

KIC 010549562

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})
010549562-01	OBS	1294.01	9.089389	139.082505	693.8	5.919	60.2	57.2	1.27	6739	4.30	351.75
010549562-02	OBS	No	9.089317	134.519058	150.3	5.808	14.7	15.2	1.27	6739	2.04	351.76

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010549562-01	OBS	FP	0.00	0	1	1	1	MOD_SEC_DV—MOD_SEC_ALT—HAS_SEC_TCE—CENT_RESOLVED_OFFSET—EPHEM_MATCH
010549562-02	OBS	FP	0.00	1	1	1	1	IS_SEC_TCE—CENT_RESOLVED_OFFSET—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.

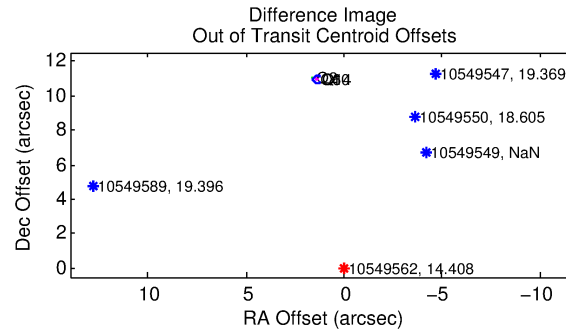
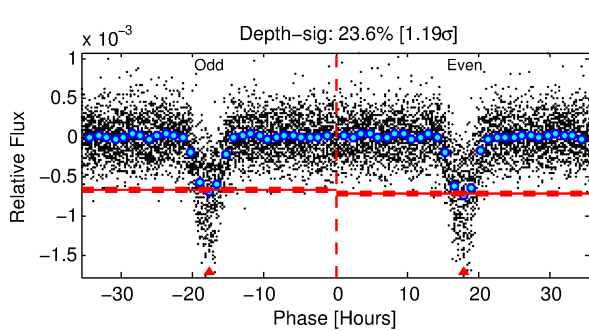
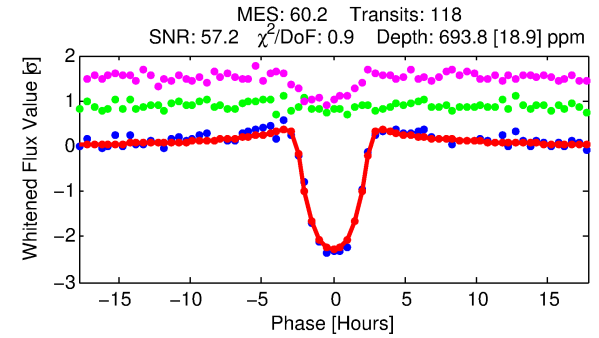
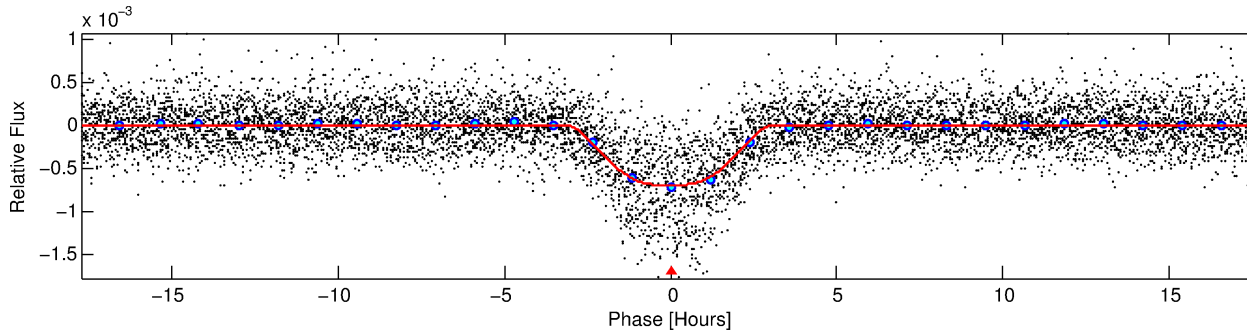
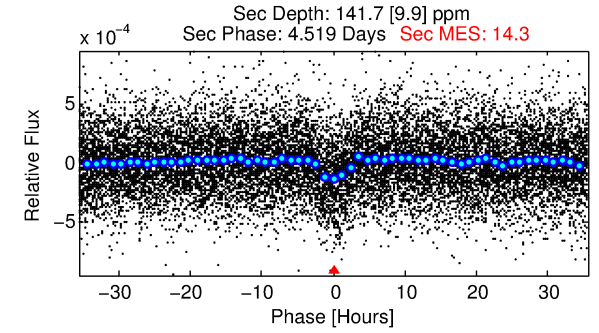
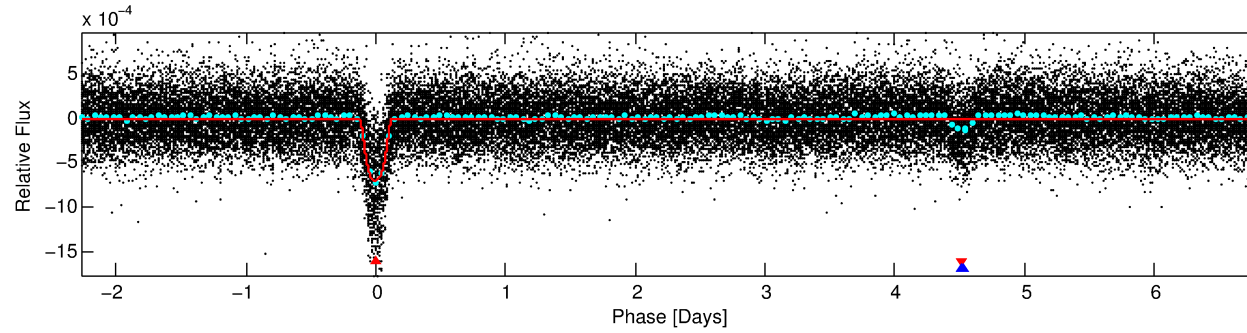
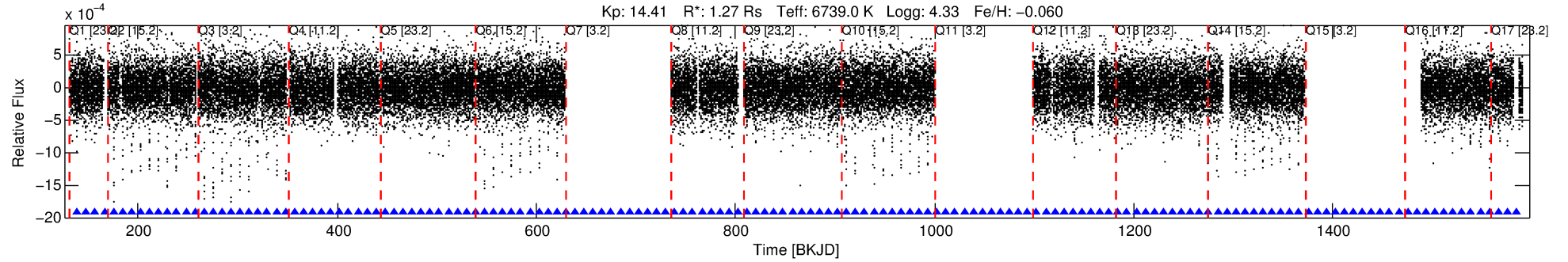
Ephemeris Match Information For 010549562-01

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
010549562-01	10549562	7341.01	10549576	1:1	14.3	-3	3	13.02	14.41	147.06	Direct-PRF	0	0.12	0.02

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: 10549562 Candidate: 1 of 2 Period: 9.089 d
KOI: K01294.01 Corr: 0.987



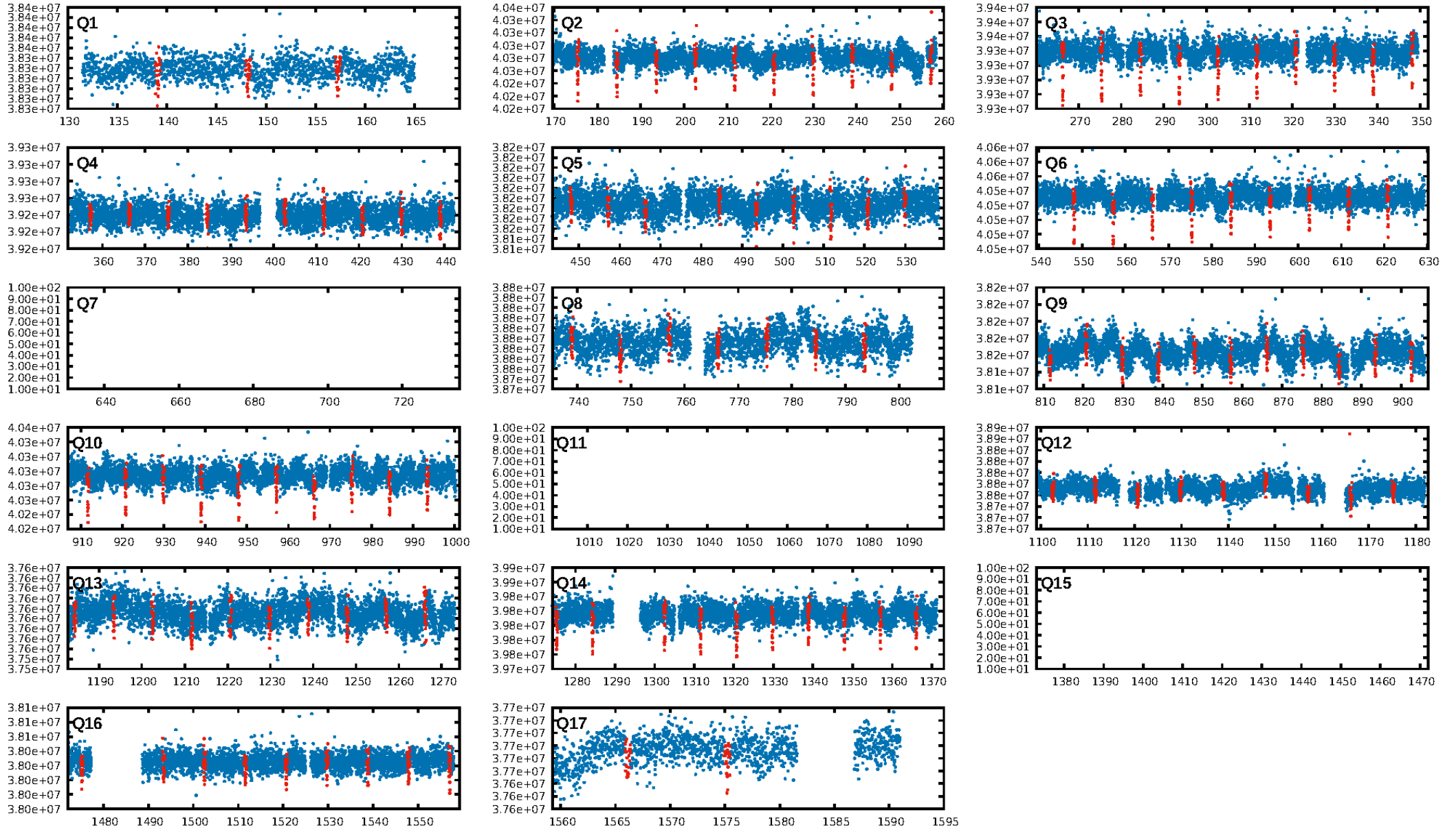
DV Fit Results:

Period = 9.08939 [0.00002] d
Epoch = 139.0825 [0.0021] BKJD
Rp/R* = 0.0309 [0.0006]
a/R* = 4.29 [0.13]
b = 0.97 [0.00]
Seff = 351.75 [133.16]
Teq = 1104 [105] K
Rp = 4.30 [1.32] Re
a = 0.0924 [0.0229] AU
Ag = 36.05 [12.81] [2.74 σ]
Teff = 4184 [181] K [14.74 σ]

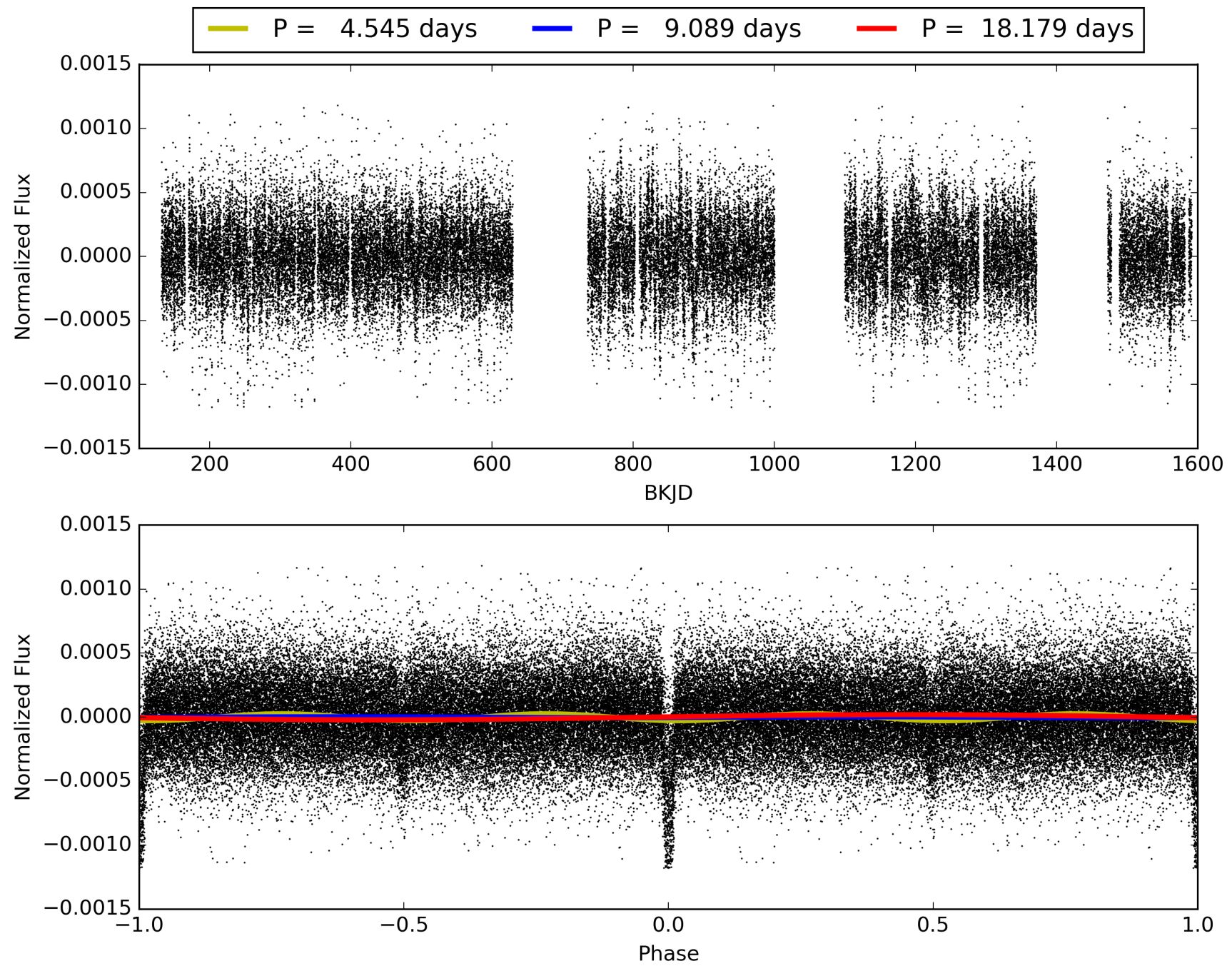
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 1.00 [113/113]
GhostDiagnostic-chr: -0.5499
Centroid-sig: N/A
Centroid-so: 92.829 arcsec [198.05 σ]
OotOffset-rm: 11.036 arcsec [156.40 σ]
KicOffset-rm: 10.977 arcsec [139.54 σ]
OotOffset-st: 4/0/0/0 [4]
KicOffset-st: 4/0/0/0 [4]
DiffImageQuality-fgm: 1.00 [4/4]
DiffImageOverlap-fno: 1.00 [14/14]

TCE 010549562-01, PDC Light Curves

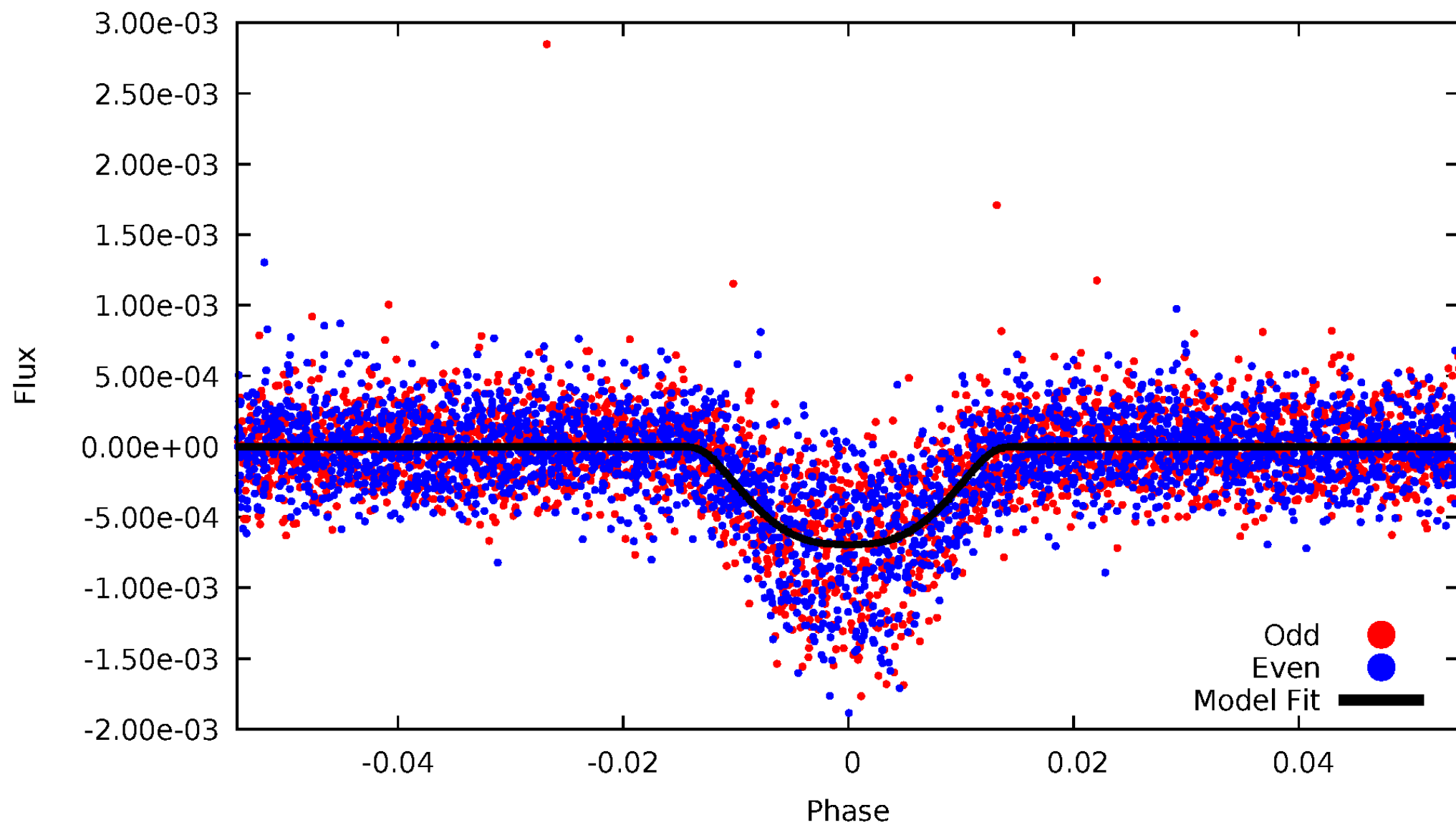


TCE 010549562-01



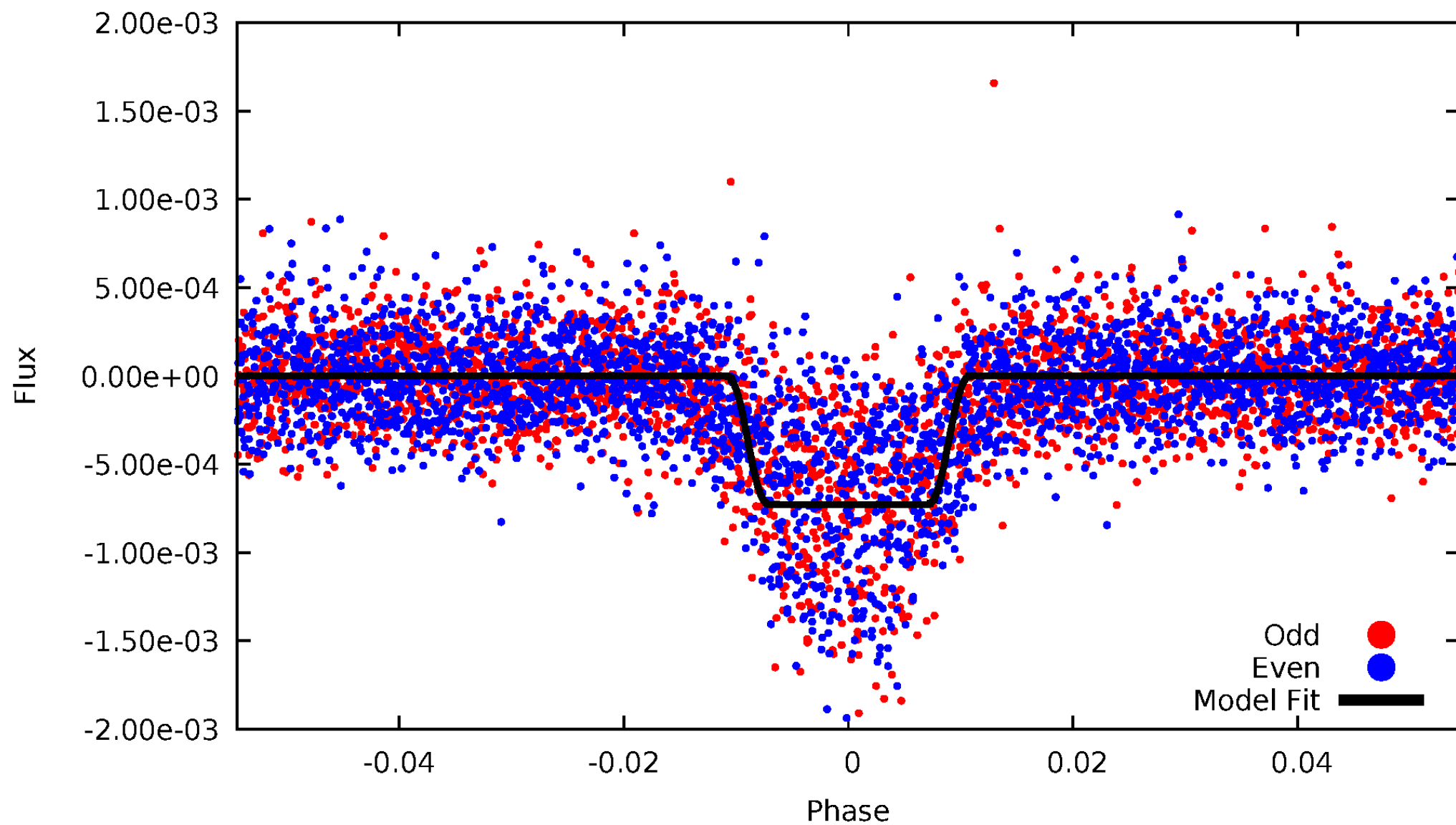
DV Odd/Even

TCE 010549562-01



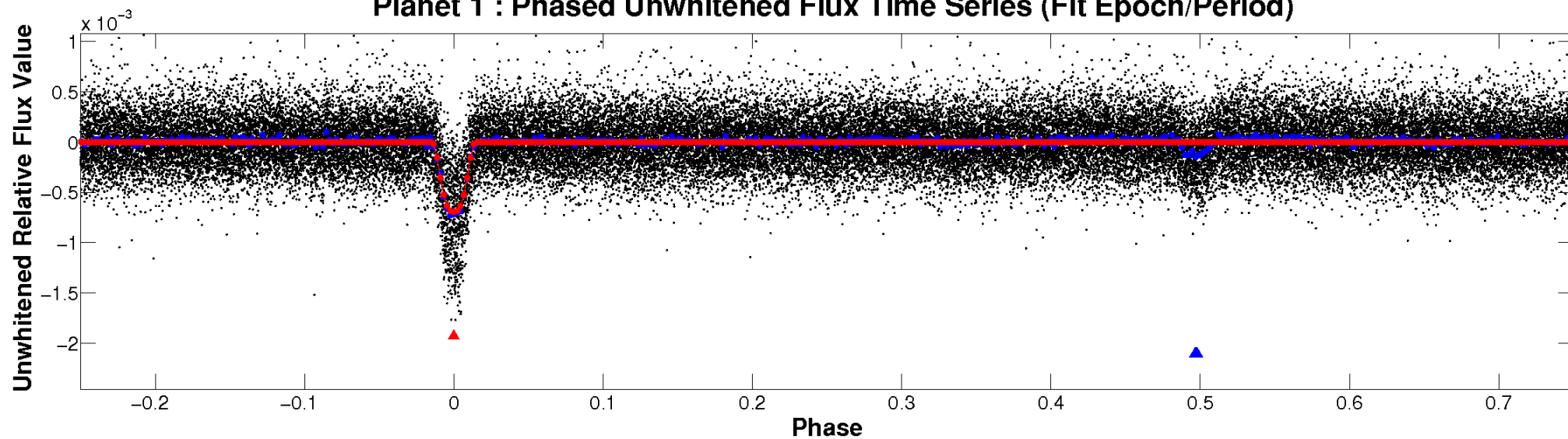
ALT Odd/Even

TCE 010549562-01

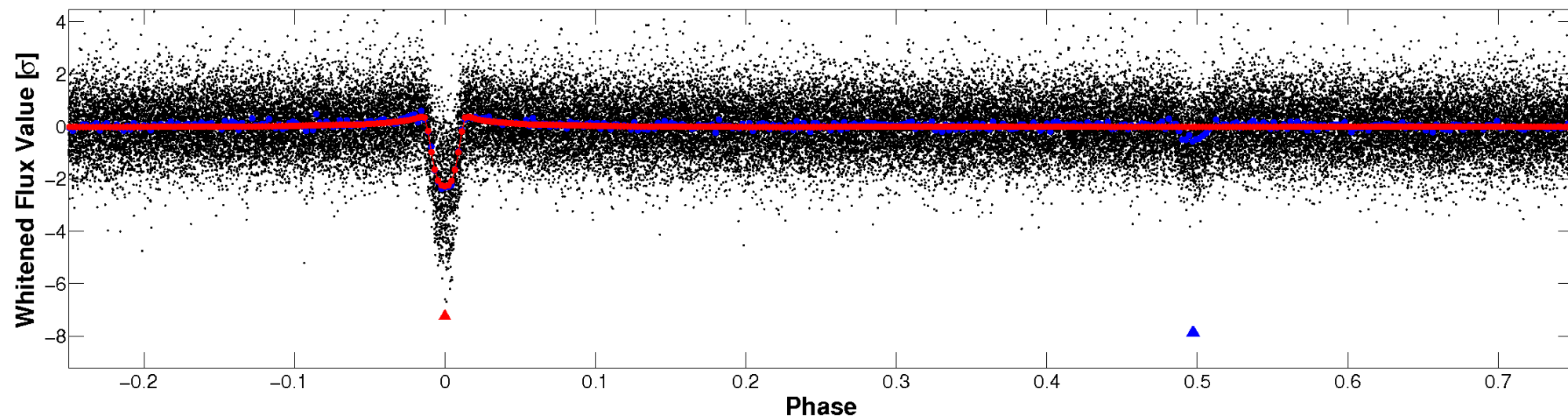


Non-Whitened Vs. Whitened Light Curve

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

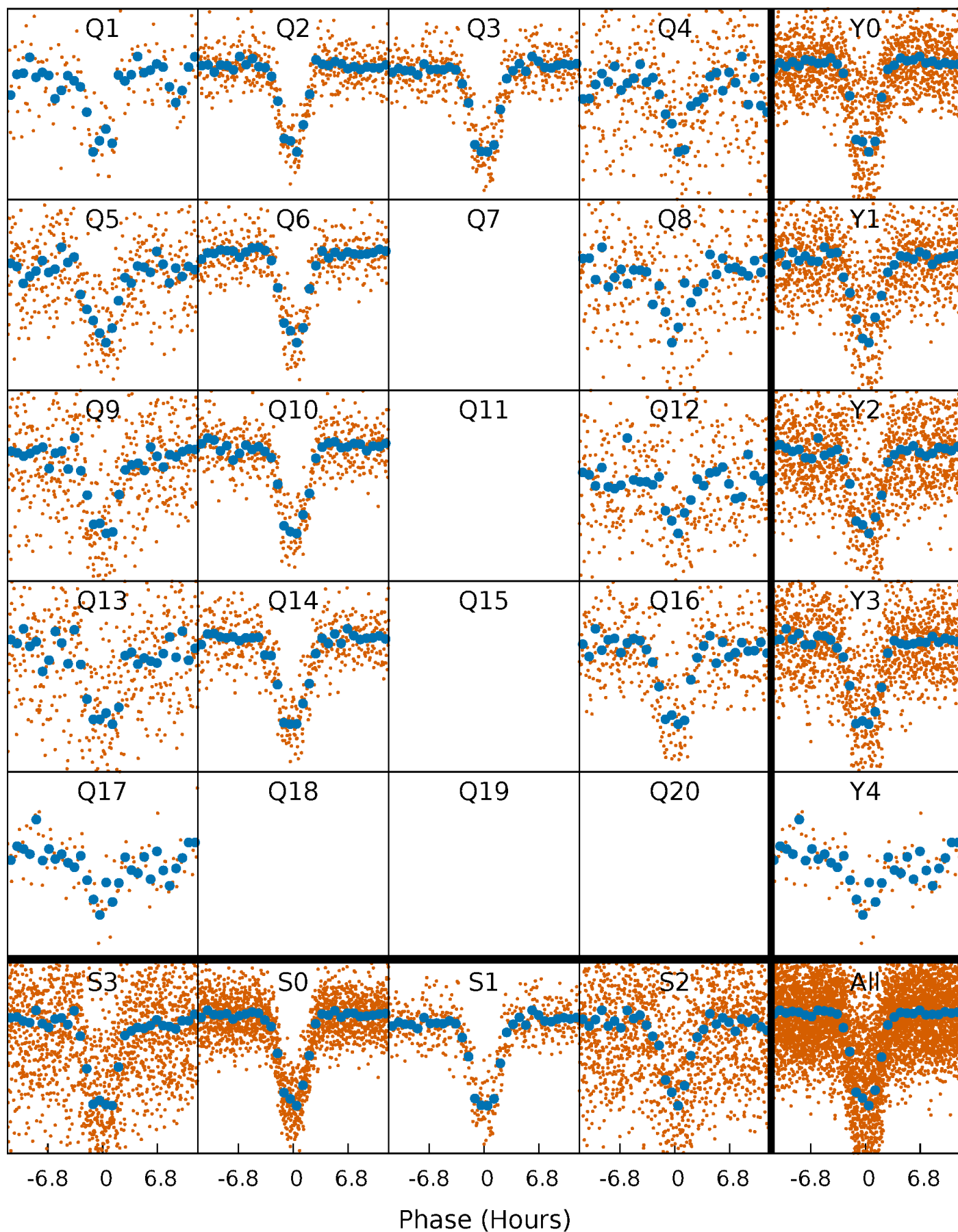


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



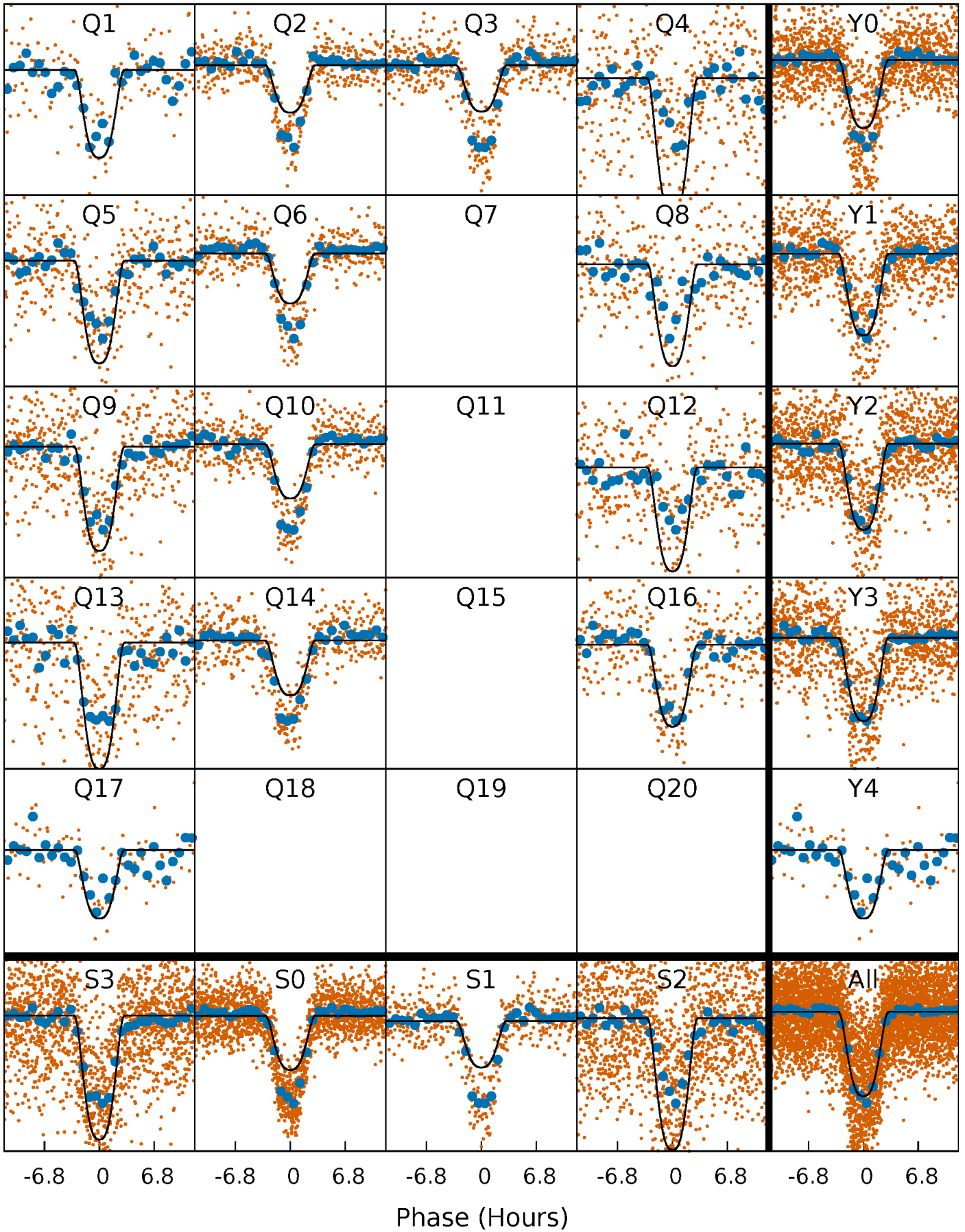
PDC Quarter-Phased Transit Curves

TCE 010549562-01 P= 9.089389 Days $T_0=139.082505$ (BKJD)



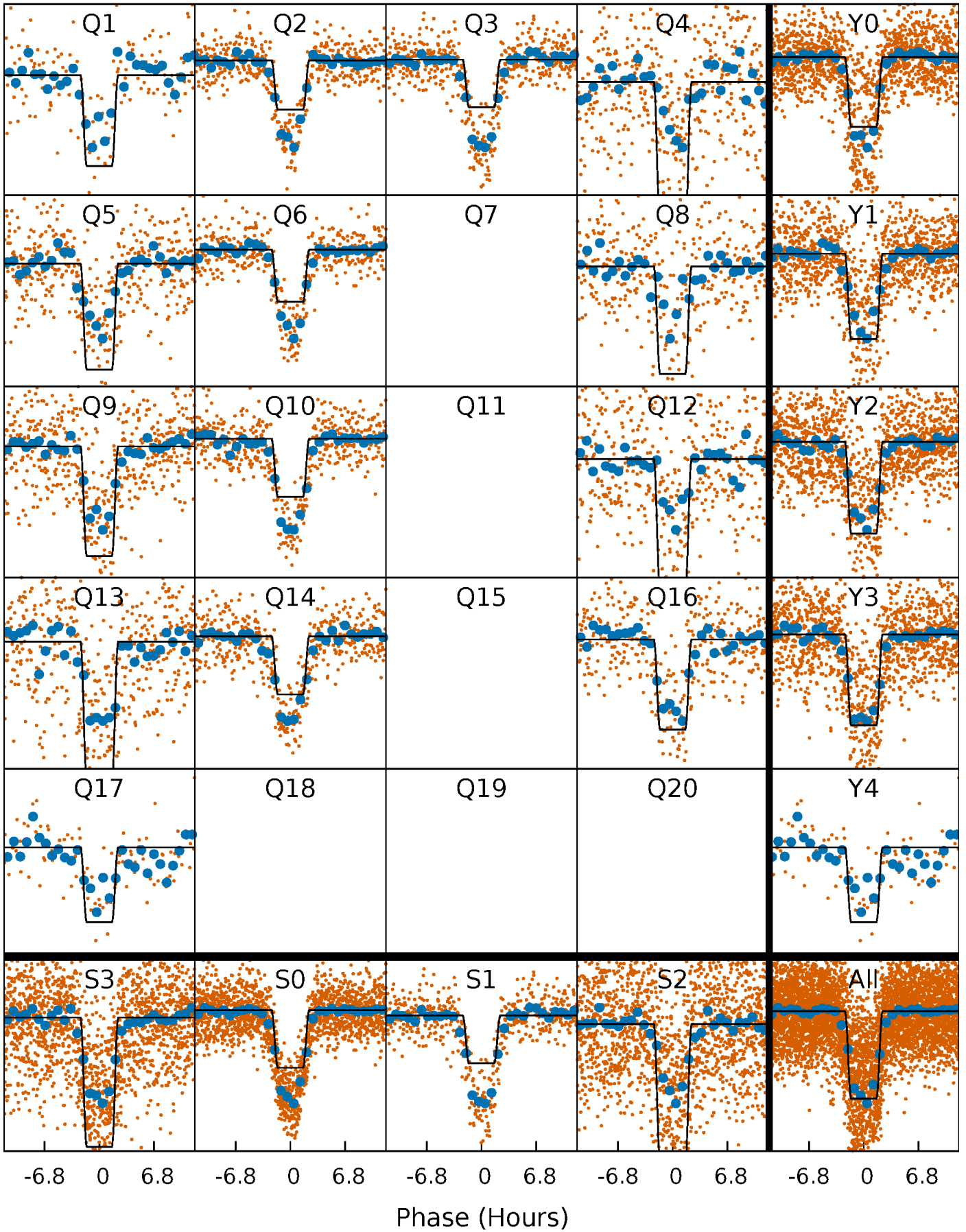
DV Quarter-Phased Transit Curves

TCE 010549562-01 P= 9.089389 Days $T_0=139.082505$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

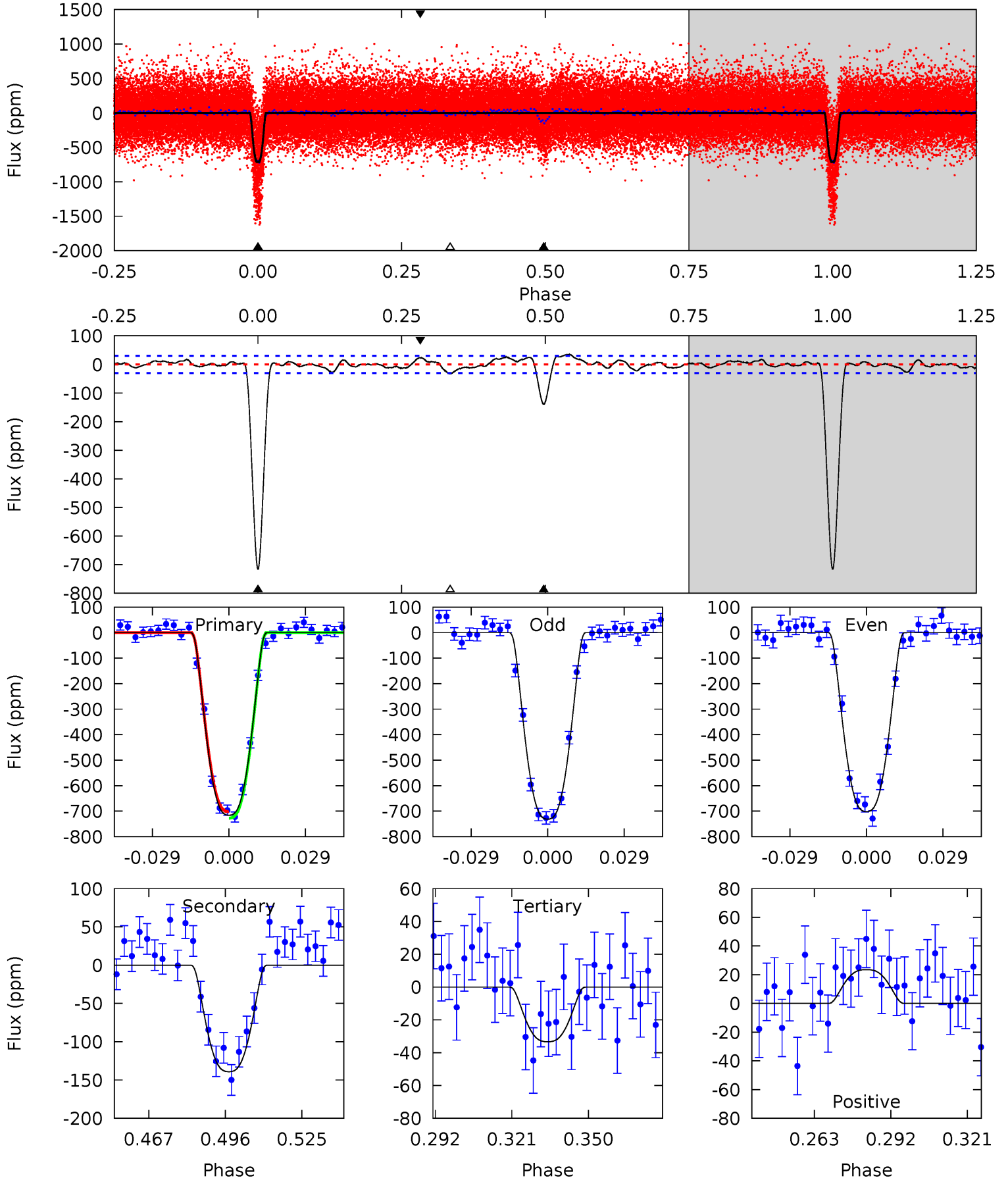
TCE 010549562-01 P= 9.089355 Days $T_0=139.084890$ (BKJD)



DV Model-Shift Uniqueness Test

010549562-01, P = 9.089389 Days, E = 129.993116 Days

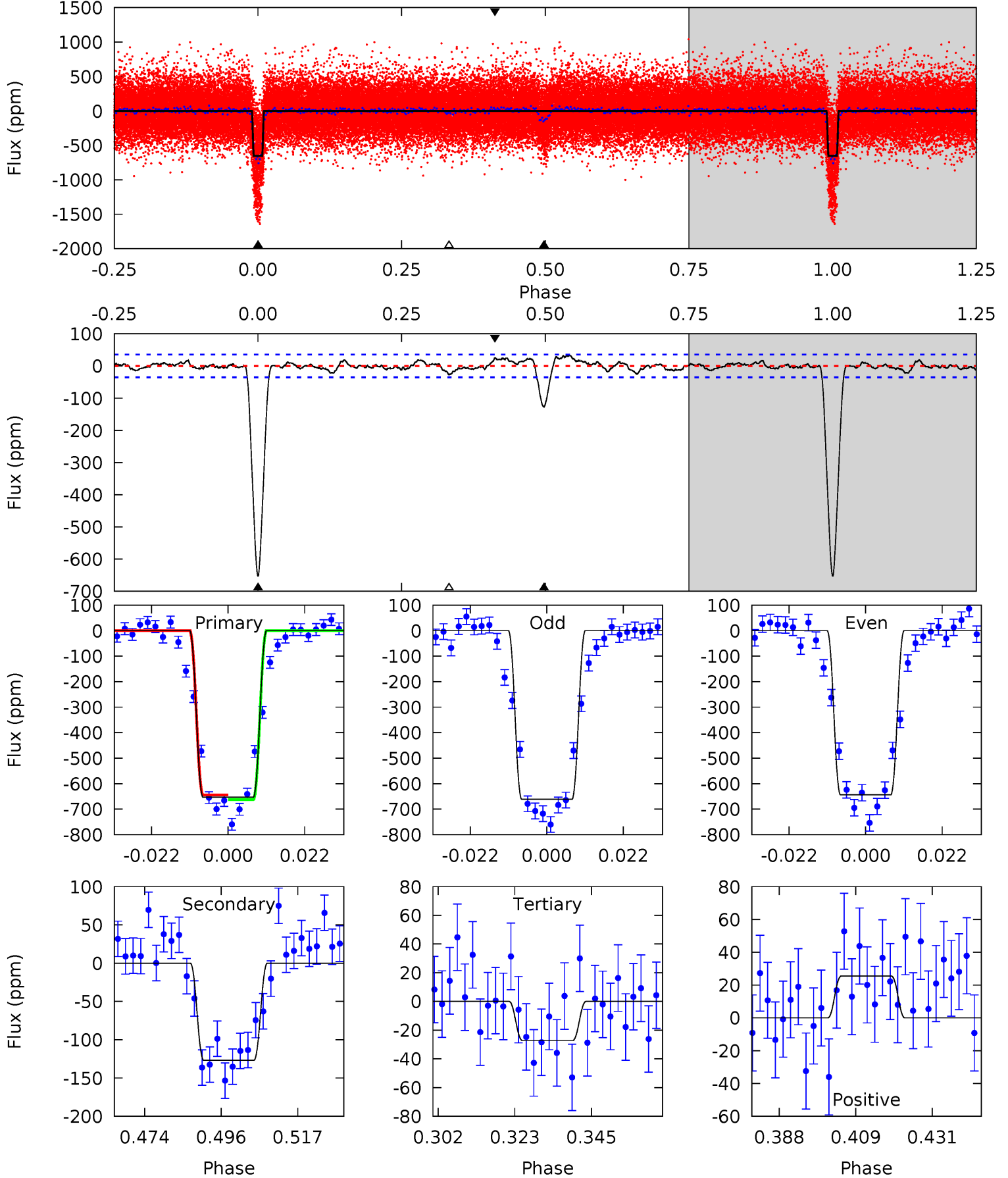
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
113.8	22.1	5.30	3.74	4.82	2.18	1.95	108.5	110.1	16.8	18.4	2.34	1.24	0.05	2.00



Alt Model-Shift Uniqueness Test

010549562-01, P = 9.089355 Days, E = 129.995535 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
89.7	17.4	3.74	3.49	4.88	2.30	1.50	86.0	86.2	13.7	13.9	1.20	1.27	0.05	1.27



Stellar Parameters For KIC 010549562

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6739^{+187}_{-258}	$4.332^{+0.065}_{-0.182}$	$-0.060^{+0.250}_{-0.350}$	$1.275^{+0.391}_{-0.168}$	$1.283^{+0.187}_{-0.187}$	$0.872^{+0.298}_{-0.431}$
	+3%/-4%	+2%/-4%	+417%/-583%	+31%/-13%	+15%/-15%	+34%/-49%
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 010549562-01 / KOI 1294.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-139 ± 6	$4.40^{+0.72}_{-0.37}$	1569^{+109}_{-75}	4363^{+105}_{-126}	33^{+6}_{-7}
Alt.	-127 ± 7	$3.86^{+0.56}_{-0.35}$	1569^{+103}_{-79}	4508^{+111}_{-132}	39^{+7}_{-9}

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

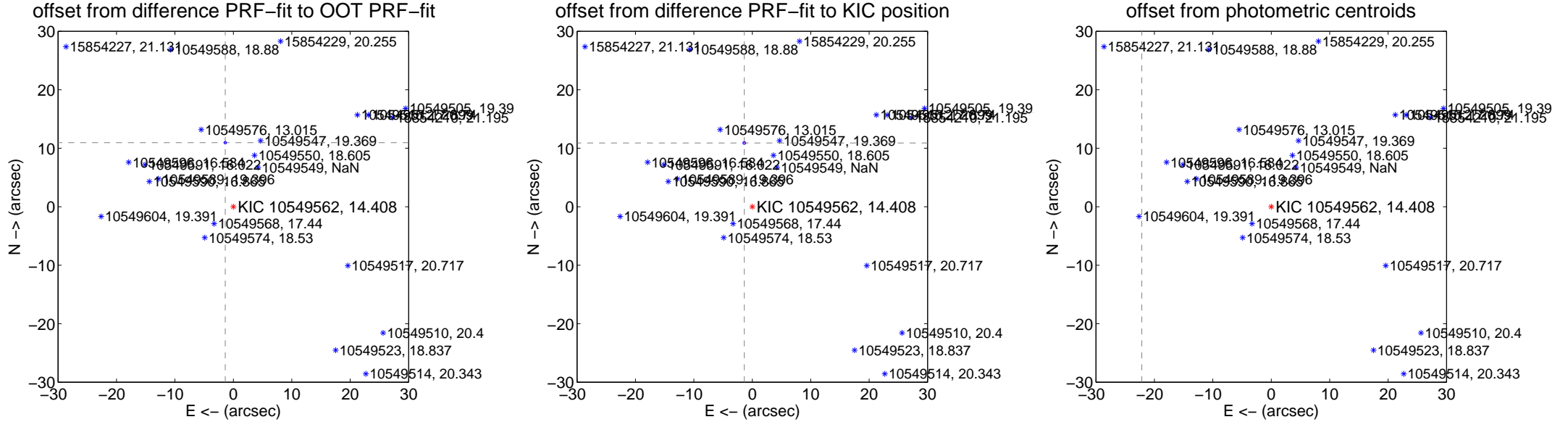
DV Centroid Data

Supplemental centroid analysis for 010549562-01. Kepler magnitude: 14.41. Transit SNR 57.15

There are 4 quarters with good PRF difference image offsets

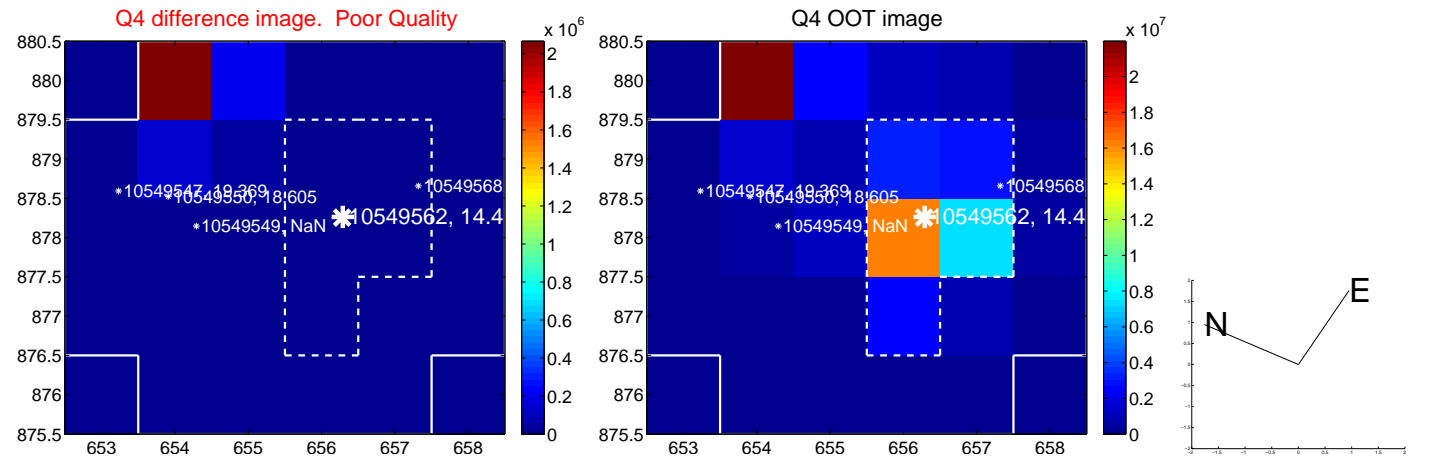
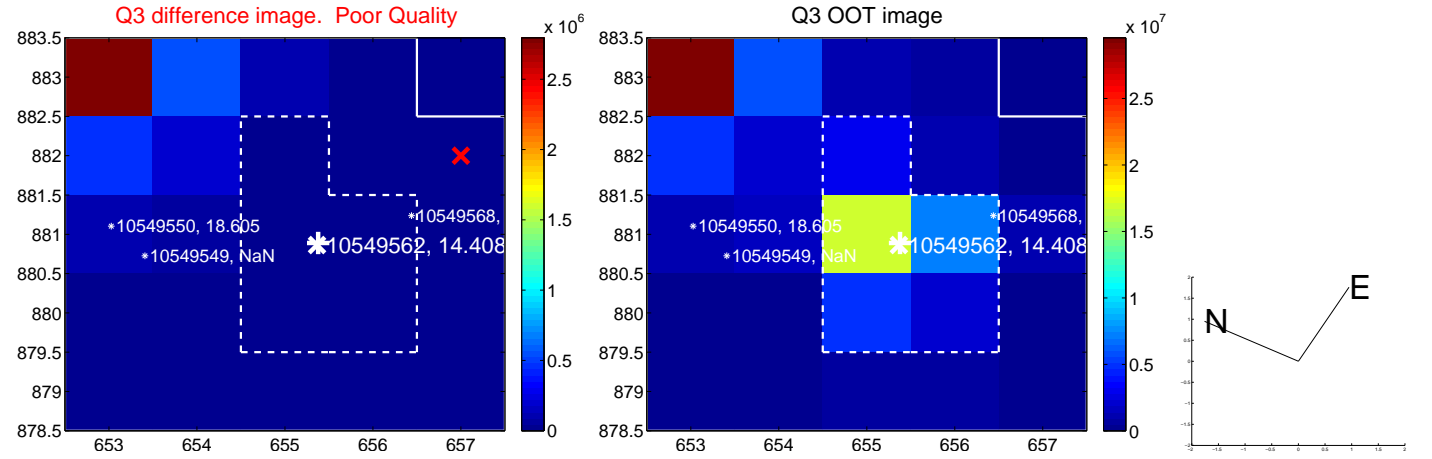
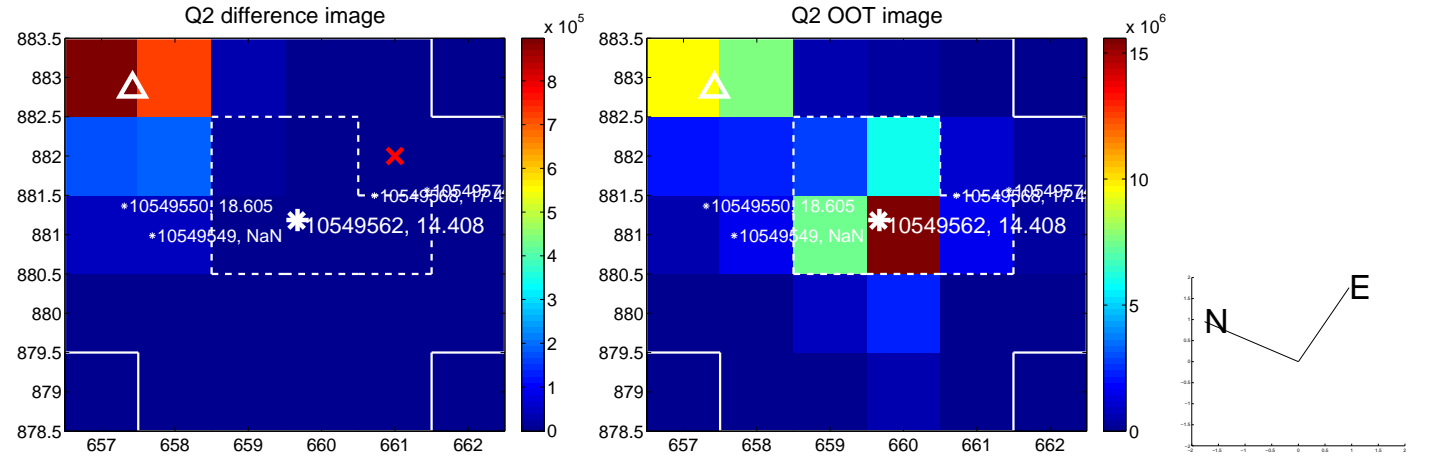
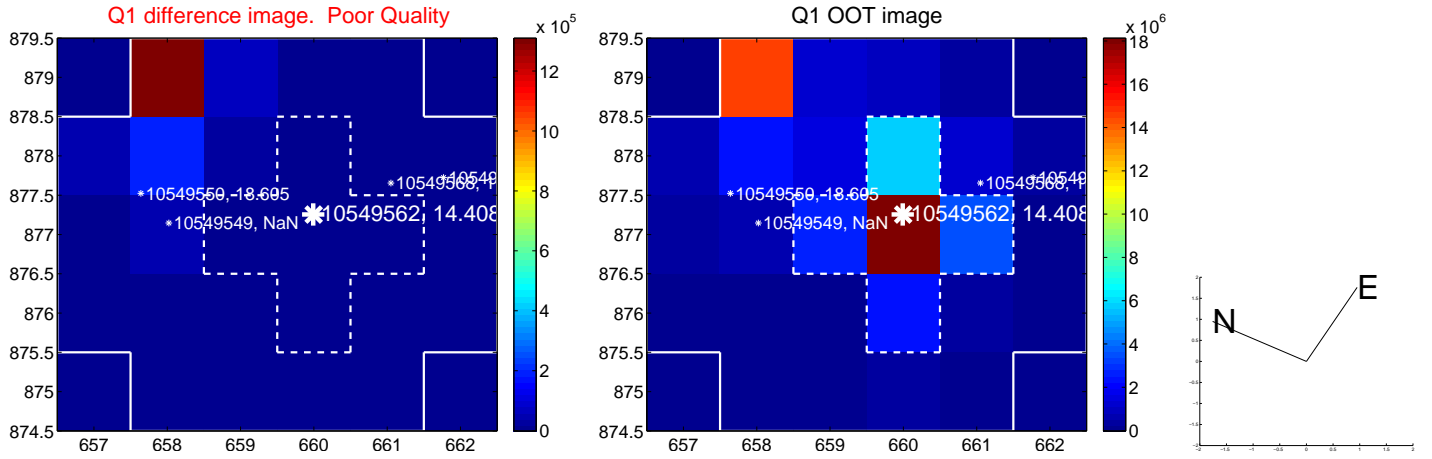
The direct PRF centroid is offset from the target star catalog position by about 0.09 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	11.036 \pm 0.071	156.40	1.383 \pm 0.081	10.949 \pm 0.069
PRF-fit source offset from KIC position	10.977 \pm 0.079	139.54	1.375 \pm 0.092	10.890 \pm 0.075
photometric centroid source offset	92.83 \pm 0.47	198.04	22.16 \pm 0.24	90.14 \pm 0.48

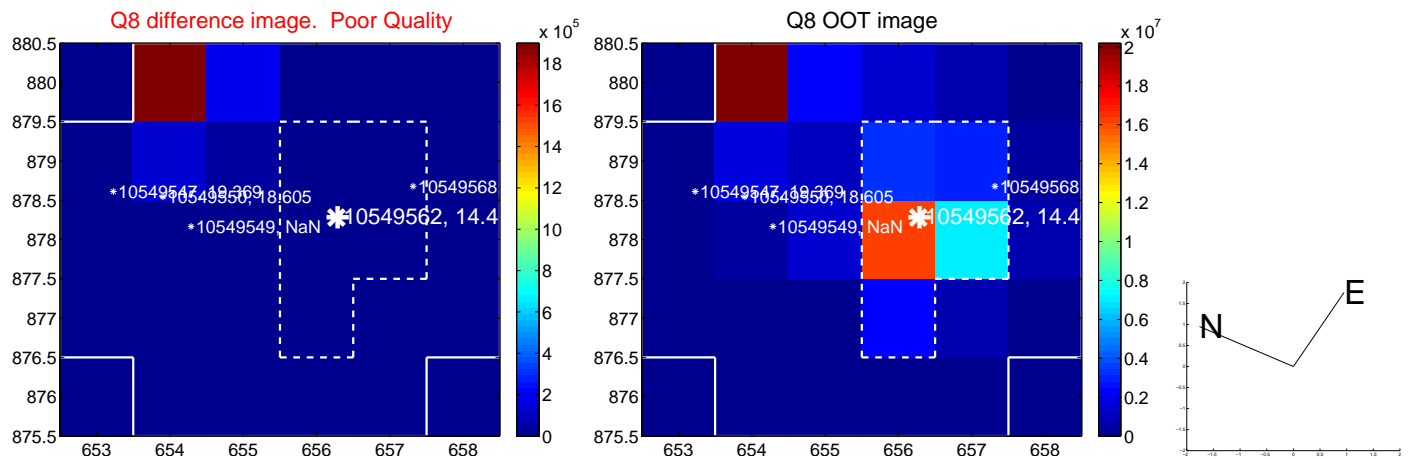
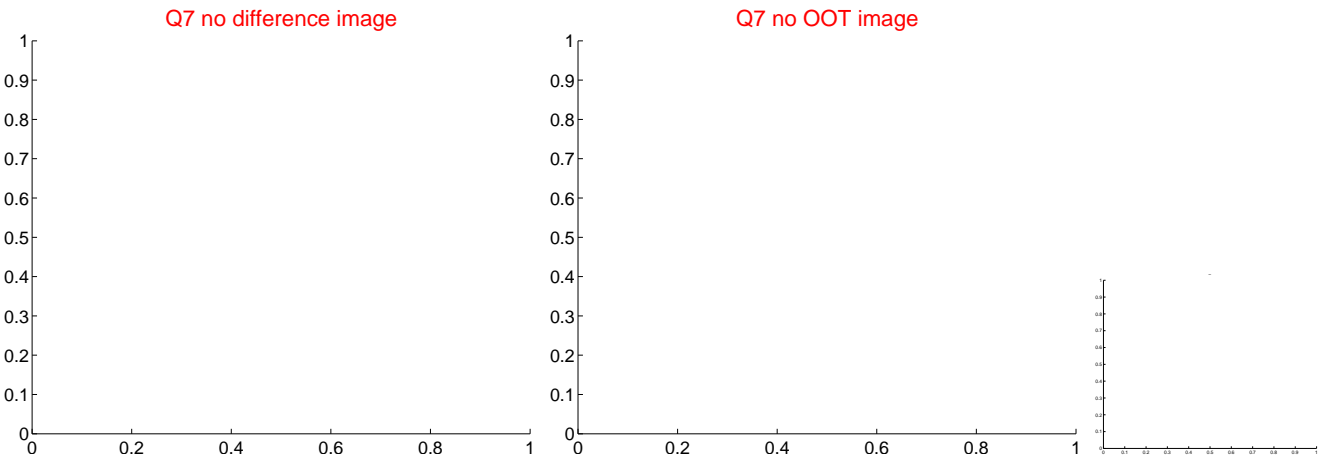
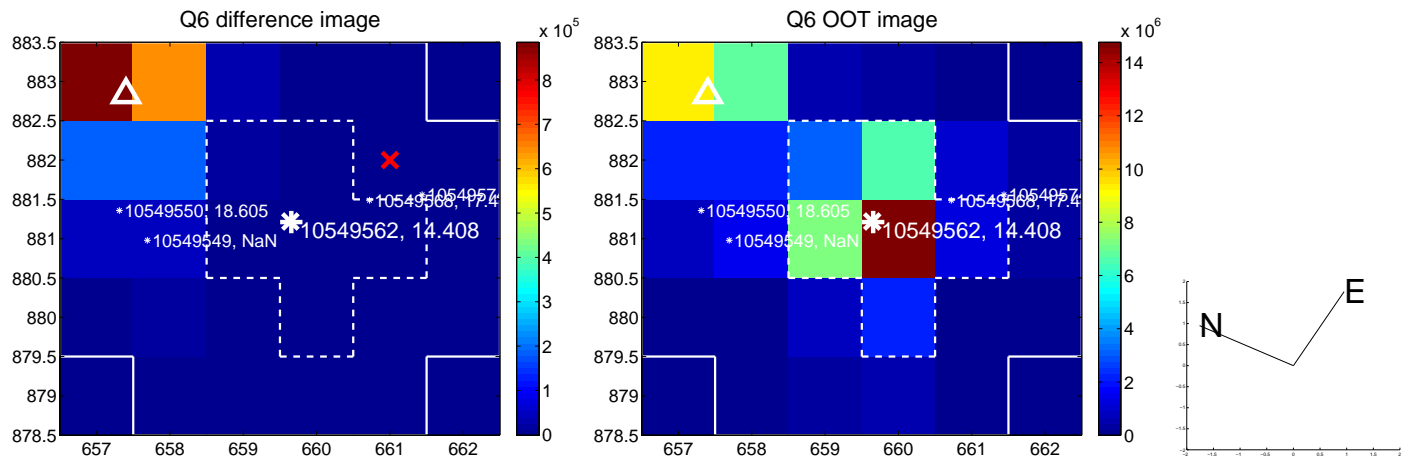
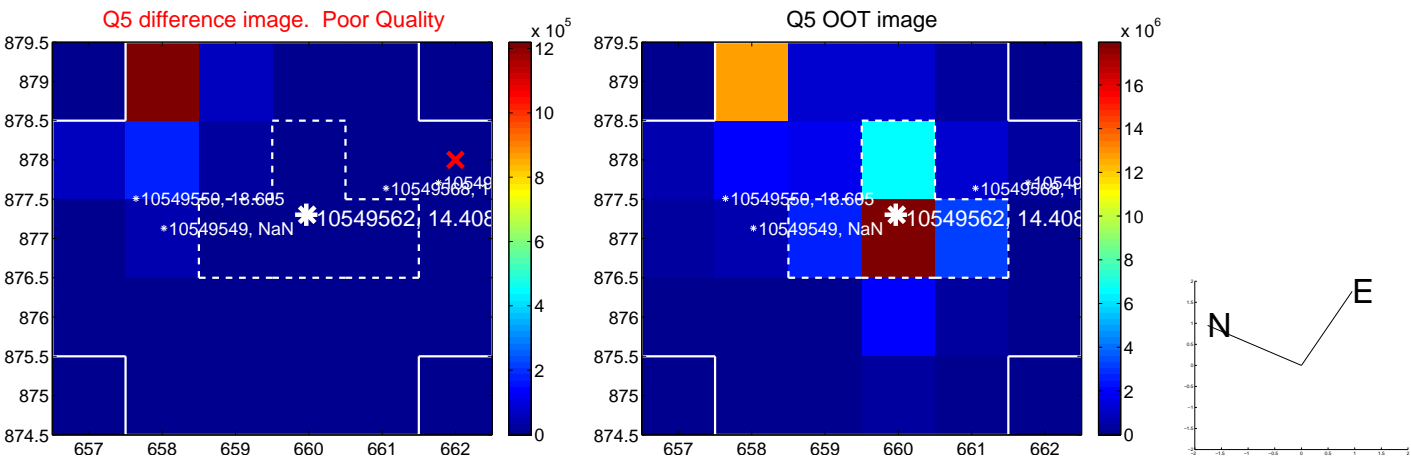


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

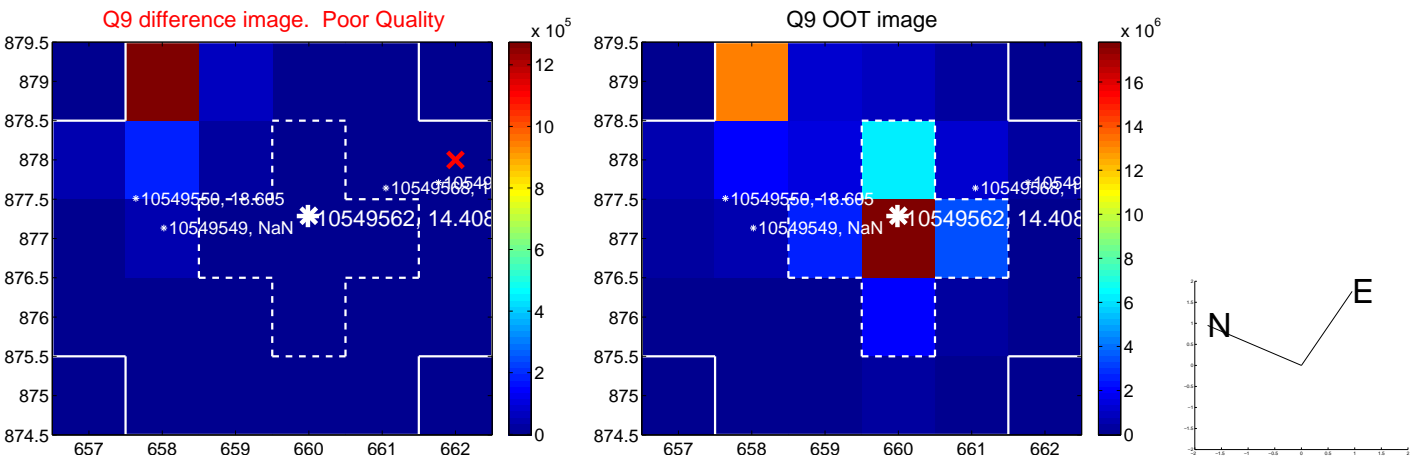
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



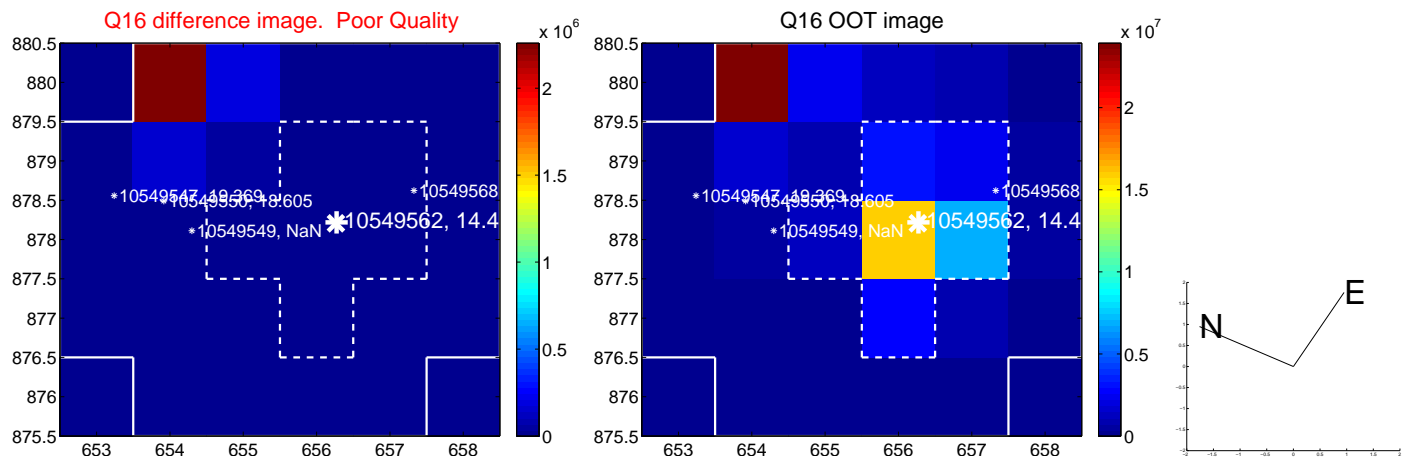
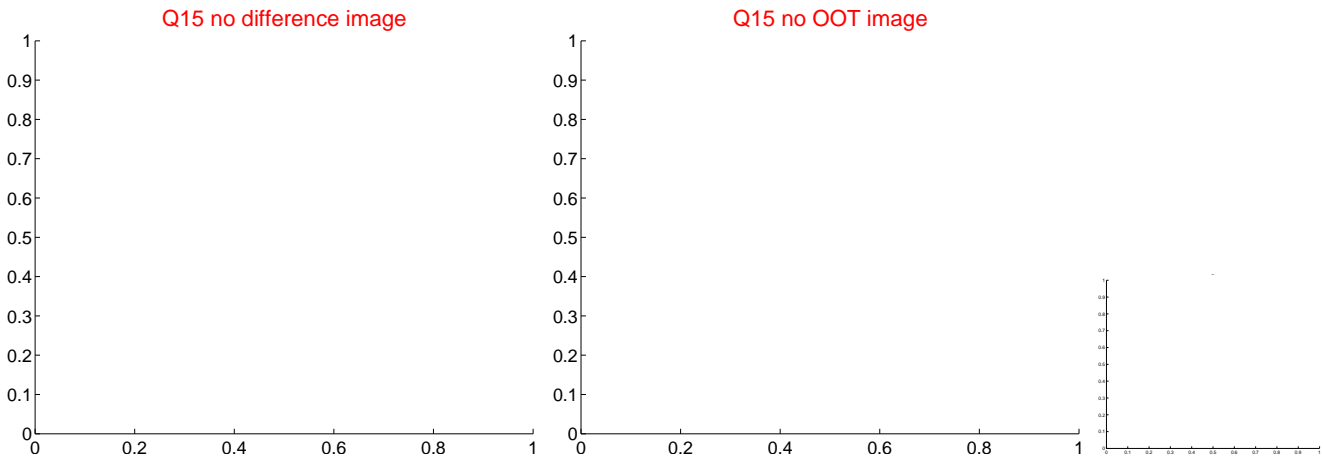
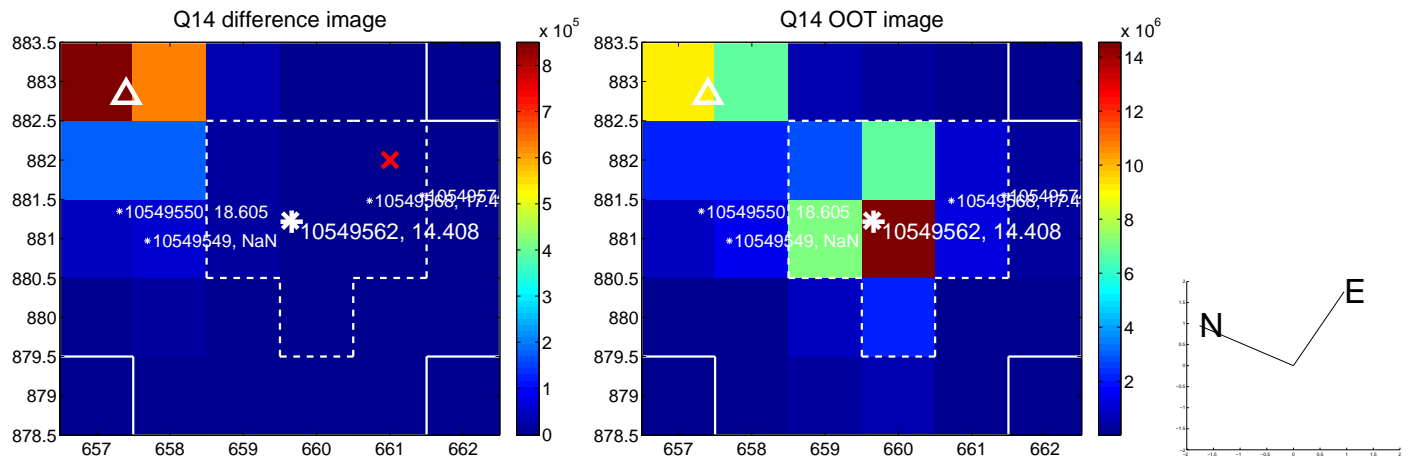
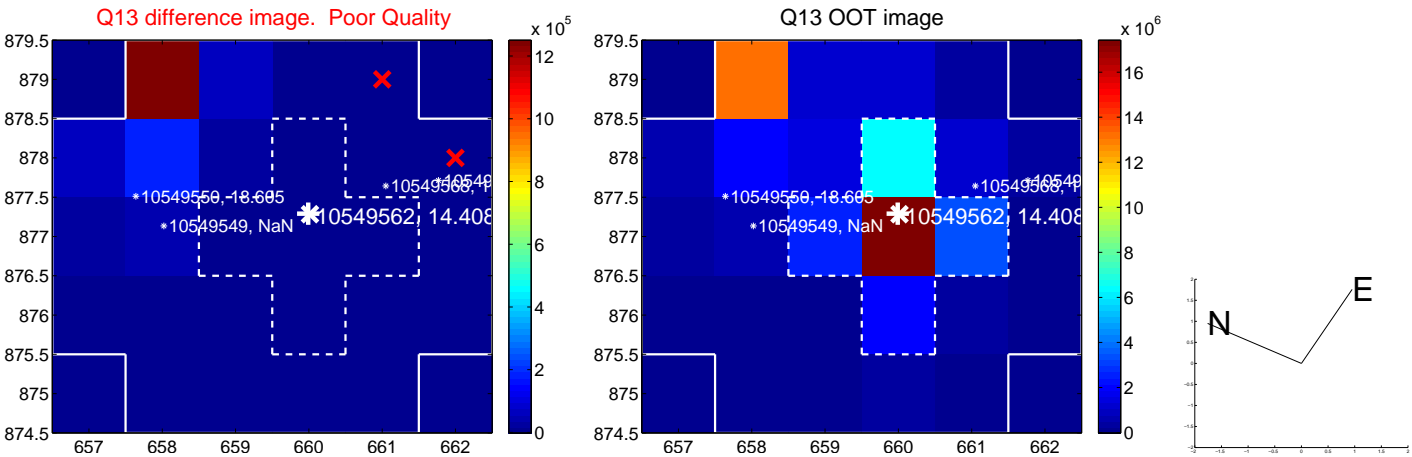
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



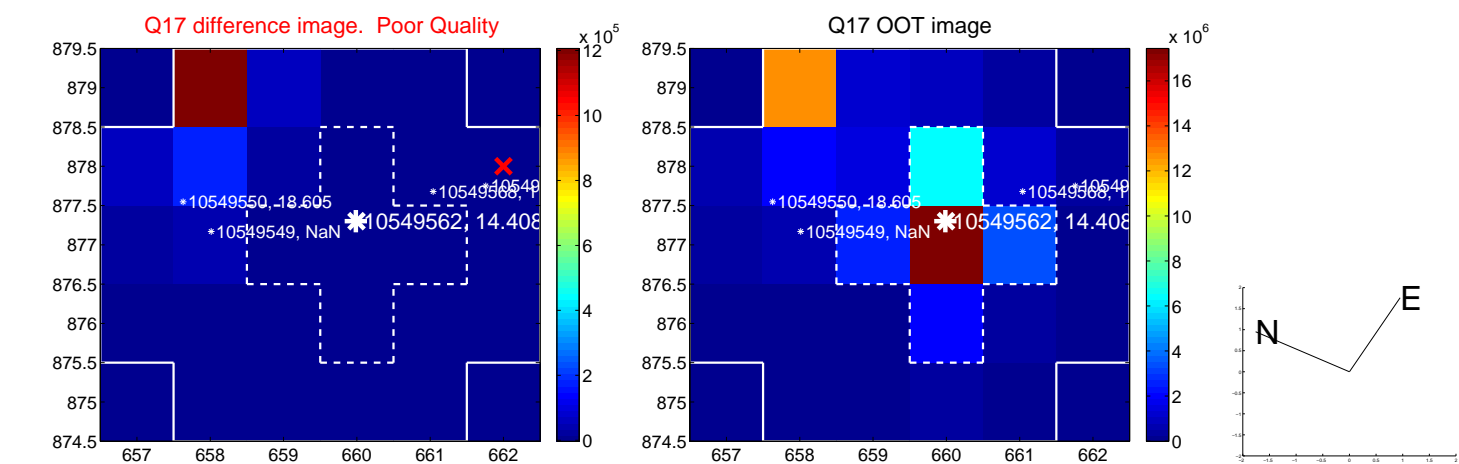
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



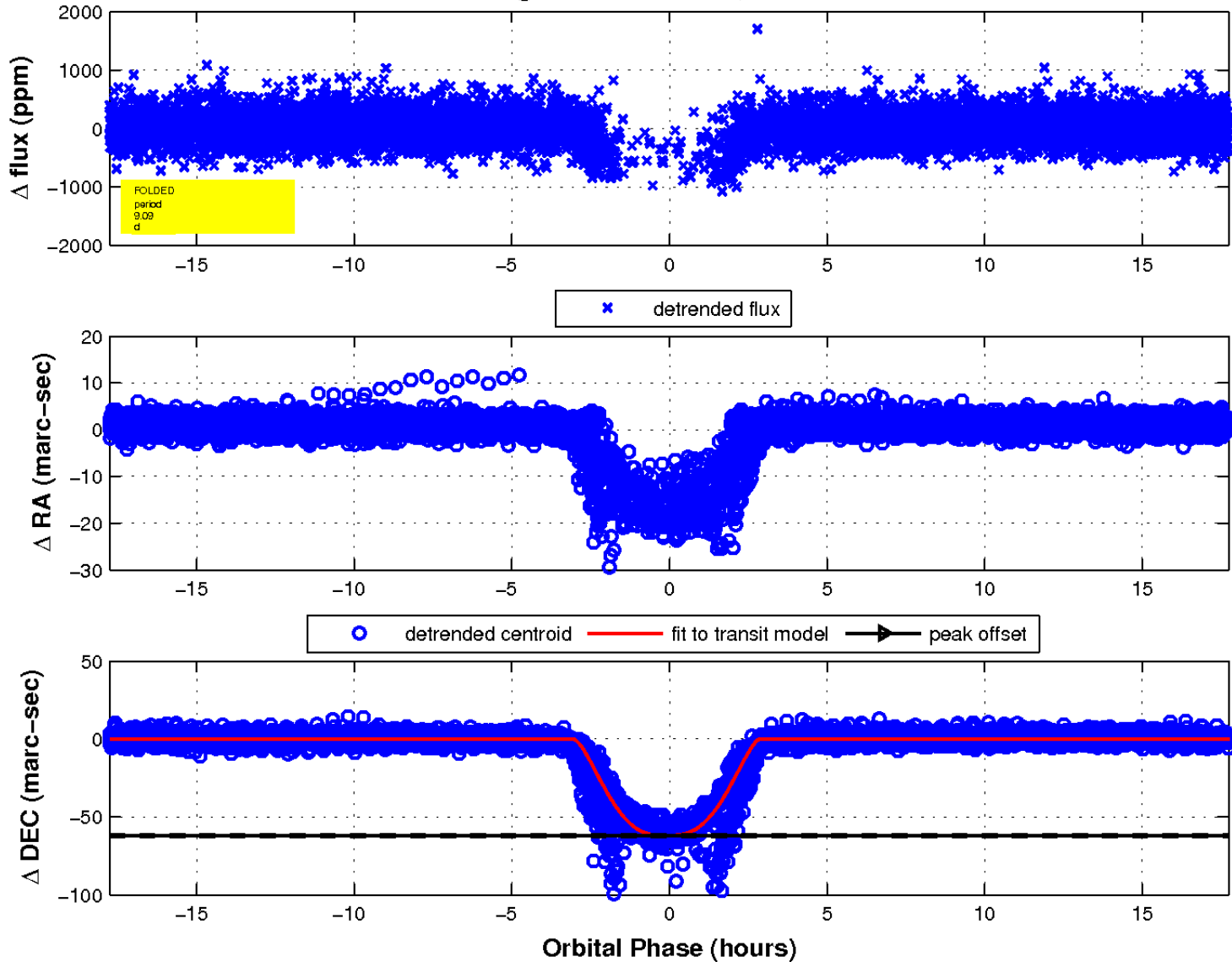
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

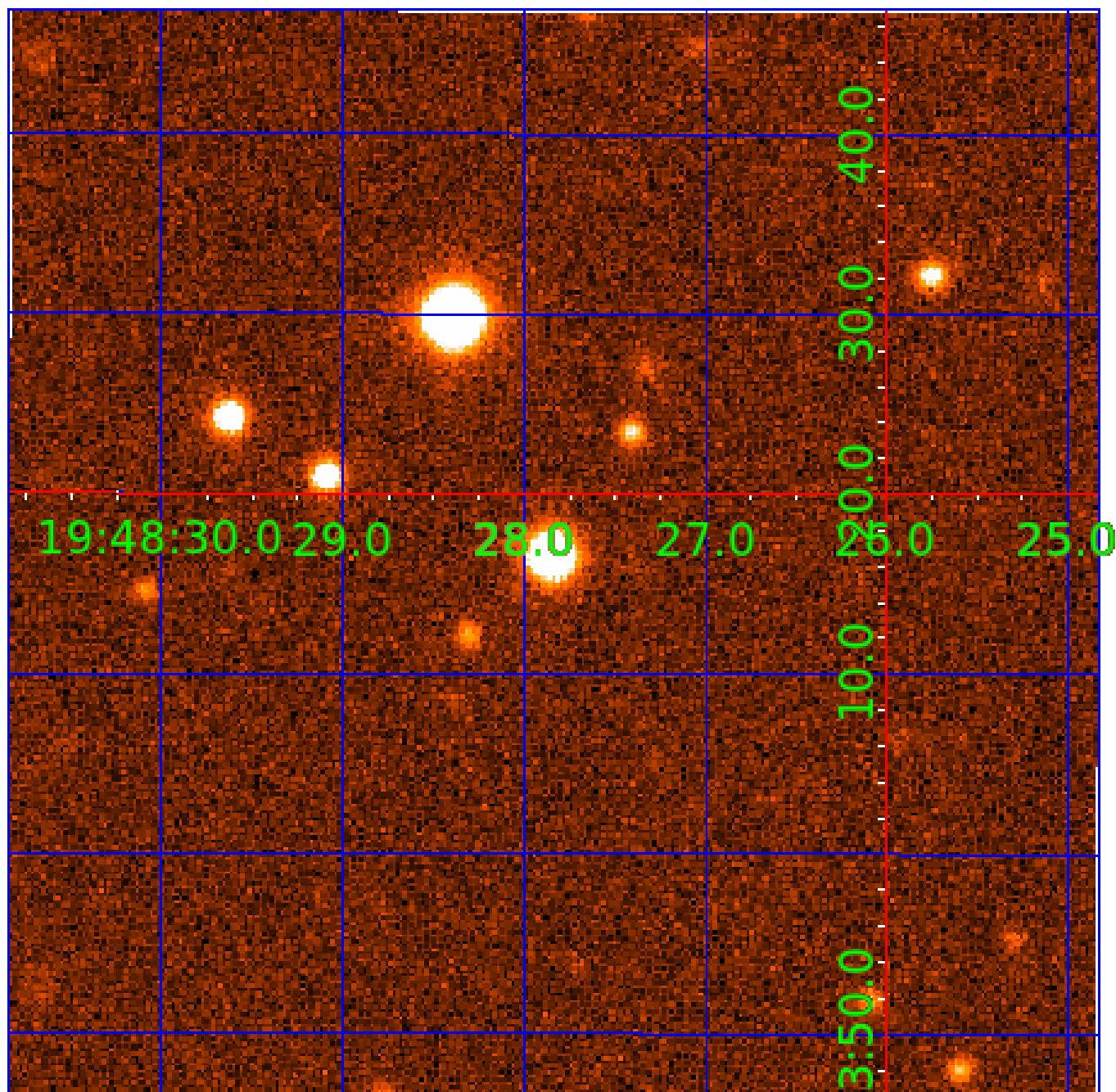


fluxWeightedCentroids, Planet 1 of 2



UKIRT Image

Declination



KIC 010549562

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})
010549562-01	OBS	1294.01	9.089389	139.082505	693.8	5.919	60.2	57.2	1.27	6739	4.30	351.75
010549562-02	OBS	No	9.089317	134.519058	150.3	5.808	14.7	15.2	1.27	6739	2.04	351.76

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010549562-01	OBS	FP	0.00	0	1	1	1	MOD_SEC_DV—MOD_SEC_ALT—HAS_SEC_TCE—CENT_RESOLVED_OFFSET—EPHEM_MATCH
010549562-02	OBS	FP	0.00	1	1	1	1	IS_SEC_TCE—CENT_RESOLVED_OFFSET—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 010549562-02

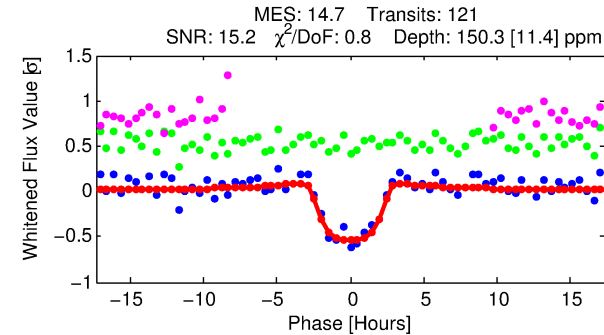
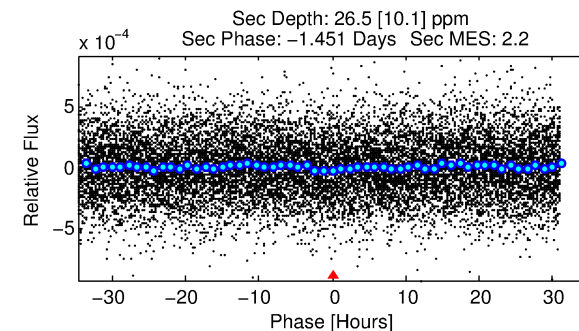
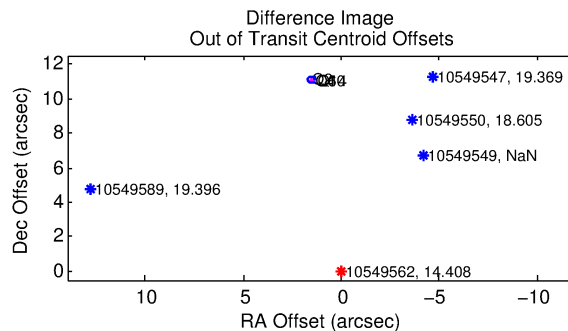
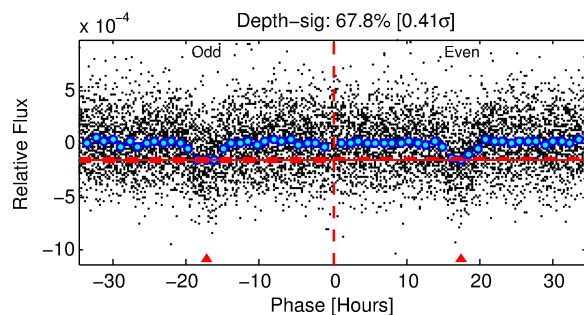
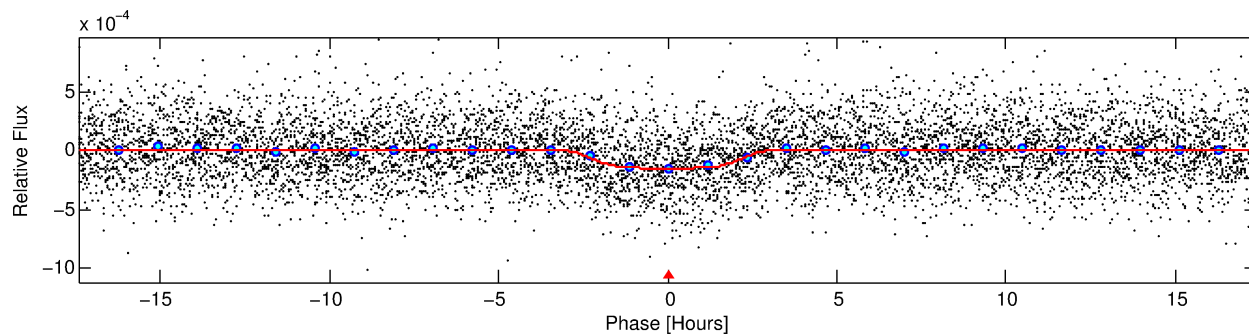
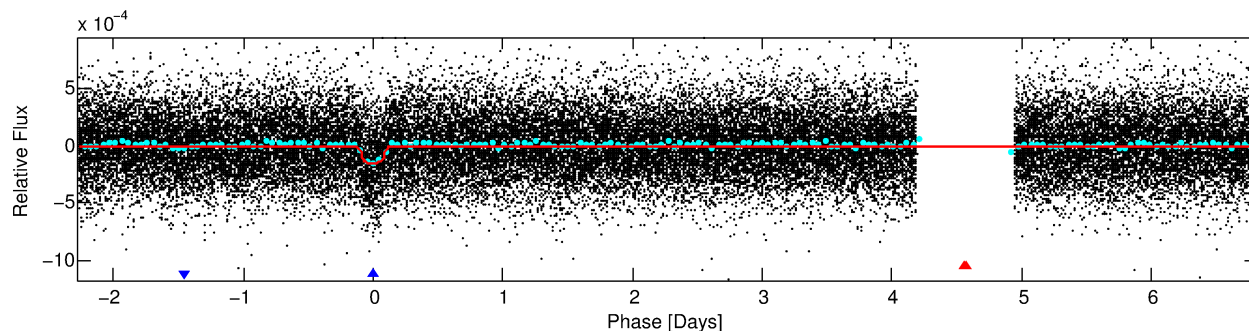
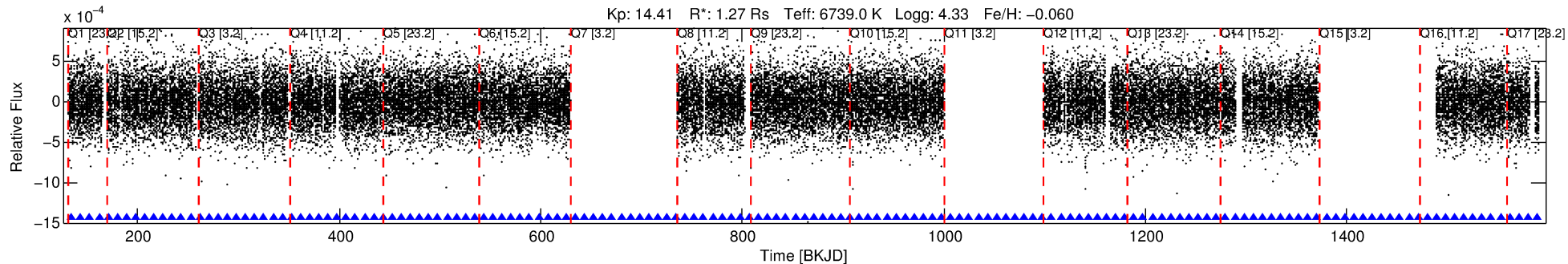
TCE (1)	KIC	Parent (2)	Parent KIC	$P_1:P_2$	Dist ($''$)	Δ Row	Δ Col	m_2	m_1	D_2/D_1	Mechanism	Flag	σ_P	σ_T
010549562-02	10549562	010549576-sec	10549576	1:1	14.3	-3	3	13.02	14.41	182.00	Direct-PRF	0	0.66	0.04

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: 10549562 Candidate: 2 of 2 Period: 9.089 d
KOI: K01294 Corr: No Ephemeris Match

Kp: 14.41 R*: 1.27 Rs Teff: 6739.0 K Logg: 4.33 Fe/H: -0.060



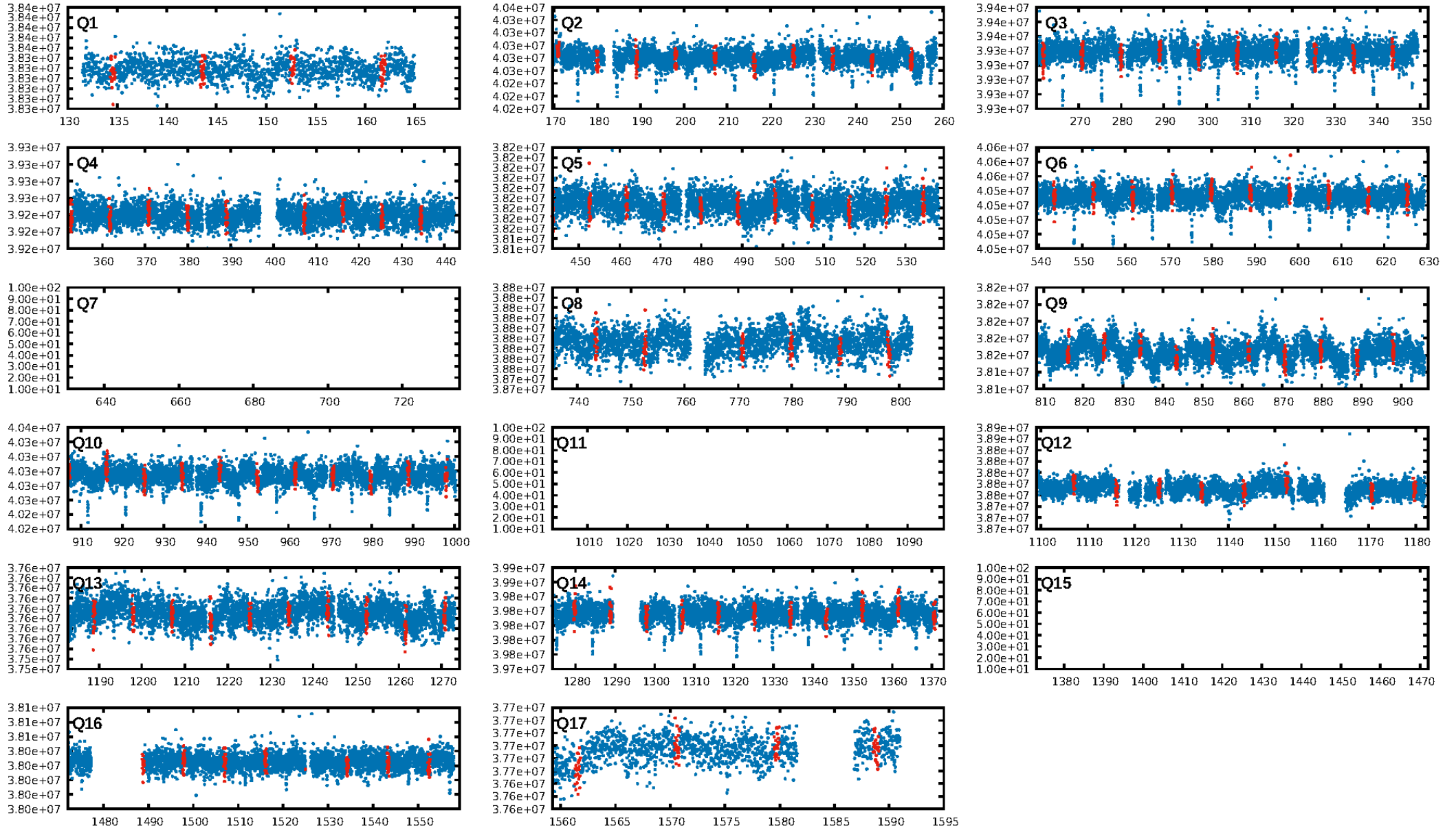
DV Fit Results:

Period = 9.08932 [0.00008] d
Epoch = 134.5191 [0.0074] BKJD
Rp/R* = 0.0146 [0.0008]
a/R* = 3.44 [0.56]
b = 0.98 [0.01]
Seff = 351.76 [133.16]
Teff = 1104 [105] K
Rp = 2.04 [0.63] Re
a = 0.0924 [0.0229] AU
Ag = 30.05 [15.80] [1.84σ]
Teffp = 3998 [424] K [6.62σ]

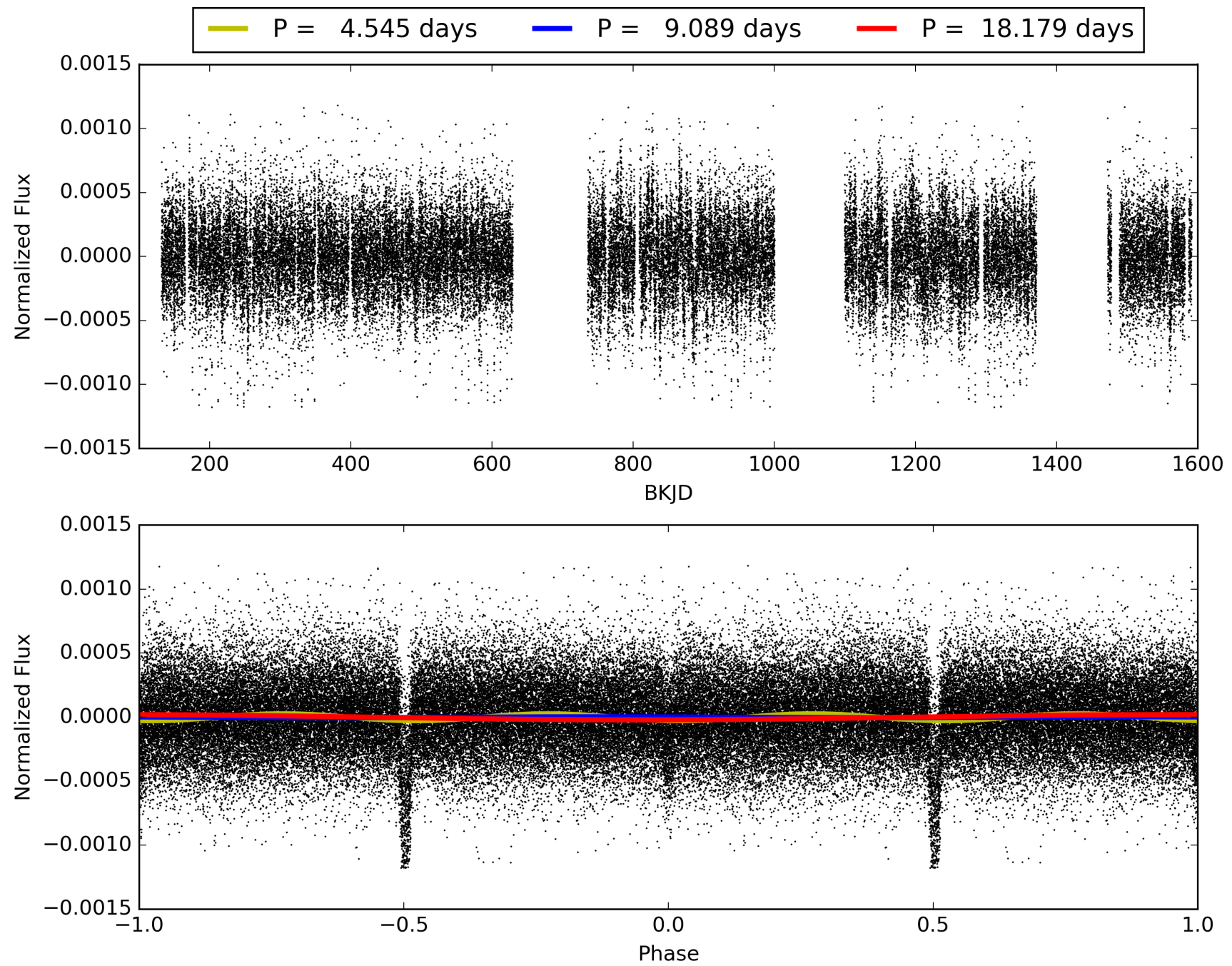
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.0% [0.00σ]
ModelChiSquare2-sig: 97.6%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 6.38e-47
RollingBand-fgt: 1.00 [113/113]
GhostDiagnostic-chr: -0.4563
Centroid-sig: N/A
Centroid-so: 85.877 arcsec [44.50σ]
OotOffset-rm: 11.191 arcsec [158.37σ]
KicOffset-rm: 11.116 arcsec [146.42σ]
OotOffset-st: 4/0/0/0 [4]
KicOffset-st: 4/0/0/0 [4]
DiffImageQuality-fgm: 1.00 [4/4]
DiffImageOverlap-fno: 1.00 [14/14]

TCE 010549562-02, PDC Light Curves

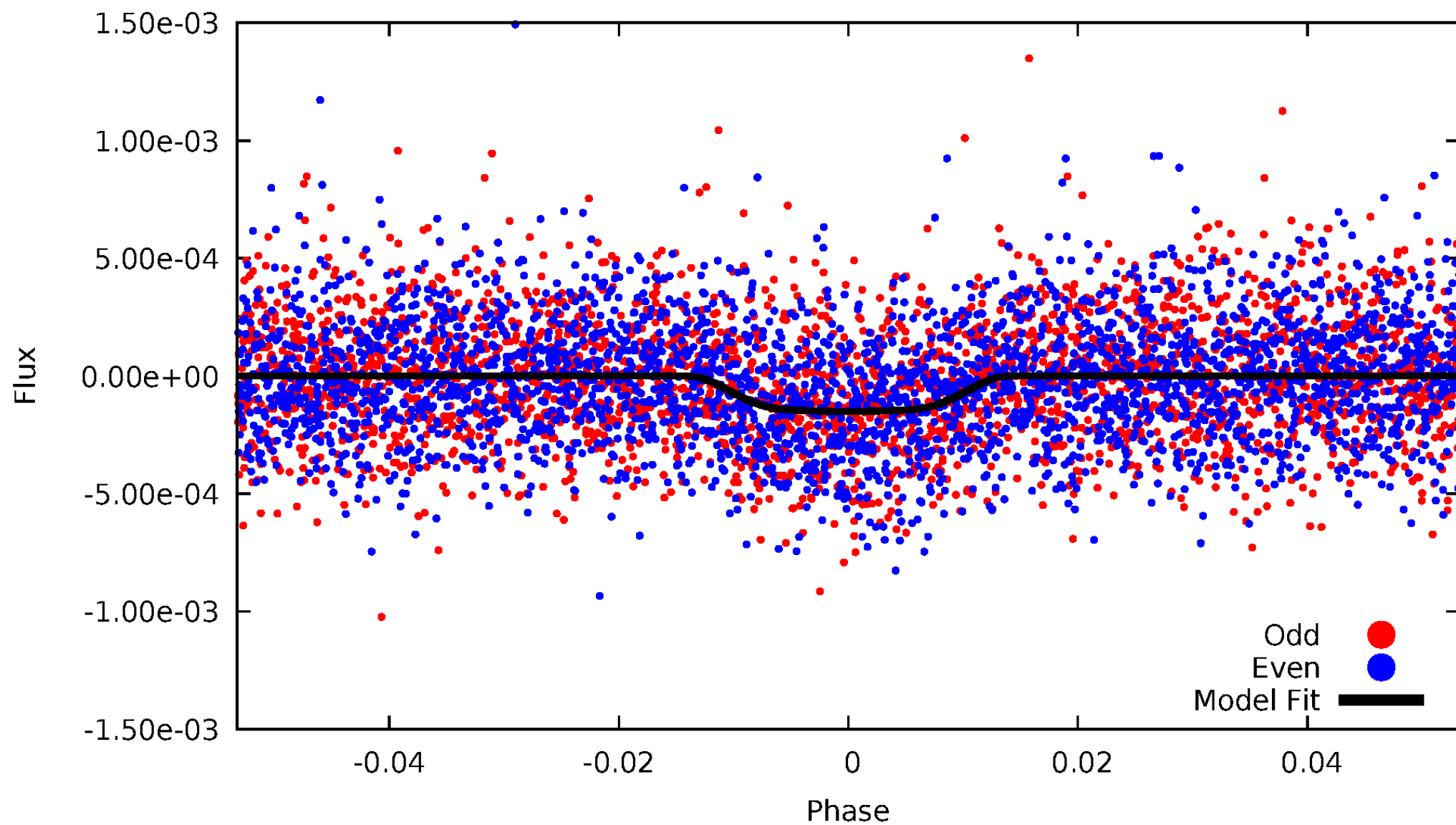


TCE 010549562-02



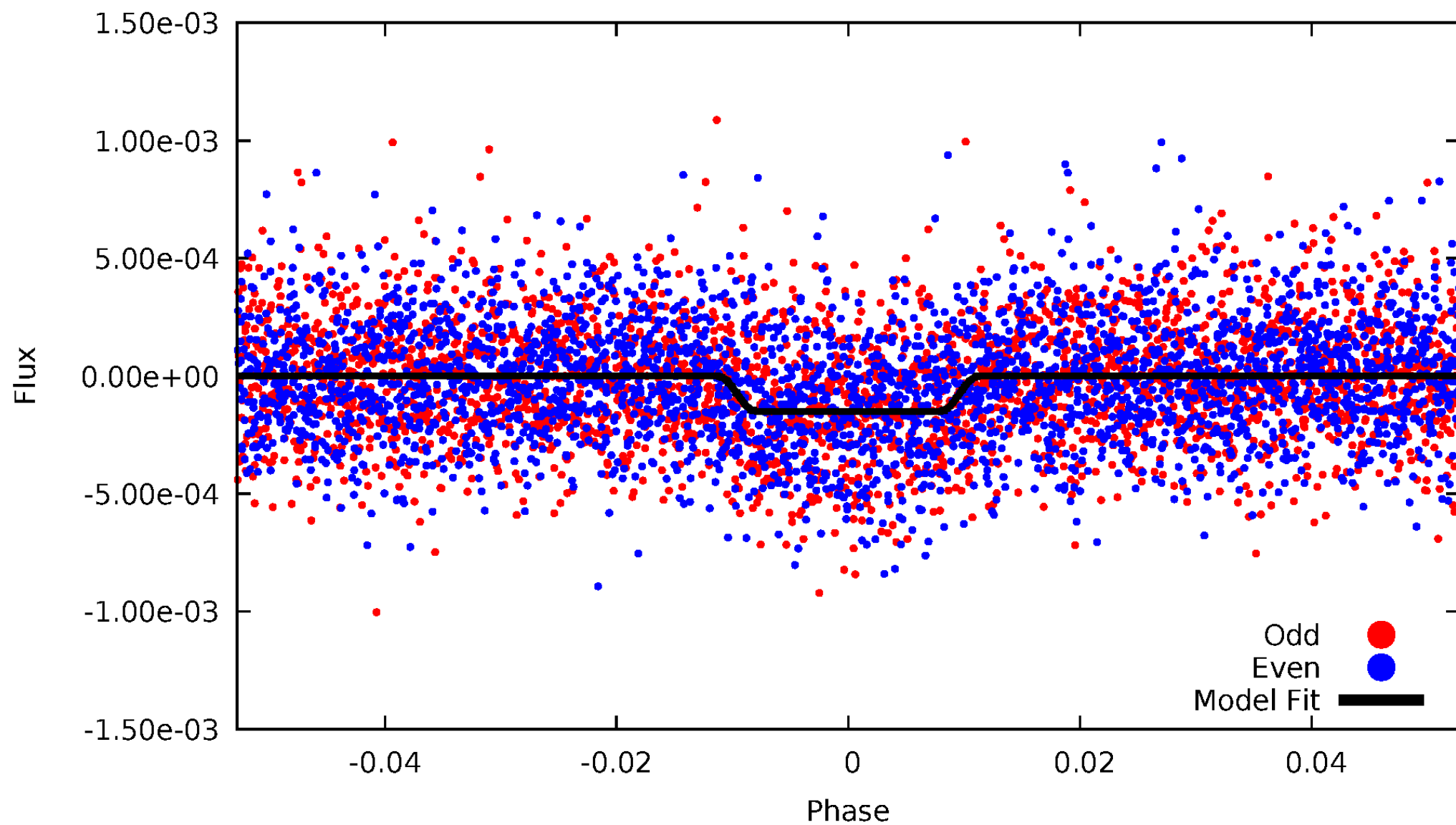
DV Odd/Even

TCE 010549562-02



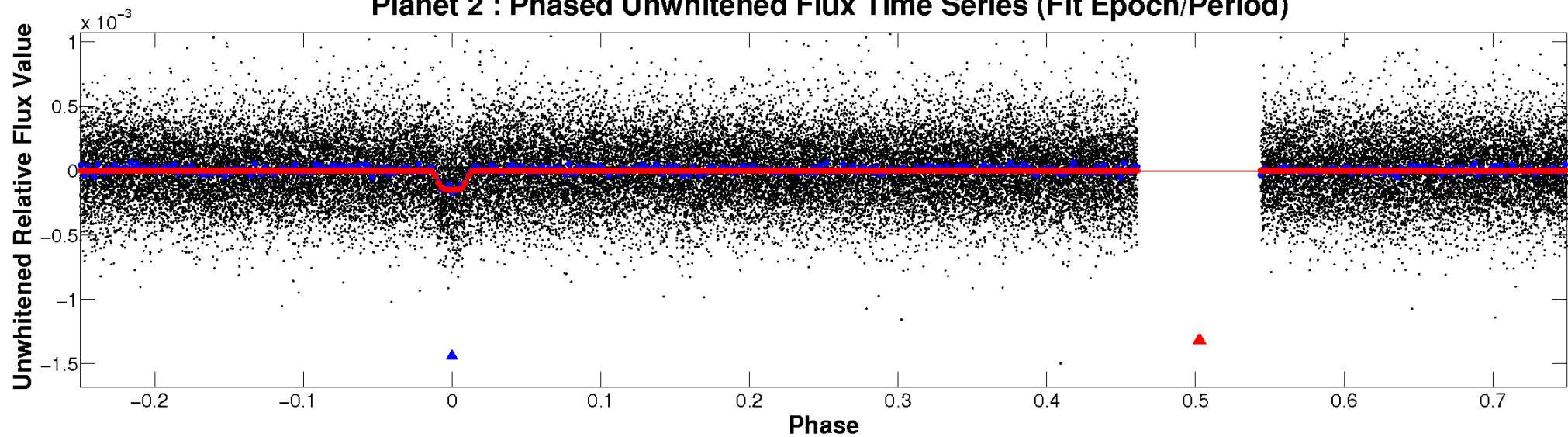
ALT Odd/Even

TCE 010549562-02

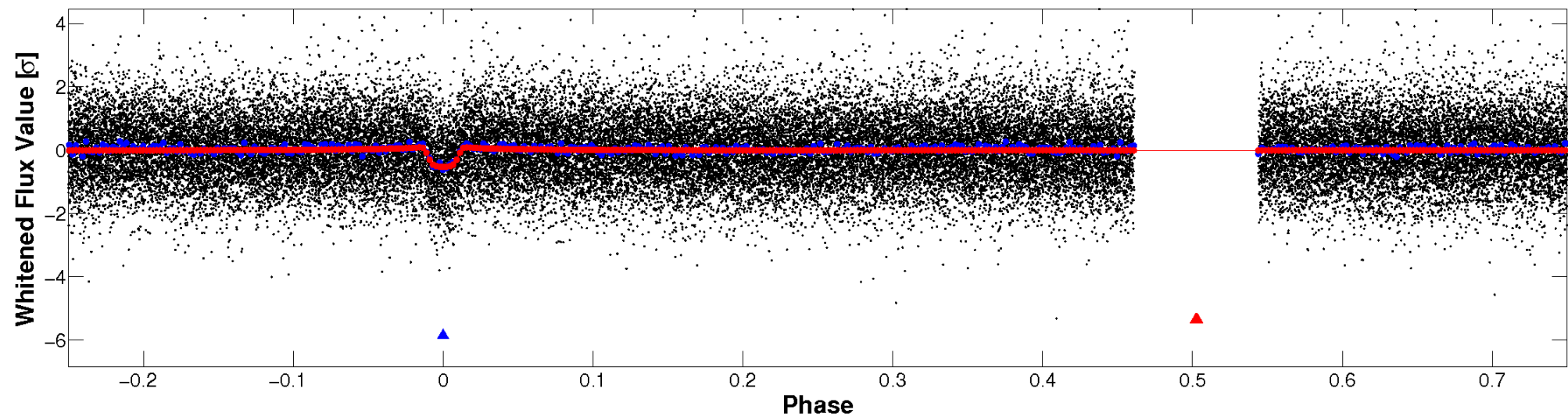


Non-Whitened Vs. Whitened Light Curve

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

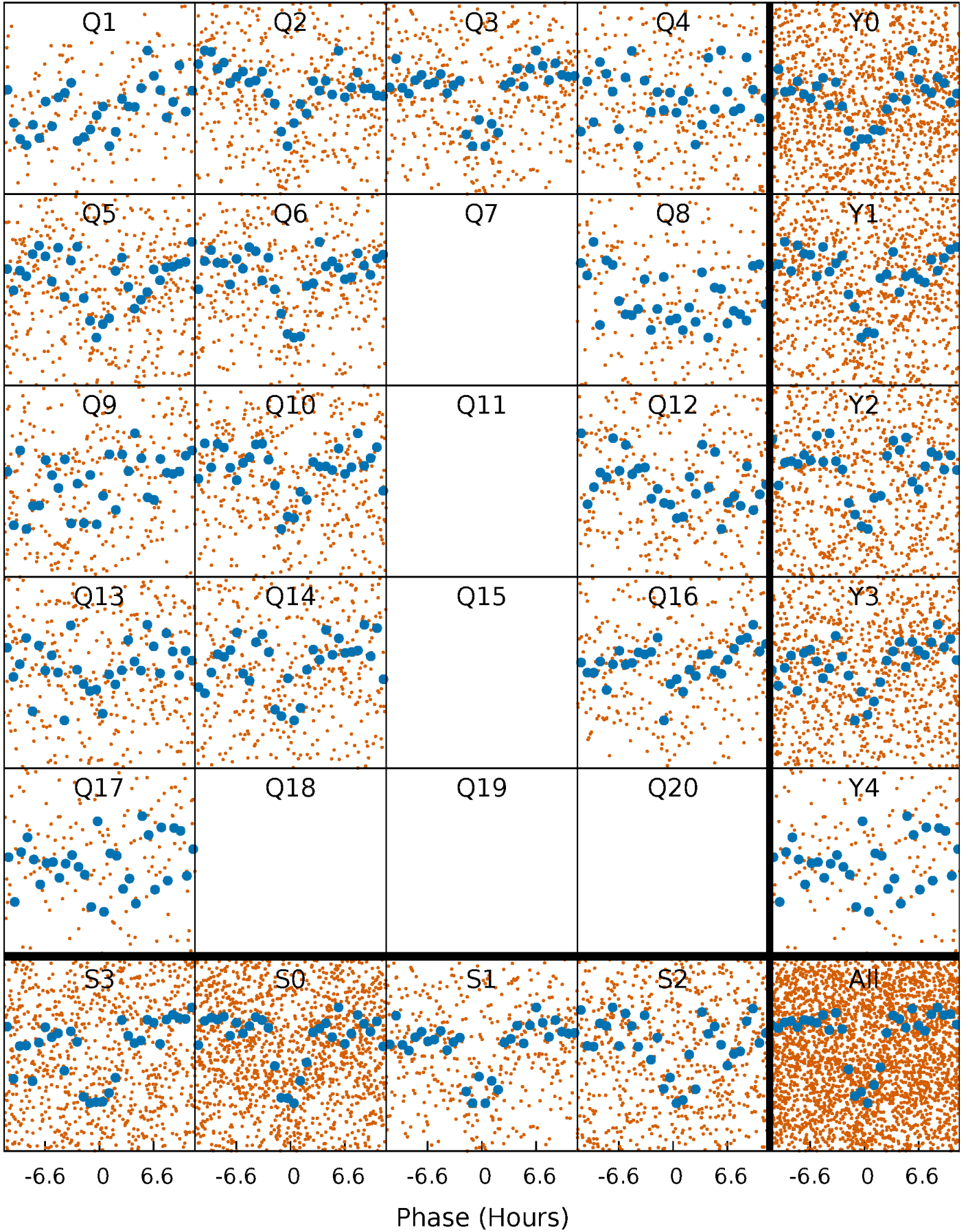


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



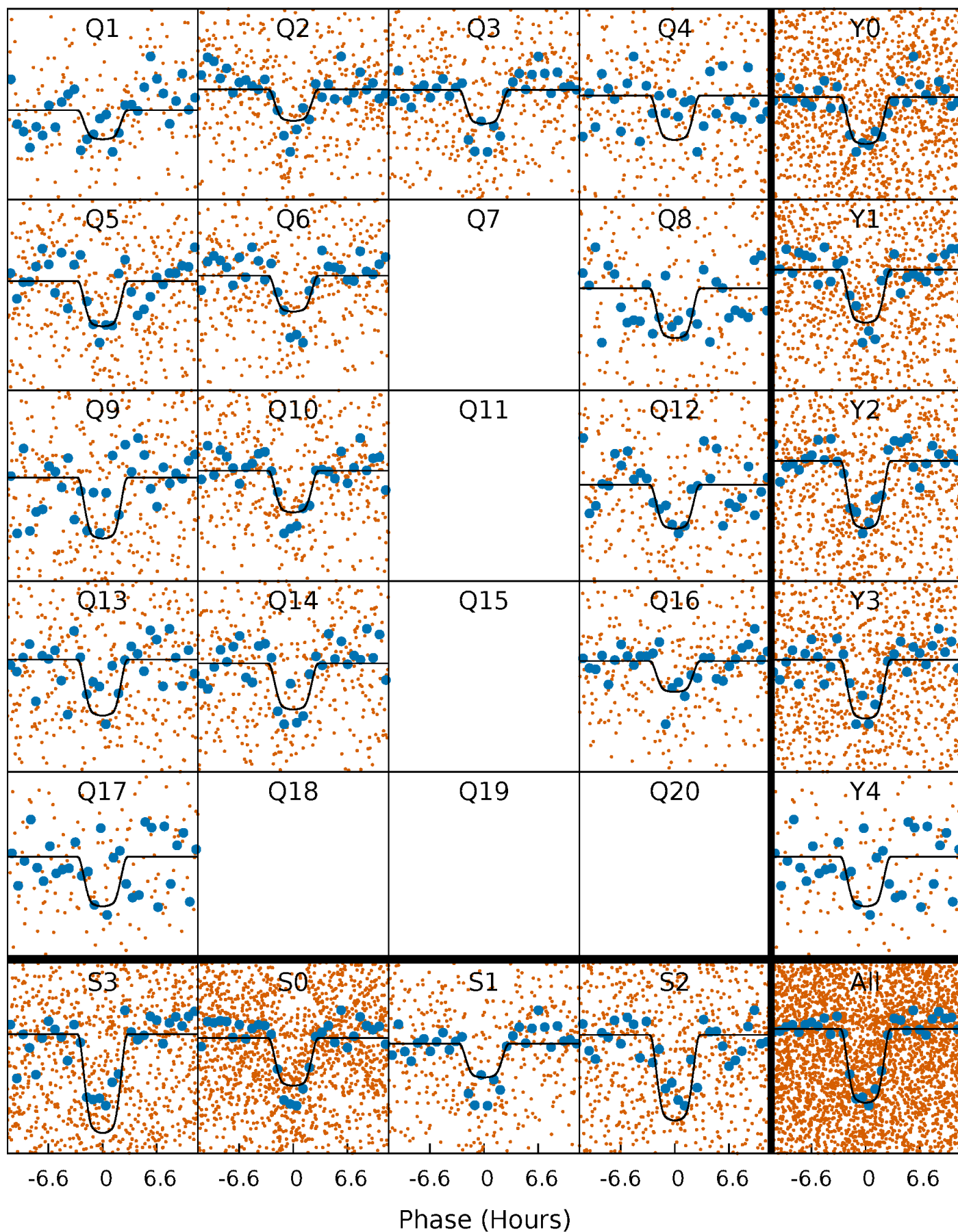
PDC Quarter-Phased Transit Curves

TCE 010549562-02 P= 9.089316 Days $T_0=134.519058$ (BKJD)



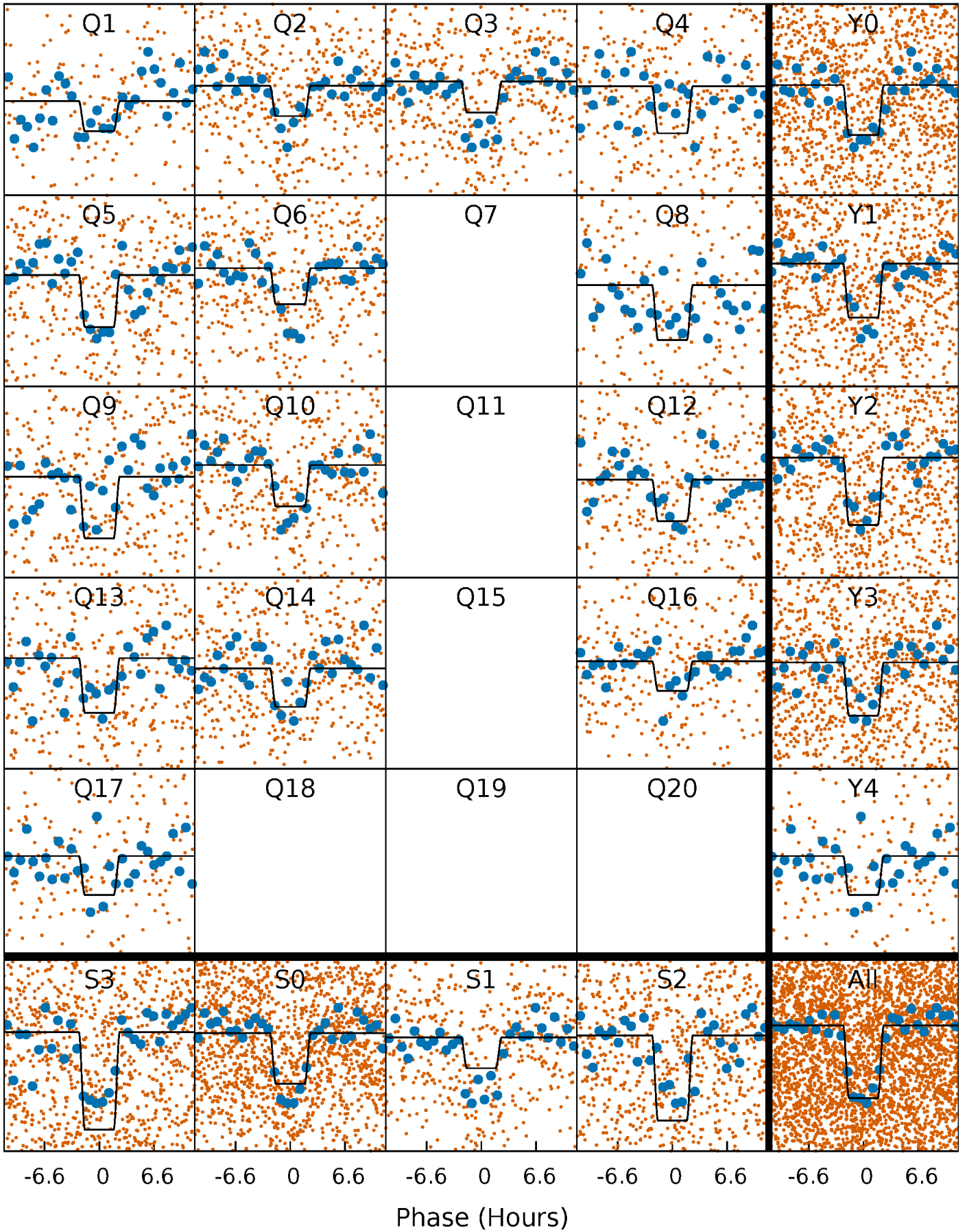
DV Quarter-Phased Transit Curves

TCE 010549562-02 P= 9.089316 Days $T_0=134.519058$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

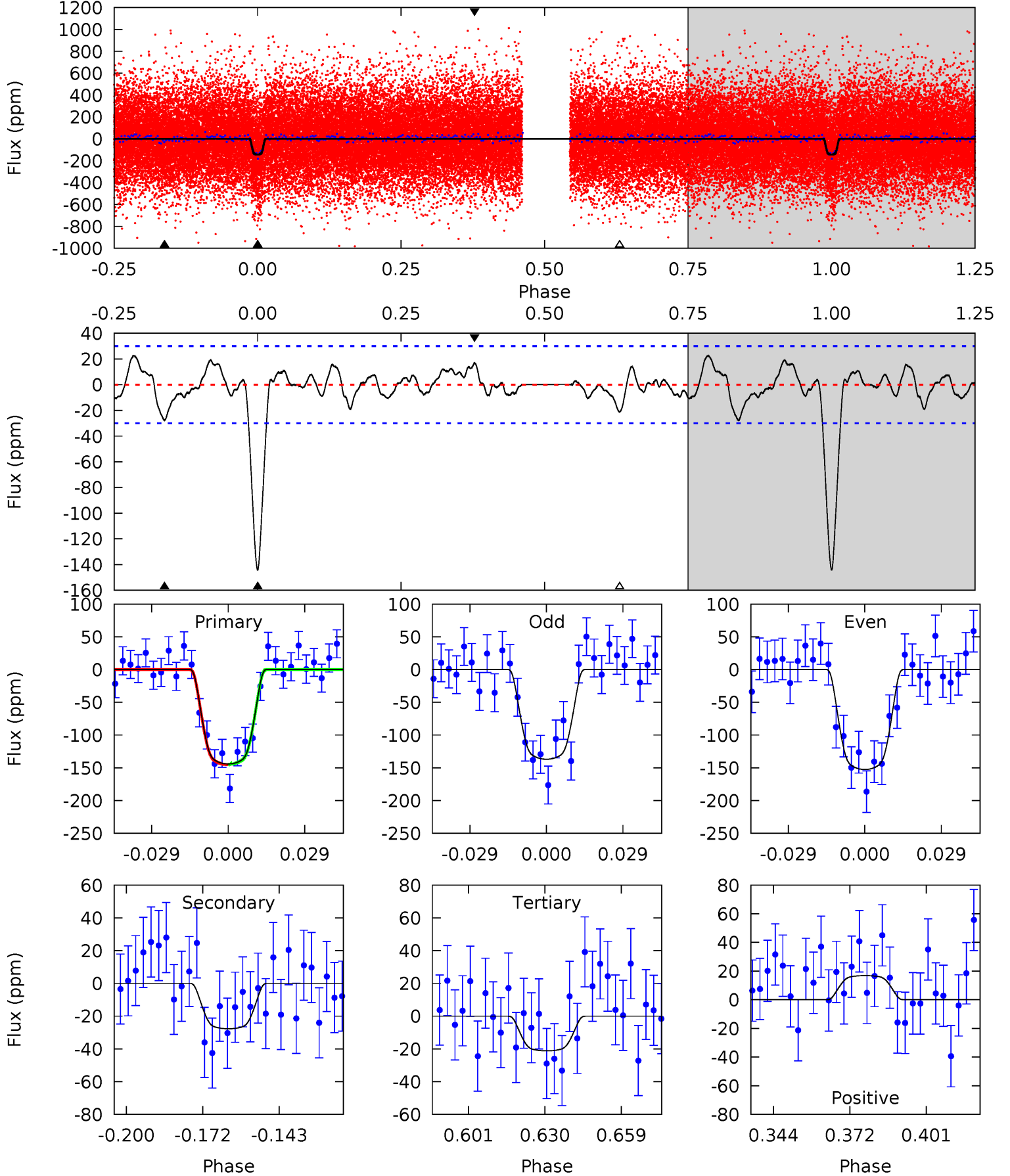
TCE 010549562-02 P= 9.089306 Days $T_0=134.519845$ (BKJD)



DV Model-Shift Uniqueness Test

010549562-02, P = 9.089316 Days, E = 125.429742 Days

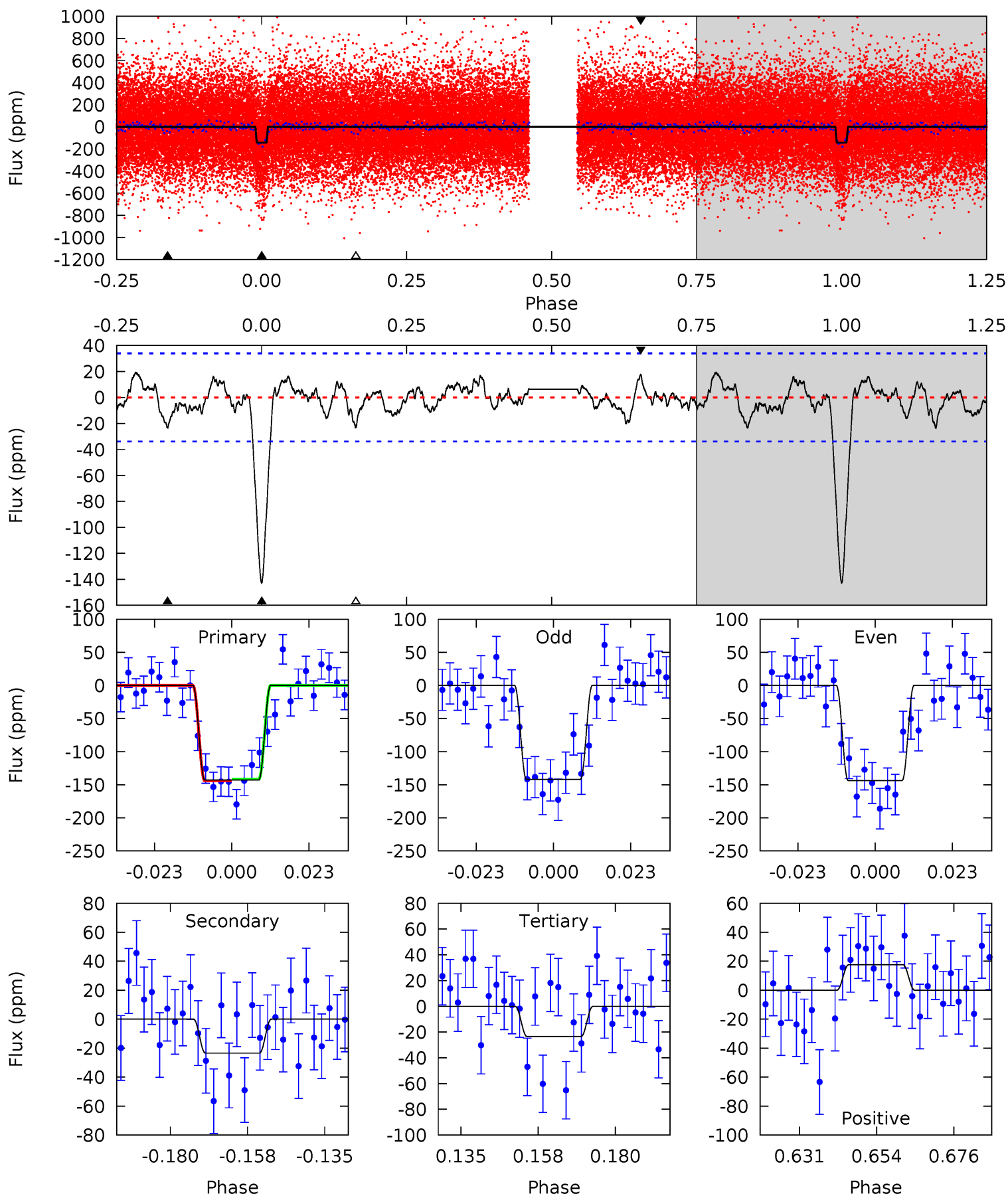
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
23.2	4.46	3.41	2.71	4.82	2.19	1.34	19.8	20.5	1.05	1.75	1.26	1.06	0.14	0.04



Alt Model-Shift Uniqueness Test

010549562-02, P = 9.089306 Days, E = 125.430539 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
20.5	3.36	3.36	2.54	4.87	2.28	1.14	17.1	17.9	0.00	0.83	0.13	1.18	0.12	0.15



Stellar Parameters For KIC 010549562

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6739^{+187}_{-258}	$4.332^{+0.065}_{-0.182}$	$-0.060^{+0.250}_{-0.350}$	$1.275^{+0.391}_{-0.168}$	$1.283^{+0.187}_{-0.187}$	$0.872^{+0.298}_{-0.431}$
	+3%/-4%	+2%/-4%	+417%/-583%	+31%/-13%	+15%/-15%	+34%/-49%
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 010549562-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-28 ± 6	$2.09^{+0.37}_{-0.22}$	1569^{+107}_{-78}	4239^{+229}_{-224}	28^{+11}_{-9}
Alt.	-23 ± 7	$1.75^{+0.28}_{-0.20}$	1564^{+100}_{-84}	4396^{+295}_{-317}	34^{+15}_{-12}

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 $A_{obs} \gg 1.0$

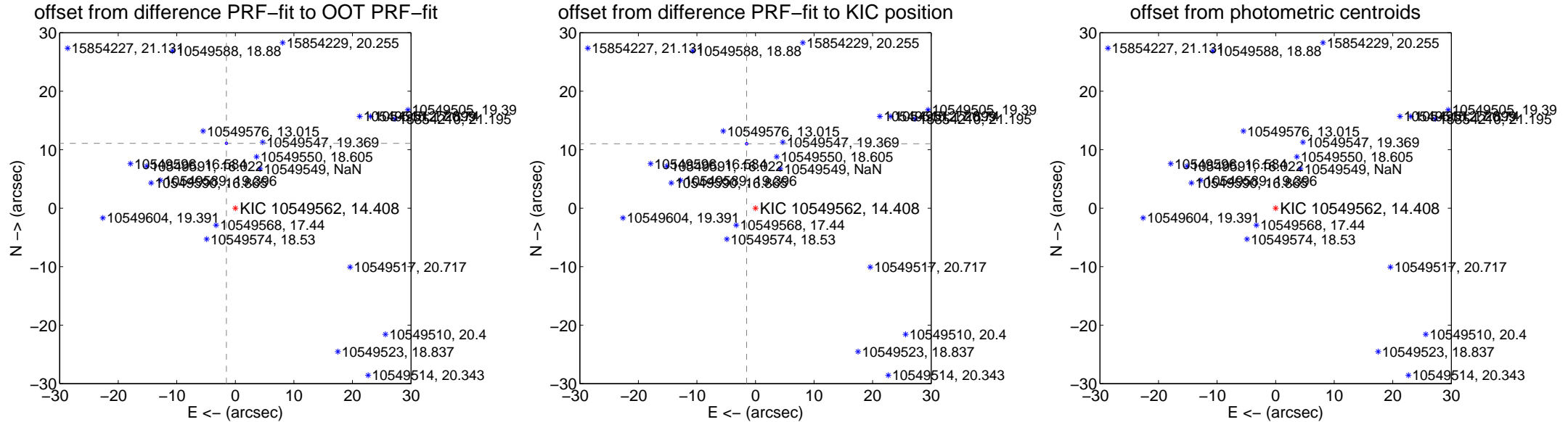
DV Centroid Data

Supplemental centroid analysis for 010549562-02. Kepler magnitude: 14.41. Transit SNR 15.19

There are 4 quarters with good PRF difference image offsets

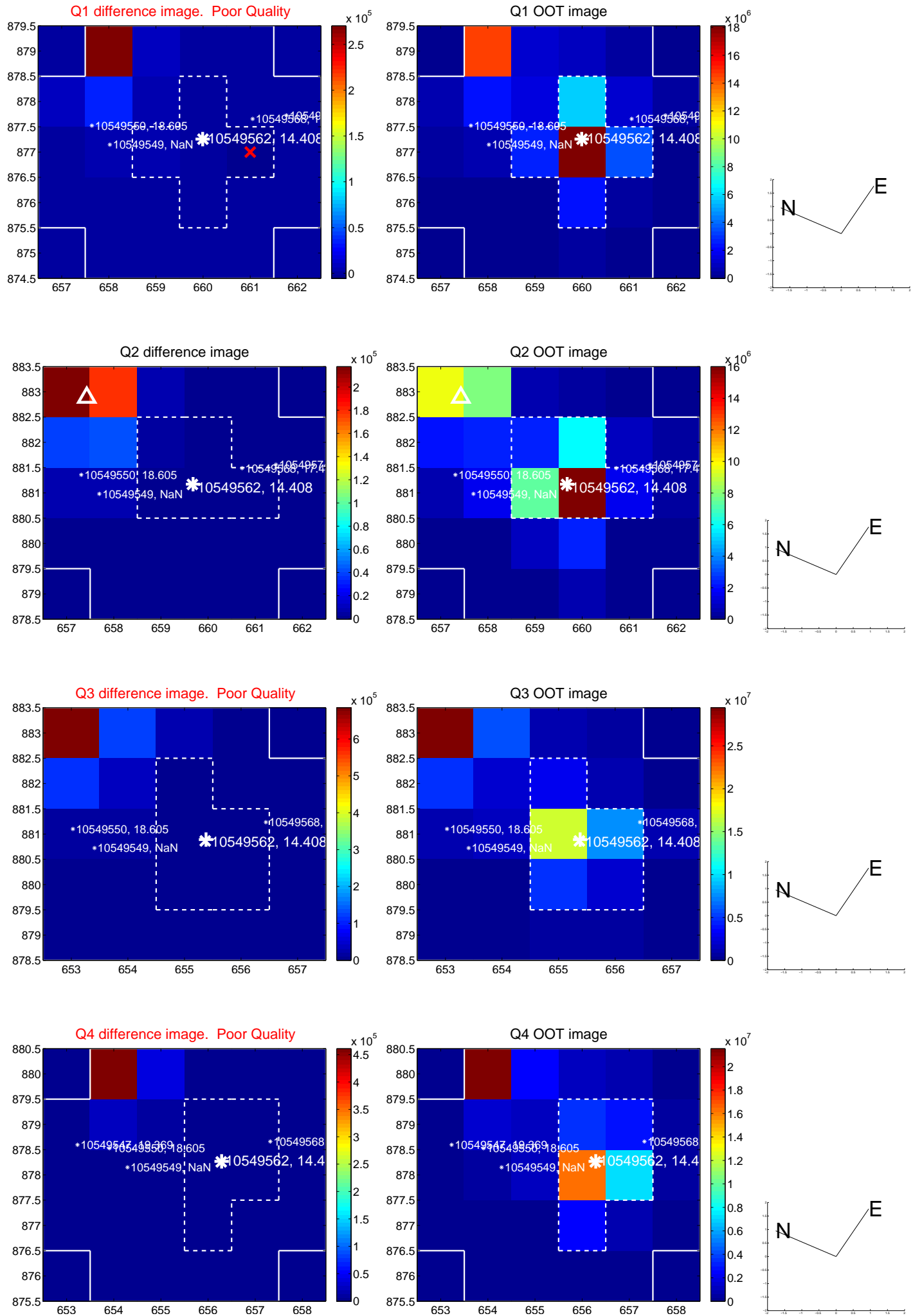
The direct PRF centroid is offset from the target star catalog position by about 0.09 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	11.191 \pm 0.071	158.37	1.526 \pm 0.083	11.086 \pm 0.069
PRF-fit source offset from KIC position	11.116 \pm 0.076	146.42	1.513 \pm 0.078	11.013 \pm 0.076
photometric centroid source offset	85.87 \pm 1.93	44.50	34.42 \pm 1.03	78.67 \pm 2.06

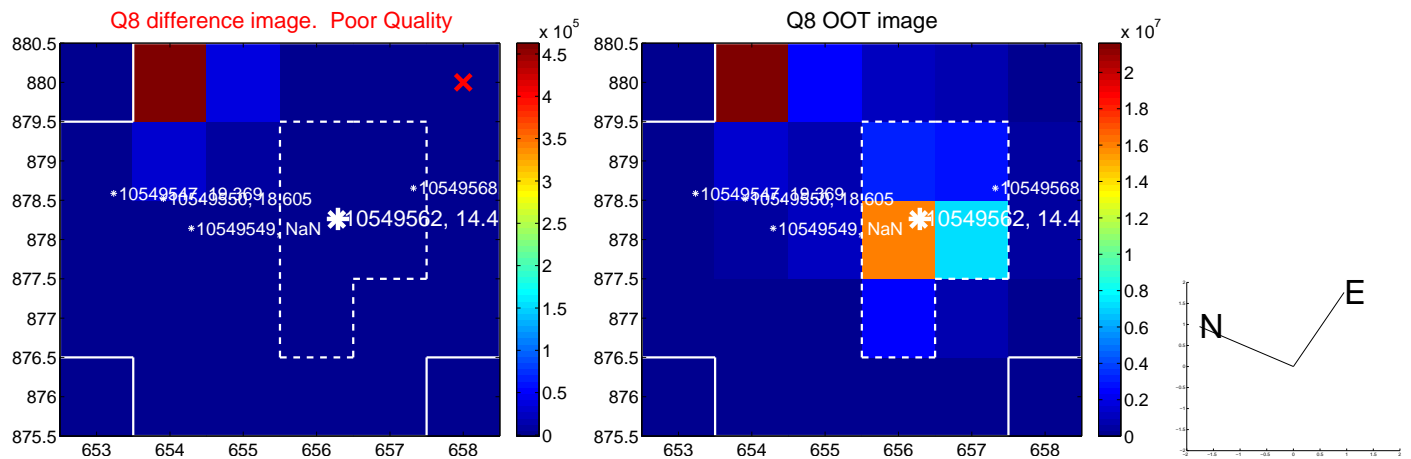
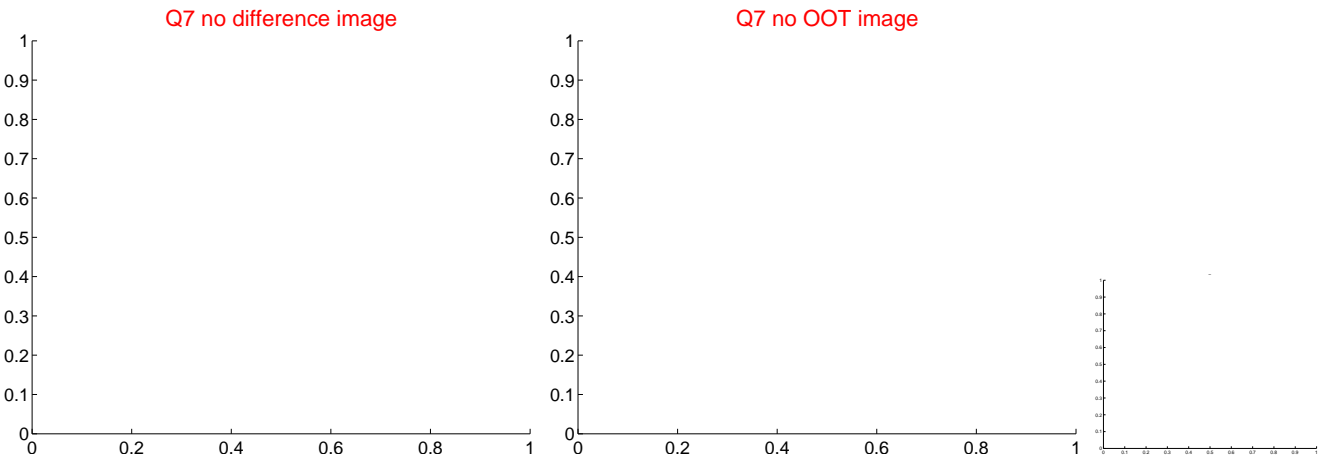
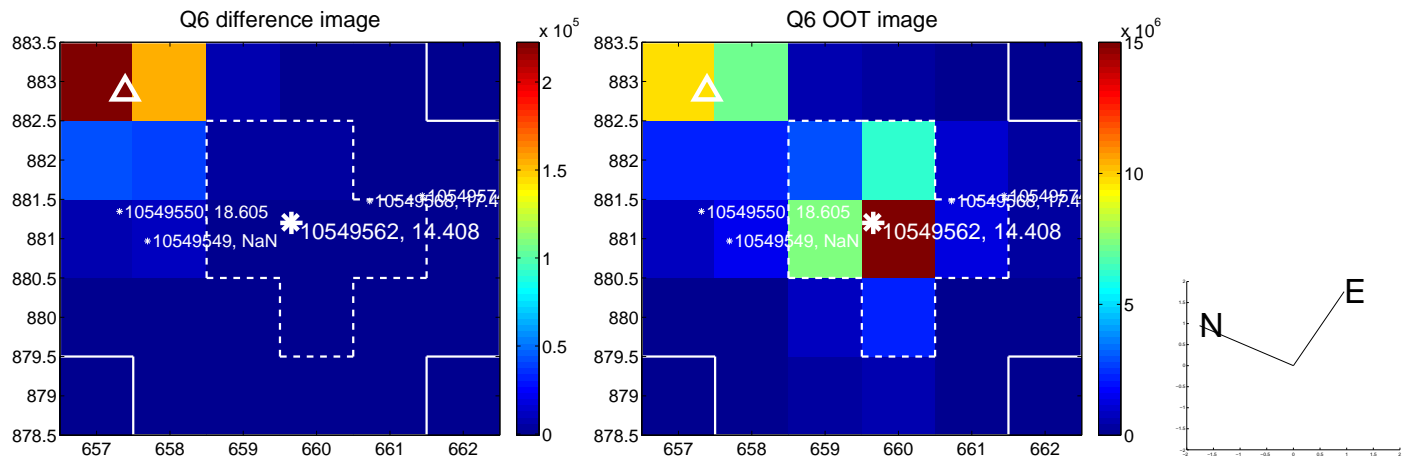
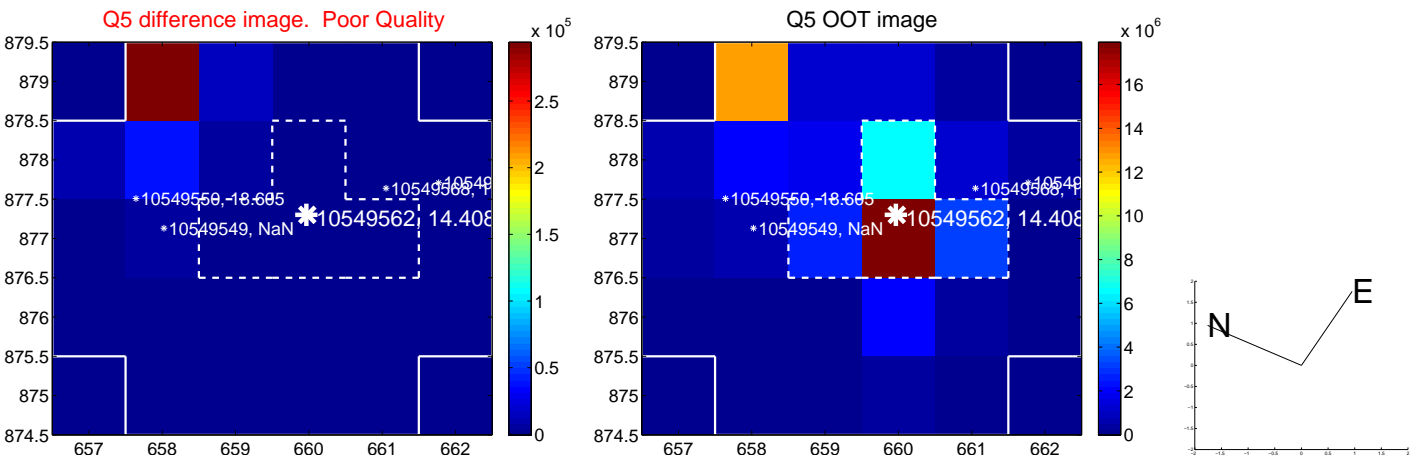


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

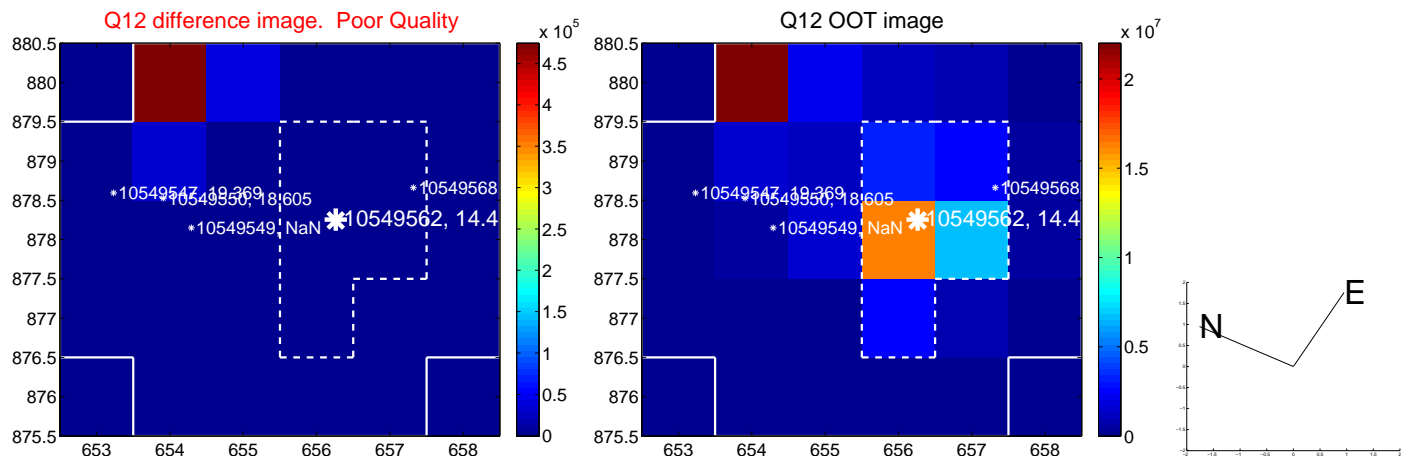
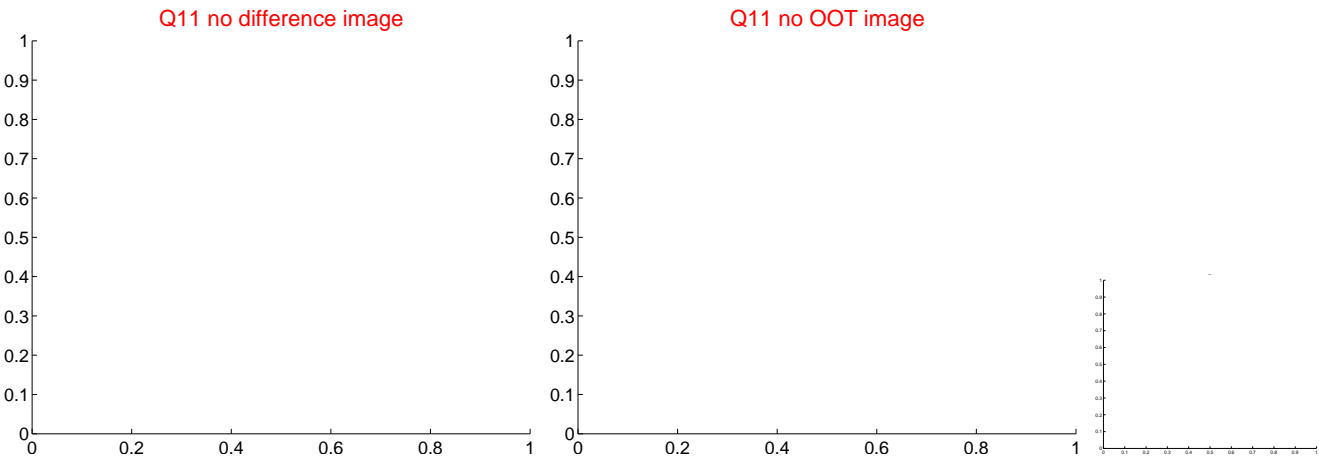
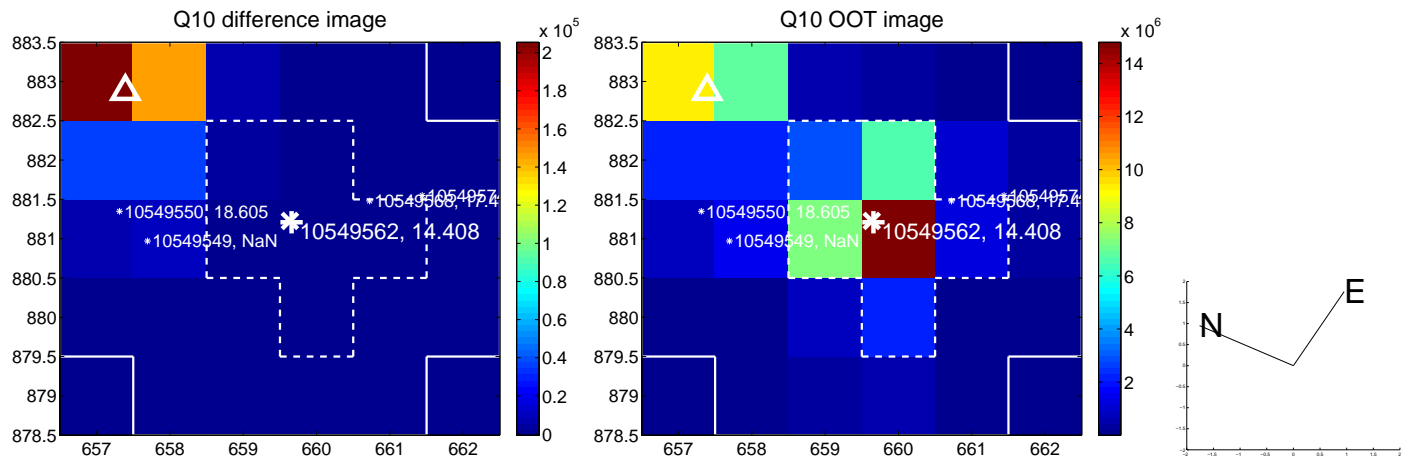
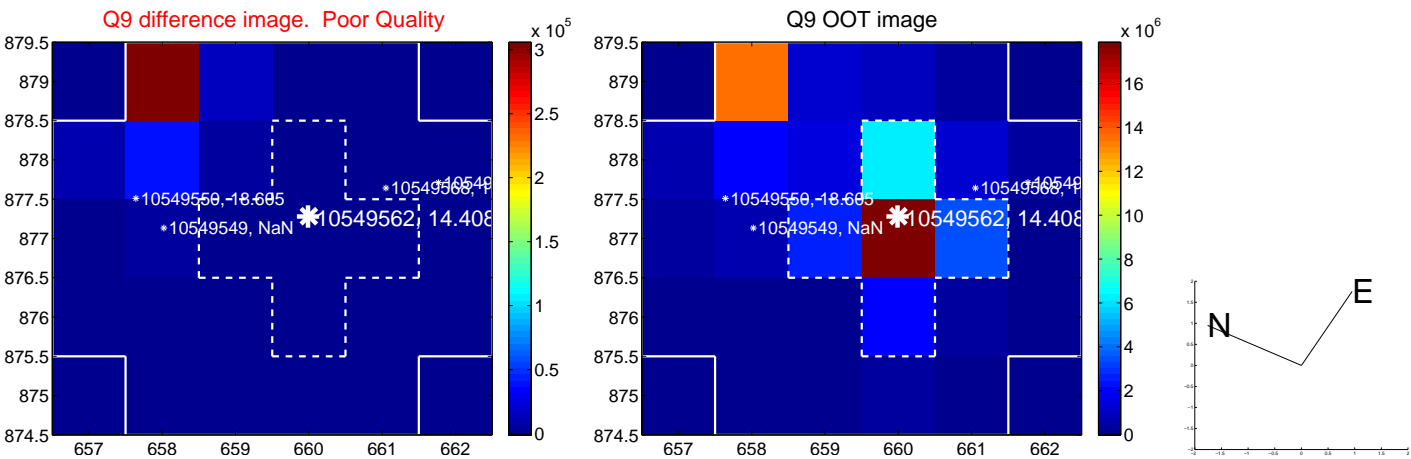
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



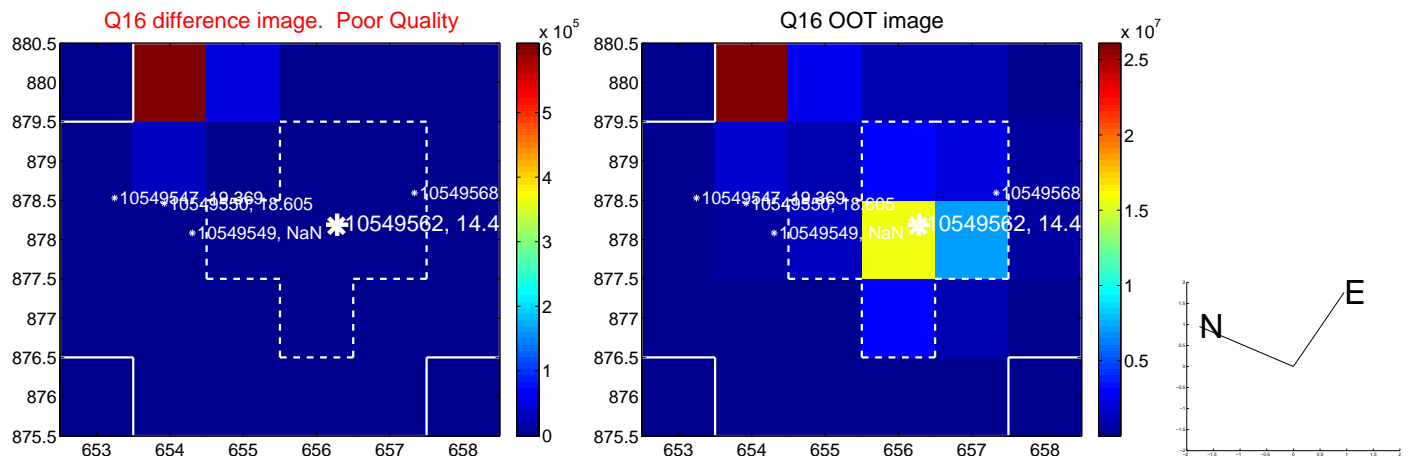
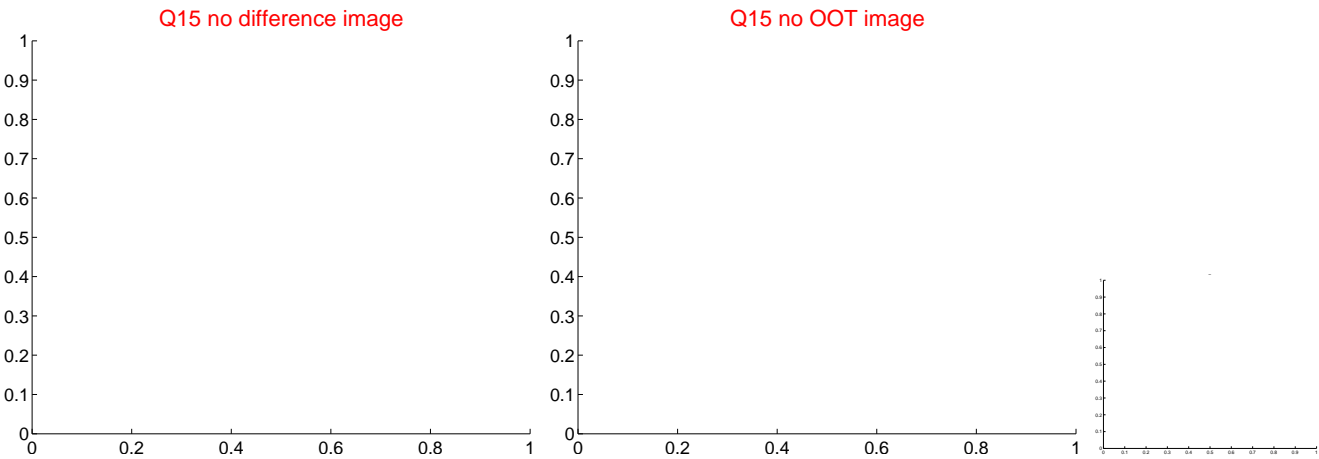
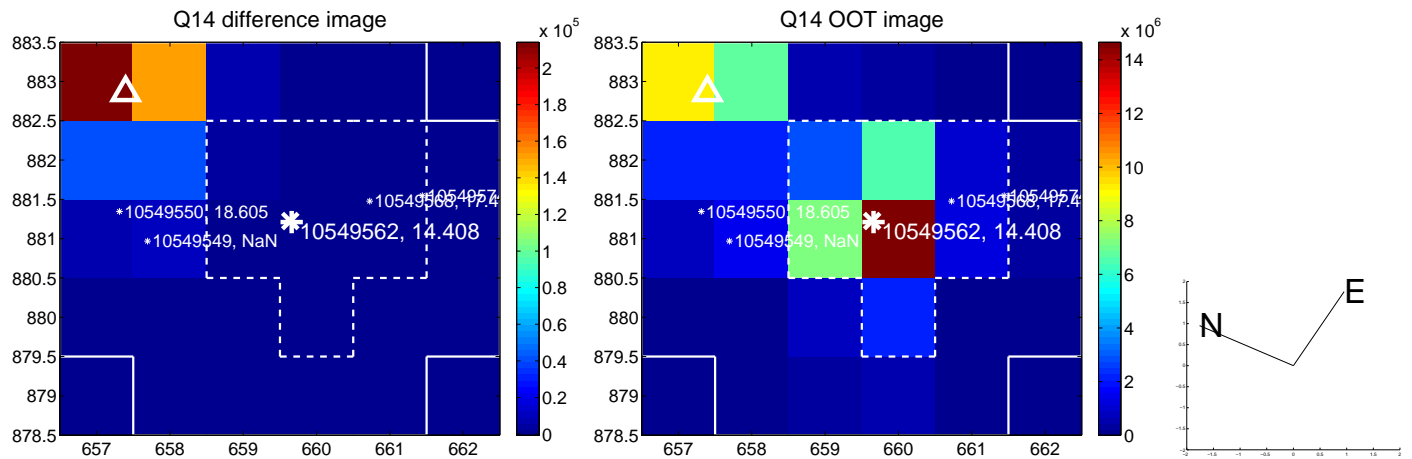
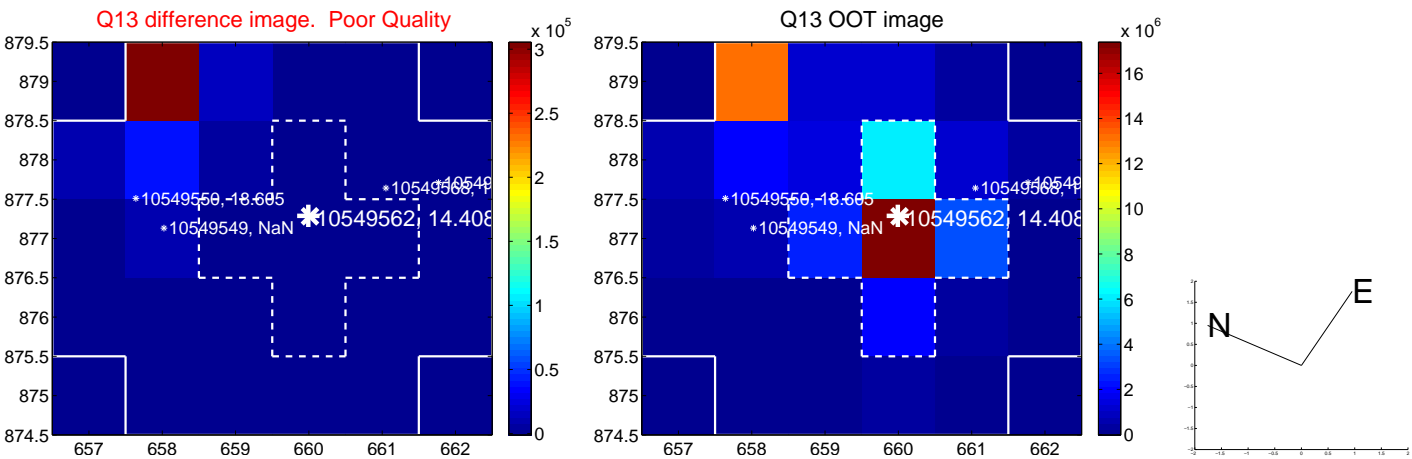
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



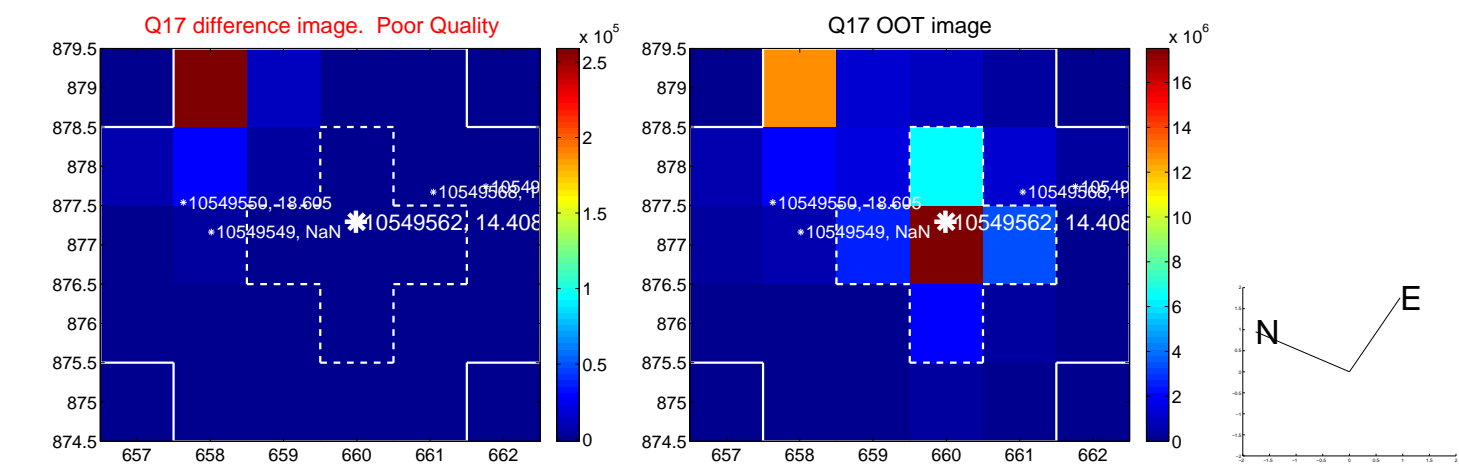
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



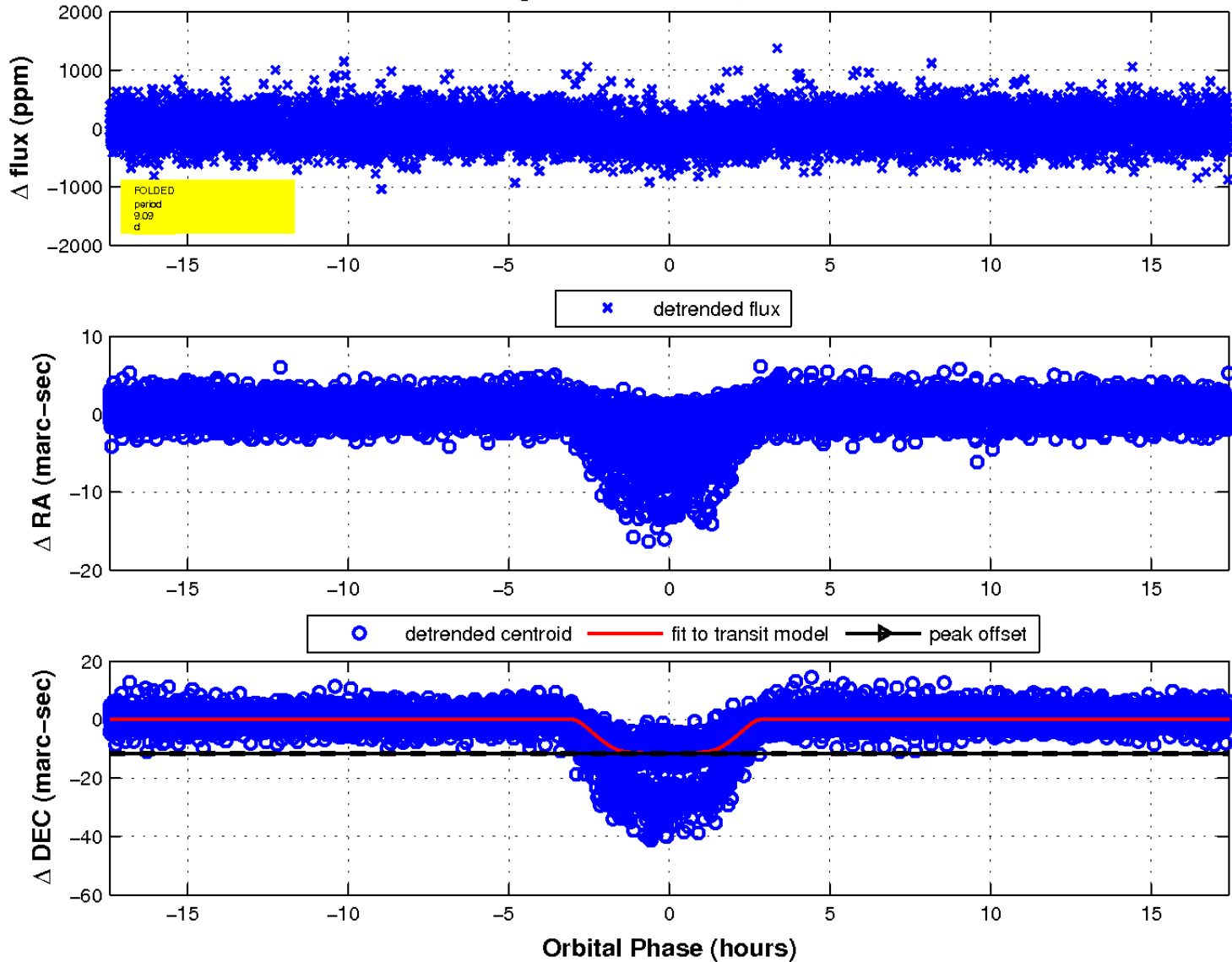
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 2 of 2



UKIRT Image

Declination

