

KIC 009026749

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})
009026749-01	OBS	2564.01	66.557991	181.321574	212.5	10.725	15.7	16.2	3.40	5734	5.48	77.84
009026749-02	OBS	2564.02	17.664481	144.194654	62.3	7.273	7.8	8.1	3.40	5734	3.11	456.39

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009026749-01	OBS	PC	0.96	0	0	0	0	NO_COMMENT
009026749-02	OBS	PC	0.91	0	0	0	0	NO_COMMENT

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

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

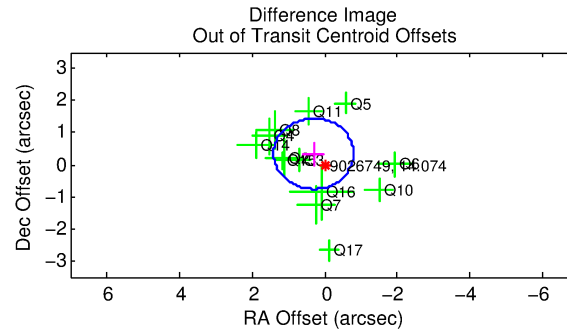
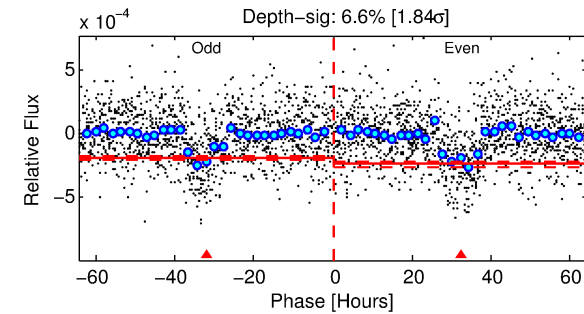
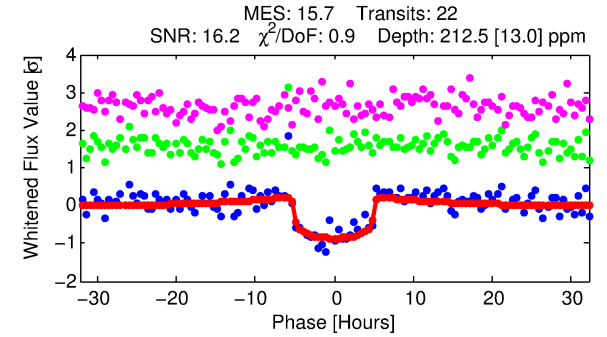
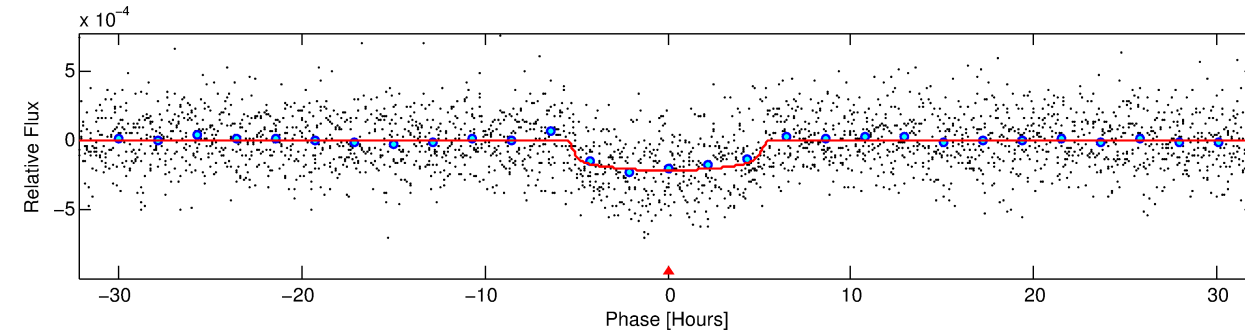
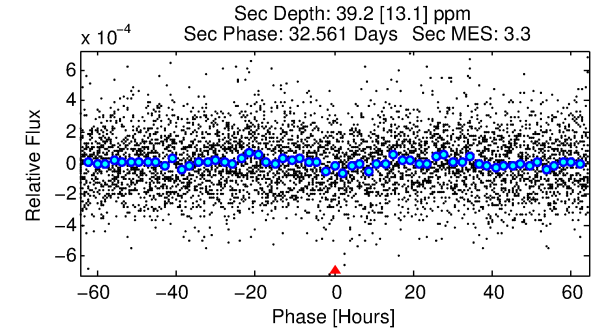
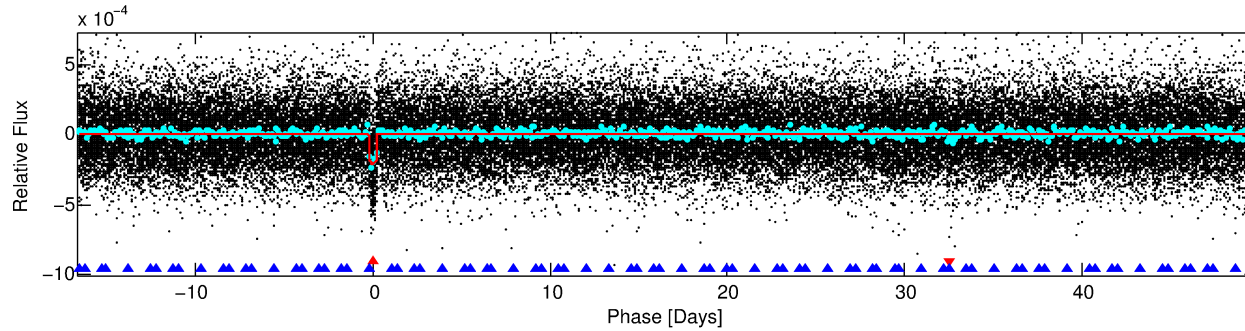
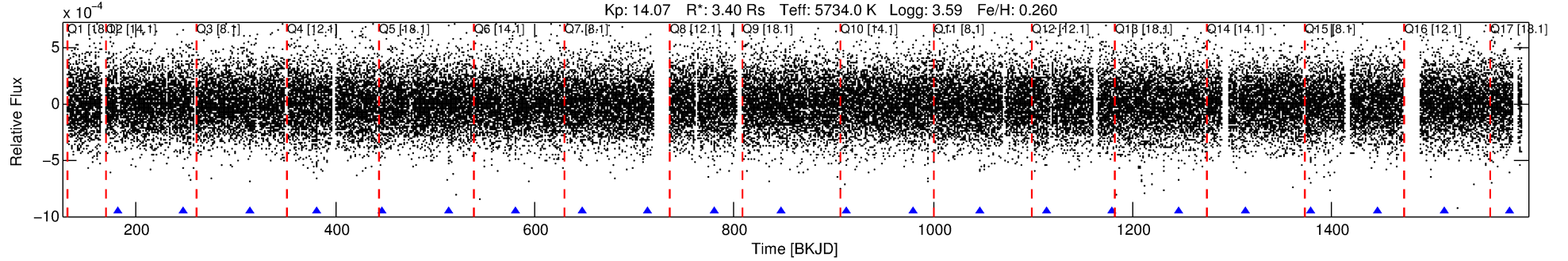
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009026749-01

No Significant Match Found

DV One-Page Summary

KIC: 9026749 Candidate: 1 of 2 Period: 66.558 d
KOI: K02564.01 Corr: 0.985



DV Fit Results:

Period = 66.55799 [0.00076] d
Epoch = 181.3216 [0.0097] BKJD
Rp/R* = 0.0147 [0.0037]
a/R* = 30.38 [32.96]
b = 0.79 [0.53]
Seff = 77.84 [39.46]
Teq = 757 [96] K
Rp = 5.48 [2.31] Re
a = 0.3798 [0.1212] AU
Ag = 103.75 [81.17] [1.27σ]
Teffp = 3737 [564] K [5.21σ]

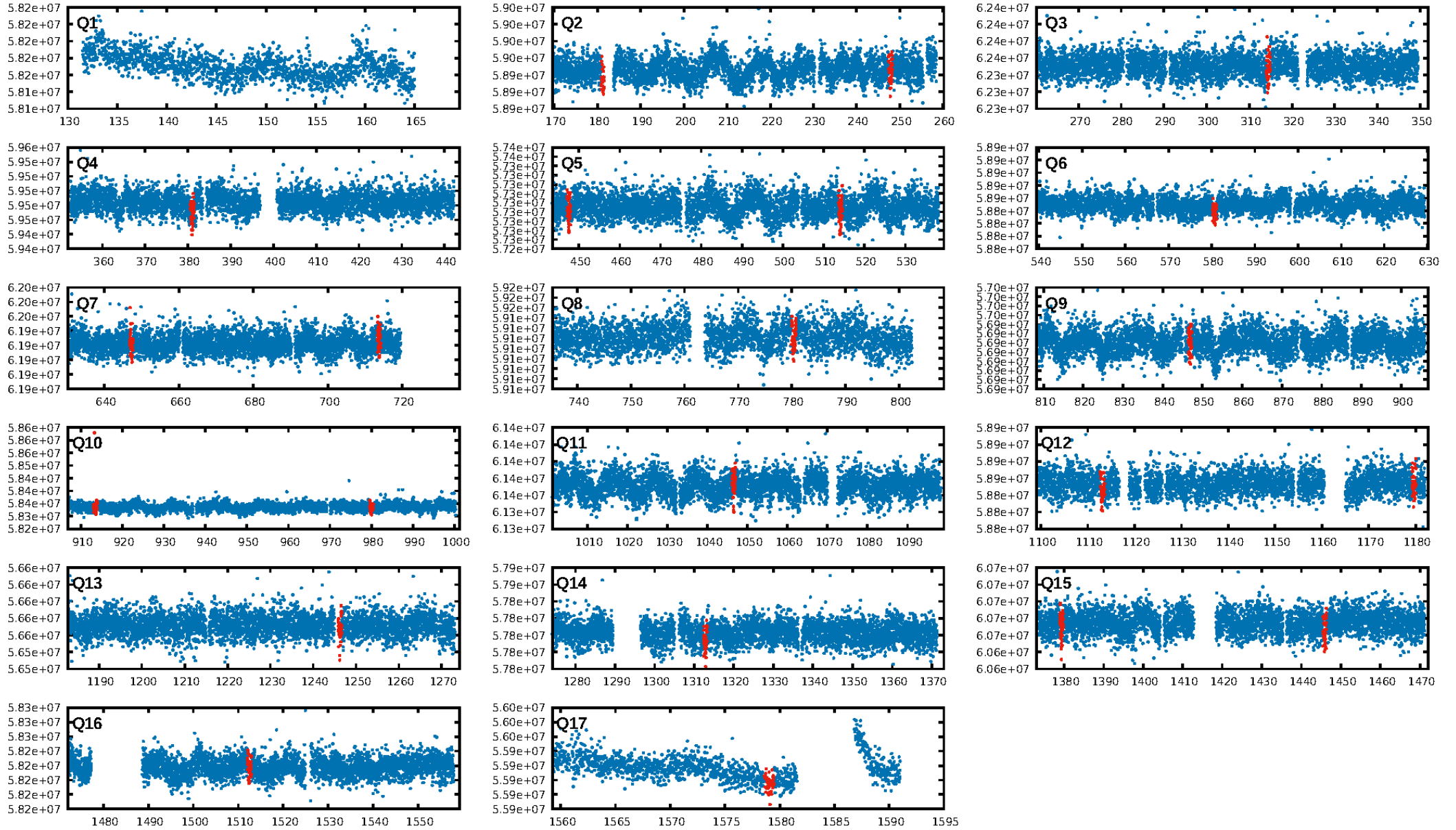
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [90.56σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 24.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 1.45e-54
RollingBand-fgt: 1.00 [21/21]
GhostDiagnostic-chr: 3.108
Centroid-sig: 70.5%
Centroid-so: 0.408 arcsec [0.66σ]
OotOffset-rm: 0.458 arcsec [1.25σ]
OotOffset-st: 4/4/3/2 [13]
KicOffset-rm: 0.358 arcsec [0.95σ]
KicOffset-st: 4/4/3/2 [13]
DiffImageQuality-fgm: 0.92 [12/13]
DiffImageOverlap-fno: 0.92 [12/13]

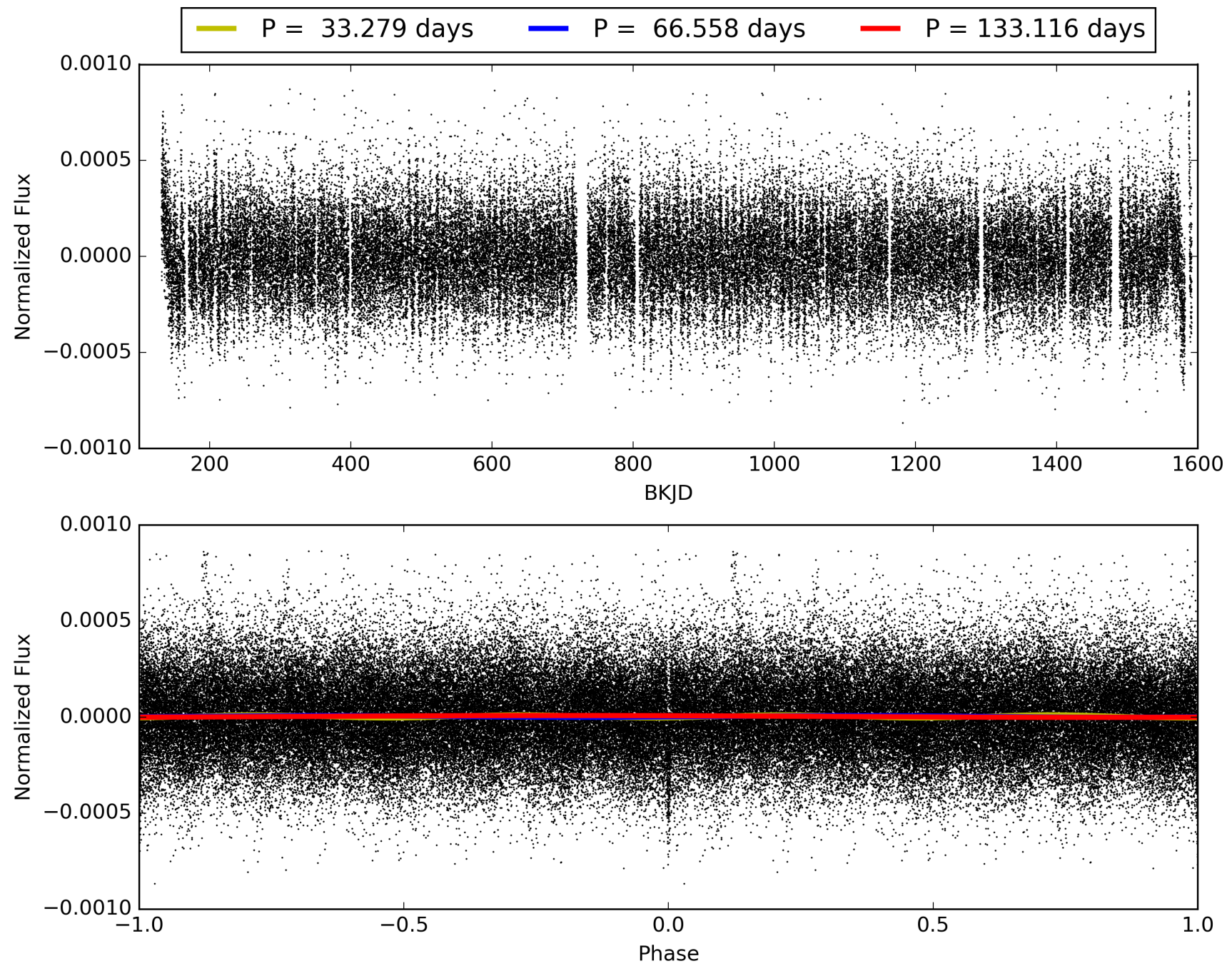
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 20:01:20 Z

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

TCE 009026749-01, PDC Light Curves

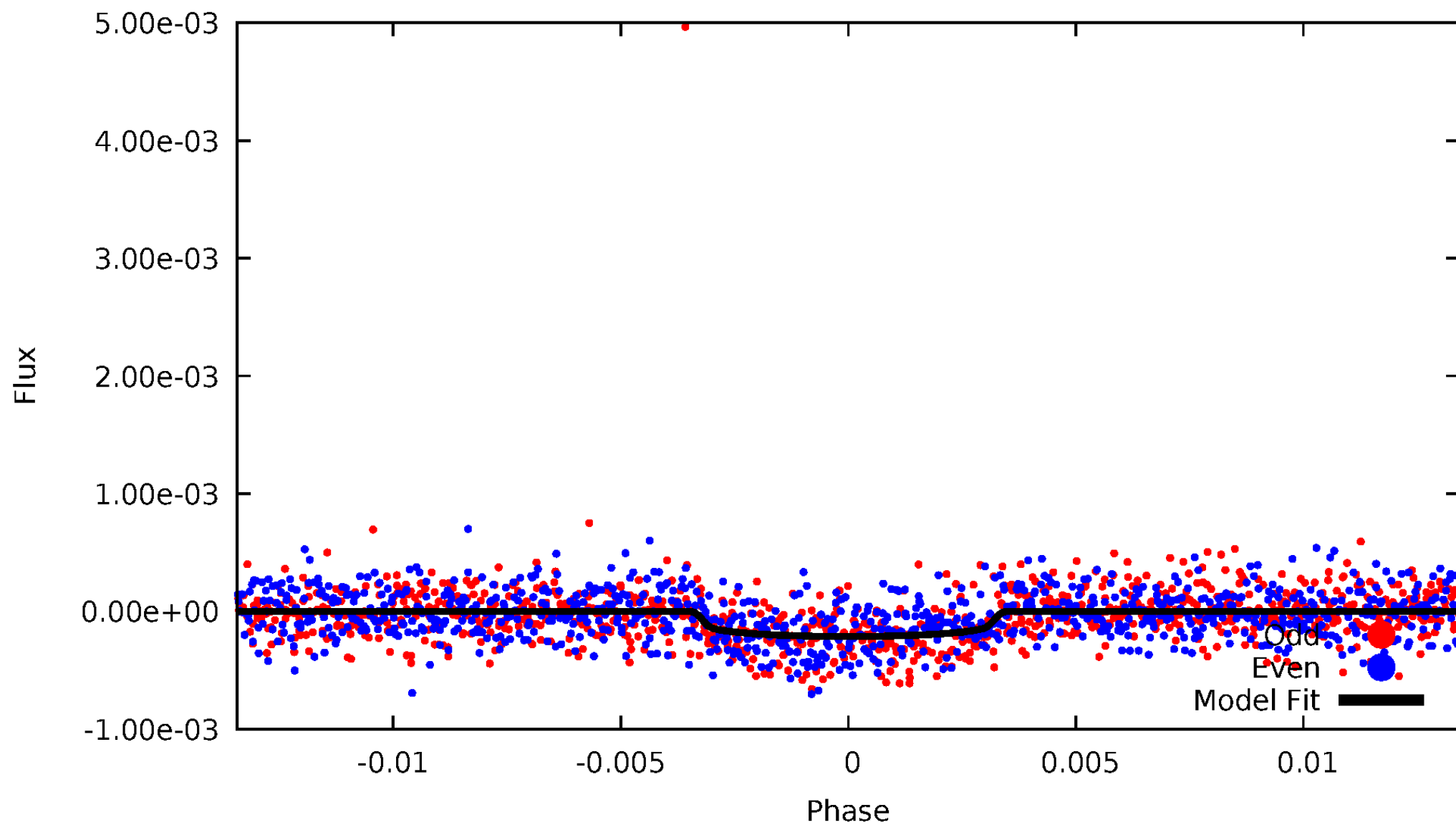


TCE 009026749-01



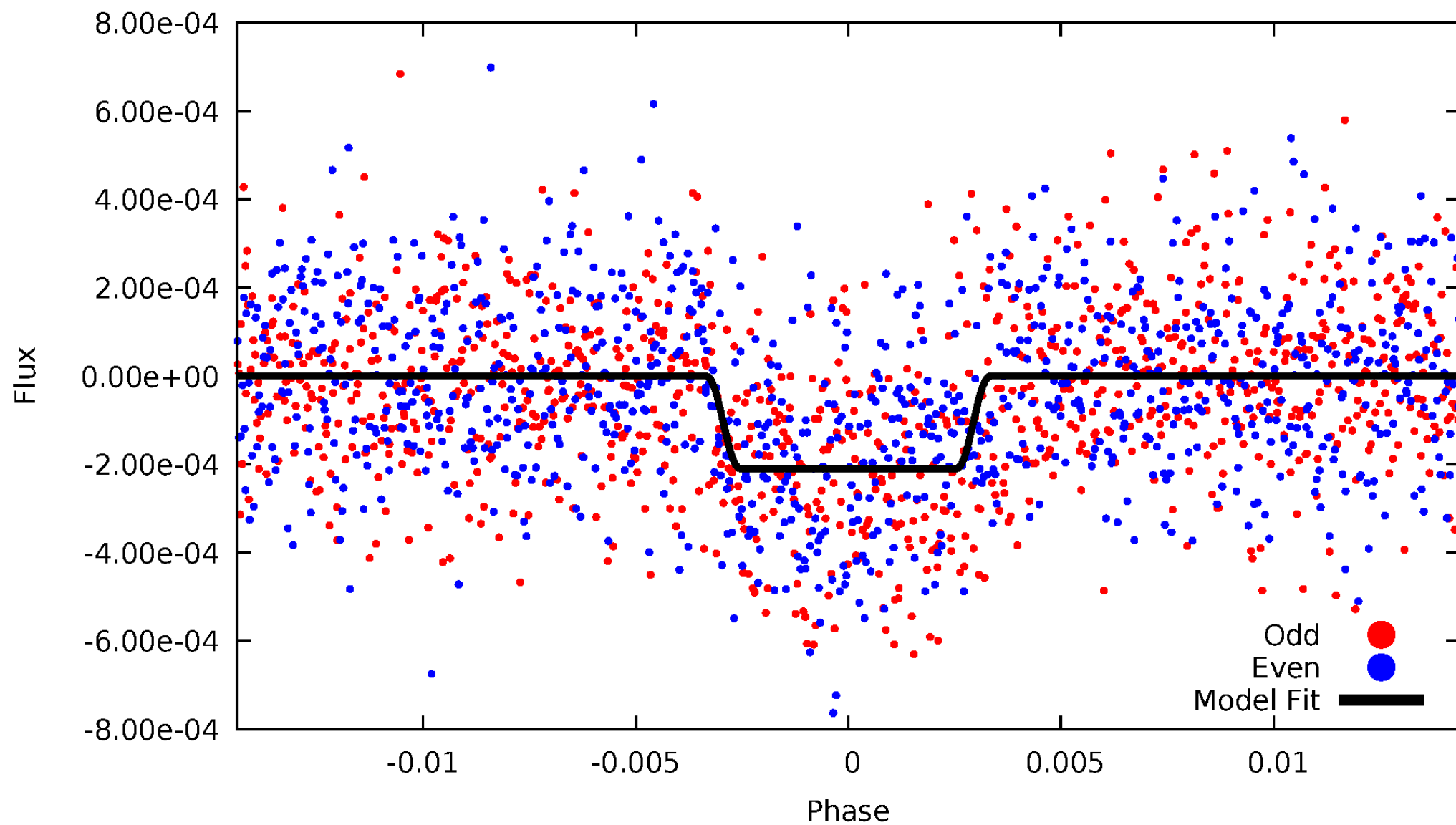
DV Odd/Even

TCE 009026749-01



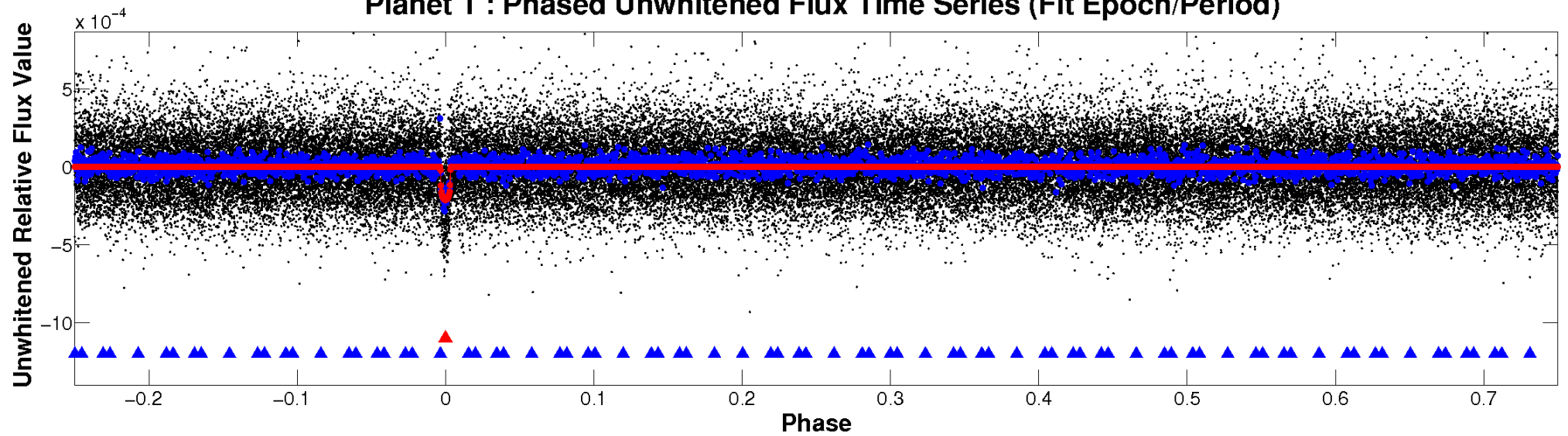
ALT Odd/Even

TCE 009026749-01

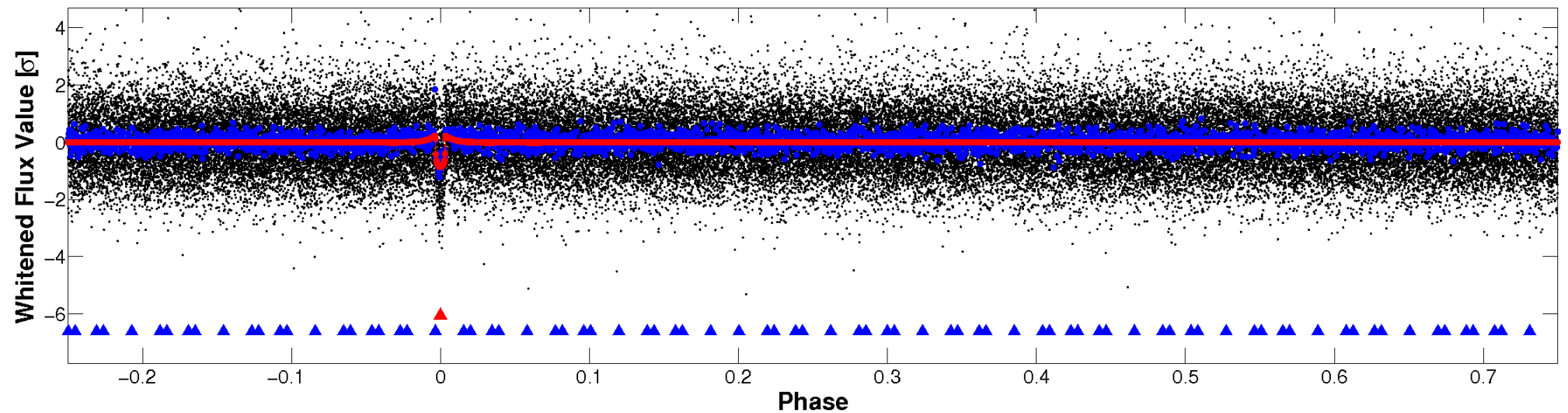


Non-Whitened Vs. Whitened Light Curve

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

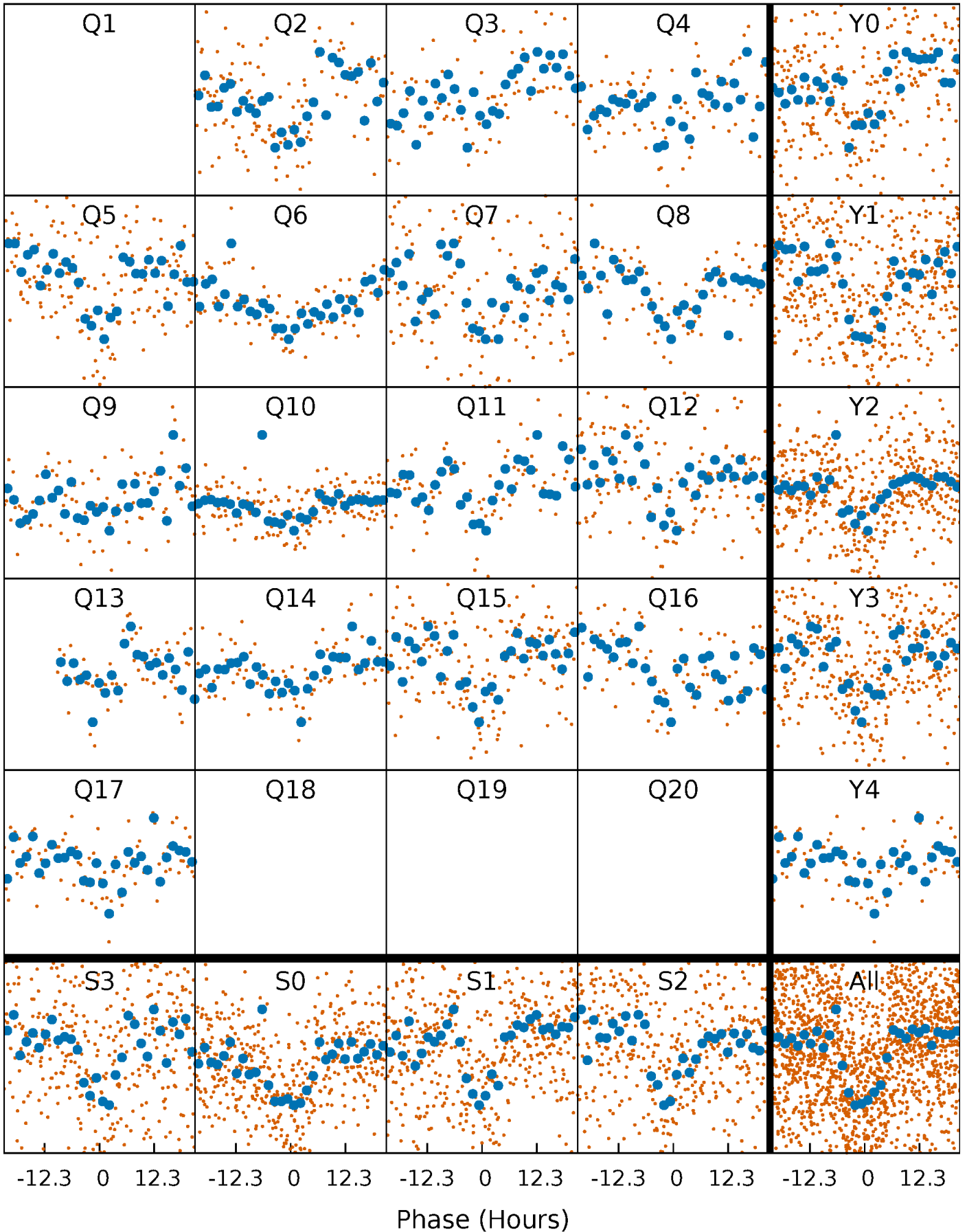


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



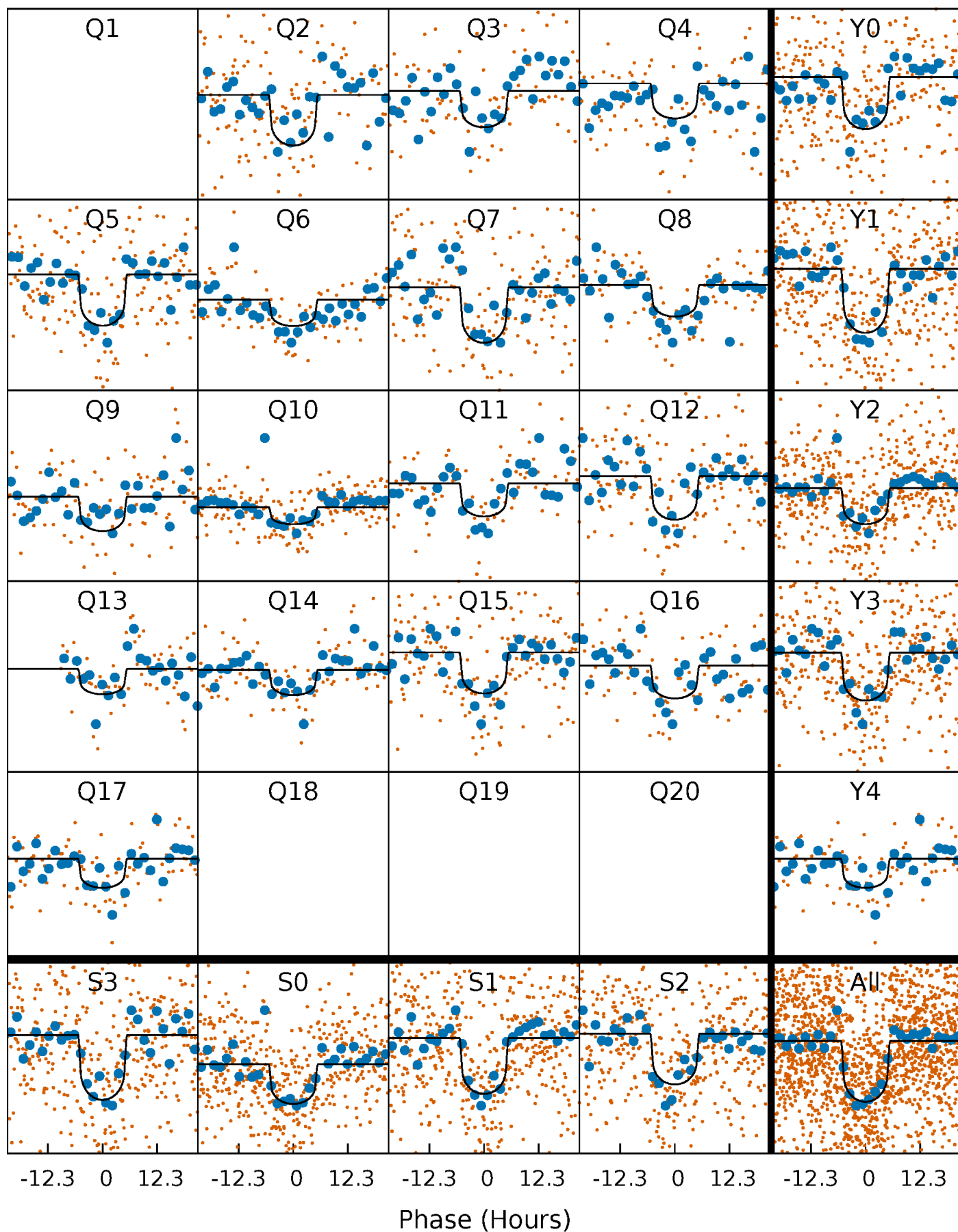
PDC Quarter-Phased Transit Curves

TCE 009026749-01 P= 66.557991 Days $T_0=181.321574$ (BKJD)



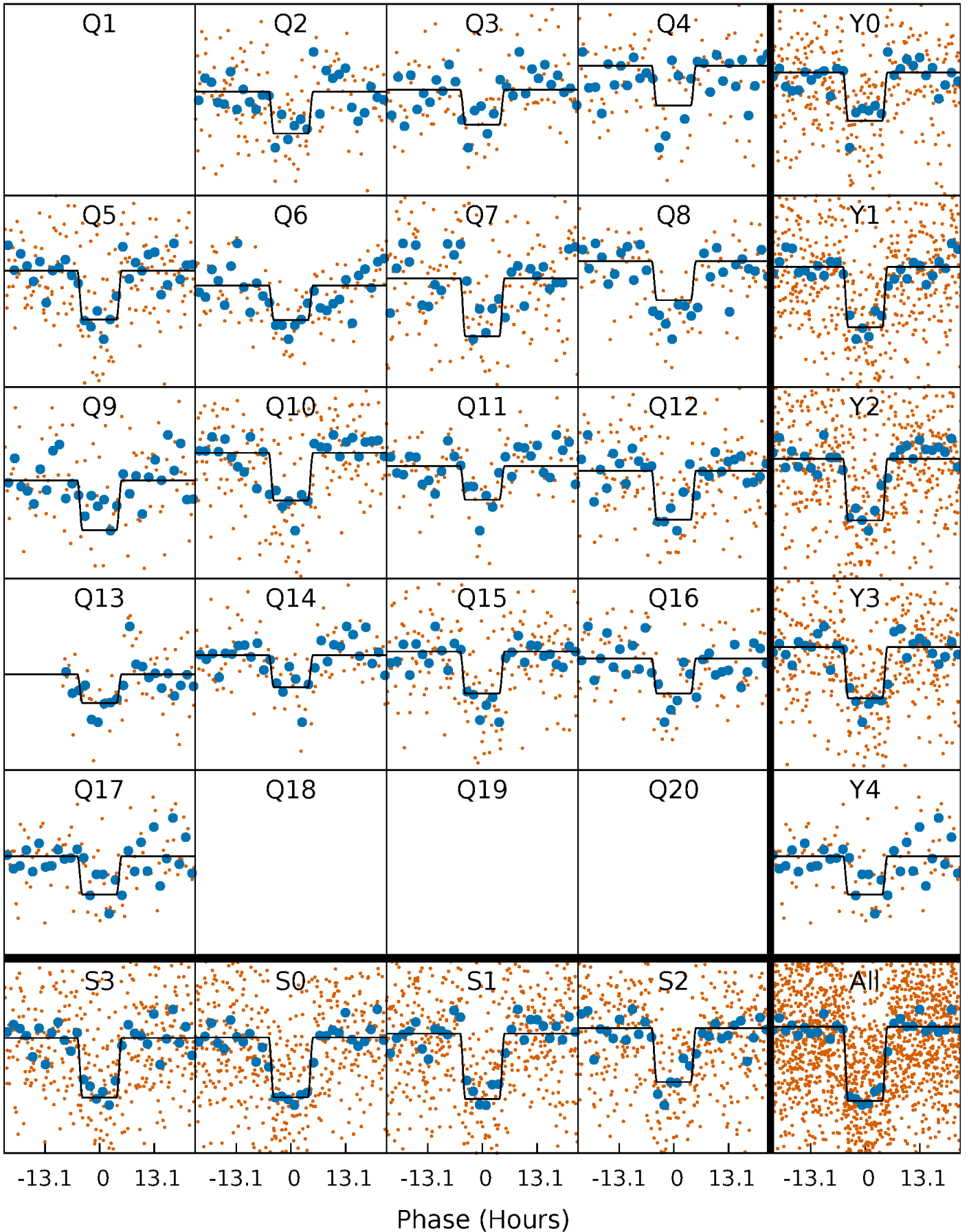
DV Quarter-Phased Transit Curves

TCE 009026749-01 P= 66.557991 Days $T_0=181.321574$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

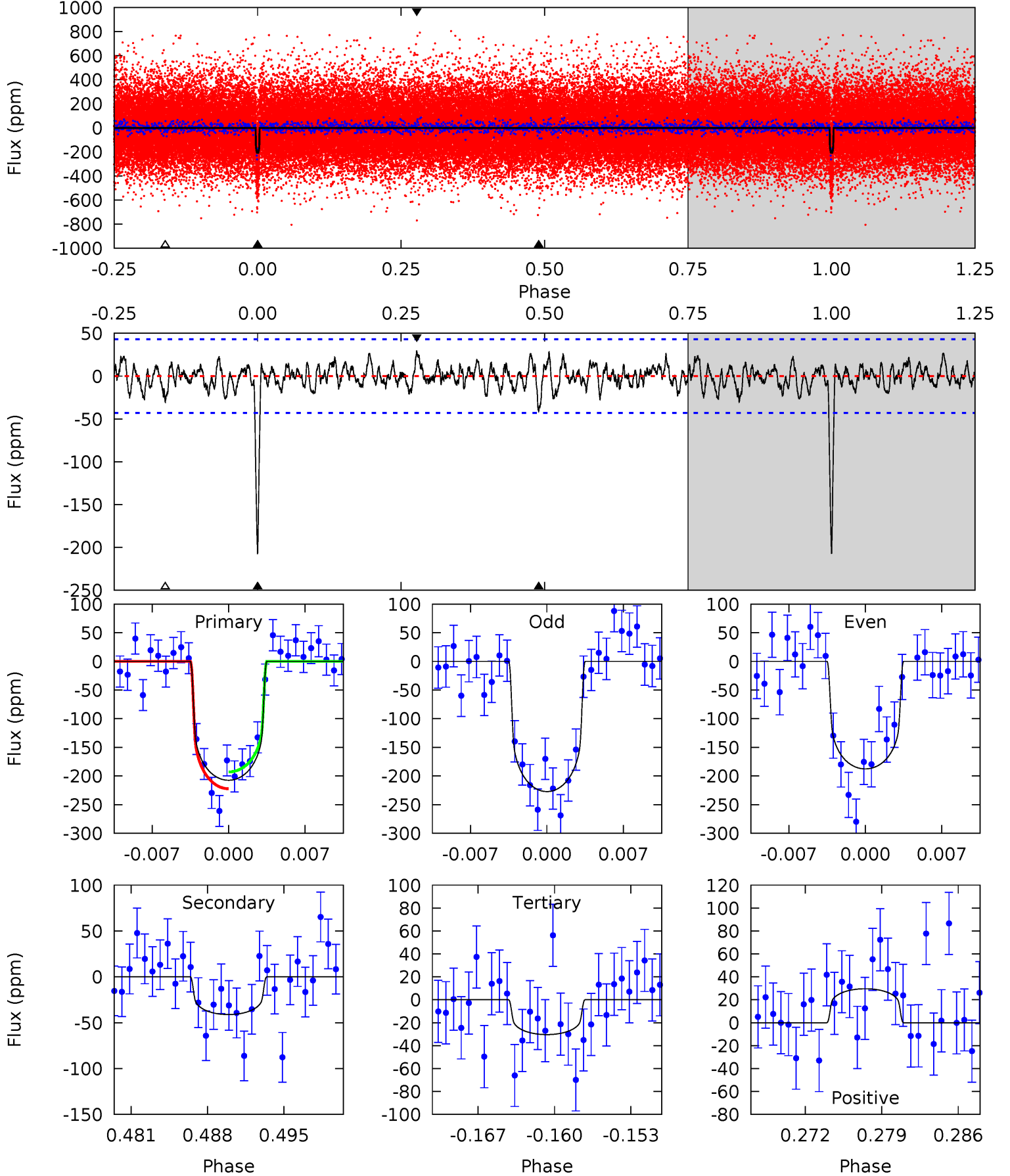
TCE 009026749-01 P= 66.555215 Days $T_0=181.341430$ (BKJD)



DV Model-Shift Uniqueness Test

009026749-01, P = 66.557991 Days, E = 114.763583 Days

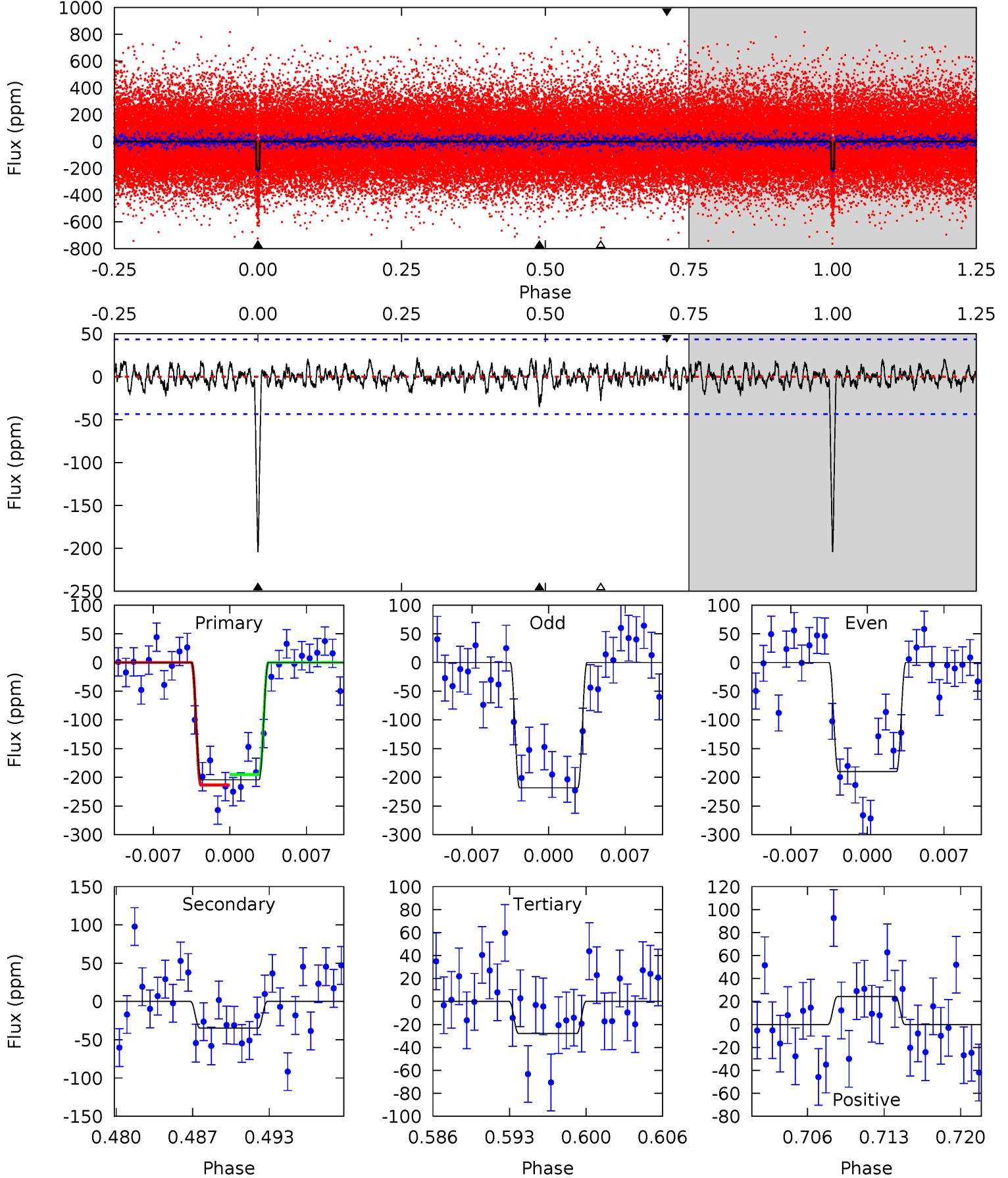
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
24.5	4.87	3.60	3.50	5.10	2.70	1.26	20.9	21.0	1.27	1.37	2.35	0.97	0.12	1.74



Alt Model-Shift Uniqueness Test

009026749-01, P = 66.555215 Days, E = 114.786215 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
23.9	4.09	3.28	2.83	5.10	2.71	0.93	20.7	21.1	0.81	1.26	1.66	0.96	0.11	1.06



Stellar Parameters For KIC 009026749

	$T_{\text{eff}} (K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5734^{+95}_{-69}	$3.591^{+0.292}_{-0.097}$	$0.260^{+0.150}_{-0.150}$	$3.405^{+0.625}_{-1.161}$	$1.648^{+0.143}_{-0.334}$	$0.059^{+0.119}_{-0.018}$
	+2%/-1%	+8%/-3%	+58%/-58%	+18%/-34%	+9%/-20%	+202%/-31%
Source	SPE90	SPE90	SPE90	DSEP		

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

Secondary Eclipse Parameters for KIC 009026749-01 / KOI 2564.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-41 ± 8	$5.10^{+1.66}_{-1.53}$	1041^{+58}_{-91}	4085^{+454}_{-356}	121^{+131}_{-54}
Alt.	-35 ± 9	$4.96^{+1.75}_{-1.44}$	1050^{+59}_{-85}	4006^{+506}_{-384}	106^{+120}_{-50}

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

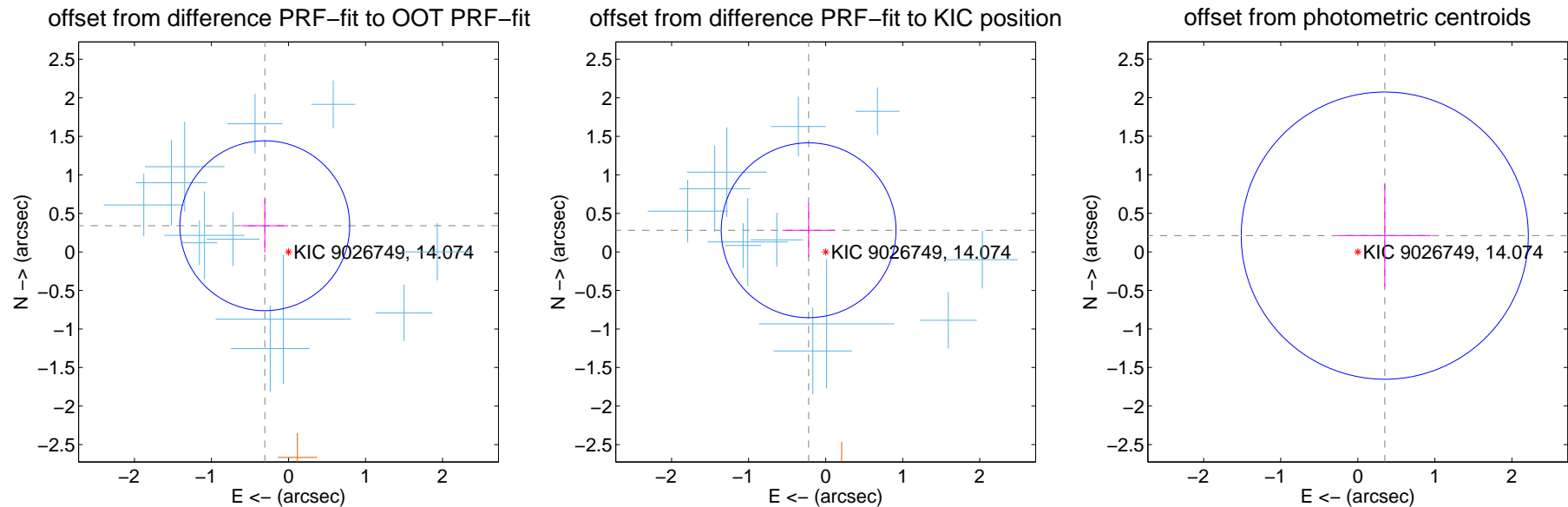
DV Centroid Data

Supplemental centroid analysis for 009026749-01. Kepler magnitude: 14.07. Transit SNR 16.20

There are 12 quarters with good PRF difference image offsets

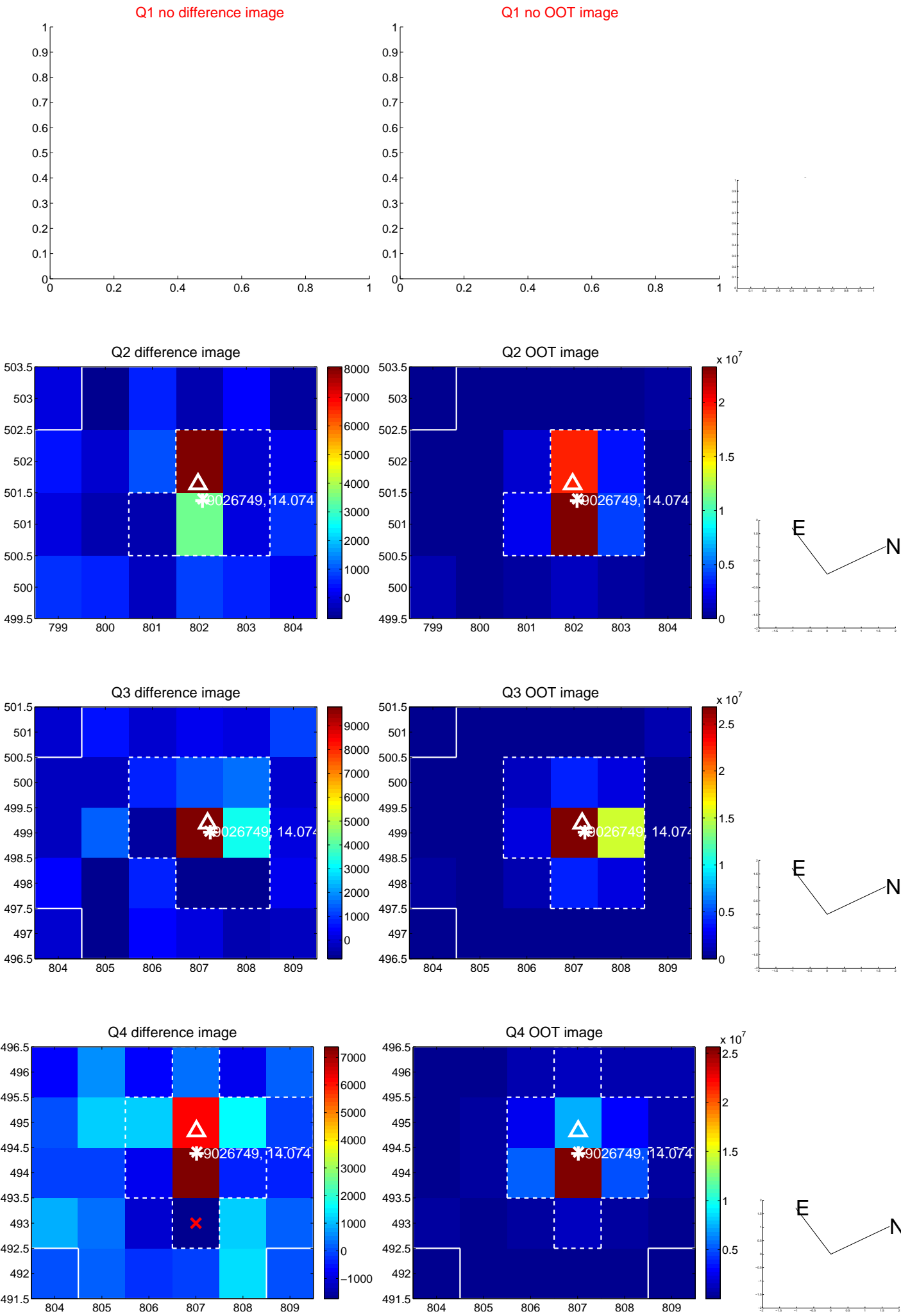
The direct PRF centroid is offset from the target star catalog position by about 0.14 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.458 ± 0.367	1.25	0.308 ± 0.303	0.340 ± 0.347
PRF-fit source offset from KIC position	0.358 ± 0.378	0.95	0.221 ± 0.338	0.281 ± 0.346
photometric centroid source offset	0.41 ± 0.62	0.66	-0.35 ± 0.60	0.21 ± 0.67

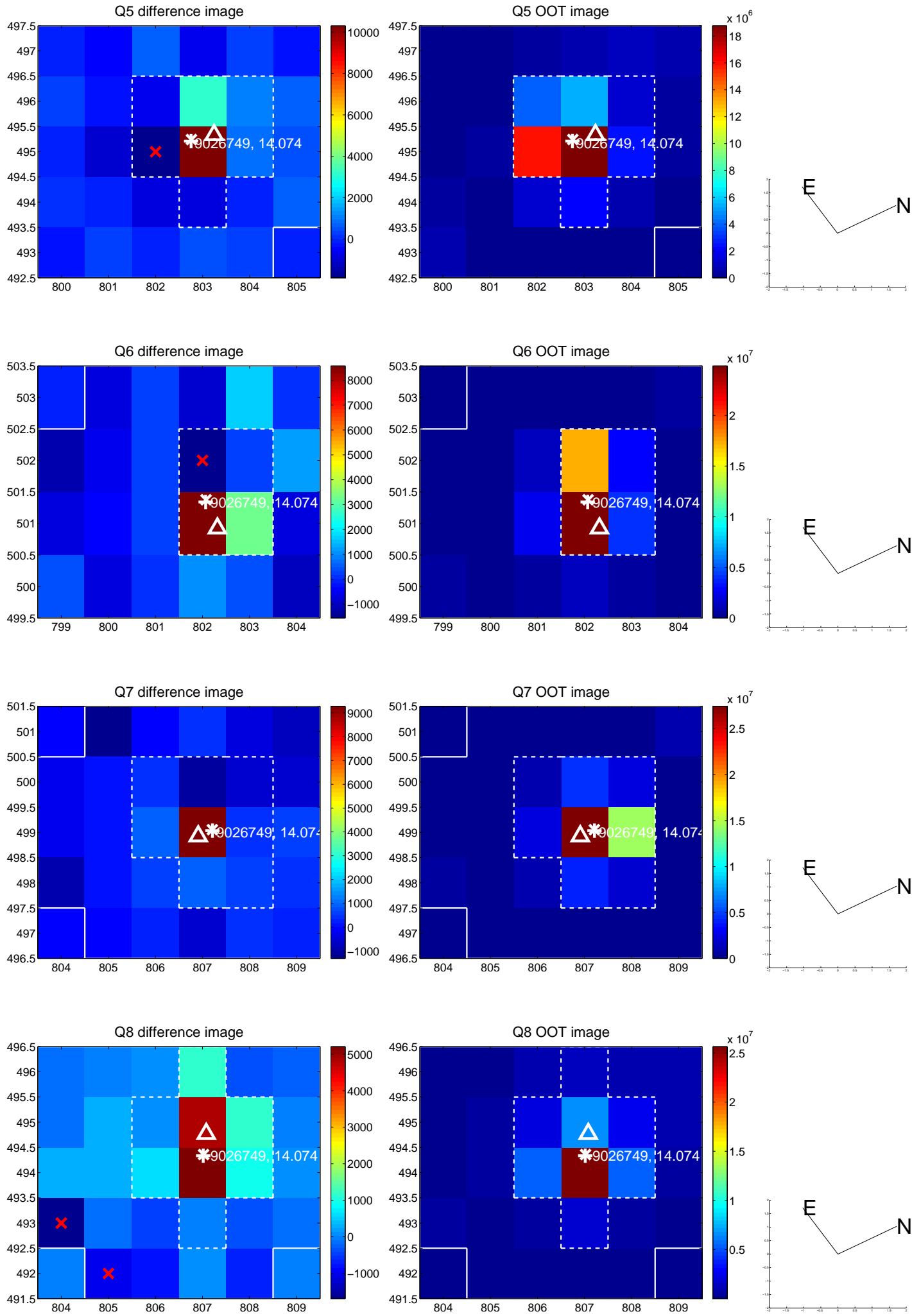


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

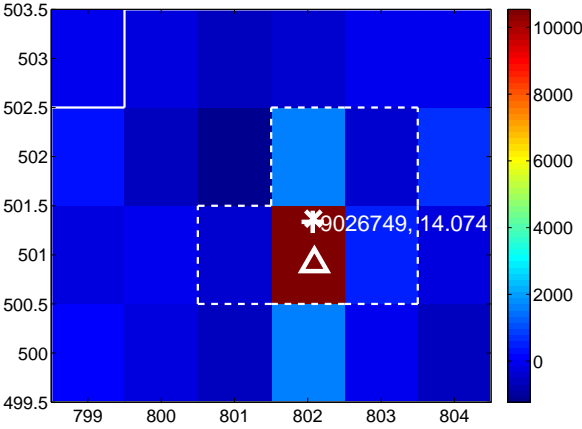
Q9 no difference image



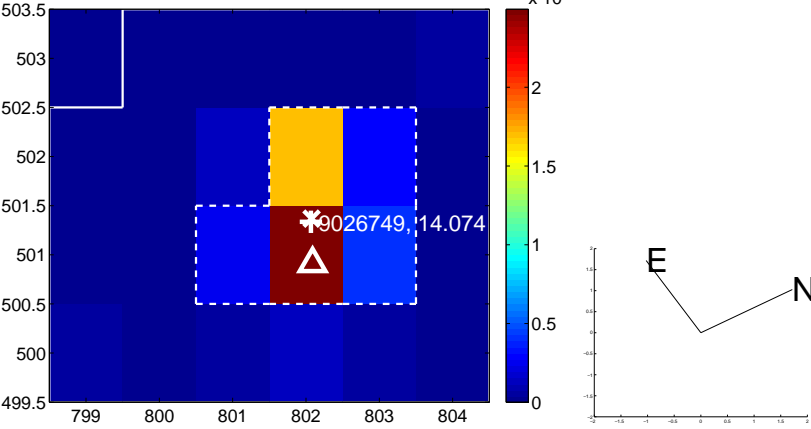
Q9 no OOT image



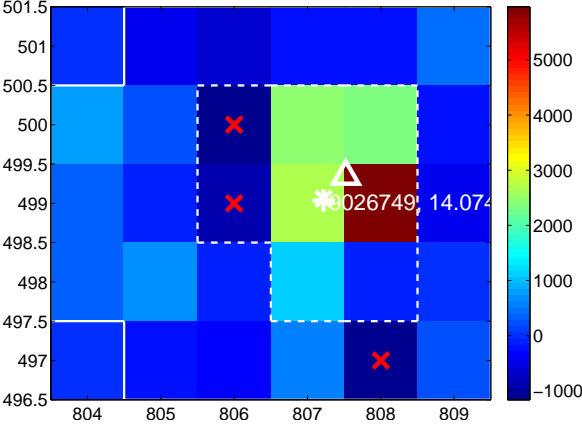
Q10 difference image



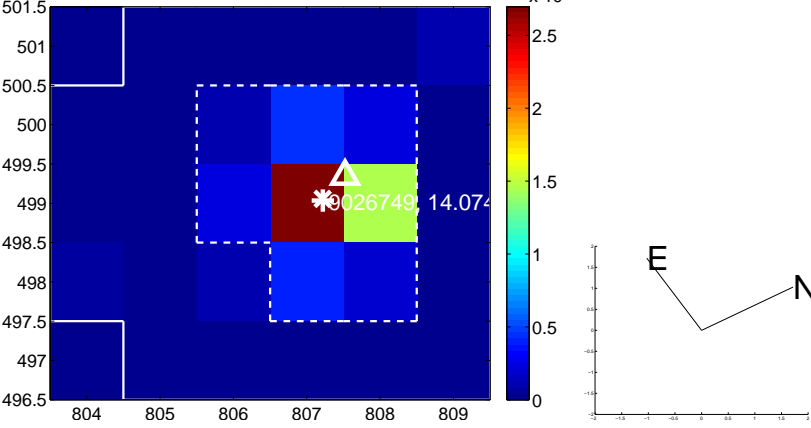
Q10 OOT image



Q11 difference image



Q11 OOT image



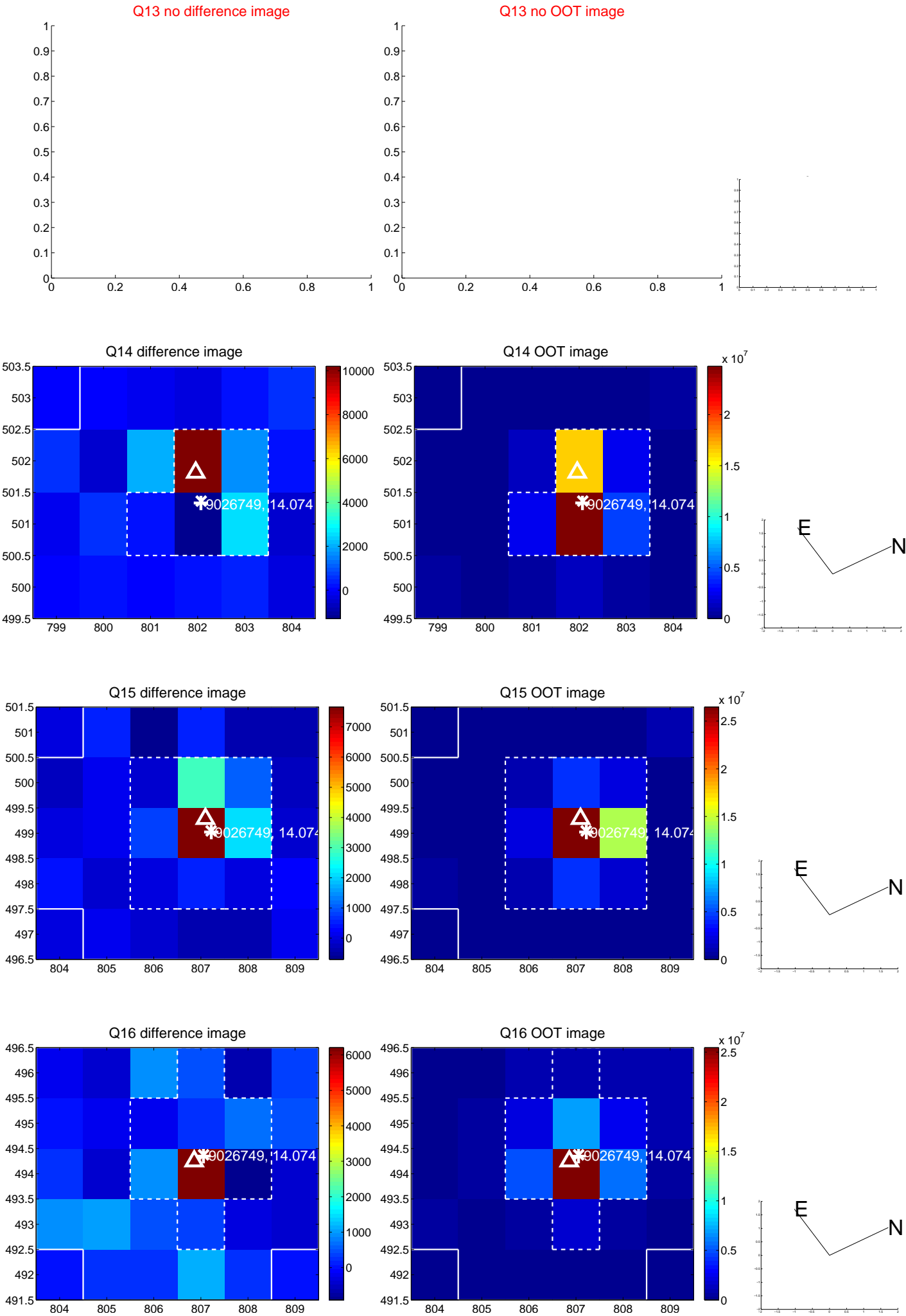
Q12 no difference image



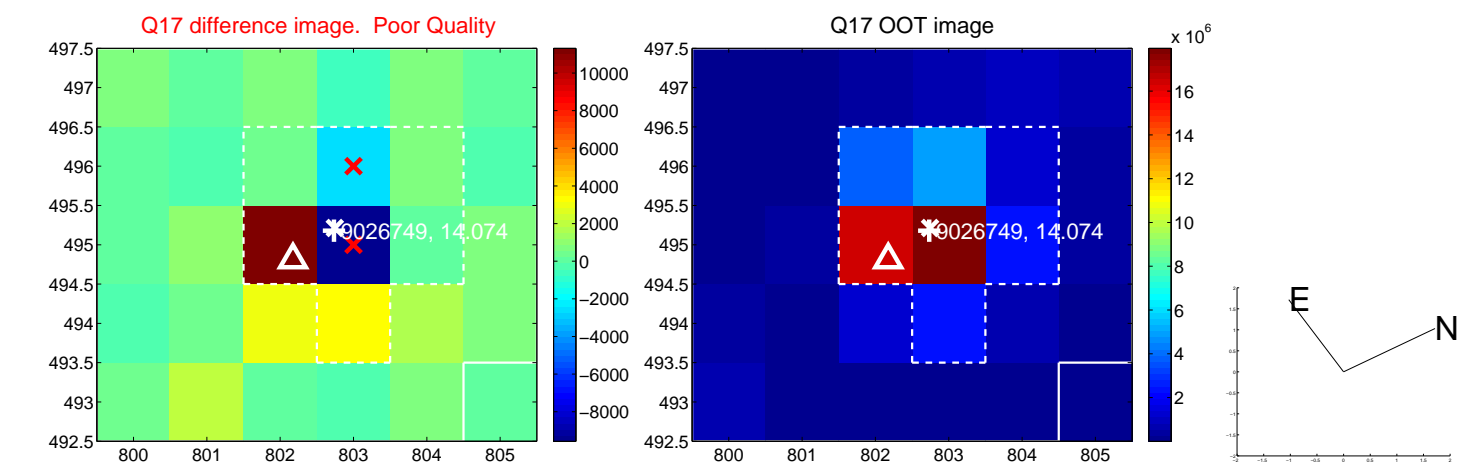
Q12 no OOT image



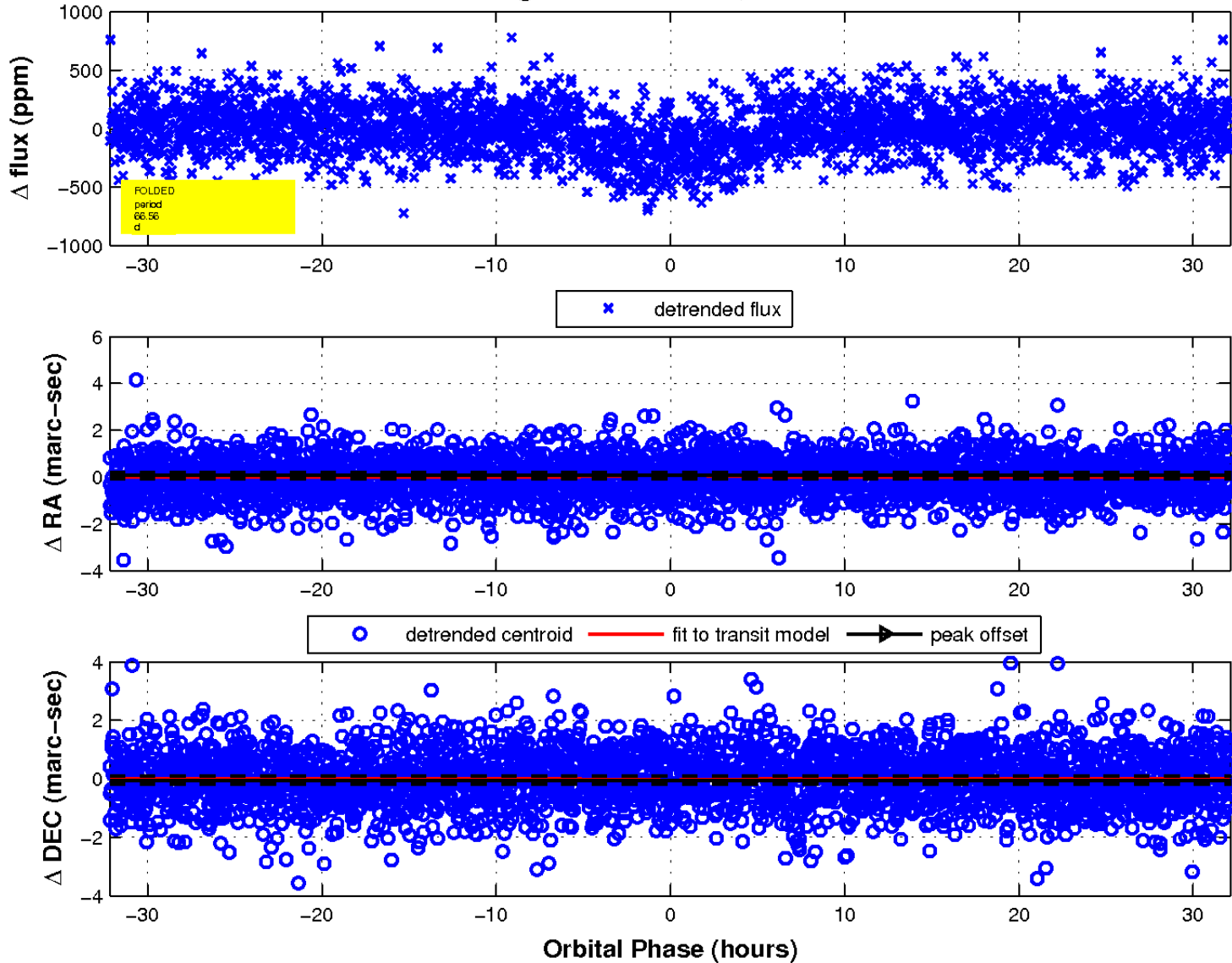
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

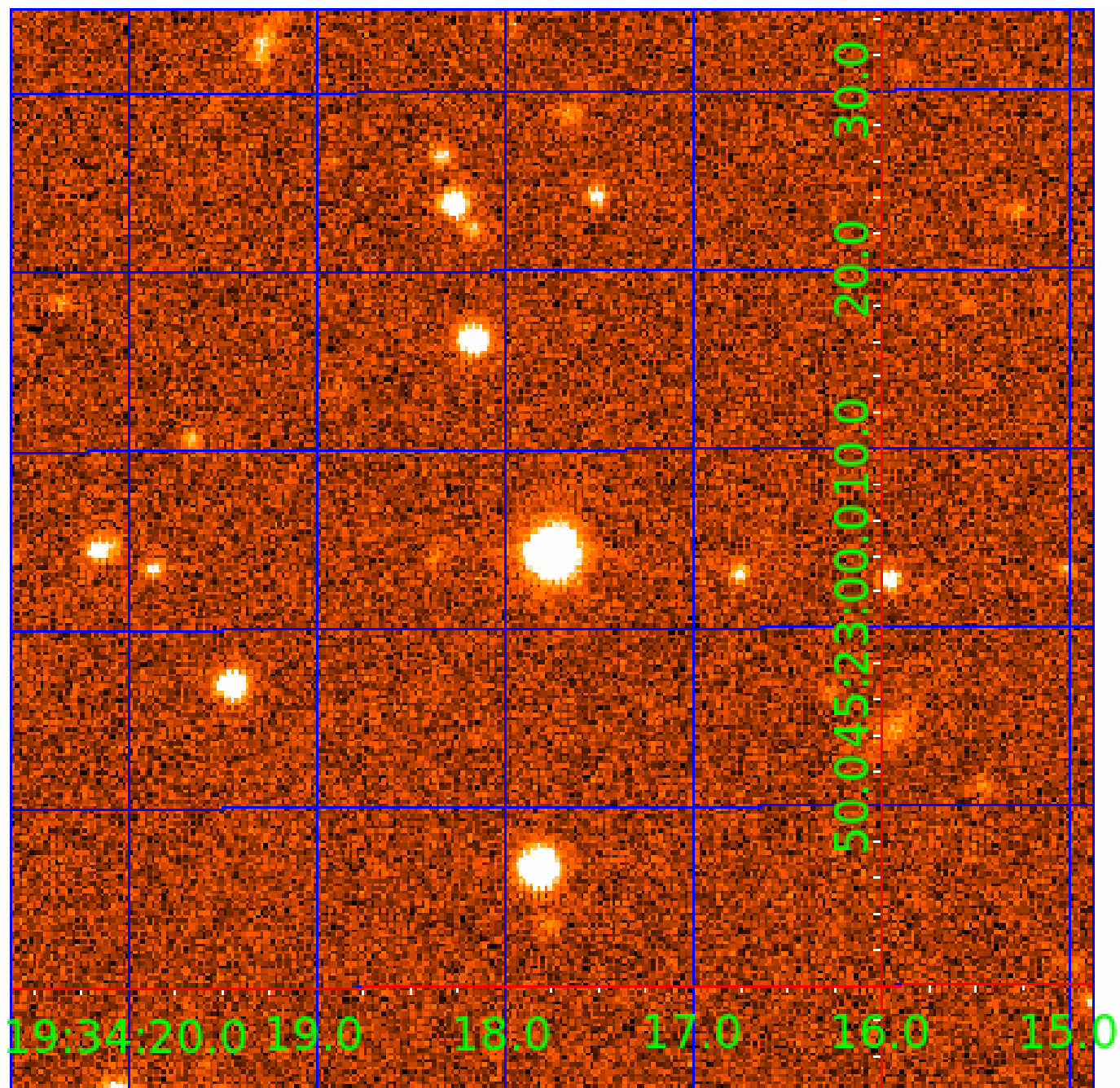


fluxWeightedCentroids, Planet 1 of 2



UKIRT Image

Declination



KIC 009026749

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})
009026749-01	OBS	2564.01	66.557991	181.321574	212.5	10.725	15.7	16.2	3.40	5734	5.48	77.84
009026749-02	OBS	2564.02	17.664481	144.194654	62.3	7.273	7.8	8.1	3.40	5734	3.11	456.39

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009026749-01	OBS	PC	0.96	0	0	0	0	NO_COMMENT
009026749-02	OBS	PC	0.91	0	0	0	0	NO_COMMENT

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

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

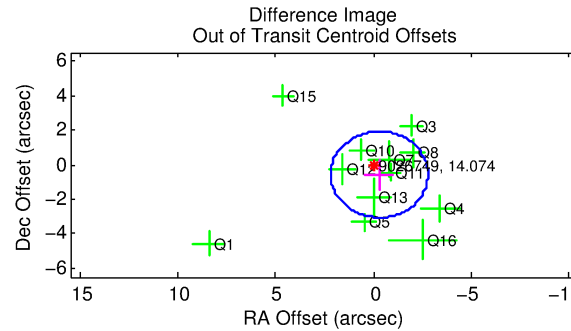
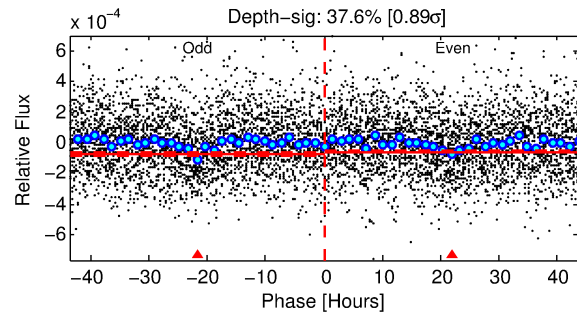
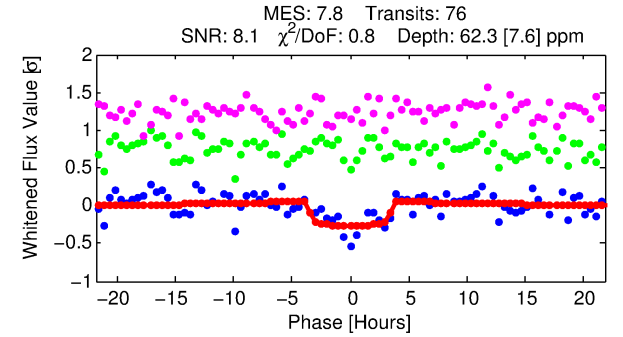
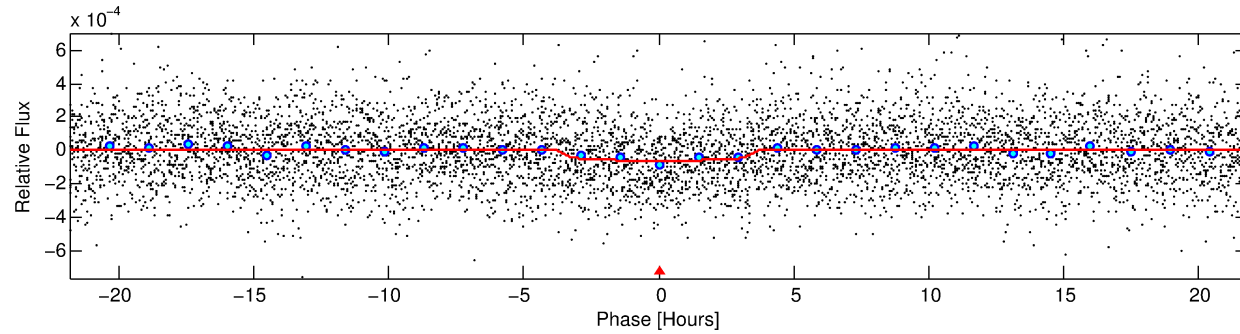
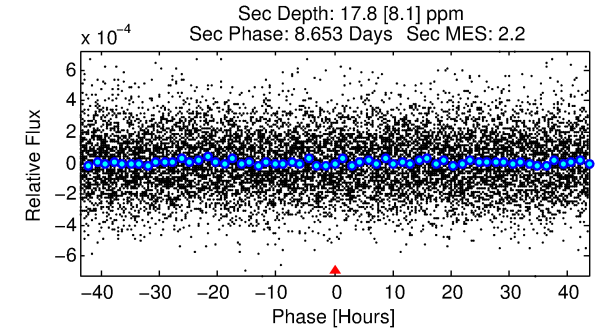
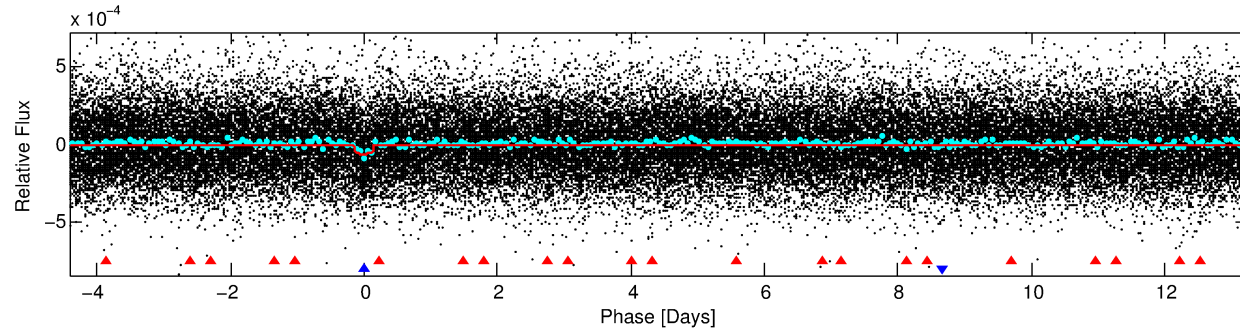
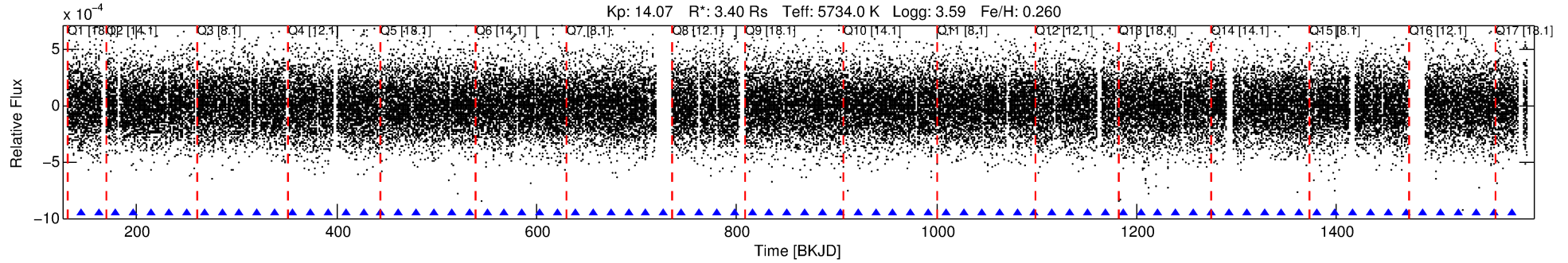
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009026749-02

No Significant Match Found

DV One-Page Summary

KIC: 9026749 Candidate: 2 of 2 Period: 17.664 d
KOI: K02564.02 Corr: 0.882



DV Fit Results:

Period = 17.66448 [0.00032] d
Epoch = 144.1947 [0.0146] BKJD
Rp/R* = 0.0084 [0.0045]
a/R* = 9.60 [23.50]
b = 0.87 [0.72]
Seff = 456.39 [231.36]
Teq = 1179 [149] K
Rp = 3.11 [1.99] Re
a = 0.1569 [0.0501] AU
Ag = 24.89 [31.82] [0.75σ]
Teffp = 4070 [1198] K [2.40σ]

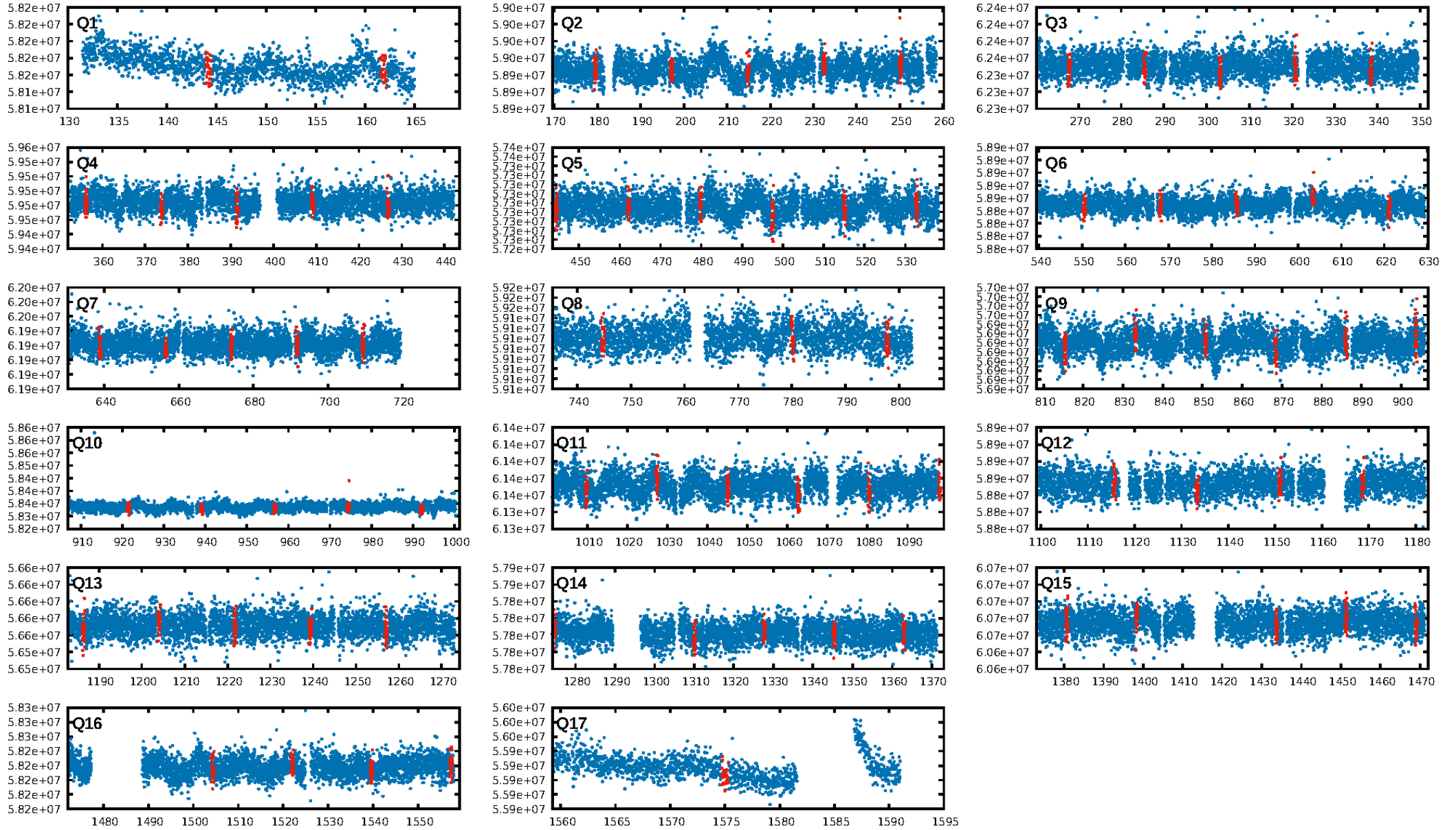
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [90.56σ]
ModelChiSquare2-sig: 96.6%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 7.72e-15
RollingBand-fgt: 1.00 [73/73]
GhostDiagnostic-chr: -2.724
Centroid-sig: 6.5%
Centroid-so: 2.203 arcsec [1.66σ]
OotOffset-rm: 0.642 arcsec [0.77σ]
KicOffset-rm: 0.731 arcsec [0.88σ]
OotOffset-st: 1/4/4/3 [12]
KicOffset-st: 1/4/4/3 [12]
DiffImageQuality-fgm: 0.33 [4/12]
DiffImageOverlap-fno: 1.00 [17/17]

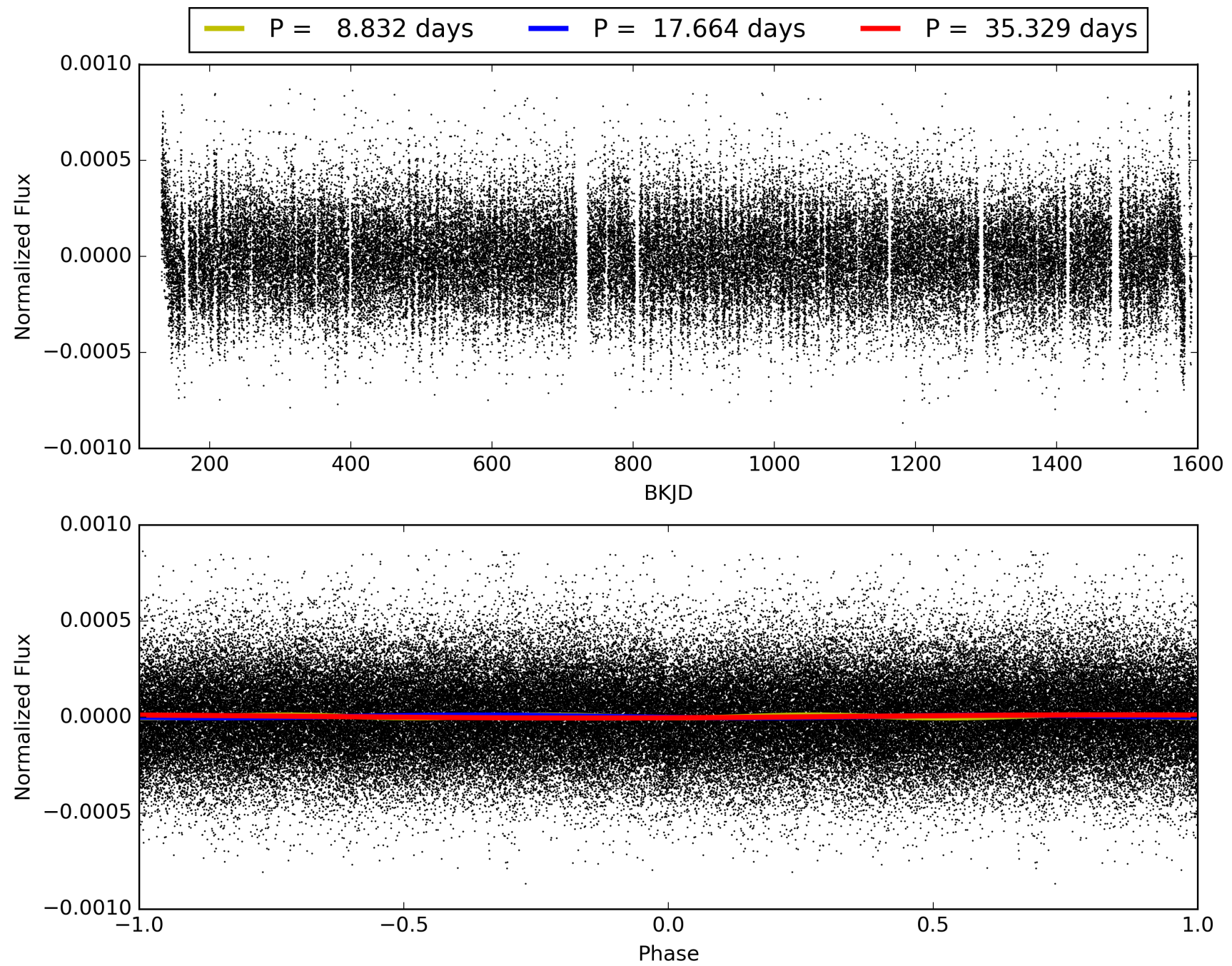
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 20:01:27 Z

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

TCE 009026749-02, PDC Light Curves

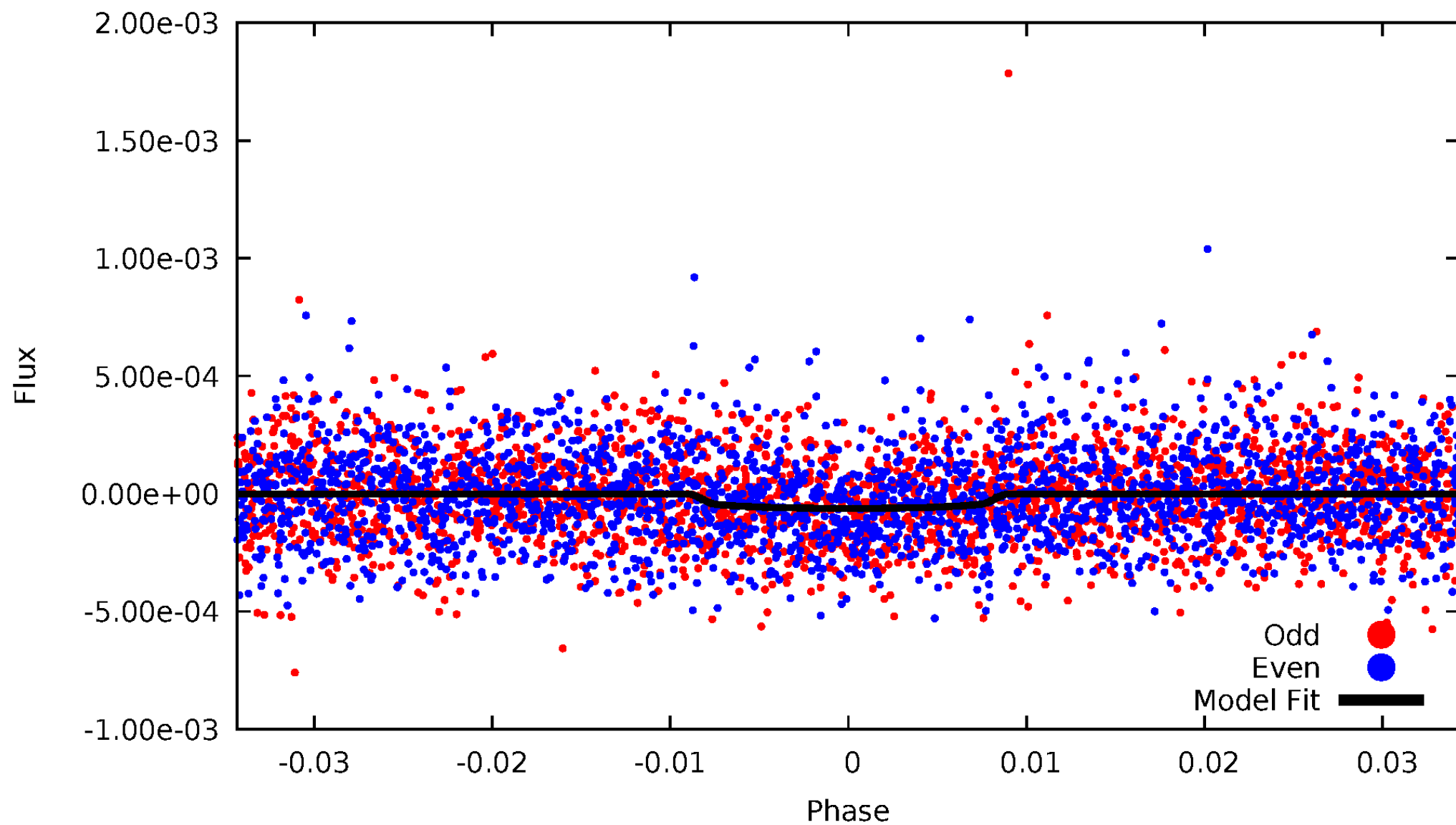


TCE 009026749-02



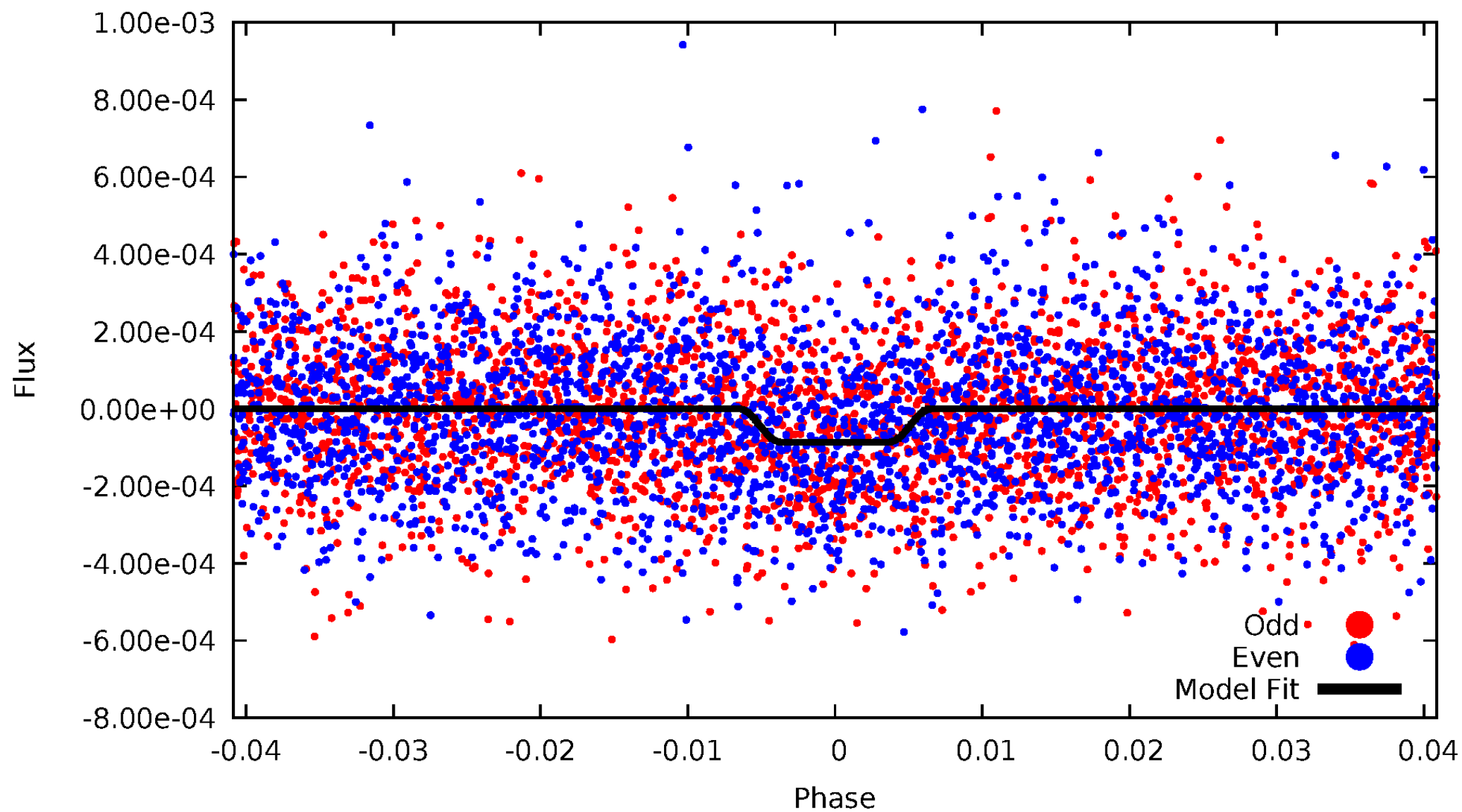
DV Odd/Even

TCE 009026749-02



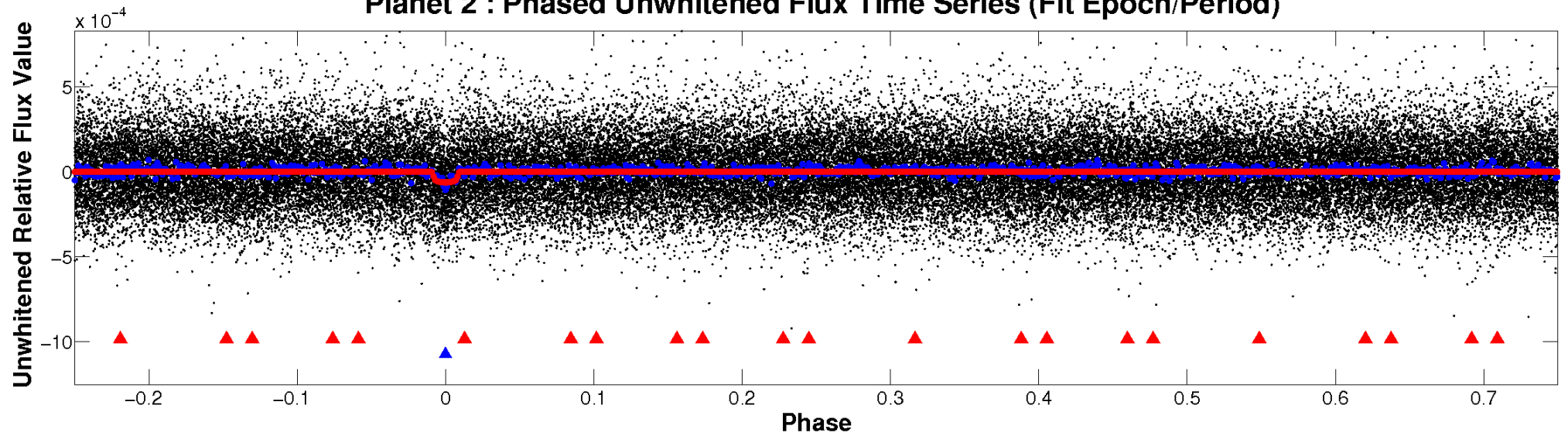
ALT Odd/Even

TCE 009026749-02

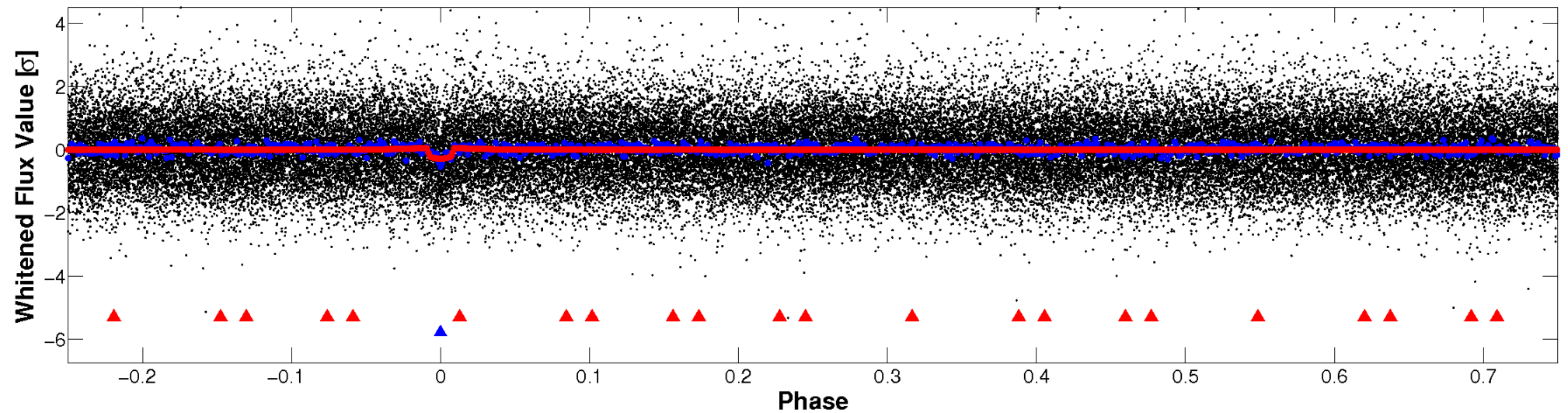


Non-Whitened Vs. Whitened Light Curve

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

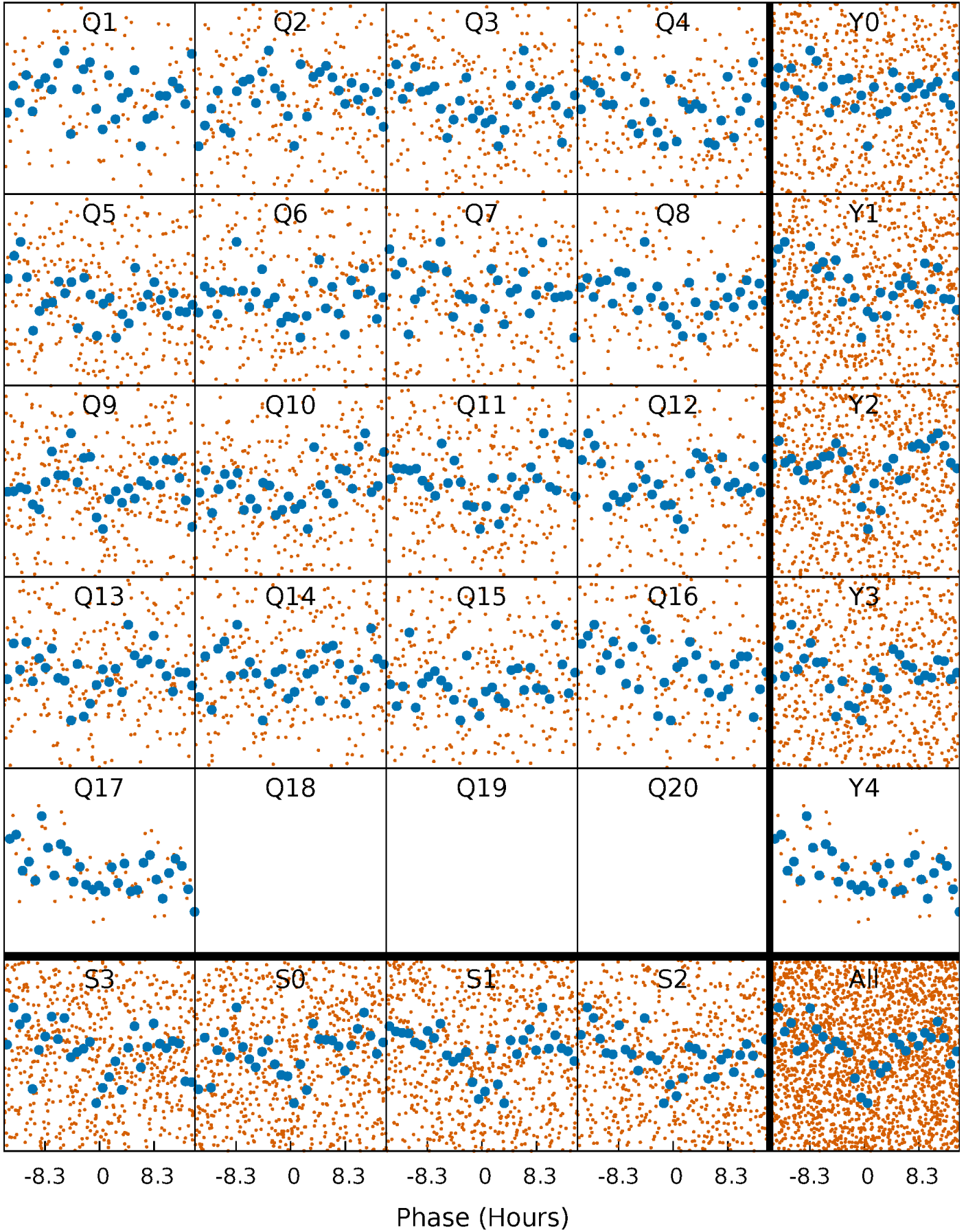


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



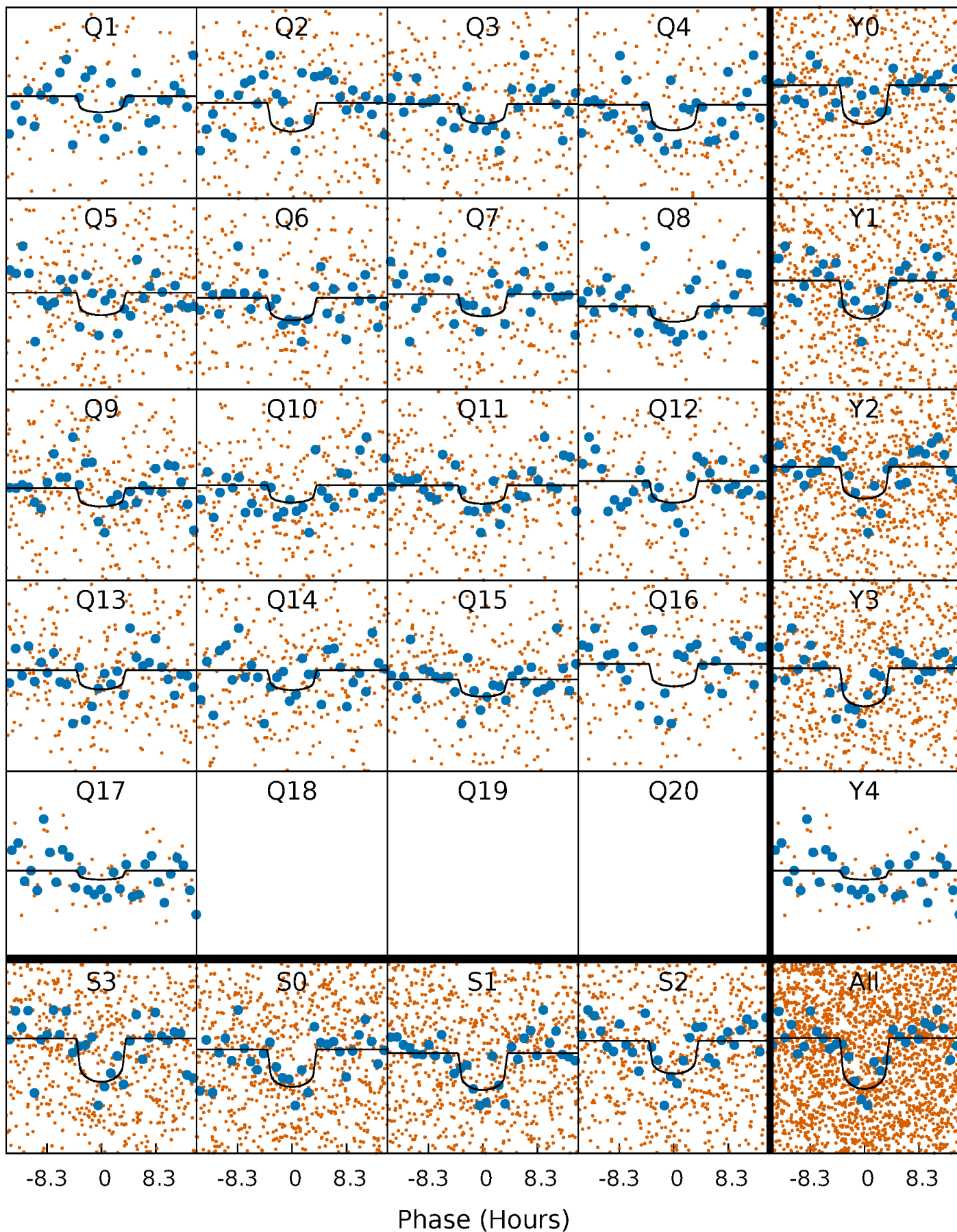
PDC Quarter-Phased Transit Curves

TCE 009026749-02 P= 17.664481 Days $T_0=144.194654$ (BKJD)



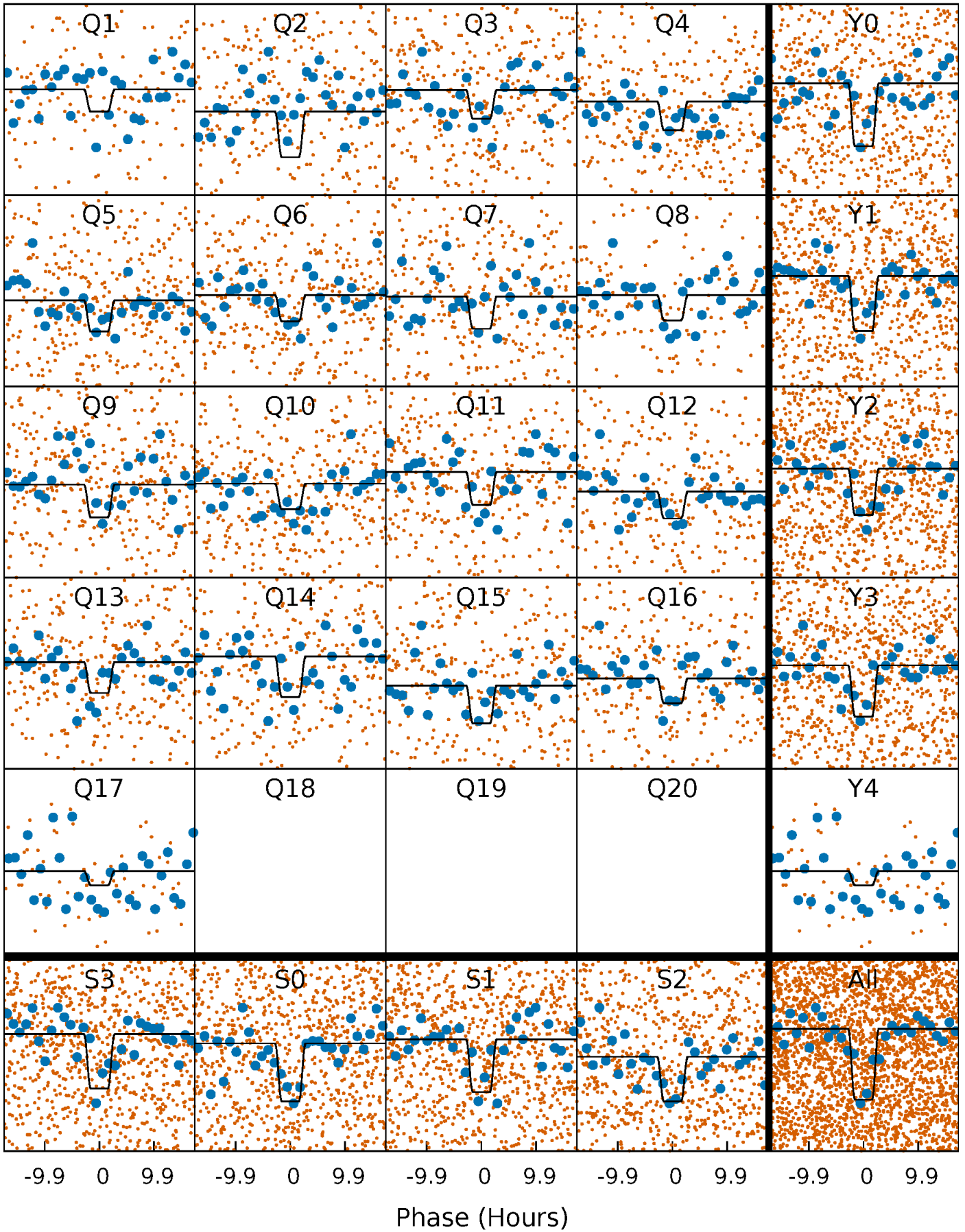
DV Quarter-Phased Transit Curves

TCE 009026749-02 P= 17.664481 Days $T_0=144.194654$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

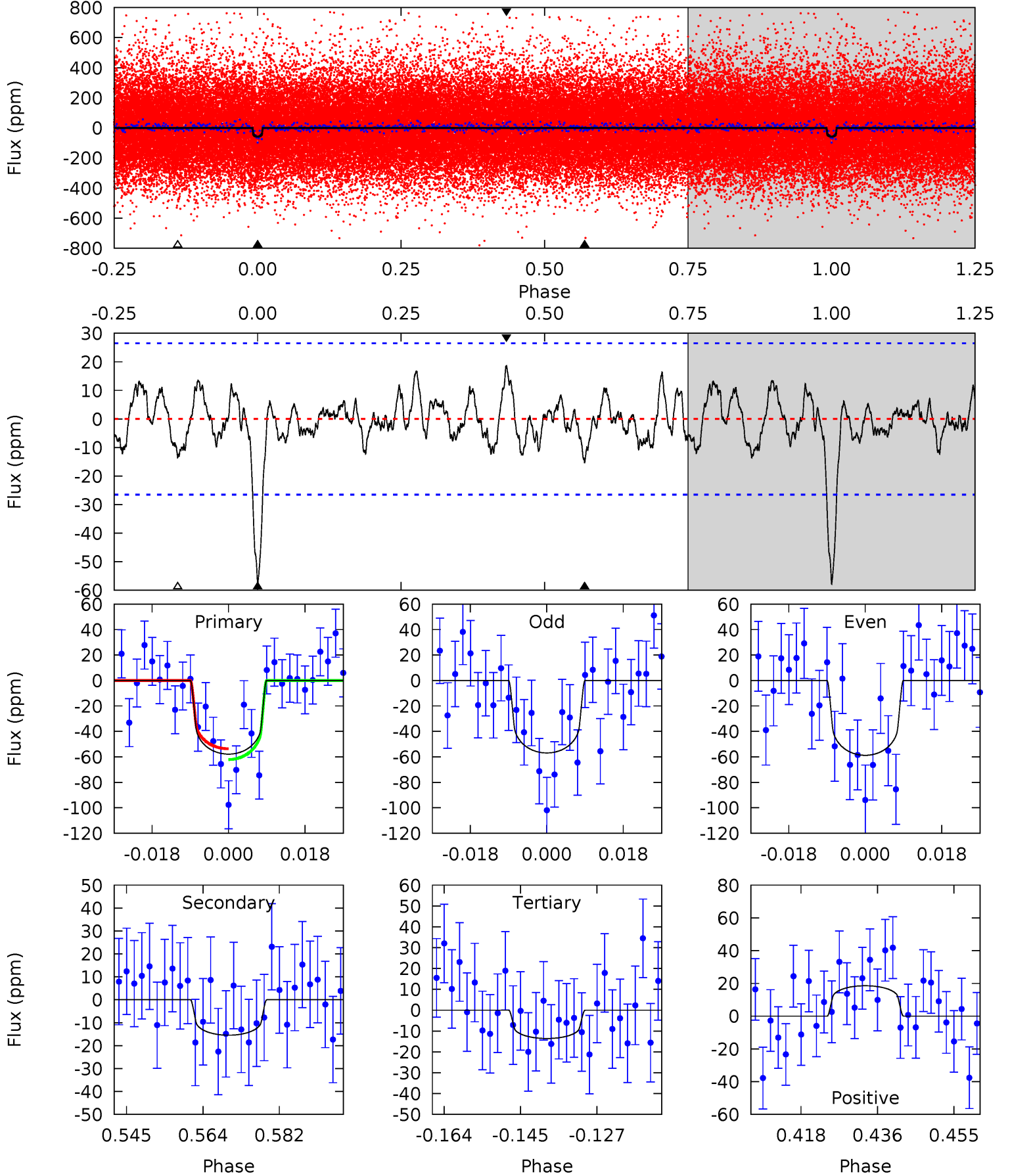
TCE 009026749-02 P= 17.663782 Days $T_0=144.228501$ (BKJD)



DV Model-Shift Uniqueness Test

009026749-02, $P = 17.664481$ Days, $E = 126.530173$ Days

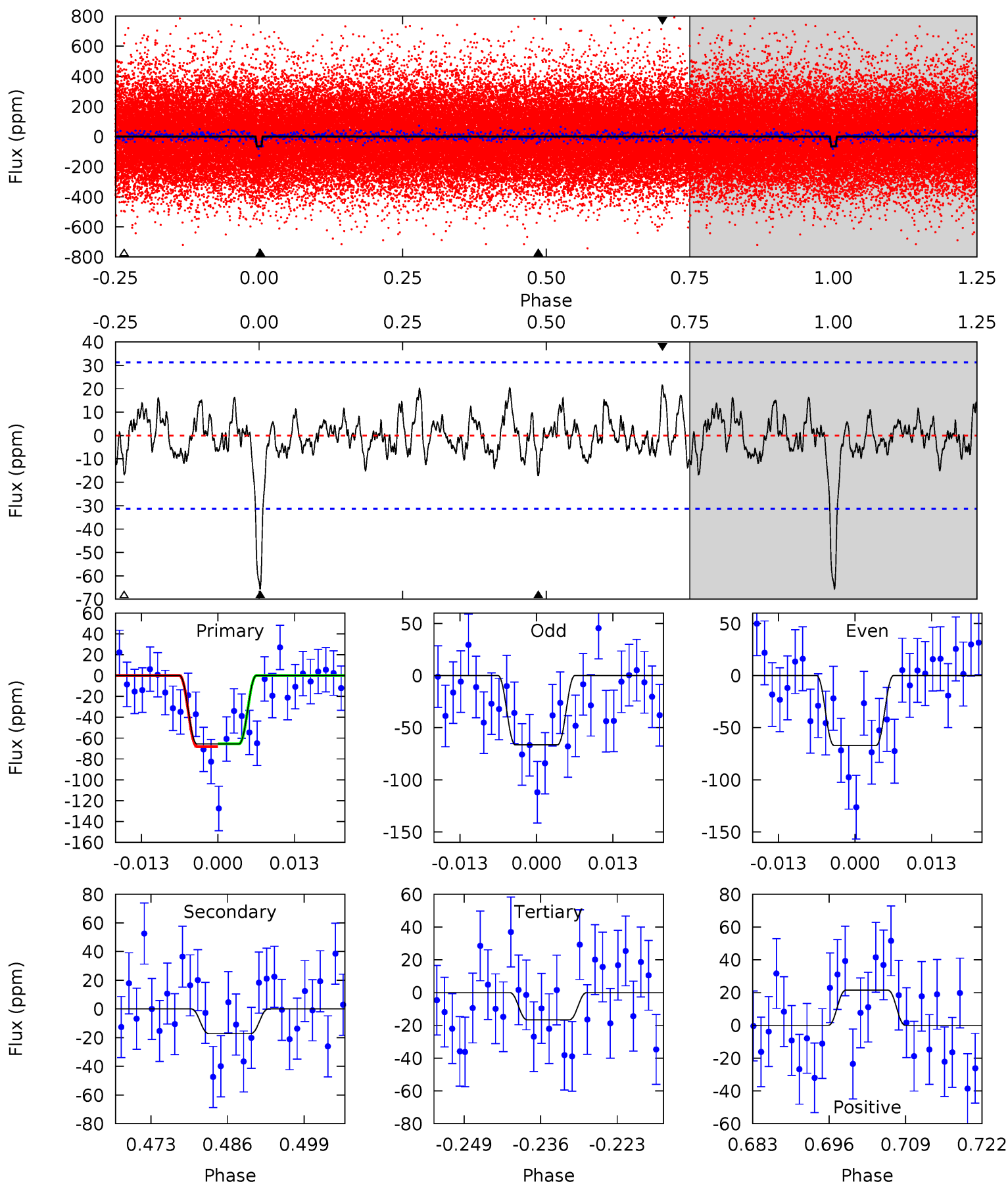
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.7	2.87	2.52	3.44	4.91	2.36	1.21	8.20	7.28	0.35	-0.57	0.17	1.02	0.24	0.78



Alt Model-Shift Uniqueness Test

009026749-02, $P = 17.663782$ Days, $E = 126.564719$ Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.4	2.73	2.65	3.41	4.97	2.48	1.12	7.76	6.99	0.09	-0.68	0.05	1.26	0.25	0.21



Stellar Parameters For KIC 009026749

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5734^{+95}_{-69}	$3.591^{+0.292}_{-0.097}$	$0.260^{+0.150}_{-0.150}$	$3.405^{+0.625}_{-1.161}$	$1.648^{+0.143}_{-0.334}$	$0.059^{+0.119}_{-0.018}$
	+2%/-1%	+8%/-3%	+58%/-58%	+18%/-34%	+9%/-20%	+202%/-31%
Source	SPE90	SPE90	SPE90	DSEP		

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

Secondary Eclipse Parameters for KIC 009026749-02 / KOI 2564.02

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-15 ± 5	$2.87^{+1.89}_{-1.42}$	1619^{+100}_{-122}	4166^{+1269}_{-703}	24^{+66}_{-16}
Alt.	-17 ± 6	$3.17^{+1.85}_{-1.43}$	1618^{+94}_{-141}	4057^{+1043}_{-583}	21^{+51}_{-13}

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

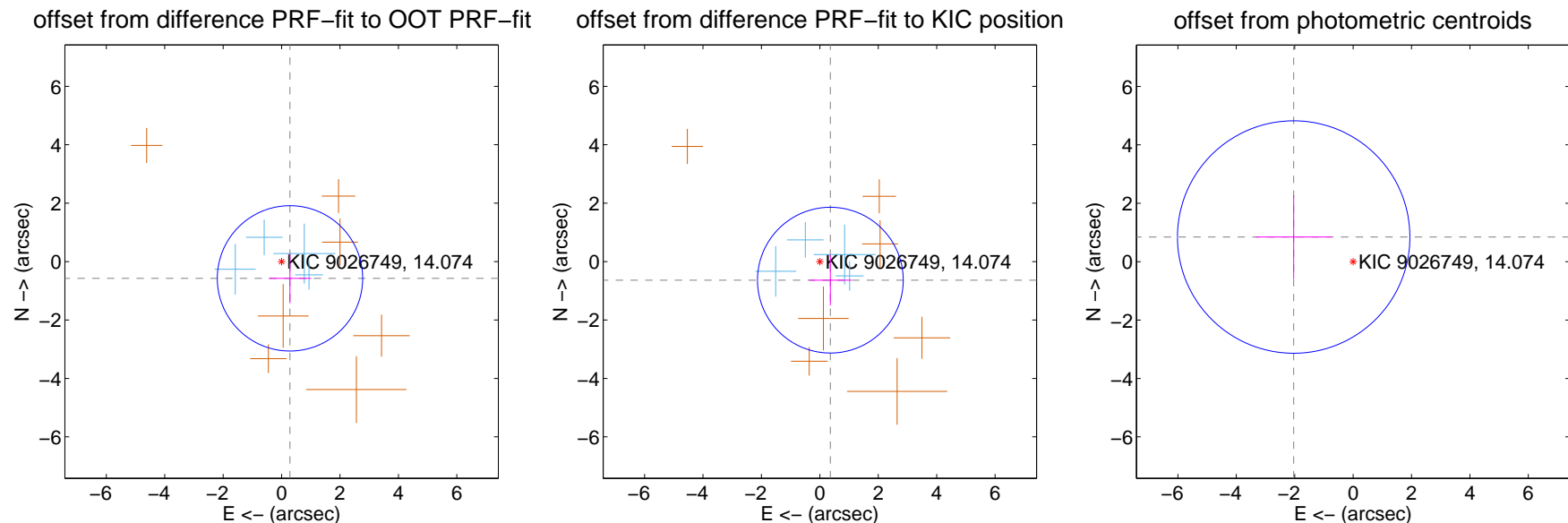
DV Centroid Data

Supplemental centroid analysis for 009026749-02. Kepler magnitude: 14.07. Transit SNR 8.07

There are 4 quarters with good PRF difference image offsets

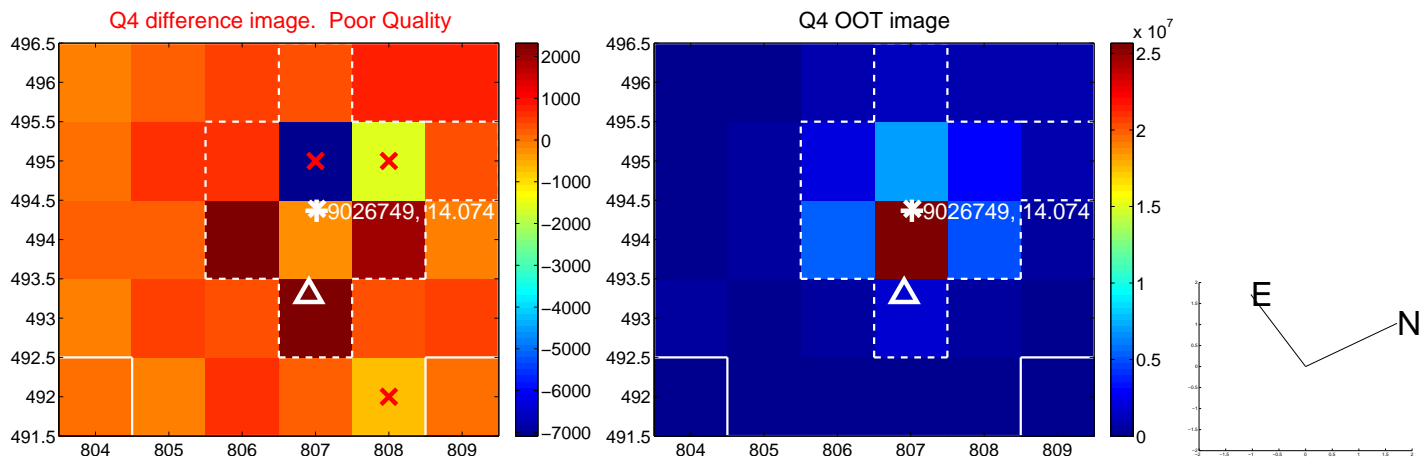
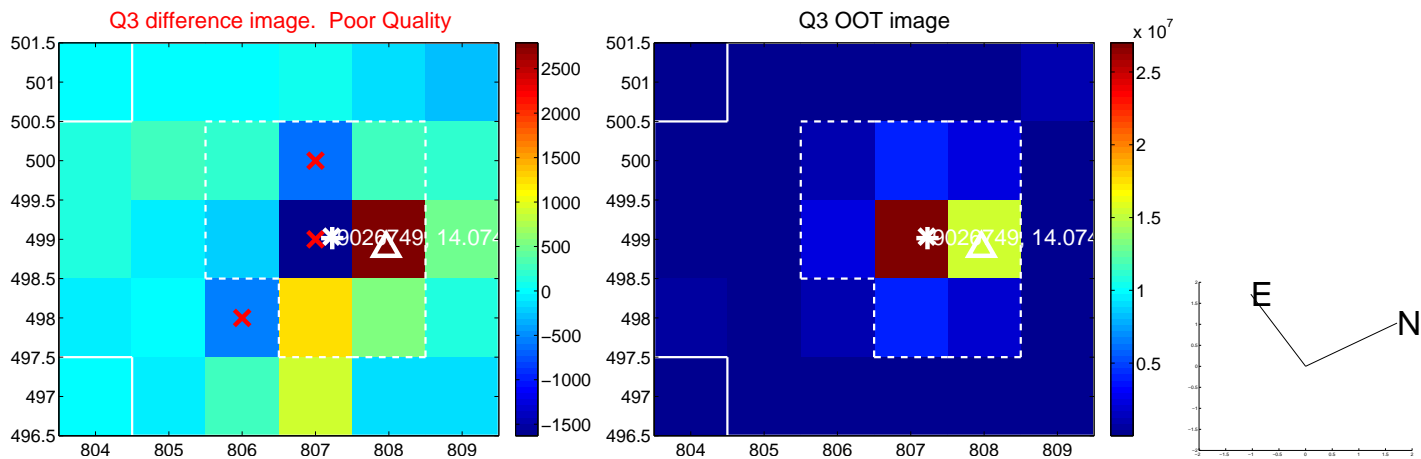
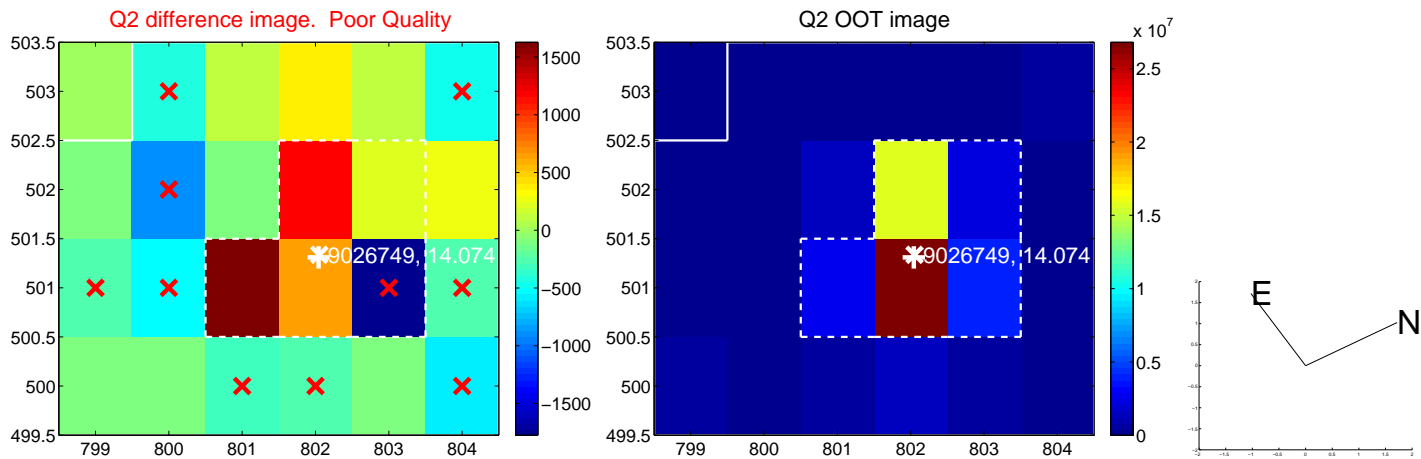
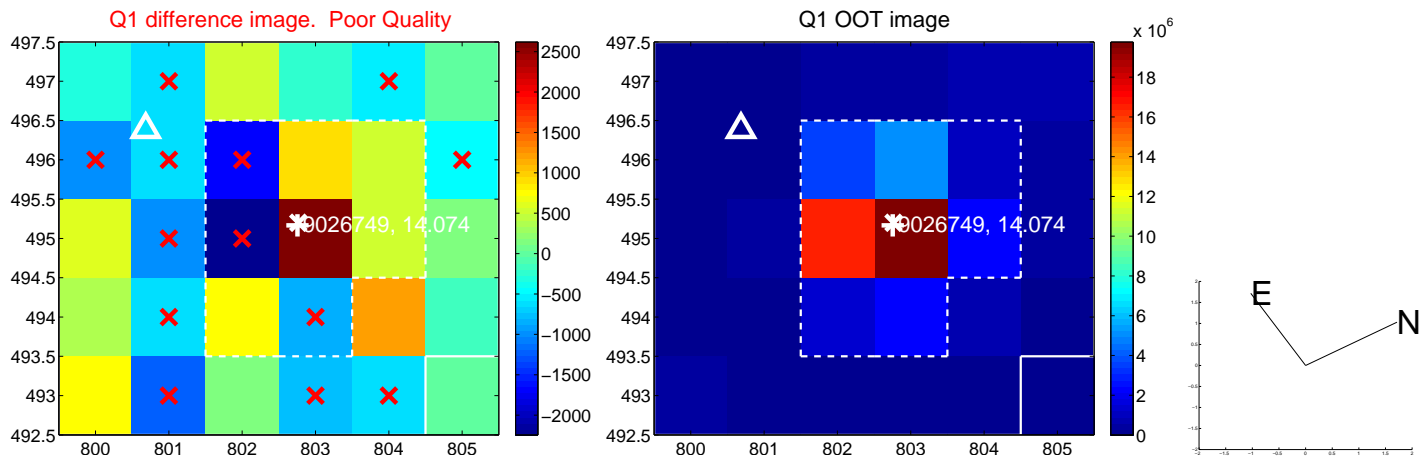
The direct PRF centroid is offset from the target star catalog position by about 0.11 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.642 ± 0.829	0.77	-0.288 ± 0.724	-0.574 ± 0.854
PRF-fit source offset from KIC position	0.731 ± 0.832	0.88	-0.360 ± 0.725	-0.636 ± 0.863
photometric centroid source offset	2.20 ± 1.33	1.66	2.04 ± 1.31	0.84 ± 1.43

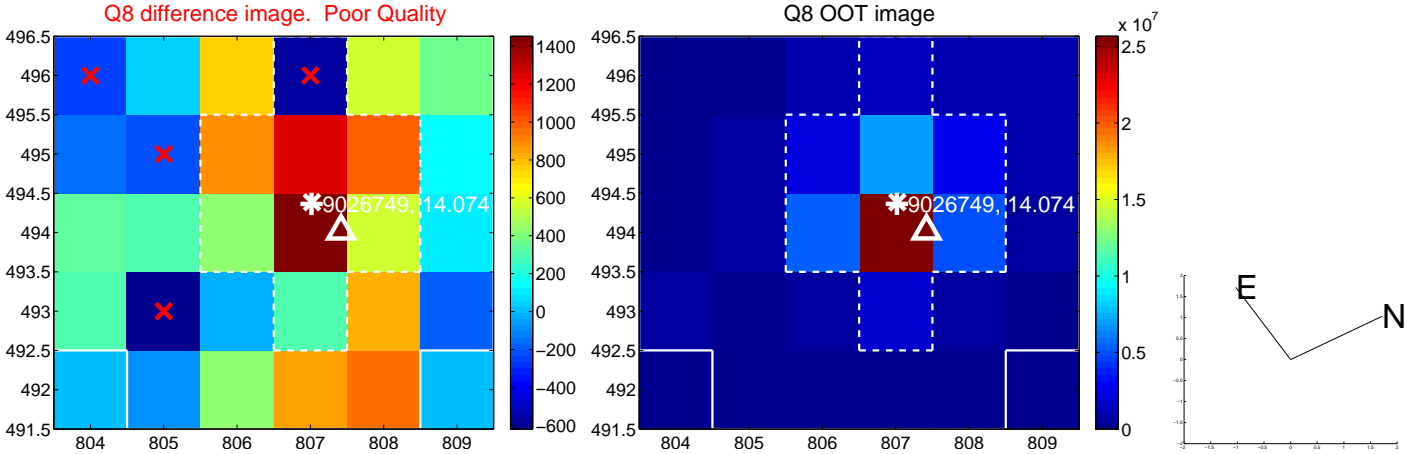
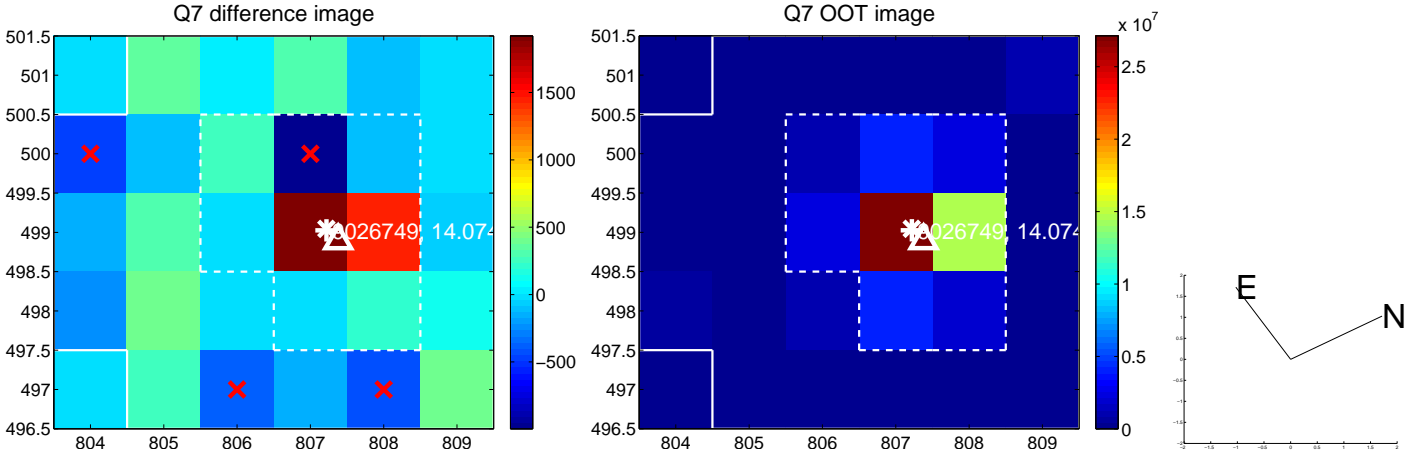
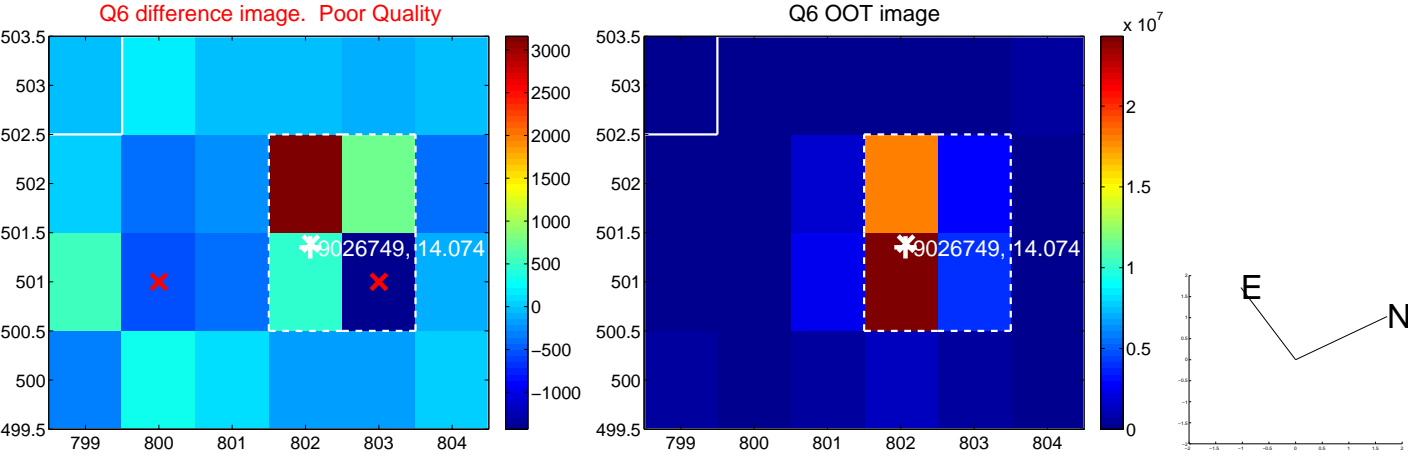
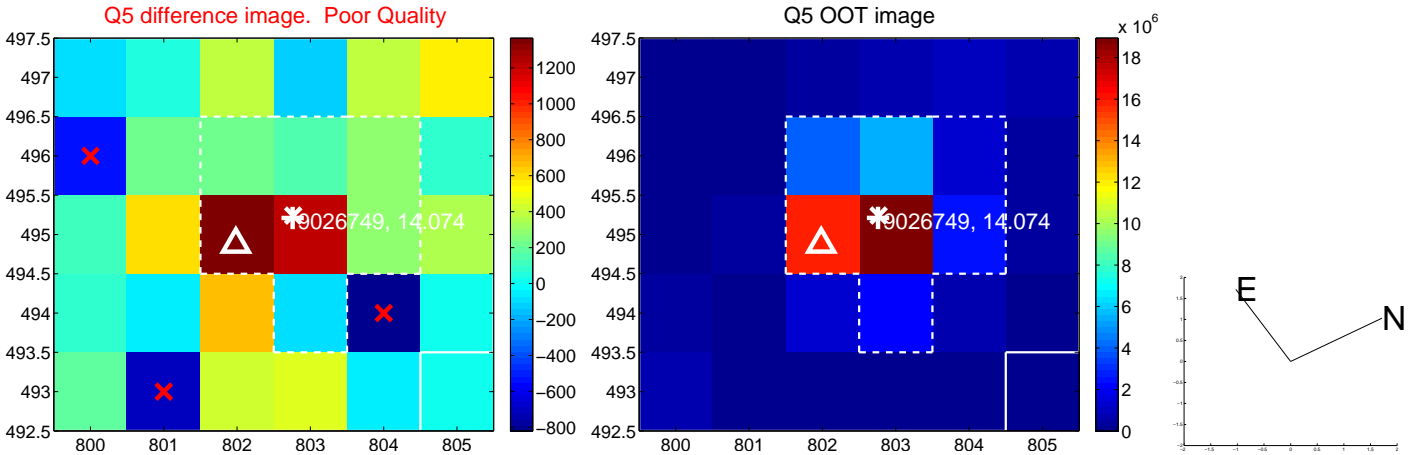


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

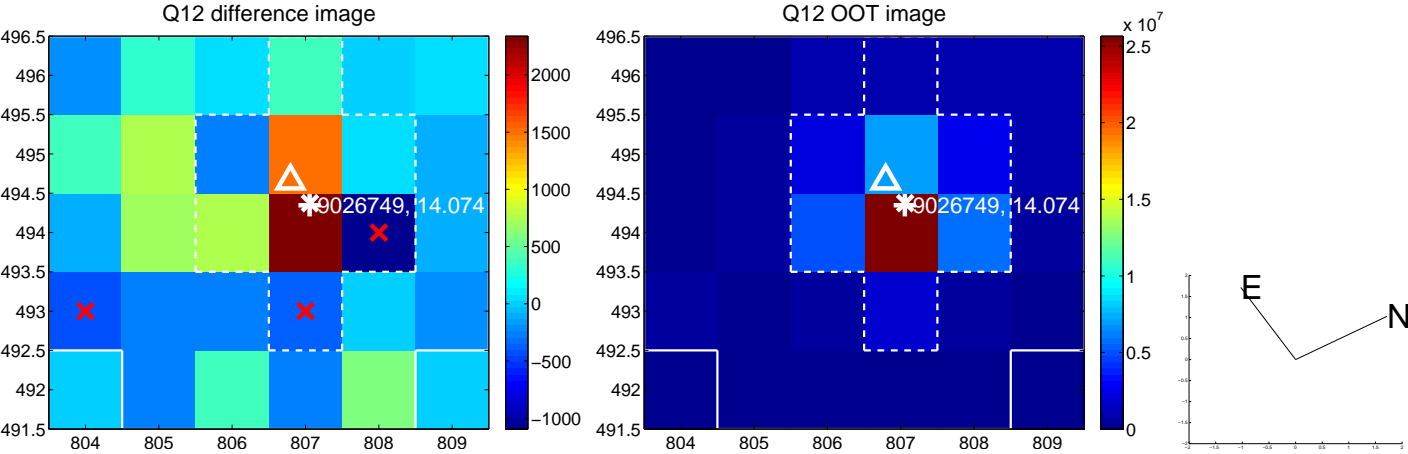
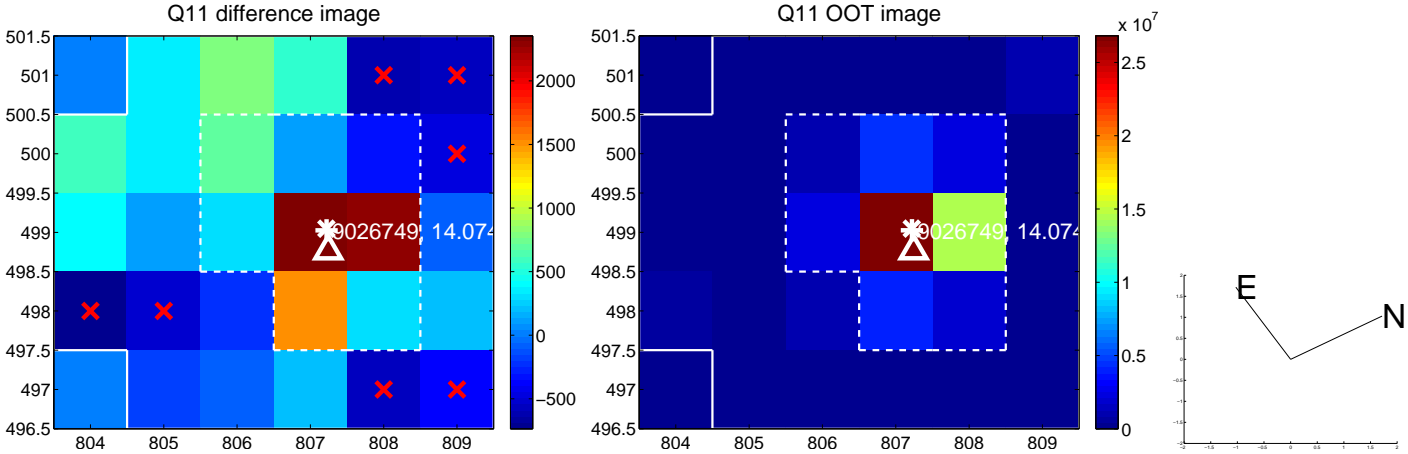
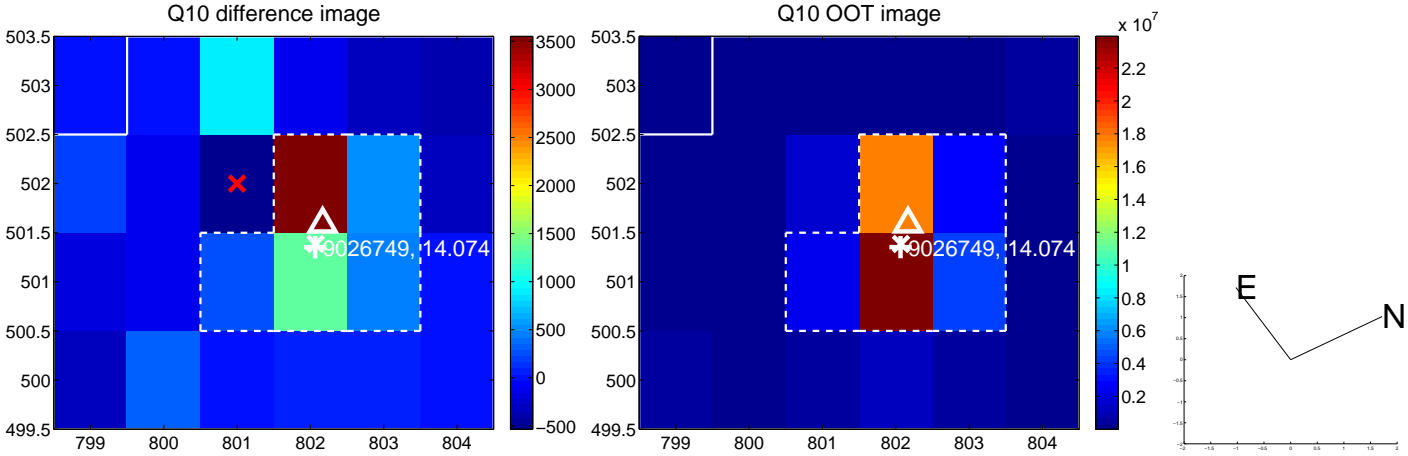
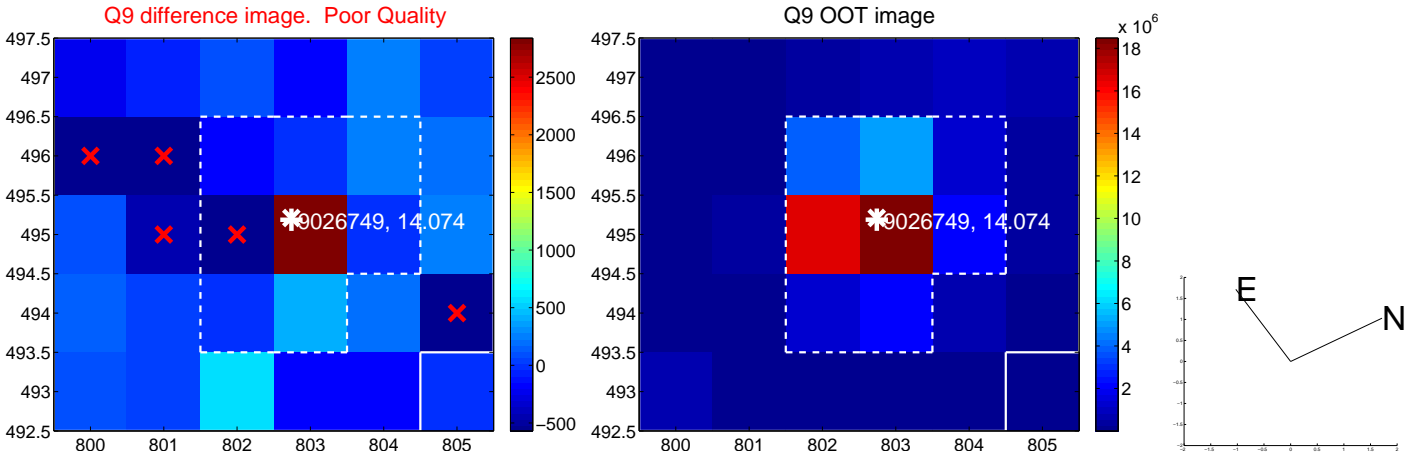
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



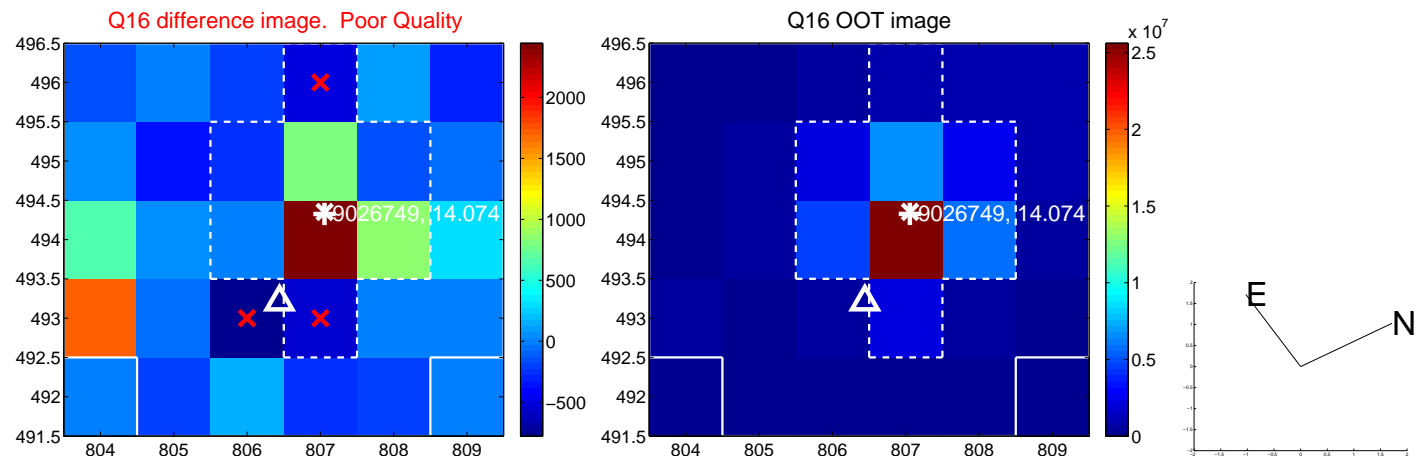
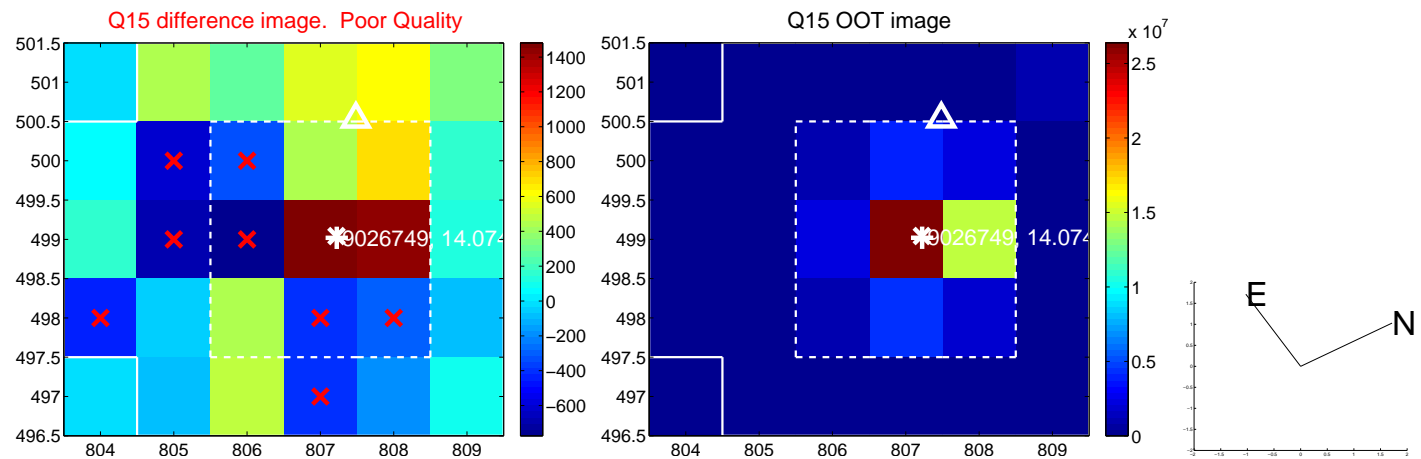
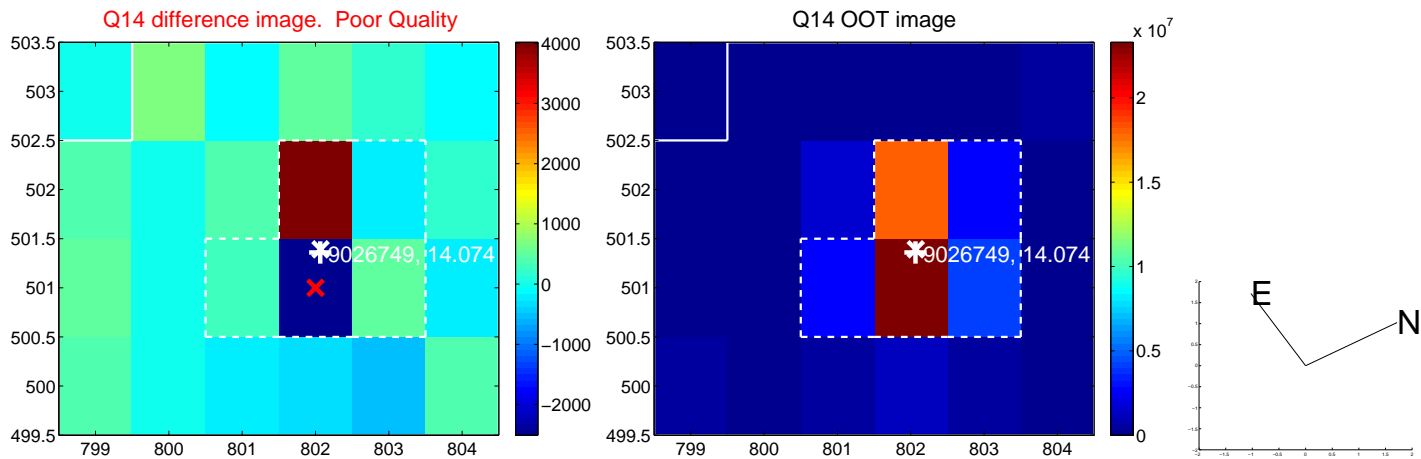
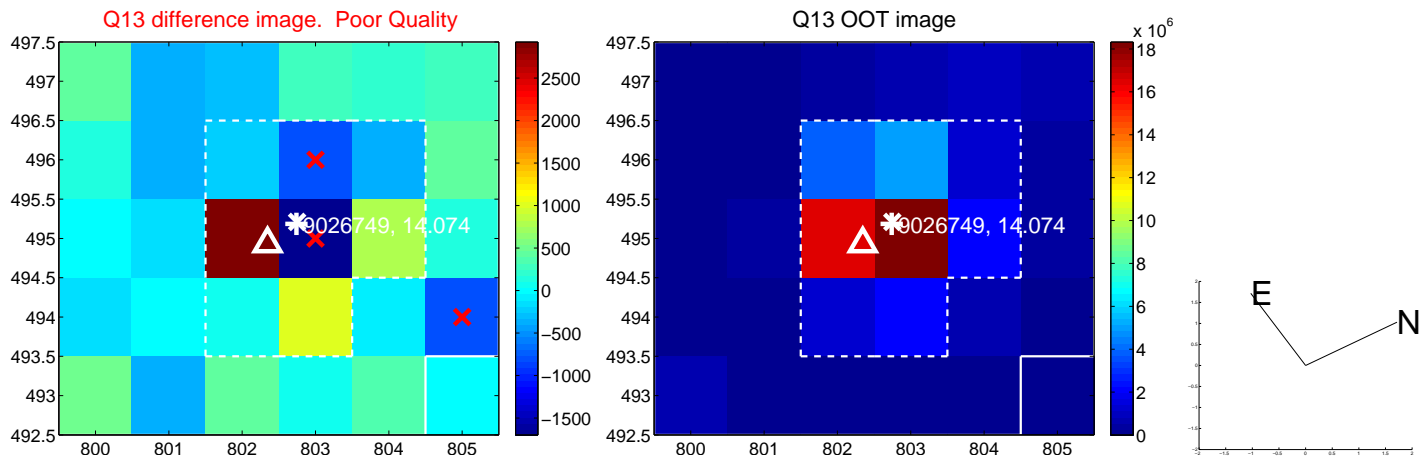
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



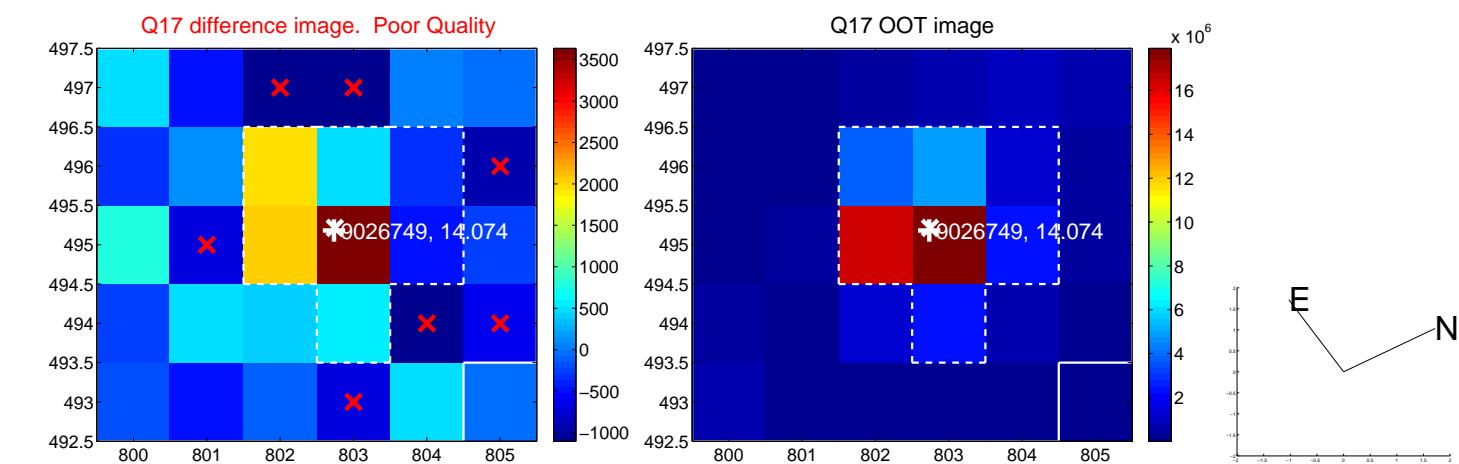
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



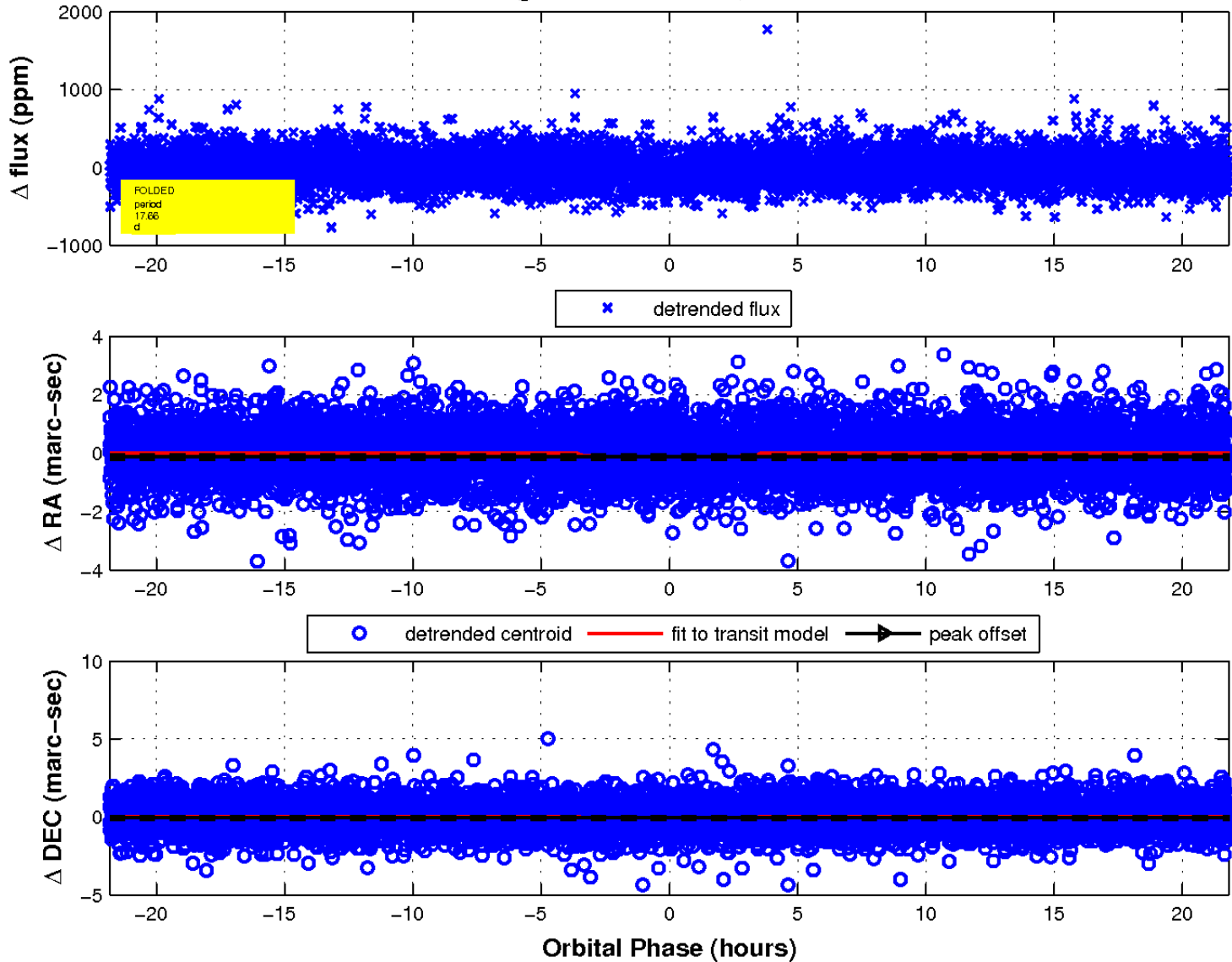
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 2 of 2



UKIRT Image

Declination

