

KIC 006776331

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})
006776331-01	OBS	No	292.385793	303.152697	4247.1	3.808	82.4	37.0	3.27	7870	22.48	31.42
006776331-02	OBS	No	292.543578	303.985293	5523.9	5.602	76.3	77.6	3.27	7870	28.80	31.40
006776331-03	OBS	No	194.125631	208.640872	341.5	10.500	41.4	-1.0	3.27	7870	6.08	54.25
006776331-04	OBS	No	114.349739	148.320840	1613.1	0.893	25.7	22.4	3.27	7870	20.40	109.86
006776331-05	OBS	No	145.058436	160.965149	637.4	12.173	28.2	21.4	3.27	7870	8.94	80.00

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006776331-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_ZUMA—LPP_DV—LPP_ALT—INCONSISTENT_TRANS—CENT_SATURATED
006776331-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_ZUMA_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED
006776331-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_ZUMA—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED
006776331-04	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED
006776331-05	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED

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

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

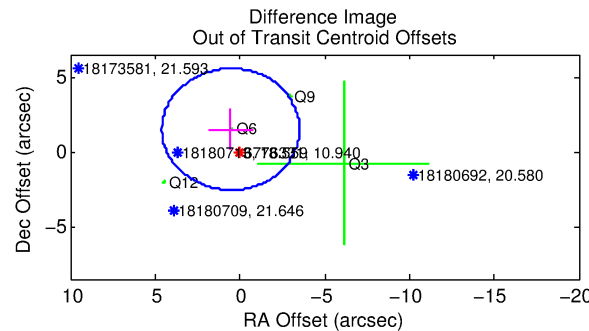
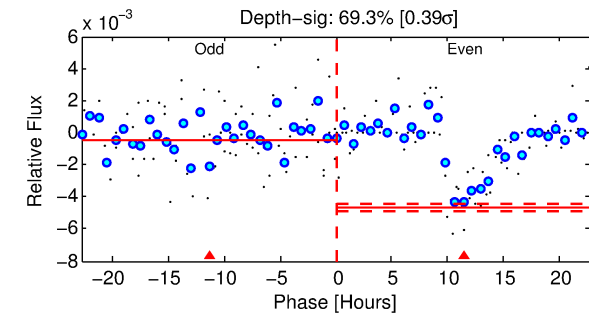
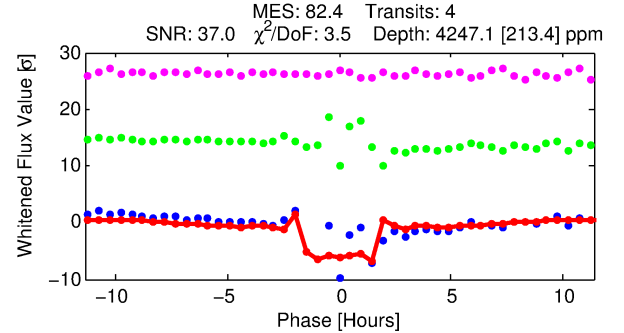
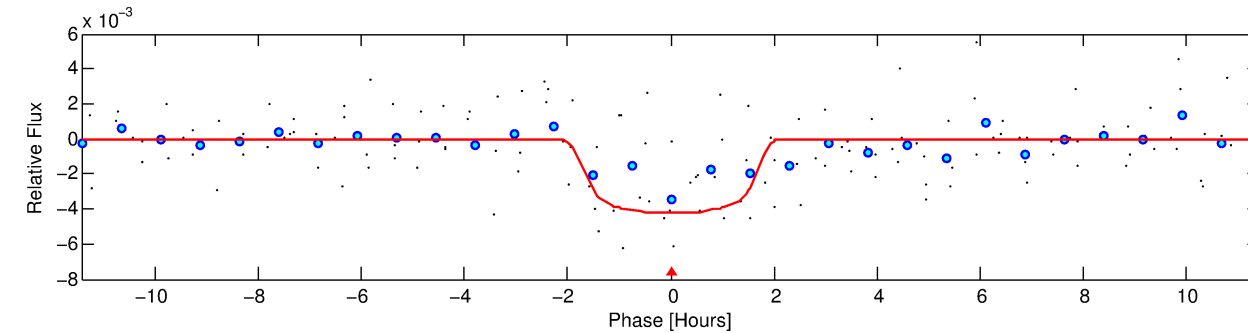
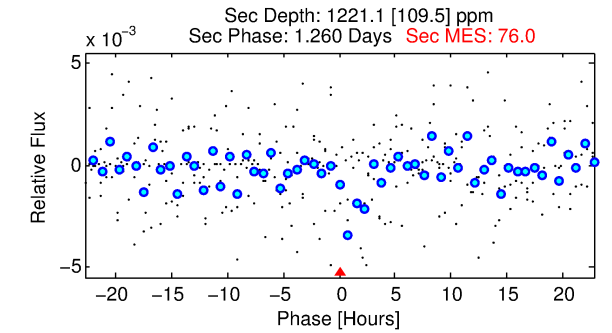
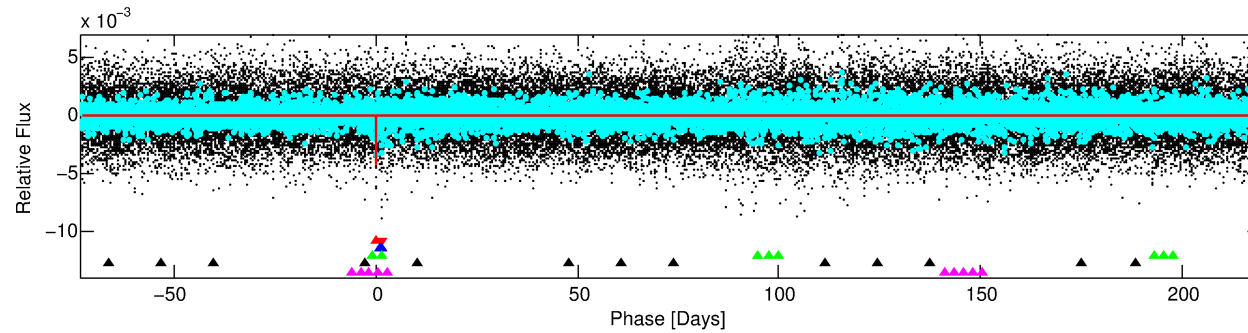
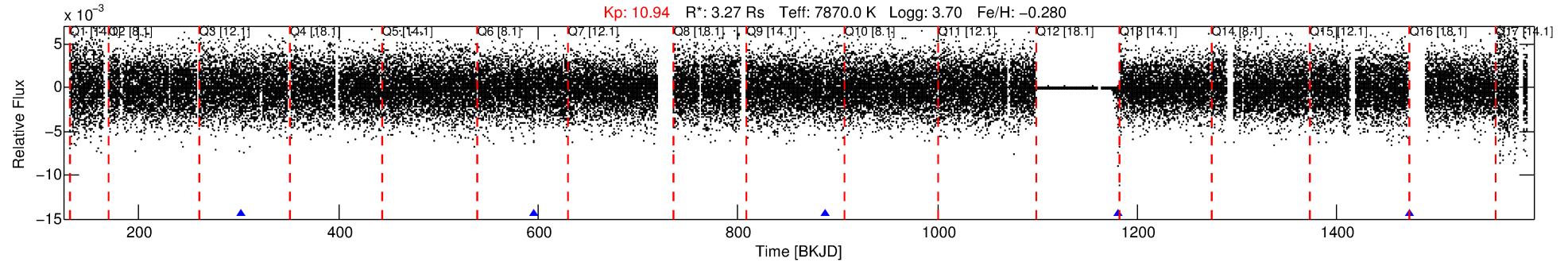
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 006776331-01

No Significant Match Found

DV One-Page Summary

KIC: 6776331 Candidate: 1 of 5 Period: 292.386 d



DV Fit Results:

Period = 292.38579 [0.00439] d
Epoch = 303.1527 [0.0132] BKJD
Rp/R* = 0.0630 [0.0111]
a/R* = 502.24 [454.41]
b = 0.63 [0.87]
Seff = 31.42 [25.17]
Teq = 604 [121] K
Rp = 22.48 [12.23] Re
a = 1.0815 [0.5320] AU
Ag = 1555.43 [1343.64] [1.16 σ]
Teffp = 5862 [585] K [8.81 σ]

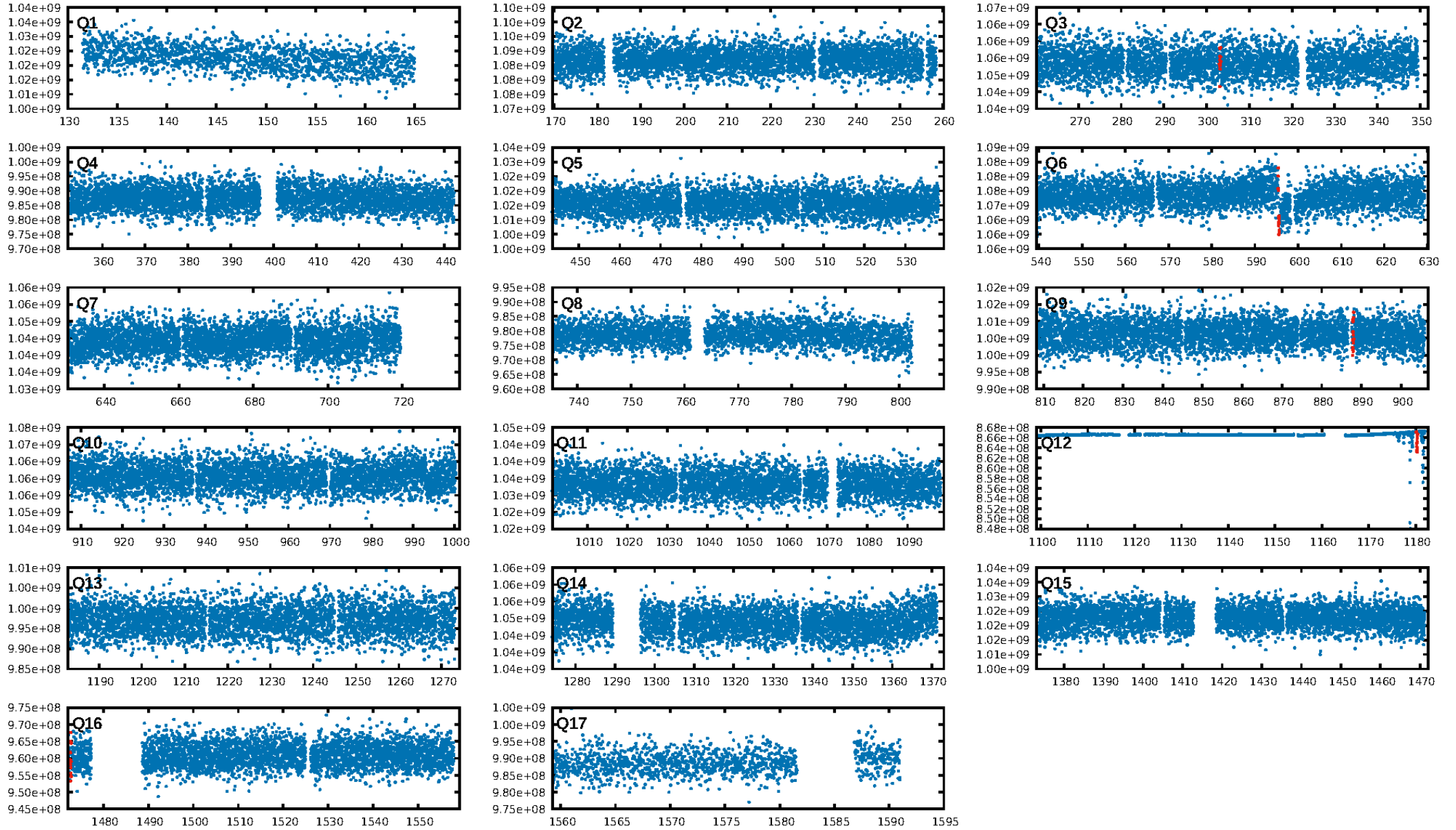
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [211.14 σ]
LongPeriod-sig: 42.4% [0.56 σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 0.0%
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: -3.517
Centroid-sig: 9.4%
Centroid-so: 0.104 arcsec [1.11 σ]
OotOffset-rm: 1.590 arcsec [1.18 σ]
OotOffset-st: 1/1/1/1 [4]
KicOffset-rm: 2.129 arcsec [1.57 σ]
KicOffset-st: 1/1/1/1 [4]
DiffImageQuality-fgm: 0.25 [1/4]
DiffImageOverlap-fno: 0.75 [3/4]

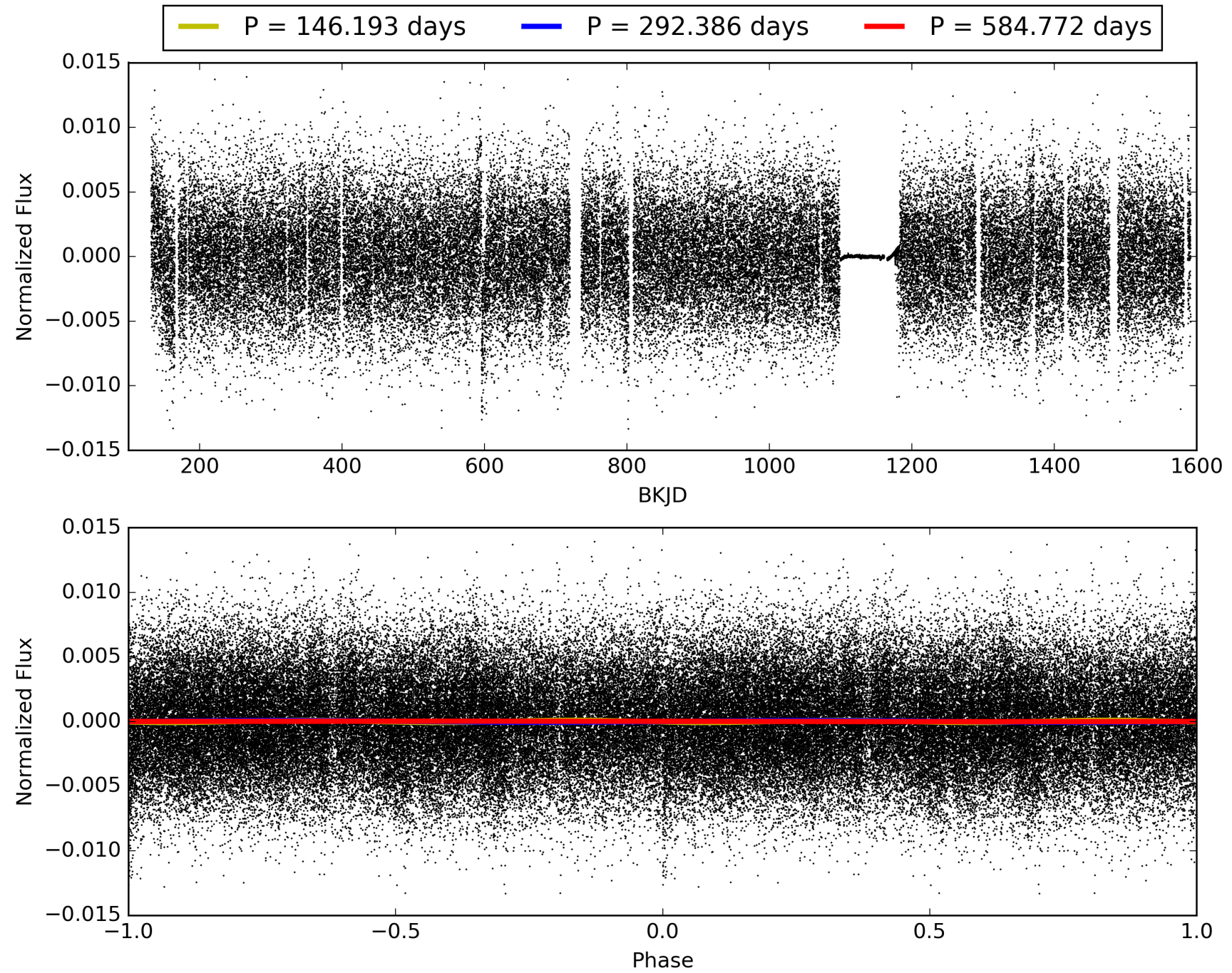
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 05:08:30 Z

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

TCE 006776331-01, PDC Light Curves

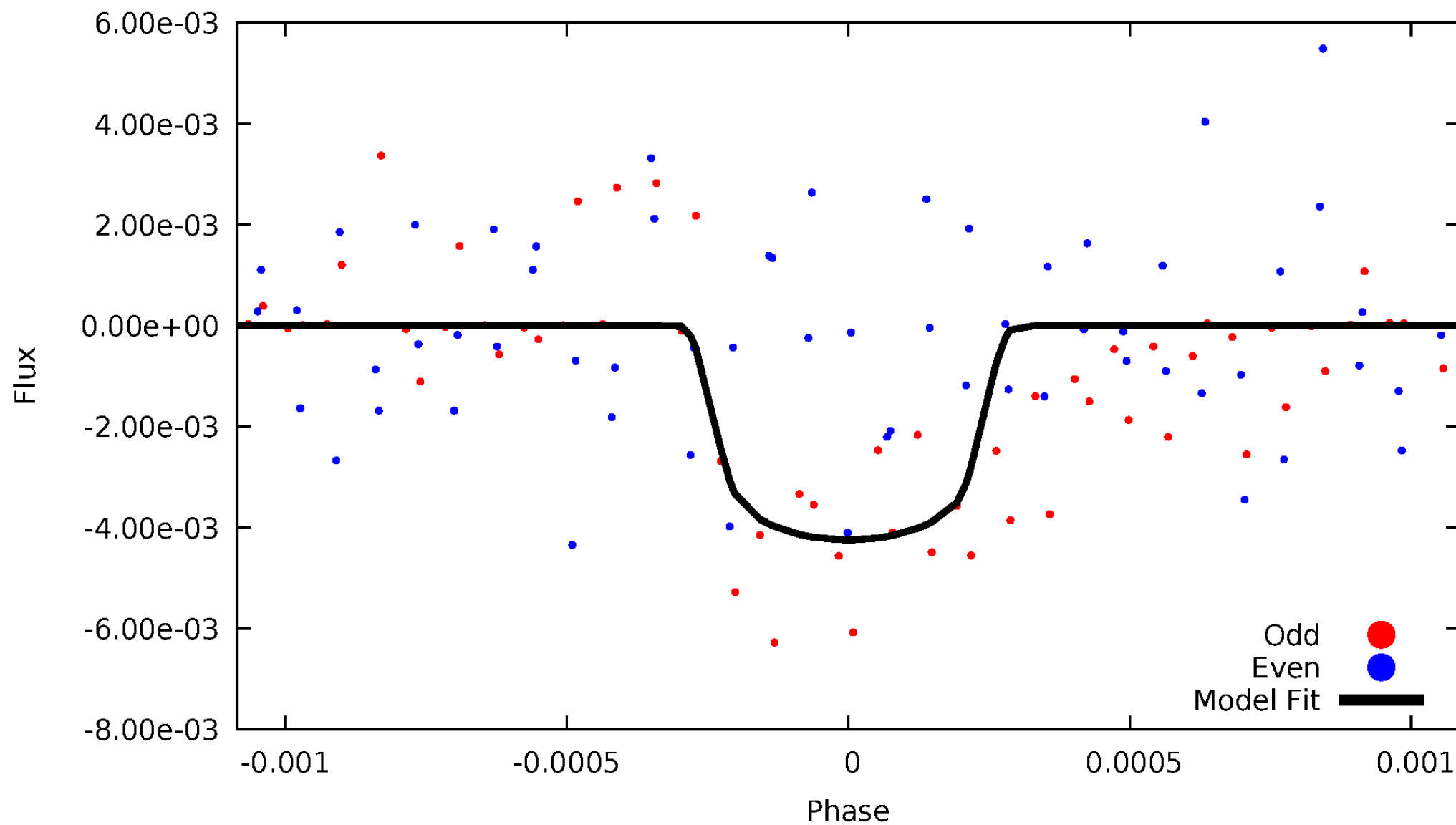


TCE 006776331-01



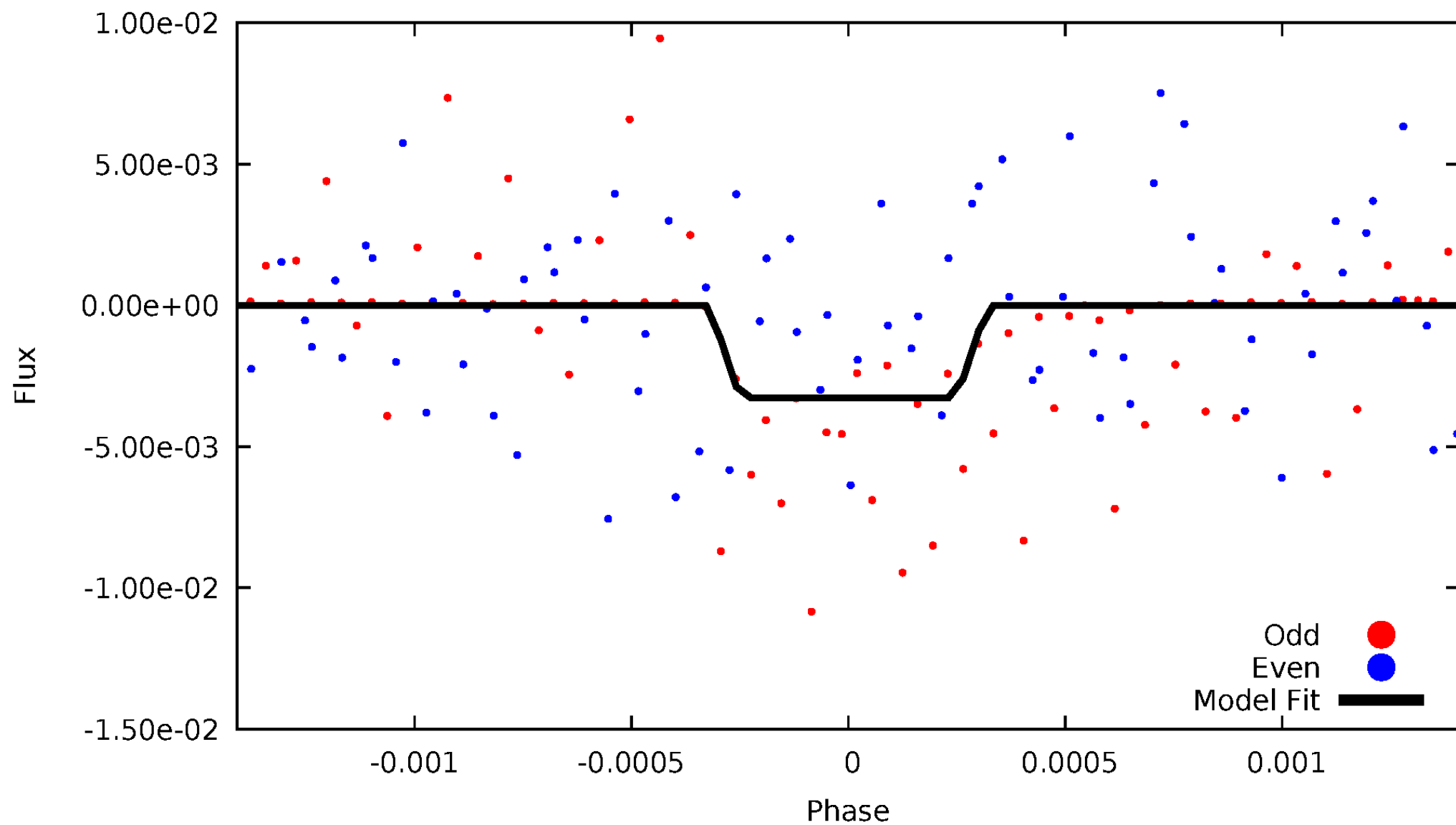
DV Odd/Even

TCE 006776331-01

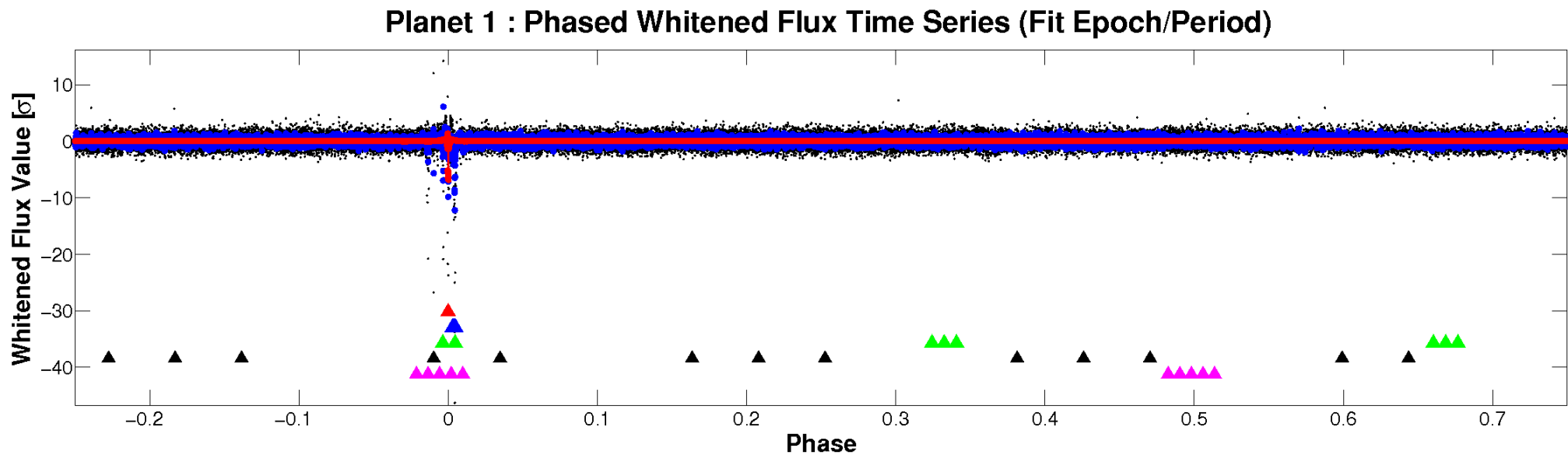
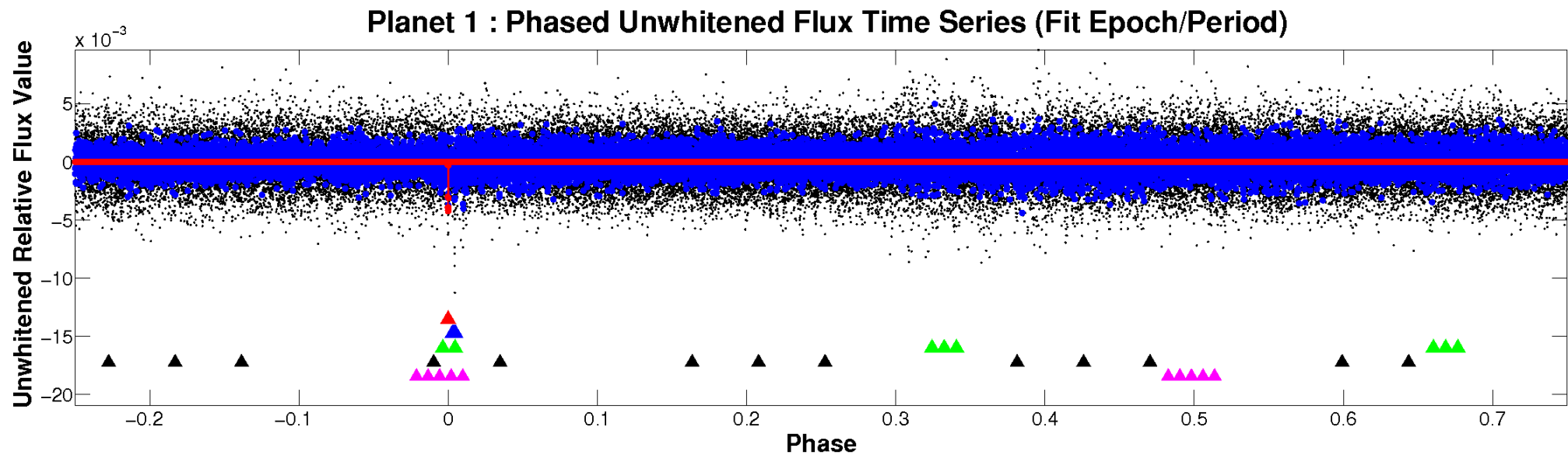


ALT Odd/Even

TCE 006776331-01

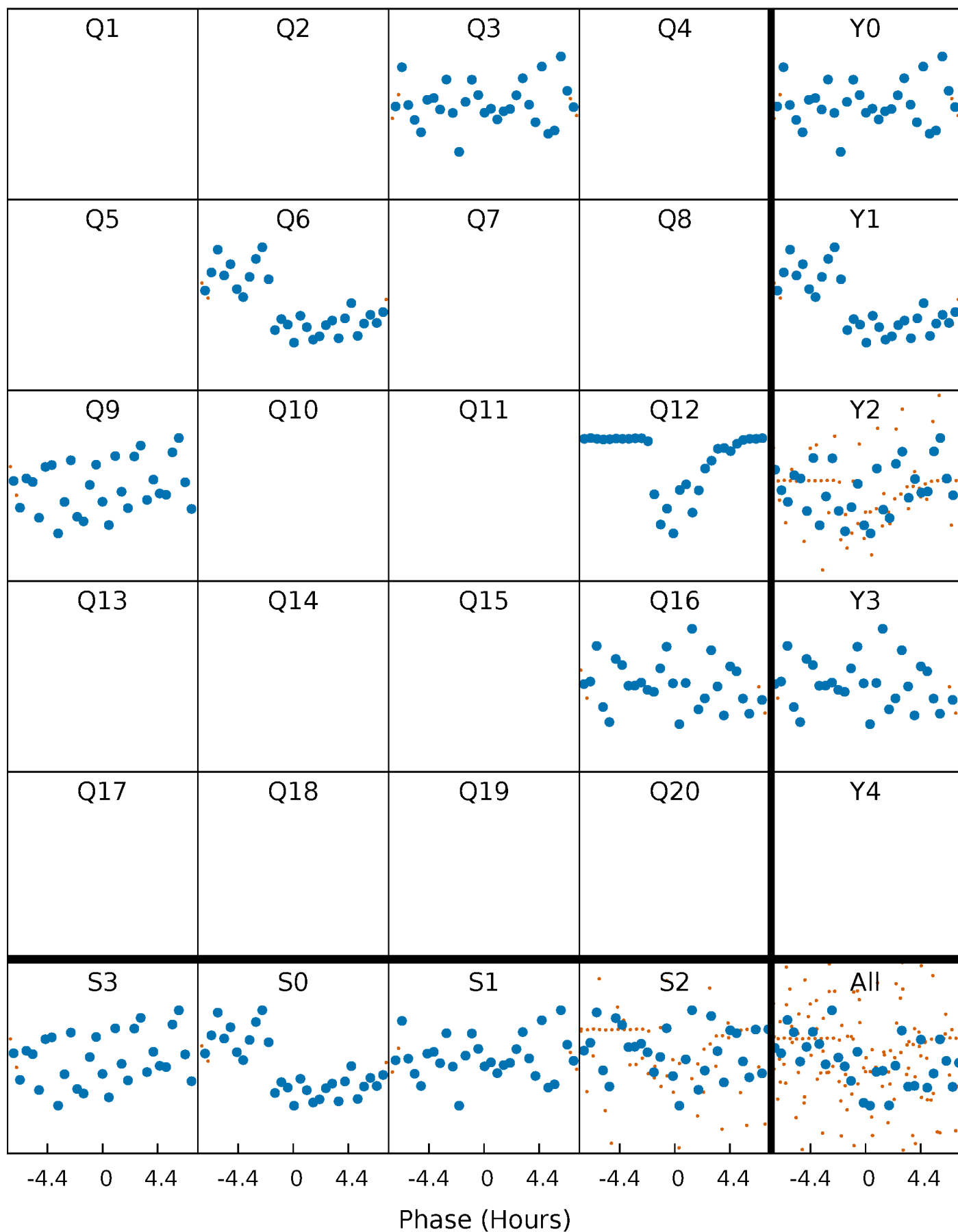


Non-Whitened Vs. Whitened Light Curve



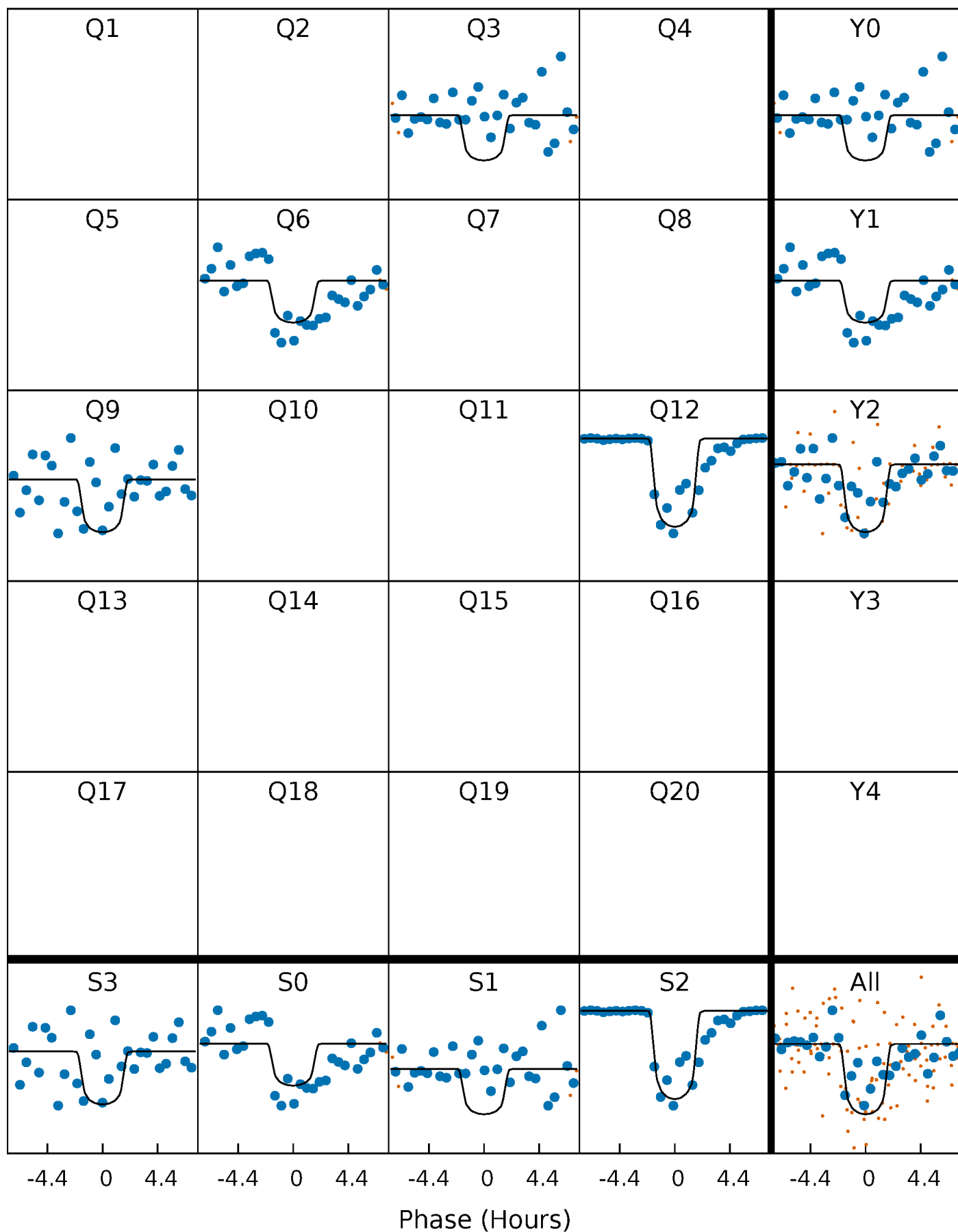
PDC Quarter-Phased Transit Curves

TCE 006776331-01 P=292.385793 Days $T_0=303.152697$ (BKJD)



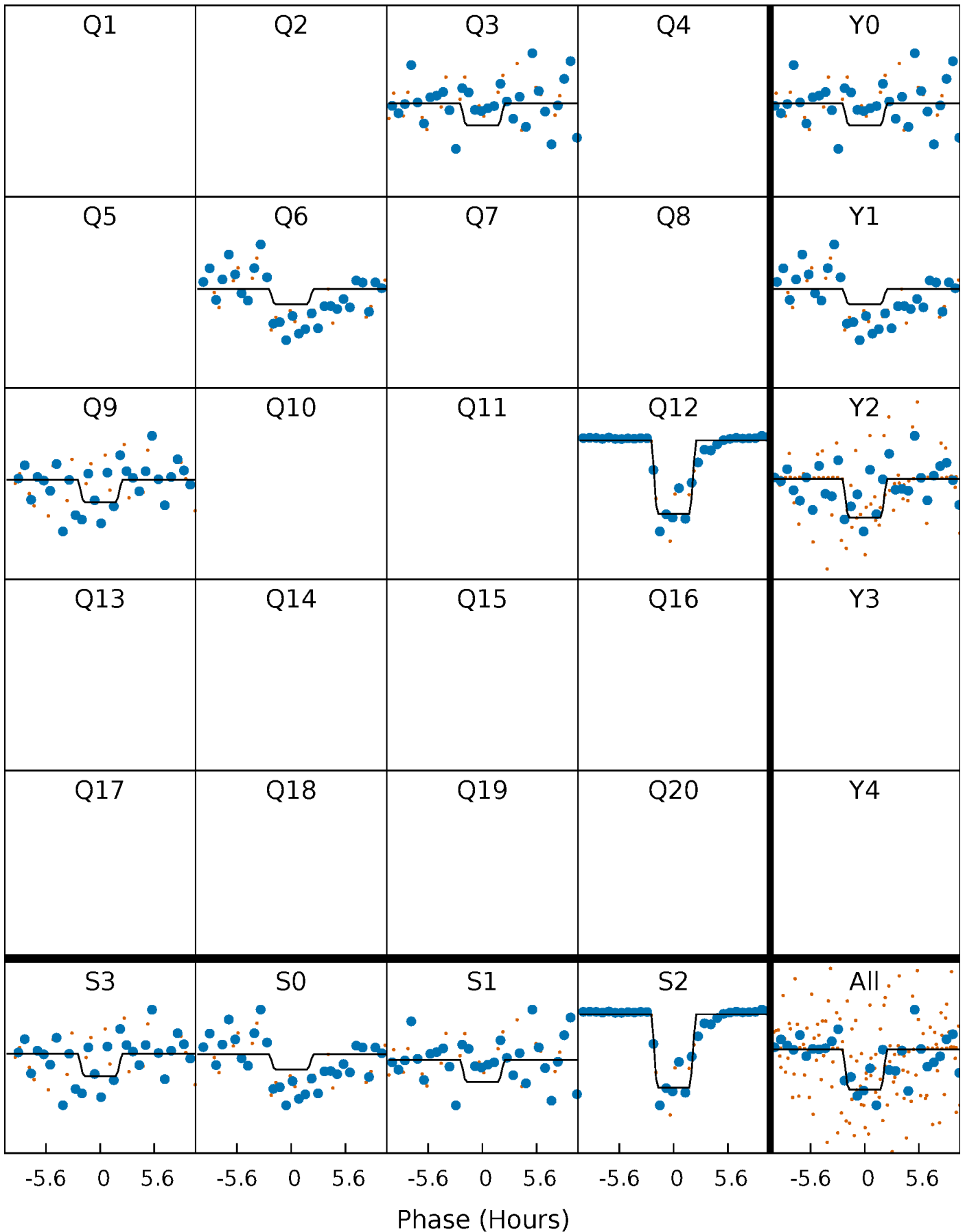
DV Quarter-Phased Transit Curves

TCE 006776331-01 P=292.385793 Days $T_0=303.152697$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

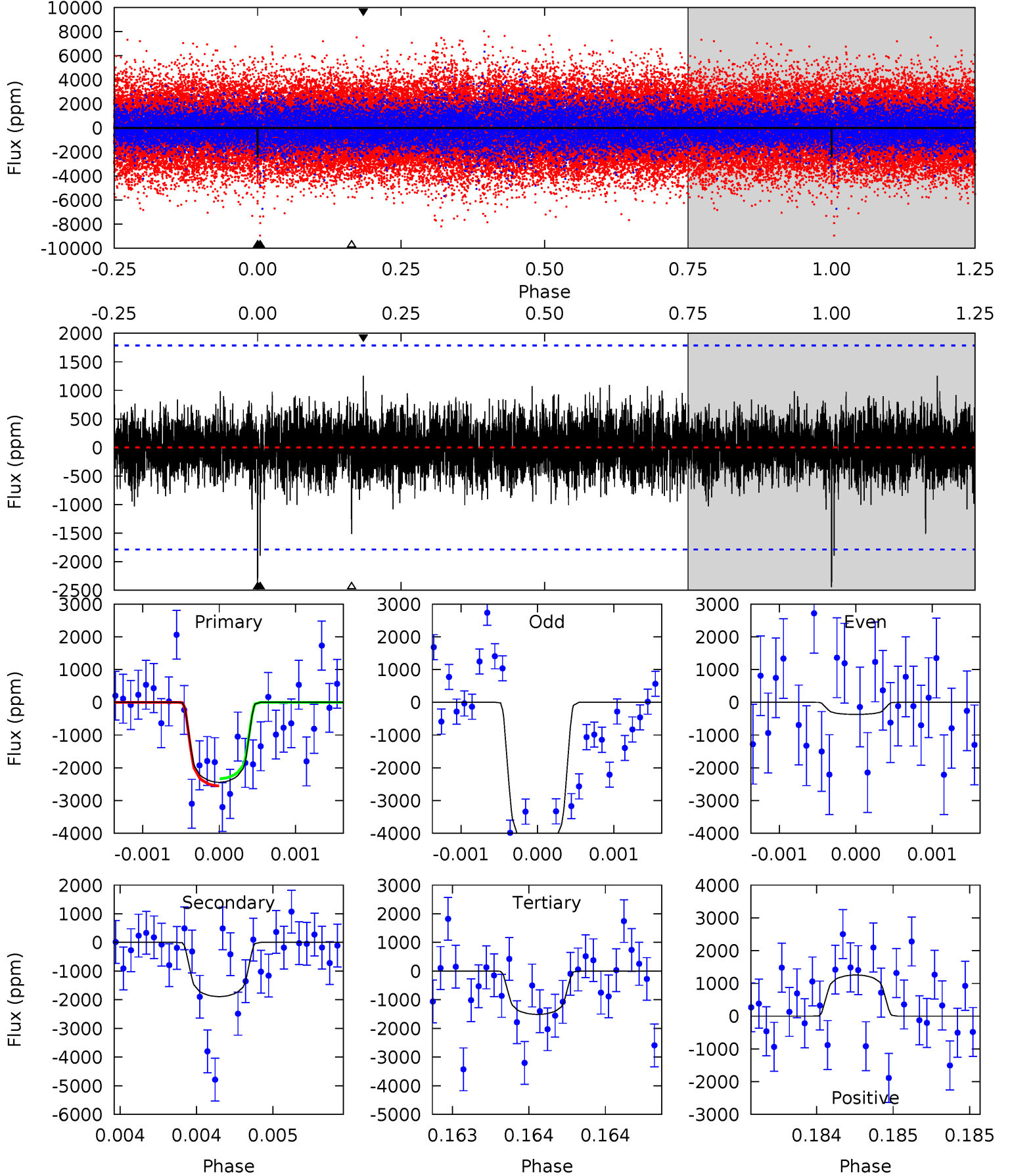
TCE 006776331-01 P=292.376999 Days $T_0=303.188782$ (BKJD)



DV Model-Shift Uniqueness Test

006776331-01, P = 292.385793 Days, E = 10.766904 Days

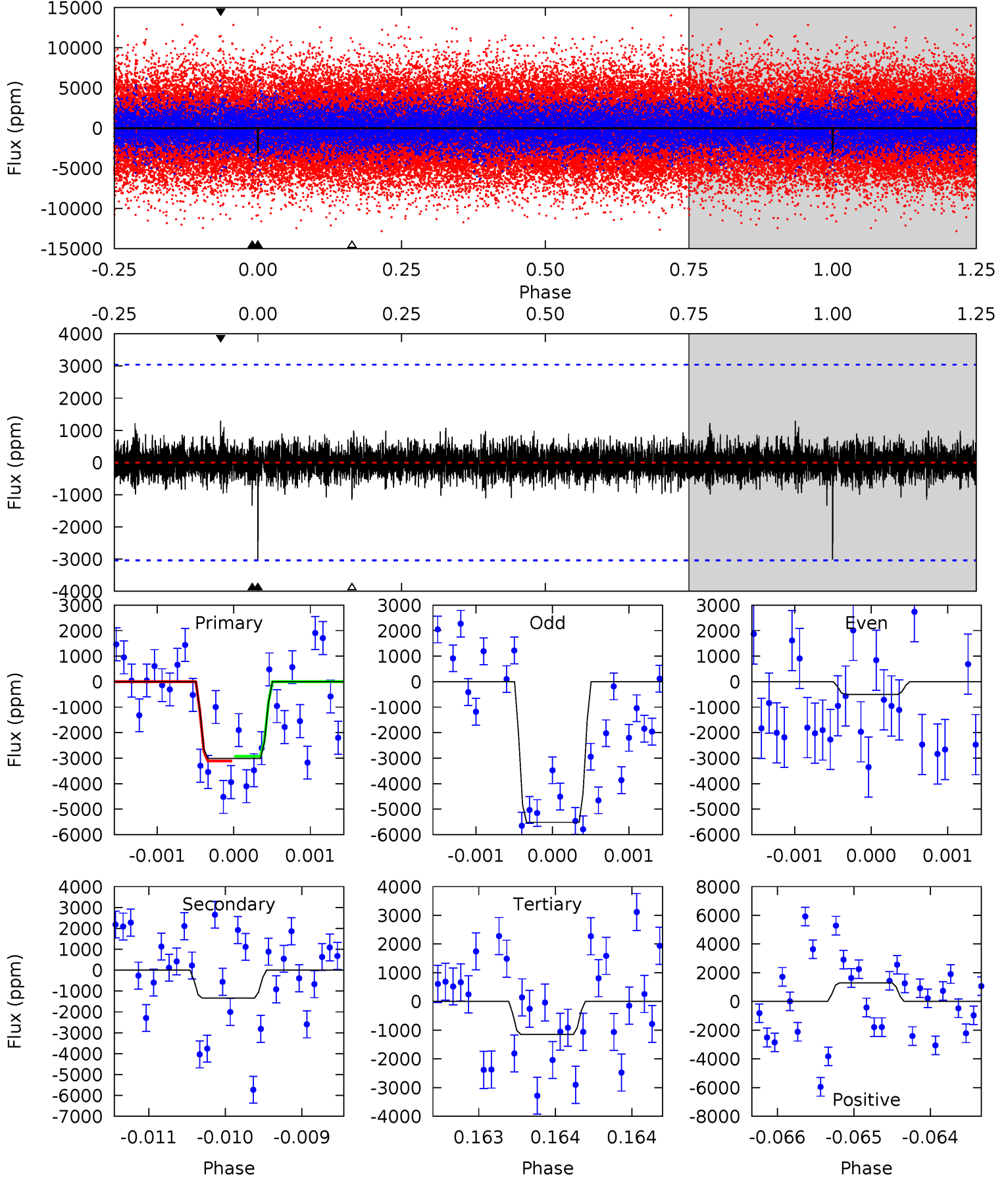
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.58	5.86	4.69	3.90	5.54	3.43	0.97	2.89	3.68	1.17	1.96	6.53	1.00	0.34	0.34



Alt Model-Shift Uniqueness Test

006776331-01, $P = 292.376999$ Days, $E = 10.811783$ Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.47	2.42	2.09	2.35	5.52	3.40	0.51	3.38	3.12	0.34	0.07	4.58	1.29	0.30	0.17



Stellar Parameters For KIC 006776331

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	7870^{+244}_{-325}	$3.704^{+0.459}_{-0.081}$	$-0.280^{+0.200}_{-0.300}$	$3.270^{+0.396}_{-1.684}$	$1.976^{+0.208}_{-0.555}$	$0.080^{+0.362}_{-0.021}$
	+3%/-4%	+12%/-2%	+71%/-107%	+12%/-51%	+11%/-28%	+455%/-26%
Source	KIC0	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 006776331-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-1890 ± 322	$20.80^{+5.44}_{-6.12}$	819^{+56}_{-105}	6380^{+806}_{-593}	2860^{+2660}_{-1126}
Alt.	-1335 ± 551	$18.72^{+5.28}_{-5.33}$	818^{+59}_{-100}	6046^{+974}_{-870}	2385^{+2538}_{-1300}

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

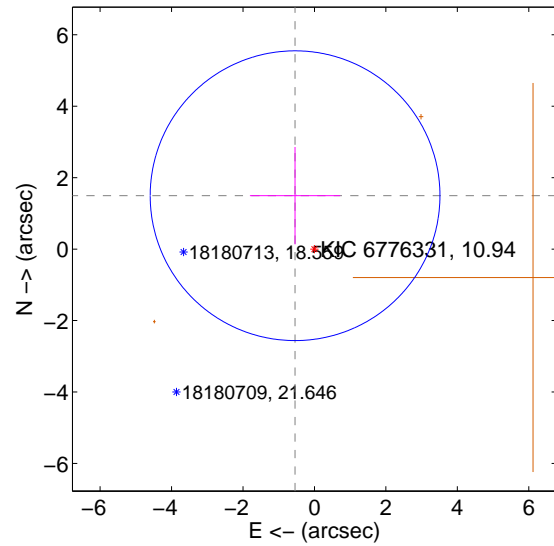
Supplemental centroid analysis for 006776331-01. **Kepler magnitude: 10.94.** Transit SNR 37.03

There are 1 quarters with good PRF difference image offsets

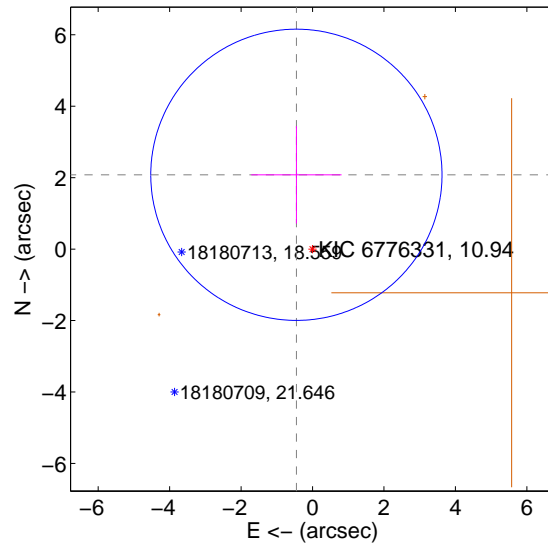
The direct PRF centroid is offset from the target star catalog position by about 0.27 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.590 ± 1.352	1.18	0.542 ± 1.264	1.495 ± 1.363
PRF-fit source offset from KIC position	2.129 ± 1.359	1.57	0.452 ± 1.264	2.081 ± 1.363
photometric centroid source offset	0.10 ± 0.09	1.11	0.09 ± 0.09	0.06 ± 0.11

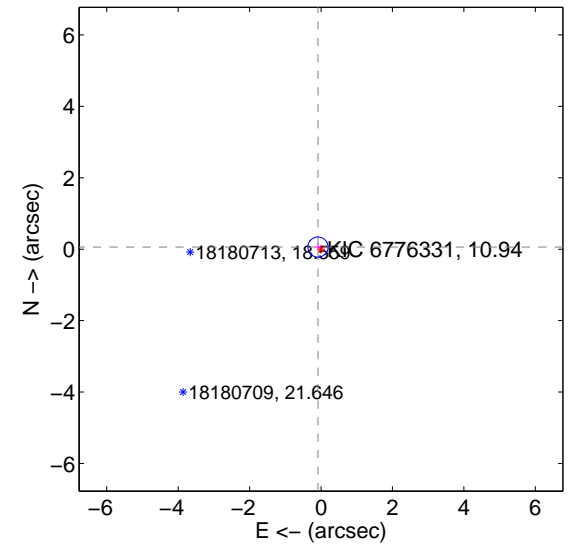
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

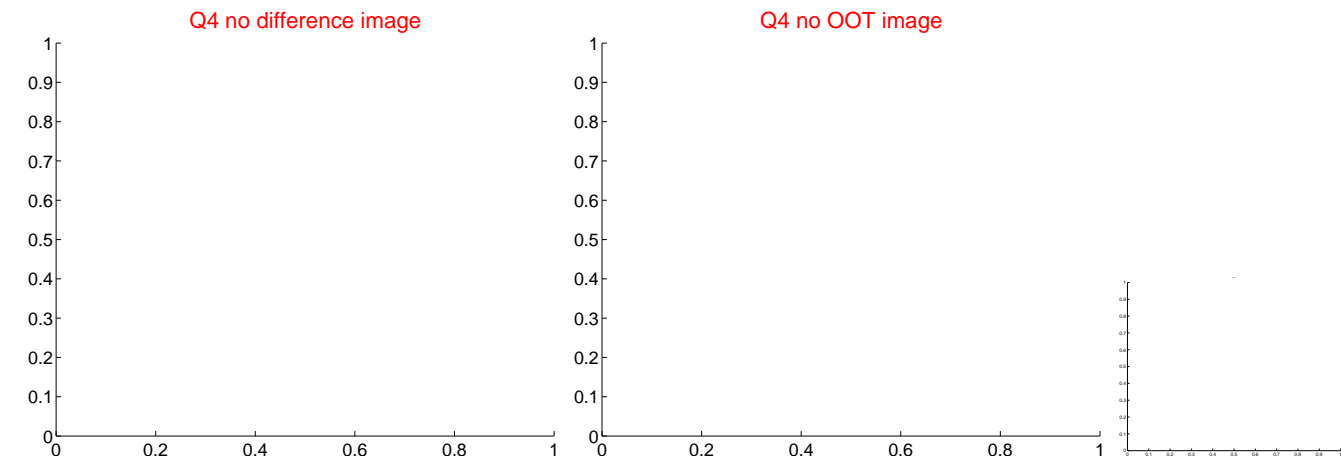
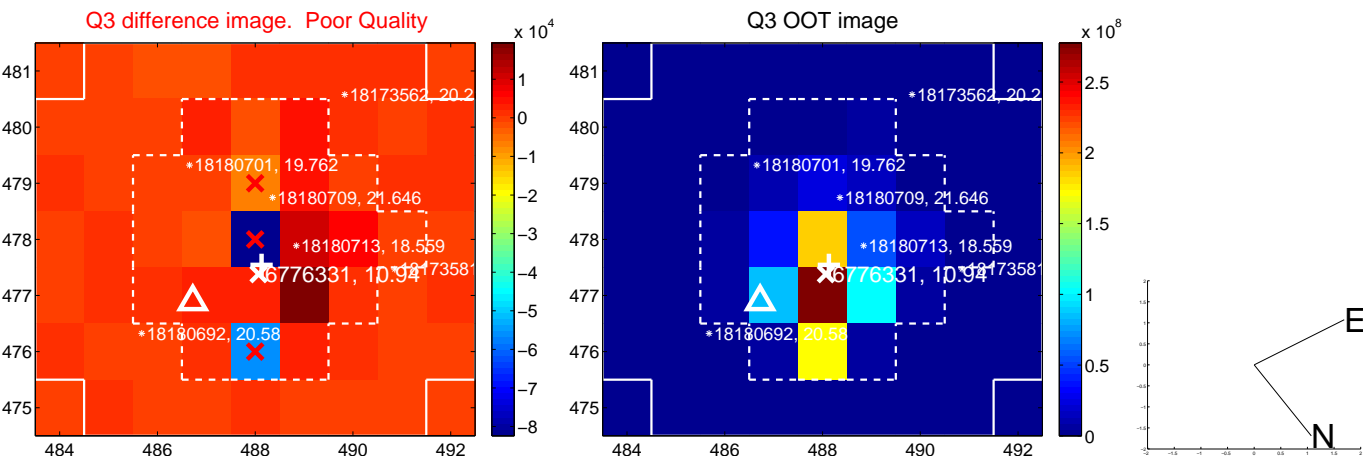


offset from photometric centroids



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.

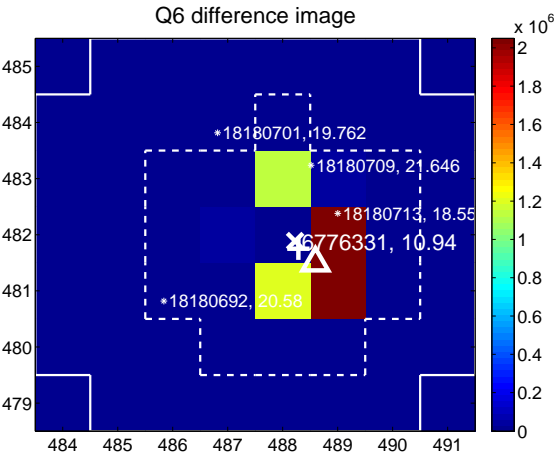
Q5 no difference image



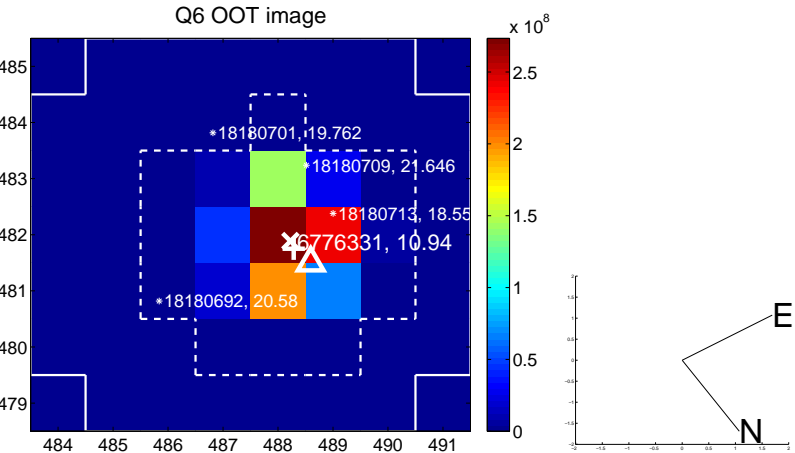
Q5 no OOT image



Q6 difference image



Q6 OOT image



Q7 no difference image



Q7 no OOT image



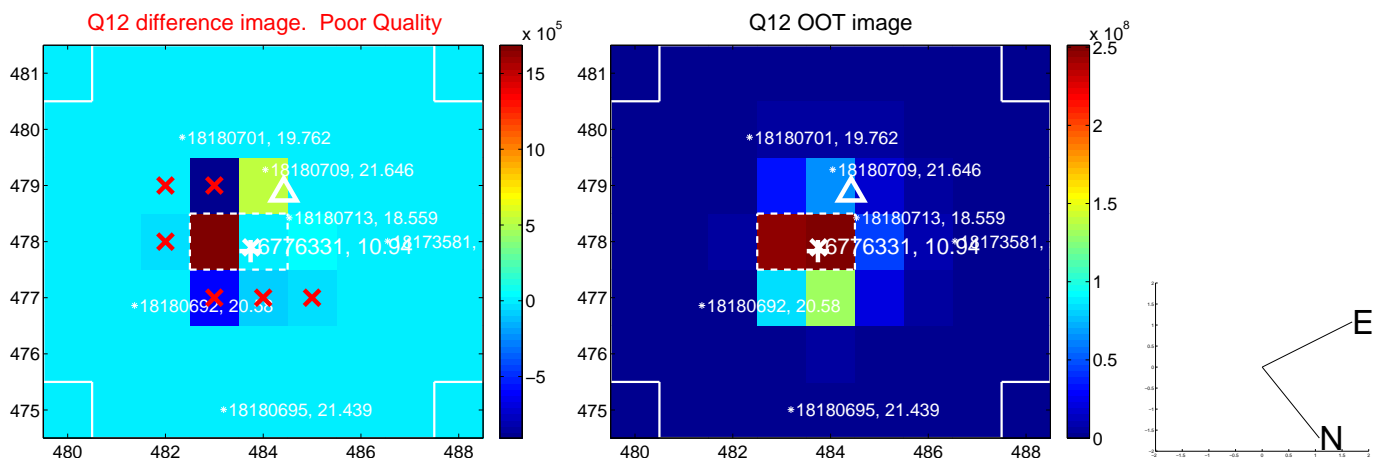
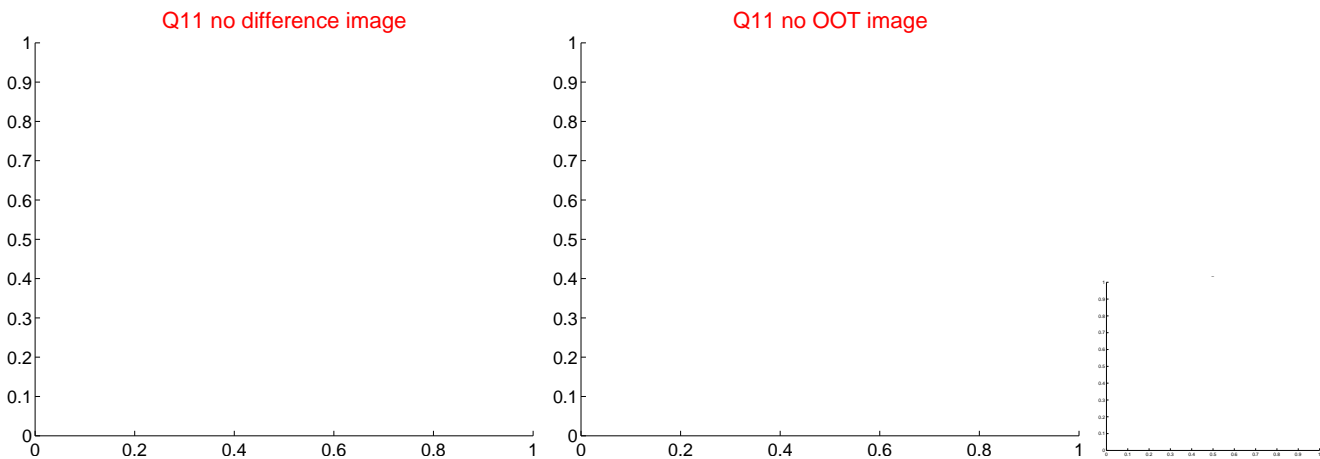
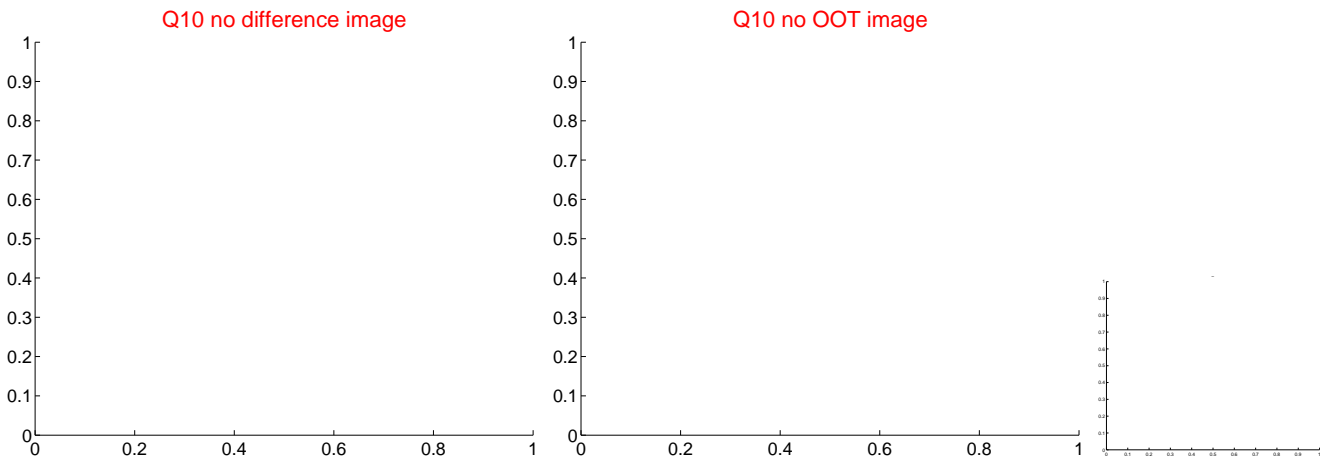
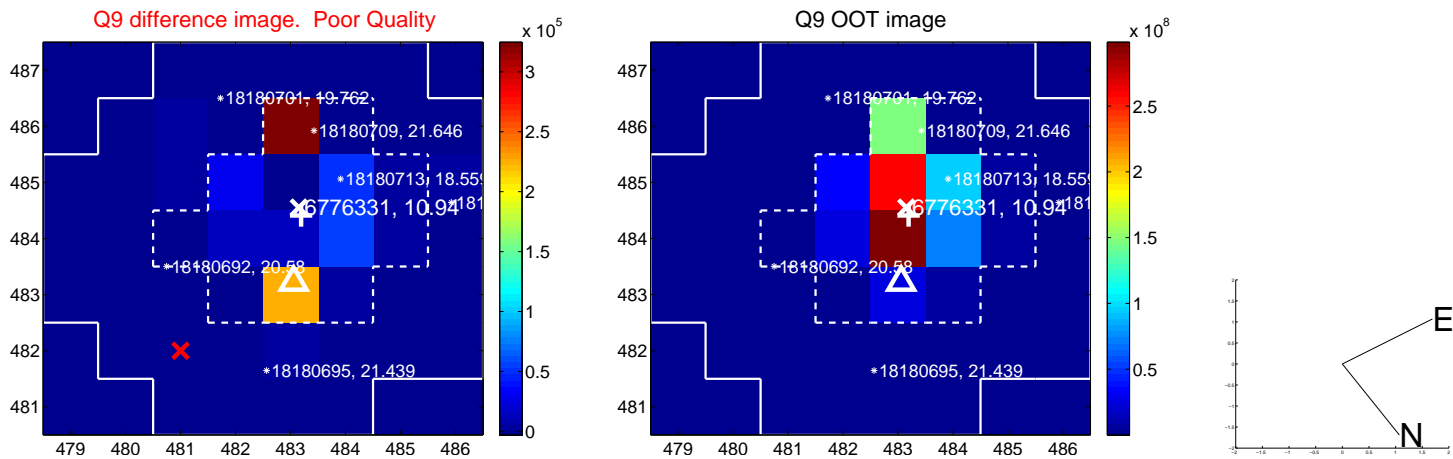
Q8 no difference image



Q8 no OOT image



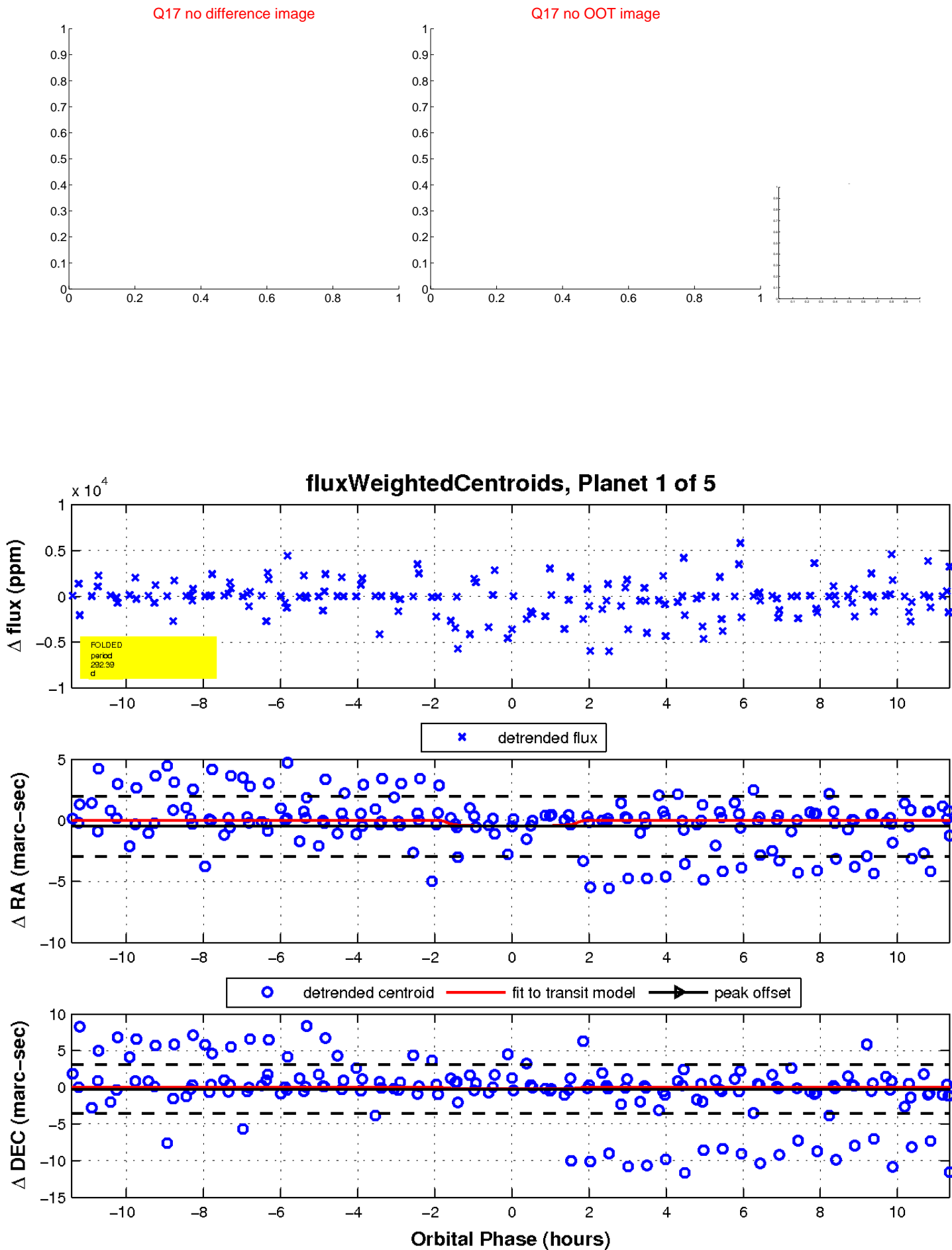
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

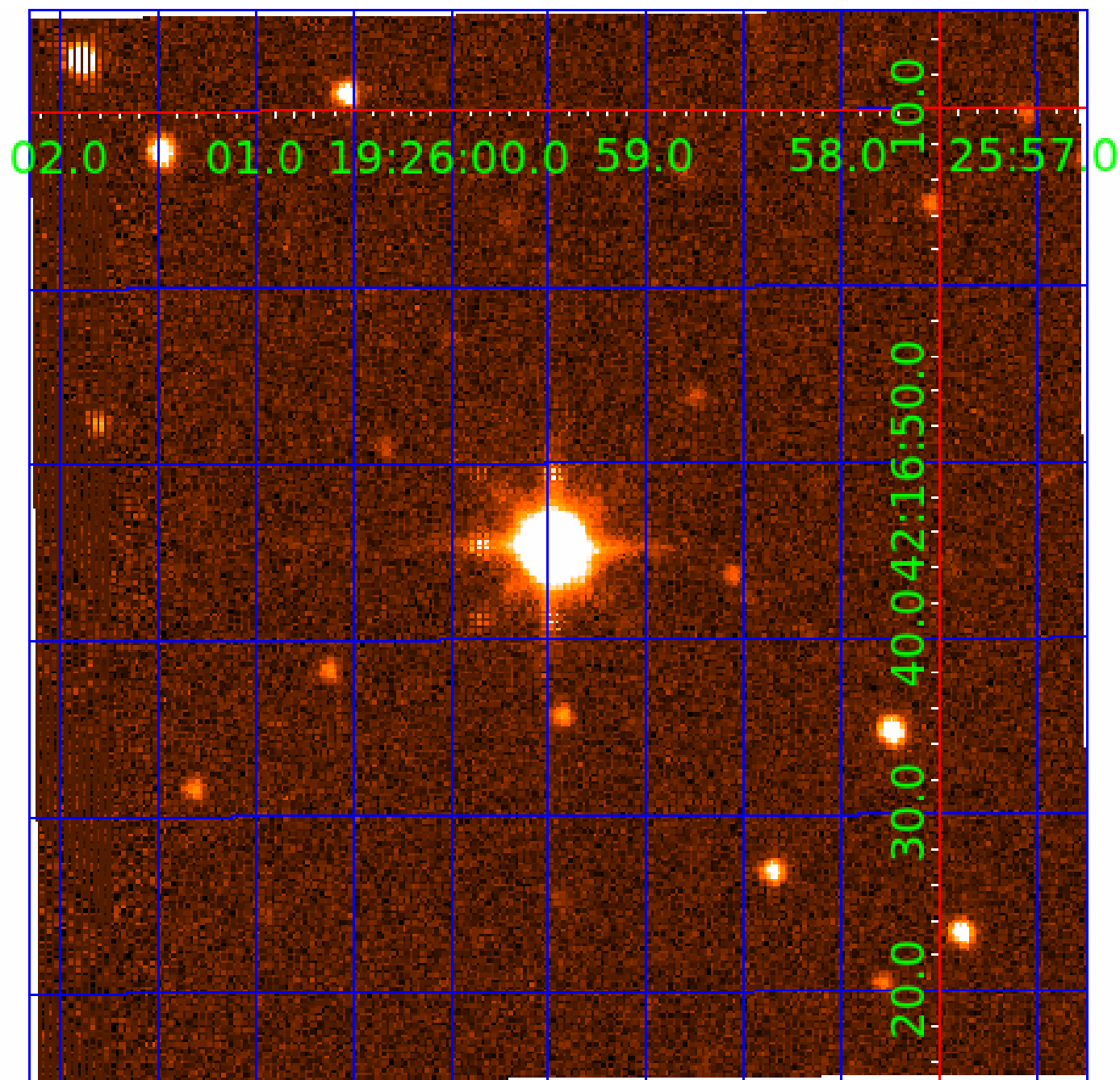


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 006776331

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})
006776331-01	OBS	No	292.385793	303.152697	4247.1	3.808	82.4	37.0	3.27	7870	22.48	31.42
006776331-02	OBS	No	292.543578	303.985293	5523.9	5.602	76.3	77.6	3.27	7870	28.80	31.40
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006776331-05	OBS	No	145.058436	160.965149	637.4	12.173	28.2	21.4	3.27	7870	8.94	80.00

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
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006776331-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_ZUMA_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED
006776331-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_ZUMA—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED
006776331-04	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED
006776331-05	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED

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

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

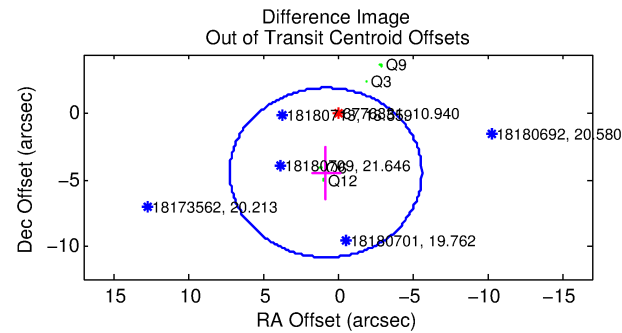
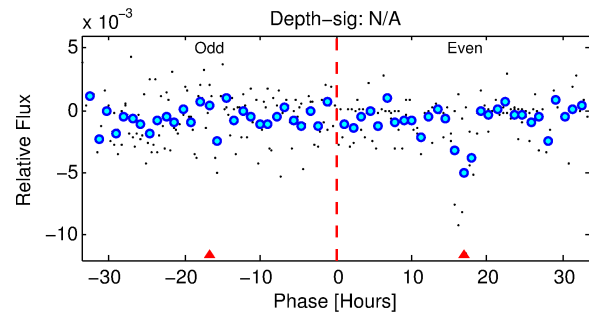
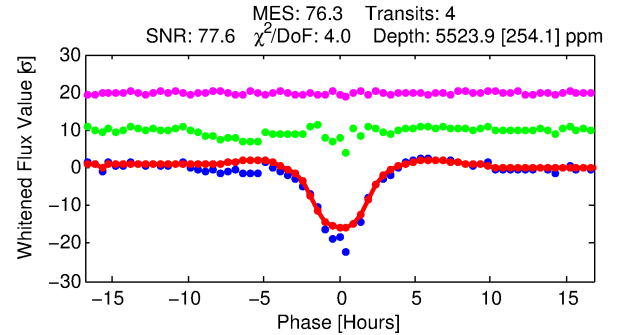
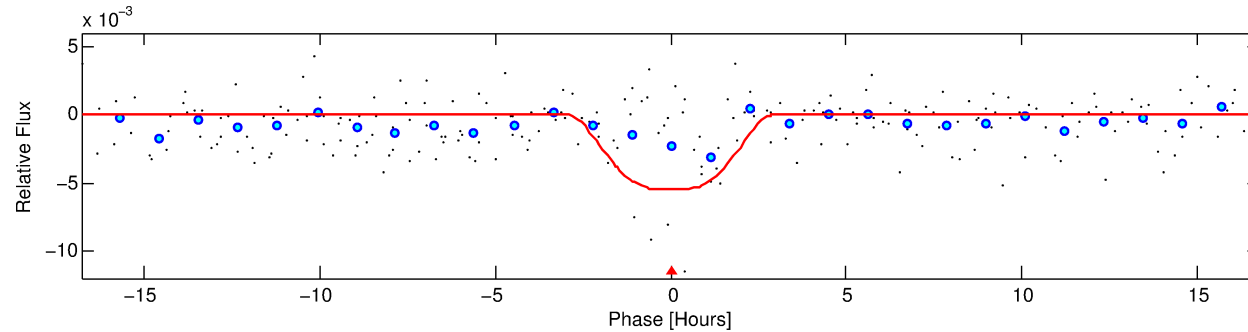
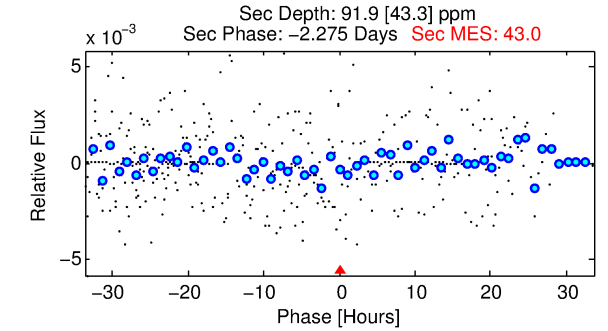
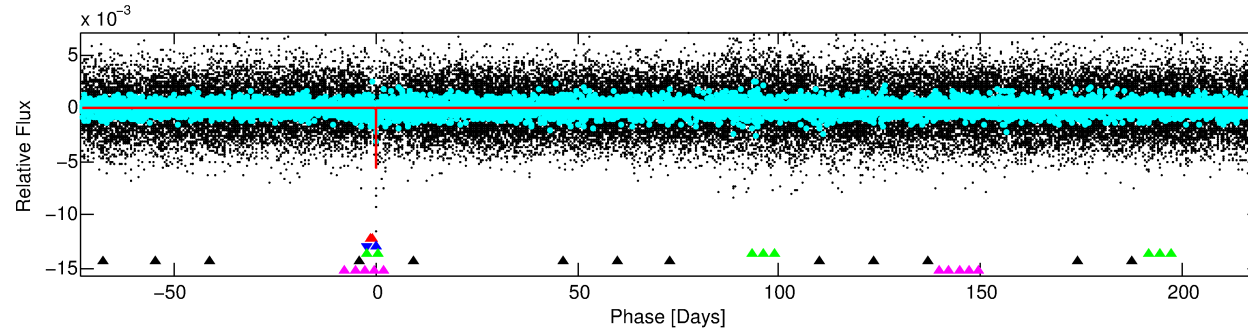
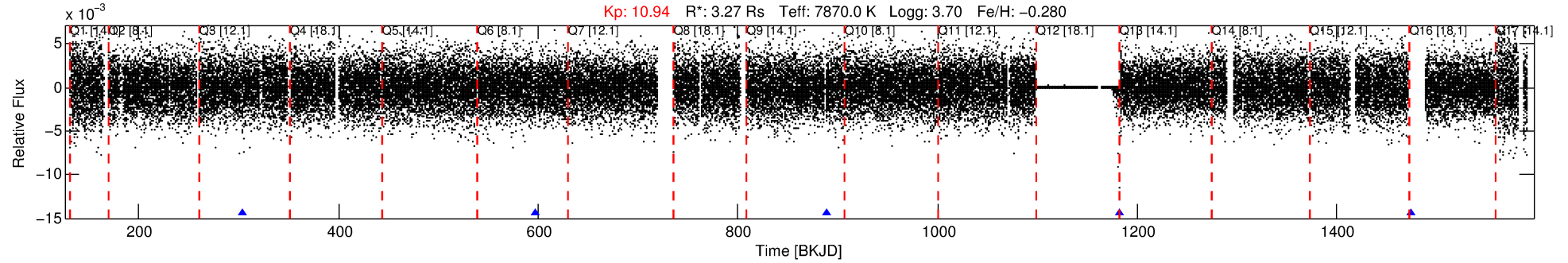
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 006776331-02

No Significant Match Found

DV One-Page Summary

KIC: 6776331 Candidate: 2 of 5 Period: 292.544 d



DV Fit Results:

Period = 292.54358 [0.00456] d
Epoch = 303.9853 [0.0136] BKJD
 $R_p/R^* = 0.0807$ [0.0034]
 $a/R^* = 234.53$ [21.49]
 $b = 0.91$ [0.02]
 $S_{\text{eff}} = 31.40$ [25.15]
 $T_{\text{eq}} = 604$ [121] K
 $R_p = 28.80$ [14.88] R_e
 $a = 1.0819$ [0.5322] AU
 $A_g = 71.33$ [65.51] [1.07]
 $T_{\text{eff}} = 2712$ [343] K [5.79 σ]

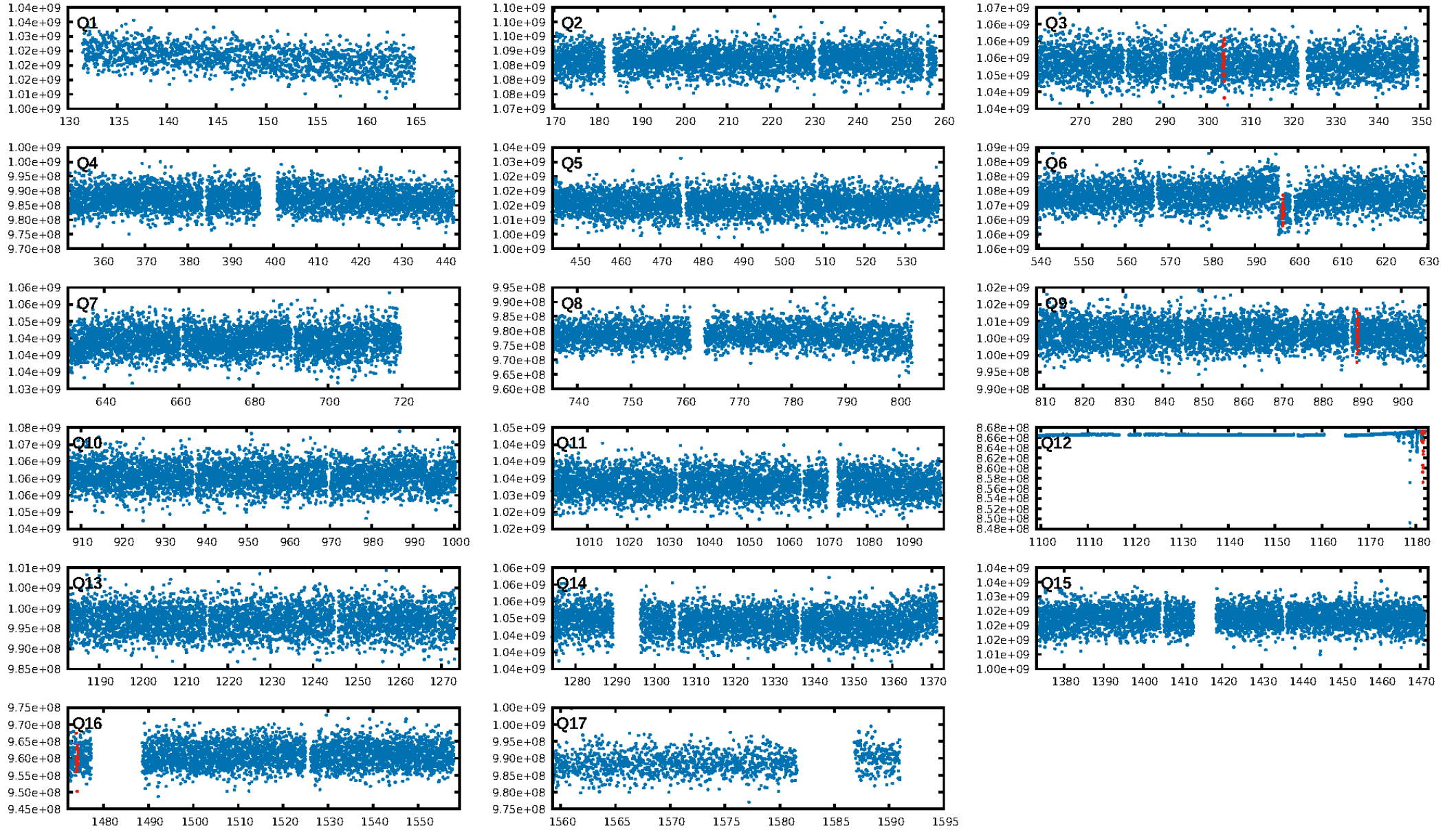
DV Diagnostic Results:

ShortPeriod-sig: 42.4% [0.56 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 0.0%
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: -2.832
Centroid-sig: 6.5%
Centroid-so: 0.086 arcsec [1.20 σ]
OotOffset-rm: 4.522 arcsec [2.12 σ]
OotOffset-st: 1/1/1/1 [4]
KicOffset-rm: 4.308 arcsec [1.87 σ]
KicOffset-st: 1/1/1/1 [4]
DiffImageQuality-fgm: 0.00 [0/4]
DiffImageOverlap-fno: 0.75 [3/4]

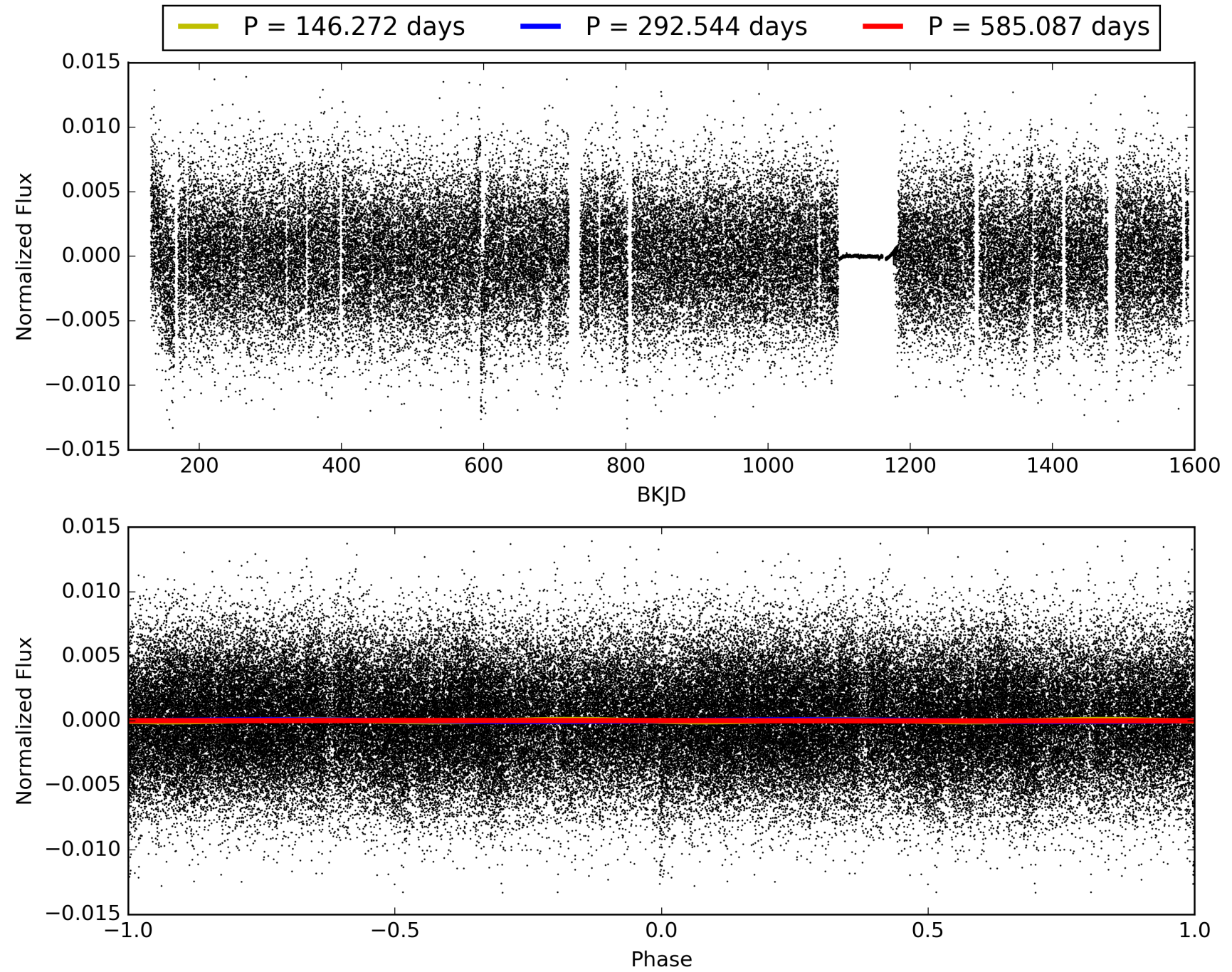
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 05:08:42 Z

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

TCE 006776331-02, PDC Light Curves

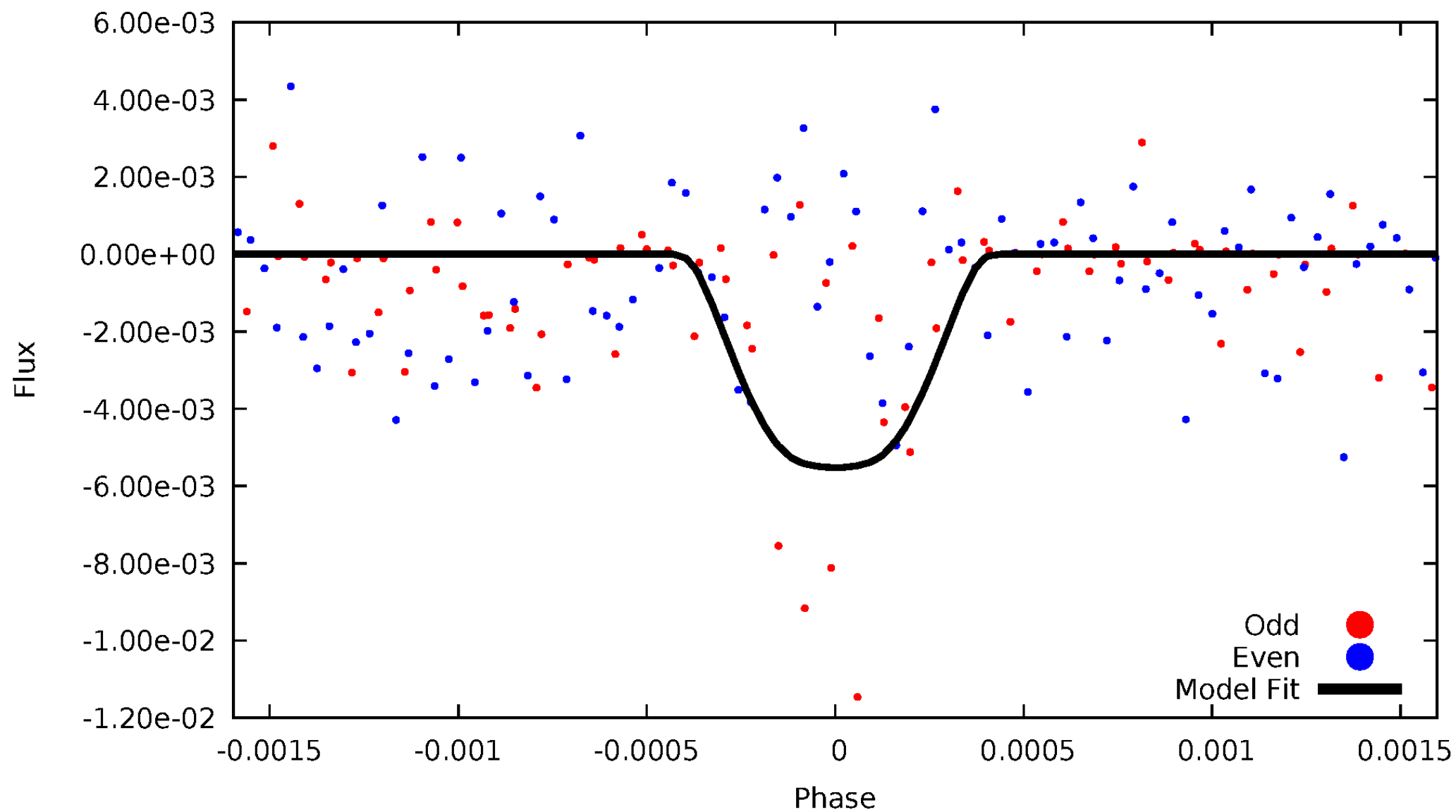


TCE 006776331-02



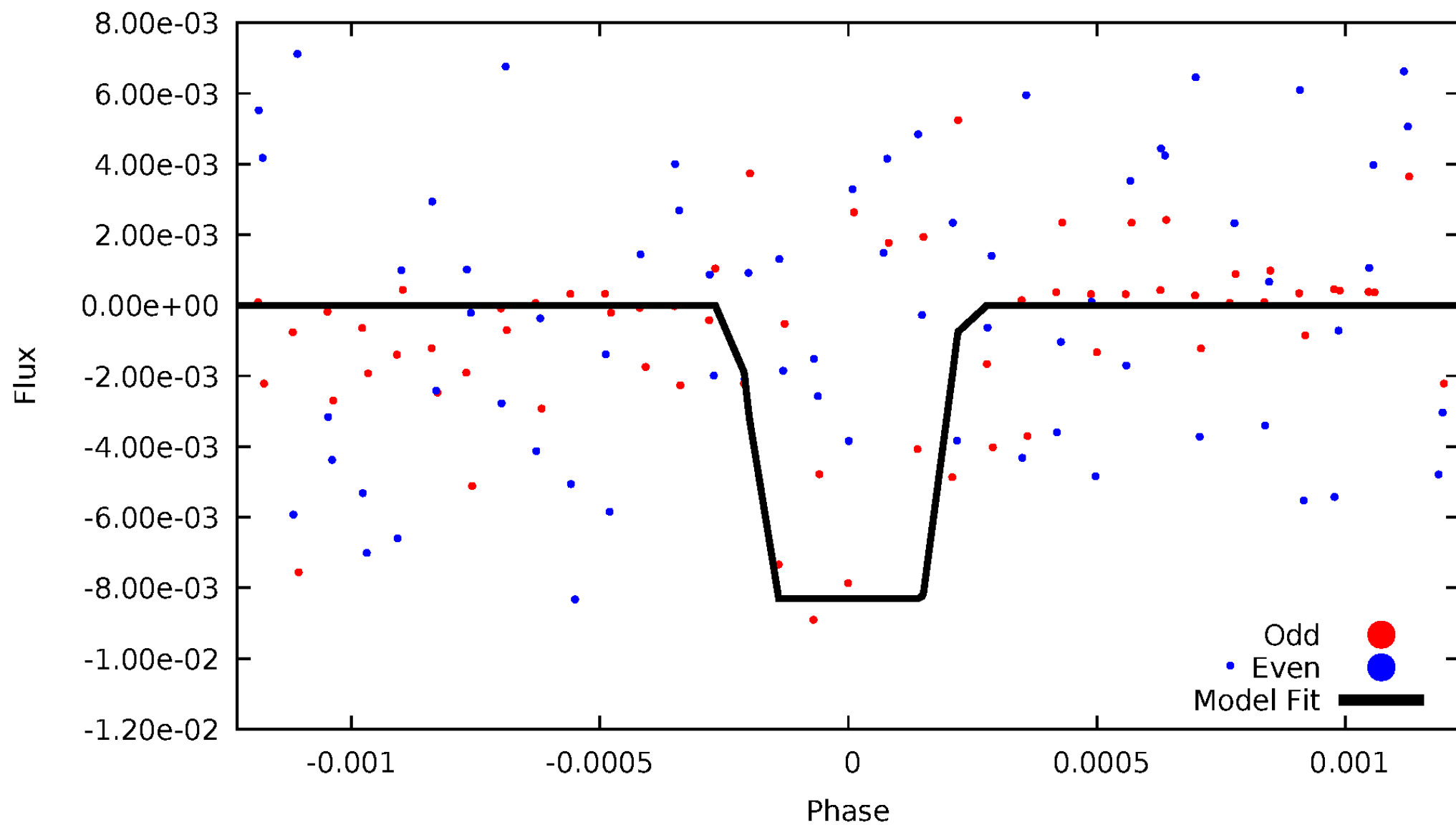
DV Odd/Even

TCE 006776331-02



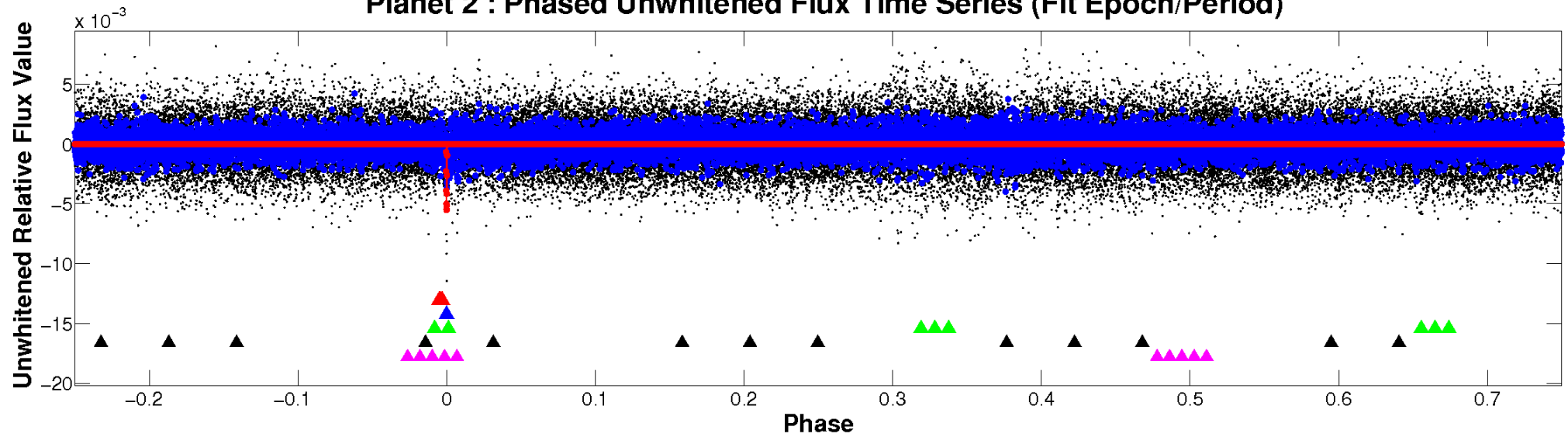
ALT Odd/Even

TCE 006776331-02

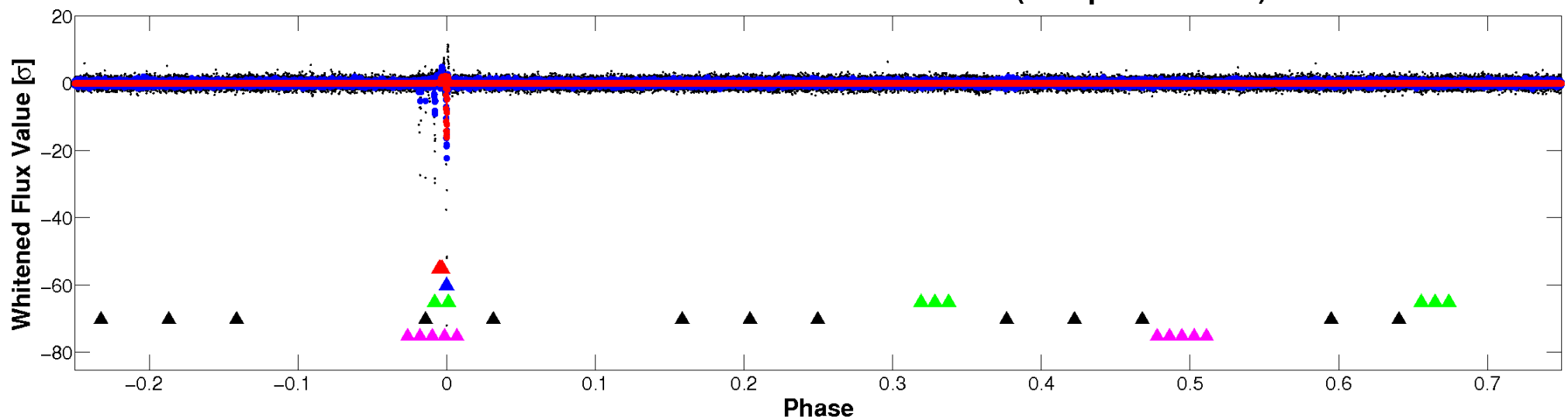


Non-Whitened Vs. Whitened Light Curve

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

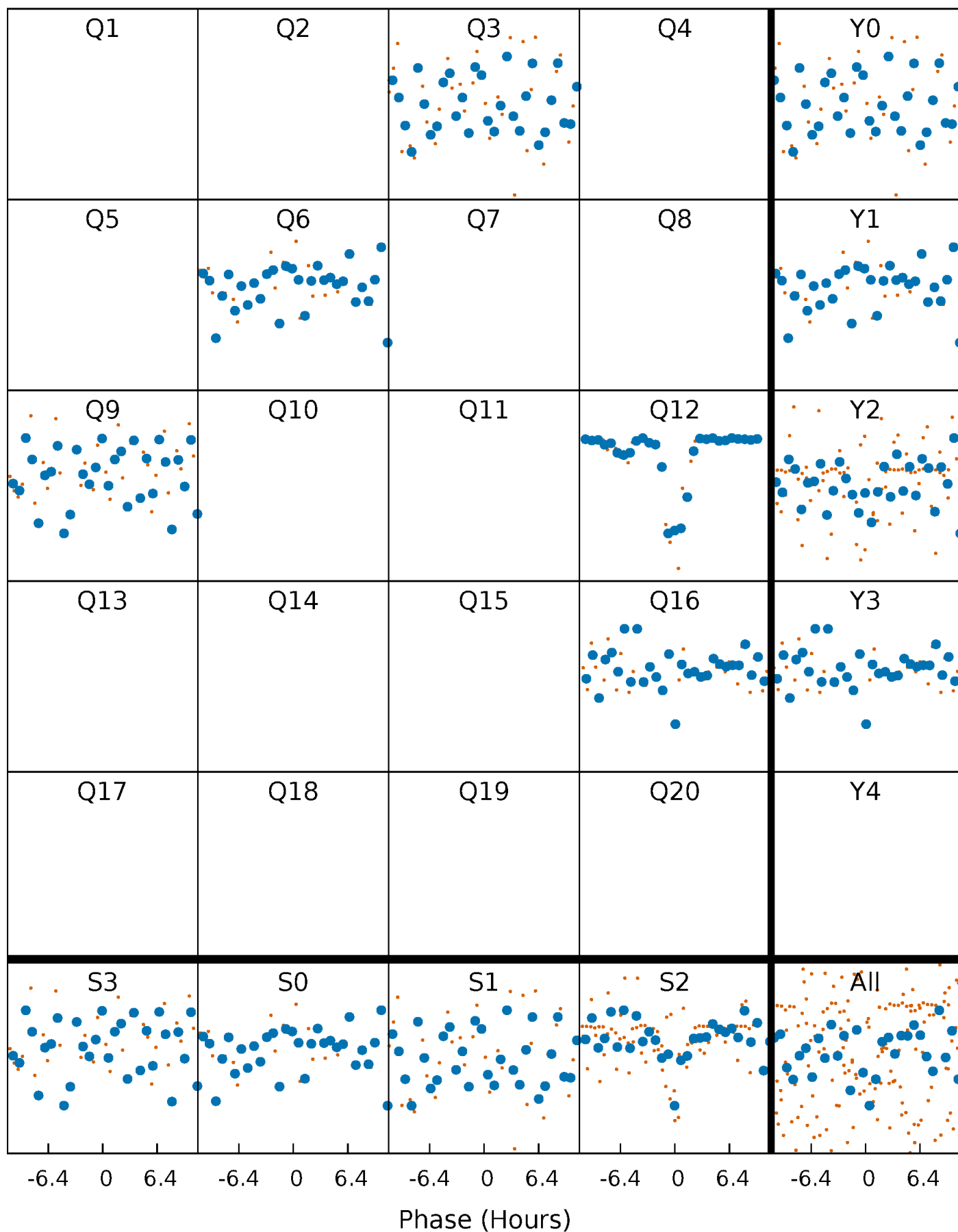


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



PDC Quarter-Phased Transit Curves

TCE 006776331-02 $P=292.543578$ Days $T_0=303.985293$ (BKJD)



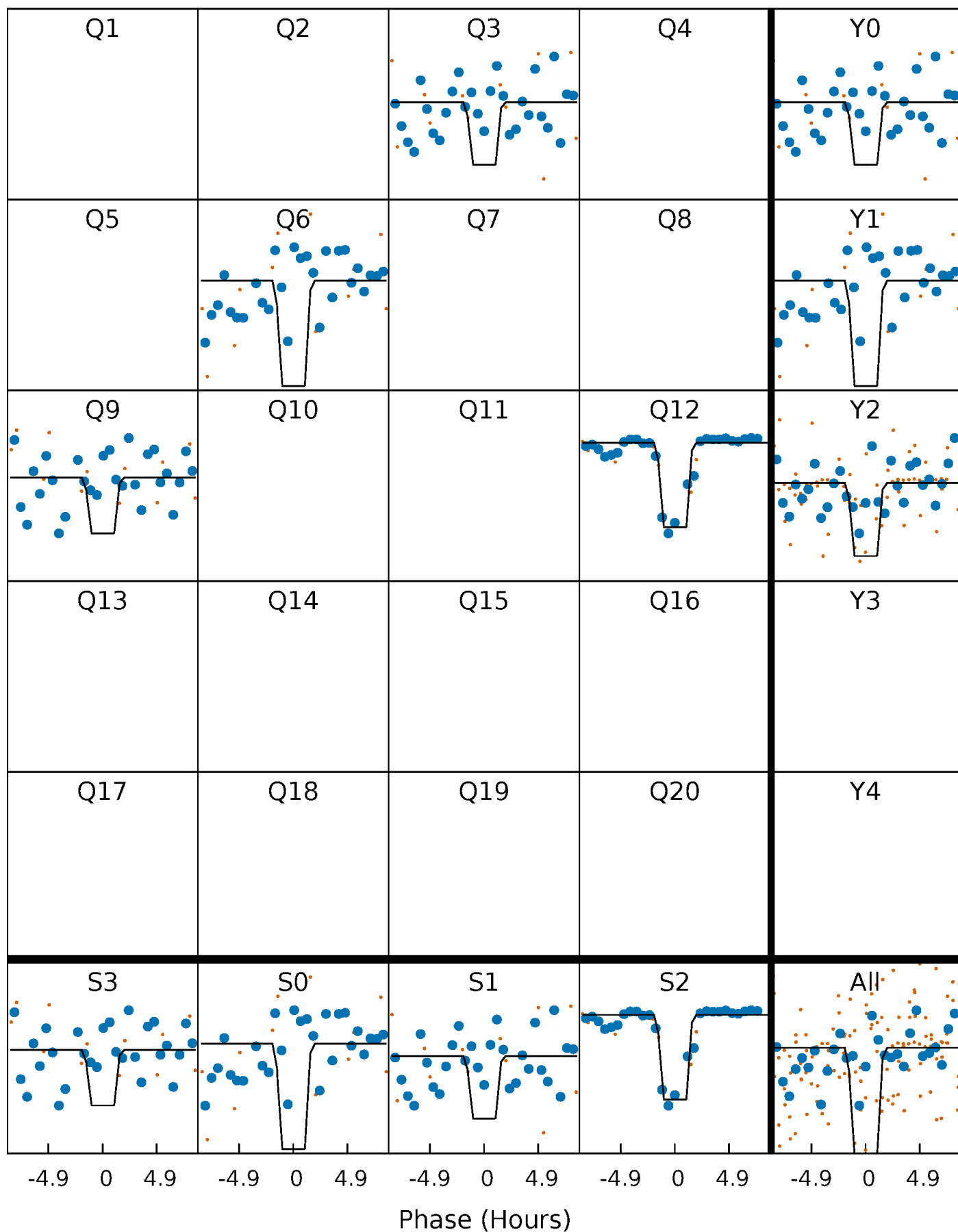
DV Quarter-Phased Transit Curves

TCE 006776331-02 $P=292.543578$ Days $T_0=303.985293$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

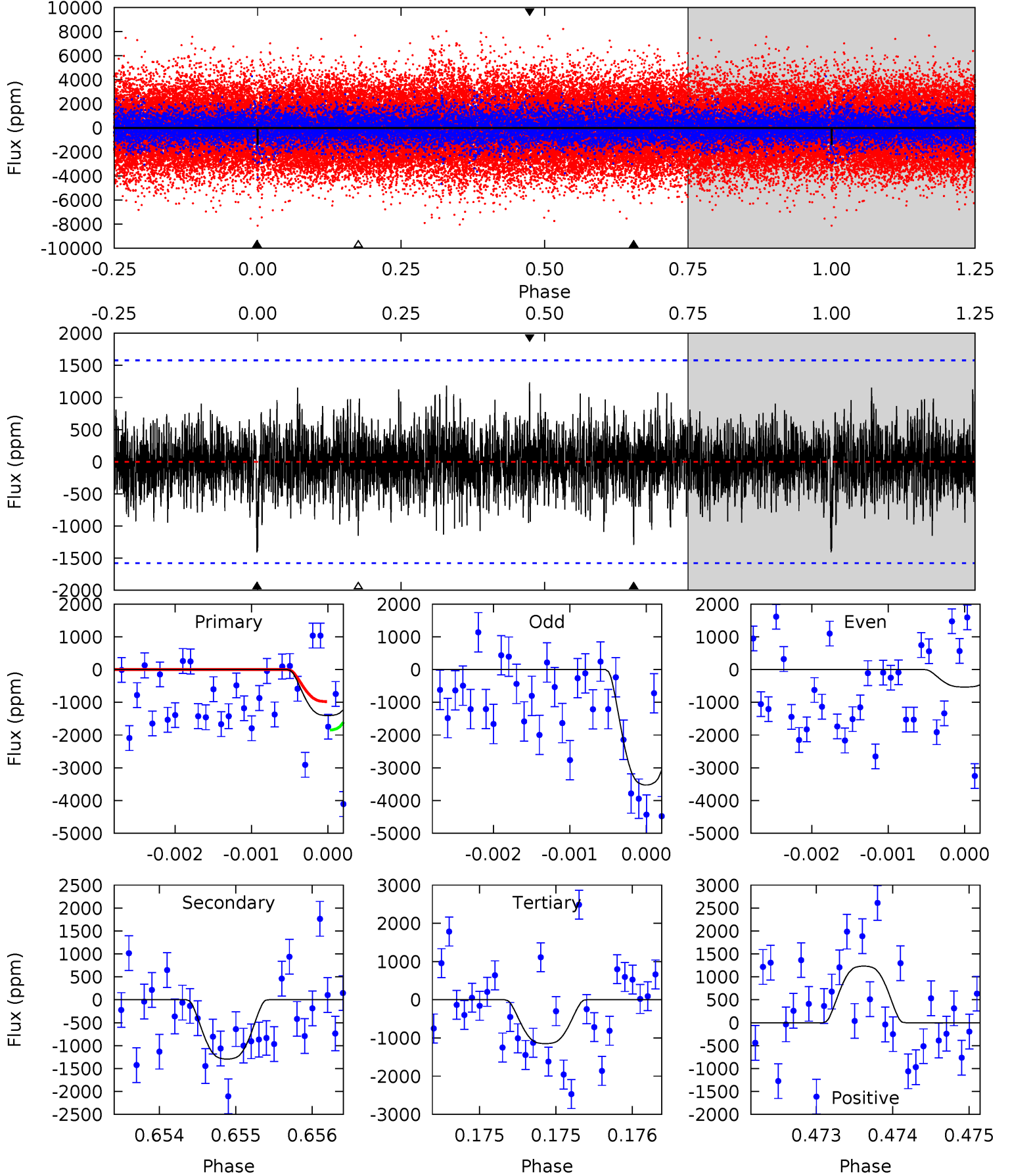
TCE 006776331-02 P=292.567712 Days $T_0=303.909920$ (BKJD)



DV Model-Shift Uniqueness Test

006776331-02, $P = 292.543578$ Days, $E = 11.441715$ Days

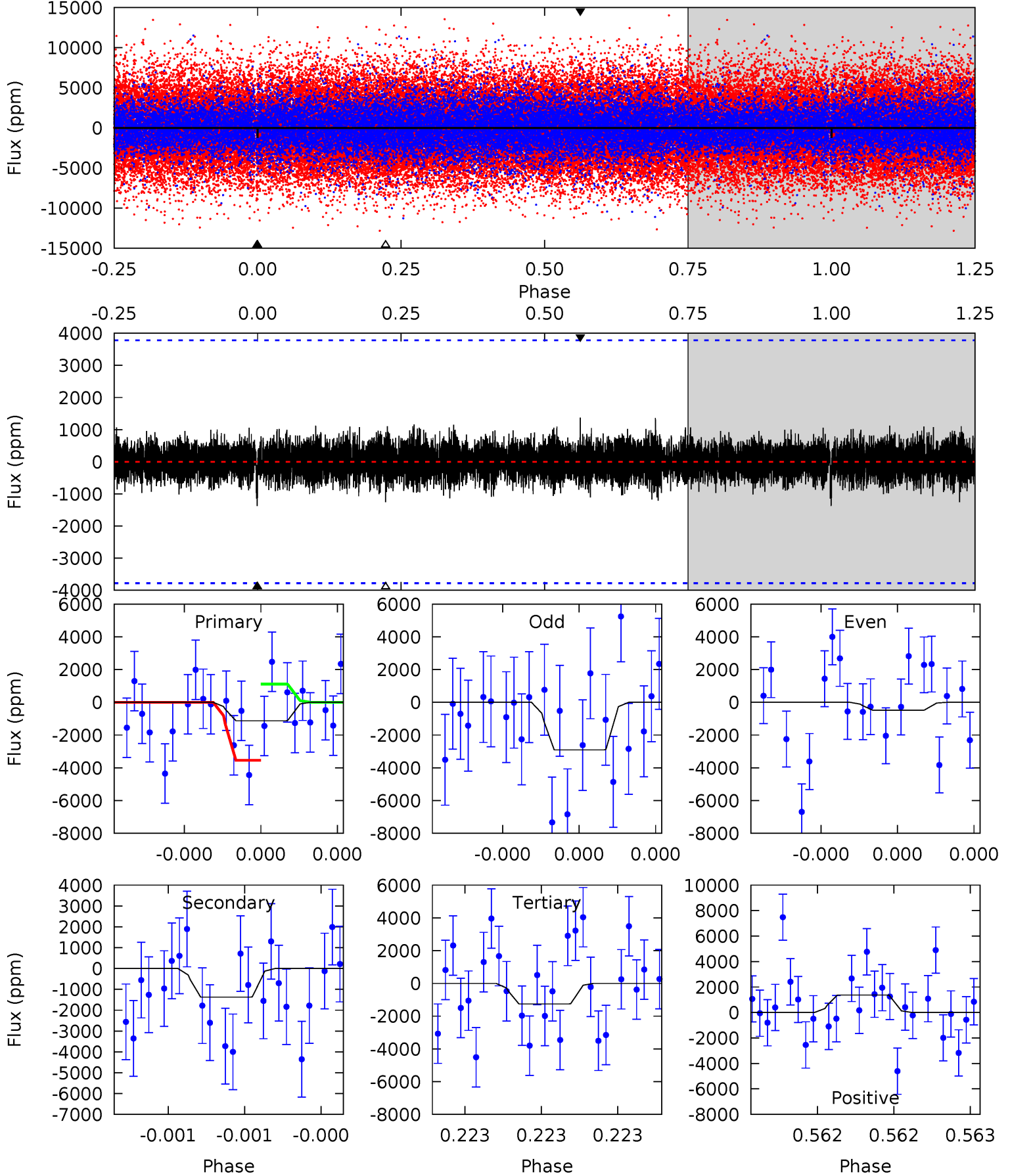
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4.89	4.50	4.00	4.29	5.49	3.35	1.18	0.90	0.60	0.51	0.21	5.39	2.71	0.47	1.51



Alt Model-Shift Uniqueness Test

006776331-02, P = 292.567712 Days, E = 11.342208 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1.67	2.04	1.86	2.03	5.60	3.52	0.49	-0.19	-0.36	0.17	0.01	1.81	-2.98	0.50	1.79



Stellar Parameters For KIC 006776331

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	7870^{+244}_{-325}	$3.704^{+0.459}_{-0.081}$	$-0.280^{+0.200}_{-0.300}$	$3.270^{+0.396}_{-1.684}$	$1.976^{+0.208}_{-0.555}$	$0.080^{+0.362}_{-0.021}$
	+3%/-4%	+12%/-2%	+71%/-107%	+12%/-51%	+11%/-28%	+455%/-26%
Source	KIC0	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 006776331-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-1294 ± 287	$27.41^{+3.49}_{-7.91}$	814^{+55}_{-101}	5197^{+259}_{-311}	1168^{+827}_{-362}
Alt.	-1374 ± 675	$31.73^{+3.39}_{-8.06}$	822^{+55}_{-97}	4986^{+507}_{-675}	947^{+689}_{-490}

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

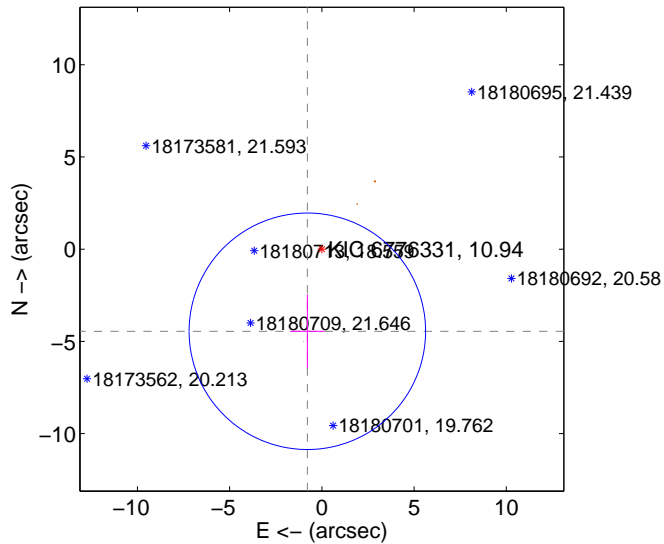
Supplemental centroid analysis for 006776331-02. **Kepler magnitude: 10.94.** Transit SNR 77.62

There are 0 quarters with good PRF difference image offsets

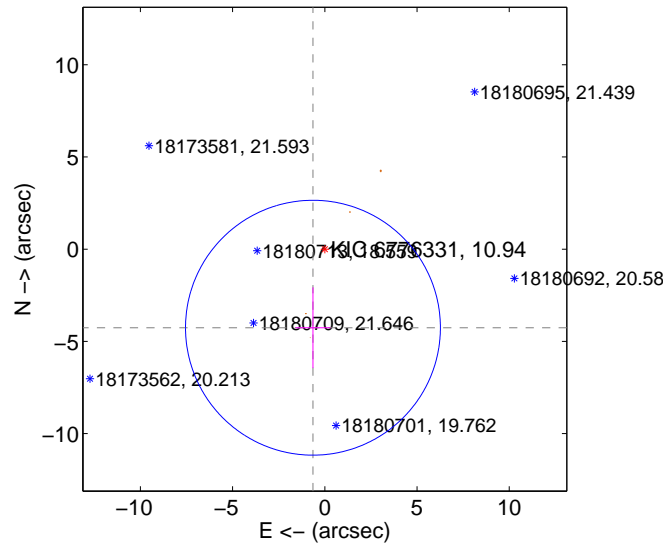
The direct PRF centroid is offset from the target star catalog position by about 0.27 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	4.522 ± 2.137	2.12	0.787 ± 0.938	-4.453 ± 2.006
PRF-fit source offset from KIC position	4.308 ± 2.304	1.87	0.643 ± 0.949	-4.260 ± 2.189
photometric centroid source offset	0.09 ± 0.07	1.20	0.07 ± 0.07	0.04 ± 0.08

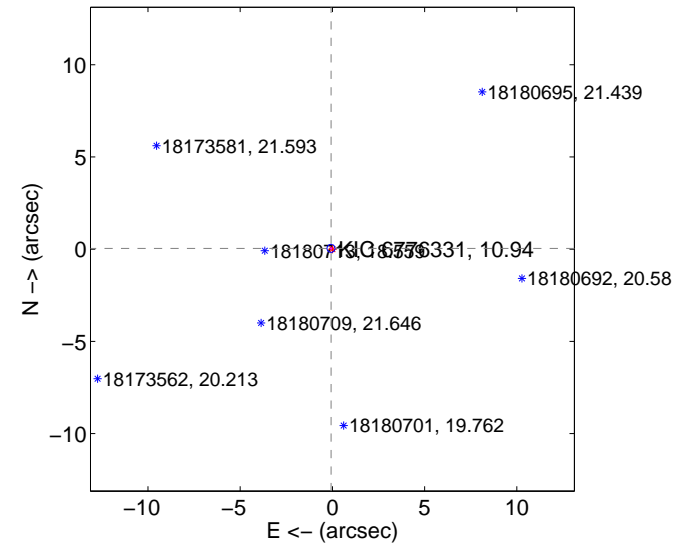
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

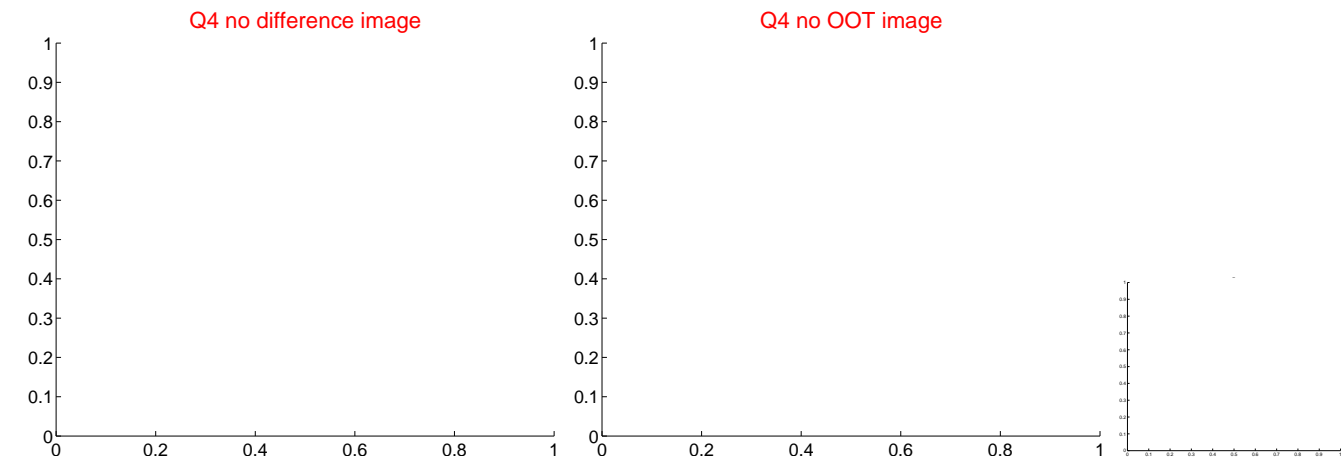
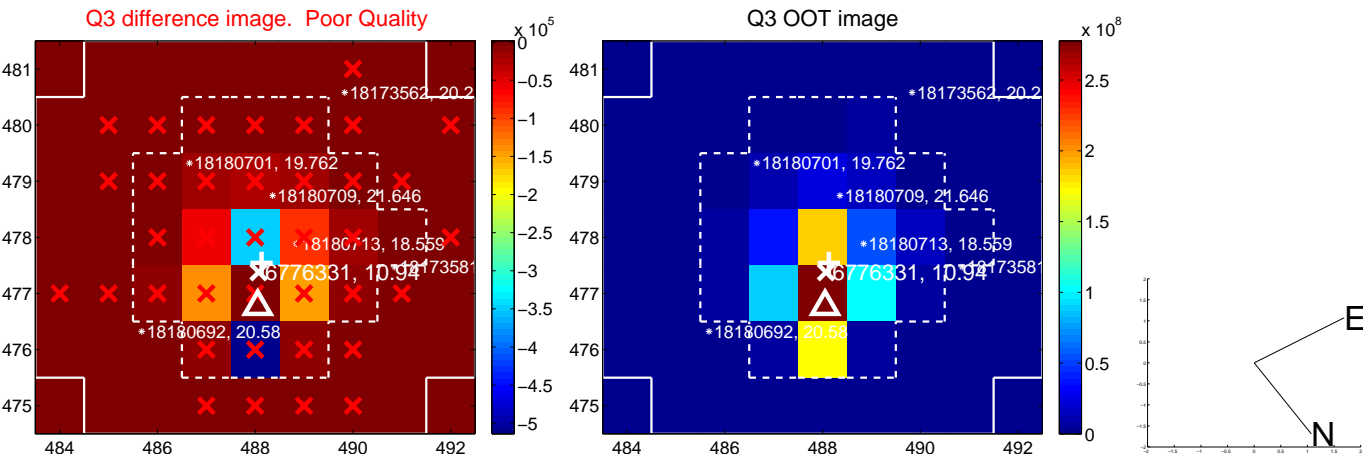
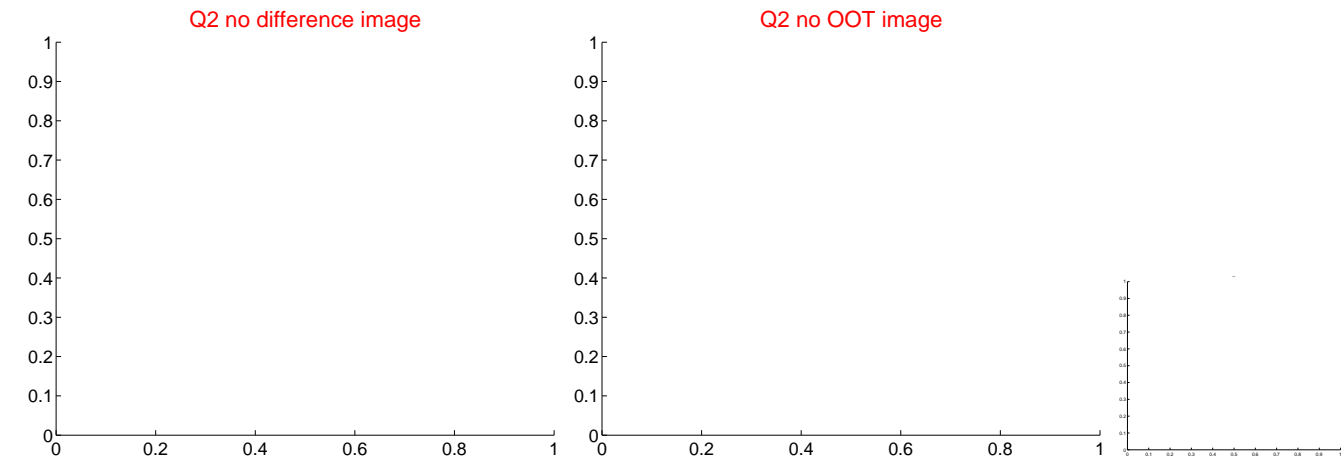


offset from photometric centroids

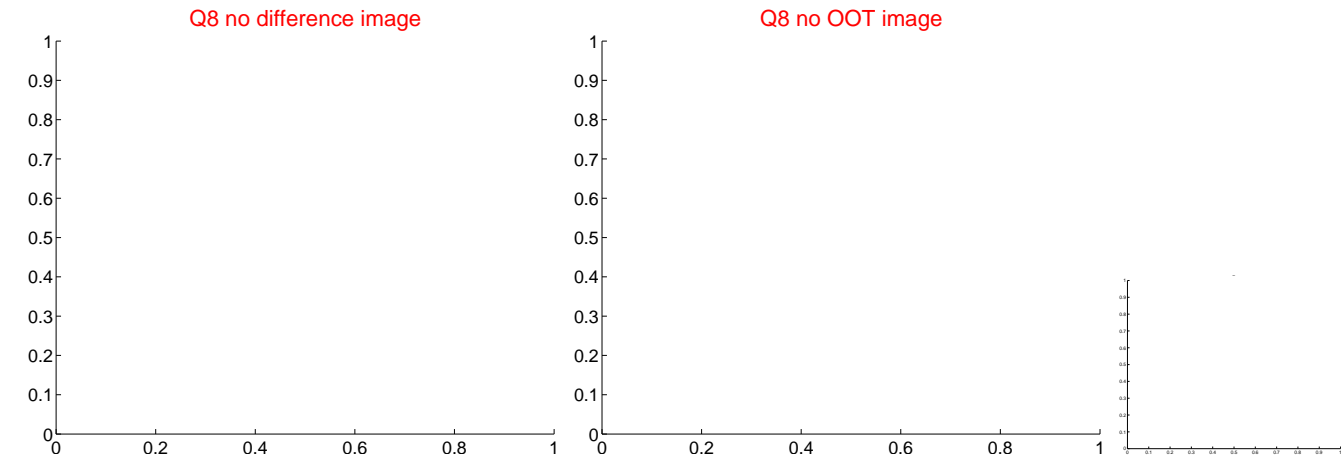
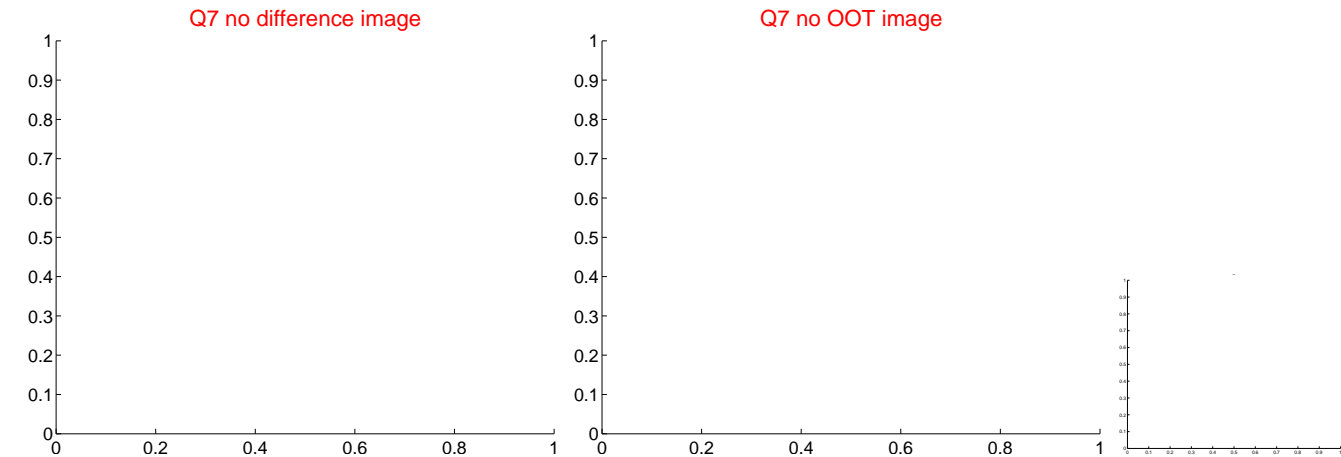
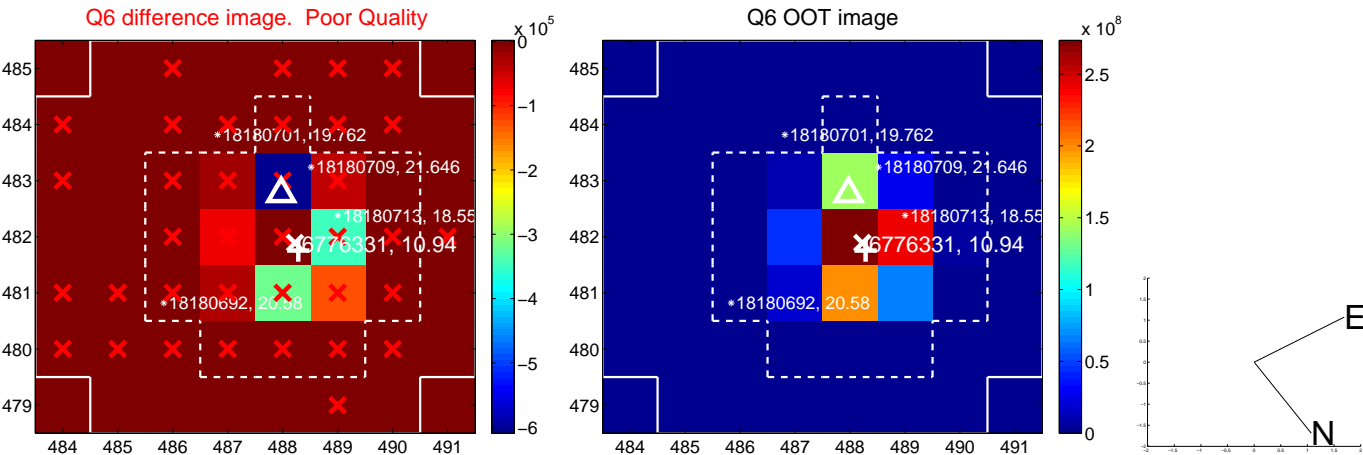


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

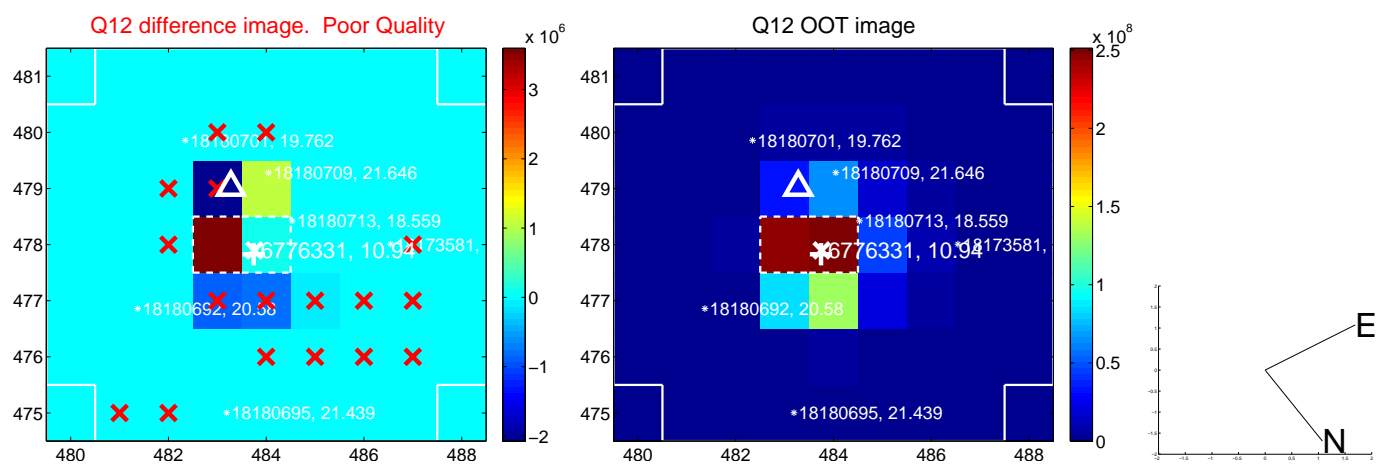
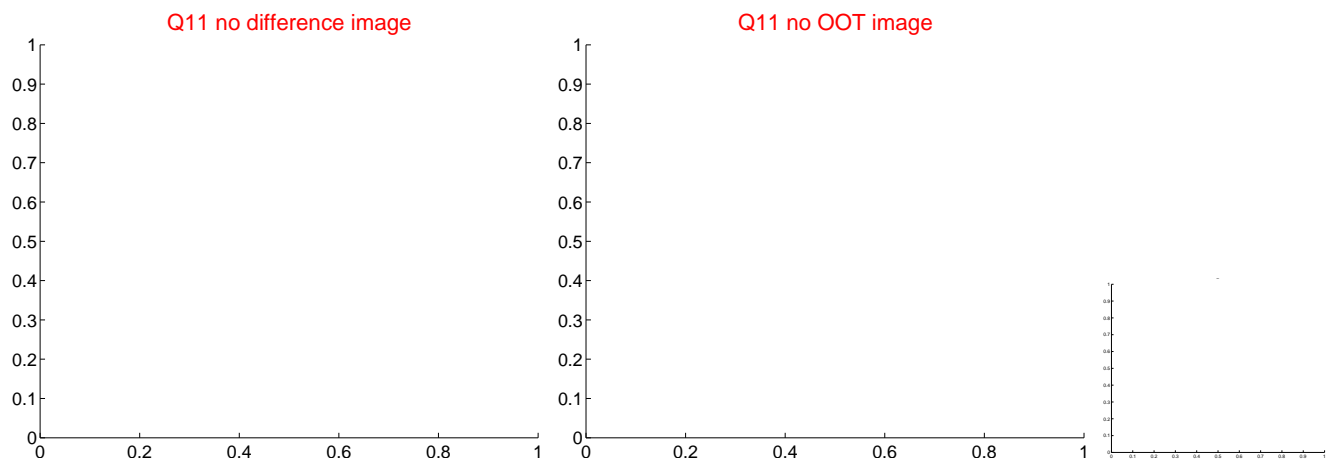
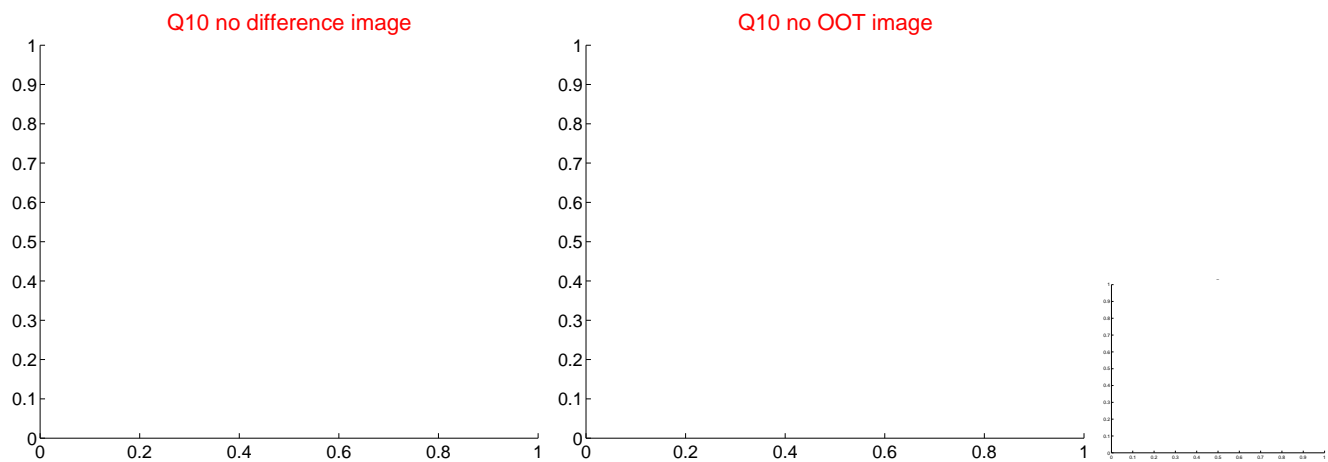
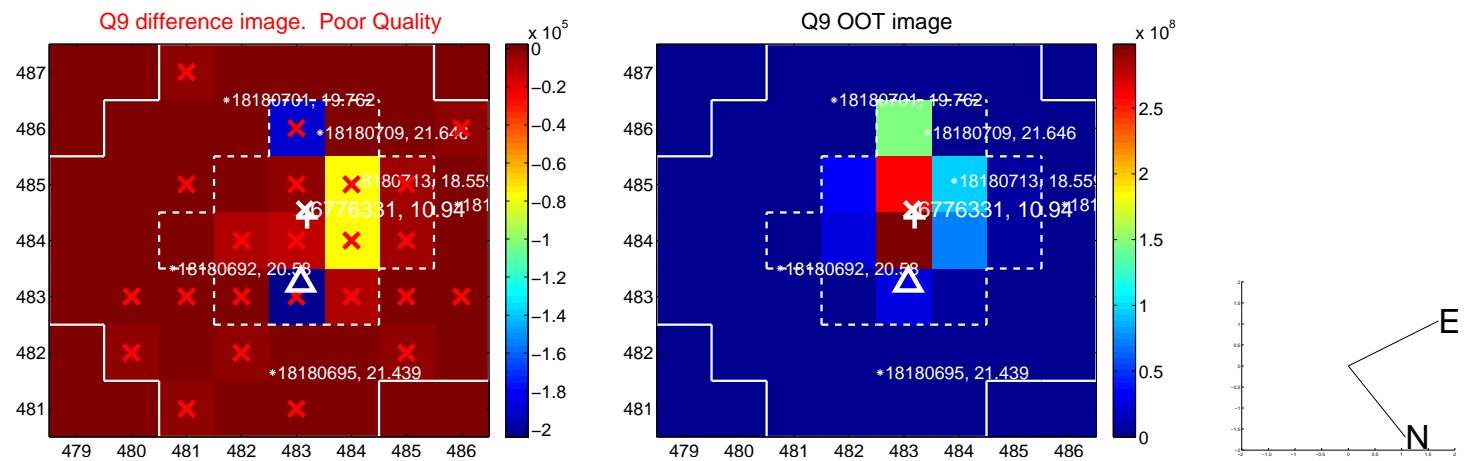
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



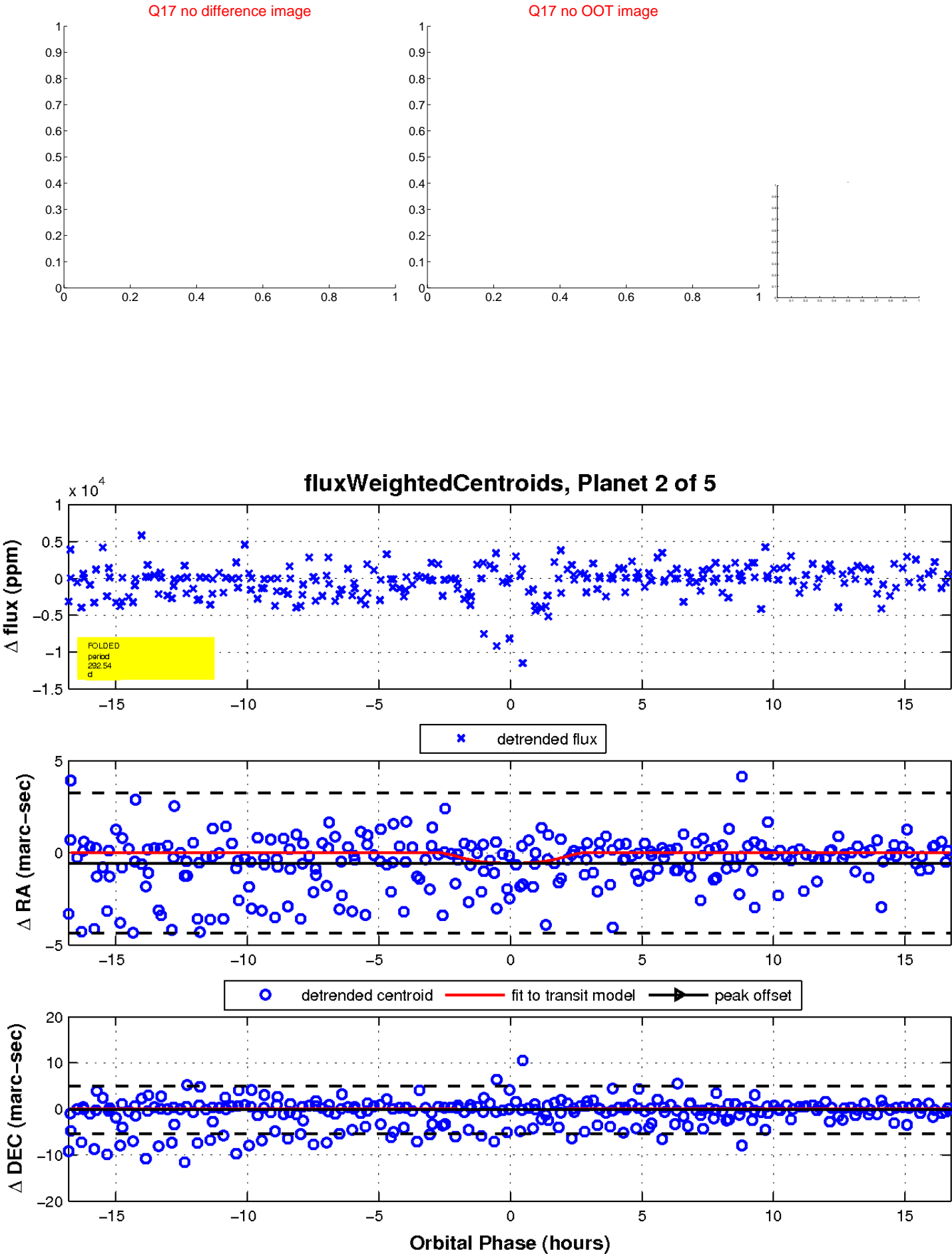
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

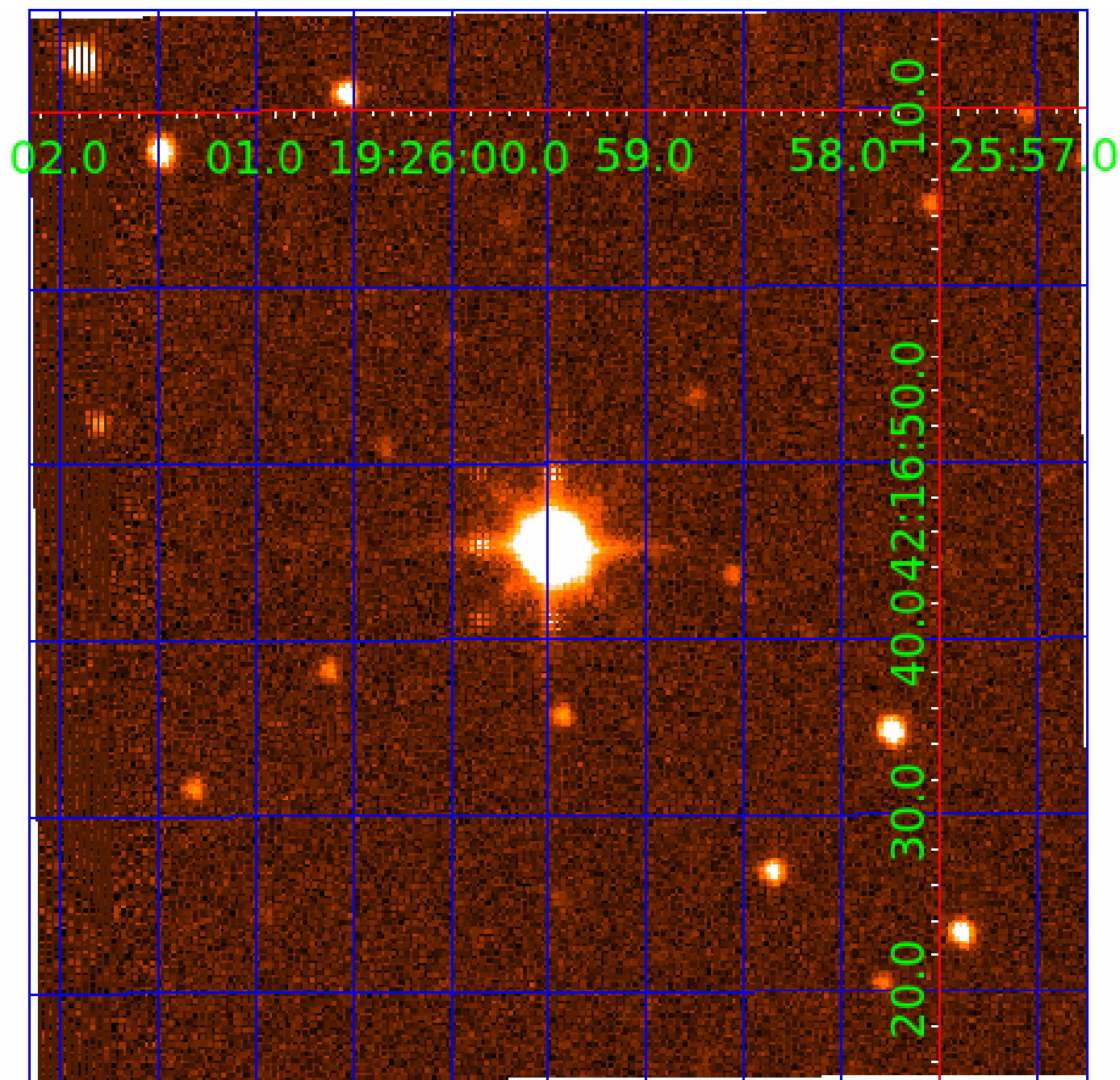


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 006776331

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})
006776331-01	OBS	No	292.385793	303.152697	4247.1	3.808	82.4	37.0	3.27	7870	22.48	31.42
006776331-02	OBS	No	292.543578	303.985293	5523.9	5.602	76.3	77.6	3.27	7870	28.80	31.40
006776331-03	OBS	No	194.125631	208.640872	341.5	10.500	41.4	-1.0	3.27	7870	6.08	54.25
006776331-04	OBS	No	114.349739	148.320840	1613.1	0.893	25.7	22.4	3.27	7870	20.40	109.86
006776331-05	OBS	No	145.058436	160.965149	637.4	12.173	28.2	21.4	3.27	7870	8.94	80.00

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006776331-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_ZUMA—LPP_DV—LPP_ALT—INCONSISTENT_TRANS—CENT_SATURATED
006776331-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_ZUMA_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED
006776331-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_ZUMA—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED
006776331-04	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED
006776331-05	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED

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

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

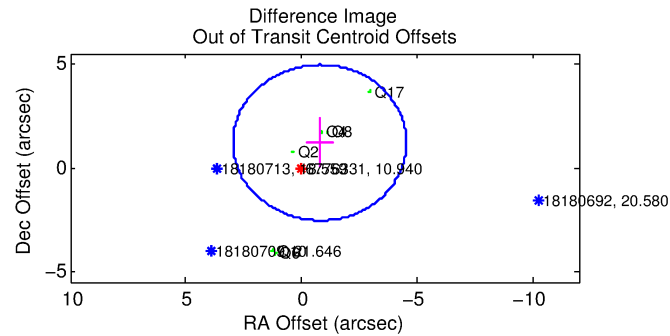
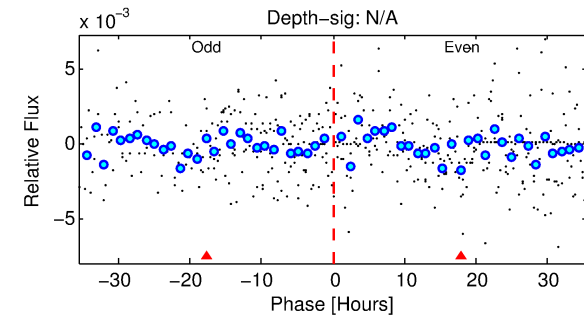
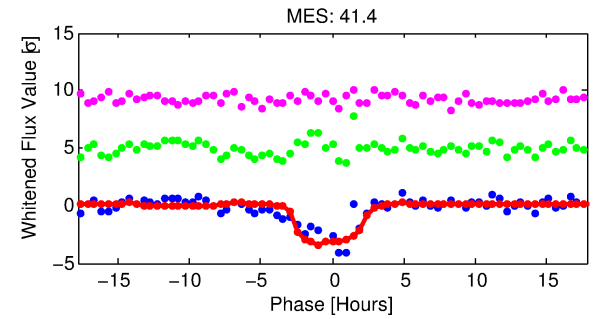
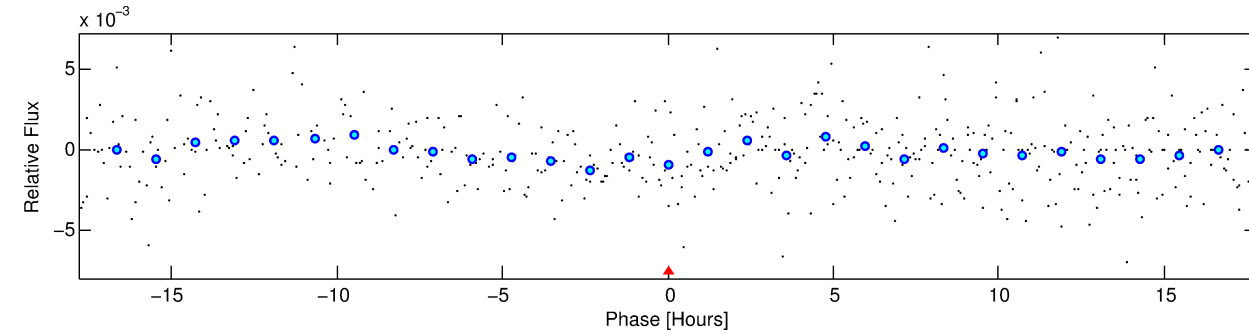
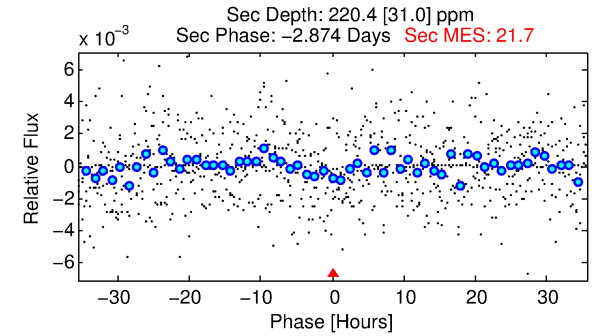
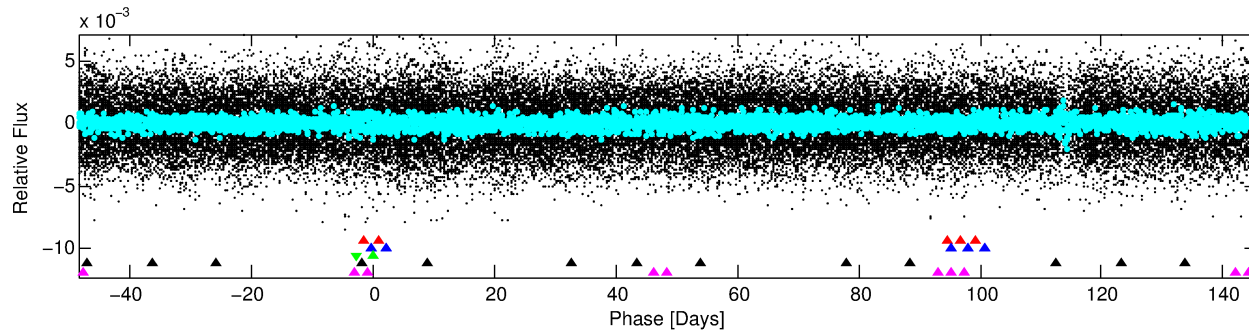
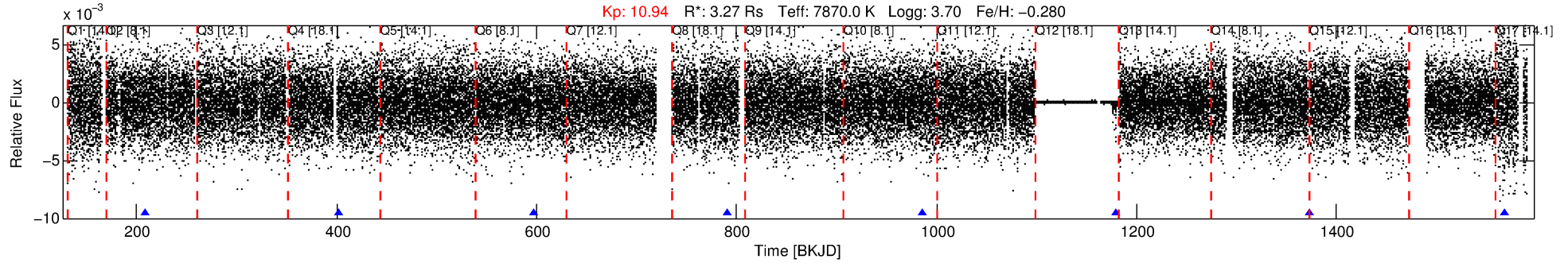
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 006776331-03

No Significant Match Found

DV One-Page Summary

KIC: 6776331 Candidate: 3 of 5 Period: 194.126 d



TPS TCE Results:

Period = 194.12563 d
Epoch = 208.6409 BKJD

DV fit results are unavailable

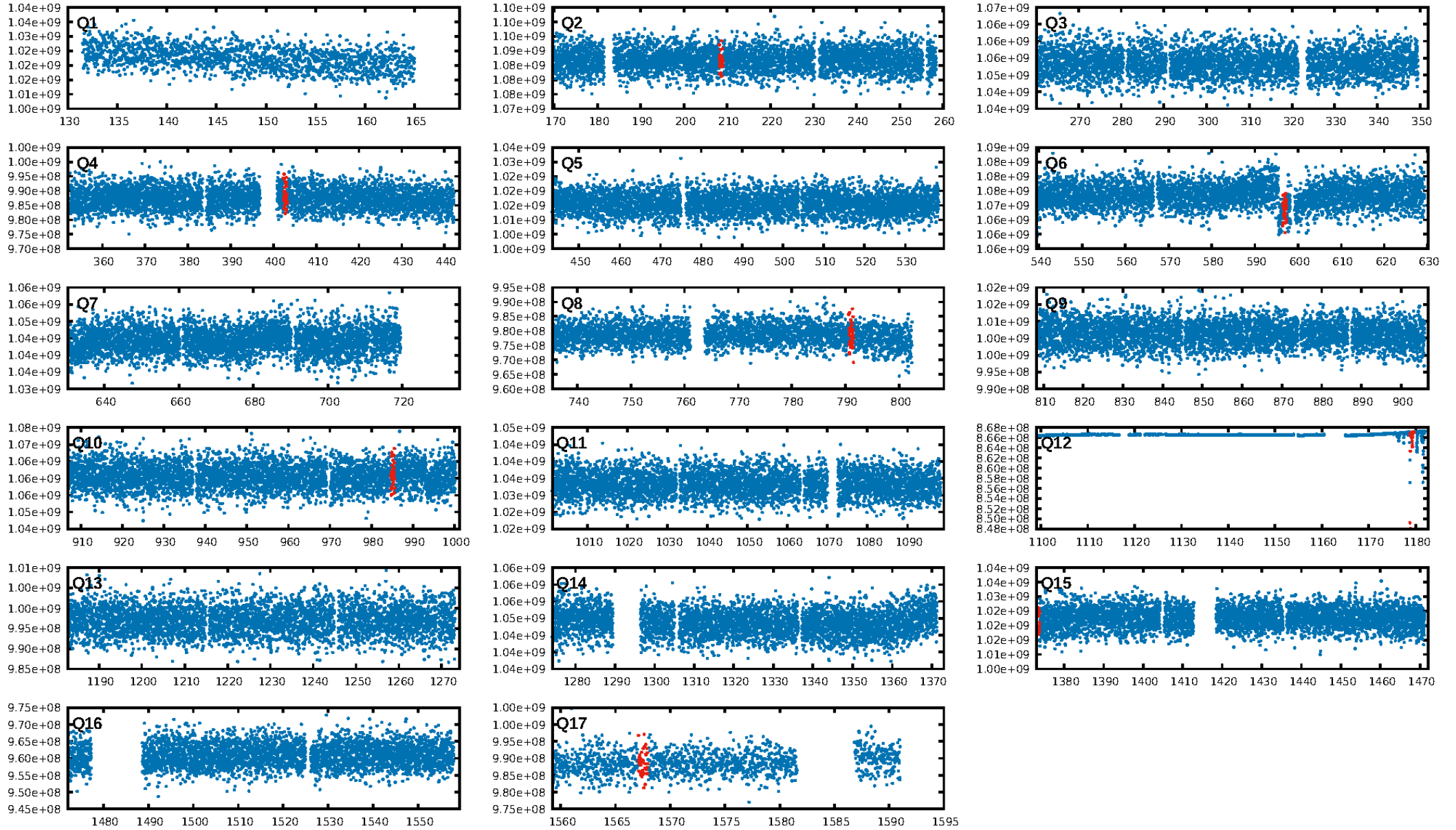
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [73.26σ]
LongPeriod-sig: 100.0% [211.14σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 1.00 [7/7]
GhostDiagnostic-chr: 1.319
Centroid-sig: 42.4%
Centroid-so: 0.093 arcsec [0.56σ]
OotOffset-rm: 1.446 arcsec [1.16σ]
KicOffset-rm: 1.932 arcsec [1.33σ]
OotOffset-st: 3/0/2/1 [6]
KicOffset-st: 3/0/2/1 [6]
DiffImageQuality-fgm: 0.50 [3/6]
DiffImageOverlap-fno: 0.83 [5/6]

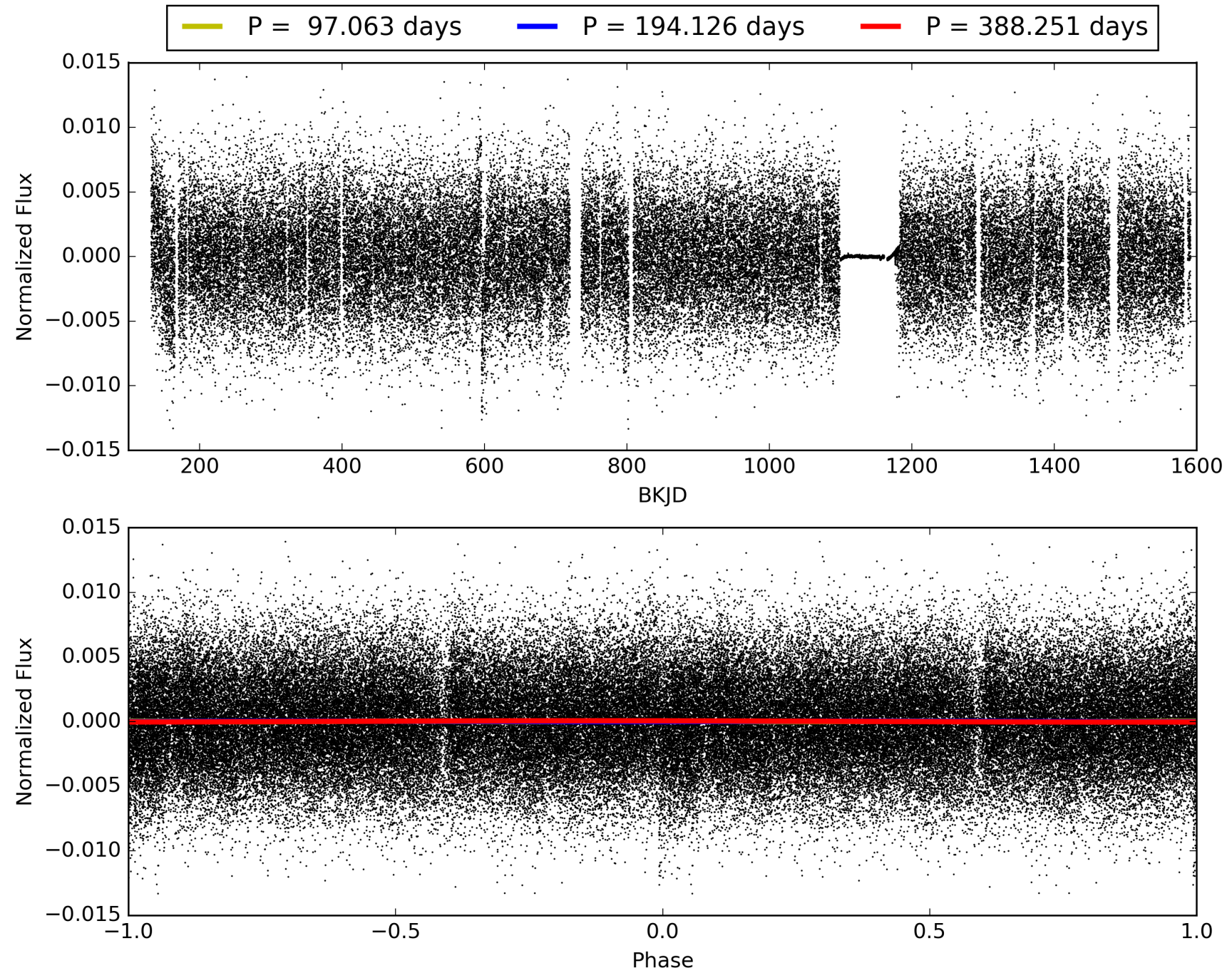
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 05:08:51 Z

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

TCE 006776331-03, PDC Light Curves

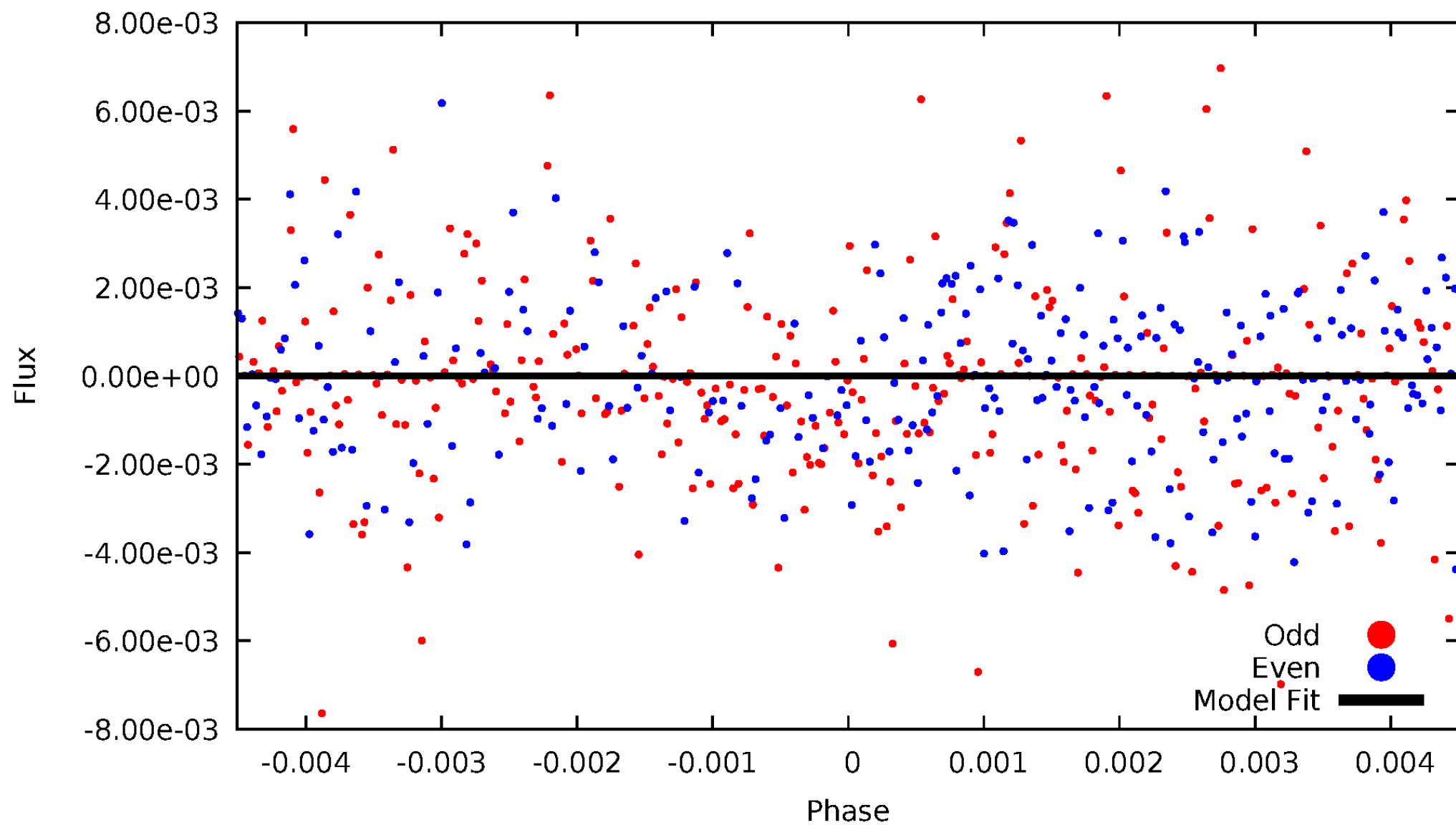


TCE 006776331-03



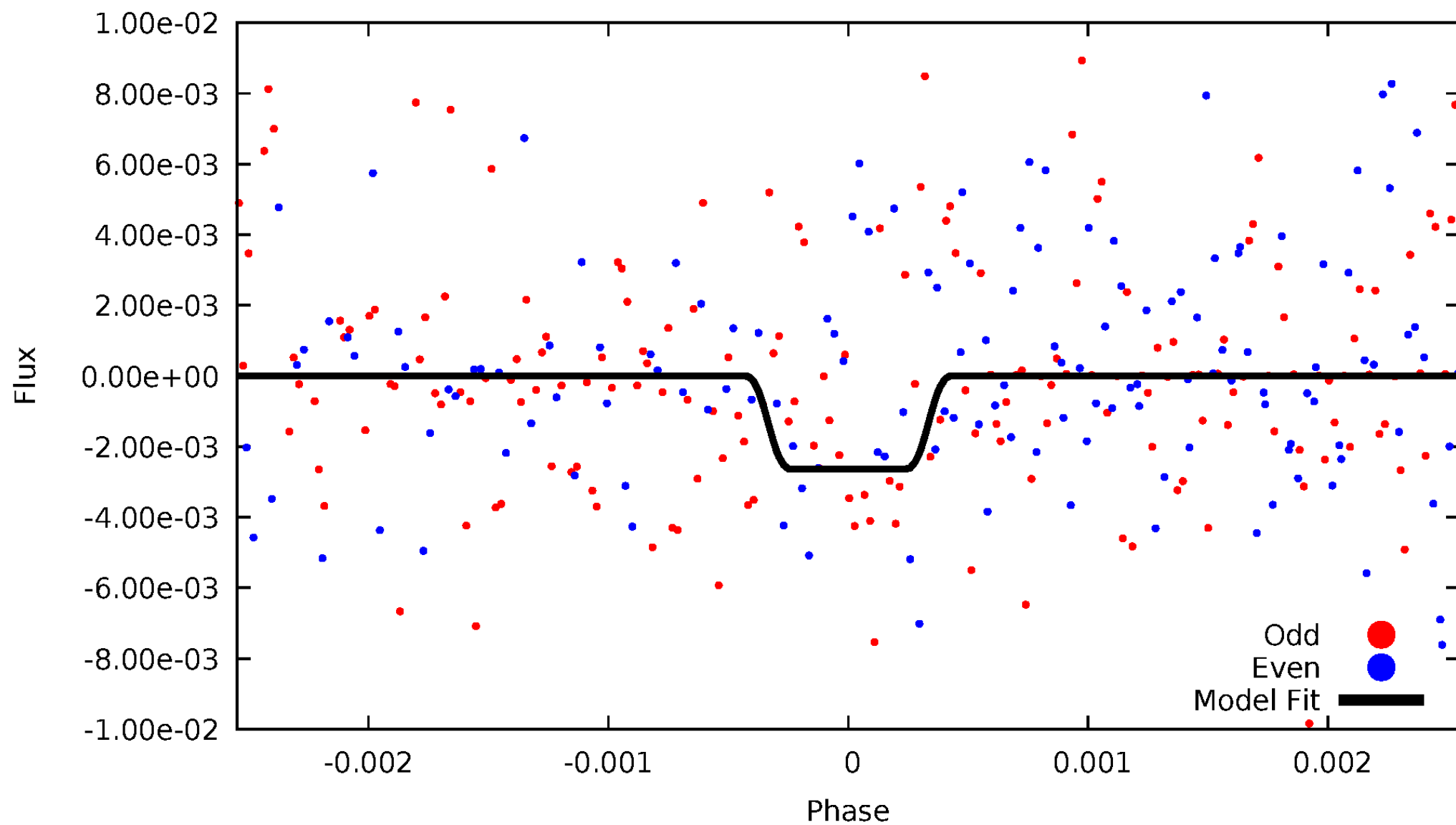
DV Odd/Even

TCE 006776331-03

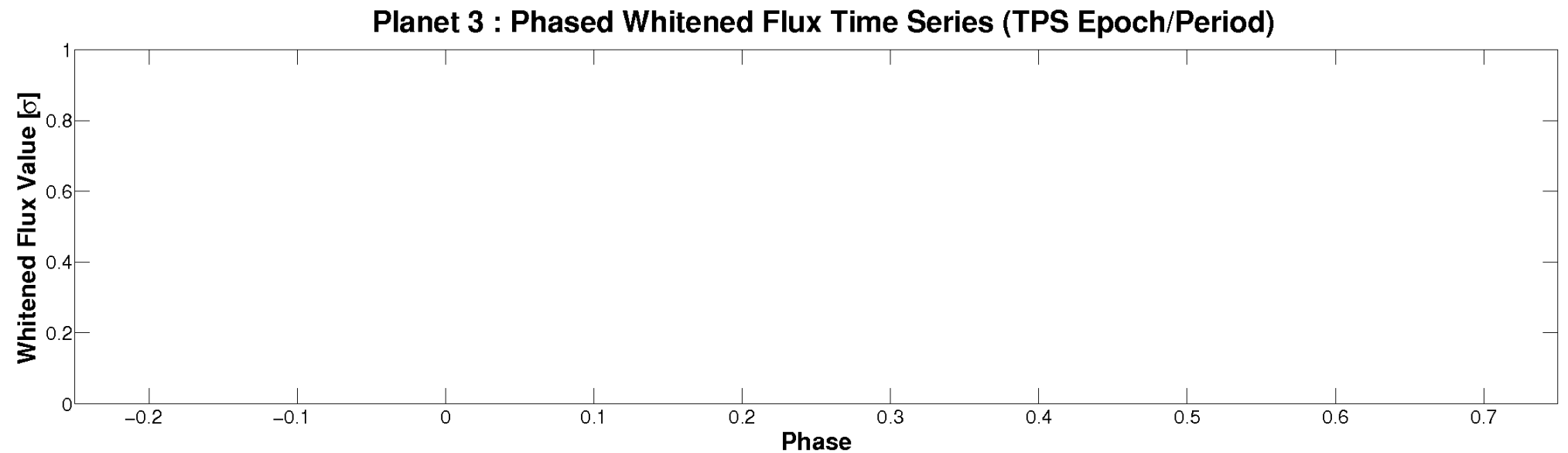
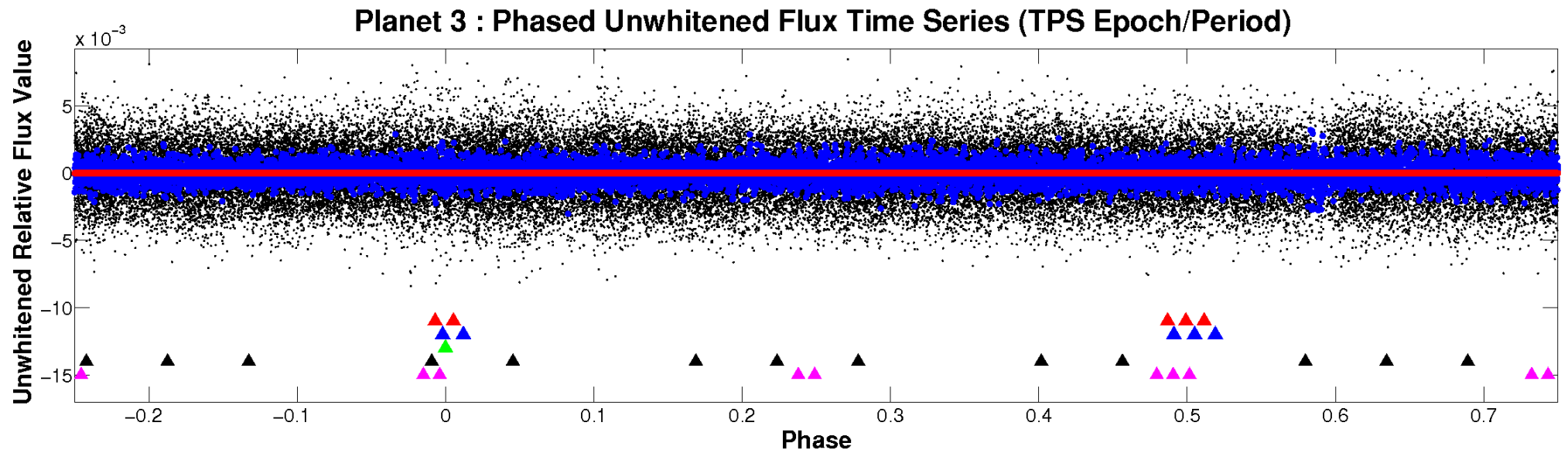


ALT Odd/Even

TCE 006776331-03

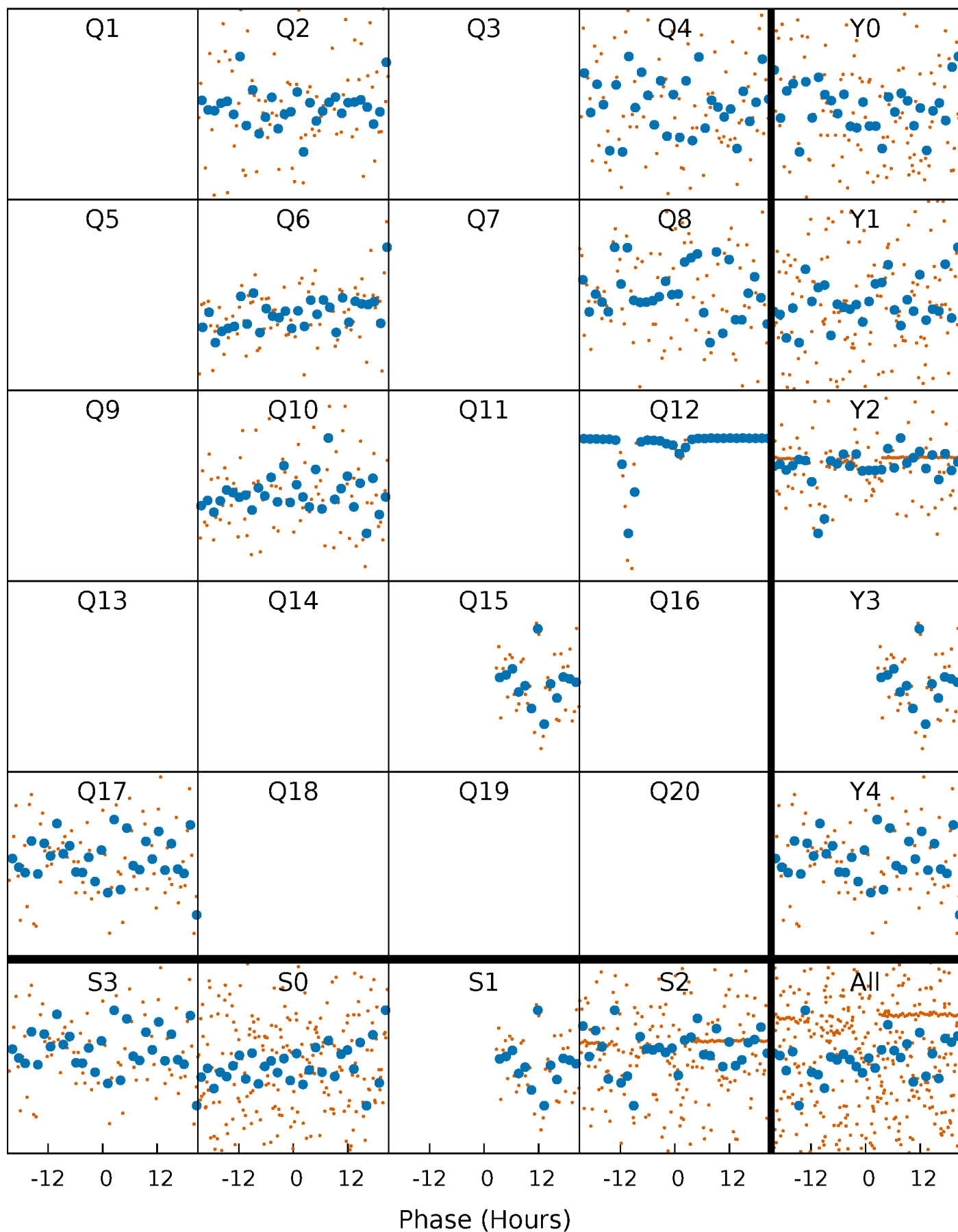


Non-Whitened Vs. Whitened Light Curve



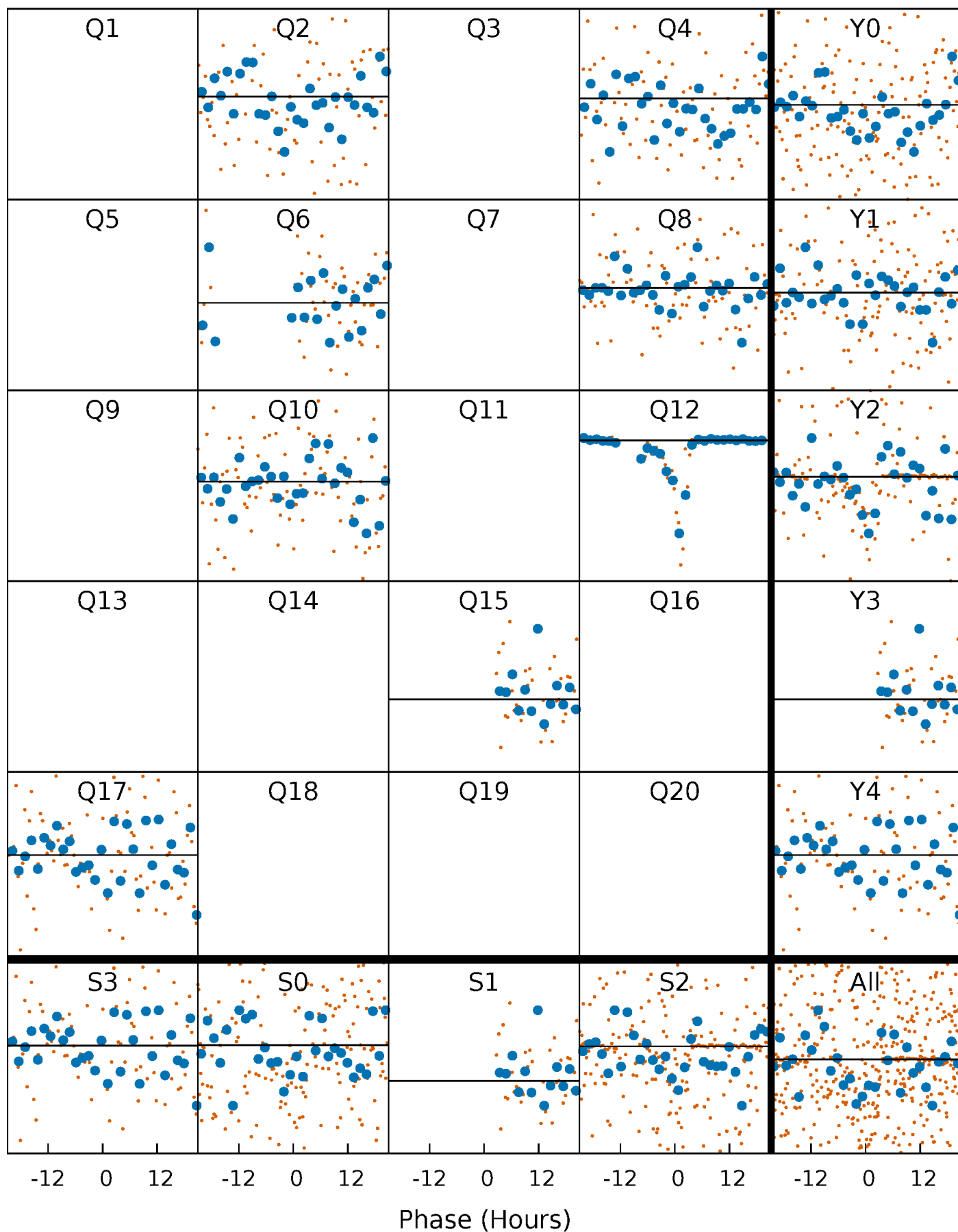
PDC Quarter-Phased Transit Curves

TCE 006776331-03 P=194.125631 Days $T_0=208.640872$ (BKJD)



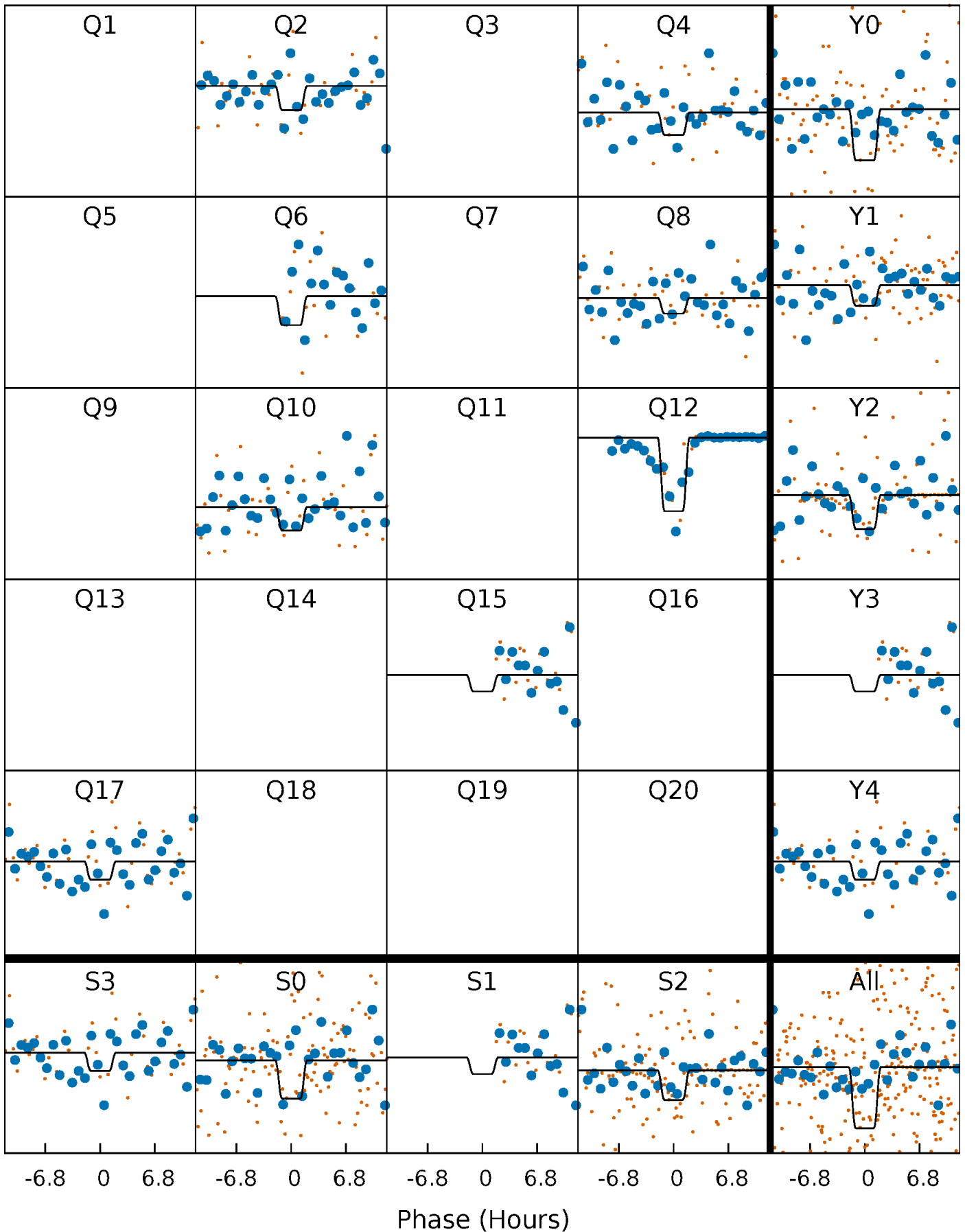
DV Quarter-Phased Transit Curves

TCE 006776331-03 P=194.125631 Days $T_0=208.640872$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

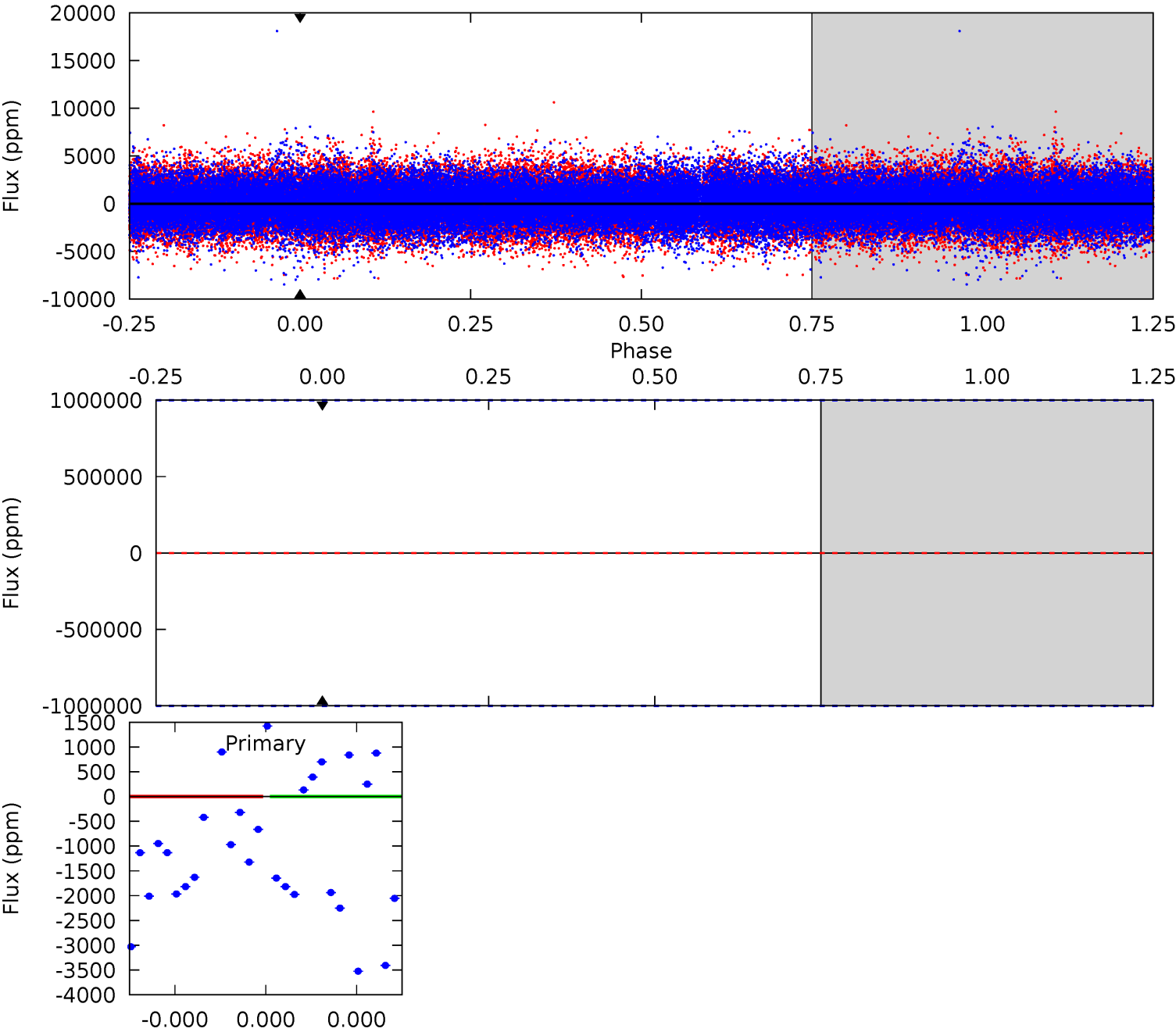
TCE 006776331-03 P=194.125631 Days $T_0=208.683062$ (BKJD)



DV Model-Shift Uniqueness Test

006776331-03, P = 194.125631 Days, E = 14.515241 Days

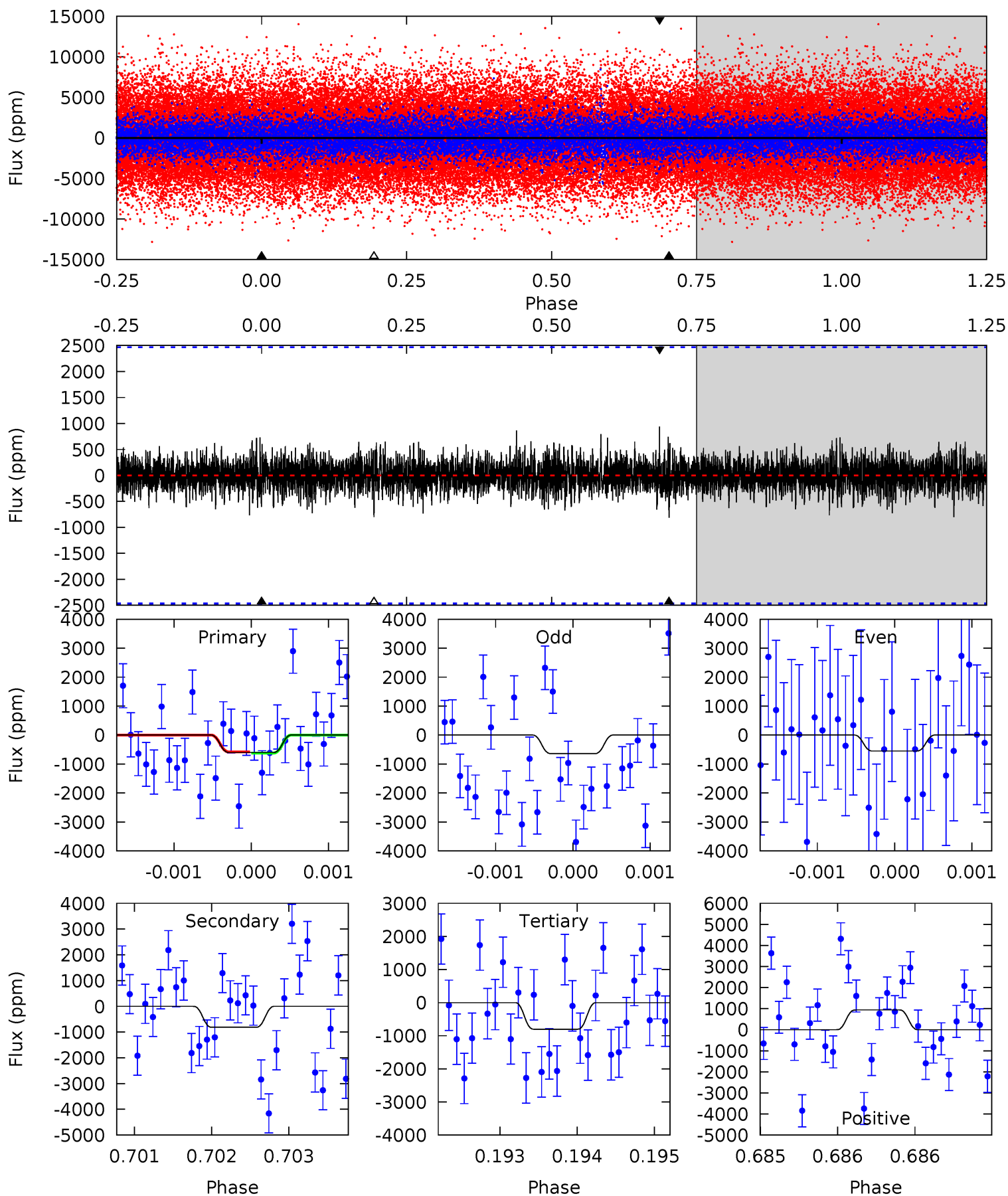
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



Alt Model-Shift Uniqueness Test

006776331-03, P = 194.125631 Days, E = 14.557431 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1.34	1.81	1.78	2.09	5.49	3.34	0.46	-0.44	-0.75	0.03	-0.27	0.10	0.93	0.54	0.04



Stellar Parameters For KIC 006776331

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	7870^{+244}_{-325}	$3.704^{+0.459}_{-0.081}$	$-0.280^{+0.200}_{-0.300}$	$3.270^{+0.396}_{-1.684}$	$1.976^{+0.208}_{-0.555}$	$0.080^{+0.362}_{-0.021}$
	+3%/-4%	+12%/-2%	+71%/-107%	+12%/-51%	+11%/-28%	+455%/-26%
Source	KIC0	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 006776331-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	0 ± 1000000	$23.52^{+26.55}_{-16.73}$	940^{+64}_{-116}	-4046^{+48140}_{-38697}	$-204.949^{+119421.950}_{-120032.693}$
Alt.	-815 ± 450	$27.59^{+29.48}_{-18.93}$	944^{+58}_{-117}	4450^{+3754}_{-1114}	349^{+3904}_{-281}

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

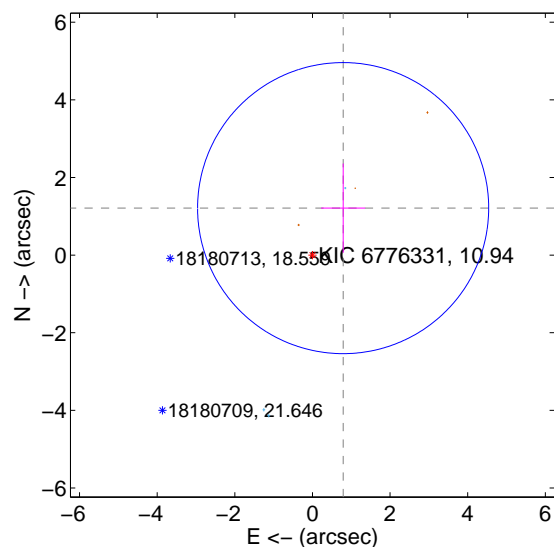
Supplemental centroid analysis for 006776331-03. **Kepler magnitude: 10.94.** Transit SNR -1.00

There are 3 quarters with good PRF difference image offsets

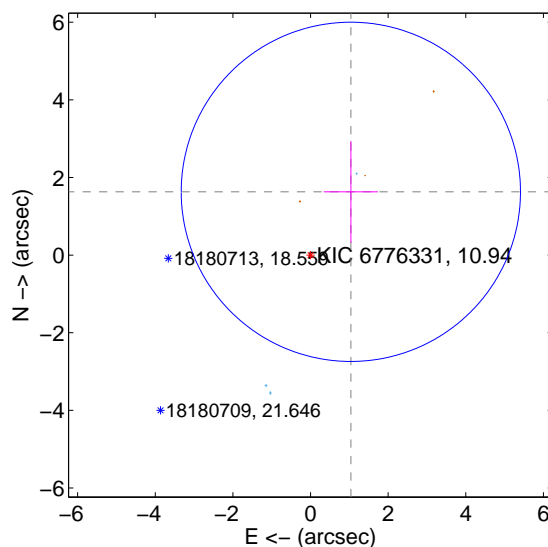
The direct PRF centroid is offset from the target star catalog position by about 0.58 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.446 ± 1.250	1.16	-0.791 ± 0.567	1.210 ± 1.149
PRF-fit source offset from KIC position	1.932 ± 1.456	1.33	-1.039 ± 0.697	1.630 ± 1.312
photometric centroid source offset	0.09 ± 0.17	0.56	0.07 ± 0.15	-0.07 ± 0.18

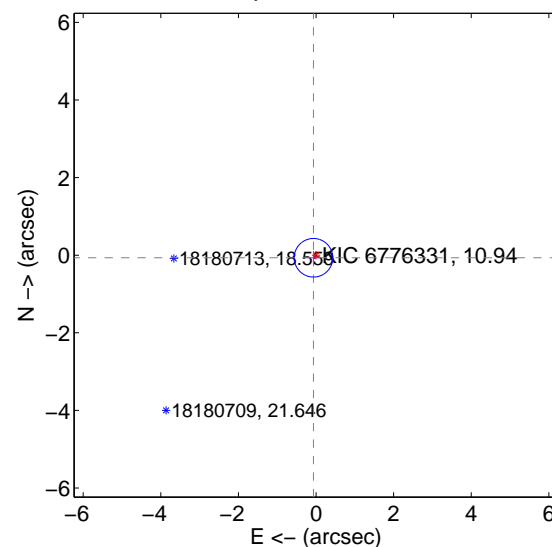
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

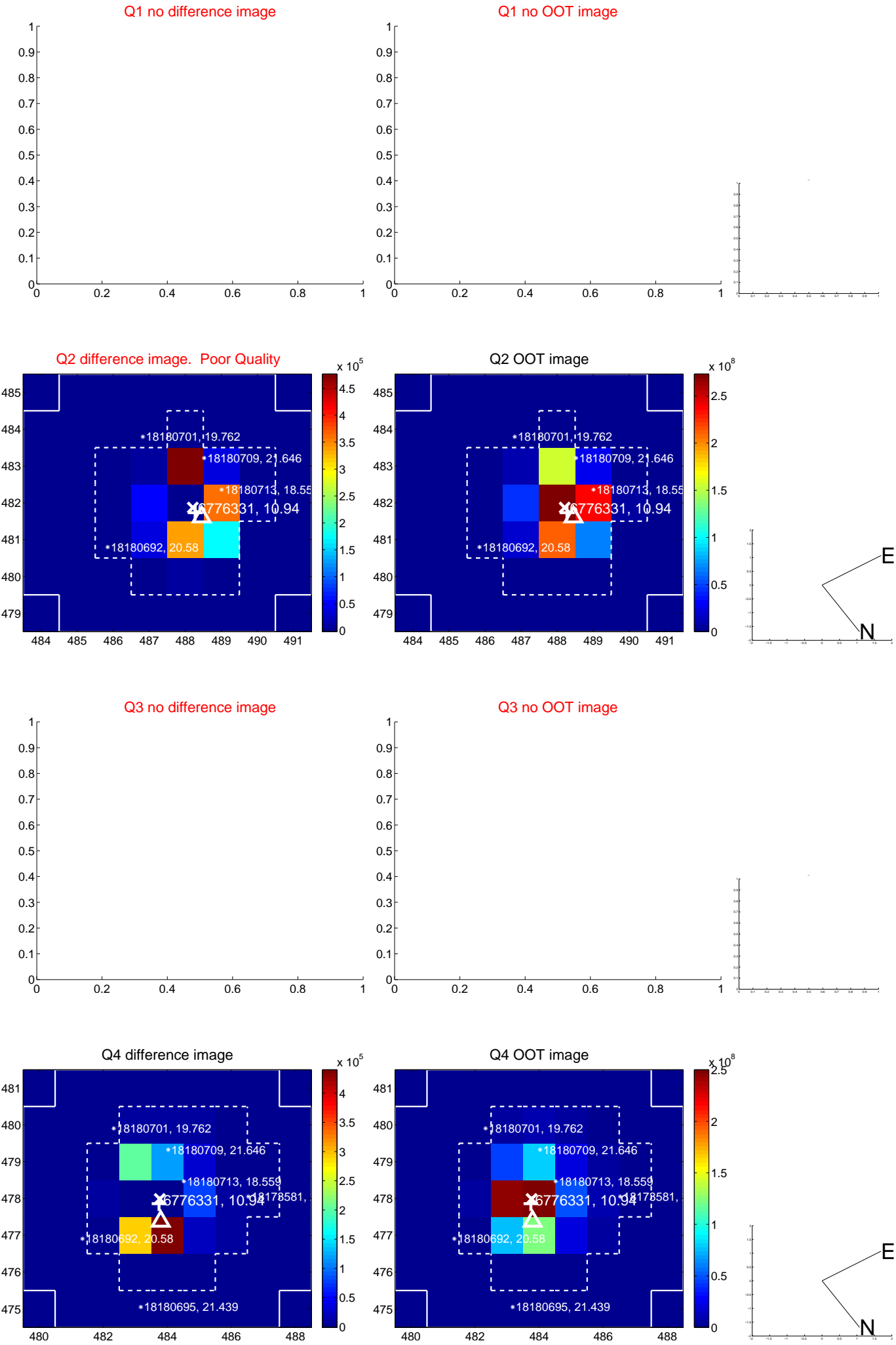


offset from photometric centroids

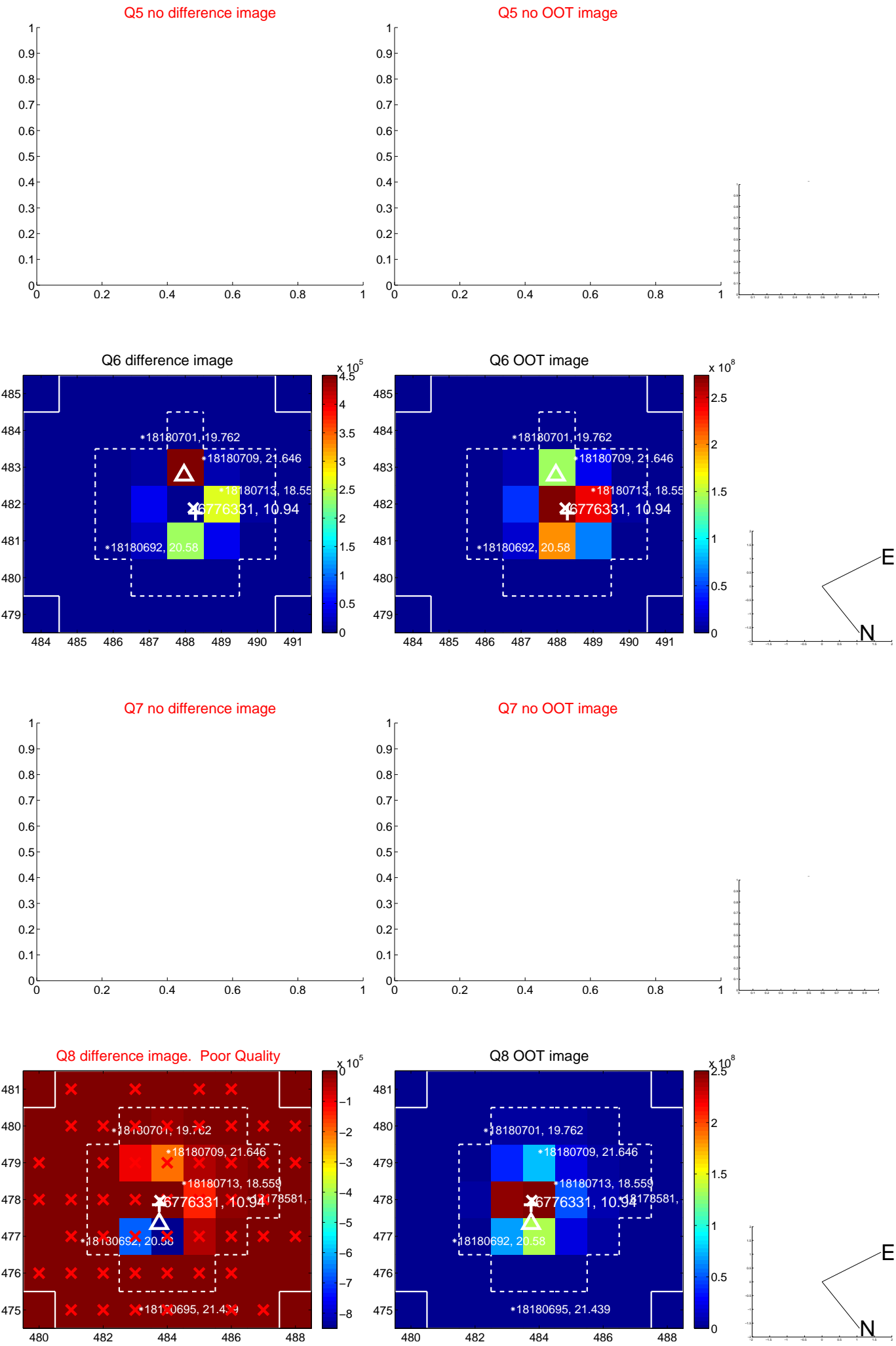


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

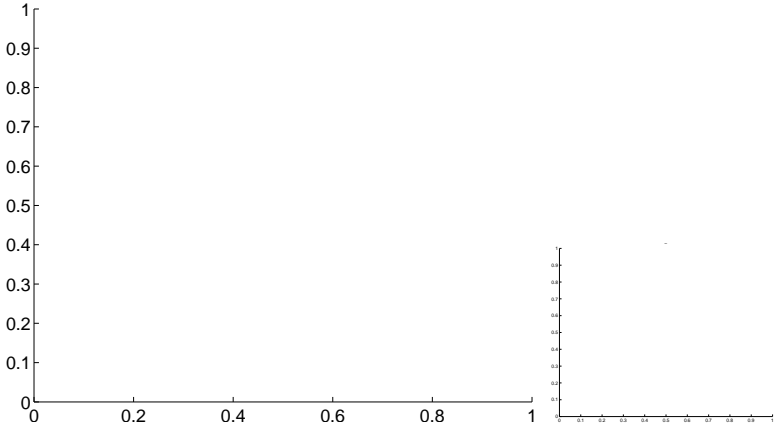


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

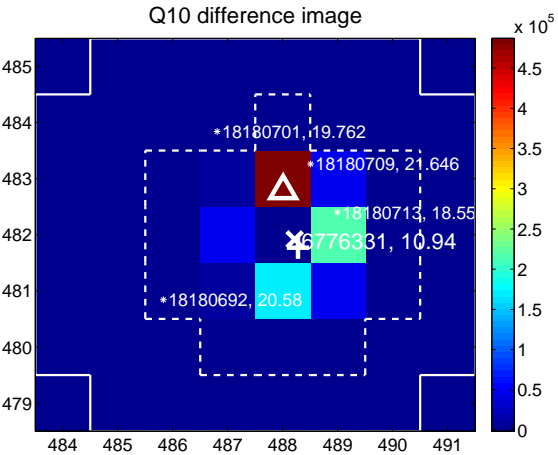
Q9 no difference image



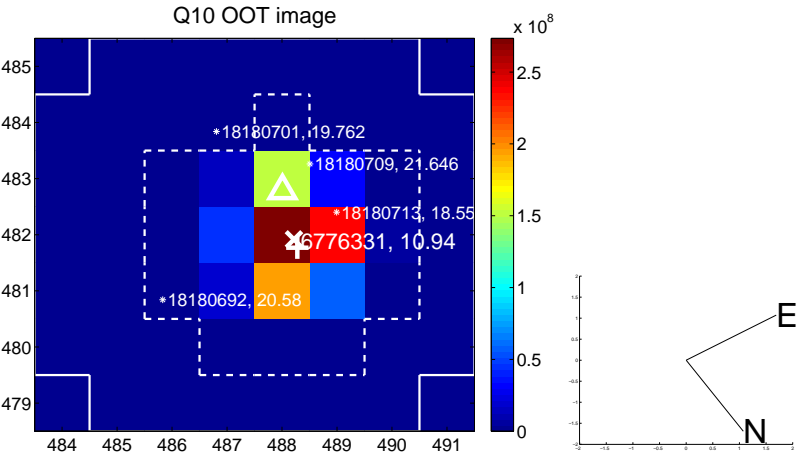
Q9 no OOT image



Q10 difference image



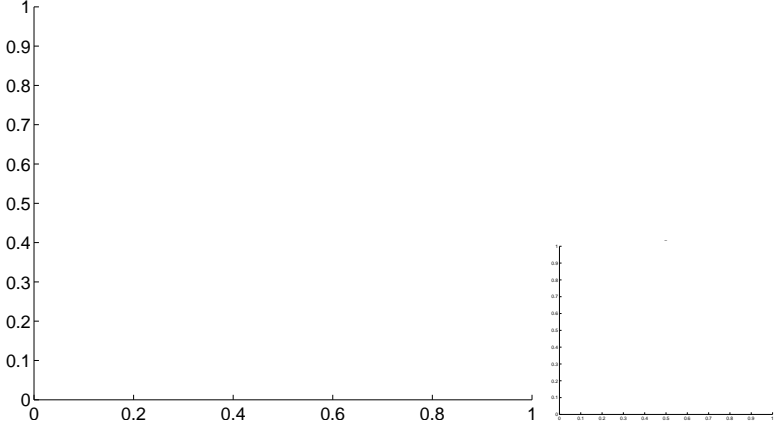
Q10 OOT image



Q11 no difference image



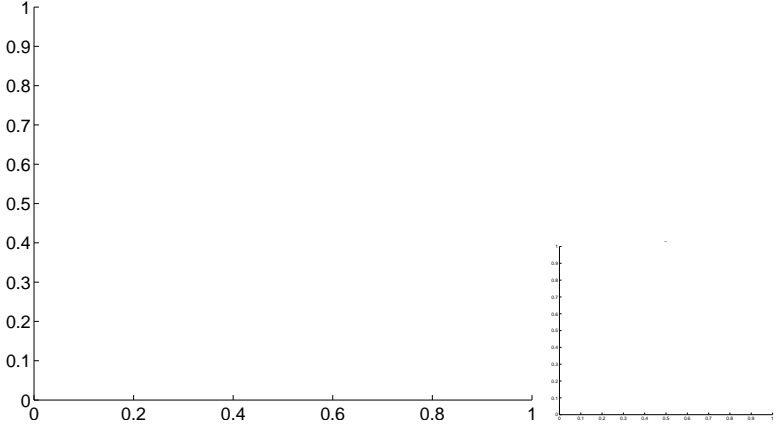
Q11 no OOT image



Q12 no difference image



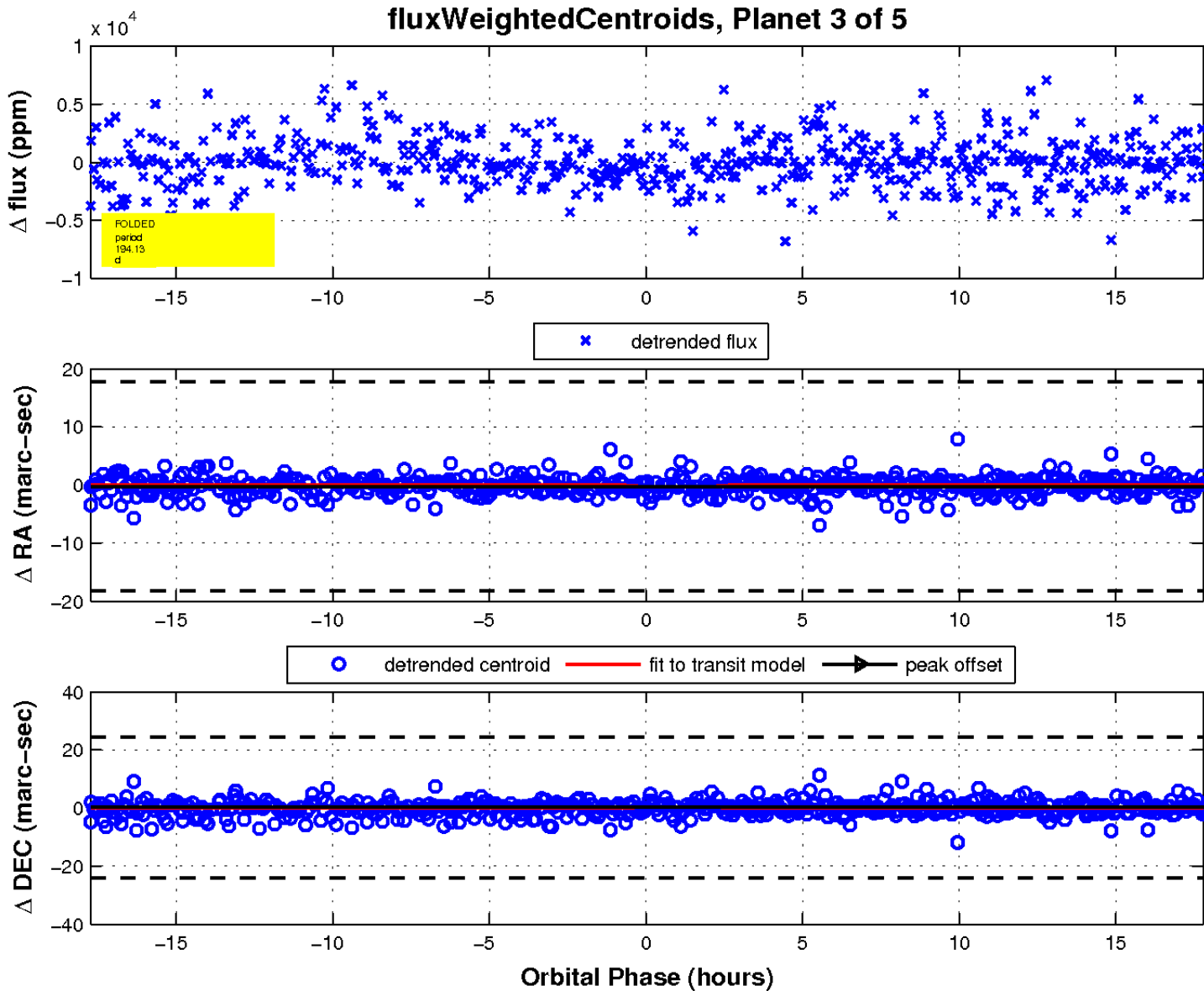
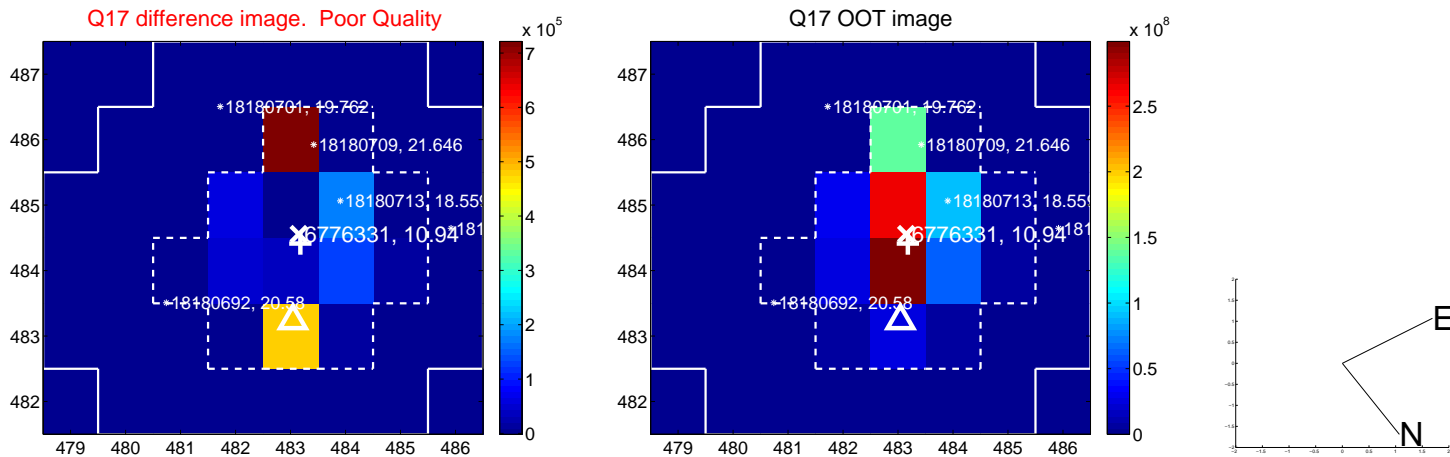
Q12 no OOT image



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

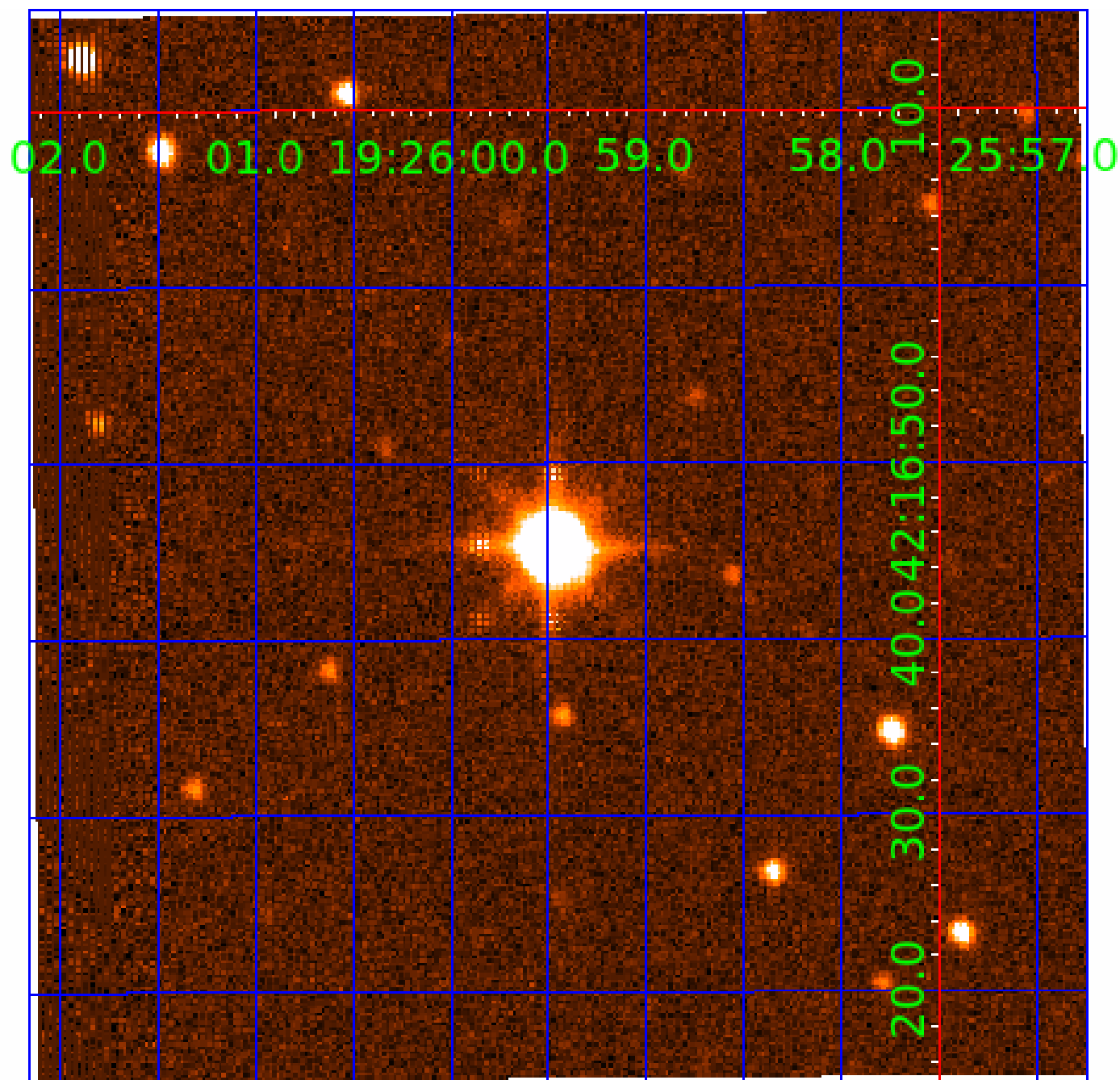


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 006776331

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})
006776331-01	OBS	No	292.385793	303.152697	4247.1	3.808	82.4	37.0	3.27	7870	22.48	31.42
006776331-02	OBS	No	292.543578	303.985293	5523.9	5.602	76.3	77.6	3.27	7870	28.80	31.40
006776331-03	OBS	No	194.125631	208.640872	341.5	10.500	41.4	-1.0	3.27	7870	6.08	54.25
006776331-04	OBS	No	114.349739	148.320840	1613.1	0.893	25.7	22.4	3.27	7870	20.40	109.86
006776331-05	OBS	No	145.058436	160.965149	637.4	12.173	28.2	21.4	3.27	7870	8.94	80.00

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006776331-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_ZUMA—LPP_DV—LPP_ALT—INCONSISTENT_TRANS—CENT_SATURATED
006776331-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_ZUMA_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED
006776331-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_ZUMA—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED
006776331-04	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED
006776331-05	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED

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

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

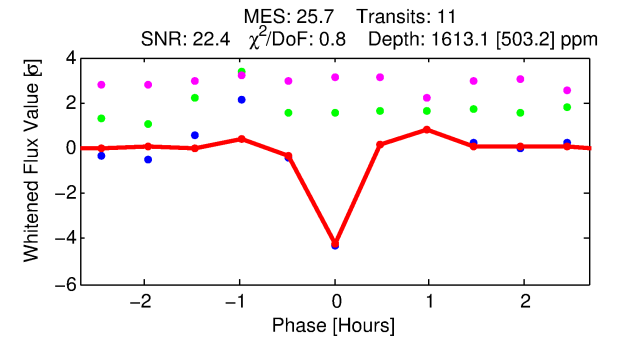
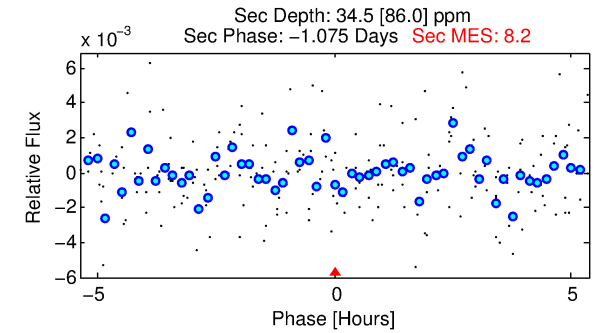
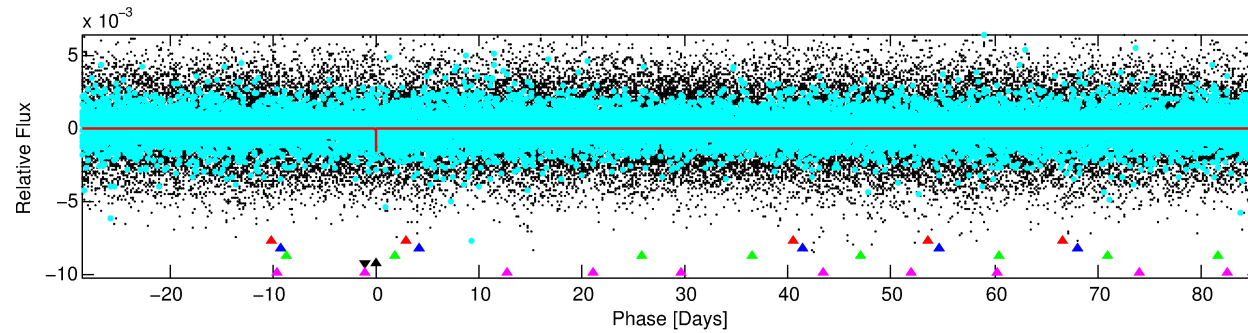
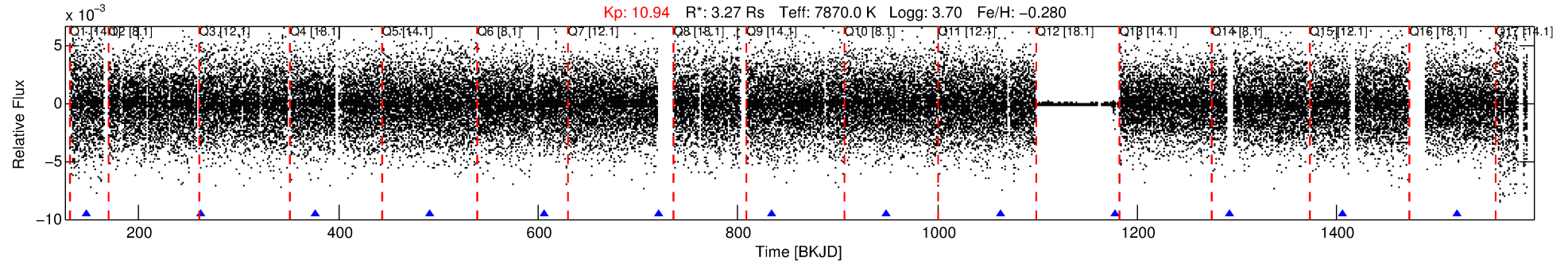
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 006776331-04

No Significant Match Found

DV One-Page Summary

KIC: 6776331 Candidate: 4 of 5 Period: 114.350 d

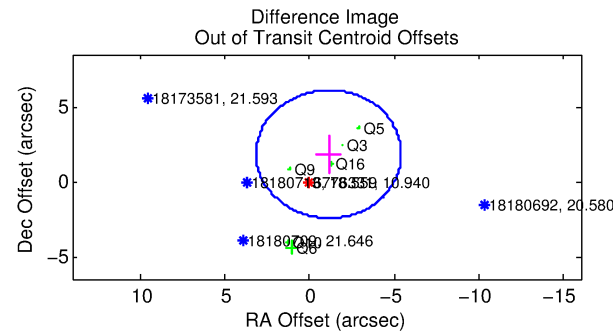
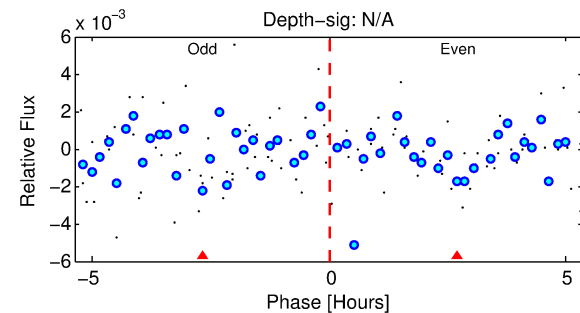
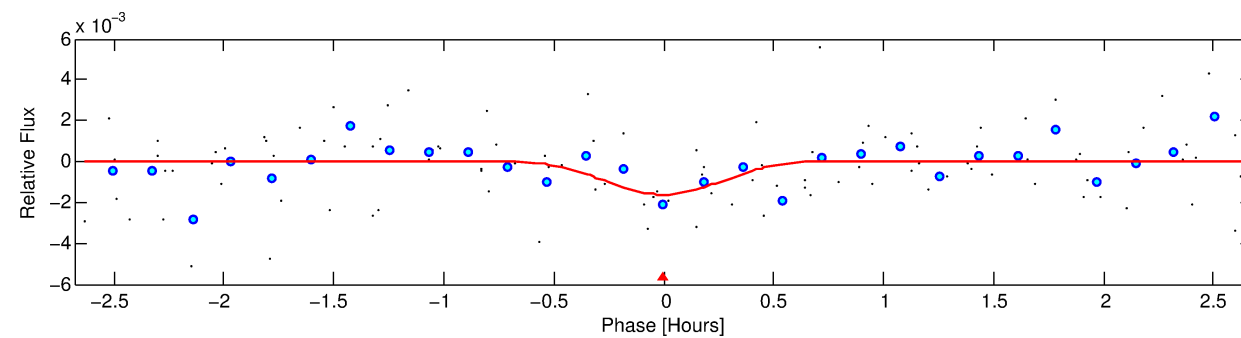


DV Fit Results:

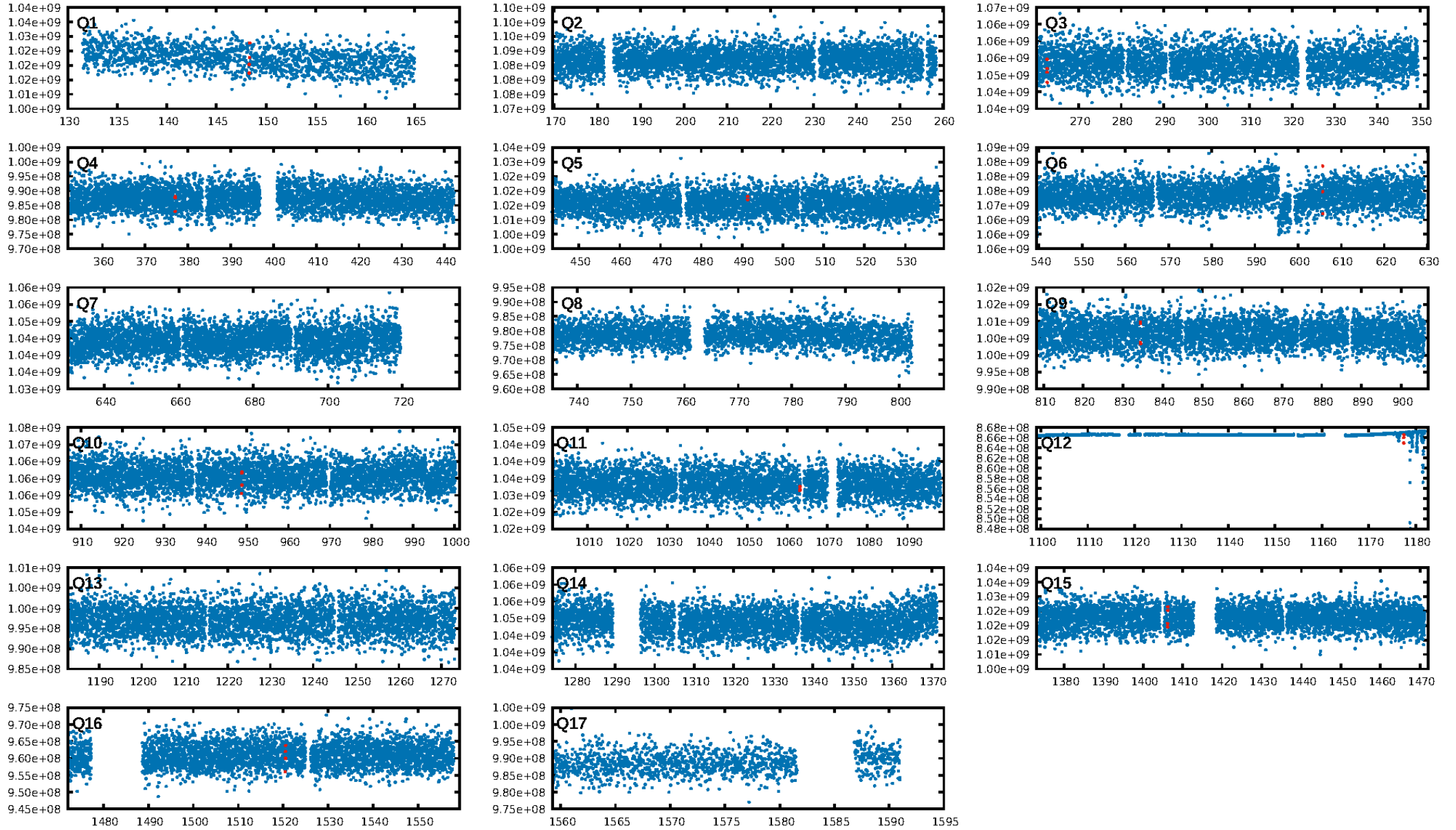
Period = 114.34974 [0.00130] d
Epoch = 148.3208 [0.0106] BKJD
 R_p/R^* = 0.0572 [0.6120]
 a/R^* = 403.02 [1487.48]
 b = 0.97 [1.19]
 Seff = 109.86 [88.00]
 T_{eq} = 826 [165] K
 R_p = 20.40 [218.65] Re
 a = 0.5784 [0.2845] AU
 A_g = 15.25 [329.01] [0.04σ]
 T_{effp} = 2522 [13593] K [0.1σ]

DV Diagnostic Results:

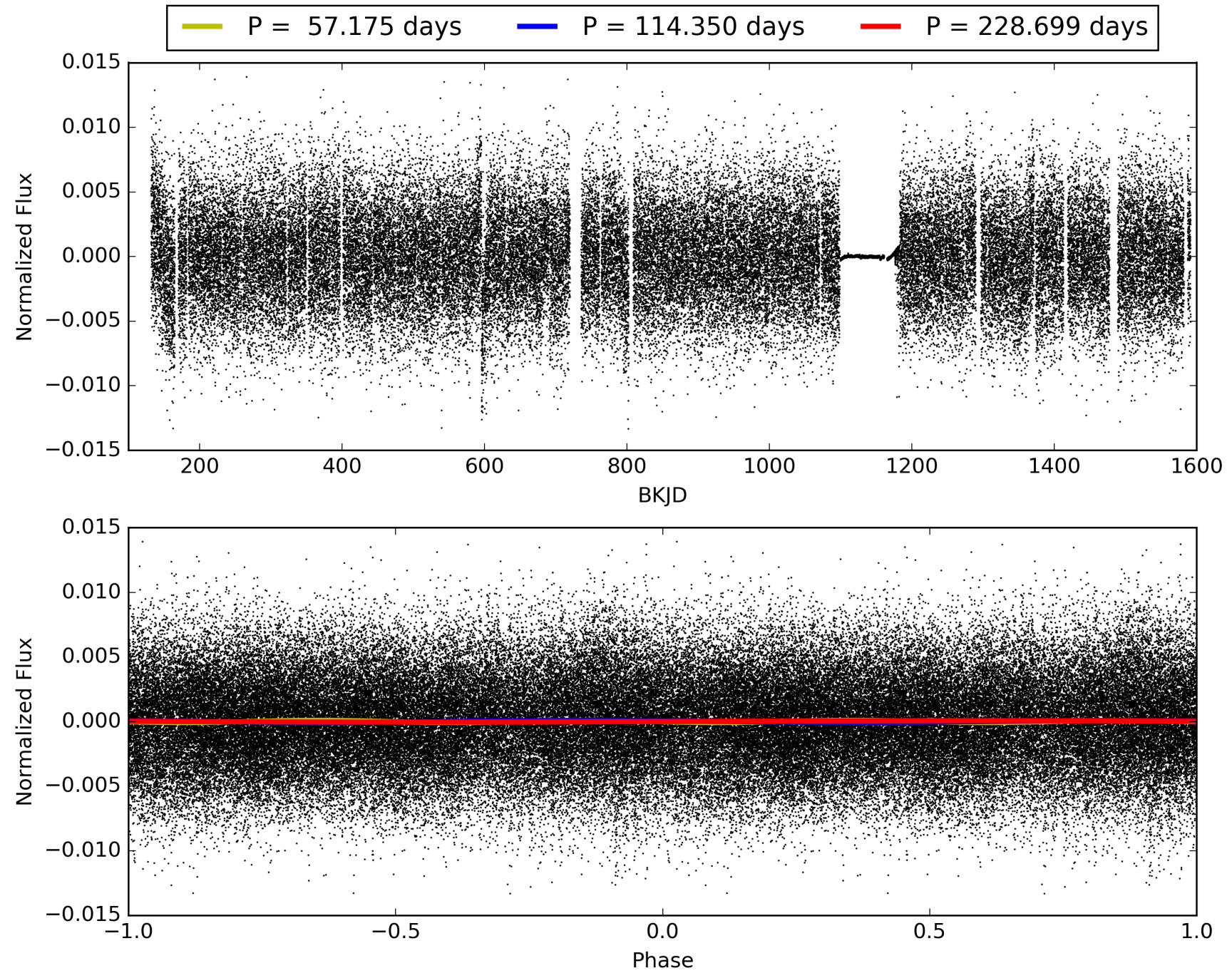
ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [60.38σ]
ModelChiSquare2-sig: 88.4%
ModelChiSquareGof-sig: 99.3%
Bootstrap-pfa: 6.40e-146
RollingBand-fgt: 1.00 [10/10]
GhostDiagnostic-chr: 2.37
Centroid-sig: 43.4%
Centroid-so: 0.220 arcsec [0.60σ]
OotOffset-rm: 2.148 arcsec [1.51σ]
OotOffset-st: 2/1/1/2 [6]
KicOffset-rm: 1.996 arcsec [1.58σ]
KicOffset-st: 2/1/1/2 [6]
DiffImageQuality-fgm: 0.17 [1/6]
DiffImageOverlap-fno: 1.00 [7/7]



TCE 006776331-04, PDC Light Curves

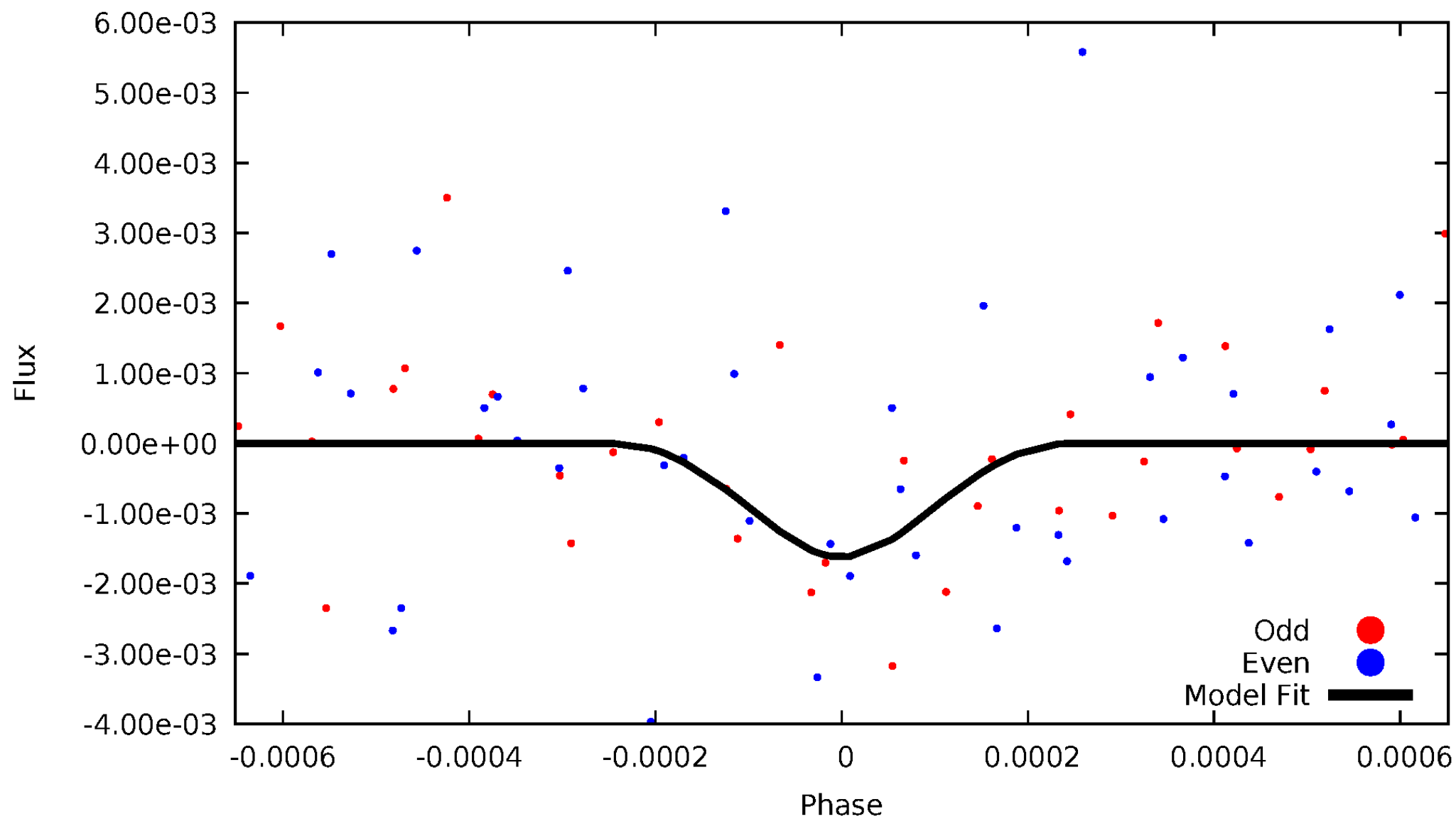


TCE 006776331-04



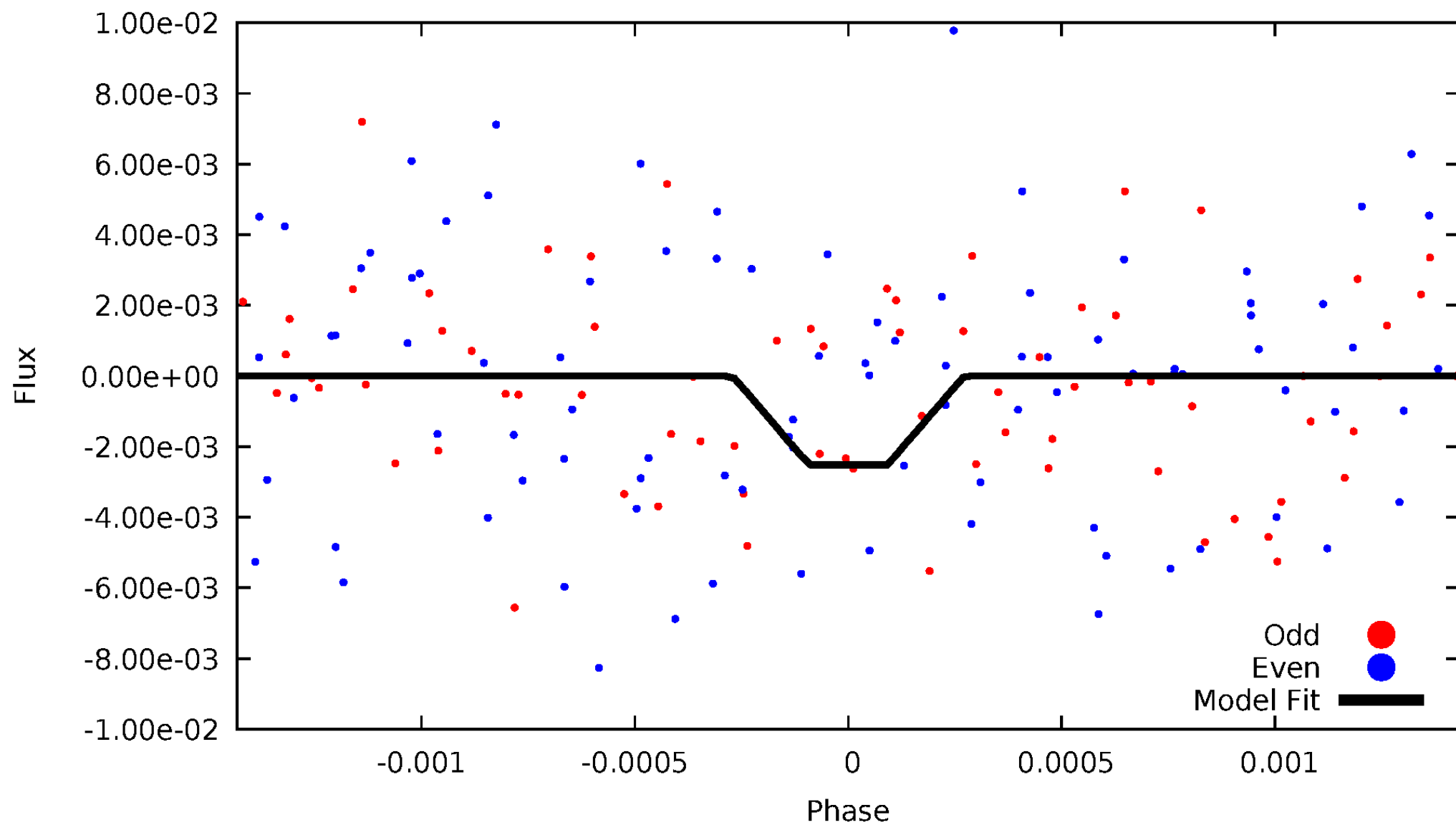
DV Odd/Even

TCE 006776331-04



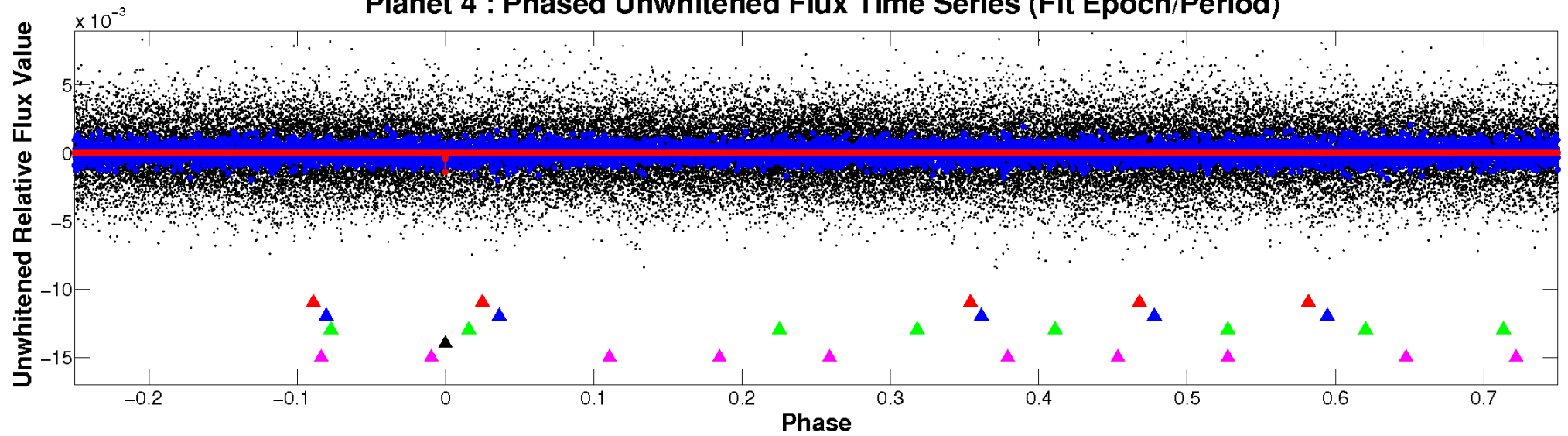
ALT Odd/Even

TCE 006776331-04

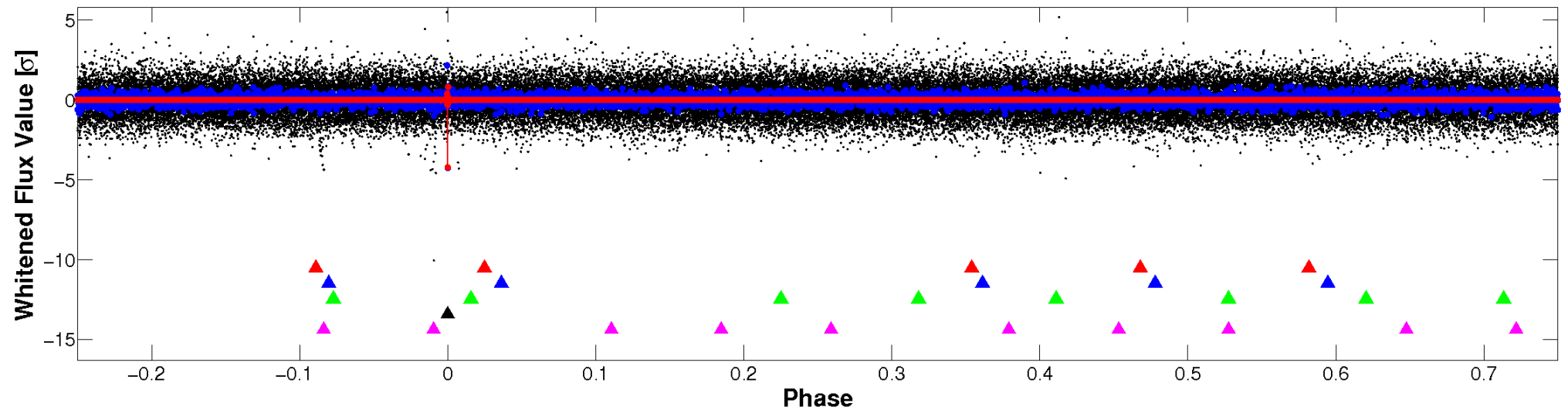


Non-Whitened Vs. Whitened Light Curve

Planet 4 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

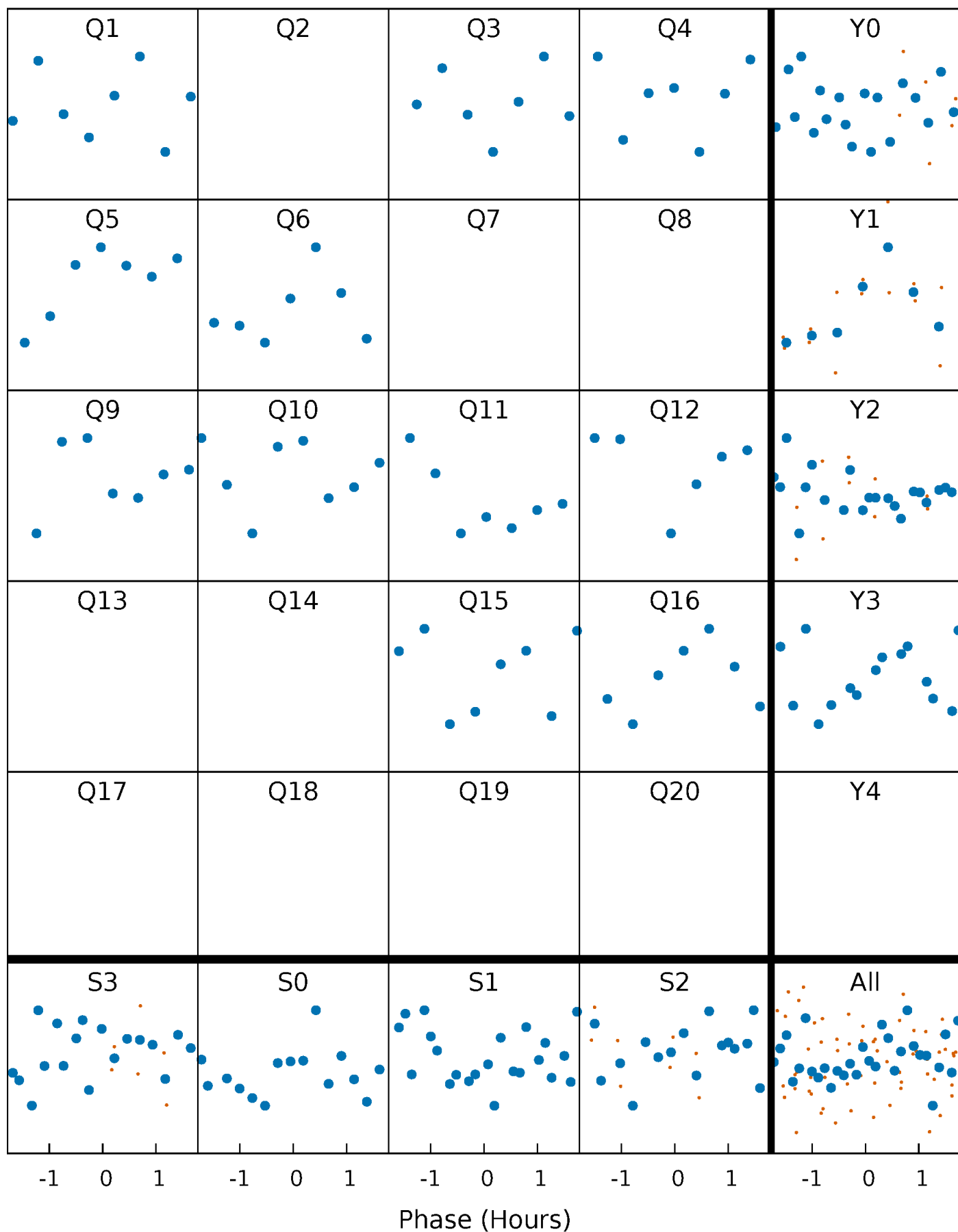


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



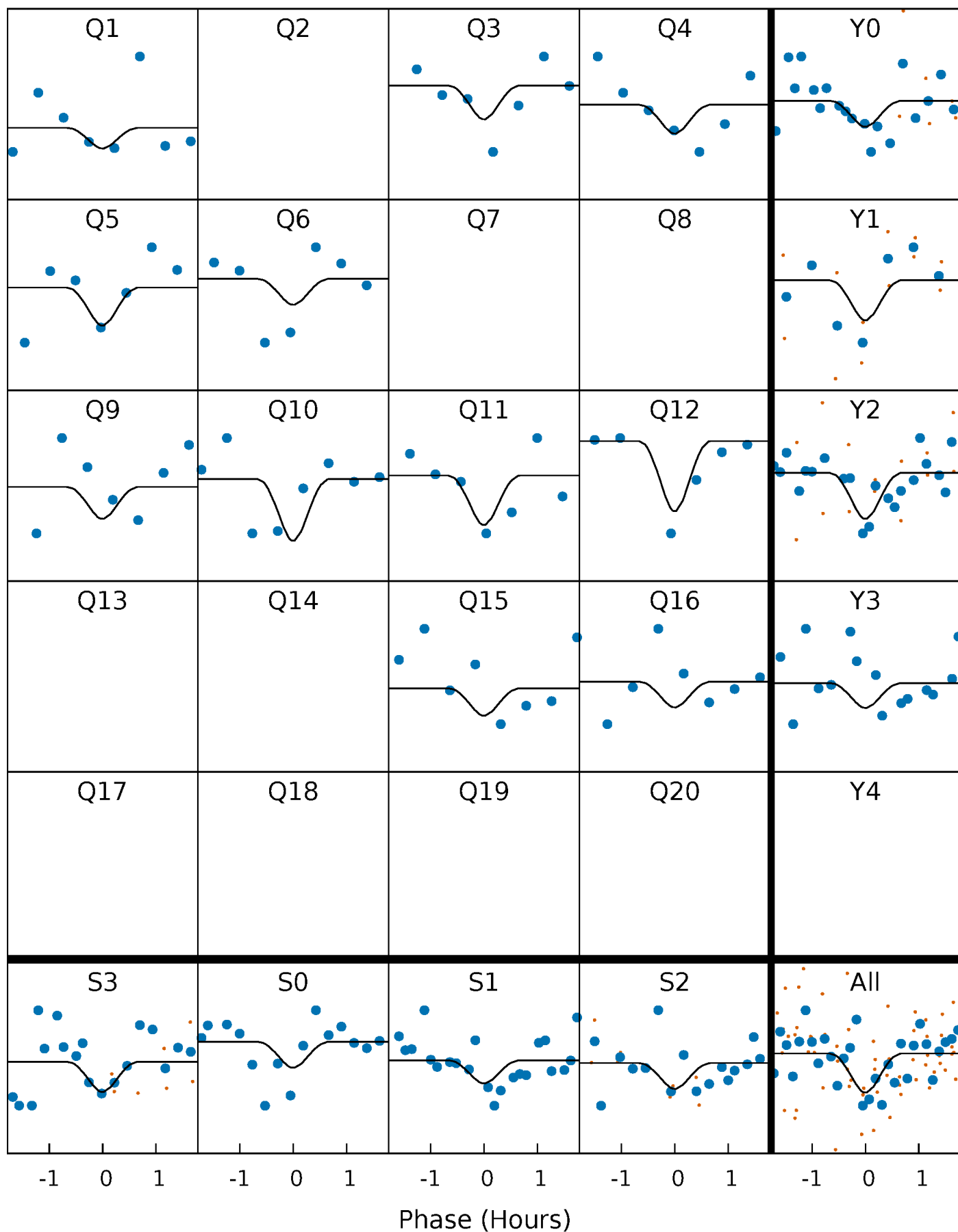
PDC Quarter-Phased Transit Curves

TCE 006776331-04 P=114.349739 Days $T_0=148.320840$ (BKJD)



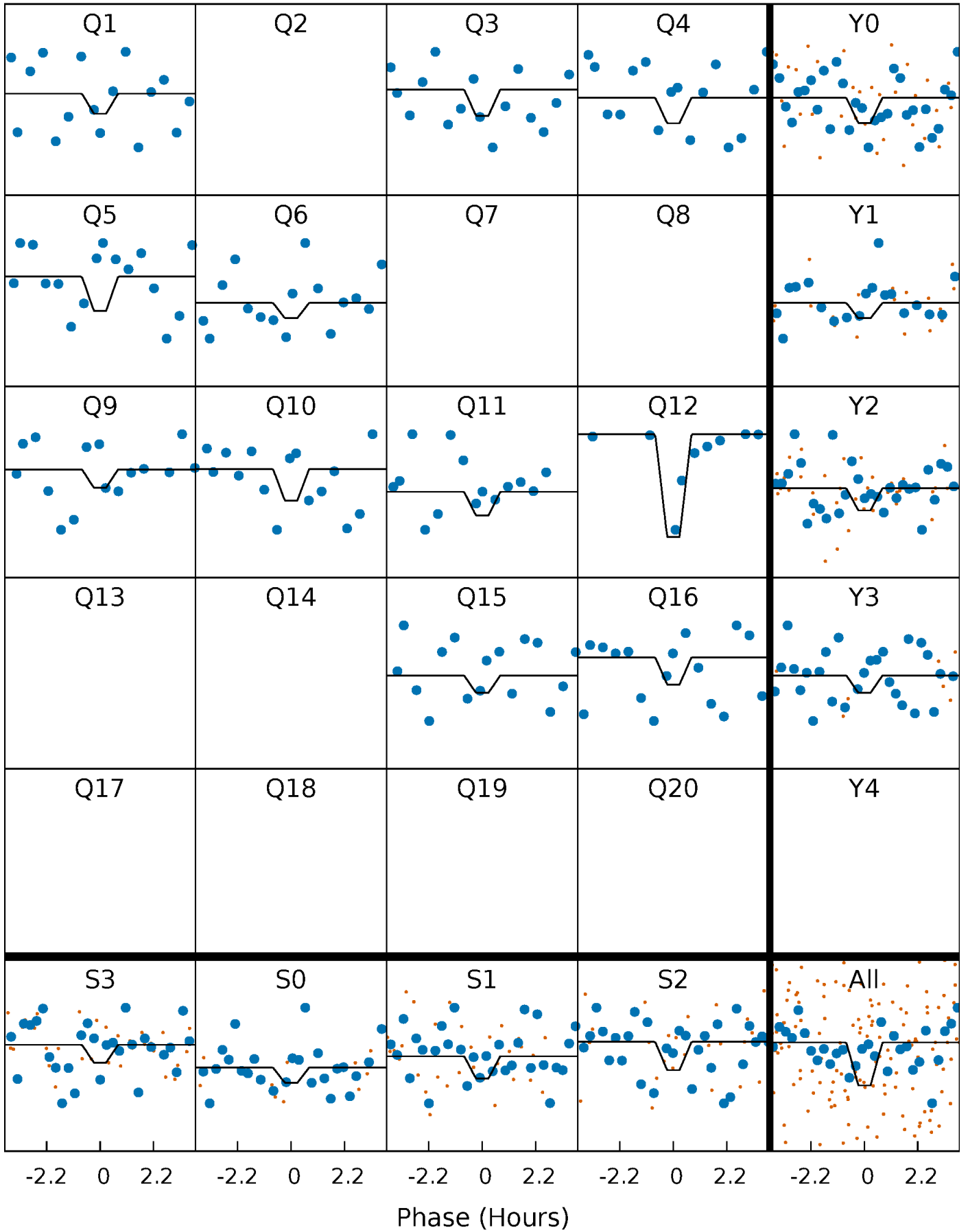
DV Quarter-Phased Transit Curves

TCE 006776331-04 $P=114.349739$ Days $T_0=148.320840$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

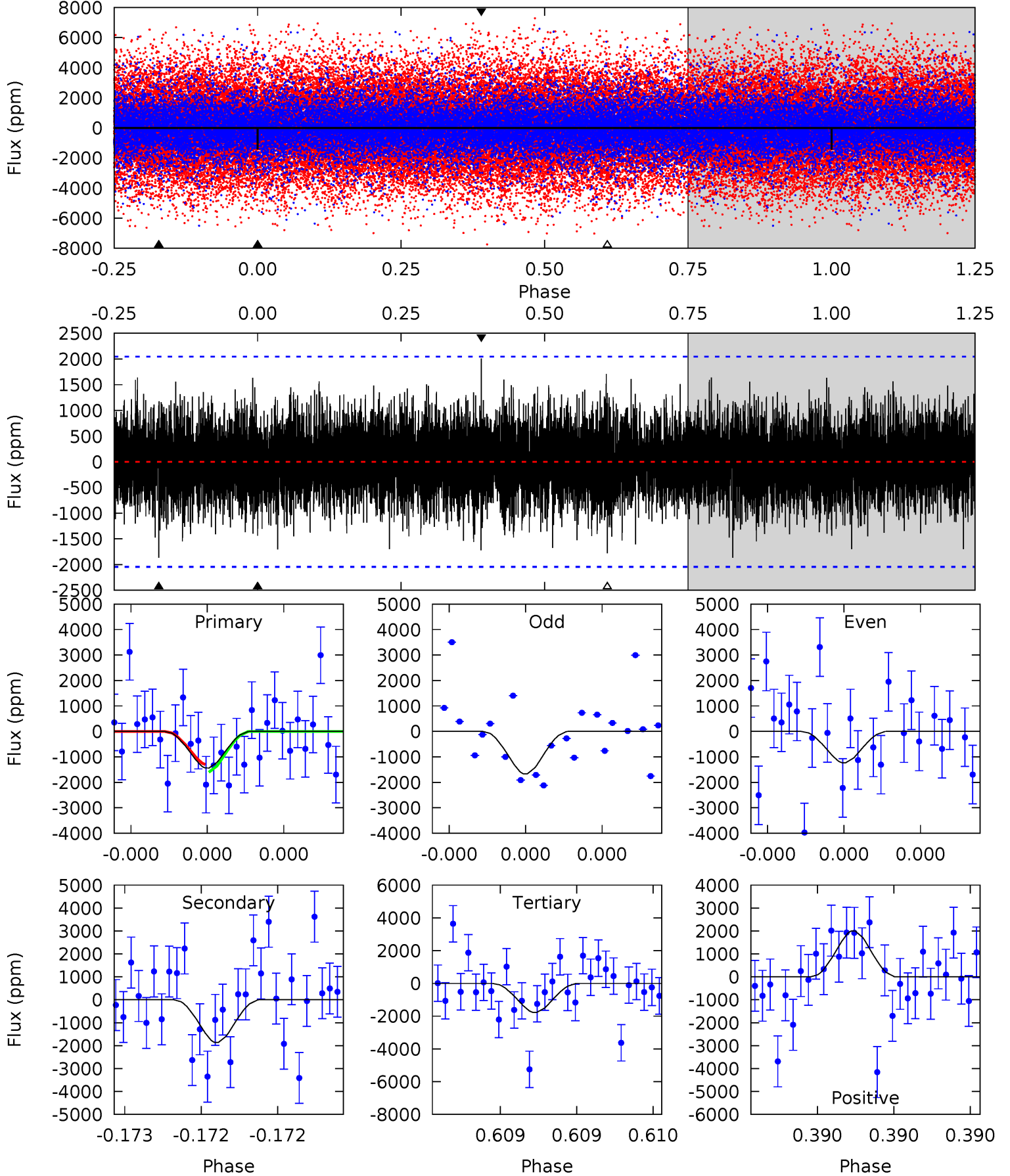
TCE 006776331-04 P=114.351291 Days $T_0=148.303826$ (BKJD)



DV Model-Shift Uniqueness Test

006776331-04, P = 114.349739 Days, E = 33.971101 Days

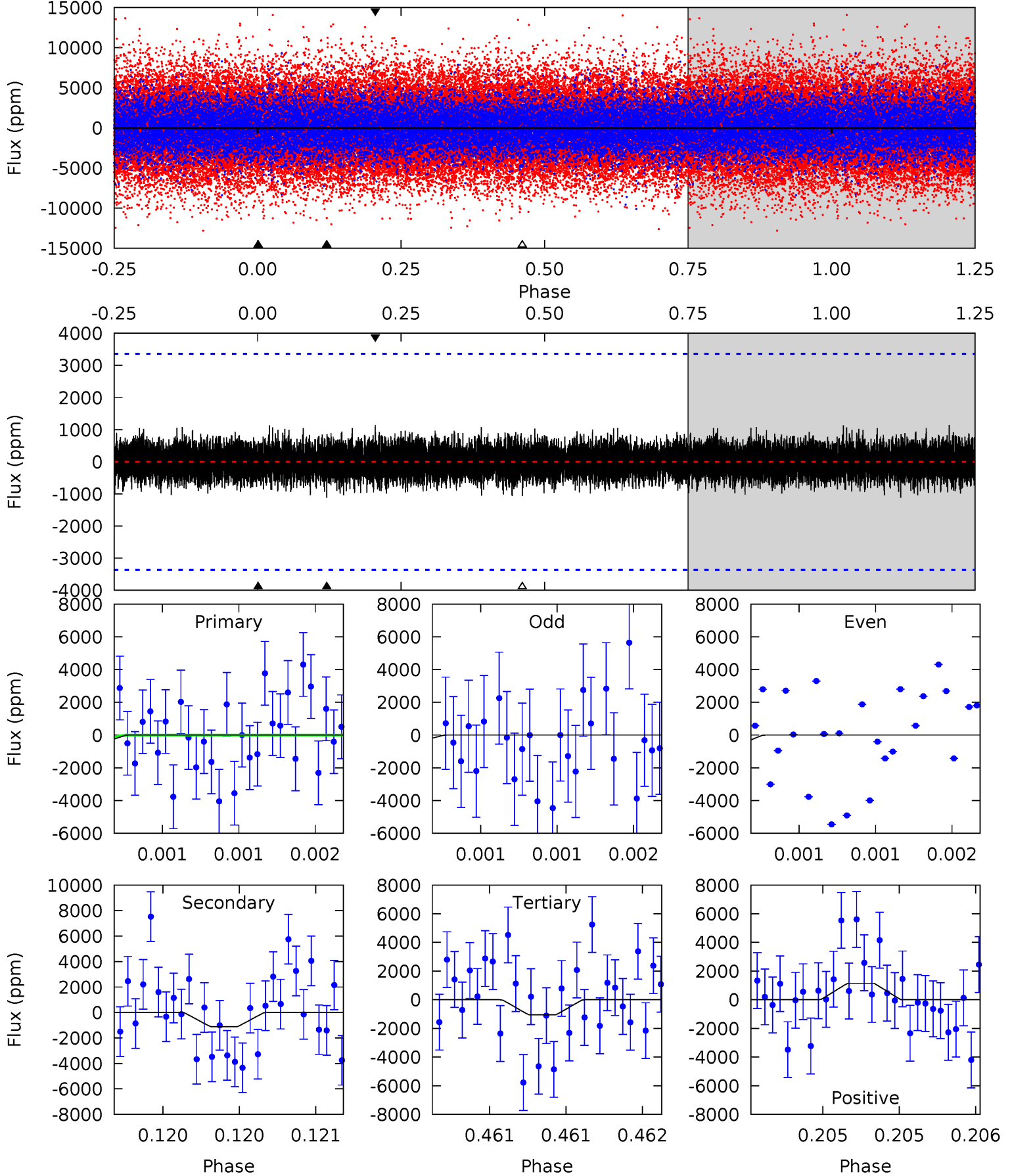
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3.94	5.10	4.86	5.49	5.60	3.52	1.32	-0.92	-1.55	0.25	-0.38	0.60	0.74	0.52	0.42



Alt Model-Shift Uniqueness Test

006776331-04, P = 114.351291 Days, E = 33.952535 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0.91	1.84	1.75	1.89	5.57	3.47	0.69	-0.84	-0.97	0.09	-0.04	0.20	1.54	0.51	0.49



Stellar Parameters For KIC 006776331

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	7870^{+244}_{-325}	$3.704^{+0.459}_{-0.081}$	$-0.280^{+0.200}_{-0.300}$	$3.270^{+0.396}_{-1.684}$	$1.976^{+0.208}_{-0.555}$	$0.080^{+0.362}_{-0.021}$
	+3%/-4%	+12%/-2%	+71%/-107%	+12%/-51%	+11%/-28%	+455%/-26%
Source	KIC0	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 006776331-04 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-1866 ± 365	$140.59^{+154.15}_{-97.00}$	1120^{+76}_{-126}	3052^{+1359}_{-532}	17^{+174}_{-13}
Alt.	-1114 ± 604	$146.79^{+142.36}_{-101.98}$	1109^{+83}_{-139}	2727^{+1150}_{-515}	$7.877^{+81.390}_{-6.378}$

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

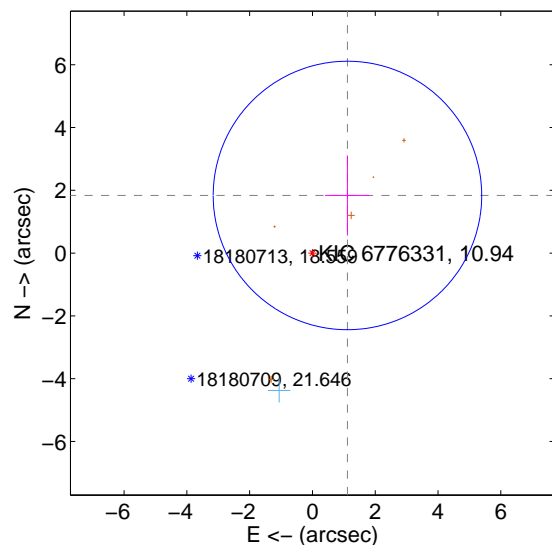
Supplemental centroid analysis for 006776331-04. **Kepler magnitude: 10.94.** Transit SNR 22.40

There are 1 quarters with good PRF difference image offsets

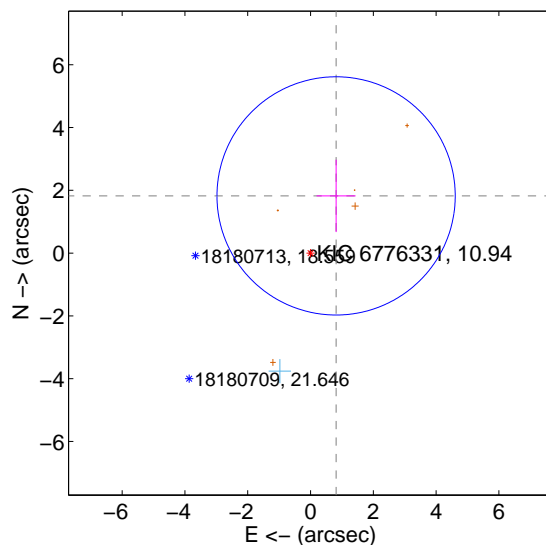
The direct PRF centroid is offset from the target star catalog position by about 0.35 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	2.148 ± 1.425	1.51	-1.115 ± 0.711	1.835 ± 1.274
PRF-fit source offset from KIC position	1.996 ± 1.265	1.58	-0.815 ± 0.622	1.822 ± 1.152
photometric centroid source offset	0.22 ± 0.37	0.60	0.20 ± 0.35	-0.10 ± 0.43

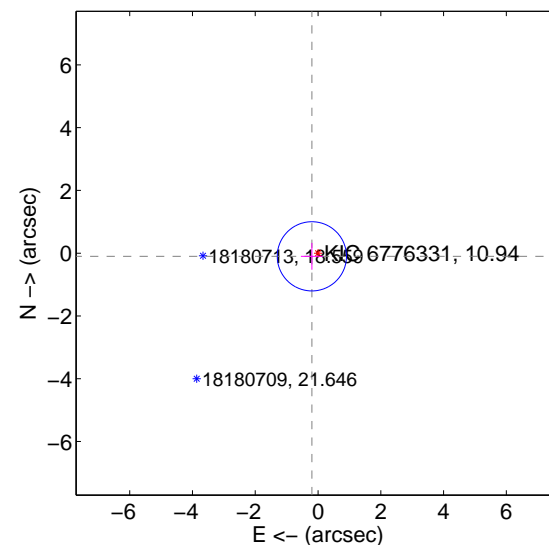
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

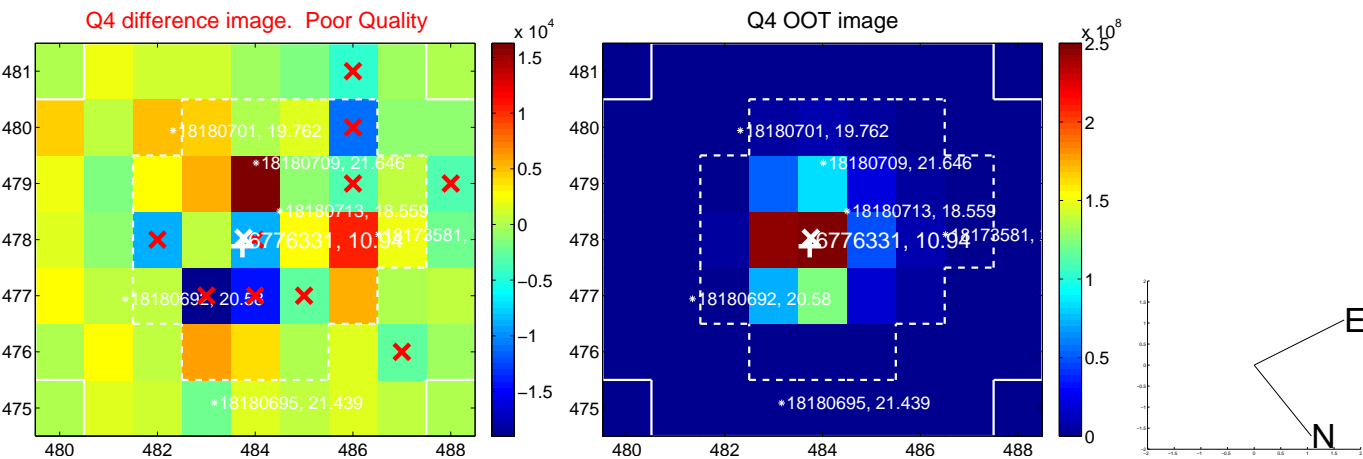
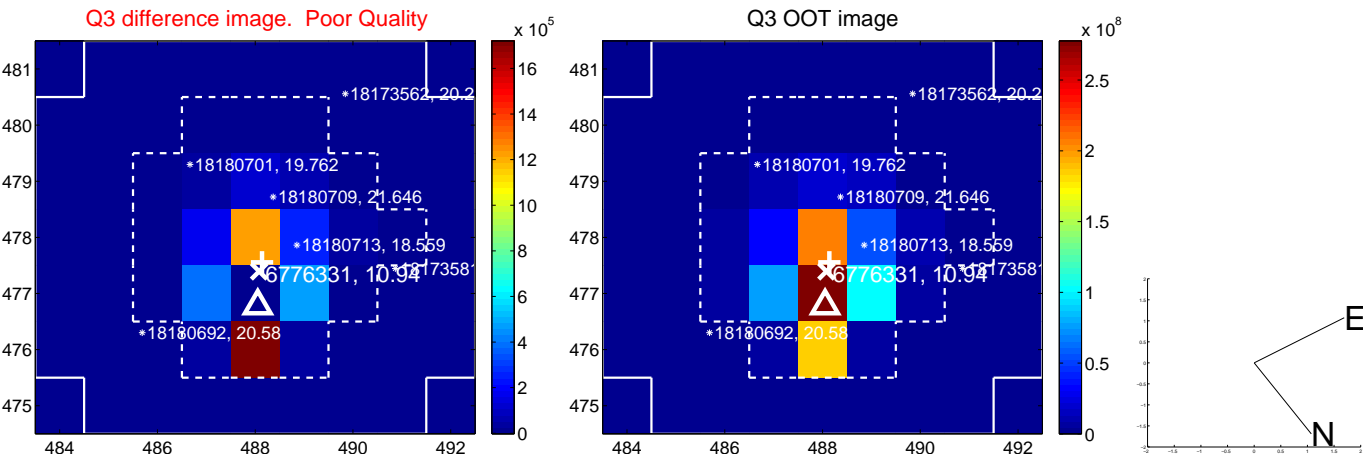
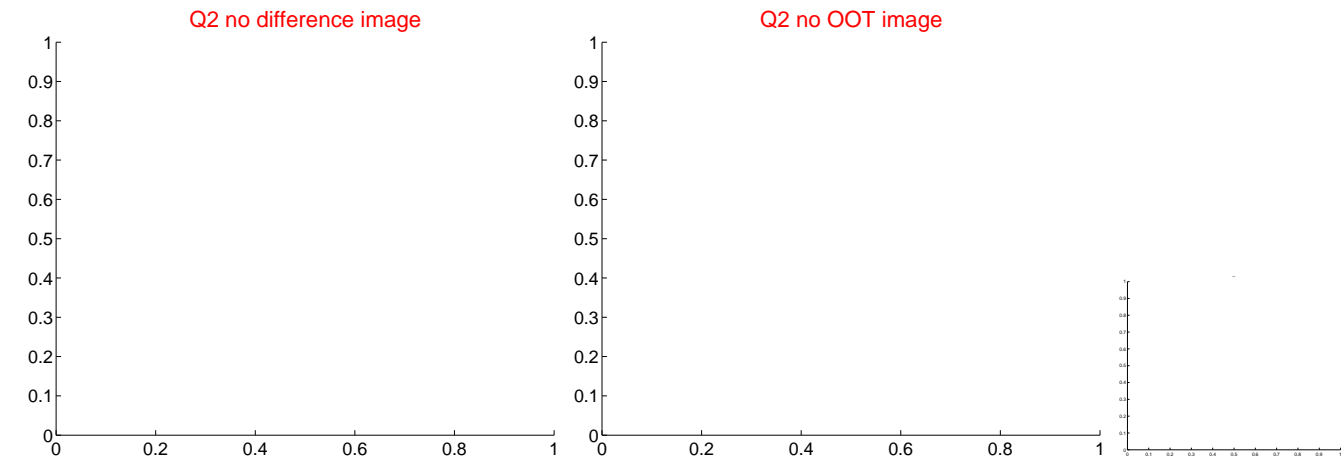


offset from photometric centroids

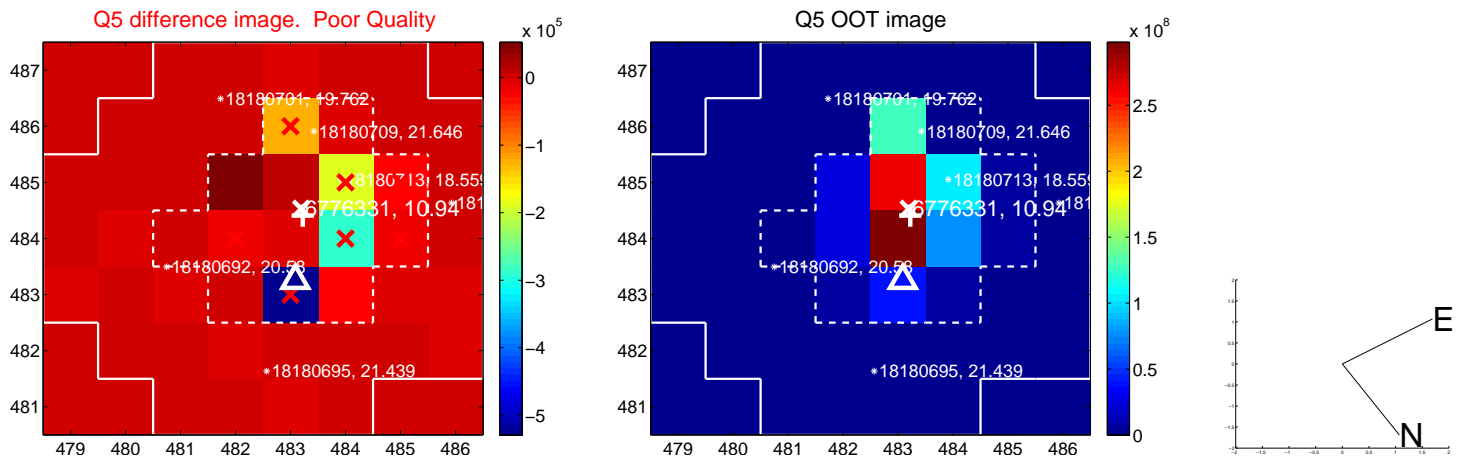


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

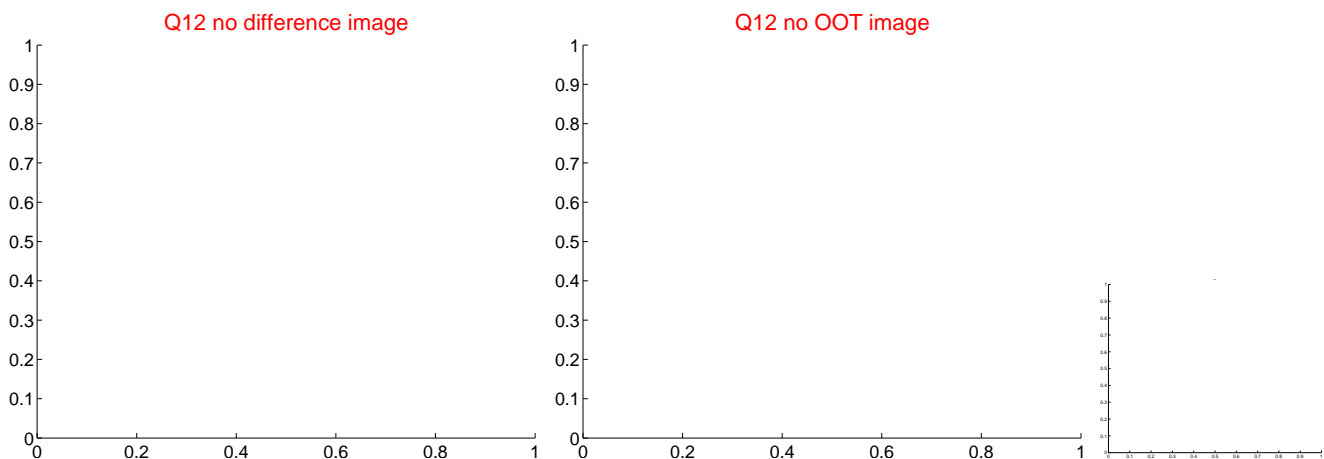
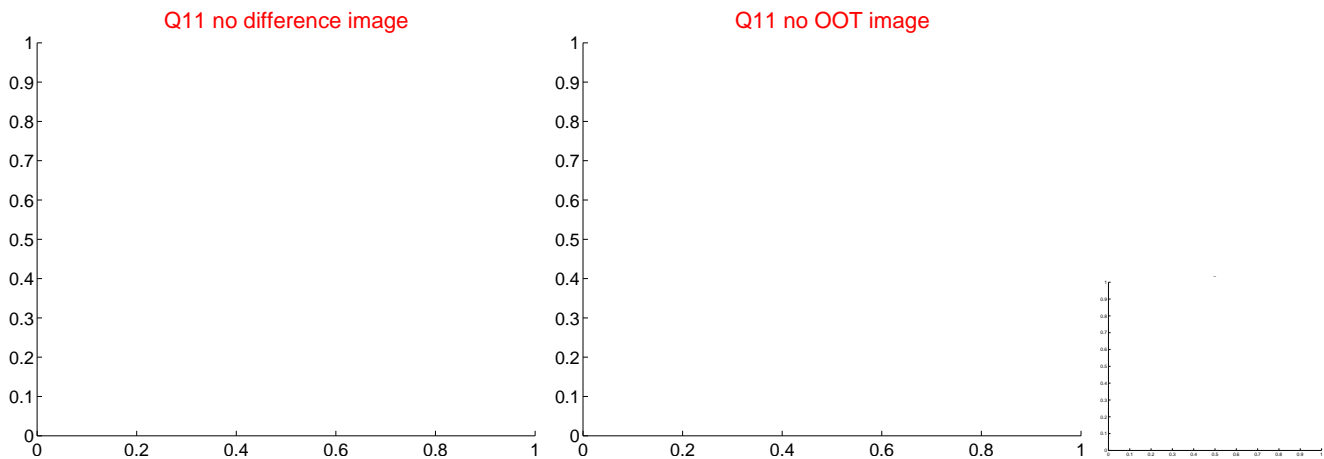
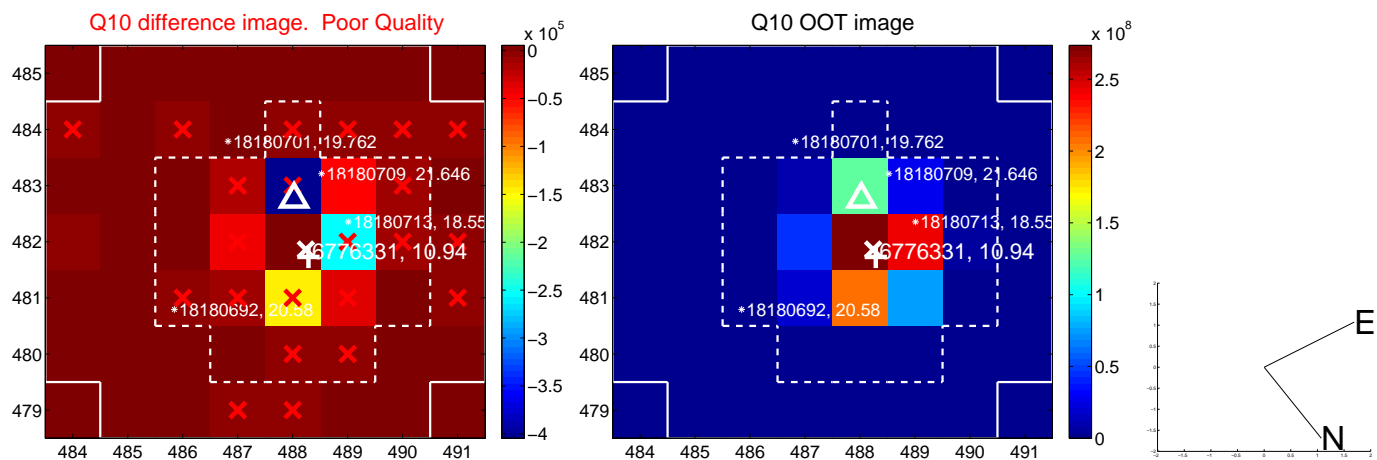
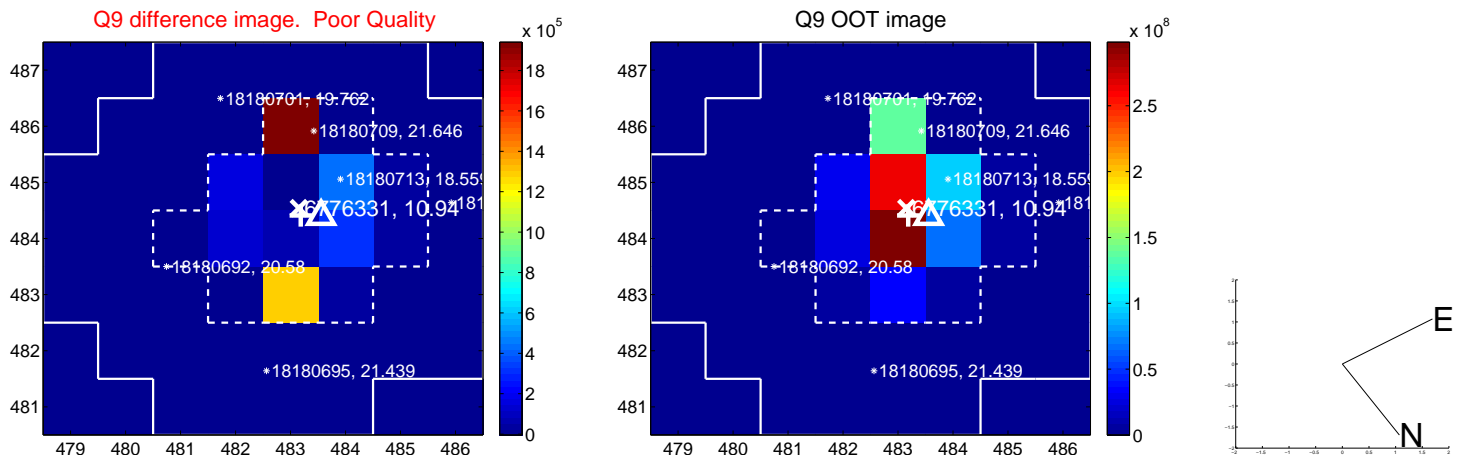
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



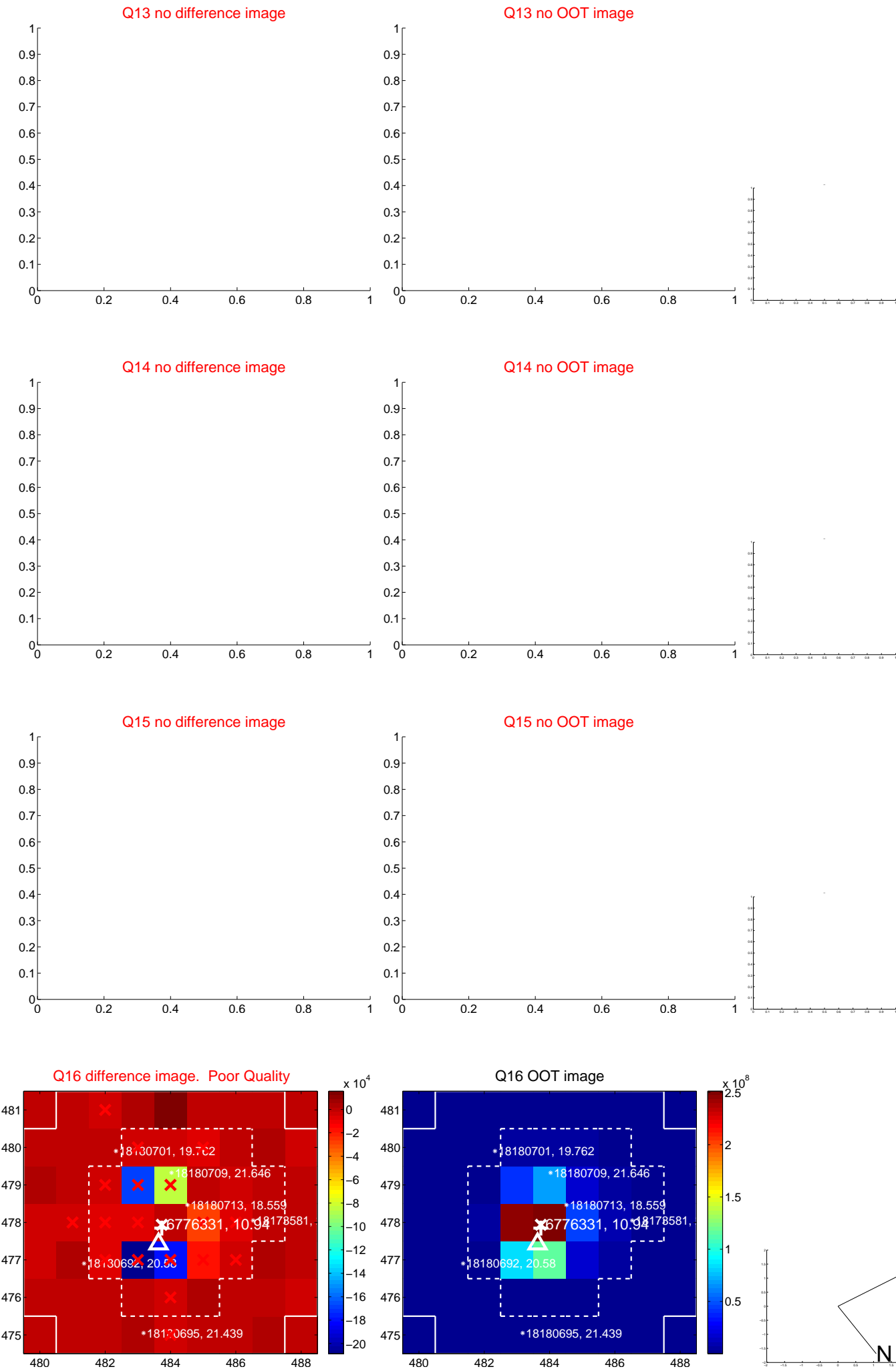
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



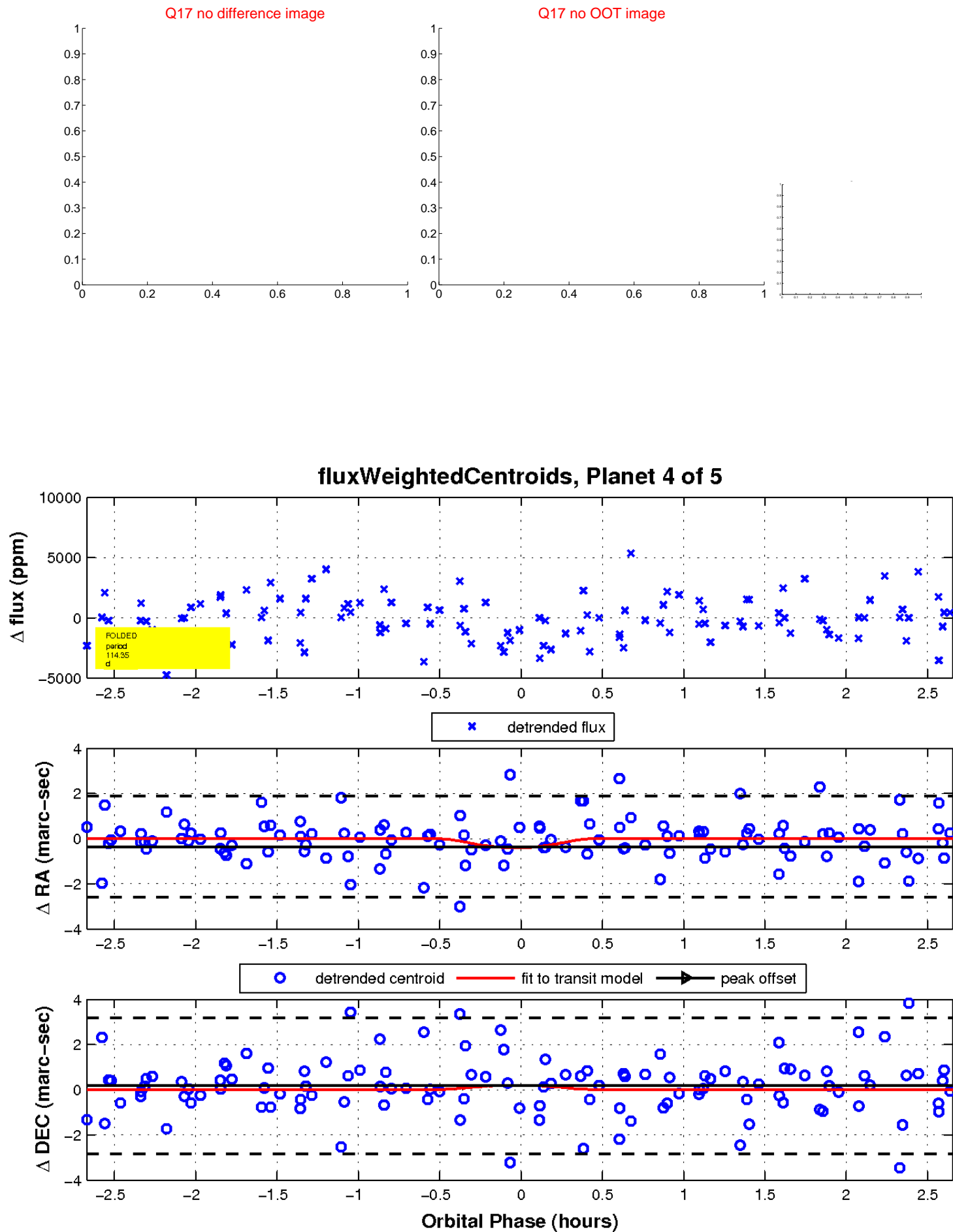
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

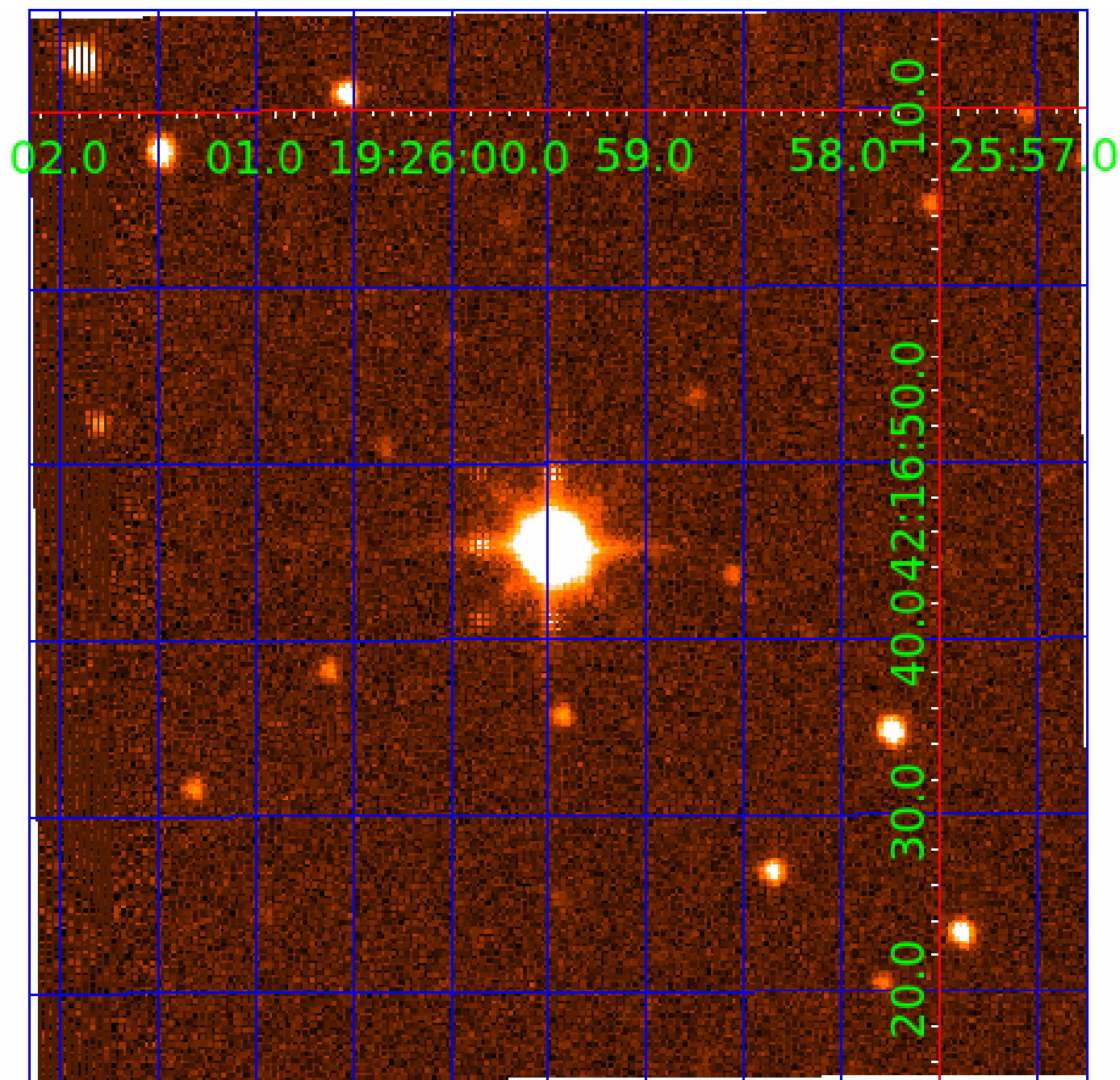


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 006776331

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})
006776331-01	OBS	No	292.385793	303.152697	4247.1	3.808	82.4	37.0	3.27	7870	22.48	31.42
006776331-02	OBS	No	292.543578	303.985293	5523.9	5.602	76.3	77.6	3.27	7870	28.80	31.40
006776331-03	OBS	No	194.125631	208.640872	341.5	10.500	41.4	-1.0	3.27	7870	6.08	54.25
006776331-04	OBS	No	114.349739	148.320840	1613.1	0.893	25.7	22.4	3.27	7870	20.40	109.86
006776331-05	OBS	No	145.058436	160.965149	637.4	12.173	28.2	21.4	3.27	7870	8.94	80.00

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006776331-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_ZUMA—LPP_DV—LPP_ALT—INCONSISTENT_TRANS—CENT_SATURATED
006776331-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_ZUMA_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED
006776331-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_ZUMA—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED
006776331-04	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED
006776331-05	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED

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

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

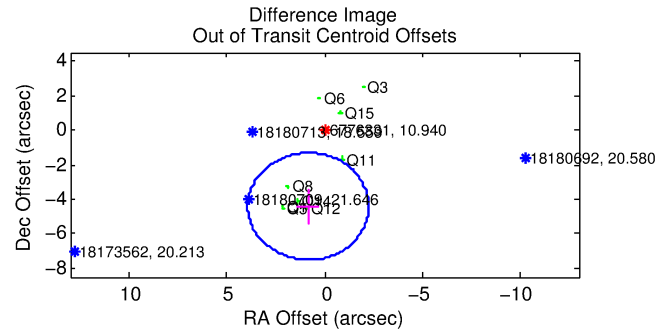
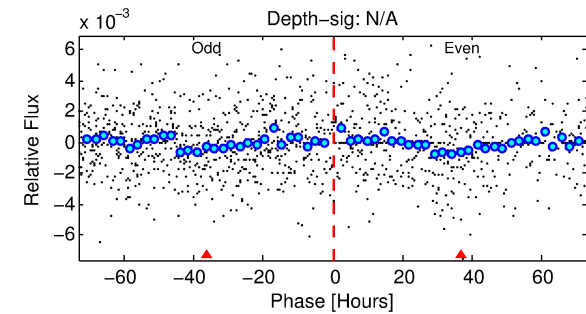
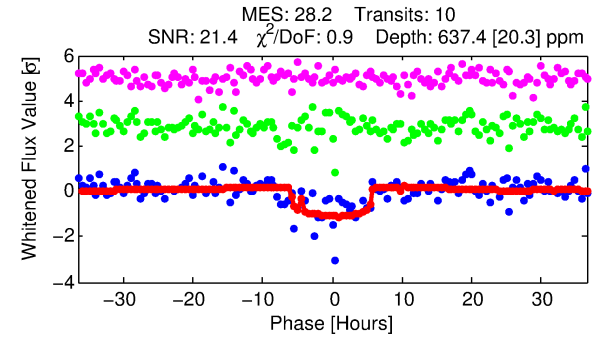
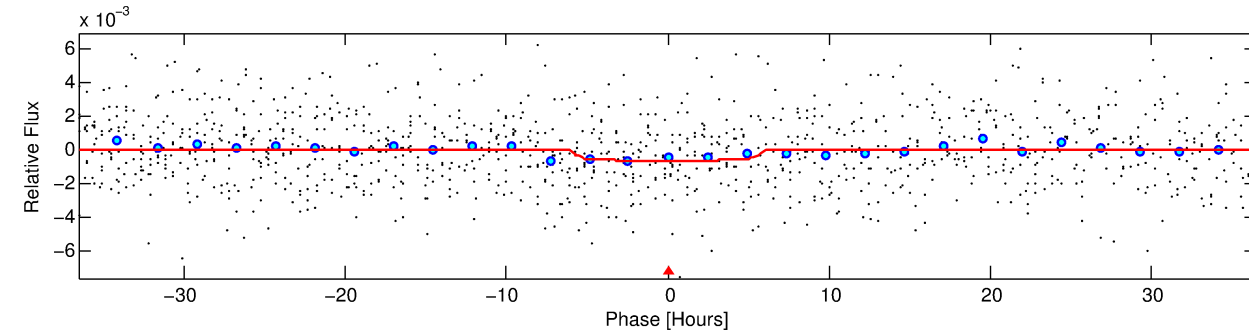
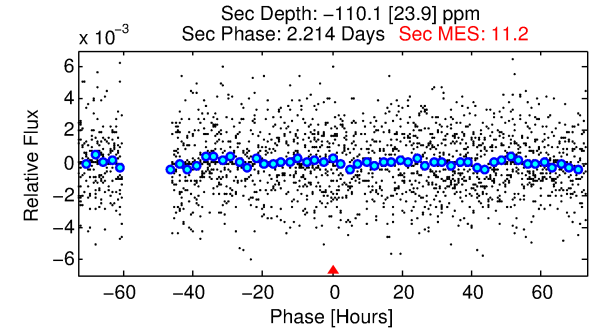
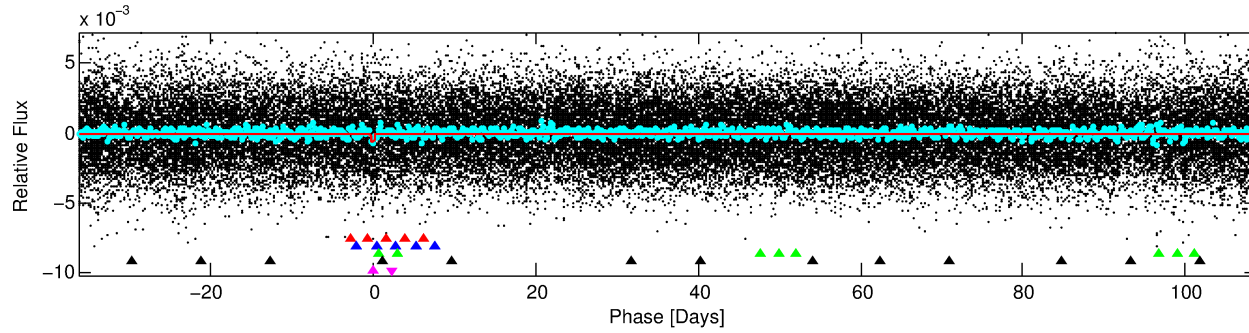
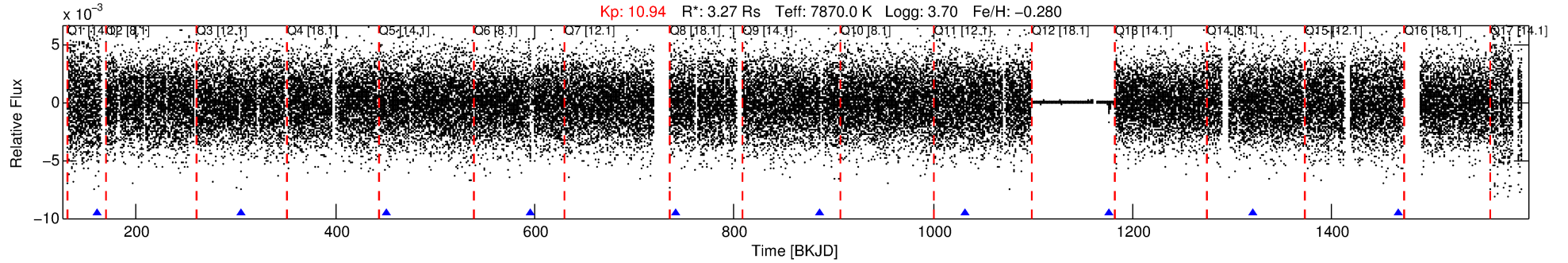
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 006776331-05

No Significant Match Found

DV One-Page Summary

KIC: 6776331 Candidate: 5 of 5 Period: 145.058 d



DV Fit Results:

Period = 145.05844 [0.00466] d
Epoch = 160.9651 [0.0330] BKJD
Rp/R* = 0.0250 [0.0025]
a/R* = 64.54 [35.32]
b = 0.74 [0.33]
Seff = 80.00 [64.08]
Teff = 763 [153] K
Rp = 8.94 [4.69] Re
a = 0.6778 [0.3334] AU
Ag = N/A
Teffp = N/A

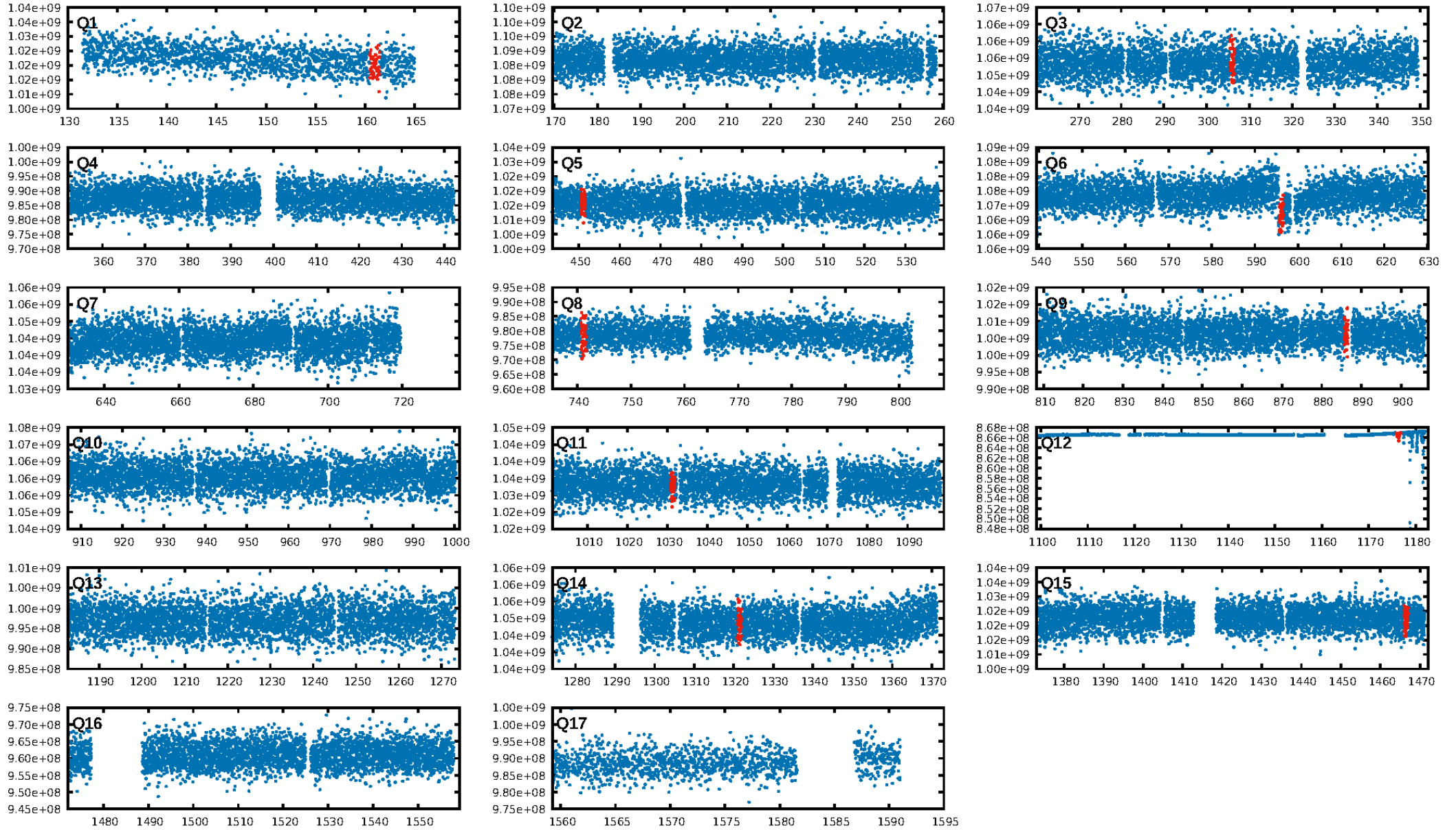
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [60.38σ]
LongPeriod-sig: 100.0% [73.26σ]
ModelChiSquare2-sig: 0.5%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 1.06e-266
RollingBand-fgt: 1.00 [9/9]
GhostDiagnostic-chr: 2.068
Centroid-sig: 80.9%
Centroid-so: 0.128 arcsec [0.54σ]
OotOffset-rm: 4.496 arcsec [4.36σ]
KicOffset-rm: 0.914 arcsec [1.56σ]
OotOffset-st: 2/3/2/2 [9]
KicOffset-st: 2/3/2/2 [9]
DiffImageQuality-fgm: 0.56 [5/9]
DiffImageOverlap-fno: 0.89 [8/9]

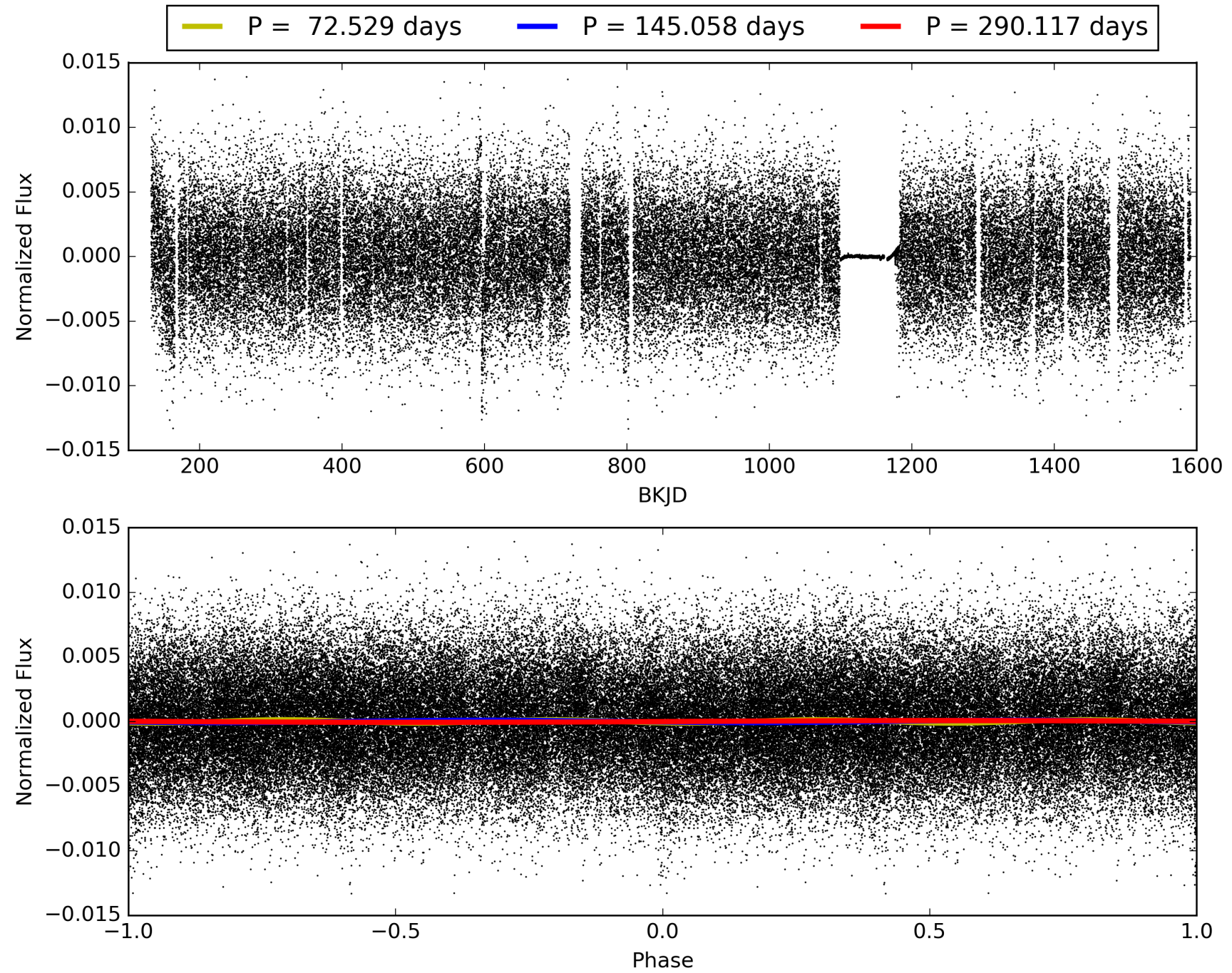
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 05:09:18 Z

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

TCE 006776331-05, PDC Light Curves

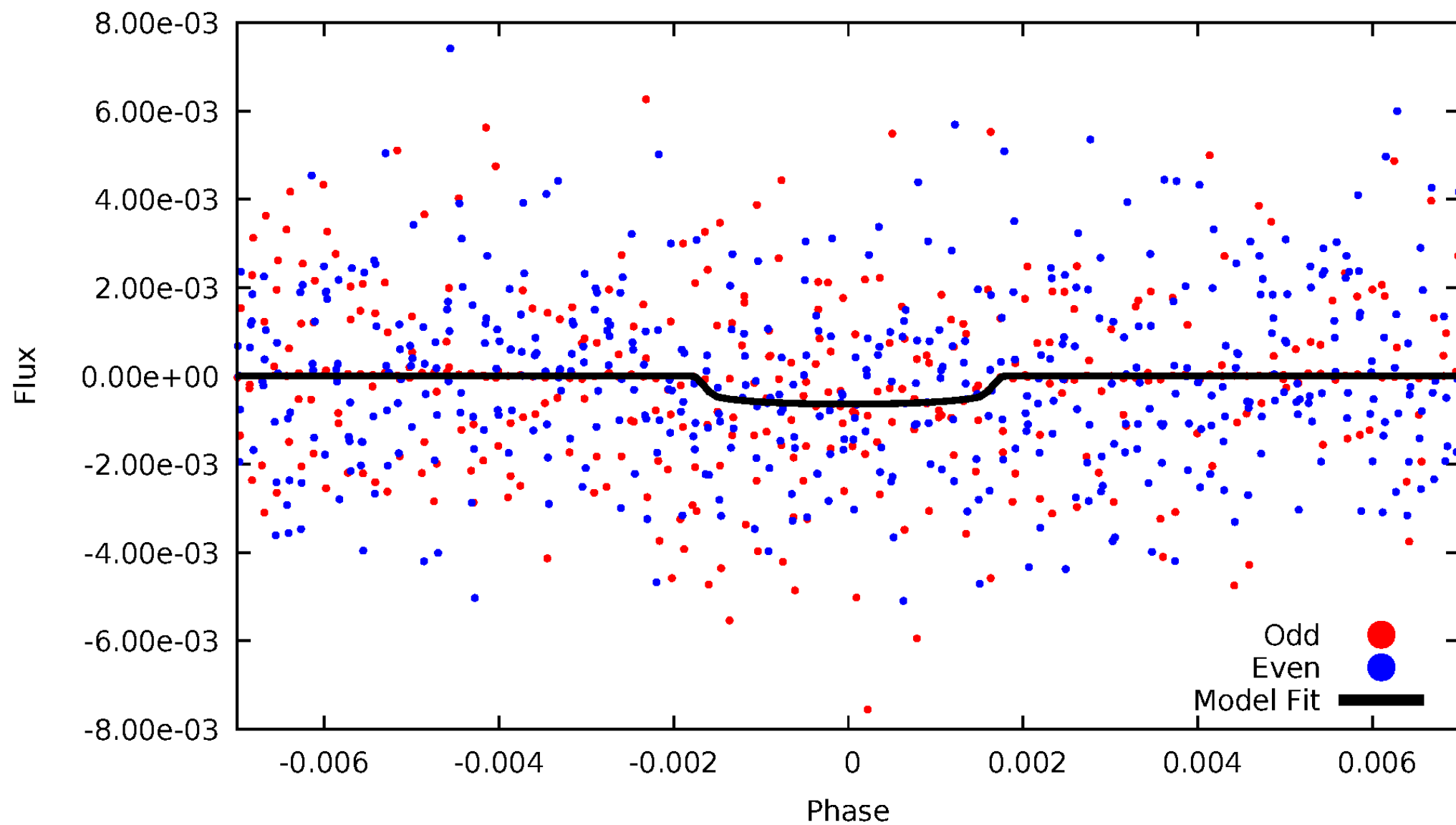


TCE 006776331-05



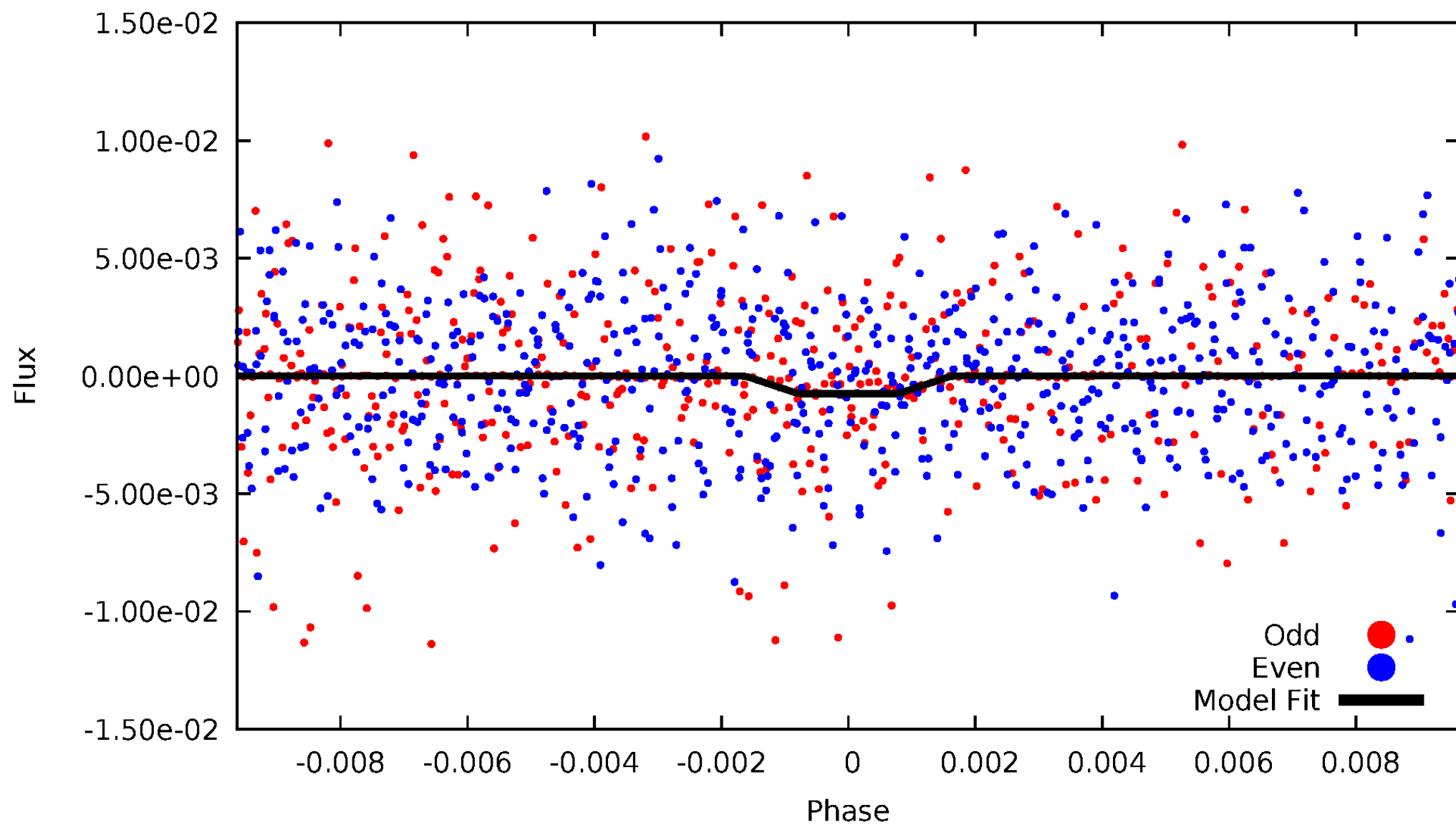
DV Odd/Even

TCE 006776331-05



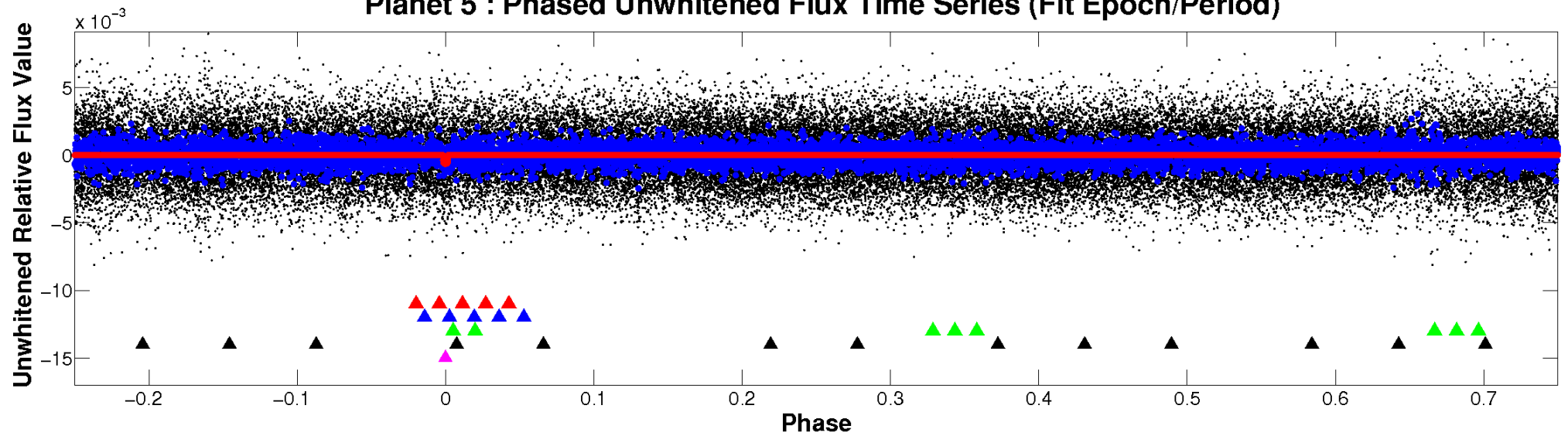
ALT Odd/Even

TCE 006776331-05

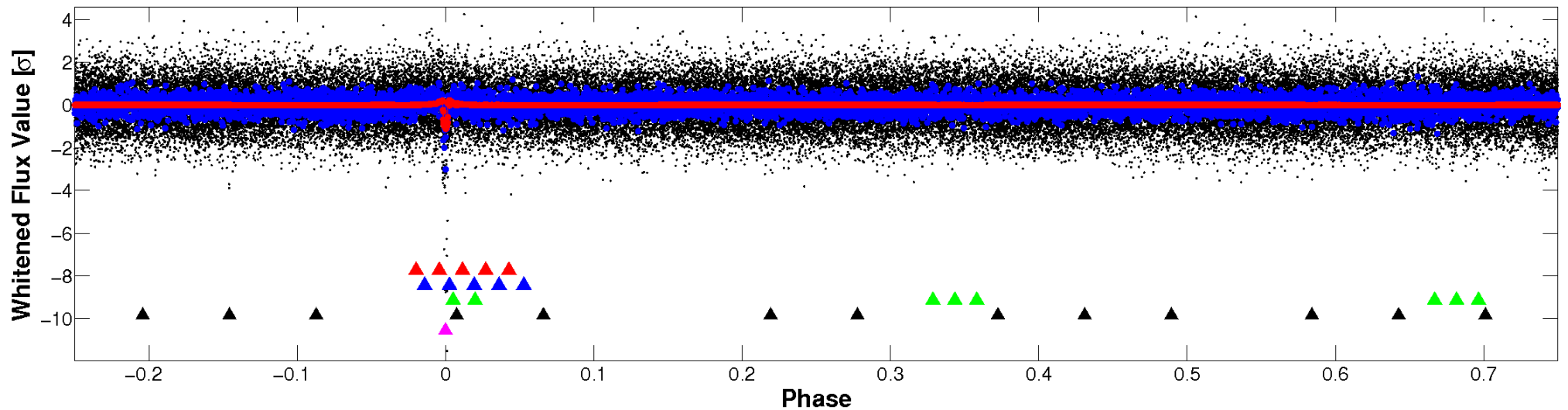


Non-Whitened Vs. Whitened Light Curve

Planet 5 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

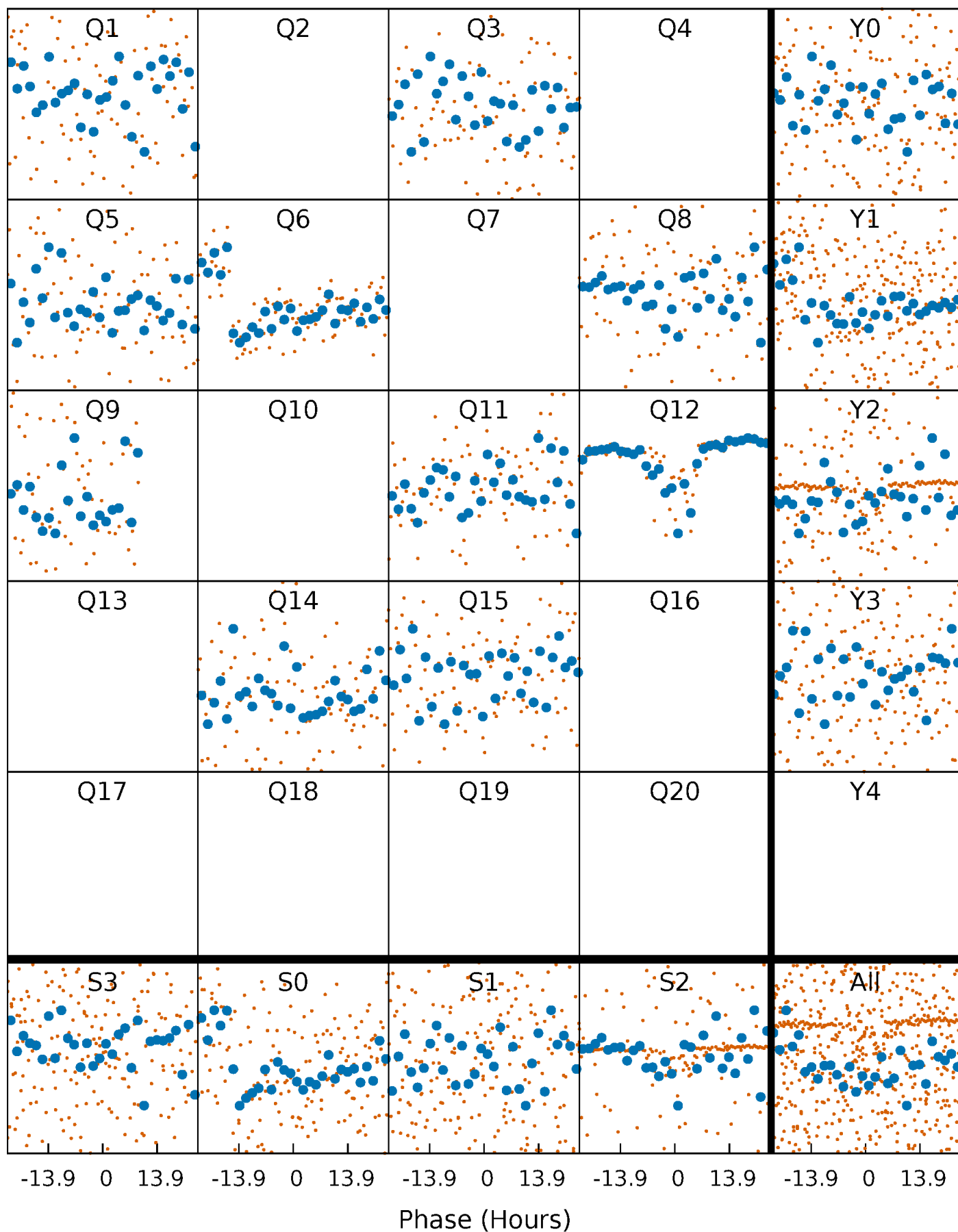


Planet 5 : Phased Whitened Flux Time Series (Fit Epoch/Period)



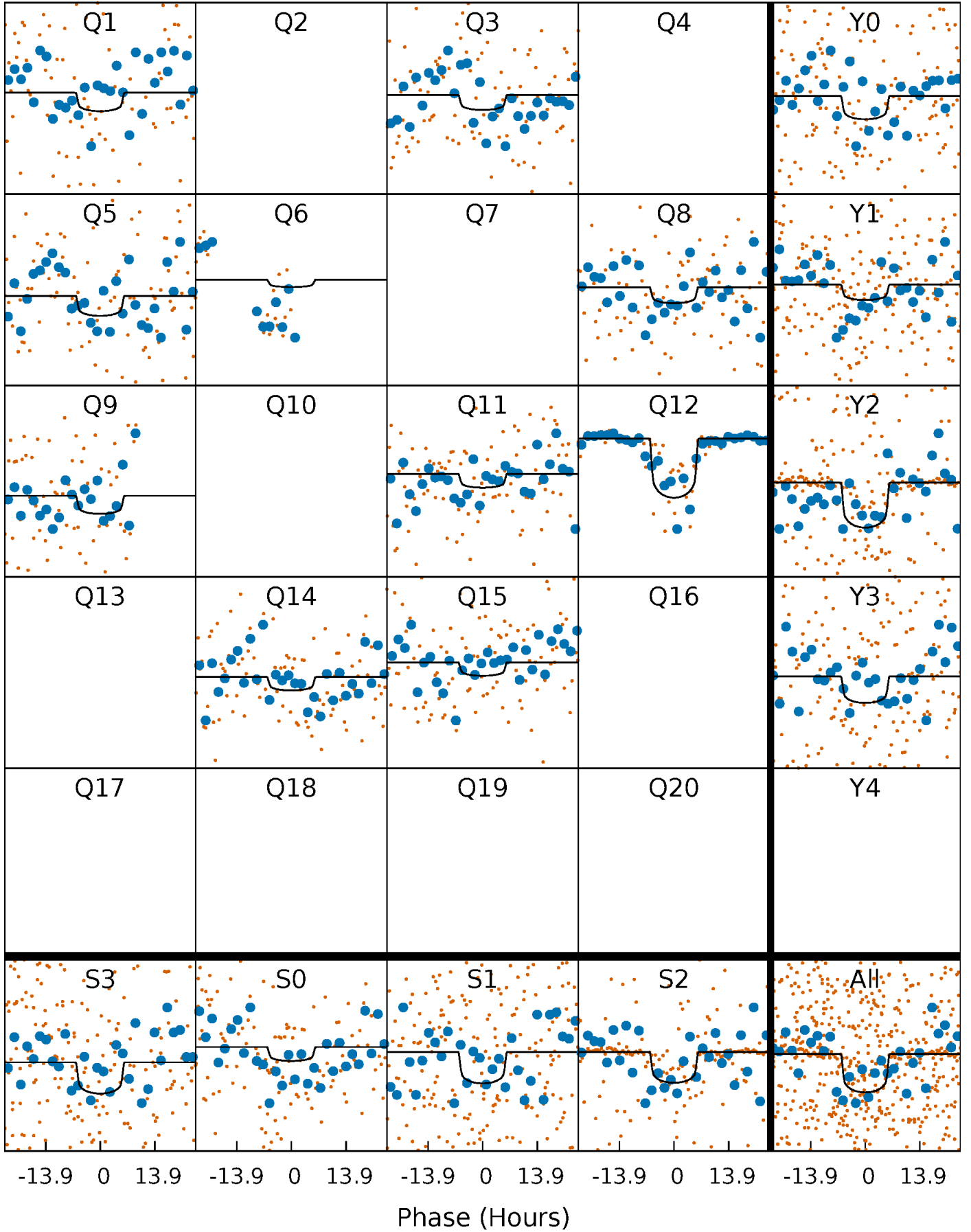
PDC Quarter-Phased Transit Curves

TCE 006776331-05 P=145.058436 Days $T_0=160.965149$ (BKJD)



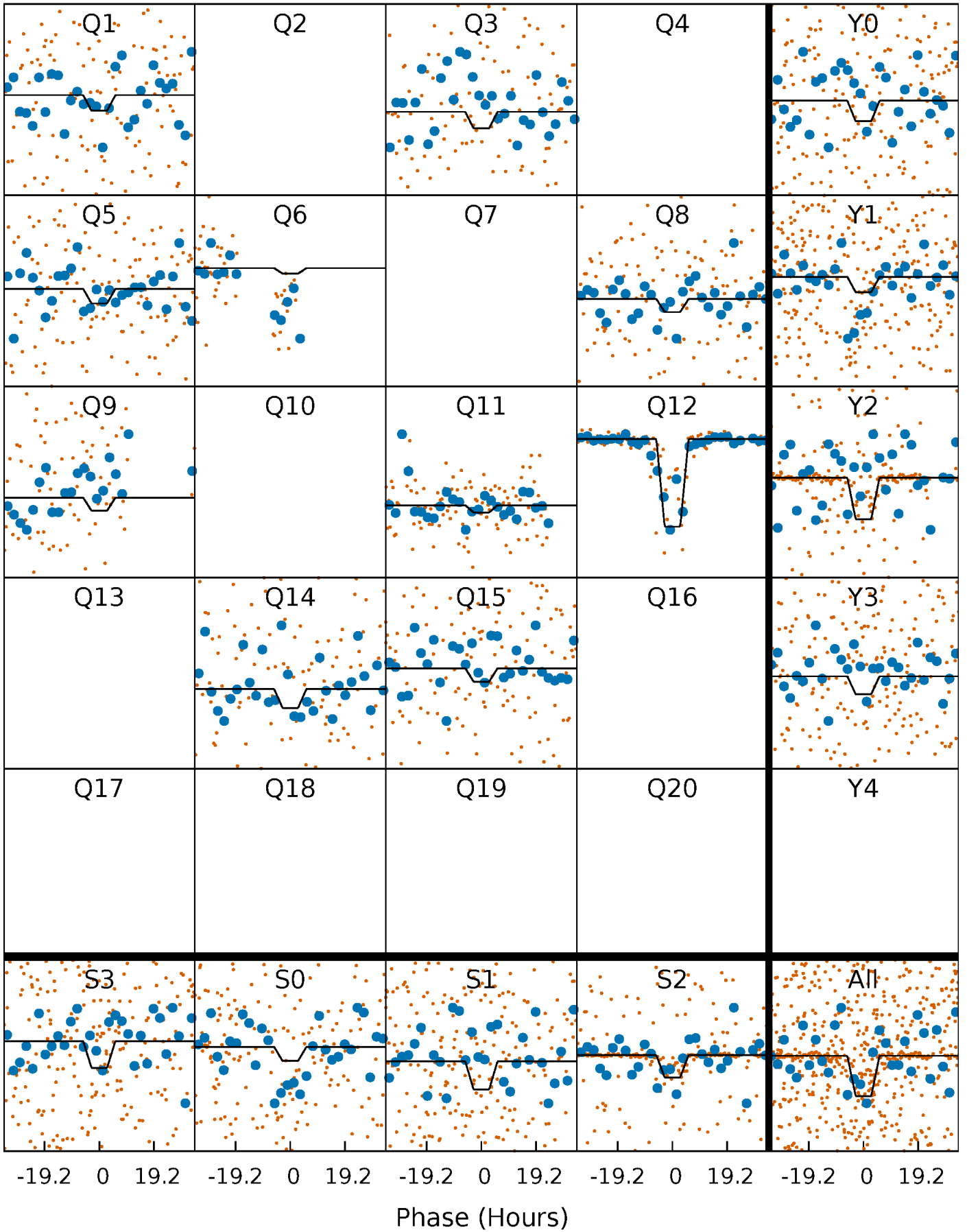
DV Quarter-Phased Transit Curves

TCE 006776331-05 $P=145.058436$ Days $T_0=160.965149$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

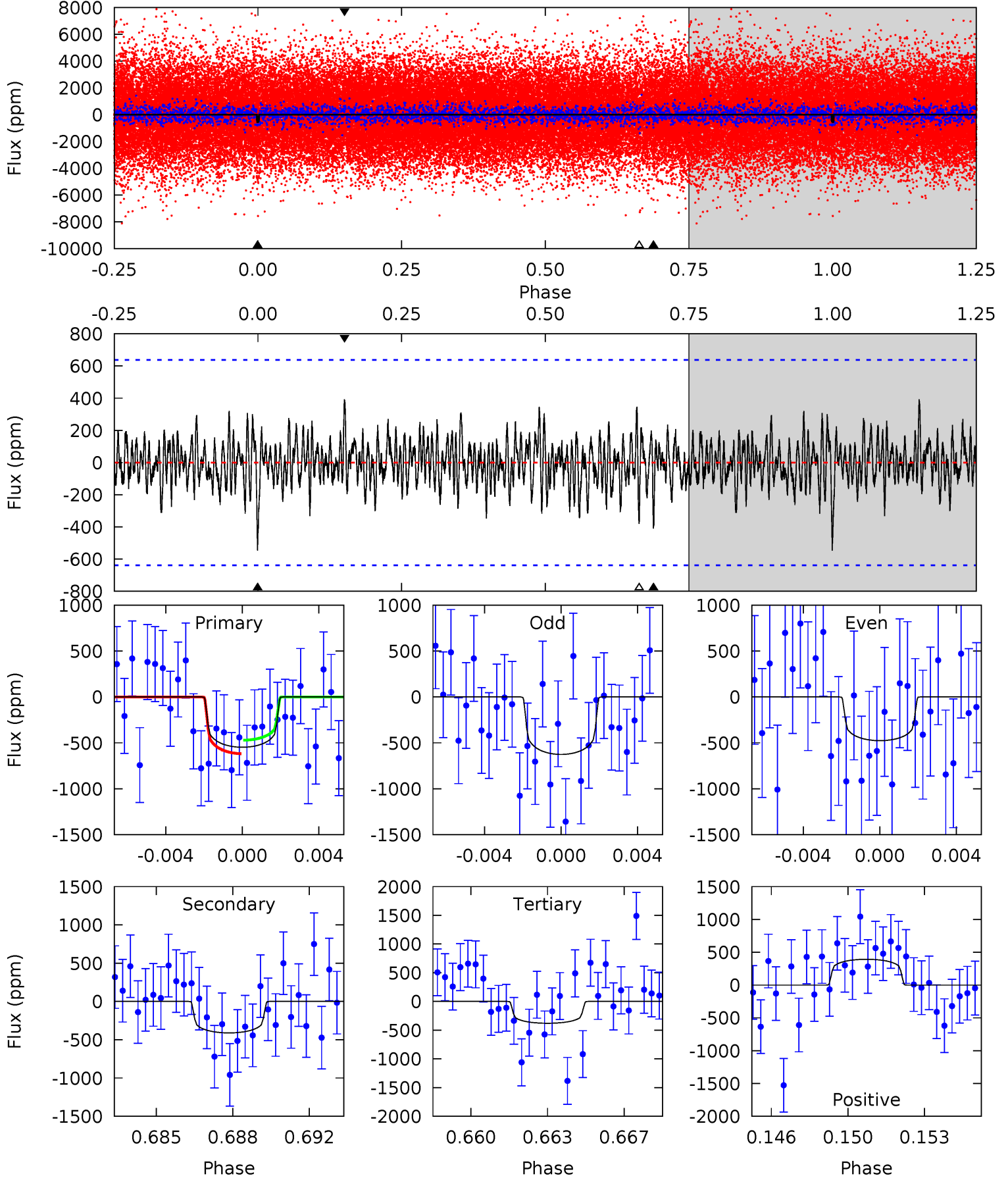
TCE 006776331-05 $P=145.085087$ Days $T_0=160.799744$ (BKJD)



DV Model-Shift Uniqueness Test

006776331-05, P = 145.058436 Days, E = 15.906713 Days

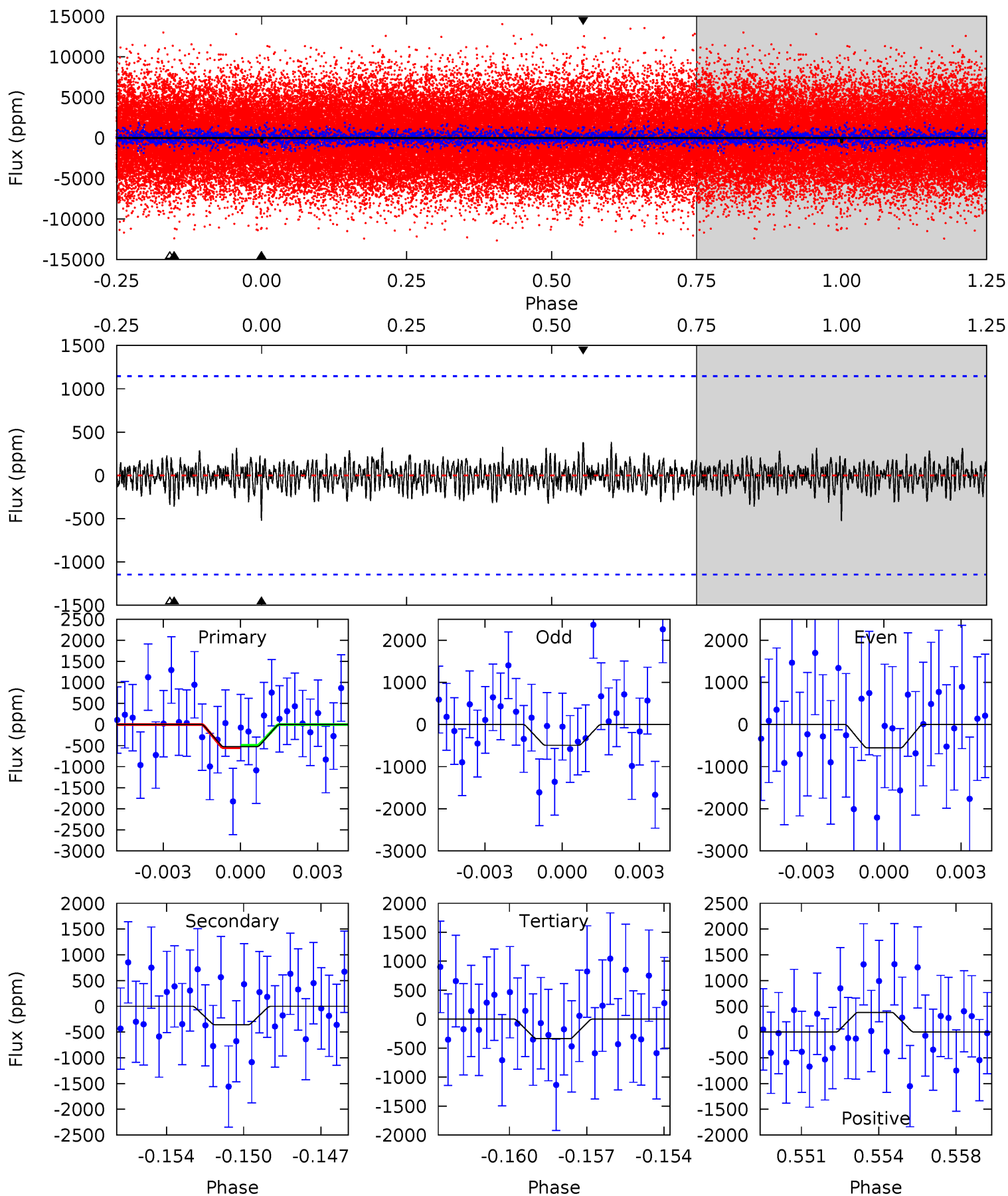
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4.48	3.36	3.11	3.21	5.22	2.91	0.97	1.37	1.27	0.25	0.15	0.61	1.47	0.42	0.60



Alt Model-Shift Uniqueness Test

006776331-05, $P = 145.085087$ Days, $E = 15.714657$ Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2.40	1.64	1.54	1.75	5.23	2.93	0.53	0.85	0.64	0.10	-0.11	0.15	1.46	0.42	0.13



Stellar Parameters For KIC 006776331

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	7870^{+244}_{-325}	$3.704^{+0.459}_{-0.081}$	$-0.280^{+0.200}_{-0.300}$	$3.270^{+0.396}_{-1.684}$	$1.976^{+0.208}_{-0.555}$	$0.080^{+0.362}_{-0.021}$
	+3%/-4%	+12%/-2%	+71%/-107%	+12%/-51%	+11%/-28%	+455%/-26%
Source	KIC0	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 006776331-05 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-411±122	$8.42^{+1.47}_{-2.07}$	1033^{+72}_{-119}	6890^{+792}_{-731}	1467^{+1089}_{-551}
Alt.	-359±219	$9.35^{+1.45}_{-2.32}$	1035^{+69}_{-114}	6387^{+971}_{-1274}	1063^{+1009}_{-648}

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

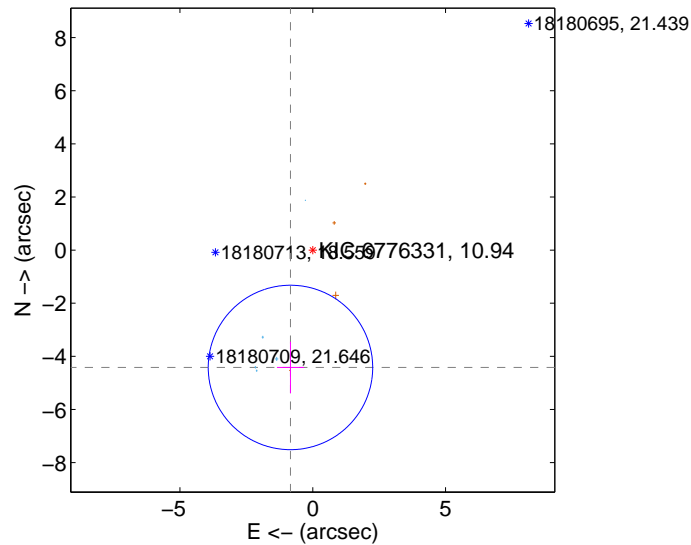
Supplemental centroid analysis for 006776331-05. **Kepler magnitude: 10.94**. Transit SNR 21.45

There are 5 quarters with good PRF difference image offsets

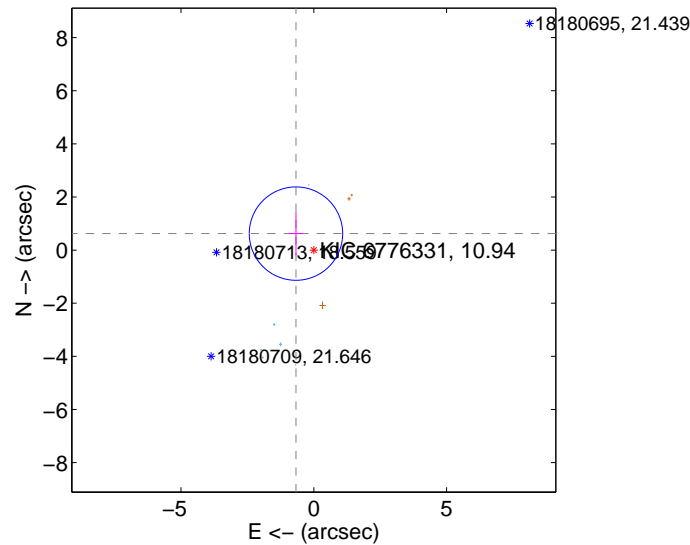
The direct PRF centroid is offset from the target star catalog position by about 1.04 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	4.496 \pm 1.031	4.36	0.839 \pm 0.510	-4.417 \pm 0.968
PRF-fit source offset from KIC position	0.914 \pm 0.586	1.56	0.670 \pm 0.272	0.621 \pm 0.811
photometric centroid source offset	0.13 \pm 0.24	0.54	-0.13 \pm 0.24	0.00 \pm 0.30

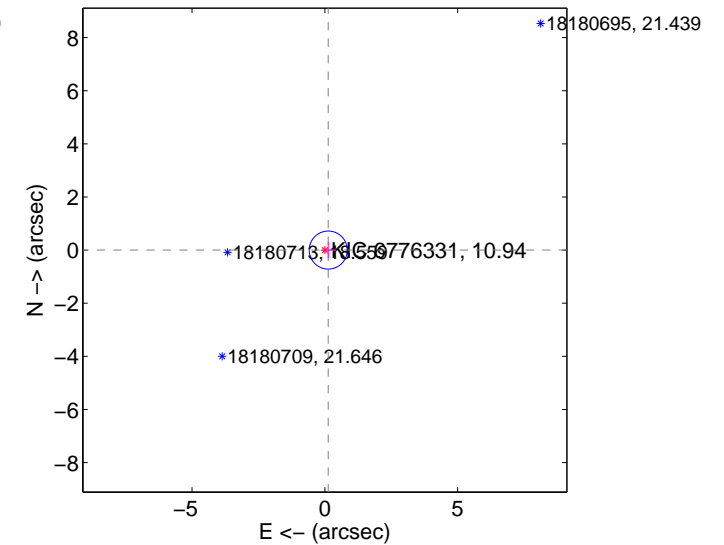
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

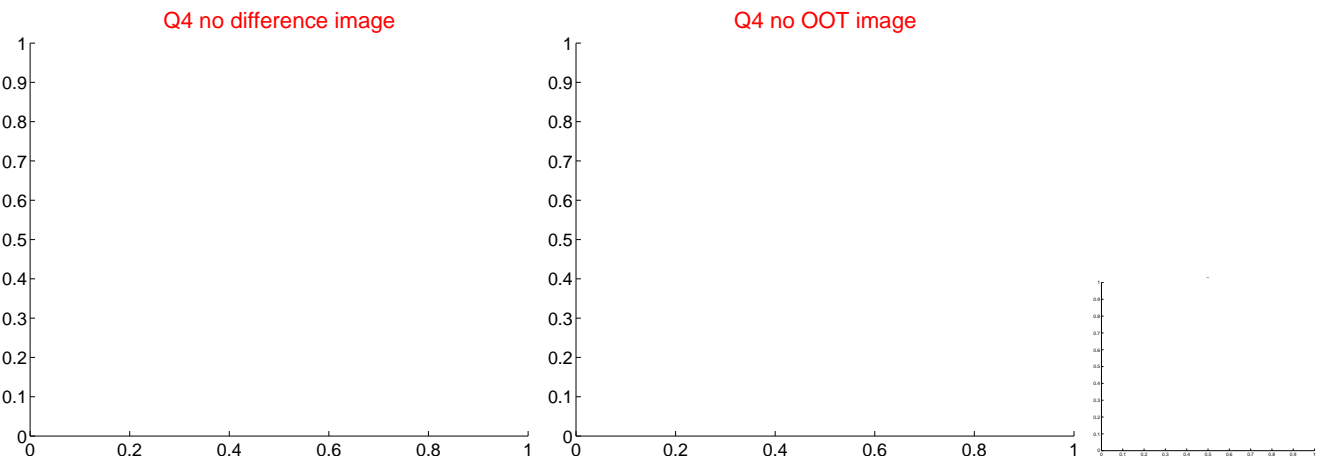
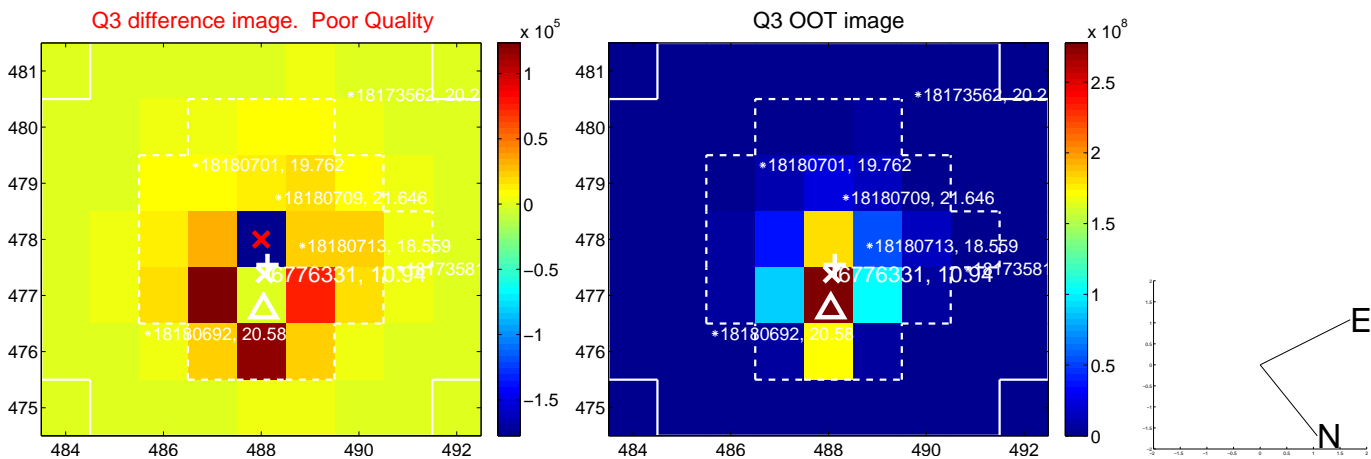
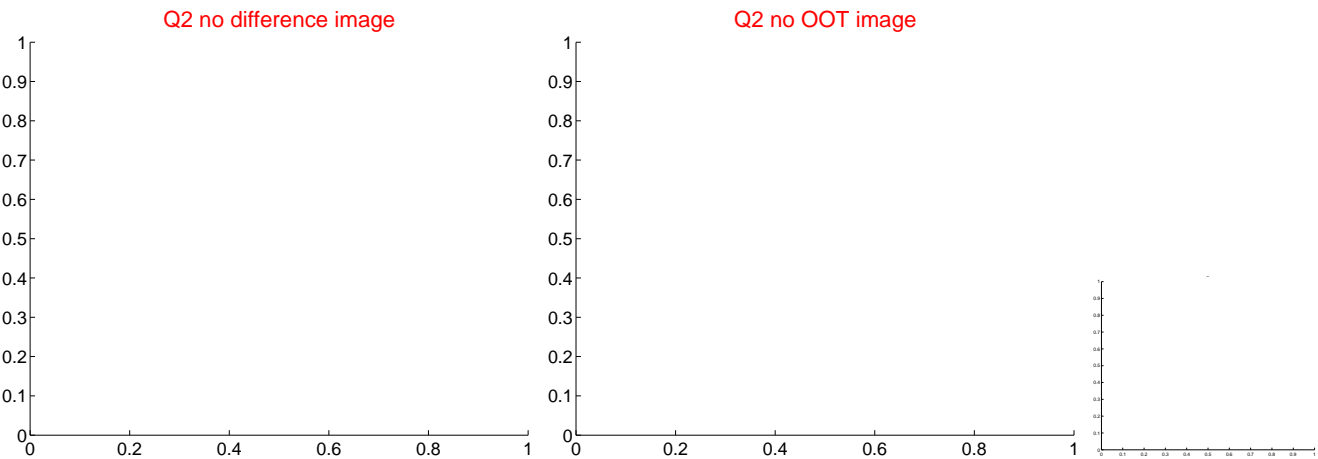
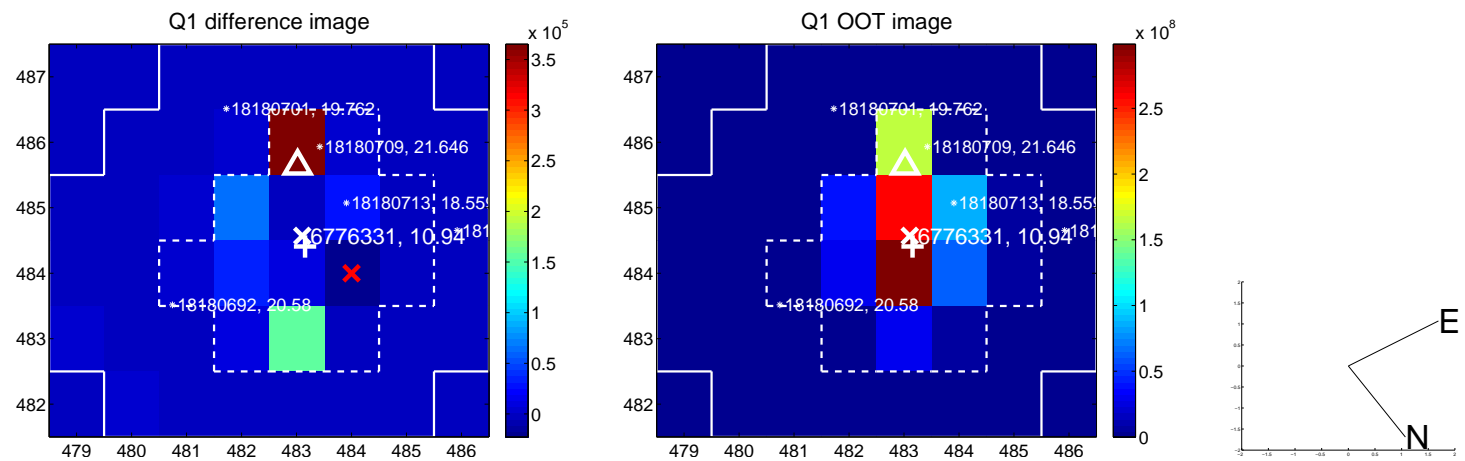


offset from photometric centroids

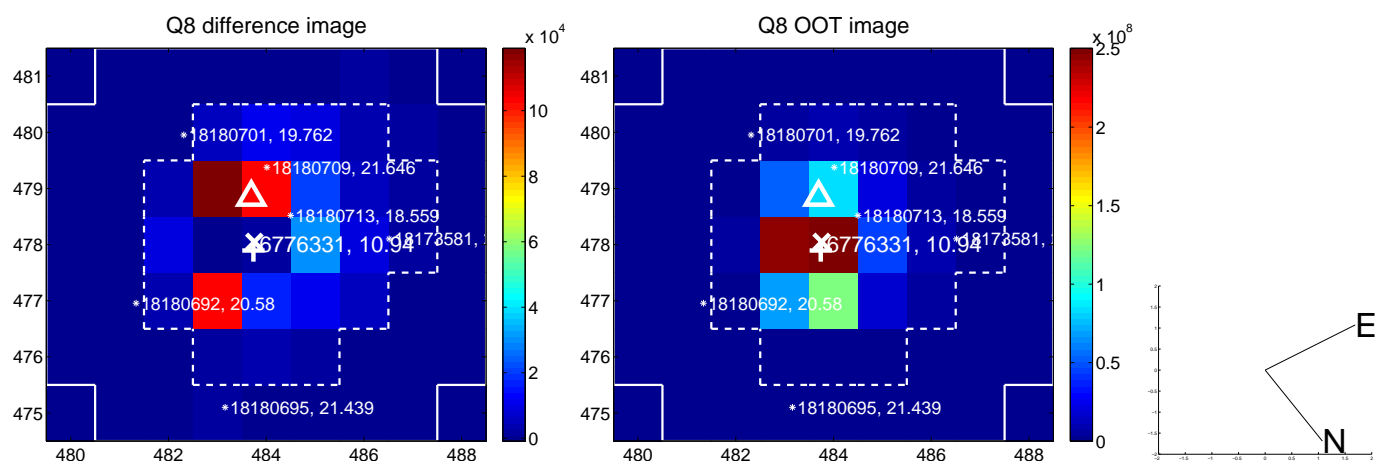
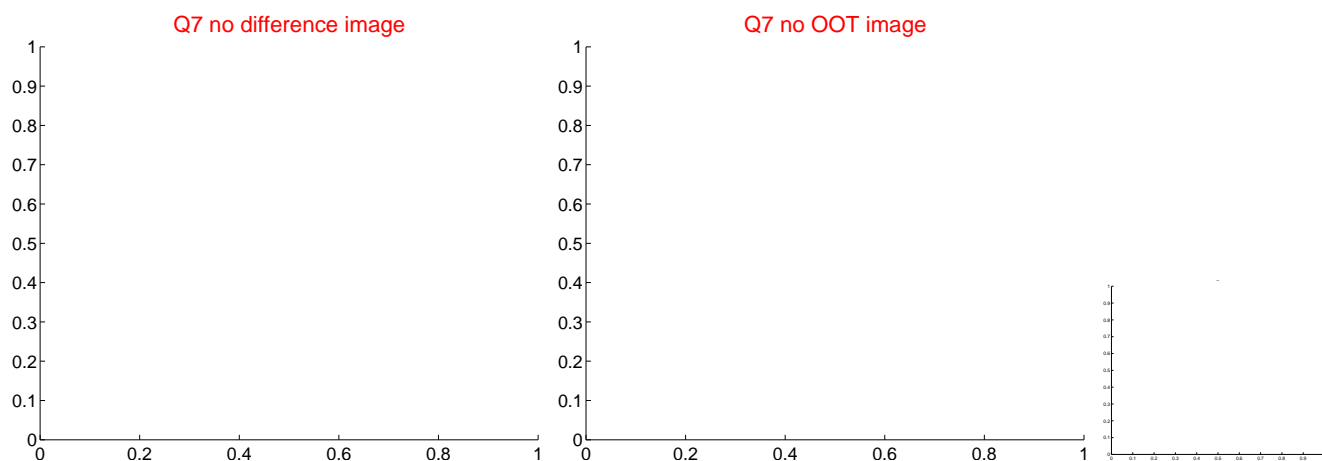
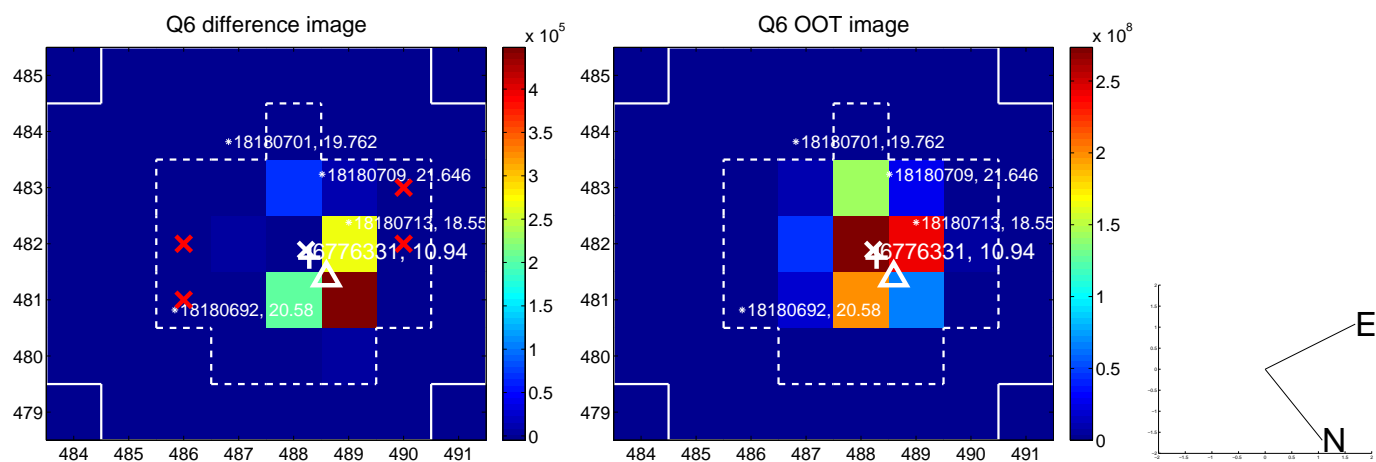
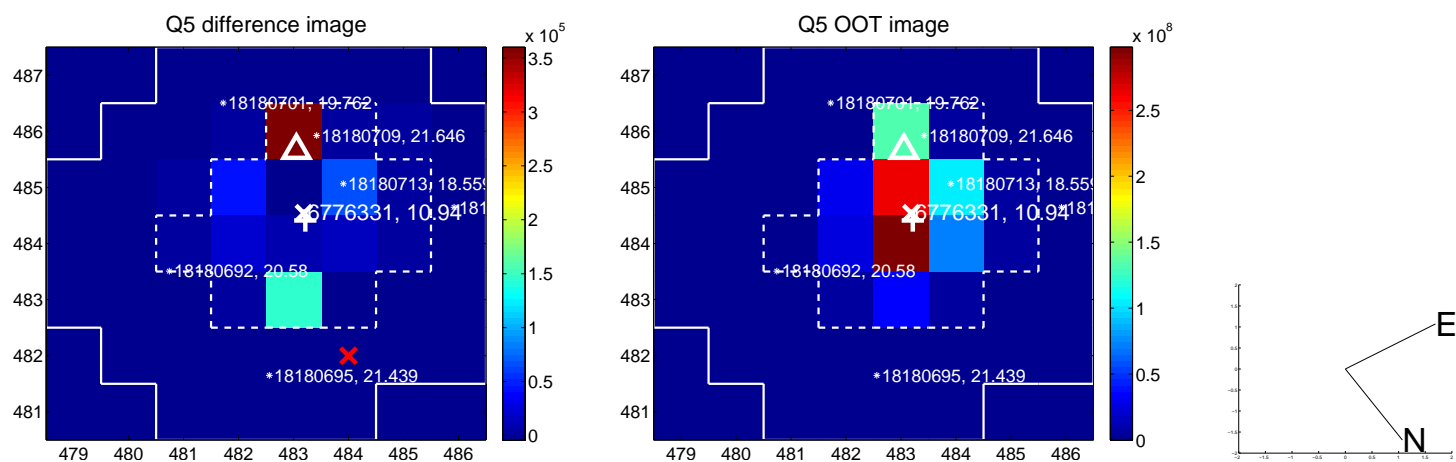


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

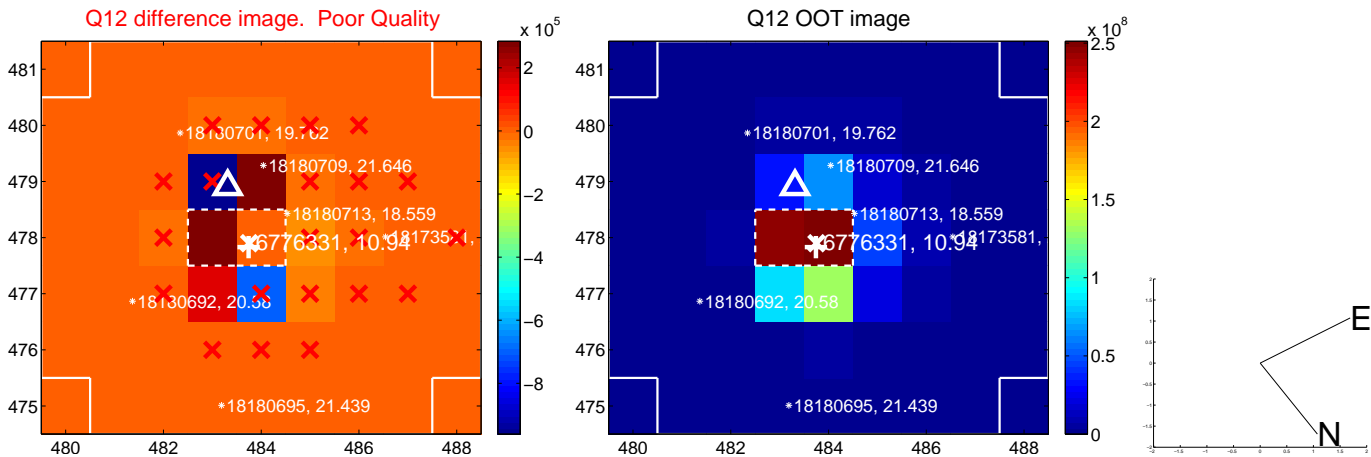
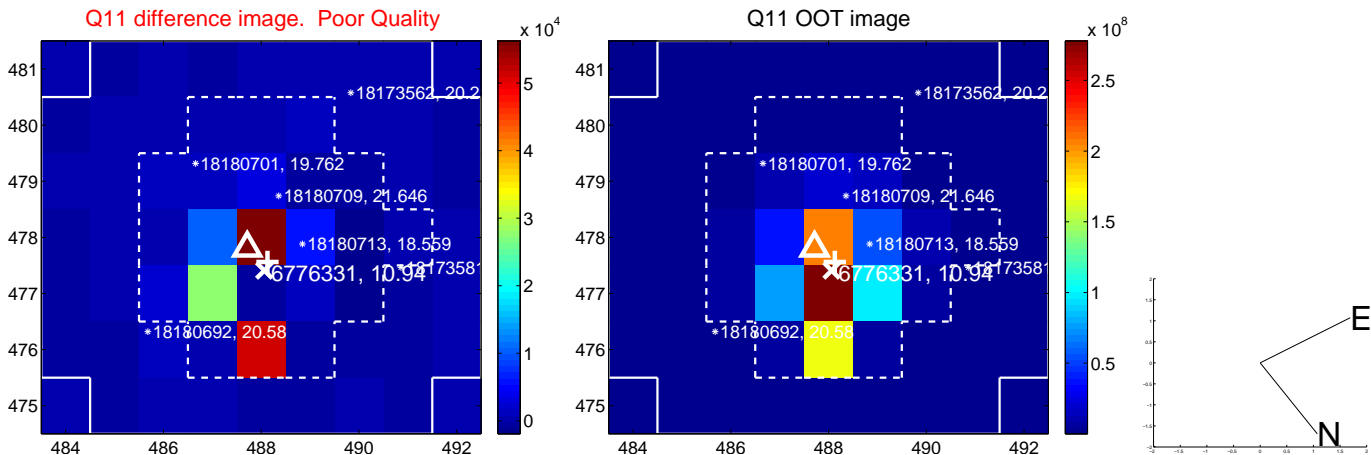
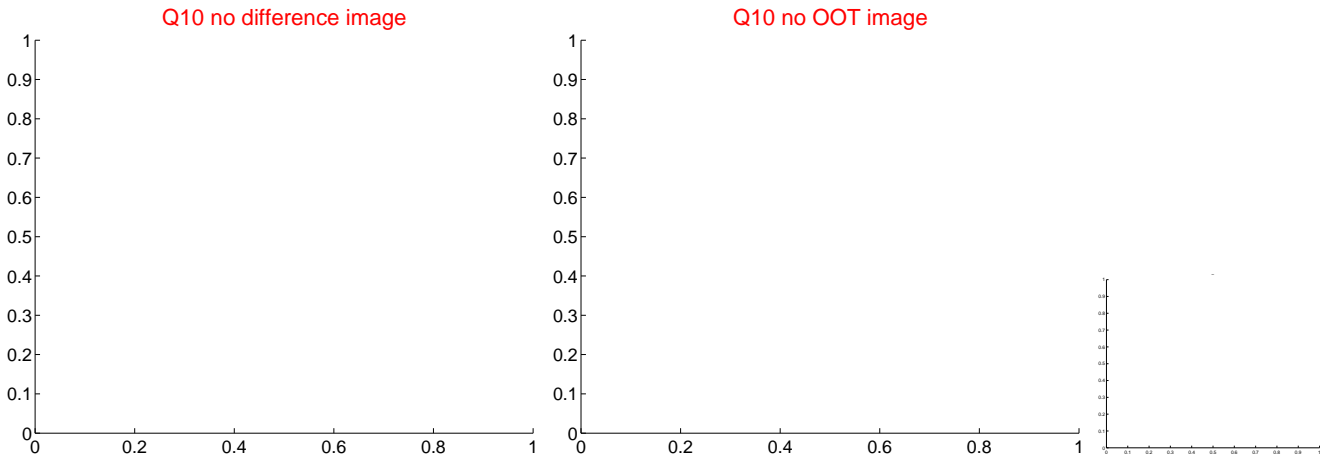
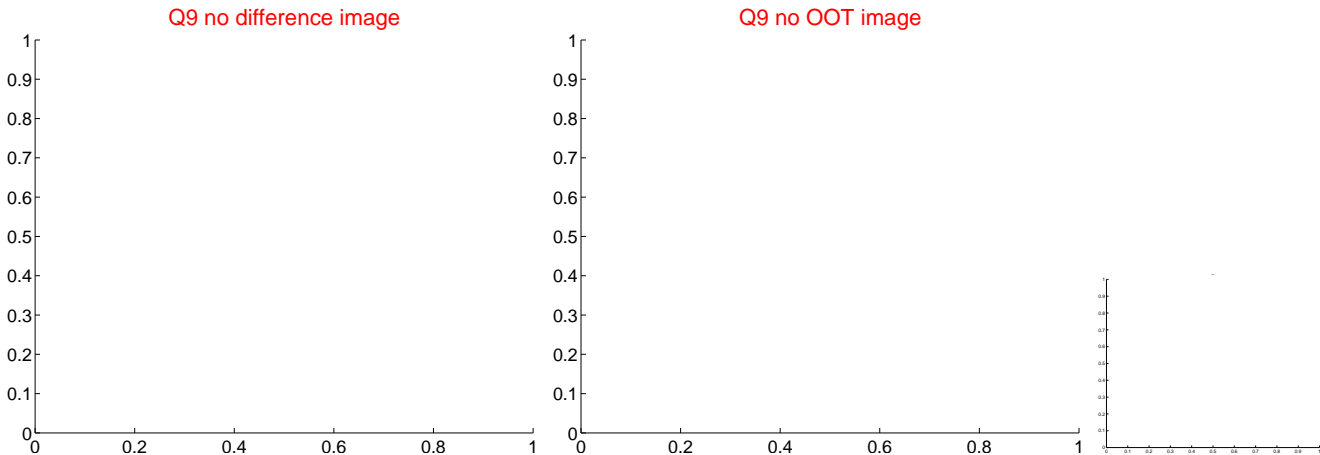
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



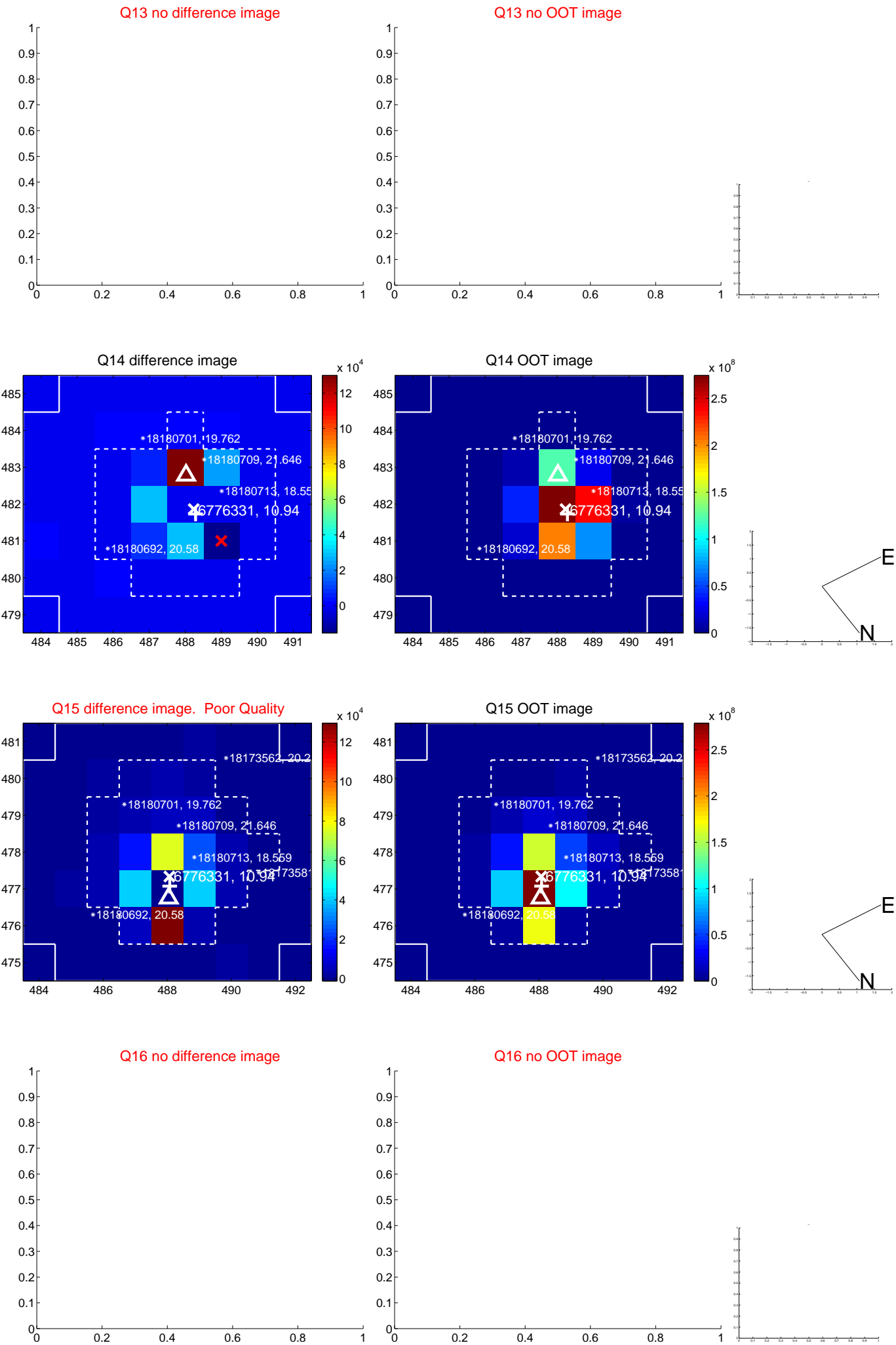
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



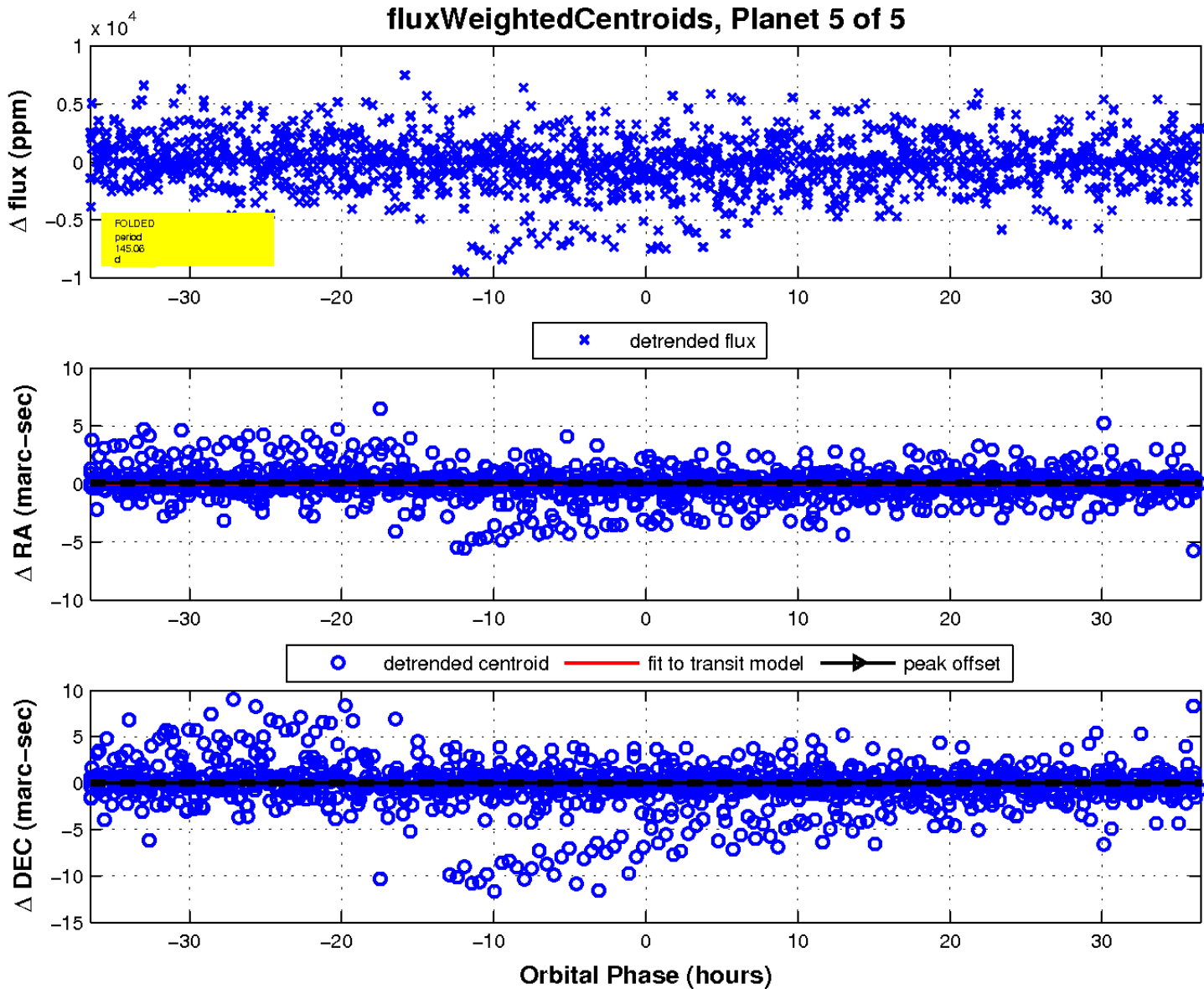
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

Q17 no difference image

Q17 no OOT image



UKIRT Image

Declination

