

KIC 010651945

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})
010651945-01	OBS	3441.01	25.366991	138.814387	150617.6	5.944	3024.5	2498.5	1.02	6208	58.94	46.19
010651945-02	OBS	No	25.366990	133.588562	55091.6	5.332	1120.9	1018.1	1.02	6208	38.40	46.19

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010651945-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_DV—MOD_SEC_ALT—MOD_ODDEVEN_ALT—DEEP_V_SHAPED—HAS_SEC_TCE
010651945-02	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.

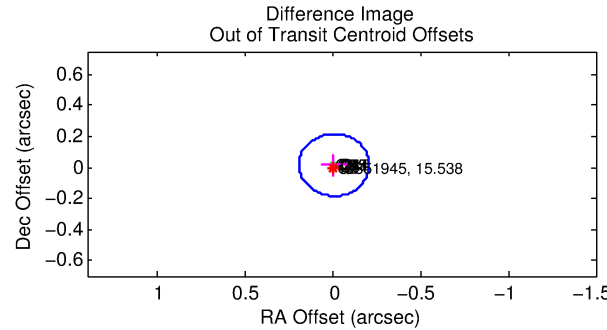
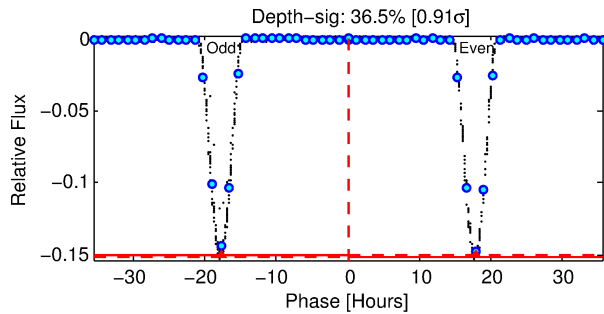
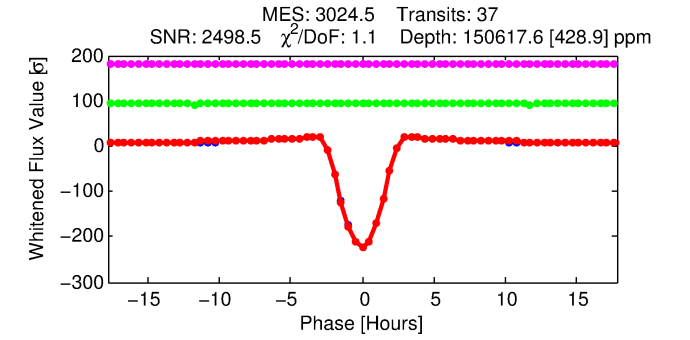
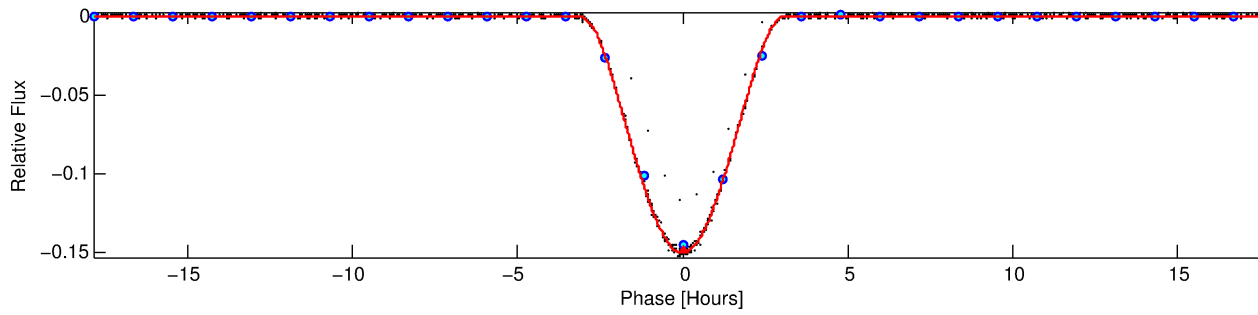
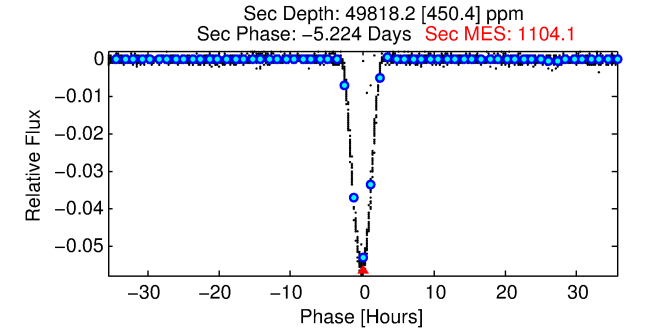
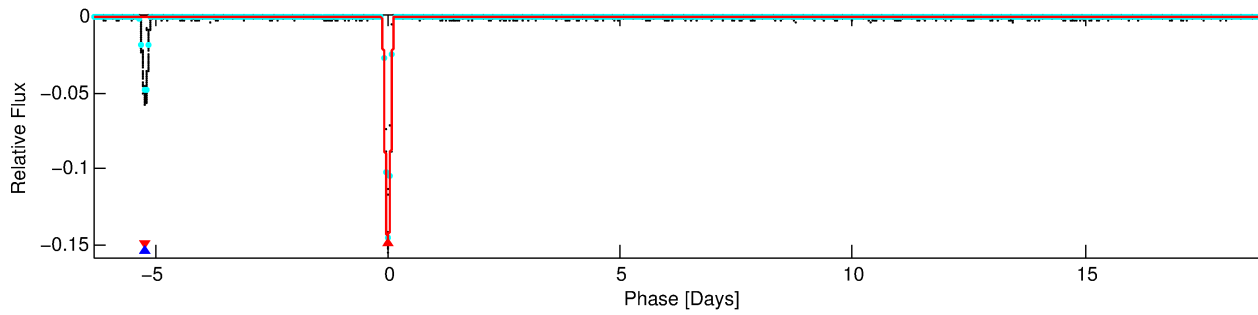
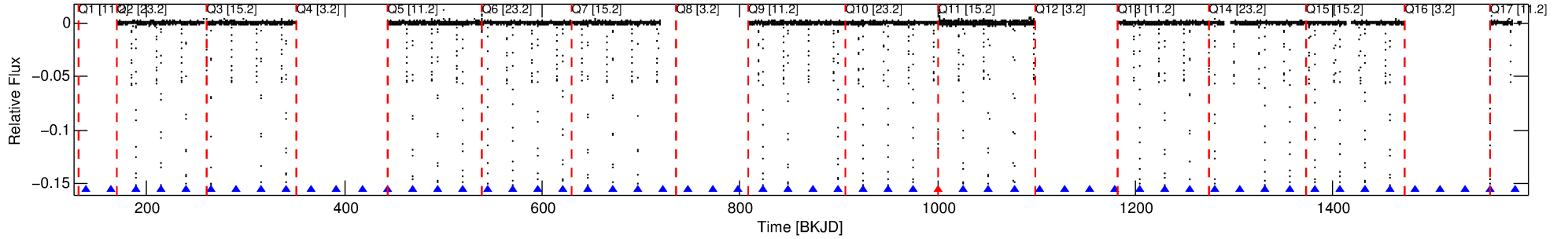
Ephemeris Match Information For 010651945-01

No Significant Match Found

DV One-Page Summary

KIC: 10651945 Candidate: 1 of 2 Period: 25.367 d
KOI: K03441.01 Corr: 0.998

Kp: 15.54 R*: 1.02 Rs Teff: 6208.0 K Logg: 4.45 Fe/H: -0.120



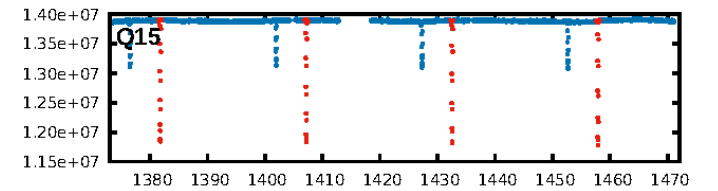
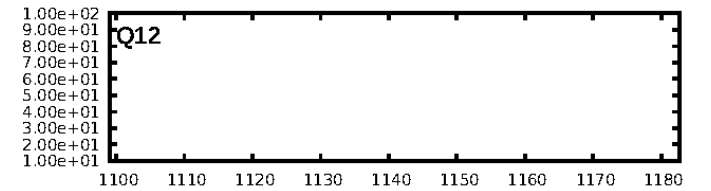
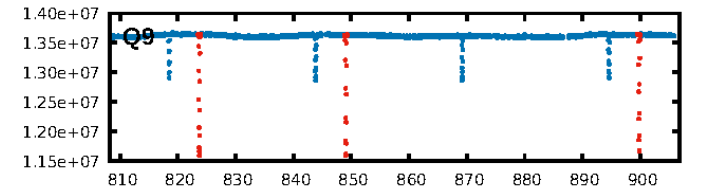
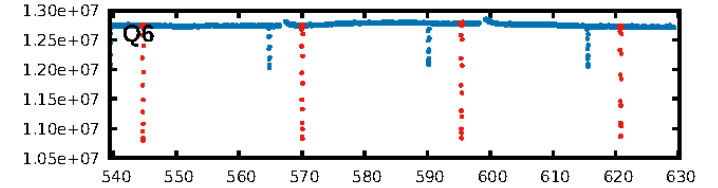
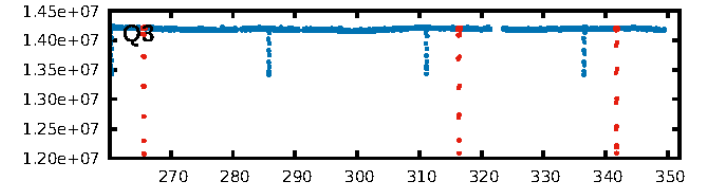
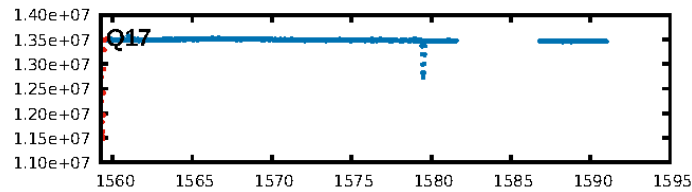
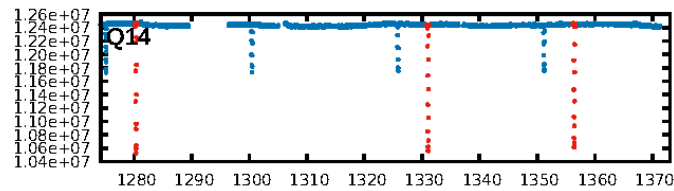
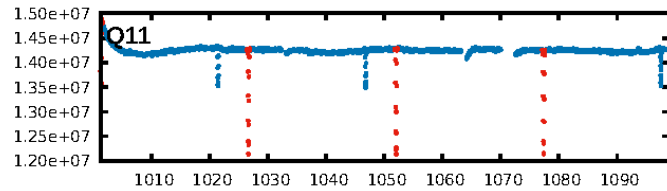
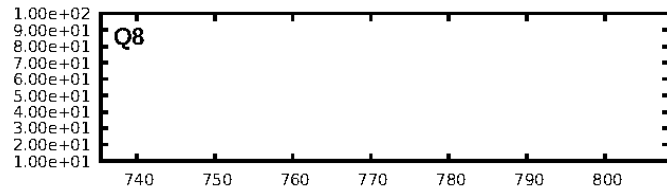
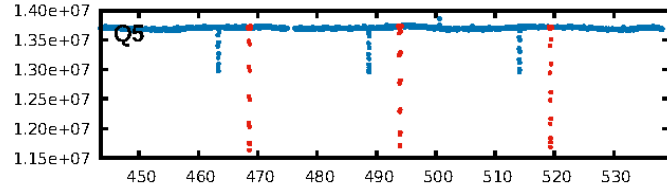
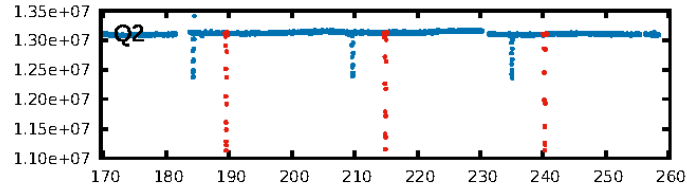
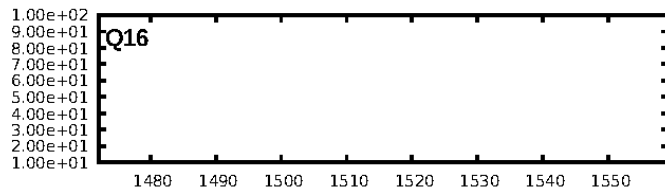
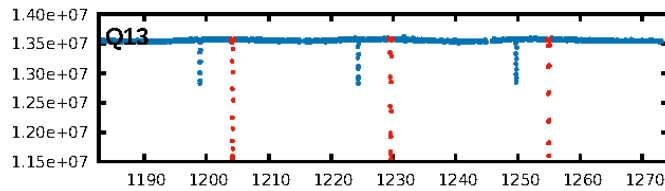
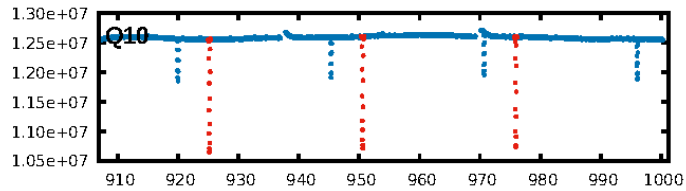
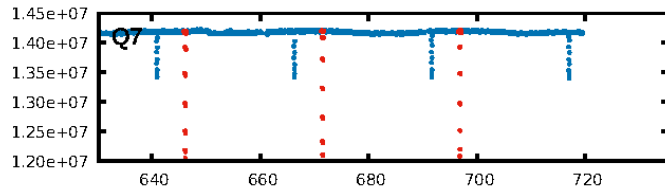
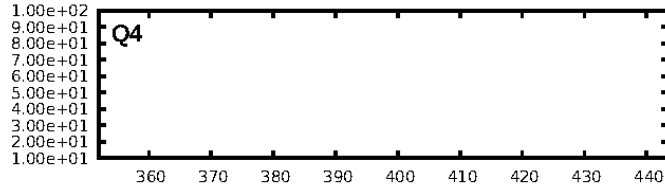
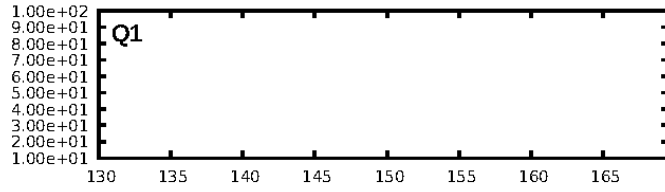
DV Fit Results:

Period = 25.36699 [0.00000] d
Epoch = 138.8144 [0.0001] BKJD
Rp/R* = 0.5275 [0.1197]
a/R* = 40.27 [0.89]
b = 0.90 [0.17]
Seff = 46.19 [20.60]
Teq = 665 [74] K
Rp = 58.94 [24.13] Re
a = 0.1738 [0.0502] AU
Ag = 238.33 [147.80] [1.61σ]
Teffp = 4038 [481] K [6.94σ]

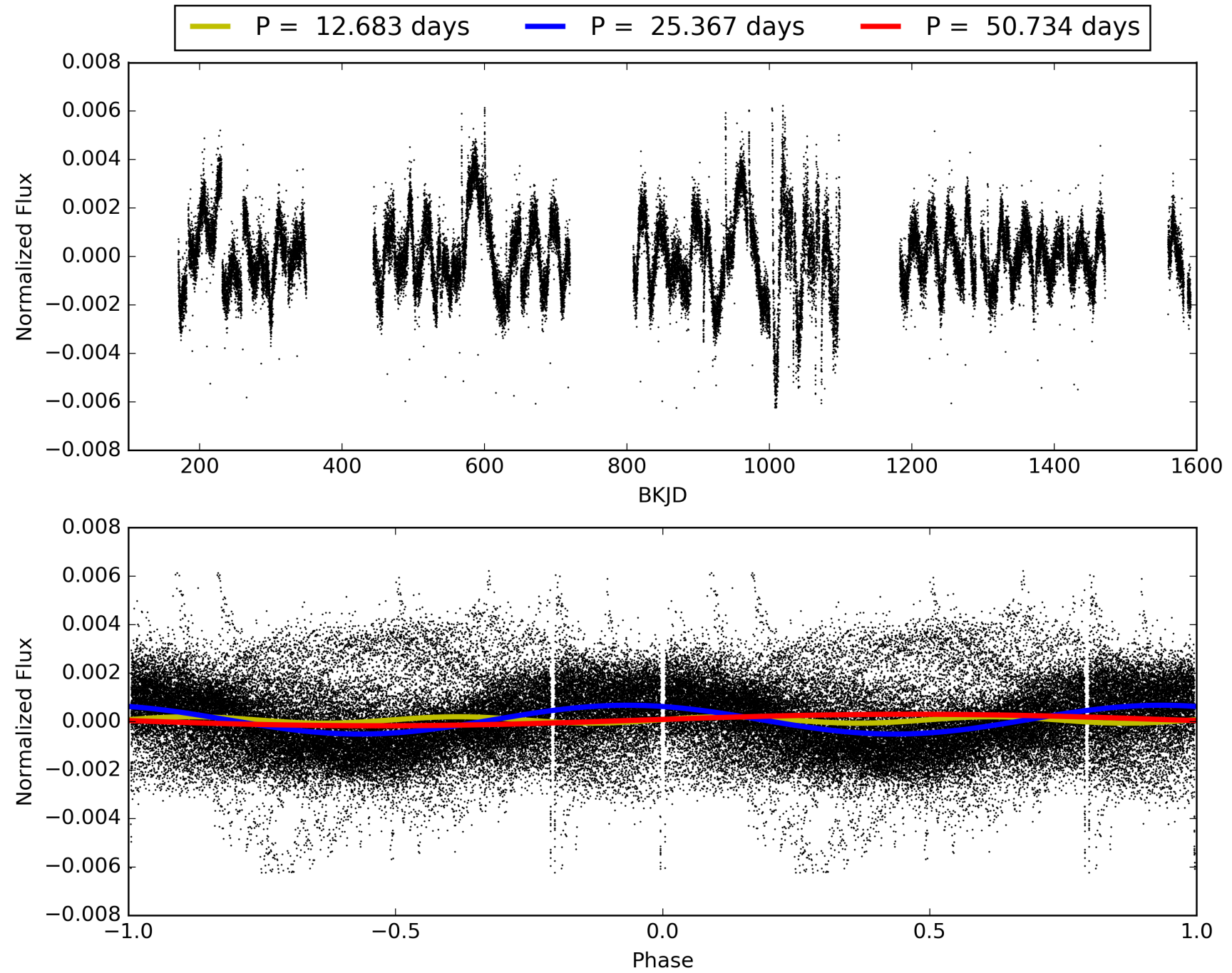
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 0.0%
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 0.97 [35/36]
GhostDiagnostic-chr: 2.88
Centroid-sig: 0.0%
Centroid-so: 0.116 arcsec [35.23σ]
OotOffset-rm: 0.018 arcsec [0.26σ]
KicOffset-rm: 0.159 arcsec [2.32σ]
OotOffset-st: 4/4/0/3 [11]
KicOffset-st: 4/4/0/3 [11]
DiffImageQuality-fgm: 1.00 [11/11]
DiffImageOverlap-fno: 1.00 [11/11]

TCE 010651945-01, PDC Light Curves

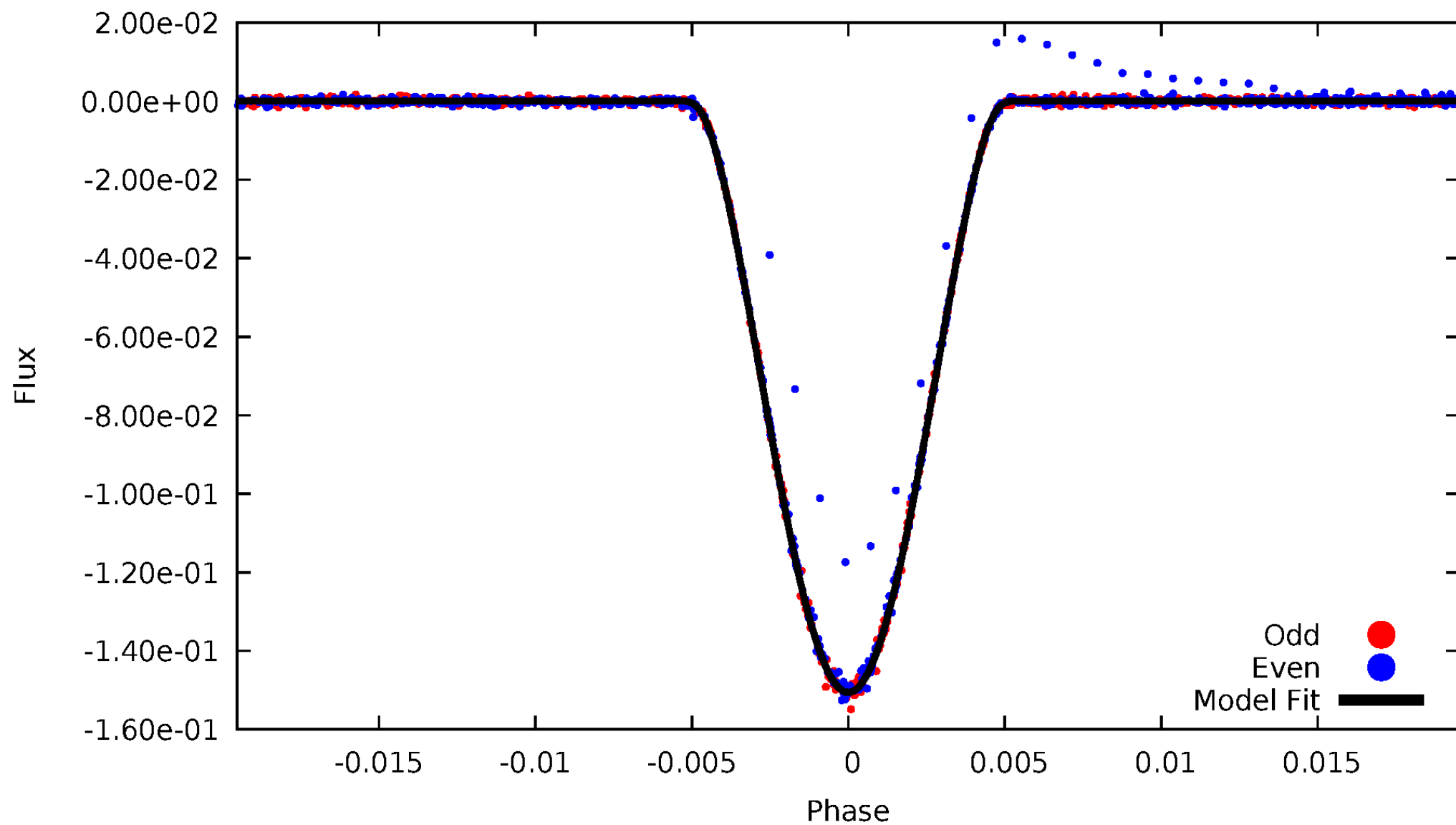


TCE 010651945-01



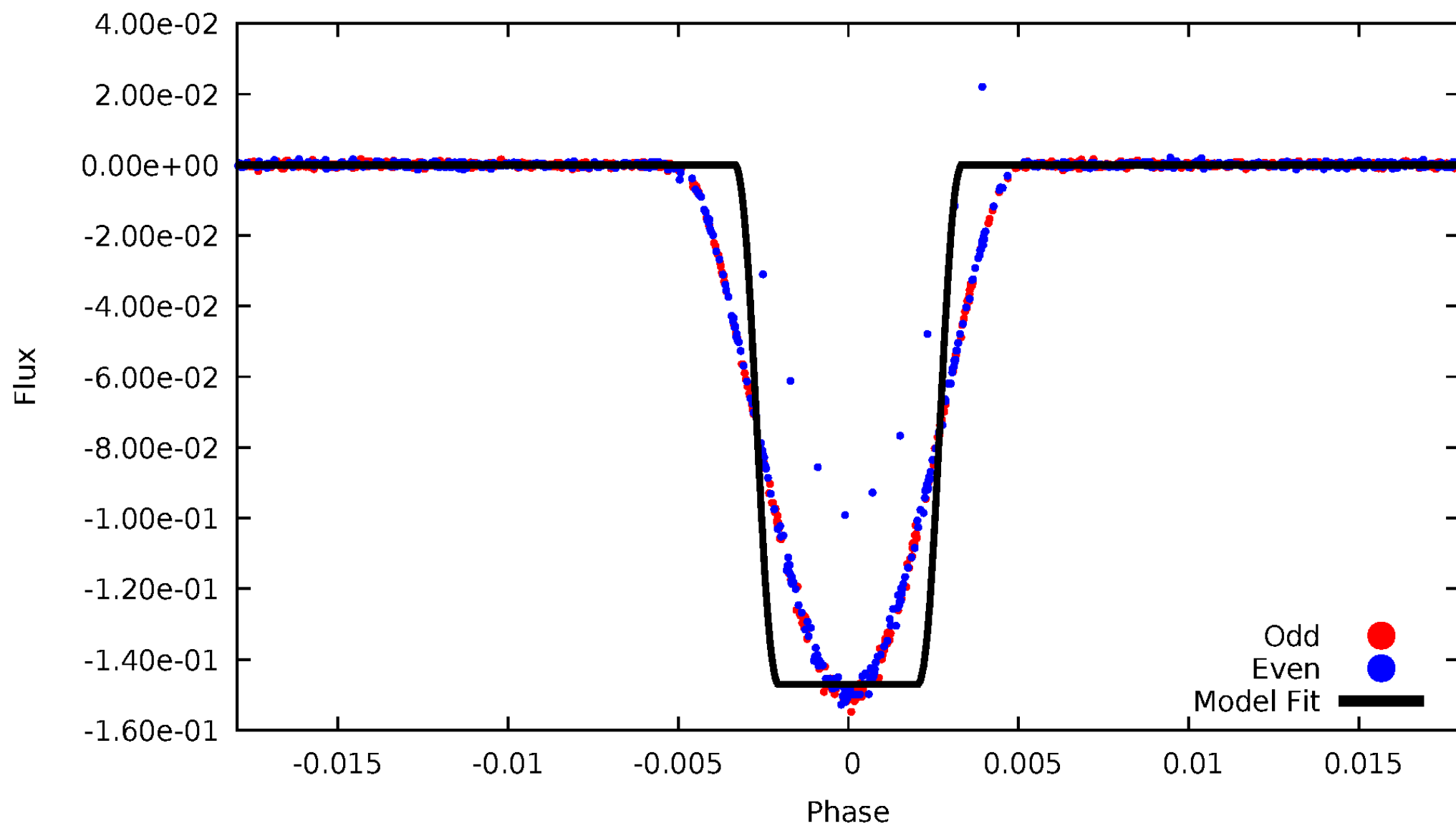
DV Odd/Even

TCE 010651945-01



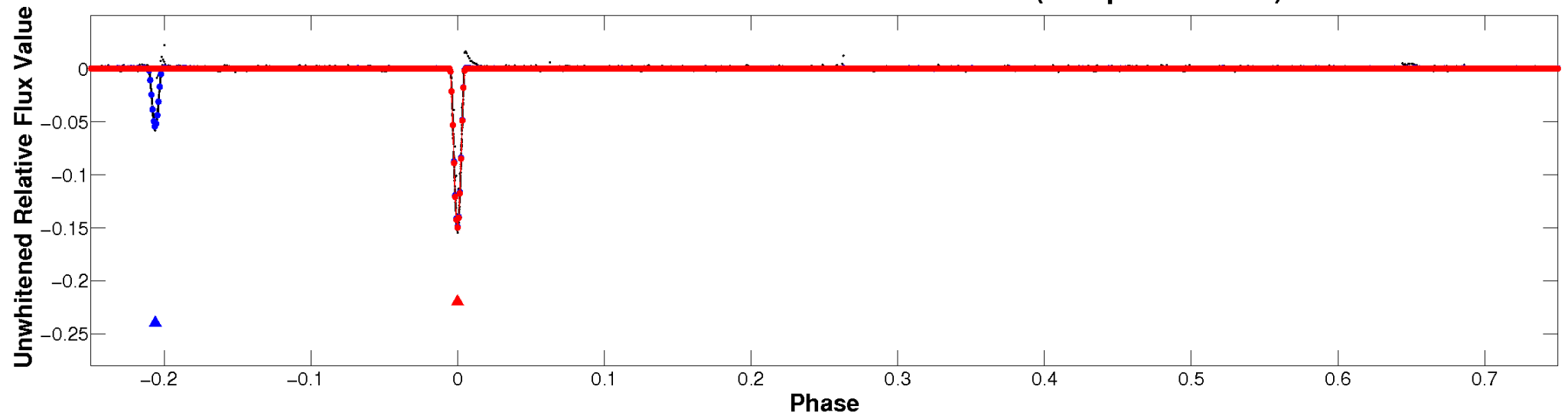
ALT Odd/Even

TCE 010651945-01

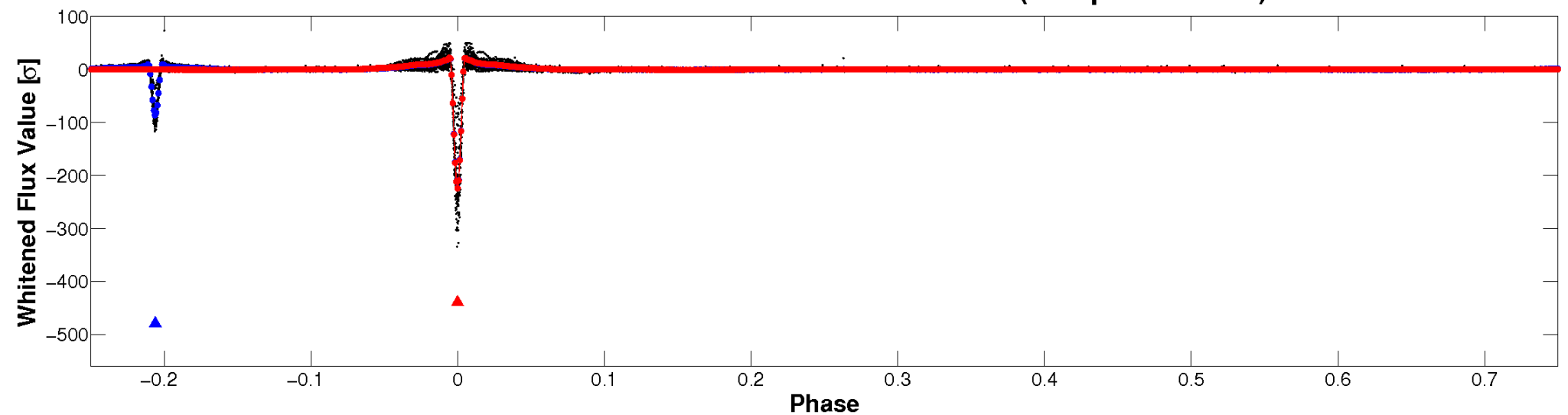


Non-Whitened Vs. Whitened Light Curve

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

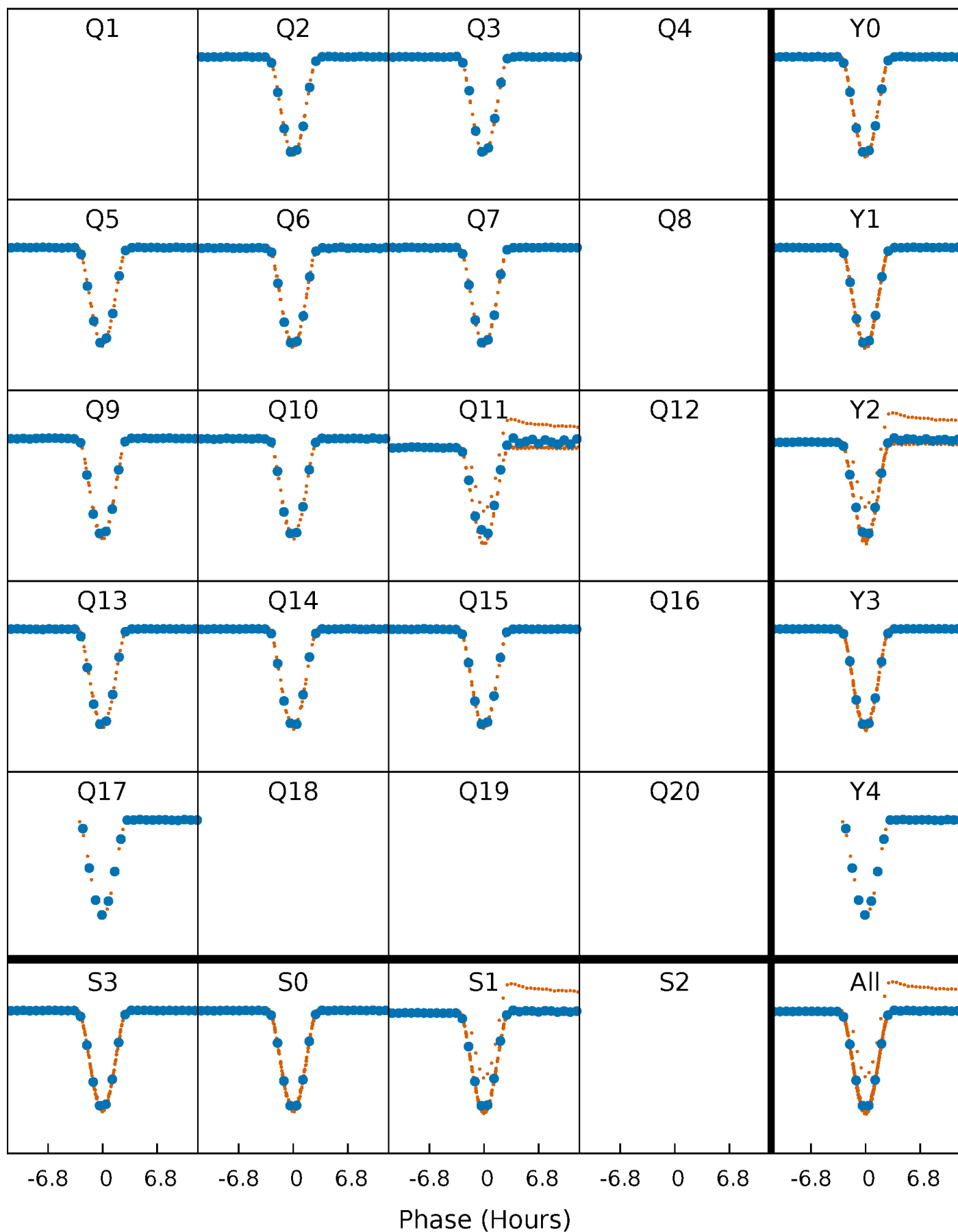


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



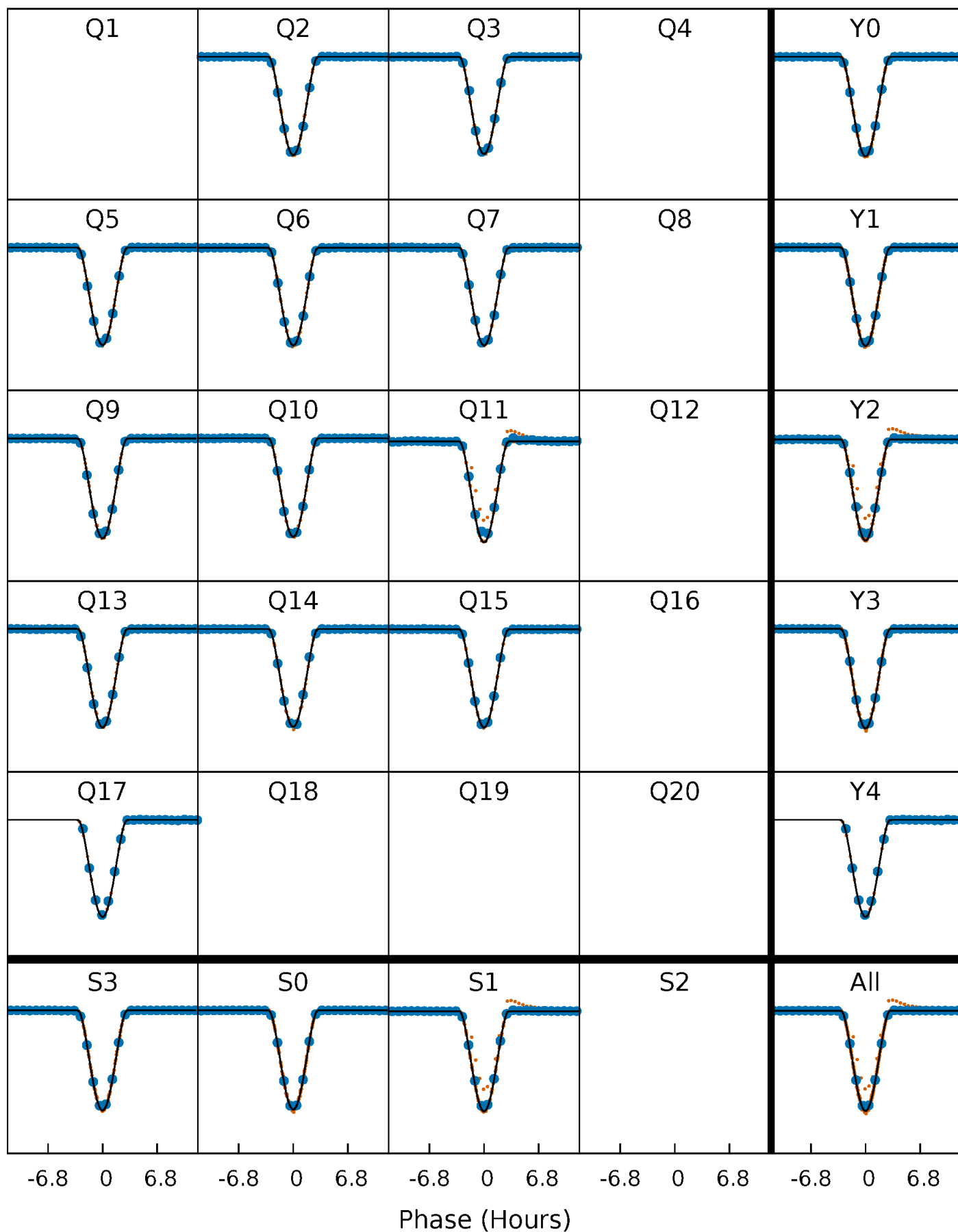
PDC Quarter-Phased Transit Curves

TCE 010651945-01 P= 25.366991 Days $T_0=138.814388$ (BKJD)



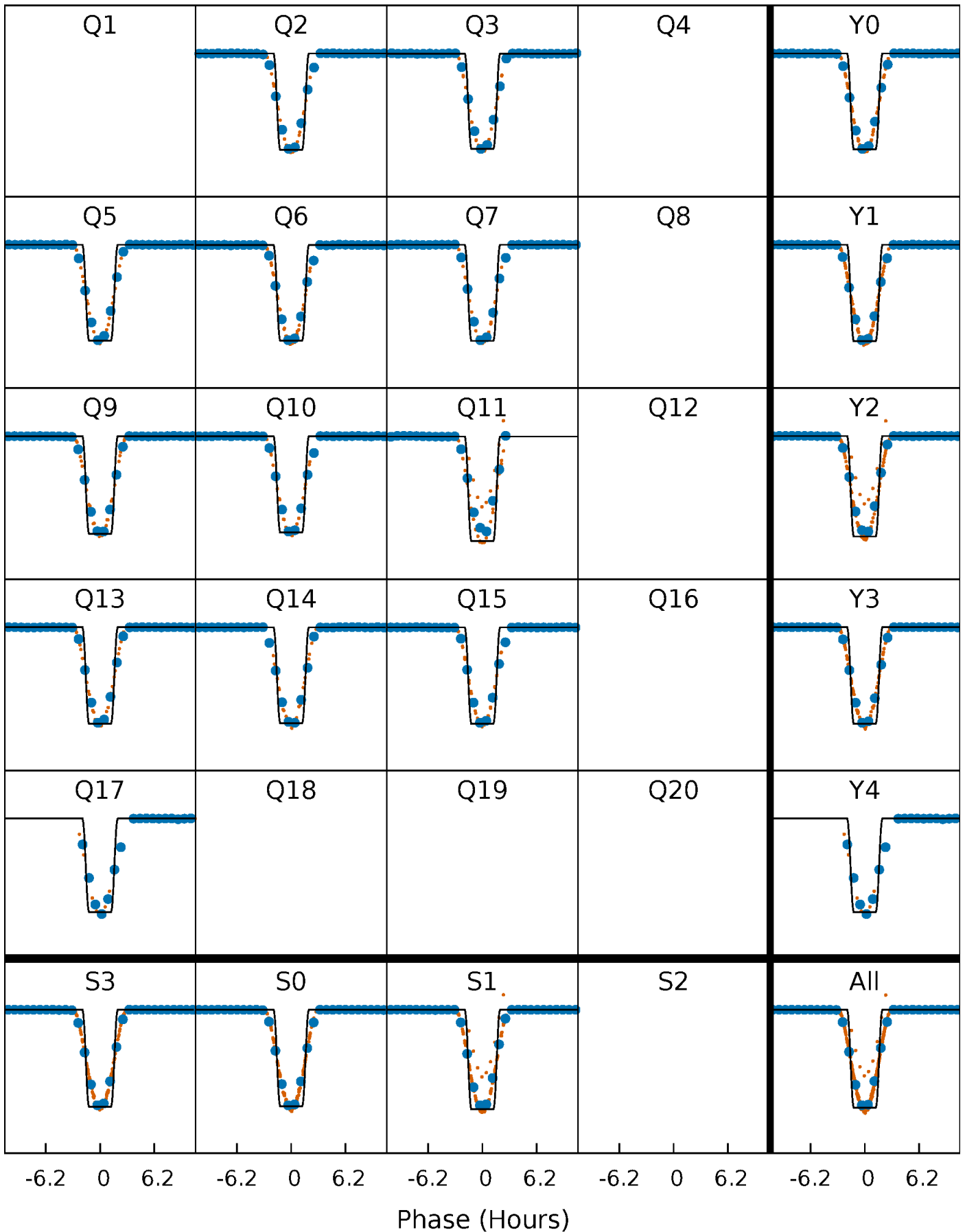
DV Quarter-Phased Transit Curves

TCE 010651945-01 P= 25.366991 Days $T_0=138.814388$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

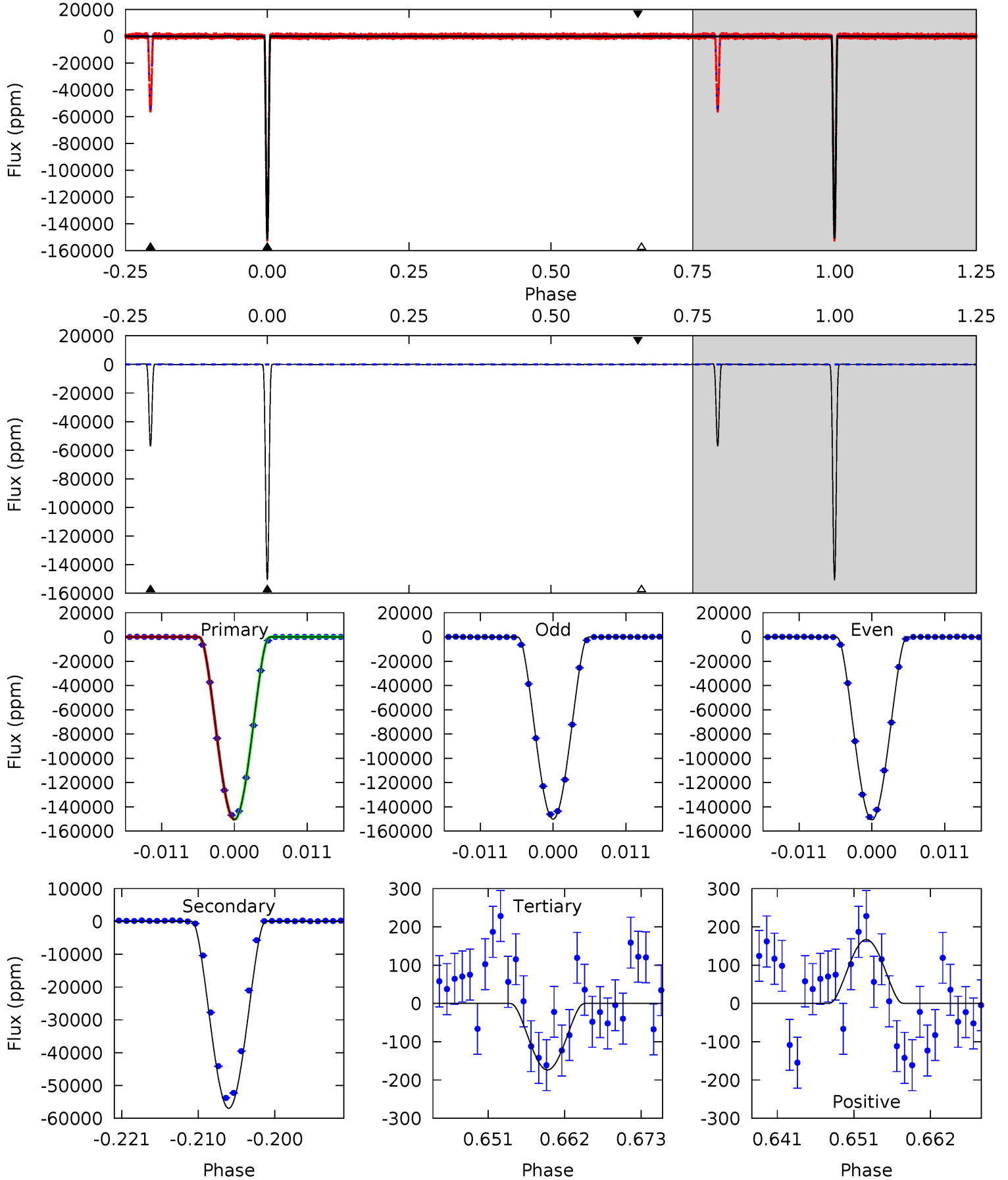
TCE 010651945-01 P= 25.366992 Days $T_0=138.814292$ (BKJD)



DV Model-Shift Uniqueness Test

010651945-01, P = 25.366991 Days, E = 138.814388 Days

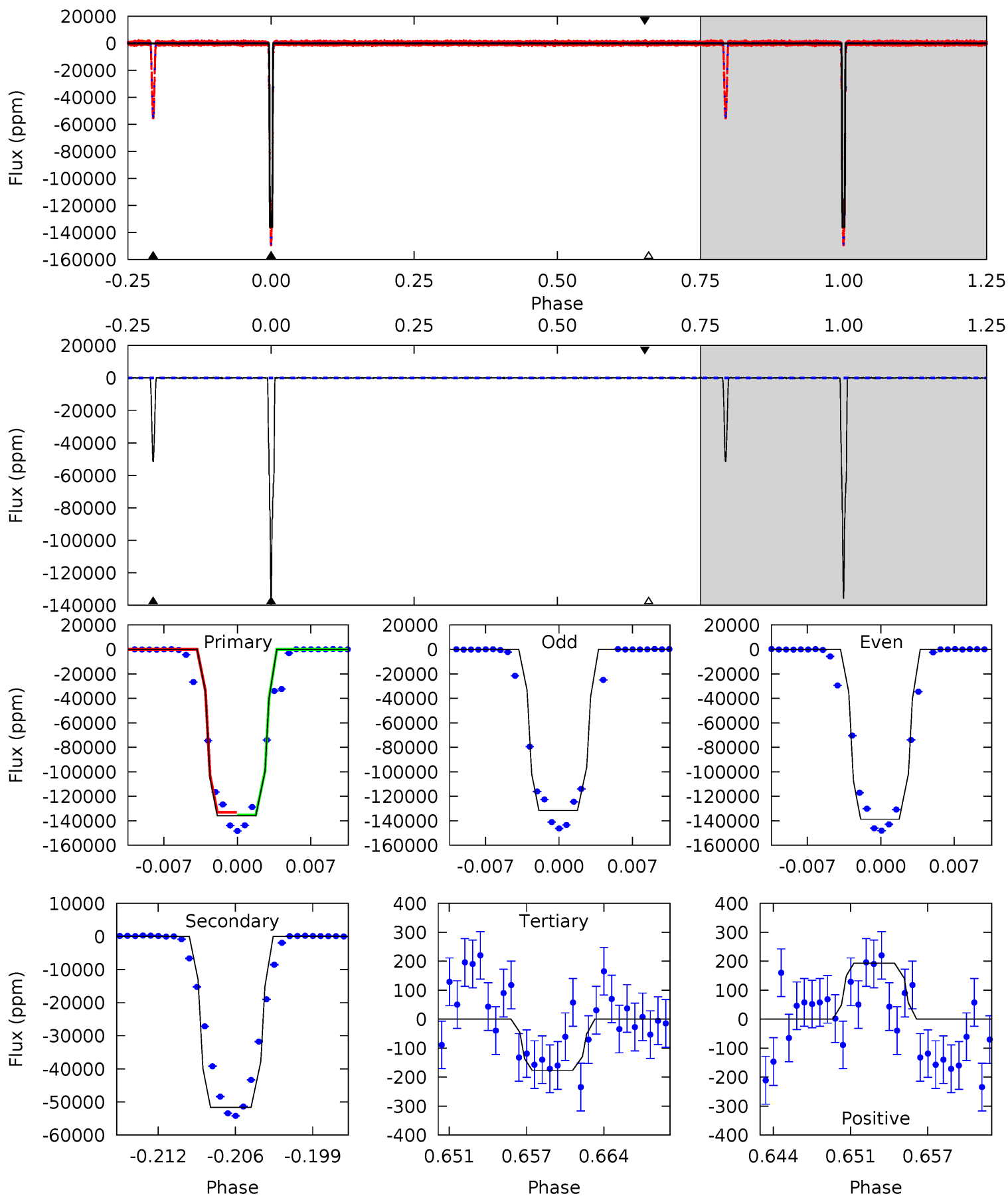
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5615	2126	6.48	6.23	5.02	2.56	2.49	5609	5609	2119	2119	10.9	0.99	0.00	0.06



Alt Model-Shift Uniqueness Test

010651945-01, P = 25.366992 Days, E = 138.814292 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3032	1152	3.93	4.32	5.10	2.71	1.28	3028	3028	1148	1148	77.9	0.99	0.00	0



Stellar Parameters For KIC 010651945

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6208^{+166}_{-222}	$4.454^{+0.058}_{-0.232}$	$-0.120^{+0.250}_{-0.300}$	$1.024^{+0.349}_{-0.116}$	$1.086^{+0.153}_{-0.153}$	$1.423^{+0.442}_{-0.832}$
	+3%/-4%	+1%/-5%	+208%/-250%	+34%/-11%	+14%/-14%	+31%/-58%
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 010651945-01 / KOI 3441.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-56956 ± 27	$62.23^{+16.51}_{-14.58}$	949^{+73}_{-49}	4428^{+448}_{-317}	258^{+175}_{-99}
Alt.	-51614 ± 45	$45.32^{+15.20}_{-14.54}$	948^{+78}_{-52}	4915^{+885}_{-516}	430^{+491}_{-184}

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 $A_{obs} \gg 1.0$

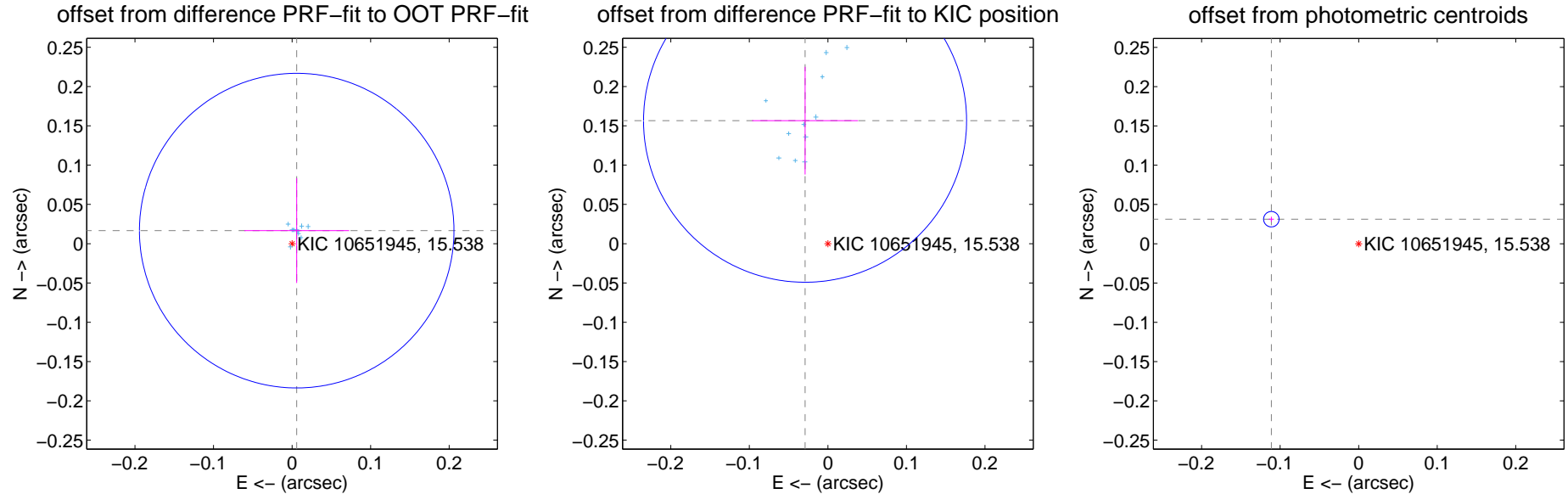
DV Centroid Data

Supplemental centroid analysis for 010651945-01. Kepler magnitude: 15.54. Transit SNR 2498.54

There are 11 quarters with good PRF difference image offsets

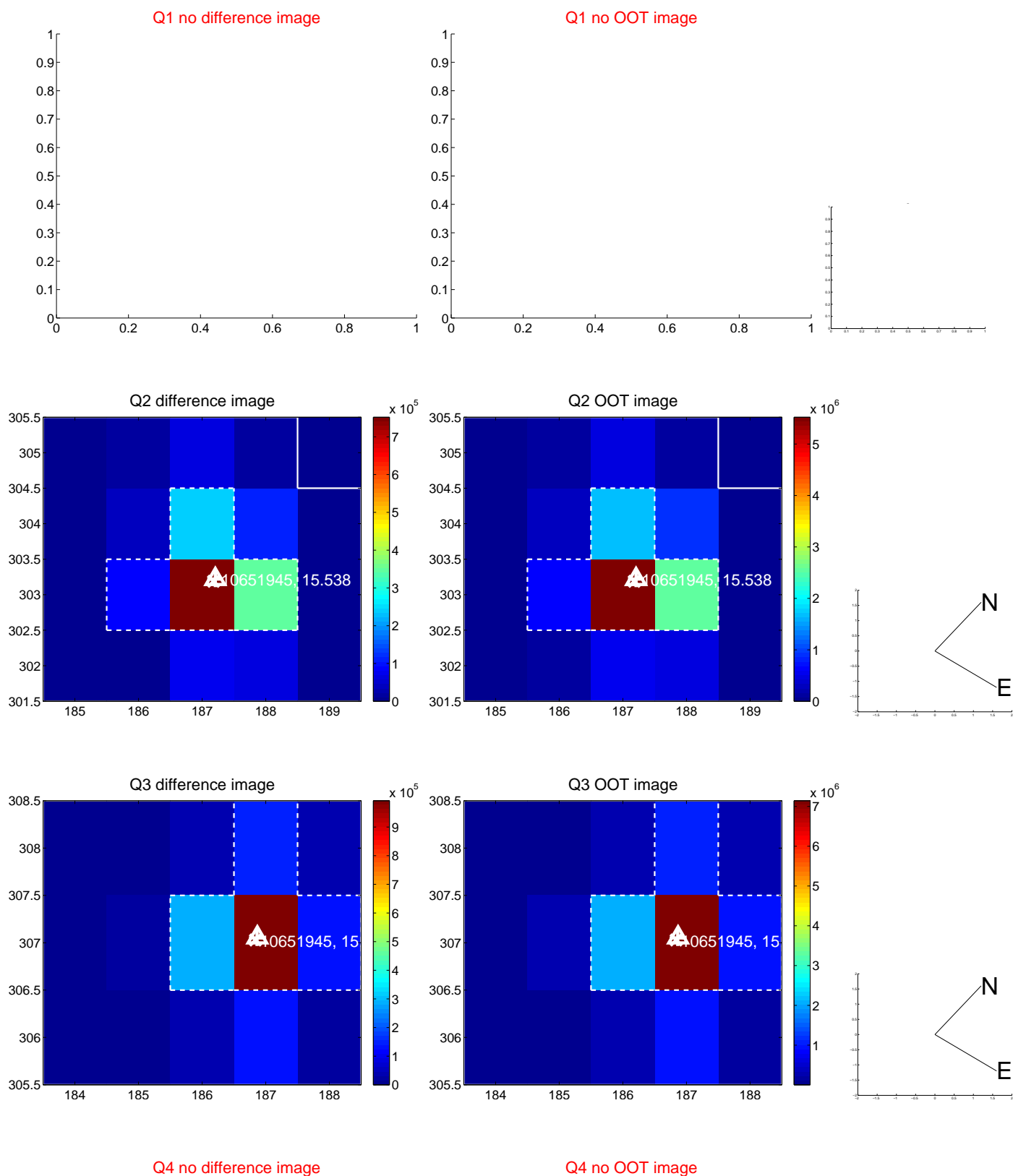
The direct PRF centroid is offset from the target star catalog position by about 0.19 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.018 ± 0.067	0.26	-0.006 ± 0.067	0.017 ± 0.067
PRF-fit source offset from KIC position	0.159 ± 0.069	2.32	0.029 ± 0.067	0.157 ± 0.069
photometric centroid source offset	0.12 ± 0.00	35.23	0.11 ± 0.00	0.03 ± 0.00

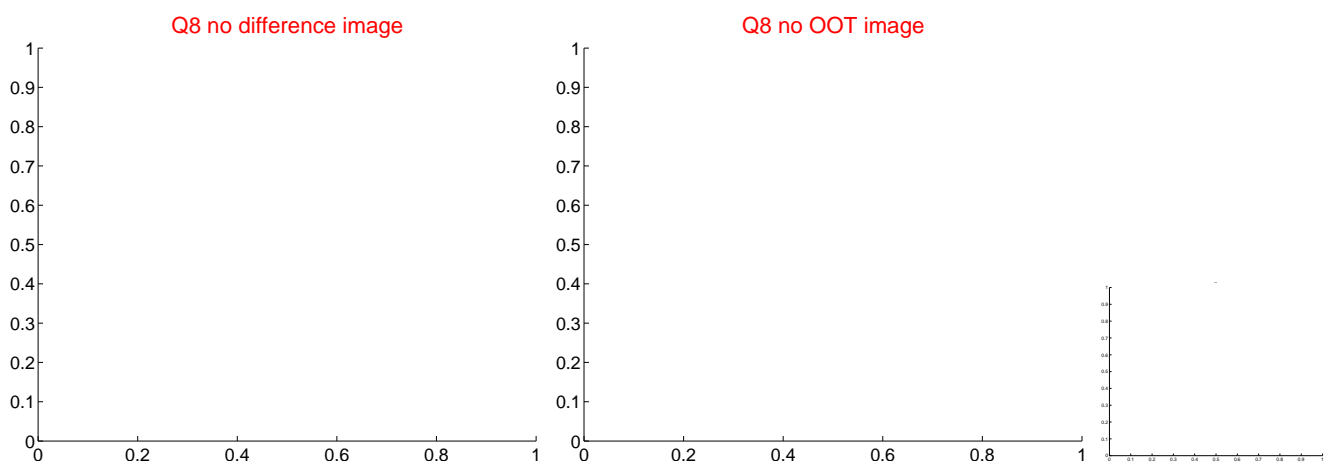
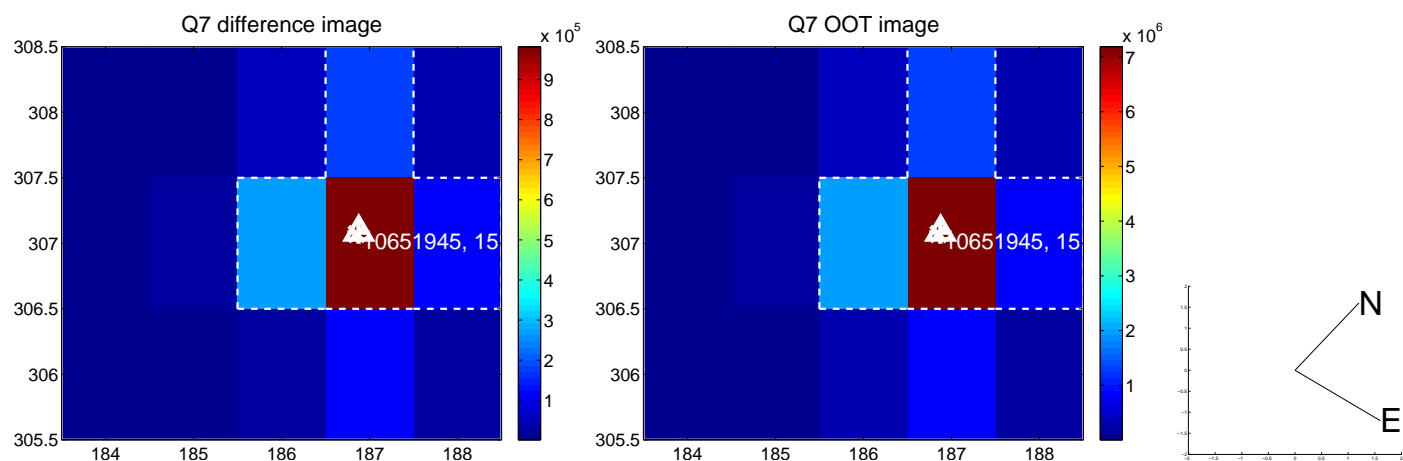
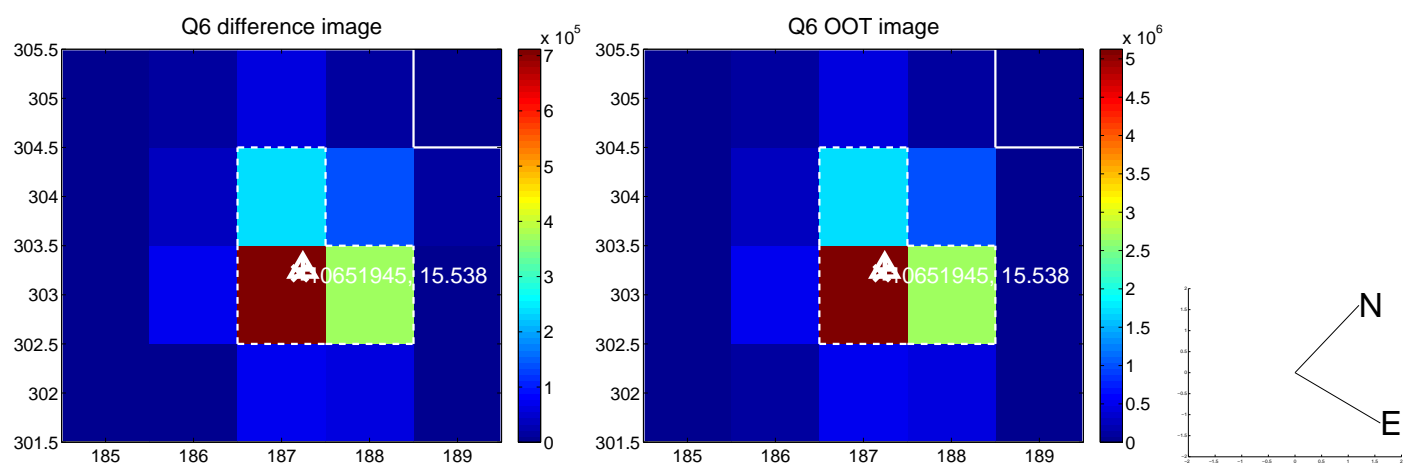
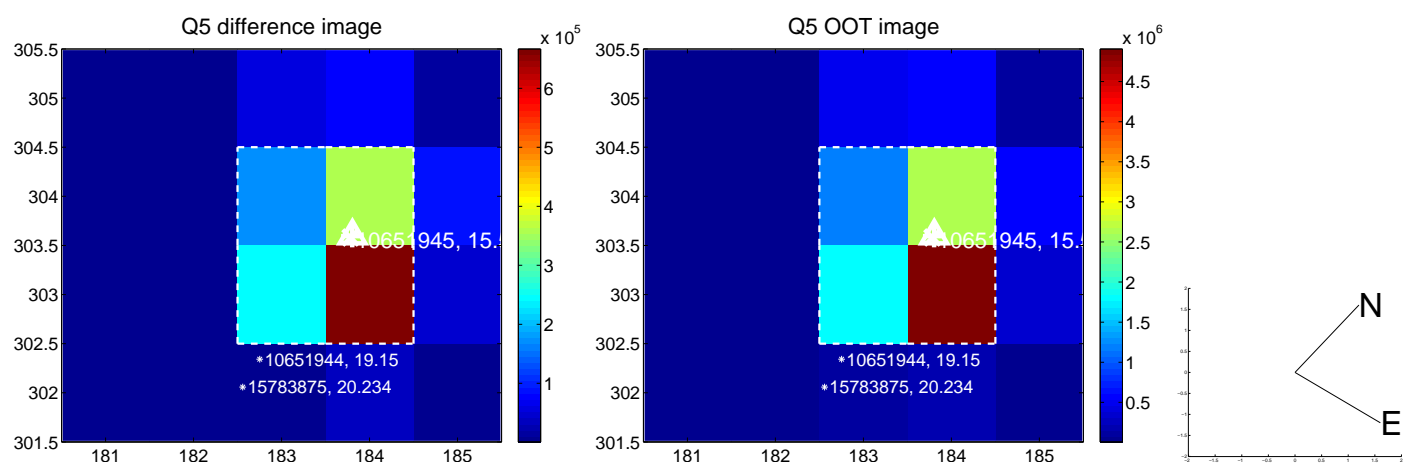


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

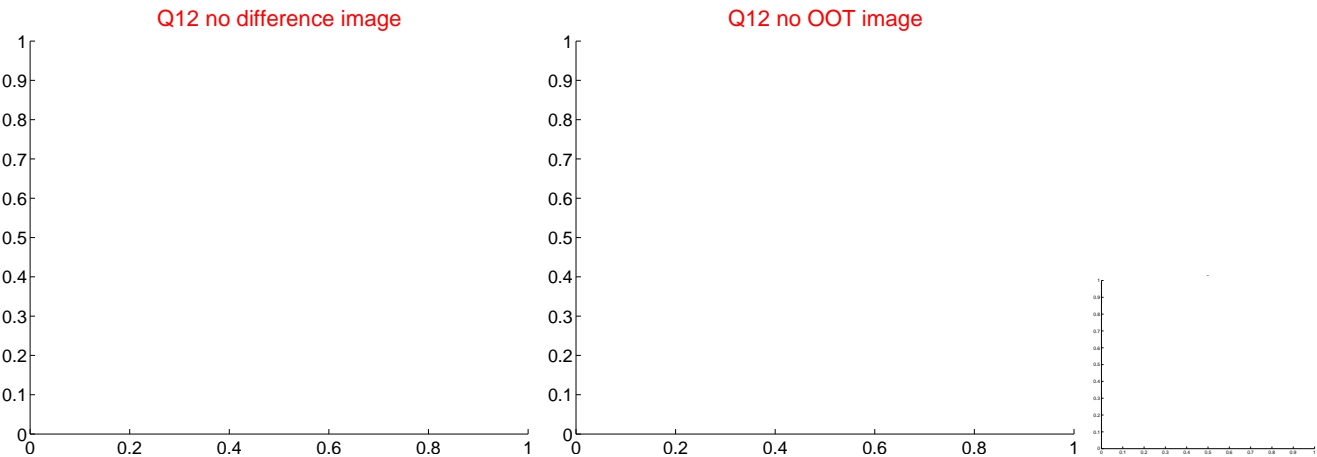
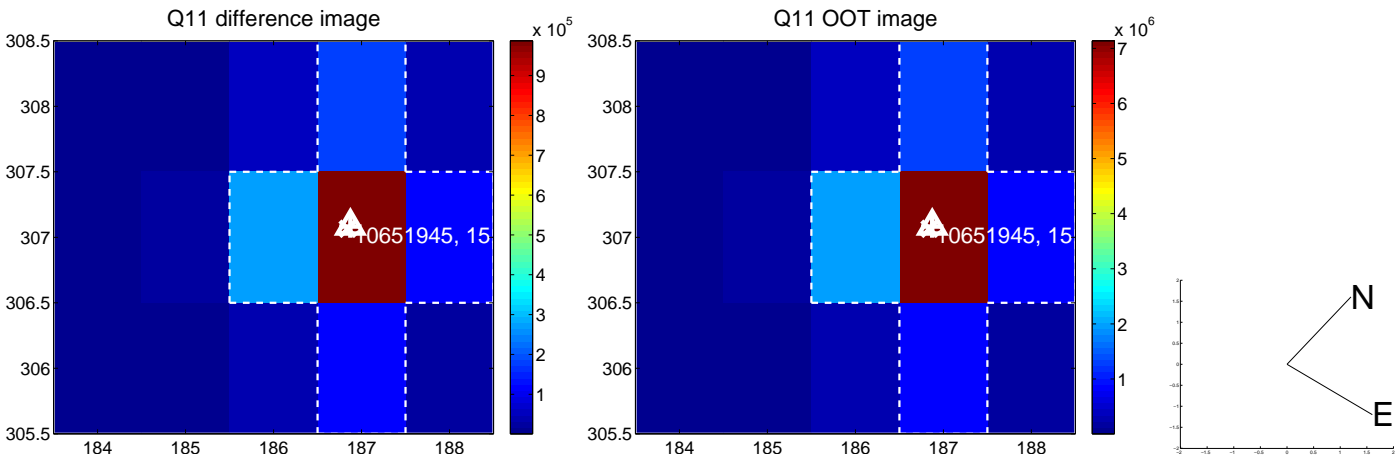
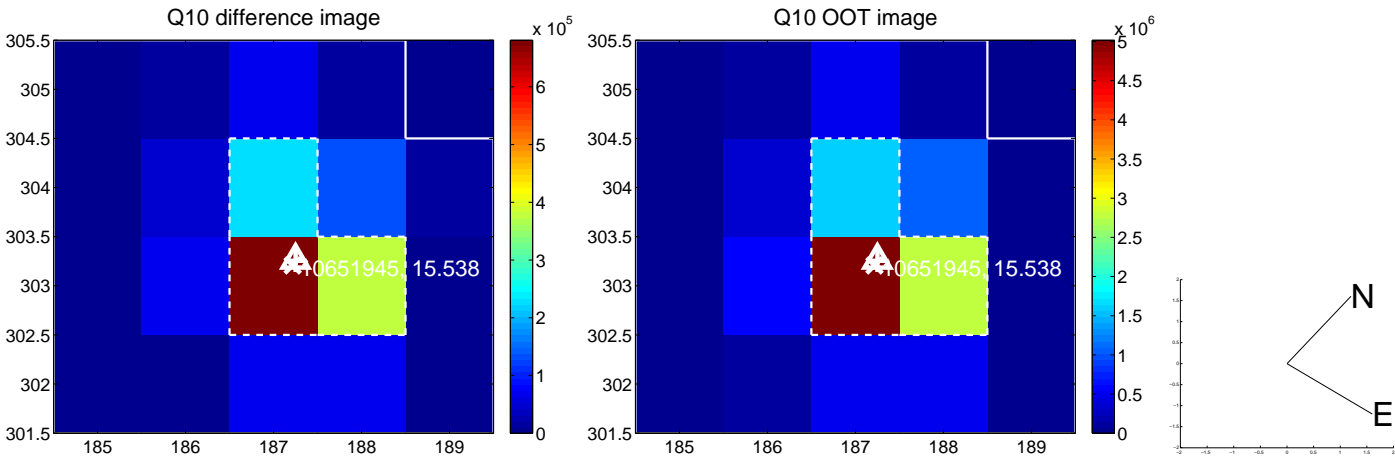
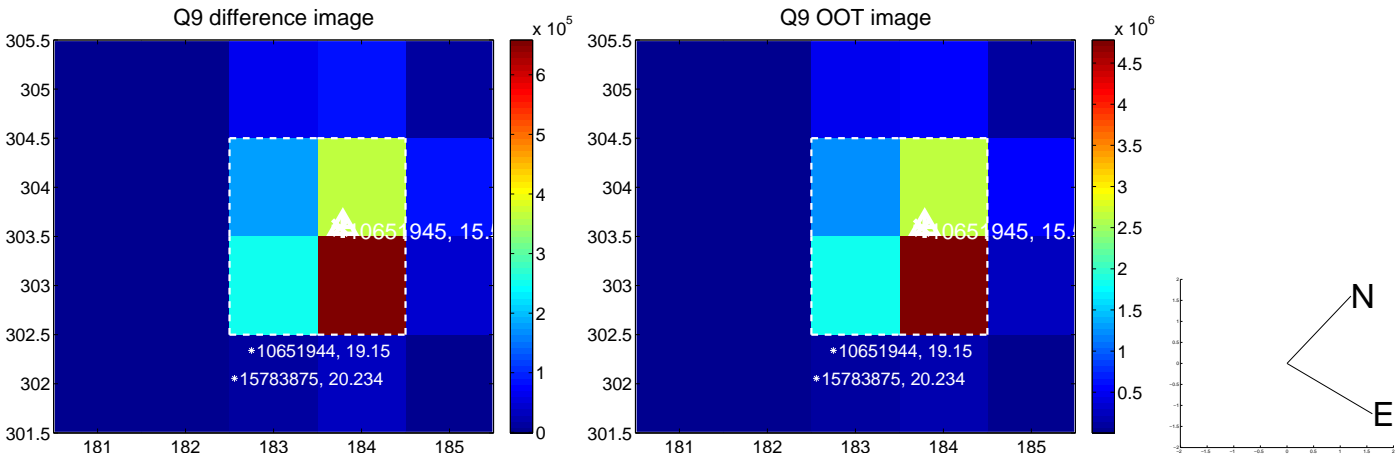
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value



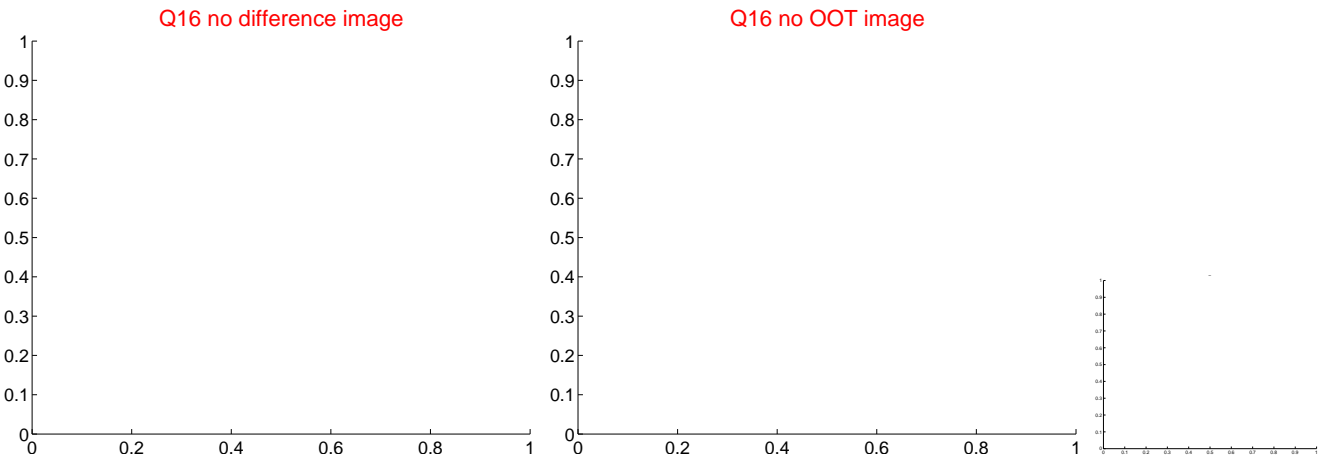
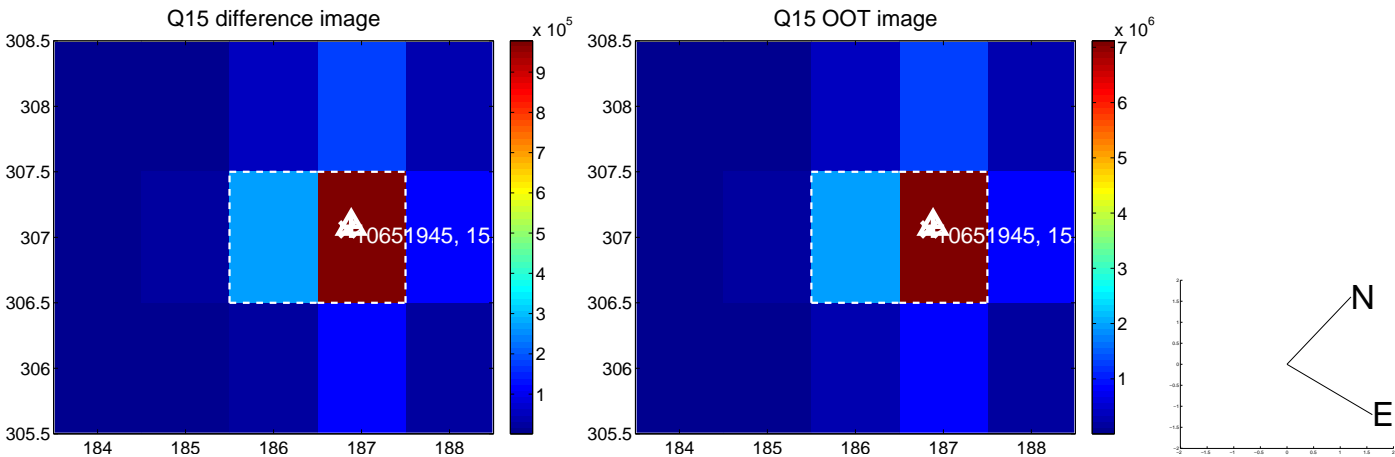
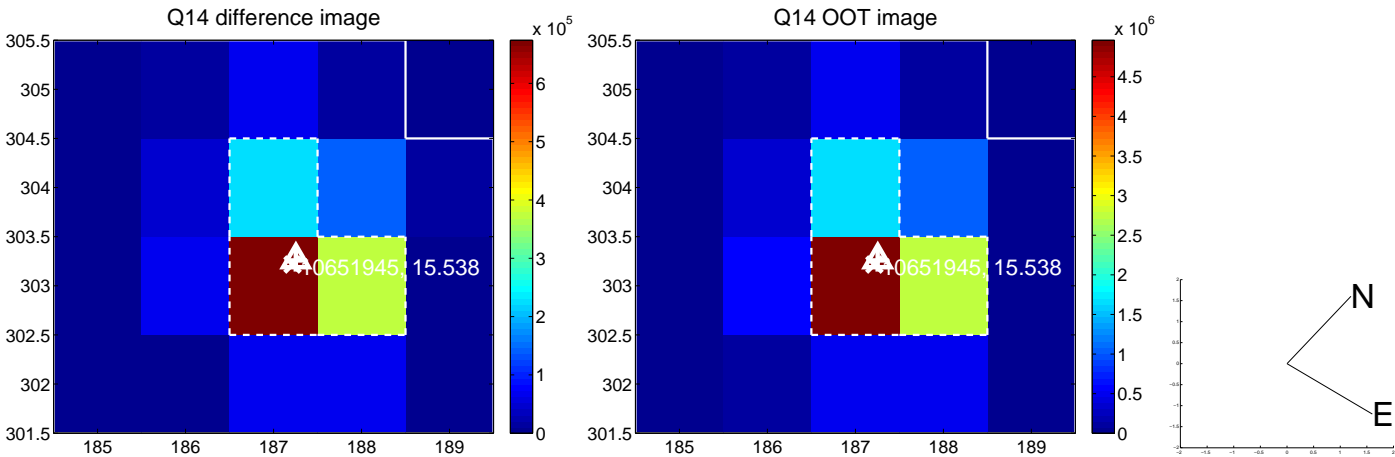
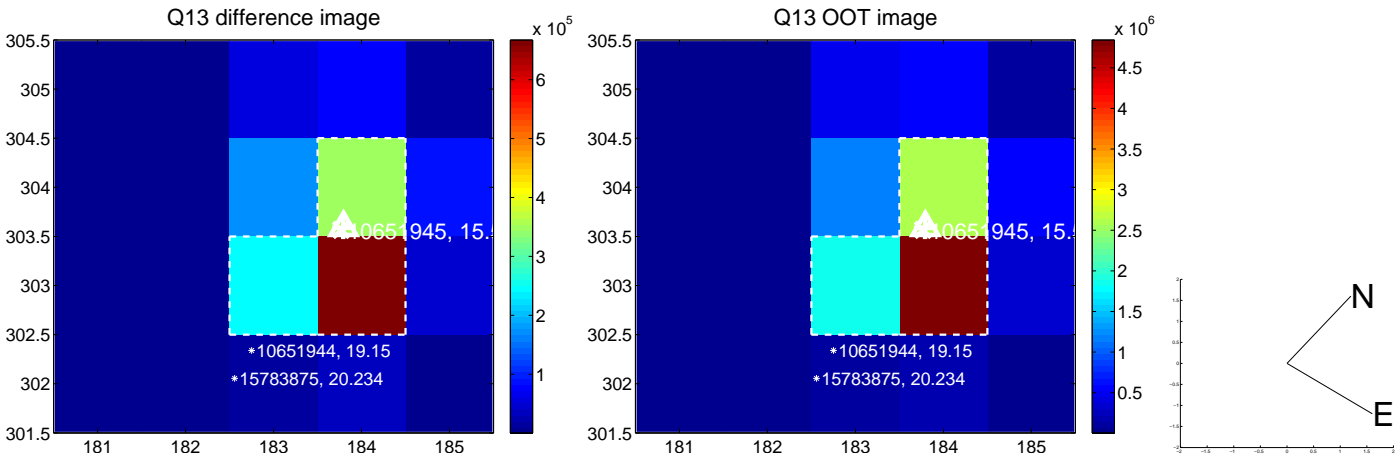
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



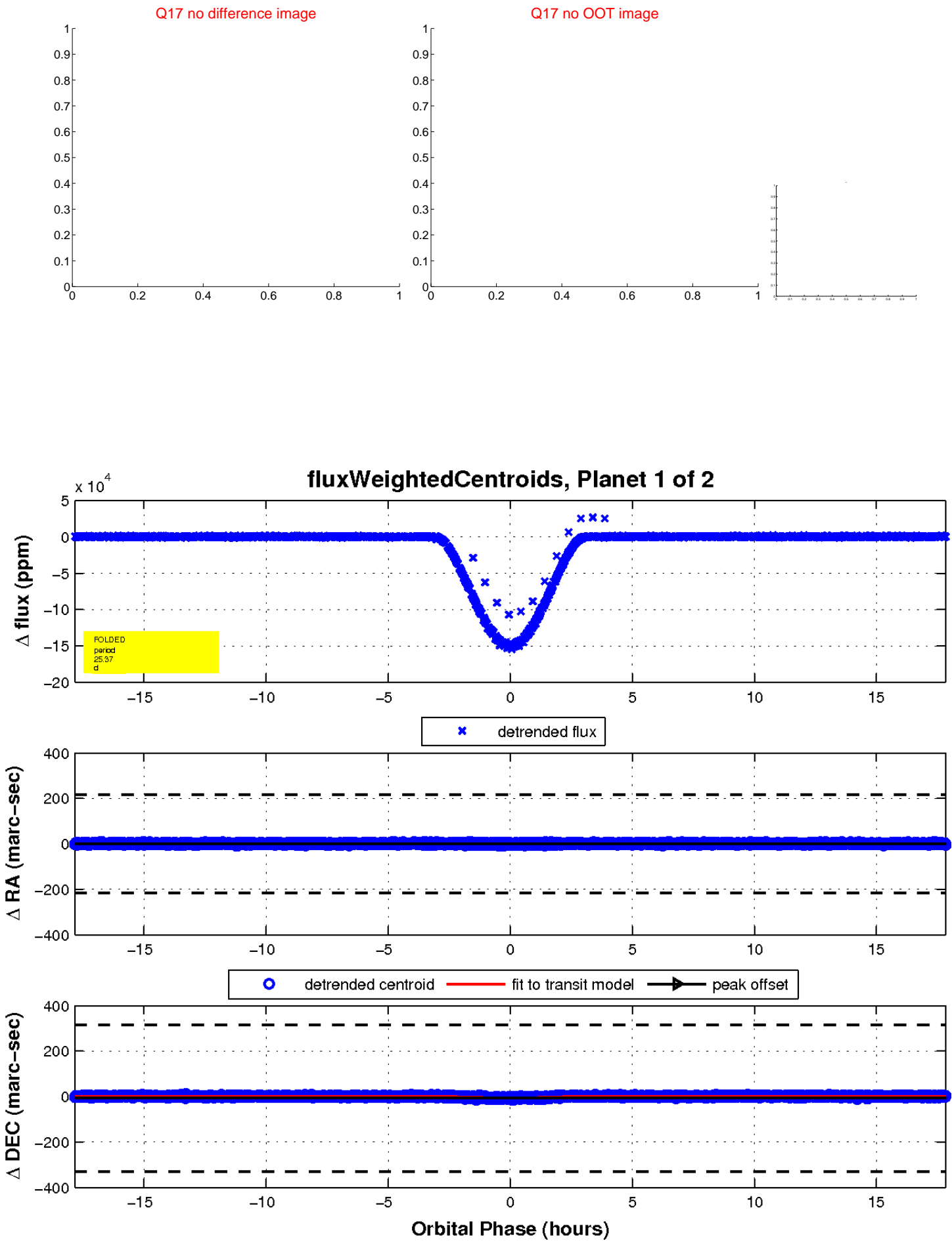
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

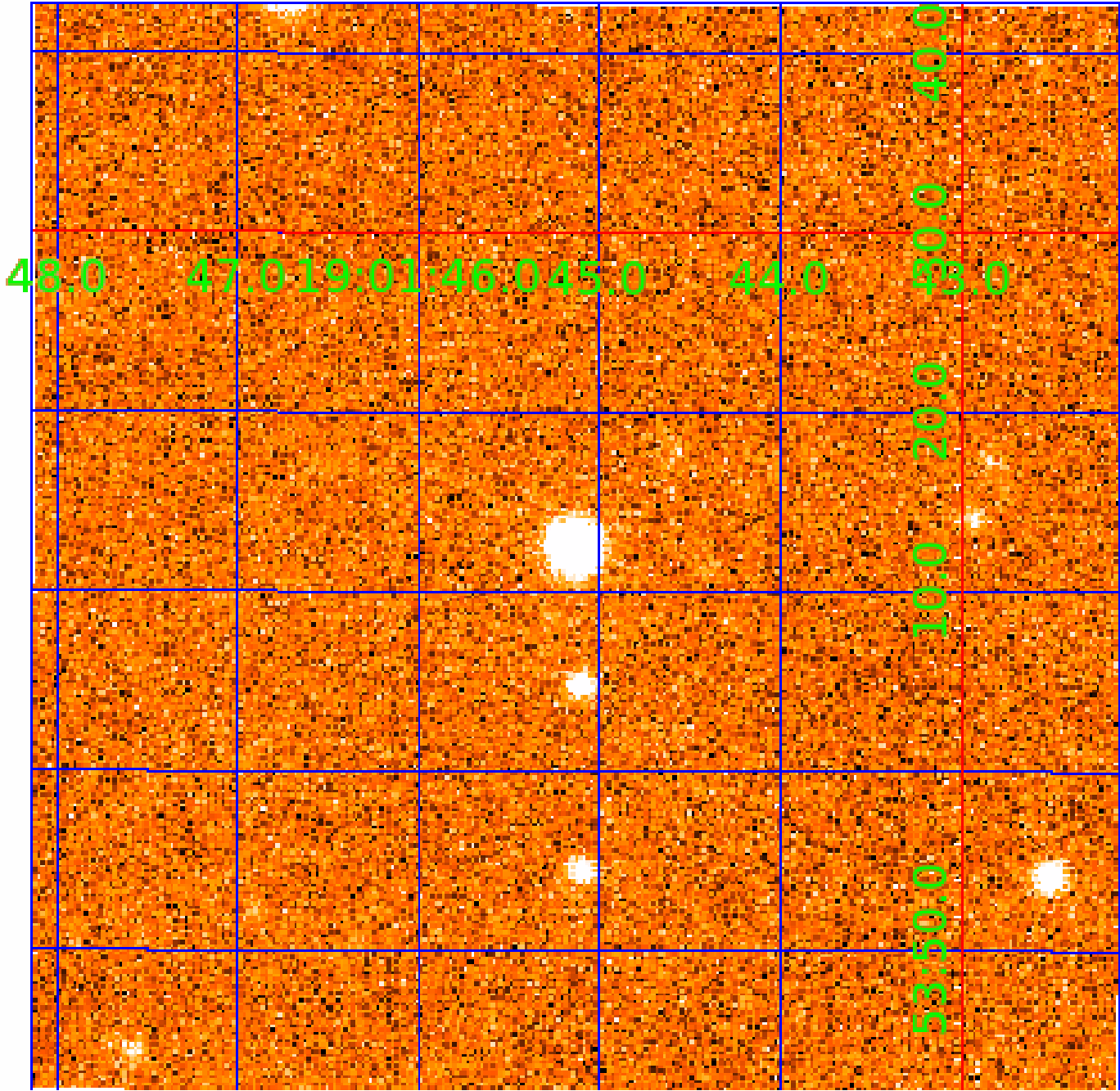


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 010651945

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})
010651945-01	OBS	3441.01	25.366991	138.814387	150617.6	5.944	3024.5	2498.5	1.02	6208	58.94	46.19
010651945-02	OBS	No	25.366990	133.588562	55091.6	5.332	1120.9	1018.1	1.02	6208	38.40	46.19

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010651945-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_DV—MOD_SEC_ALT—MOD_ODDEVEN_ALT—DEEP_V_SHAPED—HAS_SEC_TCE
010651945-02	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.

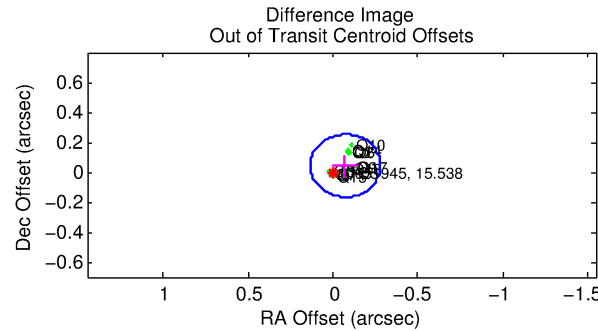
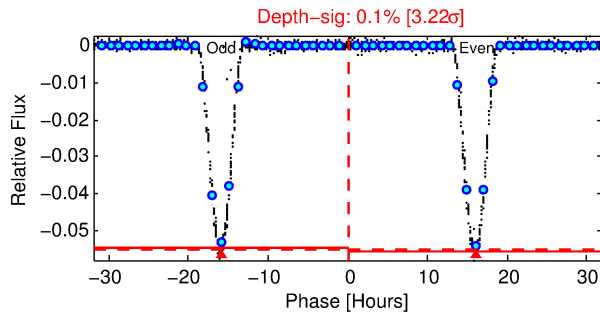
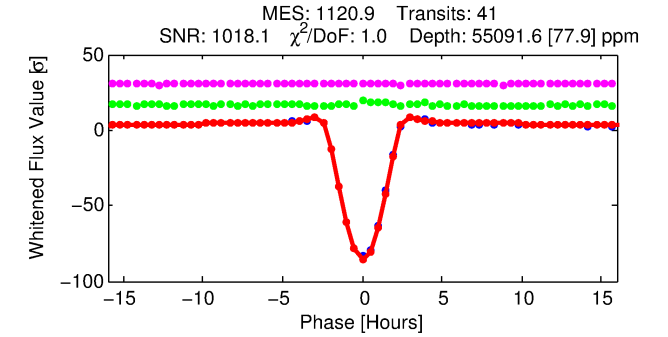
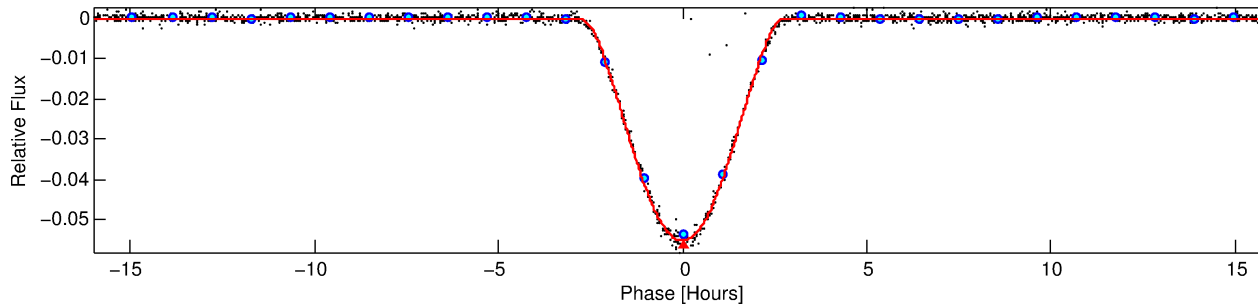
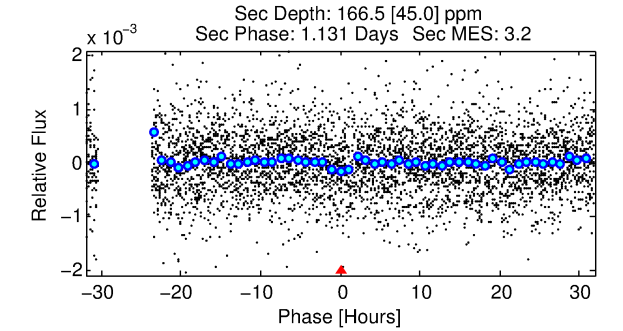
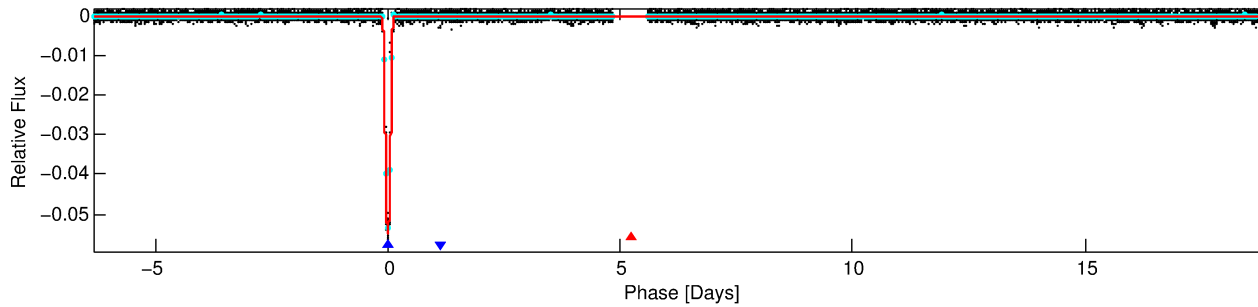
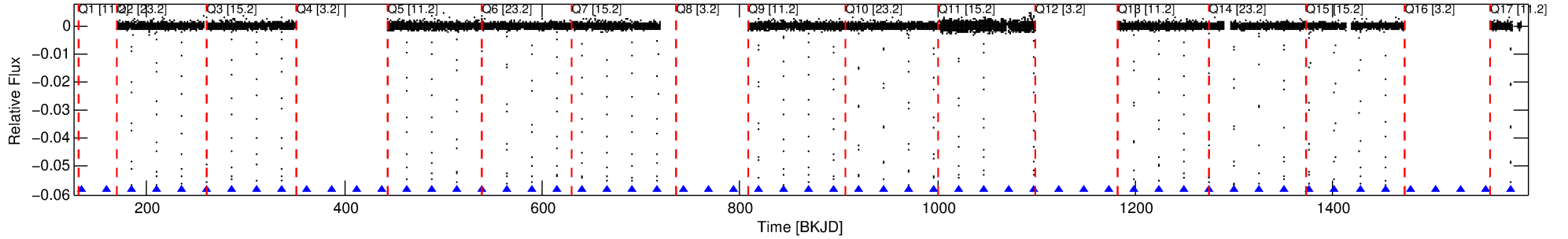
Ephemeris Match Information For 010651945-02

No Significant Match Found

DV One-Page Summary

KIC: 10651945 Candidate: 2 of 2 Period: 25.367 d
KOI: K03441 Corr: No Ephemeris Match

Kp: 15.54 R*: 1.02 Rs Teff: 6208.0 K Logg: 4.45 Fe/H: -0.120



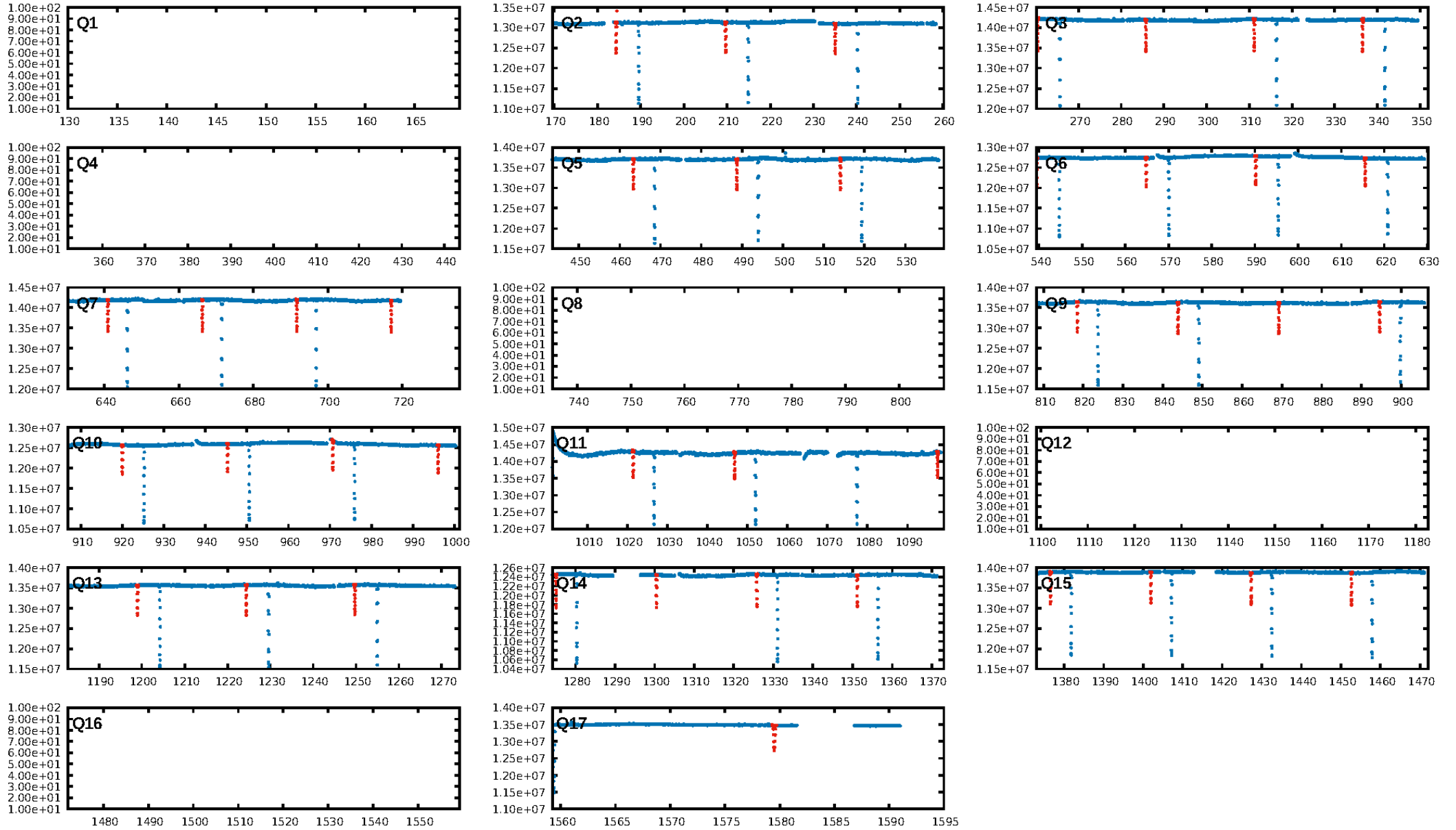
DV Fit Results:

Period = 25.36699 [0.00000] d
Epoch = 133.5886 [0.0001] BKJD
Rp/R* = 0.3437 [0.0268]
a/R* = 33.93 [0.08]
b = 0.97 [0.04]
Seff = 46.19 [20.60]
Teff = 665 [74] K
Rp = 38.40 [13.43] Re
a = 0.1738 [0.0502] AU
Ag = 1.88 [0.99] [0.89σ]
Teffp = 1203 [103] K [4.23σ]

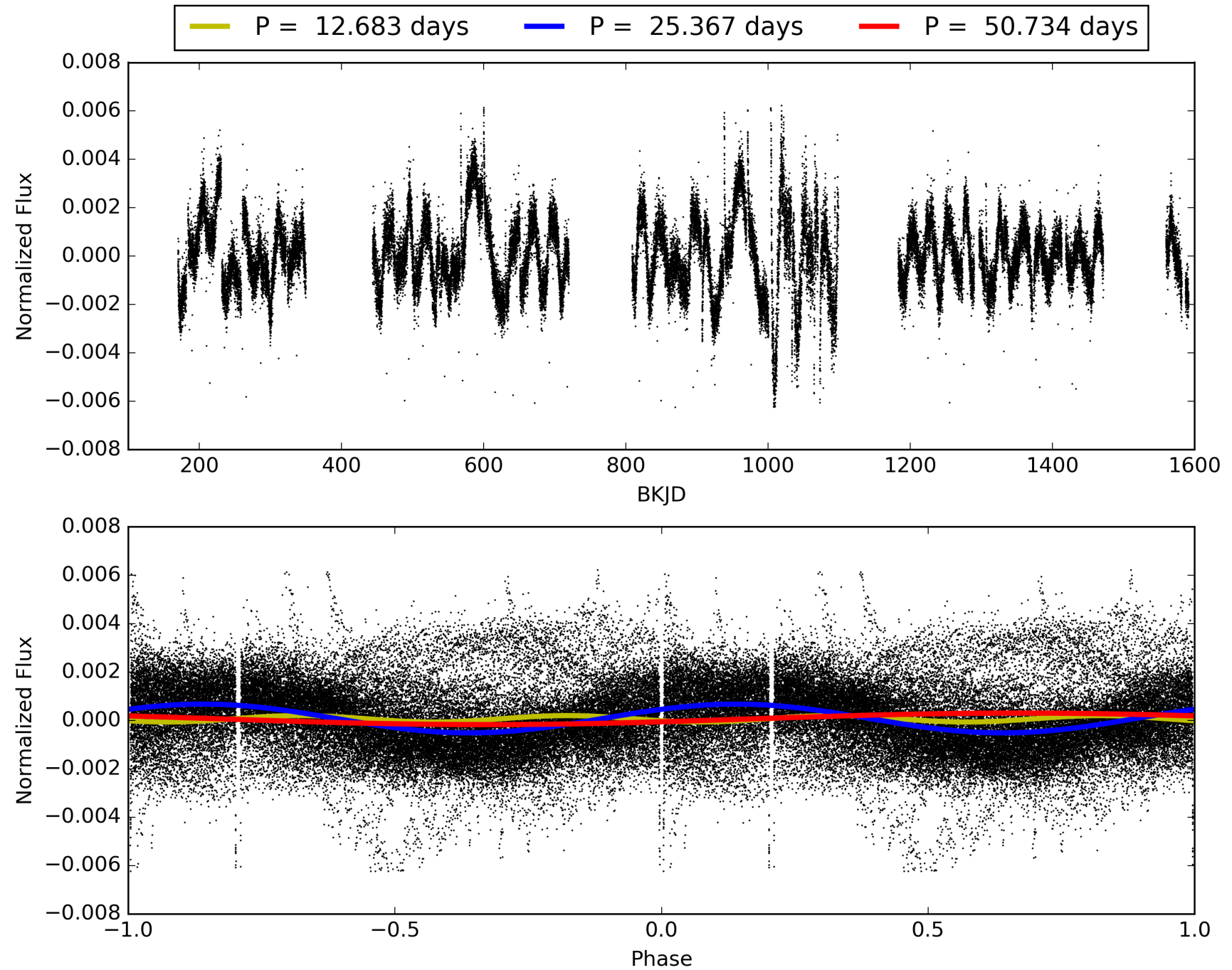
DV Diagnostic Results:

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 [40/40]
GhostDiagnostic-chr: 2.954
Centroid-sig: 0.0%
Centroid-so: 0.080 arcsec [9.13σ]
OotOffset-rm: 0.083 arcsec [1.20σ]
KicOffset-rm: 0.187 arcsec [2.41σ]
OotOffset-st: 4/4/0/4 [12]
KicOffset-st: 4/4/0/4 [12]
DiffImageQuality-fgm: 1.00 [12/12]
DiffImageOverlap-fno: 1.00 [12/12]

TCE 010651945-02, PDC Light Curves

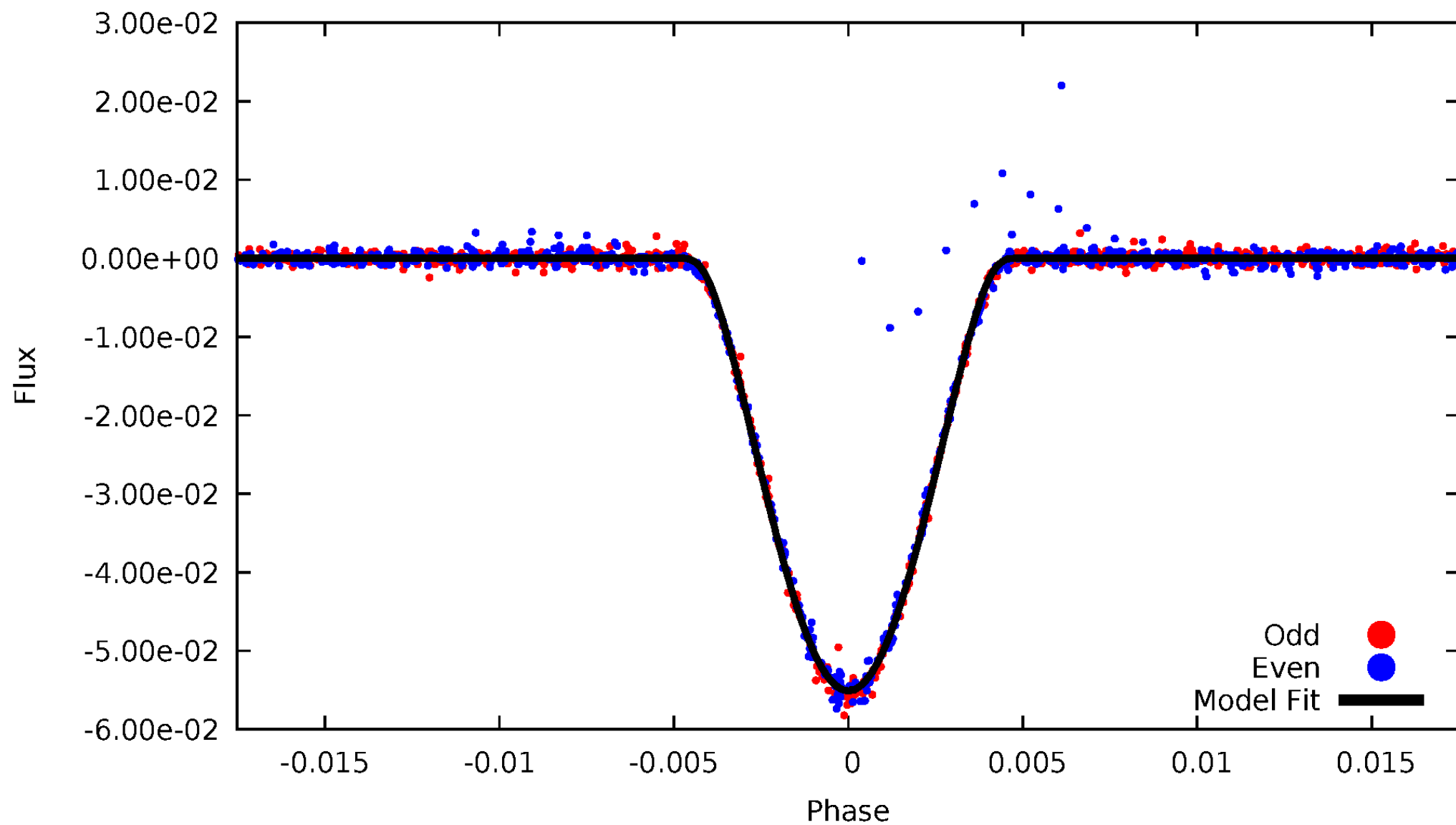


TCE 010651945-02



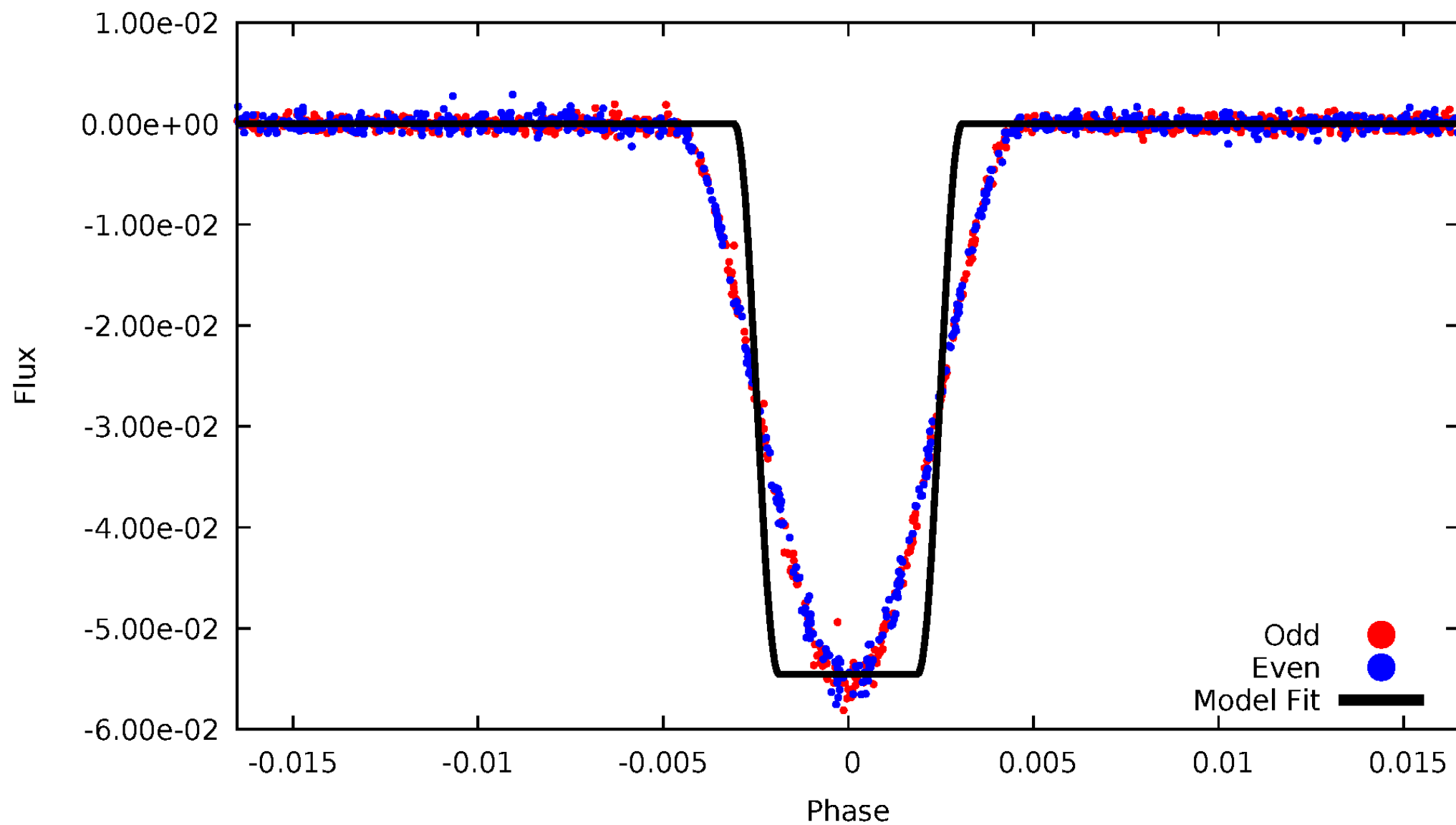
DV Odd/Even

TCE 010651945-02



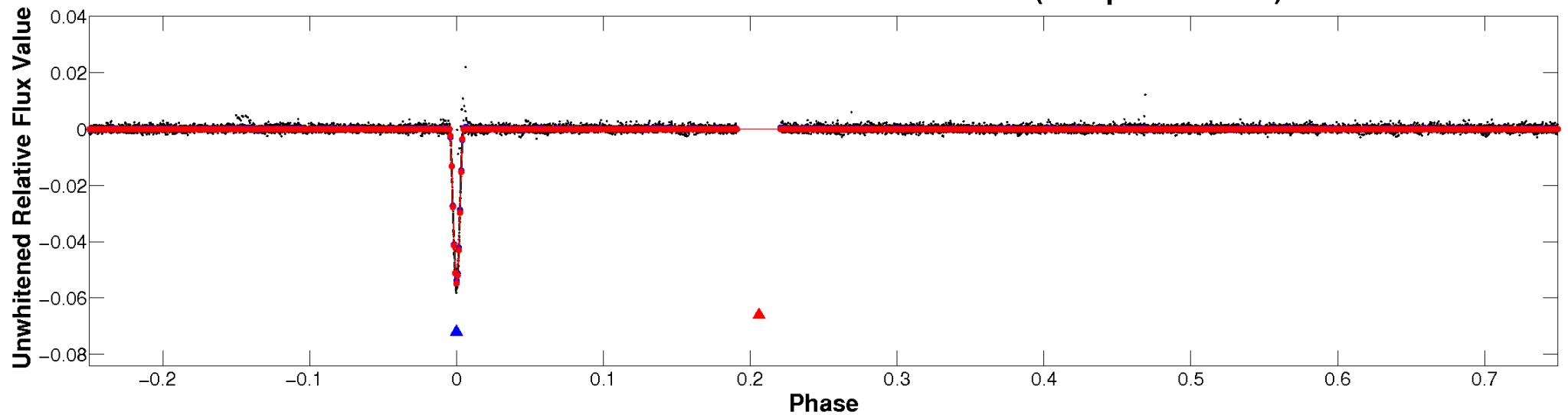
ALT Odd/Even

TCE 010651945-02

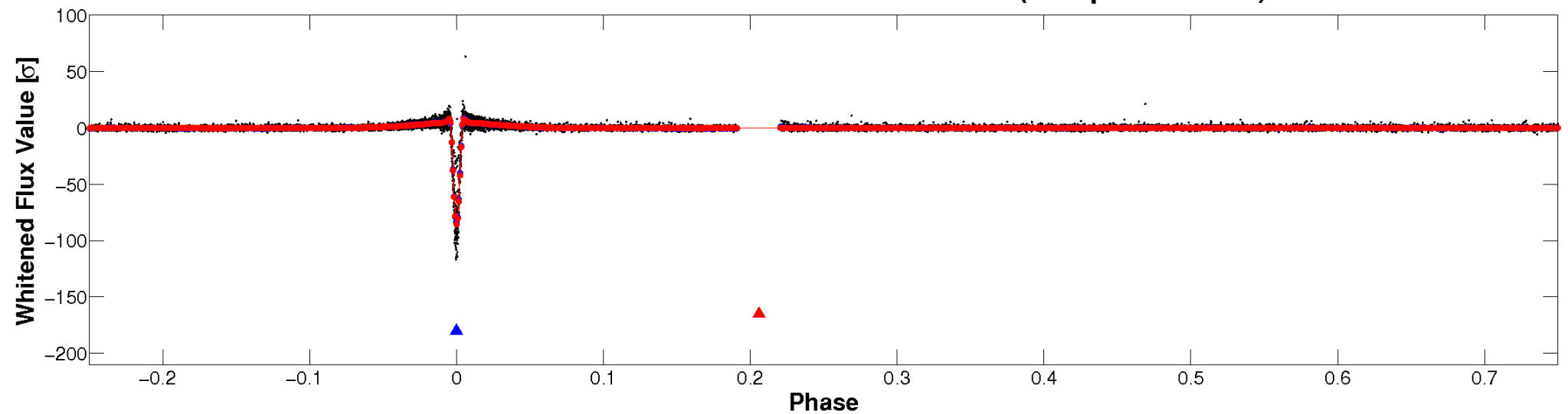


Non-Whitened Vs. Whitened Light Curve

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

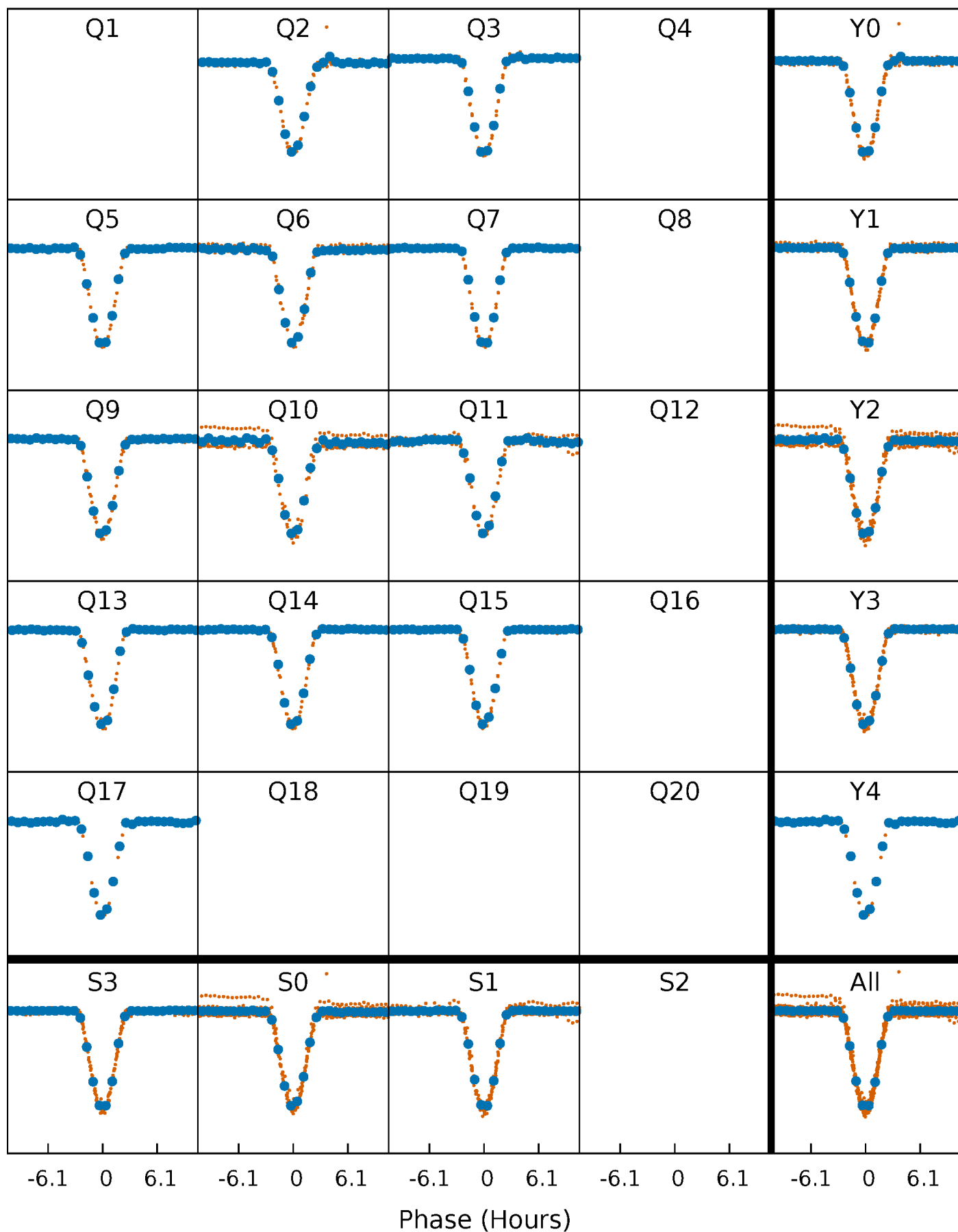


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



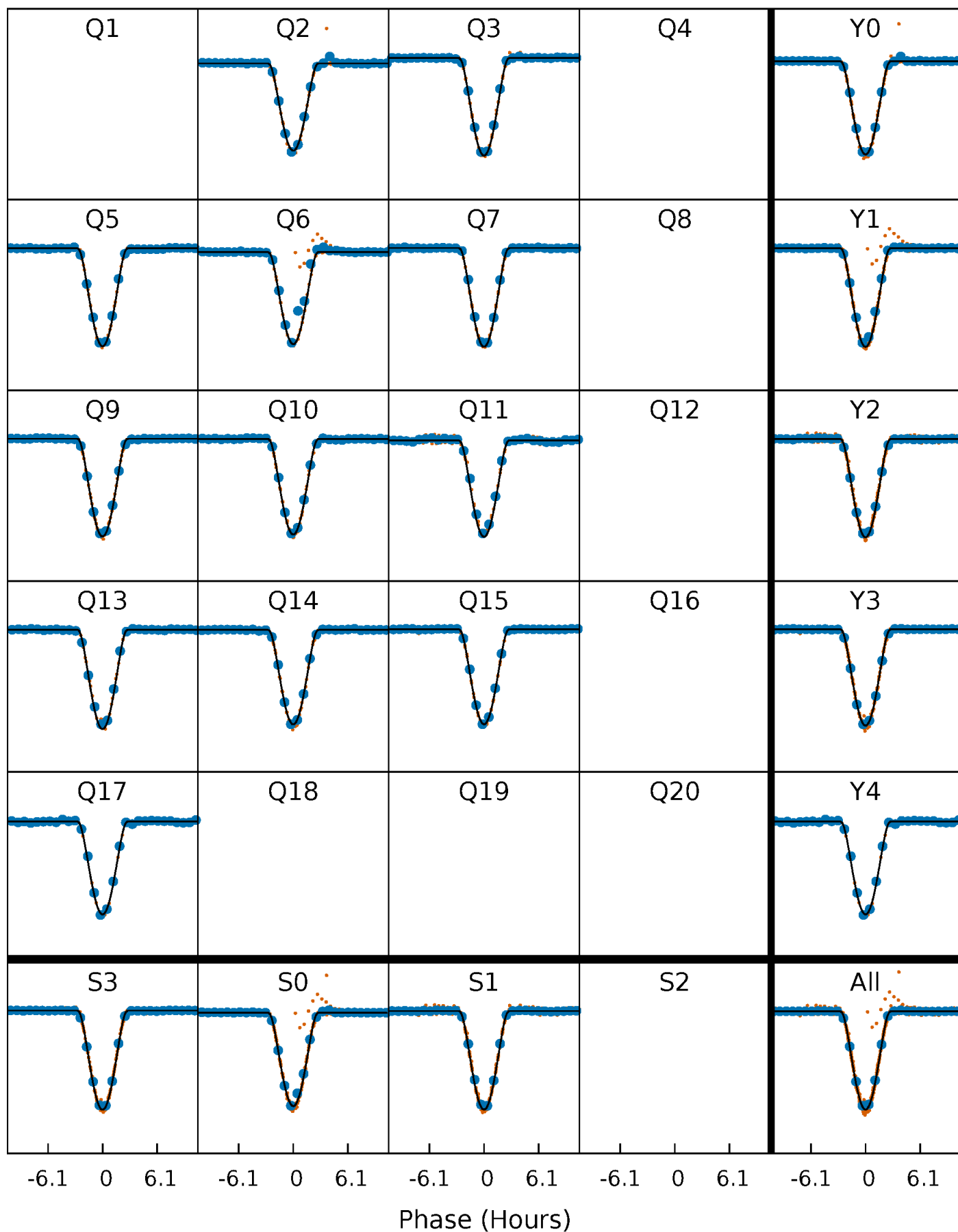
PDC Quarter-Phased Transit Curves

TCE 010651945-02 P= 25.366990 Days $T_0=133.588562$ (BKJD)



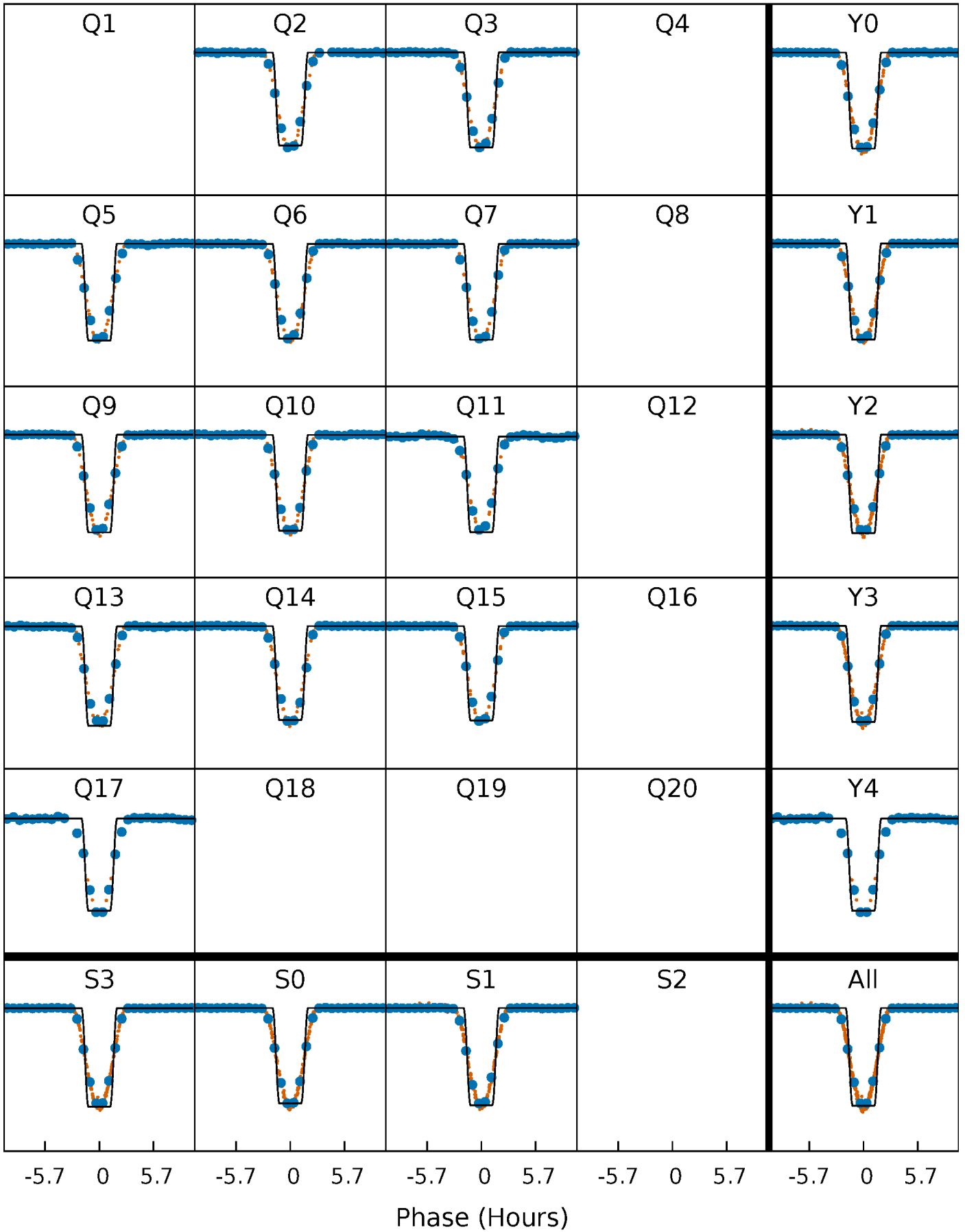
DV Quarter-Phased Transit Curves

TCE 010651945-02 $P = 25.366990$ Days $T_0 = 133.588562$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

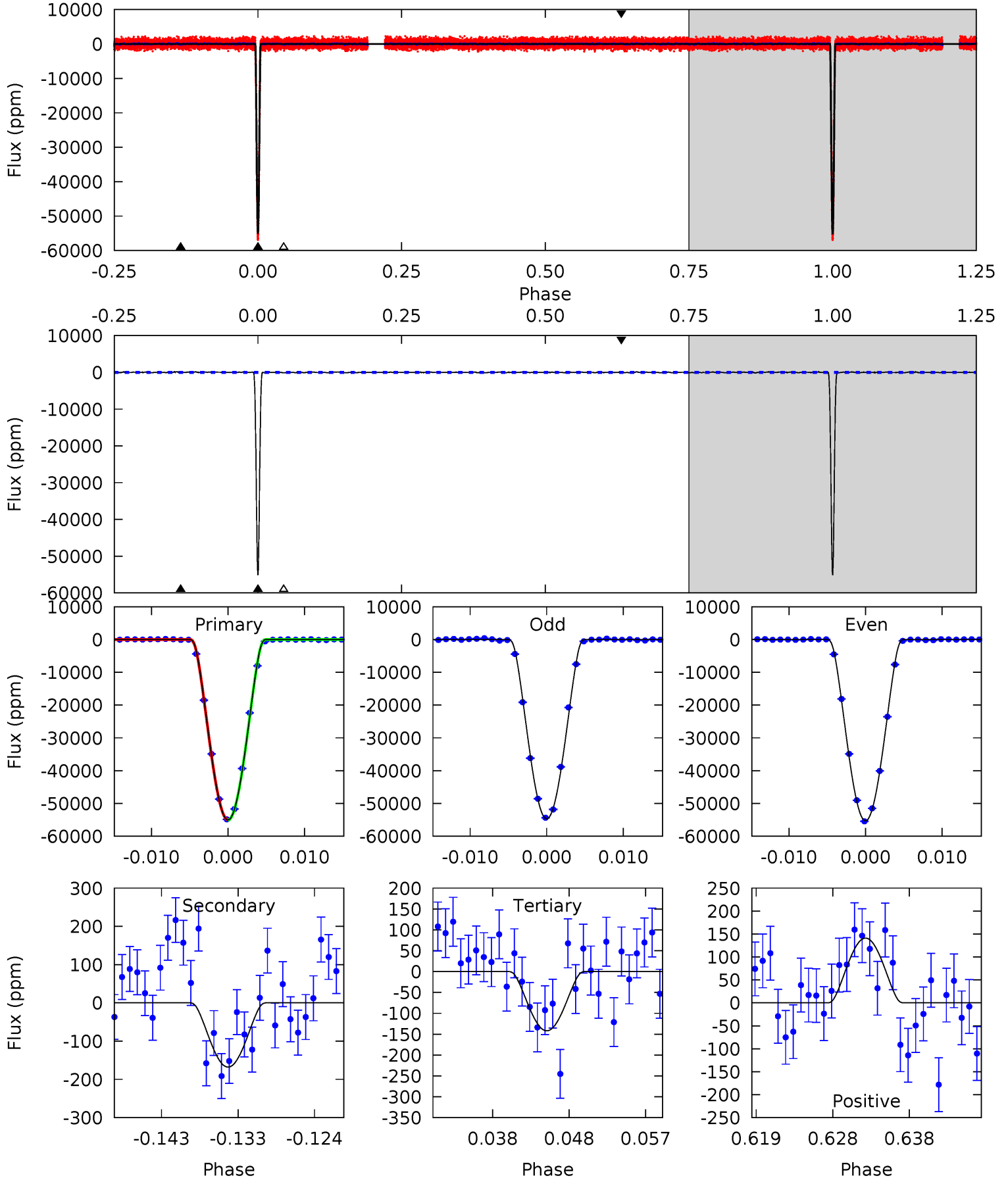
TCE 010651945-02 P= 25.366992 Days $T_0=133.588542$ (BKJD)



DV Model-Shift Uniqueness Test

010651945-02, P = 25.366990 Days, E = 133.588562 Days

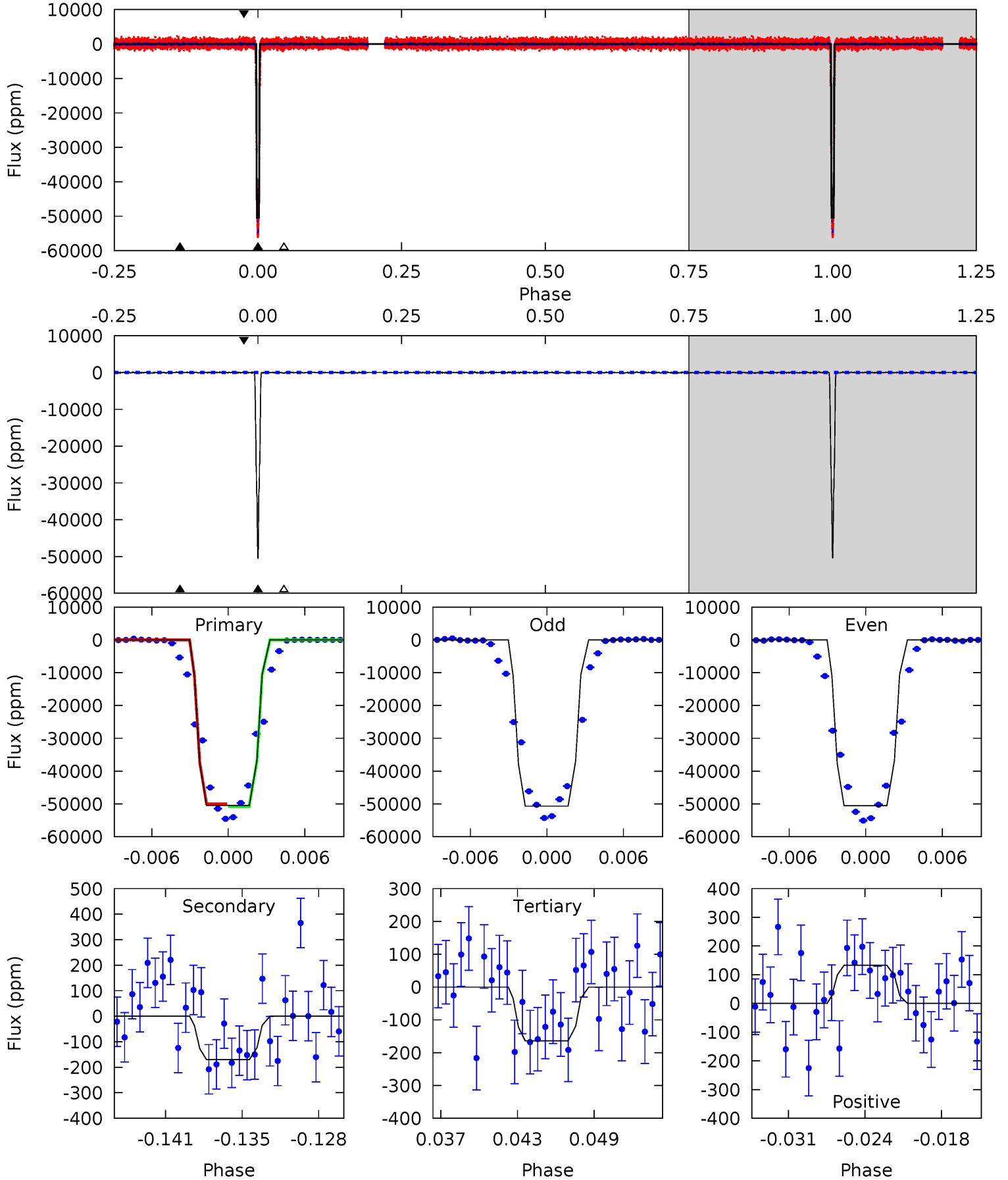
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2114	6.45	5.45	5.42	5.04	2.59	1.91	2108	2108	0.99	1.03	11.4	0.98	0.00	2.07



Alt Model-Shift Uniqueness Test

010651945-02, P = 25.366992 Days, E = 133.588542 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1336	4.51	4.35	3.51	5.12	2.74	1.20	1331	1332	0.17	1.00	2.38	1.00	0.00	0



Stellar Parameters For KIC 010651945

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6208^{+166}_{-222}	$4.454^{+0.058}_{-0.232}$	$-0.120^{+0.250}_{-0.300}$	$1.024^{+0.349}_{-0.116}$	$1.086^{+0.153}_{-0.153}$	$1.423^{+0.442}_{-0.832}$
	+3%/-4%	+1%/-5%	+208%/-250%	+34%/-11%	+14%/-14%	+31%/-58%
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 010651945-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-168 ± 26	$40.31^{+7.23}_{-5.38}$	951^{+81}_{-47}	2121^{+69}_{-71}	$1.669^{+0.588}_{-0.498}$
Alt.	-170 ± 38	$27.33^{+4.62}_{-4.00}$	945^{+72}_{-48}	2335^{+101}_{-100}	$3.655^{+1.575}_{-1.187}$

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

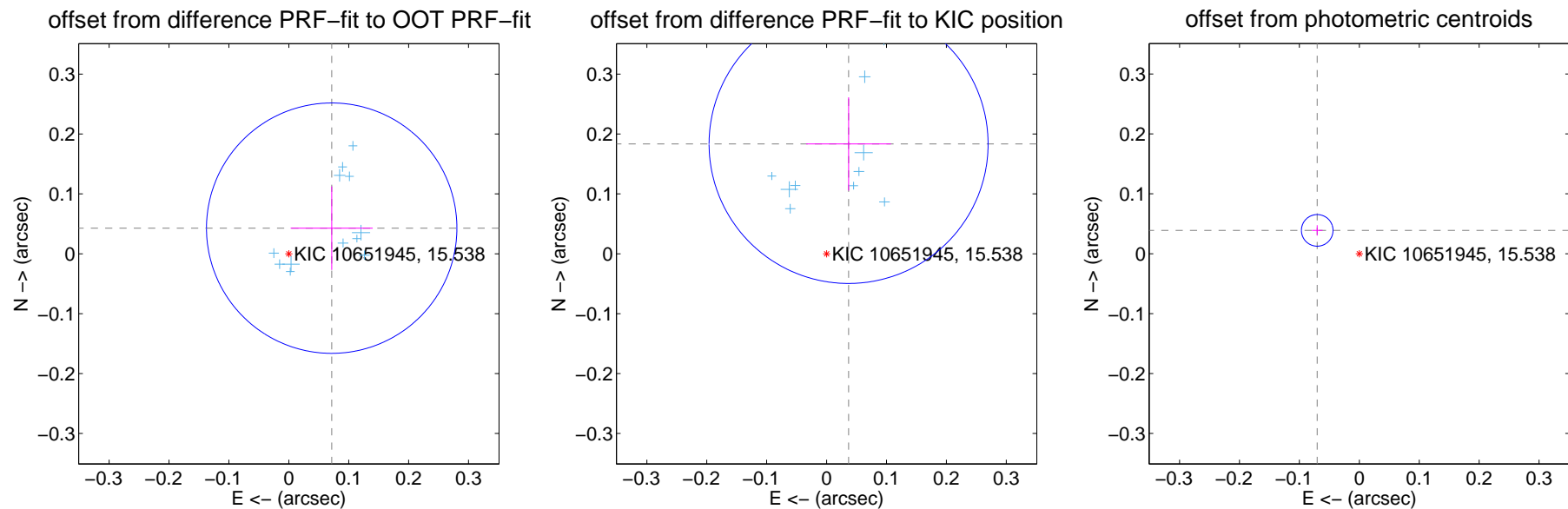
DV Centroid Data

Supplemental centroid analysis for 010651945-02. Kepler magnitude: 15.54. Transit SNR 1018.05

There are 12 quarters with good PRF difference image offsets

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

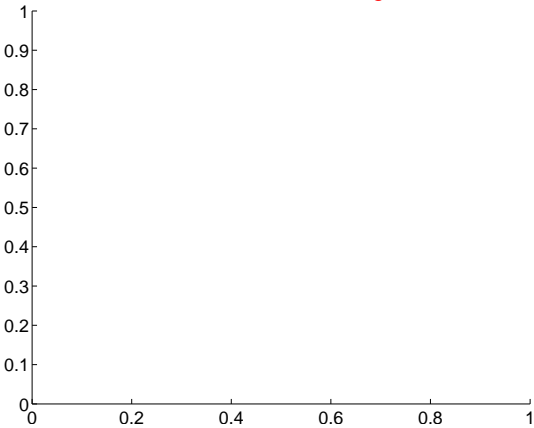
	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.083 ± 0.070	1.20	-0.072 ± 0.069	0.043 ± 0.070
PRF-fit source offset from KIC position	0.187 ± 0.078	2.41	-0.037 ± 0.071	0.183 ± 0.078
photometric centroid source offset	0.08 ± 0.01	9.13	0.07 ± 0.01	0.04 ± 0.01



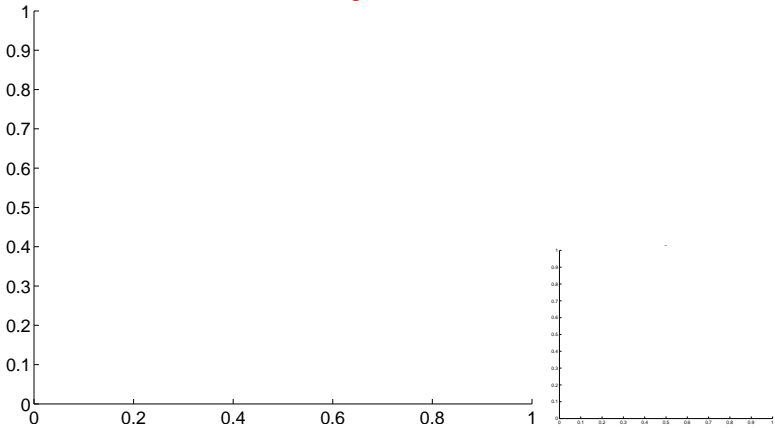
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

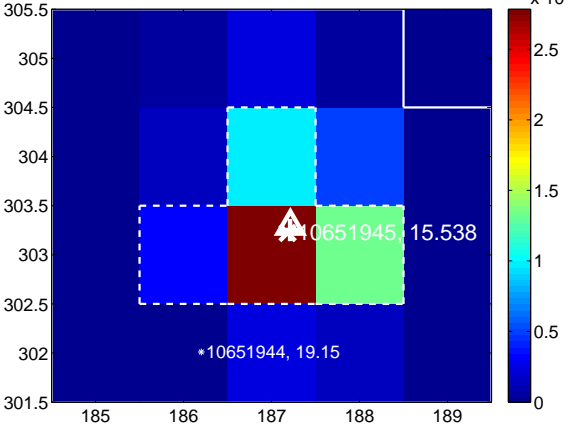
Q1 no difference image



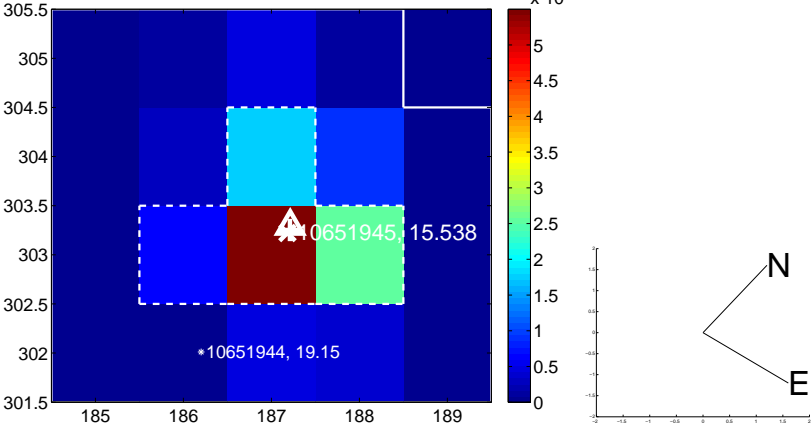
Q1 no OOT image



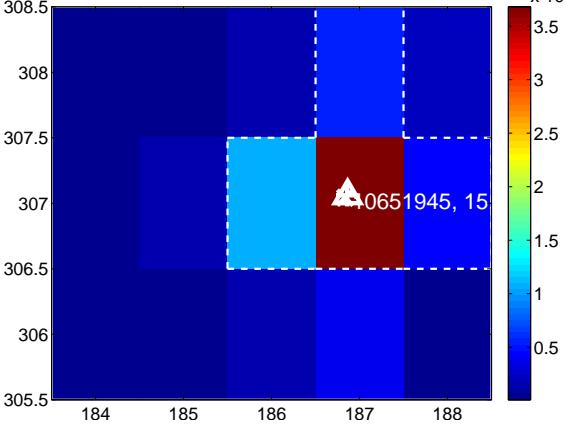
Q2 difference image



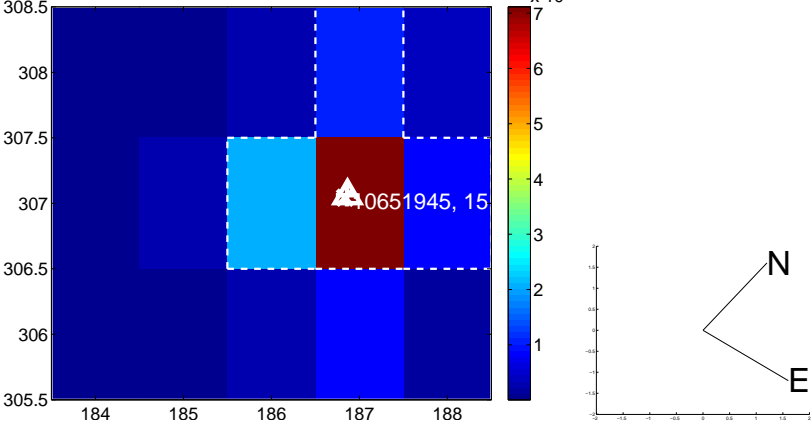
Q2 OOT image



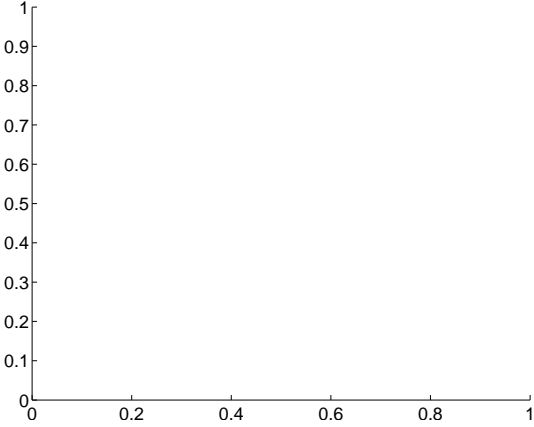
Q3 difference image



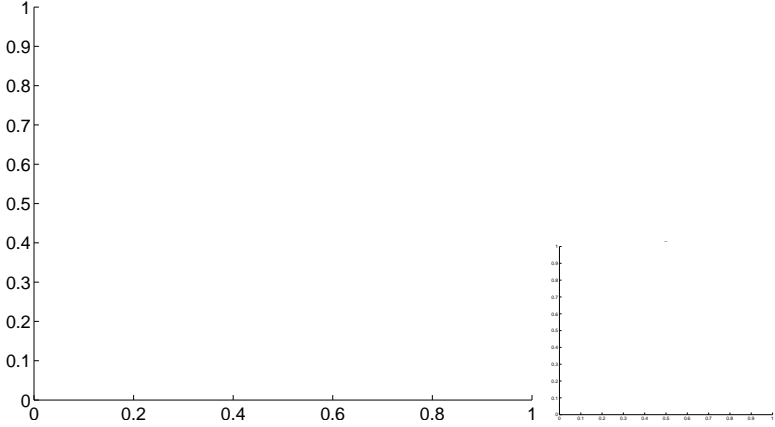
Q3 OOT image



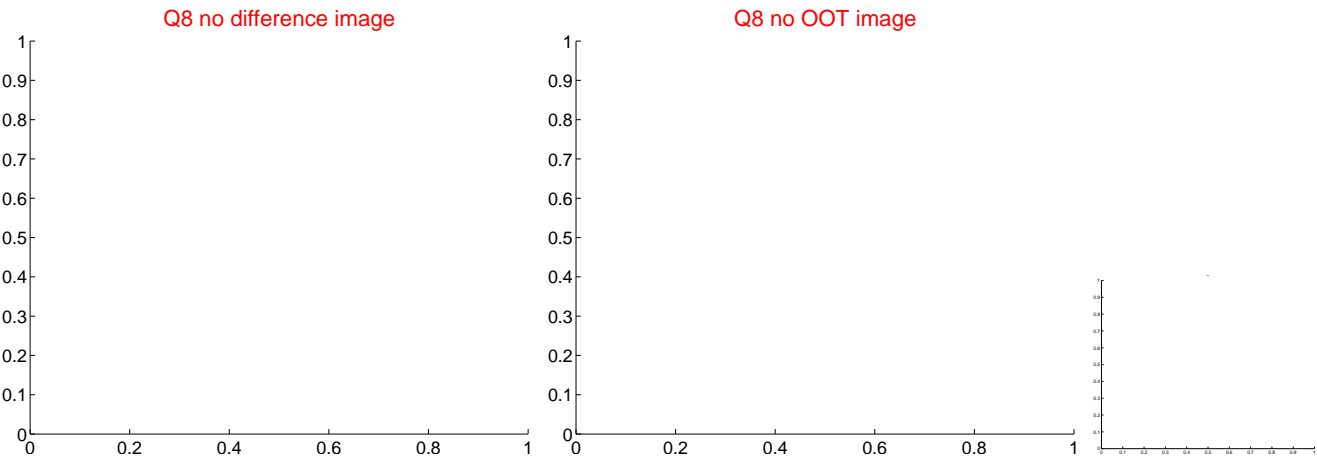
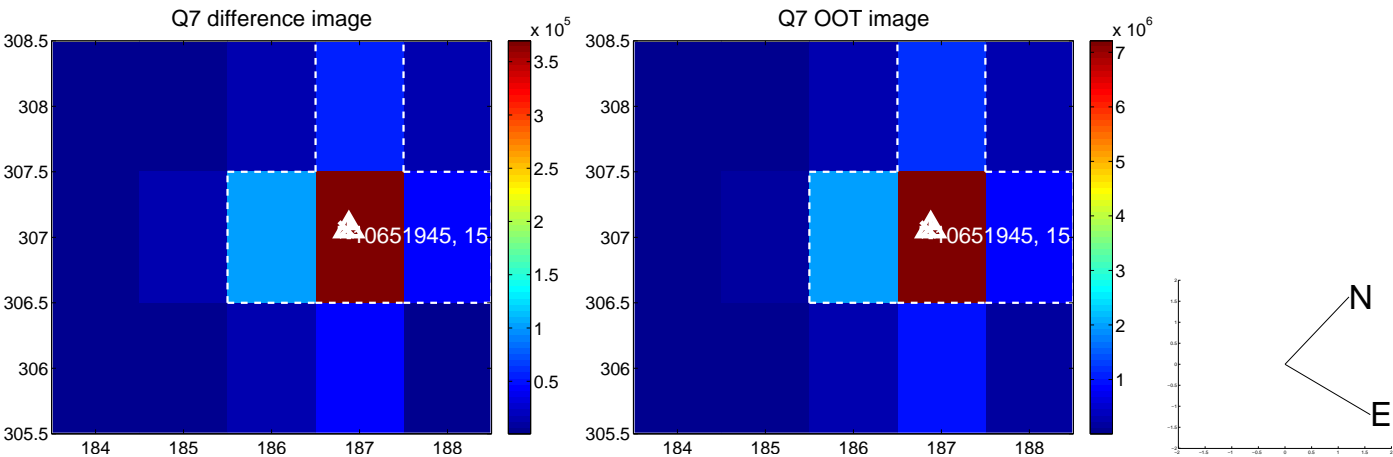
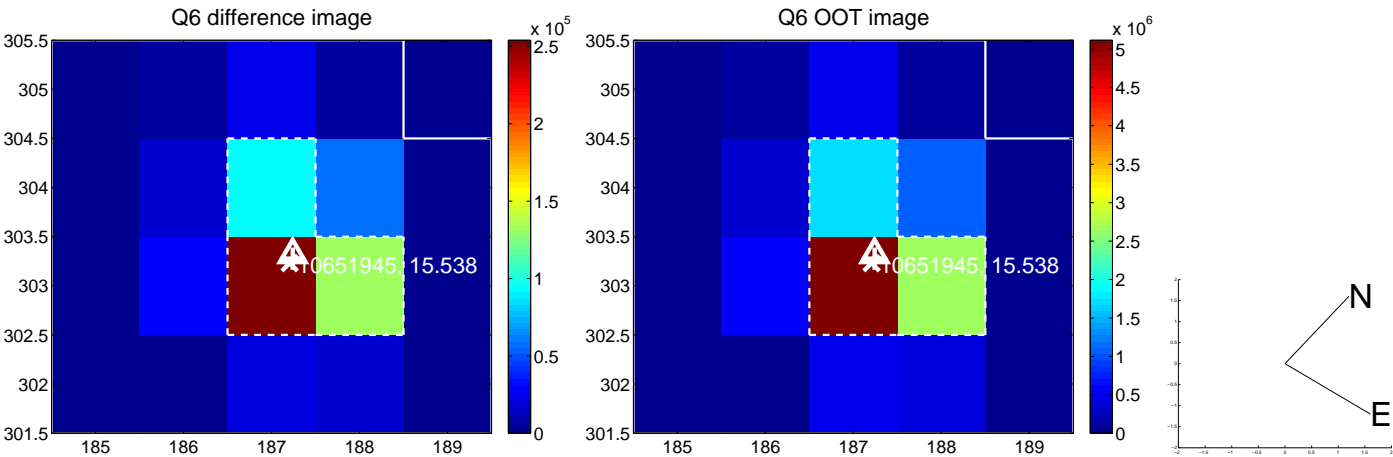
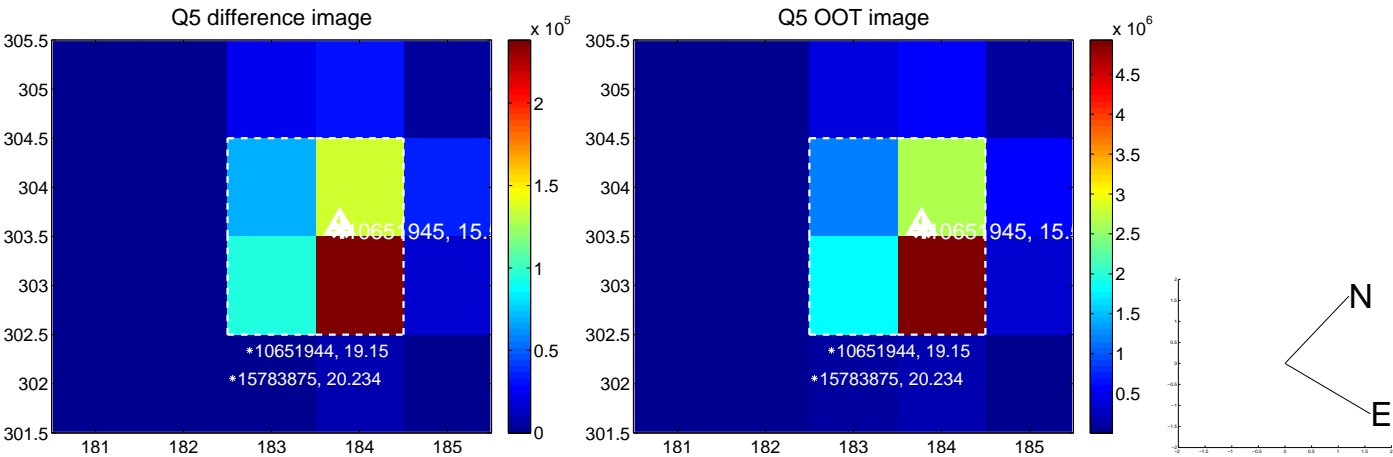
Q4 no difference image



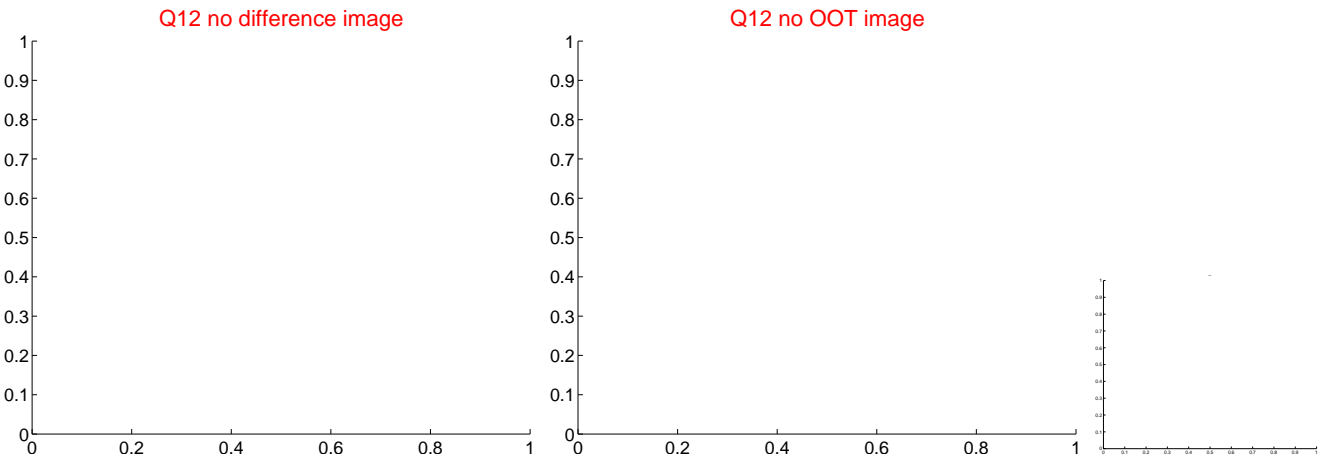
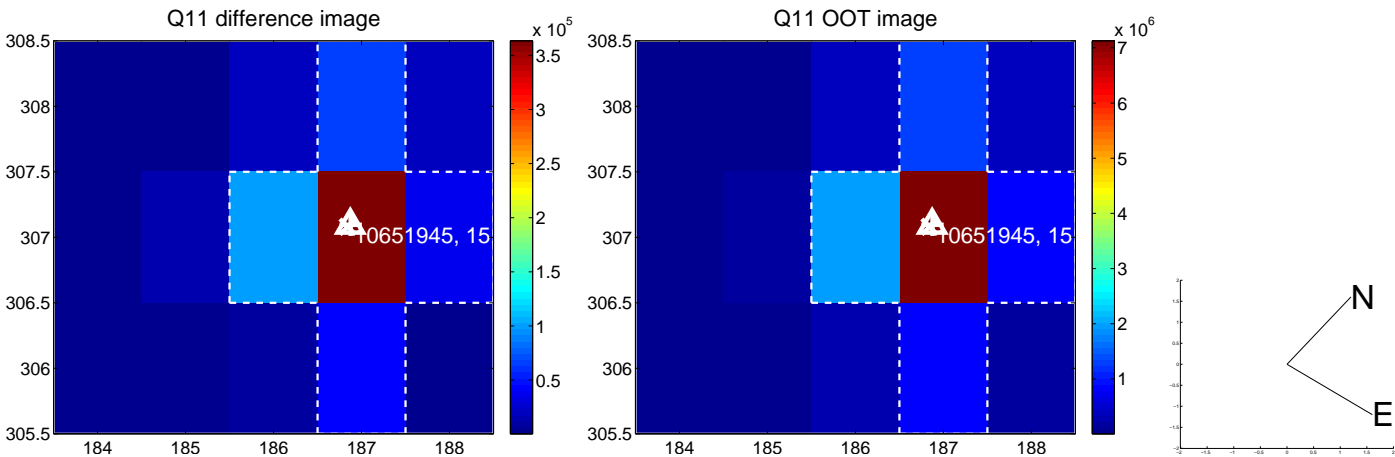
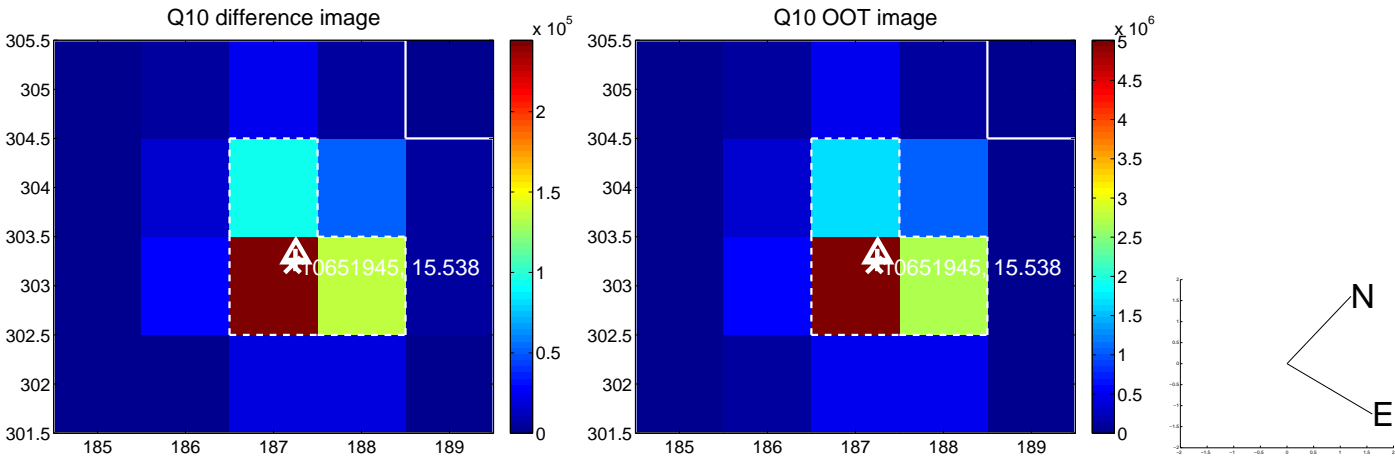
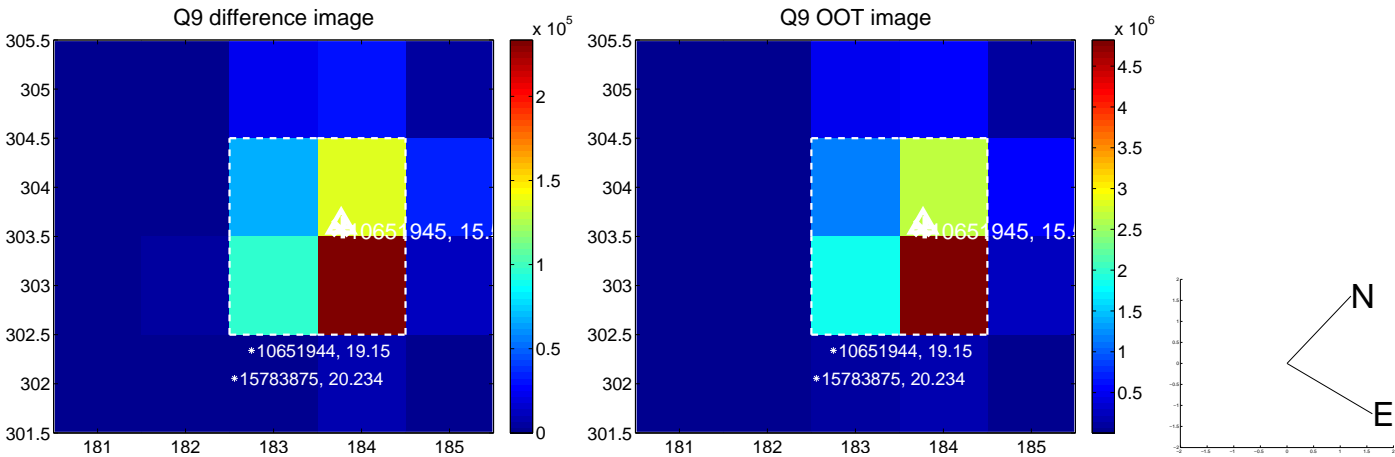
Q4 no OOT image



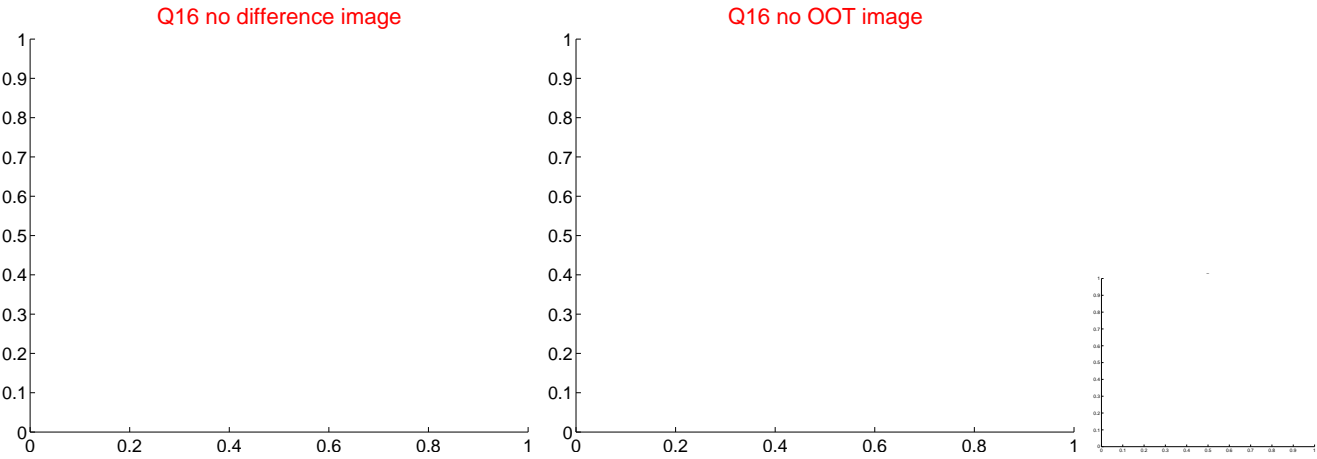
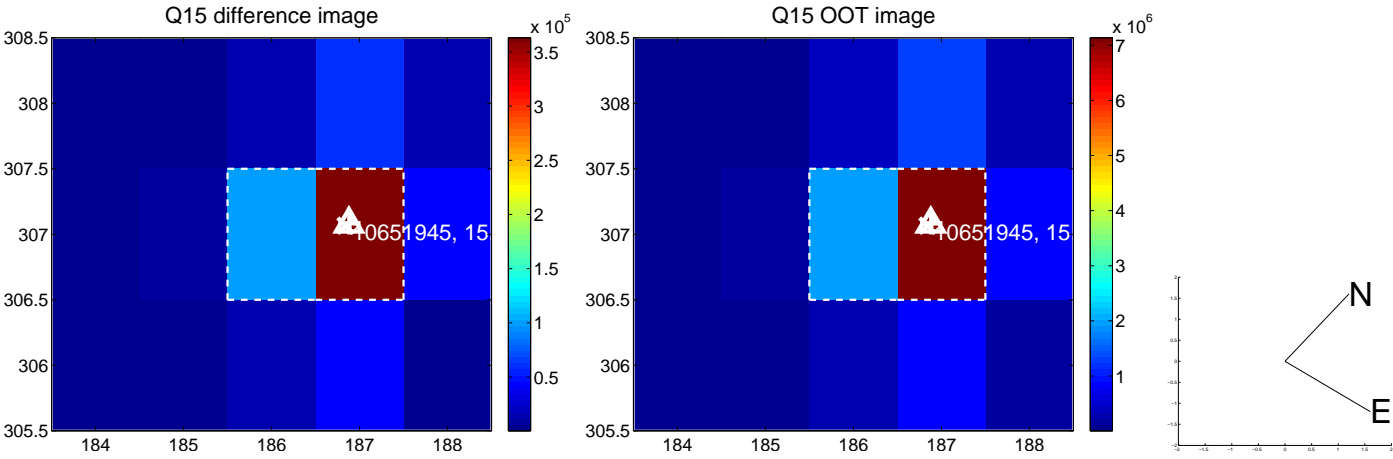
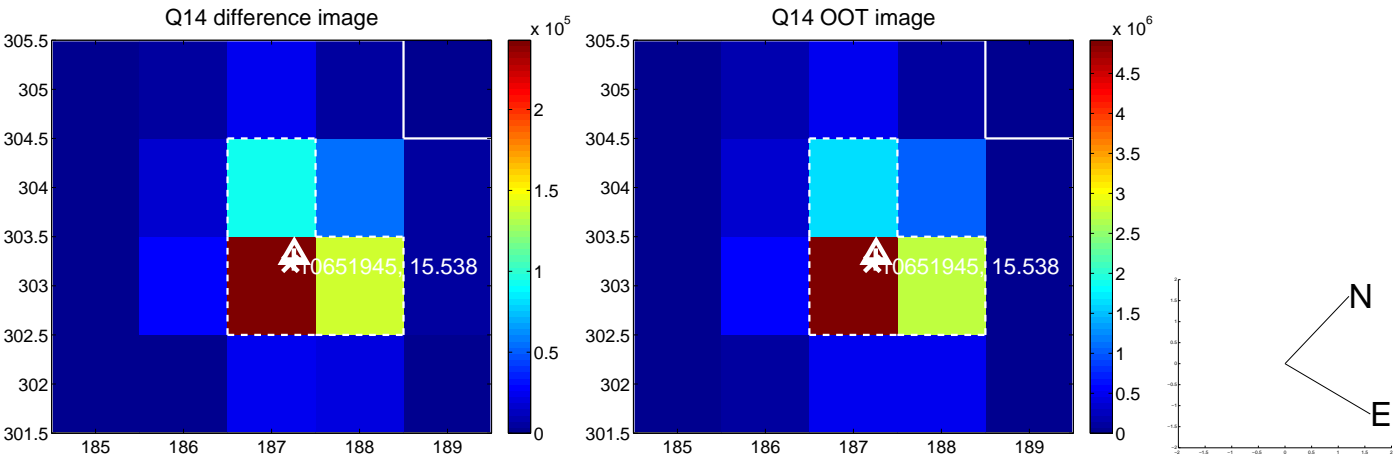
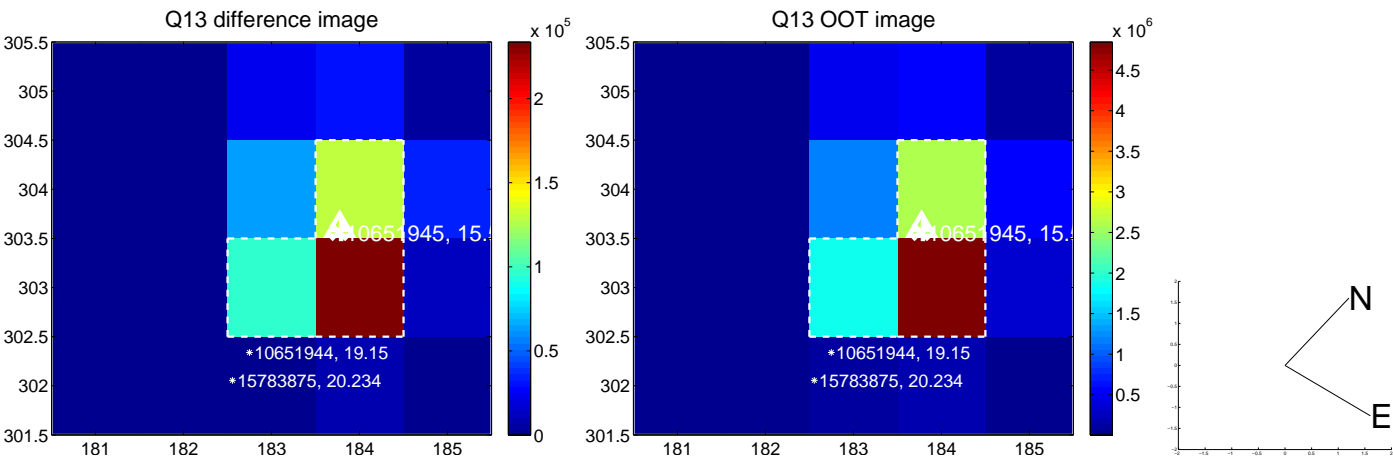
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



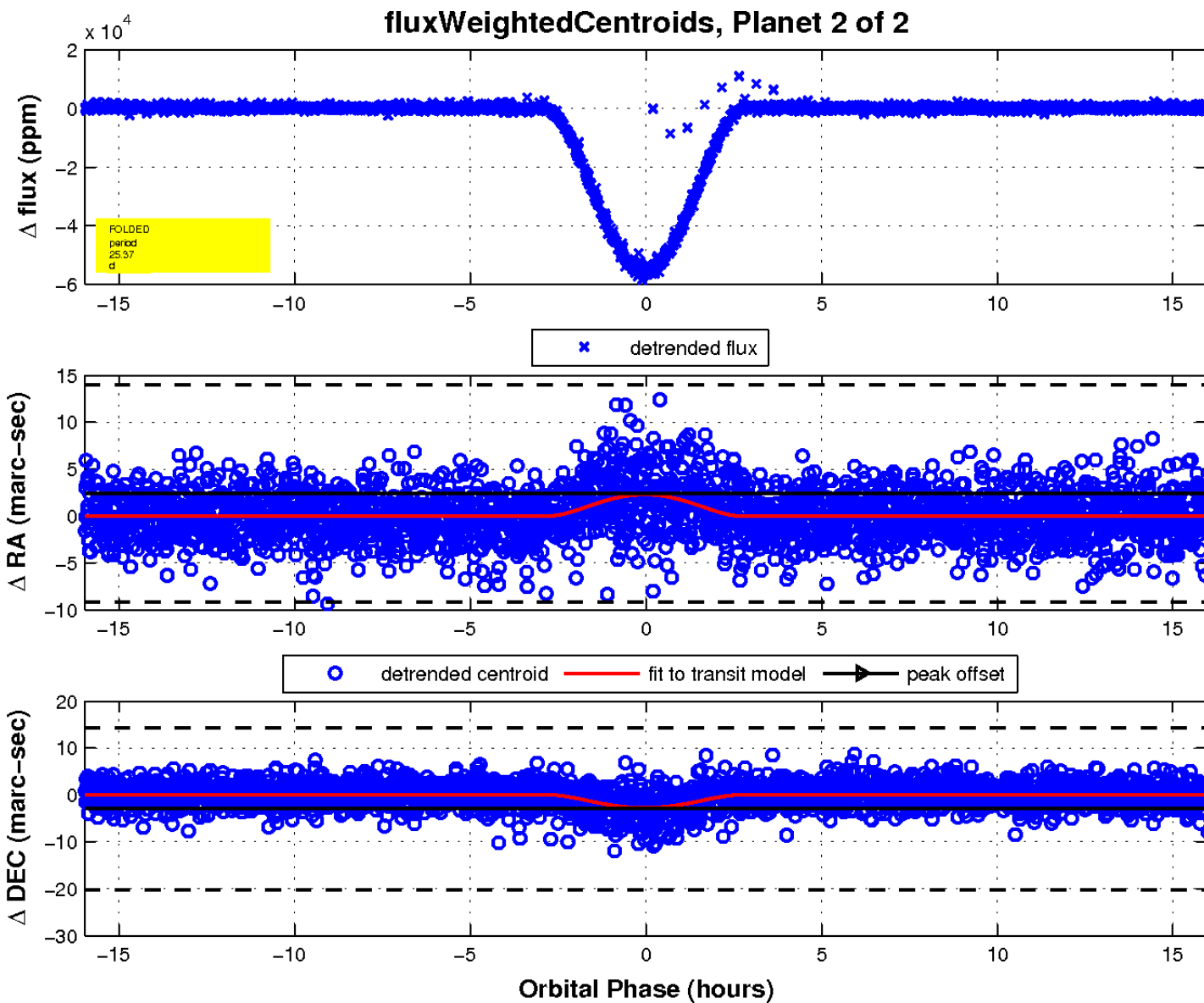
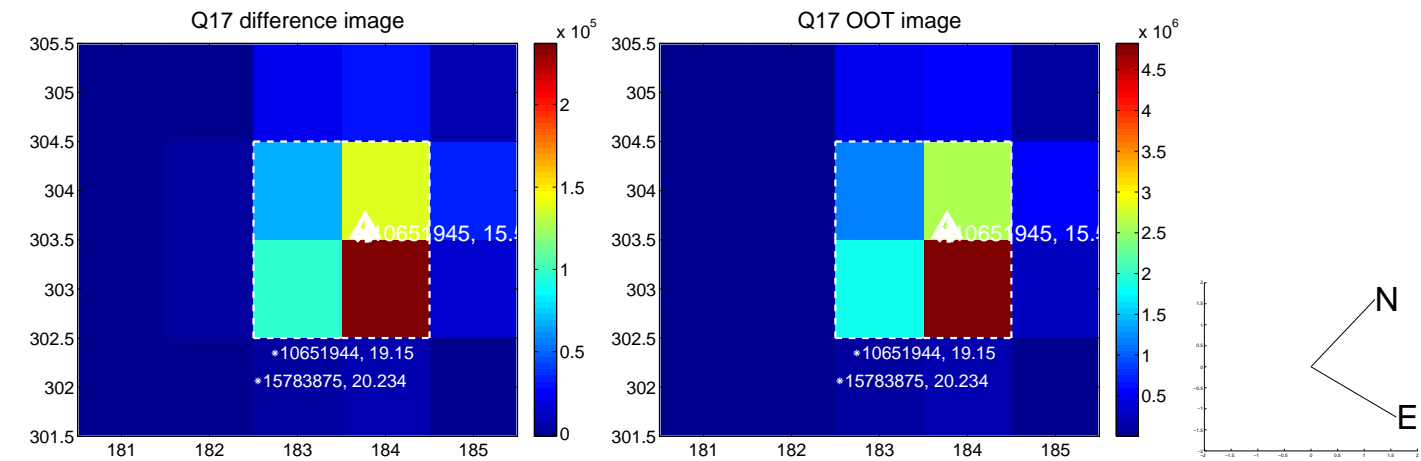
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

