

KIC 009229318

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})
009229318-01	OBS	No	0.917990	132.142970	200.9	3.549	9.3	9.5	3.61	7358	5.91	62514.59
009229318-02	OBS	No	5.873220	133.738013	623.8	21.296	7.4	10.4	3.61	7358	17.01	5263.37

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009229318-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—CENT_SATURATED
009229318-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_ZUMA—TRANS_GAPPED—LPP_DV—LPP_ALT—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.

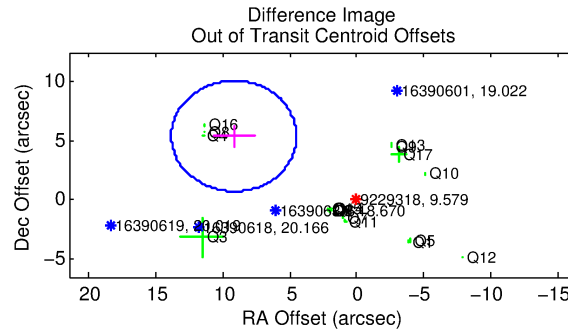
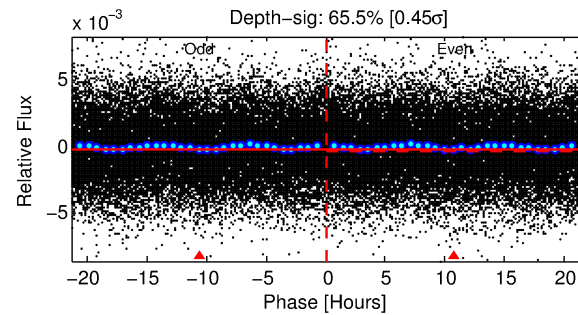
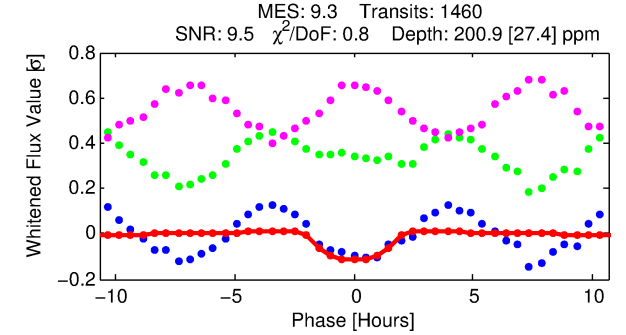
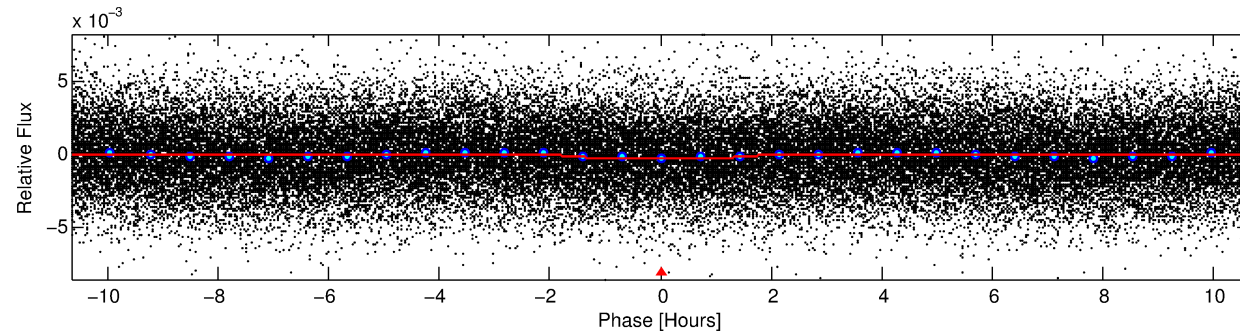
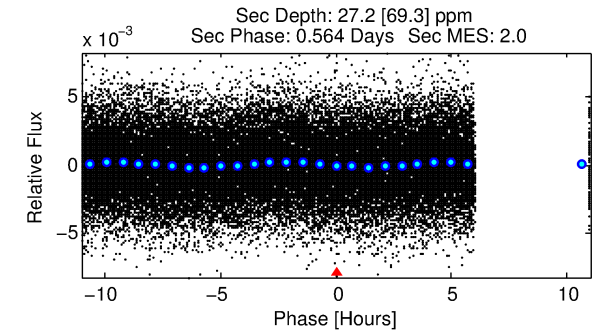
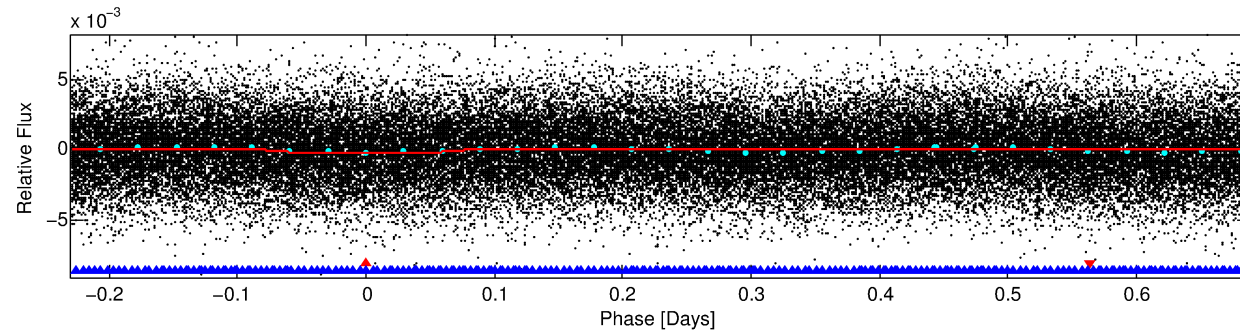
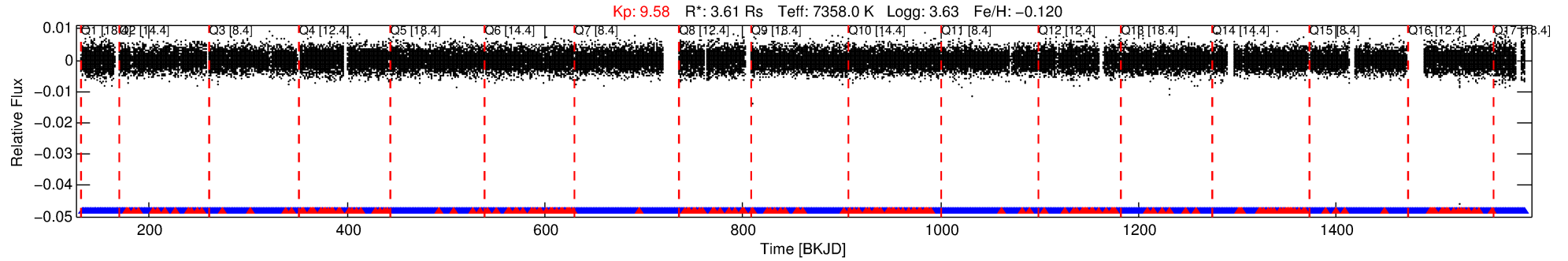
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009229318-01

No Significant Match Found

DV One-Page Summary

KIC: 9229318 Candidate: 1 of 2 Period: 0.918 d



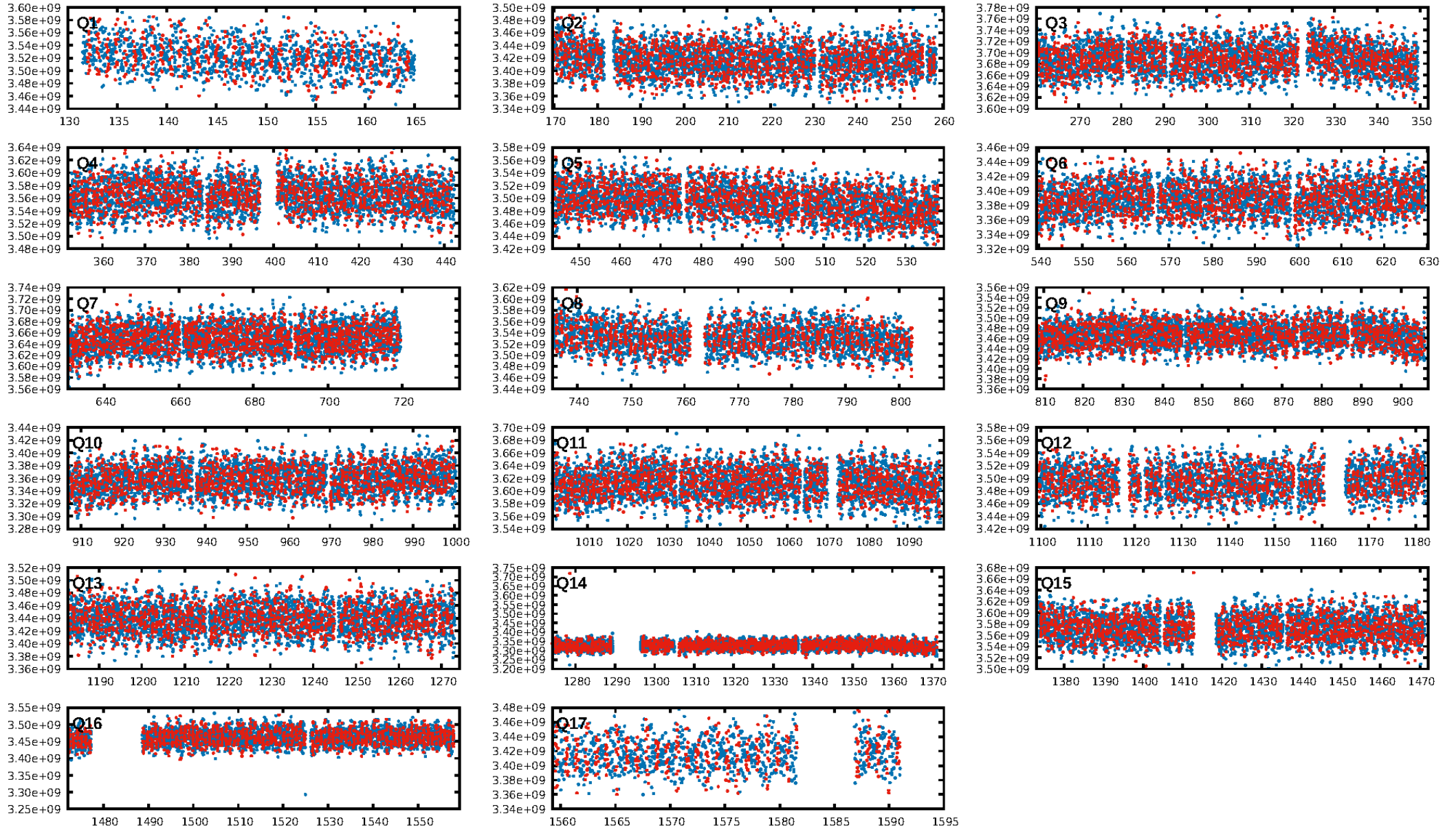
DV Fit Results:

Period = 0.91799 [0.00001] d
Epoch = 132.1430 [0.0050] BKJD
Rp/R* = 0.0150 [0.0079]
a/R* = 1.34 [1.94]
b = 0.89 [0.76]
Seff = 62514.59 [54649.00]
Teff = 4032 [881] K
Rp = 5.91 [4.55] Re
a = 0.0234 [0.0126] AU
Ag = 0.23 [0.68] [-1.13σ]
Teffp = 4339 [2996] K [0.10σ]

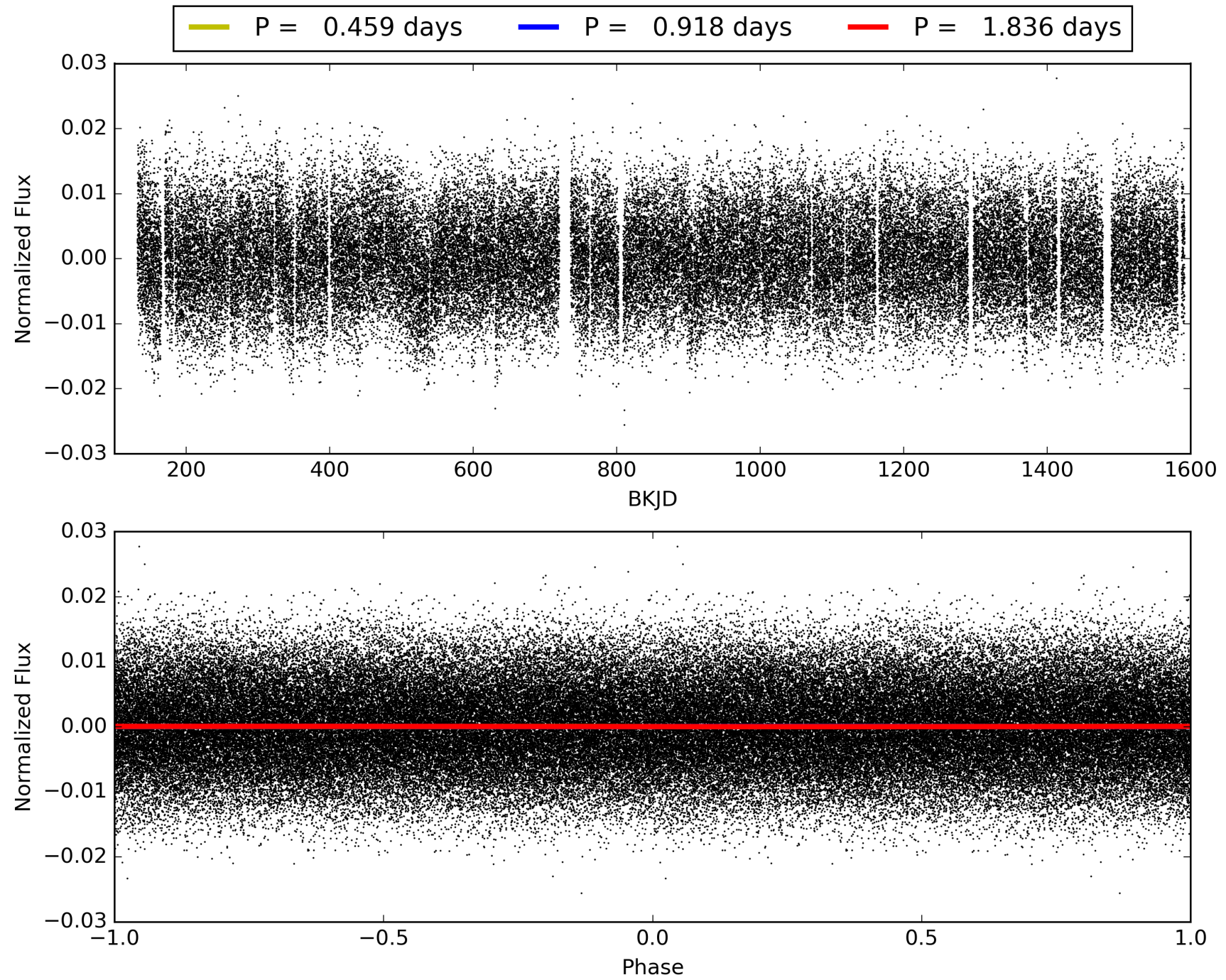
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [5.51σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 1.36e-17
RollingBand-fgt: 0.86 [1202/1394]
GhostDiagnostic-chr: N/A
Centroid-sig: 0.0%
Centroid-so: 1.650 arcsec [6.68σ]
OotOffset-rm: 10.656 arcsec [6.84σ]
KicOffset-rm: 10.765 arcsec [7.18σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 0.00 [0/17]
DiffImageOverlap-fno: 1.00 [17/17]

TCE 009229318-01, PDC Light Curves

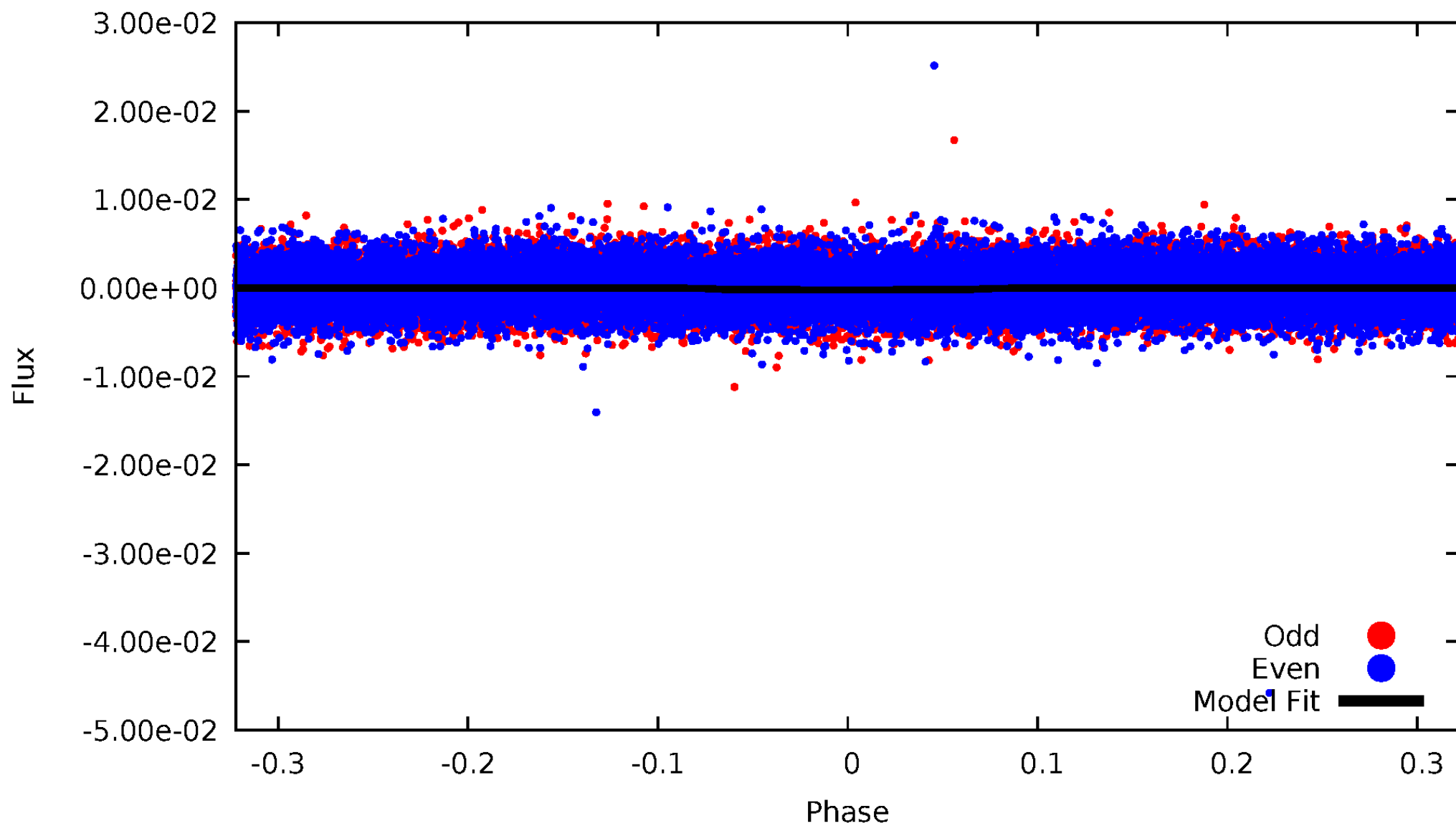


TCE 009229318-01



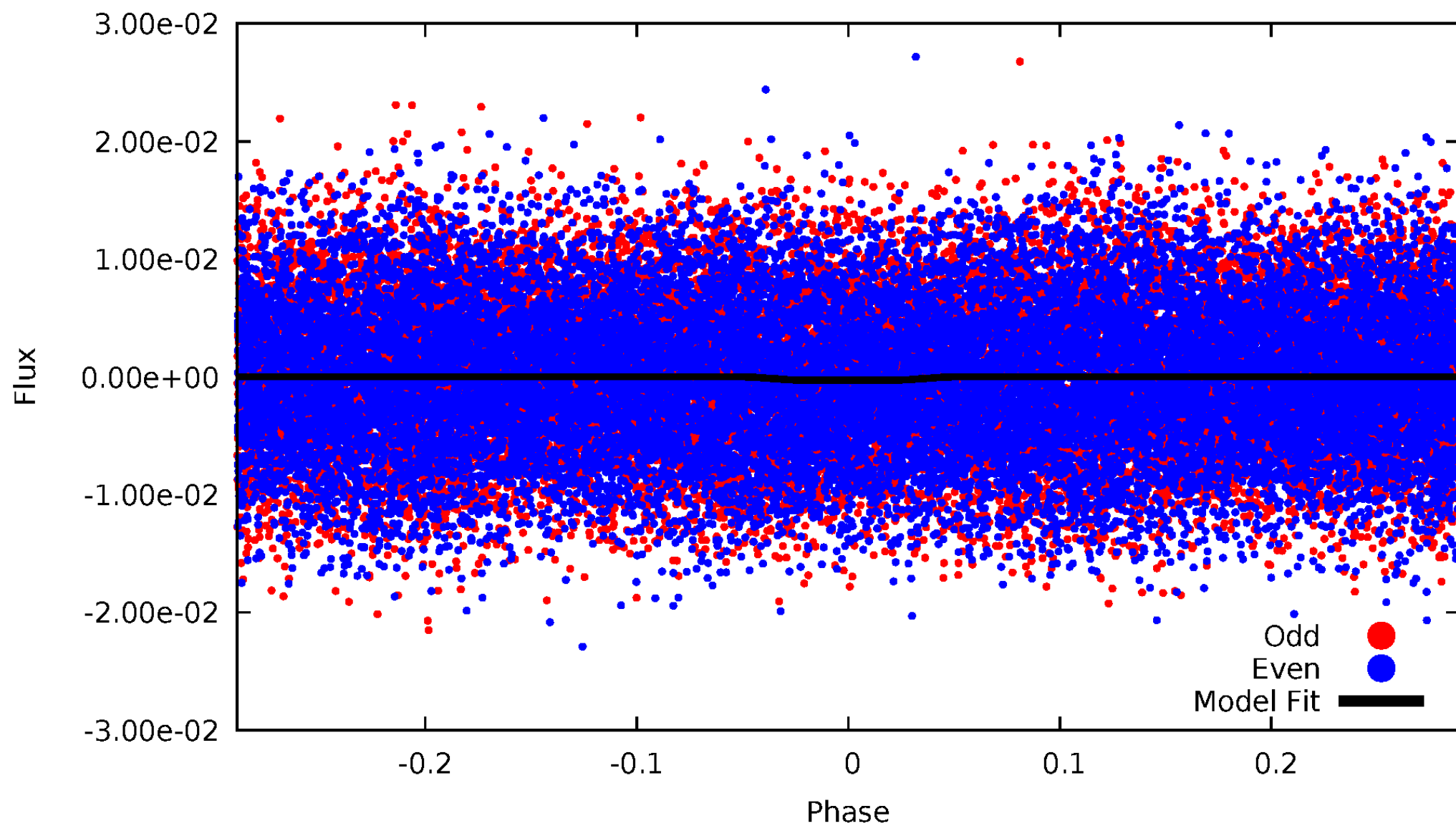
DV Odd/Even

TCE 009229318-01

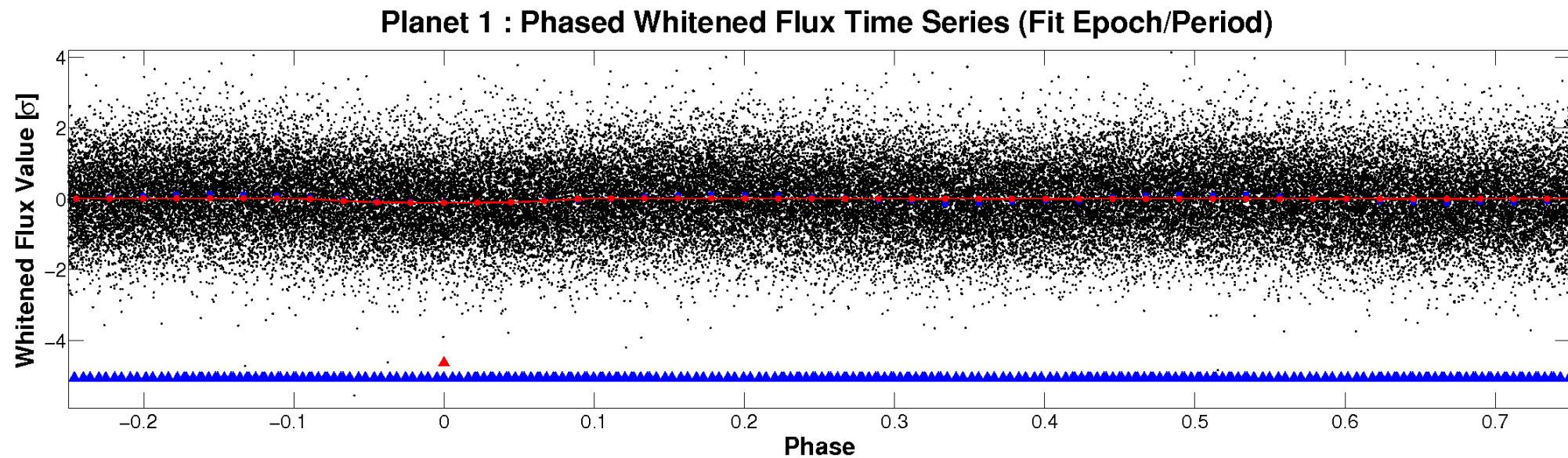
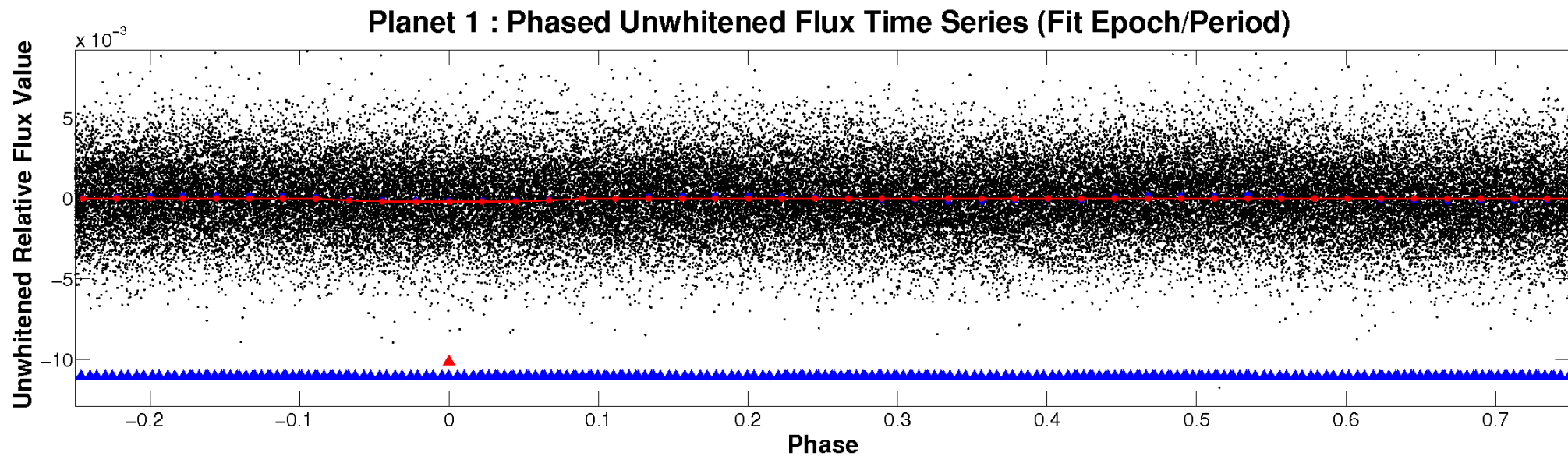


ALT Odd/Even

TCE 009229318-01

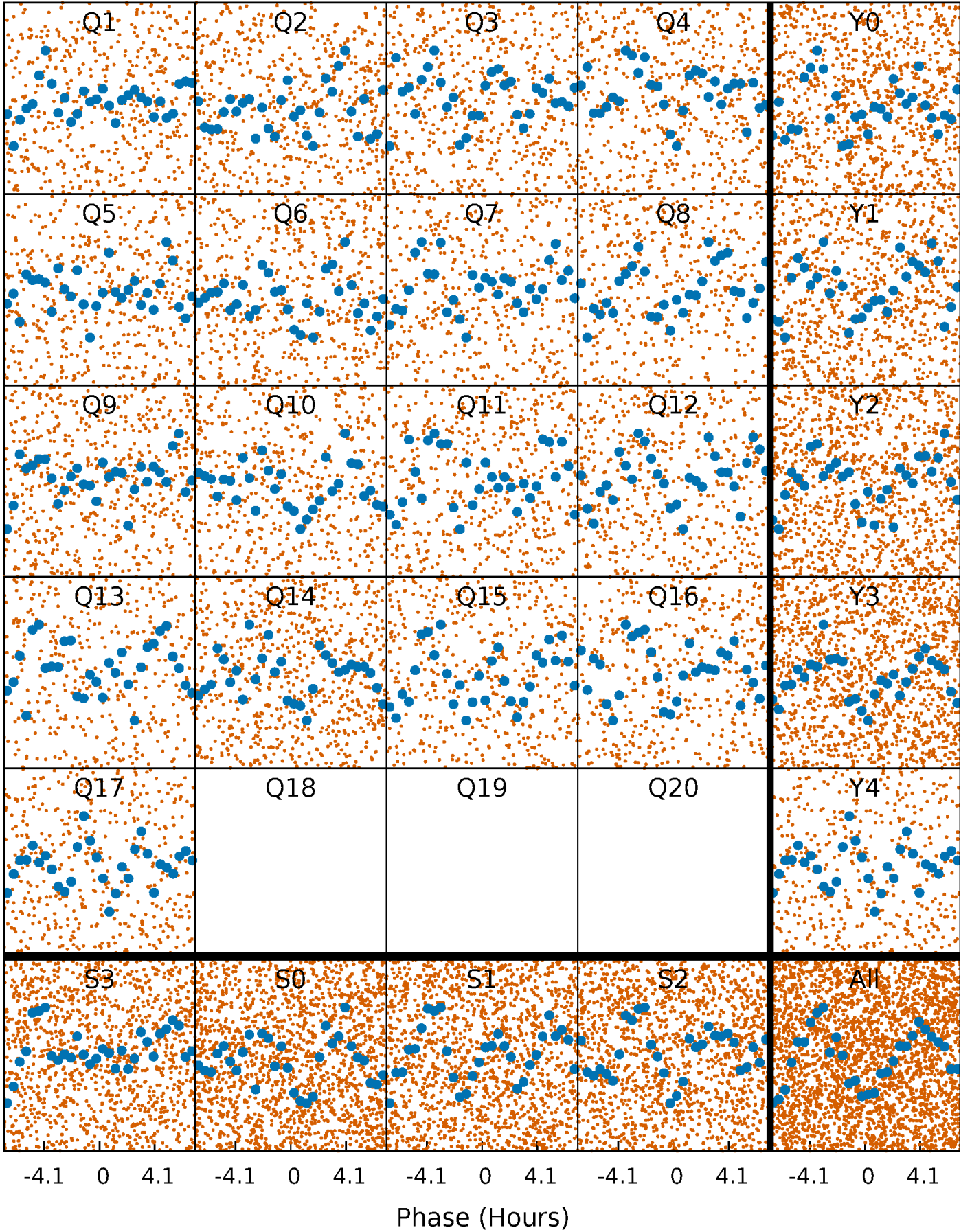


Non-Whitened Vs. Whitened Light Curve



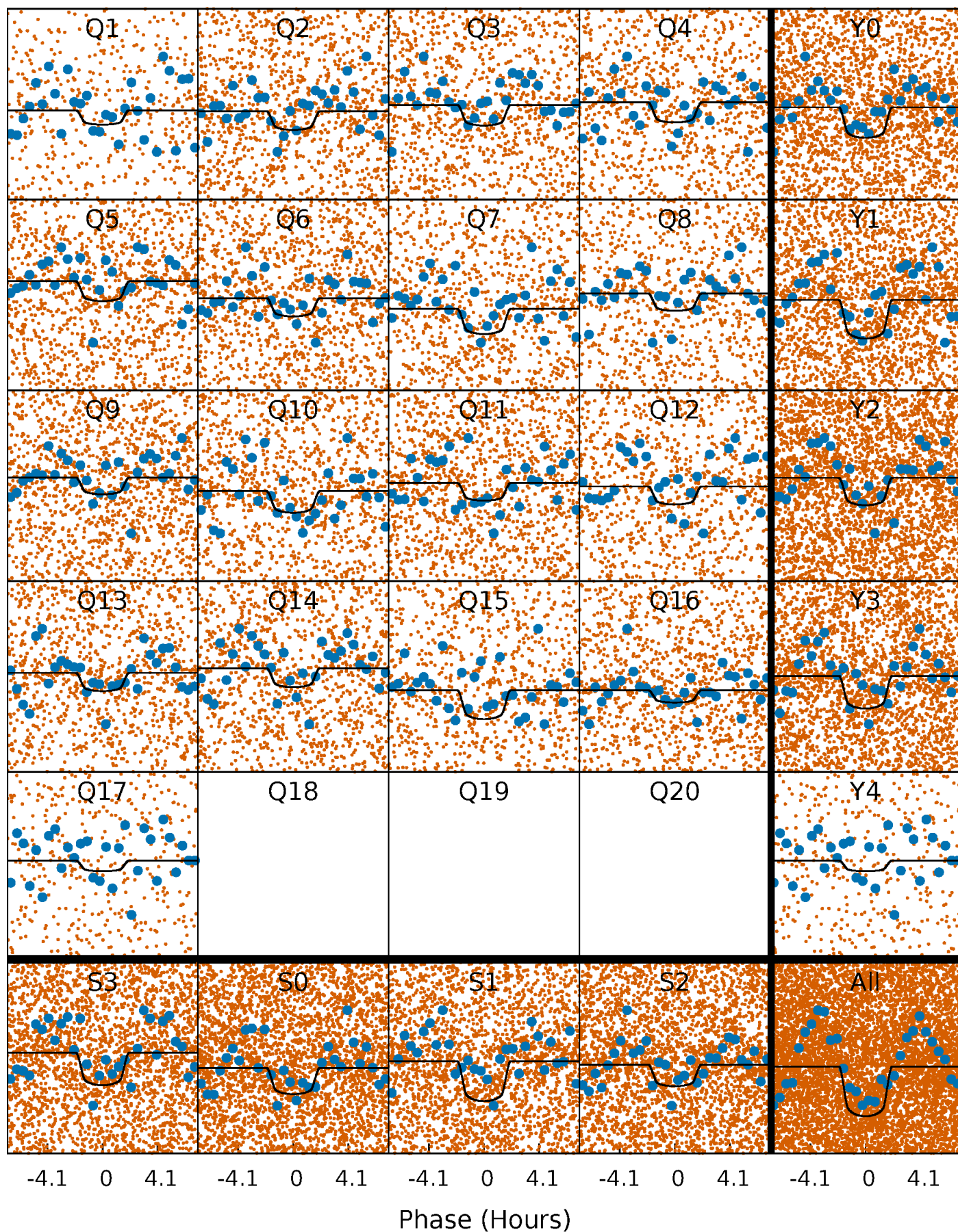
PDC Quarter-Phased Transit Curves

TCE 009229318-01 P= 0.917990 Days $T_0=132.142970$ (BKJD)



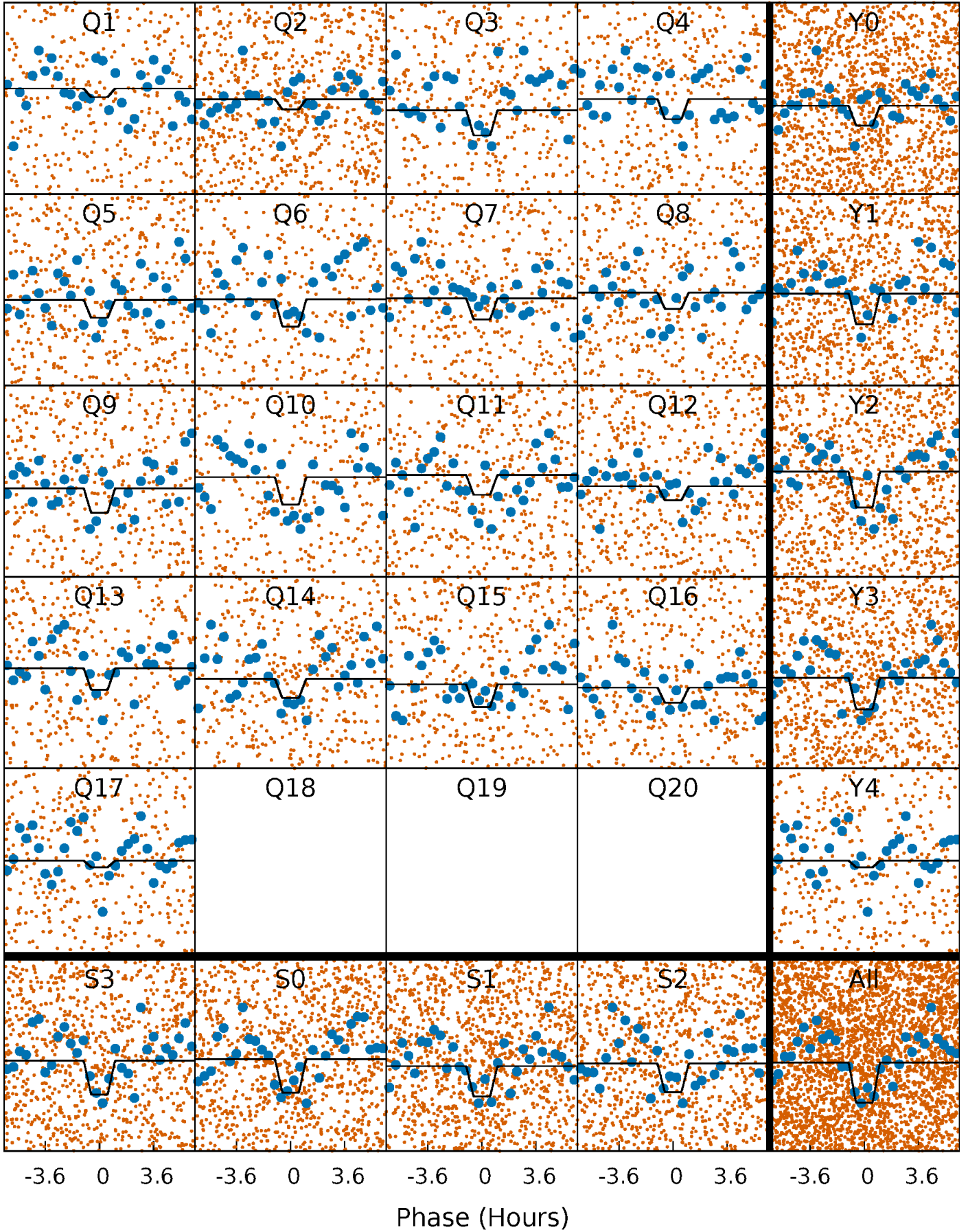
DV Quarter-Phased Transit Curves

TCE 009229318-01 P= 0.917990 Days $T_0=132.142970$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

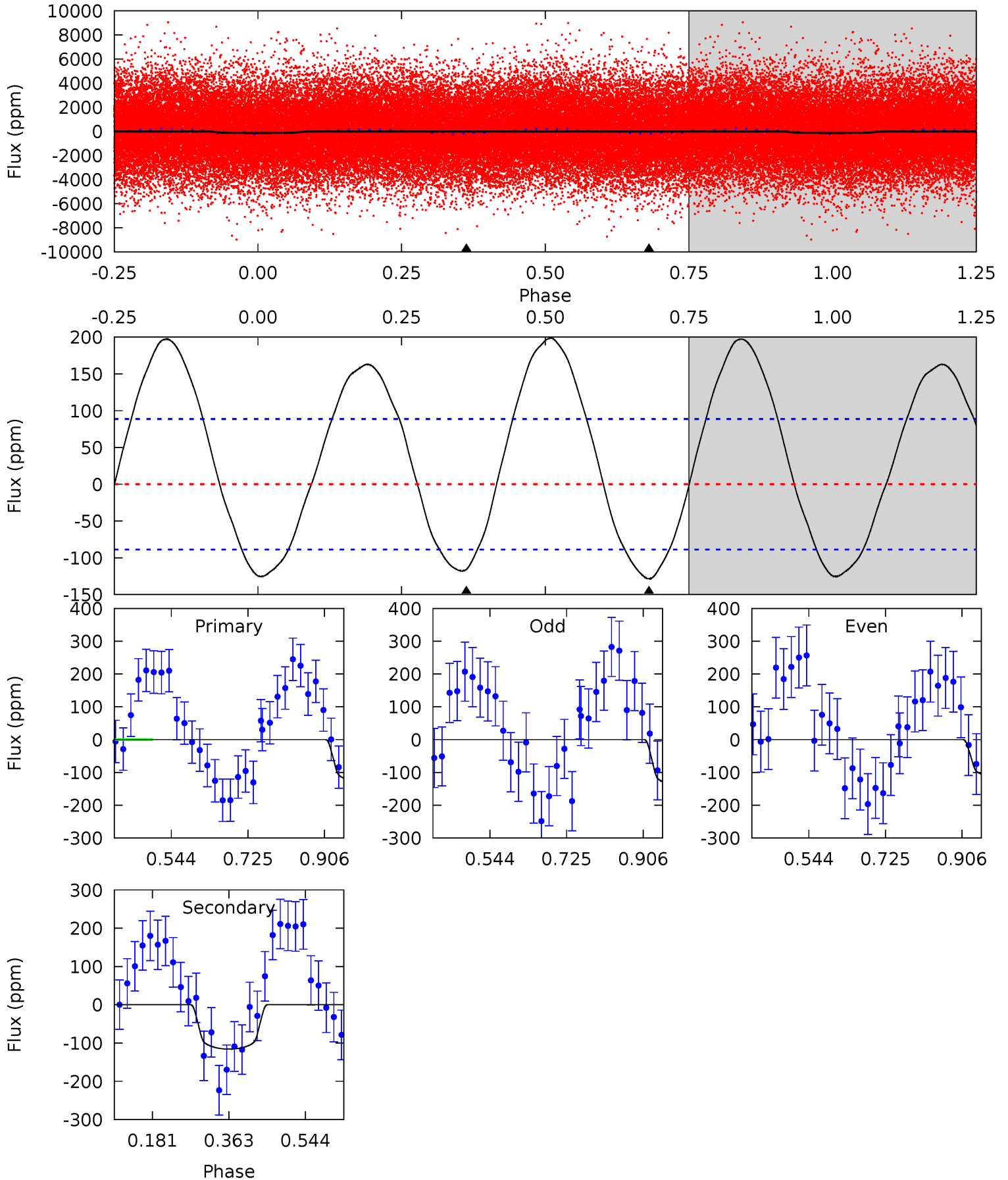
TCE 009229318-01 P= 0.918019 Days $T_0=132.115531$ (BKJD)



DV Model-Shift Uniqueness Test

009229318-01, P = 0.917990 Days, E = 131.224980 Days

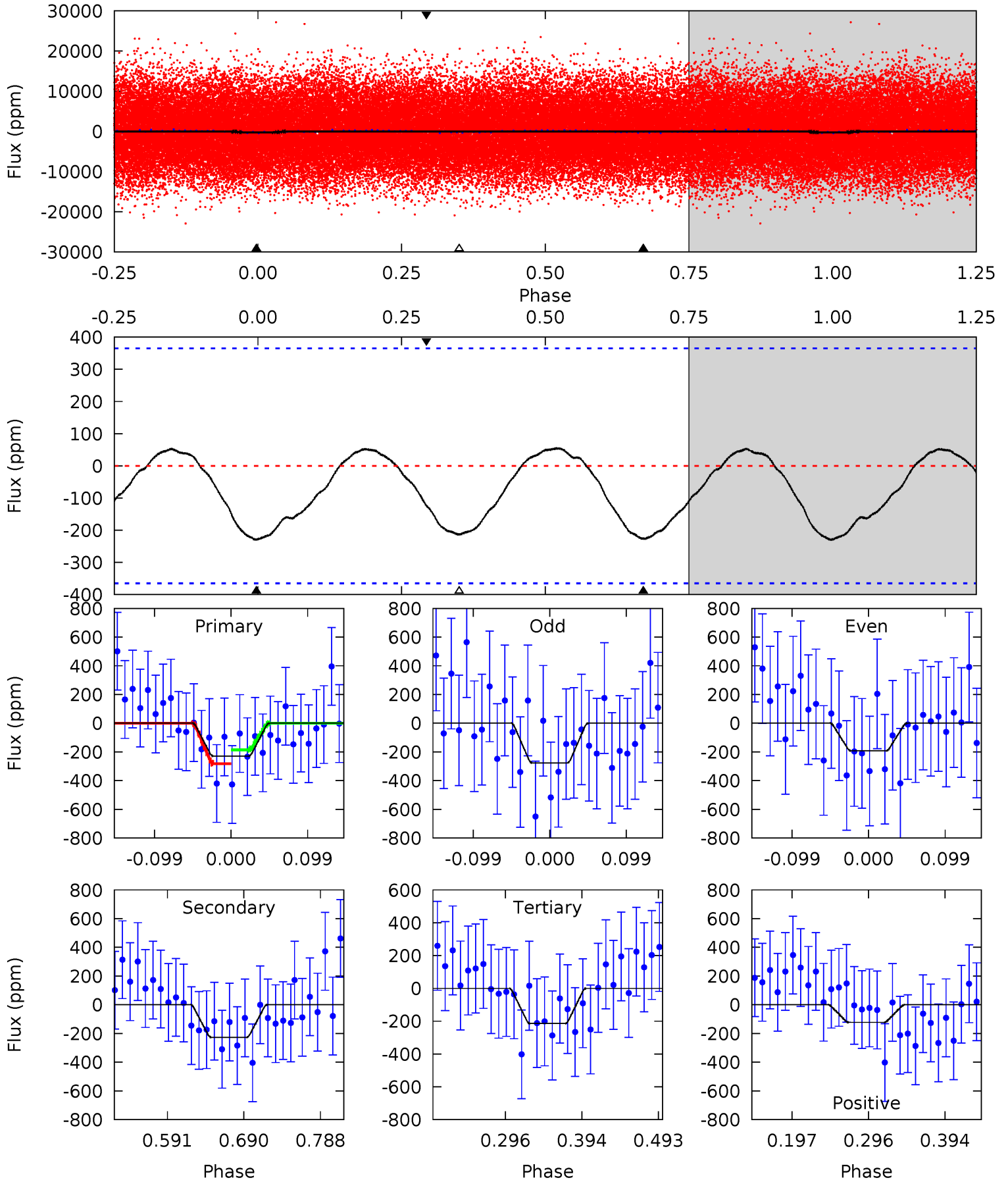
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.44	5.79	0	0	4.44	1.34	5.03	6.44	6.44	5.79	5.79	0.64	0.88	0.61	0.53



Alt Model-Shift Uniqueness Test

009229318-01, P = 0.918019 Days, E = 131.197512 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2.88	2.84	2.68	-1.53	4.57	1.65	1.06	0.20	4.41	0.16	4.37	0.53	0.78	0.19	0.60



Stellar Parameters For KIC 009229318

	$T_{\text{eff}} (K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	7358^{+228}_{-304}	$3.630^{+0.504}_{-0.056}$	$-0.120^{+0.250}_{-0.300}$	$3.612^{+0.336}_{-2.015}$	$2.033^{+0.110}_{-0.621}$	$0.061^{+0.366}_{-0.012}$
	+3%/-4%	+14%/-2%	+208%/-250%	+9%/-56%	+5%/-31%	+602%/-20%
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 009229318-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-116 ± 20	$4.97^{+3.17}_{-2.52}$	5417^{+358}_{-695}	5799^{+2939}_{-1507}	$1.379^{+4.223}_{-0.860}$
Alt.	-227 ± 80	$5.78^{+3.31}_{-3.00}$	5411^{+354}_{-706}	6490^{+3742}_{-1609}	$2.037^{+6.323}_{-1.316}$

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 $A_{obs} \gg 1.0$

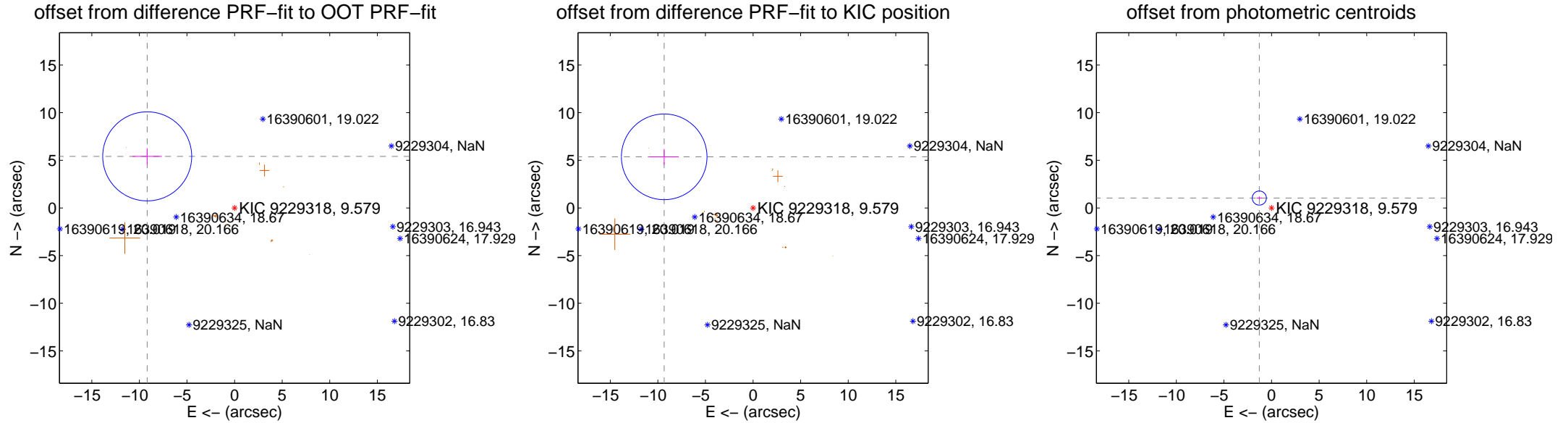
DV Centroid Data

Supplemental centroid analysis for 009229318-01. **Kepler magnitude: 9.58.** Transit SNR 9.49

There are 0 quarters with good PRF difference image offsets

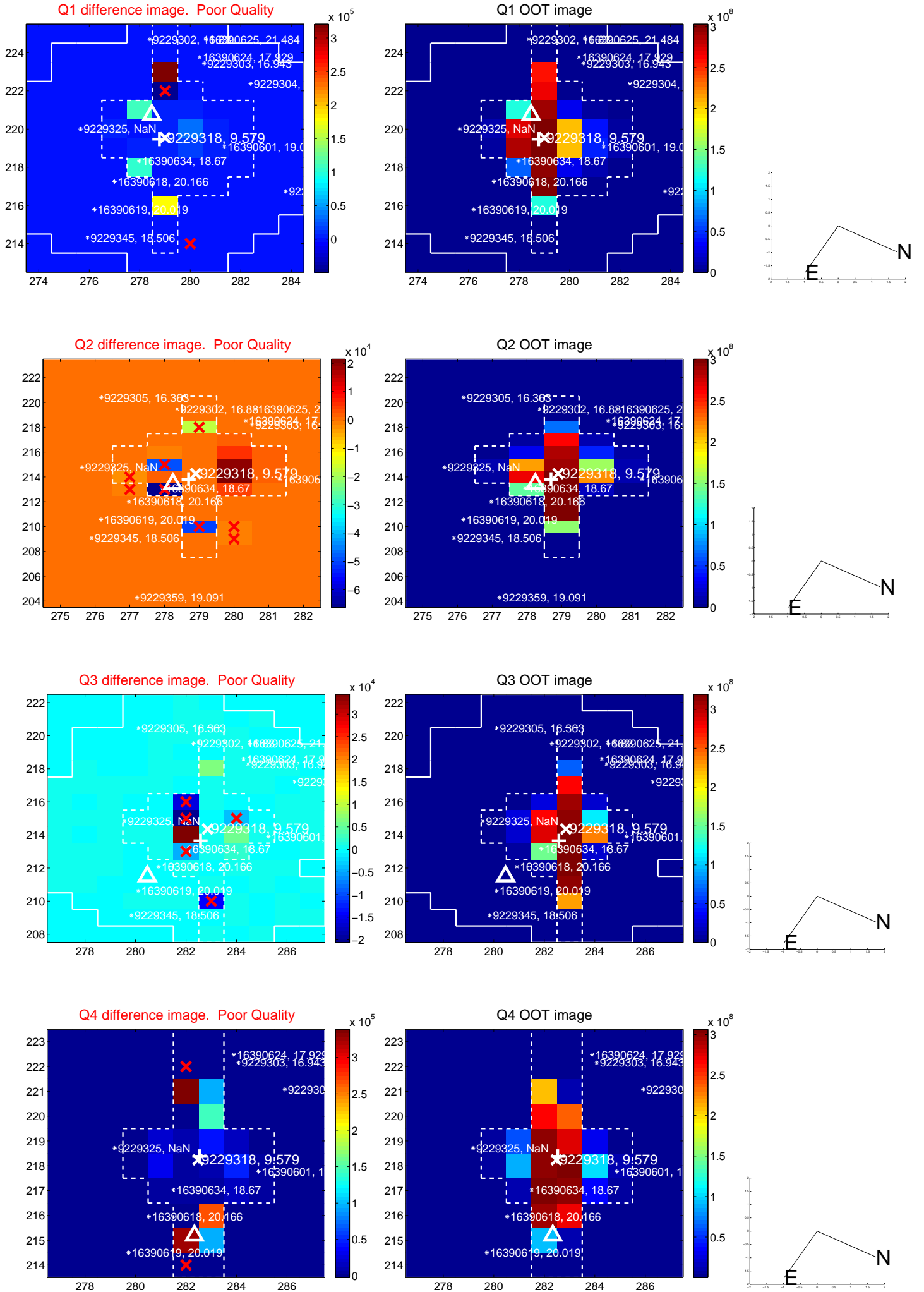
The direct PRF centroid is offset from the target star catalog position by about 0.81 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	10.656 ± 1.558	6.84	9.178 ± 1.533	5.414 ± 0.852
PRF-fit source offset from KIC position	10.765 ± 1.499	7.18	9.333 ± 1.525	5.365 ± 0.829
photometric centroid source offset	1.65 ± 0.25	6.68	1.28 ± 0.29	1.04 ± 0.17

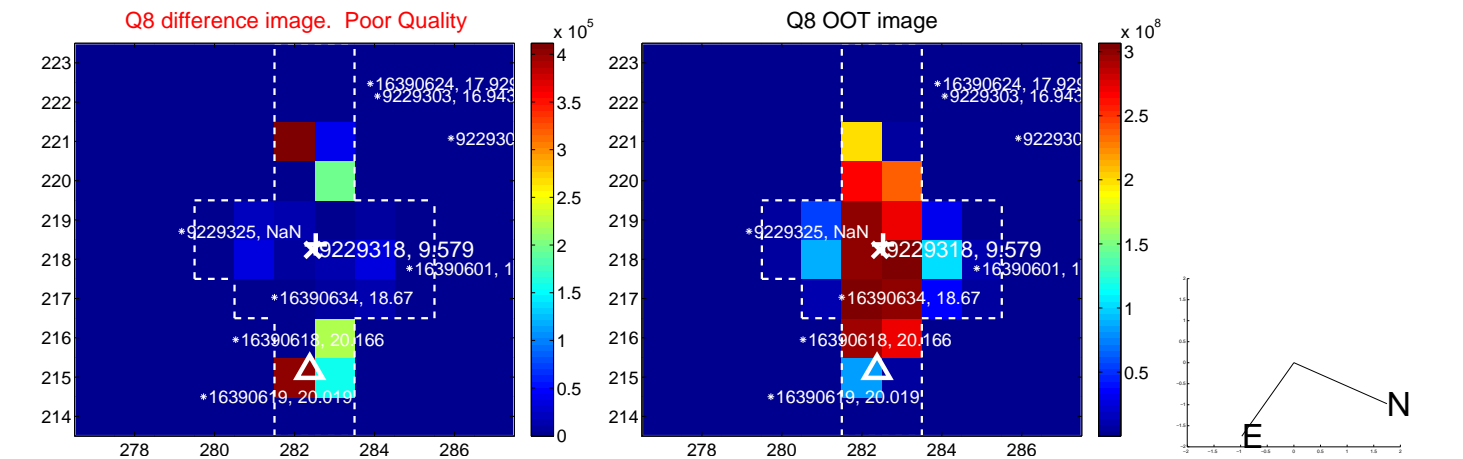
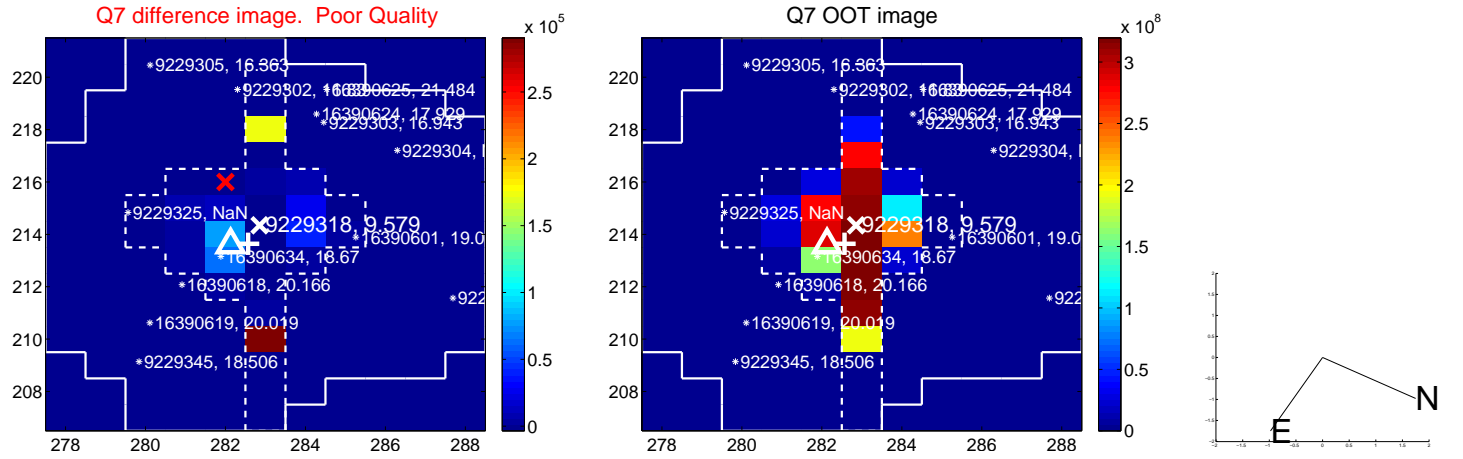
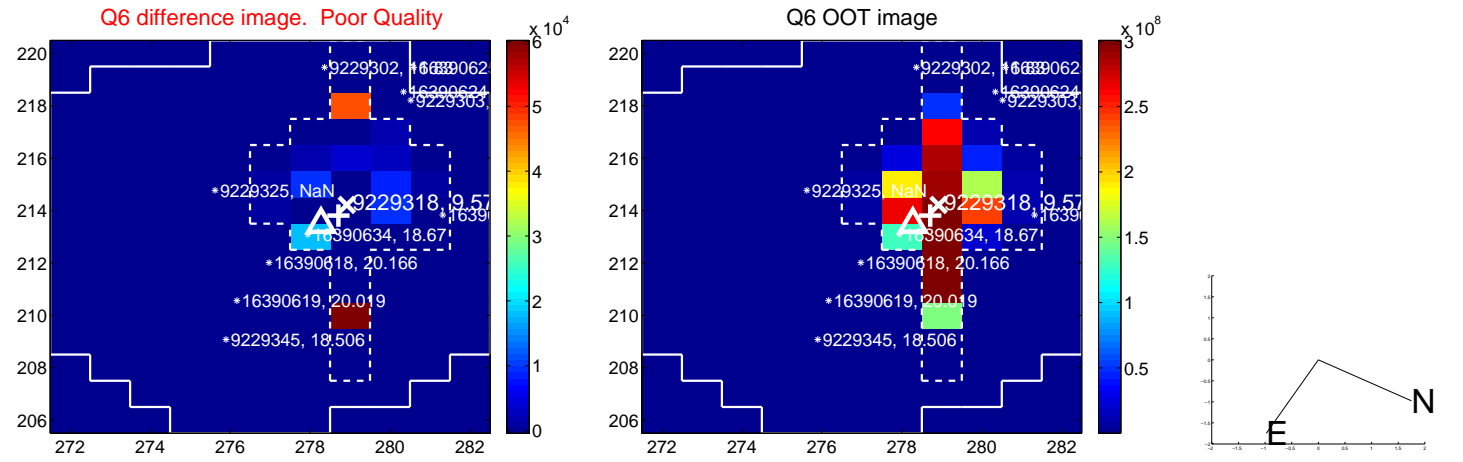
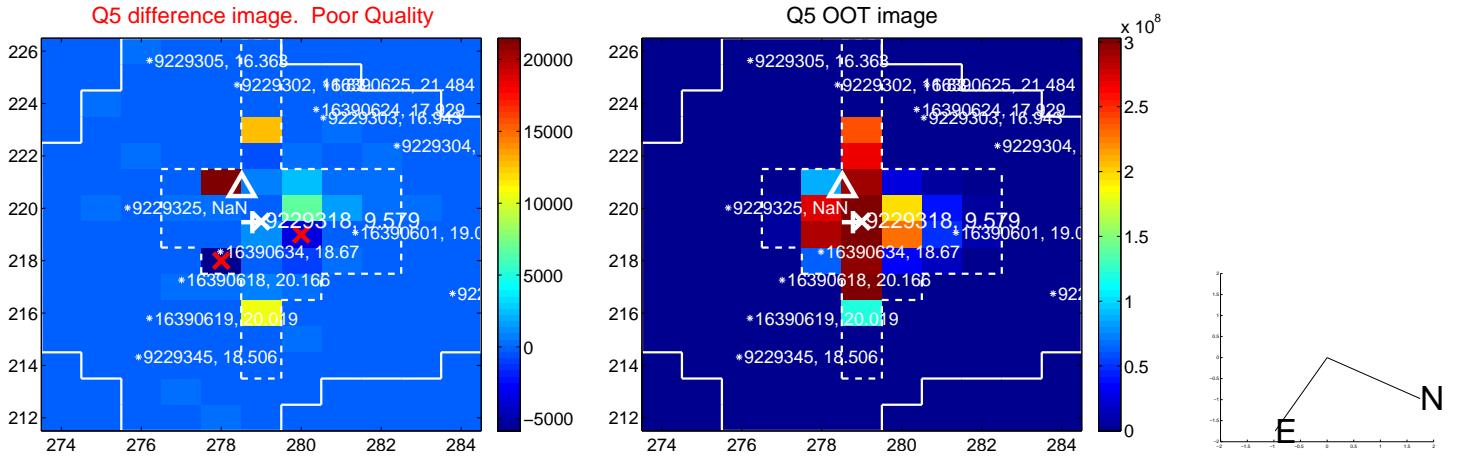


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

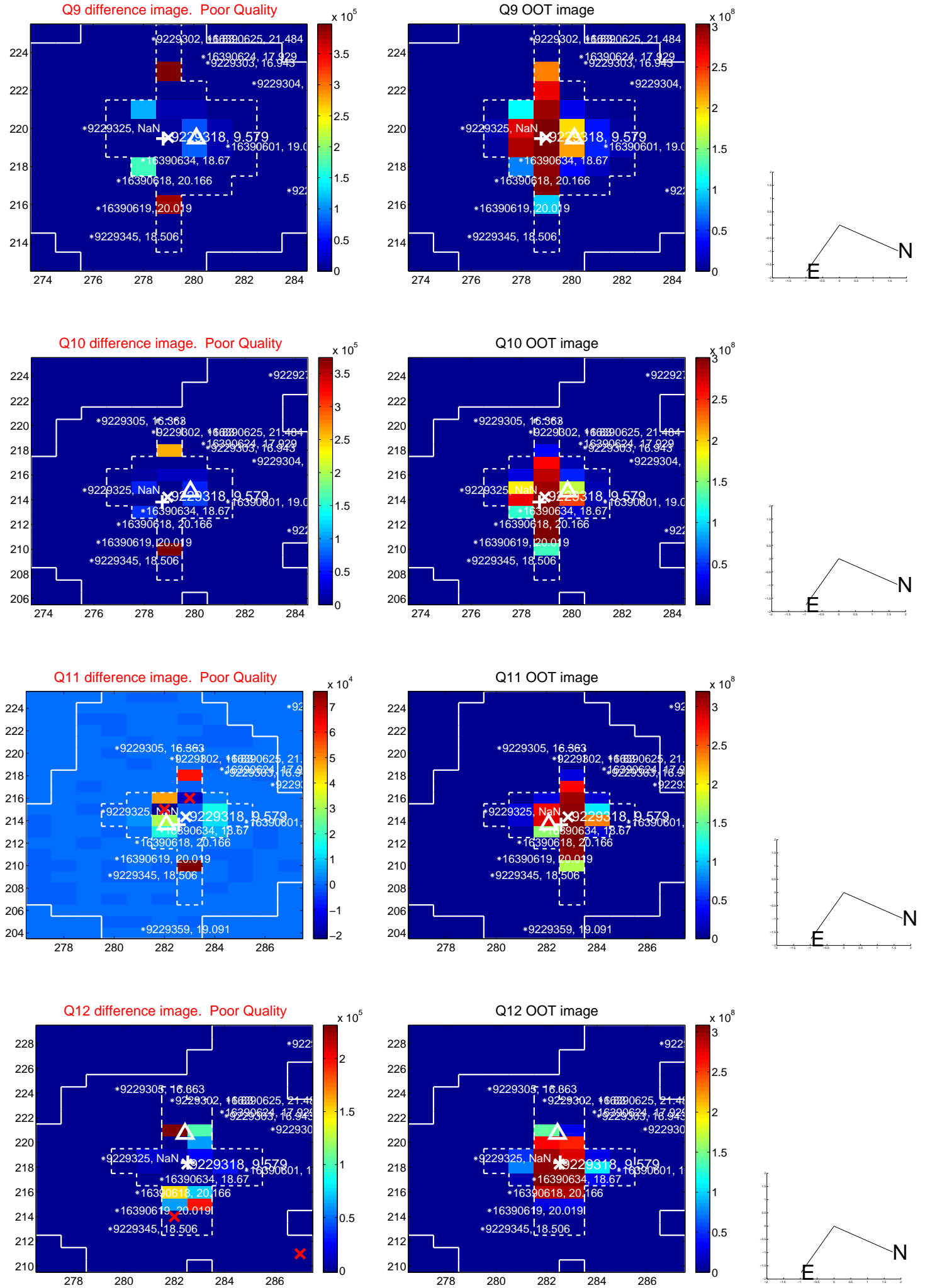
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



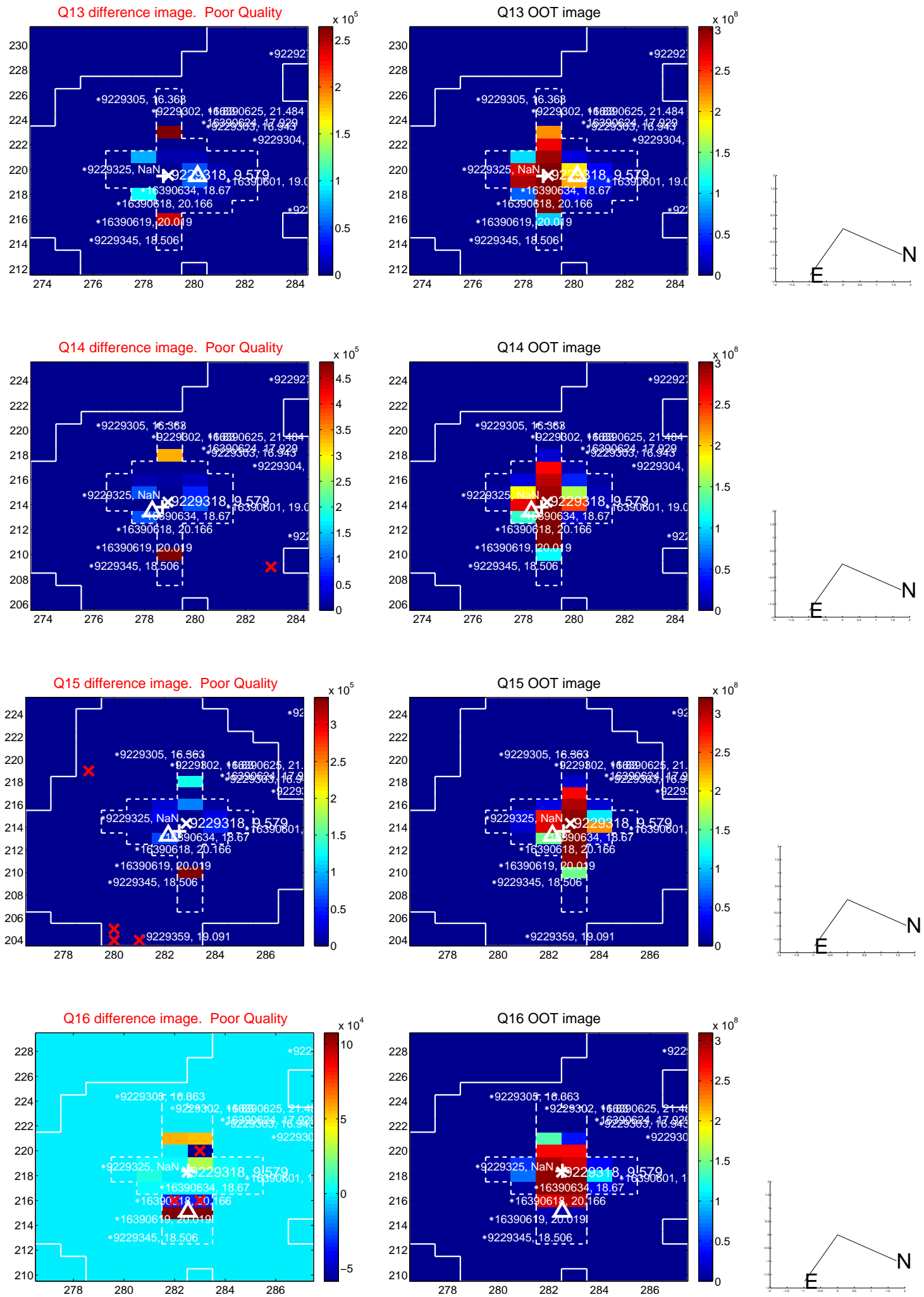
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



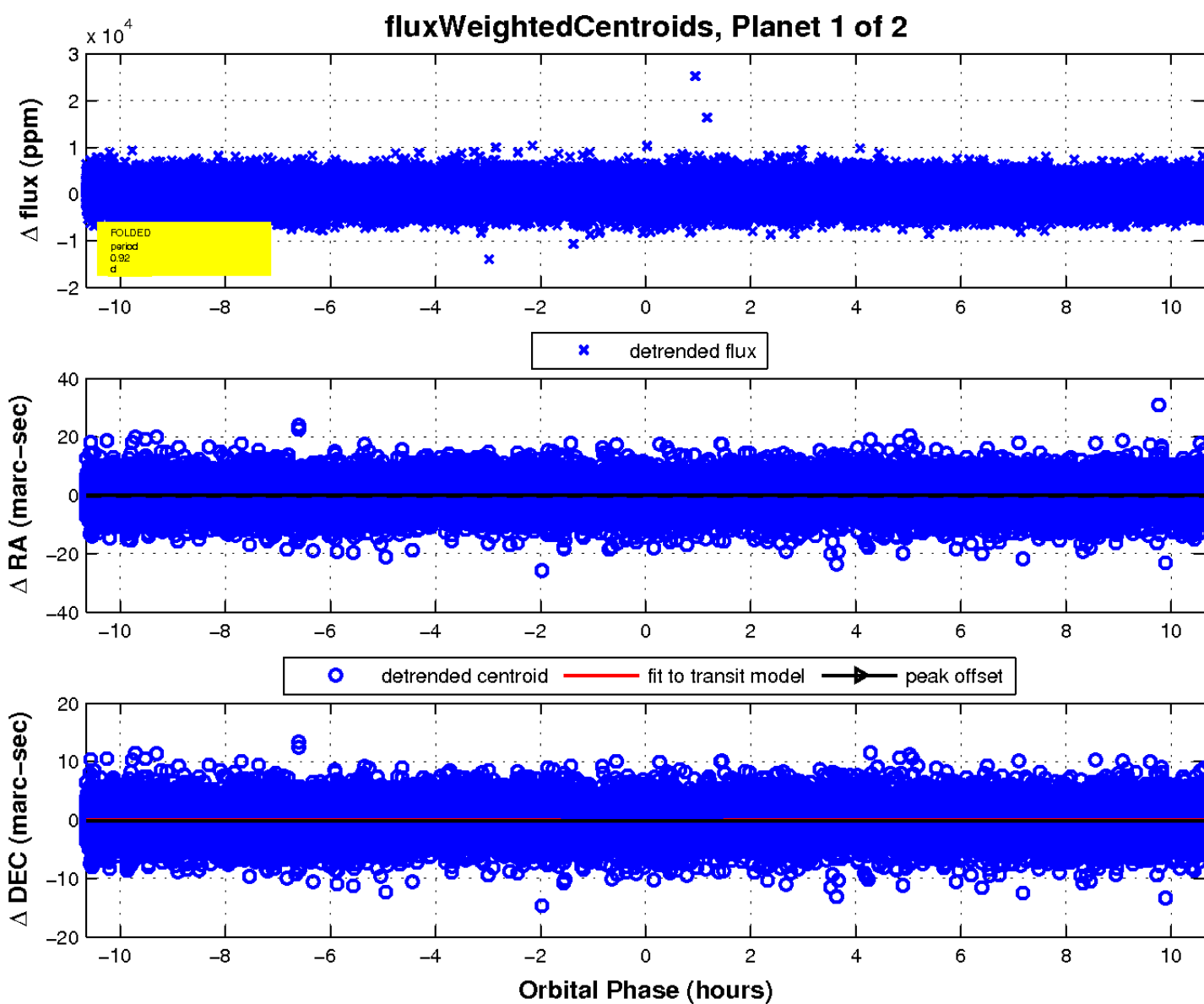
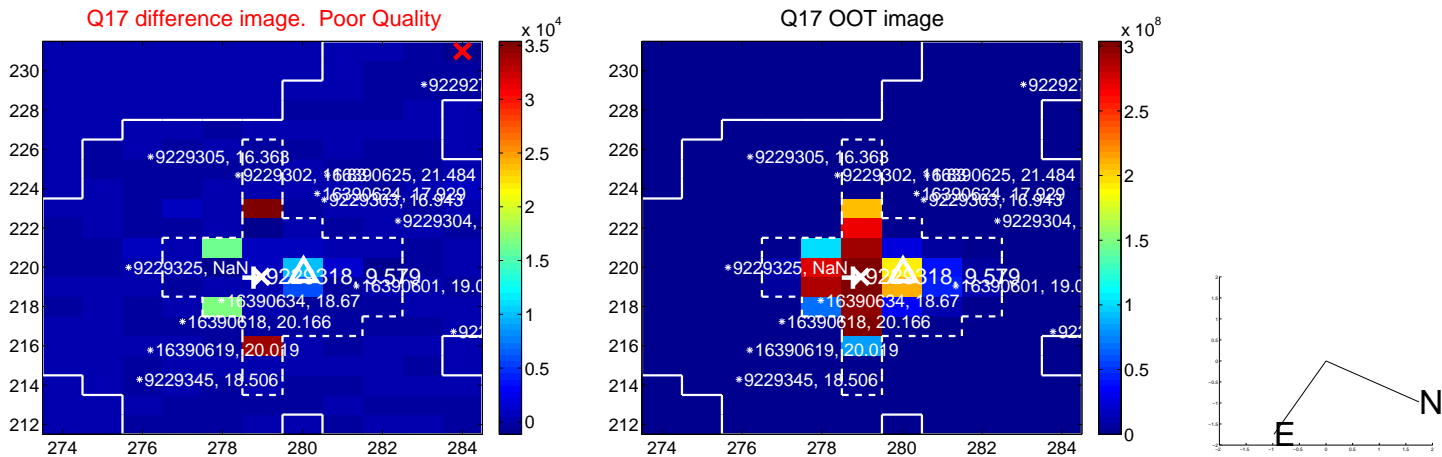
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

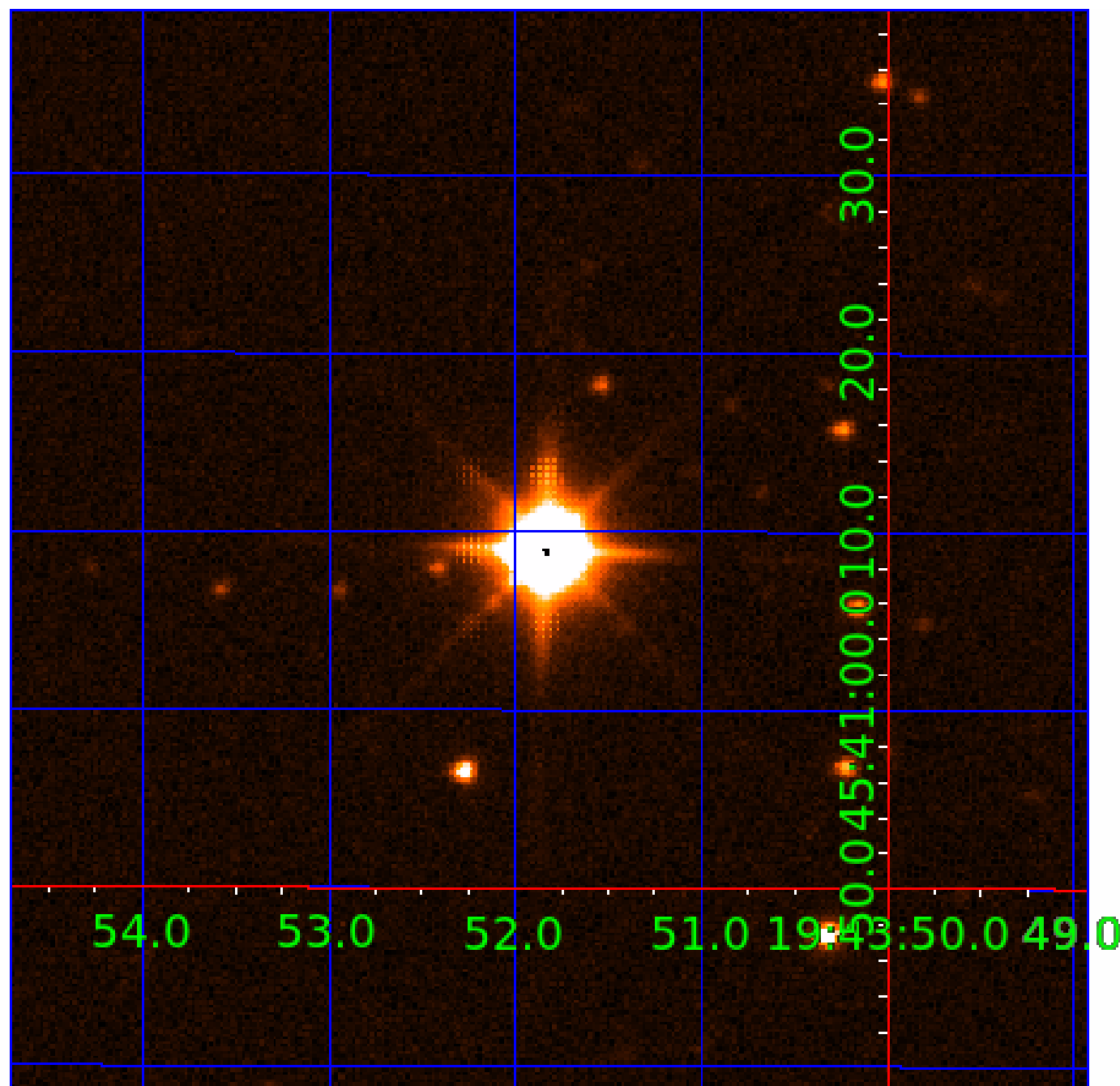


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009229318

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})
009229318-01	OBS	No	0.917990	132.142970	200.9	3.549	9.3	9.5	3.61	7358	5.91	62514.59
009229318-02	OBS	No	5.873220	133.738013	623.8	21.296	7.4	10.4	3.61	7358	17.01	5263.37

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009229318-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—CENT_SATURATED
009229318-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_ZUMA—TRANS_GAPPED—LPP_DV—LPP_ALT—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.

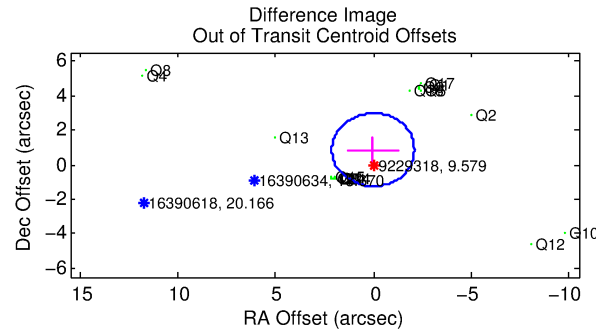
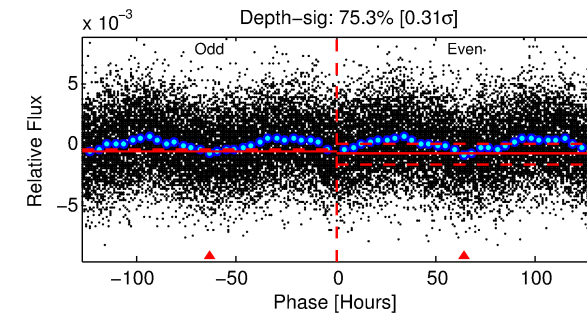
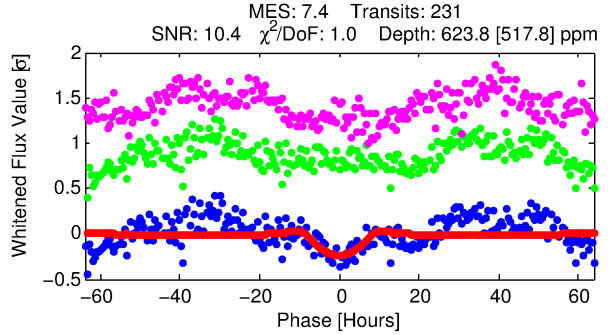
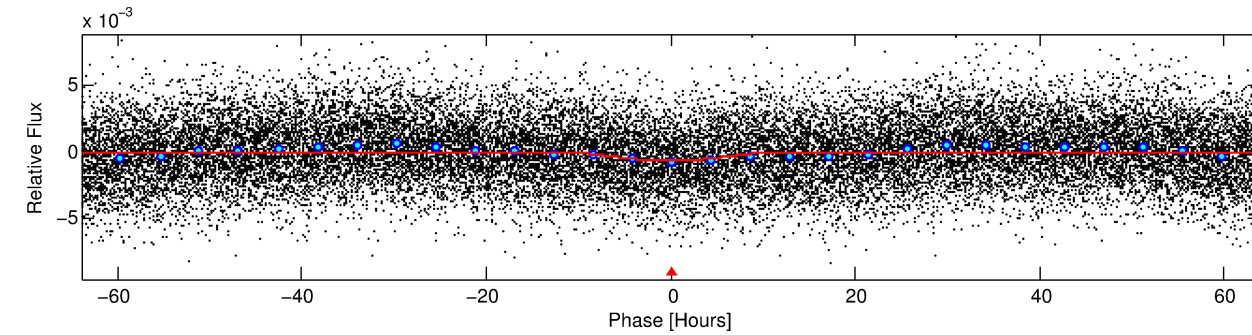
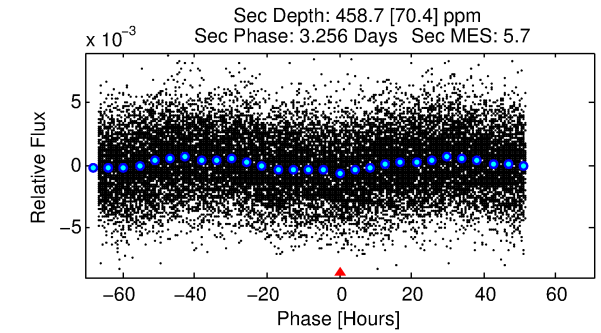
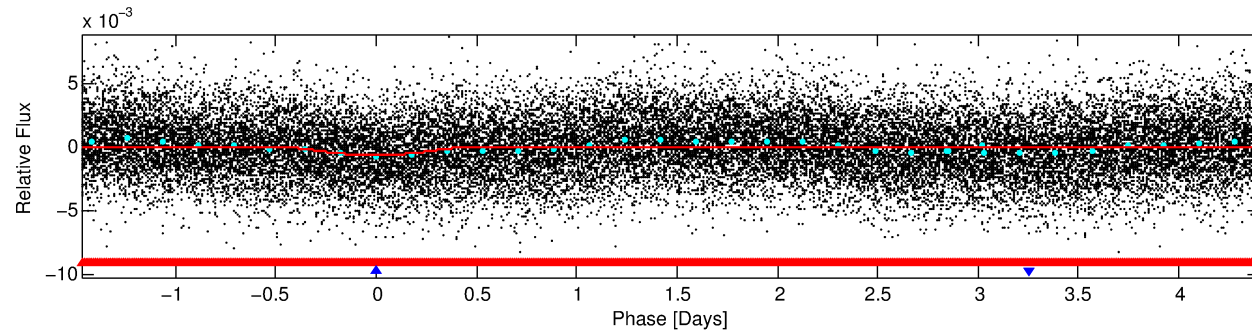
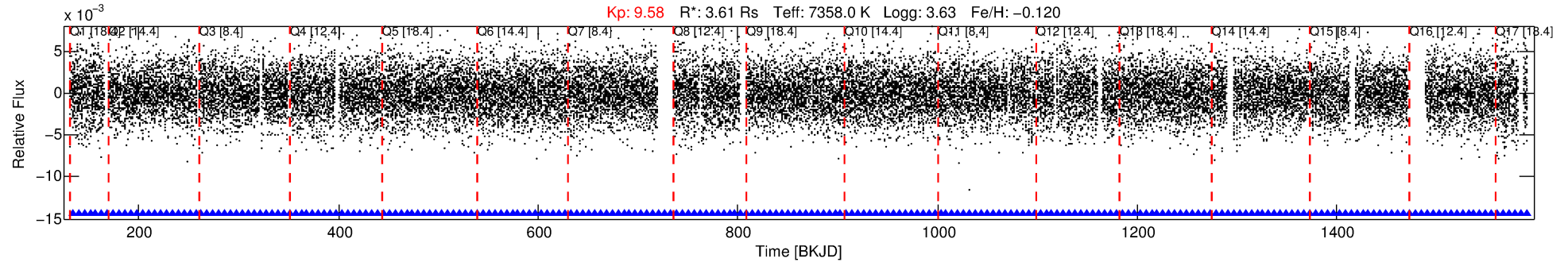
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009229318-02

No Significant Match Found

DV One-Page Summary

KIC: 9229318 Candidate: 2 of 2 Period: 5.873 d



DV Fit Results:

Period = 5.87322 [0.00032] d
Epoch = 133.7380 [0.0447] BKJD
 $R_p/R^* = 0.0431$ [0.1106]
 $a/R^* = 1.19$ [0.10]
 $b = 1.00$ [0.19]
 $S_{\text{eff}} = 5263.37$ [4601.13]
 $T_{\text{eq}} = 2172$ [475] K
 $R_p = 17.01$ [44.63] R_e
 $a = 0.0807$ [0.0433] AU
 $A_g = 5.68$ [29.55] [0.16σ]
 $T_{\text{eff}} = 5184$ [6654] K [0.45σ]

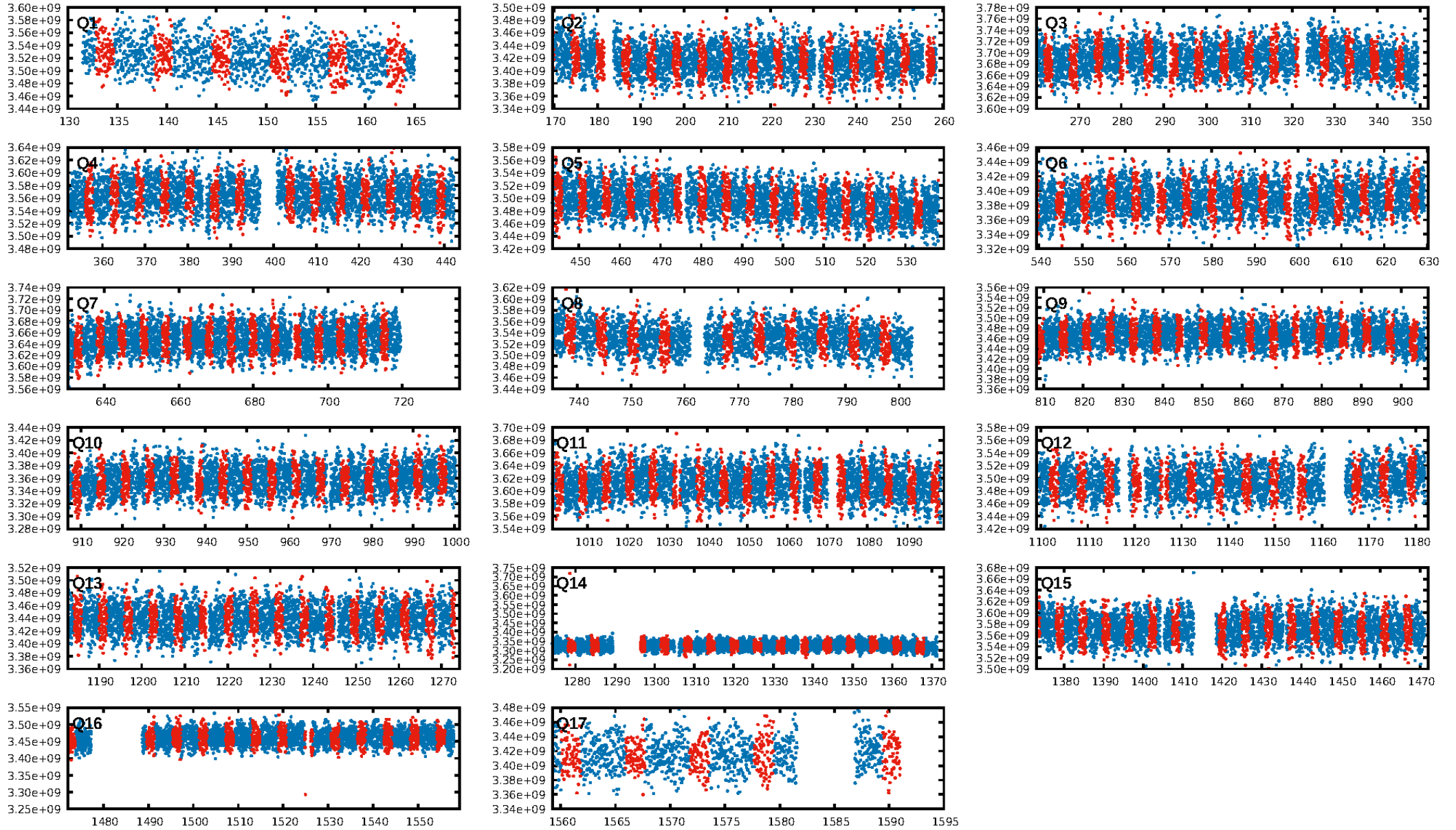
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [5.51σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGoF-sig: N/A
Bootstrap-pfa: 1.41e-12
RollingBand-fgt: 1.00 [220/220]
GhostDiagnostic-chr: N/A
Centroid-sig: 0.0%
Centroid-so: 1.278 arcsec [6.63σ]
OotOffset-rm: 0.862 arcsec [1.23σ]
KicOffset-rm: 2.656 arcsec [1.89σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 0.00 [0/17]
DiffImageOverlap-fno: 0.00 [0/17]

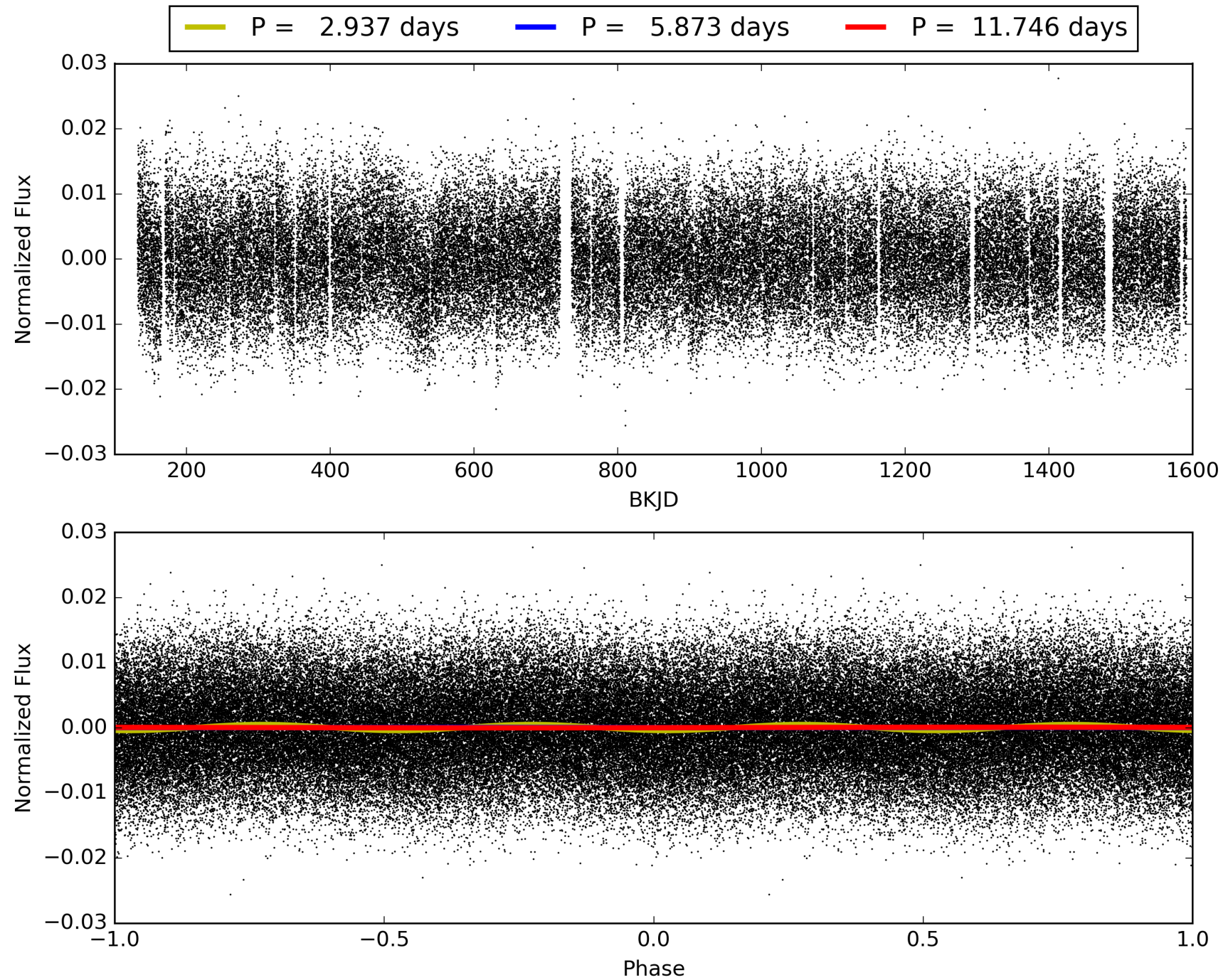
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 15:50:36 Z

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

TCE 009229318-02, PDC Light Curves

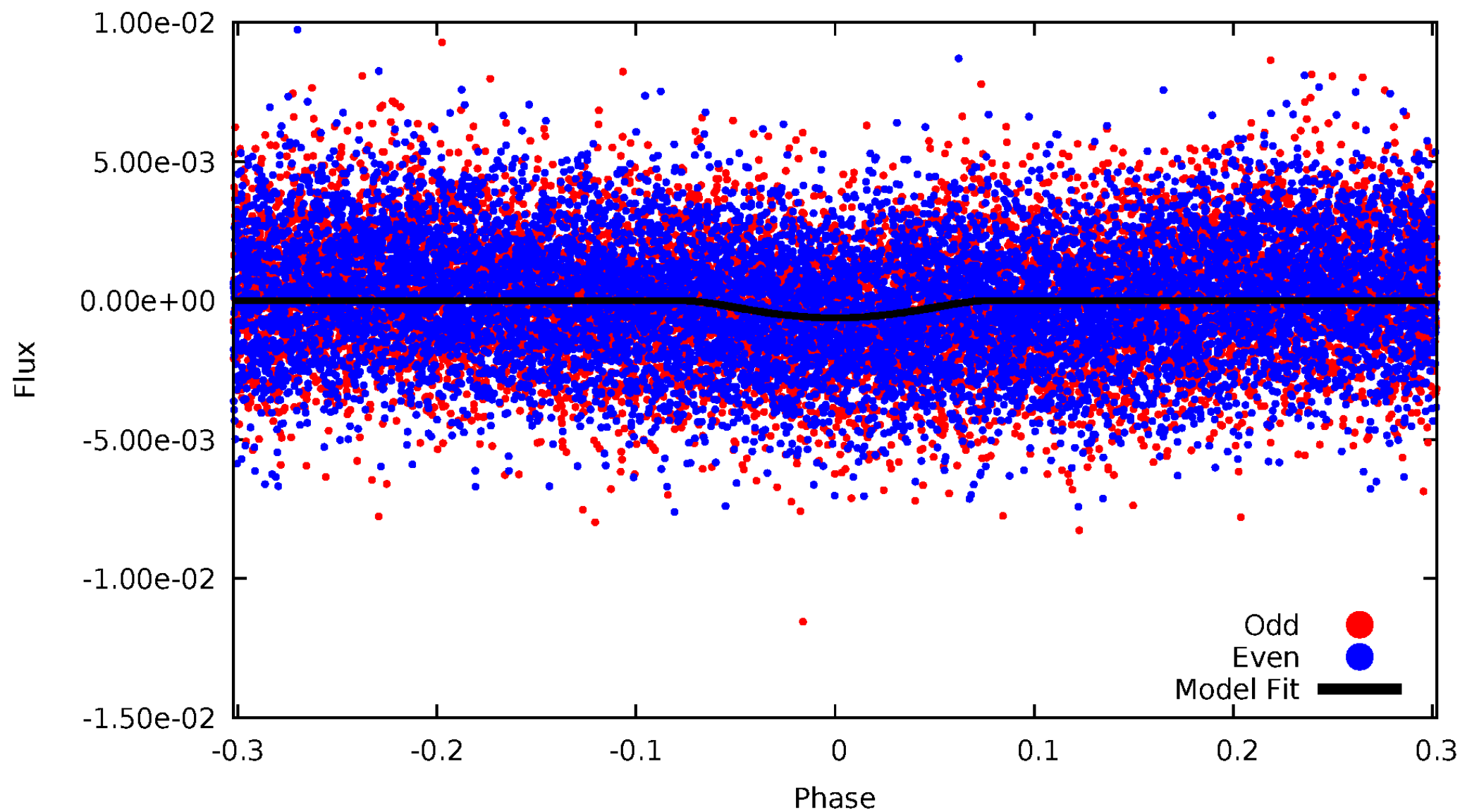


TCE 009229318-02



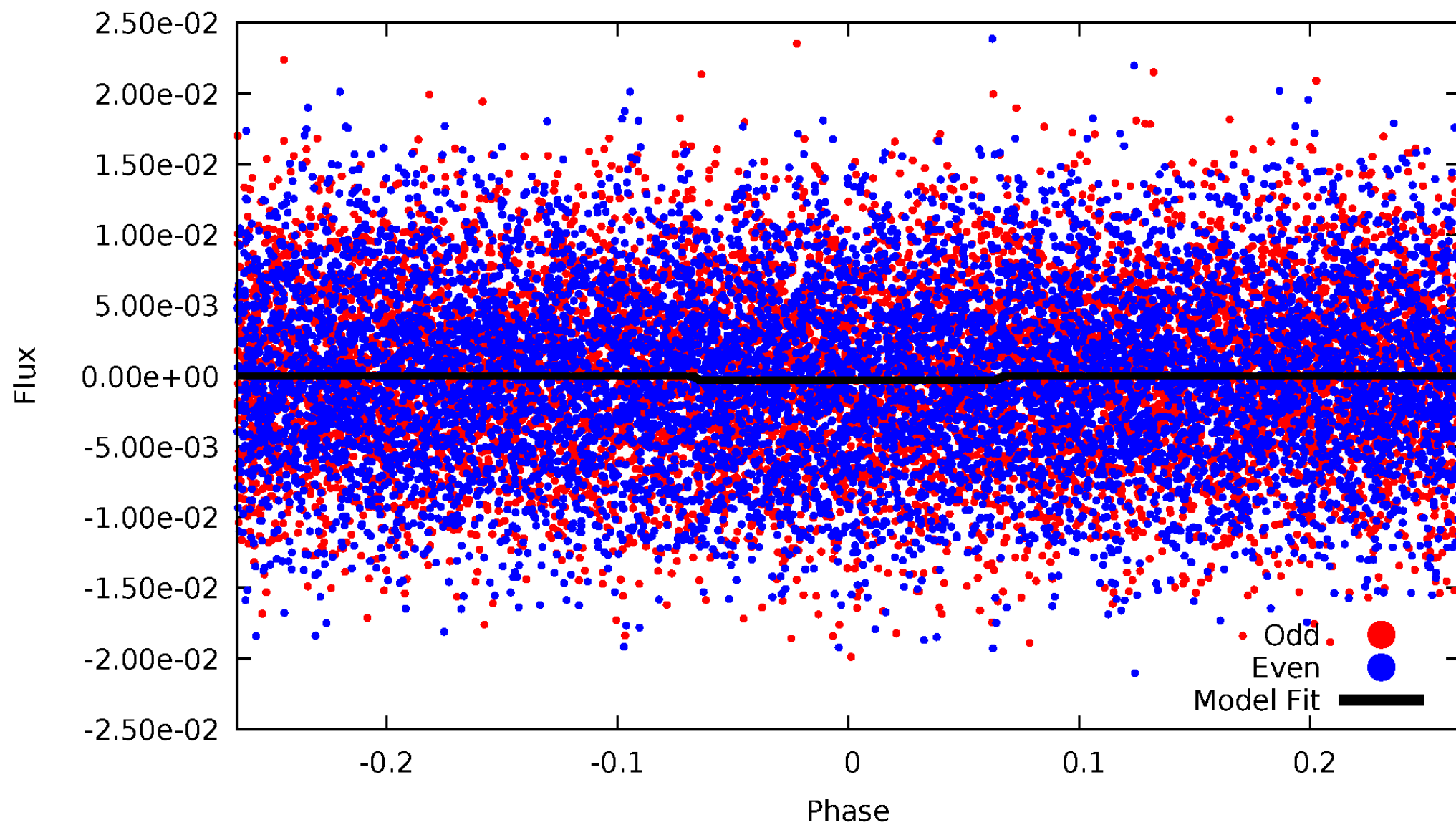
DV Odd/Even

TCE 009229318-02



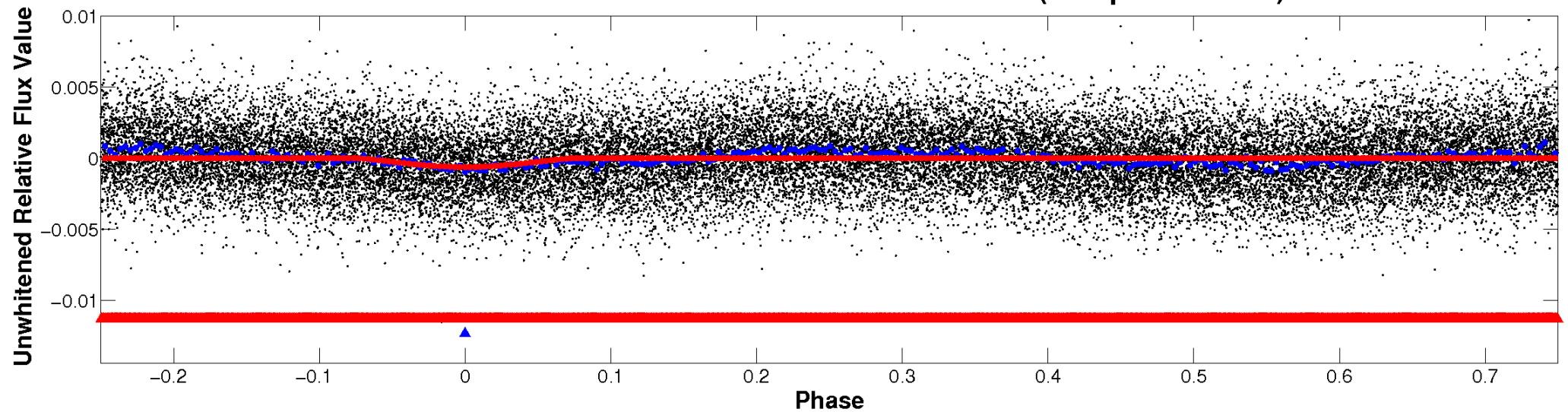
ALT Odd/Even

TCE 009229318-02

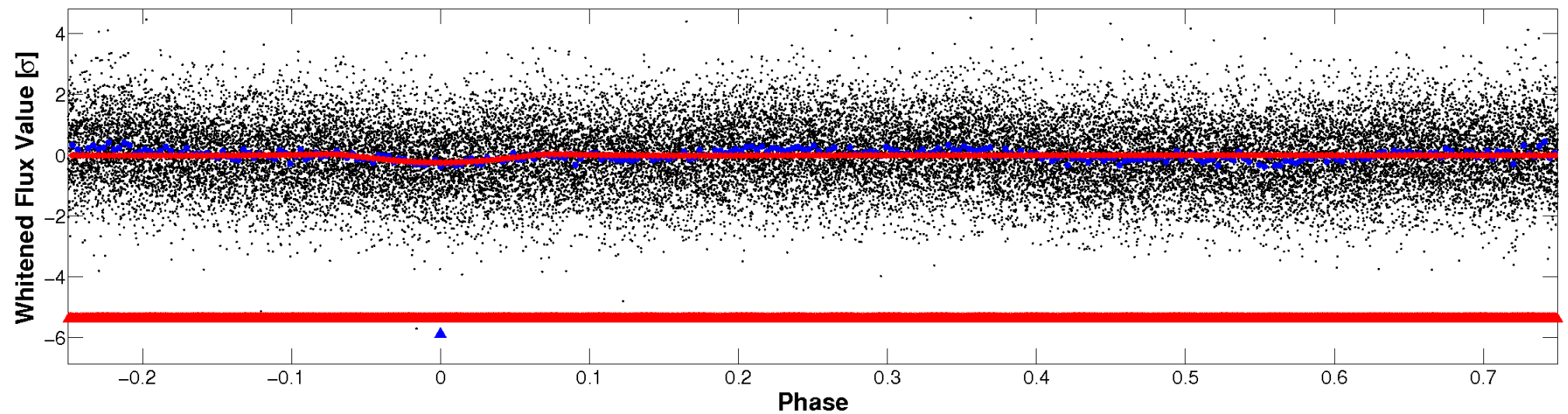


Non-Whitened Vs. Whitened Light Curve

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

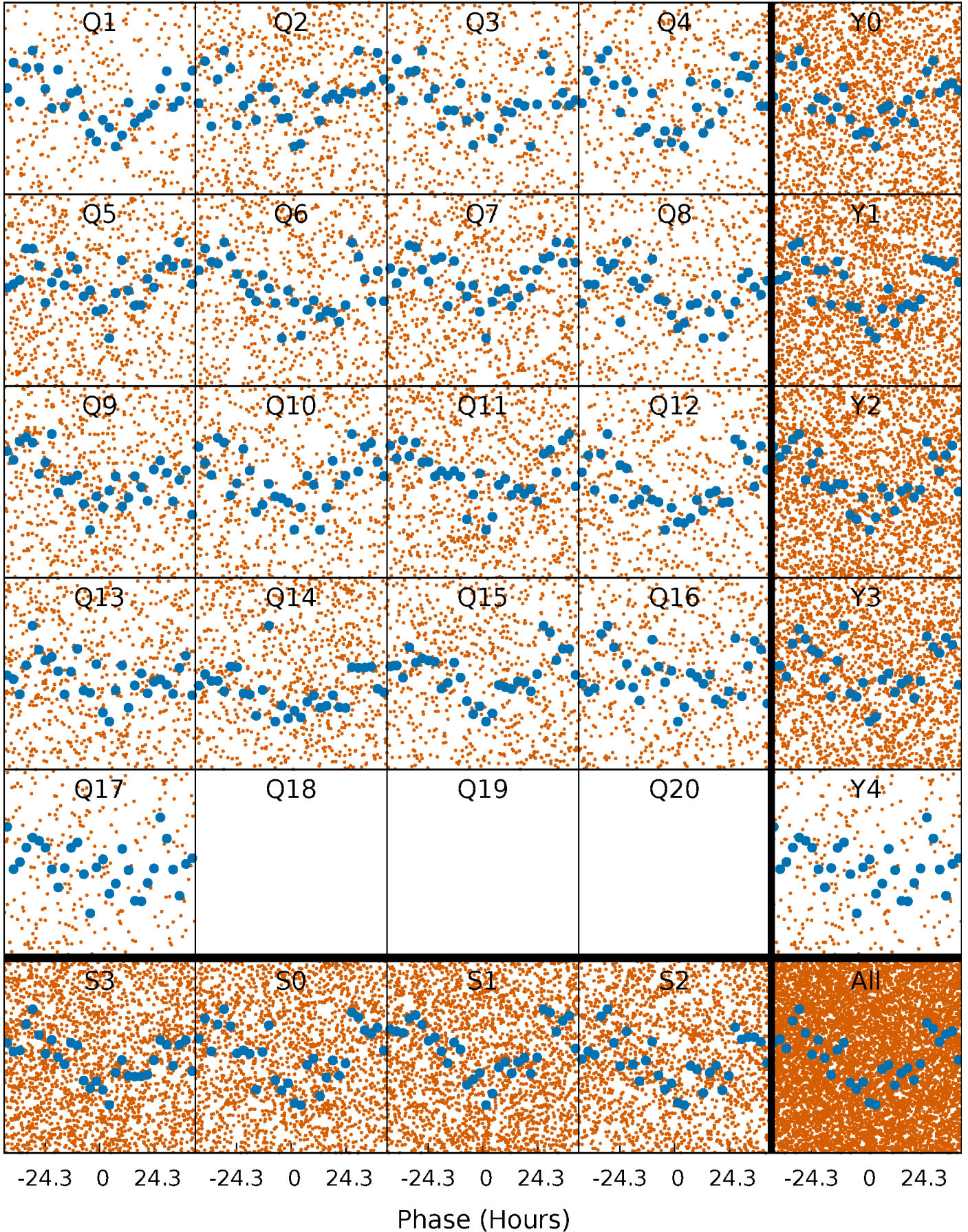


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



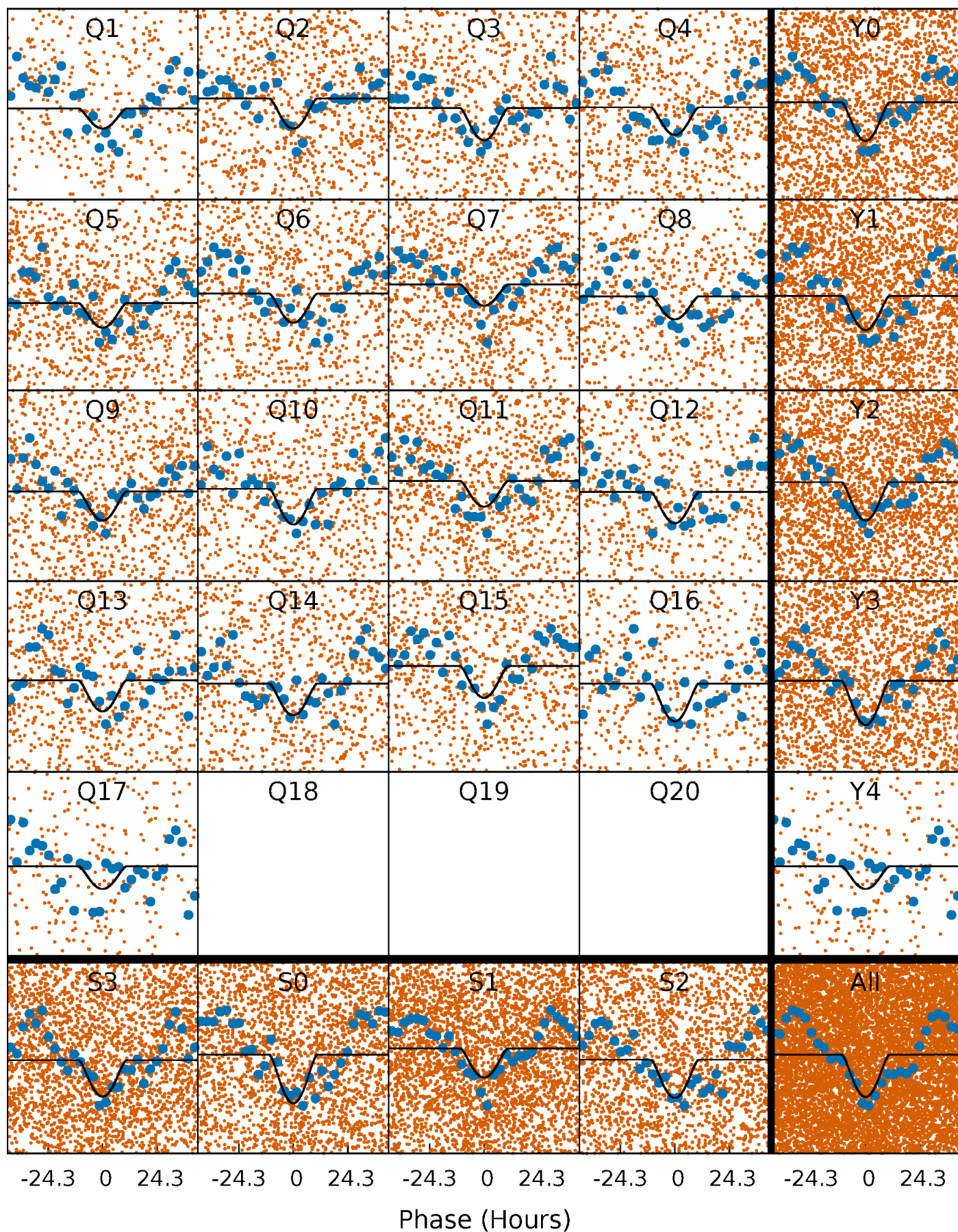
PDC Quarter-Phased Transit Curves

TCE 009229318-02 P= 5.873220 Days $T_0=133.738012$ (BKJD)



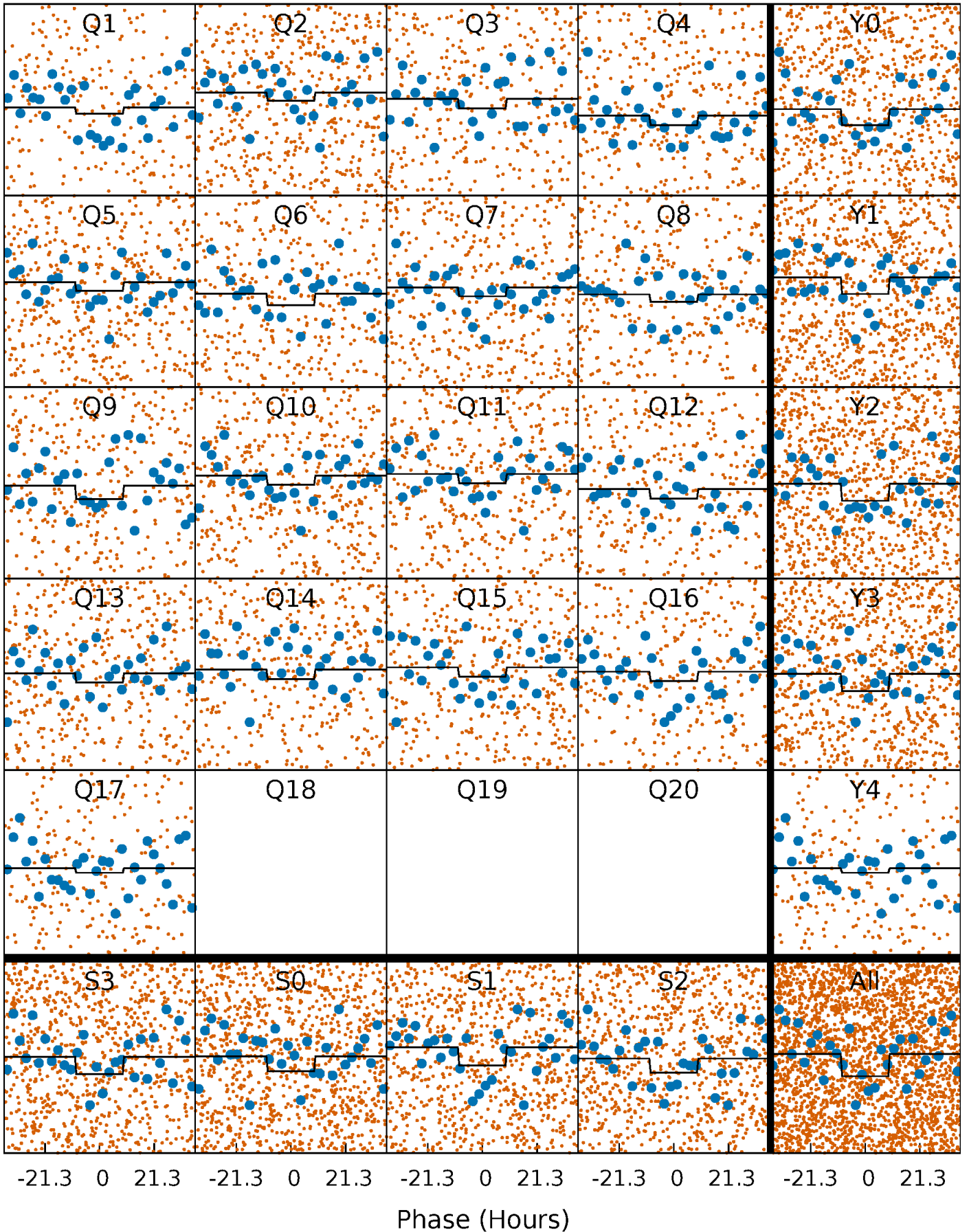
DV Quarter-Phased Transit Curves

TCE 009229318-02 P= 5.873220 Days $T_0=133.738012$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

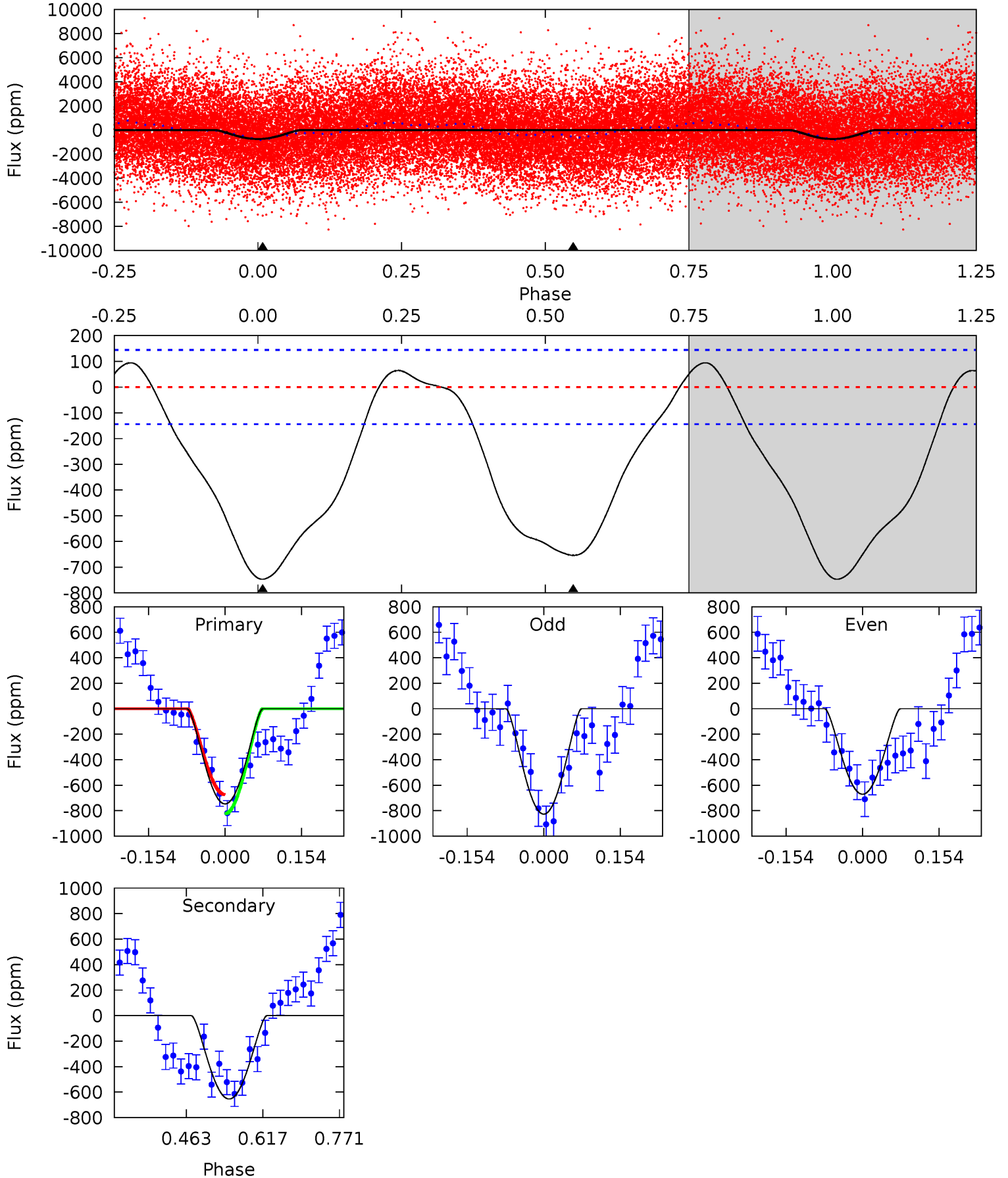
TCE 009229318-02 P= 5.873208 Days $T_0=133.756375$ (BKJD)



DV Model-Shift Uniqueness Test

009229318-02, P = 5.873220 Days, E = 127.864792 Days

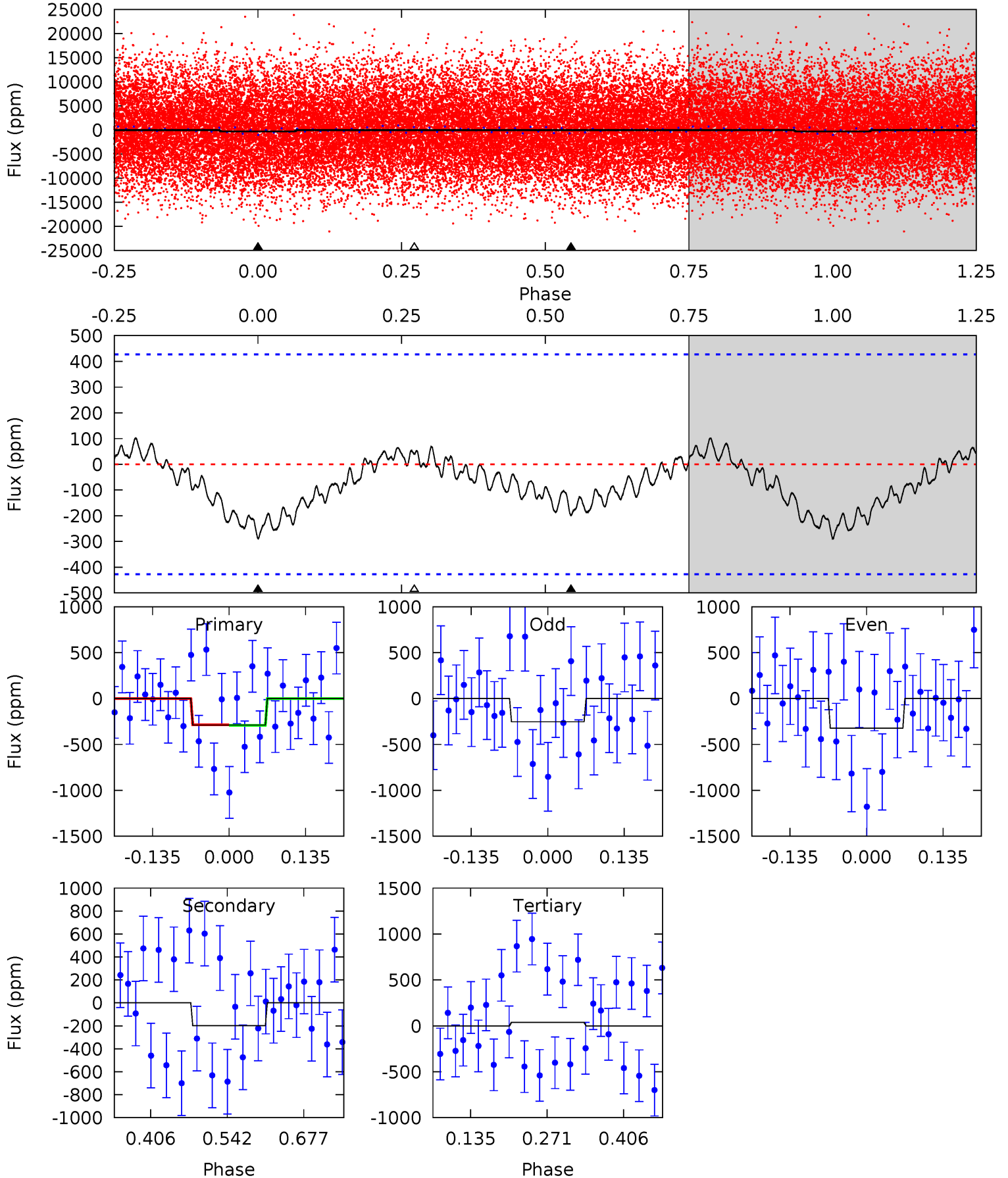
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
23.2	20.3	0	0	4.47	1.42	2.82	23.2	23.2	20.3	20.3	2.42	0.93	0.11	2.34



Alt Model-Shift Uniqueness Test

009229318-02, P = 5.873208 Days, E = 127.883167 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3.04	2.09	-0.41	0	4.50	1.49	0.49	3.45	3.04	2.50	2.09	0.37	0.85	0.26	0.03



Stellar Parameters For KIC 009229318

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	7358^{+228}_{-304}	$3.630^{+0.504}_{-0.056}$	$-0.120^{+0.250}_{-0.300}$	$3.612^{+0.336}_{-2.015}$	$2.033^{+0.110}_{-0.621}$	$0.061^{+0.366}_{-0.012}$
	+3%/-4%	+14%/-2%	+208%/-250%	+9%/-56%	+5%/-31%	+602%/-20%
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 009229318-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-654 ± 32	$29.24^{+36.12}_{-19.89}$	2922^{+199}_{-360}	4065^{+2763}_{-1114}	$2.715^{+22.696}_{-2.163}$
Alt.	-199 ± 95	$26.71^{+31.90}_{-18.93}$	2915^{+209}_{-378}	3213^{+2044}_{-5947}	$0.846^{+8.558}_{-0.686}$

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 $A_{\text{obs}} \gg 1.0$

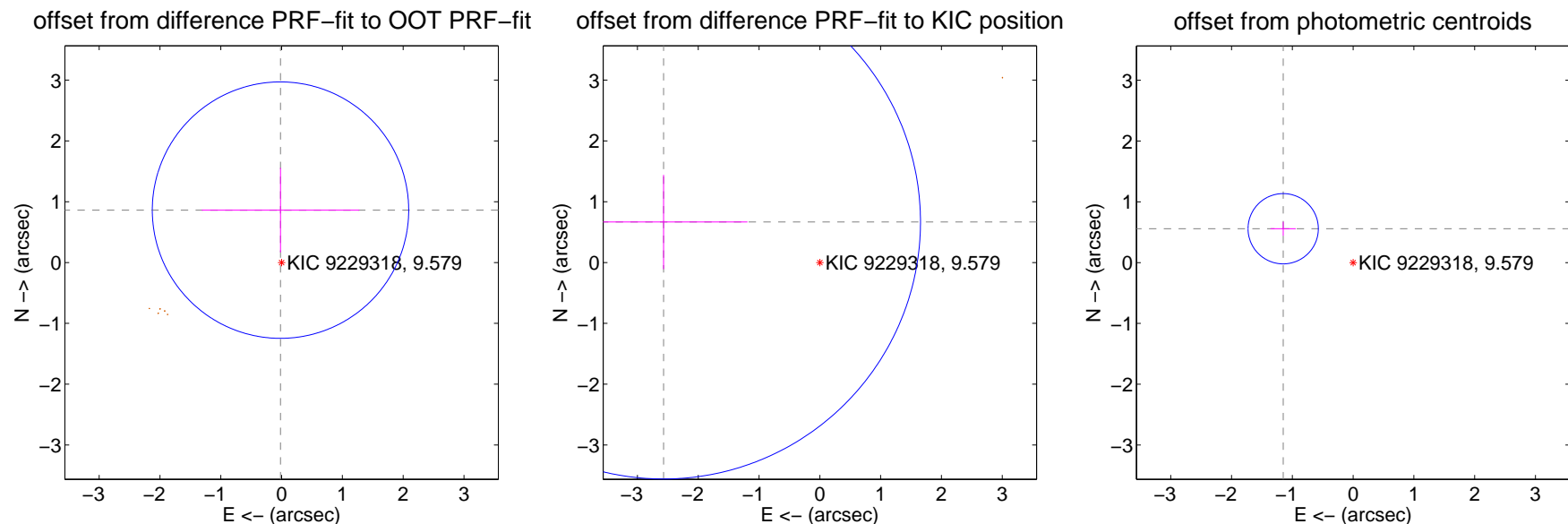
DV Centroid Data

Supplemental centroid analysis for 009229318-02. **Kepler magnitude: 9.58.** Transit SNR 10.39

There are 0 quarters with good PRF difference image offsets

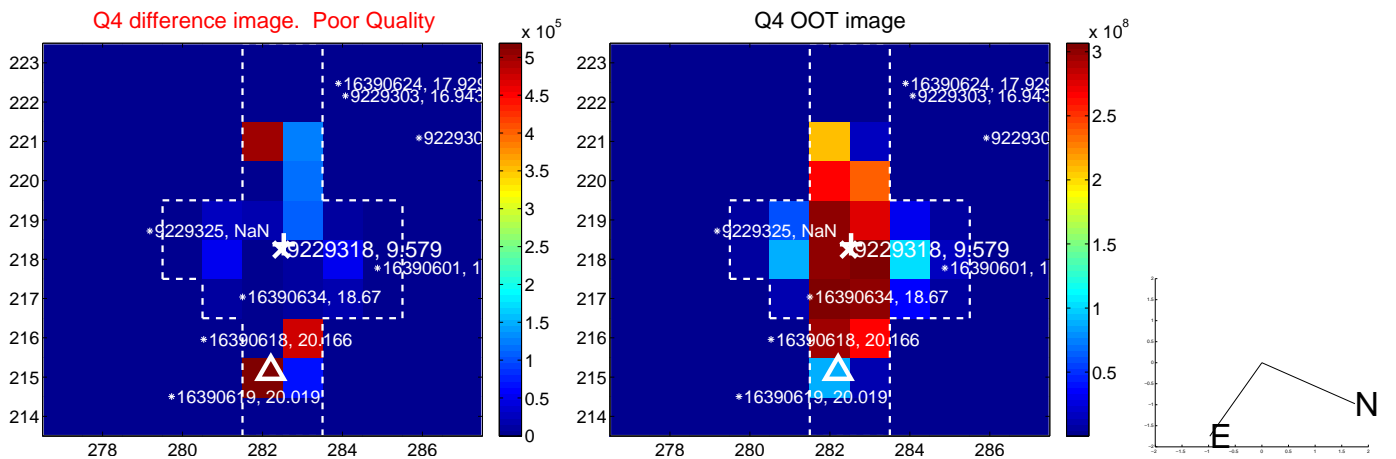
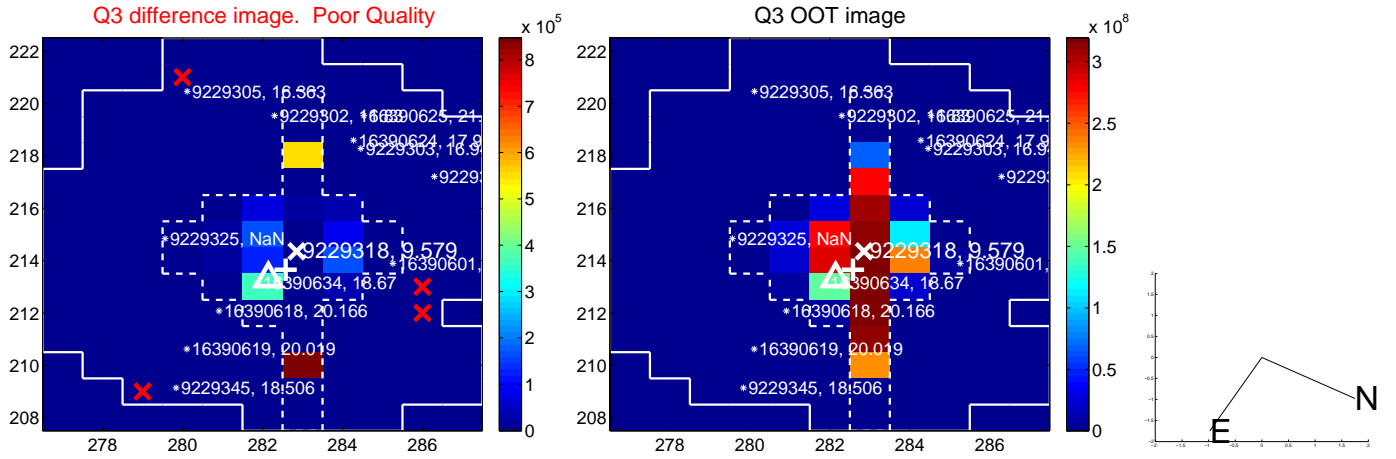
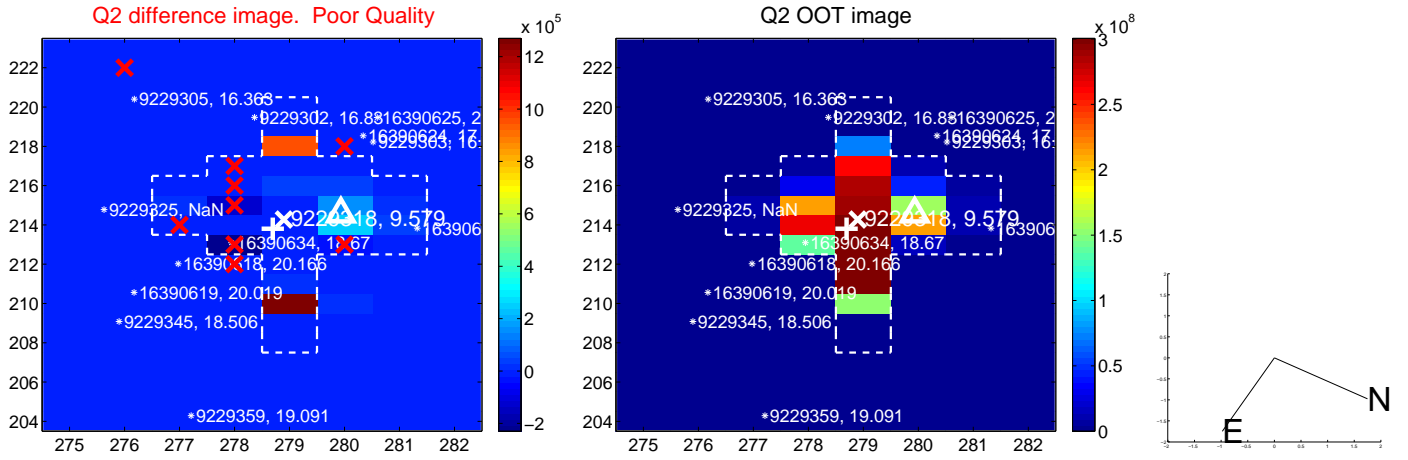
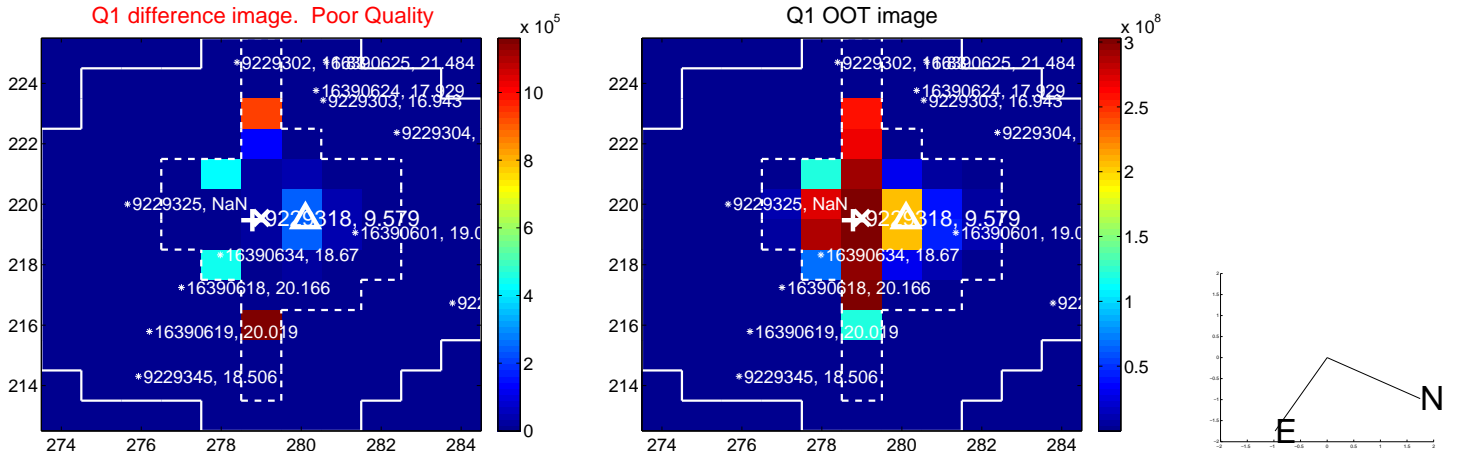
The direct PRF centroid is offset from the target star catalog position by about 0.81 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.862 ± 0.703	1.23	0.018 ± 1.295	0.862 ± 0.694
PRF-fit source offset from KIC position	2.656 ± 1.409	1.89	2.571 ± 1.381	0.667 ± 0.775
photometric centroid source offset	1.28 ± 0.19	6.63	1.15 ± 0.21	0.56 ± 0.11

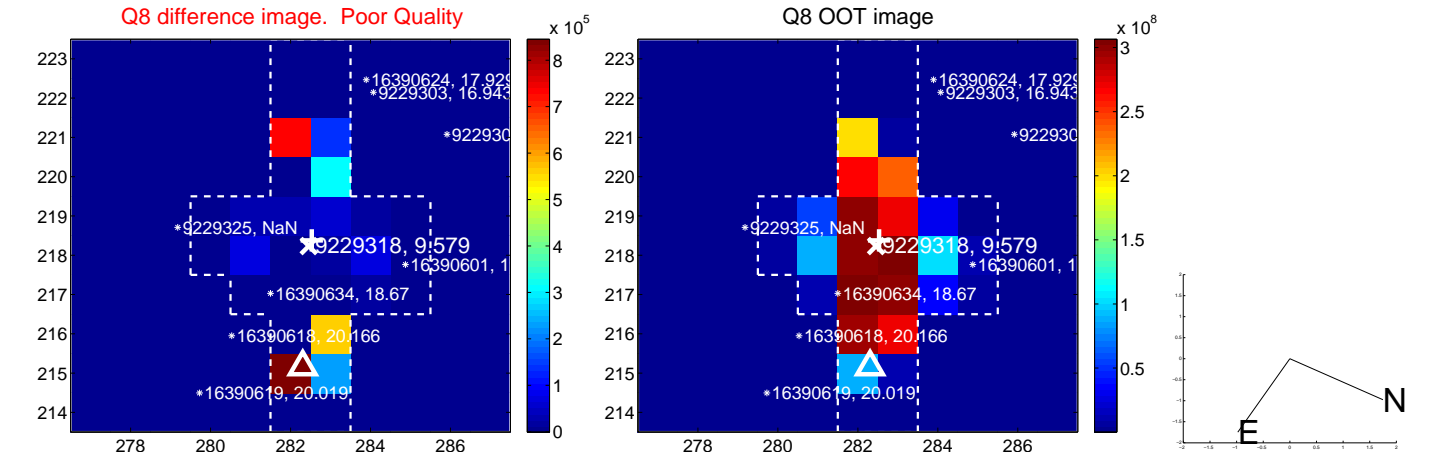
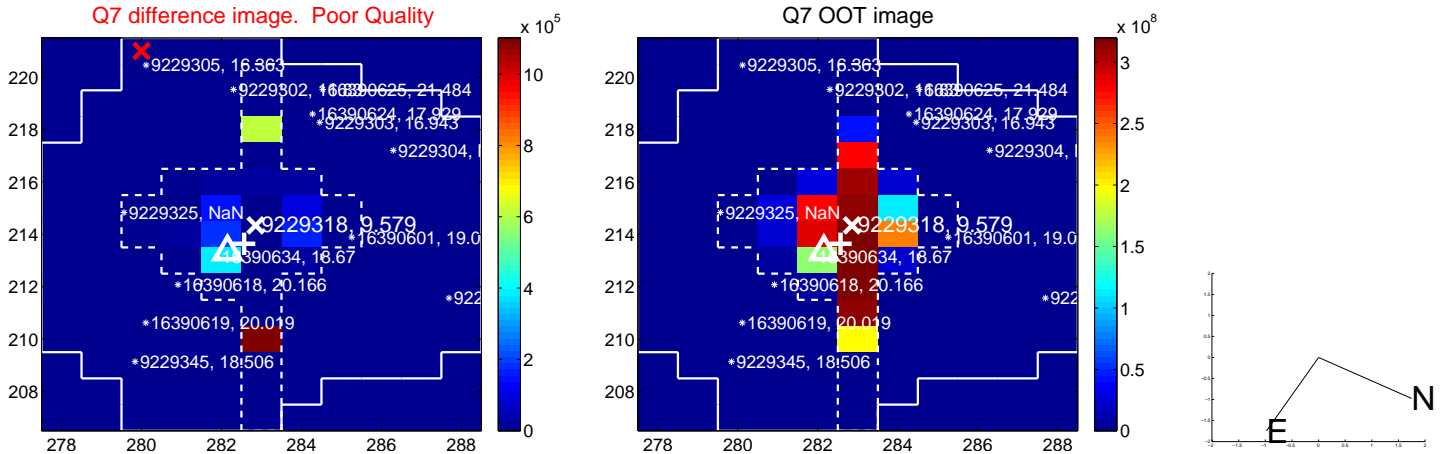
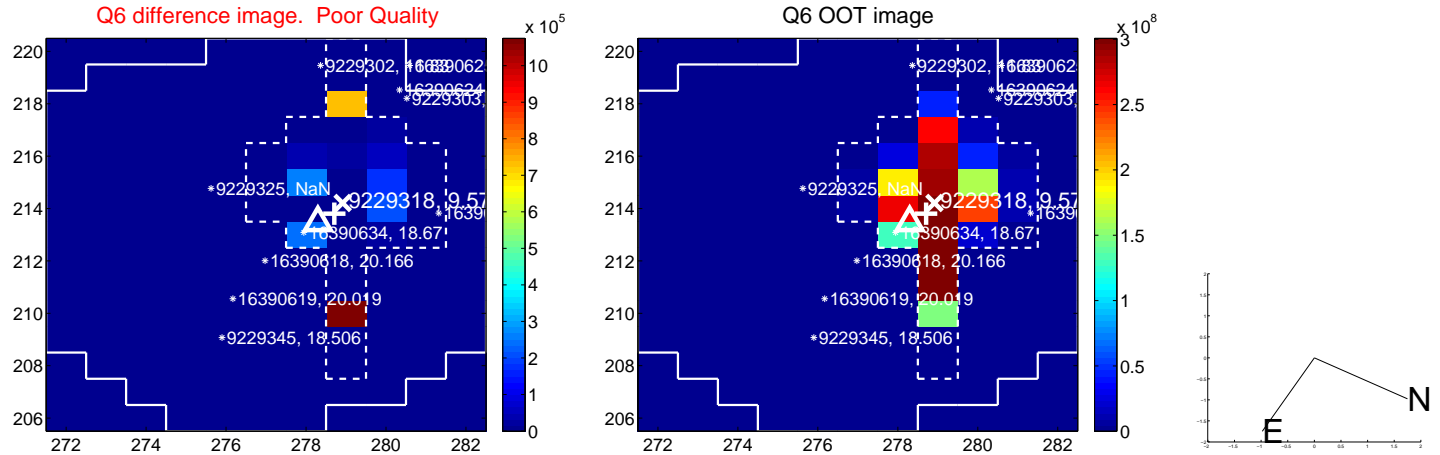
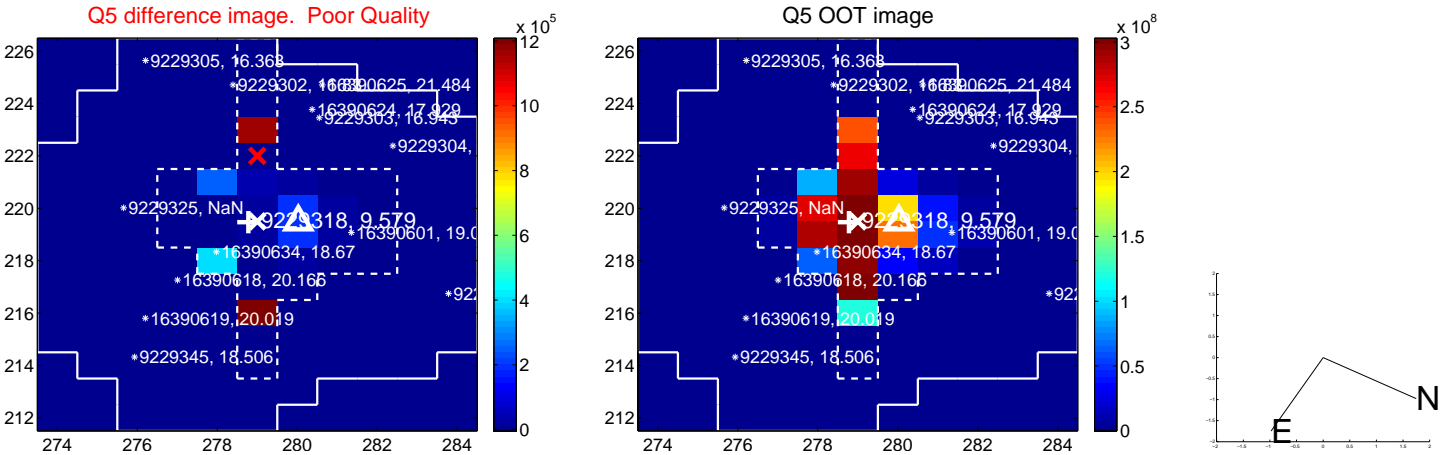


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

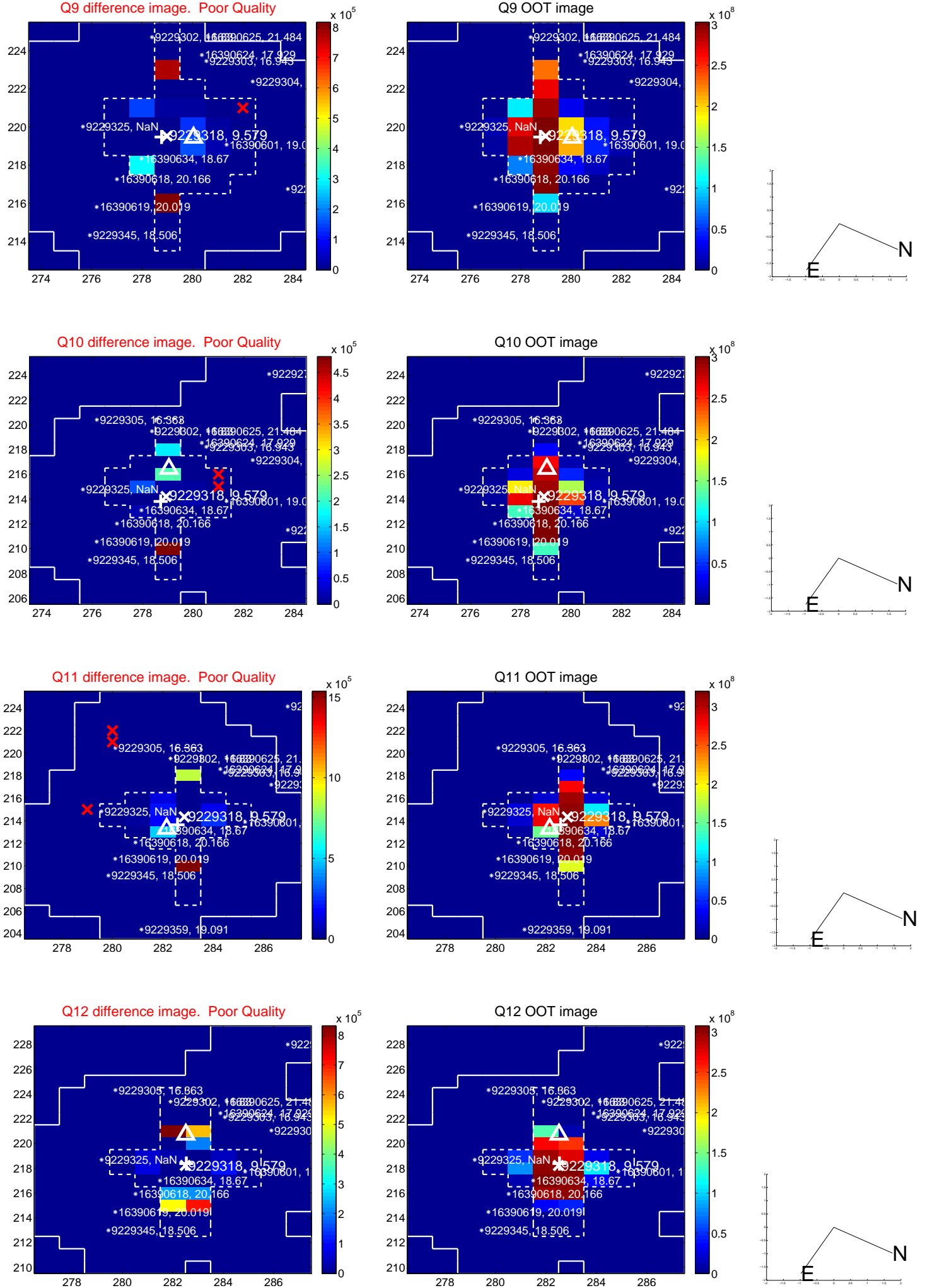
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



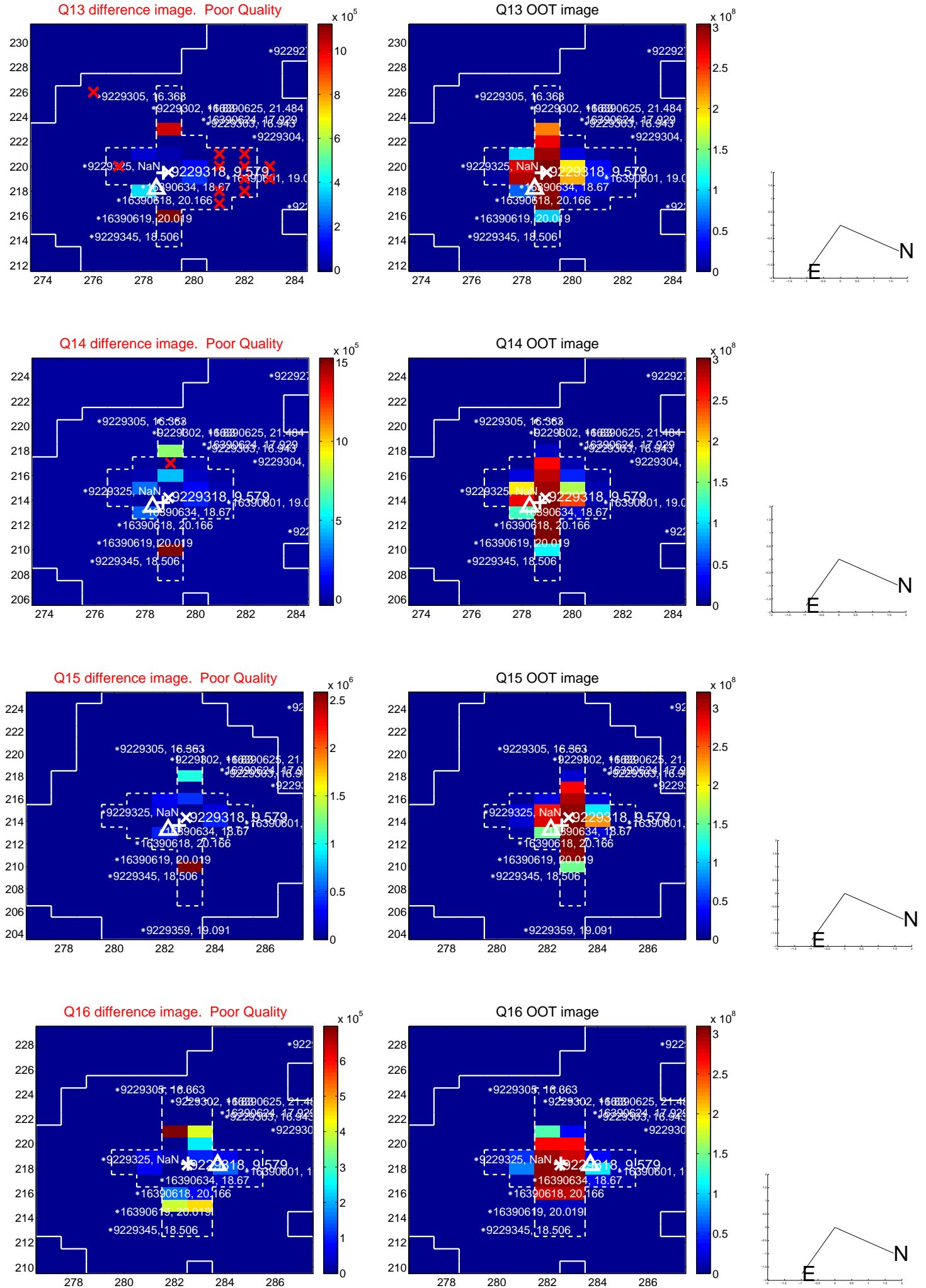
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



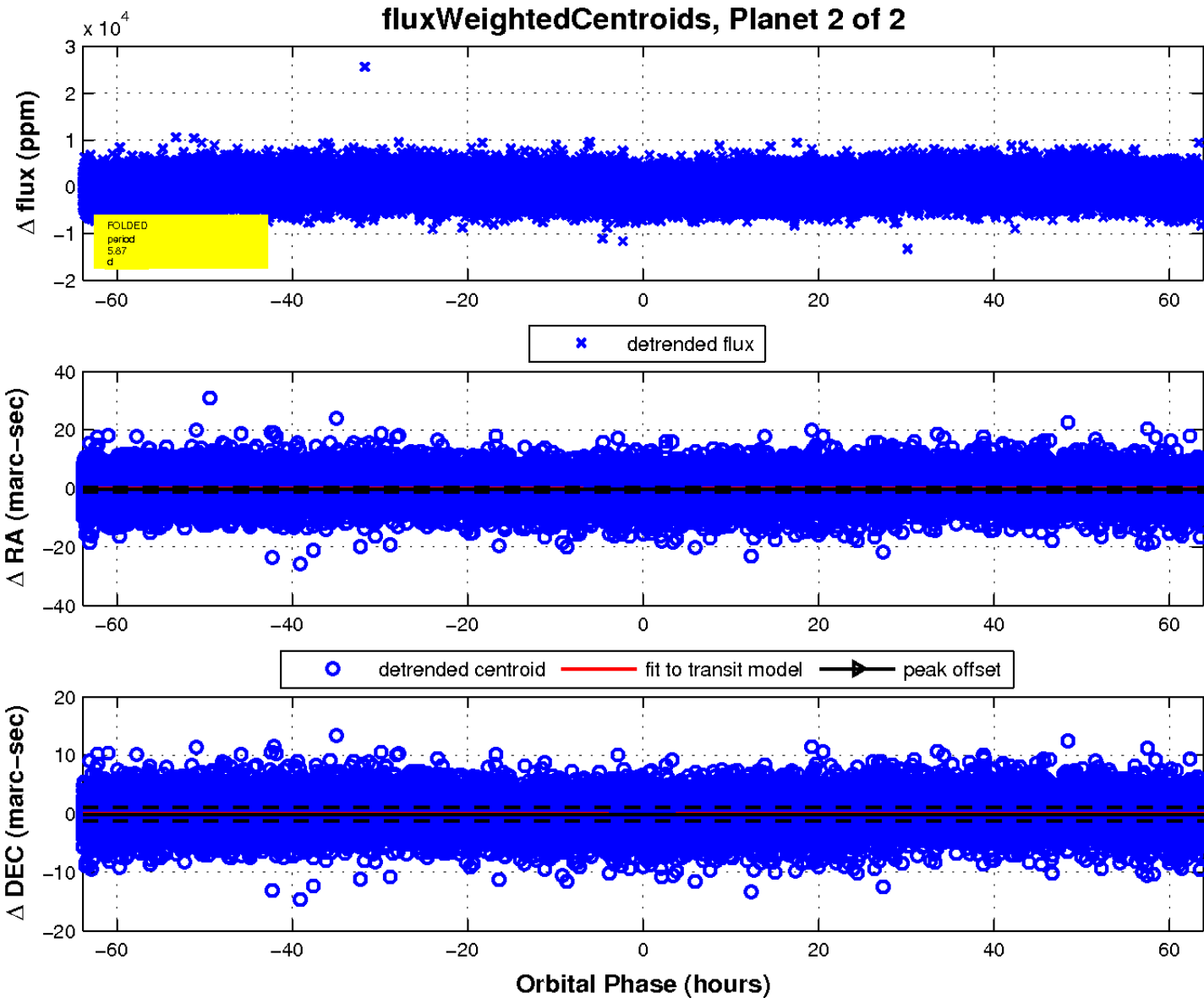
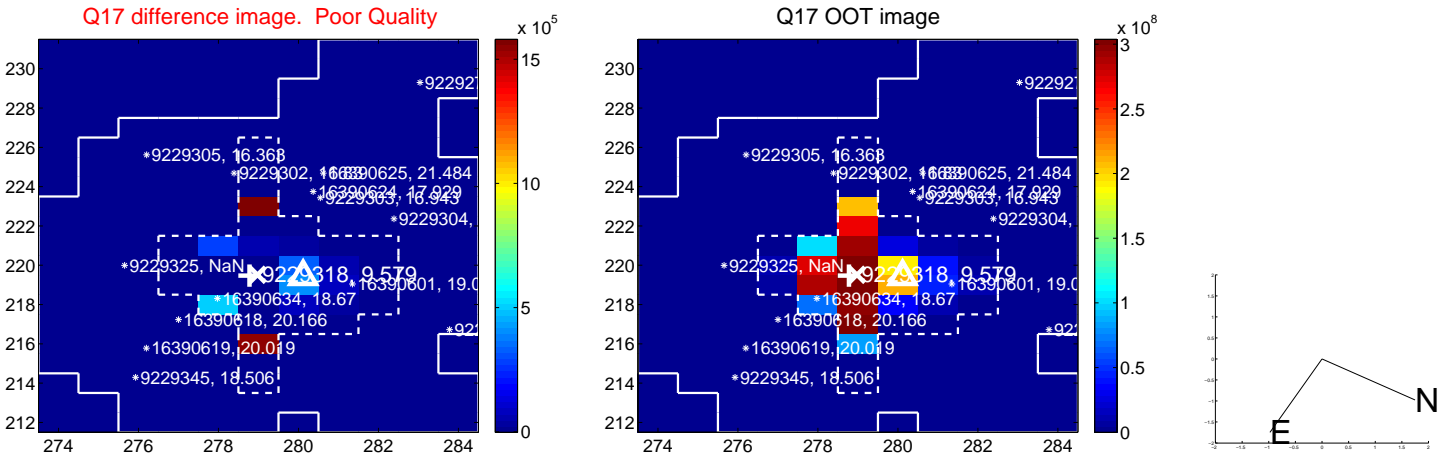
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

