

KIC 006522745

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})
006522745-01	OBS	4574.01	17.445498	135.756443	483.6	6.493	13.9	15.0	1.06	6260	4.36	83.30
006522745-02	OBS	No	17.445876	145.232749	235.9	4.656	8.3	8.3	1.06	6260	1.79	83.30

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006522745-01	OBS	FP	0.00	0	1	1	1	MOD_SEC_DV—MOD_SEC_ALT—HAS_SEC_TCE—CENT_FEW_DIFFS—HALO_GHOST—EPHEM_MATCH
006522745-02	OBS	FP	0.00	1	1	1	1	IS_SEC_TCE—CENT_FEW_DIFFS—HALO_GHOST—EPHEM_MATCH

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 006522745-01

TCE (1)	KIC	Parent (2)	Parent KIC	$P_1:P_2$	Dist ($''$)	Δ Row	Δ Col	m_2	m_1	D_2/D_1	Mechanism	Flag	σ_P	σ_T
006522745-01	6522745	6724.01	6522750	1:1	43.5	-9	5	11.23	15.95	692.77	Direct-PRF	0	0.26	0.26

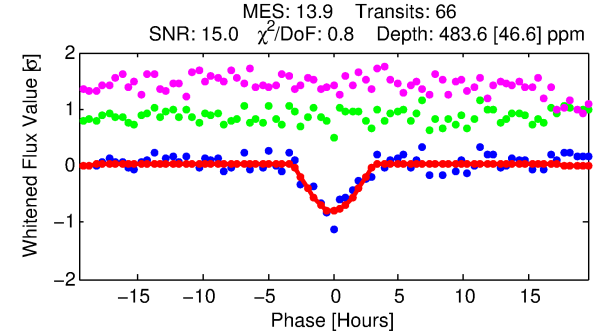
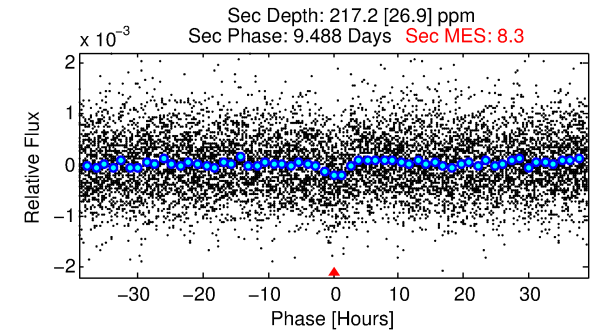
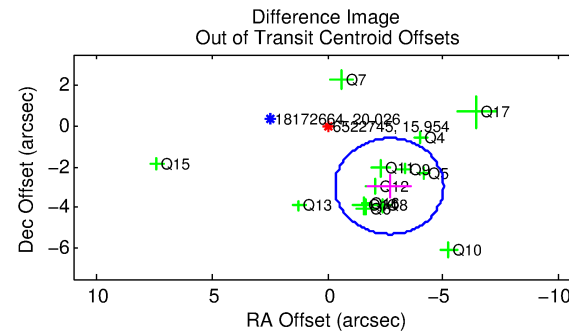
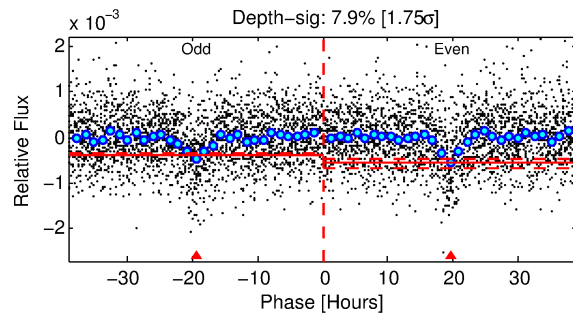
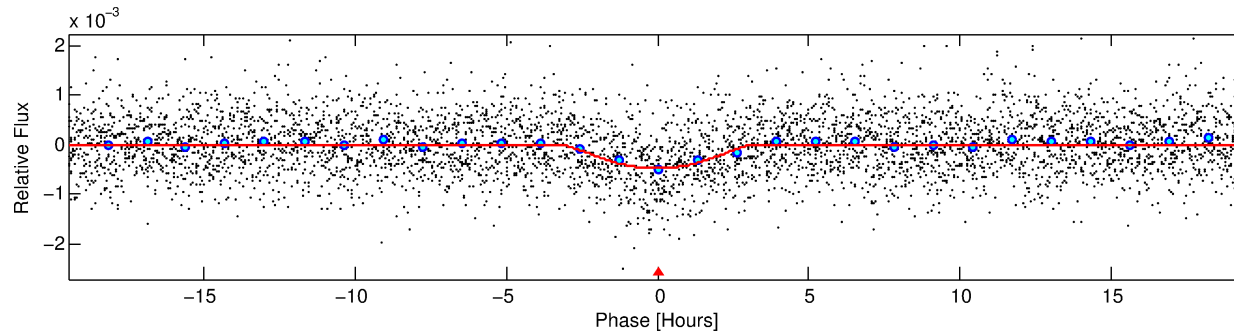
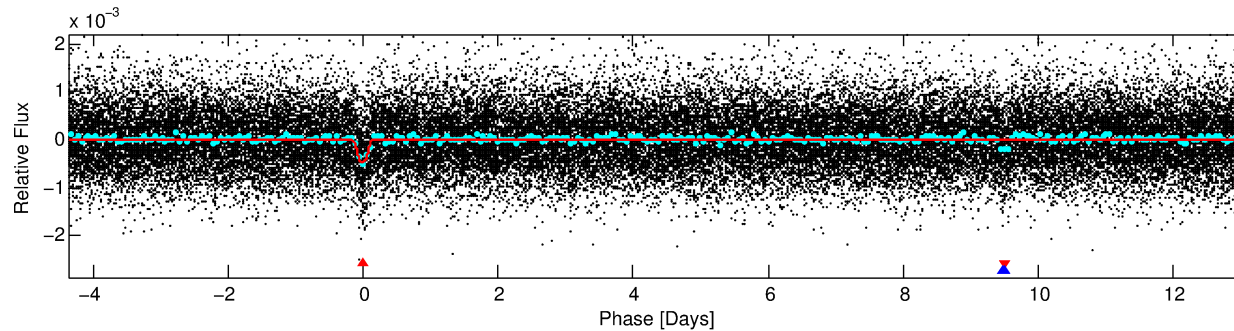
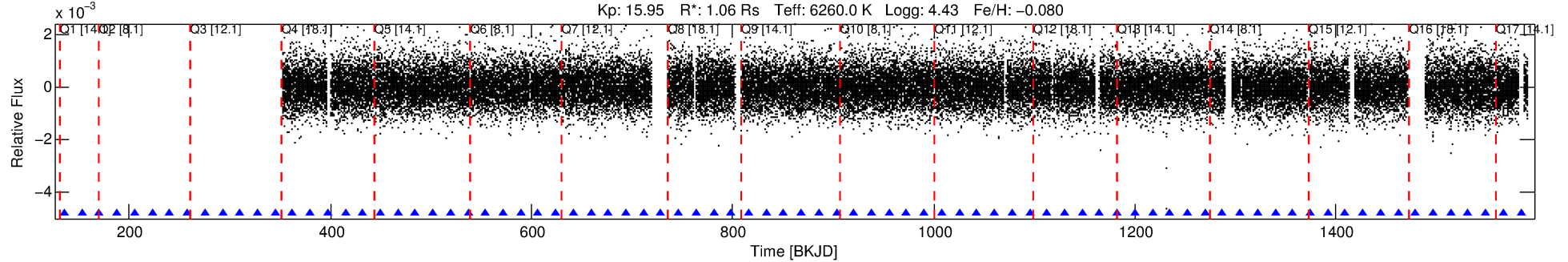
Notes: $P_1:P_2$ is the period ratio. Dist is the distance in arcseconds. Δ Row and Δ Col are the number of pixels apart in row and column. m_2 and m_1 are the magnitudes of the parent and child. D_2/D_1 is the parent's transit depth divided by the child's. σ_P and σ_T are the significance of the match in period and epoch. For a match to be considered significant $\sigma_P < 5.0$ and $\sigma_T < 5.0$. Matches which have σ_P and σ_T very close to this cutoff should receive extra scrutiny, especially if the period ratio is very large.

DV One-Page Summary

KIC: 6522745 Candidate: 1 of 2 Period: 17.445 d

KOI: K04574.01 Corr: 0.877

Kp: 15.95 R*: 1.06 Rs Teff: 6260.0 K Logg: 4.43 Fe/H: -0.080



DV Fit Results:

Period = 17.44550 [0.00026] d
Epoch = 135.7564 [0.0131] BKJD
Rp/R* = 0.0376 [0.0800]
a/R* = 5.95 [3.31]
b = 1.00 [0.12]
Seff = 83.30 [33.01]
Teq = 770 [76] K
Rp = 4.36 [9.38] Re
a = 0.1366 [0.0352] AU
Ag = 117.16 [500.50] [0.23σ]
Teffp = 3919 [4172] K [0.75σ]

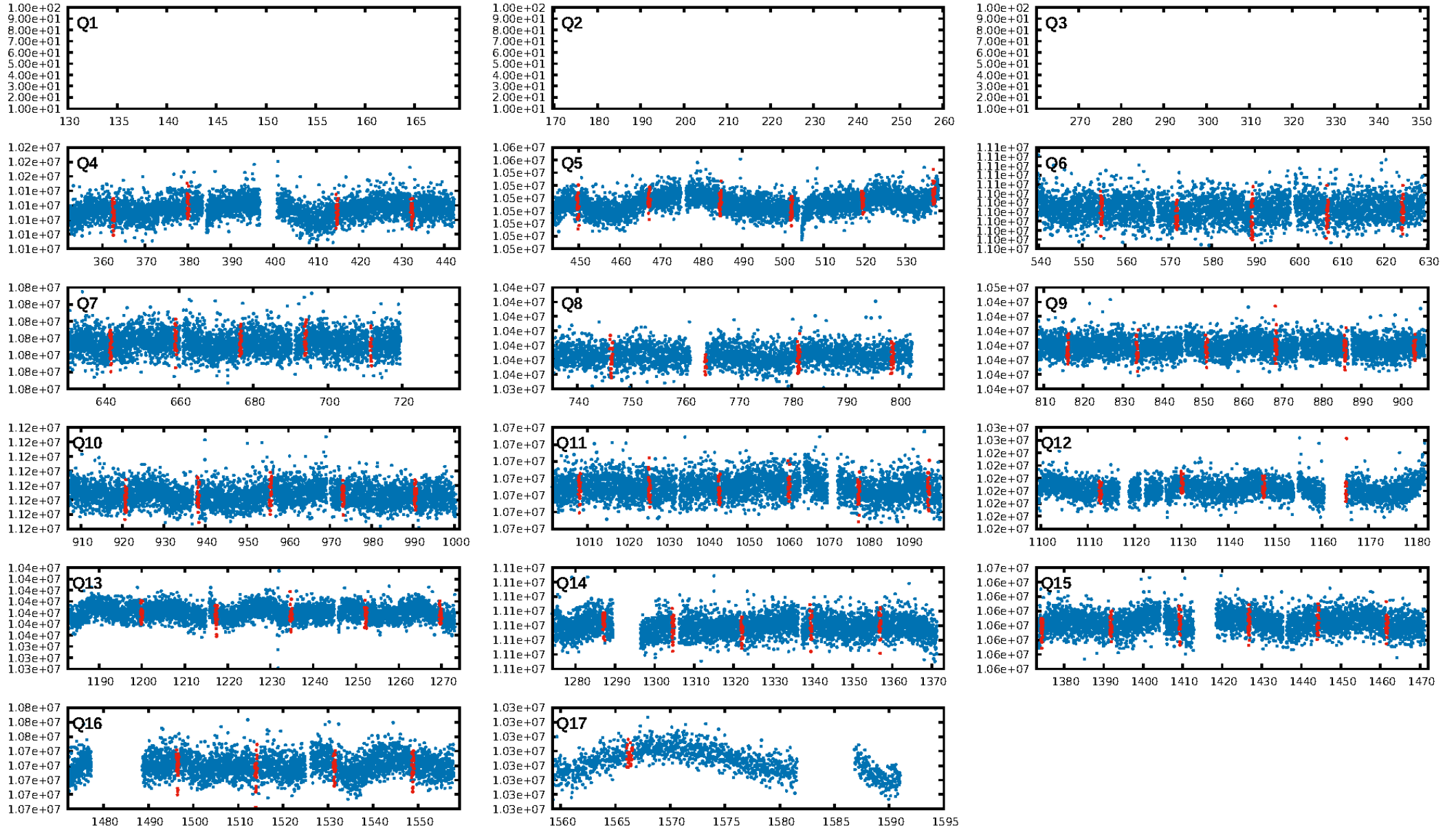
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.1% [0.00σ]
ModelChiSquare2-sig: 70.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 3.18e-41
RollingBand-fgt: 1.00 [65/65]
GhostDiagnostic-chr: 0.01192
Centroid-sig: 0.1%
Centroid-so: 1.995 arcsec [2.53σ]
OotOffset-rm: 3.986 arcsec [5.10σ]
KicOffset-rm: 3.980 arcsec [5.53σ]
OotOffset-st: 3/3/4/4 [14]
KicOffset-st: 3/3/4/4 [14]
DiffImageQuality-fgm: 0.00 [0/14]
DiffImageOverlap-fno: 1.00 [14/14]

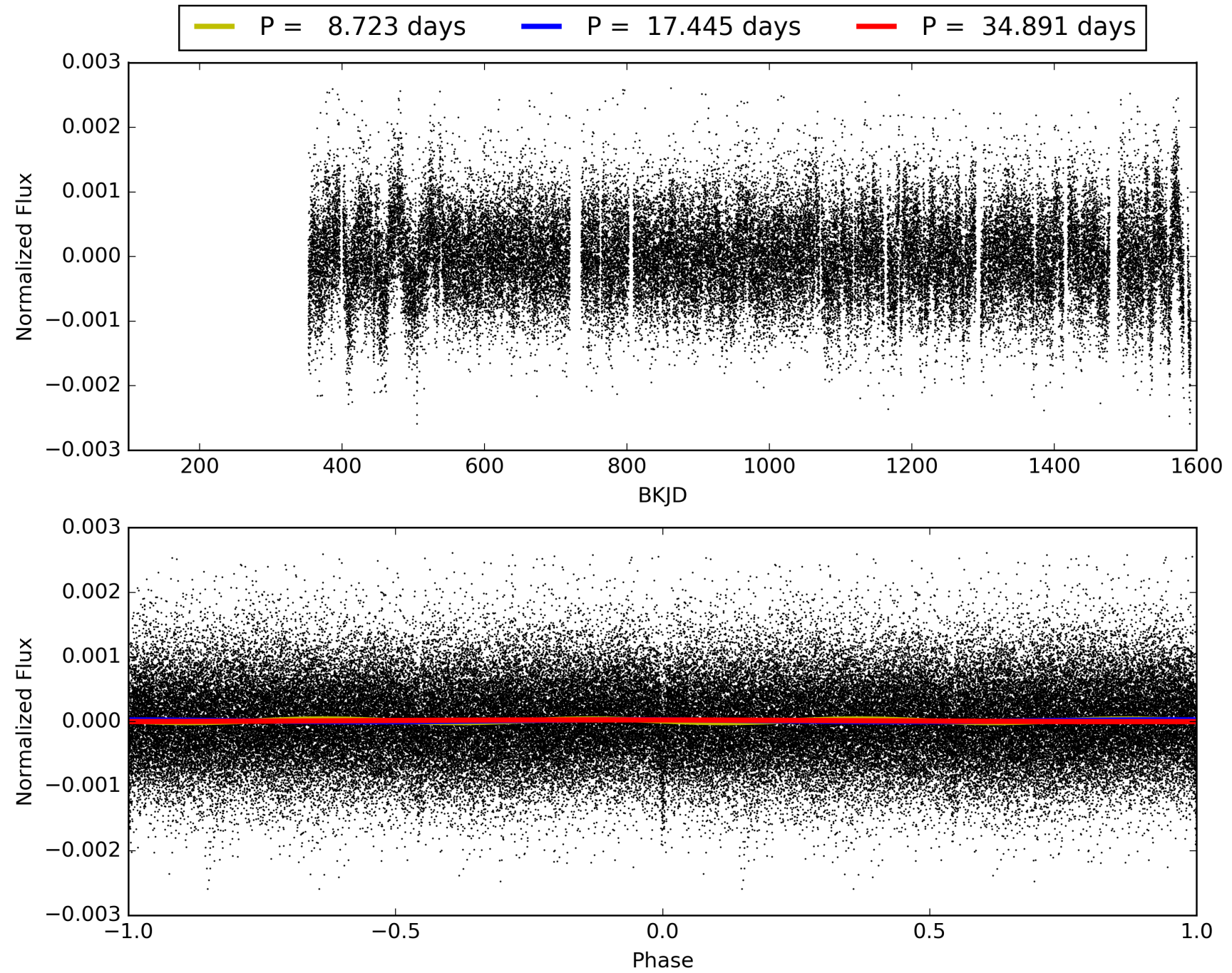
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 006522745-01, PDC Light Curves

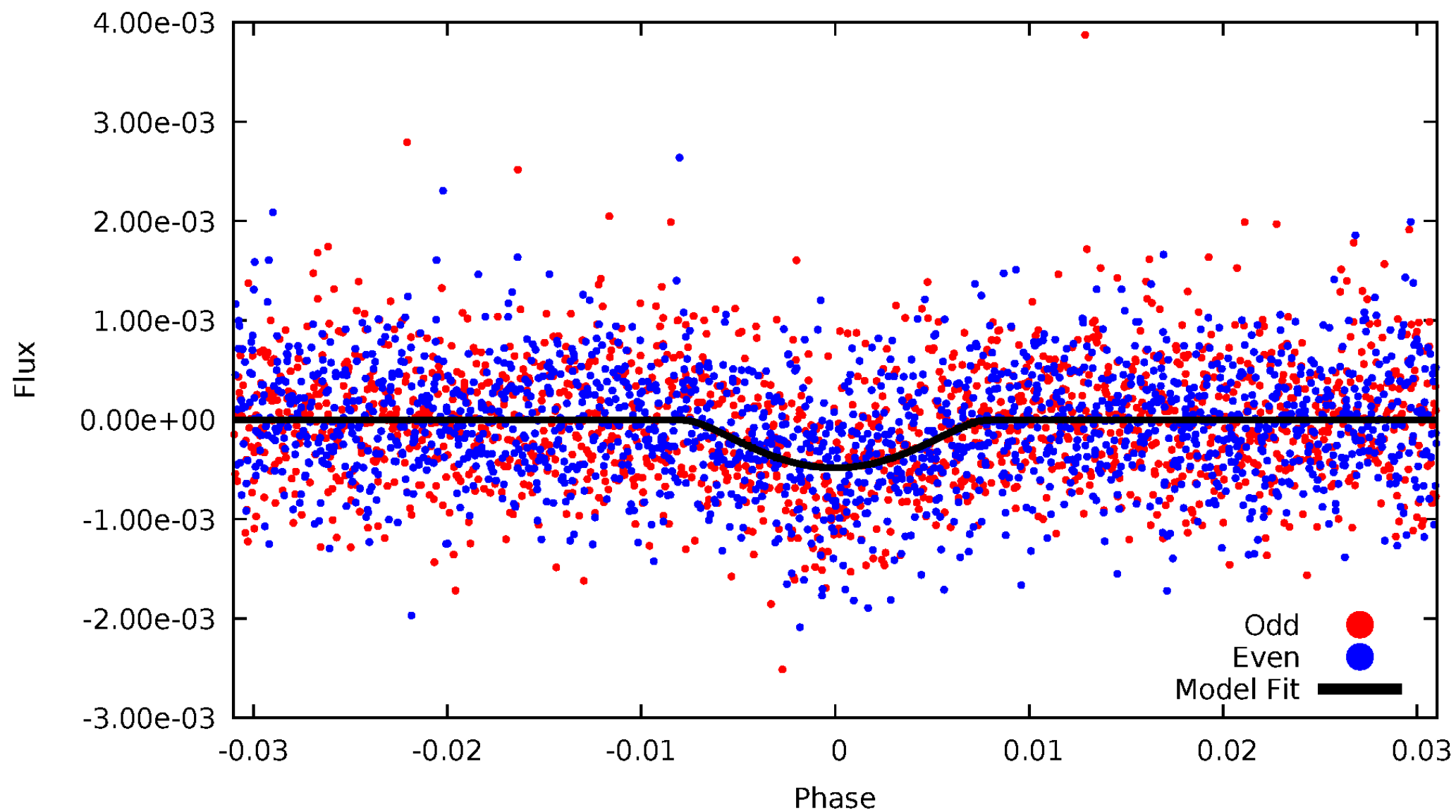


TCE 006522745-01



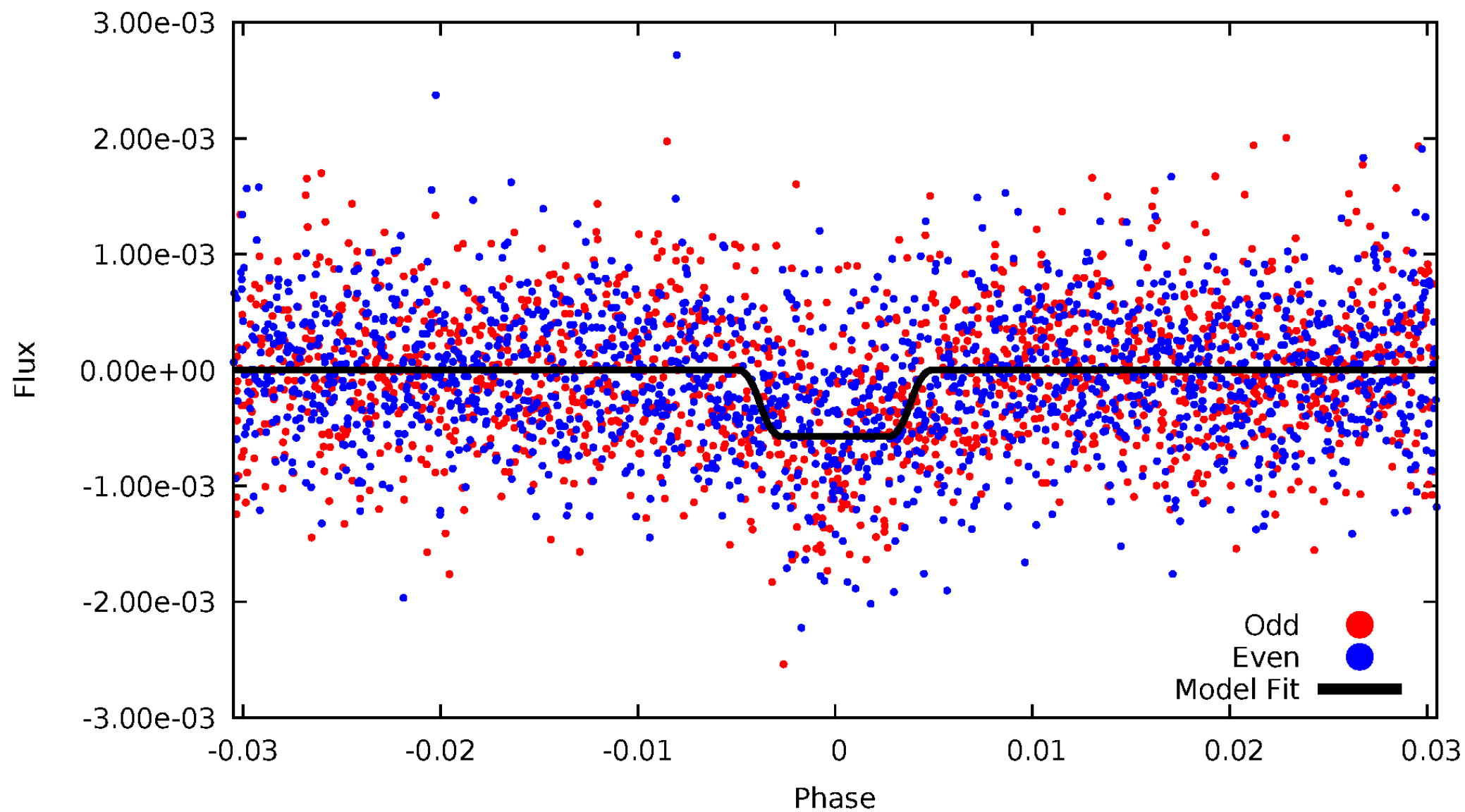
DV Odd/Even

TCE 006522745-01

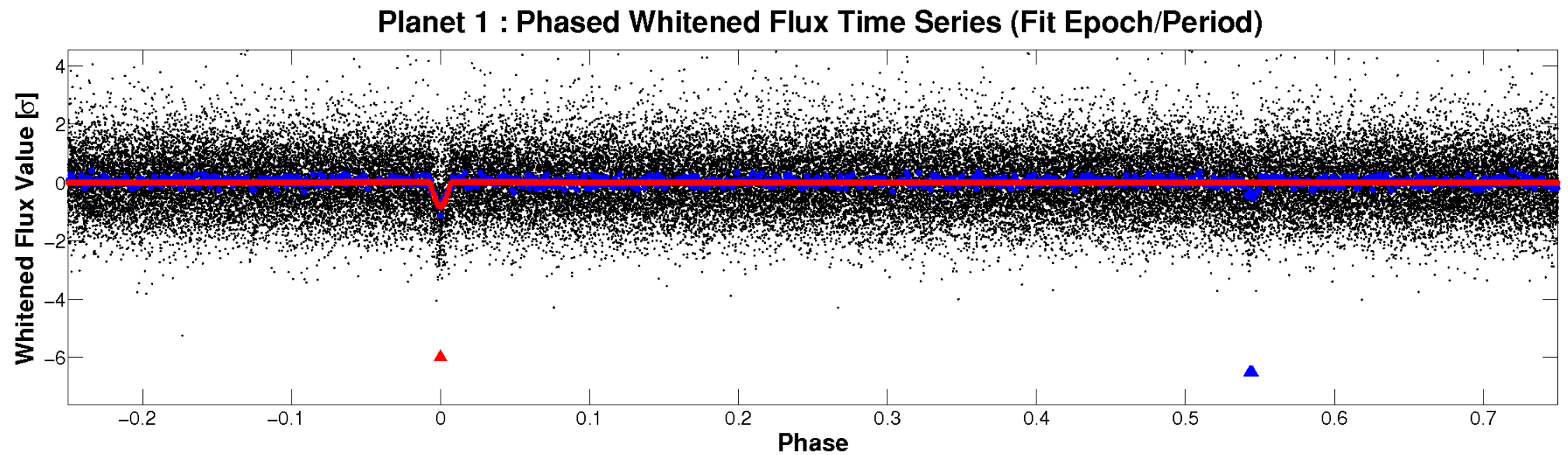
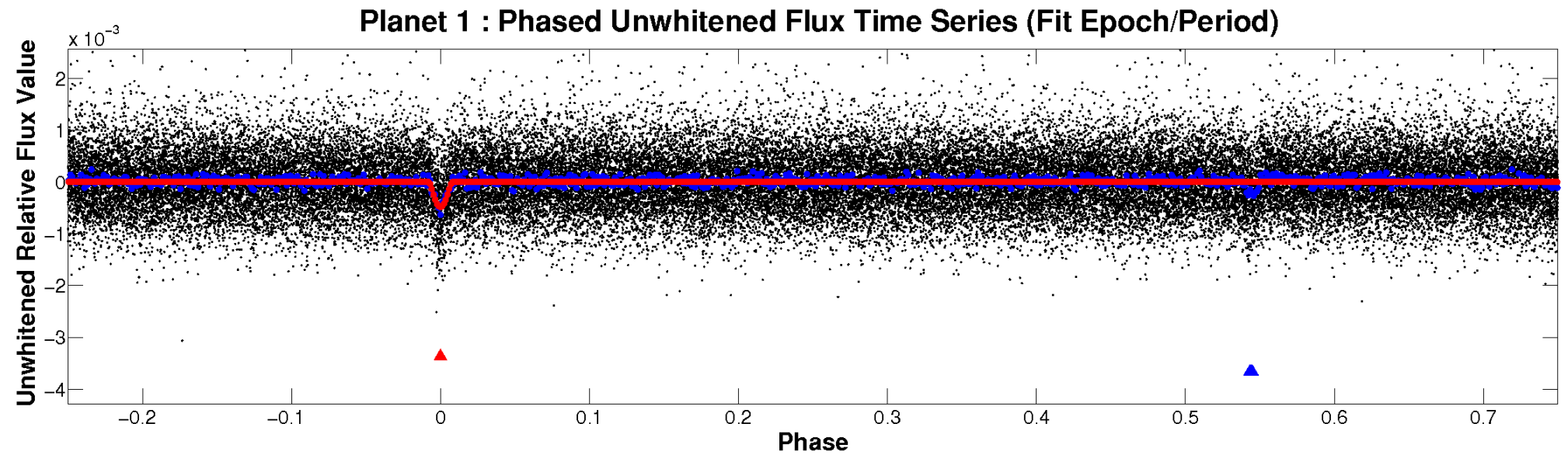


ALT Odd/Even

TCE 006522745-01

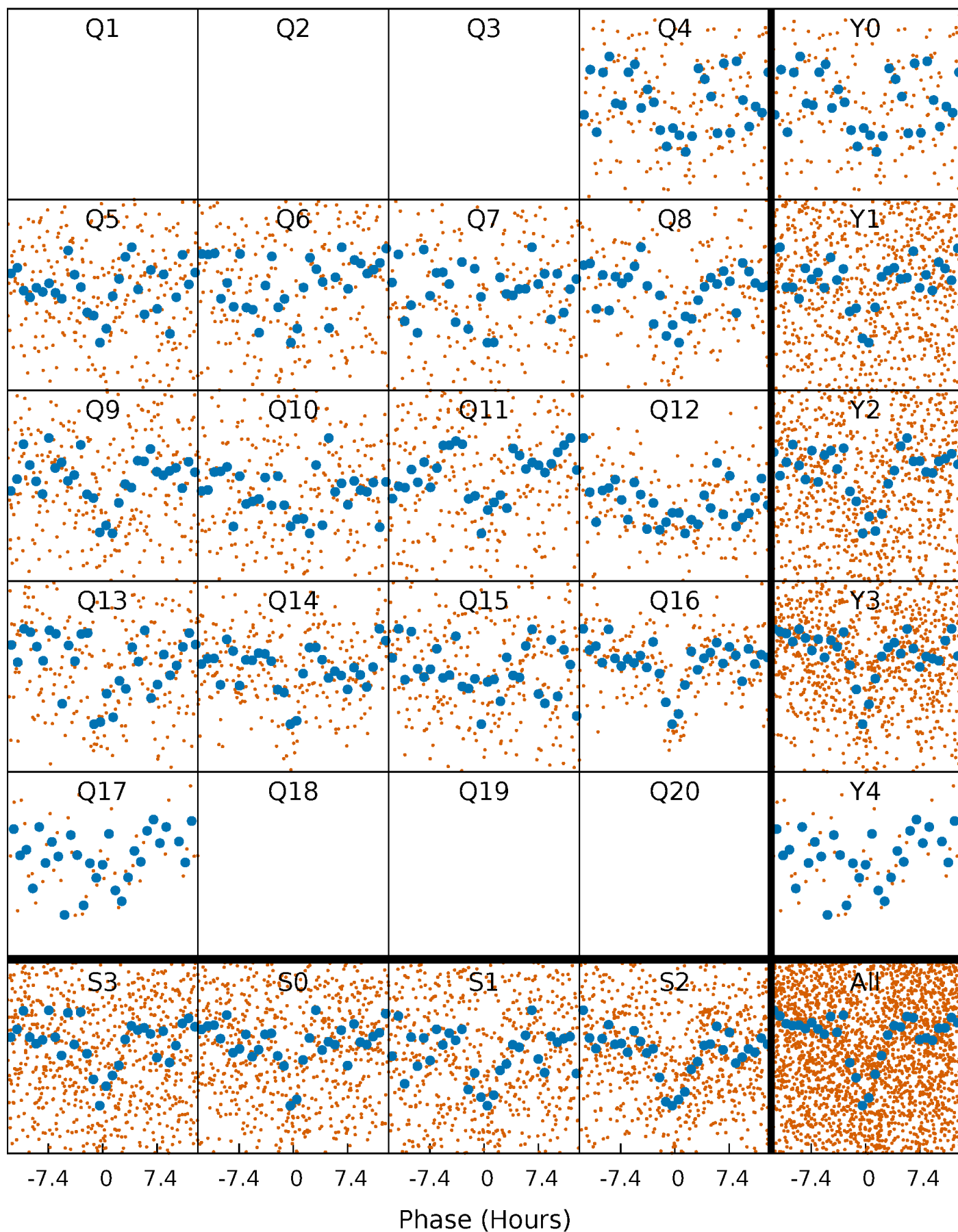


Non-Whitened Vs. Whitened Light Curve



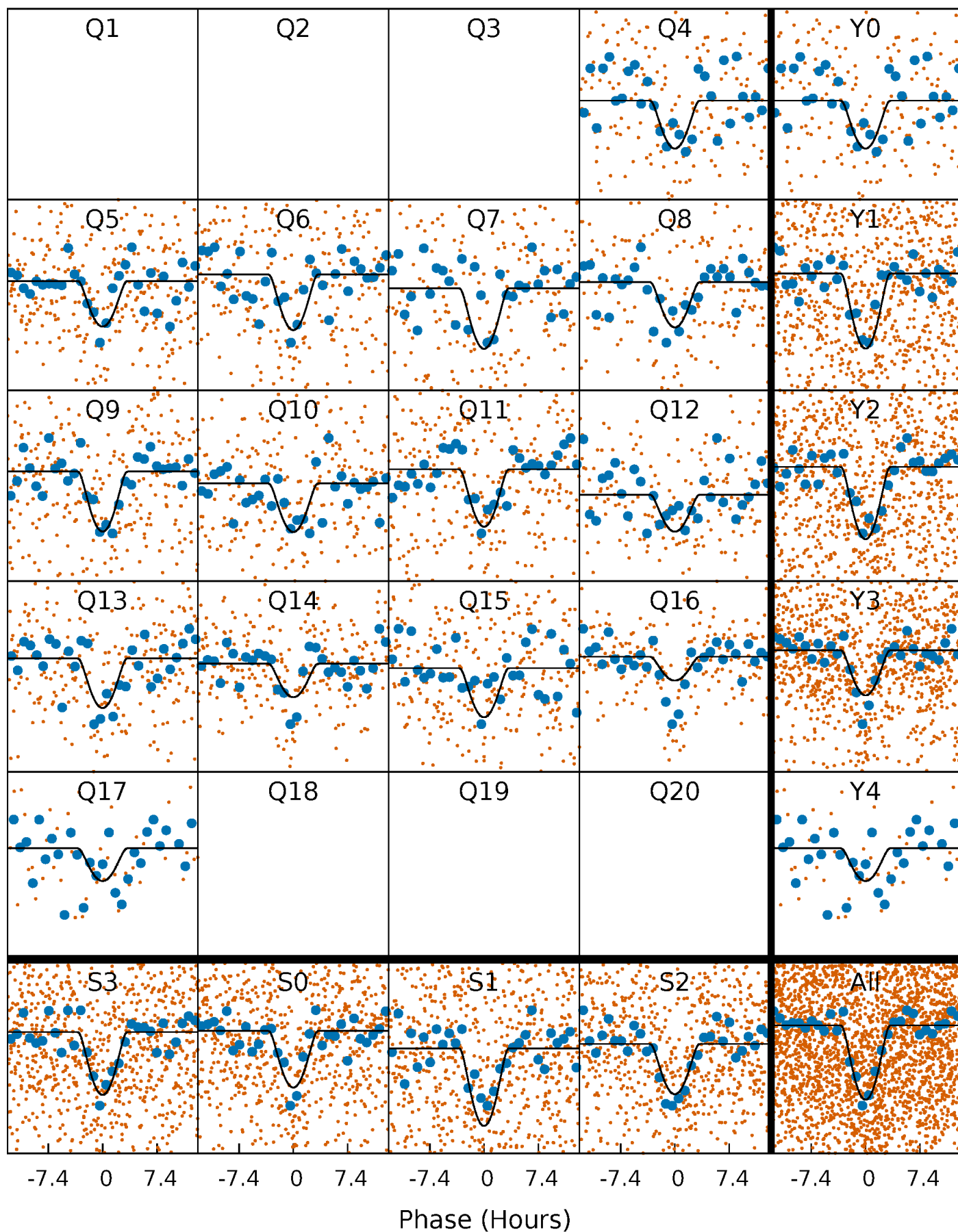
PDC Quarter-Phased Transit Curves

TCE 006522745-01 P= 17.445498 Days $T_0=135.756443$ (BKJD)



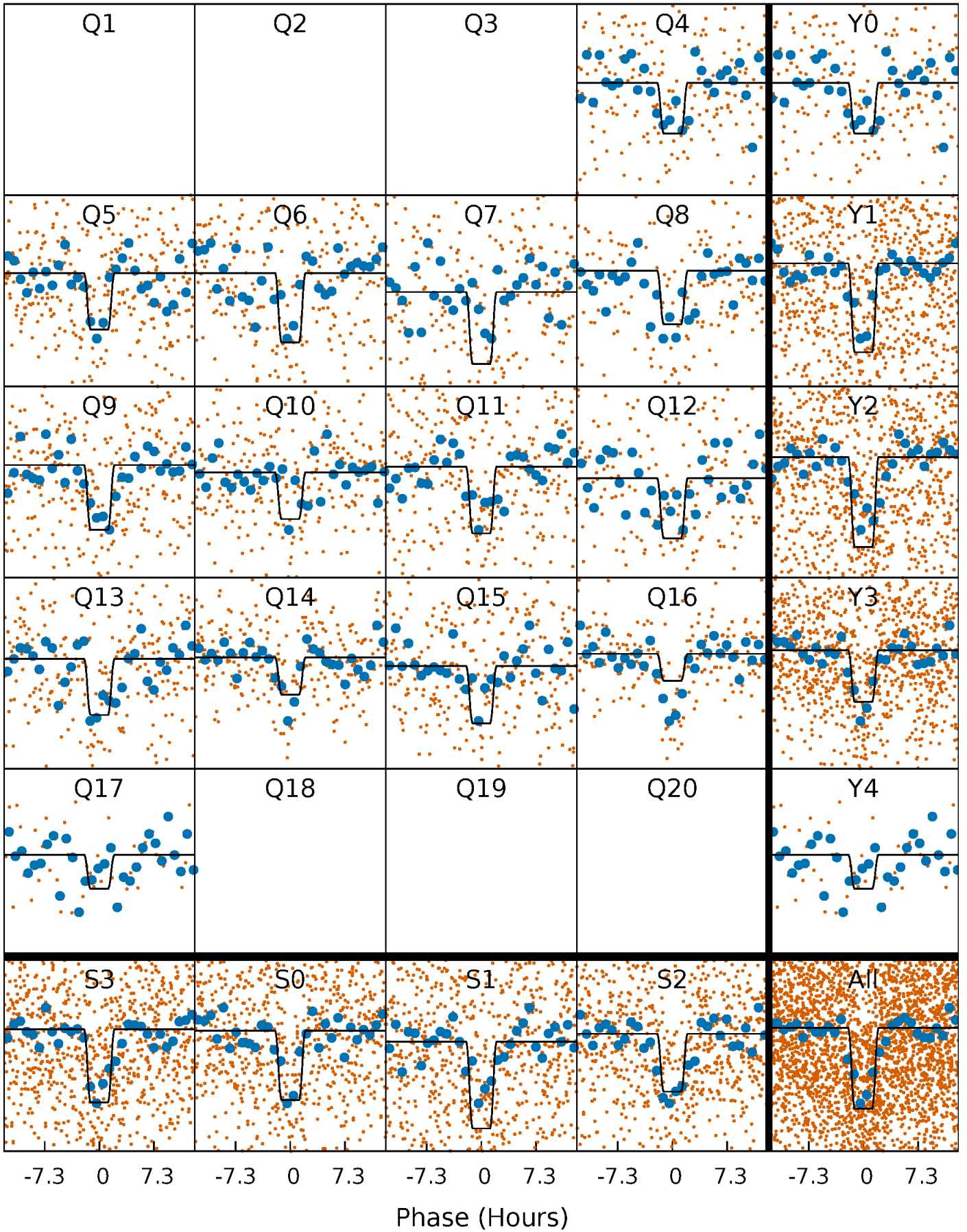
DV Quarter-Phased Transit Curves

TCE 006522745-01 P= 17.445498 Days $T_0=135.756443$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

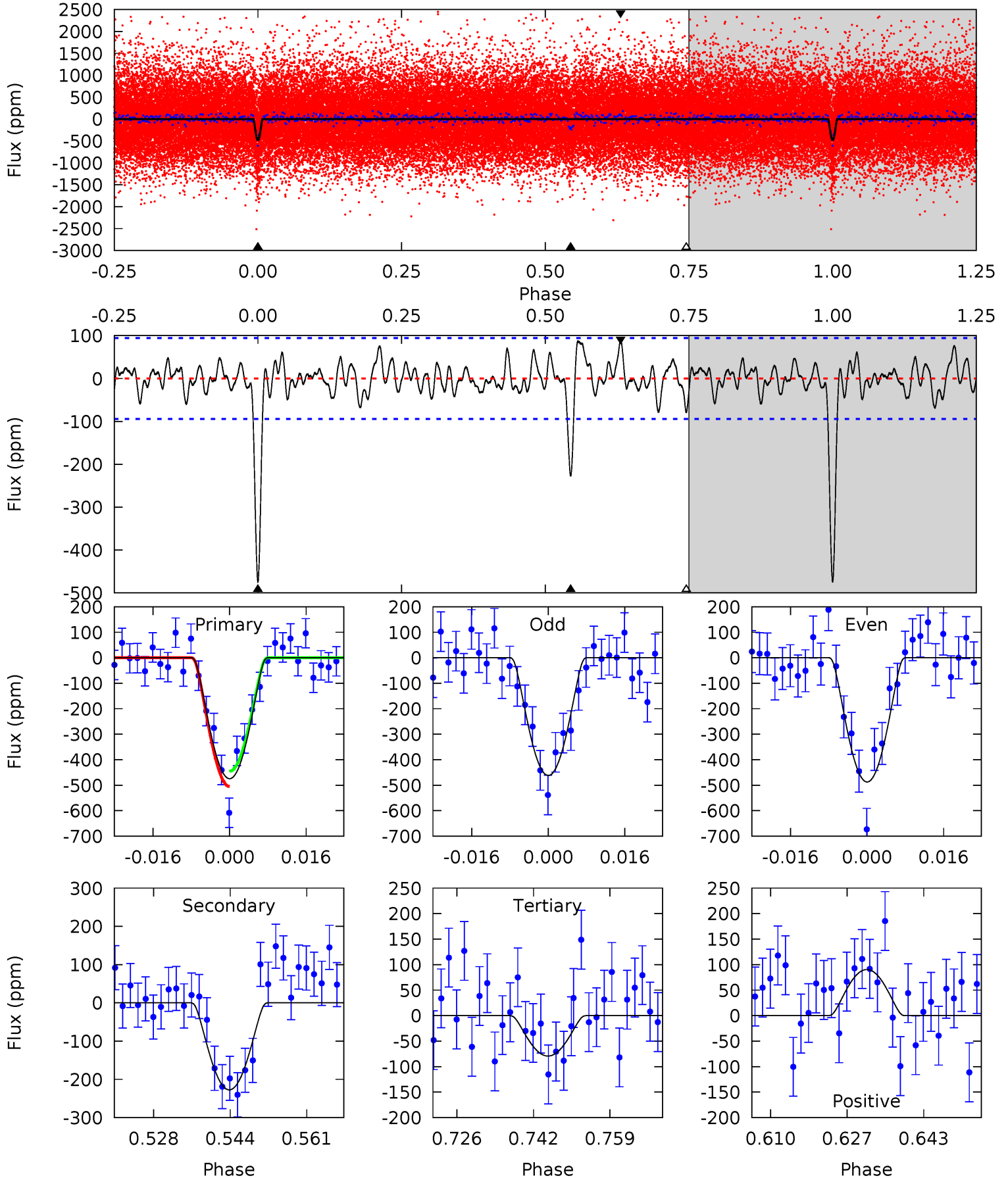
TCE 006522745-01 P= 17.445450 Days $T_0=135.758282$ (BKJD)



DV Model-Shift Uniqueness Test

006522745-01, P = 17.445498 Days, E = 135.756443 Days

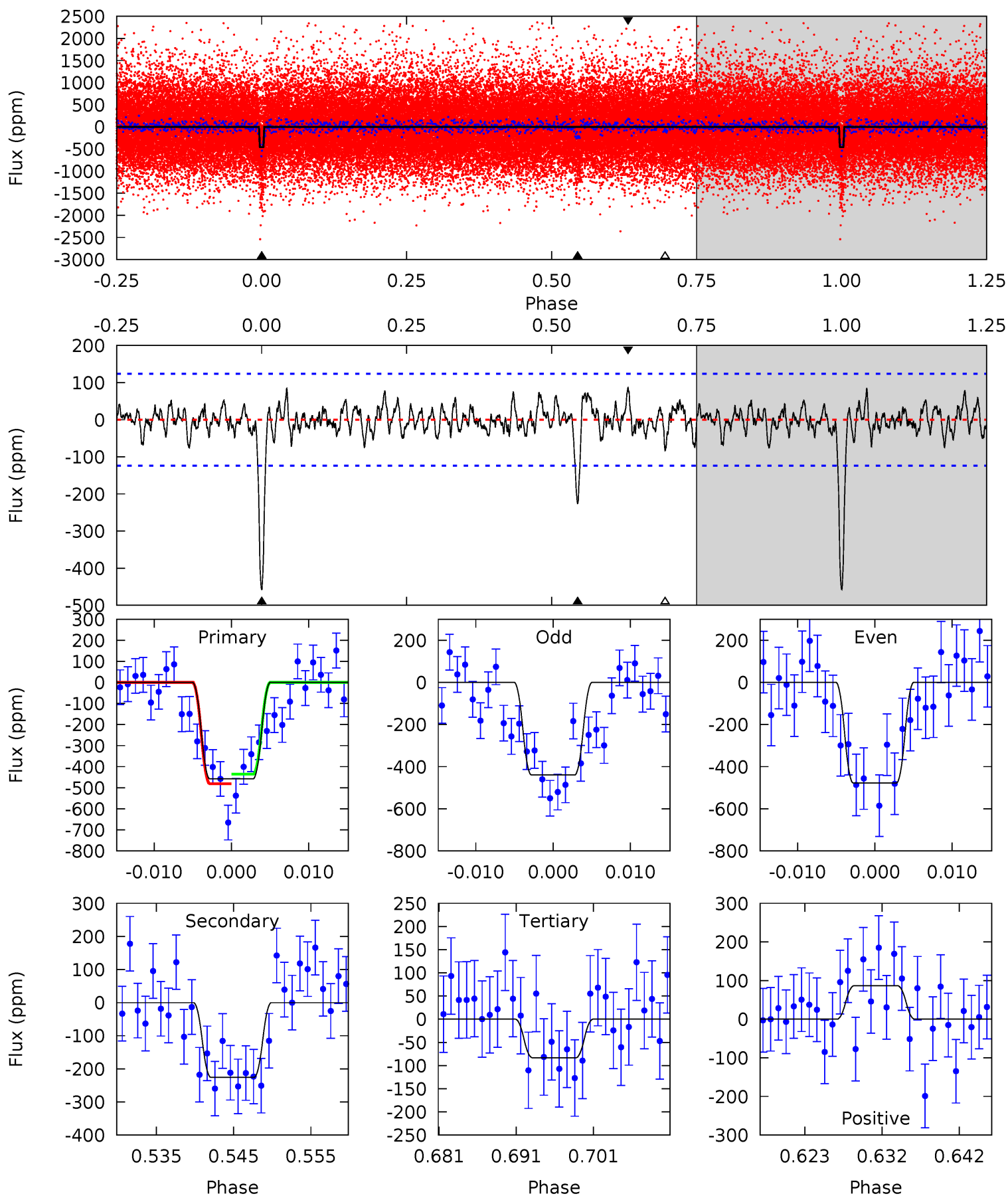
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
24.8	11.9	4.15	4.73	4.93	2.40	1.49	20.7	20.1	7.76	7.18	0.67	1.02	0.16	1.57



Alt Model-Shift Uniqueness Test

006522745-01, P = 17.445450 Days, E = 135.758282 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
18.6	9.18	3.39	3.53	5.03	2.59	1.16	15.3	15.1	5.79	5.65	0.77	1.07	0.16	0.91



Stellar Parameters For KIC 006522745

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6260^{+196}_{-239}	$4.433^{+0.065}_{-0.195}$	$-0.080^{+0.250}_{-0.300}$	$1.063^{+0.335}_{-0.134}$	$1.118^{+0.159}_{-0.159}$	$1.310^{+0.365}_{-0.651}$
	+3%/-4%	+1%/-4%	+312%/-375%	+32%/-13%	+14%/-14%	+28%/-50%
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 006522745-01 / KOI 4574.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-227 ± 19	$8.95^{+7.66}_{-5.96}$	1093^{+85}_{-57}	3356^{+1622}_{-565}	29^{+236}_{-20}
Alt.	-226 ± 25	$7.46^{+8.28}_{-5.12}$	1092^{+81}_{-59}	3529^{+2121}_{-696}	41^{+397}_{-32}

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

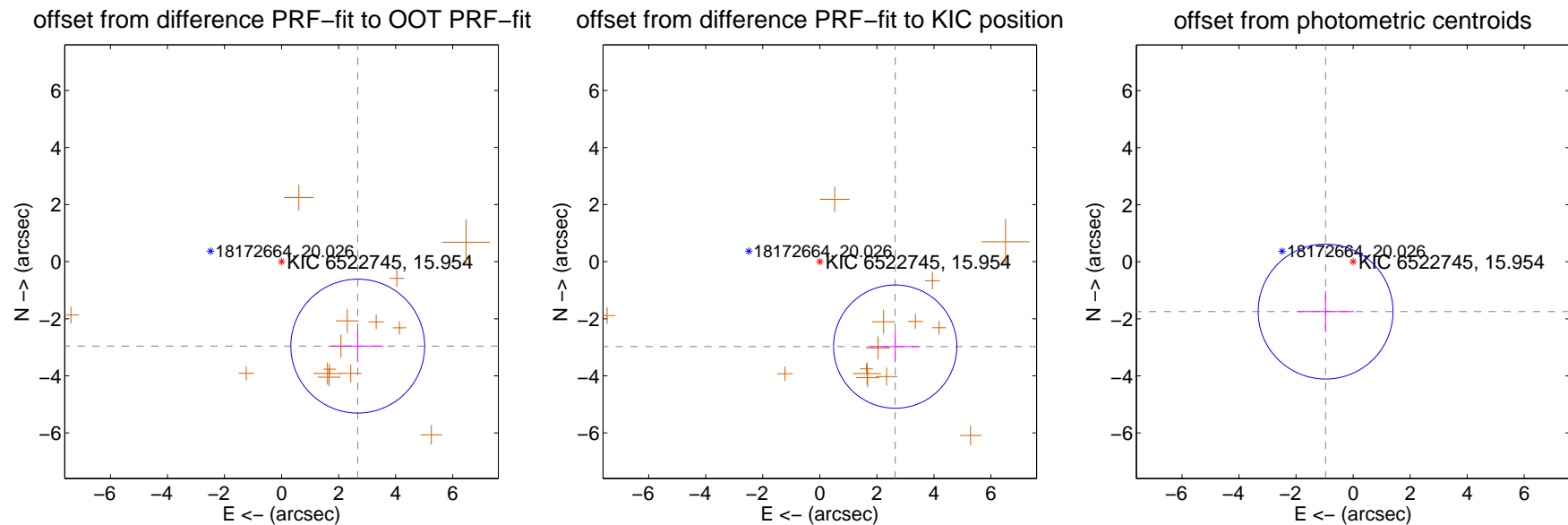
DV Centroid Data

Supplemental centroid analysis for 006522745-01. Kepler magnitude: 15.95. Transit SNR 15.04

There are 0 quarters with good PRF difference image offsets

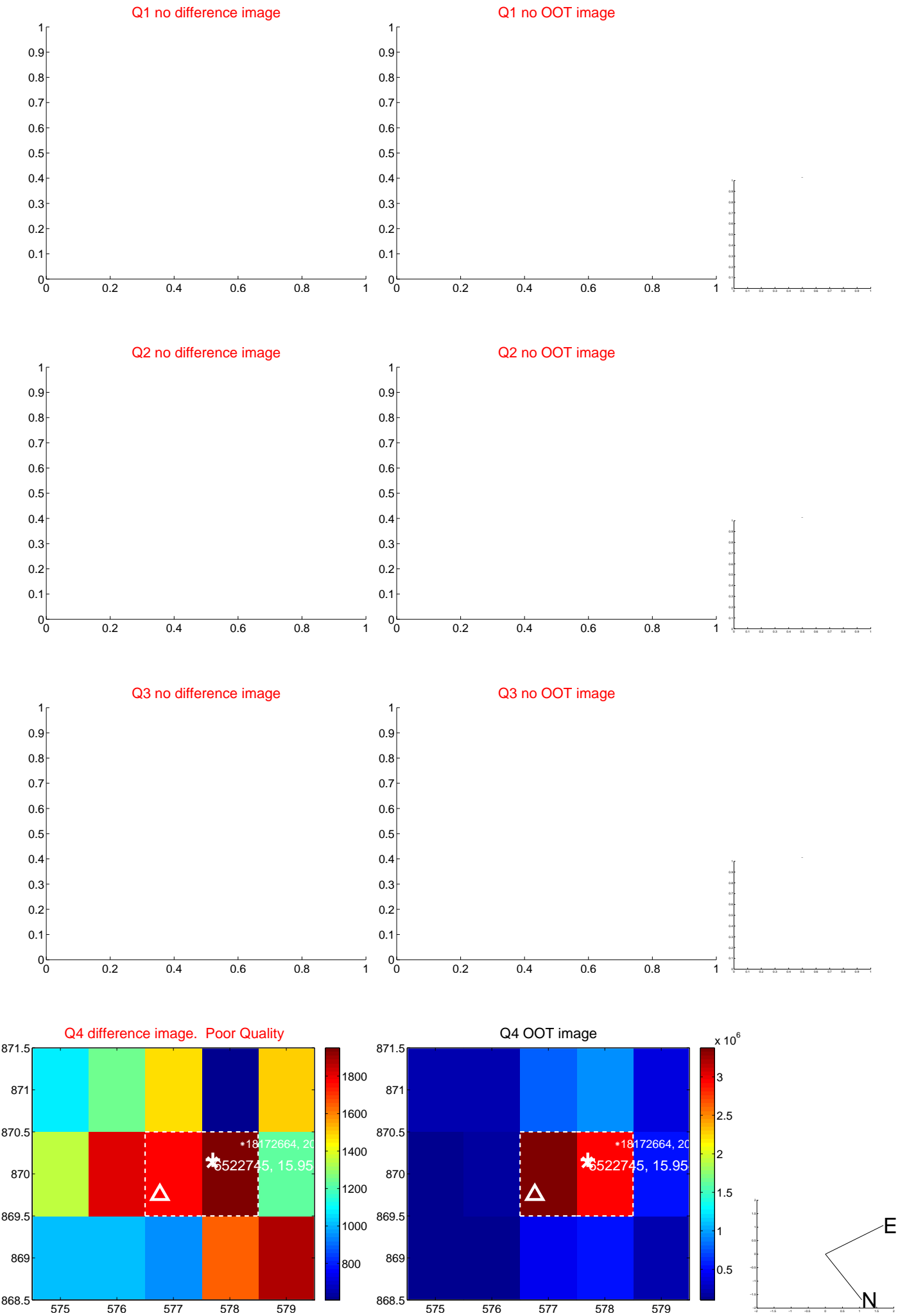
The direct PRF centroid is offset from the target star catalog position by about 0.05 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	3.986 ± 0.782	5.10	-2.671 ± 0.899	-2.959 ± 0.553
PRF-fit source offset from KIC position	3.980 ± 0.720	5.53	-2.643 ± 0.881	-2.976 ± 0.549
photometric centroid source offset	2.00 ± 0.79	2.53	0.97 ± 0.99	-1.75 ± 0.72

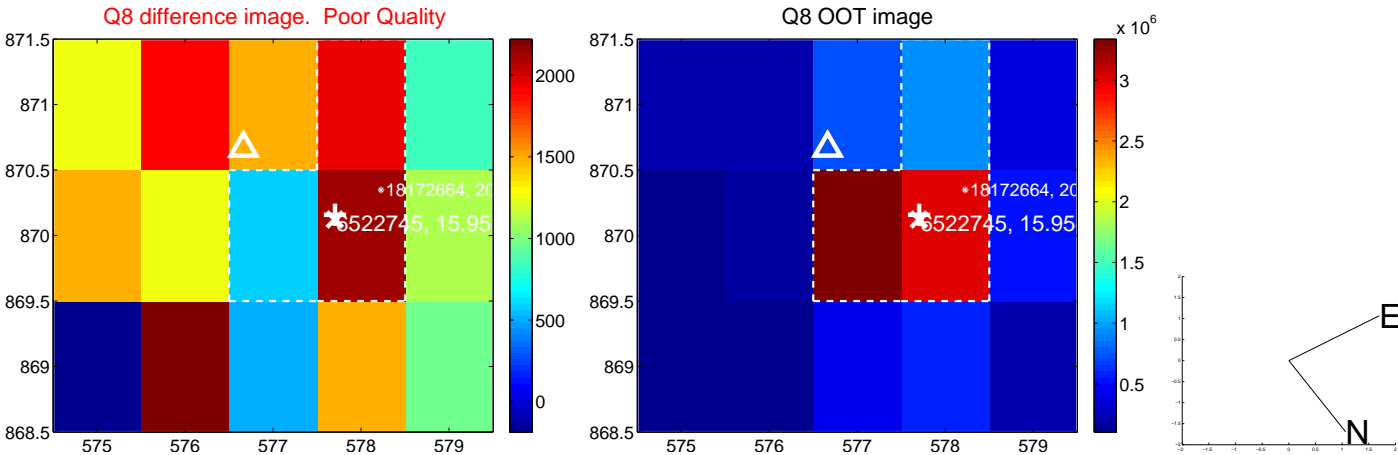
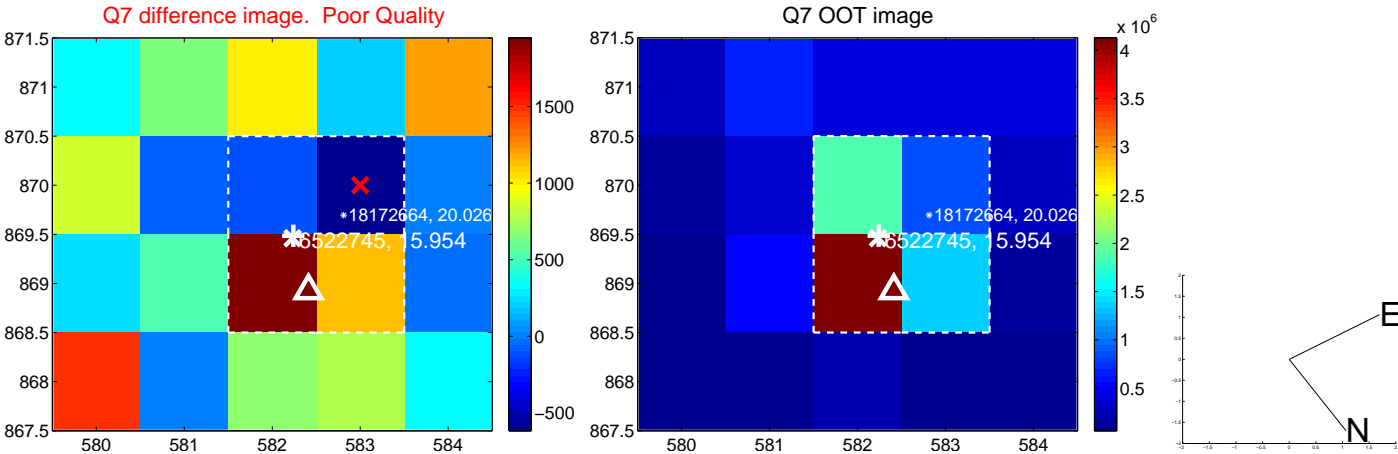
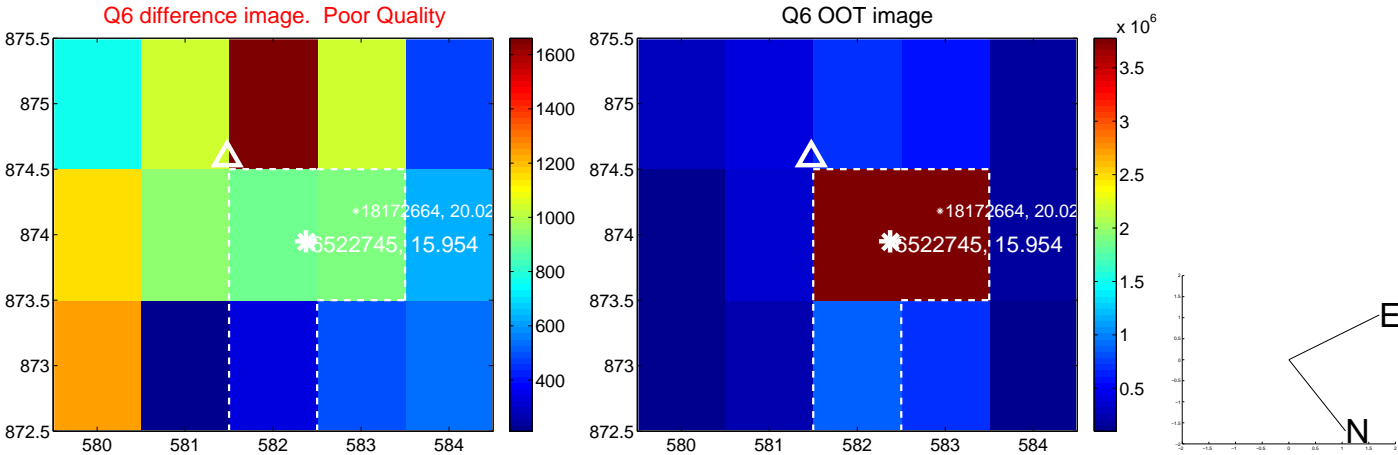
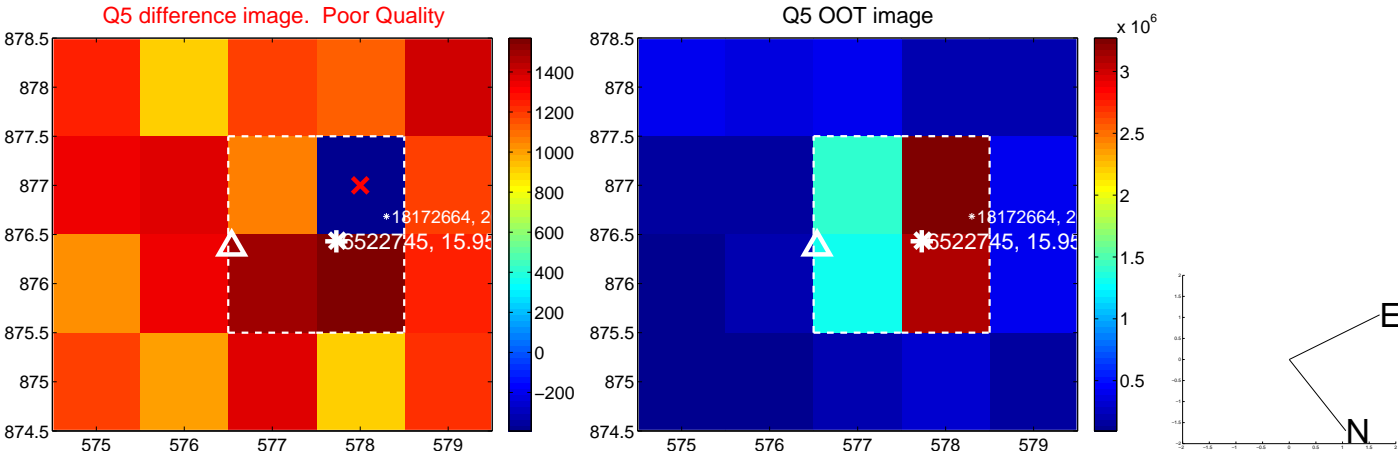


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ . Red *: target star. Blue *: Other stars. Text next to a star gives its KIC ID and kepmag. KIC IDs > 15,000,000 are from the UKIRT catalog.

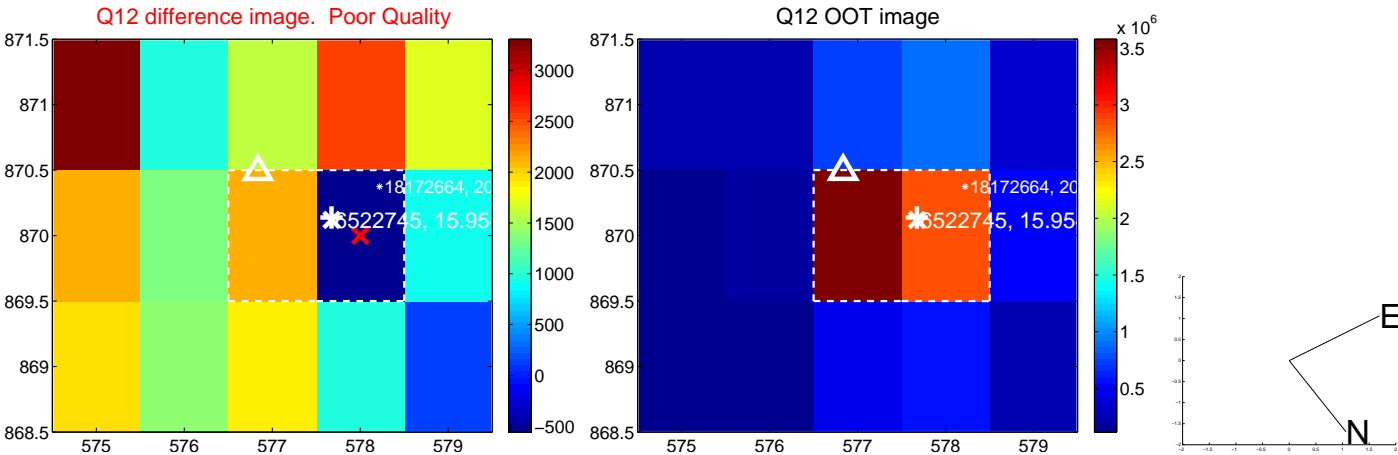
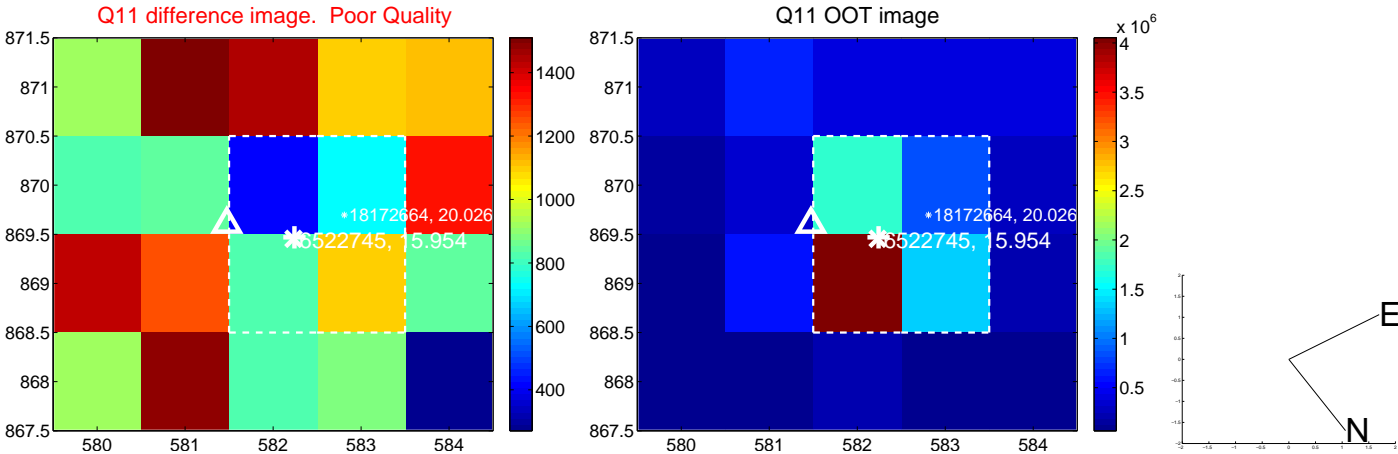
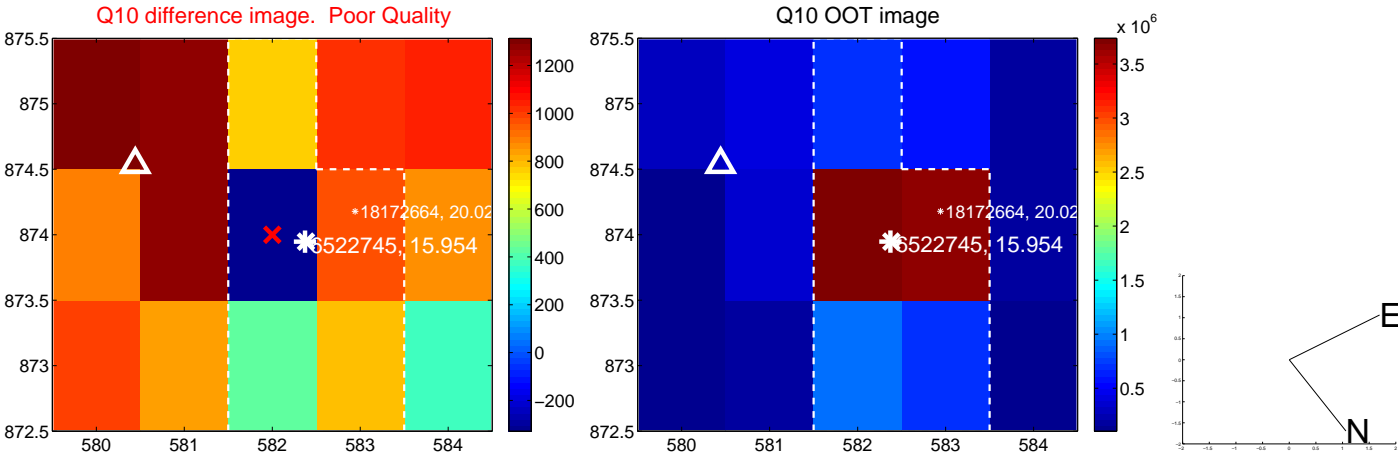
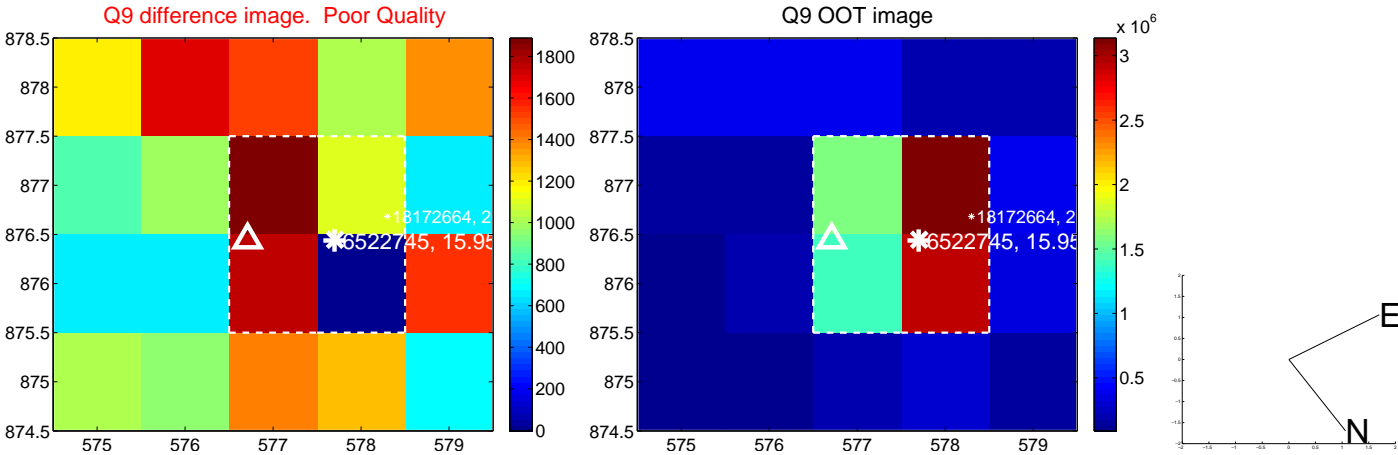
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



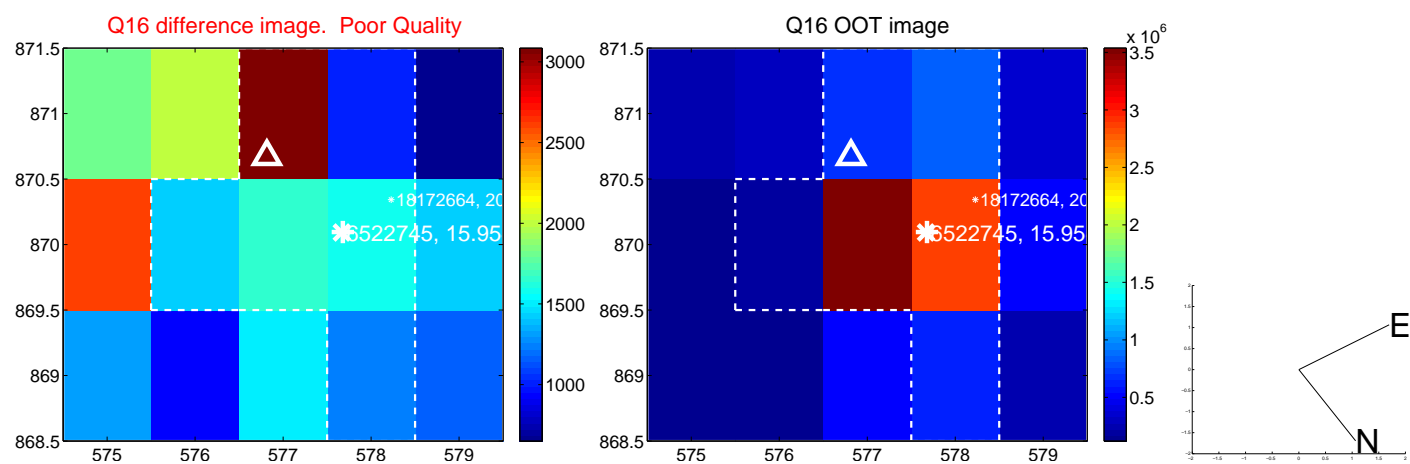
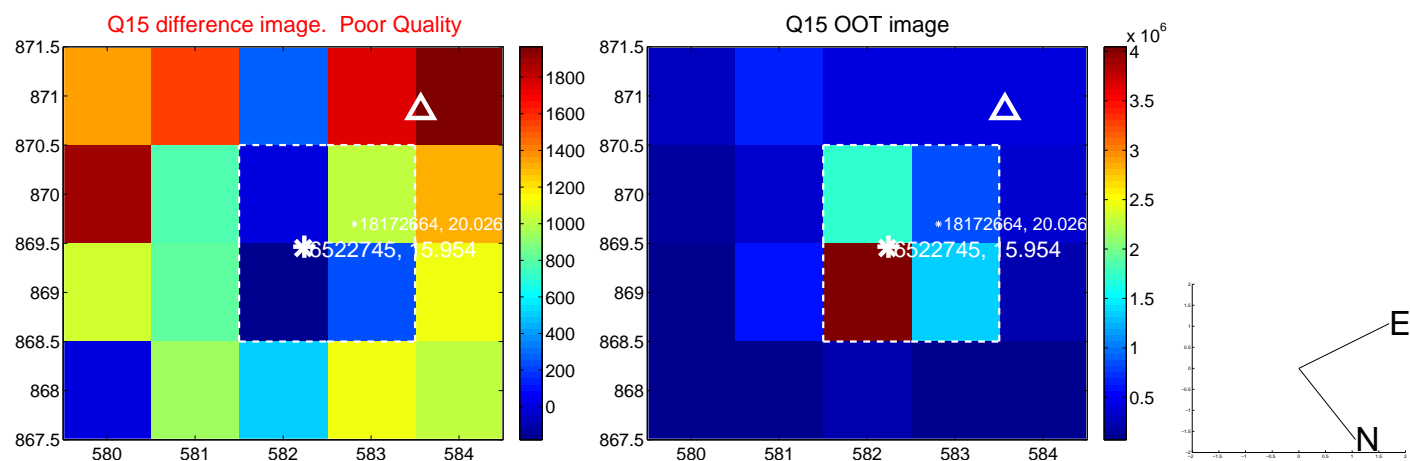
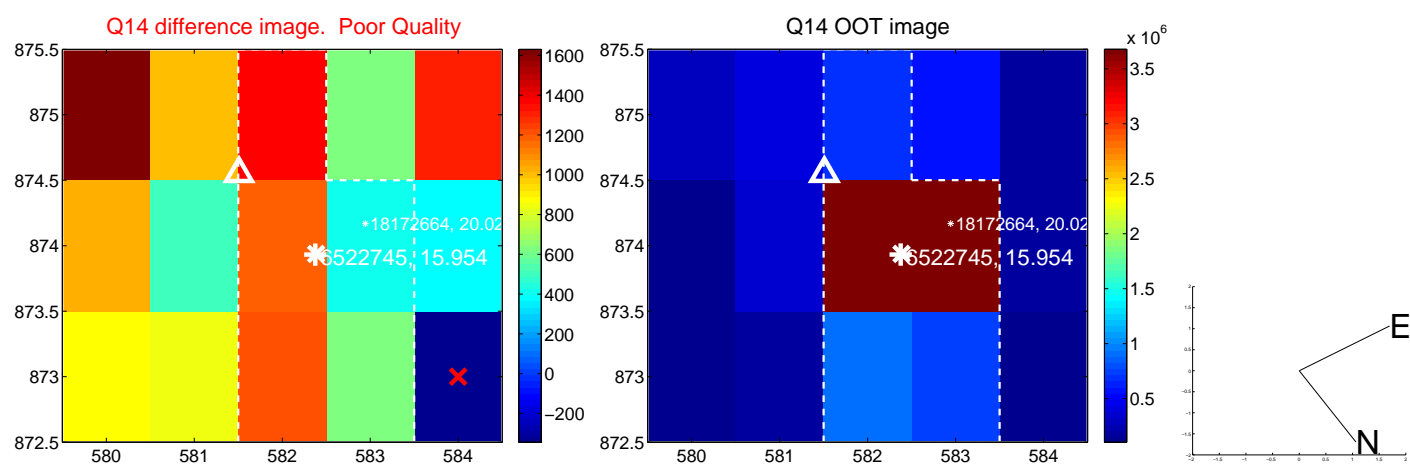
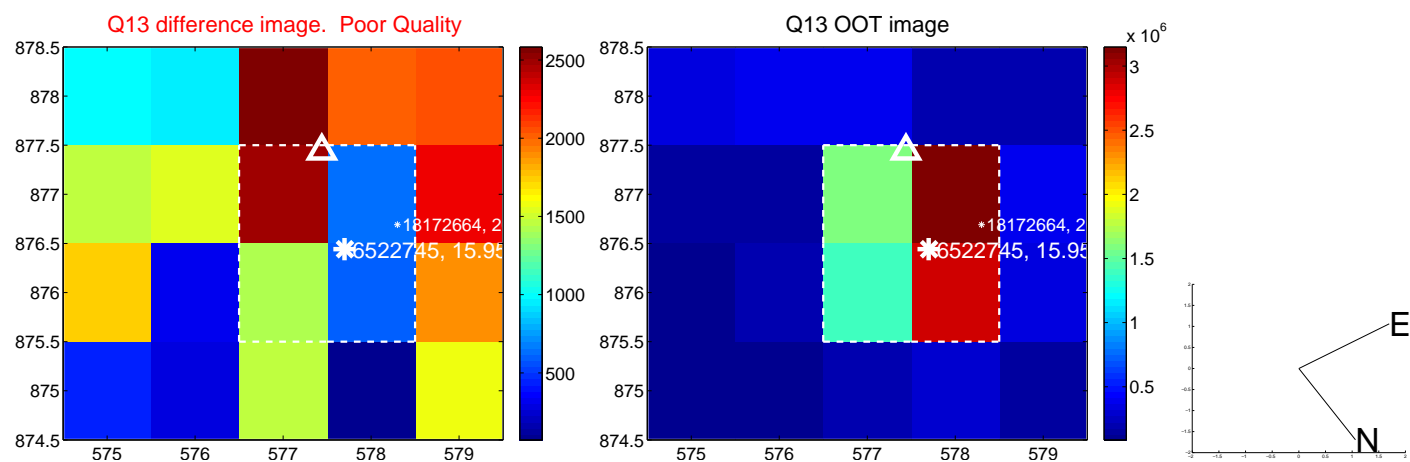
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



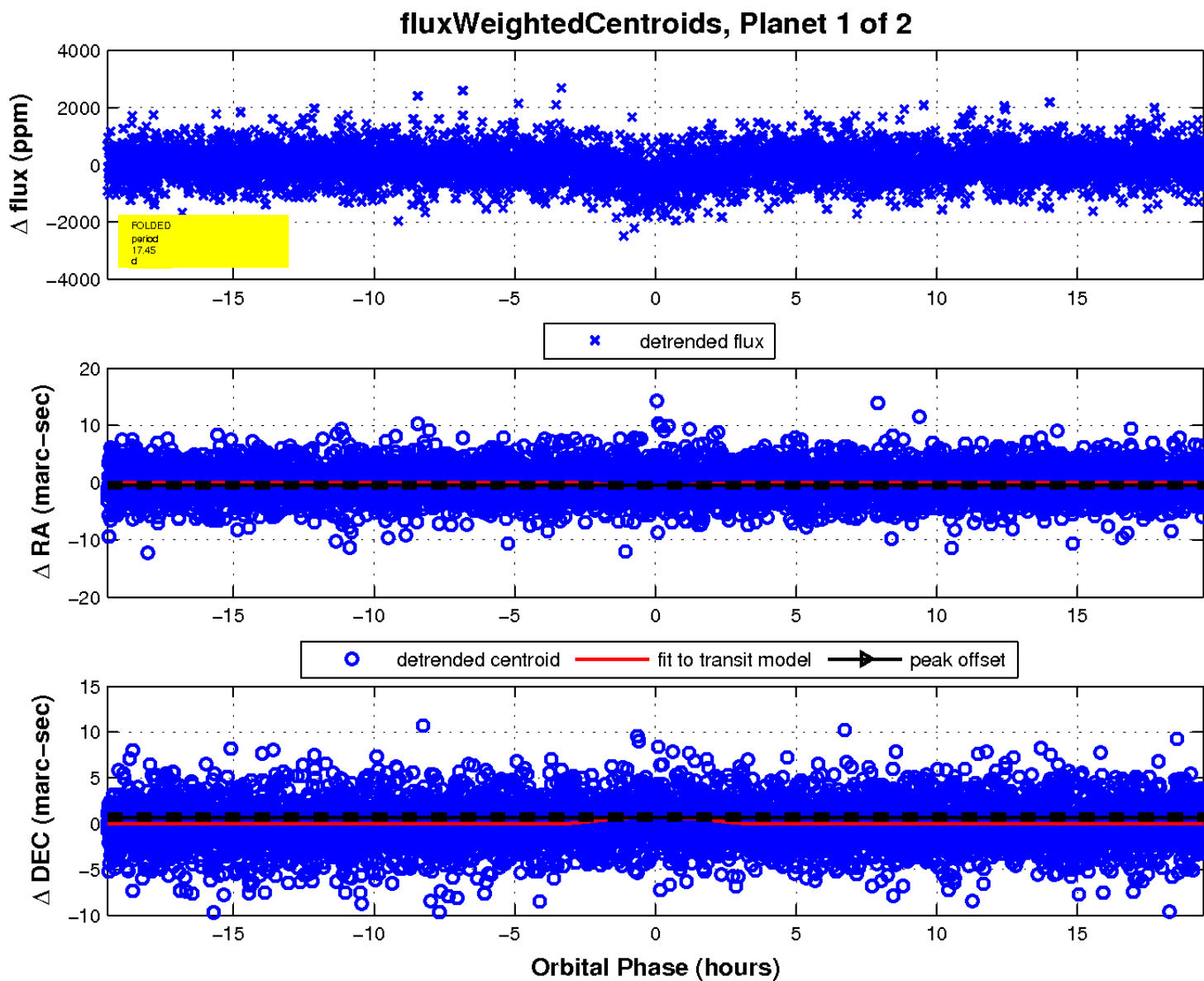
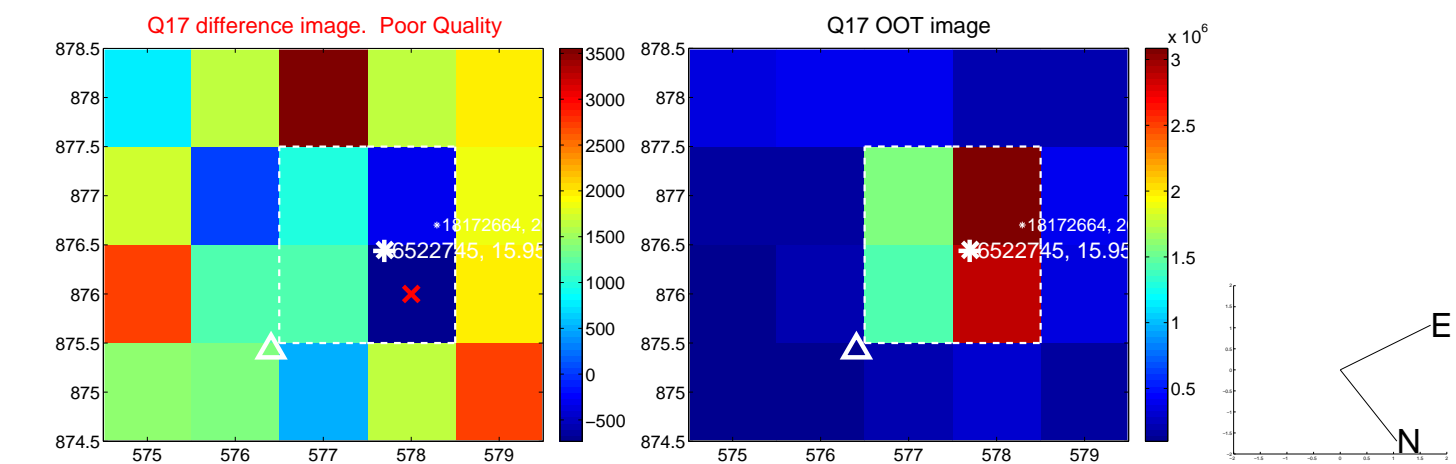
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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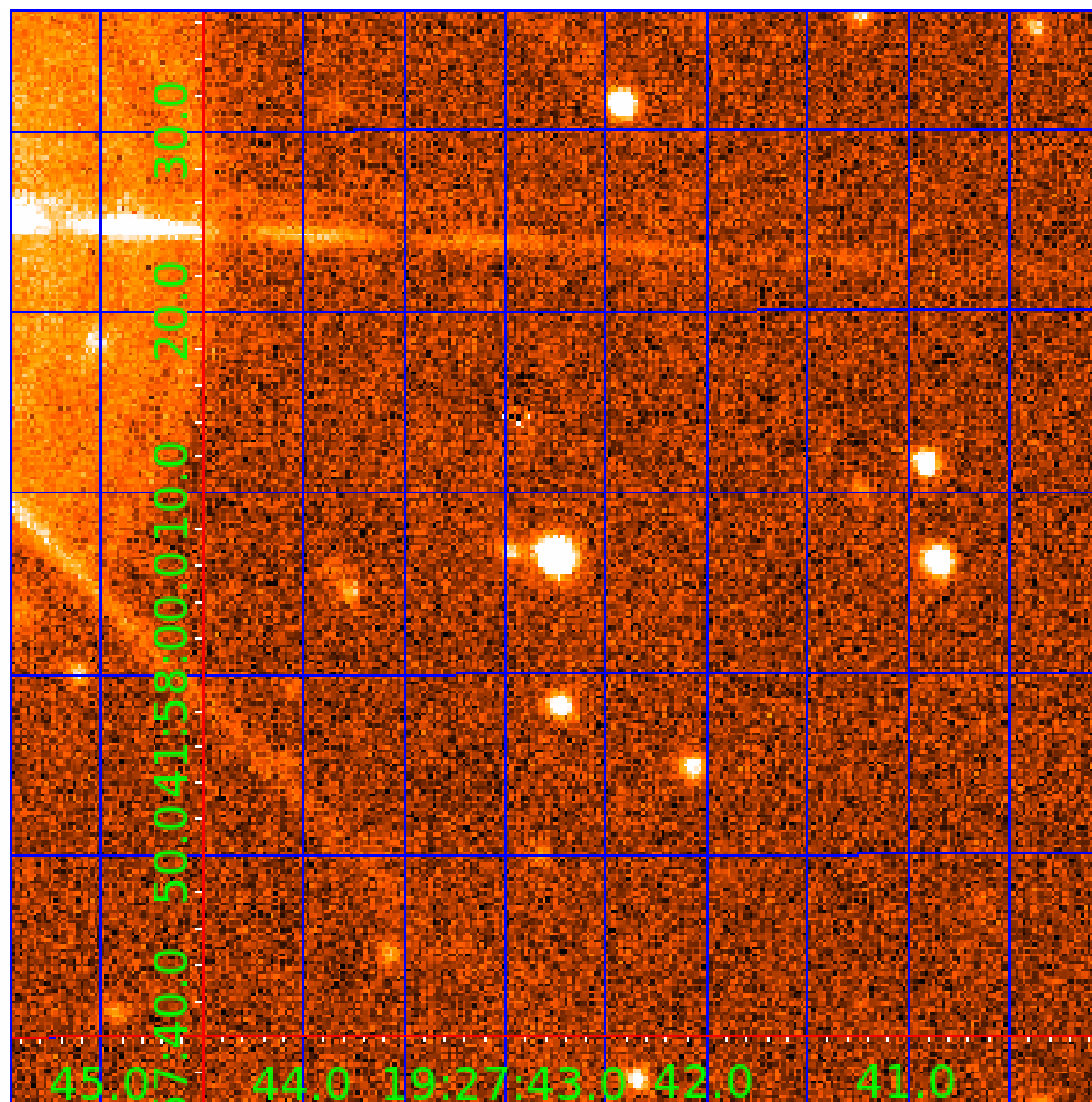


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 006522745

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})
006522745-01	OBS	4574.01	17.445498	135.756443	483.6	6.493	13.9	15.0	1.06	6260	4.36	83.30
006522745-02	OBS	No	17.445876	145.232749	235.9	4.656	8.3	8.3	1.06	6260	1.79	83.30

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006522745-01	OBS	FP	0.00	0	1	1	1	MOD_SEC_DV—MOD_SEC_ALT—HAS_SEC_TCE—CENT_FEW_DIFFS—HALO_GHOST—EPHEM_MATCH
006522745-02	OBS	FP	0.00	1	1	1	1	IS_SEC_TCE—CENT_FEW_DIFFS—HALO_GHOST—EPHEM_MATCH

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 006522745-02

TCE (1)	KIC	Parent (2)	Parent KIC	$P_1:P_2$	Dist ($''$)	Δ Row	Δ Col	m_2	m_1	D_2/D_1	Mechanism	Flag	σ_P	σ_T
006522745-02	6522745	006522750-02	6522750	1:1	43.5	-9	5	11.23	15.95	668.98	Direct-PRF	0	0.42	0.42

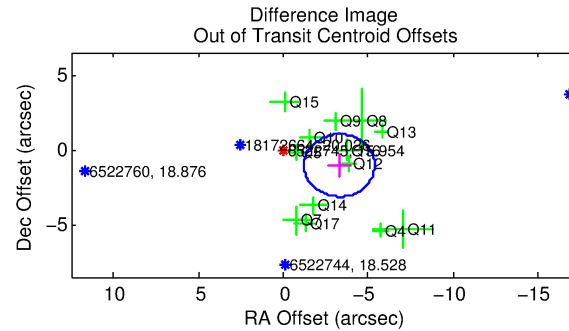
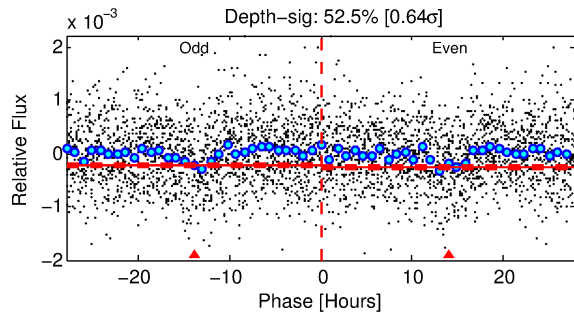
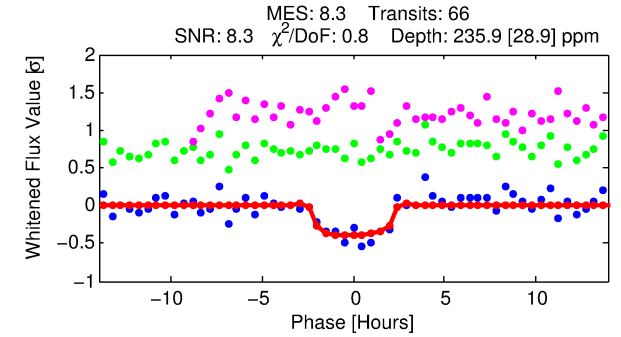
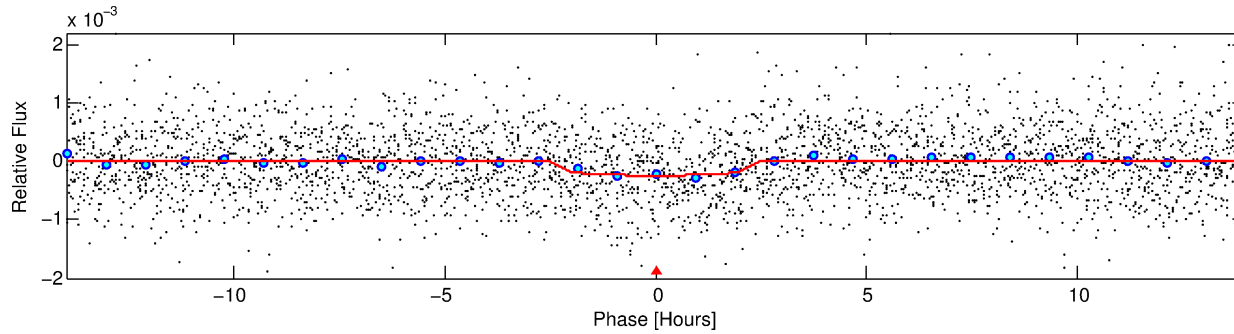
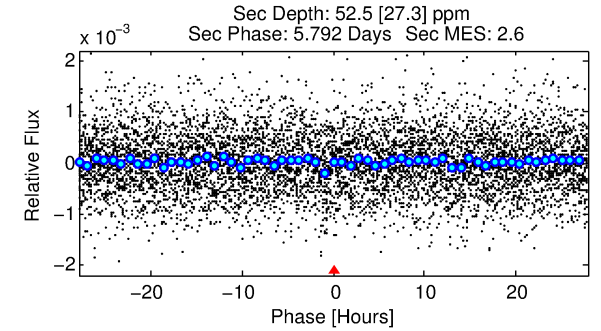
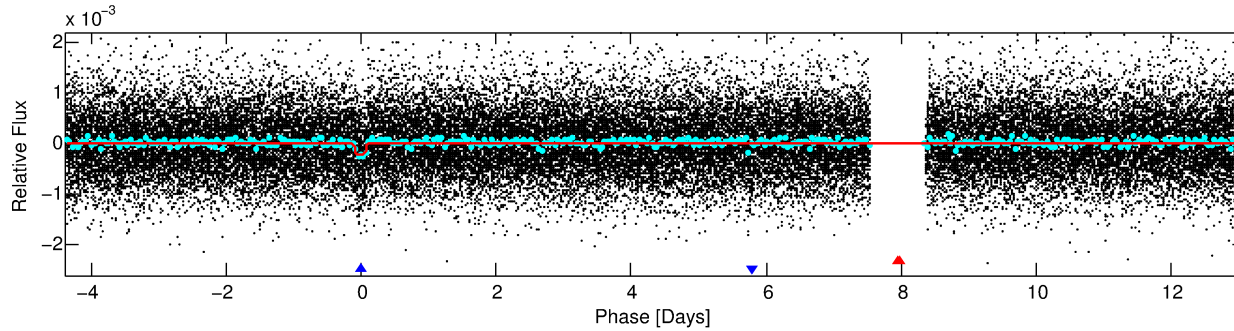
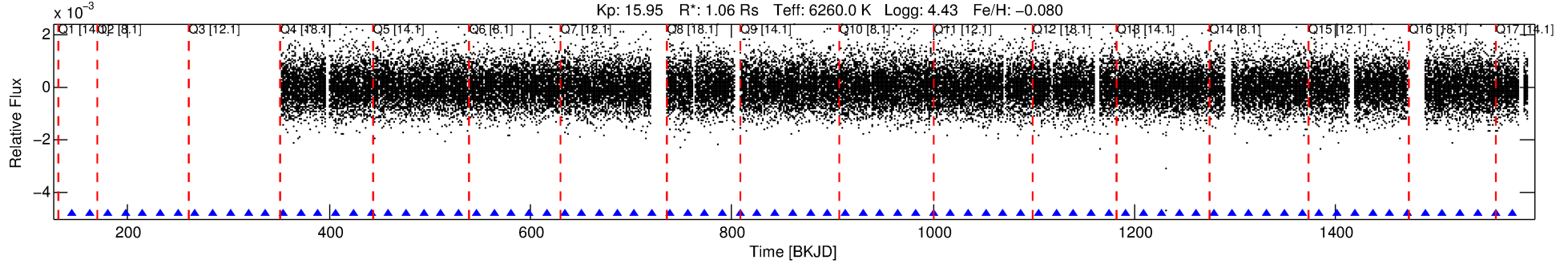
Notes: $P_1:P_2$ is the period ratio. Dist is the distance in arcseconds. Δ Row and Δ Col are the number of pixels apart in row and column. m_2 and m_1 are the magnitudes of the parent and child. D_2/D_1 is the parent's transit depth divided by the child's. σ_P and σ_T are the significance of the match in period and epoch. For a match to be considered significant $\sigma_P < 5.0$ and $\sigma_T < 5.0$. Matches which have σ_P and σ_T very close to this cutoff should receive extra scrutiny, especially if the period ratio is very large.

DV One-Page Summary

KIC: 6522745 Candidate: 2 of 2 Period: 17.446 d

KOI: K04574 Corr: No Ephemeris Match

Kp: 15.95 R*: 1.06 Rs Teff: 6260.0 K Logg: 4.43 Fe/H: -0.080



DV Fit Results:

Period = 17.44588 [0.00029] d
Epoch = 145.2327 [0.0143] BKJD
Rp/R* = 0.0154 [0.0120]
a/R* = 18.59 [75.12]
b = 0.78 [2.04]
Seff = 83.30 [33.01]
Teff = 770 [76] K
Rp = 1.79 [1.51] Re
a = 0.1366 [0.0352] AU
Ag = 168.04 [282.88] [0.59σ]
Teffp = 4288 [1769] K [1.99σ]

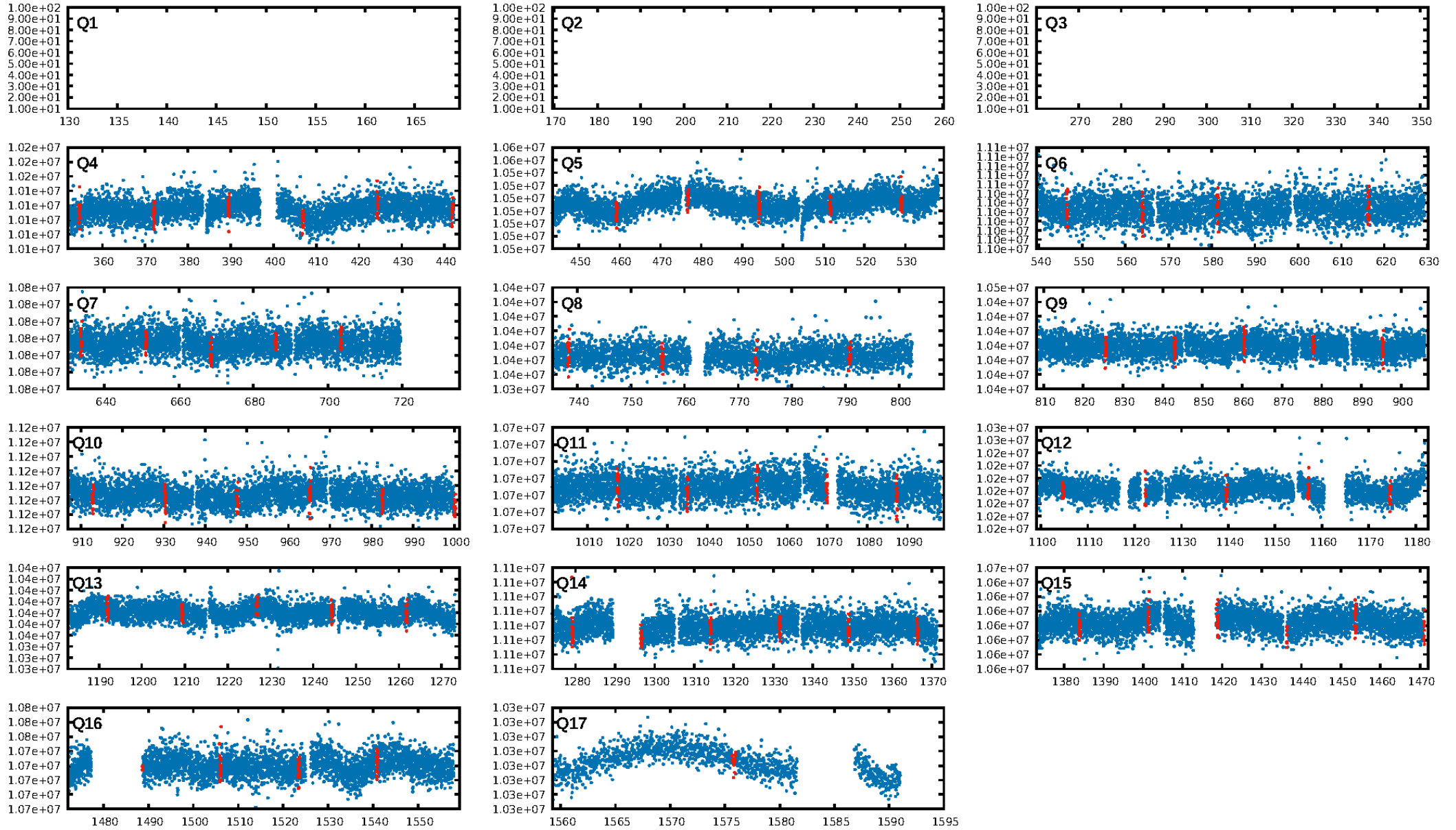
DV Diagnostic Results:

ShortPeriod-sig: 0.1% [0.00σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 53.2%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 5.36e-16
RollingBand-fgt: 1.00 [65/65]
GhostDiagnostic-chr: -0.06482
Centroid-sig: 4.1%
Centroid-so: 2.640 arcsec [1.66σ]
OotOffset-rm: 3.471 arcsec [4.99σ]
KicOffset-rm: 3.458 arcsec [4.84σ]
OotOffset-st: 2/3/4/4 [13]
KicOffset-st: 2/3/4/4 [13]
DiffImageQuality-fgm: 0.08 [1/13]
DiffImageOverlap-fno: 1.00 [14/14]

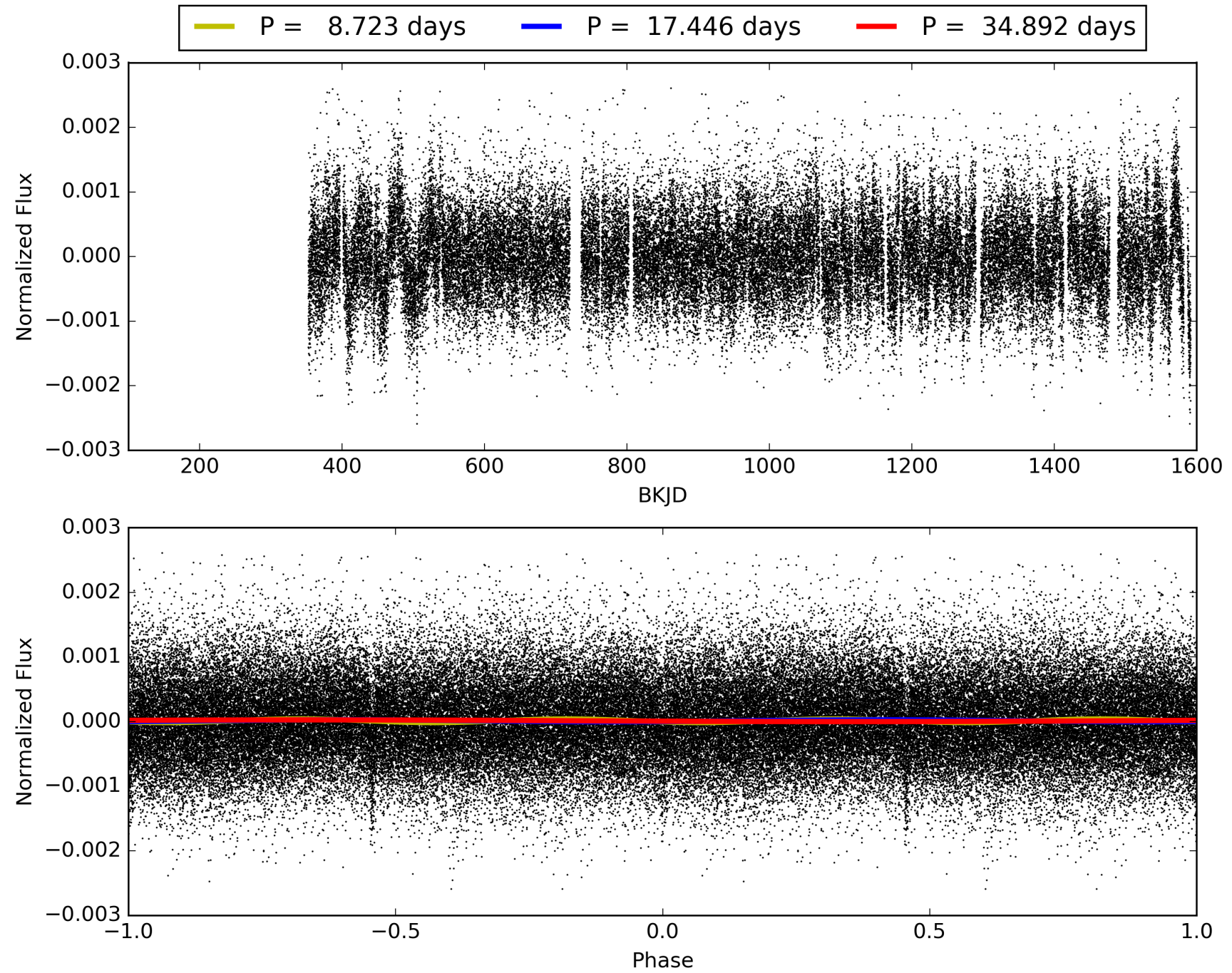
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 006522745-02, PDC Light Curves

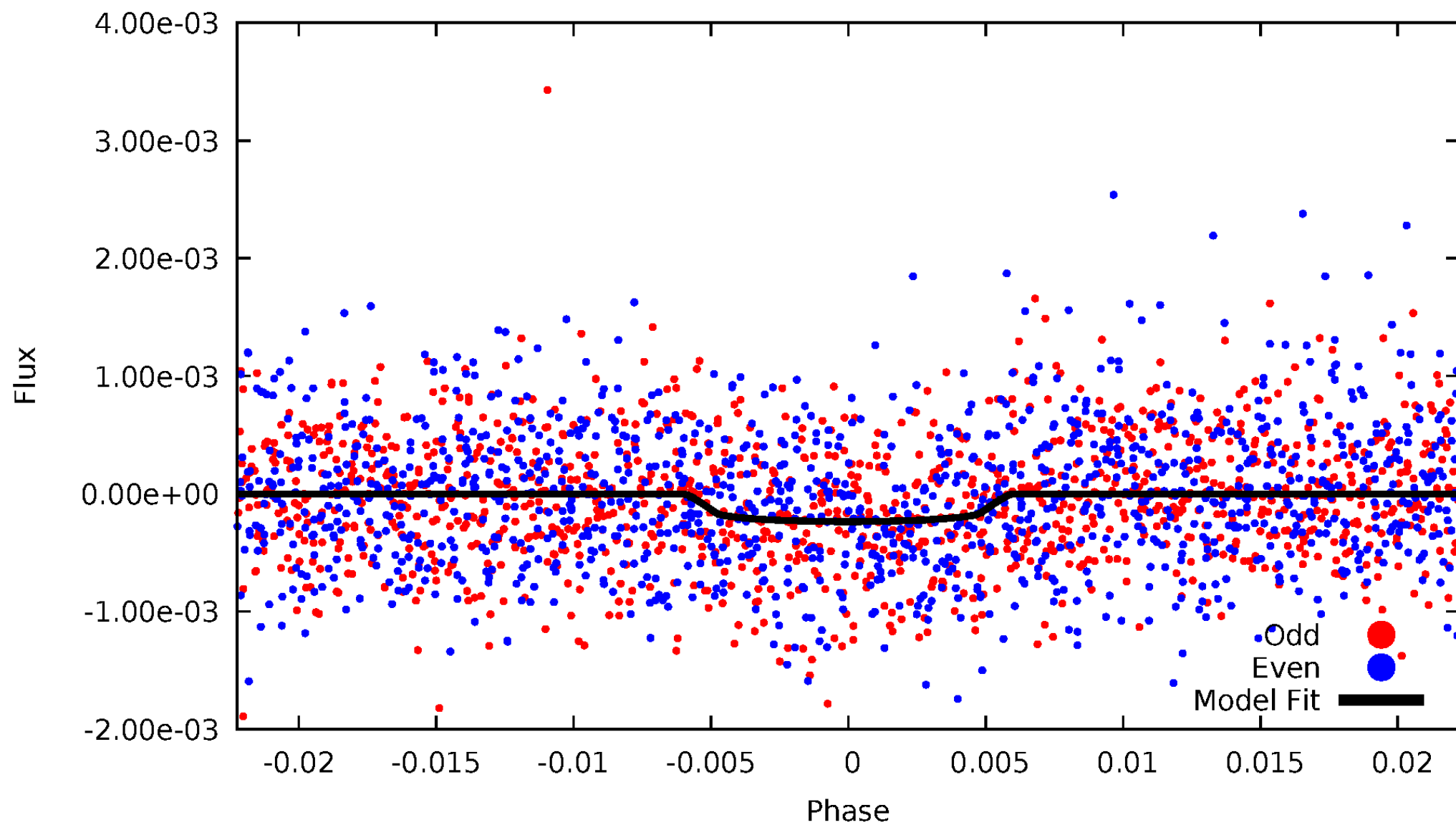


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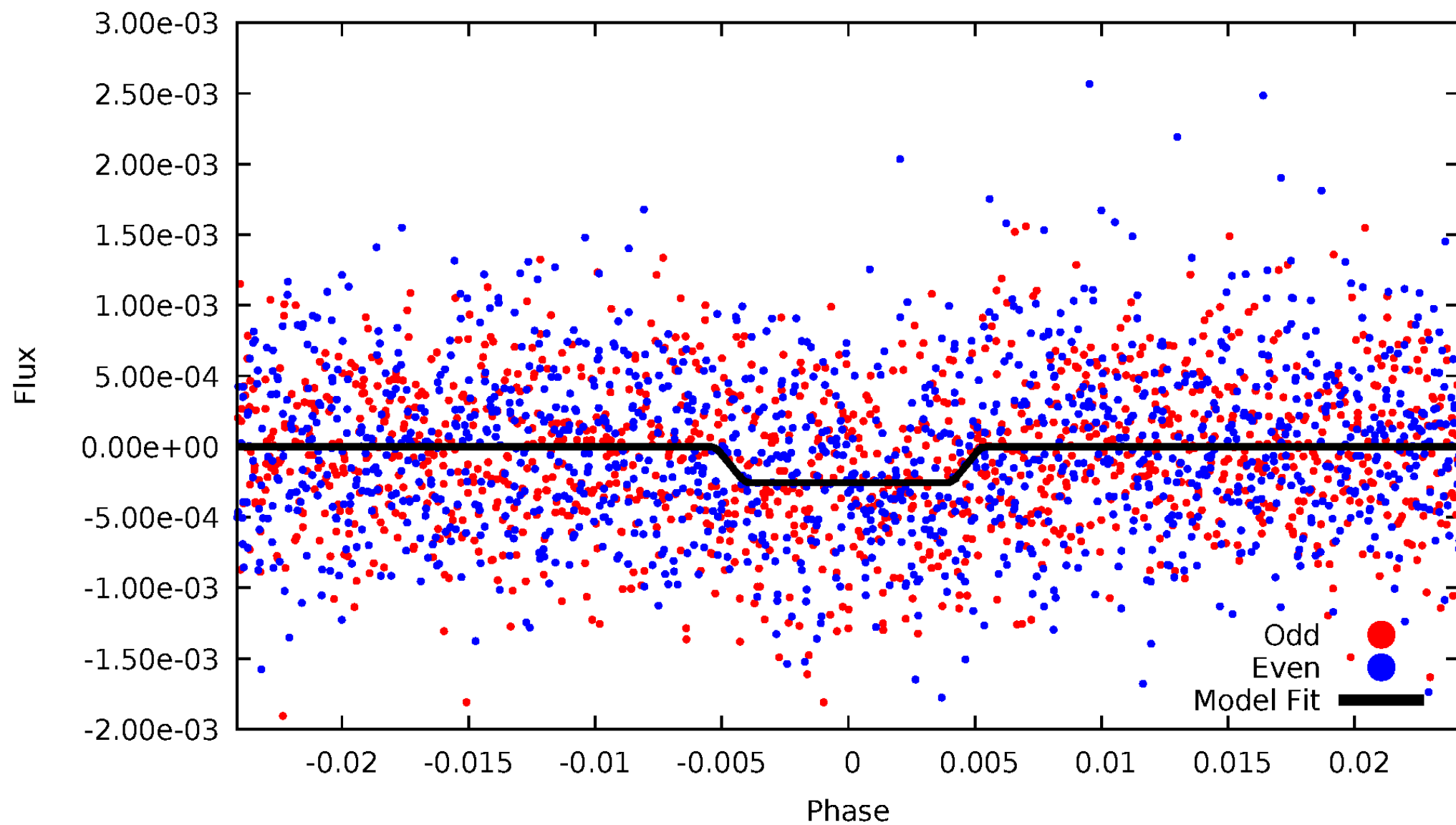
DV Odd/Even

TCE 006522745-02



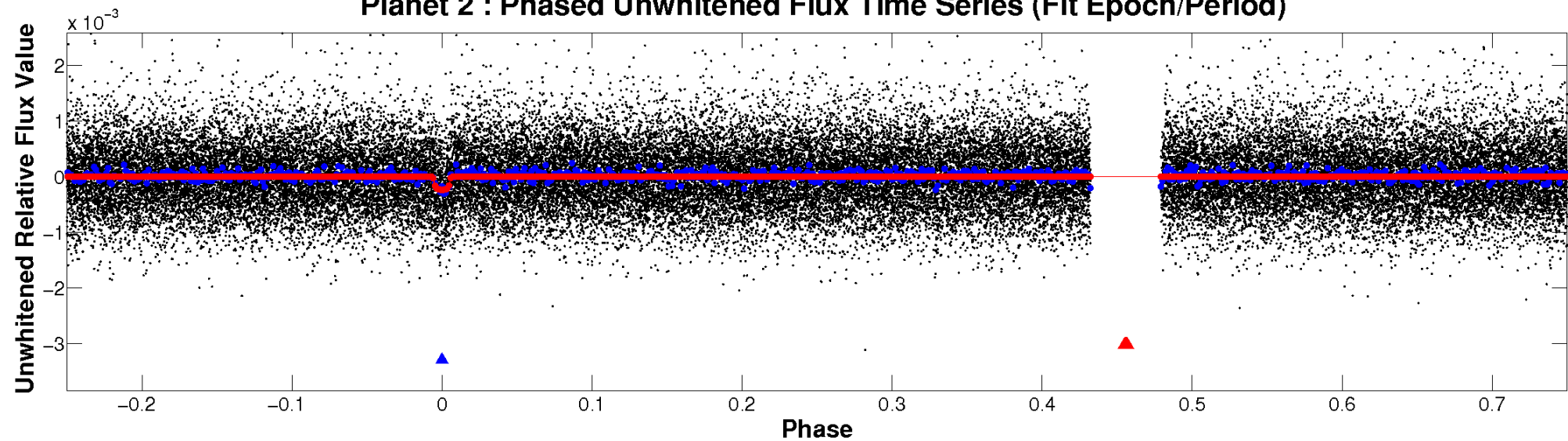
ALT Odd/Even

TCE 006522745-02

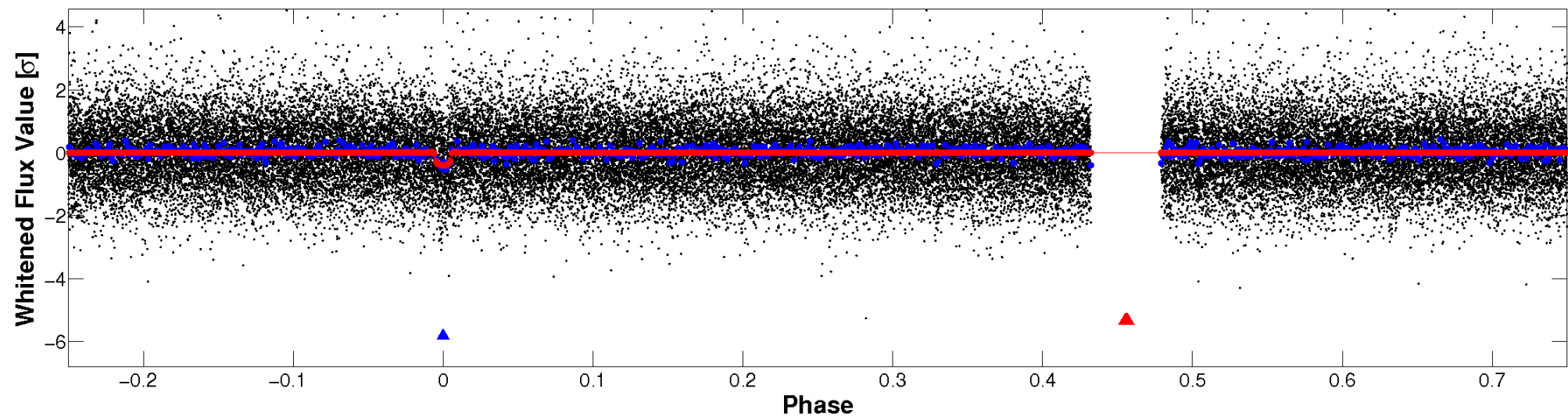


Non-Whitened Vs. Whitened Light Curve

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

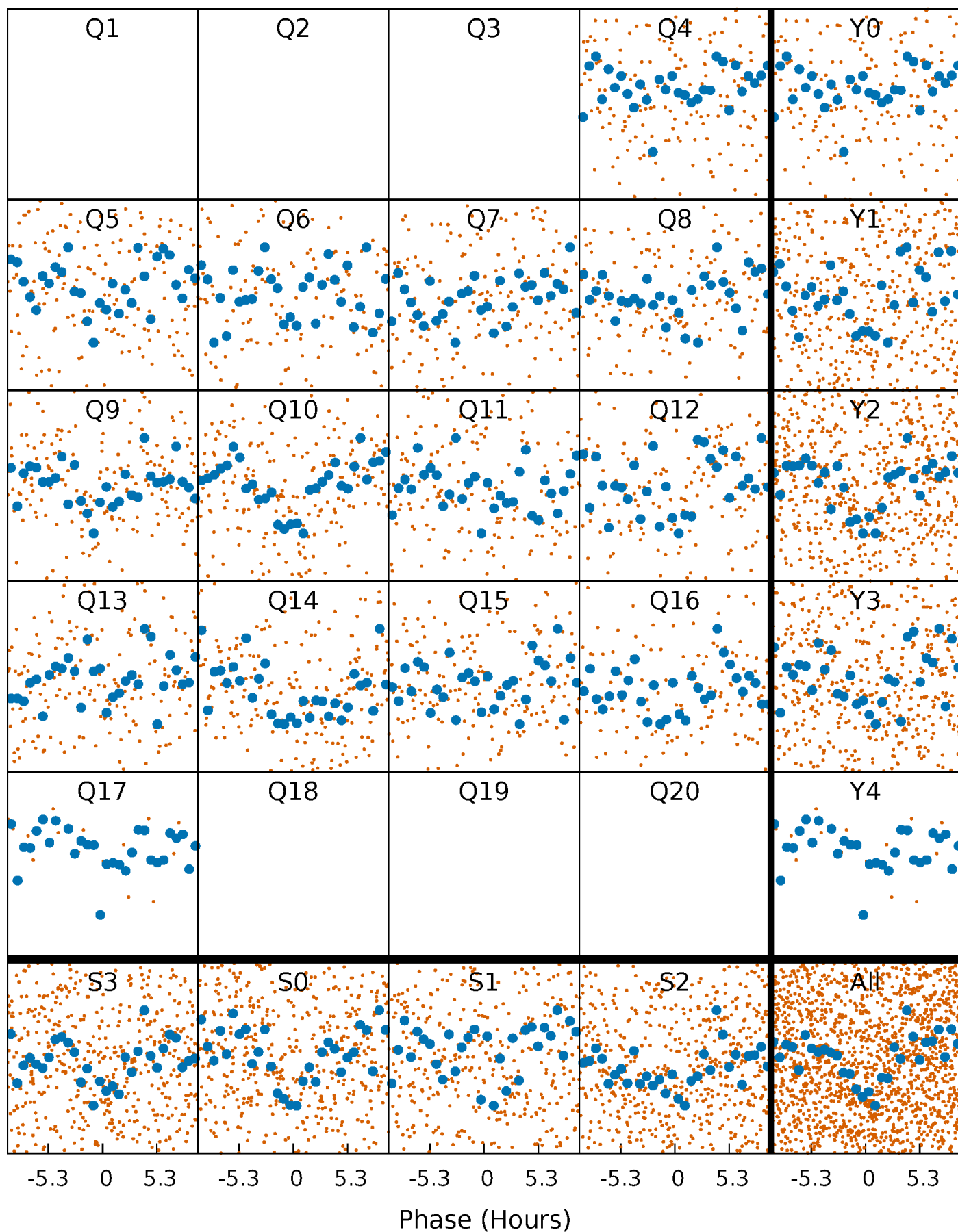


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



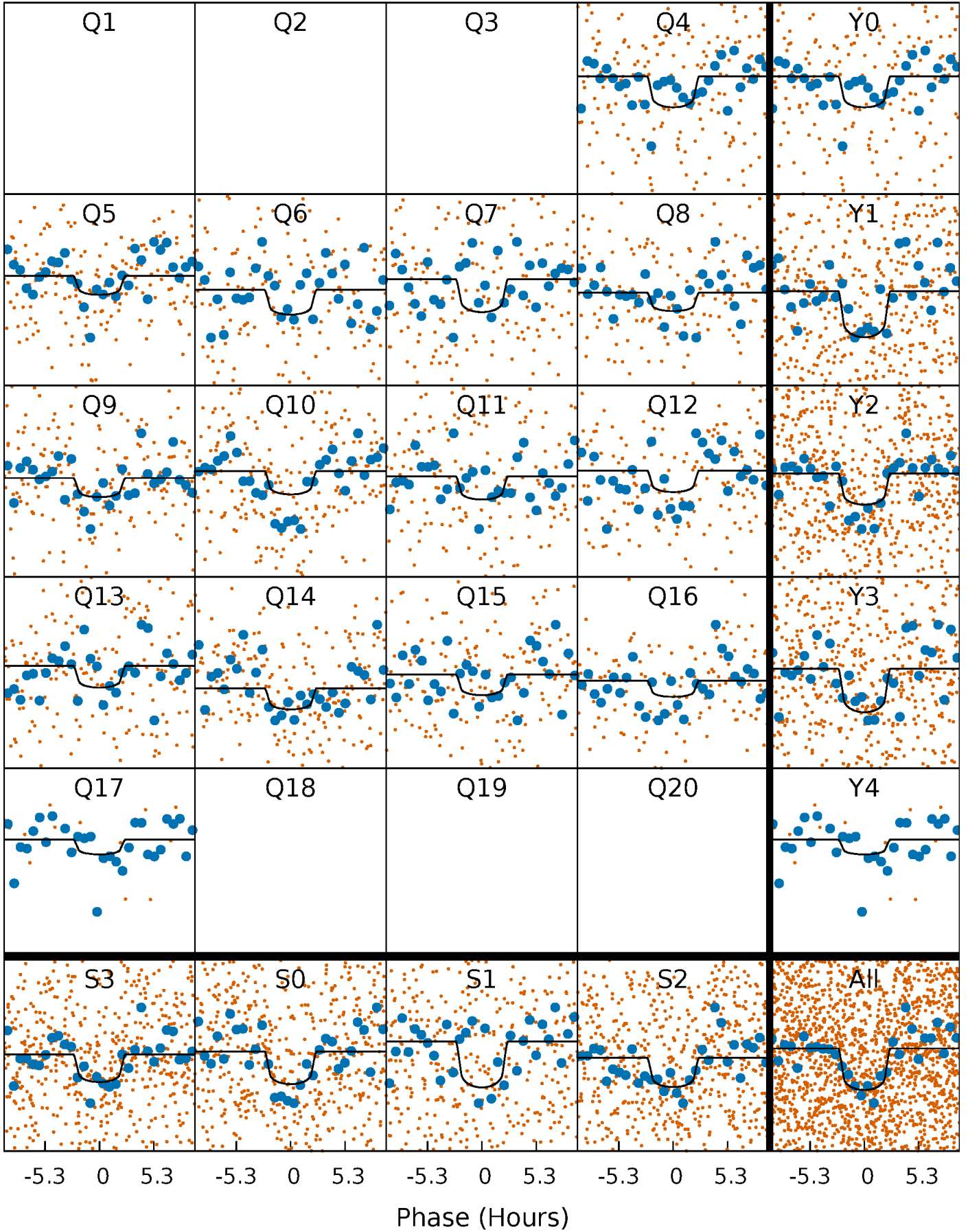
PDC Quarter-Phased Transit Curves

TCE 006522745-02 $P = 17.445876$ Days $T_0 = 145.232749$ (BKJD)



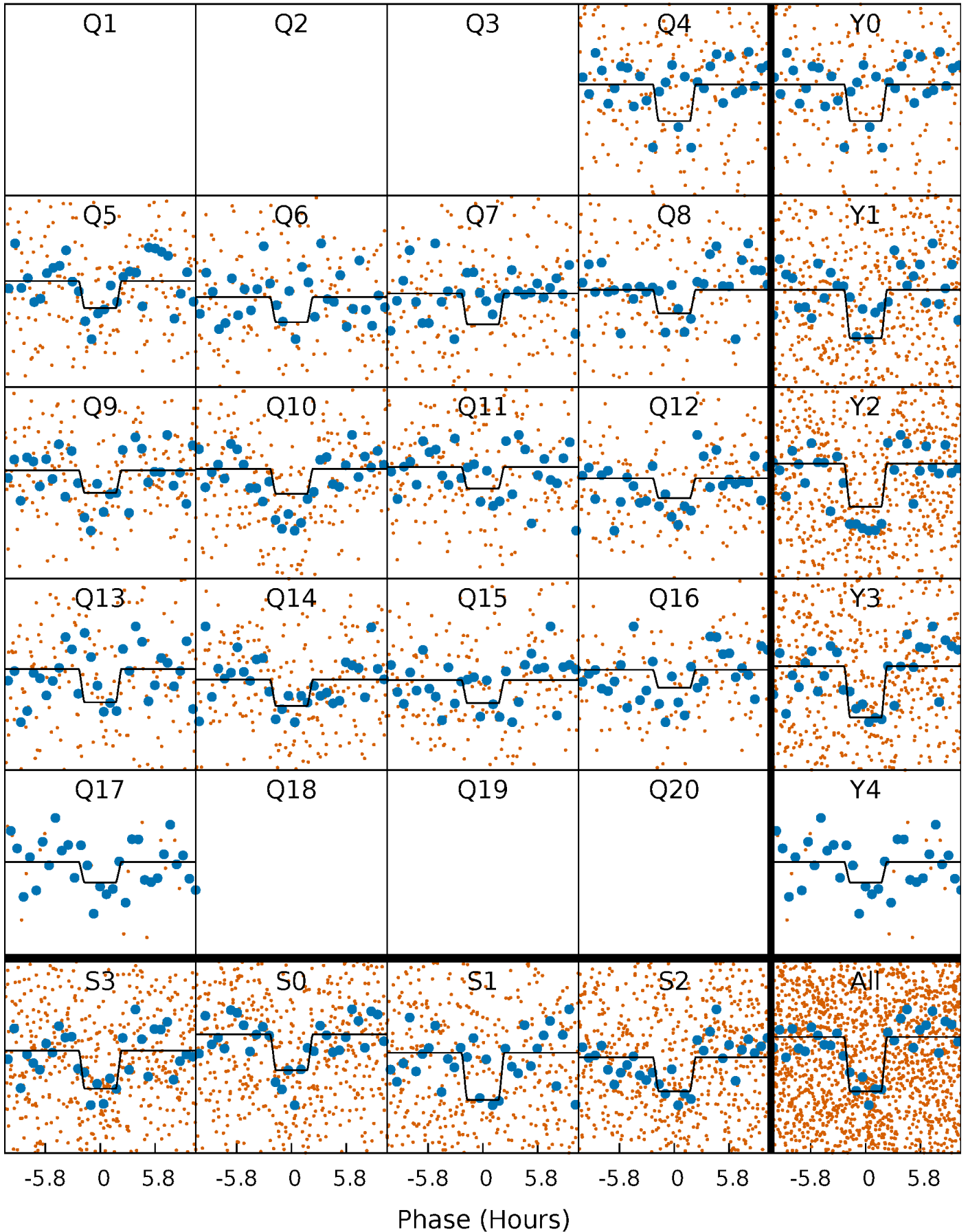
DV Quarter-Phased Transit Curves

TCE 006522745-02 P= 17.445876 Days $T_0=145.232749$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

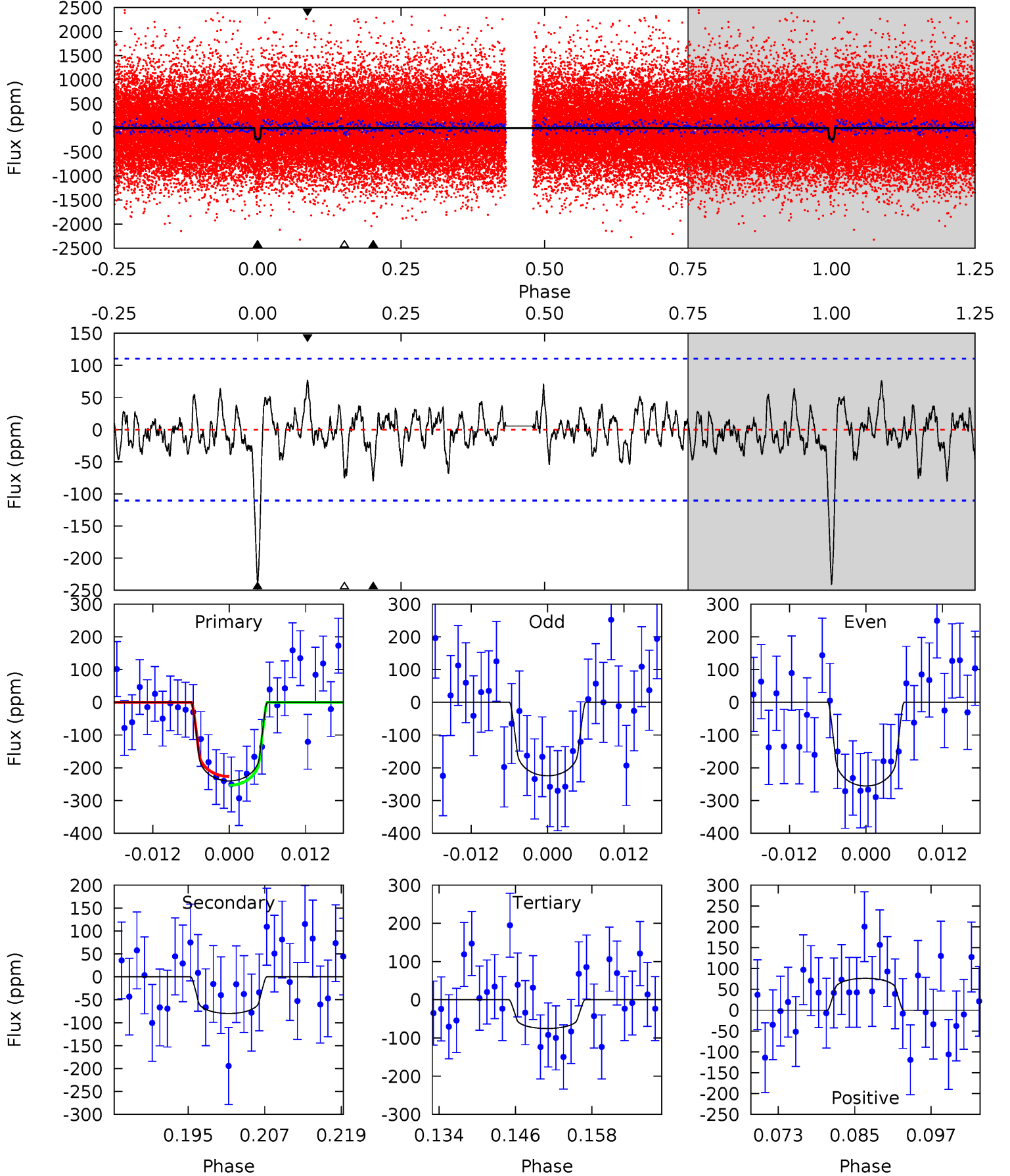
TCE 006522745-02 P= 17.445830 Days $T_0=145.238683$ (BKJD)



DV Model-Shift Uniqueness Test

006522745-02, P = 17.445876 Days, E = 145.232749 Days

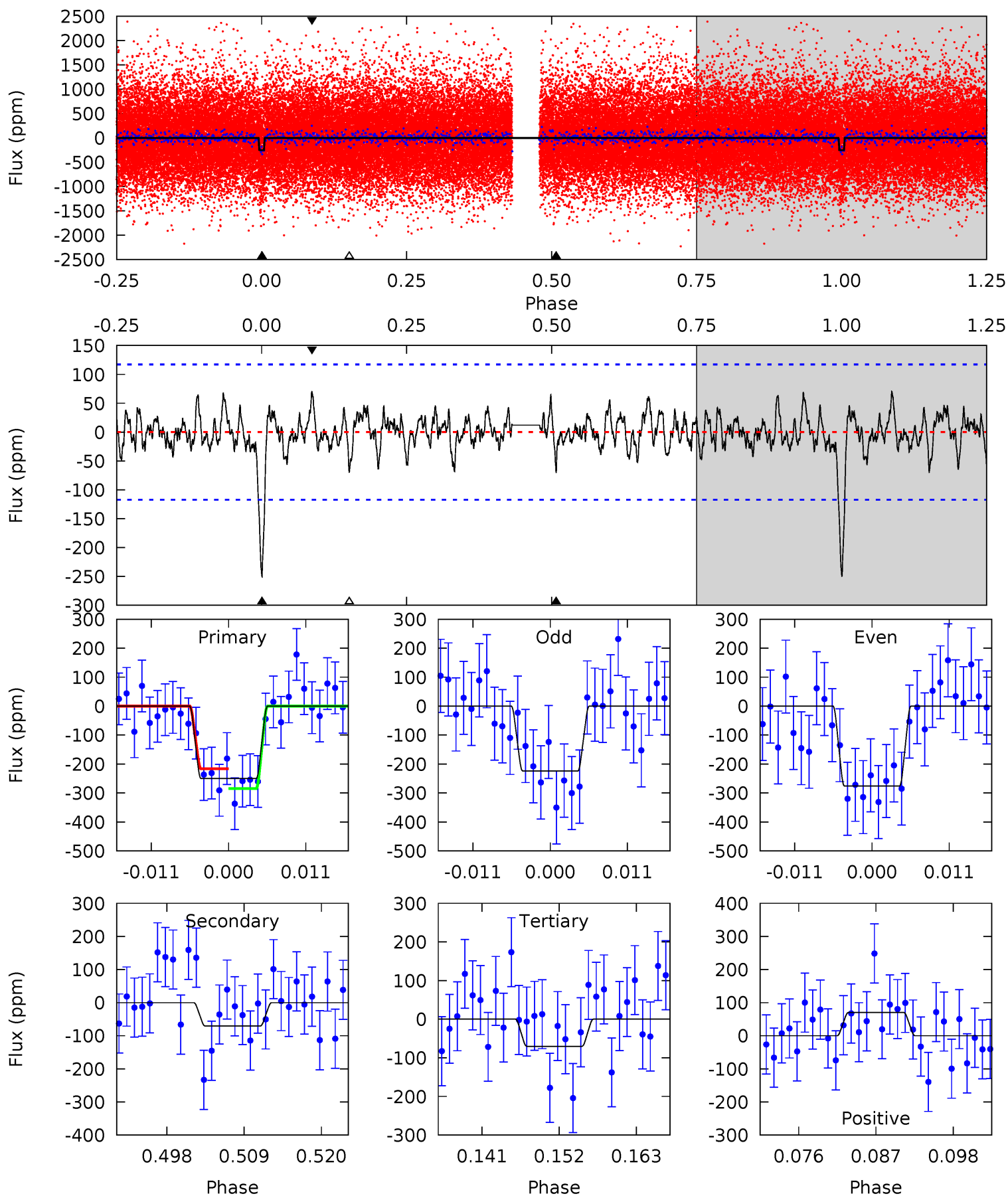
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.8	3.61	3.40	3.45	4.99	2.51	1.07	7.44	7.39	0.21	0.16	0.71	0.85	0.24	0.61



Alt Model-Shift Uniqueness Test

006522745-02, P = 17.445830 Days, E = 145.238683 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.7	3.02	3.00	3.01	5.01	2.55	1.00	7.70	7.69	0.01	0.01	1.11	0.87	0.22	1.47



Stellar Parameters For KIC 006522745

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6260^{+196}_{-239}	$4.433^{+0.065}_{-0.195}$	$-0.080^{+0.250}_{-0.300}$	$1.063^{+0.335}_{-0.134}$	$1.118^{+0.159}_{-0.159}$	$1.310^{+0.365}_{-0.651}$
	+3%/-4%	+1%/-4%	+312%/-375%	+32%/-13%	+14%/-14%	+28%/-50%
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 006522745-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-80 ± 22	$2.10^{+1.46}_{-1.20}$	1097^{+67}_{-57}	4561^{+2312}_{-755}	173^{+810}_{-110}
Alt.	-71 ± 23	$2.16^{+1.39}_{-1.32}$	1101^{+74}_{-61}	4467^{+2090}_{-746}	151^{+697}_{-100}

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 $A_{obs} \gg 1.0$

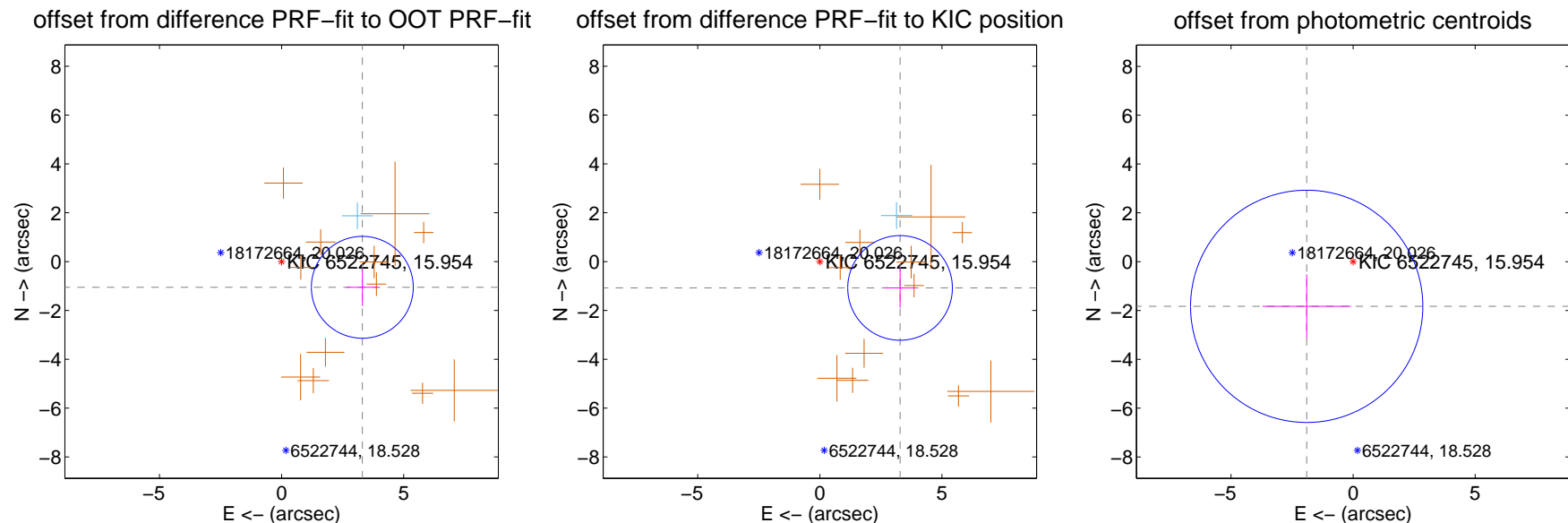
DV Centroid Data

Supplemental centroid analysis for 006522745-02. Kepler magnitude: 15.95. Transit SNR 8.26

There are 1 quarters with good PRF difference image offsets

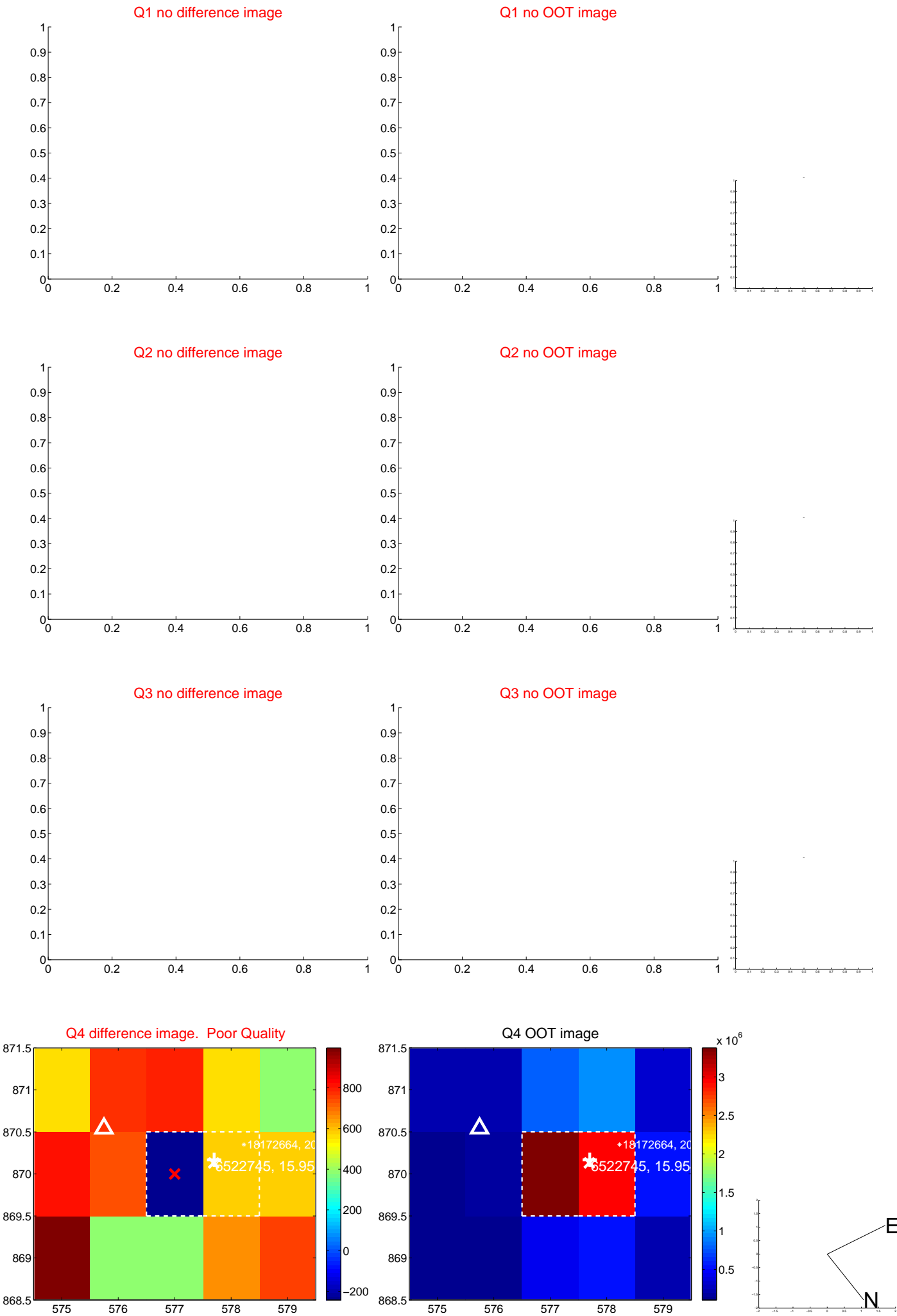
The direct PRF centroid is offset from the target star catalog position by about 0.05 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	3.471 ± 0.696	4.99	-3.307 ± 0.662	-1.053 ± 0.766
PRF-fit source offset from KIC position	3.458 ± 0.714	4.84	-3.286 ± 0.648	-1.079 ± 0.815
photometric centroid source offset	2.64 ± 1.59	1.66	1.90 ± 1.81	-1.83 ± 1.31

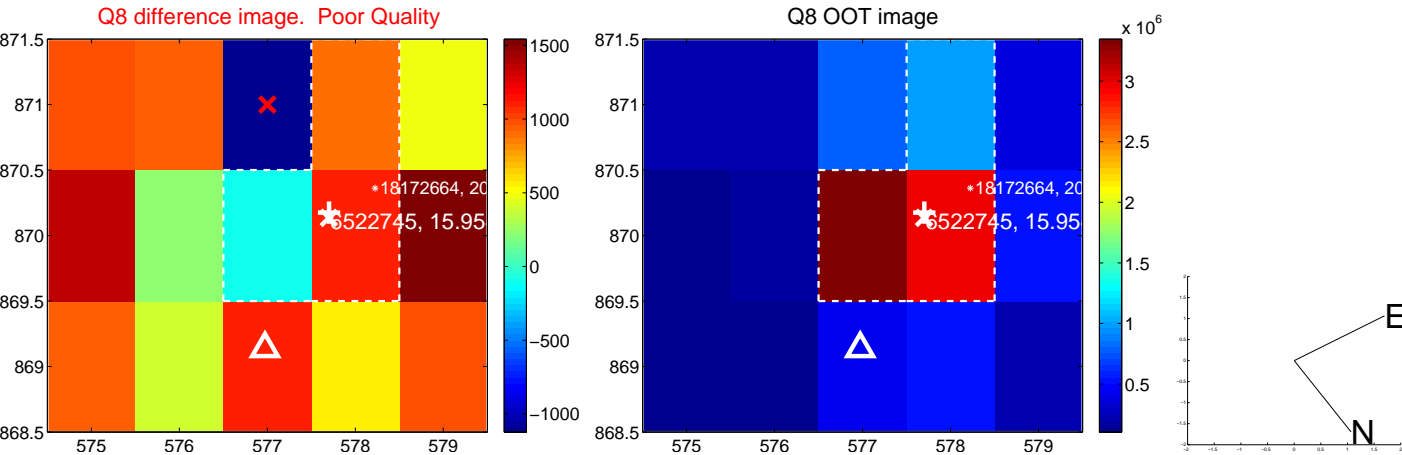
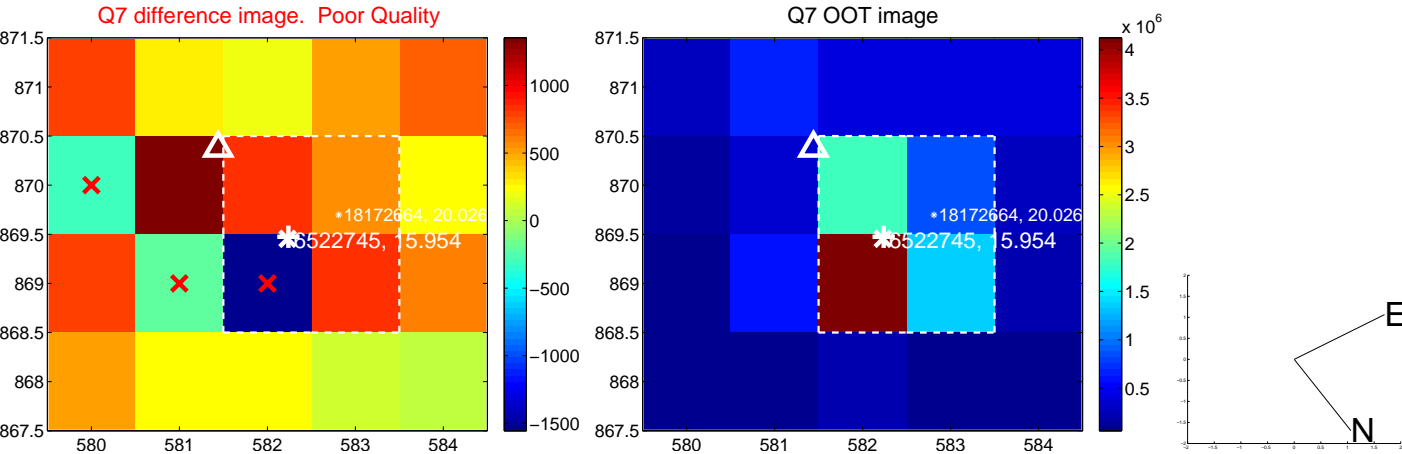
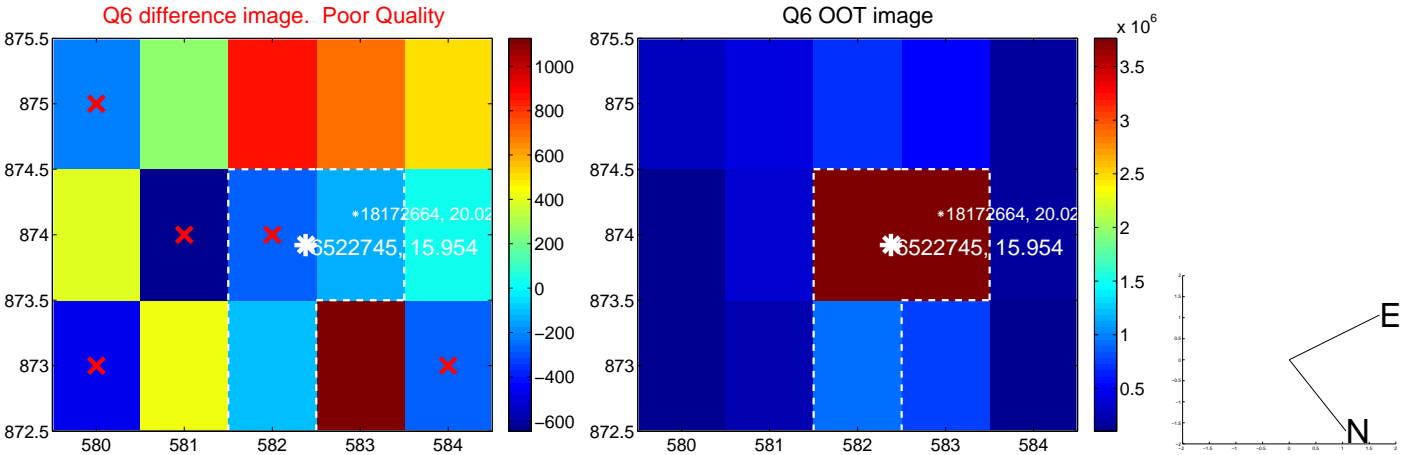
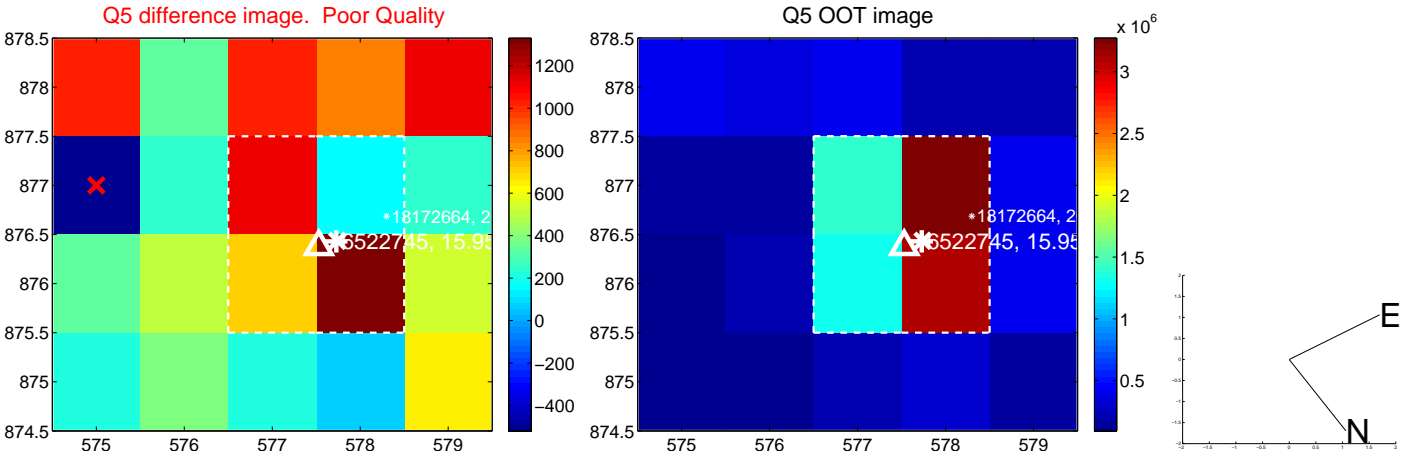


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

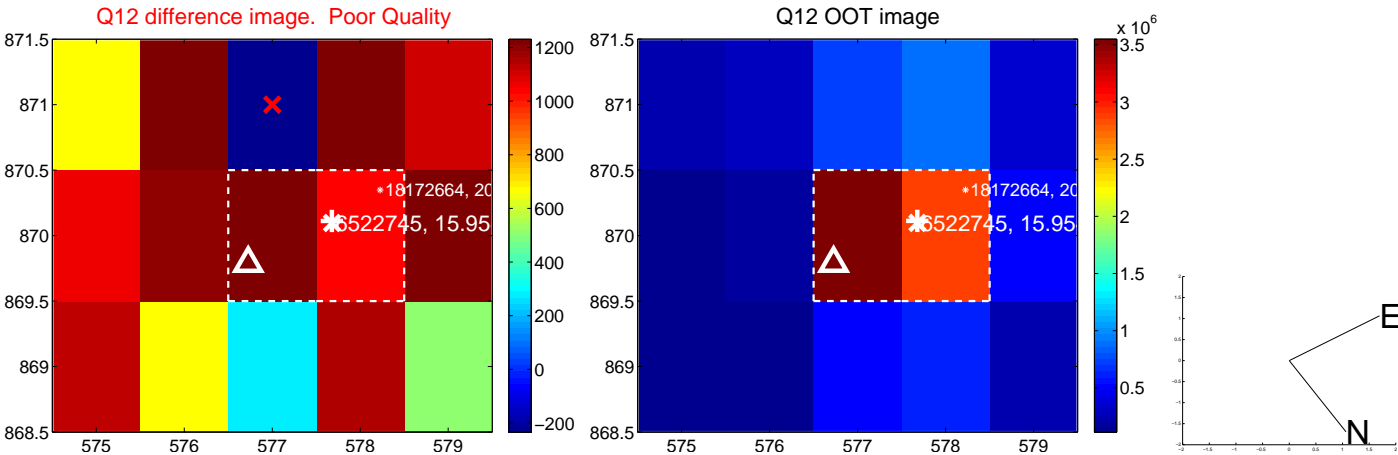
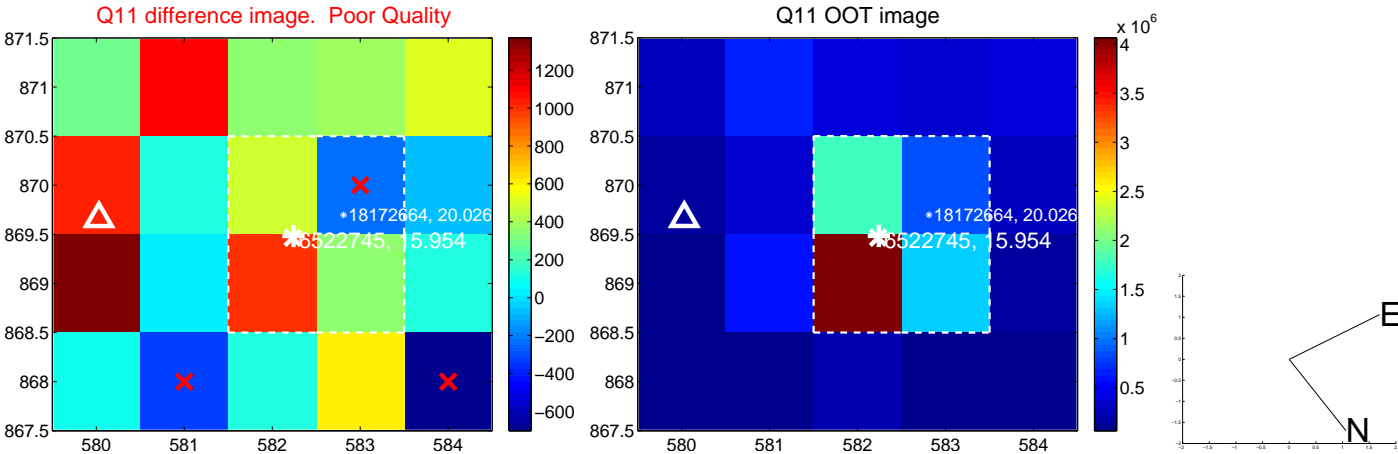
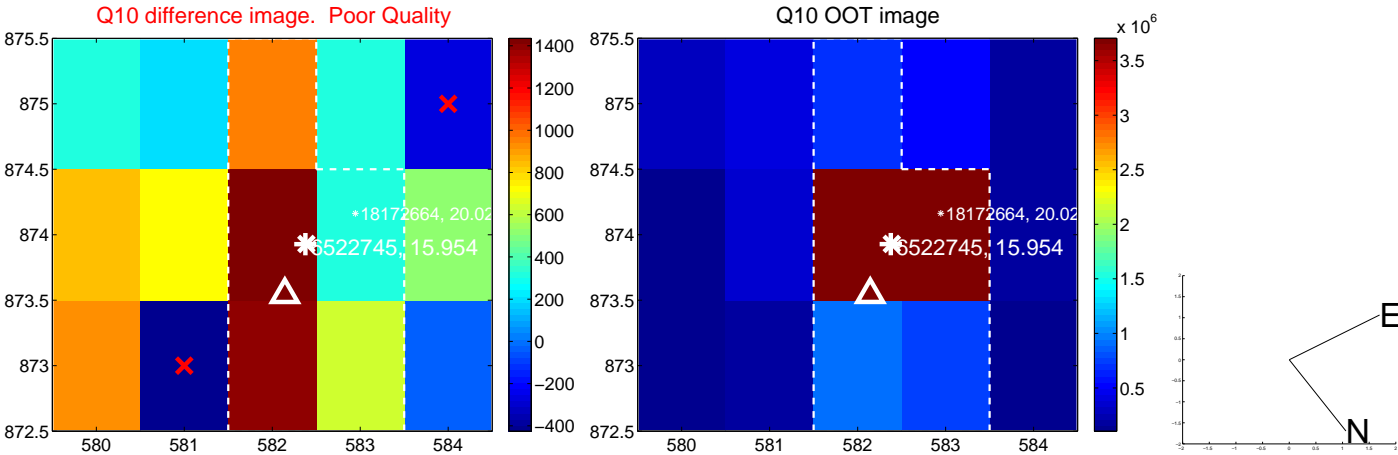
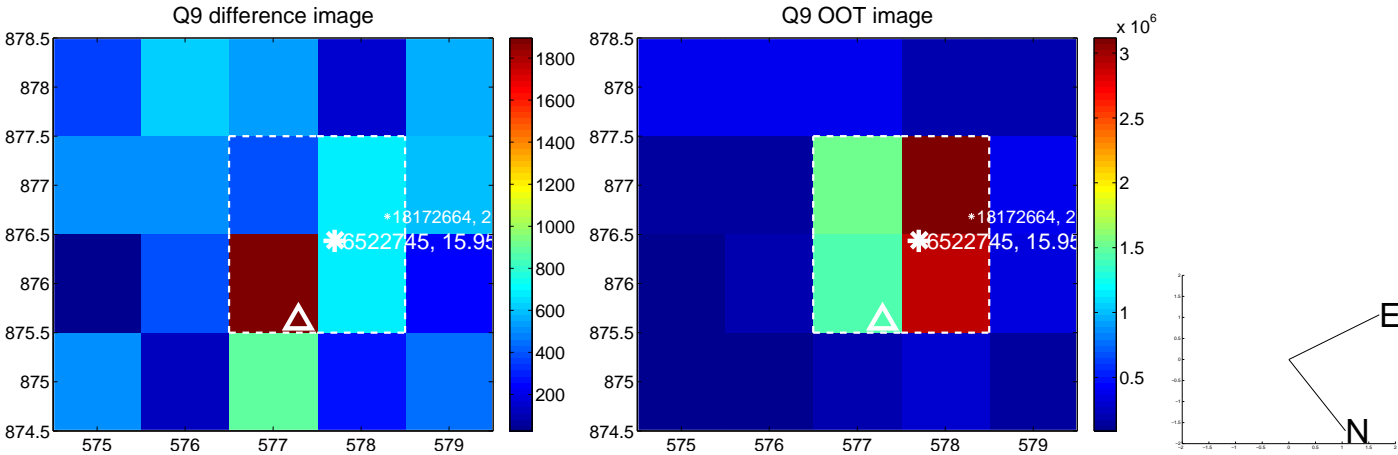
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



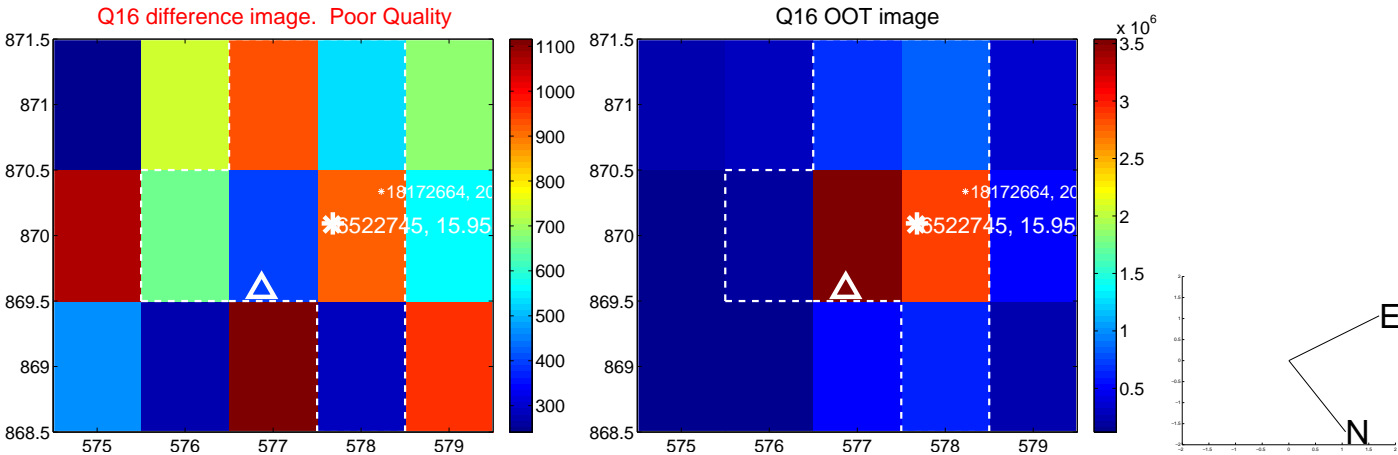
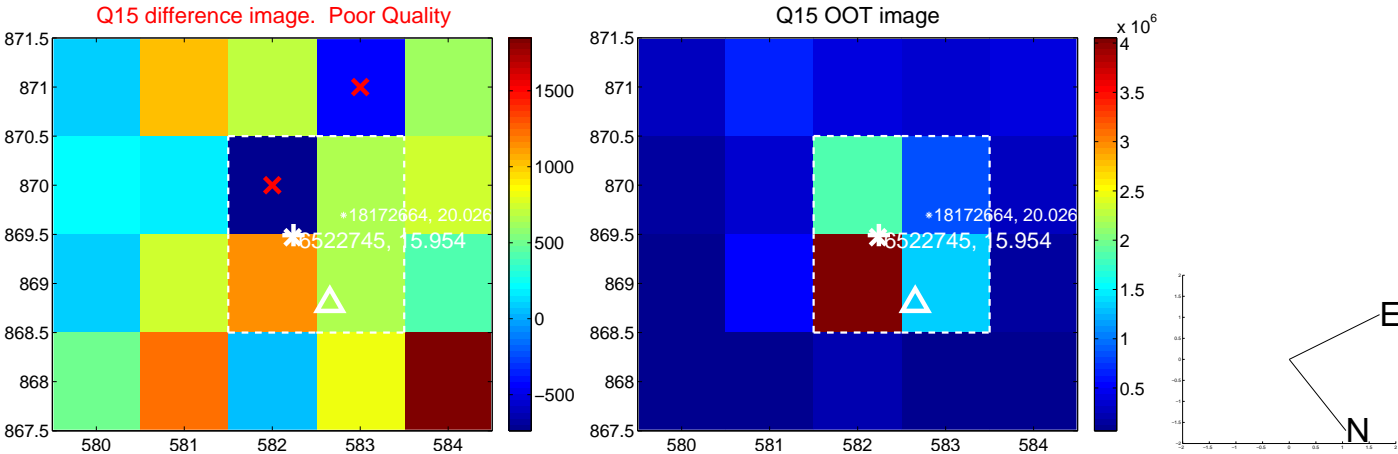
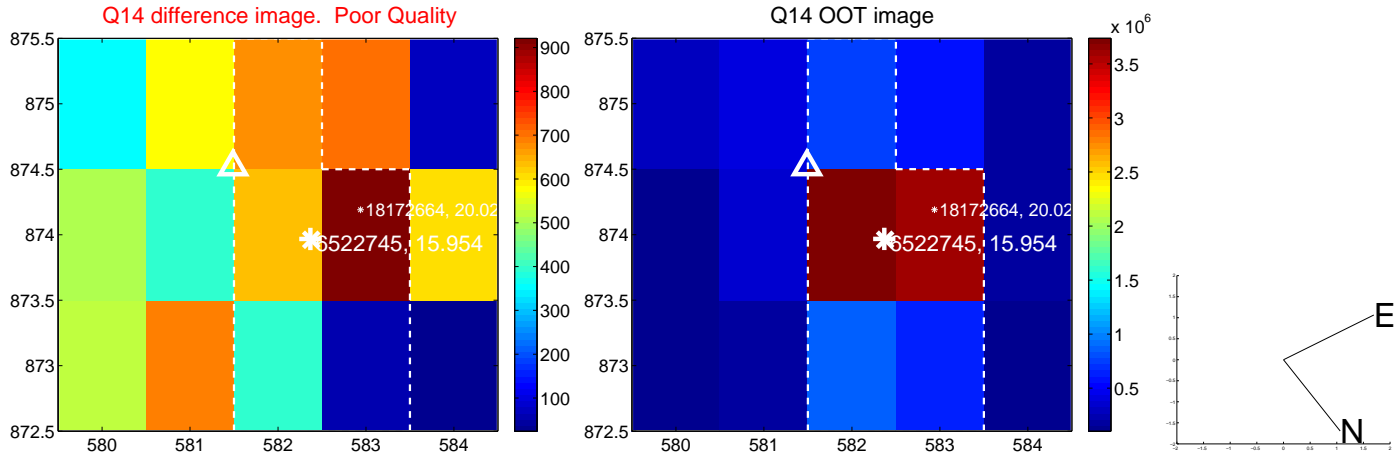
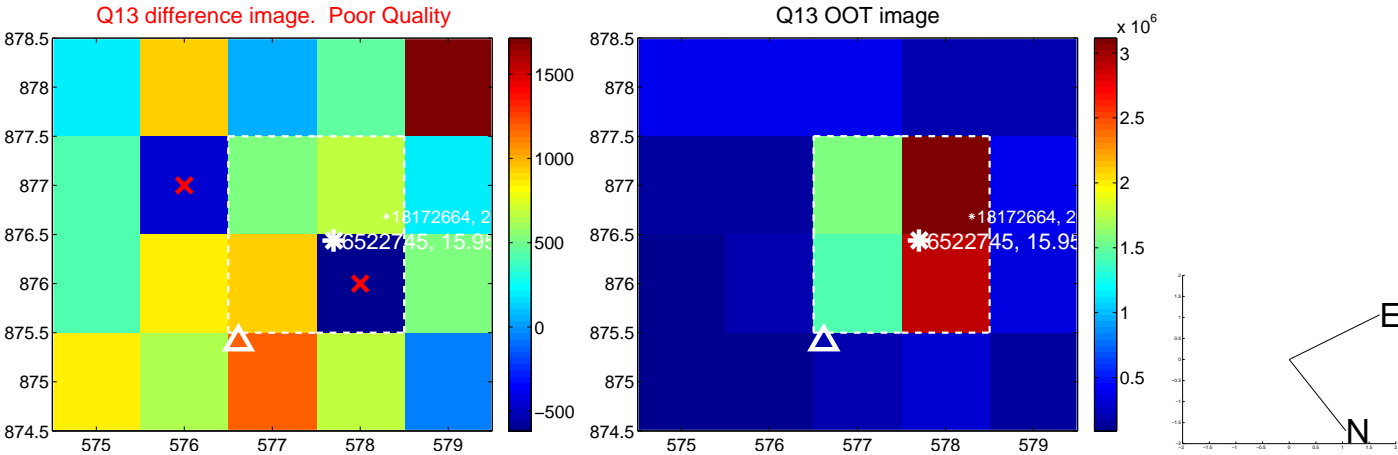
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



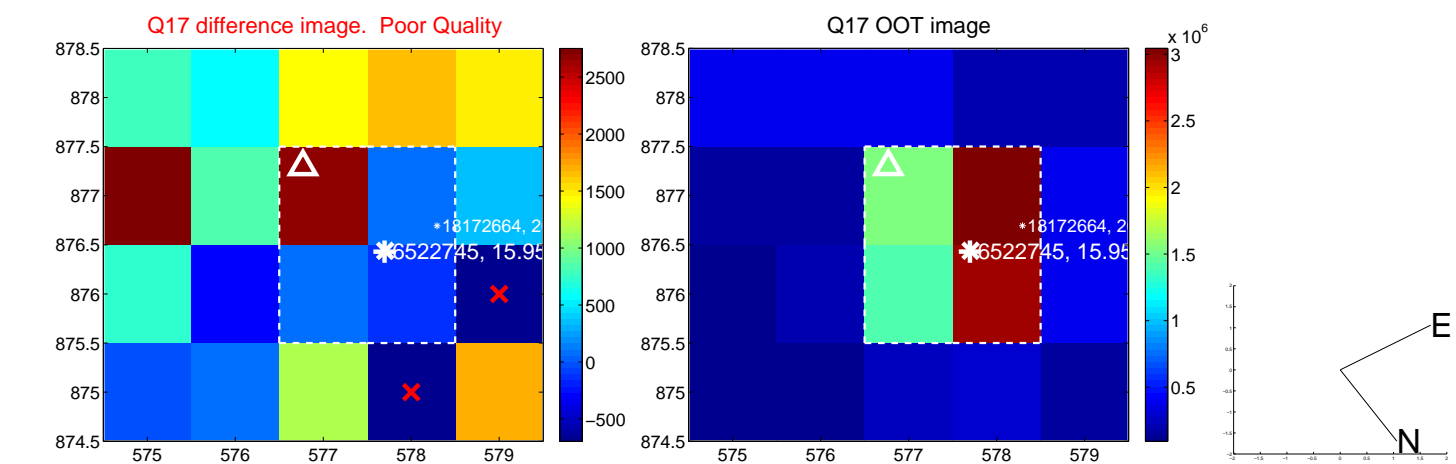
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



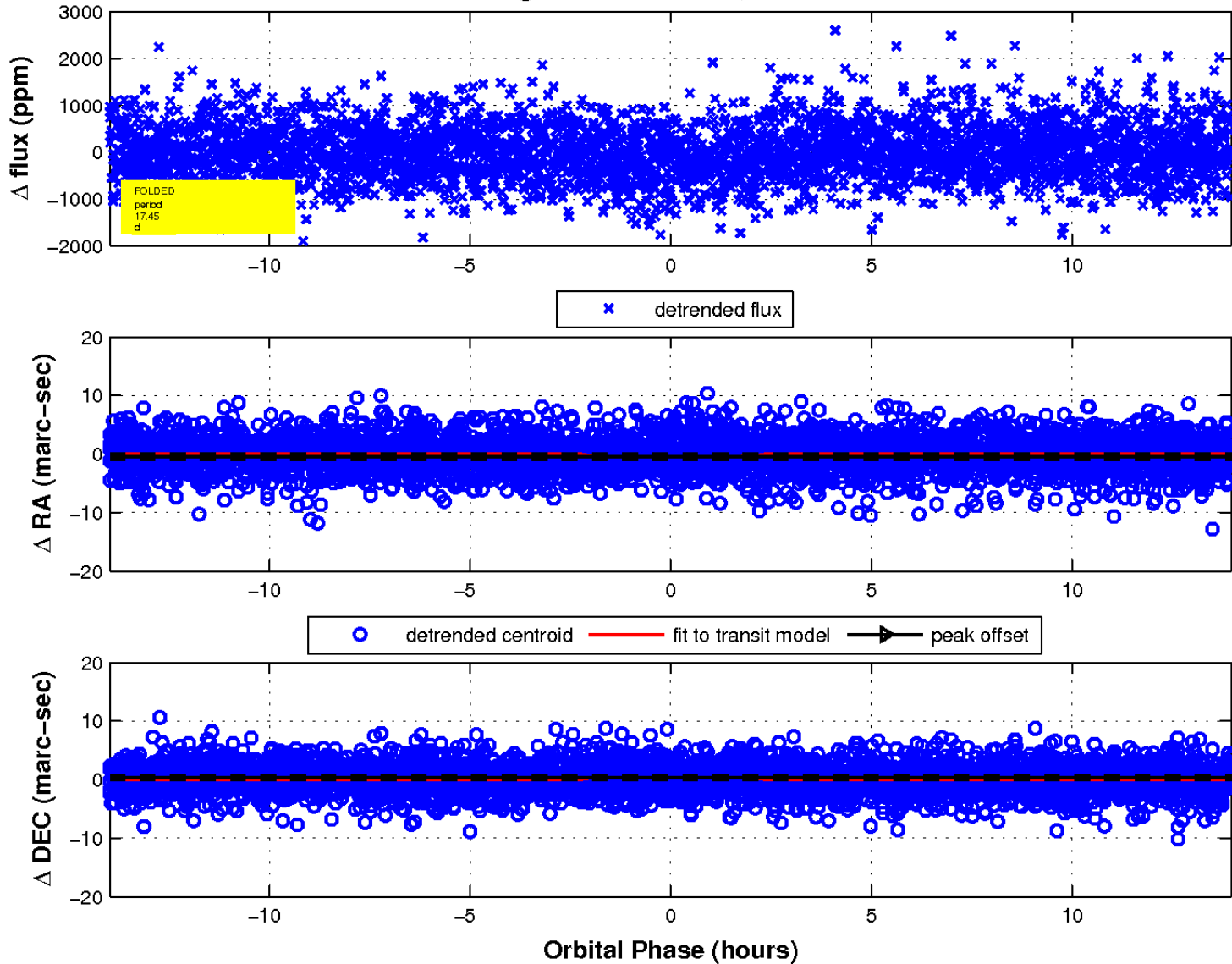
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 2 of 2



UKIRT Image

Declination

