

KIC 004181749

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})
004181749-01	OBS	No	4.092945	135.058257	139.9	19.251	7.2	6.8	0.67	4946	0.80	126.72
004181749-02	OBS	No	268.748596	387.566906	3085.5	21.636	31.7	15.0	0.67	4946	7.15	0.48

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004181749-01	OBS	FP	0.00	1	0	0	0	LPP_DV
004181749-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_ZUMA—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—INCONSISTENT_TRANS—CENT_FEW_DIFS

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

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

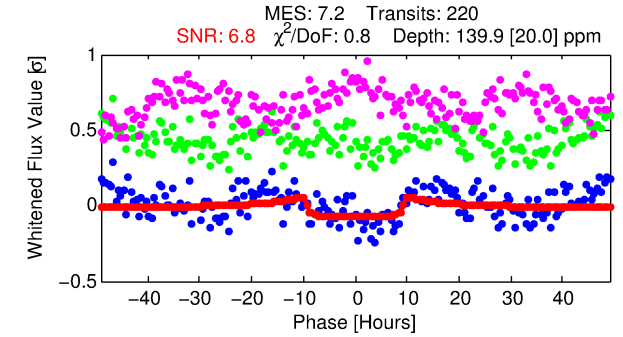
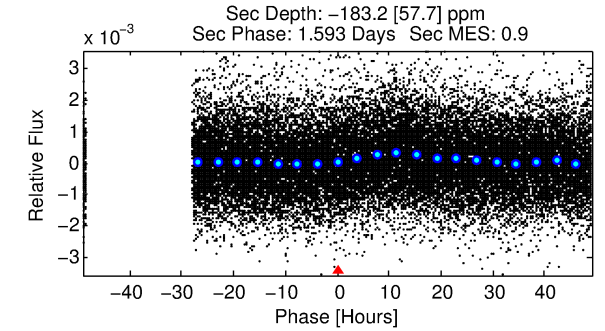
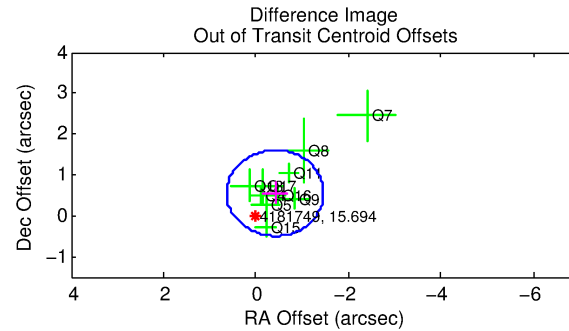
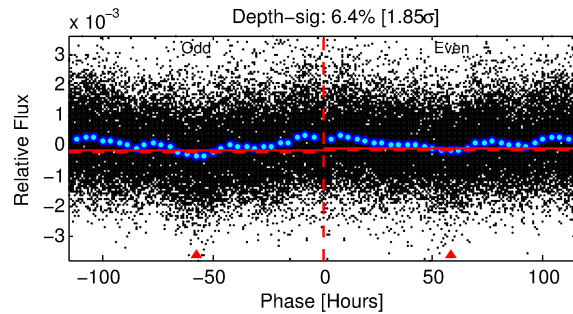
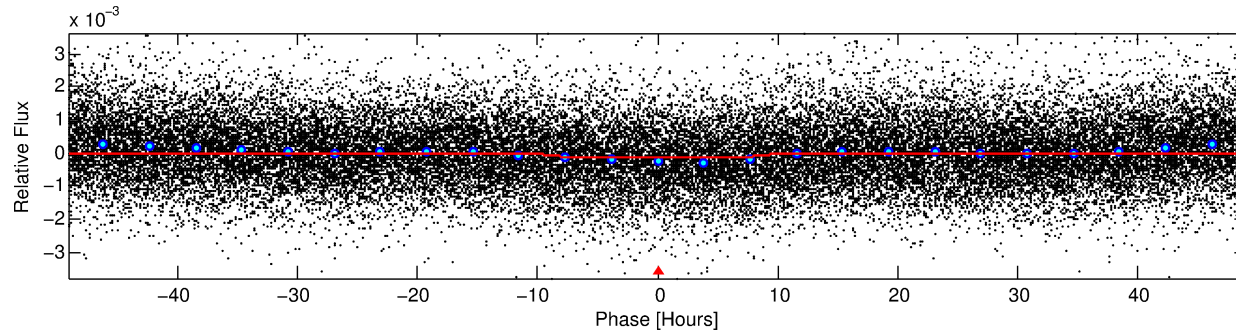
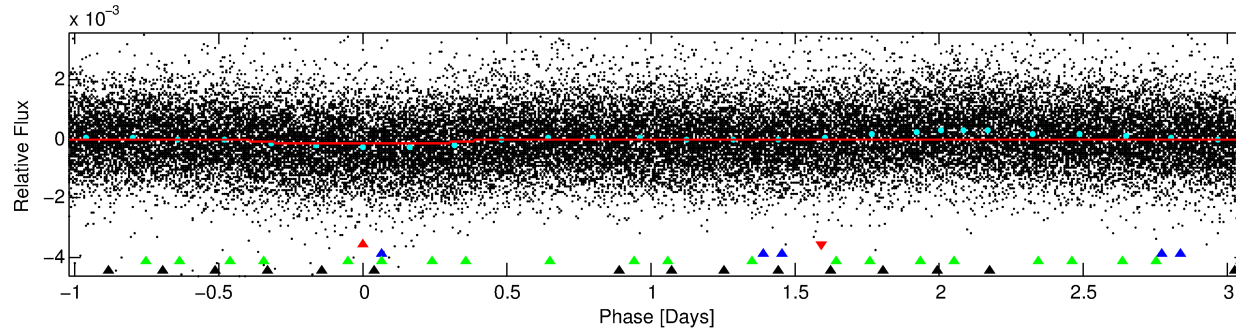
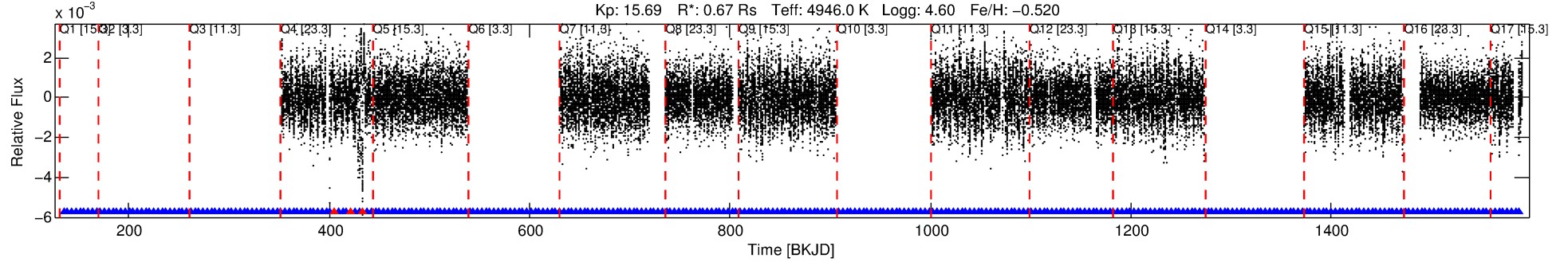
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004181749-01

No Significant Match Found

DV One-Page Summary

KIC: 4181749 Candidate: 1 of 4 Period: 4.093 d



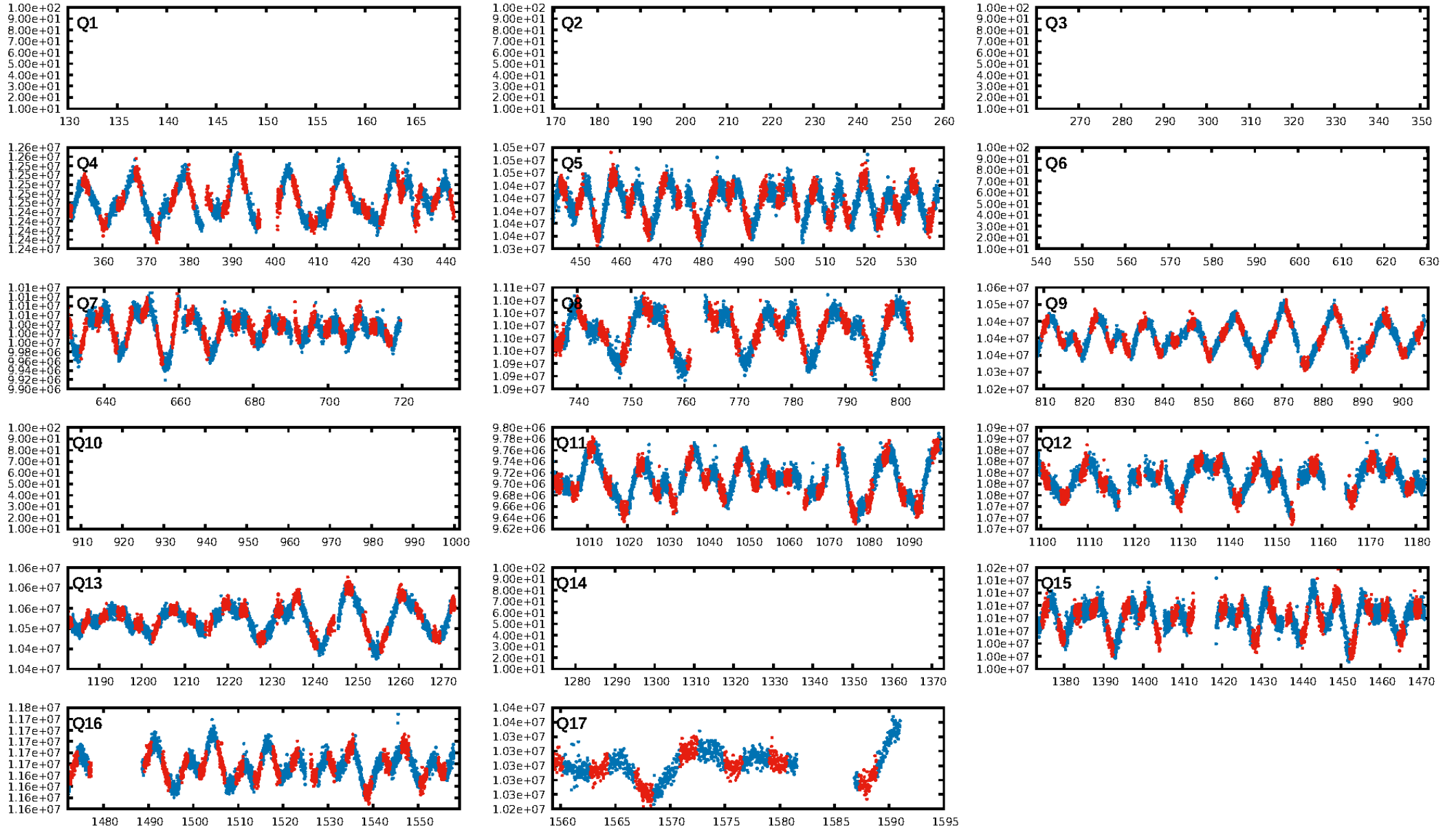
DV Fit Results:

Period = 4.09295 [0.00009] d
Epoch = 135.0583 [0.0177] BKJD
Rp/R* = 0.0110 [0.0082]
a/R* = 1.58 [2.55]
b = 0.53 [3.66]
Seff = 126.72 [23.78]
Teff = 856 [40] K
Rp = 0.80 [0.60] Re
a = 0.0433 [0.0036] AU
Ag = N/A
Teffp = N/A

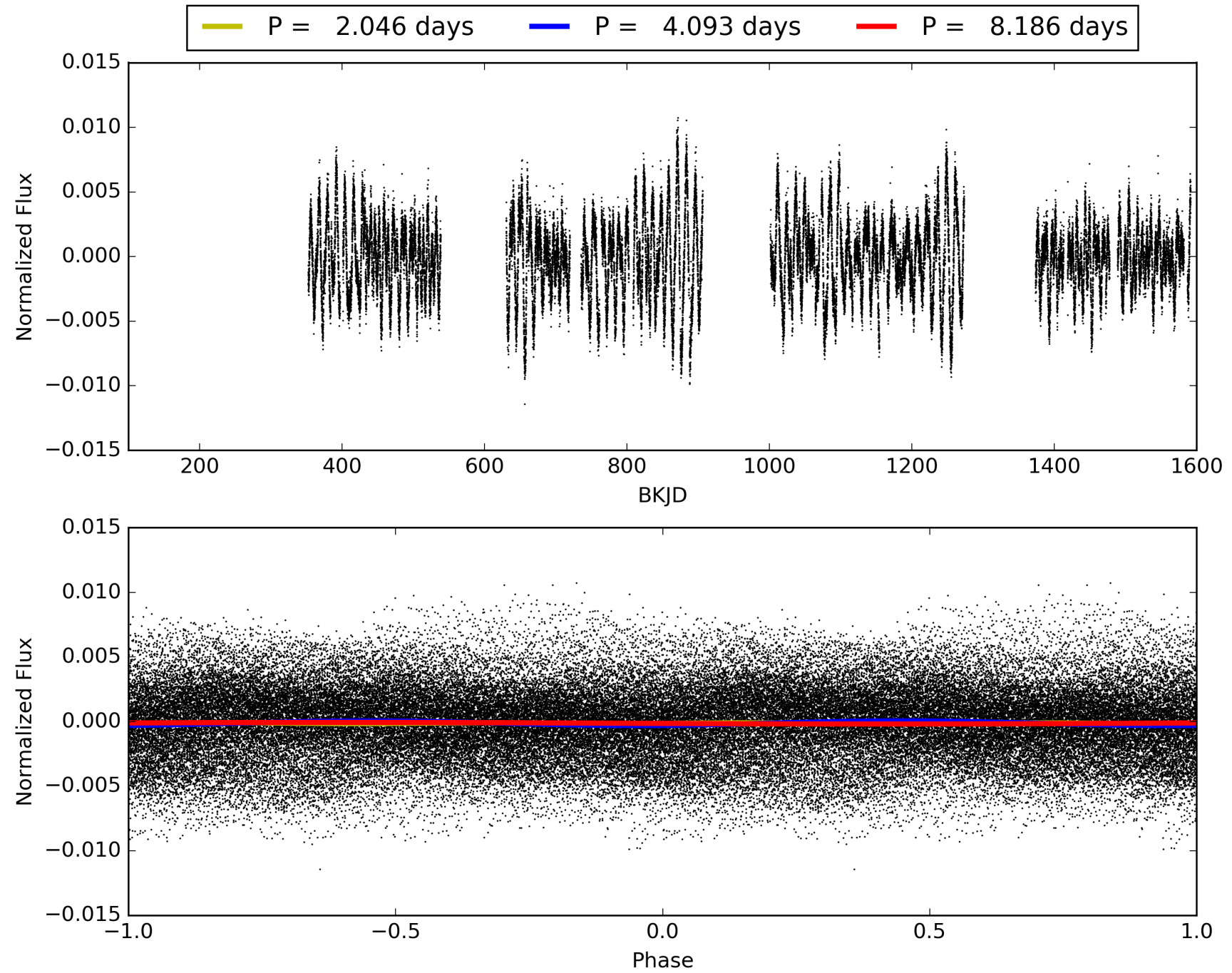
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [72.05 σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 1.68e-10
RollingBand-fgt: 0.99 [210/213]
GhostDiagnostic-chr: 1.058
Centroid-sig: 0.8%
Centroid-so: 1.505 arcsec [1.41 σ]
OotOffset-rm: 0.686 arcsec [1.96 σ]
KicOffset-rm: 0.105 arcsec [0.34 σ]
OotOffset-st: 0/3/3/4 [10]
KicOffset-st: 0/3/3/4 [10]
DiffImageQuality-fgm: 0.90 [9/10]
DiffImageOverlap-fno: 1.00 [11/11]

TCE 004181749-01, PDC Light Curves

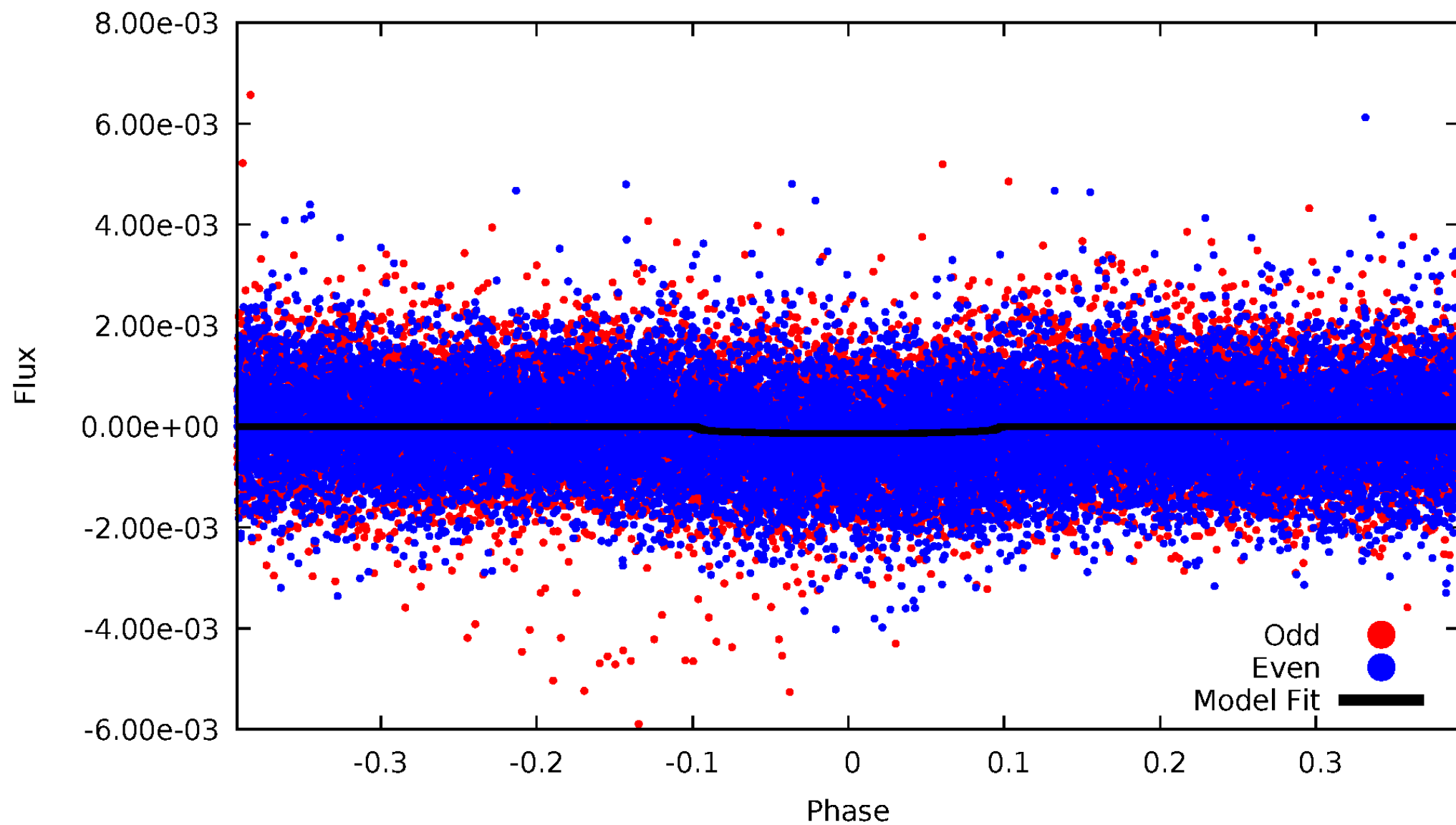


TCE 004181749-01



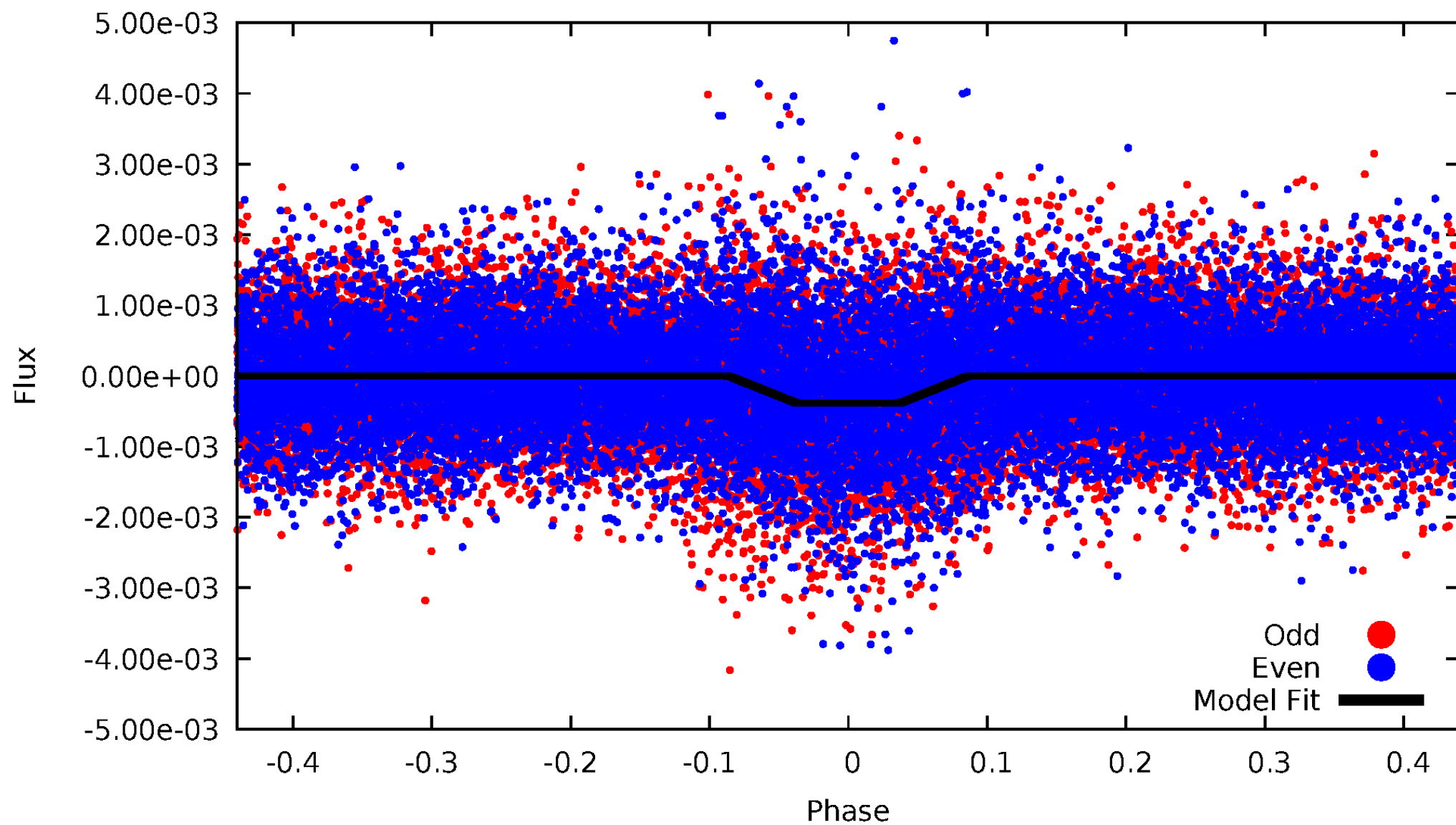
DV Odd/Even

TCE 004181749-01



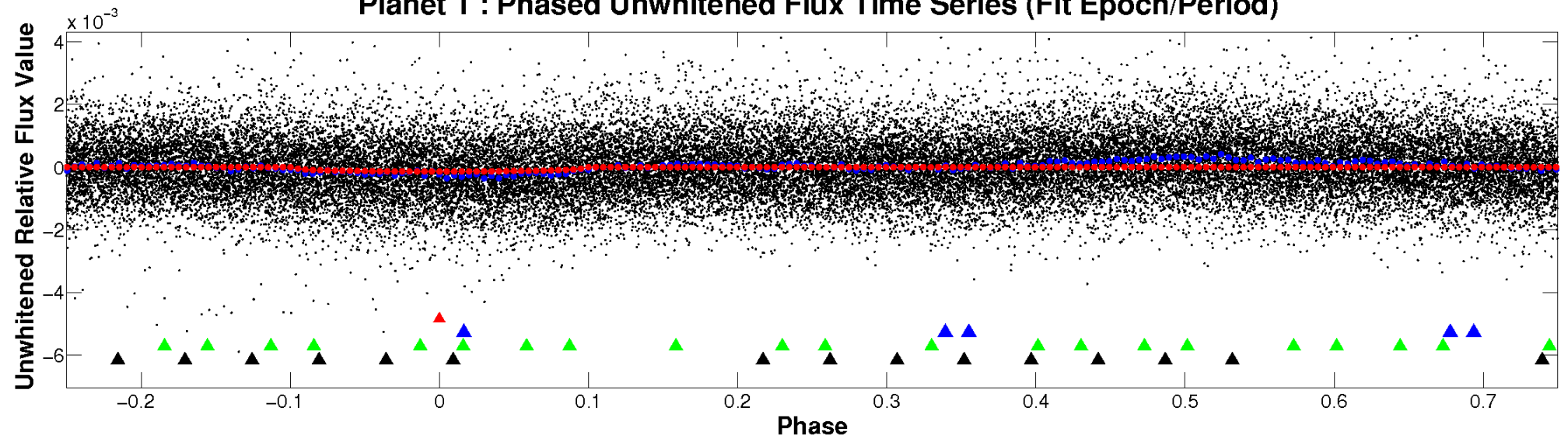
ALT Odd/Even

TCE 004181749-01

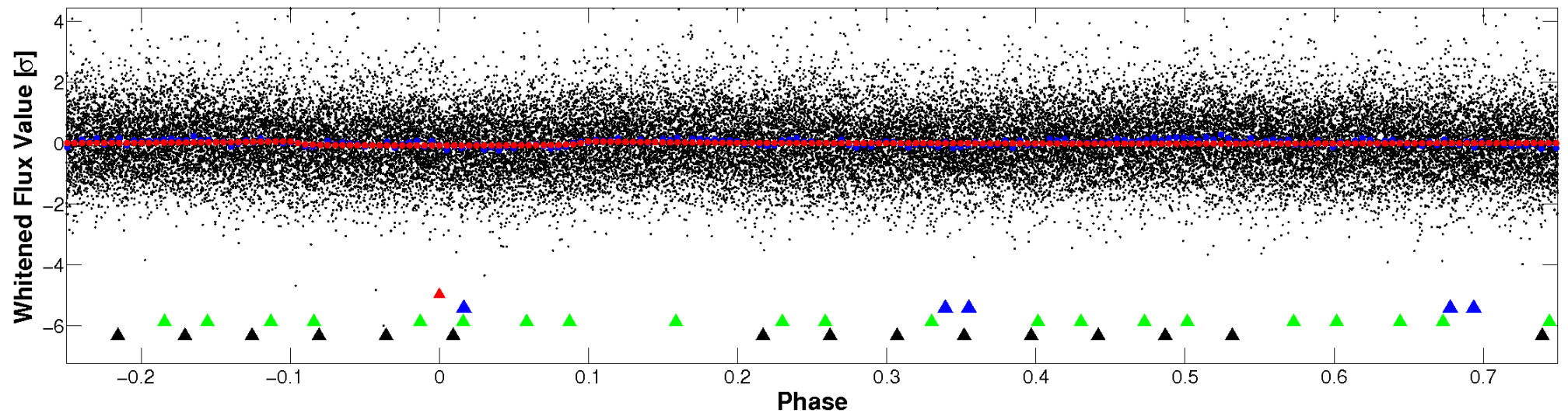


Non-Whitened Vs. Whitened Light Curve

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

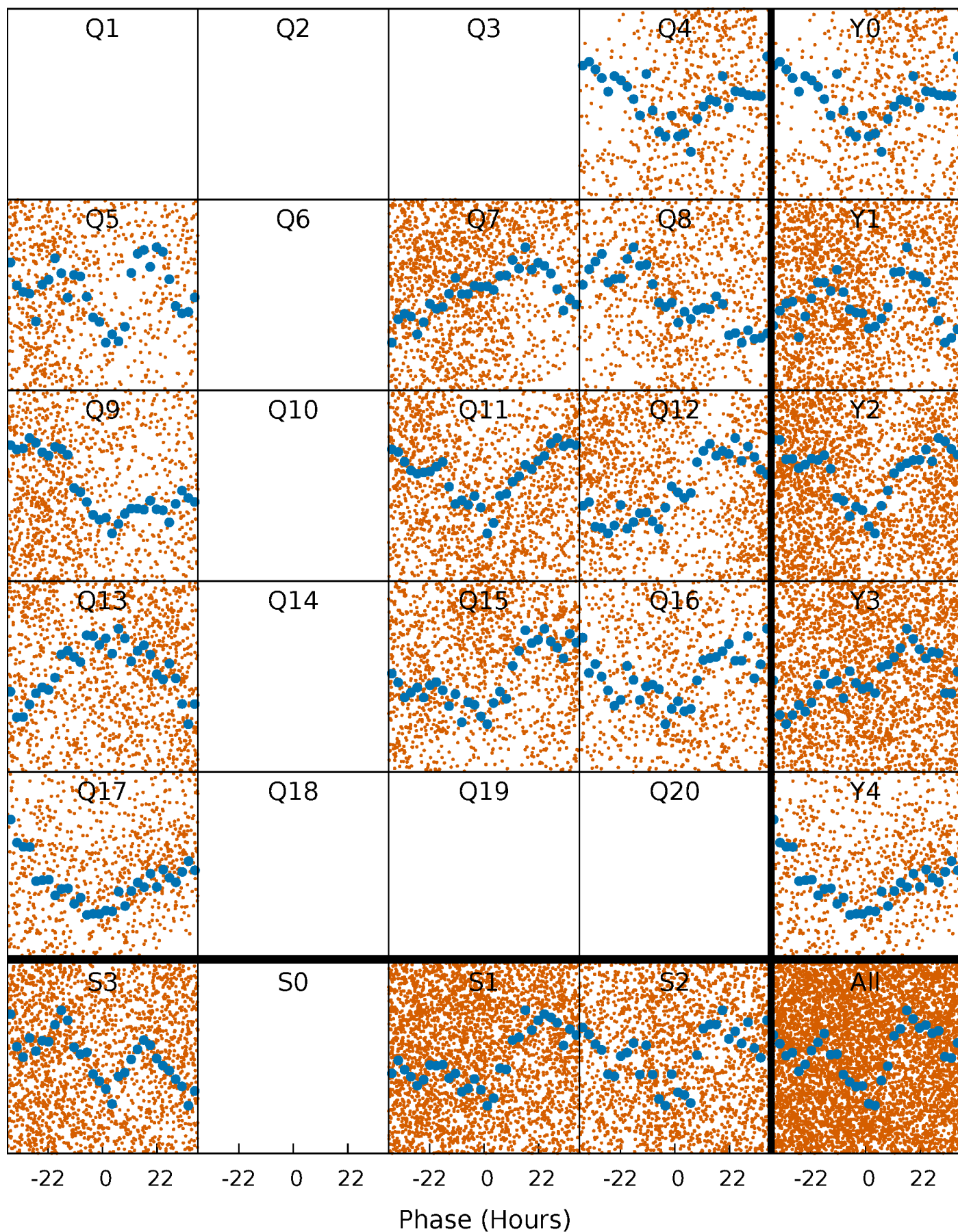


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



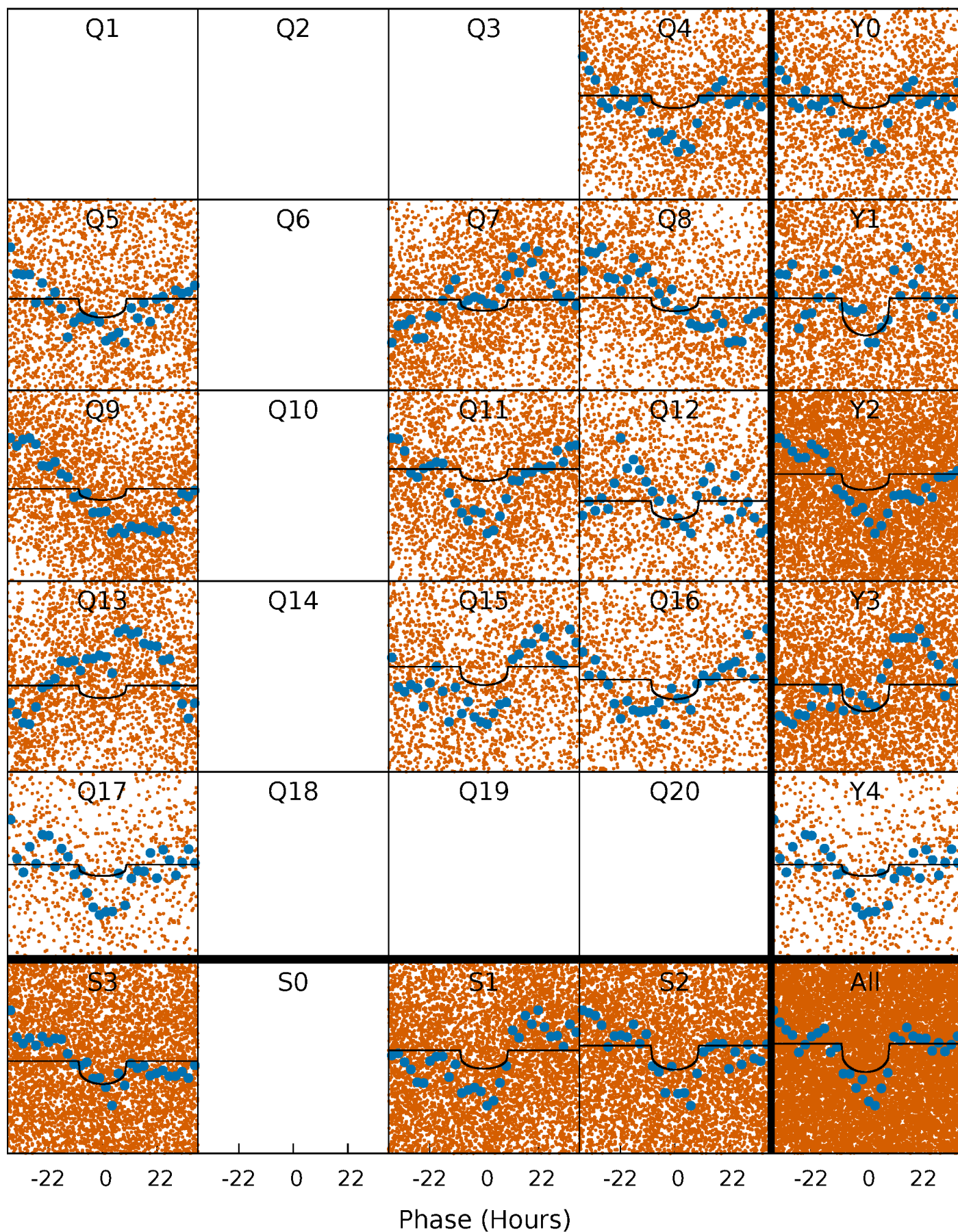
PDC Quarter-Phased Transit Curves

TCE 004181749-01 P= 4.092945 Days $T_0=135.058257$ (BKJD)



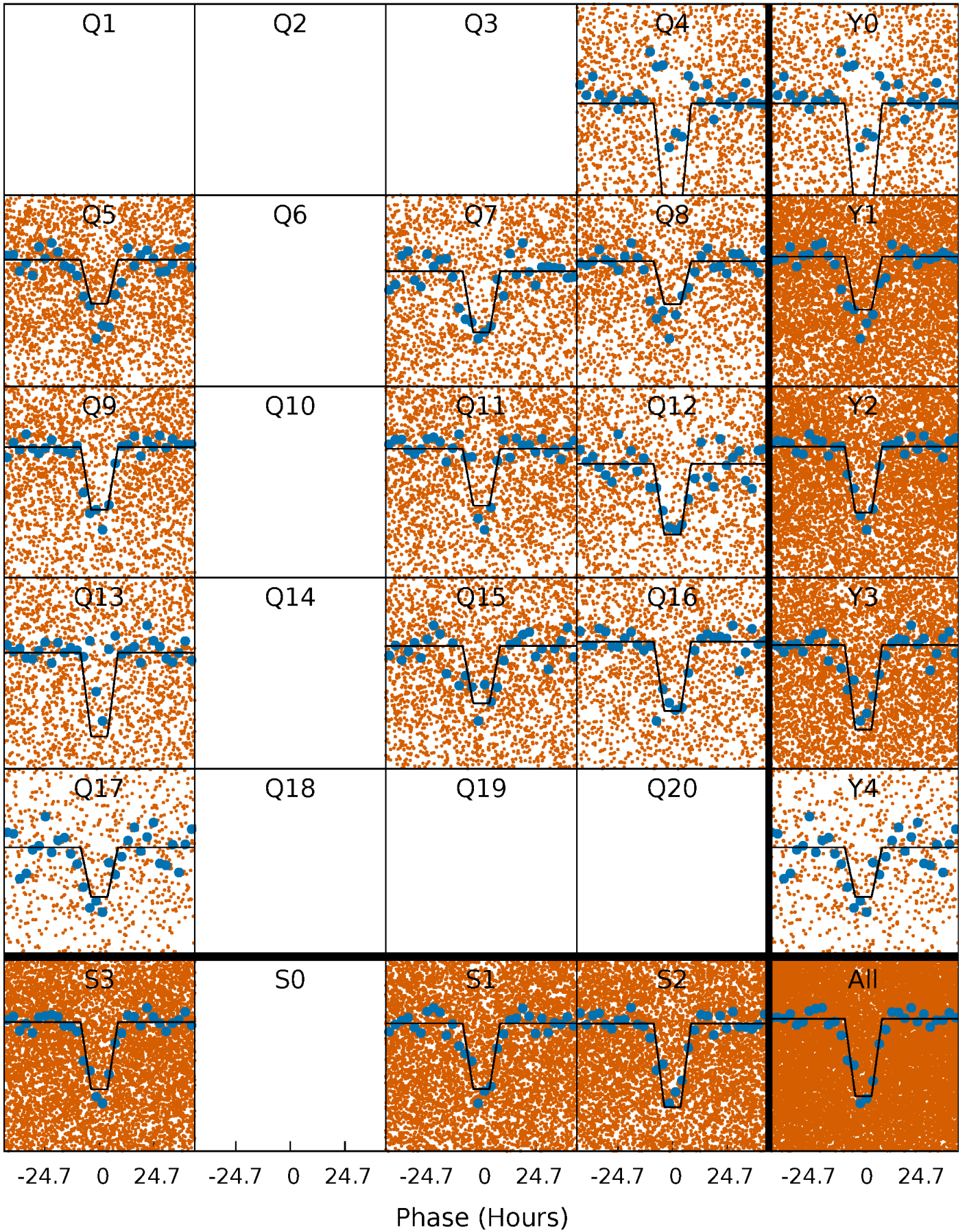
DV Quarter-Phased Transit Curves

TCE 004181749-01 P= 4.092945 Days $T_0=135.058257$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

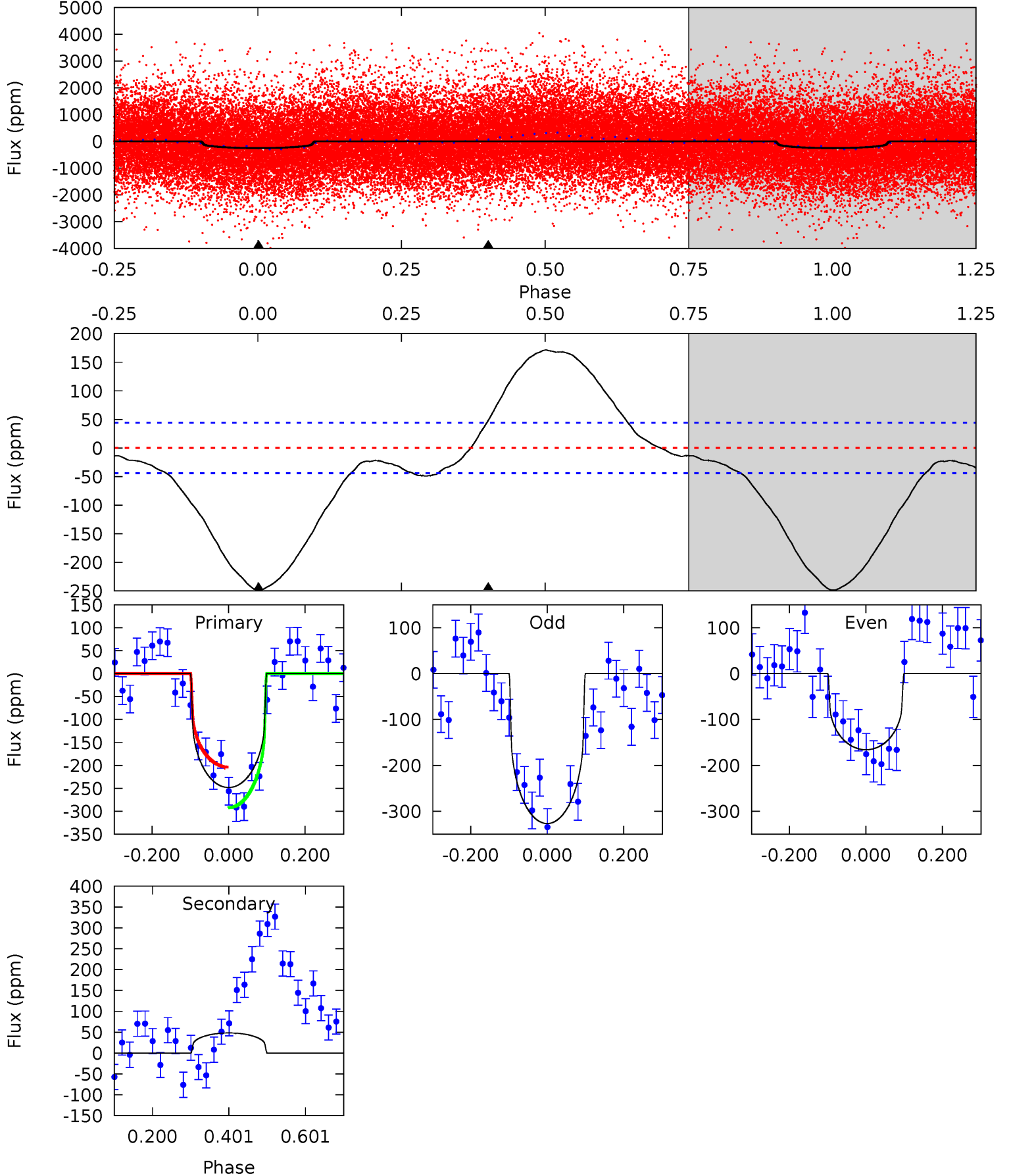
TCE 004181749-01 P= 4.092635 Days $T_0=135.229007$ (BKJD)



DV Model-Shift Uniqueness Test

004181749-01, P = 4.092945 Days, E = 135.058257 Days

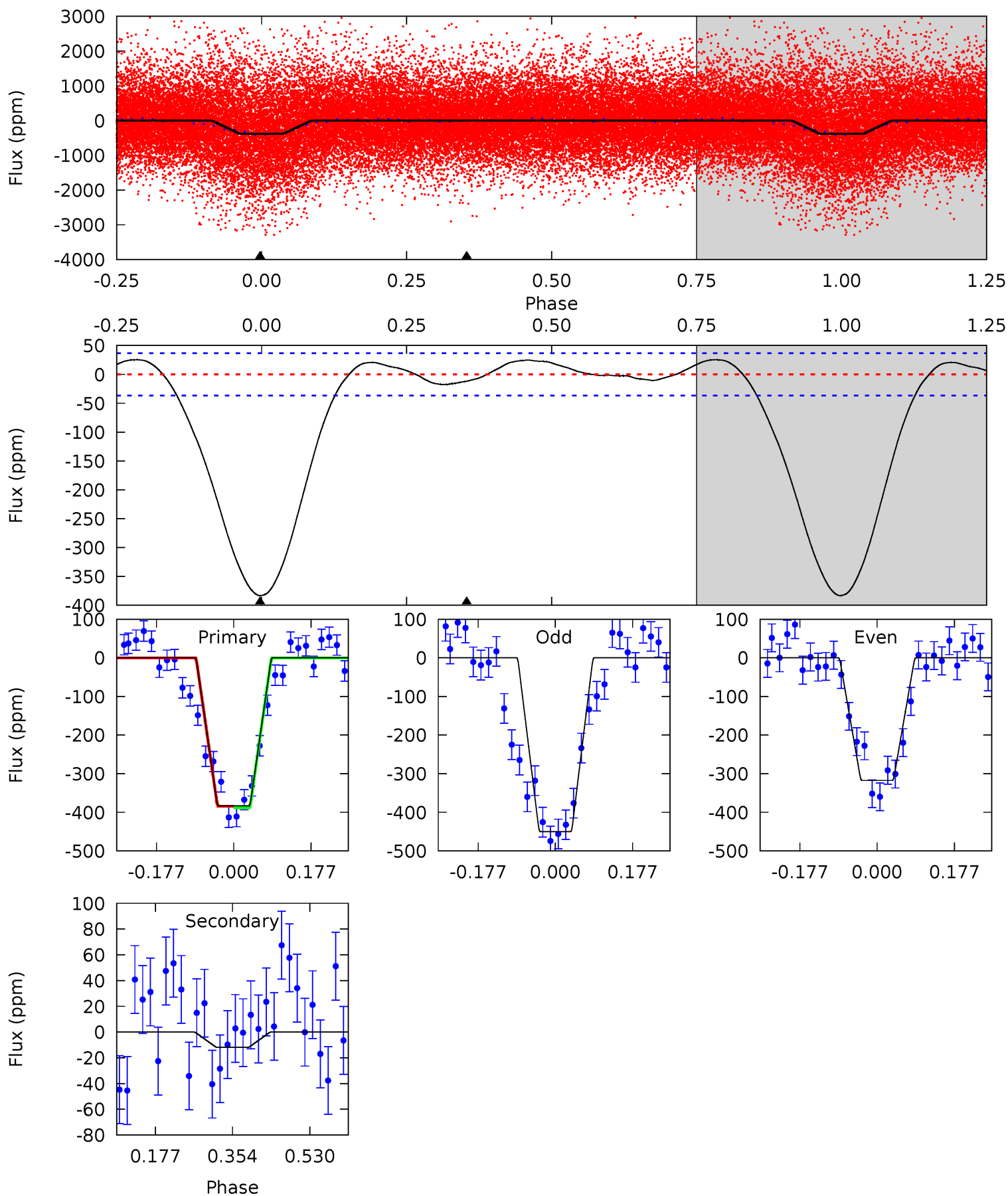
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
24.9	-4.83	0	0	4.42	1.28	3.60	24.9	24.9	-4.83	-4.83	8.04	1.05	0.41	4.38



Alt Model-Shift Uniqueness Test

004181749-01, P = 4.092635 Days, E = 135.229007 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
46.3	1.44	0	0	4.44	1.35	1.37	46.3	46.3	1.44	1.44	7.97	0.94	0.06	0.22



Stellar Parameters For KIC 004181749

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	4946^{+178}_{-158}	$4.602^{+0.066}_{-0.039}$	$-0.520^{+0.300}_{-0.300}$	$0.666^{+0.065}_{-0.065}$	$0.647^{+0.090}_{-0.036}$	$3.080^{+0.833}_{-0.492}$
	+4%/-3%	+1%/-1%	+58%/-58%	+10%/-10%	+14%/-6%	+27%/-16%
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 004181749-01 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	48 ± 10	$0.84^{+0.58}_{-0.49}$	1189^{+47}_{-49}	-4055^{+659}_{-1880}	$-71.636^{+46.665}_{-363.146}$
Alt.	-12 ± 8	$1.42^{+0.58}_{-0.61}$	1188^{+46}_{-48}	2760^{+574}_{-473}	$6.171^{+15.509}_{-4.534}$

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

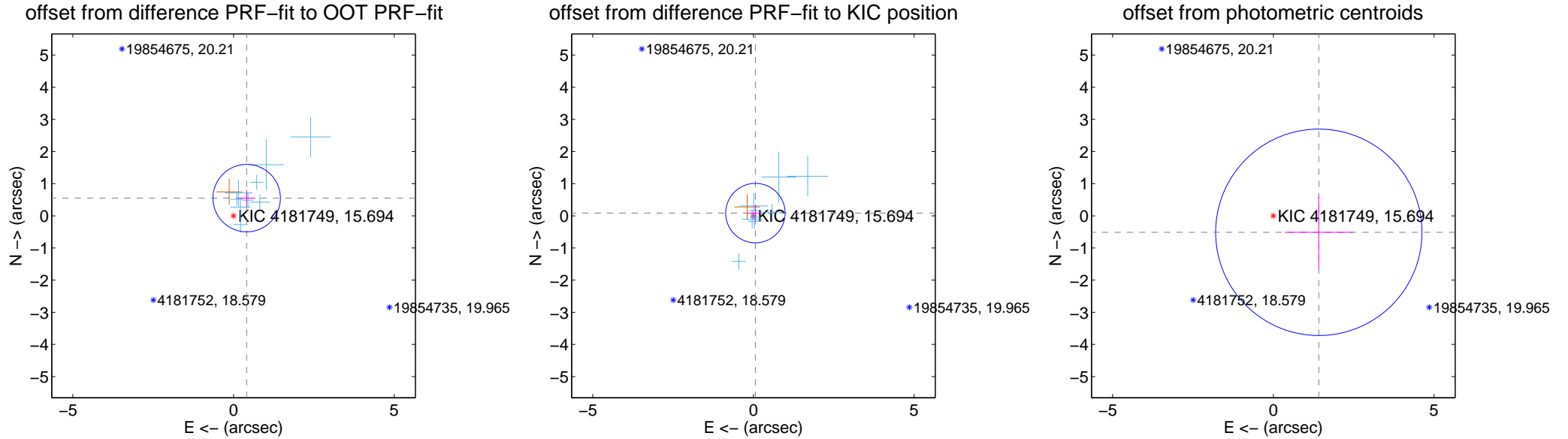
DV Centroid Data

Supplemental centroid analysis for 004181749-01. Kepler magnitude: 15.69. Transit SNR 6.80

There are 9 quarters with good PRF difference image offsets

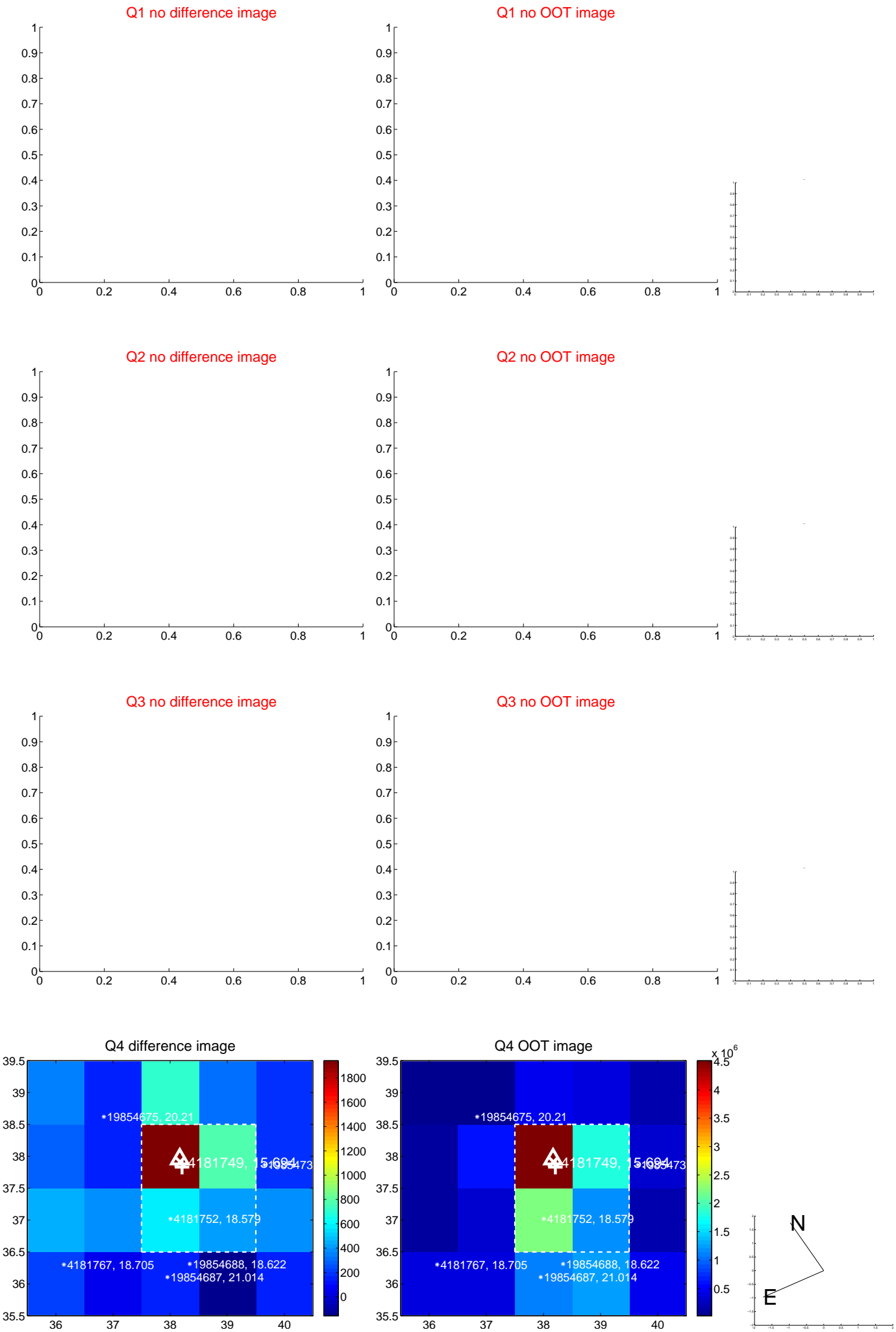
The direct PRF centroid is offset from the target star catalog position by about 0.43 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.686 ± 0.350	1.96	-0.409 ± 0.268	0.550 ± 0.257
PRF-fit source offset from KIC position	0.105 ± 0.308	0.34	-0.061 ± 0.206	0.085 ± 0.254
photometric centroid source offset	1.51 ± 1.07	1.41	-1.42 ± 1.06	-0.51 ± 1.13

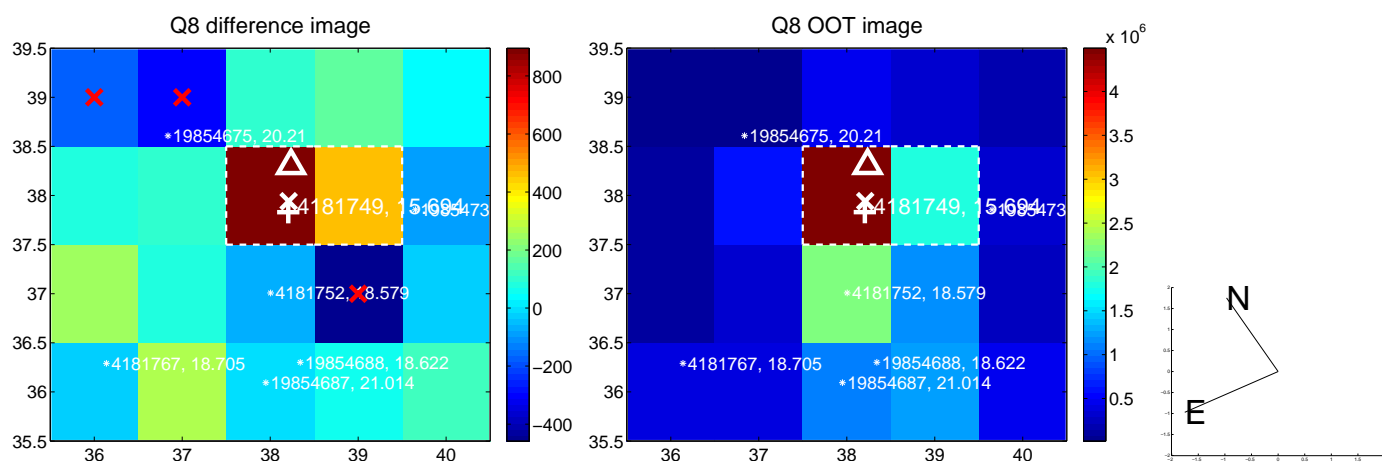
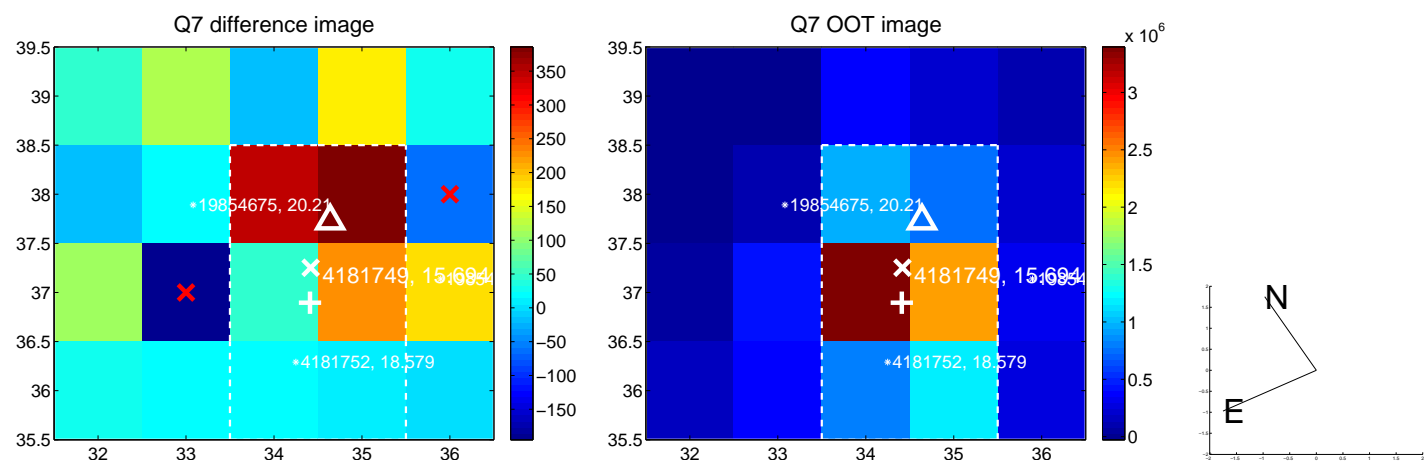
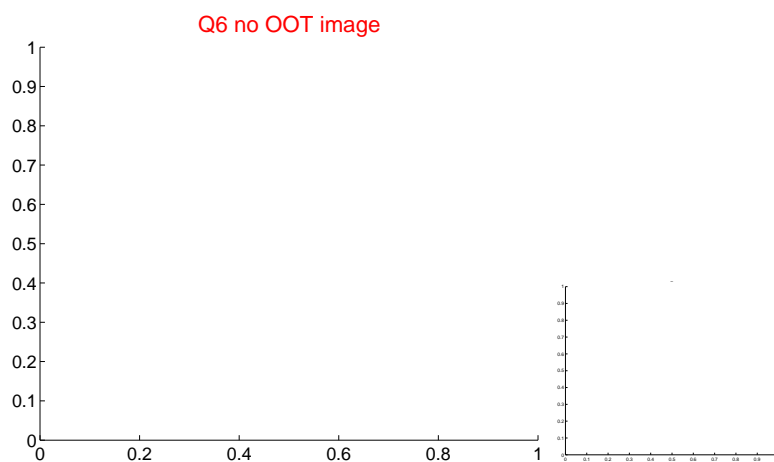
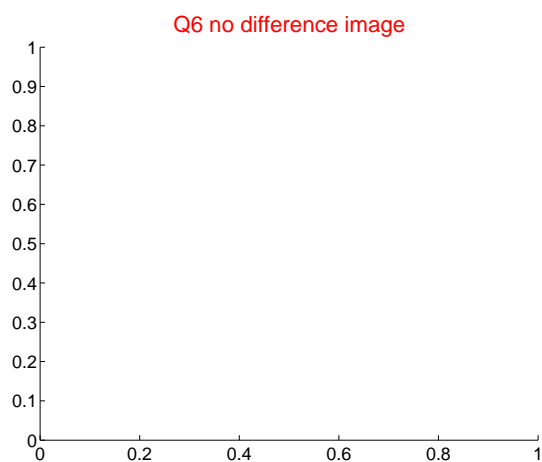
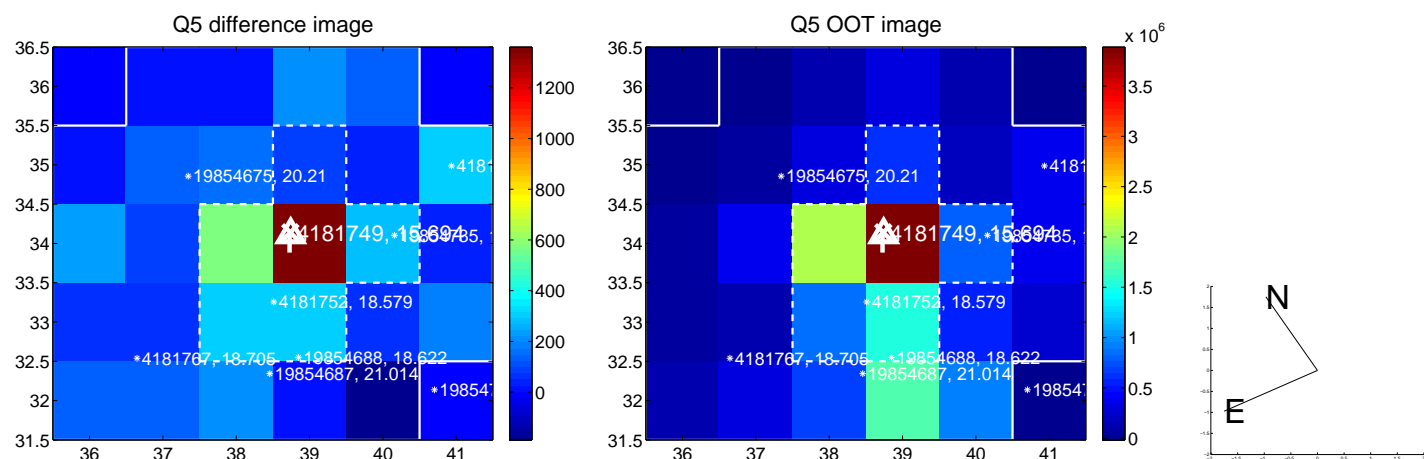


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

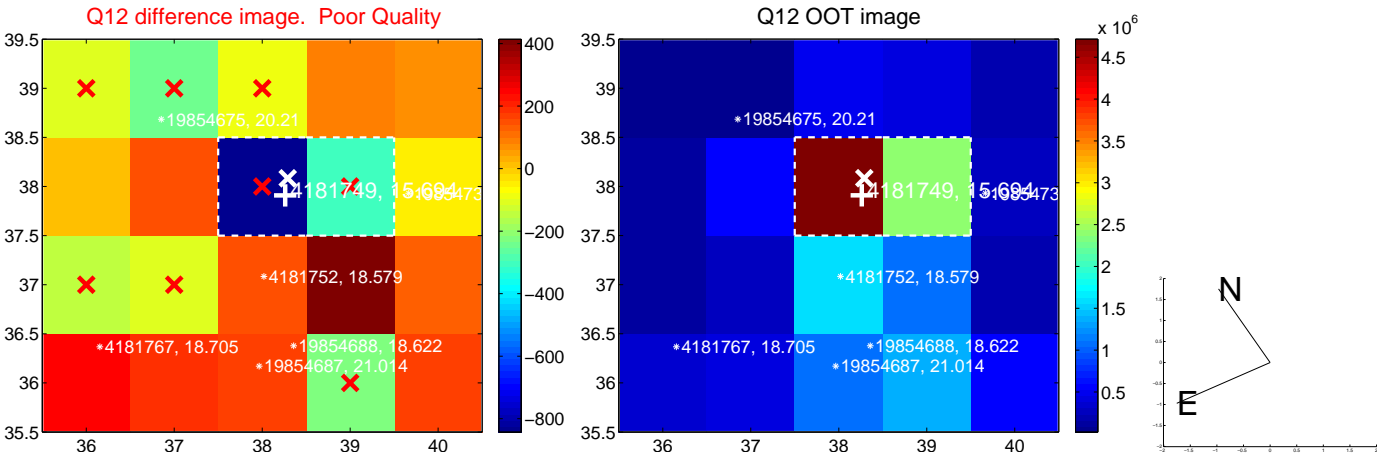
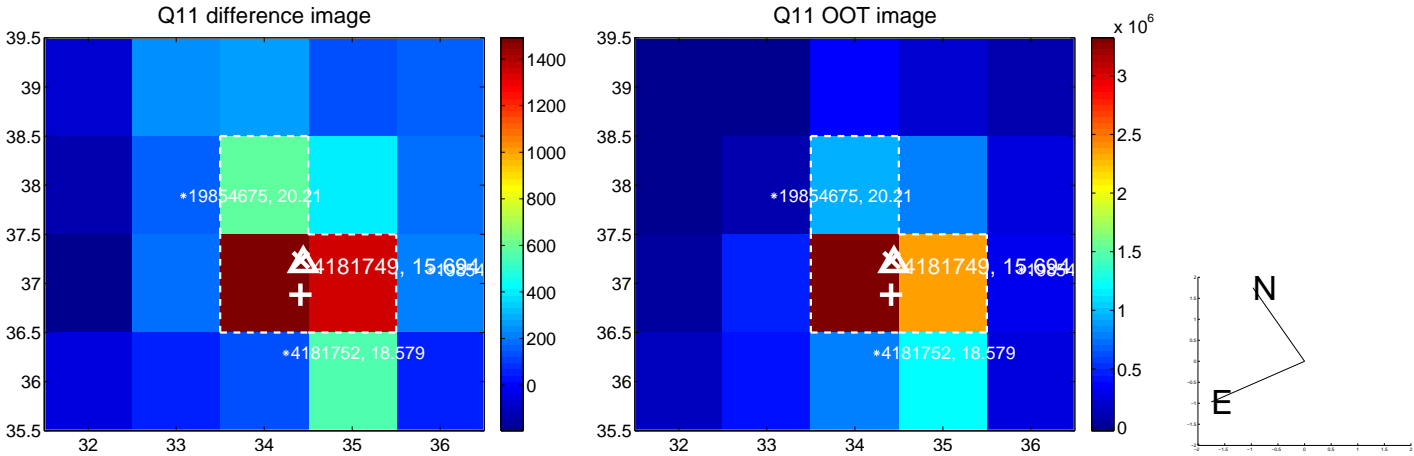
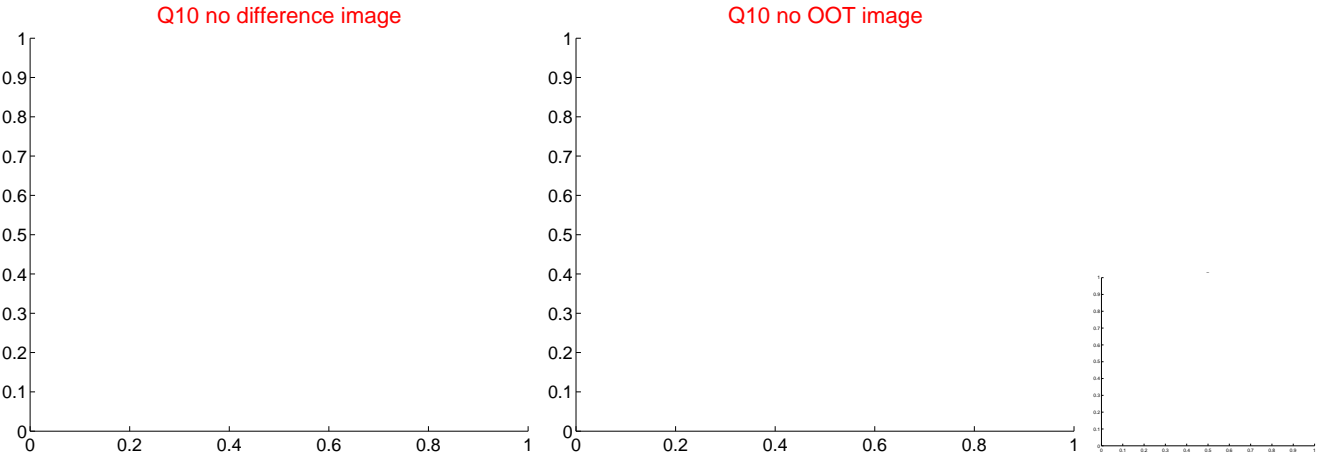
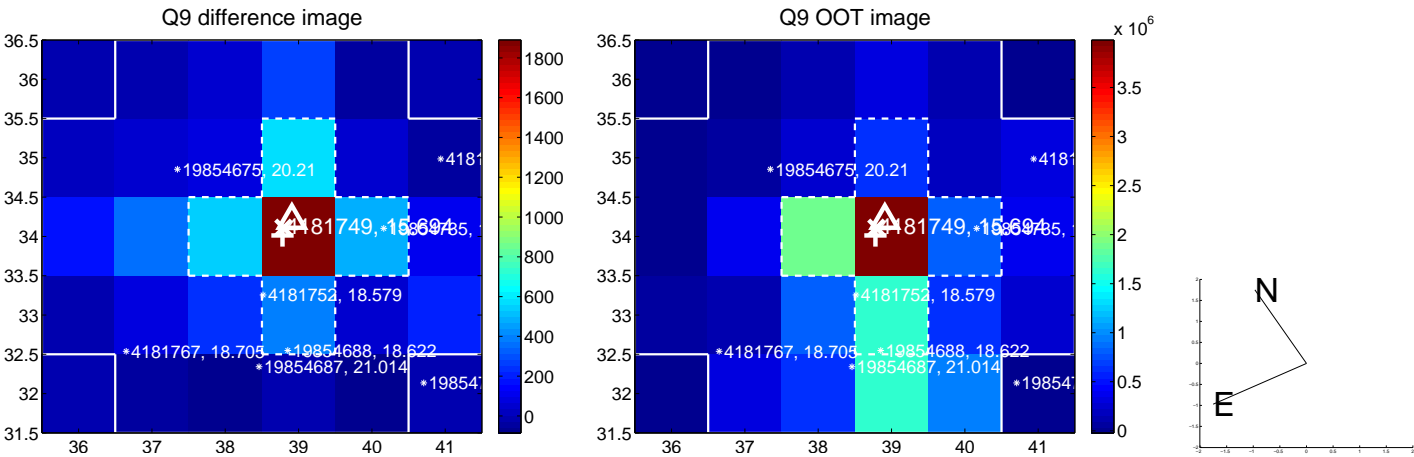
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



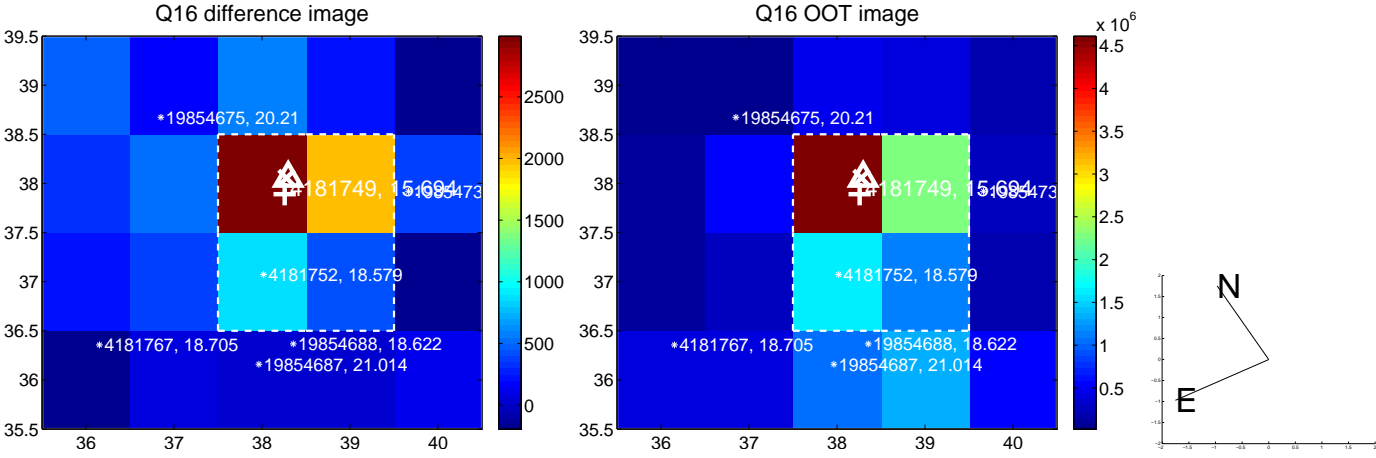
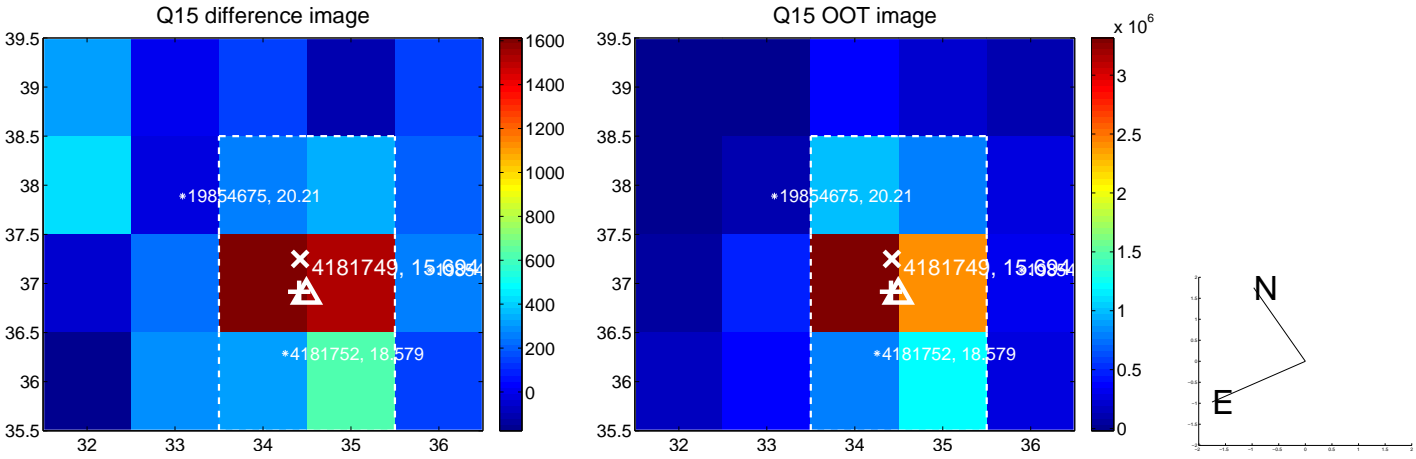
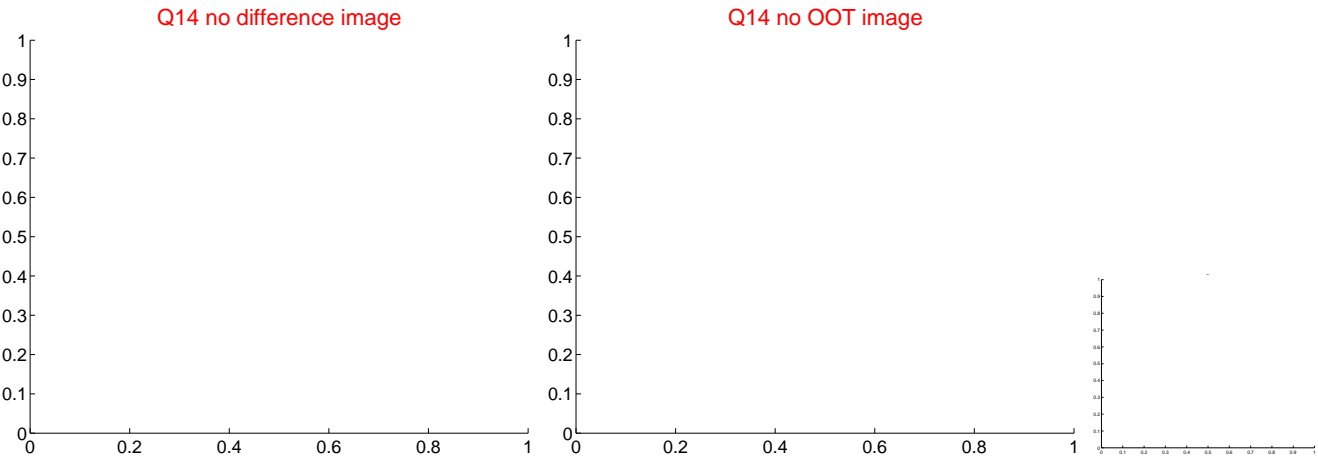
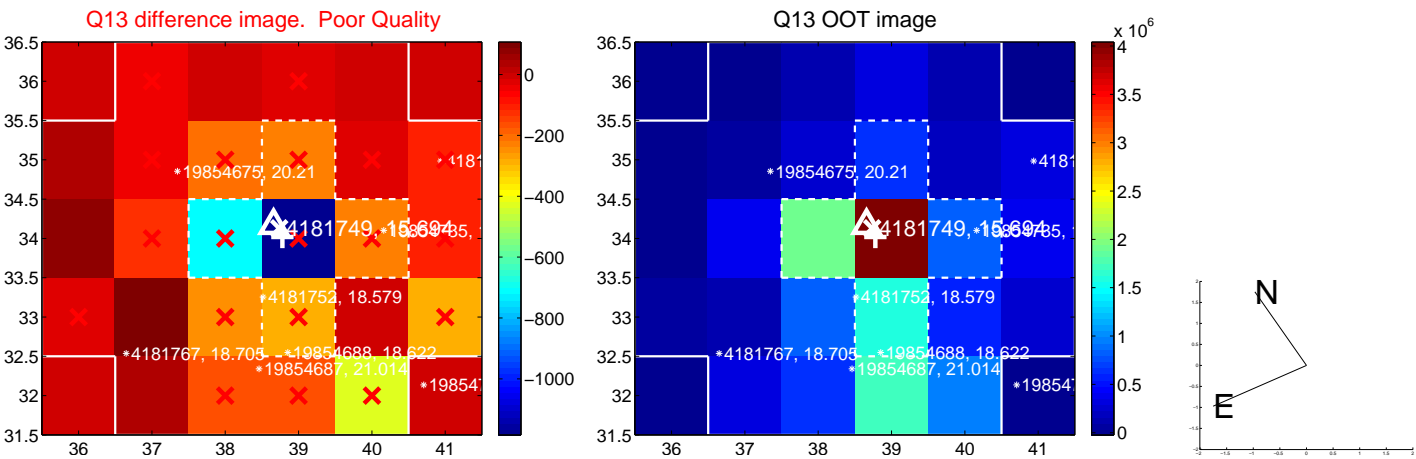
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value



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

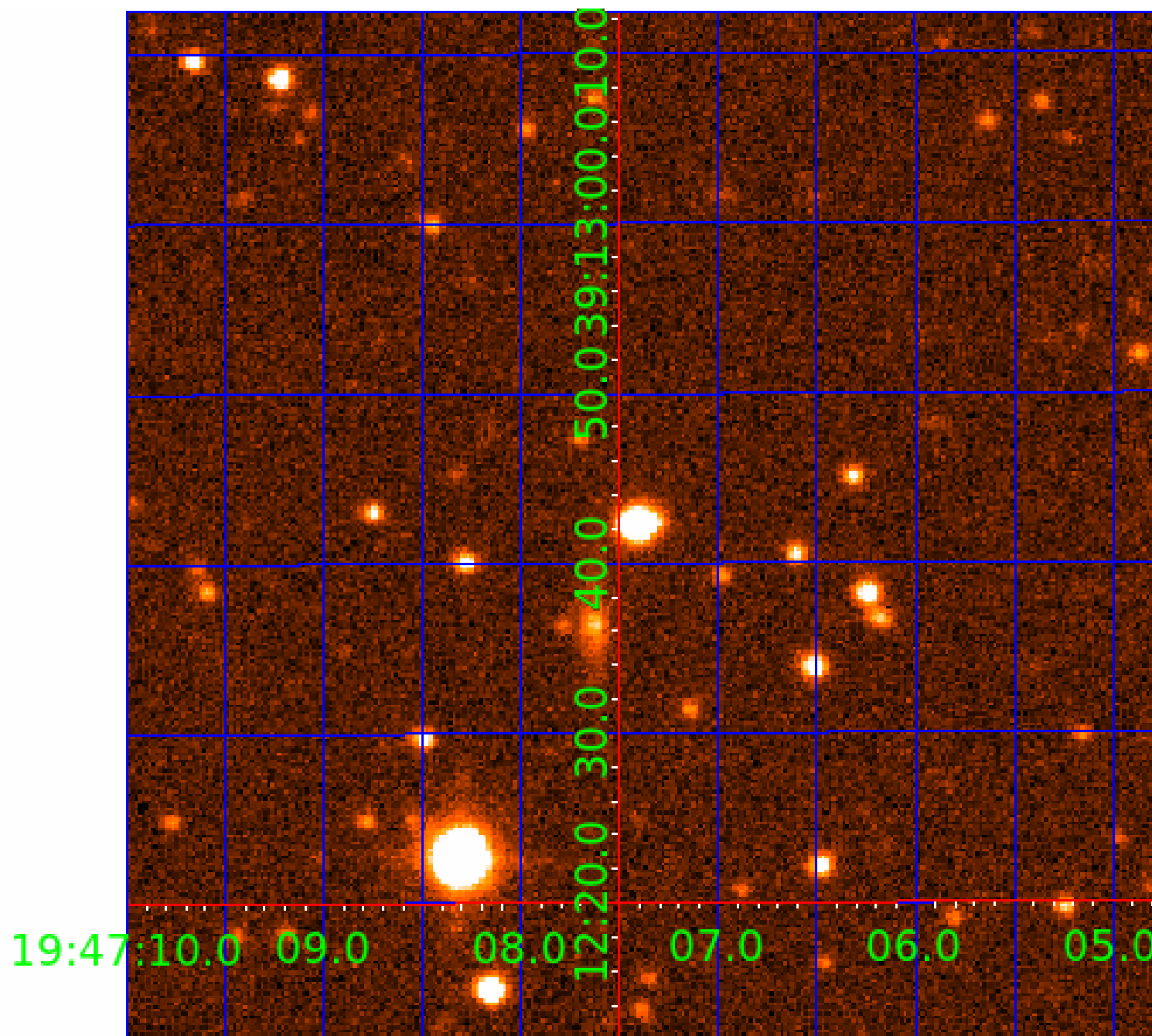


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 004181749

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})
004181749-01	OBS	No	4.092945	135.058257	139.9	19.251	7.2	6.8	0.67	4946	0.80	126.72
004181749-02	OBS	No	268.748596	387.566906	3085.5	21.636	31.7	15.0	0.67	4946	7.15	0.48

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004181749-01	OBS	FP	0.00	1	0	0	0	LPP_DV
004181749-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_ZUMA—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—INCONSISTENT_TRANS—CENT_FEW_DIFS

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

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

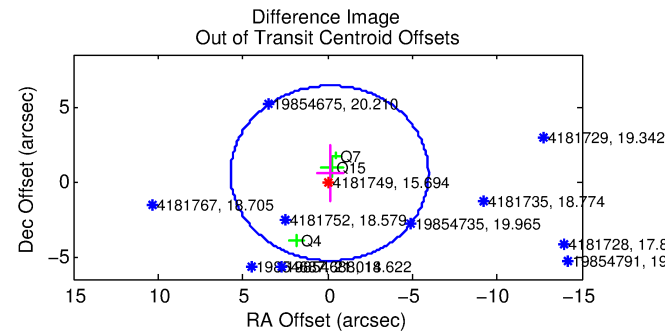
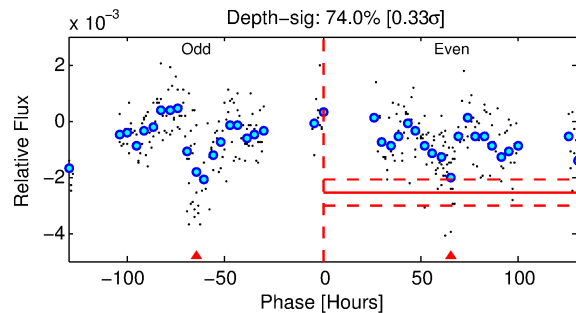
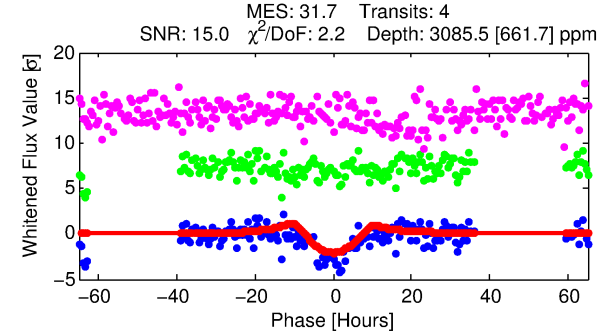
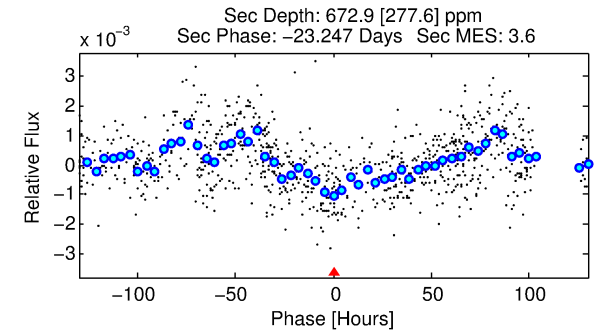
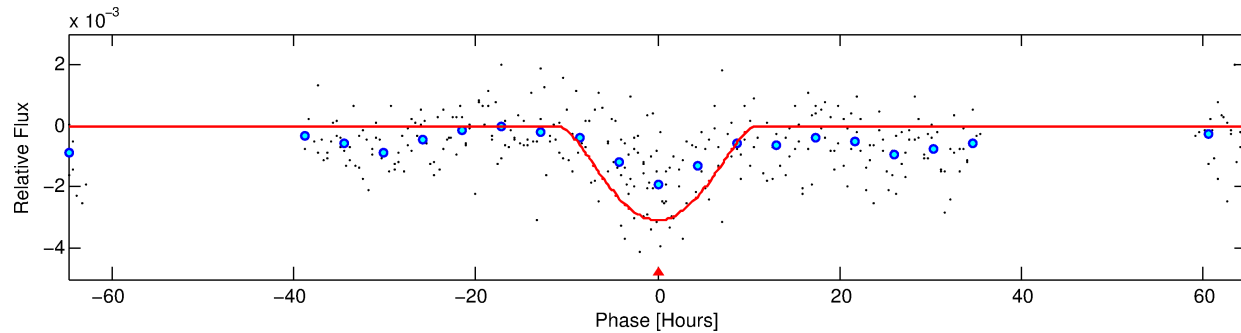
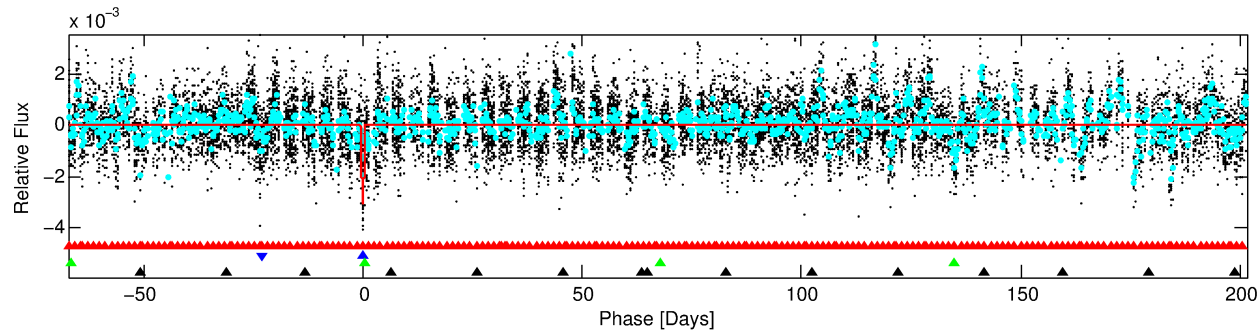
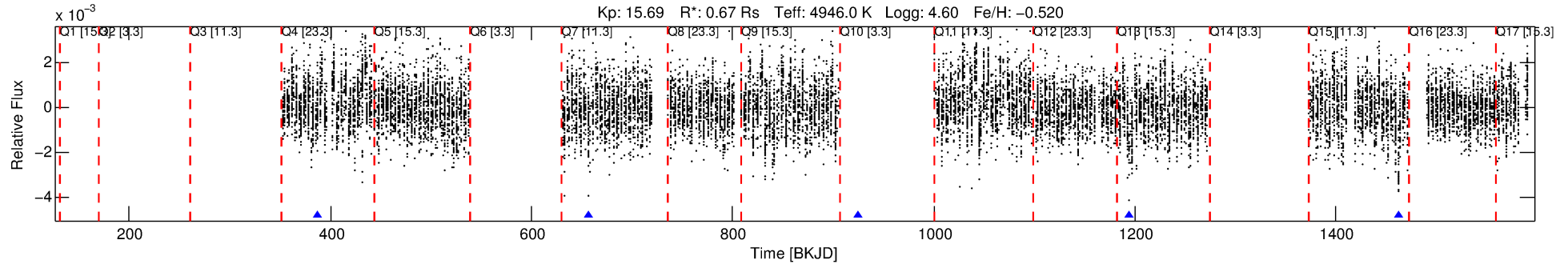
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004181749-02

No Significant Match Found

DV One-Page Summary

KIC: 4181749 Candidate: 2 of 4 Period: 268.749 d



DV Fit Results:

Period = 268.74860 [0.01381] d
Epoch = 387.5669 [0.0353] BKJD
Rp/R* = 0.0984 [0.2566]
a/R* = 43.16 [22.28]
b = 1.00 [0.35]
Seff = 0.48 [0.09]
Teq = 212 [10] K
Rp = 7.15 [18.66] Re
a = 0.7051 [0.0581] AU
Ag = 3598.22 [18825.55] [0.19σ]
Teffp = 2539 [3322] K [0.70σ]

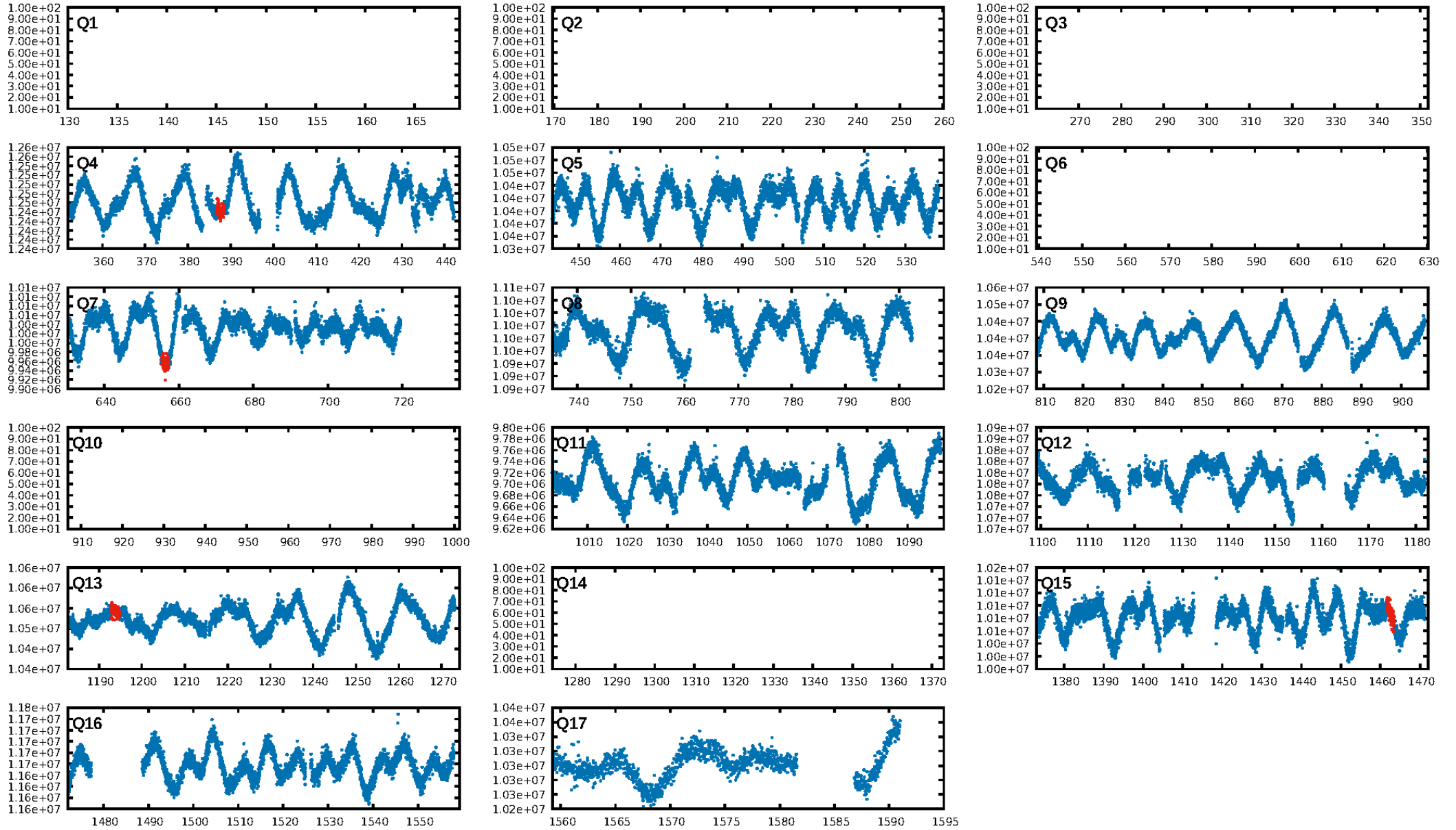
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [189.04σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 0.2%
Bootstrap-pfa: 7.65e-84
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: 1.238
Centroid-sig: 18.6%
Centroid-so: 1.942 arcsec [3.69σ]
OotOffset-rm: 0.572 arcsec [0.29σ]
KicOffset-rm: 0.657 arcsec [0.60σ]
OotOffset-st: 0/2/1/0 [3]
KicOffset-st: 0/2/1/0 [3]
DiffImageQuality-fgm: 0.33 [1/3]
DiffImageOverlap-fno: 0.00 [0/3]

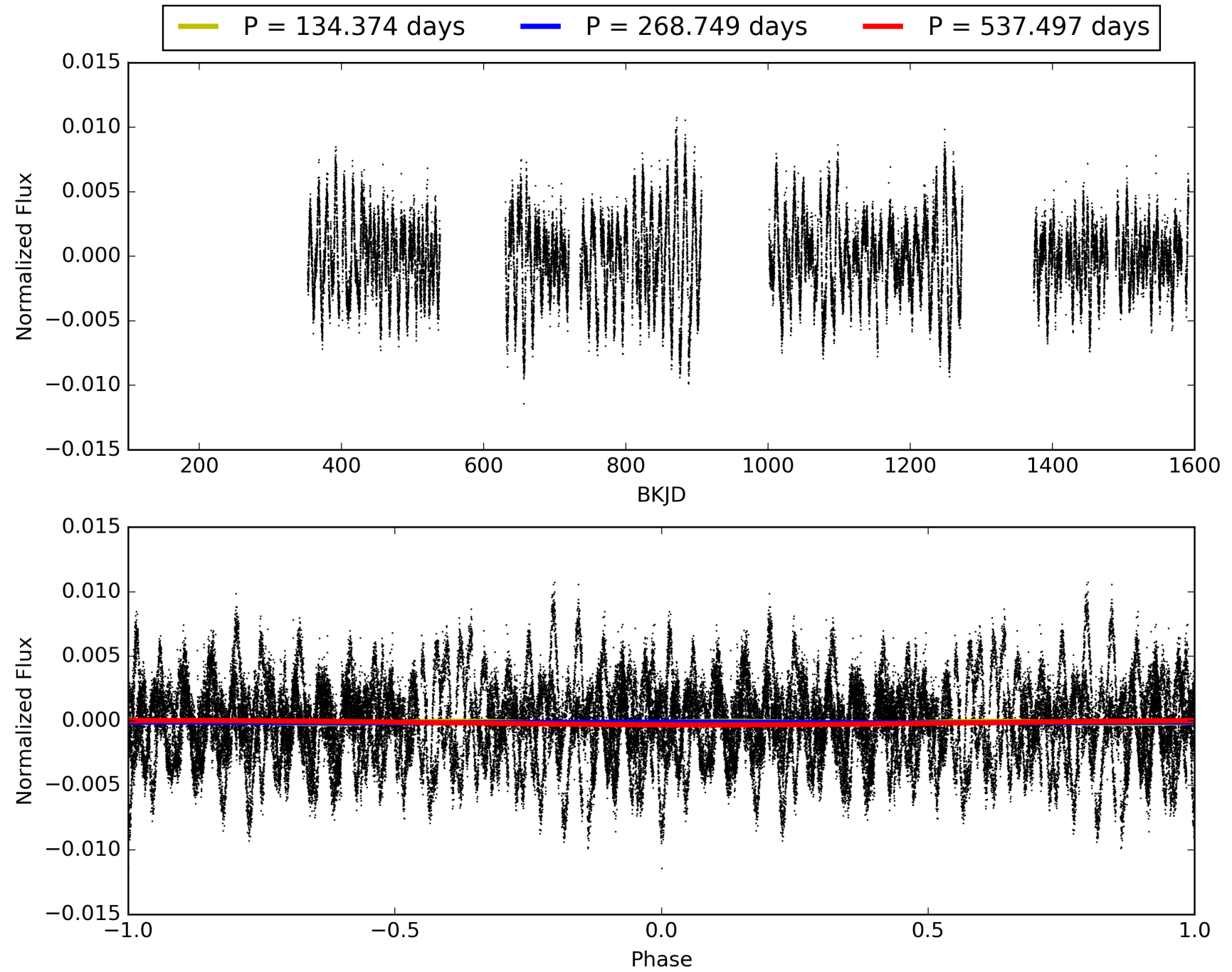
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 06:08:29 Z

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

TCE 004181749-02, PDC Light Curves

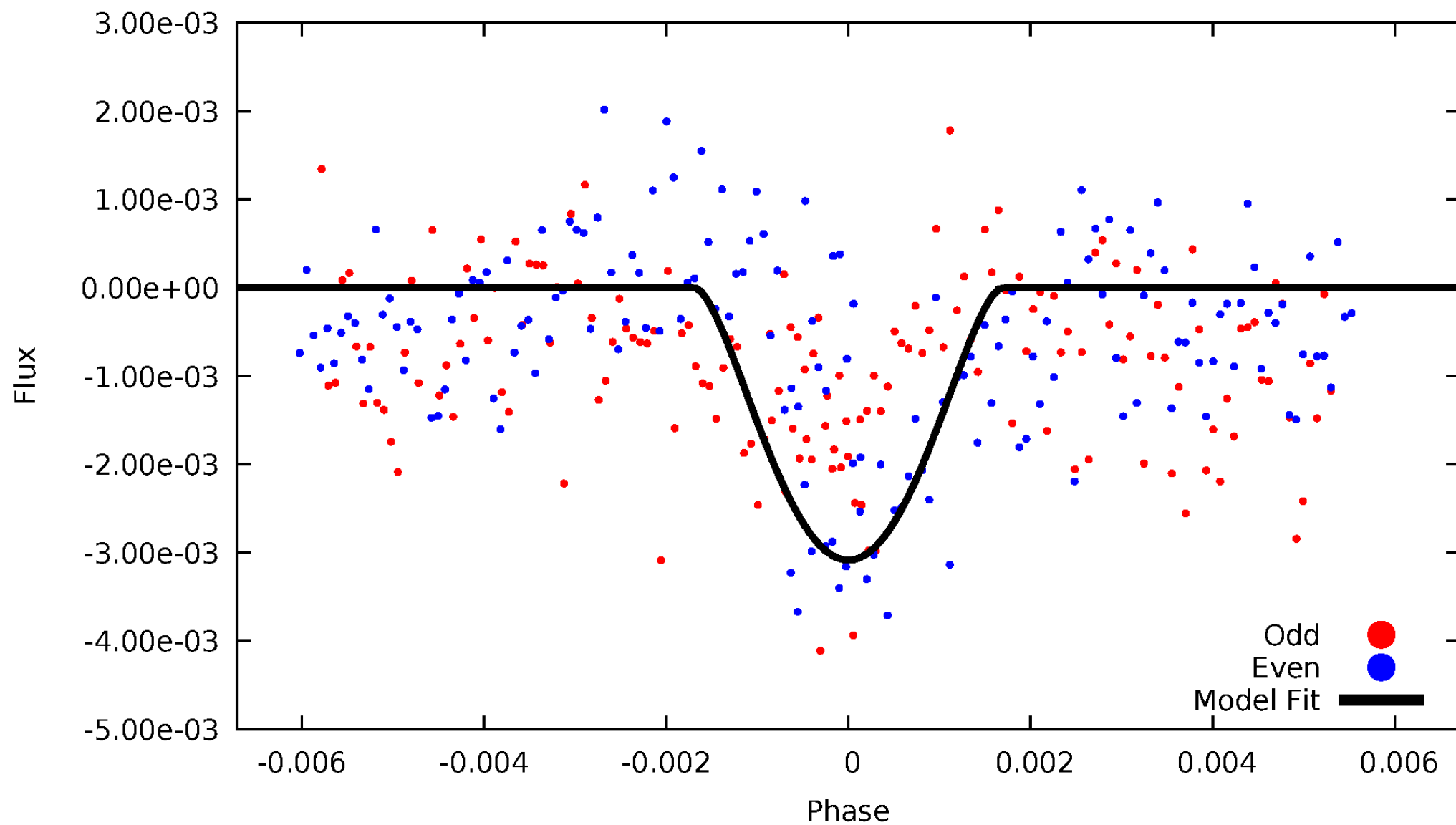


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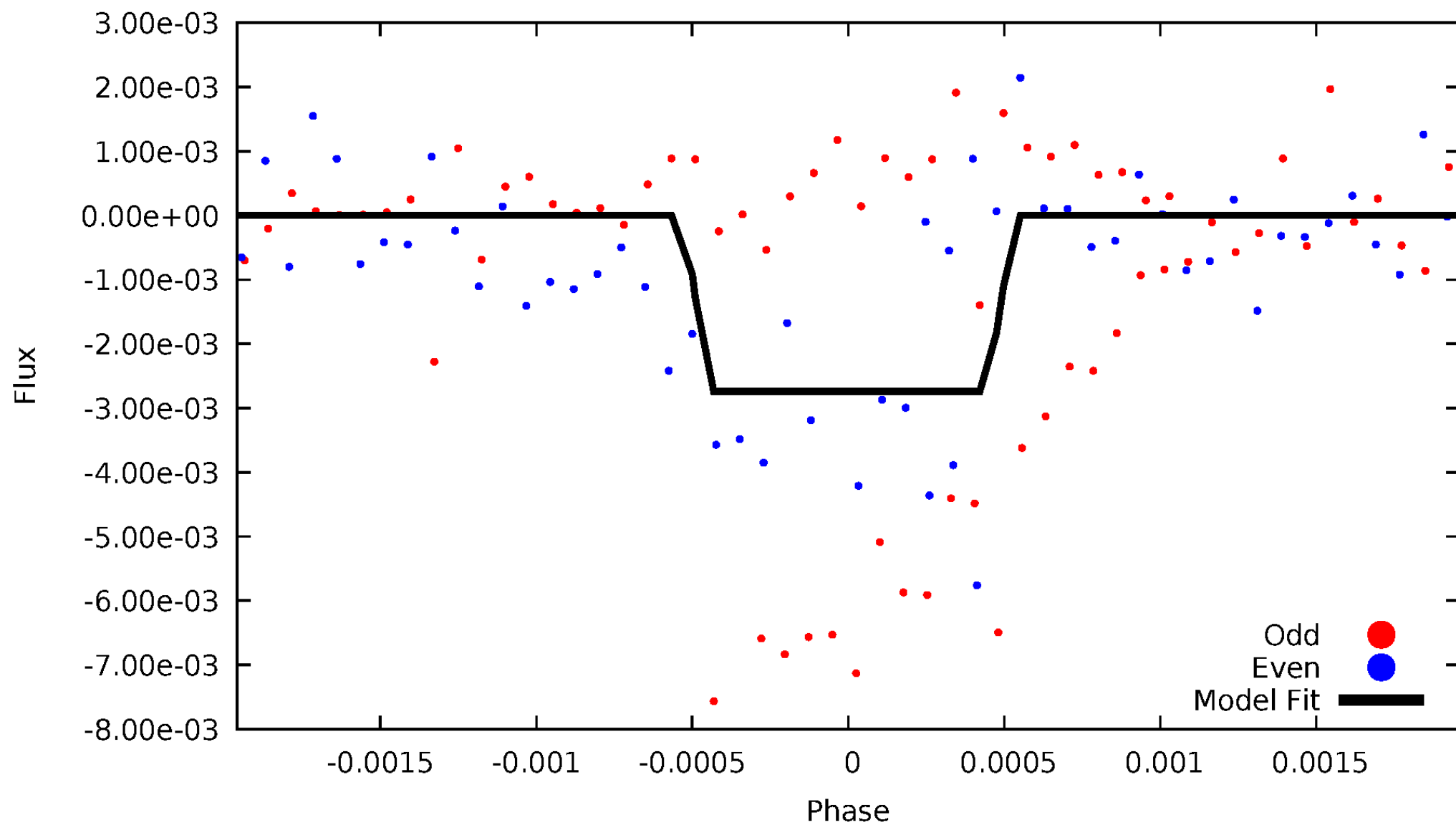
DV Odd/Even

TCE 004181749-02



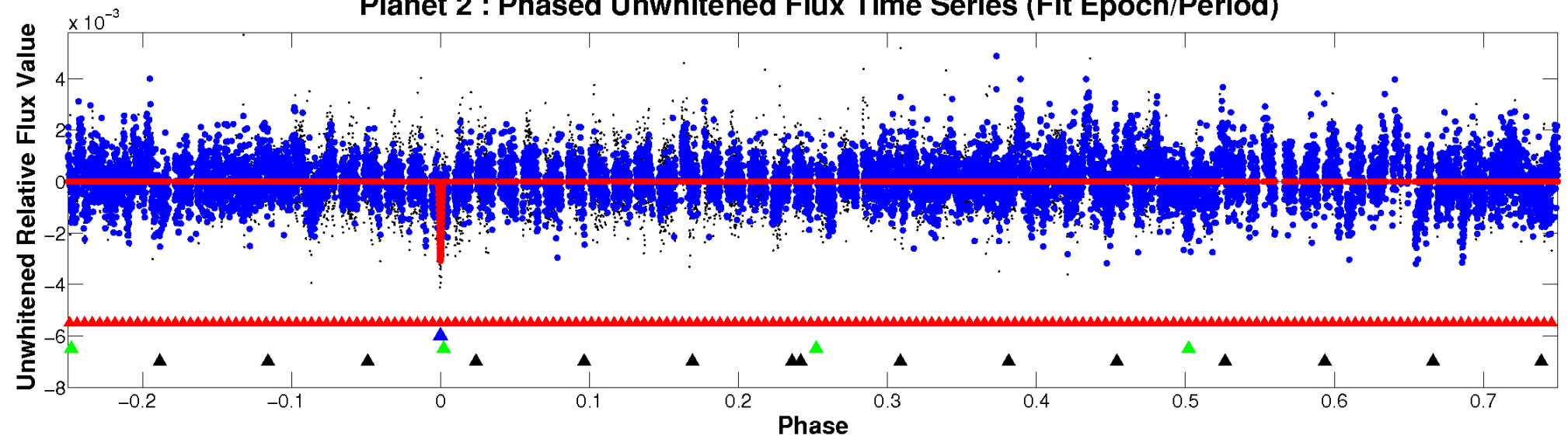
ALT Odd/Even

TCE 004181749-02

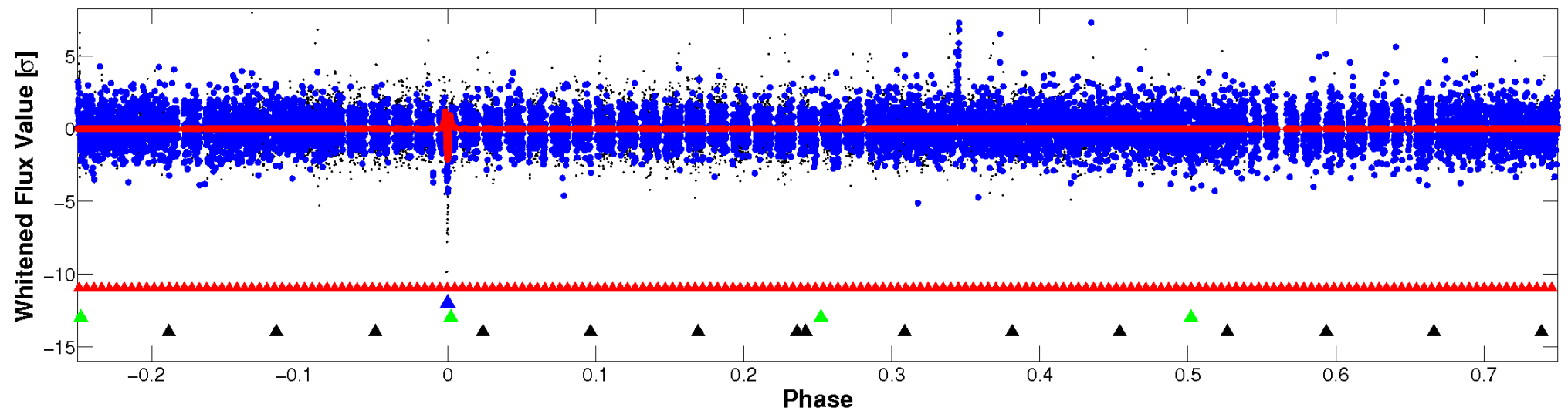


Non-Whitened Vs. Whitened Light Curve

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

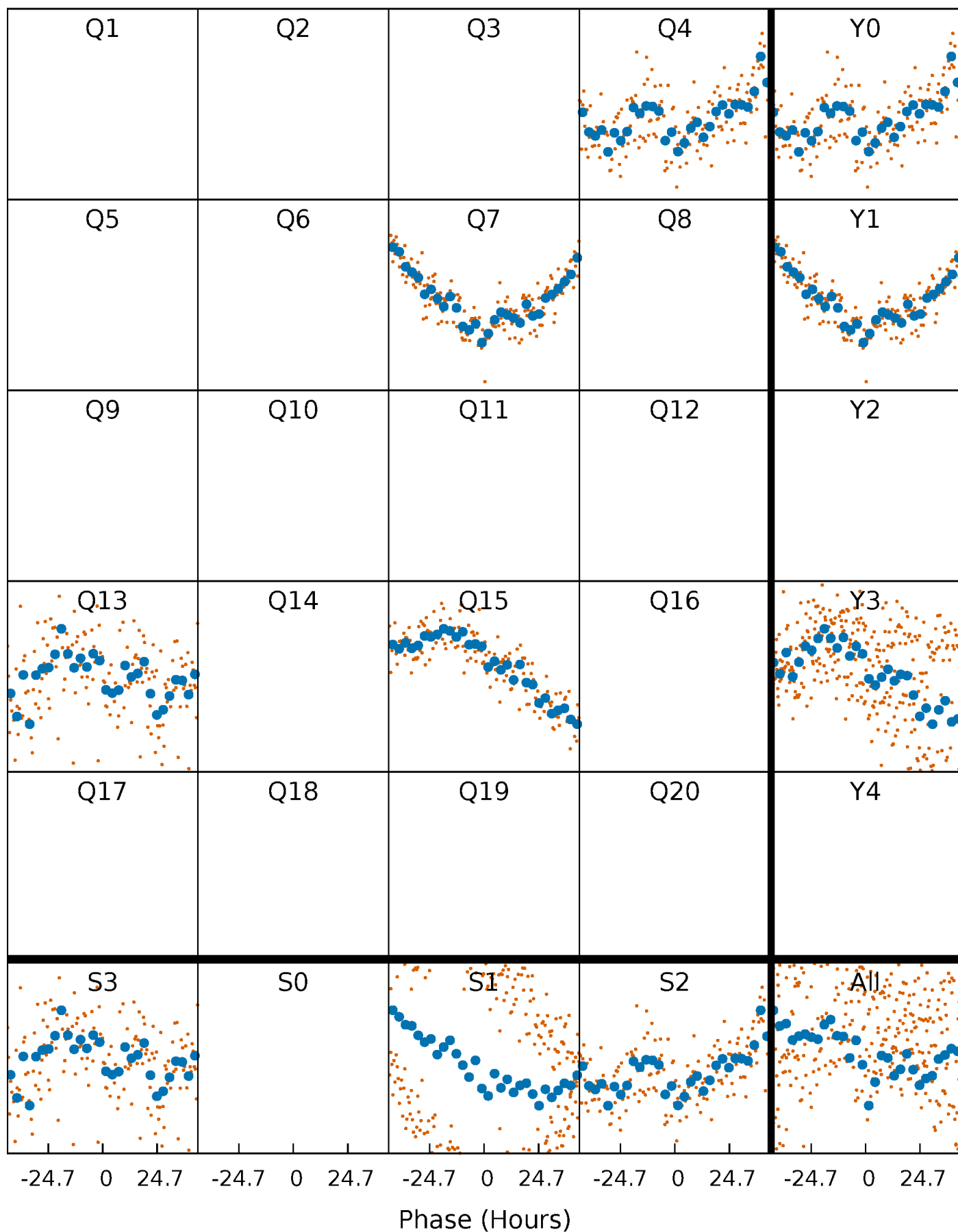


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



PDC Quarter-Phased Transit Curves

TCE 004181749-02 $P=268.748596$ Days $T_0=387.566906$ (BKJD)



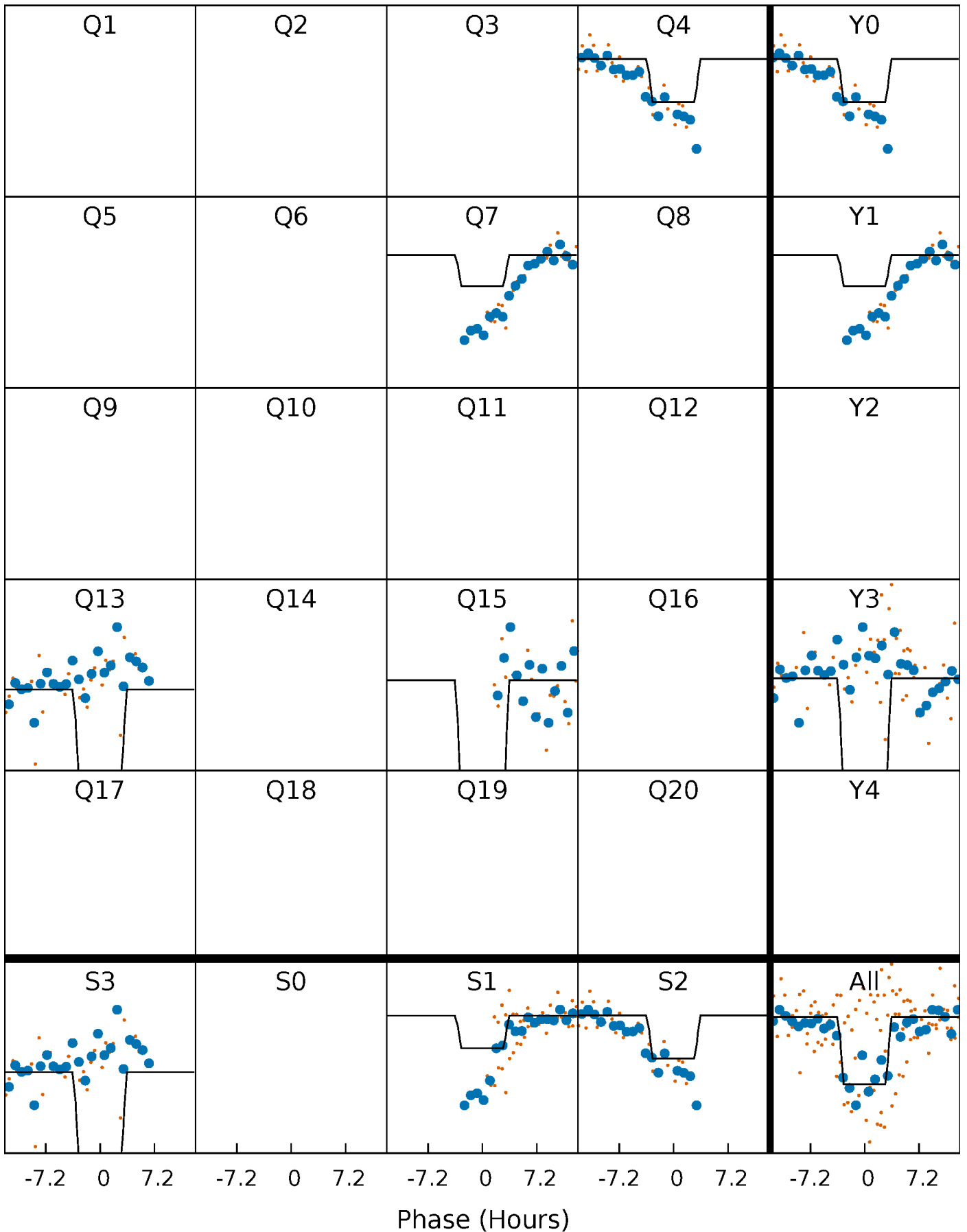
DV Quarter-Phased Transit Curves

TCE 004181749-02 P=268.748596 Days $T_0=387.566906$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

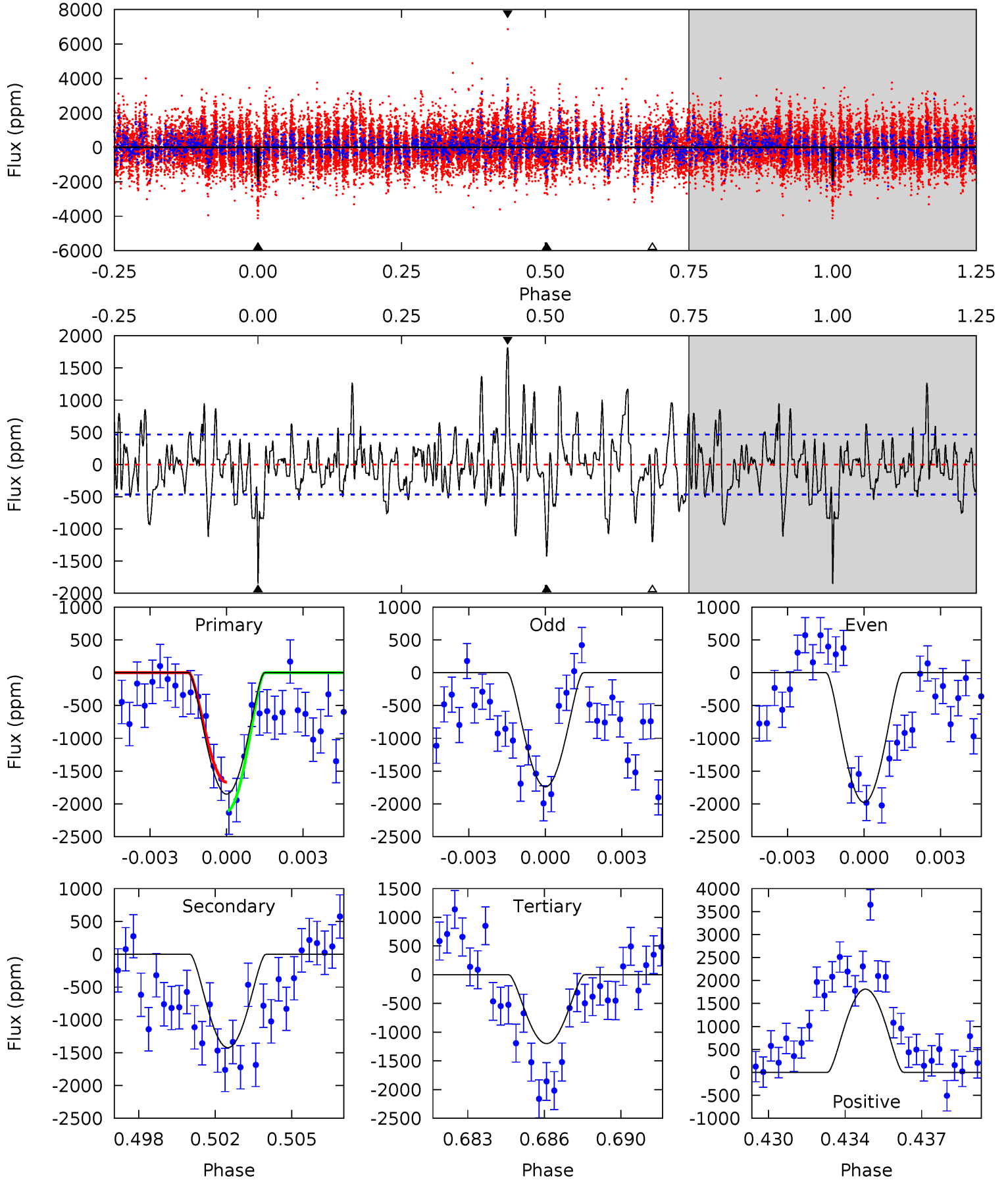
TCE 004181749-02 P=268.708125 Days $T_0=387.492301$ (BKJD)



DV Model-Shift Uniqueness Test

004181749-02, P = 268.748596 Days, E = 118.818310 Days

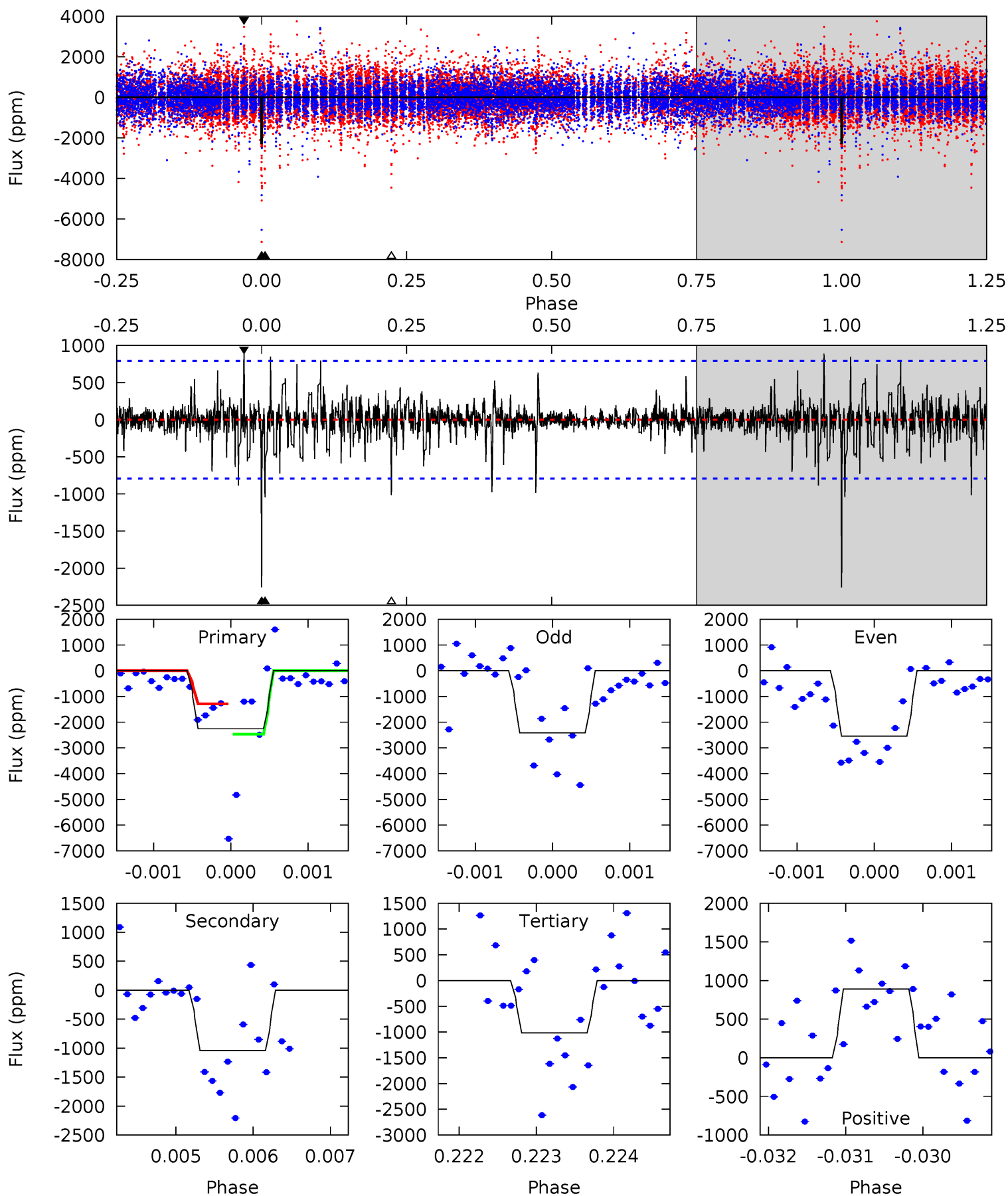
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
20.7	15.9	13.4	20.3	5.23	2.93	4.62	7.31	0.45	2.52	-4.35	1.34	0.97	0.49	2.45



Alt Model-Shift Uniqueness Test

004181749-02, P = 268.708125 Days, E = 118.784176 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
15.5	7.17	6.97	6.11	5.45	3.29	1.15	8.53	9.39	0.20	1.05	0.45	1.31	0.28	4.02



Stellar Parameters For KIC 004181749

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	4946^{+178}_{-158}	$4.602^{+0.066}_{-0.039}$	$-0.520^{+0.300}_{-0.300}$	$0.666^{+0.065}_{-0.065}$	$0.647^{+0.090}_{-0.036}$	$3.080^{+0.833}_{-0.492}$
	+4%/-3%	+1%/-1%	+58%/-58%	+10%/-10%	+14%/-6%	+27%/-16%
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 004181749-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-1424 ± 89	$15.27^{+14.47}_{-10.86}$	294^{+12}_{-11}	2825^{+1319}_{-459}	1742^{+19064}_{-1292}
Alt.	-1043 ± 146	$13.53^{+15.89}_{-9.28}$	295^{+12}_{-12}	2749^{+1195}_{-444}	1515^{+14442}_{-1169}

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

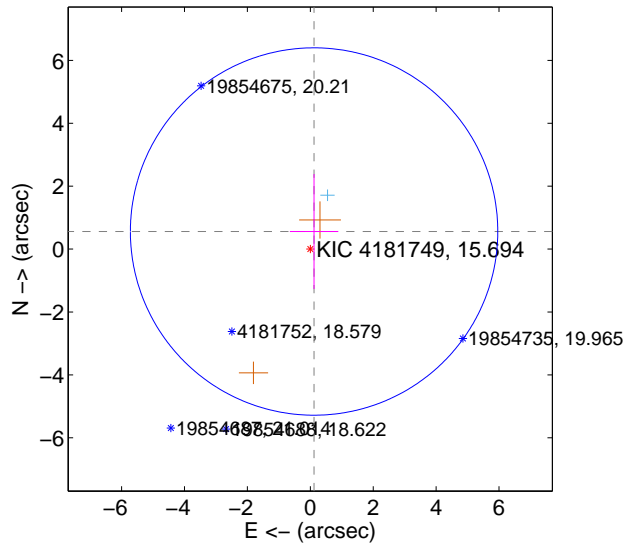
Supplemental centroid analysis for 004181749-02. Kepler magnitude: 15.69. Transit SNR 14.97

There are 1 quarters with good PRF difference image offsets

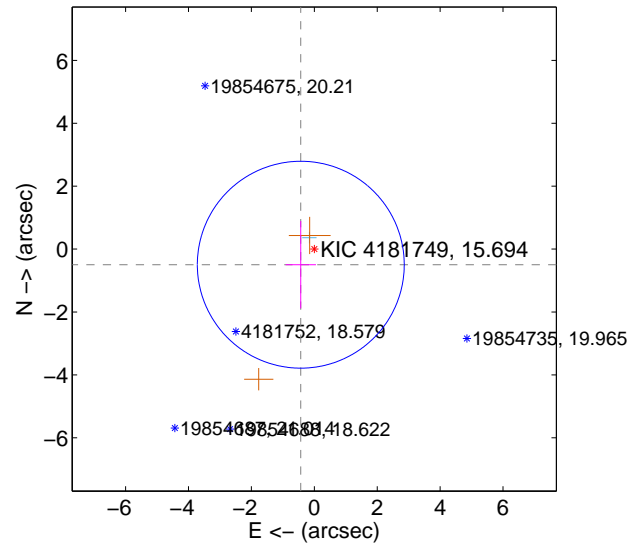
The direct PRF centroid is offset from the target star catalog position by about 0.67 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.572 ± 1.947	0.29	-0.120 ± 0.770	0.559 ± 1.827
PRF-fit source offset from KIC position	0.657 ± 1.097	0.60	0.430 ± 0.483	-0.497 ± 1.389
photometric centroid source offset	1.94 ± 0.53	3.69	0.86 ± 0.46	-1.74 ± 0.54

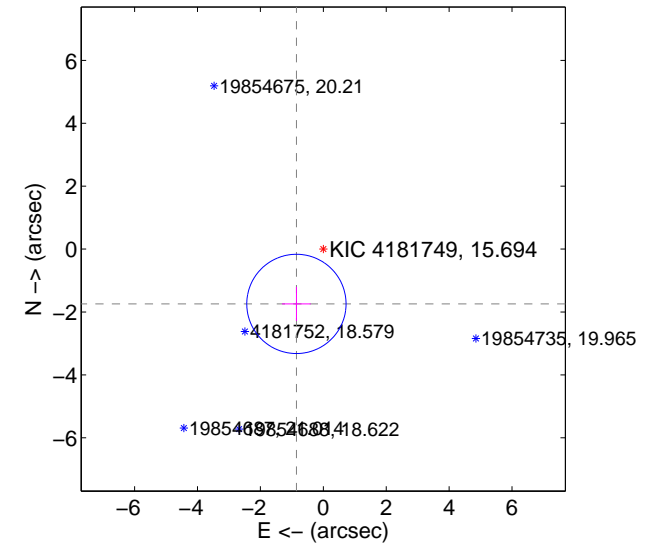
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

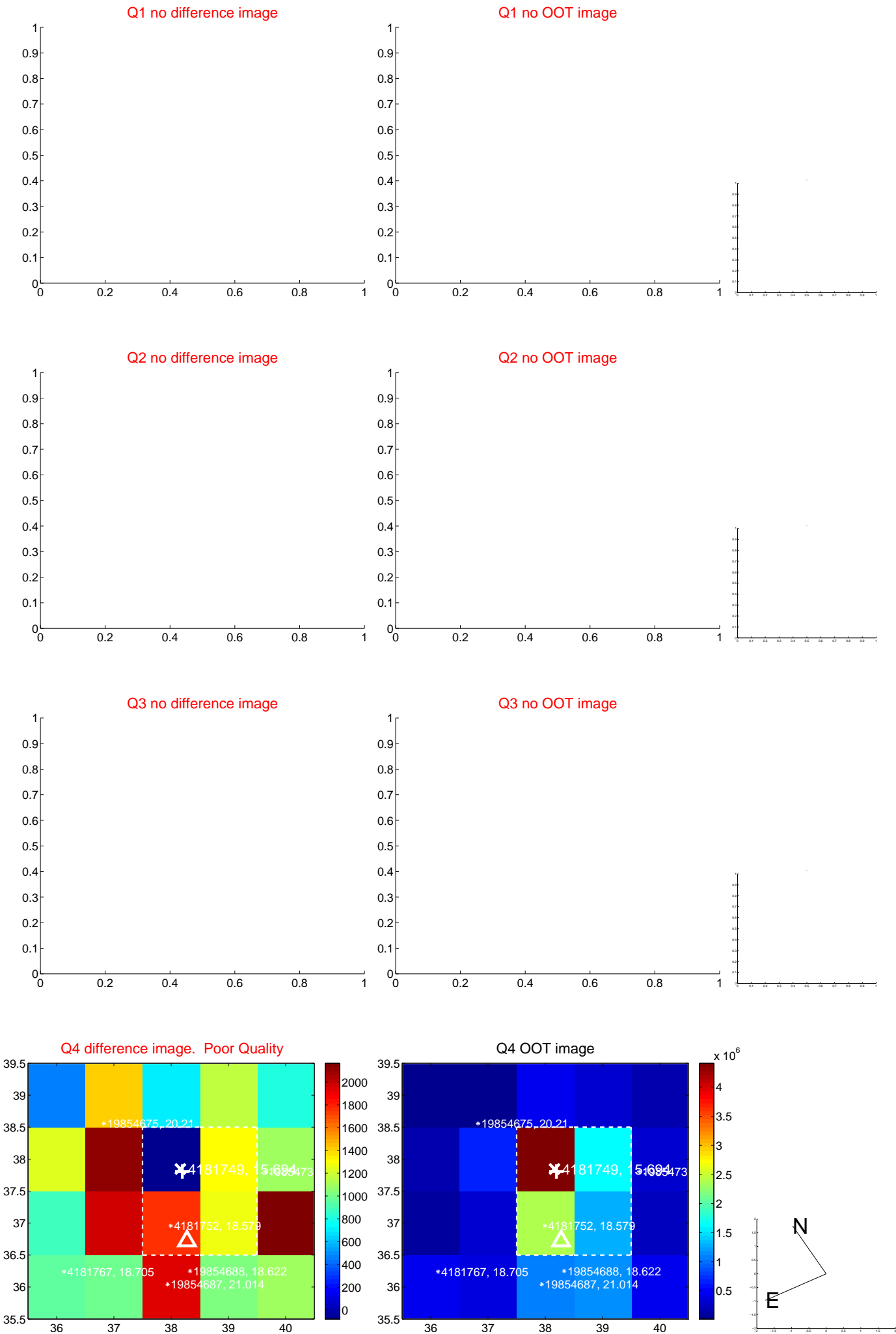


offset from photometric centroids

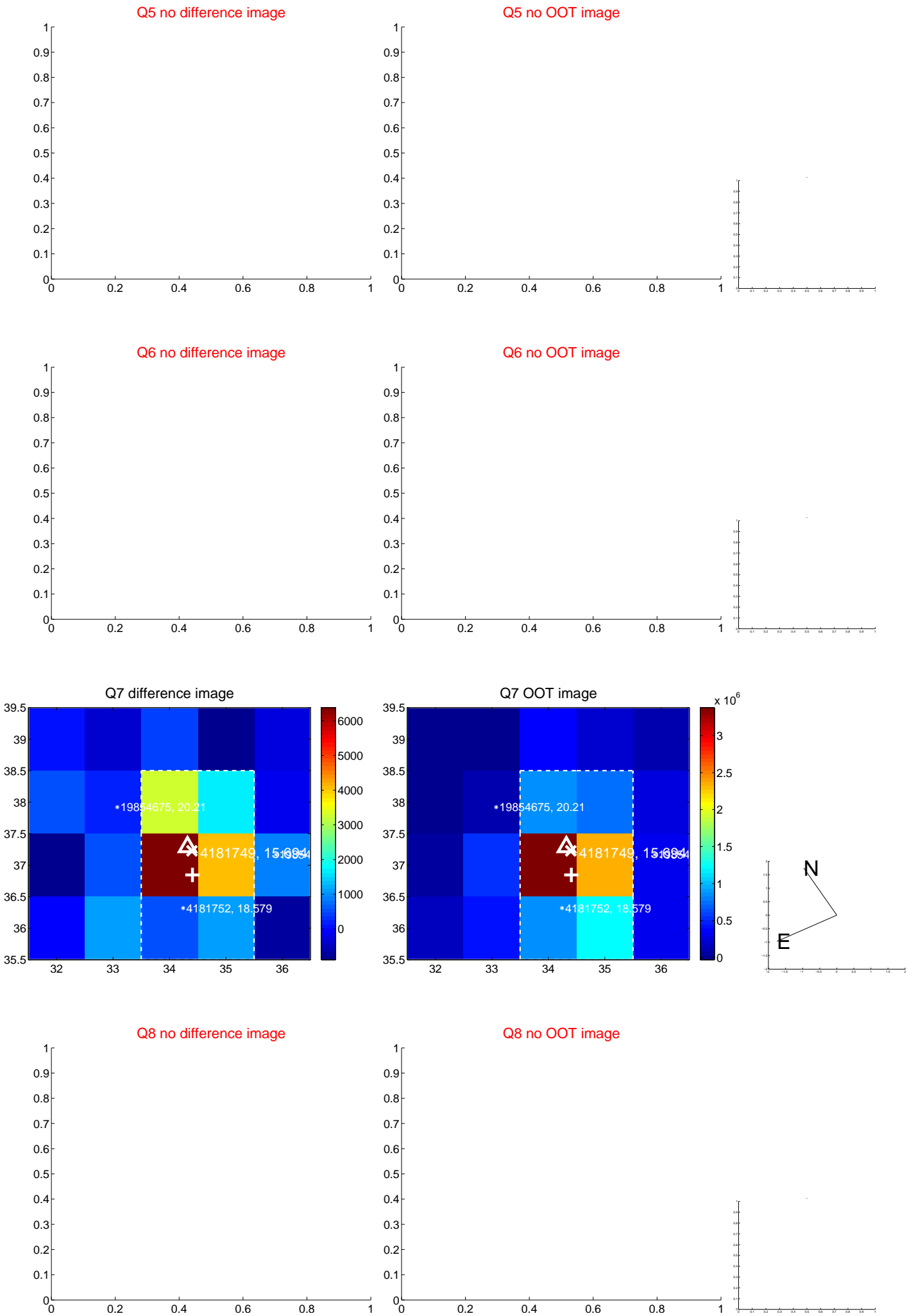


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

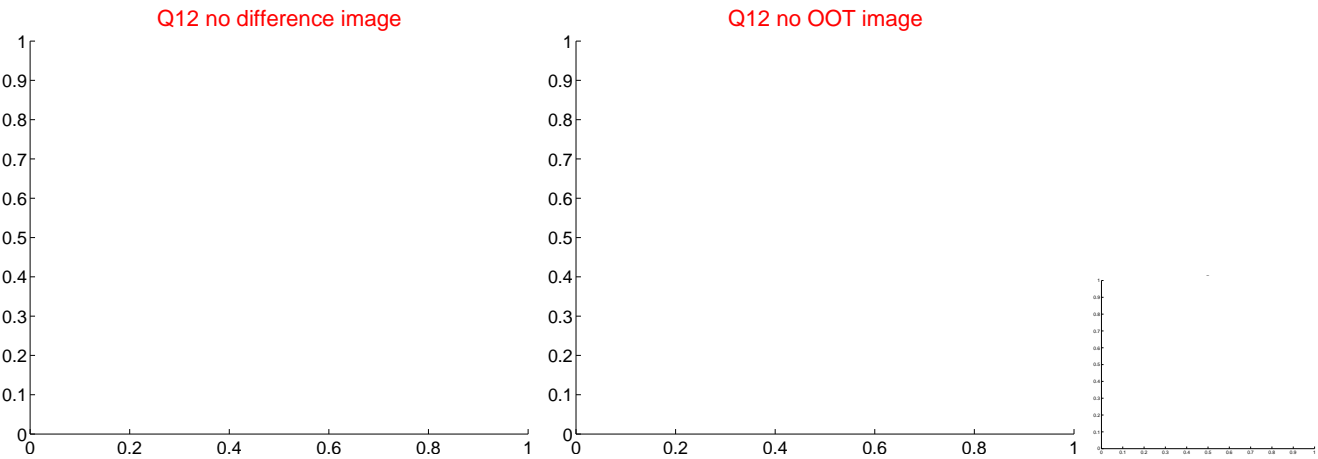
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



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



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

Q13 no difference image



Q13 no OOT image



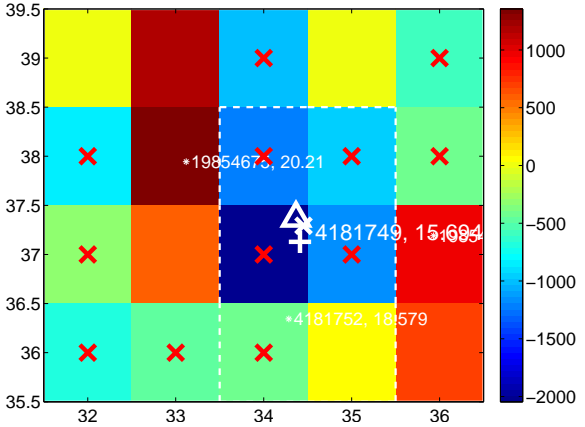
Q14 no difference image



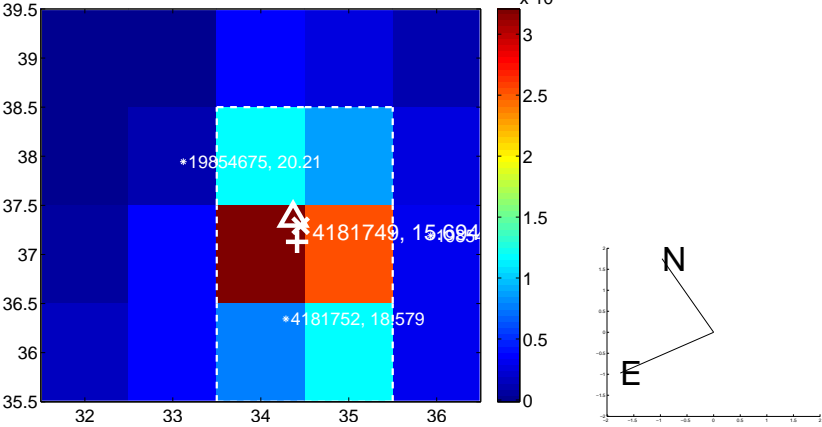
Q14 no OOT image



Q15 difference image. Poor Quality



Q15 OOT image



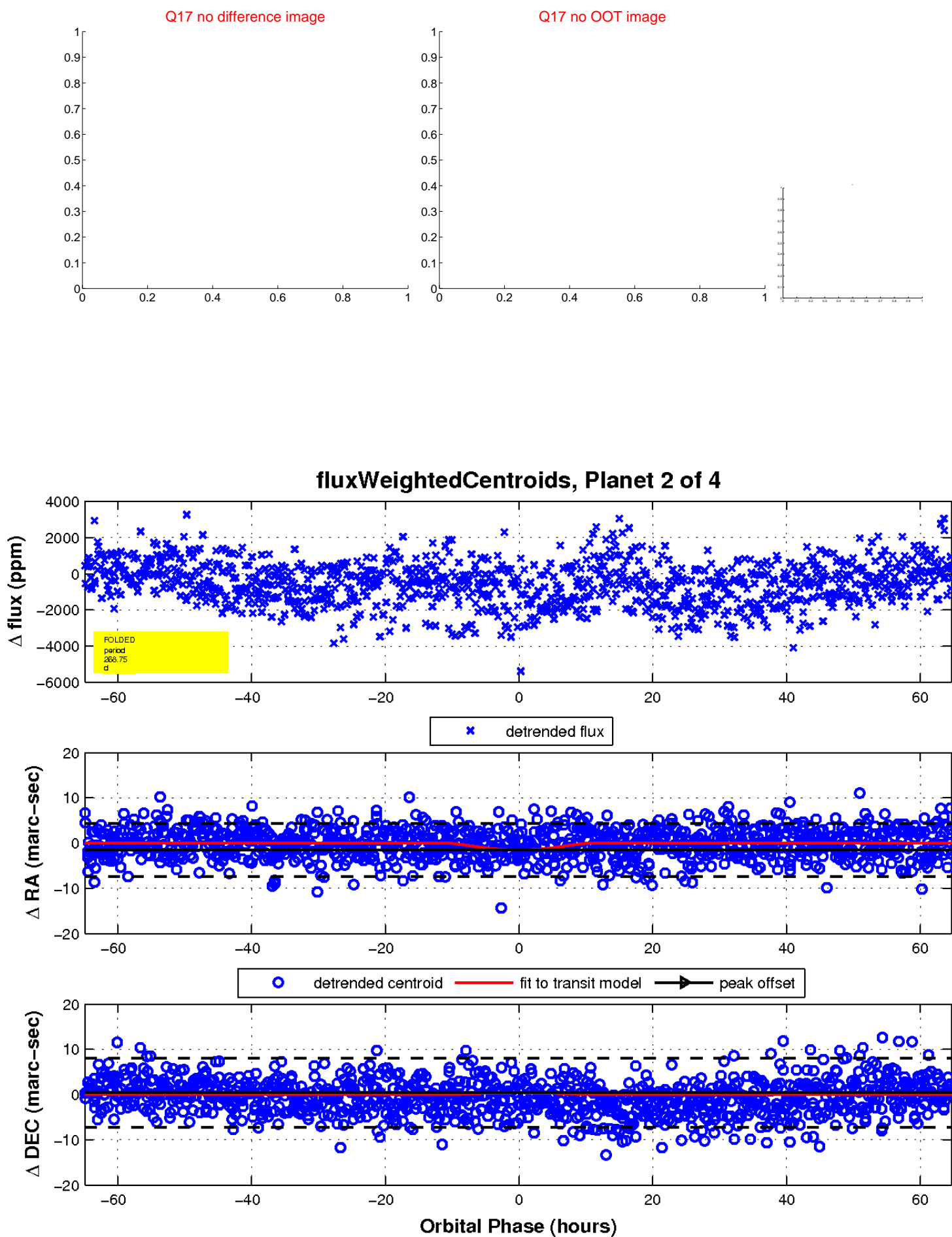
Q16 no difference image



Q16 no OOT image



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



UKIRT Image

Declination

