

KIC 007977197

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})
007977197-01	OBS	0459.01	19.446397	150.656087	910.0	3.708	73.4	74.8	0.95	5815	3.31	50.86
007977197-02	OBS	0459.02	6.919840	134.118838	156.4	3.497	21.6	22.6	0.95	5815	1.41	201.68

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007977197-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT
007977197-02	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.

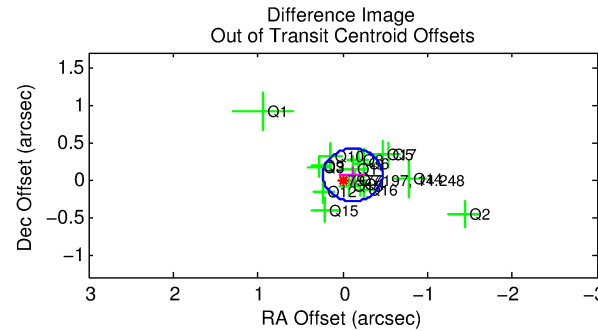
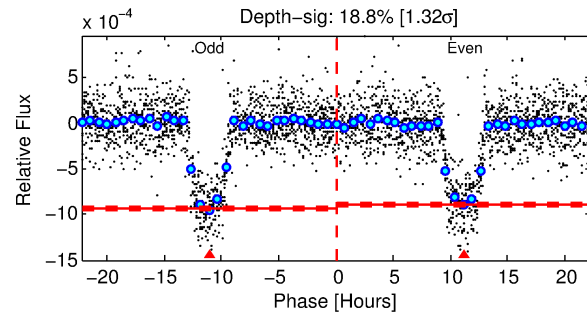
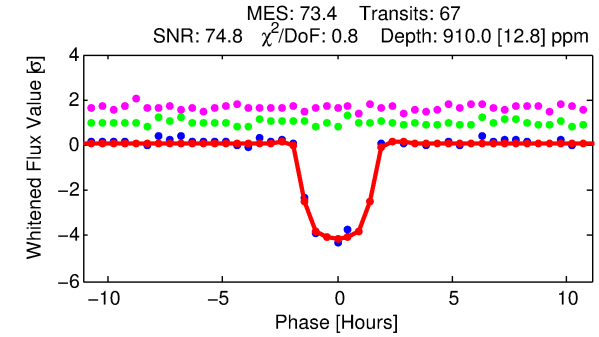
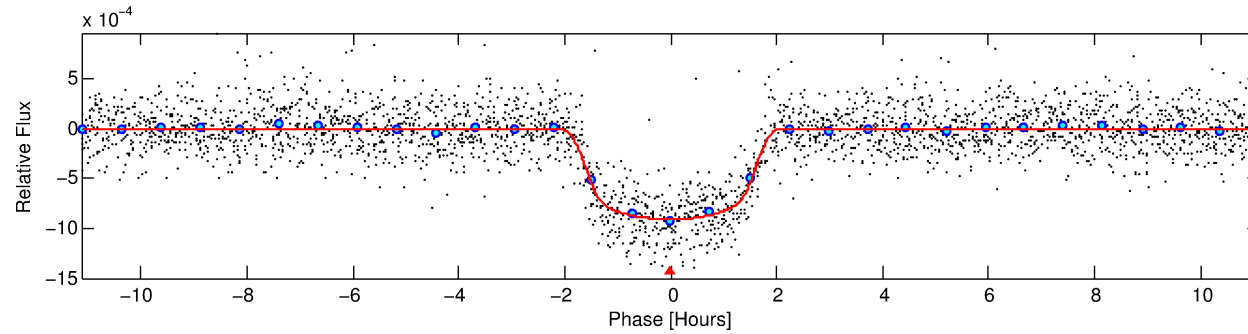
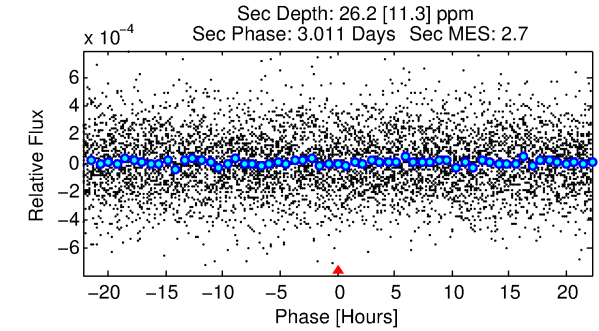
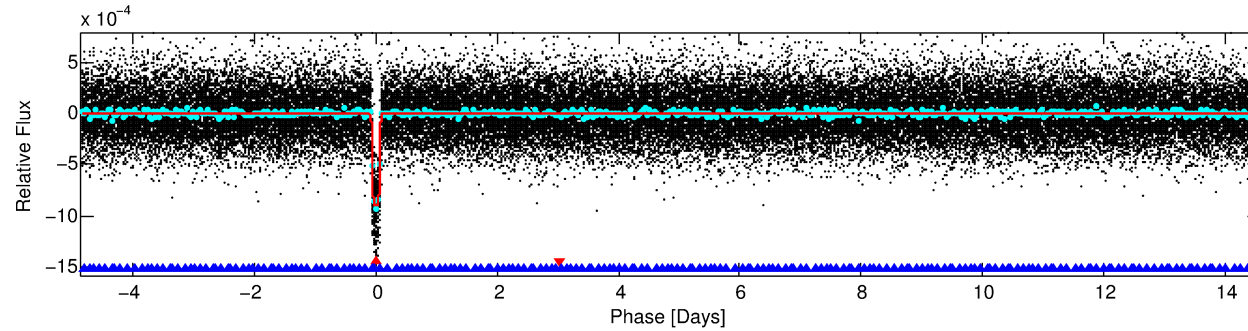
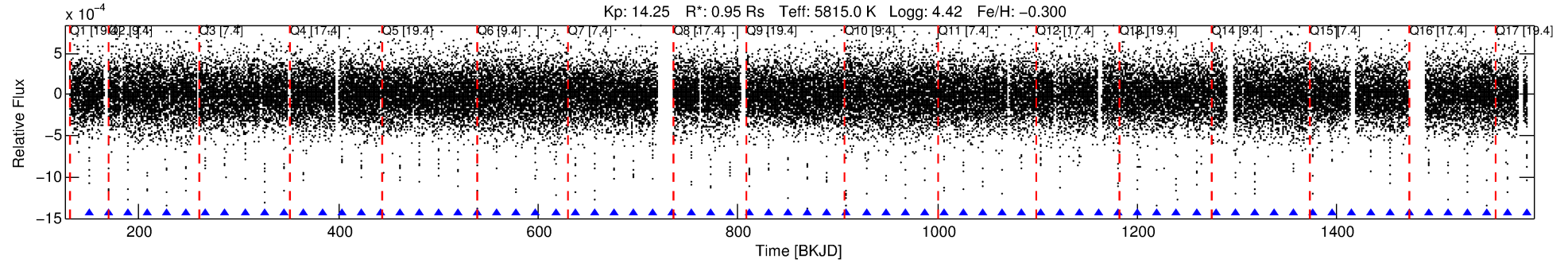
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 007977197-01

No Significant Match Found

DV One-Page Summary

KIC: 7977197 Candidate: 1 of 2 Period: 19.446 d
KOI: K00459.01 Name: Kepler-162c Corr: 0.990



DV Fit Results:

Period = 19.44640 [0.00003] d
Epoch = 150.6561 [0.0011] BKJD
Rp/R* = 0.0318 [0.0011]
a/R* = 22.56 [3.67]
b = 0.86 [0.05]
Seff = 50.86 [17.90]
Teq = 681 [60] K
Rp = 3.31 [0.91] Re
a = 0.1354 [0.0310] AU
Ag = 24.12 [13.22] [1.75σ]
Teffp = 2333 [264] K [6.10σ]

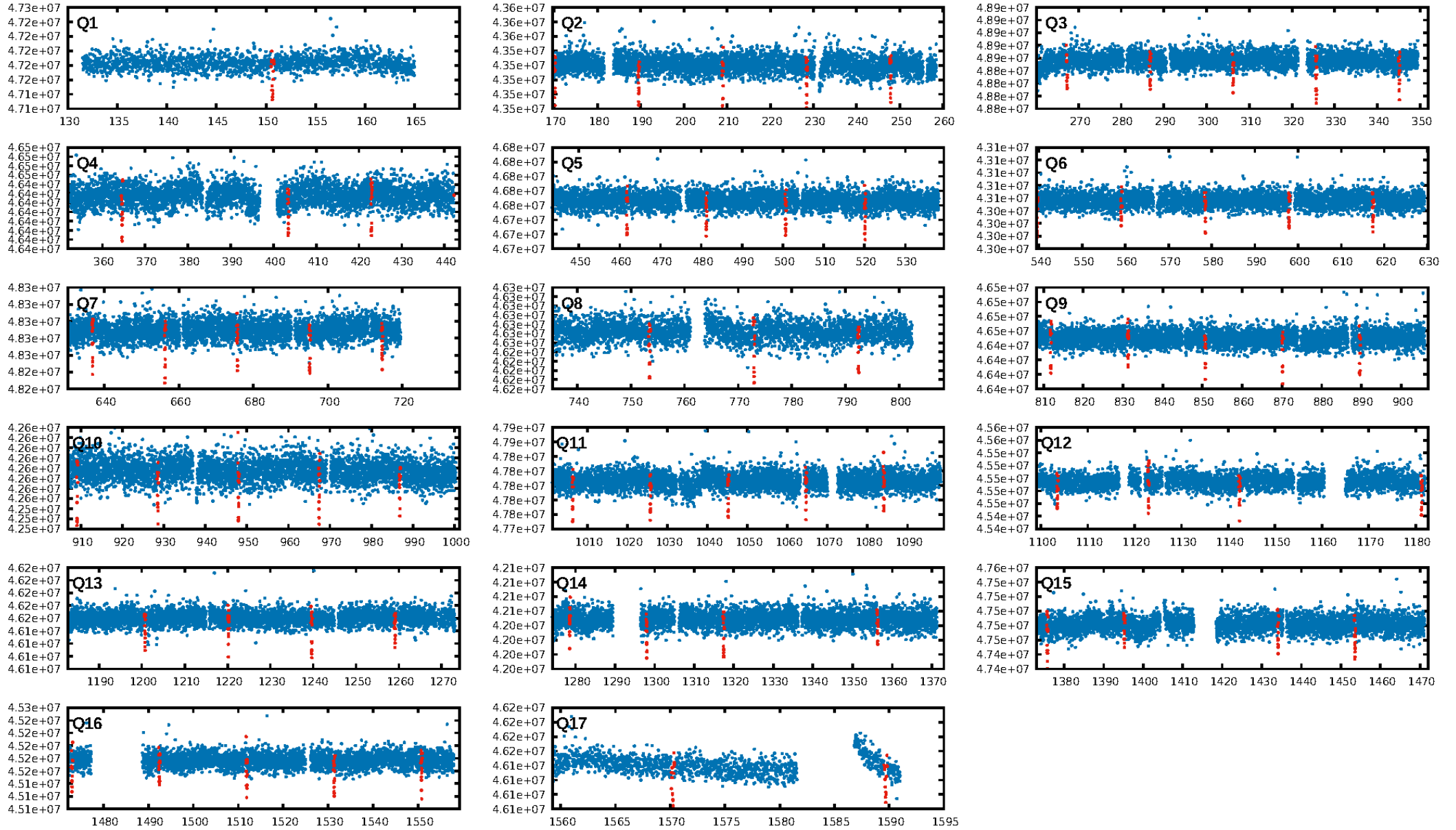
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [58.99σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 23.1%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 1.00 [64/64]
GhostDiagnostic-chr: 5.327
Centroid-sig: 12.7%
Centroid-so: 0.032 arcsec [0.19σ]
OotOffset-rm: 0.132 arcsec [1.13σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-rm: 0.082 arcsec [0.63σ]
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DiffImageQuality-fgm: 1.00 [17/17]
DiffImageOverlap-fno: 1.00 [17/17]

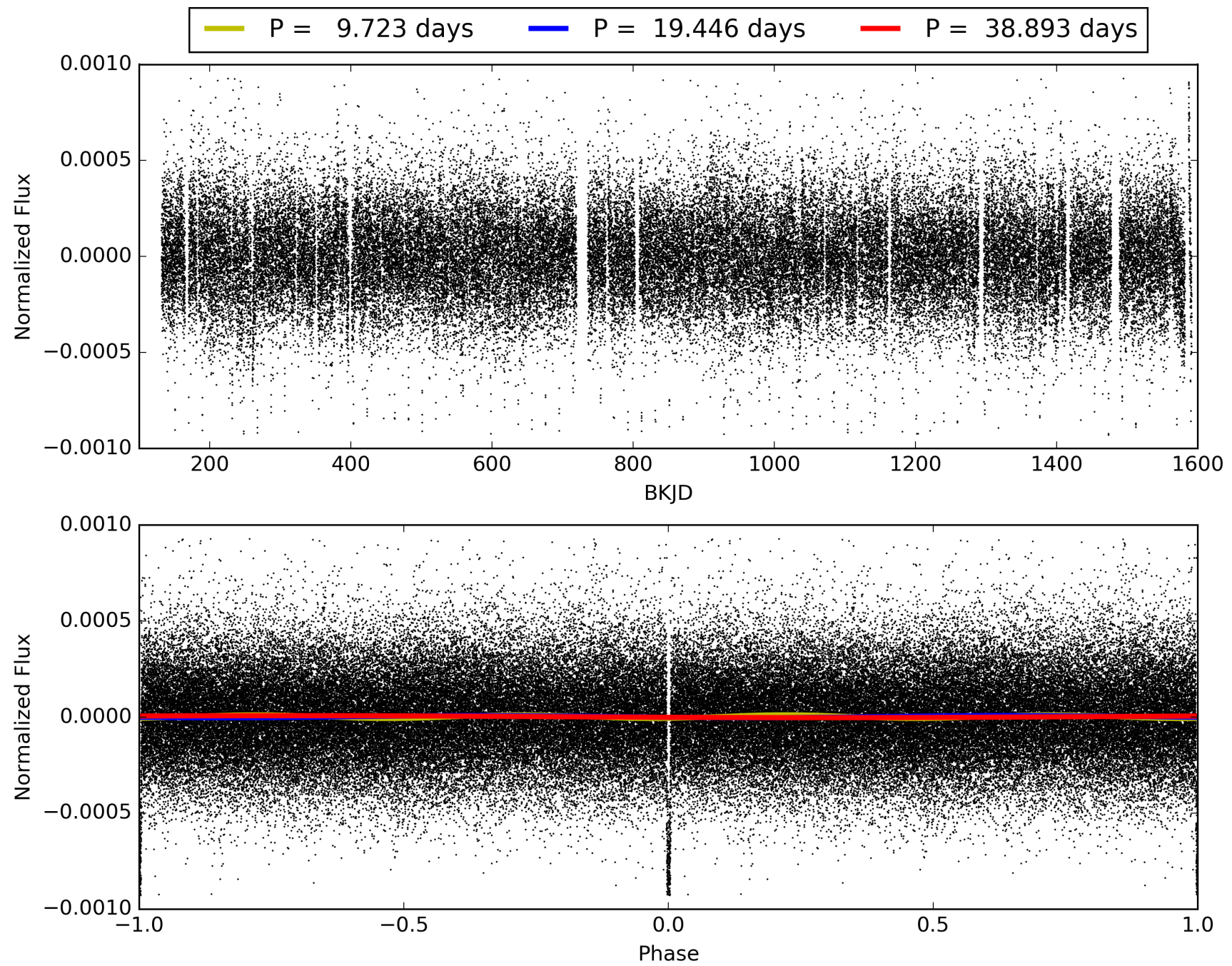
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 007977197-01, PDC Light Curves

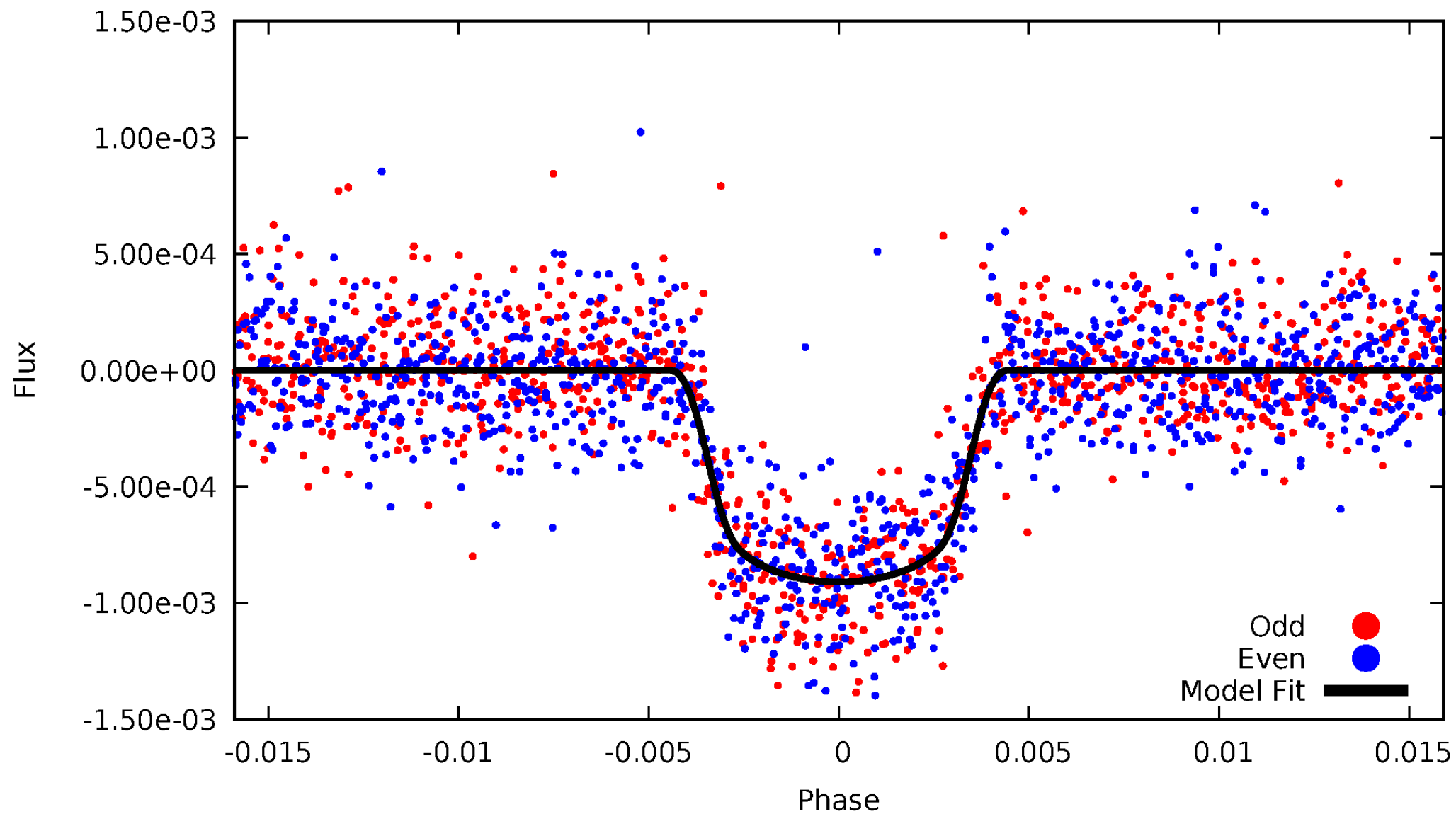


TCE 007977197-01



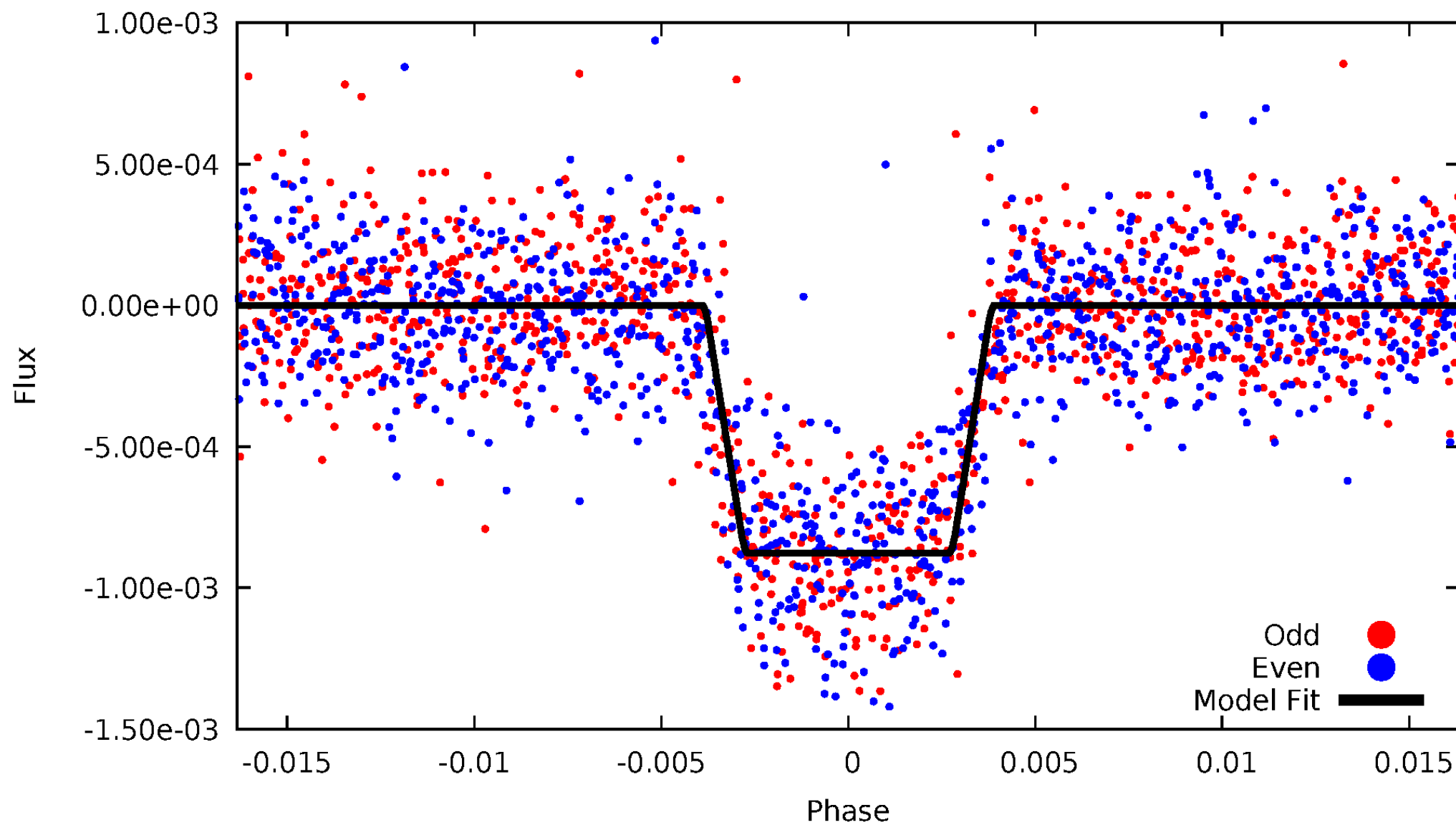
DV Odd/Even

TCE 007977197-01

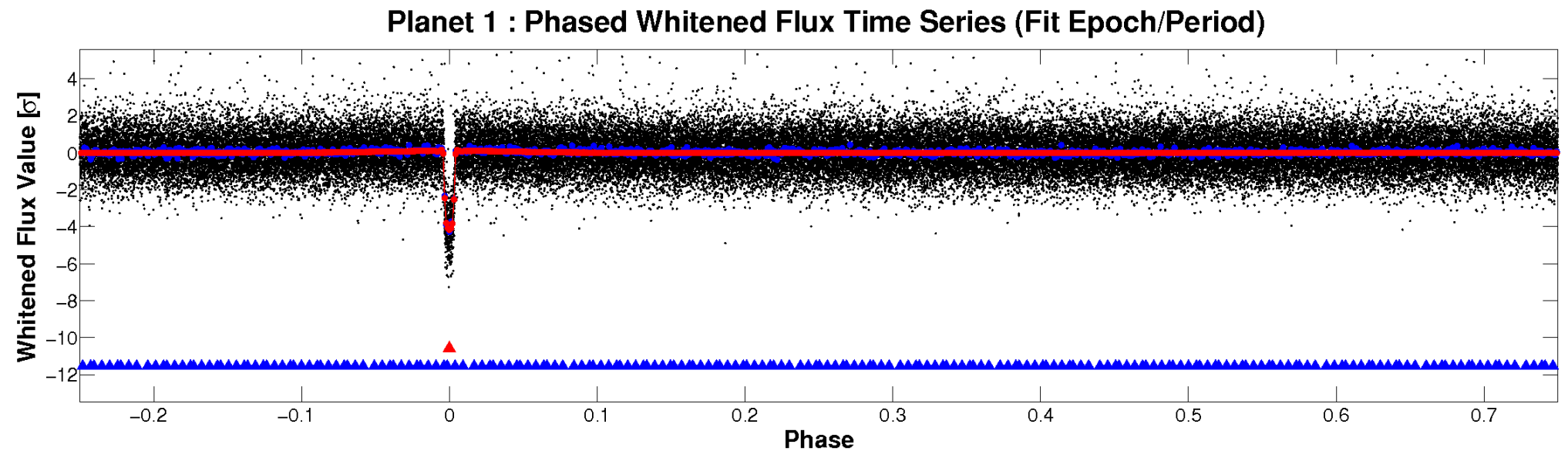
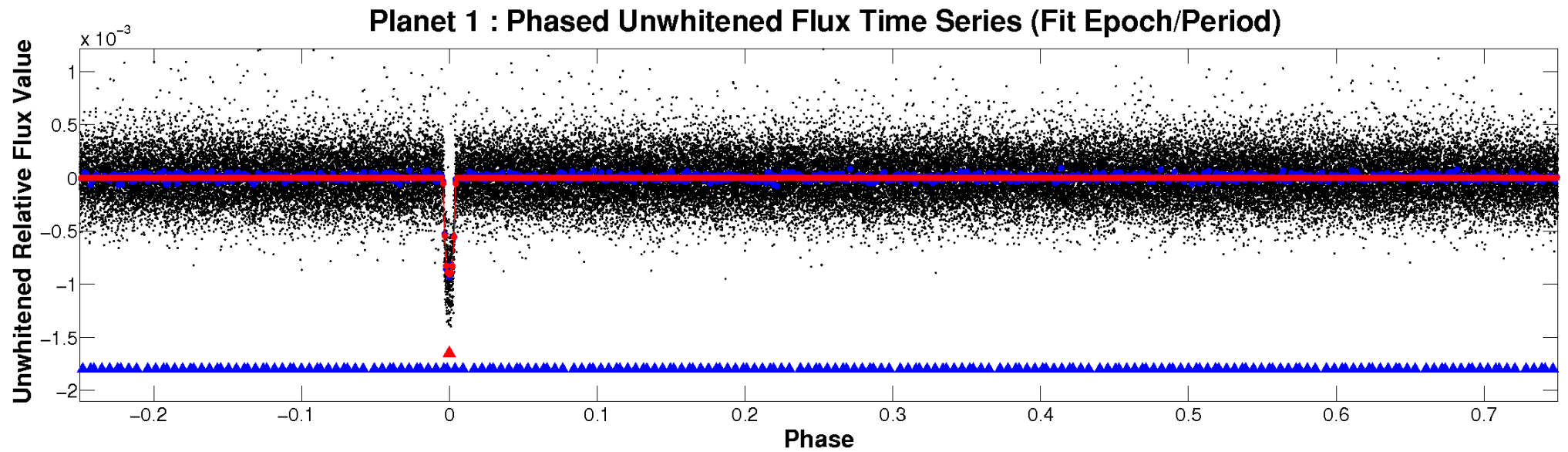


ALT Odd/Even

TCE 007977197-01

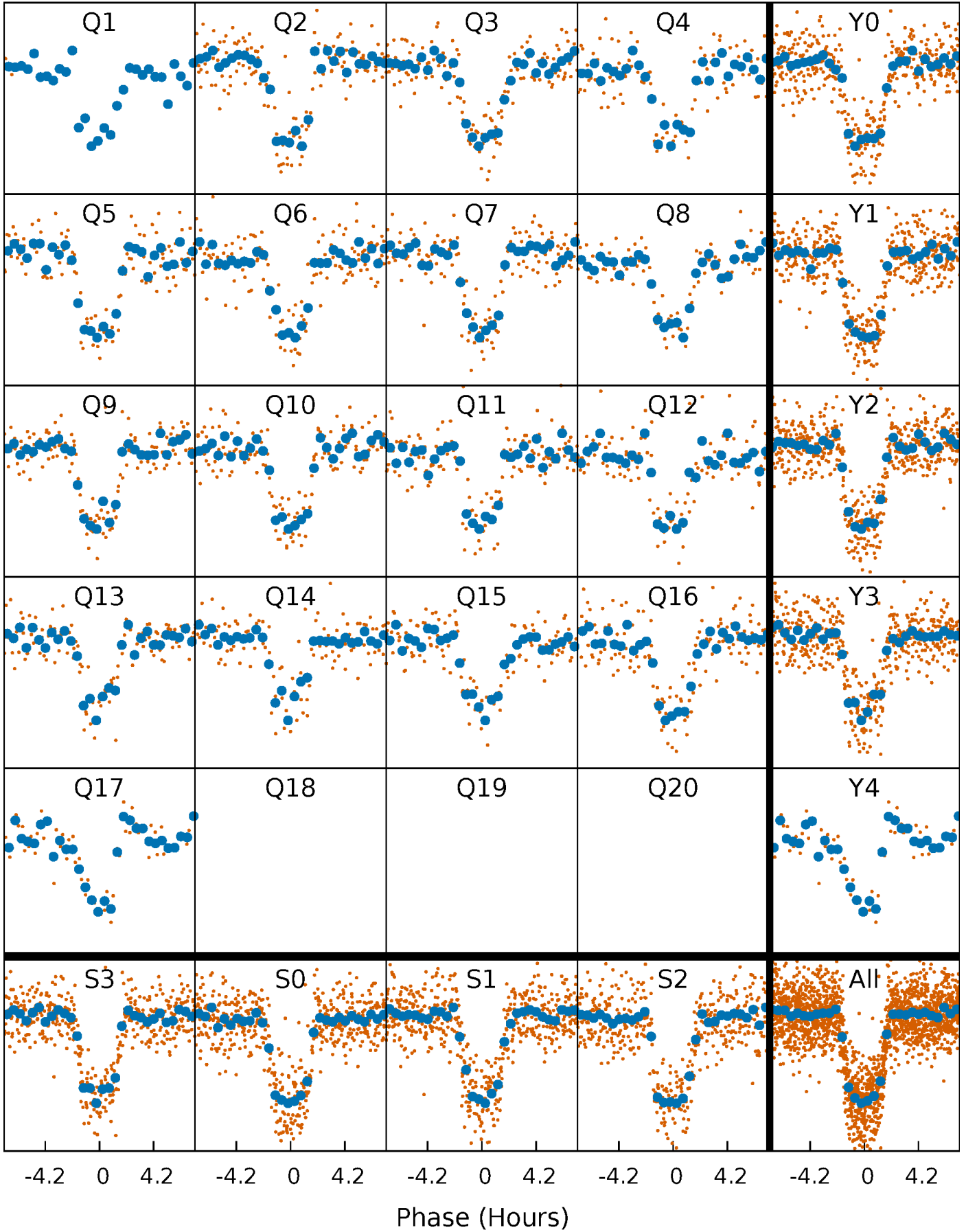


Non-Whitened Vs. Whitened Light Curve



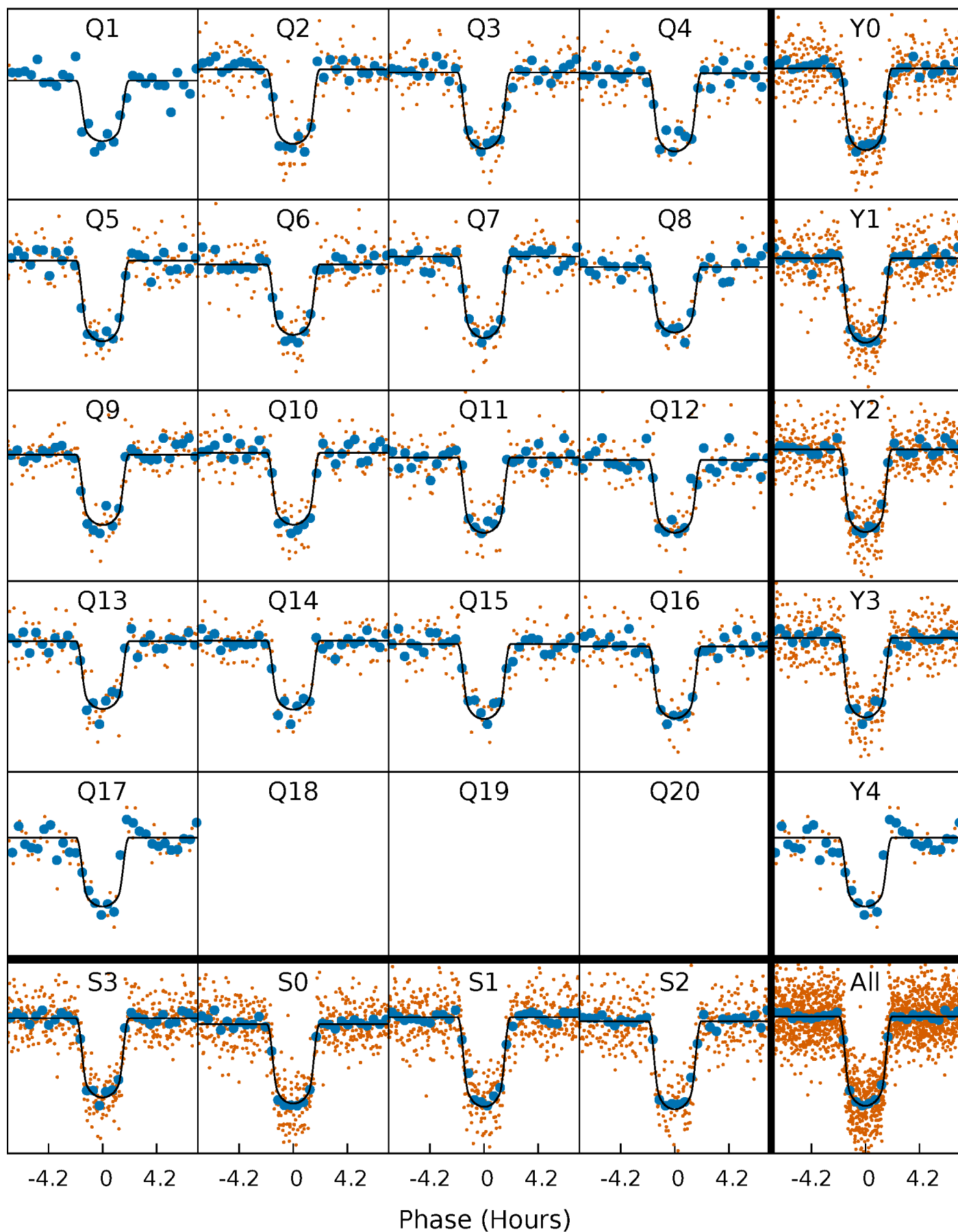
PDC Quarter-Phased Transit Curves

TCE 007977197-01 P= 19.446397 Days $T_0=150.656087$ (BKJD)



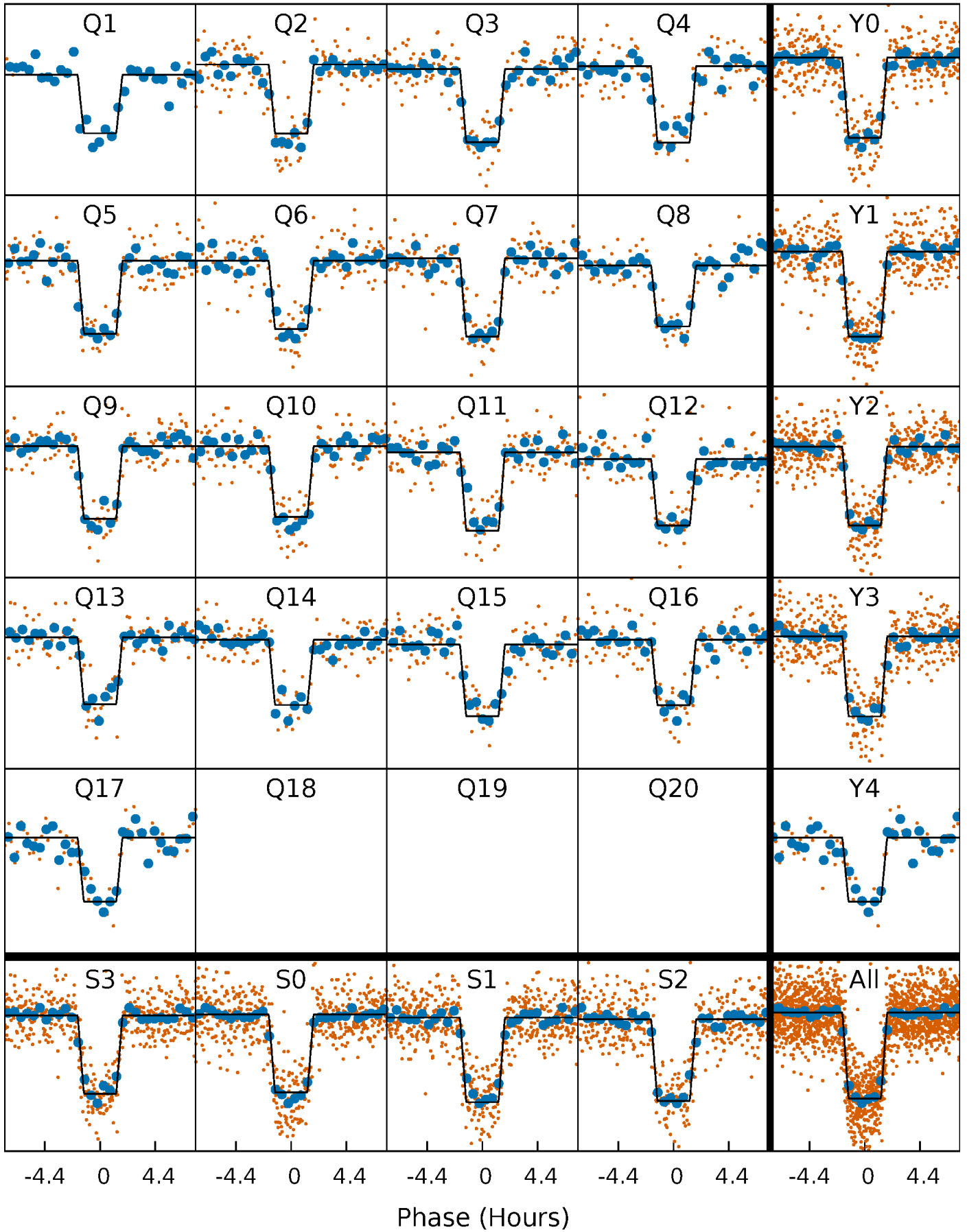
DV Quarter-Phased Transit Curves

TCE 007977197-01 P= 19.446397 Days $T_0=150.656087$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

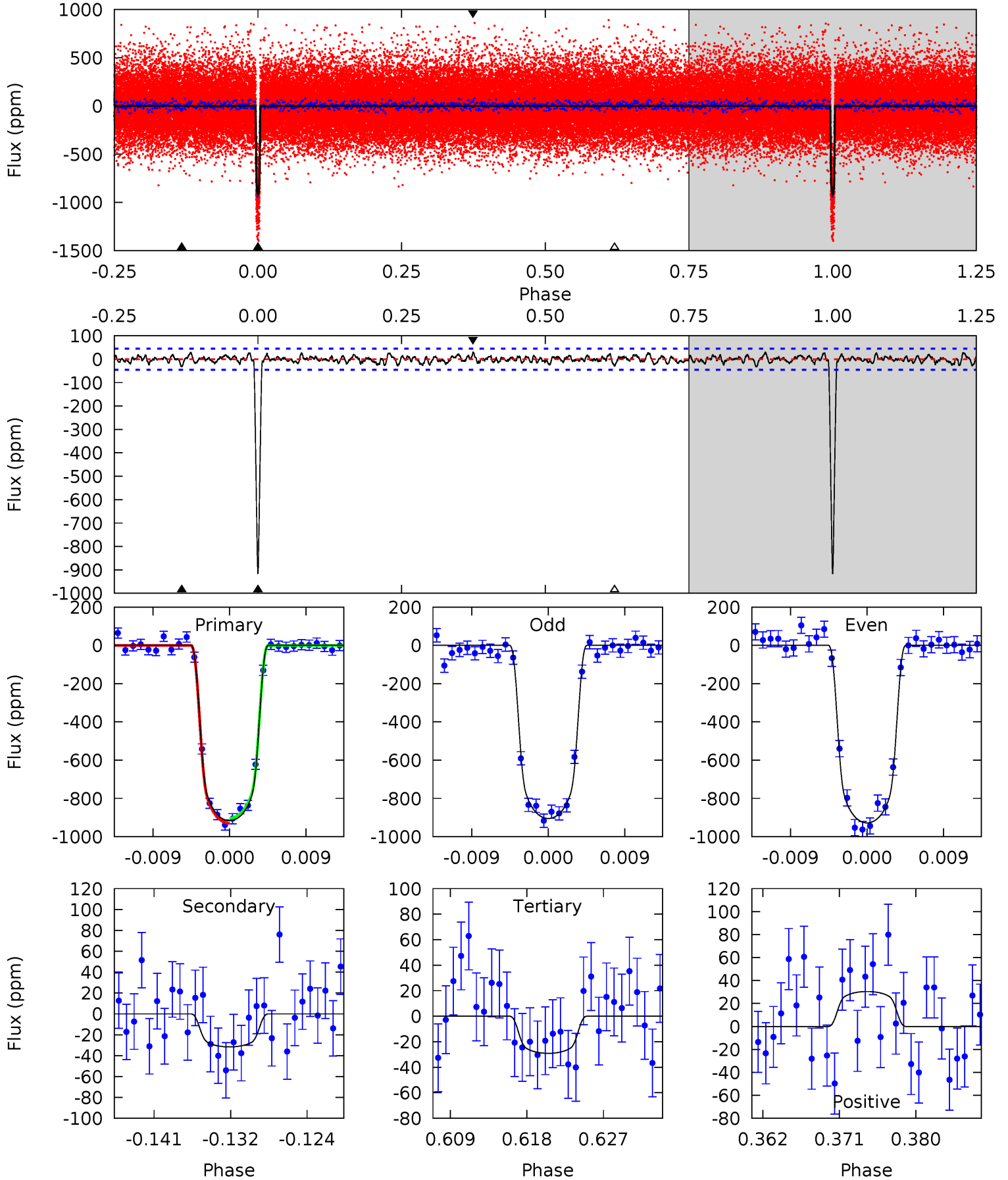
TCE 007977197-01 P= 19.446213 Days $T_0=150.662772$ (BKJD)



DV Model-Shift Uniqueness Test

007977197-01, P = 19.446397 Days, E = 131.209690 Days

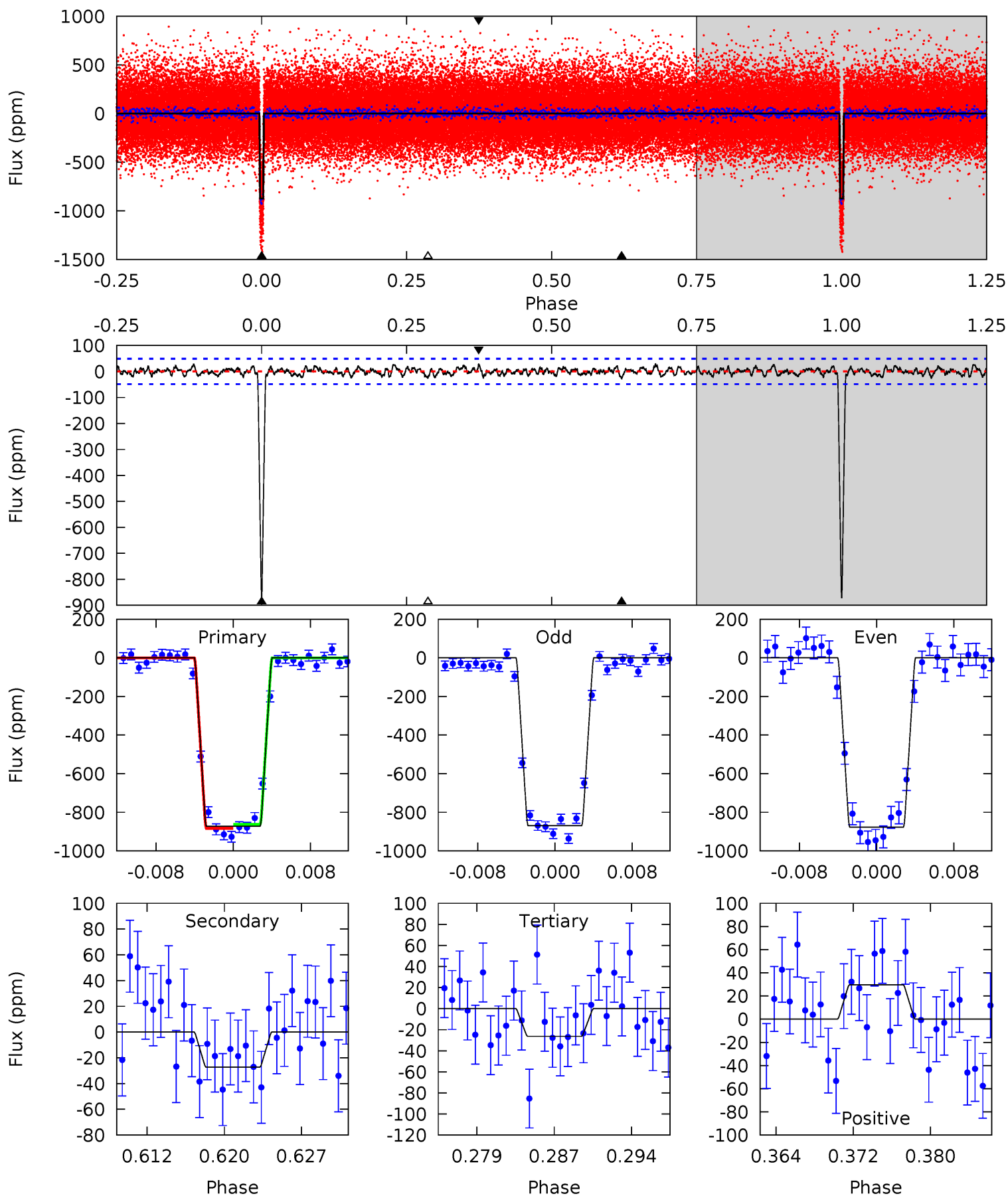
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
102.1	3.52	3.24	3.39	5.05	2.62	1.17	98.9	98.7	0.28	0.13	1.29	0.99	0.03	1.46



Alt Model-Shift Uniqueness Test

007977197-01, P = 19.446213 Days, E = 131.216559 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
90.6	2.83	2.73	3.07	5.08	2.66	1.04	87.9	87.5	0.09	-0.24	0.42	1.00	0.03	1.13



Stellar Parameters For KIC 007977197

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5815^{+157}_{-174}	$4.421^{+0.120}_{-0.180}$	$-0.300^{+0.300}_{-0.300}$	$0.954^{+0.261}_{-0.140}$	$0.875^{+0.121}_{-0.080}$	$1.419^{+0.770}_{-0.671}$
	+3%/-3%	+3%/-4%	+100%/-100%	+27%/-15%	+14%/-9%	+54%/-47%
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 007977197-01 / KOI 0459.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-32 ± 9	$3.35^{+0.49}_{-0.31}$	957^{+65}_{-52}	3064^{+136}_{-155}	27^{+11}_{-8}
Alt.	-27 ± 10	$3.12^{+0.47}_{-0.32}$	955^{+69}_{-48}	3073^{+153}_{-203}	27^{+14}_{-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 $A_{obs} \gg 1.0$

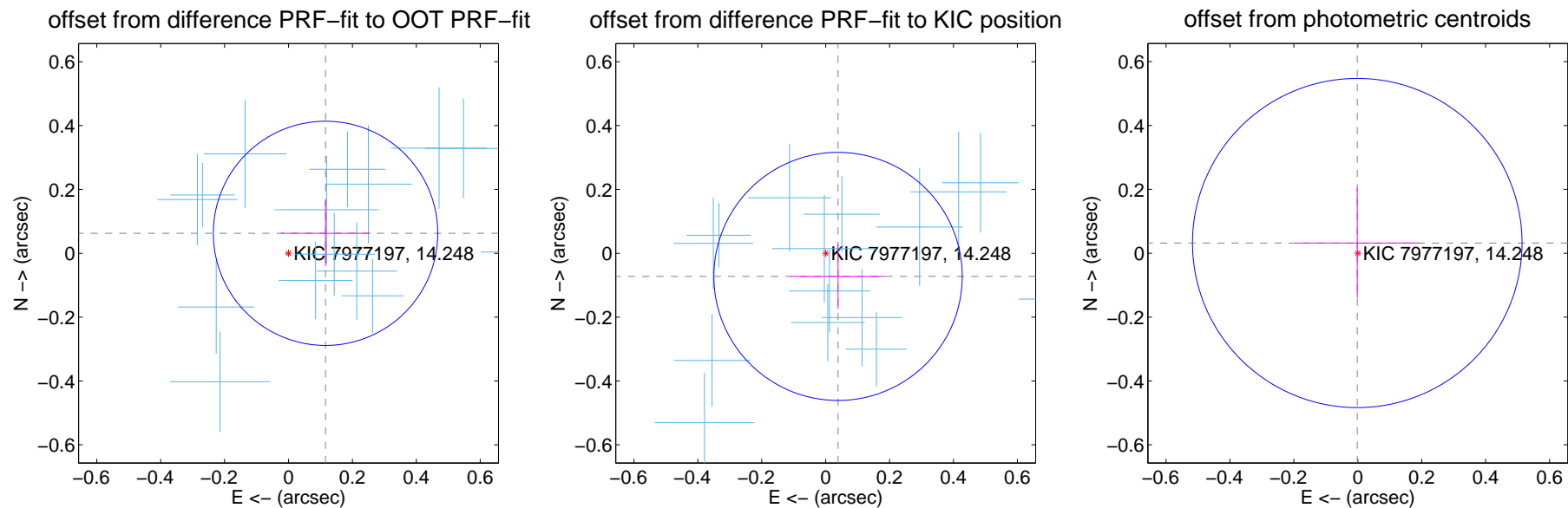
DV Centroid Data

Supplemental centroid analysis for 007977197-01. Kepler magnitude: 14.25. Transit SNR 74.79

There are 17 quarters with good PRF difference image offsets

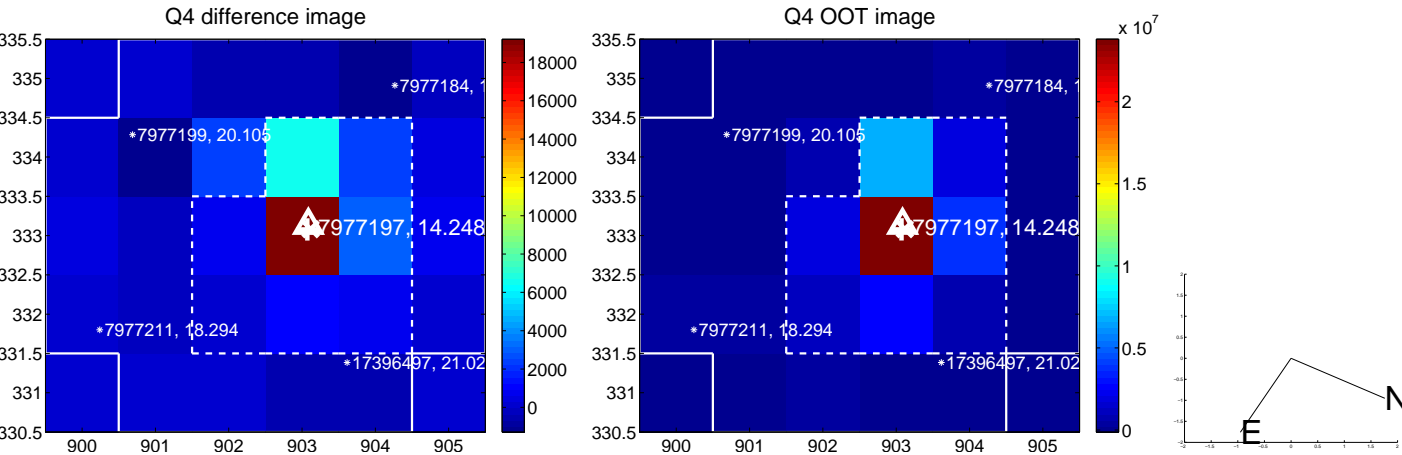
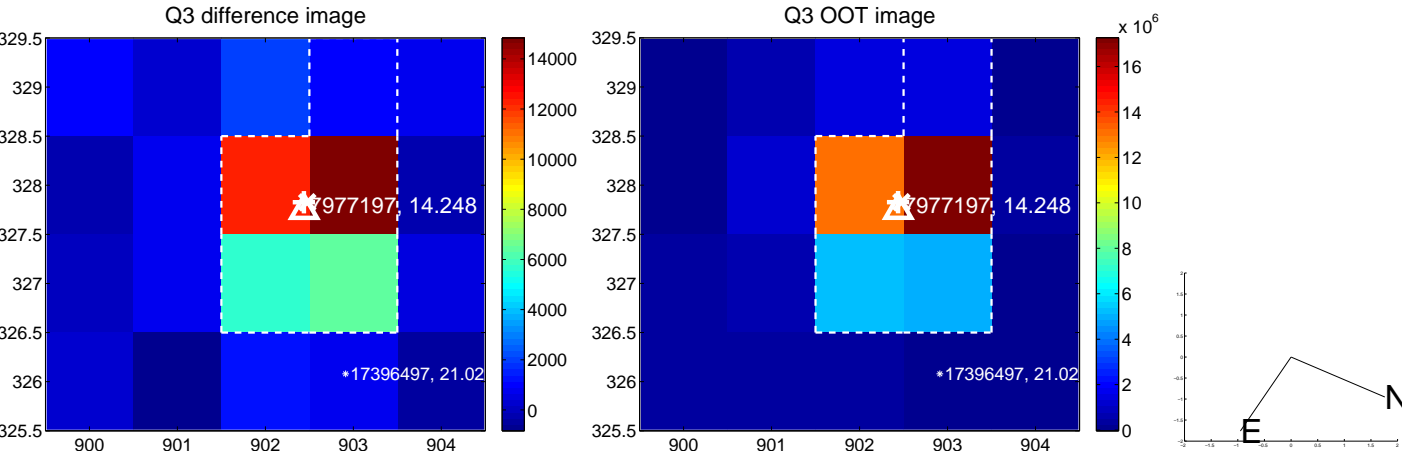
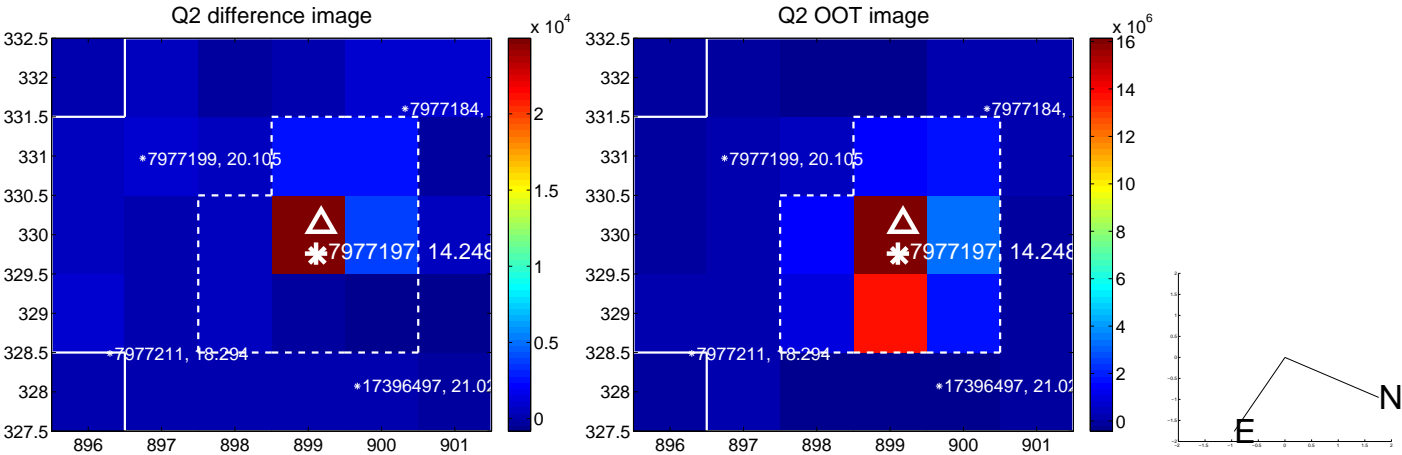
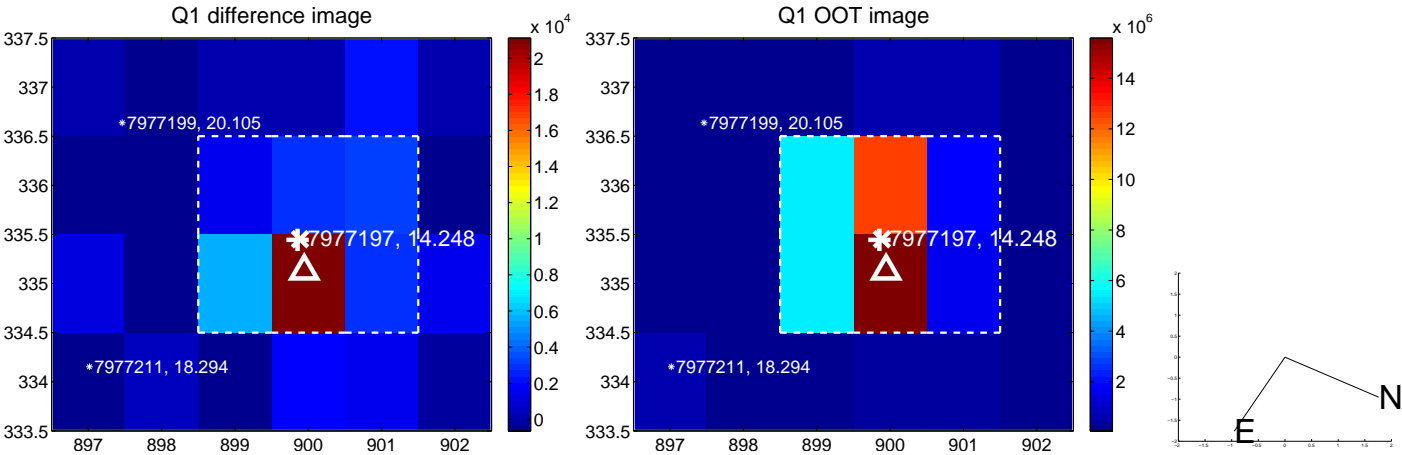
The direct PRF centroid is offset from the target star catalog position by about 0.15 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.132 ± 0.117	1.13	-0.116 ± 0.139	0.063 ± 0.103
PRF-fit source offset from KIC position	0.082 ± 0.130	0.63	-0.039 ± 0.148	-0.072 ± 0.102
photometric centroid source offset	0.03 ± 0.17	0.19	0.00 ± 0.19	0.03 ± 0.17

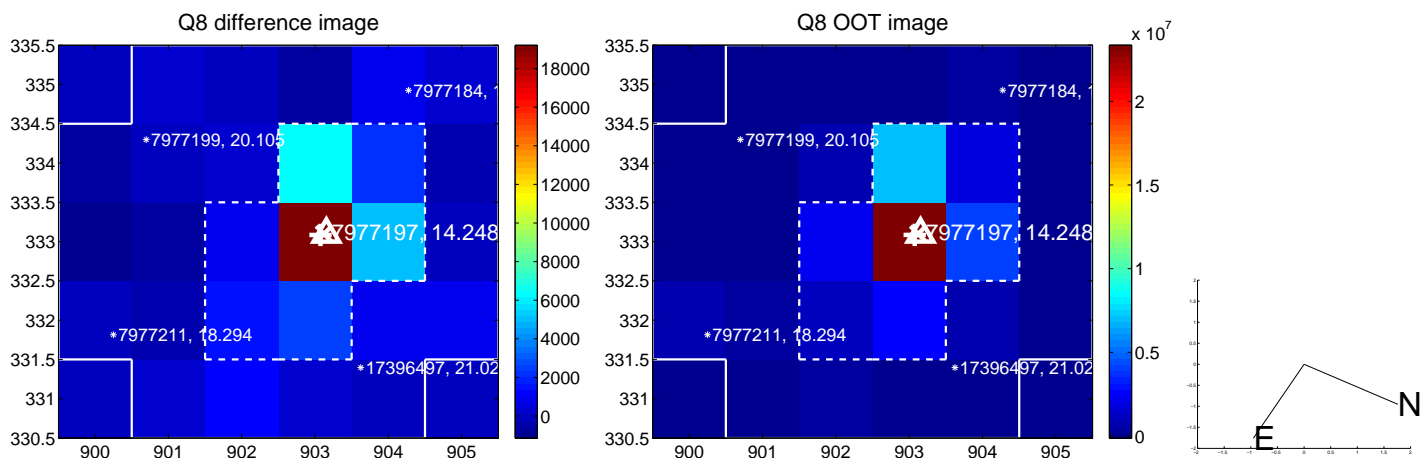
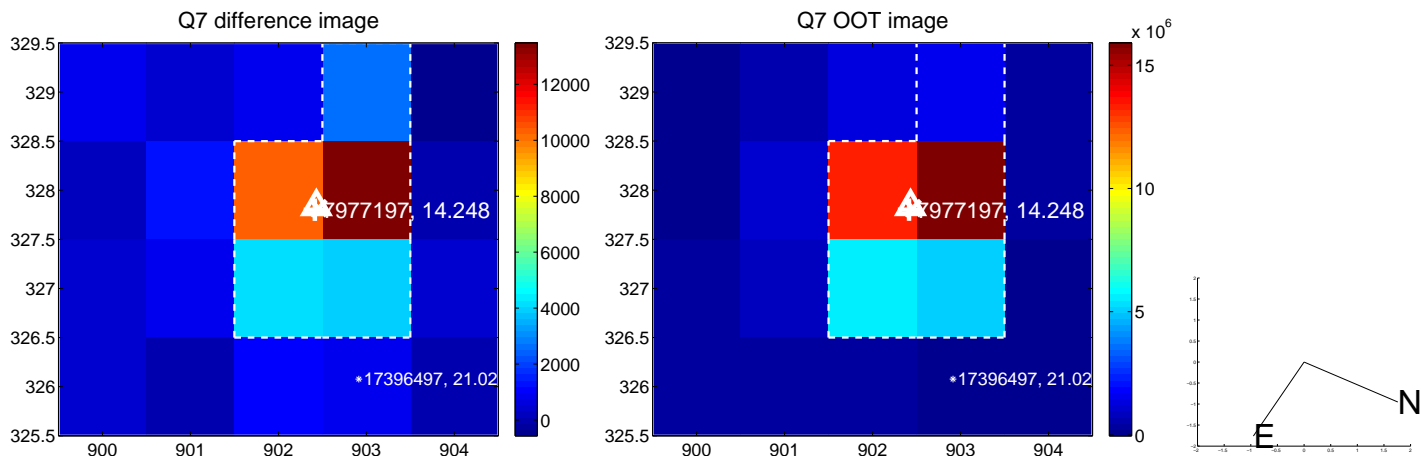
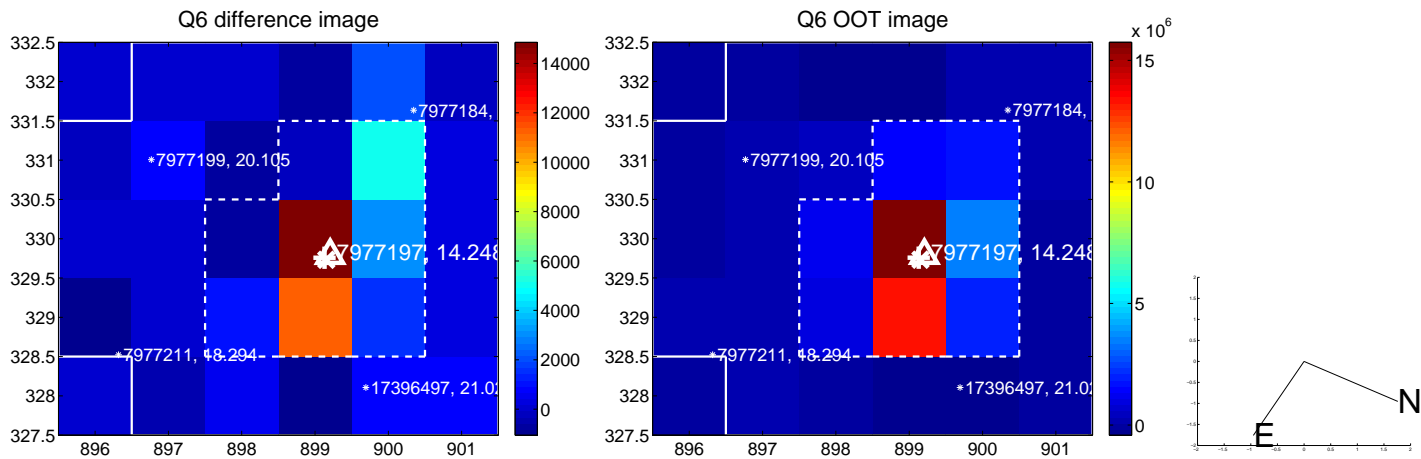
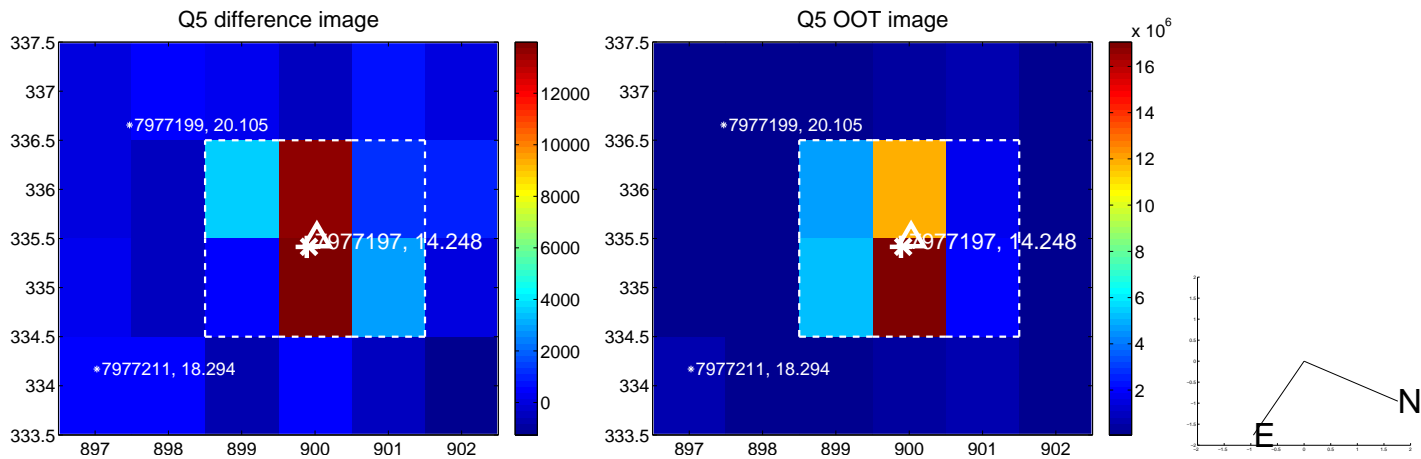


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ . Red *: target star. Blue *: Other stars. Text next to a star gives its KIC ID and kepmag. KIC IDs > 15,000,000 are from the UKIRT catalog.

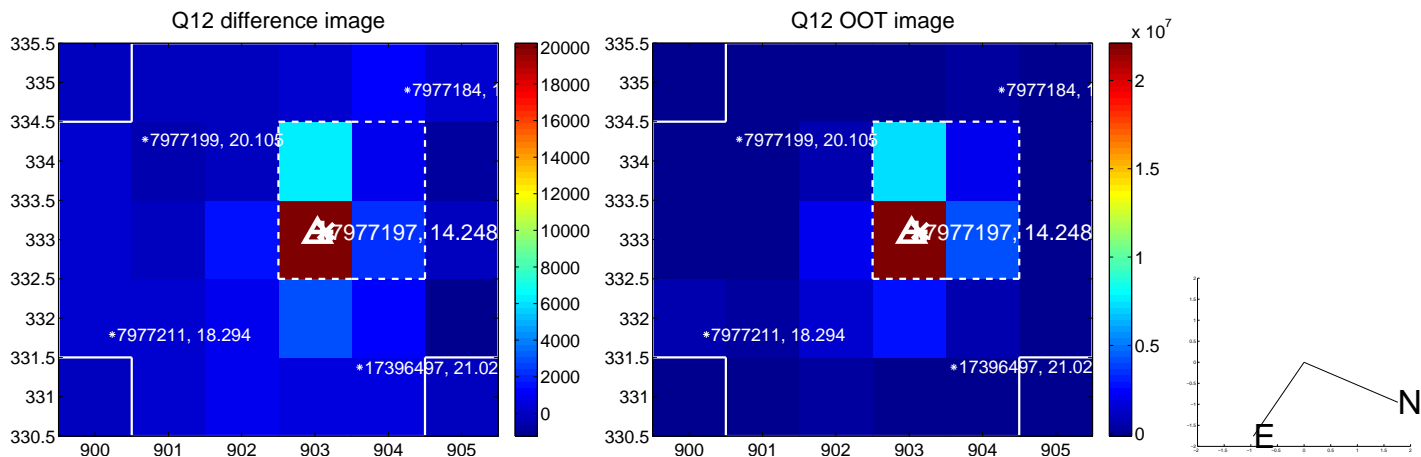
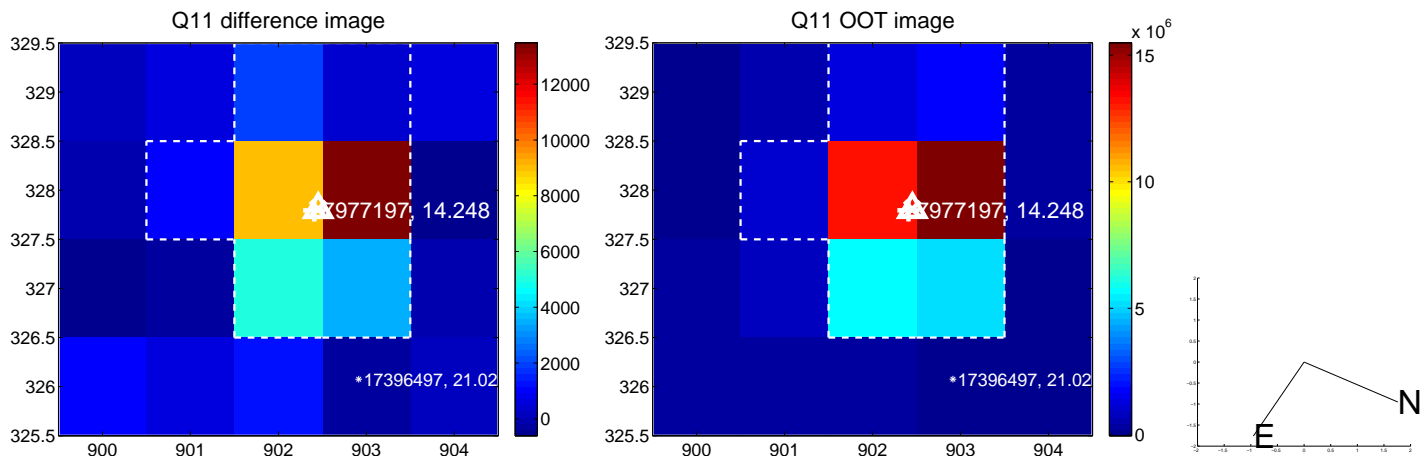
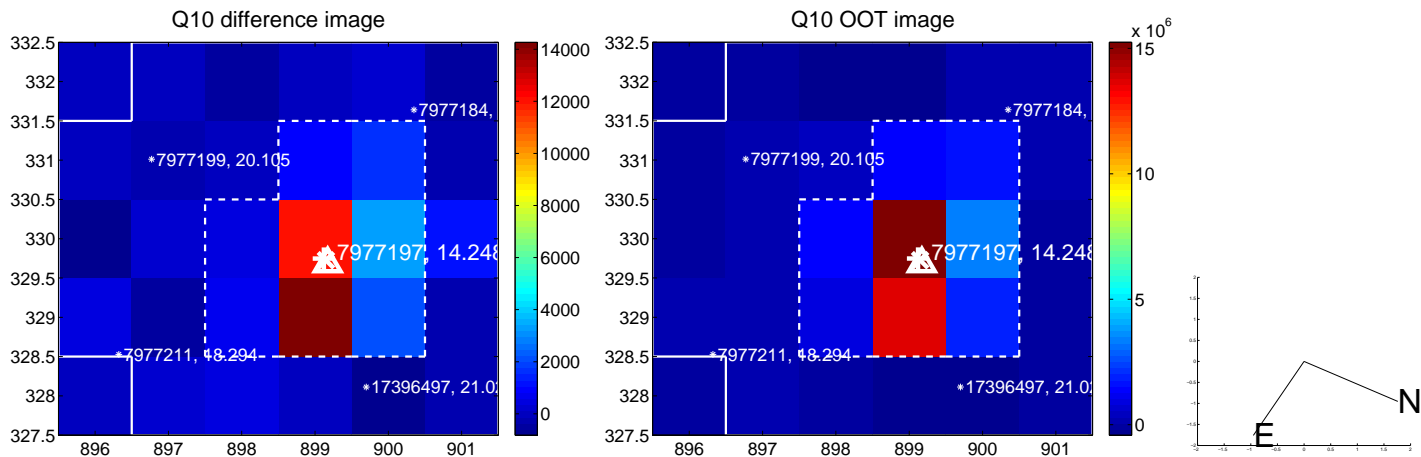
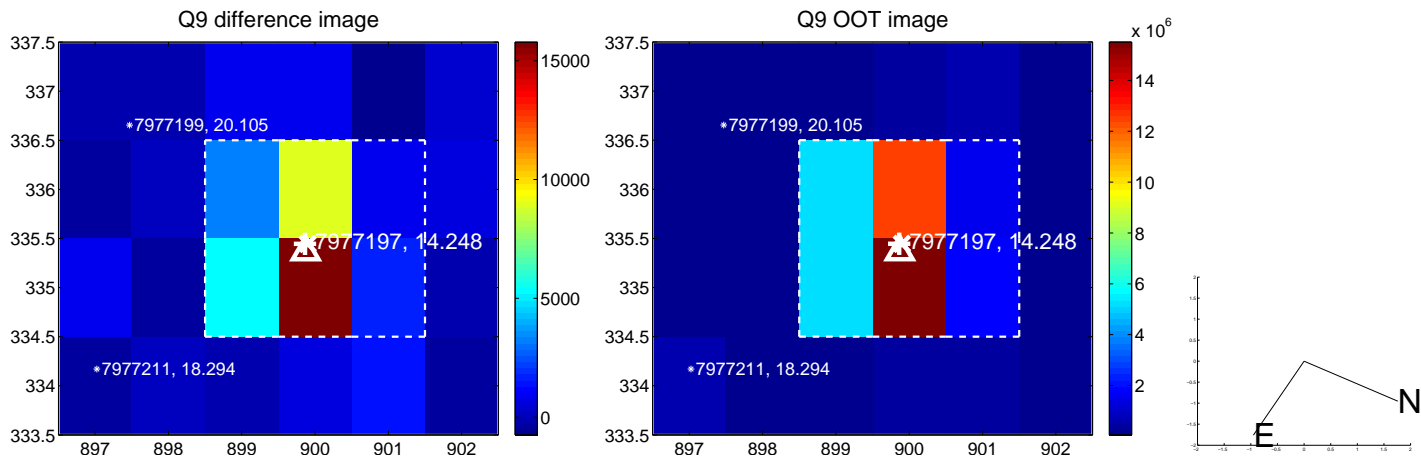
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



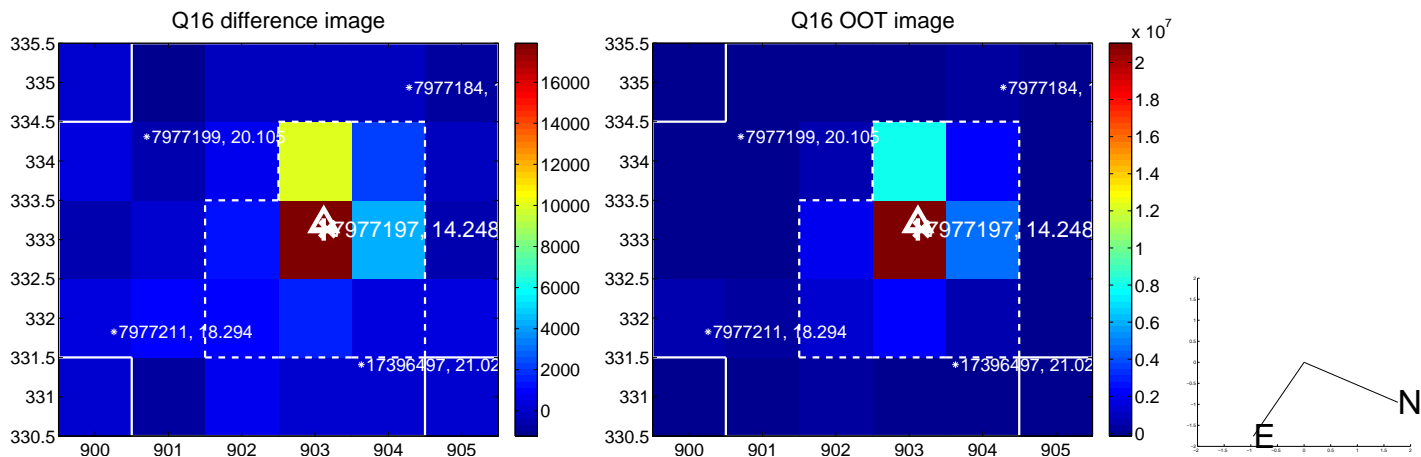
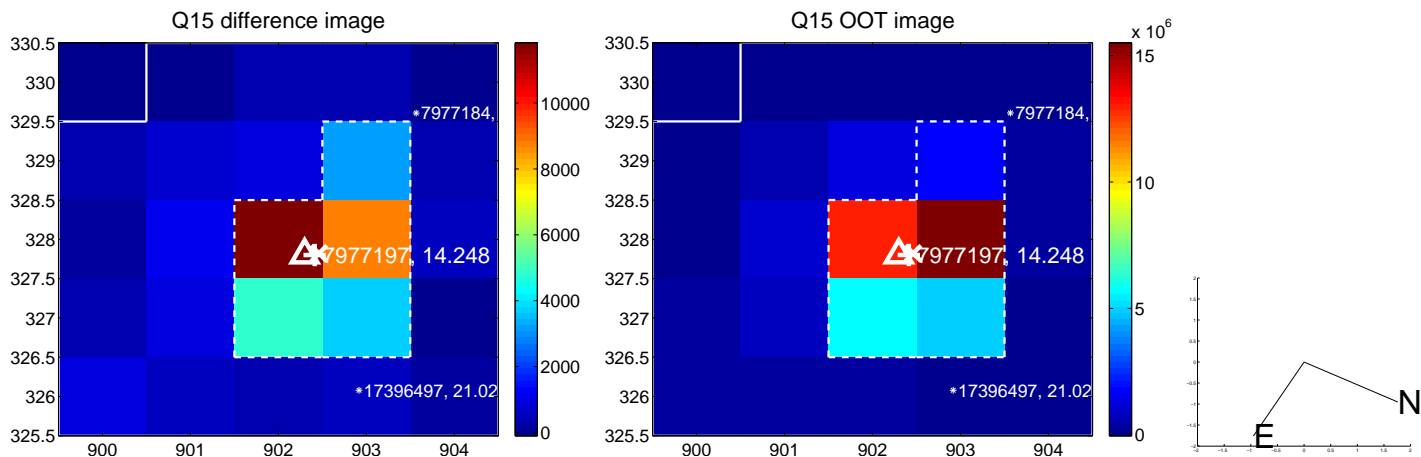
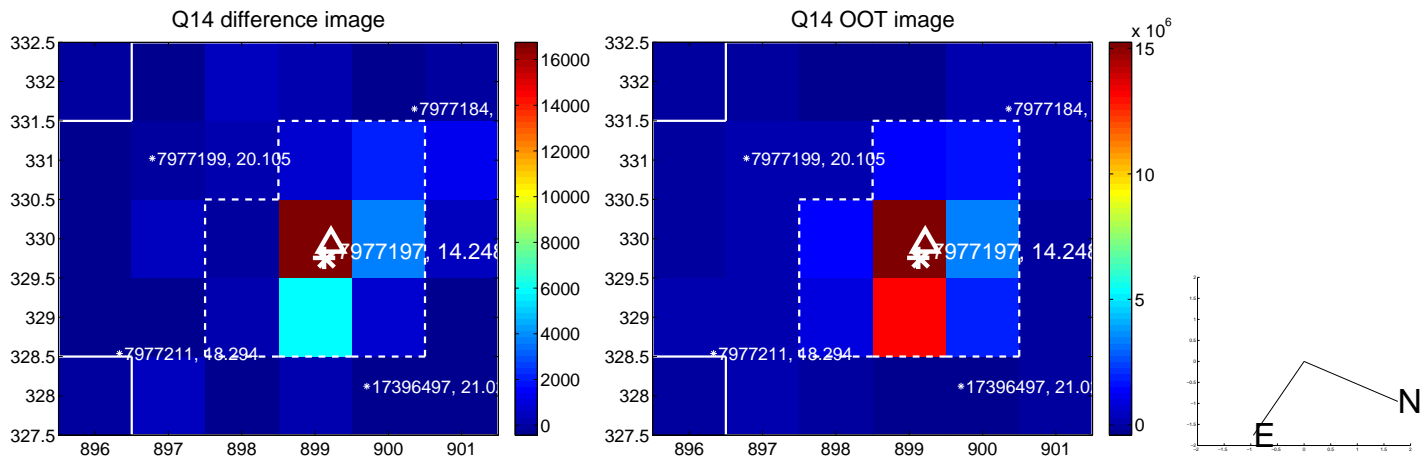
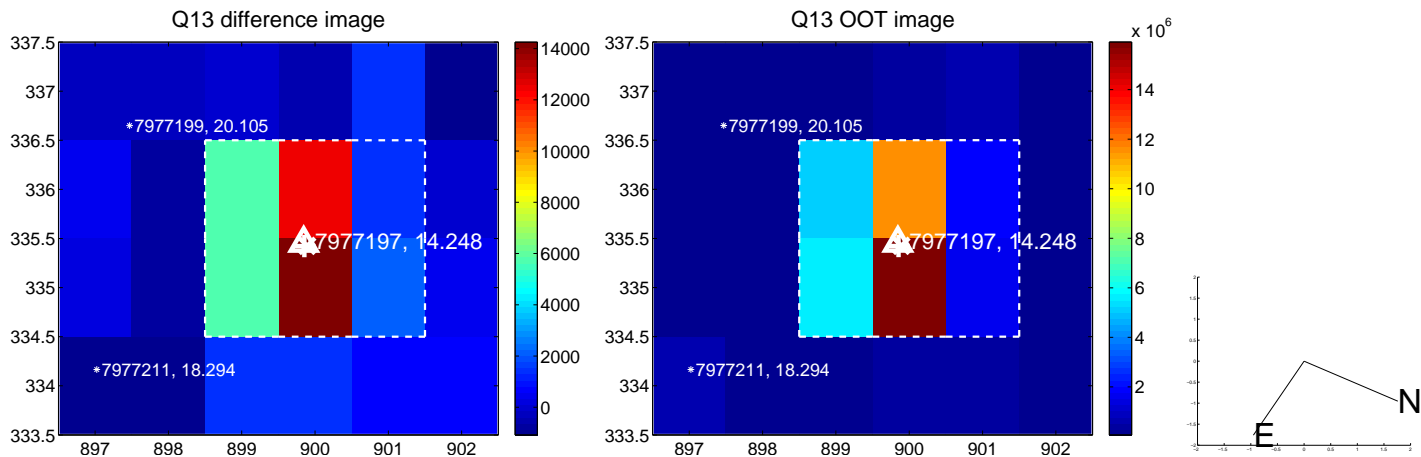
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



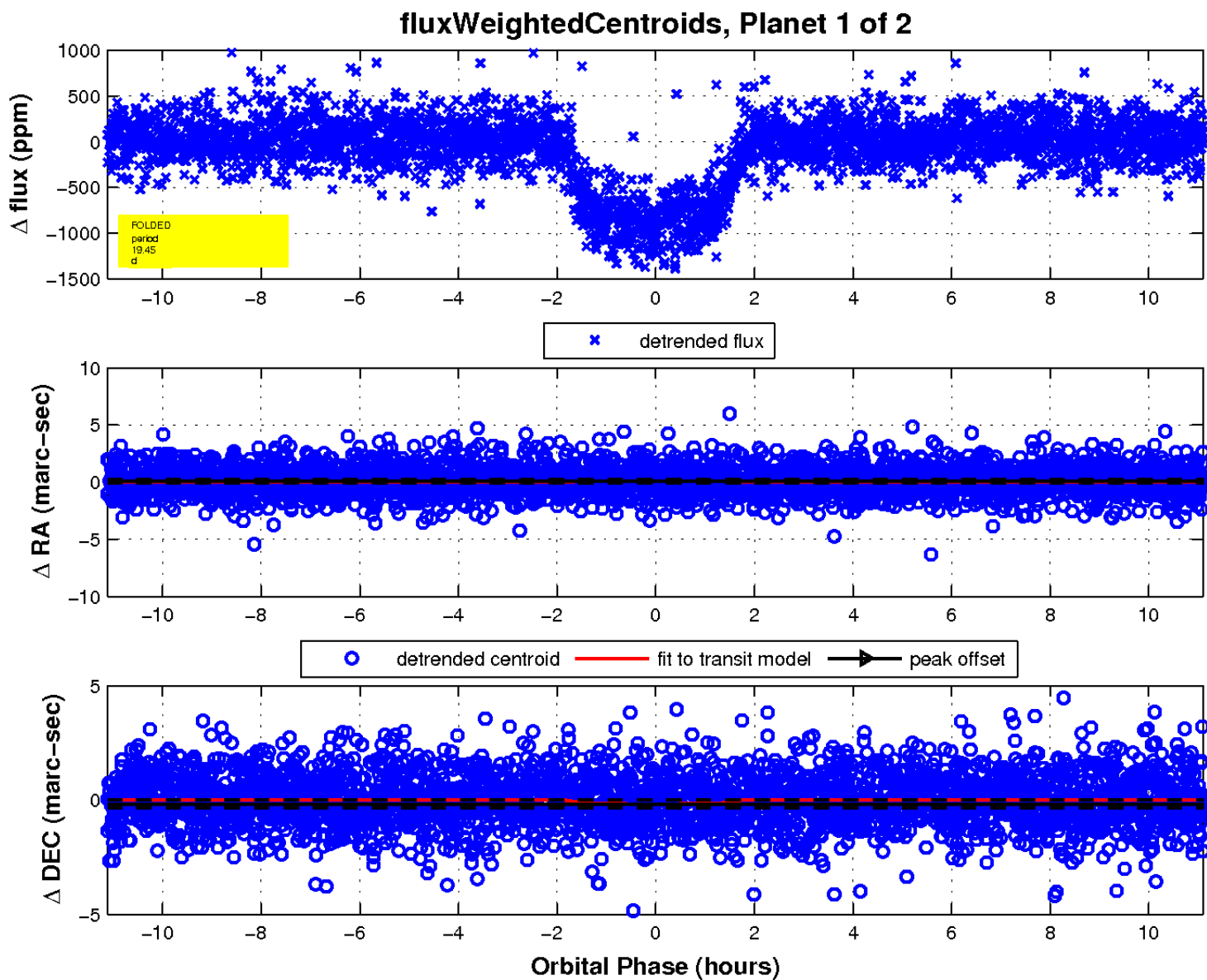
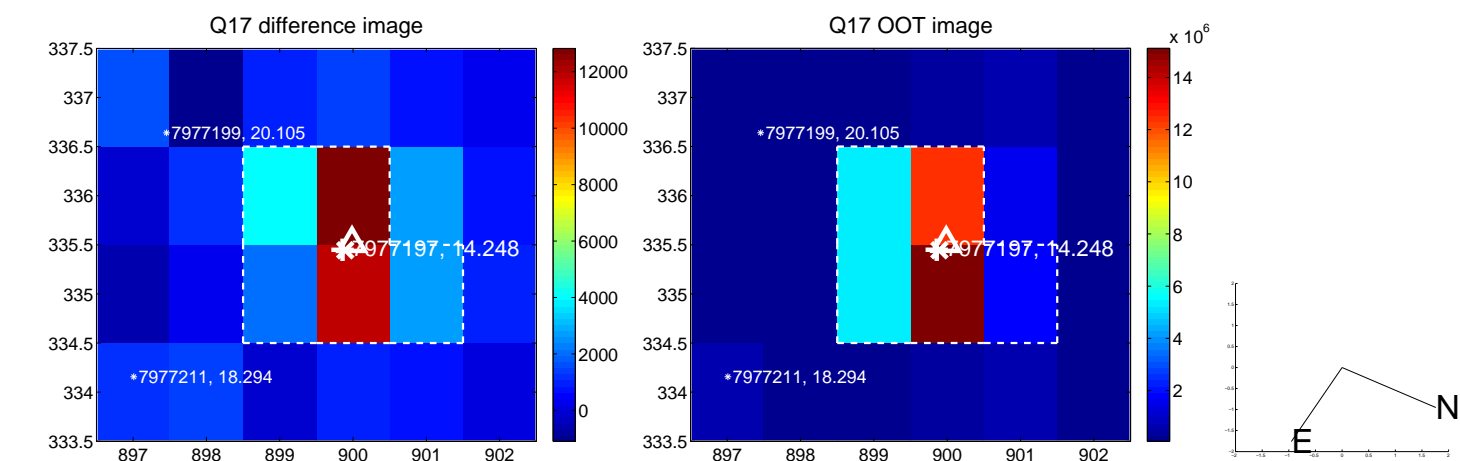
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

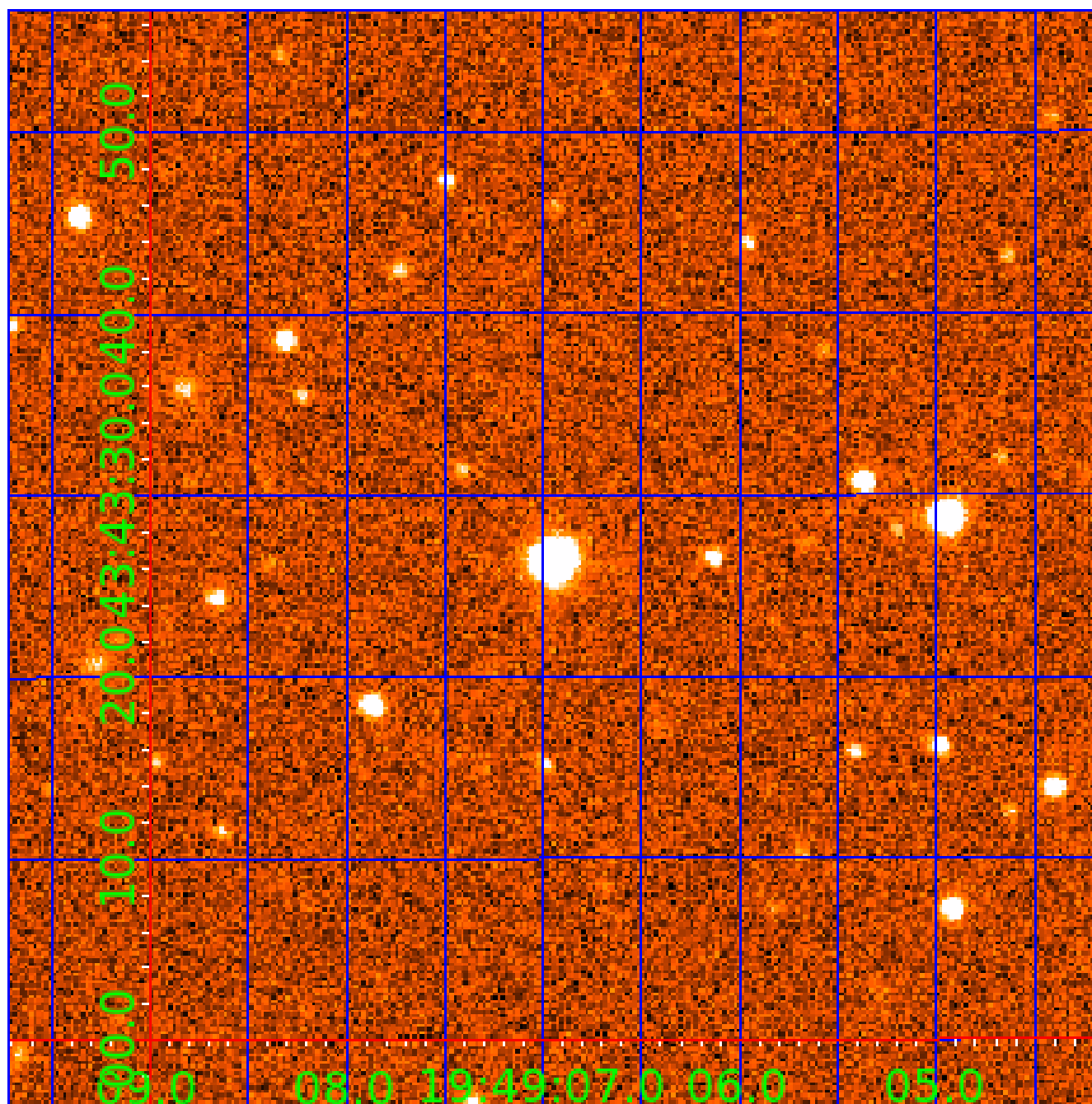


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 007977197

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})
007977197-01	OBS	0459.01	19.446397	150.656087	910.0	3.708	73.4	74.8	0.95	5815	3.31	50.86
007977197-02	OBS	0459.02	6.919840	134.118838	156.4	3.497	21.6	22.6	0.95	5815	1.41	201.68

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007977197-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT
007977197-02	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.

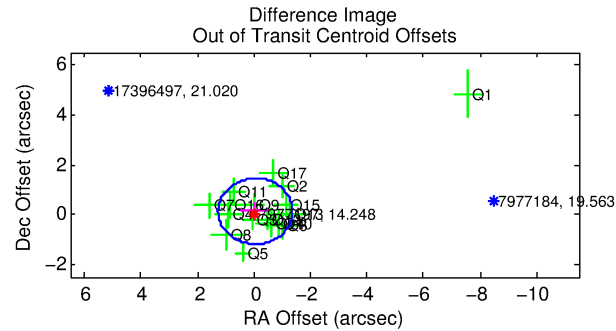
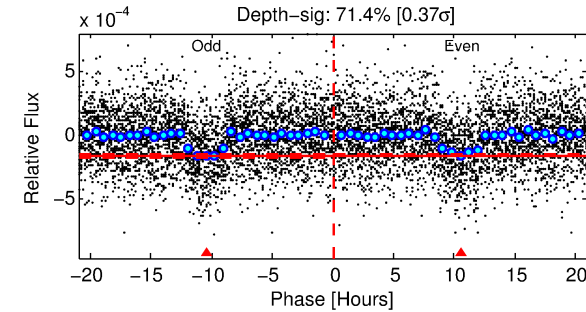
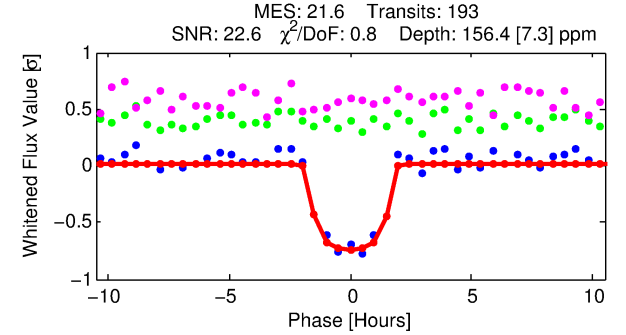
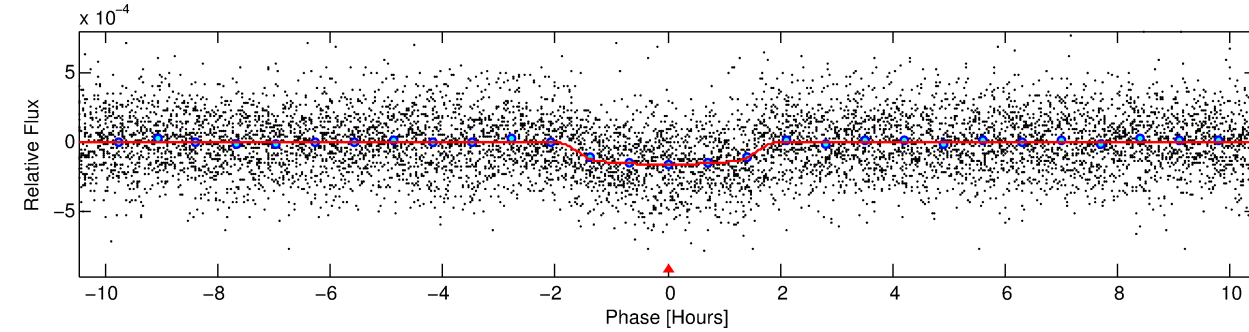
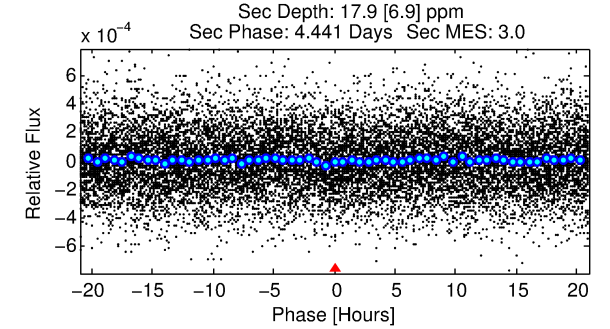
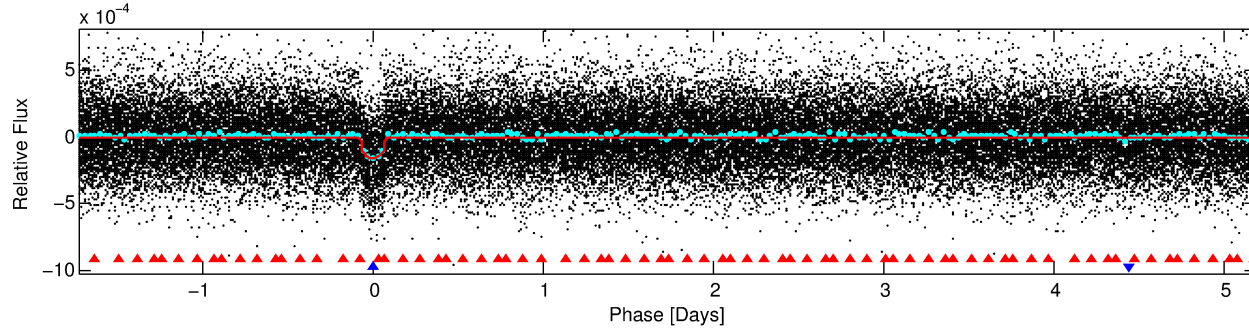
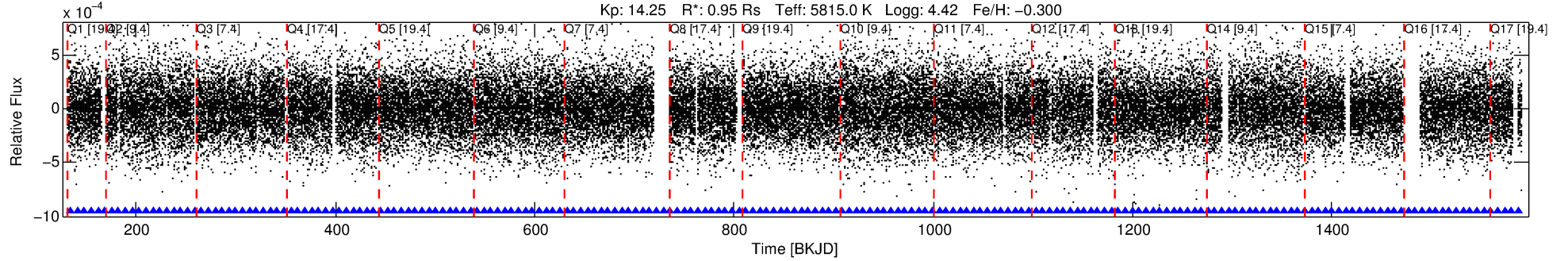
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 007977197-02

No Significant Match Found

DV One-Page Summary

KIC: 7977197 Candidate: 2 of 2 Period: 6.920 d
KOI: K00459.02 Name: Kepler-162b Corr: 0.976



DV Fit Results:

Period = 6.91984 [0.00003] d
Epoch = 134.1188 [0.0030] BKJD
Rp/R* = 0.0135 [0.0032]
a/R* = 7.12 [8.40]
b = 0.90 [0.26]
Seff = 201.68 [71.00]
Teq = 961 [85] K
Rp = 1.41 [0.51] Re
a = 0.0680 [0.0156] AU
Ag = 22.90 [15.96] [1.37σ]
Teffp = 3250 [508] K [4.45σ]

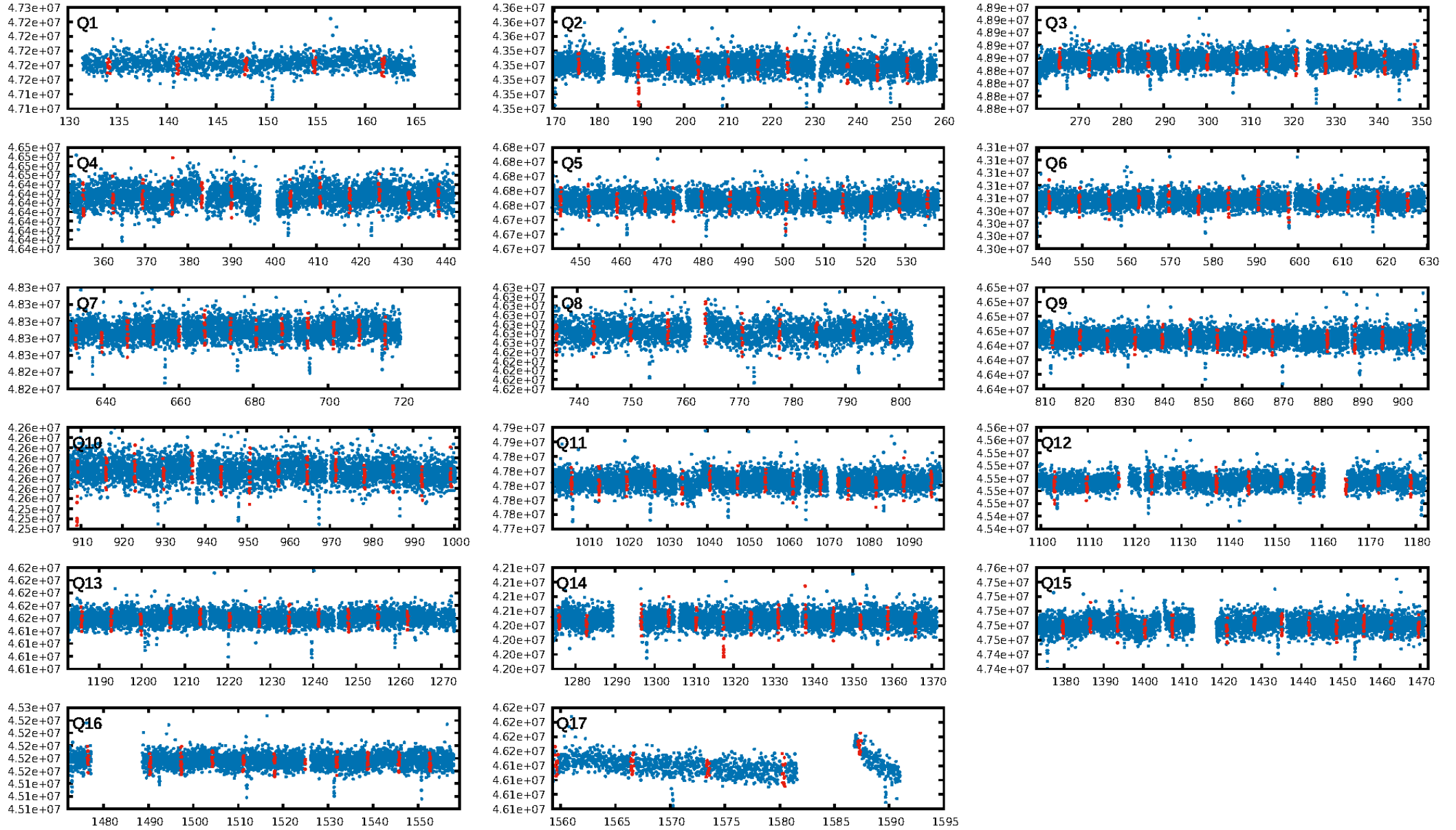
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [58.99σ]
ModelChiSquare2-sig: 100.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 1.56e-99
RollingBand-fgt: 1.00 [183/183]
GhostDiagnostic-chr: 3.565
Centroid-sig: 39.8%
Centroid-so: 0.622 arcsec [0.93σ]
OotOffset-rm: 0.137 arcsec [0.31σ]
KicOffset-rm: 0.034 arcsec [0.06σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 0.94 [16/17]
DiffImageOverlap-fno: 1.00 [17/17]

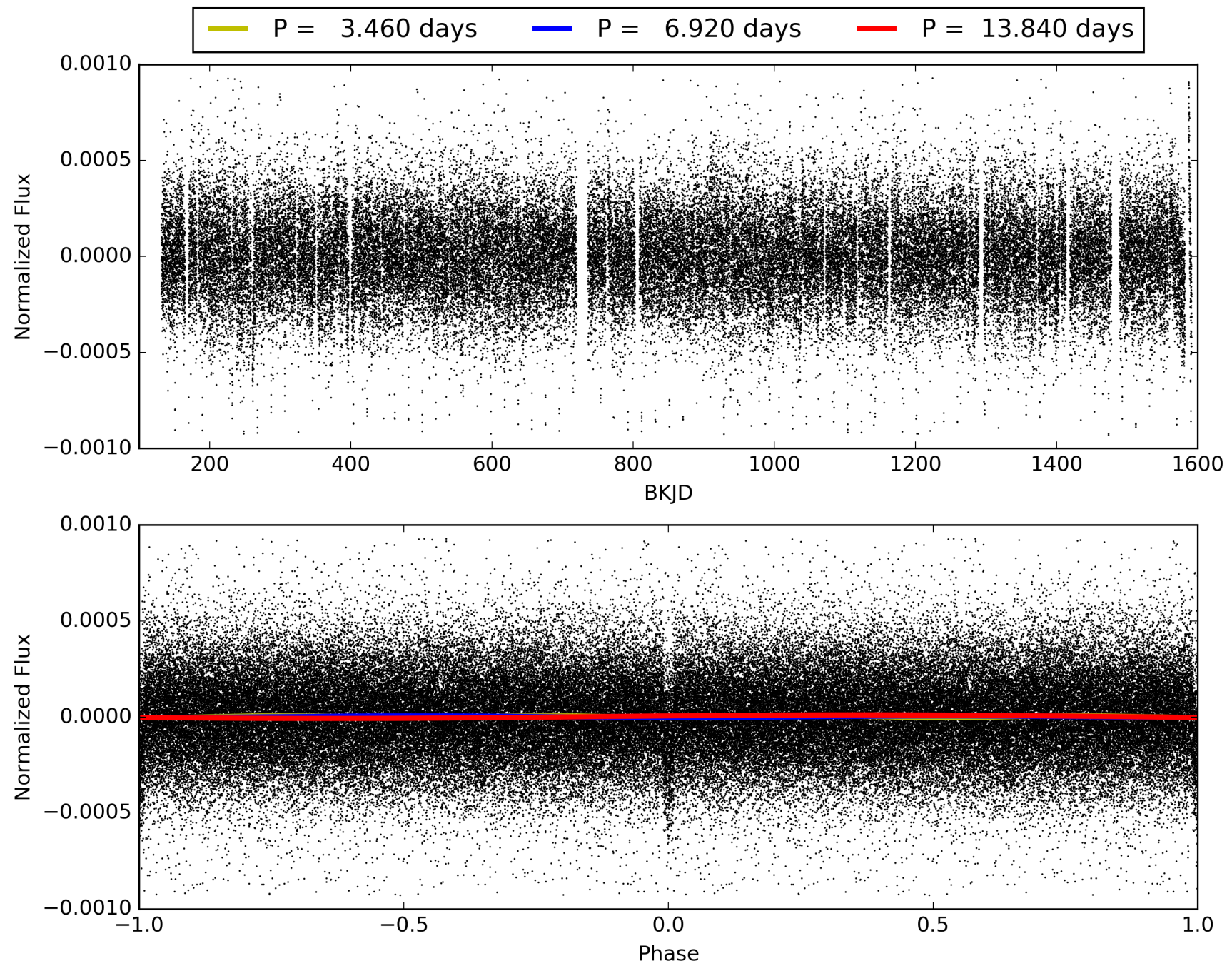
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 01:13:25 Z

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

TCE 007977197-02, PDC Light Curves

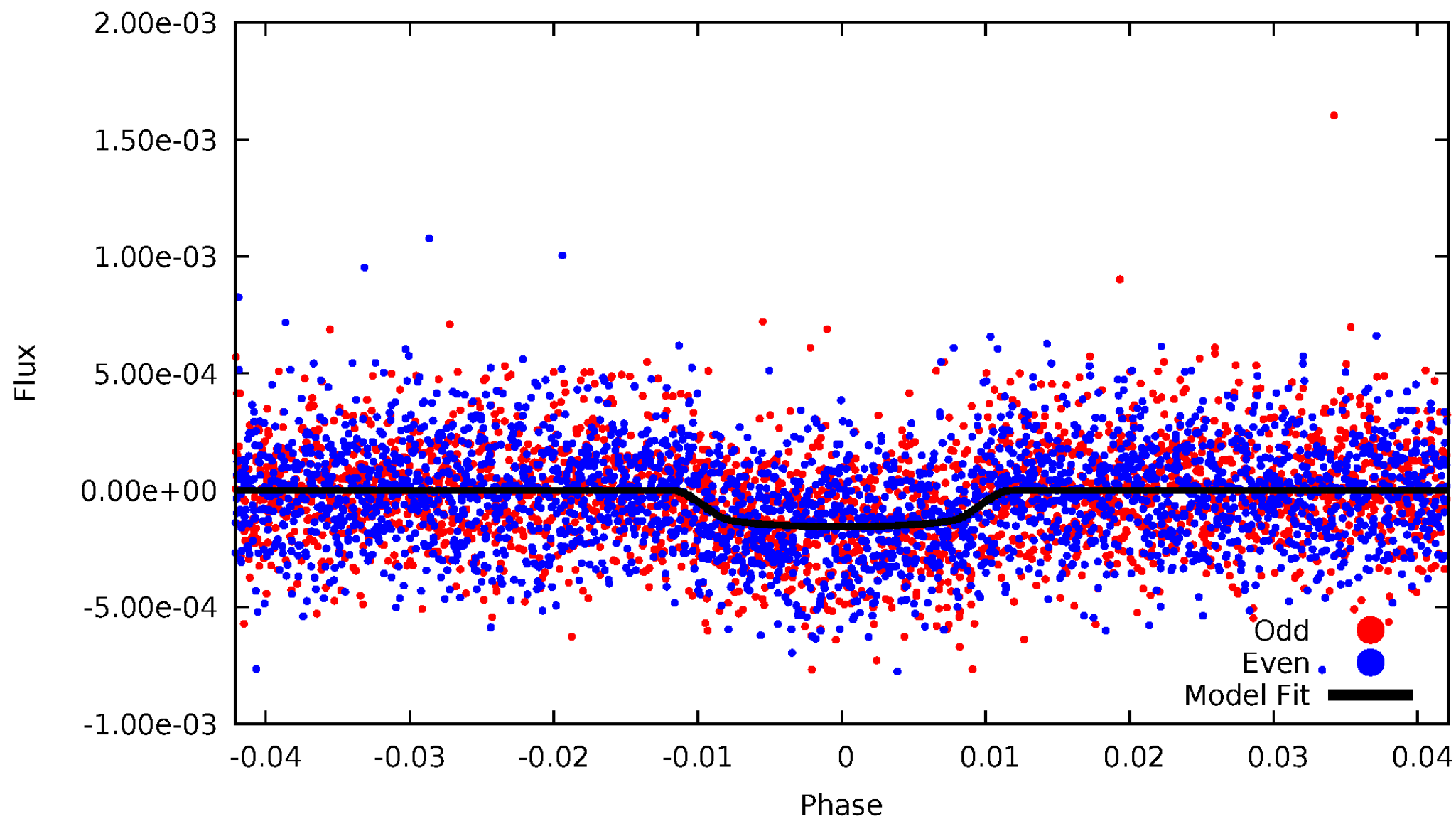


TCE 007977197-02



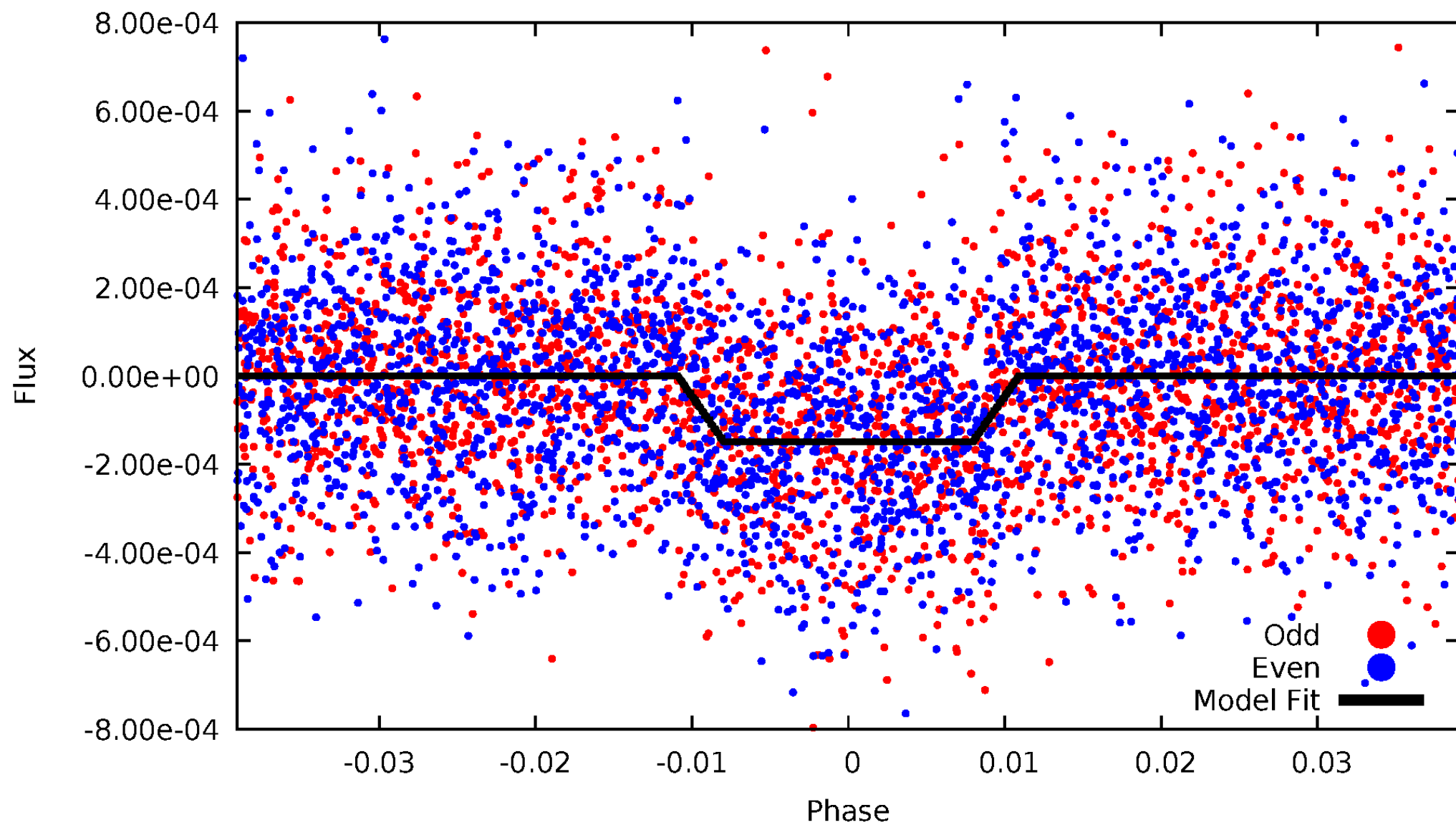
DV Odd/Even

TCE 007977197-02



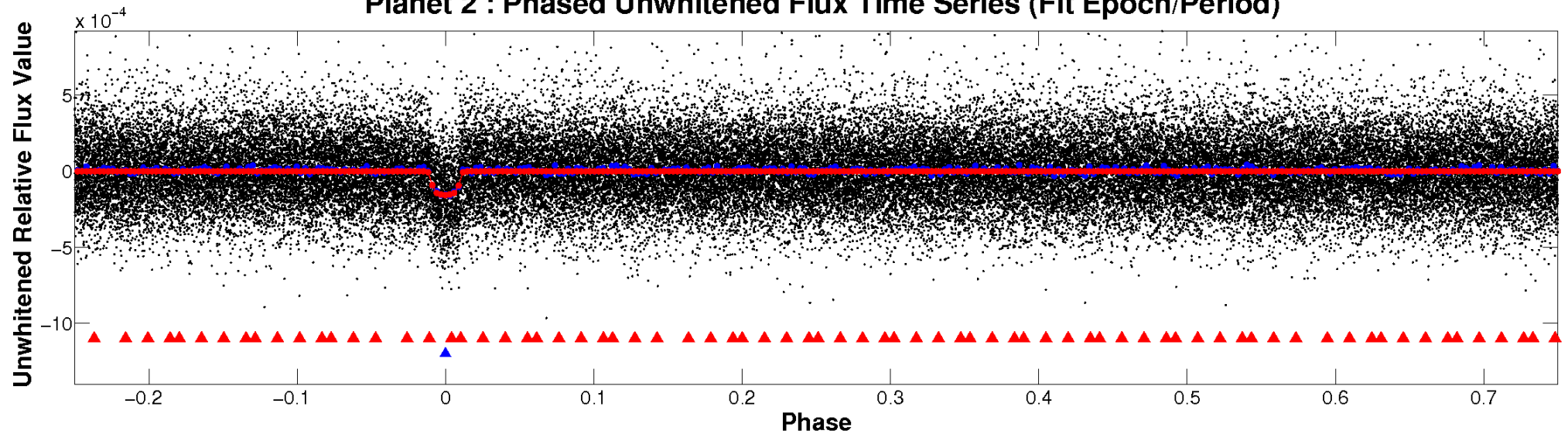
ALT Odd/Even

TCE 007977197-02

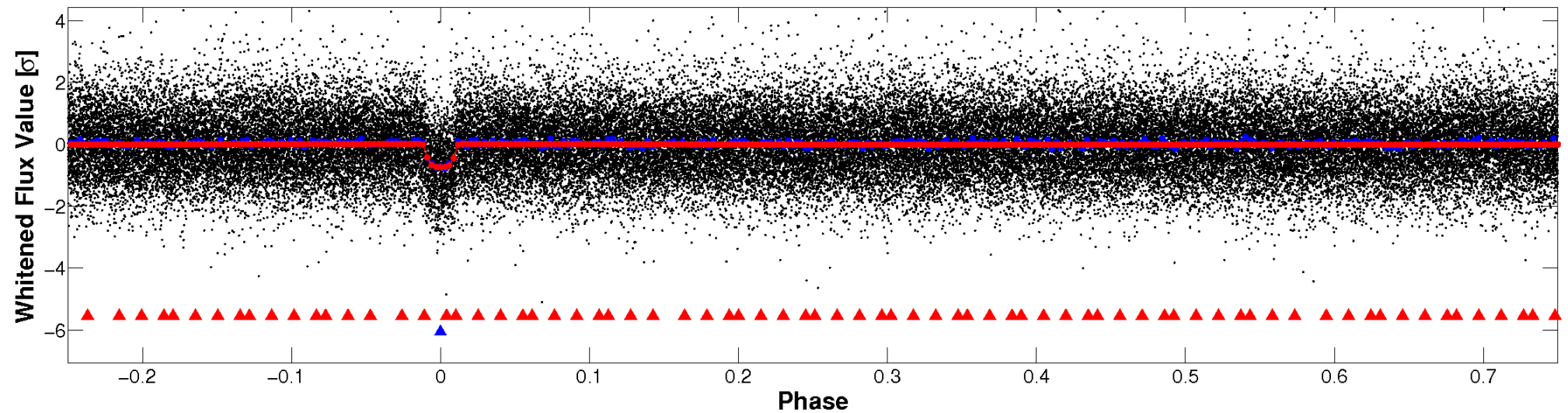


Non-Whitened Vs. Whitened Light Curve

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

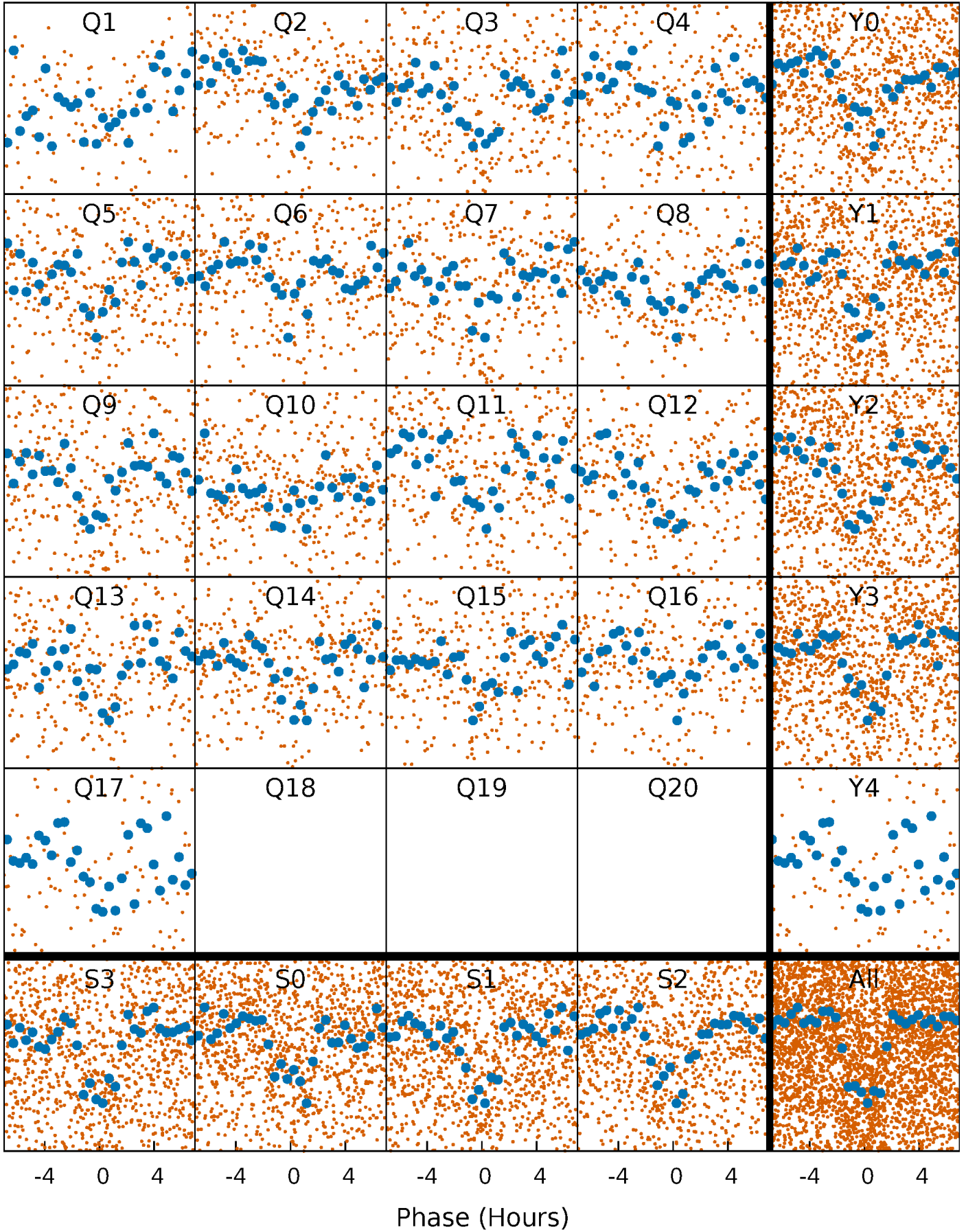


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



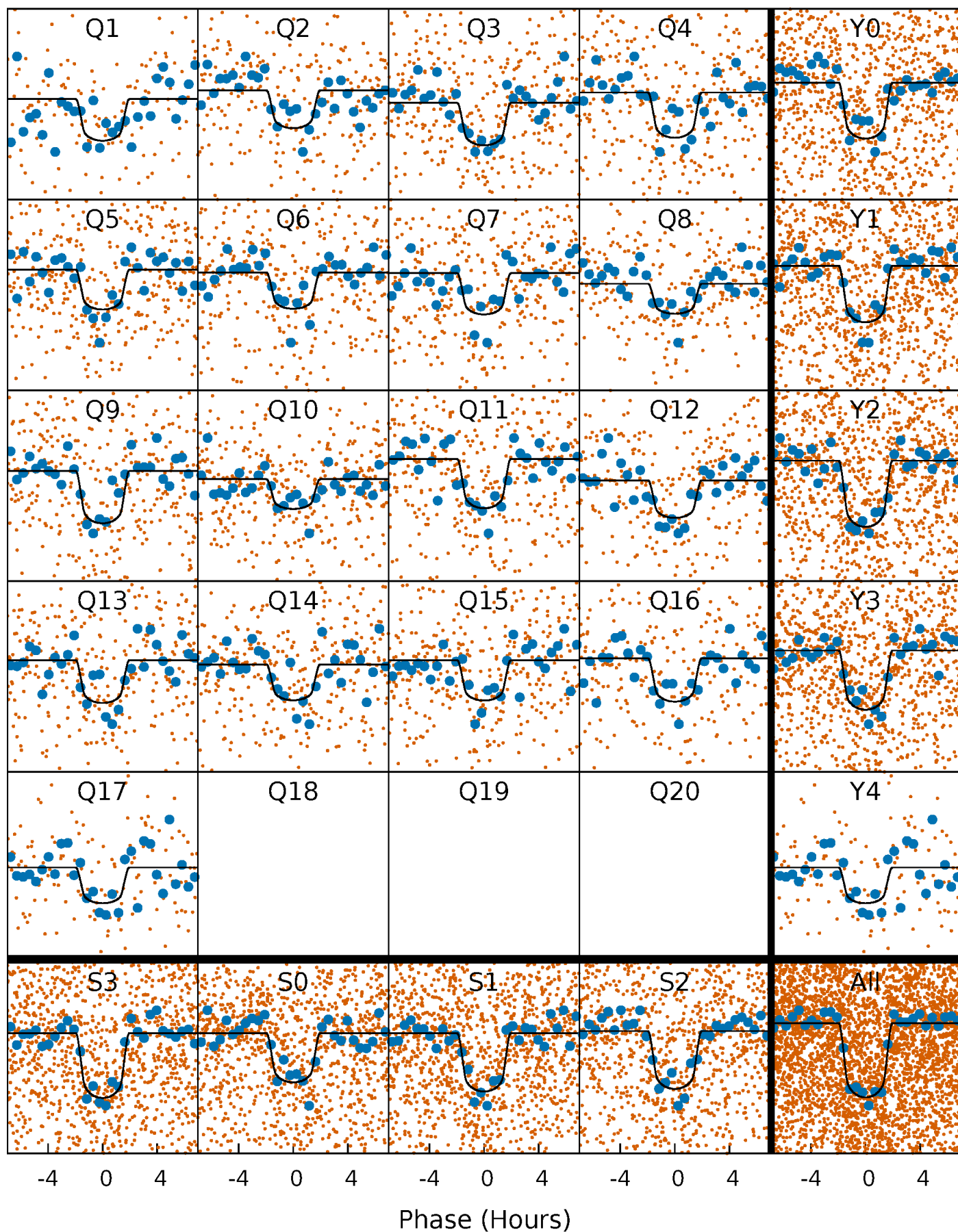
PDC Quarter-Phased Transit Curves

TCE 007977197-02 P= 6.919840 Days $T_0=134.118838$ (BKJD)



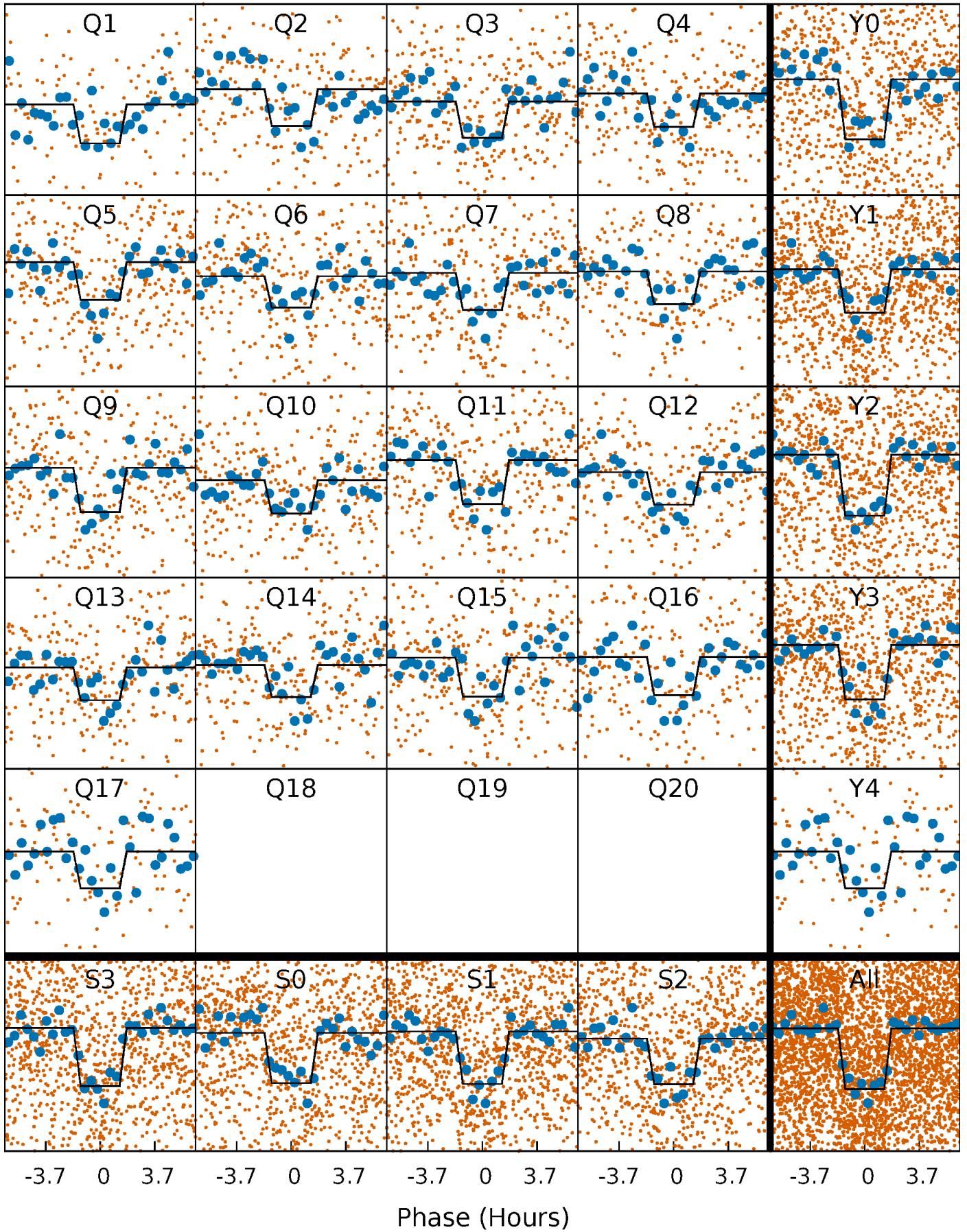
DV Quarter-Phased Transit Curves

TCE 007977197-02 P= 6.919840 Days $T_0=134.118838$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

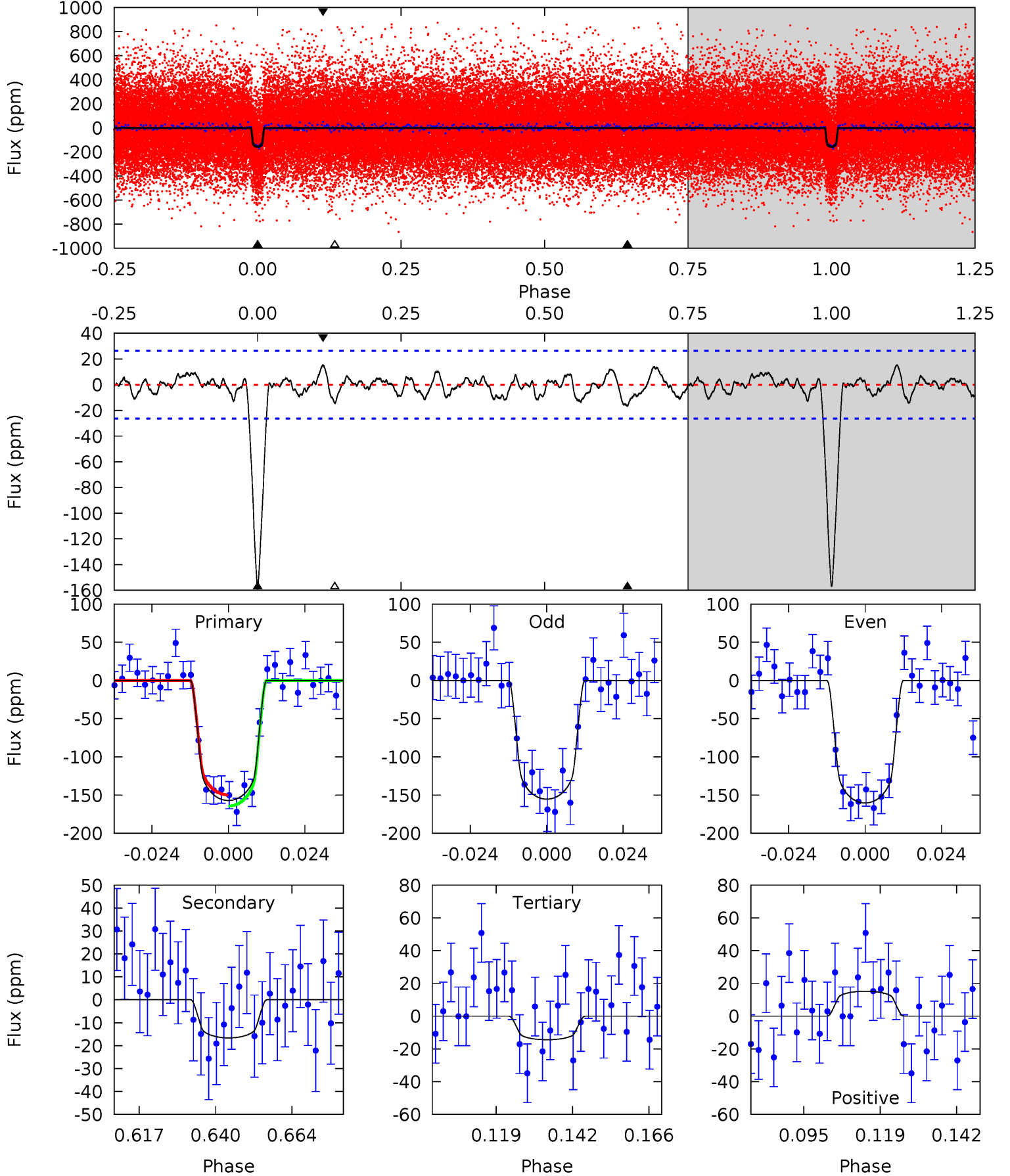
TCE 007977197-02 P= 6.919874 Days $T_0=134.115448$ (BKJD)



DV Model-Shift Uniqueness Test

007977197-02, P = 6.919840 Days, E = 127.198998 Days

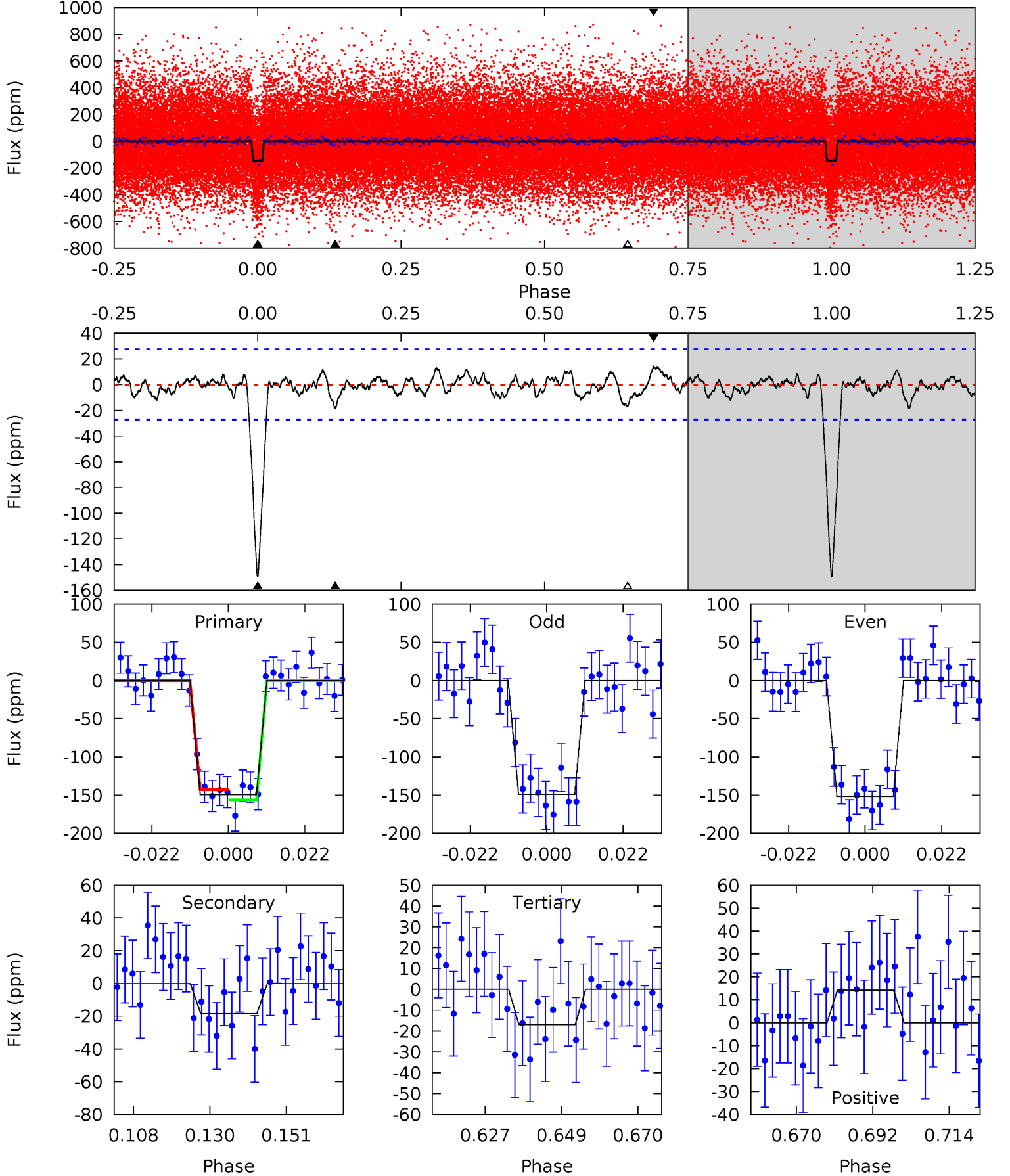
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
29.0	3.07	2.66	2.80	4.86	2.26	1.08	26.3	26.2	0.41	0.26	0.47	1.05	0.09	1.34



Alt Model-Shift Uniqueness Test

007977197-02, P = 6.919874 Days, E = 127.195574 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
26.5	3.26	3.00	2.51	4.88	2.30	1.02	23.5	24.0	0.26	0.75	0.24	1.06	0.09	1.16



Stellar Parameters For KIC 007977197

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5815^{+157}_{-174}	$4.421^{+0.120}_{-0.180}$	$-0.300^{+0.300}_{-0.300}$	$0.954^{+0.261}_{-0.140}$	$0.875^{+0.121}_{-0.080}$	$1.419^{+0.770}_{-0.671}$
	+3%/-3%	+3%/-4%	+100%/-100%	+27%/-15%	+14%/-9%	+54%/-47%
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 007977197-02 / KOI 0459.02

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-17 ± 5	$1.46^{+0.38}_{-0.38}$	1346^{+99}_{-76}	3611^{+376}_{-330}	20^{+18}_{-9}
Alt.	-18 ± 6	$1.31^{+0.41}_{-0.39}$	1349^{+97}_{-71}	3785^{+497}_{-366}	27^{+29}_{-13}

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

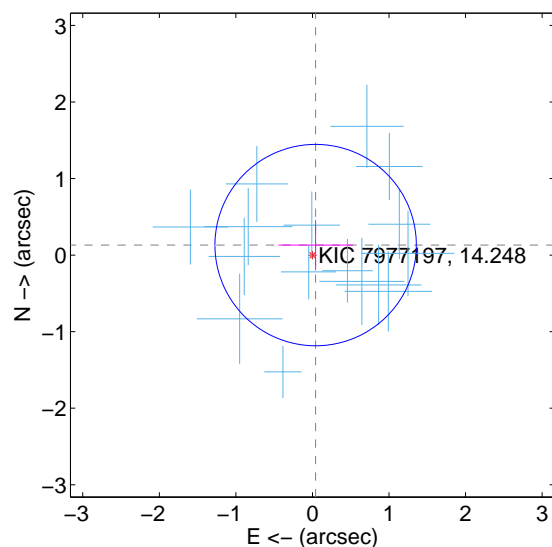
Supplemental centroid analysis for 007977197-02. Kepler magnitude: 14.25. Transit SNR 22.57

There are 16 quarters with good PRF difference image offsets

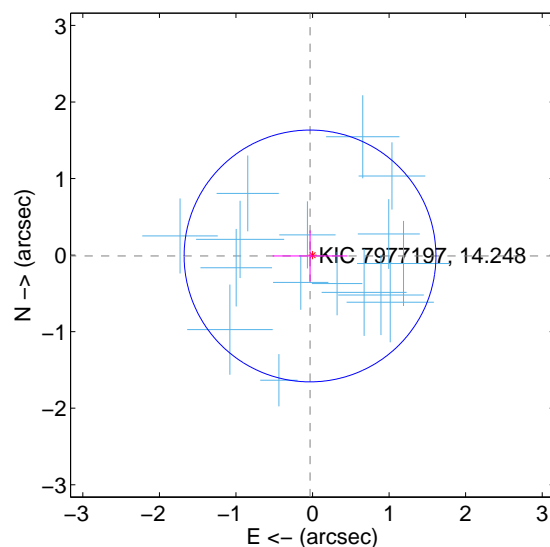
The direct PRF centroid is offset from the target star catalog position by about 0.15 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.137 ± 0.438	0.31	-0.042 ± 0.485	0.131 ± 0.330
PRF-fit source offset from KIC position	0.034 ± 0.548	0.06	0.033 ± 0.489	-0.011 ± 0.334
photometric centroid source offset	0.62 ± 0.67	0.93	0.61 ± 0.67	0.09 ± 0.59

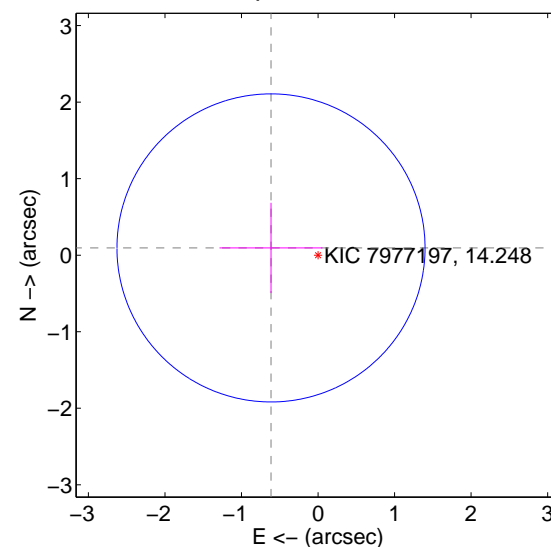
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

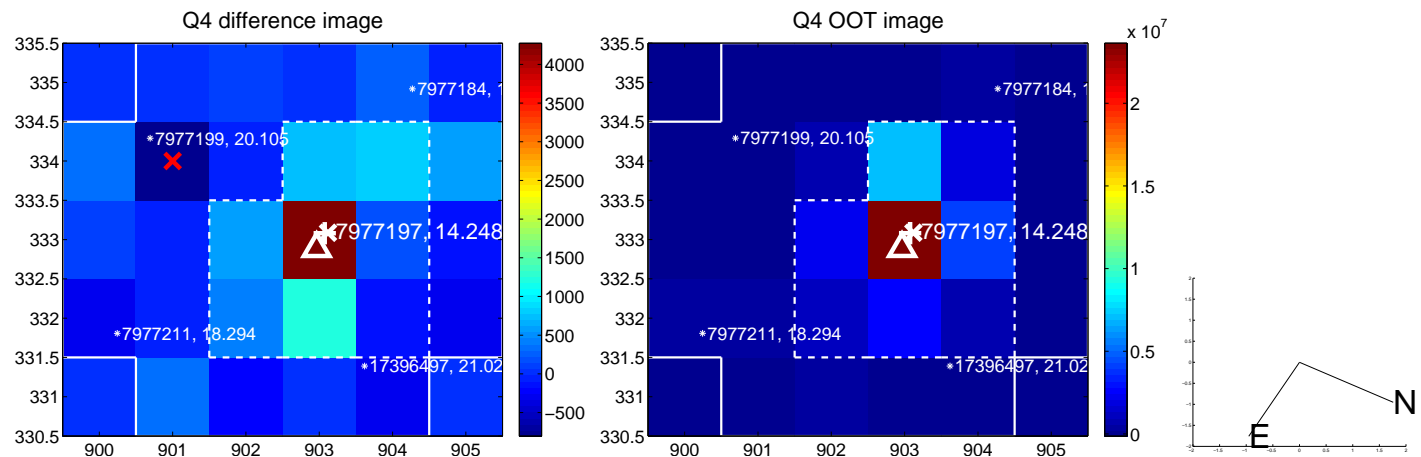
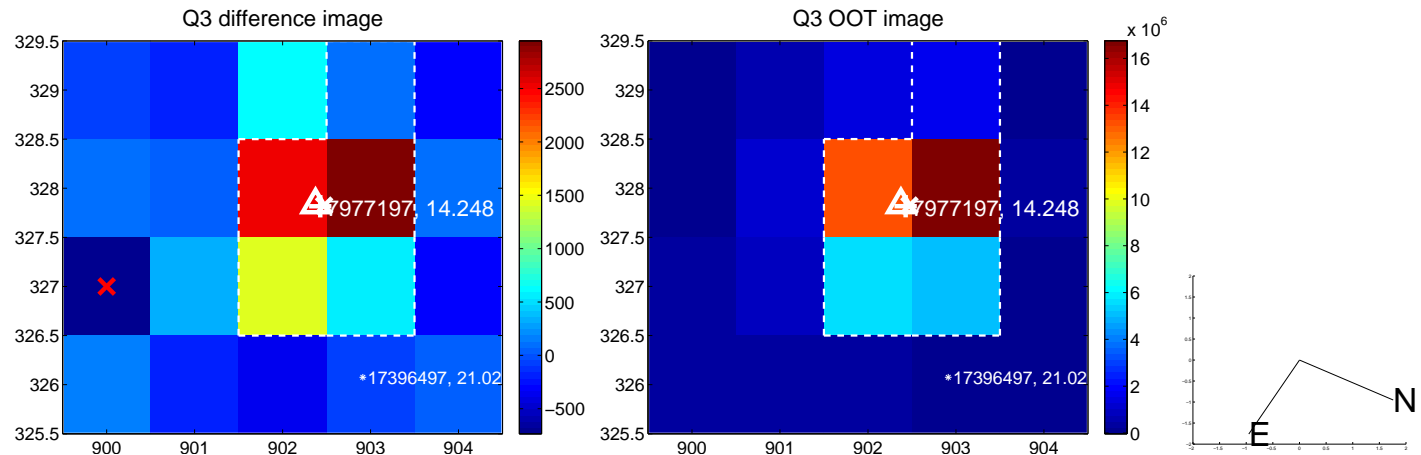
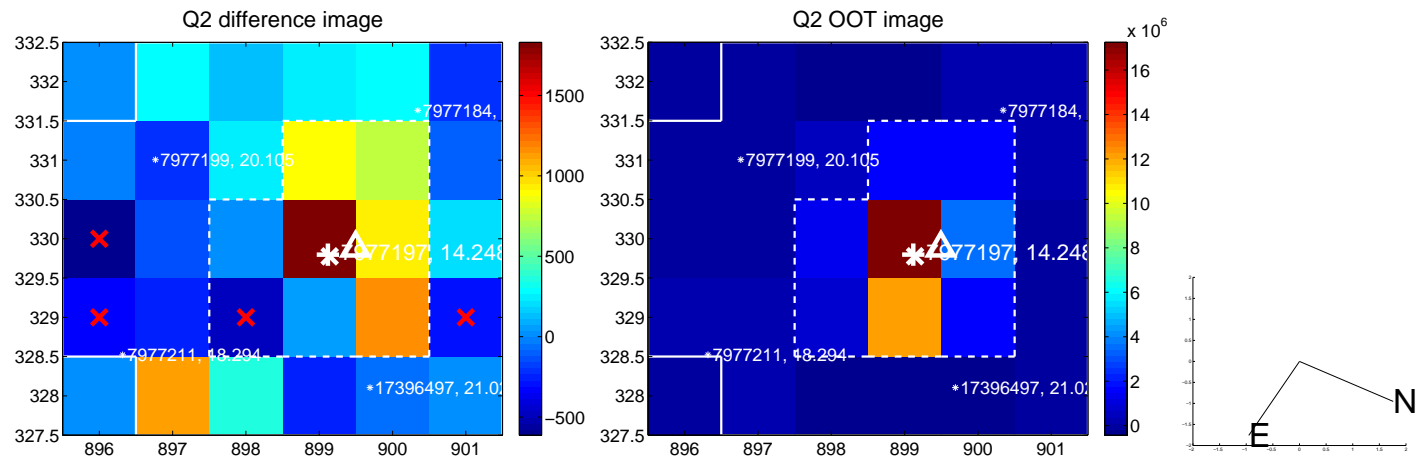
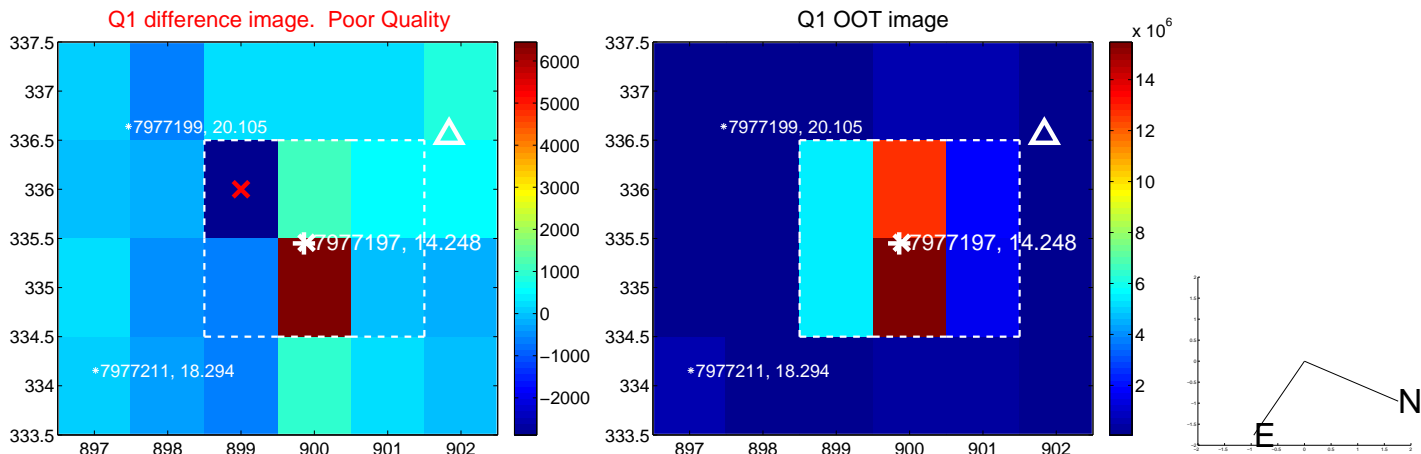


offset from photometric centroids

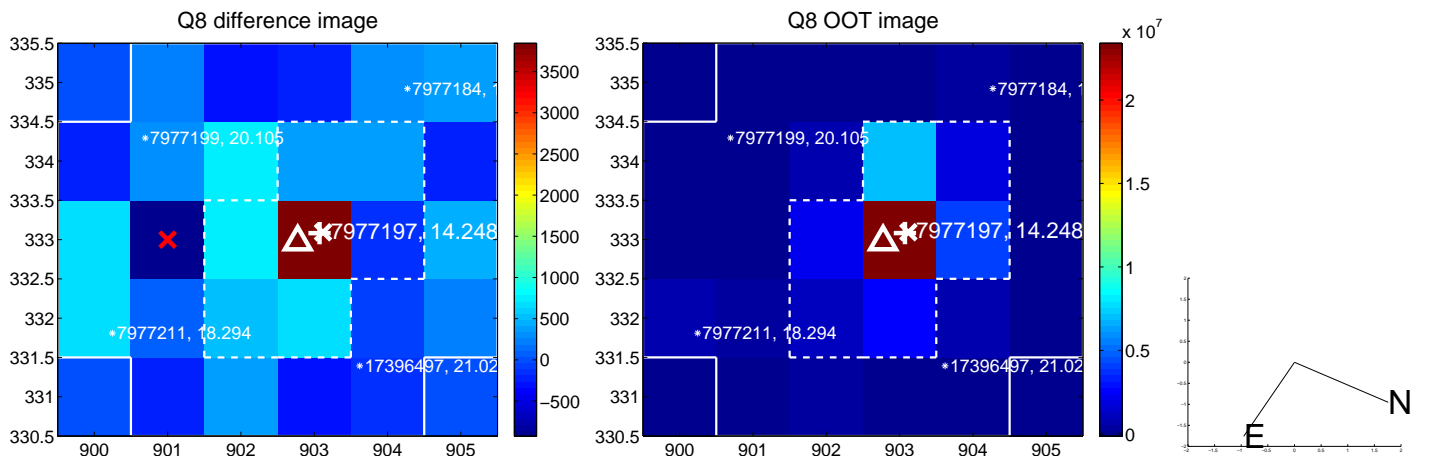
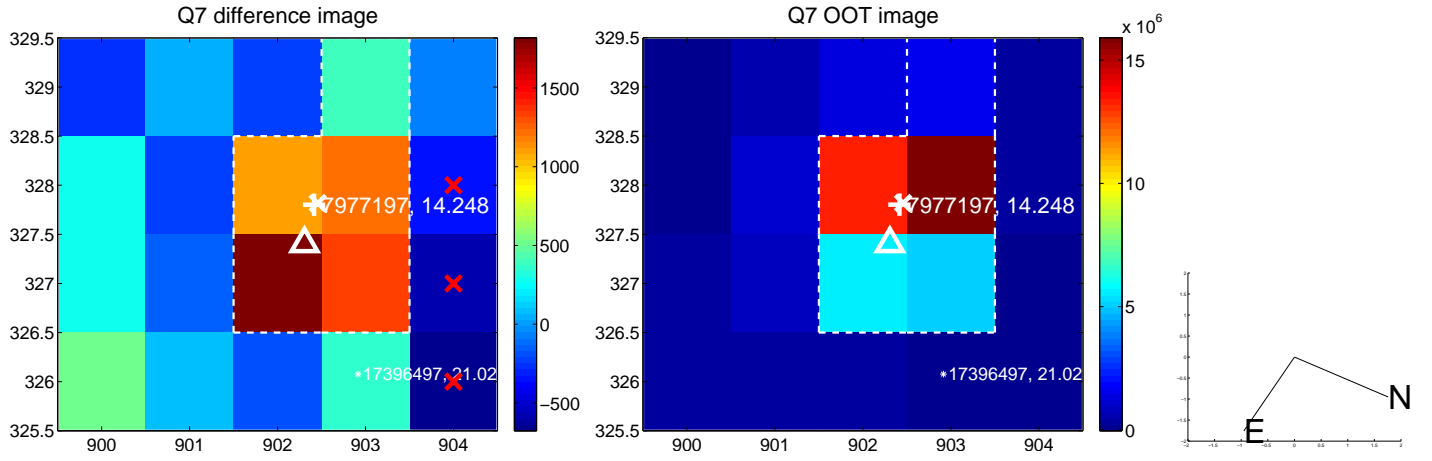
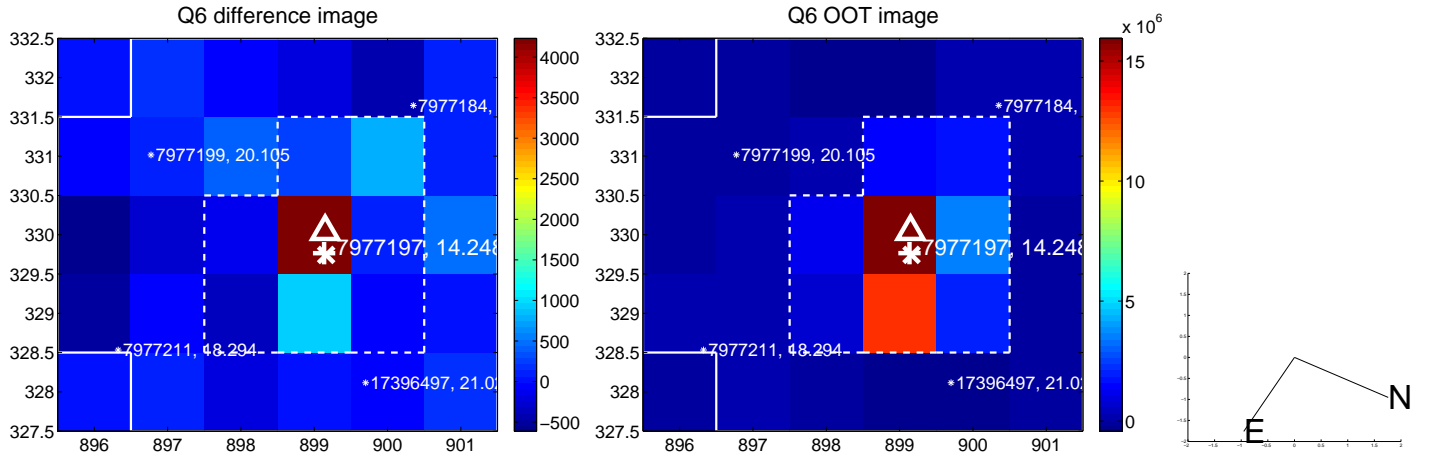
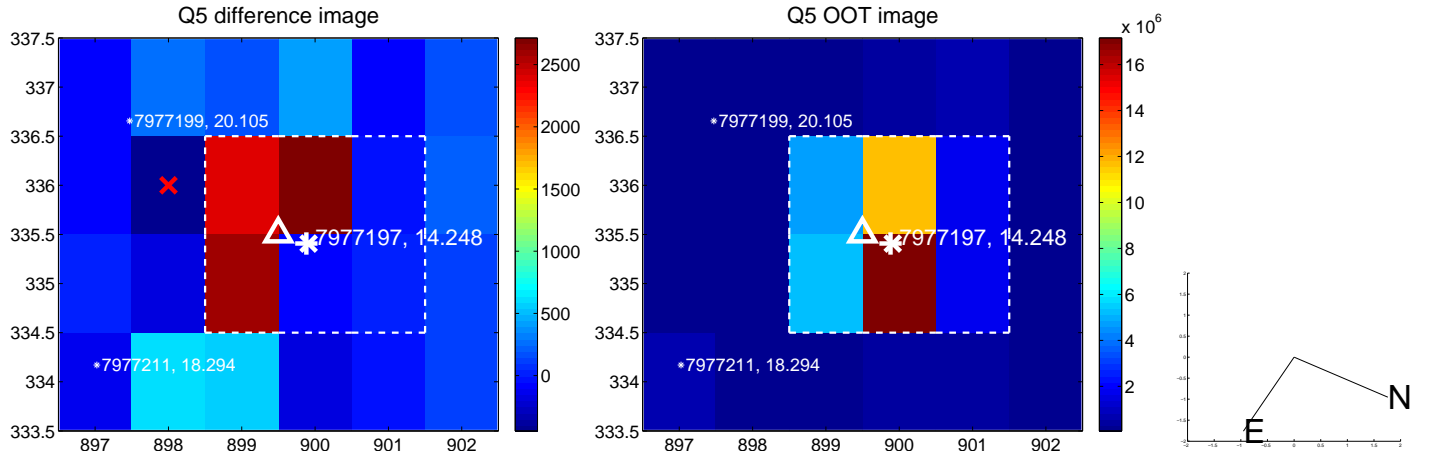


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

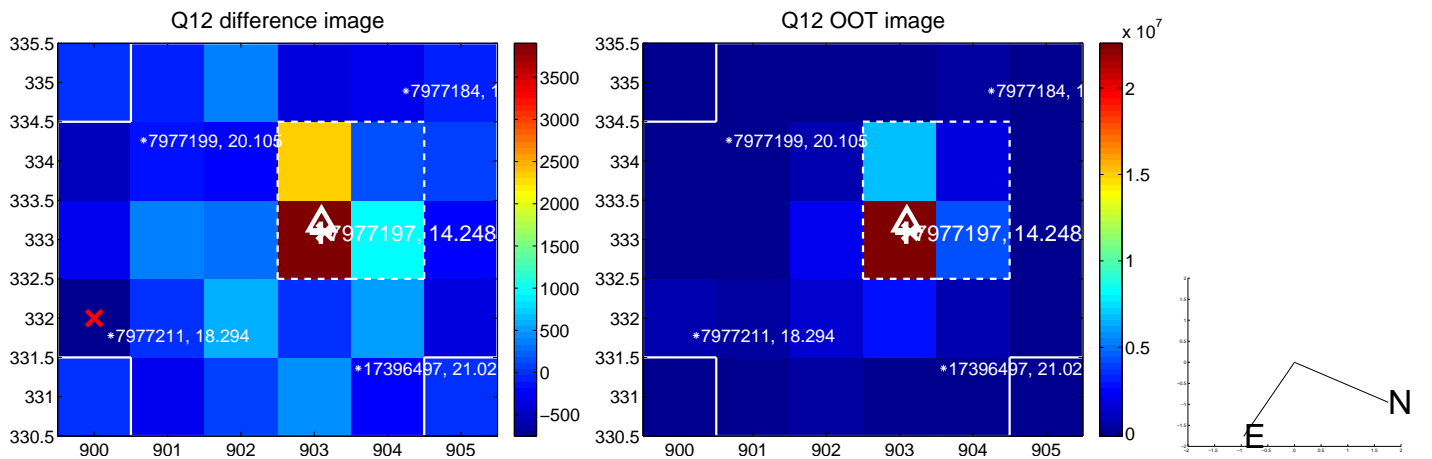
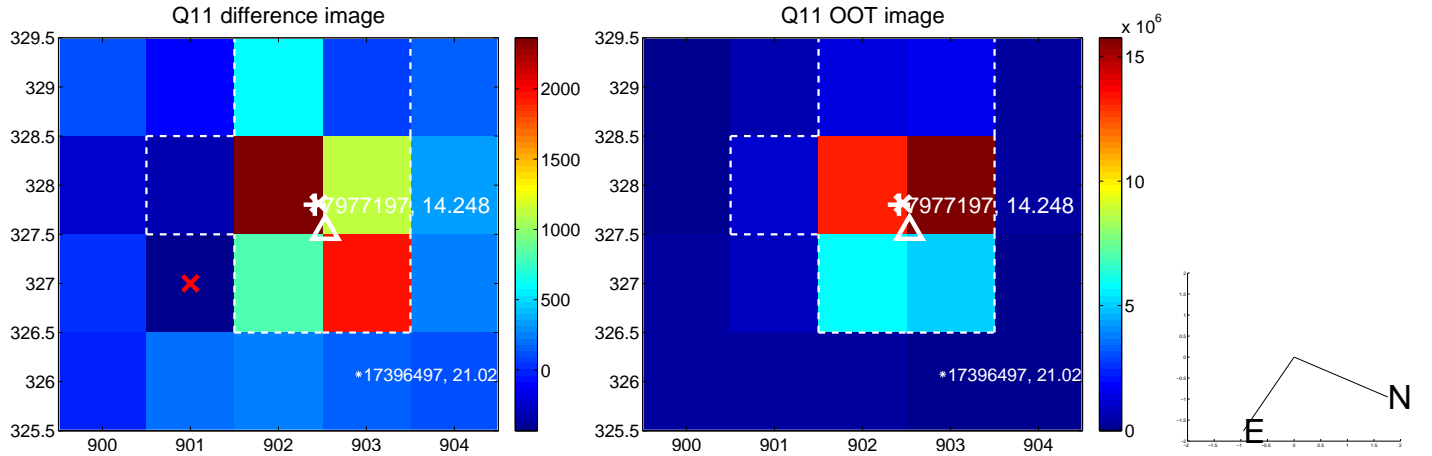
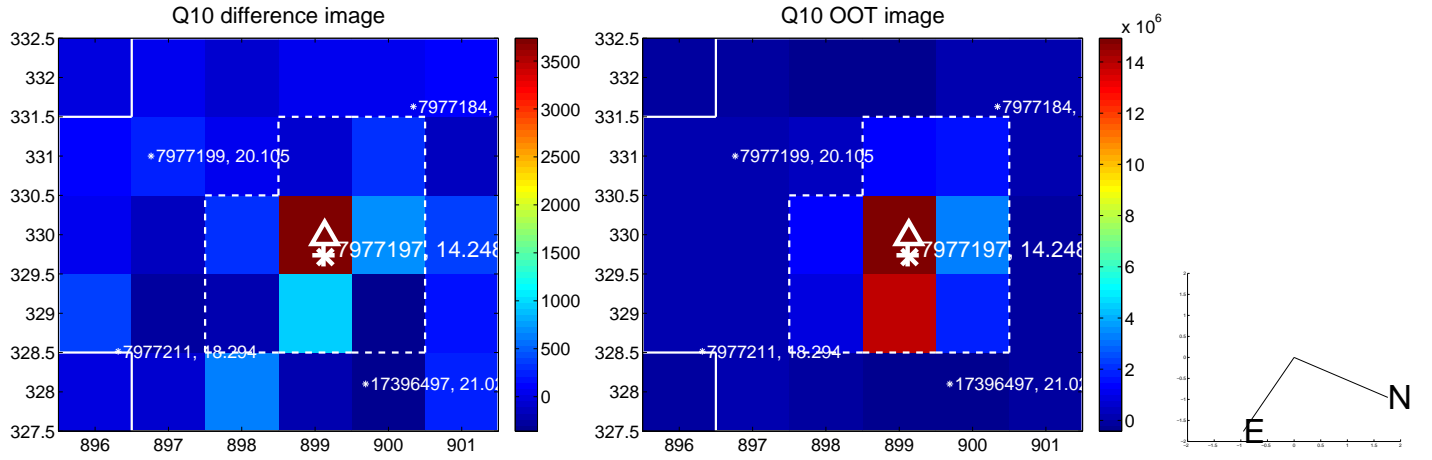
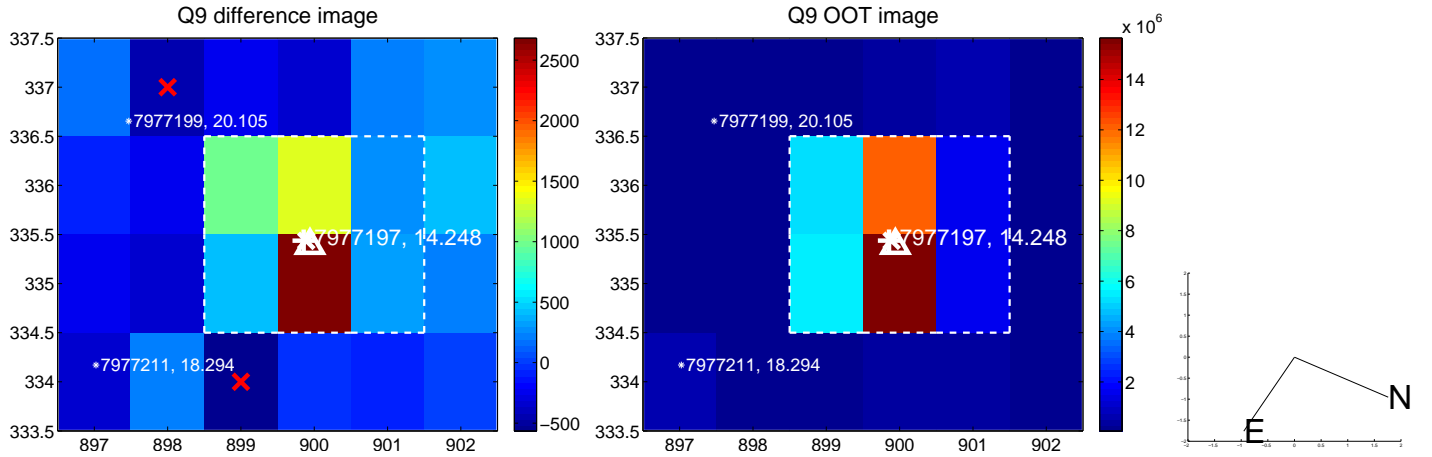
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



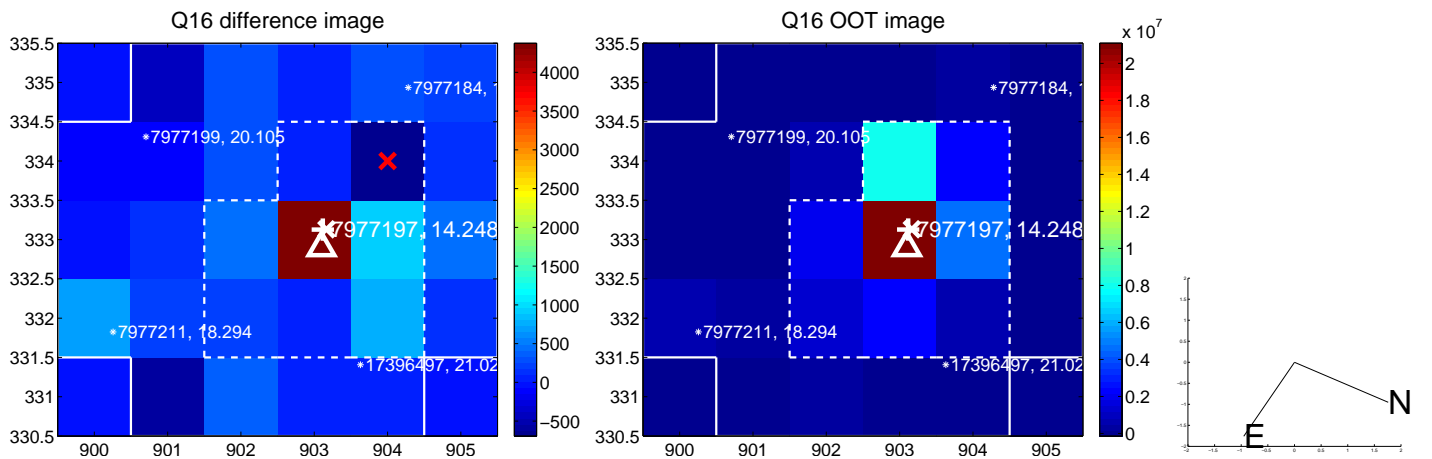
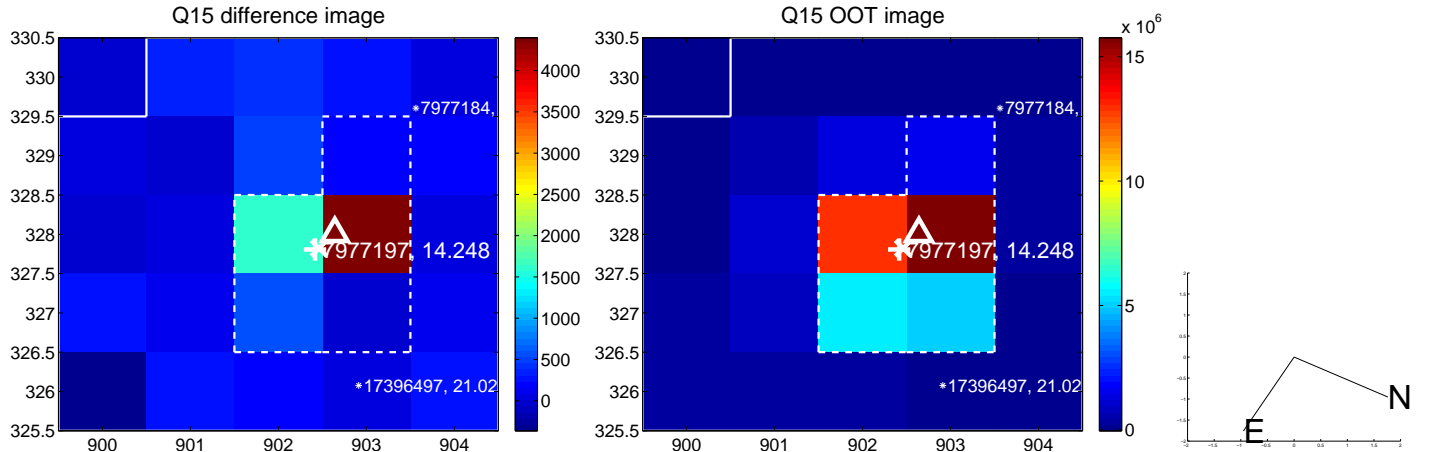
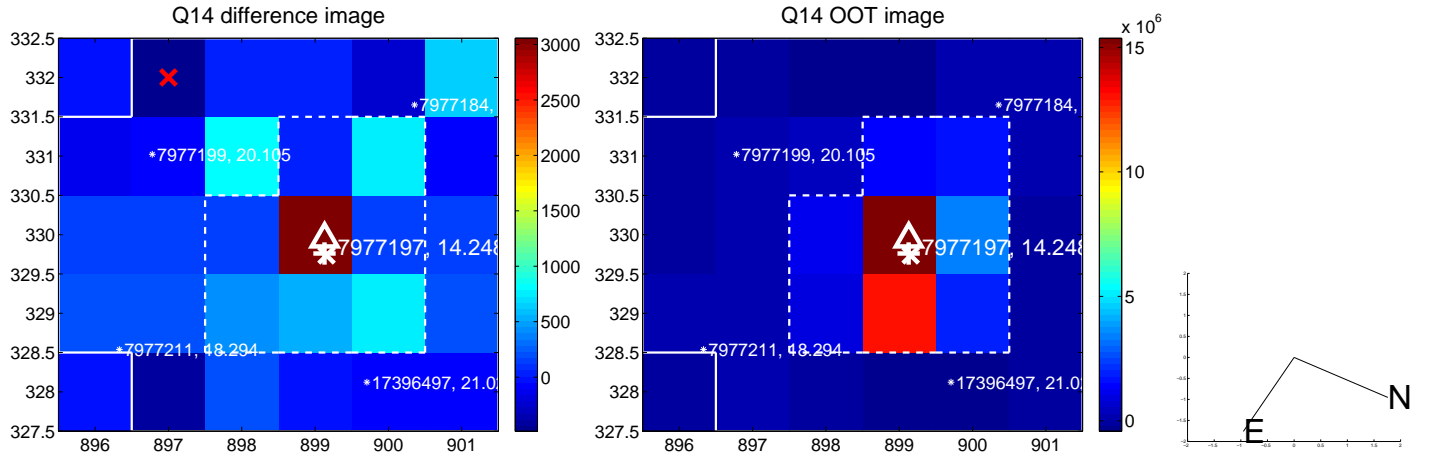
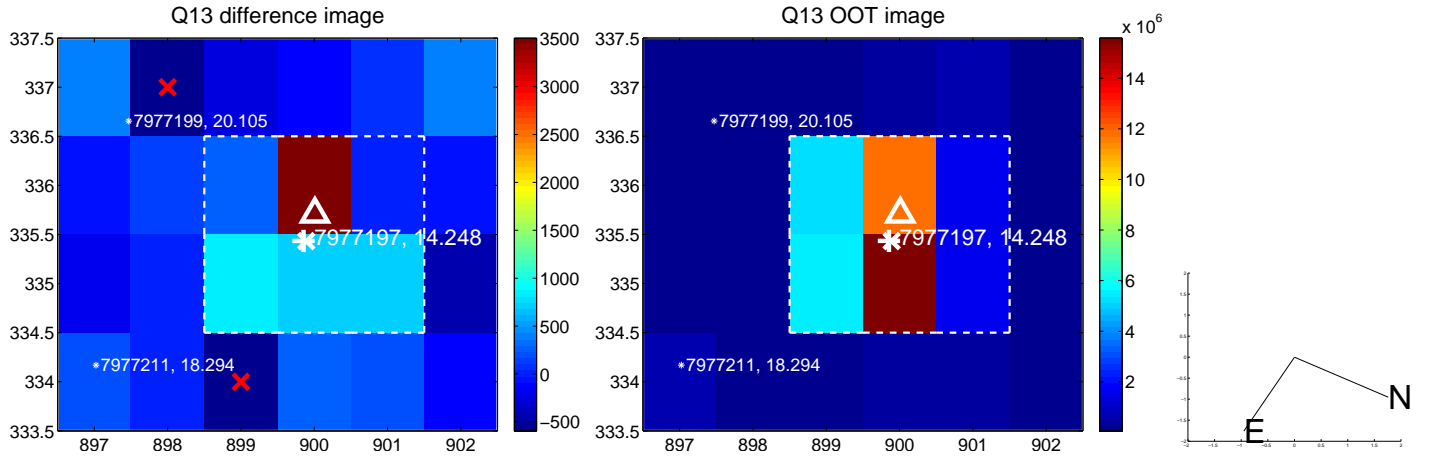
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

