

KIC 009907505

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})
009907505-01	OBS	3427.01	39.206806	142.461197	182701.4	6.279	3046.5	2440.6	0.86	5945	55.14	16.84
009907505-02	OBS	No	39.206826	156.357327	13712.4	5.547	261.8	256.5	0.86	5945	15.87	16.84

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009907505-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_DV—MOD_SEC_ALT—MOD_ODDEVEN_DV—MOD_ODDEVEN_ALT—DEEP_V_SHAPED—HAS_SEC_TCE
009907505-02	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.

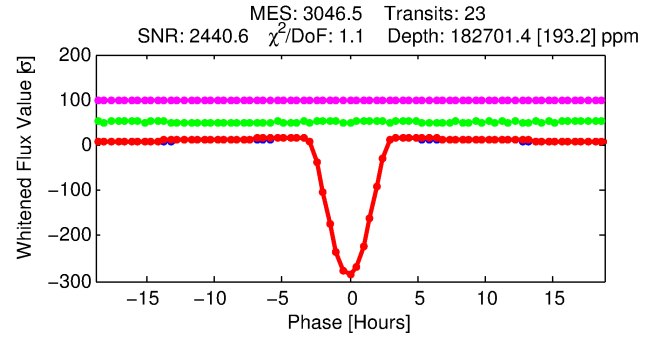
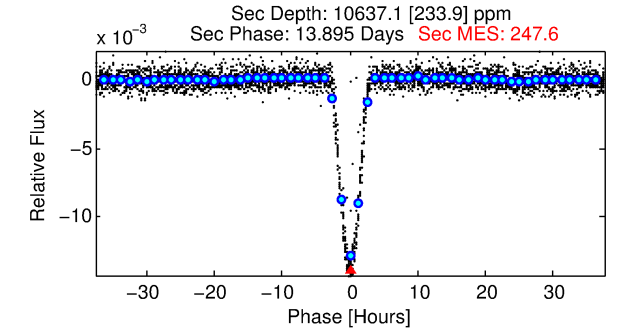
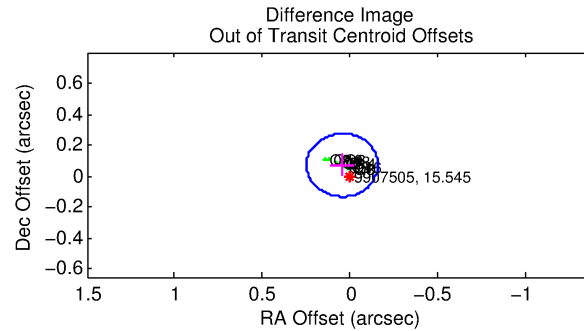
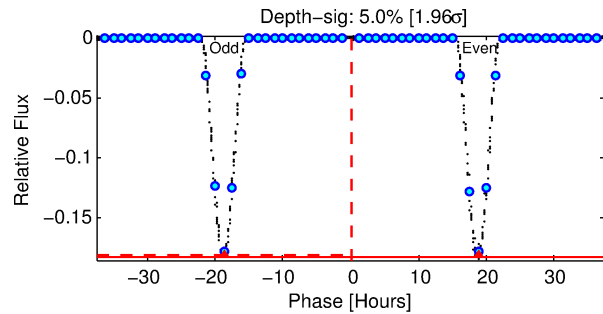
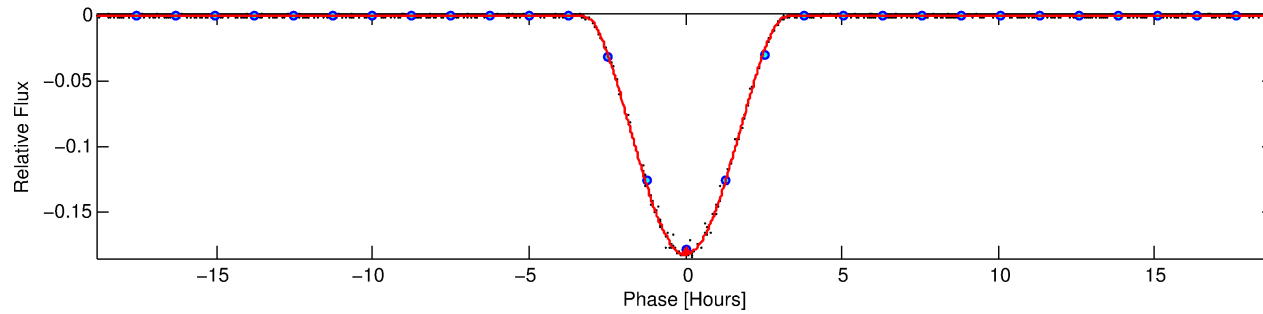
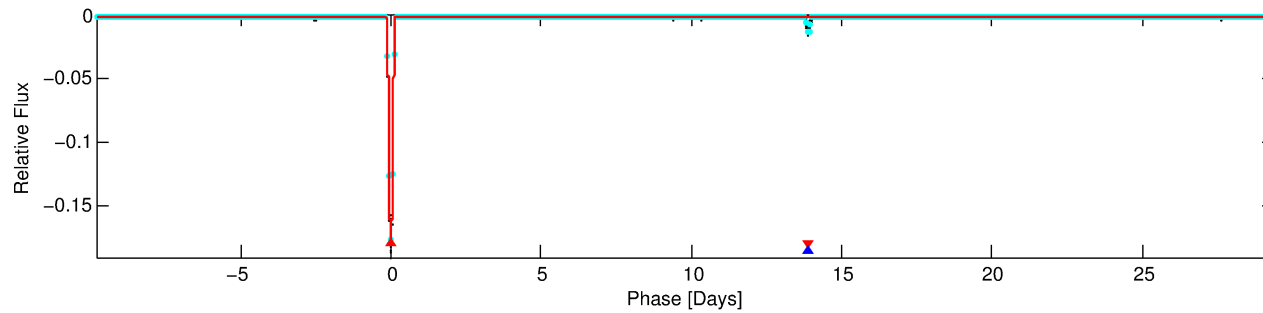
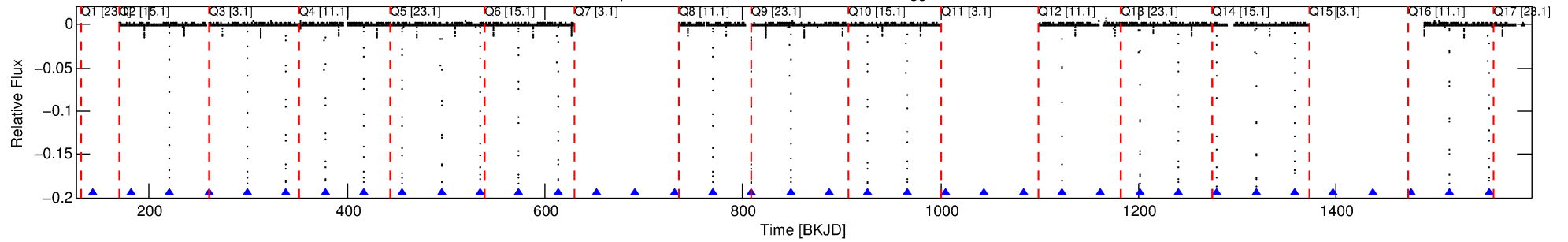
Ephemeris Match Information For 009907505-01

No Significant Match Found

DV One-Page Summary

KIC: 9907505 Candidate: 1 of 2 Period: 39.207 d
KOI: K03427.01 Corr: 0.997

Kp: 15.55 R*: 0.86 Rs Teff: 5945.0 K Logg: 4.54 Fe/H: -0.300



DV Fit Results:

Period = 39.20681 [0.00000] d
Epoch = 142.4612 [0.0001] BKJD
Rp/R* = 0.5869 [0.0325]
a/R* = 62.44 [0.48]
b = 0.90 [0.04]
Seff = 16.84 [6.77]
Teq = 517 [52] K
Rp = 55.14 [17.81] Re
a = 0.2220 [0.0589] AU
Ag = 94.82 [37.90] [2.48σ]
Teffp = 2492 [103] K [17.15σ]

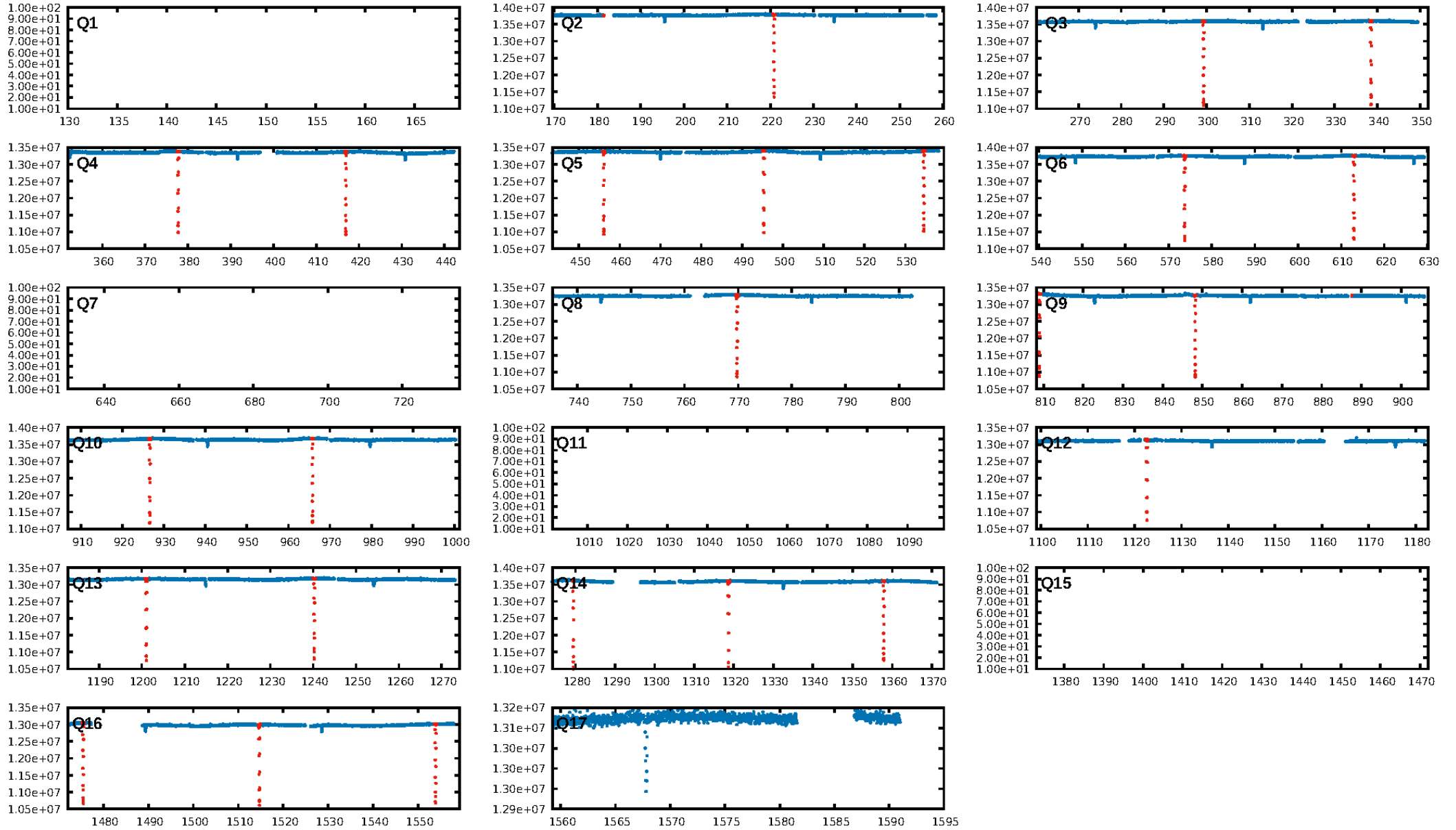
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.0% [0.00σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 0.0%
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 1.00 [23/23]
GhostDiagnostic-chr: 7.434
Centroid-sig: 0.0%
Centroid-so: 0.421 arcsec [108.24σ]
OotOffset-rm: 0.085 arcsec [1.25σ]
KicOffset-rm: 0.214 arcsec [3.00σ]
OotOffset-st: 4/1/3/3 [11]
KicOffset-st: 4/1/3/3 [11]
DiffImageQuality-fgm: 1.00 [11/11]
DiffImageOverlap-fno: 1.00 [11/11]

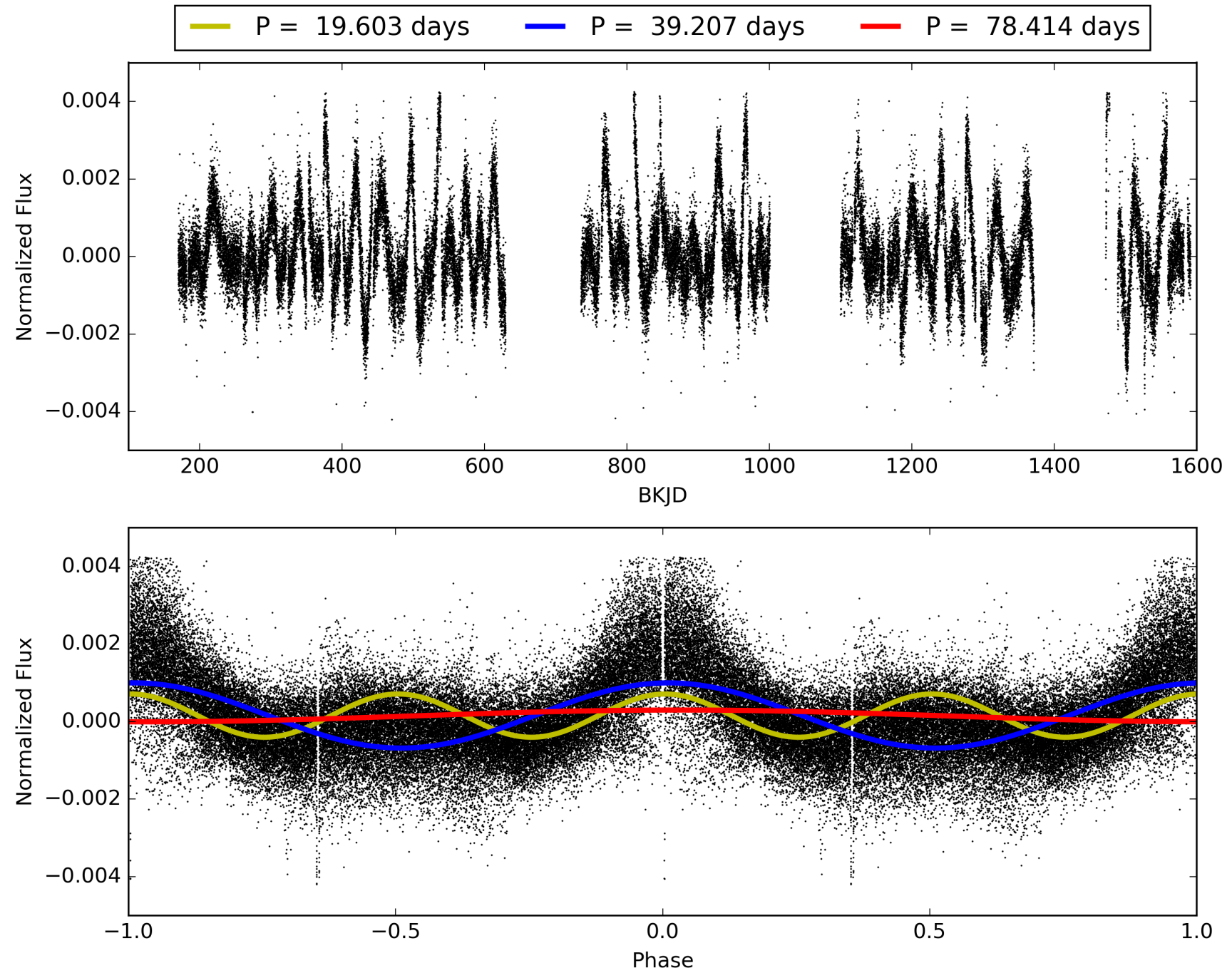
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 15:03:32 Z

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

TCE 009907505-01, PDC Light Curves

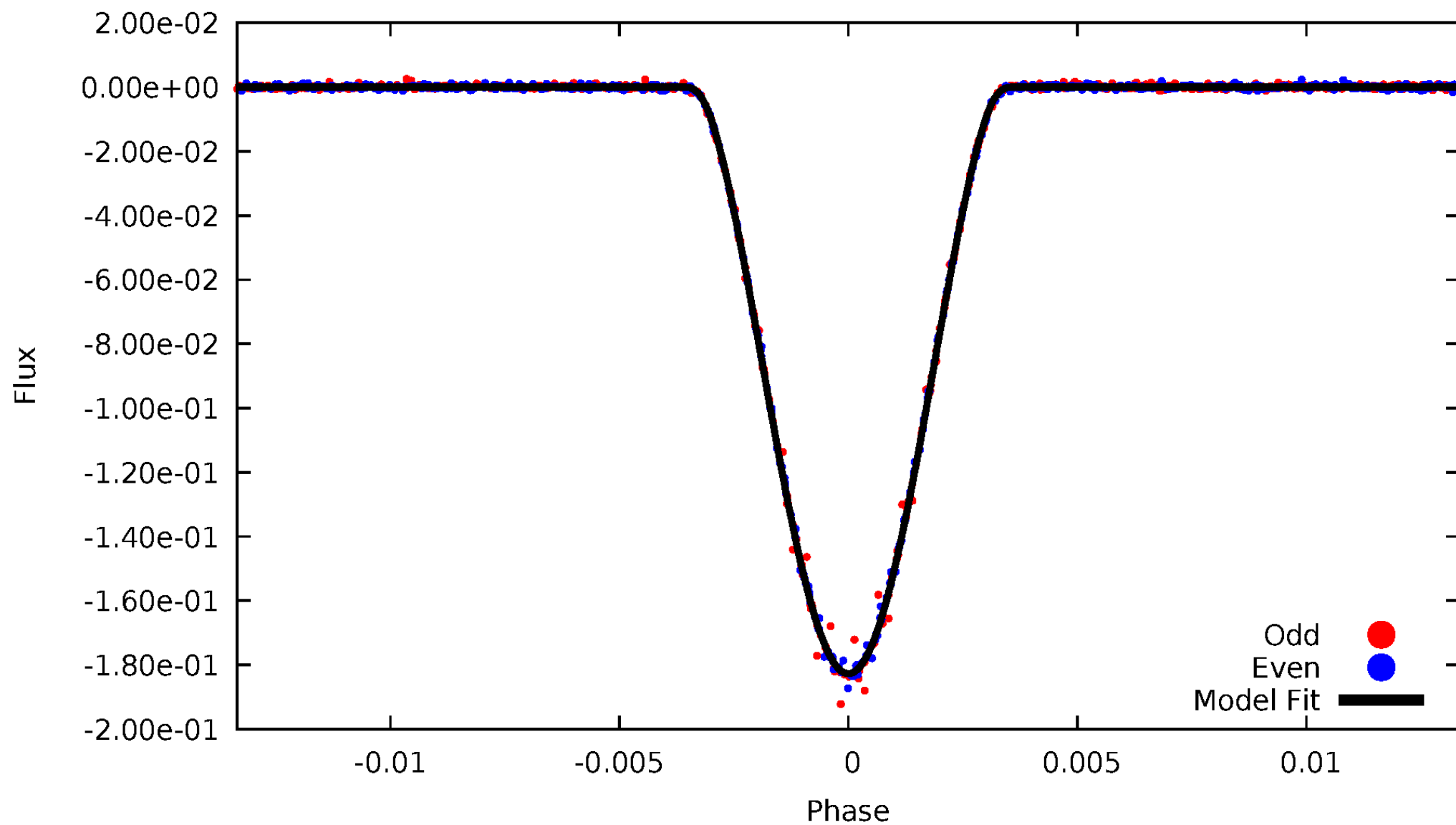


TCE 009907505-01



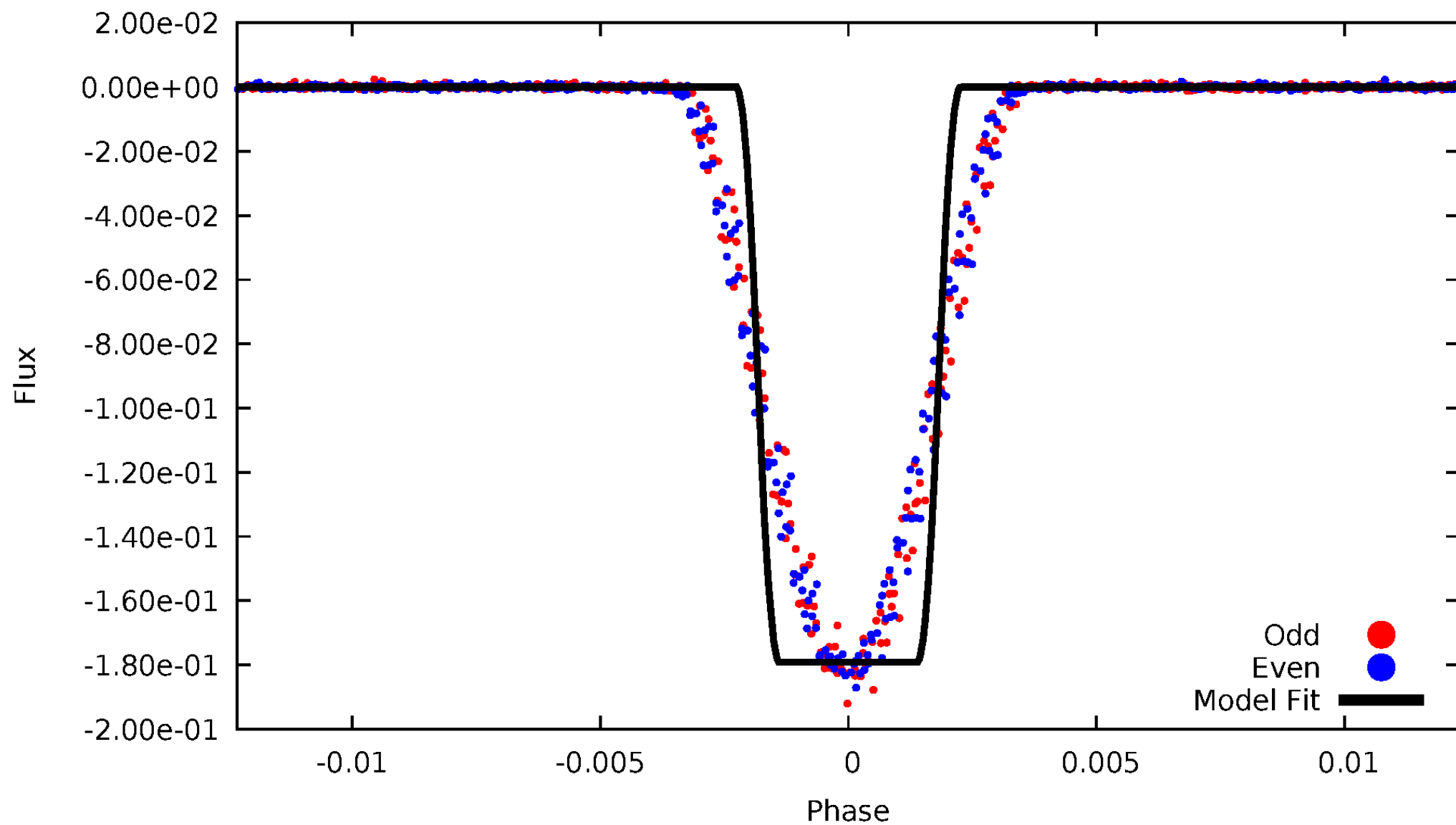
DV Odd/Even

TCE 009907505-01



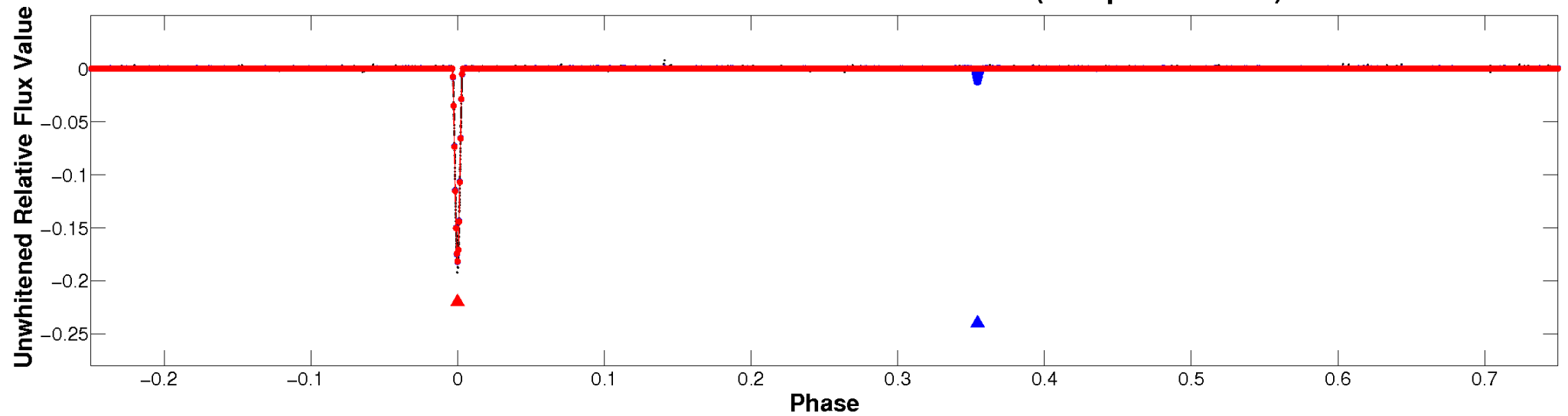
ALT Odd/Even

TCE 009907505-01

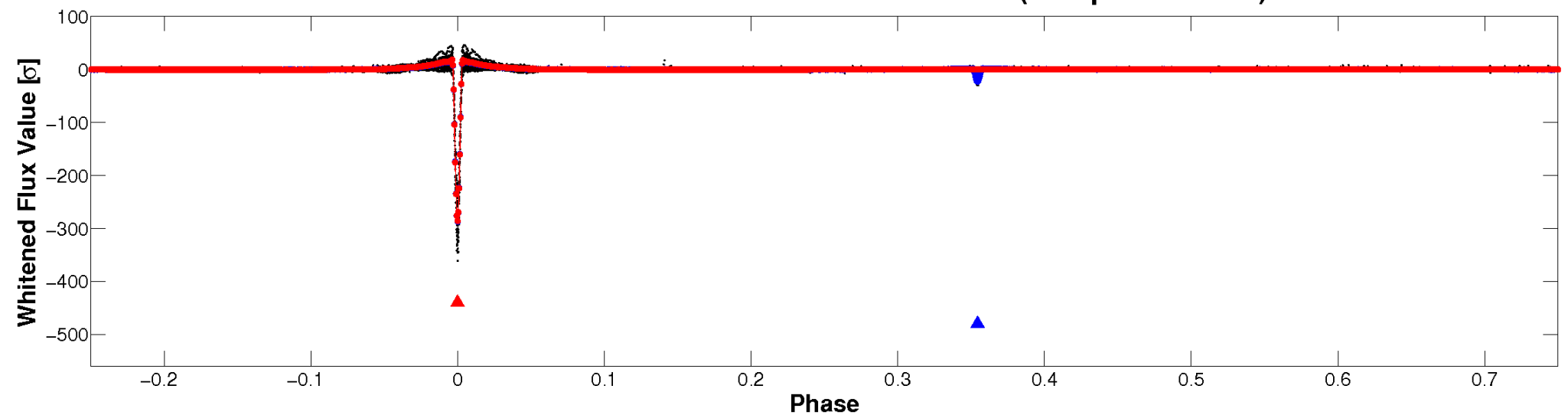


Non-Whitened Vs. Whitened Light Curve

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

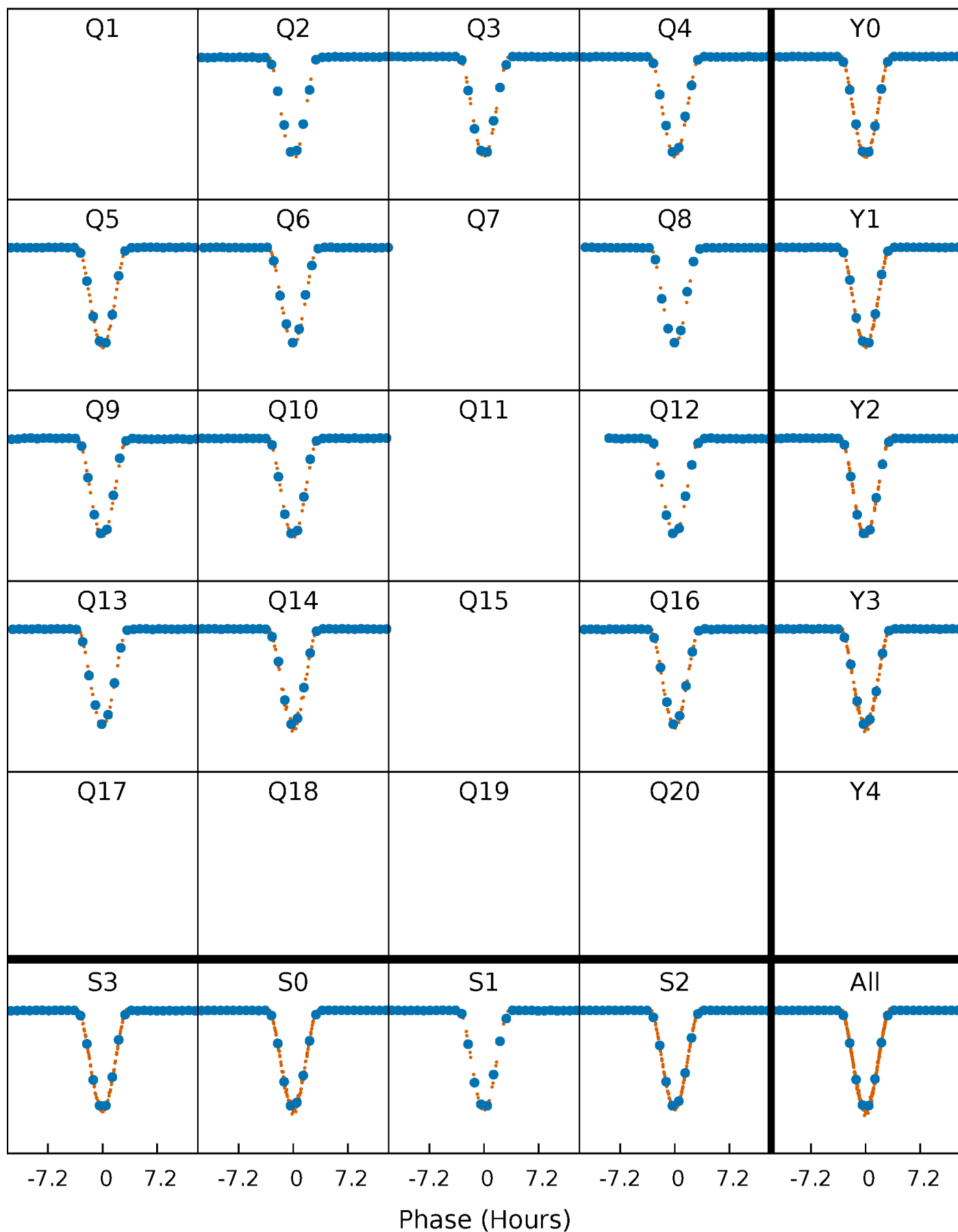


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



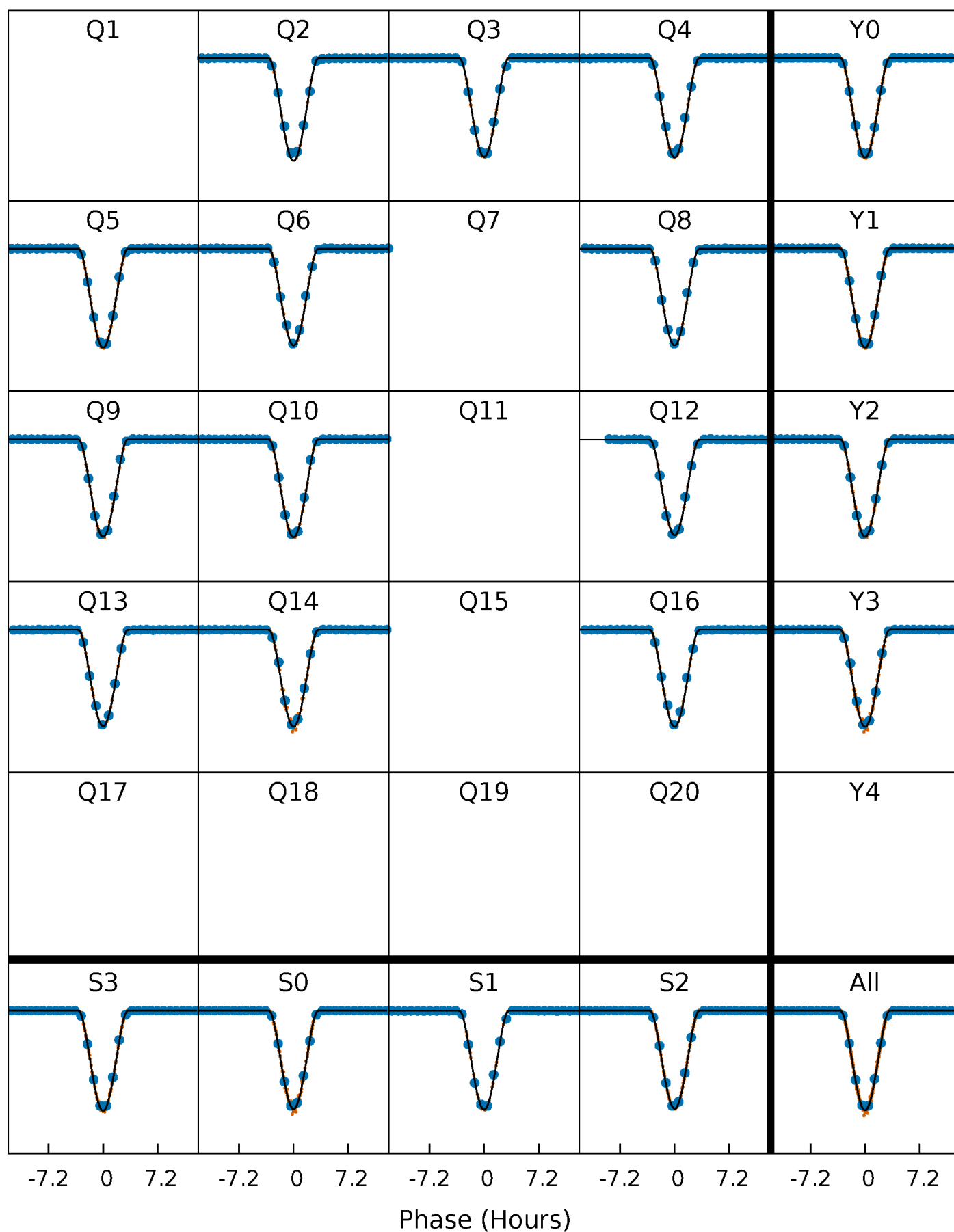
PDC Quarter-Phased Transit Curves

TCE 009907505-01 P= 39.206806 Days $T_0=142.461197$ (BKJD)



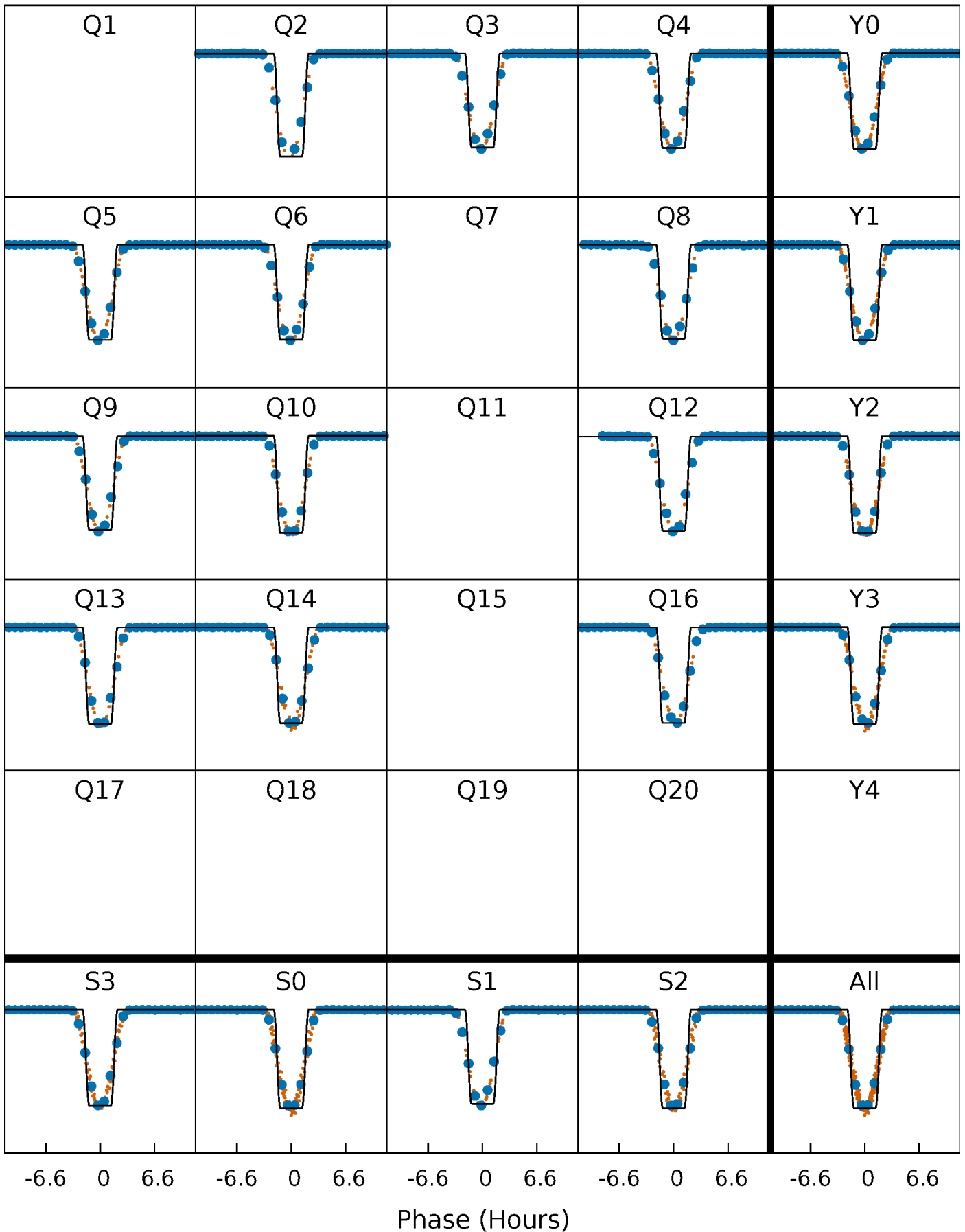
DV Quarter-Phased Transit Curves

TCE 009907505-01 P= 39.206806 Days $T_0=142.461197$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

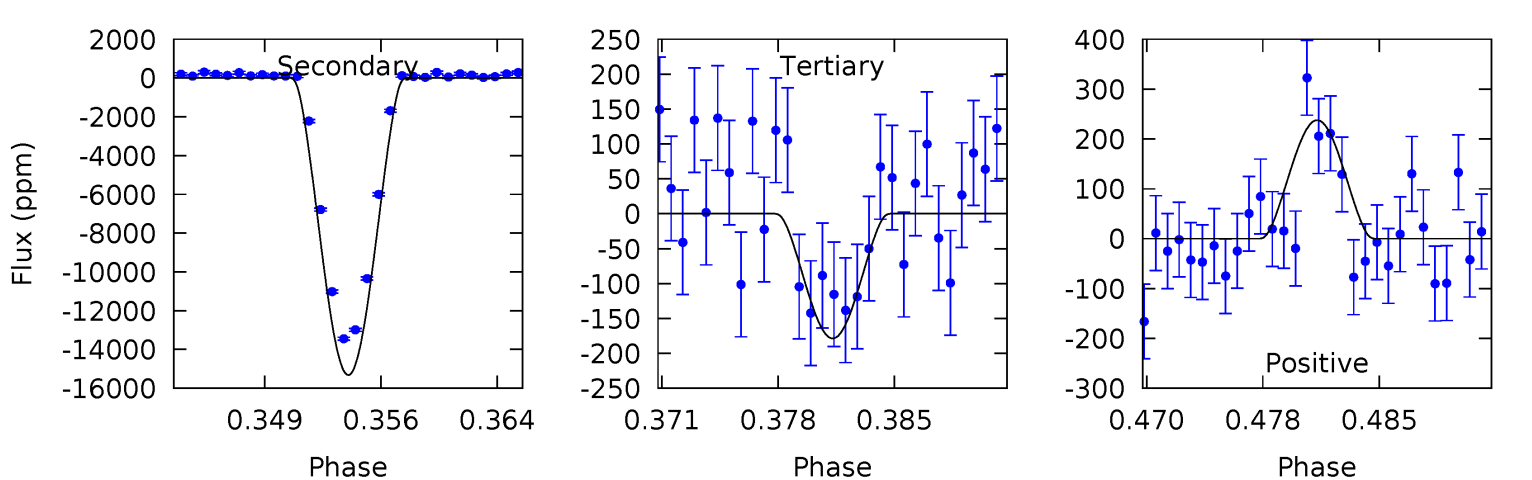
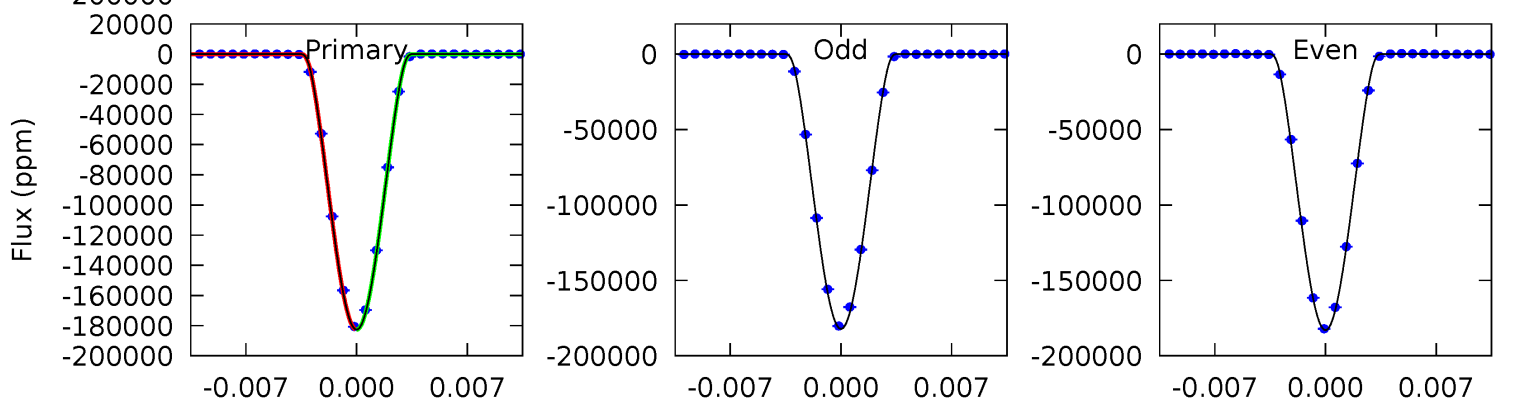
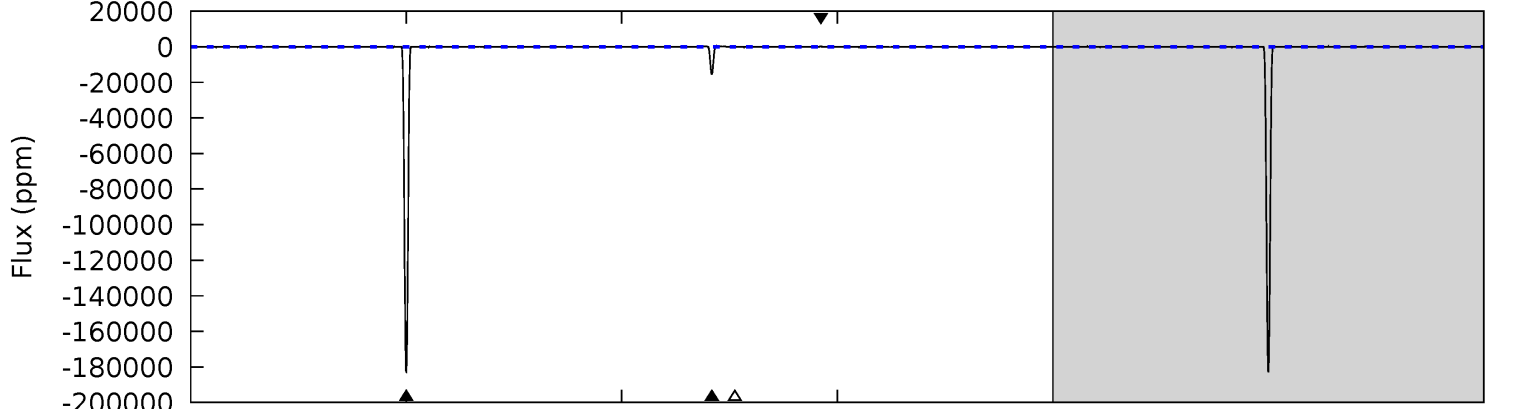
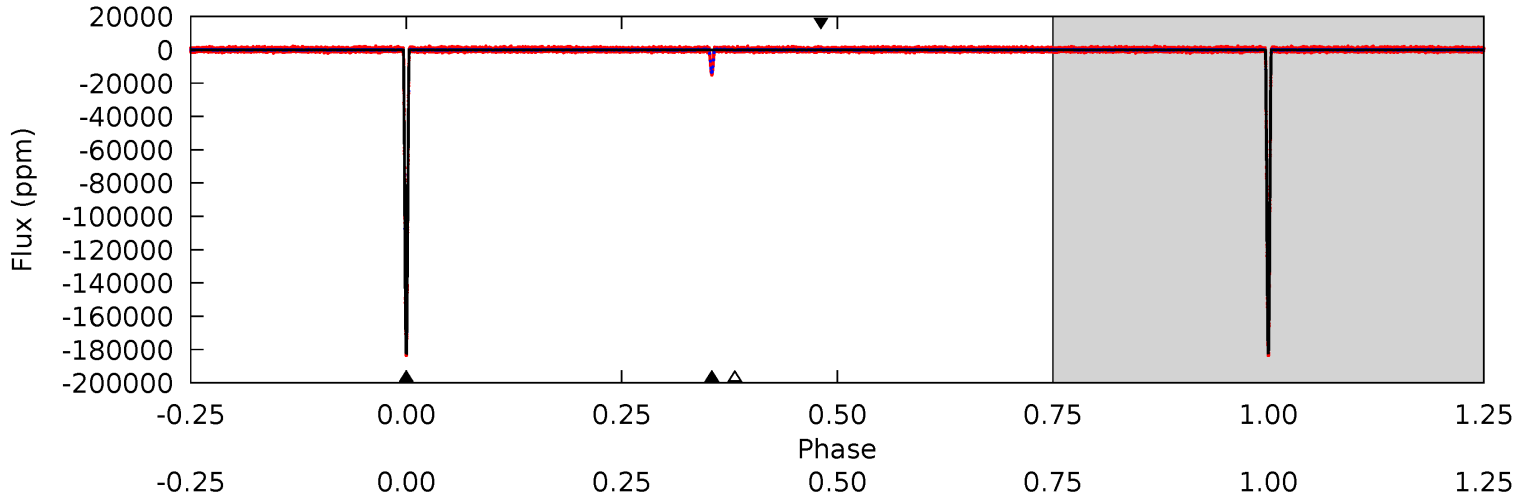
TCE 009907505-01 P= 39.206302 Days $T_0=142.470048$ (BKJD)



DV Model-Shift Uniqueness Test

009907505-01, P = 39.206806 Days, E = 142.461197 Days

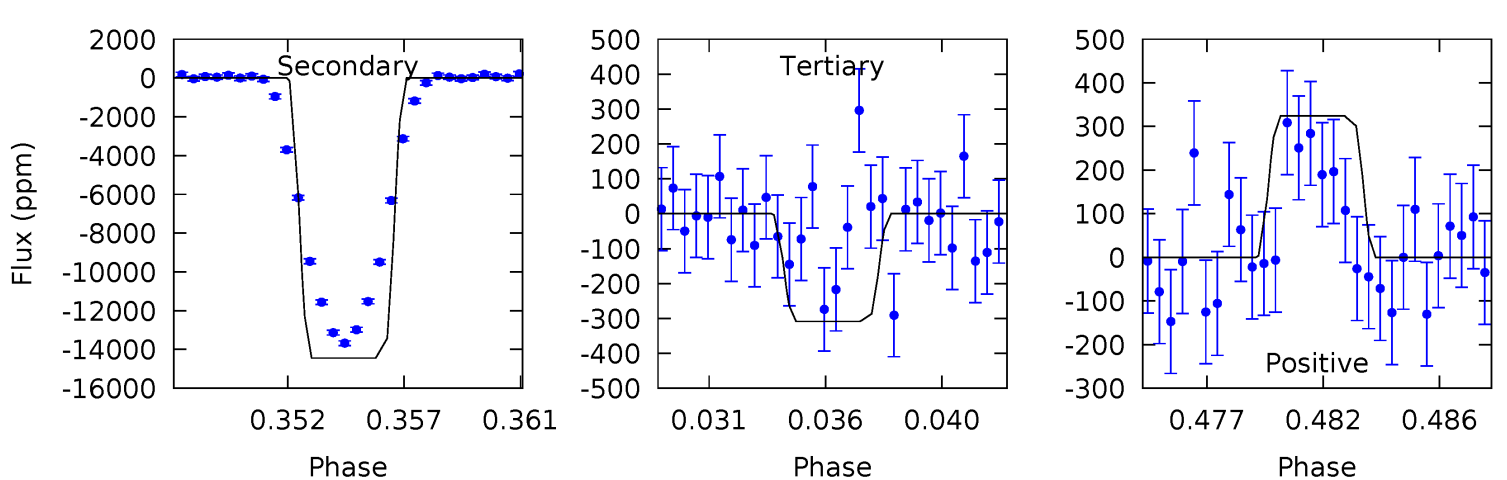
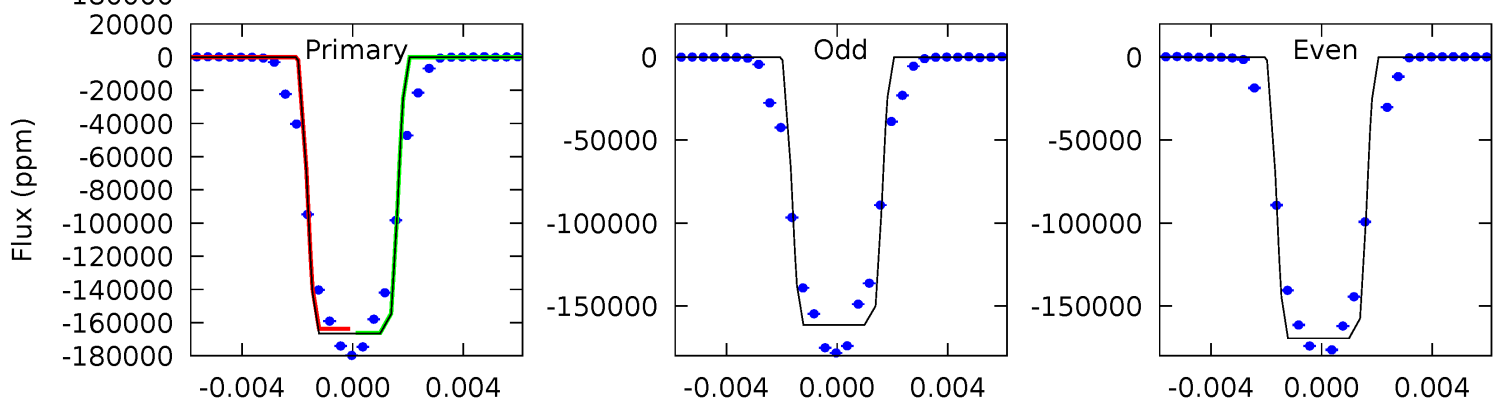
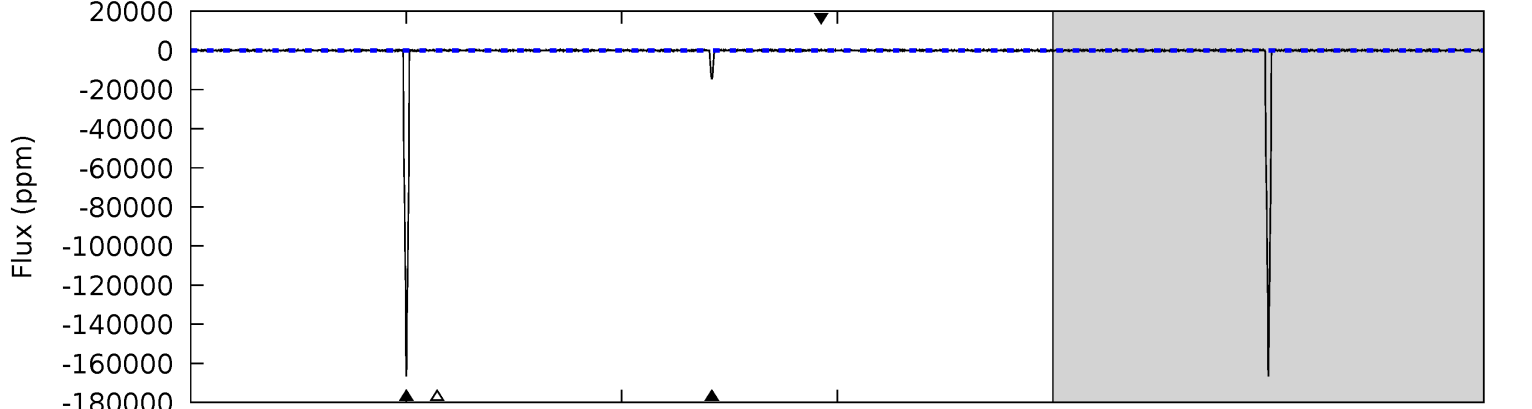
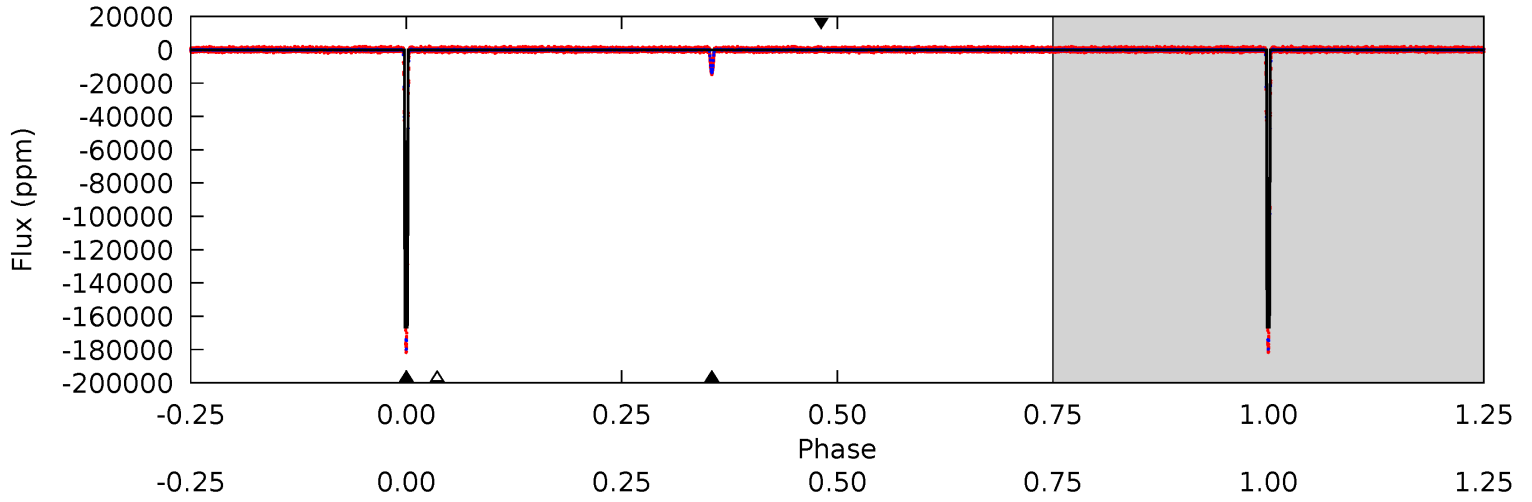
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5872	492.7	5.74	7.64	5.09	2.69	2.01	5866	5864	486.9	485.0	13.6	1.00	0.00	0



Alt Model-Shift Uniqueness Test

009907505-01, P = 39.206302 Days, E = 142.470048 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2113	183.2	3.91	4.11	5.18	2.84	1.12	2109	2109	179.3	179.1	55.0	1.00	0.00	0



Stellar Parameters For KIC 009907505

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5945^{+179}_{-179}	$4.545^{+0.039}_{-0.208}$	$-0.300^{+0.300}_{-0.300}$	$0.861^{+0.274}_{-0.069}$	$0.950^{+0.106}_{-0.118}$	$2.096^{+0.435}_{-1.110}$
	+3%/-3%	+1%/-5%	+100%/-100%	+32%/-8%	+11%/-12%	+21%/-53%
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 009907505-01 / KOI 3427.01

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-15322 ± 31	$57.40^{+9.08}_{-5.35}$	740^{+52}_{-36}	3294^{+83}_{-83}	124^{+25}_{-27}
Alt.	-14442 ± 79	$41.43^{+7.42}_{-4.69}$	742^{+58}_{-35}	3630^{+115}_{-107}	225^{+57}_{-56}

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 $A_{obs} \gg 1.0$

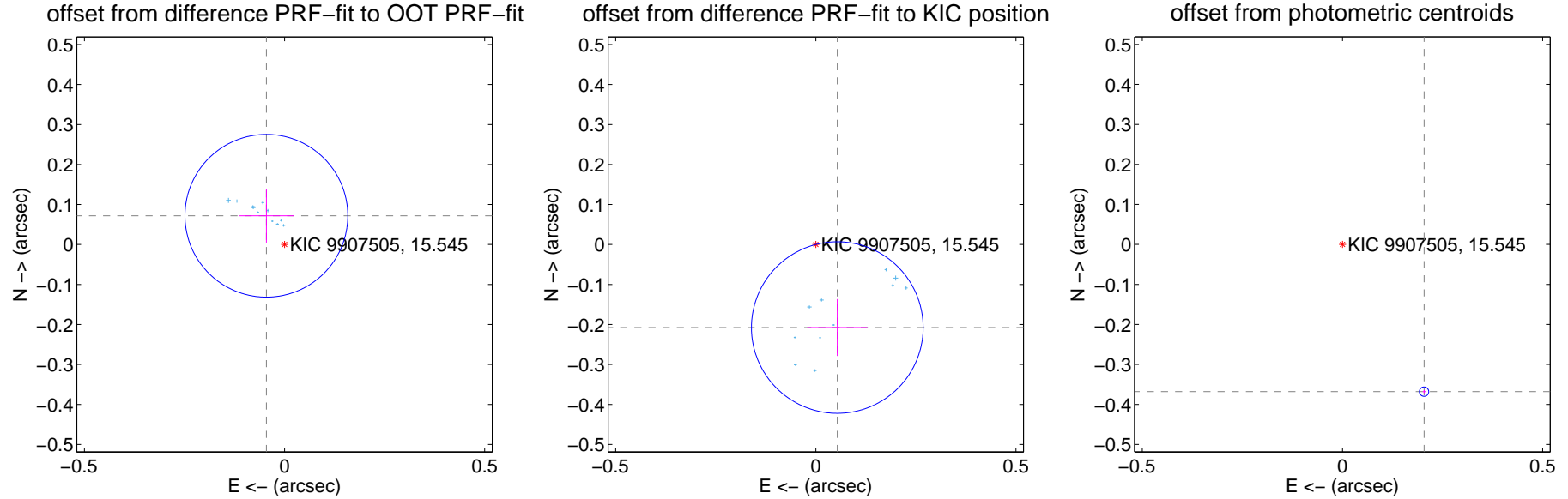
DV Centroid Data

Supplemental centroid analysis for 009907505-01. Kepler magnitude: 15.54. Transit SNR 2440.59

There are 11 quarters with good PRF difference image offsets

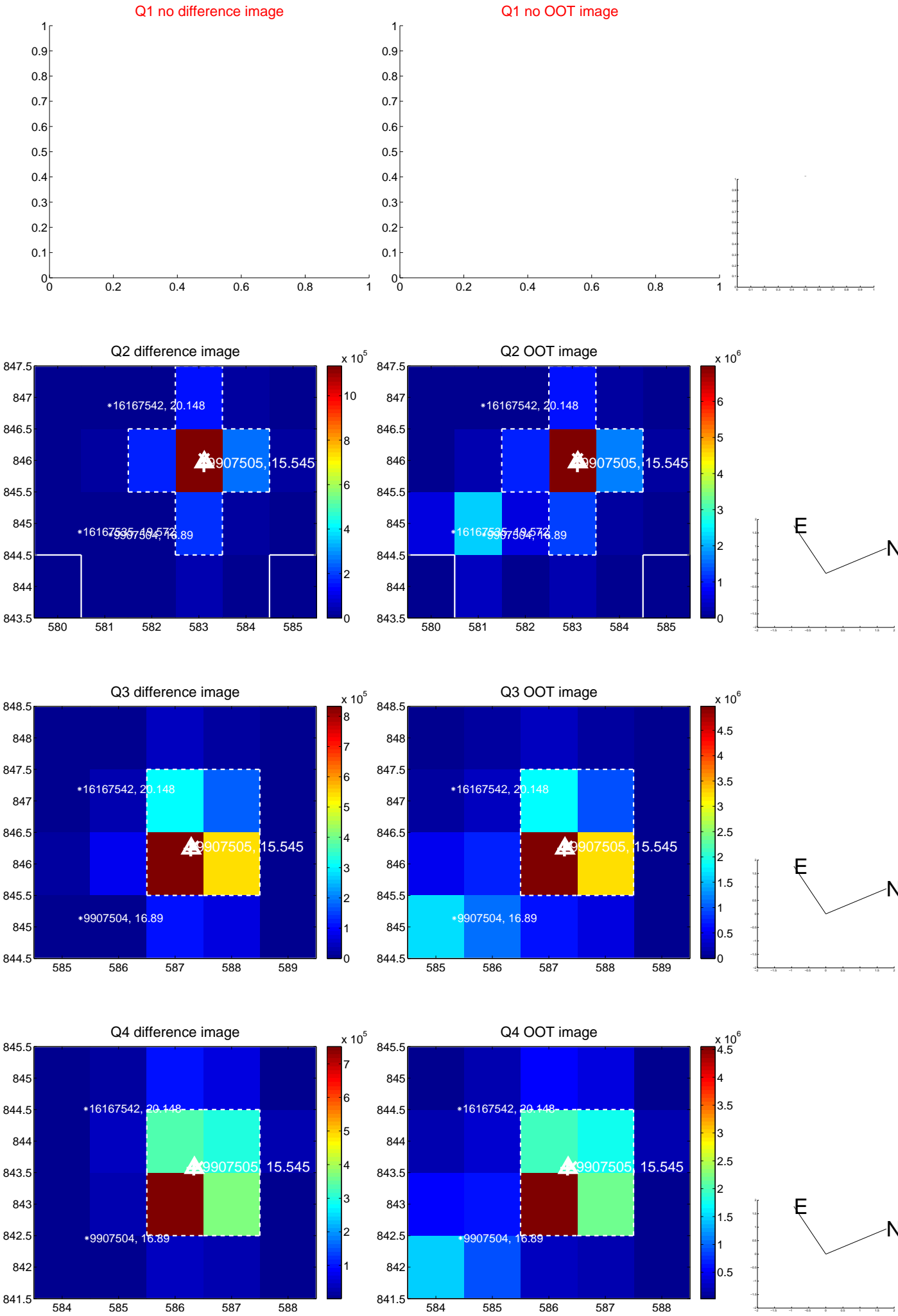
The direct PRF centroid is offset from the target star catalog position by about 0.35 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.085 ± 0.068	1.25	0.045 ± 0.068	0.072 ± 0.067
PRF-fit source offset from KIC position	0.214 ± 0.071	3.00	-0.054 ± 0.075	-0.208 ± 0.071
photometric centroid source offset	0.42 ± 0.00	108.24	-0.20 ± 0.00	-0.37 ± 0.00

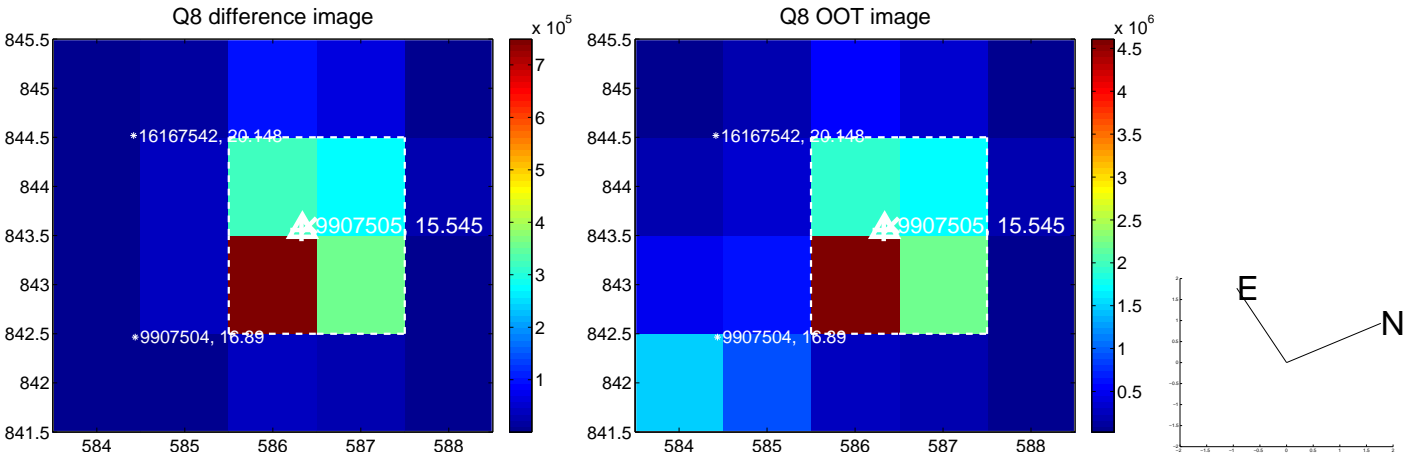
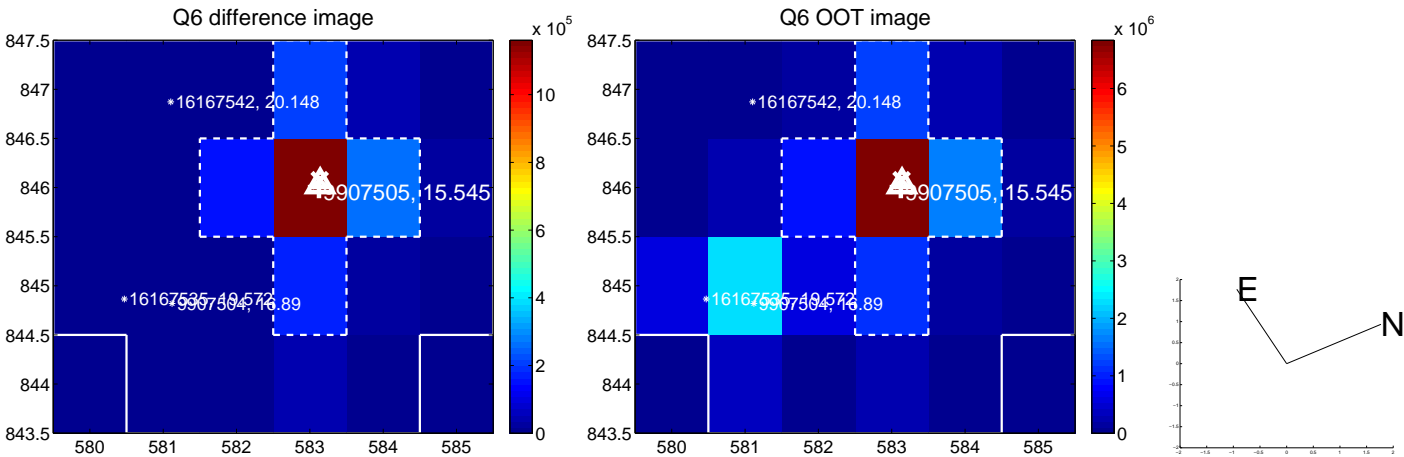
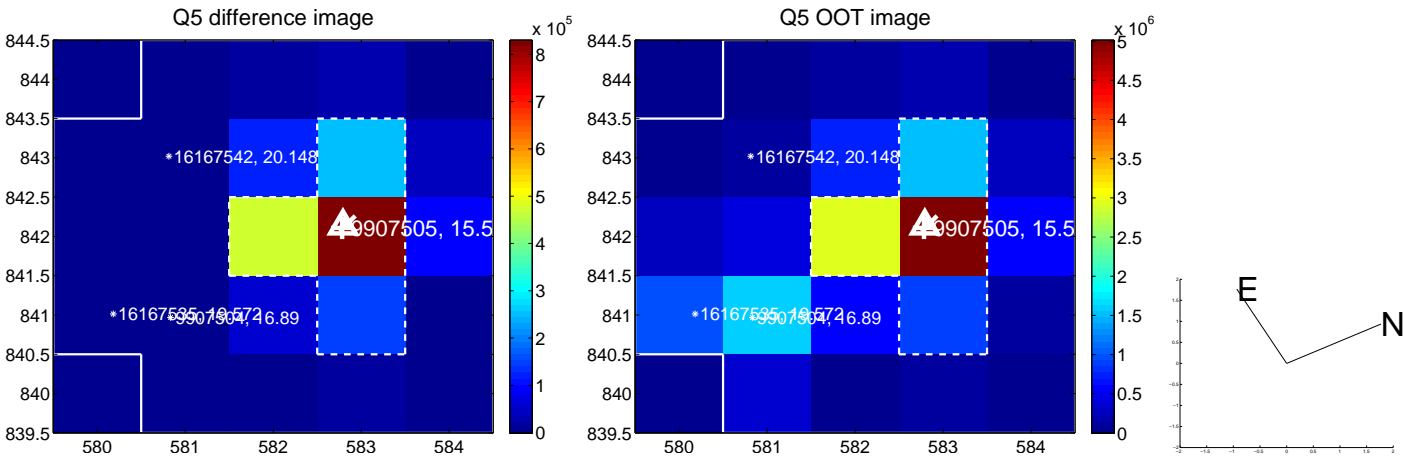


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

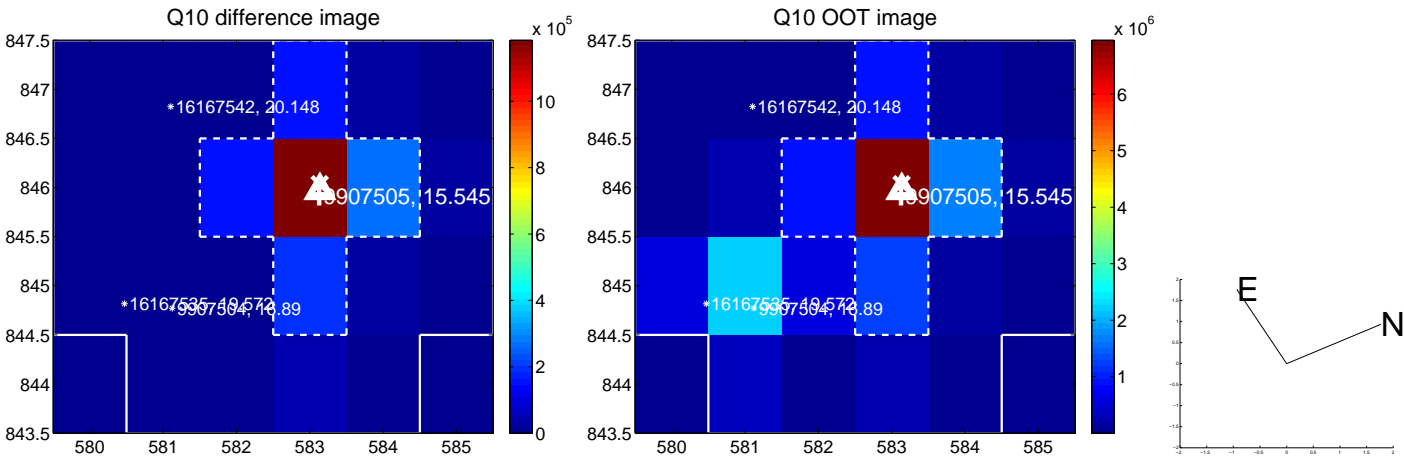
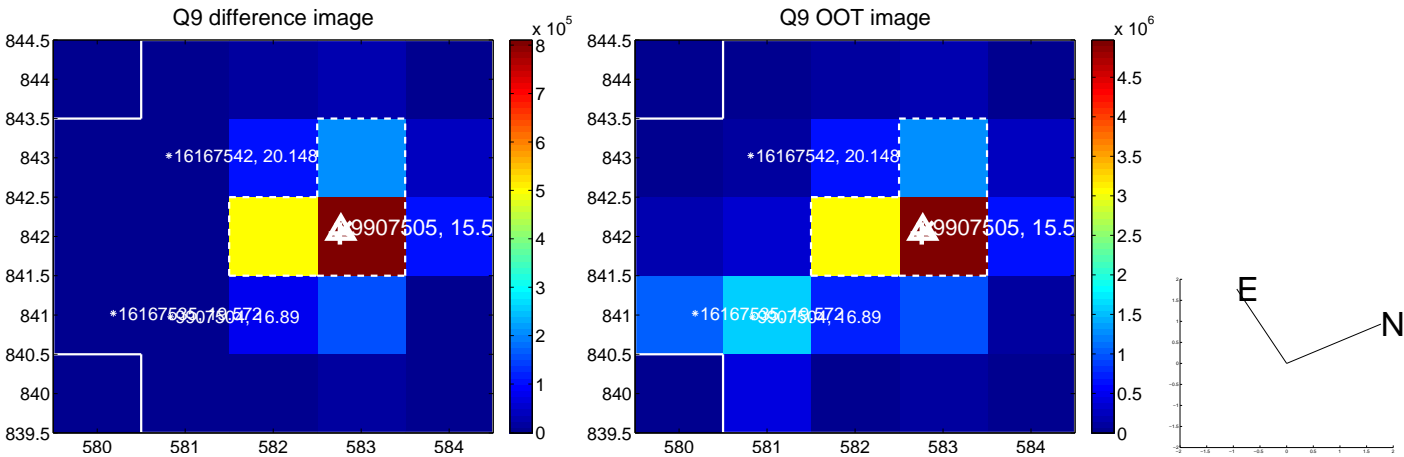
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



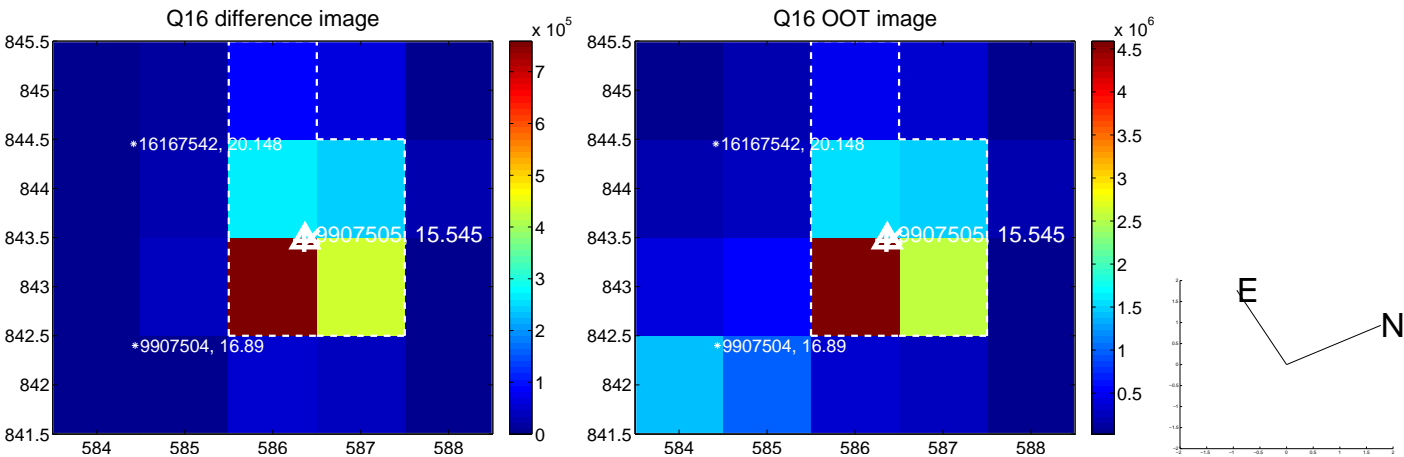
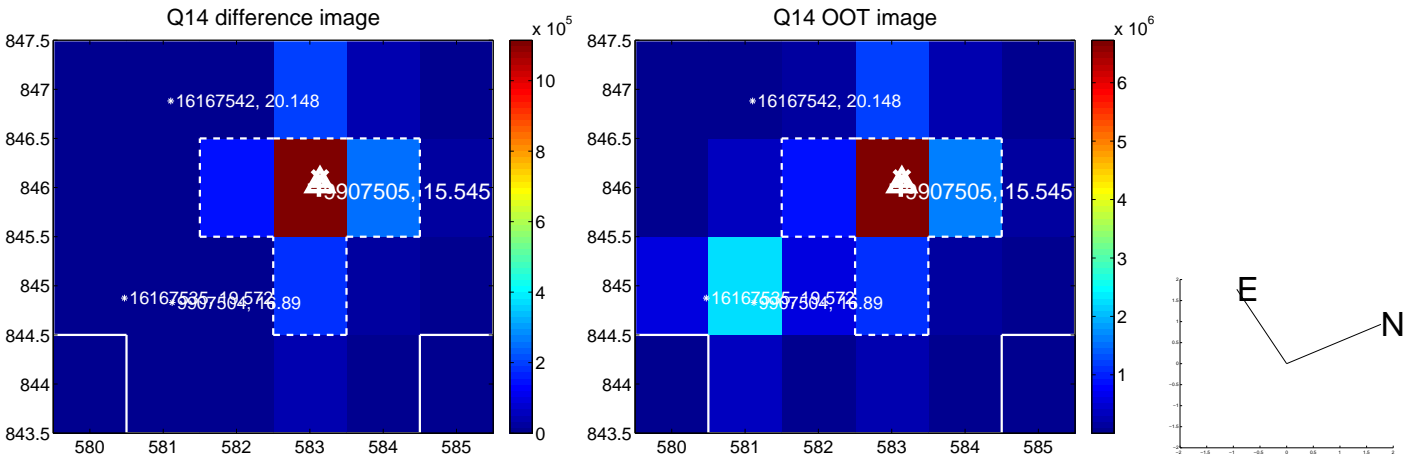
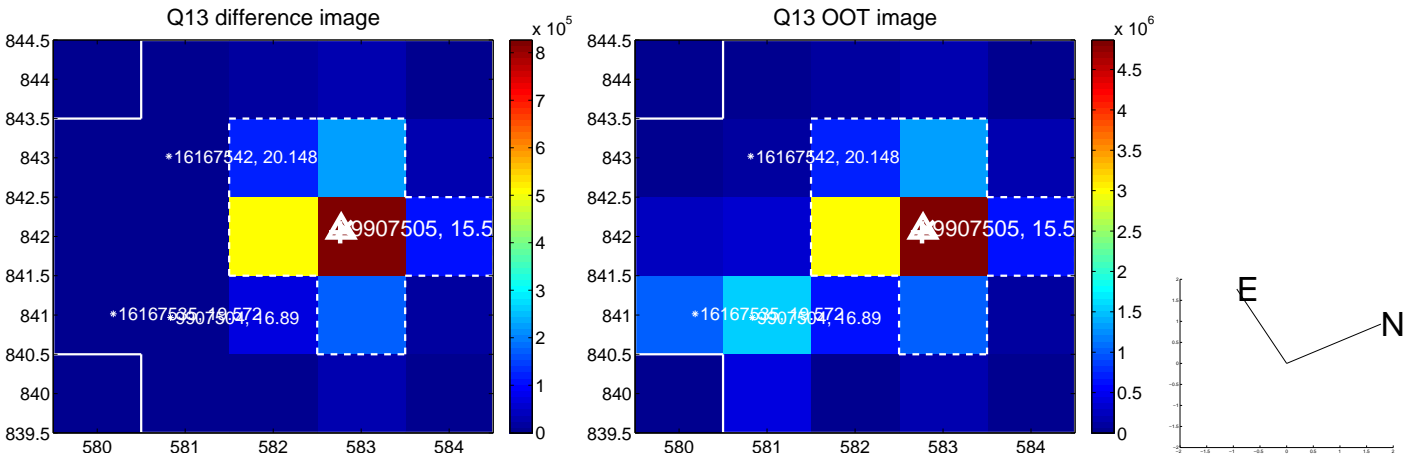
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



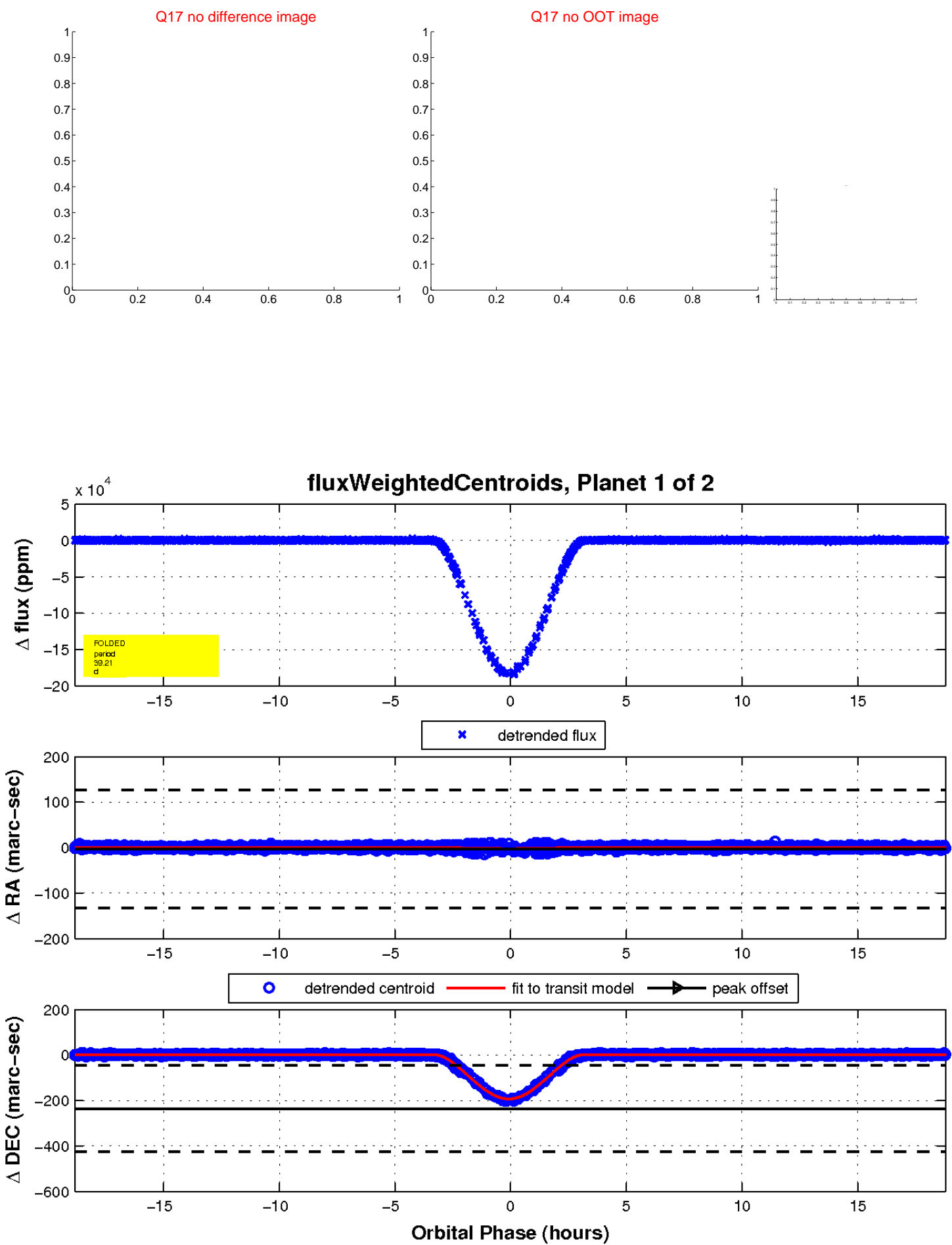
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white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

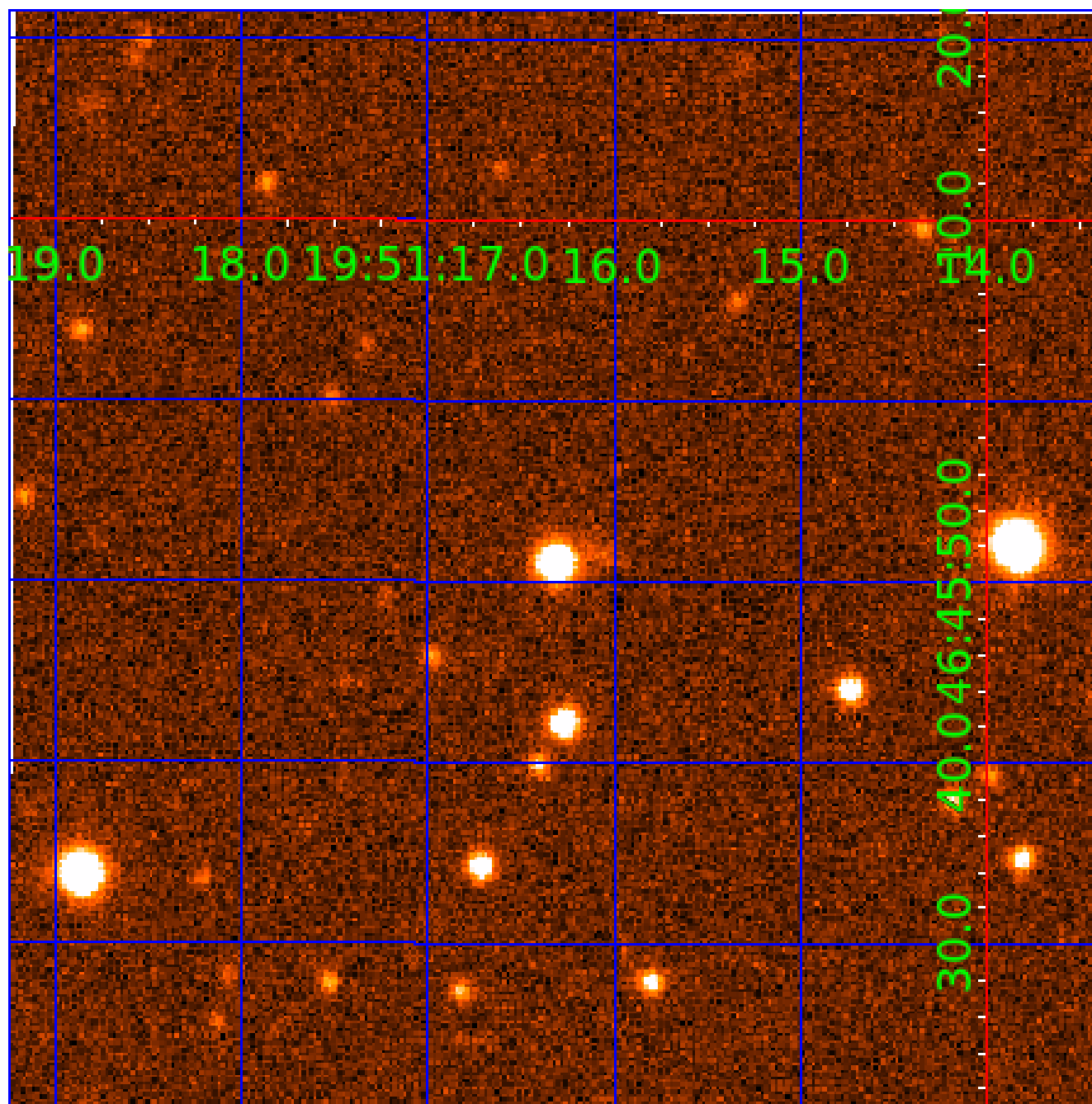


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009907505

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})
009907505-01	OBS	3427.01	39.206806	142.461197	182701.4	6.279	3046.5	2440.6	0.86	5945	55.14	16.84
009907505-02	OBS	No	39.206826	156.357327	13712.4	5.547	261.8	256.5	0.86	5945	15.87	16.84

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009907505-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_DV—MOD_SEC_ALT—MOD_ODDEVEN_DV—MOD_ODDEVEN_ALT—DEEP_V_SHAPED—HAS_SEC_TCE
009907505-02	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.

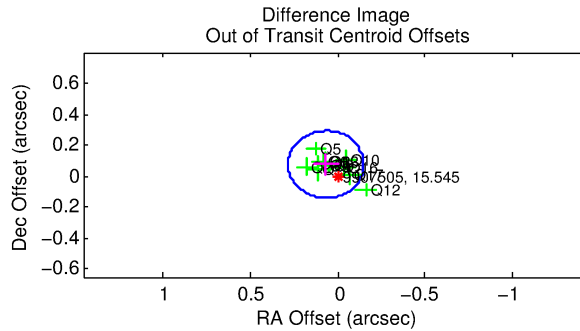
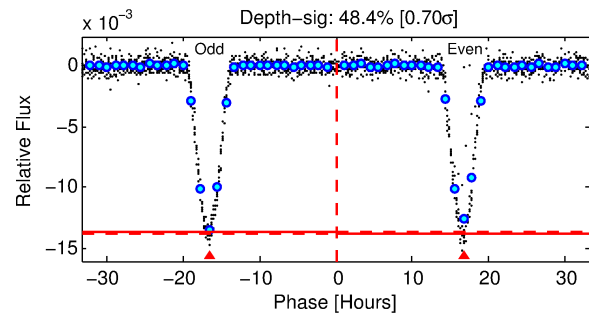
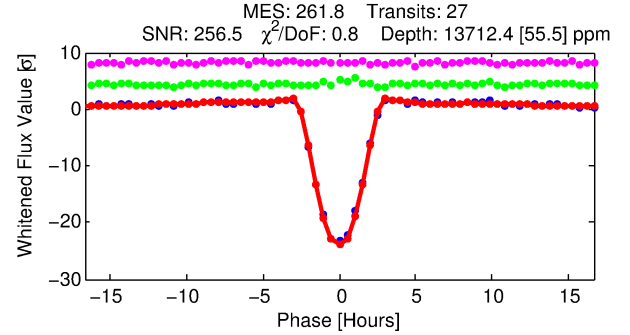
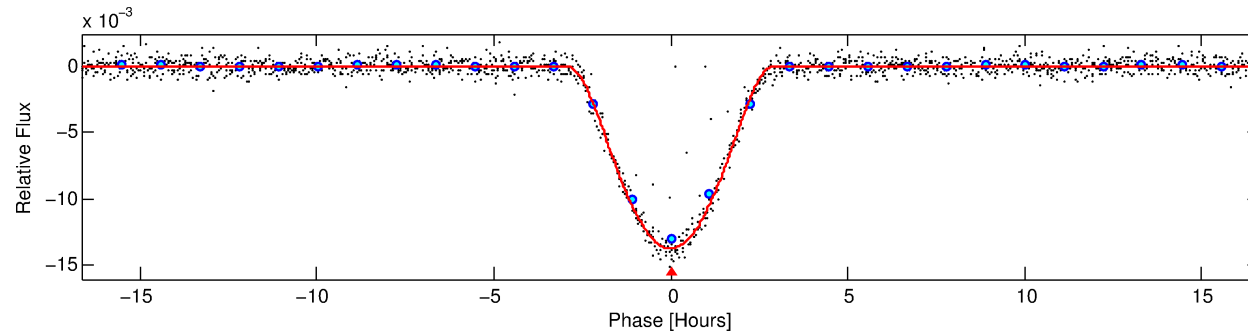
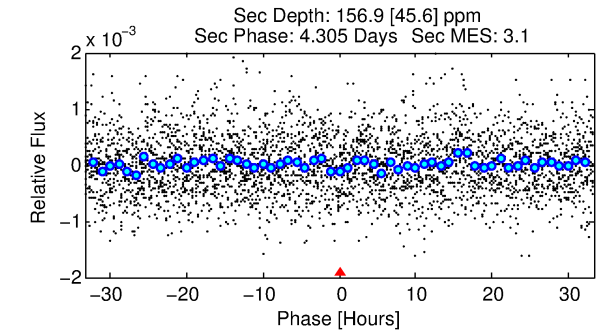
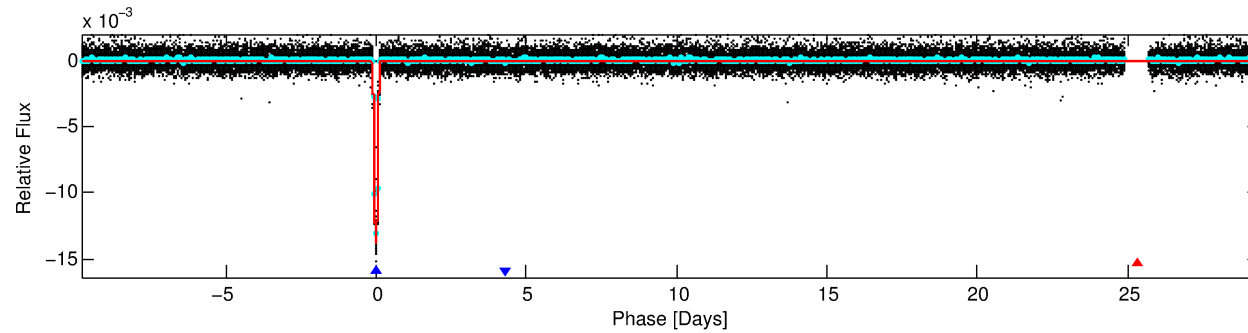
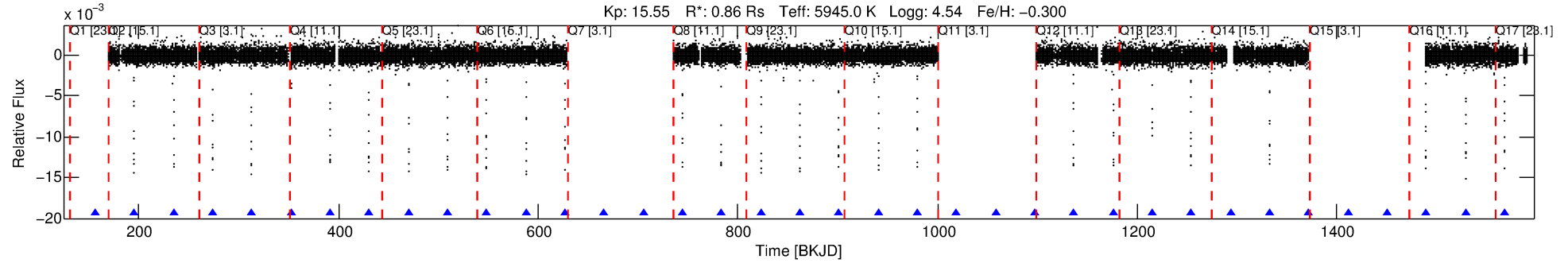
Ephemeris Match Information For 009907505-02

No Significant Match Found

DV One-Page Summary

KIC: 9907505 Candidate: 2 of 2 Period: 39.207 d

KOI: K03427 Corr: No Ephemeris Match



DV Fit Results:

Period = 39.20683 [0.00002] d
Epoch = 156.3573 [0.0004] BKJD
Rp/R* = 0.1689 [0.0214]
a/R* = 35.36 [0.80]
b = 0.97 [0.03]
Seff = 16.84 [6.77]
Teq = 517 [52] K
Rp = 15.87 [5.43] Re
a = 0.2220 [0.0589] AU
Ag = 16.89 [9.18] [1.73 σ]
Teffp = 1619 [164] K [6.43 σ]

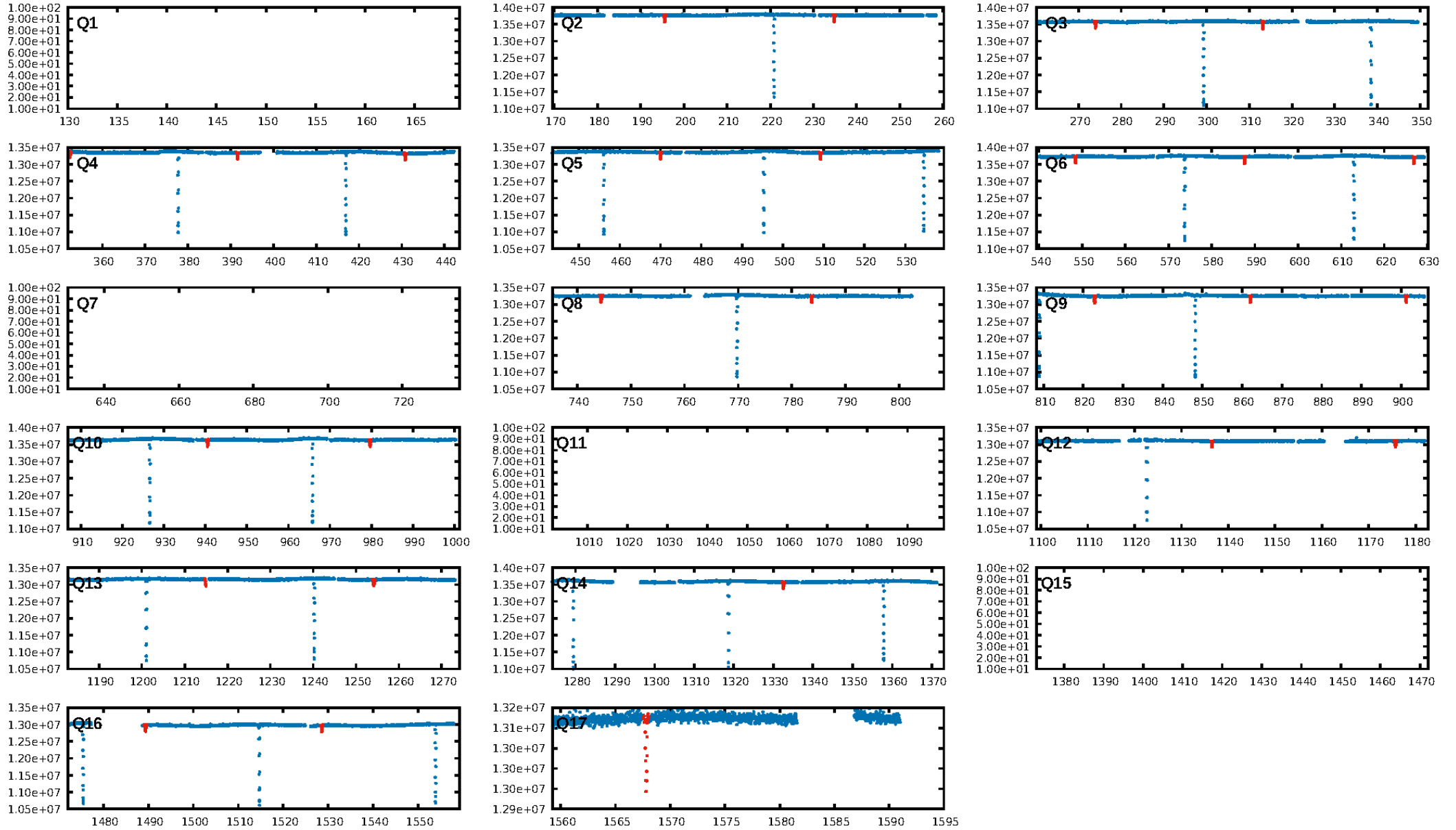
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 44.2%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 1.00 [26/26]
GhostDiagnostic-chr: 6.846
Centroid-sig: 0.0%
Centroid-so: 0.517 arcsec [10.43 σ]
OotOffset-rm: 0.102 arcsec [1.42 σ]
KicOffset-rm: 0.201 arcsec [2.79 σ]
OotOffset-st: 4/1/4/4 [13]
KicOffset-st: 4/1/4/4 [13]
DiffImageQuality-fgm: 1.00 [13/13]
DiffImageOverlap-fno: 1.00 [13/13]

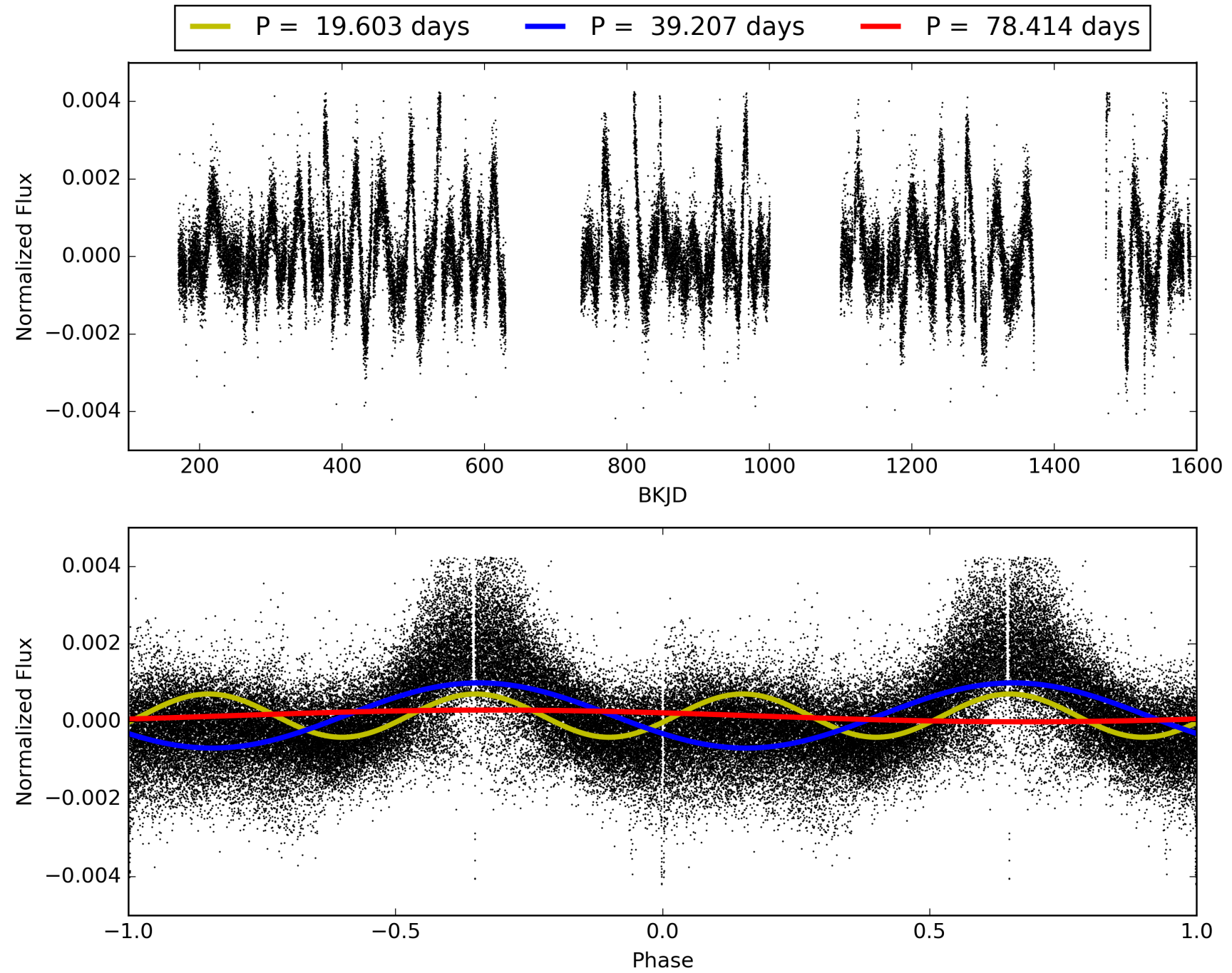
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 15:03:36 Z

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

TCE 009907505-02, PDC Light Curves

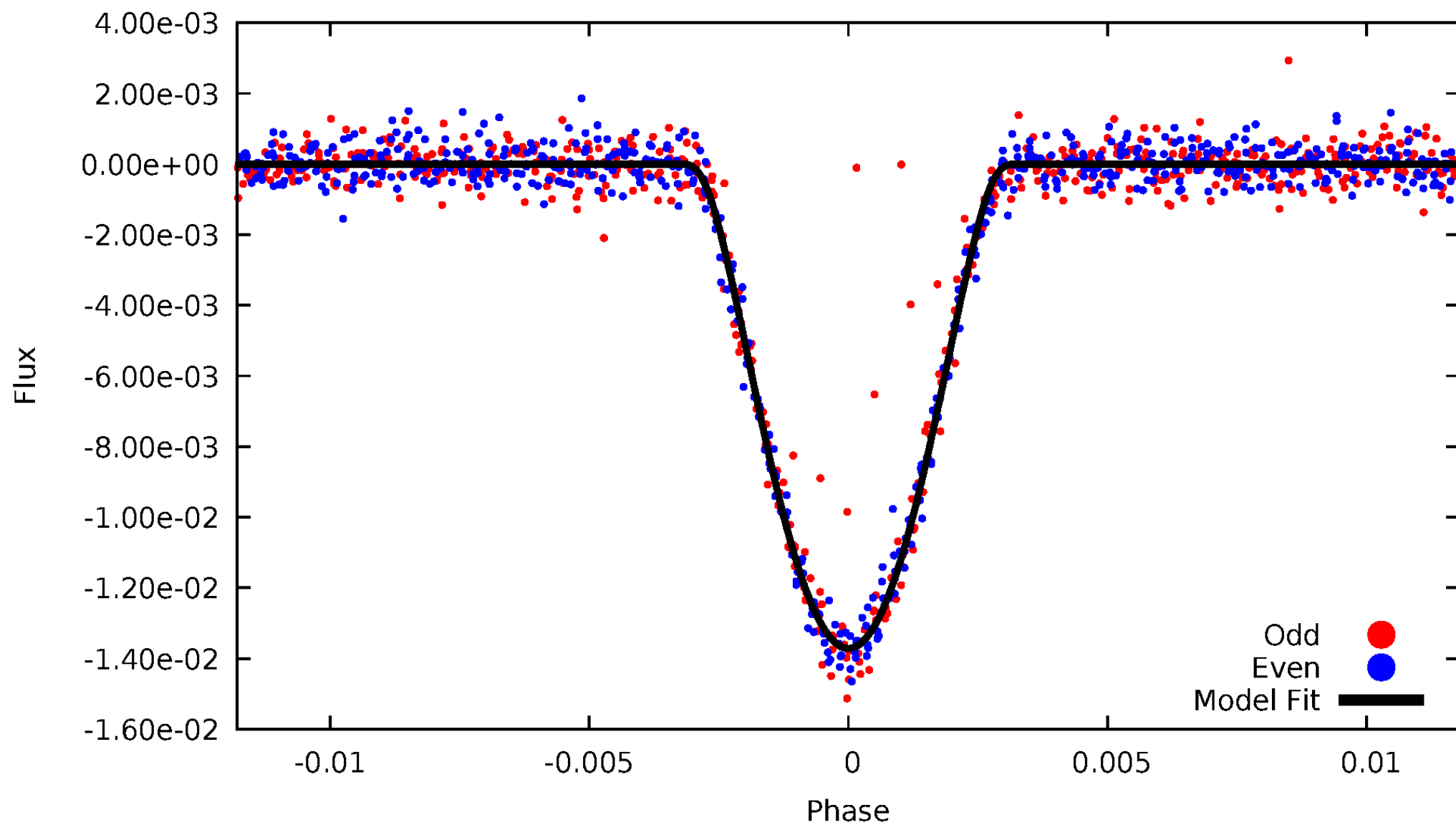


TCE 009907505-02



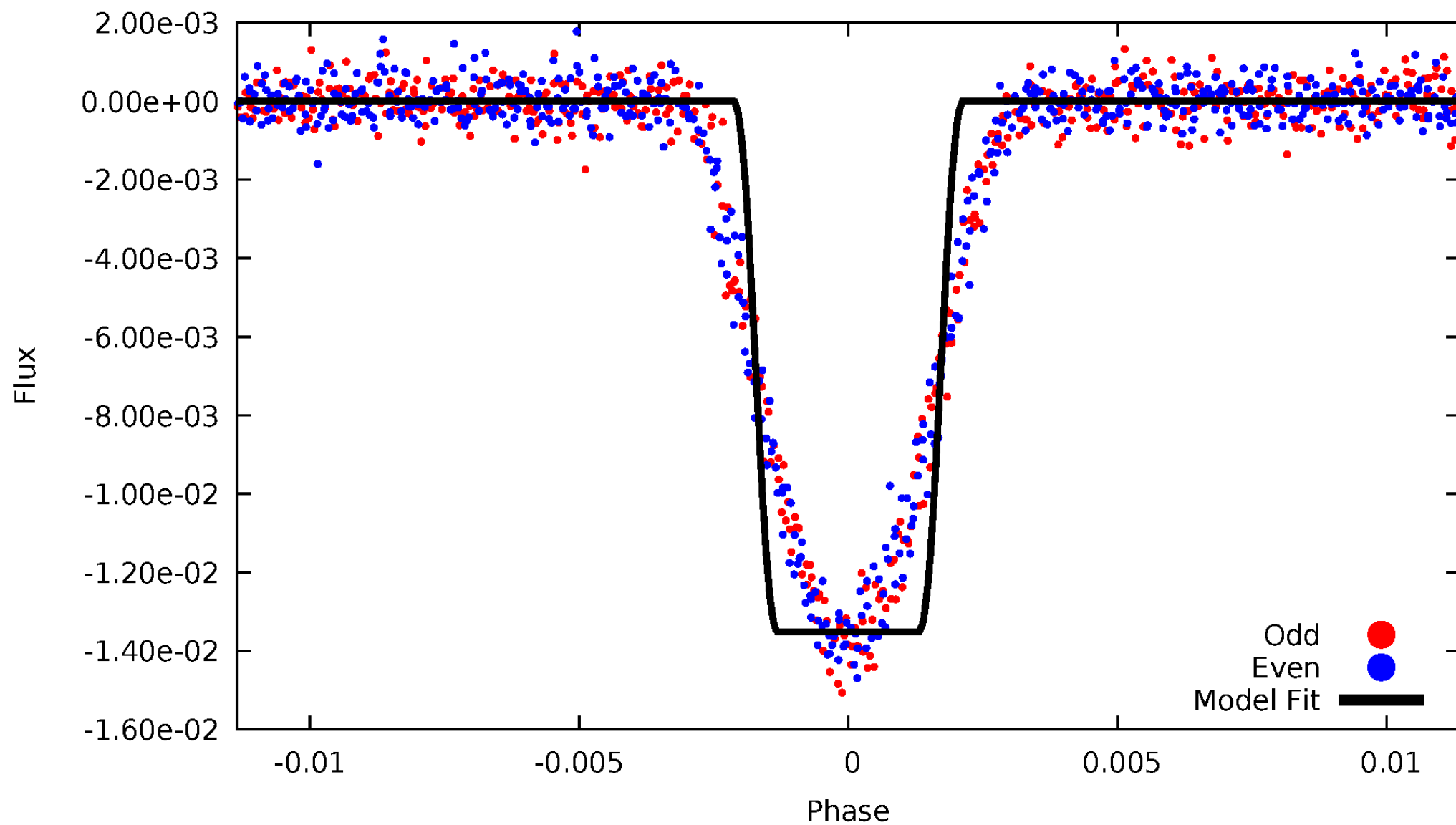
DV Odd/Even

TCE 009907505-02



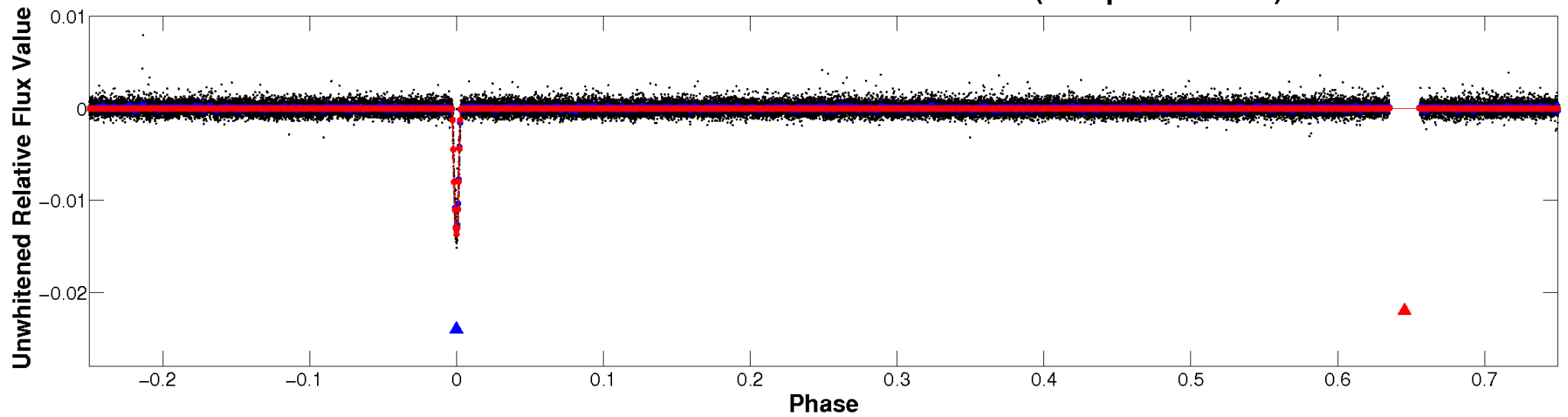
ALT Odd/Even

TCE 009907505-02

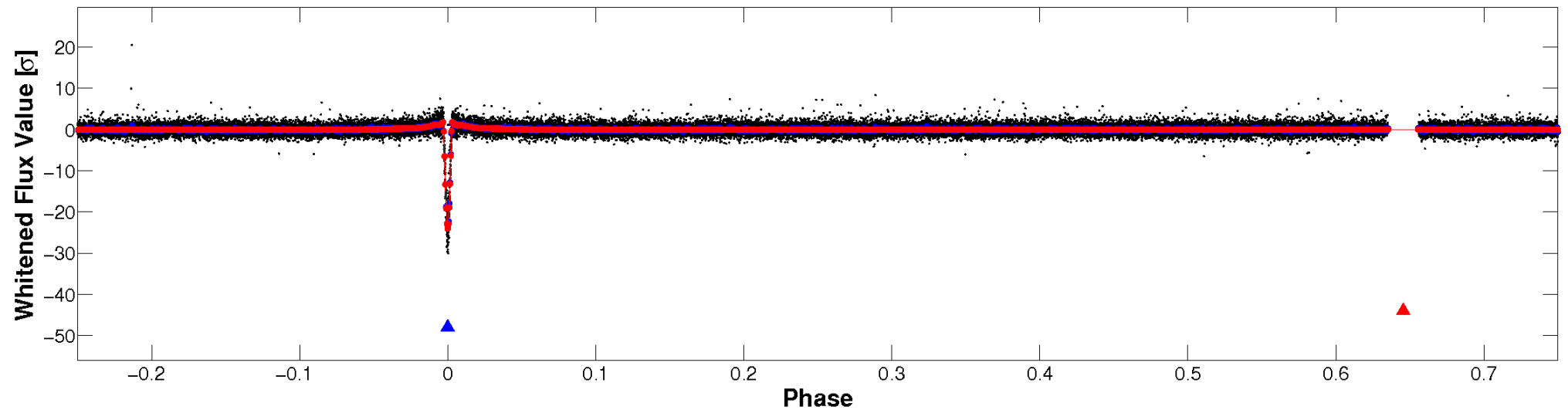


Non-Whitened Vs. Whitened Light Curve

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

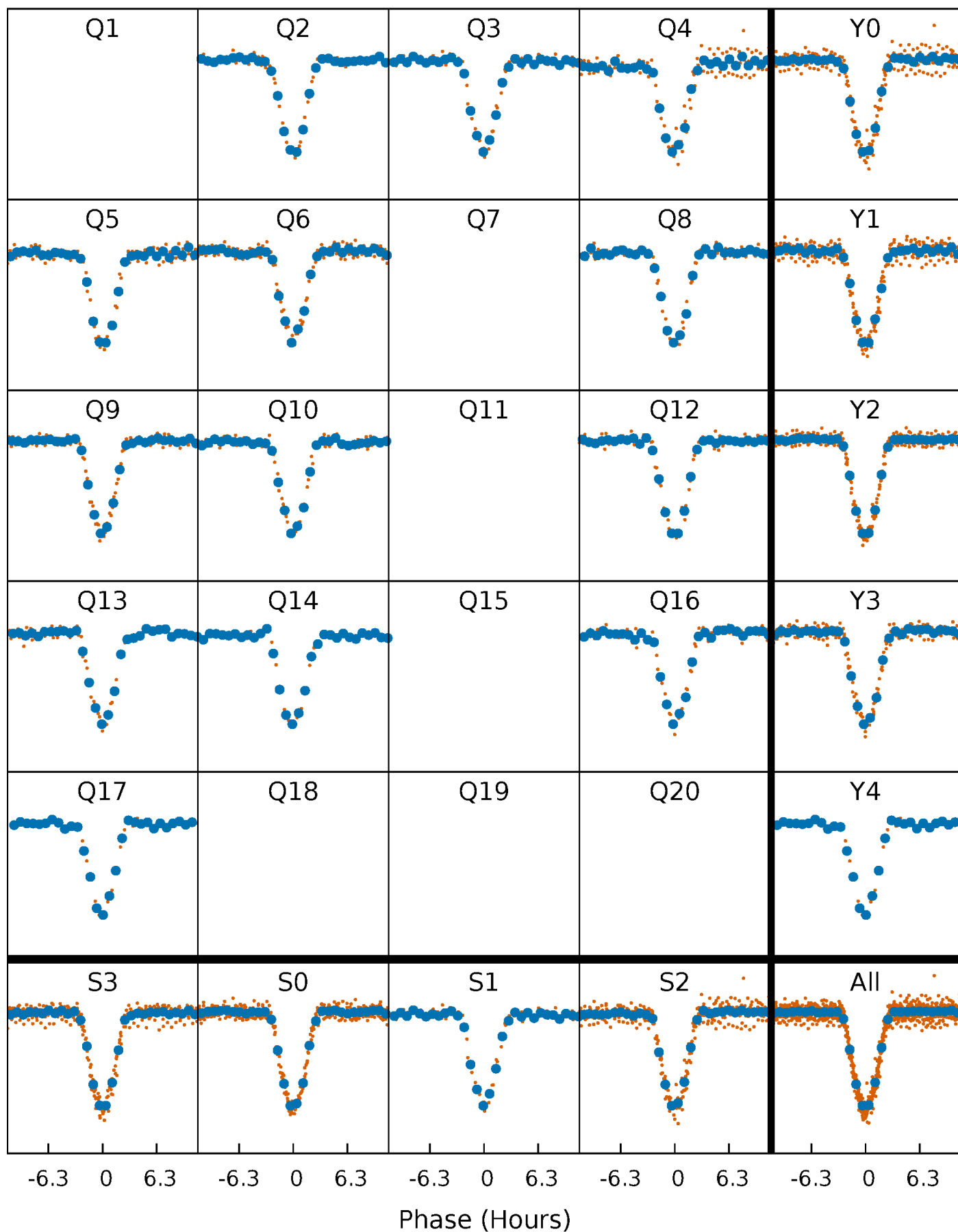


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



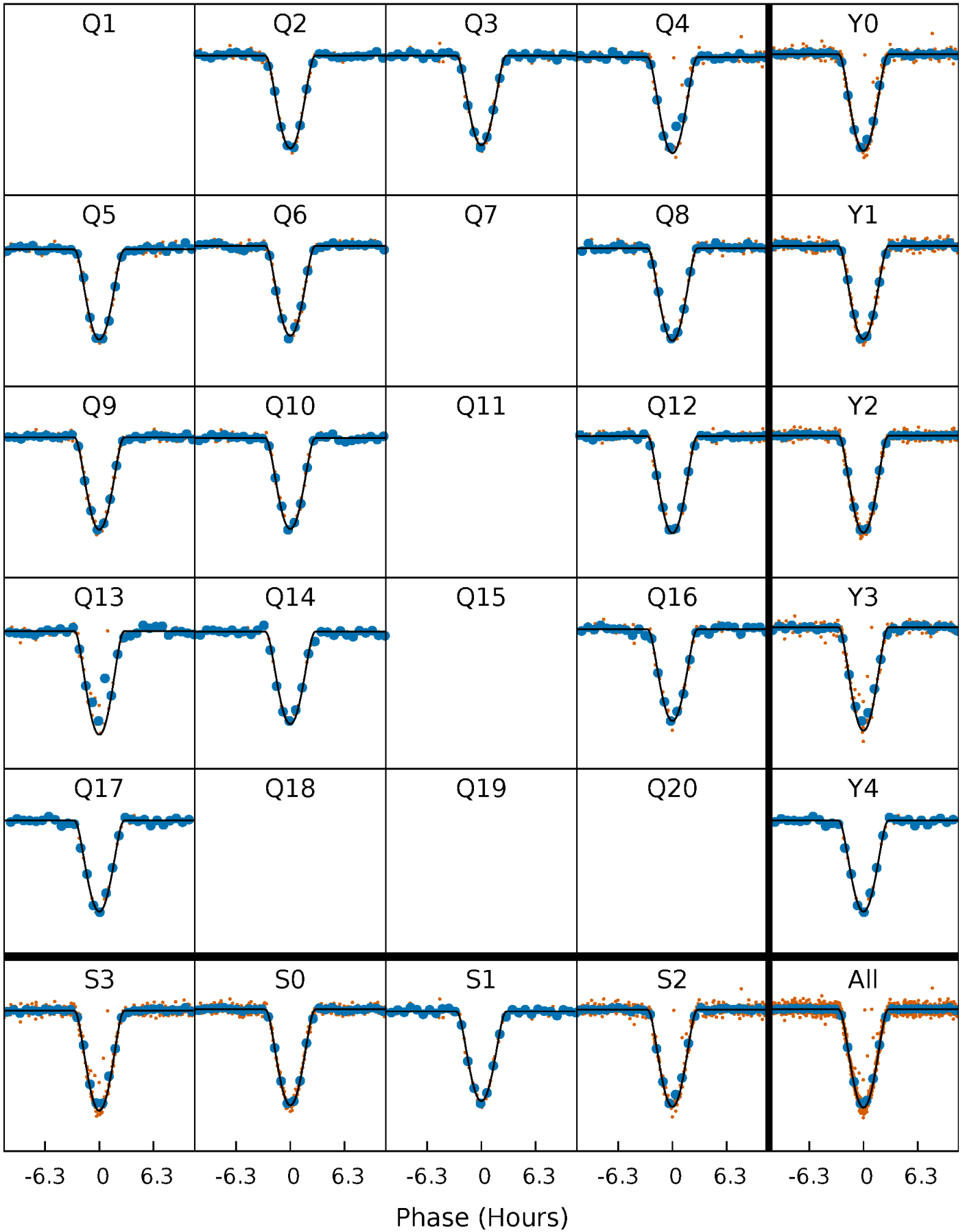
PDC Quarter-Phased Transit Curves

TCE 009907505-02 P= 39.206826 Days $T_0=156.357327$ (BKJD)



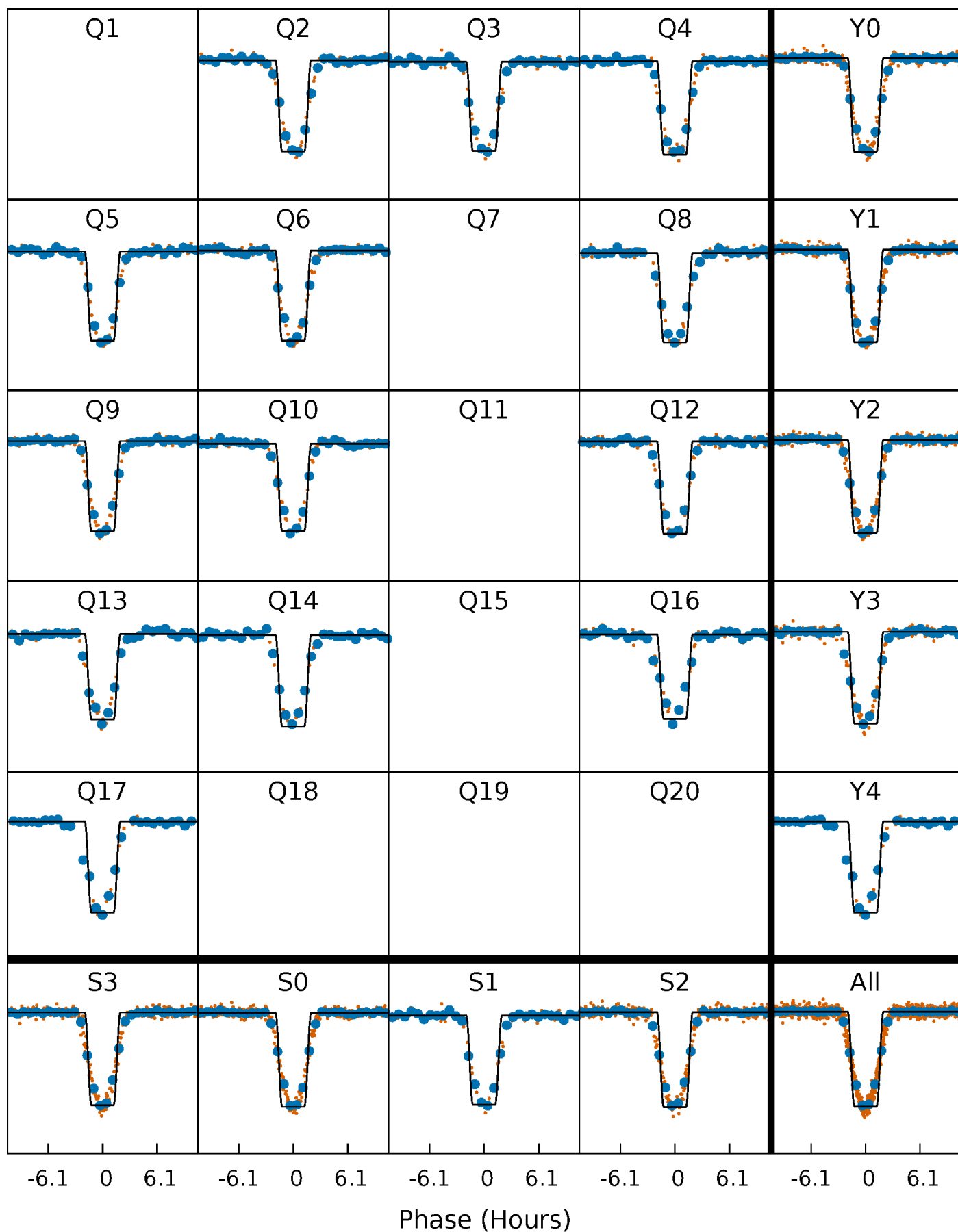
DV Quarter-Phased Transit Curves

TCE 009907505-02 P= 39.206826 Days $T_0=156.357327$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

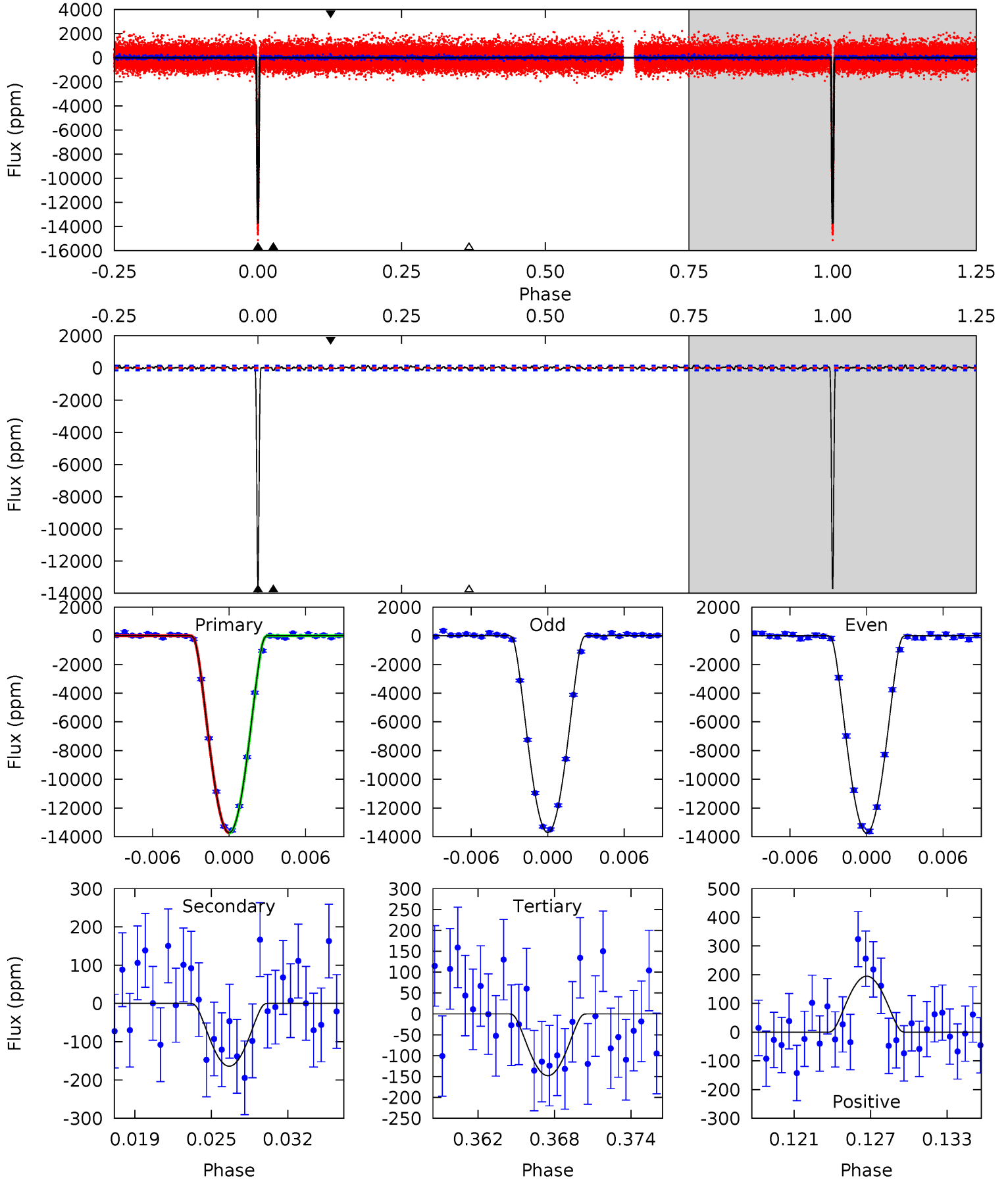
TCE 009907505-02 P= 39.207167 Days $T_0=156.351978$ (BKJD)



DV Model-Shift Uniqueness Test

009907505-02, P = 39.206826 Days, E = 156.357327 Days

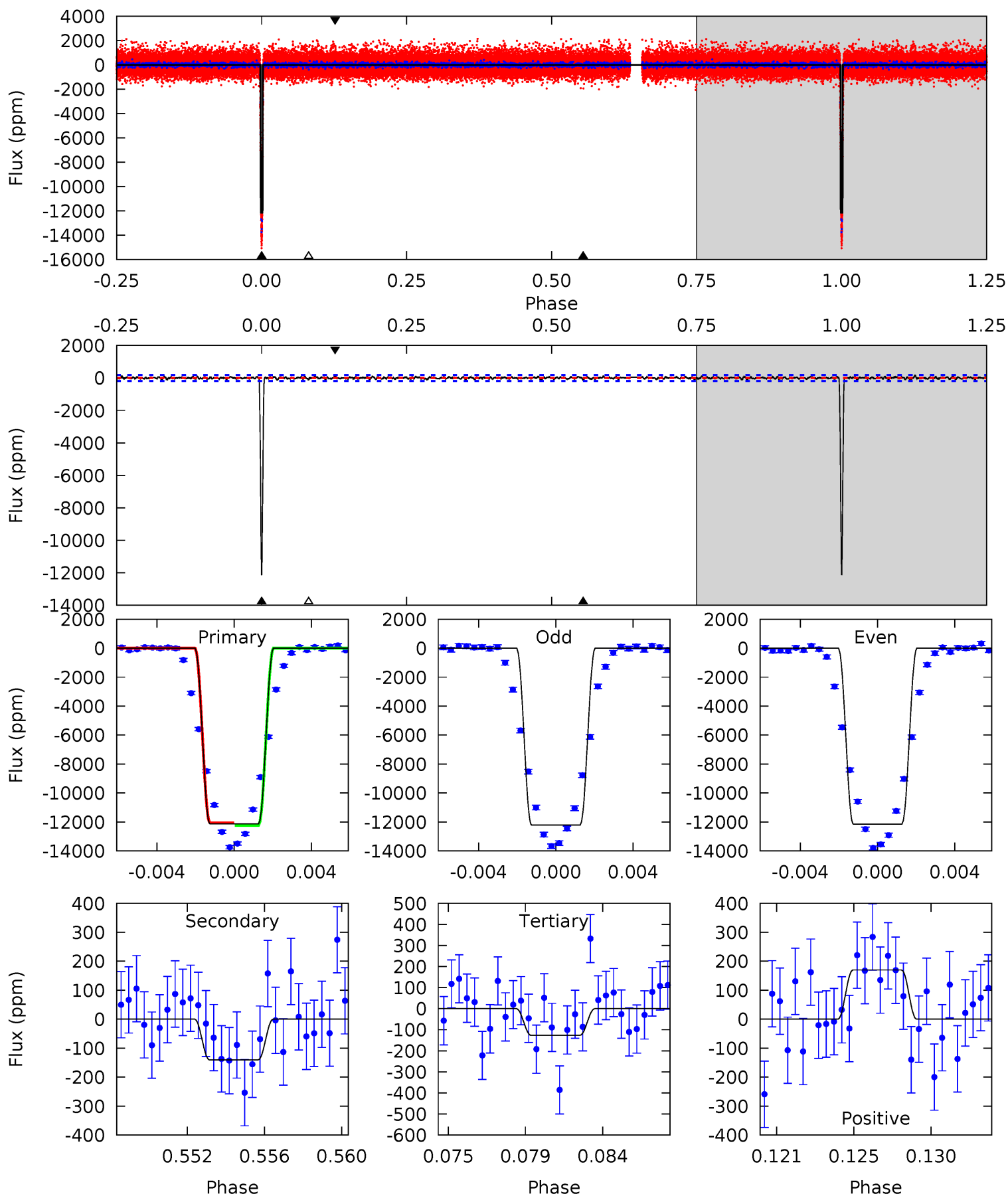
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
468.7	5.60	5.05	6.66	5.11	2.73	1.66	463.7	462.1	0.55	-1.06	0.45	0.96	0.01	0



Alt Model-Shift Uniqueness Test

009907505-02, P = 39.207167 Days, E = 156.351978 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
336.0	3.89	3.51	4.70	5.19	2.86	1.08	332.5	331.3	0.38	-0.81	0.96	1.00	0.01	2.53



Stellar Parameters For KIC 009907505

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5945^{+179}_{-179}	$4.545^{+0.039}_{-0.208}$	$-0.300^{+0.300}_{-0.300}$	$0.861^{+0.274}_{-0.069}$	$0.950^{+0.106}_{-0.118}$	$2.096^{+0.435}_{-1.110}$
	+3%/-3%	+1%/-5%	+100%/-100%	+32%/-8%	+11%/-12%	+21%/-53%
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 009907505-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-164 ± 29	$16.56^{+3.33}_{-2.52}$	741^{+52}_{-35}	2488^{+113}_{-93}	16^{+7}_{-5}
Alt.	-140 ± 36	$11.36^{+2.75}_{-2.22}$	742^{+49}_{-32}	2685^{+182}_{-160}	28^{+19}_{-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 $T_{\text{obs}} \gg T_{\text{max}}$ AND $A_{\text{obs}} \gg 1.0$

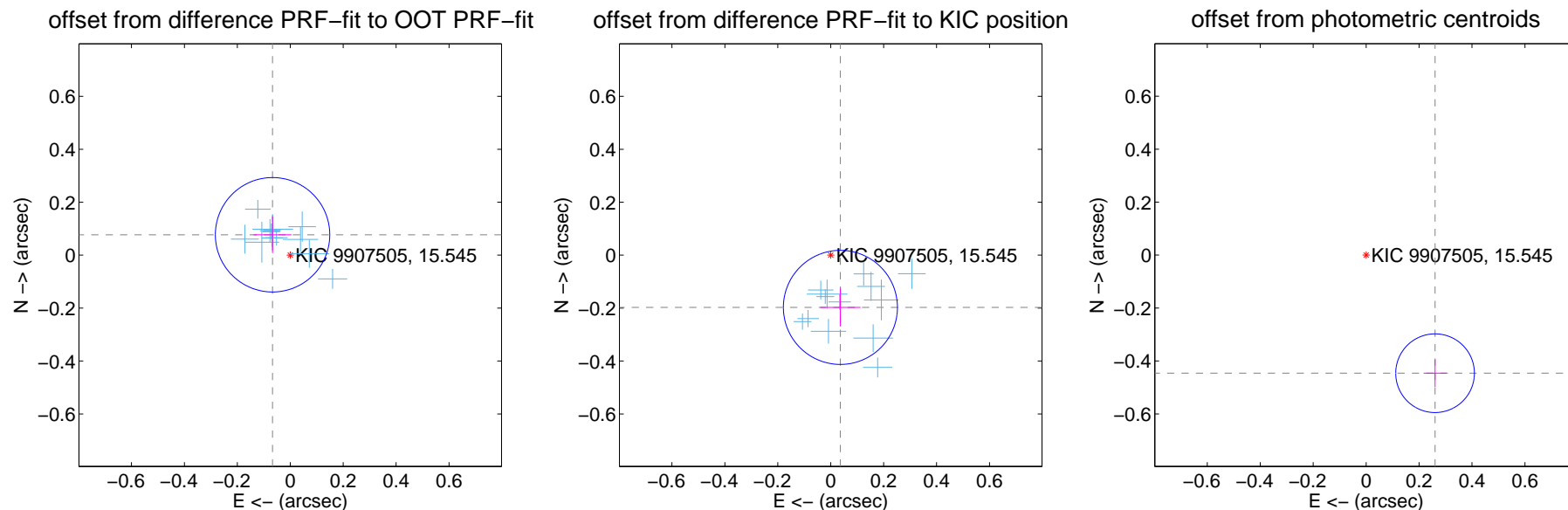
DV Centroid Data

Supplemental centroid analysis for 009907505-02. Kepler magnitude: 15.54. Transit SNR 256.51

There are 13 quarters with good PRF difference image offsets

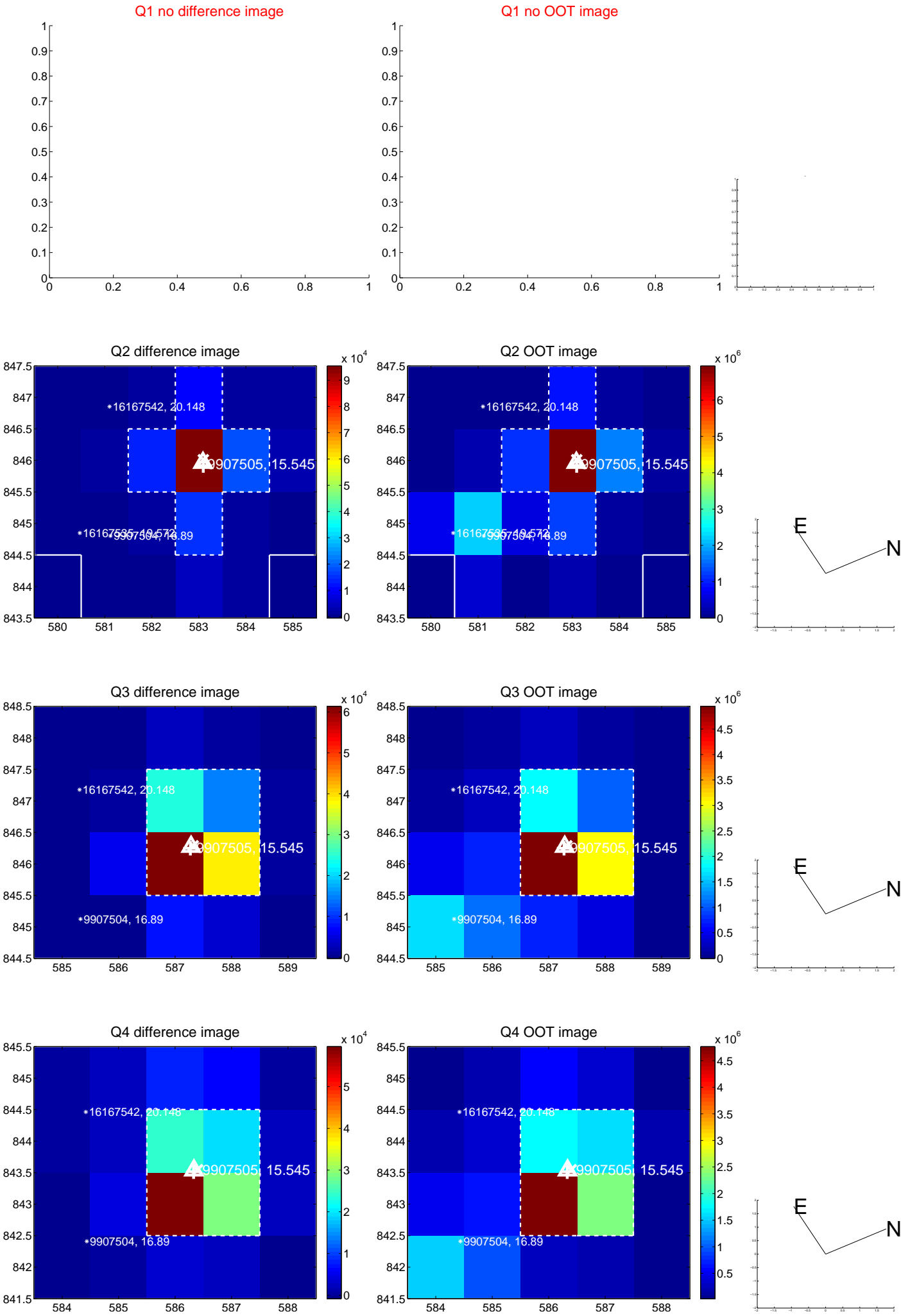
The direct PRF centroid is offset from the target star catalog position by about 0.33 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.102 ± 0.072	1.42	0.067 ± 0.072	0.077 ± 0.069
PRF-fit source offset from KIC position	0.201 ± 0.072	2.79	-0.037 ± 0.076	-0.197 ± 0.072
photometric centroid source offset	0.52 ± 0.05	10.43	-0.26 ± 0.04	-0.45 ± 0.05

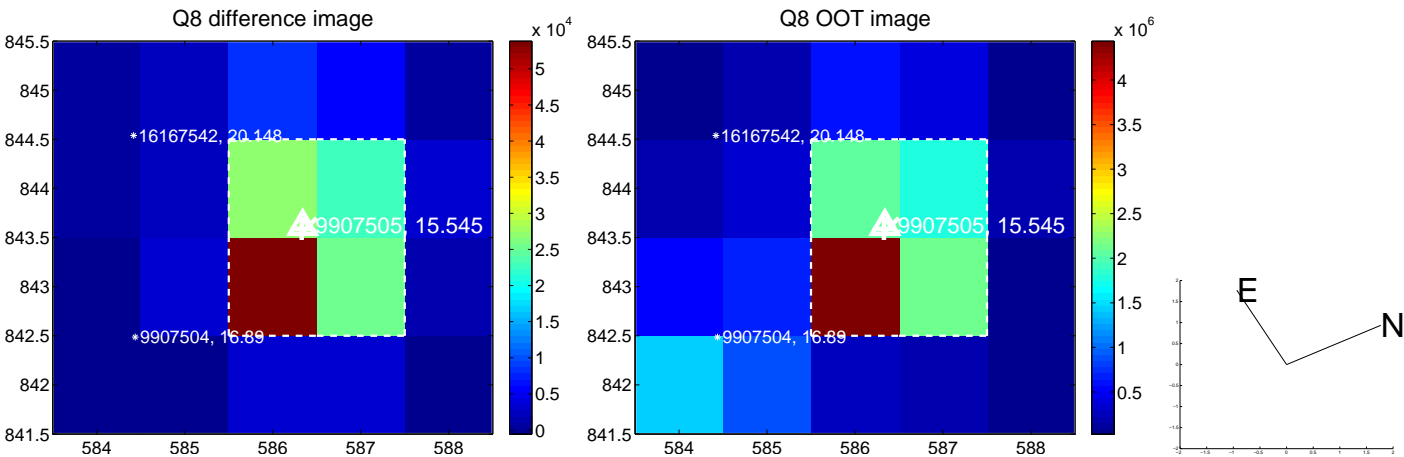
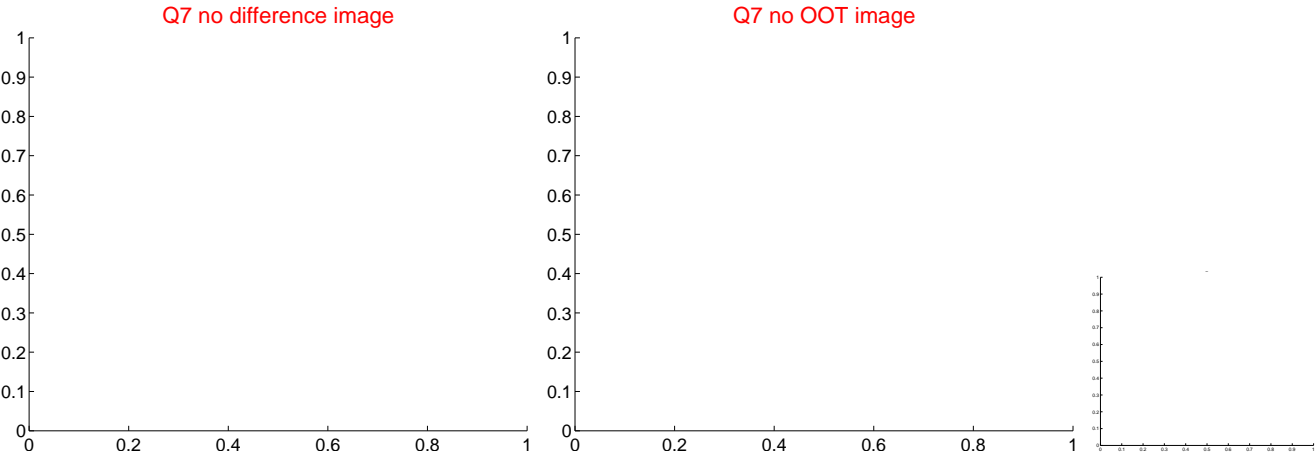
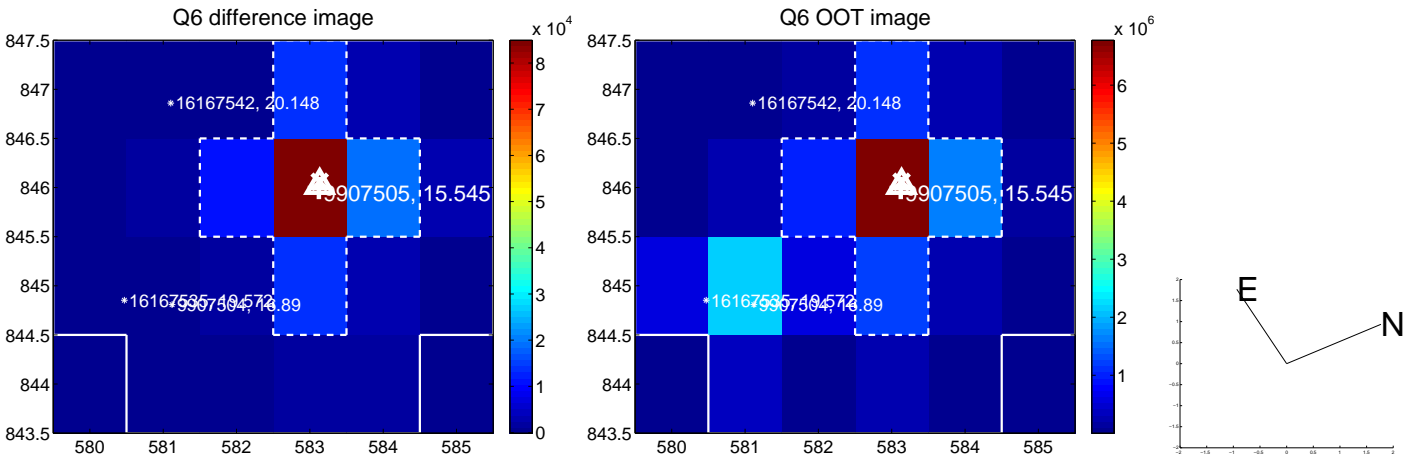
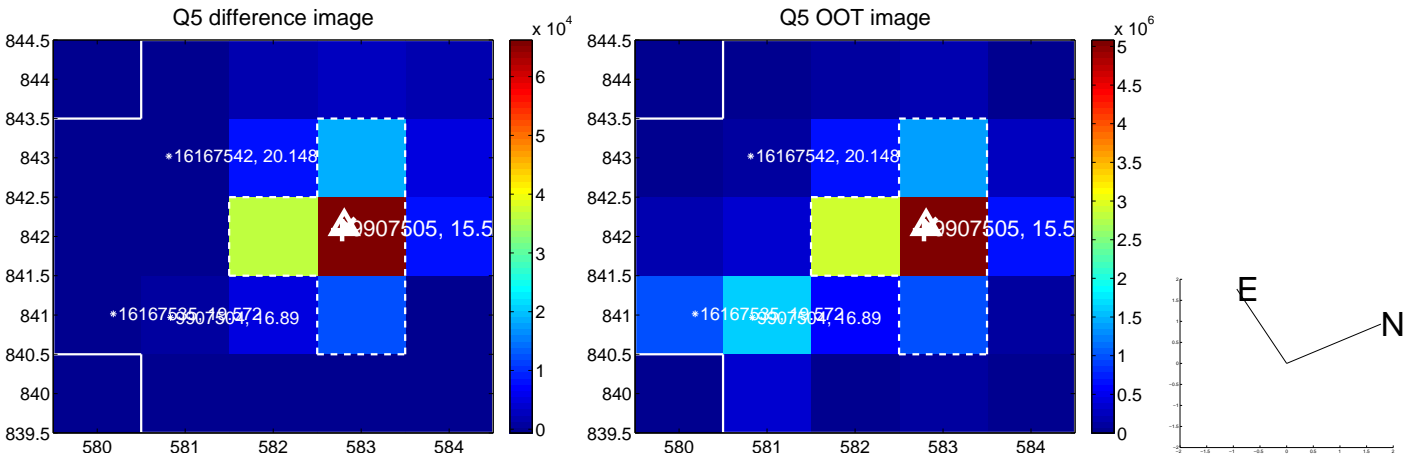


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

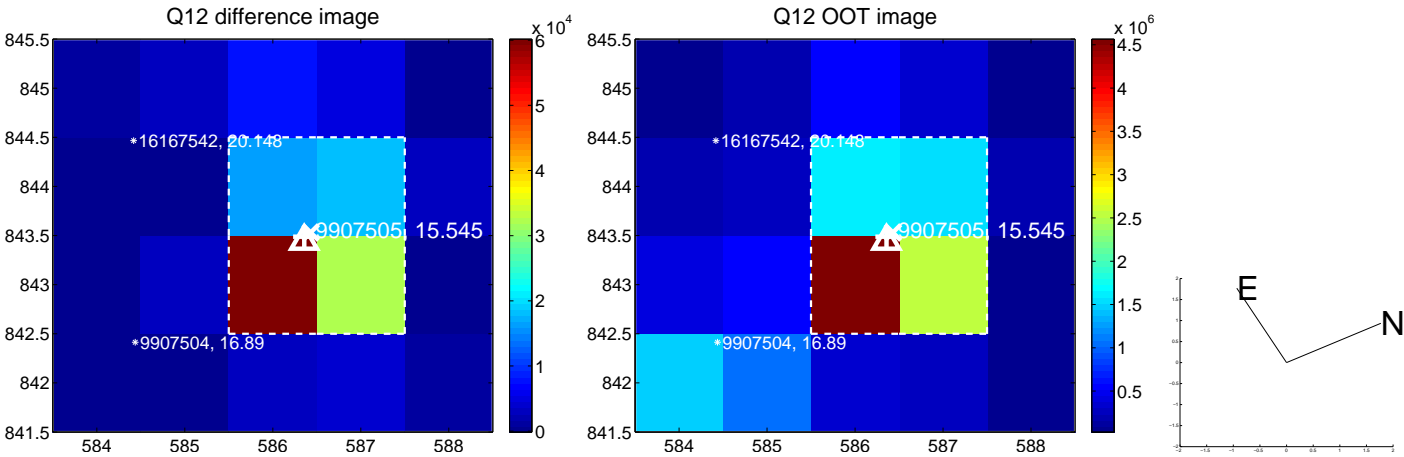
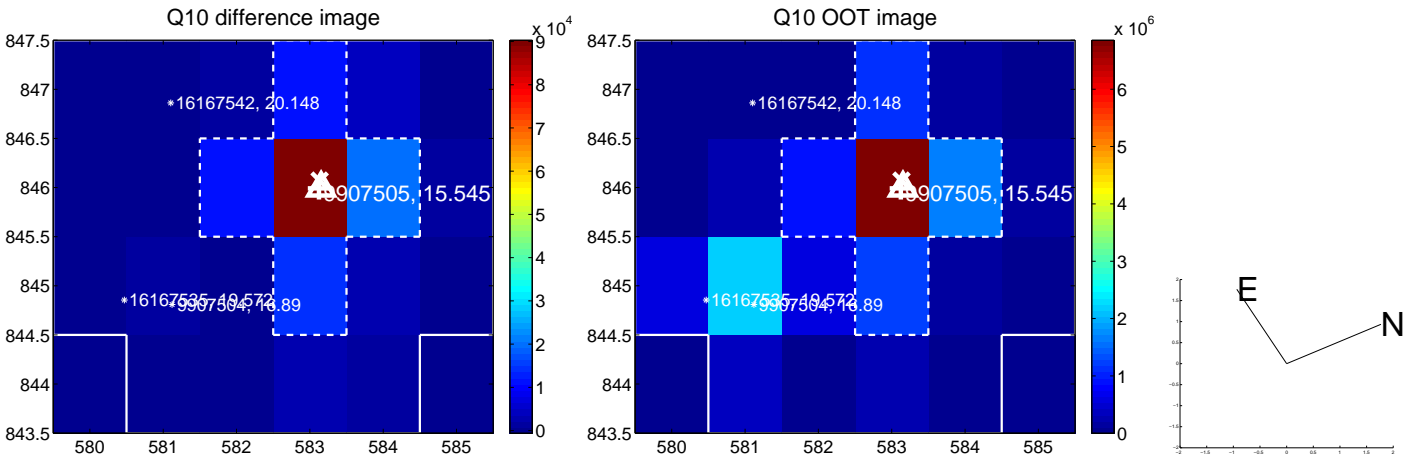
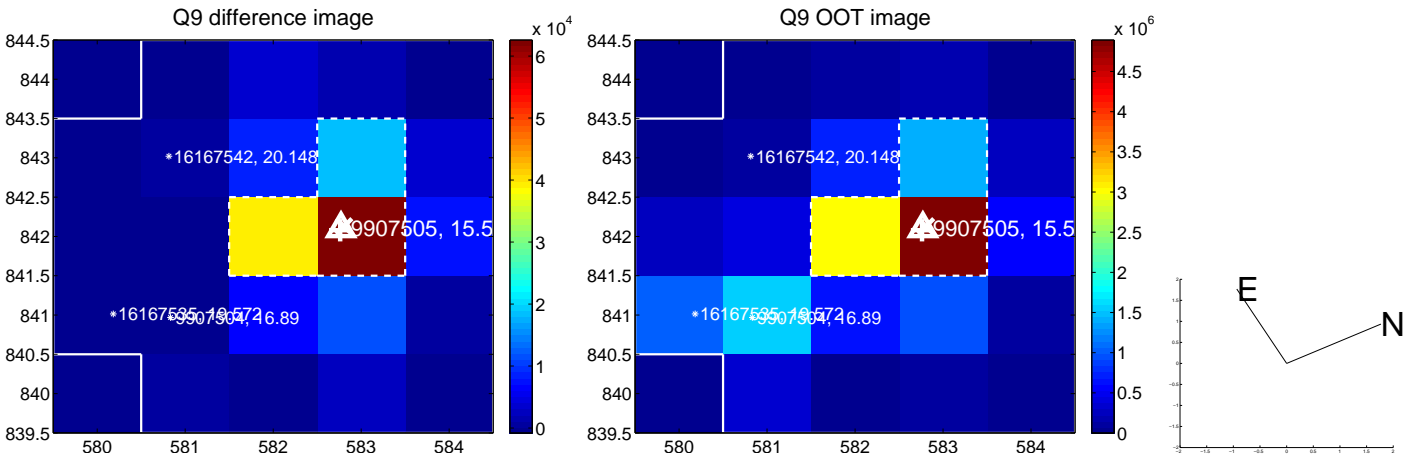
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



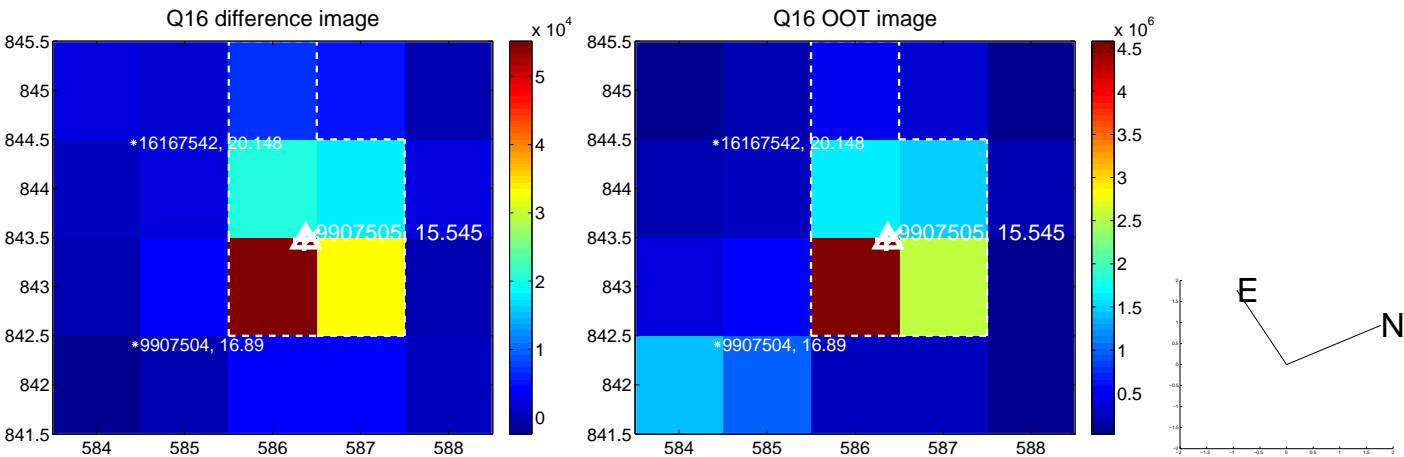
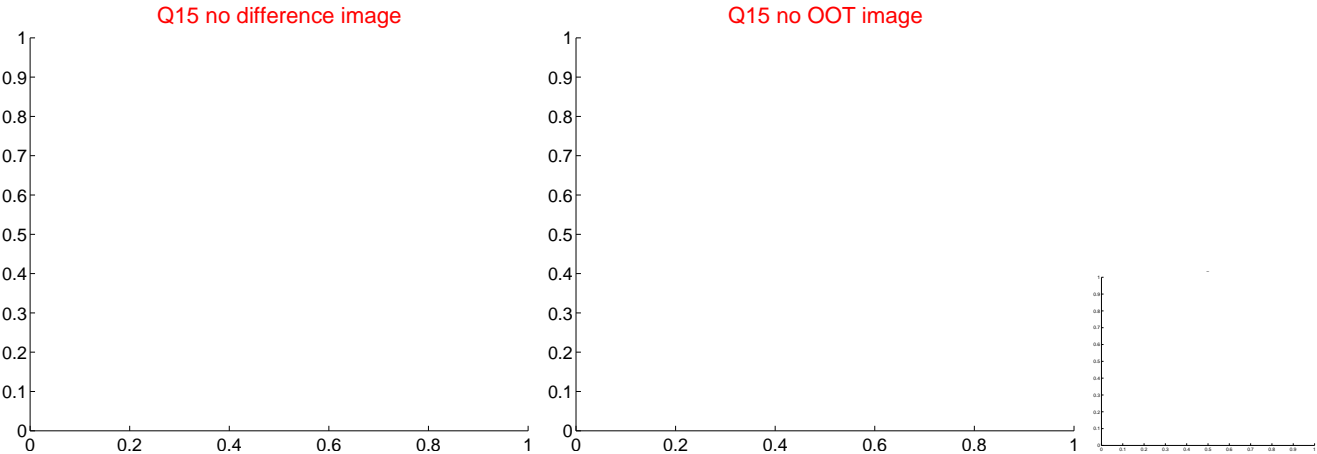
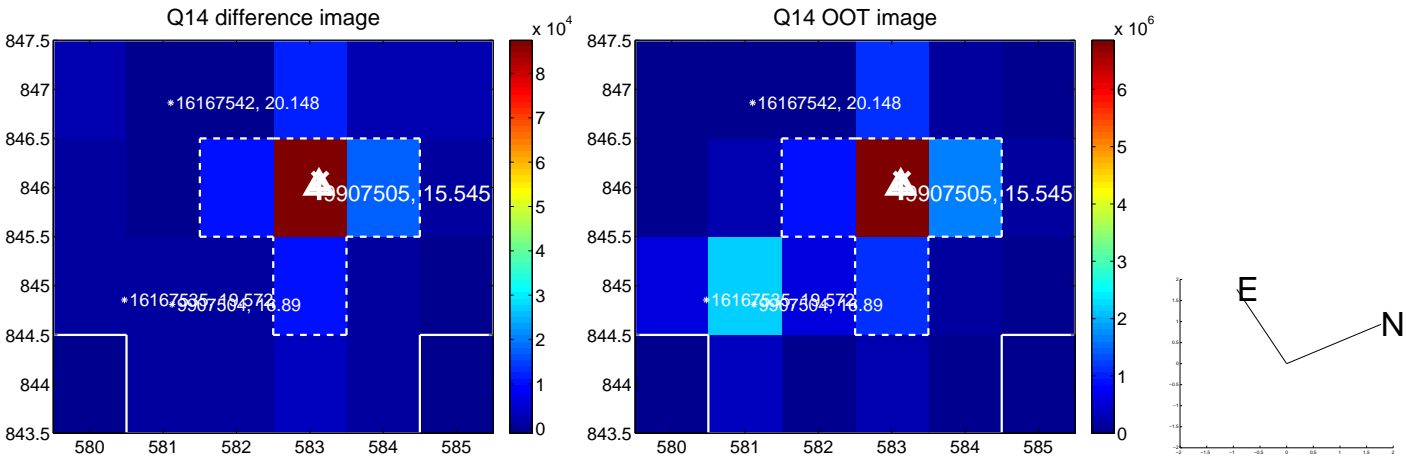
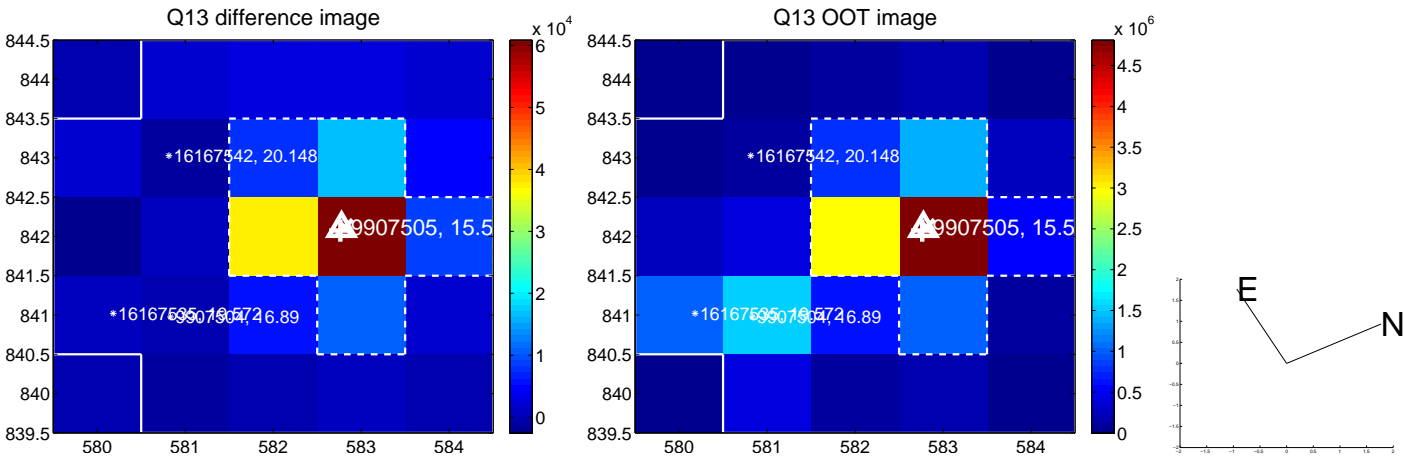
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



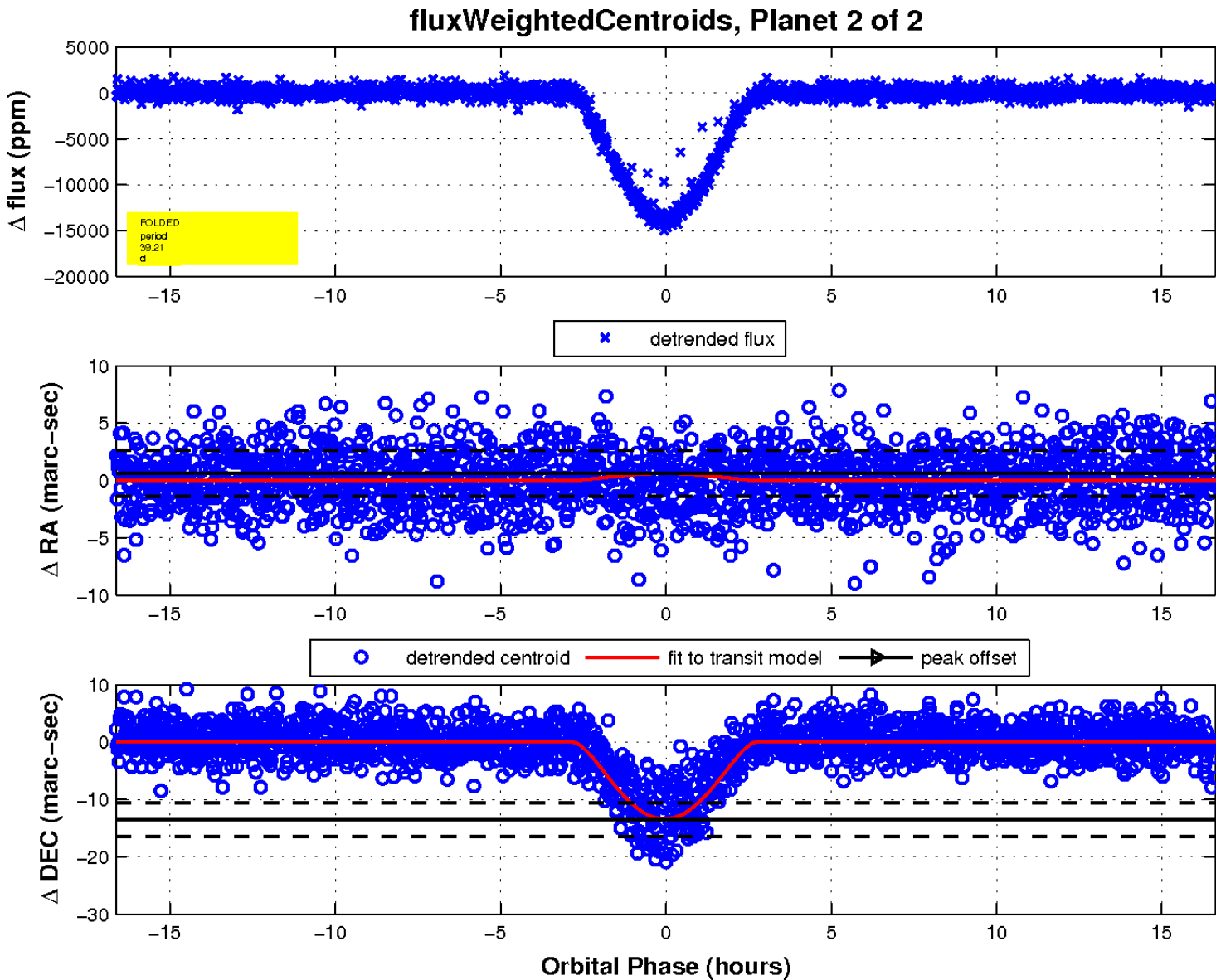
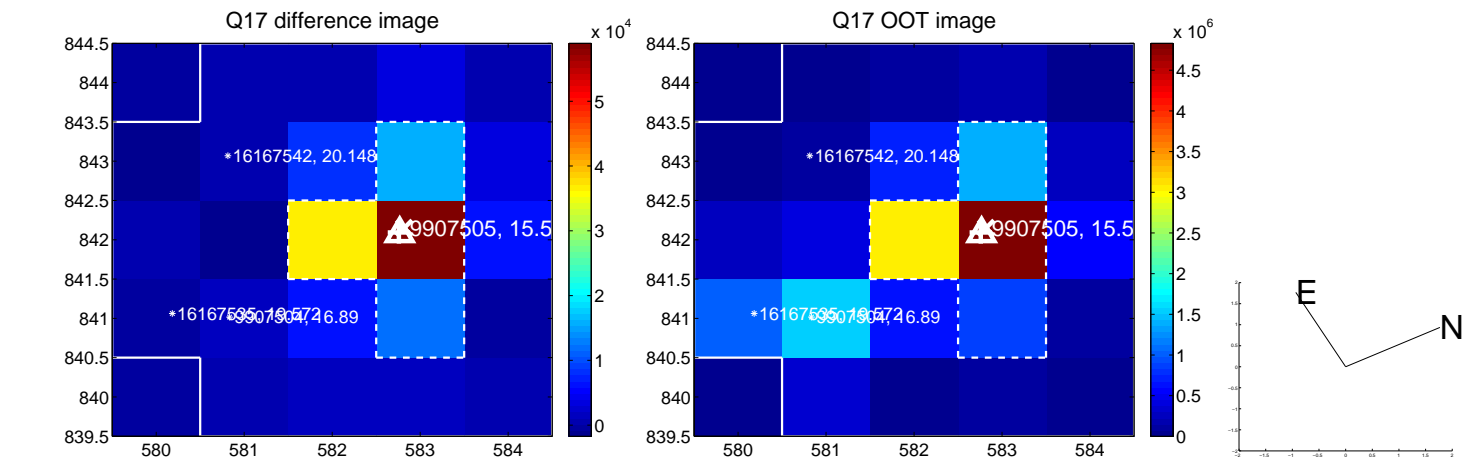
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image

Declination

