

KIC 009009514

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})
009009514-01	OBS	No	1.210886	132.431503	0.1	6.526	8.9	0.0	0.67	4569	0.02	468.09
009009514-02	OBS	No	108.440422	147.249593	1688.6	5.973	7.7	7.6	0.67	4569	2.80	1.17

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009009514-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV
009009514-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT

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

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

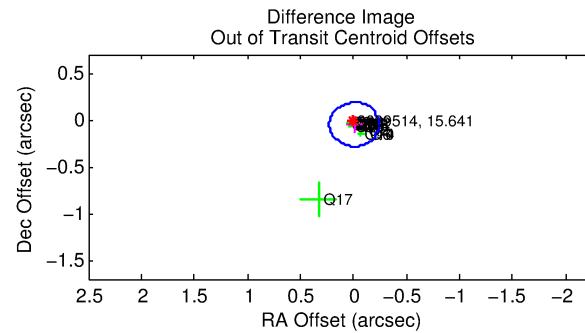
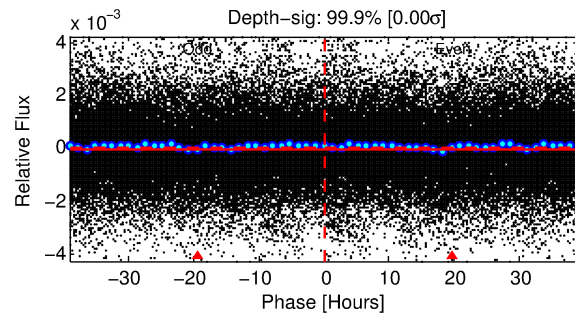
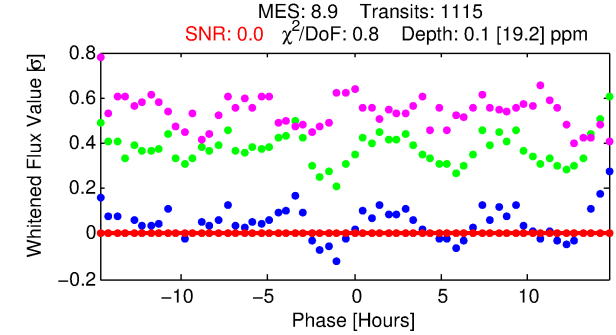
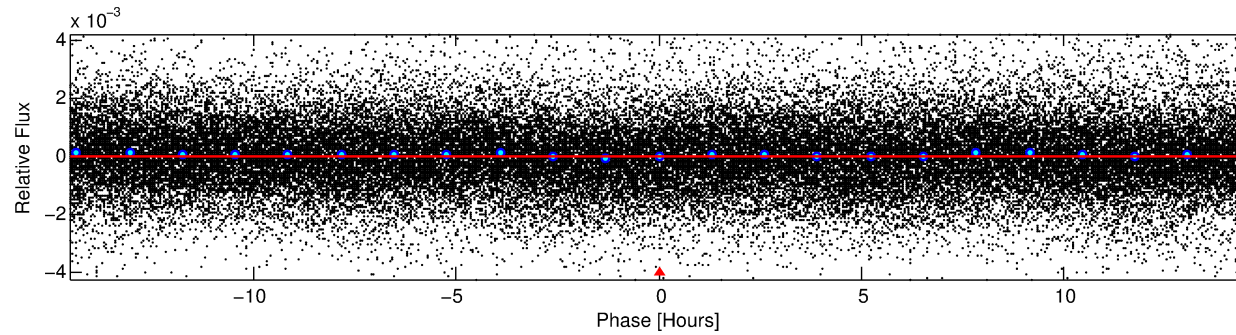
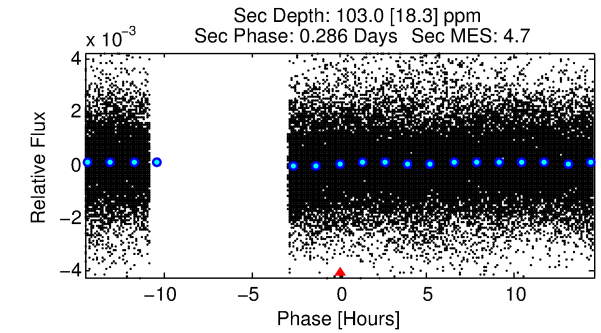
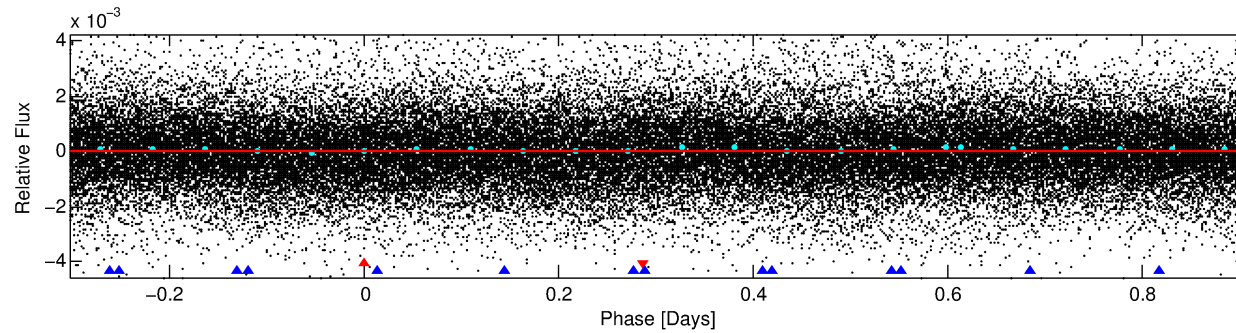
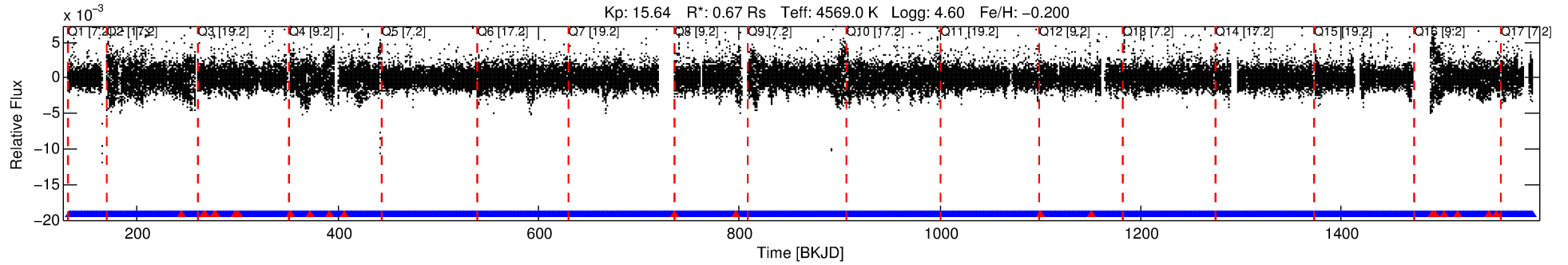
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009009514-01

No Significant Match Found

DV One-Page Summary

KIC: 9009514 Candidate: 1 of 2 Period: 1.211 d



DV Fit Results:

Period = 1.21089 [0.04017] d
Epoch = 132.4315 [9.8957] BKJD
Rp/R* = 0.0002 [0.0430]
a/R* = 1.26 [40.80]
b = 0.76 [54.35]
Seff = 468.09 [76.44]
Teff = 1186 [48] K
Rp = 0.02 [3.14] Re
a = 0.0193 [0.0015] AU
Ag = 75583.27 [28372963.89] [0.00σ]
Teffp = 30406 [2853630] K [0.01σ]

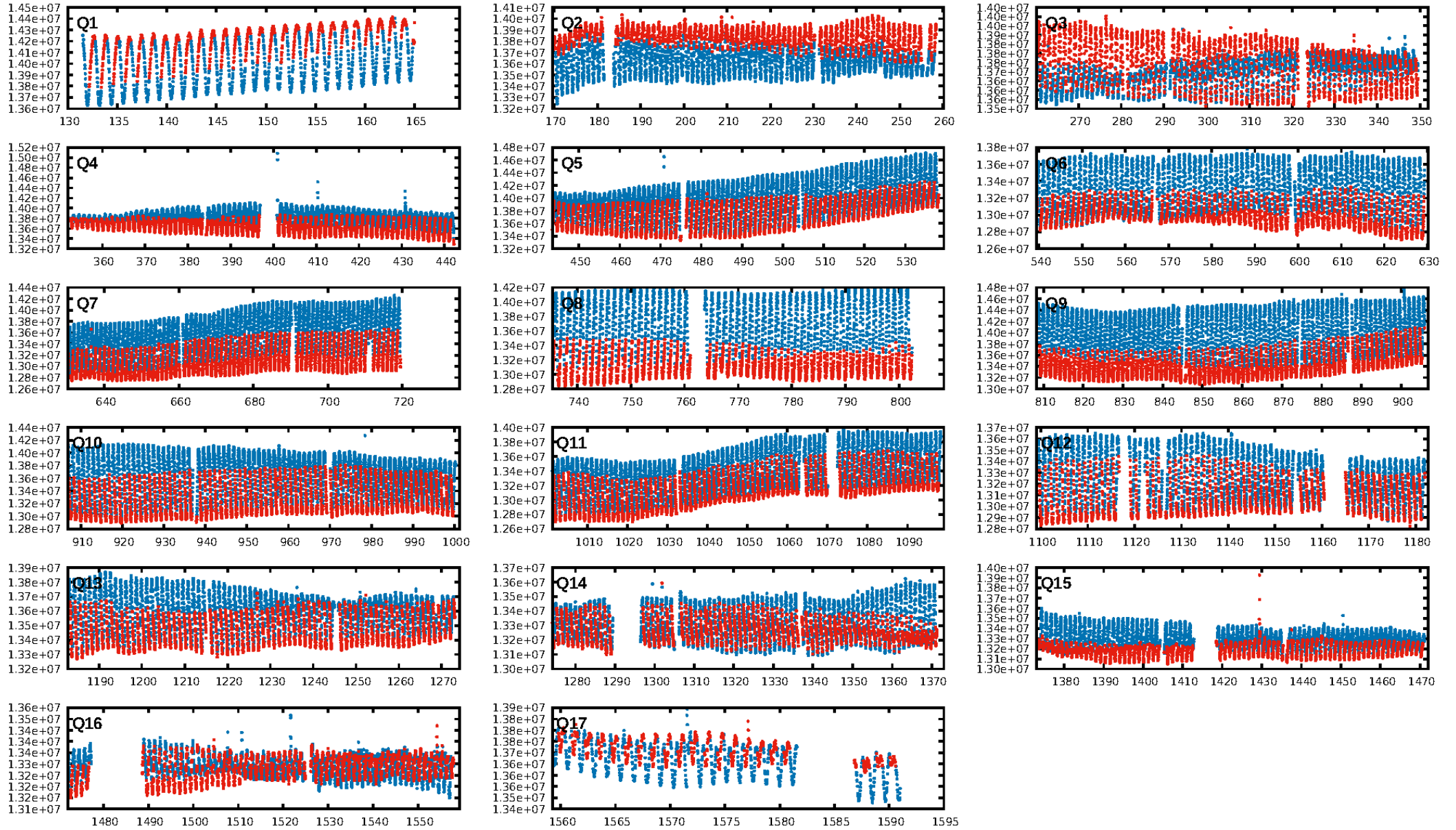
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [290.90σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 2.06e-13
RollingBand-fgt: 0.98 [1044/1065]
GhostDiagnostic-chr: N/A
Centroid-sig: N/A
Centroid-so: N/A
OotOffset-rm: 0.050 arcsec [0.64σ]
KicOffset-rm: 0.073 arcsec [1.09σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 0.76 [13/17]
DiffImageOverlap-fno: 1.00 [17/17]

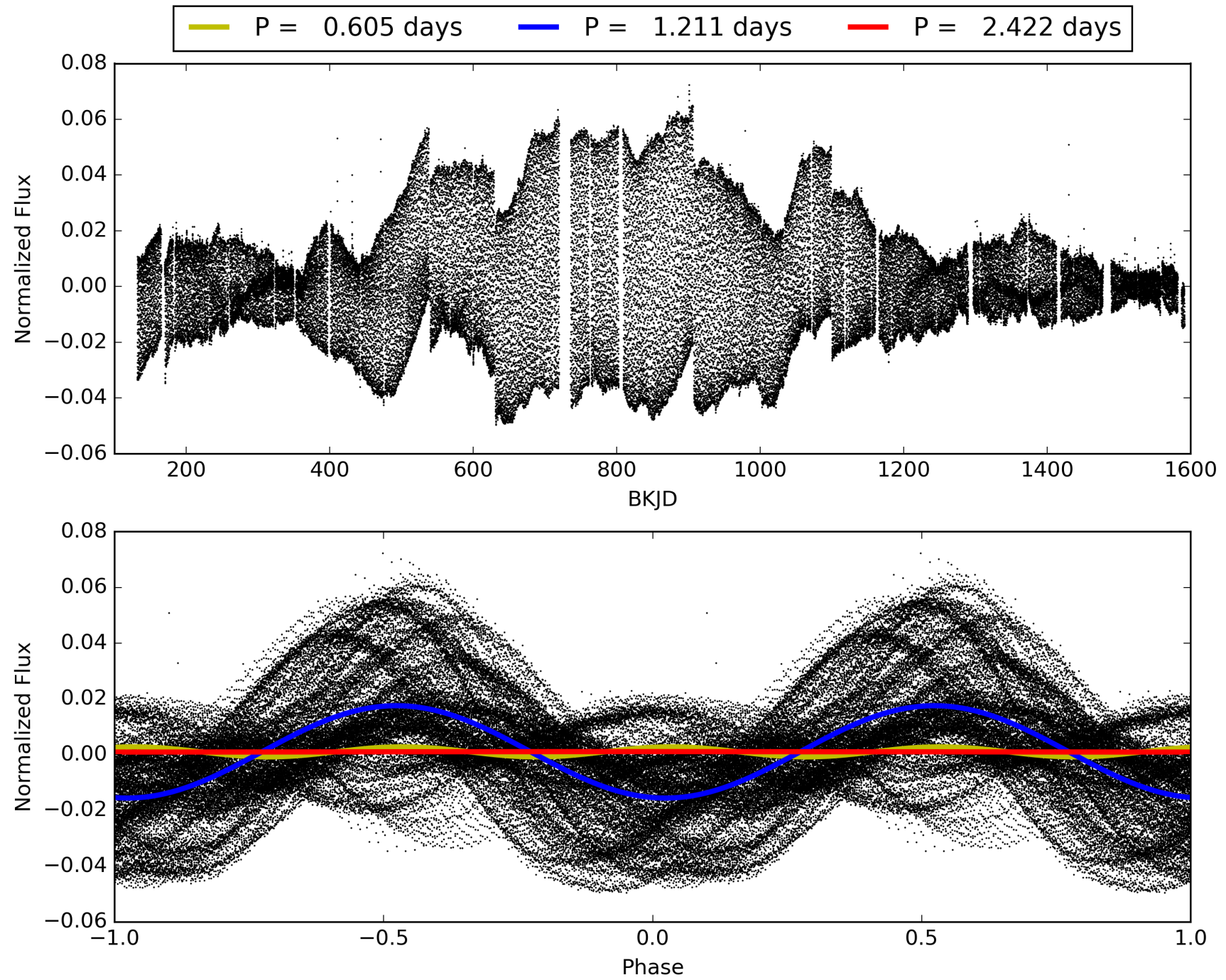
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 06:01:33 Z

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

TCE 009009514-01, PDC Light Curves

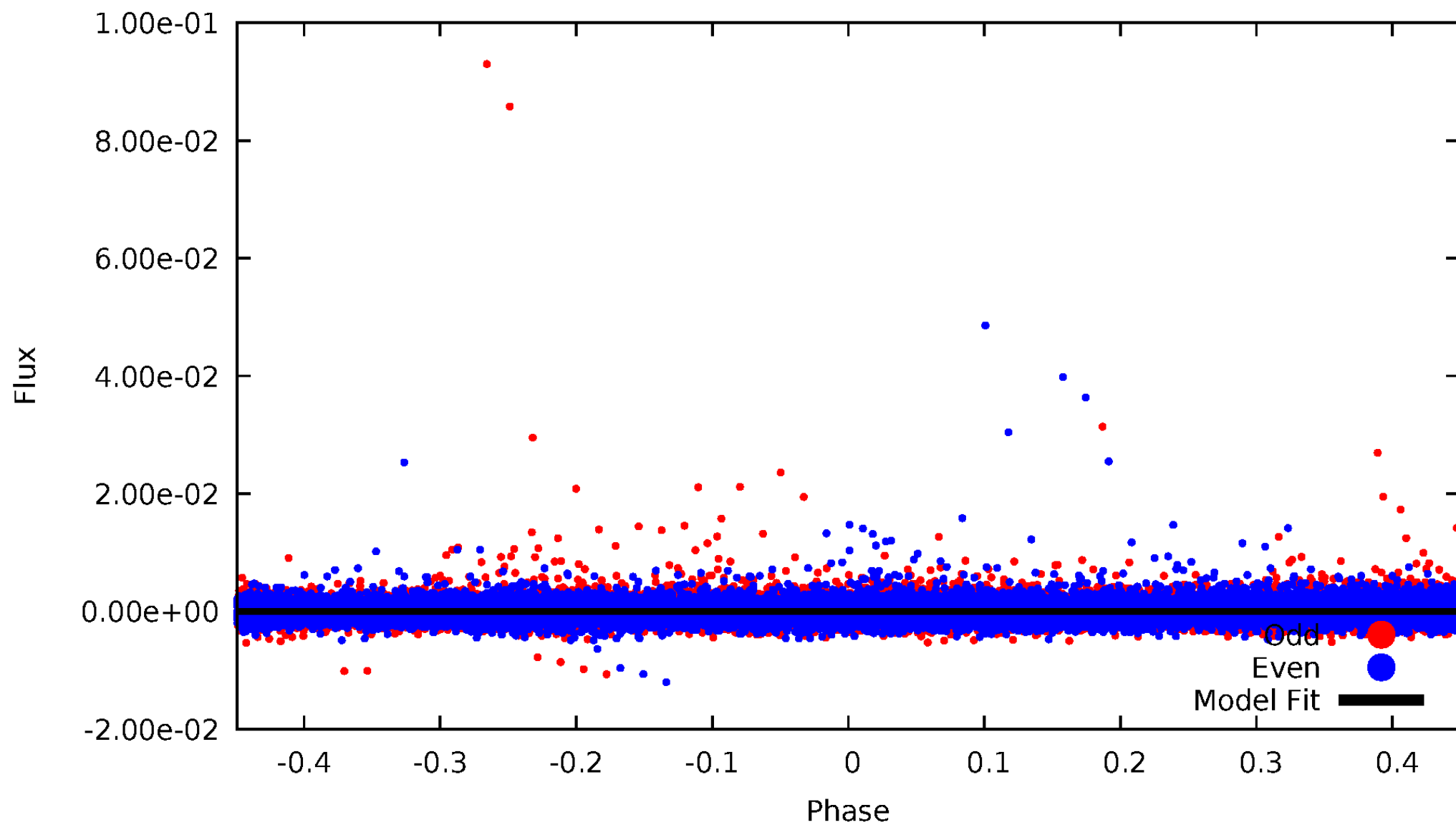


TCE 009009514-01



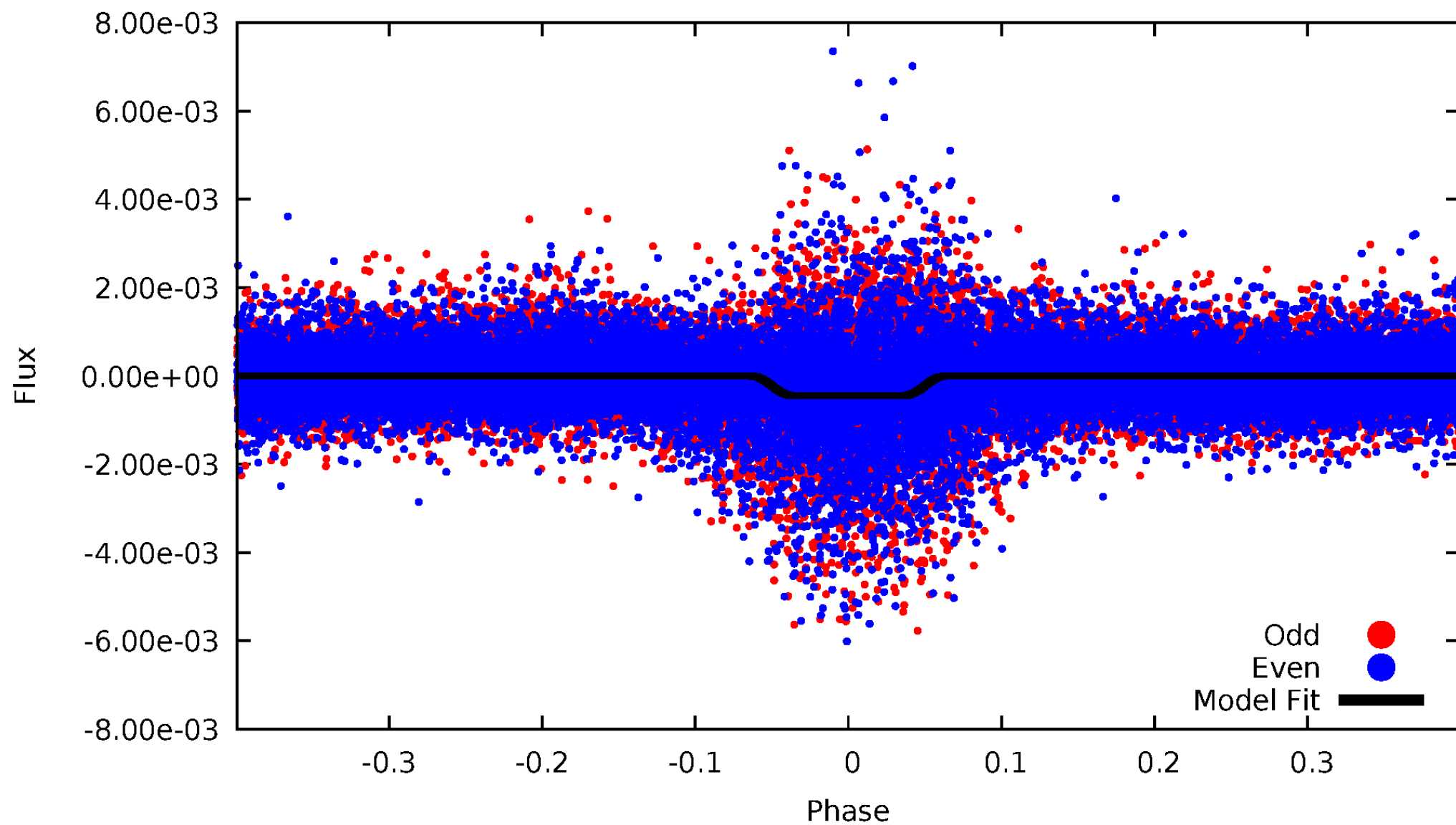
DV Odd/Even

TCE 009009514-01



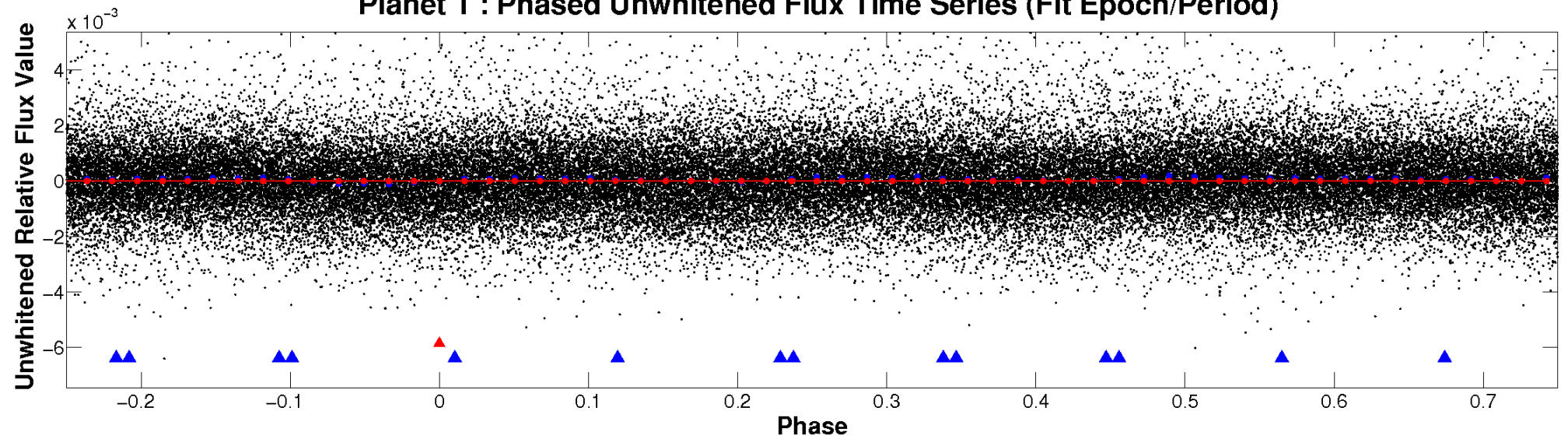
ALT Odd/Even

TCE 009009514-01

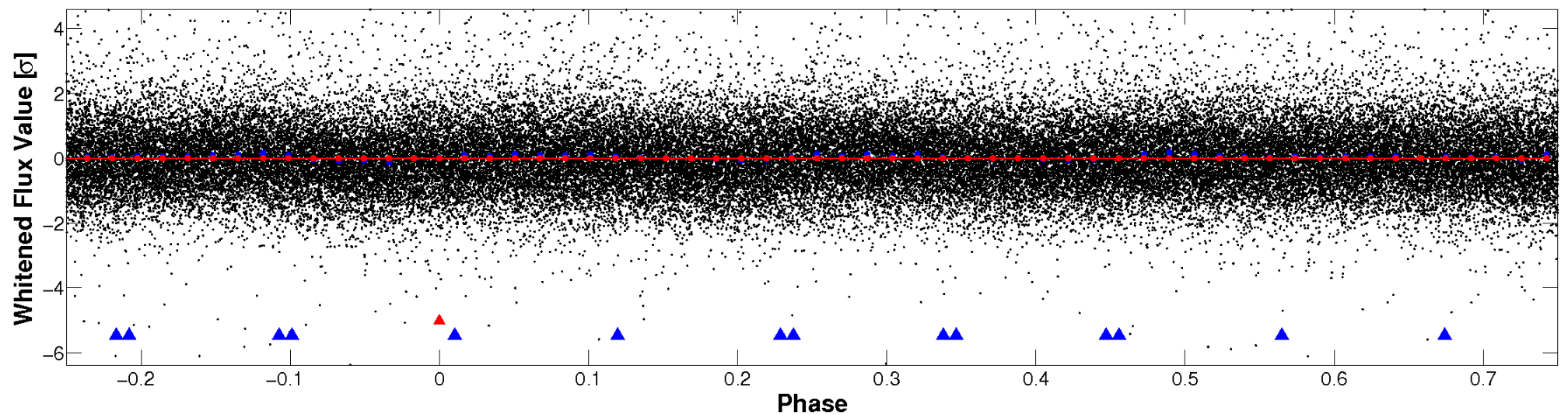


Non-Whitened Vs. Whitened Light Curve

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

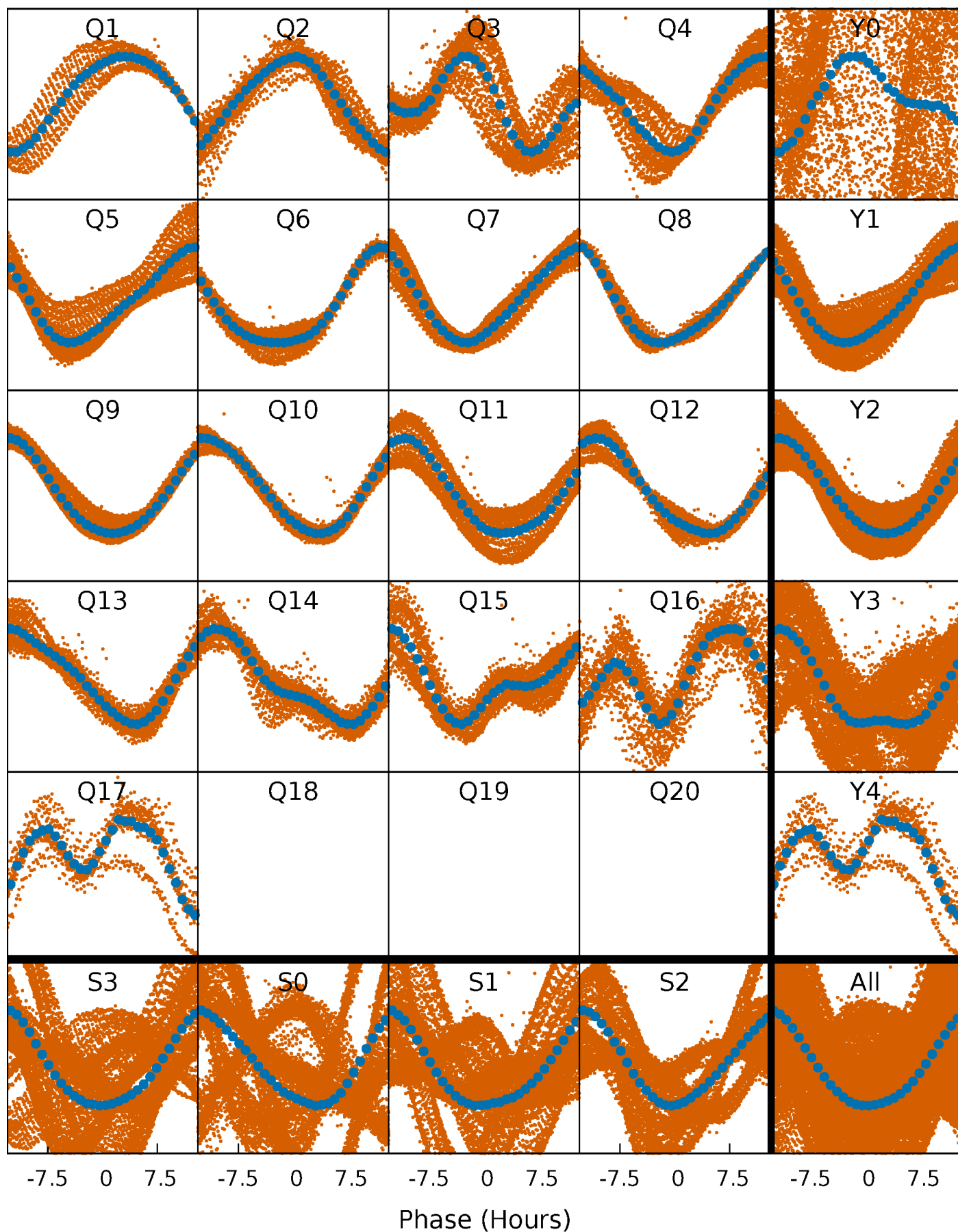


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



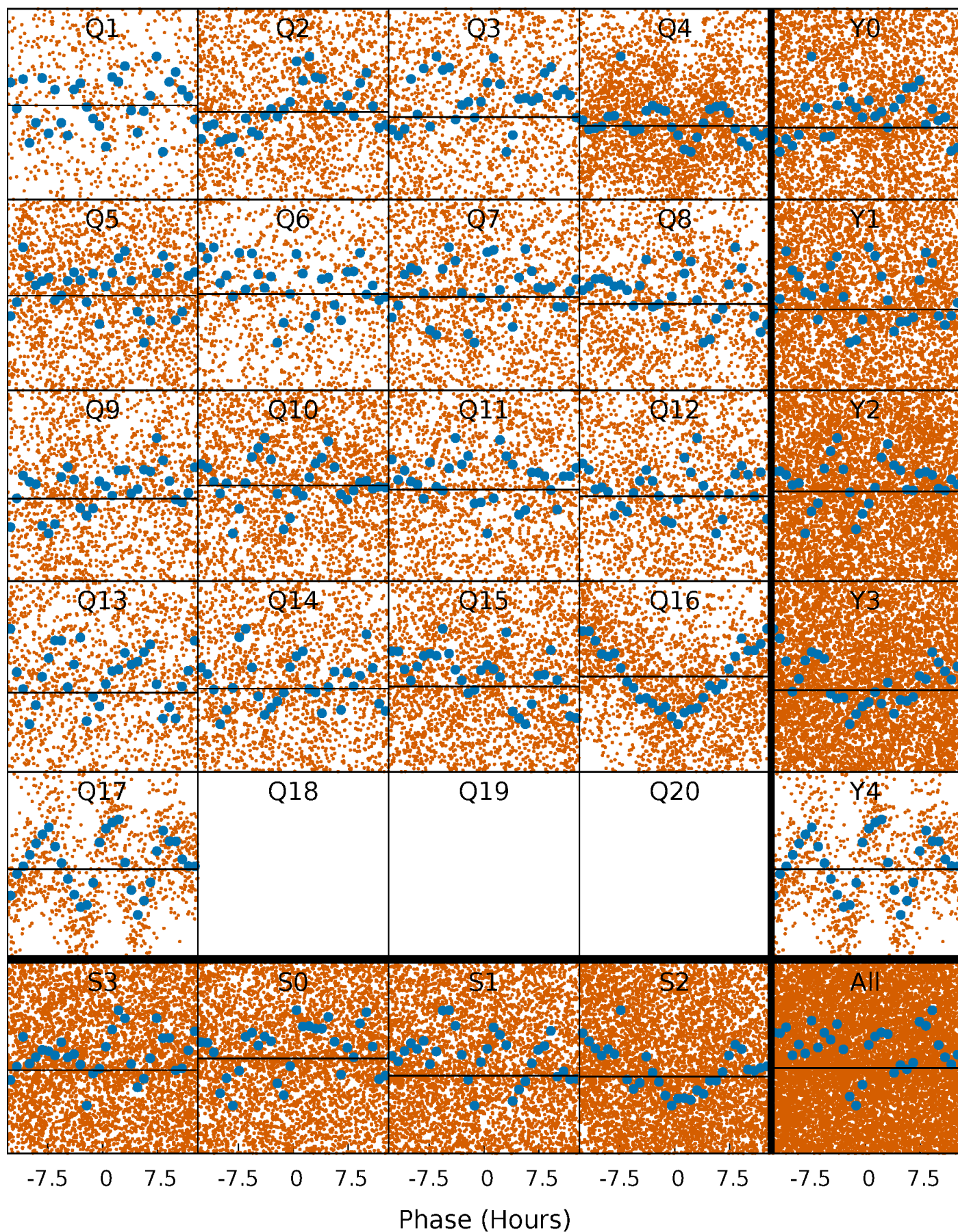
PDC Quarter-Phased Transit Curves

TCE 009009514-01 P= 1.210886 Days $T_0=132.431503$ (BKJD)



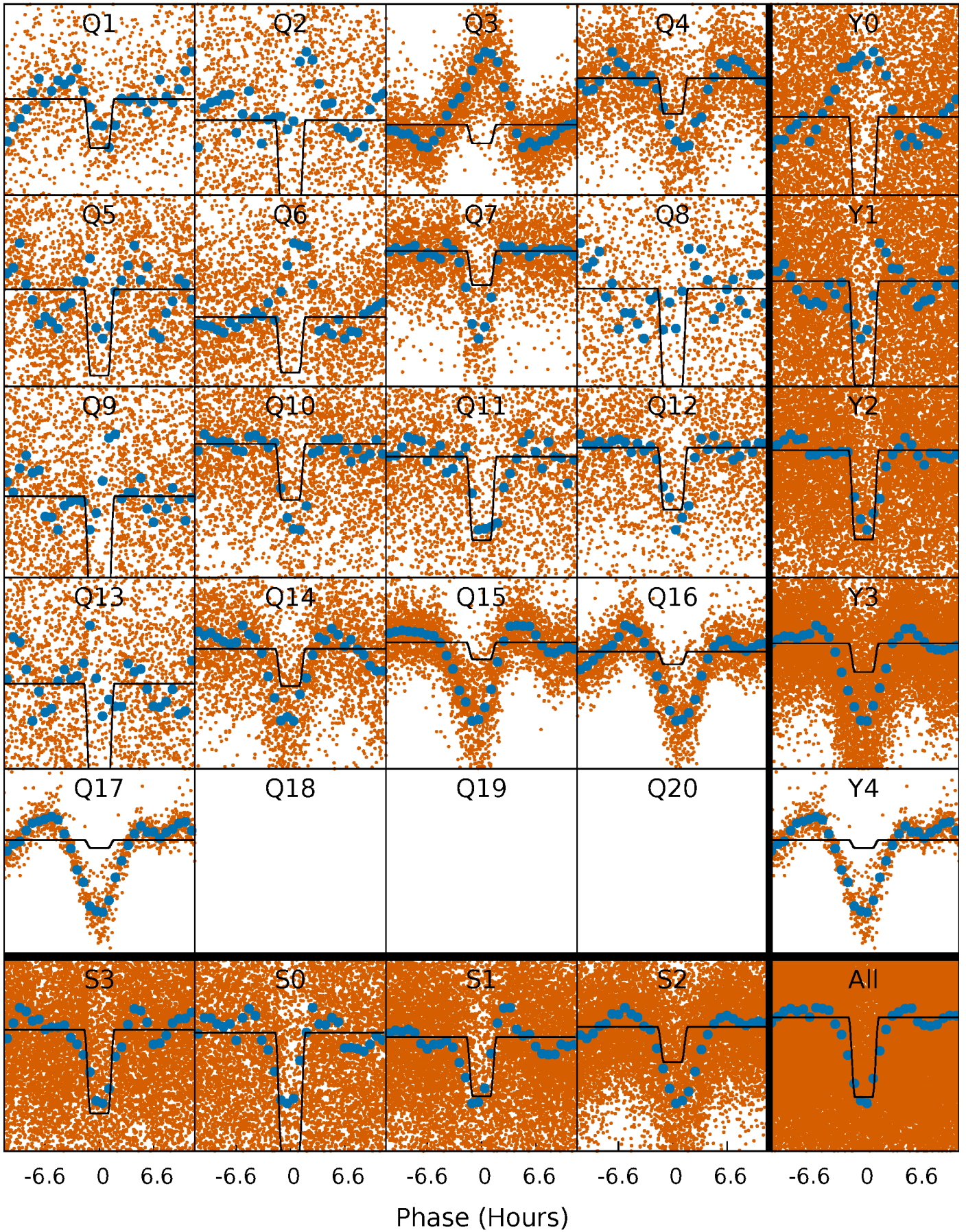
DV Quarter-Phased Transit Curves

TCE 009009514-01 P= 1.210886 Days $T_0=132.431503$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

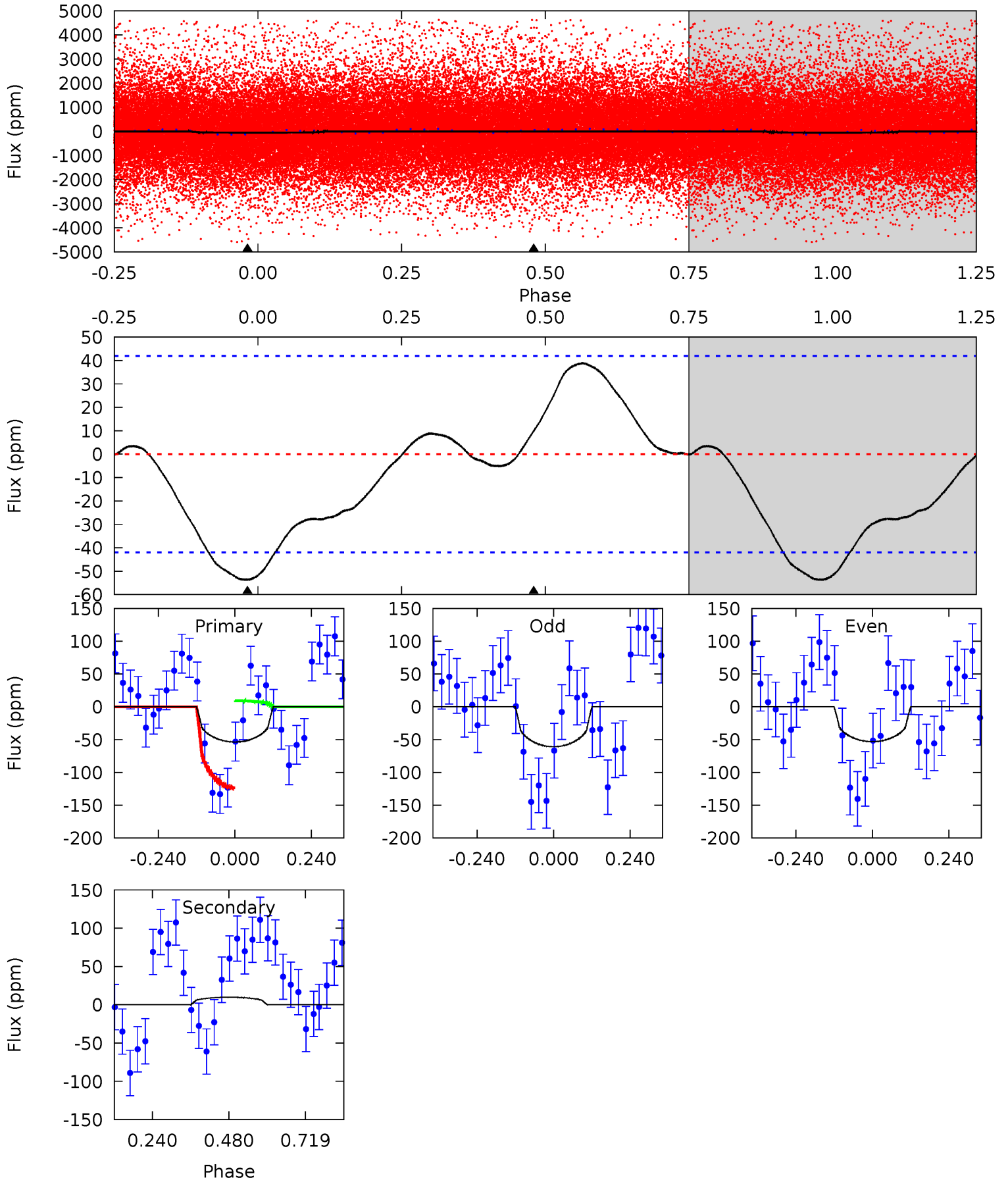
TCE 009009514-01 P= 1.210833 Days $T_0=132.391747$ (BKJD)



DV Model-Shift Uniqueness Test

009009514-01, P = 1.210886 Days, E = 131.220617 Days

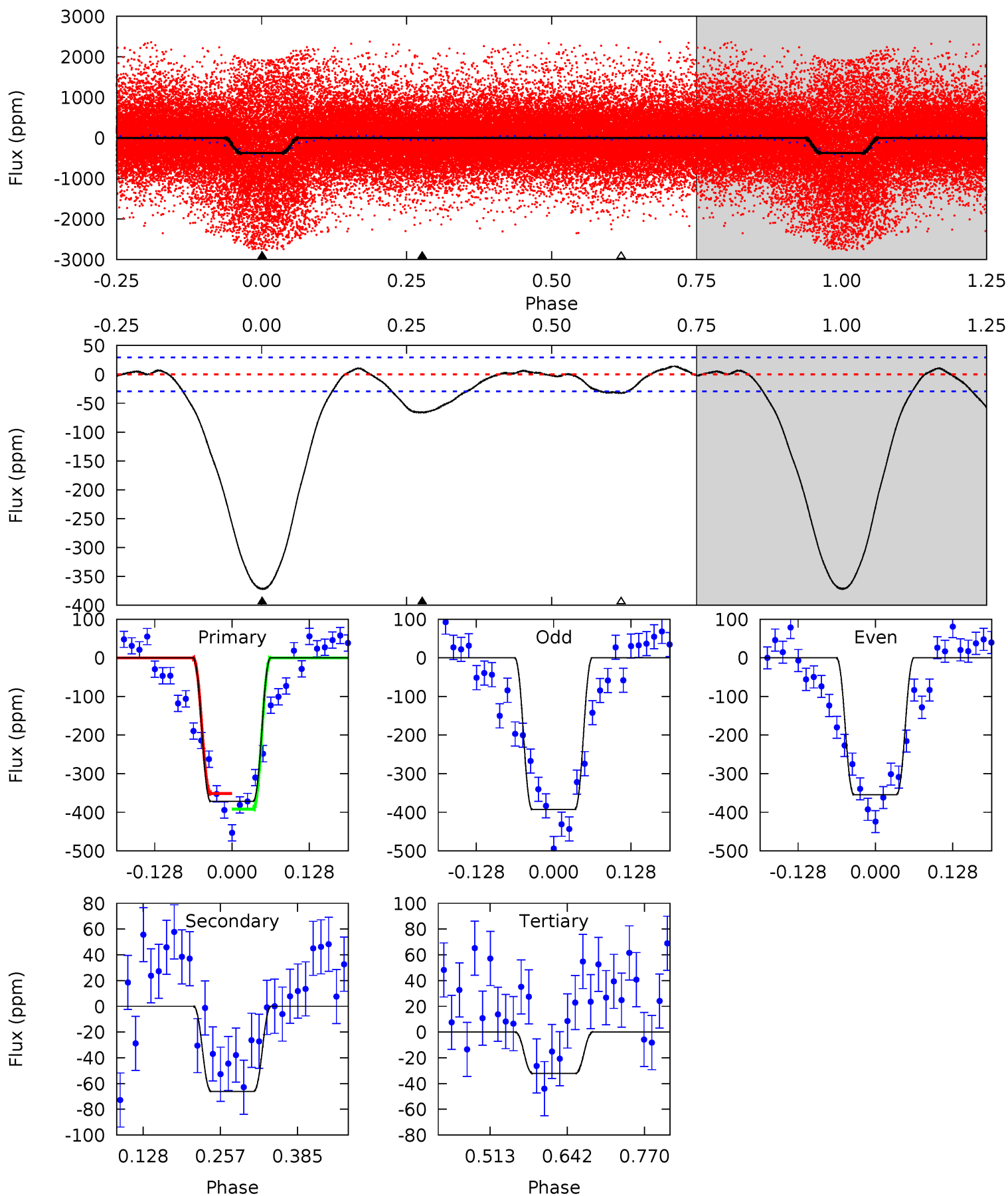
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.60	-1.03	0	0	4.38	1.18	0.41	5.60	5.60	-1.03	-1.03	0.41	0.33	0.42	5.98



Alt Model-Shift Uniqueness Test

009009514-01, P = 1.210833 Days, E = 131.180914 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
57.1	10.1	4.94	0	4.51	1.52	2.06	52.1	57.1	5.20	10.1	2.95	1.21	0.04	3.10



Stellar Parameters For KIC 009009514

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (g \cdot \text{cm}^{-3})$
	4569^{+137}_{-137}	$4.604^{+0.054}_{-0.027}$	$-0.200^{+0.300}_{-0.300}$	$0.669^{+0.048}_{-0.059}$	$0.655^{+0.073}_{-0.049}$	$3.086^{+0.710}_{-0.351}$
	+3%/-3%	+1%/-1%	+150%/-150%	+7%/-9%	+11%/-7%	+23%/-11%
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 009009514-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	10 ± 10	$2.06^{+2.48}_{-1.44}$	1642^{+61}_{-52}	-2437^{+219}_{-703}	$-0.313^{+0.315}_{-3.828}$
Alt.	-66 ± 7	$2.91^{+2.51}_{-1.99}$	1650^{+61}_{-61}	2666^{+1214}_{-590}	$1.624^{+14.154}_{-1.181}$

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 $A_{obs} \gg 1.0$

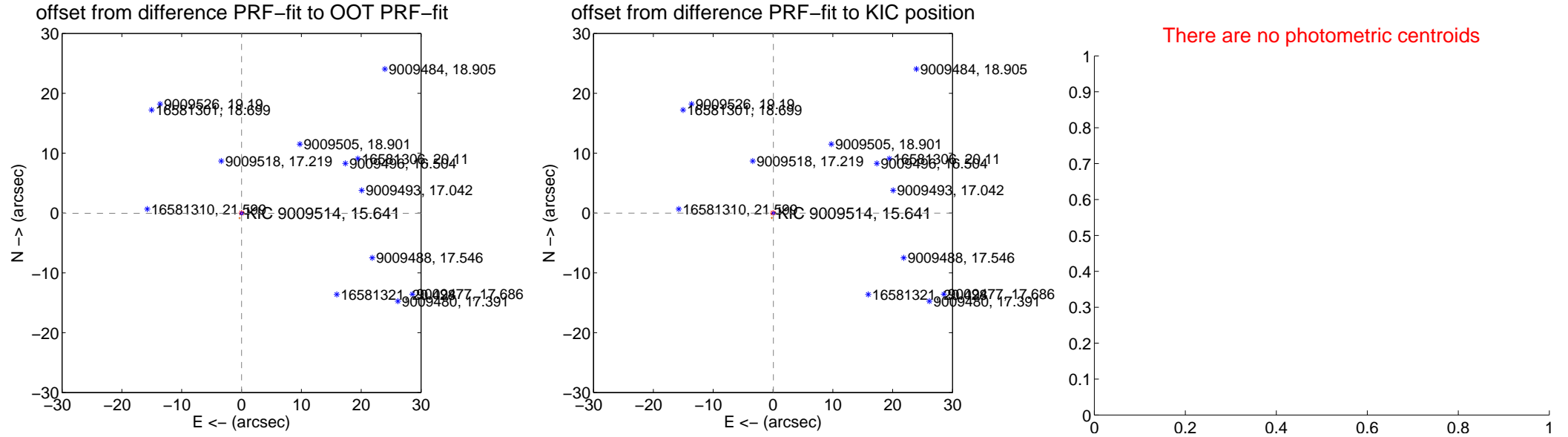
DV Centroid Data

Supplemental centroid analysis for 009009514-01. Kepler magnitude: 15.64. Transit SNR 0.00

There are 13 quarters with good PRF difference image offsets

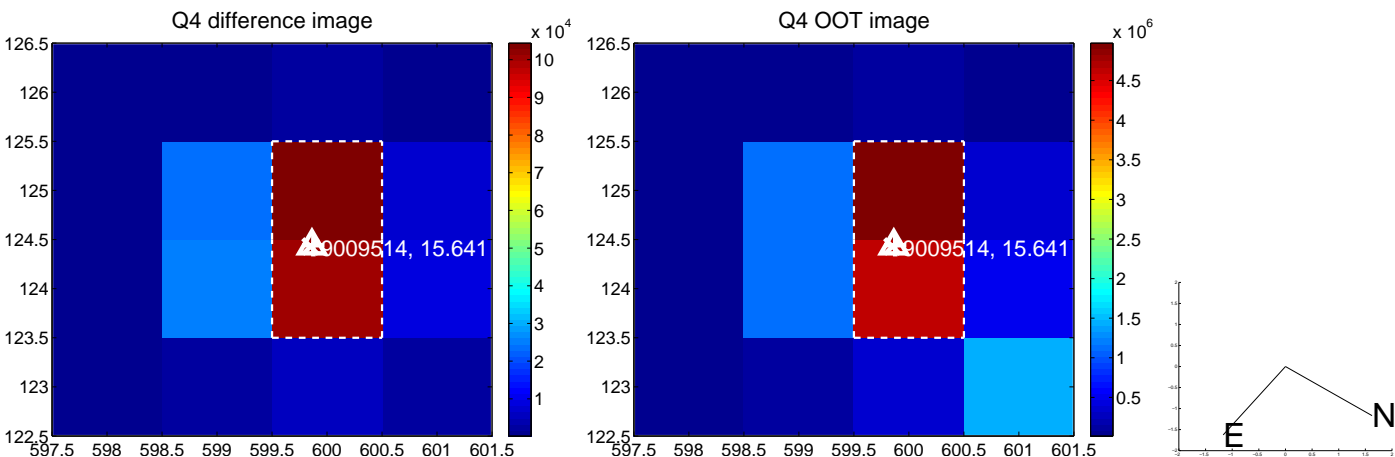
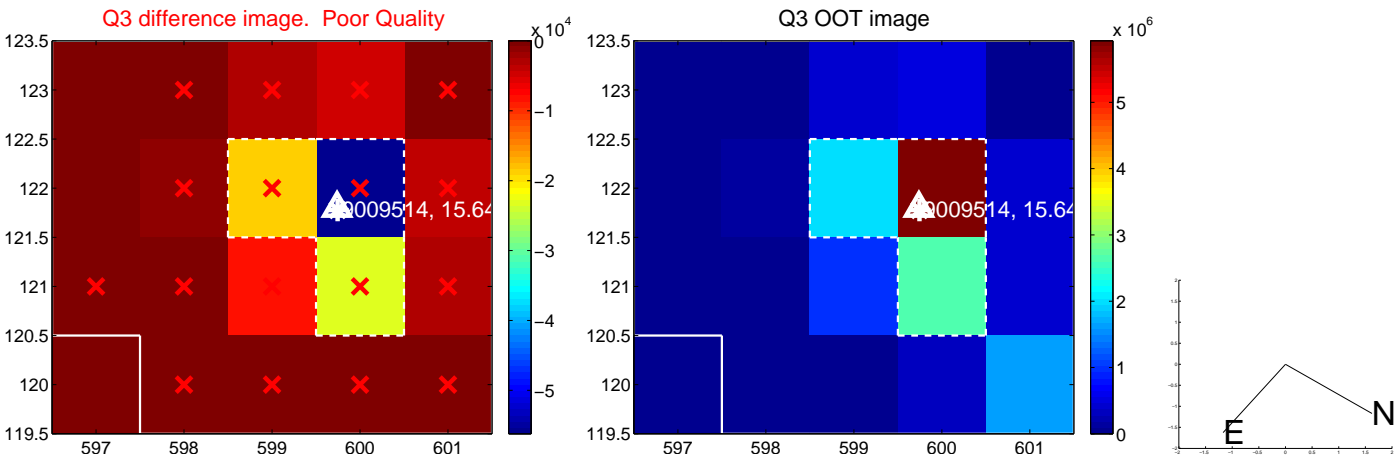
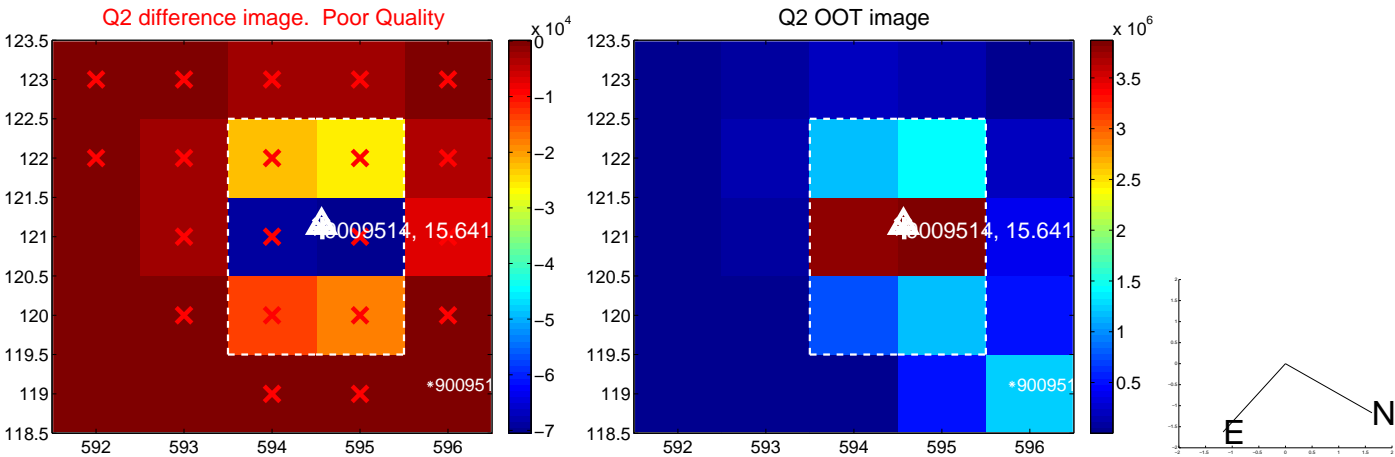
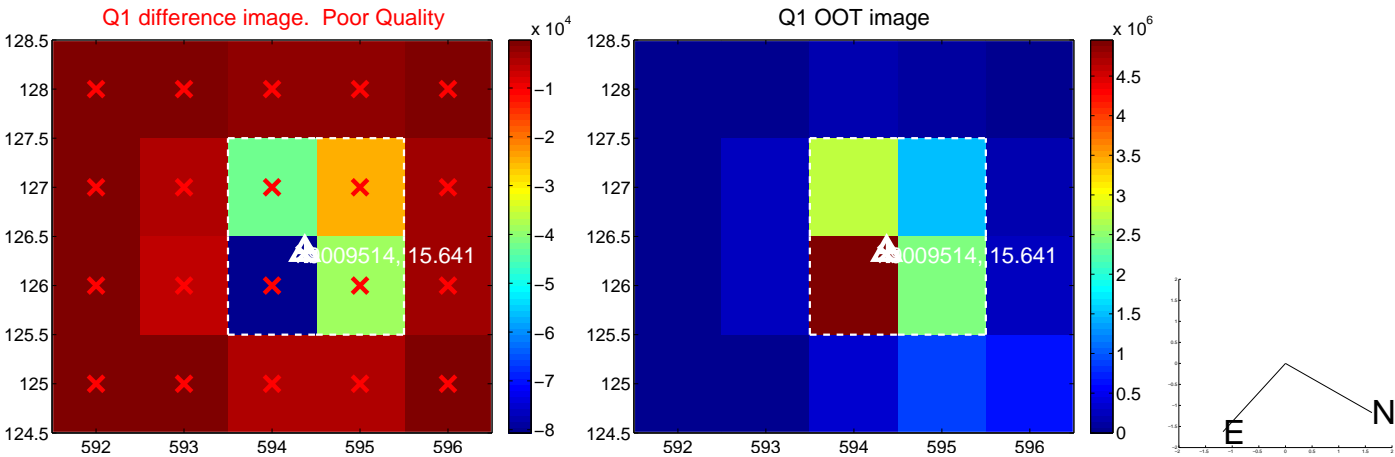
The direct PRF centroid is offset from the target star catalog position by about 0.12 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.050 ± 0.078	0.64	-0.009 ± 0.071	-0.049 ± 0.080
PRF-fit source offset from KIC position	0.073 ± 0.067	1.09	-0.070 ± 0.067	-0.021 ± 0.068
photometric centroid source offset	—	—	—	—

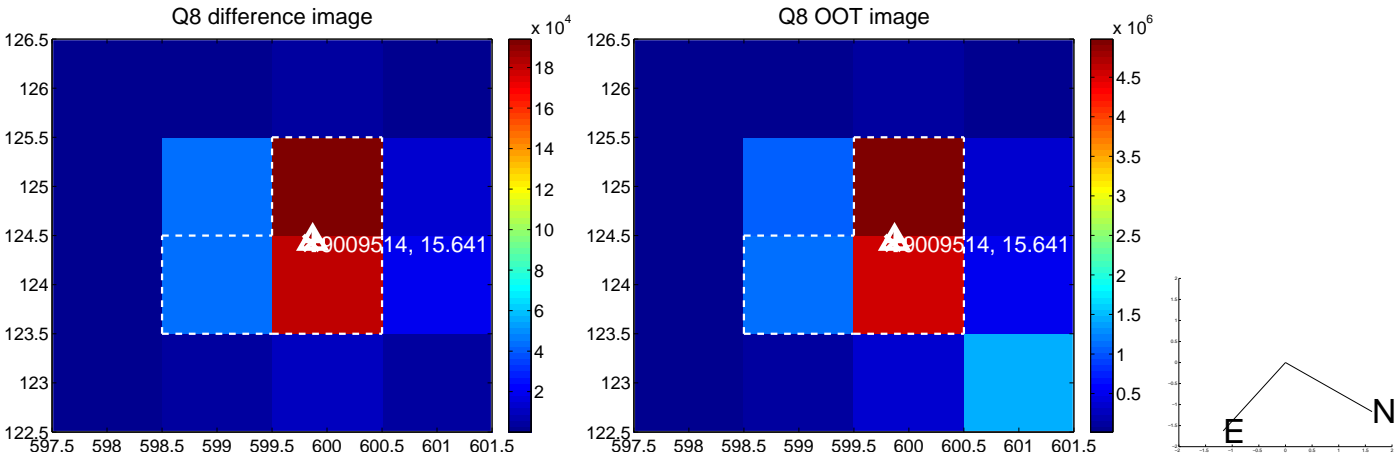
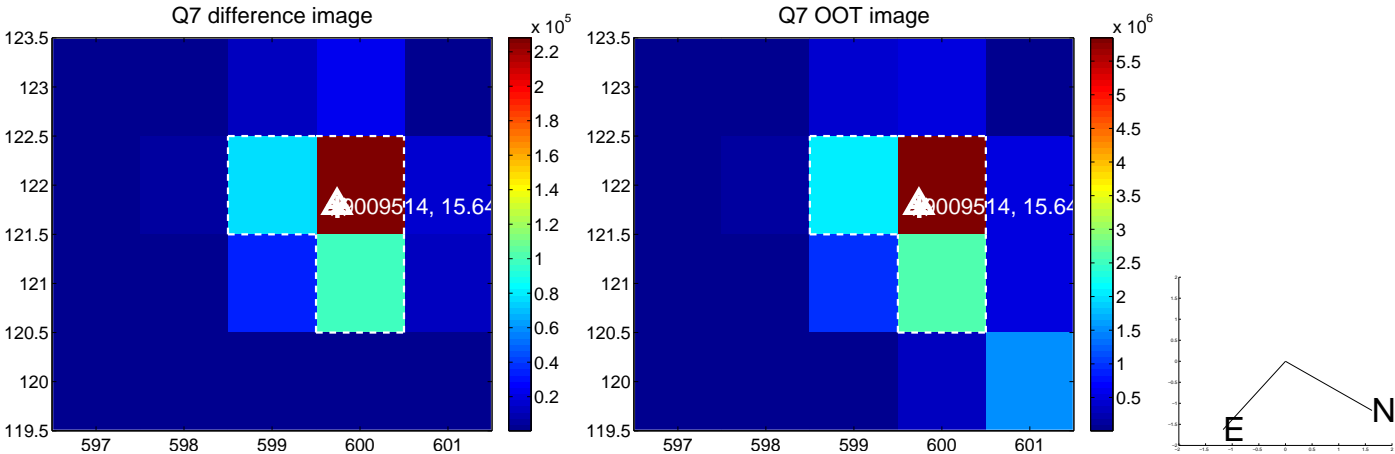
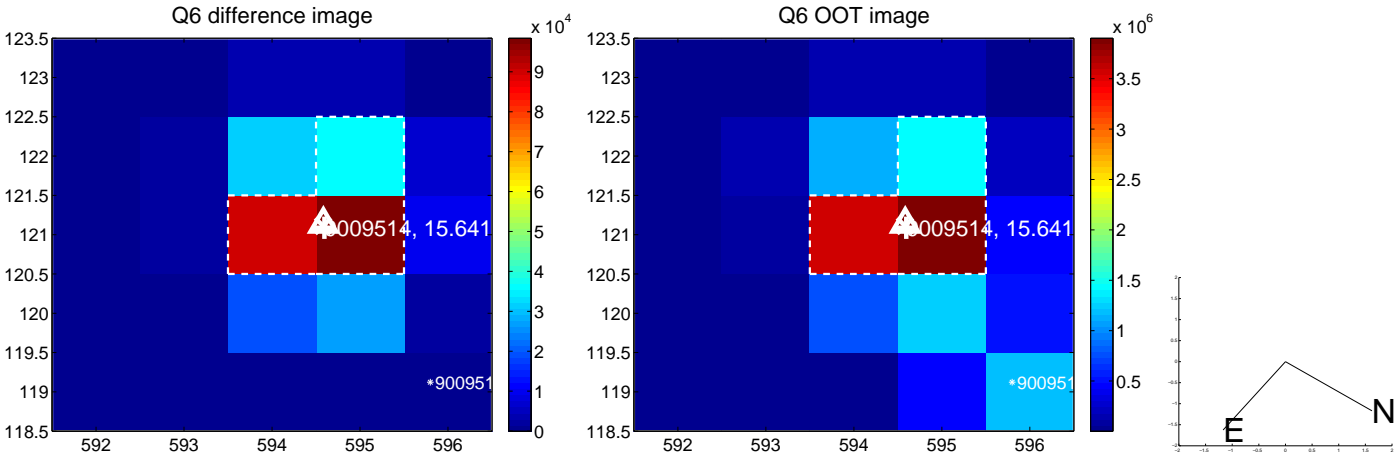
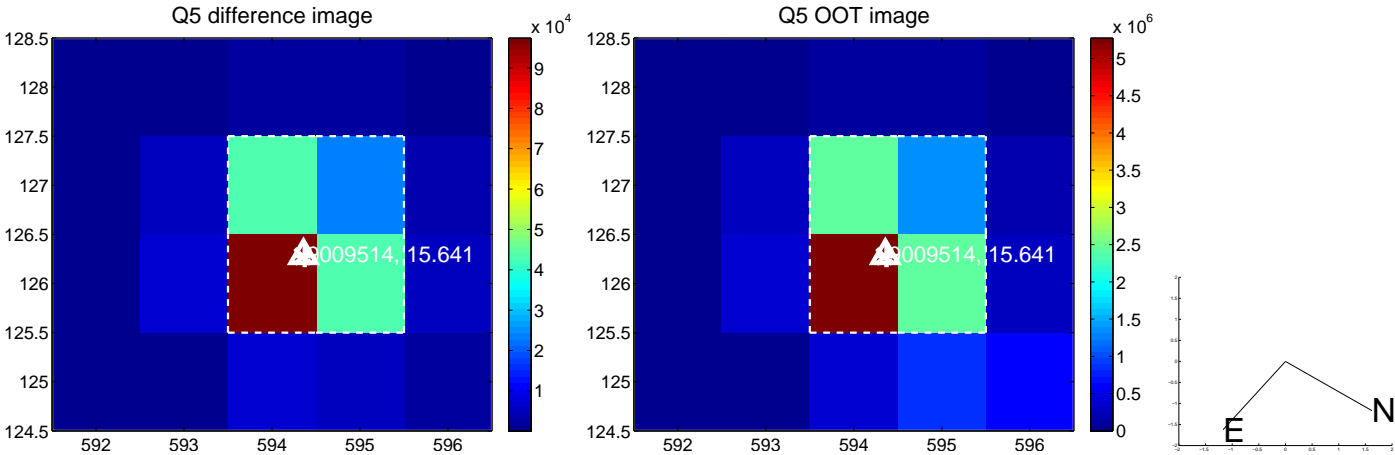


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

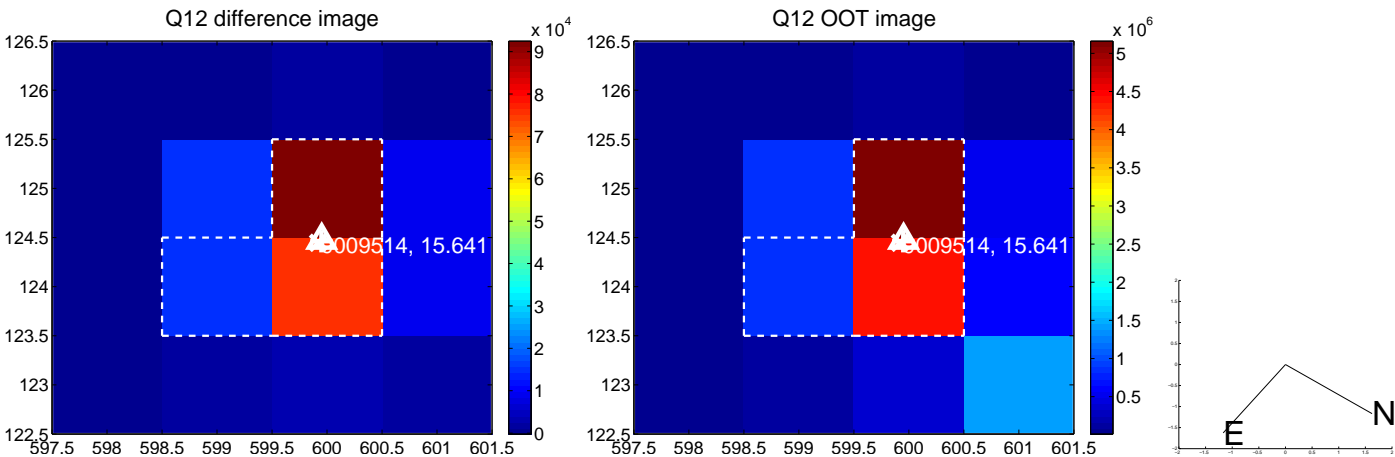
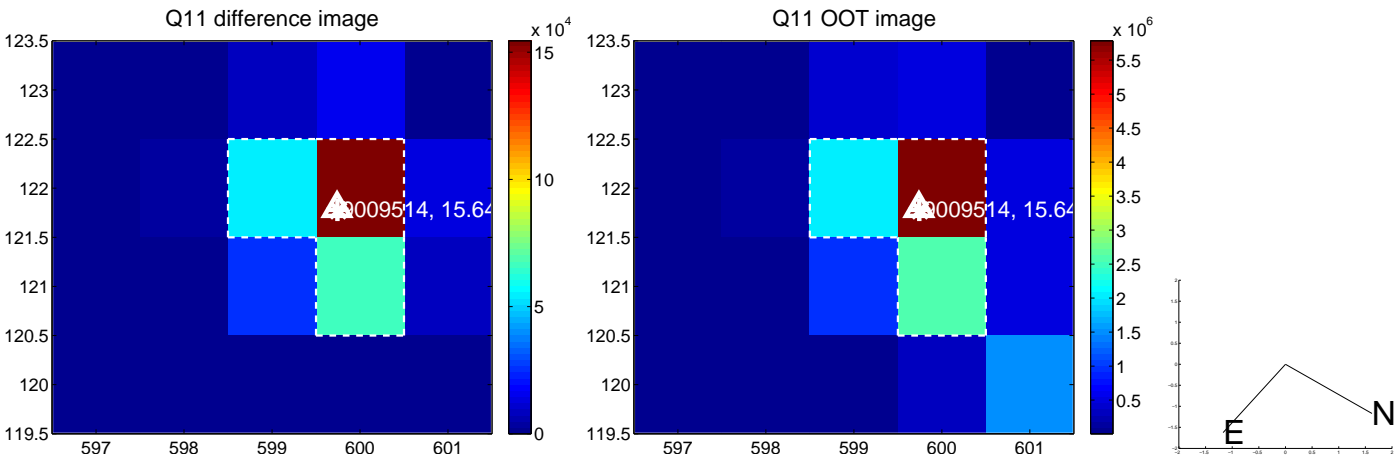
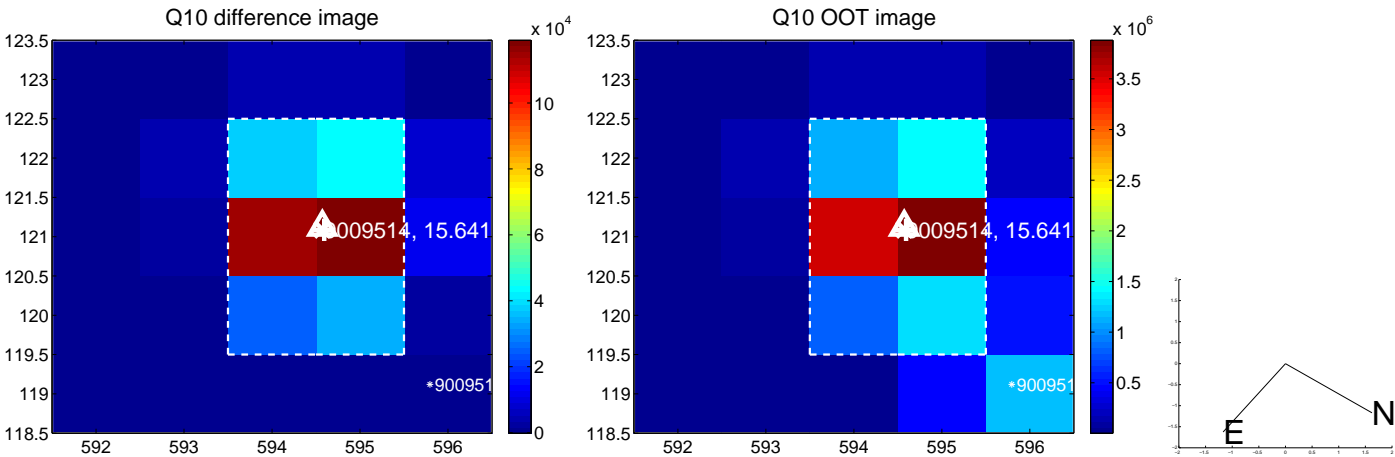
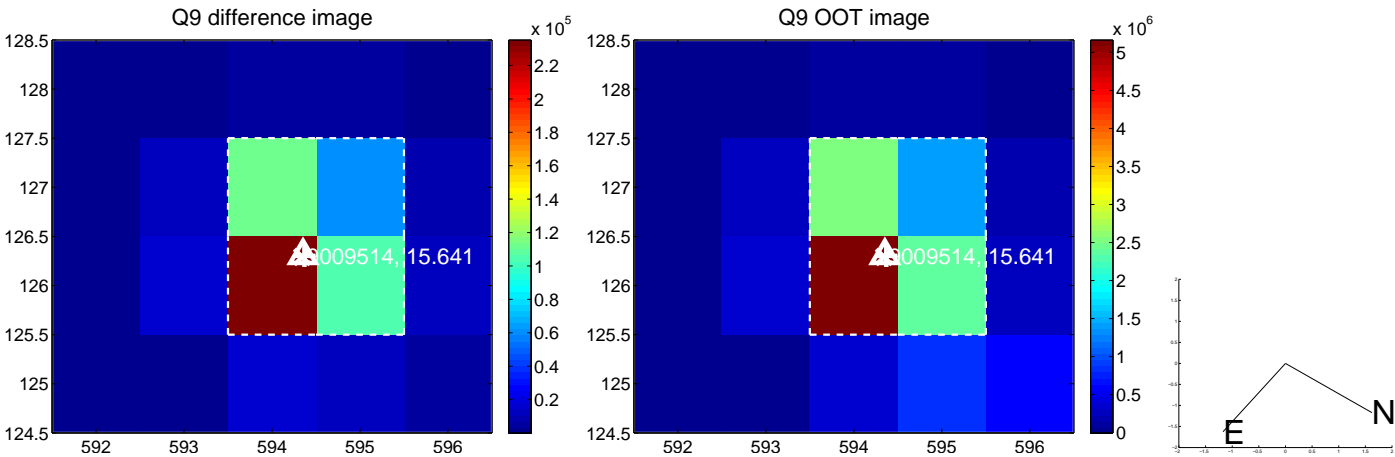
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



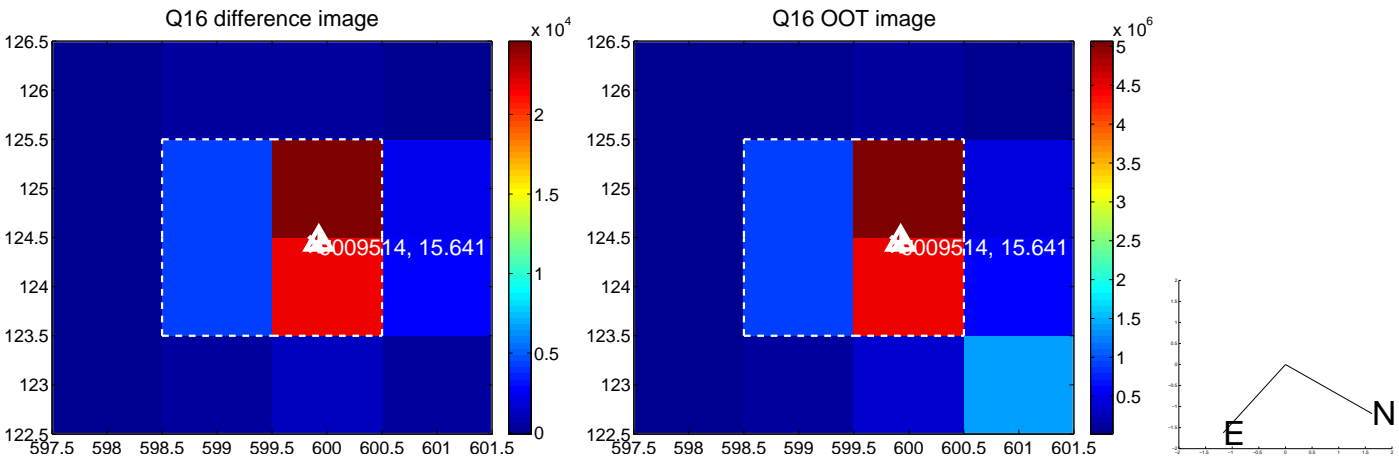
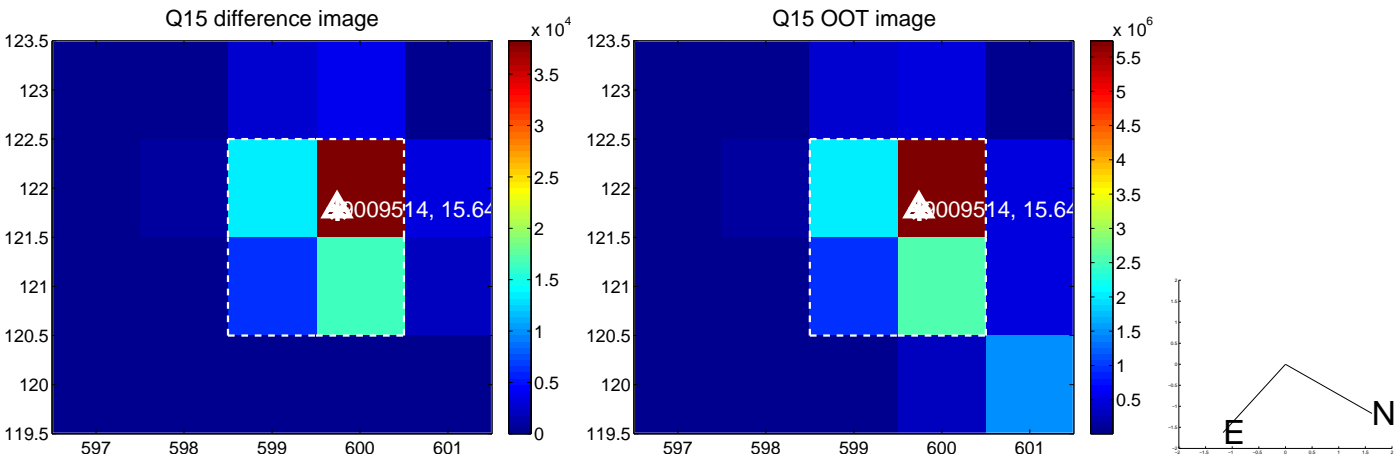
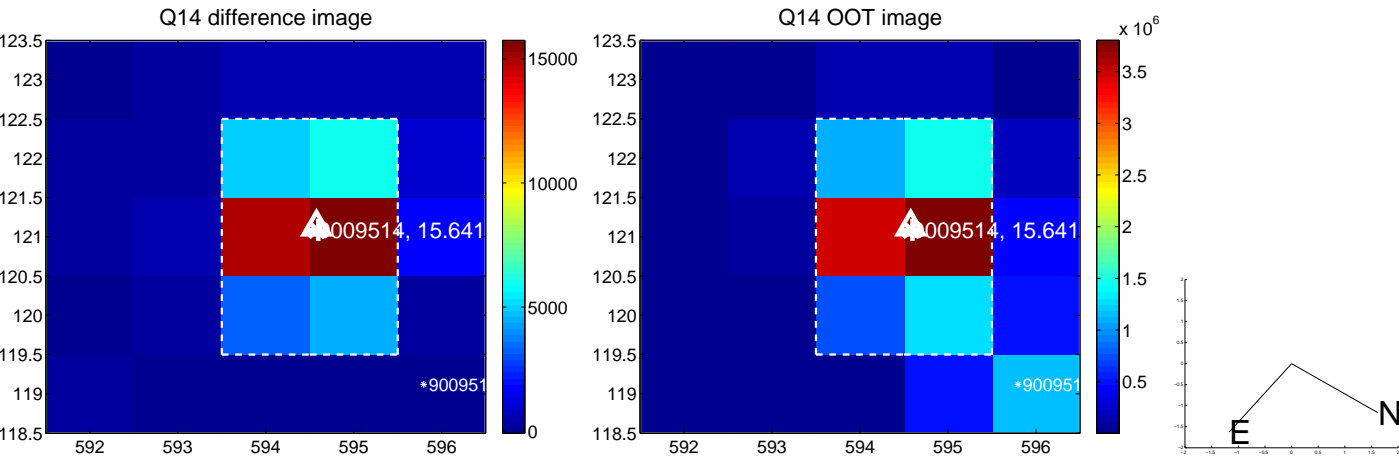
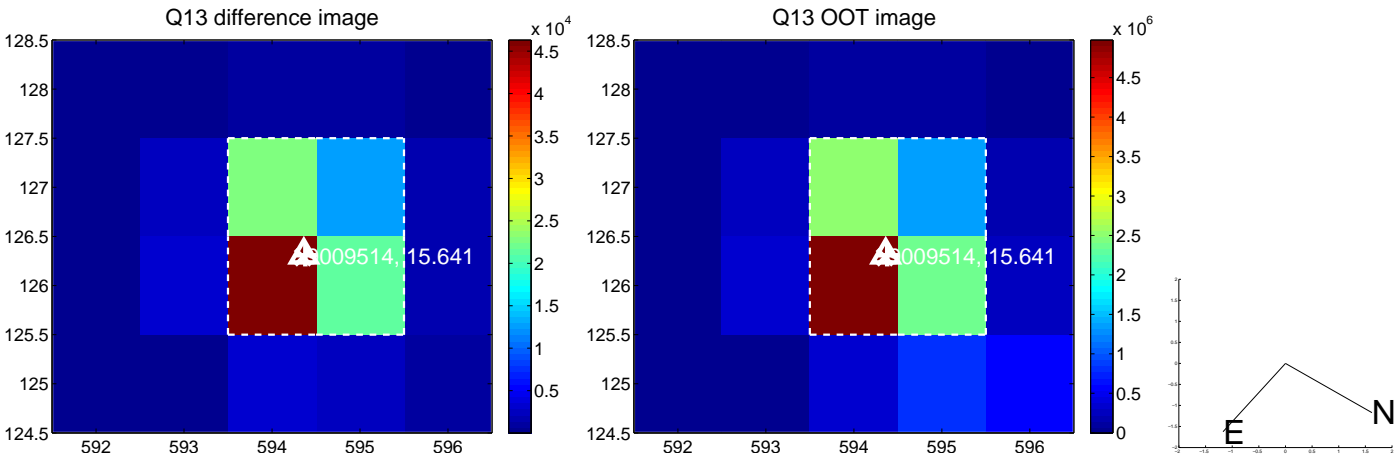
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



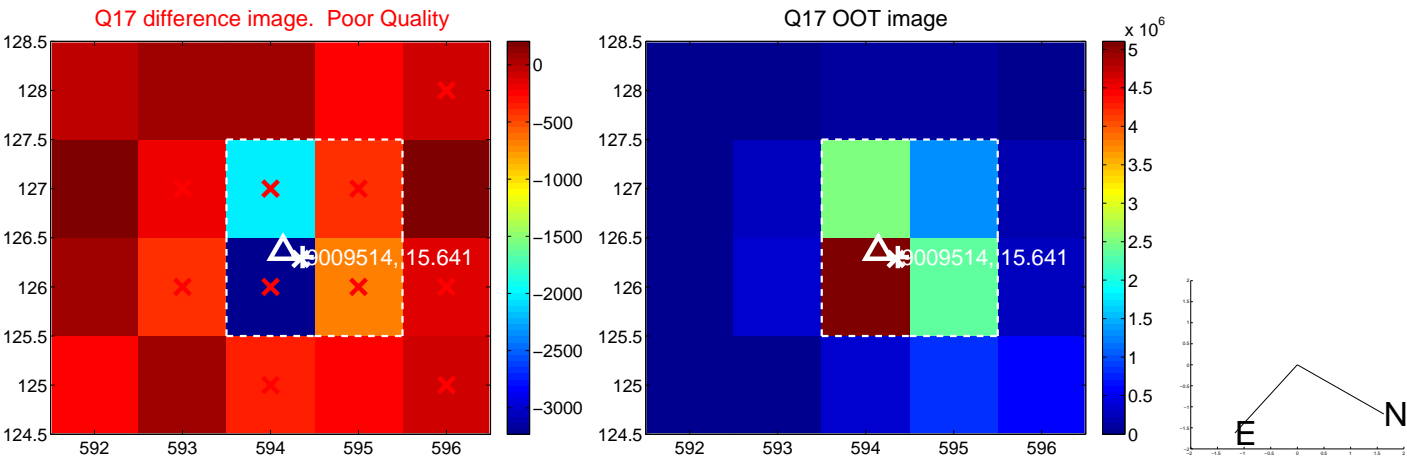
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



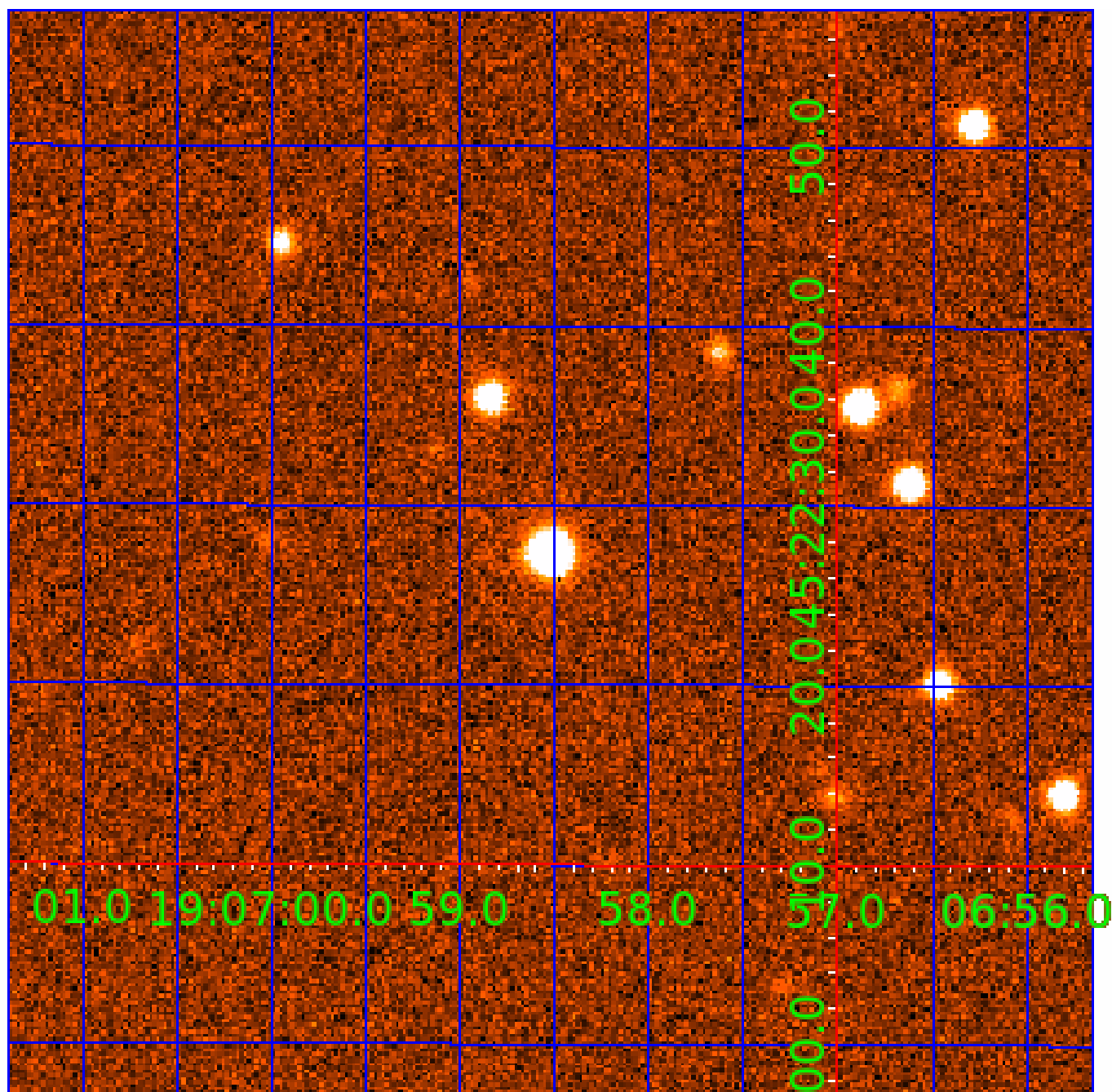
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



folded centroid time series figure for this object.

UKIRT Image

Declination



KIC 009009514

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})
009009514-01	OBS	No	1.210886	132.431503	0.1	6.526	8.9	0.0	0.67	4569	0.02	468.09
009009514-02	OBS	No	108.440422	147.249593	1688.6	5.973	7.7	7.6	0.67	4569	2.80	1.17

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009009514-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV
009009514-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT

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

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

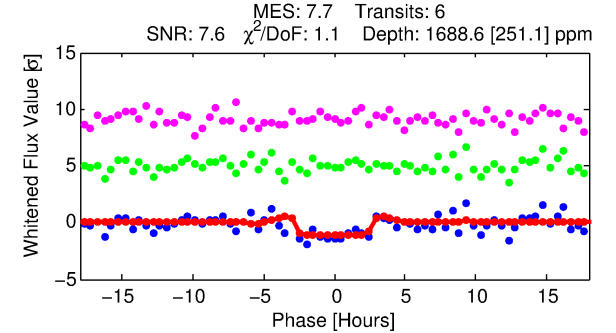
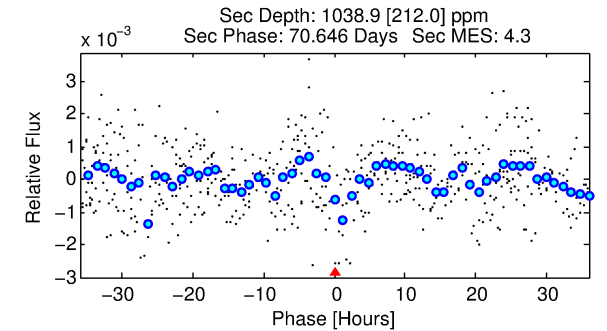
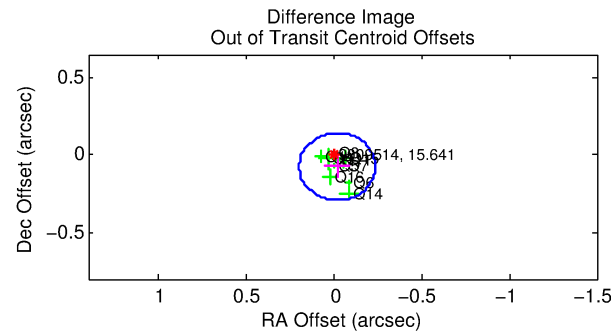
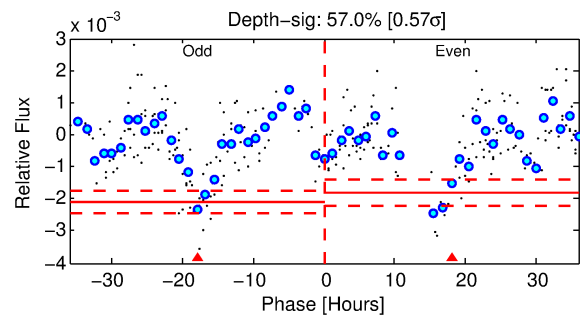
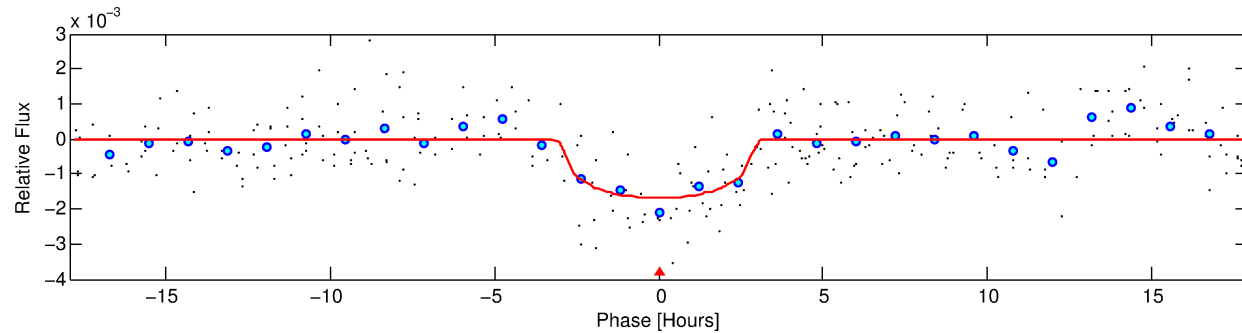
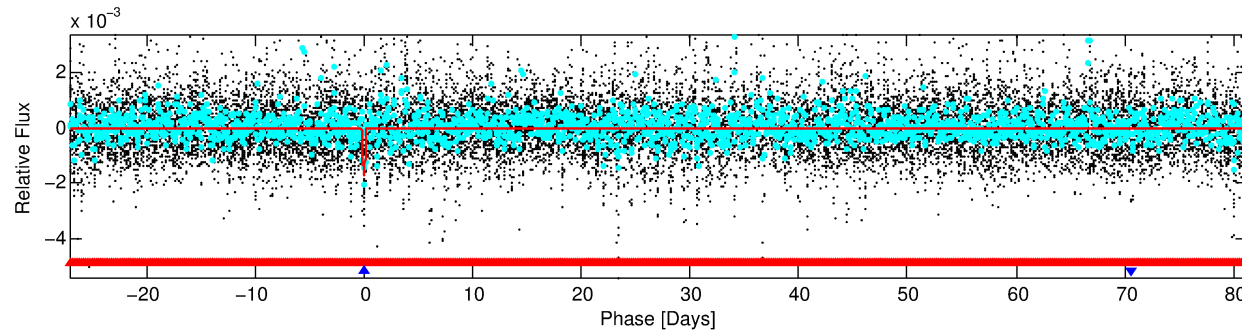
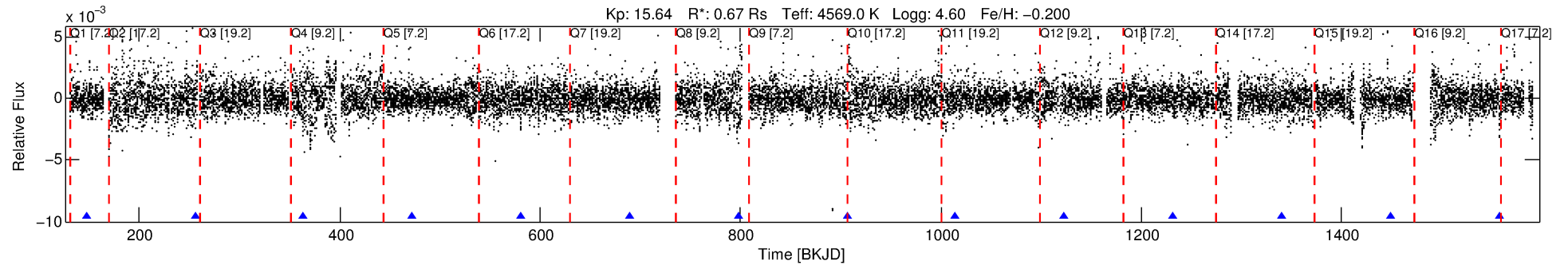
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009009514-02

No Significant Match Found

DV One-Page Summary

KIC: 9009514 Candidate: 2 of 2 Period: 108.440 d



DV Fit Results:

Period = 108.44042 [0.00143] d
Epoch = 147.2496 [0.0122] BKJD
Rp/R* = 0.0384 [0.0311]
a/R* = 120.76 [299.70]
b = 0.57 [3.06]
Seff = 1.17 [0.18]
Teq = 265 [10] K
Rp = 2.80 [2.29] Re
a = 0.3868 [0.0278] AU
Ag = 10896.40 [17859.64] [0.61 σ]
Teffp = 4188 [1717] K [2.28 σ]

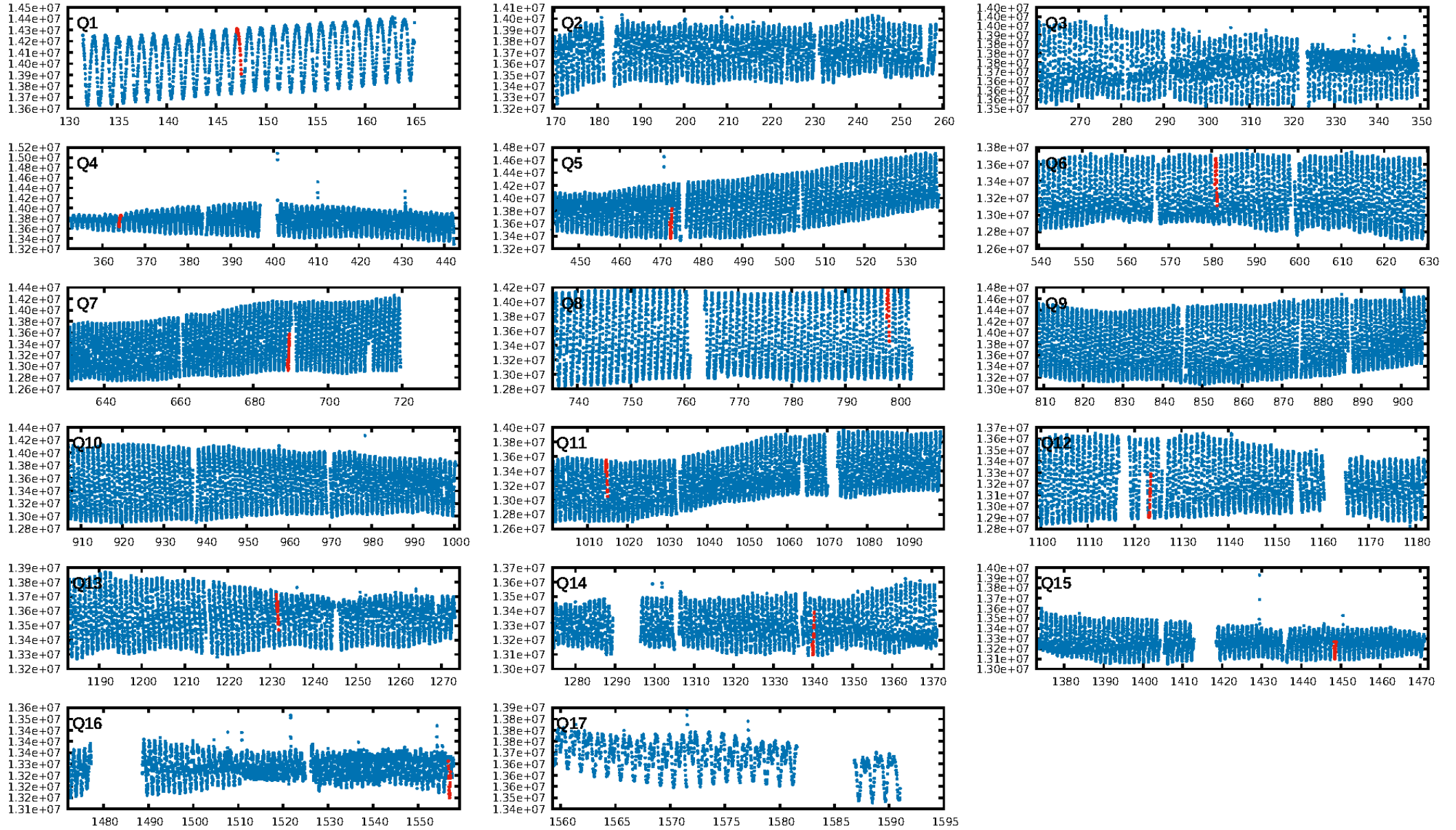
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [290.90 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 3.3%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 5.04e-09
RollingBand-fgt: 1.00 [6/6]
GhostDiagnostic-chr: 0.6165
Centroid-sig: 1.0%
Centroid-so: 0.827 arcsec [1.23 σ]
OotOffset-rm: 0.077 arcsec [1.07 σ]
OotOffset-st: 2/3/3/2 [10]
KicOffset-rm: 0.081 arcsec [1.16 σ]
KicOffset-st: 2/3/3/2 [10]
DiffImageQuality-fgm: 0.50 [5/10]
DiffImageOverlap-fno: 0.00 [0/10]

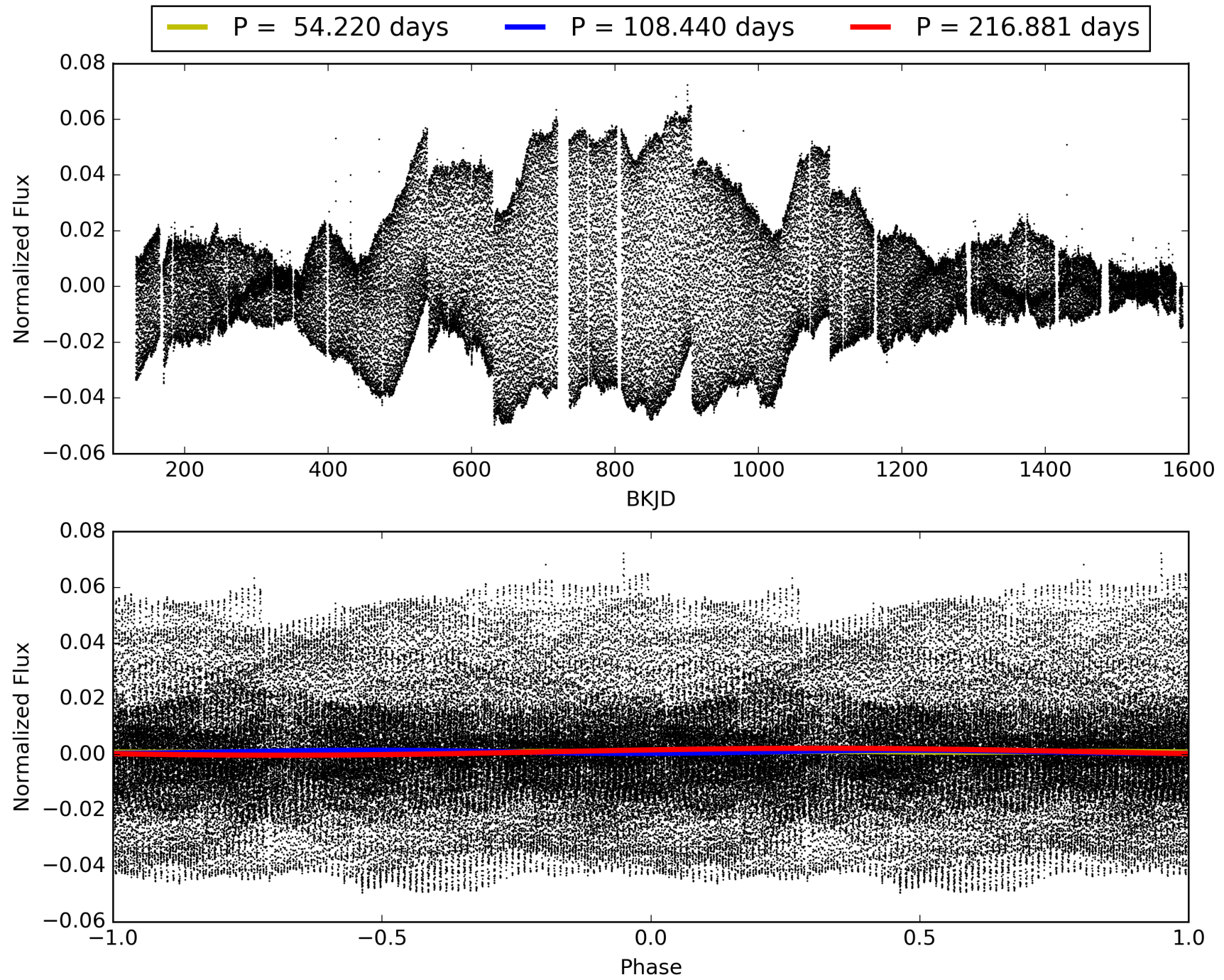
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 06:01:44 Z

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

TCE 009009514-02, PDC Light Curves

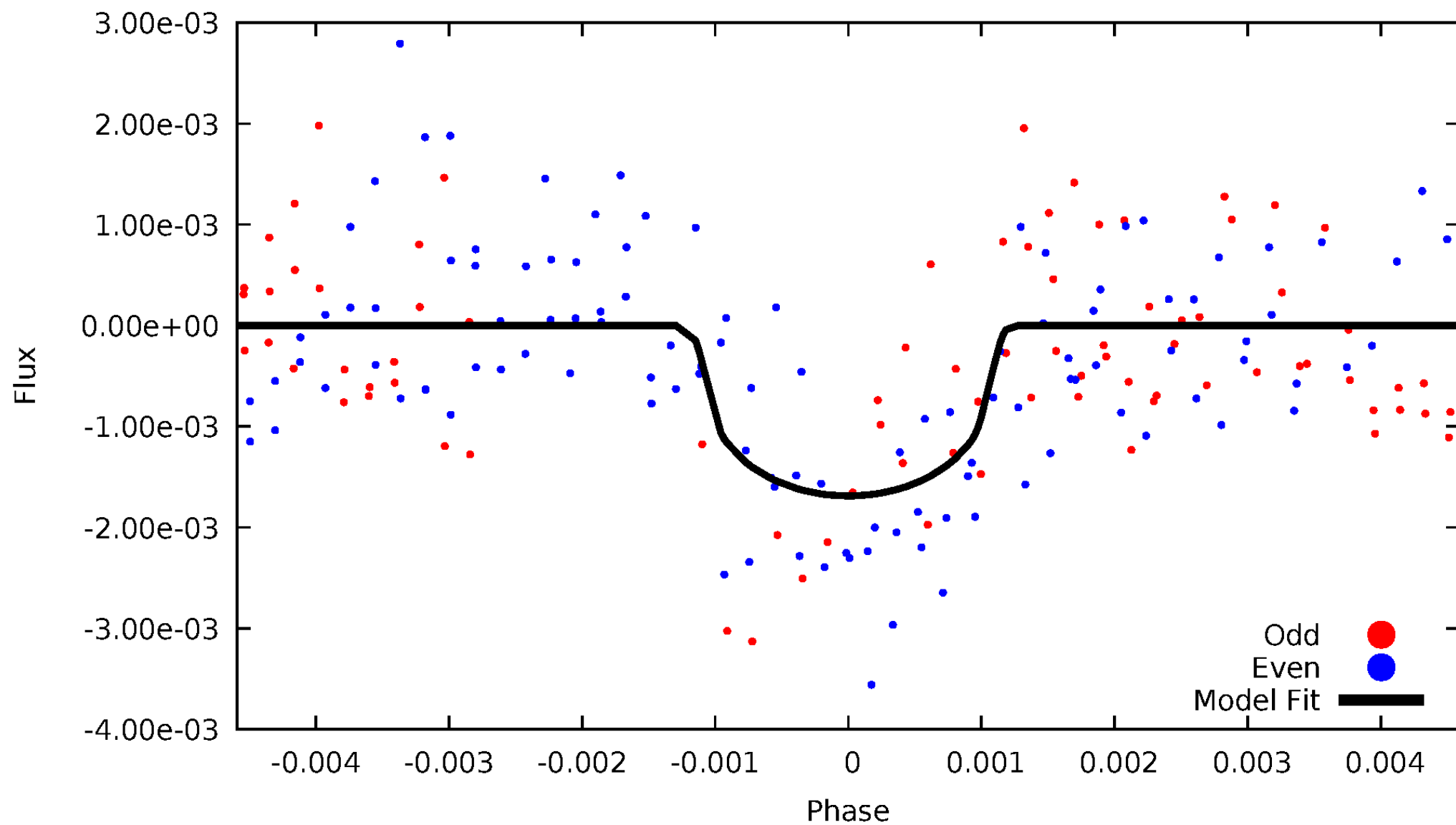


TCE 009009514-02



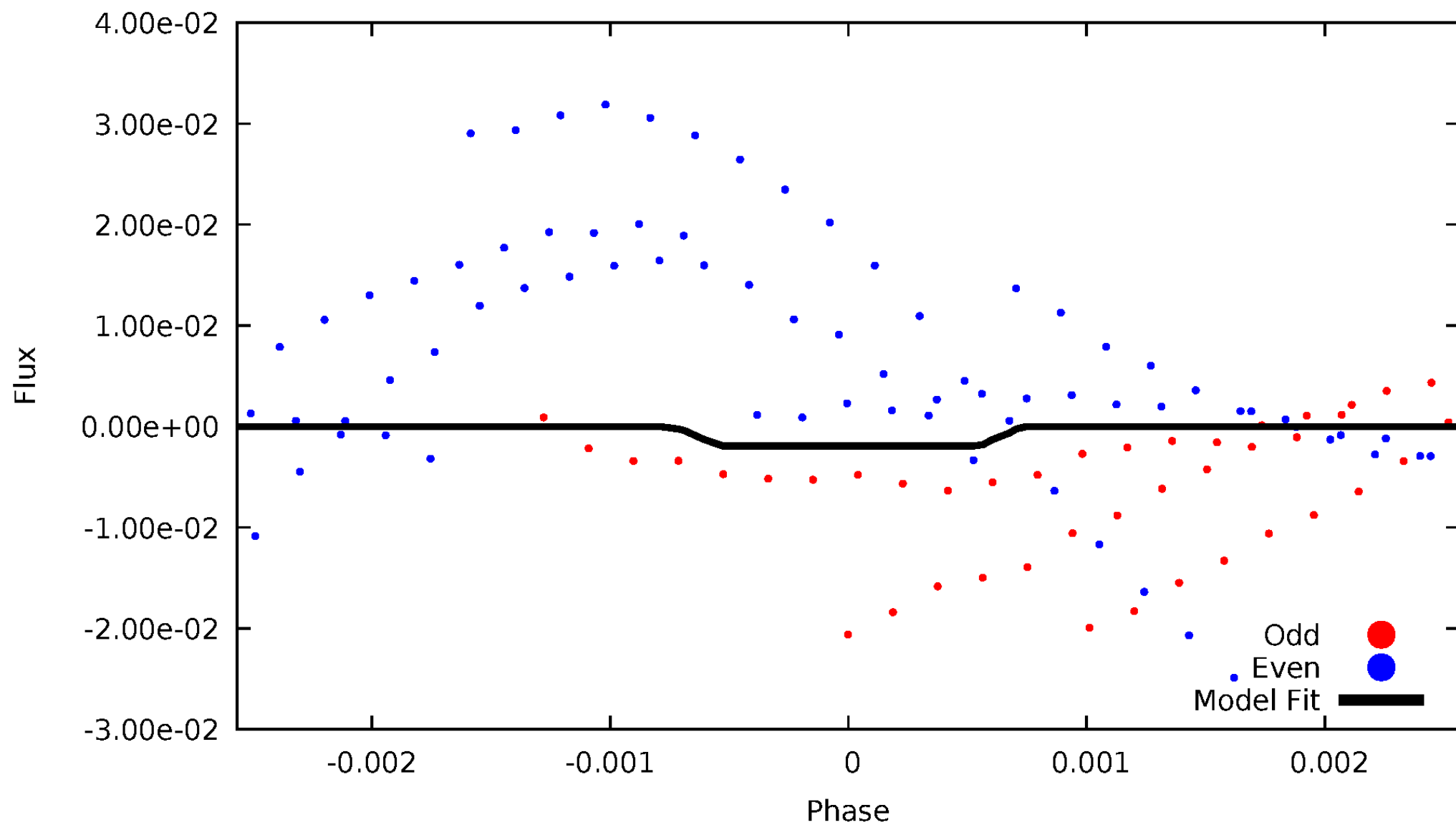
DV Odd/Even

TCE 009009514-02



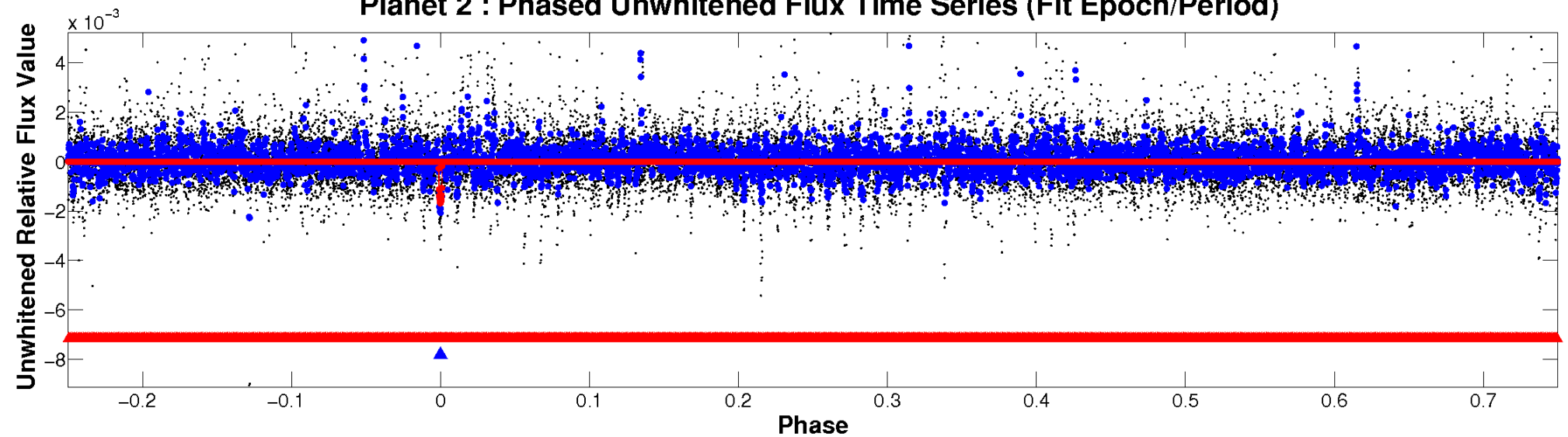
ALT Odd/Even

TCE 009009514-02

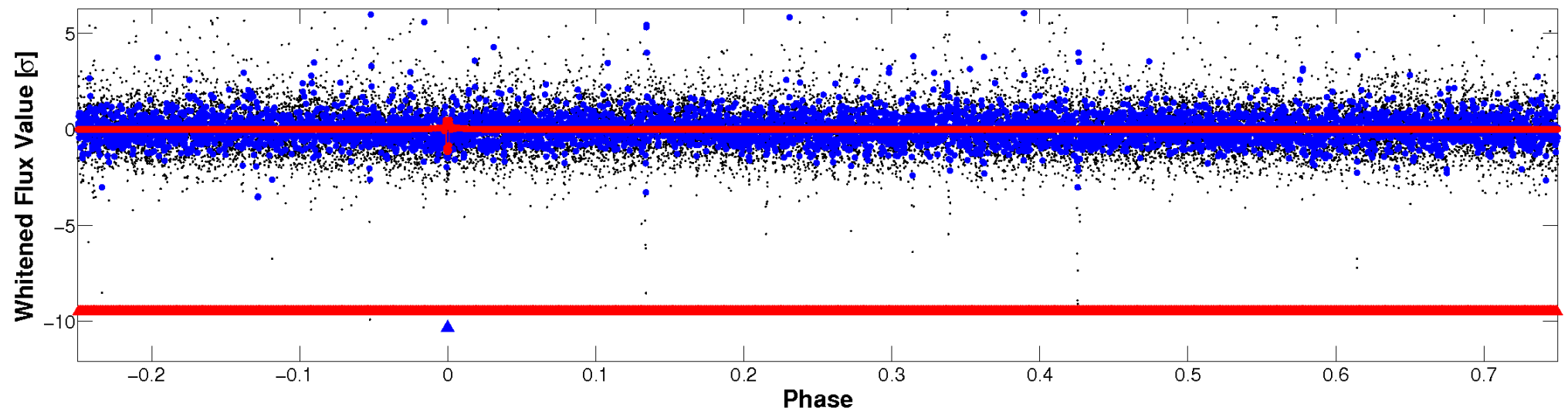


Non-Whitened Vs. Whitened Light Curve

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

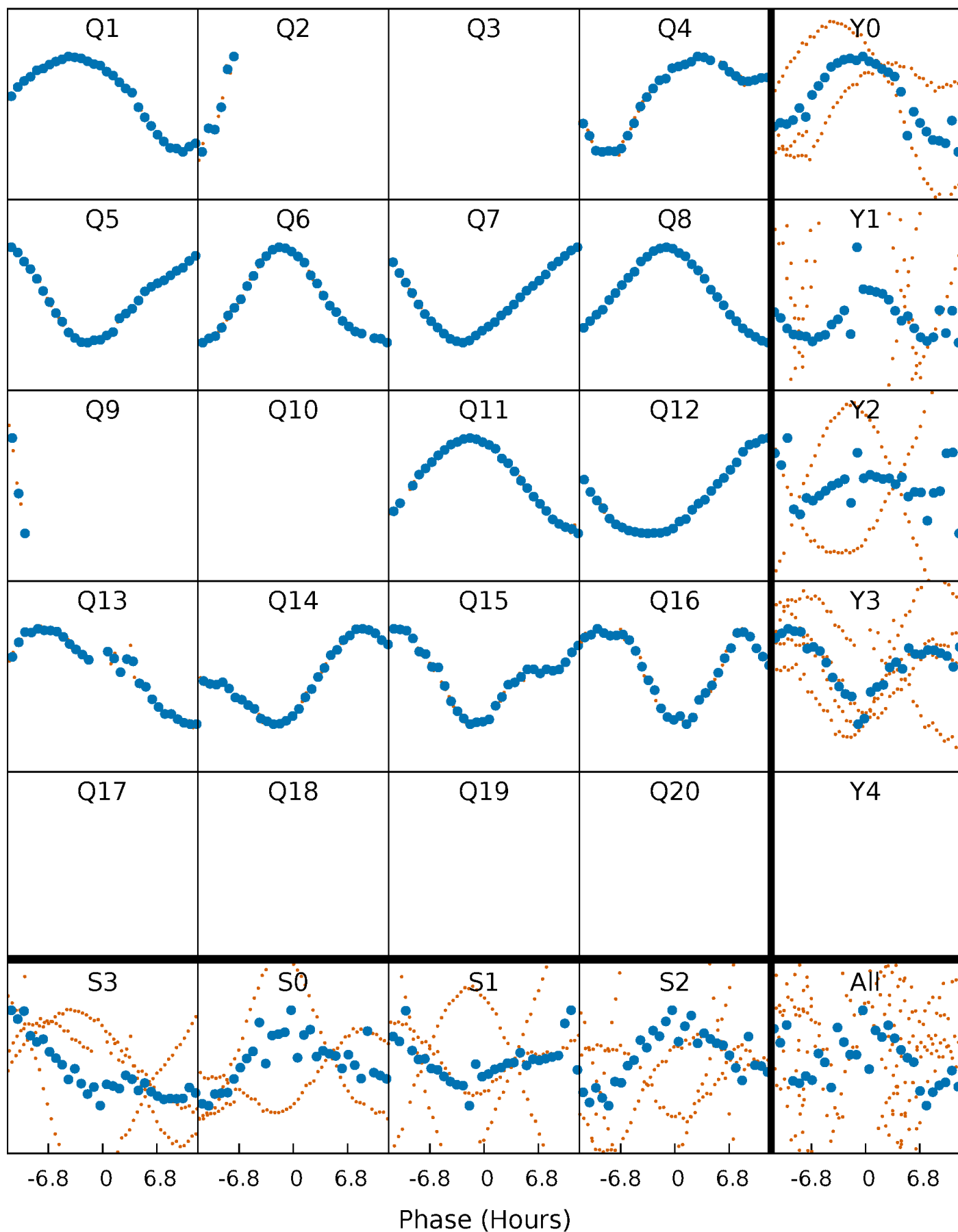


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



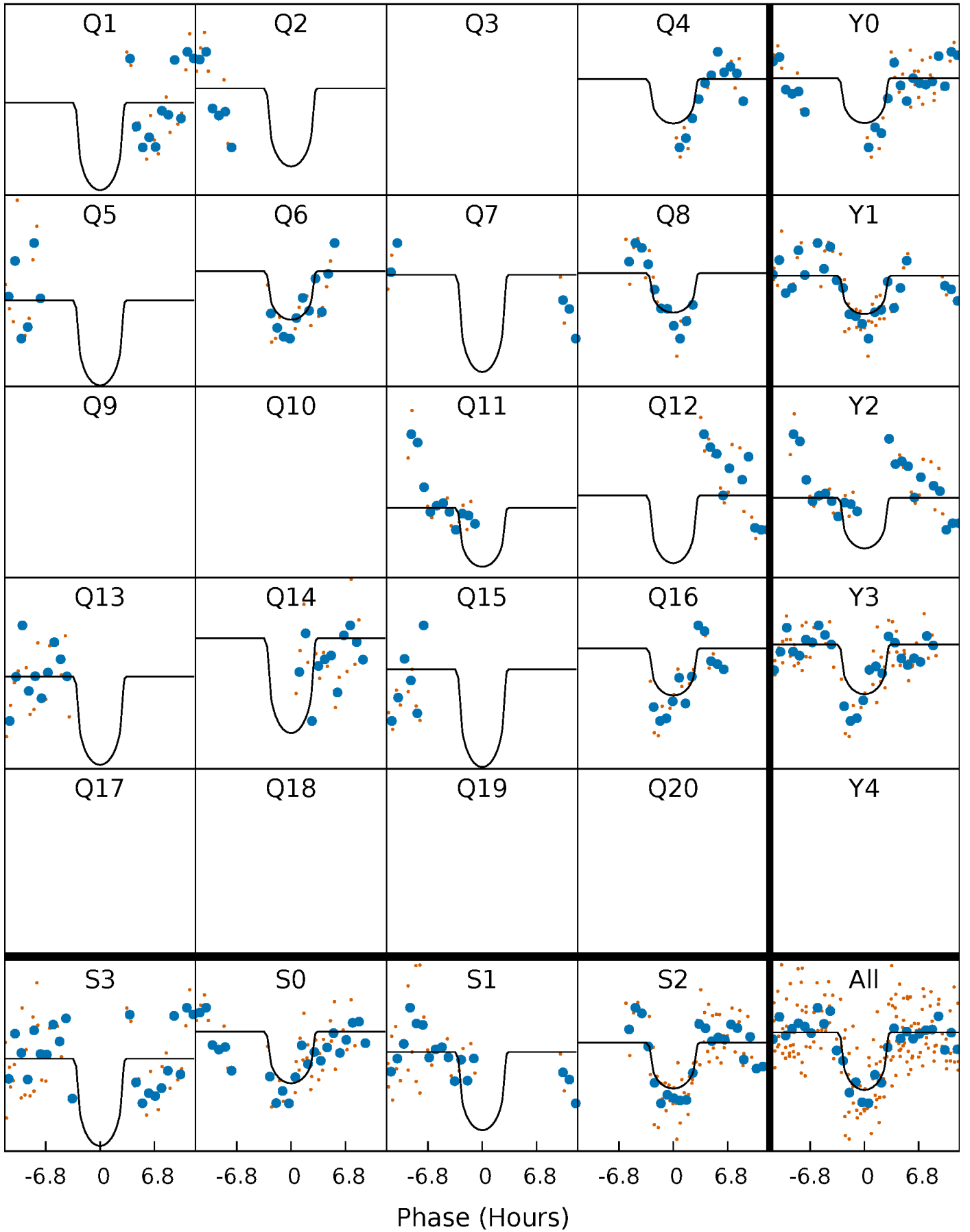
PDC Quarter-Phased Transit Curves

TCE 009009514-02 P=108.440422 Days $T_0=147.249593$ (BKJD)



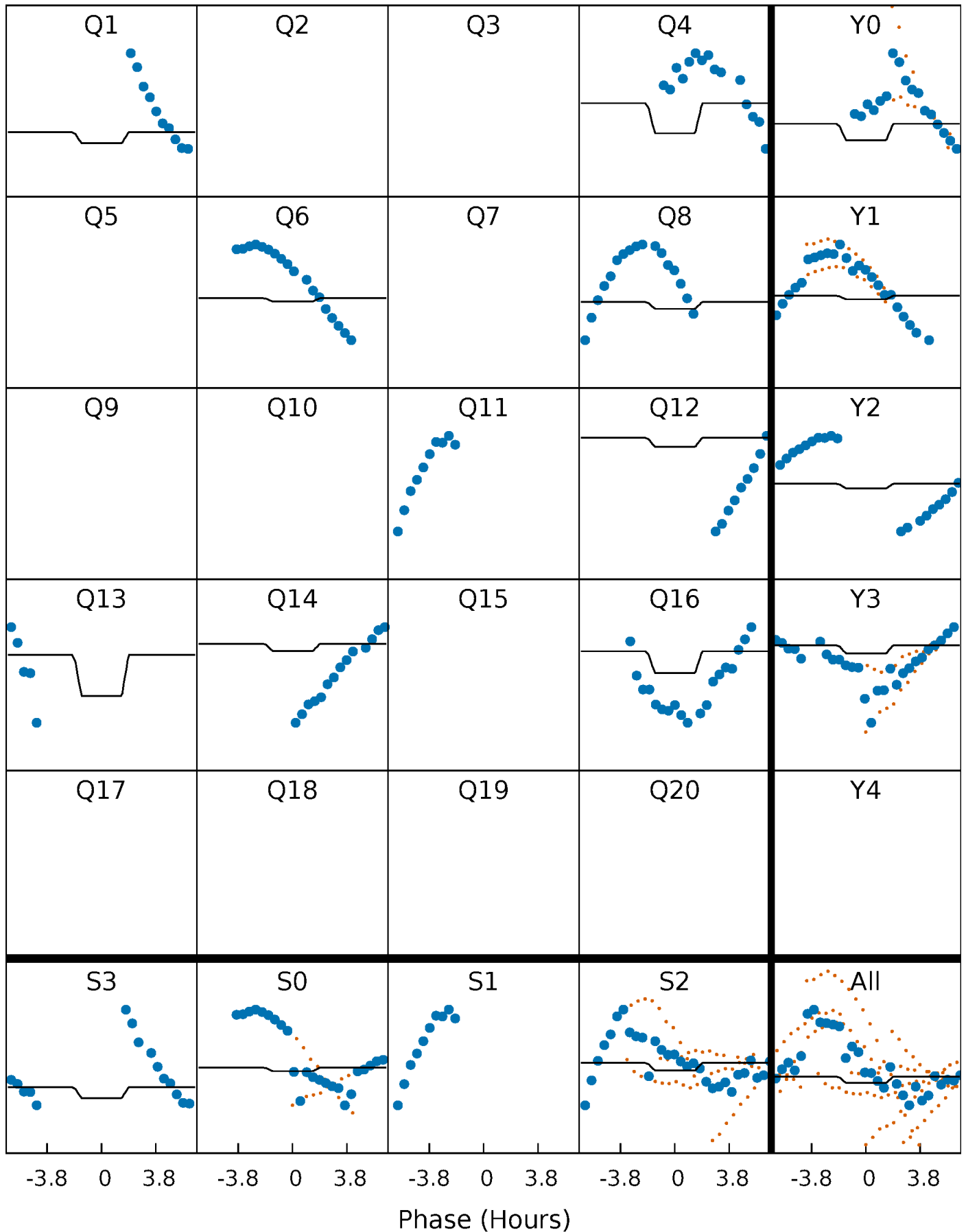
DV Quarter-Phased Transit Curves

TCE 009009514-02 P=108.440422 Days $T_0=147.249593$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

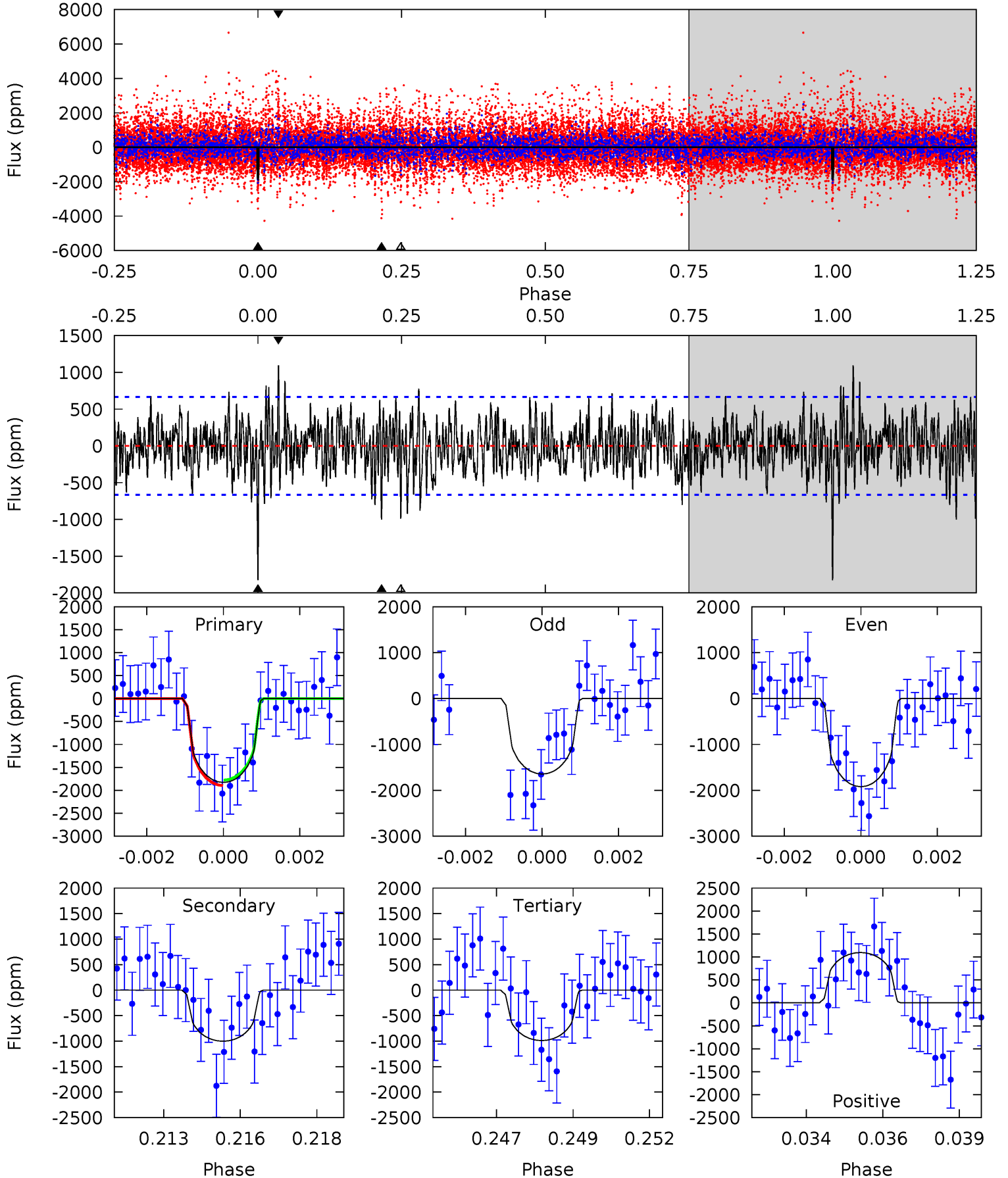
TCE 009009514-02 P=108.437002 Days $T_0=147.313642$ (BKJD)



DV Model-Shift Uniqueness Test

009009514-02, P = 108.440422 Days, E = 38.809171 Days

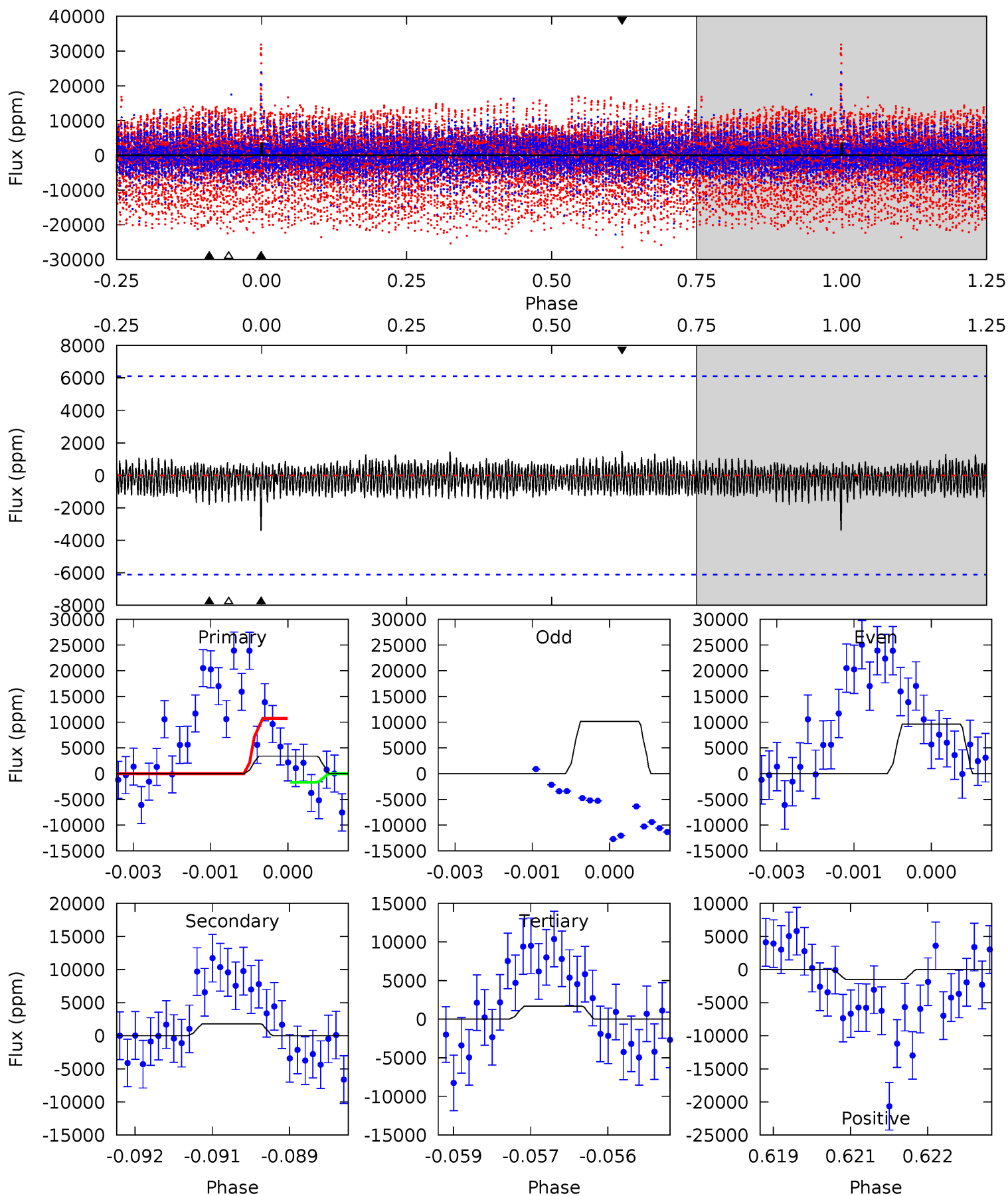
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
14.5	7.96	7.86	8.71	5.29	3.03	2.25	6.68	5.82	0.10	-0.75	1.04	0.77	0.37	0.47



Alt Model-Shift Uniqueness Test

009009514-02, P = 108.437002 Days, E = 38.876640 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3.02	1.60	1.48	1.32	5.39	3.20	0.53	1.54	1.69	0.12	0.28	0.23	0.42	0.30	0



Stellar Parameters For KIC 009009514

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (g \cdot \text{cm}^{-3})$
	4569^{+137}_{-137}	$4.604^{+0.054}_{-0.027}$	$-0.200^{+0.300}_{-0.300}$	$0.669^{+0.048}_{-0.059}$	$0.655^{+0.073}_{-0.049}$	$3.086^{+0.710}_{-0.351}$
	+3%/-3%	+1%/-1%	+150%/-150%	+7%/-9%	+11%/-7%	+23%/-11%
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 009009514-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-1001 ± 126	$2.92^{+2.13}_{-1.75}$	368^{+13}_{-13}	4143^{+2014}_{-706}	9647^{+53045}_{-6443}
Alt.	-1811 ± 1132	$3.47^{+2.21}_{-2.01}$	369^{+12}_{-13}	4277^{+2068}_{-877}	10827^{+56036}_{-7819}

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

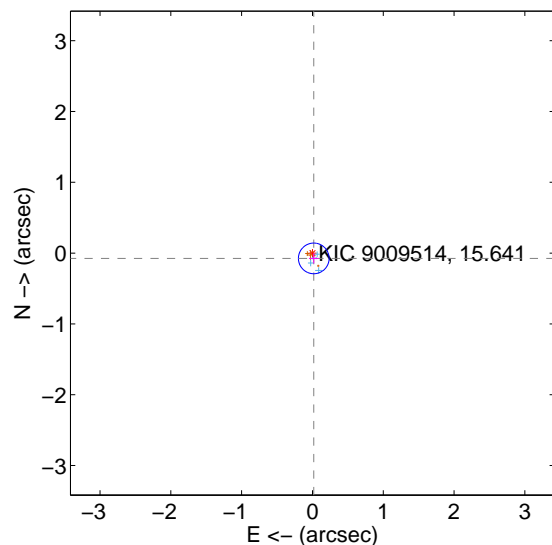
Supplemental centroid analysis for 009009514-02. Kepler magnitude: 15.64. Transit SNR 7.65

There are 5 quarters with good PRF difference image offsets

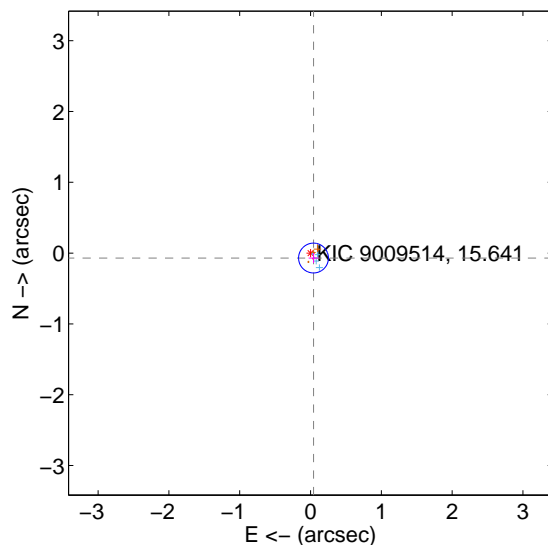
The direct PRF centroid is offset from the target star catalog position by about 0.11 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.077 ± 0.072	1.07	-0.019 ± 0.069	-0.075 ± 0.072
PRF-fit source offset from KIC position	0.081 ± 0.070	1.16	-0.042 ± 0.068	-0.070 ± 0.071
photometric centroid source offset	0.83 ± 0.67	1.23	0.62 ± 0.60	-0.55 ± 0.76

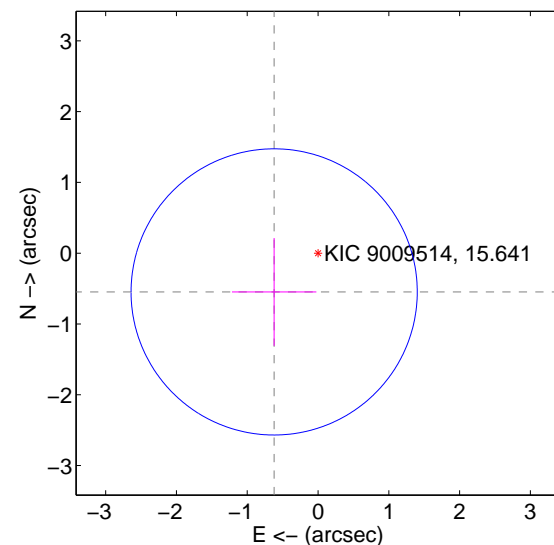
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

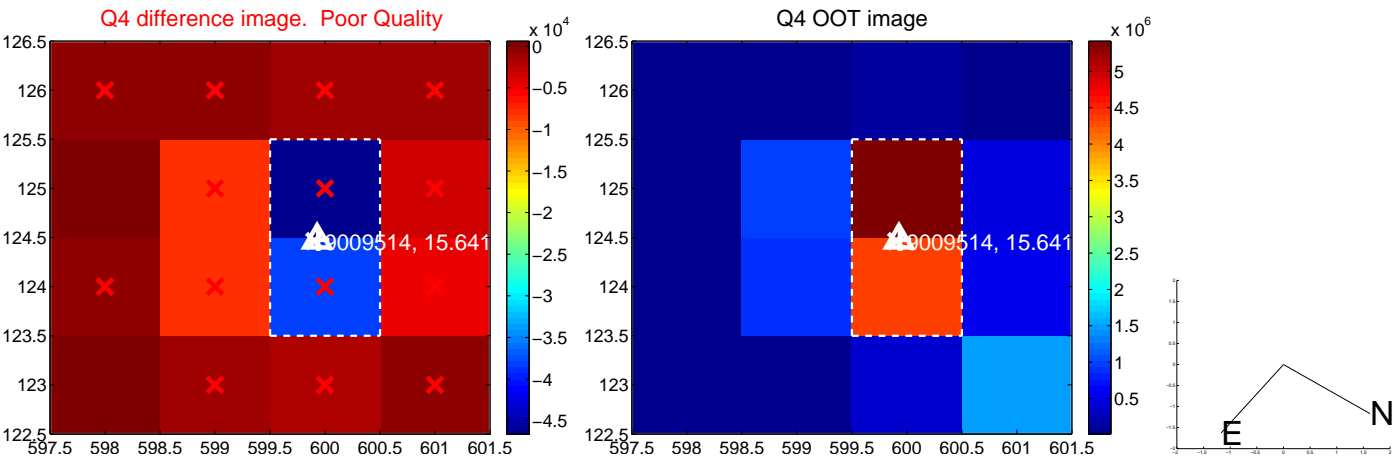
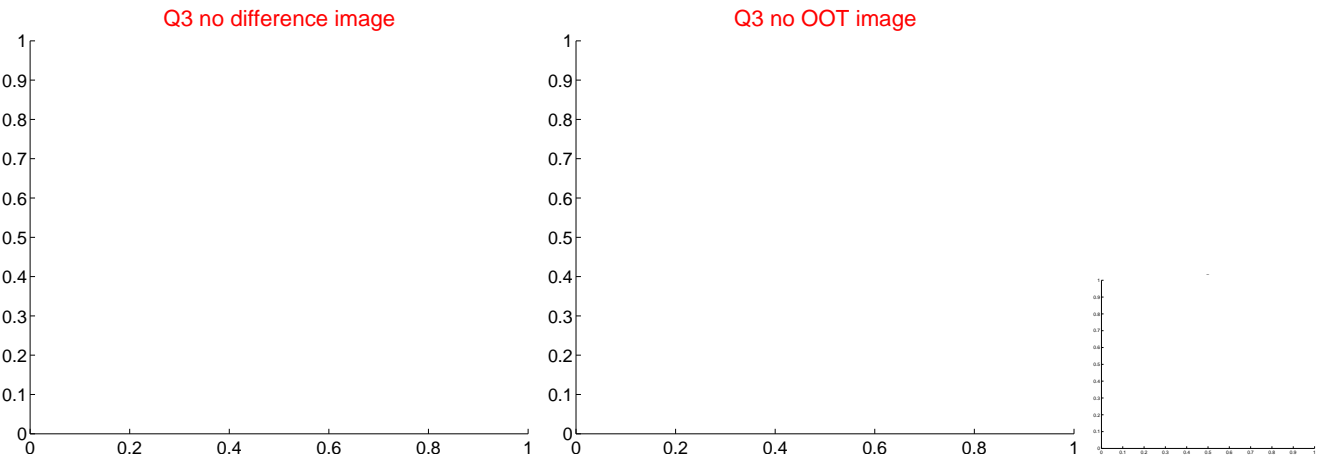
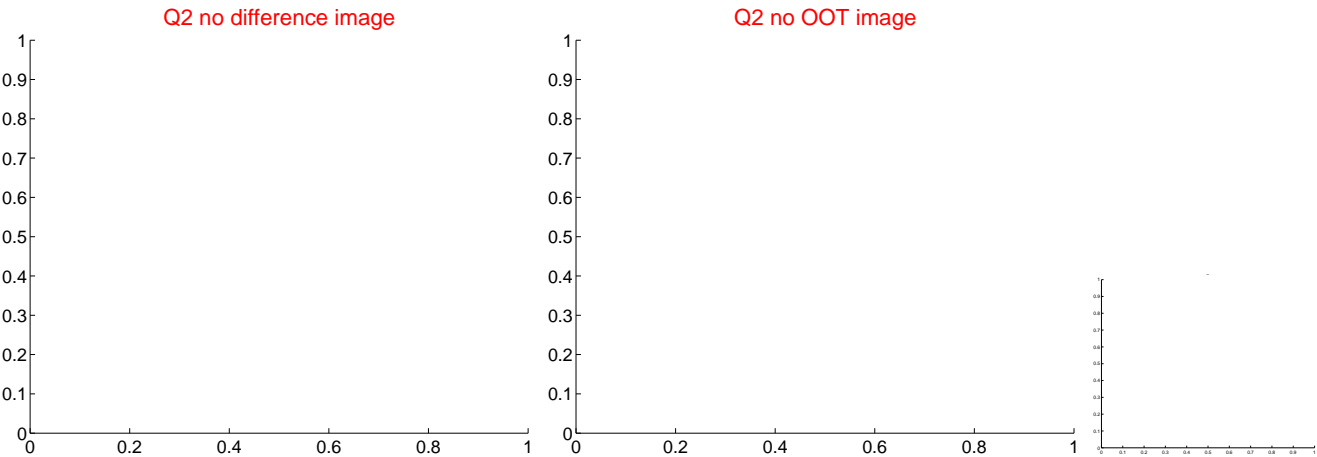
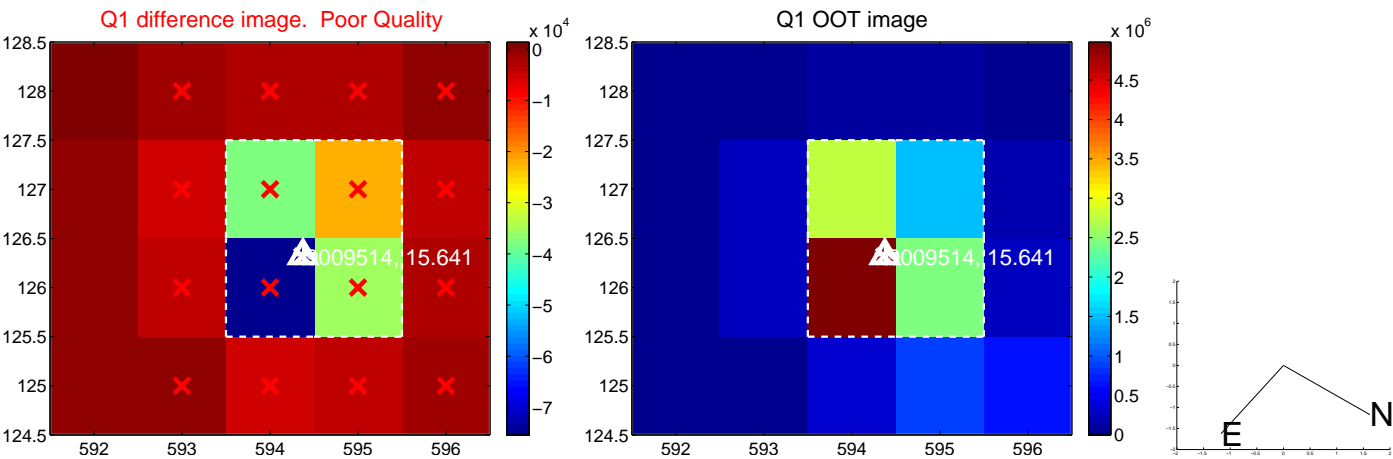


offset from photometric centroids

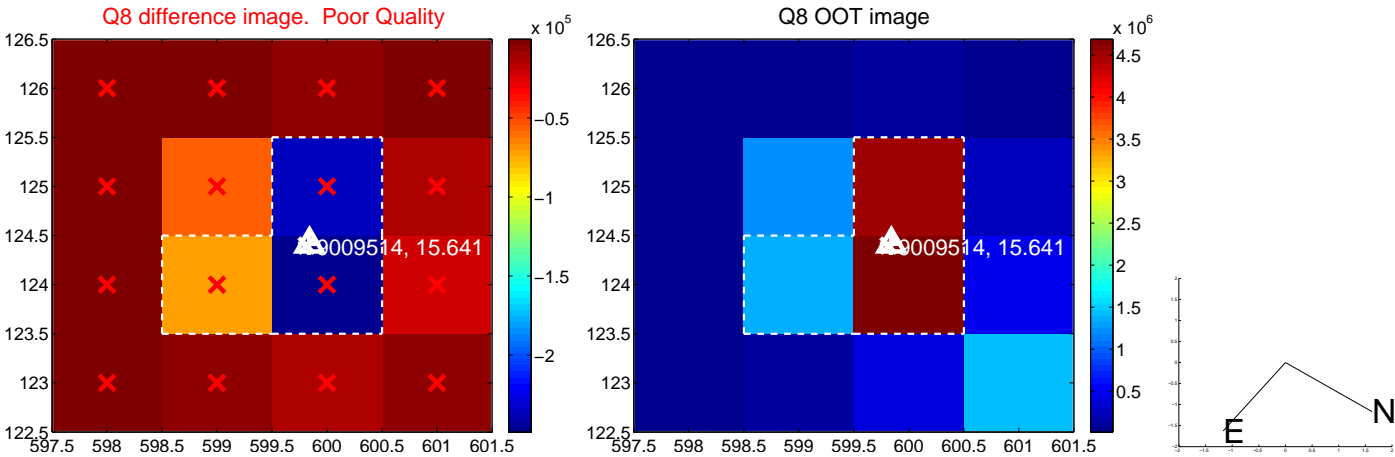
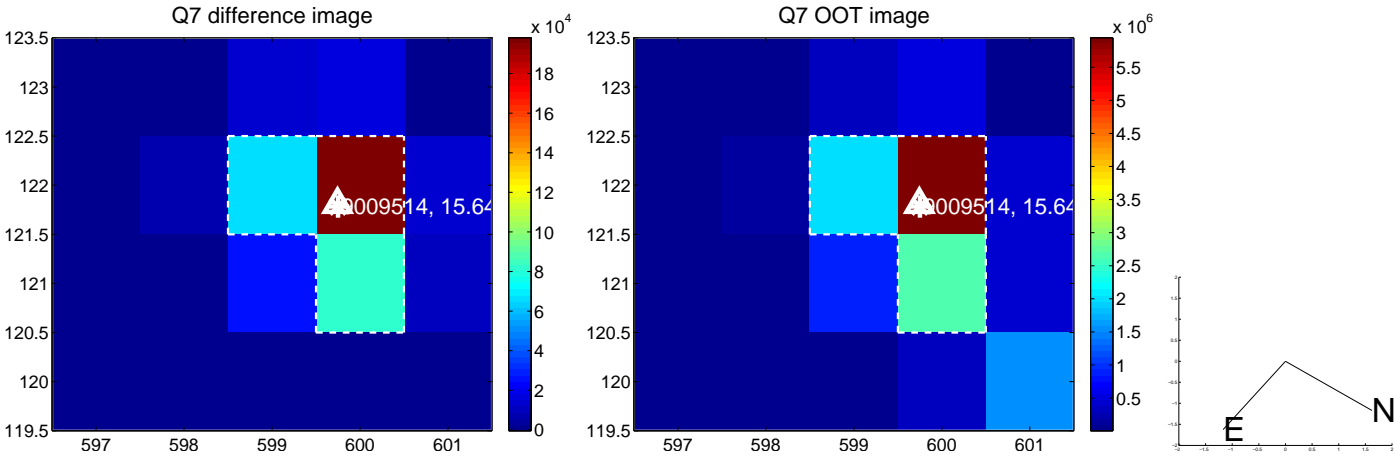
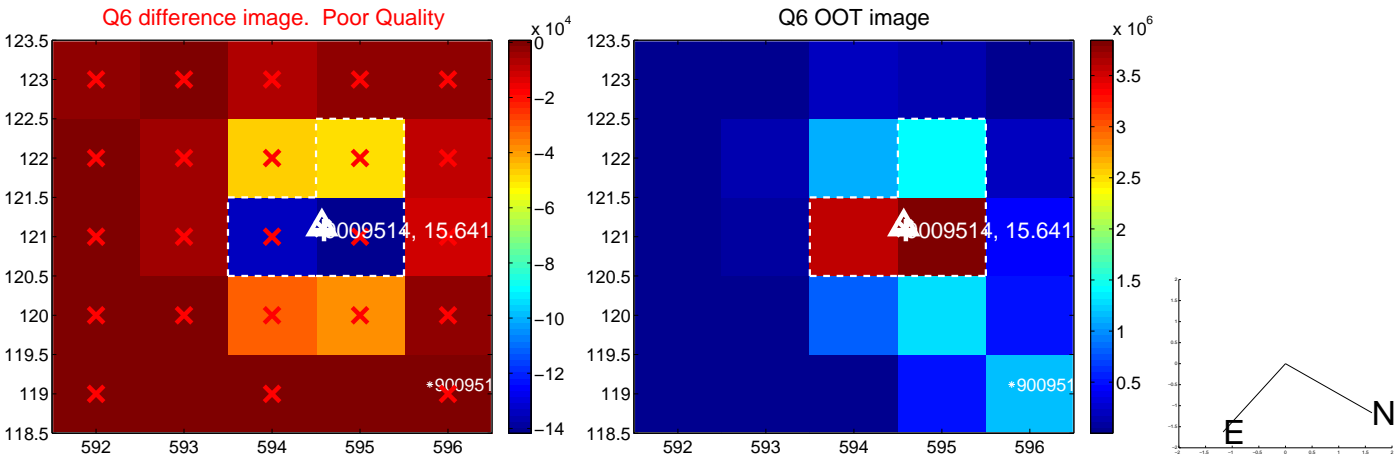
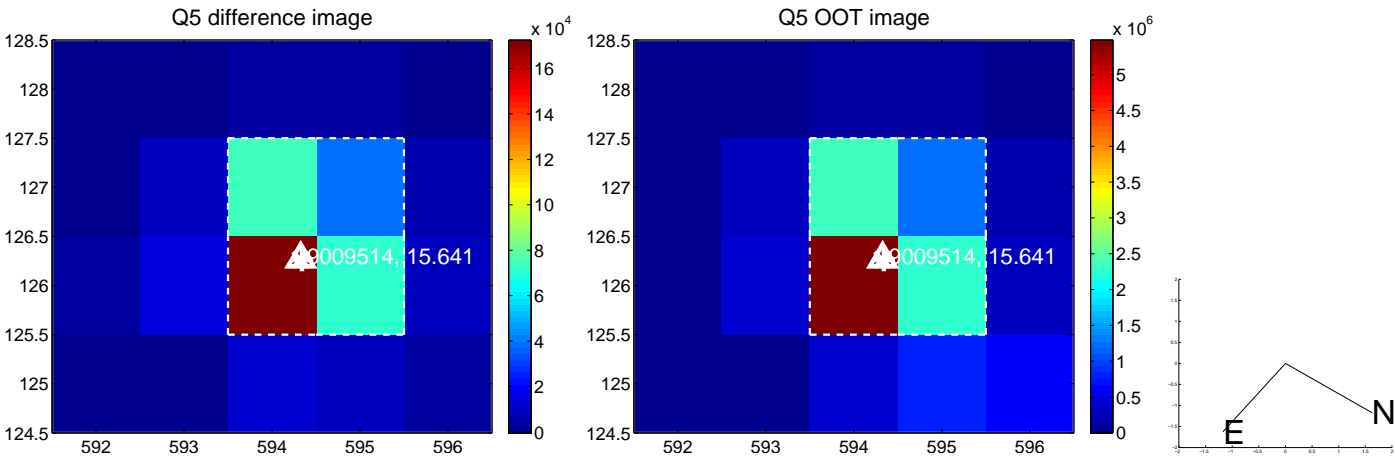


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

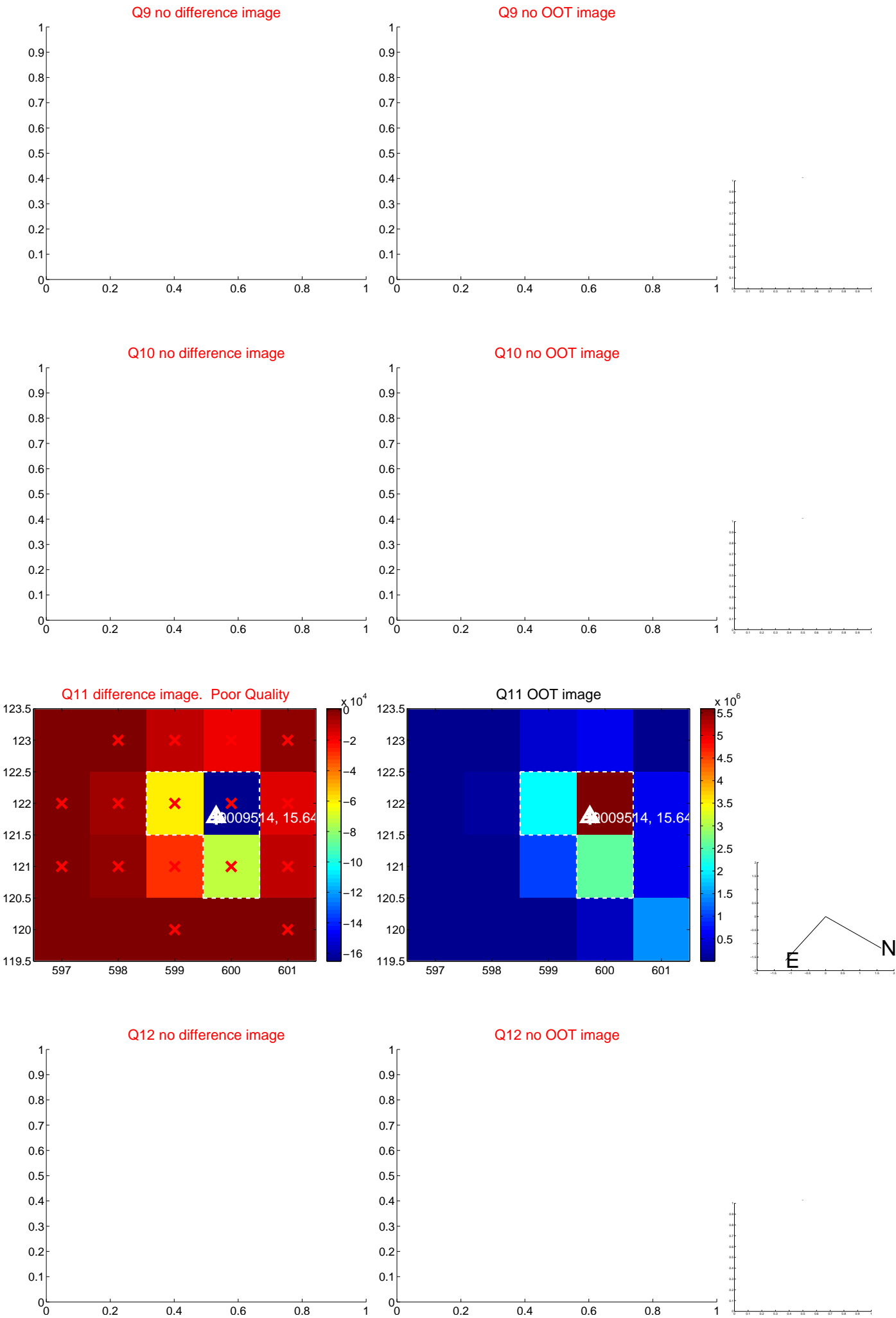
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



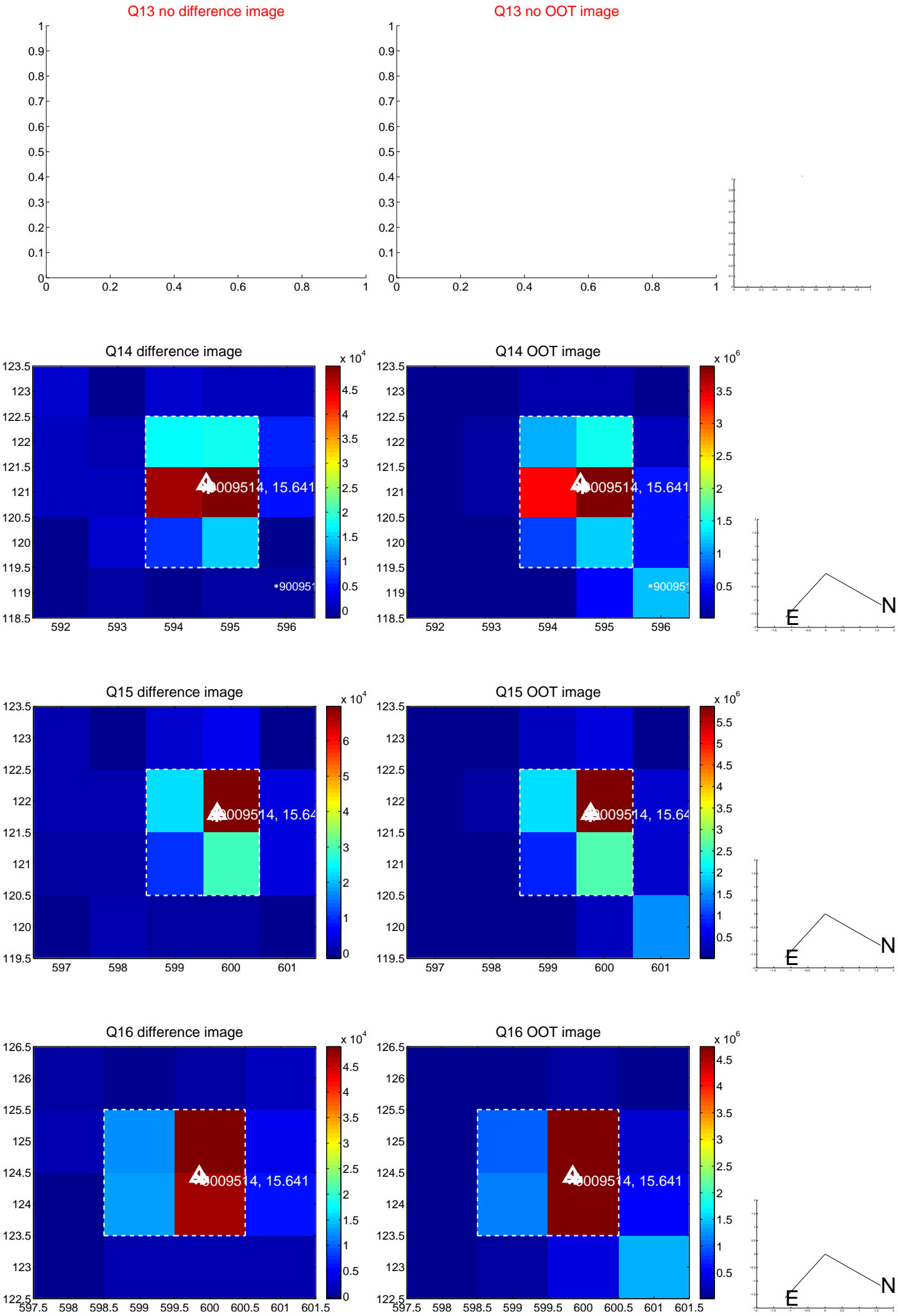
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



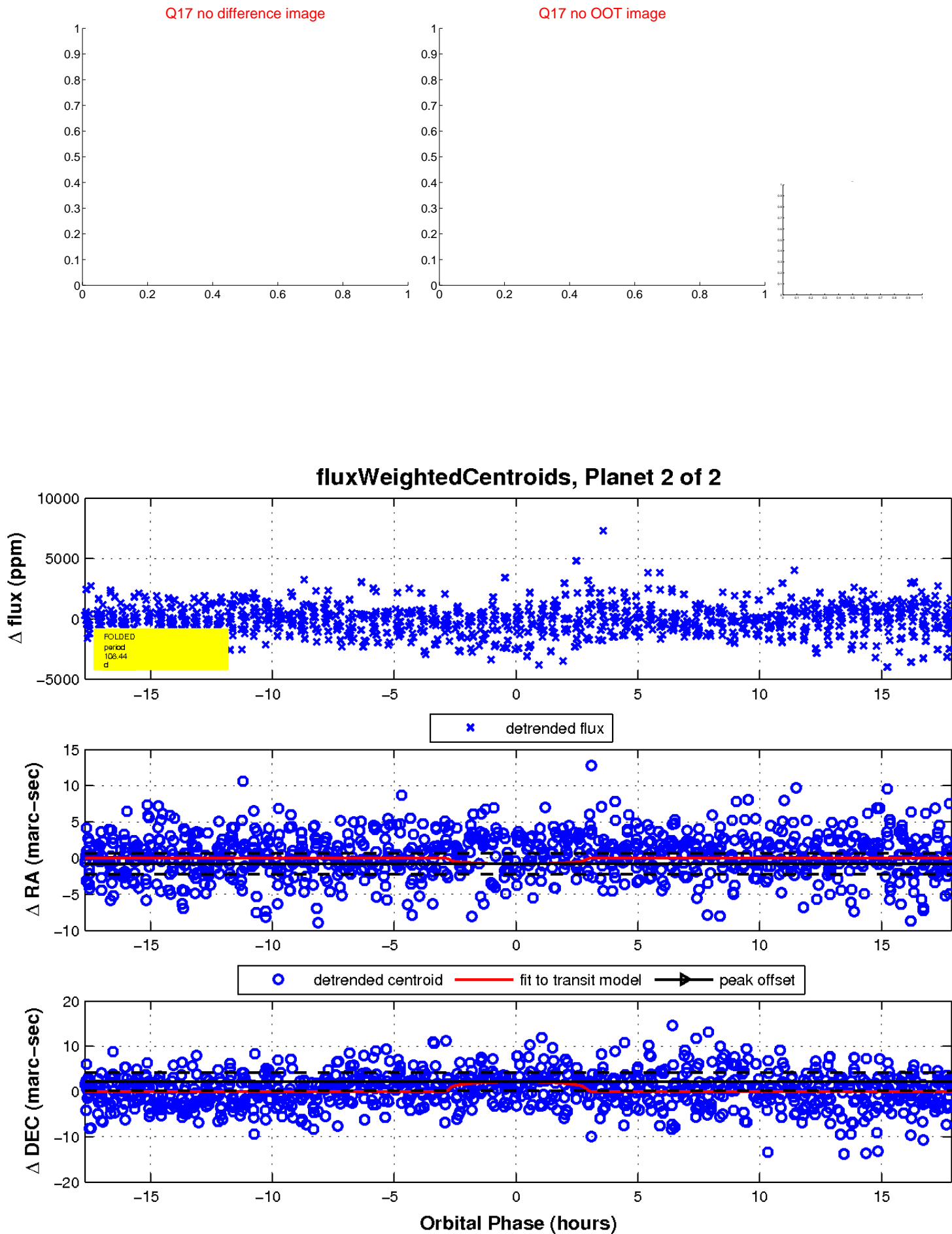
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.



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.



UKIRT Image

Declination

