

KIC 004930578

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})
004930578-01	OBS	No	4.673869	132.092349	352.5	19.804	12.7	13.6	1.46	7153	5.16	1357.61
004930578-02	OBS	No	4.673720	134.817158	276.9	13.845	13.6	13.1	1.46	7153	2.67	1357.67

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004930578-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT
004930578-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—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.

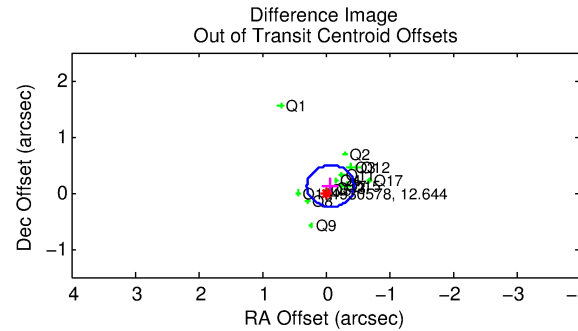
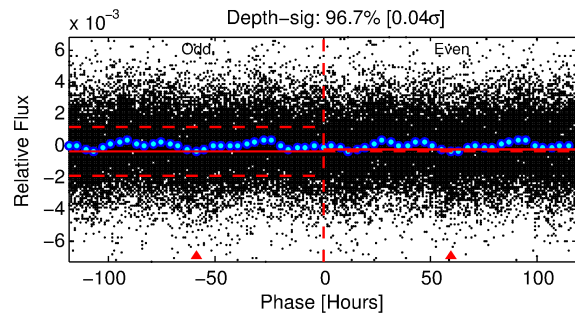
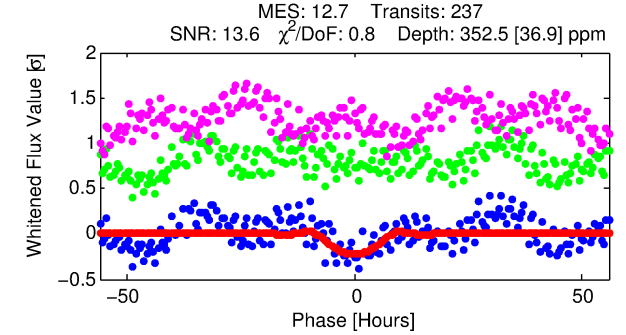
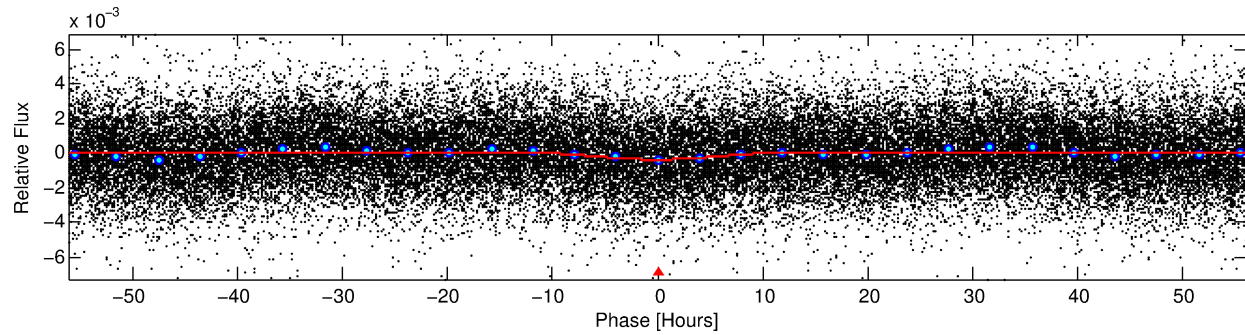
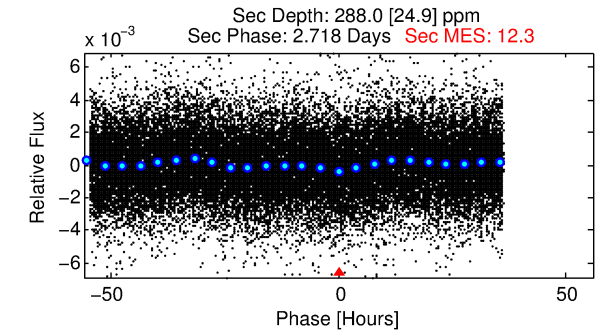
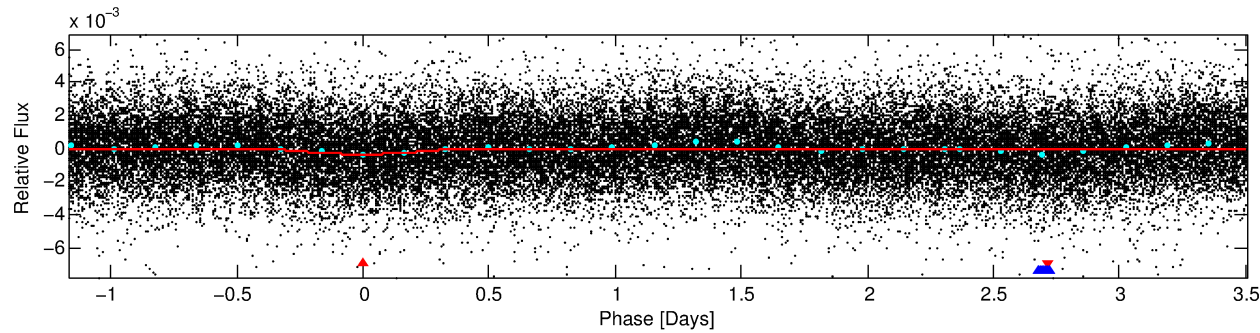
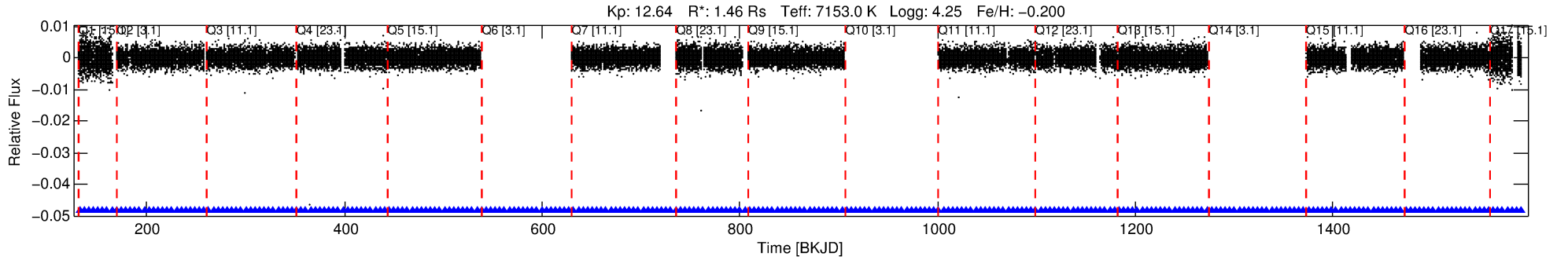
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004930578-01

No Significant Match Found

DV One-Page Summary

KIC: 4930578 Candidate: 1 of 2 Period: 4.674 d



DV Fit Results:

Period = 4.67387 [0.00016] d
Epoch = 132.0923 [0.0288] BKJD
Rp/R* = 0.0323 [0.0493]
a/R* = 1.11 [0.03]
b = 1.00 [0.08]
Seff = 1357.61 [580.19]
Teq = 1548 [165] K
Rp = 5.16 [8.08] Re
a = 0.0608 [0.0173] AU
Ag = 22.04 [67.86] [0.31σ]
Teffp = 5185 [3963] K [0.92σ]

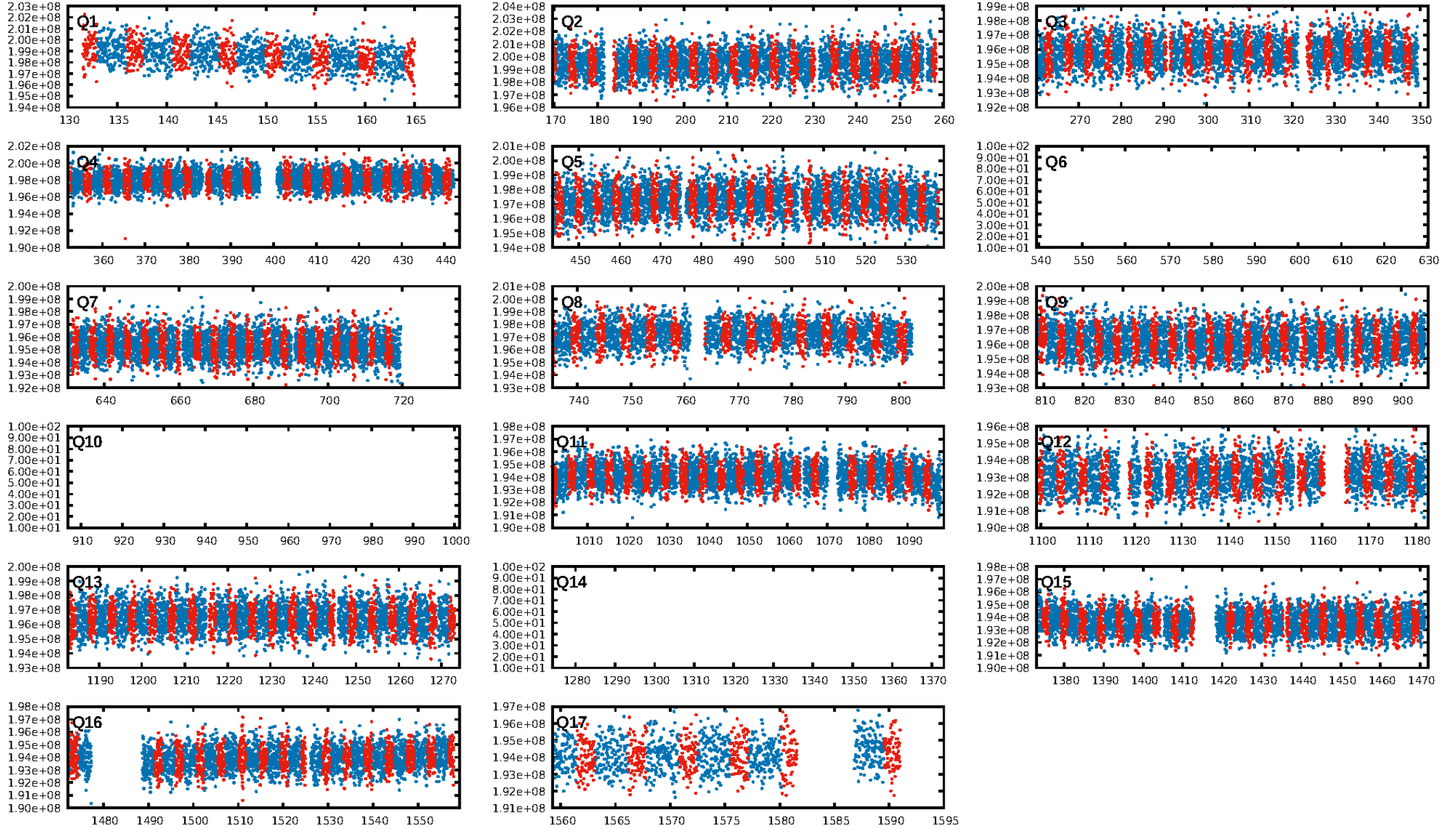
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 5.54e-49
RollingBand-fgt: 1.00 [223/223]
GhostDiagnostic-chr: 3.167
Centroid-sig: 55.1%
Centroid-so: 0.336 arcsec [1.46σ]
OotOffset-rm: 0.140 arcsec [1.13σ]
KicOffset-rm: 0.265 arcsec [1.96σ]
OotOffset-st: 1/4/4/5 [14]
KicOffset-st: 1/4/4/5 [14]
DiffImageQuality-fgm: 1.00 [14/14]
DiffImageOverlap-fno: 1.00 [14/14]

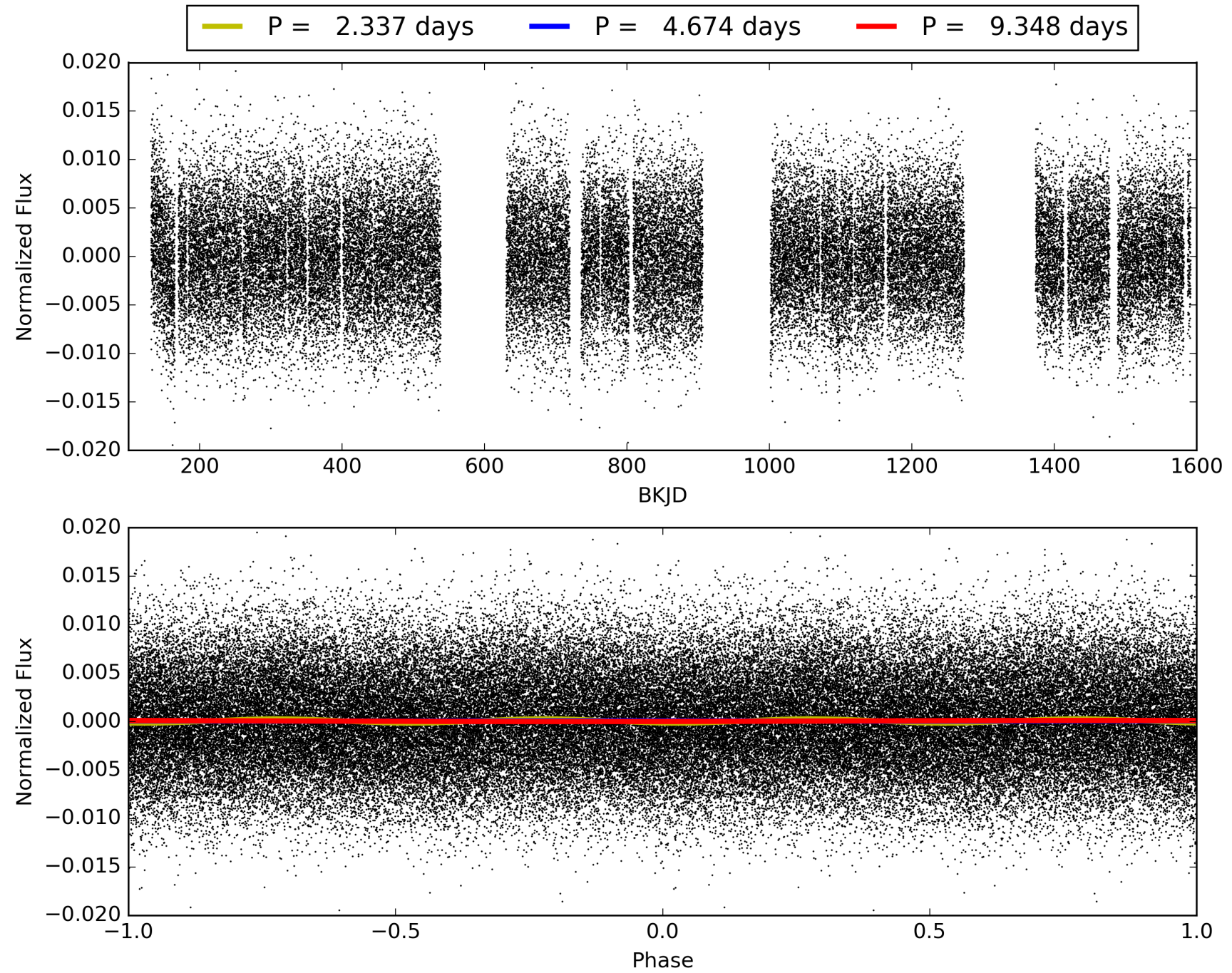
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 004930578-01, PDC Light Curves

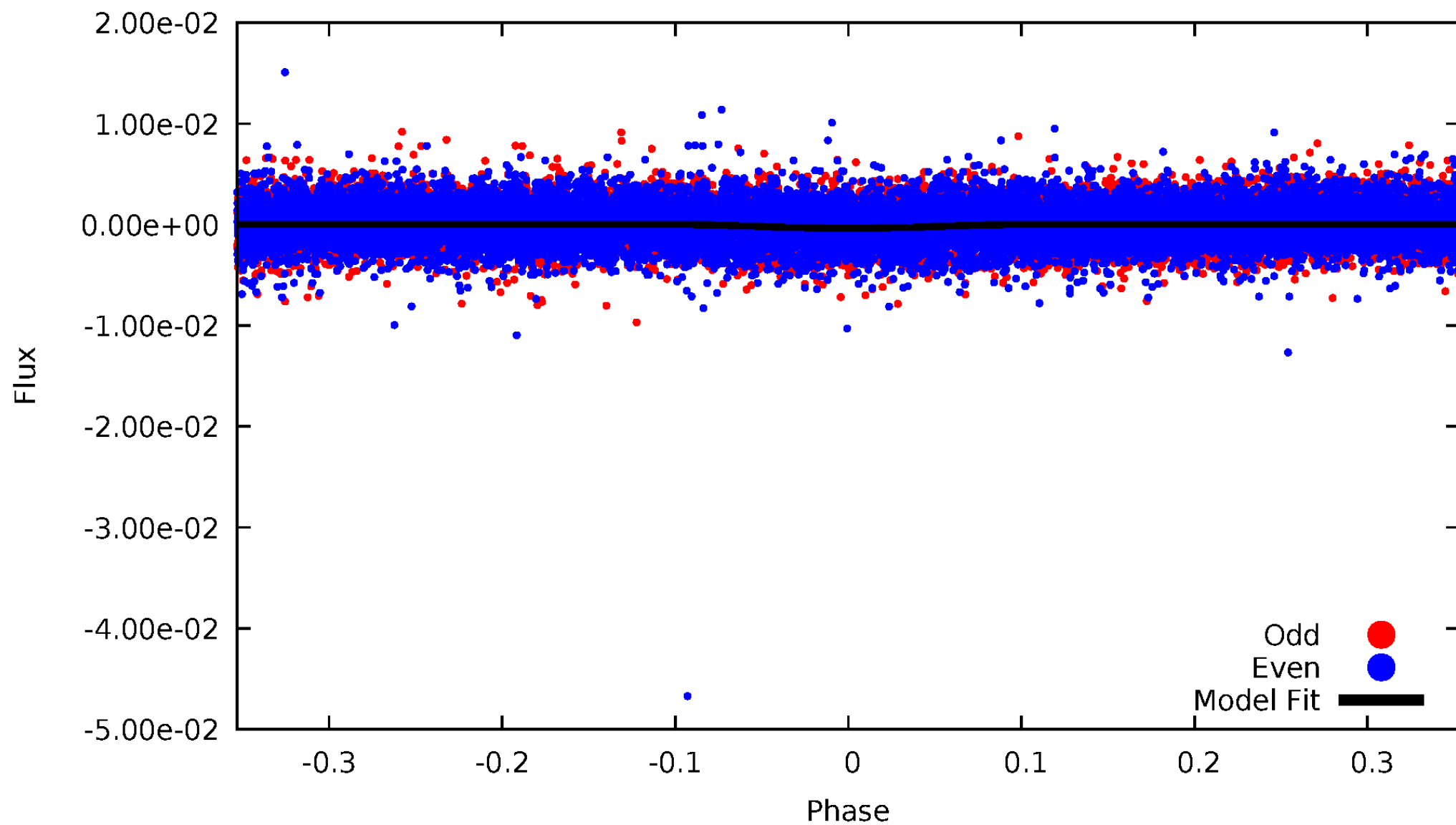


TCE 004930578-01



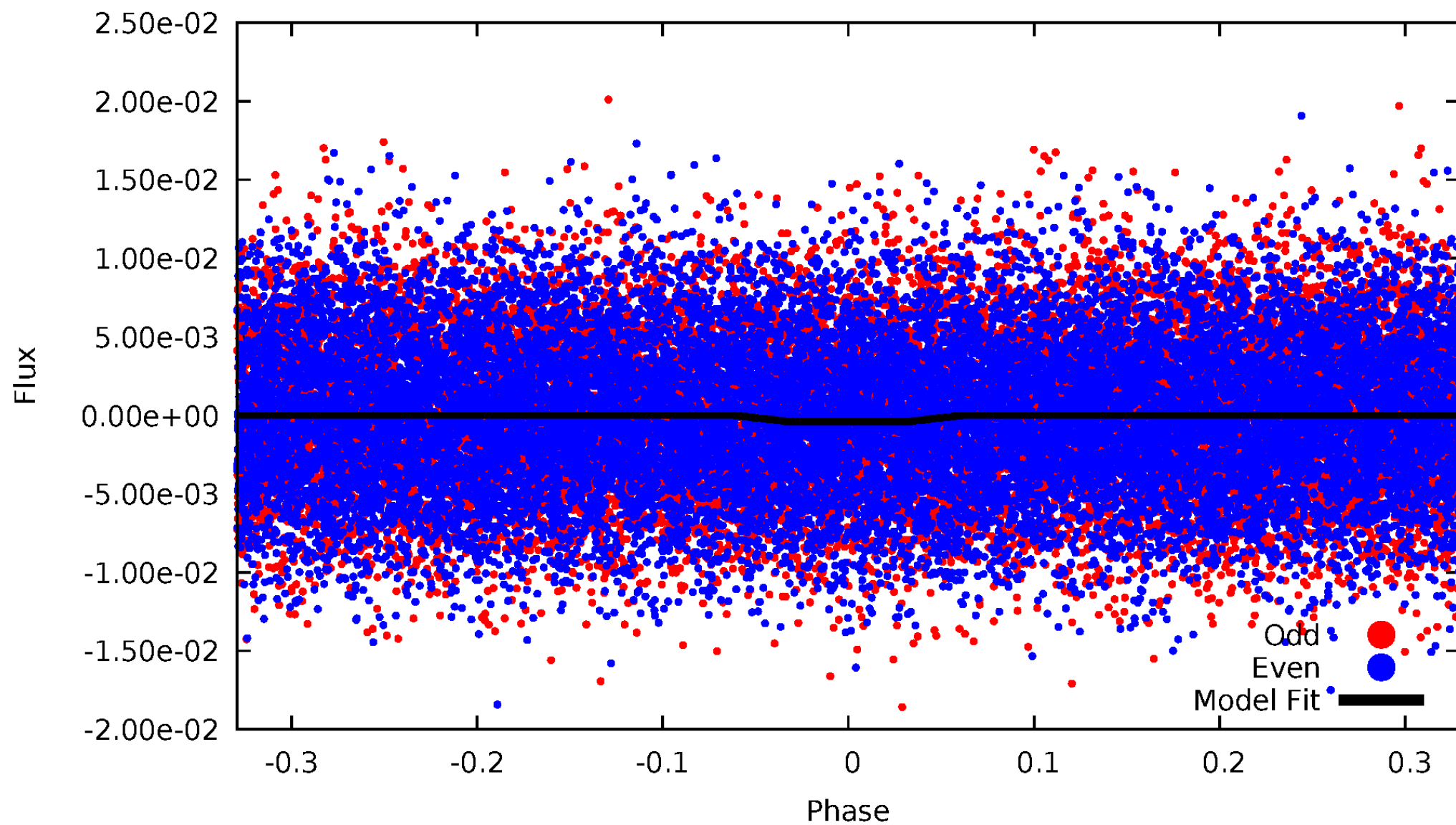
DV Odd/Even

TCE 004930578-01

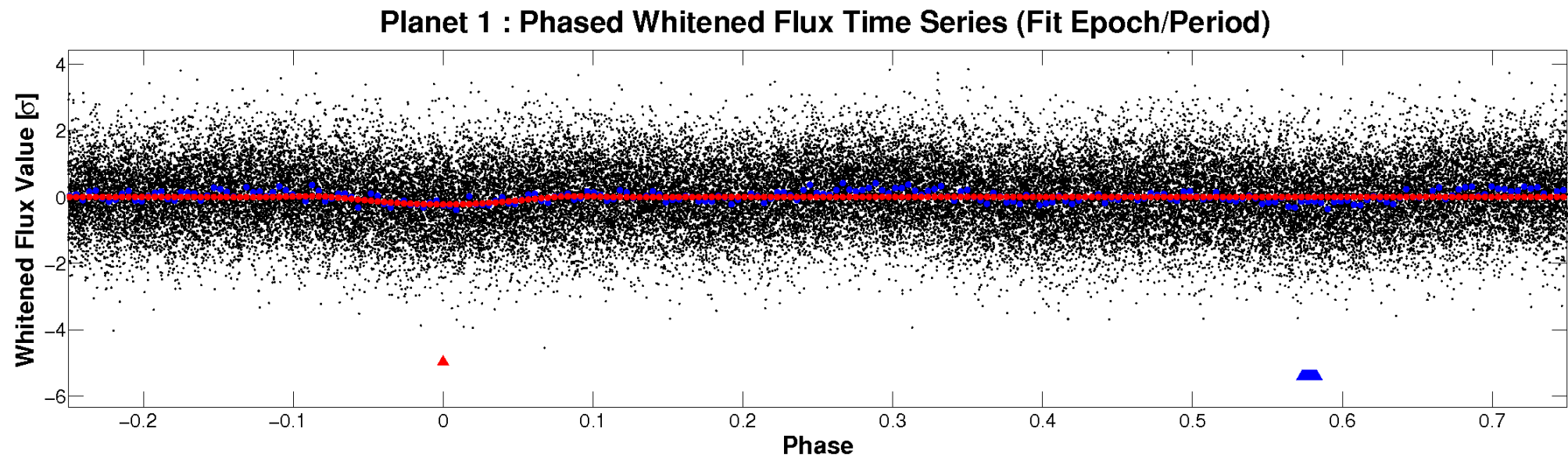
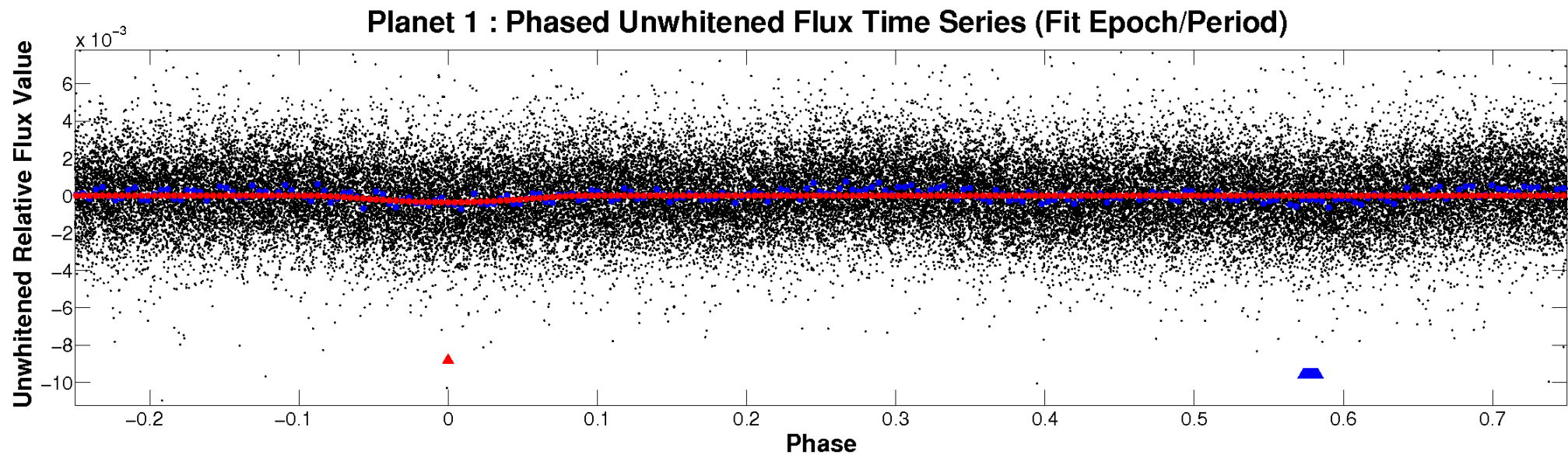


ALT Odd/Even

TCE 004930578-01

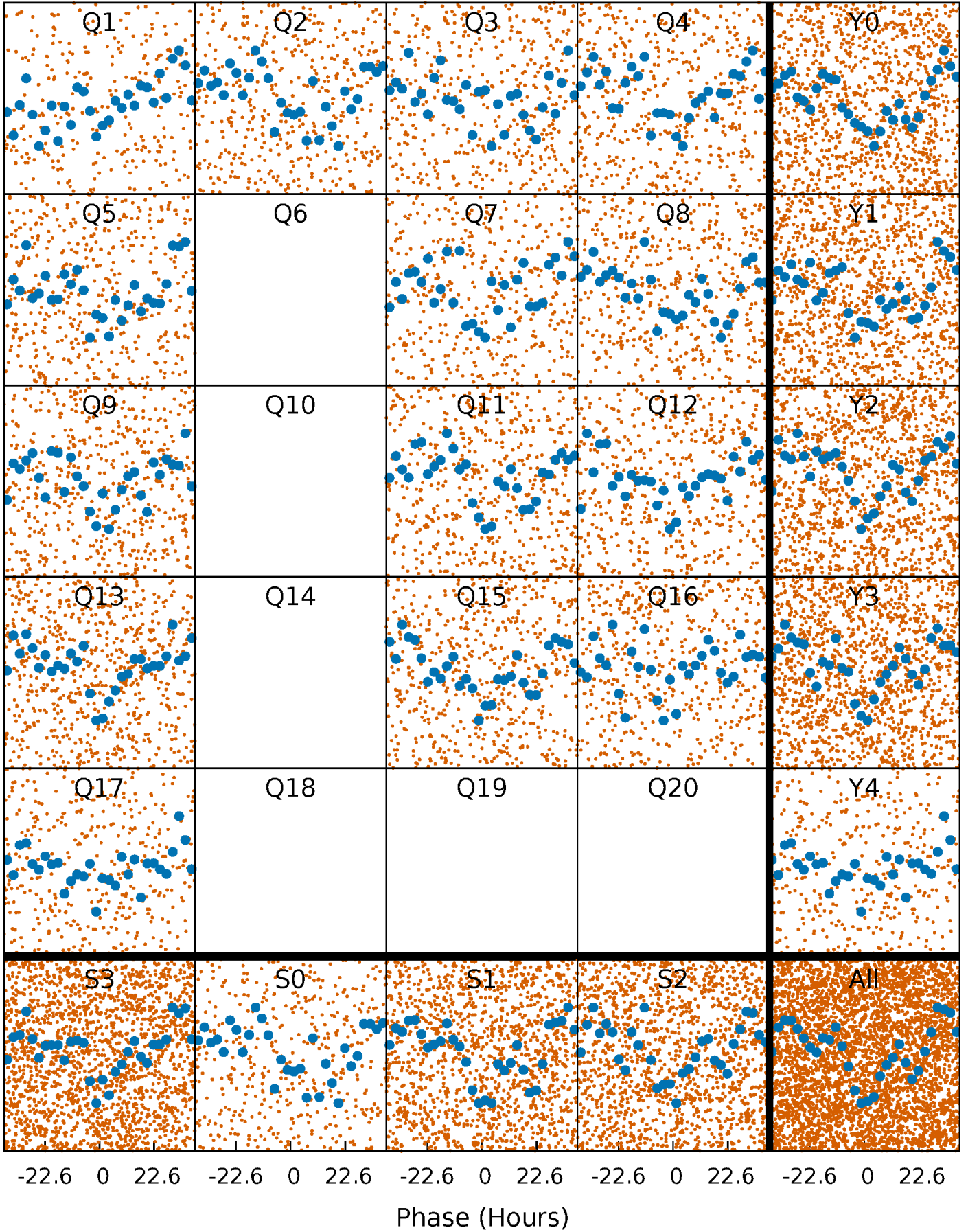


Non-Whitened Vs. Whitened Light Curve



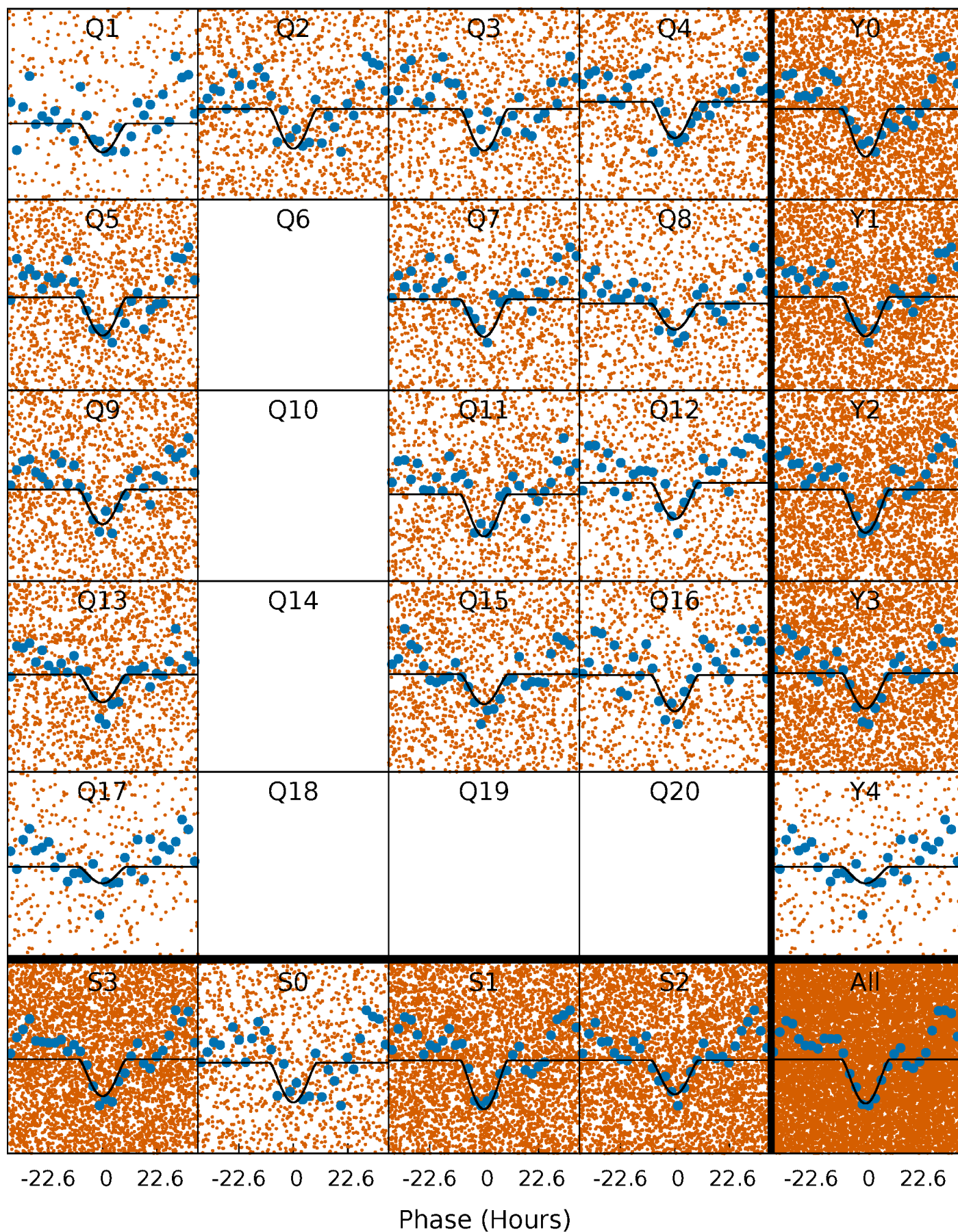
PDC Quarter-Phased Transit Curves

TCE 004930578-01 P= 4.673869 Days $T_0=132.092349$ (BKJD)



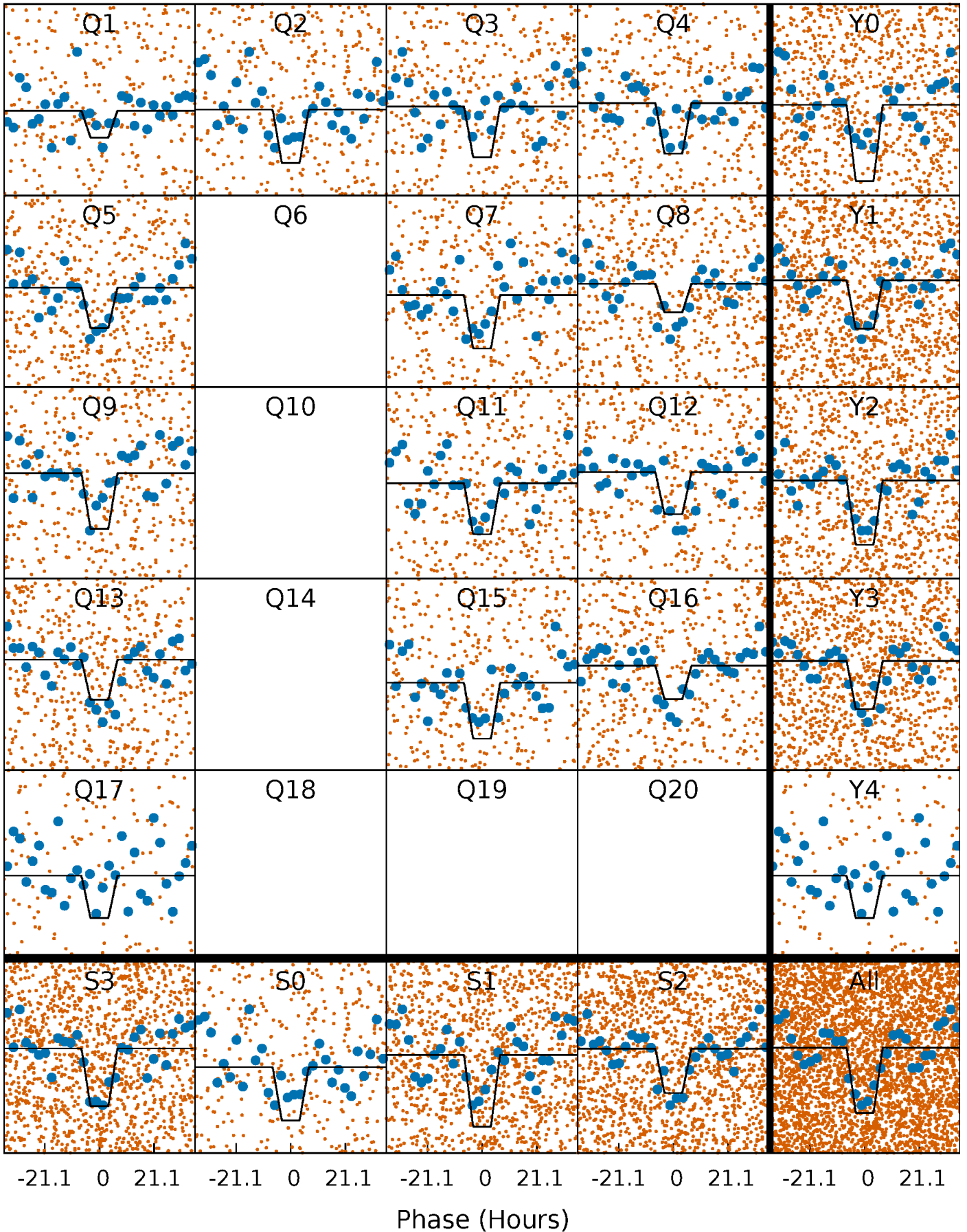
DV Quarter-Phased Transit Curves

TCE 004930578-01 P= 4.673869 Days $T_0=132.092349$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

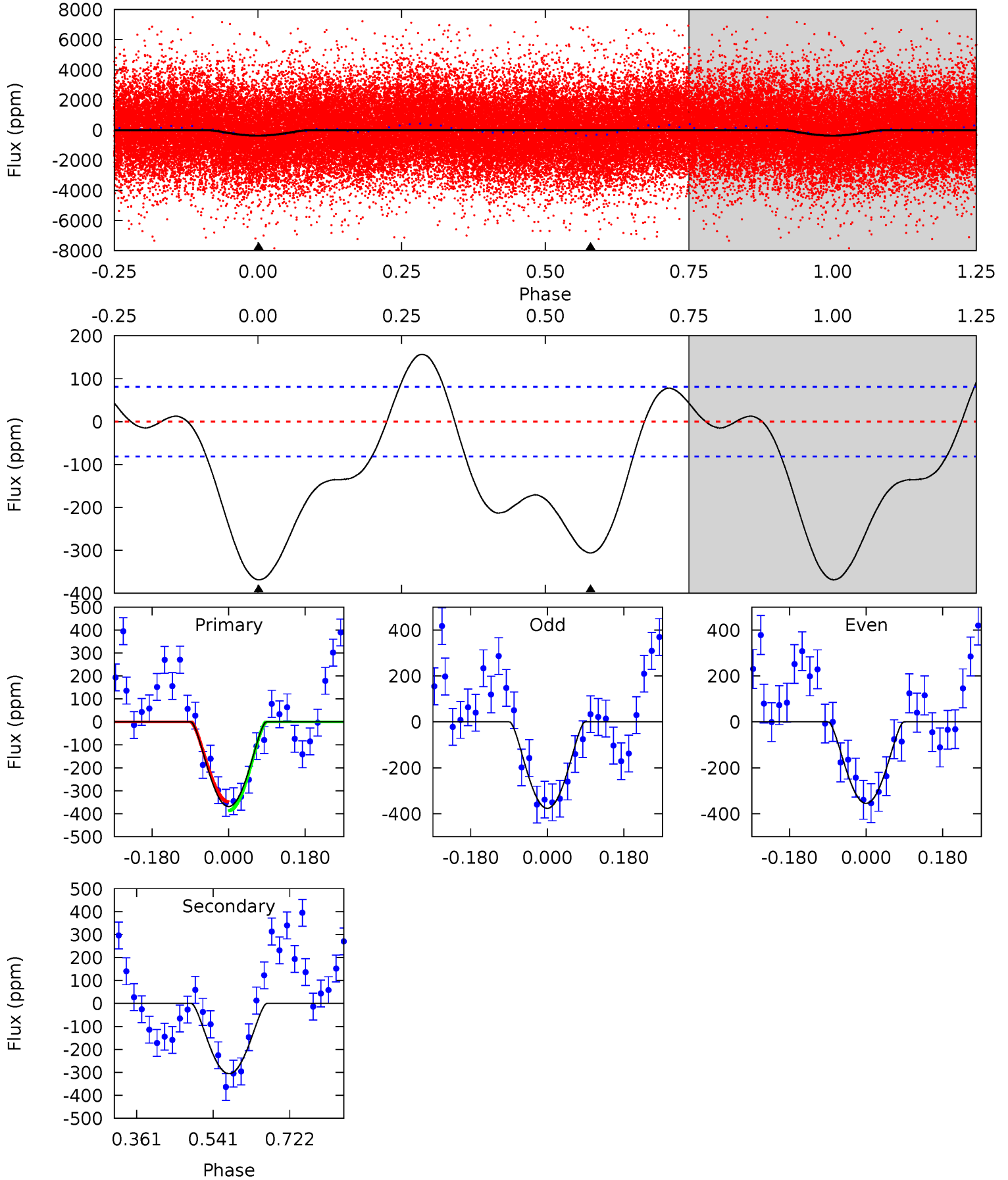
TCE 004930578-01 P= 4.673768 Days $T_0=132.084119$ (BKJD)



DV Model-Shift Uniqueness Test

004930578-01, P = 4.673869 Days, E = 127.418480 Days

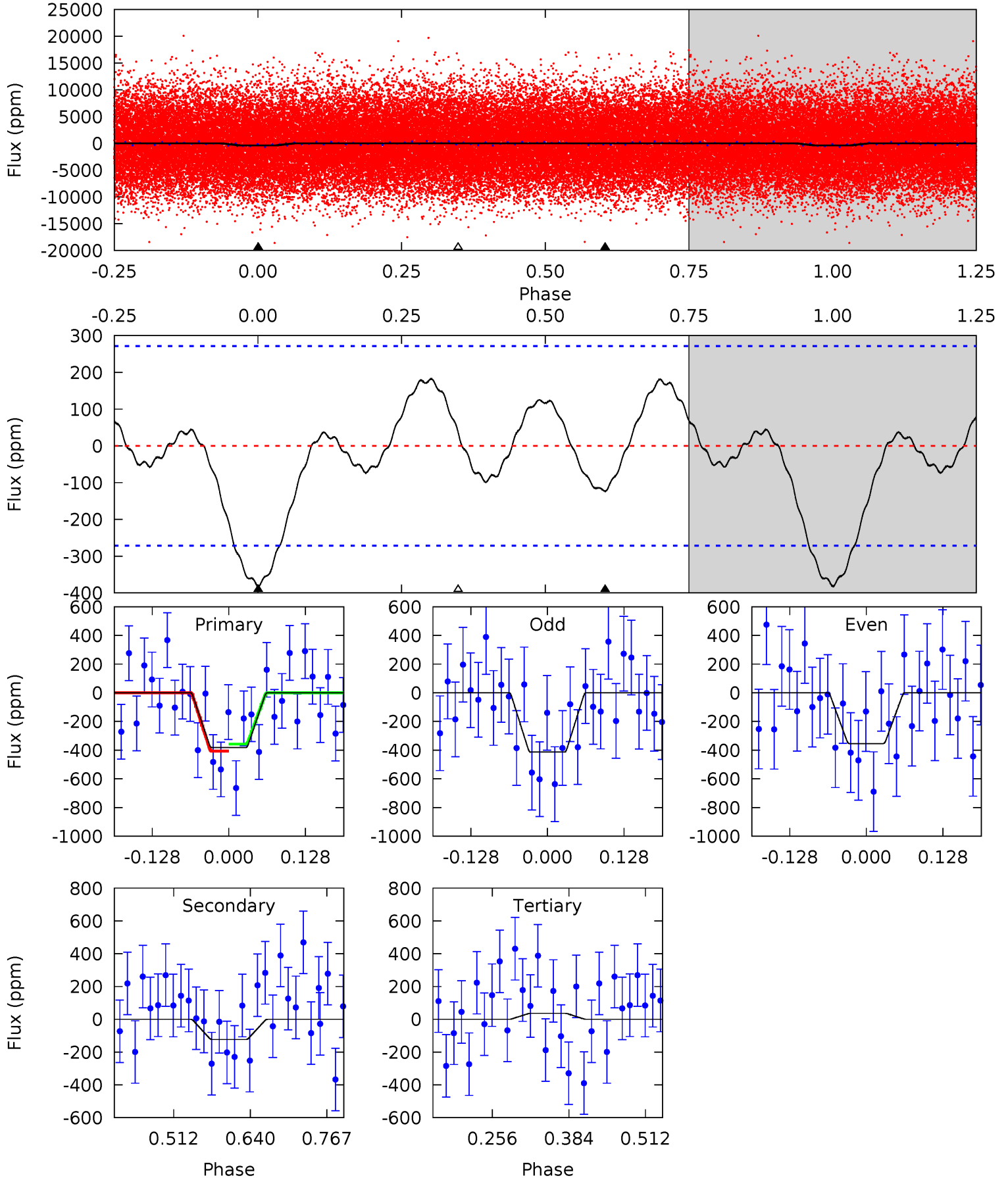
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
20.1	16.7	0	0	4.44	1.34	5.24	20.1	20.1	16.7	16.7	0.59	0.91	0.30	1.05



Alt Model-Shift Uniqueness Test

004930578-01, P = 4.673768 Days, E = 127.410351 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.36	2.05	-0.61	0	4.51	1.52	1.30	6.96	6.36	2.66	2.05	0.49	0.89	0.32	0.40



Stellar Parameters For KIC 004930578

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	7153^{+200}_{-275}	$4.245^{+0.090}_{-0.210}$	$-0.200^{+0.250}_{-0.350}$	$1.463^{+0.515}_{-0.221}$	$1.377^{+0.218}_{-0.196}$	$0.620^{+0.316}_{-0.352}$
	+3%/-4%	+2%/-5%	+125%/-175%	+35%/-15%	+16%/-14%	+51%/-57%
Source	PHO1	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 004930578-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-306 ± 18	$7.77^{+6.67}_{-4.84}$	2184^{+181}_{-123}	4473^{+2484}_{-931}	10^{+58}_{-7}
Alt.	-123 ± 60	$7.03^{+6.20}_{-4.76}$	2187^{+170}_{-123}	3852^{+2402}_{-873}	$4.706^{+36.219}_{-3.579}$

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 $A_{obs} \gg 1.0$

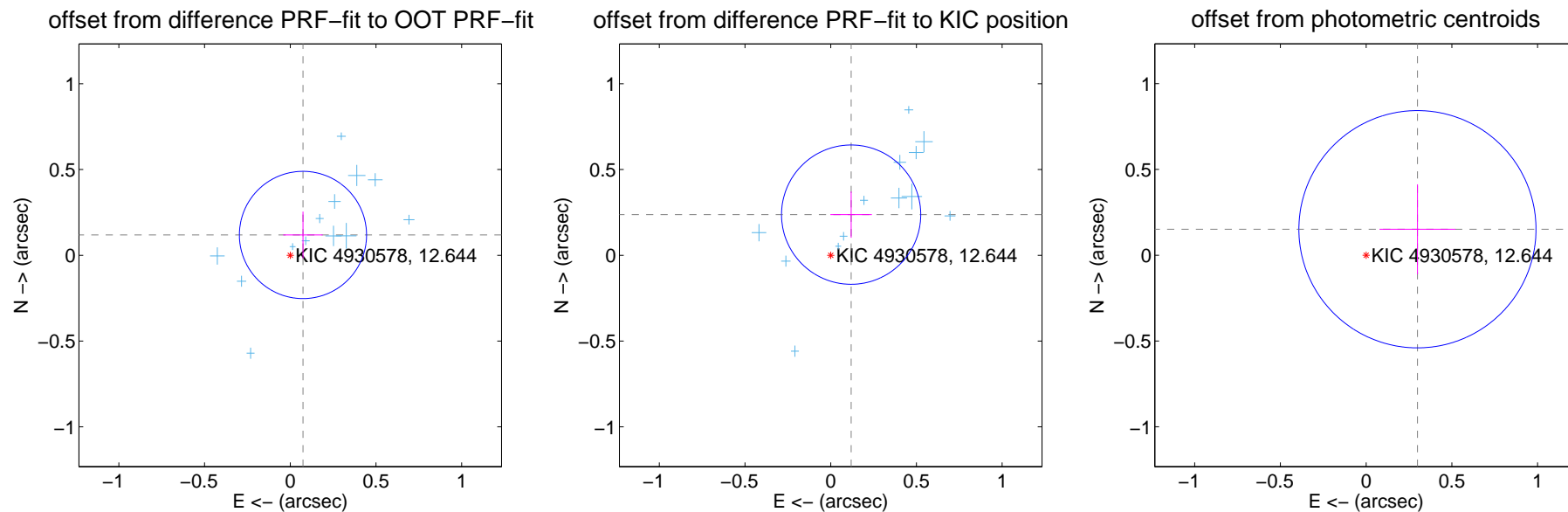
DV Centroid Data

Supplemental centroid analysis for 004930578-01. Kepler magnitude: 12.64. Transit SNR 13.59

There are 14 quarters with good PRF difference image offsets

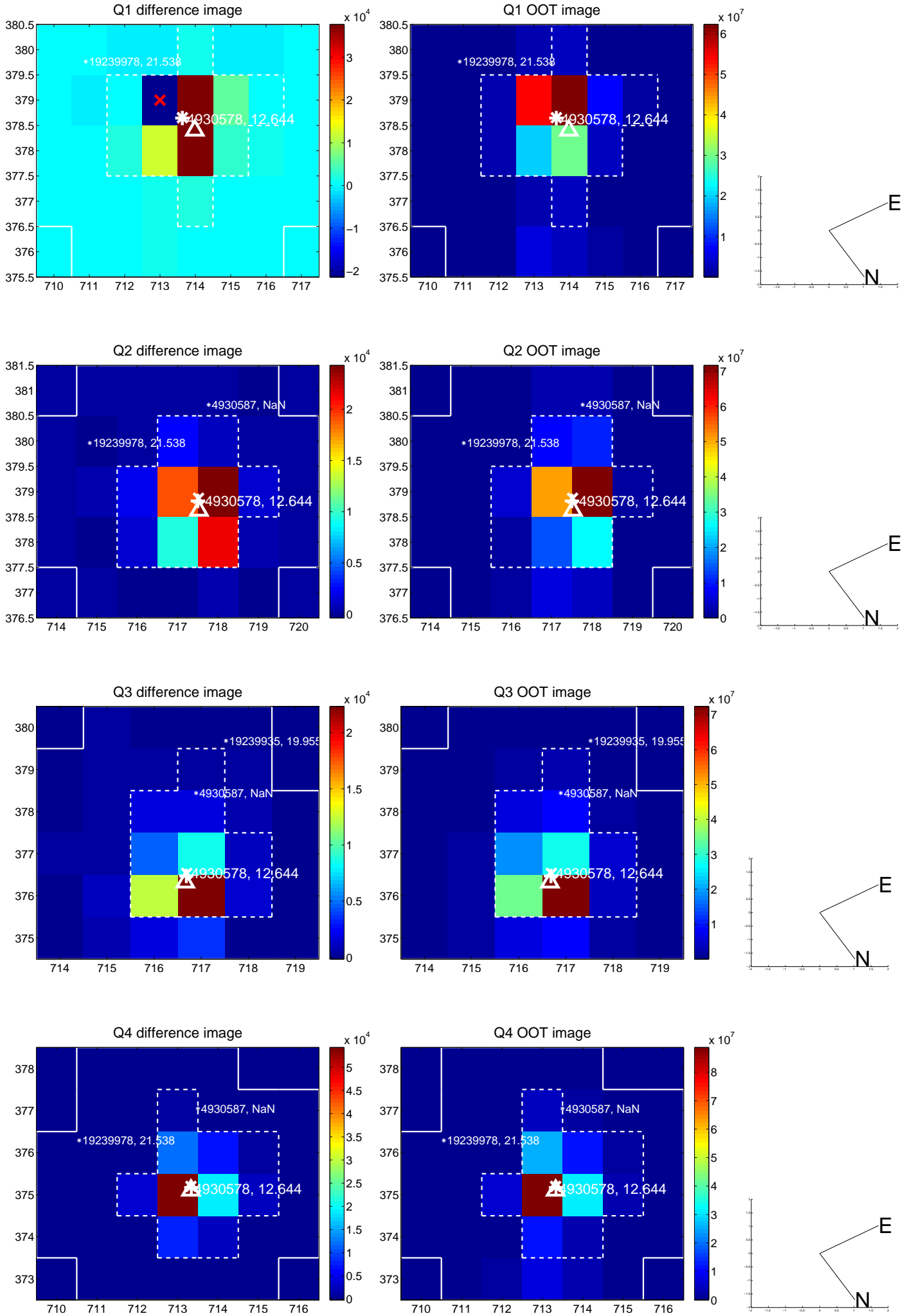
The direct PRF centroid is offset from the target star catalog position by about 0.02 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.140 ± 0.124	1.13	-0.074 ± 0.115	0.118 ± 0.136
PRF-fit source offset from KIC position	0.265 ± 0.135	1.96	-0.119 ± 0.121	0.237 ± 0.135
photometric centroid source offset	0.34 ± 0.23	1.46	-0.30 ± 0.22	0.15 ± 0.26

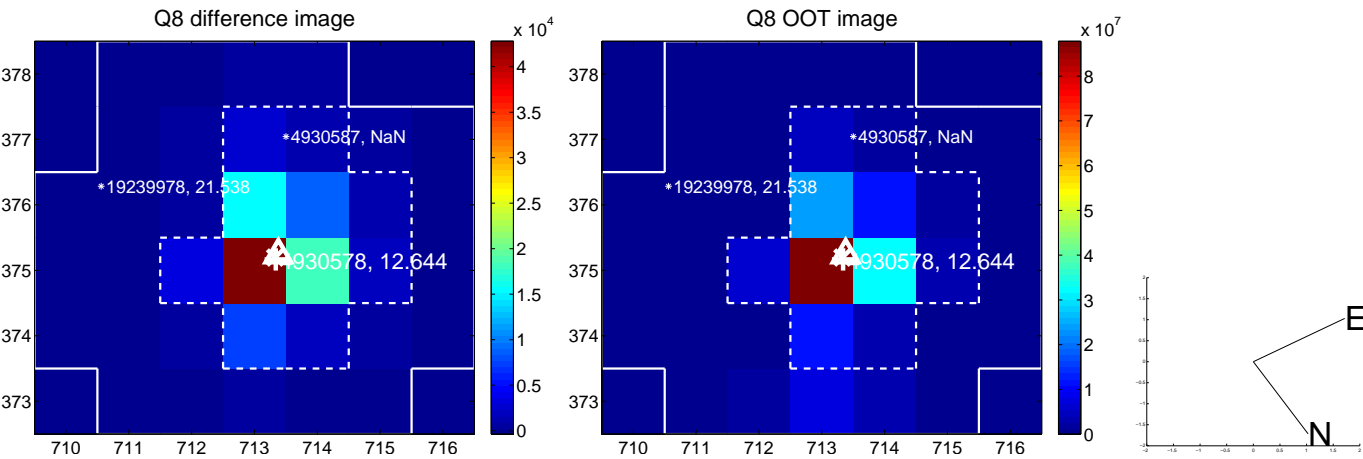
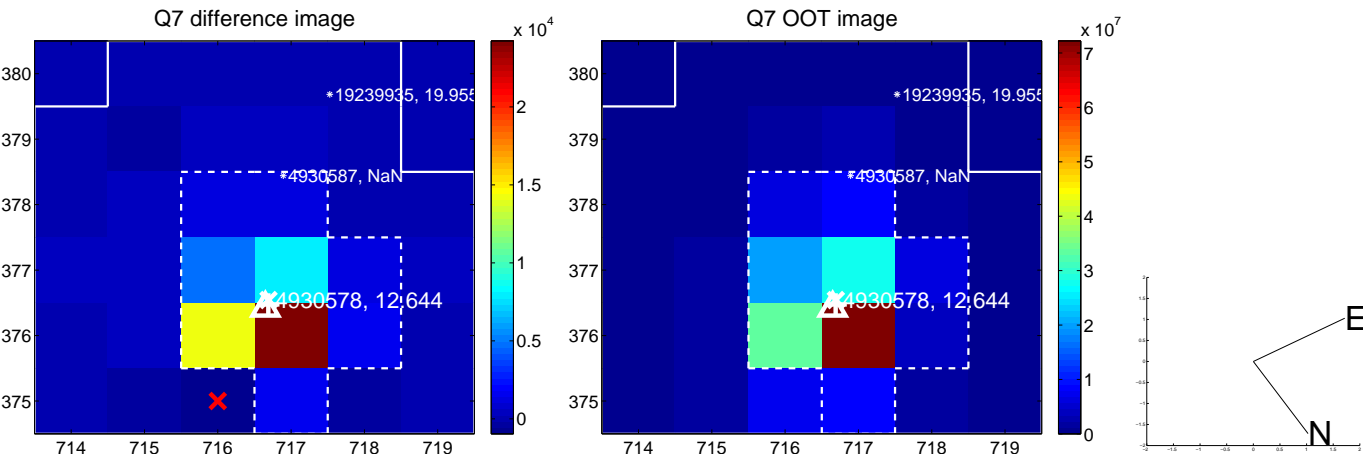
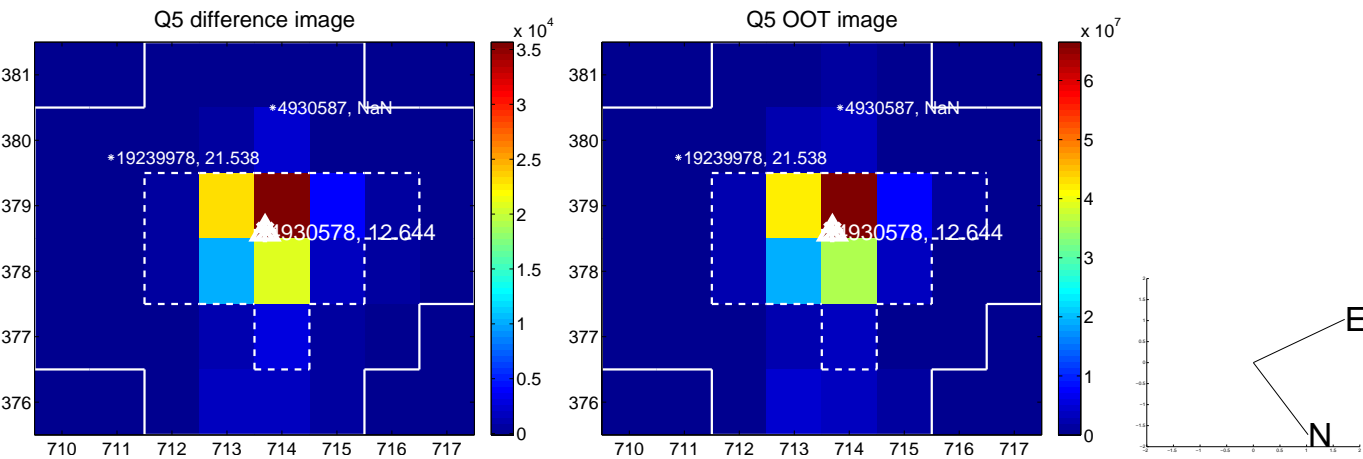


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

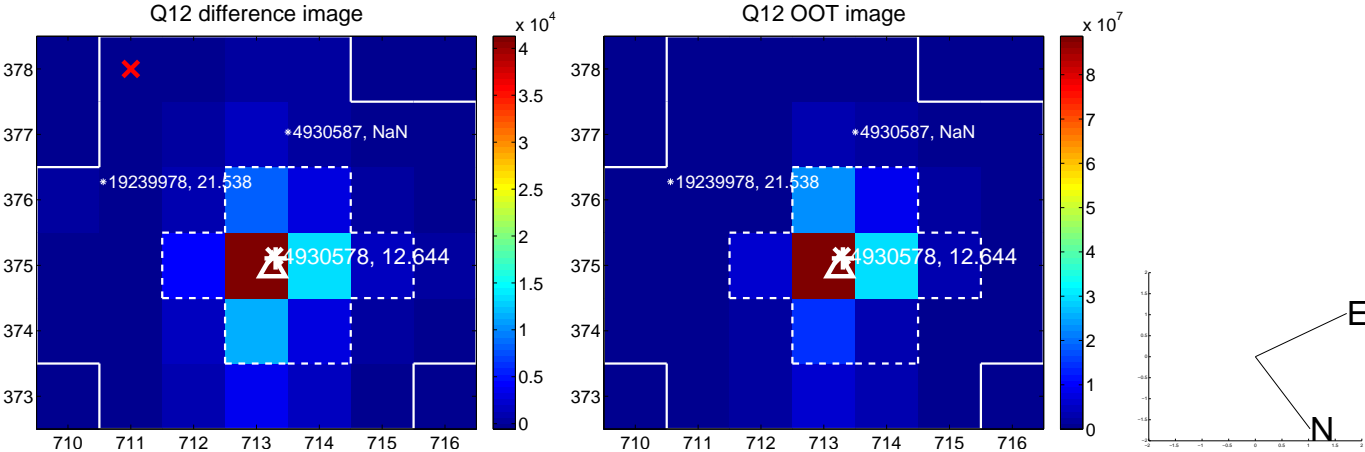
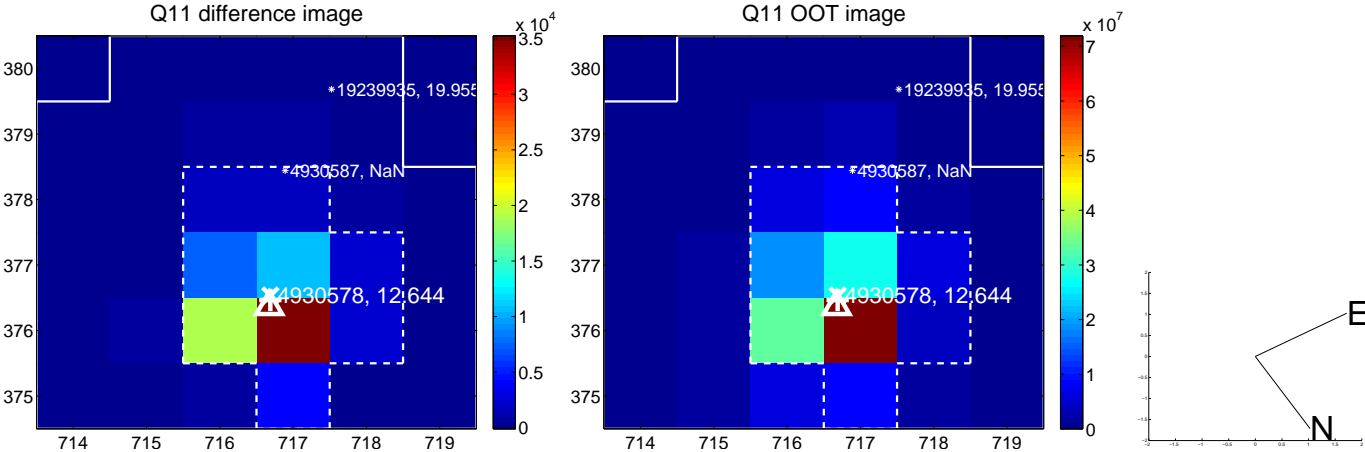
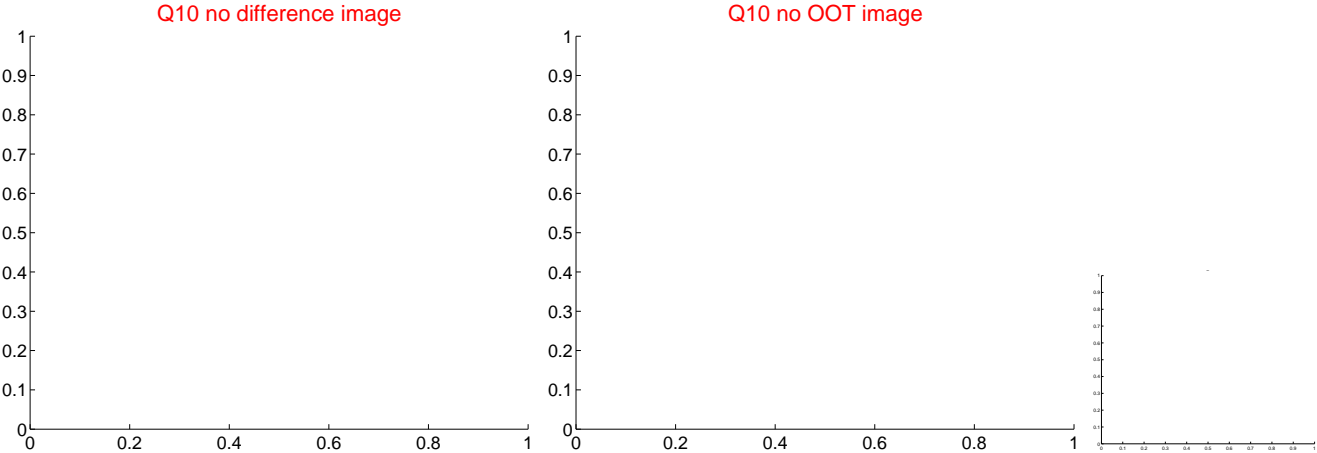
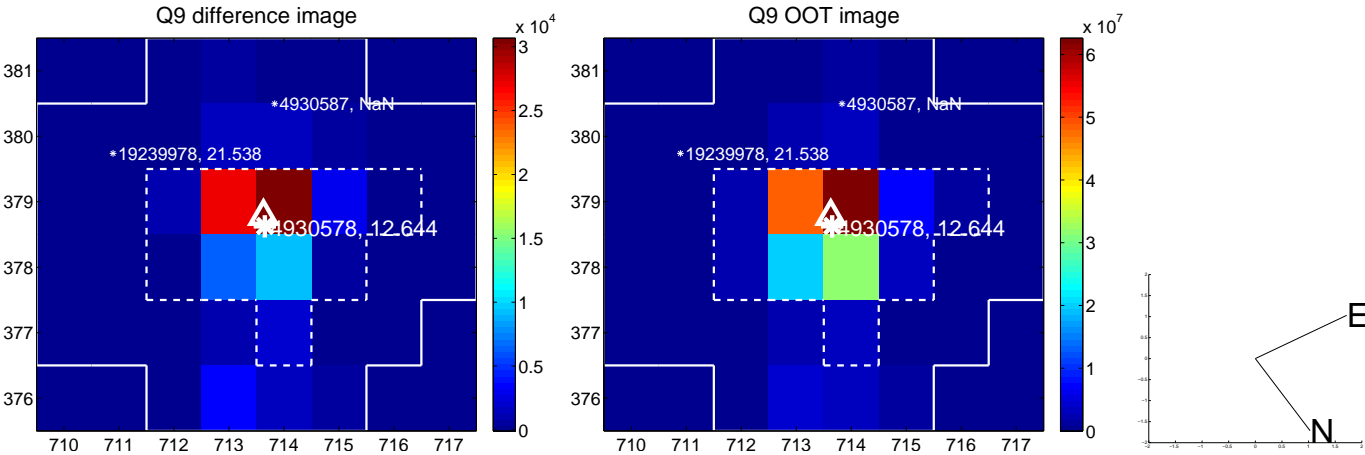
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



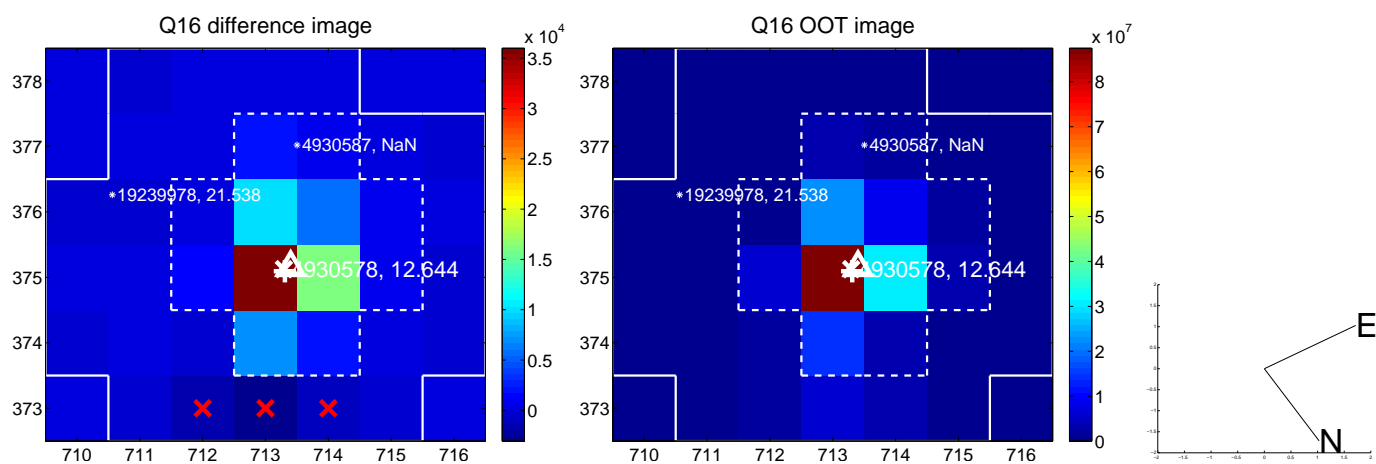
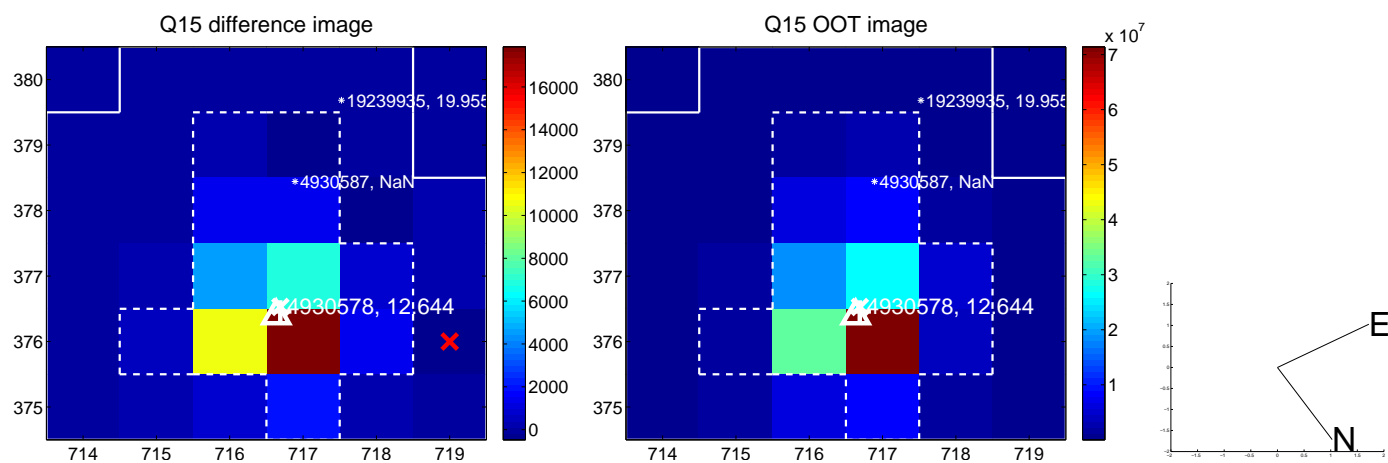
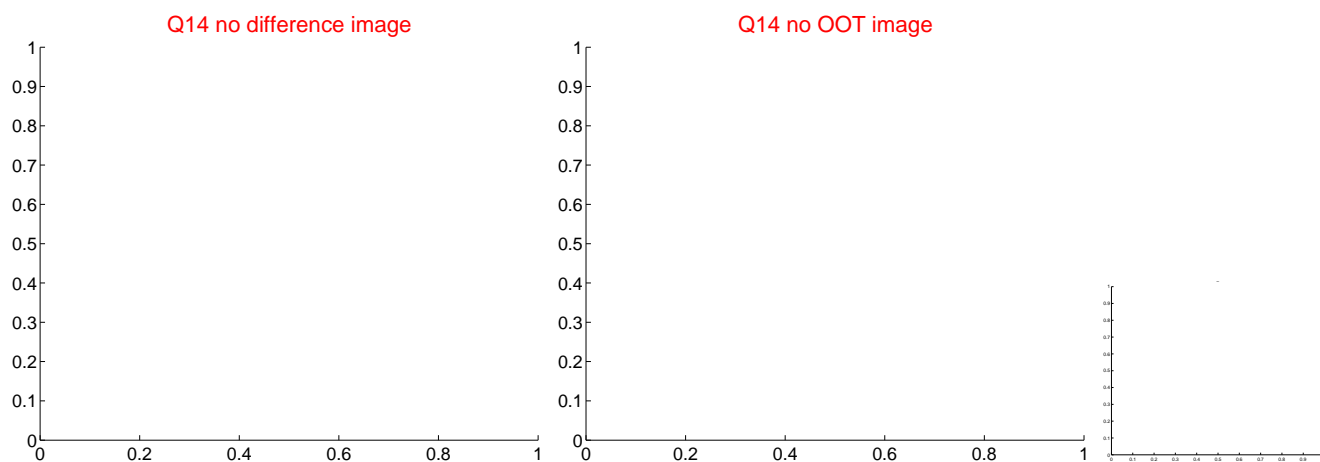
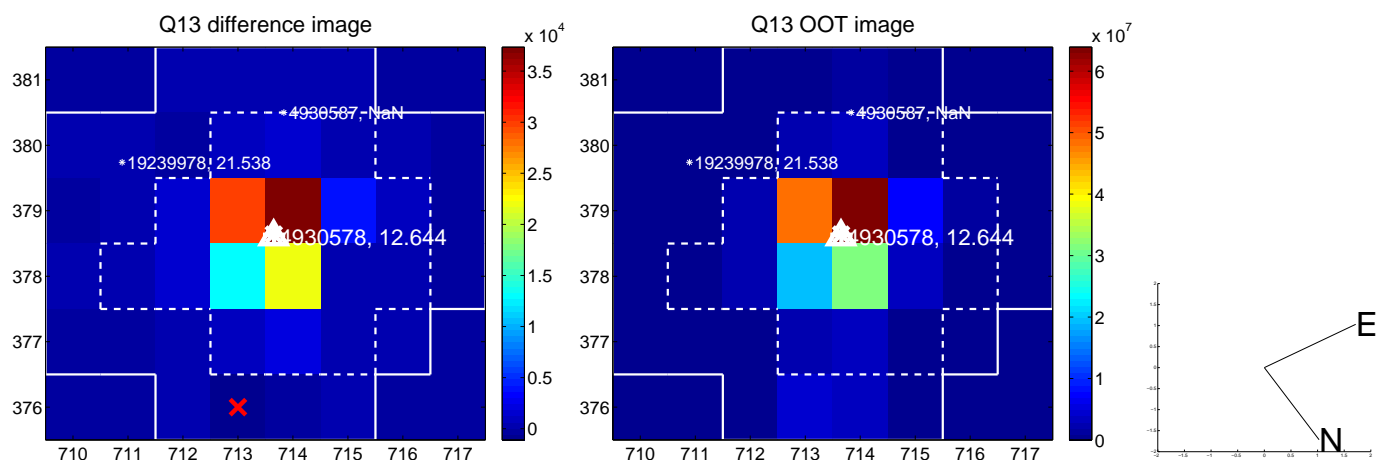
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



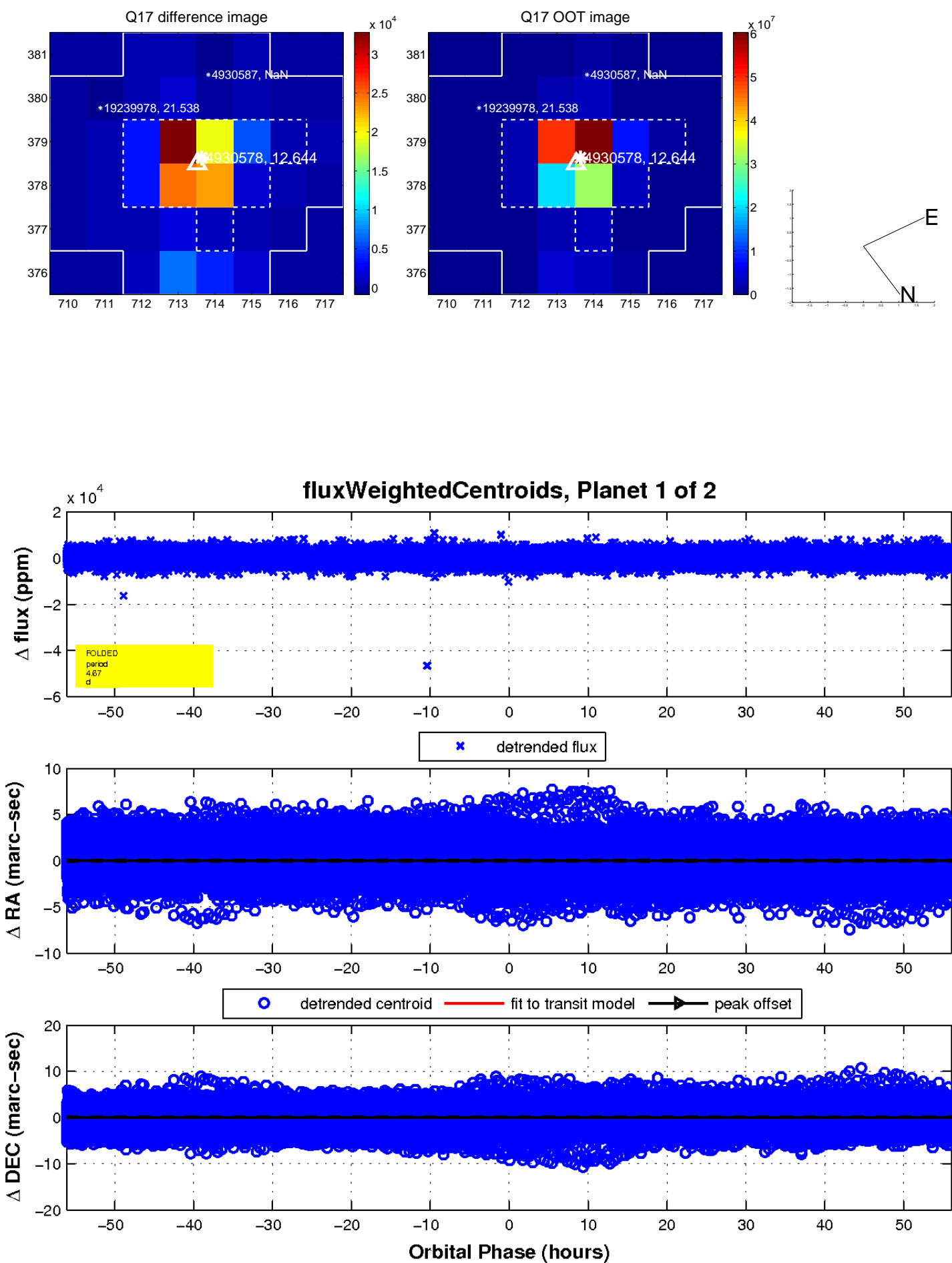
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



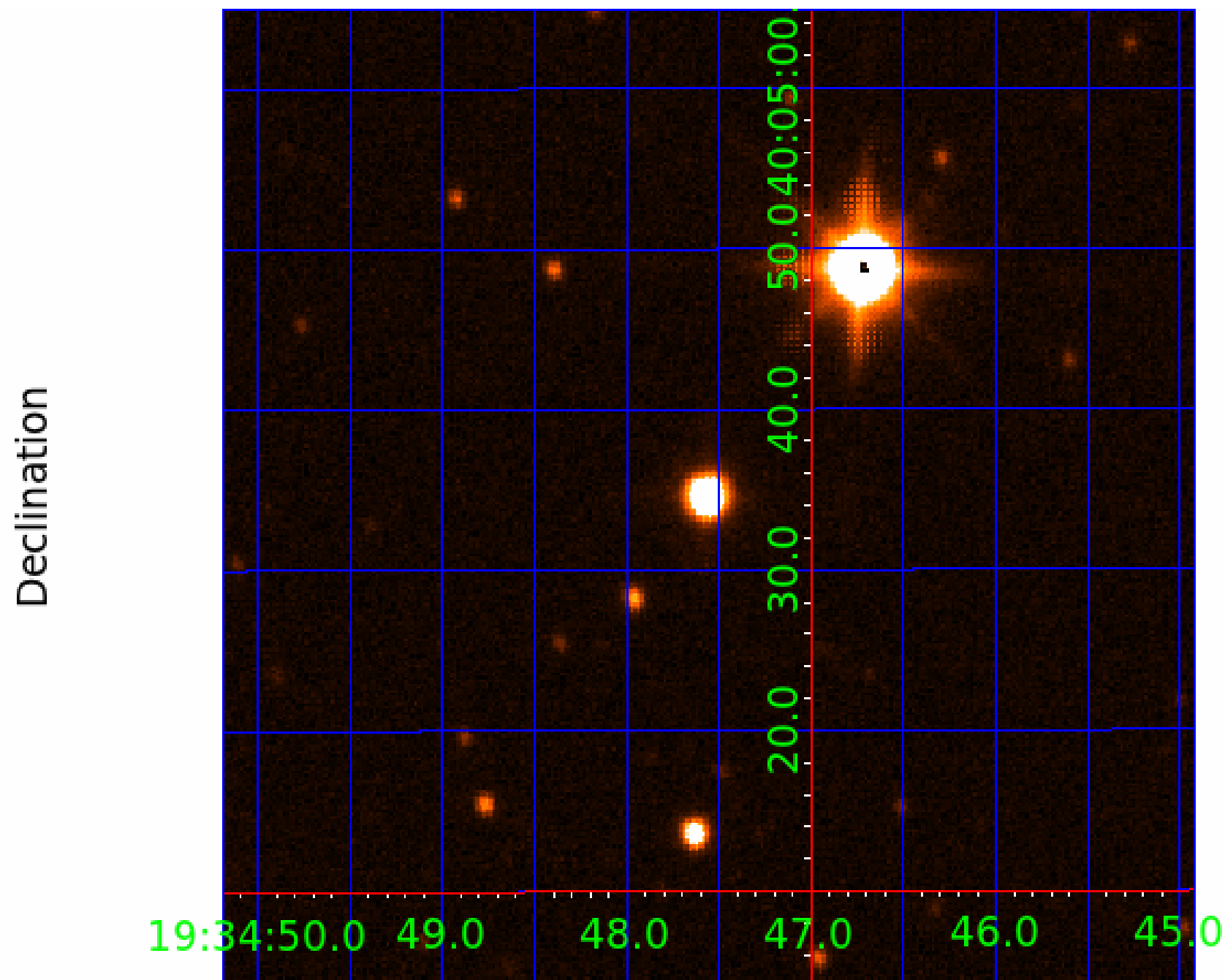
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value



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



UKIRT Image



KIC 004930578

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})
004930578-01	OBS	No	4.673869	132.092349	352.5	19.804	12.7	13.6	1.46	7153	5.16	1357.61
004930578-02	OBS	No	4.673720	134.817158	276.9	13.845	13.6	13.1	1.46	7153	2.67	1357.67

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004930578-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT
004930578-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—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.

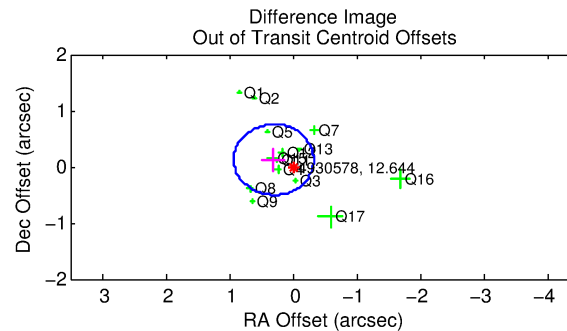
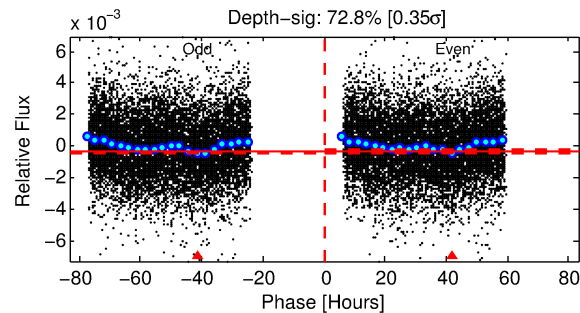
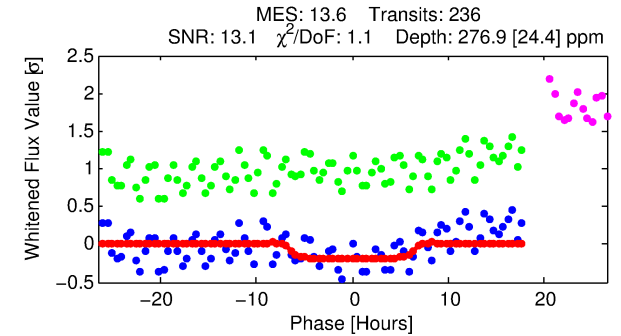
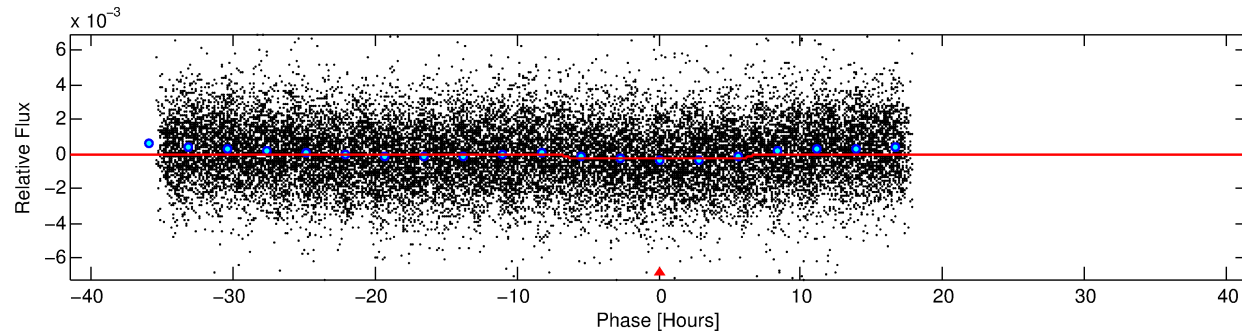
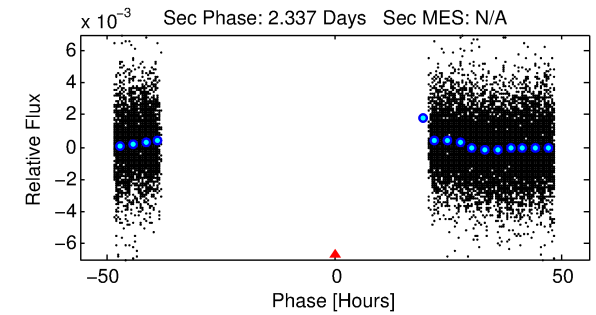
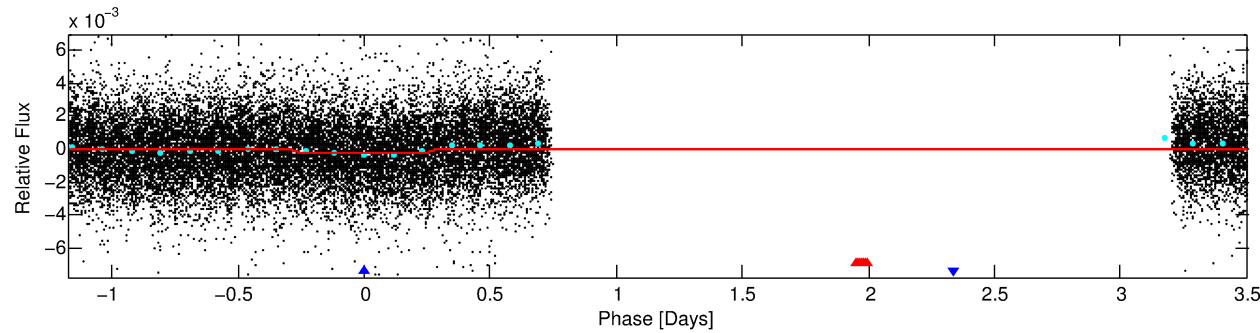
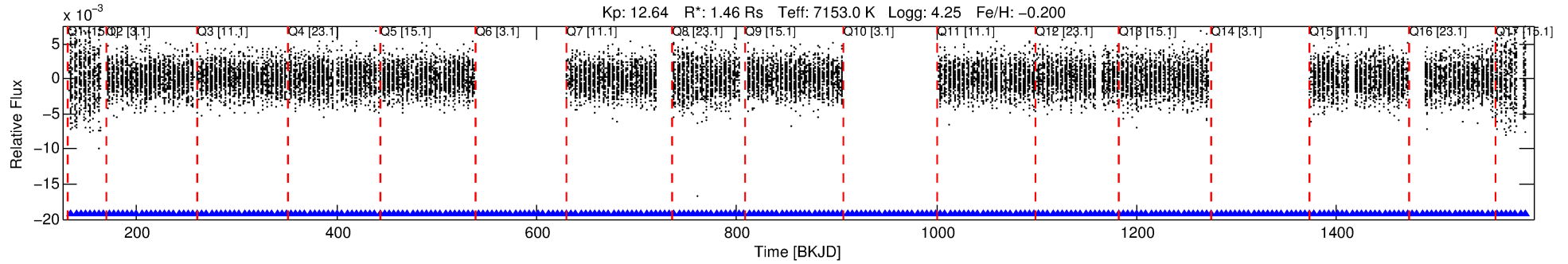
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004930578-02

No Significant Match Found

DV One-Page Summary

KIC: 4930578 Candidate: 2 of 2 Period: 4.674 d



DV Fit Results:

Period = 4.67372 [0.00010] d
Epoch = 134.8172 [0.0153] BKJD
Rp/R* = 0.0167 [0.0038]
a/R* = 1.89 [1.84]
b = 0.78 [0.68]
Seff = 1357.67 [580.22]
Teq = 1548 [165] K
Rp = 2.67 [1.12] Re
a = 0.0608 [0.0173] AU

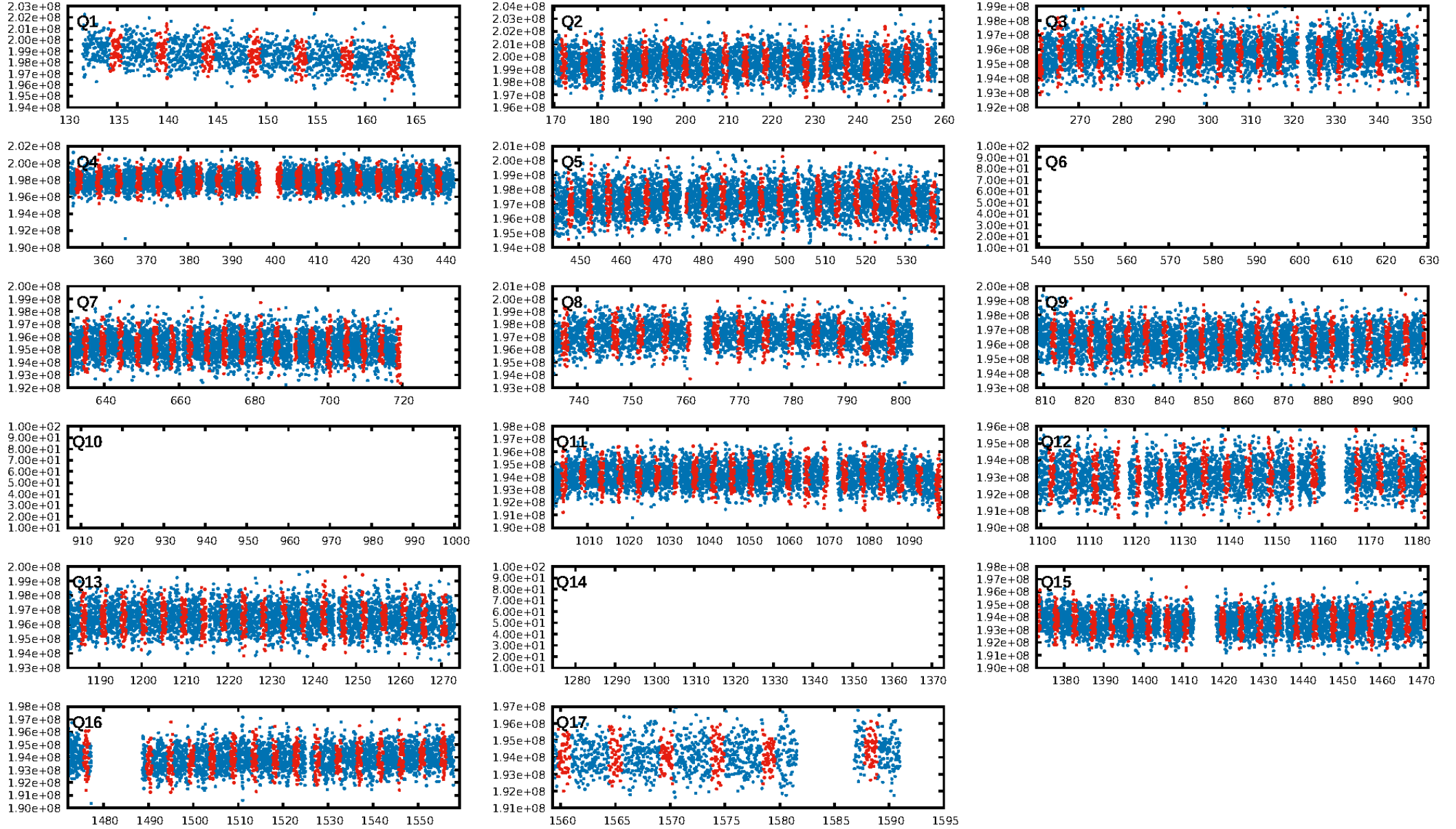
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.0% [0.00σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 6.69e-60
RollingBand-fgt: 1.00 [223/223]
GhostDiagnostic-chr: 3.419
Centroid-sig: 38.9%
Centroid-so: 0.170 arcsec [0.72σ]
OotOffset-rm: 0.326 arcsec [1.55σ]
KicOffset-rm: 0.330 arcsec [1.55σ]
OotOffset-st: 1/4/4/5 [14]
KicOffset-st: 1/4/4/5 [14]
DiffImageQuality-fgm: 0.93 [13/14]
DiffImageOverlap-fno: 1.00 [14/14]

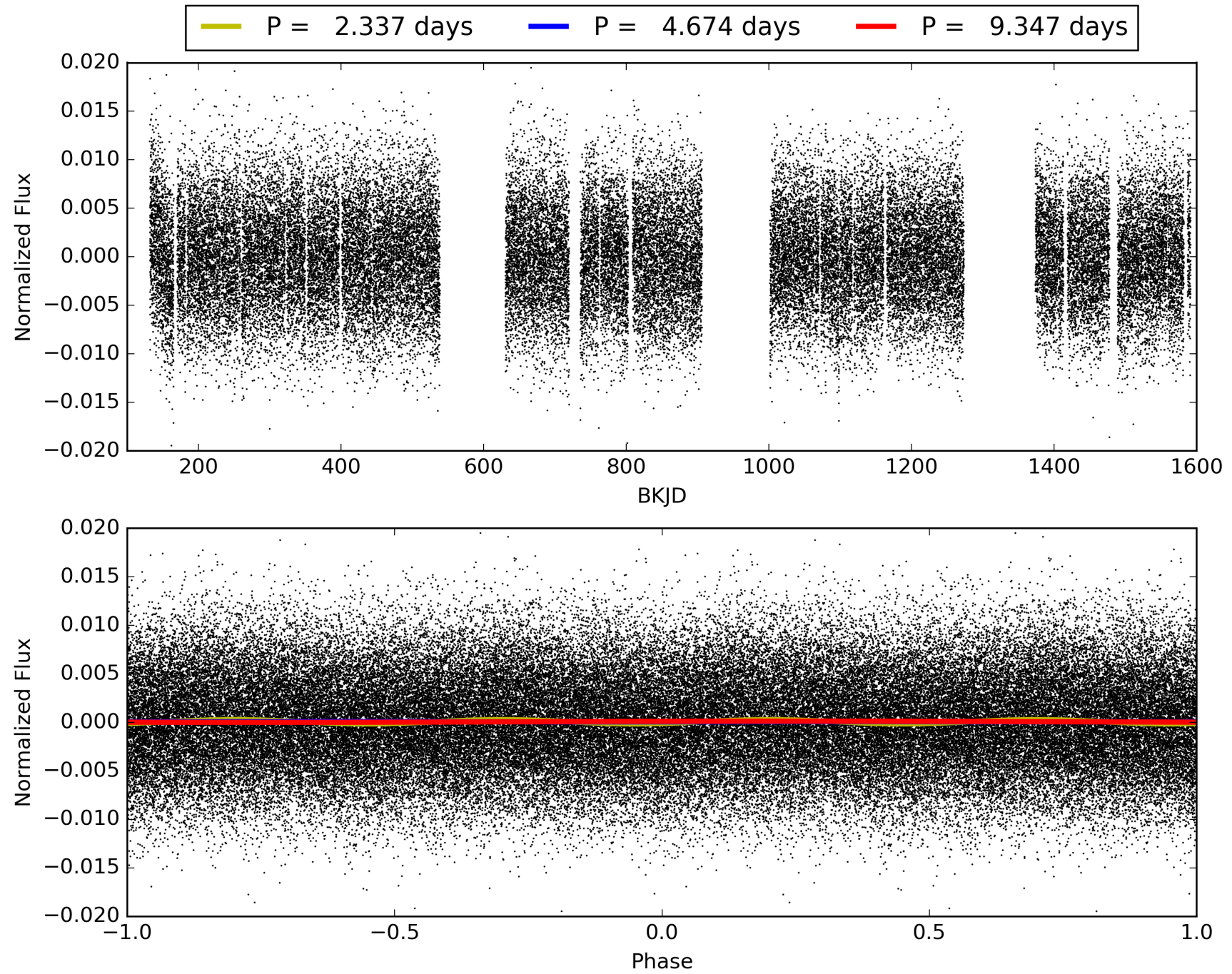
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 004930578-02, PDC Light Curves

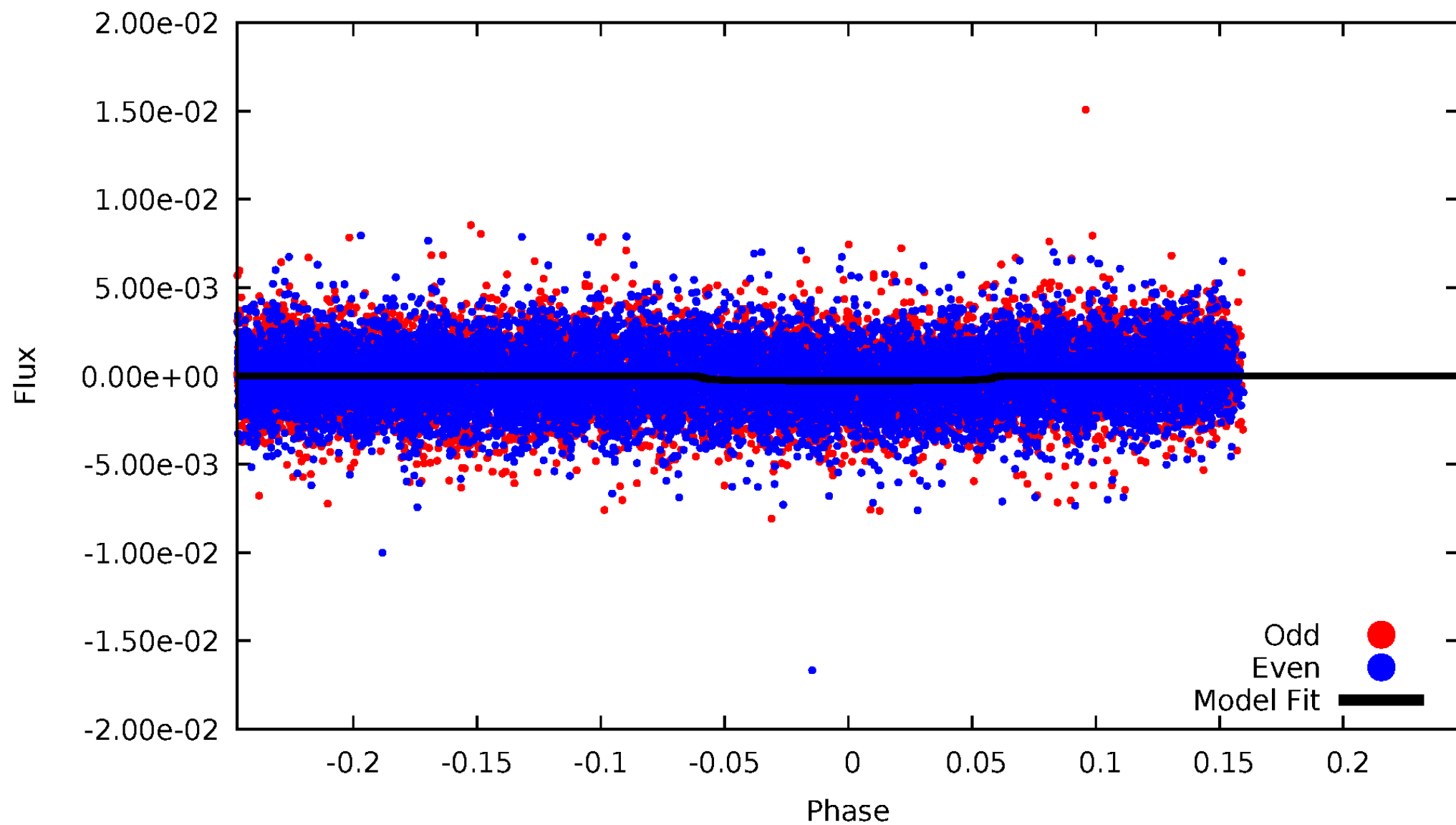


TCE 004930578-02



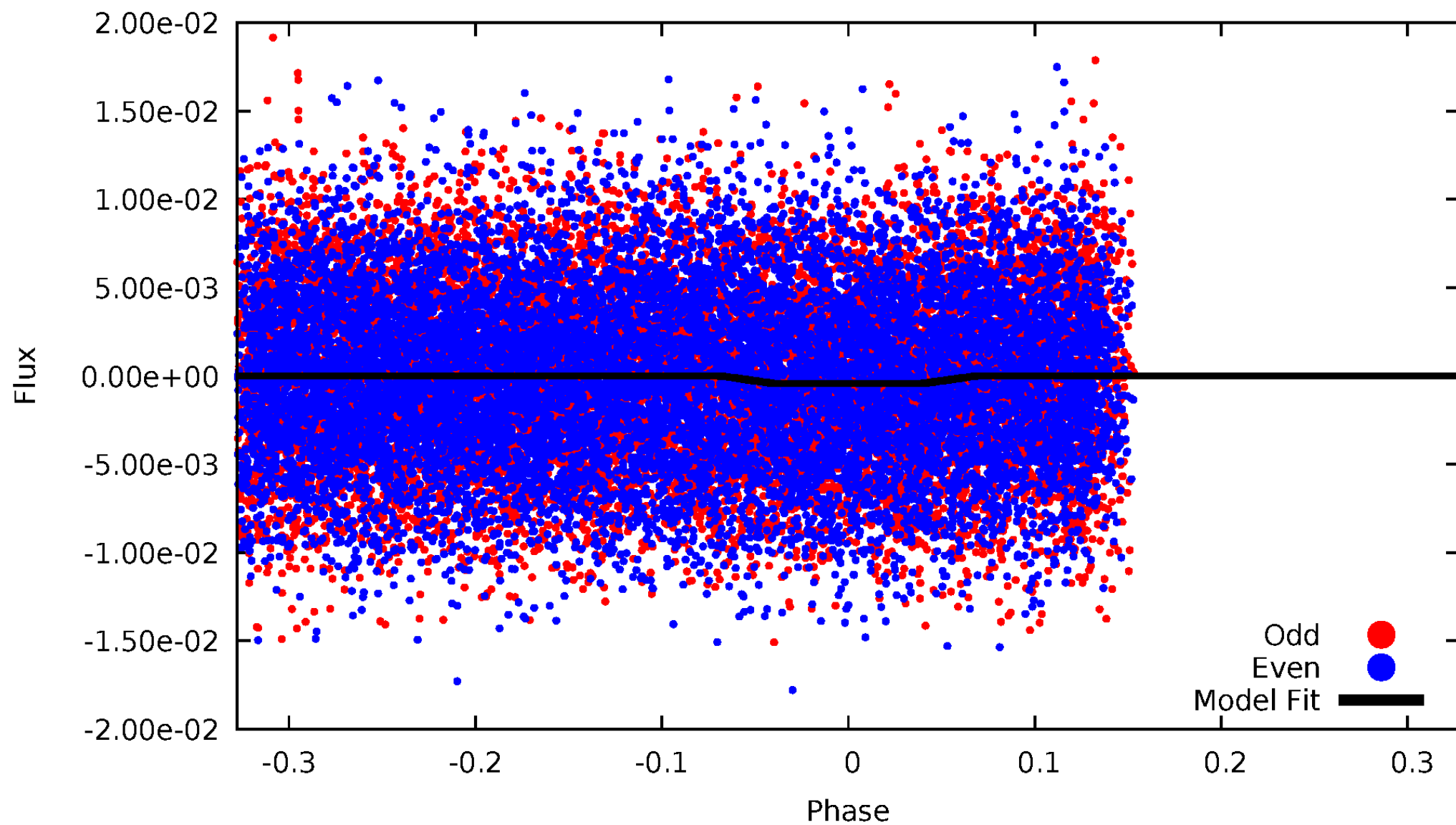
DV Odd/Even

TCE 004930578-02



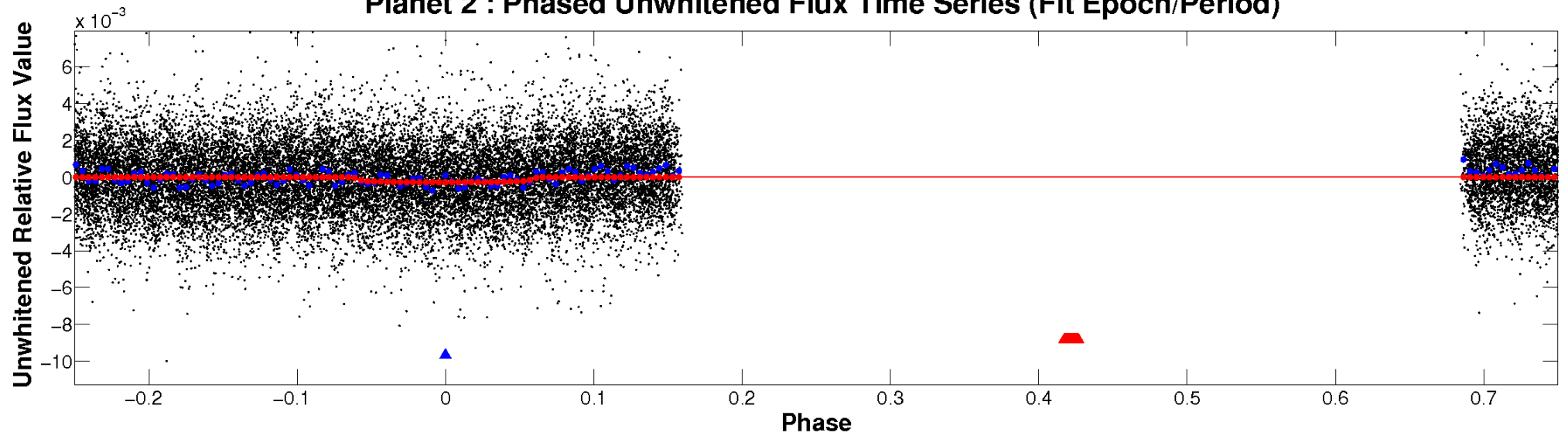
ALT Odd/Even

TCE 004930578-02

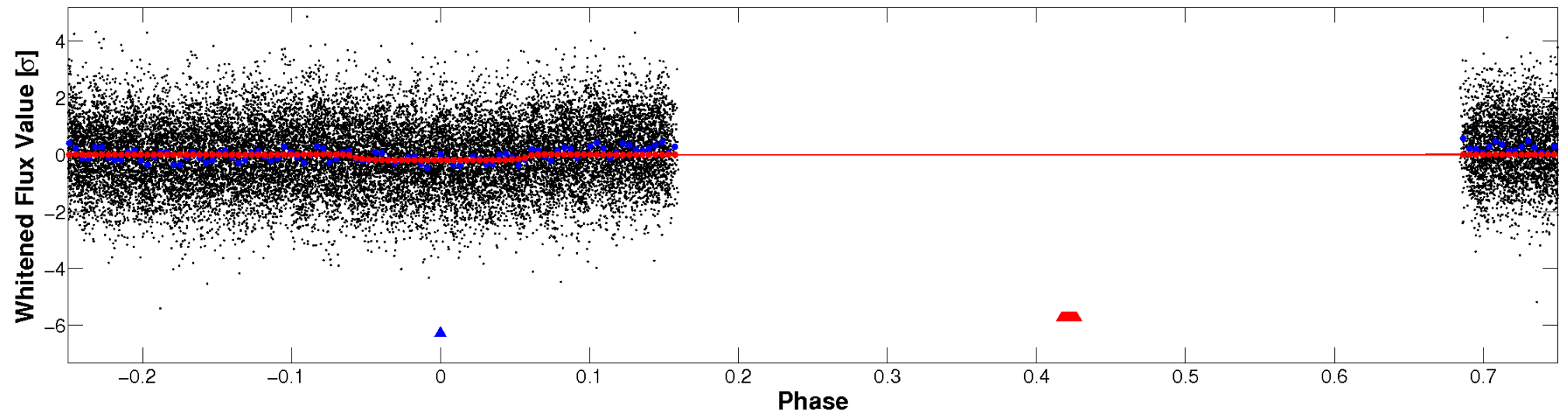


Non-Whitened Vs. Whitened Light Curve

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

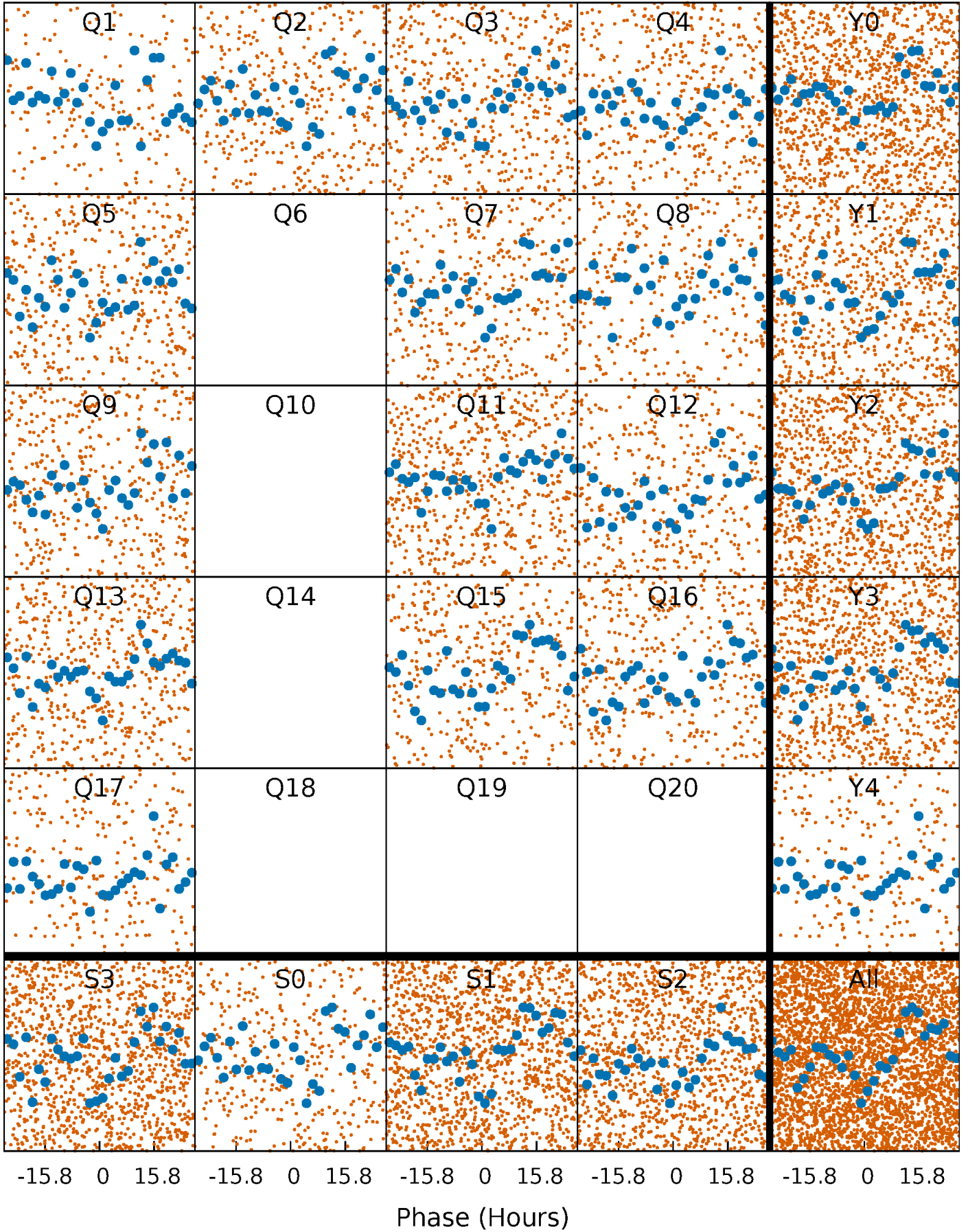


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



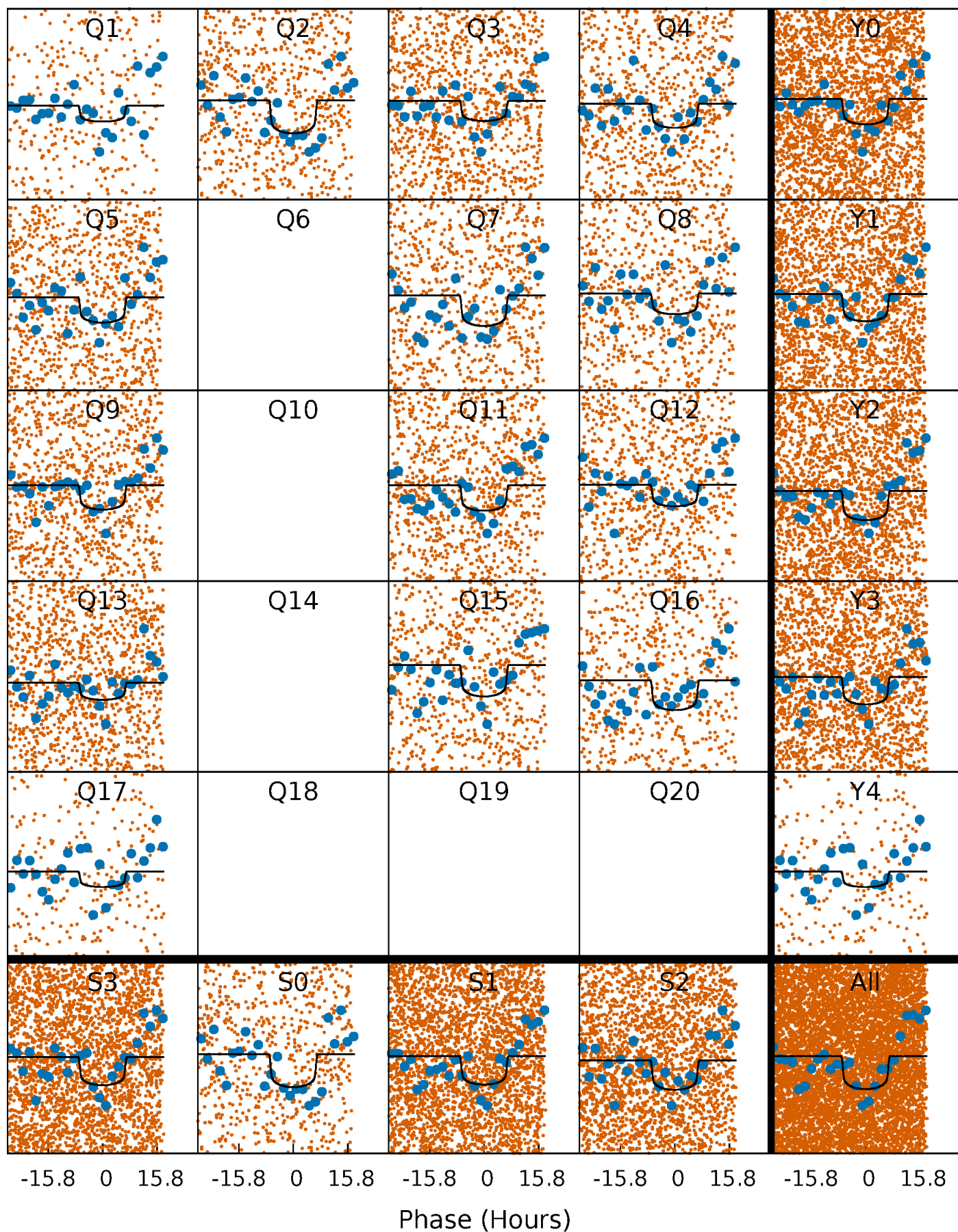
PDC Quarter-Phased Transit Curves

TCE 004930578-02 P= 4.673720 Days $T_0=134.817158$ (BKJD)



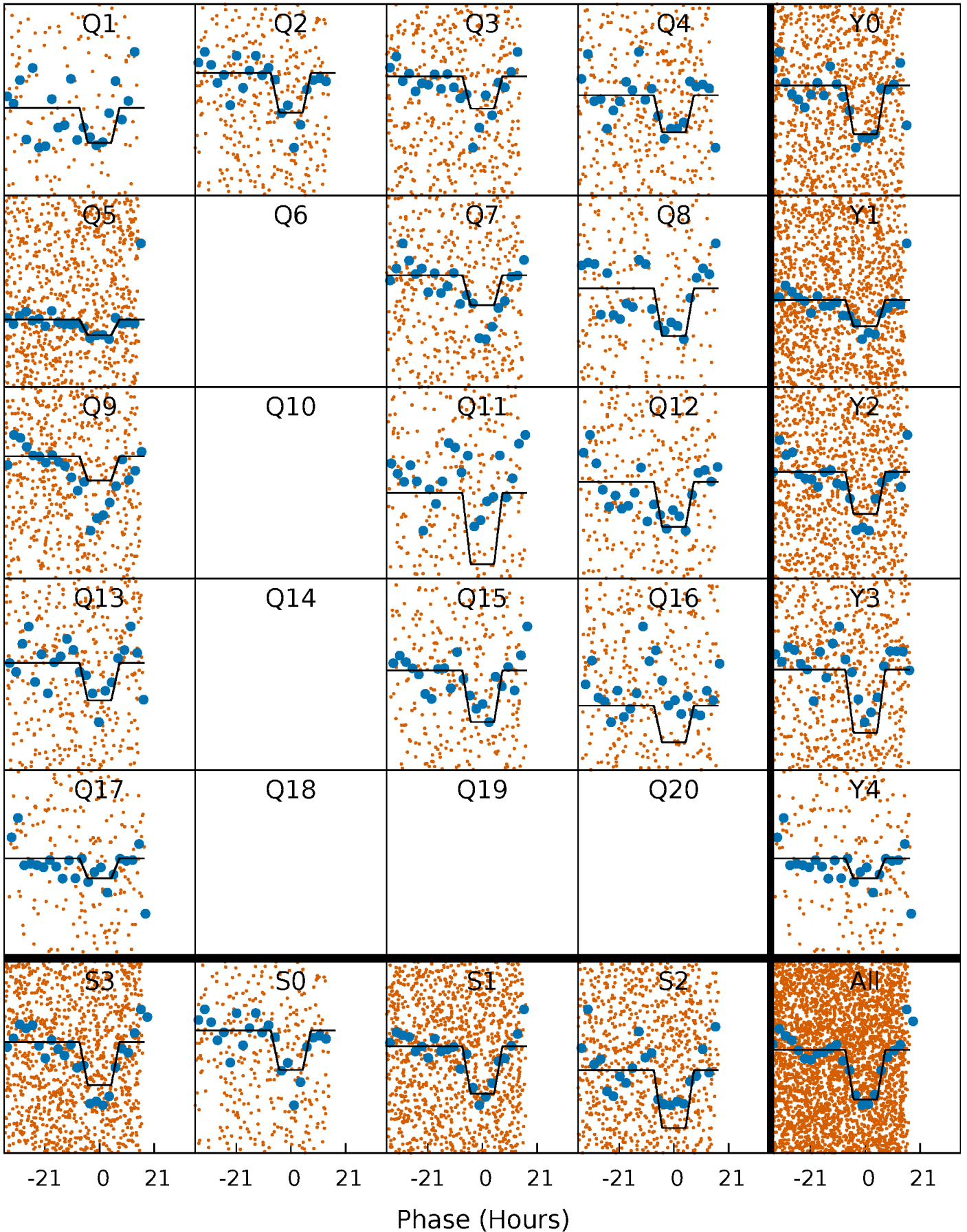
DV Quarter-Phased Transit Curves

TCE 004930578-02 P= 4.673720 Days $T_0=134.817158$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

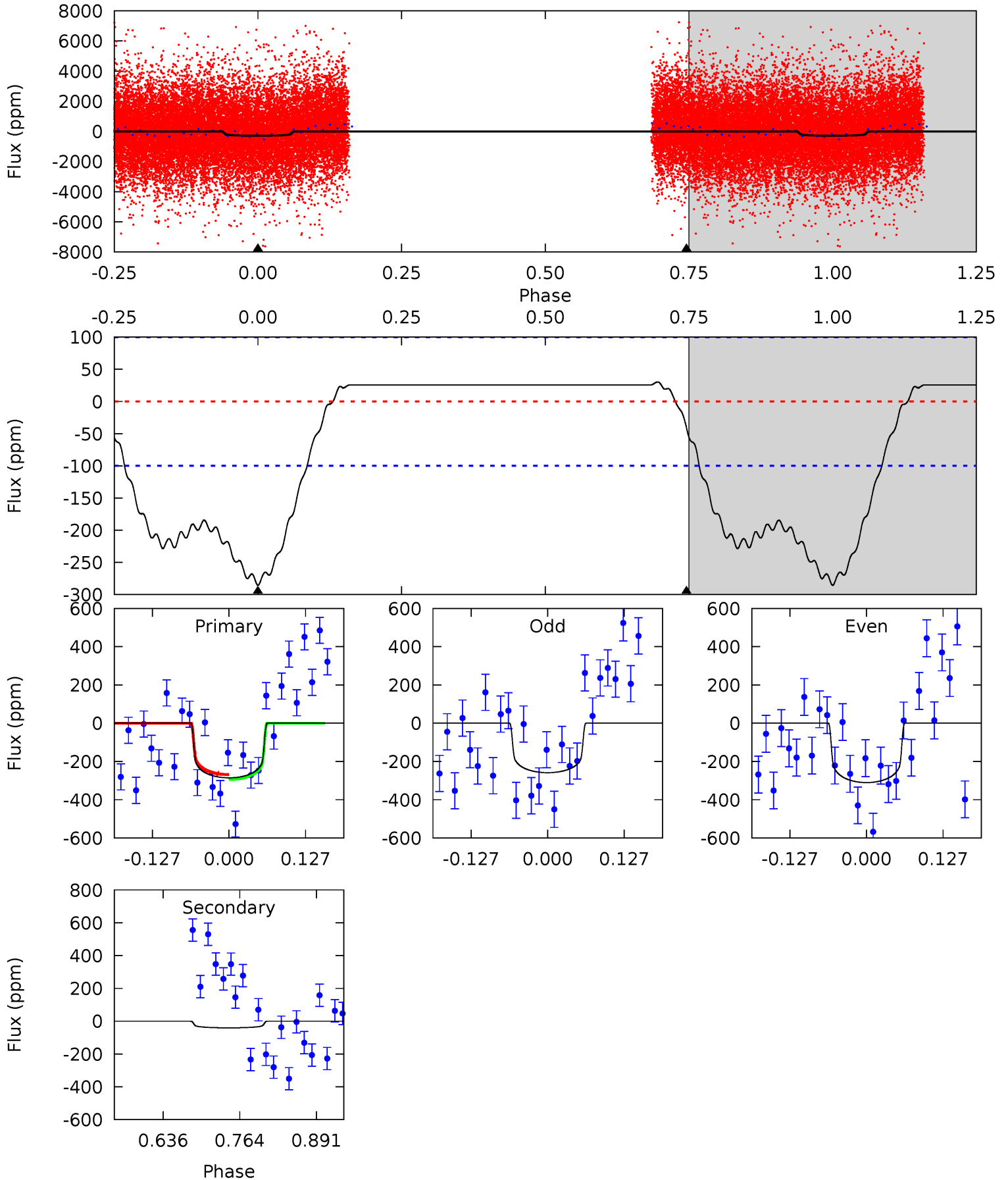
TCE 004930578-02 P= 4.673484 Days $T_0=134.919878$ (BKJD)



DV Model-Shift Uniqueness Test

004930578-02, P = 4.673720 Days, E = 130.143438 Days

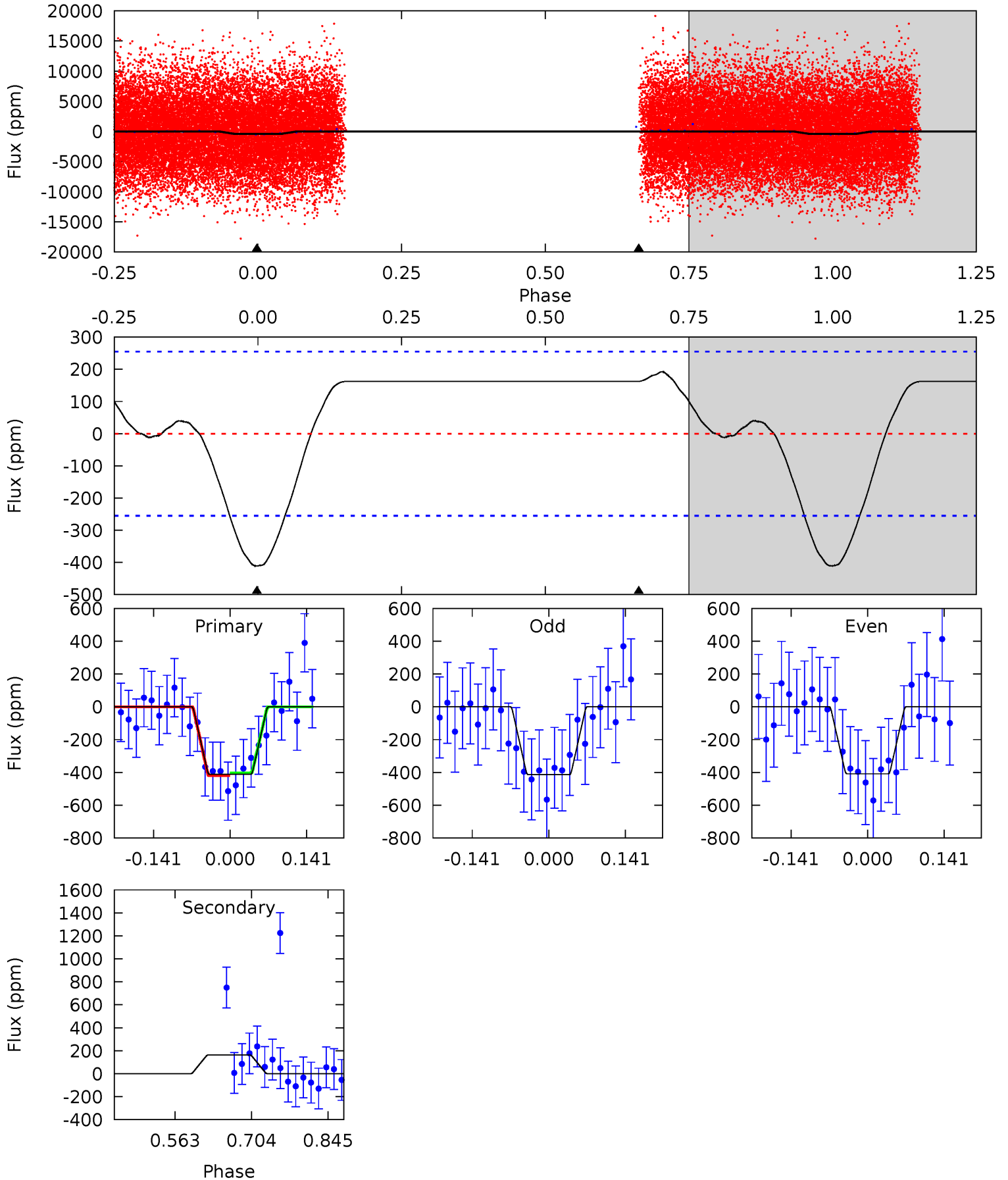
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.9	1.84	0	0	4.51	1.52	4.52	12.9	12.9	1.84	1.84	1.16	1.04	0.10	0.57



Alt Model-Shift Uniqueness Test

004930578-02, P = 4.673484 Days, E = 130.246394 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.24	-2.87	0	0	4.49	1.47	0.73	7.24	7.24	-2.87	-2.87	0.05	1.08	0.32	0.14



Stellar Parameters For KIC 004930578

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	7153^{+200}_{-275}	$4.245^{+0.090}_{-0.210}$	$-0.200^{+0.250}_{-0.350}$	$1.463^{+0.515}_{-0.221}$	$1.377^{+0.218}_{-0.196}$	$0.620^{+0.316}_{-0.352}$
	+3%/-4%	+2%/-5%	+125%/-175%	+35%/-15%	+16%/-14%	+51%/-57%
Source	PHO1	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 004930578-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-41 ± 22	$2.72^{+0.77}_{-0.65}$	2190^{+165}_{-124}	4504^{+686}_{-705}	10^{+11}_{-6}
Alt.	163 ± 57	$3.44^{+0.85}_{-0.75}$	2191^{+185}_{-134}	-5551^{+639}_{-768}	$-27.424^{+12.522}_{-20.987}$

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

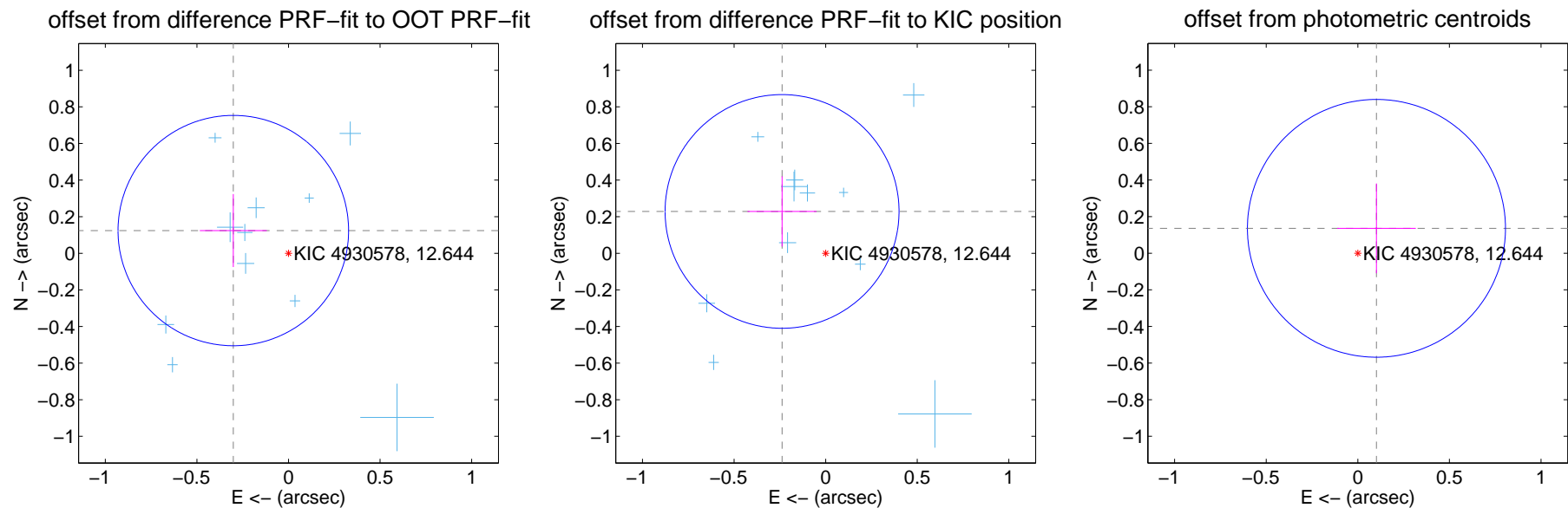
DV Centroid Data

Supplemental centroid analysis for 004930578-02. Kepler magnitude: 12.64. Transit SNR 13.15

There are 13 quarters with good PRF difference image offsets

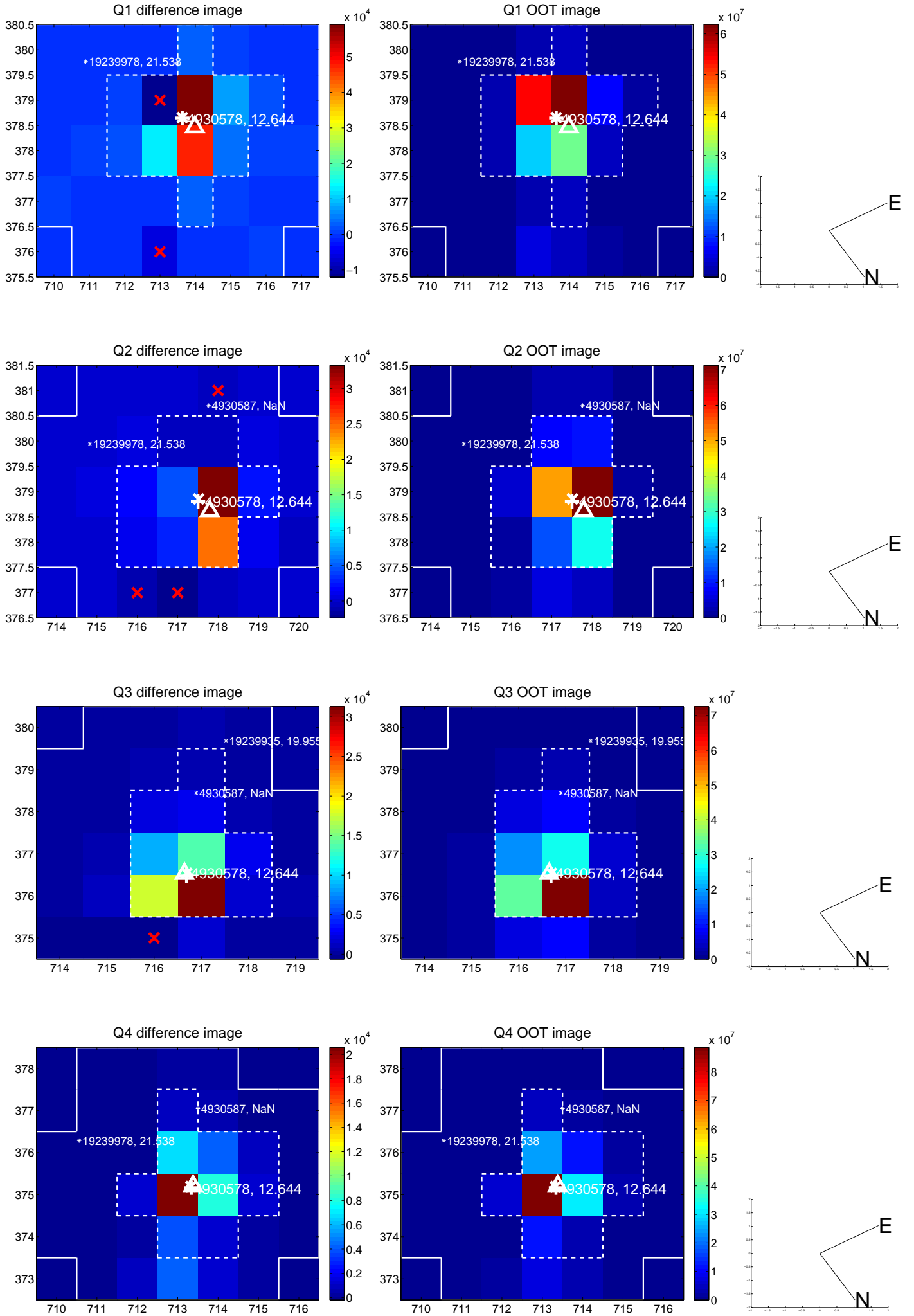
The direct PRF centroid is offset from the target star catalog position by about 0.02 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.326 ± 0.210	1.55	0.301 ± 0.183	0.124 ± 0.199
PRF-fit source offset from KIC position	0.330 ± 0.213	1.55	0.238 ± 0.188	0.229 ± 0.192
photometric centroid source offset	0.17 ± 0.23	0.72	-0.10 ± 0.21	0.14 ± 0.25

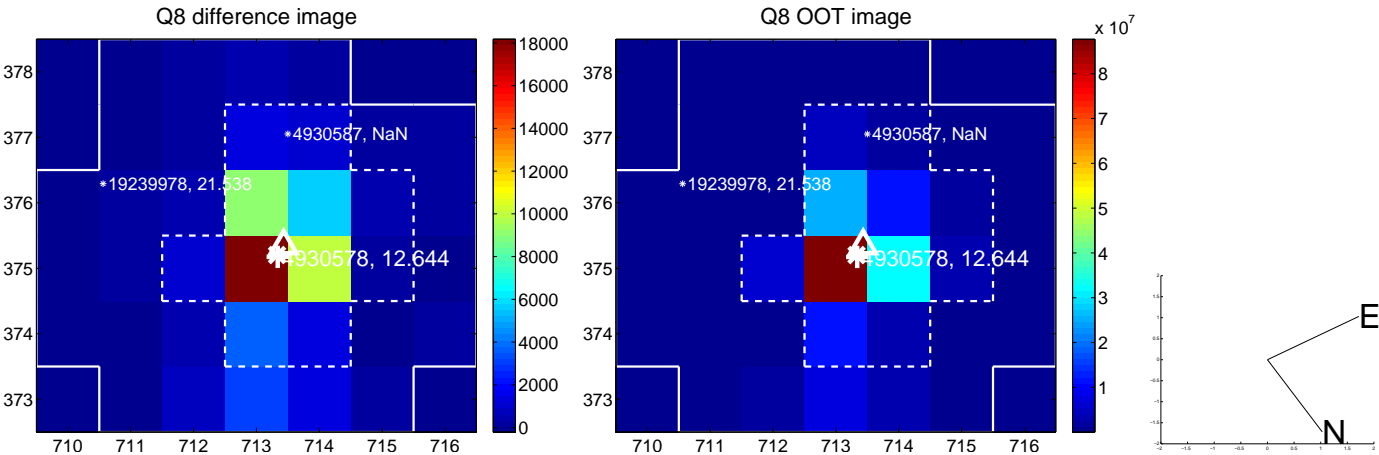
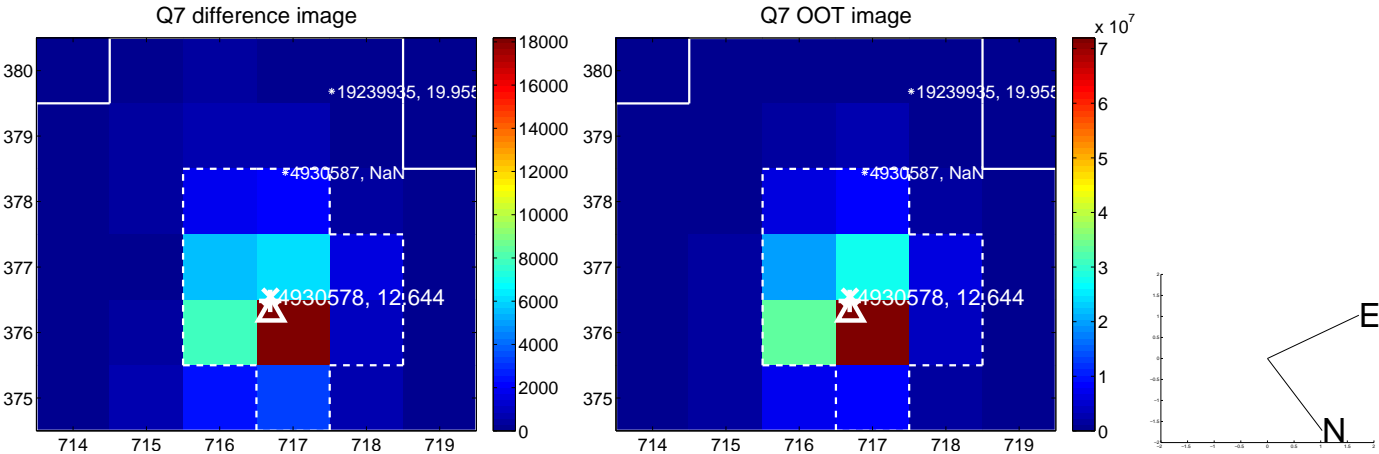
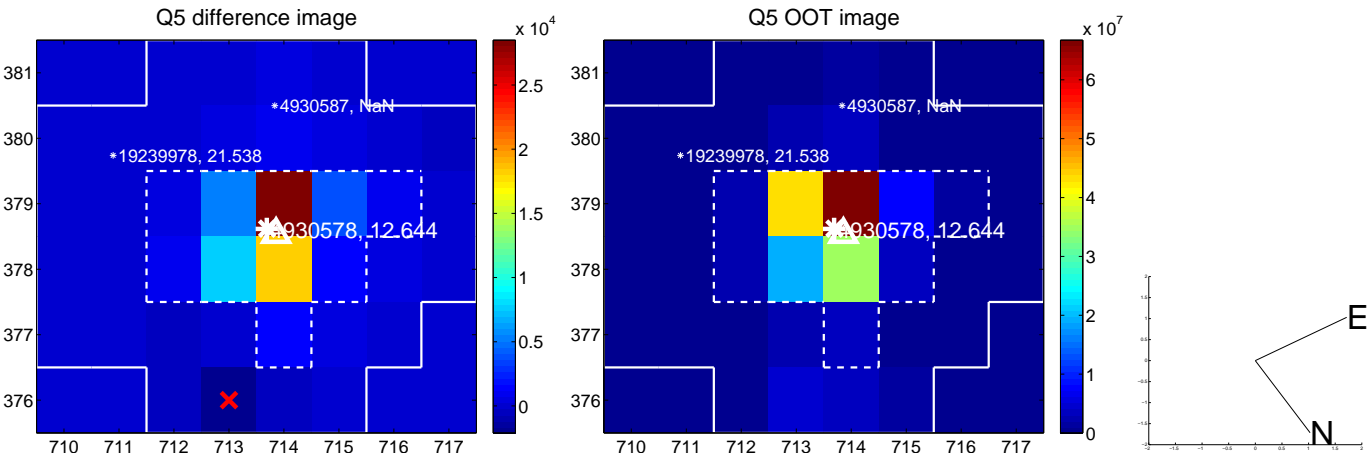


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

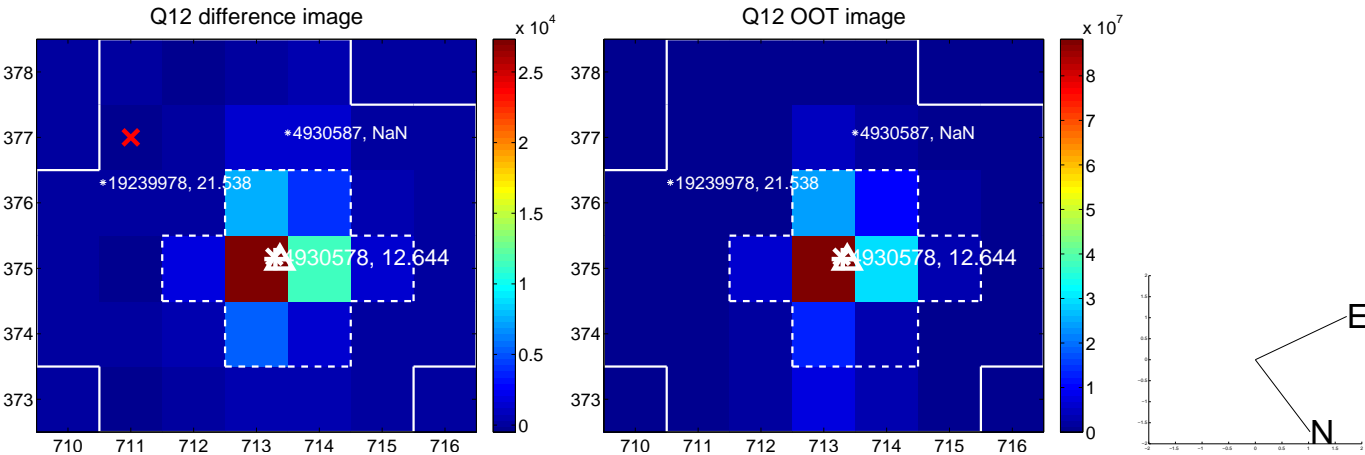
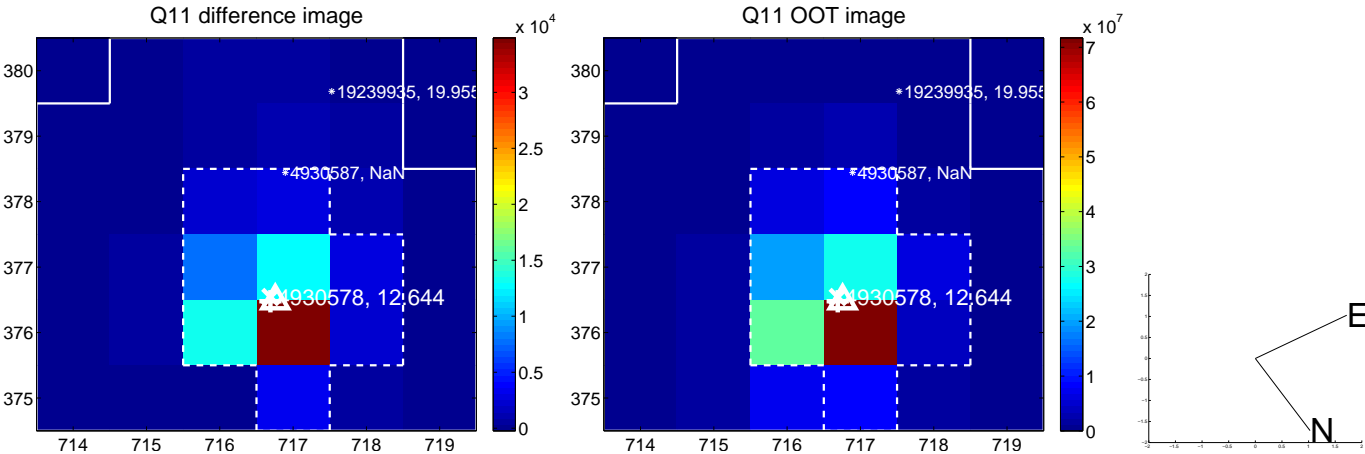
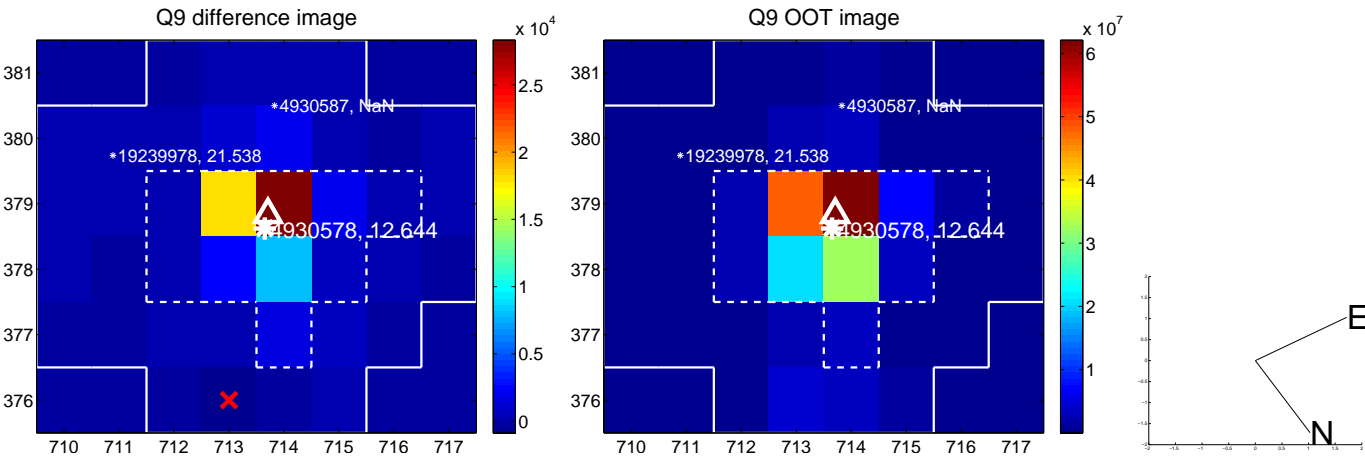
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



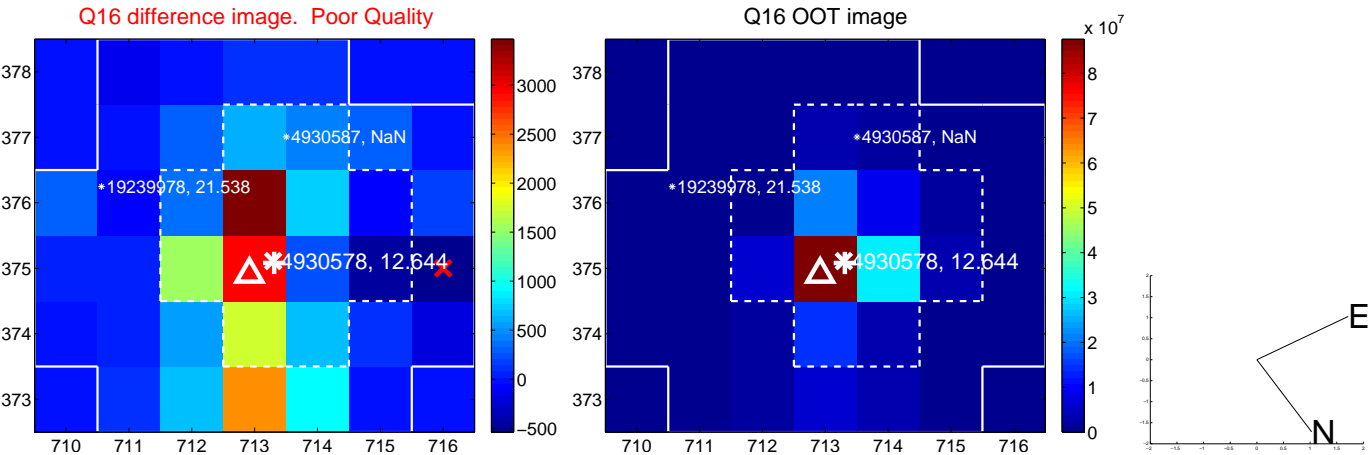
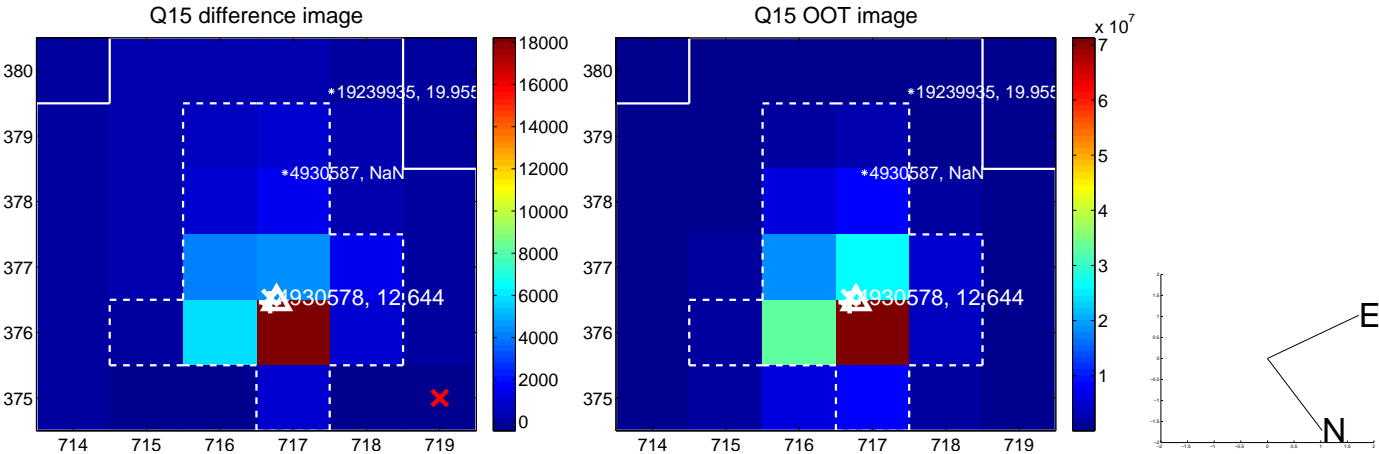
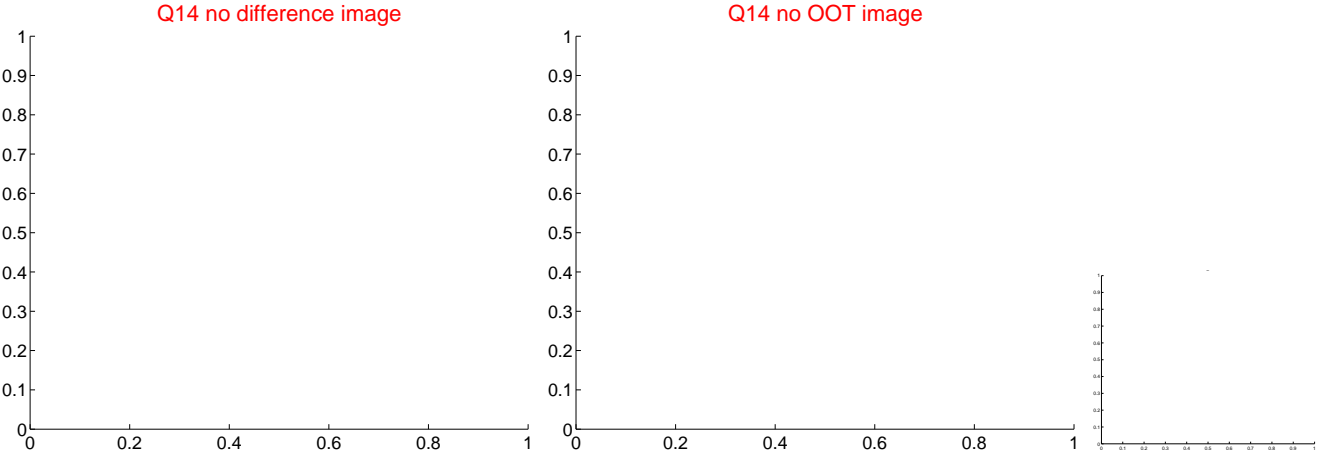
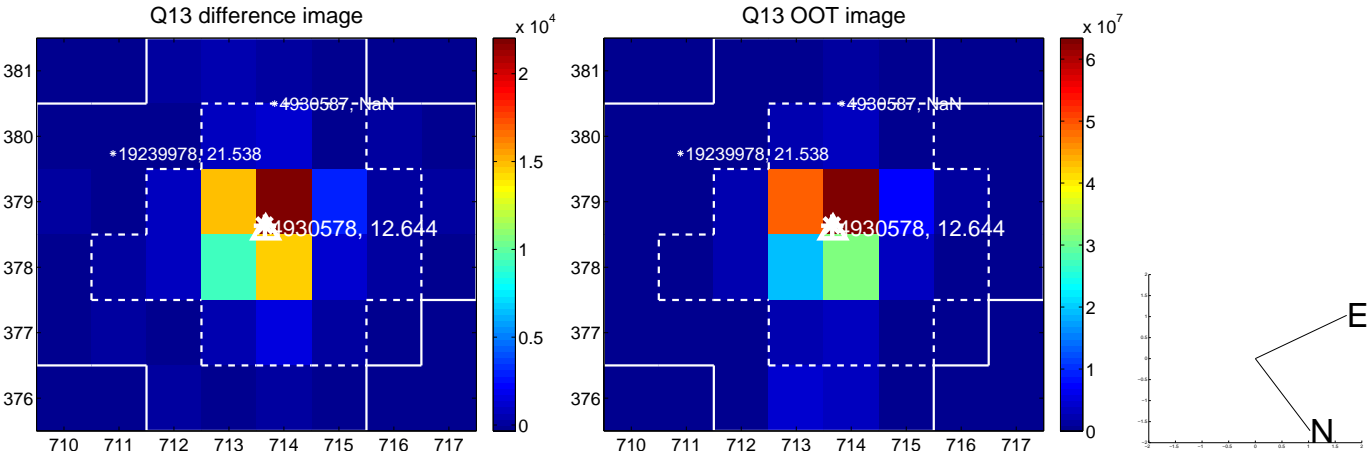
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



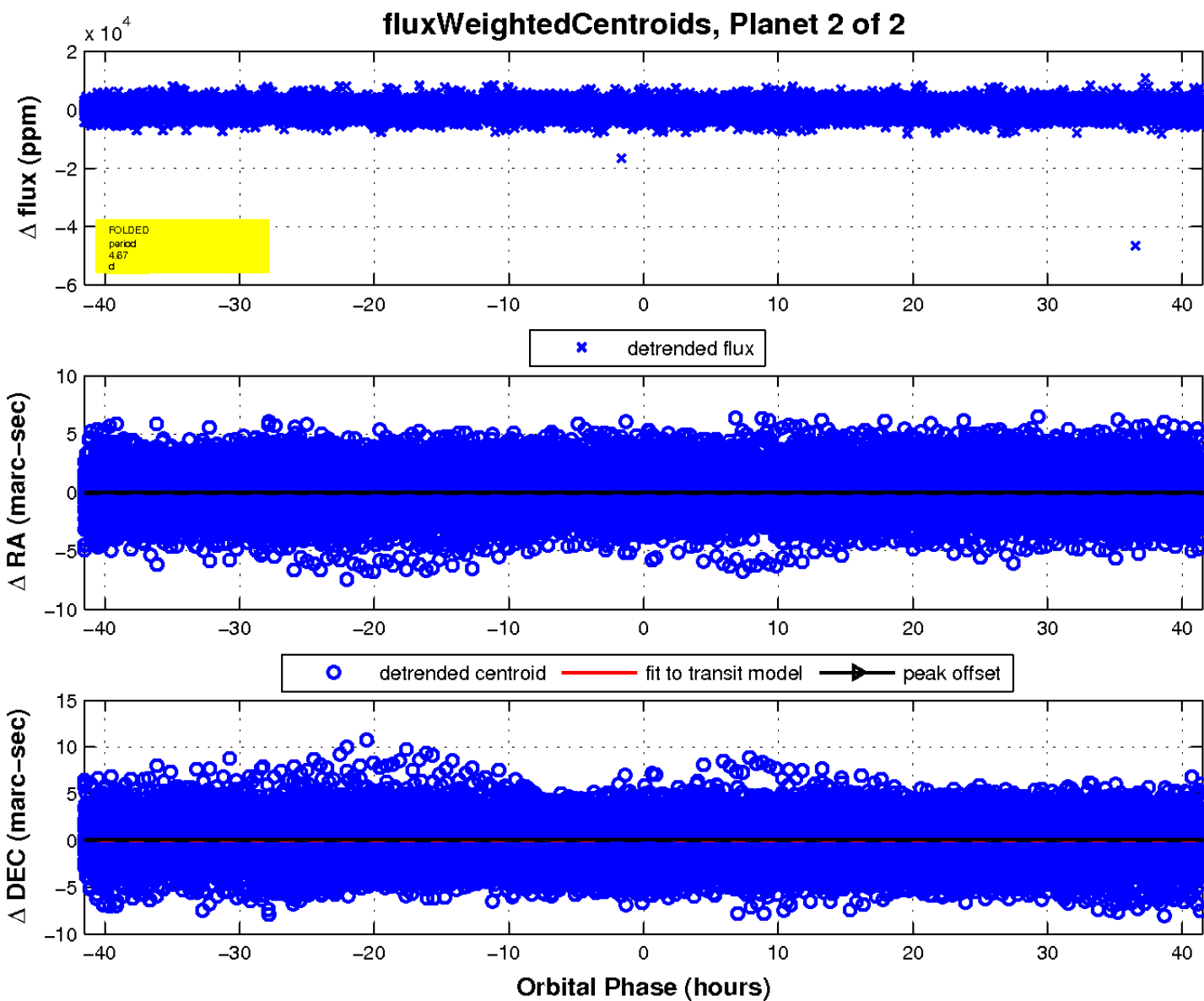
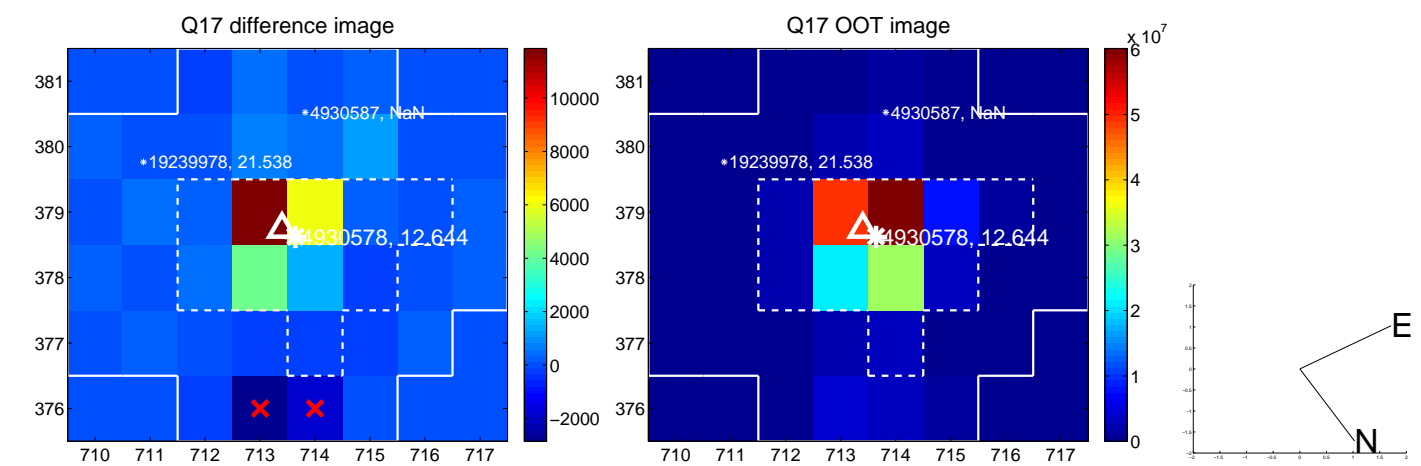
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white \times : KIC target position; $+$: OOT centroid; Δ : difference centroid. red \times : large negative pixel value.



UKIRT Image

