

KIC 008505920

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})
008505920-01	OBS	2094.01	42.427239	156.166966	622.6	5.793	19.7	20.2	1.01	5330	3.36	14.37
008505920-02	OBS	2094.02	198.681622	270.662168	684.7	8.393	12.9	13.5	1.01	5330	2.98	1.83

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008505920-01	OBS	PC	0.97	0	0	0	0	NO_COMMENT
008505920-02	OBS	PC	1.00	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.

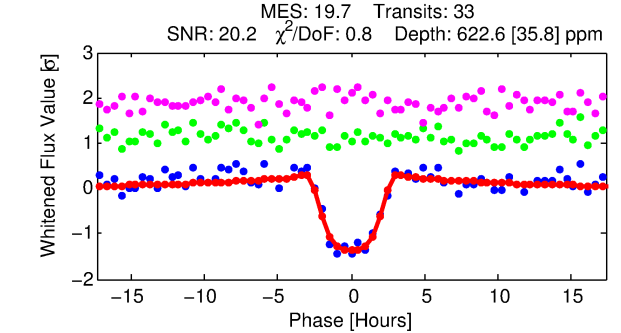
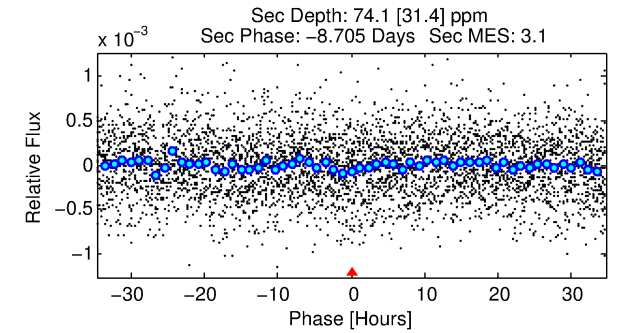
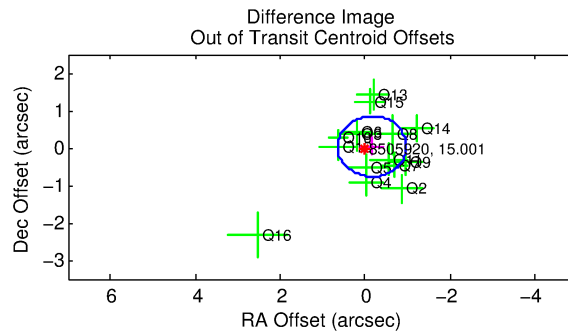
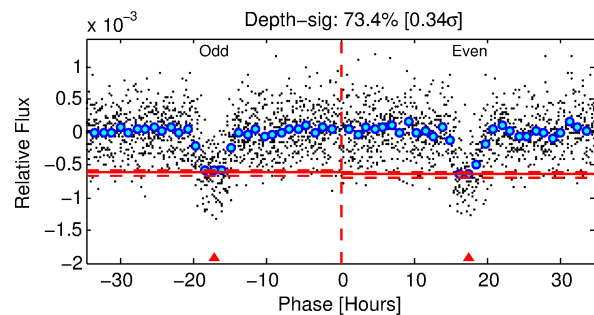
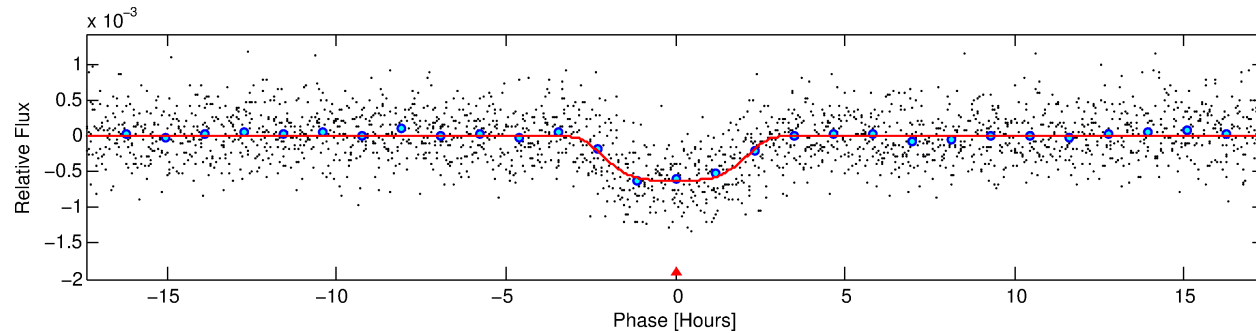
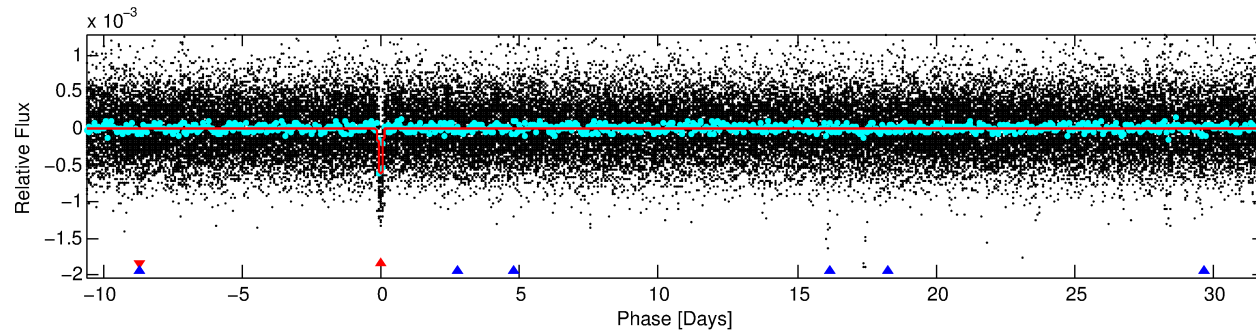
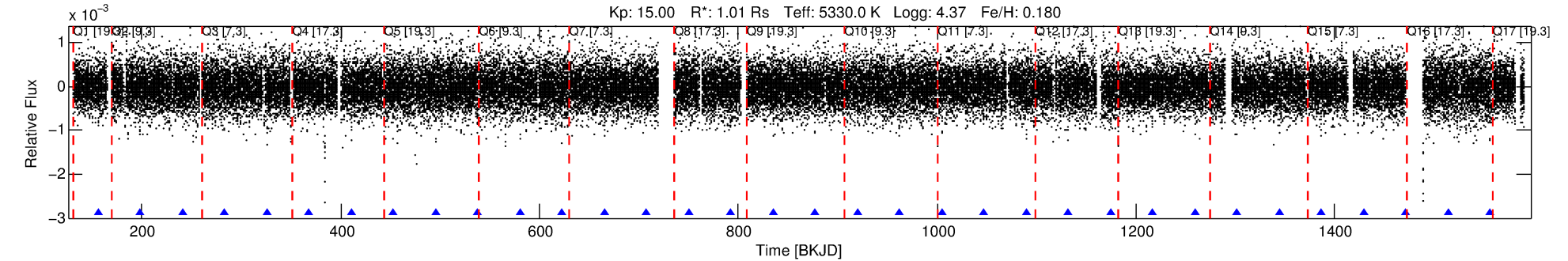
Ephemeris Match Information For 008505920-01

No Significant Match Found

DV One-Page Summary

KIC: 8505920 Candidate: 1 of 2 Period: 42.427 d

KOI: K02094.01 Corr: 0.965



DV Fit Results:

Period = 42.42724 [0.00031] d
Epoch = 156.1670 [0.0059] BKJD
Rp/R* = 0.0304 [0.0014]
a/R* = 21.14 [2.21]
b = 0.96 [0.01]
Seff = 14.37 [3.49]
Teff = 496 [30] K
Rp = 3.36 [0.56] Re
a = 0.2273 [0.0340] AU
Ag = 186.31 [91.89] [2.02 σ]
Teffp = 2836 [310] K [7.51 σ]

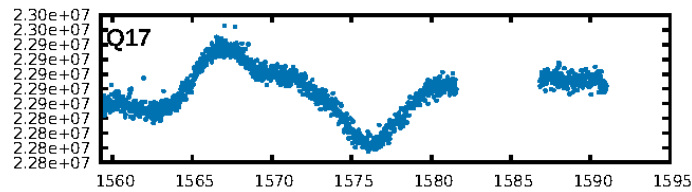
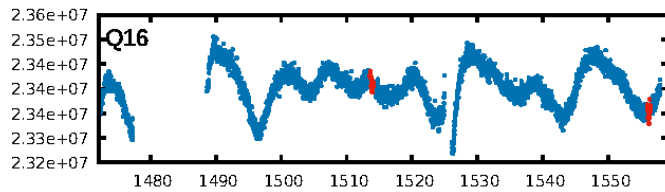
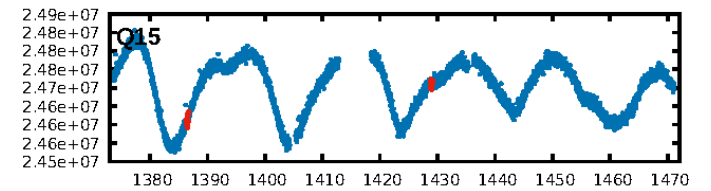
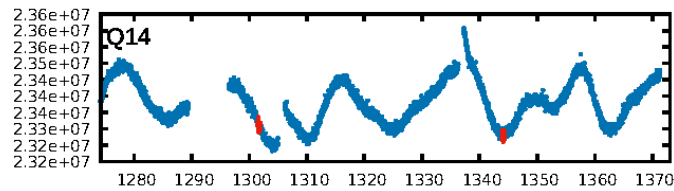
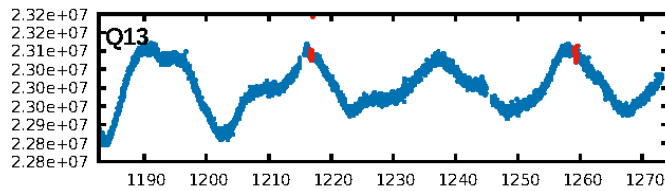
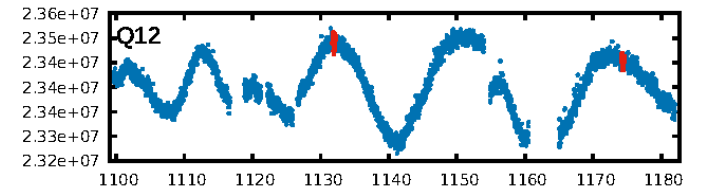
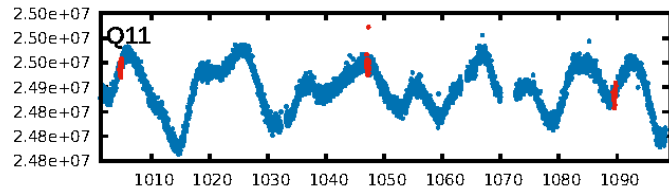
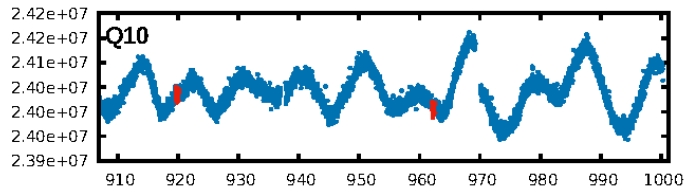
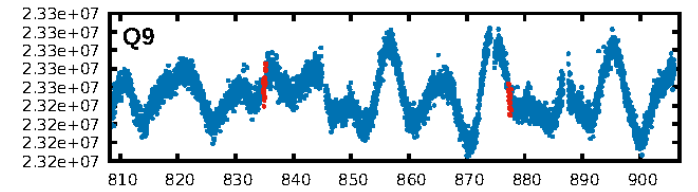
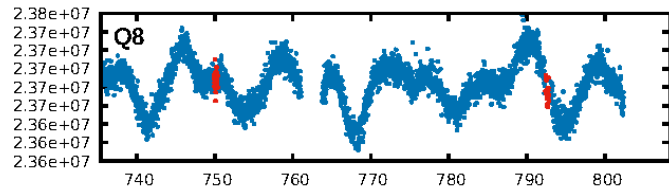
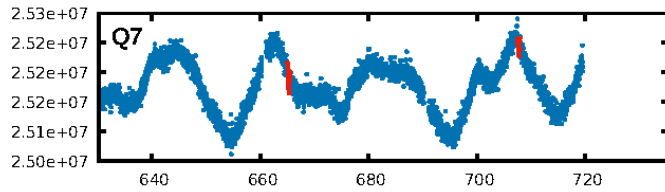
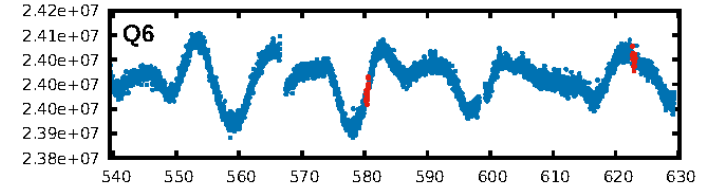
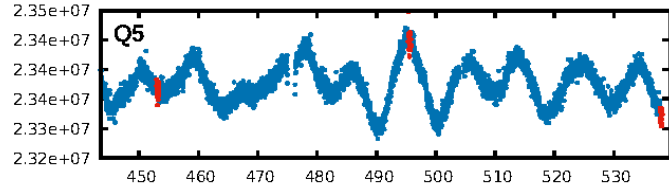
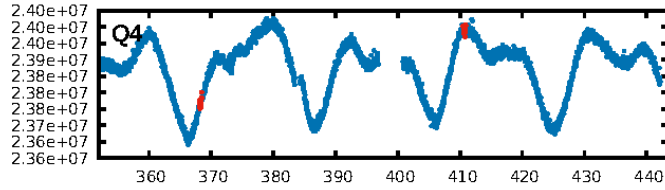
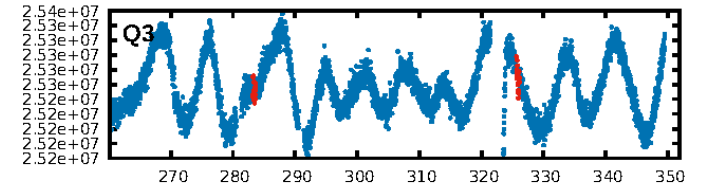
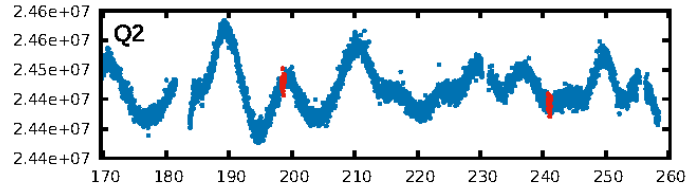
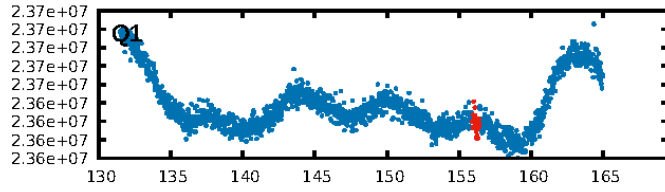
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [367.73 σ]
ModelChiSquare2-sig: 94.8%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 5.01e-71
RollingBand-fgt: 1.00 [32/32]
GhostDiagnostic-chr: 4.457
Centroid-sig: 38.8%
Centroid-so: 0.410 arcsec [0.79 σ]
OotOffset-rm: 0.172 arcsec [0.64 σ]
KicOffset-rm: 0.140 arcsec [0.57 σ]
OotOffset-st: 4/4/4/3 [15]
KicOffset-st: 4/4/4/3 [15]
DiffImageQuality-fgm: 0.93 [14/15]
DiffImageOverlap-fno: 1.00 [16/16]

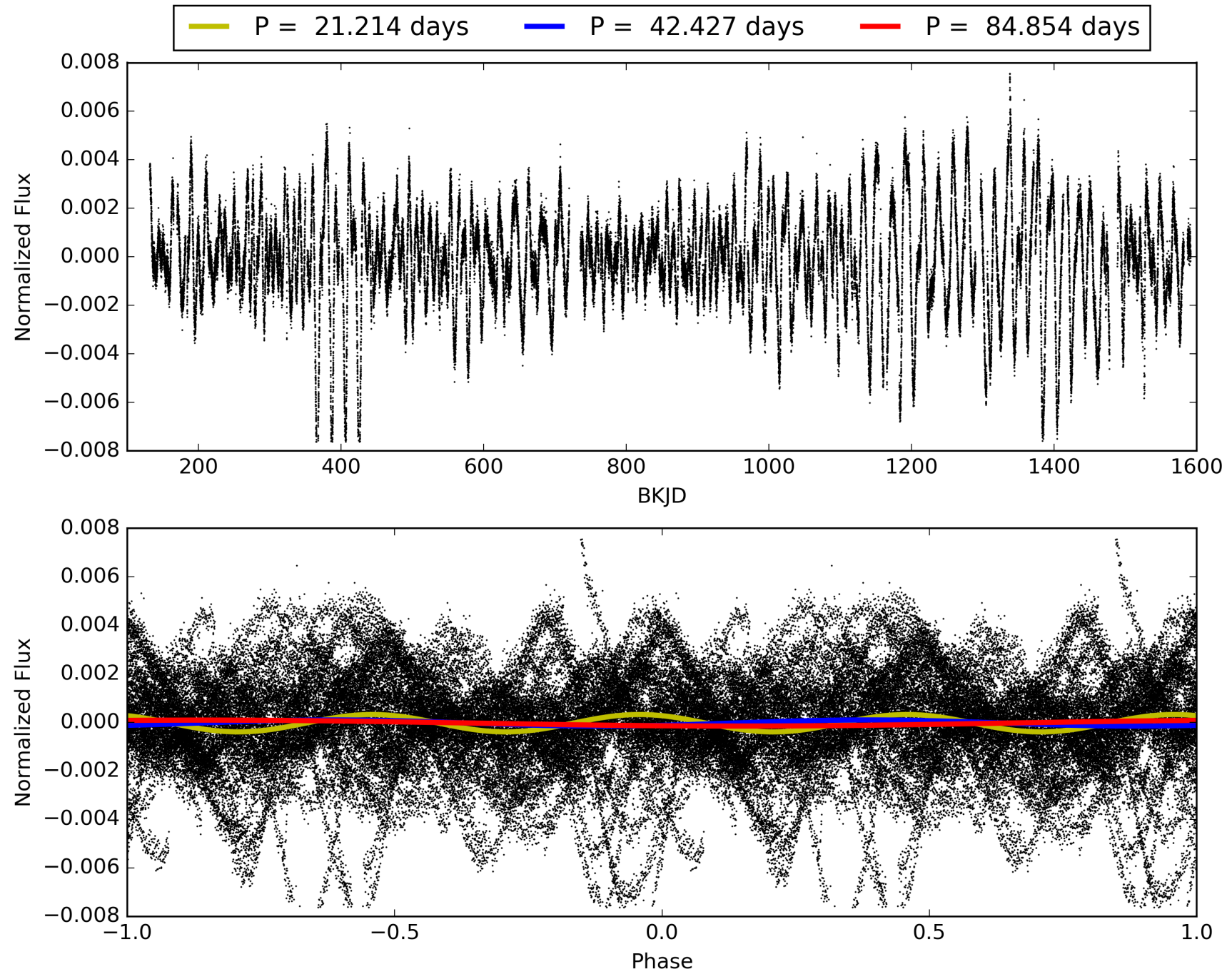
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 008505920-01, PDC Light Curves

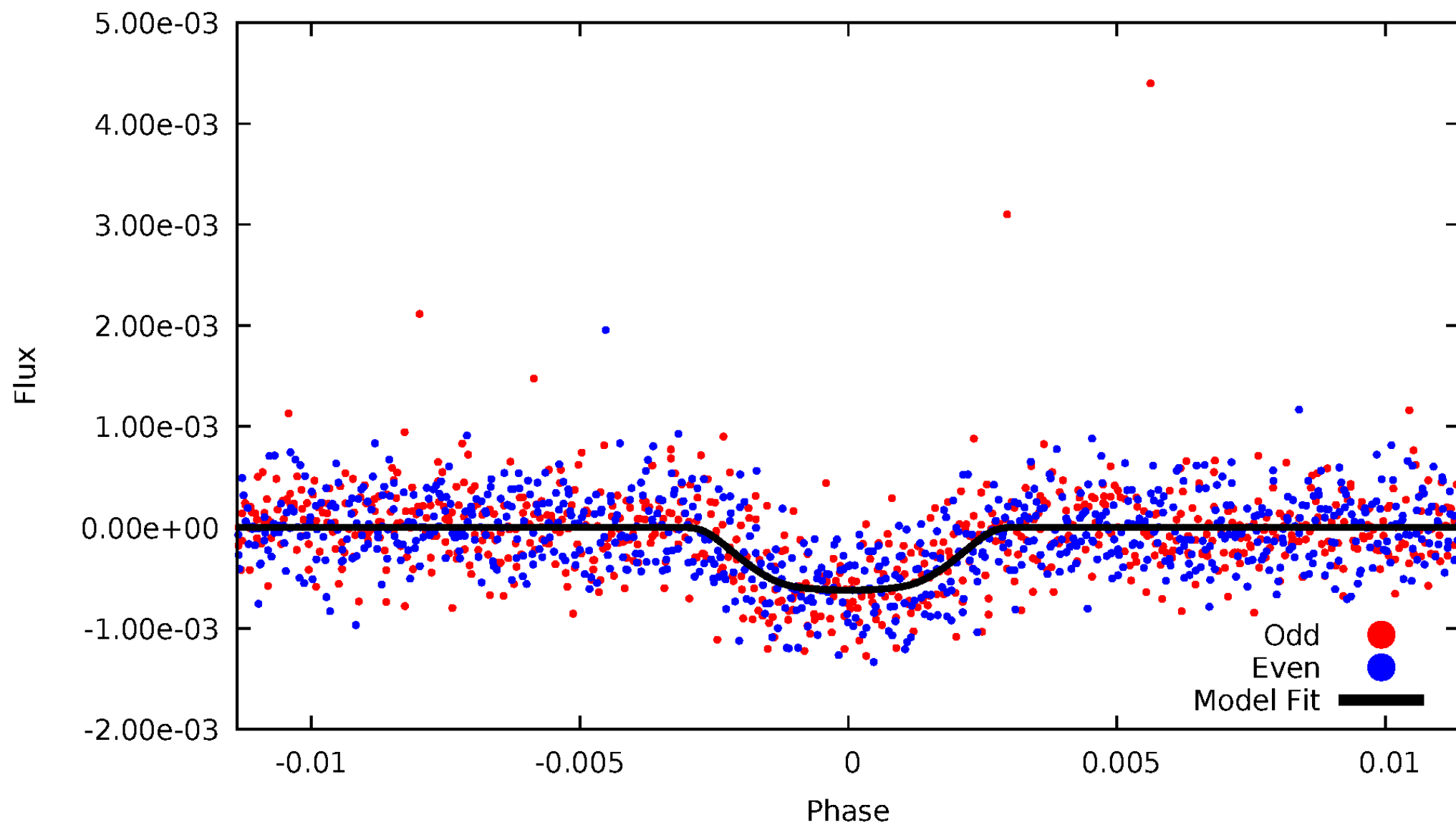


TCE 008505920-01



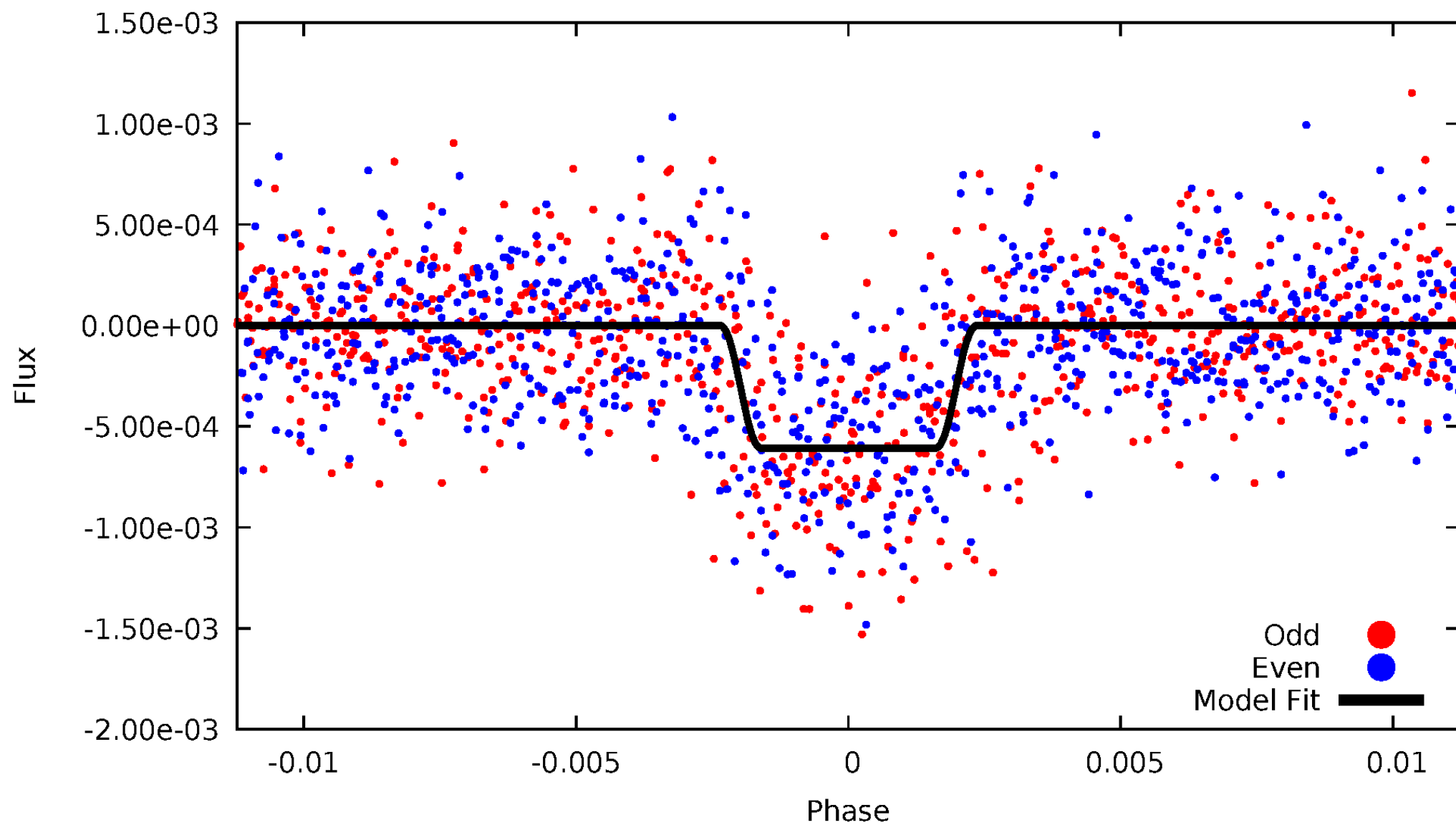
DV Odd/Even

TCE 008505920-01



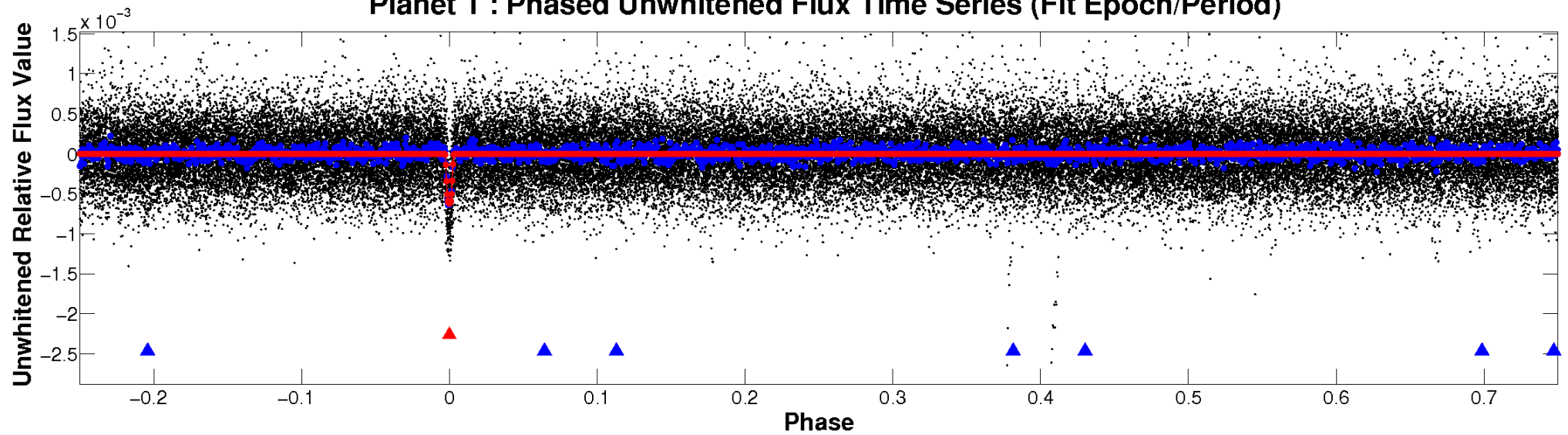
ALT Odd/Even

TCE 008505920-01

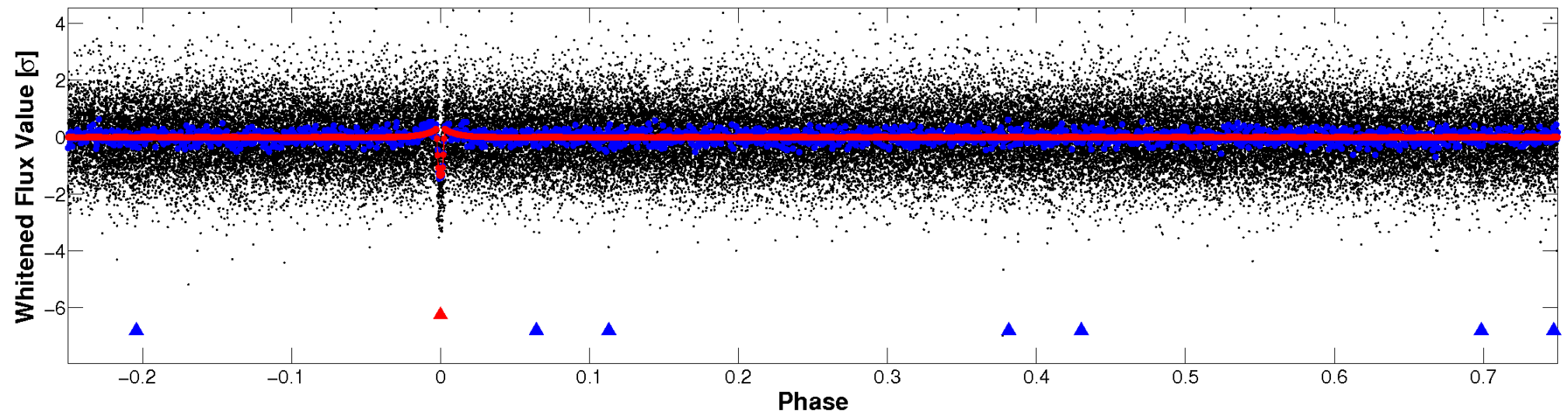


Non-Whitened Vs. Whitened Light Curve

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

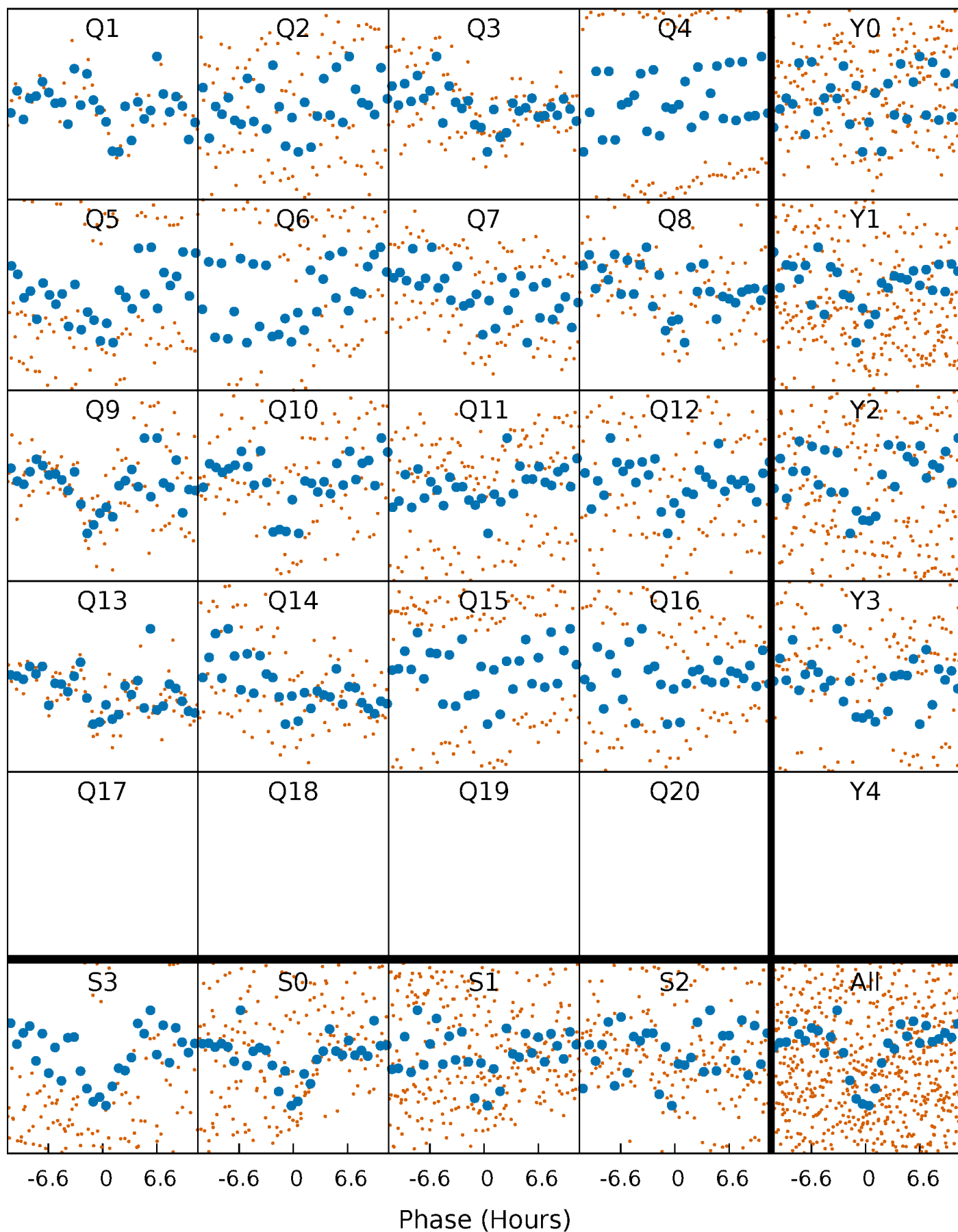


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



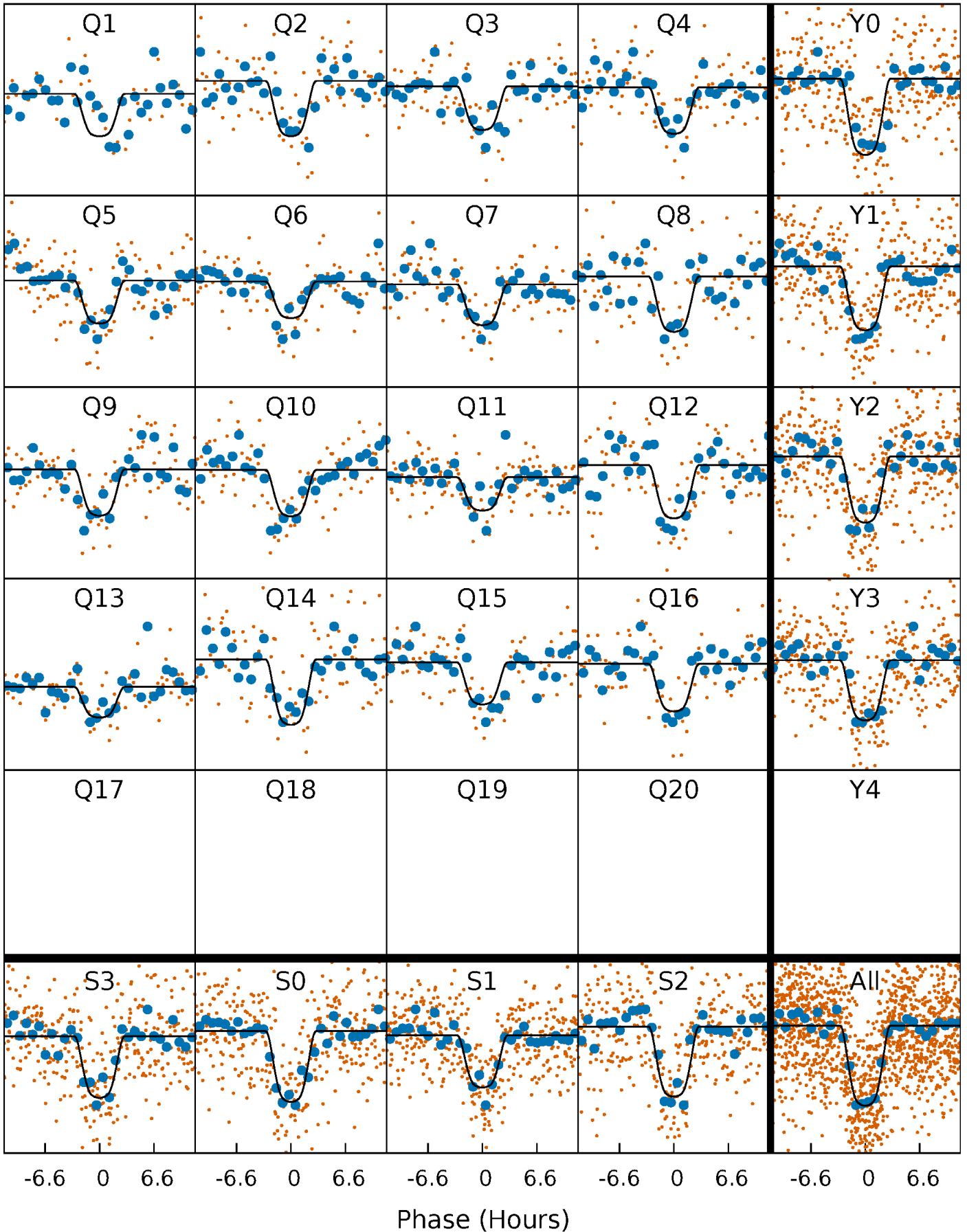
PDC Quarter-Phased Transit Curves

TCE 008505920-01 P= 42.427239 Days $T_0=156.166966$ (BKJD)



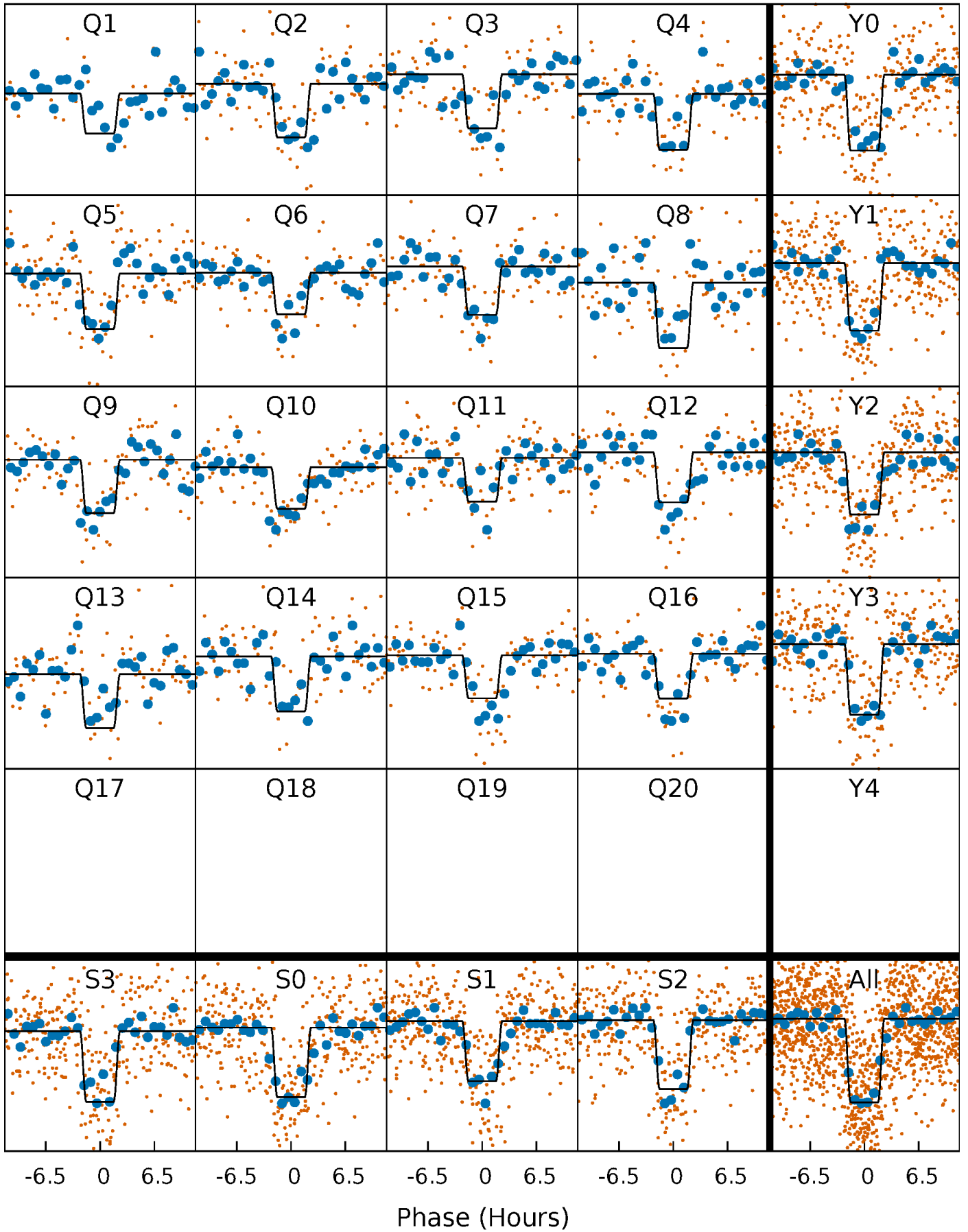
DV Quarter-Phased Transit Curves

TCE 008505920-01 P= 42.427239 Days $T_0=156.166966$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

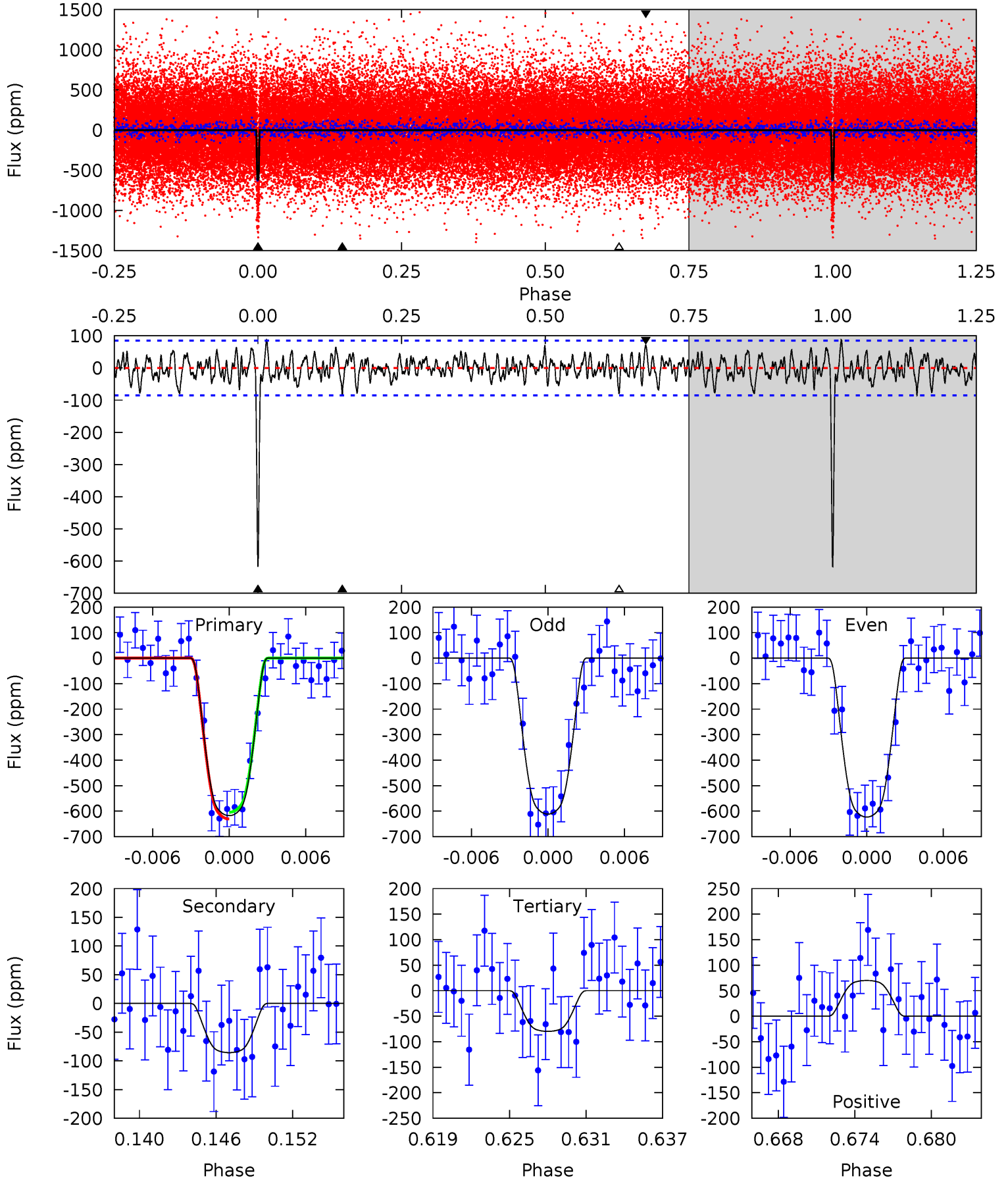
TCE 008505920-01 P= 42.426910 Days $T_0=156.174567$ (BKJD)



DV Model-Shift Uniqueness Test

008505920-01, $P = 42.427239$ Days, $E = 113.739727$ Days

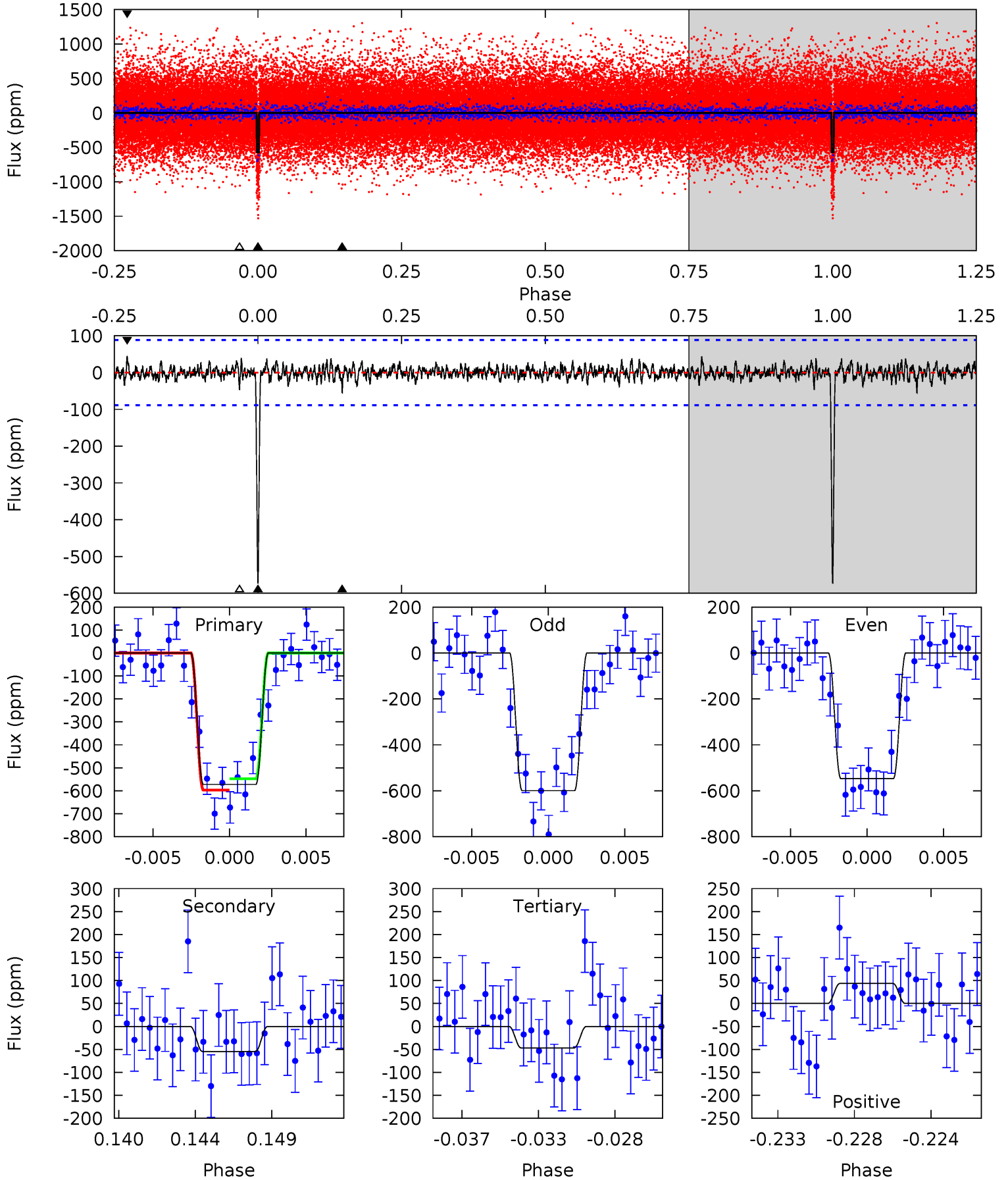
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
37.2	5.16	4.80	4.22	5.12	2.74	1.64	32.4	33.0	0.36	0.94	0.35	0.98	0.12	0.79



Alt Model-Shift Uniqueness Test

008505920-01, $P = 42.426910$ Days, $E = 113.747657$ Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
33.4	3.19	2.74	2.55	5.17	2.83	0.74	30.7	30.9	0.45	0.65	1.53	1.02	0.07	1.42



Stellar Parameters For KIC 008505920

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5330^{+79}_{-79}	$4.366^{+0.137}_{-0.125}$	$0.180^{+0.150}_{-0.100}$	$1.013^{+0.162}_{-0.133}$	$0.869^{+0.065}_{-0.035}$	$1.176^{+0.668}_{-0.426}$
	+1%/-1%	+3%/-3%	+83%/-56%	+16%/-13%	+7%/-4%	+57%/-36%
Source	SPE90	SPE90	SPE90	DSEP		

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

Secondary Eclipse Parameters for KIC 008505920-01 / KOI 2094.01

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-86 ± 17	$3.36^{+0.37}_{-0.29}$	695^{+27}_{-31}	3434^{+113}_{-112}	221^{+63}_{-54}
Alt.	-55 ± 17	$2.73^{+0.31}_{-0.26}$	693^{+34}_{-29}	3416^{+167}_{-206}	209^{+82}_{-70}

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

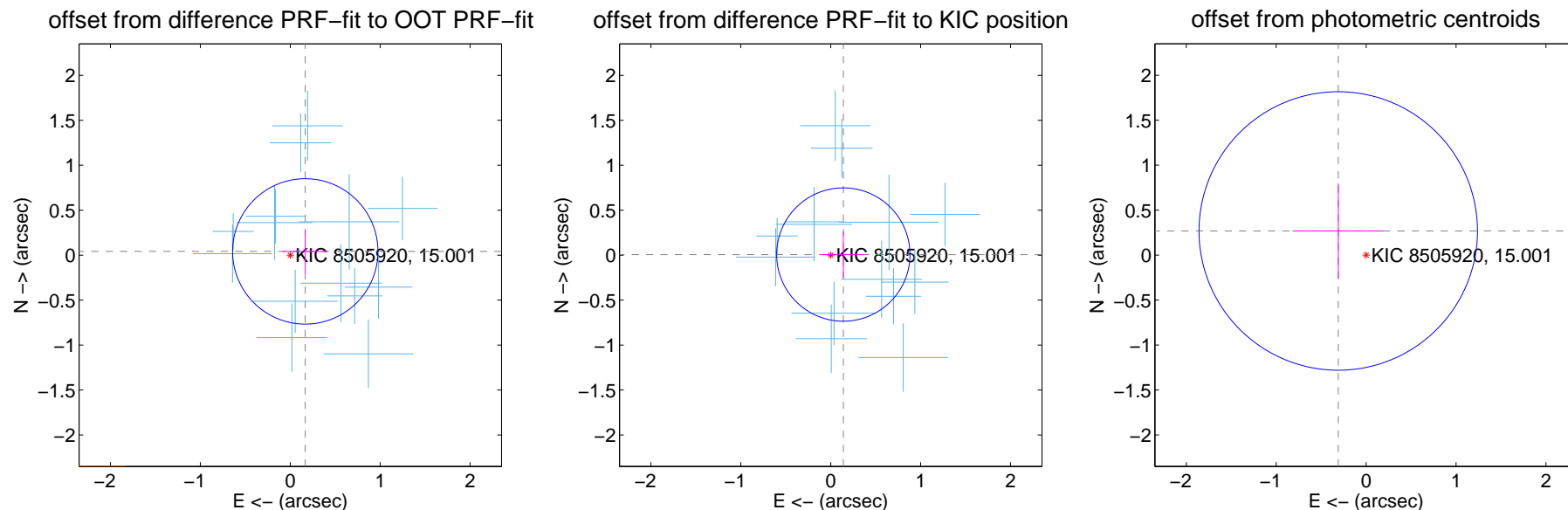
DV Centroid Data

Supplemental centroid analysis for 008505920-01. Kepler magnitude: 15.00. Transit SNR 20.21

There are 14 quarters with good PRF difference image offsets

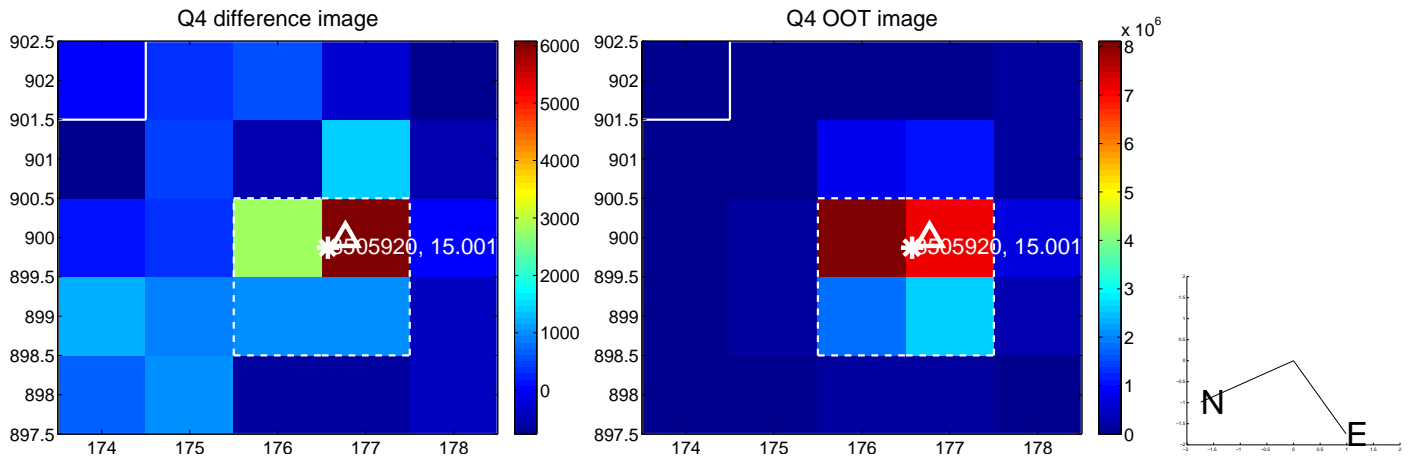
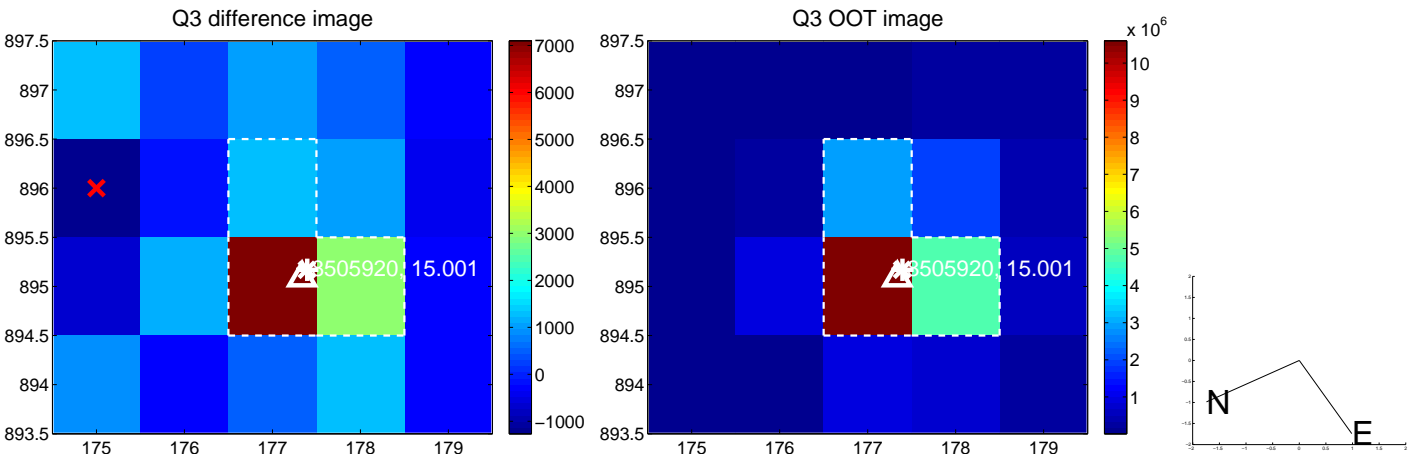
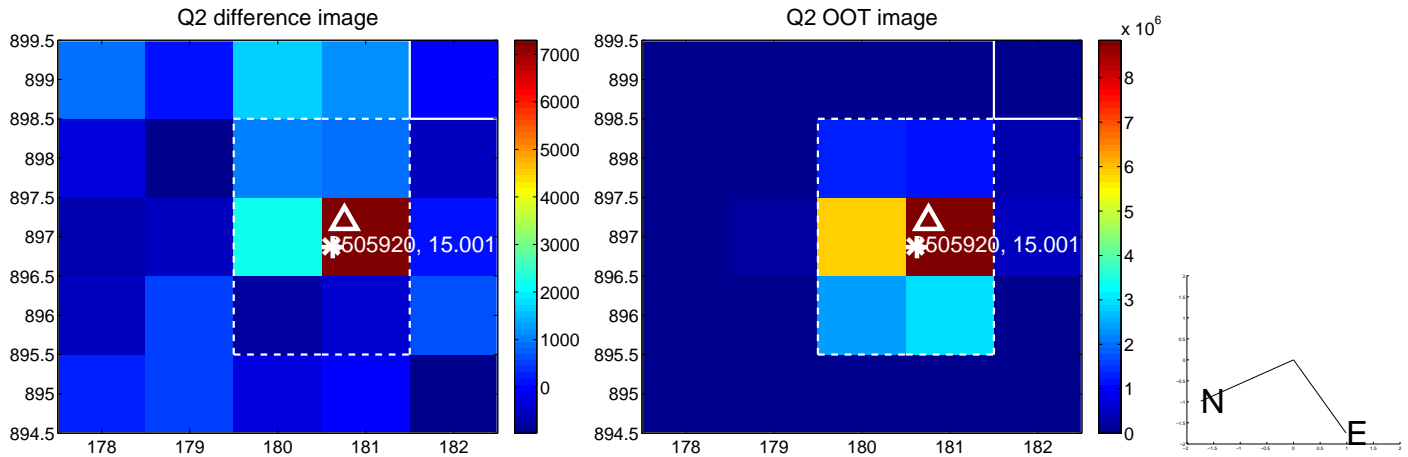
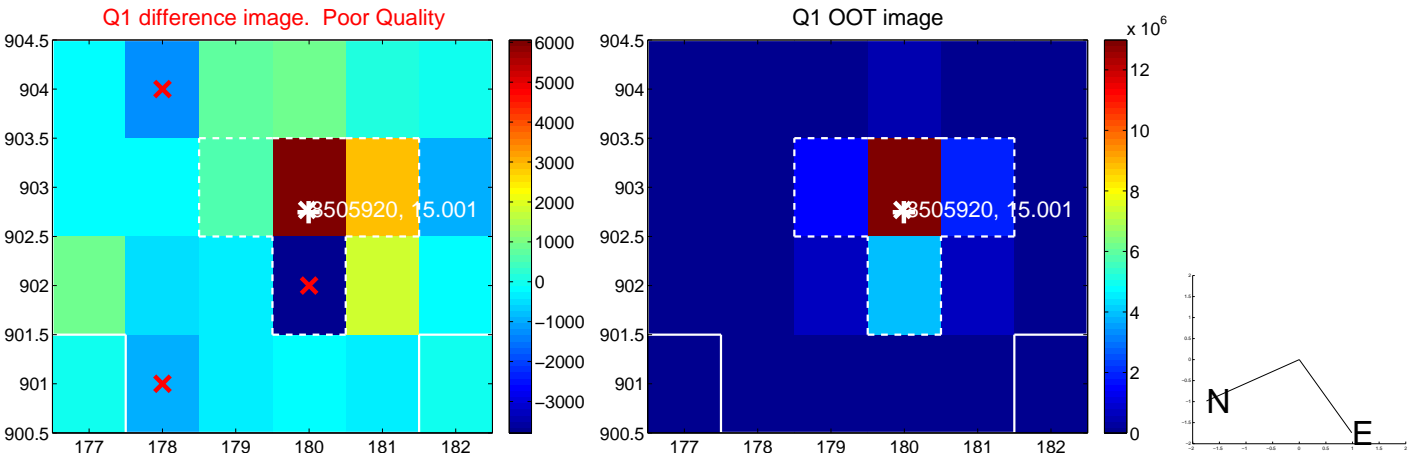
The direct PRF centroid is offset from the target star catalog position by about 0.05 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.172 ± 0.269	0.64	-0.167 ± 0.250	0.042 ± 0.240
PRF-fit source offset from KIC position	0.140 ± 0.247	0.57	-0.140 ± 0.243	0.007 ± 0.256
photometric centroid source offset	0.41 ± 0.52	0.79	0.31 ± 0.51	0.27 ± 0.53

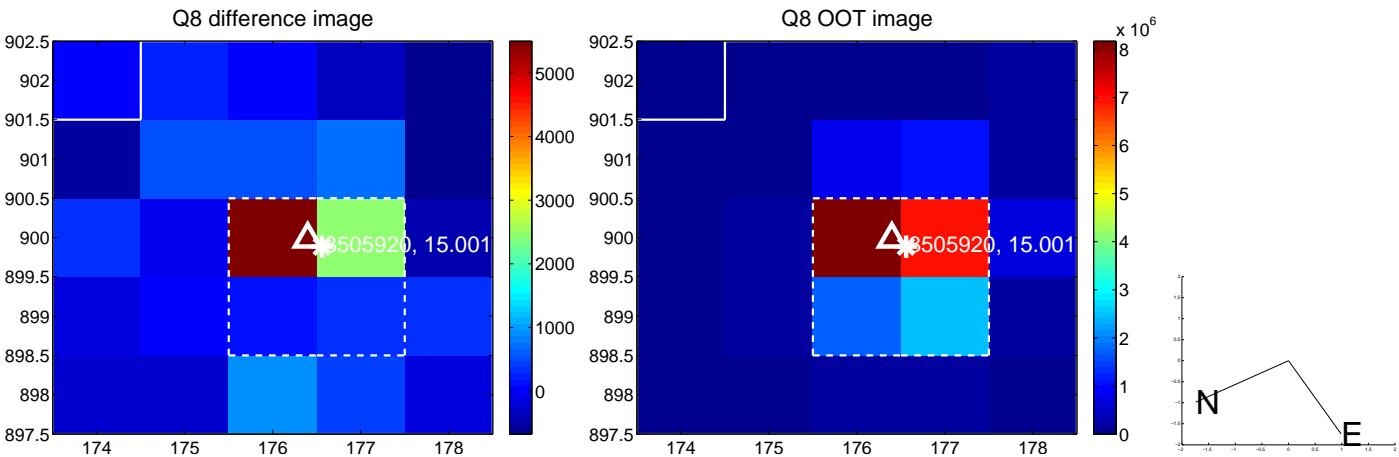
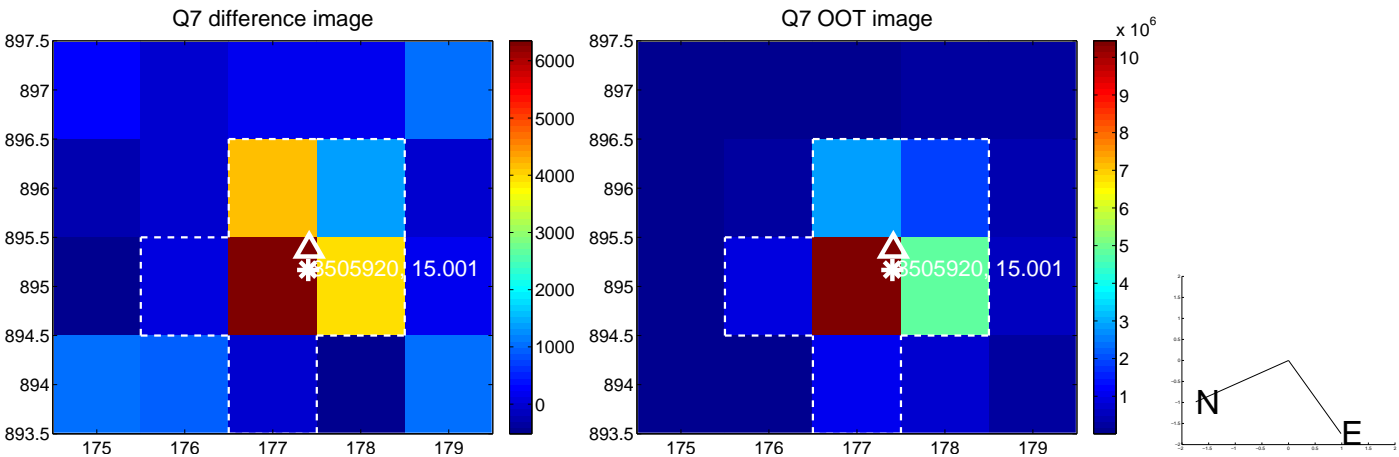
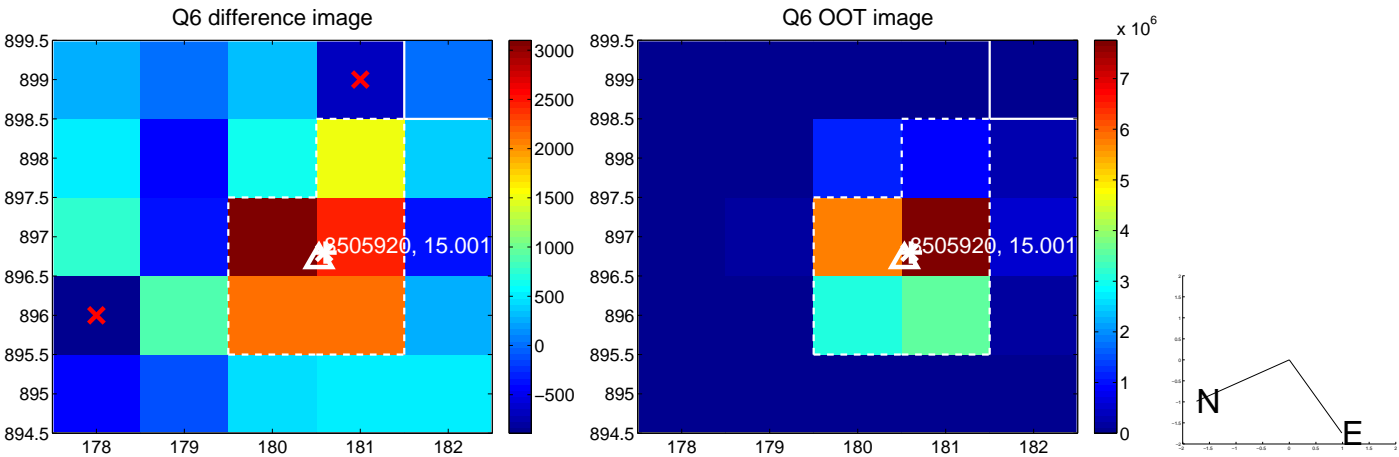
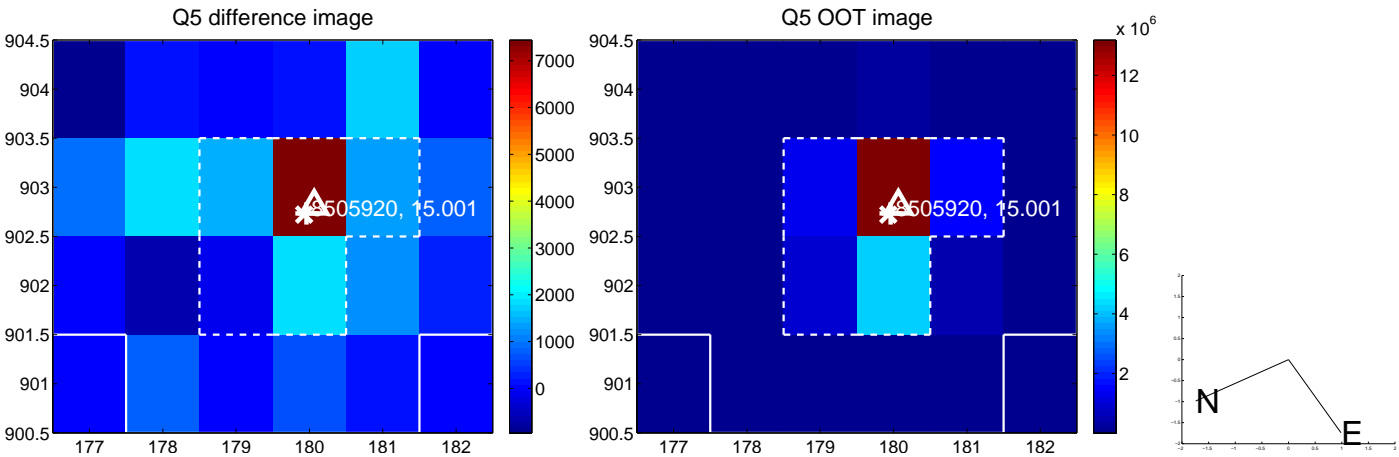


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

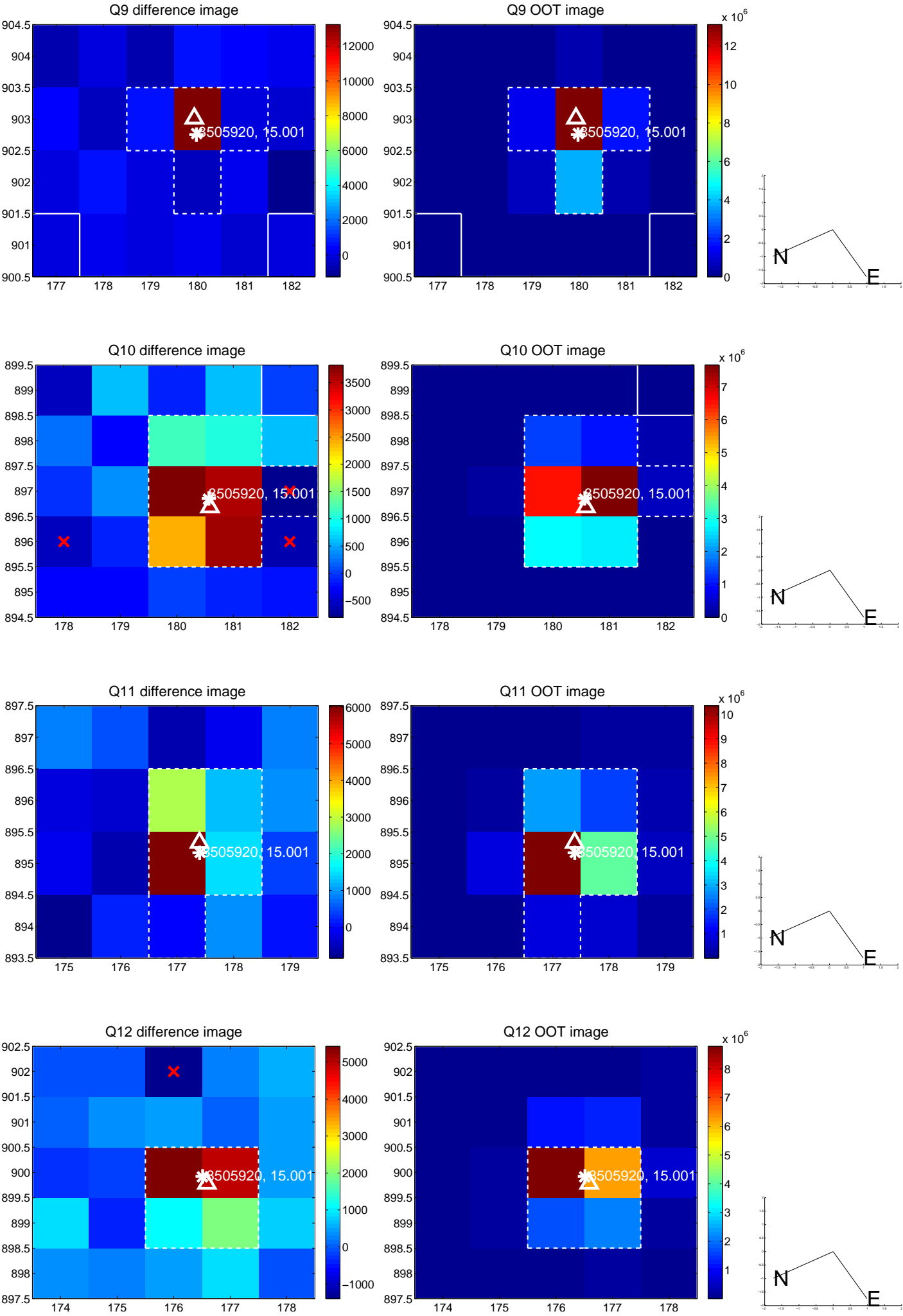
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



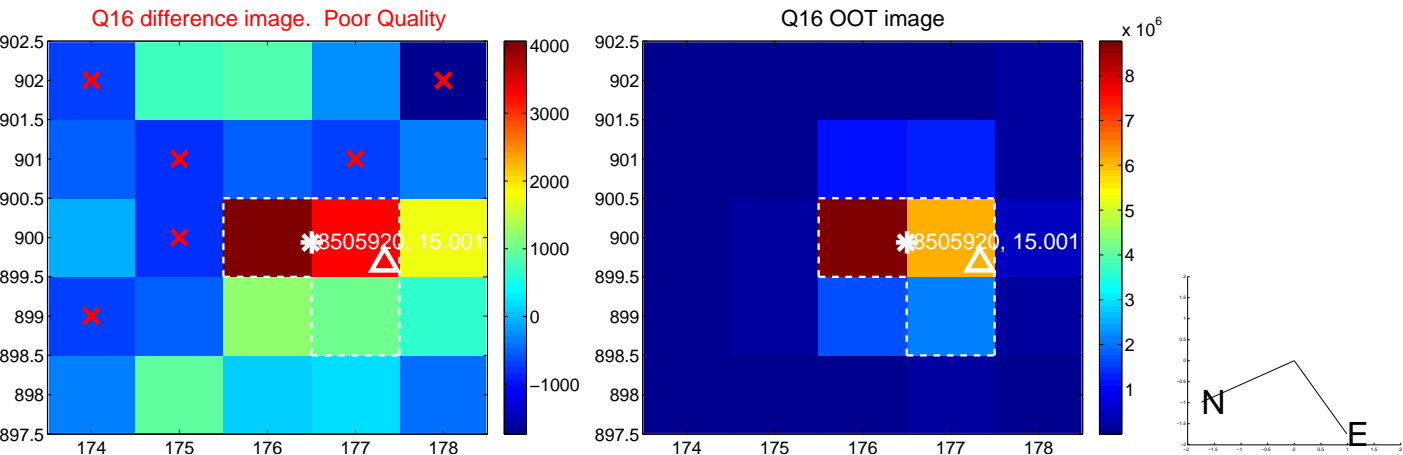
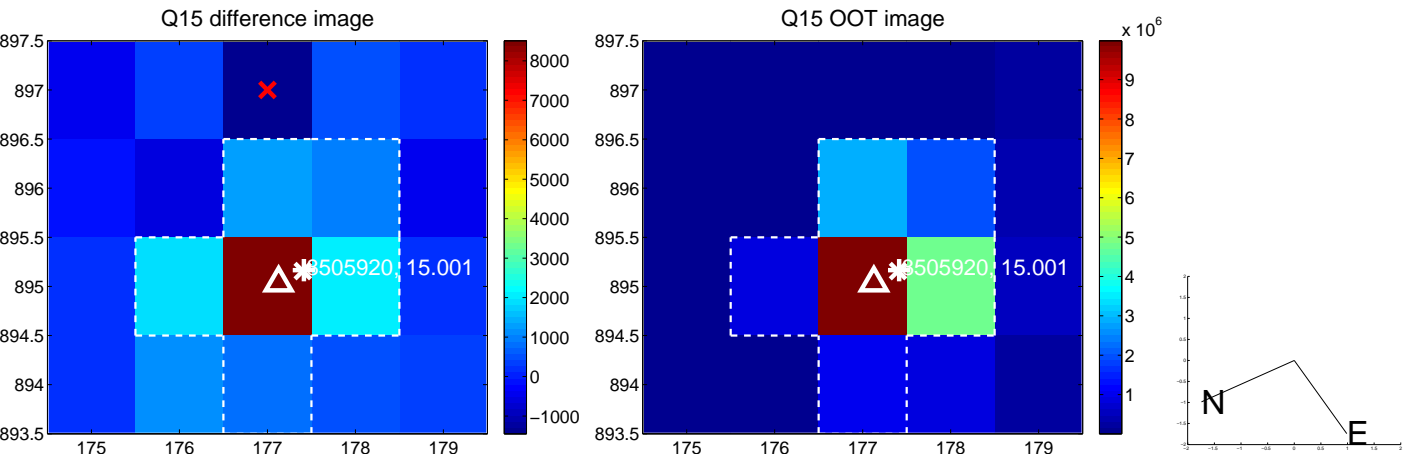
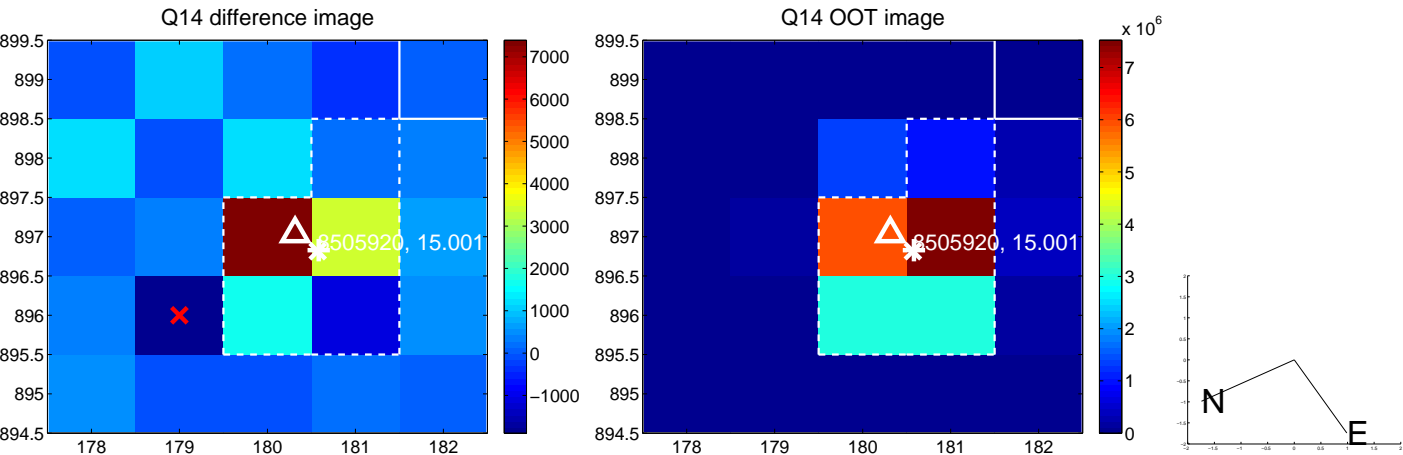
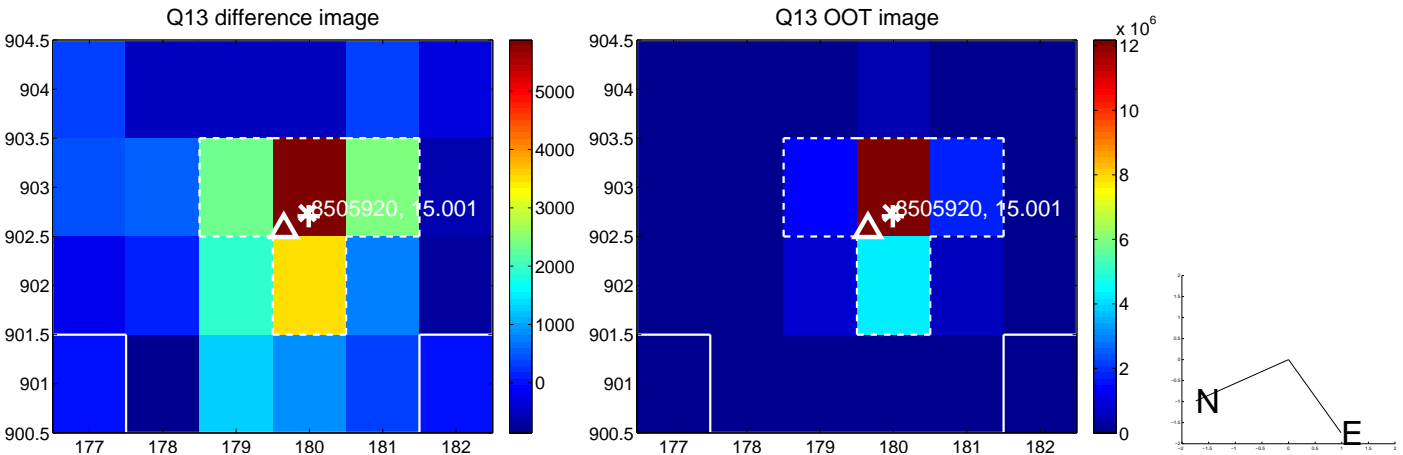
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



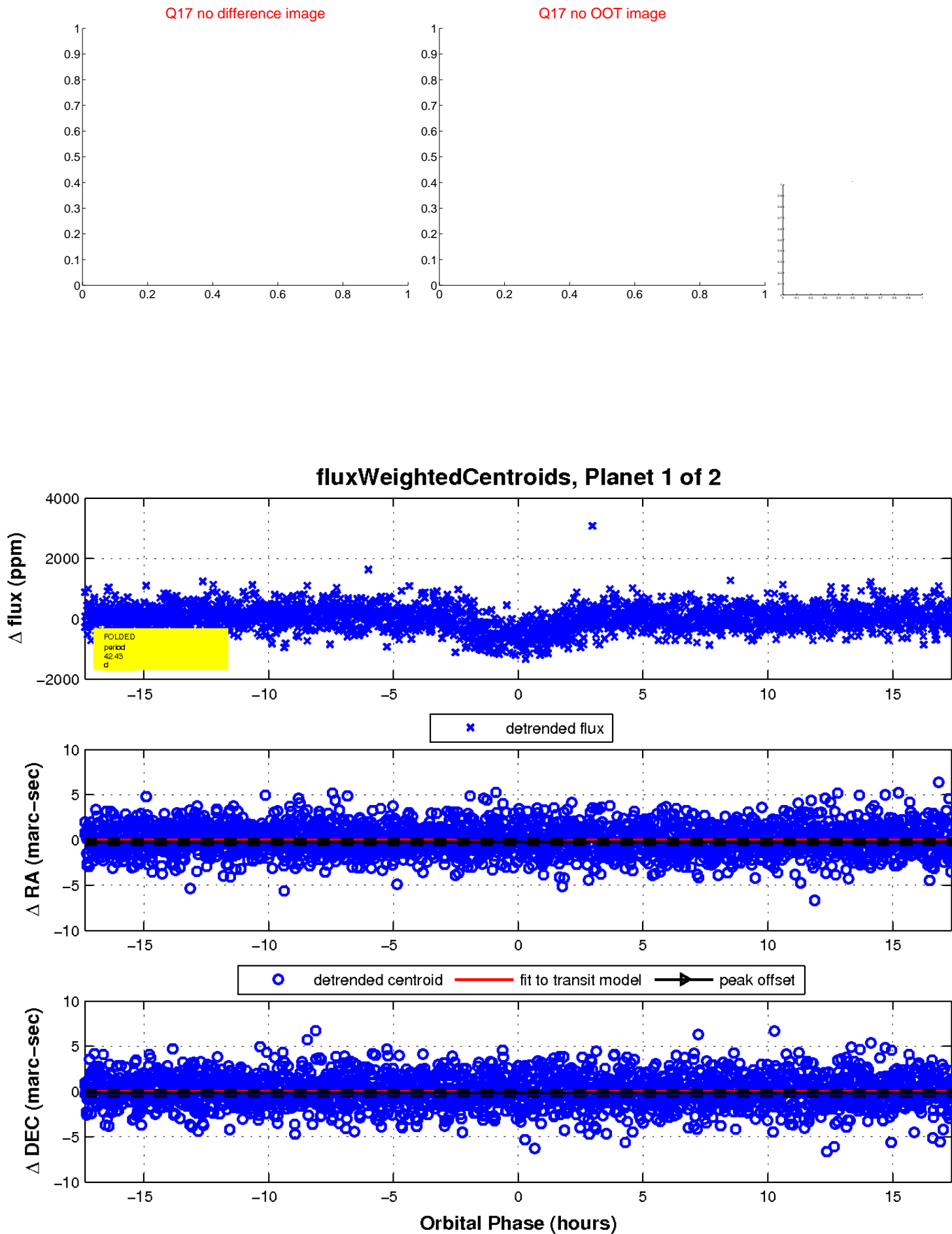
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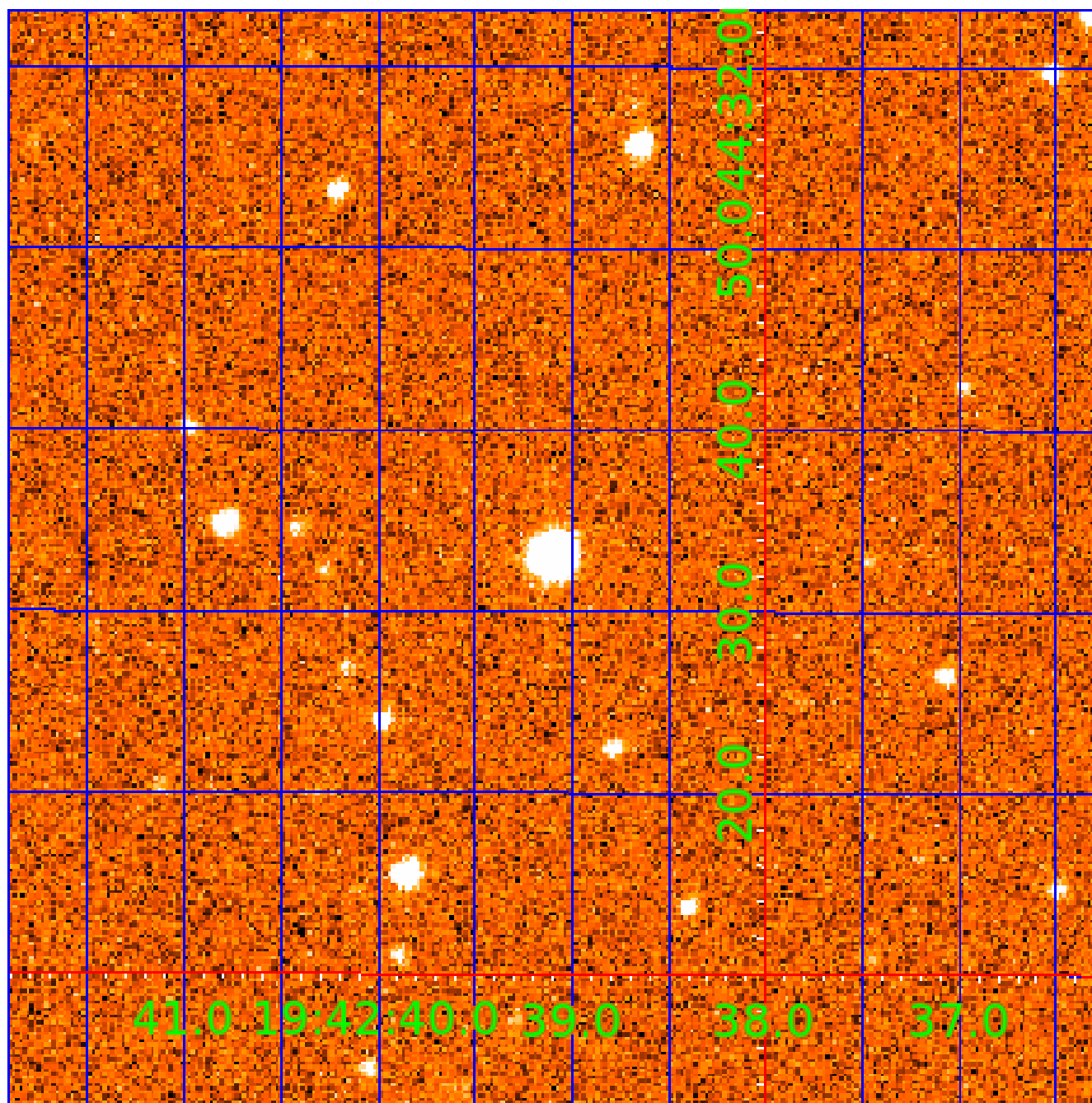


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 008505920

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})
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008505920-02	OBS	2094.02	198.681622	270.662168	684.7	8.393	12.9	13.5	1.01	5330	2.98	1.83

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008505920-01	OBS	PC	0.97	0	0	0	0	NO_COMMENT
008505920-02	OBS	PC	1.00	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.

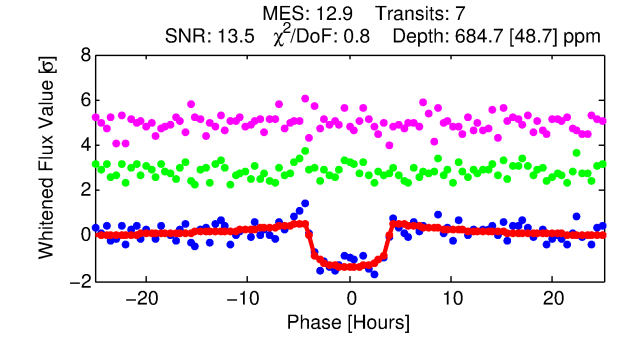
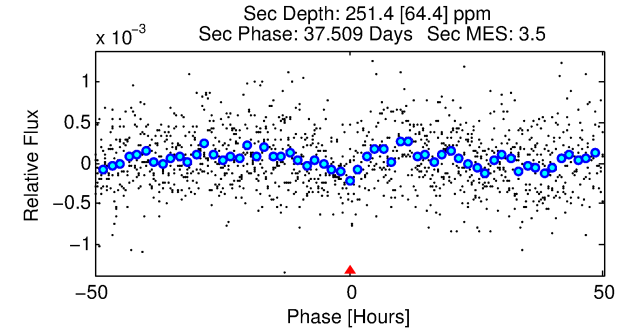
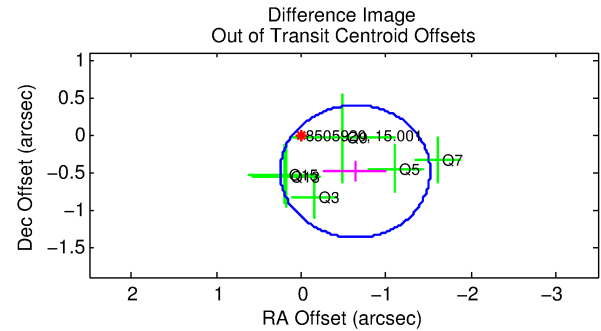
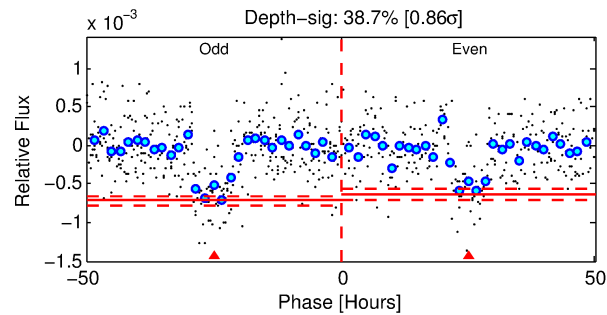
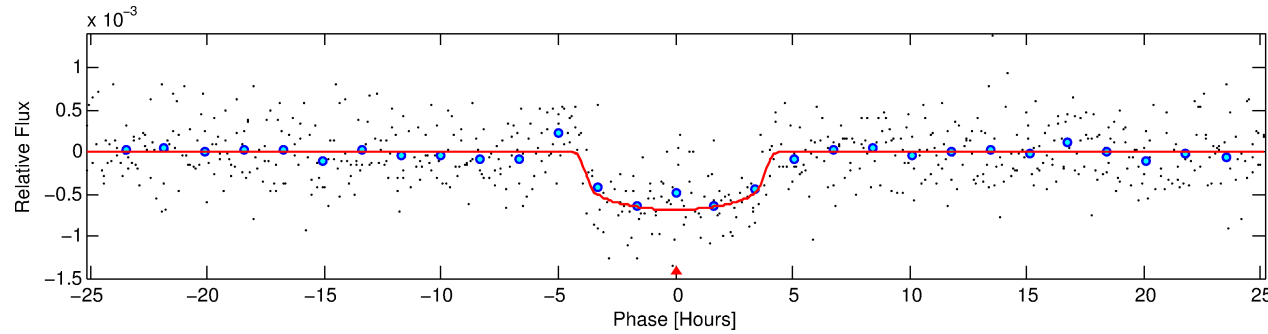
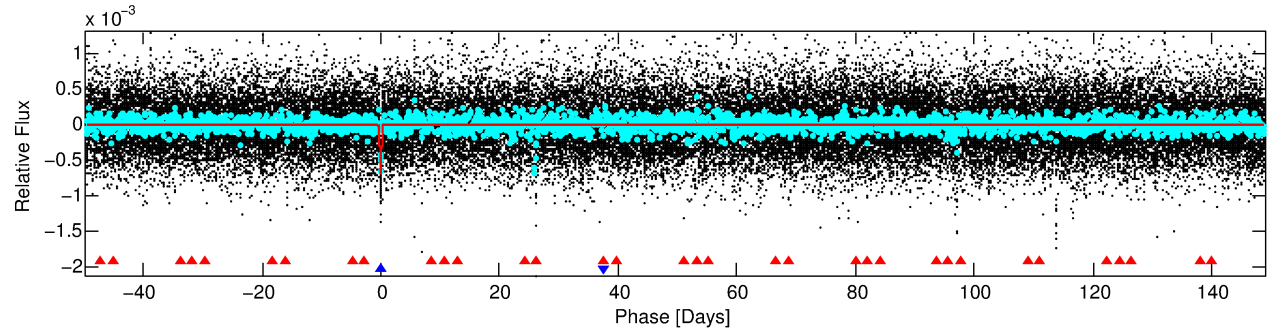
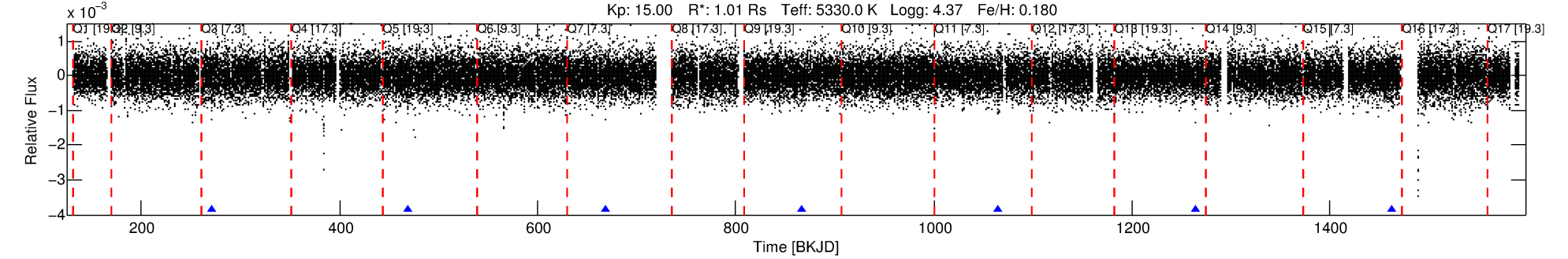
Ephemeris Match Information For 008505920-02

No Significant Match Found

DV One-Page Summary

KIC: 8505920 Candidate: 2 of 2 Period: 198.682 d

KOI: K02094.02 Corr: 0.988



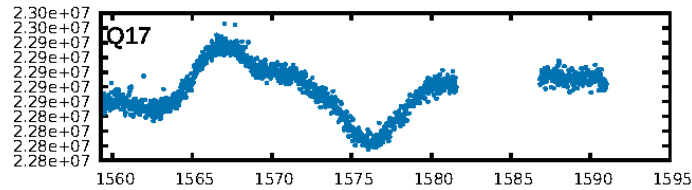
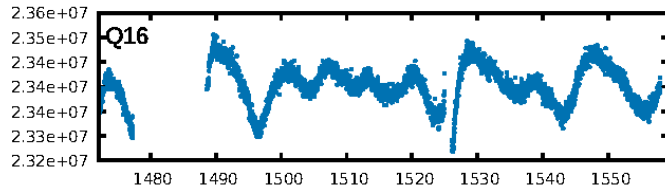
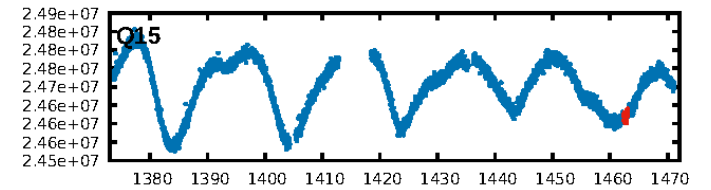
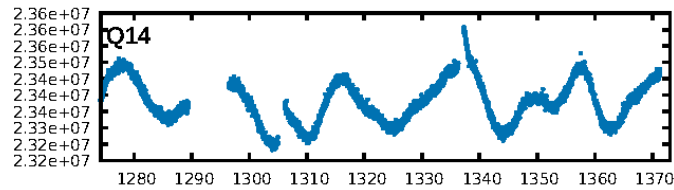
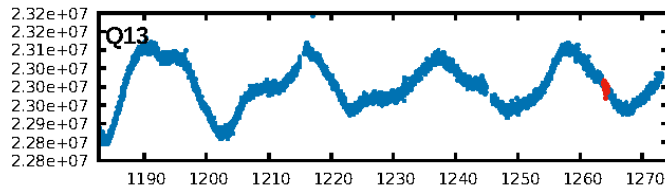
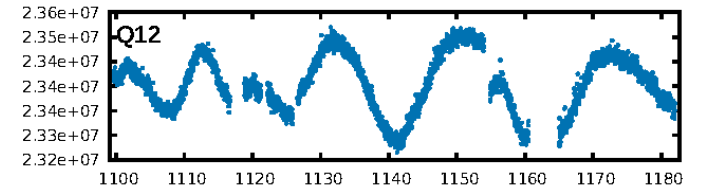
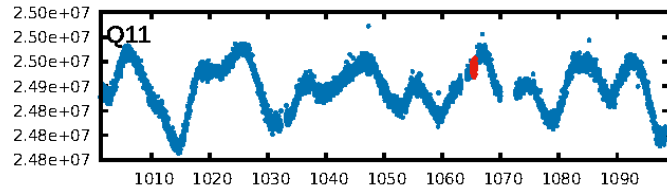
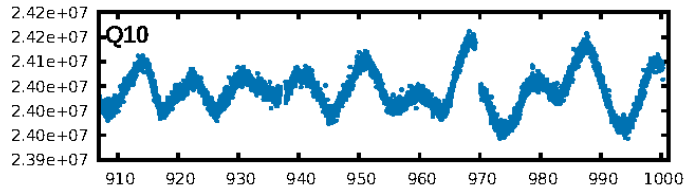
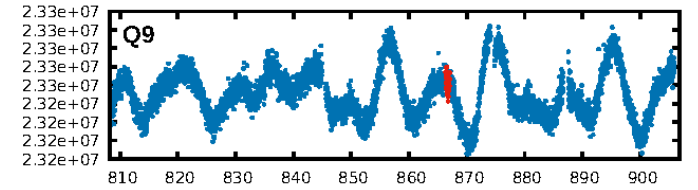
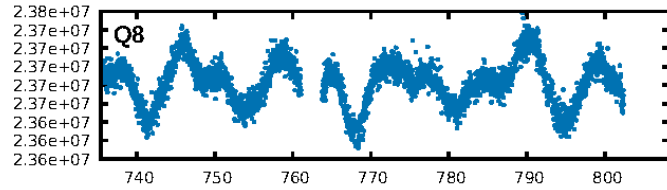
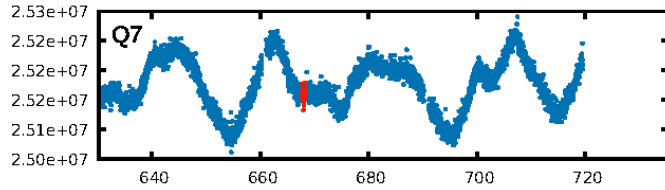
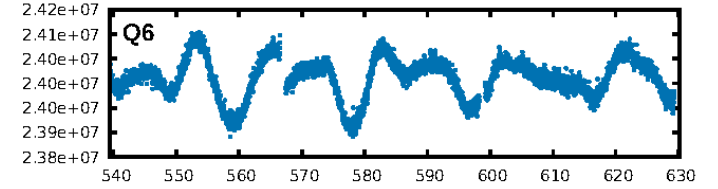
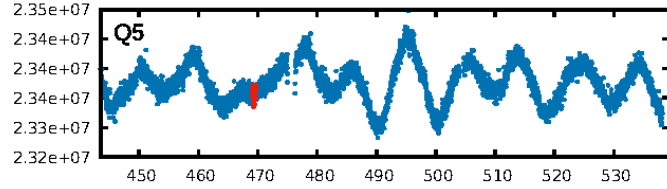
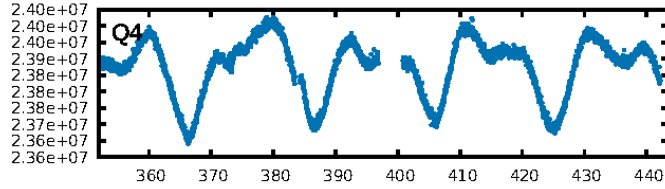
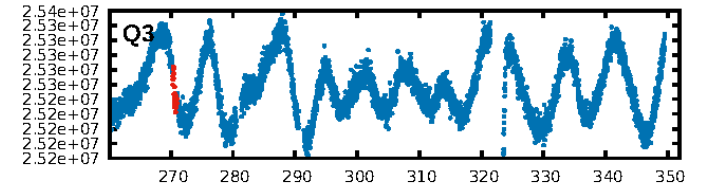
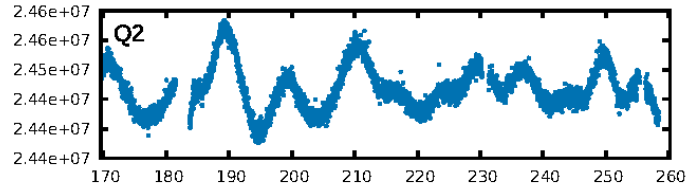
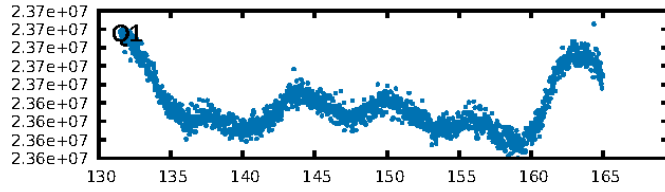
DV Fit Results:

Period = 198.68162 [0.00239] d
Epoch = 270.6622 [0.0093] BKJD
Rp/R* = 0.0269 [0.0047]
a/R* = 114.22 [75.55]
b = 0.81 [0.29]
Seff = 1.83 [0.45]
Teff = 297 [18] K
Rp = 2.98 [0.71] Re
a = 0.6361 [0.0953] AU
Ag = 6321.90 [3127.16] [2.02 σ]
Teffp = 4091 [449] K [8.45 σ]

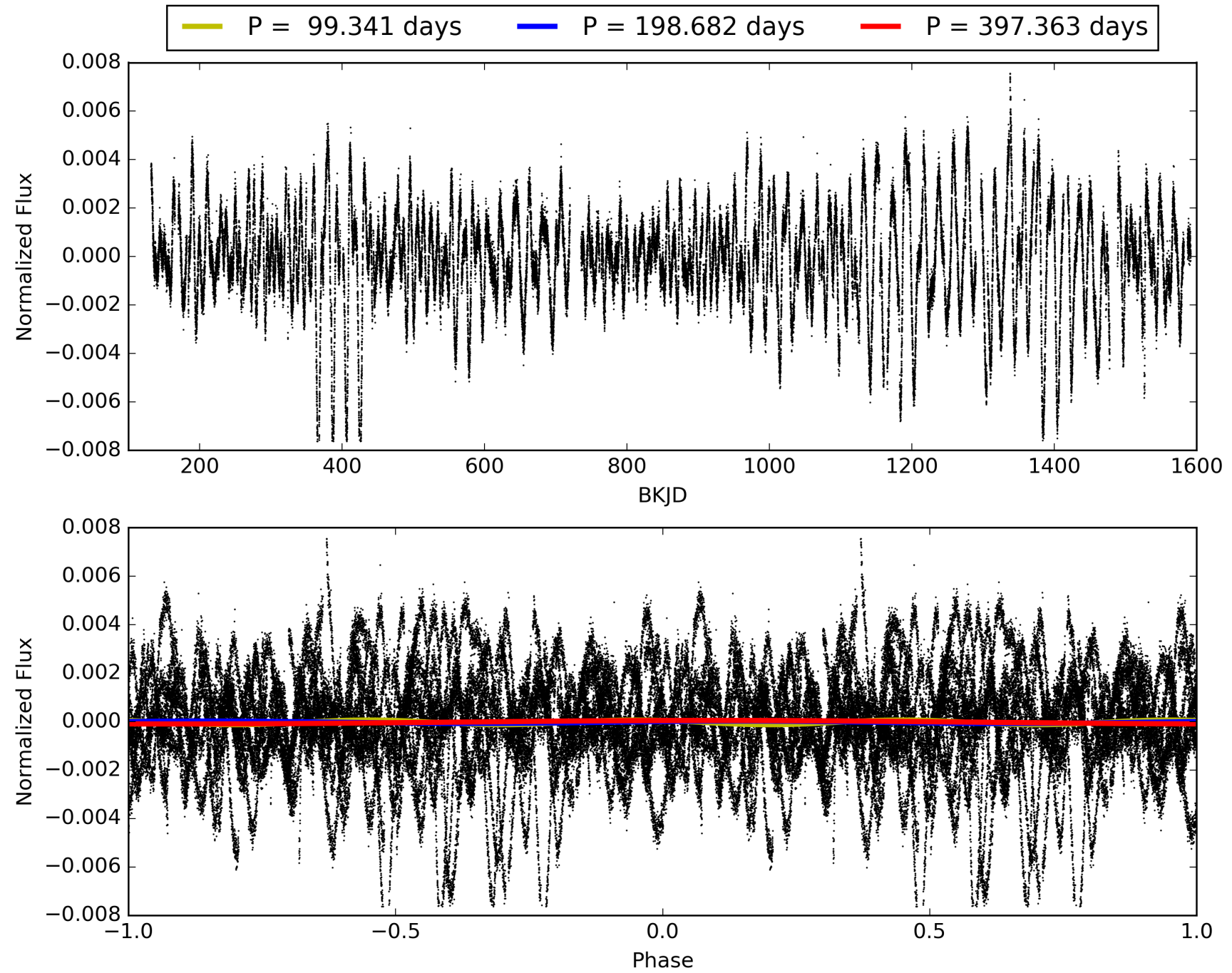
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [367.73 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 83.3%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 1.50e-19
RollingBand-fgt: 1.00 [7/7]
GhostDiagnostic-chr: 1.888
Centroid-sig: 96.9%
Centroid-so: 0.101 arcsec [0.13 σ]
OotOffset-rm: 0.805 arcsec [2.73 σ]
KicOffset-rm: 0.820 arcsec [2.76 σ]
OotOffset-st: 0/3/0/3 [6]
KicOffset-st: 0/3/0/3 [6]
DiffImageQuality-fgm: 1.00 [6/6]
DiffImageOverlap-fno: 1.00 [6/6]

TCE 008505920-02, PDC Light Curves

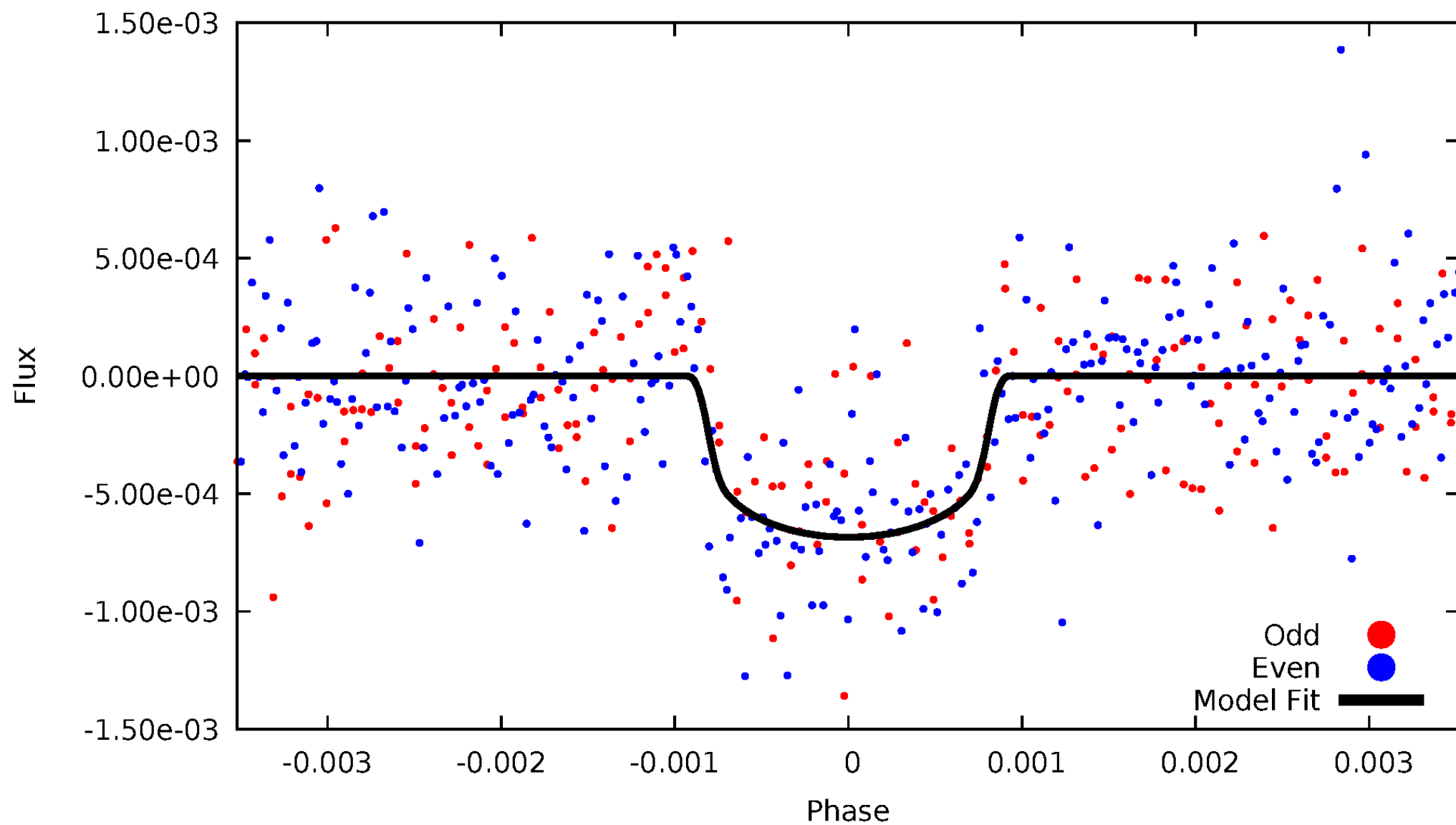


TCE 008505920-02



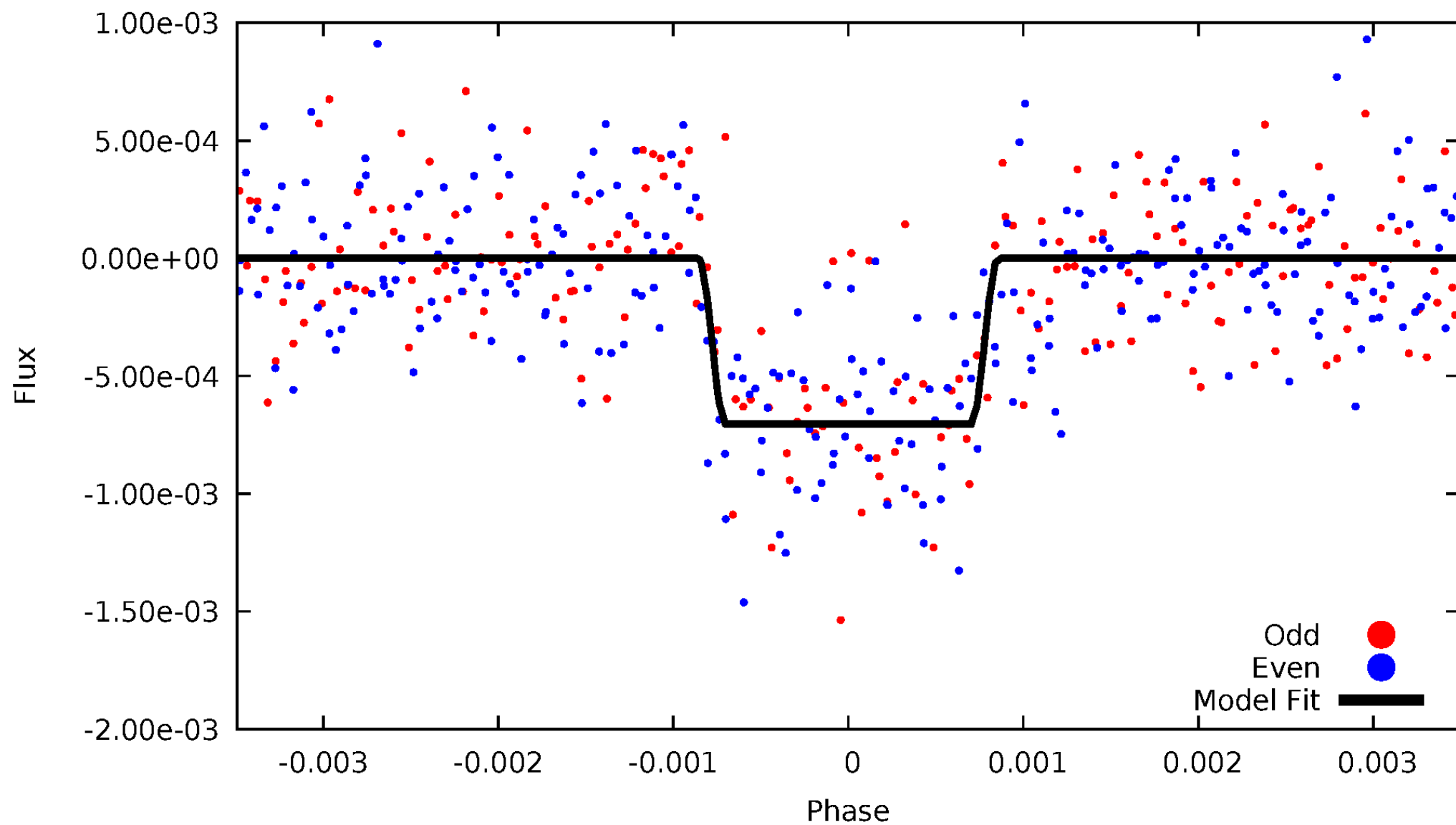
DV Odd/Even

TCE 008505920-02



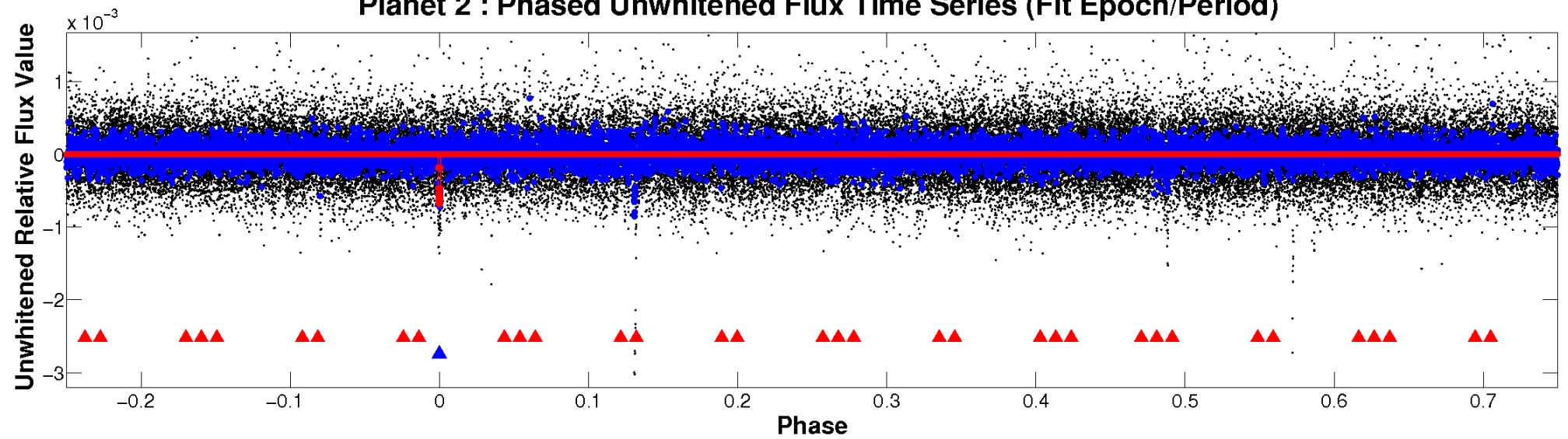
ALT Odd/Even

TCE 008505920-02

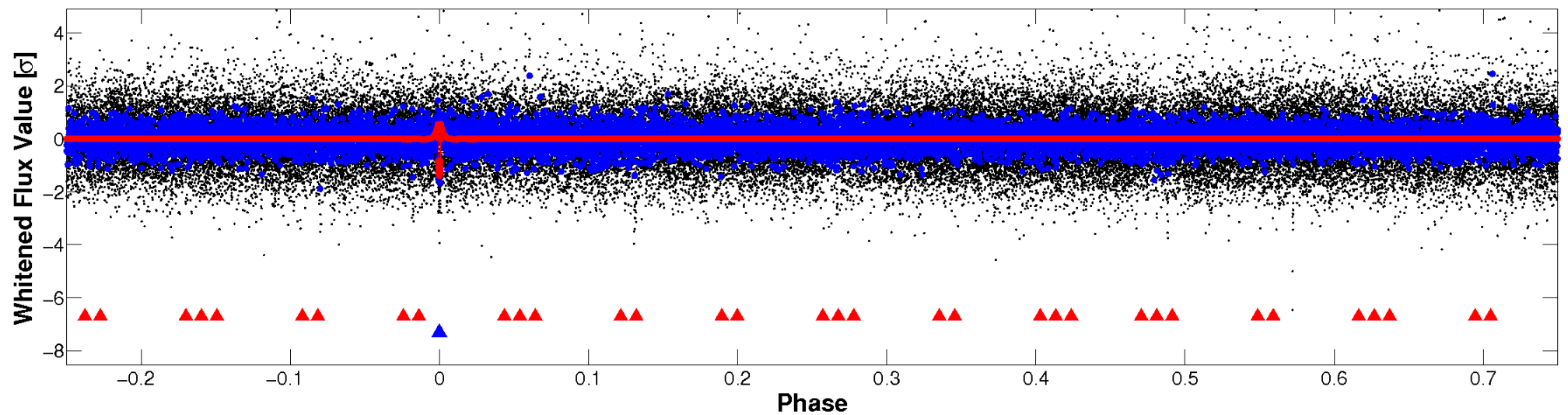


Non-Whitened Vs. Whitened Light Curve

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

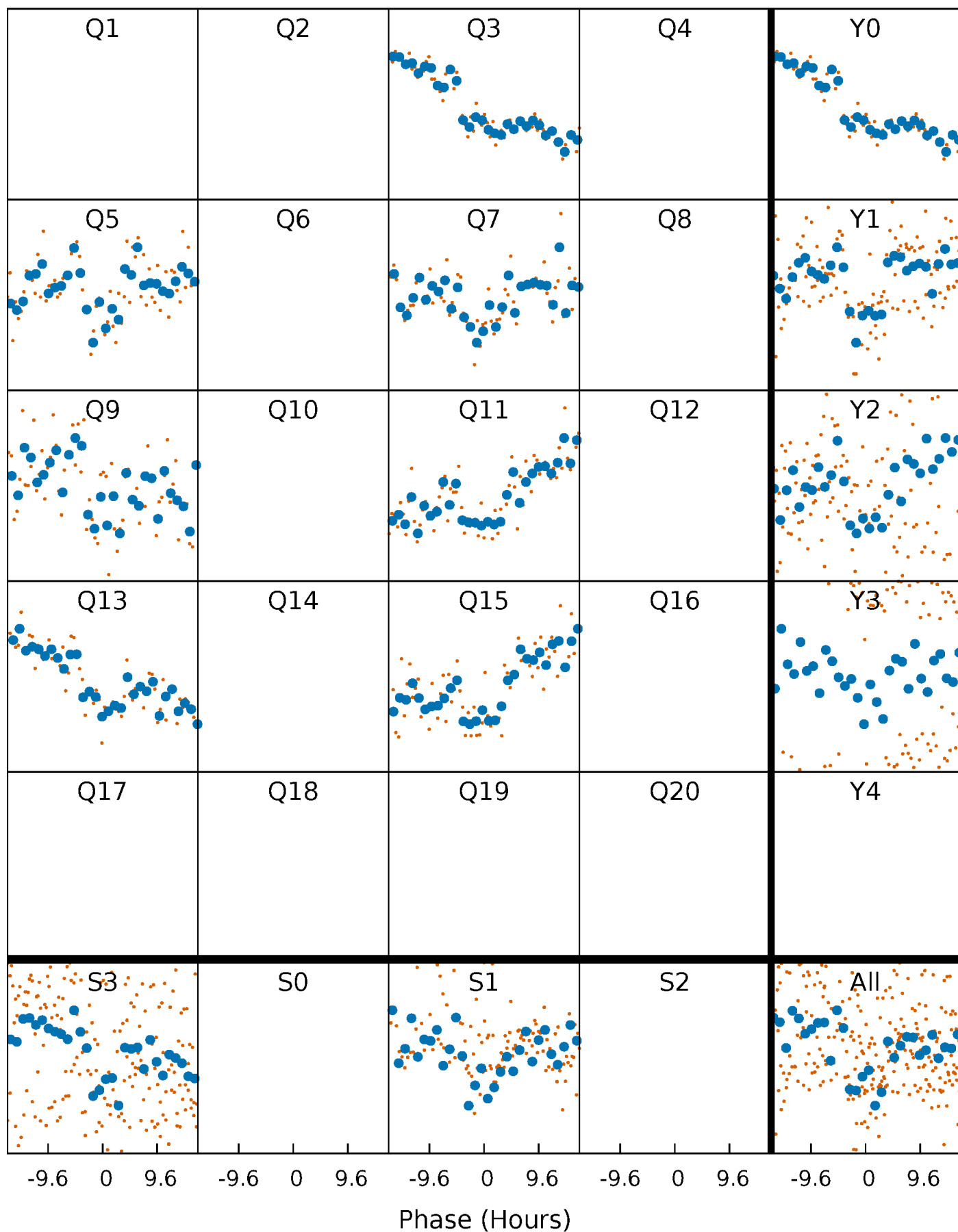


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



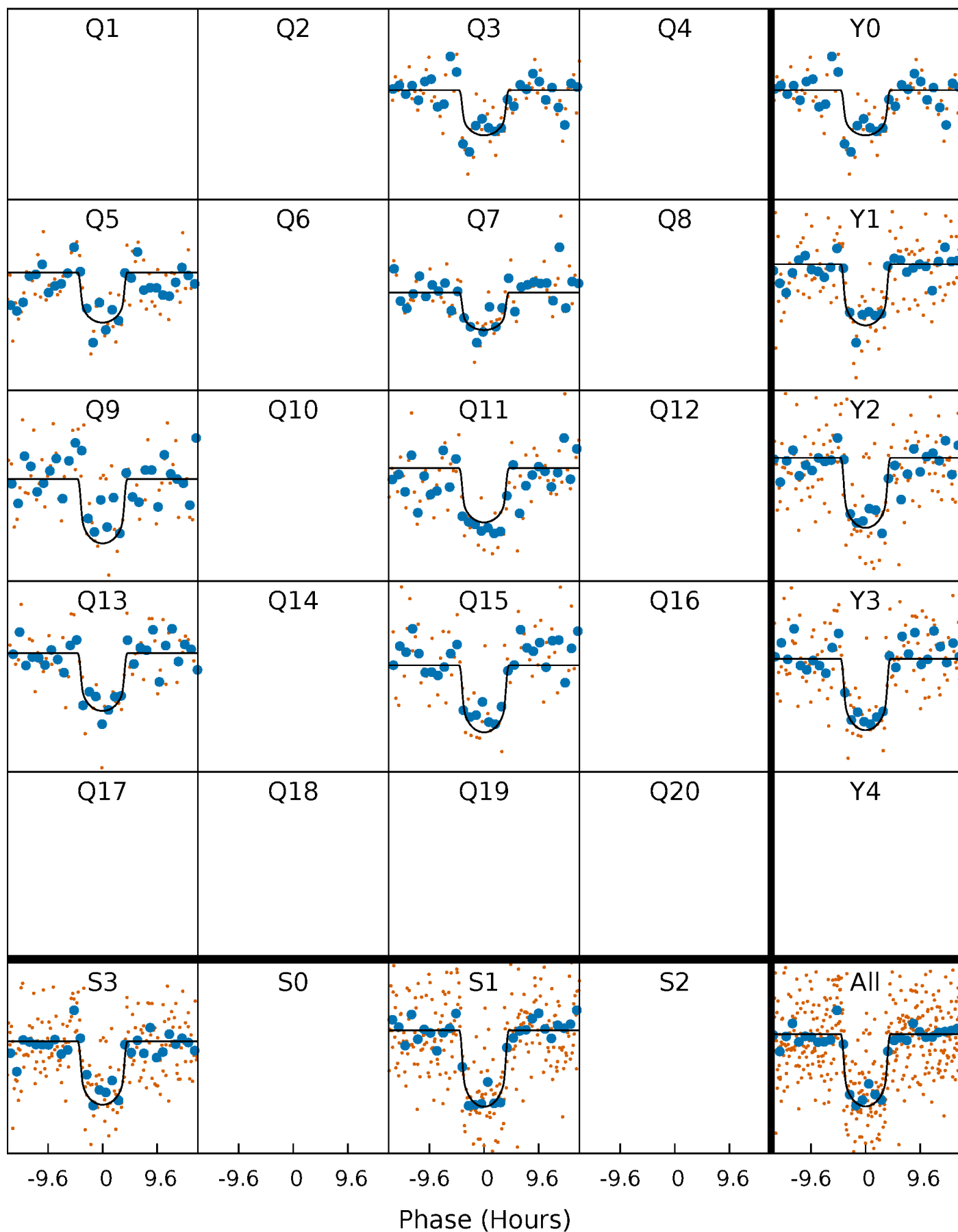
PDC Quarter-Phased Transit Curves

TCE 008505920-02 P=198.681622 Days $T_0=270.662168$ (BKJD)



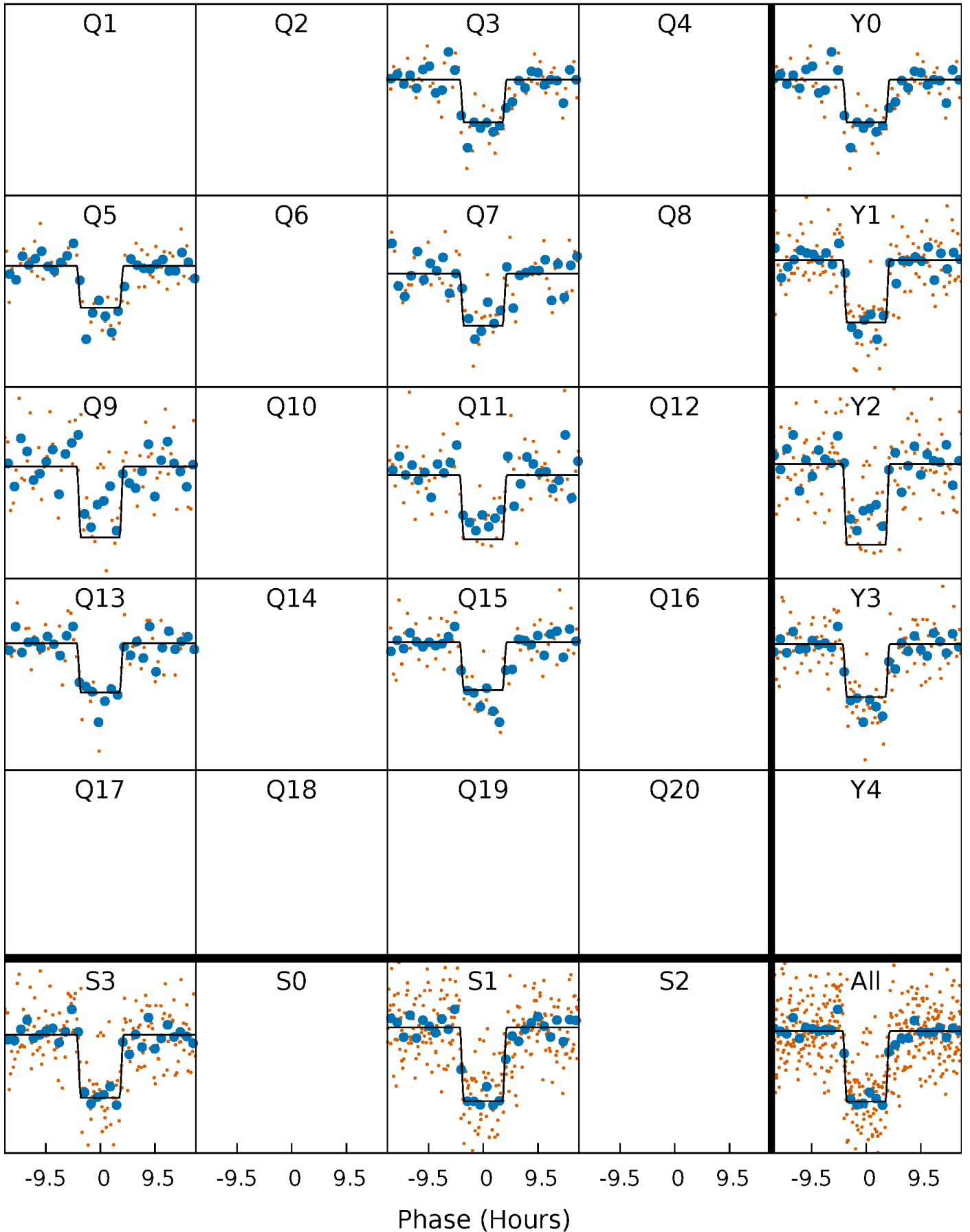
DV Quarter-Phased Transit Curves

TCE 008505920-02 $P=198.681622$ Days $T_0=270.662168$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

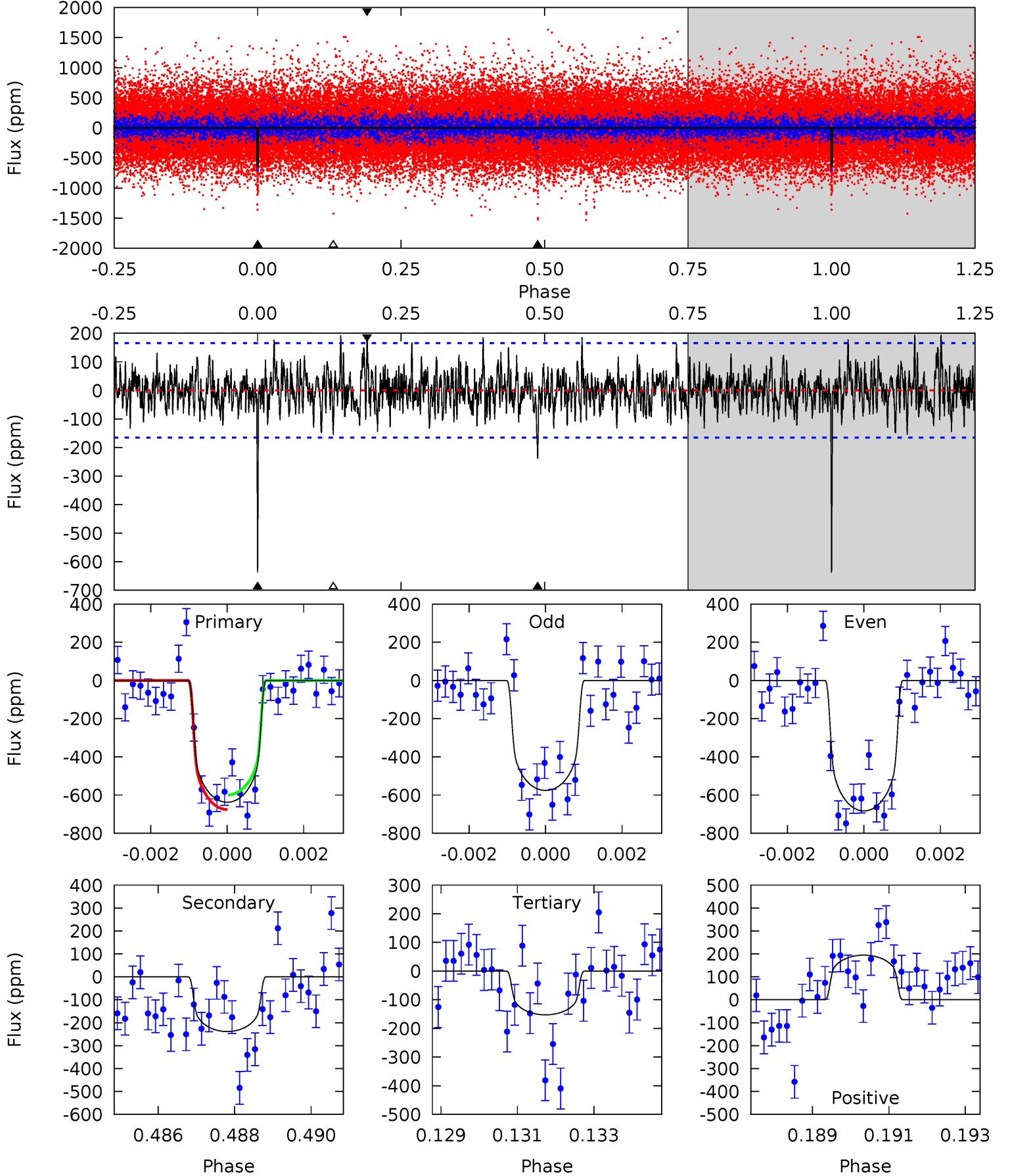
TCE 008505920-02 $P=198.682315$ Days $T_0=270.662421$ (BKJD)



DV Model-Shift Uniqueness Test

008505920-02, $P = 198.681622$ Days, $E = 71.980546$ Days

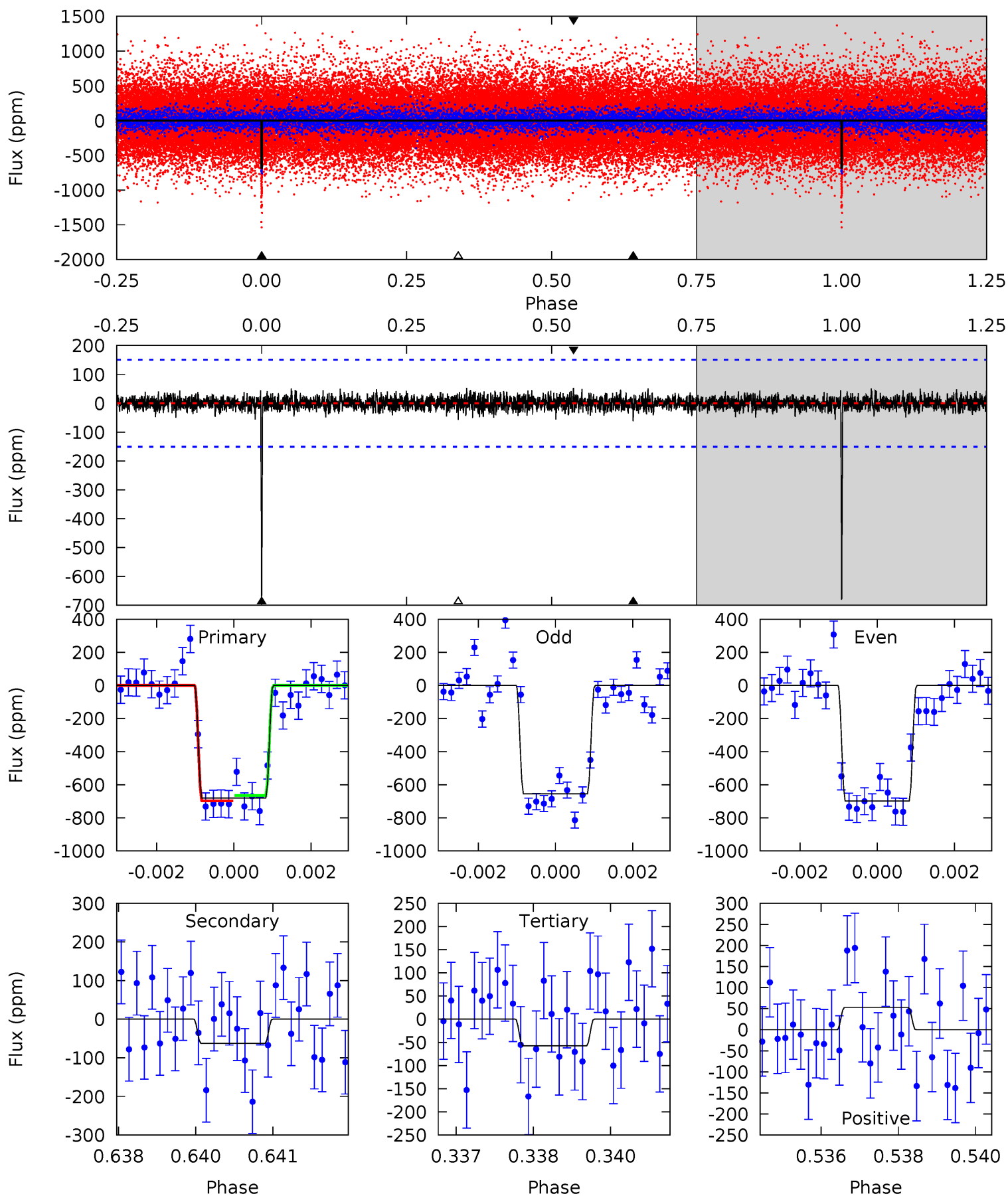
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
20.6	7.70	4.93	6.28	5.34	3.12	1.68	15.6	14.3	2.78	1.42	1.72	0.96	0.23	1.23



Alt Model-Shift Uniqueness Test

008505920-02, P = 198.682315 Days, E = 71.980106 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
24.2	2.23	2.04	1.88	5.36	3.14	0.53	22.2	22.3	0.19	0.36	0.76	0.86	0.07	0.57



Stellar Parameters For KIC 008505920

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5330^{+79}_{-79}	$4.366^{+0.137}_{-0.125}$	$0.180^{+0.150}_{-0.100}$	$1.013^{+0.162}_{-0.133}$	$0.869^{+0.065}_{-0.035}$	$1.176^{+0.668}_{-0.426}$
	+1%/-1%	+3%/-3%	+83%/-56%	+16%/-13%	+7%/-4%	+57%/-36%
Source	SPE90	SPE90	SPE90	DSEP		

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

Secondary Eclipse Parameters for KIC 008505920-02 / KOI 2094.02

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-239 \pm 31	$2.95^{+0.64}_{-0.54}$	415^{+21}_{-18}	4254^{+360}_{-261}	6141^{+3091}_{-2068}
Alt.	-63 \pm 28	$2.93^{+0.63}_{-0.55}$	414^{+19}_{-20}	3393^{+305}_{-318}	1573^{+1184}_{-780}

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 $A_{obs} \gg 1.0$

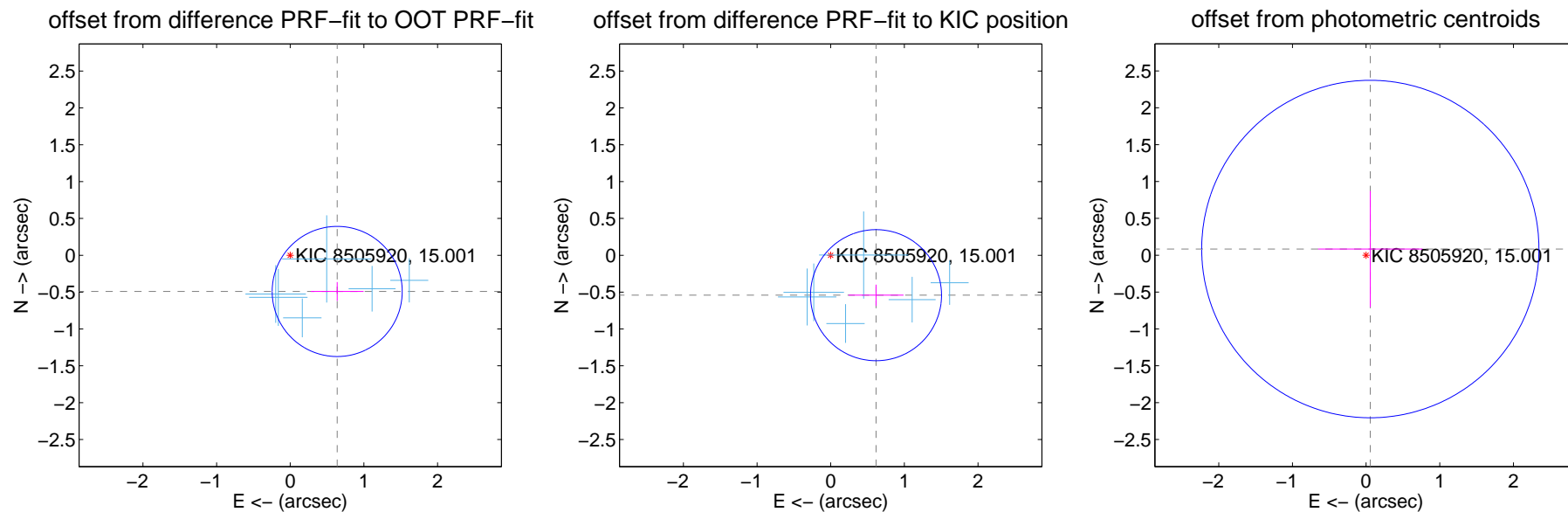
DV Centroid Data

Supplemental centroid analysis for 008505920-02. Kepler magnitude: 15.00. Transit SNR 13.53

There are 6 quarters with good PRF difference image offsets

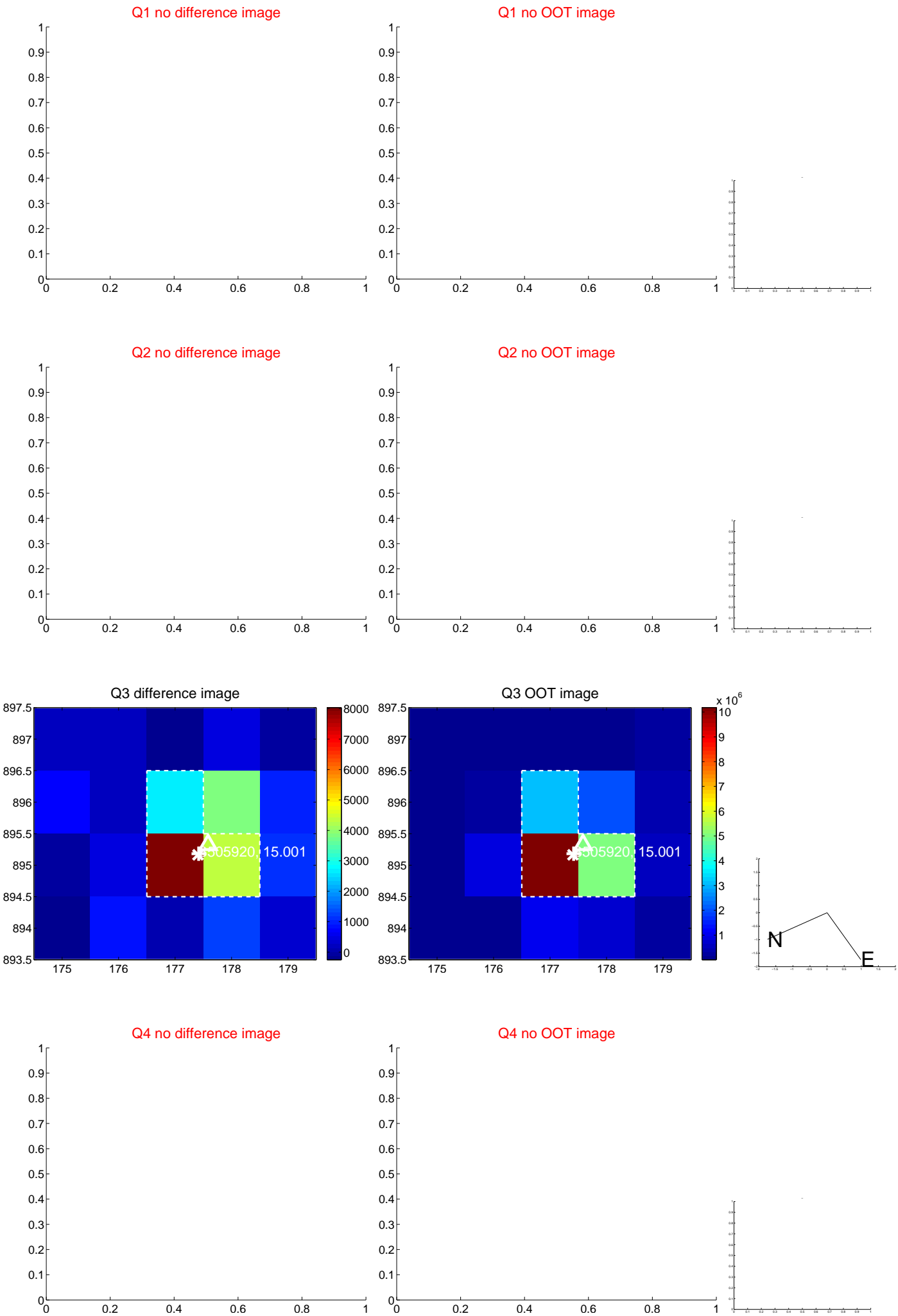
The direct PRF centroid is offset from the target star catalog position by about 0.04 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.805 ± 0.294	2.73	-0.637 ± 0.358	-0.491 ± 0.128
PRF-fit source offset from KIC position	0.820 ± 0.296	2.76	-0.615 ± 0.374	-0.542 ± 0.143
photometric centroid source offset	0.10 ± 0.76	0.13	-0.06 ± 0.71	0.08 ± 0.79

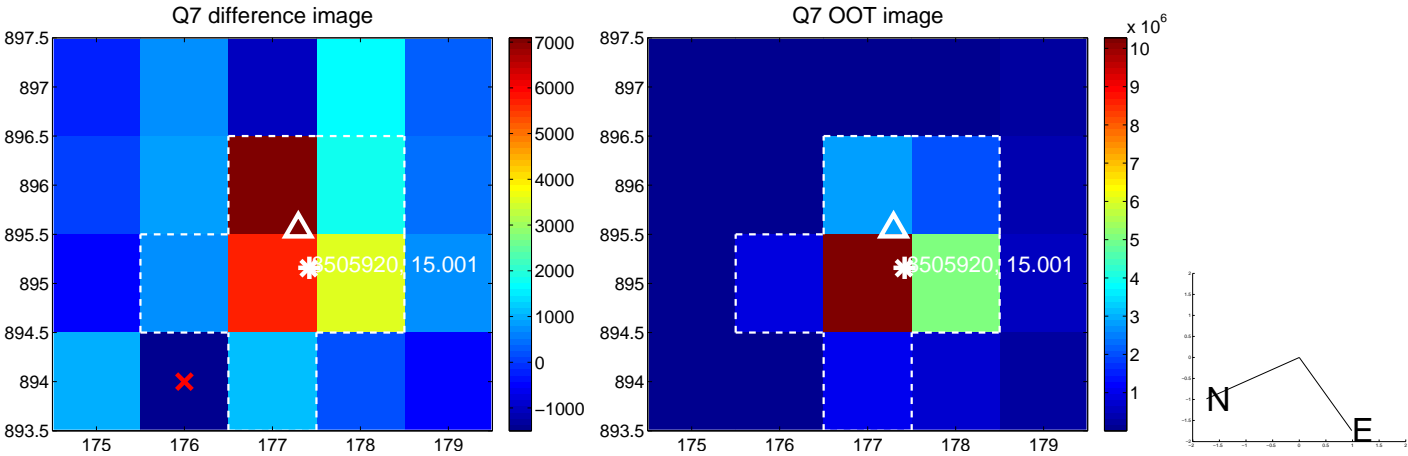
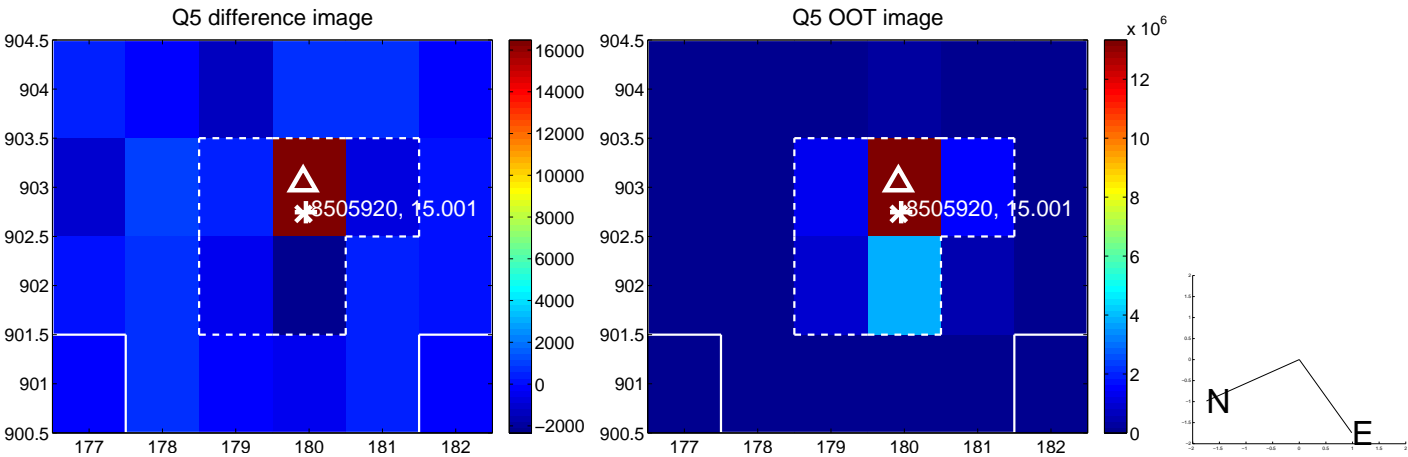


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

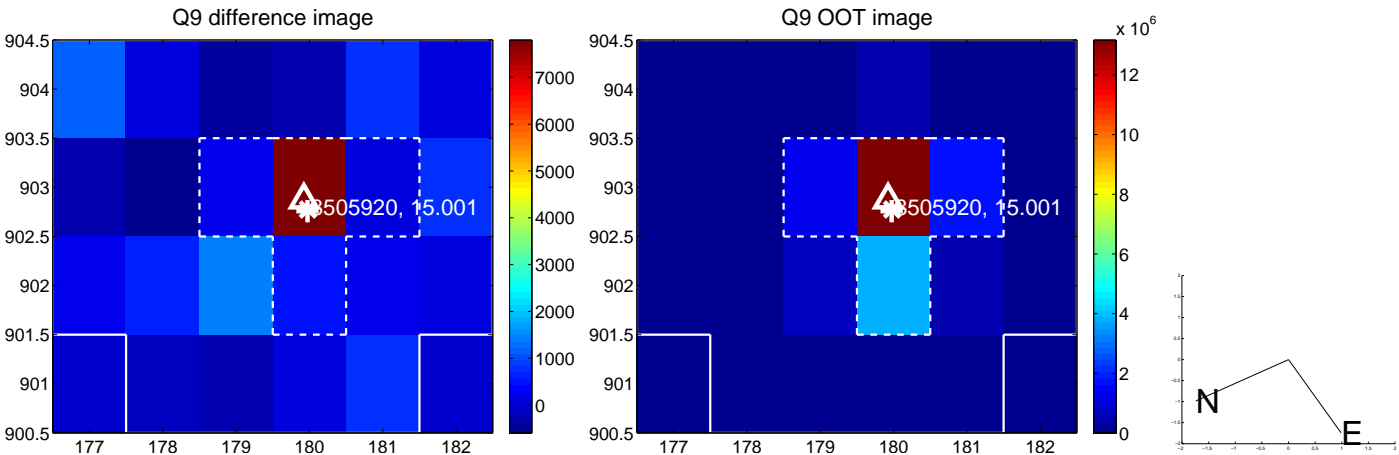
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



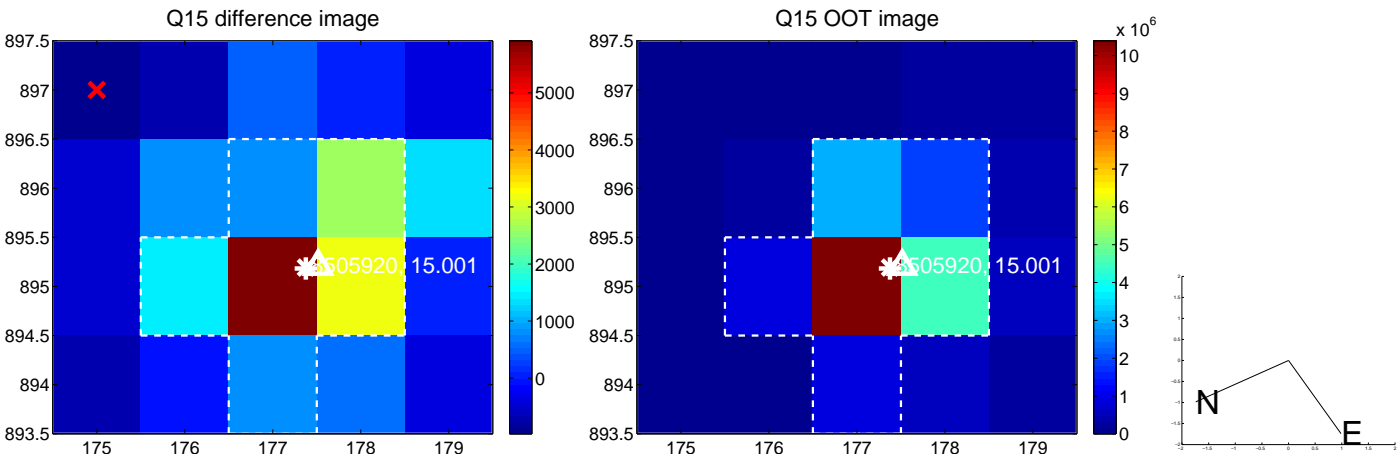
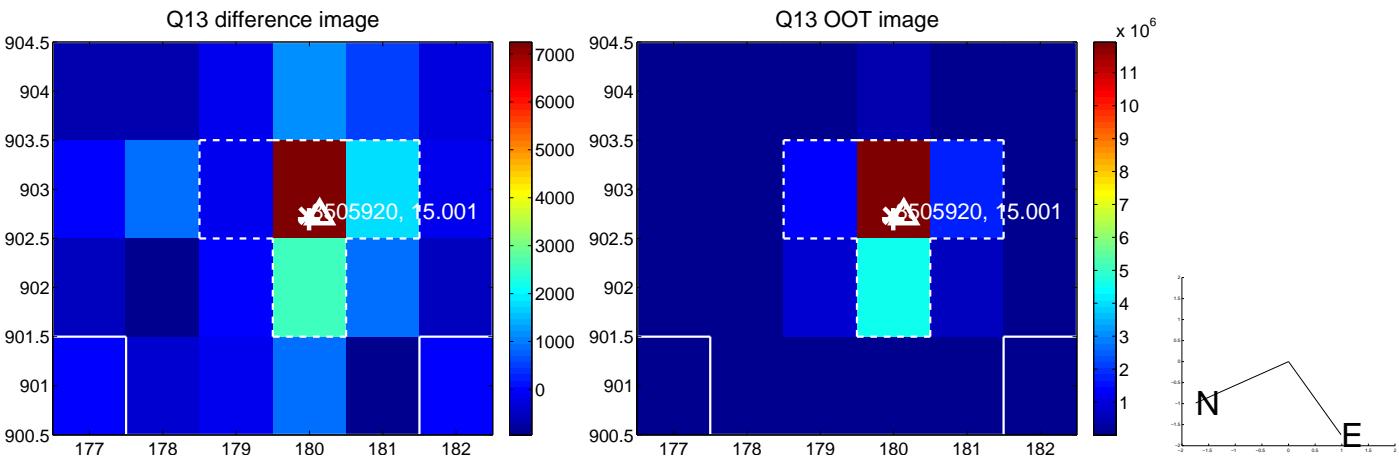
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



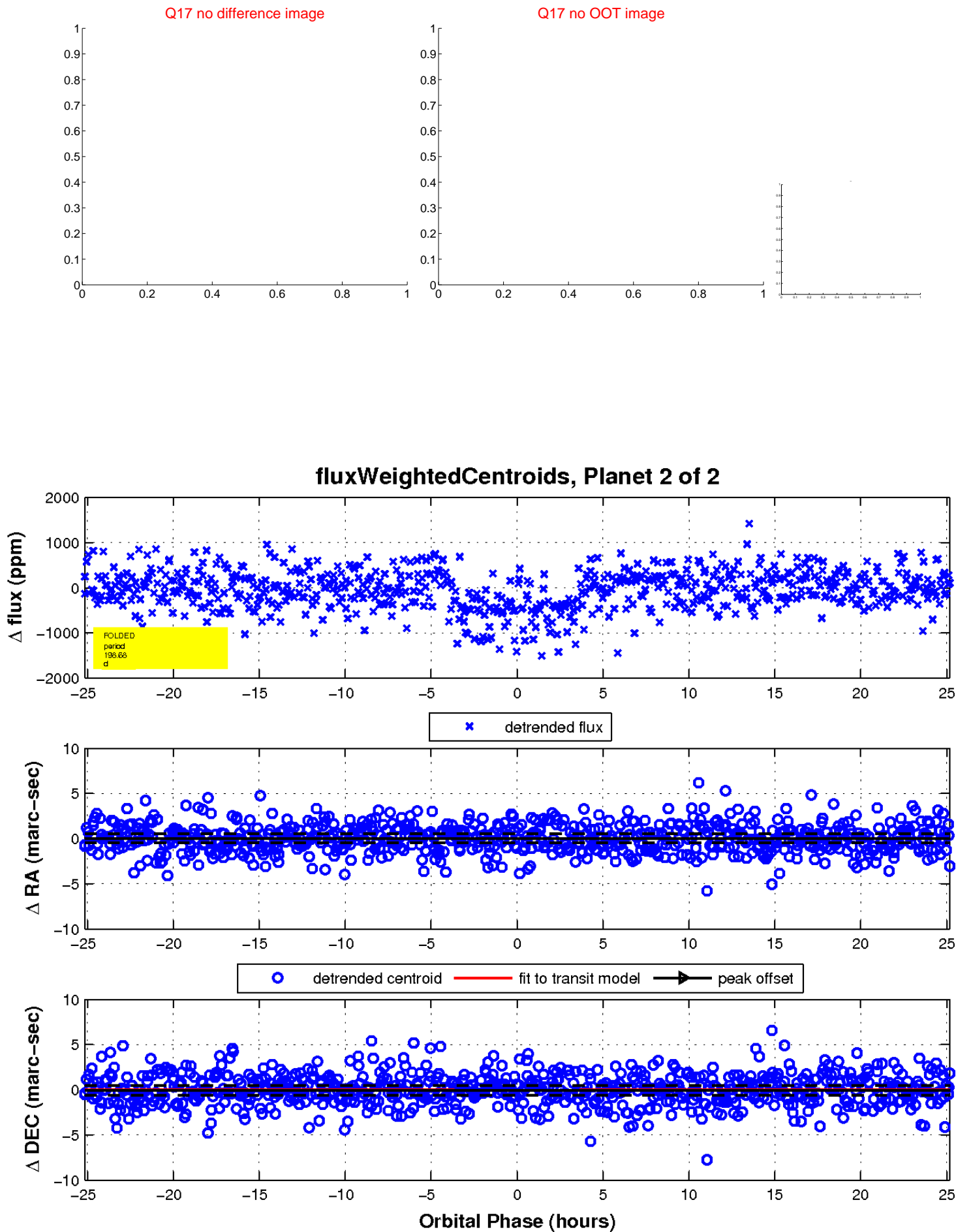
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

