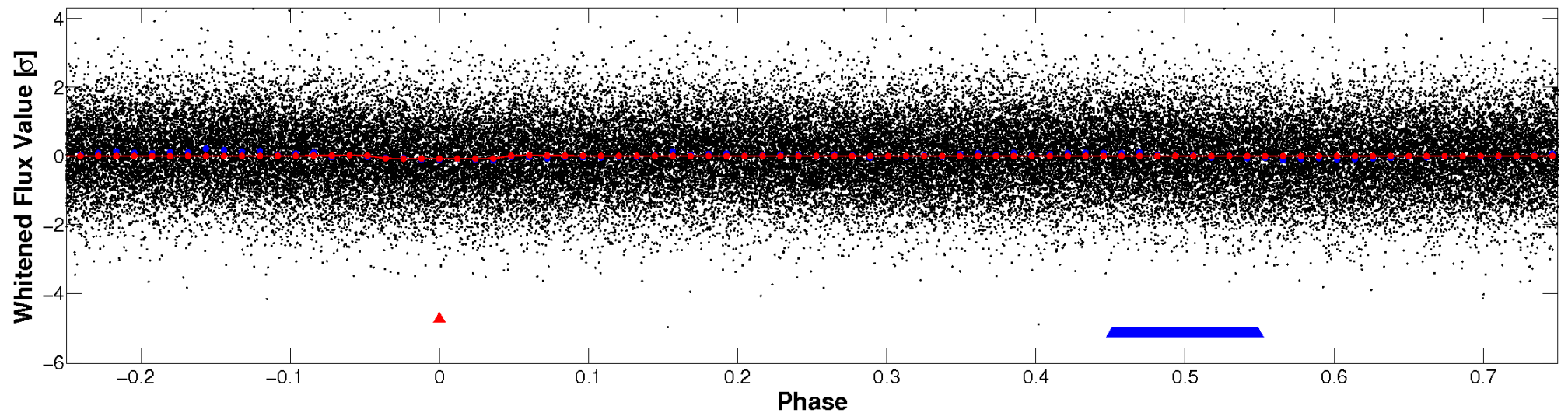


# Non-Whitened Vs. Whitened Light Curve

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

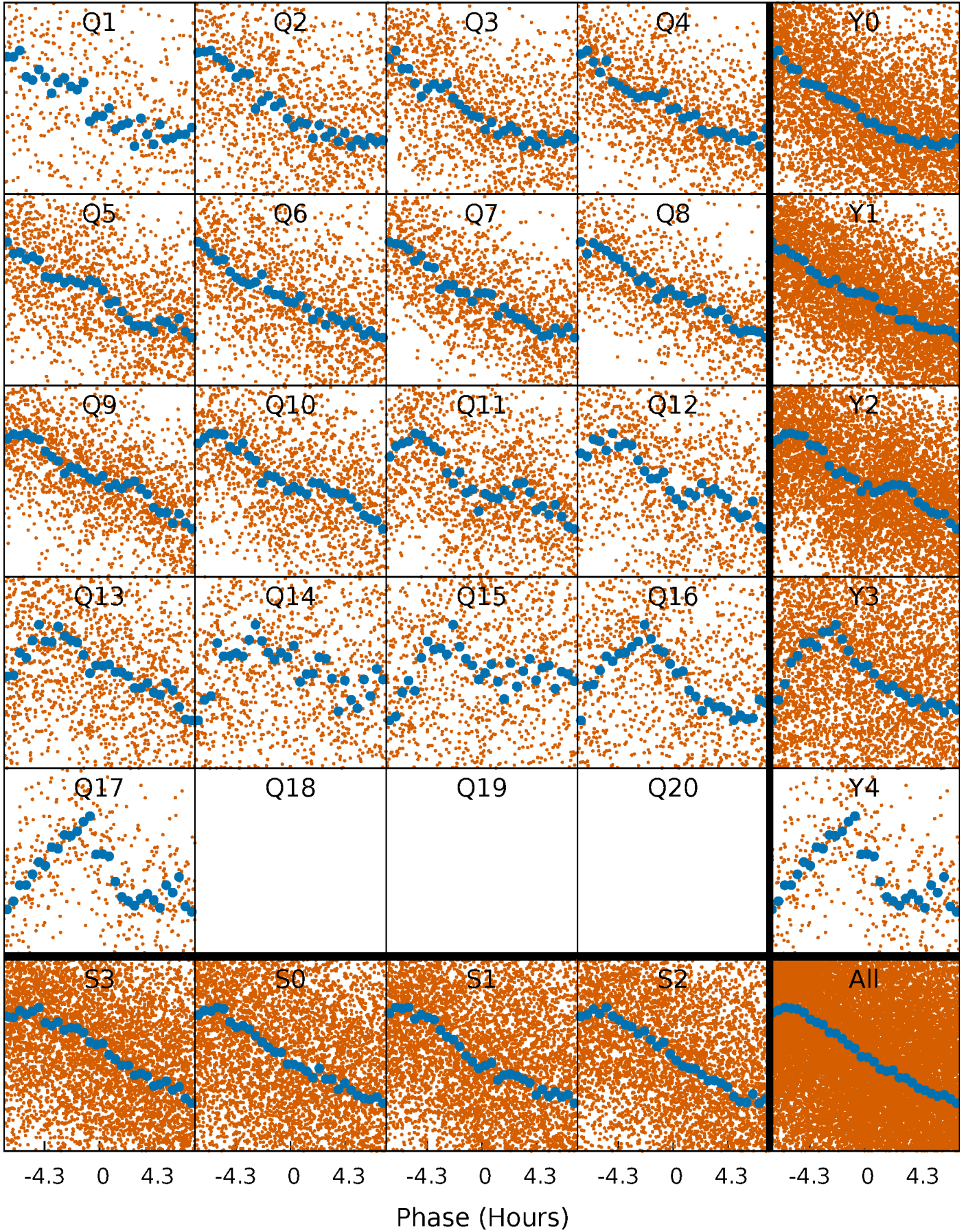


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

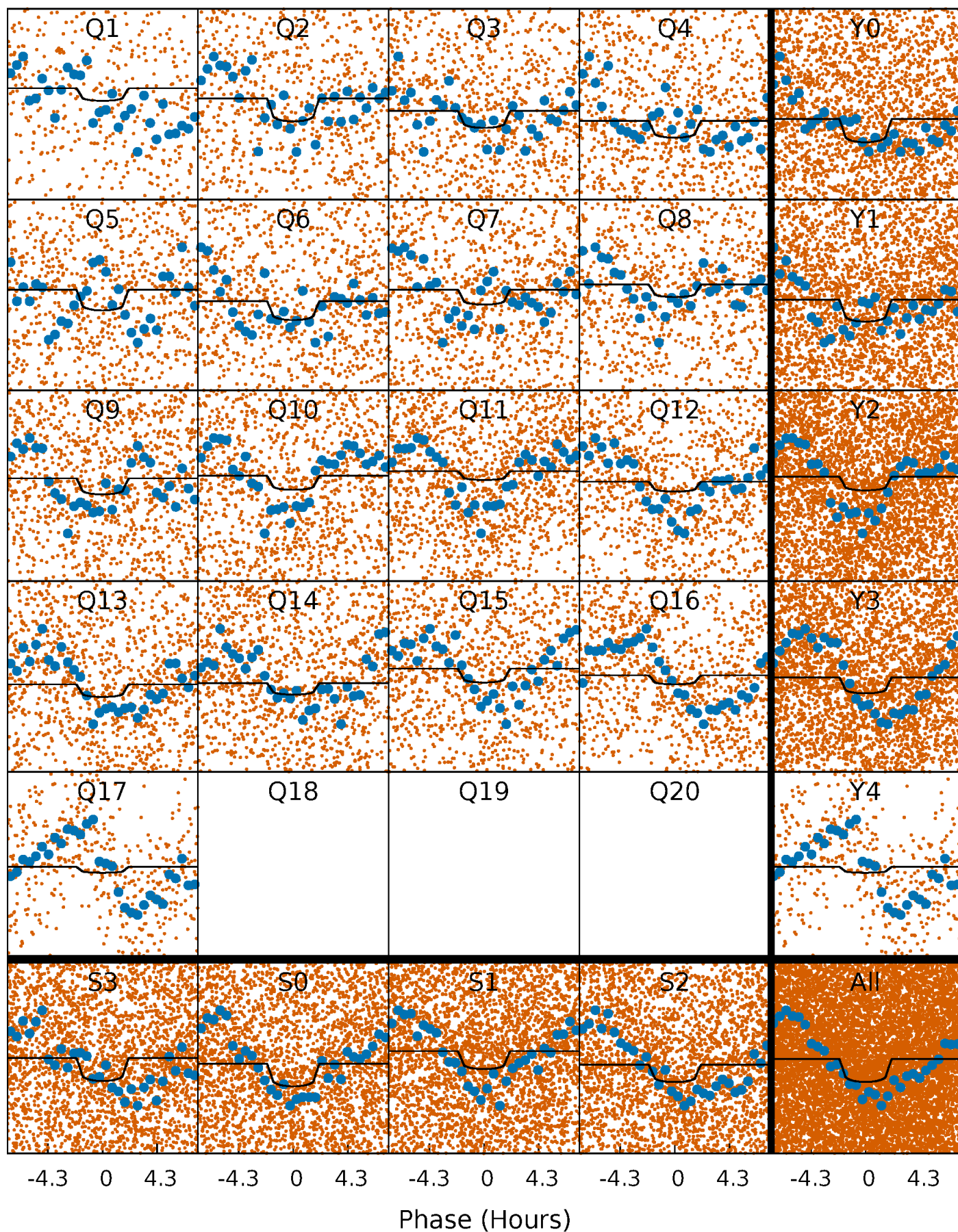
TCE 005622707-01 P= 1.697454 Days  $T_0=132.864002$  (BKJD)





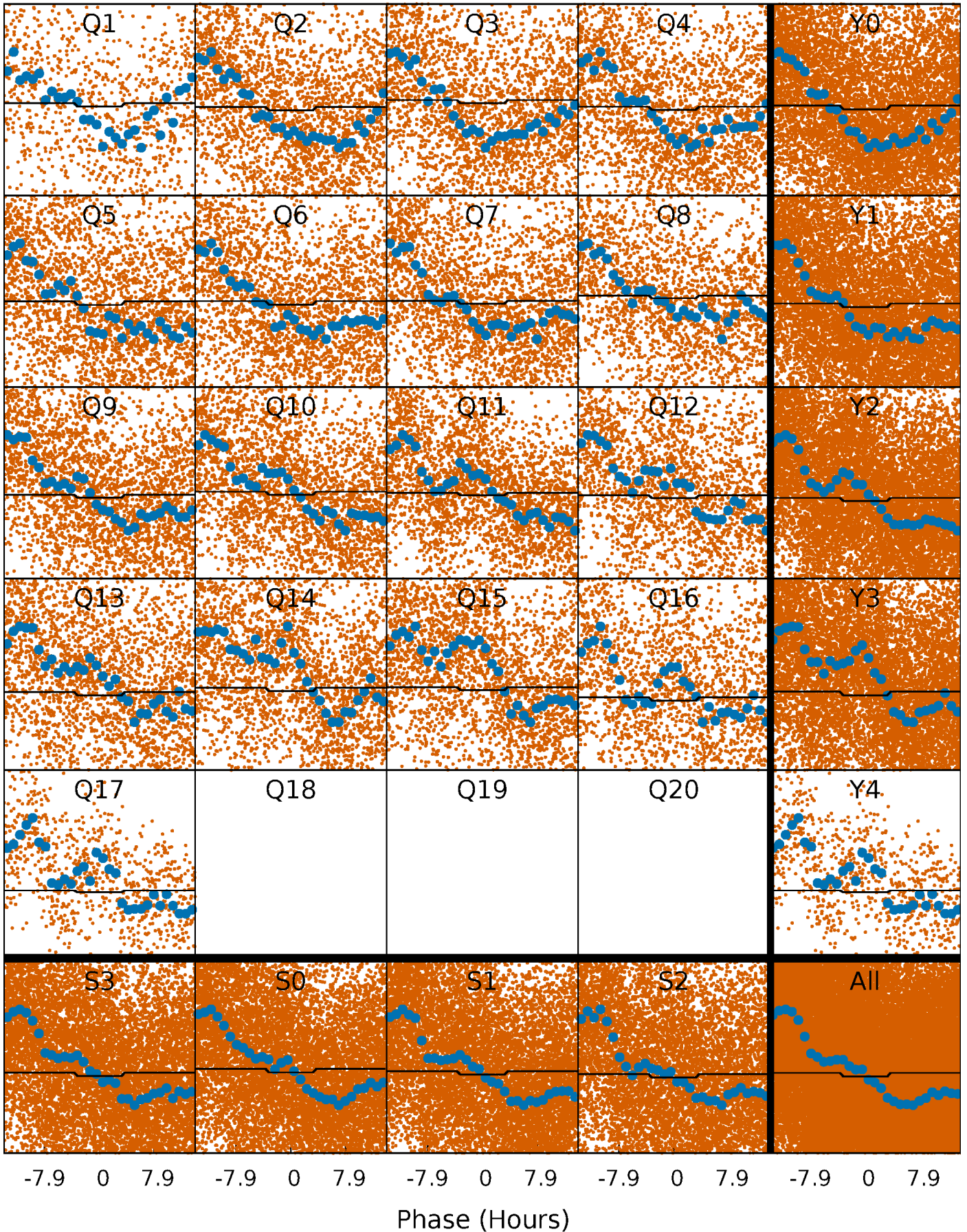
# DV Quarter-Phased Transit Curves

TCE 005622707-01 P= 1.697454 Days  $T_0=132.864002$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 005622707-01 P= 1.697756 Days  $T_0=132.958436$  (BKJD)

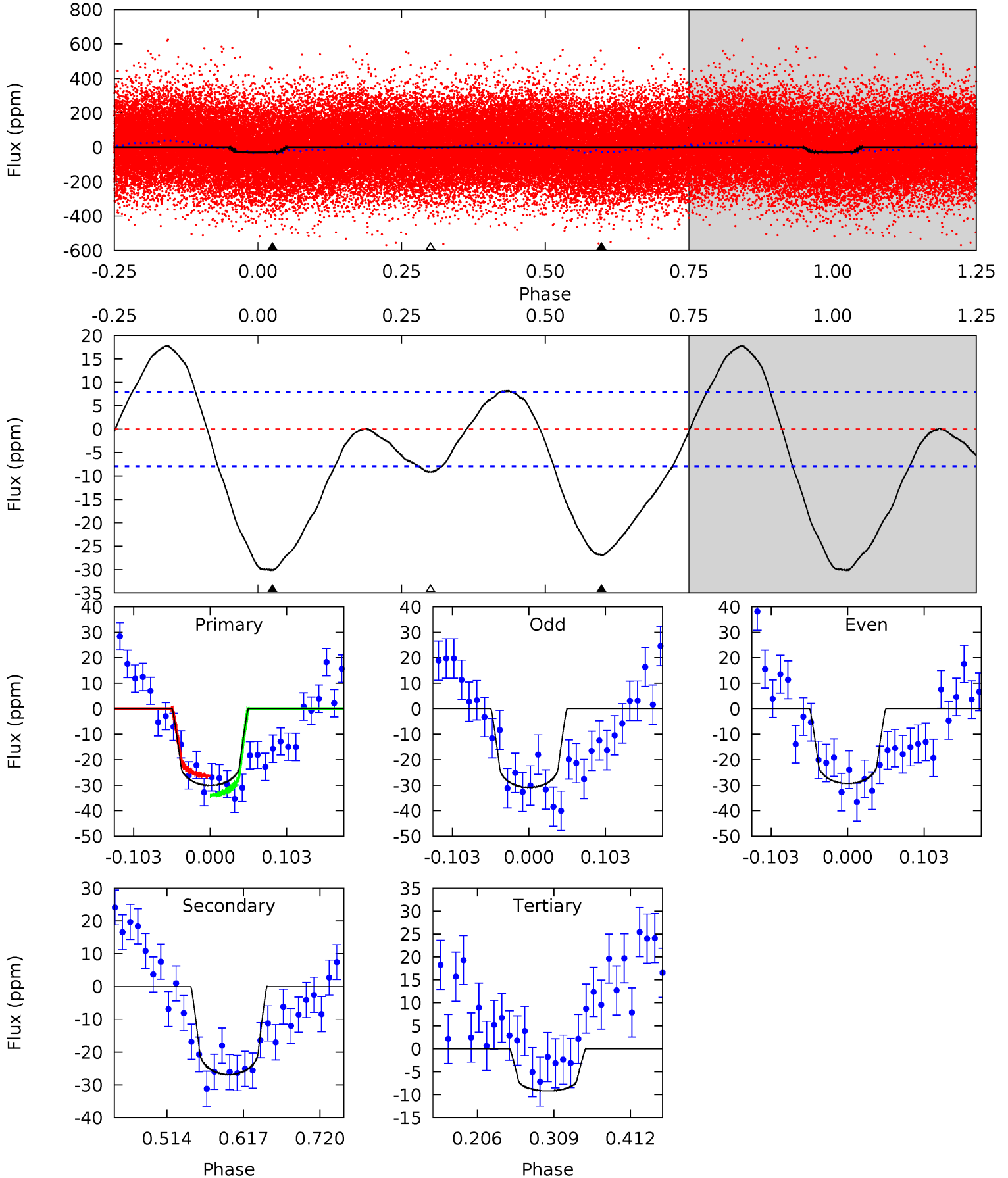




# DV Model-Shift Uniqueness Test

005622707-01, P = 1.697454 Days, E = 131.166548 Days

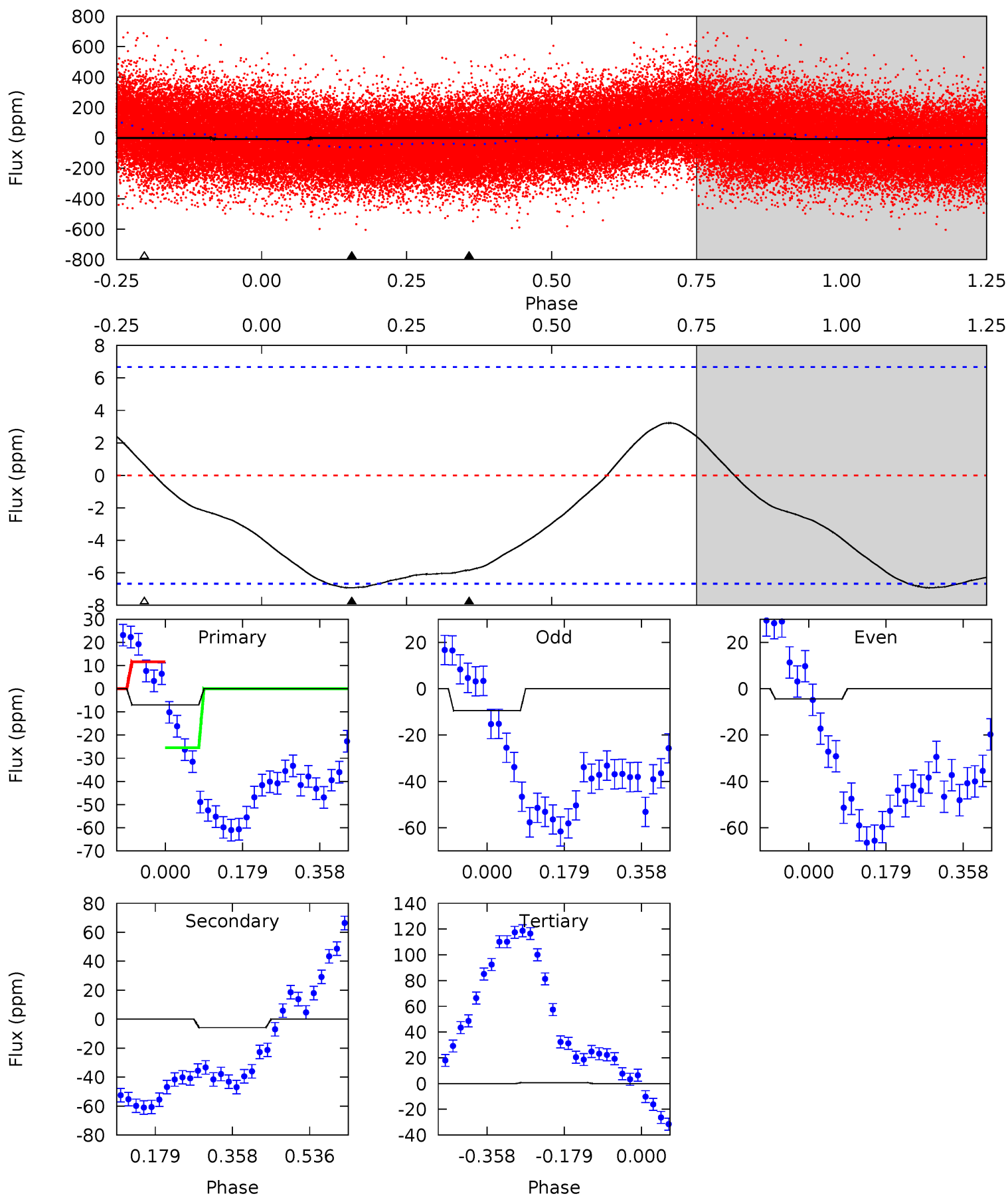
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
17.3	15.5	5.28	0	4.56	1.63	4.54	12.0	17.3	10.2	15.5	0.45	1.00	0.37	2.16



# Alt Model-Shift Uniqueness Test

005622707-01, P = 1.697756 Days, E = 131.260680 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
4.61	3.88	-0.44	0	4.44	1.34	1.37	5.05	4.61	4.32	3.88	1.67	1.48	0.32	5.12





### Stellar Parameters For KIC 005622707

	$T_{\text{eff}} (K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6880^{+82}_{-82}$	$4.042^{+0.132}_{-0.108}$	$0.160^{+0.150}_{-0.150}$	$1.990^{+0.332}_{-0.332}$	$1.590^{+0.123}_{-0.123}$	$0.284^{+0.180}_{-0.094}$
	+1%/-1%	+3%/-3%	+94%/-94%	+17%/-17%	+8%/-8%	+63%/-33%
Source	SPE68	SPE68	SPE68	DSEP		

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

### Secondary Eclipse Parameters for KIC 005622707-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-27 \pm 2$	$0.98^{+0.42}_{-0.37}$	$3307^{+155}_{-154}$	$7362^{+2564}_{-1281}$	$17^{+24}_{-9}$
Alt.	$-6 \pm 2$	$0.60^{+0.38}_{-0.33}$	$3310^{+128}_{-143}$	$6310^{+4233}_{-1390}$	$9.284^{+38.183}_{-5.949}$

$T_{\text{max}}$  = 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

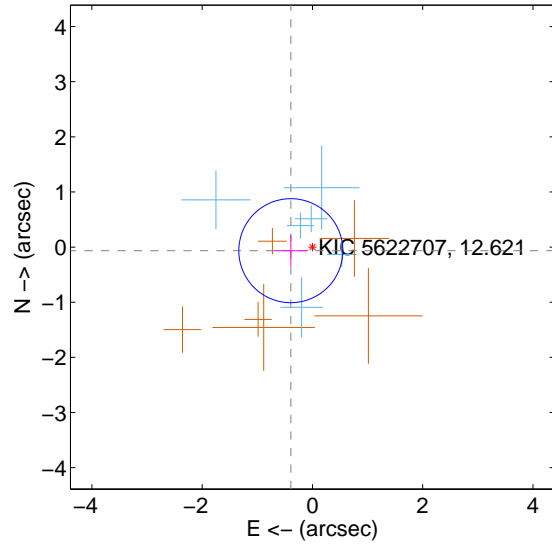
Supplemental centroid analysis for 005622707-01. Kepler magnitude: 12.62. Transit SNR 5.93

There are 6 quarters with good PRF difference image offsets

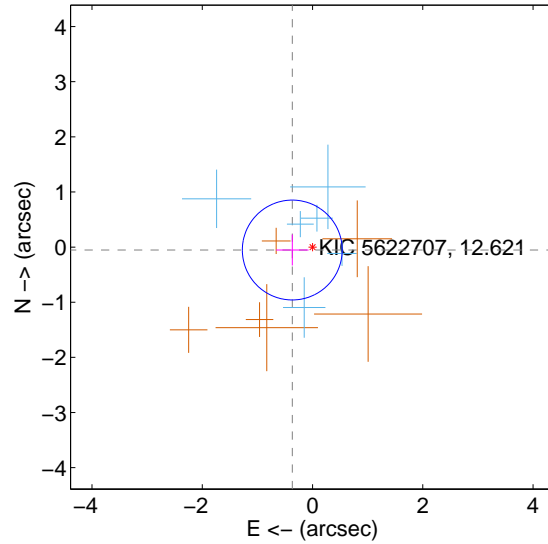
The direct PRF centroid is offset from the target star catalog position by about 0.07 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.397 \pm 0.314$	1.26	$0.392 \pm 0.307$	$-0.065 \pm 0.287$
PRF-fit source offset from KIC position	$0.371 \pm 0.302$	1.23	$0.367 \pm 0.295$	$-0.053 \pm 0.281$
photometric centroid source offset	$1.06 \pm 0.87$	1.22	$0.12 \pm 0.91$	$1.05 \pm 0.87$

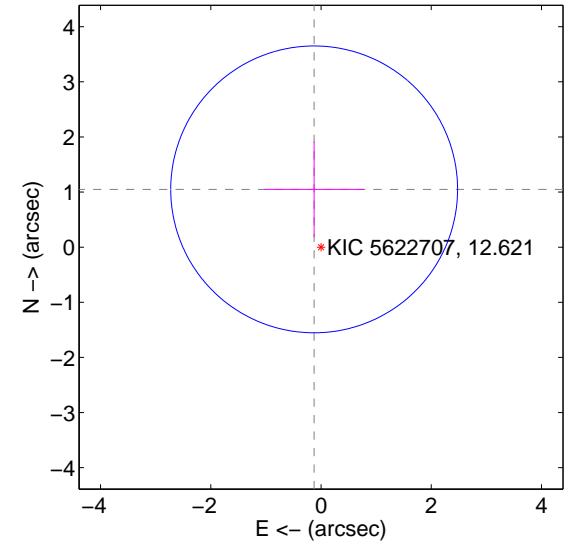
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

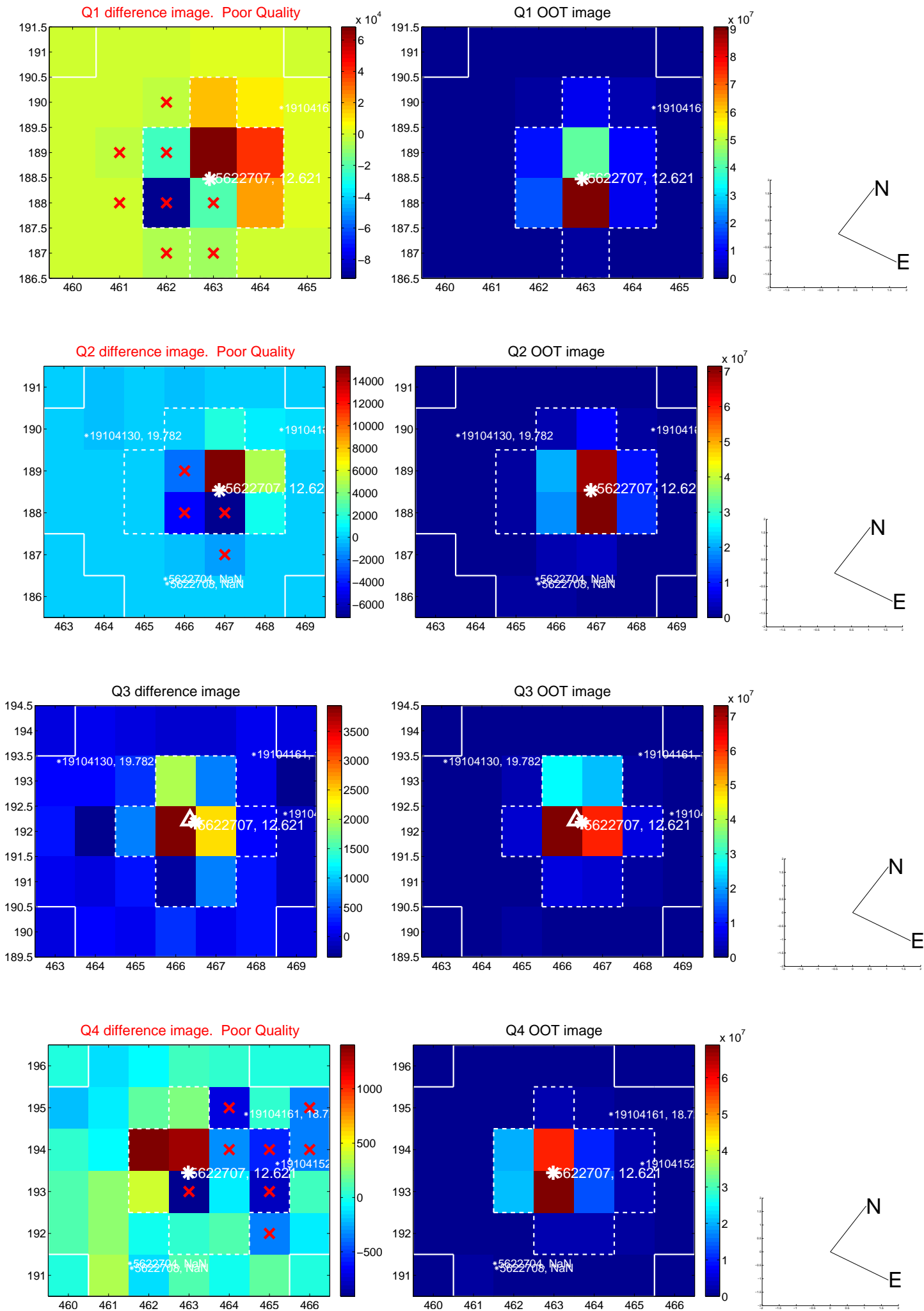


offset from photometric centroids

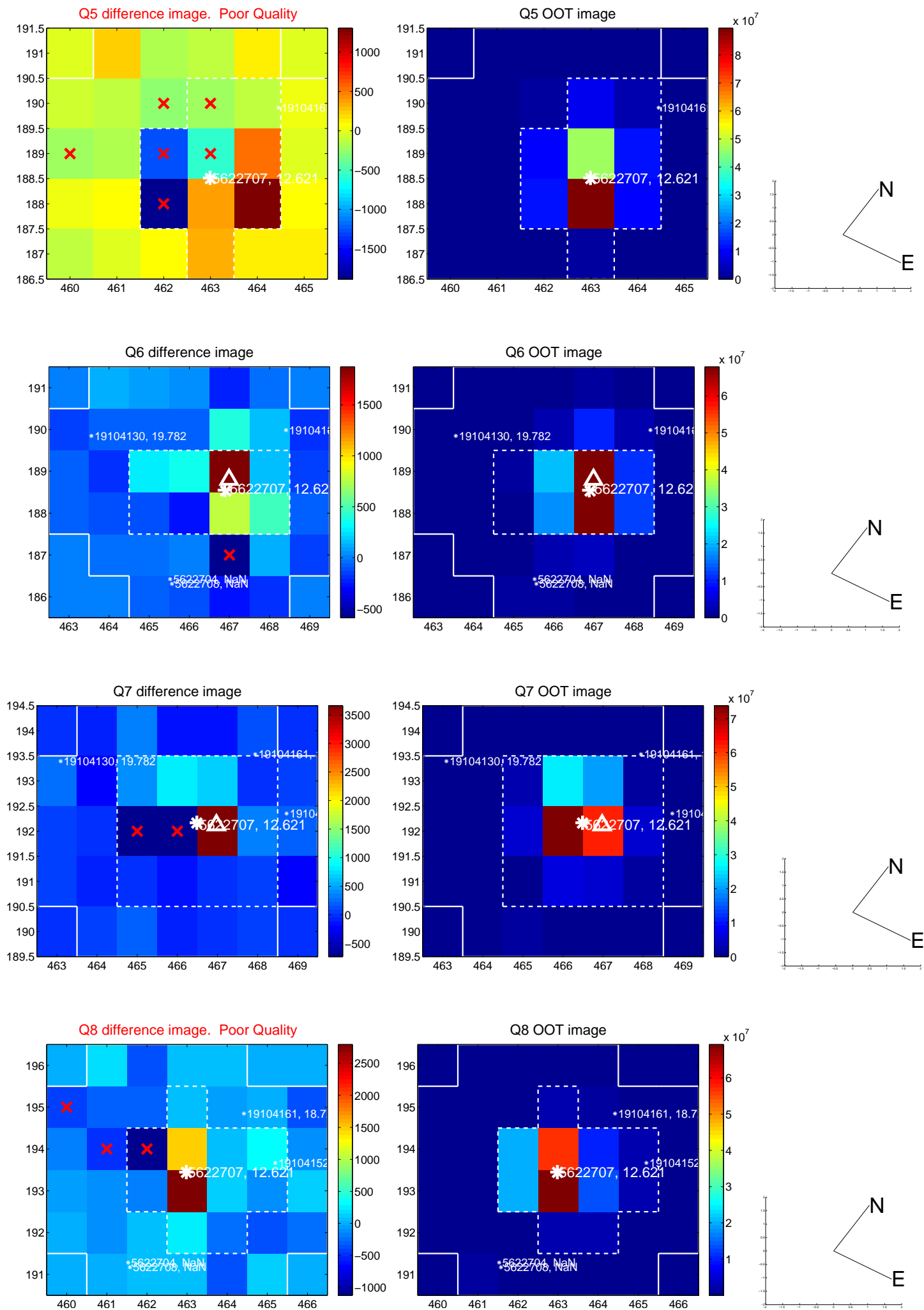


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

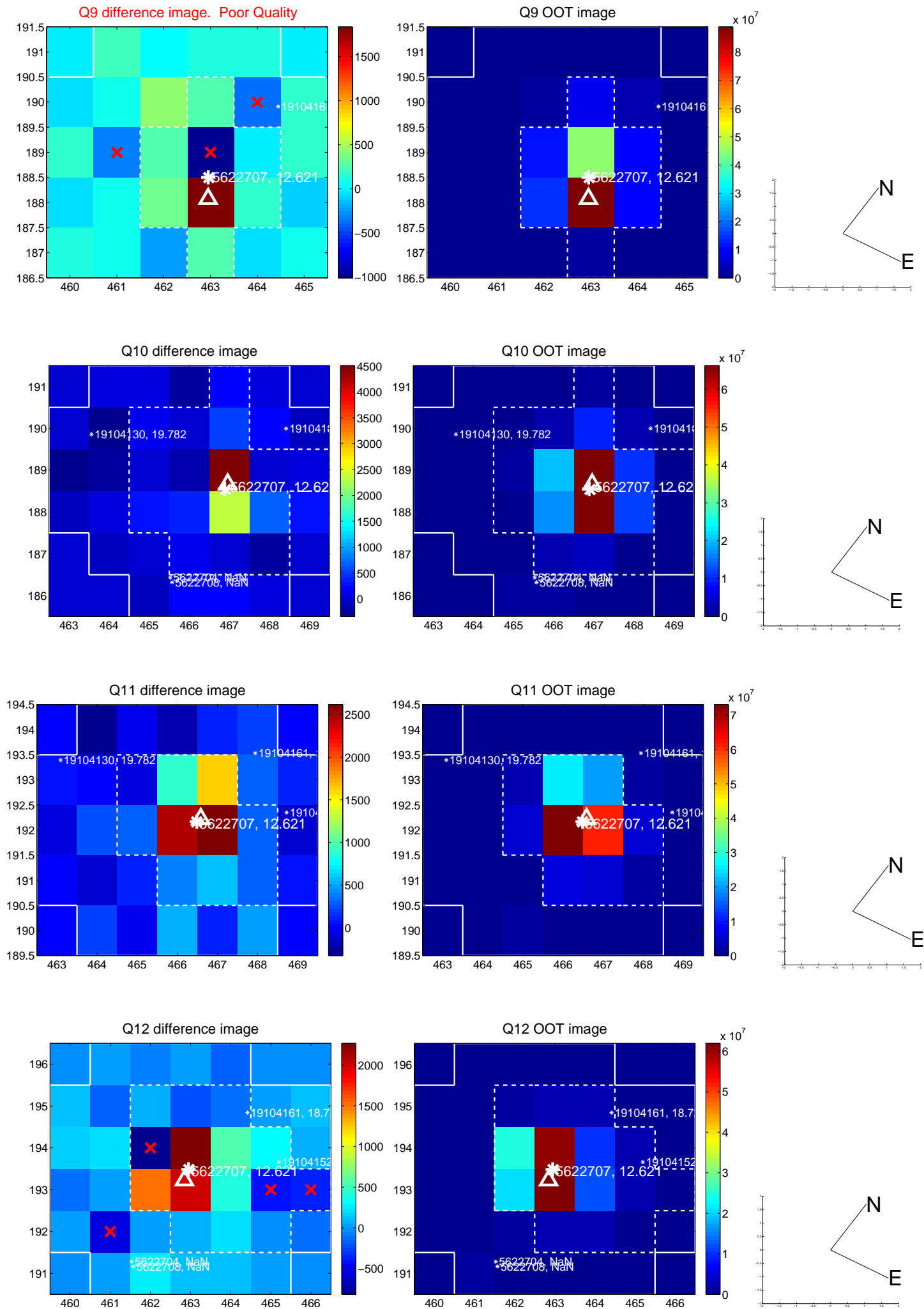


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

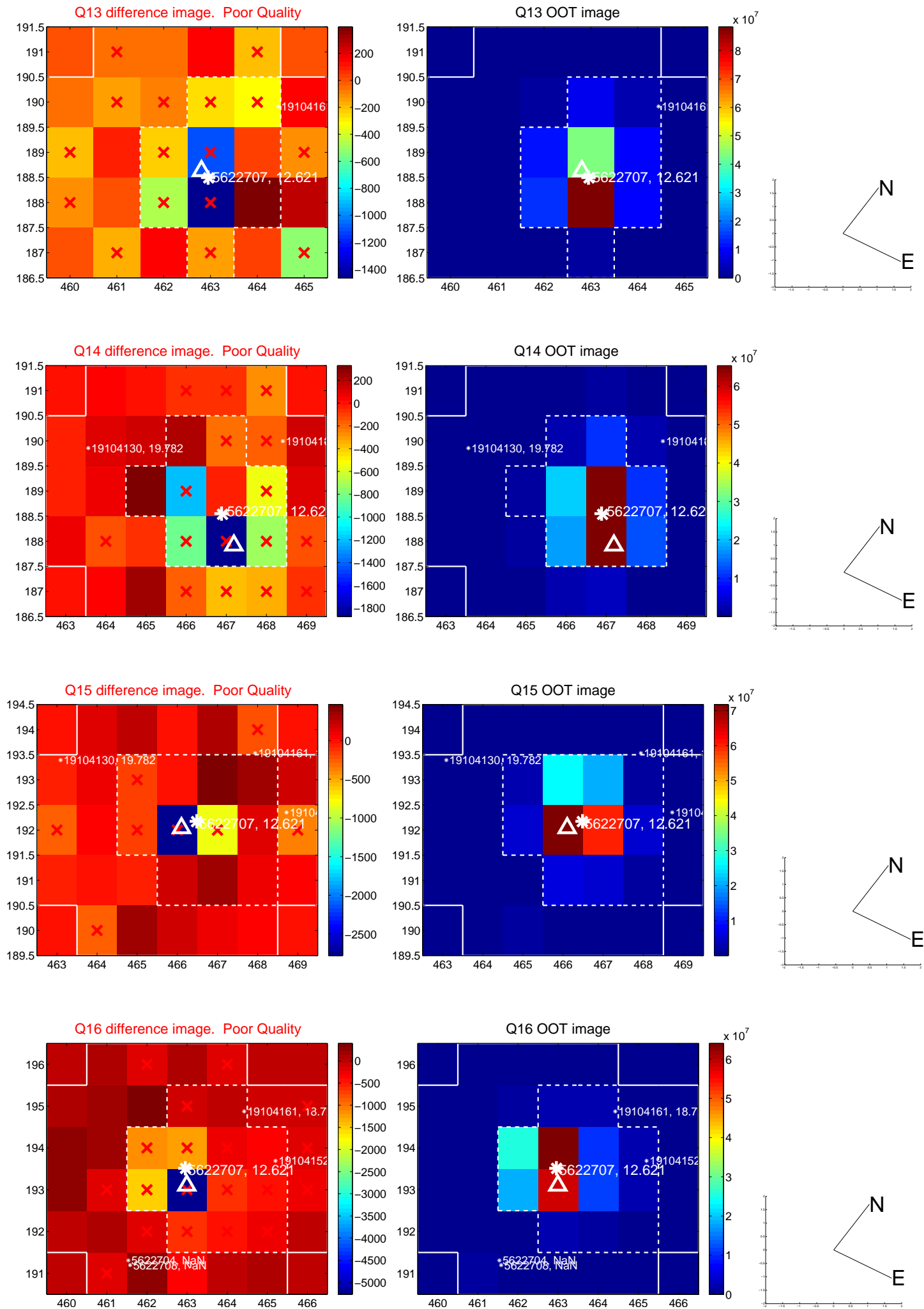




white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



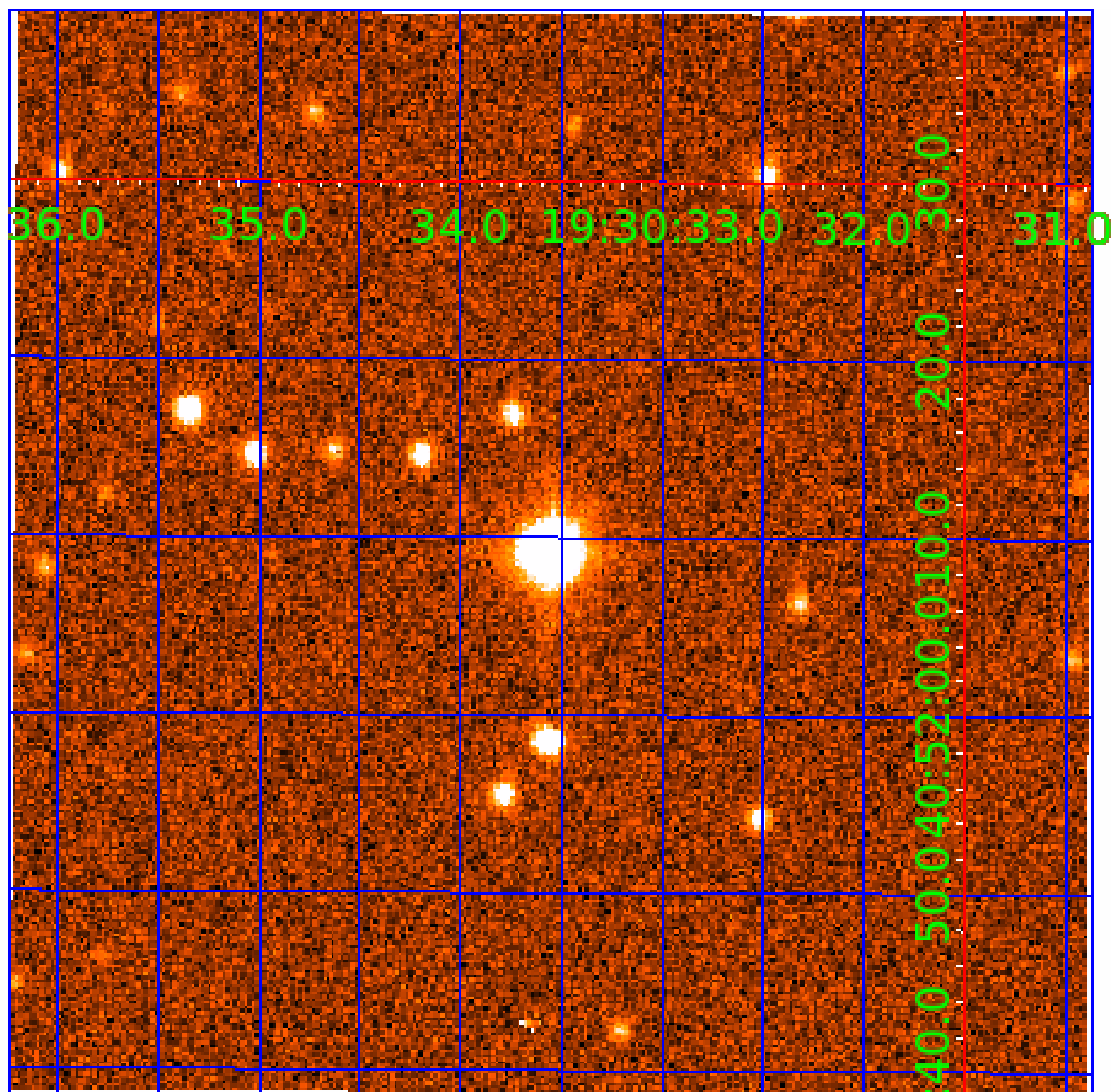
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.





UKIRT Image

Declination





# KIC 005622707

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005622707-01	OBS	No	1.697454	132.864002	18.1	3.748	9.7	5.9	1.99	6880	0.99	7517.72
005622707-02	OBS	No	1.697262	132.097959	5.0	16.186	9.3	3.1	1.99	6880	0.52	7518.86

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005622707-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT
005622707-02	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD

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

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

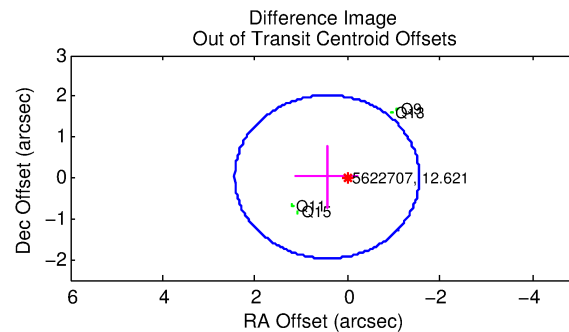
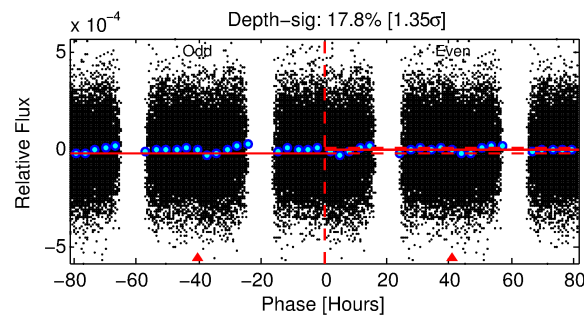
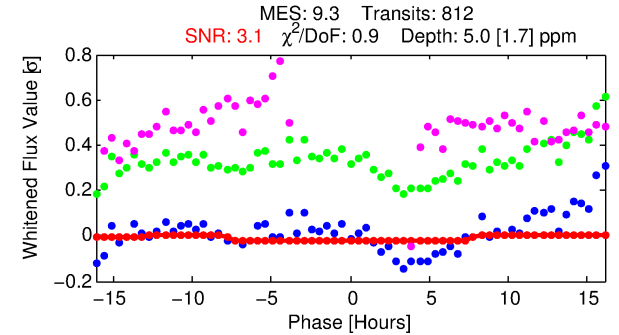
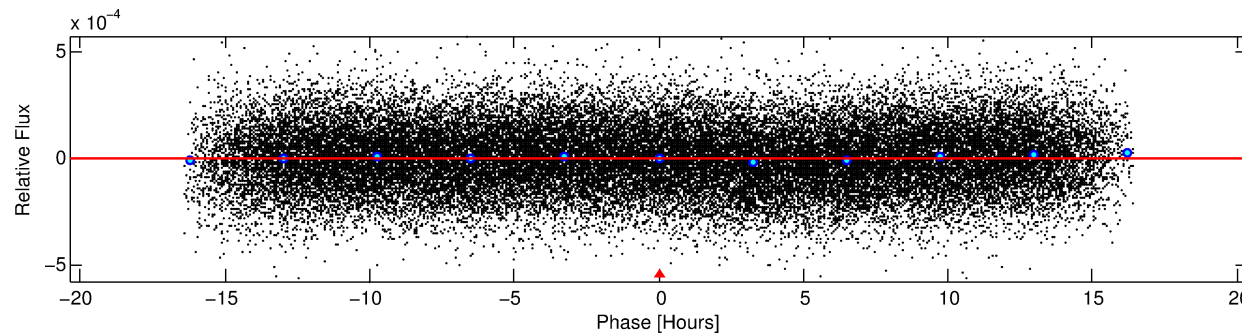
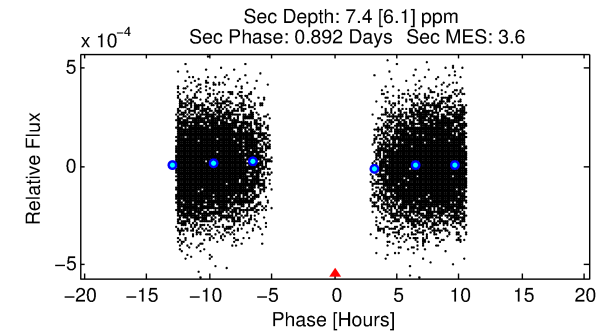
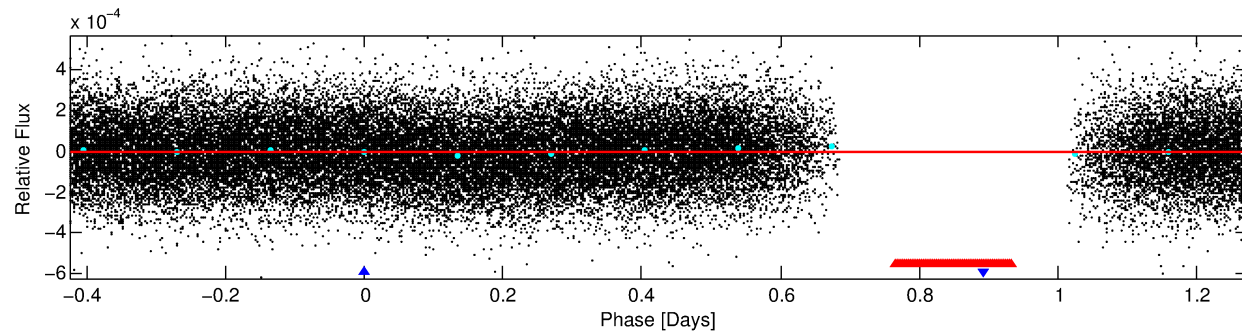
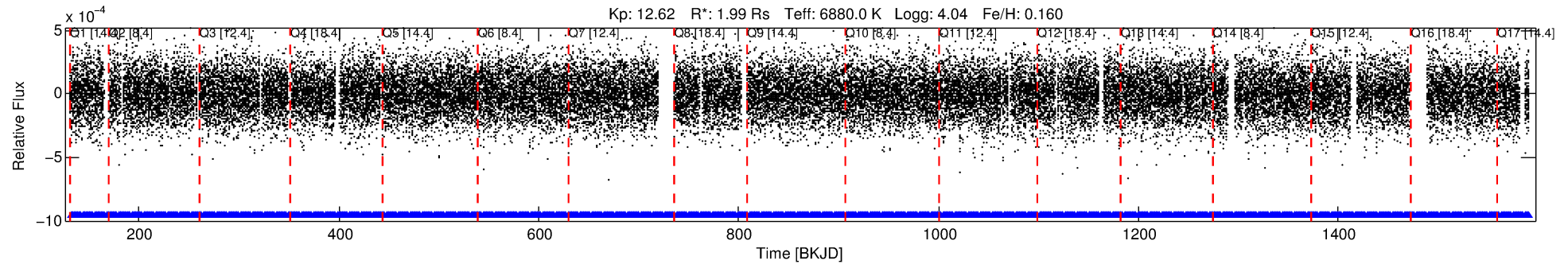
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 005622707-02

No Significant Match Found

# DV One-Page Summary

KIC: 5622707 Candidate: 2 of 2 Period: 1.697 d



## DV Fit Results:

Period = 1.69726 [0.00010] d  
Epoch = 132.0980 [0.0284] BKJD  
Rp/R\* = 0.0024 [0.0023]  
a/R\* = 1.01 [0.16]  
b = 0.90 [1.32]  
Seff = 7518.86 [1774.53]  
Teq = 2374 [140] K  
Rp = 0.52 [0.50] Re  
a = 0.0325 [0.0049] AU  
Ag = 15.98 [33.65] [0.45σ]  
Teffp = 7340 [3842] K [1.29σ]

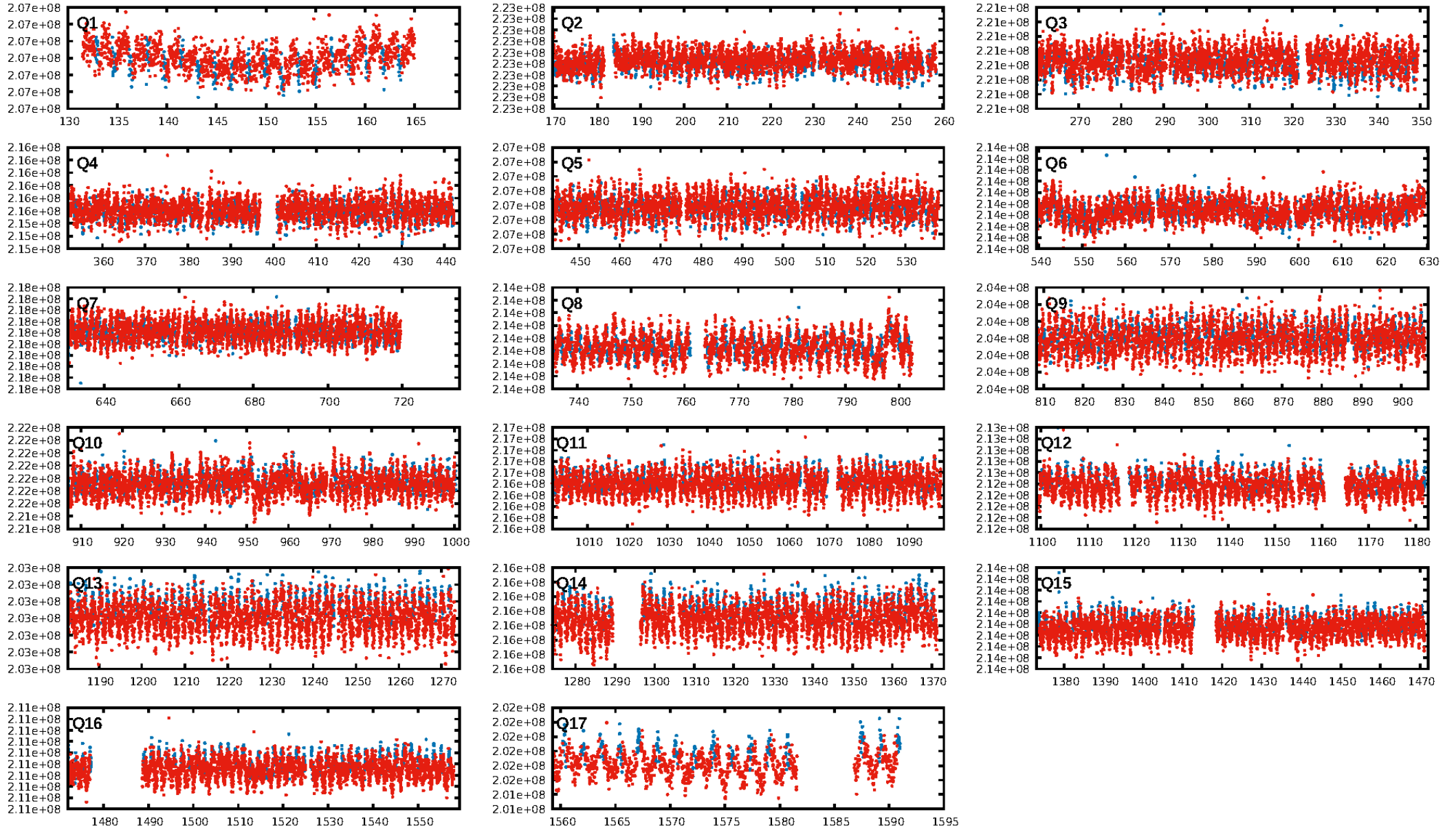
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 0.0% [0.00σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGoF-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [775/775]  
GhostDiagnostic-chr: 1.698  
Centroid-sig: 0.3%  
Centroid-so: 3.540 arcsec [2.08σ]  
OotOffset-rm: 0.449 arcsec [0.67σ]  
OotOffset-st: 0/2/0/2 [4]  
KicOffset-rm: 0.438 arcsec [0.64σ]  
KicOffset-st: 0/2/0/2 [4]  
DiffImageQuality-fgm: 1.00 [4/4]  
DiffImageOverlap-fno: 0.00 [0/17]

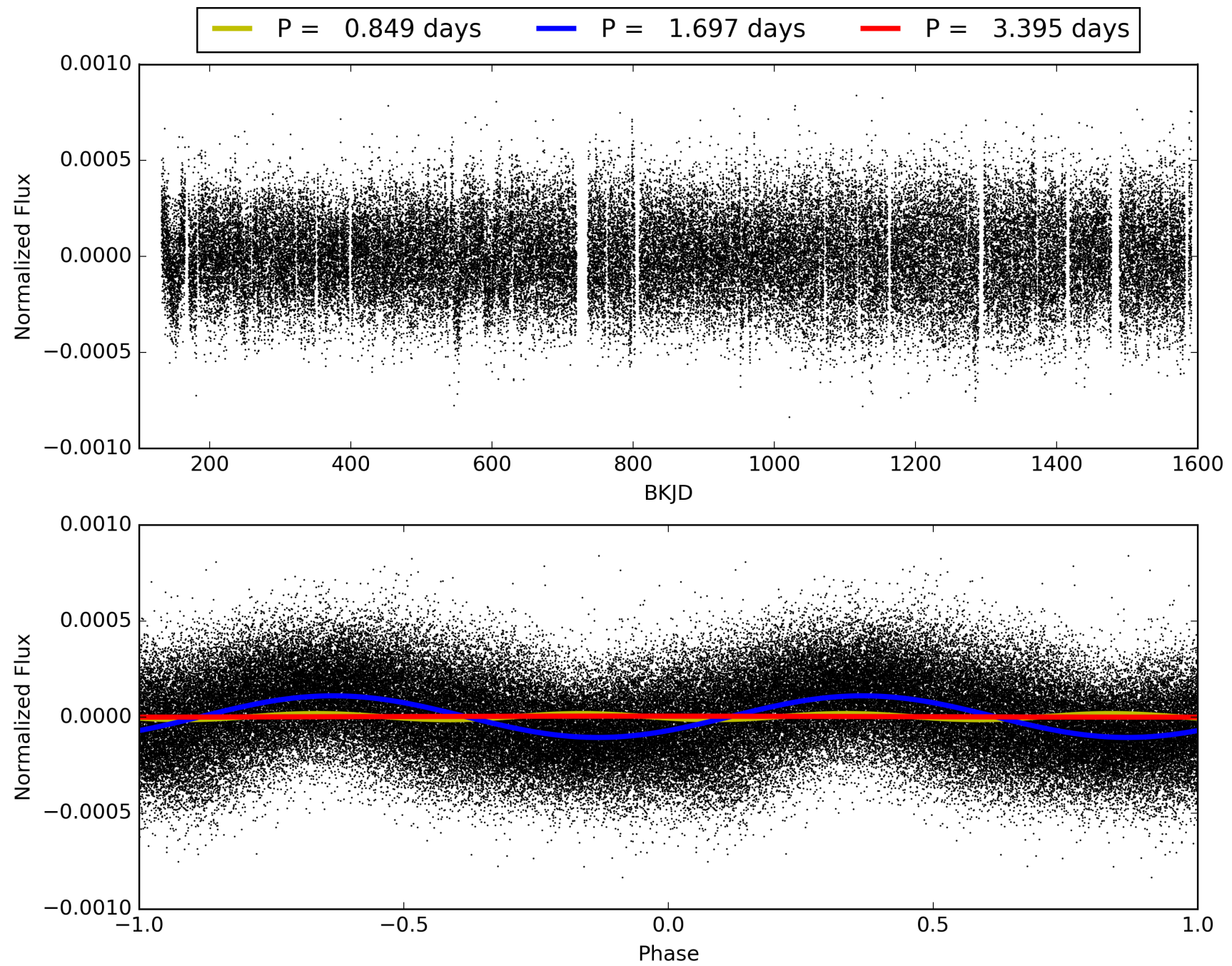
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 22:46:12 Z

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

# TCE 005622707-02, PDC Light Curves



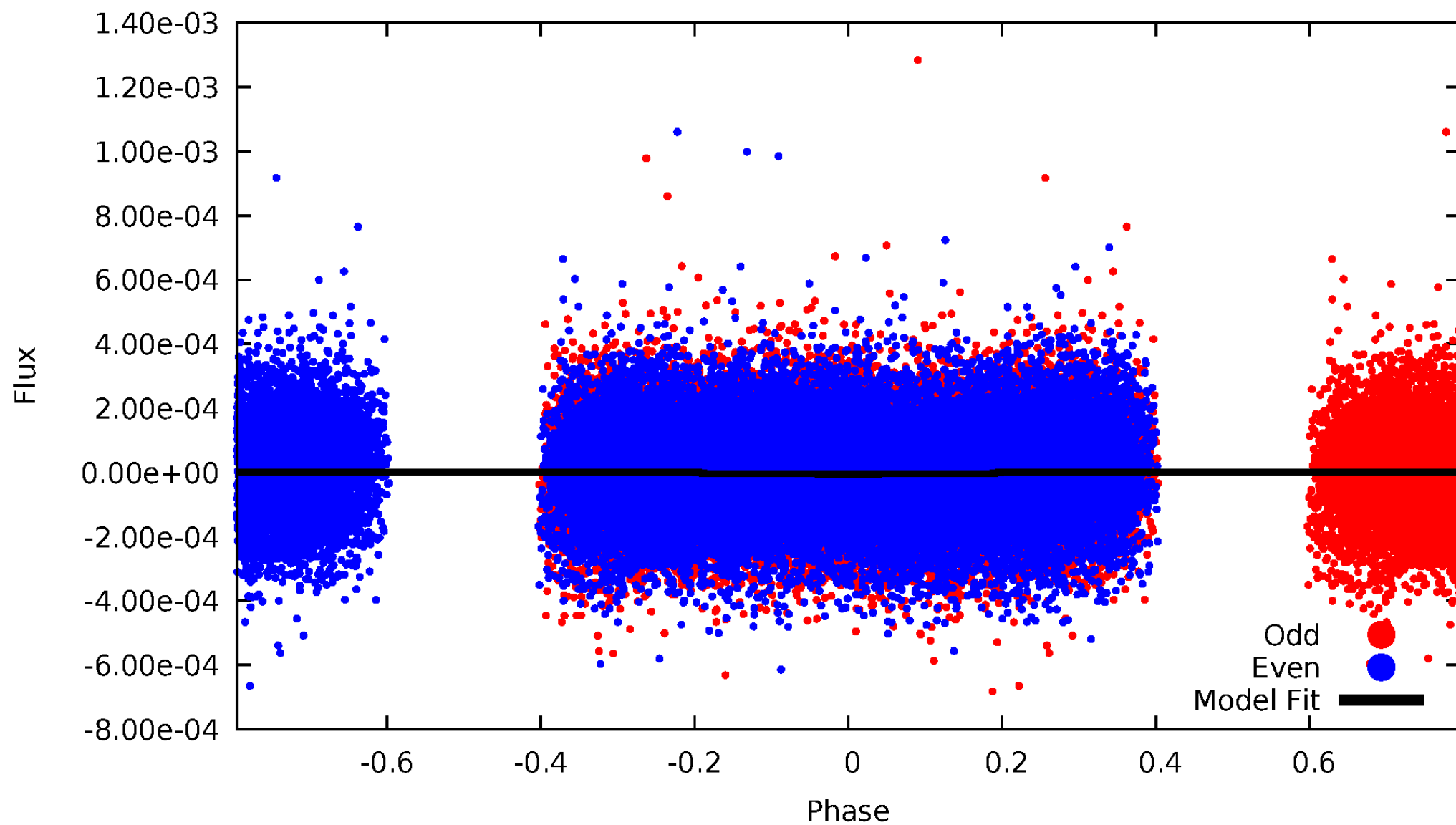
TCE 005622707-02





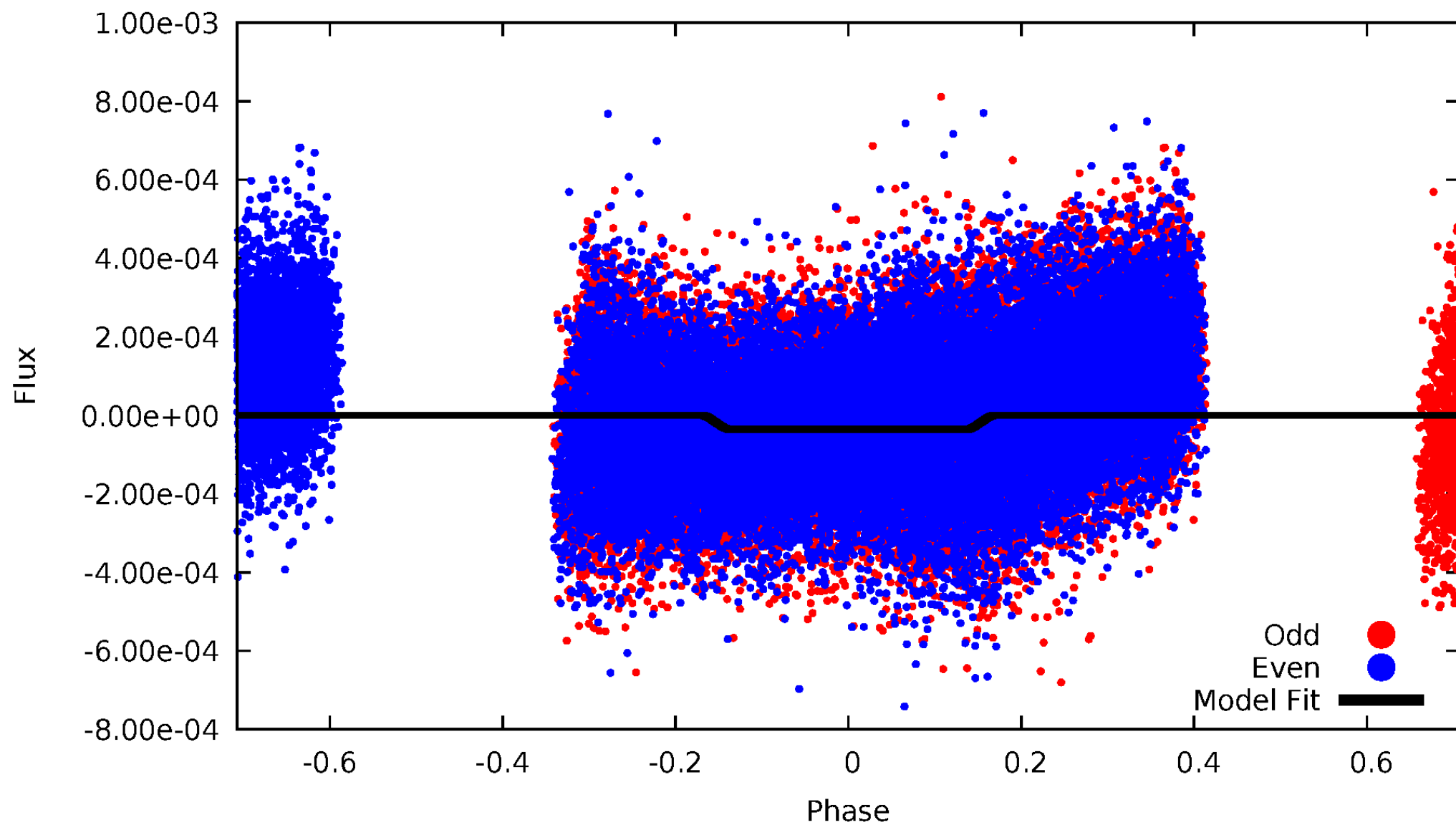
# DV Odd/Even

TCE 005622707-02



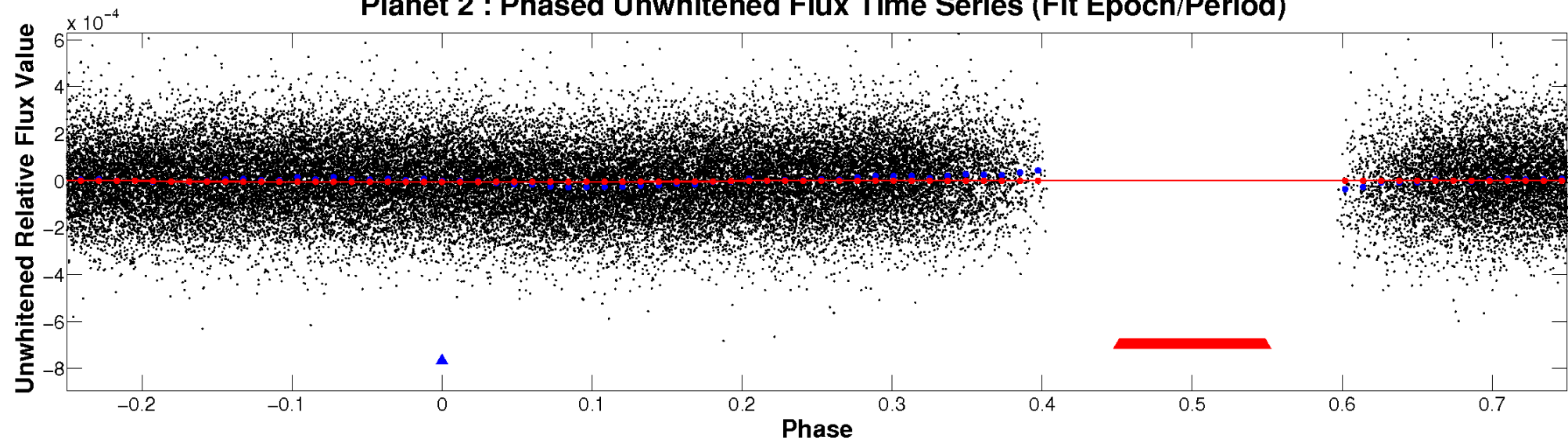
# ALT Odd/Even

TCE 005622707-02

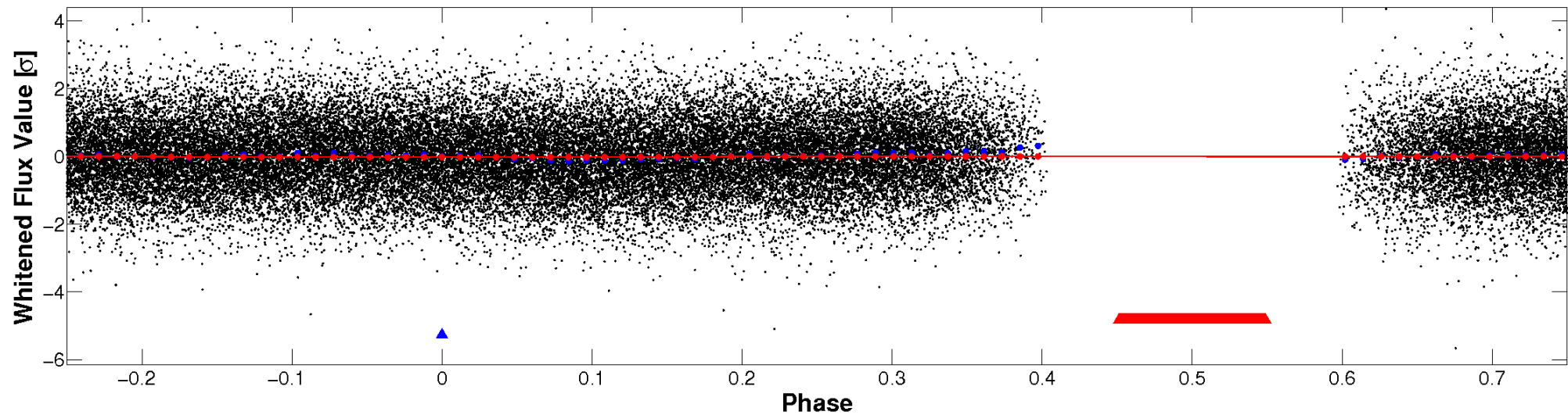


# Non-Whitened Vs. Whitened Light Curve

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

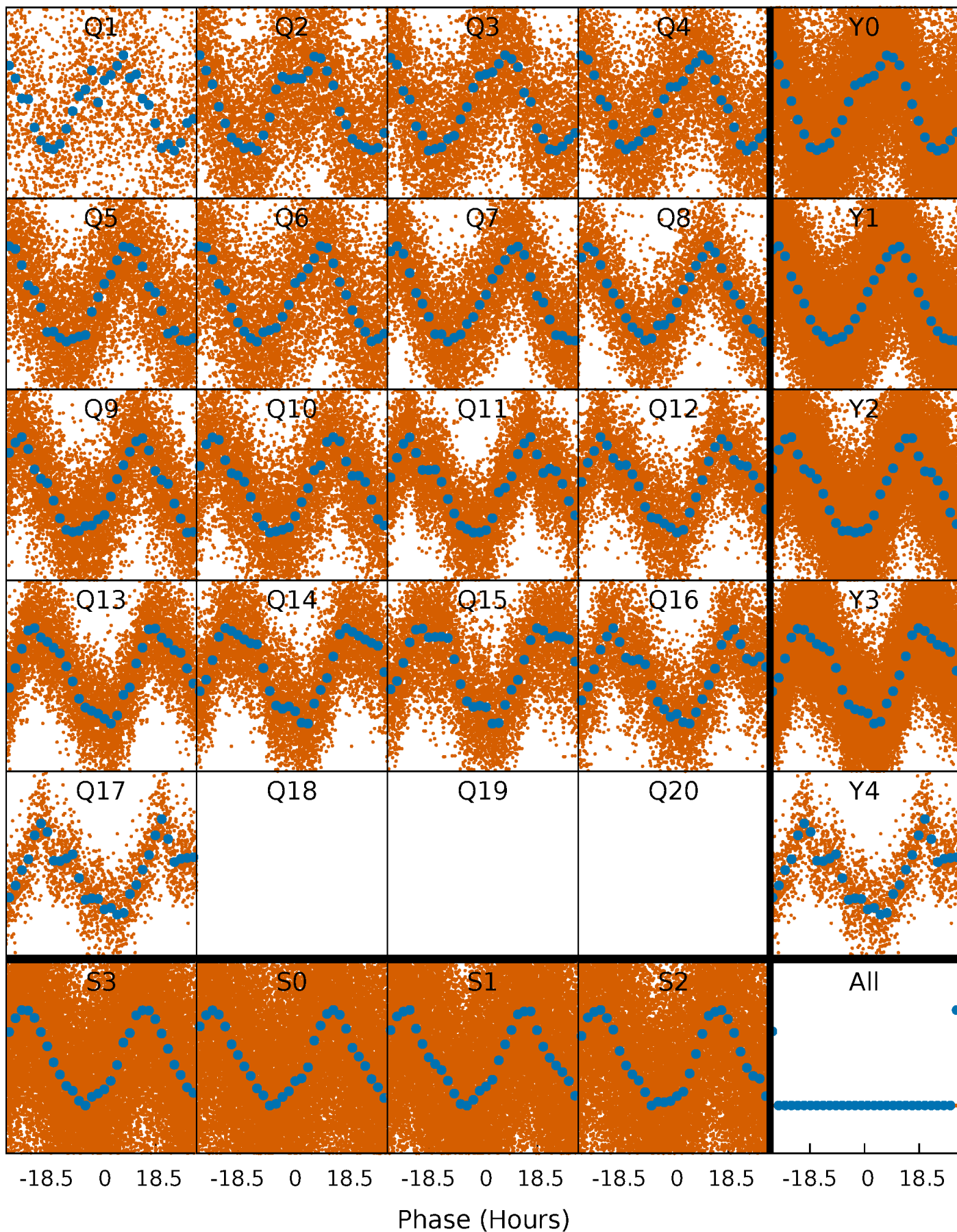


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

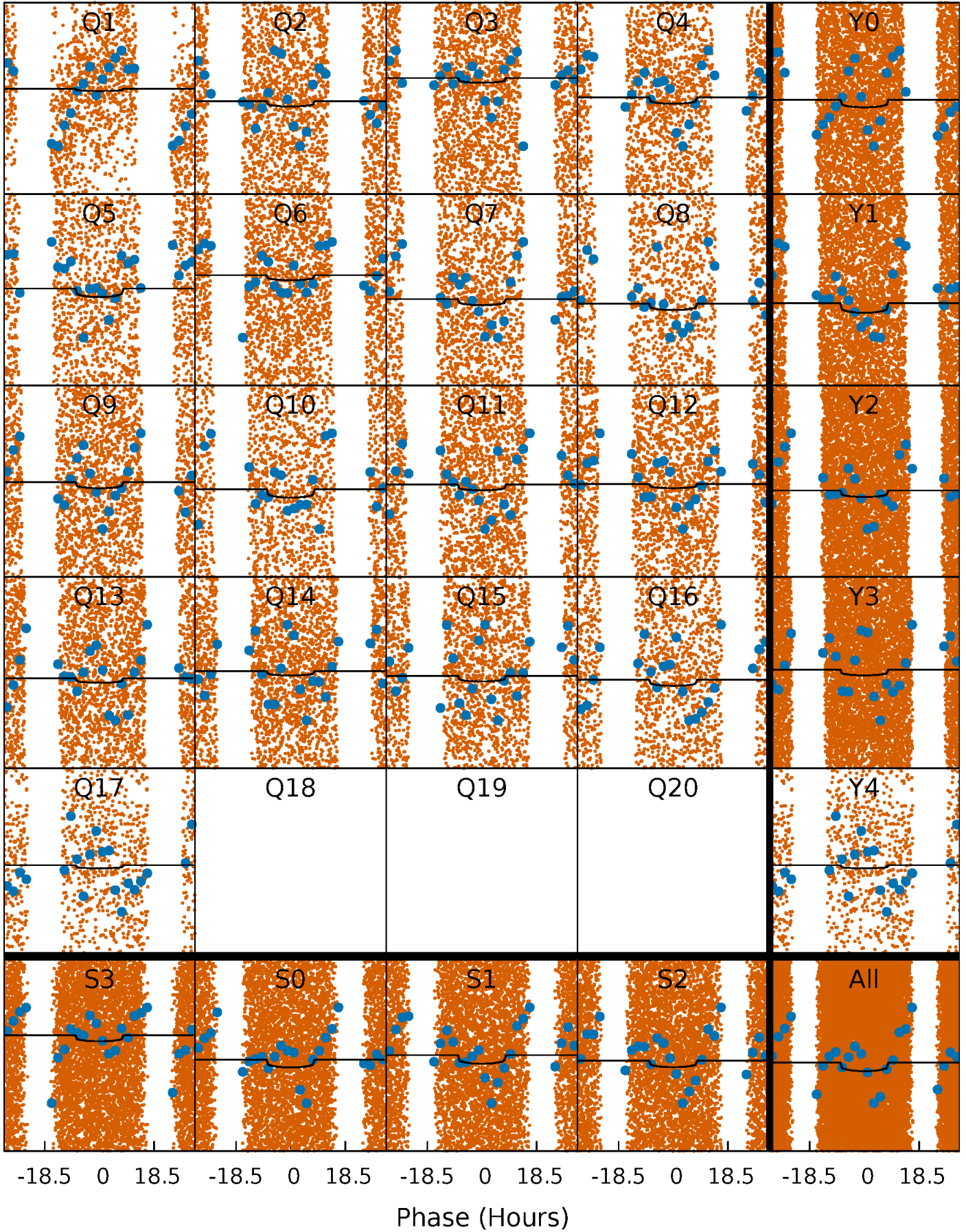
TCE 005622707-02   P= 1.697262 Days    $T_0=132.097959$  (BKJD)





# DV Quarter-Phased Transit Curves

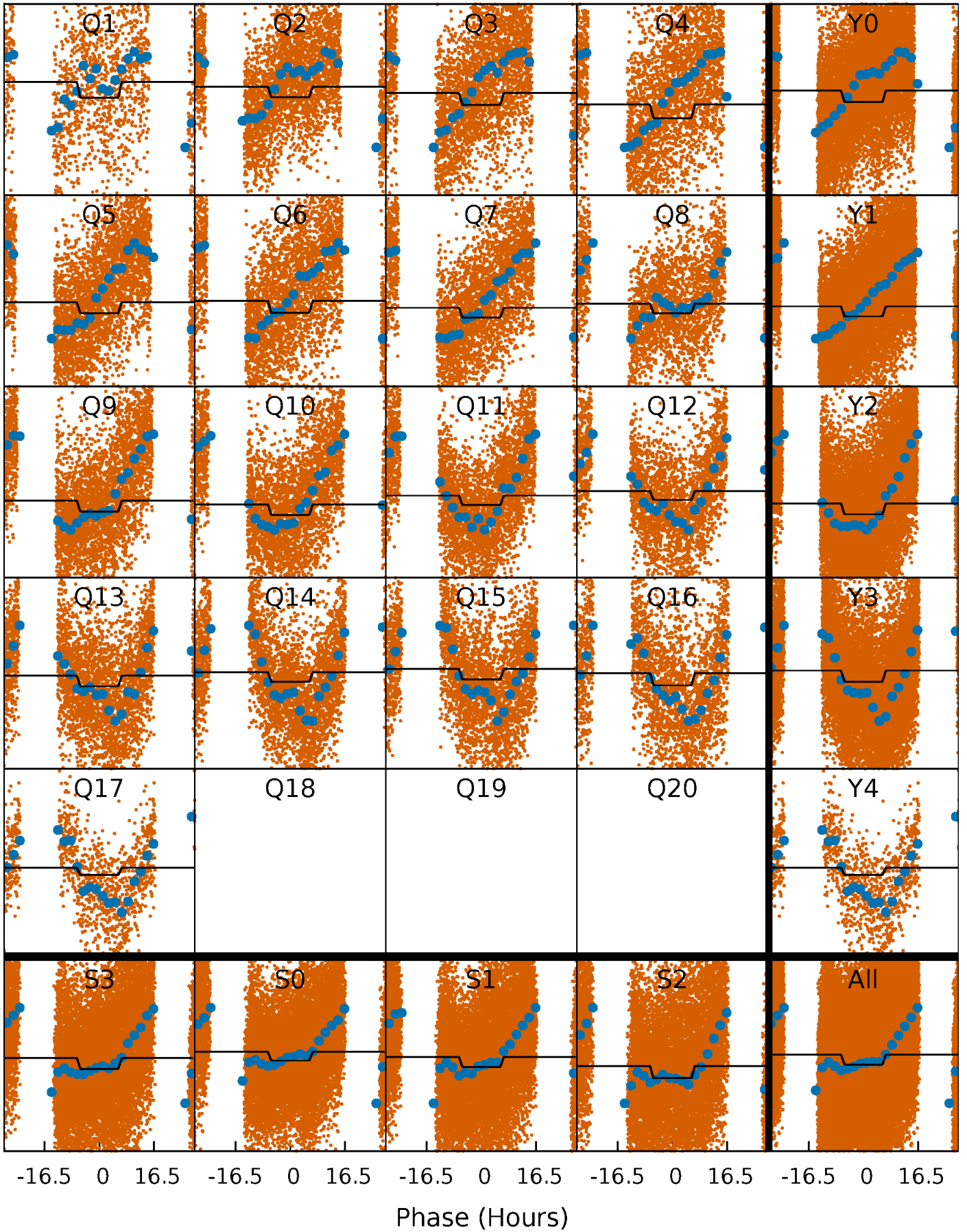
TCE 005622707-02   P= 1.697262 Days    $T_0=132.097959$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

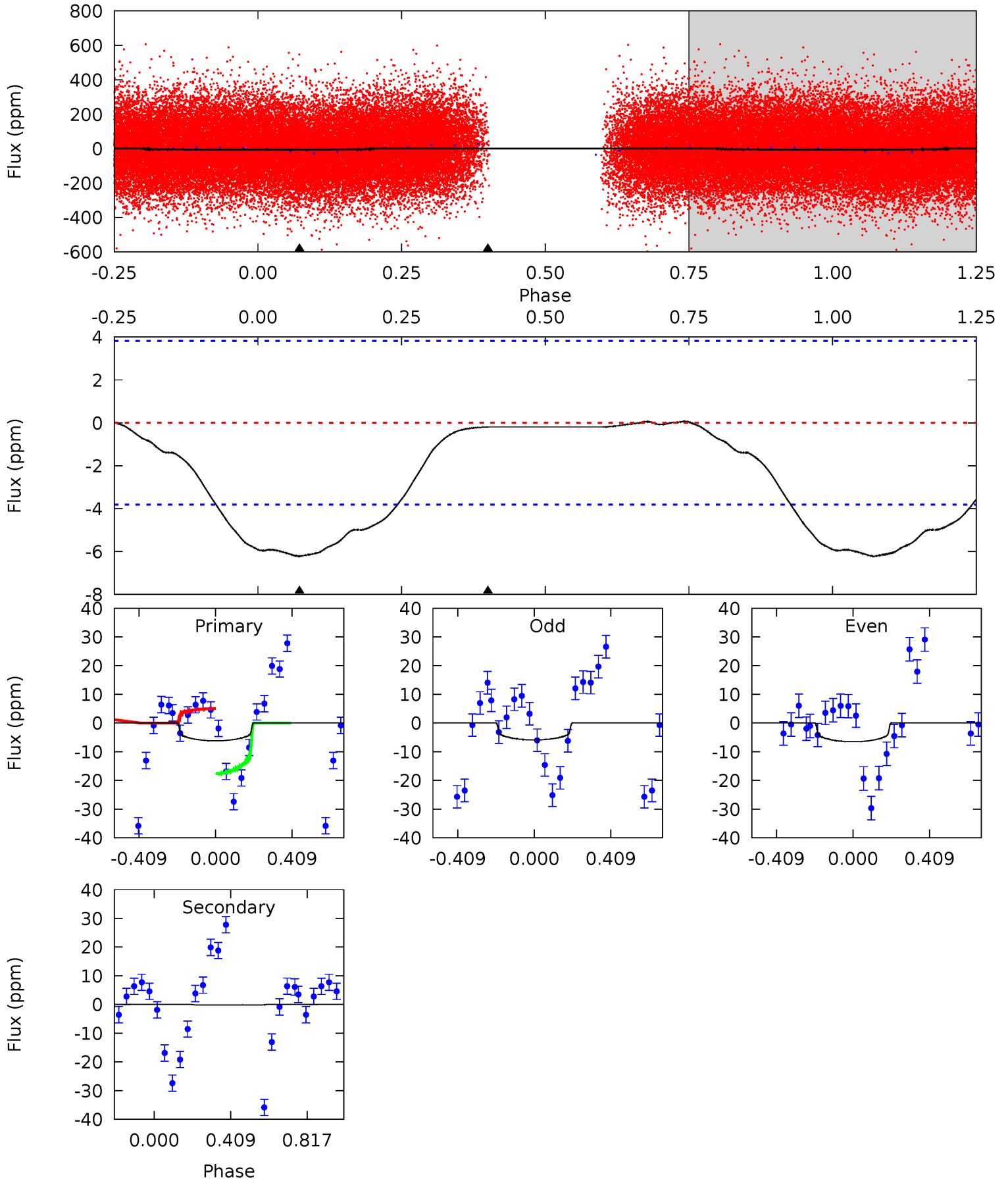
TCE 005622707-02   P= 1.697363 Days    $T_0=131.993200$  (BKJD)



# DV Model-Shift Uniqueness Test

005622707-02, P = 1.697262 Days, E = 130.400697 Days

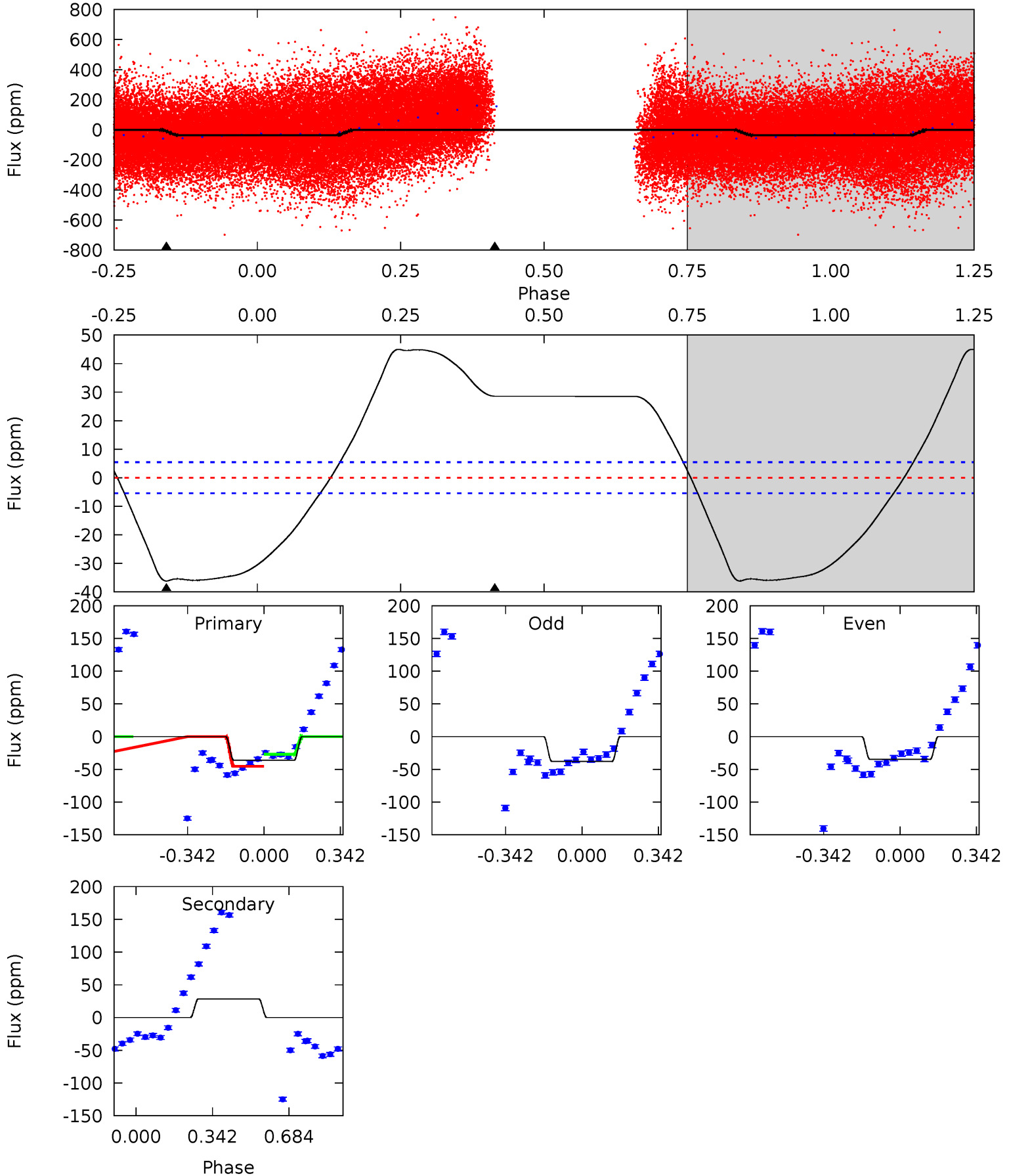
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.94	0.22	0	0	4.26	0.83	0.08	6.94	6.94	0.22	0.22	0.35	0.73	0.01	7.09



# Alt Model-Shift Uniqueness Test

005622707-02, P = 1.697363 Days, E = 130.295837 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
28.7	-22.6	0	0	4.30	0.95	5.33	28.7	28.7	-22.6	-22.6	1.20	1.24	0.55	7.55



### Stellar Parameters For KIC 005622707

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$6880^{+82}_{-82}$	$4.042^{+0.132}_{-0.108}$	$0.160^{+0.150}_{-0.150}$	$1.990^{+0.332}_{-0.332}$	$1.590^{+0.123}_{-0.123}$	$0.284^{+0.180}_{-0.094}$
	+1%/-1%	+3%/-3%	+94%/-94%	+17%/-17%	+8%/-8%	+63%/-33%
Source	SPE68	SPE68	SPE68	DSEP		

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

### Secondary Eclipse Parameters for KIC 005622707-02 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-0 \pm 1$	$0.61^{+0.45}_{-0.40}$	$3307^{+155}_{-153}$	$-2714^{+7535}_{-1628}$	$0.223^{+2.808}_{-1.521}$
Alt.	$29 \pm 1$	$1.26^{+0.57}_{-0.52}$	$3315^{+133}_{-154}$	$-6610^{+1061}_{-2179}$	$-10.456^{+5.557}_{-18.949}$

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

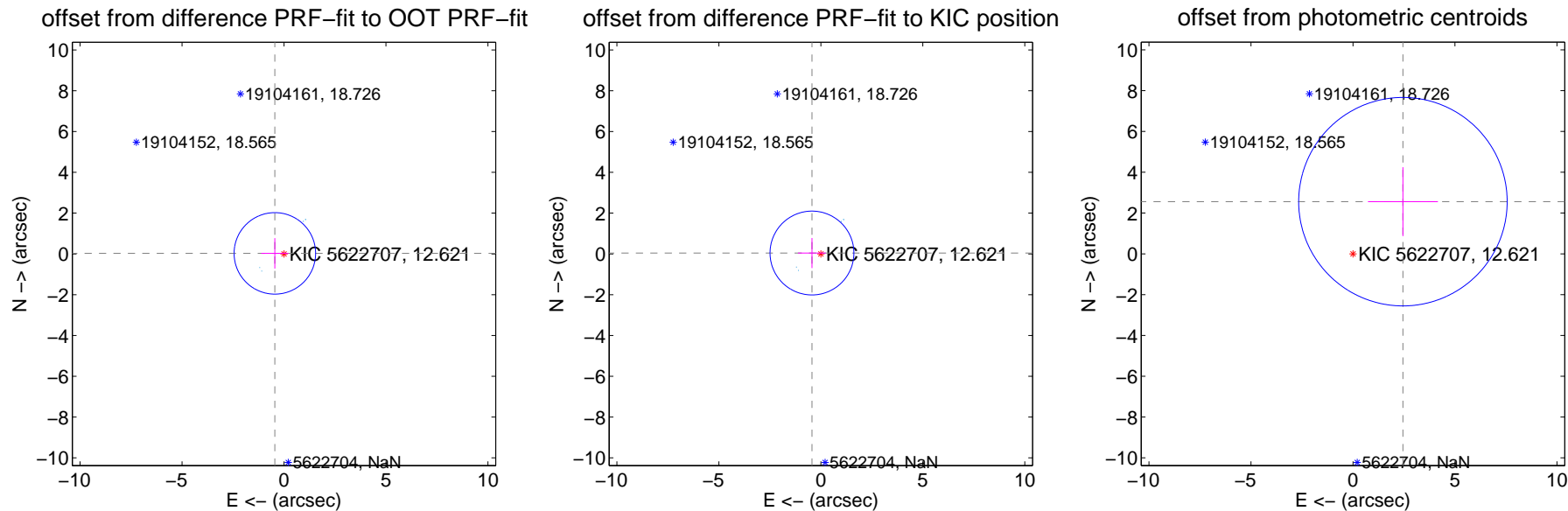
## DV Centroid Data

Supplemental centroid analysis for 005622707-02. Kepler magnitude: 12.62. Transit SNR 3.08

There are 4 quarters with good PRF difference image offsets

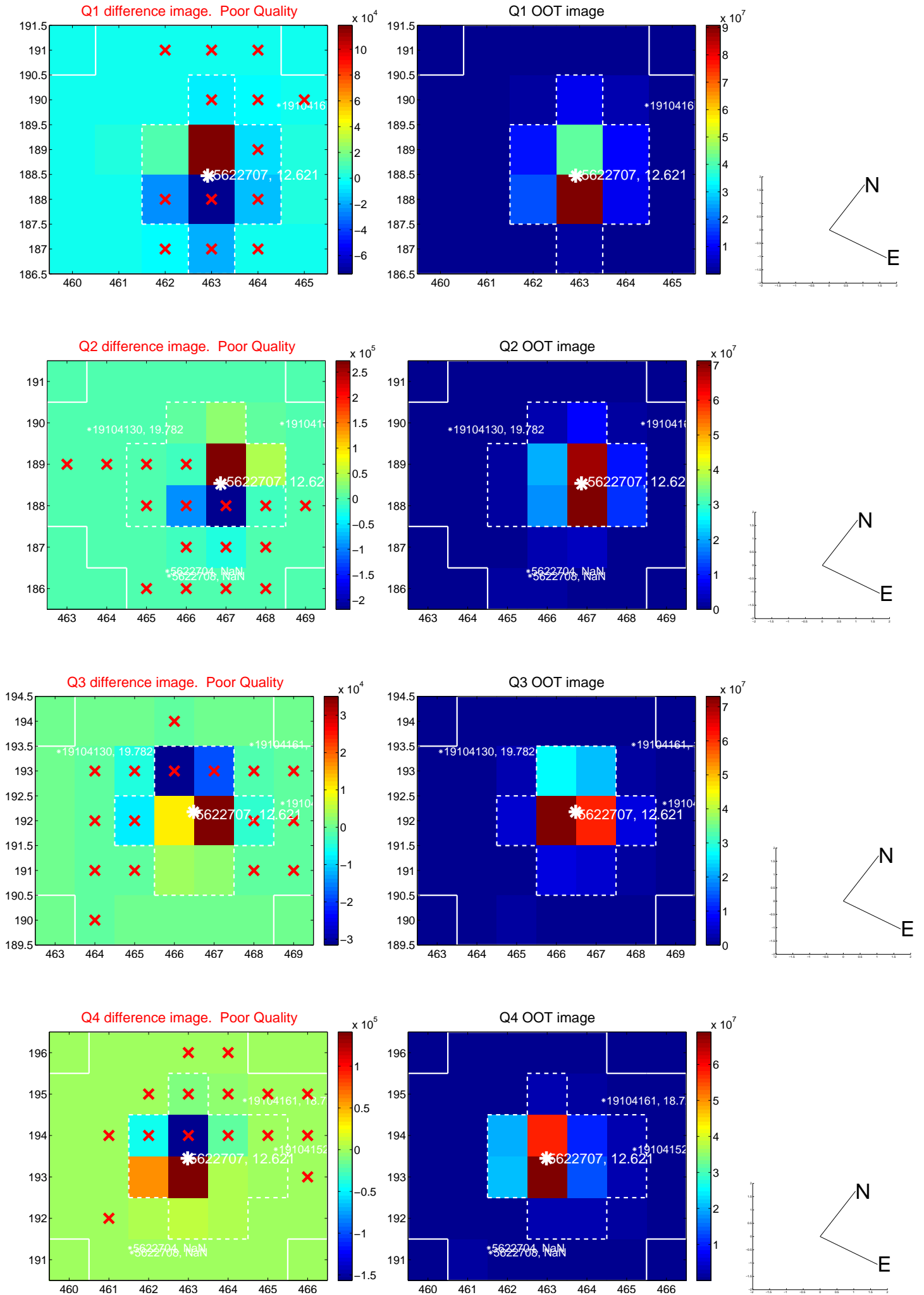
The direct PRF centroid is offset from the target star catalog position by about 0.03 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.449 \pm 0.666$	0.67	$0.448 \pm 0.666$	$0.026 \pm 0.747$
PRF-fit source offset from KIC position	$0.438 \pm 0.685$	0.64	$0.436 \pm 0.685$	$0.043 \pm 0.736$
photometric centroid source offset	$3.54 \pm 1.70$	2.08	$-2.45 \pm 1.72$	$2.56 \pm 1.69$



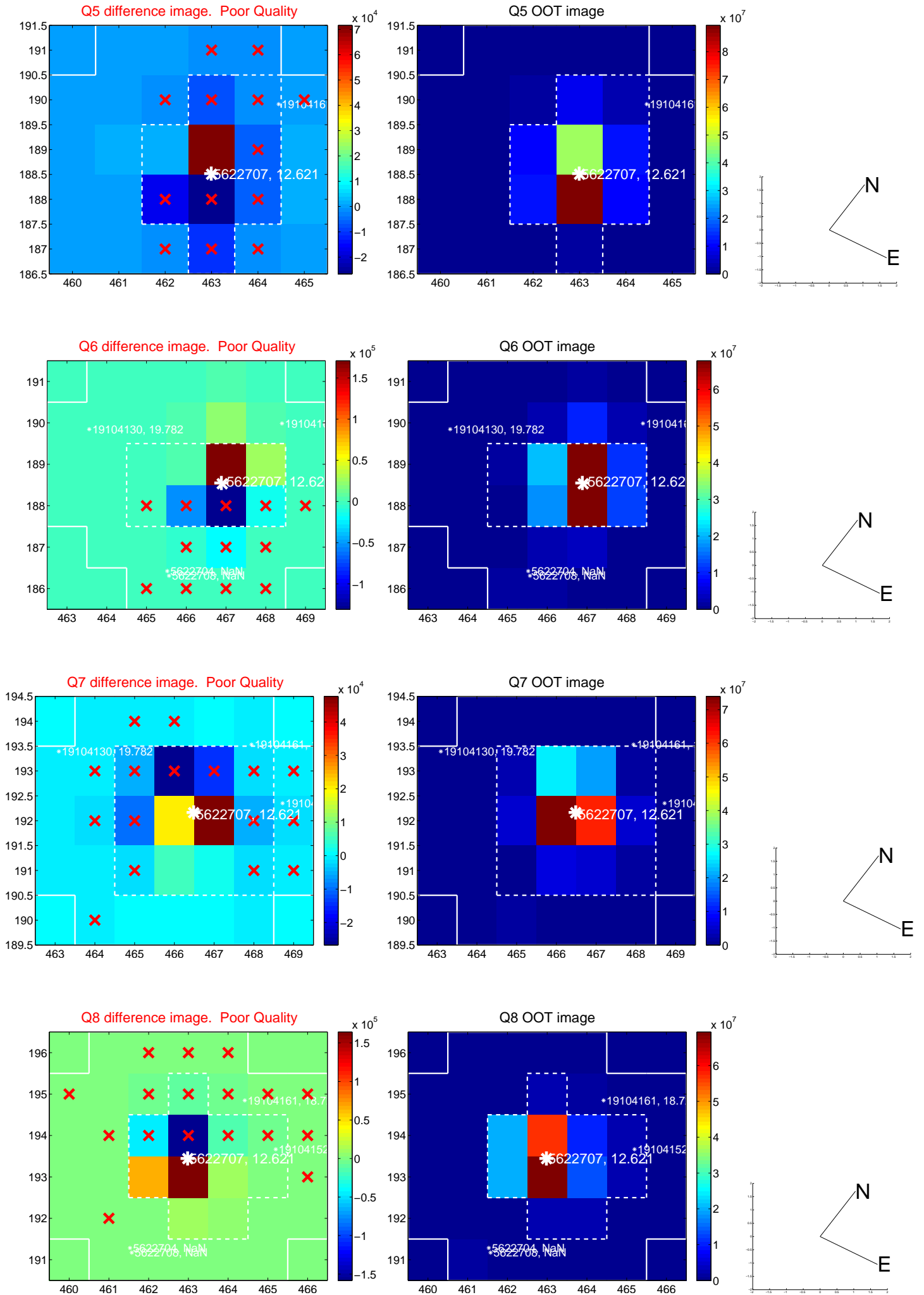
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

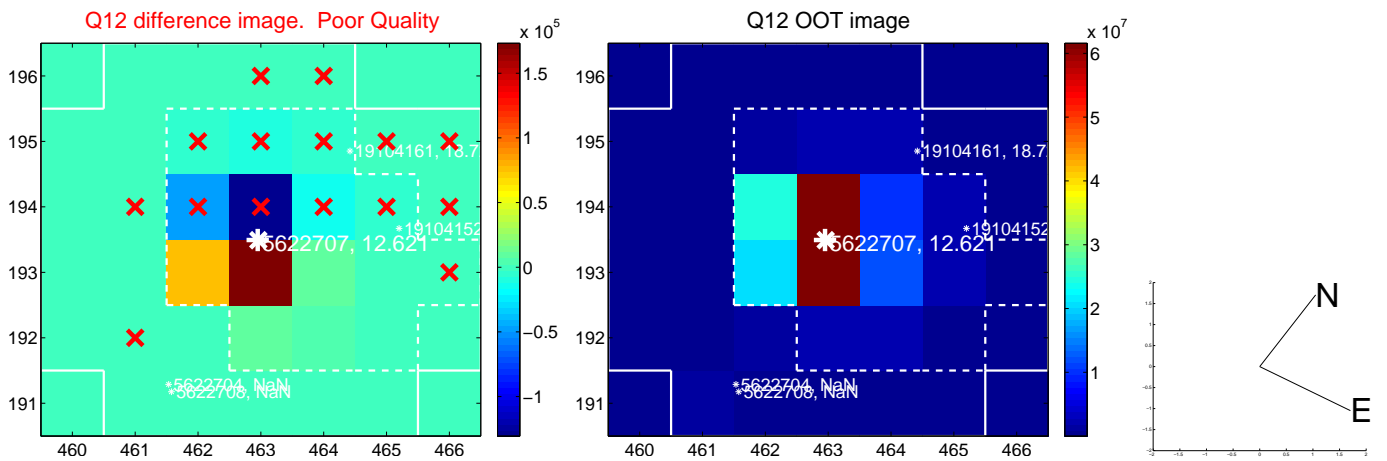
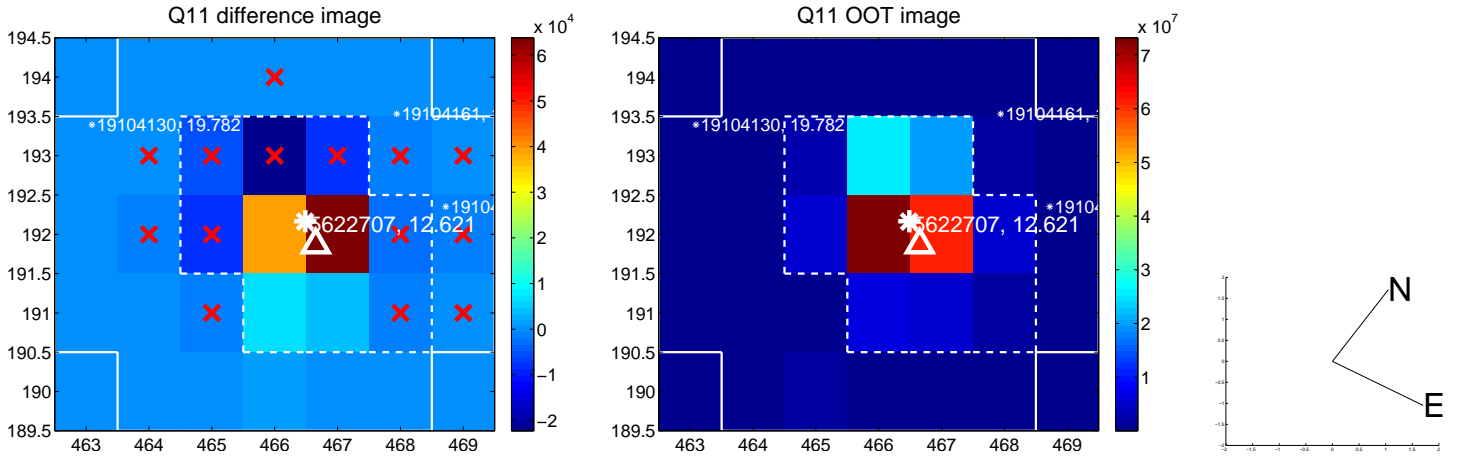
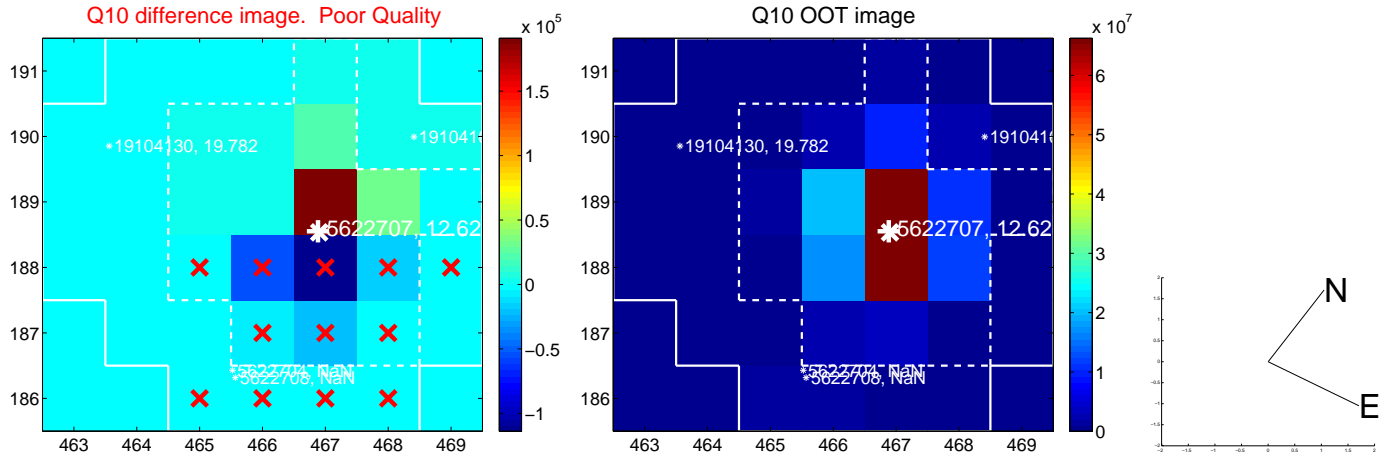
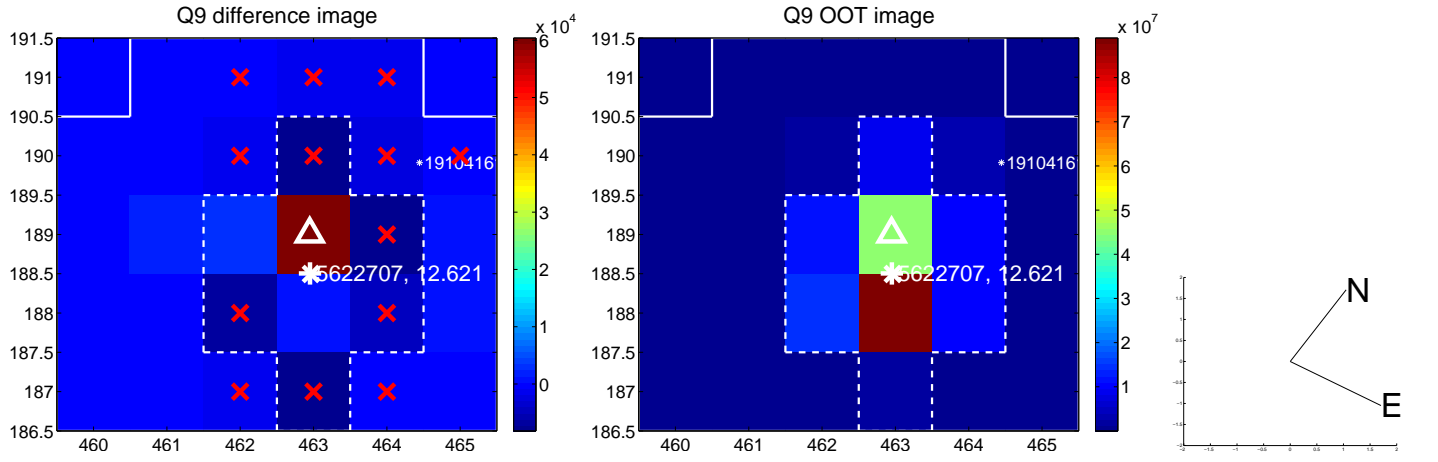




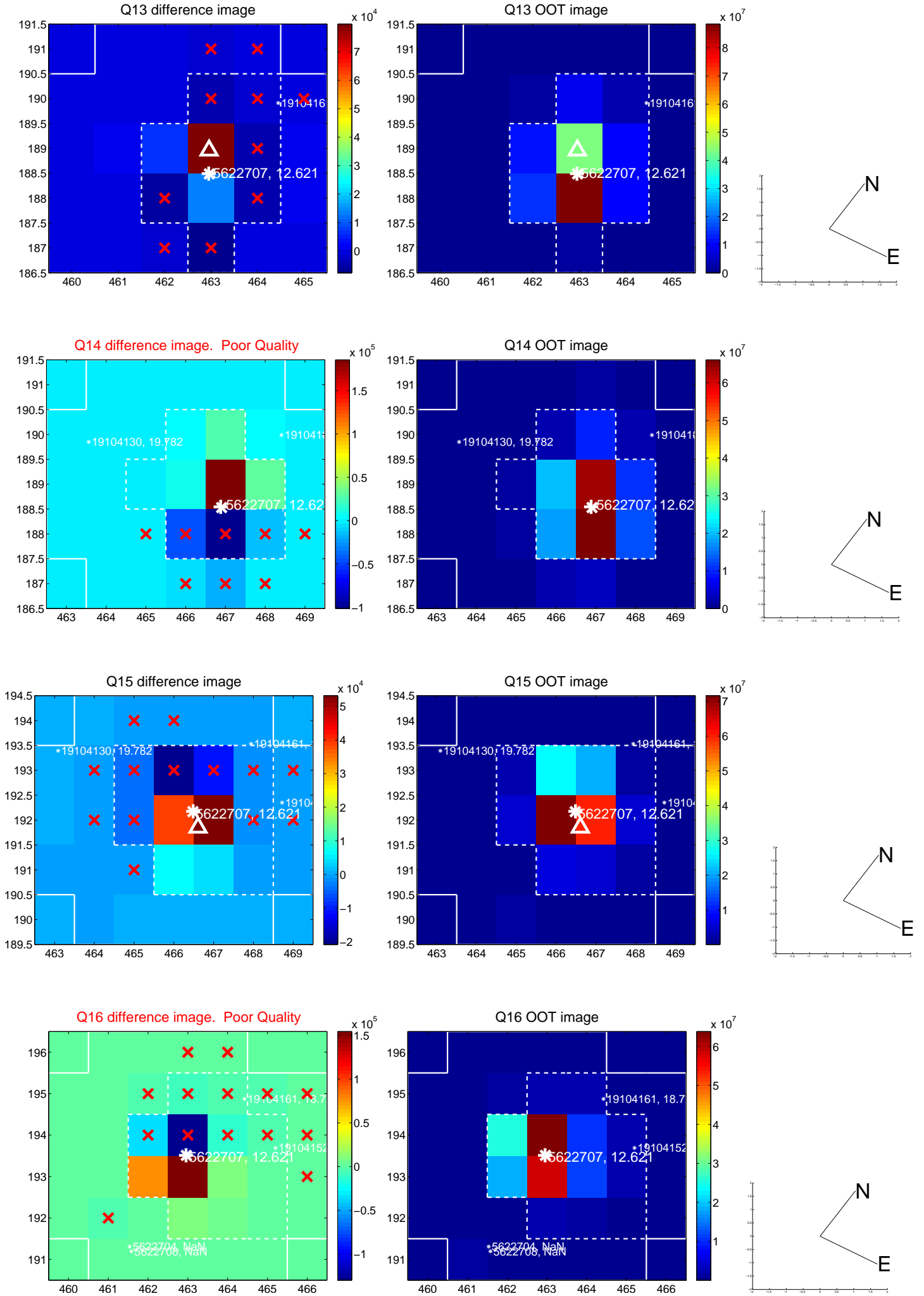
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



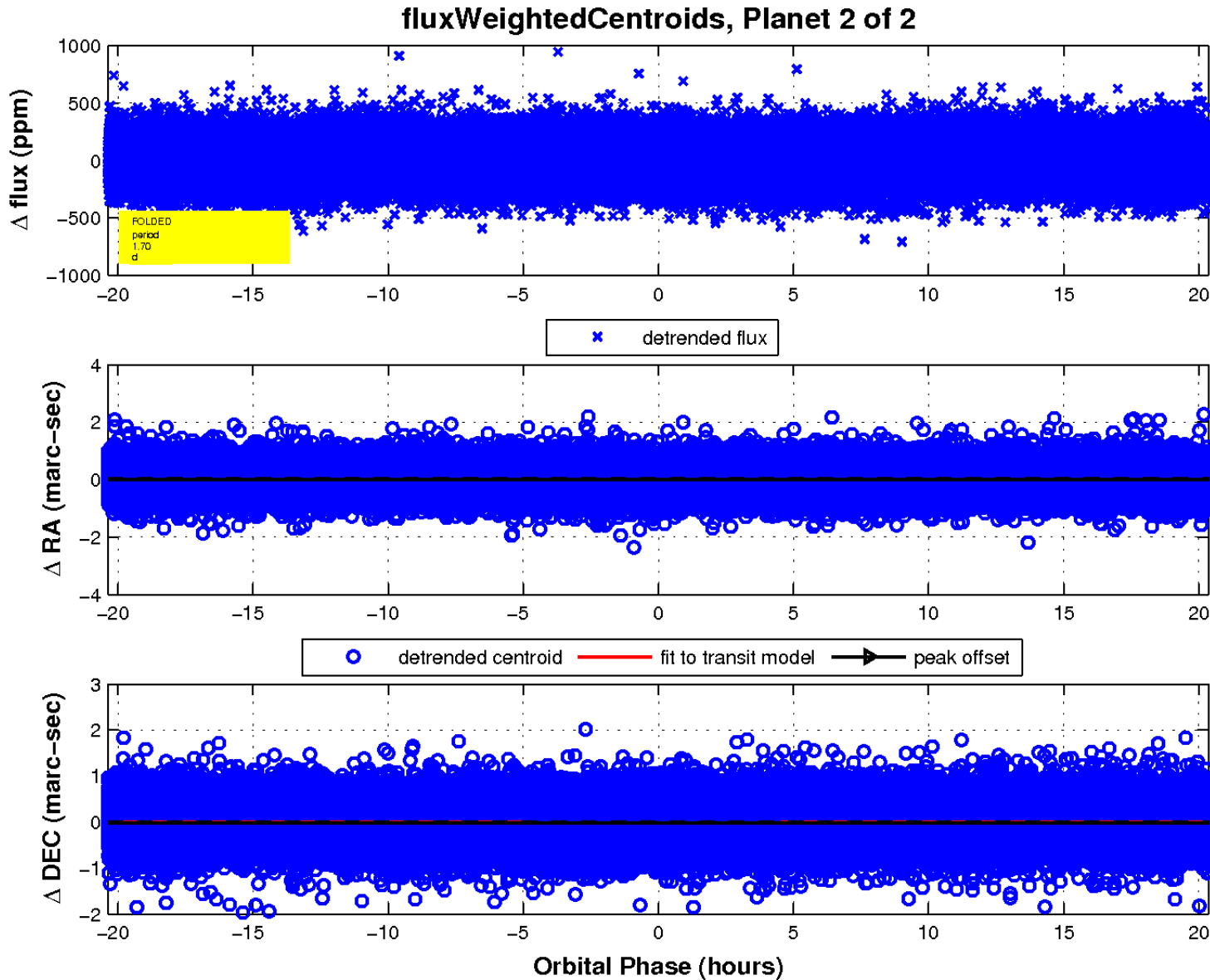
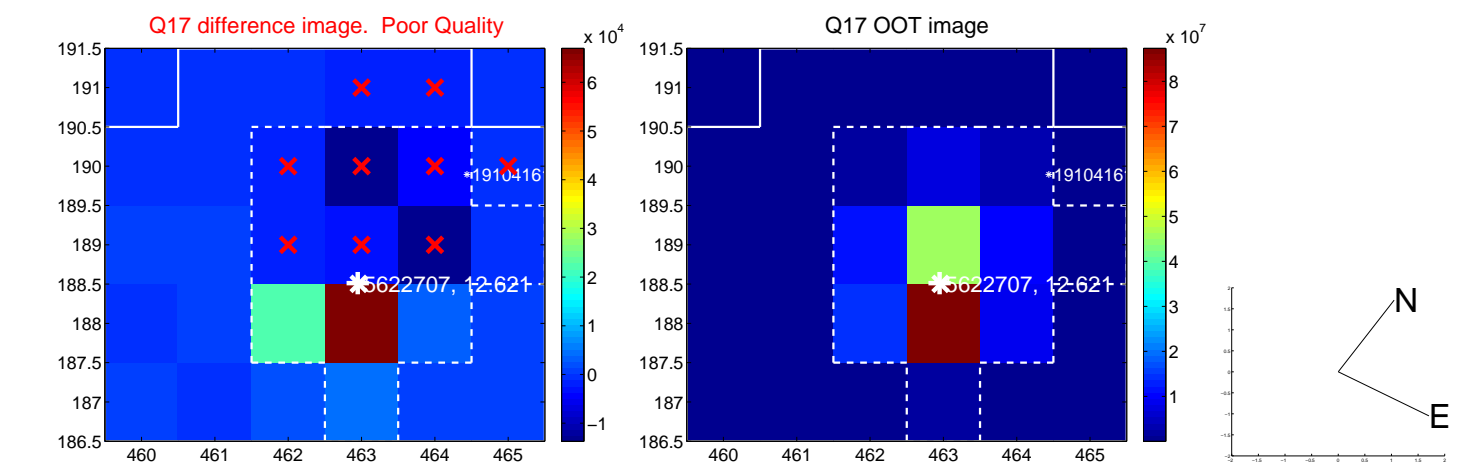
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

