

KIC 003937519

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})
003937519-01	OBS	0221.01	3.413036	132.443083	3863.2	2.676	455.1	459.2	1.09	5392	6.94	491.88
003937519-02	OBS	0221.02	5.896607	134.033305	138.8	3.295	12.1	13.5	1.09	5392	1.54	237.27

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003937519-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT
003937519-02	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.

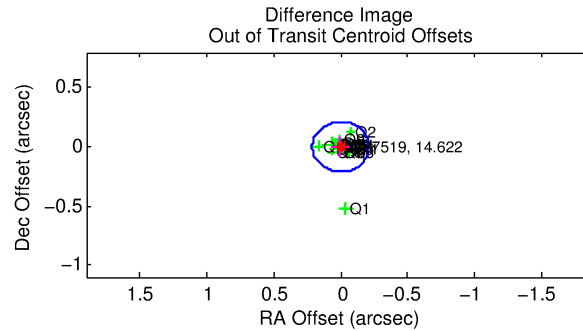
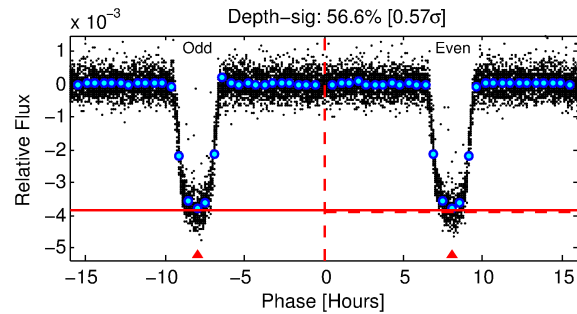
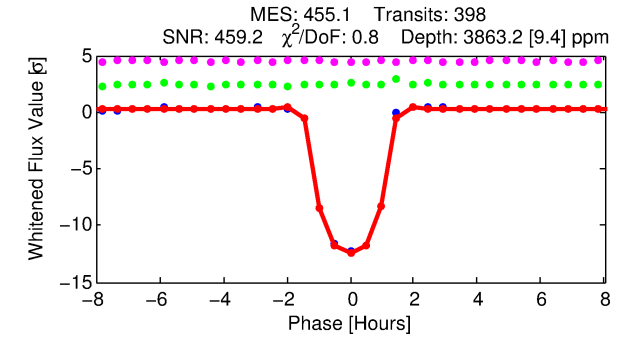
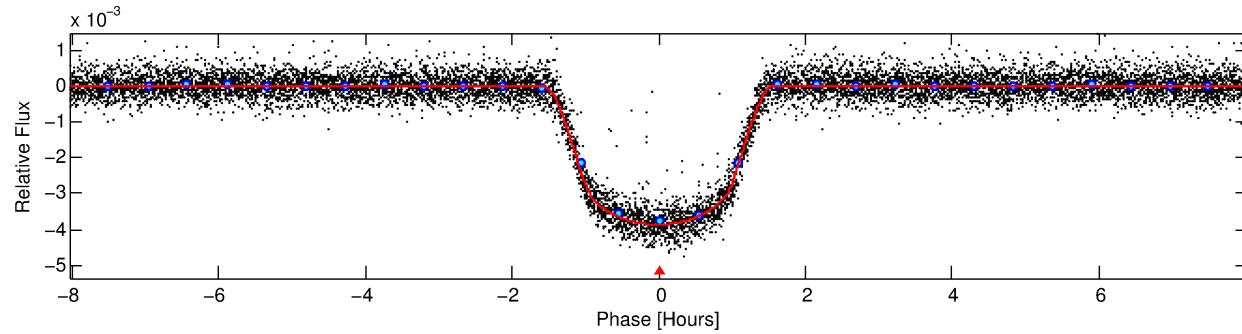
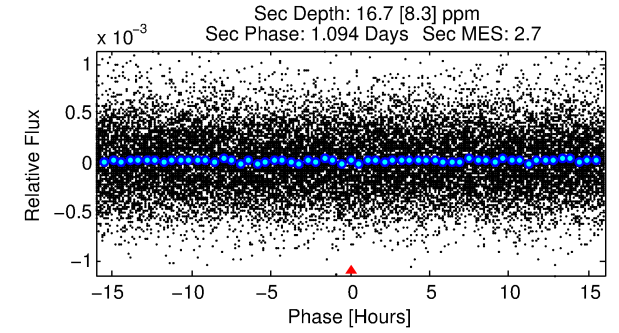
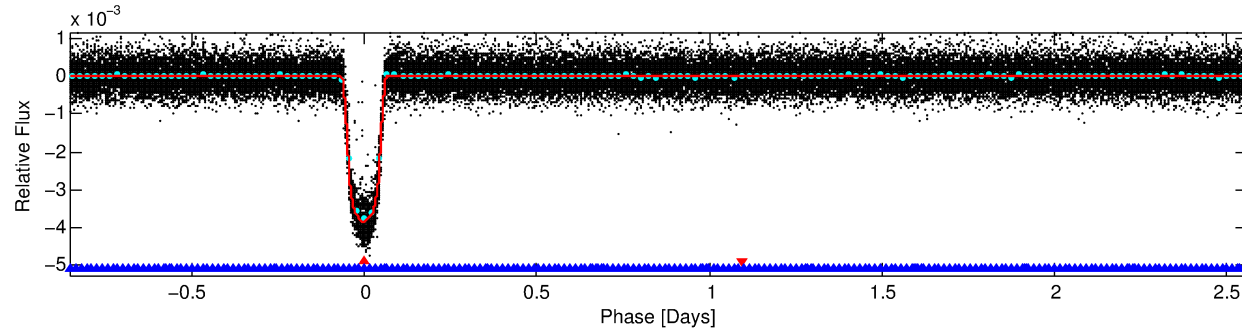
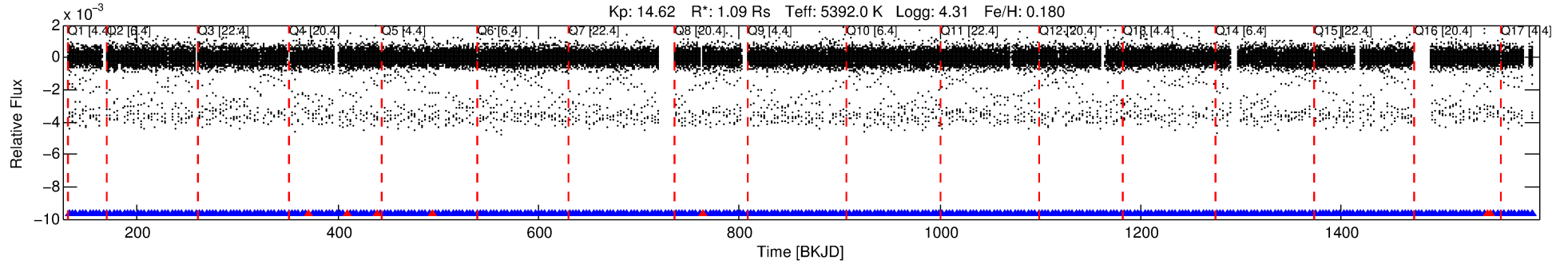
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 003937519-01

No Significant Match Found

DV One-Page Summary

KIC: 3937519 Candidate: 1 of 2 Period: 3.413 d
KOI: K00221.01 Corr: 0.987



DV Fit Results:

Period = 3.41304 [0.00000] d
Epoch = 132.4431 [0.0001] BKJD
Rp/R* = 0.0585 [0.0014]
a/R* = 8.80 [0.76]
b = 0.56 [0.11]
Seff = 491.88 [144.71]
Teq = 1201 [88] K
Rp = 6.94 [1.44] Re
a = 0.0427 [0.0080] AU
Ag = 0.35 [0.20] [-3.28 σ]
Teffp = 1425 [178] K [1.12 σ]

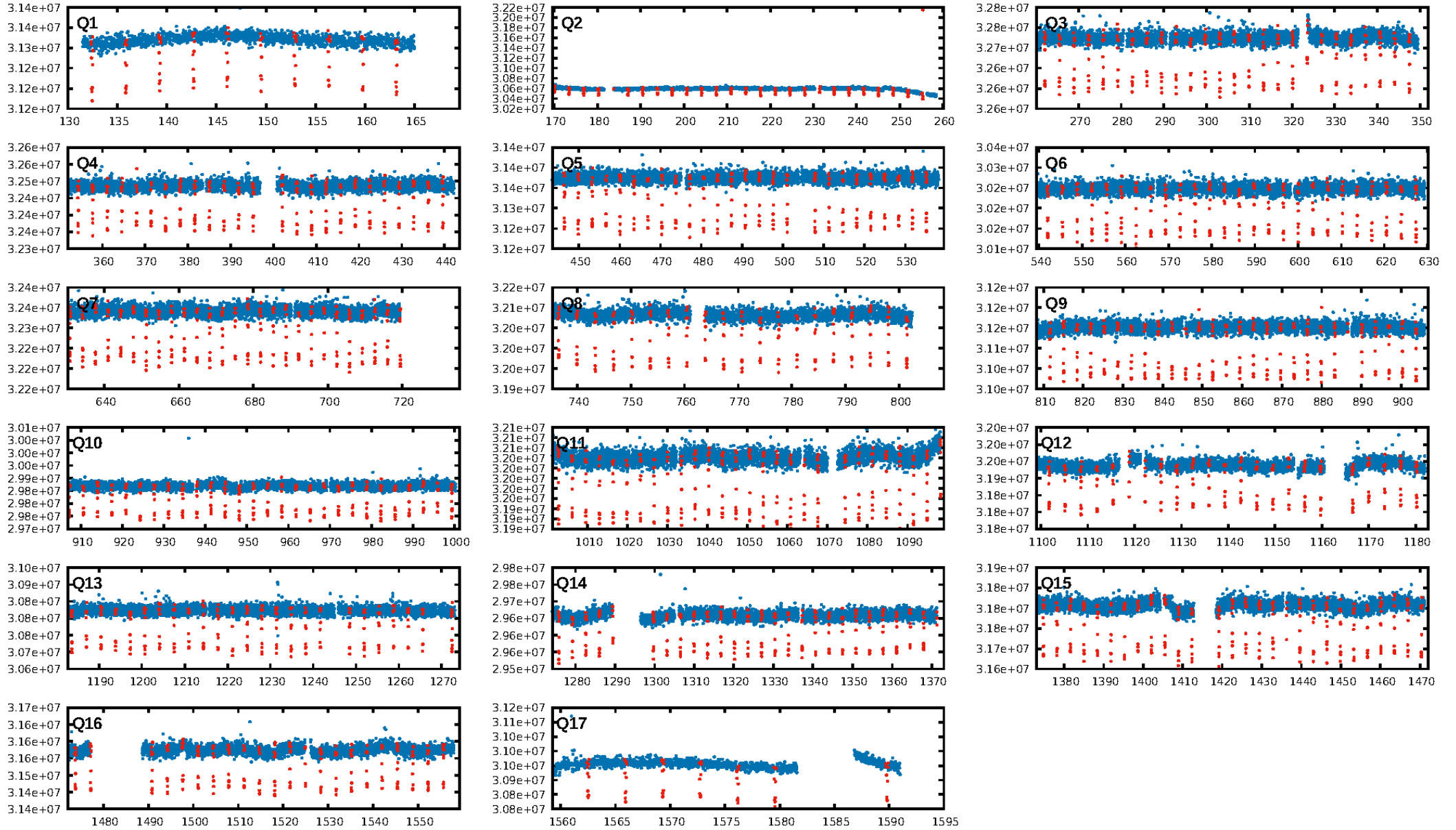
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [14.04 σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 0.98 [374/381]
GhostDiagnostic-chr: 5.918
Centroid-sig: 2.0%
Centroid-so: 0.241 arcsec [6.57 σ]
OotOffset-rm: 0.001 arcsec [0.01 σ]
KicOffset-rm: 0.062 arcsec [0.90 σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 1.00 [17/17]
DiffImageOverlap-fno: 1.00 [17/17]

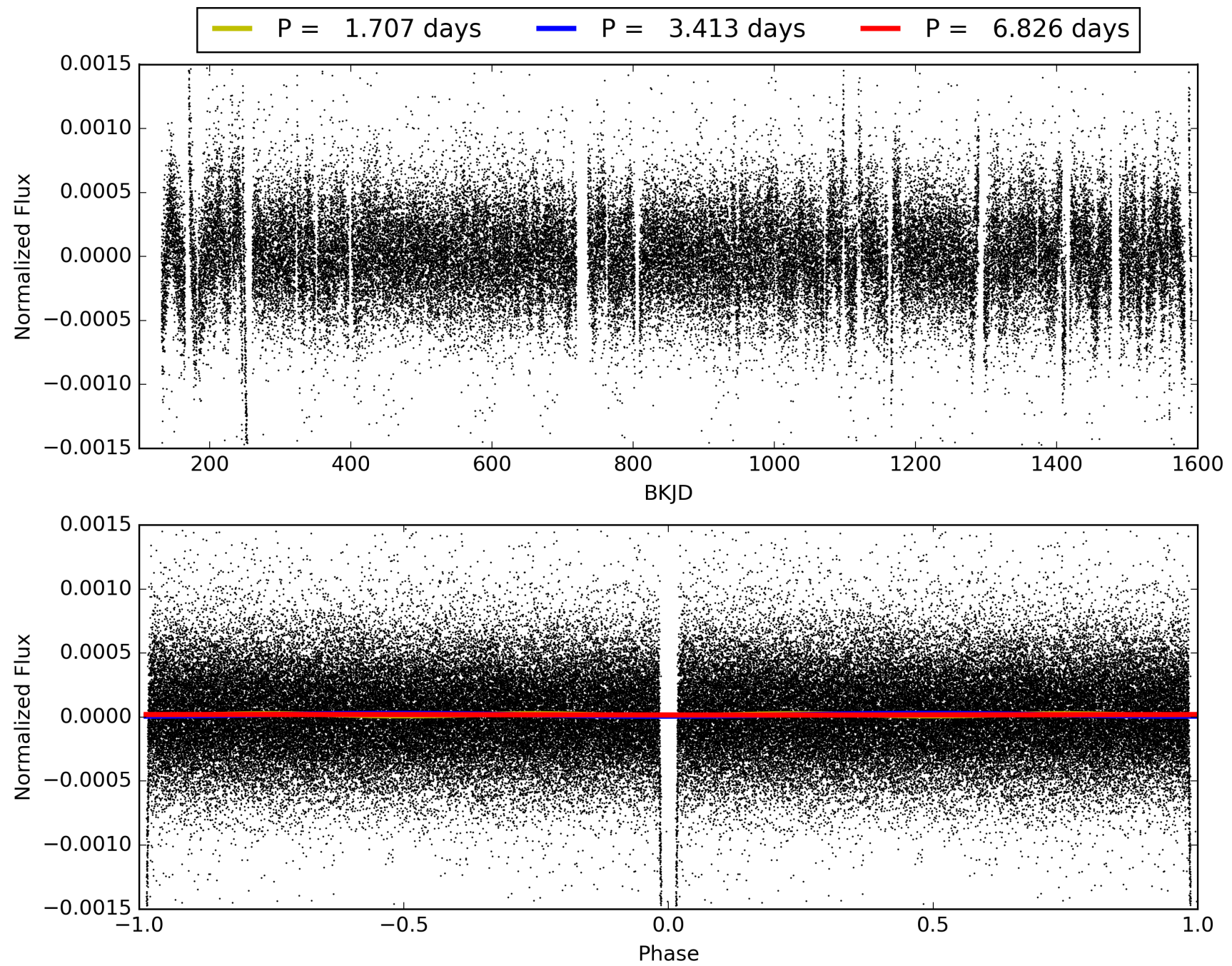
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 14:26:48 Z

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

TCE 003937519-01, PDC Light Curves

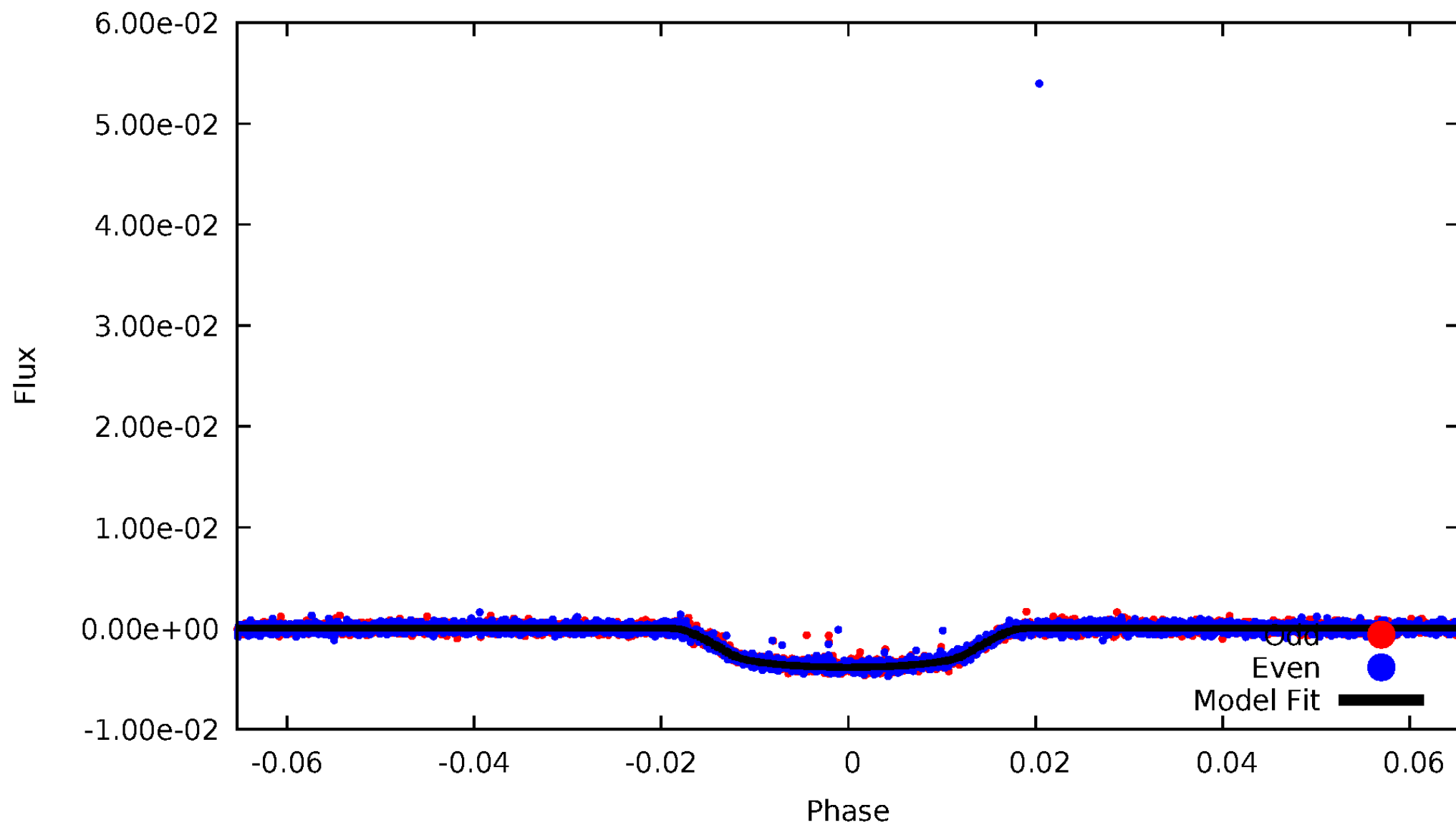


TCE 003937519-01



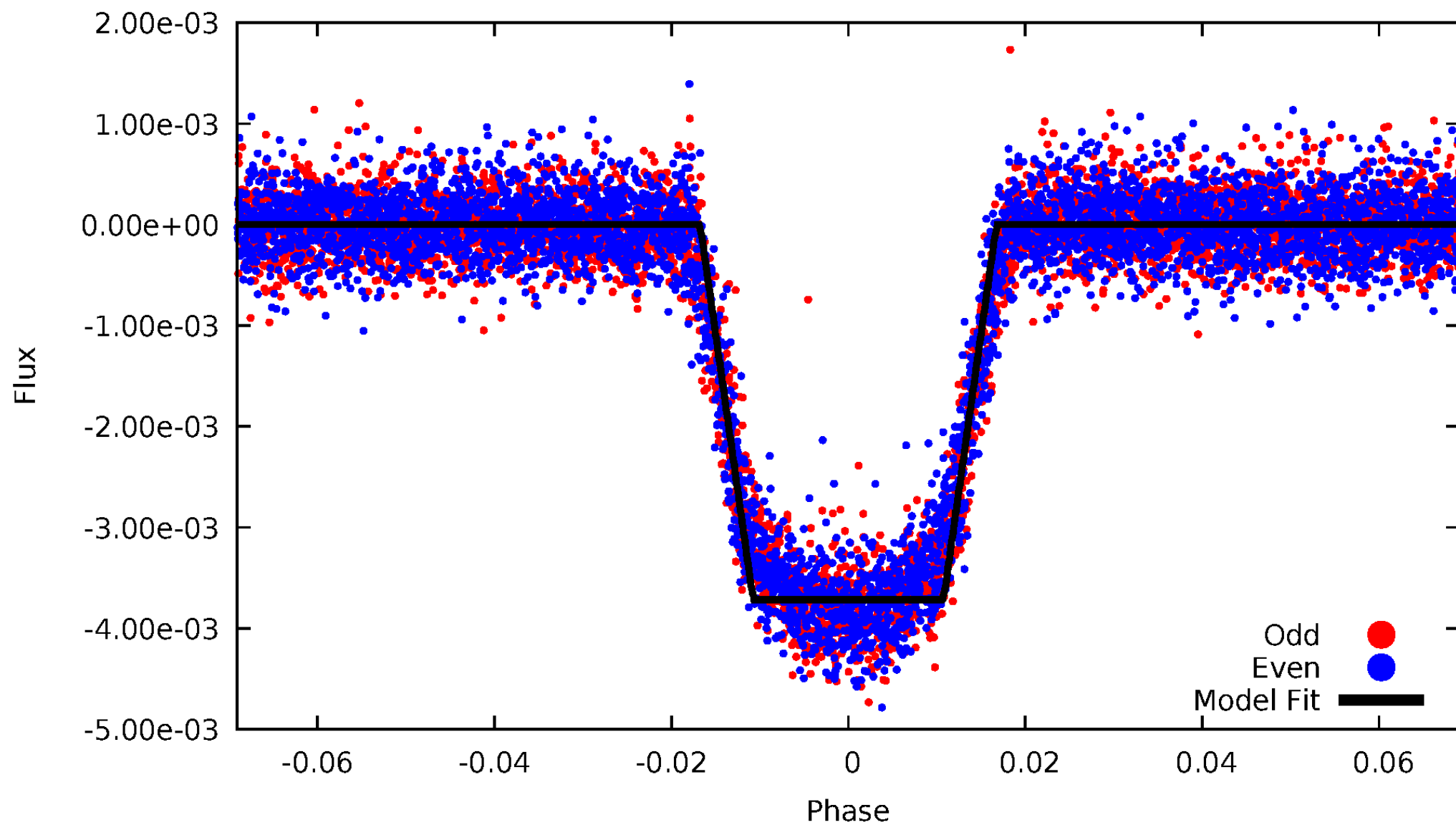
DV Odd/Even

TCE 003937519-01



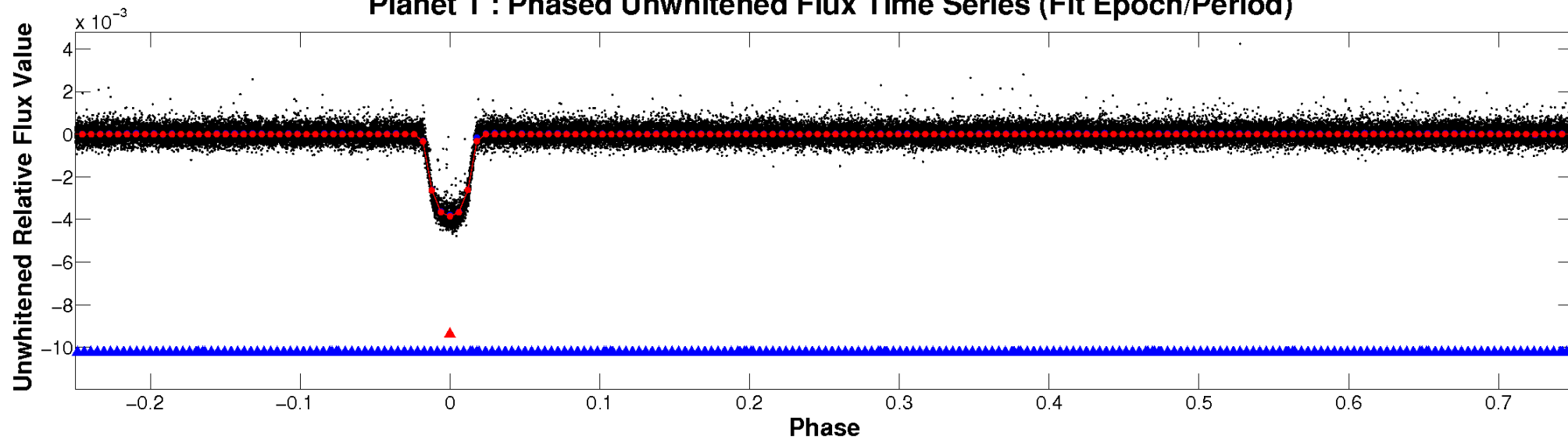
ALT Odd/Even

TCE 003937519-01

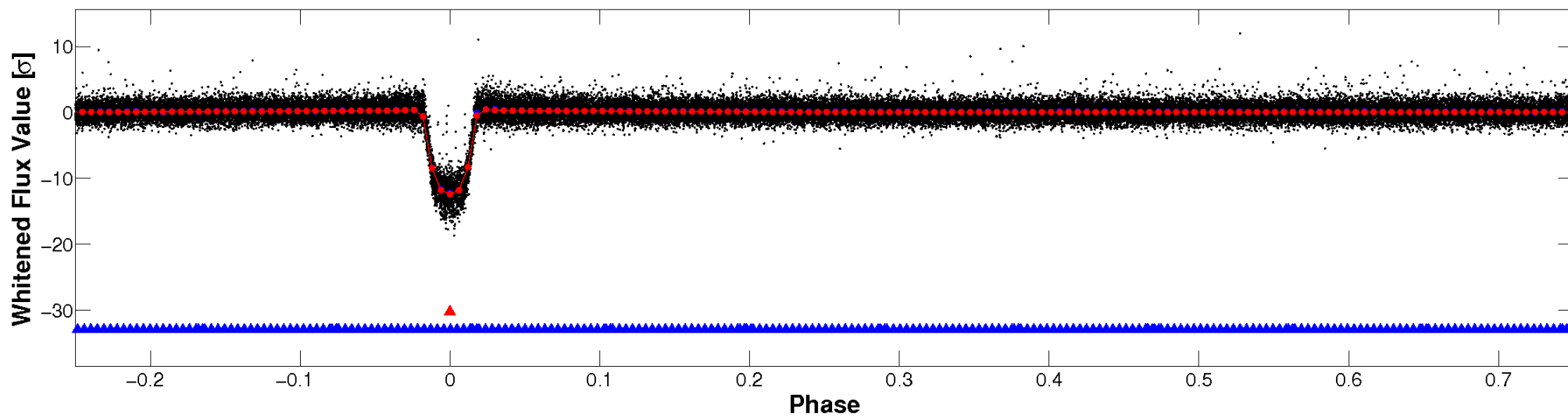


Non-Whitened Vs. Whitened Light Curve

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

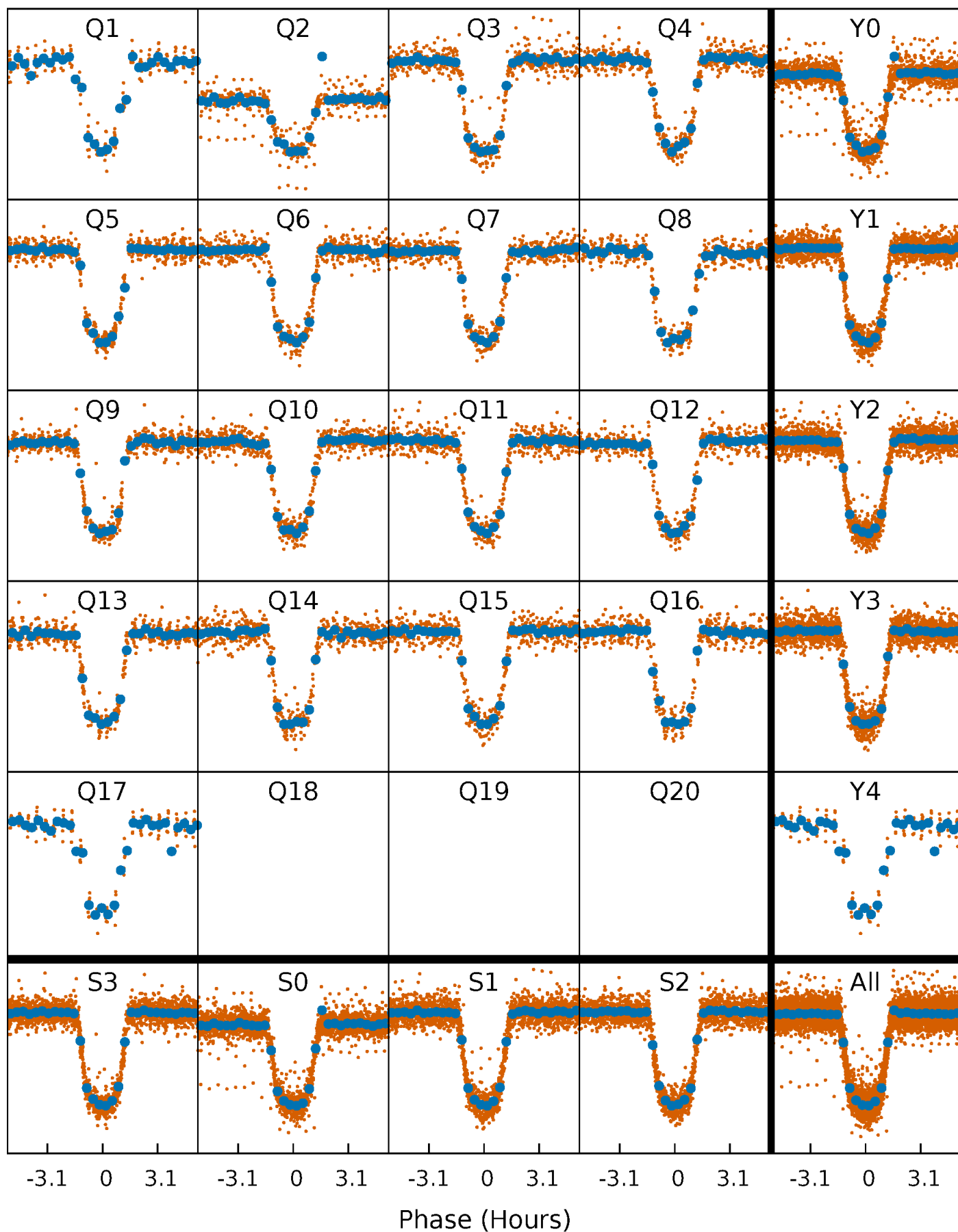


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



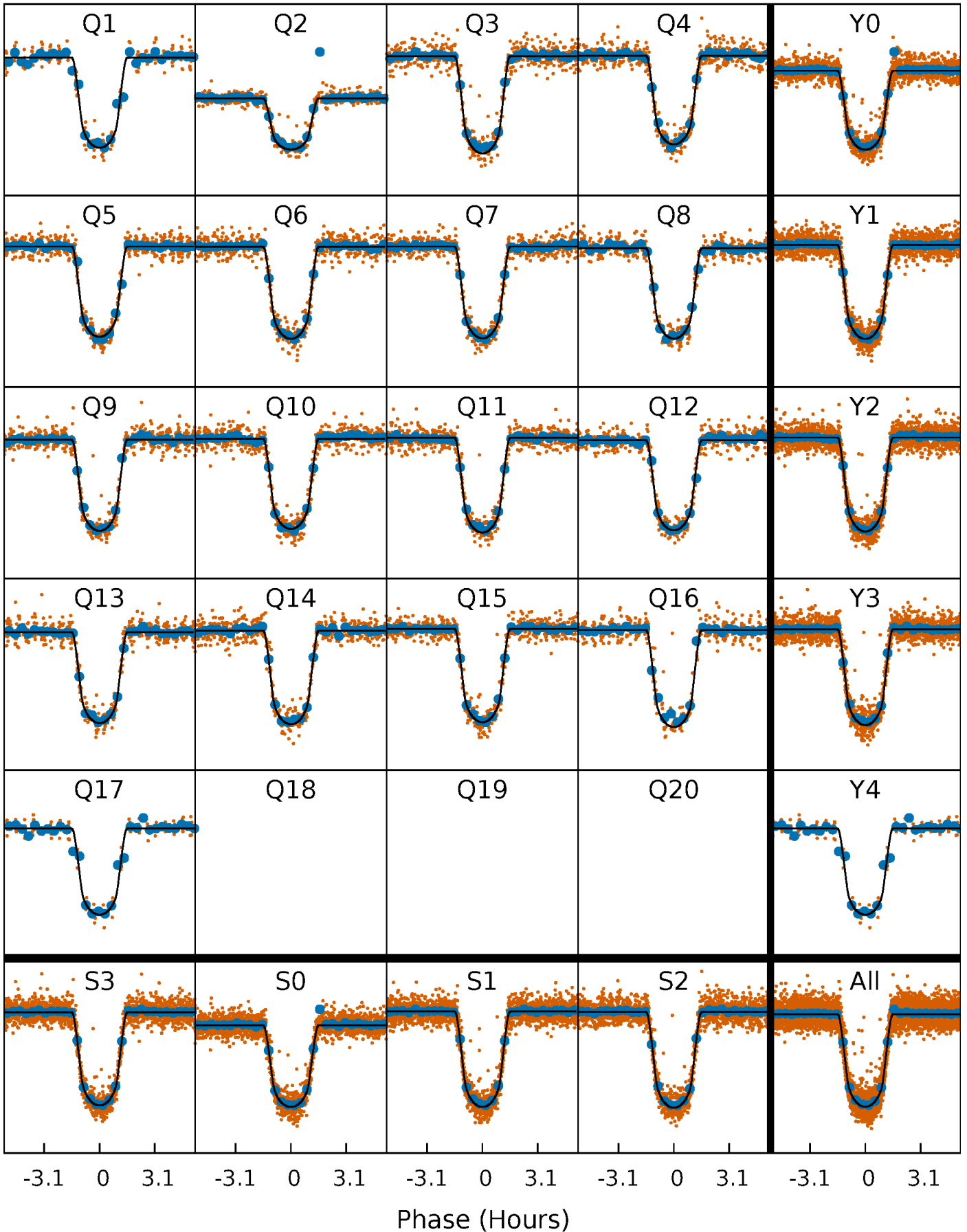
PDC Quarter-Phased Transit Curves

TCE 003937519-01 P= 3.413036 Days $T_0=132.443083$ (BKJD)



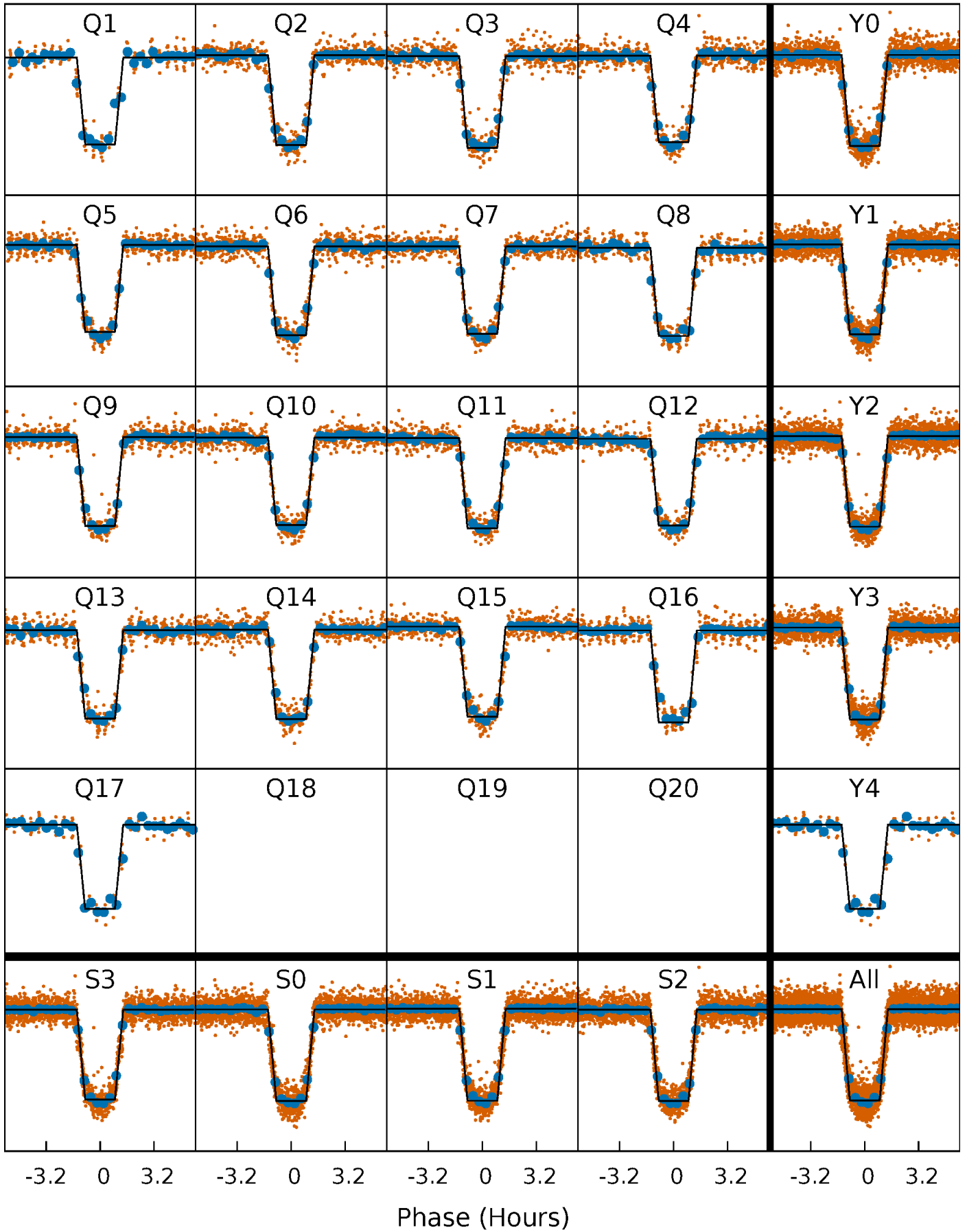
DV Quarter-Phased Transit Curves

TCE 003937519-01 P= 3.413036 Days $T_0=132.443083$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

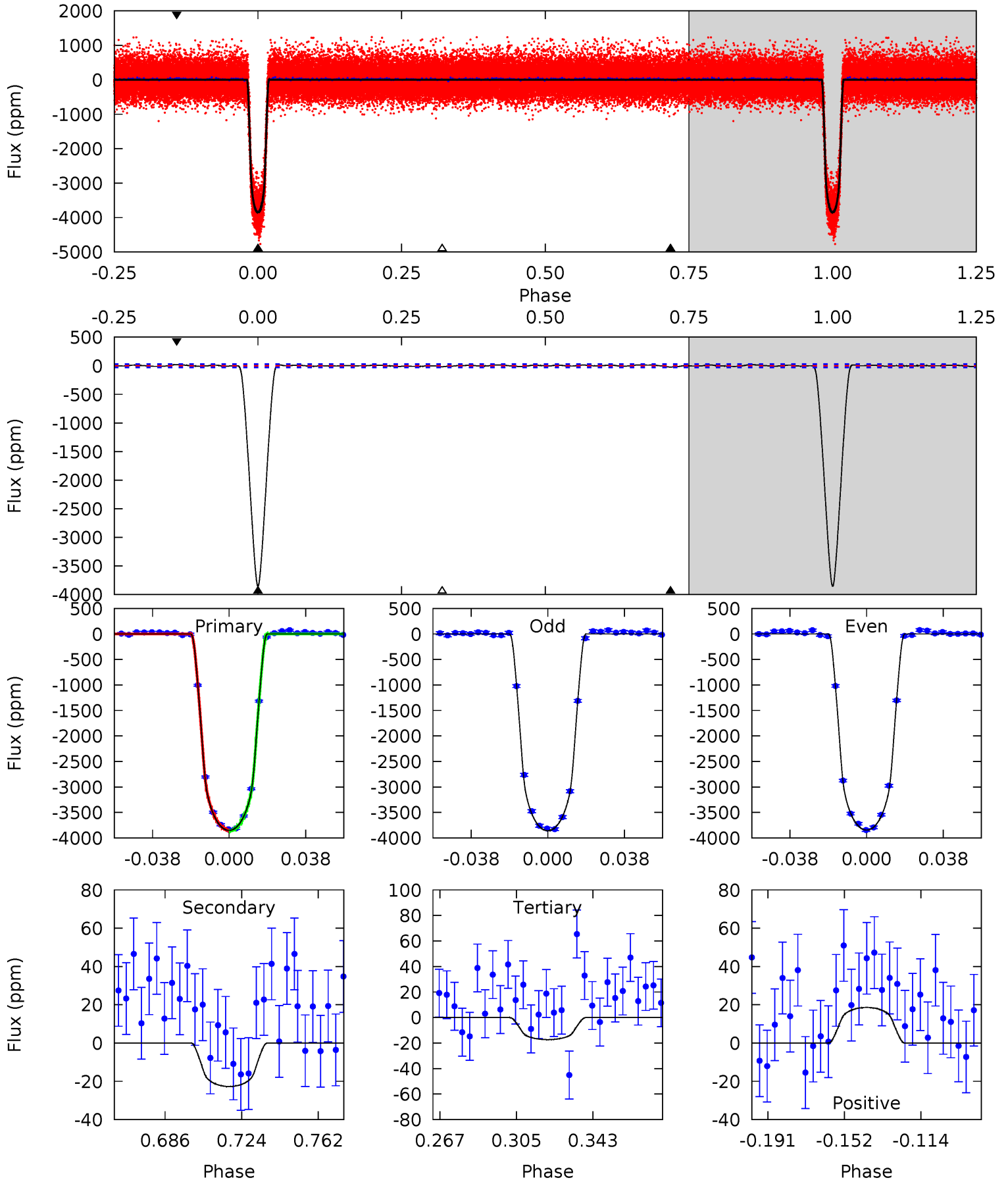
TCE 003937519-01 P= 3.413019 Days $T_0=132.446695$ (BKJD)



DV Model-Shift Uniqueness Test

003937519-01, P = 3.413036 Days, E = 129.030047 Days

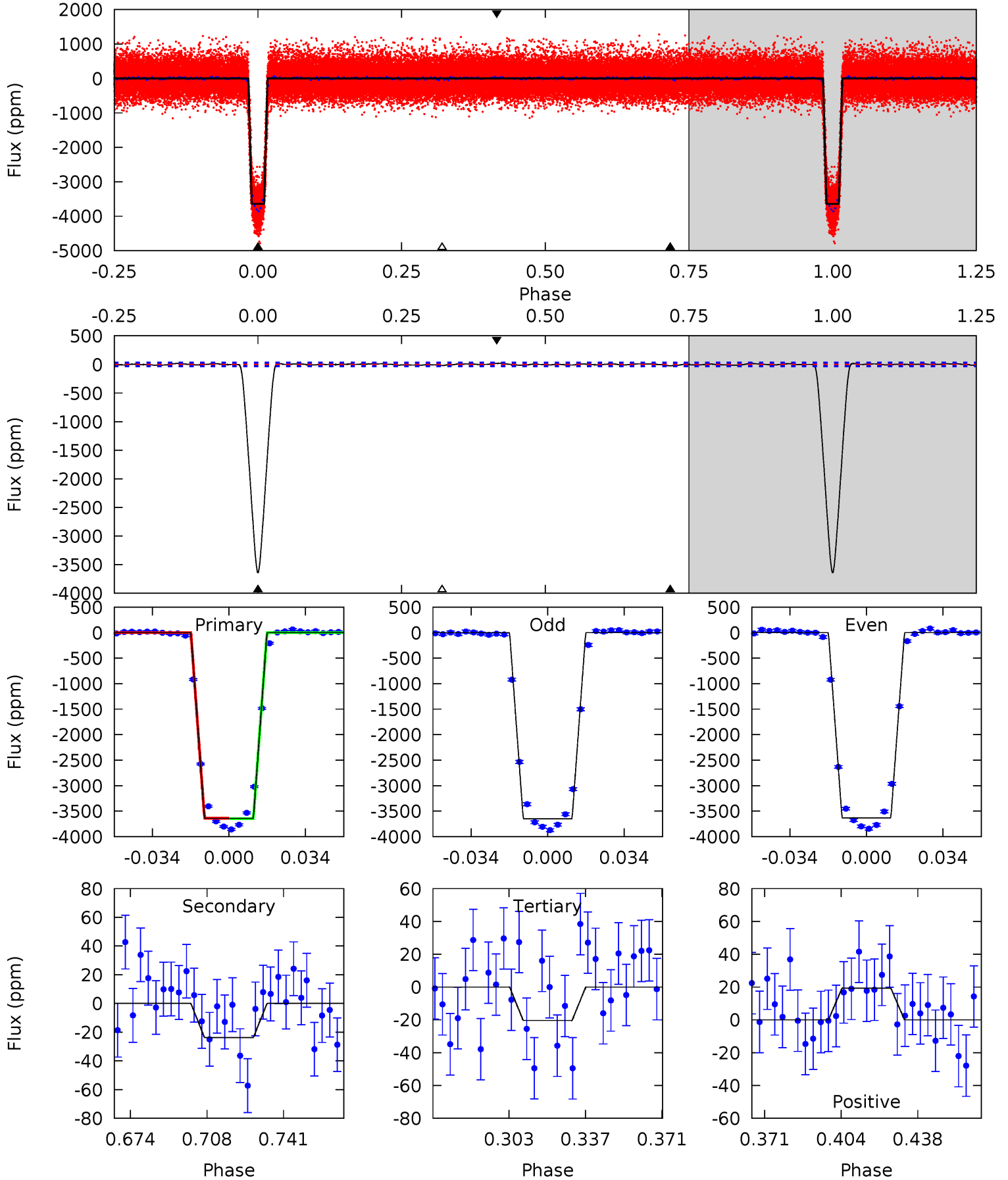
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
635.2	3.75	2.86	3.07	4.76	2.07	1.21	632.3	632.1	0.89	0.68	1.03	0.99	0.00	1.61



Alt Model-Shift Uniqueness Test

003937519-01, P = 3.413019 Days, E = 129.033676 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
564.8	3.69	3.16	2.99	4.79	2.12	1.19	561.6	561.8	0.53	0.70	1.15	1.00	0.01	0.63



Stellar Parameters For KIC 003937519

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5392^{+80}_{-72}	$4.314^{+0.165}_{-0.150}$	$0.180^{+0.150}_{-0.100}$	$1.087^{+0.224}_{-0.184}$	$0.888^{+0.061}_{-0.035}$	$0.973^{+0.675}_{-0.398}$
	+1%/-1%	+4%/-3%	+83%/-56%	+21%/-17%	+7%/-4%	+69%/-41%
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 003937519-01 / KOI 0221.01

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-23 ± 6	$6.96^{+0.79}_{-0.76}$	1676^{+92}_{-92}	2152^{+157}_{-389}	$0.468^{+0.192}_{-0.149}$
Alt.	-24 ± 6	$7.23^{+0.95}_{-0.82}$	1674^{+110}_{-95}	2138^{+155}_{-662}	$0.458^{+0.180}_{-0.155}$

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

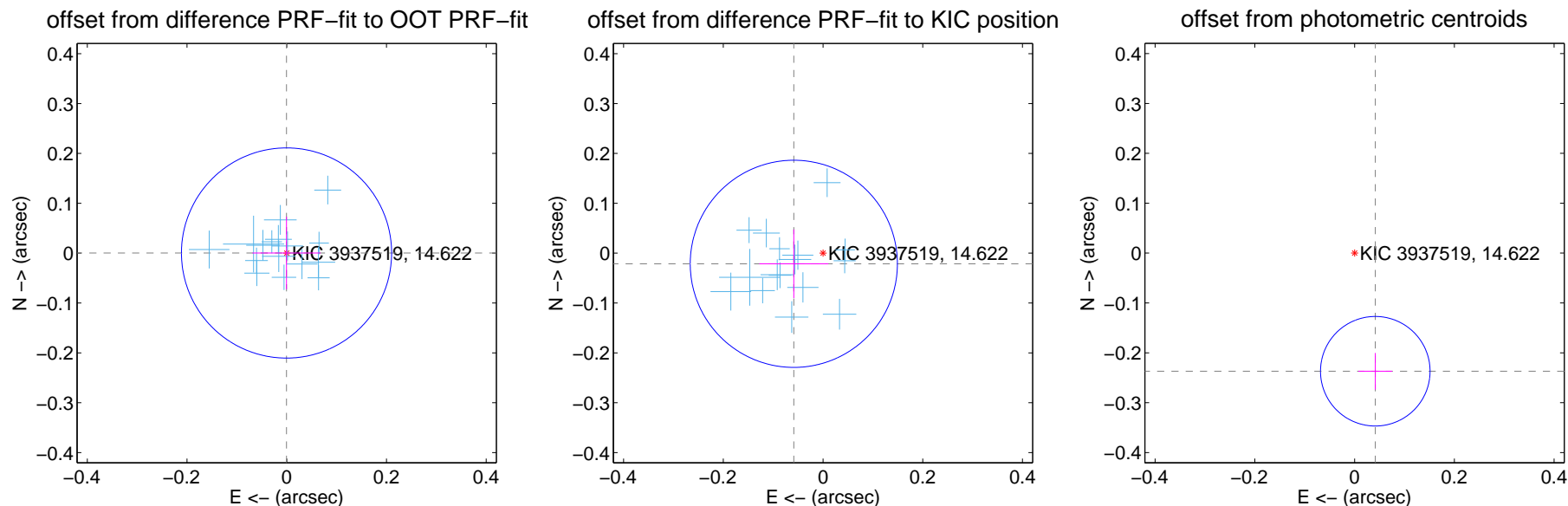
DV Centroid Data

Supplemental centroid analysis for 003937519-01. Kepler magnitude: 14.62. Transit SNR 459.22

There are 17 quarters with good PRF difference image offsets

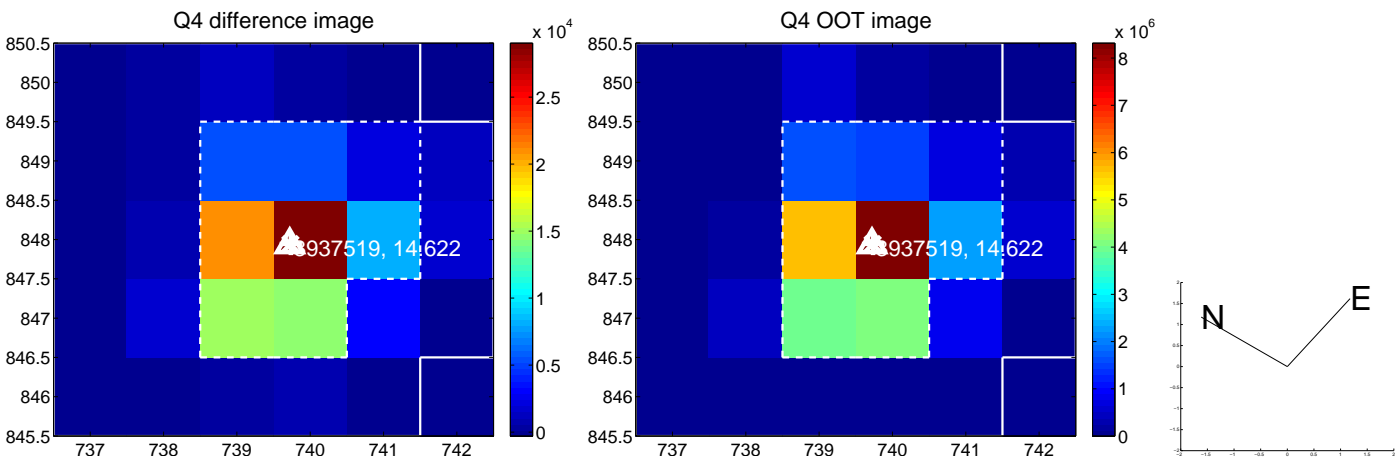
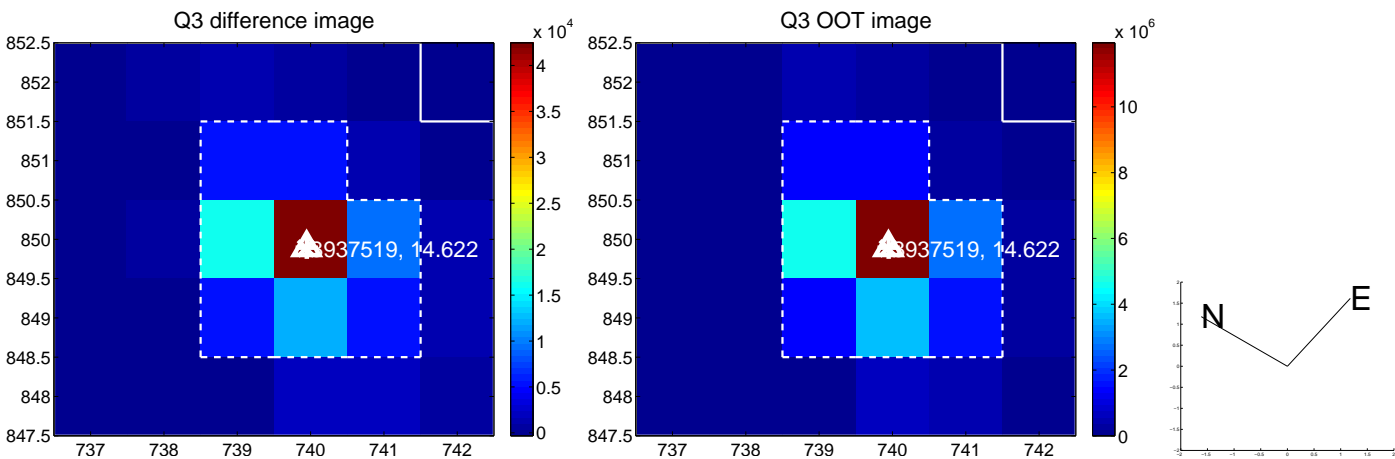
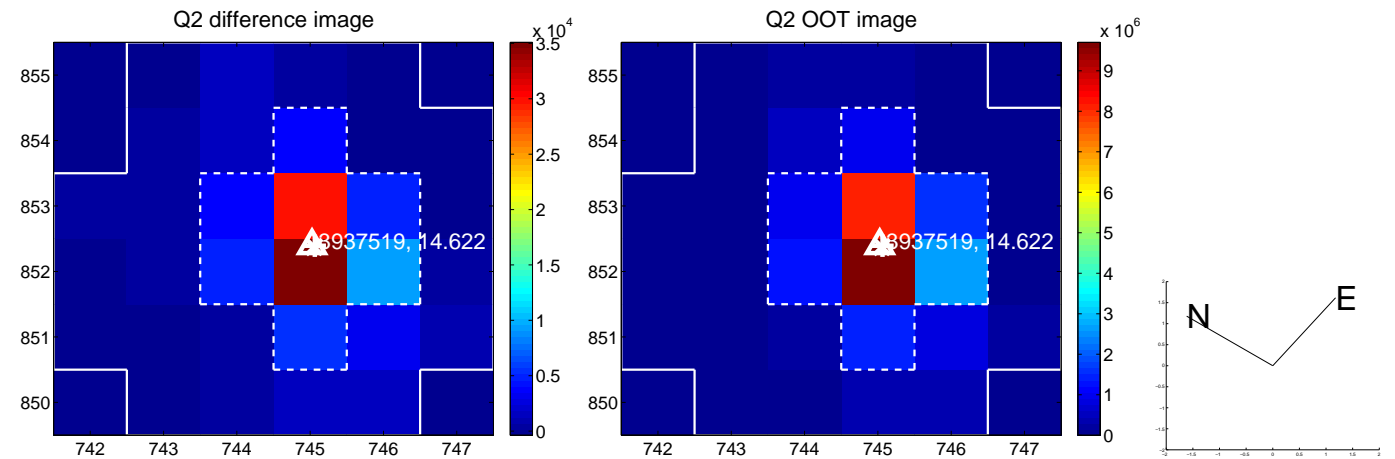
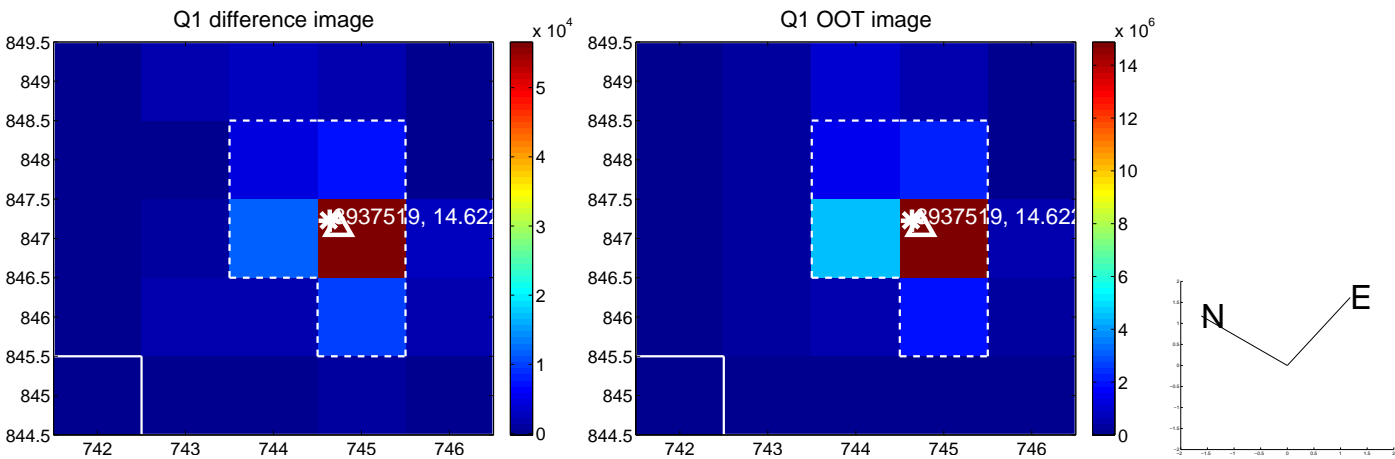
The direct PRF centroid is offset from the target star catalog position by about 0.10 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.001 ± 0.070	0.01	0.000 ± 0.068	0.000 ± 0.073
PRF-fit source offset from KIC position	0.062 ± 0.069	0.90	0.059 ± 0.069	-0.021 ± 0.069
photometric centroid source offset	0.24 ± 0.04	6.57	-0.04 ± 0.03	-0.24 ± 0.04

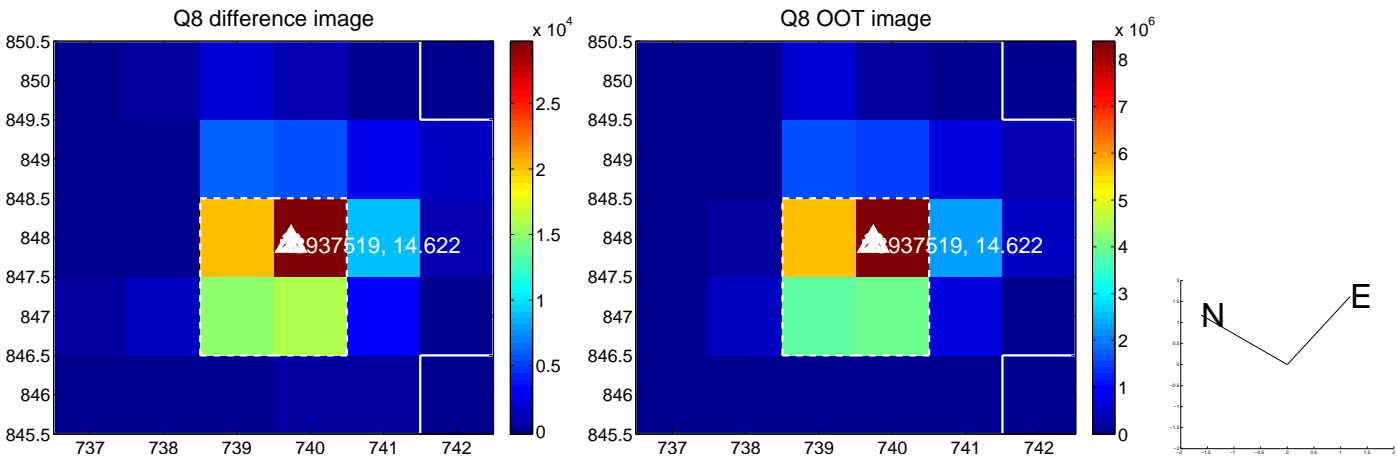
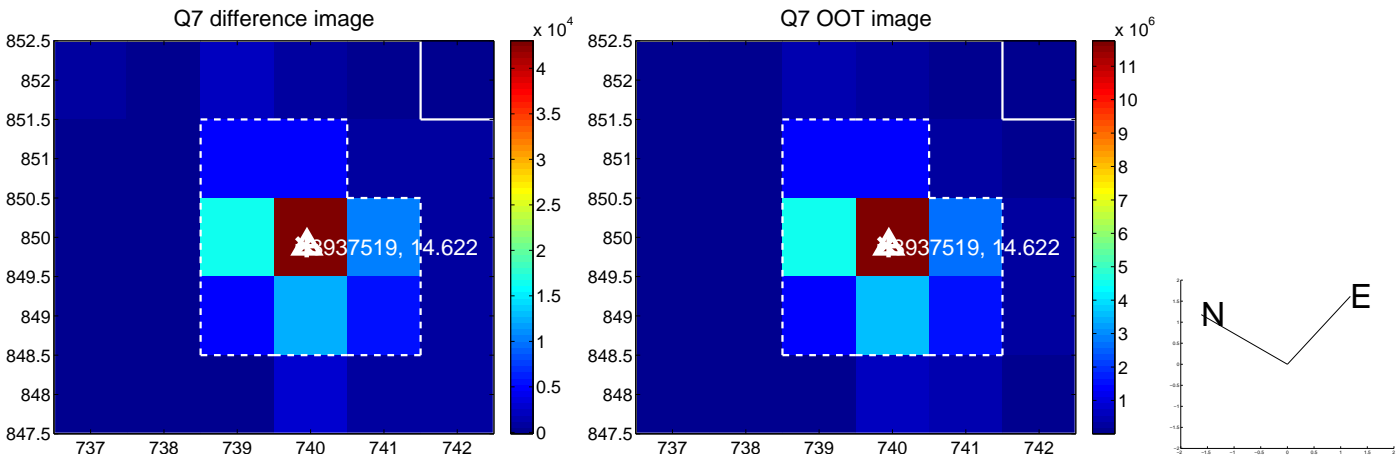
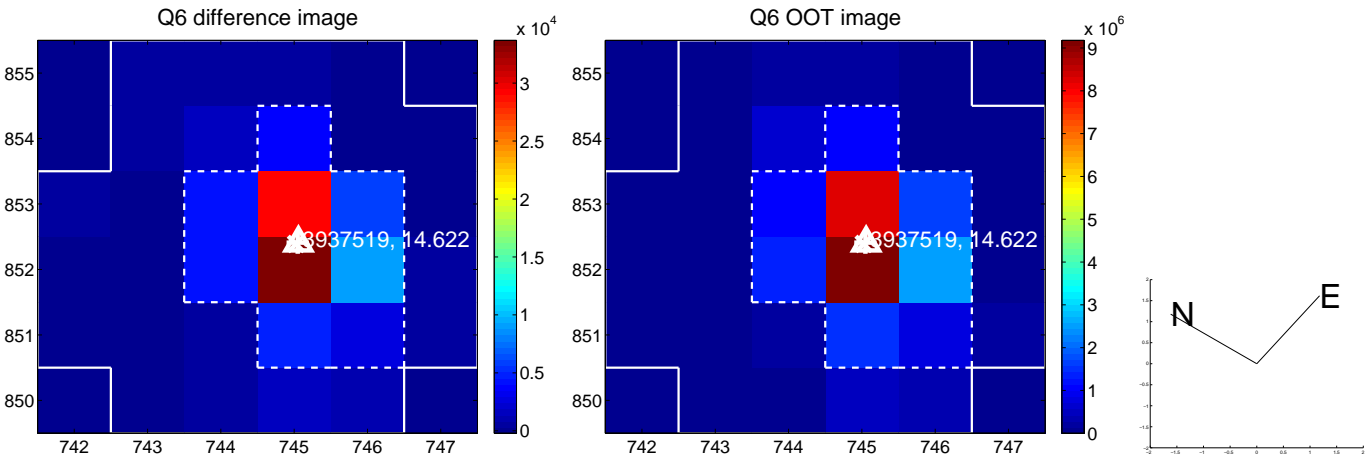
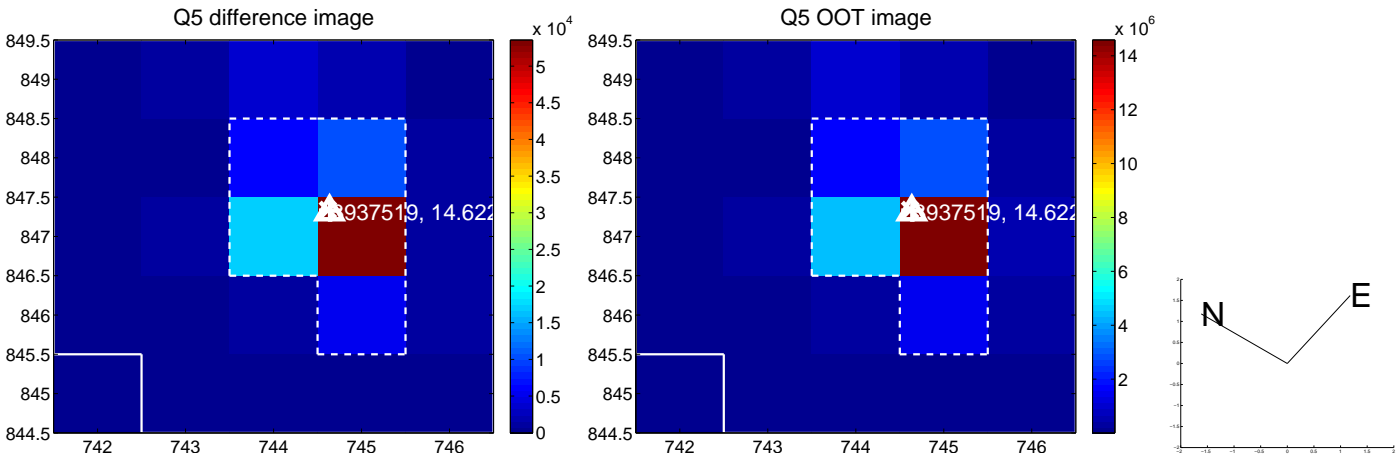


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

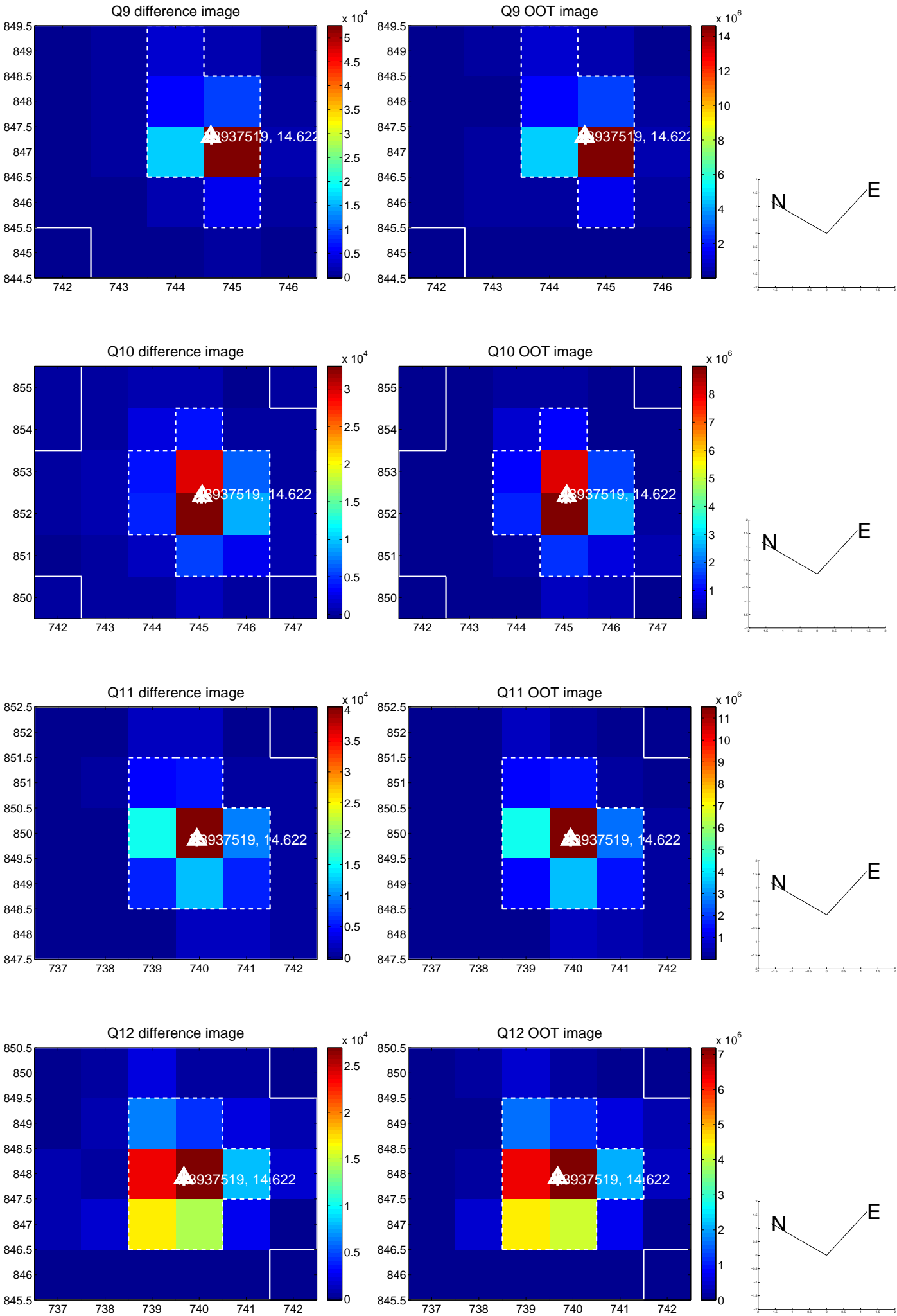
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



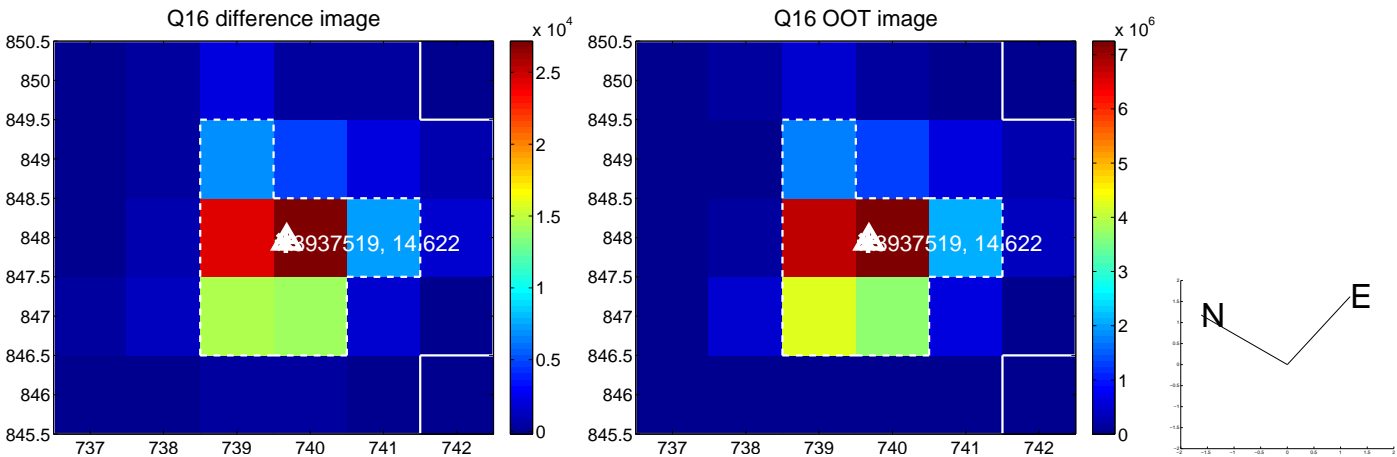
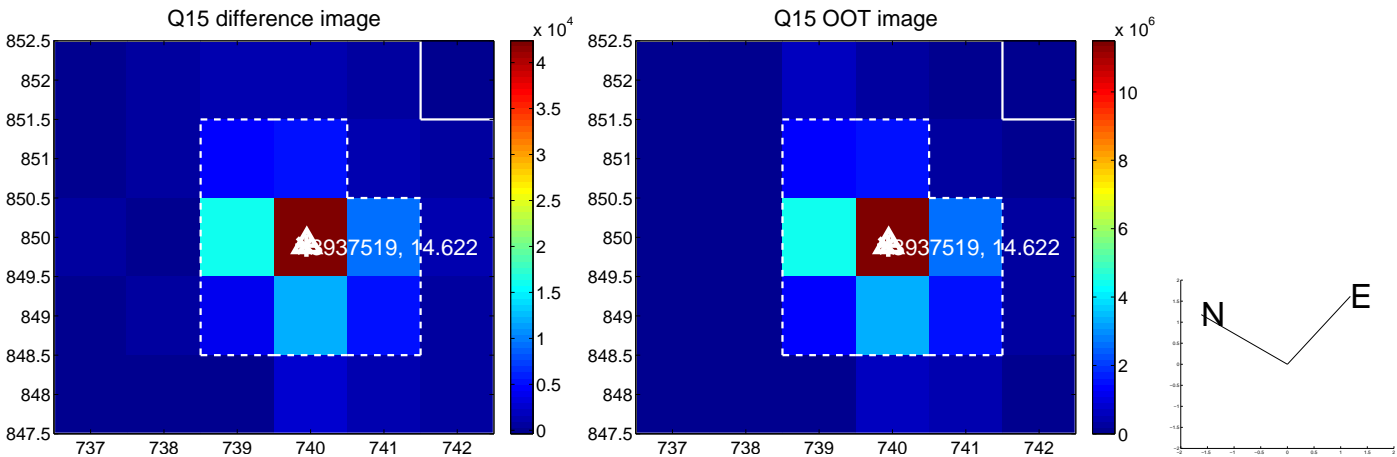
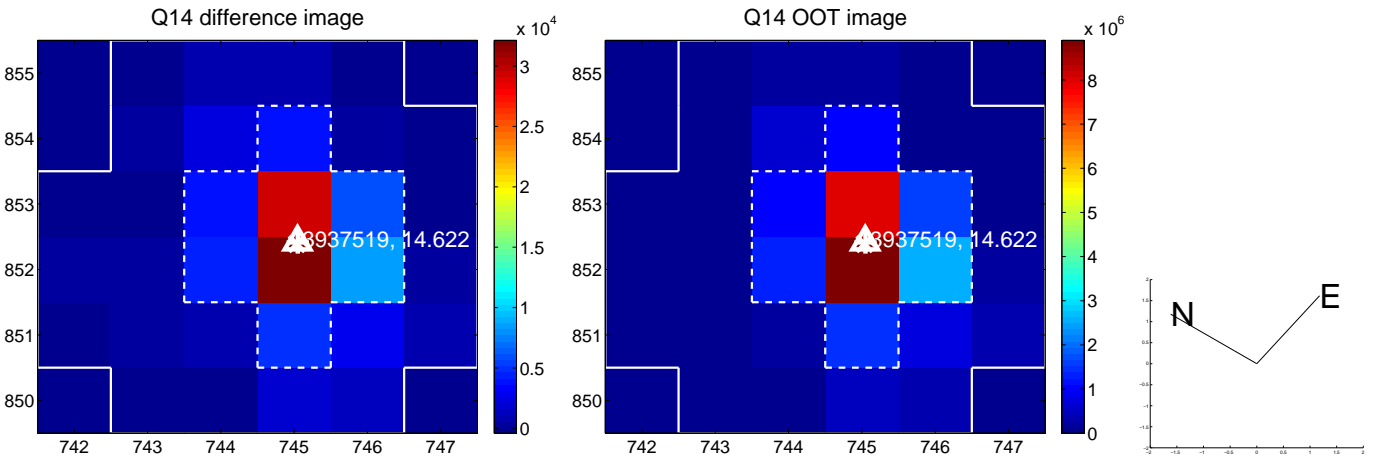
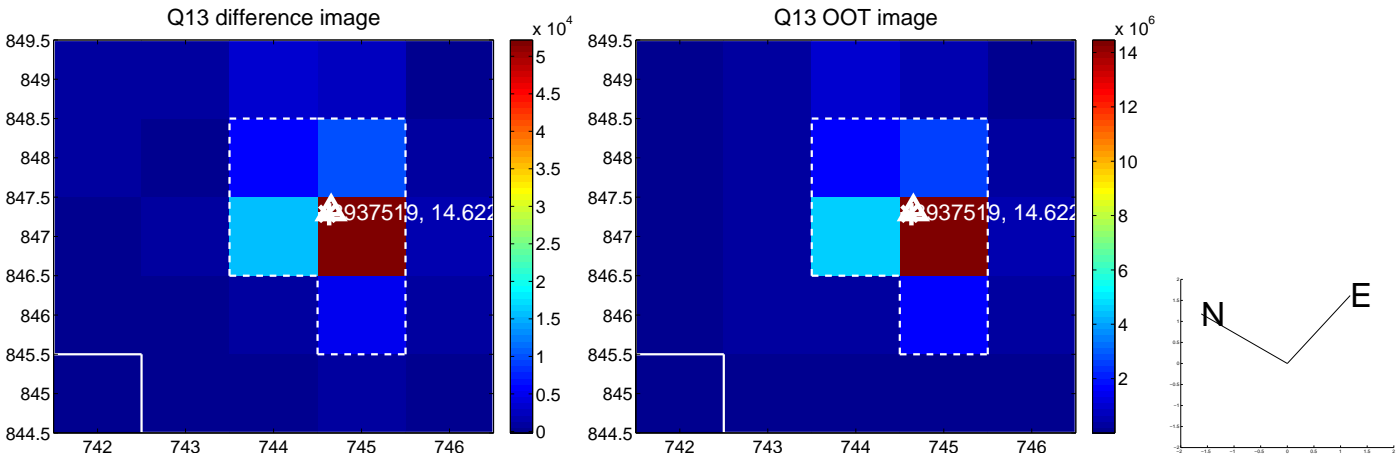
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



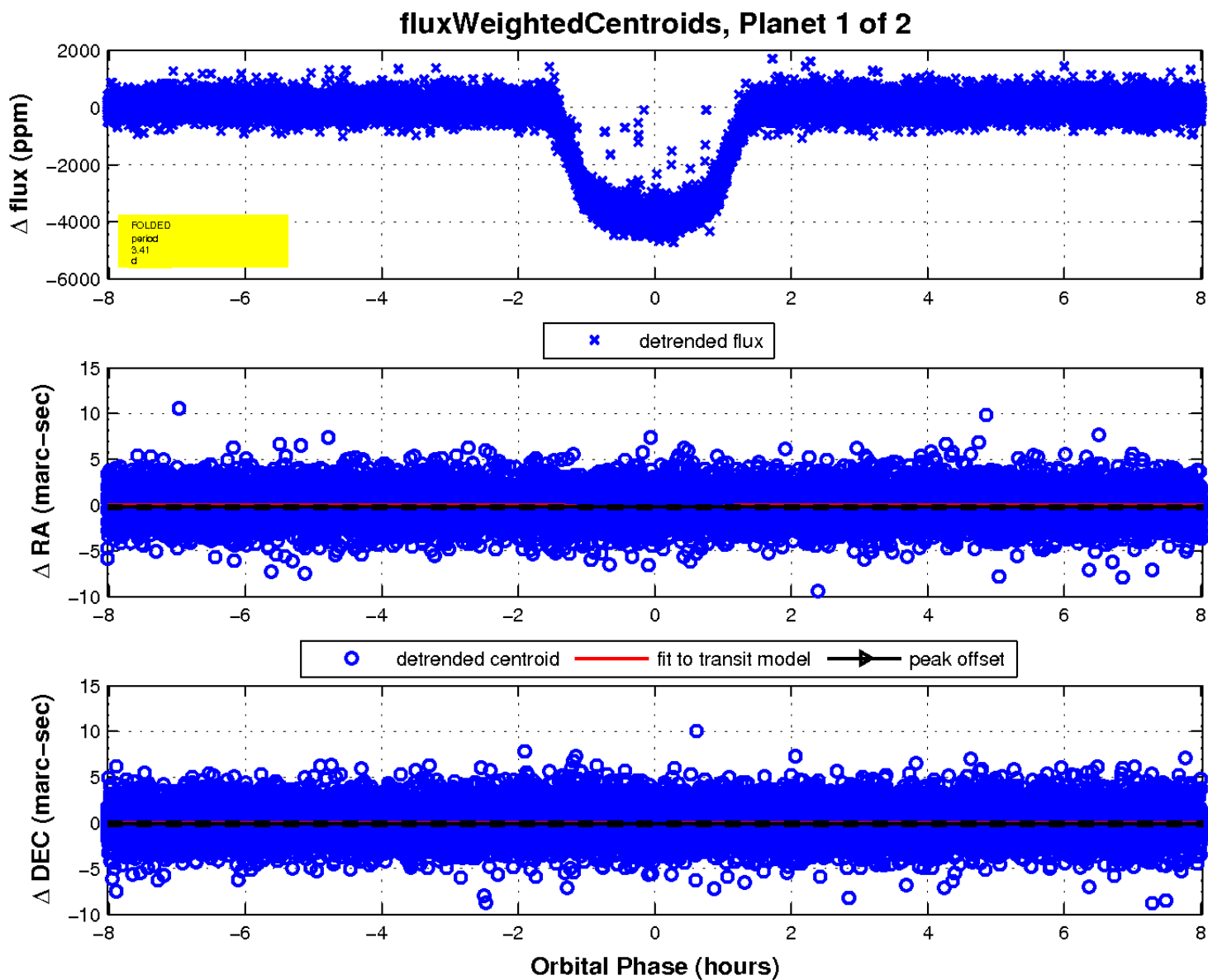
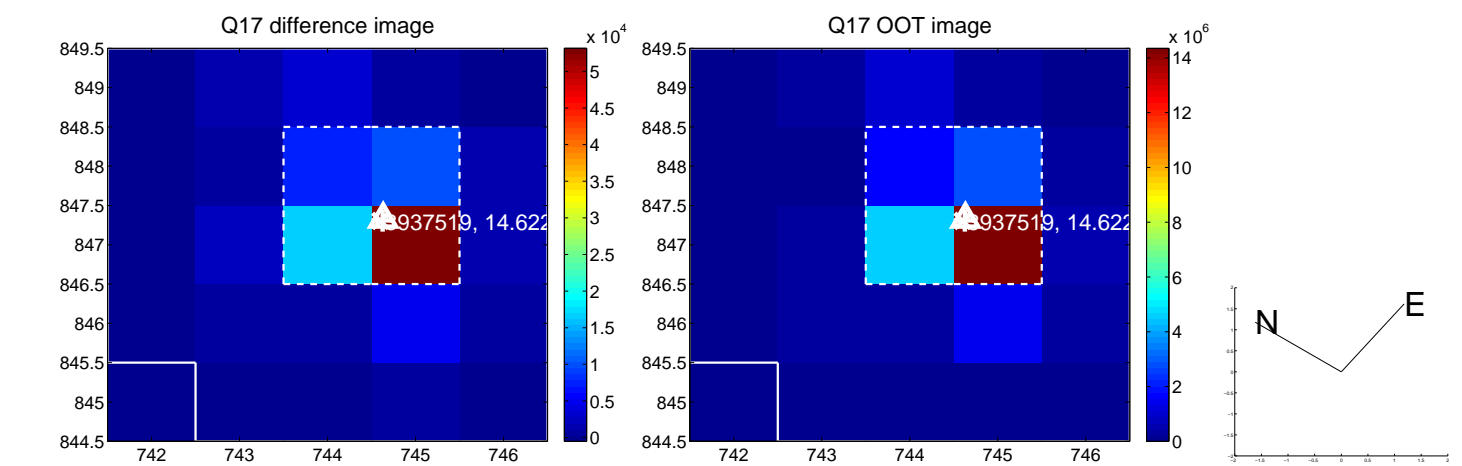
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

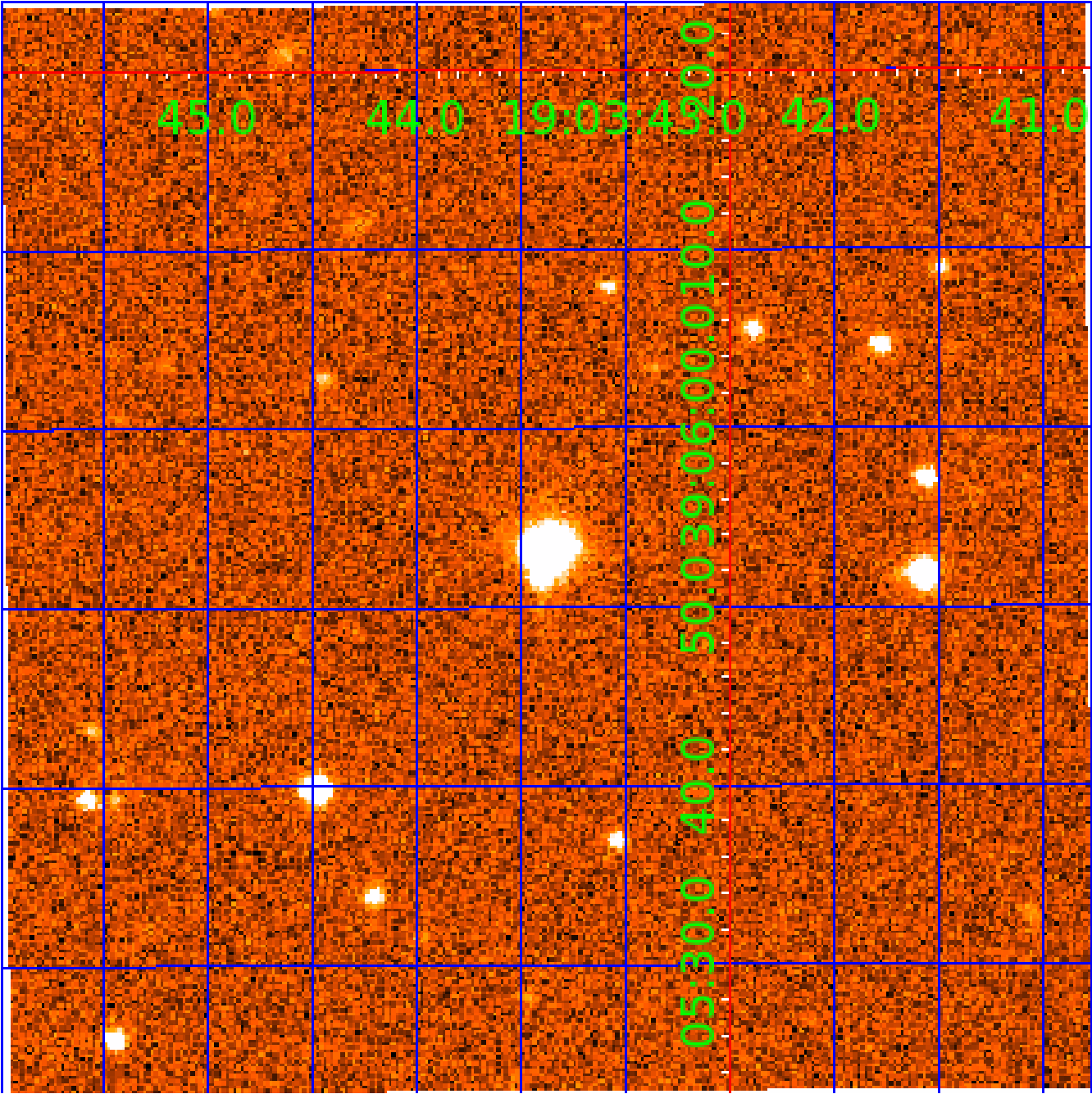


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 003937519

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})
003937519-01	OBS	0221.01	3.413036	132.443083	3863.2	2.676	455.1	459.2	1.09	5392	6.94	491.88
003937519-02	OBS	0221.02	5.896607	134.033305	138.8	3.295	12.1	13.5	1.09	5392	1.54	237.27

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003937519-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT
003937519-02	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.

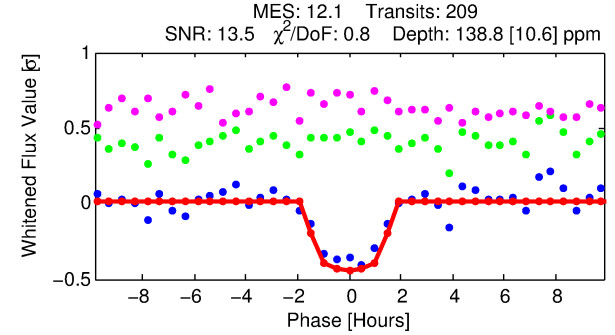
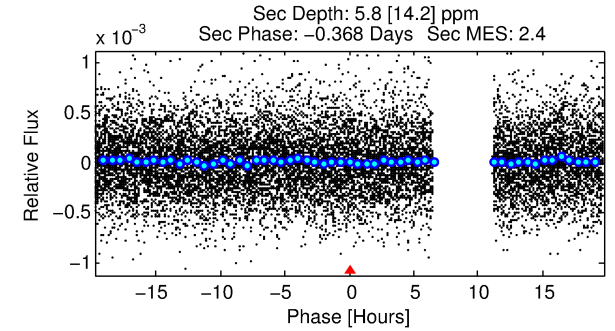
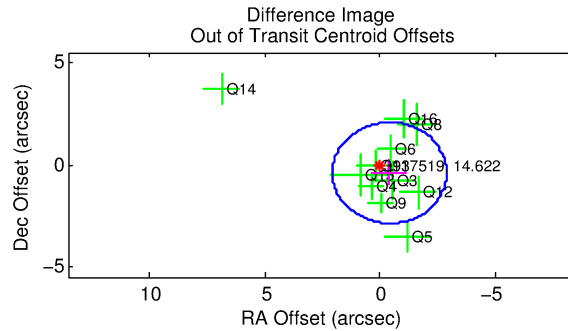
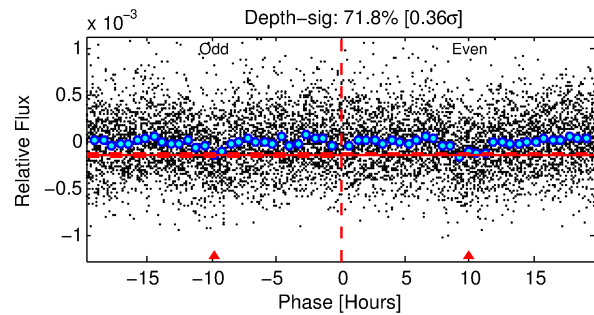
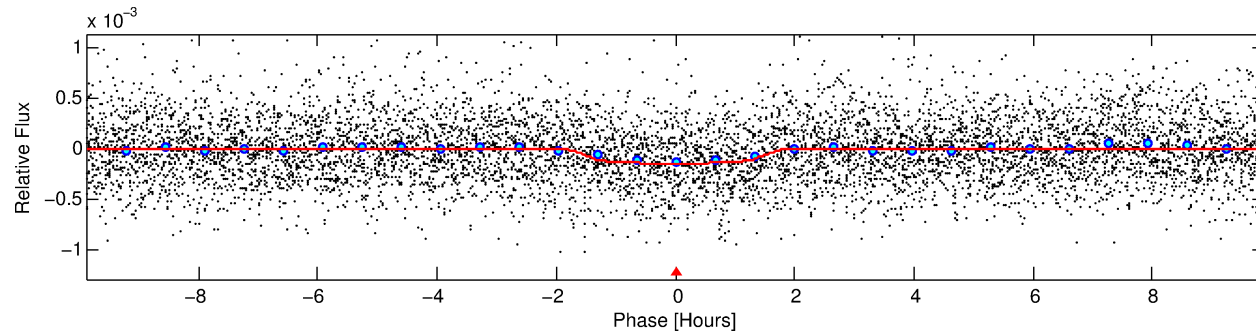
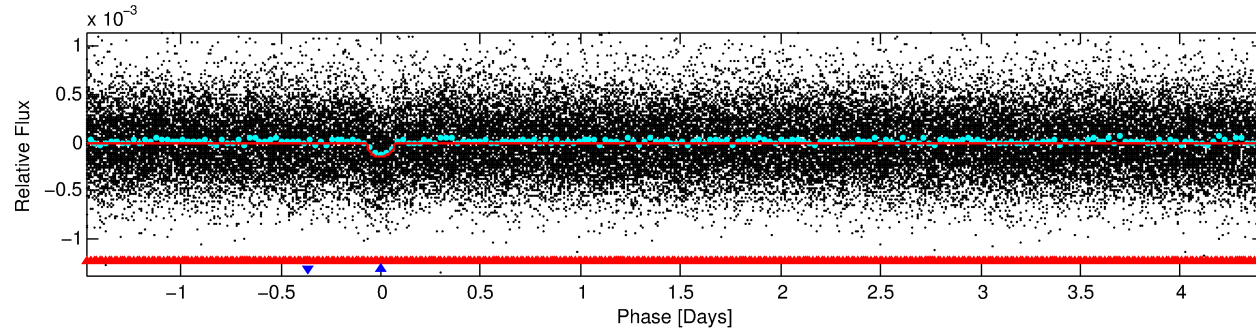
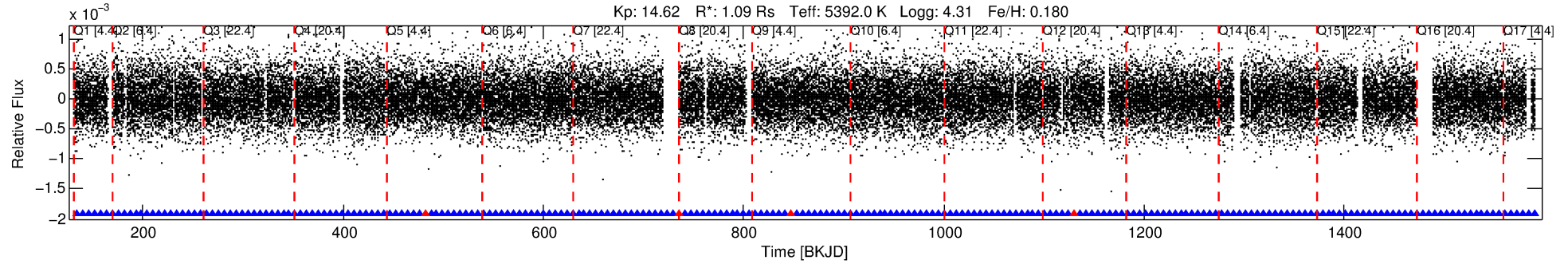
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 003937519-02

No Significant Match Found

DV One-Page Summary

KIC: 3937519 Candidate: 2 of 2 Period: 5.897 d
KOI: K00221.02 Corr: 0.991



DV Fit Results:

Period = 5.89661 [0.00004] d
Epoch = 134.0333 [0.0046] BKJD
Rp/R* = 0.0130 [0.0064]
a/R* = 6.47 [13.57]
b = 0.90 [0.47]
Seff = 237.27 [69.80]
Teq = 1001 [74] K
Rp = 1.54 [0.83] R_e
a = 0.0614 [0.0115] AU
Ag = 5.10 [13.52] [0.30 σ]
Teffp = 2325 [1532] K [0.86 σ]

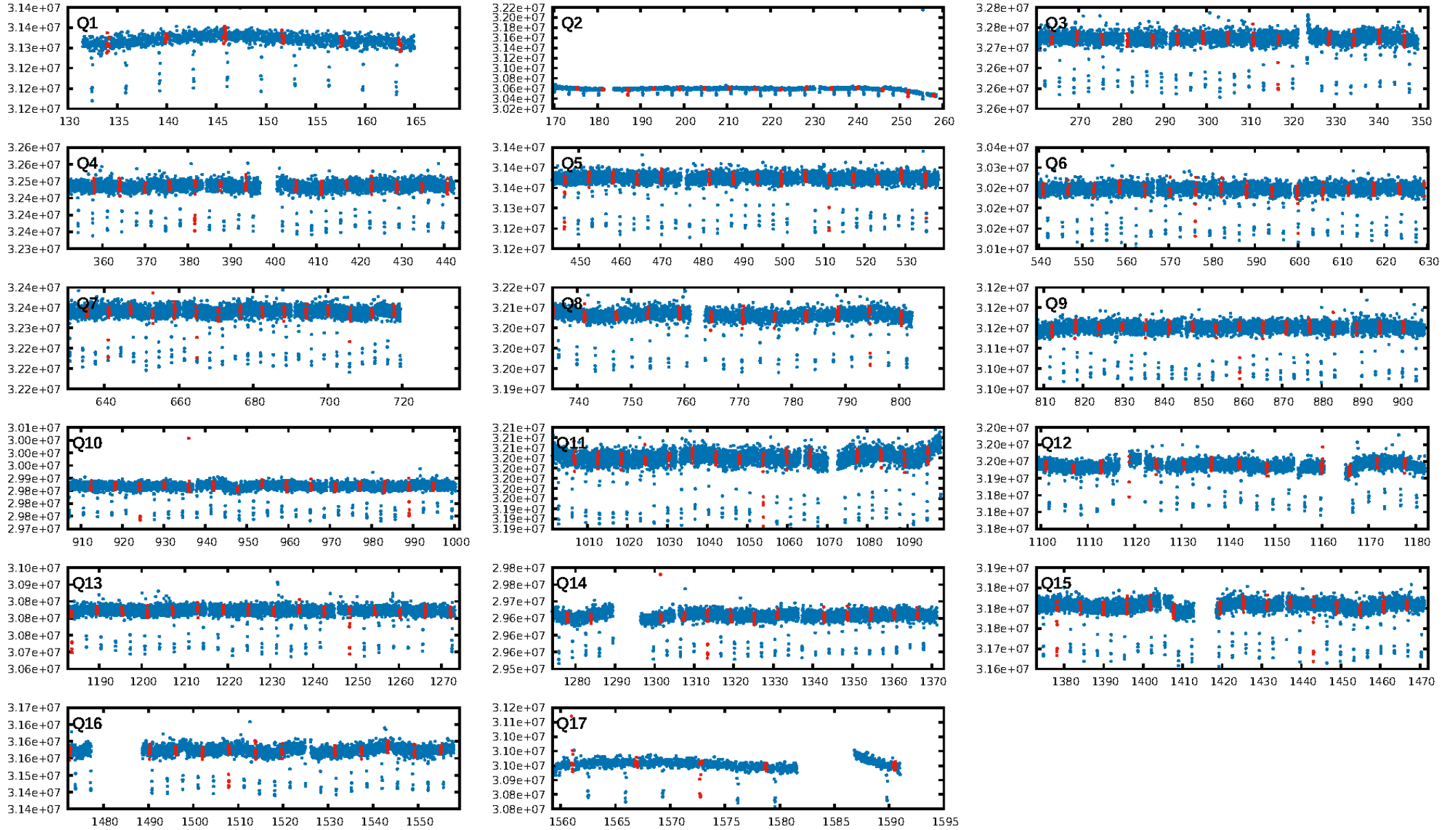
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [14.04 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 1.37e-32
RollingBand-fgt: 0.98 [195/199]
GhostDiagnostic-chr: -3.878
Centroid-sig: 26.4%
Centroid-so: 1.176 arcsec [1.01 σ]
OotOffset-rm: 0.565 arcsec [0.69 σ]
KicOffset-rm: 0.559 arcsec [0.71 σ]
OotOffset-st: 2/3/4/2 [11]
KicOffset-st: 2/3/4/2 [11]
DiffImageQuality-fgm: 0.36 [4/11]
DiffImageOverlap-fno: 1.00 [17/17]

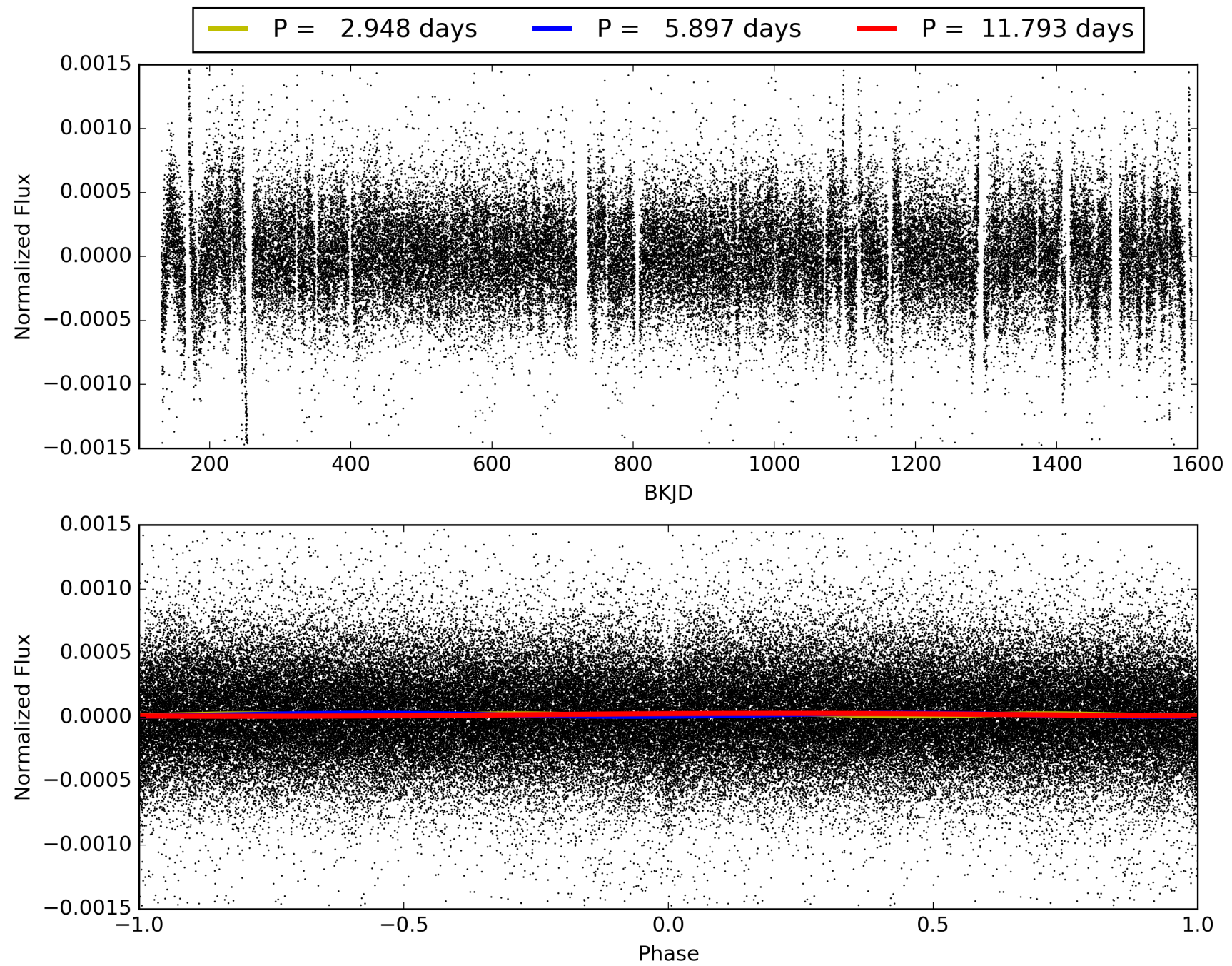
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 14:26:55 Z

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

TCE 003937519-02, PDC Light Curves

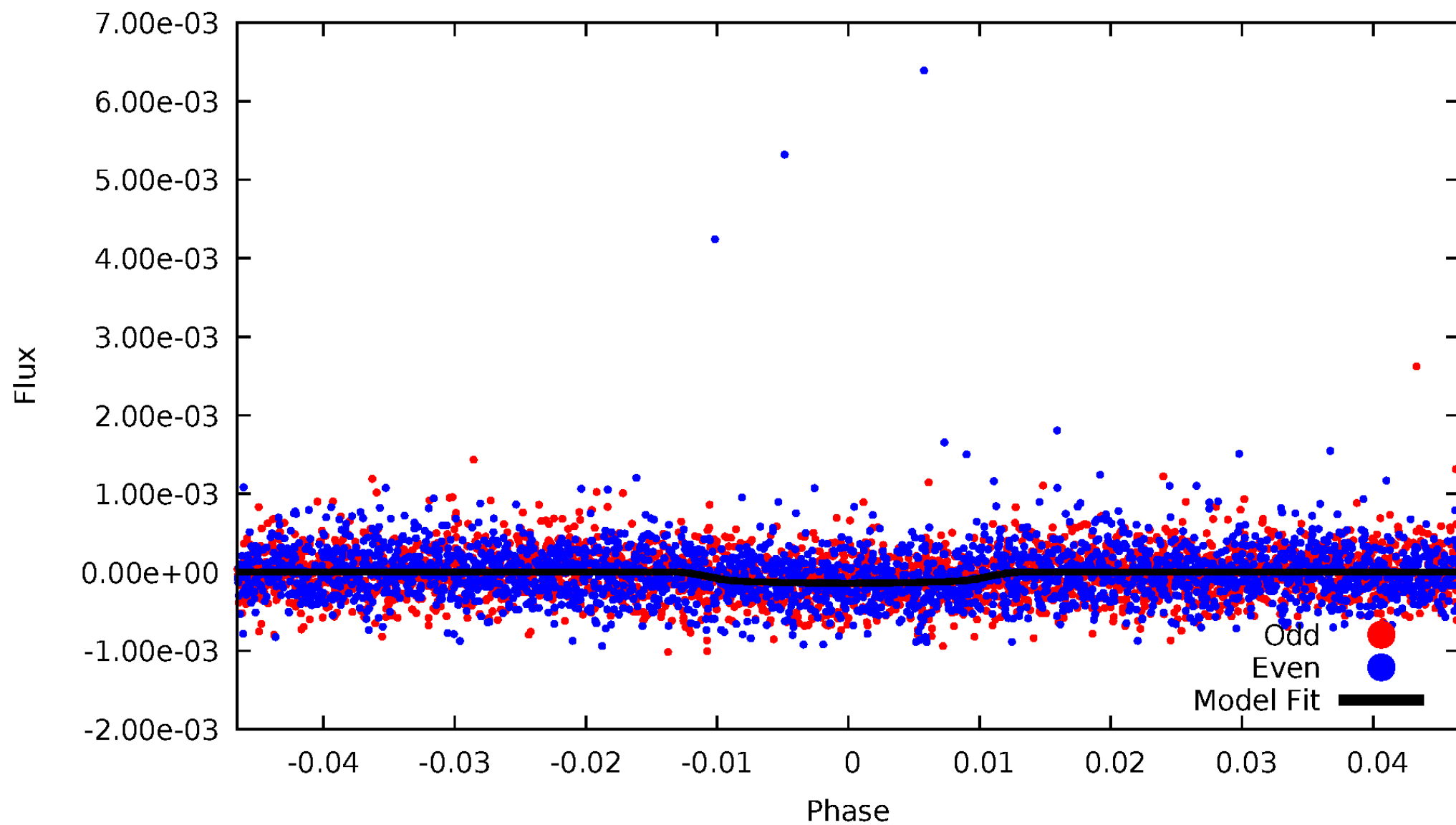


TCE 003937519-02



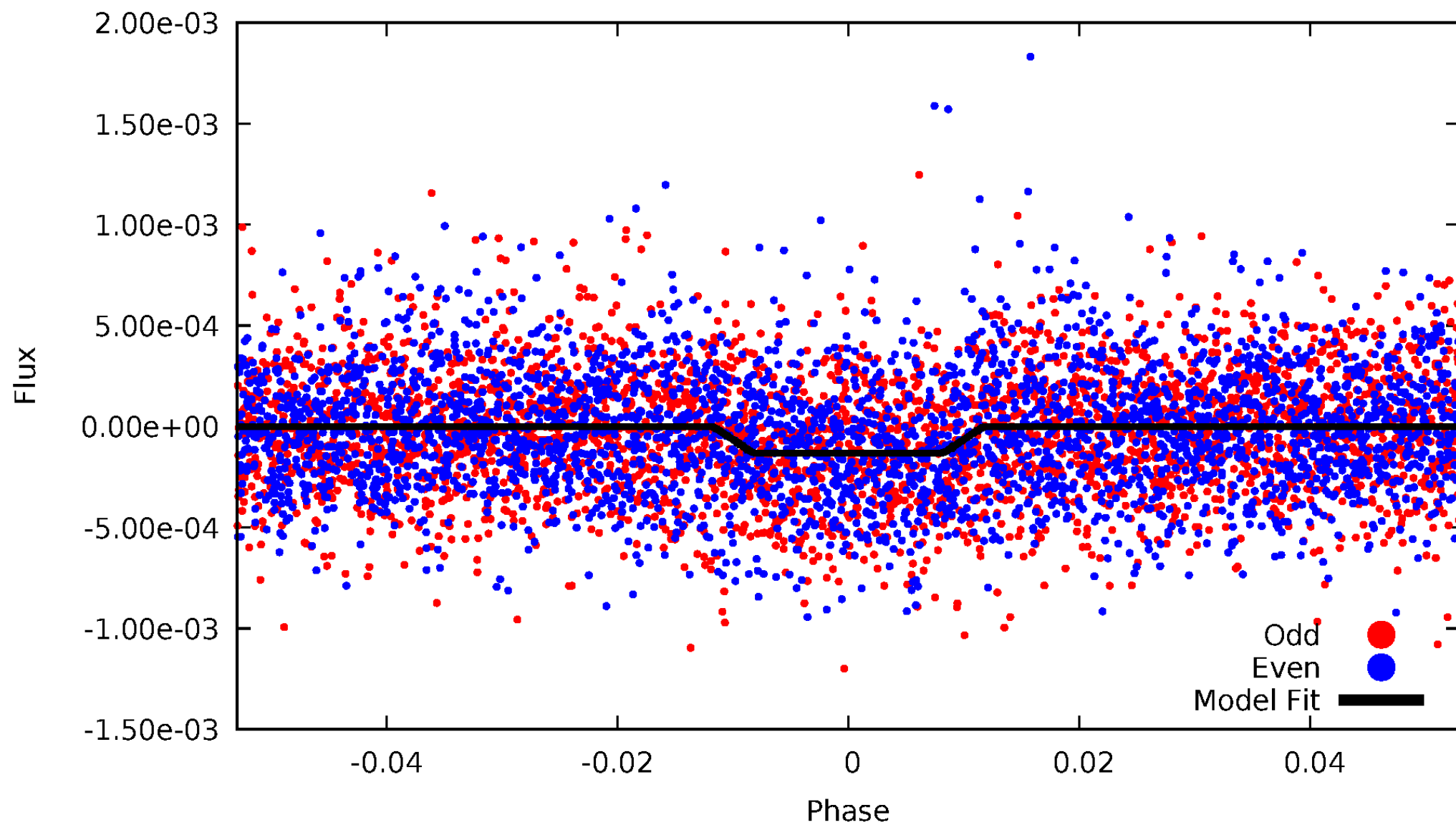
DV Odd/Even

TCE 003937519-02



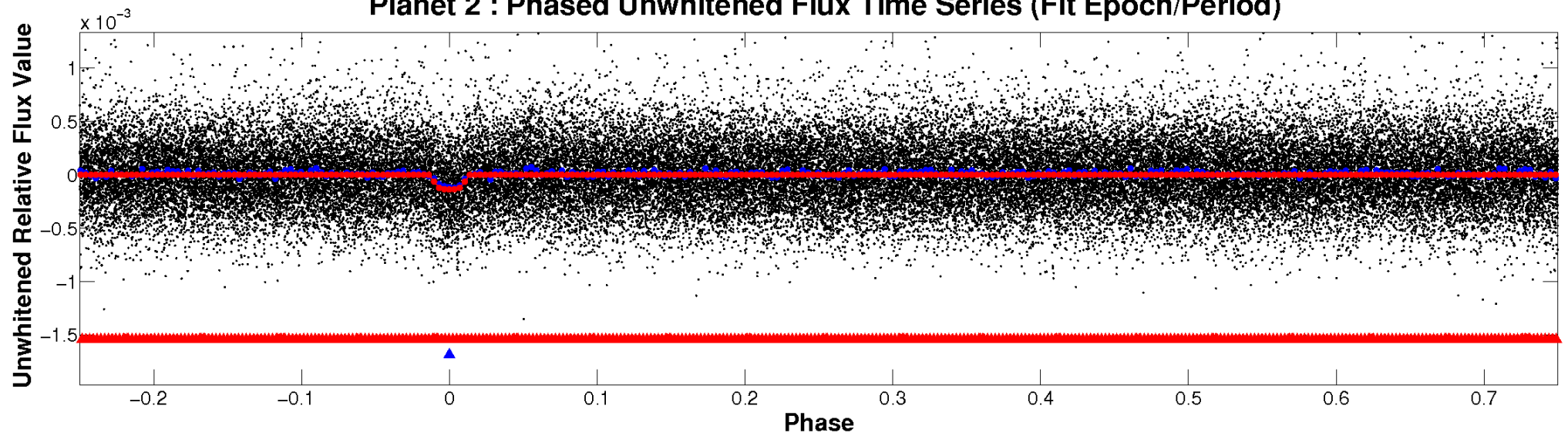
ALT Odd/Even

TCE 003937519-02

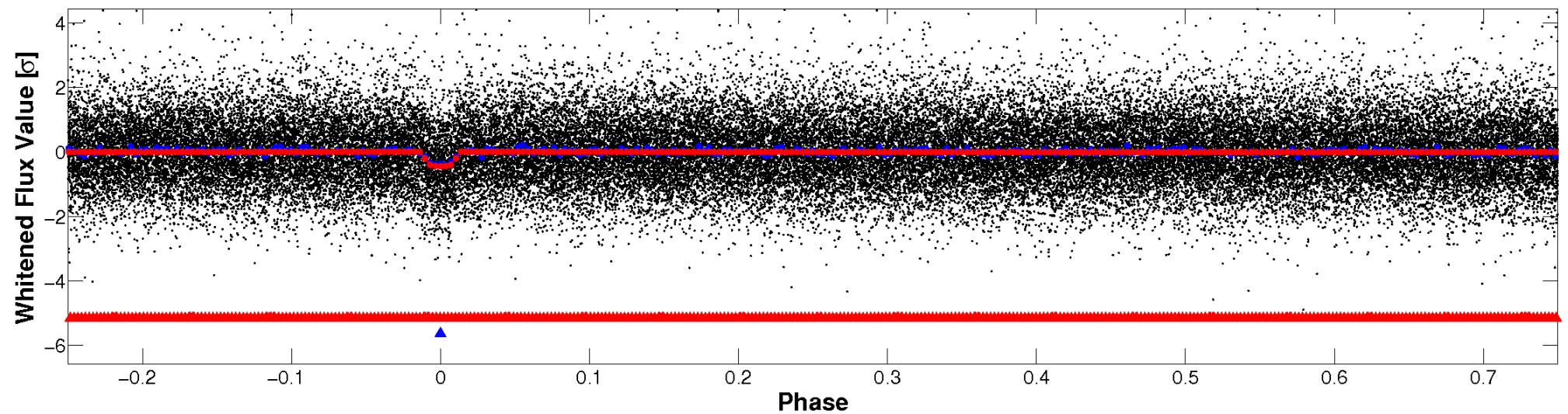


Non-Whitened Vs. Whitened Light Curve

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

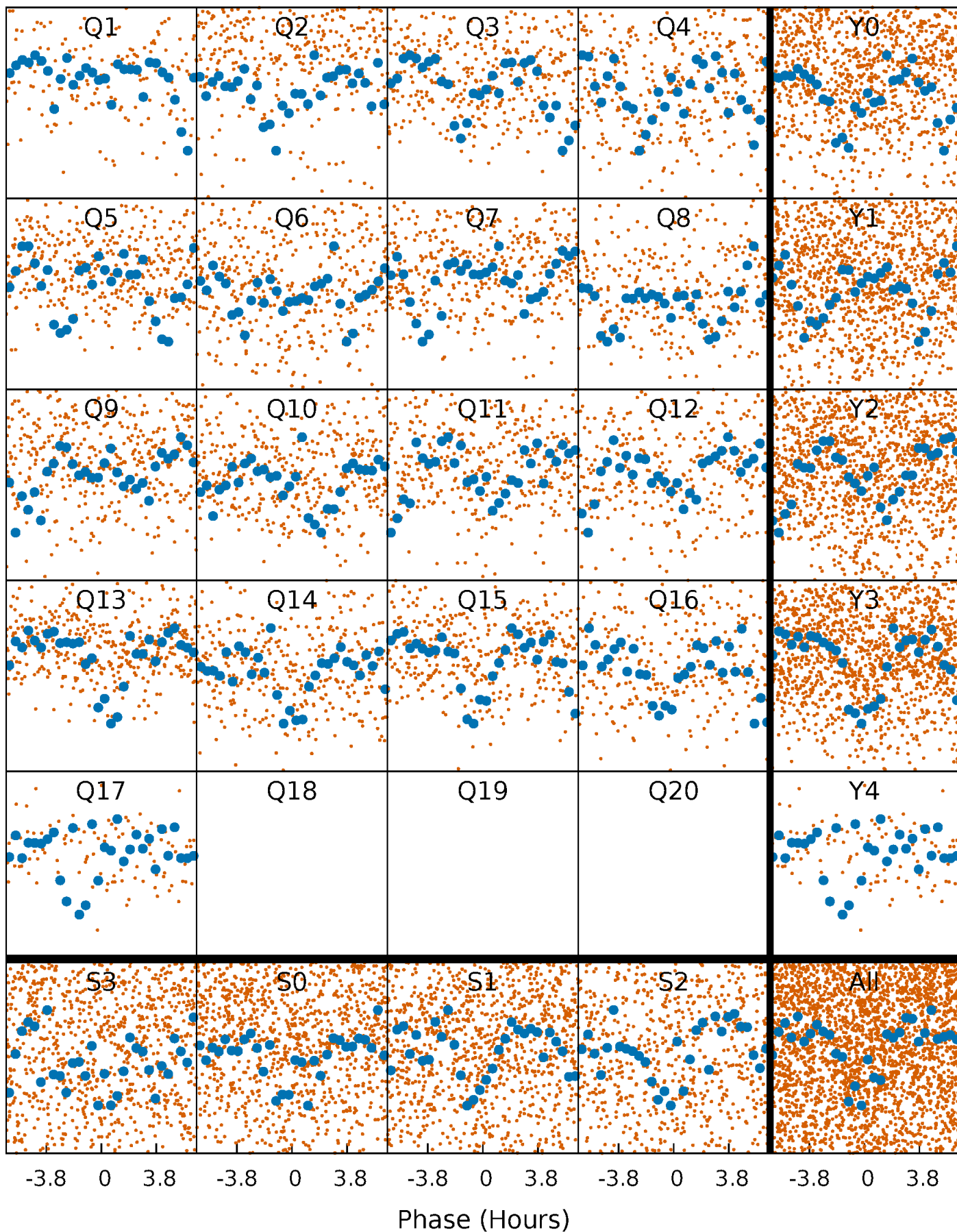


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



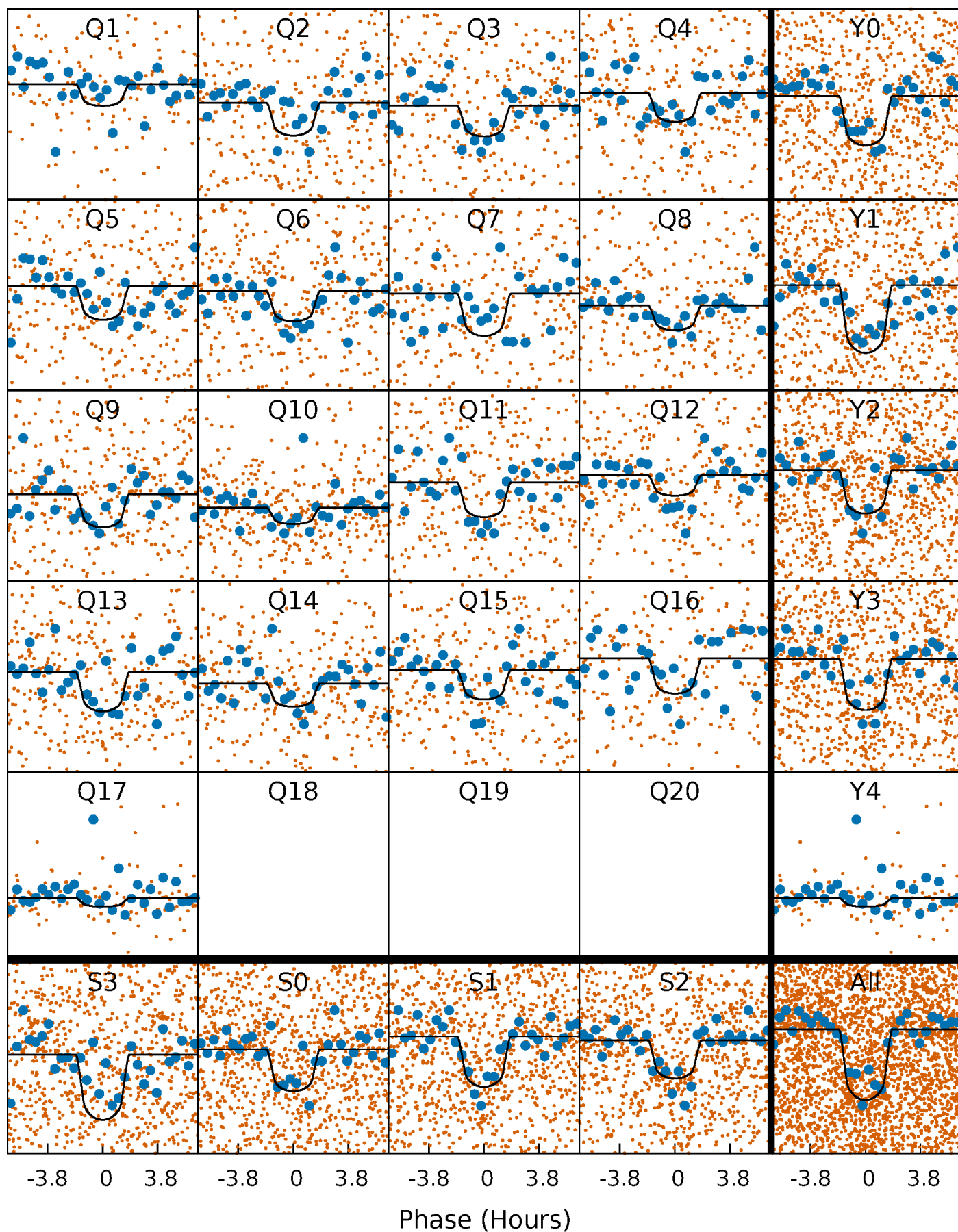
PDC Quarter-Phased Transit Curves

TCE 003937519-02 P= 5.896607 Days $T_0=134.033305$ (BKJD)



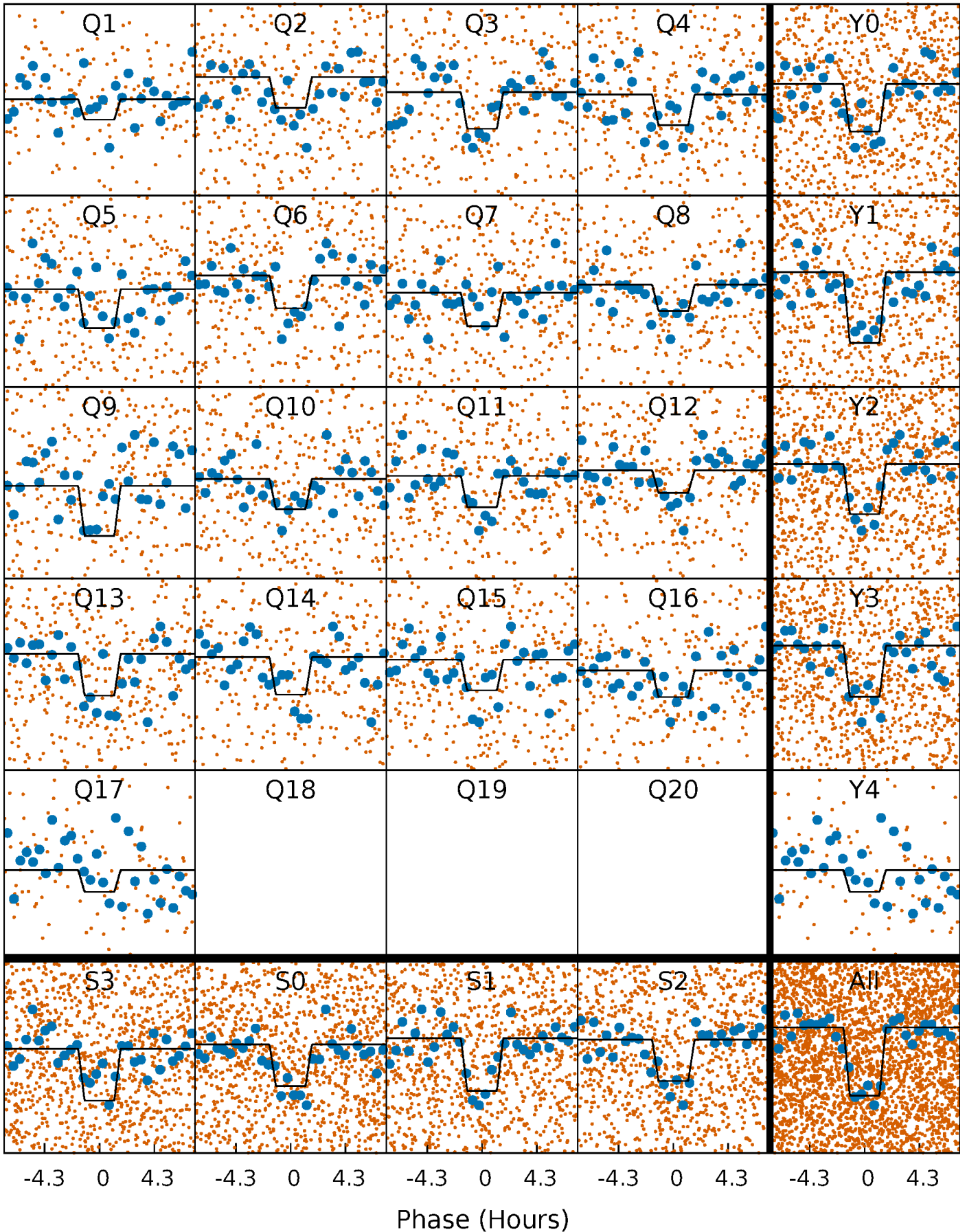
DV Quarter-Phased Transit Curves

TCE 003937519-02 P= 5.896607 Days $T_0=134.033305$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

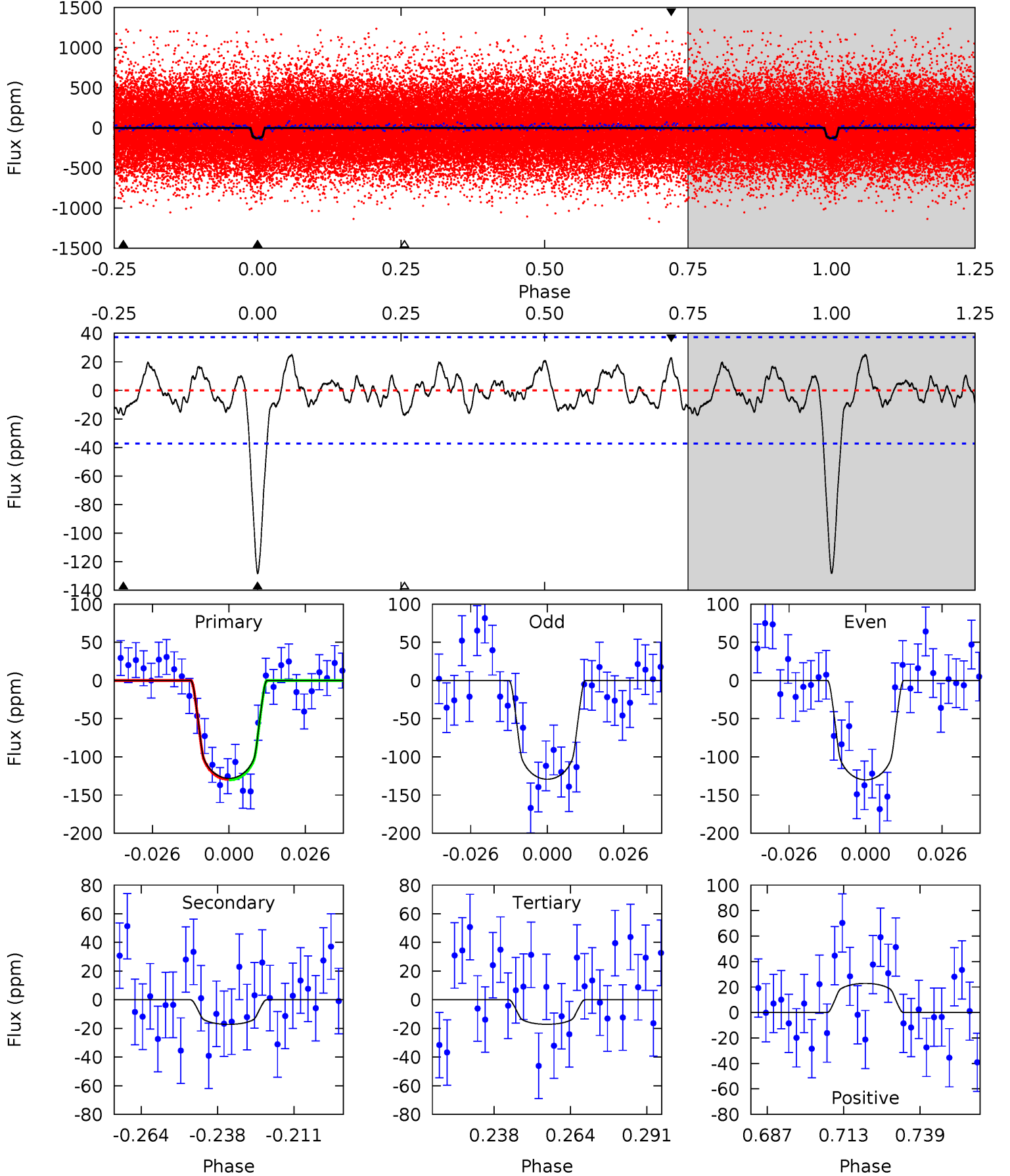
TCE 003937519-02 P= 5.896626 Days $T_0=134.030825$ (BKJD)



DV Model-Shift Uniqueness Test

003937519-02, P = 5.896607 Days, E = 128.136698 Days

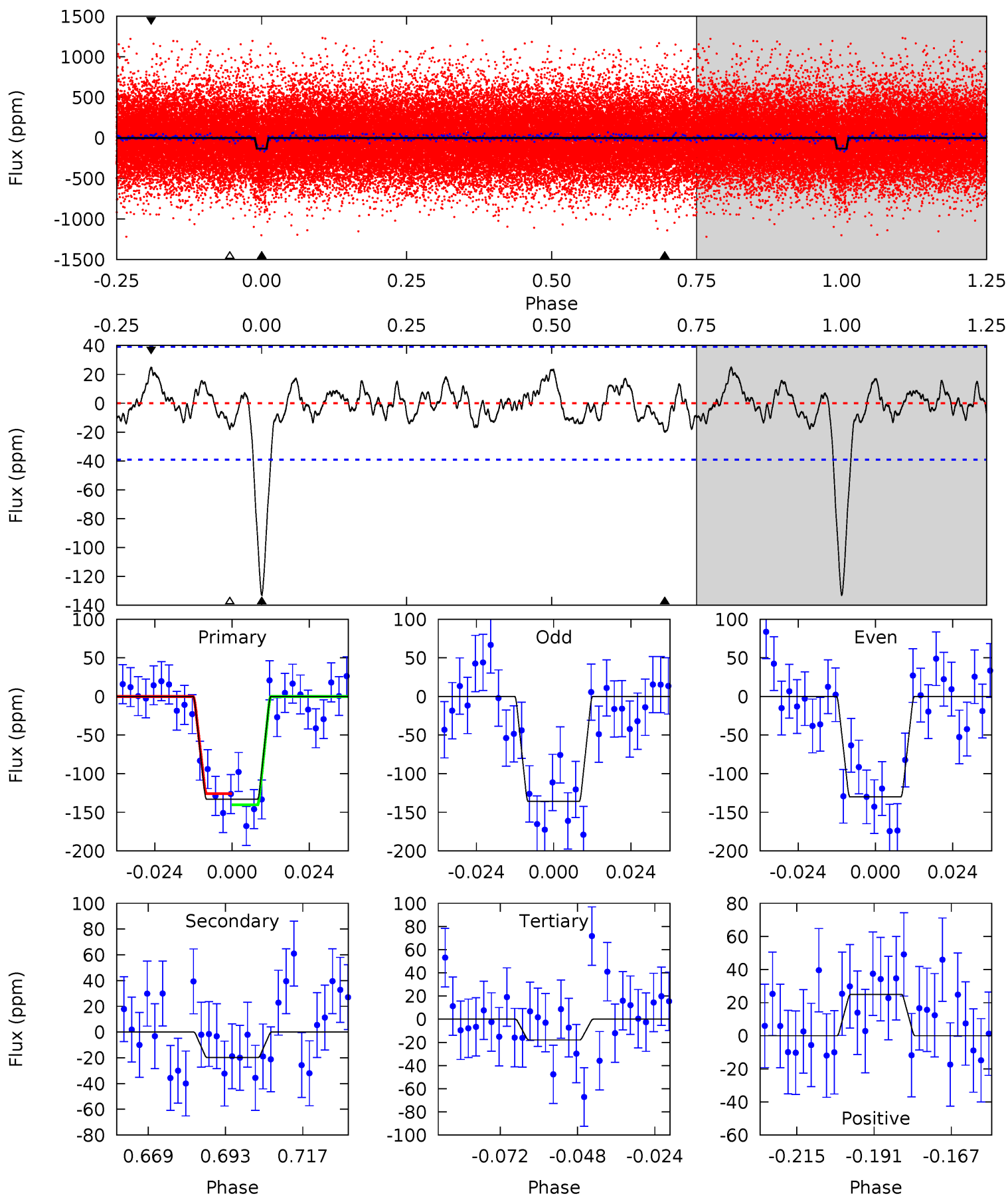
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
16.6	2.23	2.23	2.96	4.84	2.22	1.19	14.4	13.7	0.01	-0.73	0.05	0.89	0.16	0.05



Alt Model-Shift Uniqueness Test

003937519-02, P = 5.896626 Days, E = 128.134199 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
16.5	2.45	2.22	3.09	4.86	2.26	1.14	14.3	13.4	0.23	-0.64	0.38	0.95	0.16	0.89



Stellar Parameters For KIC 003937519

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5392^{+80}_{-72}	$4.314^{+0.165}_{-0.150}$	$0.180^{+0.150}_{-0.100}$	$1.087^{+0.224}_{-0.184}$	$0.888^{+0.061}_{-0.035}$	$0.973^{+0.675}_{-0.398}$
	+1%/-1%	+4%/-3%	+83%/-56%	+21%/-17%	+7%/-4%	+69%/-41%
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 003937519-02 / KOI 0221.02

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-17 ± 8	$1.52^{+0.81}_{-0.75}$	1394^{+79}_{-71}	3476^{+906}_{-490}	15^{+42}_{-9}
Alt.	-20 ± 8	$1.44^{+0.74}_{-0.73}$	1397^{+81}_{-78}	3639^{+1066}_{-536}	19^{+61}_{-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 $A_{obs} \gg 1.0$

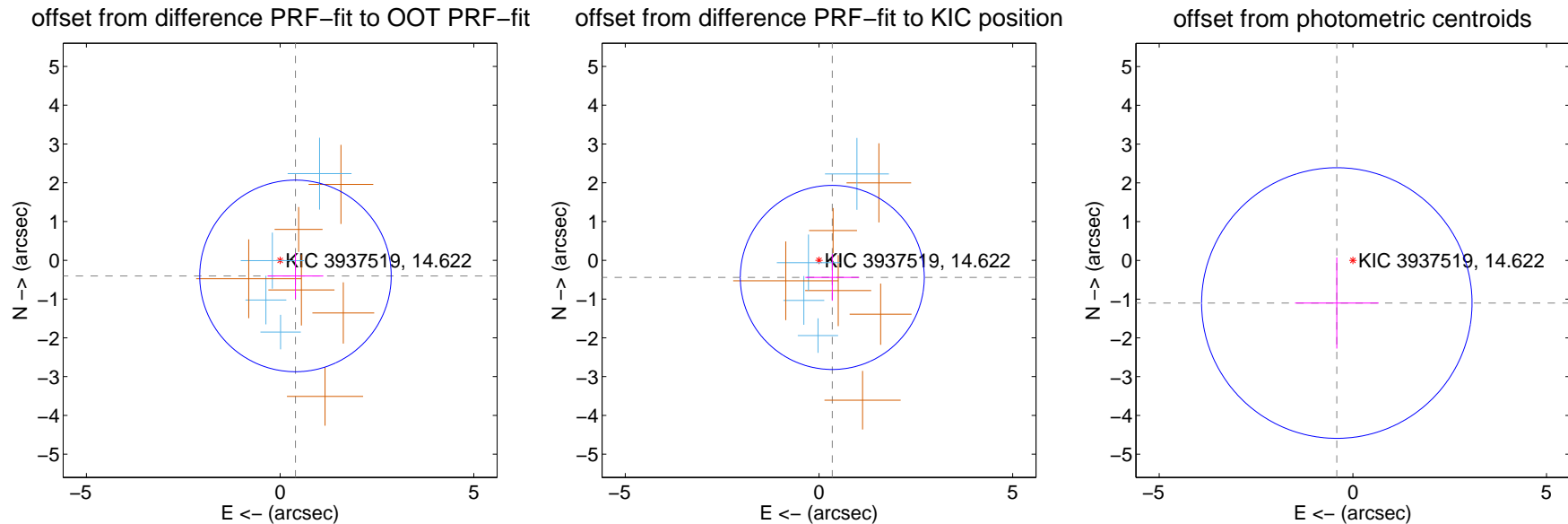
DV Centroid Data

Supplemental centroid analysis for 003937519-02. Kepler magnitude: 14.62. Transit SNR 13.49

There are 4 quarters with good PRF difference image offsets

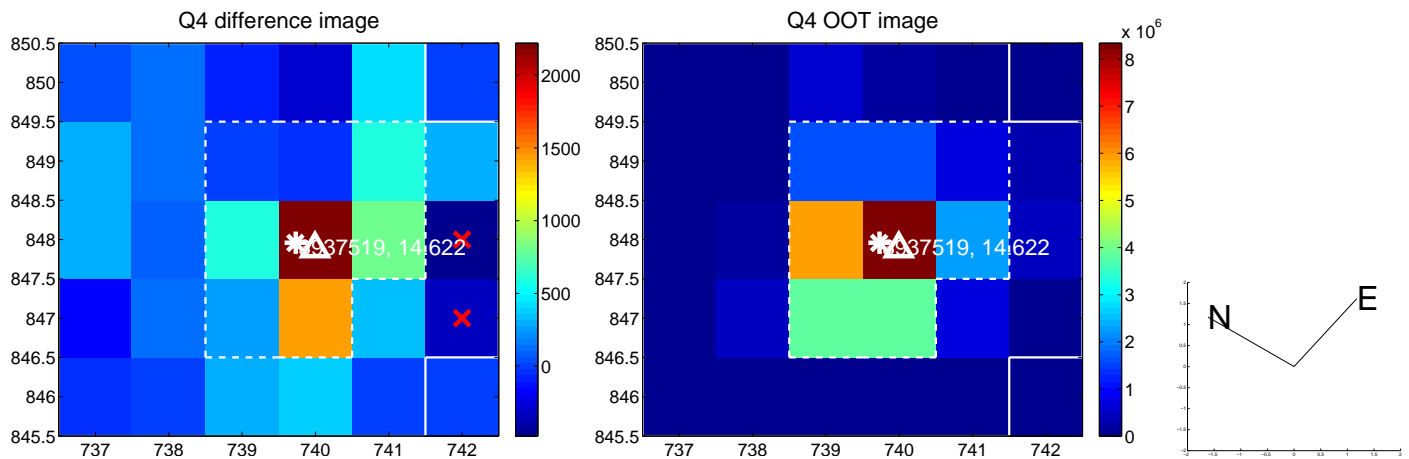
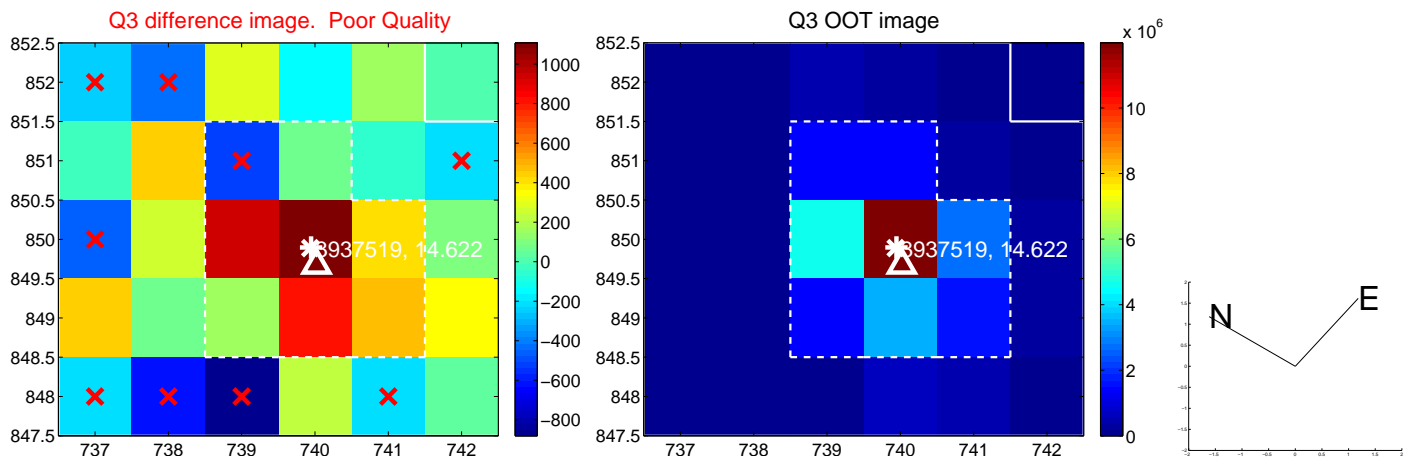
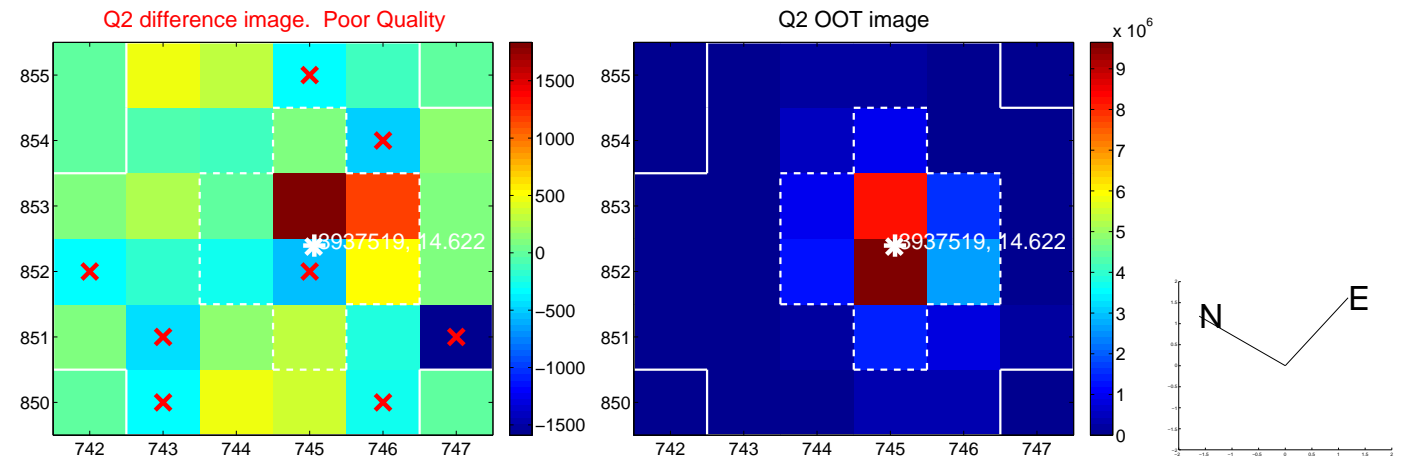
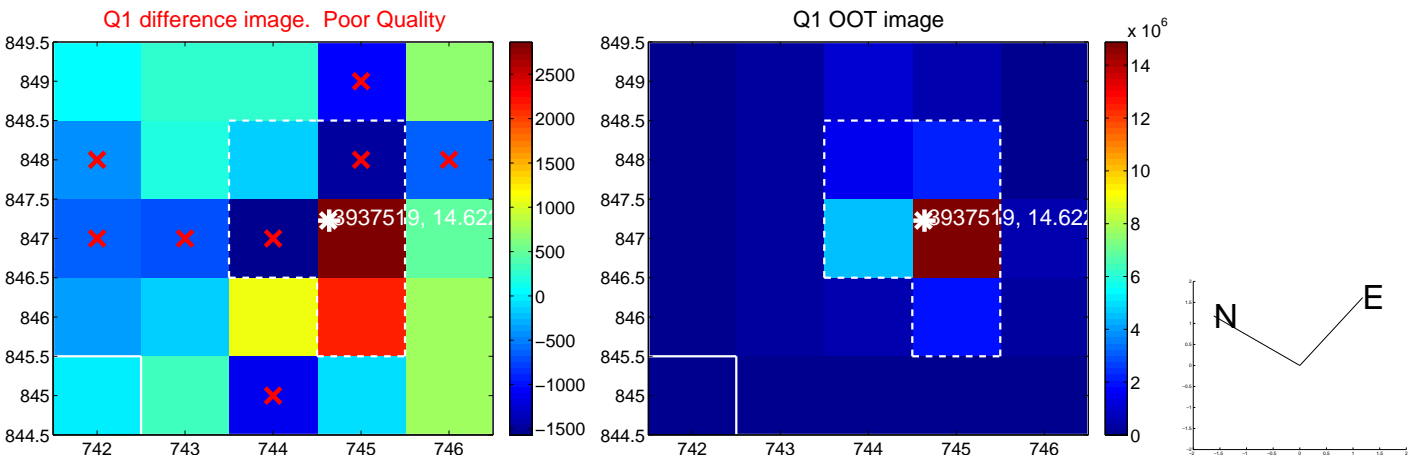
The direct PRF centroid is offset from the target star catalog position by about 0.04 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.565 ± 0.824	0.69	-0.396 ± 0.719	-0.403 ± 0.590
PRF-fit source offset from KIC position	0.559 ± 0.791	0.71	-0.343 ± 0.695	-0.442 ± 0.602
photometric centroid source offset	1.18 ± 1.16	1.01	0.41 ± 1.08	-1.10 ± 1.18

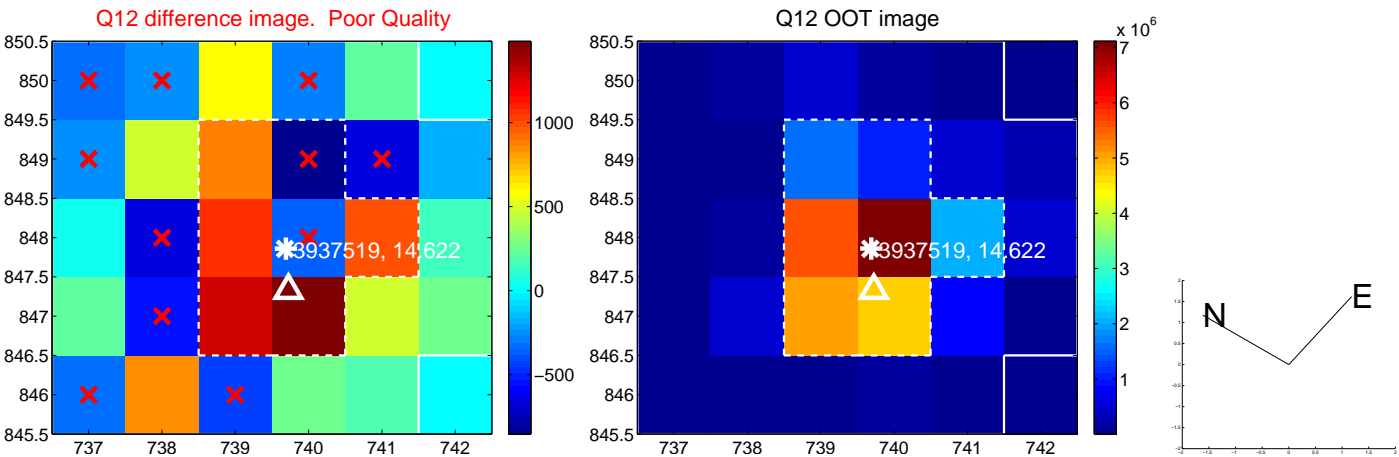
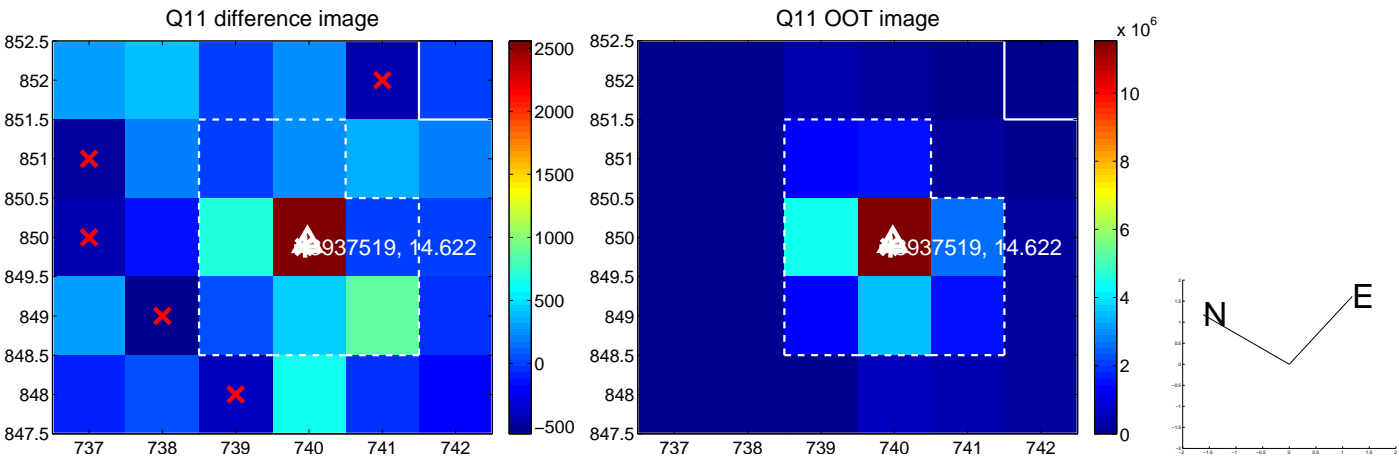
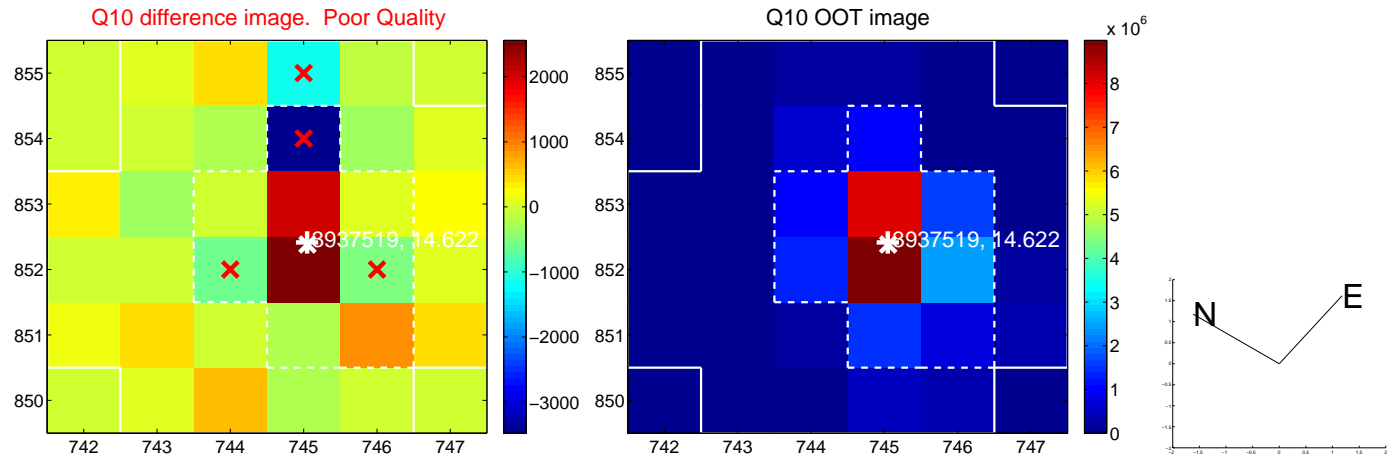
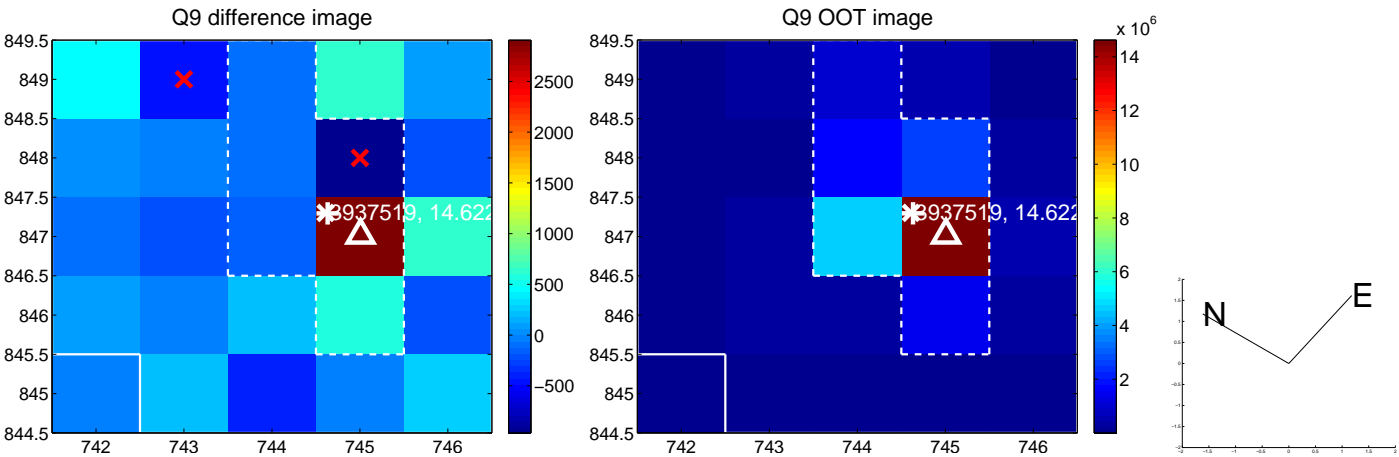


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

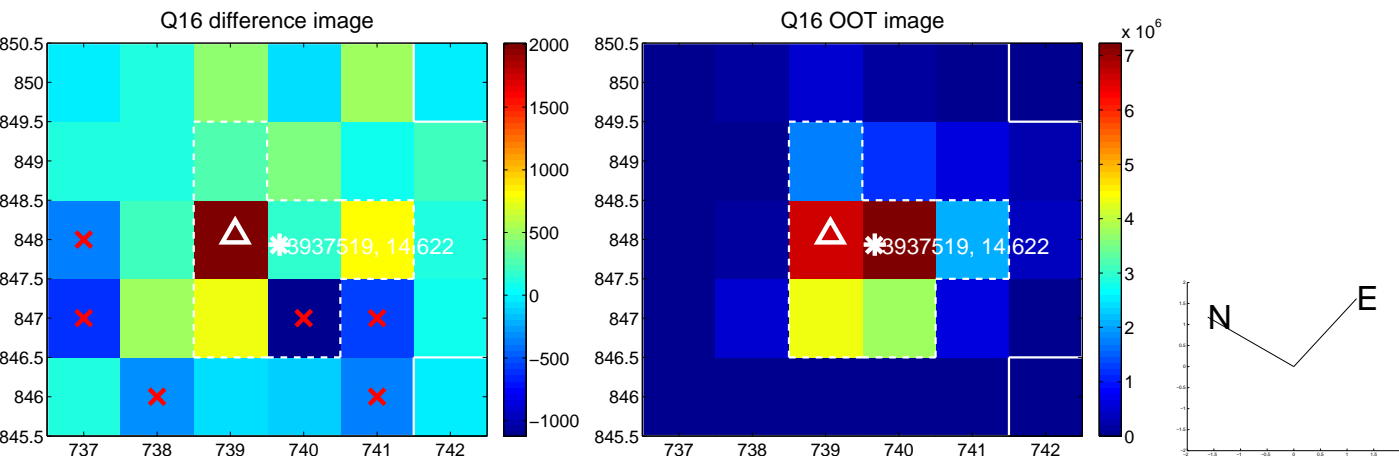
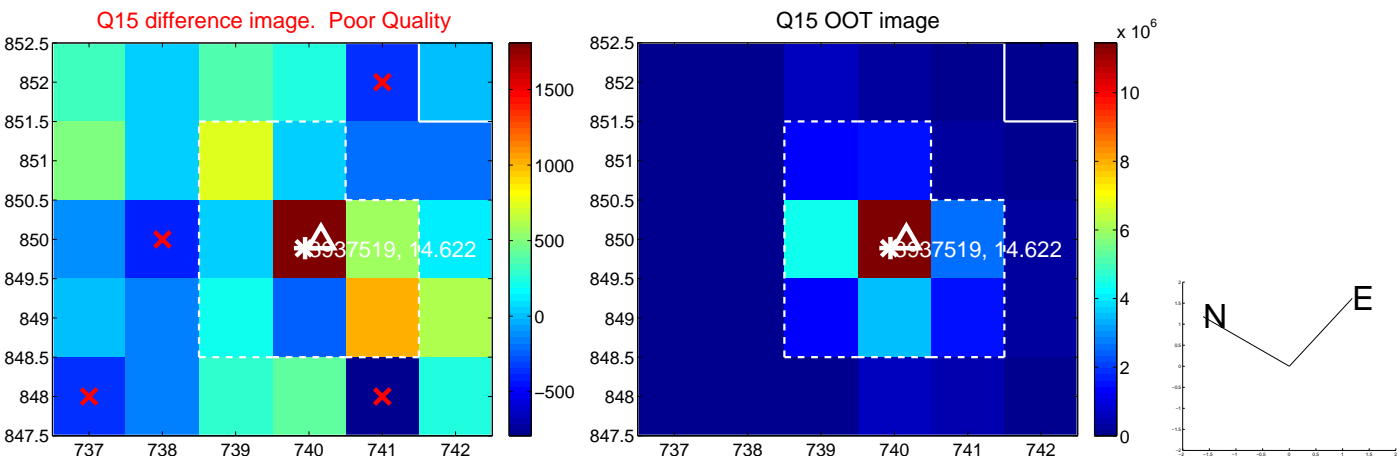
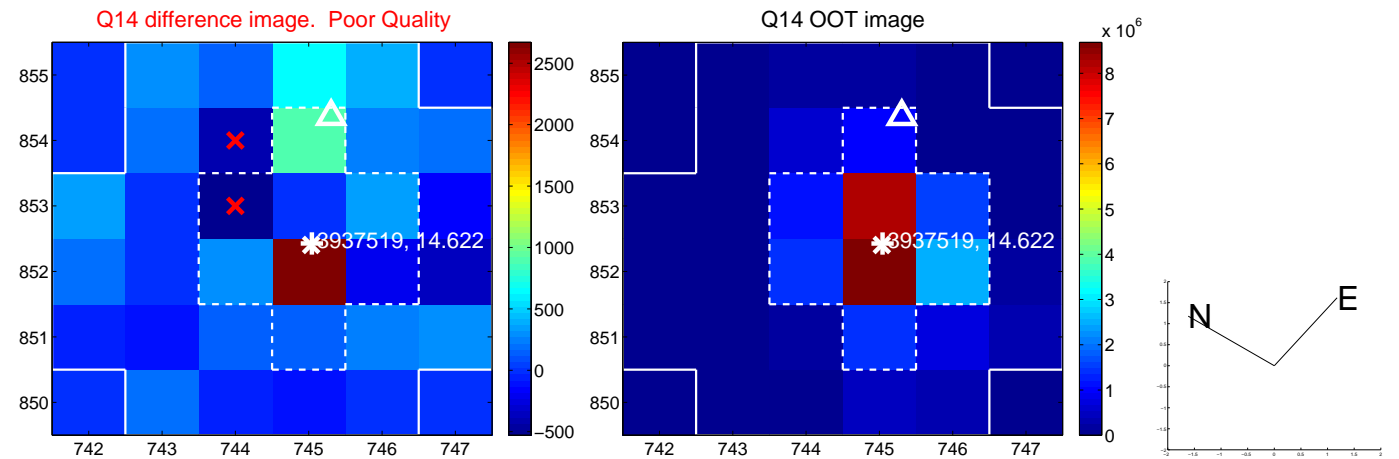
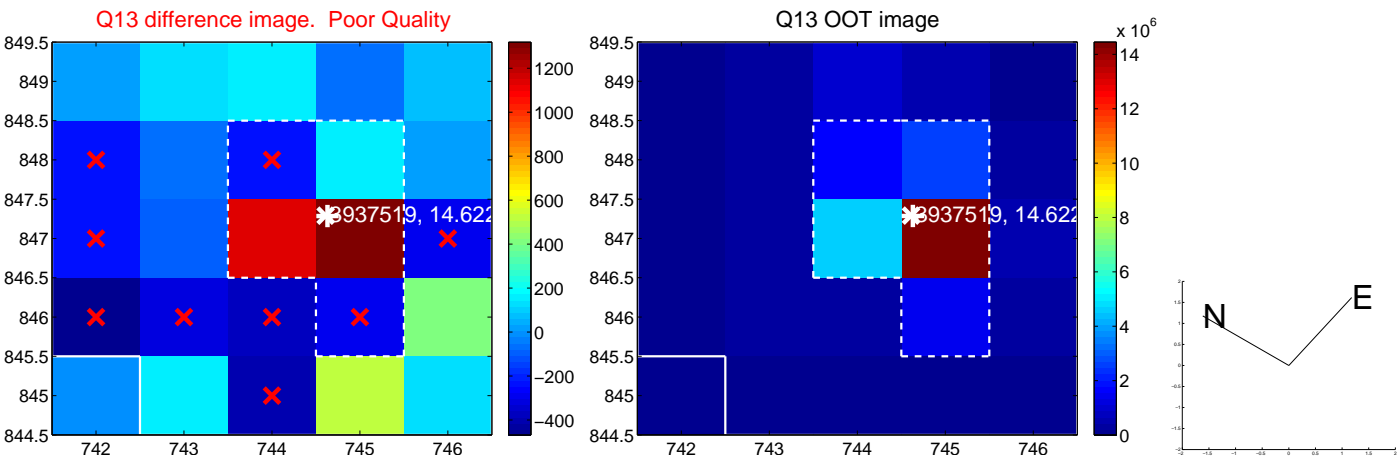
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



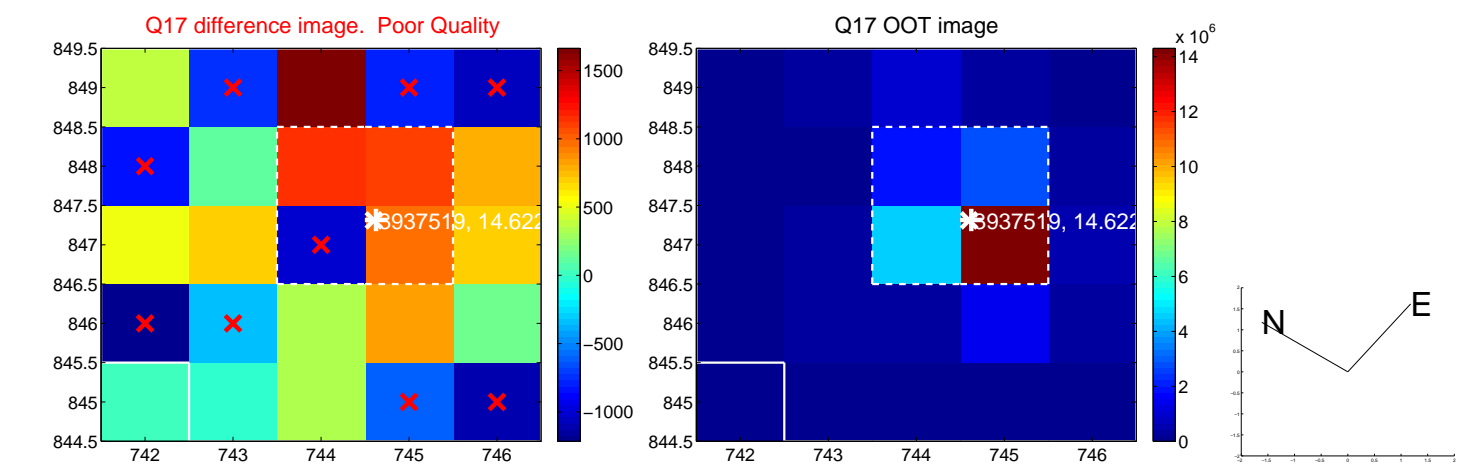
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



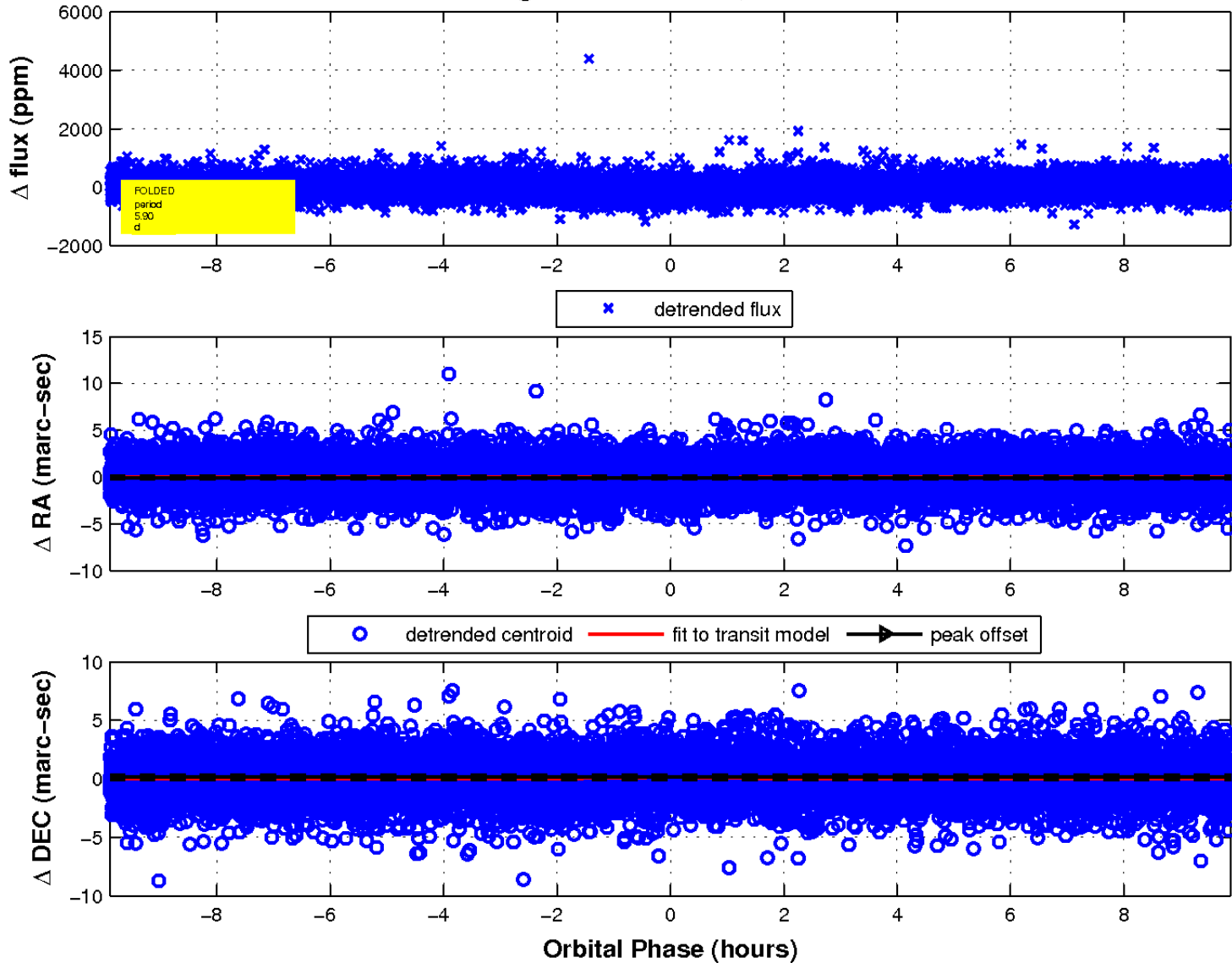
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 2 of 2



UKIRT Image

Declination

