

KIC 008648356

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})
008648356-01	OBS	No	4.575737	131.937170	30.9	3.168	8.0	8.0	2.29	7693	1.38	3737.55
008648356-02	OBS	No	0.510400	132.213105	2.1	1.469	12.7	1.2	2.29	7693	0.34	69607.18

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008648356-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
008648356-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT

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

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

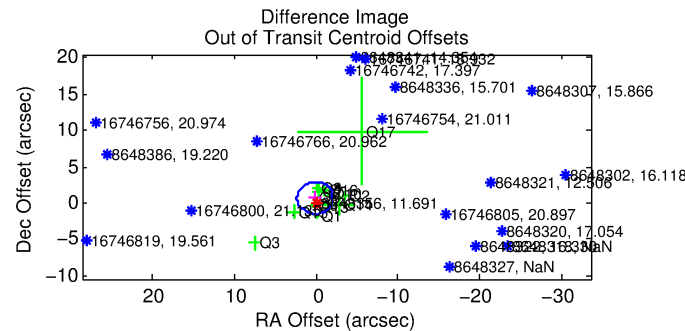
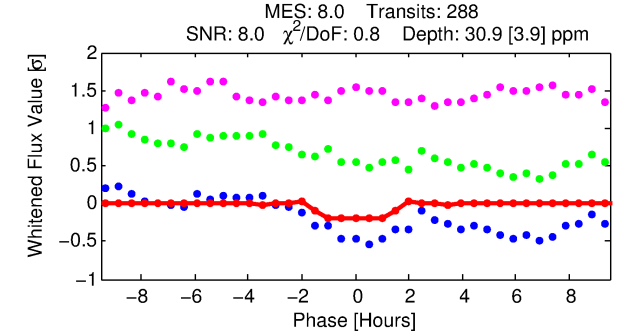
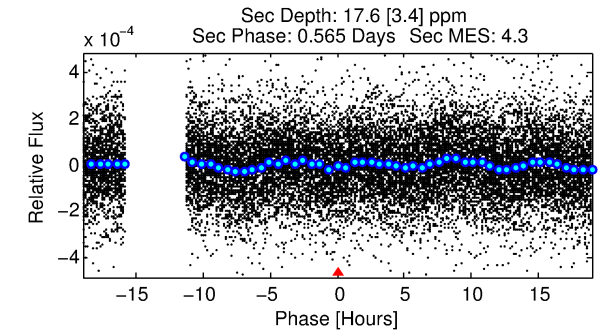
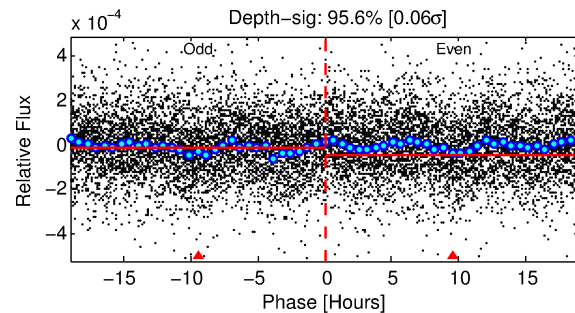
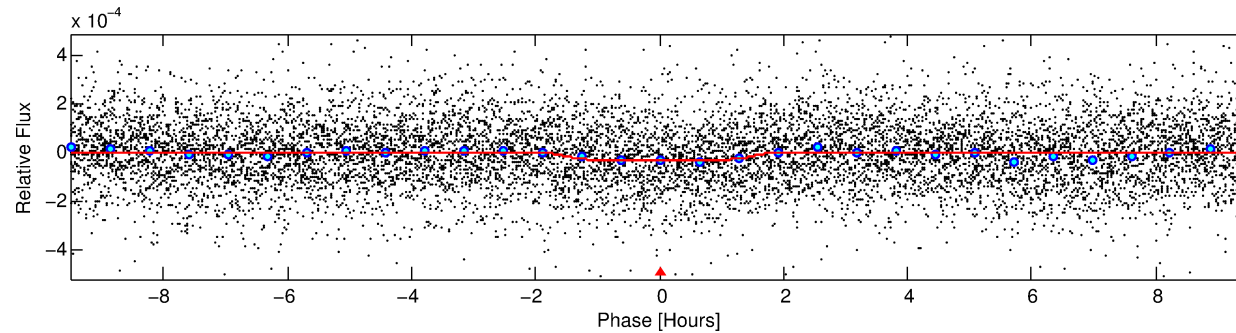
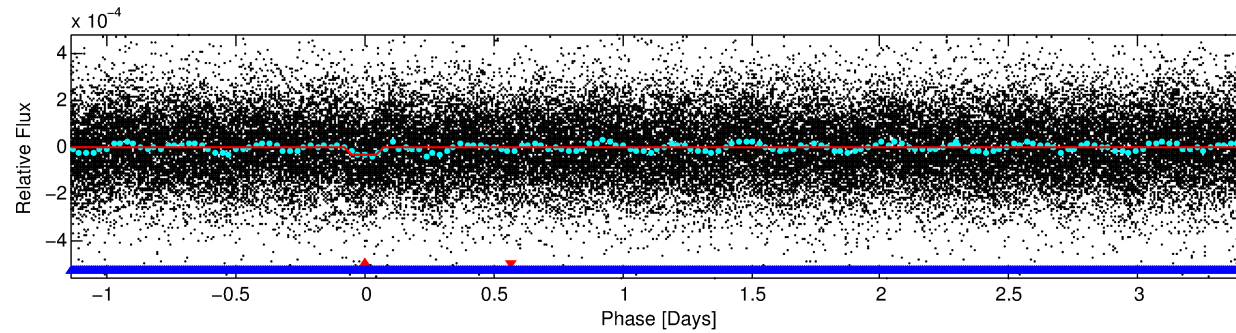
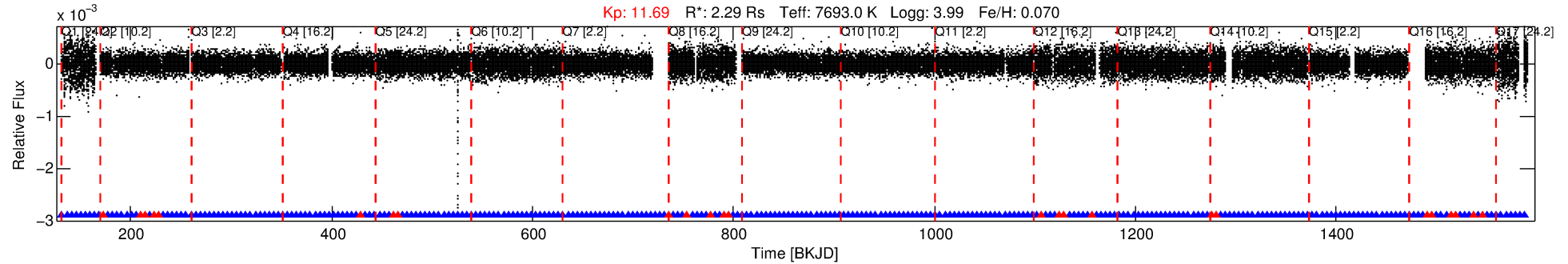
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008648356-01

No Significant Match Found

DV One-Page Summary

KIC: 8648356 Candidate: 1 of 2 Period: 4.576 d



DV Fit Results:

Period = 4.57574 [0.00004] d
Epoch = 131.9372 [0.0056] BKJD
 R_p/R^* = 0.0055 [0.0011]
 a/R^* = 7.30 [8.45]
 b = 0.76 [0.66]
Seff = 3737.55 [1466.64]
Teq = 1994 [196] K
 R_p = 1.38 [0.47] R_e
 a = 0.0662 [0.0158] AU
 A_g = 22.13 [12.56] [1.68 σ]
Teffp = 6686 [792] K [5.75 σ]

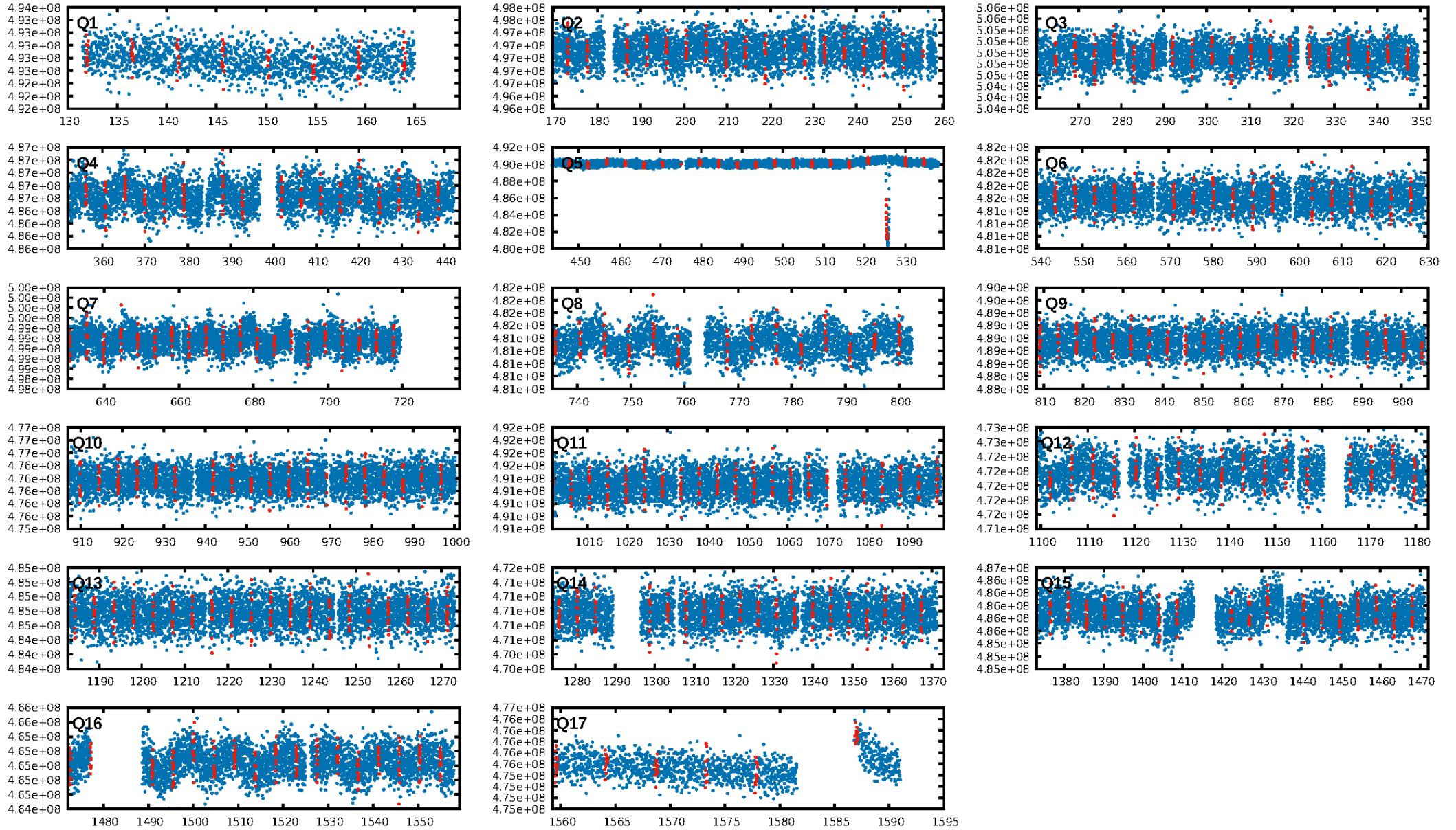
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [27.94 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 1.02e-12
RollingBand-fgt: 0.91 [249/274]
GhostDiagnostic-chr: -3.597
Centroid-sig: 15.5%
Centroid-so: 2.477 arcsec [1.56 σ]
OotOffset-rm: 0.702 arcsec [0.96 σ]
KicOffset-rm: 0.713 arcsec [0.86 σ]
OotOffset-st: 3/3/3/5 [14]
KicOffset-st: 3/3/3/5 [14]
DiffImageQuality-fgm: 0.43 [6/14]
DiffImageOverlap-fno: 0.00 [0/17]

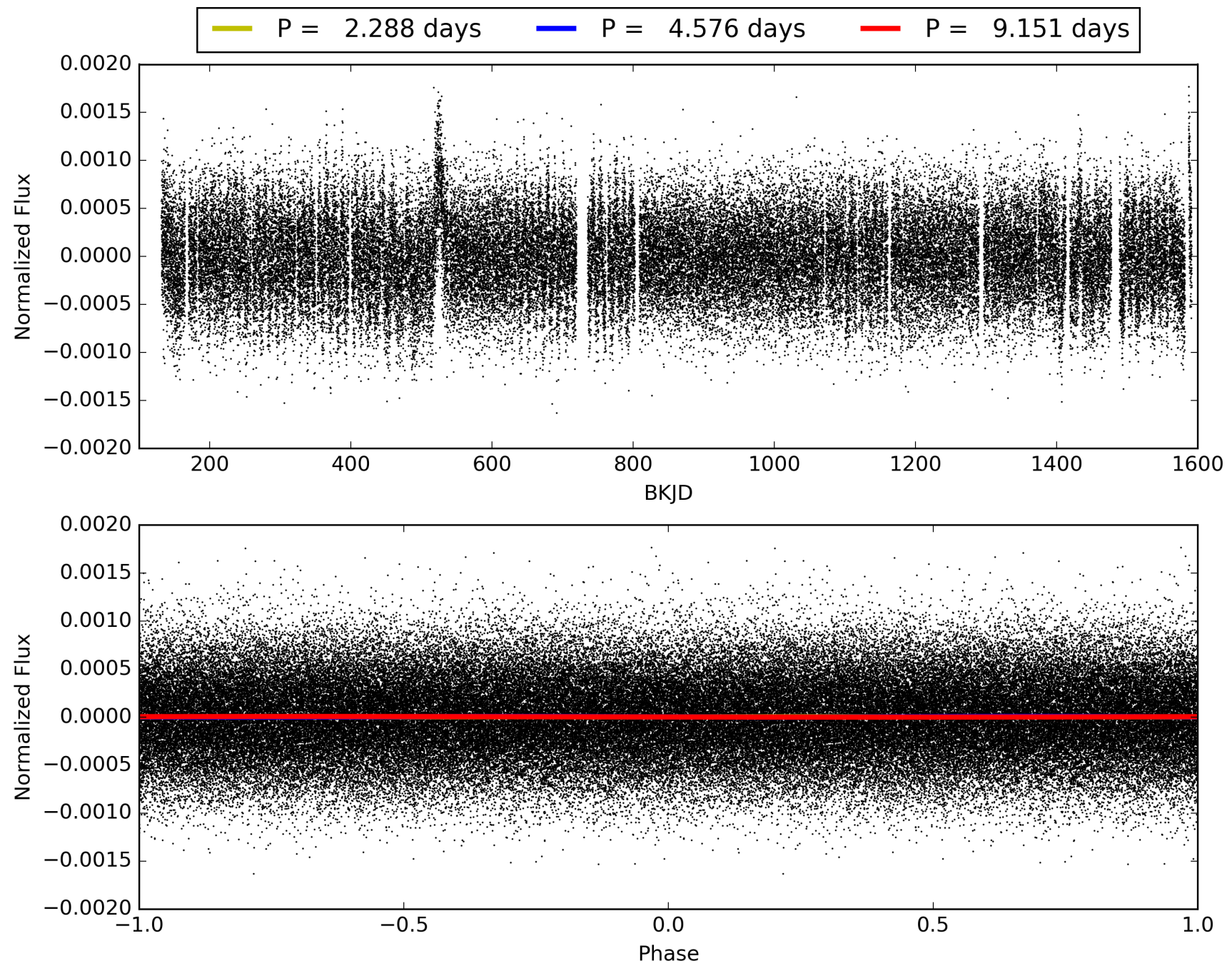
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 23:22:01 Z

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

TCE 008648356-01, PDC Light Curves

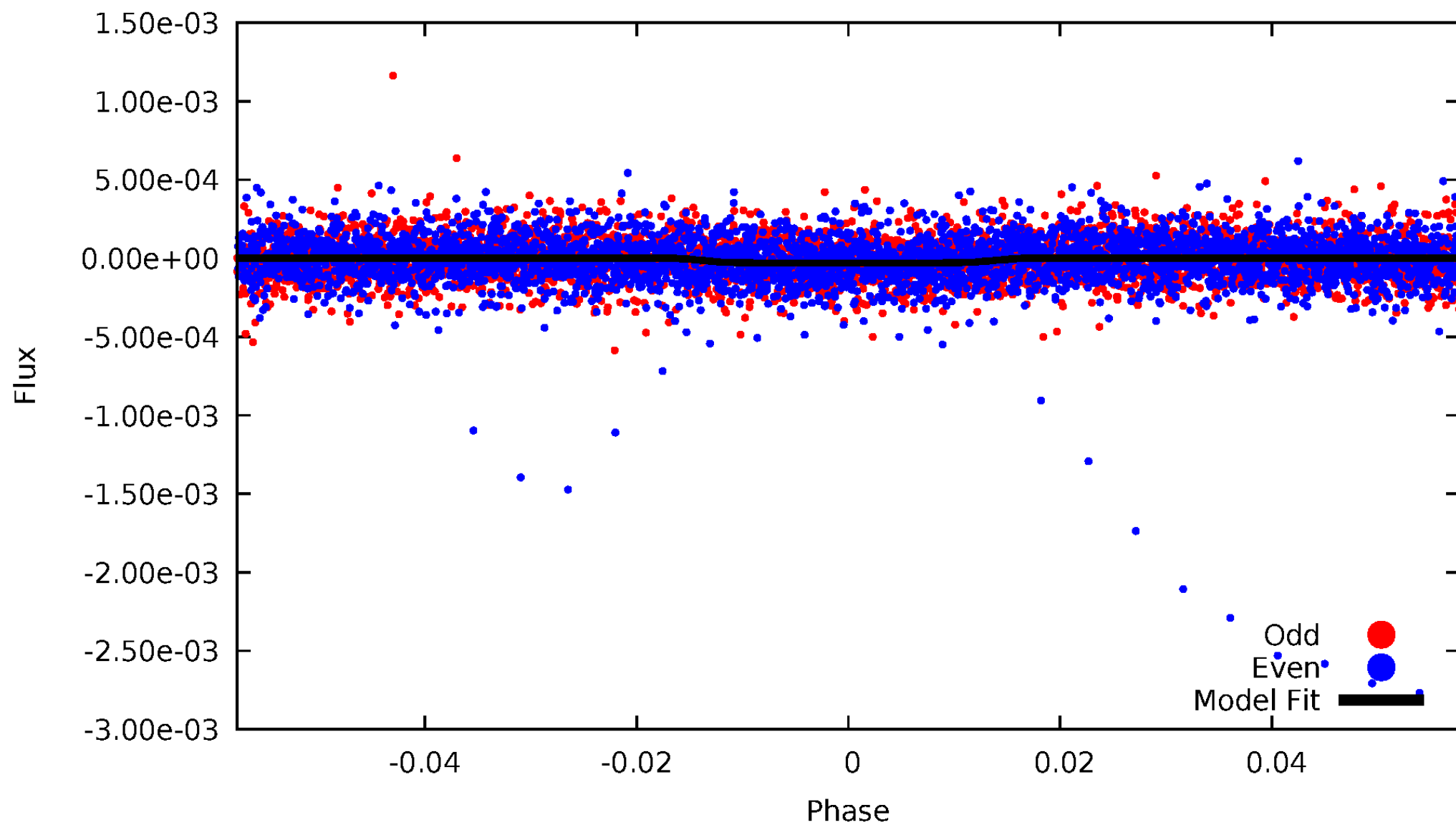


TCE 008648356-01



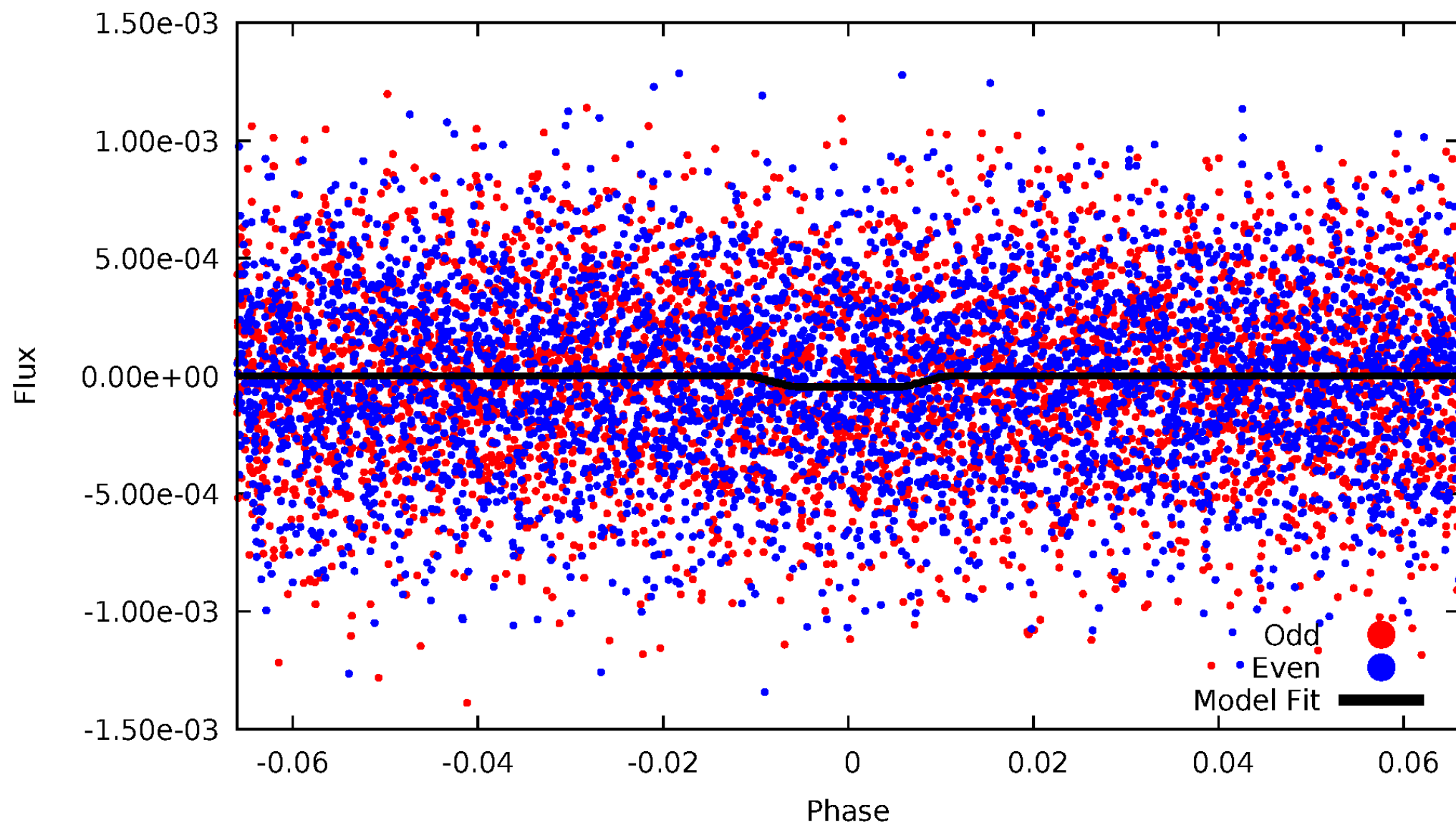
DV Odd/Even

TCE 008648356-01



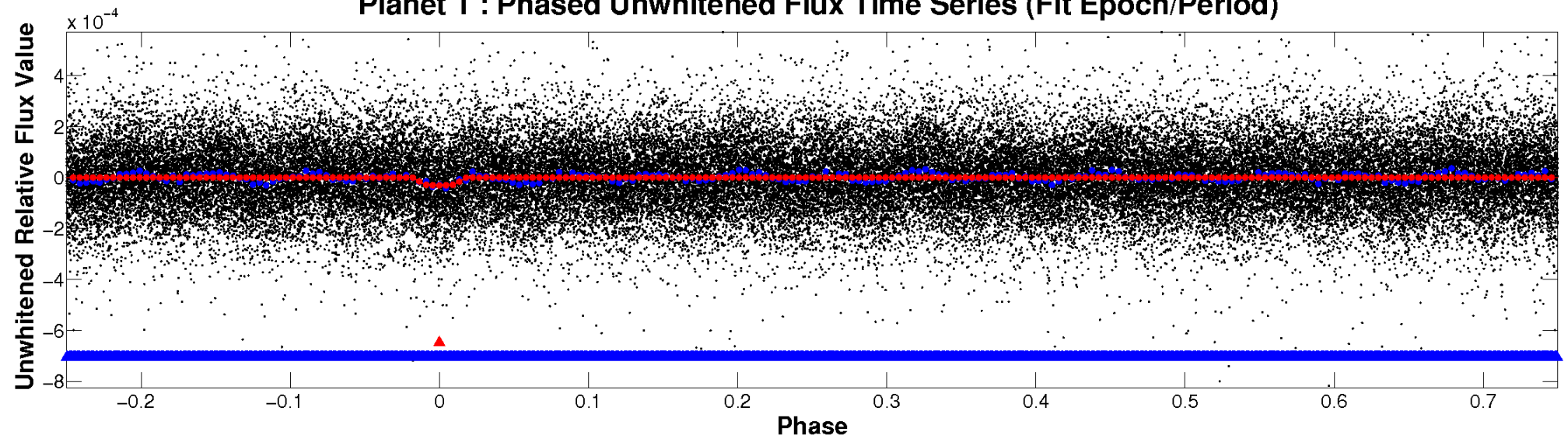
ALT Odd/Even

TCE 008648356-01

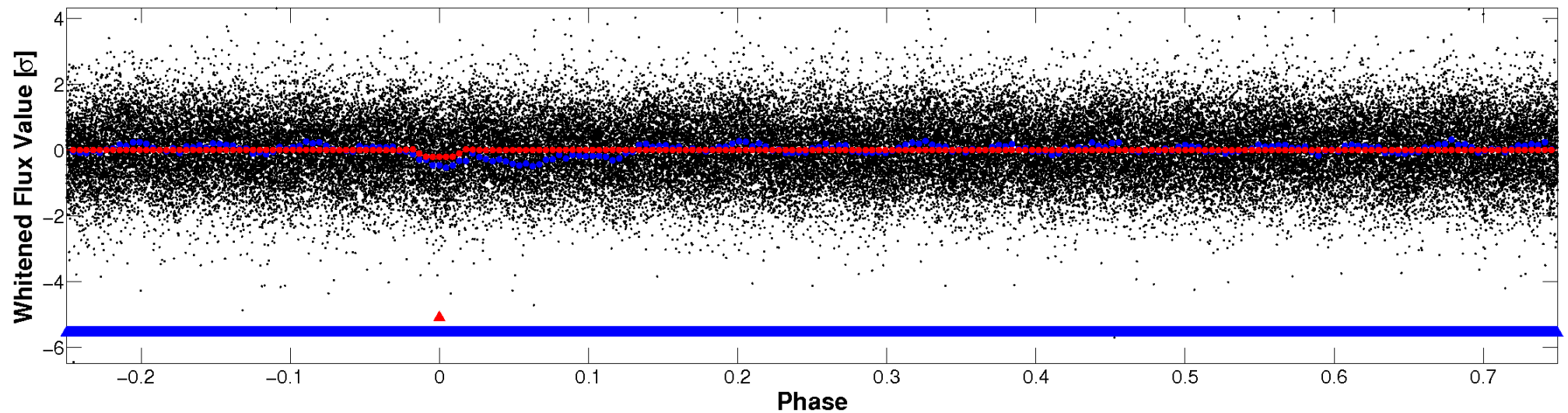


Non-Whitened Vs. Whitened Light Curve

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

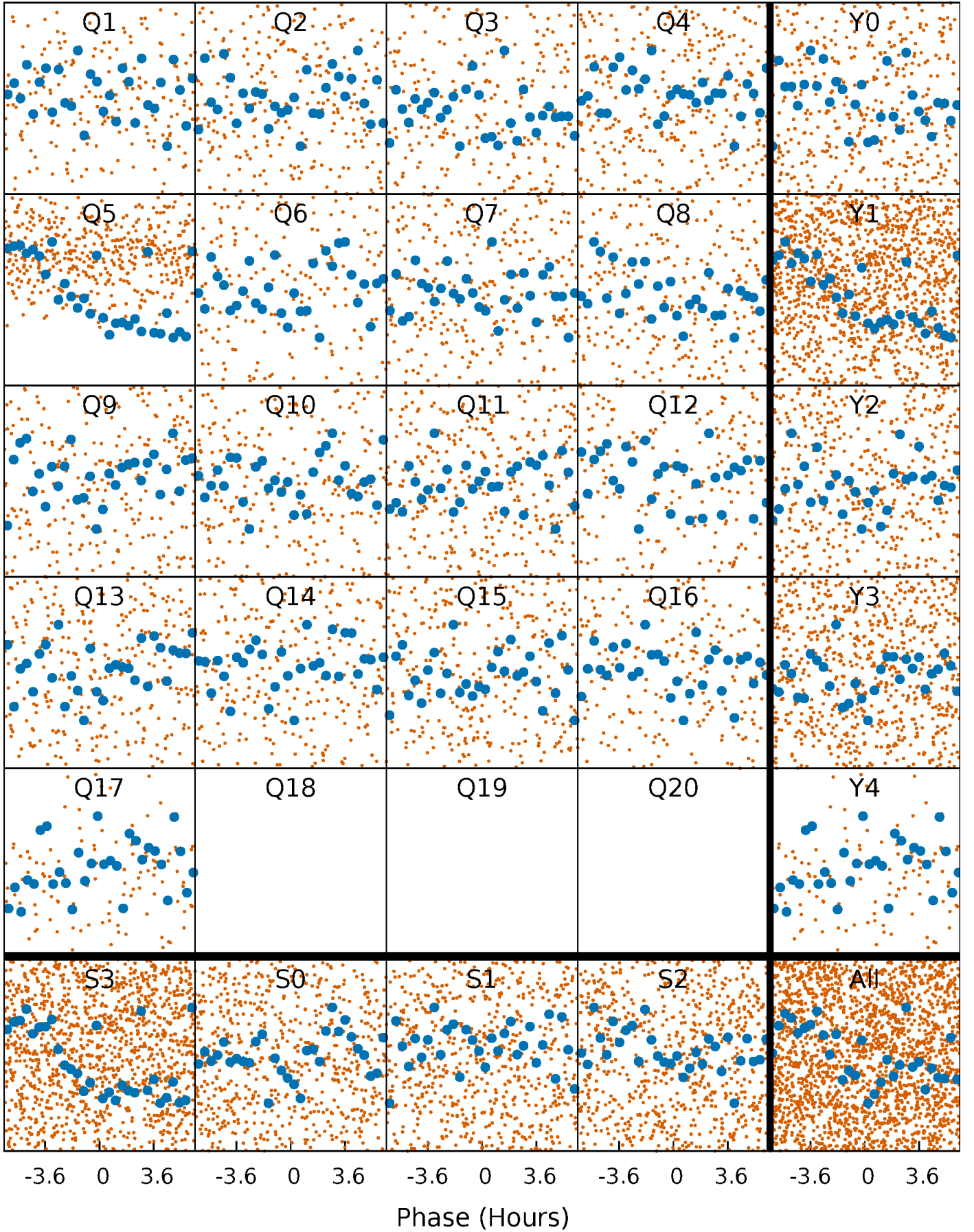


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



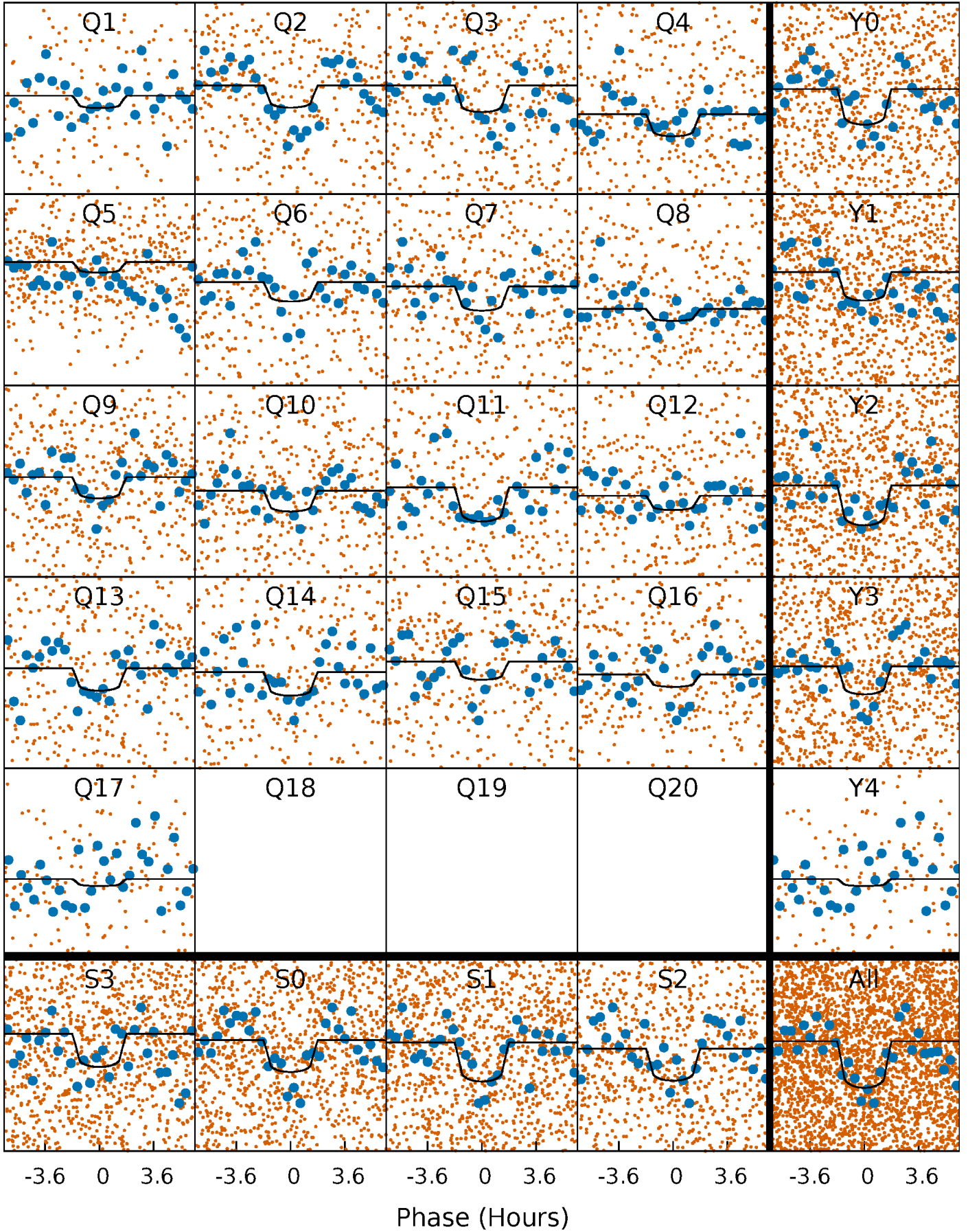
PDC Quarter-Phased Transit Curves

TCE 008648356-01 P= 4.575737 Days $T_0=131.937170$ (BKJD)



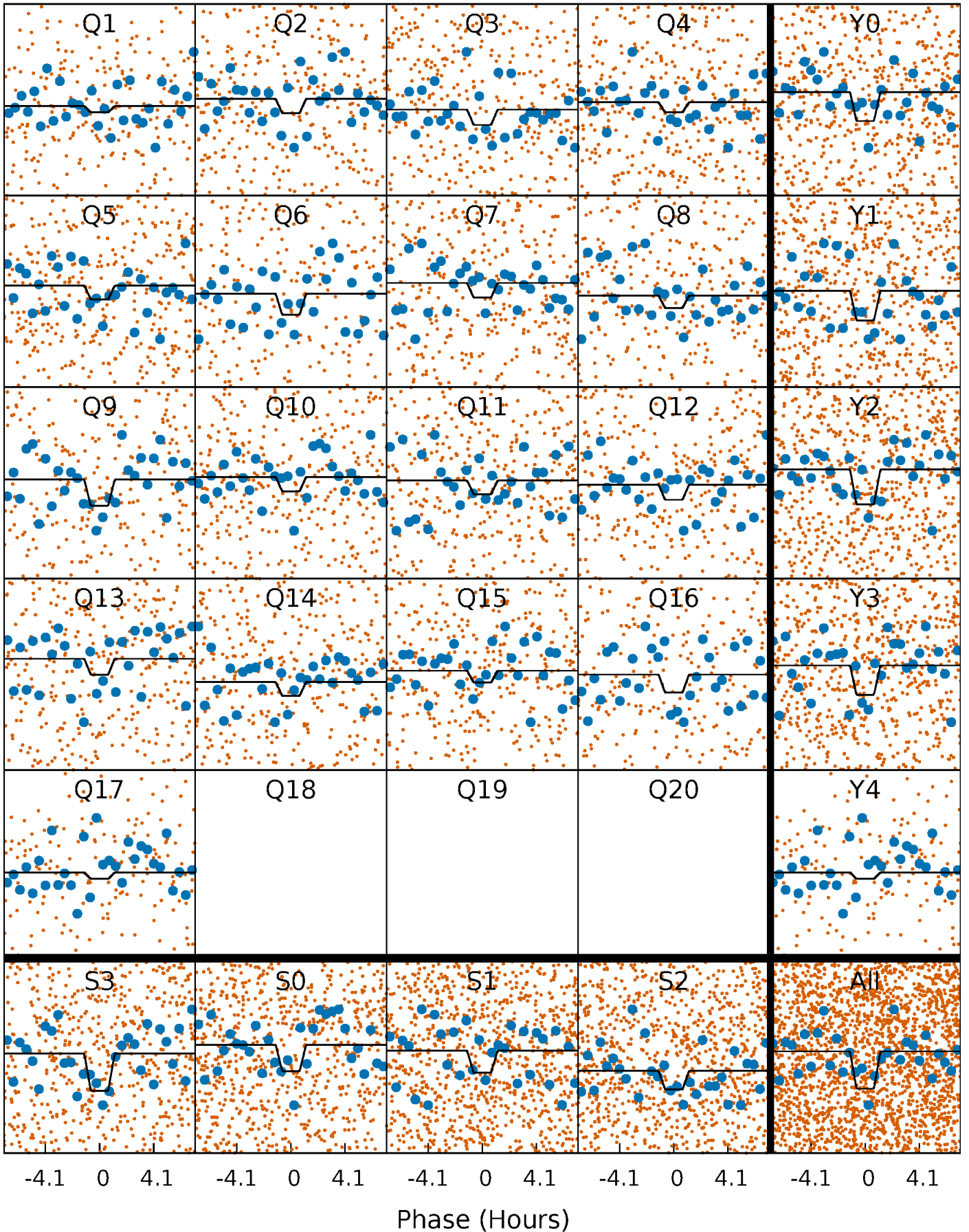
DV Quarter-Phased Transit Curves

TCE 008648356-01 P= 4.575737 Days $T_0=131.937170$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

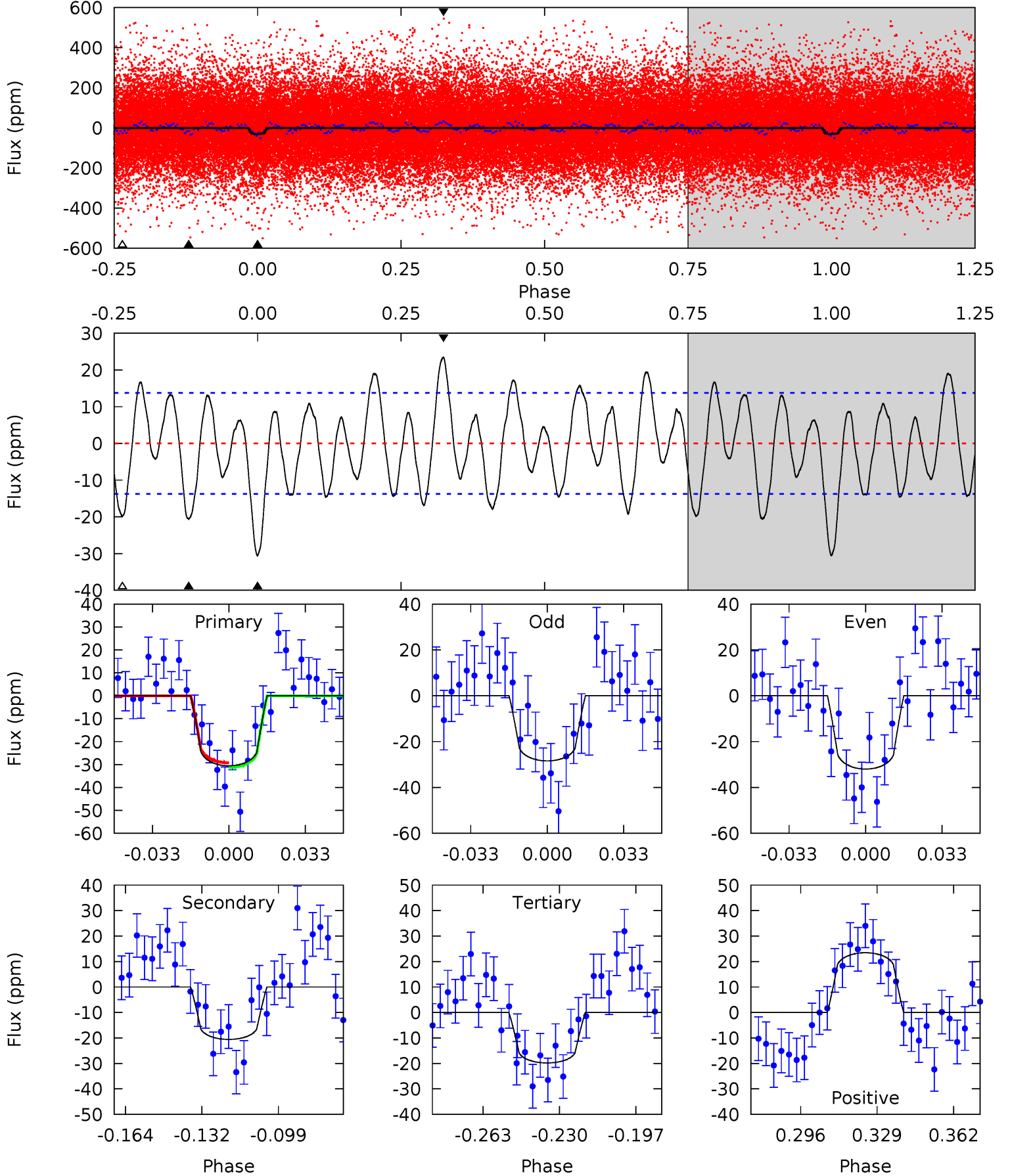
TCE 008648356-01 P= 4.575694 Days $T_0=131.951286$ (BKJD)



DV Model-Shift Uniqueness Test

008648356-01, P = 4.575737 Days, E = 127.361433 Days

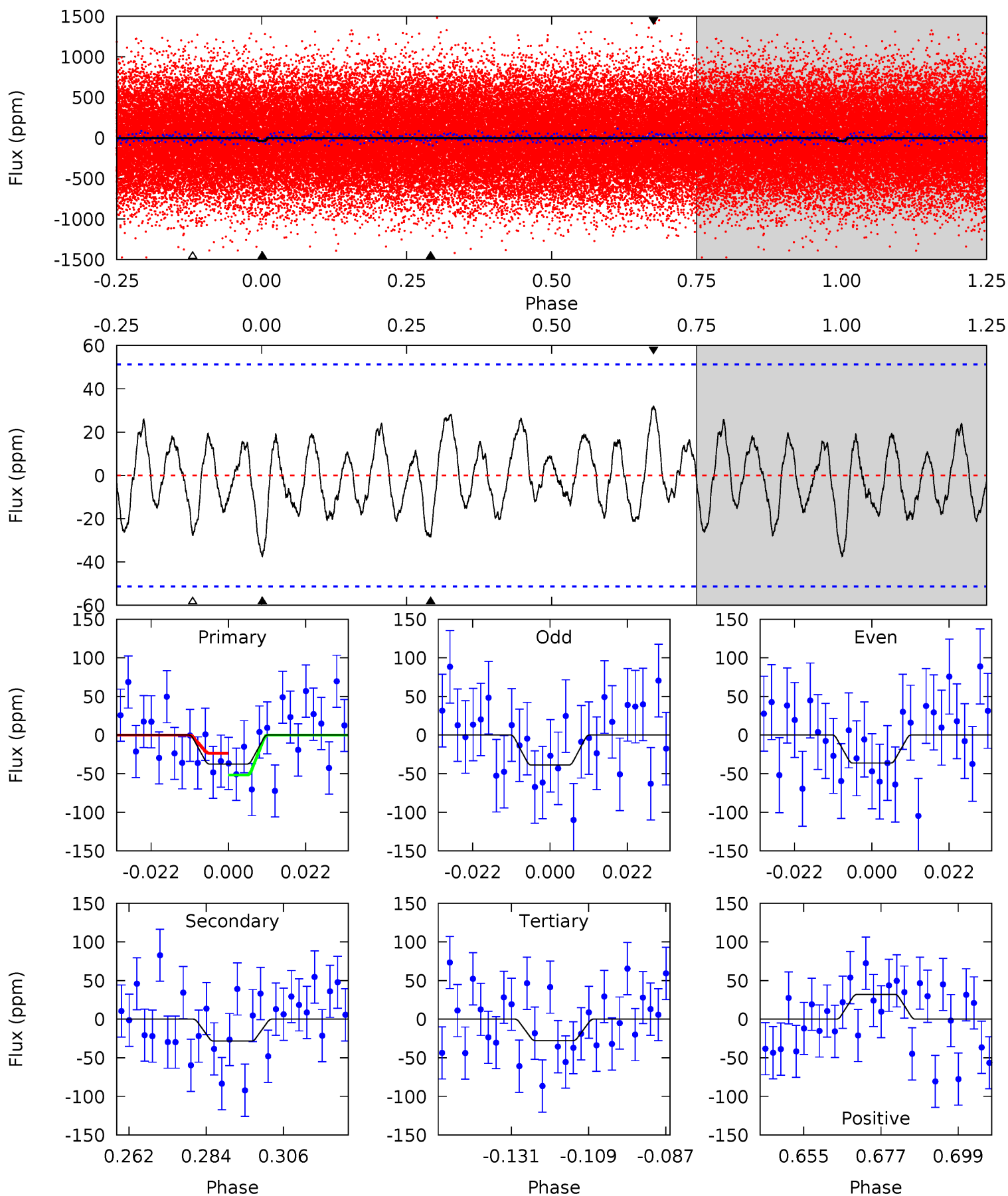
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.7	7.17	6.91	8.18	4.79	2.13	3.47	3.75	2.48	0.26	-1.01	0.62	1.03	0.43	0.34



Alt Model-Shift Uniqueness Test

008648356-01, P = 4.575694 Days, E = 127.375592 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3.56	2.69	2.64	3.05	4.87	2.29	1.26	0.92	0.52	0.05	-0.35	0.12	0.98	0.46	1.34



Stellar Parameters For KIC 008648356

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	7693^{+214}_{-322}	$3.987^{+0.198}_{-0.149}$	$0.070^{+0.200}_{-0.350}$	$2.285^{+0.514}_{-0.628}$	$1.848^{+0.136}_{-0.339}$	$0.218^{+0.247}_{-0.085}$
	+3%/-4%	+5%/-4%	+286%/-500%	+22%/-27%	+7%/-18%	+113%/-39%
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 008648356-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-21 ± 3	$1.37^{+0.32}_{-0.32}$	2762^{+192}_{-211}	6777^{+873}_{-704}	26^{+17}_{-9}
Alt.	-28 ± 11	$1.67^{+0.36}_{-0.35}$	2772^{+192}_{-209}	6585^{+994}_{-942}	23^{+18}_{-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 $A_{obs} \gg 1.0$

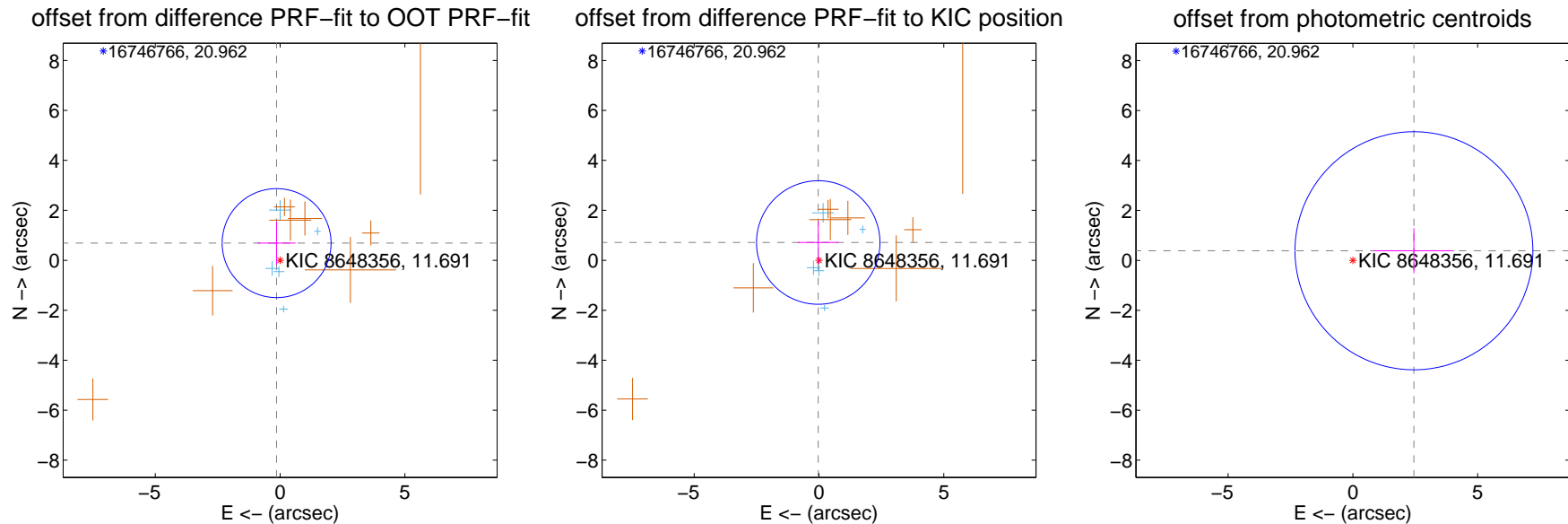
DV Centroid Data

Supplemental centroid analysis for 008648356-01. **Kepler magnitude: 11.69**. Transit SNR 8.00

There are 6 quarters with good PRF difference image offsets

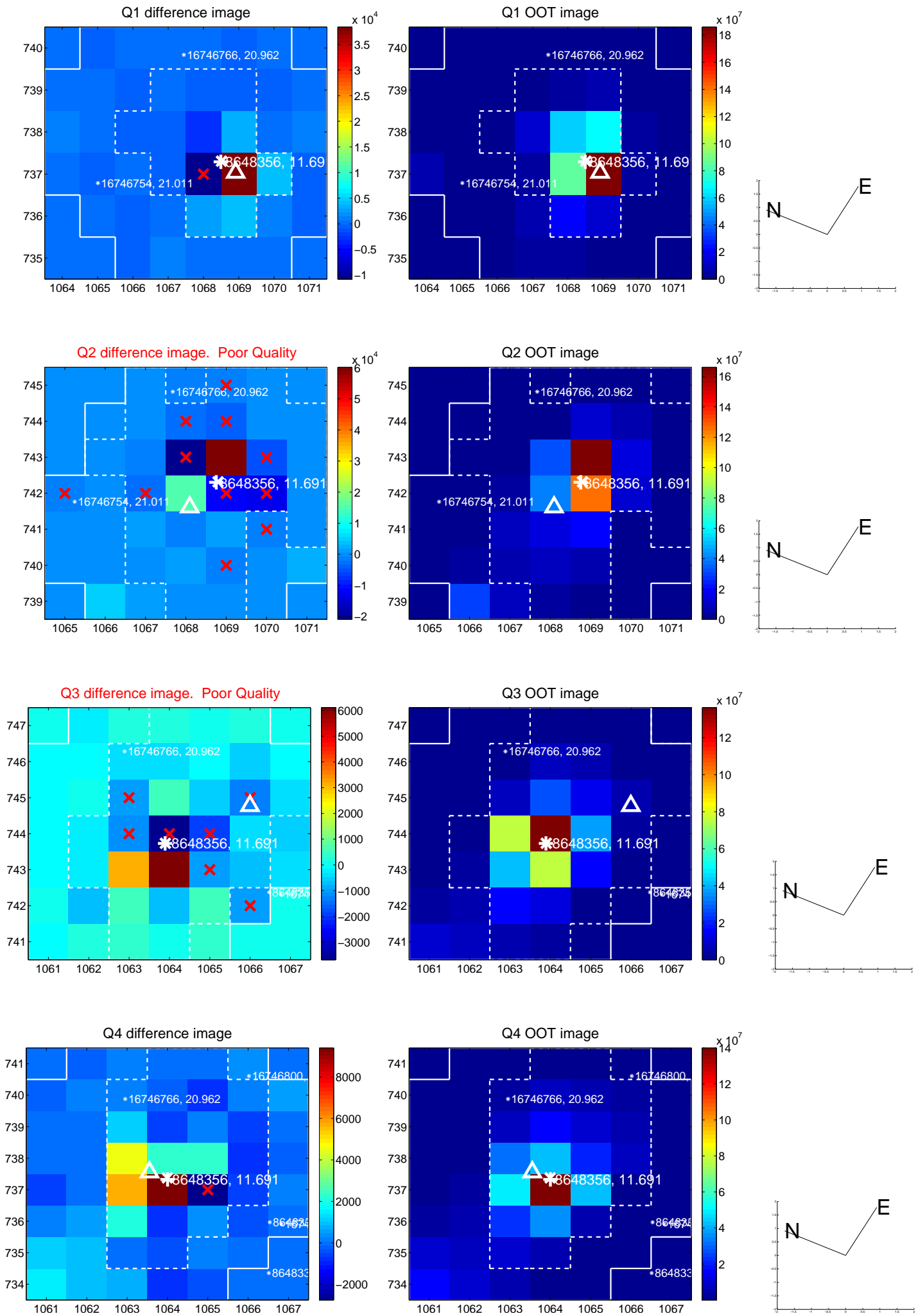
The direct PRF centroid is offset from the target star catalog position by about 0.14 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.702 ± 0.727	0.96	0.140 ± 0.761	0.688 ± 0.859
PRF-fit source offset from KIC position	0.713 ± 0.824	0.86	0.030 ± 0.813	0.712 ± 0.853
photometric centroid source offset	2.48 ± 1.59	1.56	-2.45 ± 1.60	0.38 ± 0.90

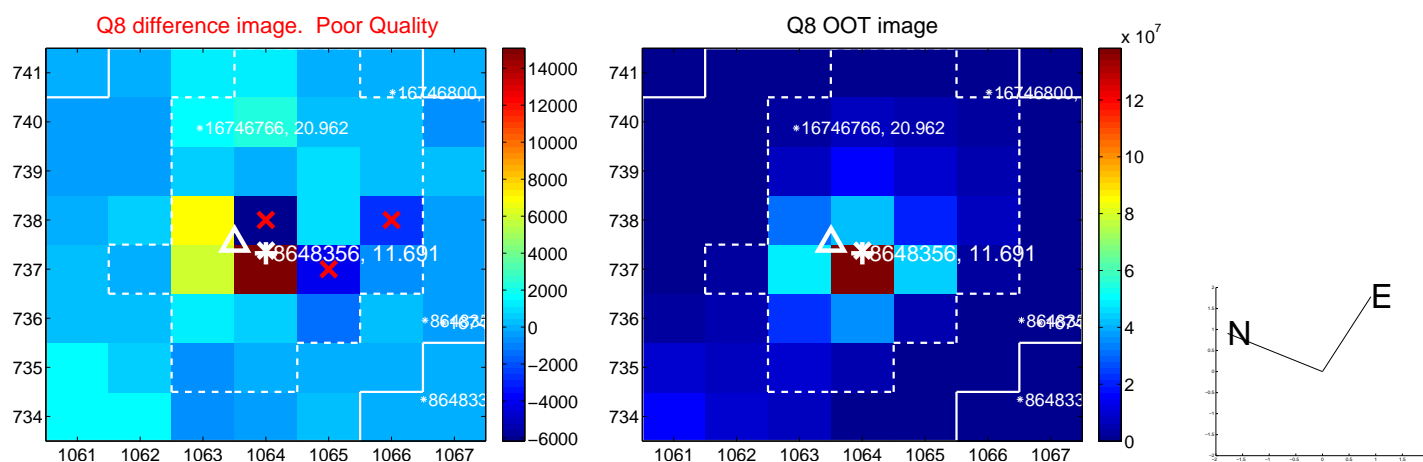
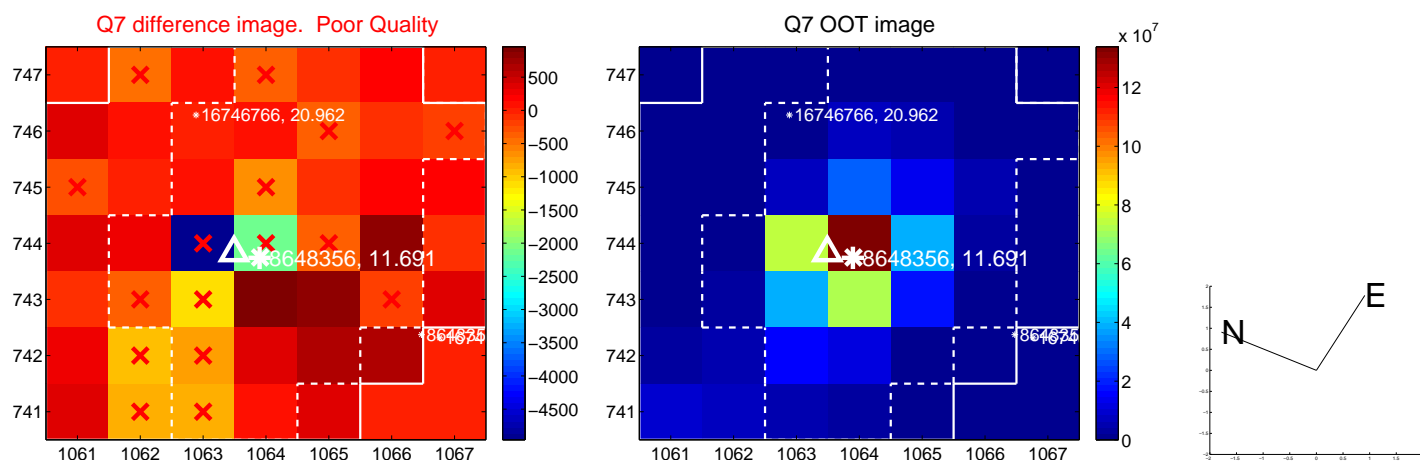
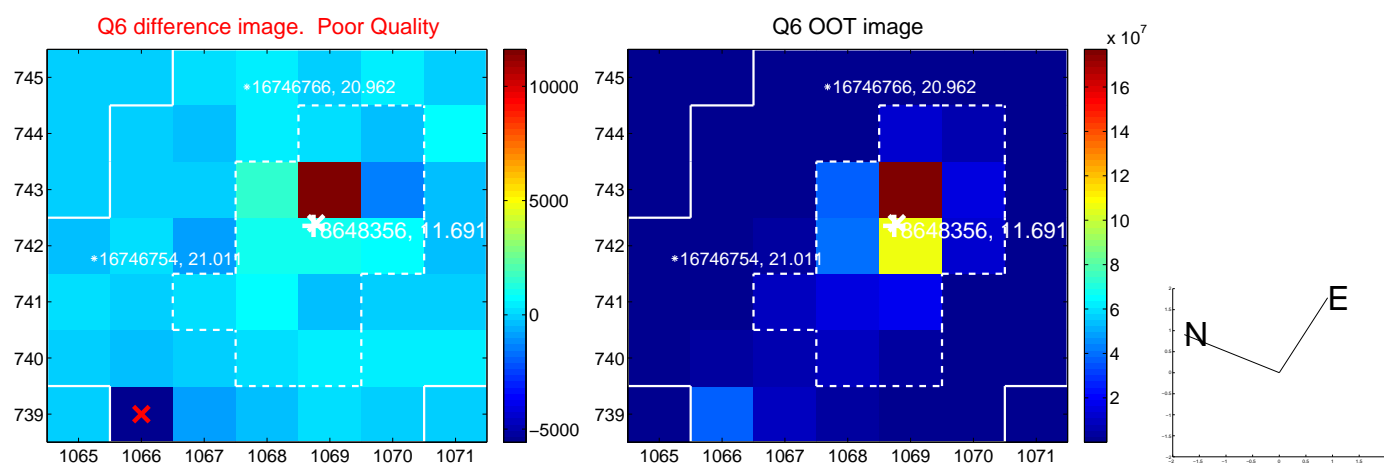
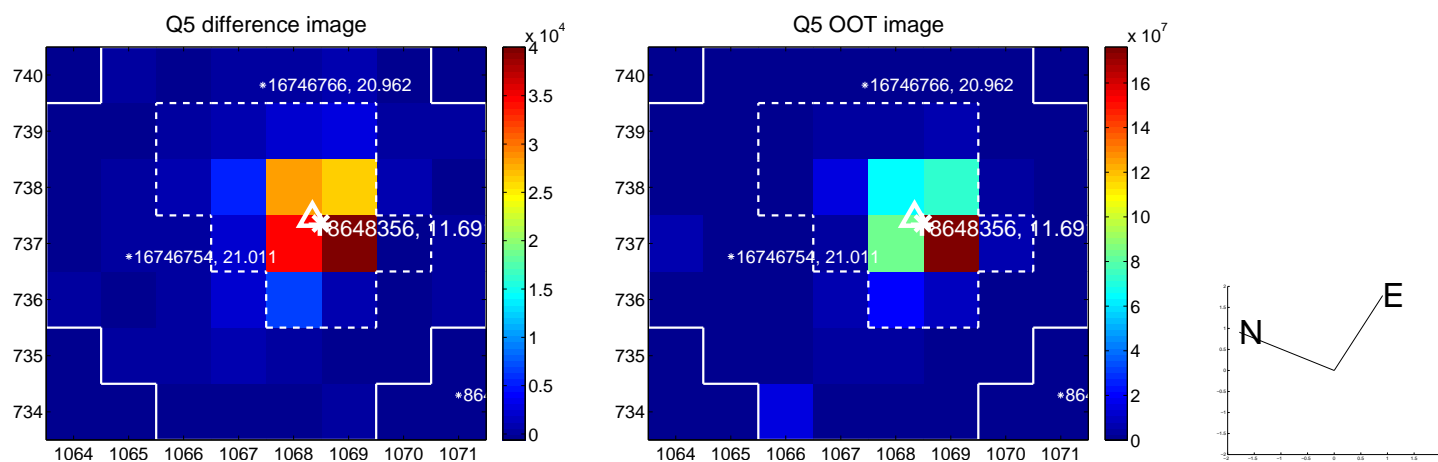


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

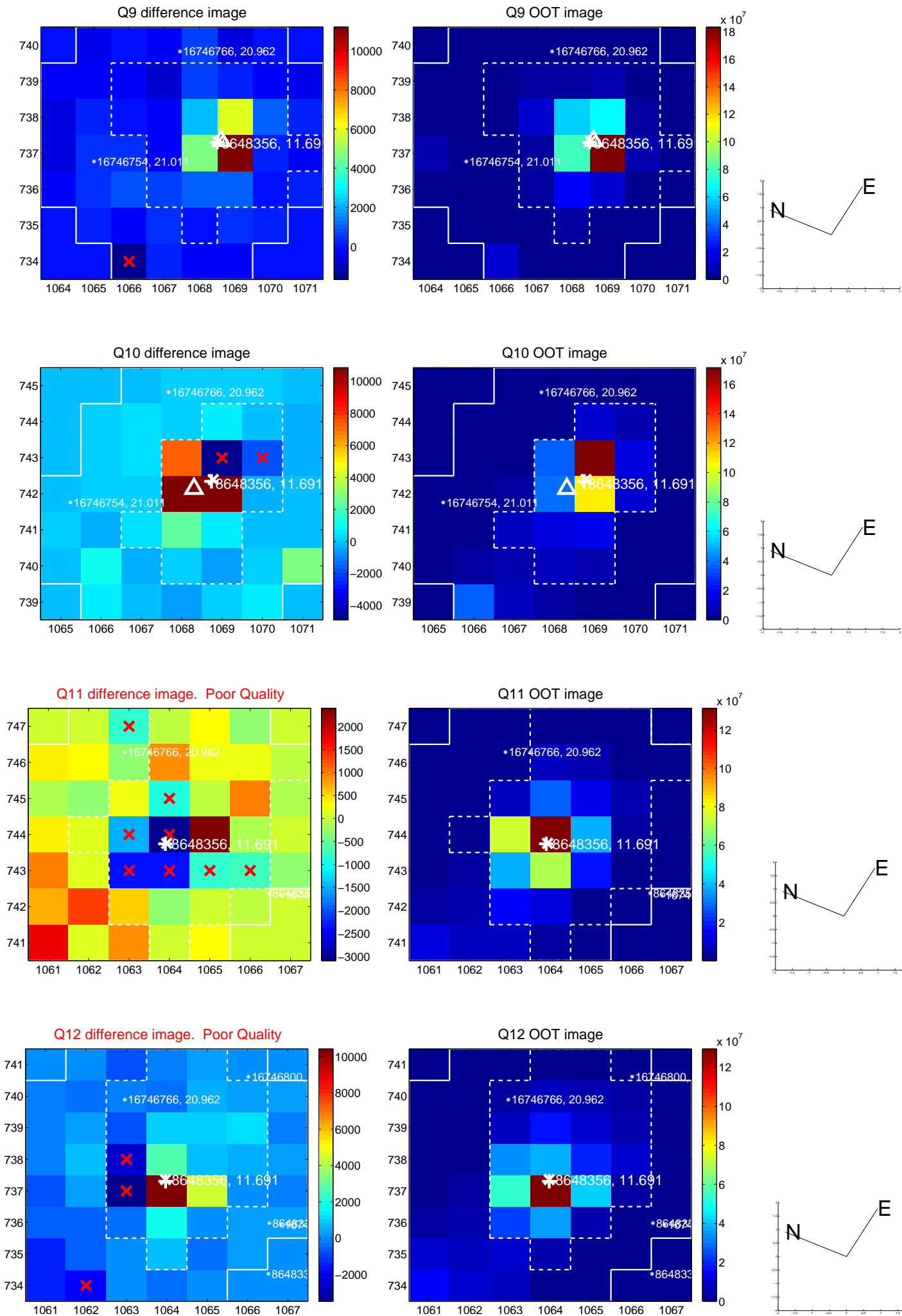
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



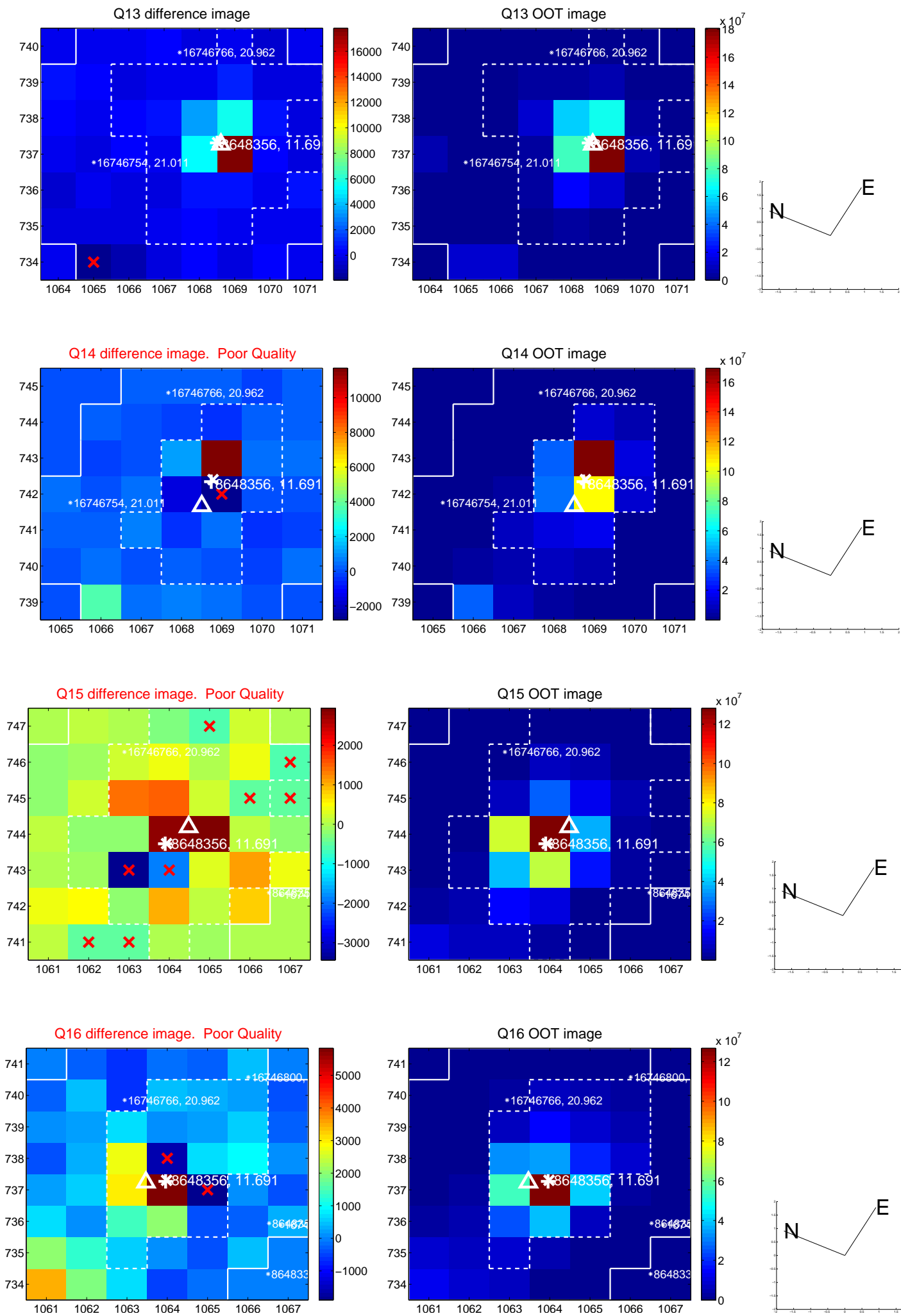
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



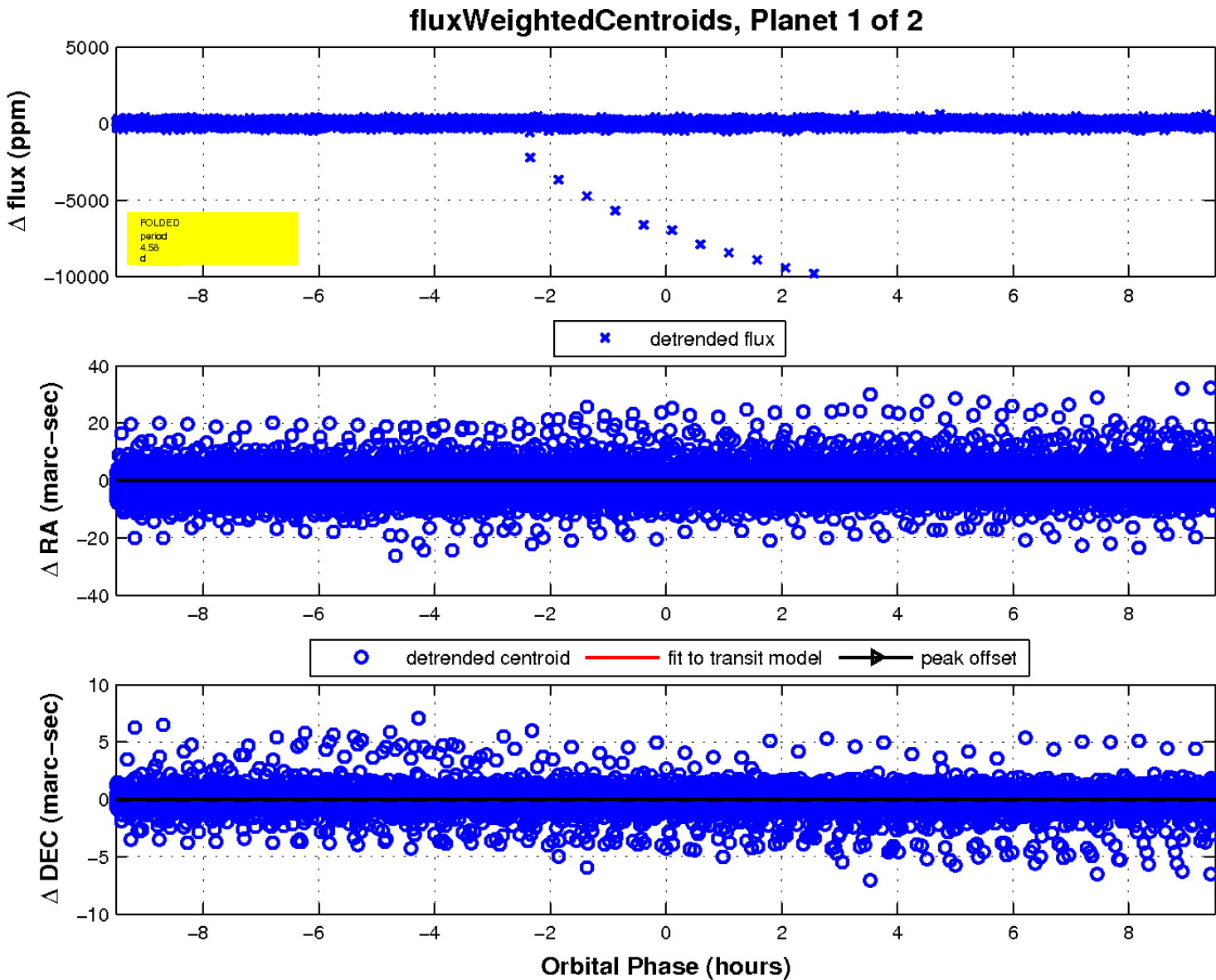
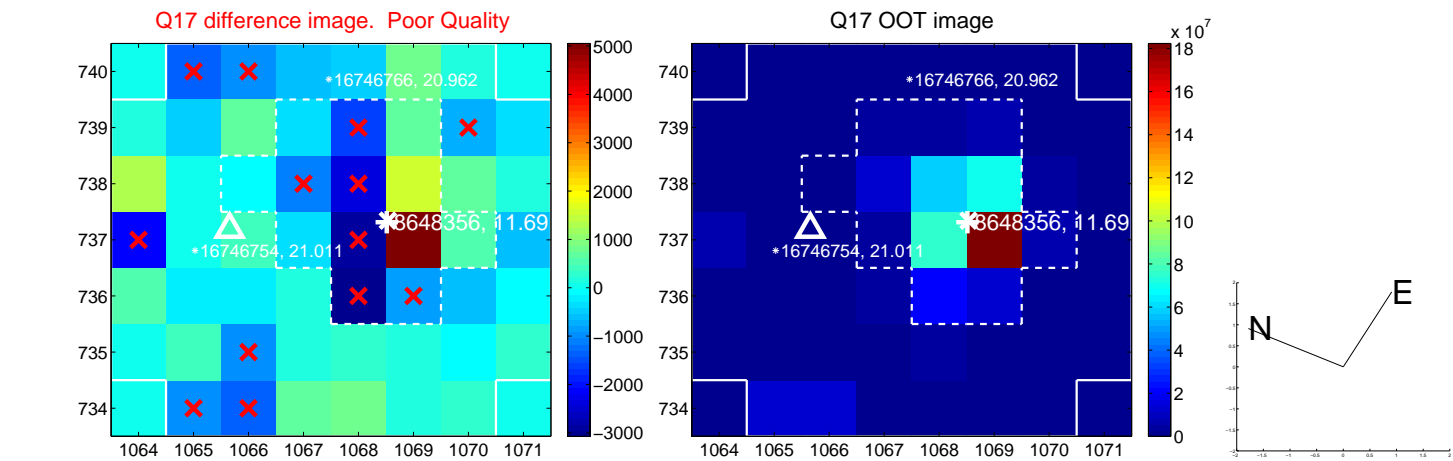
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



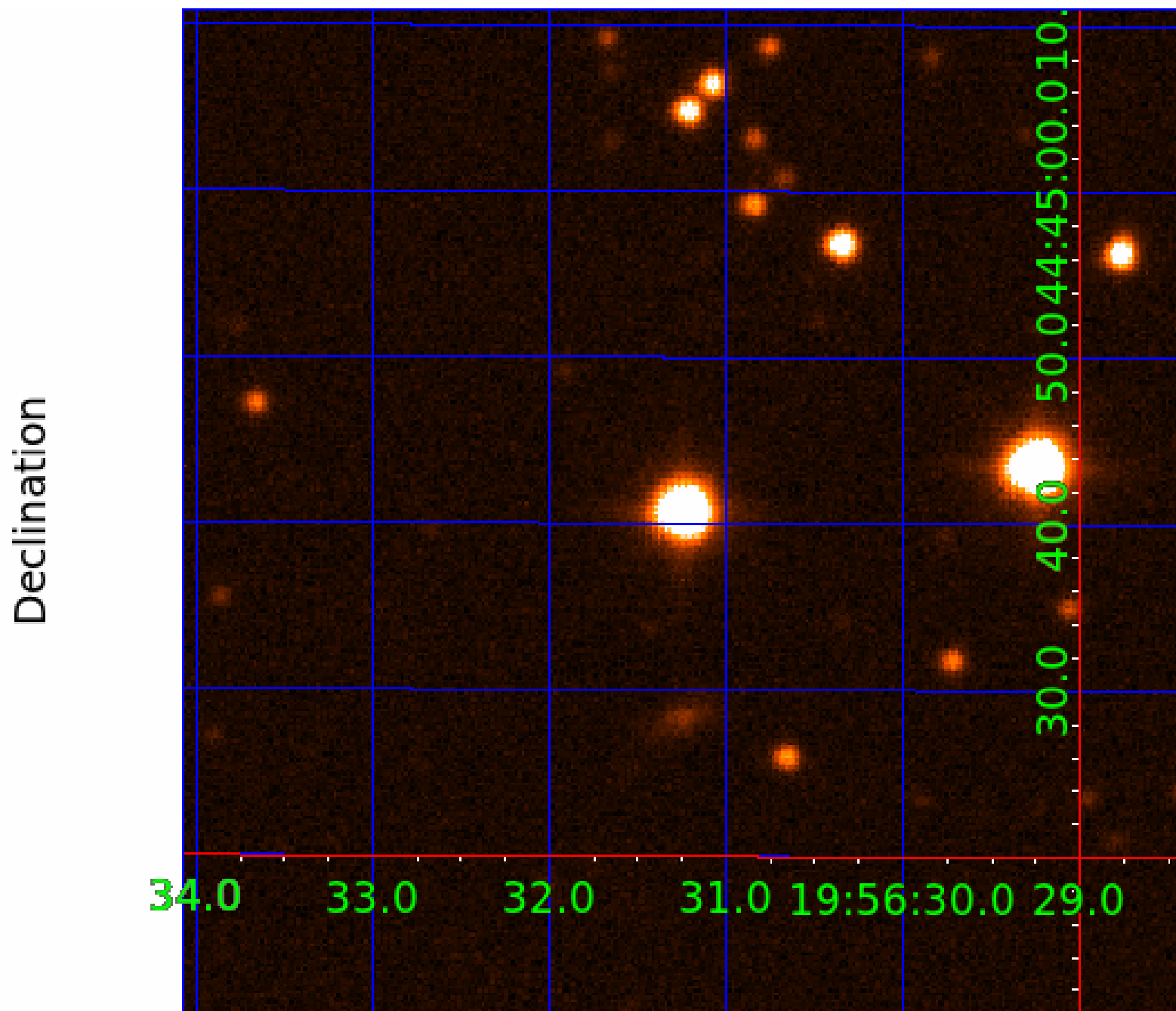
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image



KIC 008648356

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})
008648356-01	OBS	No	4.575737	131.937170	30.9	3.168	8.0	8.0	2.29	7693	1.38	3737.55
008648356-02	OBS	No	0.510400	132.213105	2.1	1.469	12.7	1.2	2.29	7693	0.34	69607.18

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008648356-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
008648356-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT

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

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

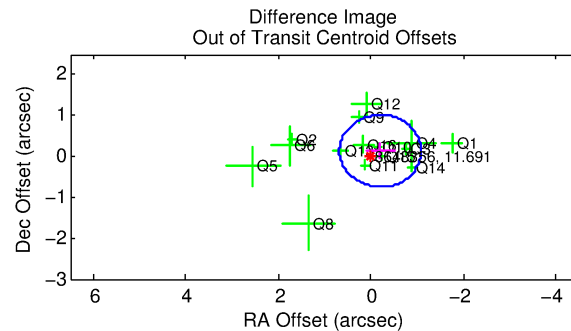
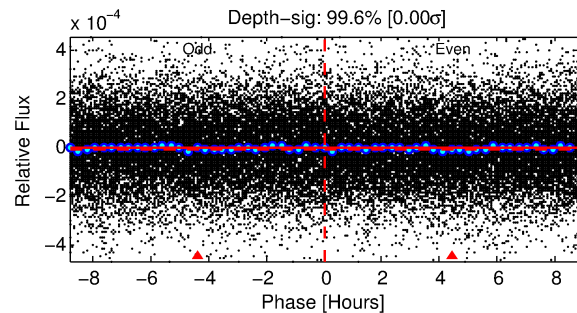
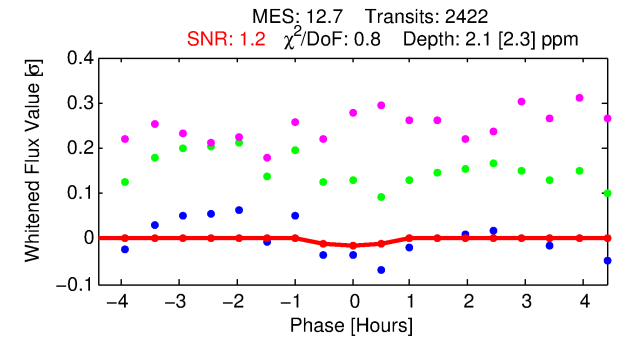
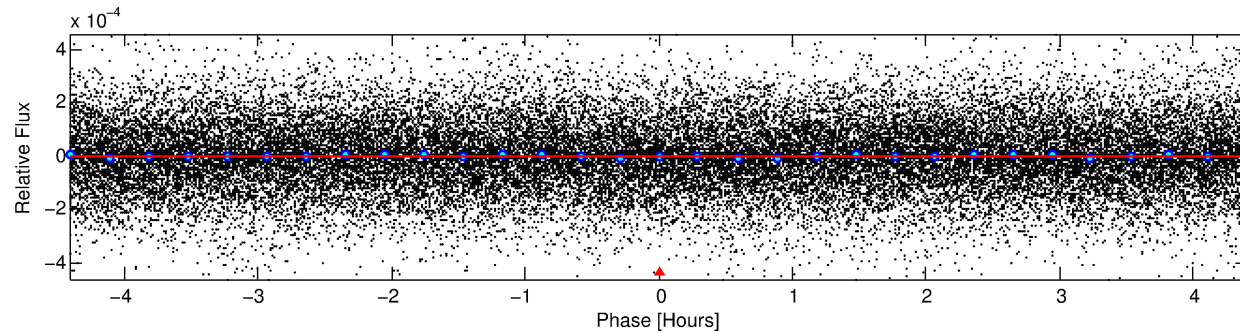
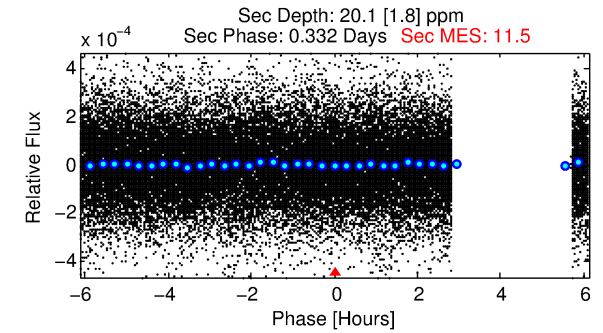
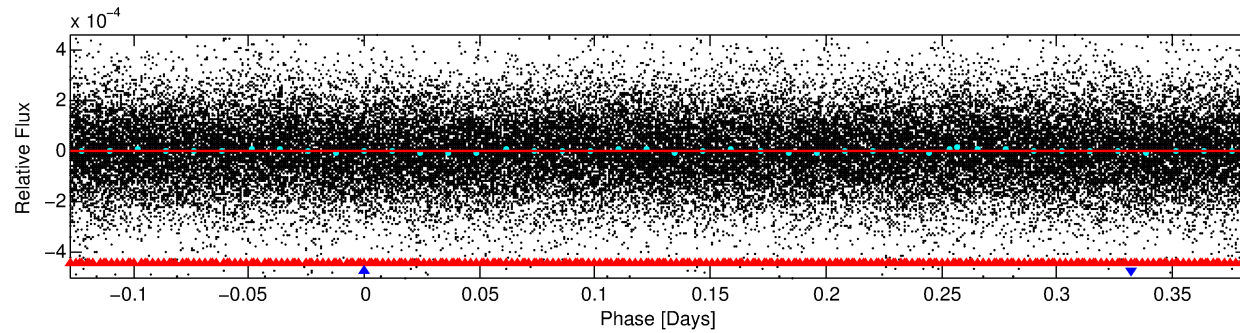
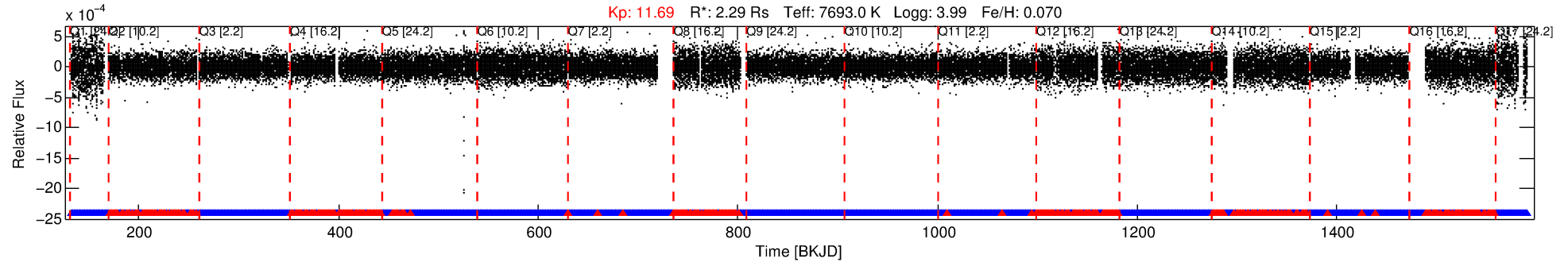
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008648356-02

No Significant Match Found

DV One-Page Summary

KIC: 8648356 Candidate: 2 of 2 Period: 0.510 d



DV Fit Results:

Period = 0.51040 [0.00008] d
Epoch = 132.2131 [0.0167] BKJD
Rp/R* = 0.0014 [0.0020]
a/R* = 2.63 [18.89]
b = 0.28 [27.82]
Seff = 69607.18 [27314.27]
Teq = 4142 [406] K
Rp = 0.34 [0.51] Re
a = 0.0153 [0.0037] AU
Ag = 22.98 [69.38] [0.32σ]
Teffp = 14021 [10524] K [0.94σ]

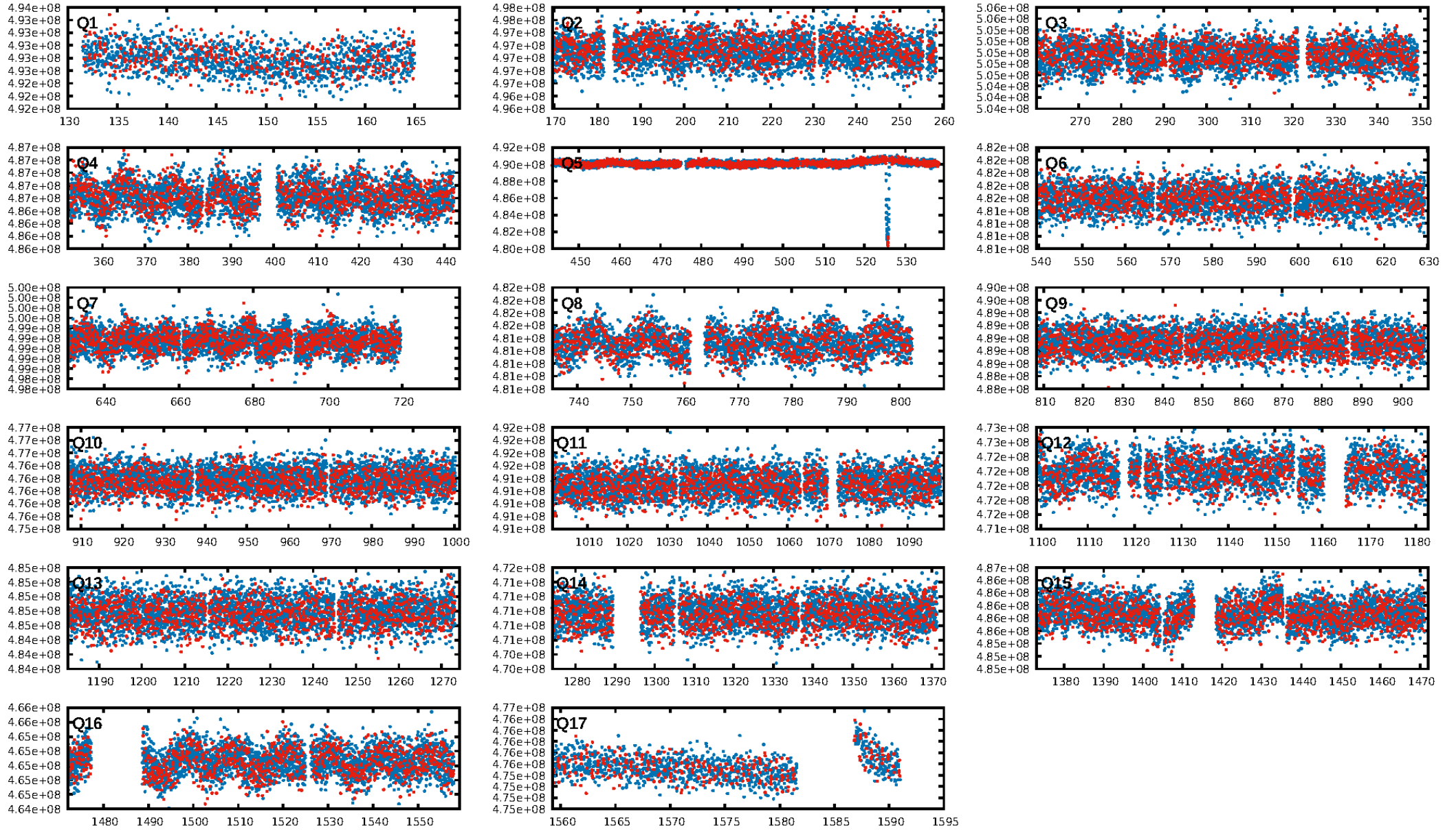
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [27.94σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 3.10e-30
RollingBand-fgt: 0.81 [1862/2308]
GhostDiagnostic-chr: N/A
Centroid-sig: N/A
Centroid-so: N/A
OotOffset-rm: 0.240 arcsec [0.81σ]
KicOffset-rm: 0.388 arcsec [1.35σ]
OotOffset-st: 4/3/4/4 [15]
KicOffset-st: 4/3/4/4 [15]
DiffImageQuality-fgm: 0.73 [11/15]
DiffImageOverlap-fno: 1.00 [17/17]

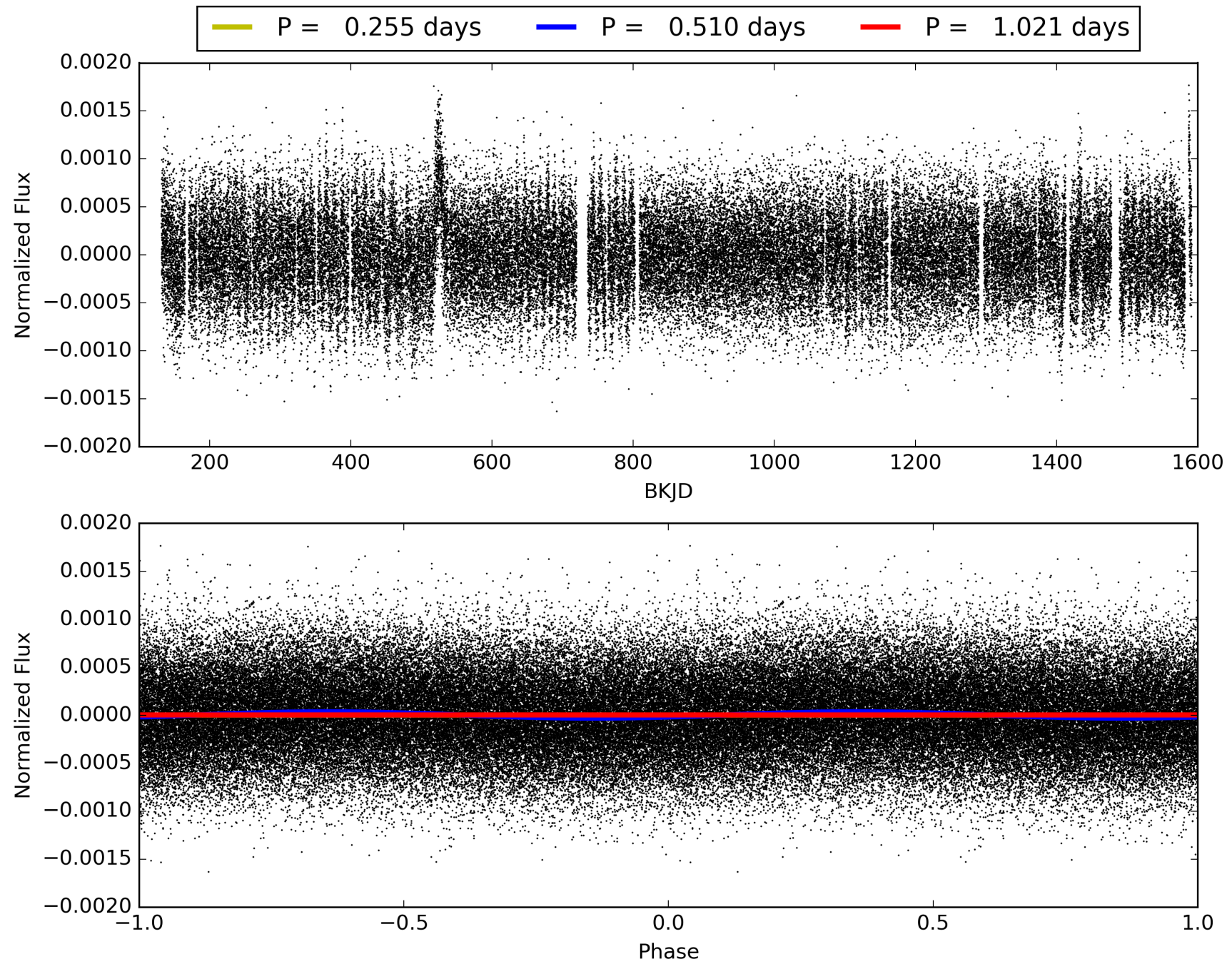
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 23:22:10 Z

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

TCE 008648356-02, PDC Light Curves

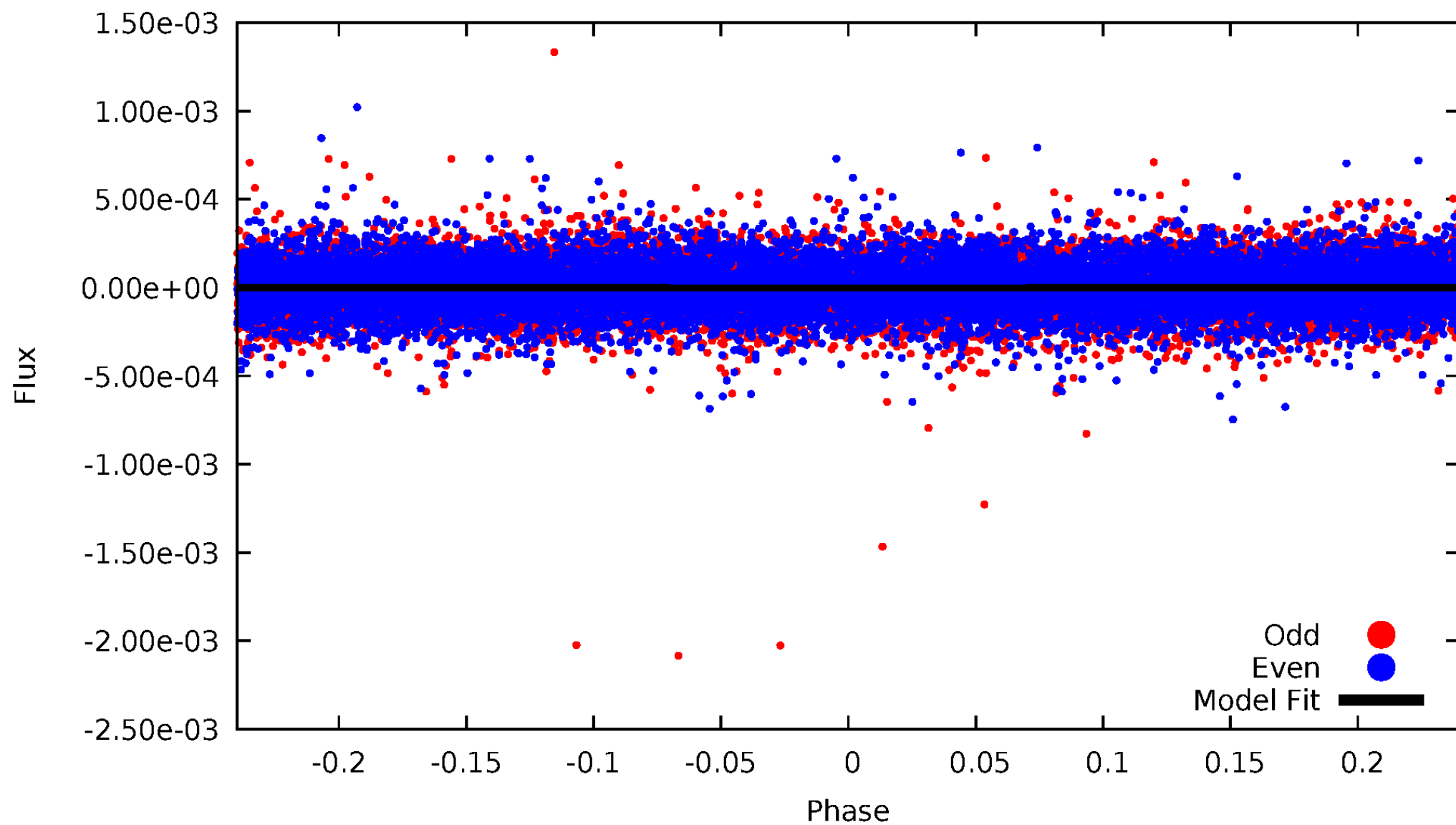


TCE 008648356-02



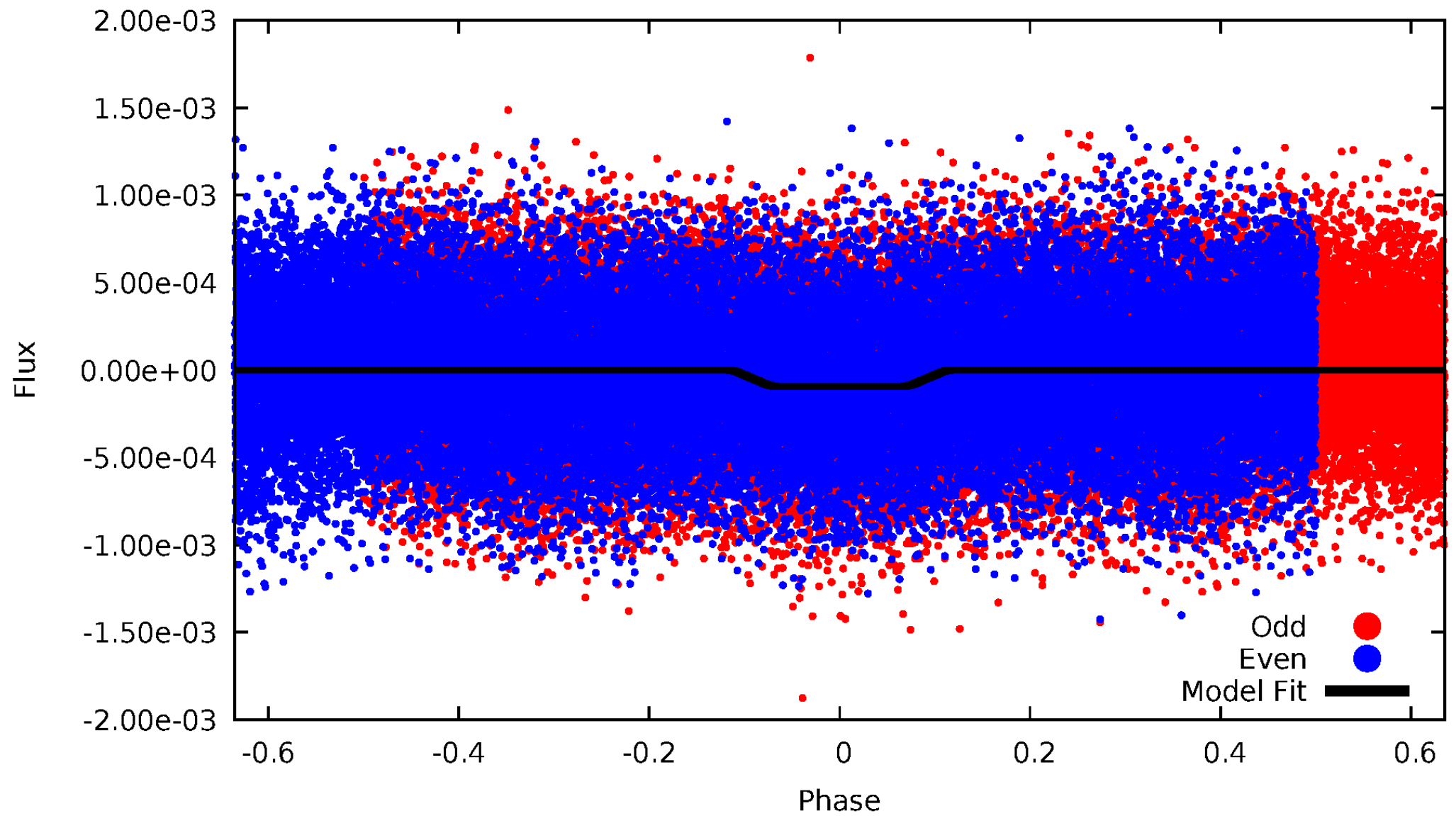
DV Odd/Even

TCE 008648356-02



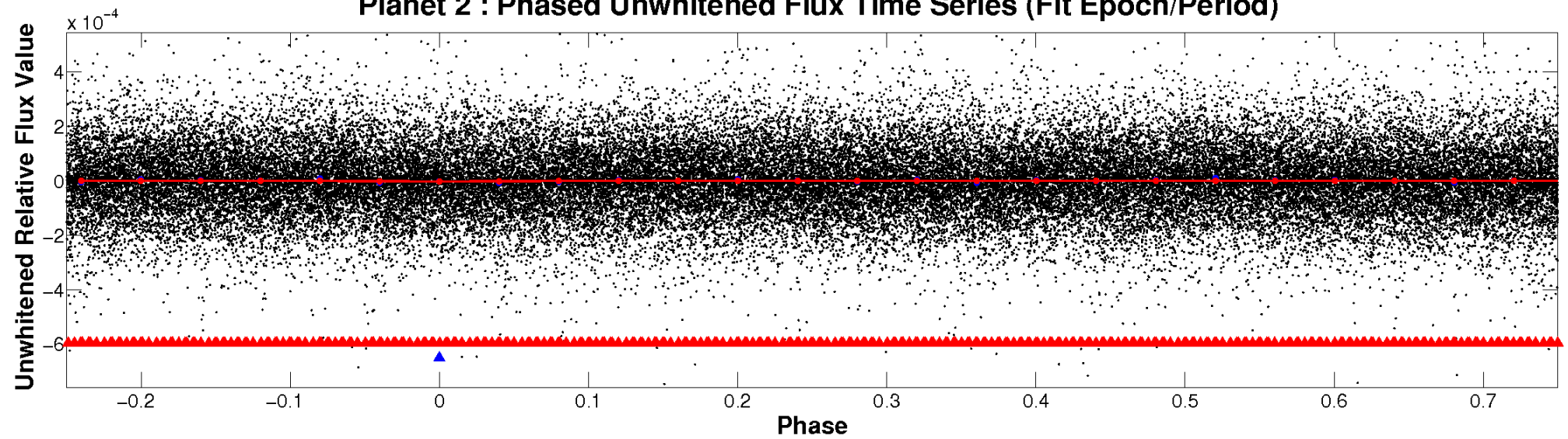
ALT Odd/Even

TCE 008648356-02

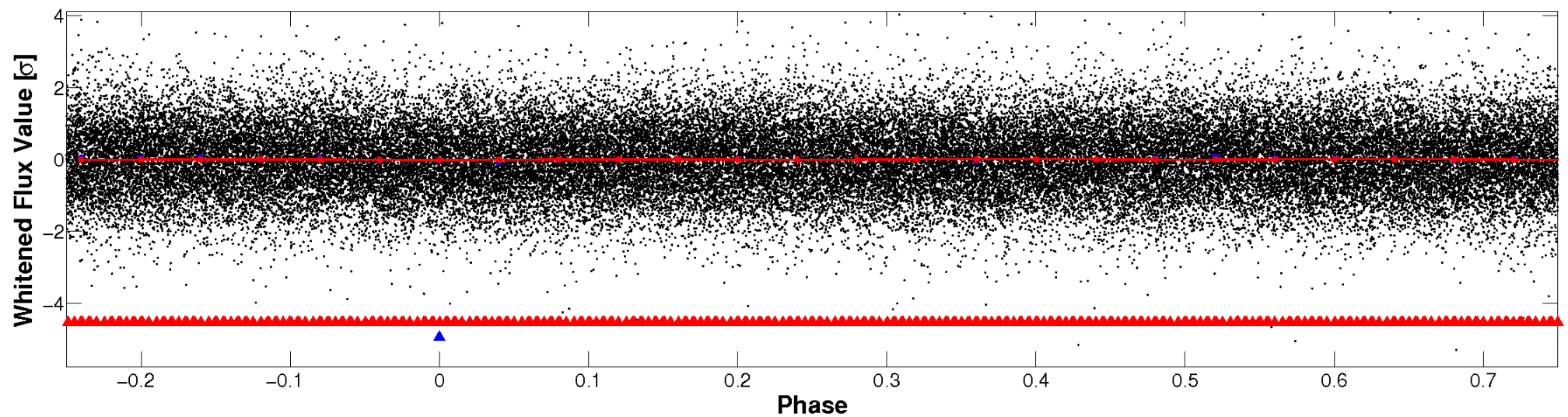


Non-Whitened Vs. Whitened Light Curve

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

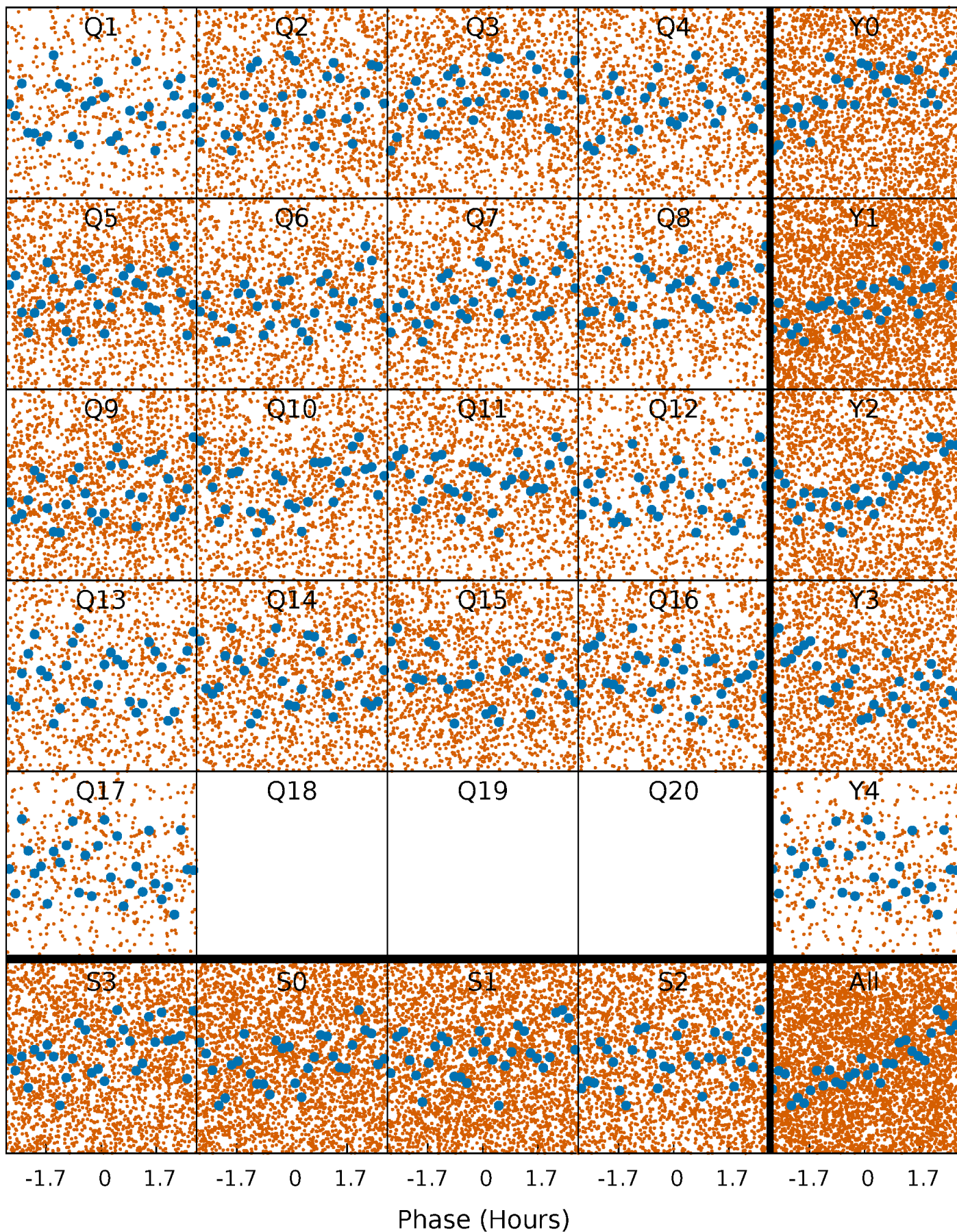


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



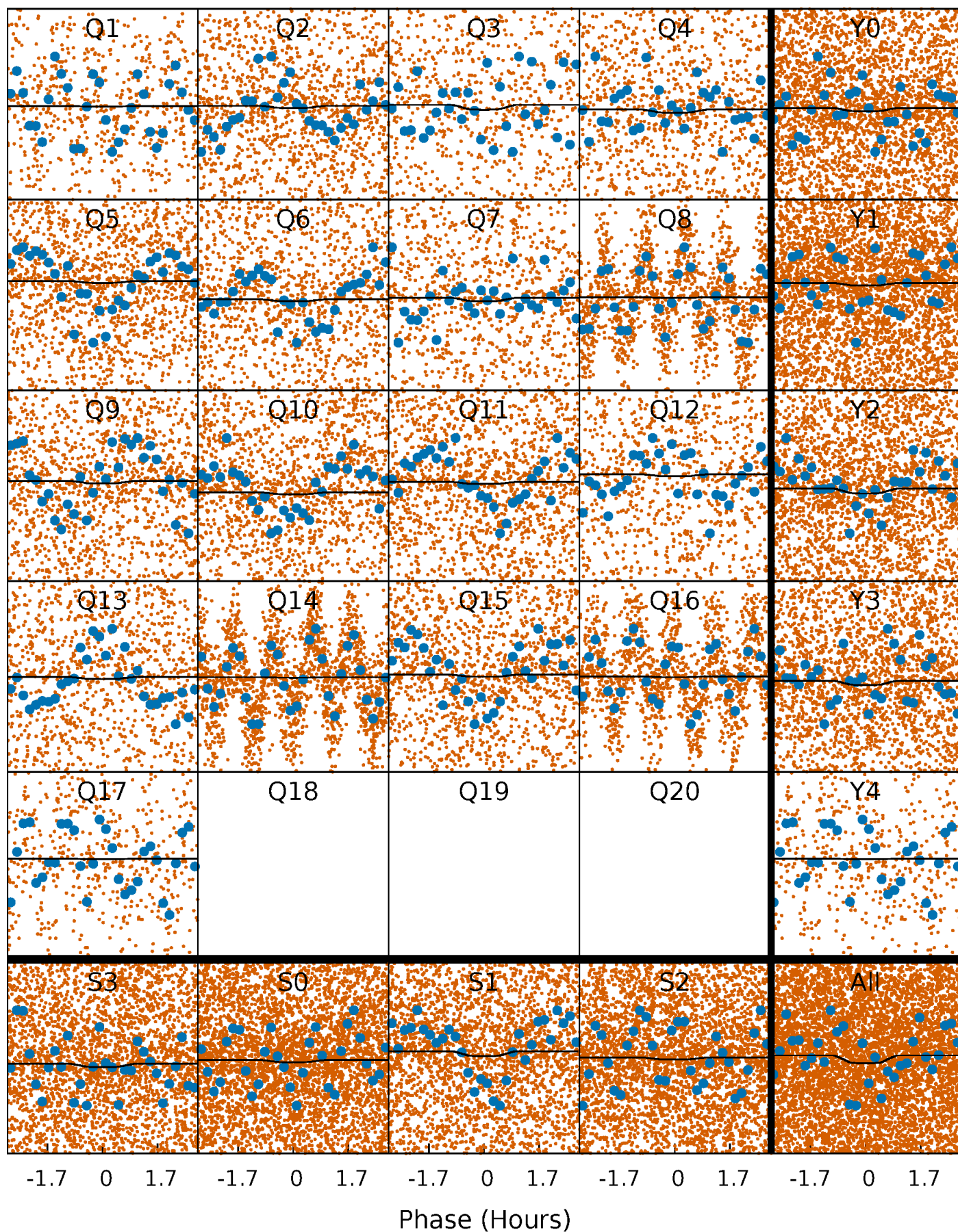
PDC Quarter-Phased Transit Curves

TCE 008648356-02 P= 0.510400 Days $T_0=132.213104$ (BKJD)



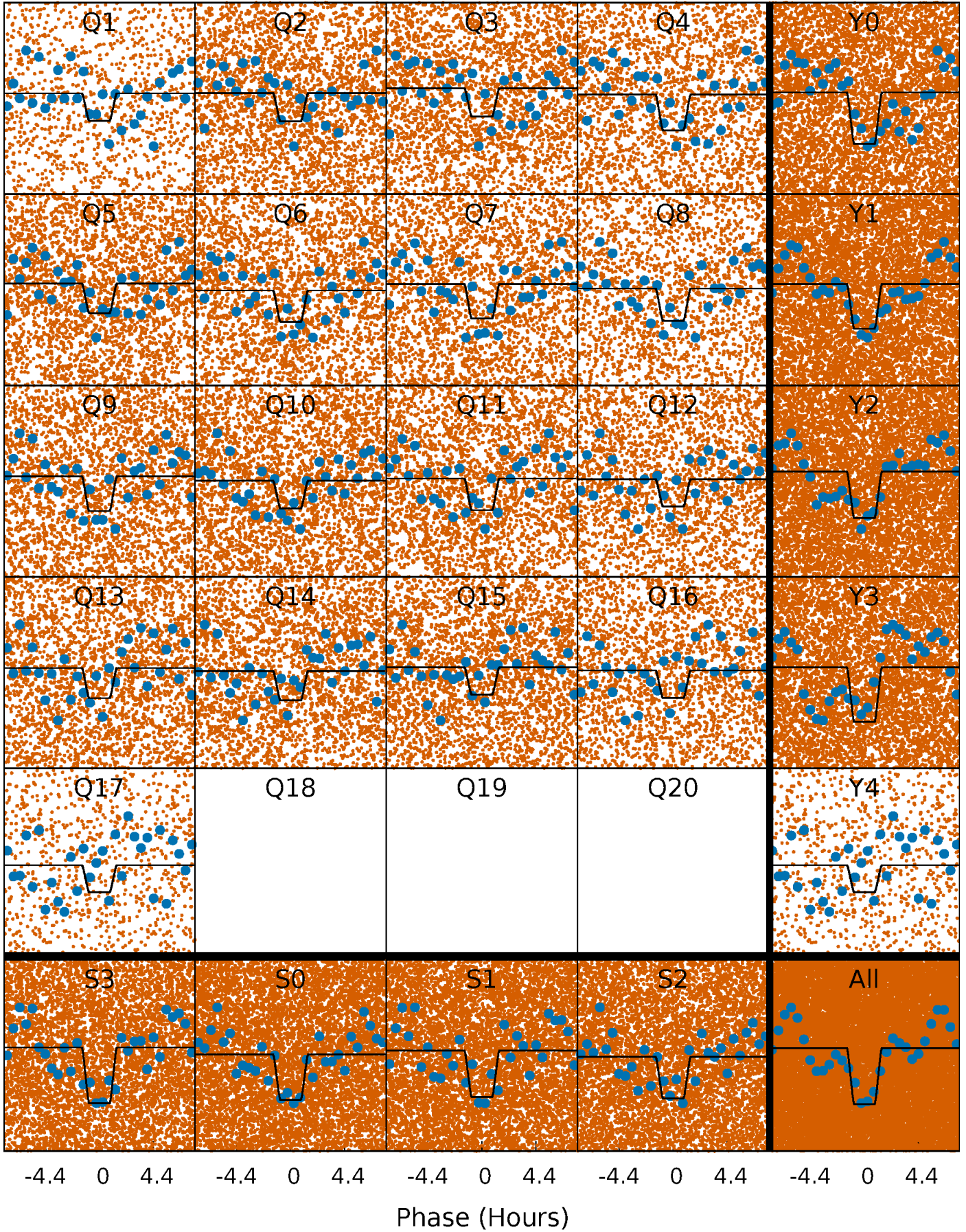
DV Quarter-Phased Transit Curves

TCE 008648356-02 $P = 0.510400$ Days $T_0 = 132.213104$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

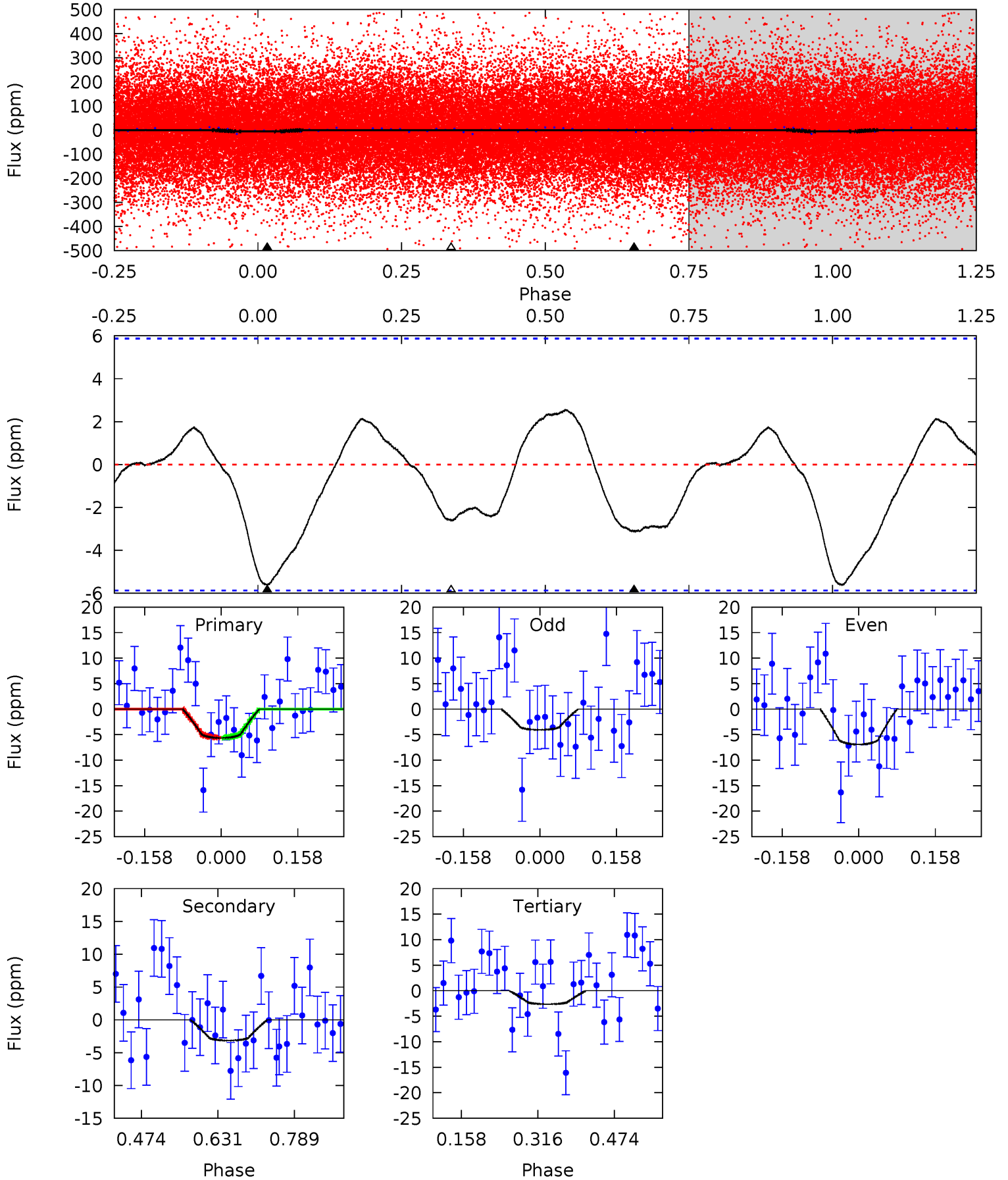
TCE 008648356-02 P= 0.510587 Days $T_0=131.891178$ (BKJD)



DV Model-Shift Uniqueness Test

008648356-02, P = 0.510400 Days, E = 131.192304 Days

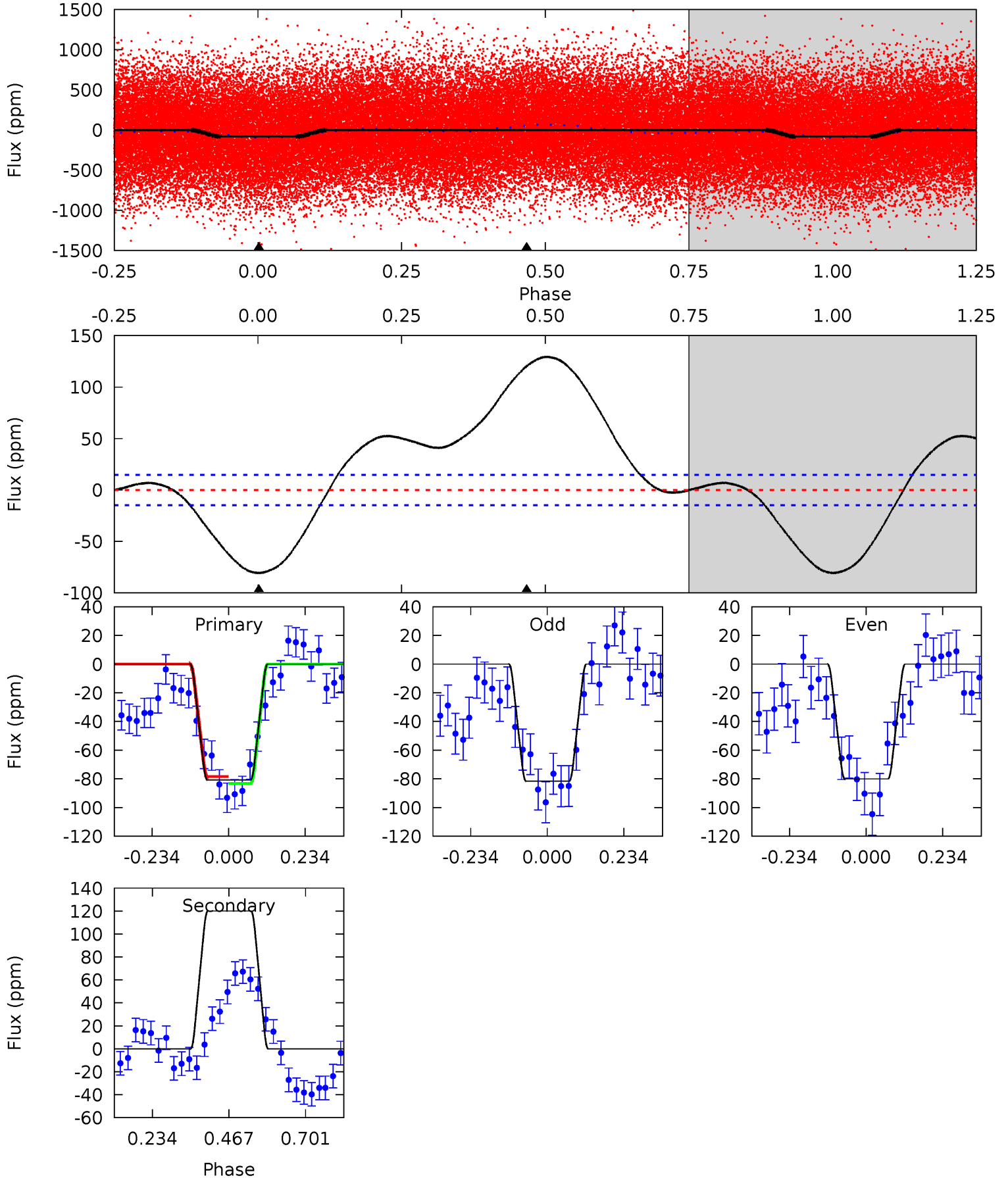
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4.30	2.40	2.00	0	4.47	1.41	1.19	2.30	4.30	0.39	2.40	1.10	1.27	0.31	0.01



Alt Model-Shift Uniqueness Test

008648356-02, P = 0.510587 Days, E = 131.380591 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
24.0	-35.7	0	0	4.38	1.19	5.79	24.0	24.0	-35.7	-35.7	0.22	0.95	0.62	0.72



Stellar Parameters For KIC 008648356

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	7693^{+214}_{-322}	$3.987^{+0.198}_{-0.149}$	$0.070^{+0.200}_{-0.350}$	$2.285^{+0.514}_{-0.628}$	$1.848^{+0.136}_{-0.339}$	$0.218^{+0.247}_{-0.085}$
	+3%/-4%	+5%/-4%	+286%/-500%	+22%/-27%	+7%/-18%	+113%/-39%
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 008648356-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-3 ± 1	$0.48^{+0.45}_{-0.30}$	5732^{+403}_{-464}	6540^{+7712}_{-2746}	$1.554^{+10.127}_{-1.159}$
Alt.	120 ± 3	$2.38^{+0.68}_{-0.57}$	5771^{+402}_{-458}	-8507^{+874}_{-1377}	$-2.723^{+1.106}_{-1.930}$

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 $A_{obs} \gg 1.0$

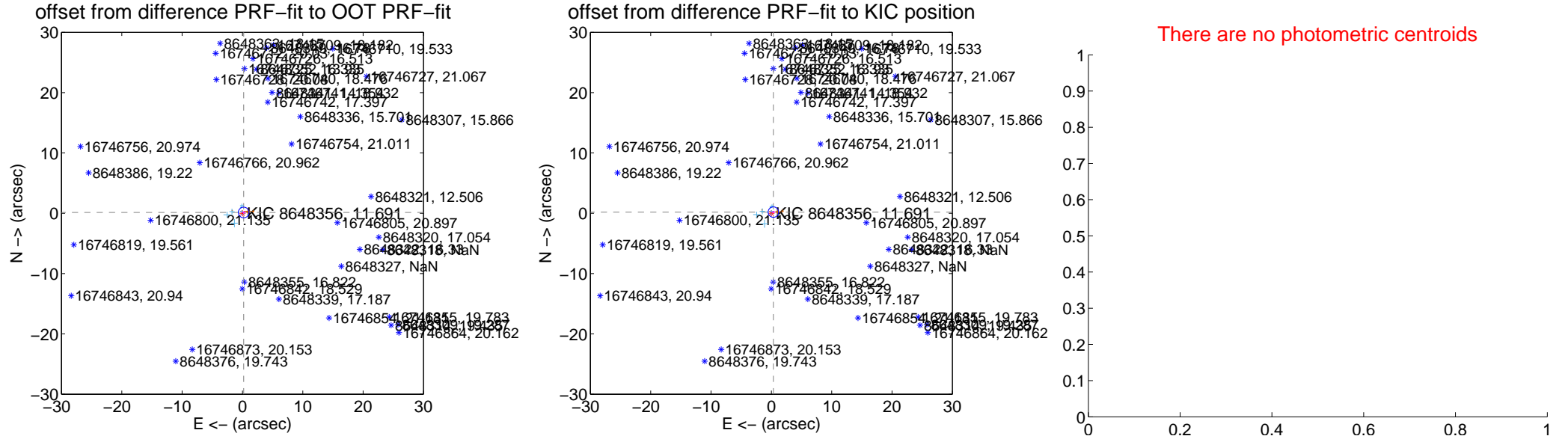
DV Centroid Data

Supplemental centroid analysis for 008648356-02. **Kepler magnitude: 11.69.** Transit SNR 1.18

There are 11 quarters with good PRF difference image offsets

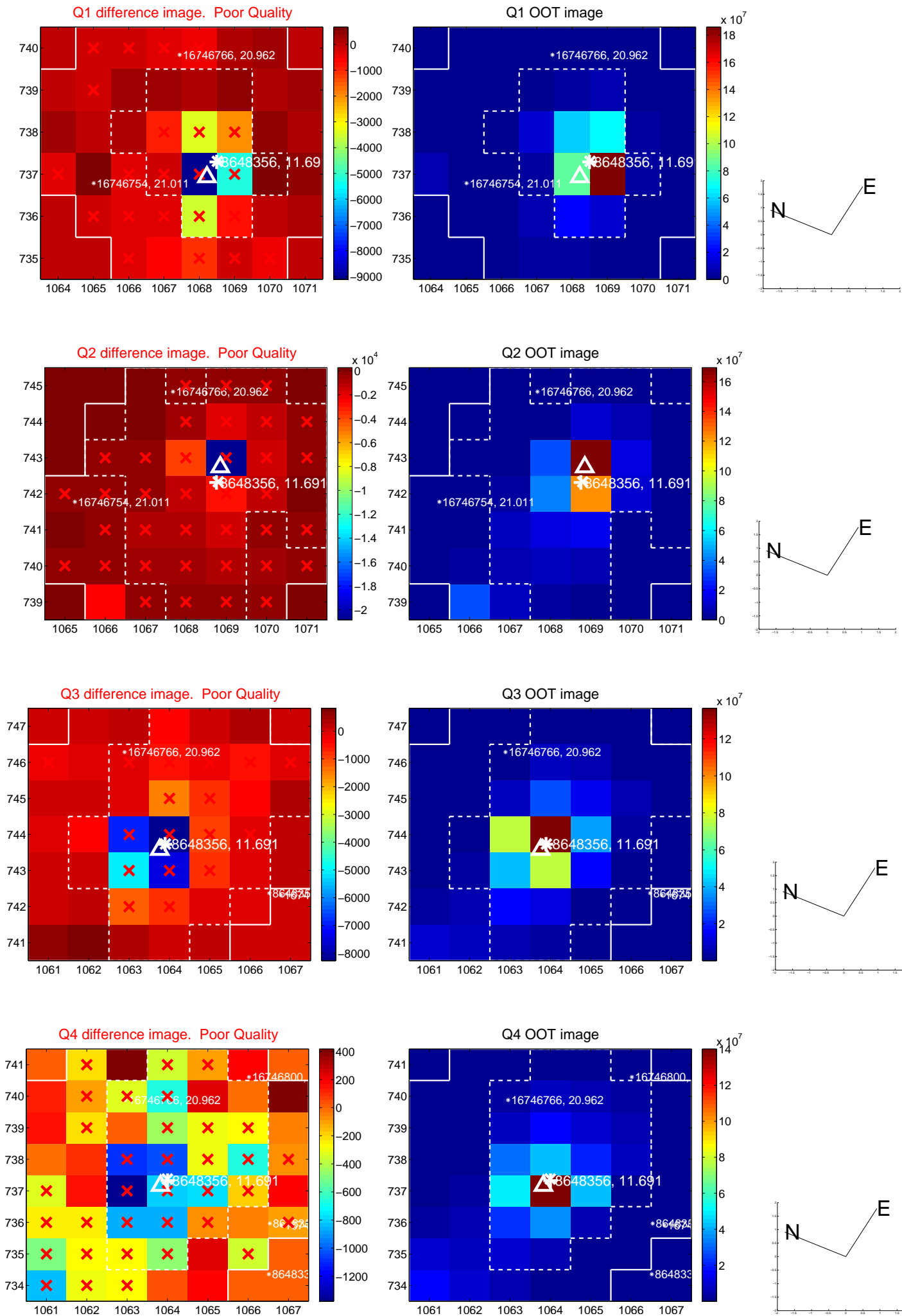
The direct PRF centroid is offset from the target star catalog position by about 0.15 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.240 ± 0.294	0.81	-0.199 ± 0.302	0.133 ± 0.175
PRF-fit source offset from KIC position	0.388 ± 0.288	1.35	-0.335 ± 0.294	0.197 ± 0.175
photometric centroid source offset	—	—	—	—

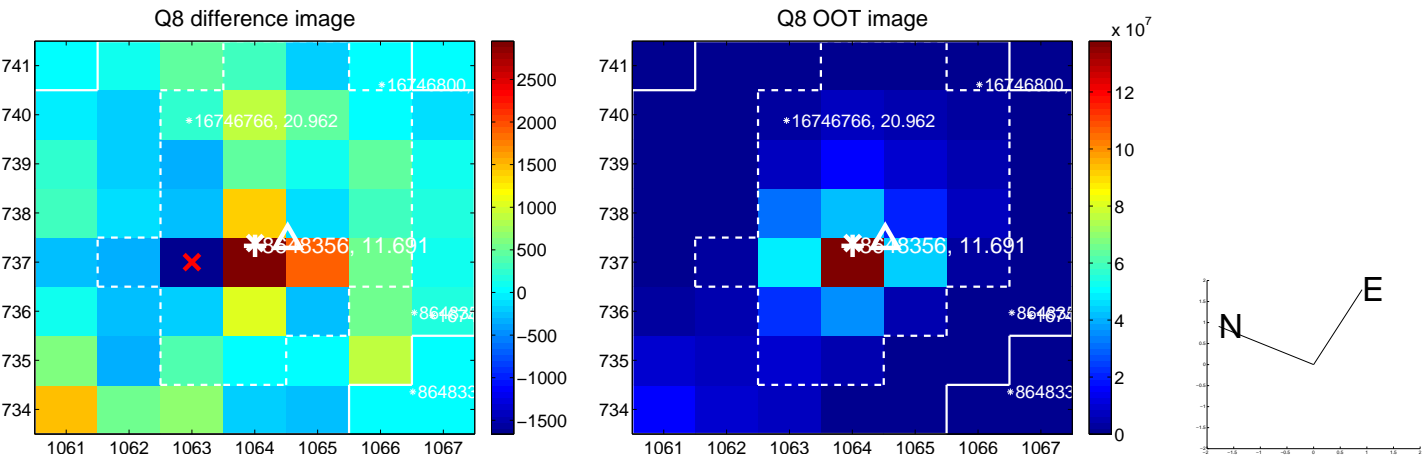
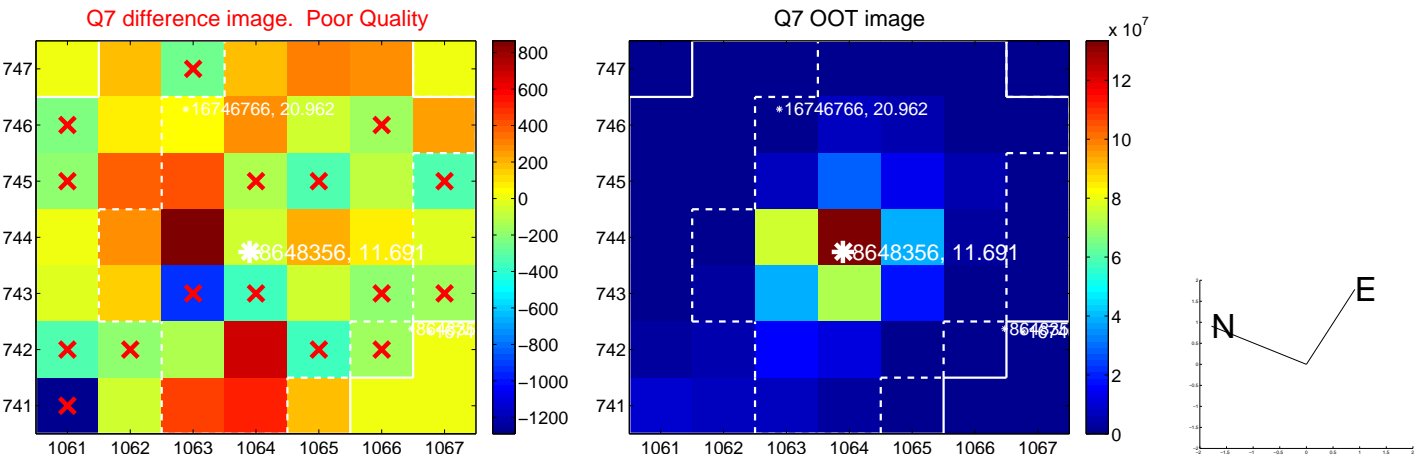
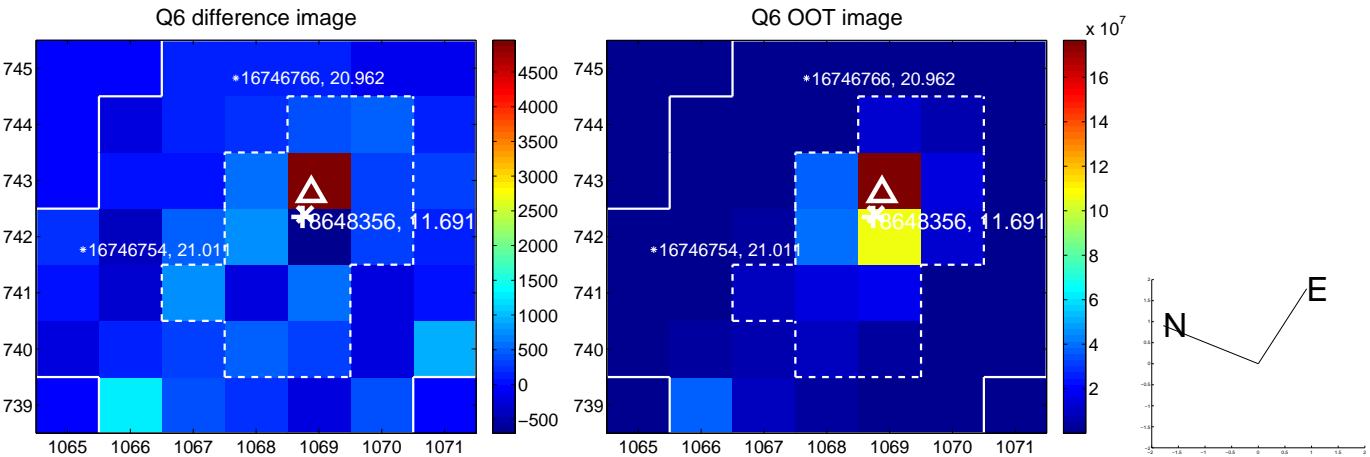
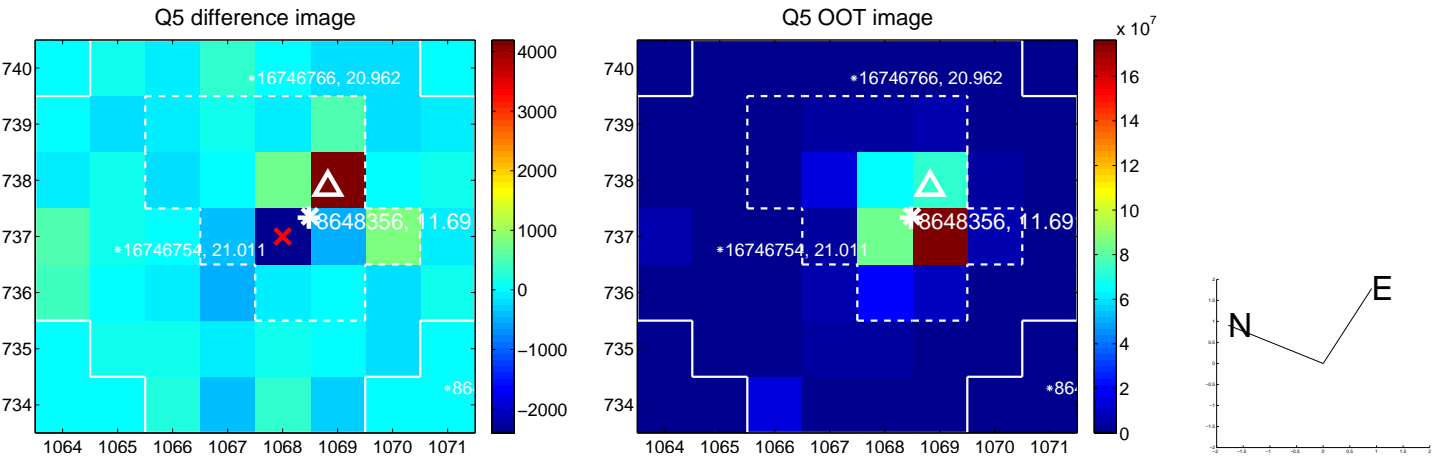


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

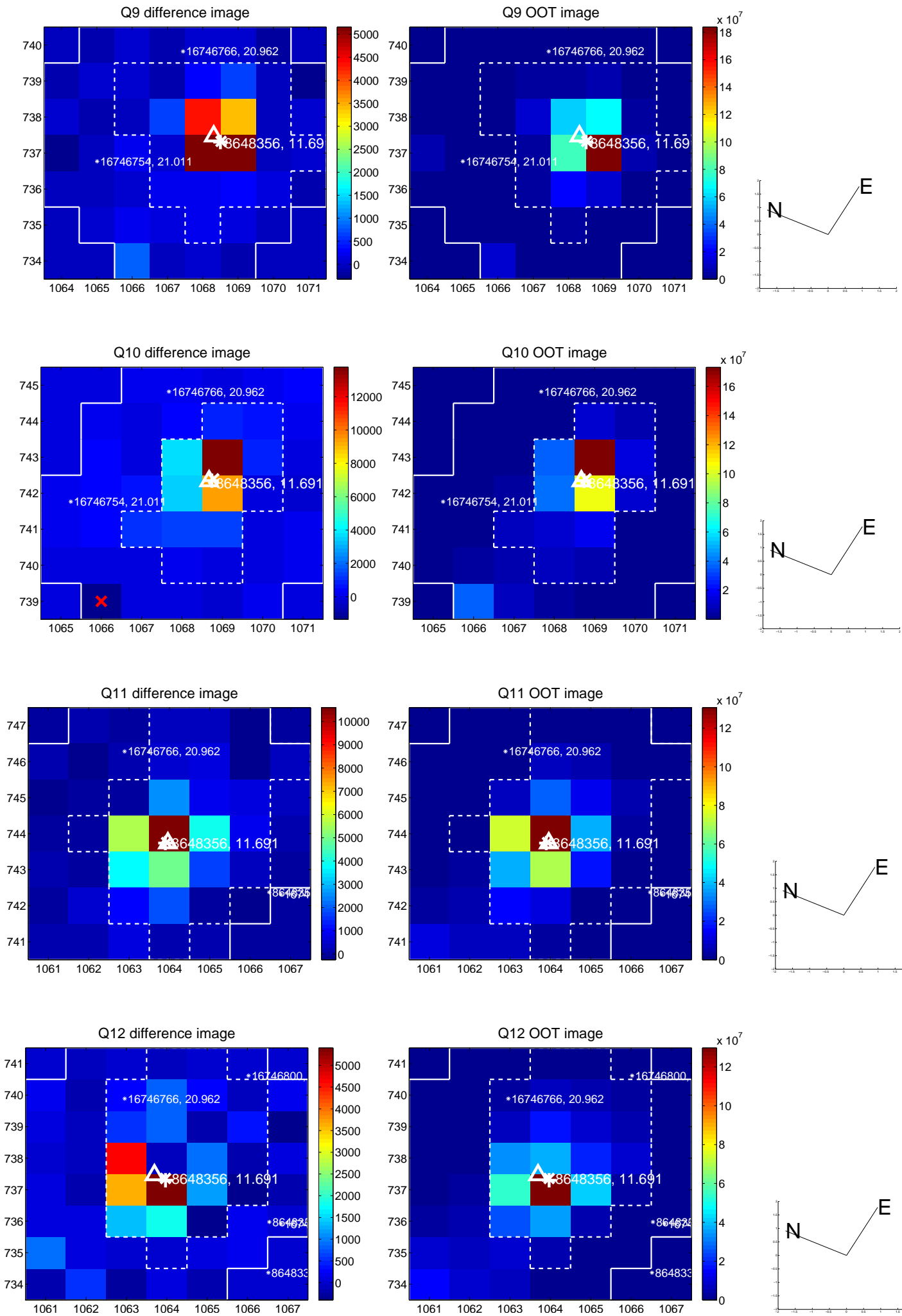
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



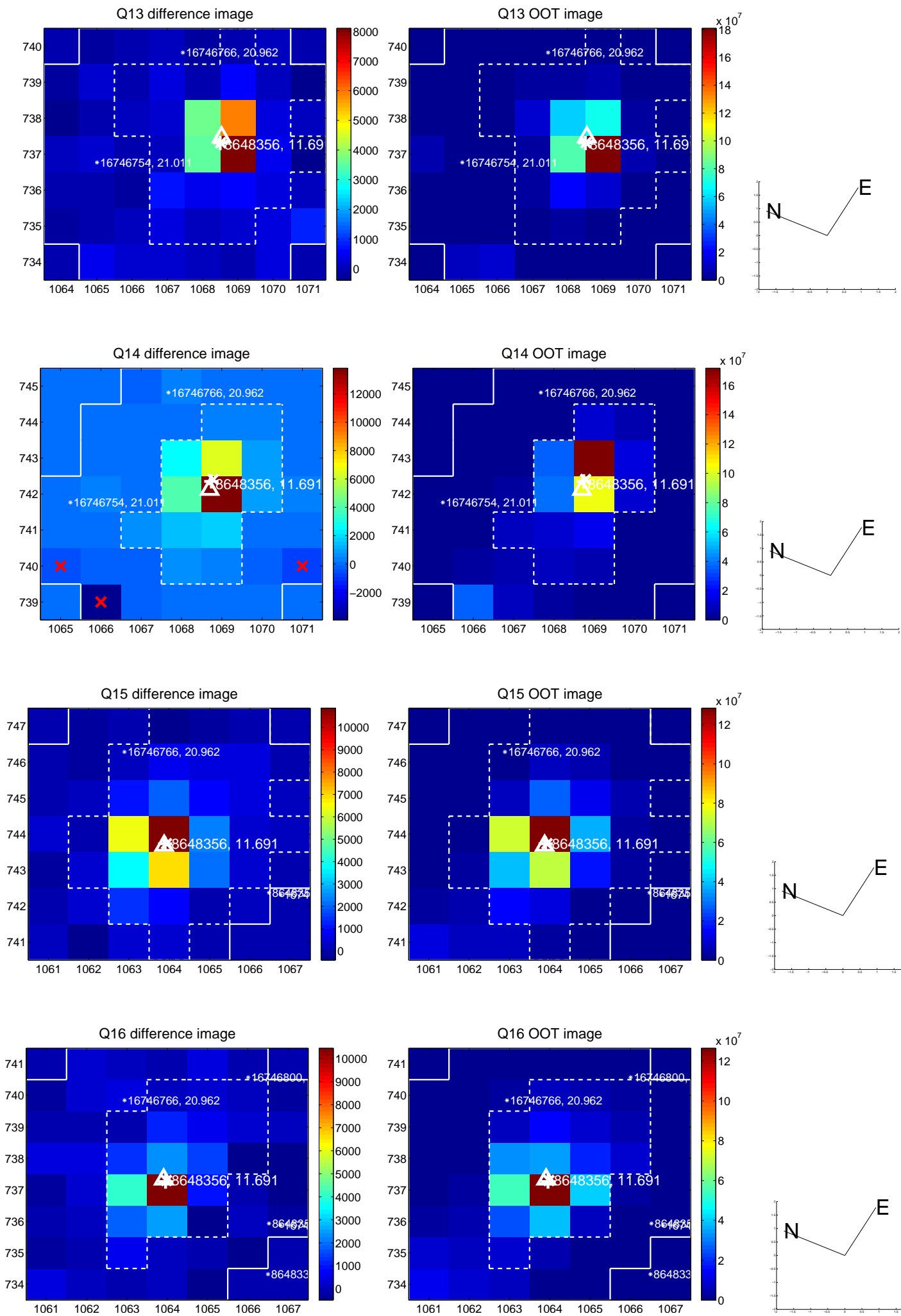
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



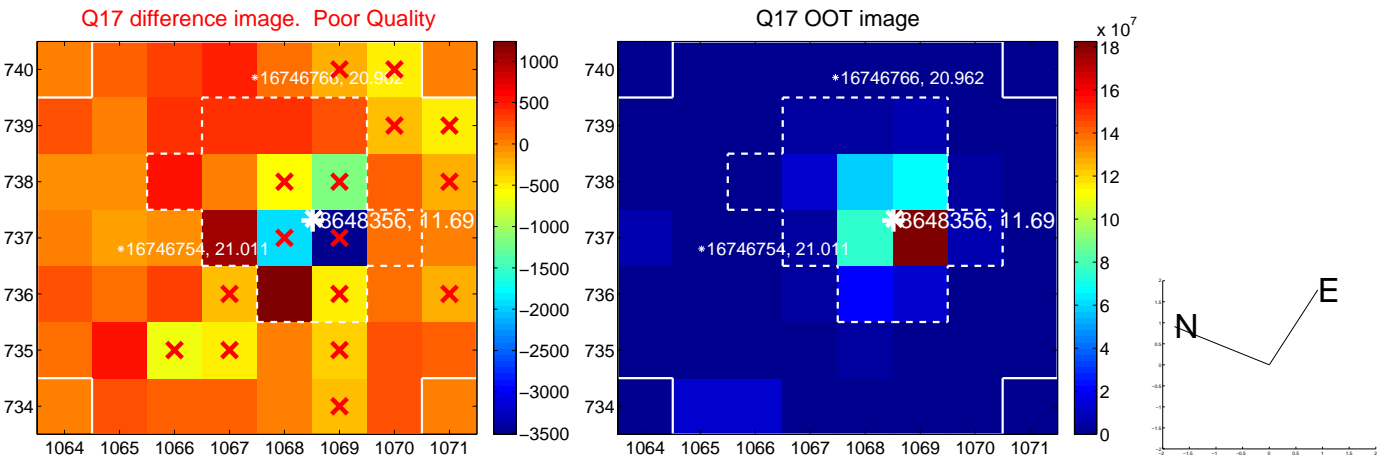
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.



folded centroid time series figure for this object.

UKIRT Image

