

KIC 005091614

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})
005091614-01	OBS	6515.01	21.142458	138.391624	73528.1	5.168	4368.4	3753.3	0.94	6079	38.00	48.19
005091614-02	OBS	No	21.142458	150.903635	27213.7	4.872	1575.0	1474.8	0.94	6079	27.10	48.19

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005091614-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_DV—MOD_SEC_ALT—DEEP_V_SHAPED—HAS_SEC_TCE
005091614-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE

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.

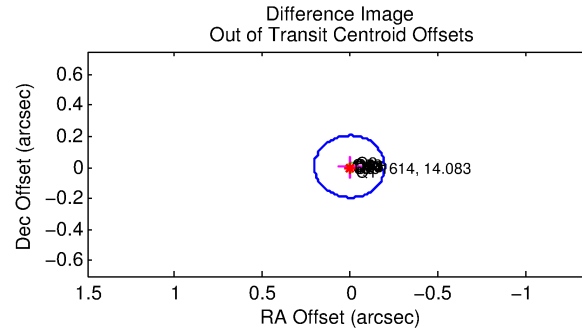
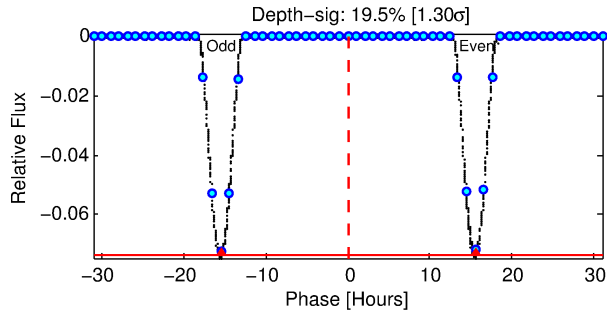
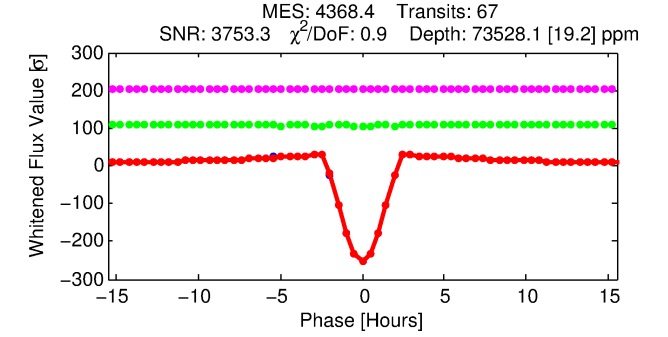
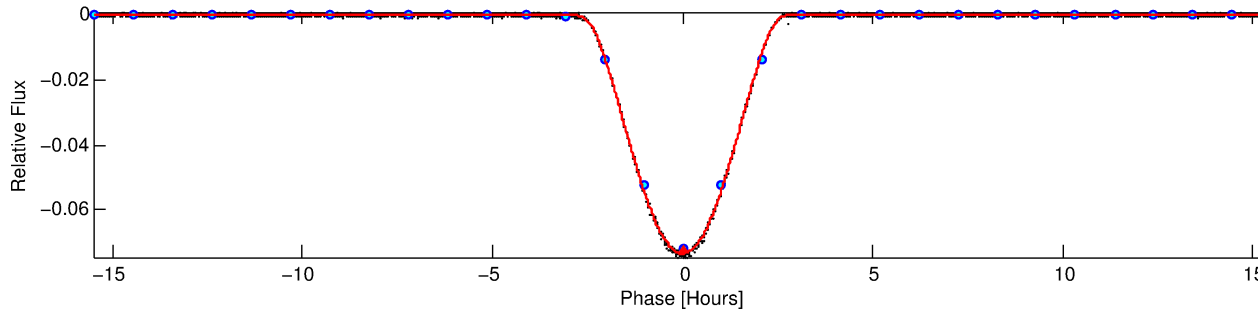
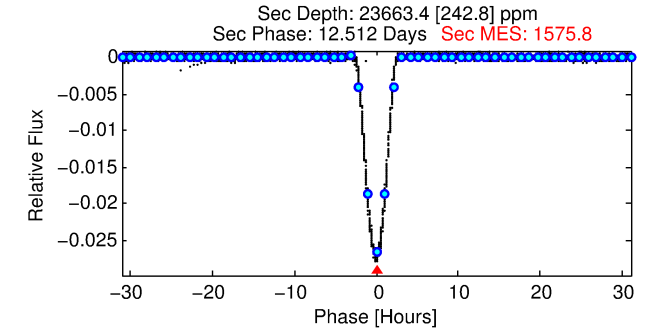
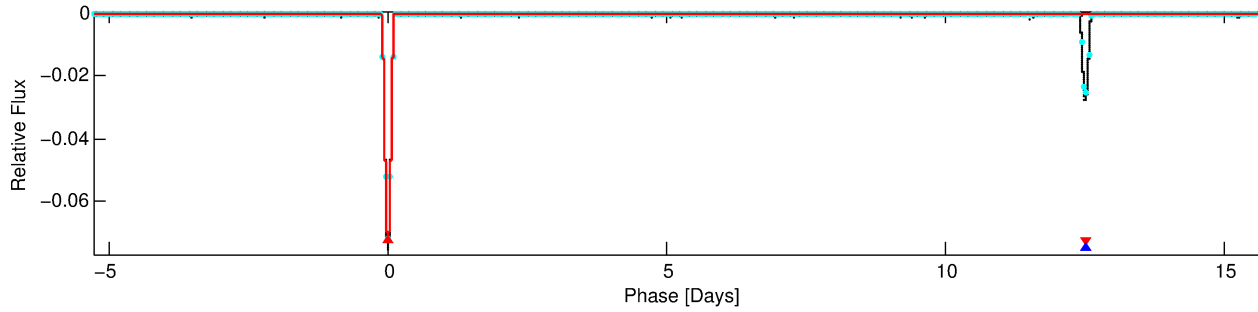
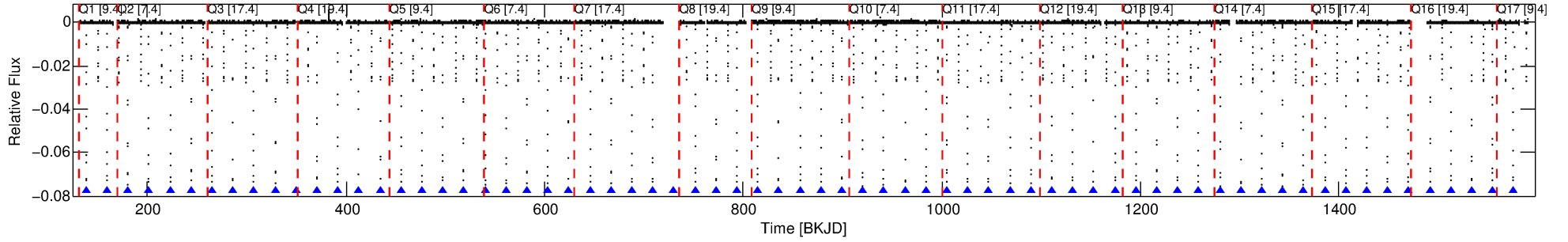
Ephemeris Match Information For 005091614-01

No Significant Match Found

DV One-Page Summary

KIC: 5091614 Candidate: 1 of 2 Period: 21.142 d
KOI: K06515.01 Corr: 0.999

Kp: 14.08 R*: 0.94 Rs Teff: 6079.0 K Logg: 4.50 Fe/H: -0.200



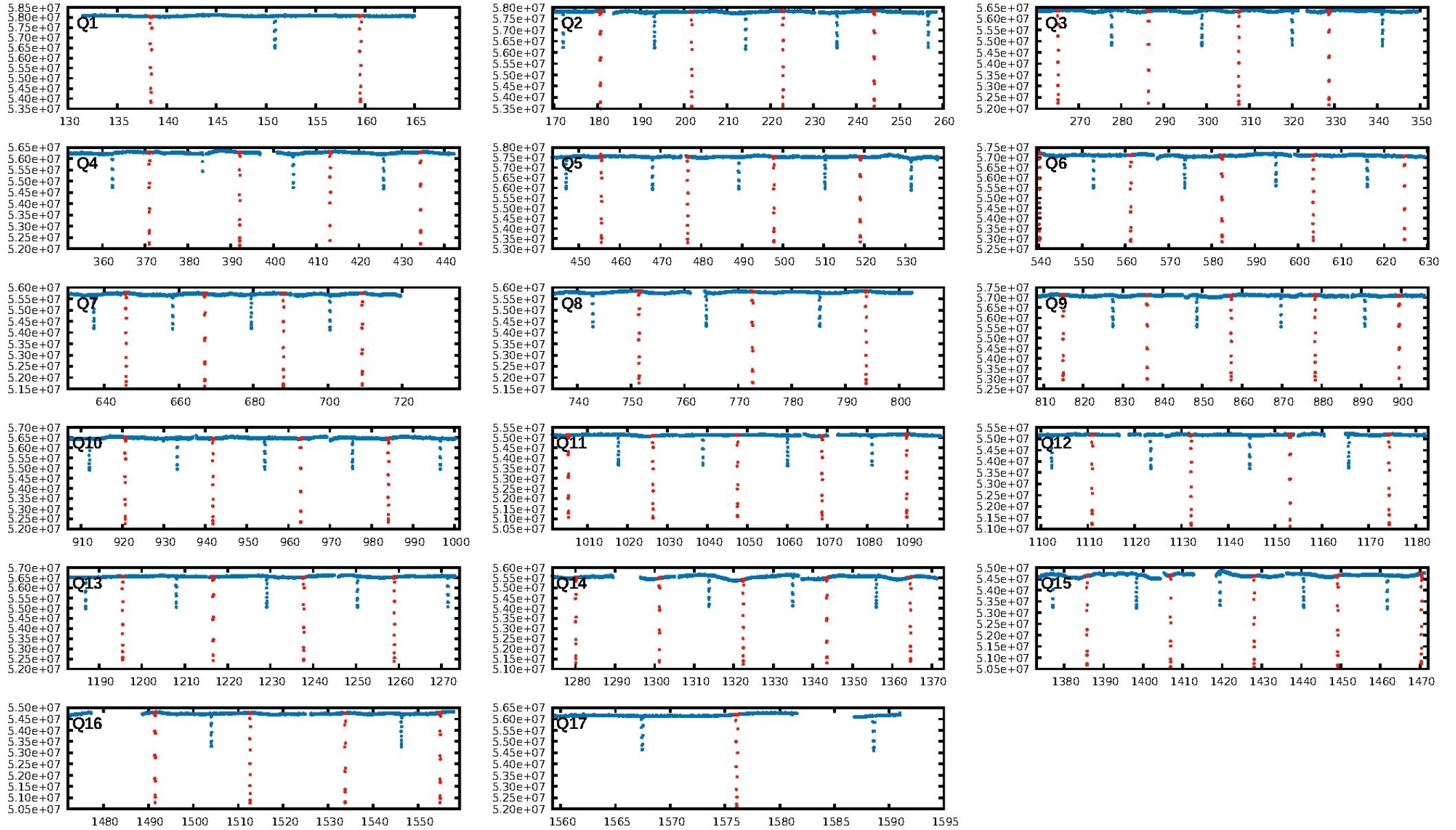
DV Fit Results:

Period = 21.14246 [0.00000] d
Epoch = 138.3916 [0.0000] BKJD
Rp/R* = 0.3685 [0.0048]
a/R* = 31.60 [0.01]
b = 0.92 [0.01]
Seff = 48.19 [20.74]
Teq = 672 [72] K
Rp = 38.00 [12.23] Re
a = 0.1506 [0.0418] AU
Ag = 204.41 [84.37] [2.41σ]
Teffp = 3928 [126] K [22.44σ]

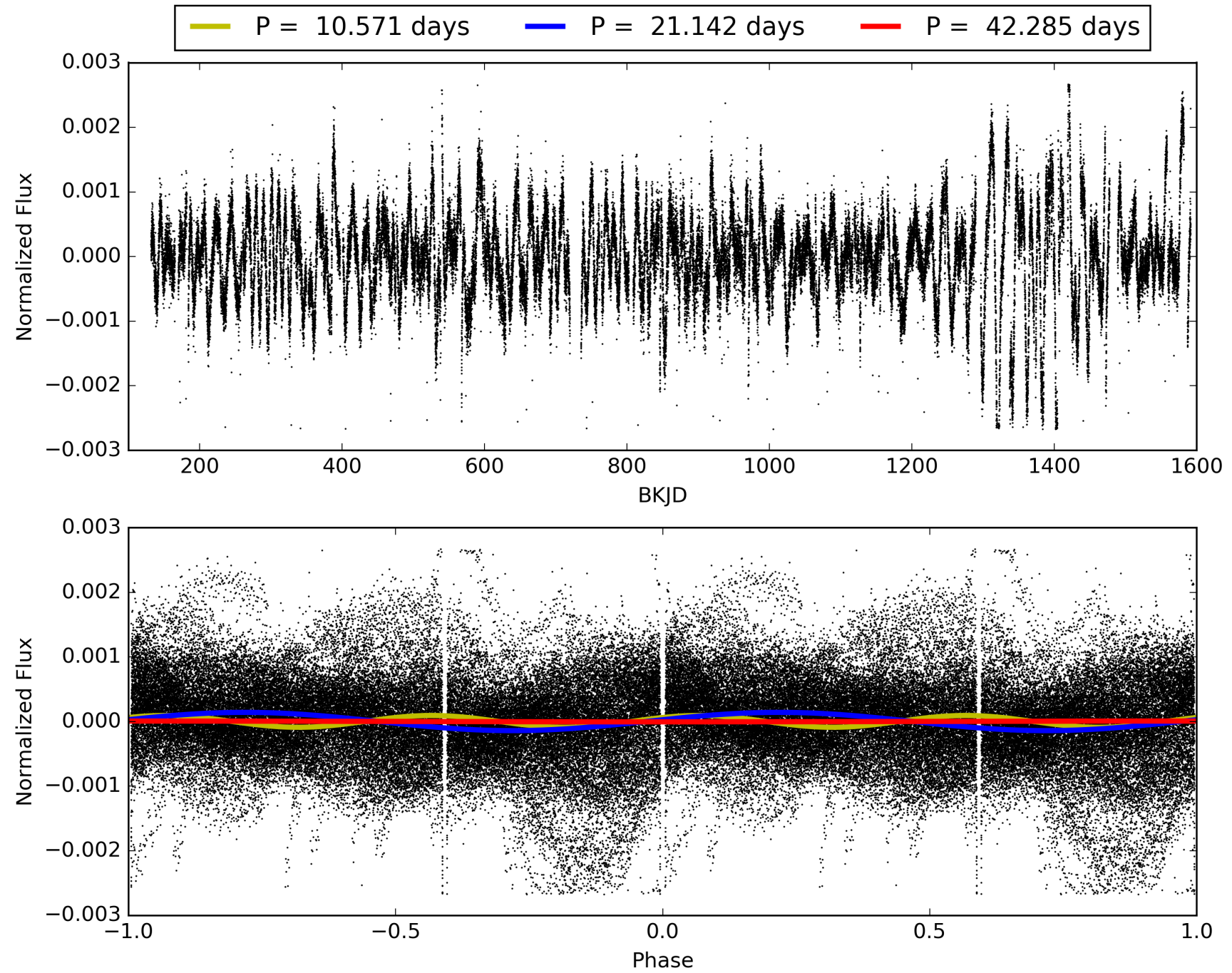
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 1.00 [64/64]
GhostDiagnostic-chr: 9.261
Centroid-sig: 0.0%
Centroid-so: 0.091 arcsec [46.89σ]
OotOffset-rm: 0.008 arcsec [0.12σ]
KicOffset-rm: 0.077 arcsec [1.13σ]
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]

TCE 005091614-01, PDC Light Curves

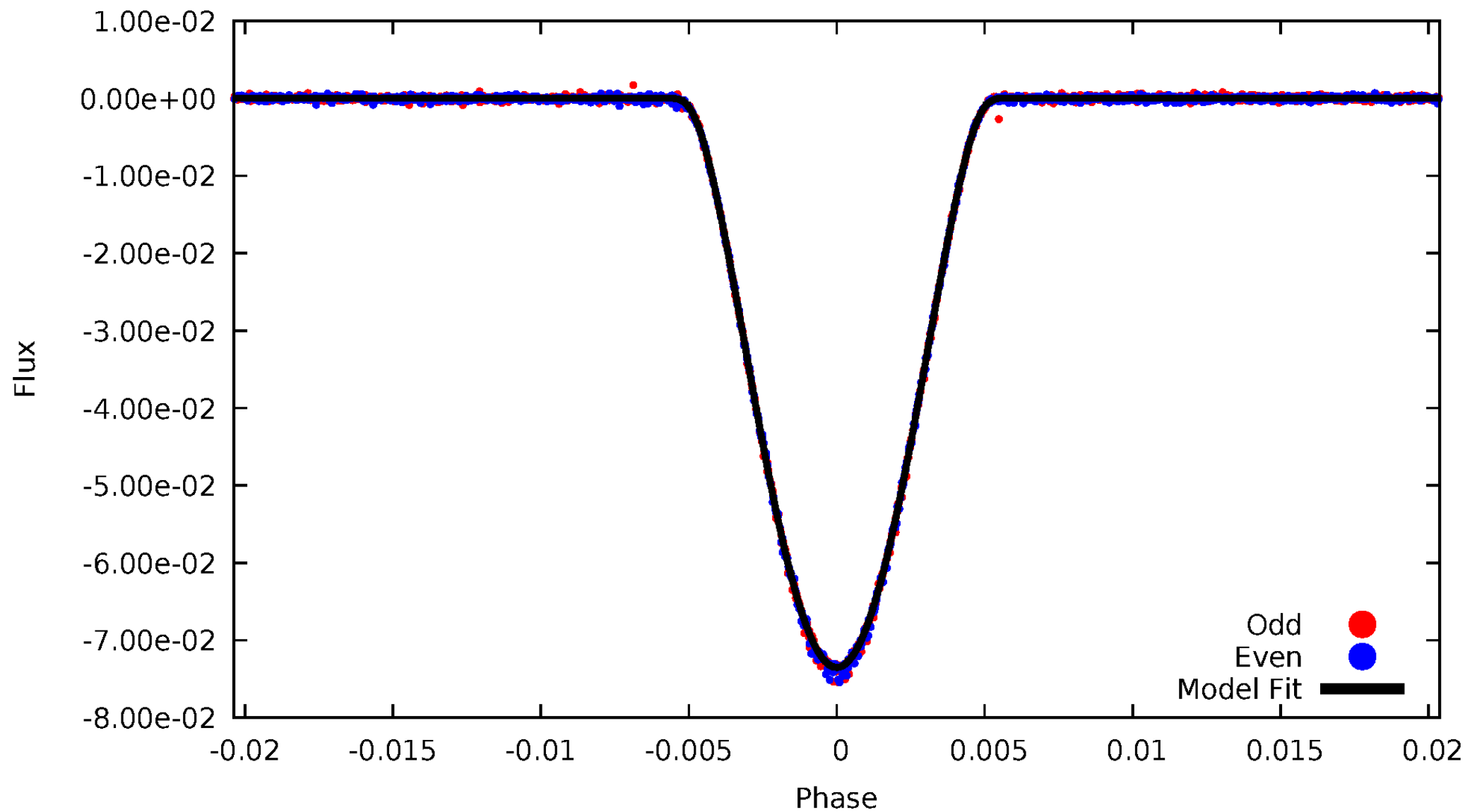


TCE 005091614-01



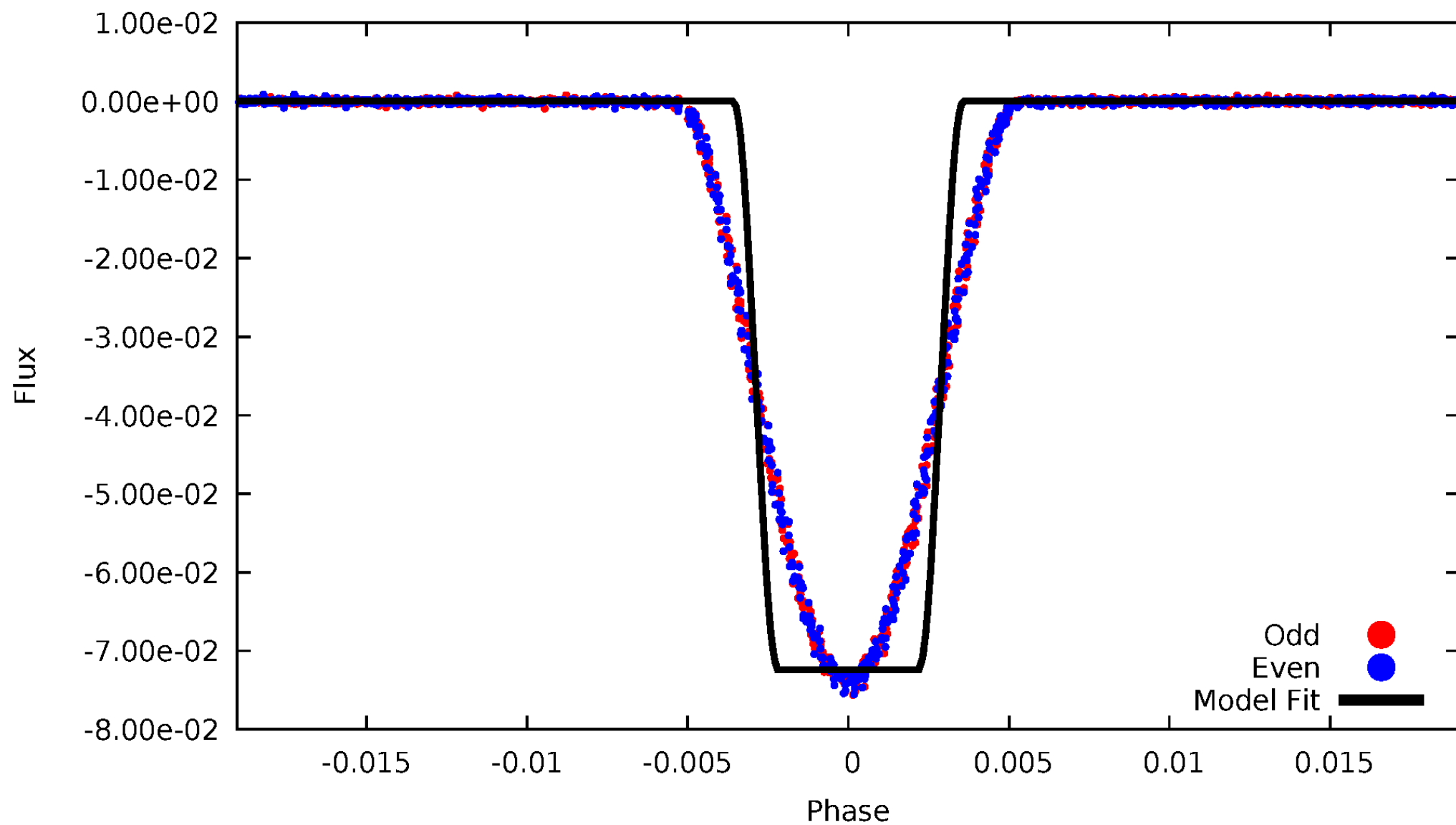
DV Odd/Even

TCE 005091614-01



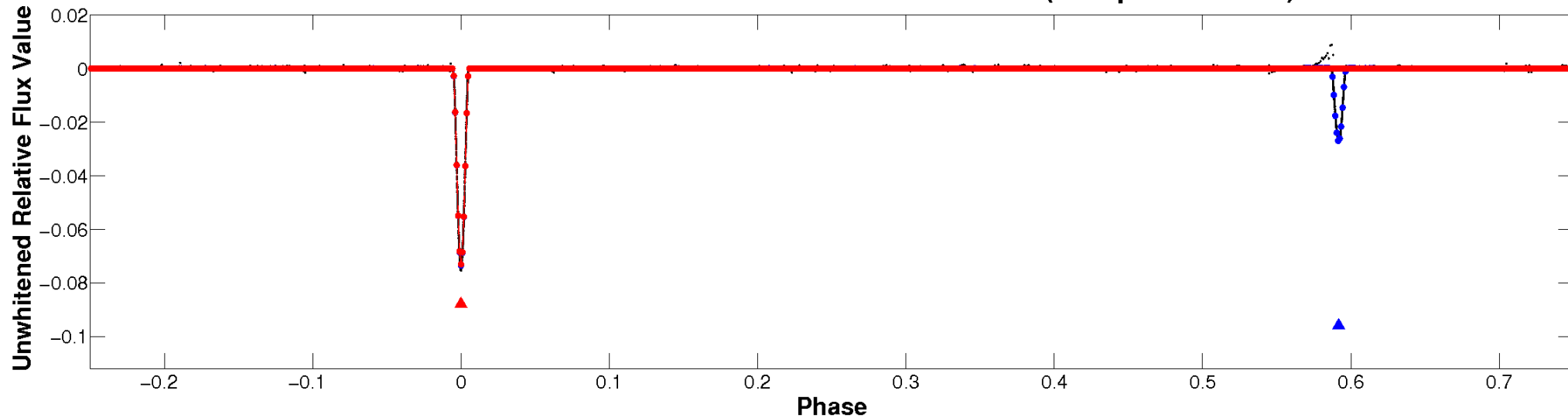
ALT Odd/Even

TCE 005091614-01

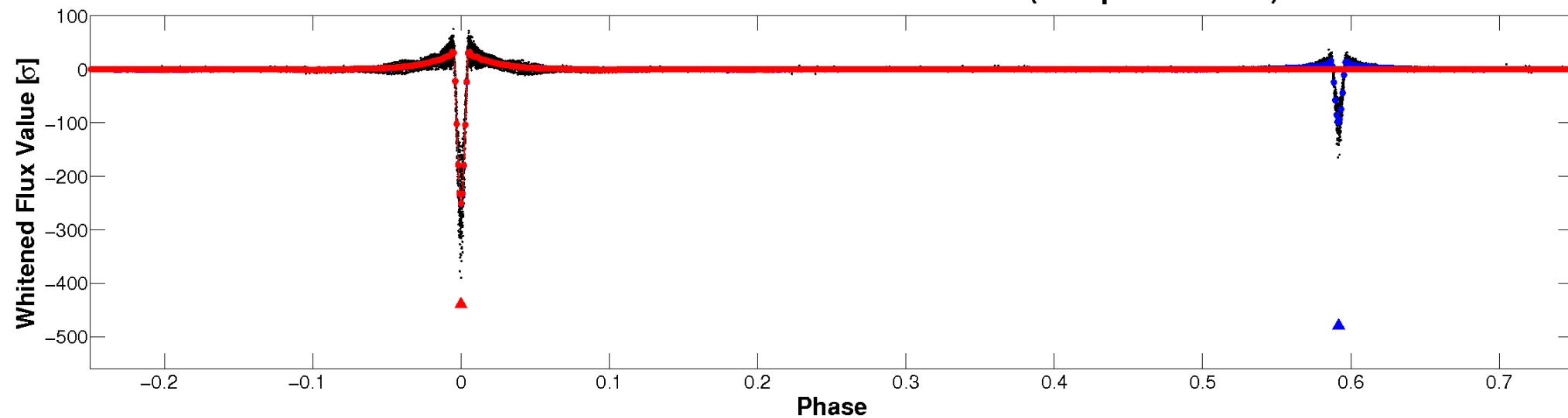


Non-Whitened Vs. Whitened Light Curve

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

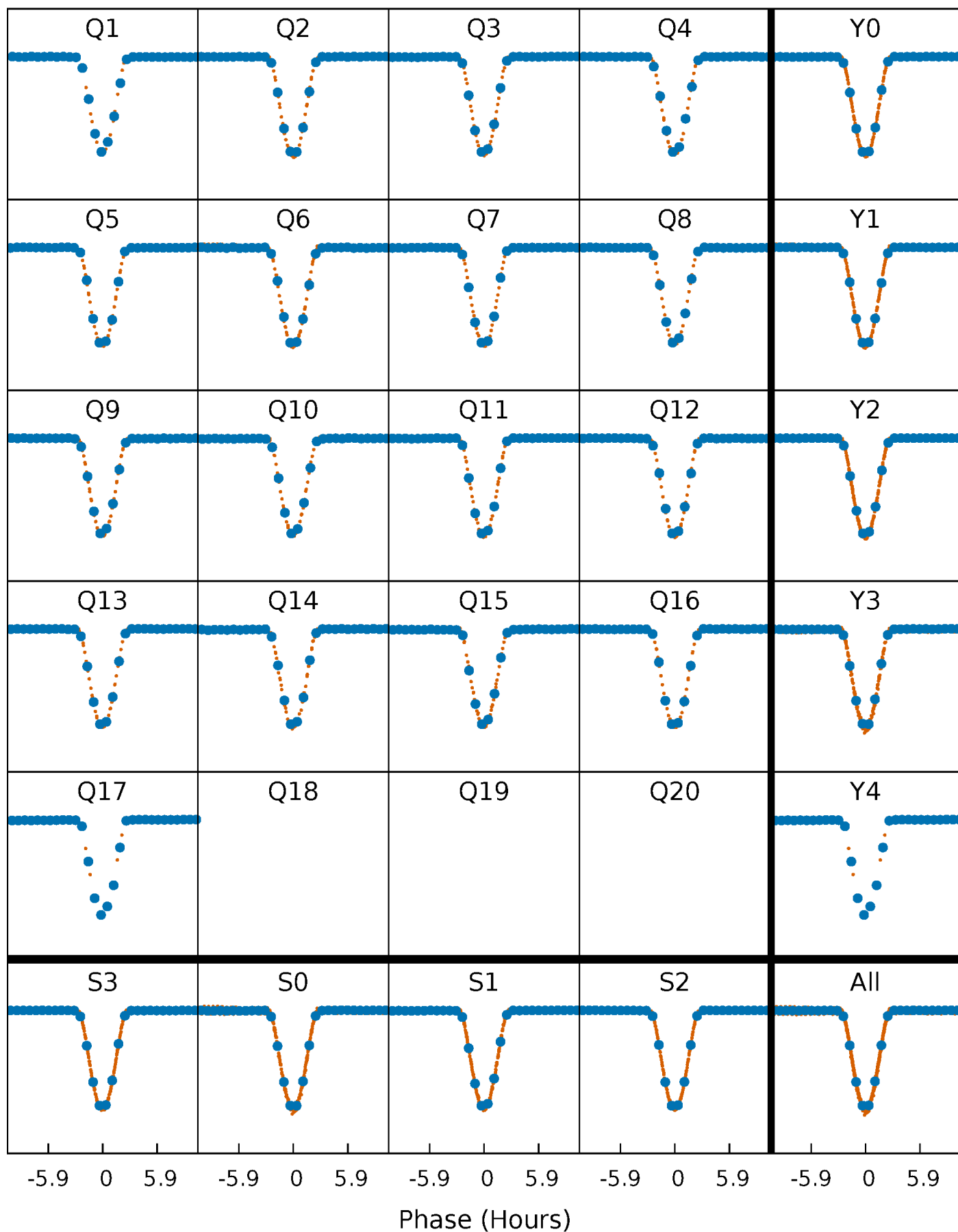


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



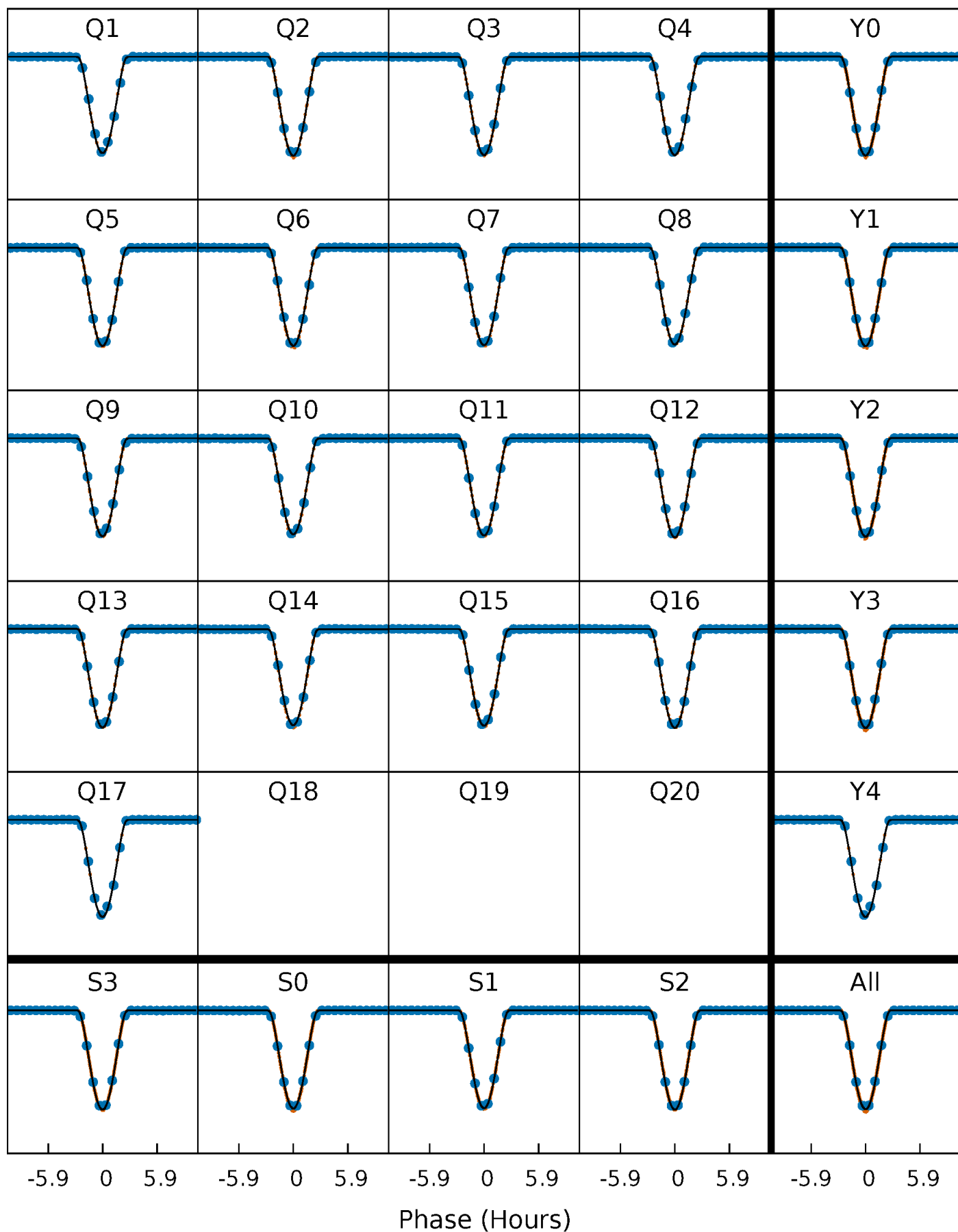
PDC Quarter-Phased Transit Curves

TCE 005091614-01 P= 21.142458 Days $T_0=138.391624$ (BKJD)



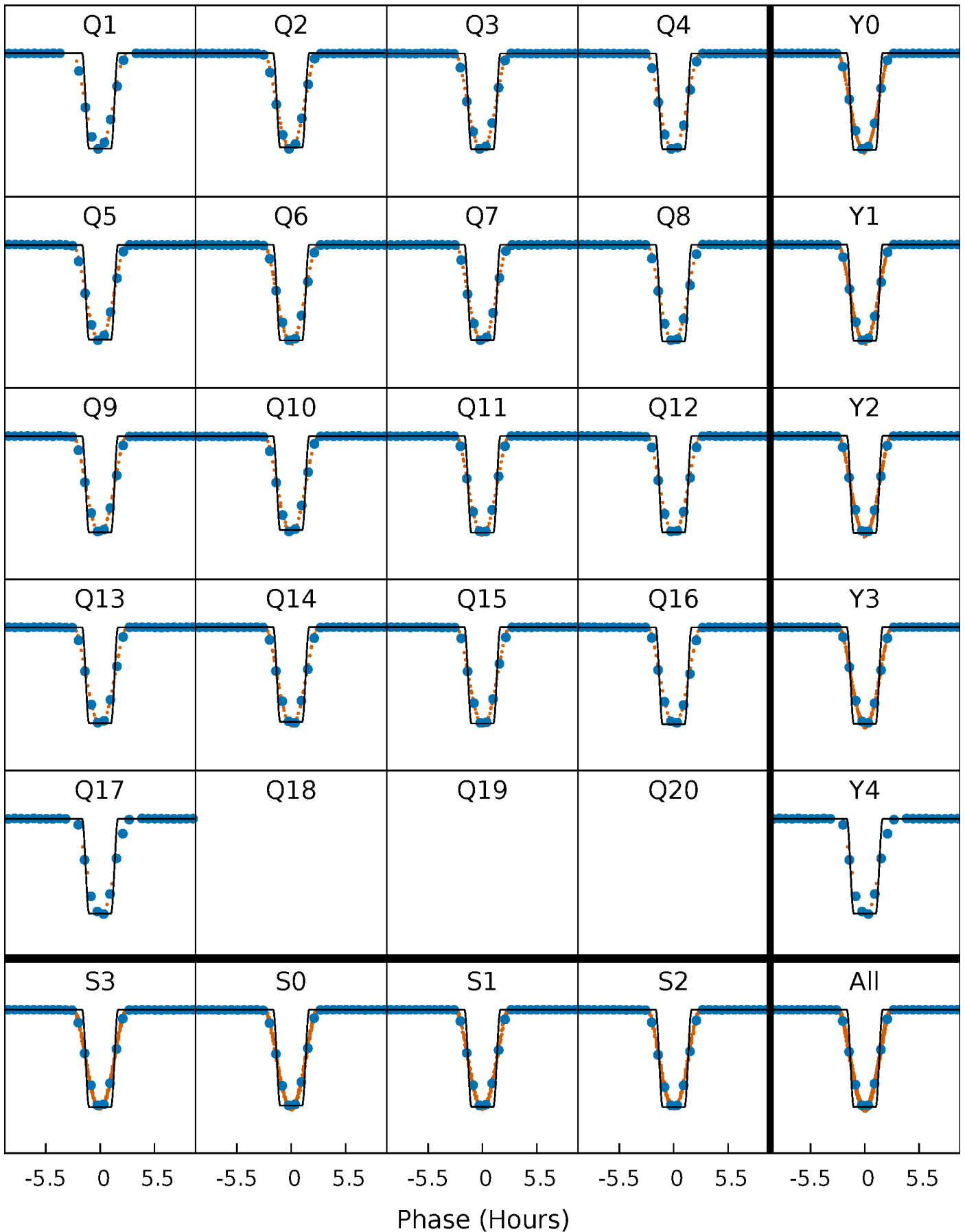
DV Quarter-Phased Transit Curves

TCE 005091614-01 P= 21.142458 Days $T_0=138.391624$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

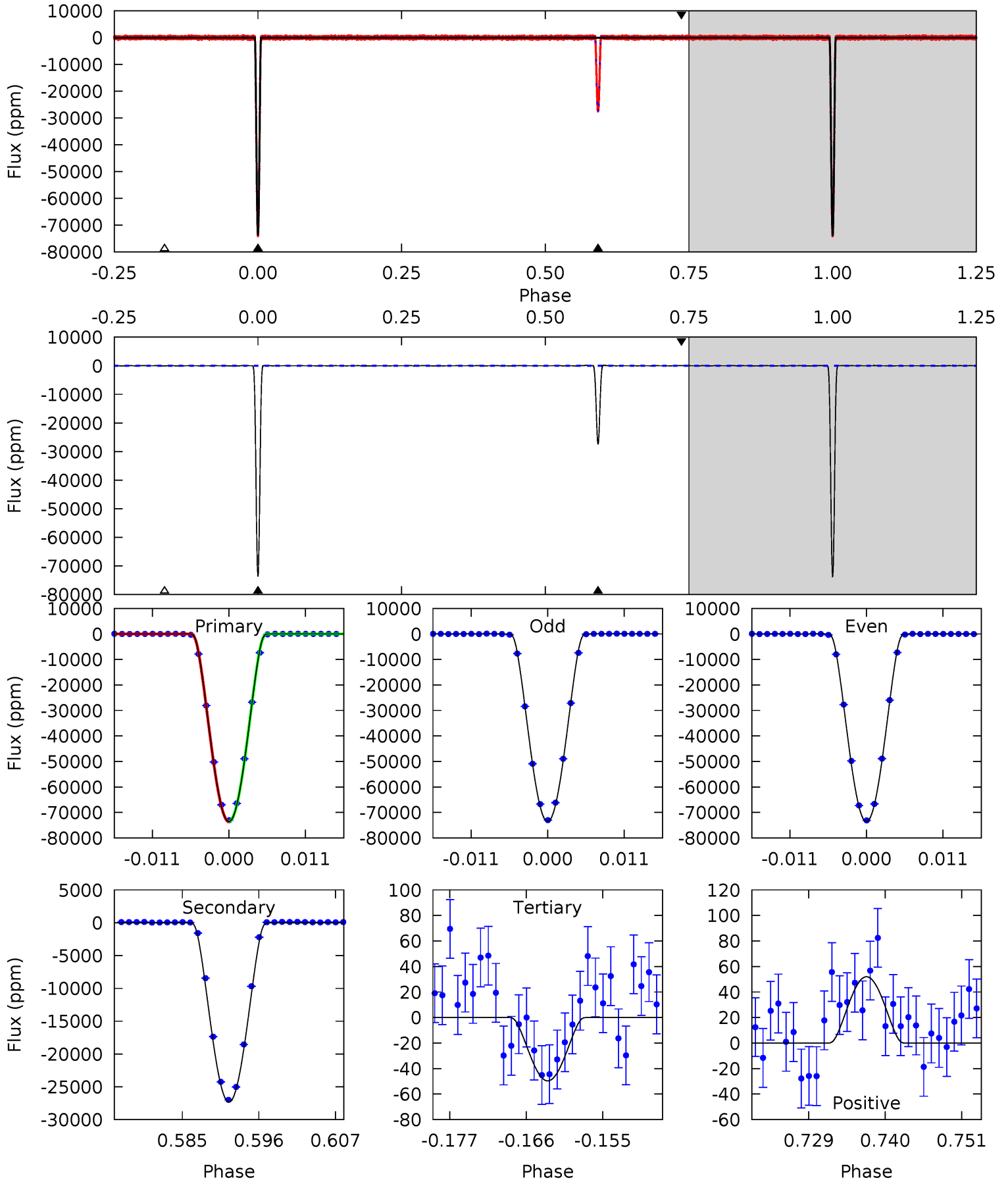
TCE 005091614-01 P= 21.142367 Days $T_0=138.394792$ (BKJD)



DV Model-Shift Uniqueness Test

005091614-01, P = 21.142458 Days, E = 117.249166 Days

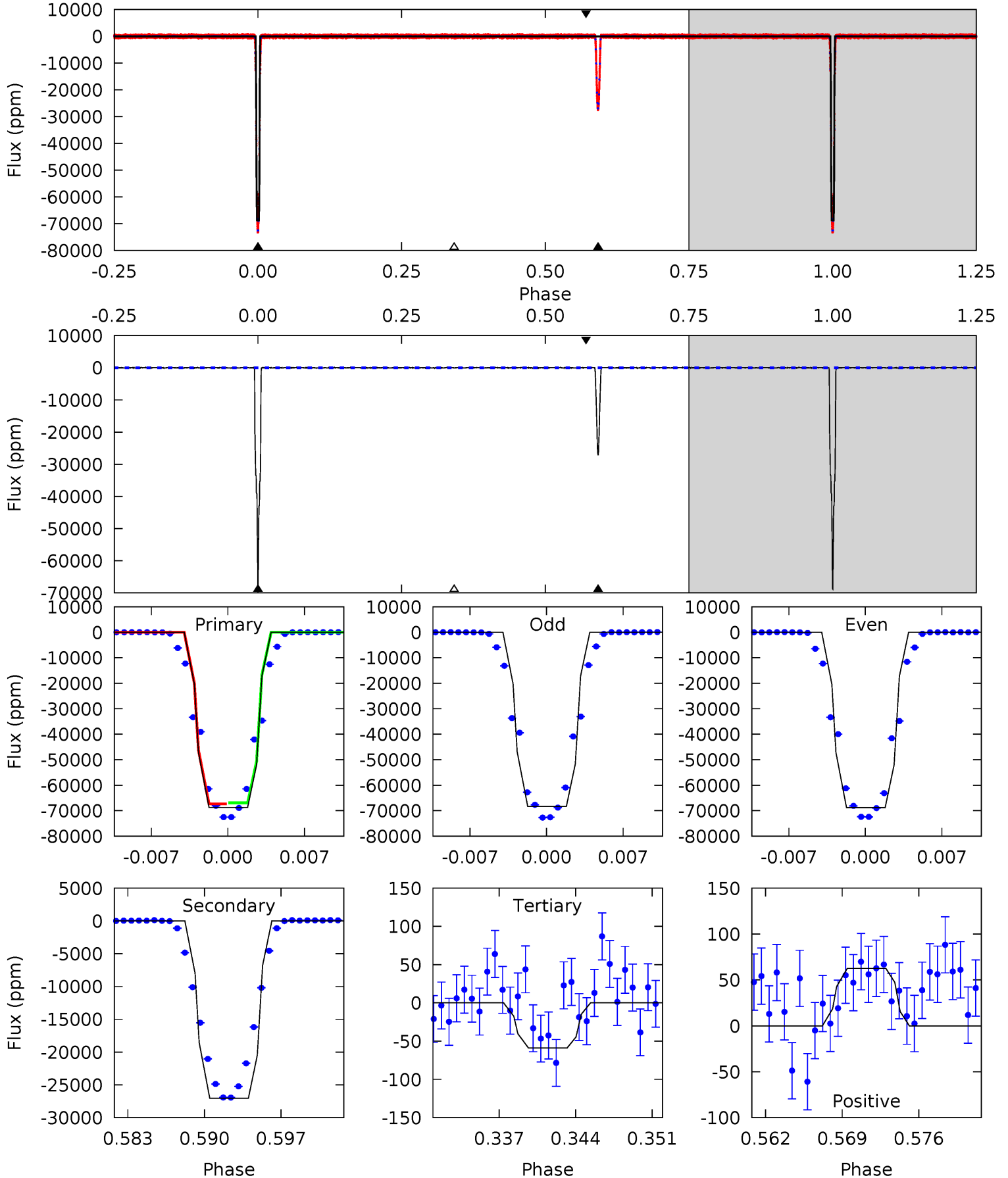
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9181	3410	6.19	6.49	5.01	2.54	3.12	9175	9175	3404	3404	1.75	1.00	0.00	0.12



Alt Model-Shift Uniqueness Test

005091614-01, P = 21.142367 Days, E = 117.252425 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4186	1648	3.59	3.81	5.09	2.70	1.31	4183	4183	1644	1644	14.3	1.00	0.00	0



Stellar Parameters For KIC 005091614

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6079^{+169}_{-190}	$4.495^{+0.054}_{-0.229}$	$-0.200^{+0.250}_{-0.300}$	$0.945^{+0.304}_{-0.101}$	$1.019^{+0.140}_{-0.140}$	$1.702^{+0.377}_{-0.941}$
	+3%/-3%	+1%/-5%	+125%/-150%	+32%/-11%	+14%/-14%	+22%/-55%
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 005091614-01 / KOI 6515.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-27327 ± 8	$39.14^{+6.91}_{-3.01}$	963^{+75}_{-47}	4327^{+90}_{-95}	224^{+33}_{-61}
Alt.	-27058 ± 16	$28.76^{+5.22}_{-2.68}$	960^{+79}_{-49}	4883^{+118}_{-127}	416^{+69}_{-112}

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

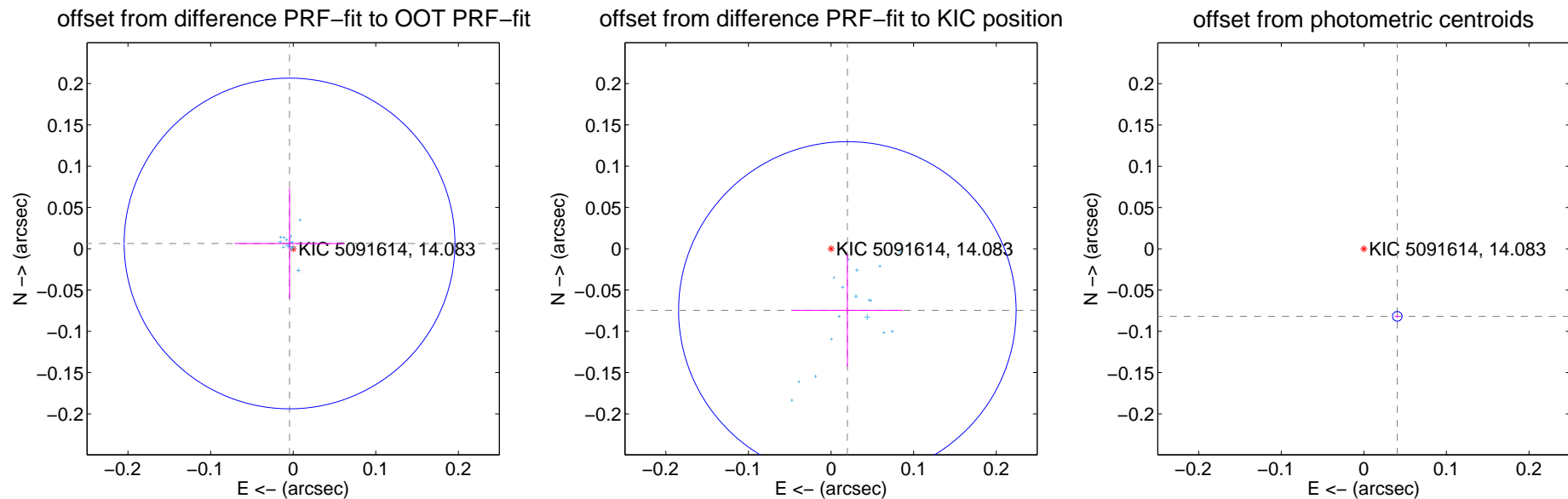
DV Centroid Data

Supplemental centroid analysis for 005091614-01. Kepler magnitude: 14.08. Transit SNR 3753.31

There are 17 quarters with good PRF difference image offsets

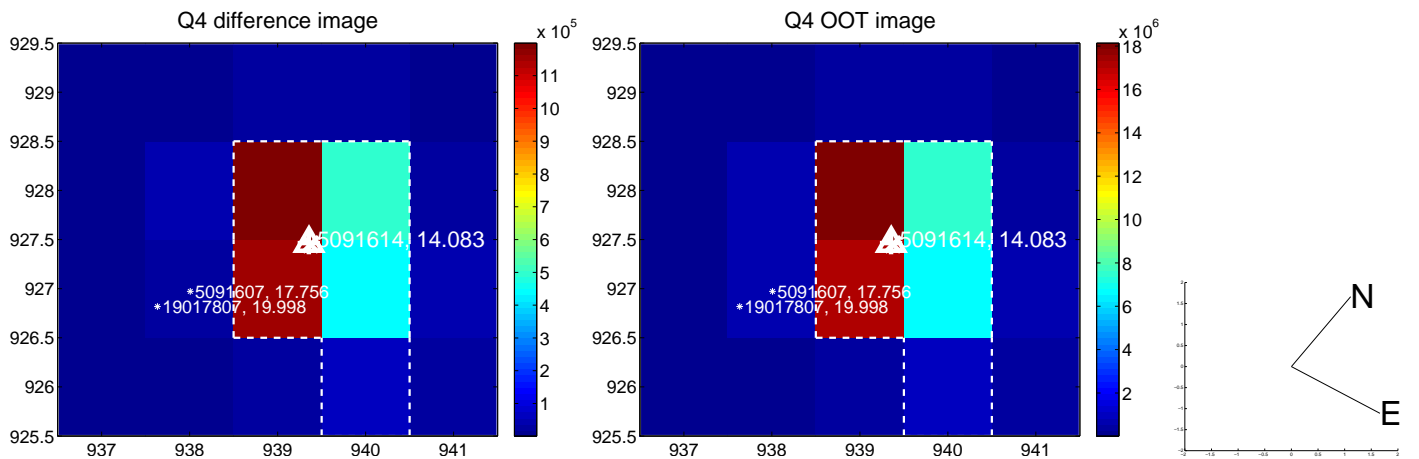
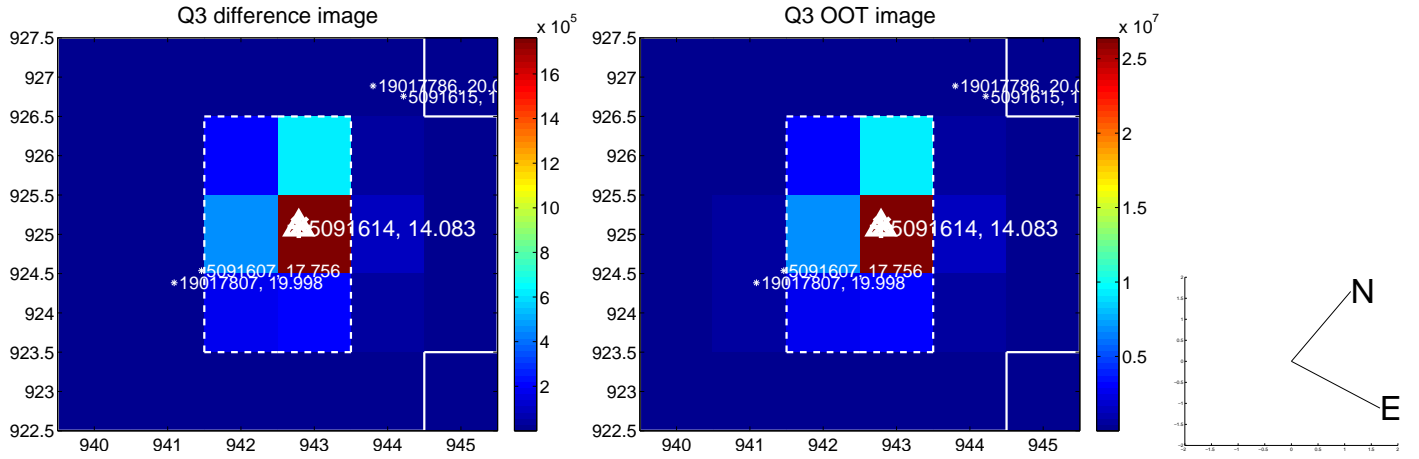
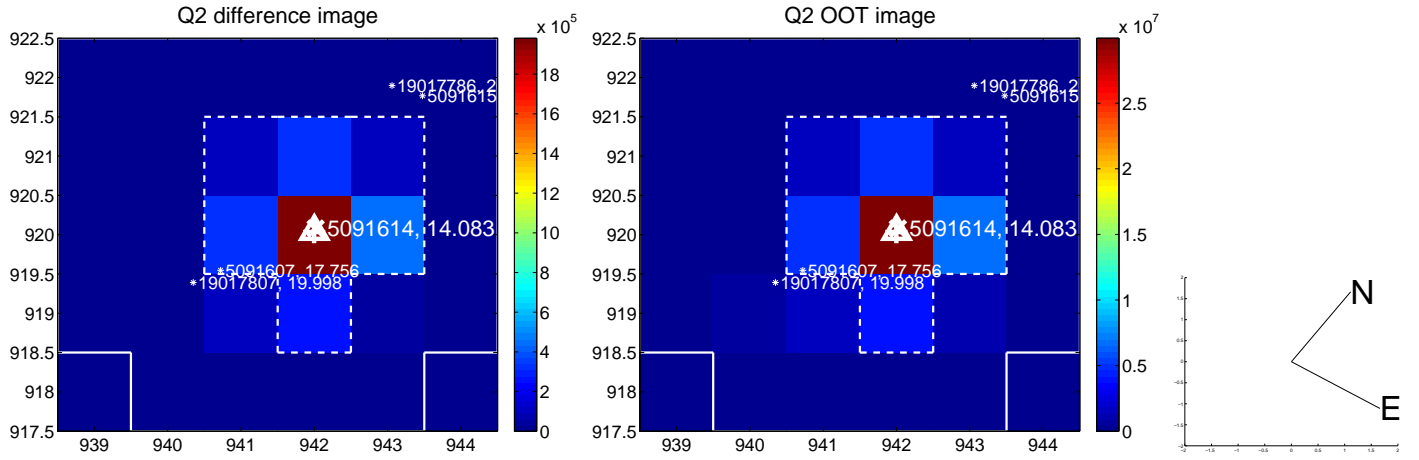
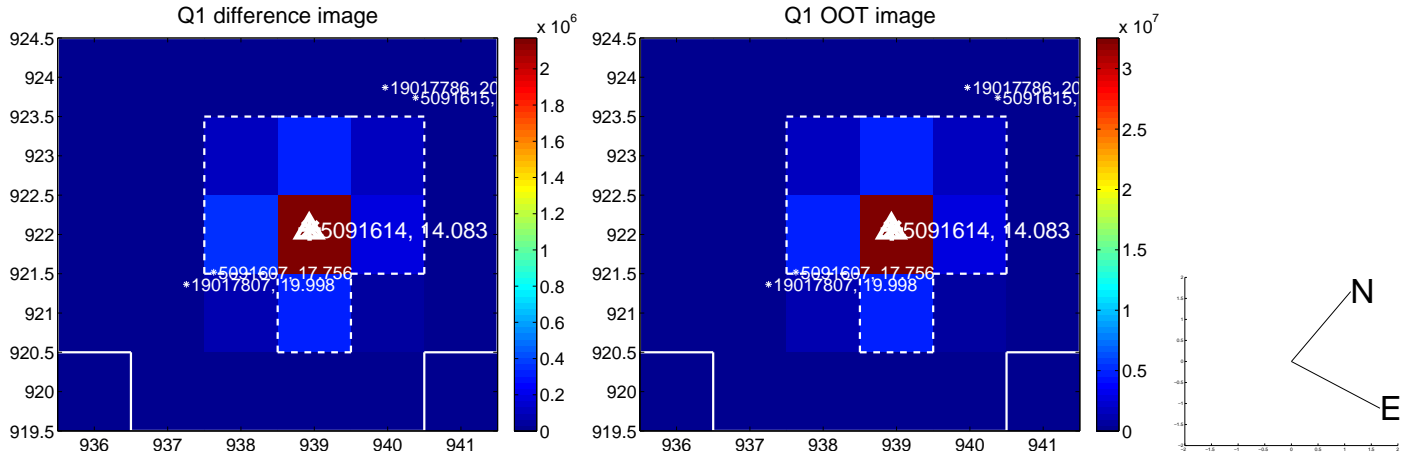
The direct PRF centroid is offset from the target star catalog position by about 0.10 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.008 ± 0.067	0.12	0.004 ± 0.067	0.006 ± 0.067
PRF-fit source offset from KIC position	0.077 ± 0.068	1.13	-0.020 ± 0.067	-0.075 ± 0.068
photometric centroid source offset	0.09 ± 0.00	46.89	-0.04 ± 0.00	-0.08 ± 0.00

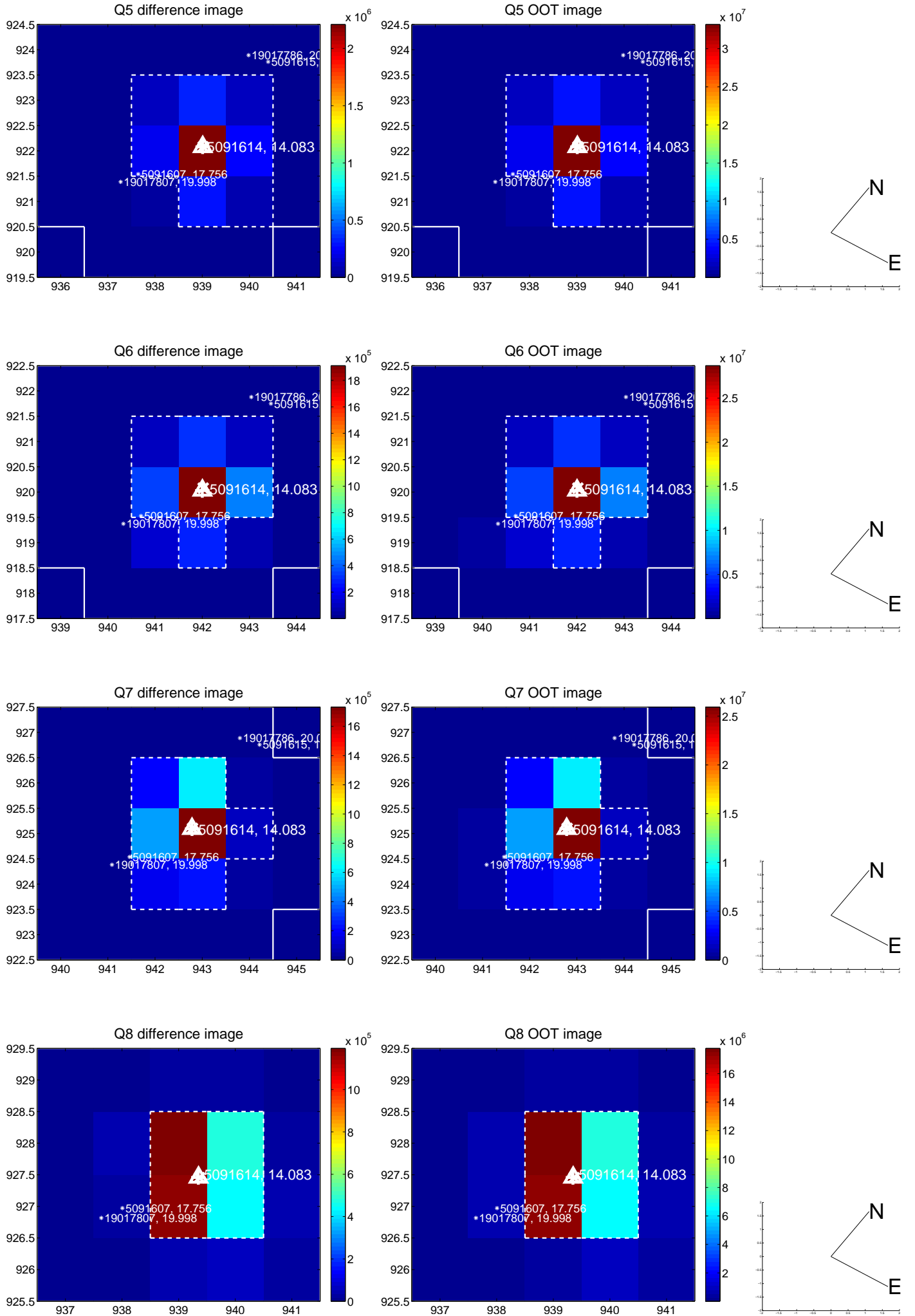


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

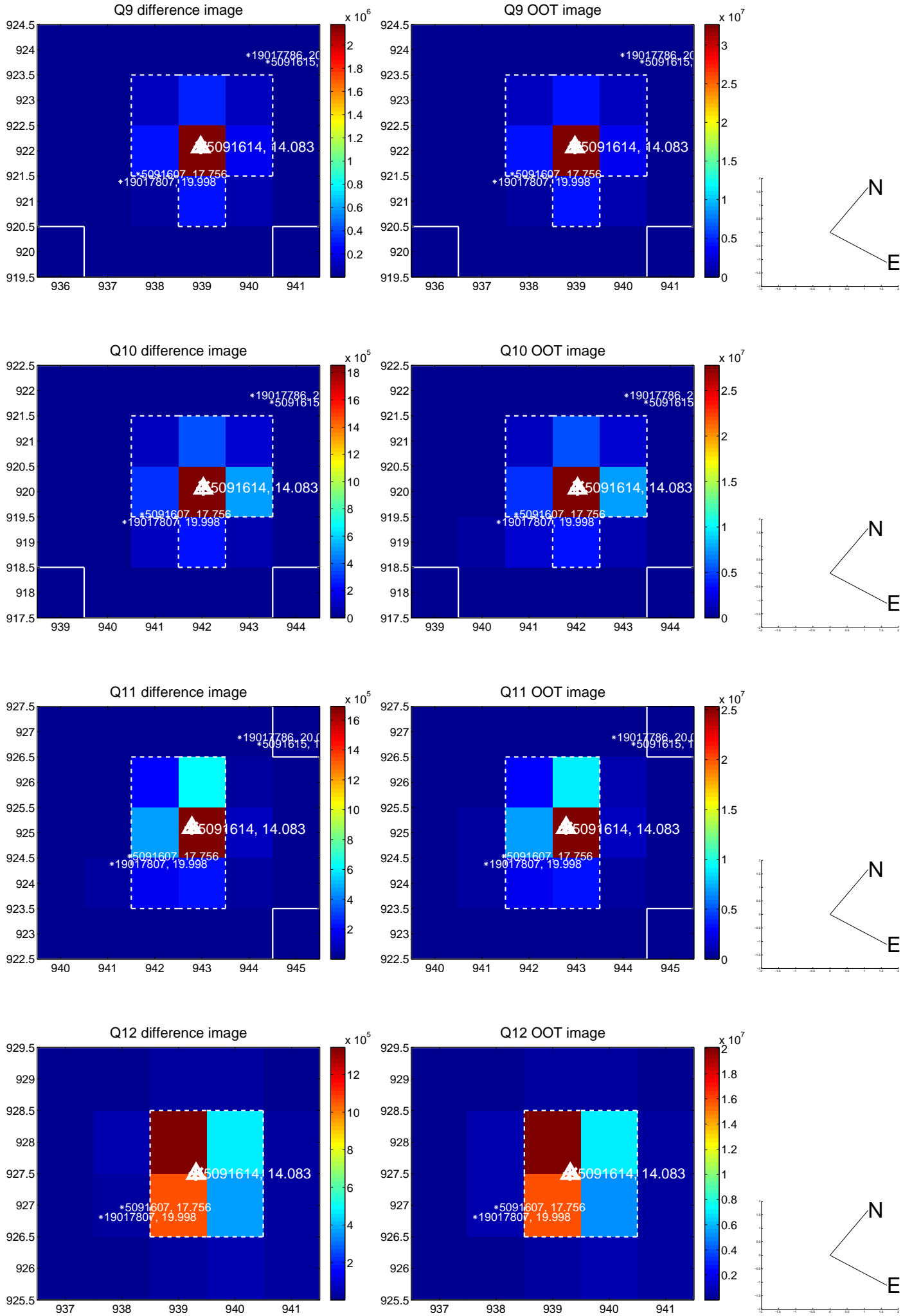
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



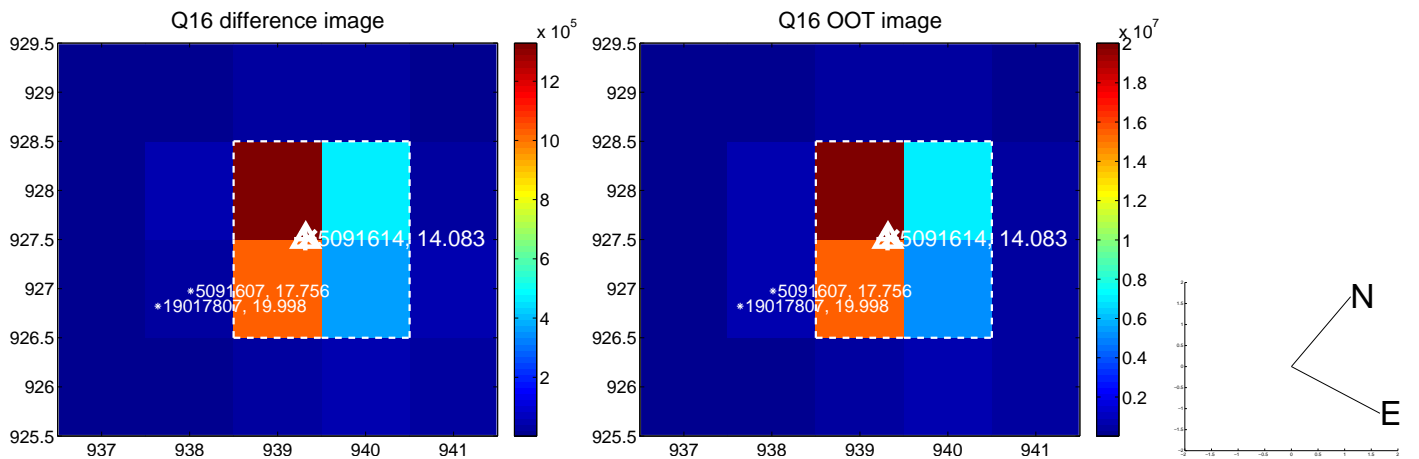
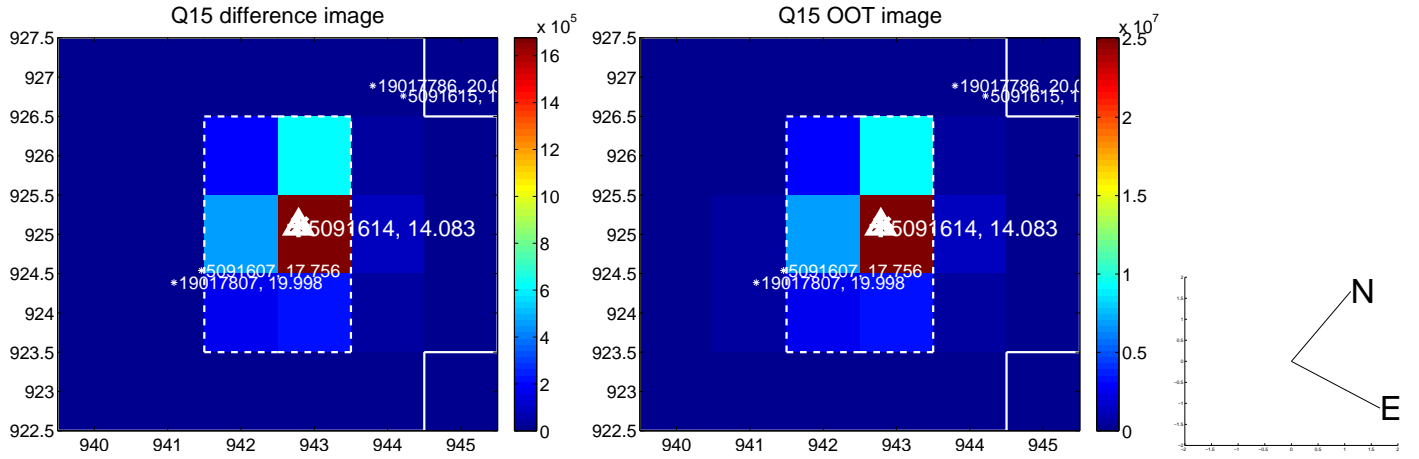
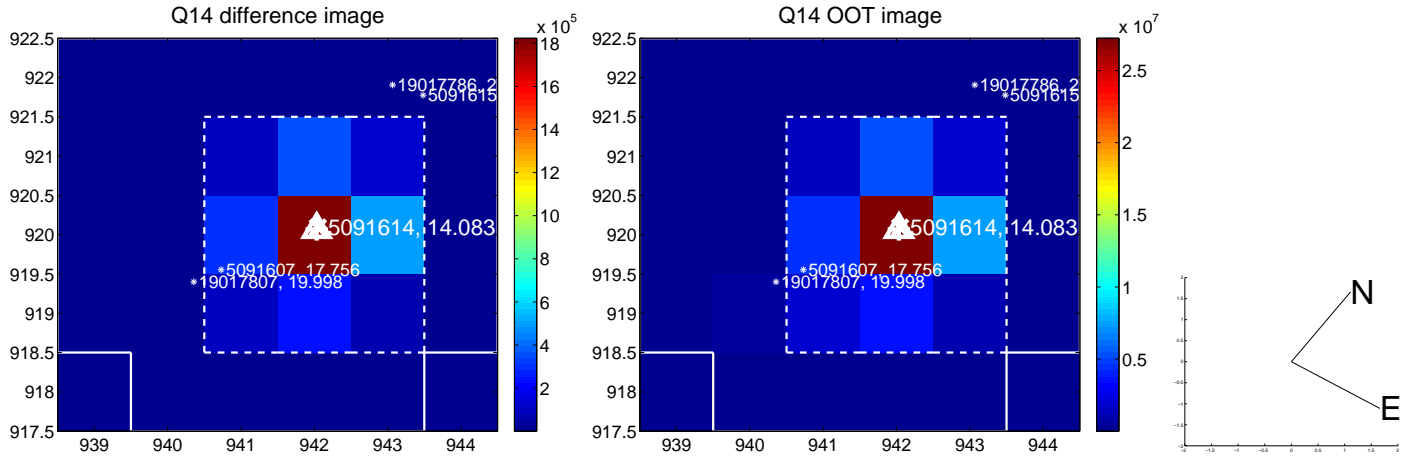
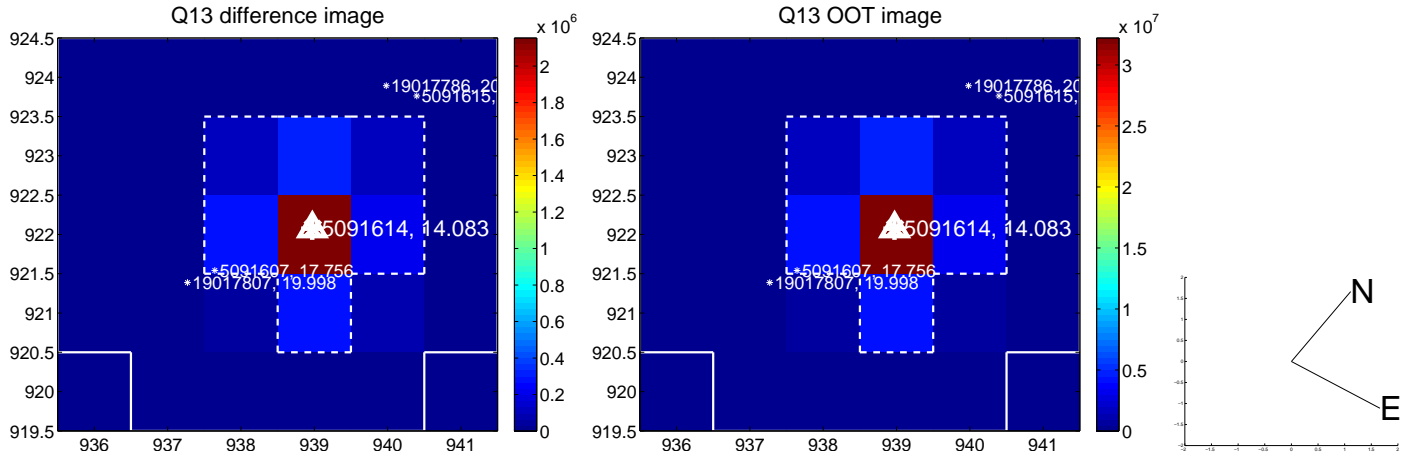
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



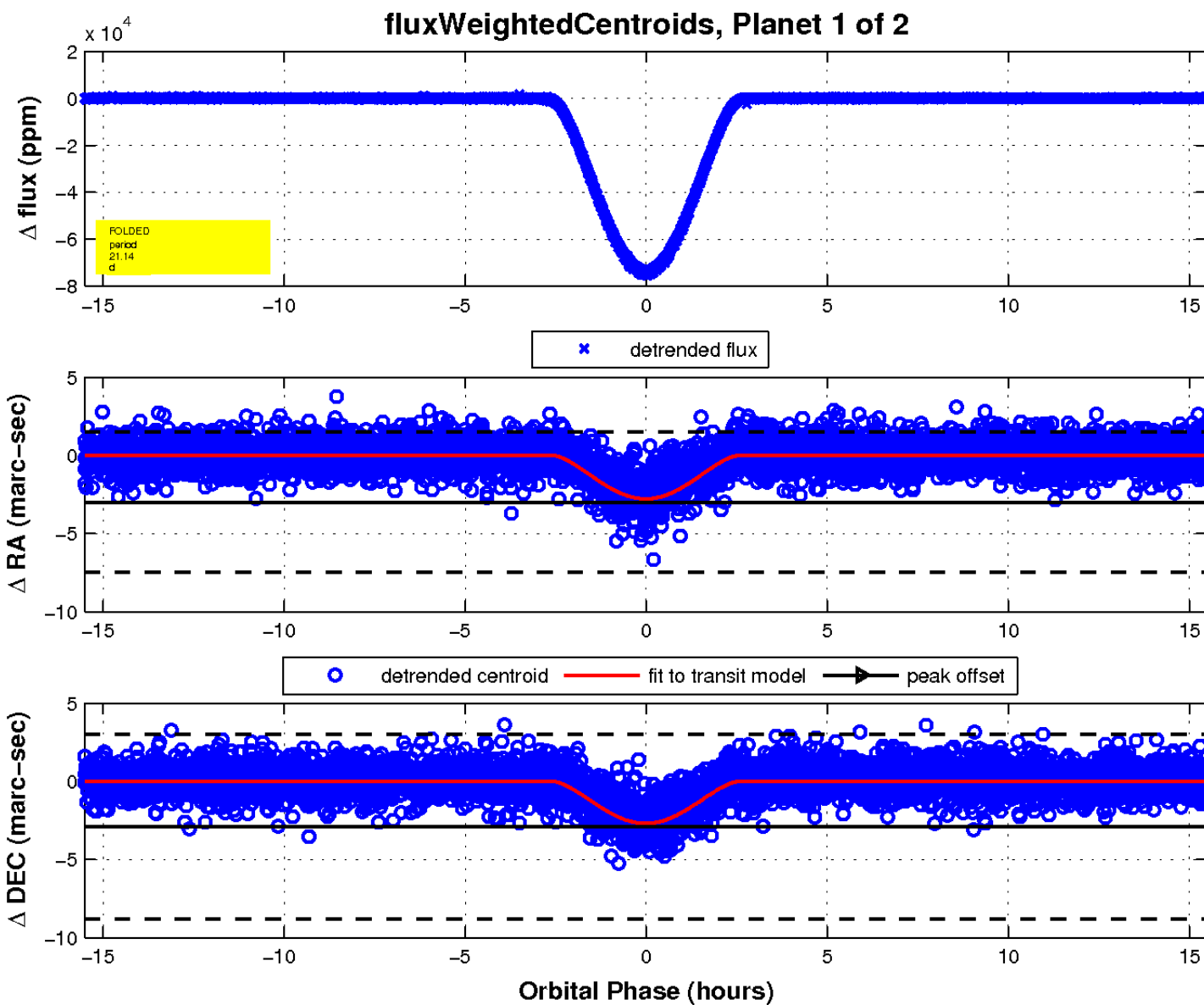
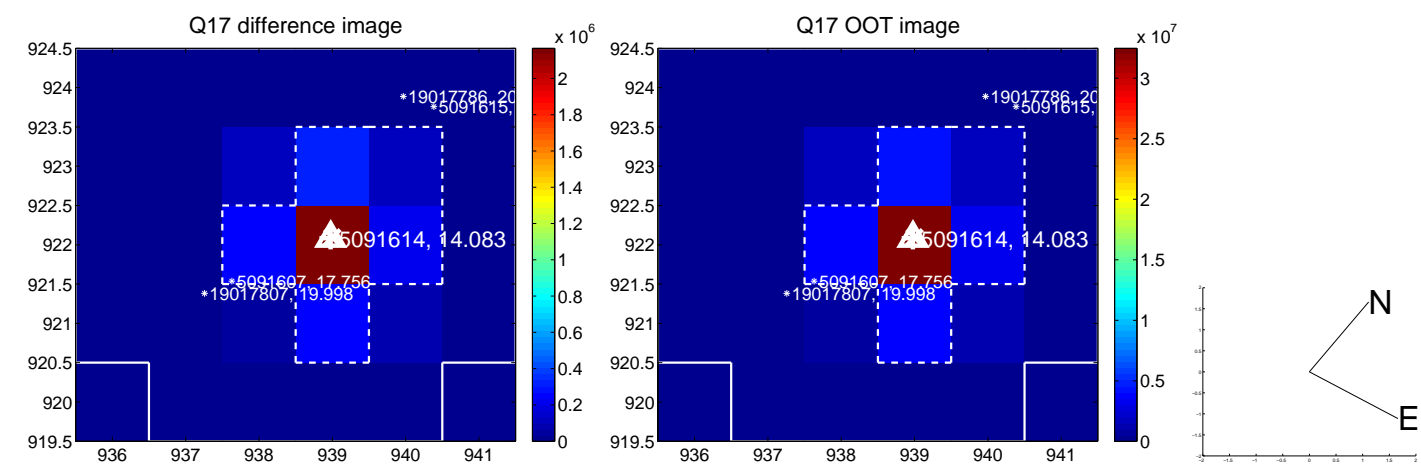
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



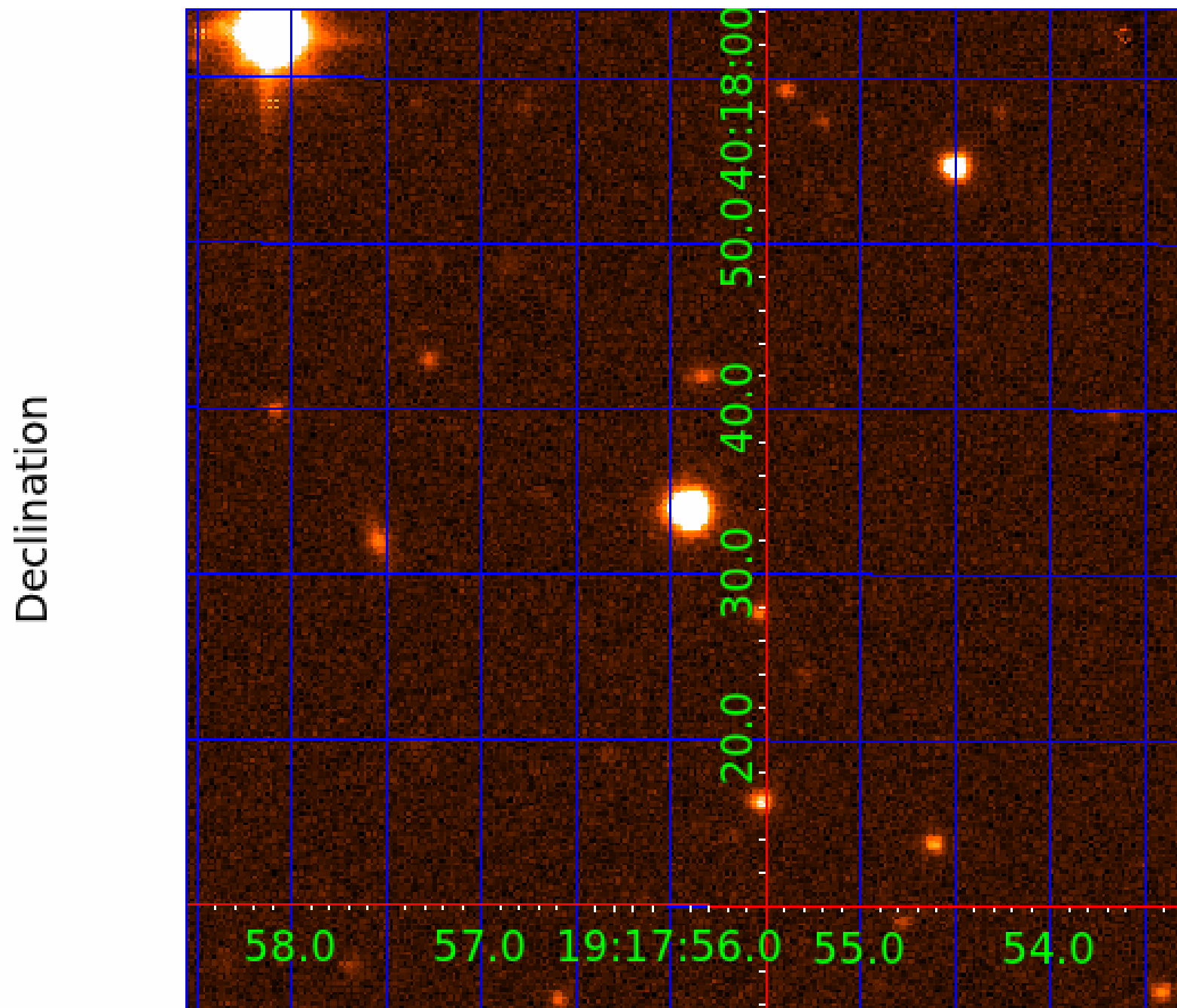
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image



KIC 005091614

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})
005091614-01	OBS	6515.01	21.142458	138.391624	73528.1	5.168	4368.4	3753.3	0.94	6079	38.00	48.19
005091614-02	OBS	No	21.142458	150.903635	27213.7	4.872	1575.0	1474.8	0.94	6079	27.10	48.19

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005091614-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_DV—MOD_SEC_ALT—DEEP_V_SHAPED—HAS_SEC_TCE
005091614-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE

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.

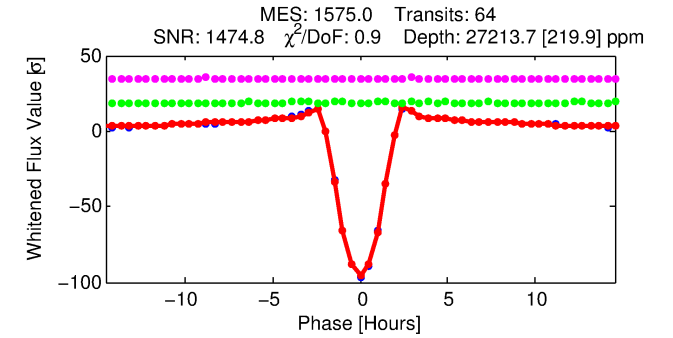
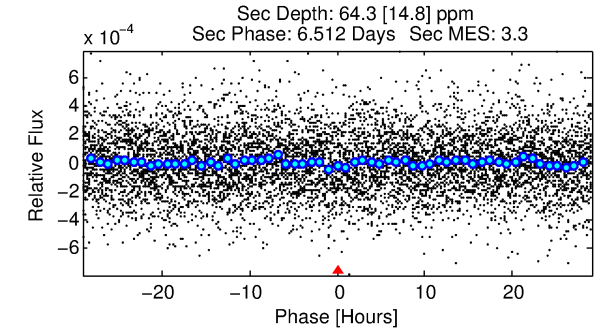
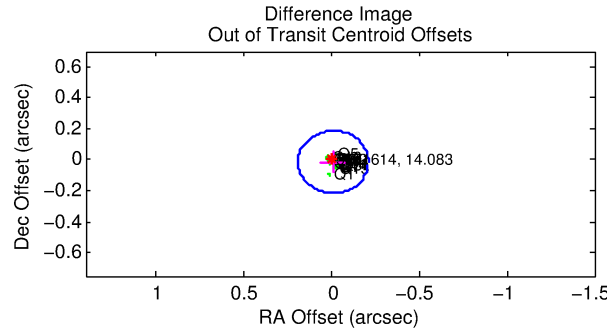
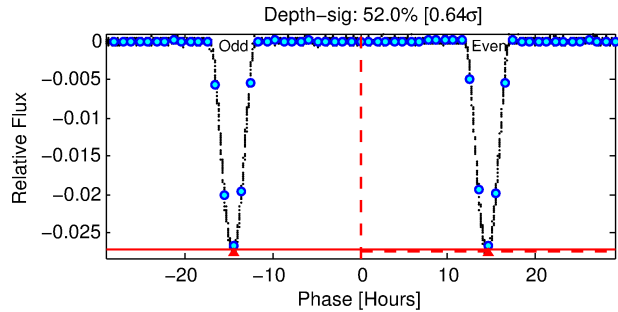
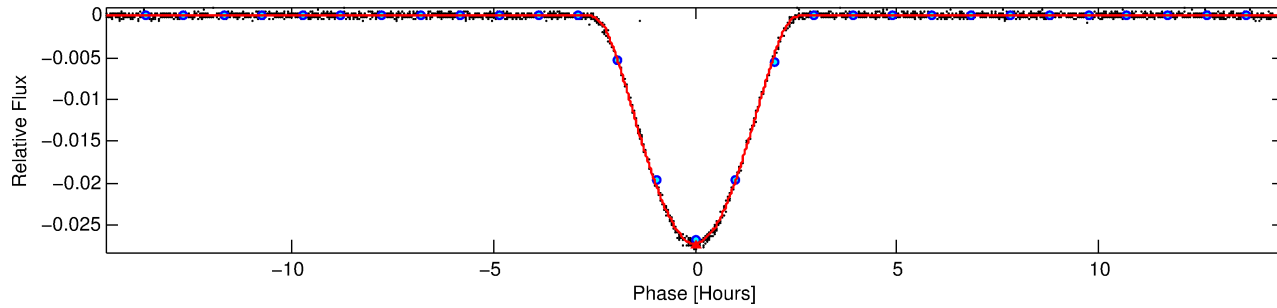
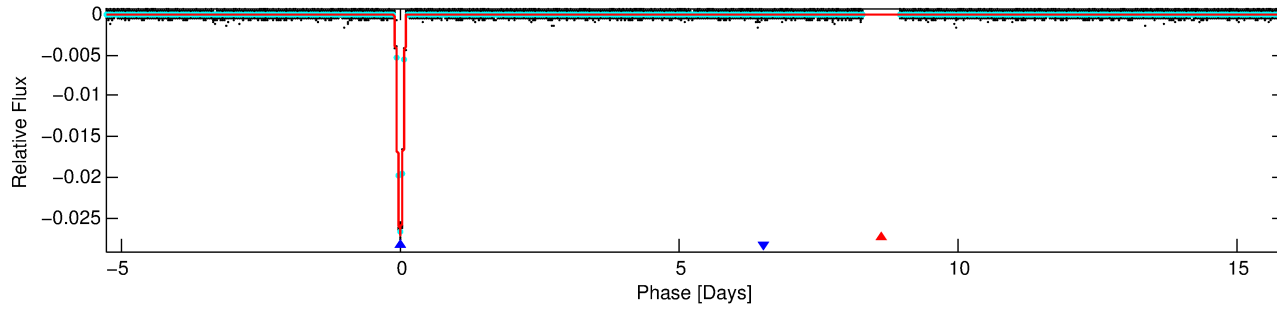
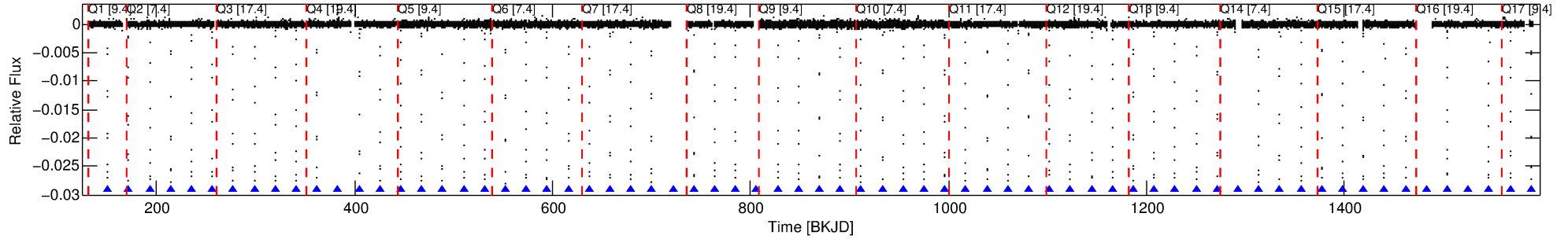
Ephemeris Match Information For 005091614-02

No Significant Match Found

DV One-Page Summary

KIC: 5091614 Candidate: 2 of 2 Period: 21.142 d
KOI: K06515 Corr: No Ephemeris Match

Kp: 14.08 R*: 0.94 Rs Teff: 6079.0 K Logg: 4.50 Fe/H: -0.200



DV Fit Results:

Period = 21.14246 [0.00000] d
Epoch = 150.9036 [0.0001] BKJD
Rp/R* = 0.2628 [0.0098]
a/R* = 25.59 [0.07]
b = 1.00 [0.01]
Seff = 48.19 [20.74]
Teq = 672 [72] K
Rp = 27.10 [8.78] Re
a = 0.1506 [0.0418] AU
Ag = 1.09 [0.52] [0.18σ]
Teff = 1062 [72] K [3.81σ]

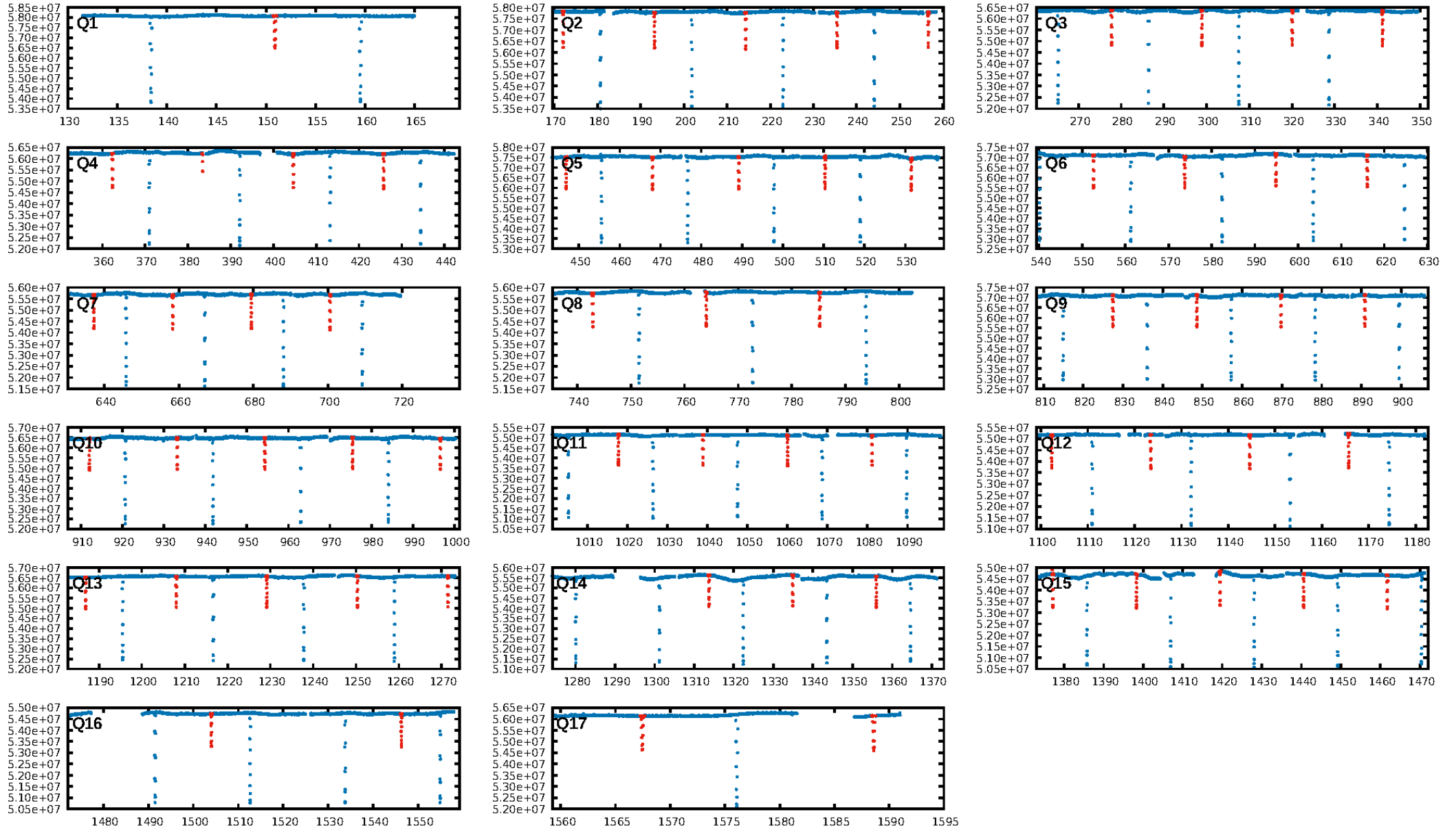
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.0% [0.00σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 1.00 [61/61]
GhostDiagnostic-chr: 8.93
Centroid-sig: 0.0%
Centroid-so: 0.119 arcsec [21.68σ]
OotOffset-rm: 0.017 arcsec [0.26σ]
KicOffset-rm: 0.109 arcsec [1.58σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 1.00 [17/17]
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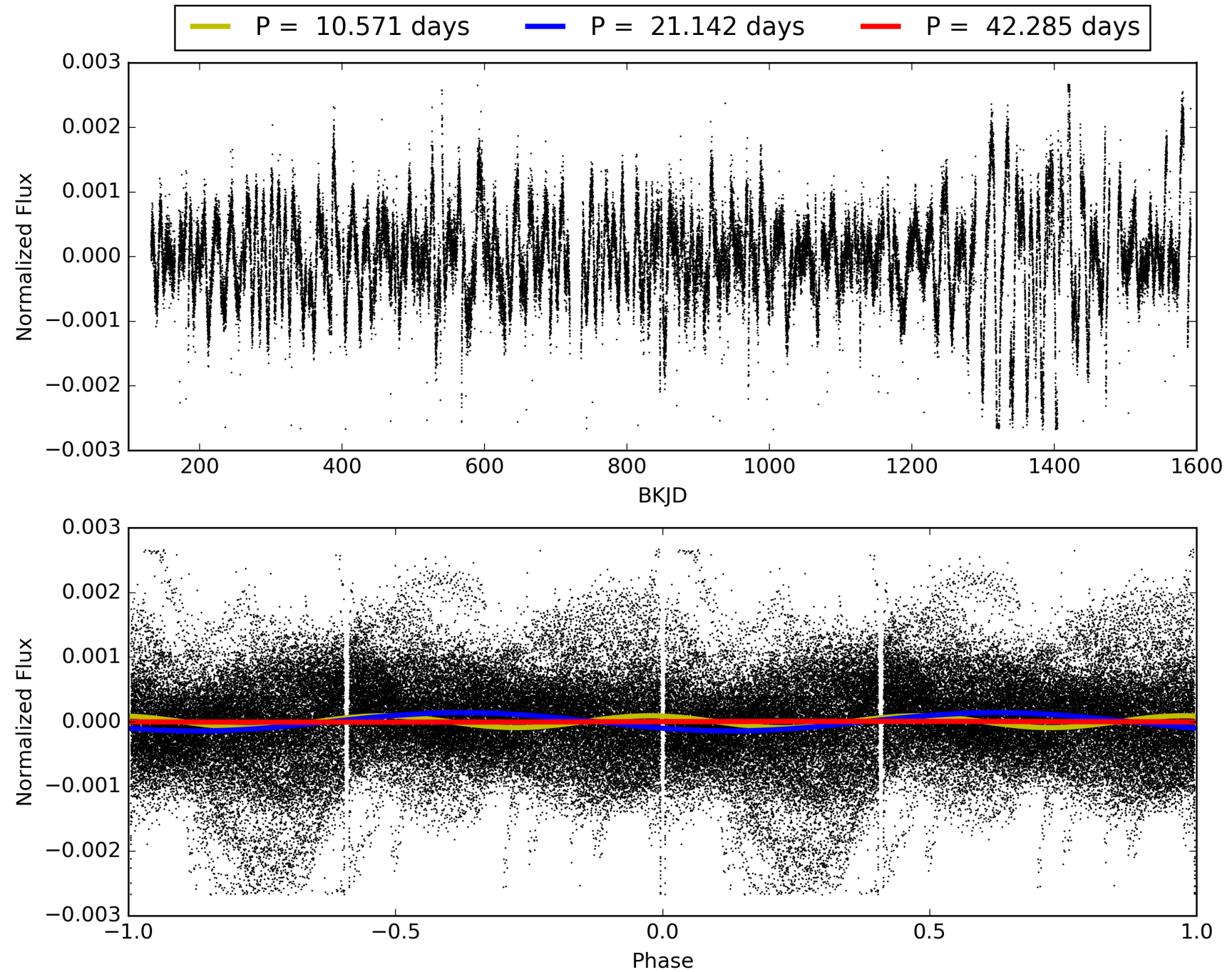
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 005091614-02, PDC Light Curves

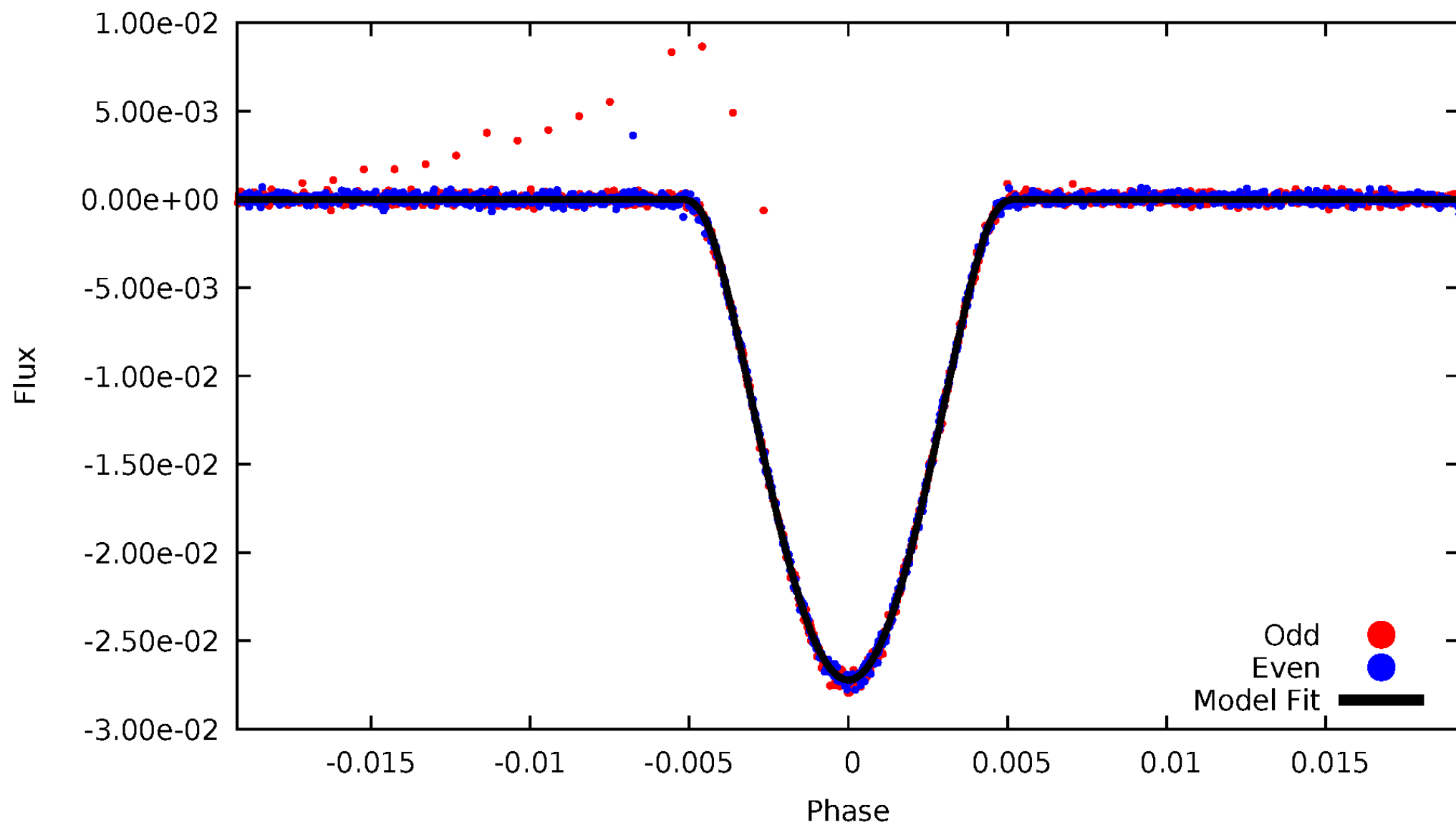


TCE 005091614-02



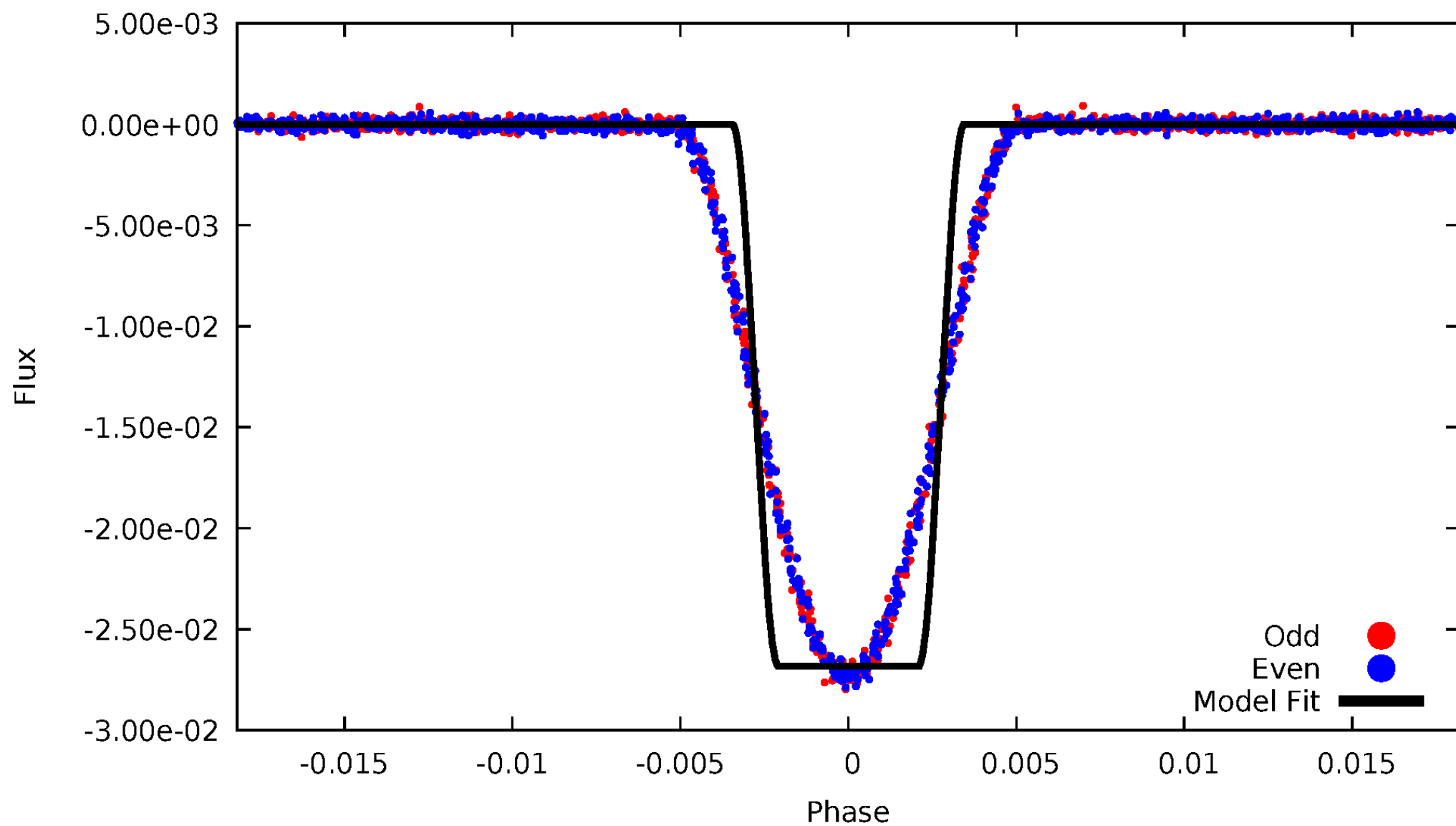
DV Odd/Even

TCE 005091614-02



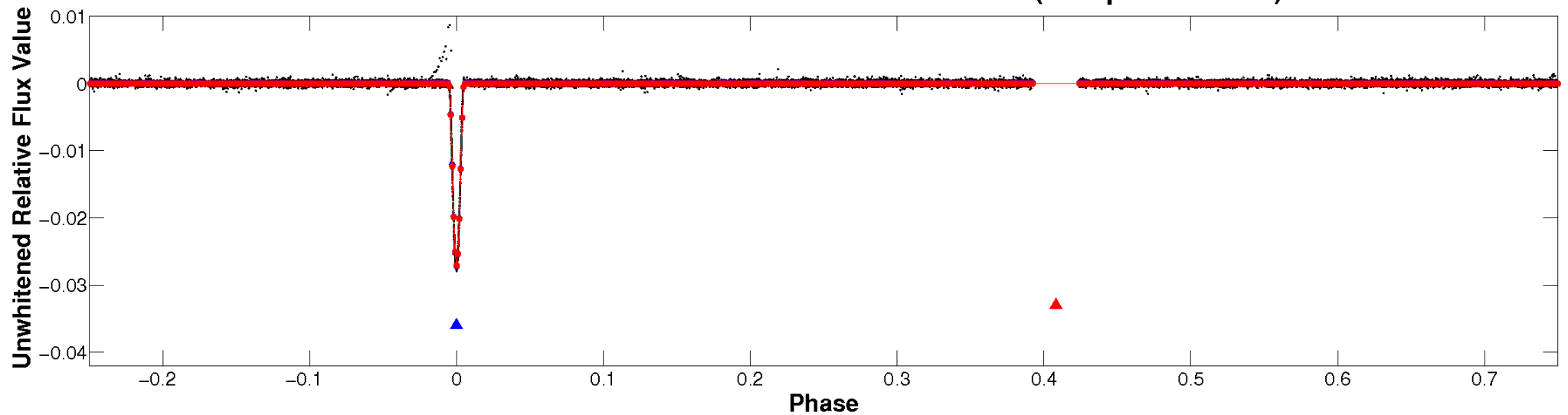
ALT Odd/Even

TCE 005091614-02

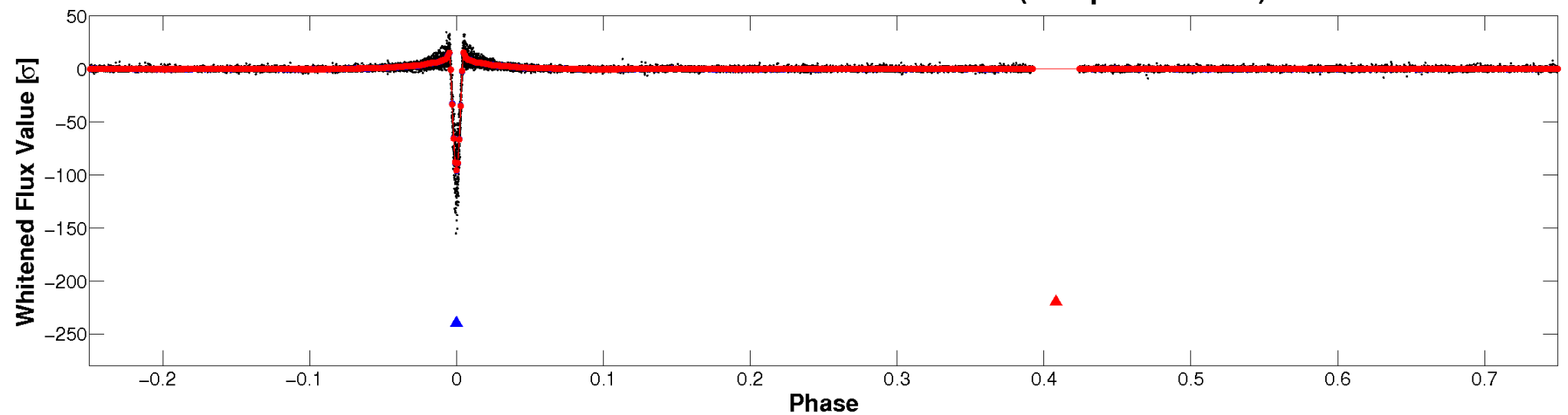


Non-Whitened Vs. Whitened Light Curve

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

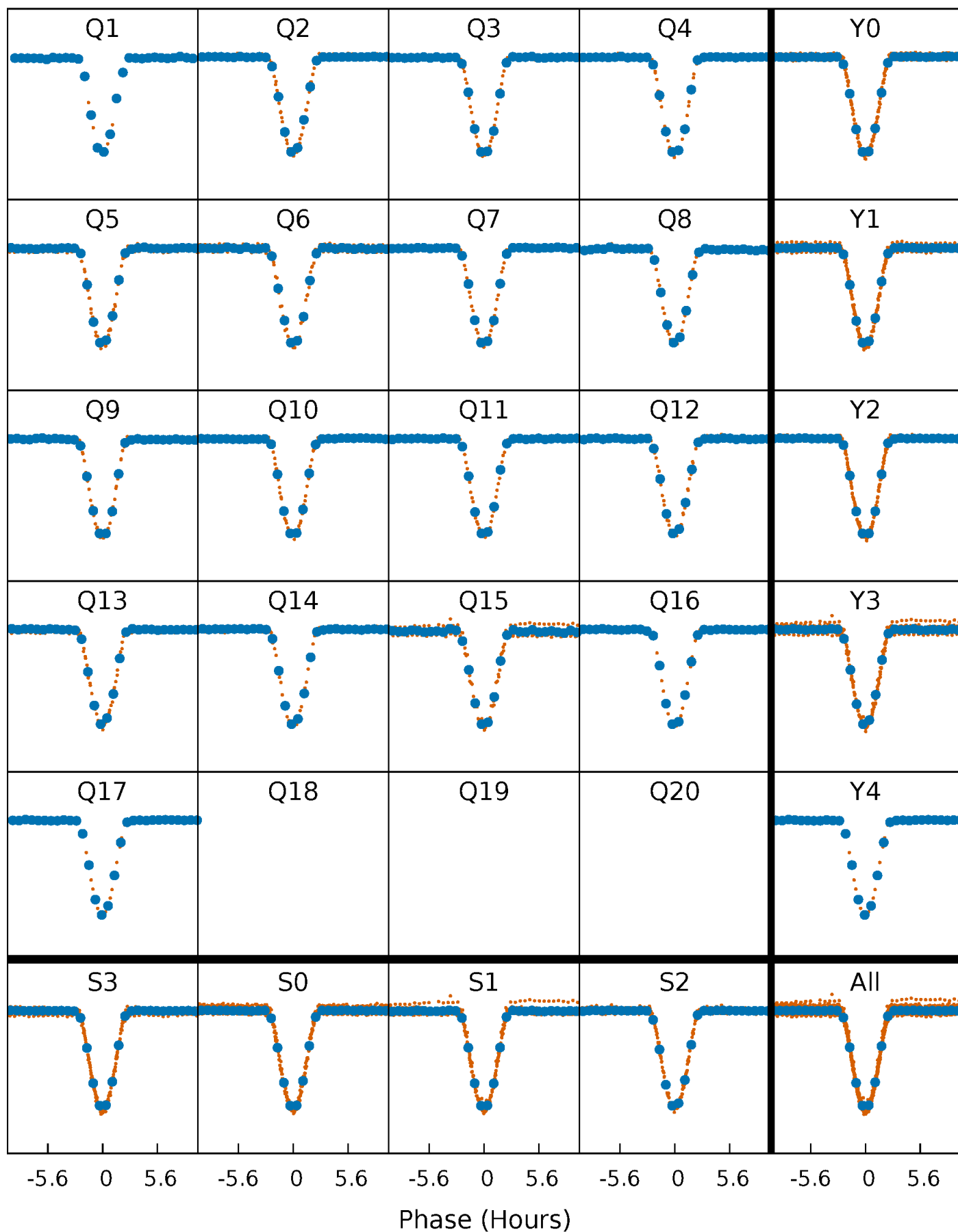


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



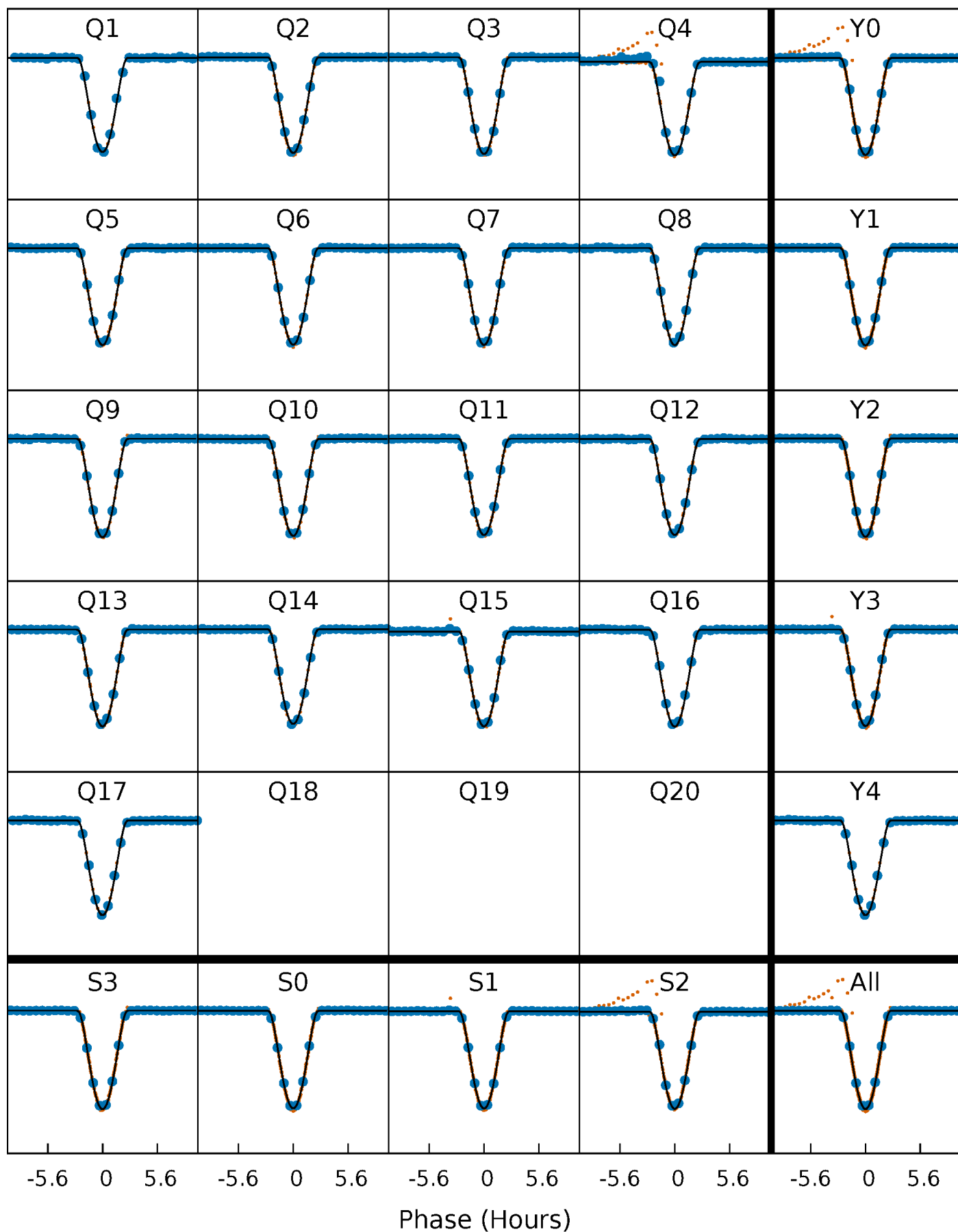
PDC Quarter-Phased Transit Curves

TCE 005091614-02 P= 21.142458 Days $T_0=150.903635$ (BKJD)



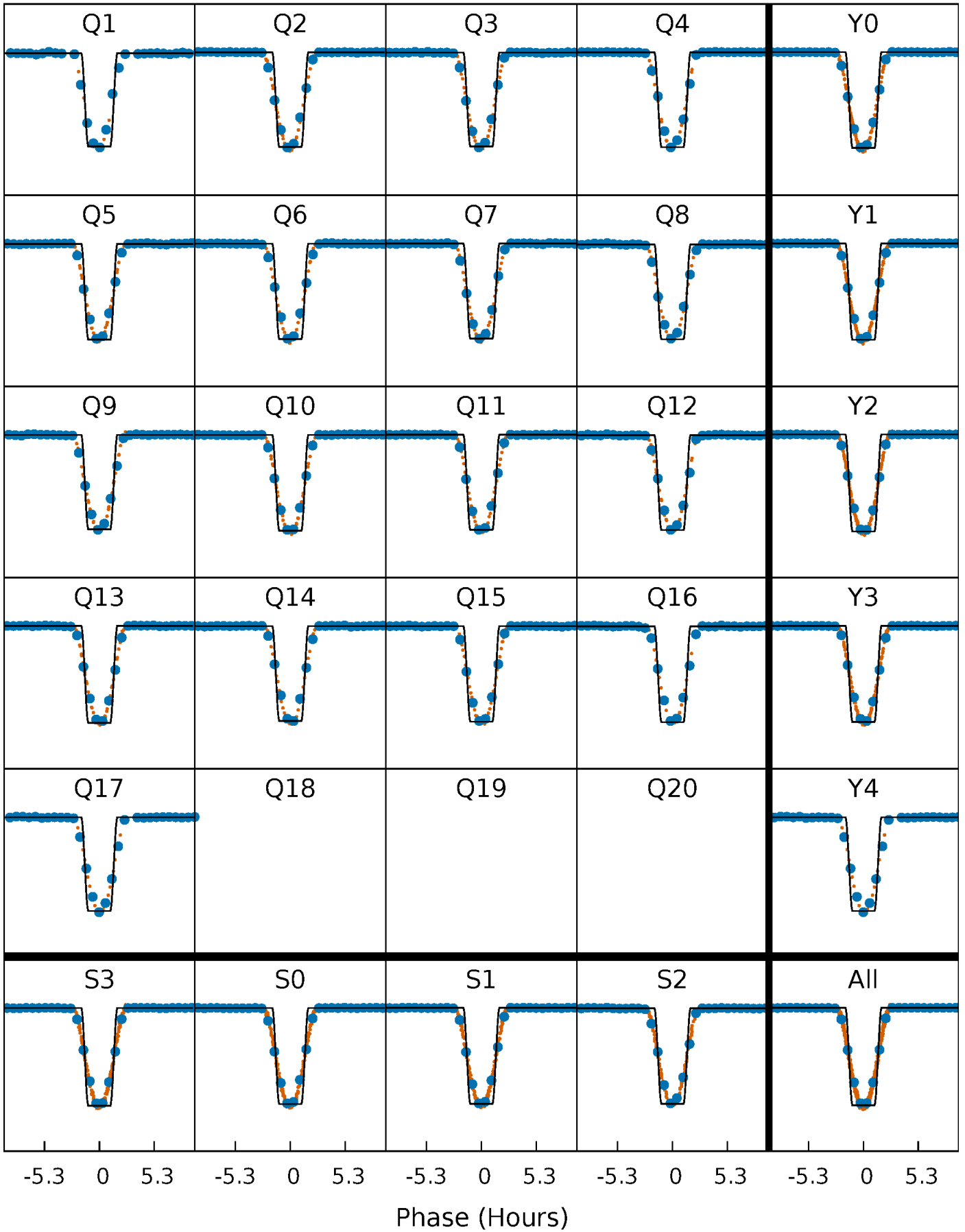
DV Quarter-Phased Transit Curves

TCE 005091614-02 P= 21.142458 Days $T_0=150.903635$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

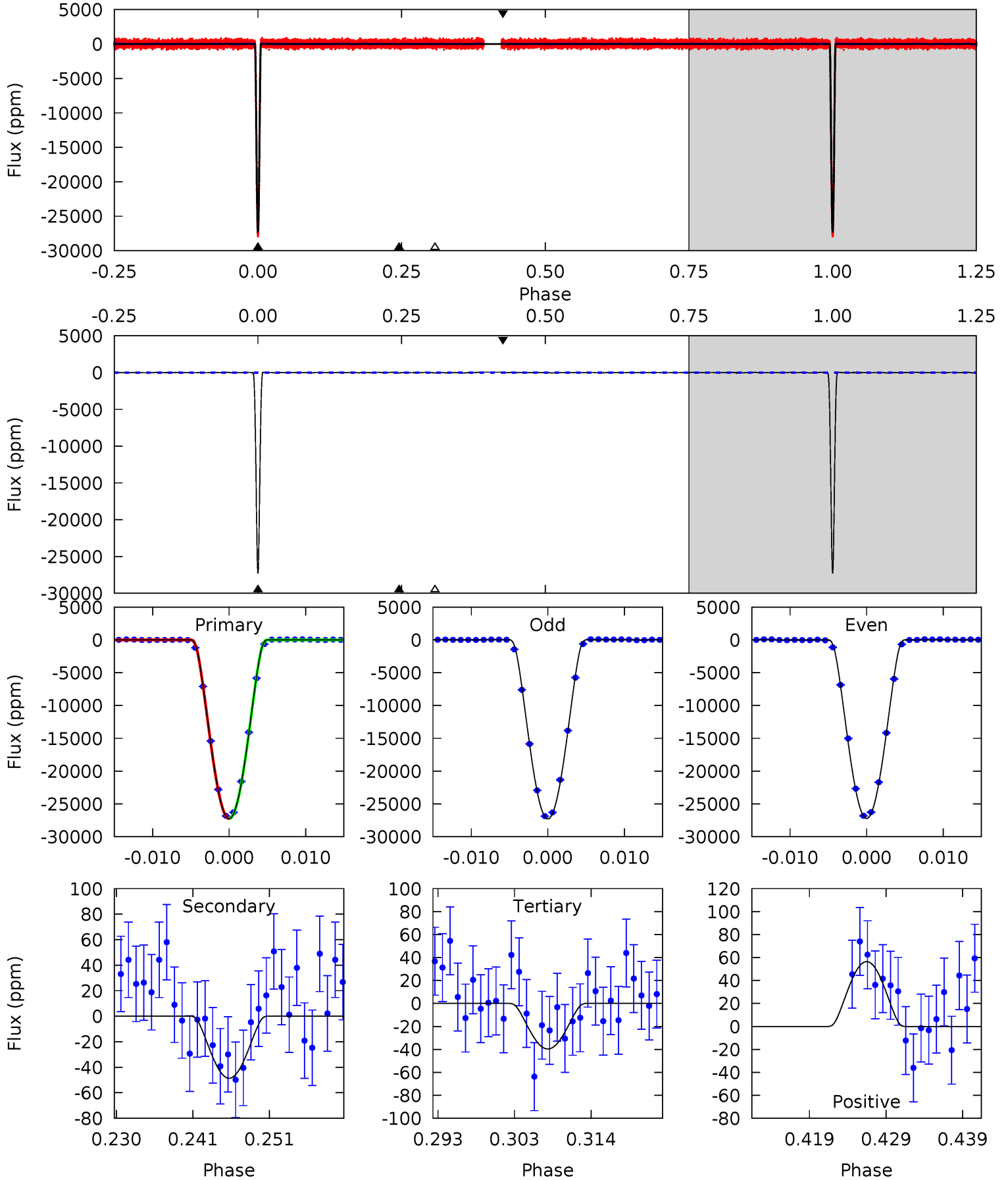
TCE 005091614-02 P= 21.142367 Days $T_0=150.906660$ (BKJD)



DV Model-Shift Uniqueness Test

005091614-02, P = 21.142458 Days, E = 129.761177 Days

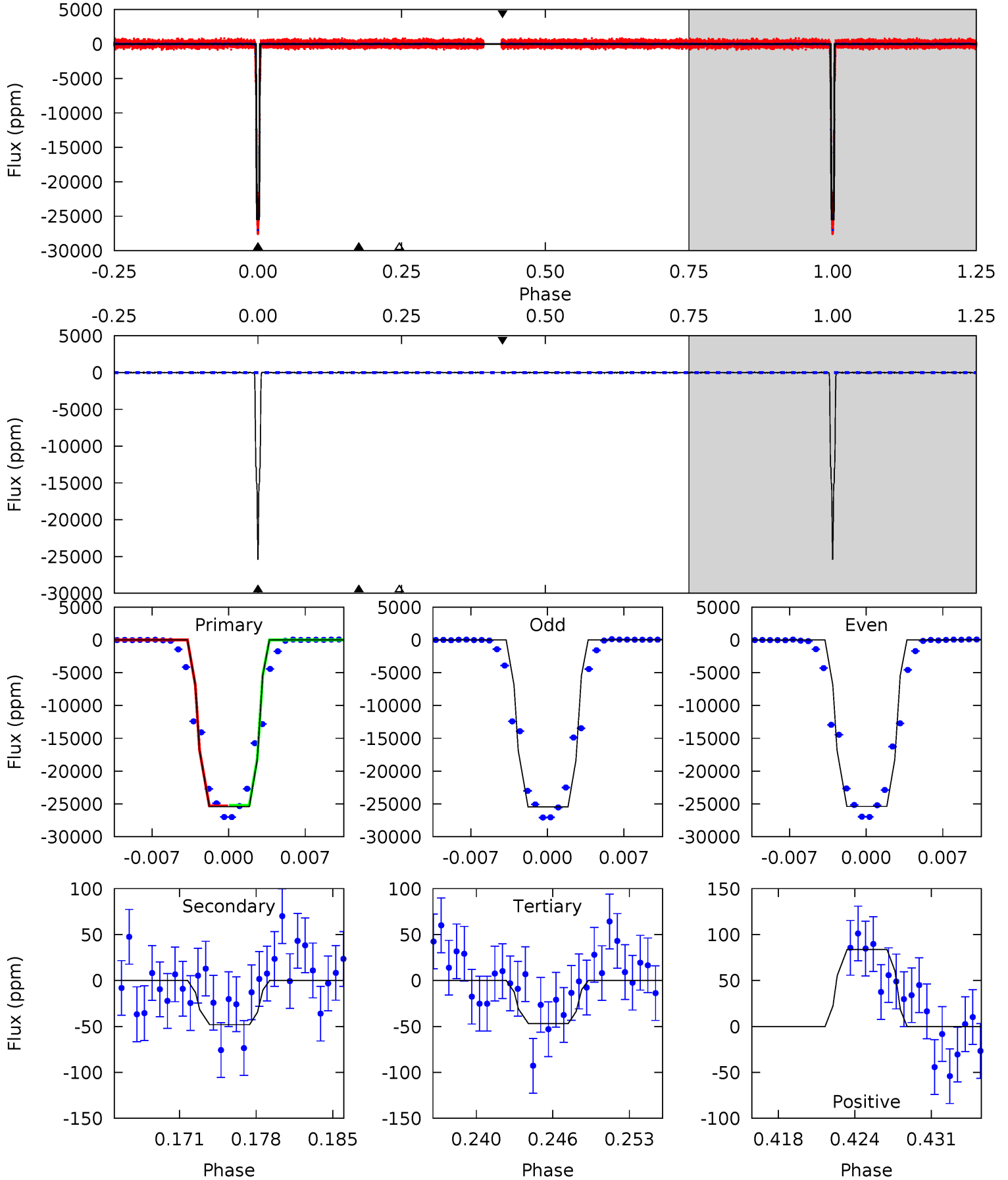
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3345	5.97	4.86	6.93	5.02	2.56	2.18	3340	3338	1.10	-0.96	4.23	0.99	0.00	1.56



Alt Model-Shift Uniqueness Test

005091614-02, P = 21.142367 Days, E = 129.764293 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1923	3.63	3.54	6.33	5.10	2.70	1.26	1919	1916	0.09	-2.69	3.24	1.00	0.00	0



Stellar Parameters For KIC 005091614

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6079^{+169}_{-190}	$4.495^{+0.054}_{-0.229}$	$-0.200^{+0.250}_{-0.300}$	$0.945^{+0.304}_{-0.101}$	$1.019^{+0.140}_{-0.140}$	$1.702^{+0.377}_{-0.941}$
	+3%/-3%	+1%/-5%	+125%/-150%	+32%/-11%	+14%/-14%	+22%/-55%
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 005091614-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-49 ± 8	$28.04^{+4.72}_{-2.58}$	960^{+70}_{-44}	1889^{+62}_{-90}	$0.738^{+0.207}_{-0.221}$
Alt.	-48 ± 13	$17.56^{+3.17}_{-1.91}$	963^{+72}_{-49}	2156^{+88}_{-105}	$1.816^{+0.801}_{-0.654}$

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

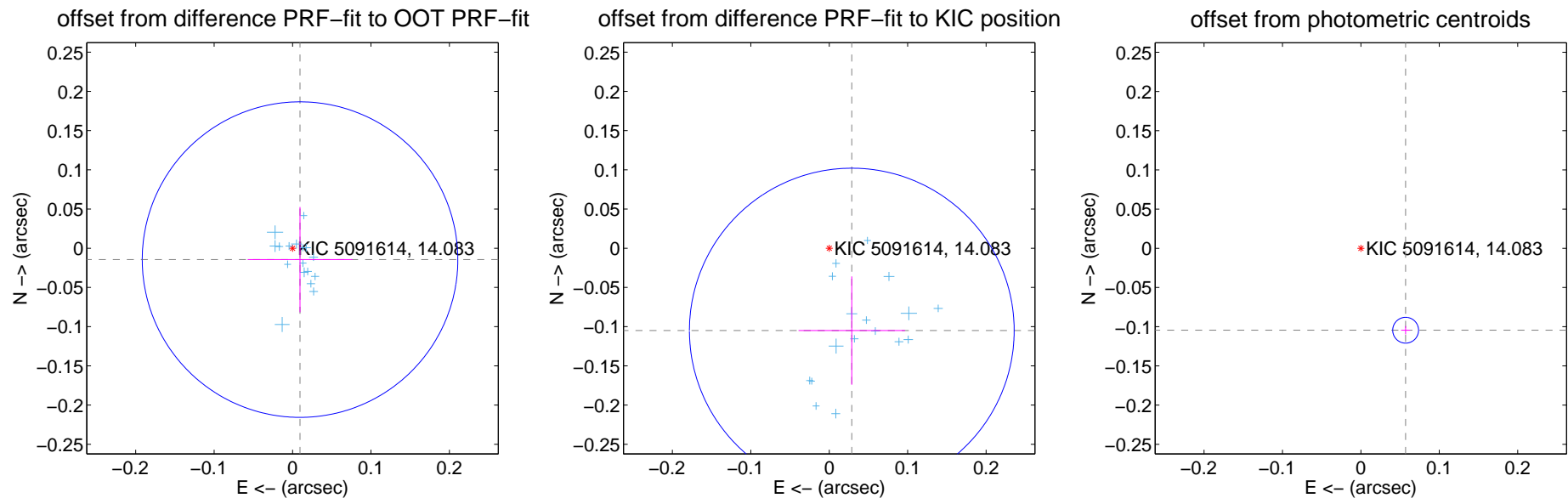
DV Centroid Data

Supplemental centroid analysis for 005091614-02. Kepler magnitude: 14.08. Transit SNR 1474.81

There are 17 quarters with good PRF difference image offsets

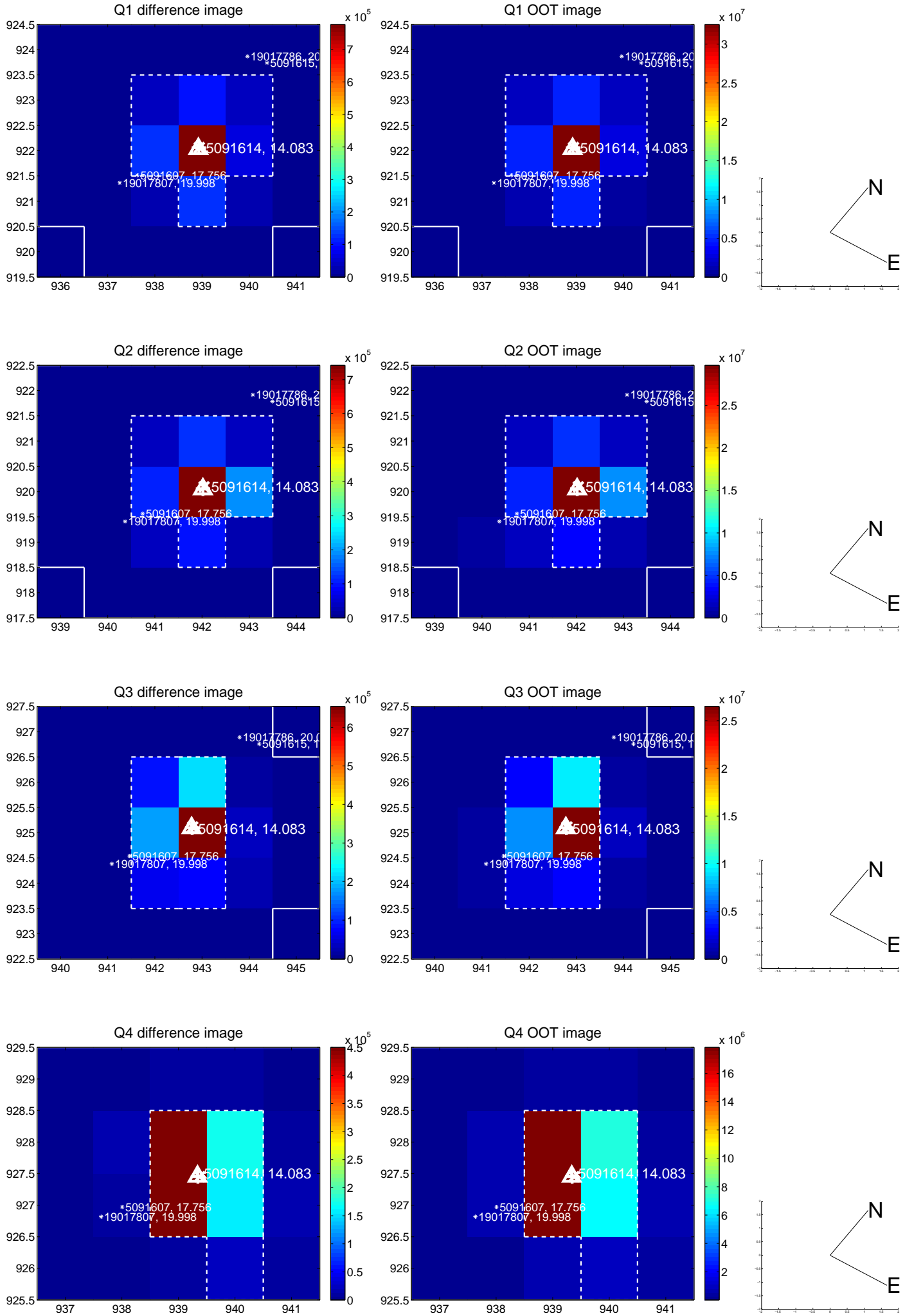
The direct PRF centroid is offset from the target star catalog position by about 0.10 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.017 ± 0.067	0.26	-0.010 ± 0.067	-0.014 ± 0.067
PRF-fit source offset from KIC position	0.109 ± 0.069	1.58	-0.029 ± 0.068	-0.105 ± 0.069
photometric centroid source offset	0.12 ± 0.01	21.68	-0.06 ± 0.01	-0.10 ± 0.01

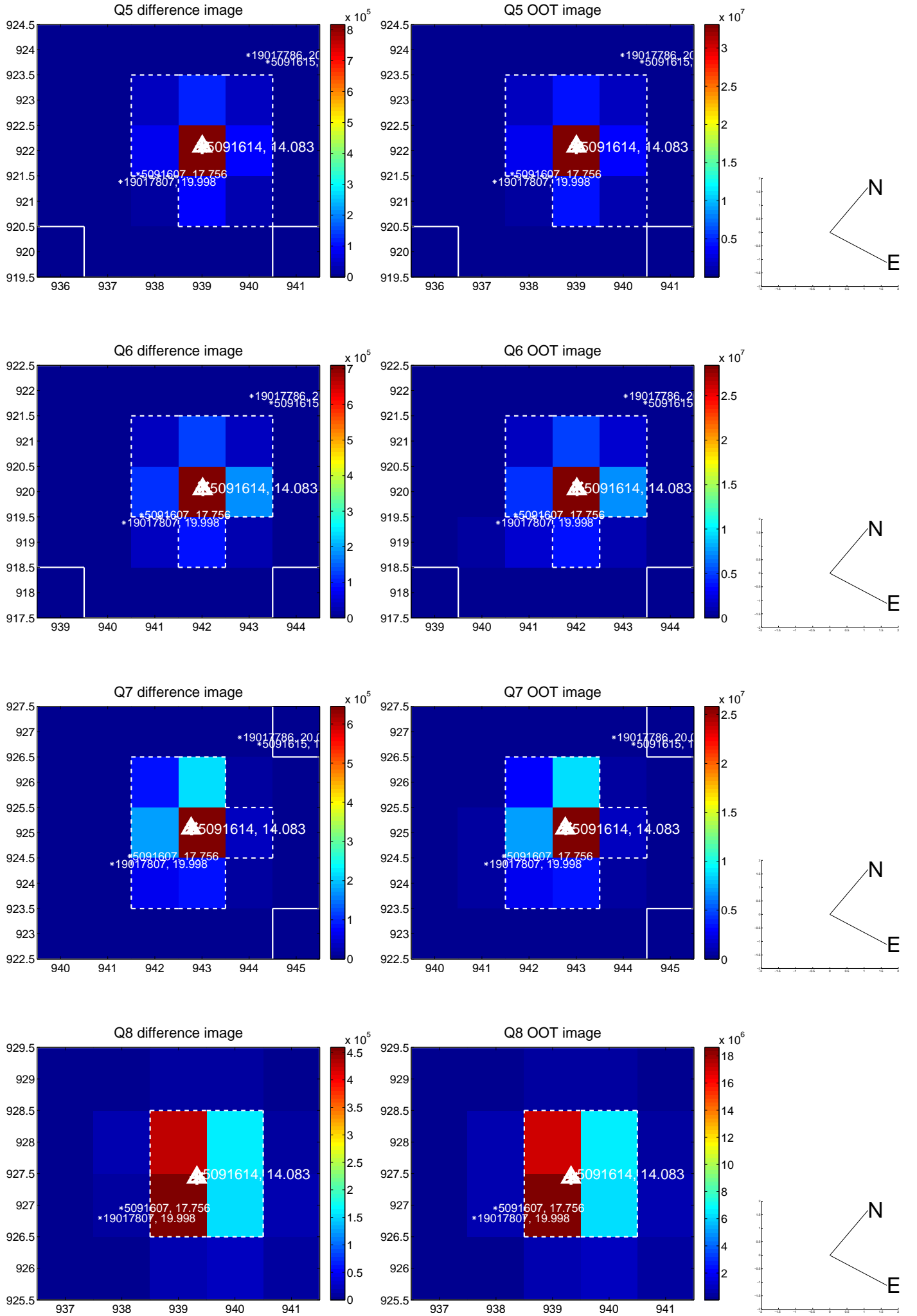


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

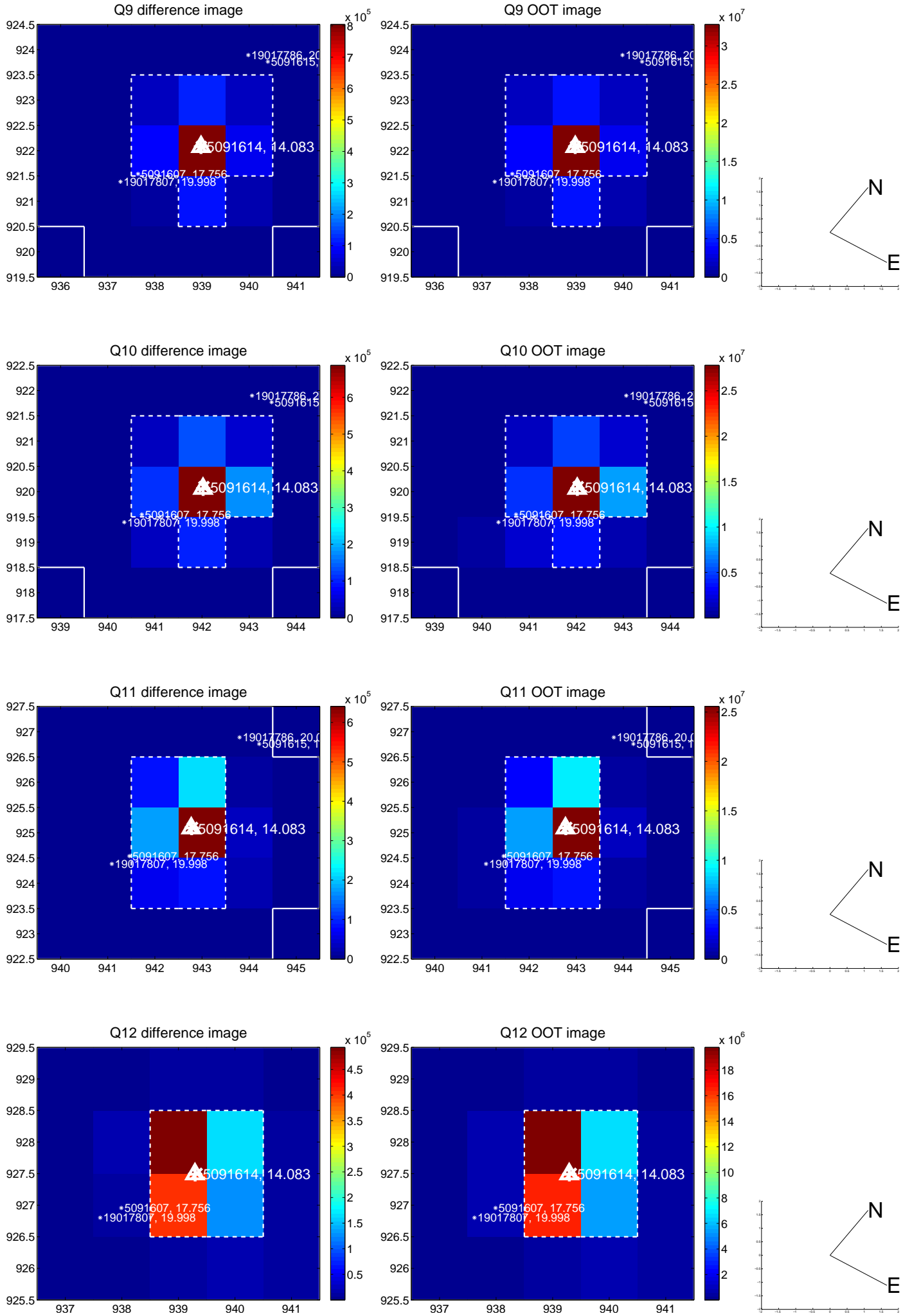
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



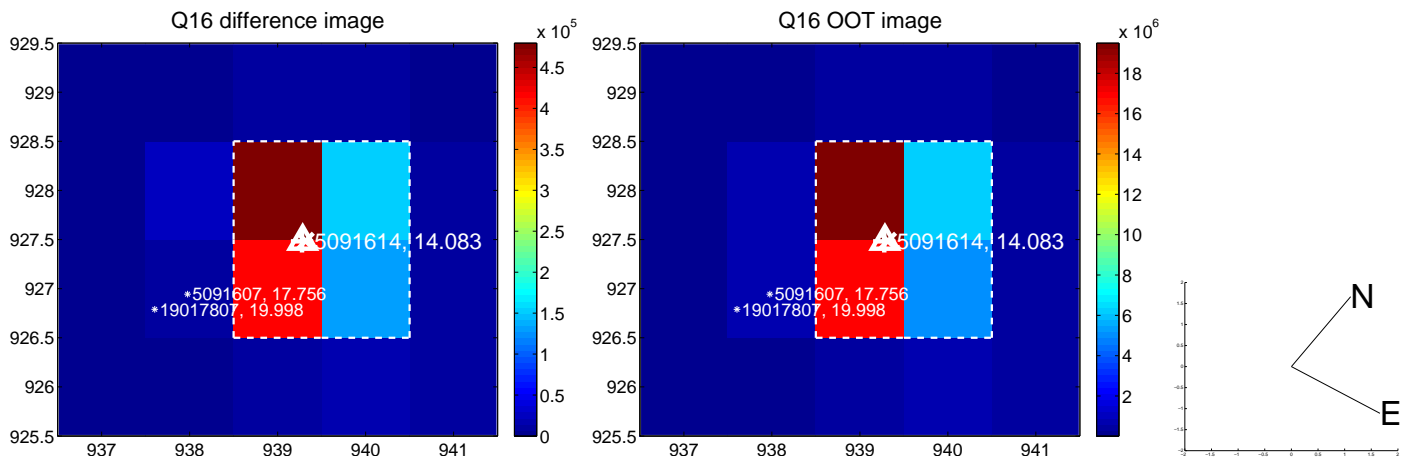
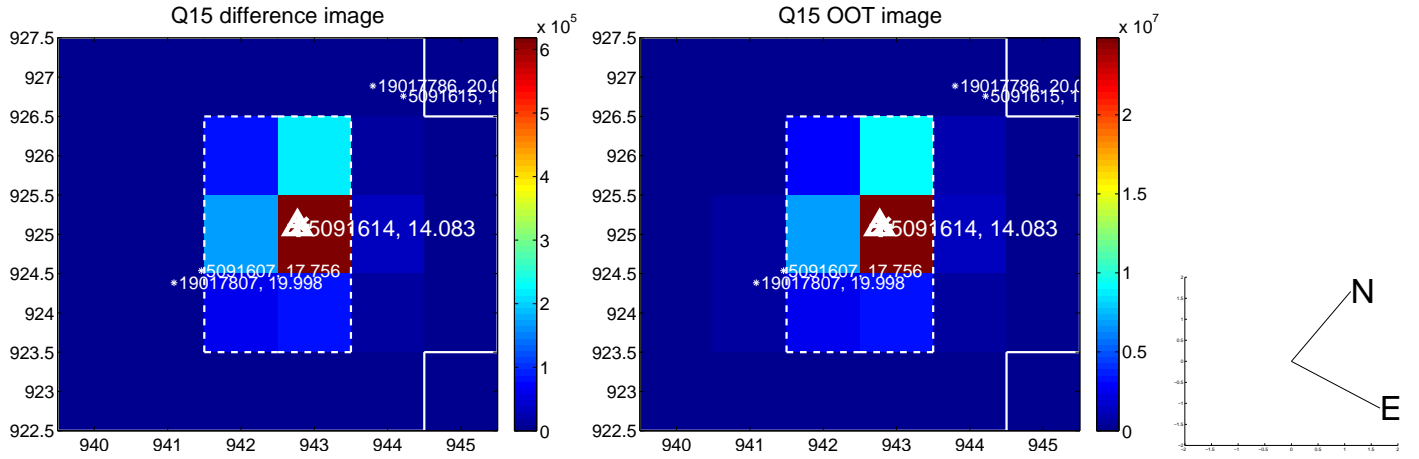
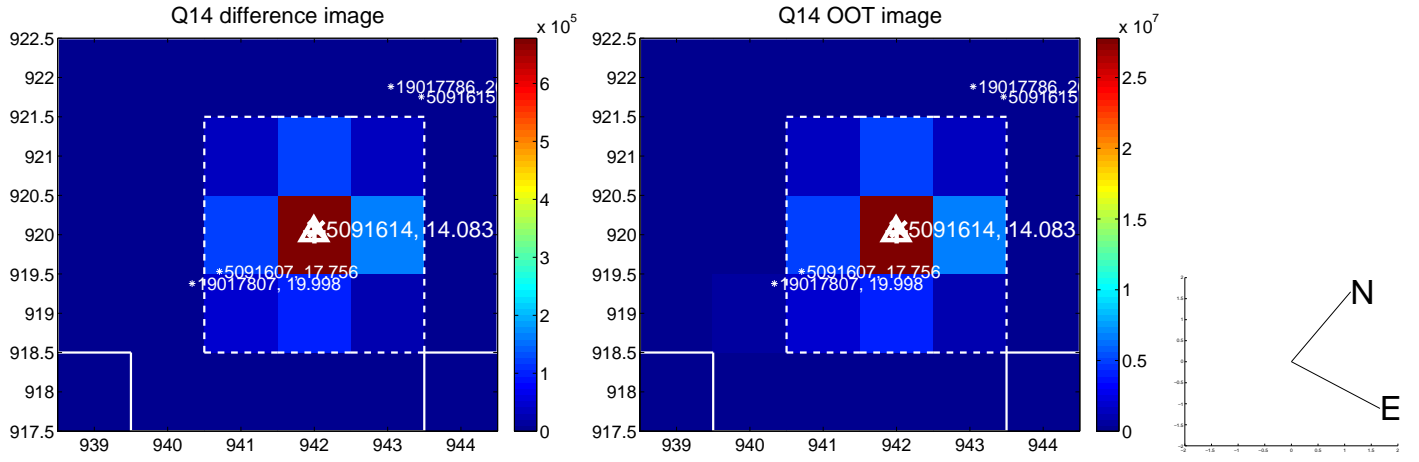
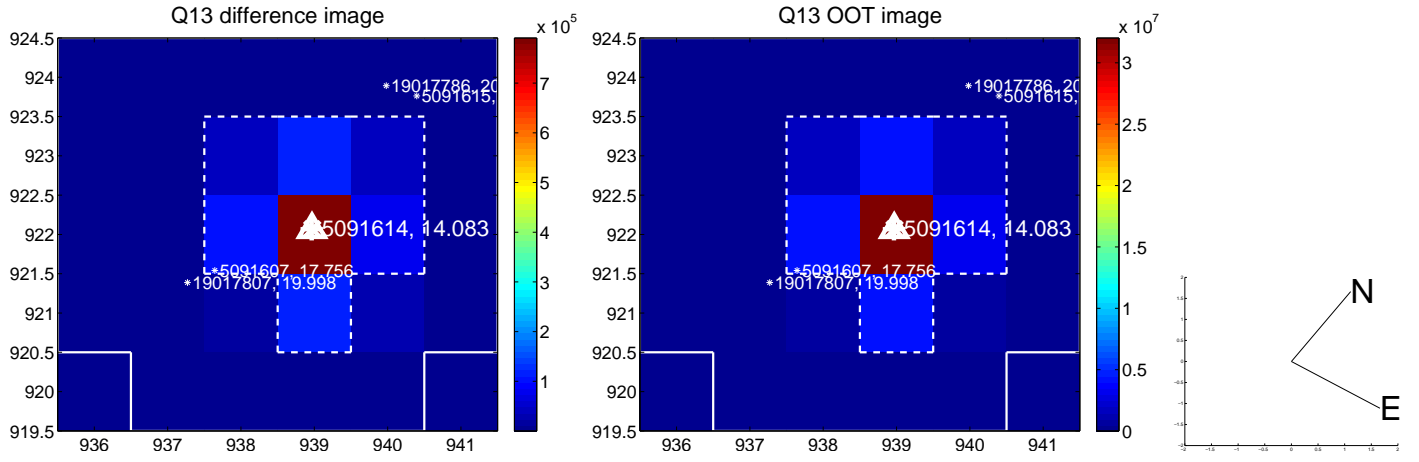
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



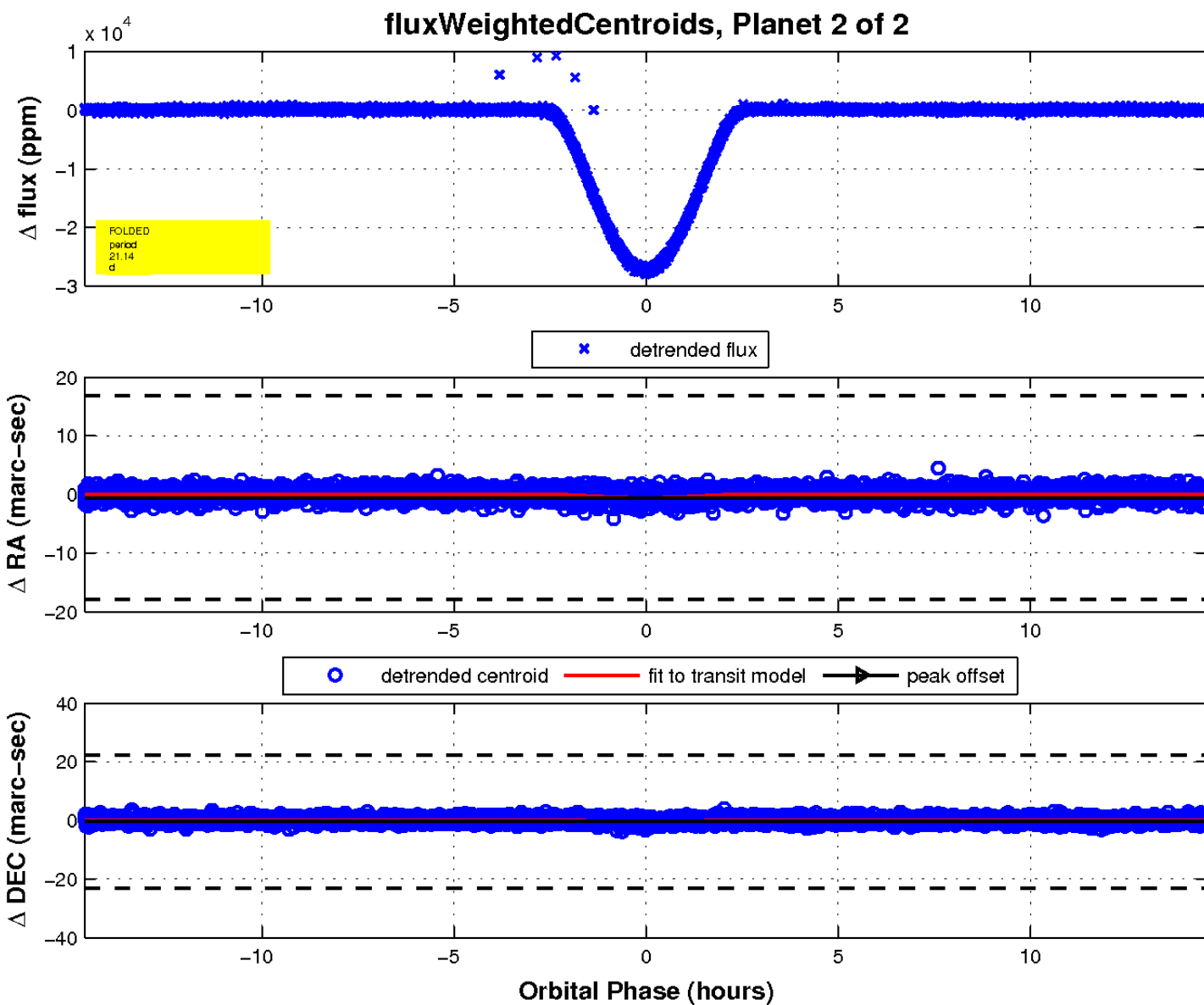
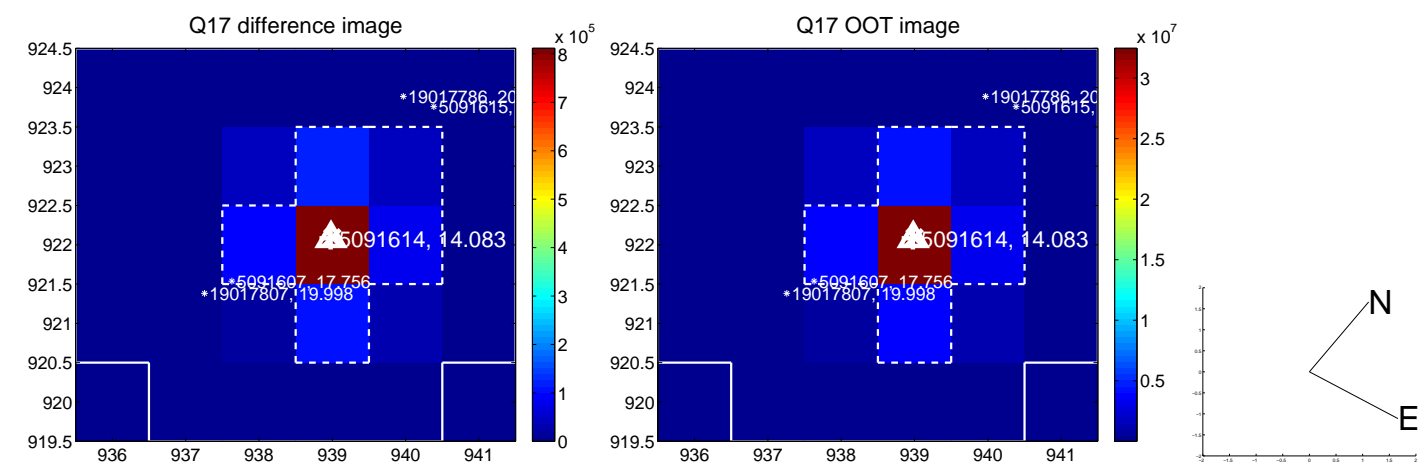
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UKIRT Image

