

KIC 004180346

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})
004180346-01	OBS	No	2.990358	134.445280	33.3	9.661	8.1	7.3	1.41	6454	0.91	1655.51
004180346-02	OBS	No	1.449718	132.284044	19.7	14.606	7.6	6.0	1.41	6454	0.63	4346.94

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004180346-01	OBS	FP	0.00	1	0	0	0	LPP_DV
004180346-02	OBS	FP	0.00	1	0	0	0	LPP_DV—CENT_FEW_DIFFS

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

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

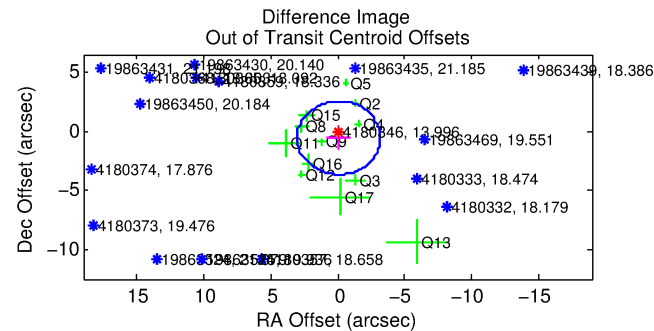
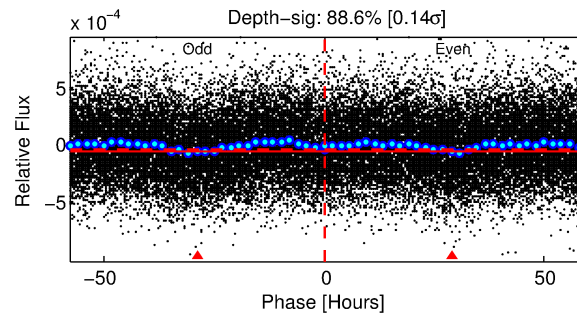
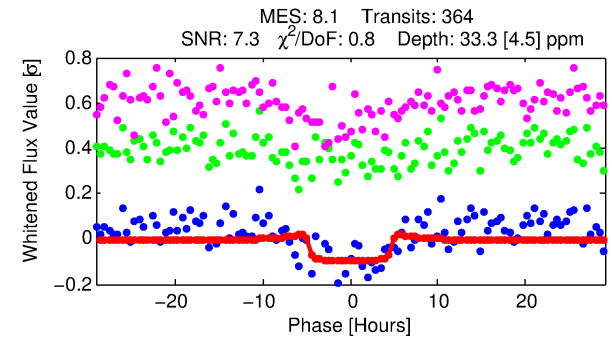
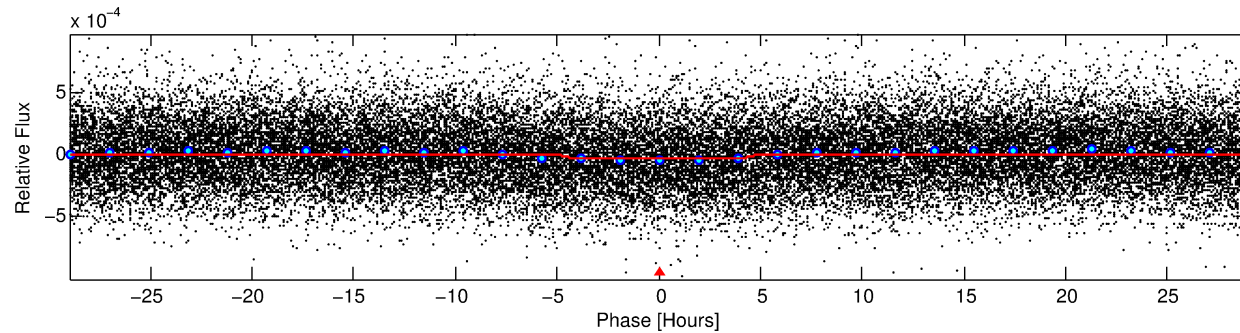
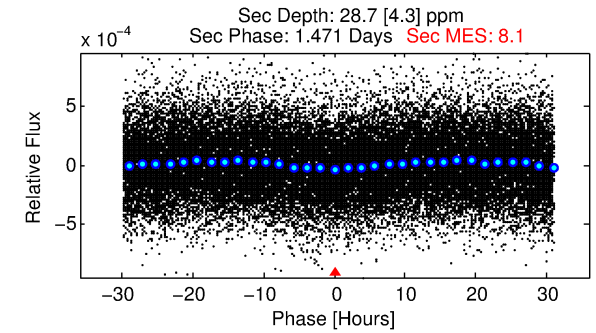
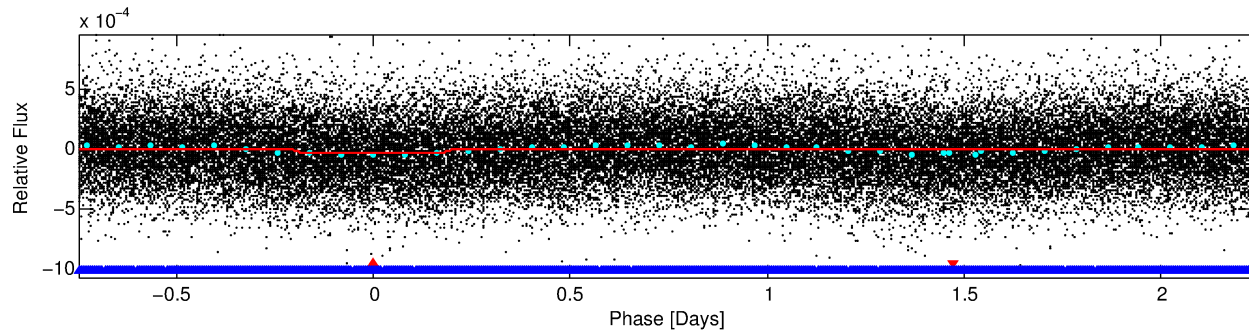
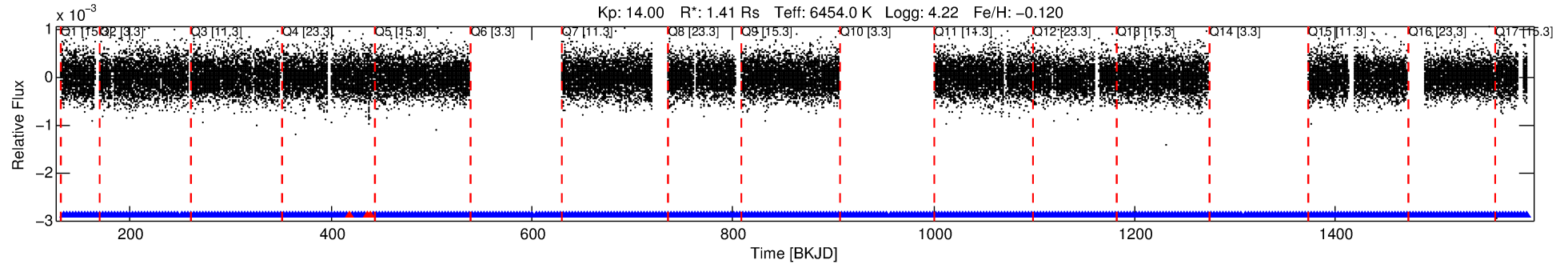
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004180346-01

No Significant Match Found

DV One-Page Summary

KIC: 4180346 Candidate: 1 of 2 Period: 2.990 d



DV Fit Results:

Period = 2.99036 [0.00005] d
Epoch = 134.4453 [0.0105] BKJD
Rp/R* = 0.0059 [0.0024]
a/R* = 1.64 [2.32]
b = 0.82 [0.91]
Seff = 1655.51 [630.66]
Teq = 1627 [155] K
Rp = 0.91 [0.46] Re
a = 0.0432 [0.0107] AU
Ag = 35.80 [32.36] [1.08σ]
Teffp = 6151 [1293] K [3.47σ]

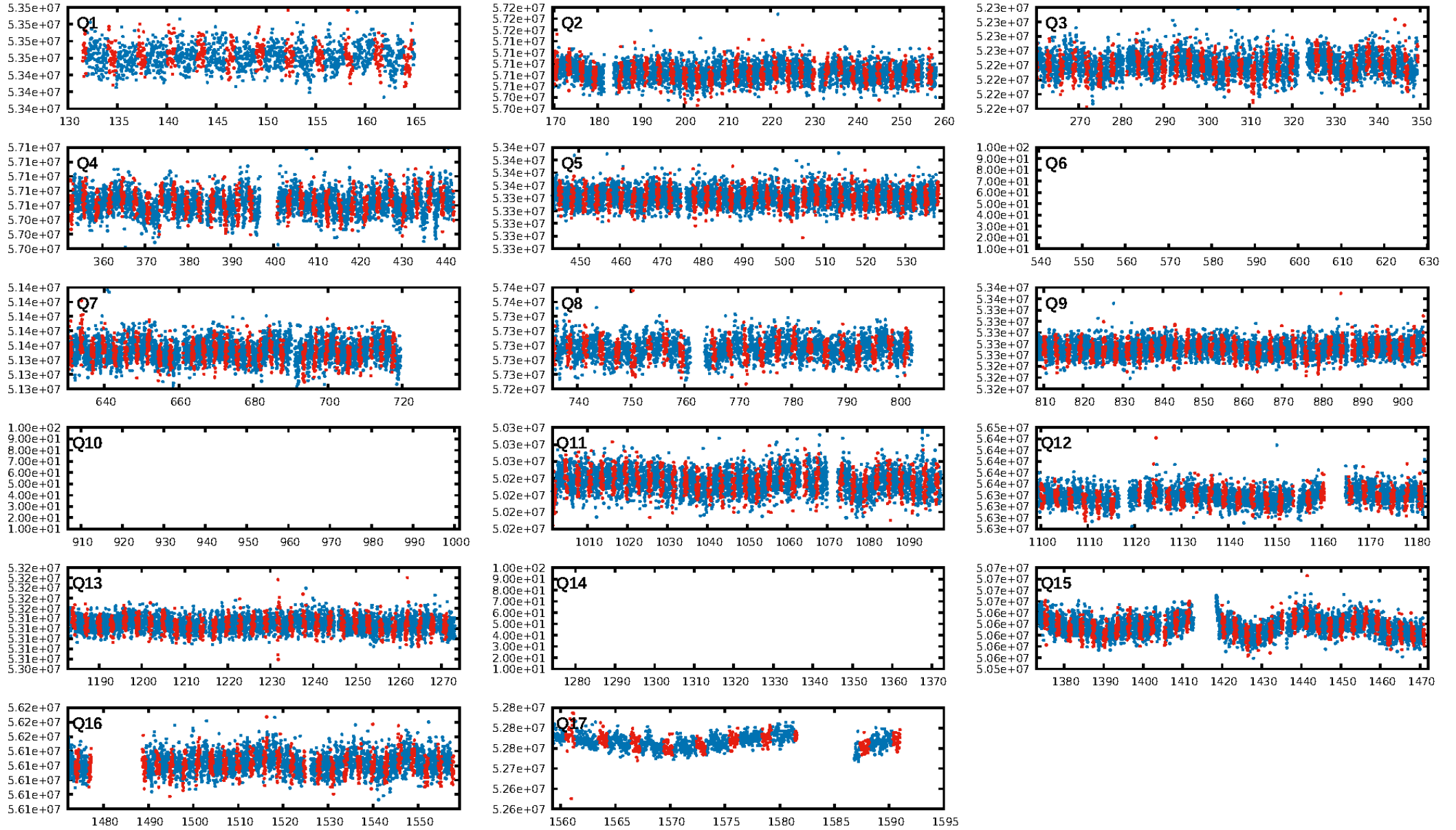
DV Diagnostic Results:

ShortPeriod-sig: 96.5% [2.11σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 0.99 [339/342]
GhostDiagnostic-chr: 1.107
Centroid-sig: 0.0%
Centroid-so: 5.344 arcsec [3.06σ]
OotOffset-rm: 0.570 arcsec [0.55σ]
OotOffset-st: 1/3/4/4 [12]
KicOffset-rm: 0.641 arcsec [0.60σ]
KicOffset-st: 1/3/4/4 [12]
DiffImageQuality-fgm: 0.33 [4/12]
DiffImageOverlap-fno: 0.00 [0/14]

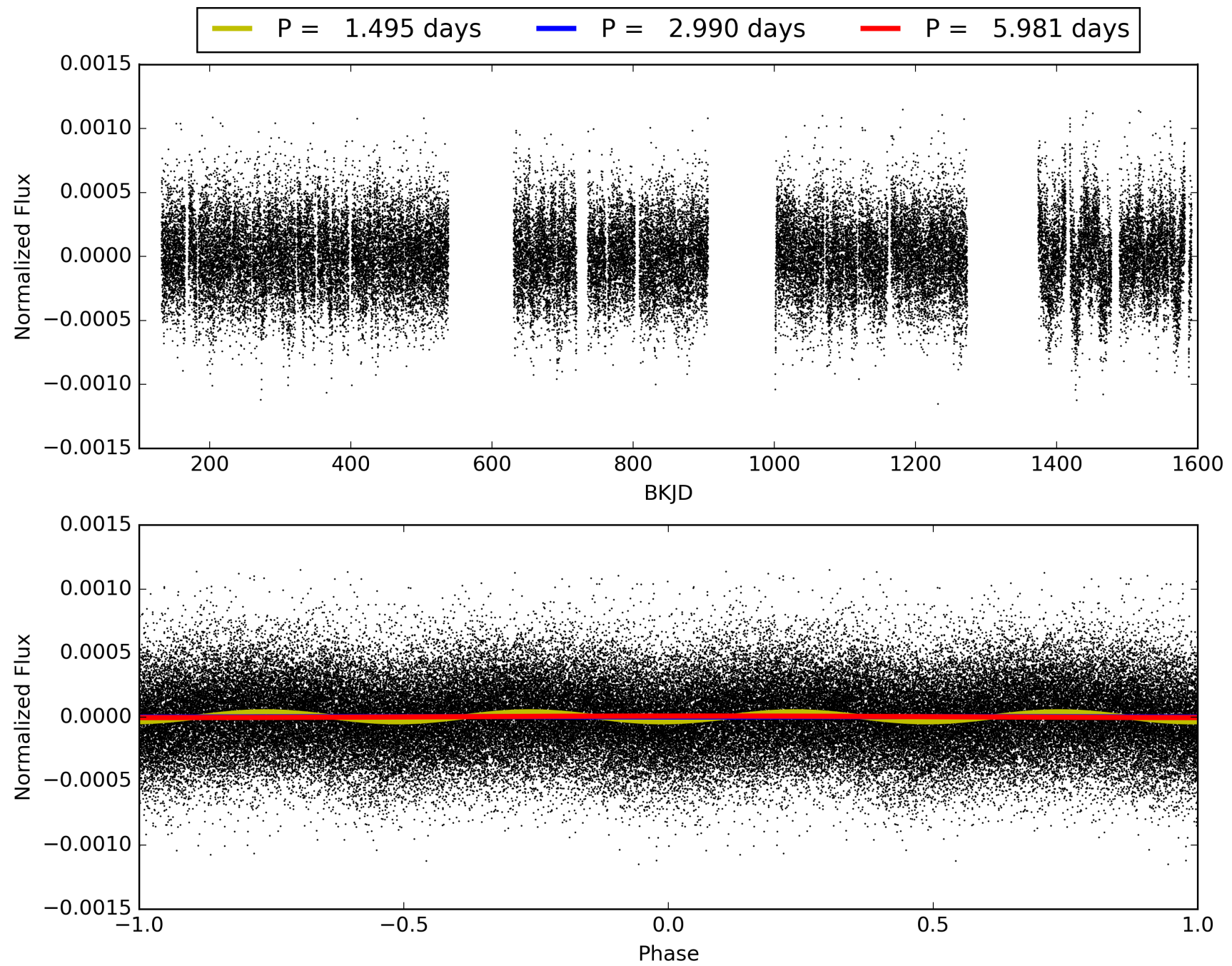
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 02:05:47 Z

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

TCE 004180346-01, PDC Light Curves

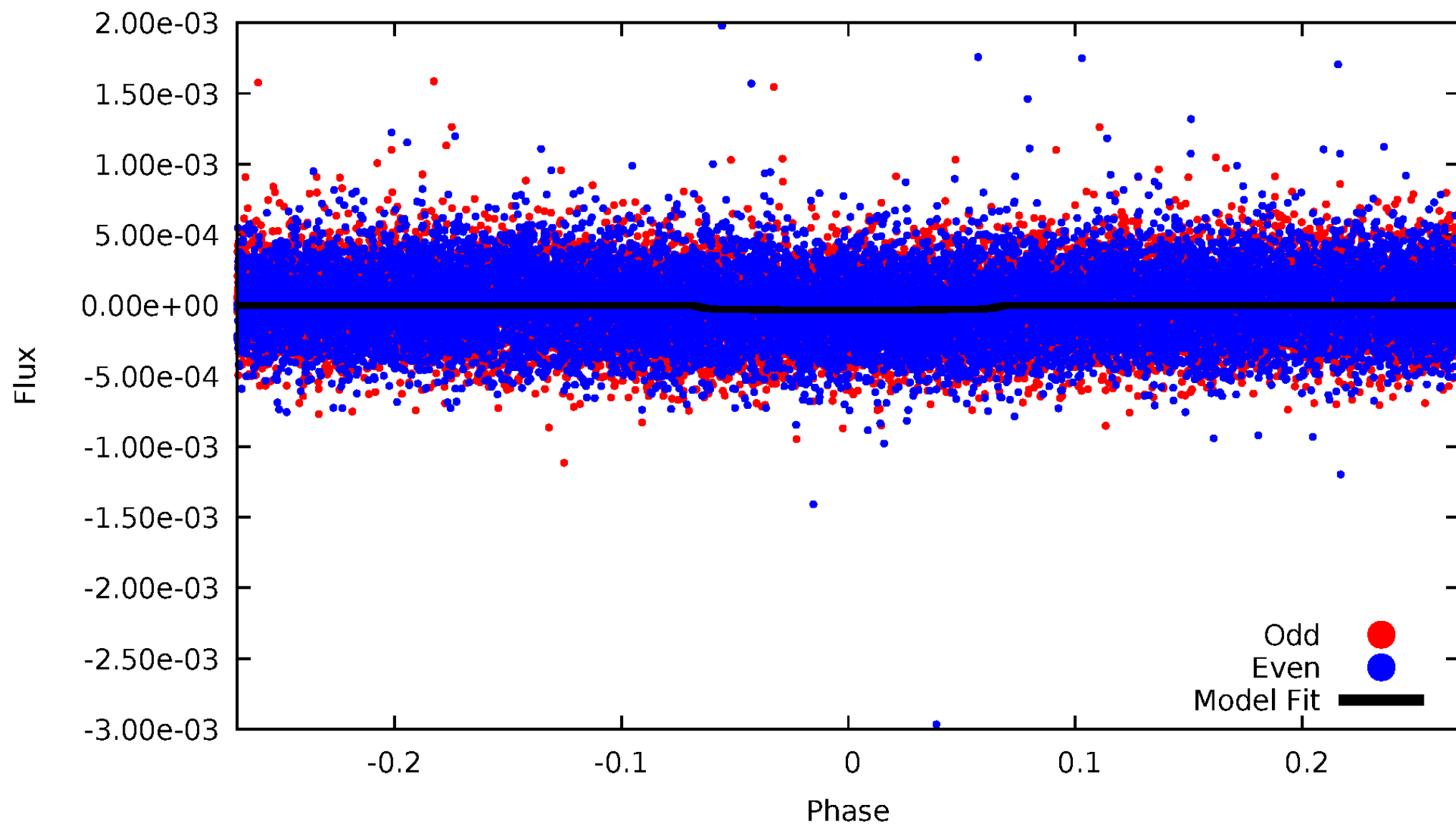


TCE 004180346-01



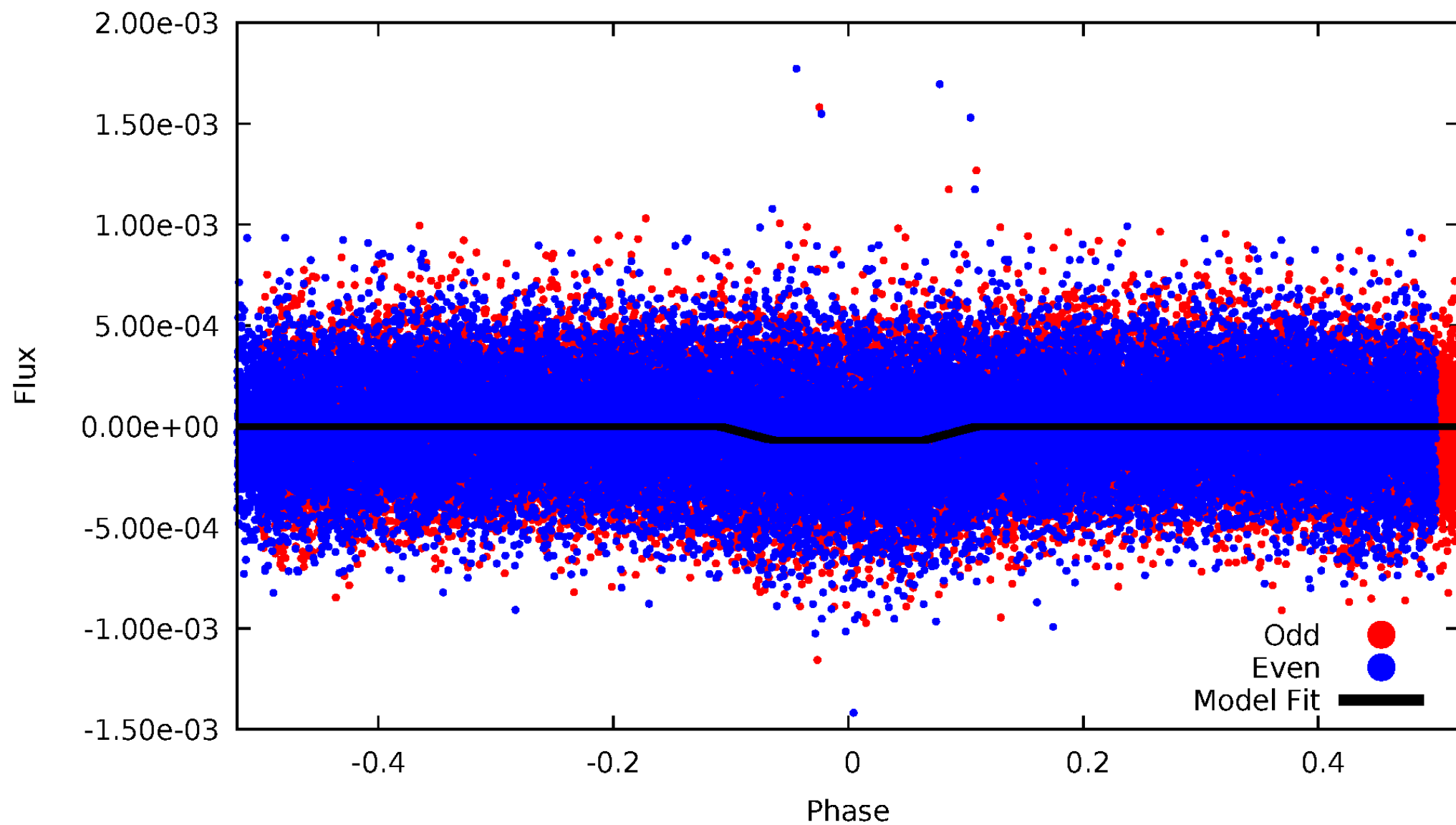
DV Odd/Even

TCE 004180346-01

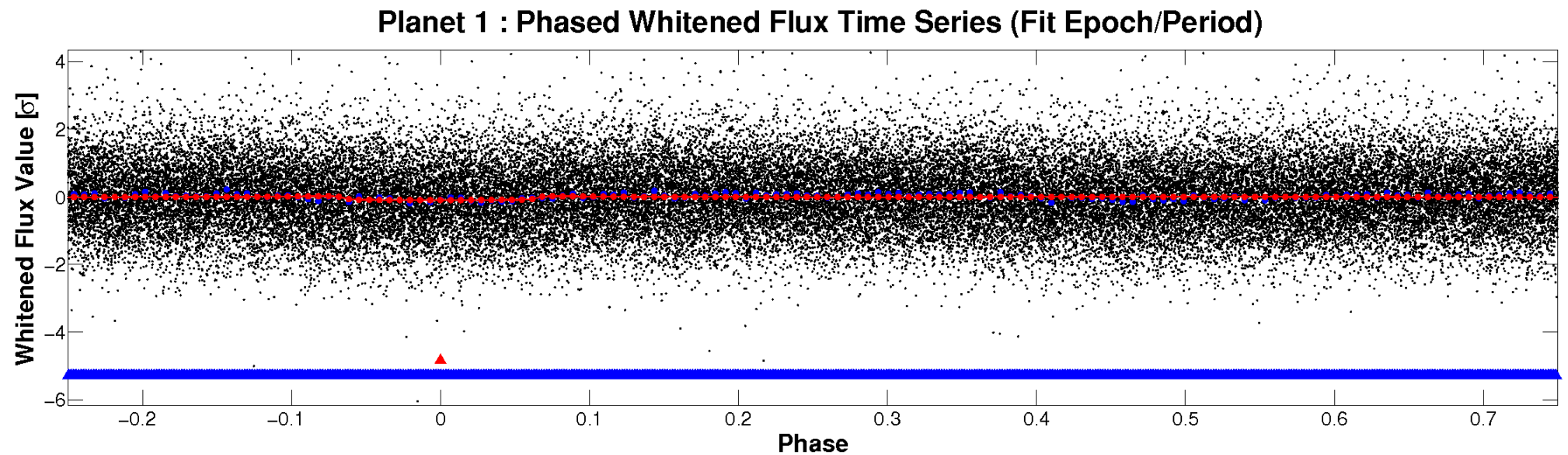
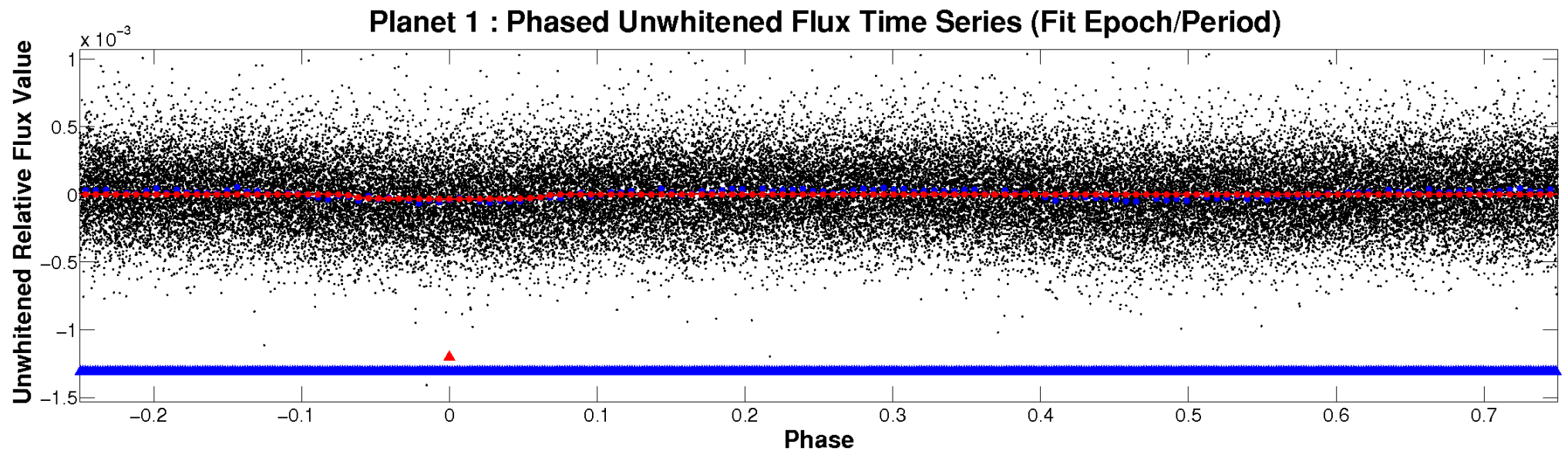


ALT Odd/Even

TCE 004180346-01

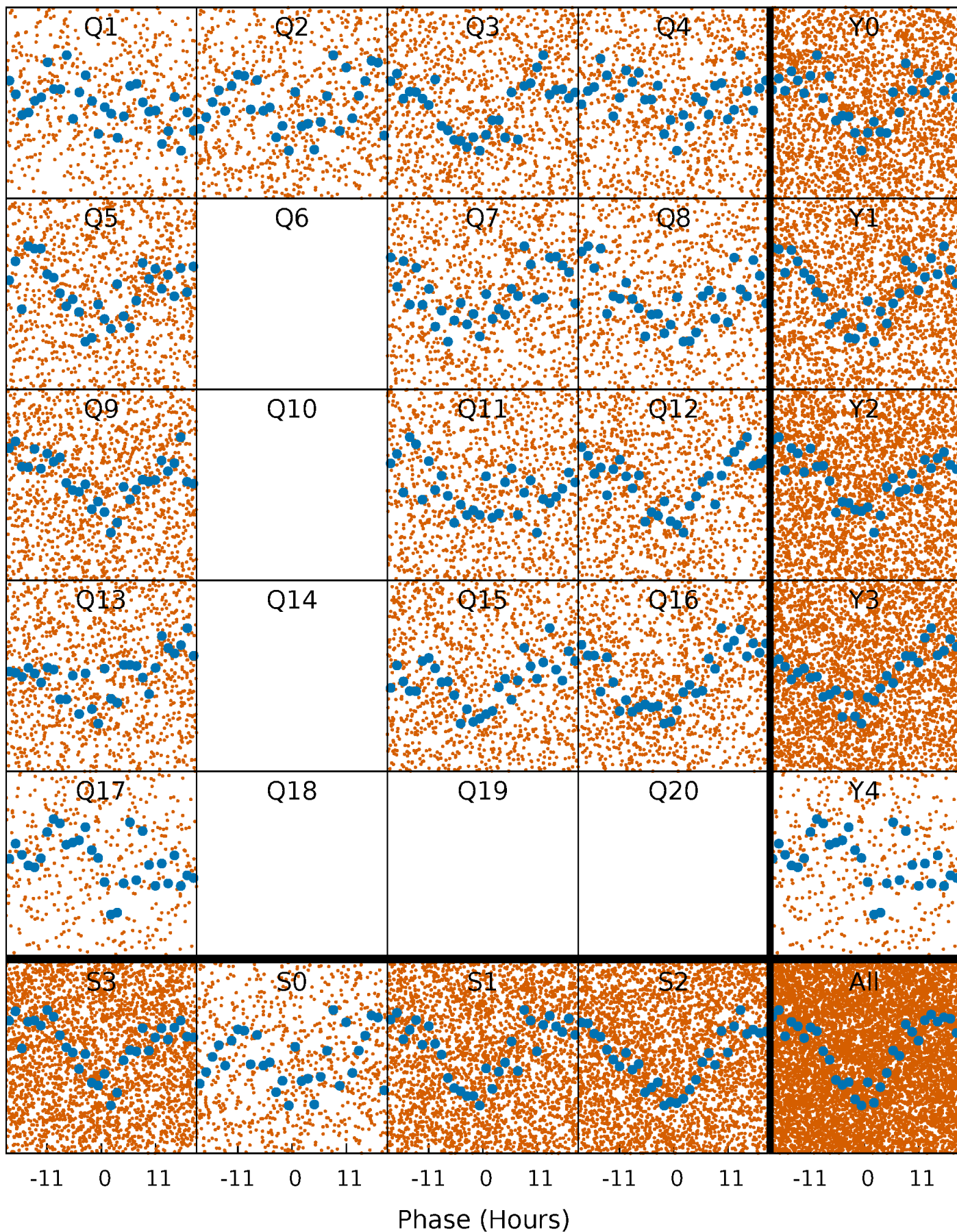


Non-Whitened Vs. Whitened Light Curve



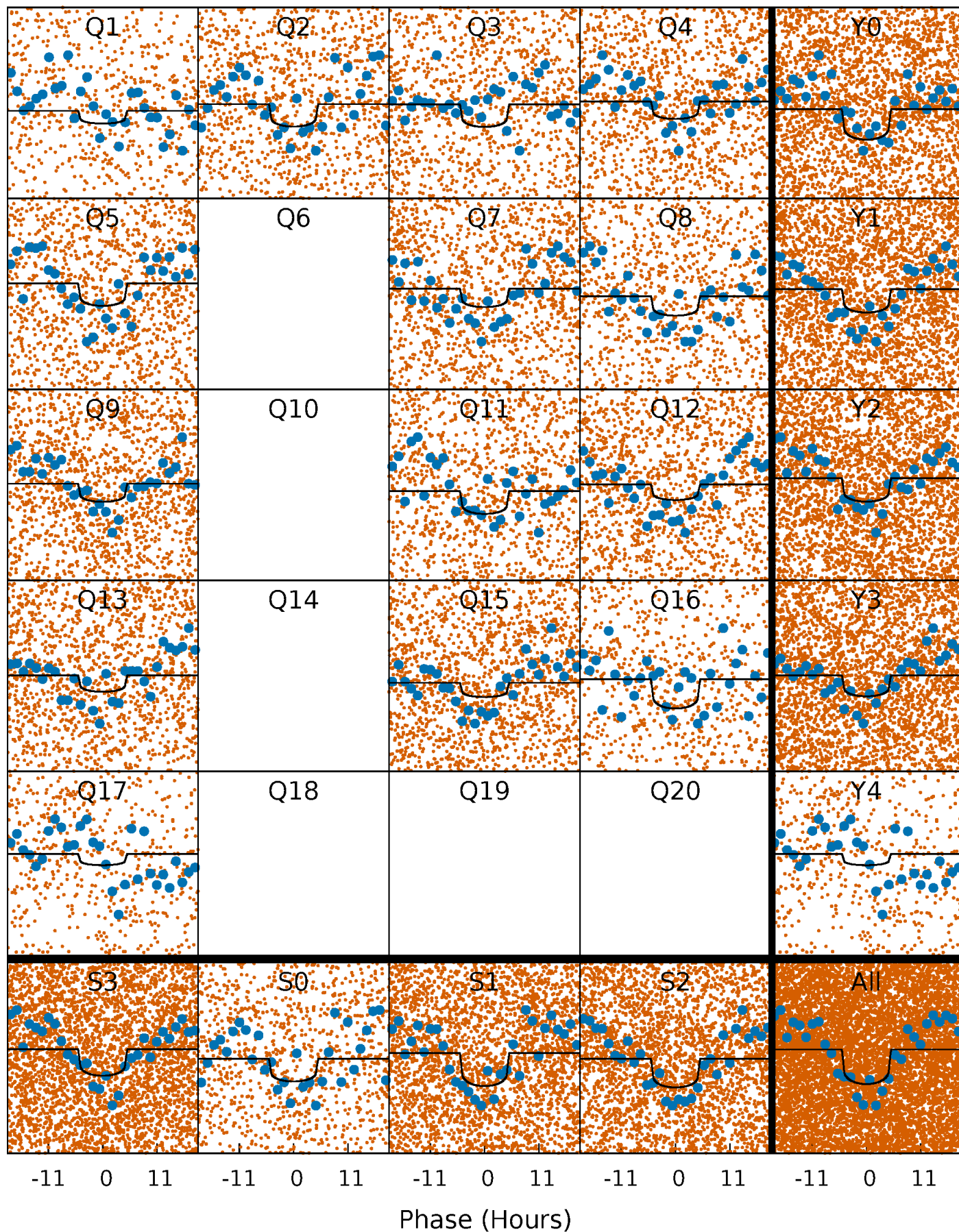
PDC Quarter-Phased Transit Curves

TCE 004180346-01 P= 2.990358 Days $T_0=134.445280$ (BKJD)



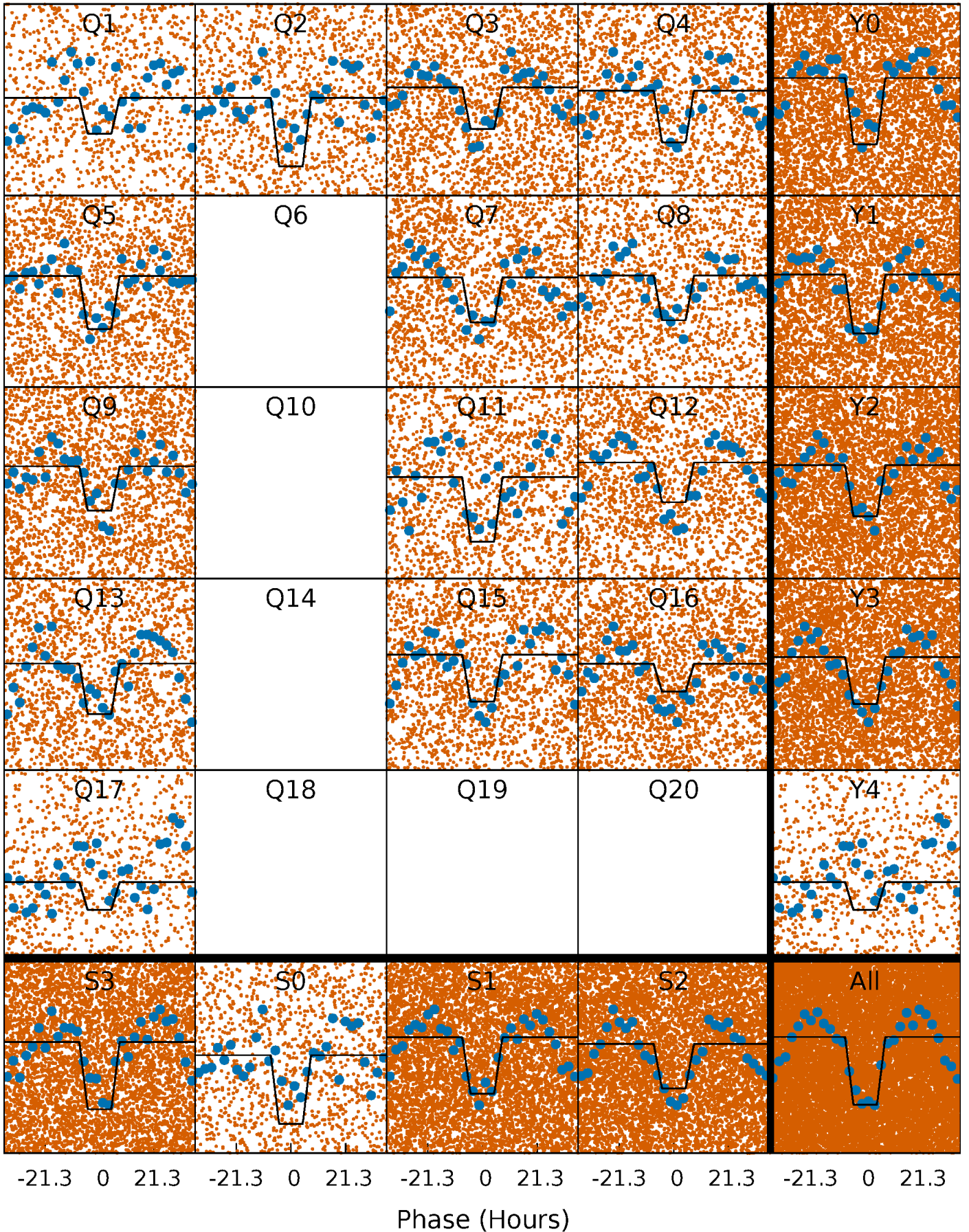
DV Quarter-Phased Transit Curves

TCE 004180346-01 P= 2.990358 Days $T_0=134.445280$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

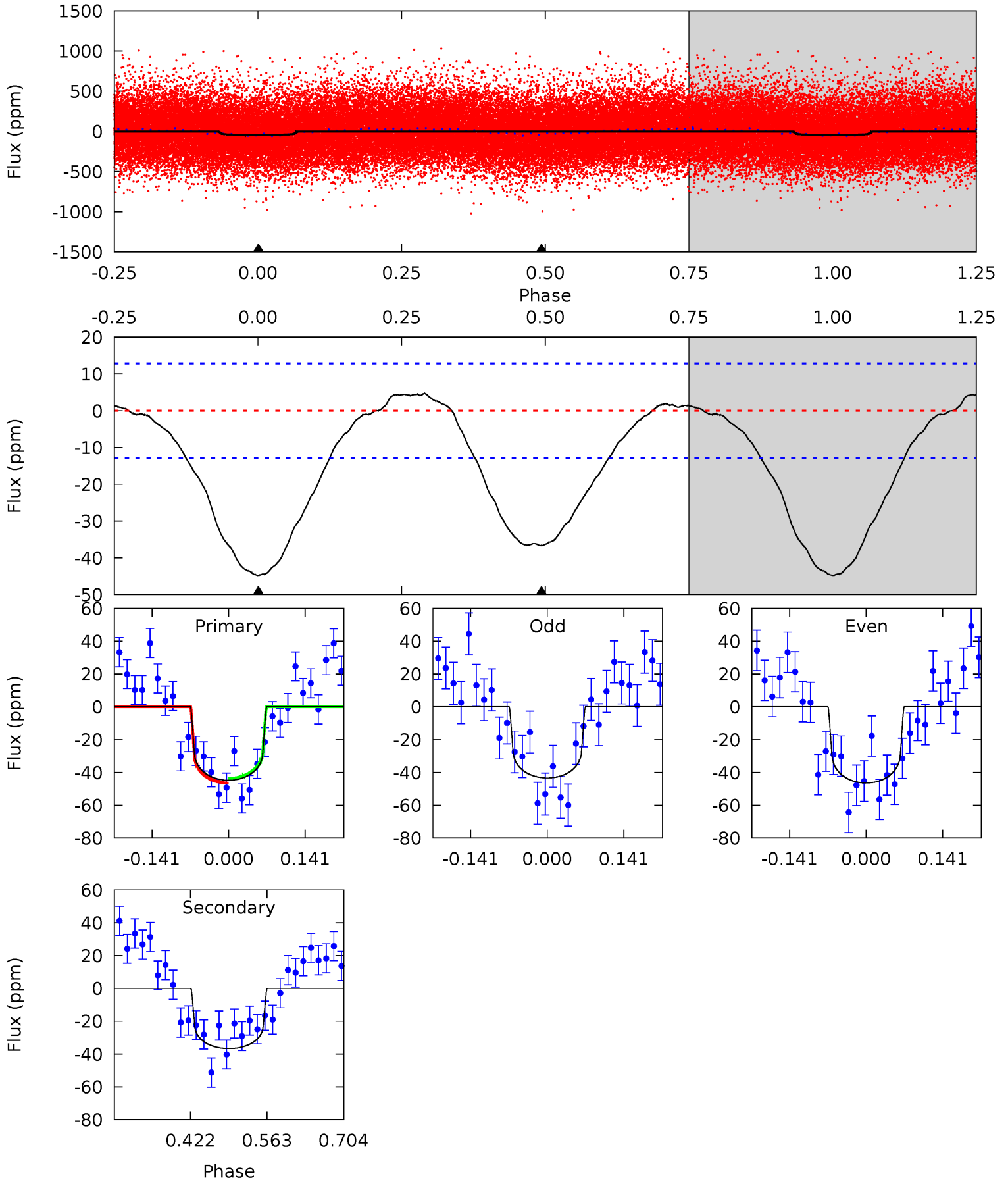
TCE 004180346-01 P= 2.990140 Days $T_0=134.465834$ (BKJD)



DV Model-Shift Uniqueness Test

004180346-01, P = 2.990358 Days, E = 131.454922 Days

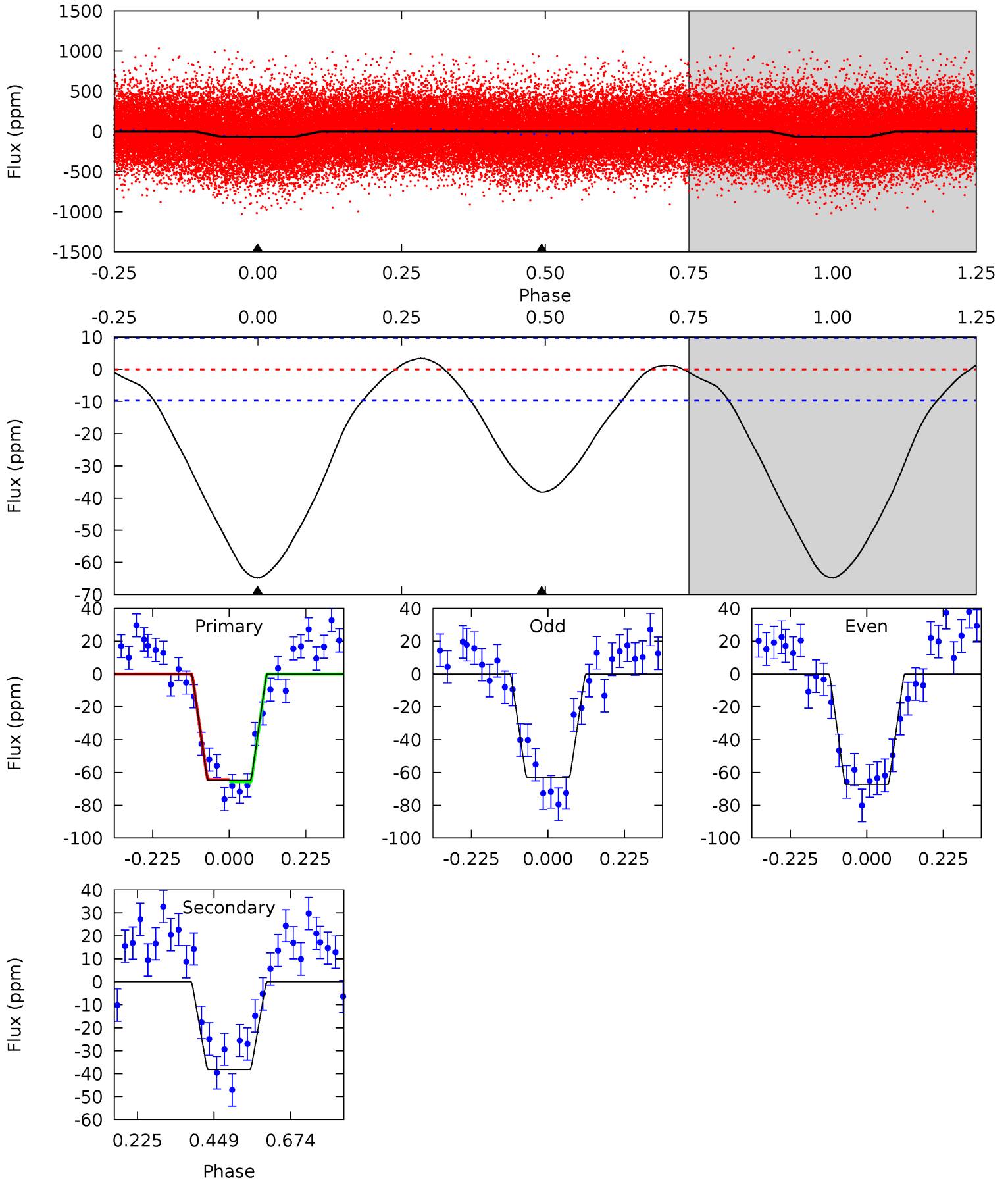
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
15.6	12.8	0	0	4.49	1.47	1.18	15.6	15.6	12.8	12.8	0.53	0.96	0.10	0.48



Alt Model-Shift Uniqueness Test

004180346-01, P = 2.990140 Days, E = 131.475694 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
29.1	17.2	0	0	4.39	1.21	0.73	29.1	29.1	17.2	17.2	0.99	1.06	0.05	0.38



Stellar Parameters For KIC 004180346

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6454^{+155}_{-214}	$4.220^{+0.158}_{-0.193}$	$-0.120^{+0.250}_{-0.300}$	$1.411^{+0.422}_{-0.307}$	$1.208^{+0.188}_{-0.188}$	$0.606^{+0.488}_{-0.315}$
	+2%/-3%	+4%/-5%	+208%/-250%	+30%/-22%	+16%/-16%	+81%/-52%
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 004180346-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-37 ± 3	$0.90^{+0.43}_{-0.38}$	2277^{+185}_{-159}	6558^{+2649}_{-1029}	47^{+89}_{-26}
Alt.	-38 ± 2	$1.27^{+0.48}_{-0.41}$	2280^{+186}_{-161}	5545^{+1111}_{-625}	24^{+29}_{-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 $A_{obs} \gg 1.0$

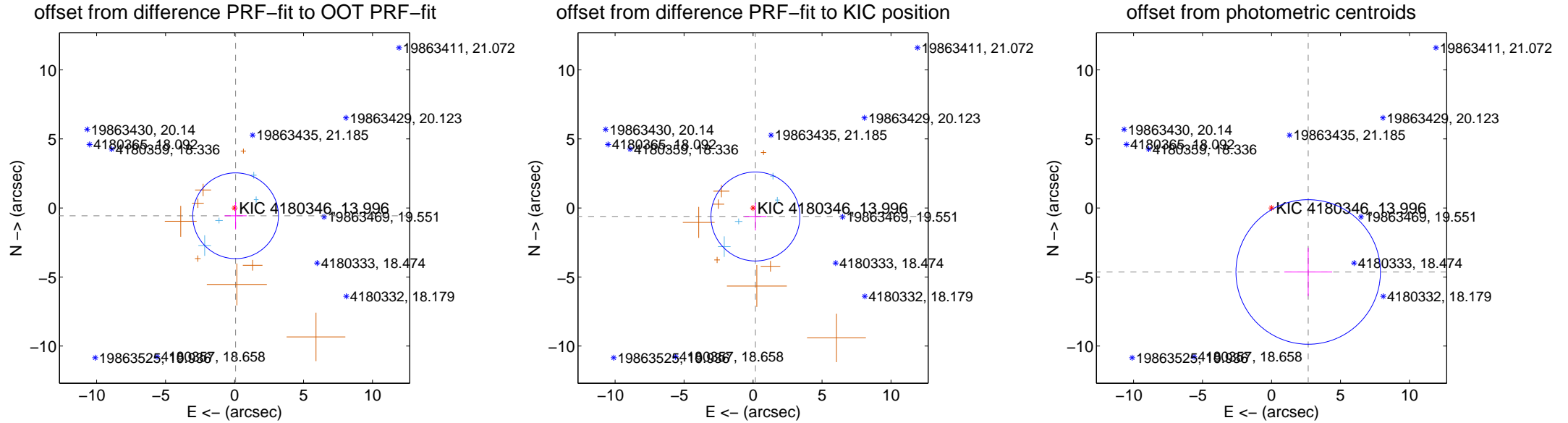
DV Centroid Data

Supplemental centroid analysis for 004180346-01. Kepler magnitude: 14.00. Transit SNR 7.28

There are 4 quarters with good PRF difference image offsets

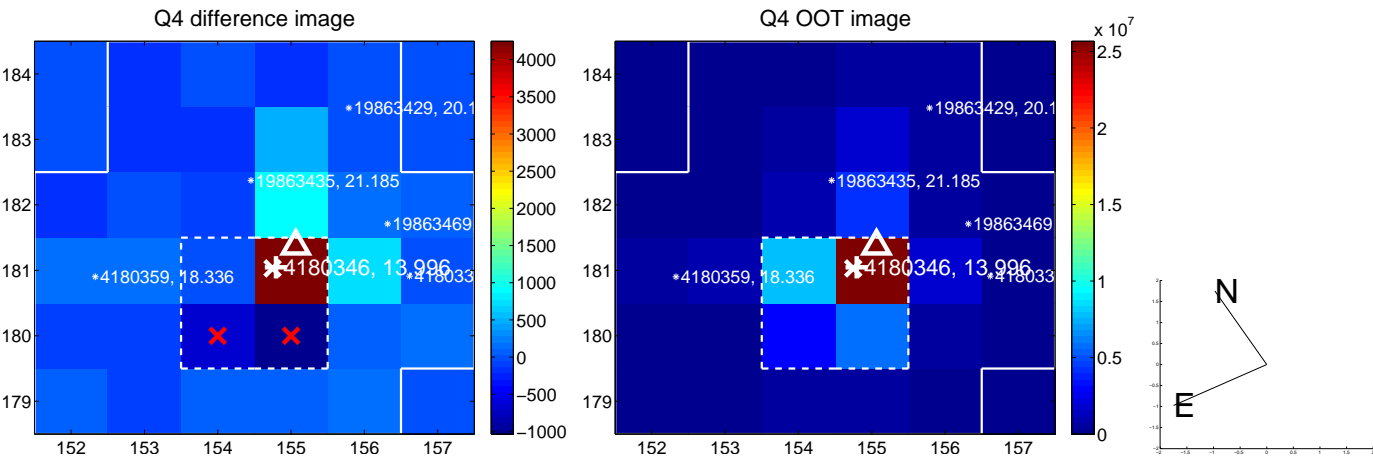
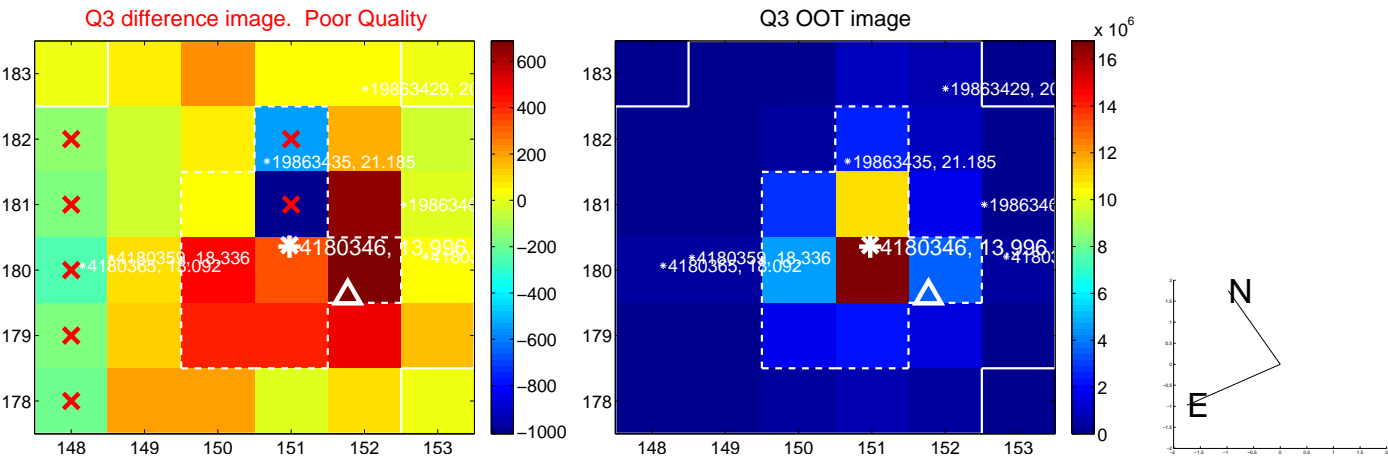
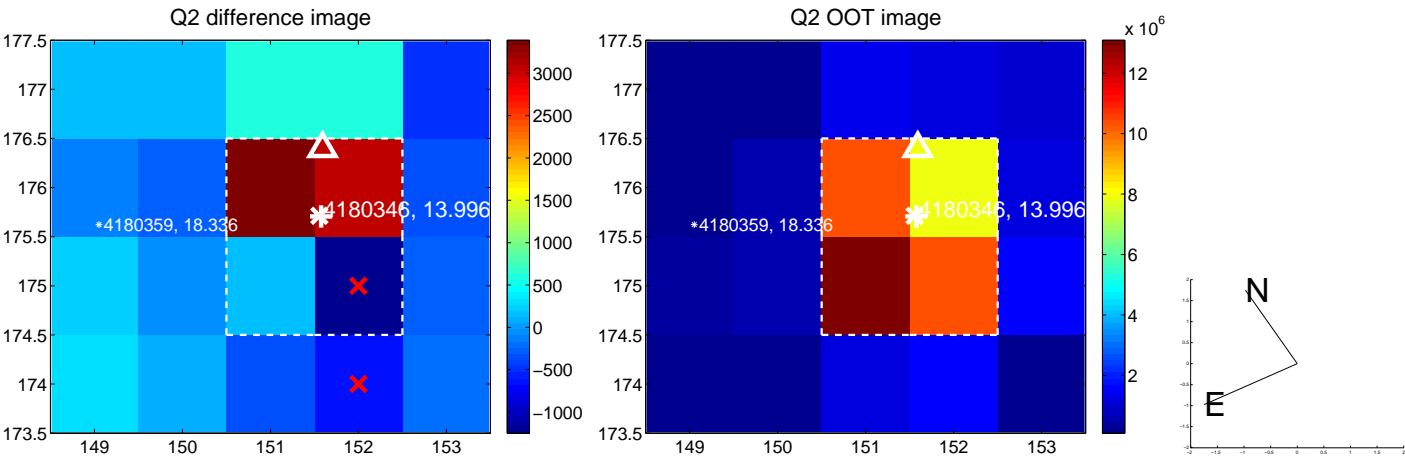
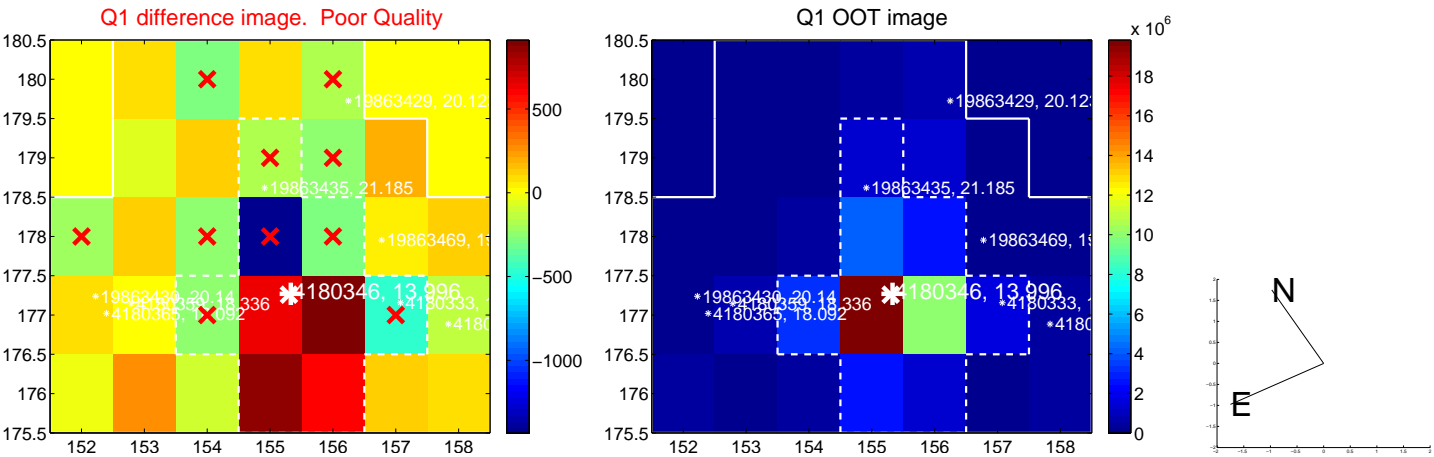
The direct PRF centroid is offset from the target star catalog position by about 0.16 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.570 ± 1.036	0.55	-0.074 ± 0.801	-0.565 ± 0.988
PRF-fit source offset from KIC position	0.641 ± 1.075	0.60	-0.171 ± 0.814	-0.617 ± 1.012
photometric centroid source offset	5.34 ± 1.75	3.06	-2.66 ± 1.74	-4.64 ± 1.75

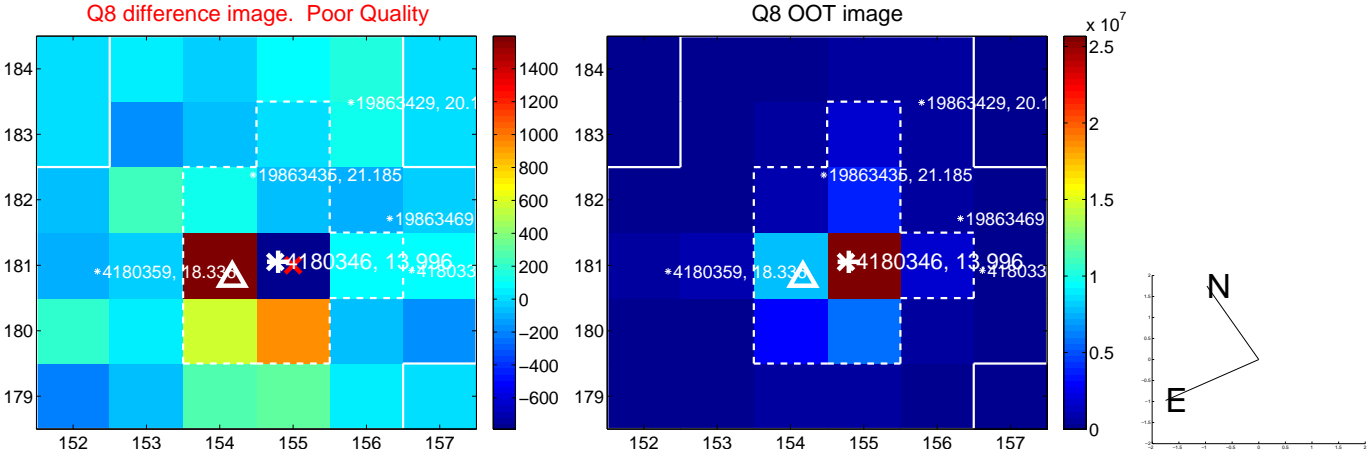
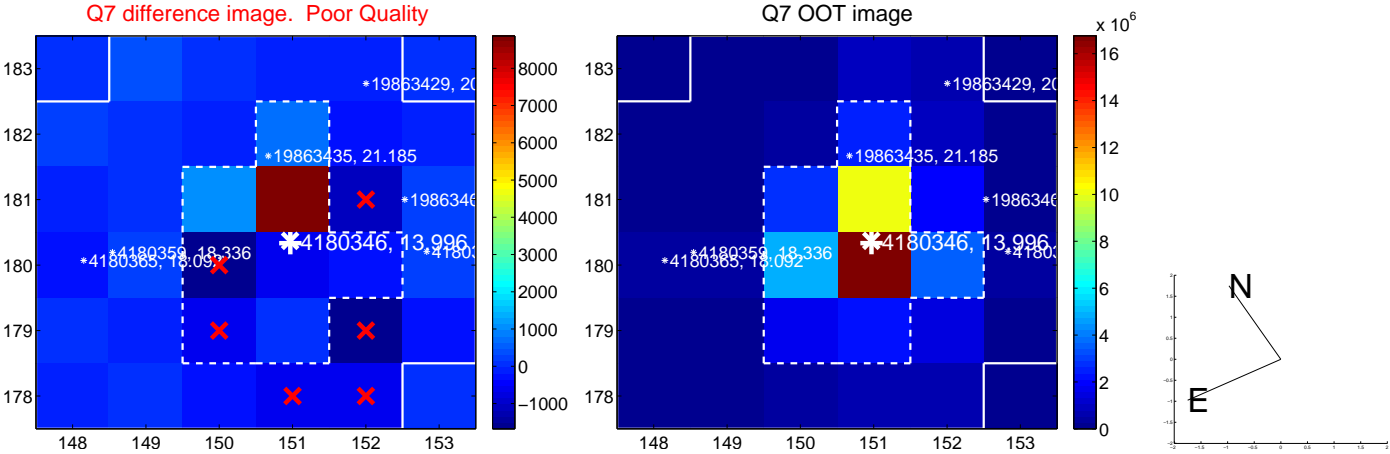
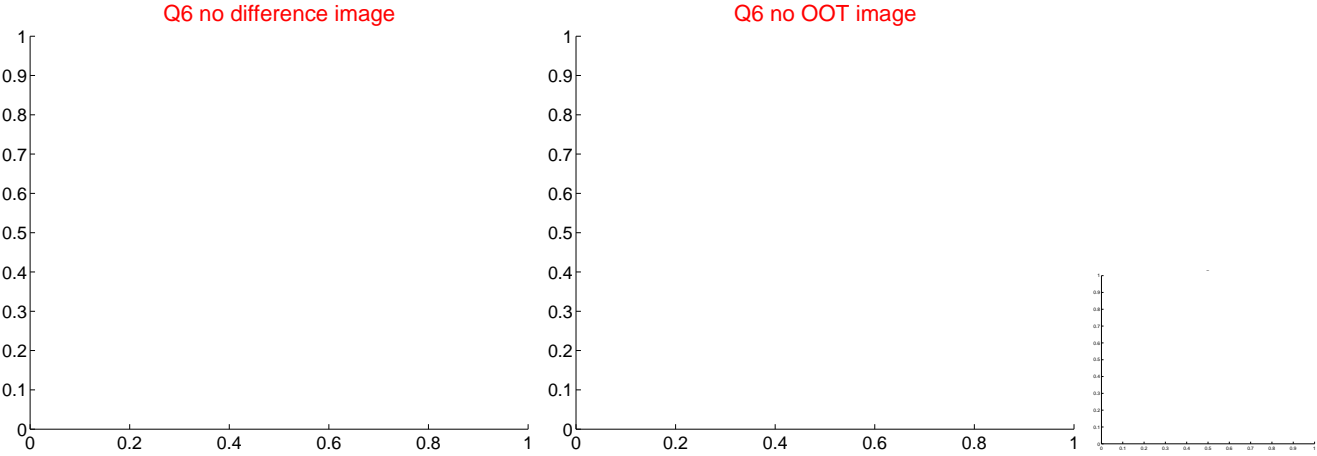
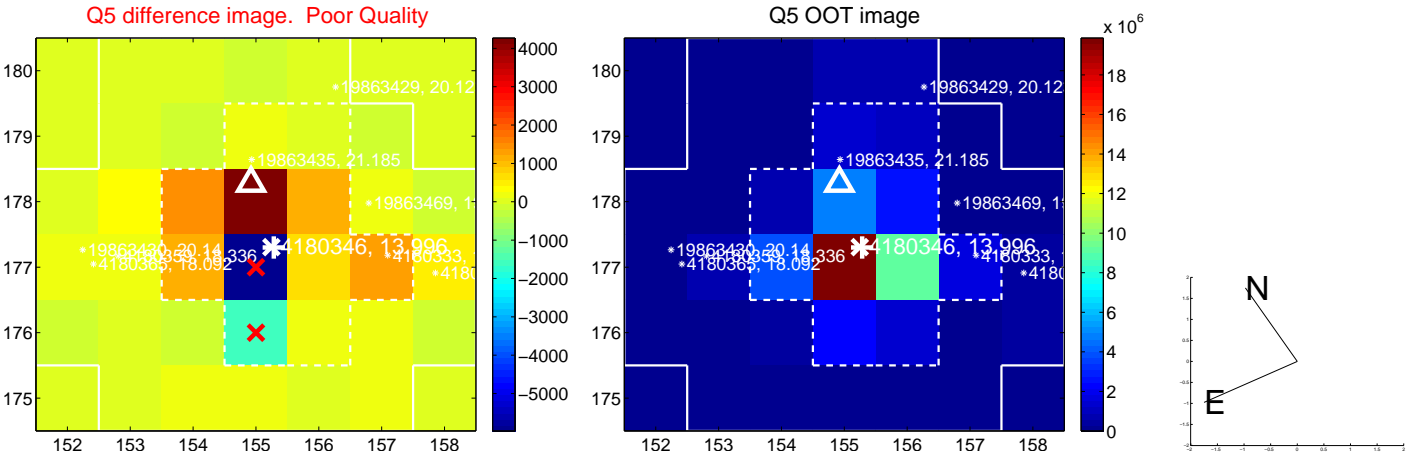


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

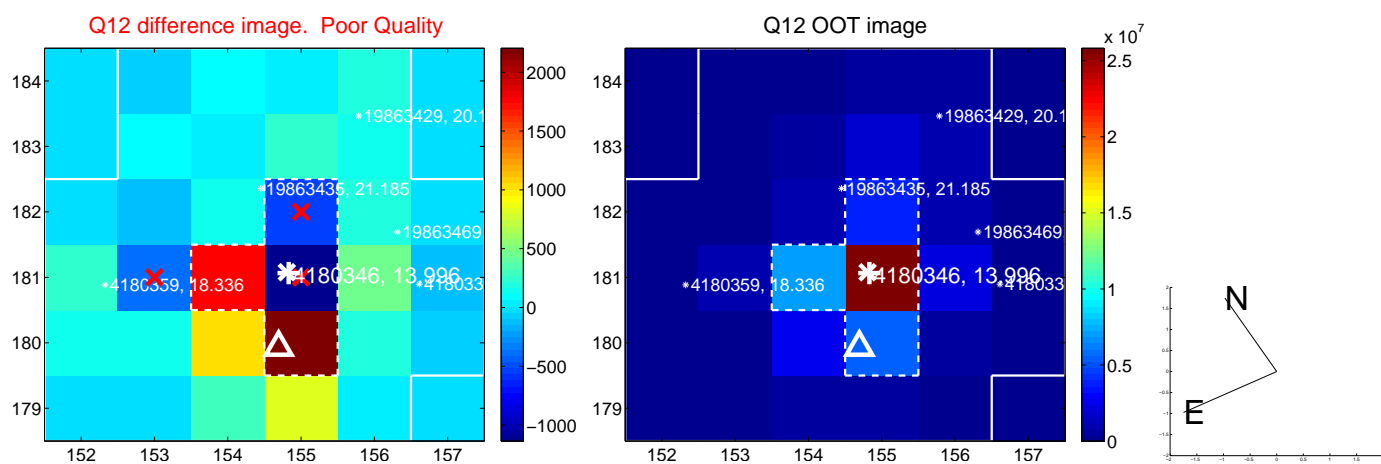
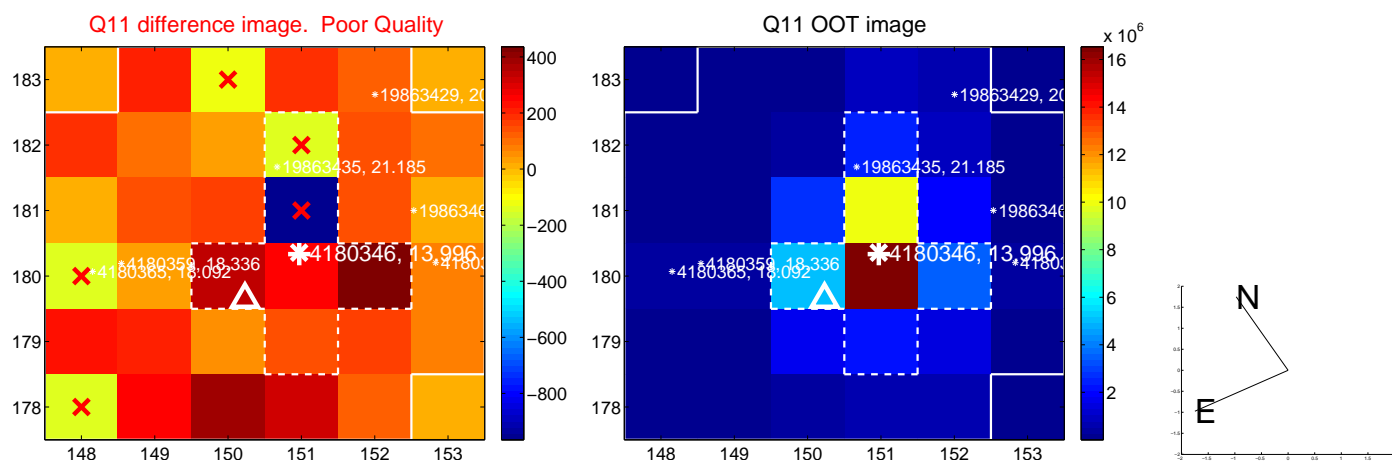
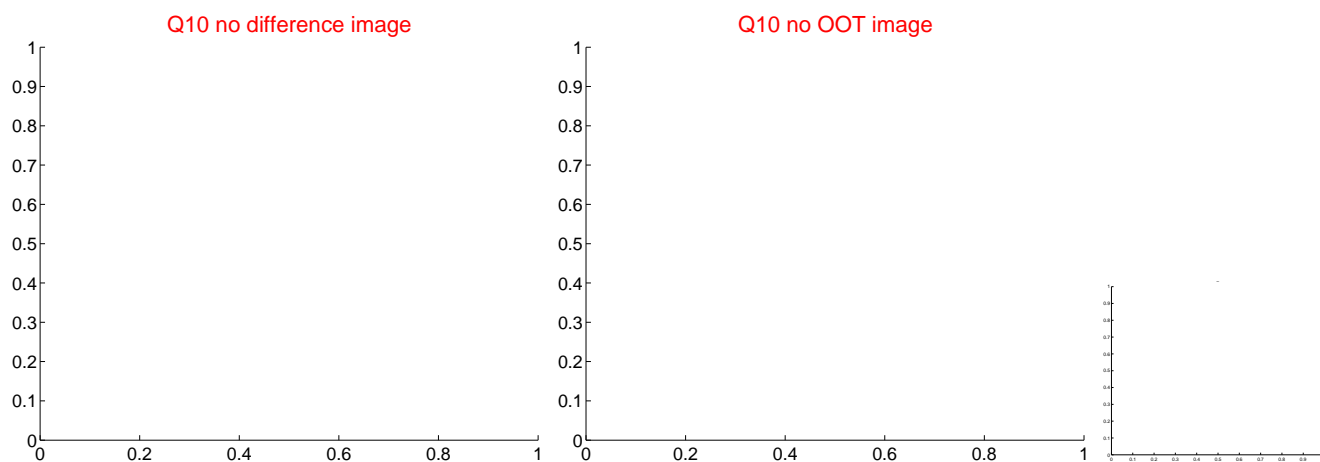
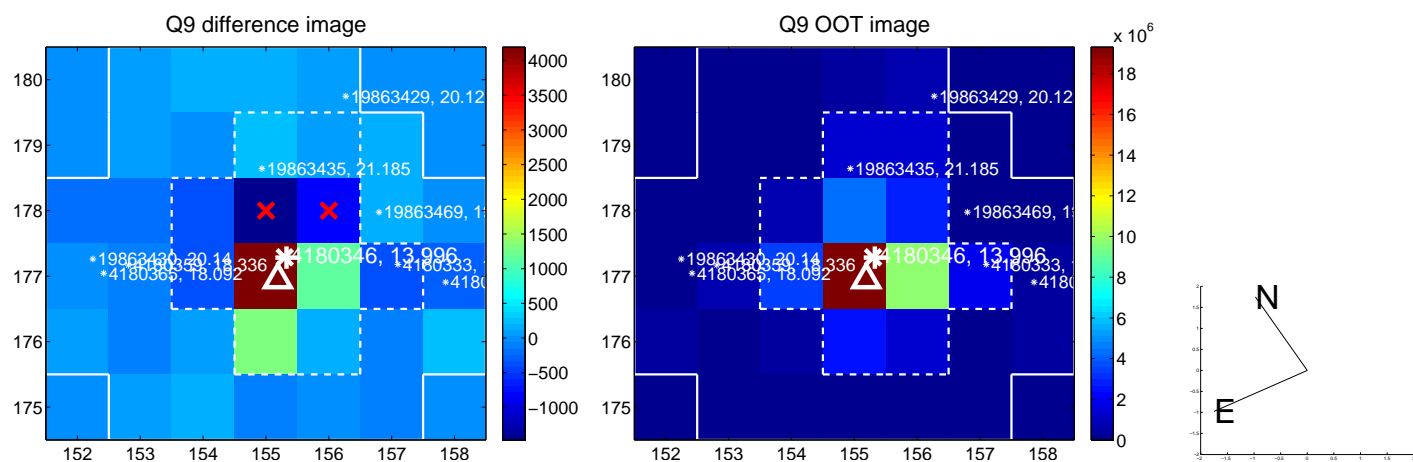
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



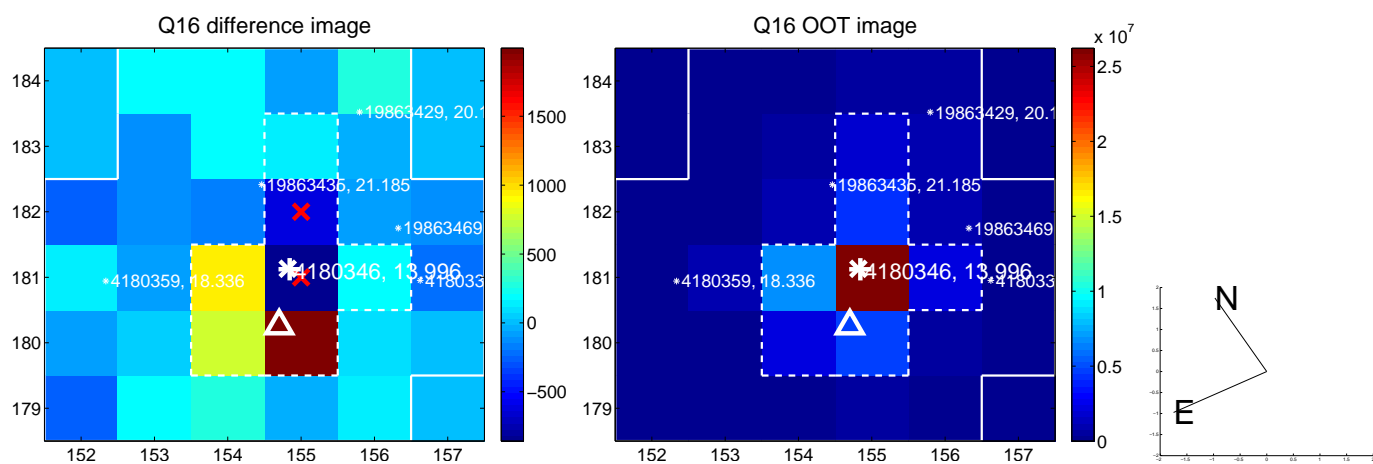
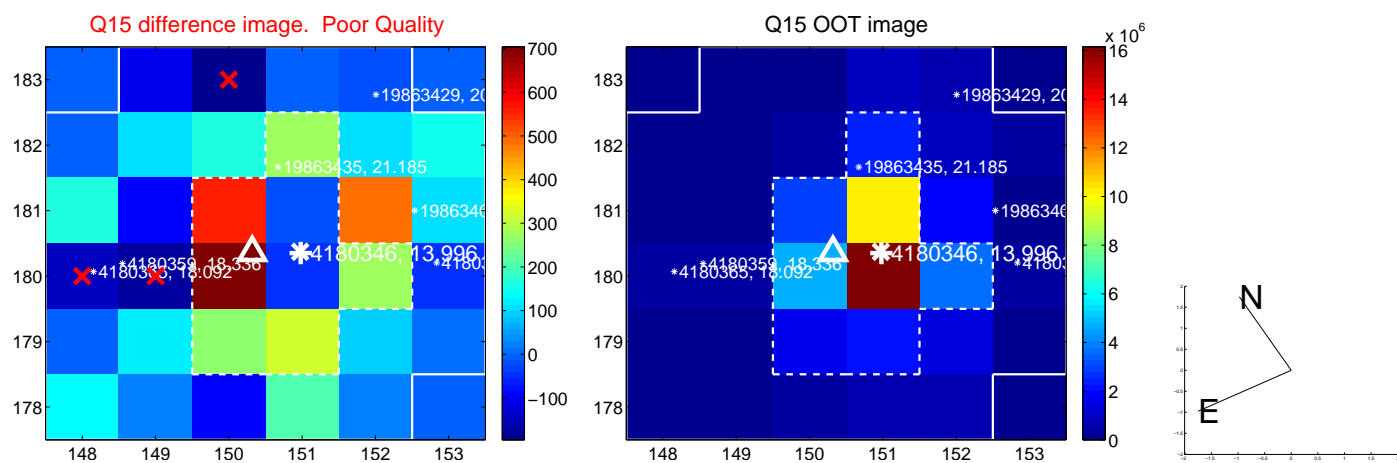
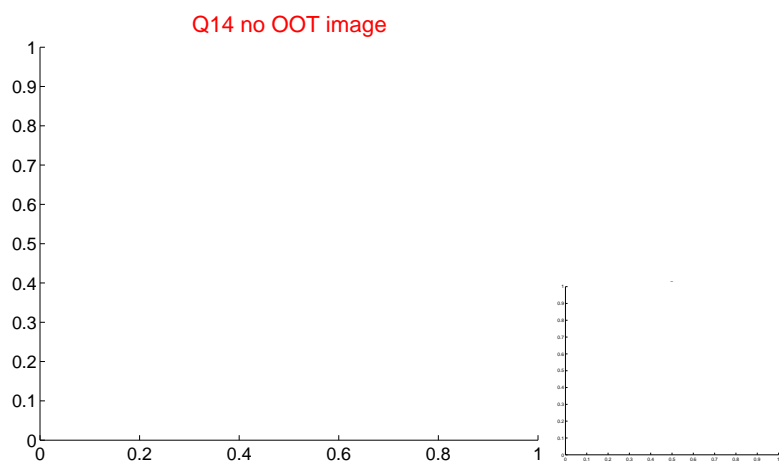
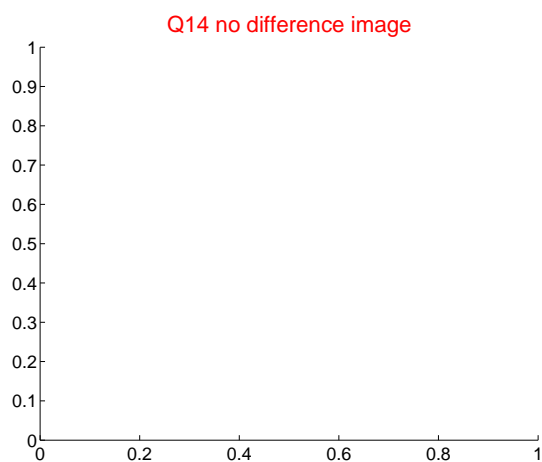
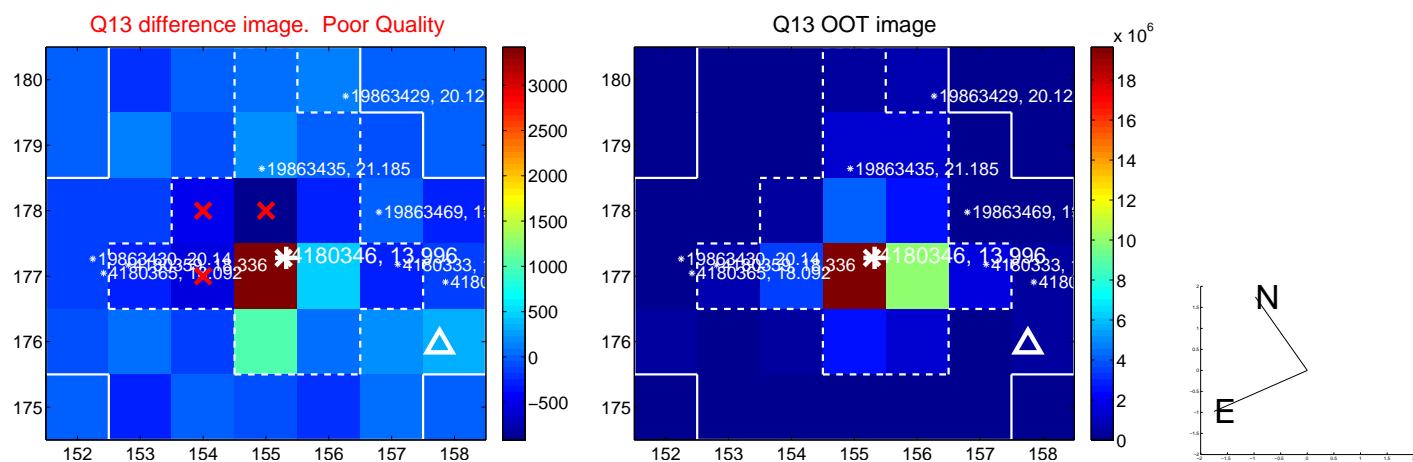
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



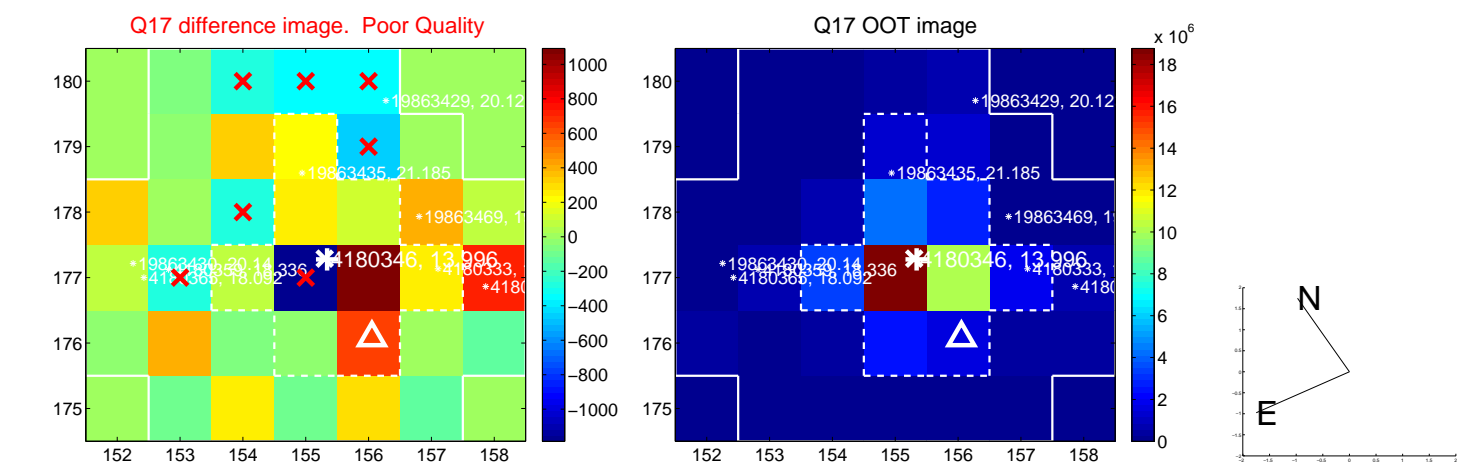
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



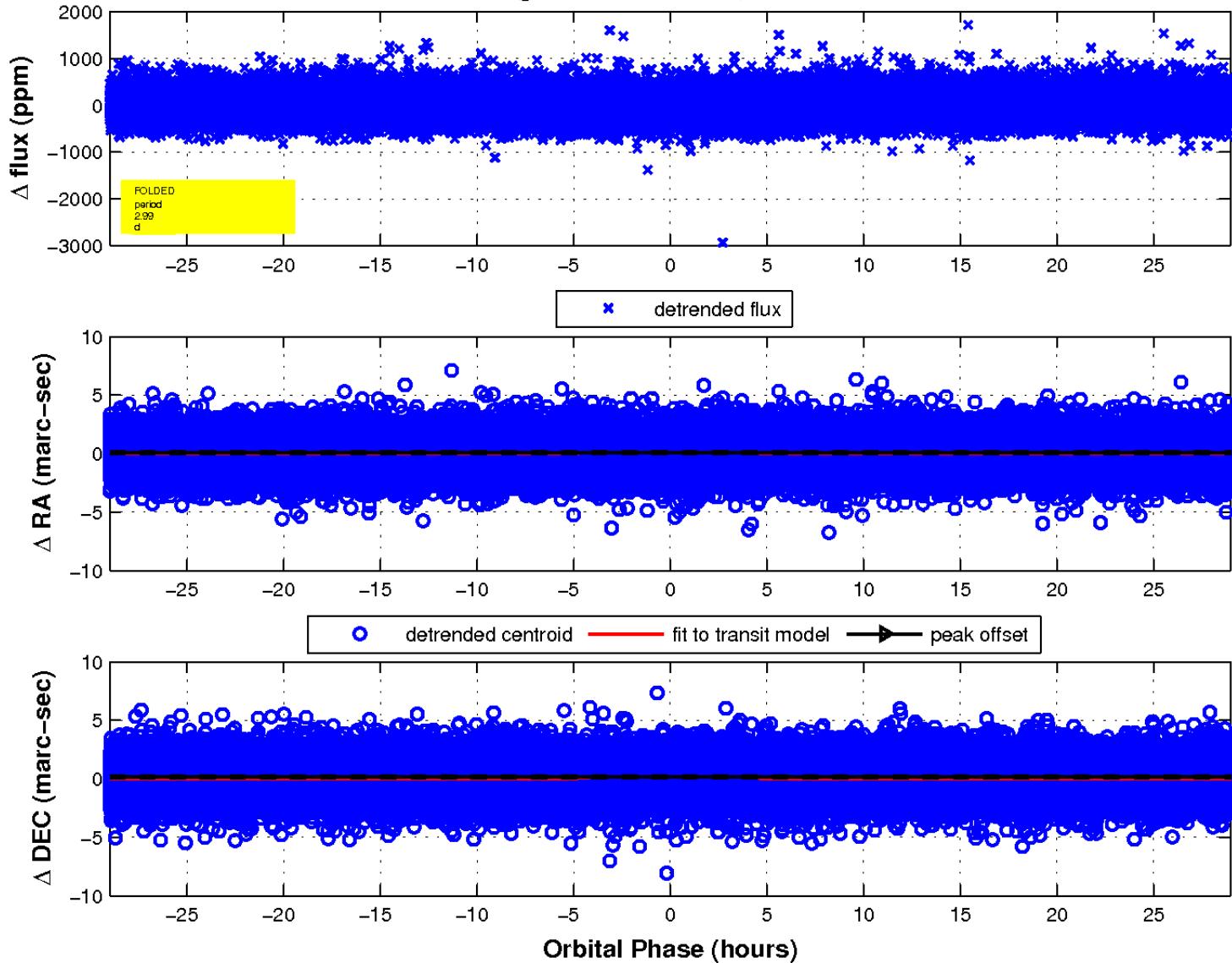
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

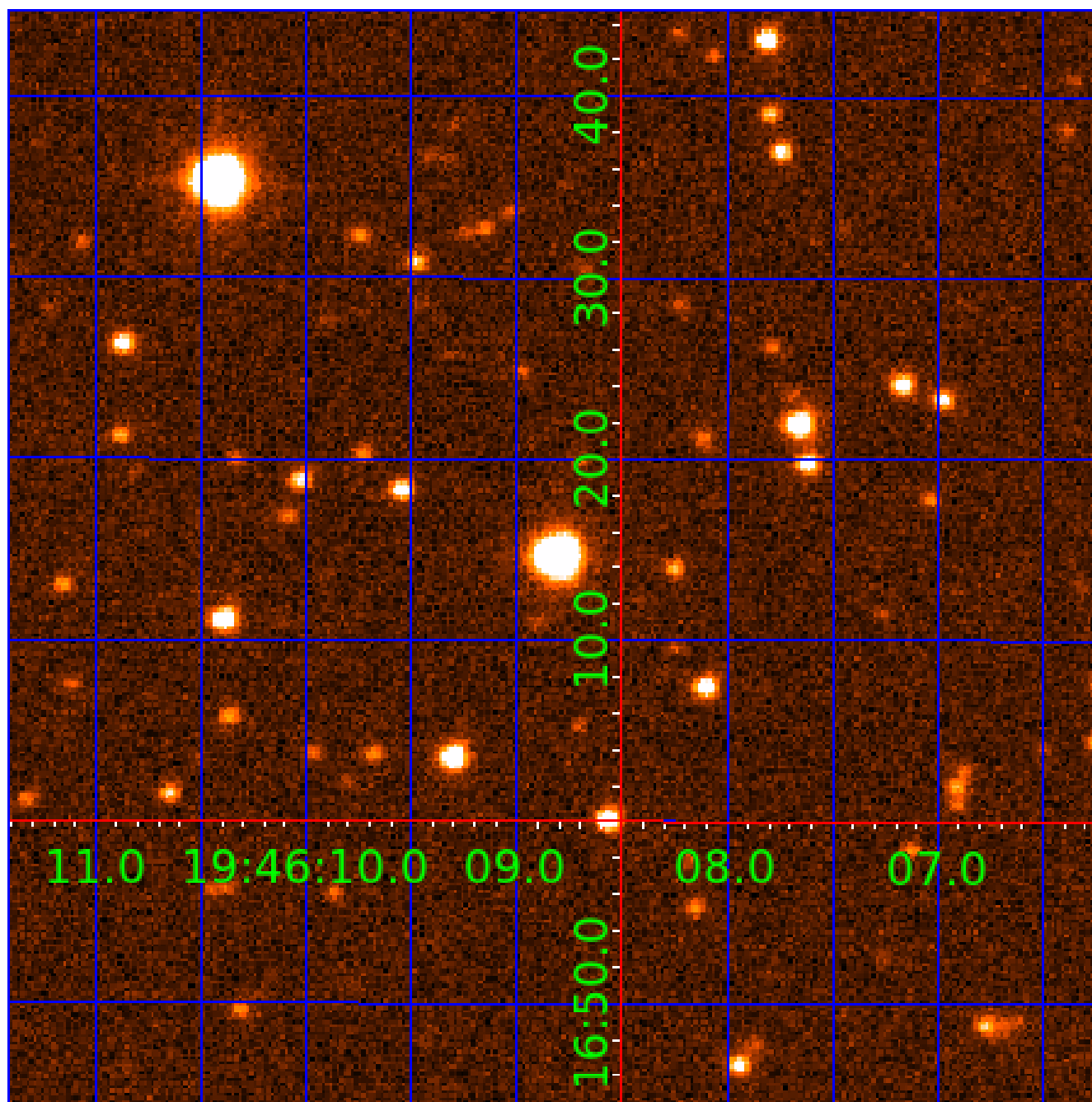


fluxWeightedCentroids, Planet 1 of 2



UKIRT Image

Declination



KIC 004180346

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})
004180346-01	OBS	No	2.990358	134.445280	33.3	9.661	8.1	7.3	1.41	6454	0.91	1655.51
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Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004180346-01	OBS	FP	0.00	1	0	0	0	LPP_DV
004180346-02	OBS	FP	0.00	1	0	0	0	LPP_DV—CENT_FEW_DIFFS

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

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

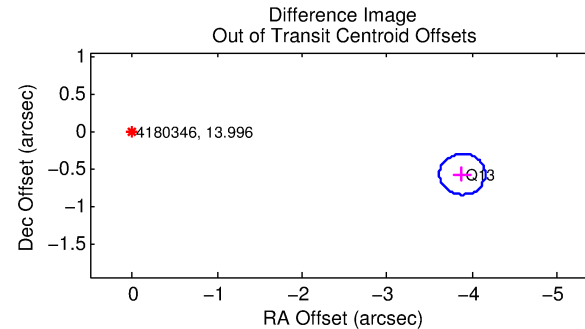
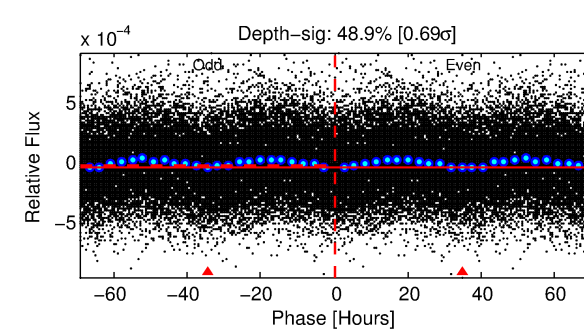
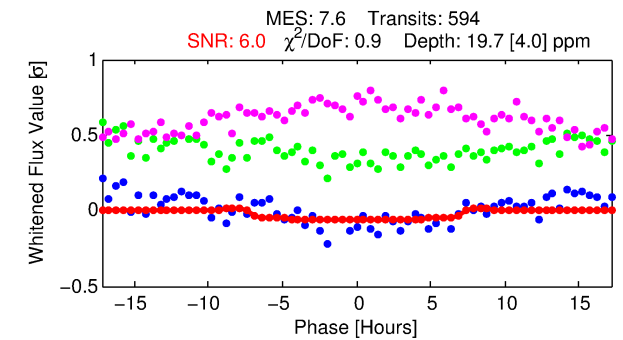
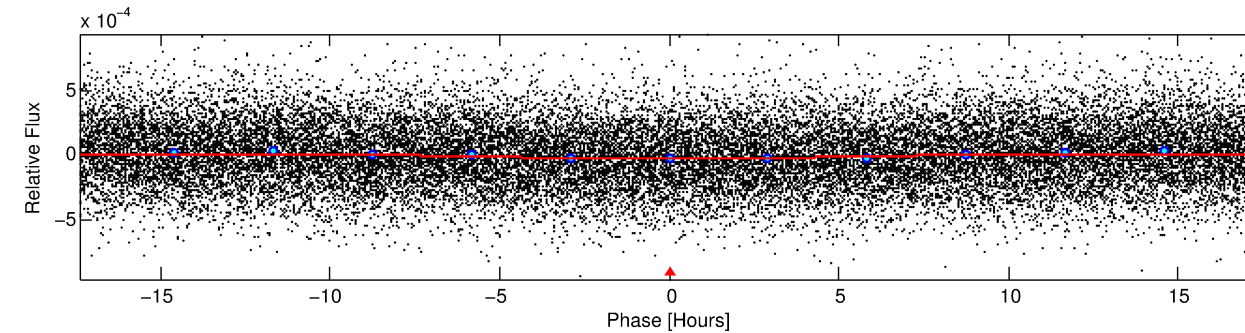
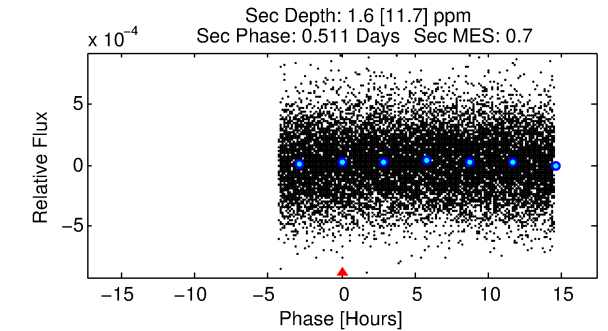
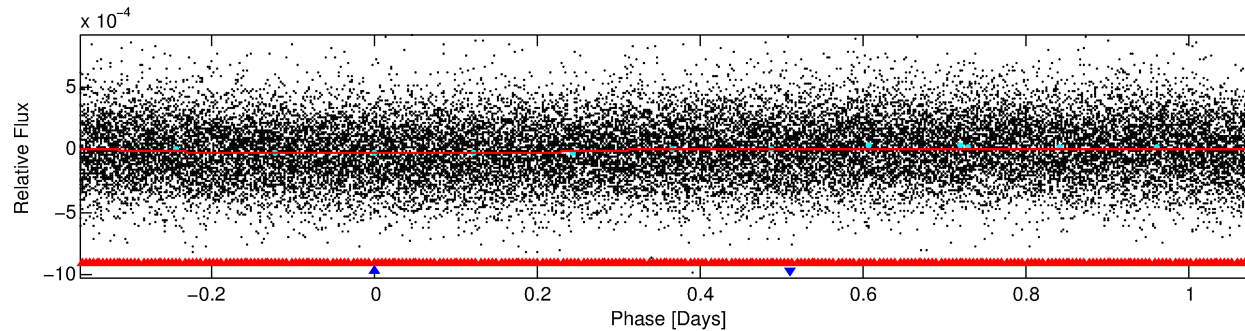
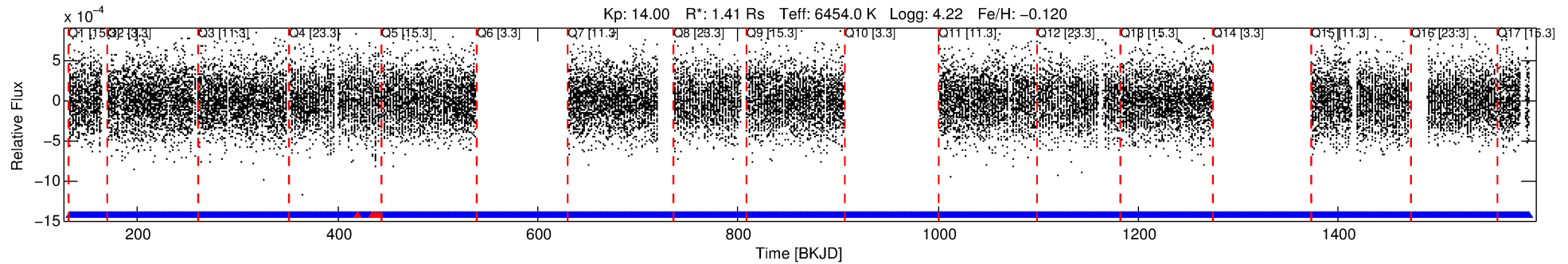
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004180346-02

No Significant Match Found

DV One-Page Summary

KIC: 4180346 Candidate: 2 of 2 Period: 1.450 d



DV Fit Results:

Period = 1.44972 [0.00005] d
Epoch = 132.2840 [0.0180] BKJD
Rp/R* = 0.0041 [0.0057]
a/R* = 1.04 [0.52]
b = 0.09 [78.84]
Seff = 4346.94 [1655.94]
Teq = 2070 [197] K
Rp = 0.63 [0.90] Re
a = 0.0267 [0.0066] AU
Ag = 1.61 [12.39] [0.05 σ]
Teffp = 3606 [6929] K [0.22 σ]

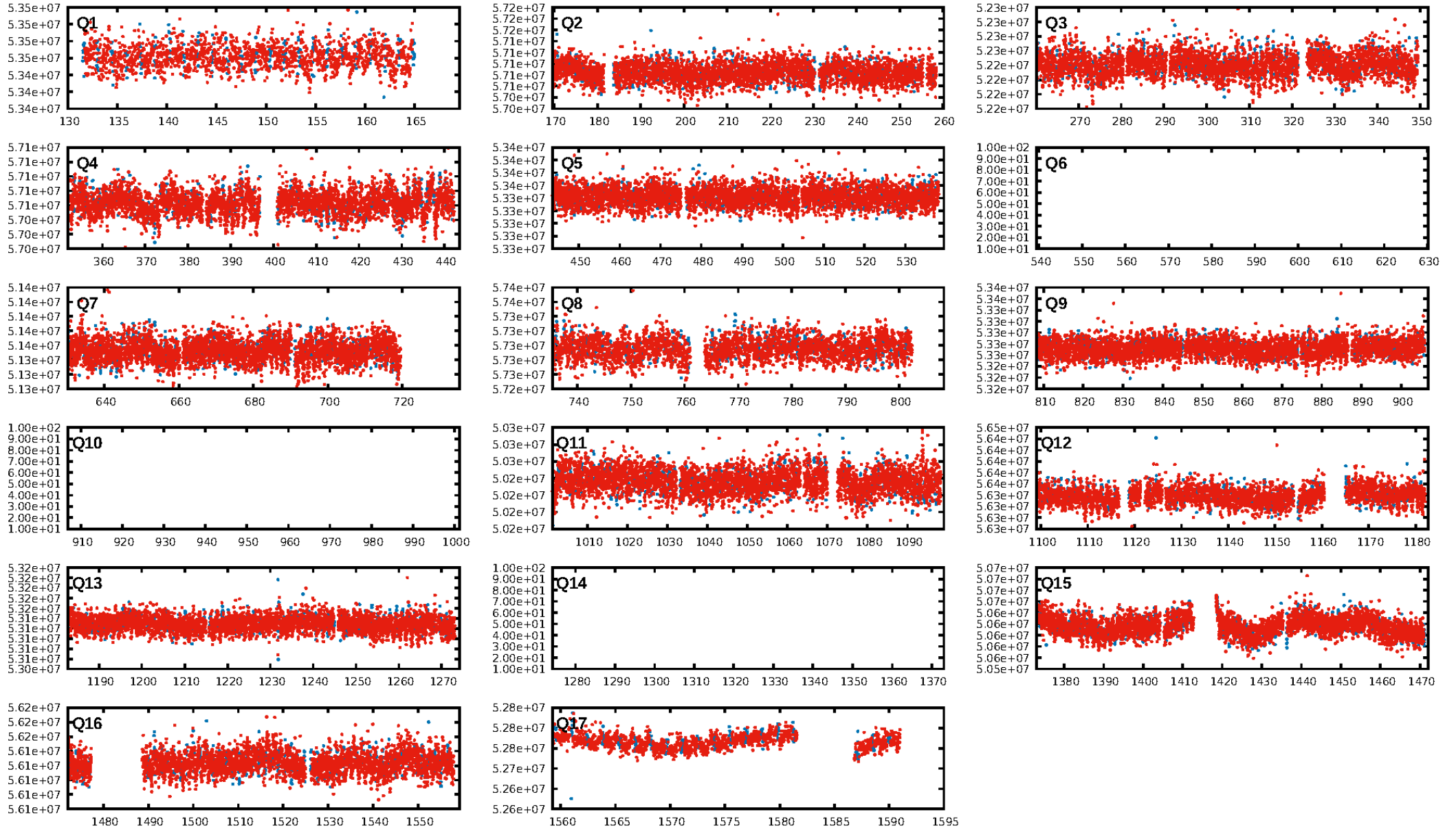
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 96.5% [2.11 σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 0.99 [557/561]
GhostDiagnostic-chr: 5.941
Centroid-sig: 4.2%
Centroid-so: 2.658 arcsec [1.56 σ]
OotOffset-rm: 3.931 arcsec [43.47 σ]
KicOffset-rm: 4.088 arcsec [45.21 σ]
OotOffset-st: 0/0/0/1 [1]
KicOffset-st: 0/0/0/1 [1]
DiffImageQuality-fgm: 0.00 [0/1]
DiffImageOverlap-fno: 1.00 [14/14]

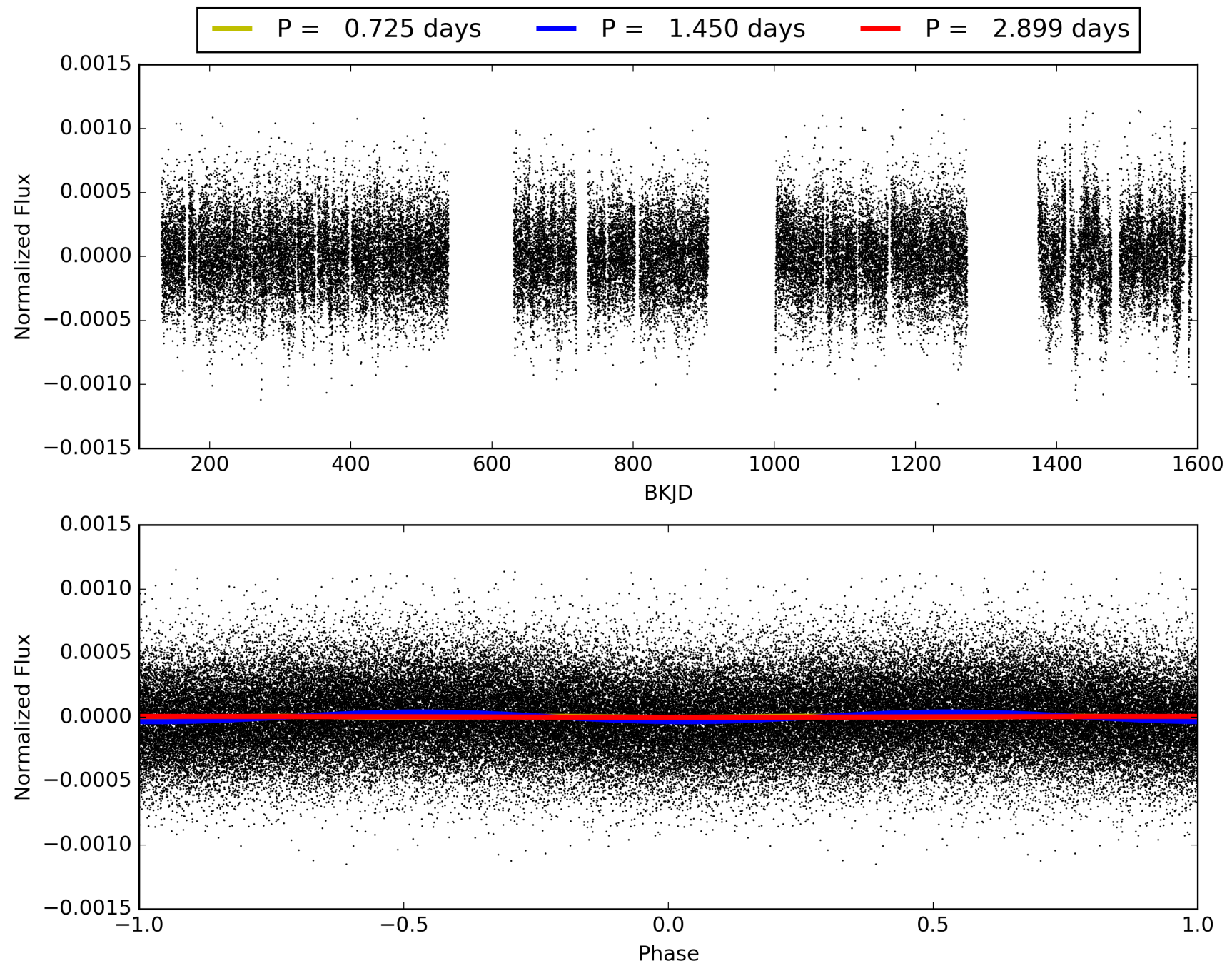
Software Revision: svn-ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 02:06:01 Z

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

TCE 004180346-02, PDC Light Curves

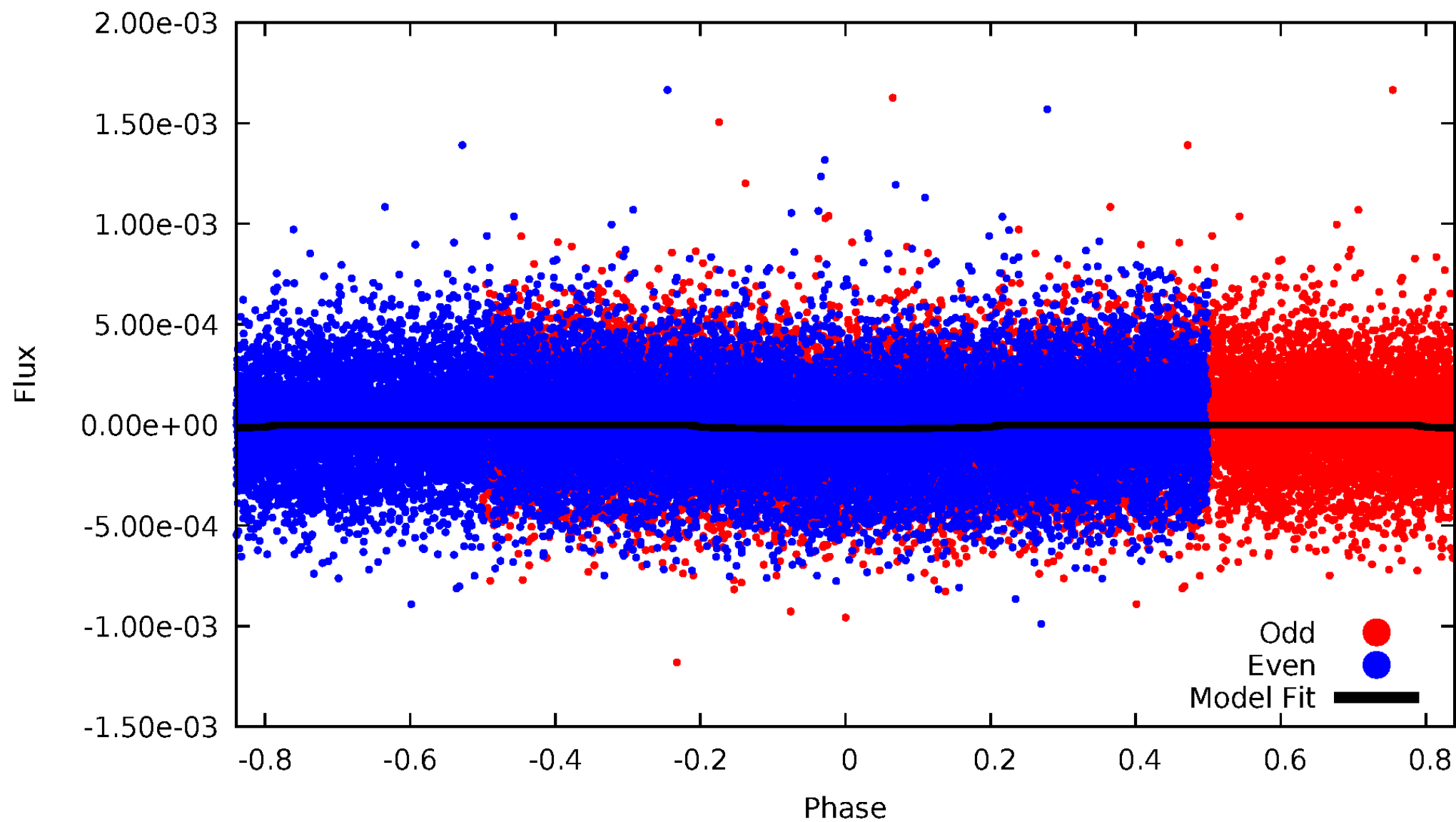


TCE 004180346-02



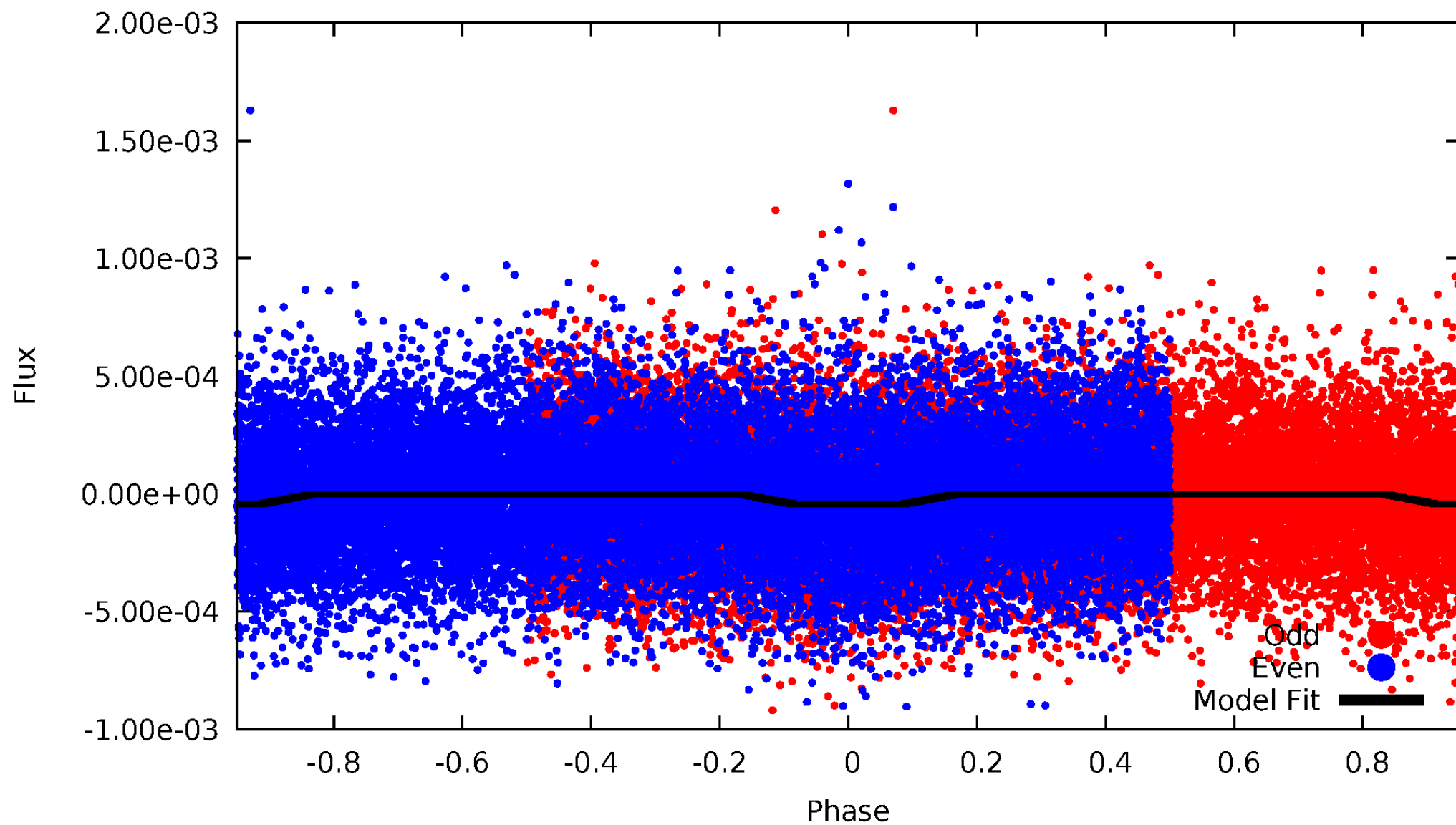
DV Odd/Even

TCE 004180346-02



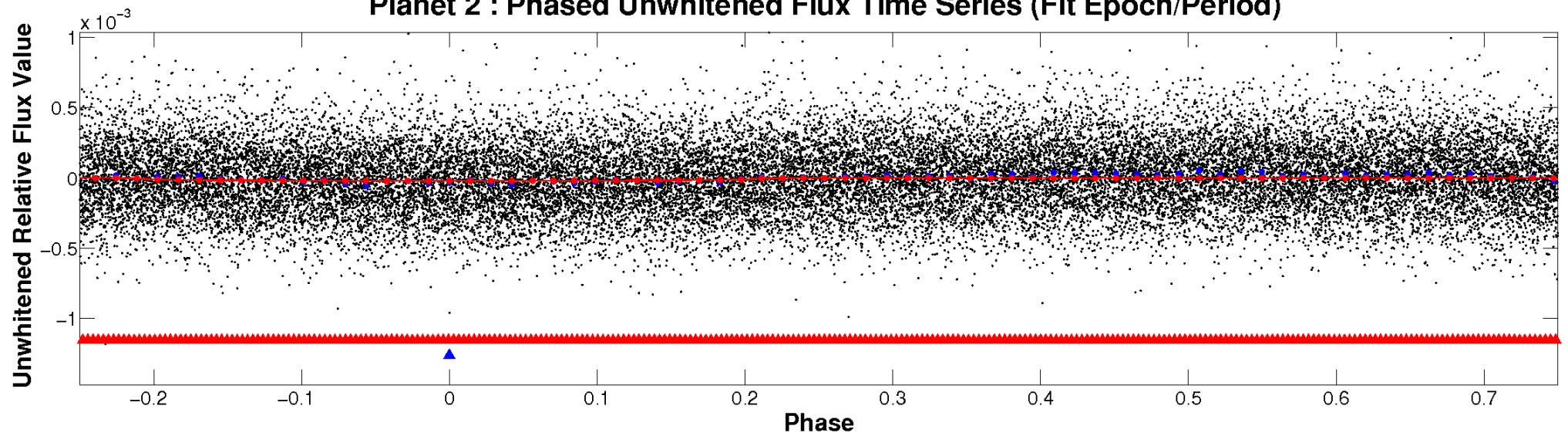
ALT Odd/Even

TCE 004180346-02

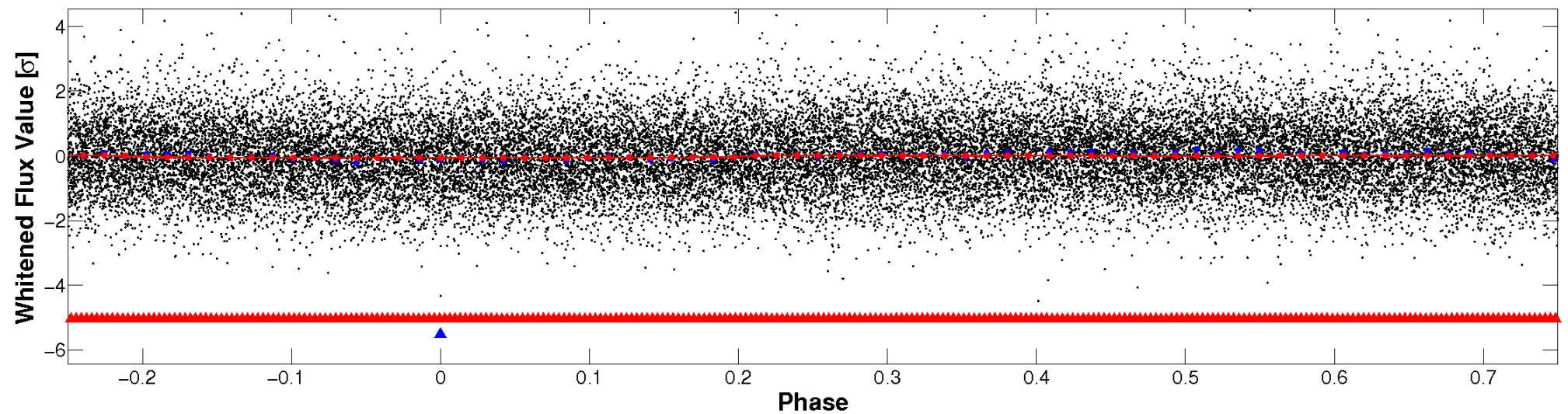


Non-Whitened Vs. Whitened Light Curve

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

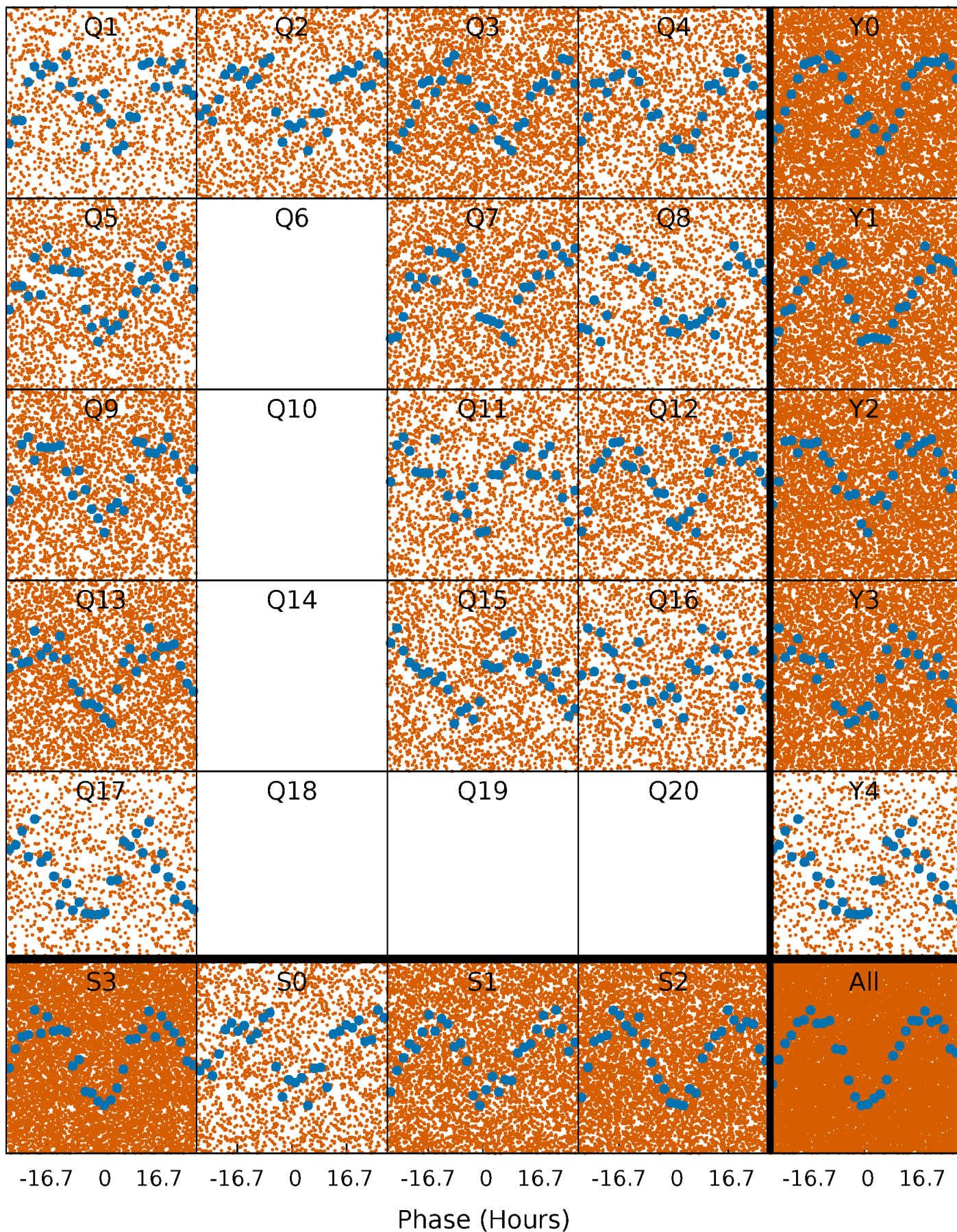


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



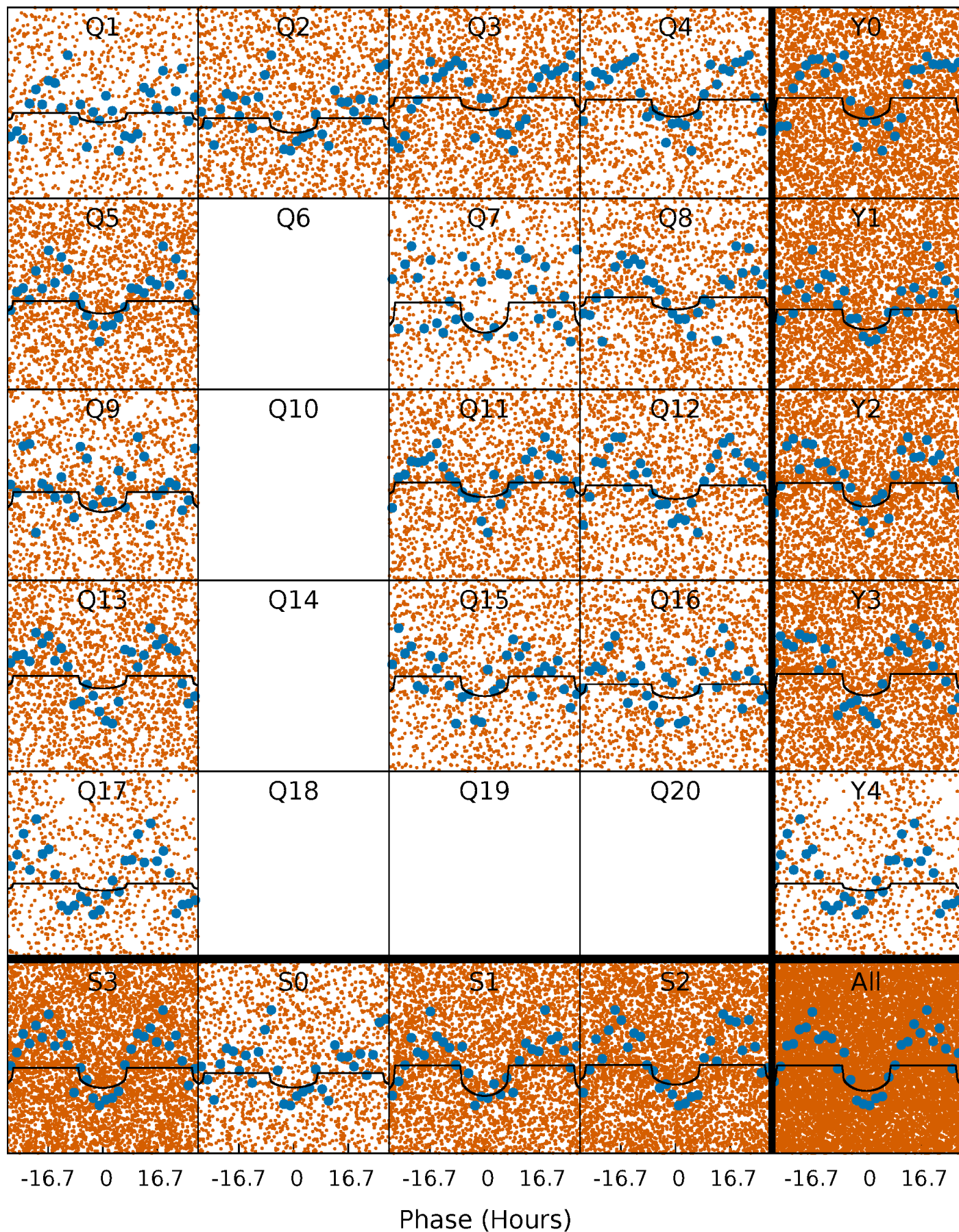
PDC Quarter-Phased Transit Curves

TCE 004180346-02 P= 1.449718 Days $T_0=132.284044$ (BKJD)



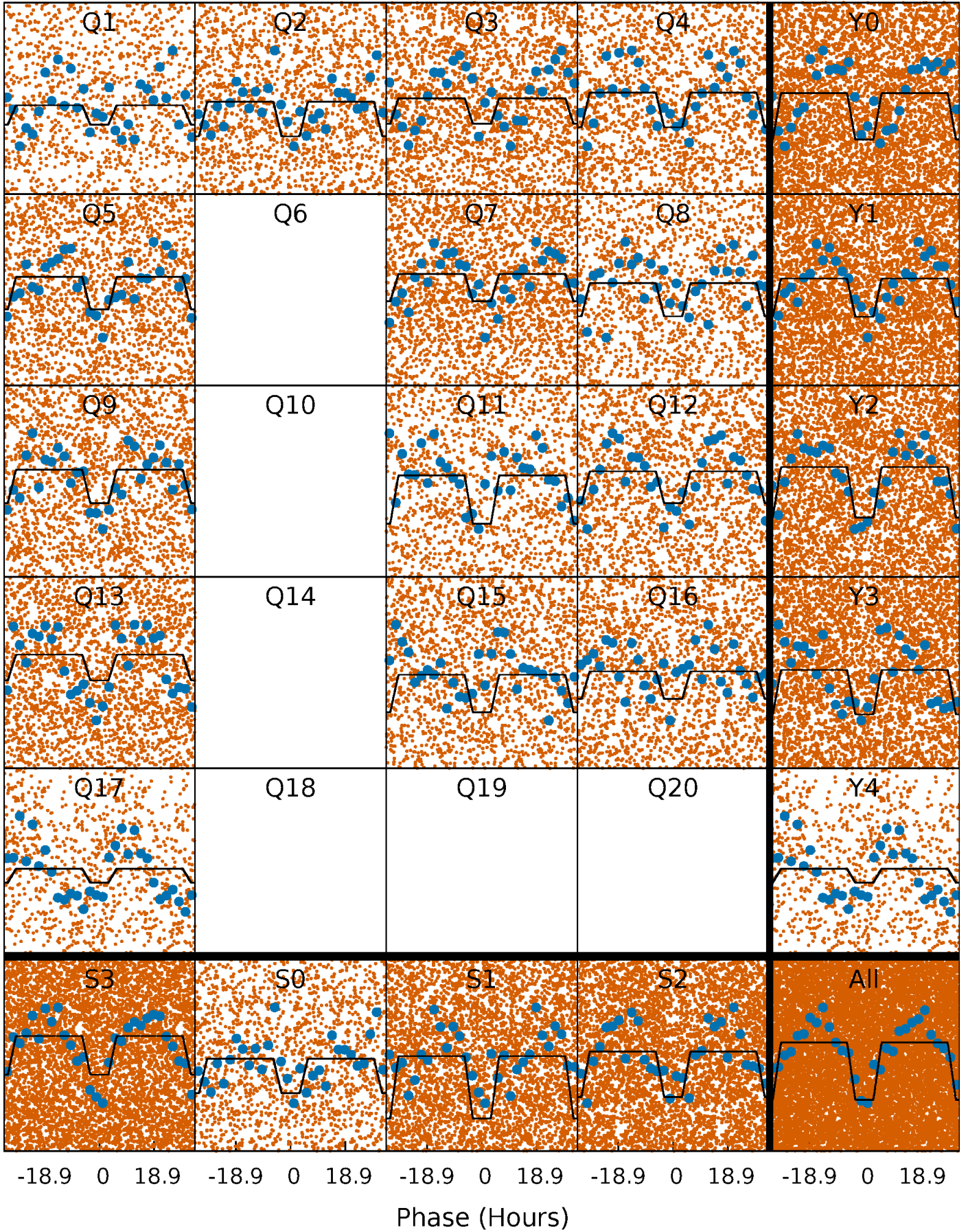
DV Quarter-Phased Transit Curves

TCE 004180346-02 P= 1.449718 Days $T_0=132.284044$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

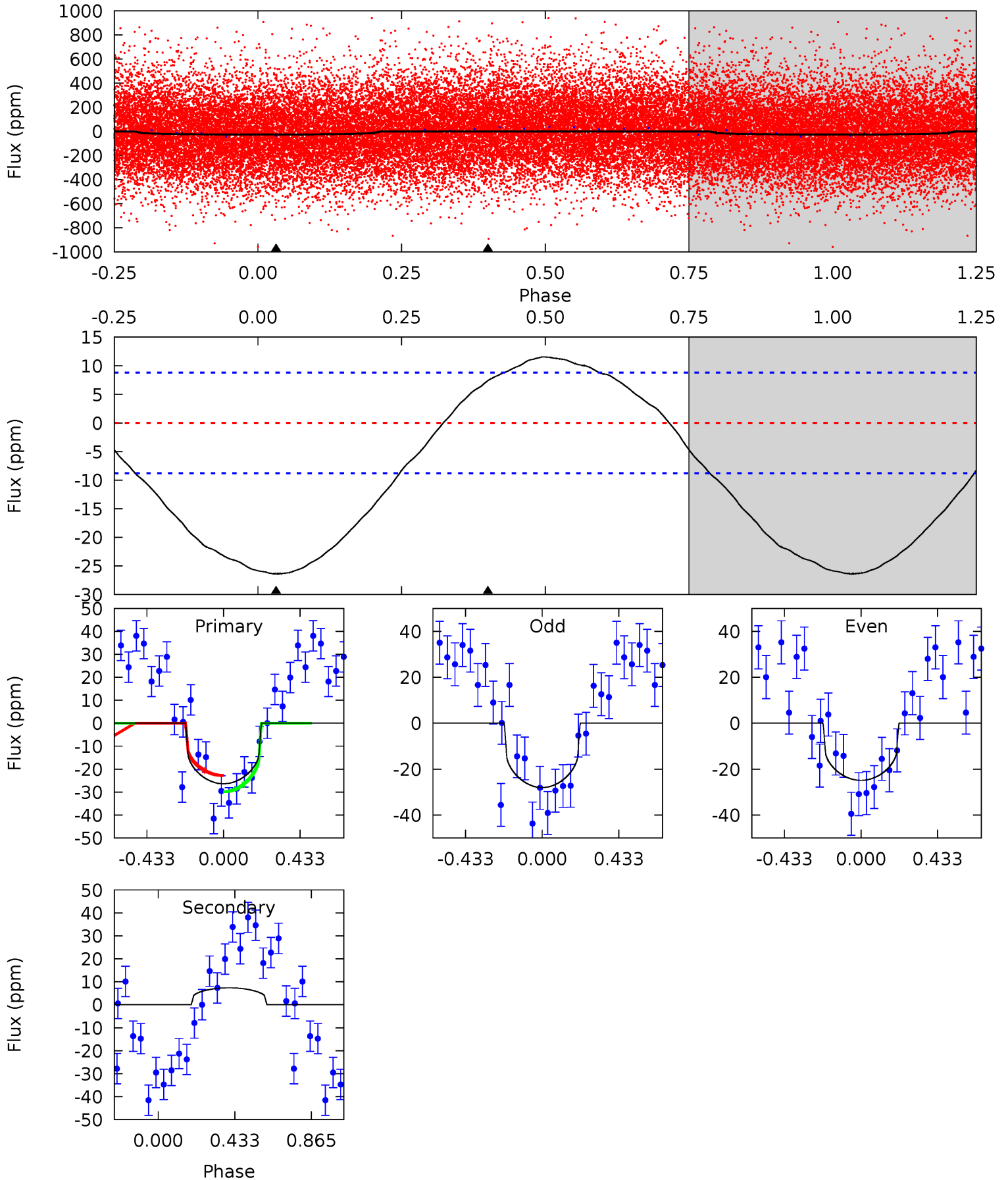
TCE 004180346-02 P= 1.449926 Days $T_0=132.203699$ (BKJD)



DV Model-Shift Uniqueness Test

004180346-02, P = 1.449718 Days, E = 130.834326 Days

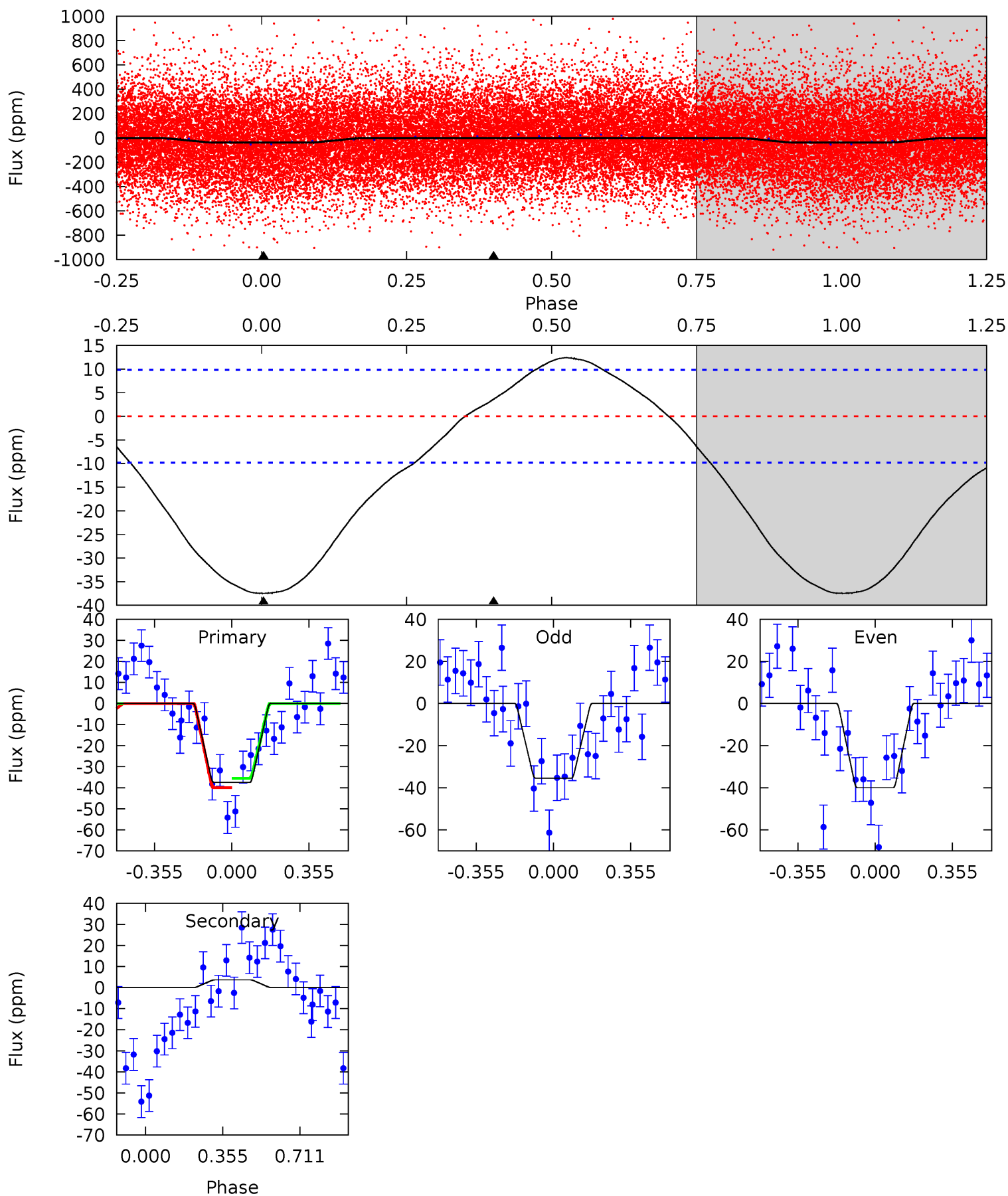
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.7	-3.57	0	0	4.25	0.78	1.61	12.7	12.7	-3.57	-3.57	0.75	1.13	0.30	1.71



Alt Model-Shift Uniqueness Test

004180346-02, P = 1.449926 Days, E = 130.753773 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
16.4	-1.59	0	0	4.29	0.92	1.48	16.4	16.4	-1.59	-1.59	0.99	1.04	0.25	0.94



Stellar Parameters For KIC 004180346

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6454^{+155}_{-214}	$4.220^{+0.158}_{-0.193}$	$-0.120^{+0.250}_{-0.300}$	$1.411^{+0.422}_{-0.307}$	$1.208^{+0.188}_{-0.188}$	$0.606^{+0.488}_{-0.315}$
	+2%/-3%	+4%/-5%	+208%/-250%	+30%/-22%	+16%/-16%	+81%/-52%
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 004180346-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	7 ± 2	$0.90^{+0.80}_{-0.60}$	2906^{+210}_{-181}	-4654^{+835}_{-3140}	$-3.481^{+2.537}_{-25.041}$
Alt.	4 ± 2	$1.15^{+0.85}_{-0.67}$	2898^{+228}_{-198}	-3774^{+493}_{-1410}	$-0.904^{+0.701}_{-5.298}$

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

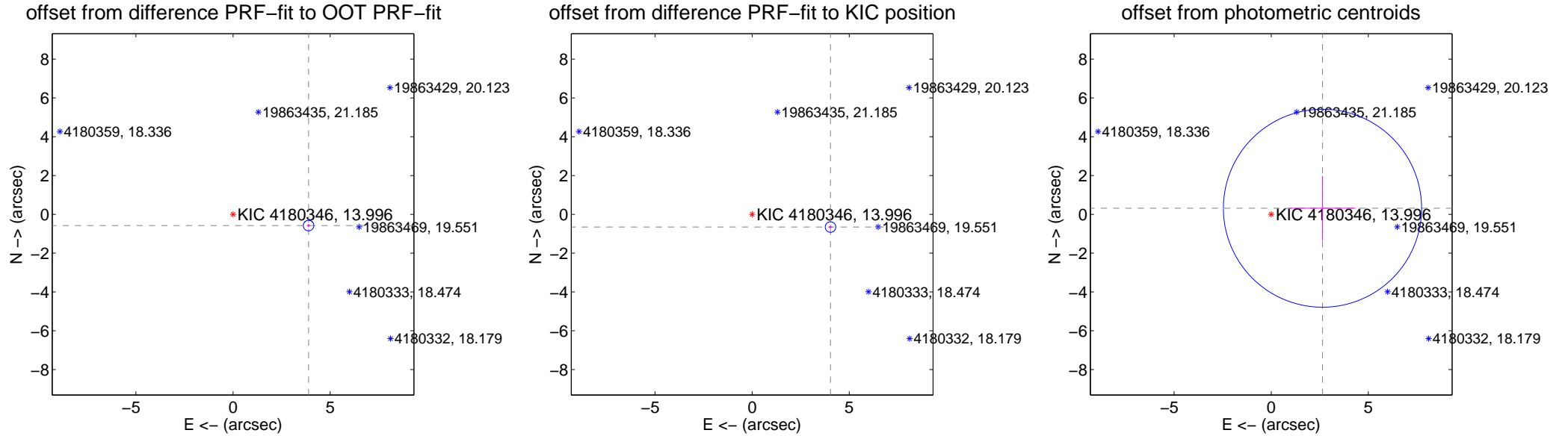
DV Centroid Data

Supplemental centroid analysis for 004180346-02. Kepler magnitude: 14.00. Transit SNR 6.03

There are 0 quarters with good PRF difference image offsets

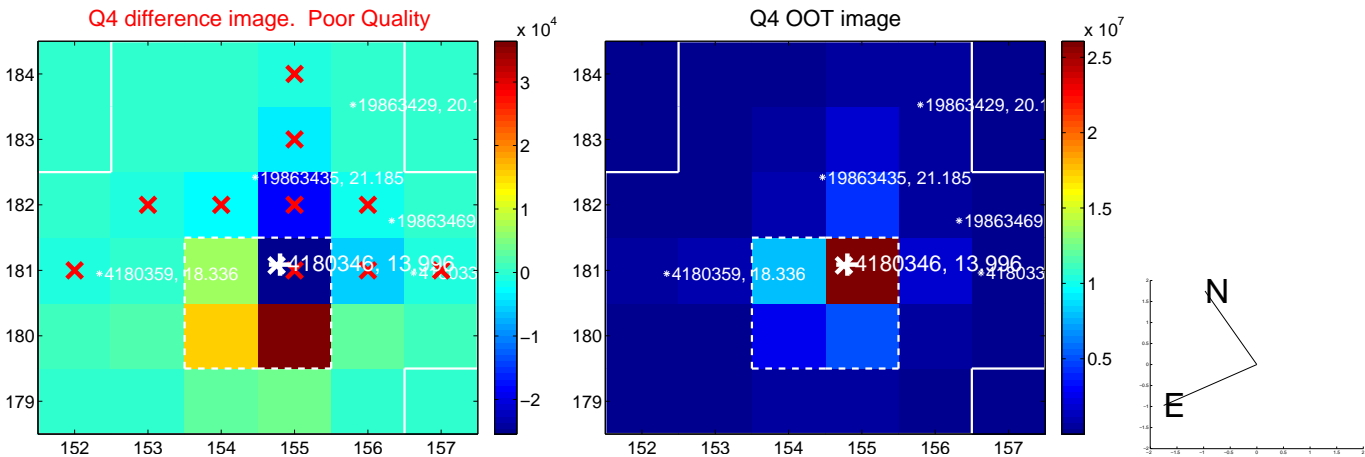
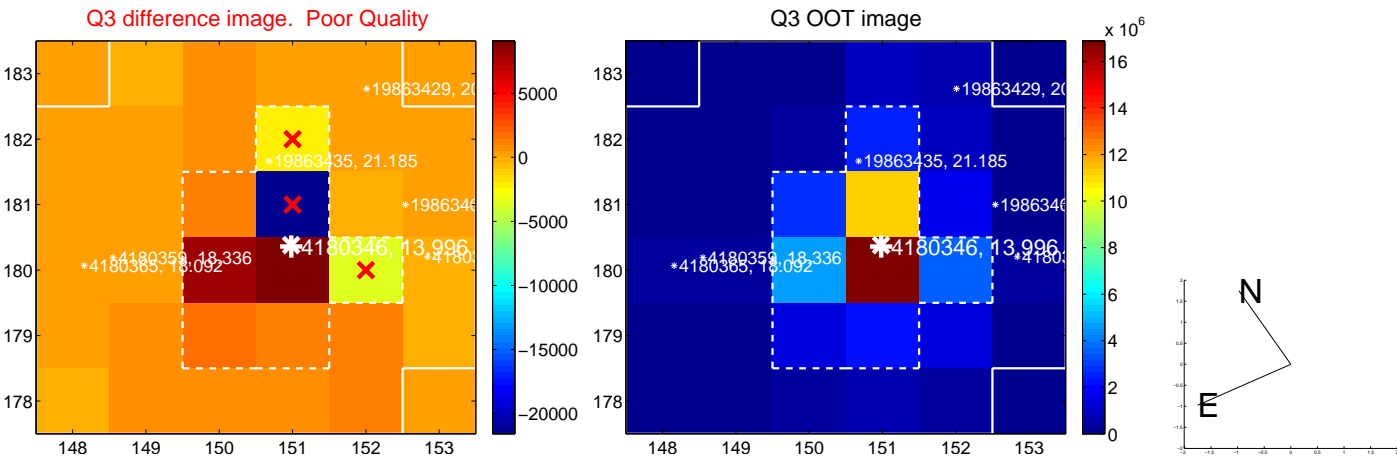
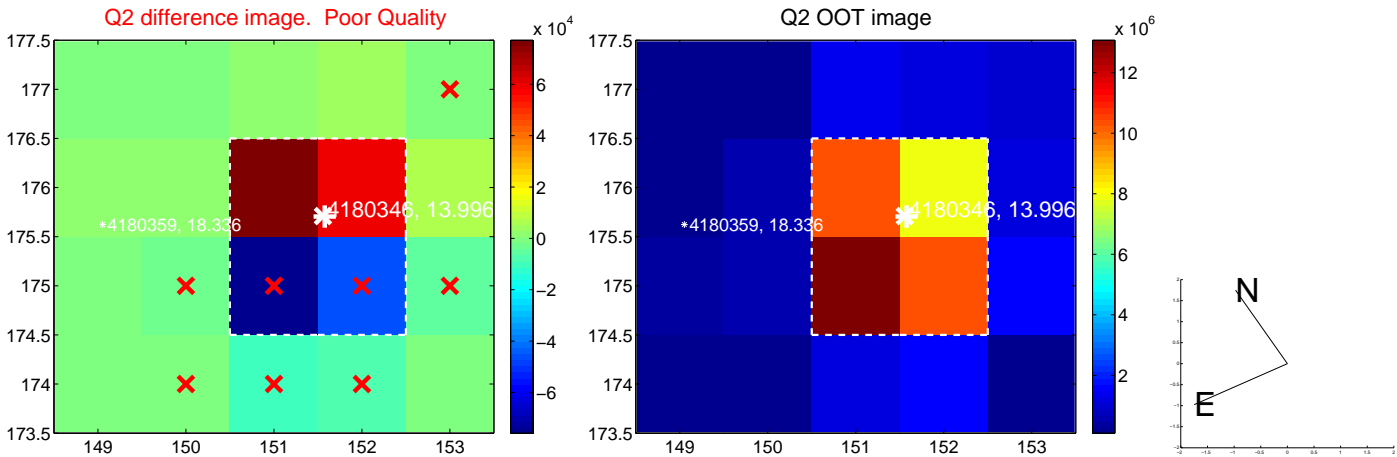
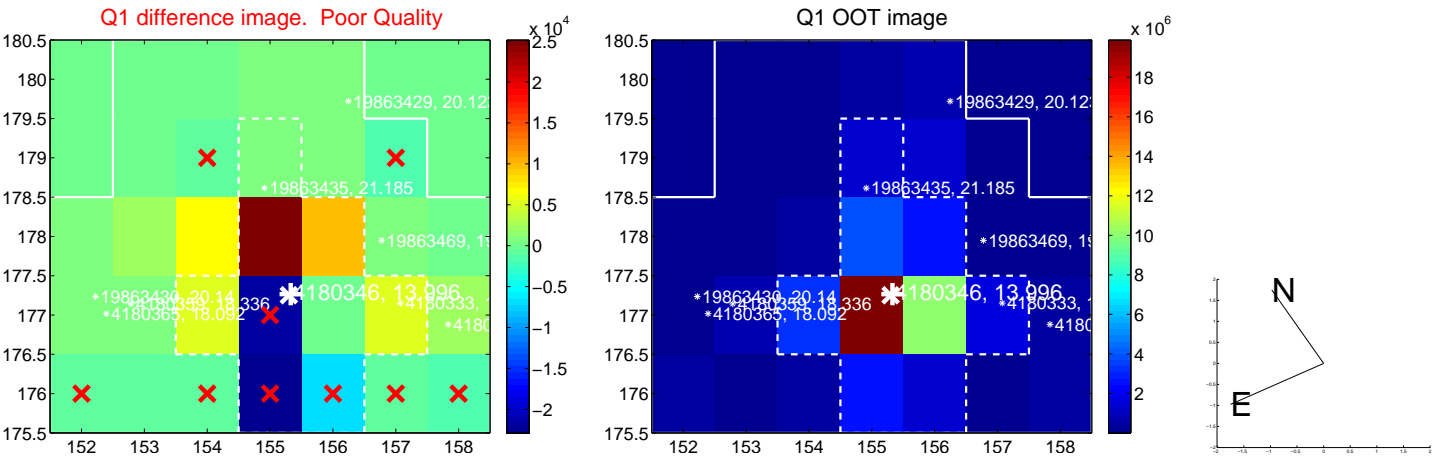
The direct PRF centroid is offset from the target star catalog position by about 0.17 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	3.931 ± 0.090	43.47	-3.888 ± 0.090	-0.580 ± 0.088
PRF-fit source offset from KIC position	4.088 ± 0.090	45.21	-4.035 ± 0.090	-0.656 ± 0.088
photometric centroid source offset	2.66 ± 1.70	1.56	-2.64 ± 1.70	0.31 ± 1.67

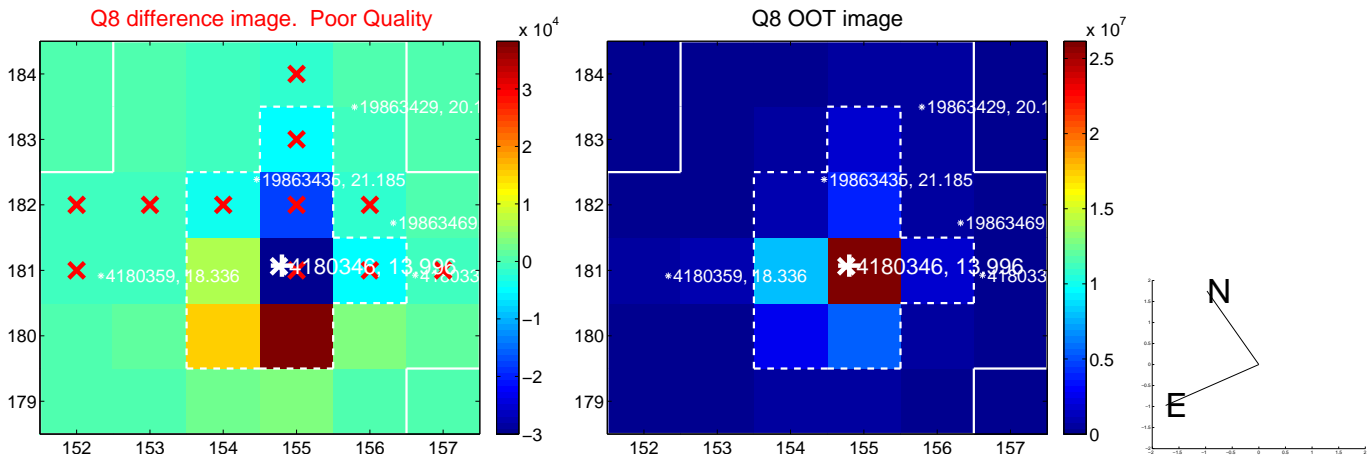
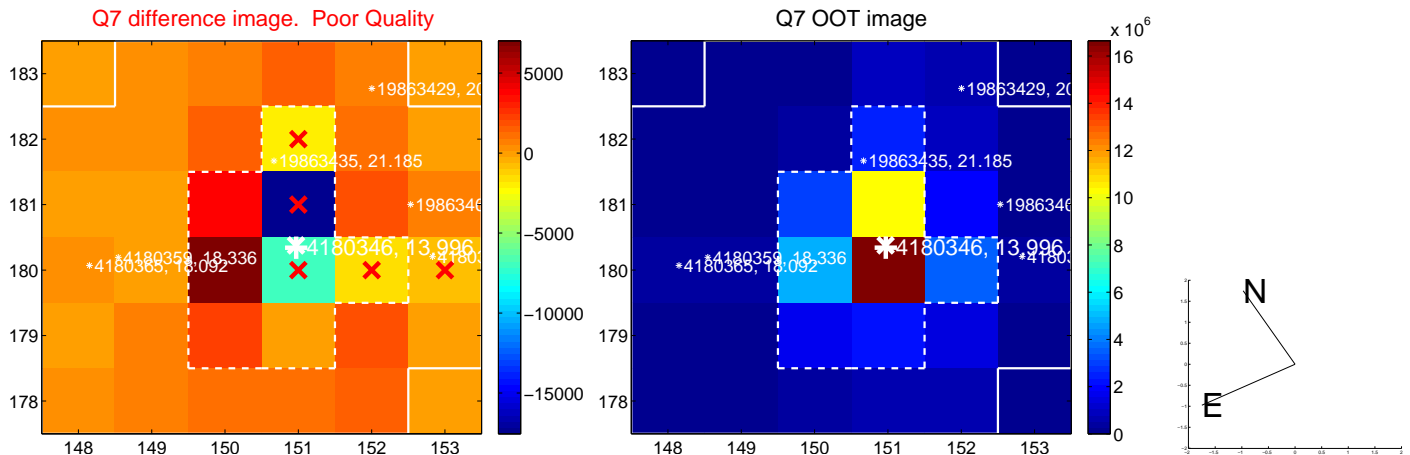
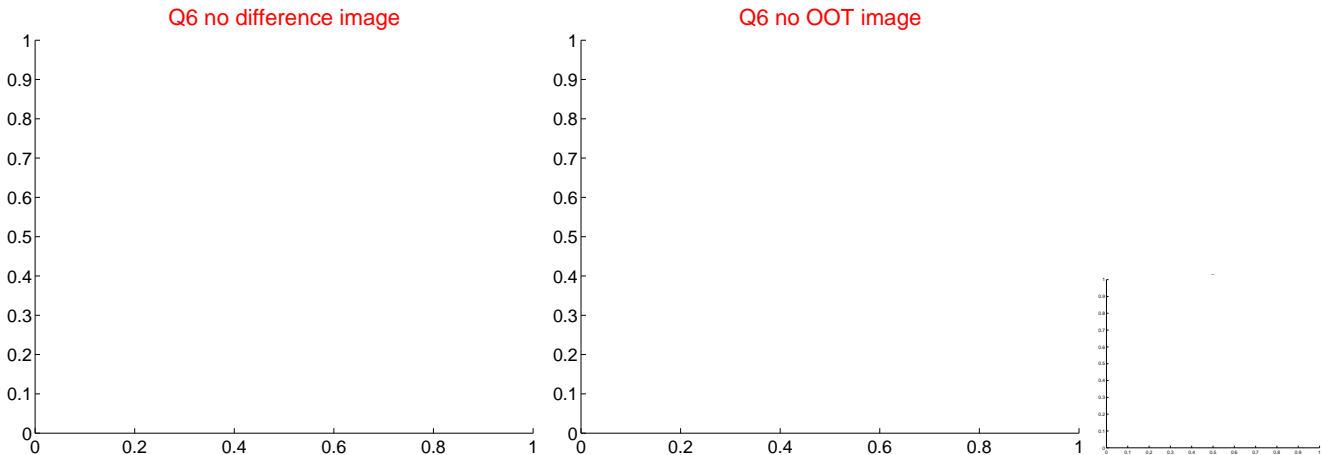
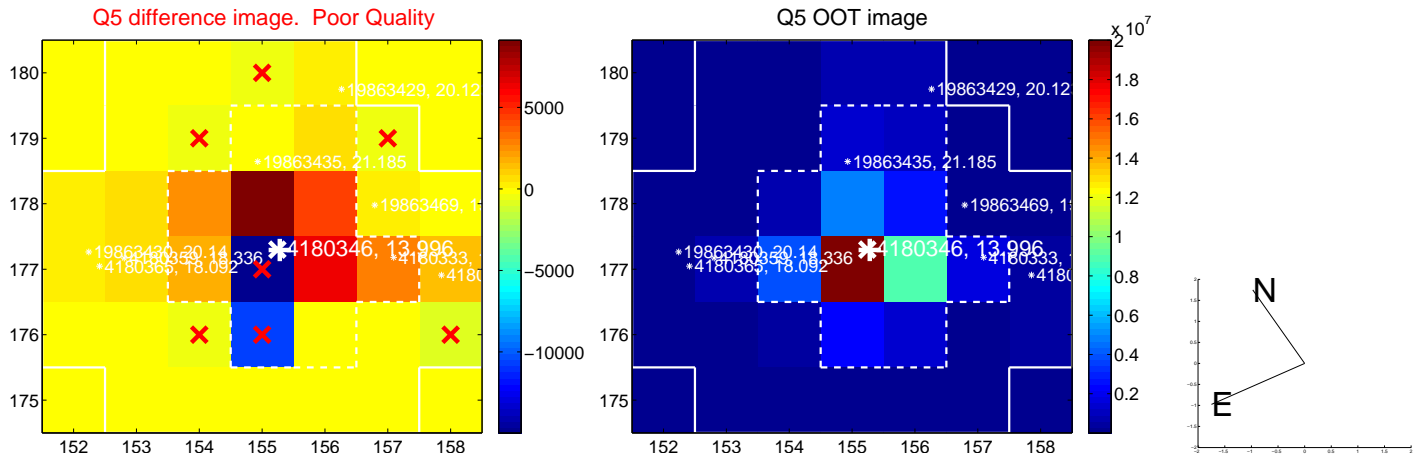


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

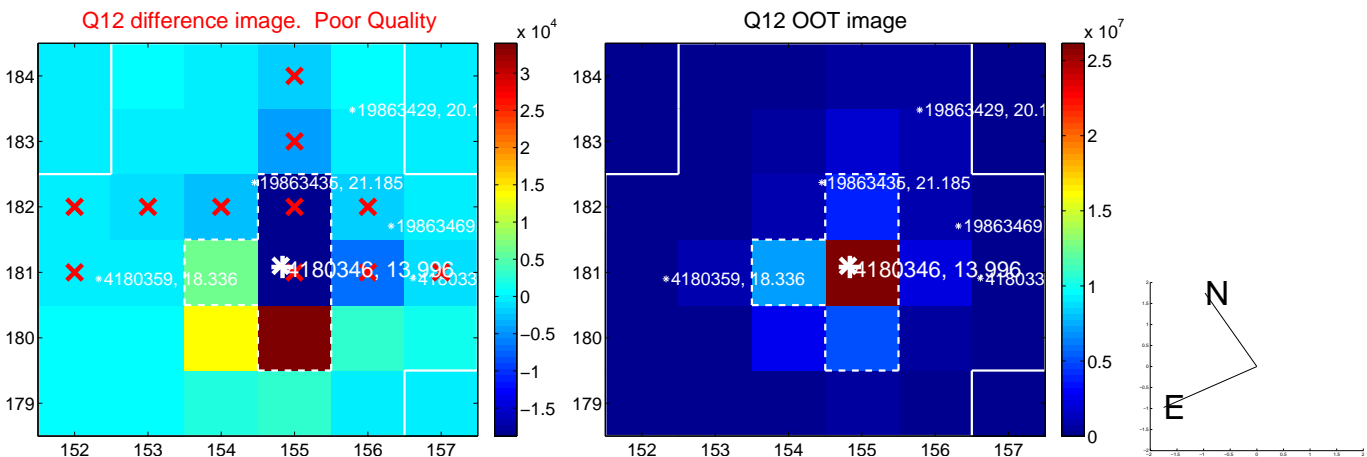
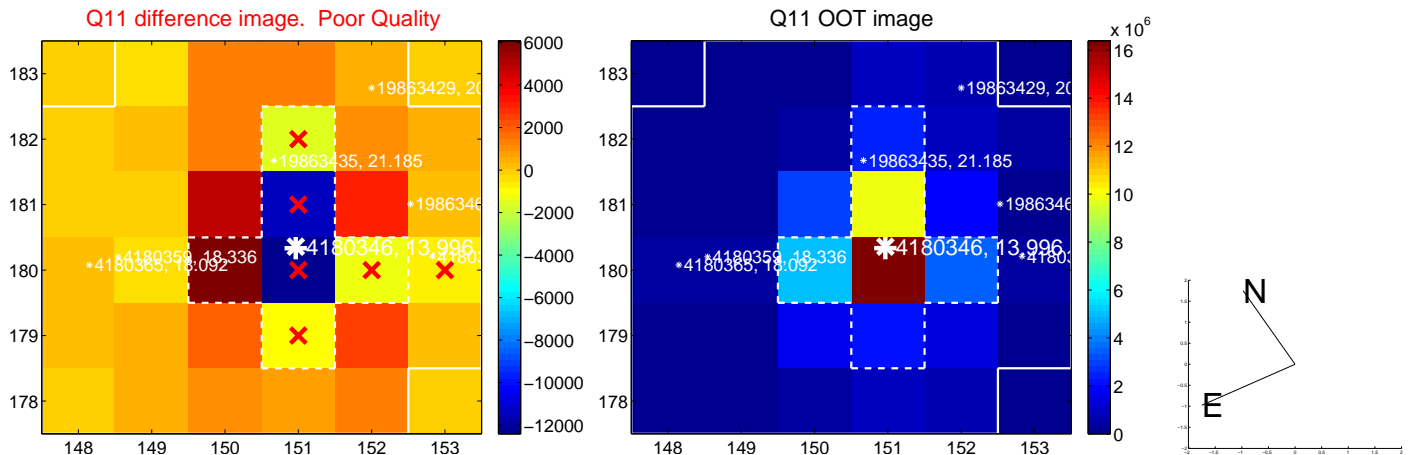
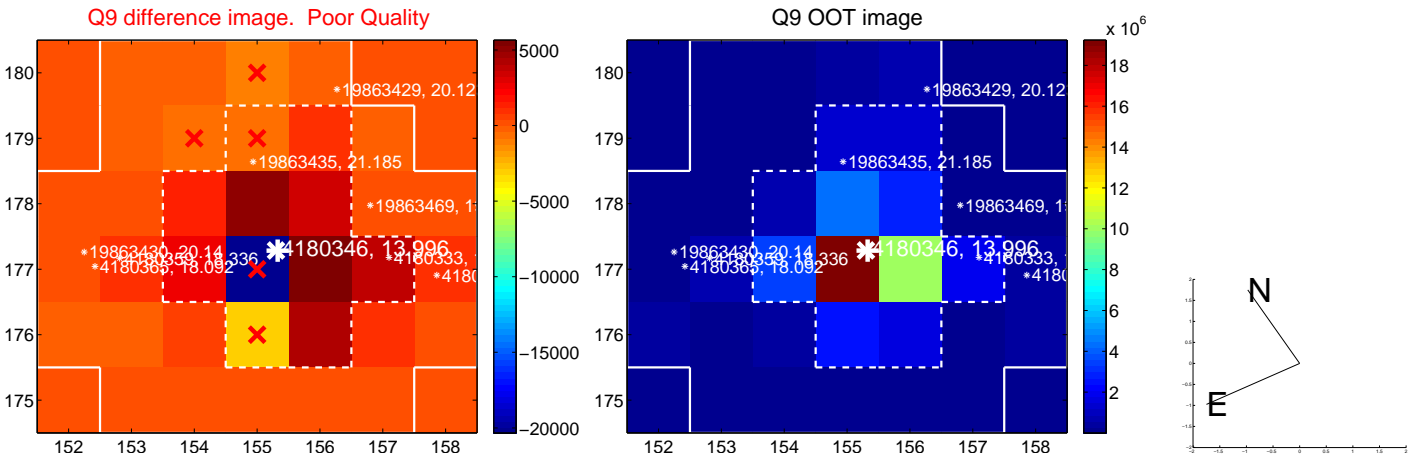
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



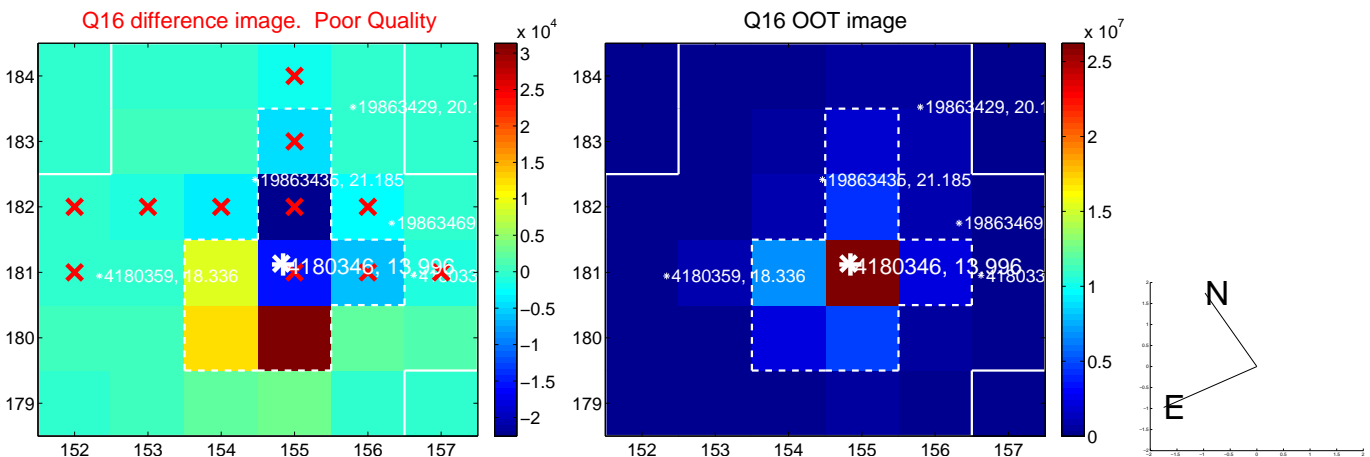
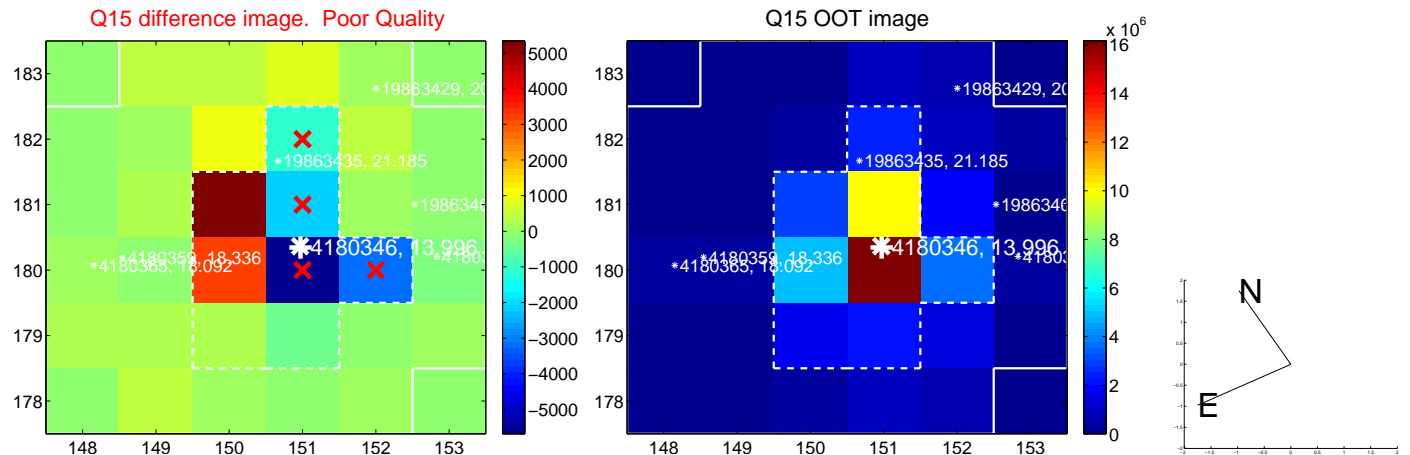
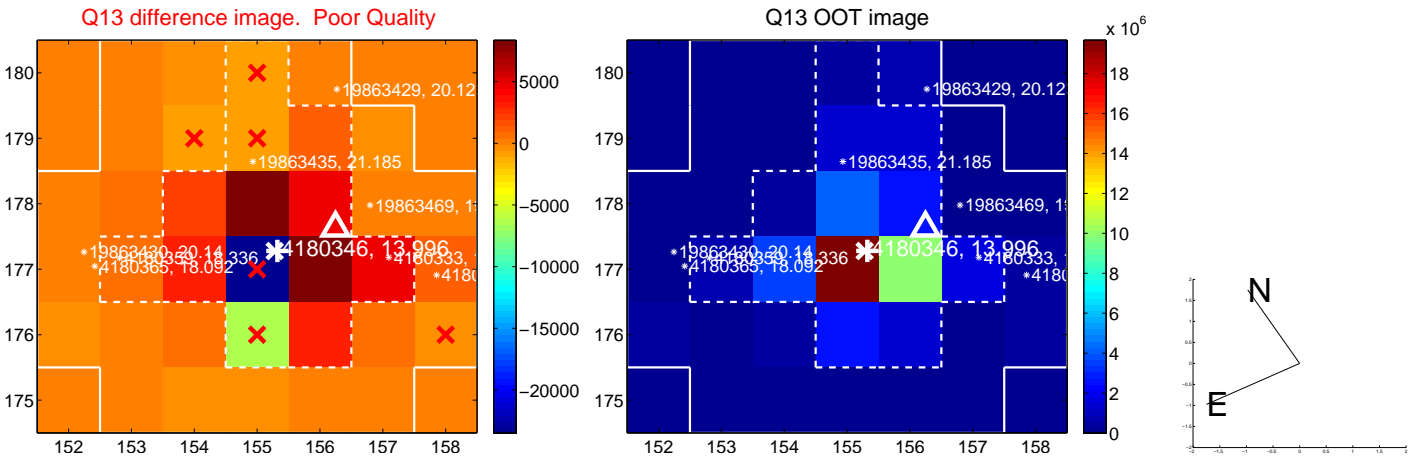
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



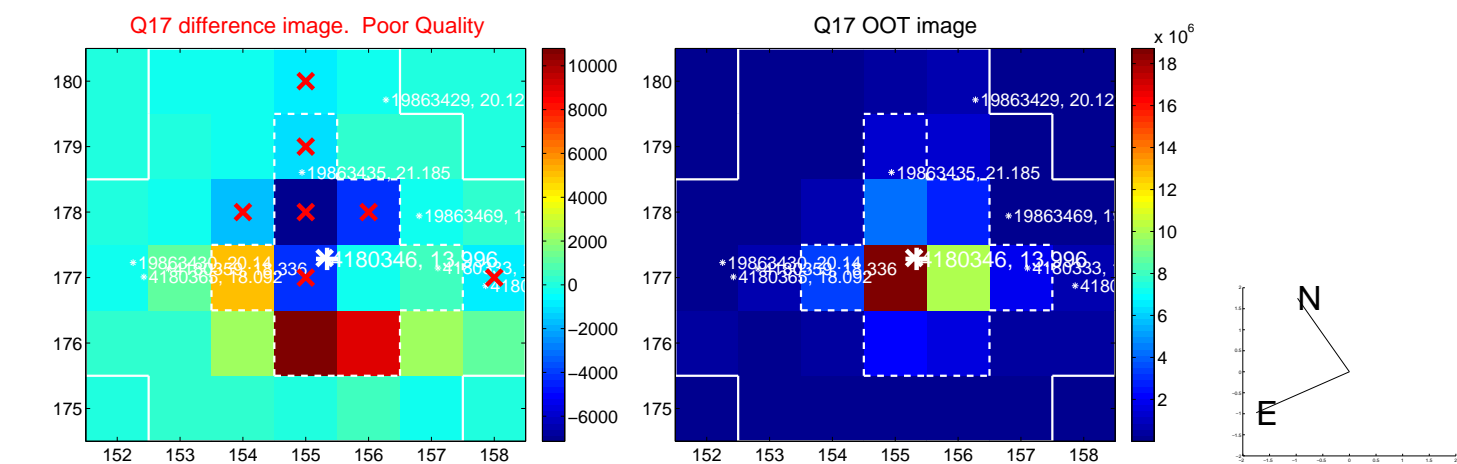
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



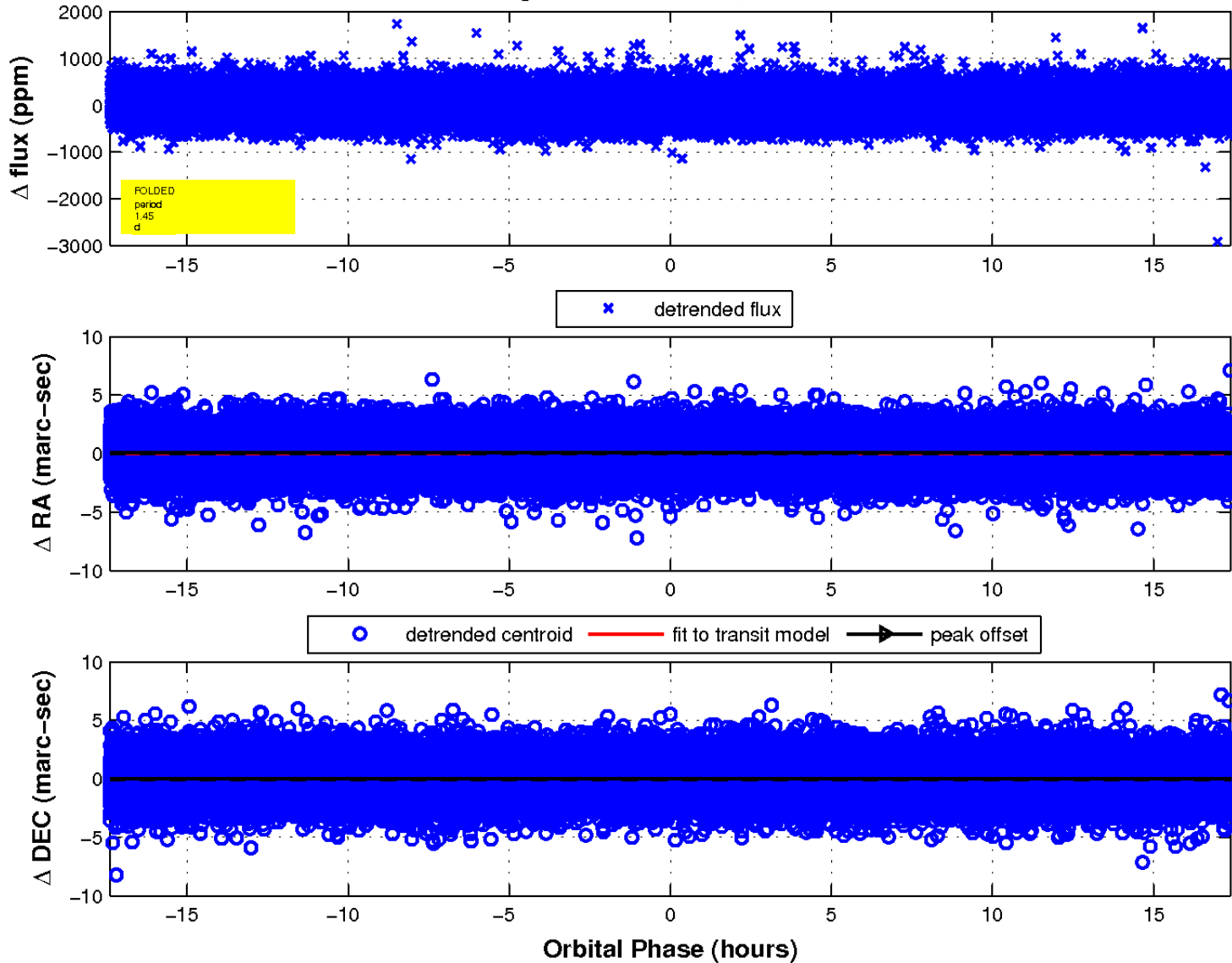
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 2 of 2



UKIRT Image

Declination

