

KIC 003859151

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})
003859151-01	OBS	4761.01	25.949308	154.967574	147.7	13.103	8.4	9.0	0.88	6139	1.15	34.50
003859151-02	OBS	No	25.949651	148.930770	138.2	13.181	8.6	8.9	0.88	6139	1.13	34.49

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003859151-01	OBS	FP	0.00	0	1	1	1	MOD_SEC_DV—MOD_SEC_ALT—HAS_SEC_TCE—CENT_UNRESOLVED_OFFSET—EPHEM_MATCH
003859151-02	OBS	FP	0.00	1	1	1	1	IS_SEC_TCE—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.

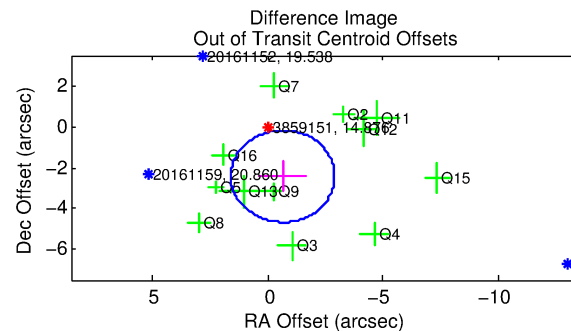
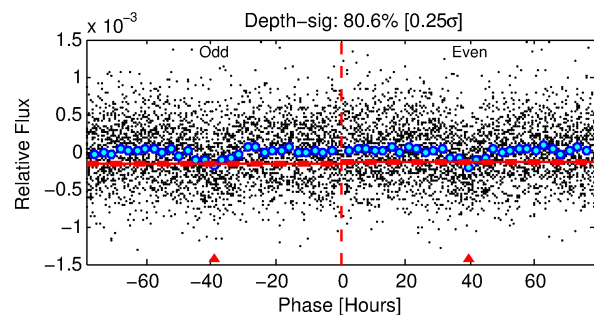
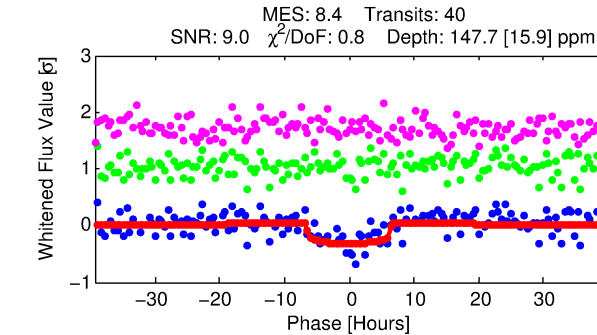
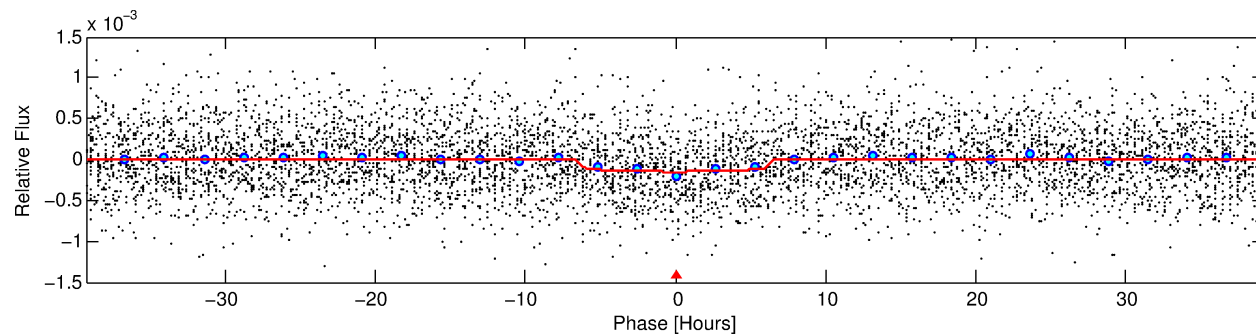
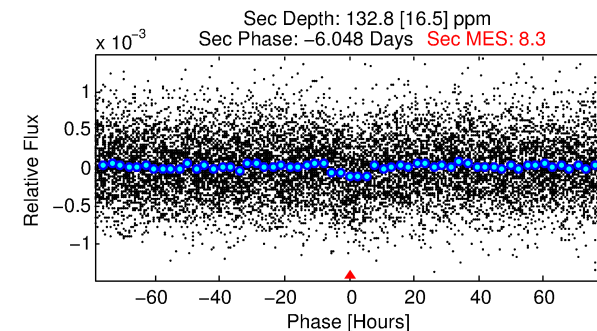
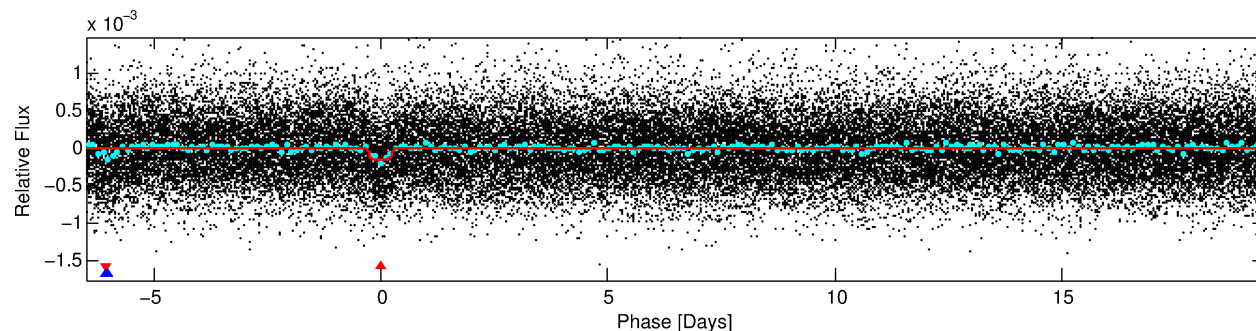
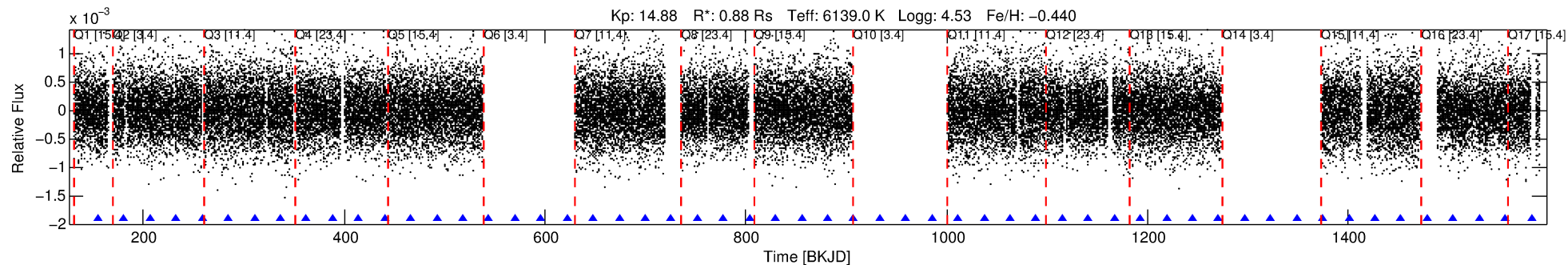
Ephemeris Match Information For 003859151-01

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
003859151-01	3859151	003858884-01	3858884	1:1	194.1	-11	48	9.28	14.88	2693.00	Direct-PRF	0	2.37	1.73

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: 3859151 Candidate: 1 of 2 Period: 25.949 d
KOI: K04761.01 Corr: 0.776



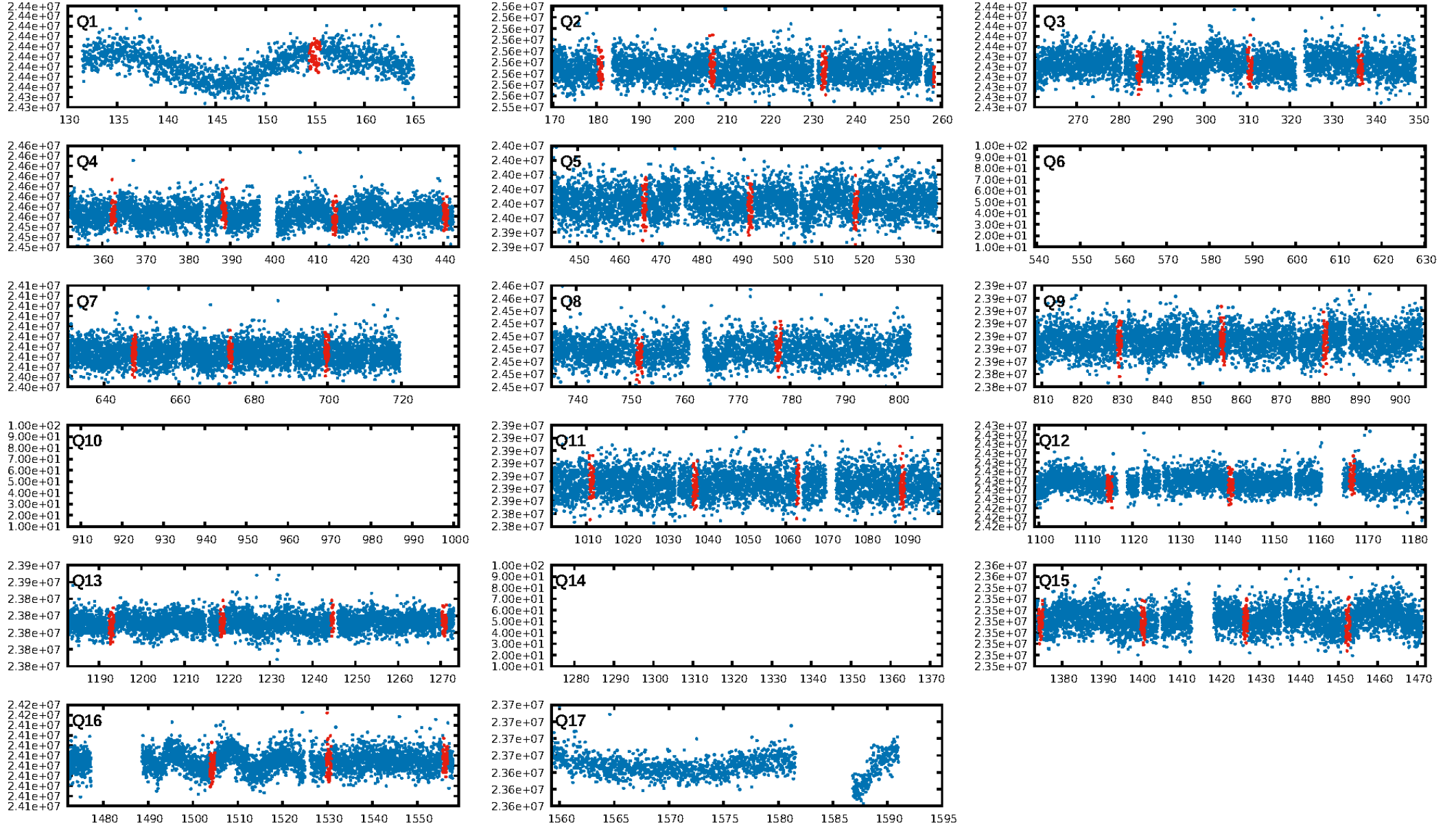
DV Fit Results:

Period = 25.94931 [0.00060] d
Epoch = 154.9676 [0.0186] BKJD
Rp/R* = 0.0119 [0.0044]
a/R* = 11.11 [20.87]
b = 0.70 [1.40]
Seff = 34.50 [13.01]
Teq = 618 [58] K
Rp = 1.14 [0.53] Re
a = 0.1692 [0.0404] AU
Ag = 1597.12 [1316.98] [1.21σ]
Teff = 6040 [1142] K [4.74σ]

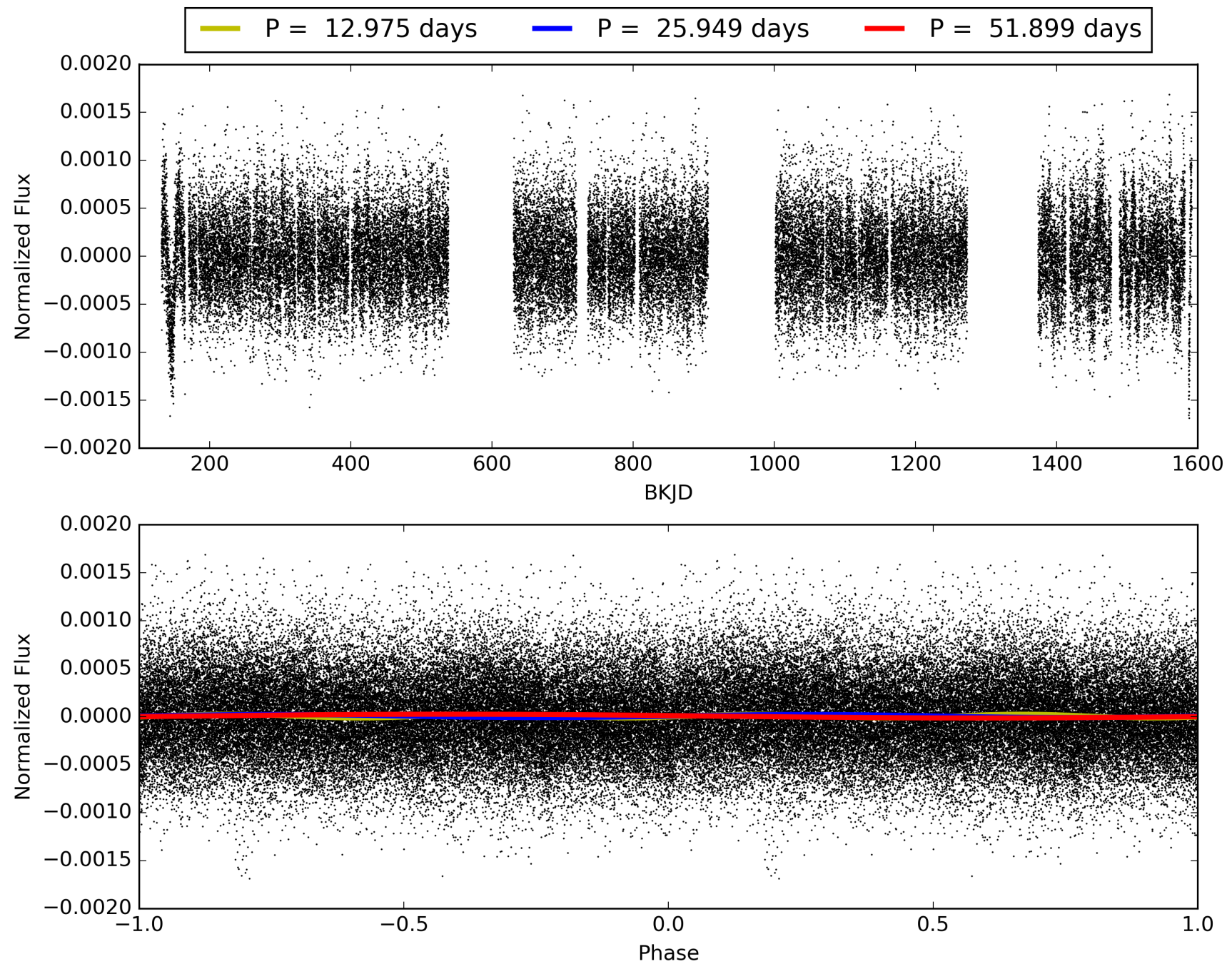
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.0% [0.00σ]
ModelChiSquare2-sig: 81.8%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 4.15e-16
RollingBand-fgt: 1.00 [39/39]
GhostDiagnostic-chr: 0.2746
Centroid-sig: 0.4%
Centroid-so: 3.528 arcsec [2.33σ]
OotOffset-rm: 2.508 arcsec [3.34σ]
KicOffset-rm: 2.381 arcsec [3.20σ]
OotOffset-st: 1/4/4/3 [12]
KicOffset-st: 1/4/4/3 [12]
DiffImageQuality-fgm: 0.08 [1/12]
DiffImageOverlap-fno: 1.00 [13/13]

TCE 003859151-01, PDC Light Curves

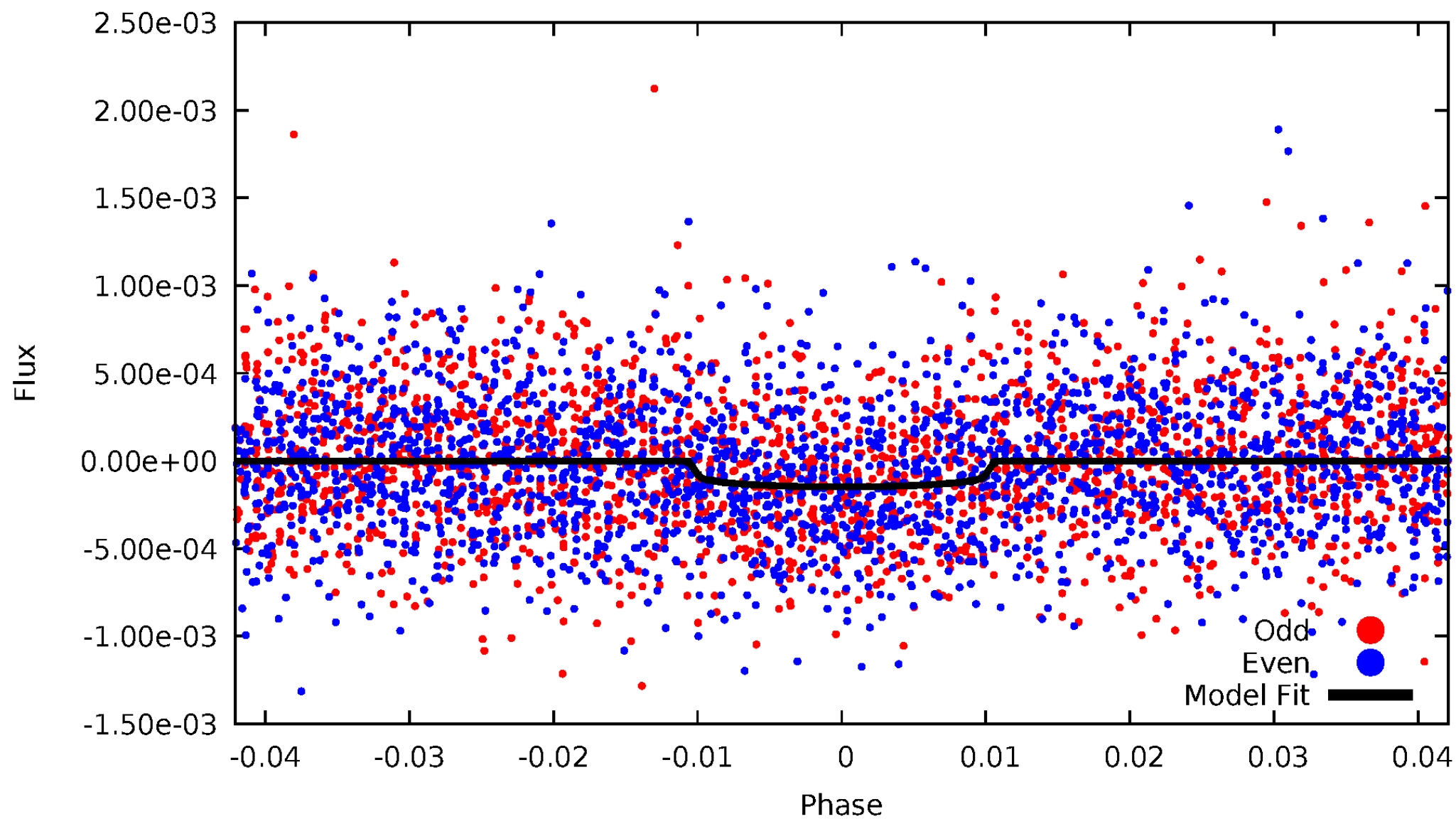


TCE 003859151-01



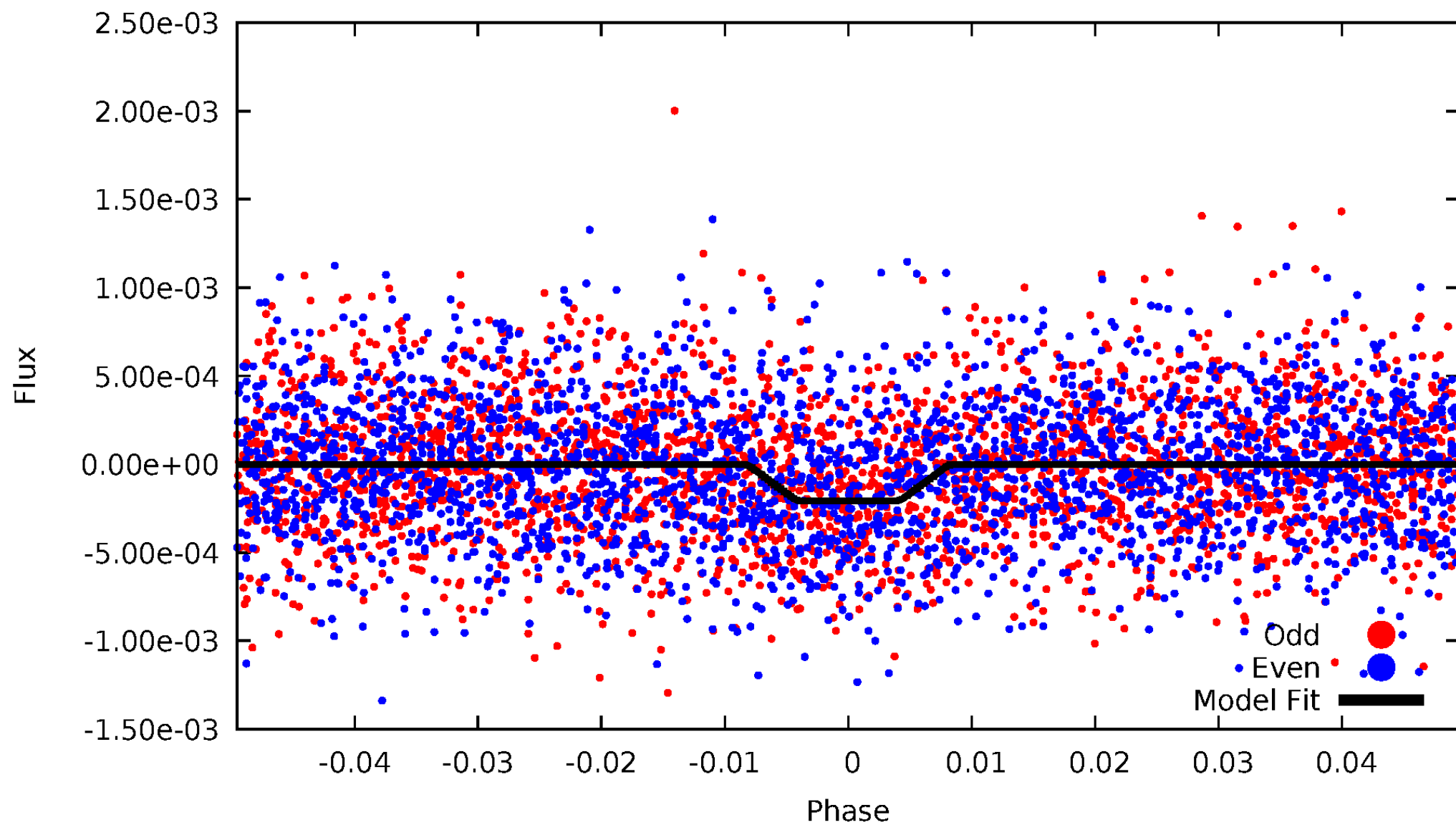
DV Odd/Even

TCE 003859151-01



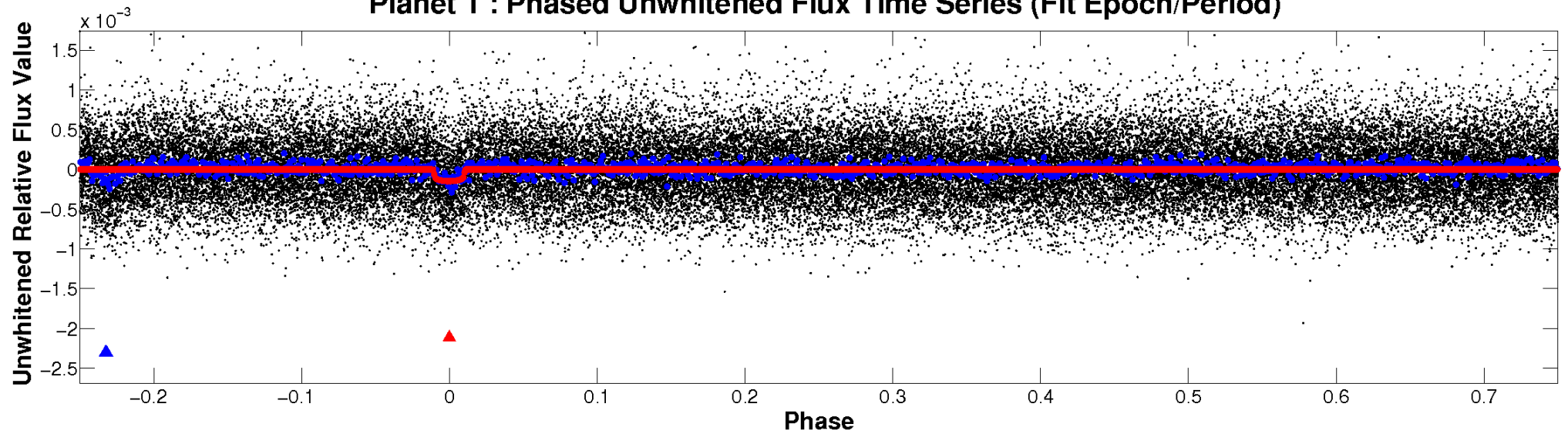
ALT Odd/Even

TCE 003859151-01

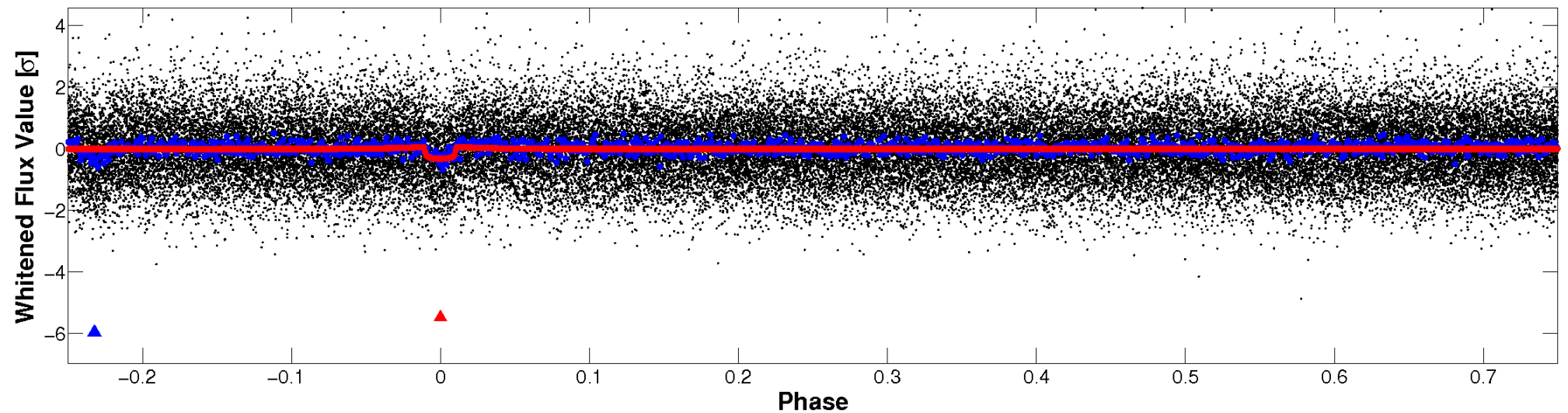


Non-Whitened Vs. Whitened Light Curve

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

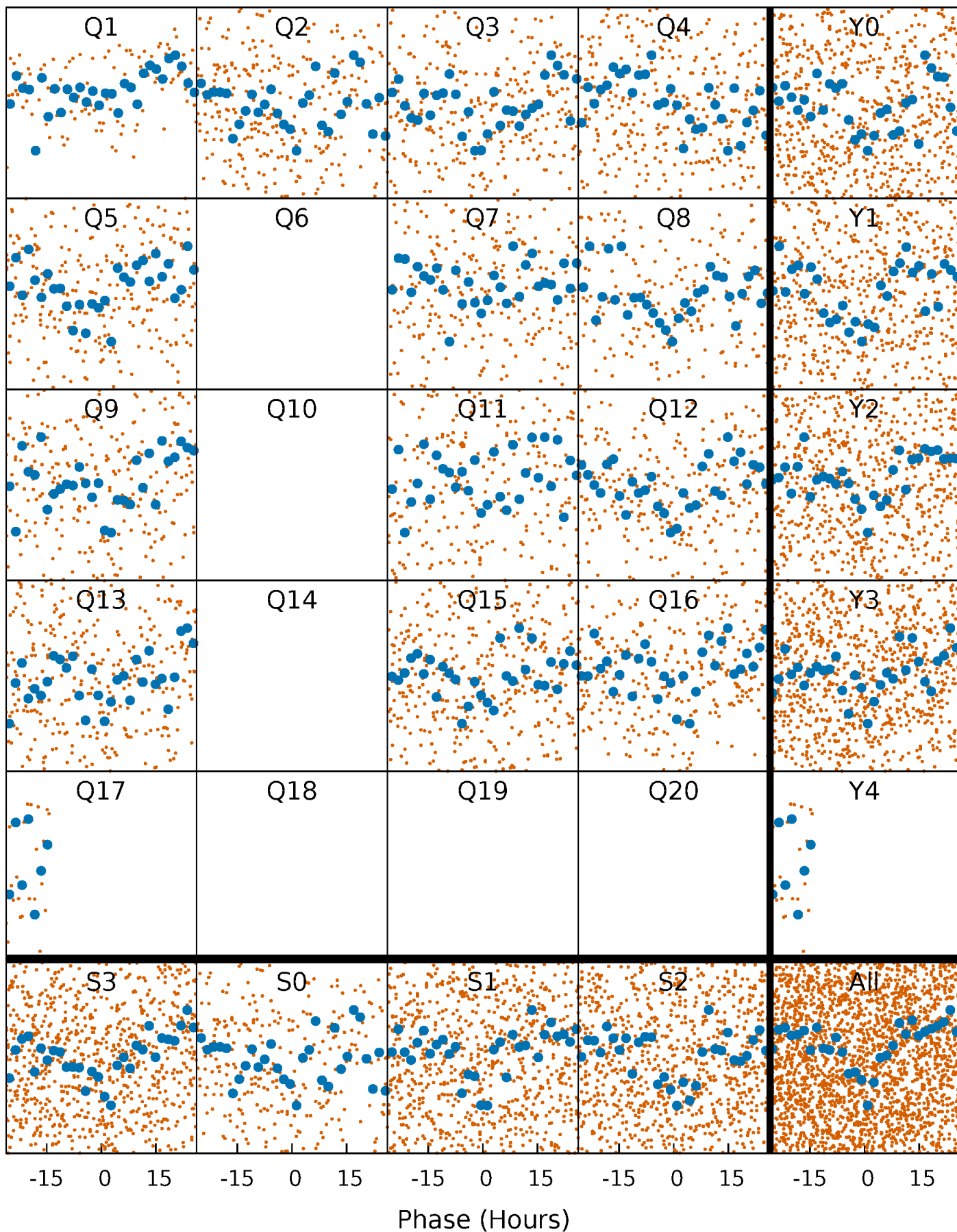


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



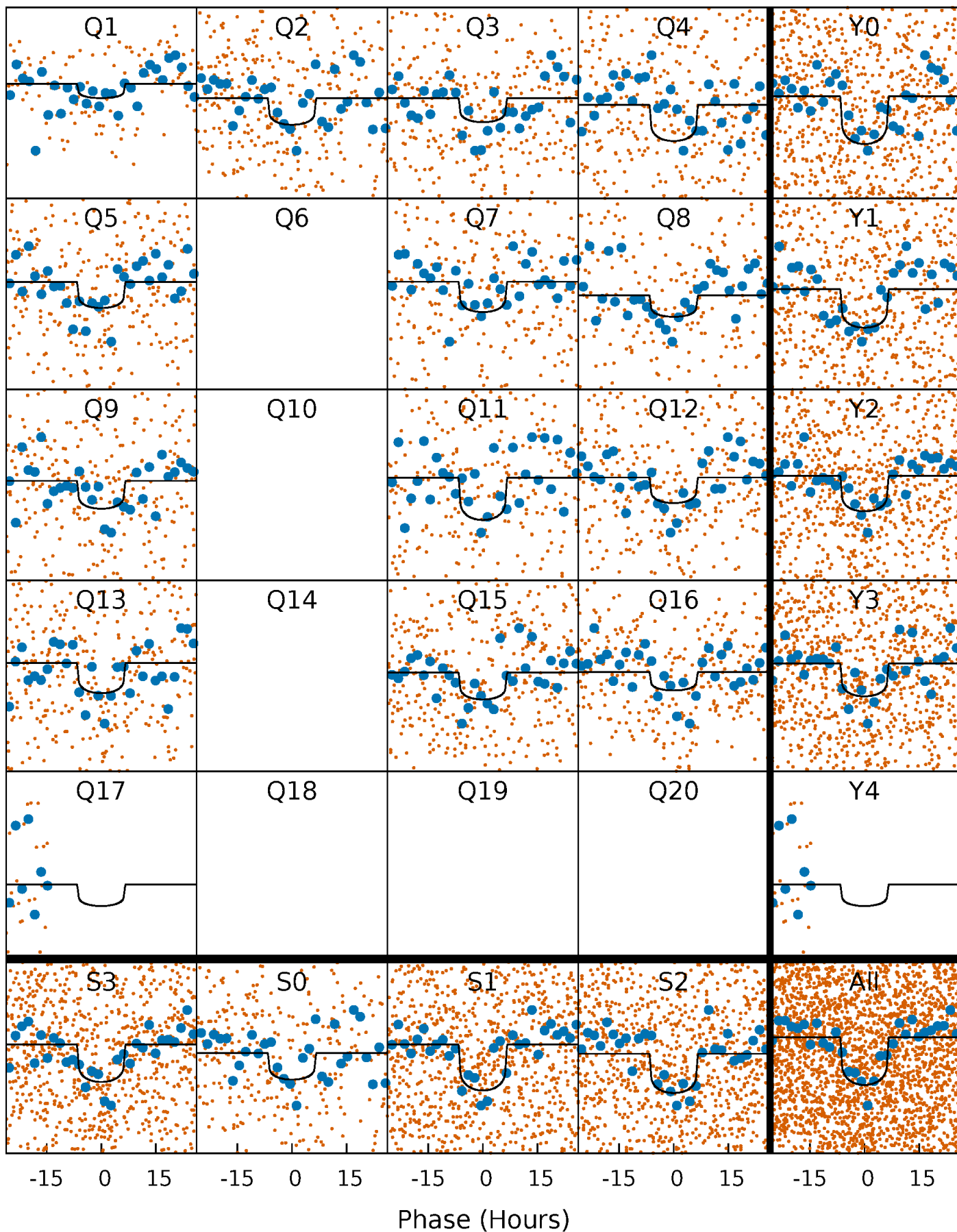
PDC Quarter-Phased Transit Curves

TCE 003859151-01 P= 25.949308 Days $T_0=154.967574$ (BKJD)



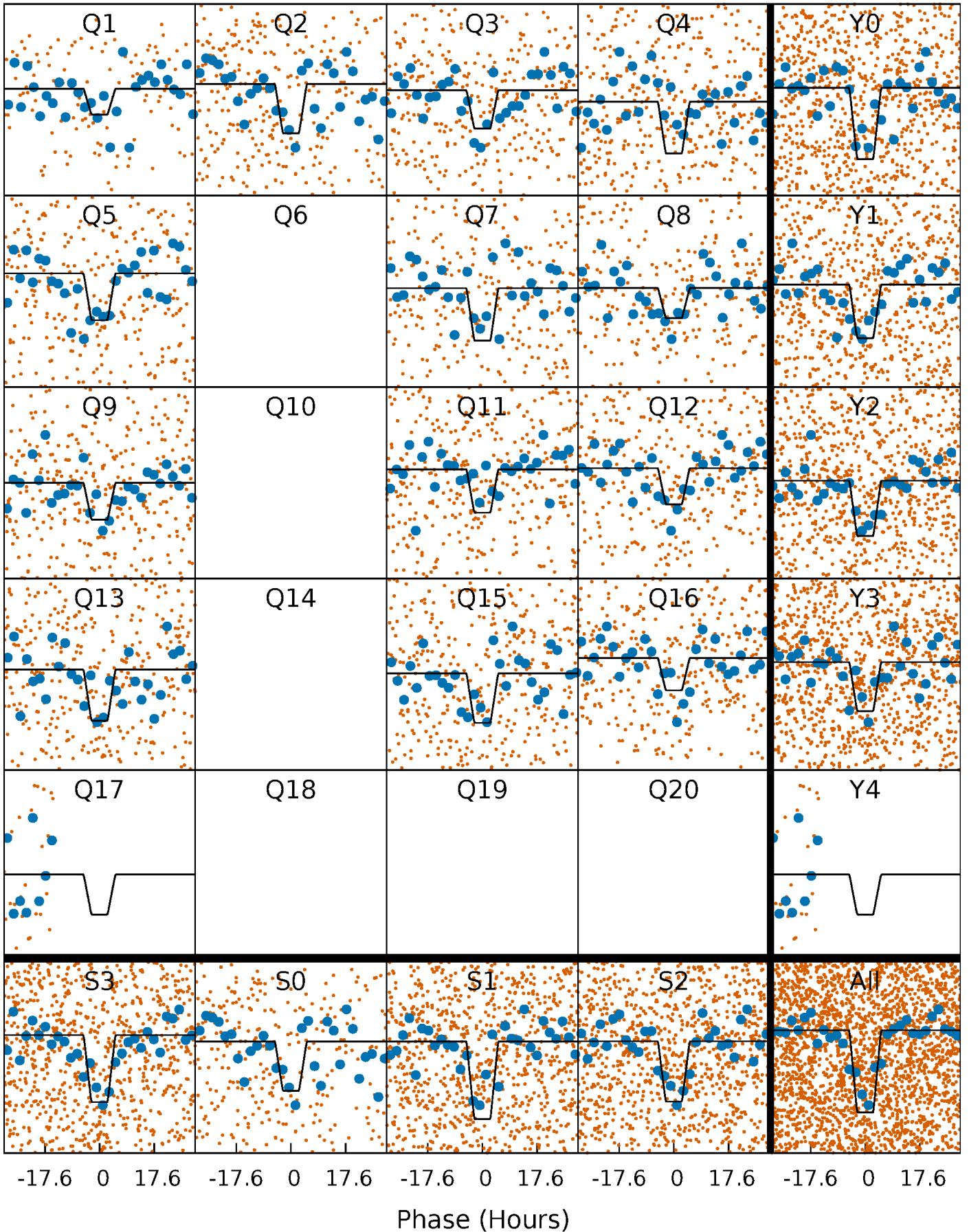
DV Quarter-Phased Transit Curves

TCE 003859151-01 P= 25.949308 Days $T_0=154.967574$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

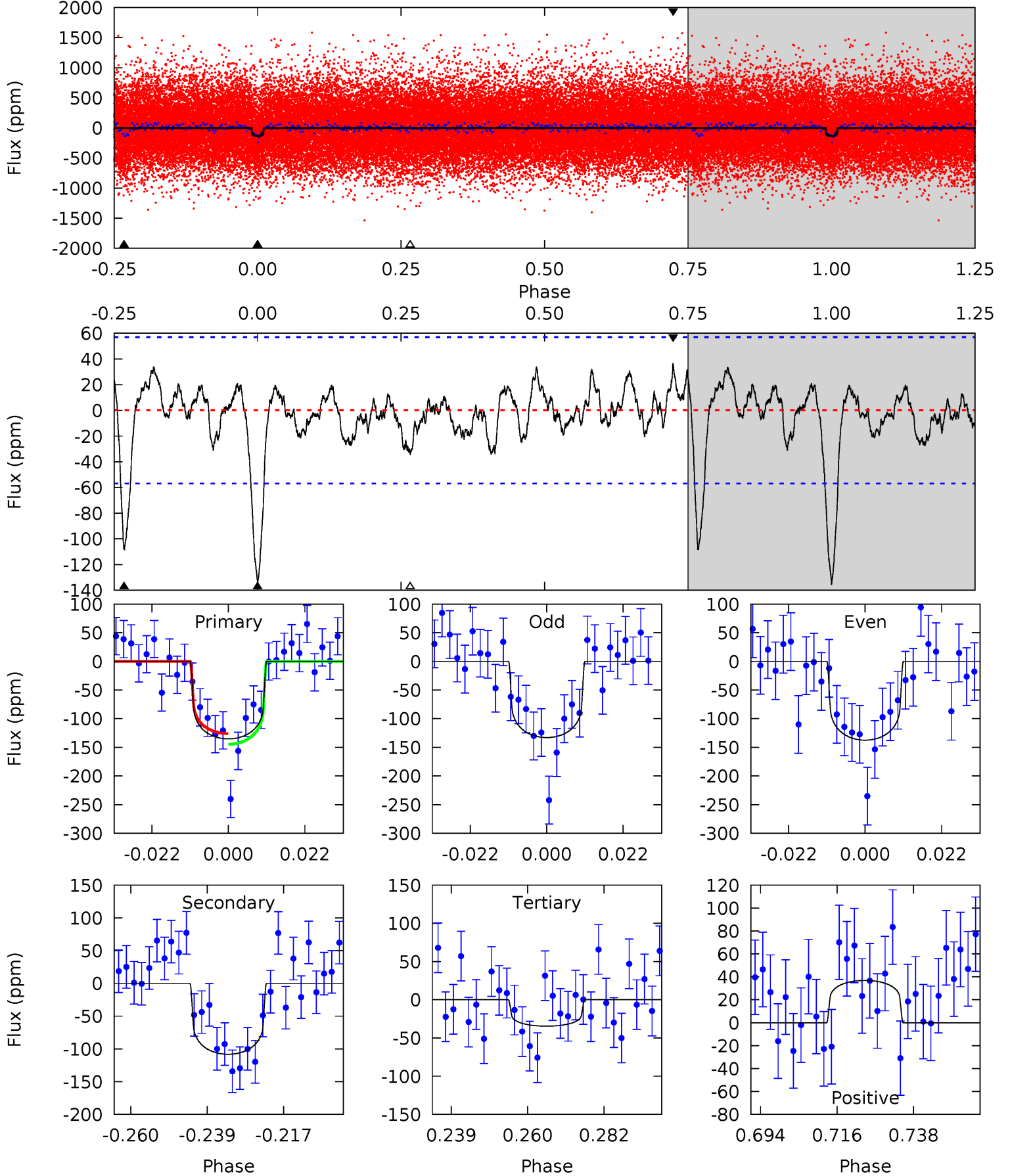
TCE 003859151-01 P= 25.949720 Days $T_0=154.973705$ (BKJD)



DV Model-Shift Uniqueness Test

003859151-01, P = 25.949308 Days, E = 129.018266 Days

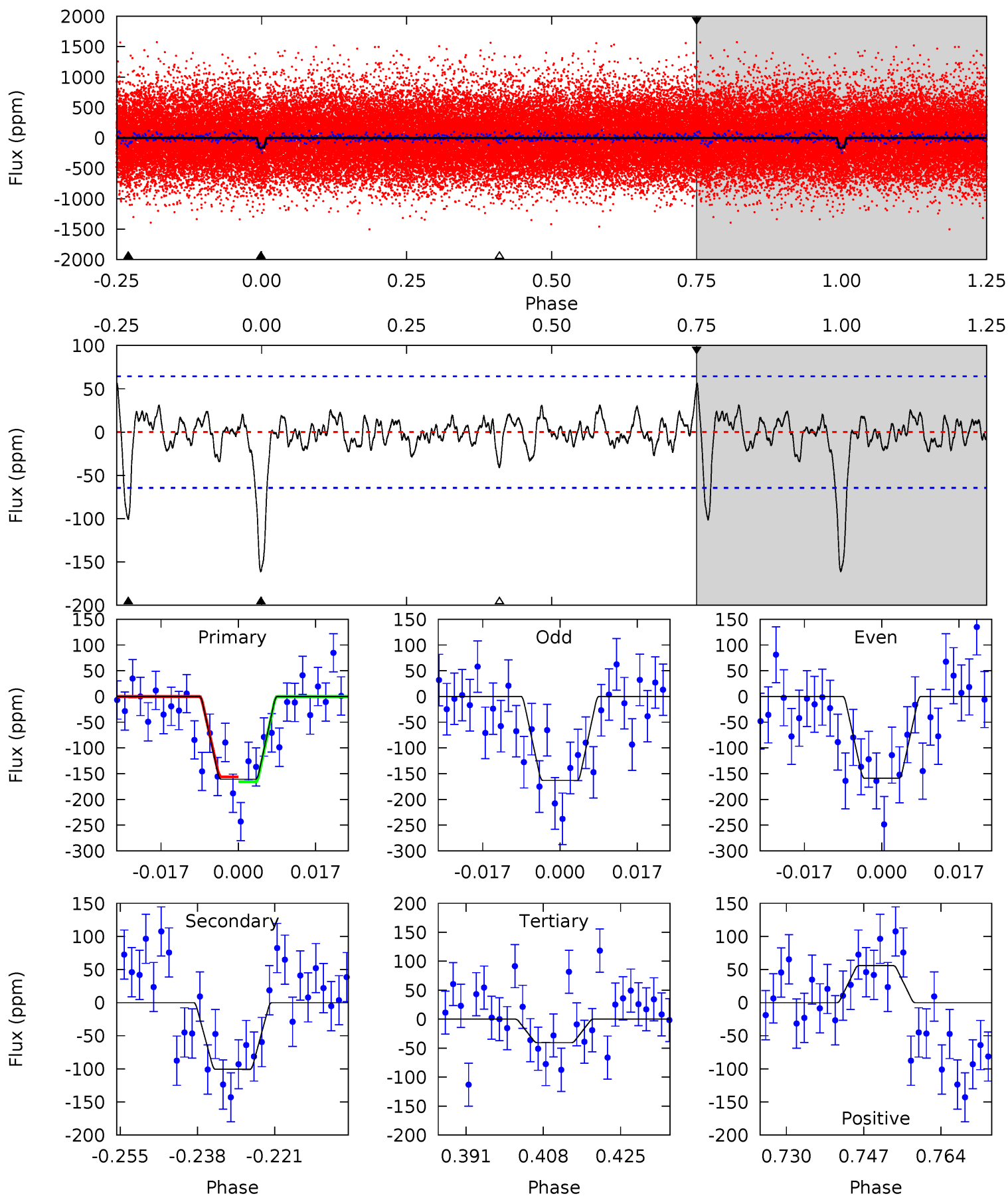
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.6	9.27	2.96	3.16	4.88	2.30	1.22	8.63	8.43	6.31	6.11	0.20	0.91	0.21	0.79



Alt Model-Shift Uniqueness Test

003859151-01, P = 25.949720 Days, E = 129.023985 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.3	7.69	3.09	4.26	4.92	2.39	1.06	9.20	8.02	4.60	3.43	0.16	0.86	0.26	0.37



Stellar Parameters For KIC 003859151

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6139^{+165}_{-202}	$4.530^{+0.046}_{-0.196}$	$-0.440^{+0.300}_{-0.300}$	$0.881^{+0.245}_{-0.077}$	$0.959^{+0.105}_{-0.117}$	$1.976^{+0.463}_{-0.920}$
	+3%/-3%	+1%/-4%	+68%/-68%	+28%/-9%	+11%/-12%	+23%/-47%
Source	PHO1	KIC0	KIC0	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

Secondary Eclipse Parameters for KIC 003859151-01 / KOI 4761.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-108 ± 12	$1.20^{+0.45}_{-0.46}$	881^{+59}_{-41}	5723^{+1607}_{-764}	1140^{+1863}_{-551}
Alt.	-101 ± 13	$1.41^{+0.49}_{-0.43}$	883^{+55}_{-43}	5205^{+942}_{-569}	746^{+833}_{-321}

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

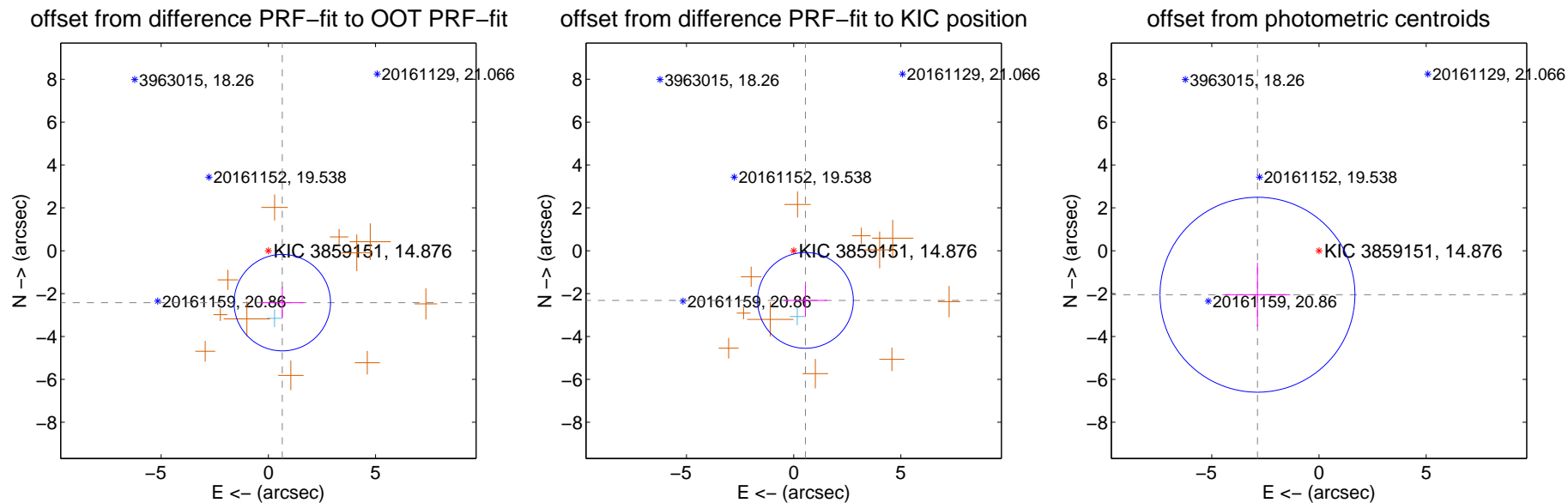
DV Centroid Data

Supplemental centroid analysis for 003859151-01. Kepler magnitude: 14.88. Transit SNR 9.01

There are 1 quarters with good PRF difference image offsets

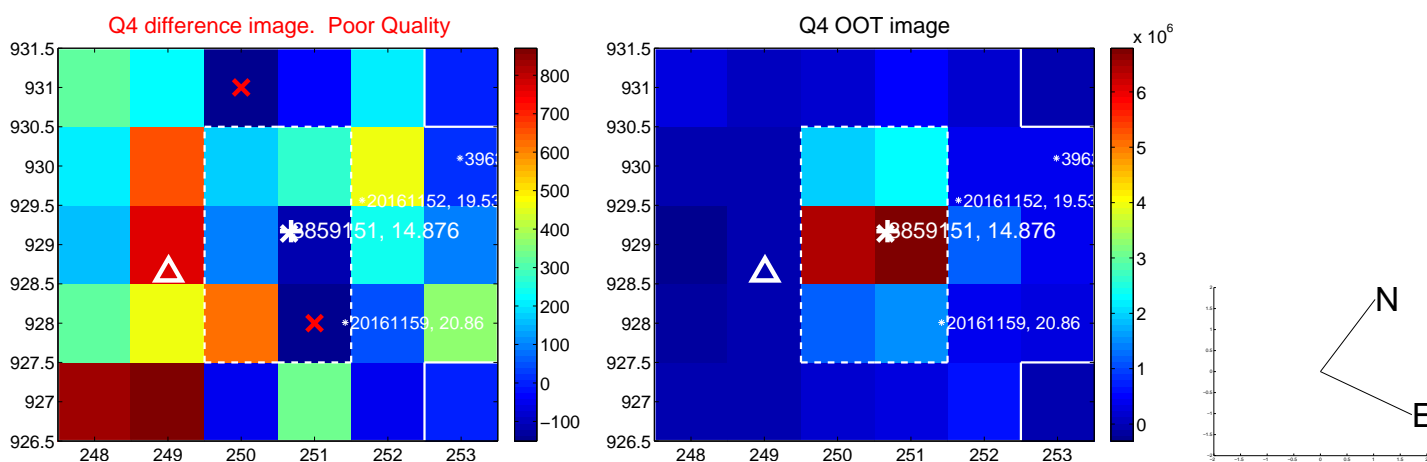
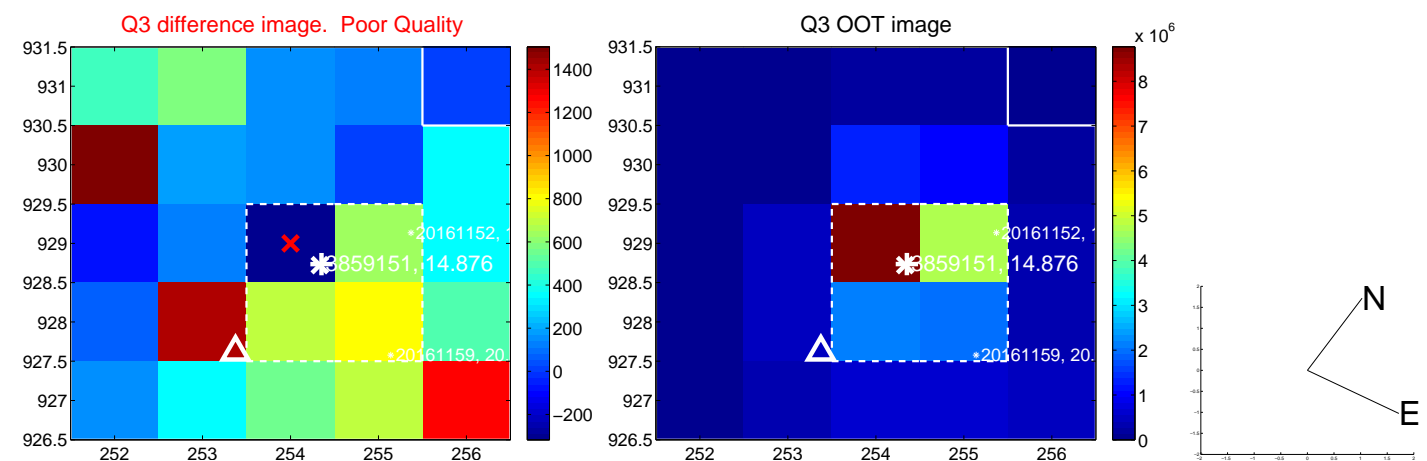
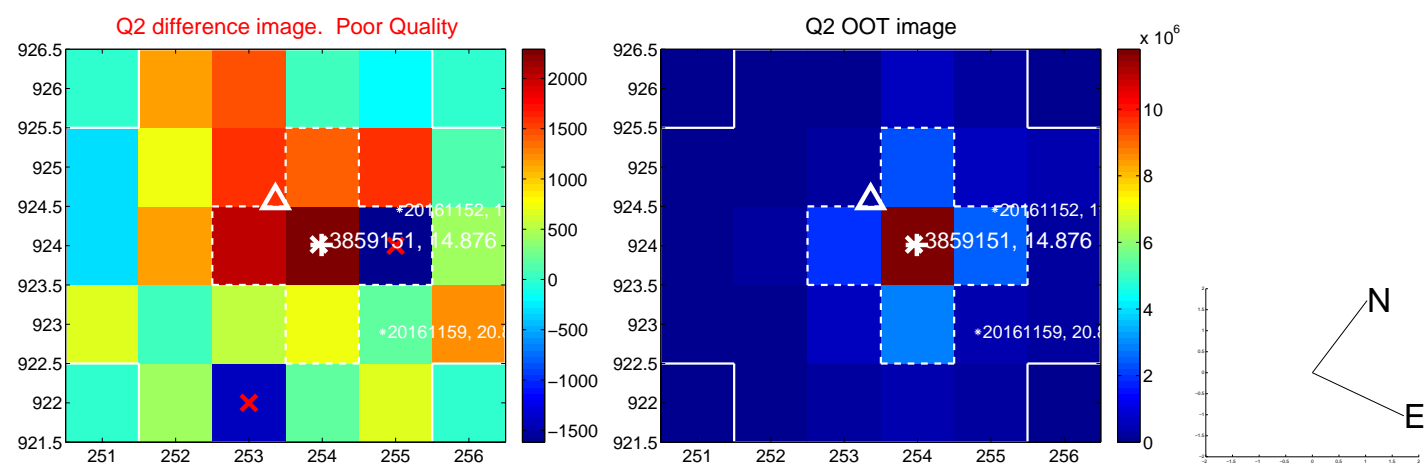
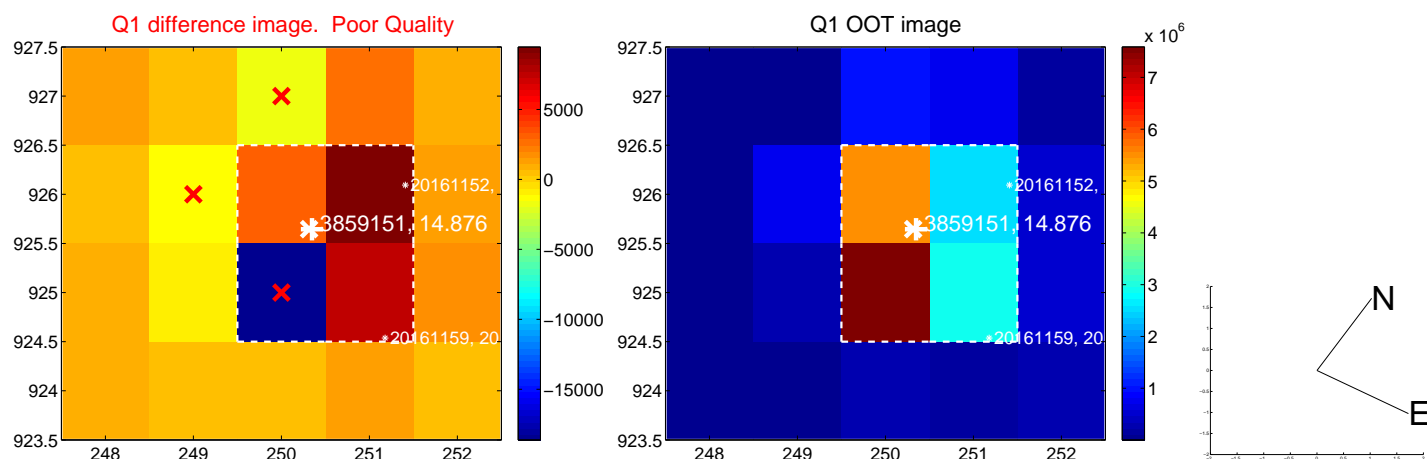
The direct PRF centroid is offset from the target star catalog position by about 0.17 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	2.508 ± 0.750	3.34	-0.650 ± 1.000	-2.422 ± 0.728
PRF-fit source offset from KIC position	2.381 ± 0.744	3.20	-0.549 ± 1.000	-2.317 ± 0.727
photometric centroid source offset	3.53 ± 1.52	2.33	2.87 ± 1.53	-2.05 ± 1.49

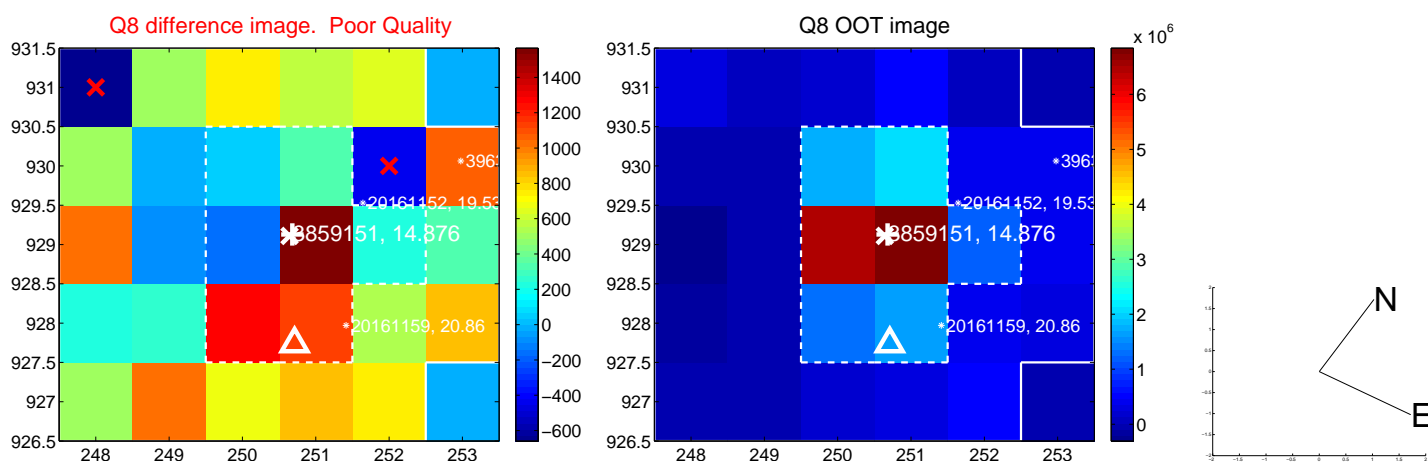
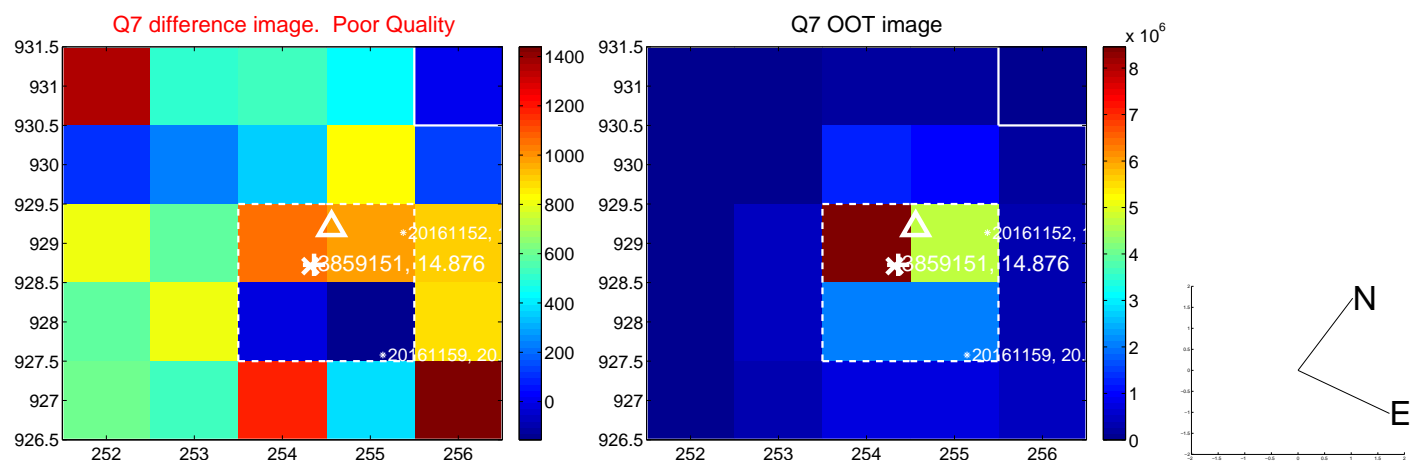
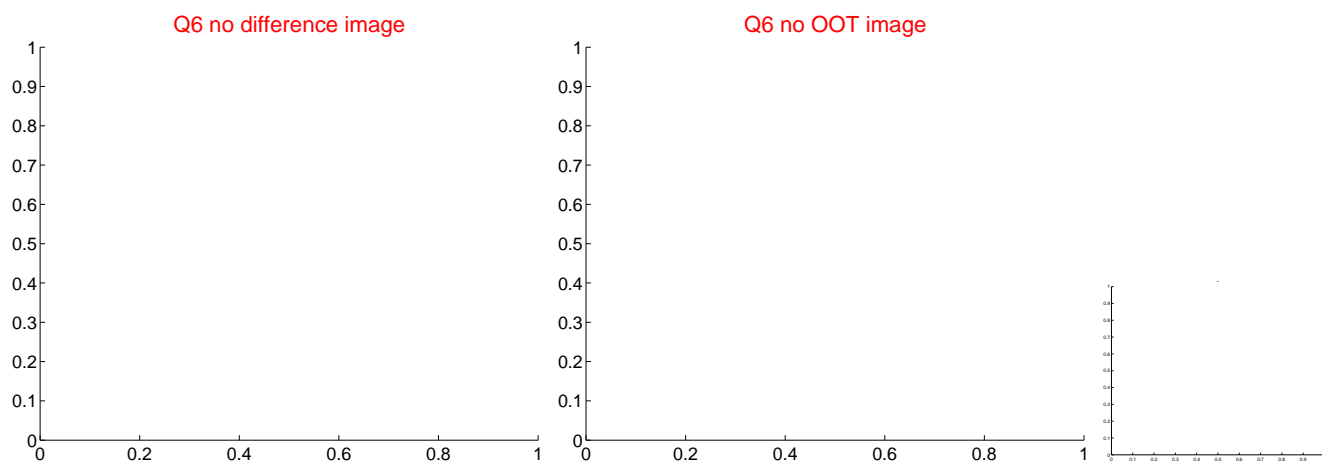
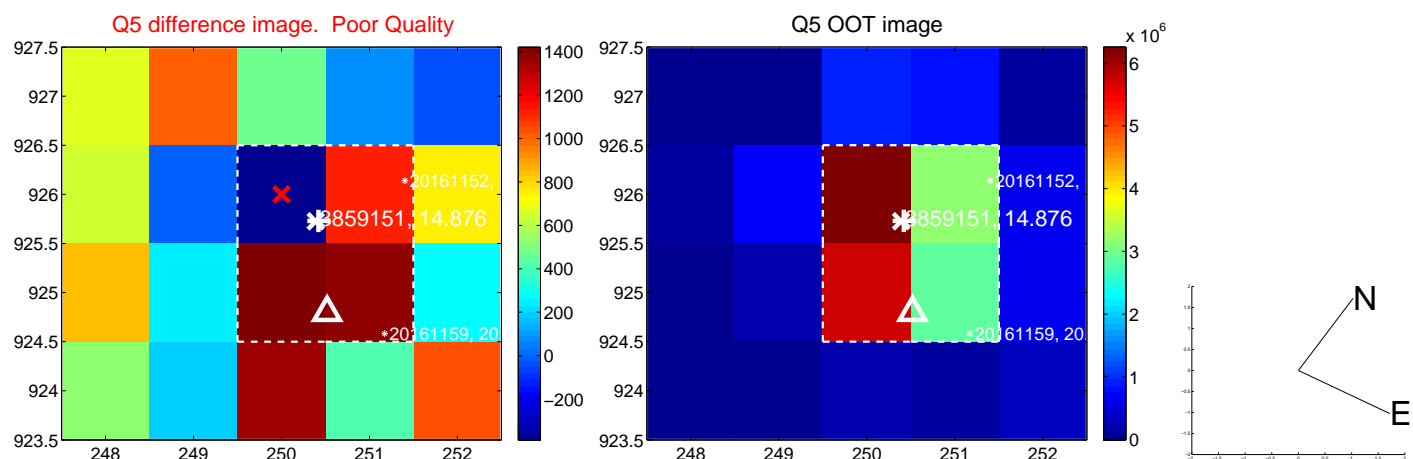


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

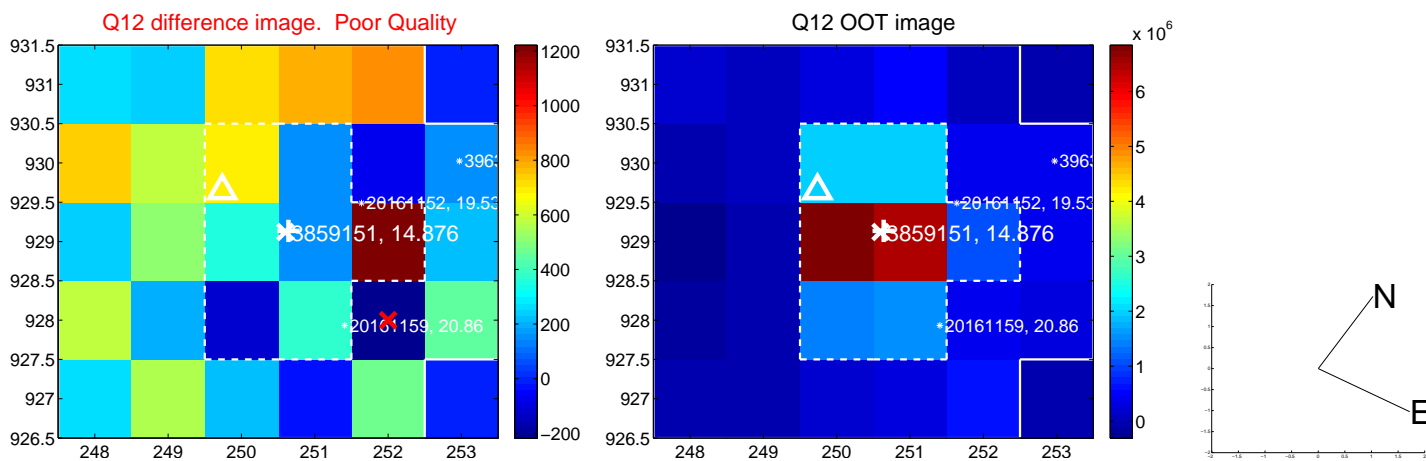
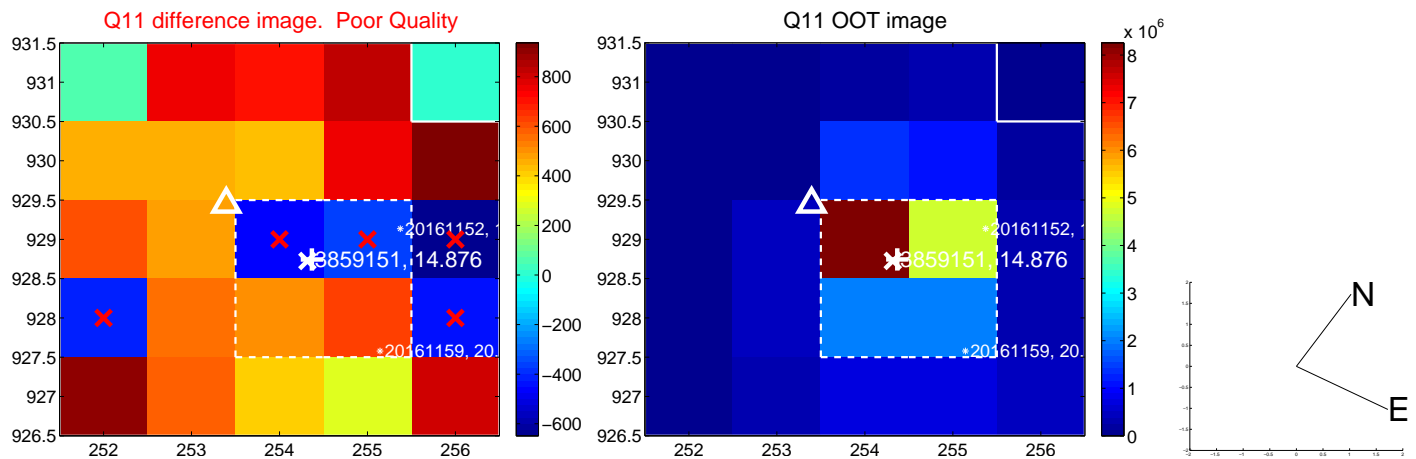
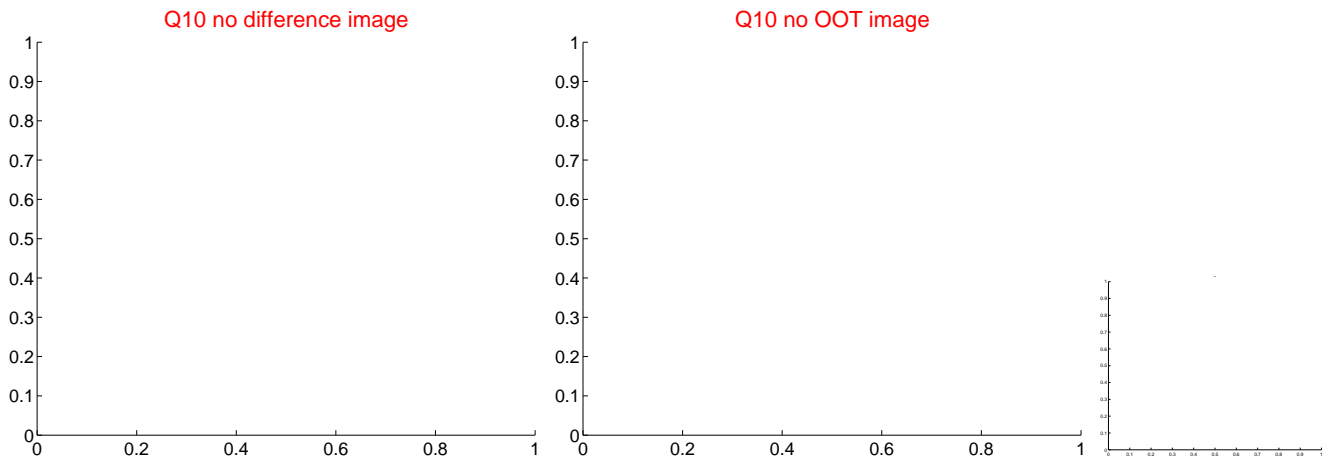
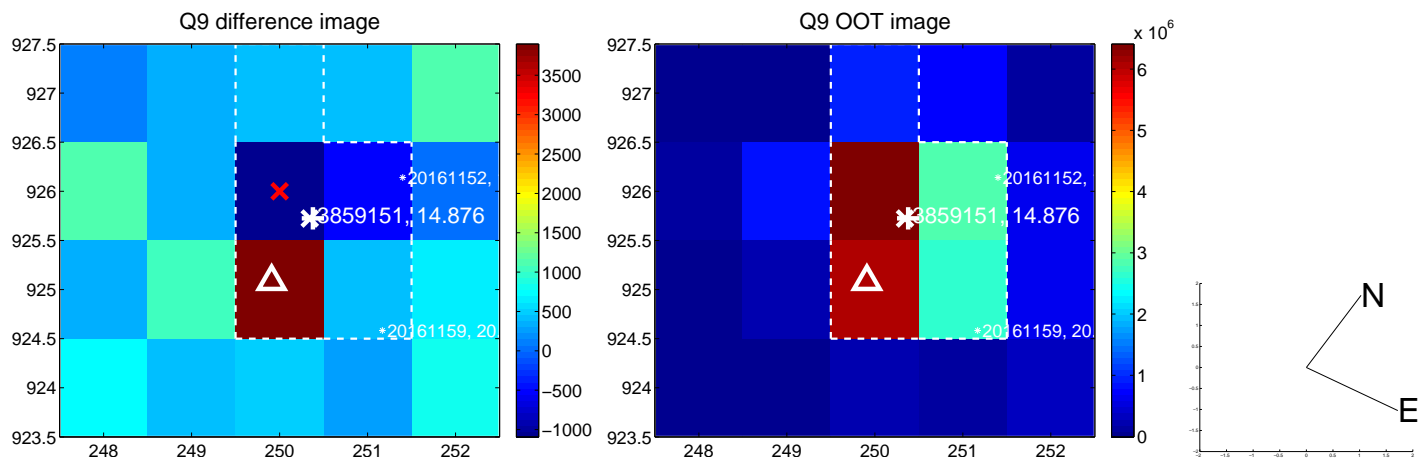
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



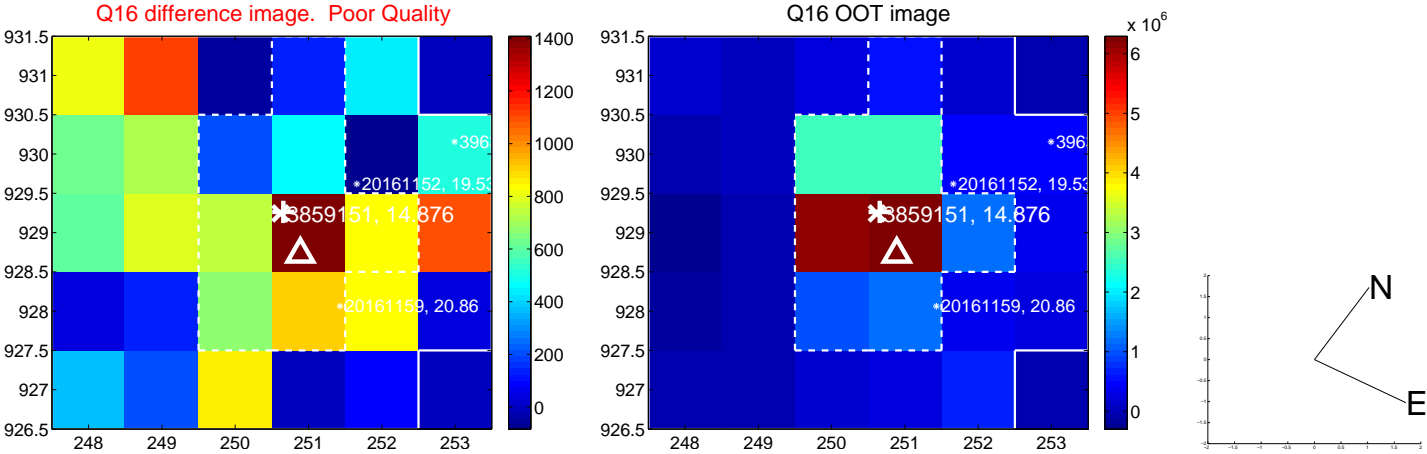
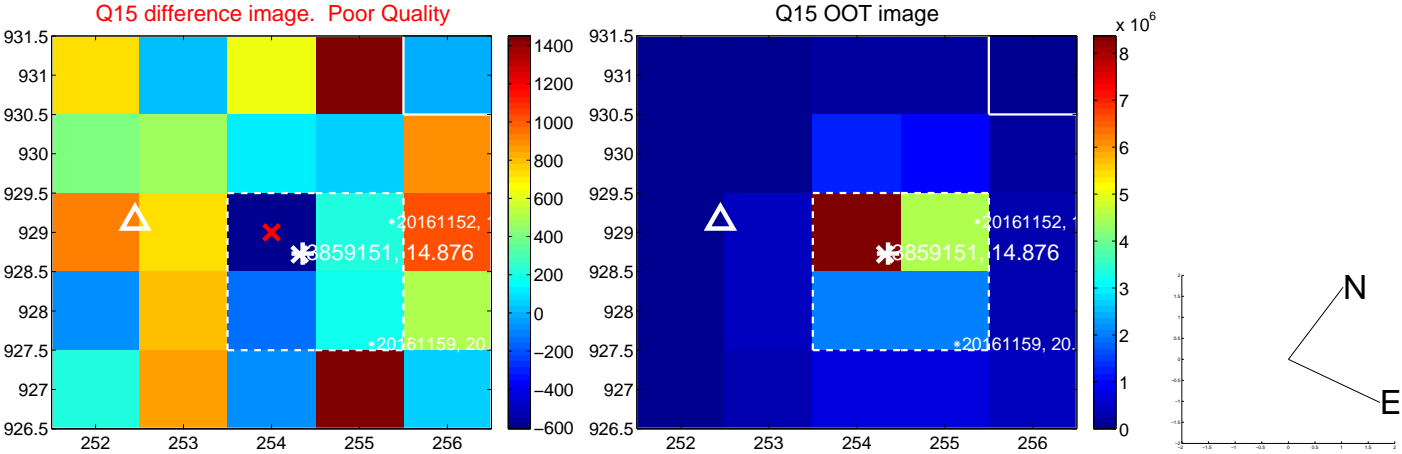
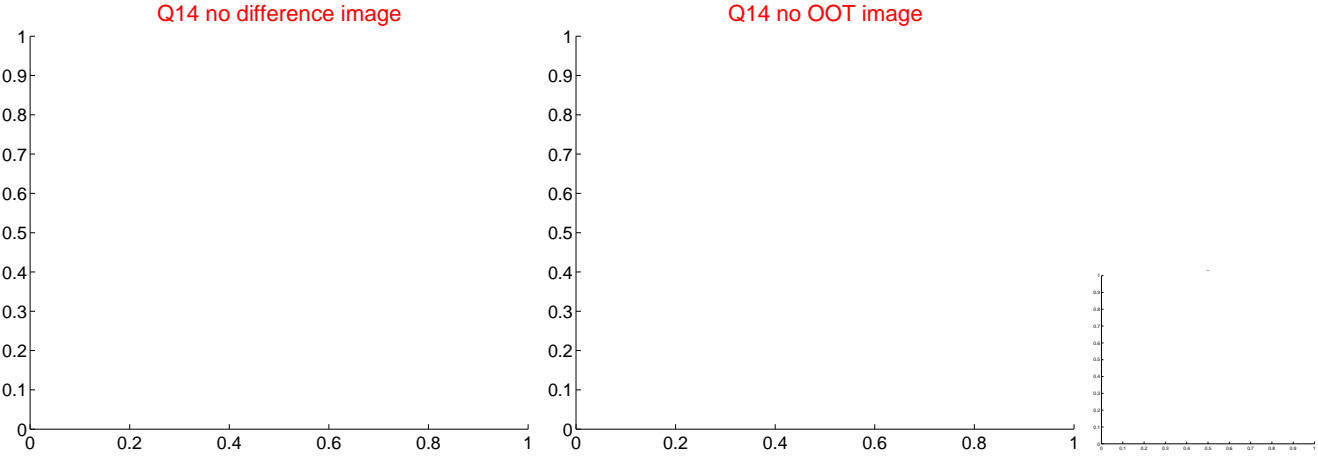
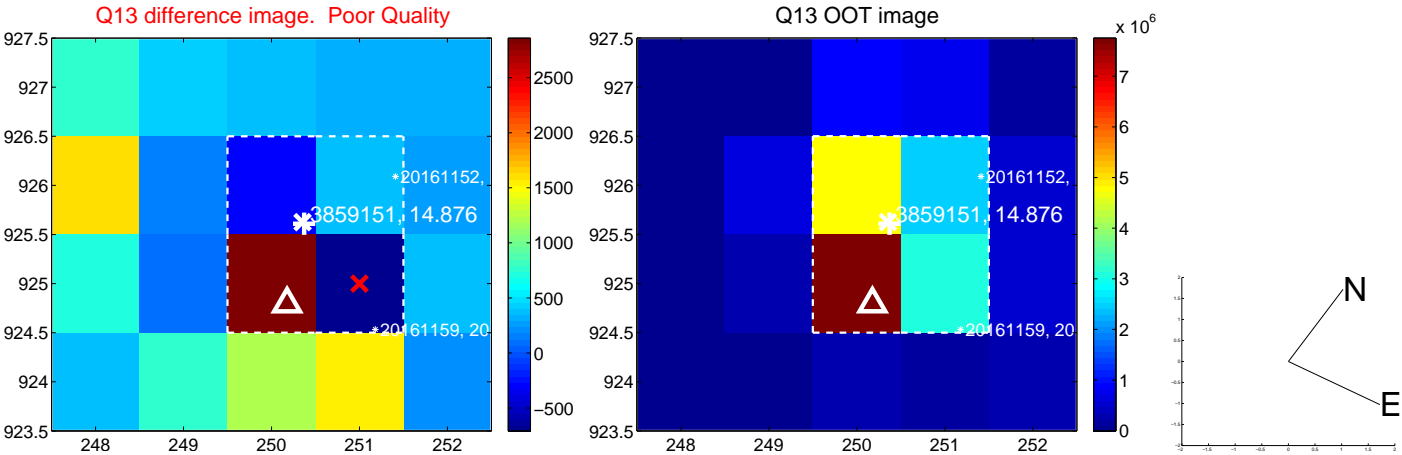
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



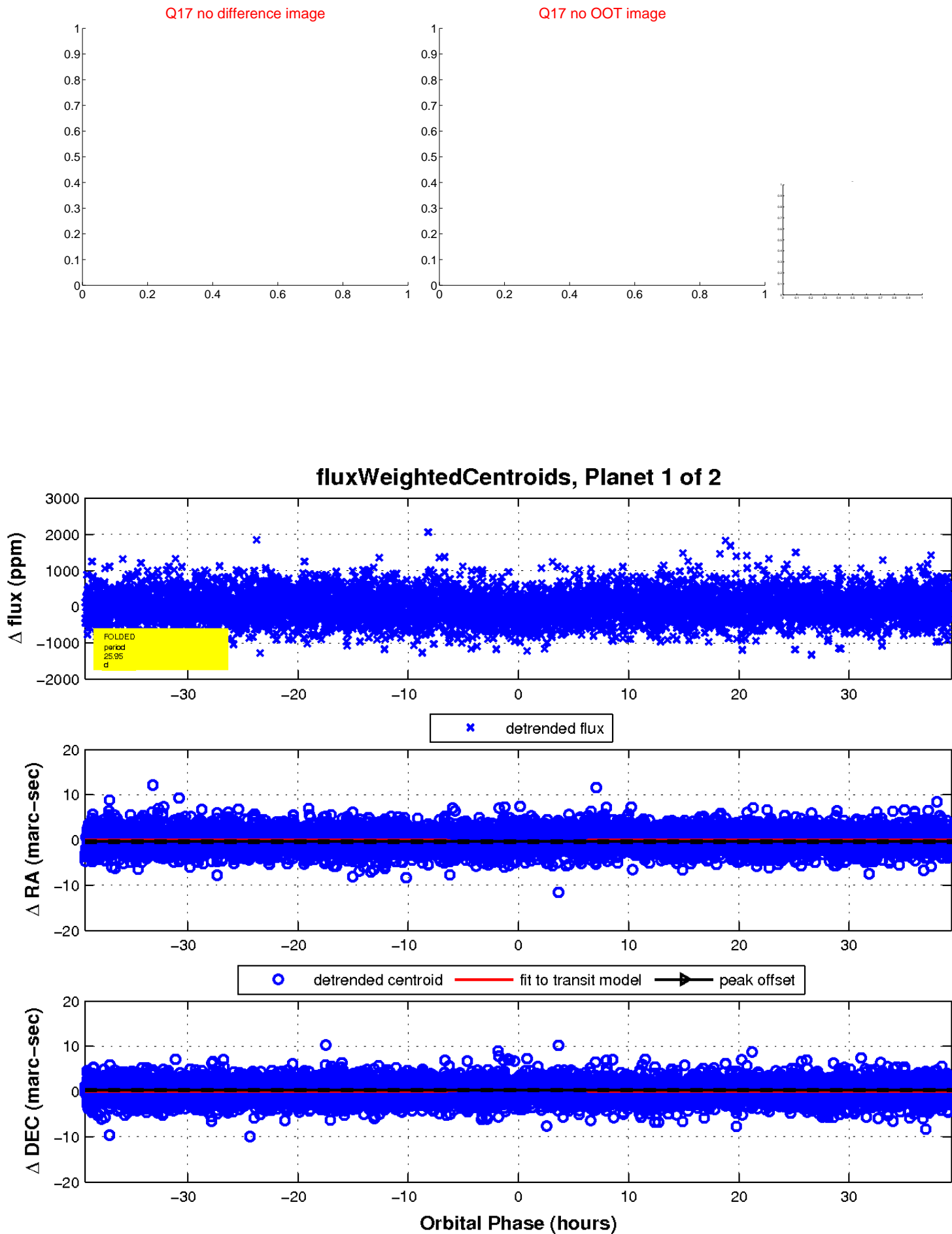
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

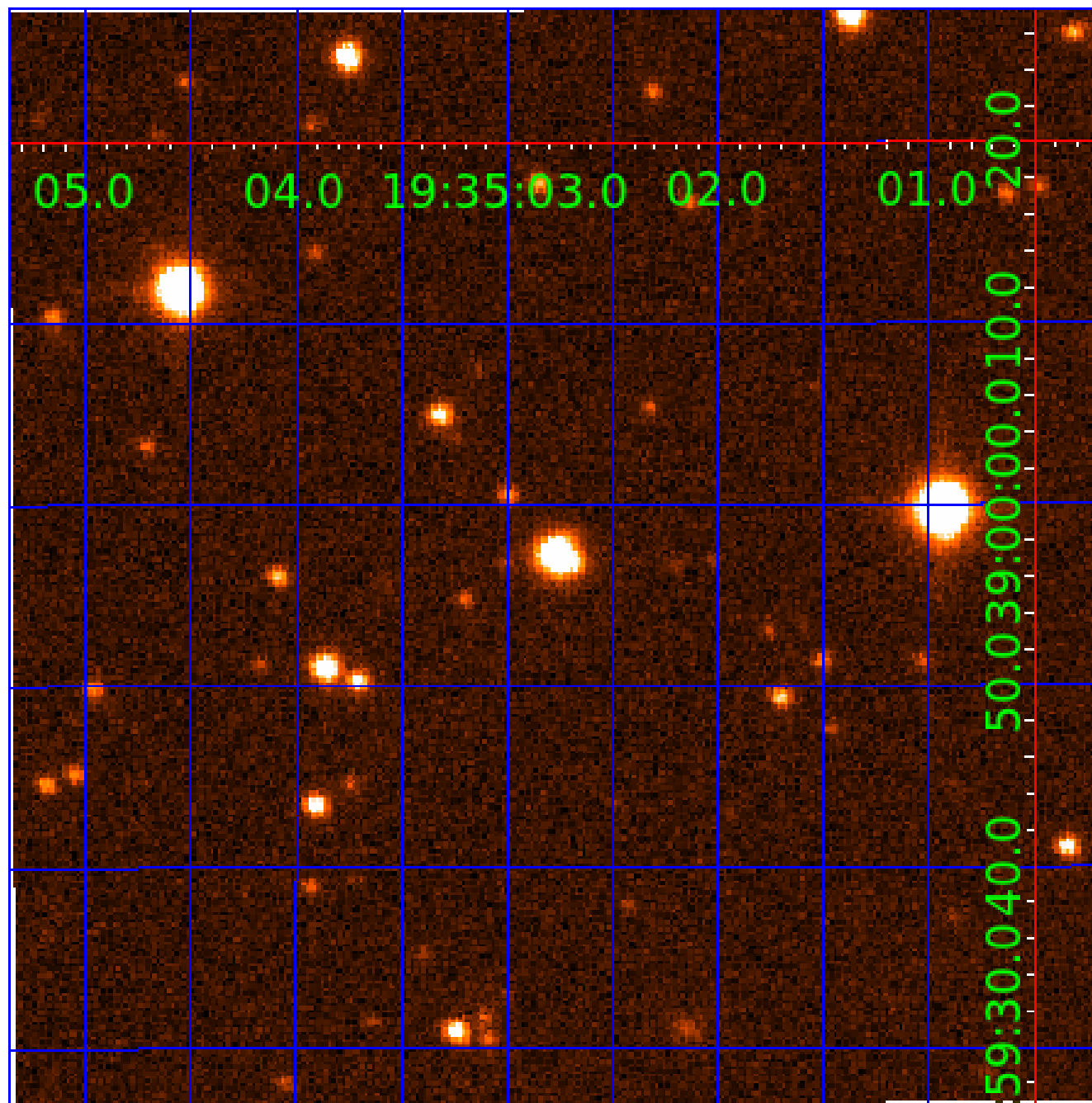


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 003859151

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})
003859151-01	OBS	4761.01	25.949308	154.967574	147.7	13.103	8.4	9.0	0.88	6139	1.15	34.50
003859151-02	OBS	No	25.949651	148.930770	138.2	13.181	8.6	8.9	0.88	6139	1.13	34.49

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003859151-01	OBS	FP	0.00	0	1	1	1	MOD_SEC_DV—MOD_SEC_ALT—HAS_SEC_TCE—CENT_UNRESOLVED_OFFSET—EPHEM_MATCH
003859151-02	OBS	FP	0.00	1	1	1	1	IS_SEC_TCE—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 003859151-02

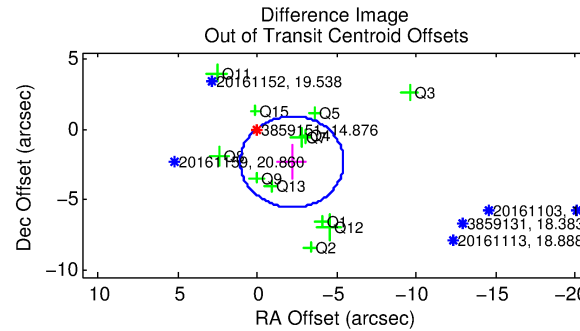
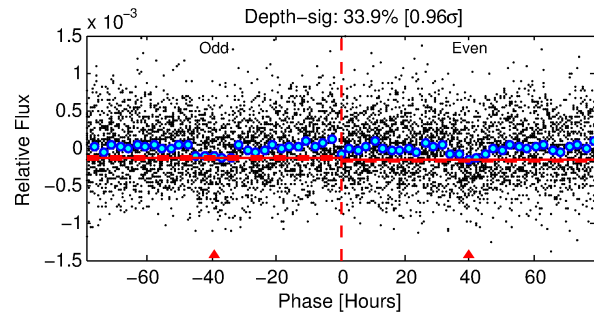
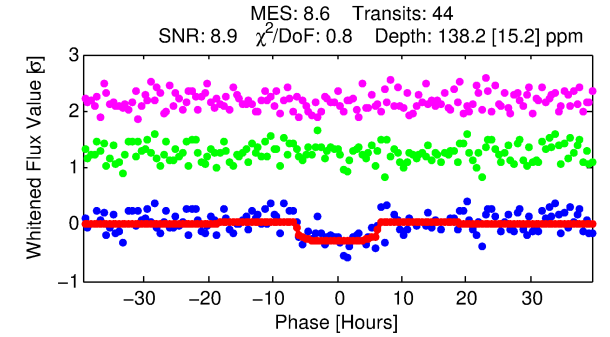
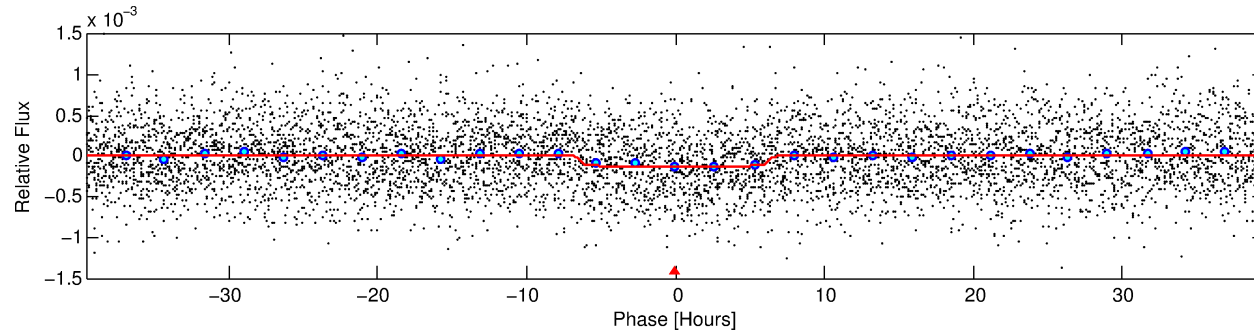
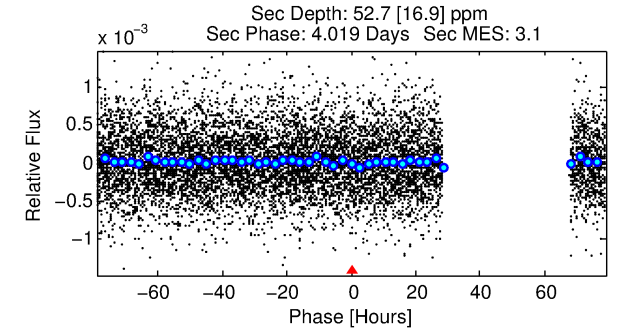
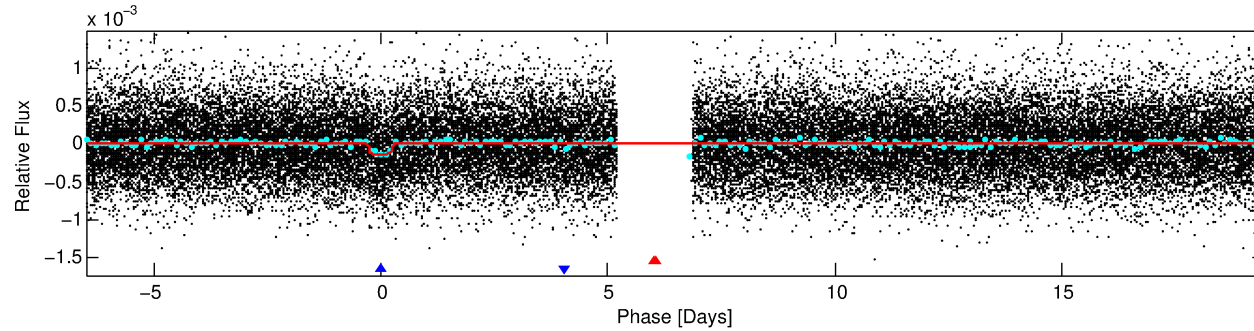
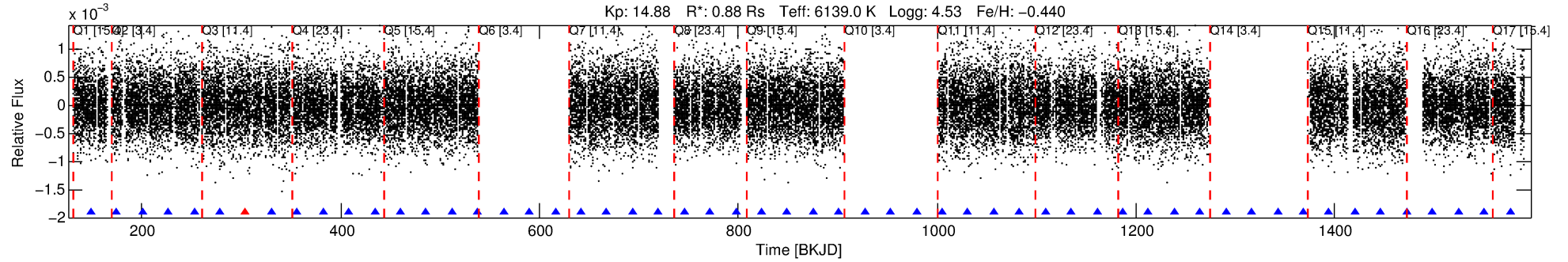
TCE (1)	KIC	Parent (2)	Parent KIC	$P_1:P_2$	Dist (")	Δ Row	Δ Col	m_2	m_1	D_2/D_1	Mechanism	Flag	σ_P	σ_T
003859151-02	3859151	003858884-02	3858884	1:1	194.1	-11	48	9.28	14.88	2443.00	Direct-PRF	0	2.09	0.00

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: 3859151 Candidate: 2 of 2 Period: 25.950 d

KOI: K04761 Corr: No Ephemeris Match



DV Fit Results:

Period = 25.94965 [0.00061] d
Epoch = 148.9308 [0.0193] BKJD
Rp/R* = 0.0117 [0.0047]
a/R* = 10.00 [20.70]
b = 0.76 [1.14]
Seff = 34.50 [13.01]
Teff = 618 [58] K
Rp = 1.13 [0.55] Re
a = 0.1692 [0.0404] AU
Ag = 650.76 [604.07] [1.08σ]
Teffp = 4826 [1048] K [4.01σ]

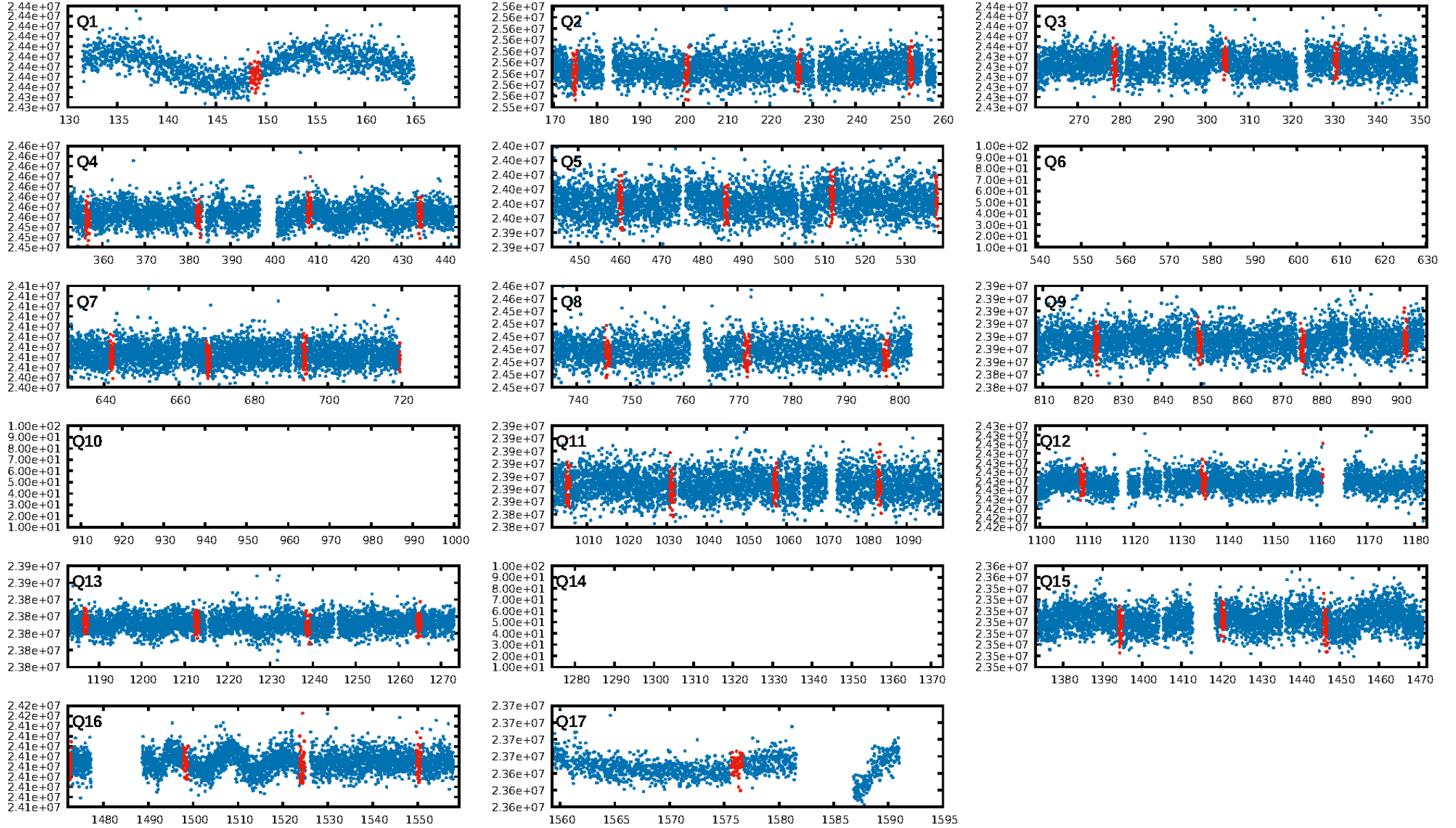
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 89.7%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 9.97e-17
RollingBand-fgt: 0.98 [41/42]
GhostDiagnostic-chr: 0.195
Centroid-sig: 0.4%
Centroid-so: 3.515 arcsec [2.27σ]
OotOffset-rm: 3.193 arcsec [2.95σ]
KicOffset-rm: 3.046 arcsec [2.79σ]
OotOffset-st: 1/4/3/4 [12]
KicOffset-st: 1/4/3/4 [12]
DiffImageQuality-fgm: 0.17 [2/12]
DiffImageOverlap-fno: 1.00 [13/13]

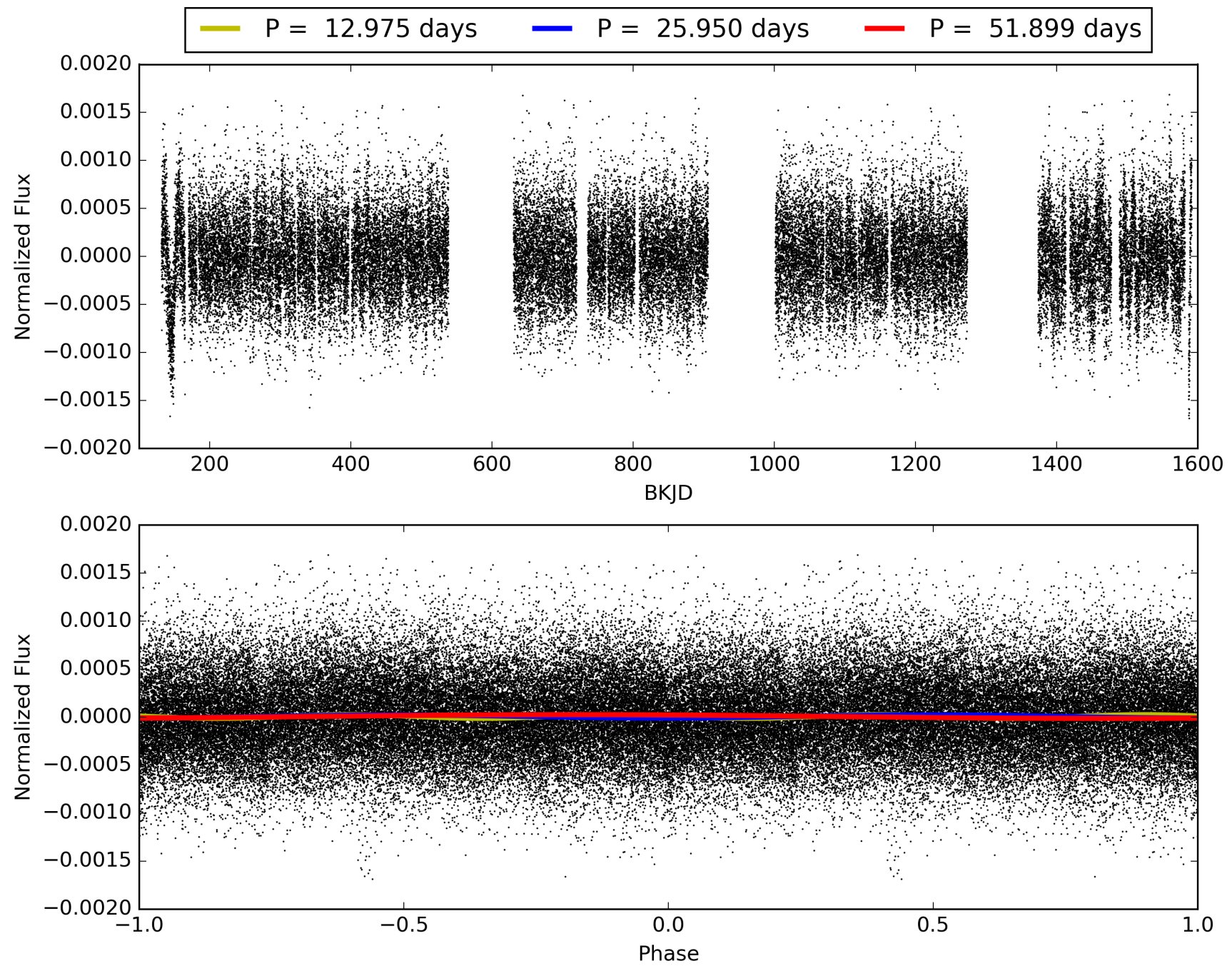
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 003859151-02, PDC Light Curves

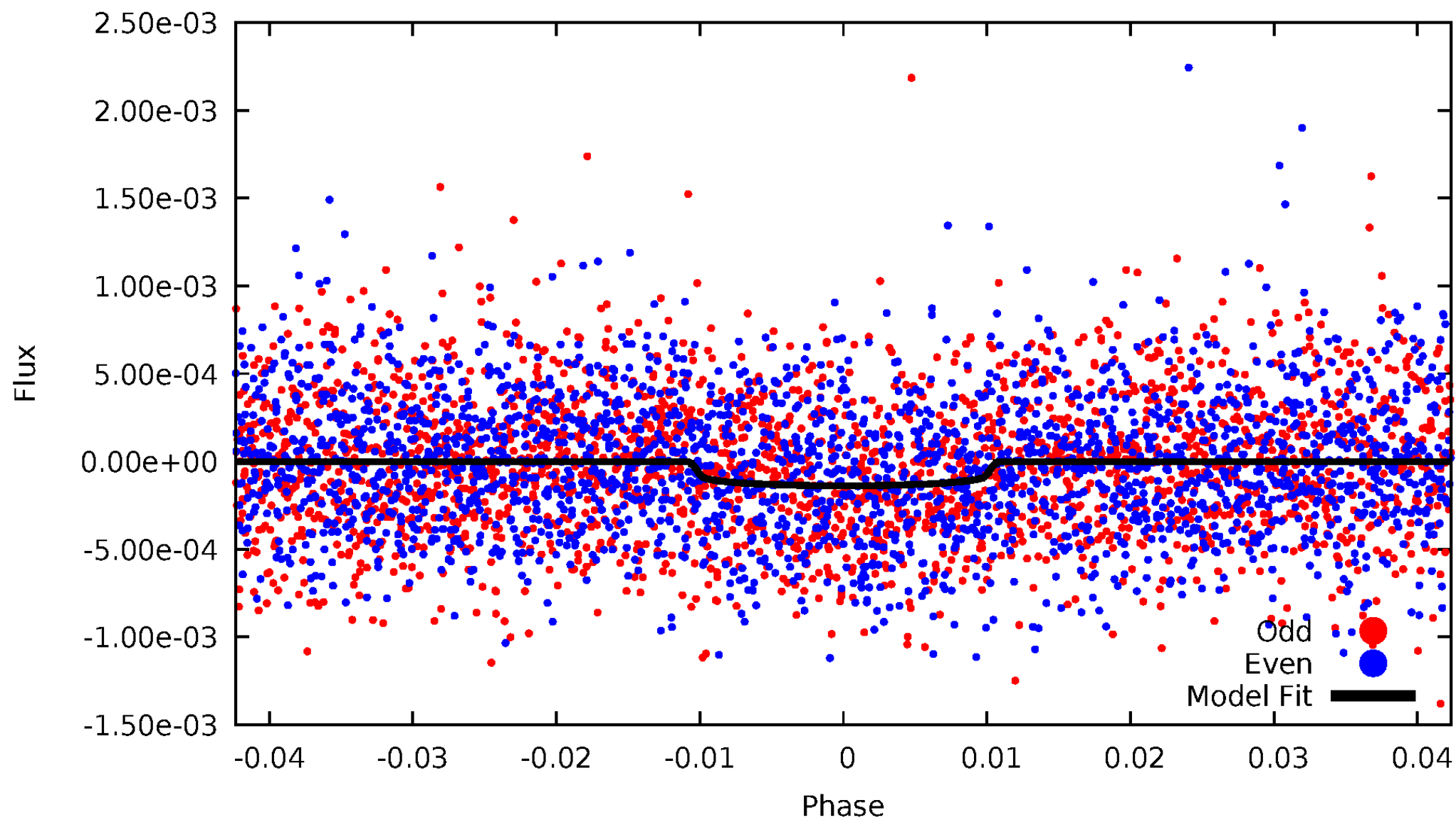


TCE 003859151-02



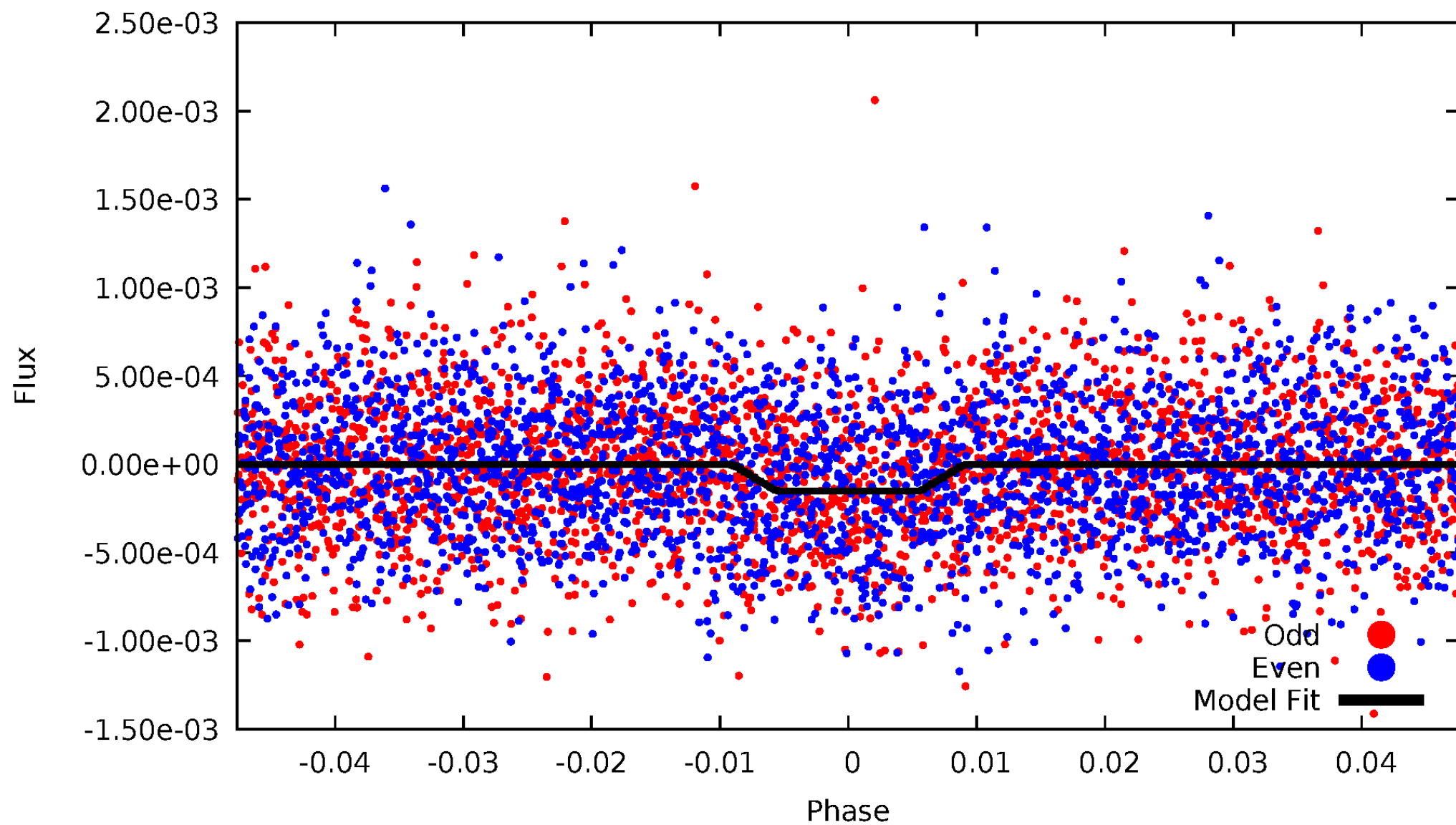
DV Odd/Even

TCE 003859151-02



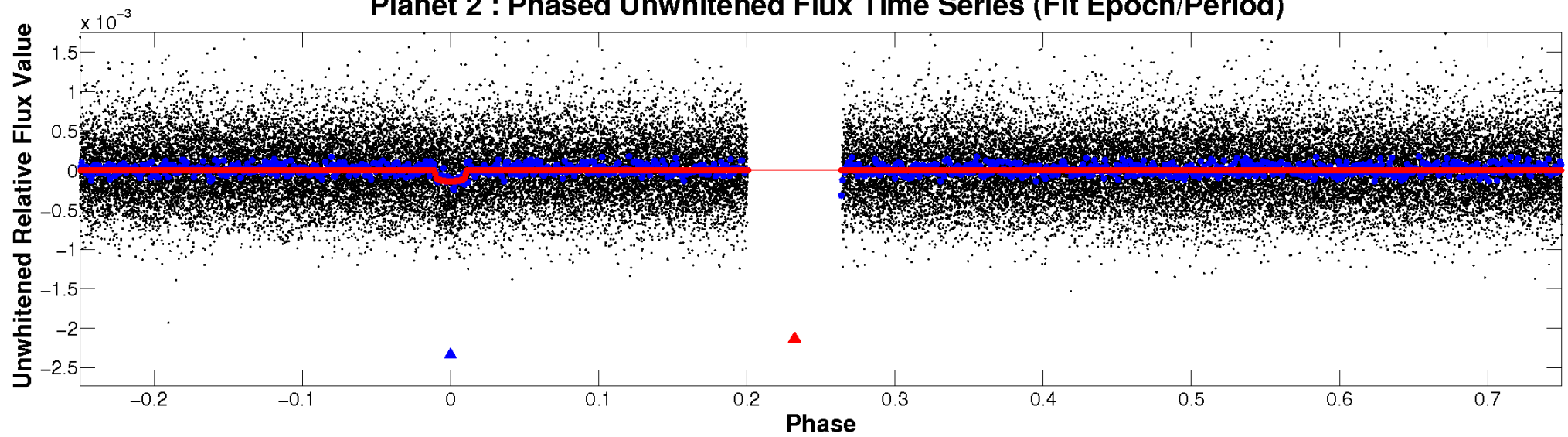
ALT Odd/Even

TCE 003859151-02

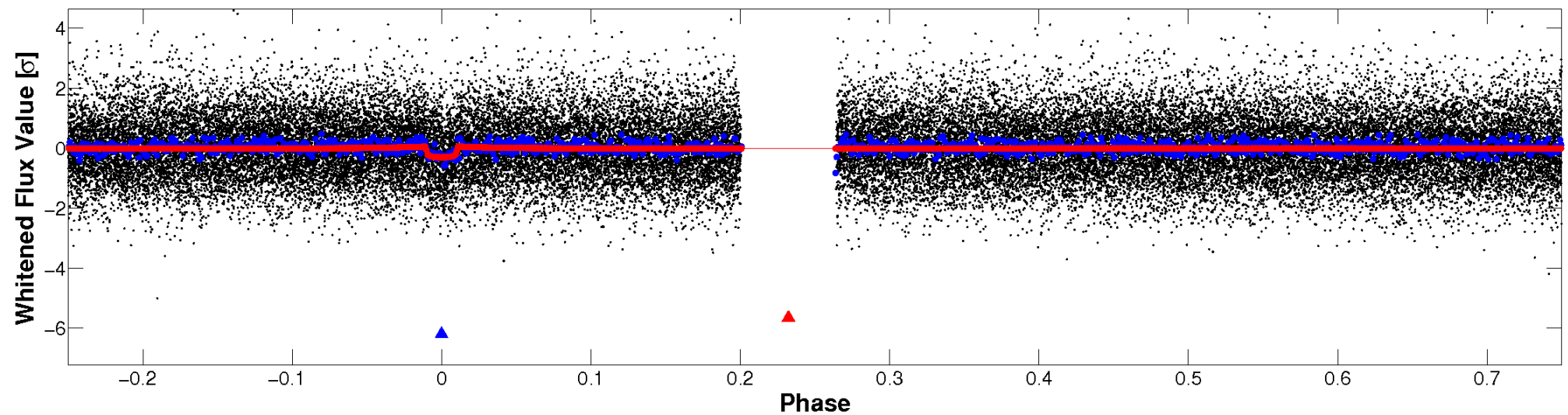


Non-Whitened Vs. Whitened Light Curve

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

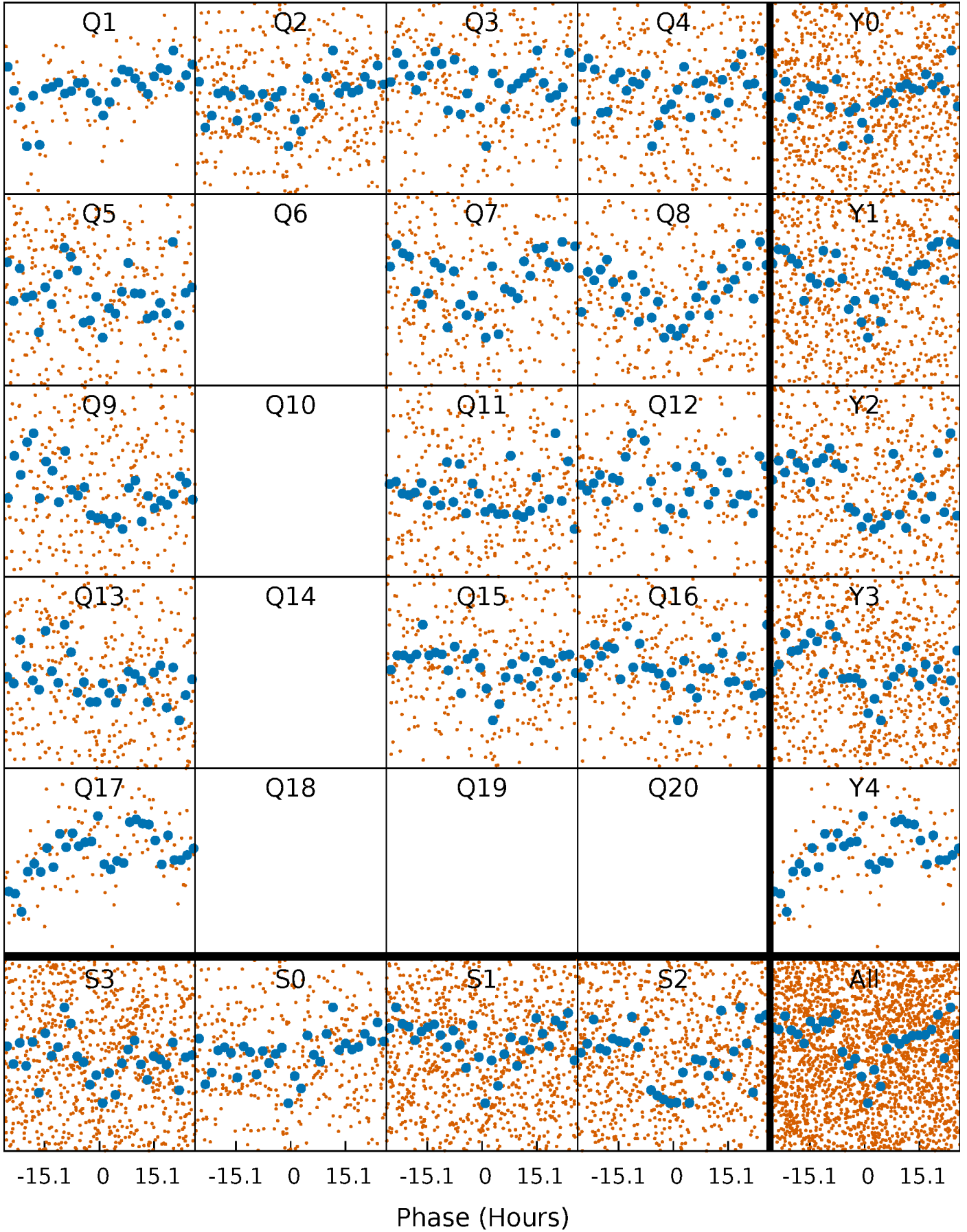


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



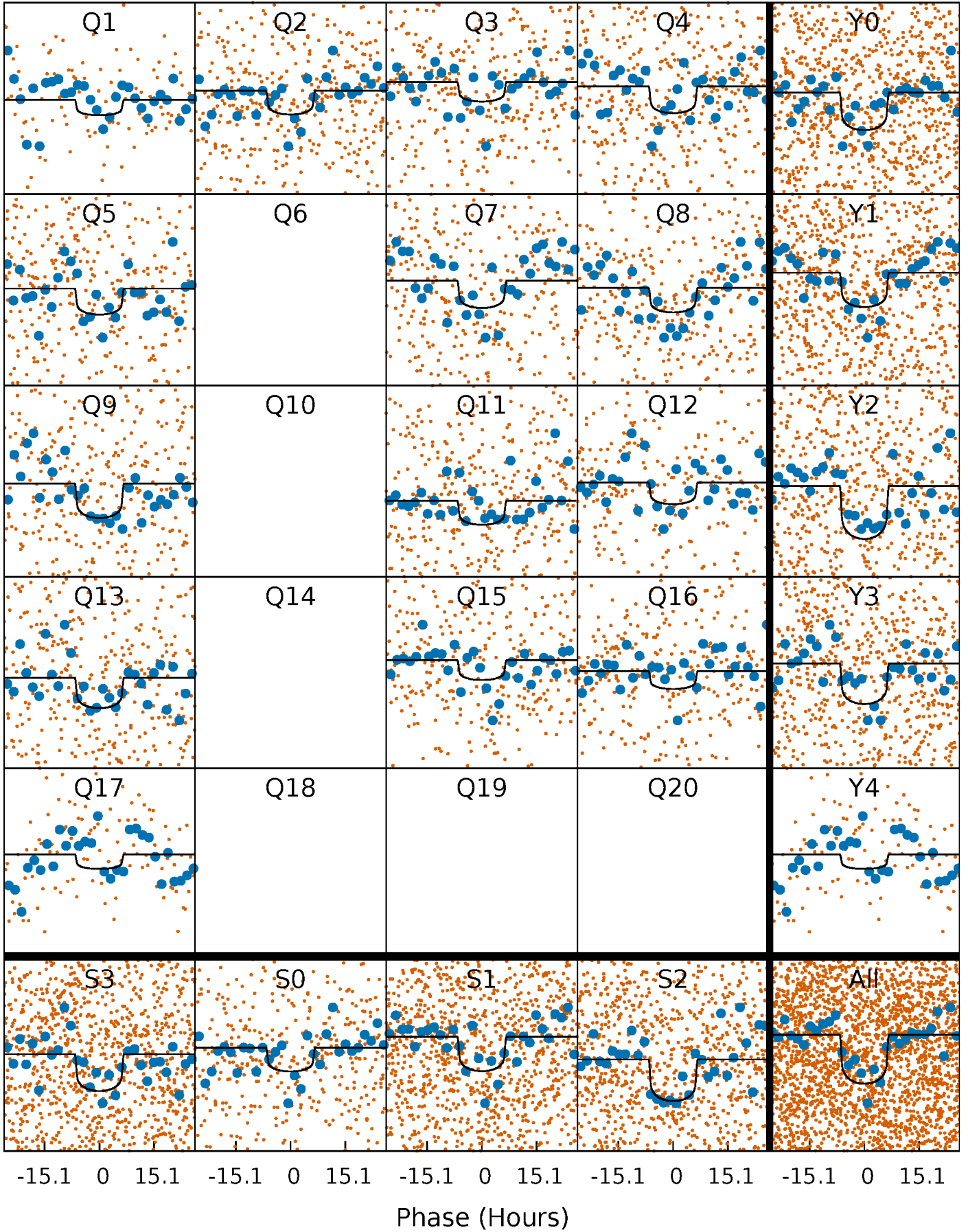
PDC Quarter-Phased Transit Curves

TCE 003859151-02 P= 25.949651 Days $T_0=148.930770$ (BKJD)



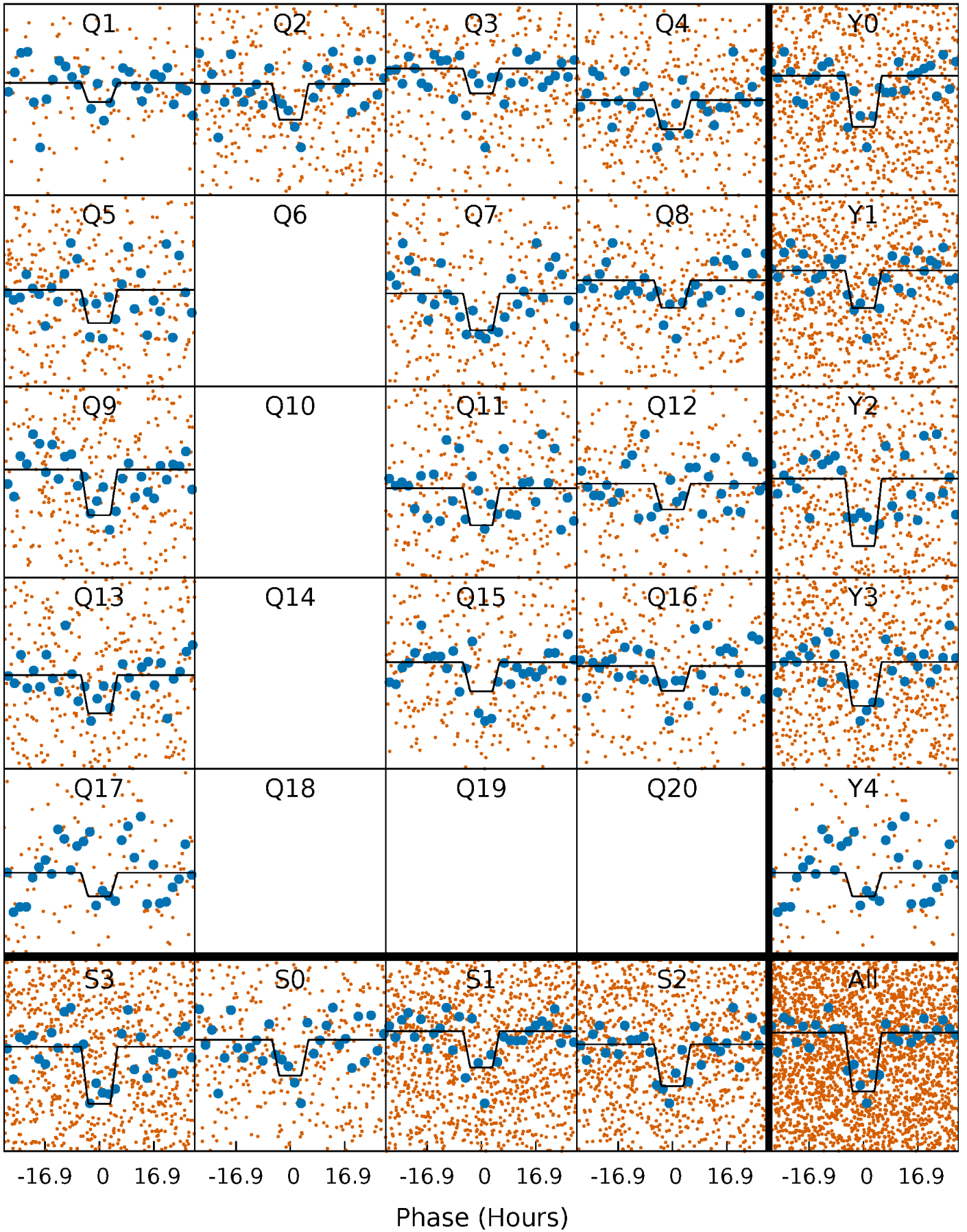
DV Quarter-Phased Transit Curves

TCE 003859151-02 P= 25.949651 Days $T_0=148.930770$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

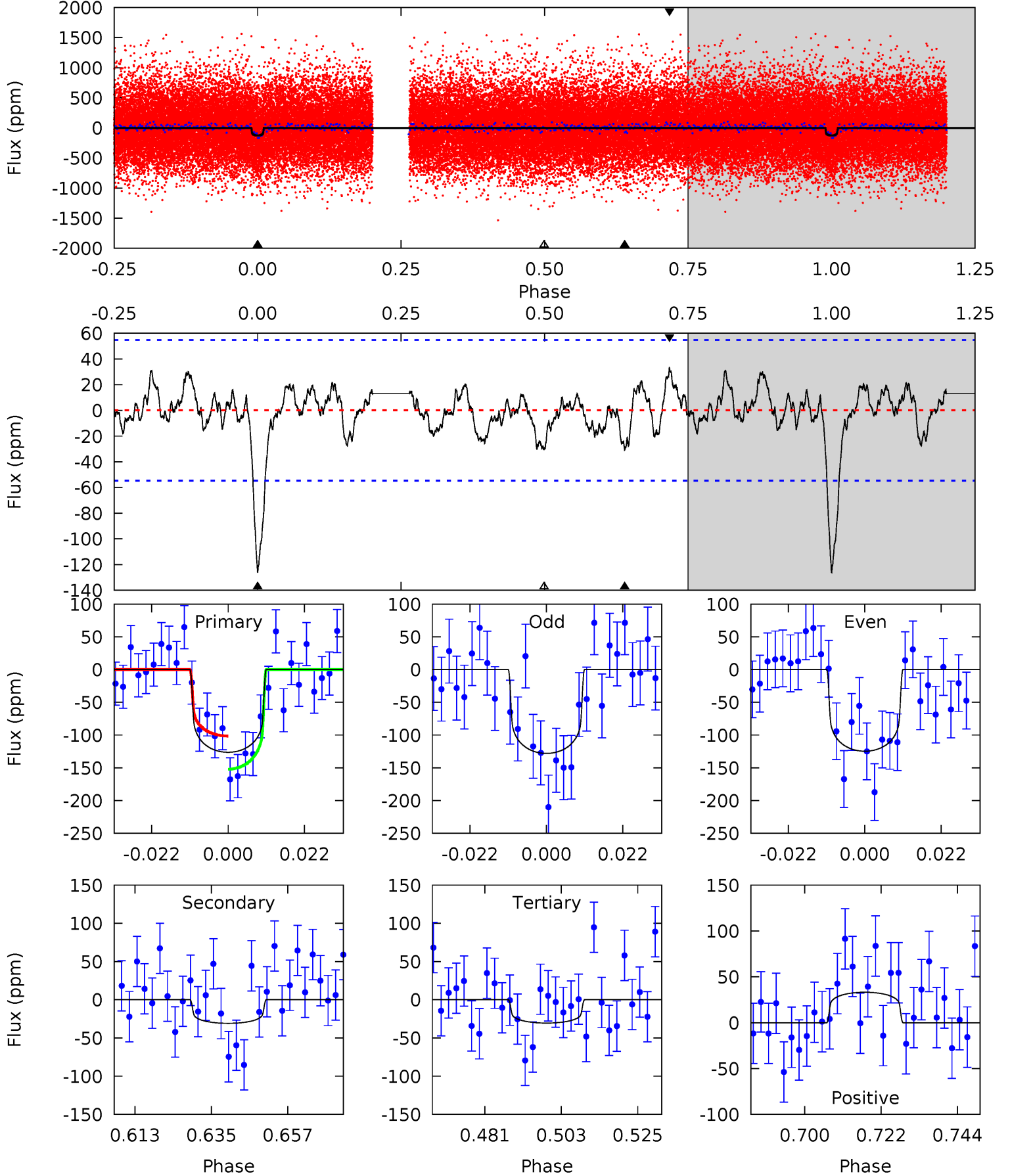
TCE 003859151-02 P= 25.951660 Days $T_0=148.894079$ (BKJD)



DV Model-Shift Uniqueness Test

003859151-02, P = 25.949651 Days, E = 122.981119 Days

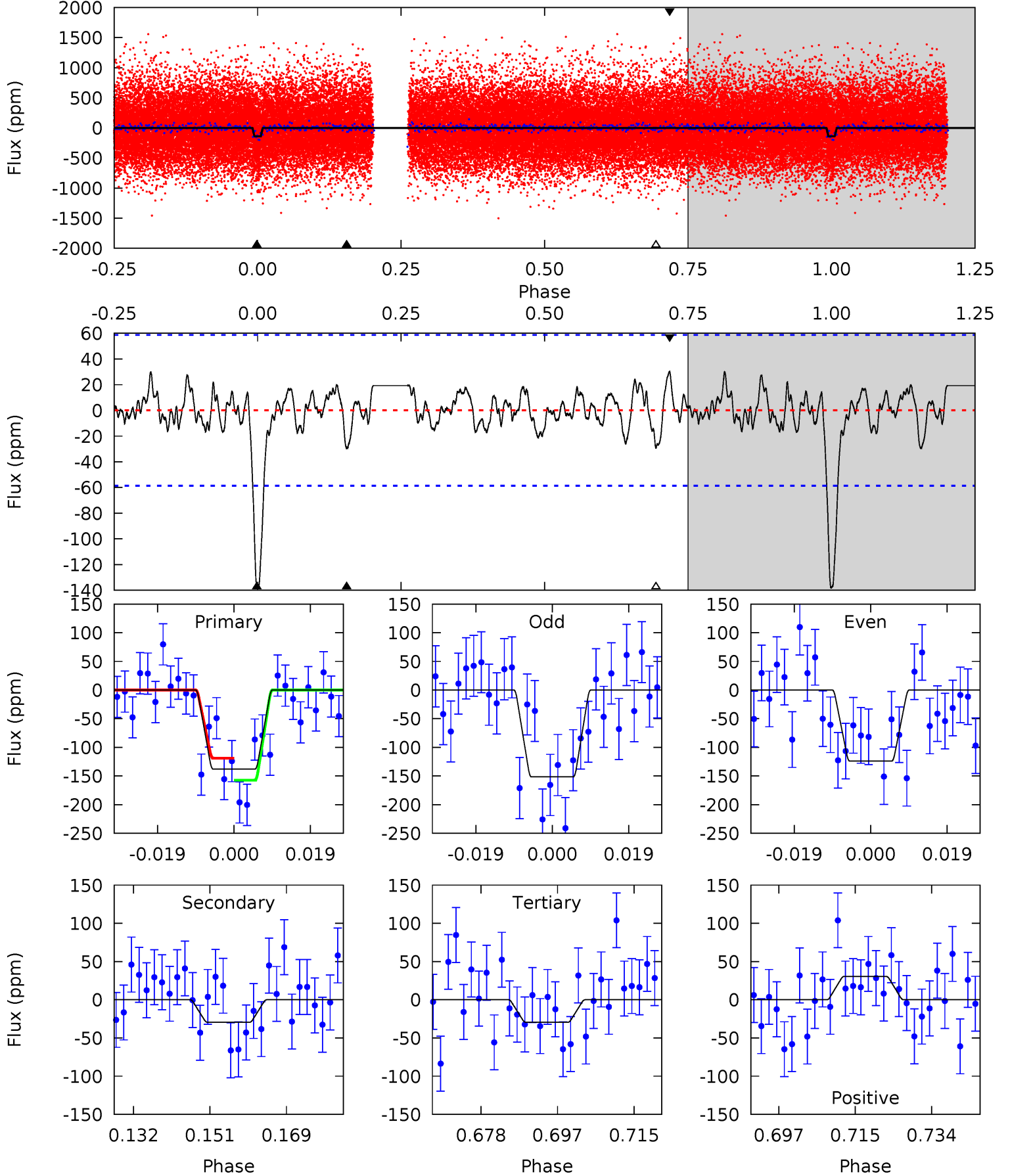
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.2	2.74	2.71	2.95	4.87	2.29	1.11	8.53	8.29	0.03	-0.21	0.15	1.00	0.21	2.25



Alt Model-Shift Uniqueness Test

003859151-02, P = 25.951660 Days, E = 122.942419 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.5	2.46	2.46	2.55	4.90	2.35	0.92	9.06	8.97	0.00	-0.09	1.15	1.01	0.18	1.60



Stellar Parameters For KIC 003859151

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6139^{+165}_{-202}	$4.530^{+0.046}_{-0.196}$	$-0.440^{+0.300}_{-0.300}$	$0.881^{+0.245}_{-0.077}$	$0.959^{+0.105}_{-0.117}$	$1.976^{+0.463}_{-0.920}$
	+3%/-3%	+1%/-4%	+68%/-68%	+28%/-9%	+11%/-12%	+23%/-47%
Source	PHO1	KIC0	KIC0	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

Secondary Eclipse Parameters for KIC 003859151-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-31 ± 11	$1.19^{+0.47}_{-0.46}$	881^{+58}_{-43}	4384^{+1023}_{-572}	331^{+543}_{-190}
Alt.	-29 ± 12	$1.27^{+0.50}_{-0.50}$	882^{+61}_{-42}	4262^{+983}_{-631}	282^{+506}_{-170}

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 $A_{obs} \gg 1.0$

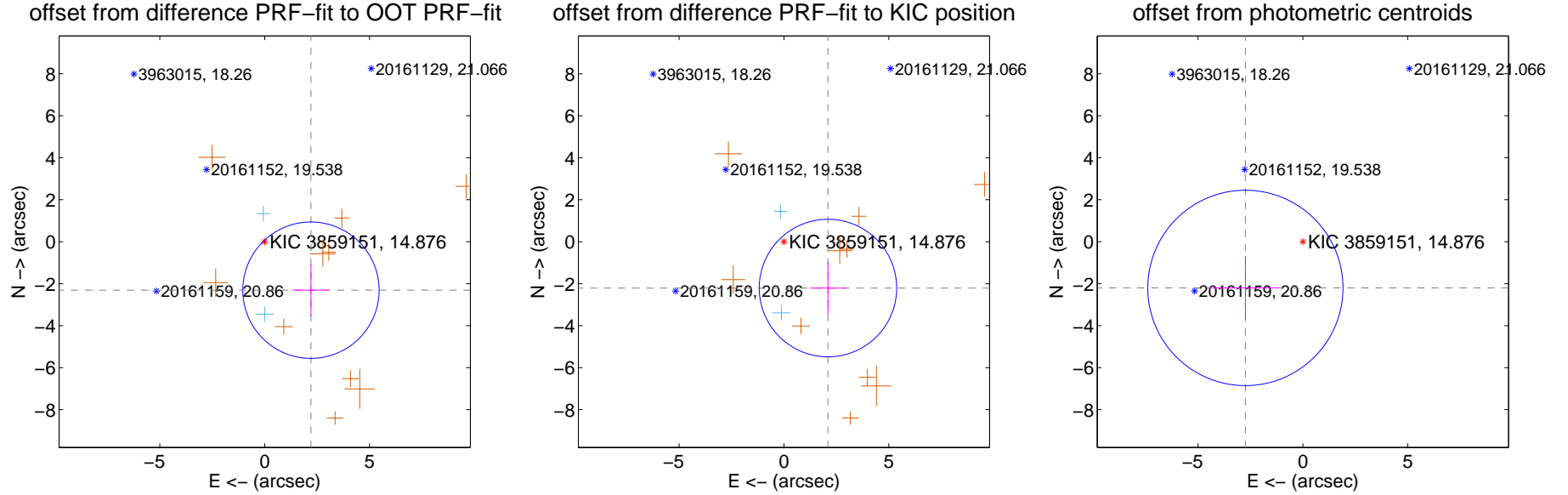
DV Centroid Data

Supplemental centroid analysis for 003859151-02. Kepler magnitude: 14.88. Transit SNR 8.92

There are 2 quarters with good PRF difference image offsets

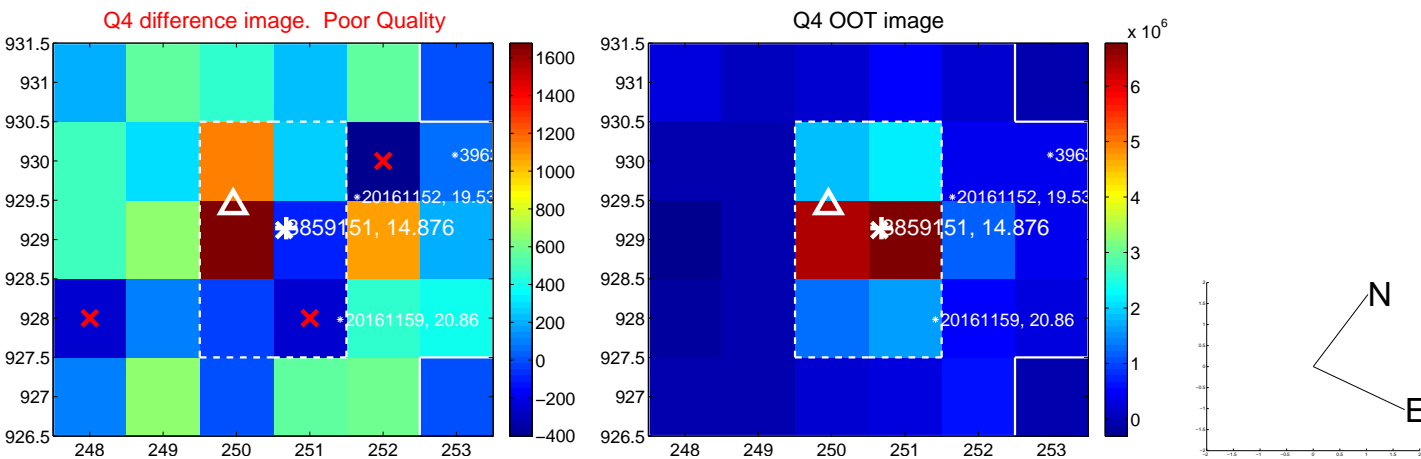
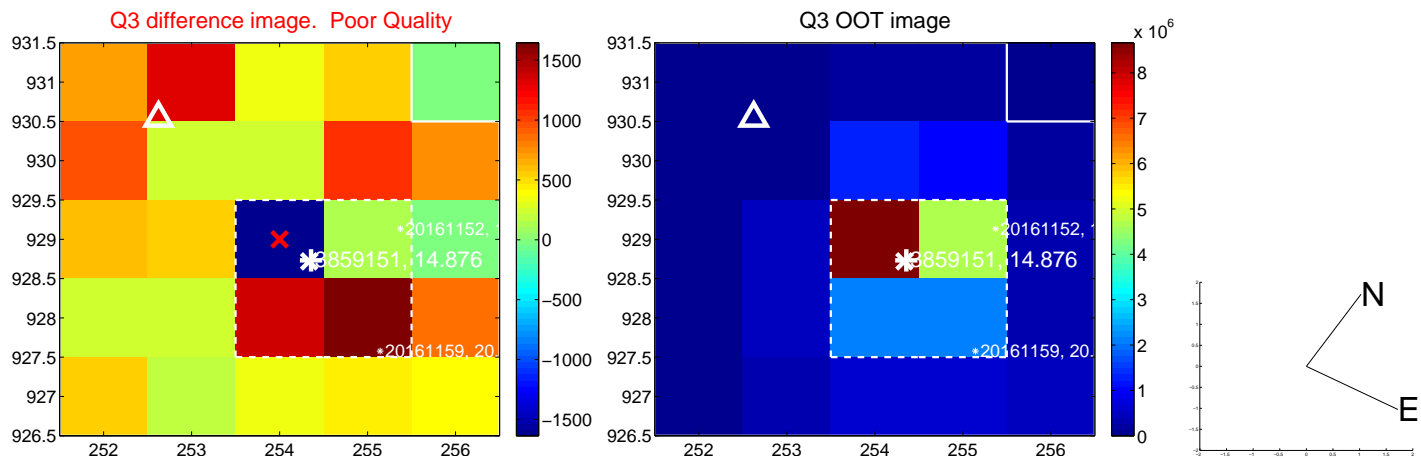
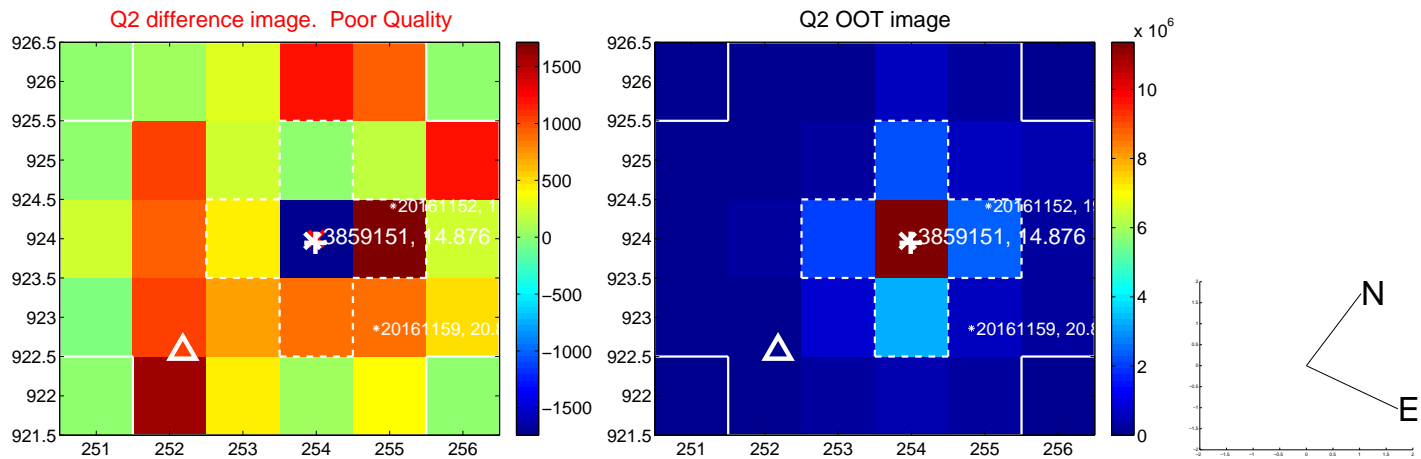
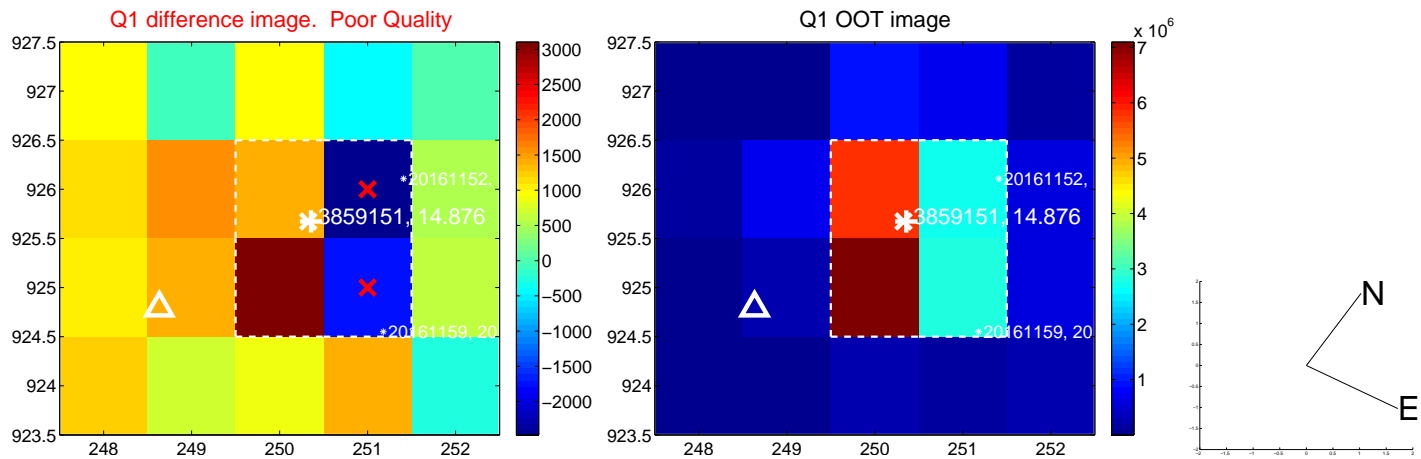
The direct PRF centroid is offset from the target star catalog position by about 0.15 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	3.193 ± 1.083	2.95	-2.205 ± 0.869	-2.310 ± 1.247
PRF-fit source offset from KIC position	3.046 ± 1.092	2.79	-2.098 ± 0.869	-2.208 ± 1.260
photometric centroid source offset	3.52 ± 1.55	2.27	2.74 ± 1.57	-2.20 ± 1.52

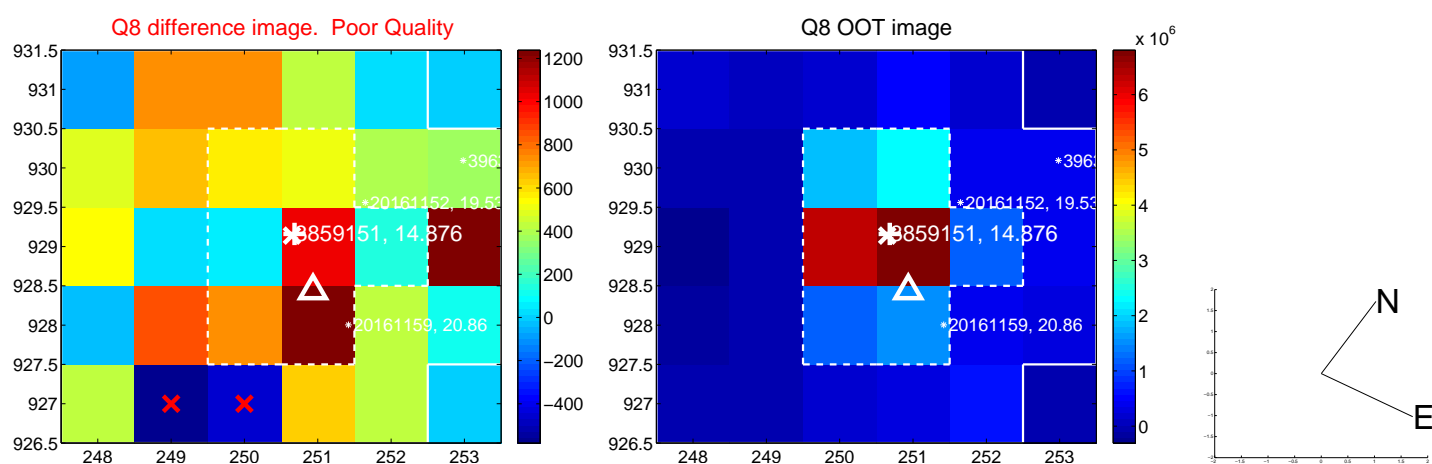
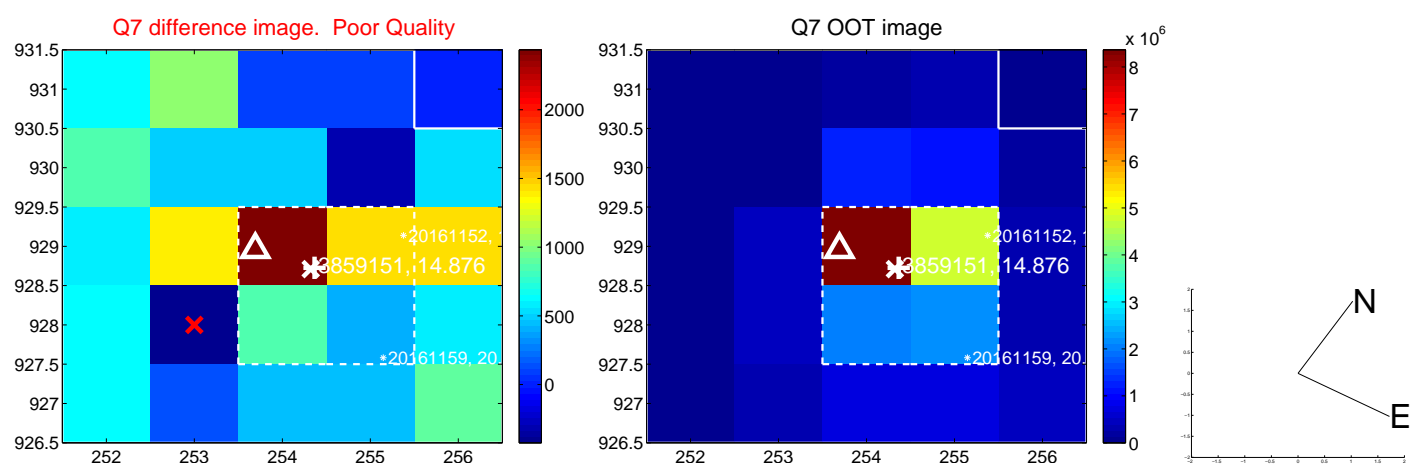
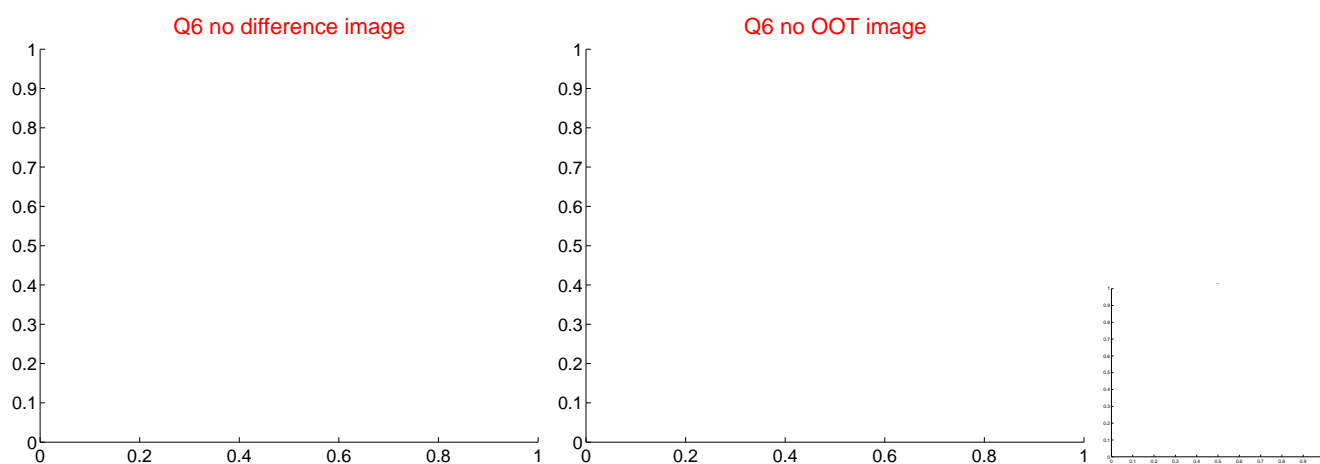
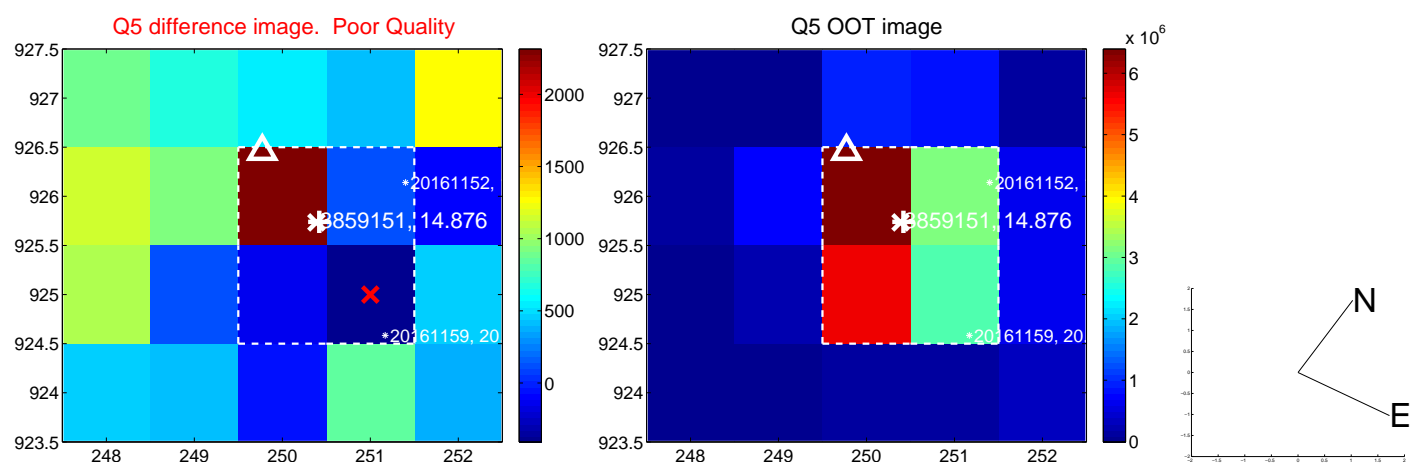


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

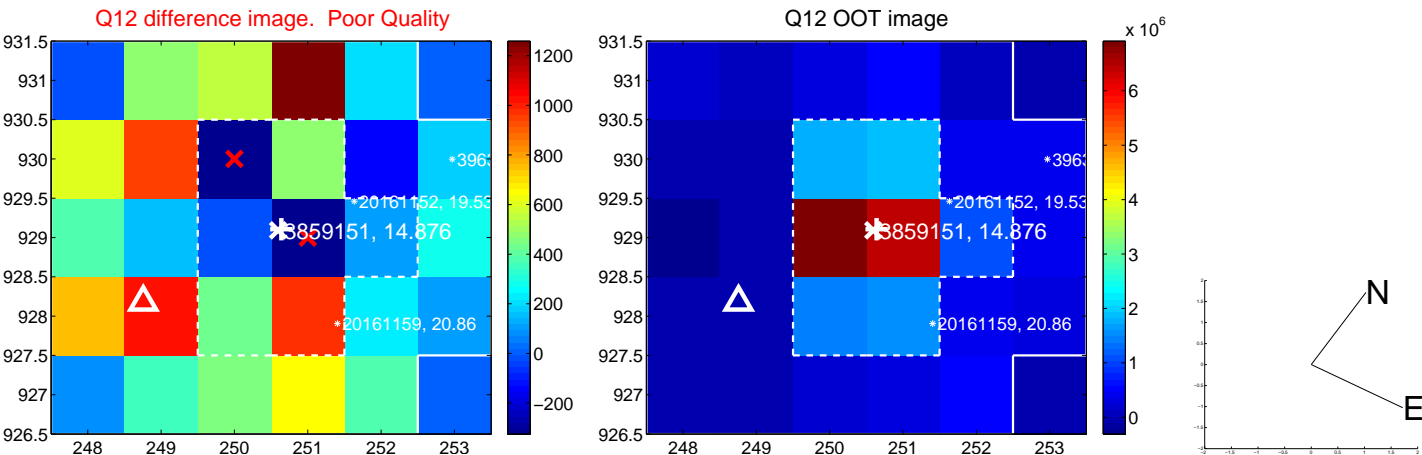
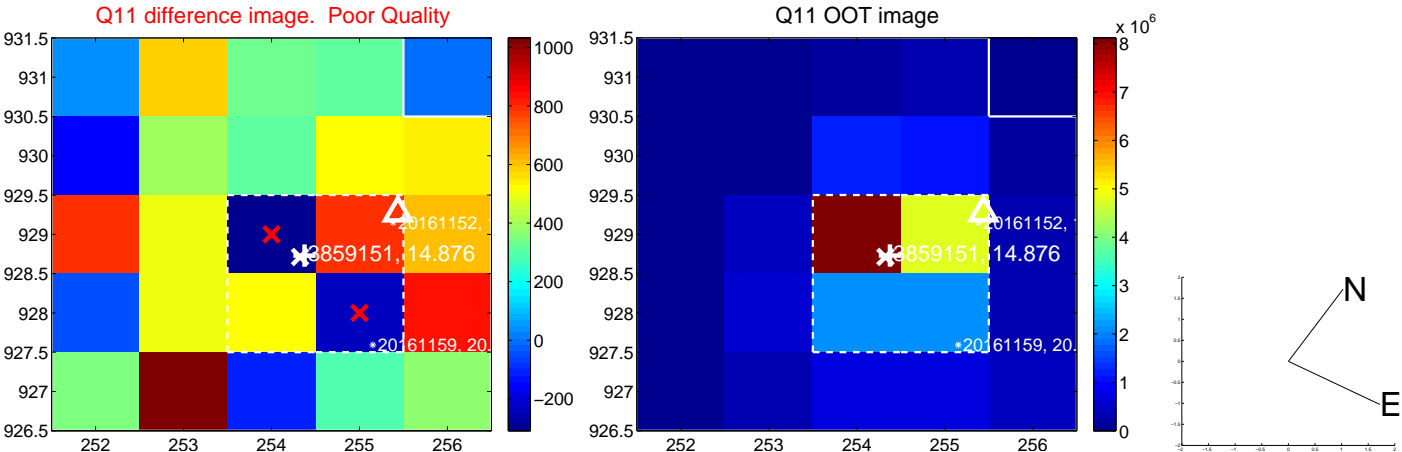
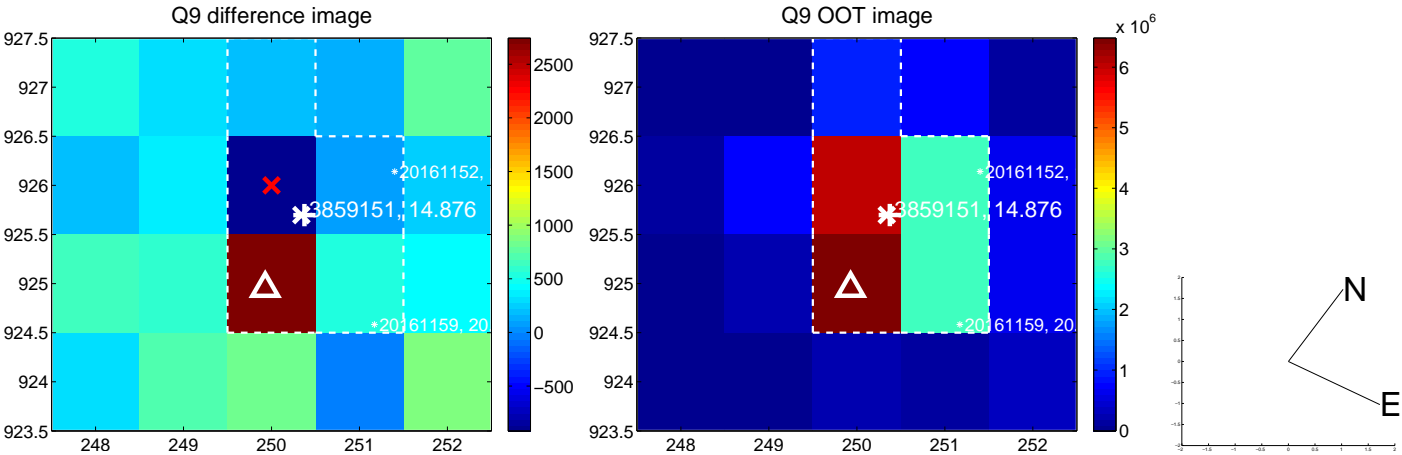
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



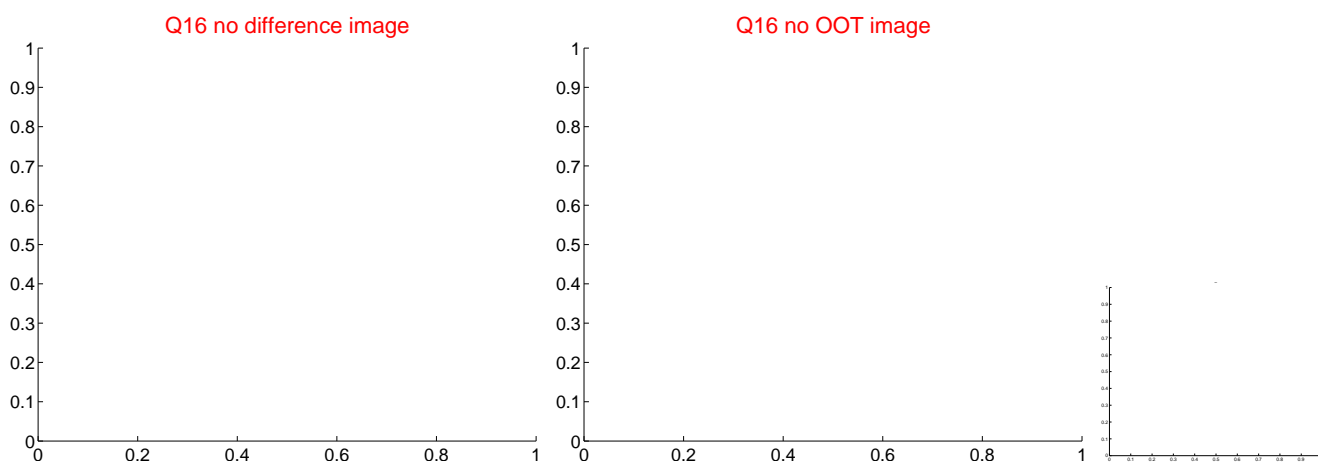
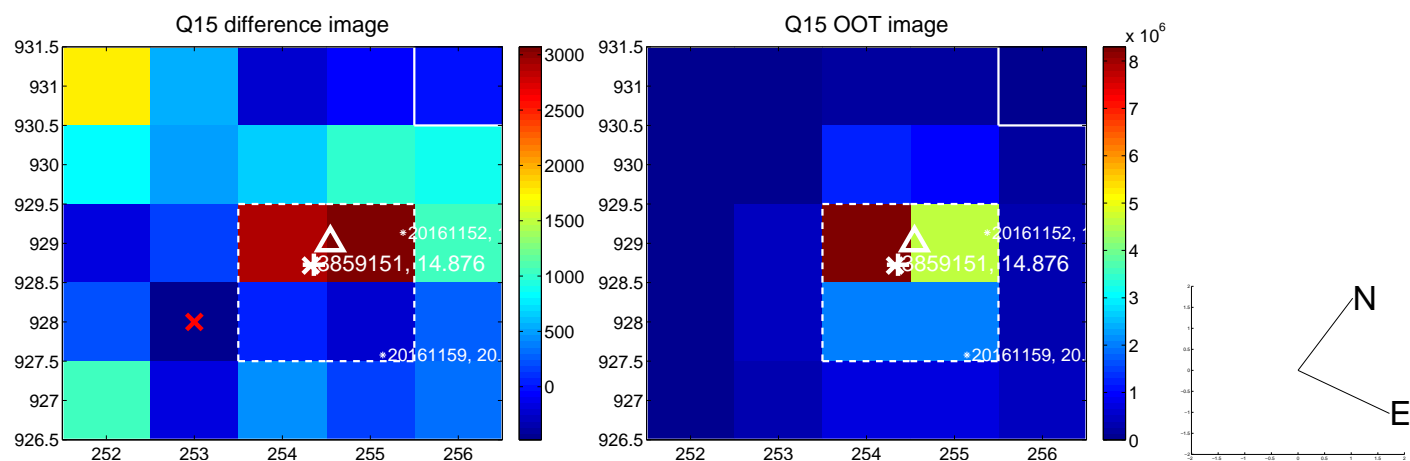
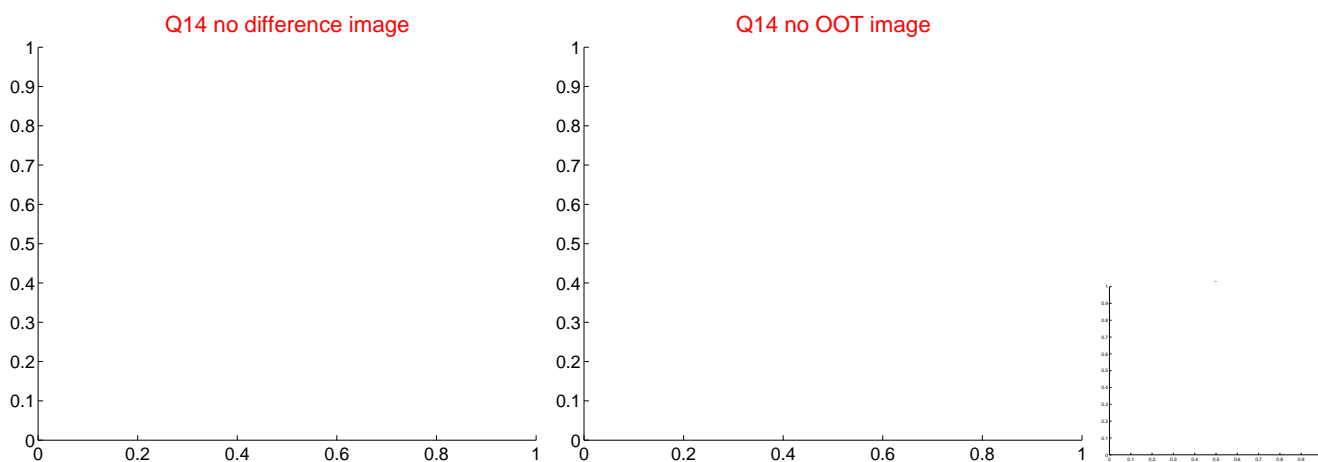
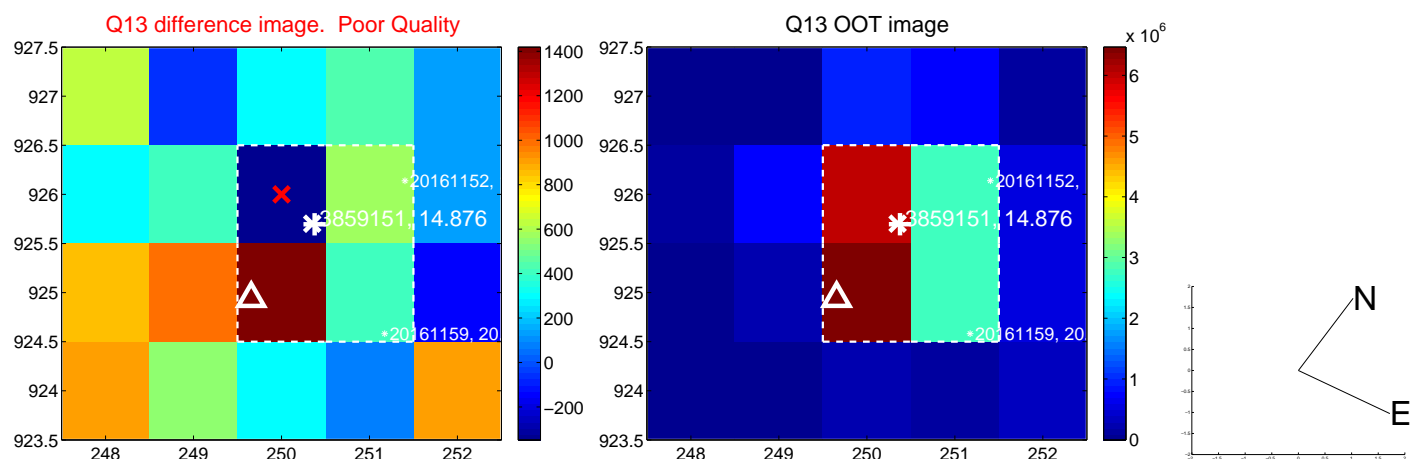
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



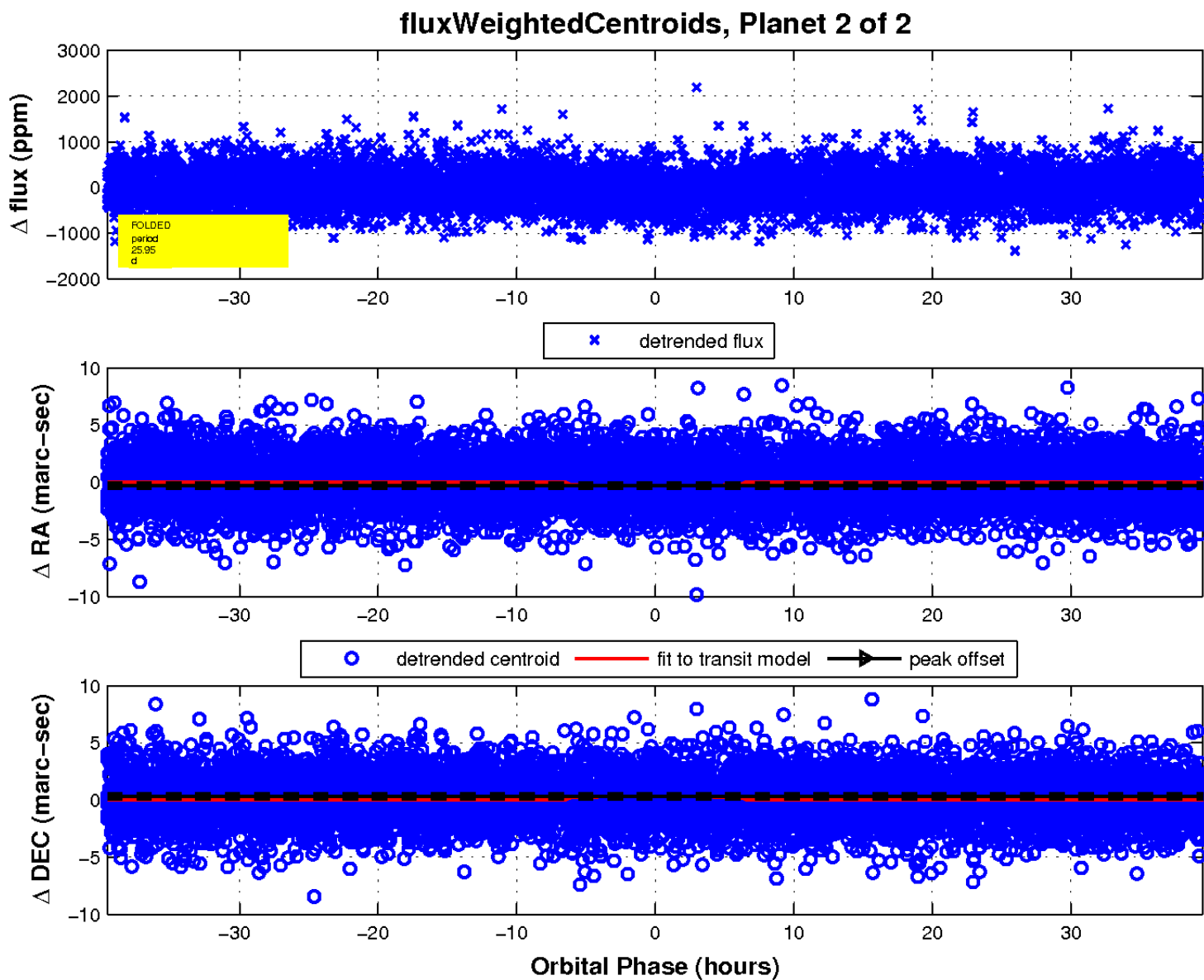
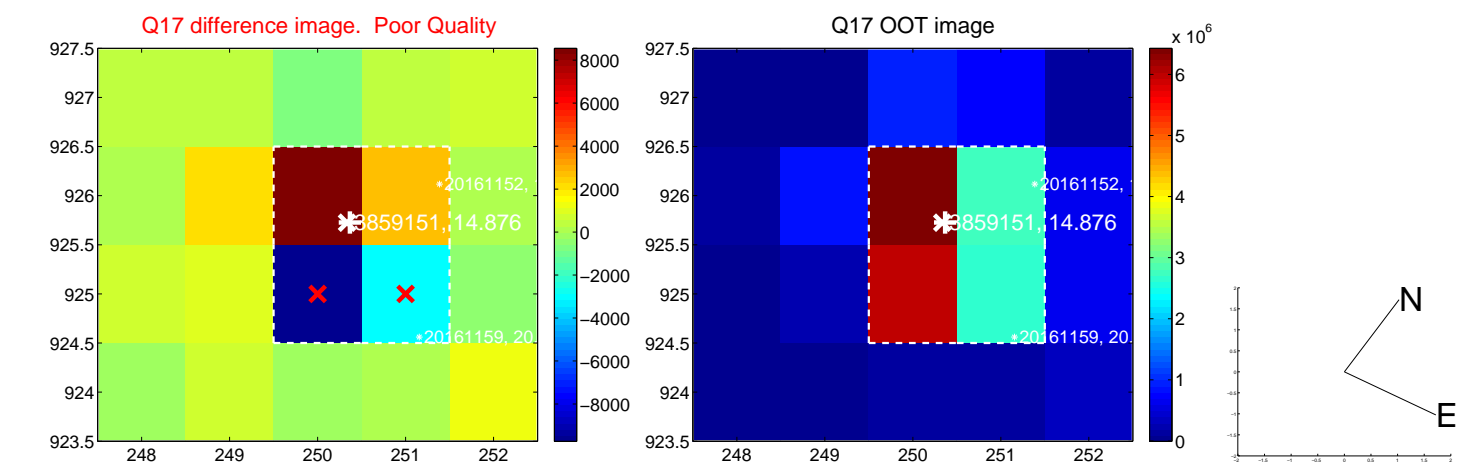
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white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination

