

KIC 001996180

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})
001996180-01	OBS	2534.01	3.025559	134.373248	118.6	3.059	20.5	20.7	1.26	6123	1.62	1148.01
001996180-02	OBS	2534.02	5.422070	133.454744	84.8	2.942	8.7	10.3	1.26	6123	1.35	527.39

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
001996180-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT
001996180-02	OBS	PC	0.92	0	0	0	0	NO_COMMENT

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

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

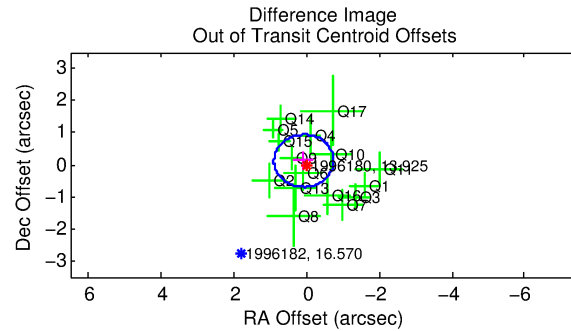
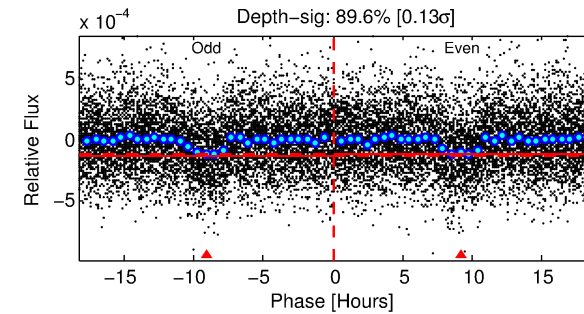
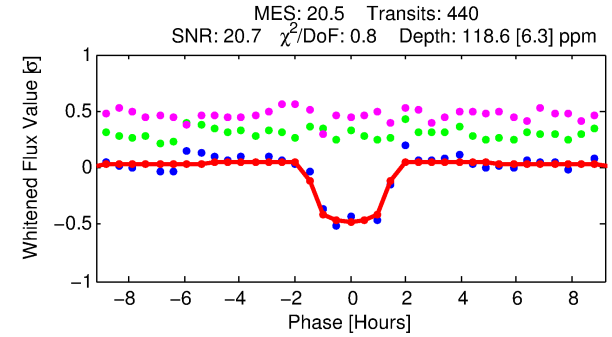
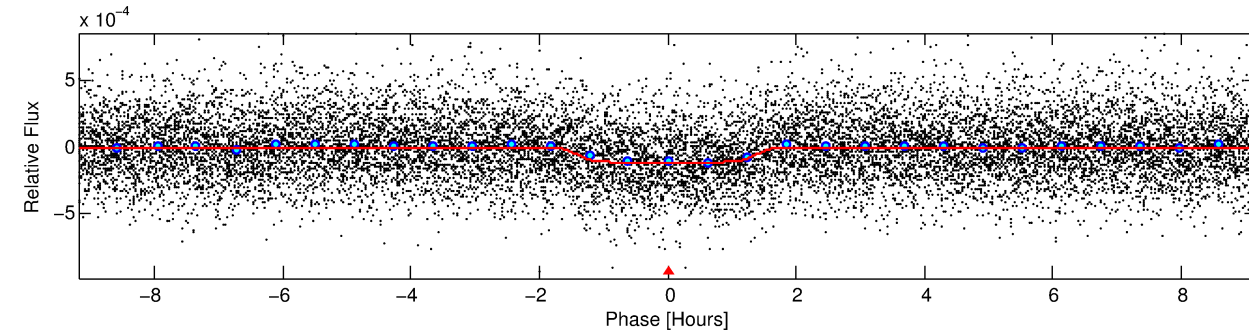
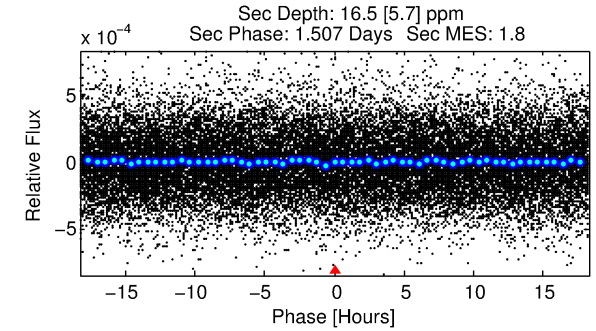
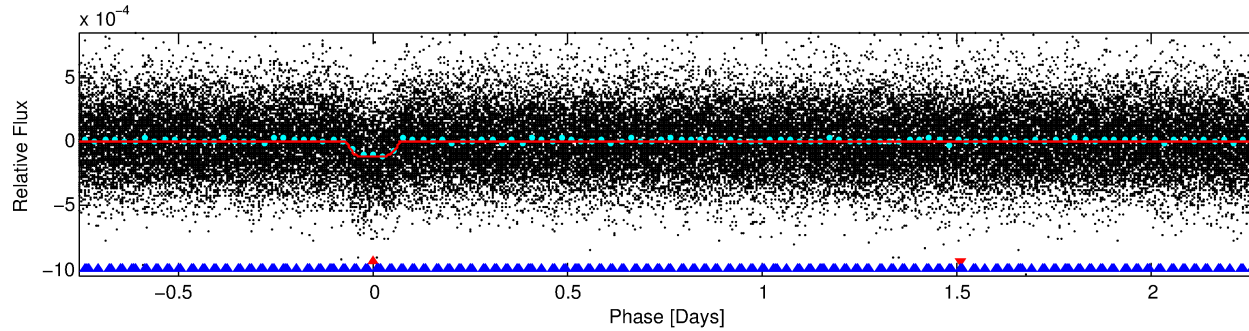
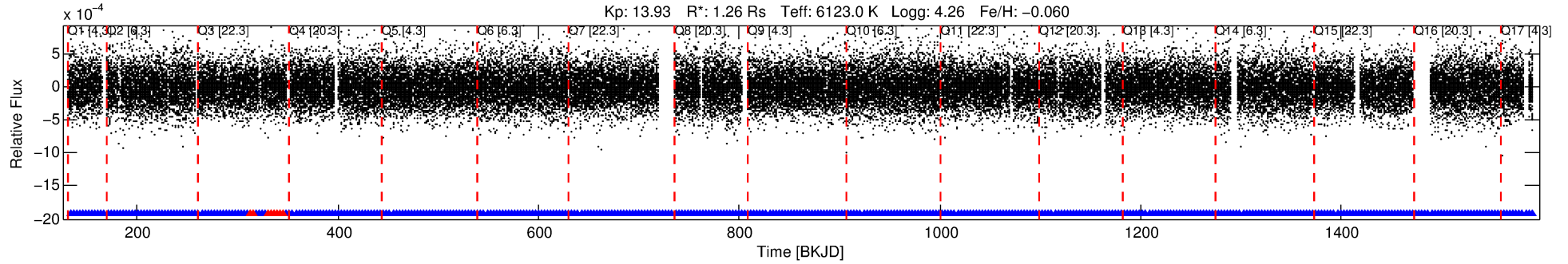
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 001996180-01

No Significant Match Found

DV One-Page Summary

KIC: 1996180 Candidate: 1 of 2 Period: 3.026 d
KOI: K02534.01 Corr: 0.963



DV Fit Results:

Period = 3.02556 [0.00001] d
Epoch = 134.3732 [0.0021] BKJD
Rp/R* = 0.0118 [0.0030]
a/R* = 3.62 [4.59]
b = 0.90 [0.29]
Seff = 1148.01 [296.90]
Teq = 1484 [96] K
Rp = 1.62 [0.51] Re
a = 0.0418 [0.0068] AU
Ag = 6.05 [4.05] [1.25σ]
Teffp = 3599 [567] K [3.68σ]

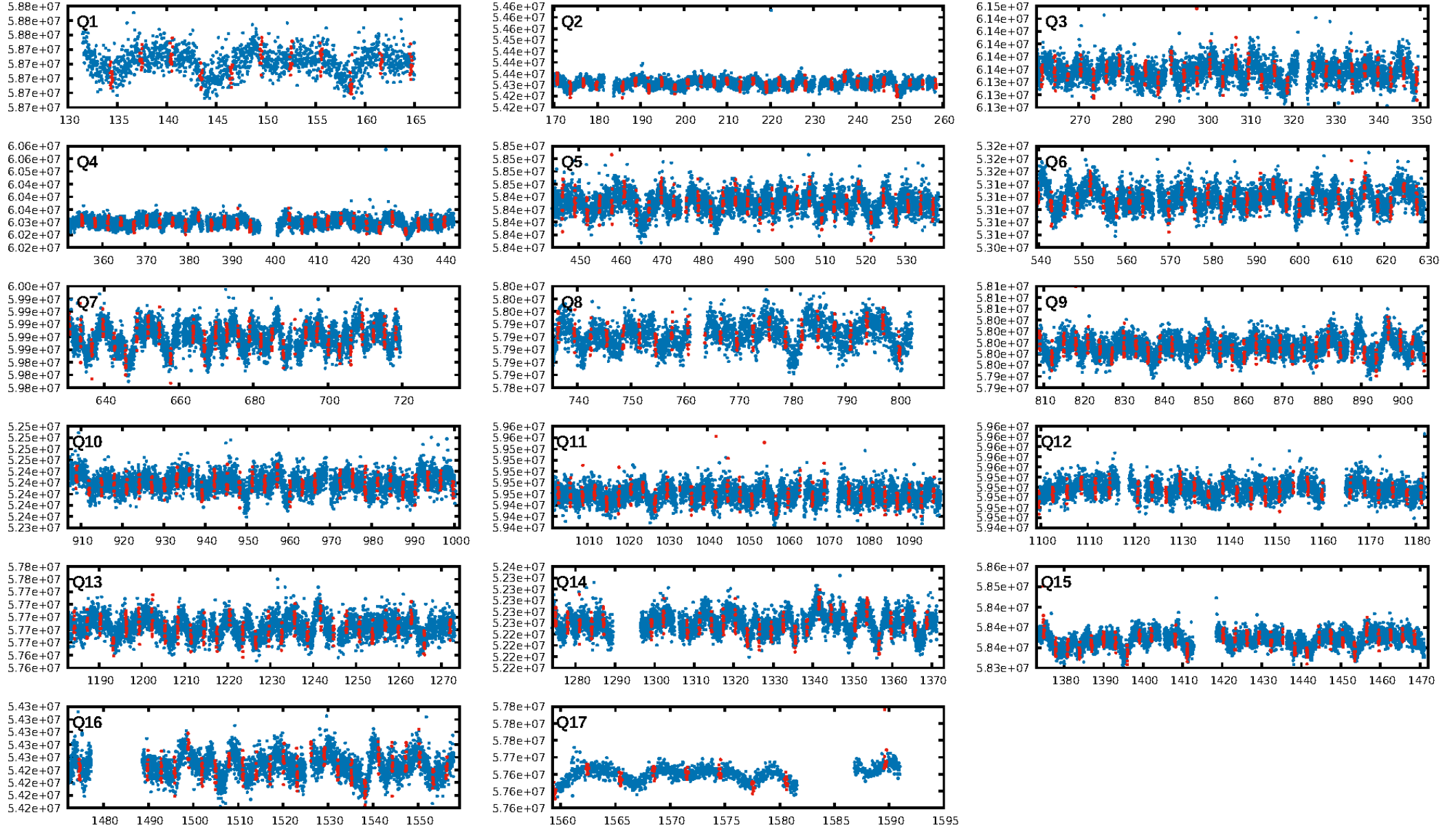
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [13.55σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 1.80e-92
RollingBand-fgt: 0.98 [412/420]
GhostDiagnostic-chr: 2.463
Centroid-sig: 96.1%
Centroid-so: 1.375 arcsec [2.33σ]
OotOffset-rm: 0.140 arcsec [0.51σ]
KicOffset-rm: 0.012 arcsec [0.05σ]
OotOffset-st: 4/4/3/5 [16]
KicOffset-st: 4/4/3/5 [16]
DiffImageQuality-fgm: 1.00 [16/16]
DiffImageOverlap-fno: 1.00 [17/17]

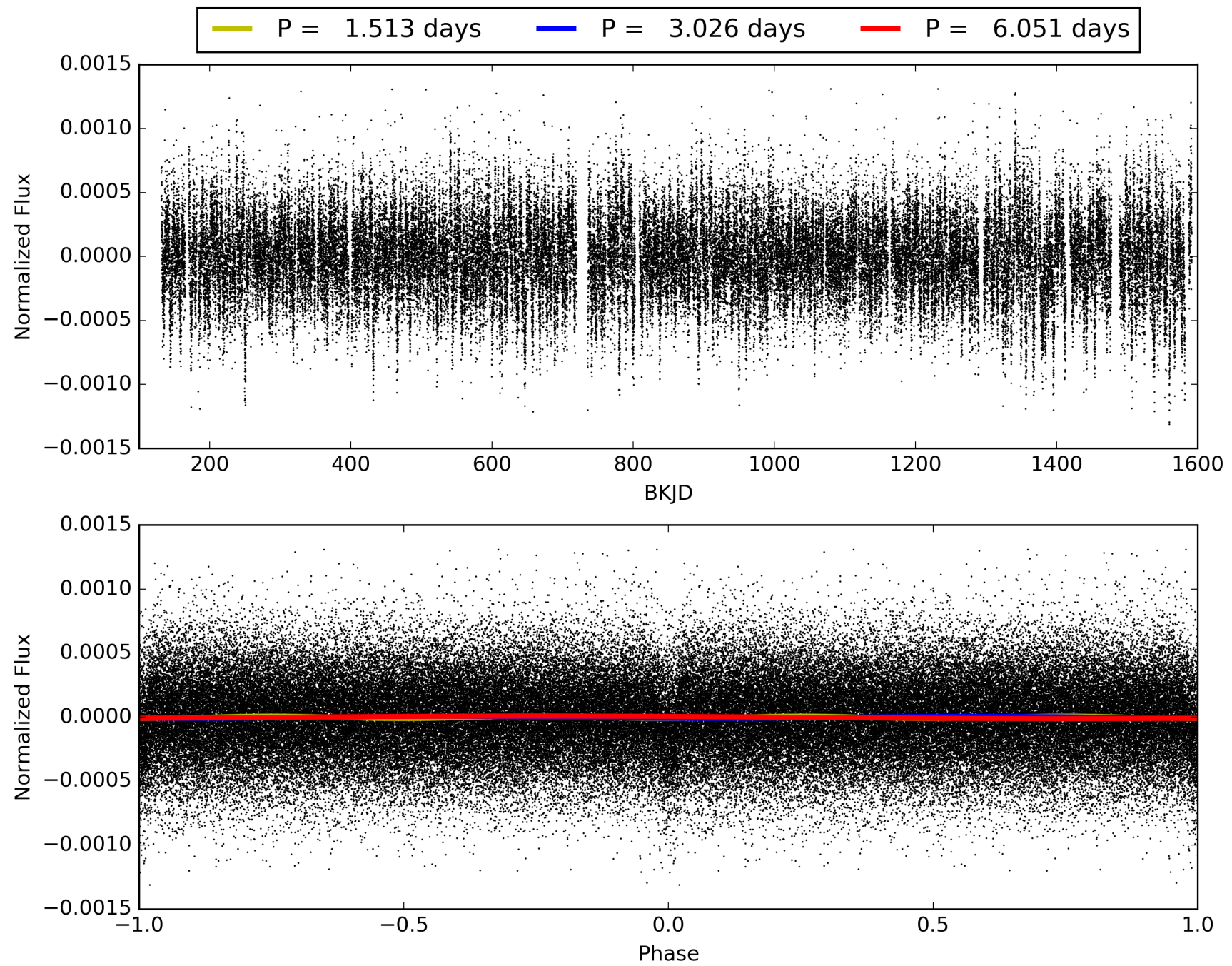
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 001996180-01, PDC Light Curves

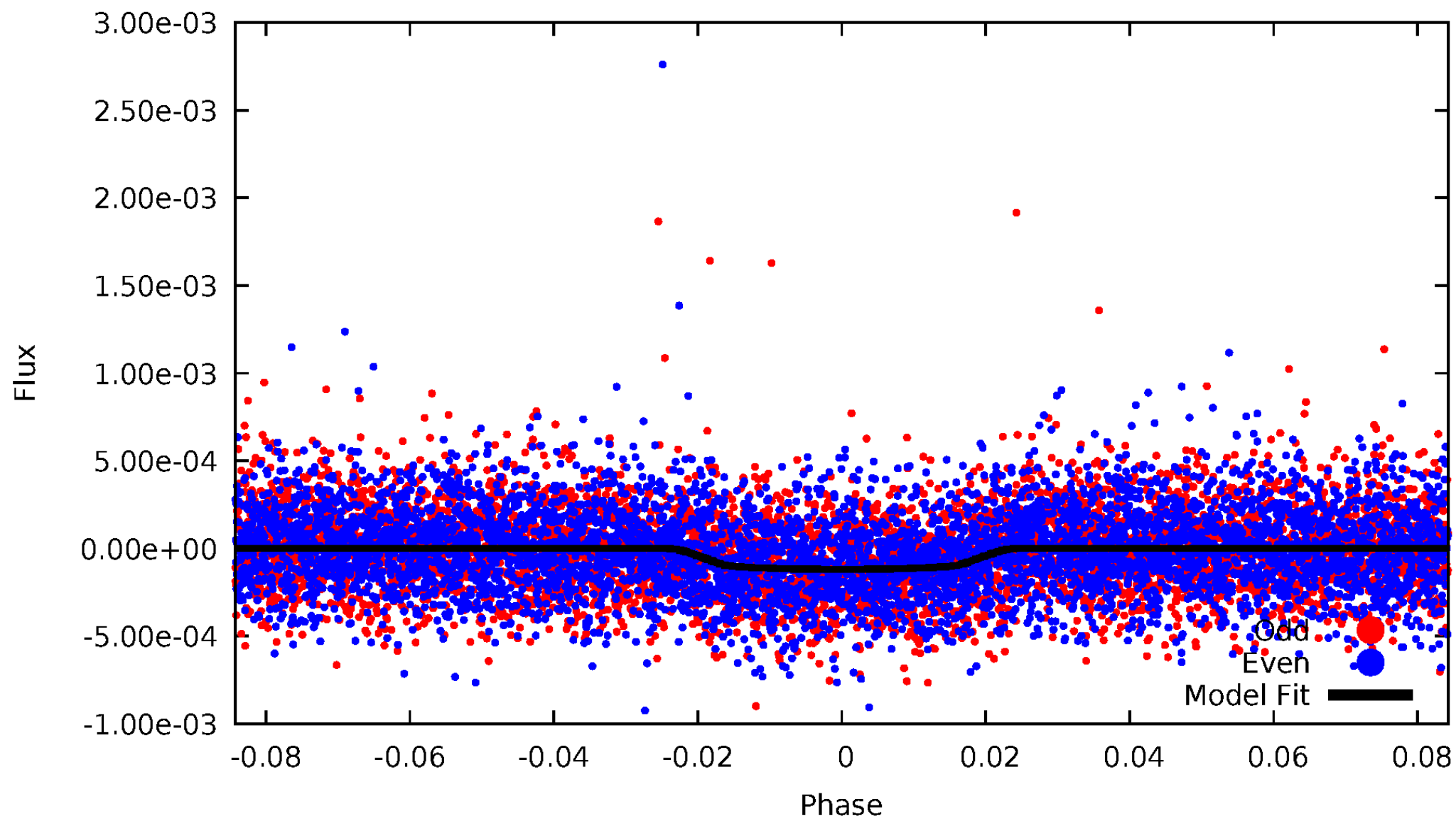


TCE 001996180-01



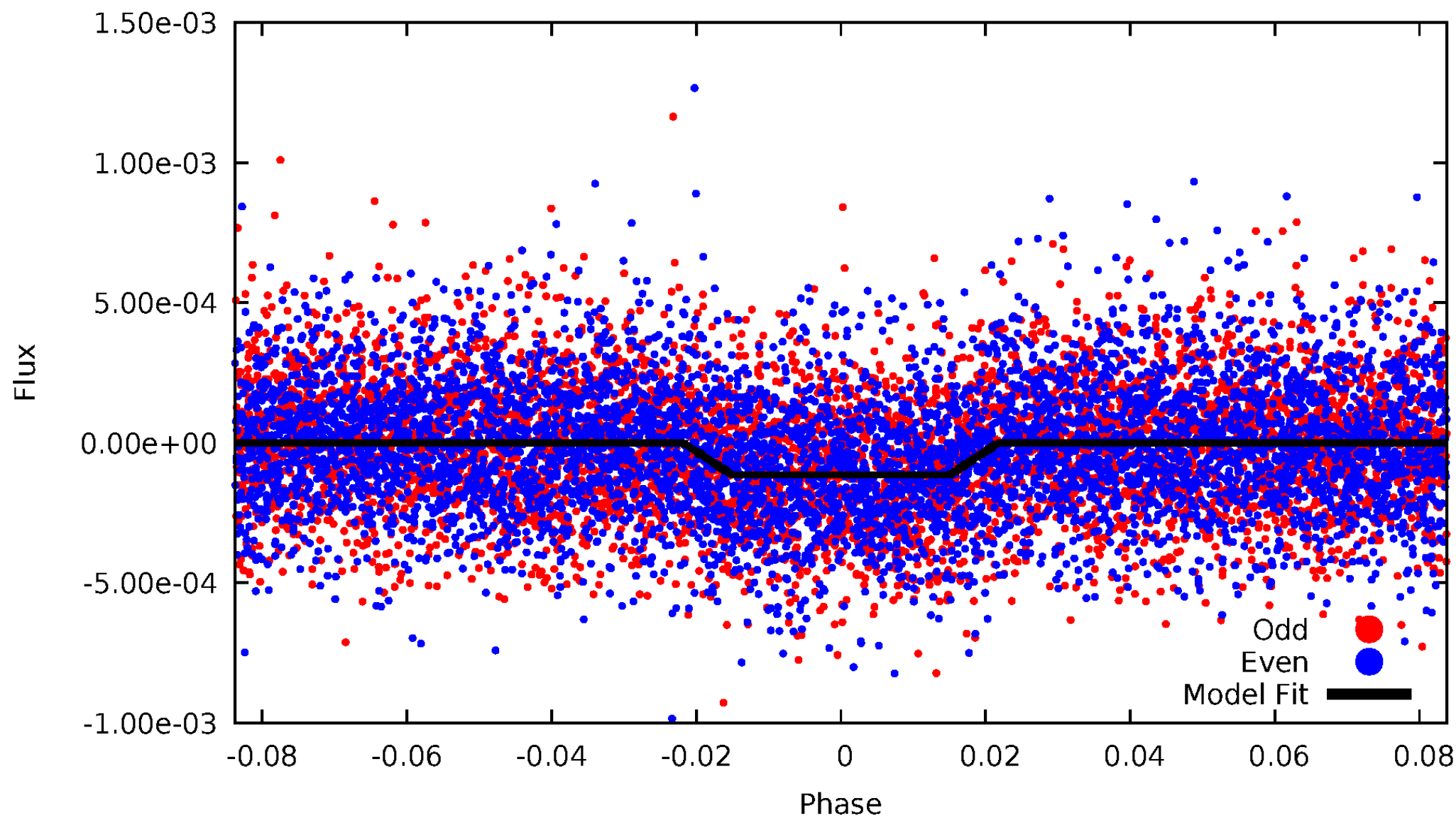
DV Odd/Even

TCE 001996180-01



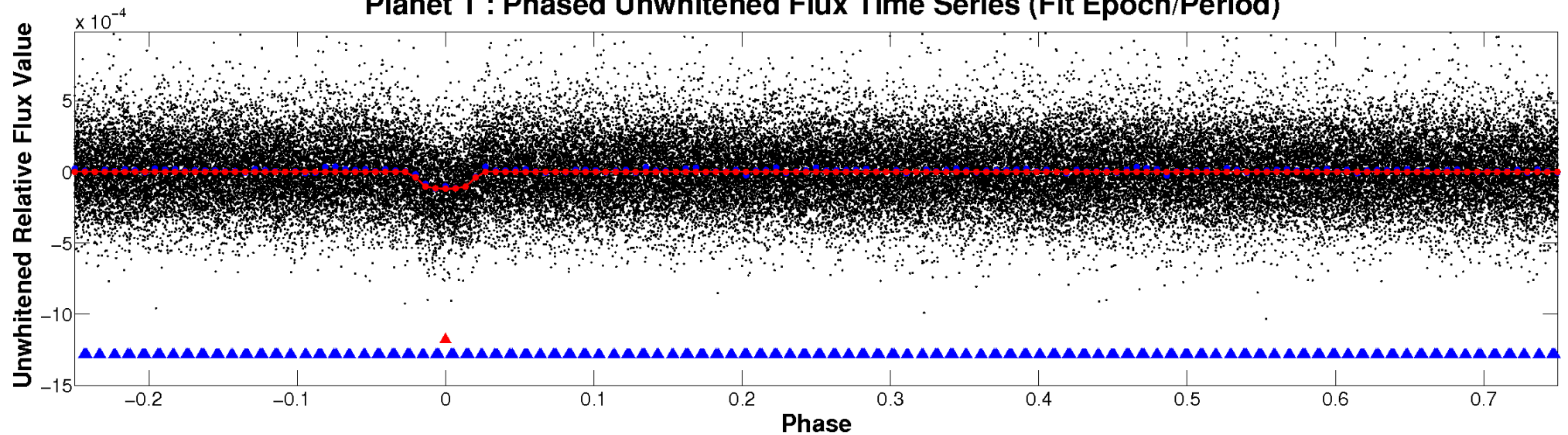
ALT Odd/Even

TCE 001996180-01

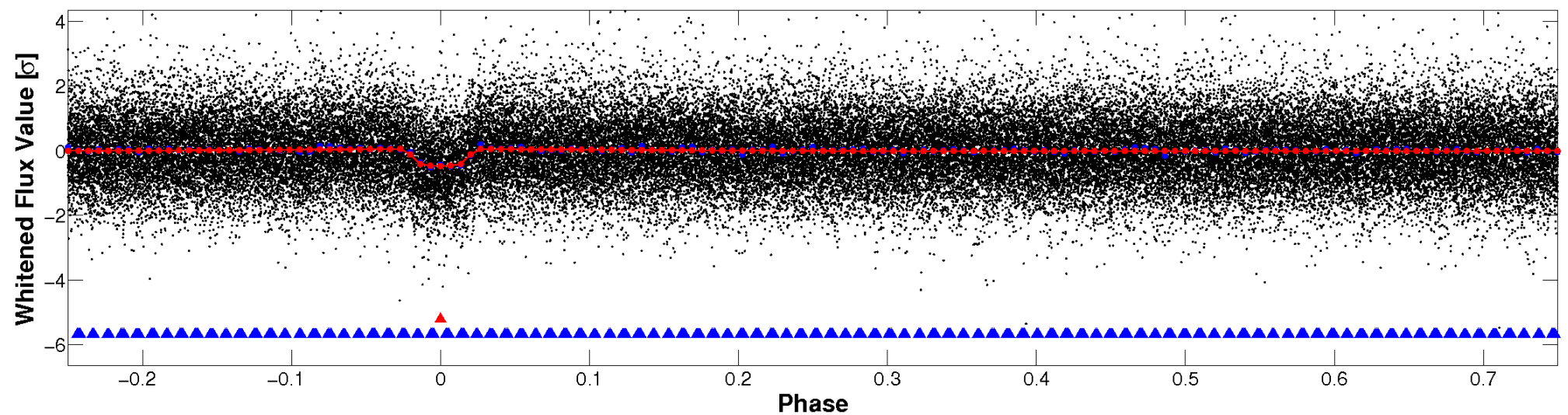


Non-Whitened Vs. Whitened Light Curve

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

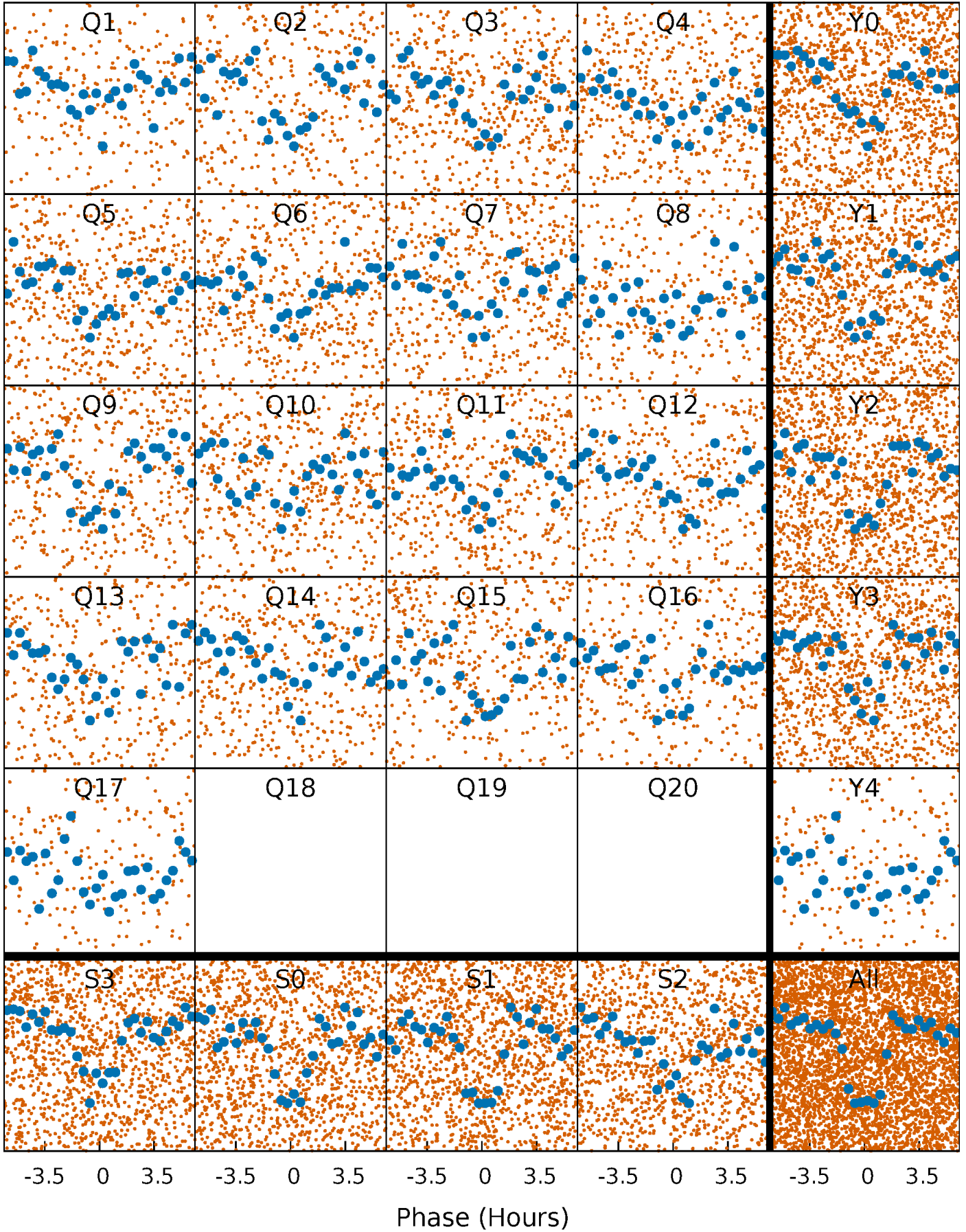


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



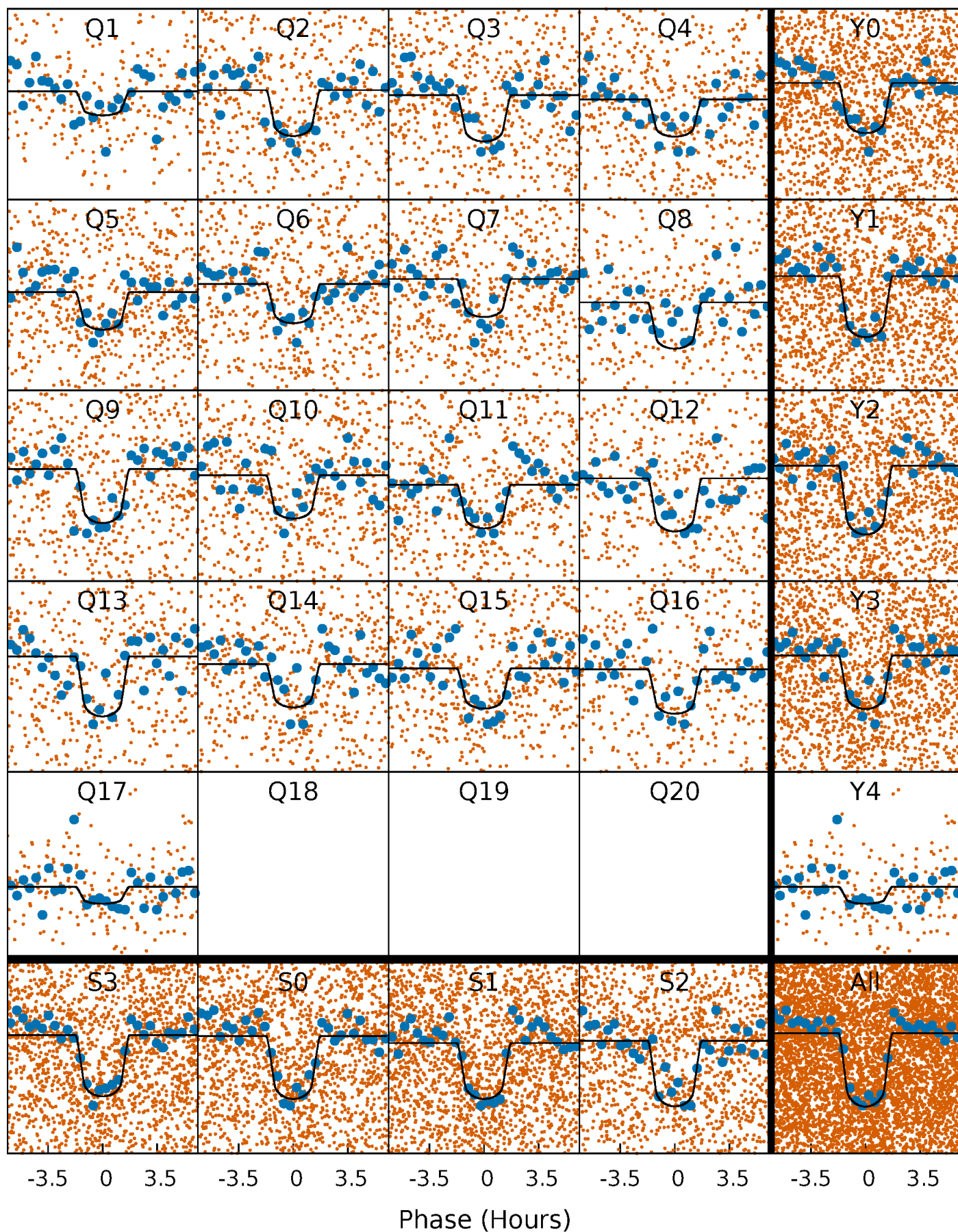
PDC Quarter-Phased Transit Curves

TCE 001996180-01 P= 3.025559 Days $T_0=134.373248$ (BKJD)



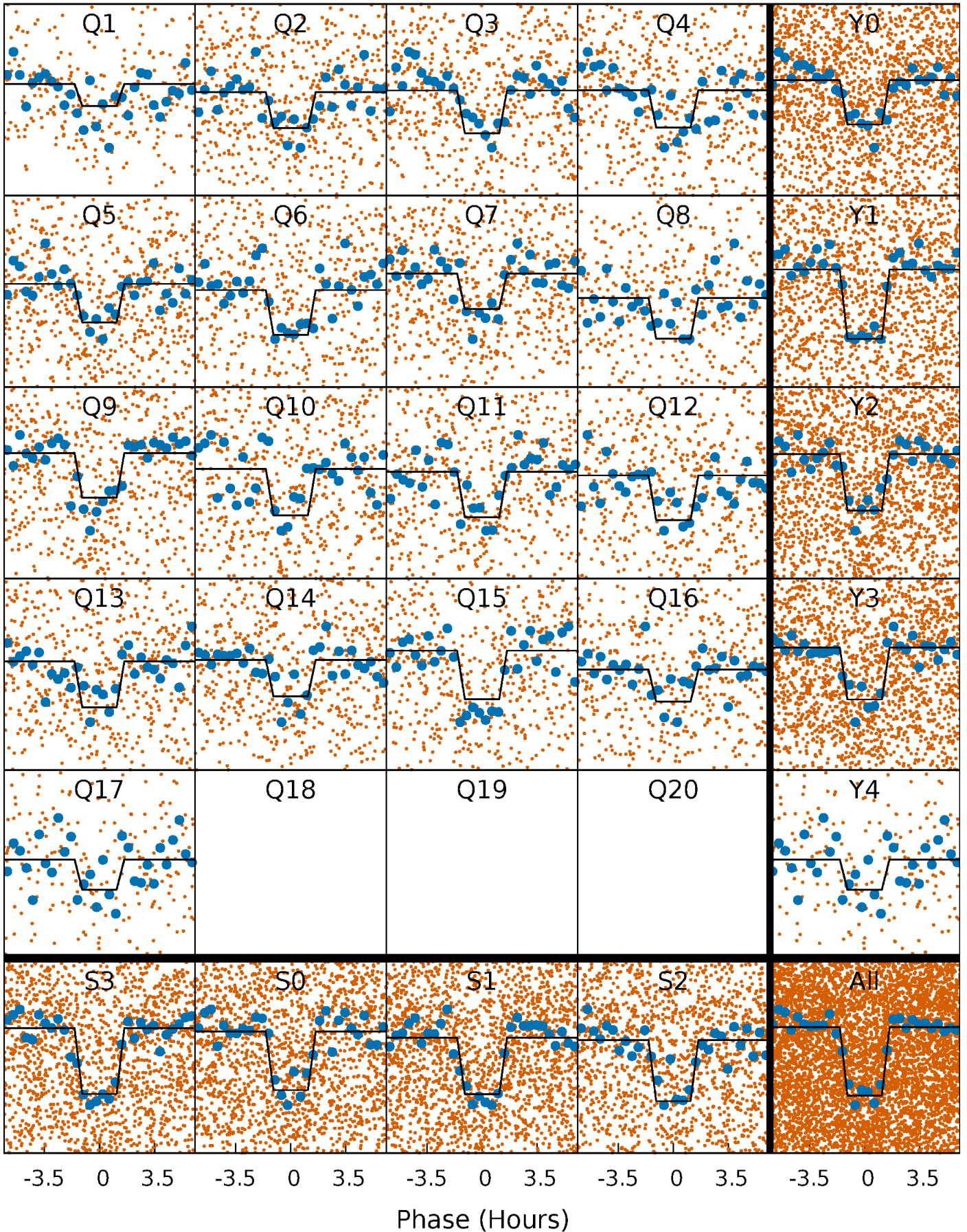
DV Quarter-Phased Transit Curves

TCE 001996180-01 P= 3.025559 Days $T_0=134.373248$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

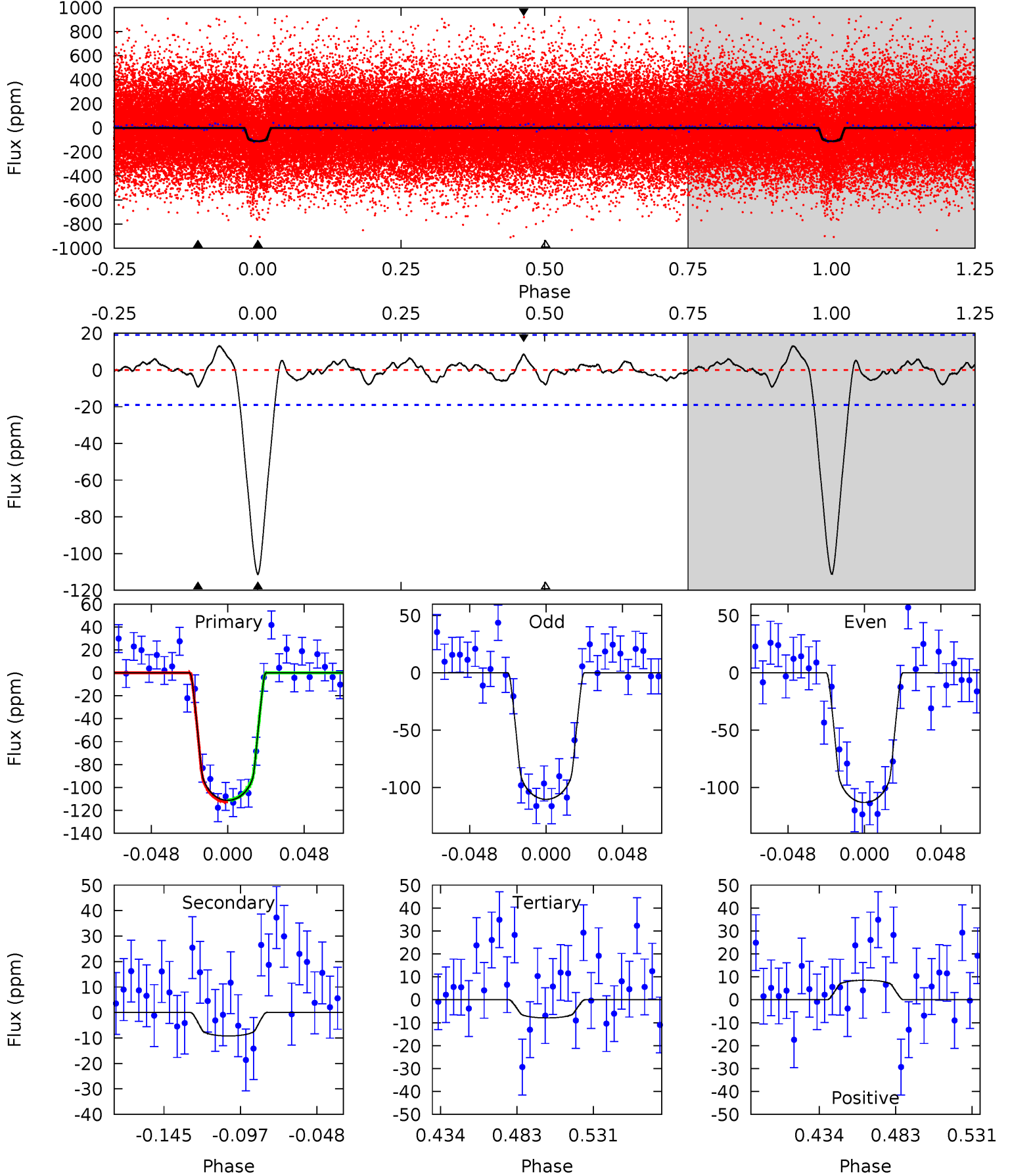
TCE 001996180-01 P= 3.025615 Days $T_0=134.360166$ (BKJD)



DV Model-Shift Uniqueness Test

001996180-01, P = 3.025559 Days, E = 131.347689 Days

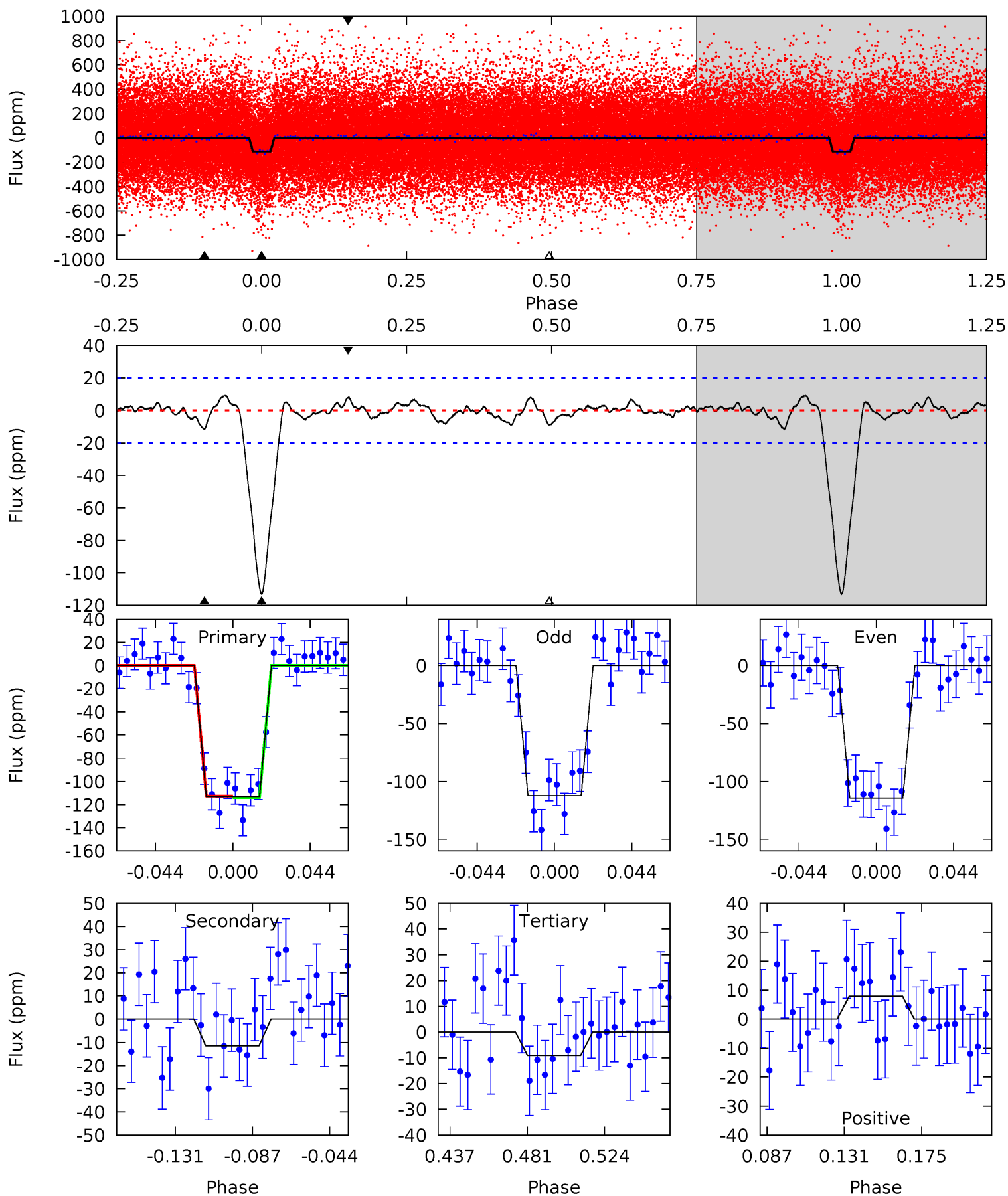
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
27.5	2.28	1.96	2.11	4.72	1.97	0.84	25.6	25.4	0.32	0.17	0.34	0.96	0.10	0.20



Alt Model-Shift Uniqueness Test

001996180-01, P = 3.025615 Days, E = 131.334551 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
26.6	2.71	2.13	1.87	4.74	2.02	0.80	24.5	24.8	0.58	0.84	0.24	0.97	0.07	0.15



Stellar Parameters For KIC 001996180

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6123^{+122}_{-134}	$4.263^{+0.137}_{-0.112}$	$-0.060^{+0.150}_{-0.150}$	$1.263^{+0.232}_{-0.190}$	$1.066^{+0.109}_{-0.073}$	$0.745^{+0.454}_{-0.260}$
	+2%/-2%	+3%/-3%	+250%/-250%	+18%/-15%	+10%/-7%	+61%/-35%
Source	SPE58	SPE58	SPE58	DSEP		

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

Secondary Eclipse Parameters for KIC 001996180-01 / KOI 2534.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-9 ± 4	$1.58^{+0.47}_{-0.41}$	2069^{+99}_{-102}	3494^{+521}_{-428}	$3.363^{+3.841}_{-1.858}$
Alt.	-12 ± 4	$1.45^{+0.43}_{-0.41}$	2065^{+98}_{-103}	3752^{+575}_{-393}	$5.009^{+6.013}_{-2.384}$

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 $A_{obs} \gg 1.0$

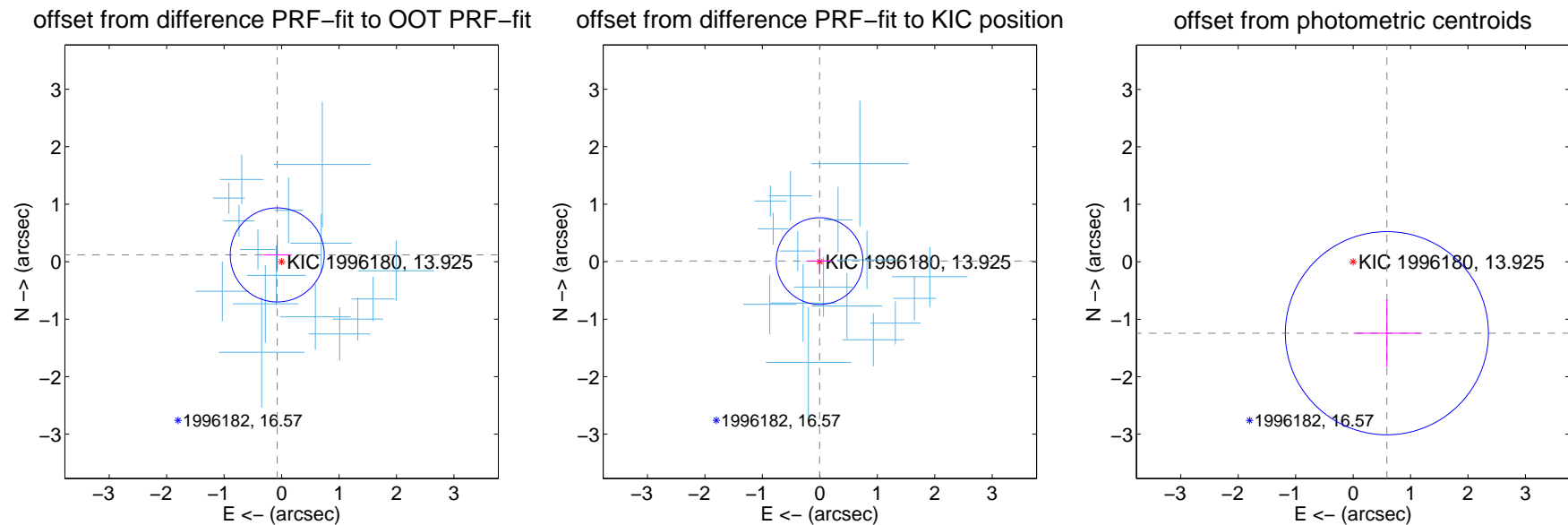
DV Centroid Data

Supplemental centroid analysis for 001996180-01. Kepler magnitude: 13.93. Transit SNR 20.75

There are 16 quarters with good PRF difference image offsets

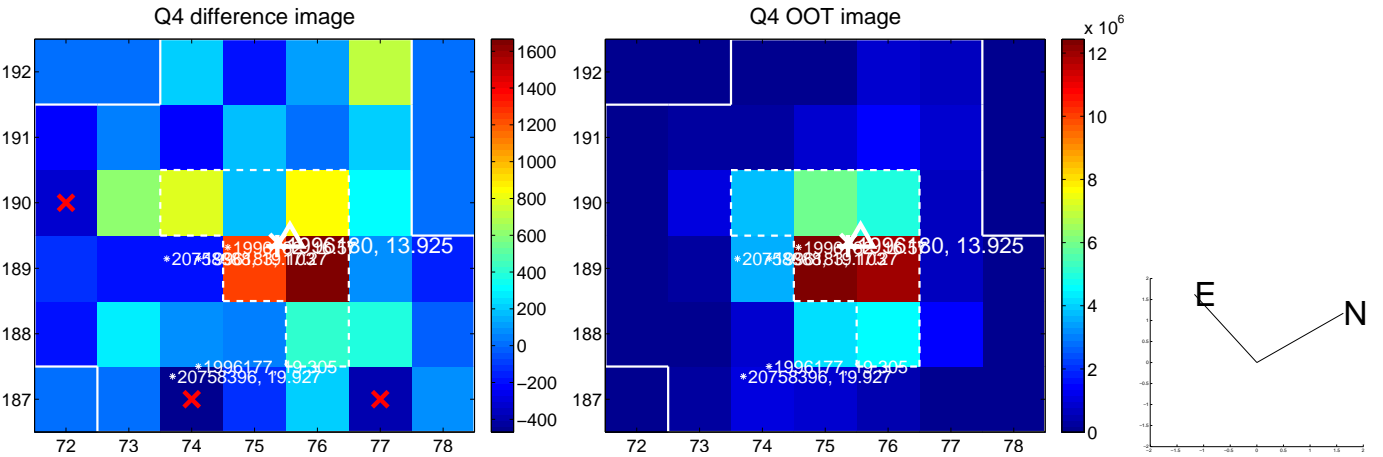
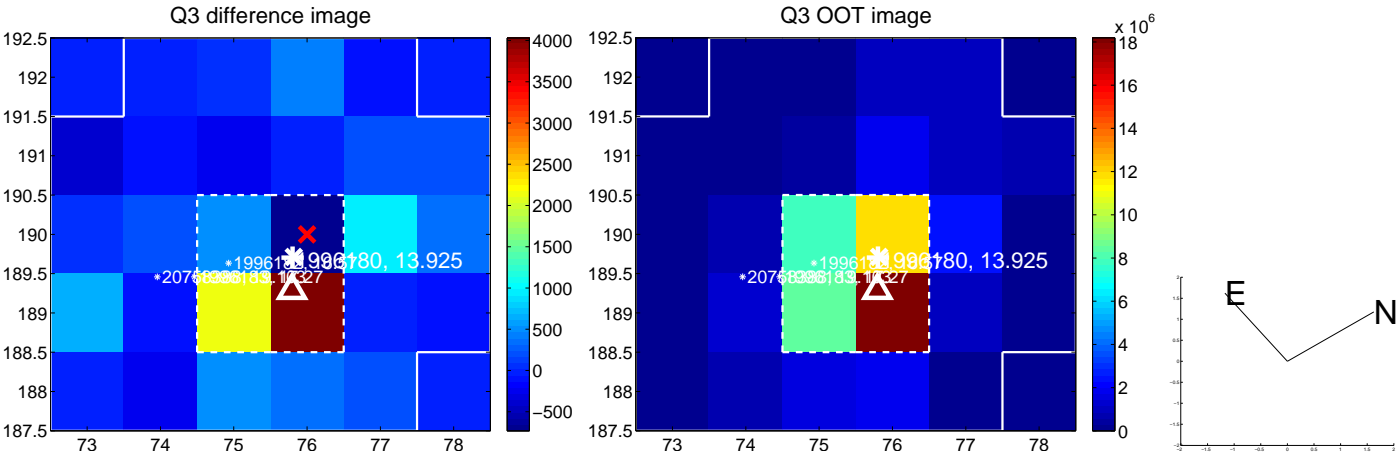
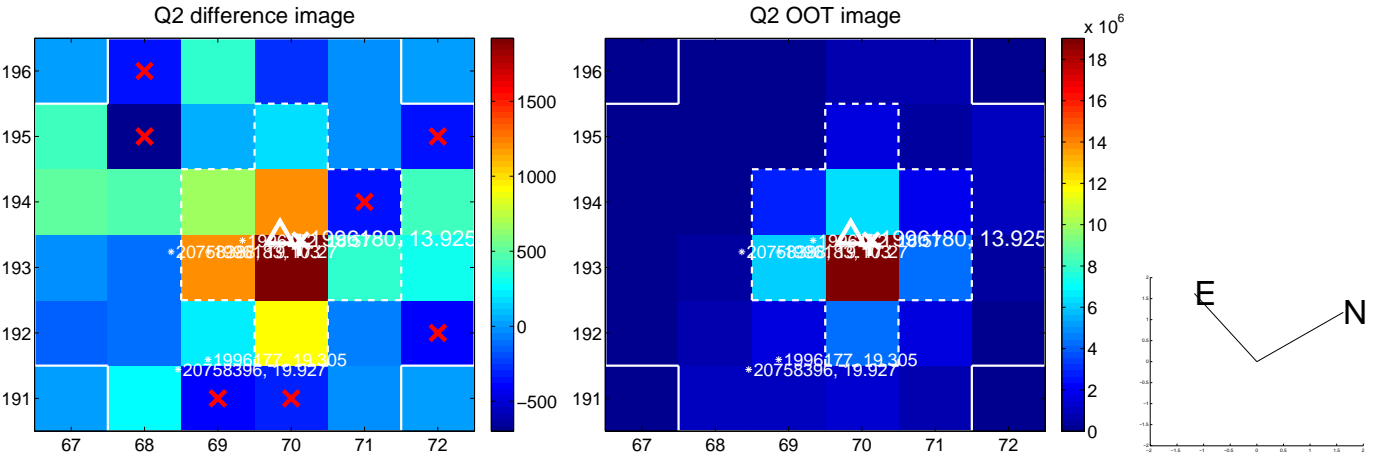
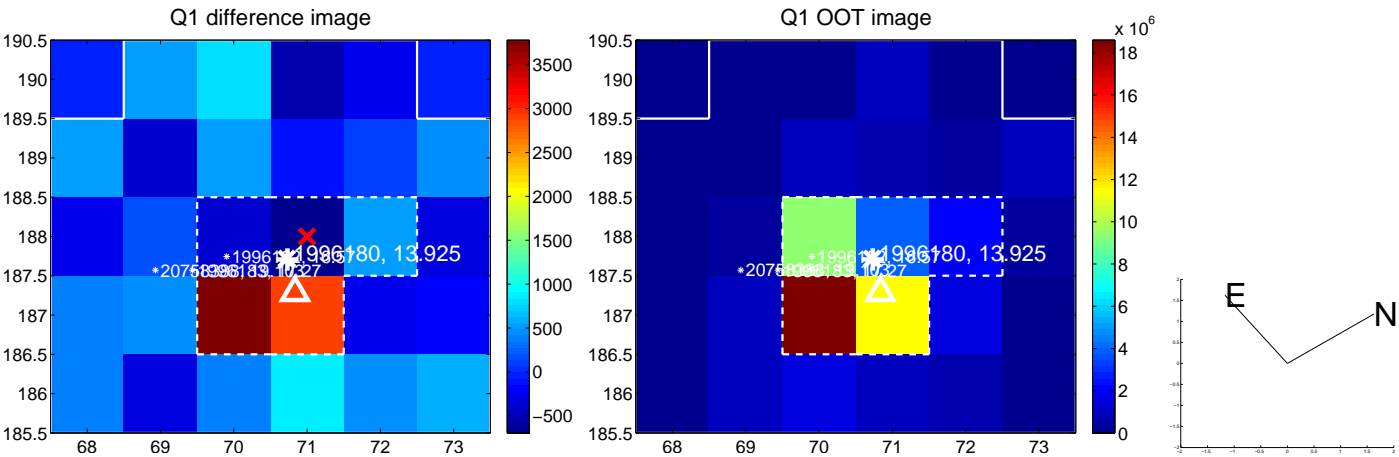
The direct PRF centroid is offset from the target star catalog position by about 0.02 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.140 ± 0.273	0.51	0.075 ± 0.251	0.118 ± 0.238
PRF-fit source offset from KIC position	0.012 ± 0.252	0.05	0.005 ± 0.228	0.011 ± 0.231
photometric centroid source offset	1.38 ± 0.59	2.33	-0.59 ± 0.58	-1.24 ± 0.59

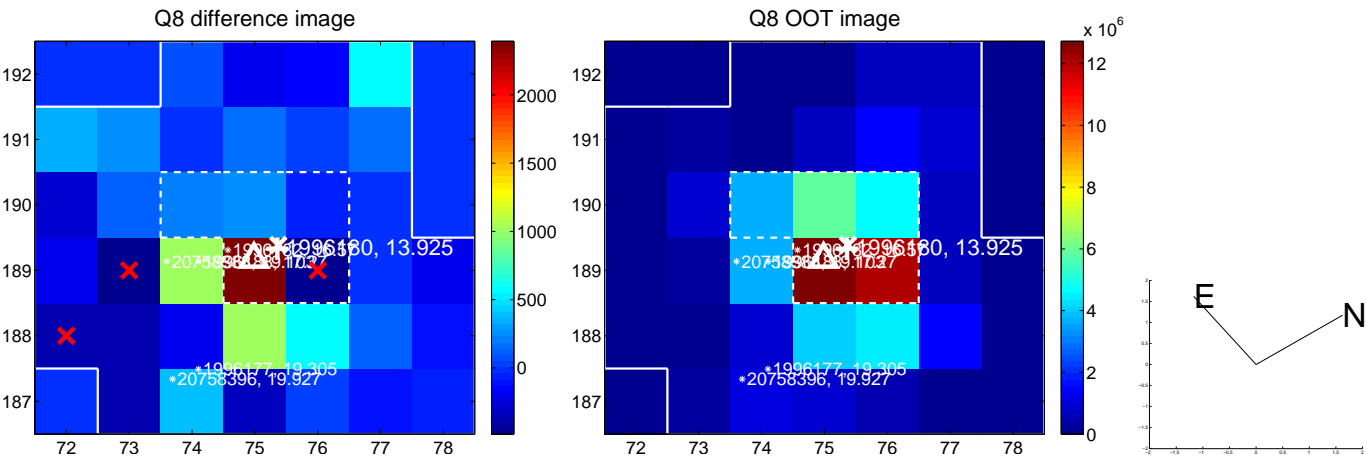
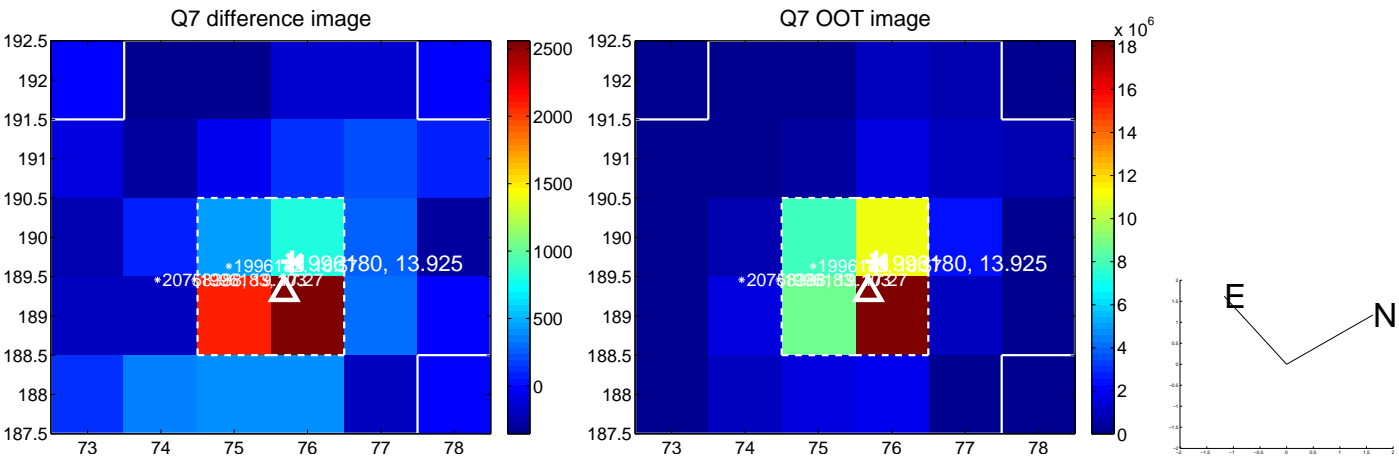
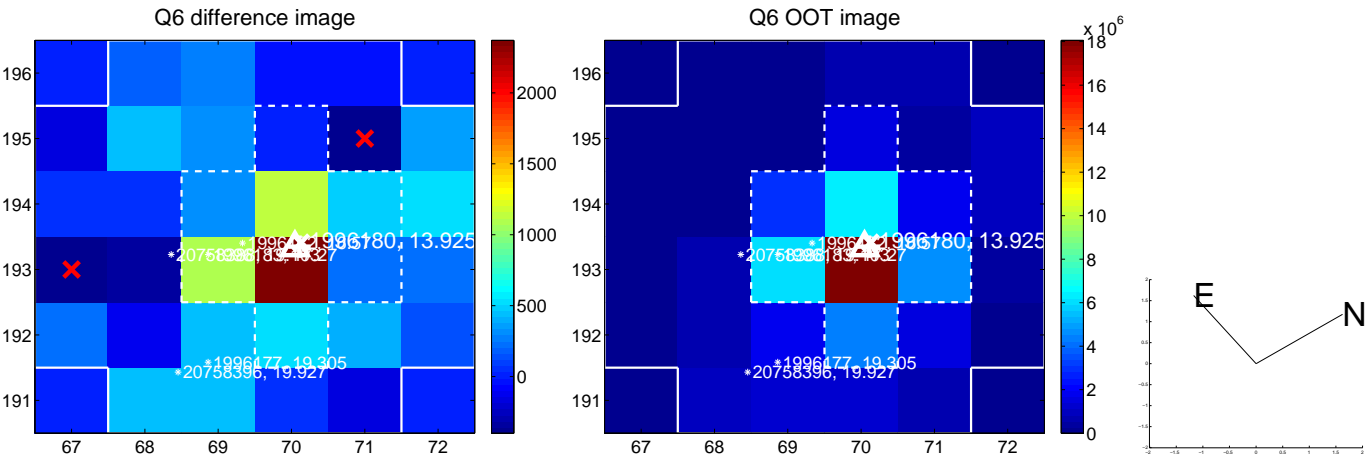
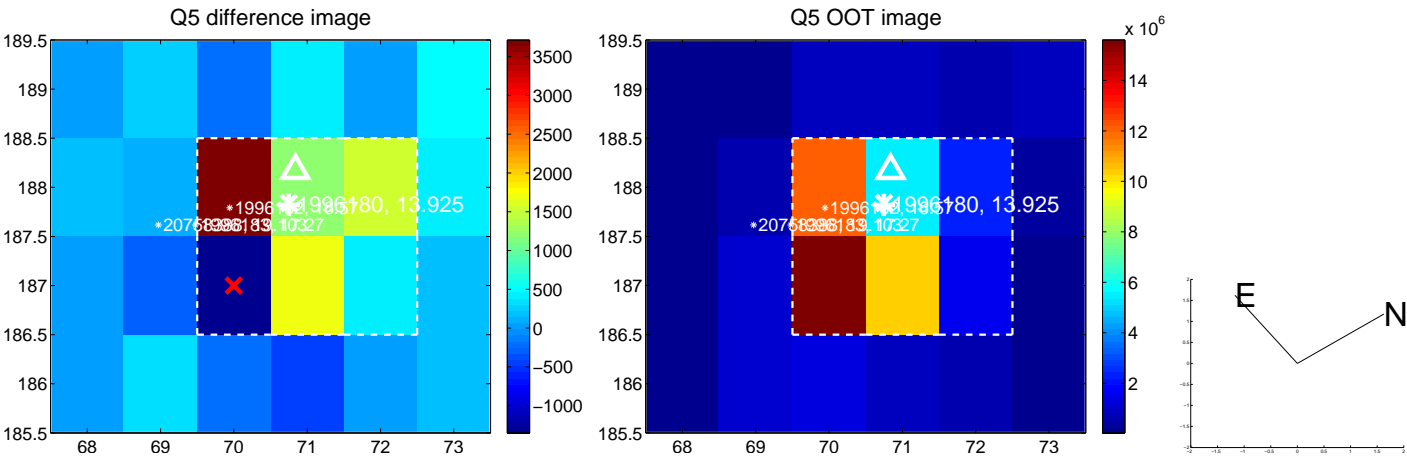


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

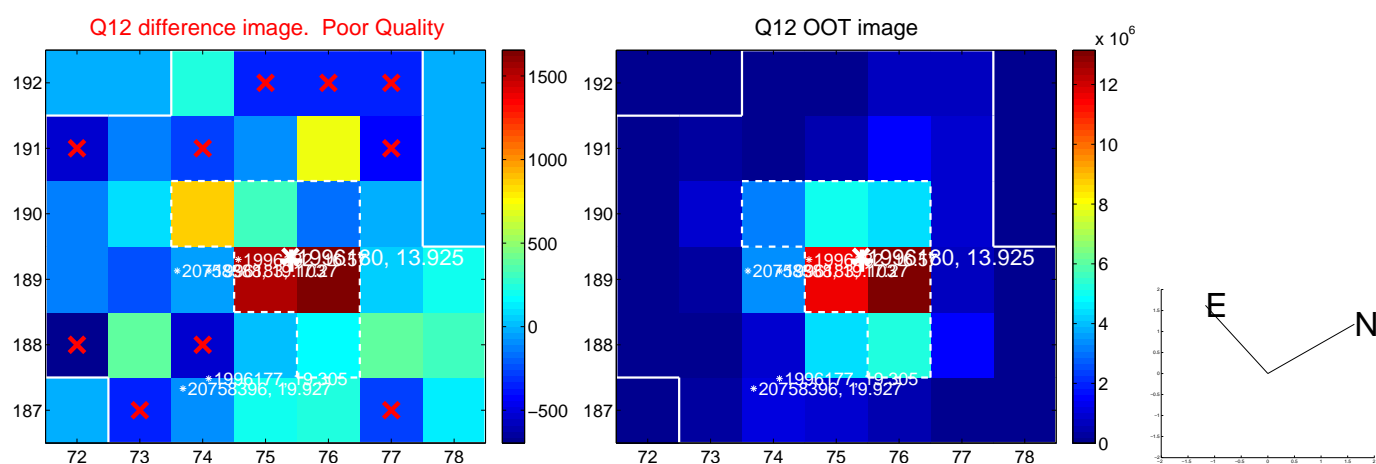
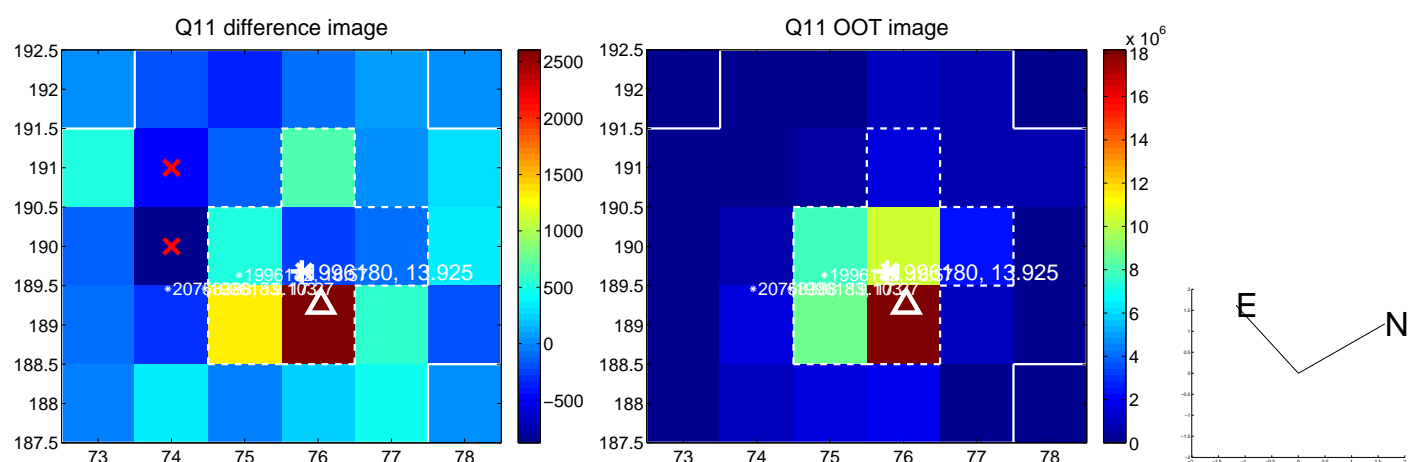
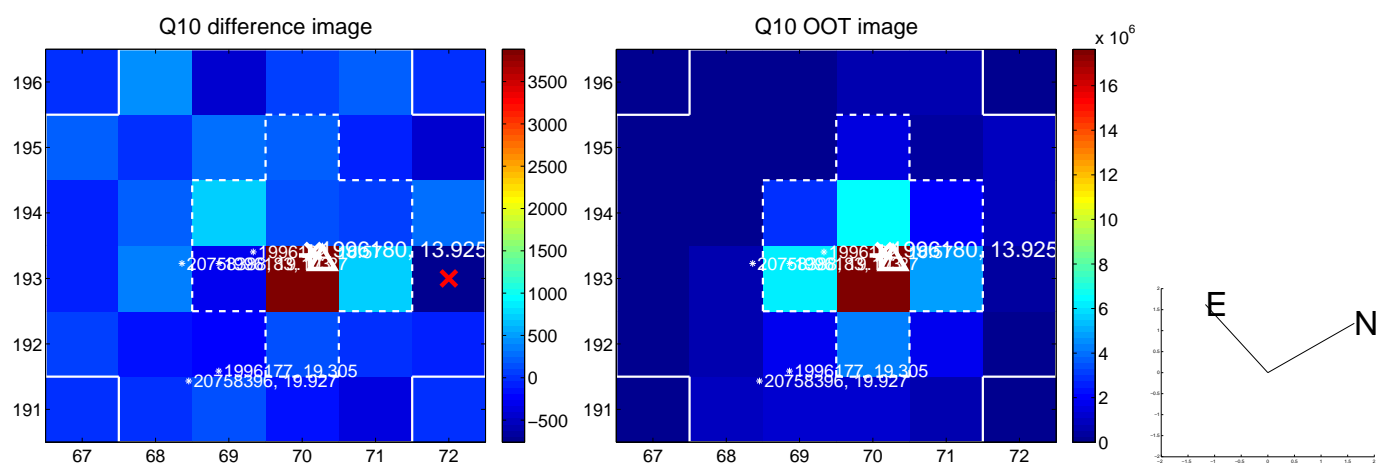
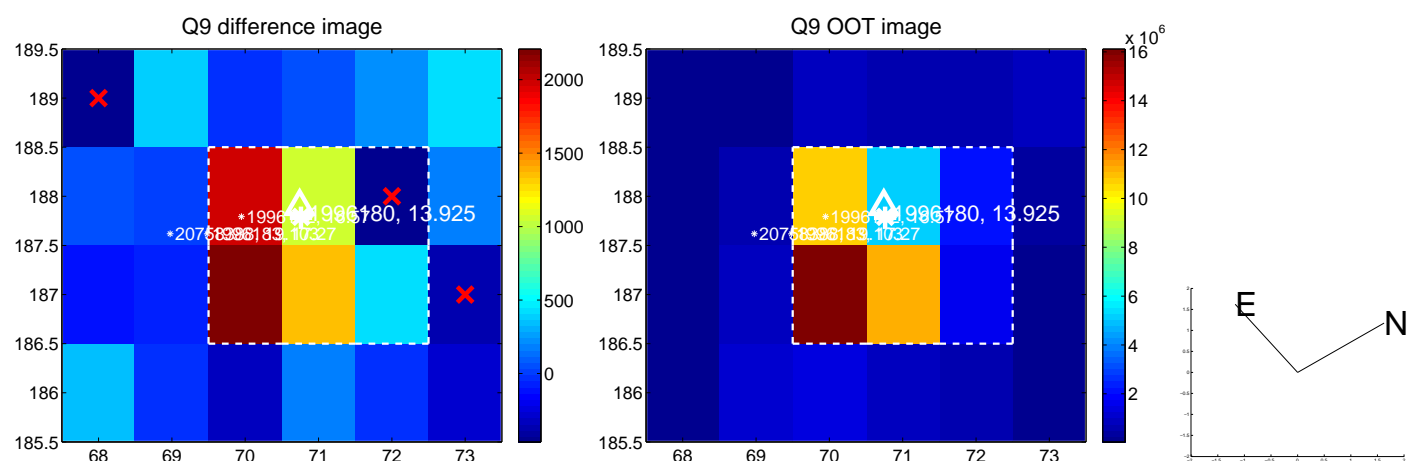
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



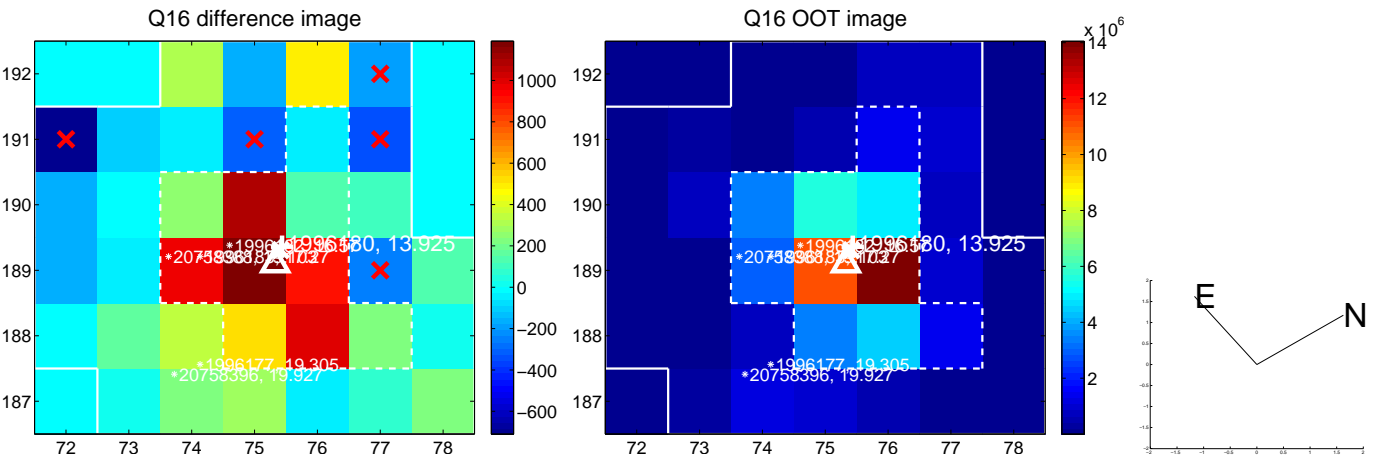
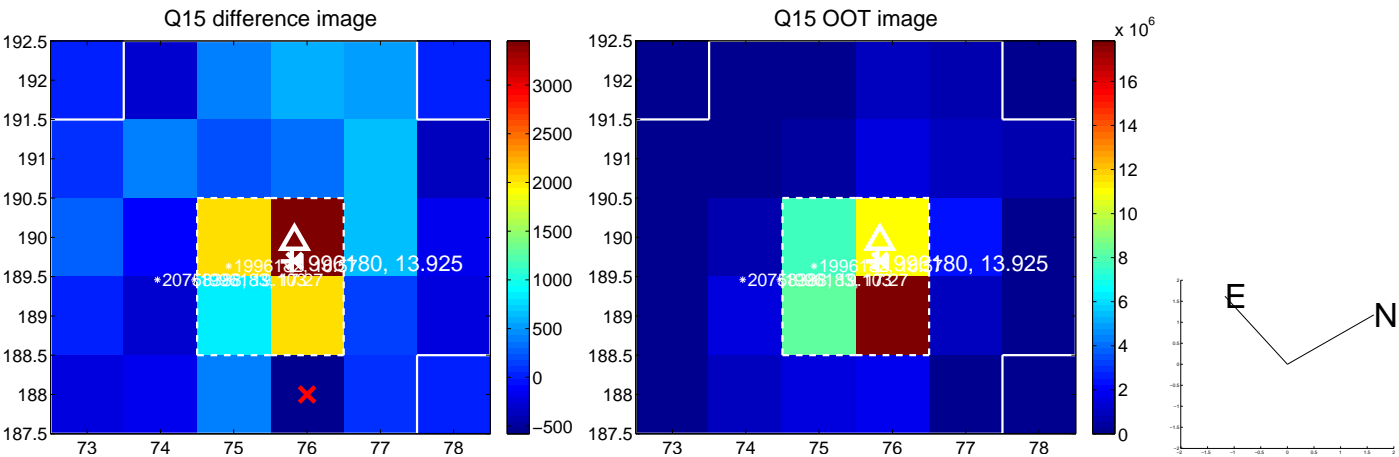
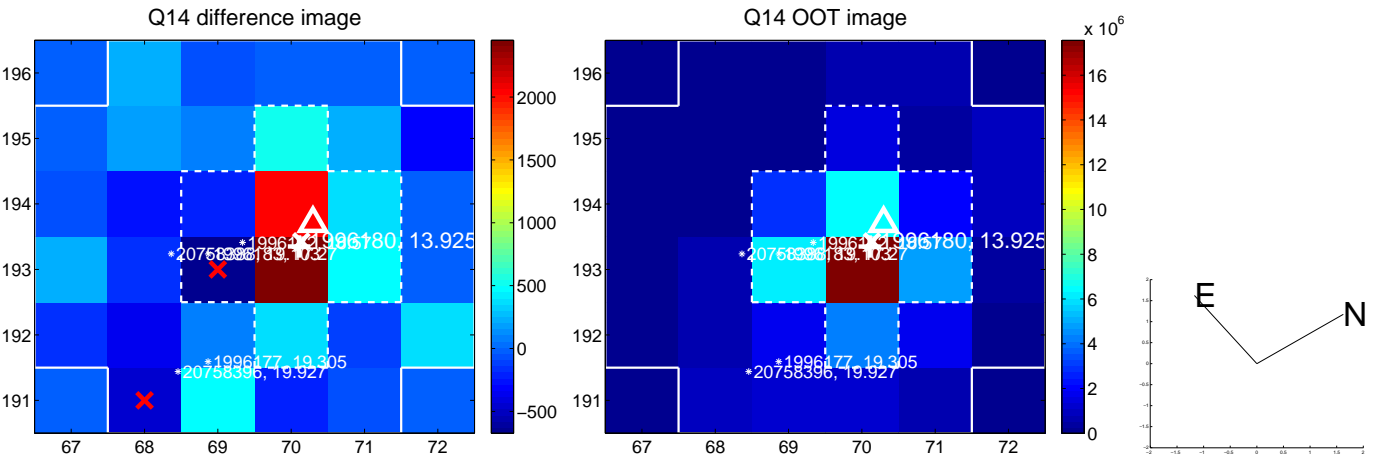
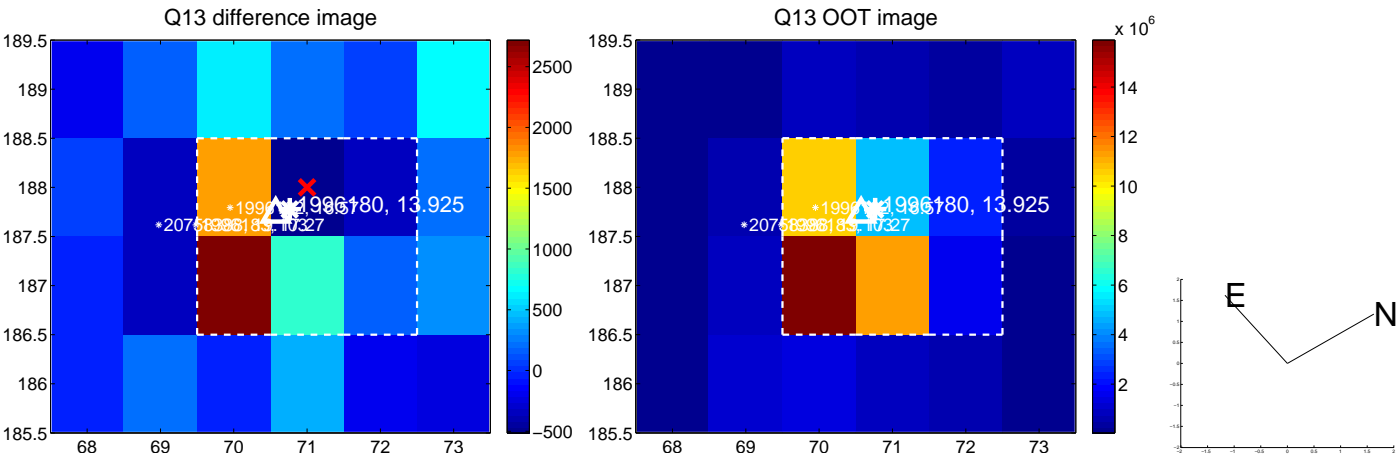
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



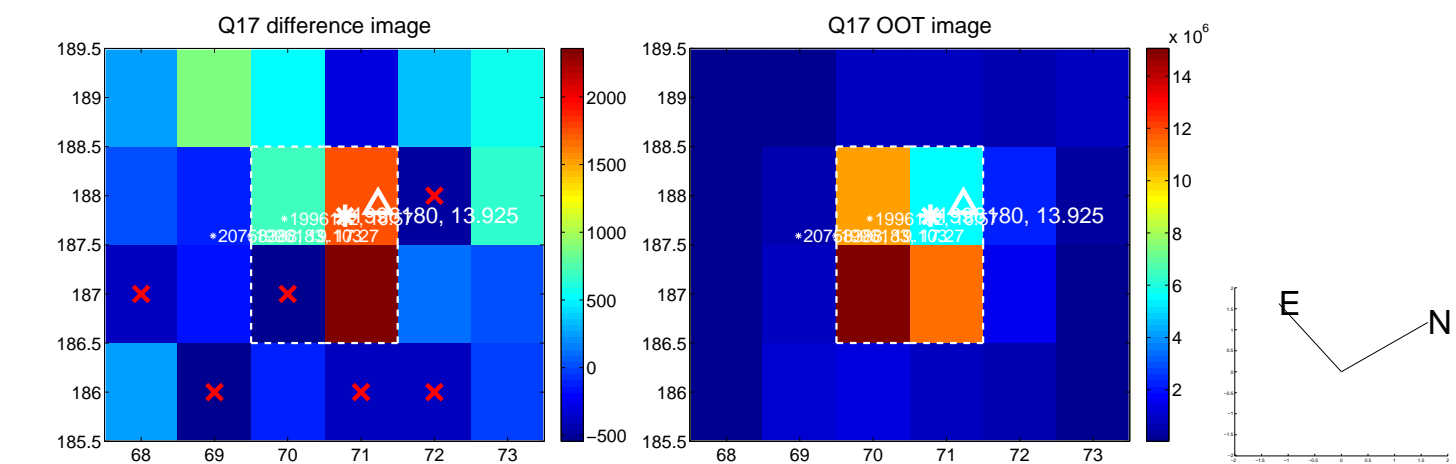
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



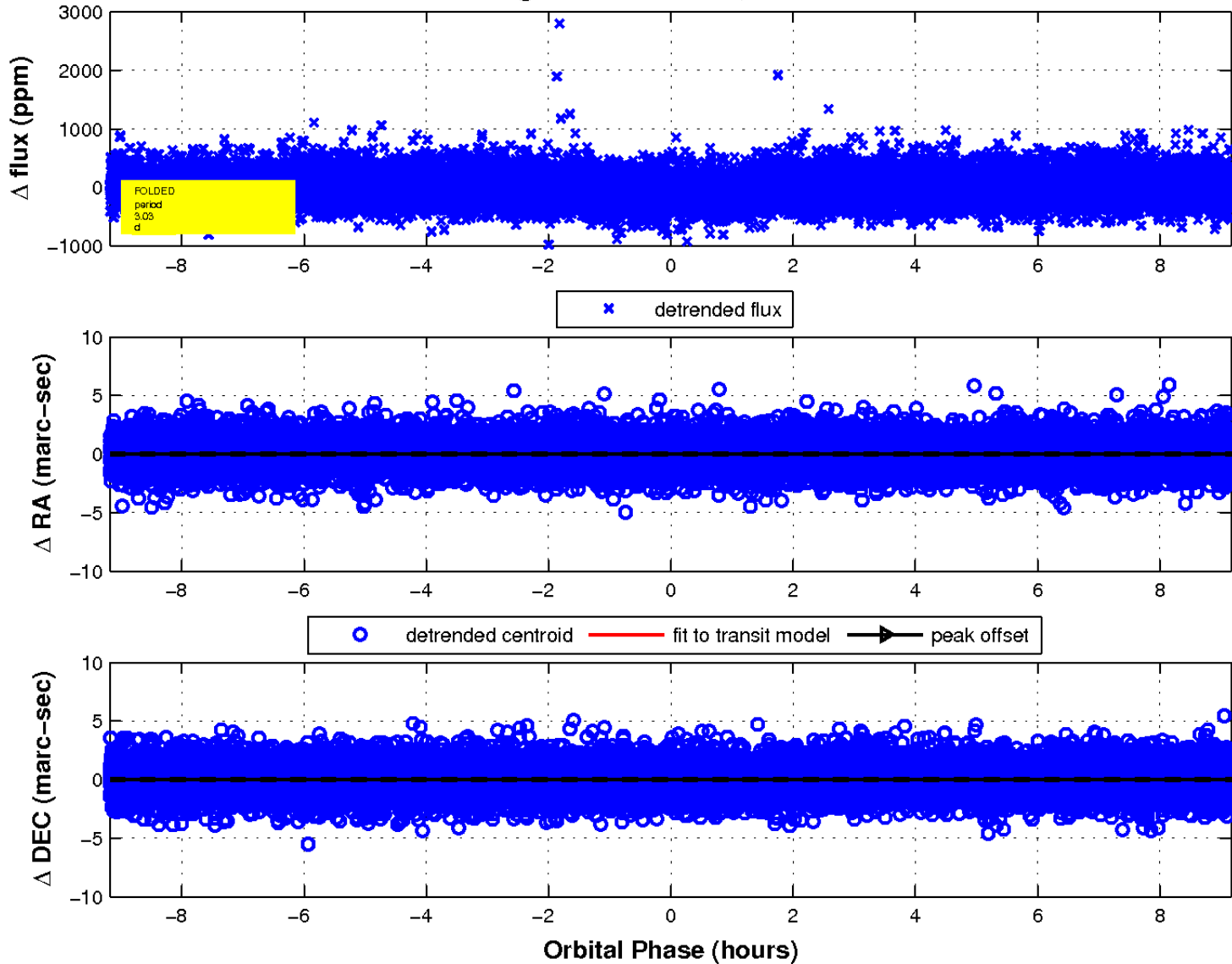
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

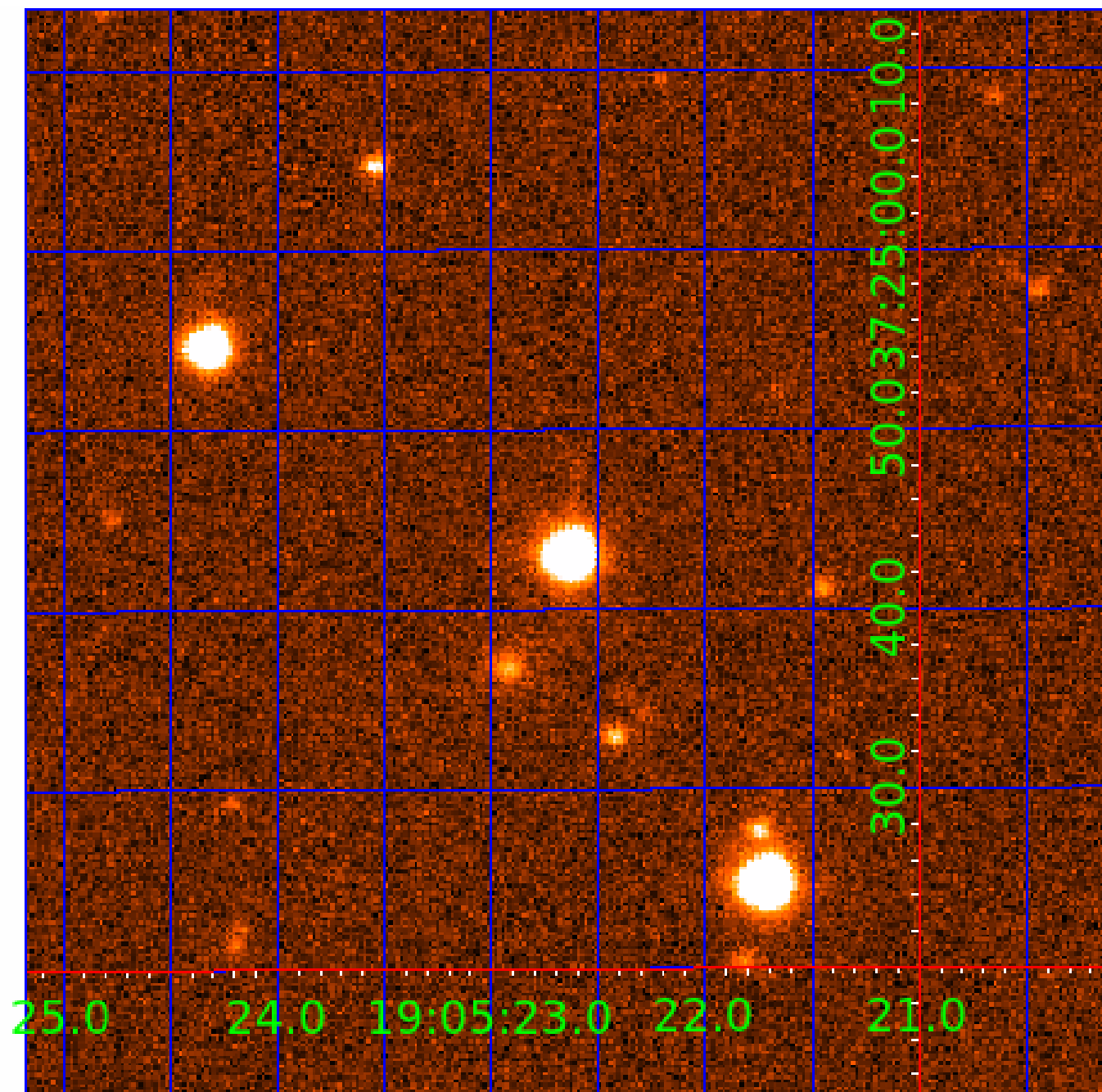


fluxWeightedCentroids, Planet 1 of 2



UKIRT Image

Declination



KIC 001996180

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})
001996180-01	OBS	2534.01	3.025559	134.373248	118.6	3.059	20.5	20.7	1.26	6123	1.62	1148.01
001996180-02	OBS	2534.02	5.422070	133.454744	84.8	2.942	8.7	10.3	1.26	6123	1.35	527.39

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
001996180-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT
001996180-02	OBS	PC	0.92	0	0	0	0	NO_COMMENT

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

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

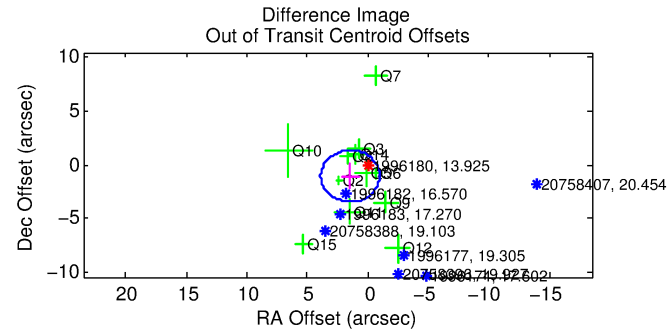
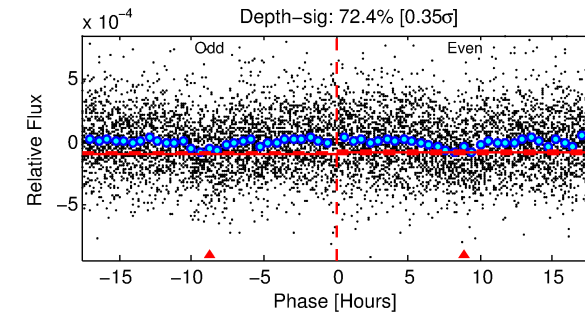
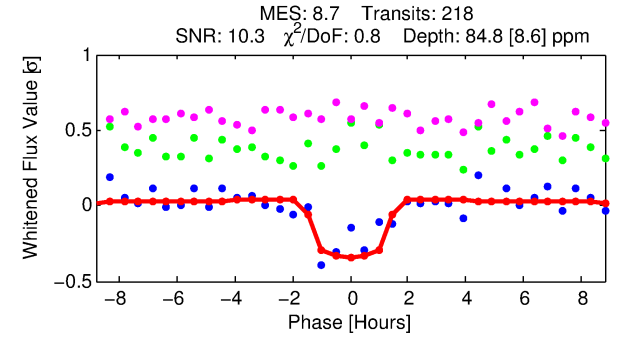
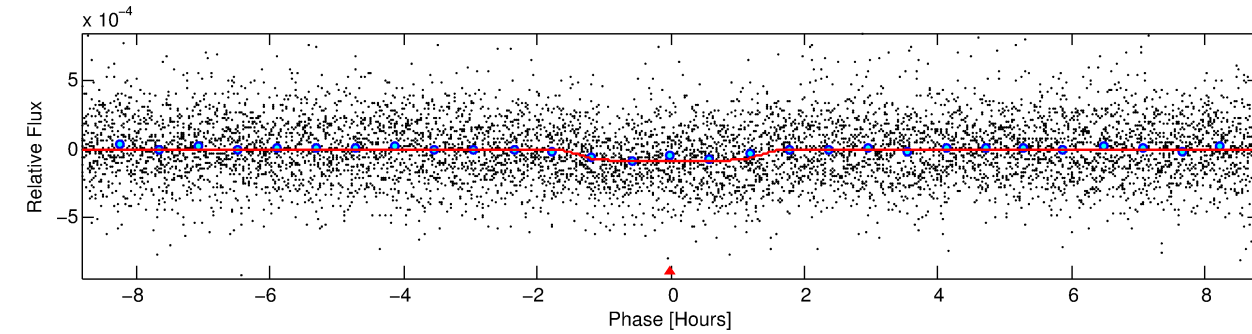
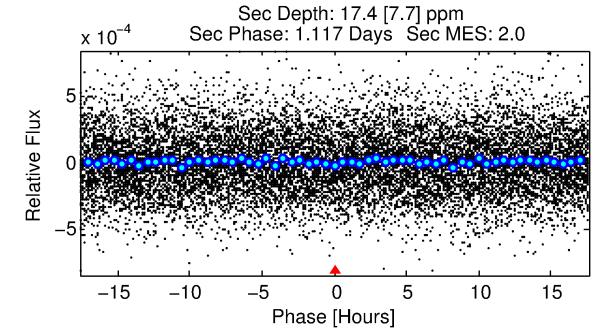
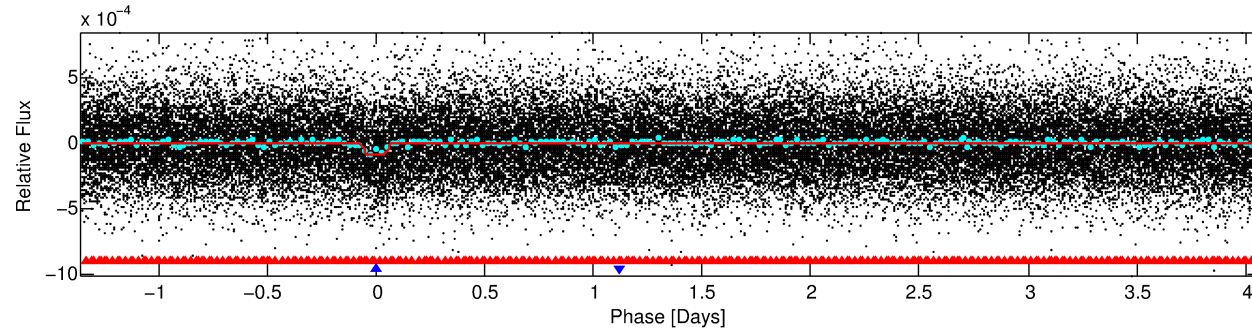
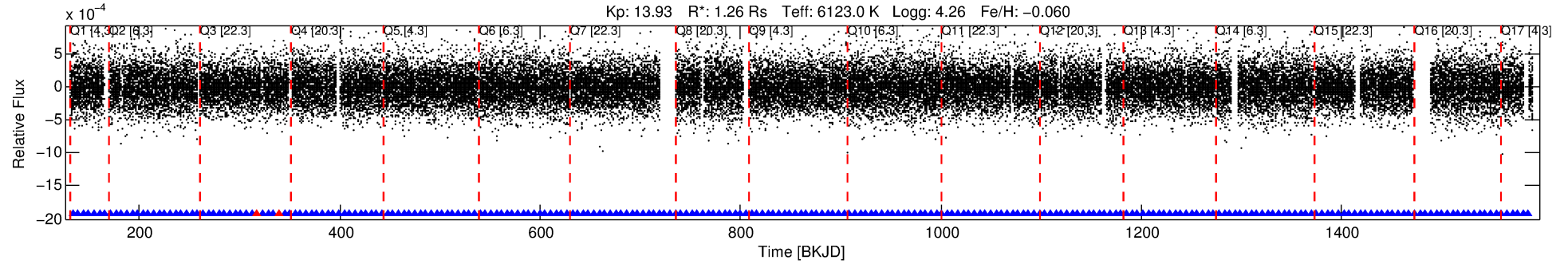
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 001996180-02

No Significant Match Found

DV One-Page Summary

KIC: 1996180 Candidate: 2 of 2 Period: 5.422 d
KOI: K02534.02 Corr: 0.956



DV Fit Results:

Period = 5.42207 [0.00004] d
Epoch = 133.4547 [0.0049] BKJD
Rp/R* = 0.0098 [0.0052]
a/R* = 6.92 [18.86]
b = 0.88 [0.70]
Seff = 527.39 [136.40]
Teq = 1222 [79] K
Rp = 1.35 [0.76] Re
a = 0.0617 [0.0100] AU
Ag = 19.89 [23.41] [0.81σ]
Teffp = 3990 [1152] K [2.40σ]

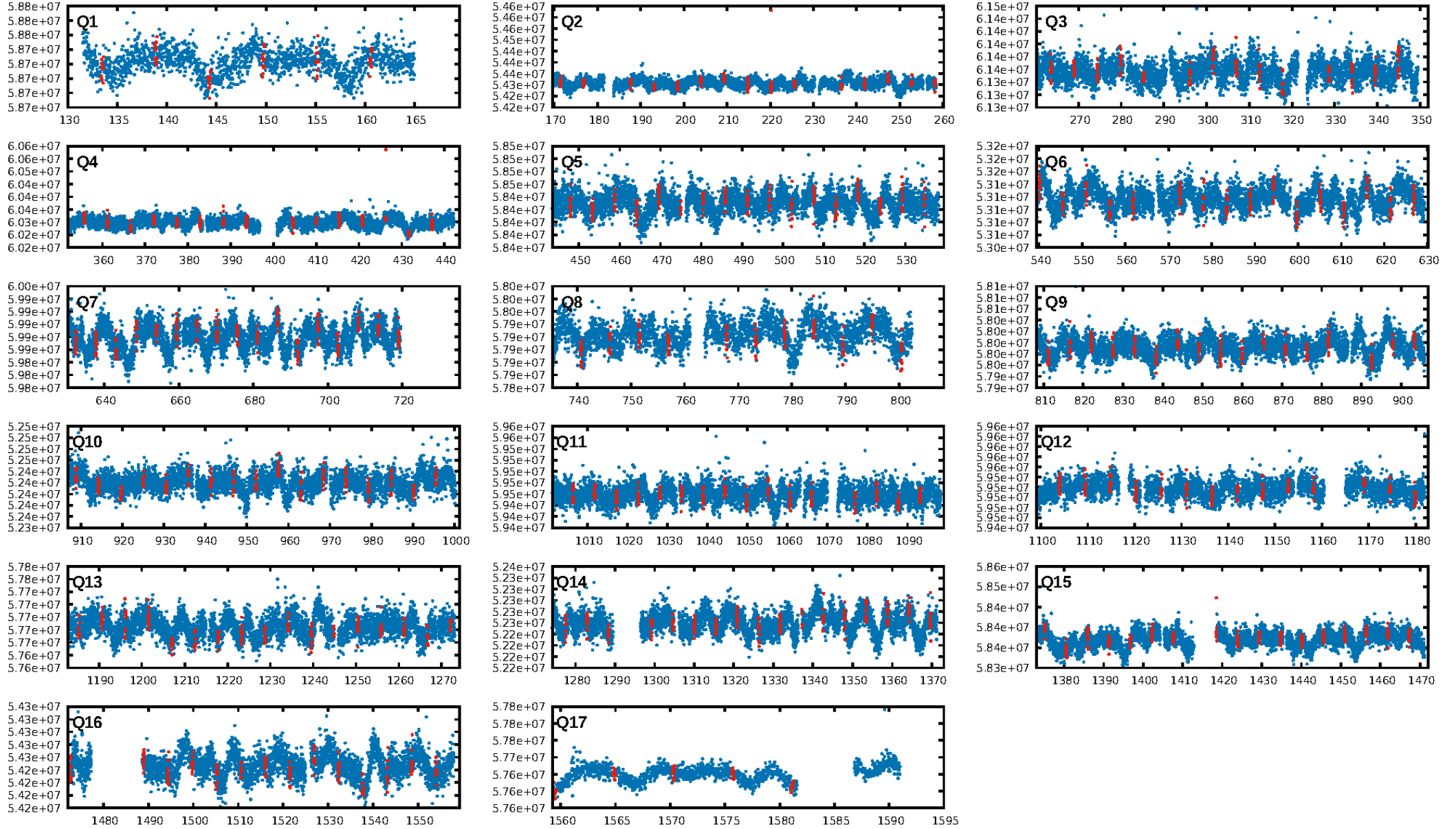
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [13.55σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 2.07e-18
RollingBand-fgt: 0.99 [206/208]
GhostDiagnostic-chr: 5.113
Centroid-sig: 65.1%
Centroid-so: 0.726 arcsec [0.65σ]
OotOffset-rm: 1.827 arcsec [2.27σ]
KicOffset-rm: 1.860 arcsec [1.78σ]
OotOffset-st: 4/4/2/2 [12]
KicOffset-st: 4/4/2/2 [12]
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DiffImageOverlap-fno: 1.00 [17/17]

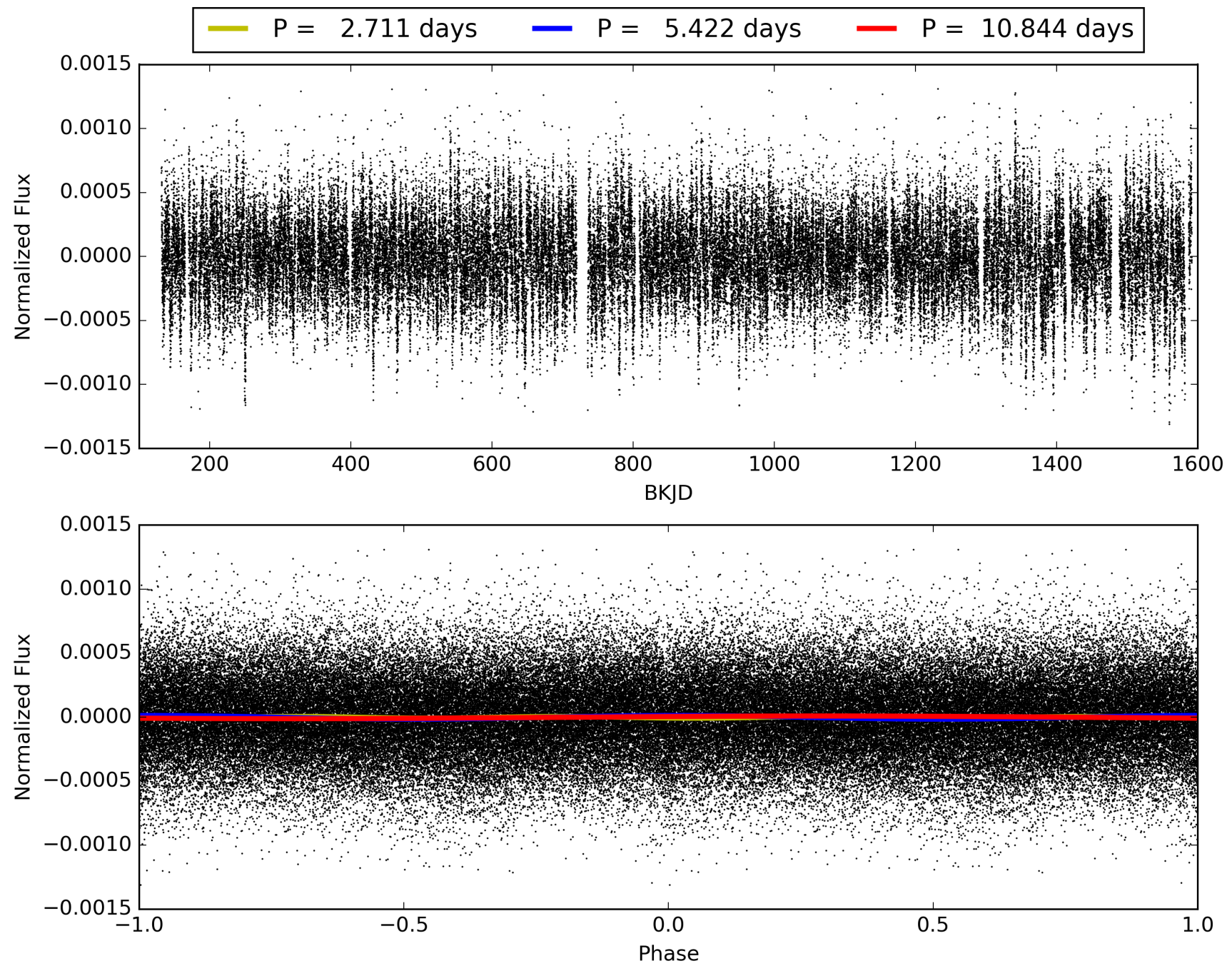
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 22:17:50 Z

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

TCE 001996180-02, PDC Light Curves

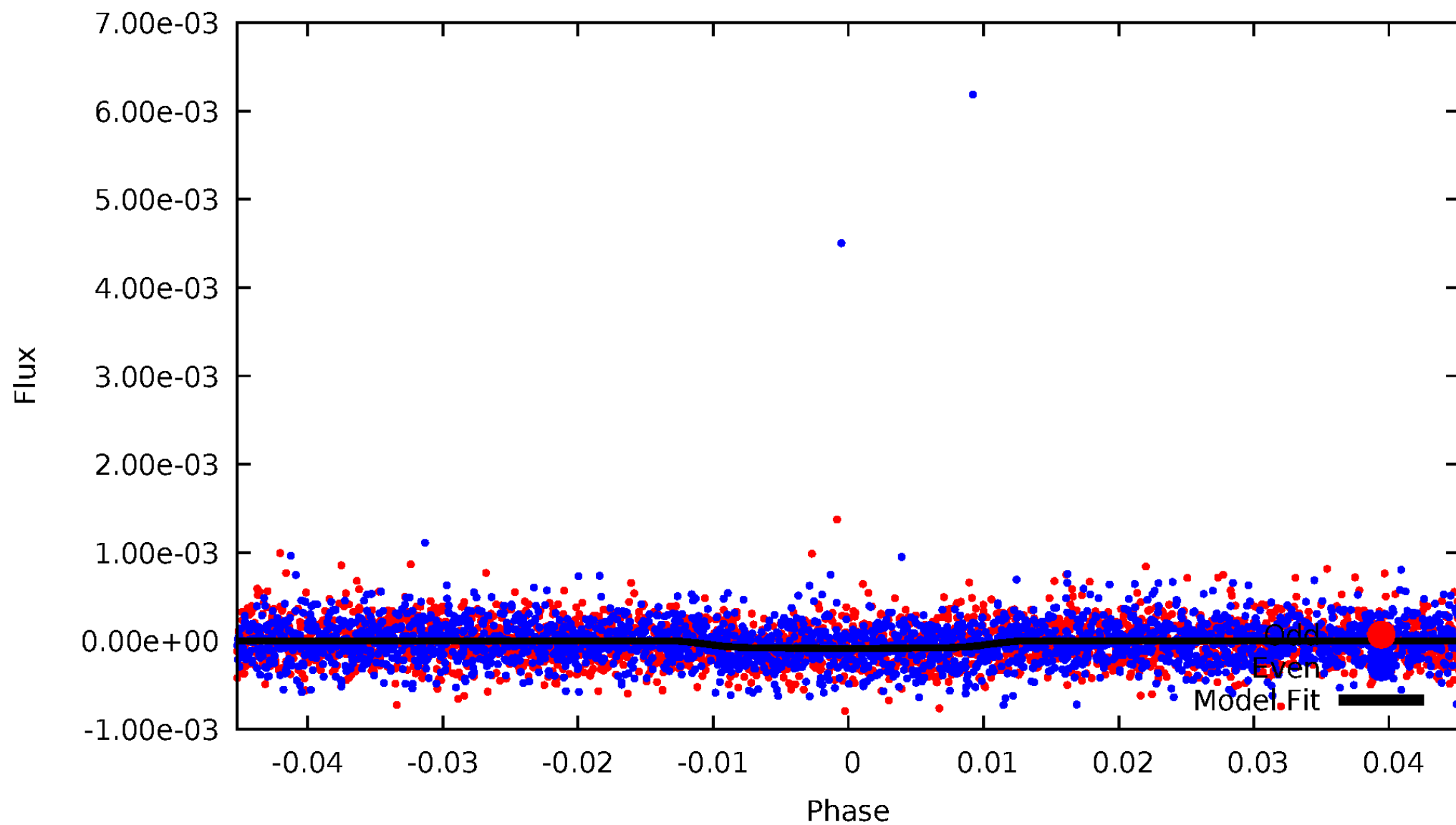


TCE 001996180-02



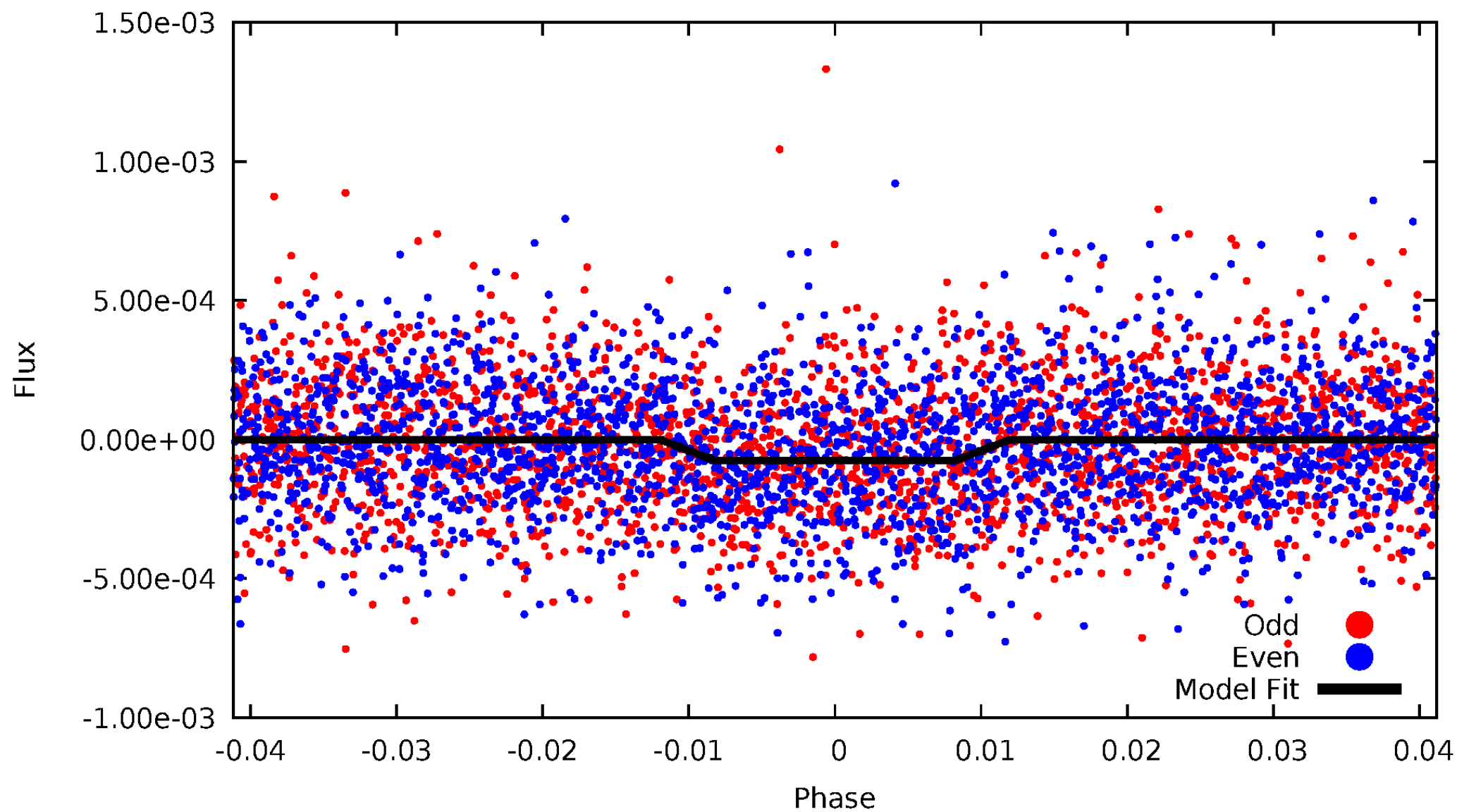
DV Odd/Even

TCE 001996180-02



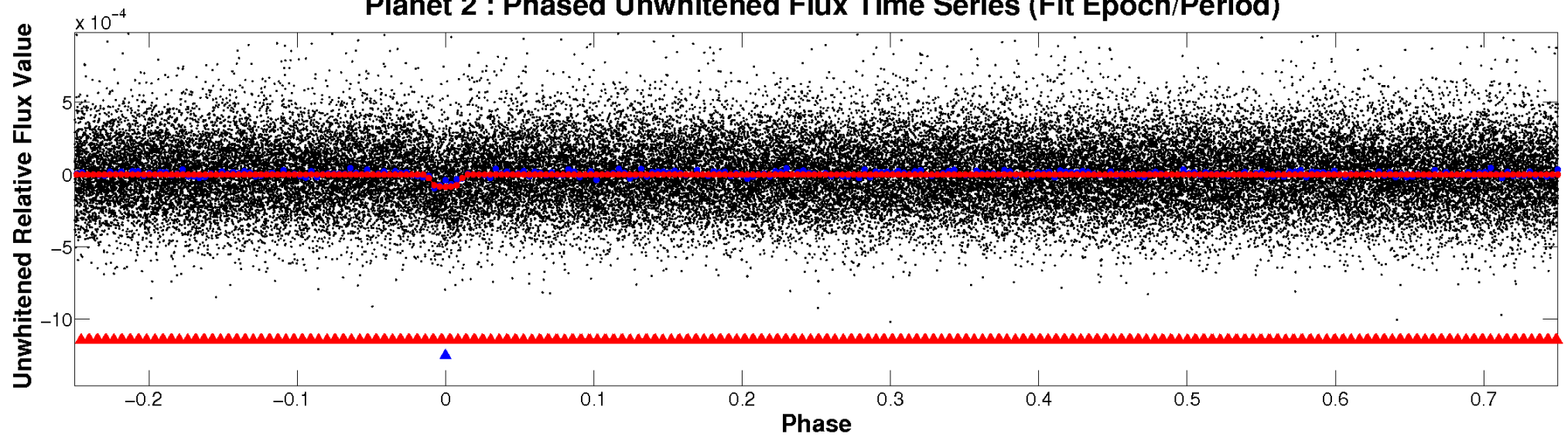
ALT Odd/Even

TCE 001996180-02

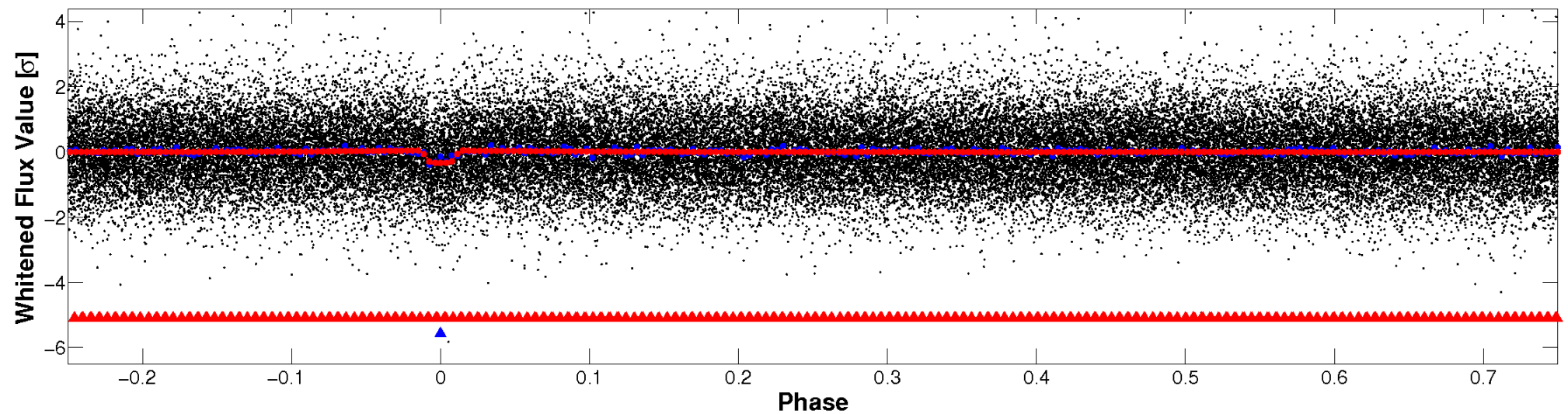


Non-Whitened Vs. Whitened Light Curve

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

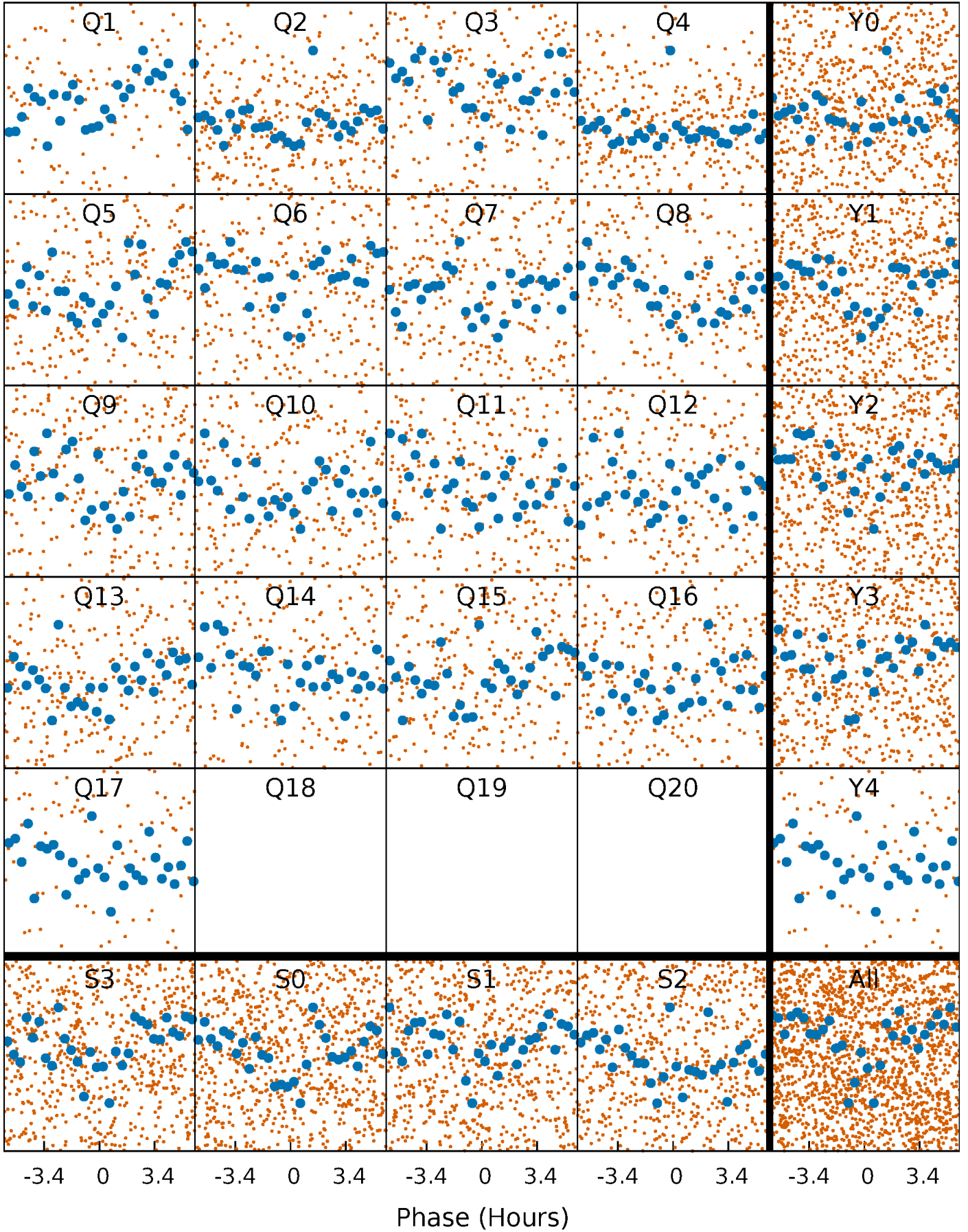


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



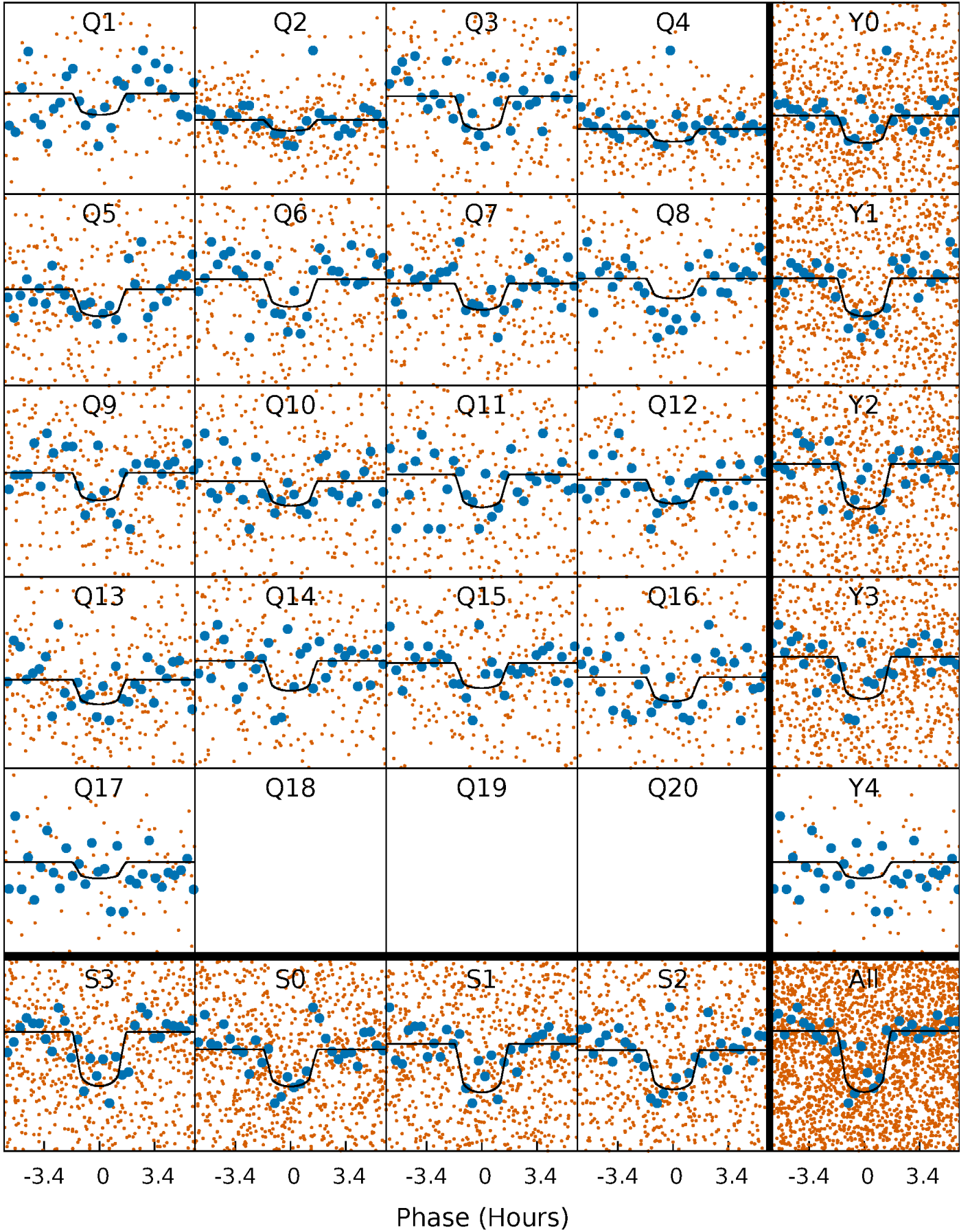
PDC Quarter-Phased Transit Curves

TCE 001996180-02 $P = 5.422070$ Days $T_0 = 133.454744$ (BKJD)



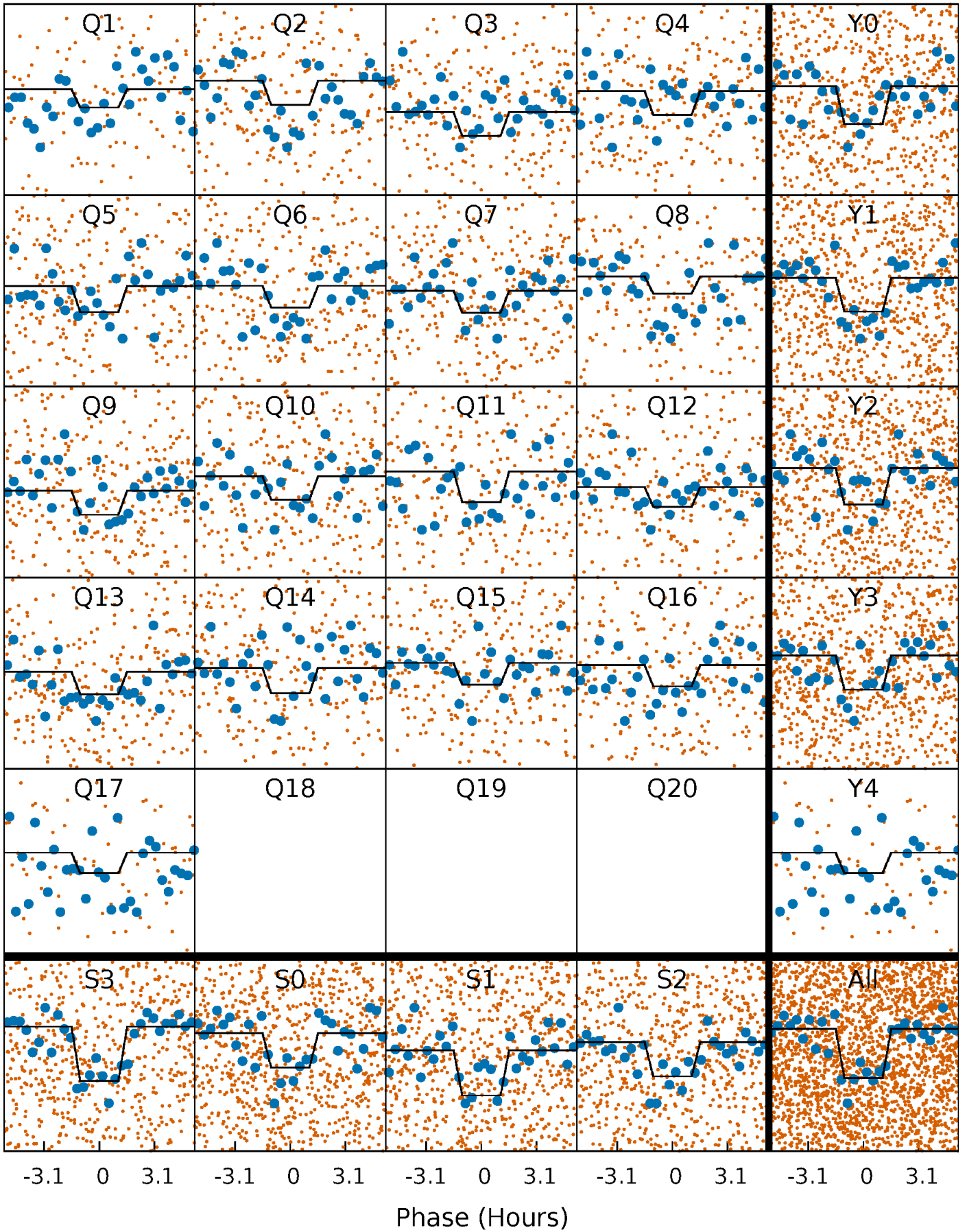
DV Quarter-Phased Transit Curves

TCE 001996180-02 P= 5.422070 Days $T_0=133.454744$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

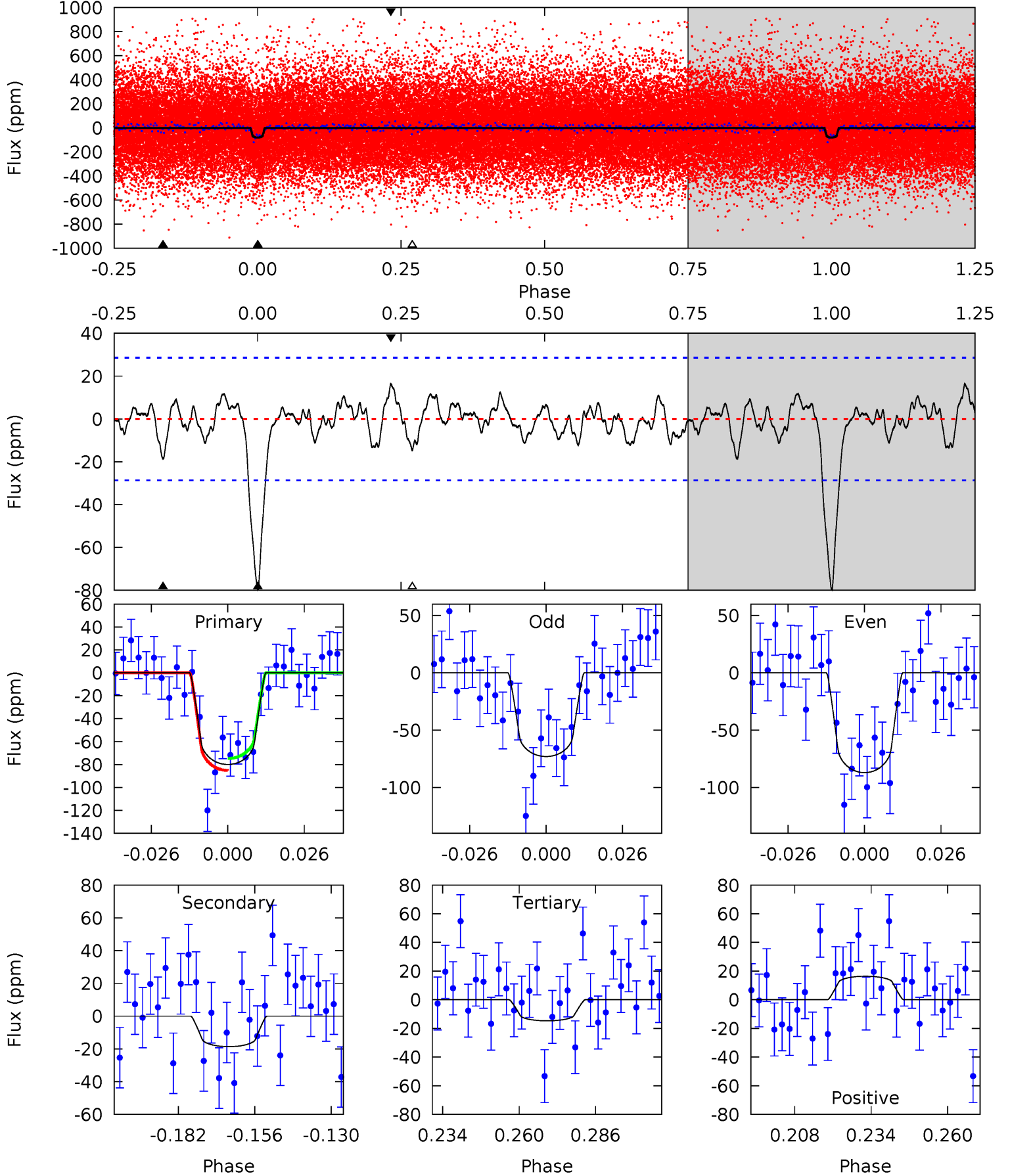
TCE 001996180-02 $P = 5.422032$ Days $T_0 = 133.462390$ (BKJD)



DV Model-Shift Uniqueness Test

001996180-02, P = 5.422070 Days, E = 128.032674 Days

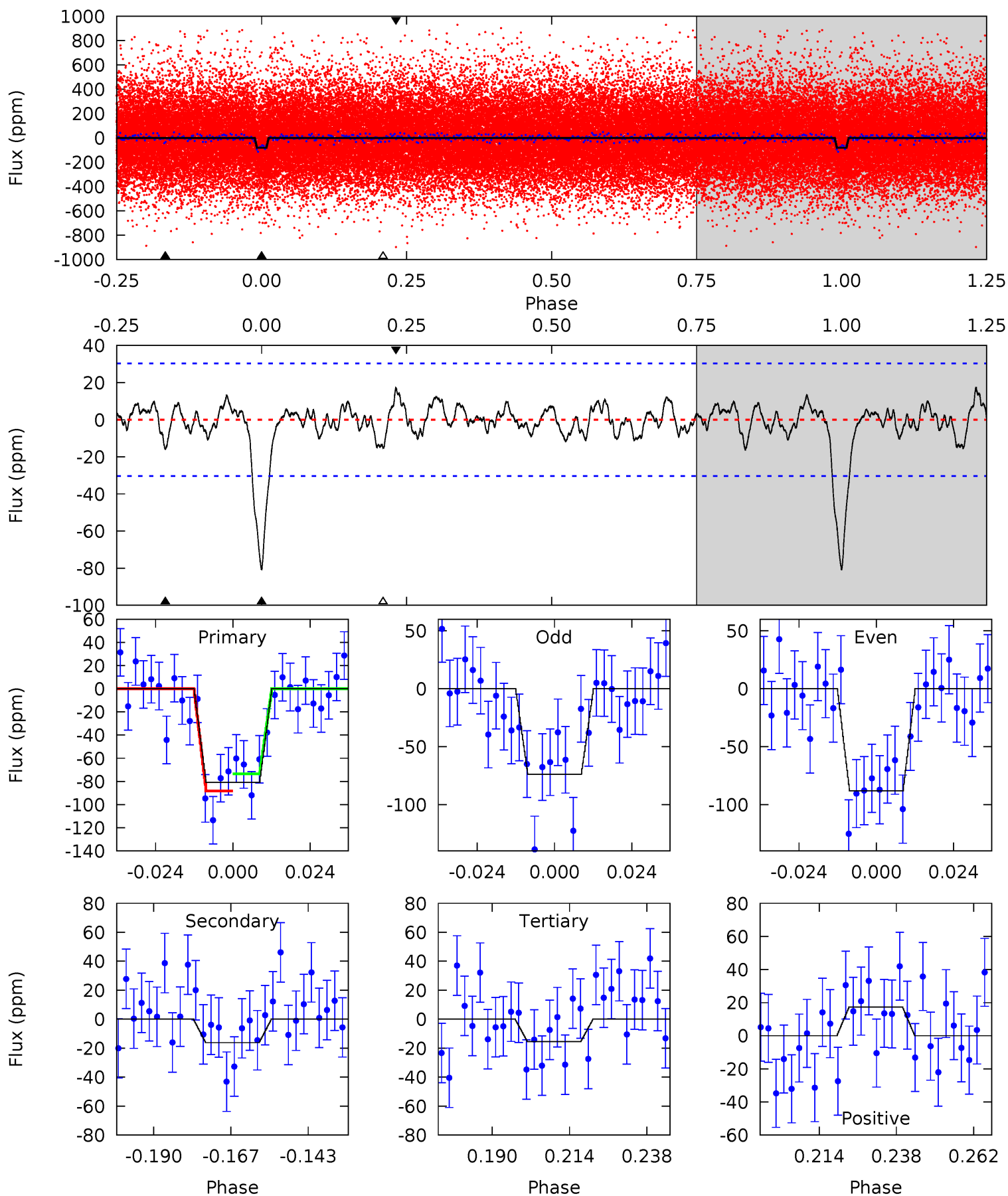
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.5	3.15	2.49	2.77	4.84	2.23	1.03	11.0	10.8	0.67	0.38	1.19	0.84	0.17	0.88



Alt Model-Shift Uniqueness Test

001996180-02, P = 5.422032 Days, E = 128.040358 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	2.59	2.47	2.78	4.86	2.26	0.95	10.5	10.2	0.12	-0.18	1.15	1.04	0.18	1.18



Stellar Parameters For KIC 001996180

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6123^{+122}_{-134}	$4.263^{+0.137}_{-0.112}$	$-0.060^{+0.150}_{-0.150}$	$1.263^{+0.232}_{-0.190}$	$1.066^{+0.109}_{-0.073}$	$0.745^{+0.454}_{-0.260}$
	+2%/-2%	+3%/-3%	+250%/-250%	+18%/-15%	+10%/-7%	+61%/-35%
Source	SPE58	SPE58	SPE58	DSEP		

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

Secondary Eclipse Parameters for KIC 001996180-02 / KOI 2534.02

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-19 ± 6	$1.40^{+0.71}_{-0.69}$	1703^{+79}_{-84}	4188^{+1333}_{-616}	19^{+55}_{-12}
Alt.	-16 ± 6	$1.25^{+0.66}_{-0.66}$	1695^{+84}_{-73}	4275^{+1564}_{-718}	21^{+76}_{-14}

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 $A_{obs} \gg 1.0$

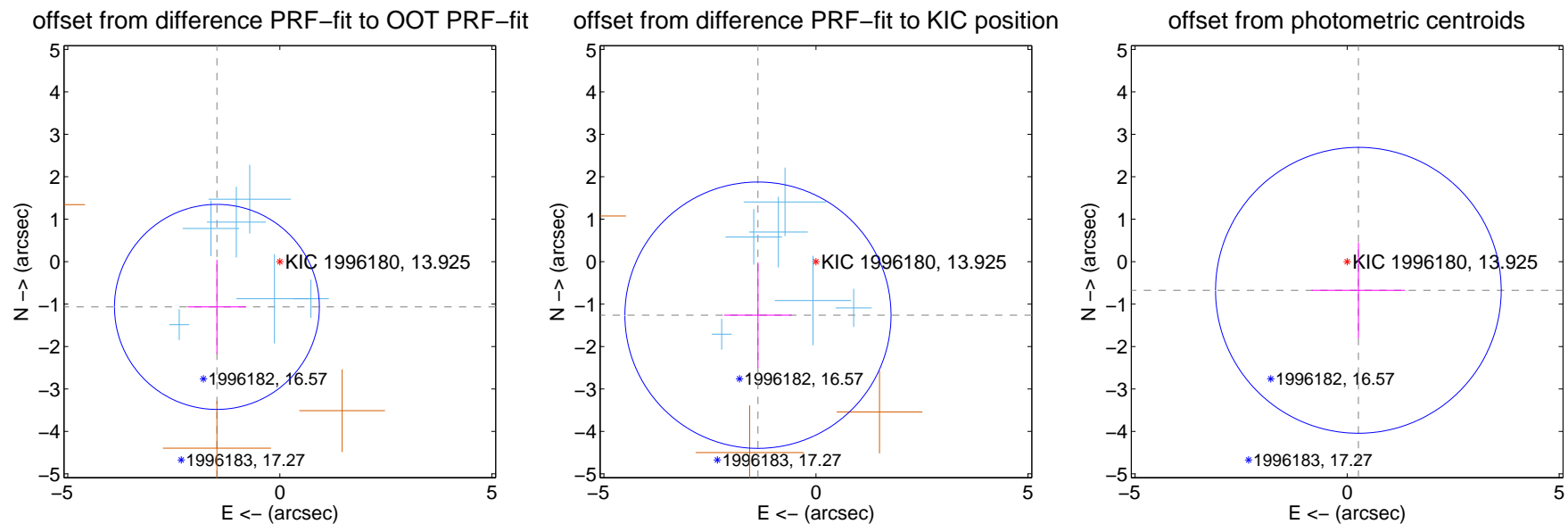
DV Centroid Data

Supplemental centroid analysis for 001996180-02. Kepler magnitude: 13.93. Transit SNR 10.26

There are 6 quarters with good PRF difference image offsets

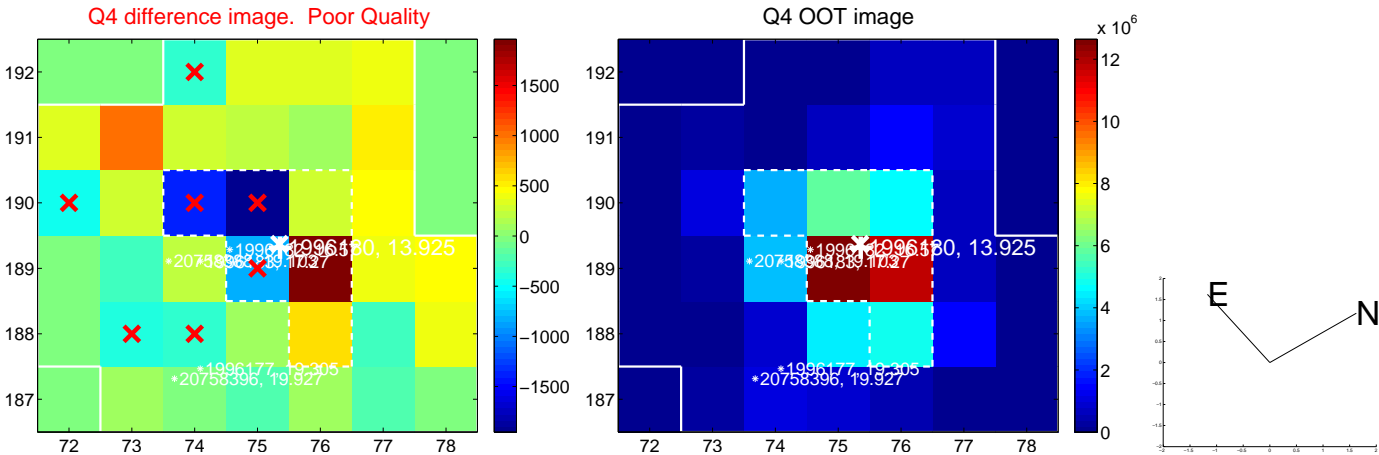
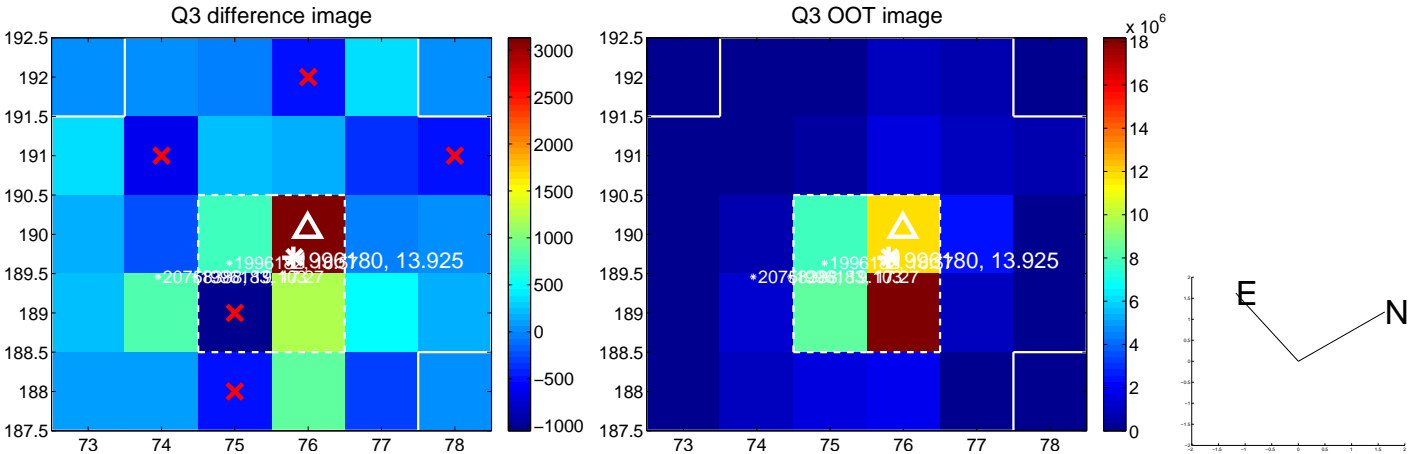
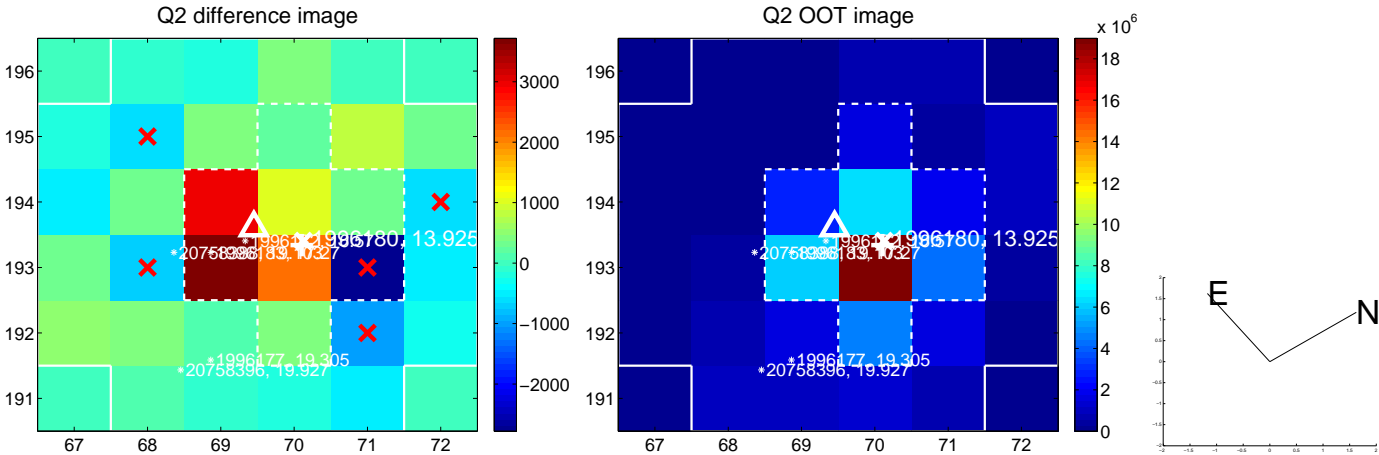
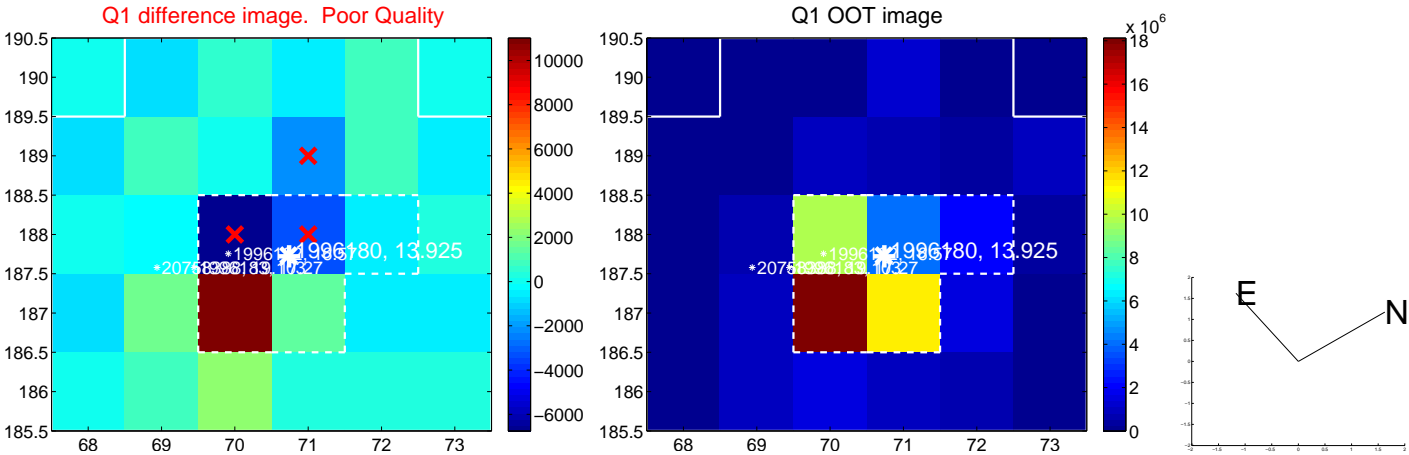
The direct PRF centroid is offset from the target star catalog position by about 0.15 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.827 ± 0.805	2.27	1.483 ± 0.691	-1.066 ± 1.108
PRF-fit source offset from KIC position	1.860 ± 1.046	1.78	1.367 ± 0.797	-1.262 ± 1.243
photometric centroid source offset	0.73 ± 1.12	0.65	-0.27 ± 1.10	-0.68 ± 1.13

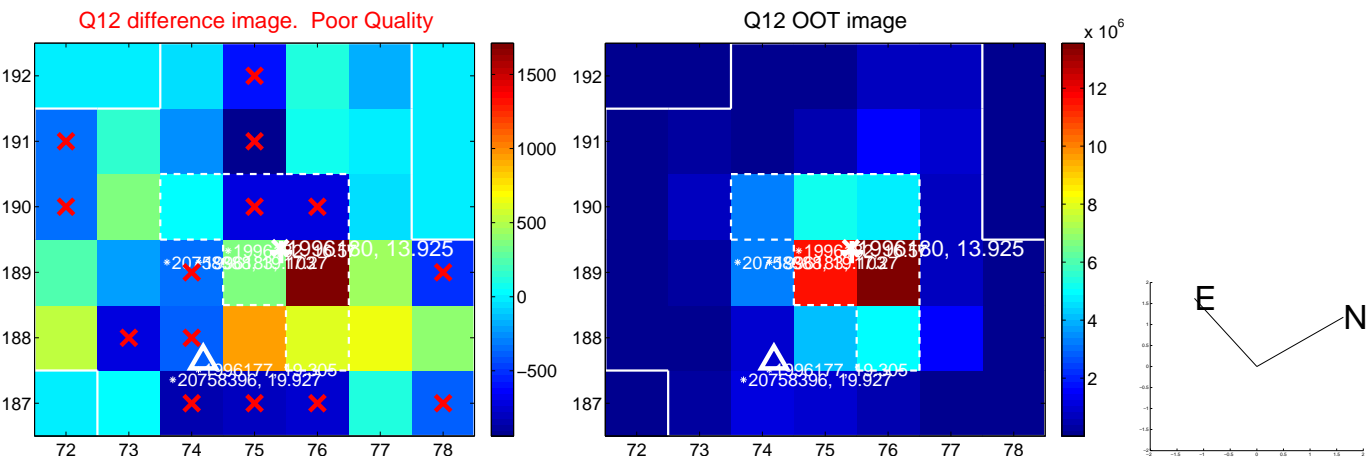
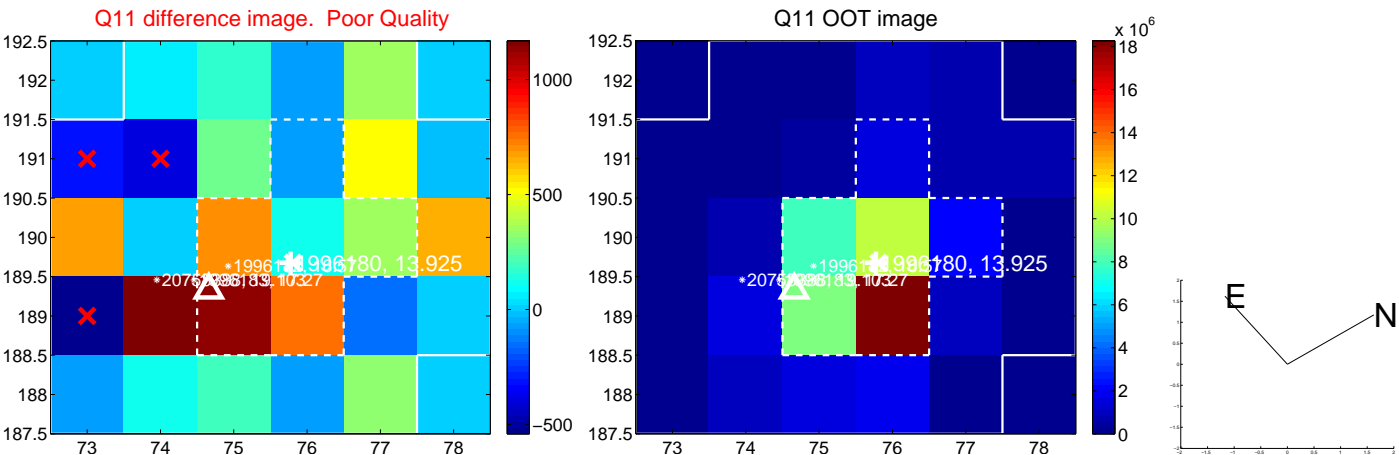
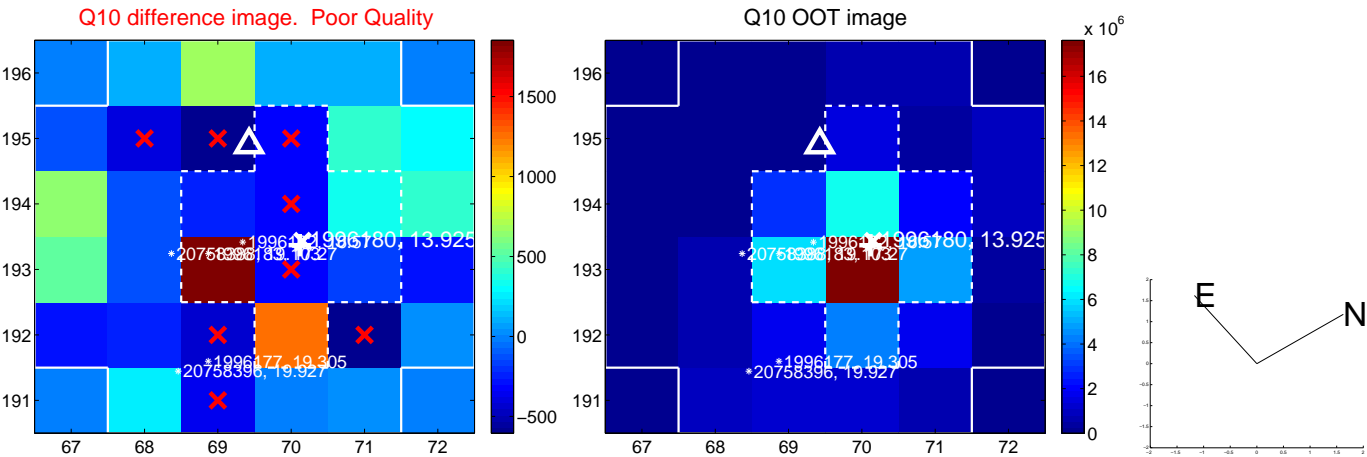
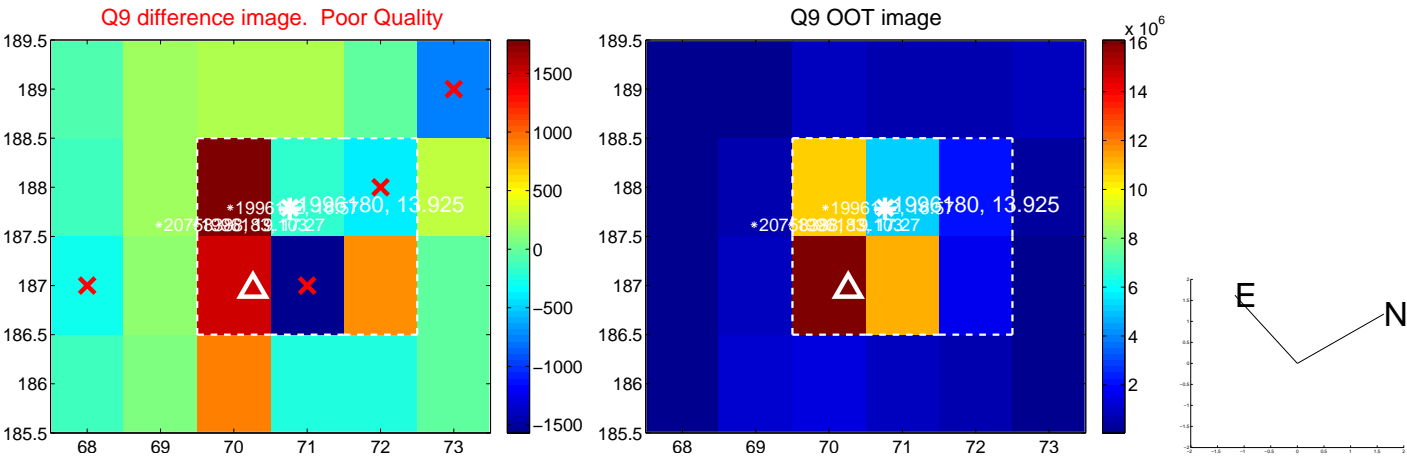


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

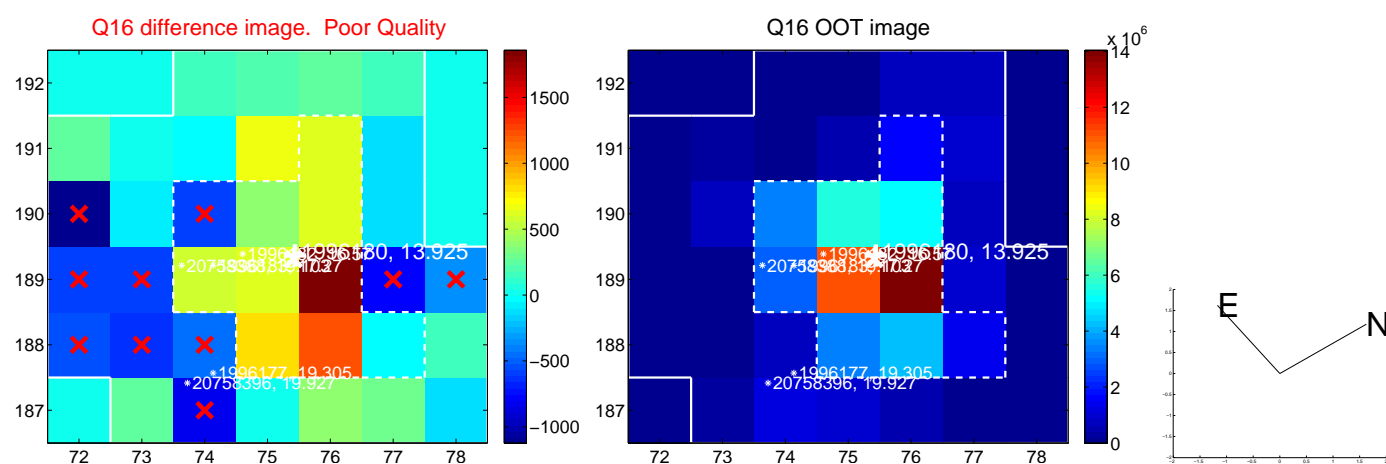
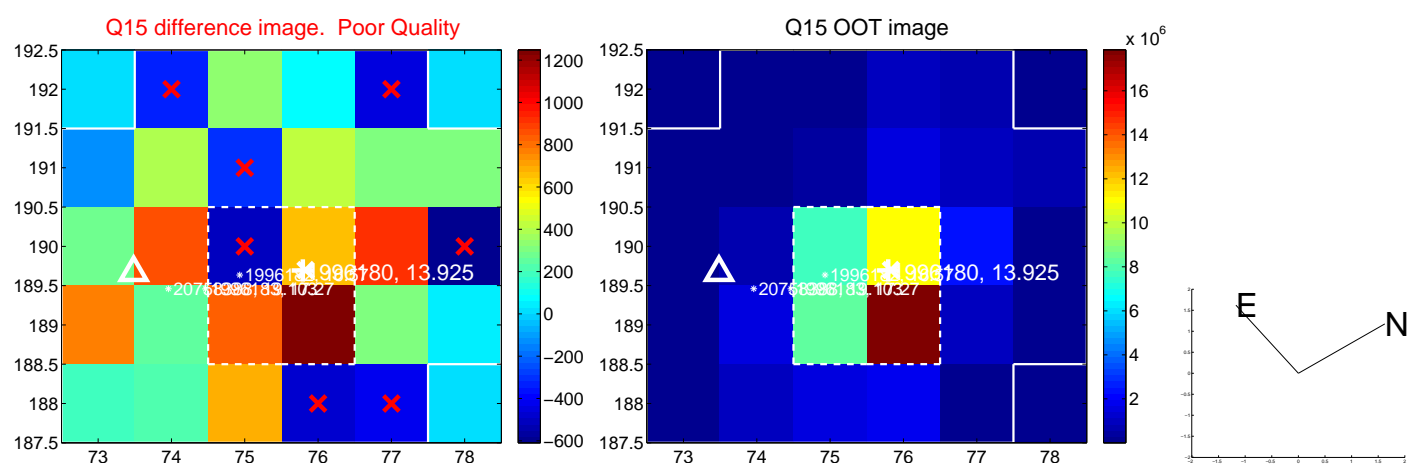
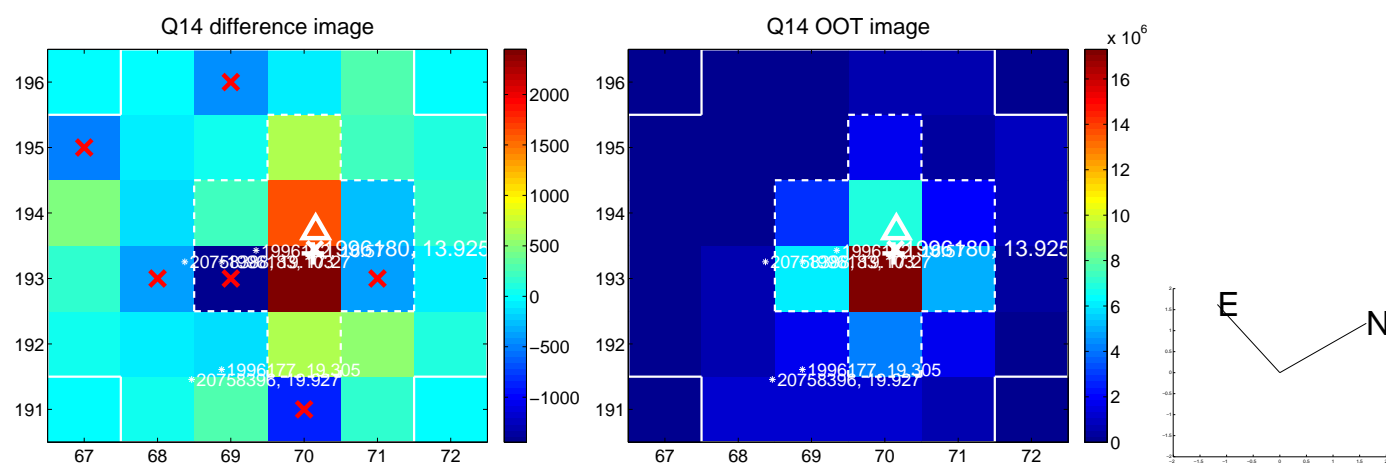
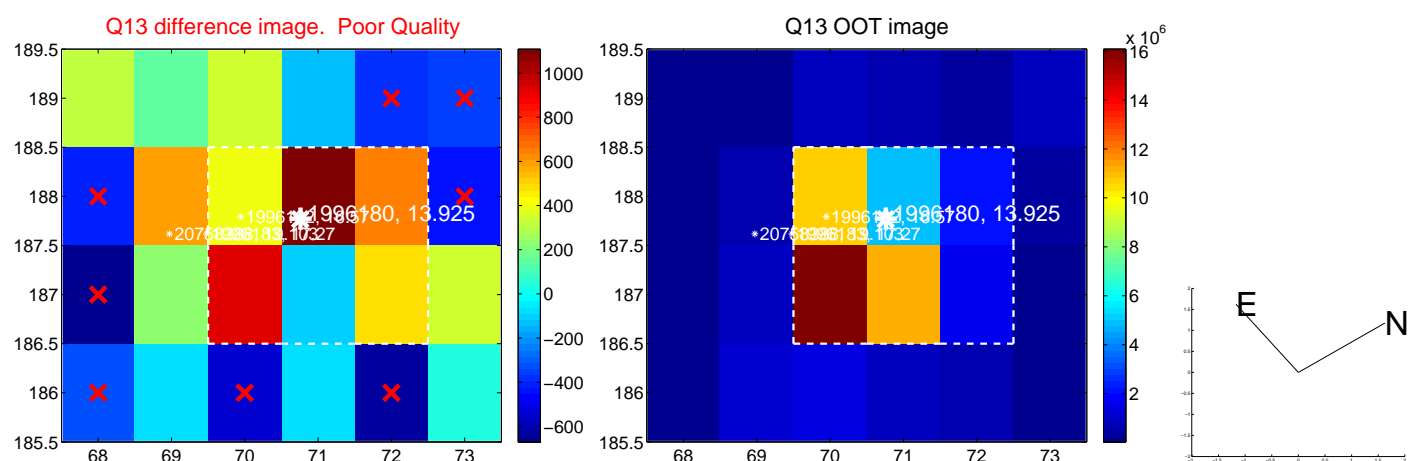
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



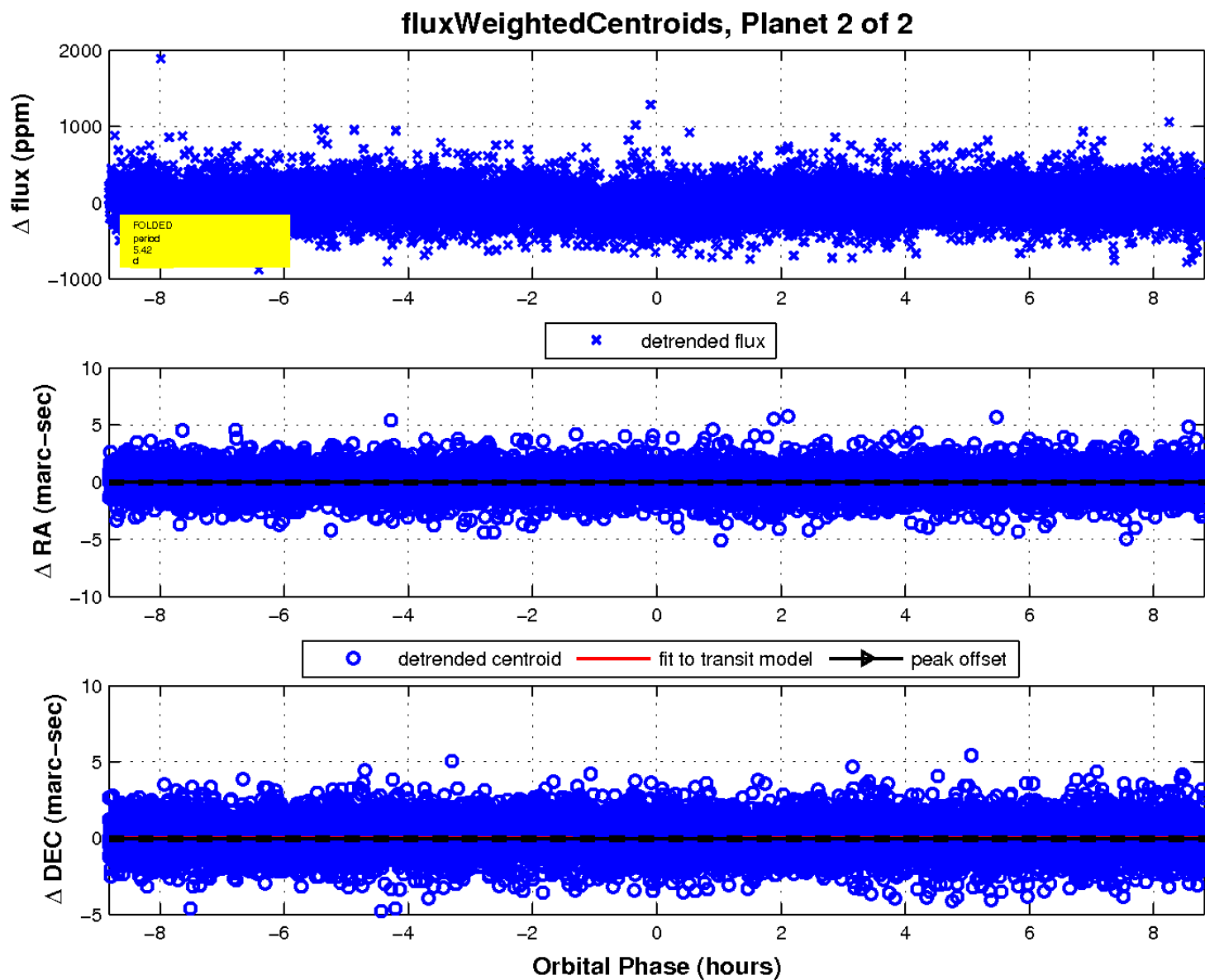
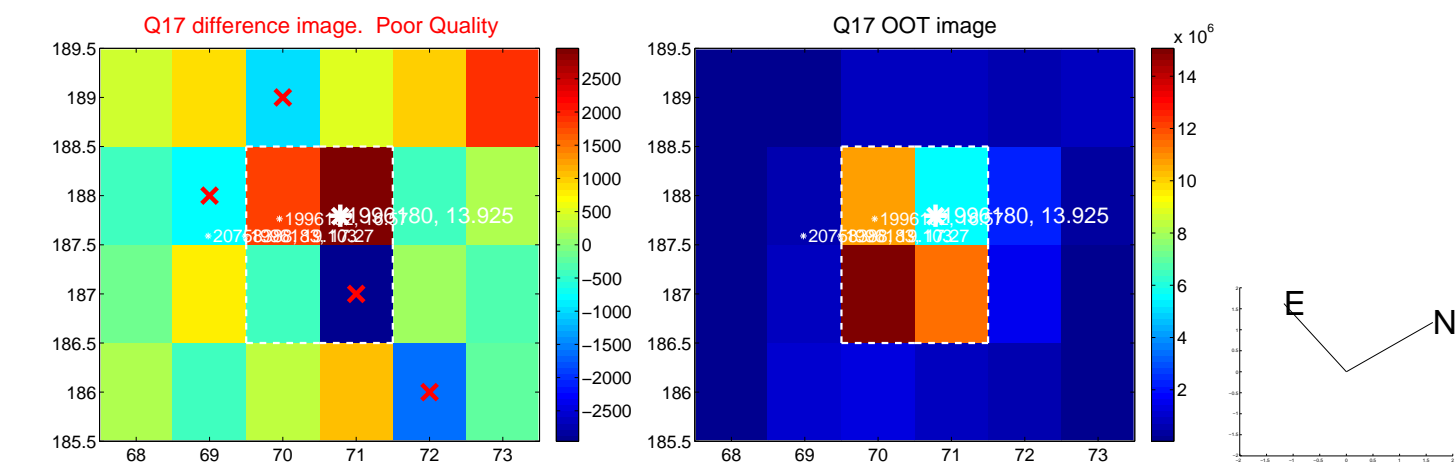
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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.



UKIRT Image

Declination

