

KIC 008027456

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})
008027456-01	OBS	No	0.564924	131.703178	16.7	1.249	10.7	12.2	3.38	8951	1.60	197664.65
008027456-02	OBS	No	0.706134	131.853557	16.2	1.596	9.1	10.1	3.38	8951	1.57	146802.15

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008027456-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
008027456-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED

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

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

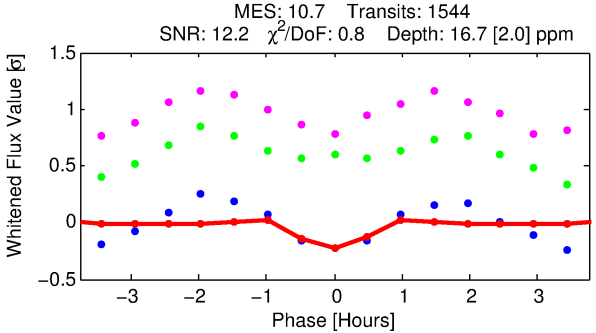
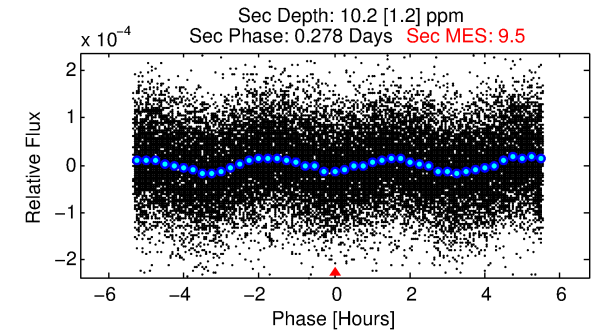
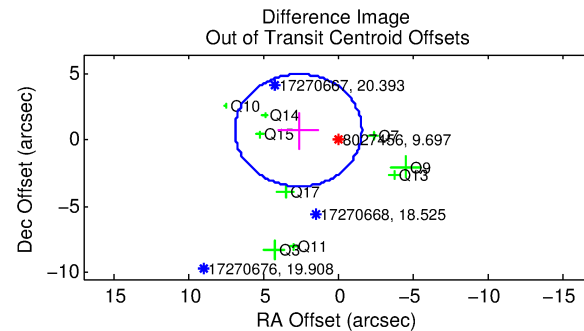
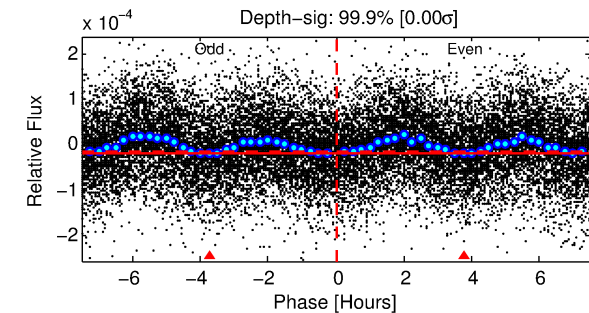
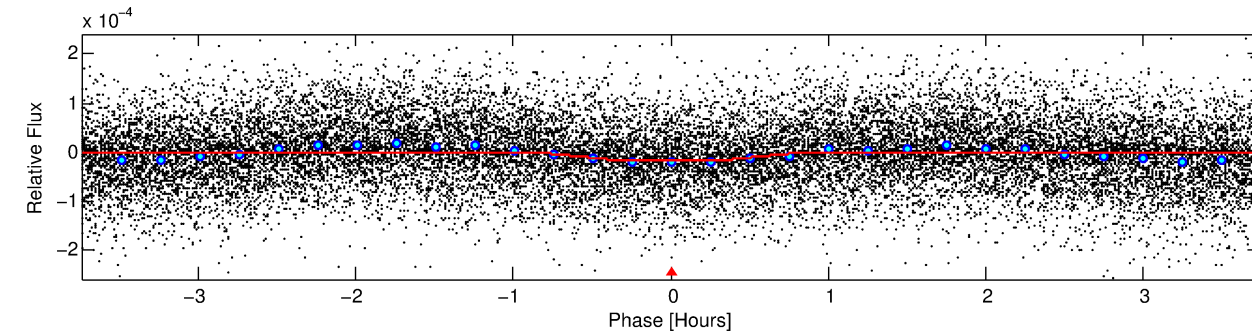
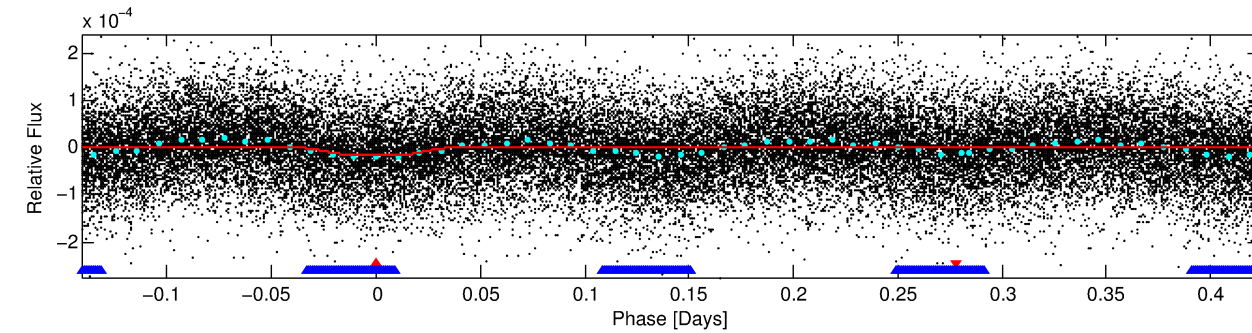
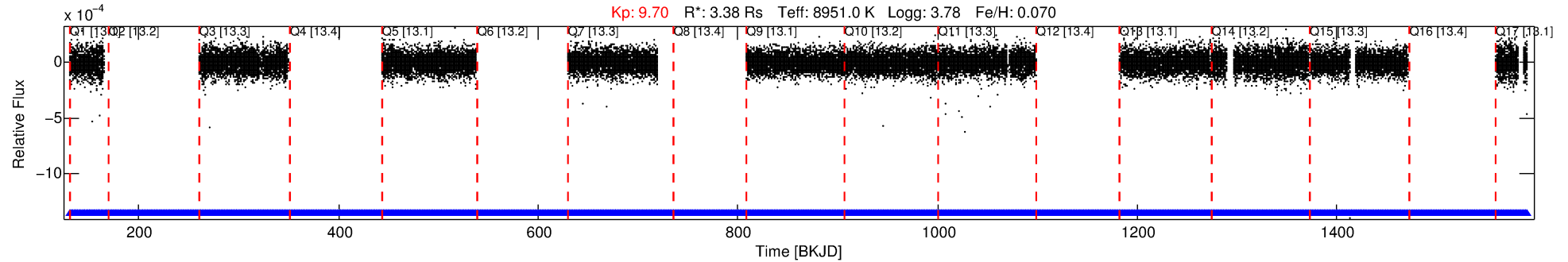
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008027456-01

No Significant Match Found

DV One-Page Summary

KIC: 8027456 Candidate: 1 of 2 Period: 0.565 d



DV Fit Results:

Period = 0.56492 [0.00001] d
Epoch = 131.7032 [0.0014] BKJD
Rp/R* = 0.0043 [0.0005]
a/R* = 1.80 [0.80]
b = 0.90 [0.14]
Seff = 197664.65 [123401.72]
Teq = 5377 [839] K
Rp = 1.60 [0.67] Re
a = 0.0182 [0.0069] AU
Ag = 0.73 [0.47] [-0.58σ]
Teffp = 7681 [597] K [2.24σ]

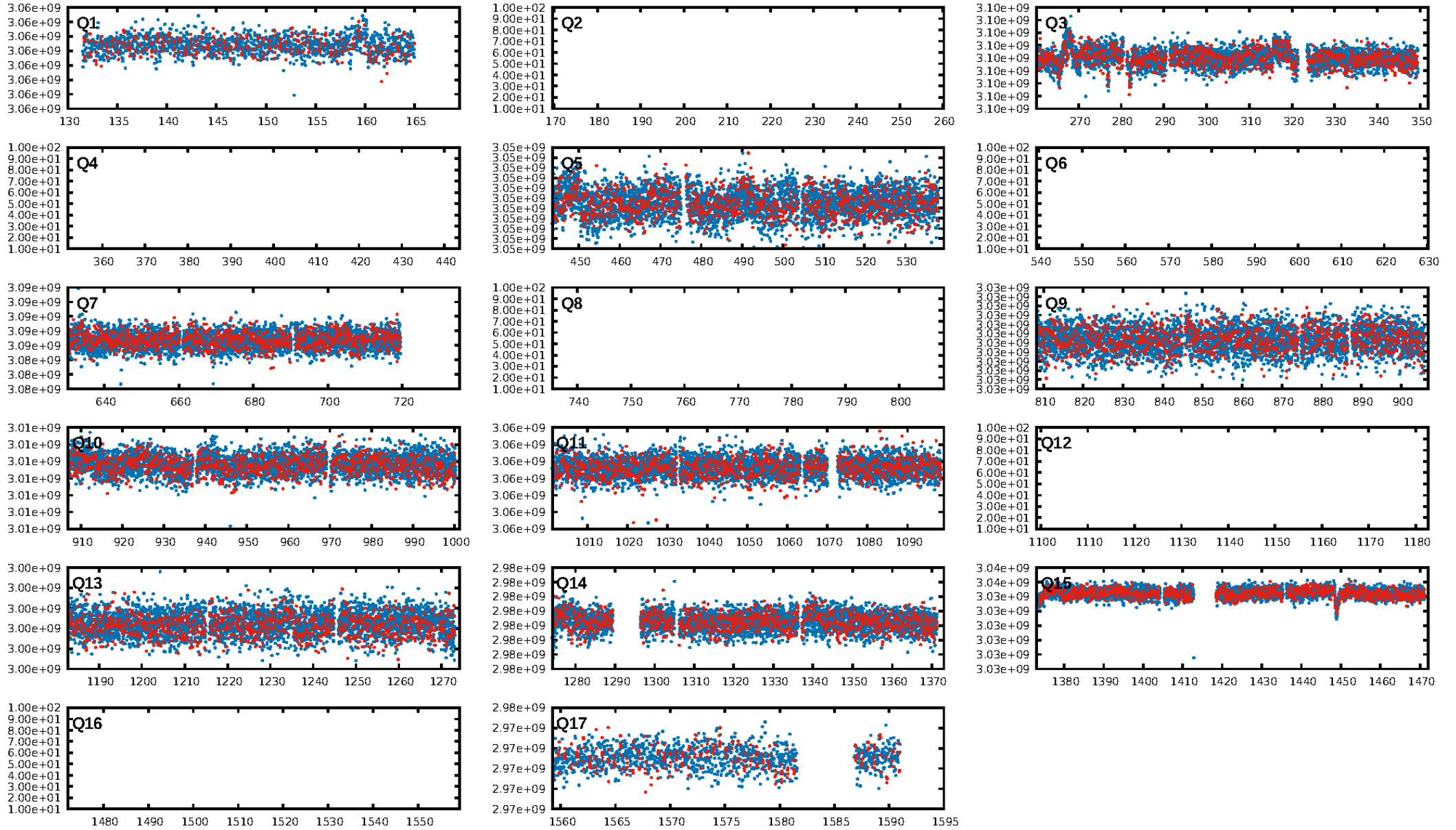
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 90.5% [1.67σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 1.73e-18
RollingBand-fgt: 1.00 [1437/1437]
GhostDiagnostic-chr: N/A
Centroid-sig: 17.5%
Centroid-so: 0.477 arcsec [0.66σ]
OotOffset-rm: 2.722 arcsec [1.92σ]
OotOffset-st: 2/4/0/3 [9]
KicOffset-rm: 2.500 arcsec [1.73σ]
KicOffset-st: 2/4/0/3 [9]
DiffImageQuality-fgm: 0.11 [1/9]
DiffImageOverlap-fno: 1.00 [11/11]

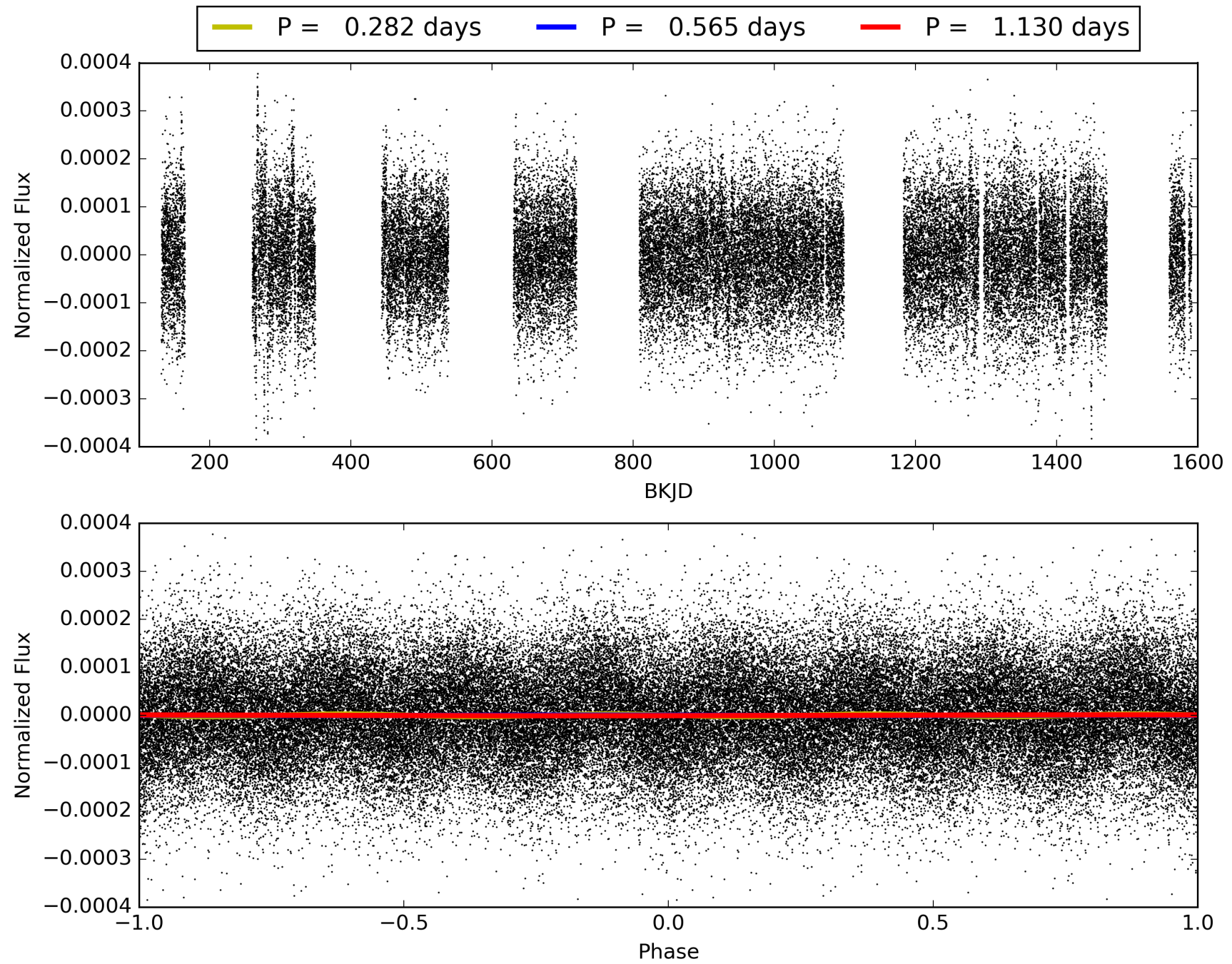
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 23:50:03 Z

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

TCE 008027456-01, PDC Light Curves

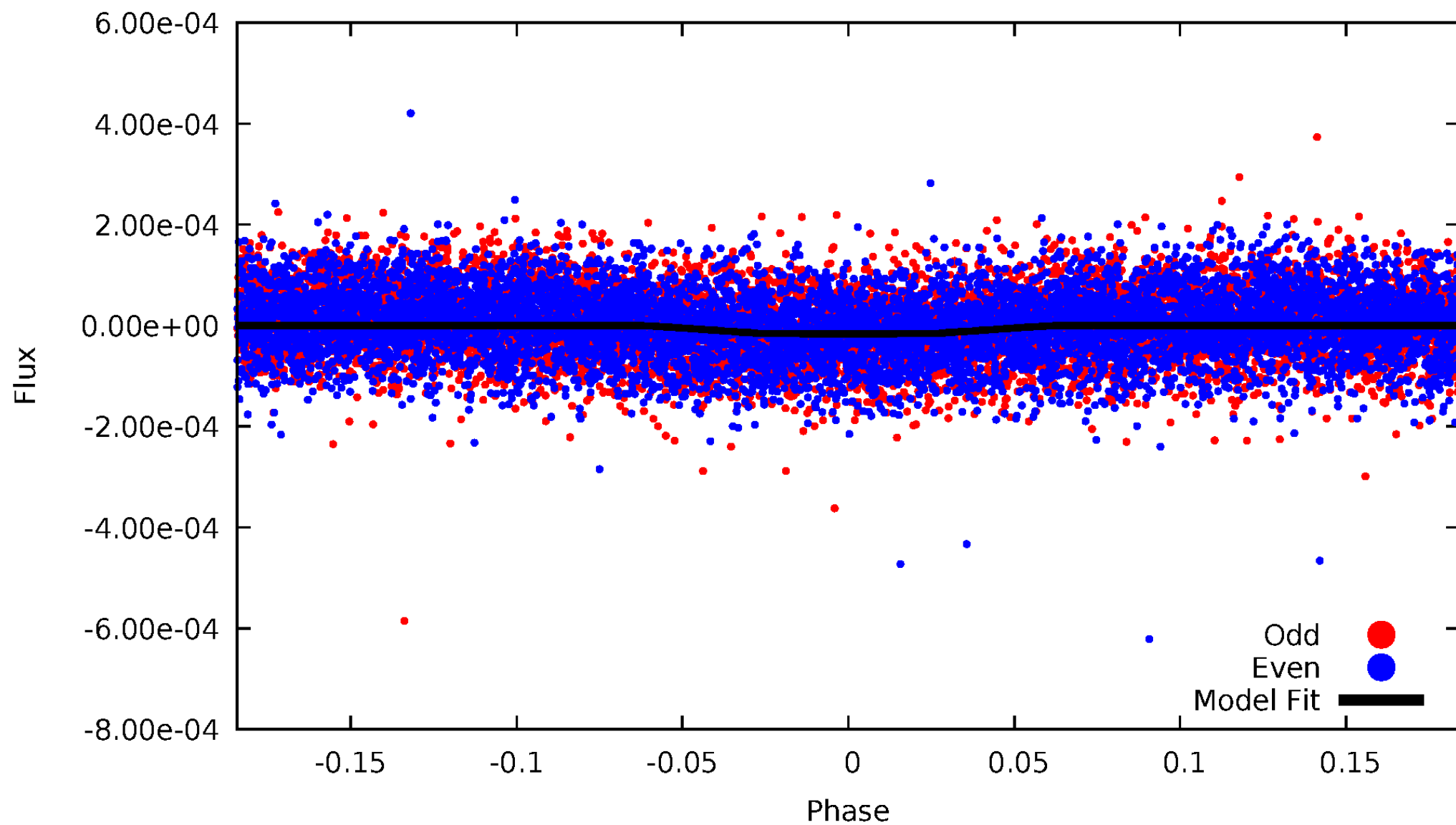


TCE 008027456-01



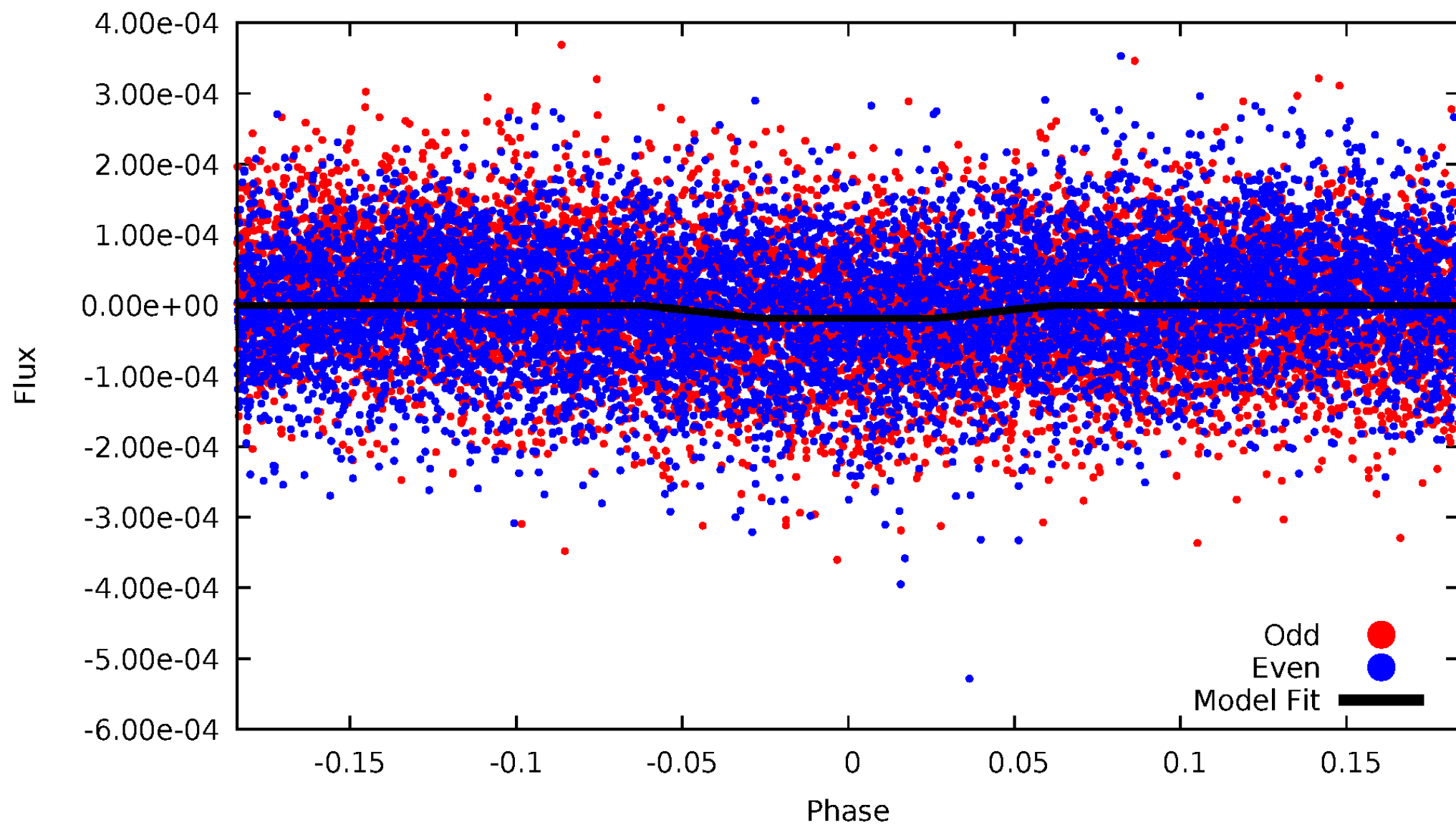
DV Odd/Even

TCE 008027456-01

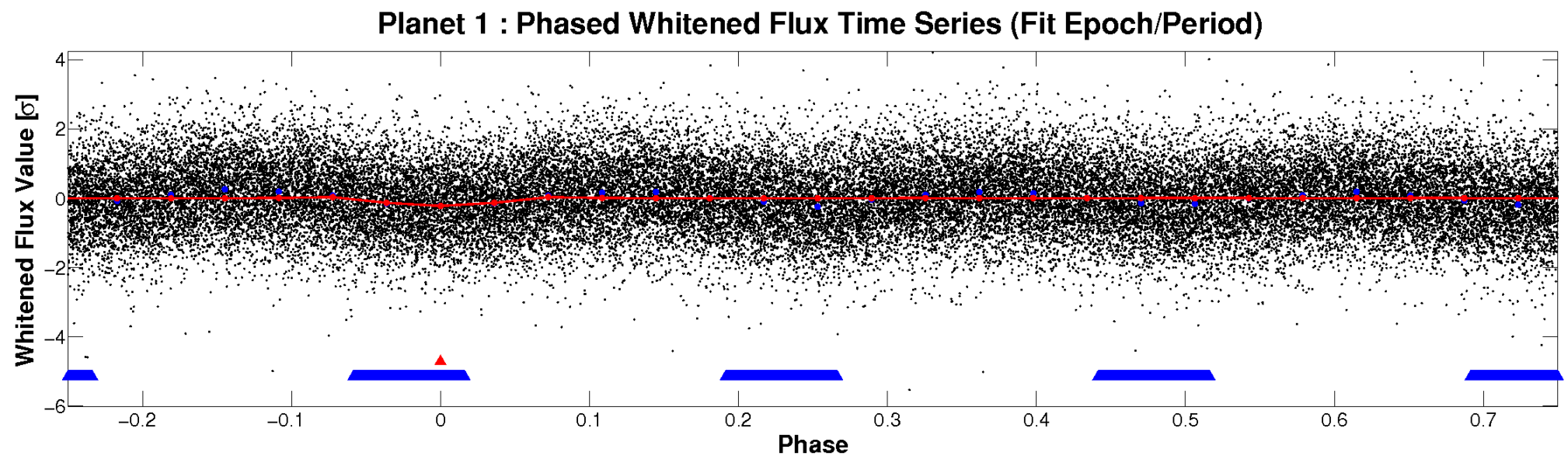
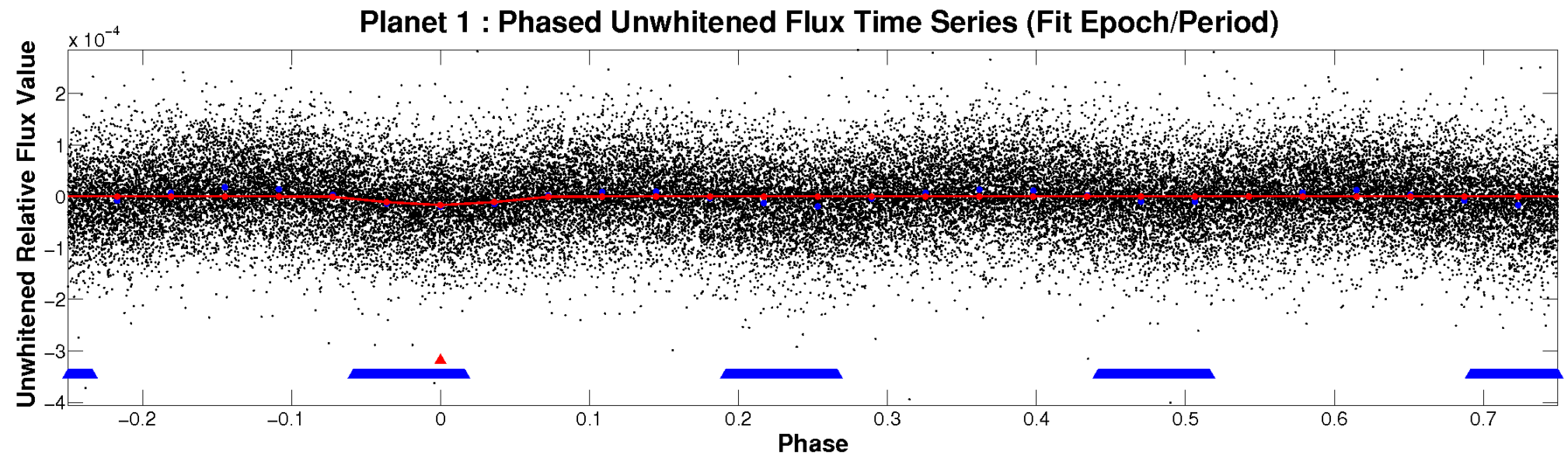


ALT Odd/Even

TCE 008027456-01

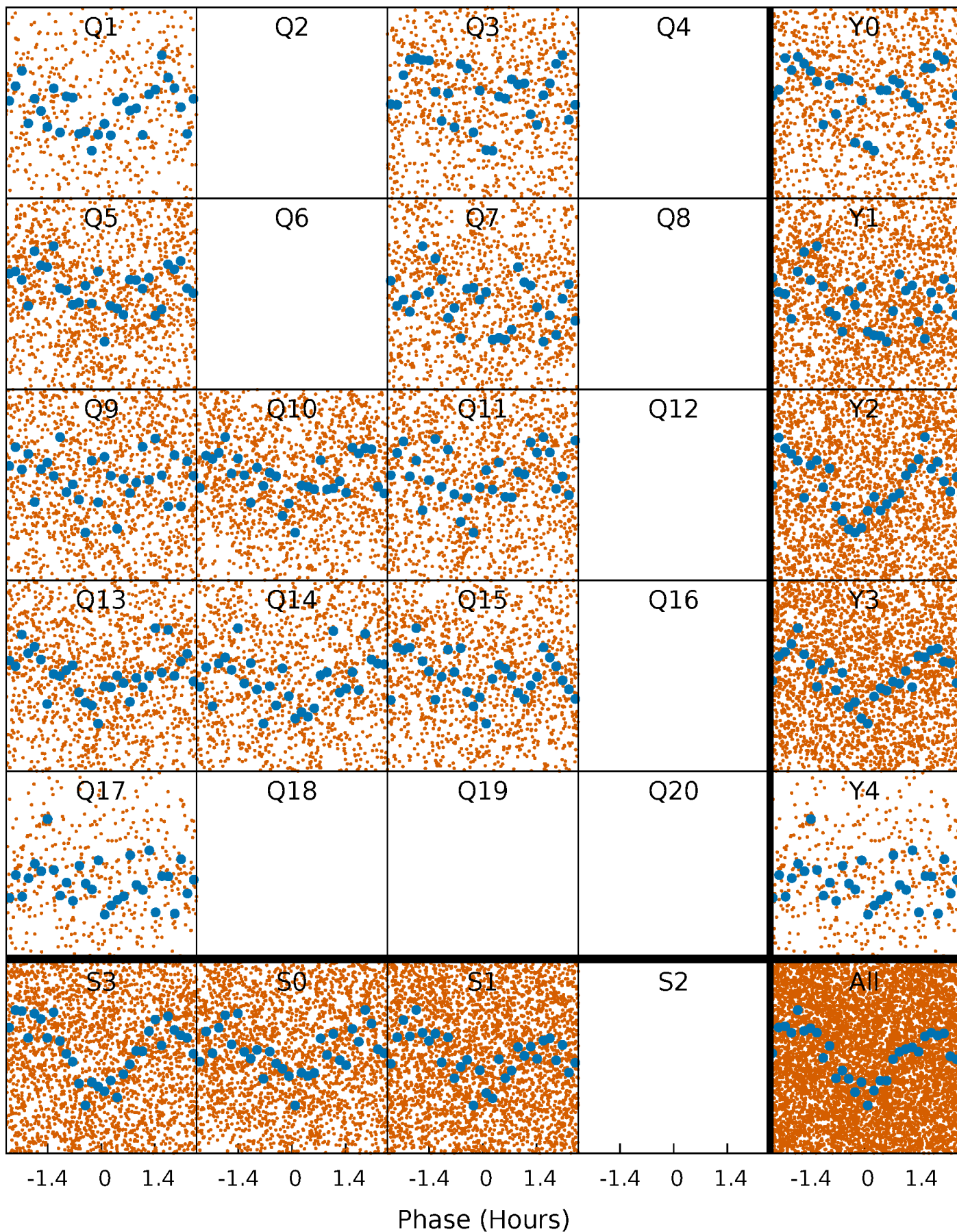


Non-Whitened Vs. Whitened Light Curve



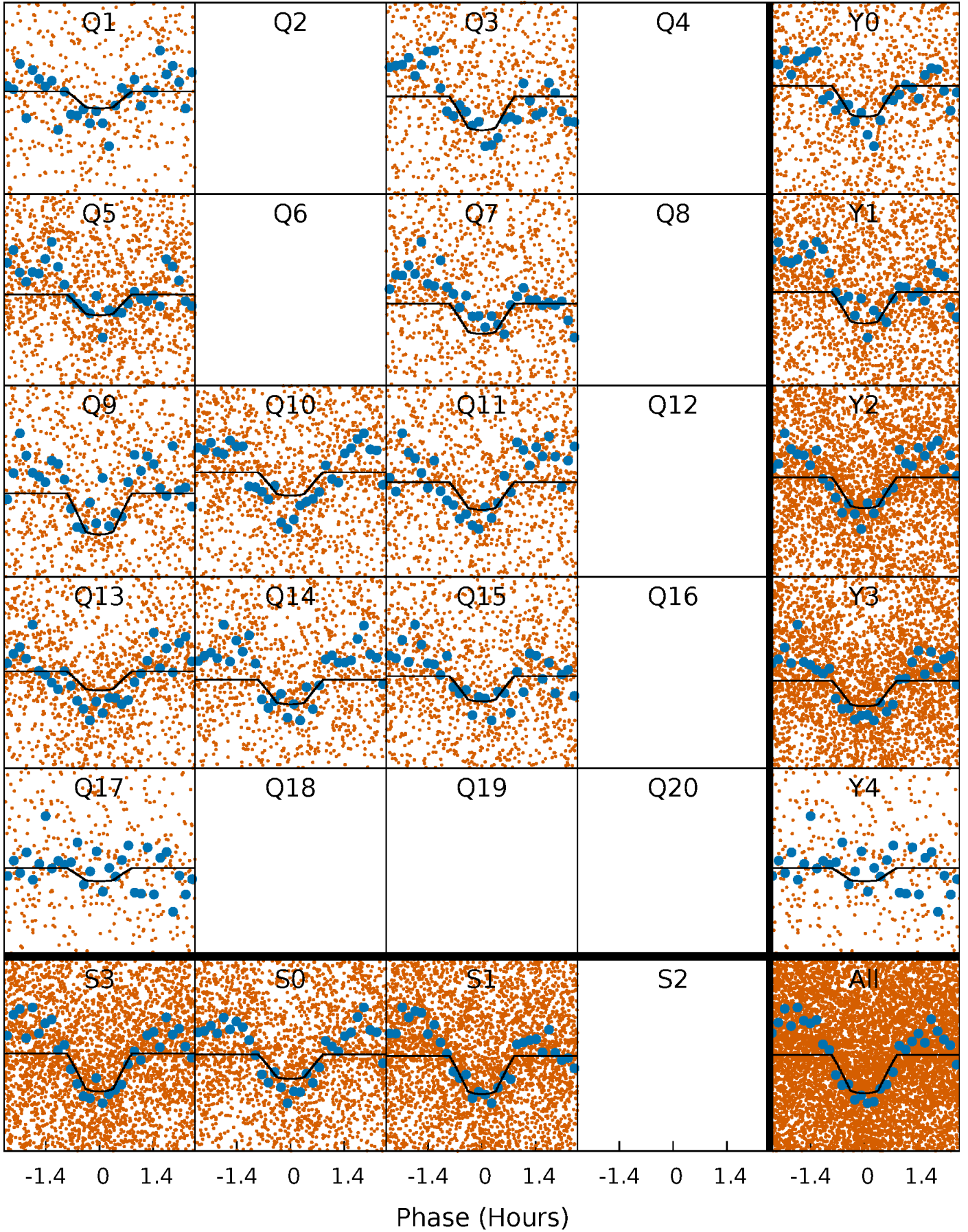
PDC Quarter-Phased Transit Curves

TCE 008027456-01 P= 0.564924 Days $T_0=131.703178$ (BKJD)



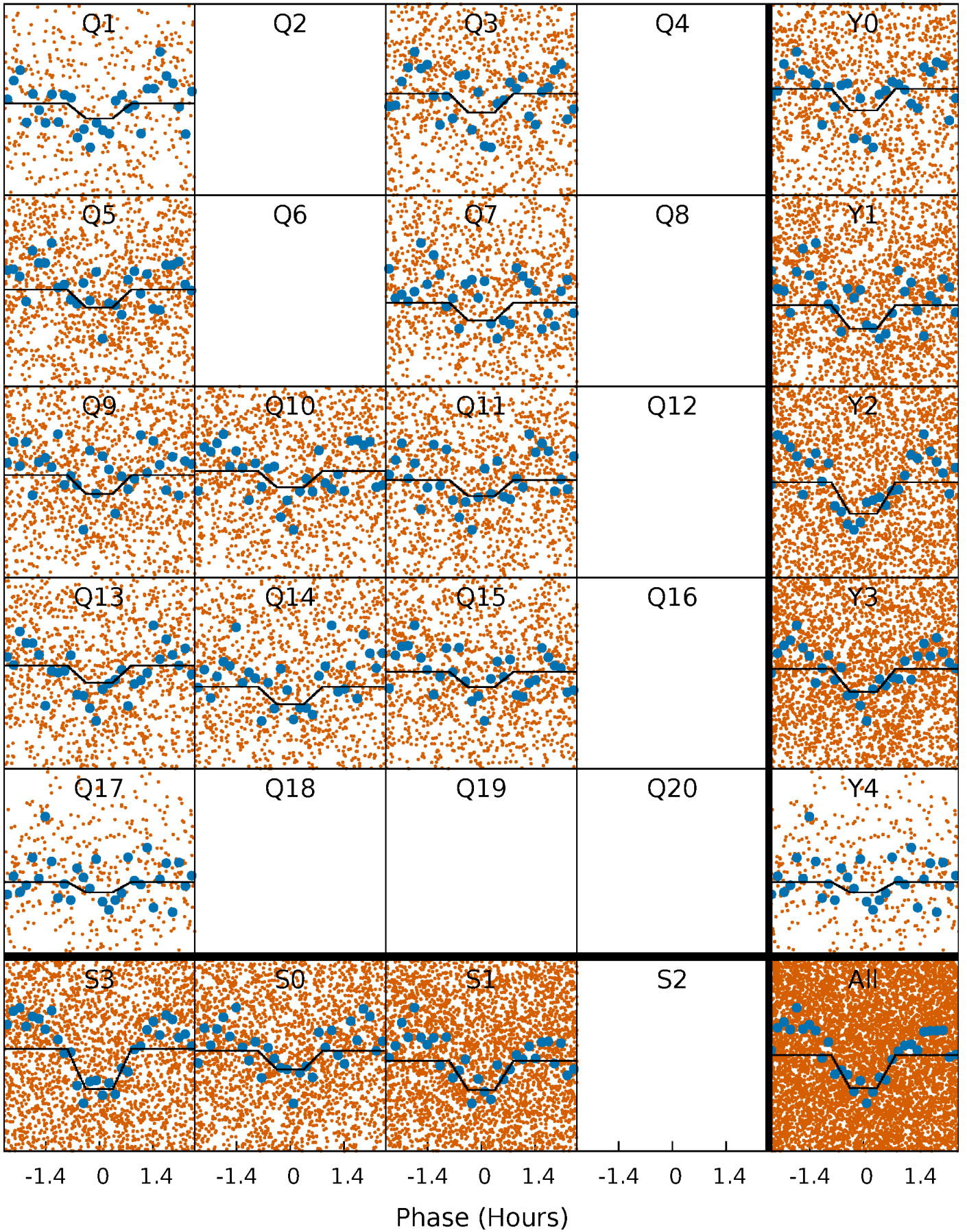
DV Quarter-Phased Transit Curves

TCE 008027456-01 P= 0.564924 Days $T_0=131.703178$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

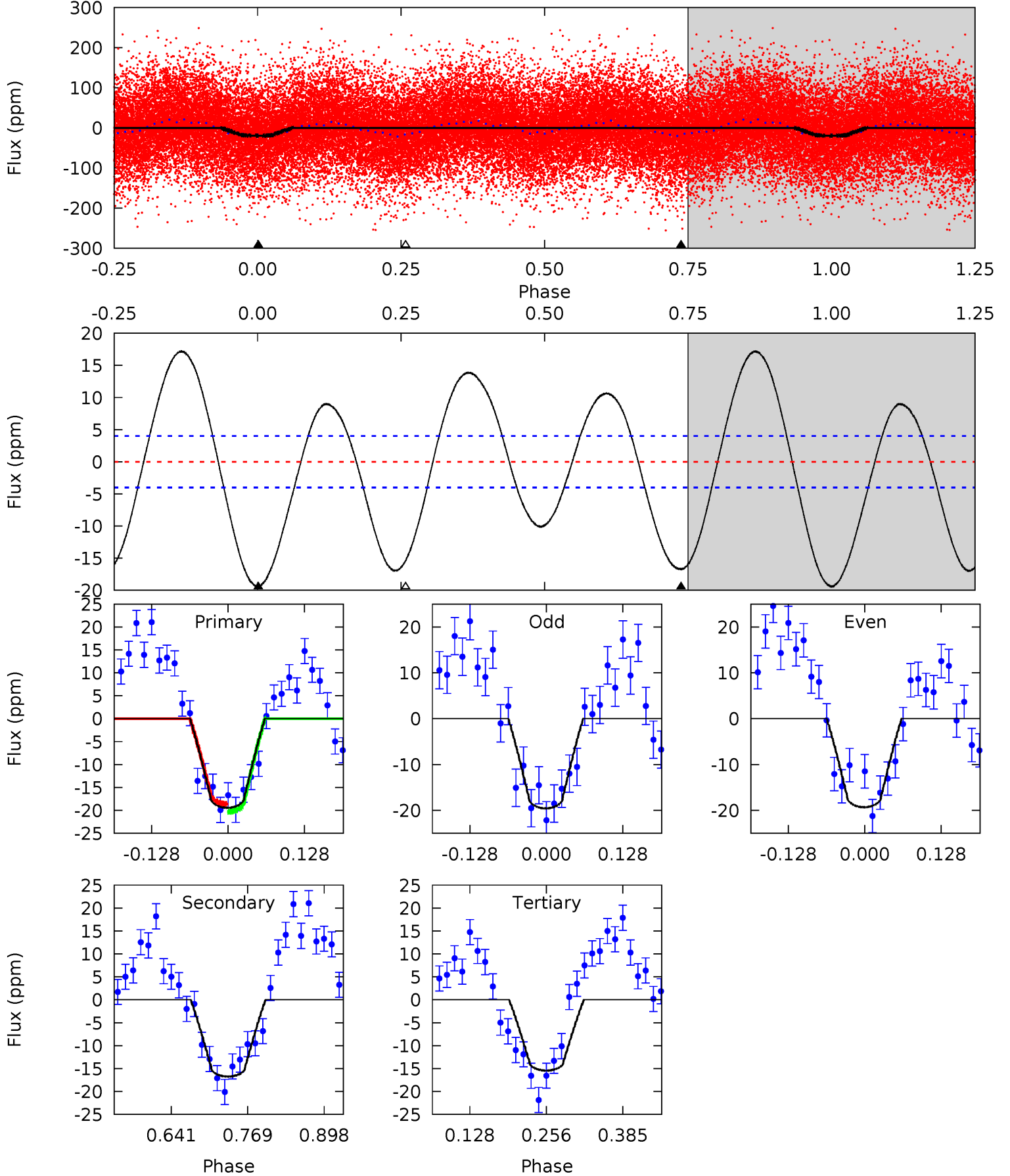
TCE 008027456-01 P= 0.564923 Days $T_0=131.703177$ (BKJD)



DV Model-Shift Uniqueness Test

008027456-01, P = 0.564924 Days, E = 131.138254 Days

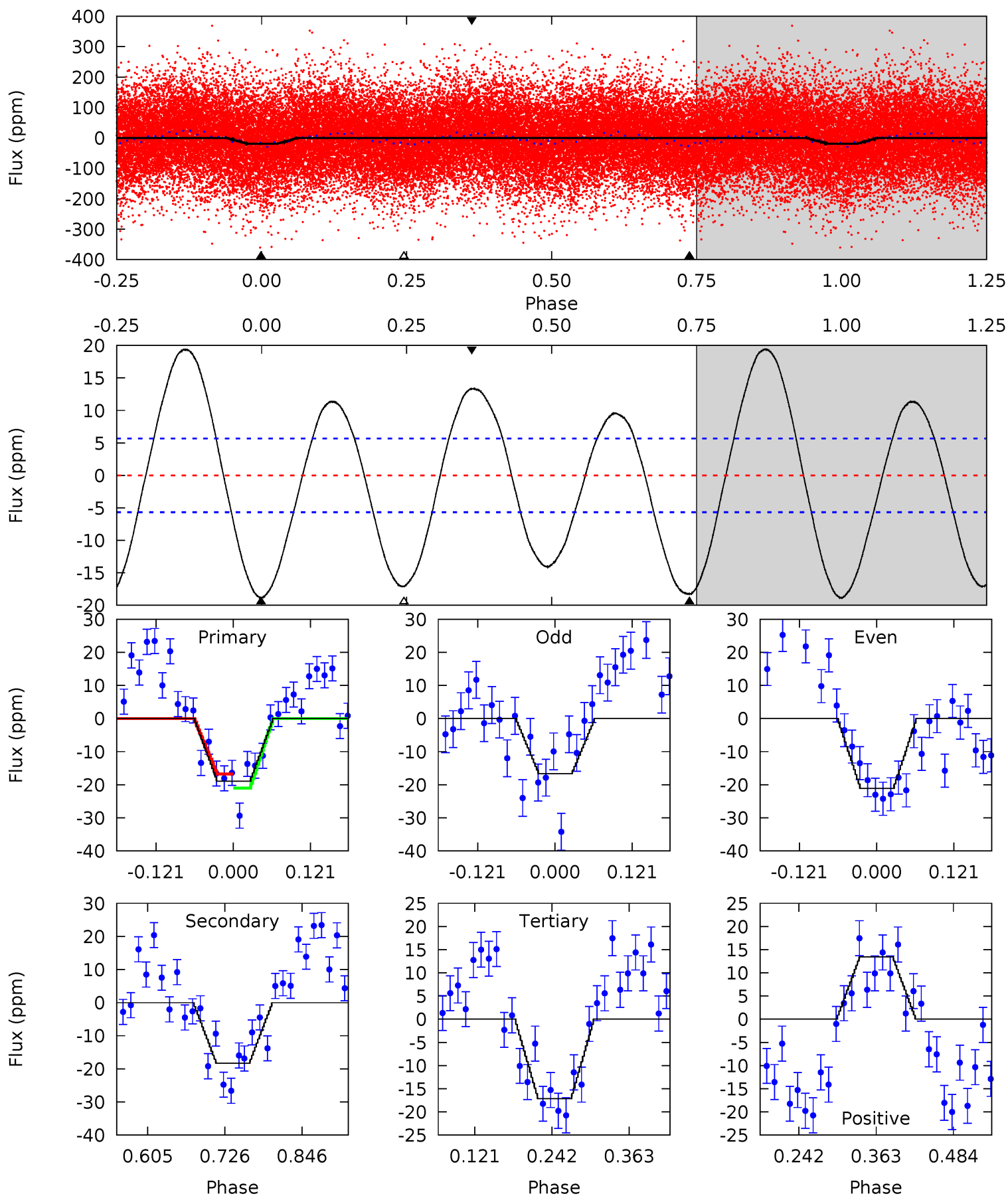
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
21.9	18.9	17.4	0	4.51	1.52	10.8	4.51	21.9	1.47	18.9	0.14	1.06	0.47	0.93



Alt Model-Shift Uniqueness Test

008027456-01, P = 0.564923 Days, E = 131.138254 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
15.1	14.6	13.7	10.7	4.52	1.55	8.37	1.41	4.38	0.93	3.91	1.76	1.15	0.51	1.68



Stellar Parameters For KIC 008027456

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$
	8951^{+283}_{-425}	$3.784^{+0.345}_{-0.186}$	$0.070^{+0.250}_{-0.550}$	$3.383^{+1.123}_{-1.373}$	$2.535^{+0.335}_{-0.781}$	$0.092^{+0.281}_{-0.045}$
	+3%/-5%	+9%/-5%	+357%/-786%	+33%/-41%	+13%/-31%	+305%/-49%
Source	KIC0	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 008027456-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-17 ± 1	$1.52^{+0.38}_{-0.35}$	7323^{+683}_{-794}	7819^{+910}_{-714}	$1.307^{+0.757}_{-0.453}$
Alt.	-18 ± 1	$1.55^{+0.38}_{-0.38}$	7422^{+673}_{-854}	8093^{+939}_{-769}	$1.336^{+0.966}_{-0.415}$

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

DV Centroid Data

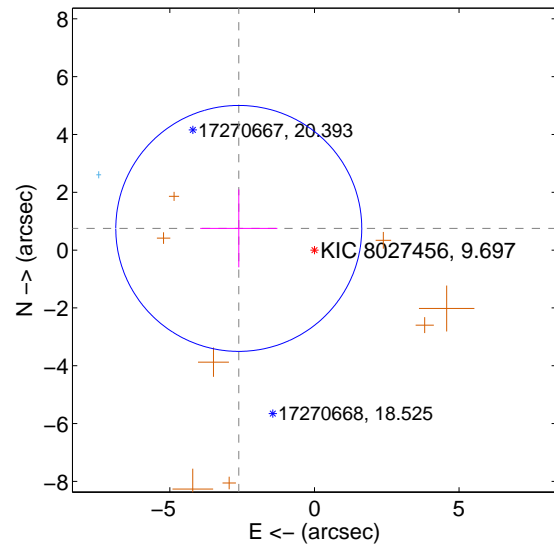
Supplemental centroid analysis for 008027456-01. **Kepler magnitude: 9.70.** Transit SNR 12.21

There are 1 quarters with good PRF difference image offsets

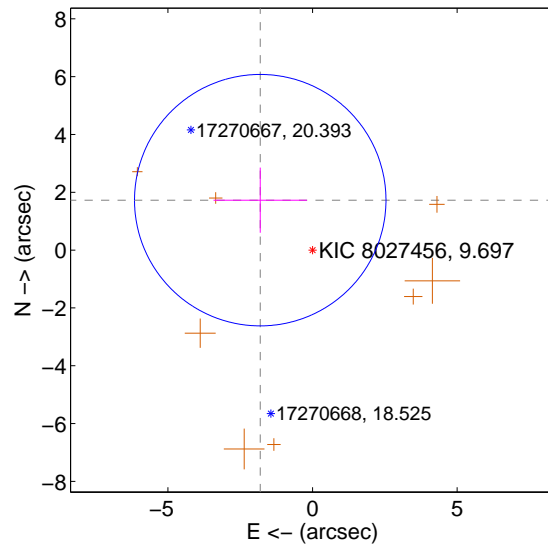
The direct PRF centroid is offset from the target star catalog position by about 1.07 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	2.722 ± 1.418	1.92	2.617 ± 1.336	0.750 ± 1.346
PRF-fit source offset from KIC position	2.500 ± 1.449	1.73	1.808 ± 1.616	1.727 ± 1.126
photometric centroid source offset	0.48 ± 0.72	0.66	-0.18 ± 0.59	-0.44 ± 0.74

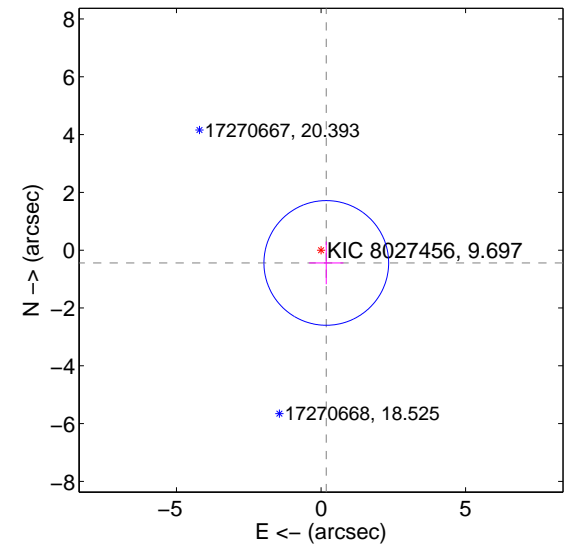
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

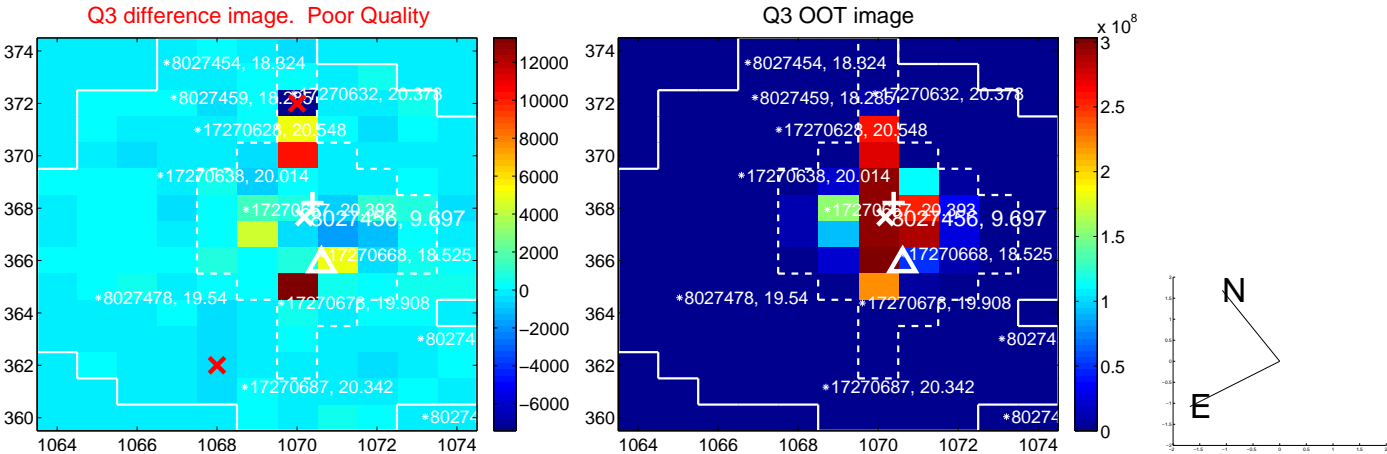
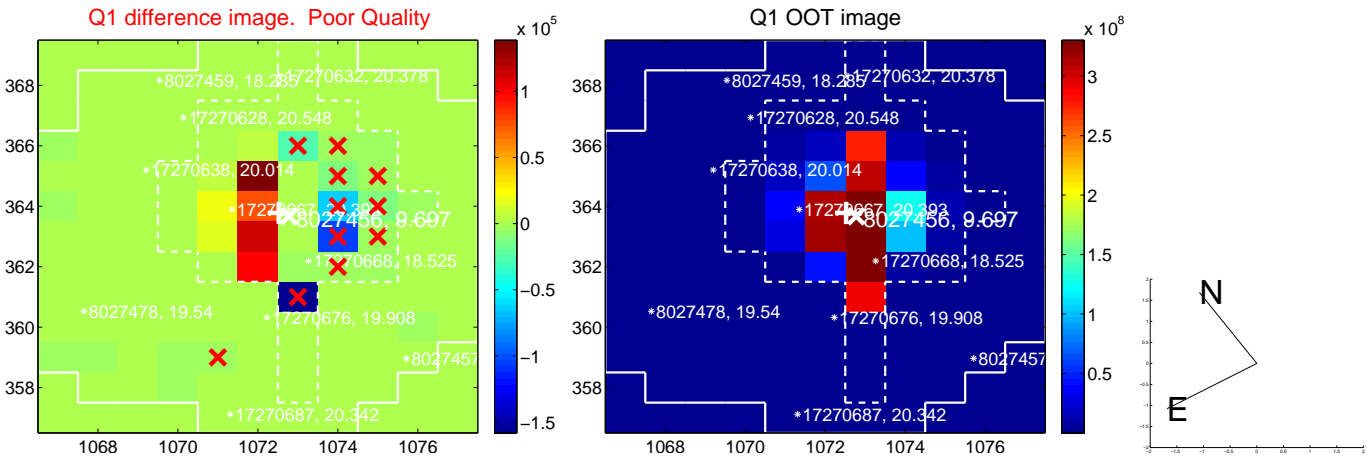


offset from photometric centroids

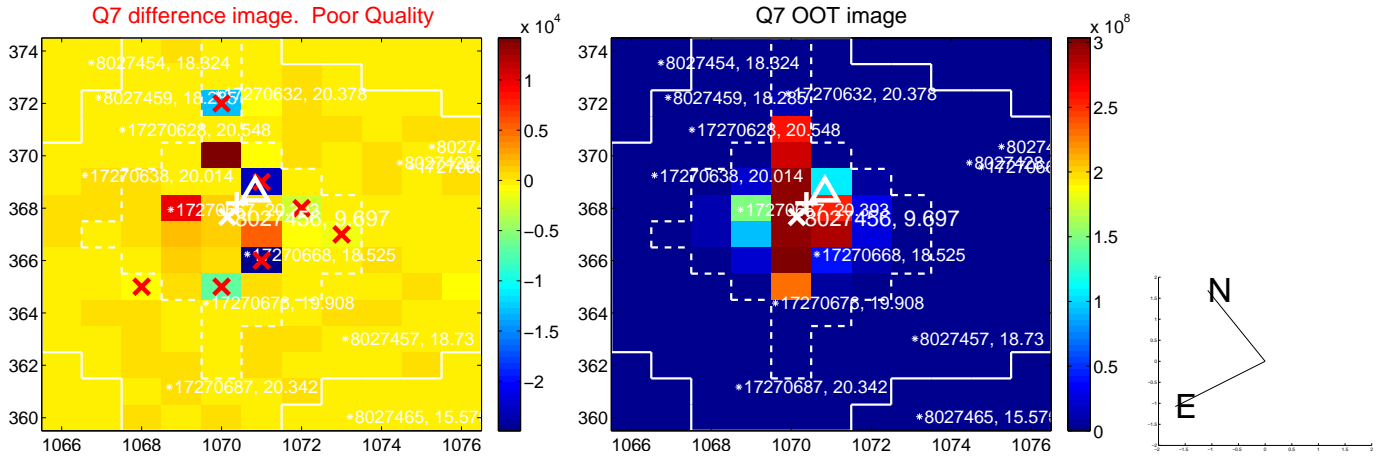
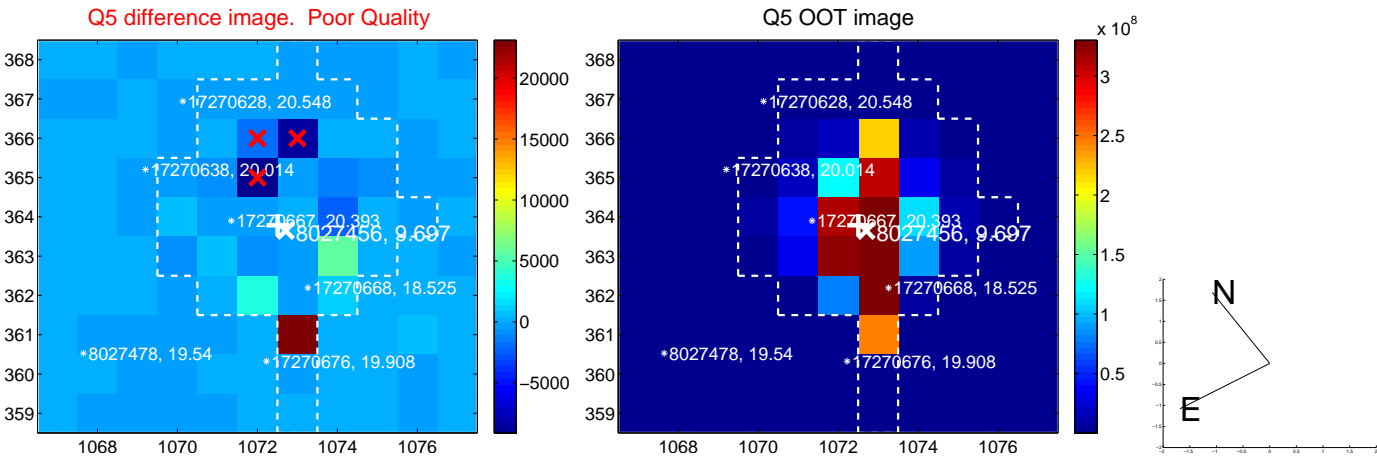


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

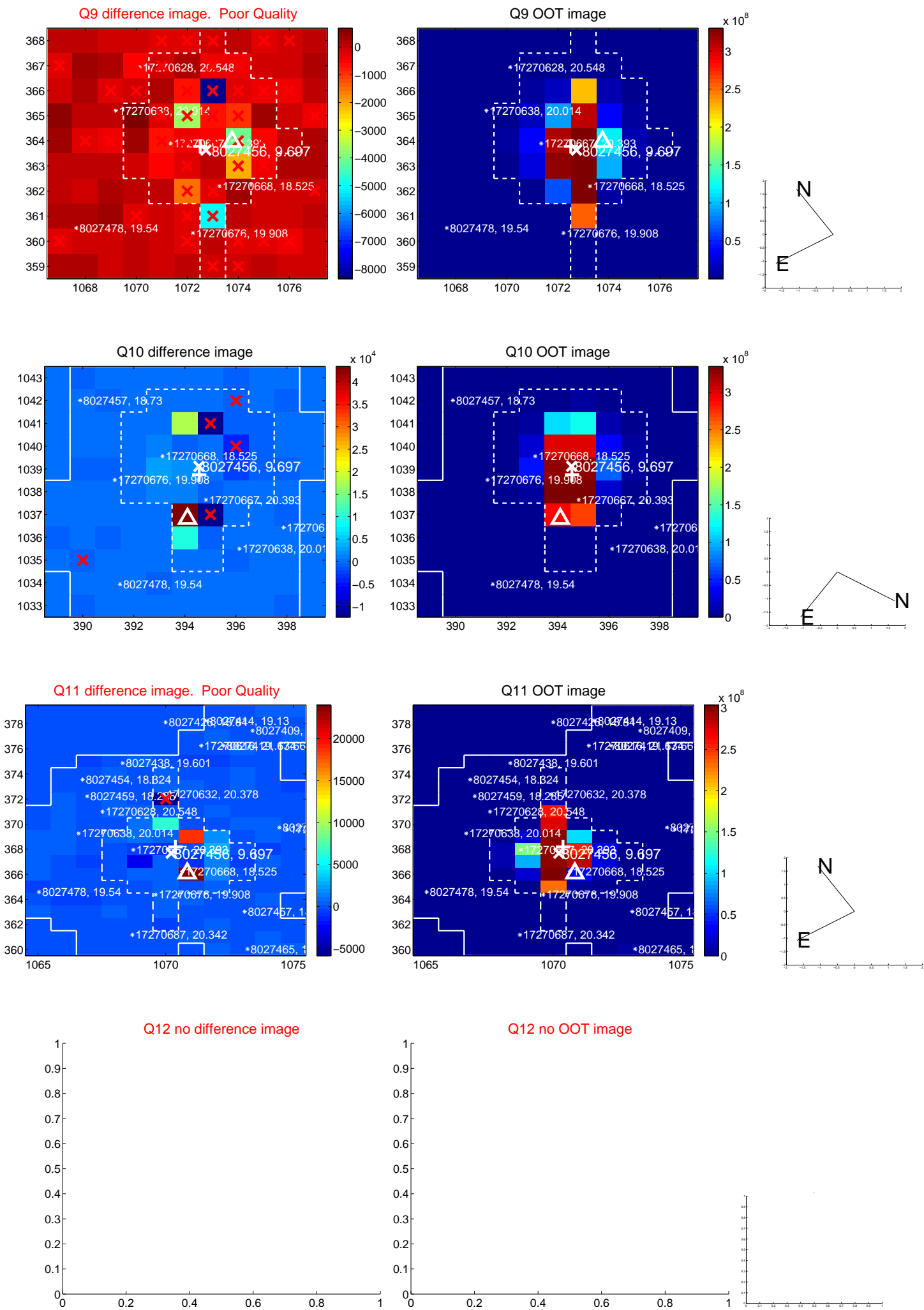
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



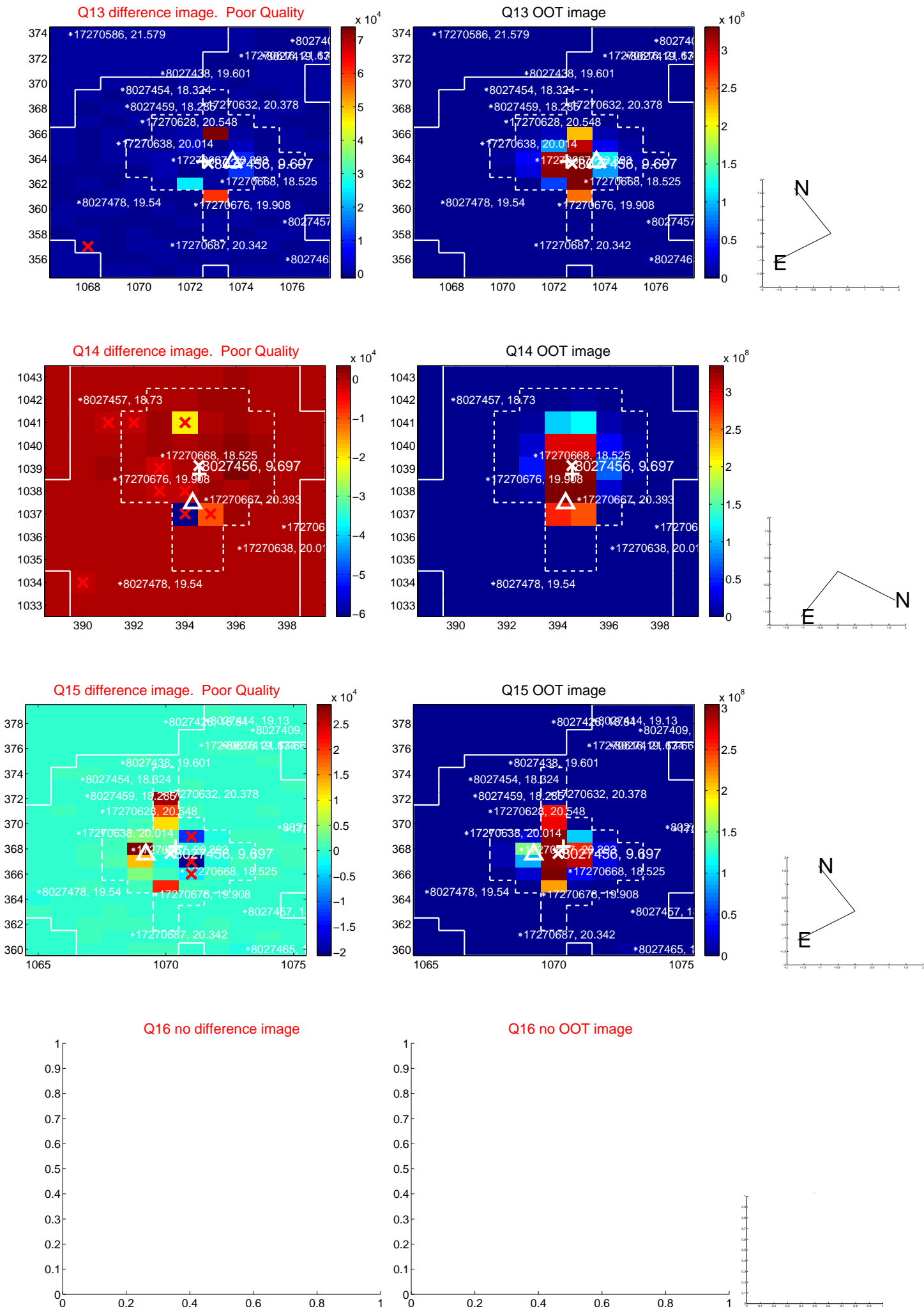
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



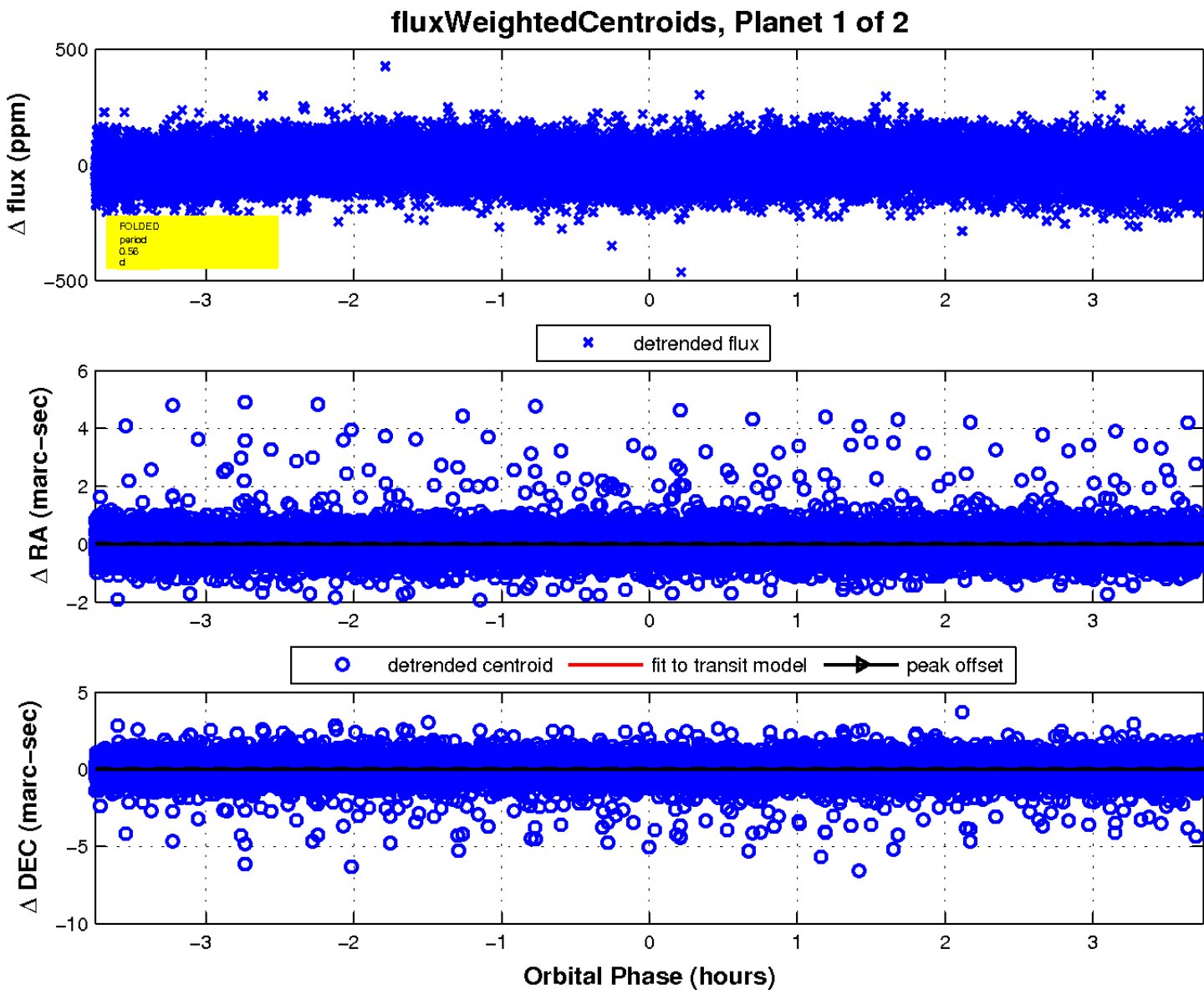
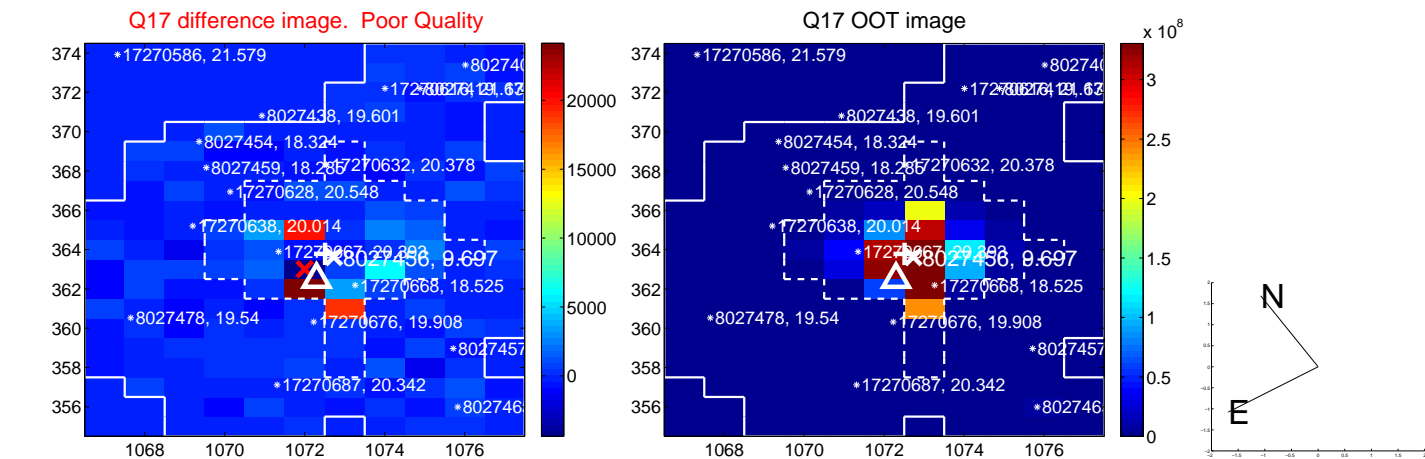
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

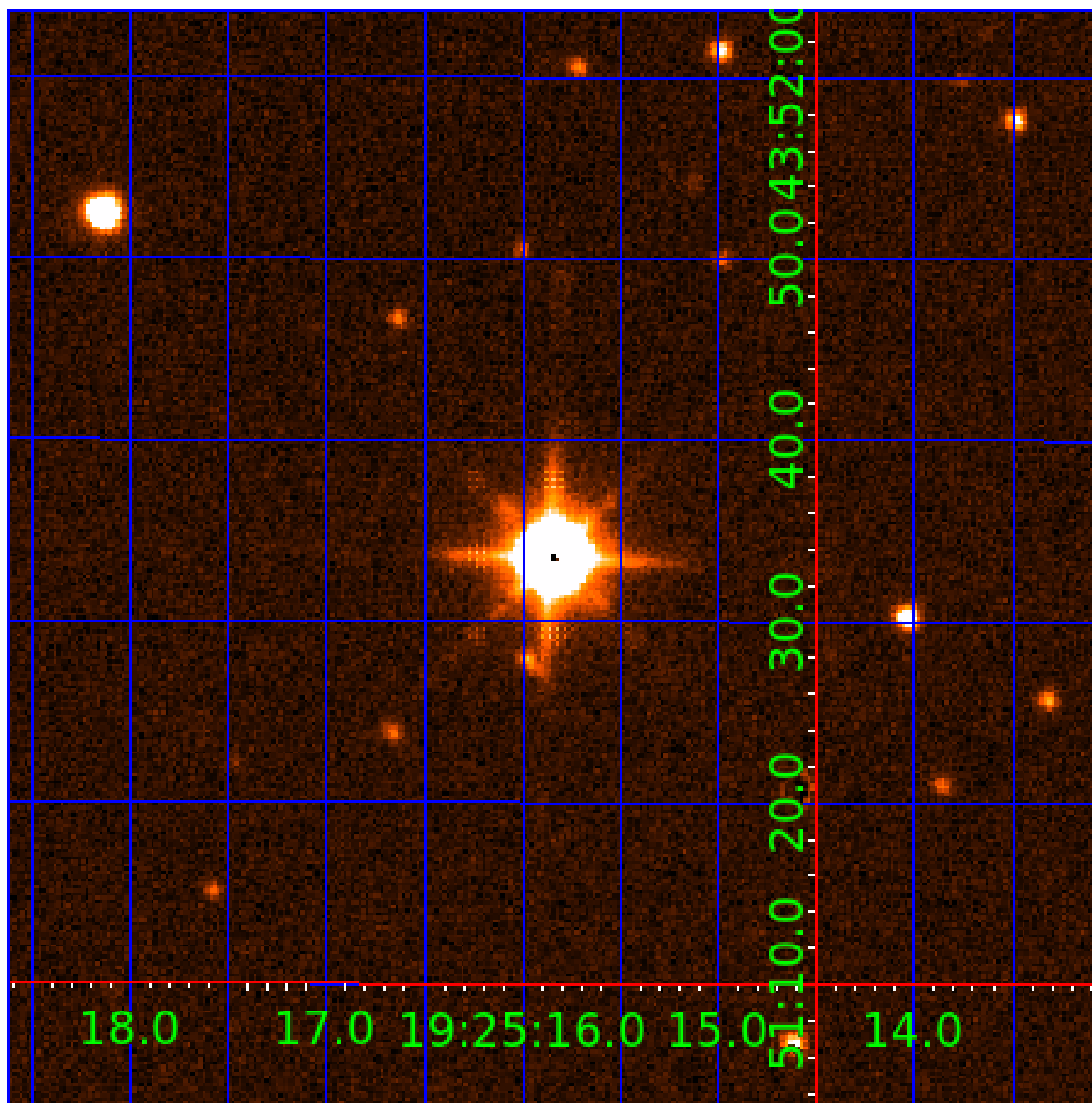


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 008027456

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})
008027456-01	OBS	No	0.564924	131.703178	16.7	1.249	10.7	12.2	3.38	8951	1.60	197664.65
008027456-02	OBS	No	0.706134	131.853557	16.2	1.596	9.1	10.1	3.38	8951	1.57	146802.15

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008027456-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
008027456-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED

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

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

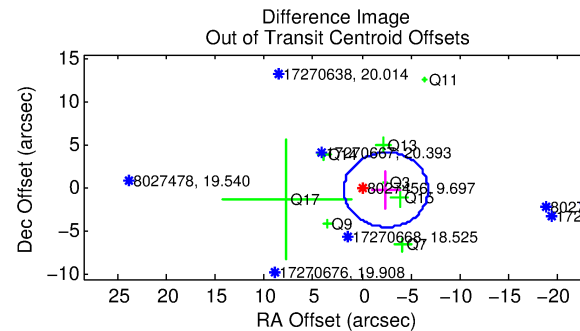
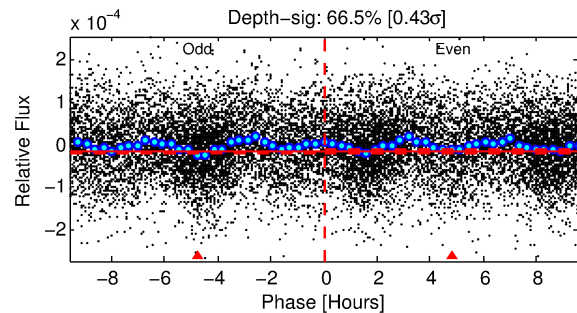
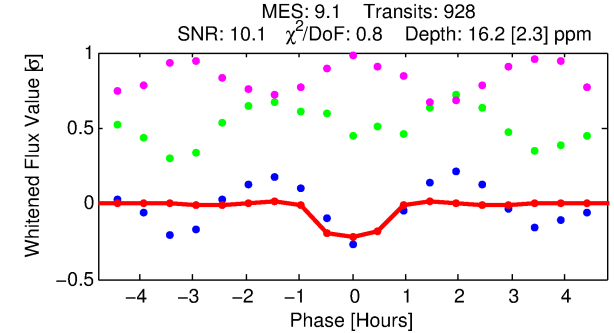
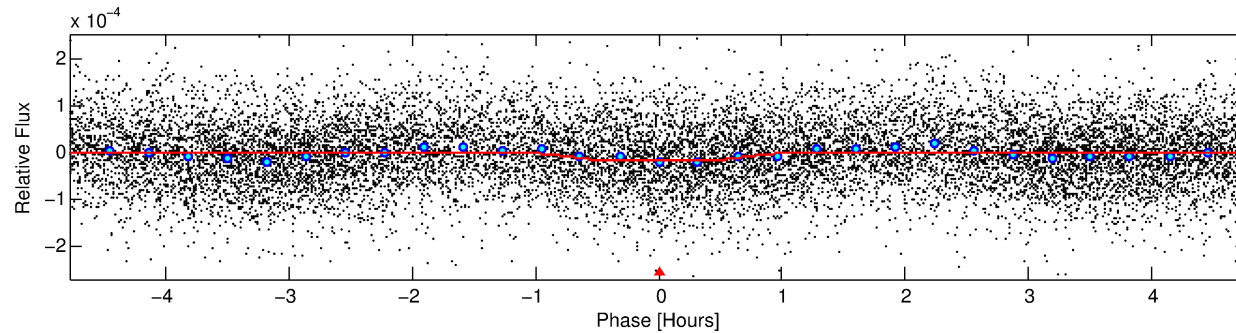
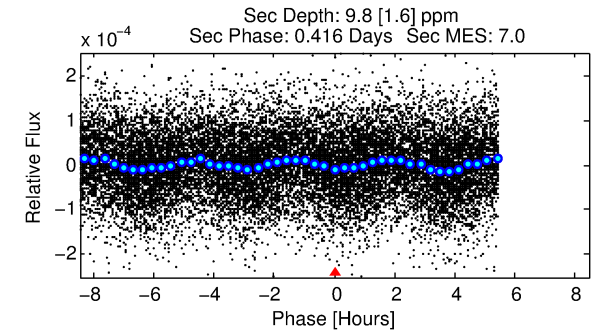
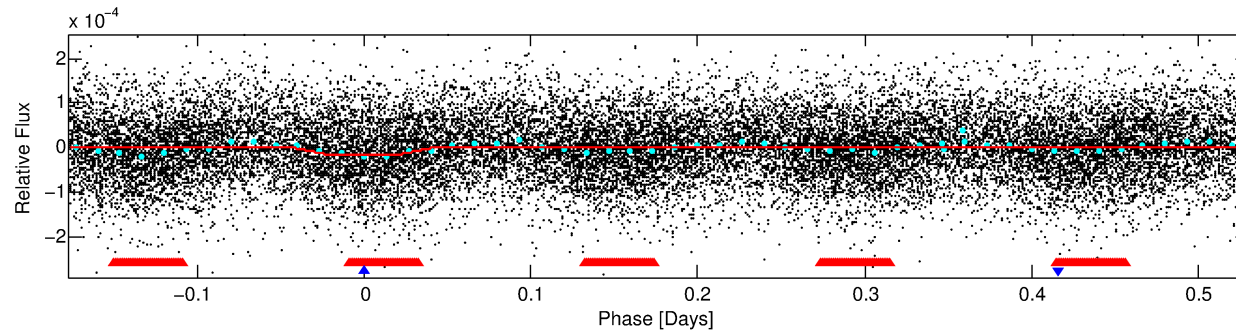
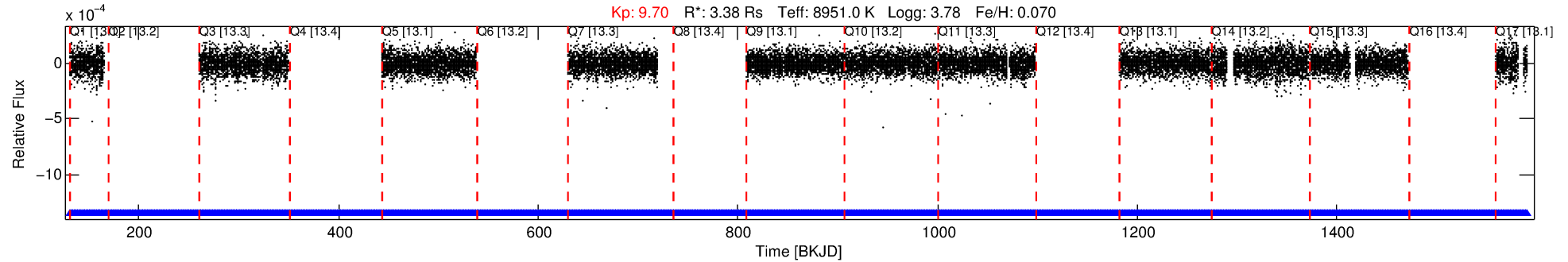
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008027456-02

No Significant Match Found

DV One-Page Summary

KIC: 8027456 Candidate: 2 of 2 Period: 0.706 d



DV Fit Results:

Period = 0.70613 [0.00001] d
Epoch = 131.8536 [0.0022] BKJD
Rp/R* = 0.0043 [0.0006]
a/R* = 1.77 [1.05]
b = 0.90 [0.19]
Seff = 146802.15 [91648.34]
Teff = 4991 [779] K
Rp = 1.57 [0.67] Re
a = 0.0212 [0.0080] AU
Ag = 0.97 [0.66] [-0.04σ]
Teffp = 7667 [712] K [2.53σ]

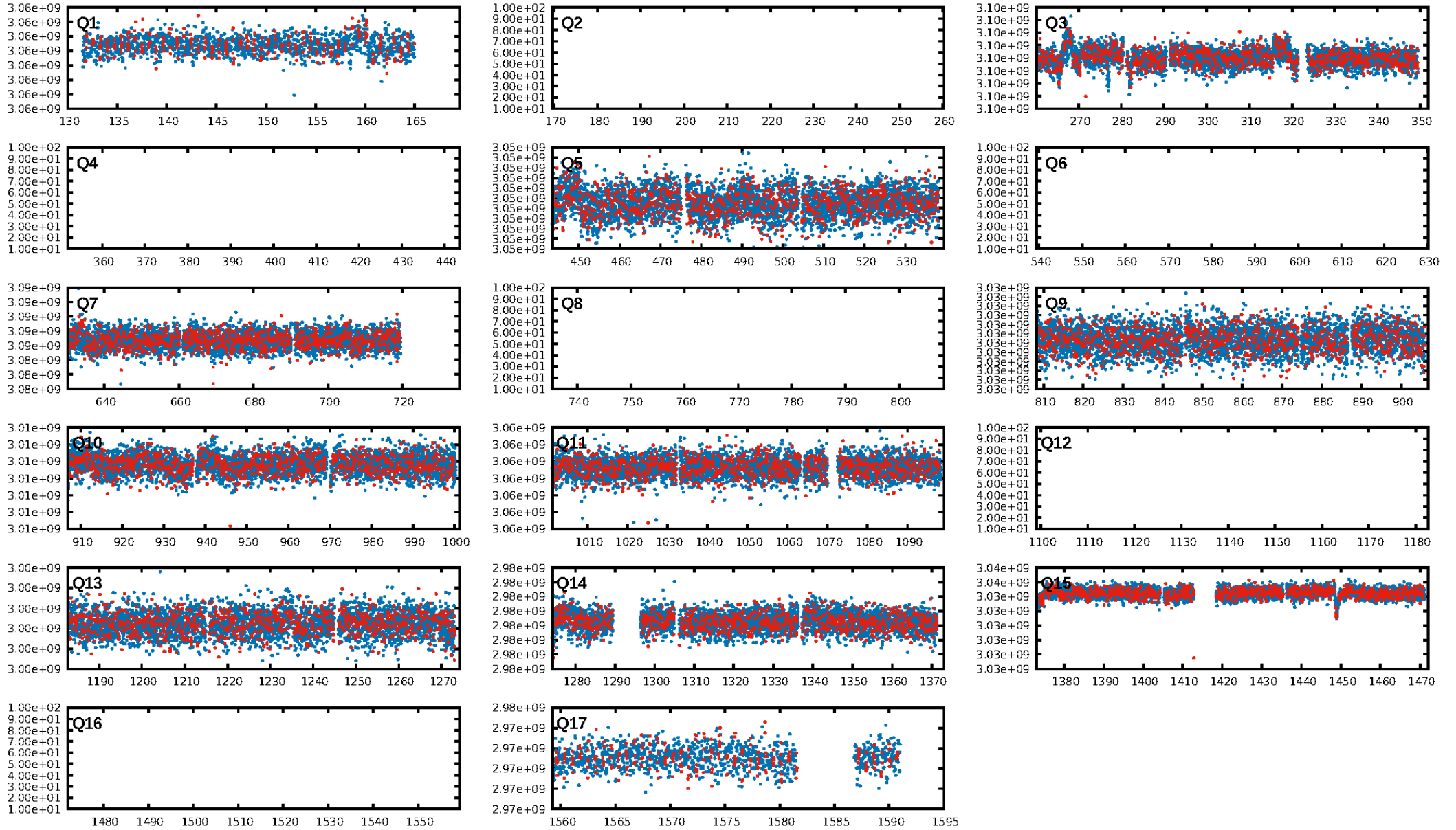
DV Diagnostic Results:

ShortPeriod-sig: 90.5% [1.67σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 1.58e-13
RollingBand-fgt: 1.00 [863/863]
GhostDiagnostic-chr: N/A
Centroid-sig: 38.3%
Centroid-so: 0.798 arcsec [1.05σ]
OotOffset-rm: 2.441 arcsec [1.70σ]
KicOffset-rm: 4.113 arcsec [1.92σ]
OotOffset-st: 1/4/0/3 [8]
KicOffset-st: 1/4/0/3 [8]
DiffImageQuality-fgm: 0.00 [0/8]
DiffImageOverlap-fno: 0.91 [10/11]

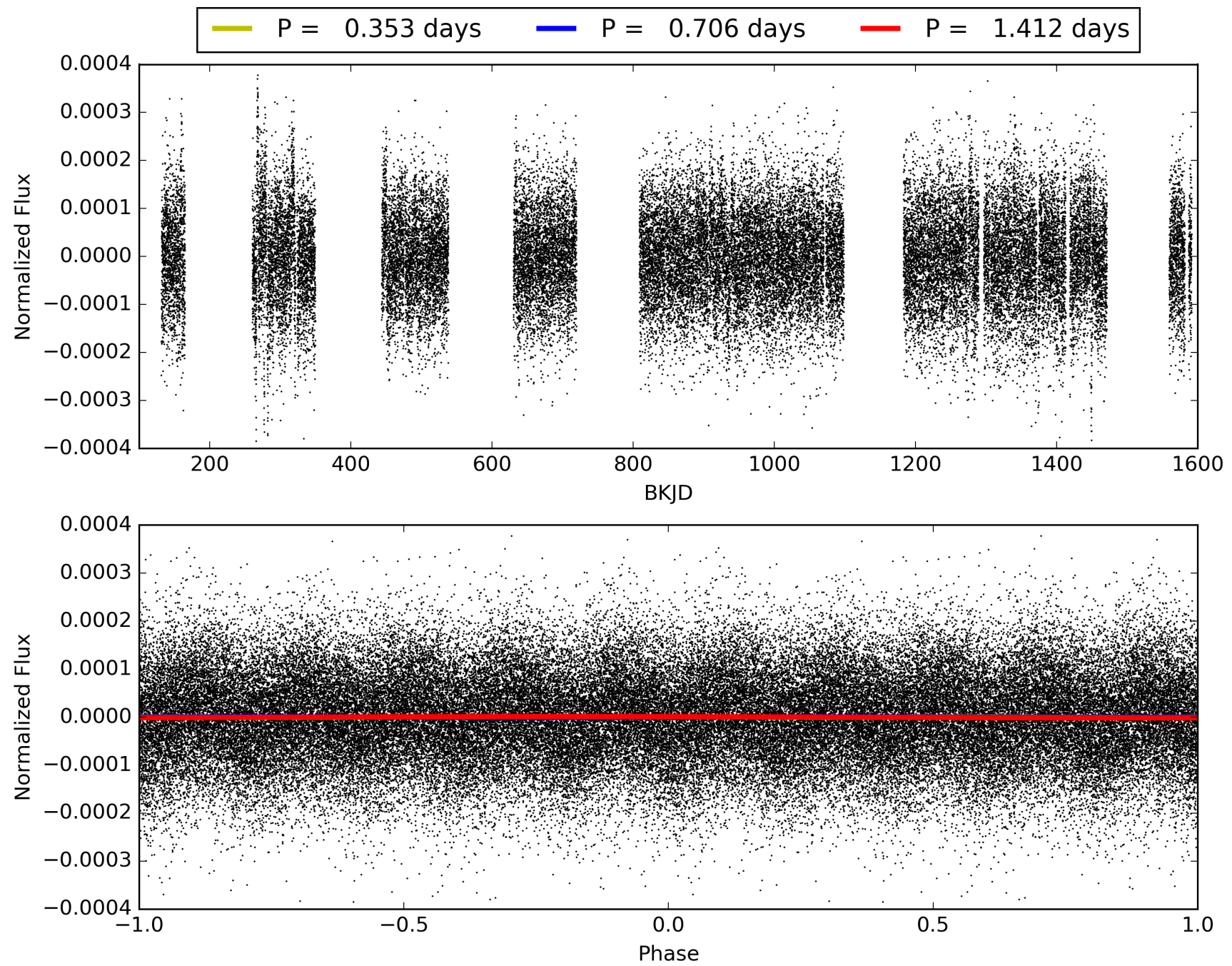
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 23:50:11 Z

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

TCE 008027456-02, PDC Light Curves

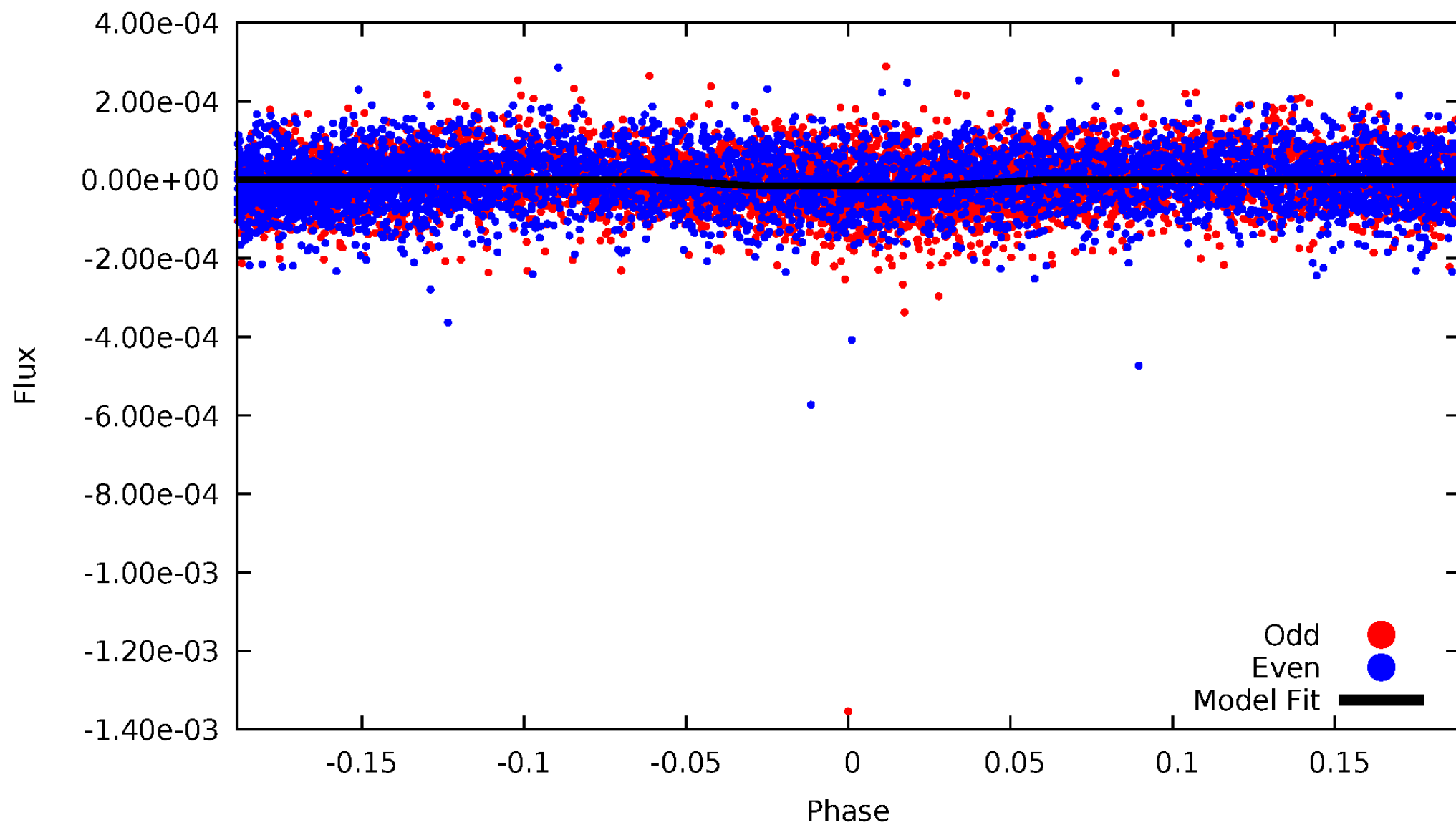


TCE 008027456-02



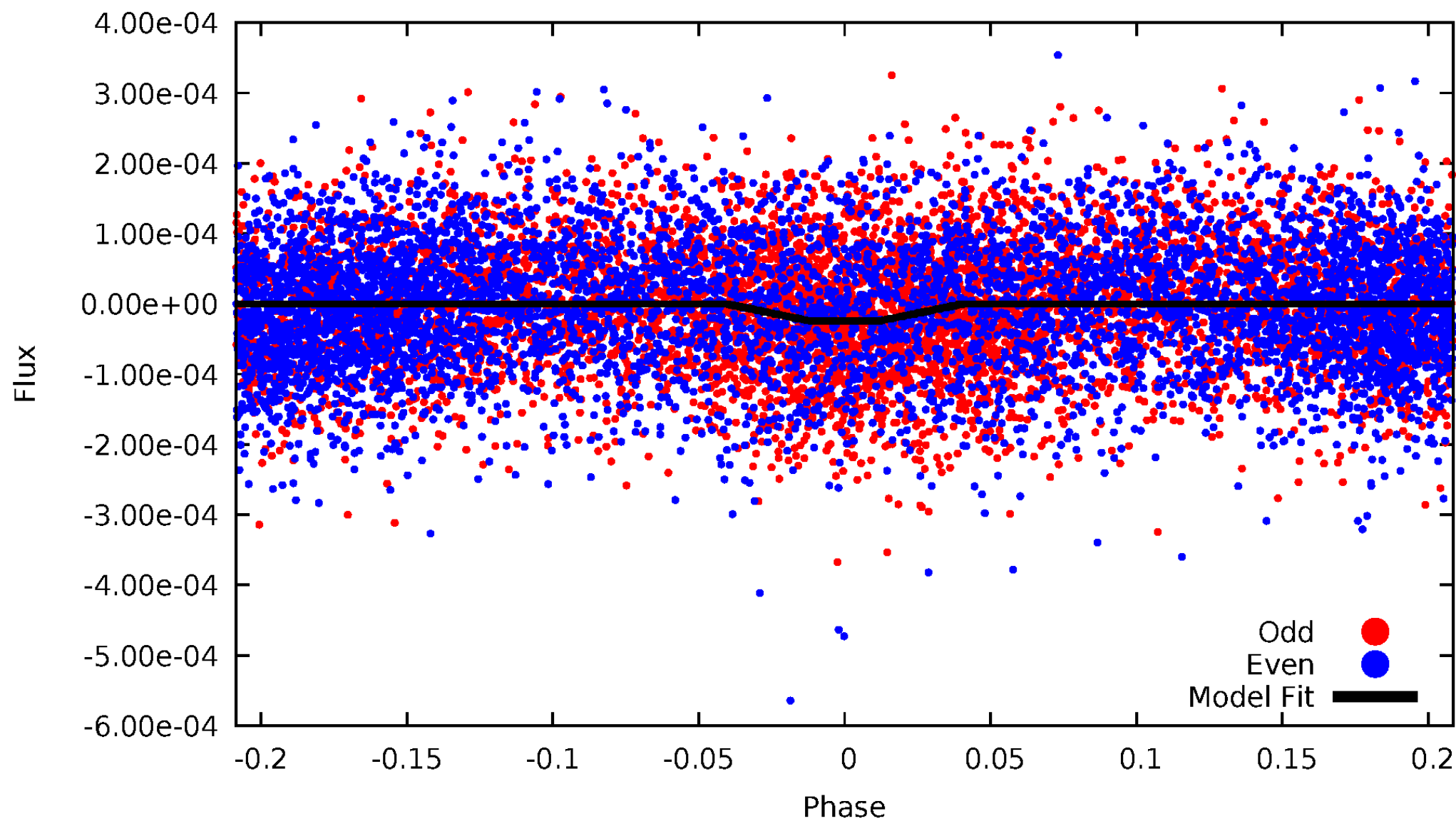
DV Odd/Even

TCE 008027456-02



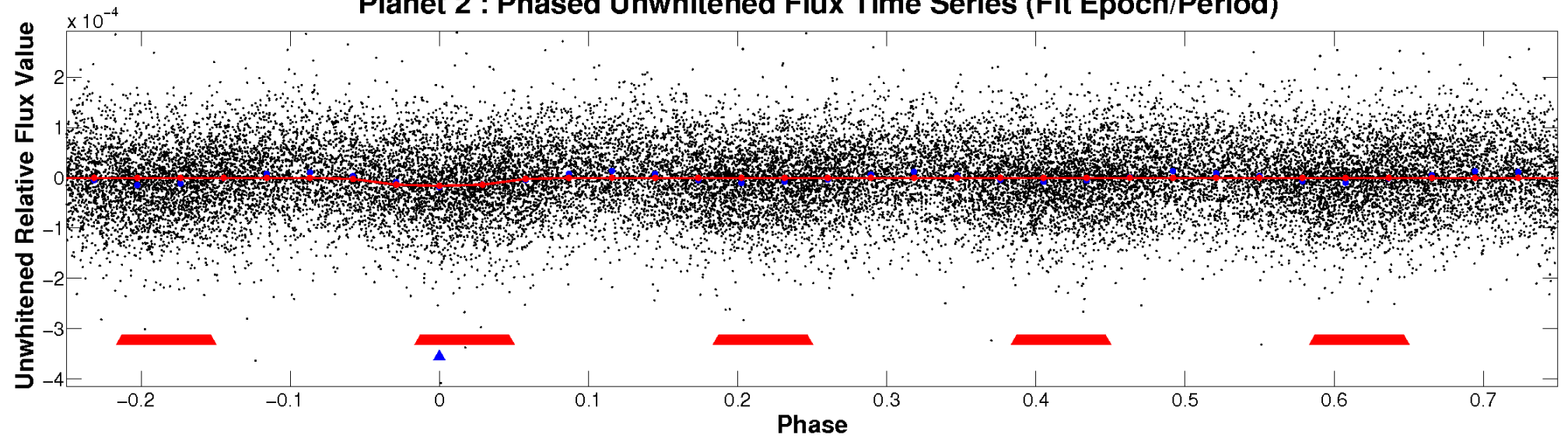
ALT Odd/Even

TCE 008027456-02

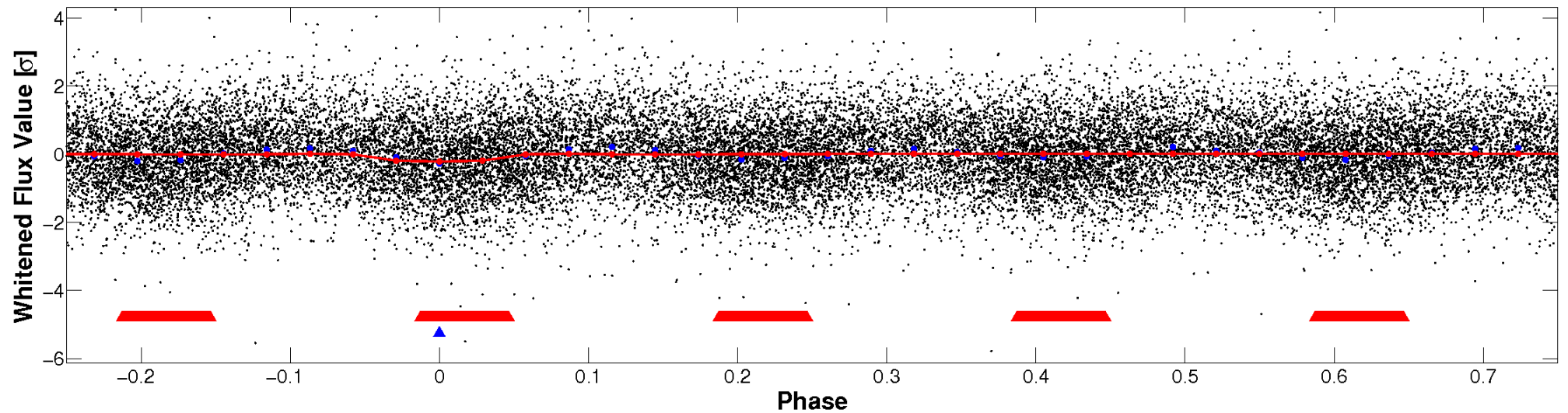


Non-Whitened Vs. Whitened Light Curve

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

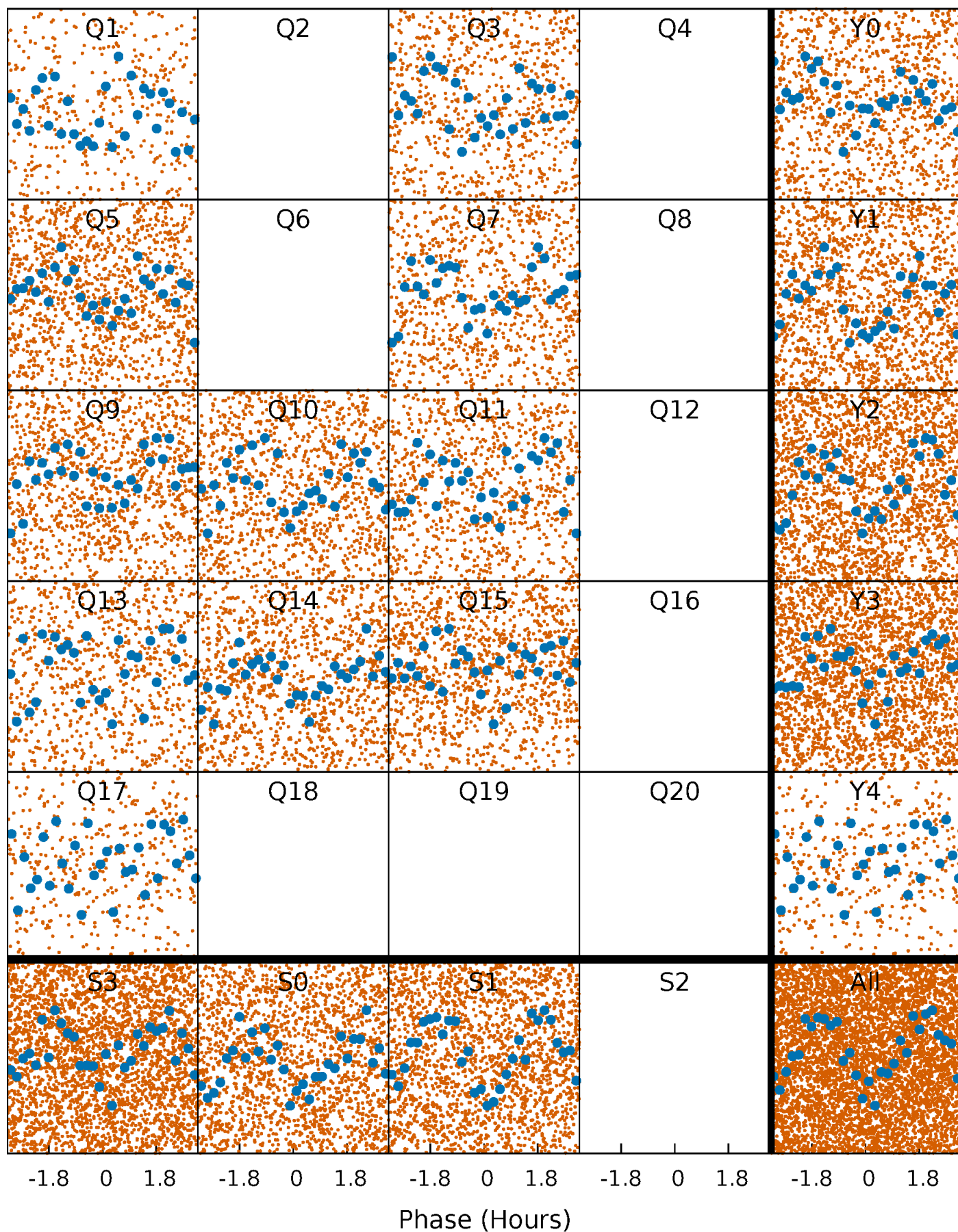


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



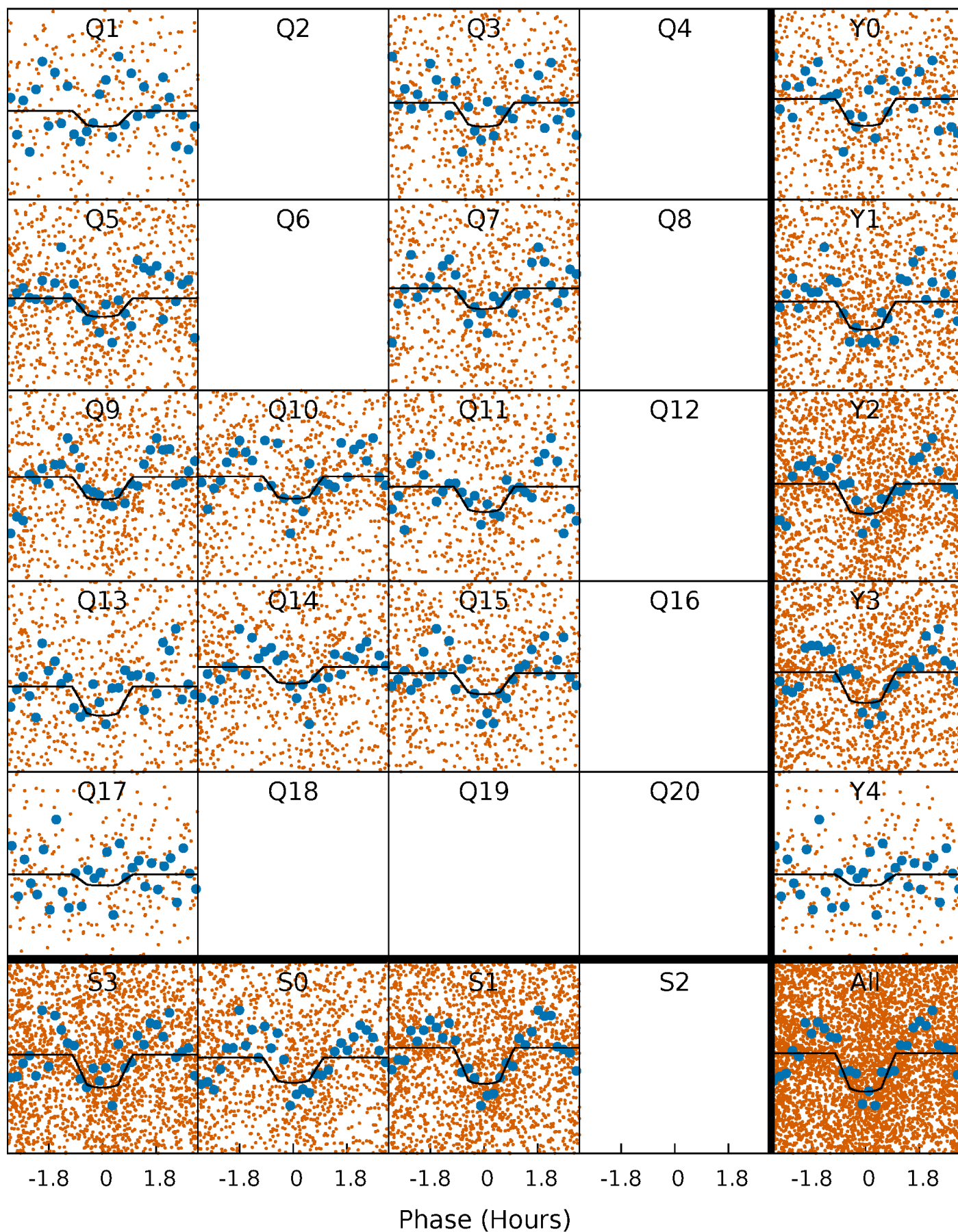
PDC Quarter-Phased Transit Curves

TCE 008027456-02 P= 0.706134 Days $T_0=131.853557$ (BKJD)



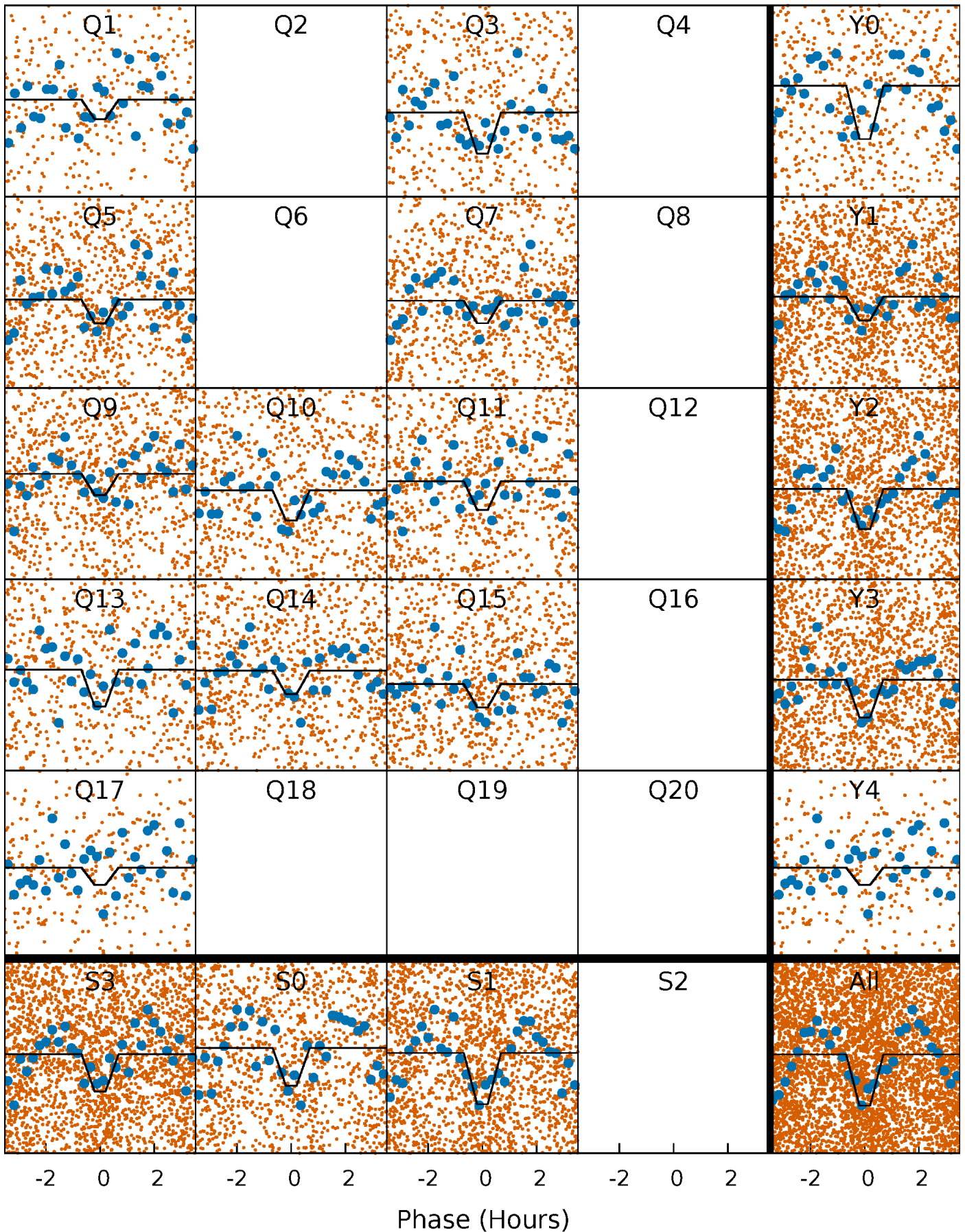
DV Quarter-Phased Transit Curves

TCE 008027456-02 P= 0.706134 Days $T_0=131.853557$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

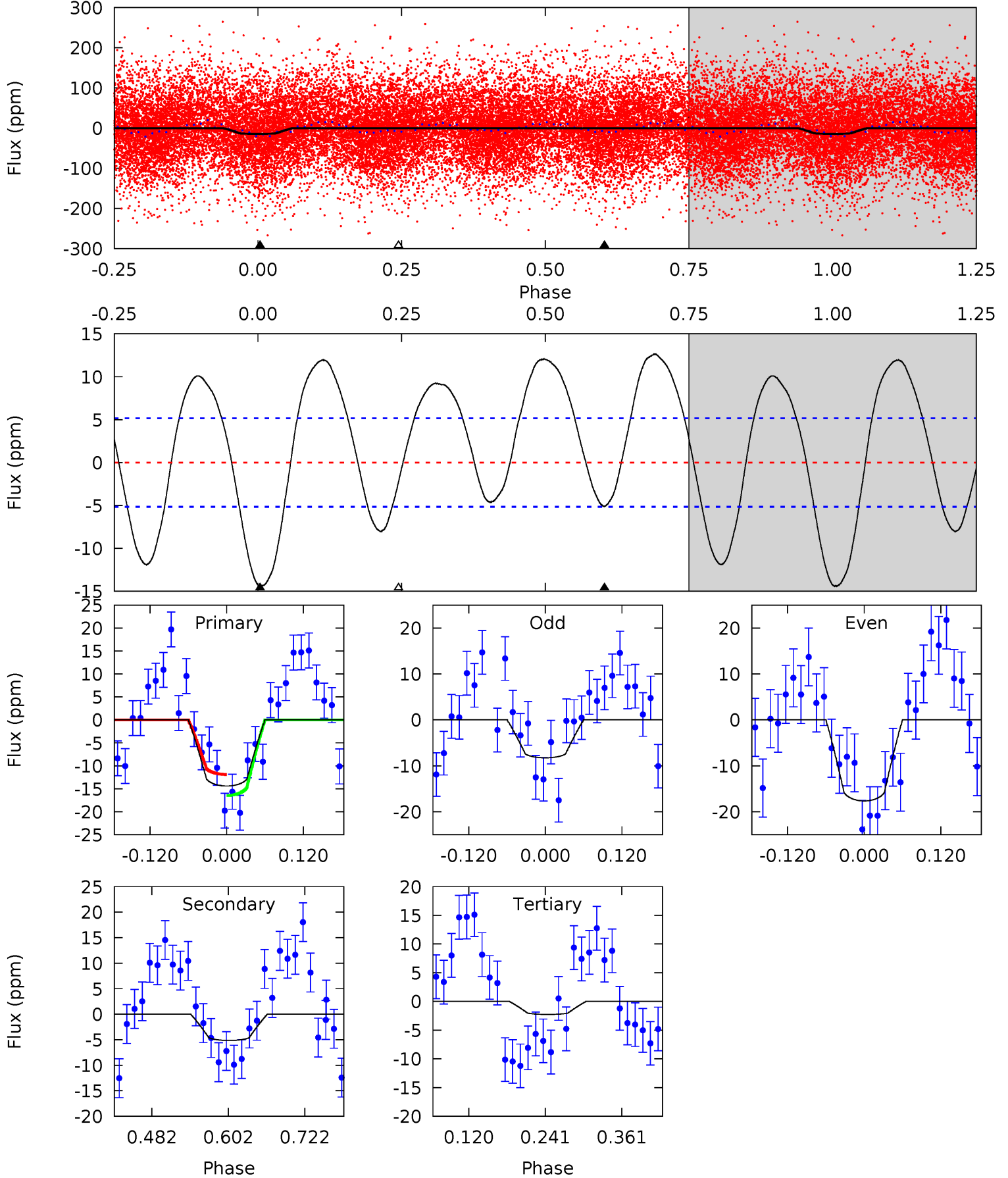
TCE 008027456-02 P= 0.706141 Days $T_0=131.850314$ (BKJD)



DV Model-Shift Uniqueness Test

008027456-02, P = 0.706134 Days, E = 131.147423 Days

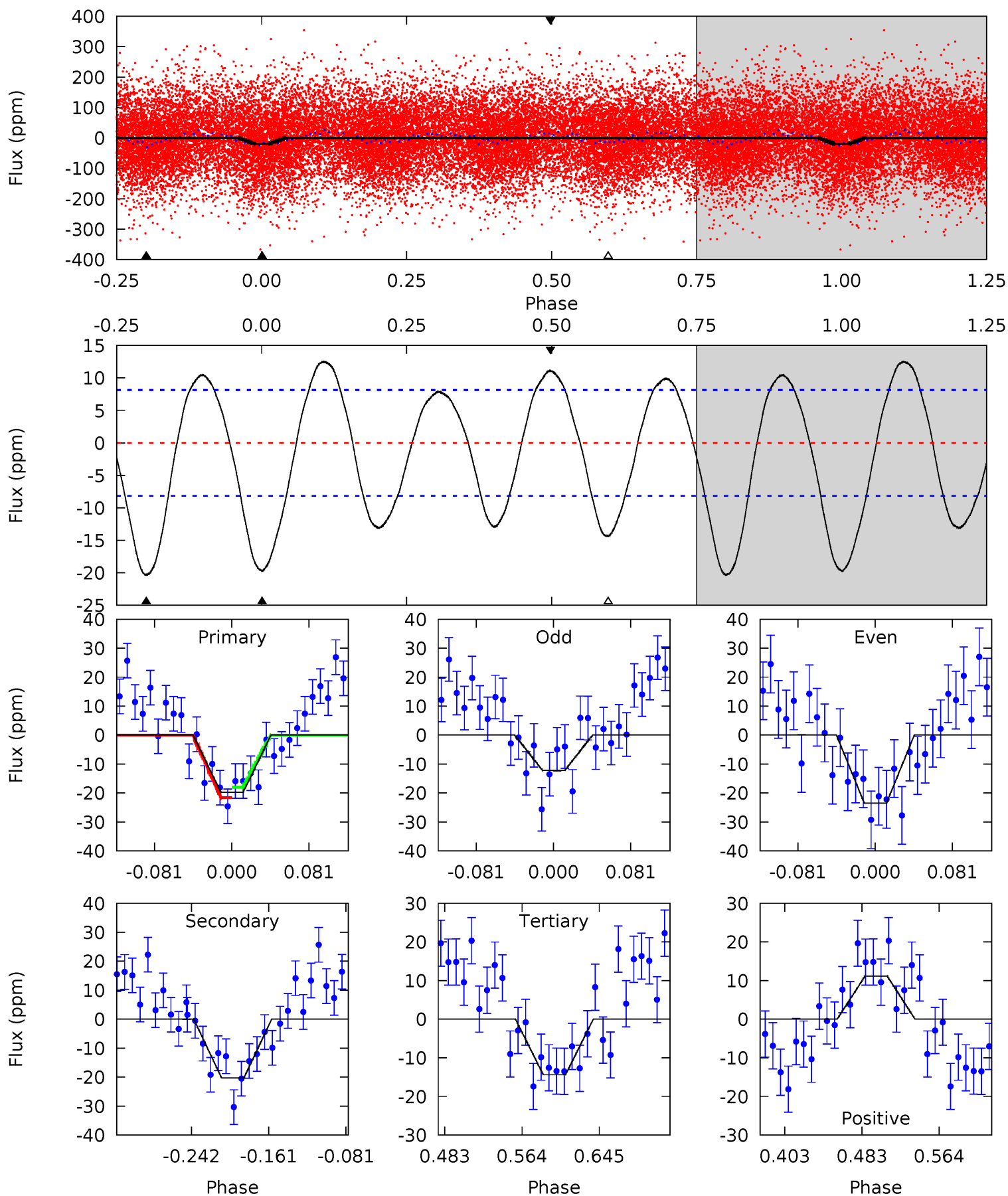
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.6	4.51	1.98	0	4.53	1.55	5.75	10.6	12.6	2.53	4.51	3.93	1.00	0.47	2.01



Alt Model-Shift Uniqueness Test

008027456-02, P = 0.706141 Days, E = 131.144173 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.2	11.5	8.13	6.30	4.61	1.75	4.84	3.04	4.87	3.36	5.19	3.00	1.20	0.38	1.02



Stellar Parameters For KIC 008027456

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	8951^{+283}_{-425}	$3.784^{+0.345}_{-0.186}$	$0.070^{+0.250}_{-0.550}$	$3.383^{+1.123}_{-1.373}$	$2.535^{+0.335}_{-0.781}$	$0.092^{+0.281}_{-0.045}$
	+3%/-5%	+9%/-5%	+357%/-786%	+33%/-41%	+13%/-31%	+305%/-49%
Source	KIC0	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 008027456-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-5 ± 1	$1.49^{+0.43}_{-0.36}$	6871^{+663}_{-754}	5060^{+944}_{-1776}	$0.536^{+0.417}_{-0.221}$
Alt.	-20 ± 2	$1.75^{+0.40}_{-0.42}$	6817^{+615}_{-684}	7782^{+929}_{-688}	$1.607^{+1.052}_{-0.532}$

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

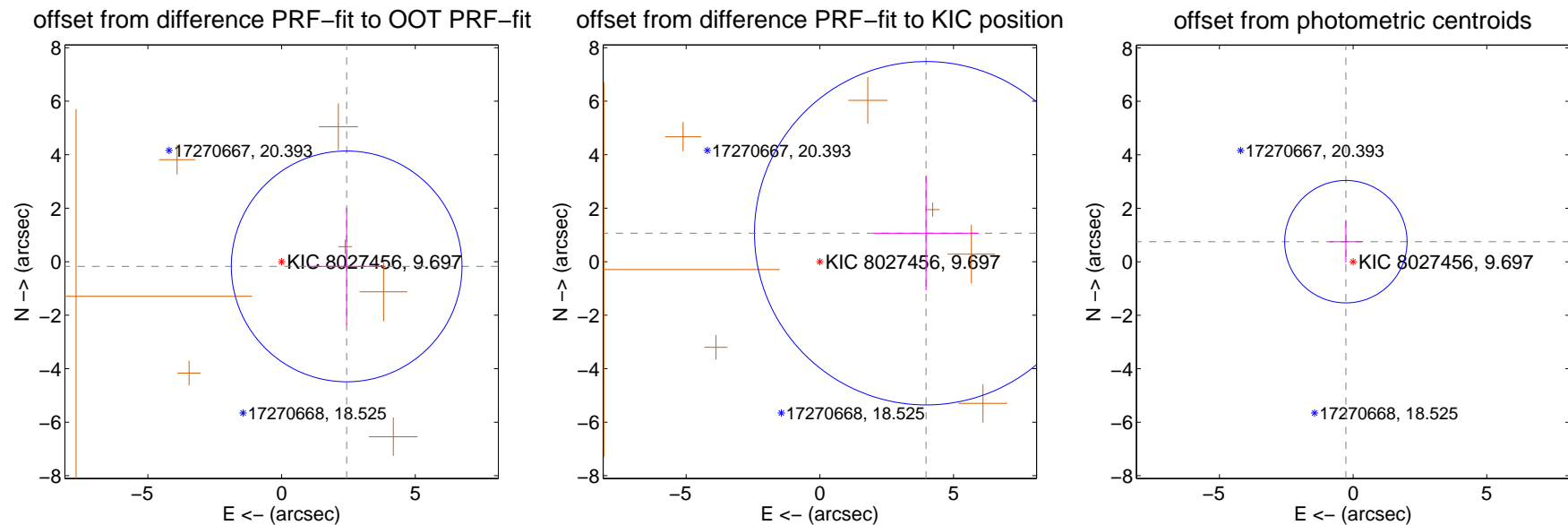
DV Centroid Data

Supplemental centroid analysis for 008027456-02. **Kepler magnitude: 9.70.** Transit SNR 10.15

There are 0 quarters with good PRF difference image offsets

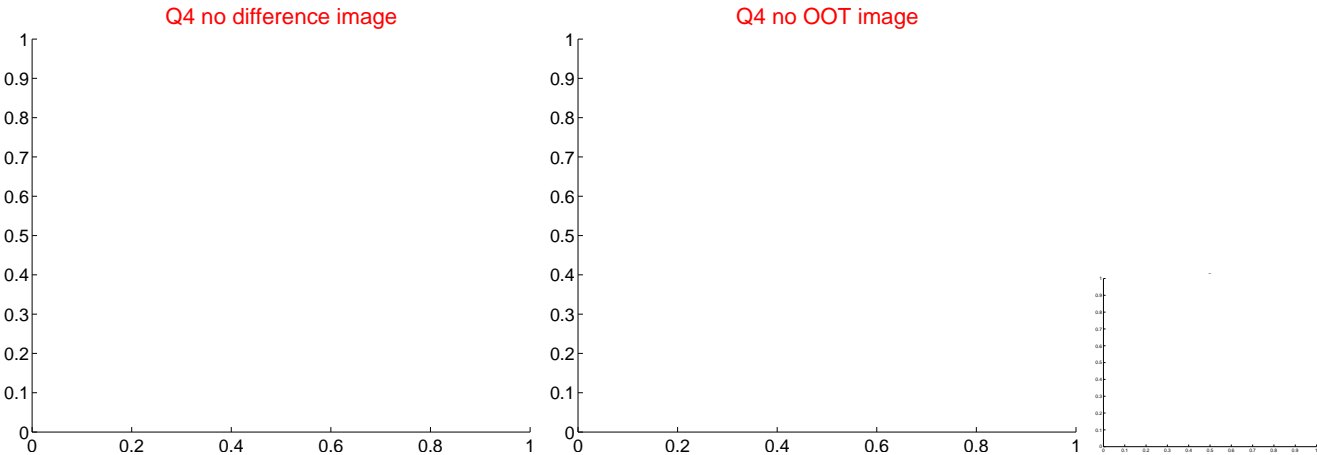
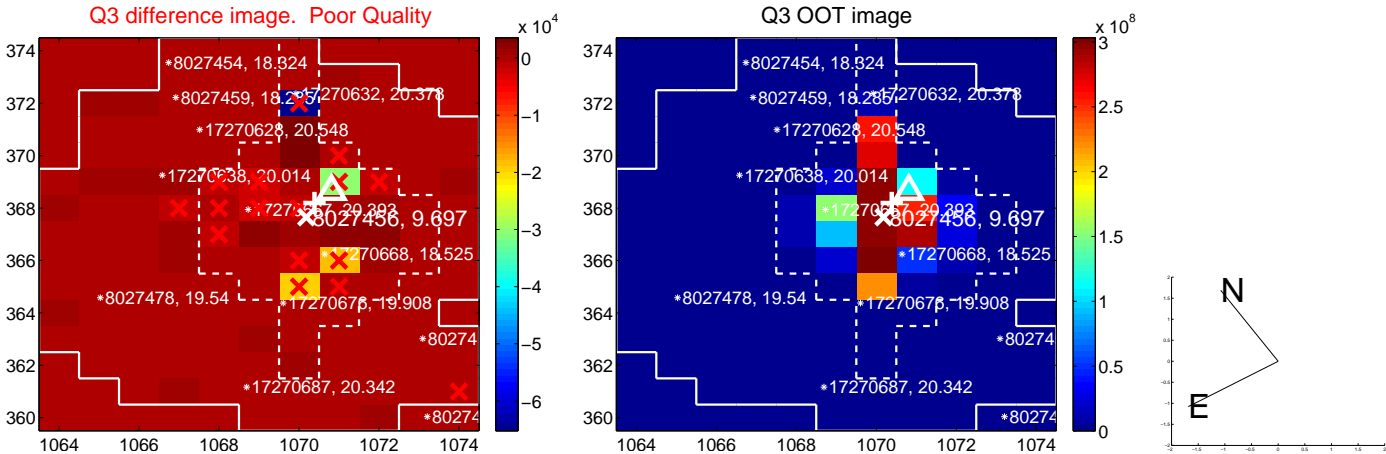
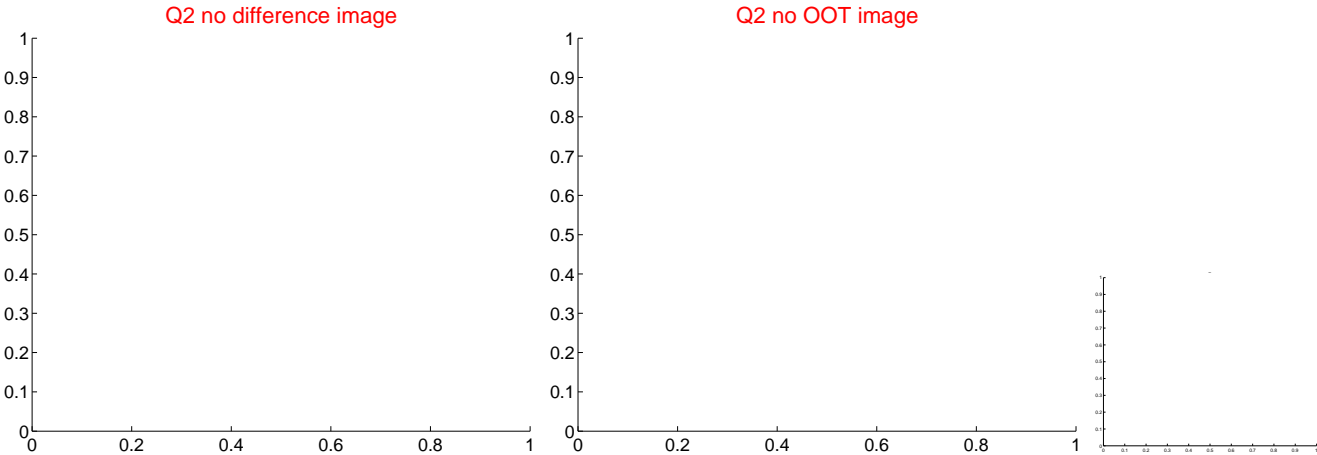
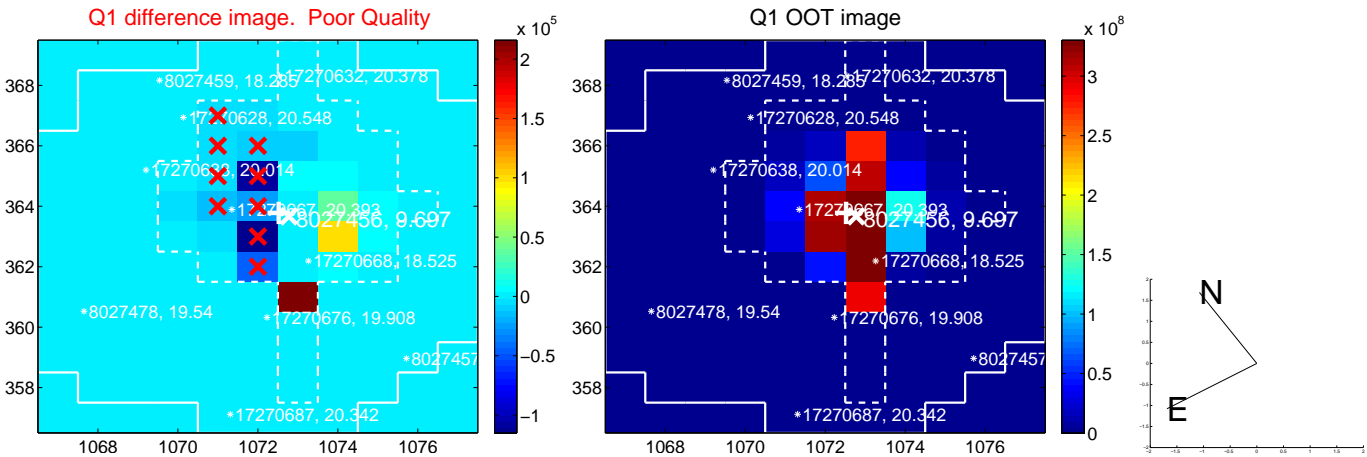
The direct PRF centroid is offset from the target star catalog position by about 1.08 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	2.441 ± 1.438	1.70	-2.434 ± 1.461	-0.176 ± 2.185
PRF-fit source offset from KIC position	4.113 ± 2.139	1.92	-3.973 ± 1.969	1.064 ± 2.139
photometric centroid source offset	0.80 ± 0.76	1.05	0.27 ± 0.62	0.75 ± 0.78

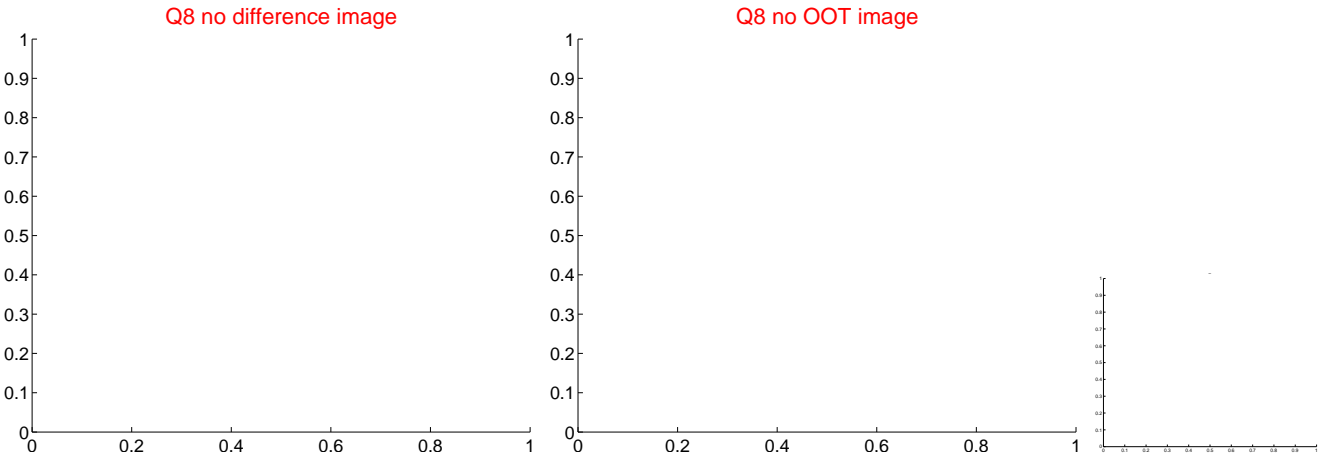
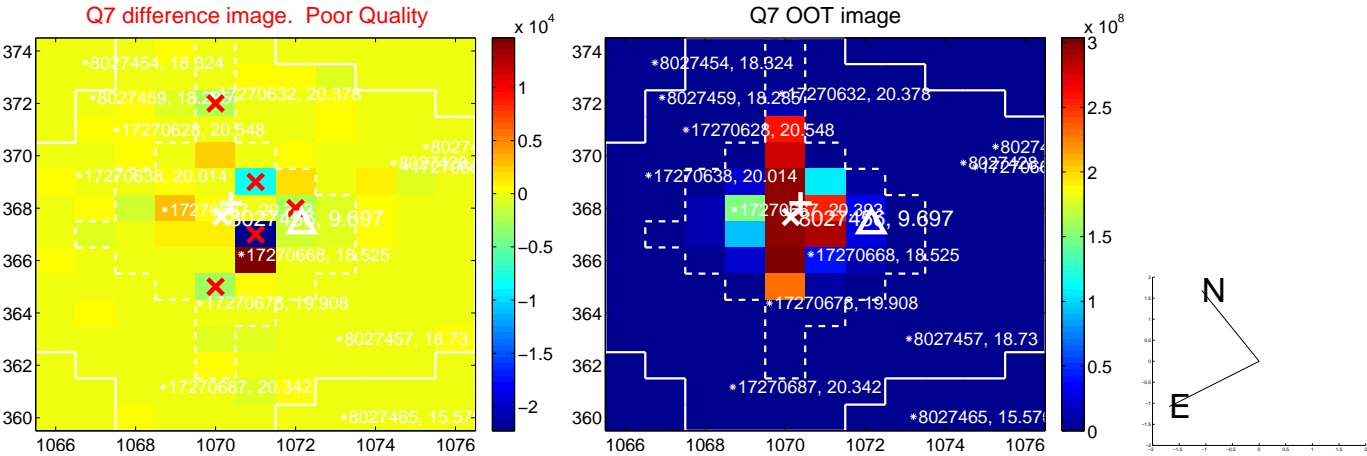
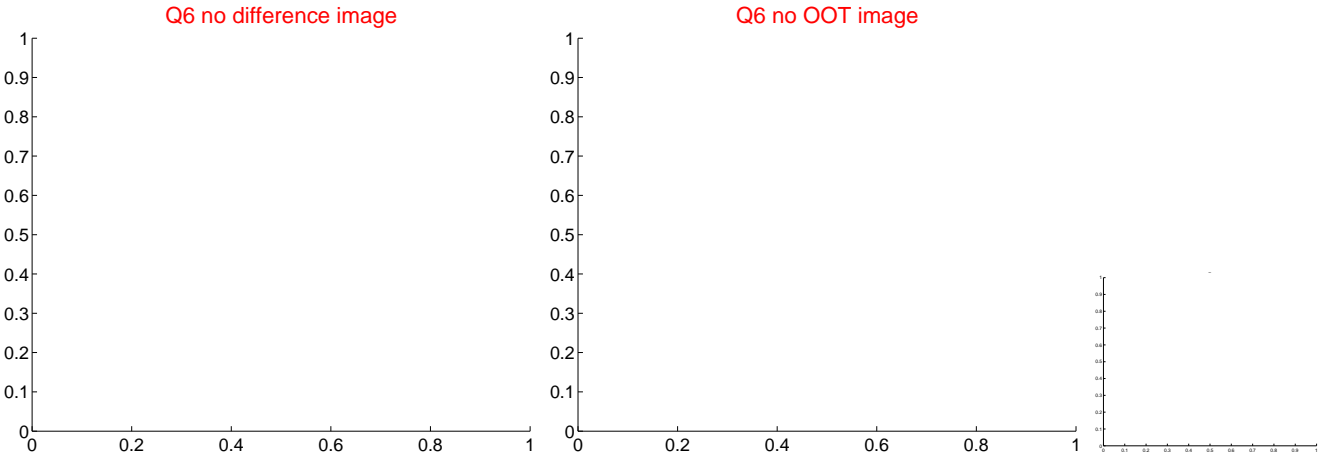
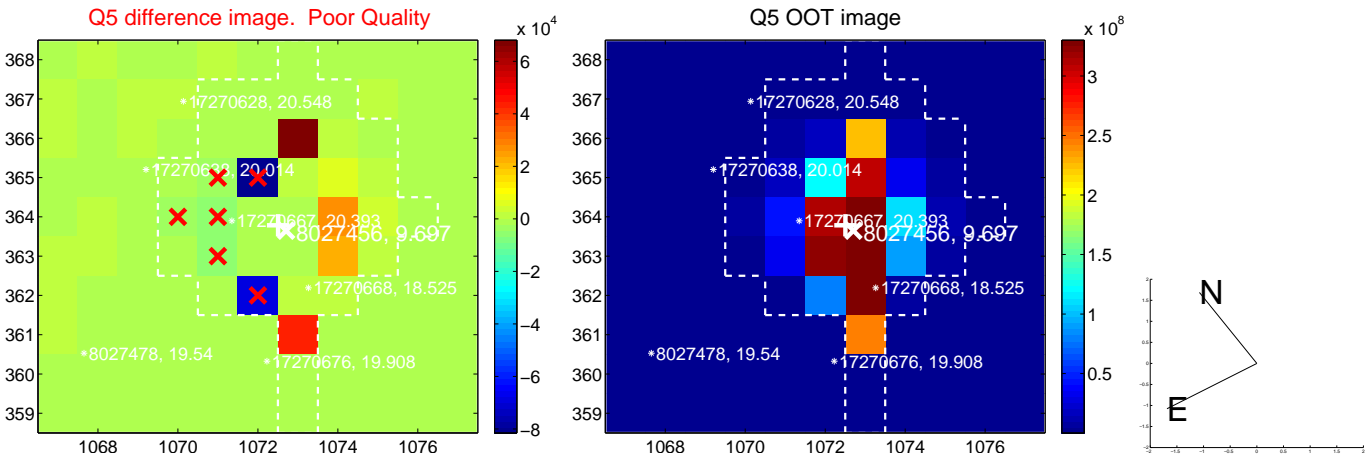


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

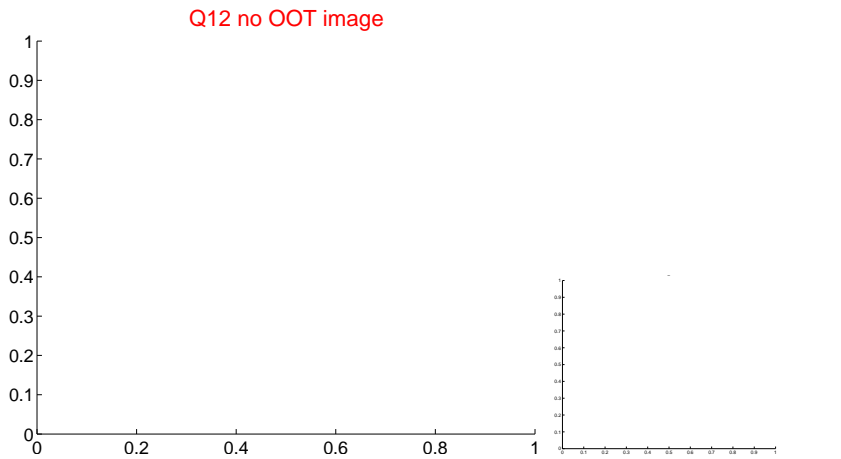
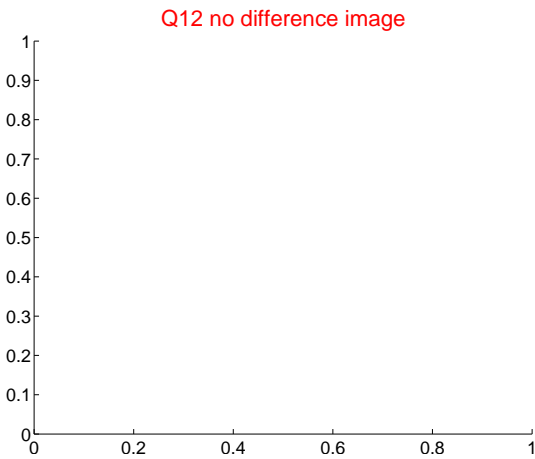
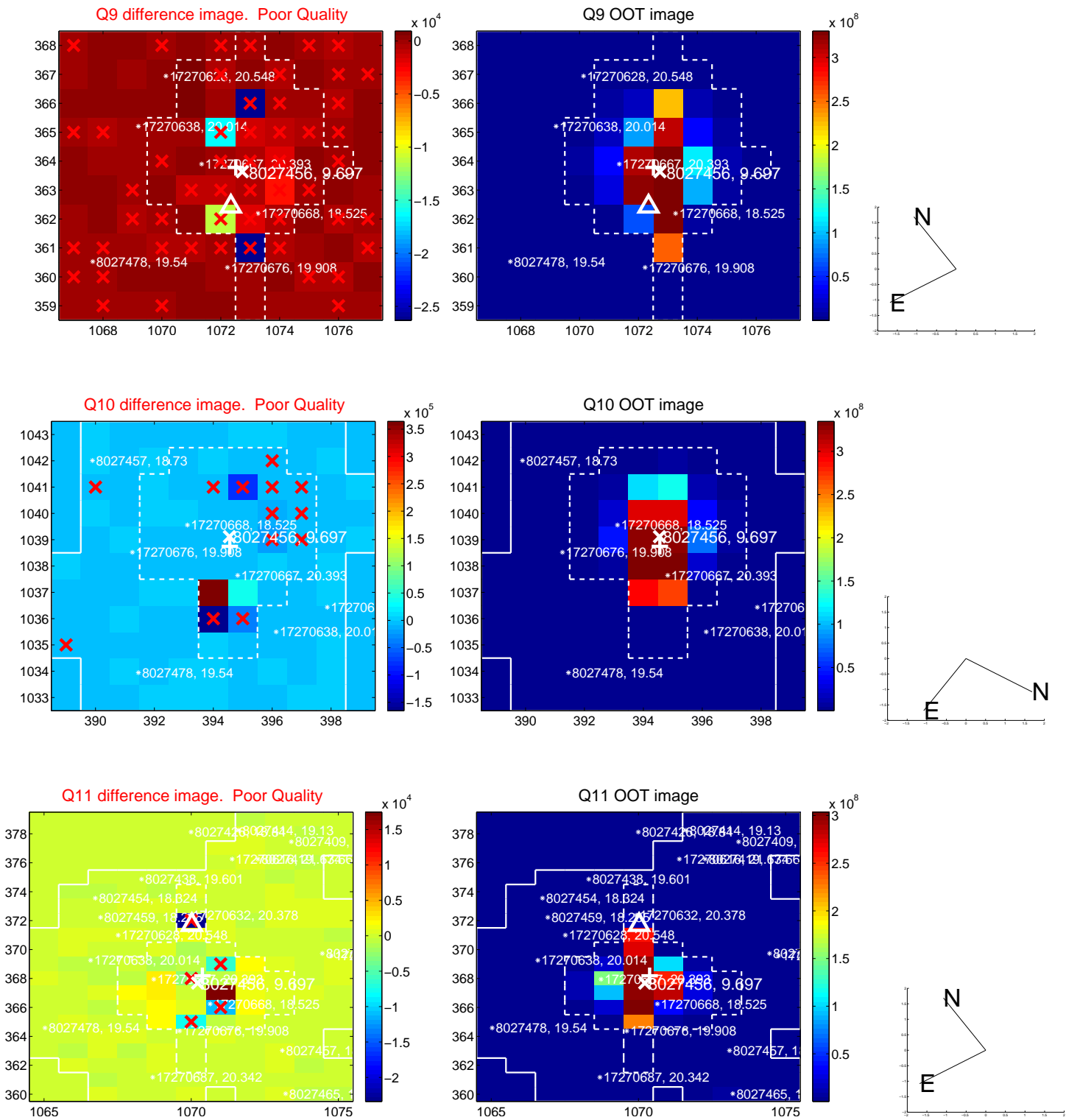
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



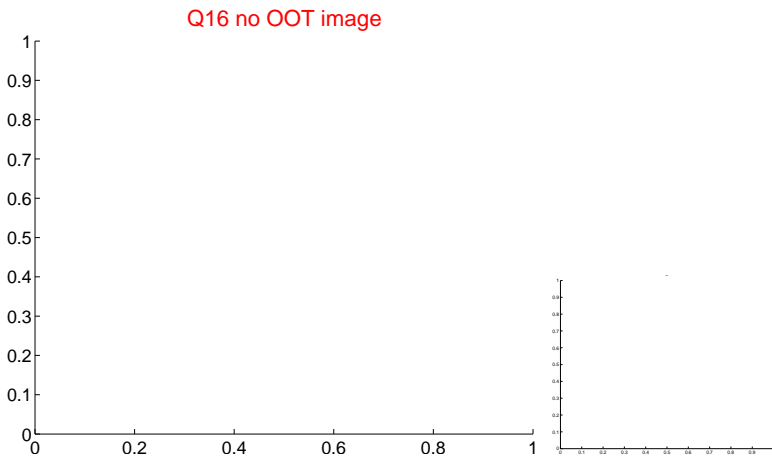
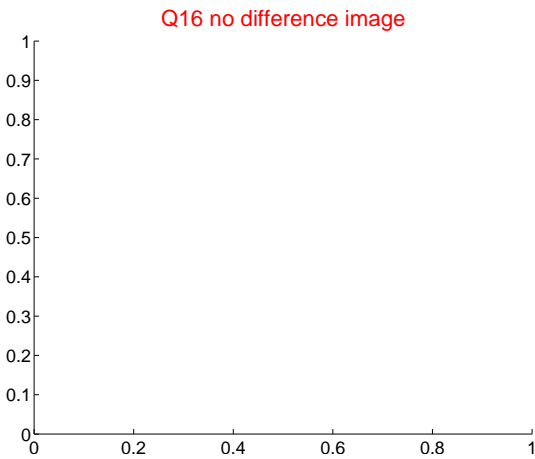
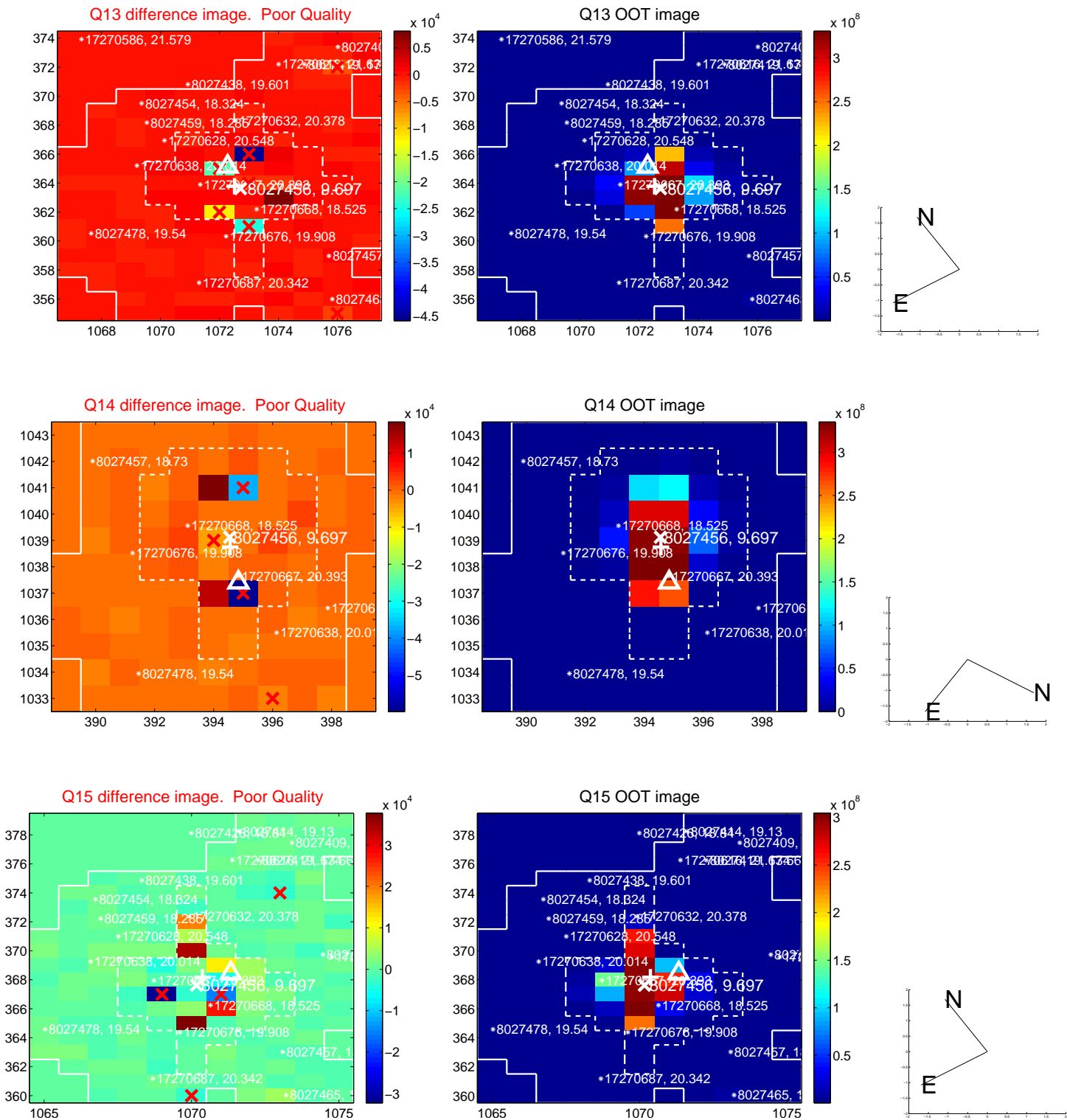
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



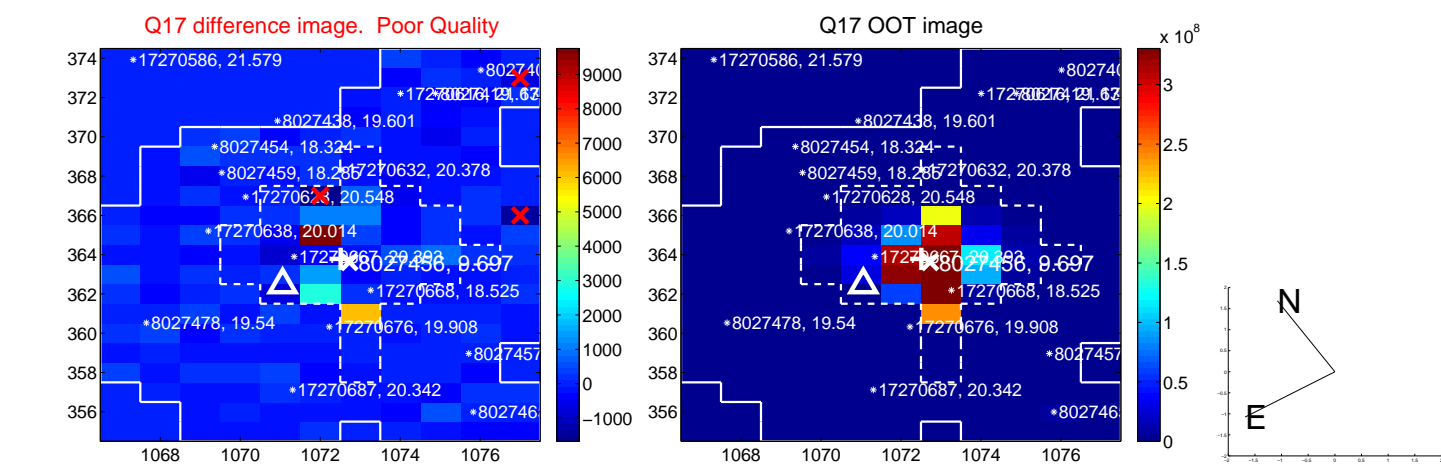
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



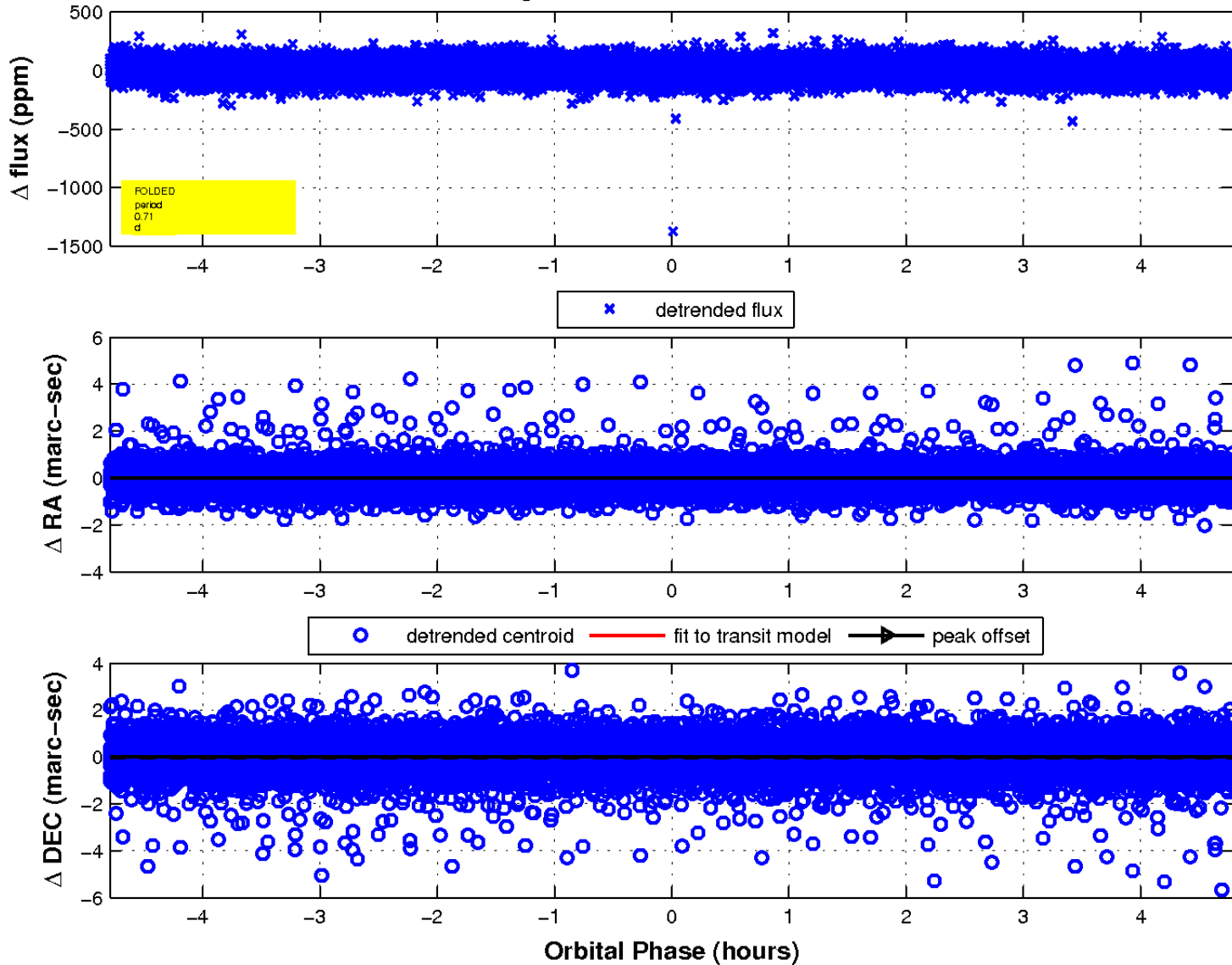
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 2 of 2



UKIRT Image

Declination

