KIC 009210823

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 ($S_\oplus$)
009210823-01	OBS	0090.01	0.828196	131.587467	62.4	1.612	16.9	29.0	3.23	5812	3.03	27198.92
009210823-02	OBS	No	222.178856	272.769815	257.2	2.409	7.3	7.8	3.23	5812	6.24	15.72

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009210823-01	OBS	FP	0.00	0	0	1	1	CENT_RESOLVED_OFFSET—EPHEM_MATCH
009210823-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS

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.

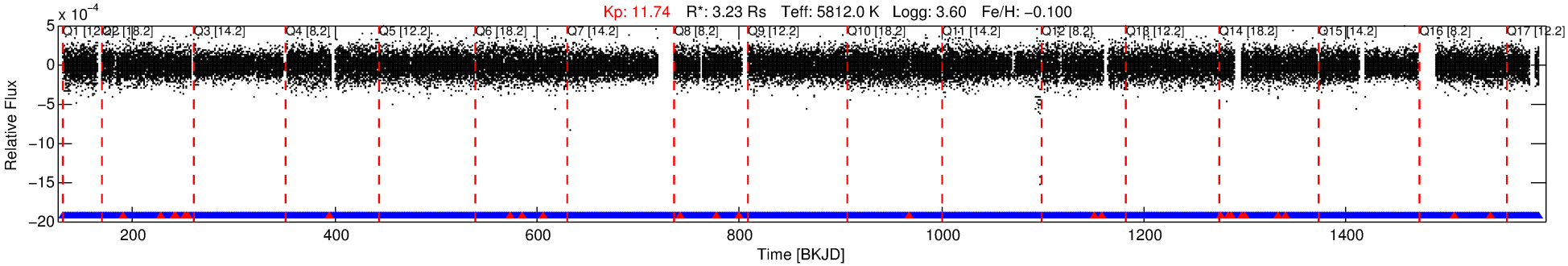
Ephemeris Match Information For 009210823-01

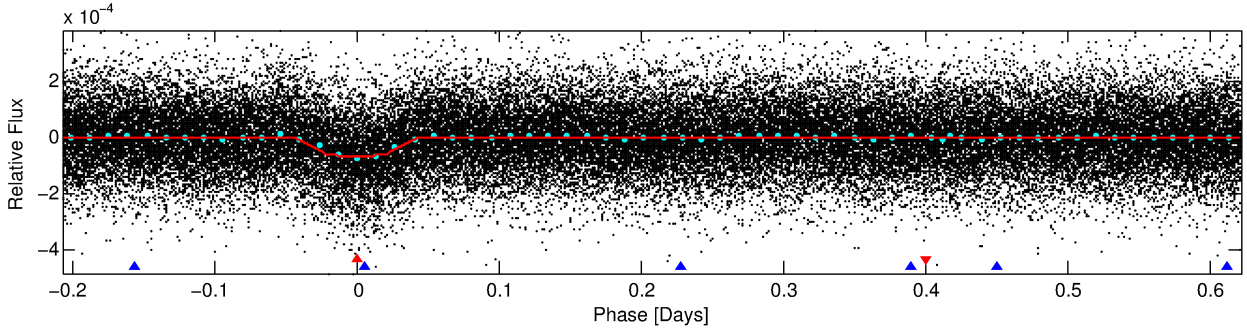
TCE (1)	KIC	Parent (2)	Parent KIC	P_1:P_2	Dist (″)	ΔRow	ΔCol	m_2	m_1	D_2/D_1	Mechanism	Flag	σ_P	σ_T
009210823-01	9210823	009210828-pri	9210828	1:2	15.2	-2	-3	13.22	11.74	2221.00	Direct-PRF	0	2.39	0.53

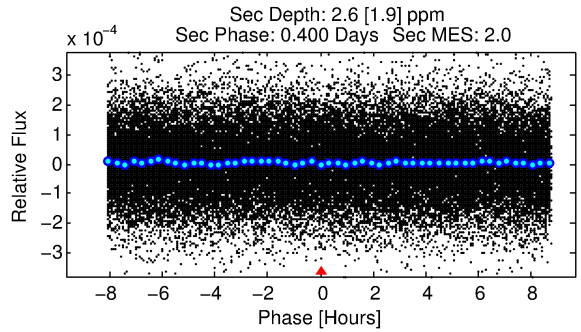
Notes: P_1:P_2 is the period ratio. Dist is the distance in arcseconds. ΔRow and ΔCol are the number of pixels apart in row and column. m_2 and m_1 are the magnitudes of the parent and child. D_2/D_1 is the parent's transit depth dividied by the child's. σ_P and σ_T are the significance of the match 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 recieve extra scrutiny, especially if the period ratio is very large.

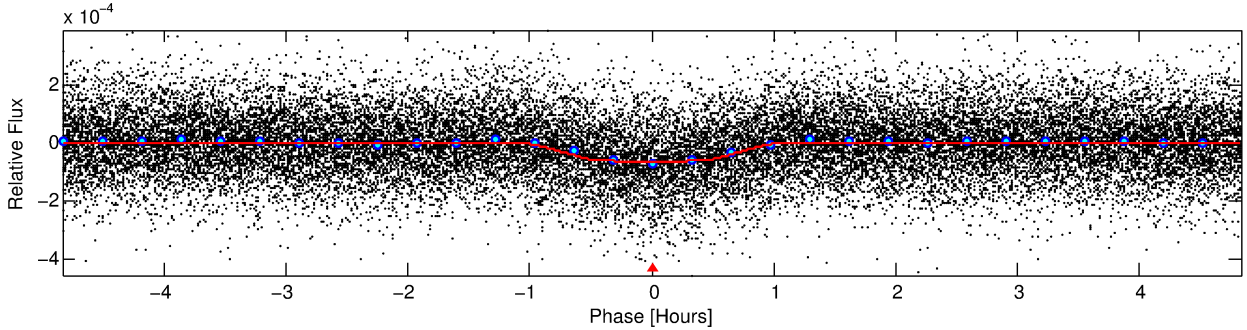
DV One-Page Summary

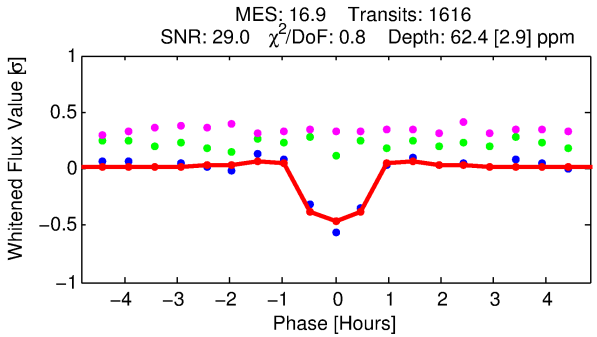
KIC: 9210823 Candidate: 1 of 2 Period: 0.828 d
KOI: K00090.01 Corr: 0.794

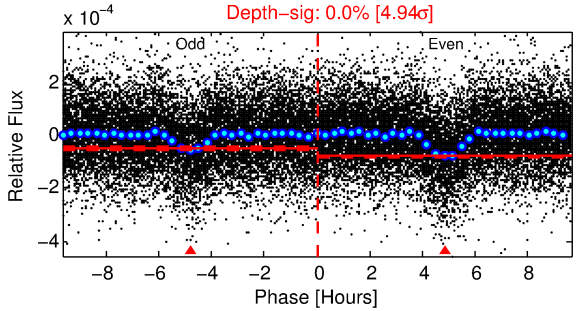


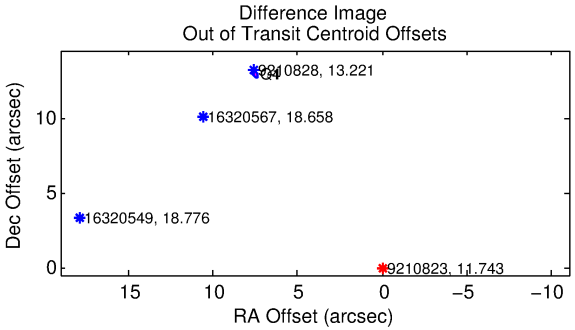












DV Fit Results:

Period = 0.82820 [0.00000] d
Epoch = 131.5875 [0.0006] BKJD
Rp/R* = 0.0086 [0.0016]
a/R* = 2.01 [1.39]
b = 0.90 [0.20]

Seff = 27198.92 [17455.59]
Teq = 3275 [525] K
Rp = 3.03 [1.40] Re
a = 0.0198 [0.0079] AU

Ag = 0.06 [0.06] [−14.85σ]
Teffp = 2527 [511] K [−1.02σ]

DV Diagnostic Results:

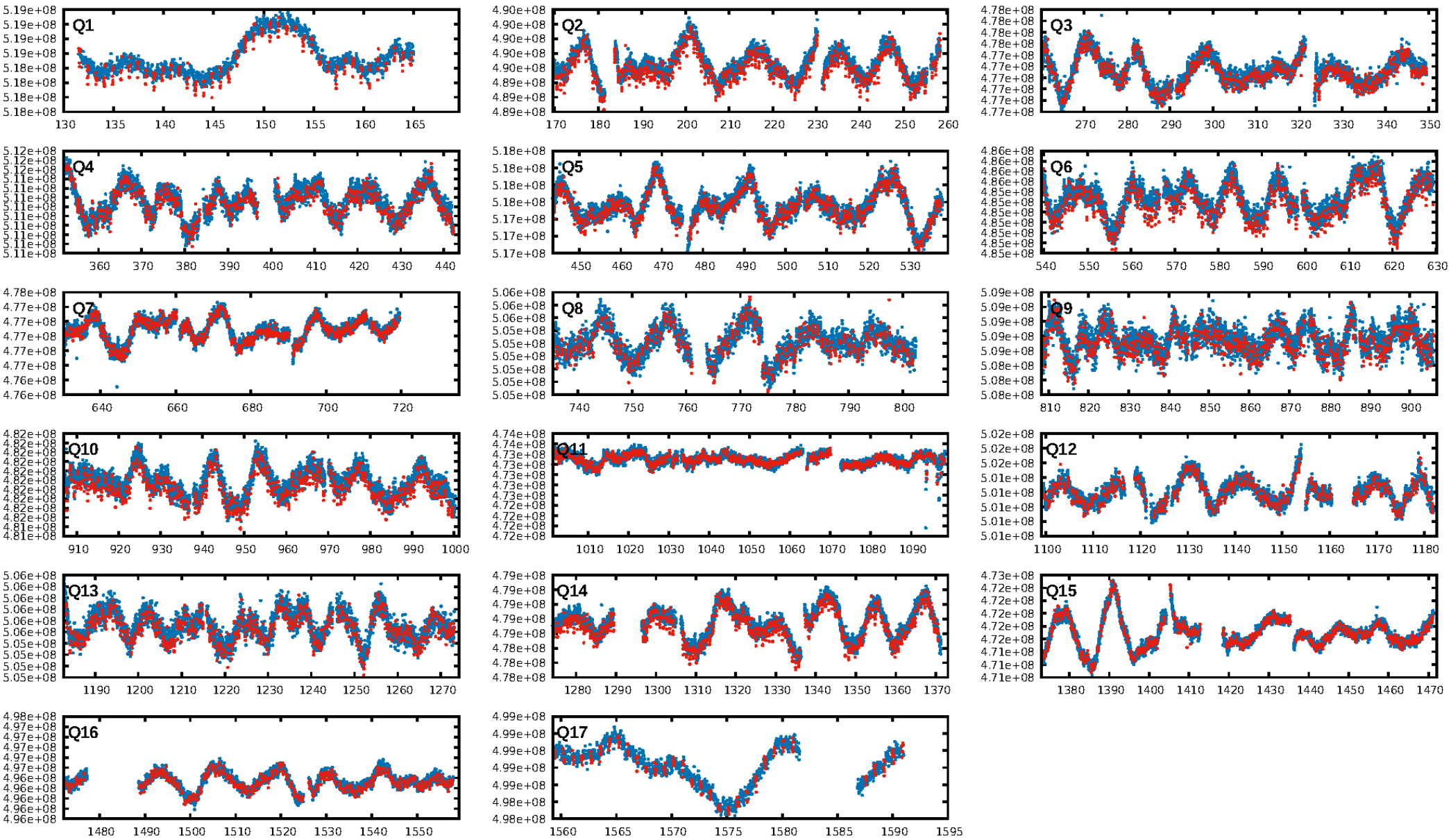
ShortPeriod−sig: N/A
LongPeriod−sig: 100.0% [1832.74σ]
ModelChiSquare2−sig: N/A
ModelChiSquareGof−sig: N/A
Bootstrap−pfa: 4.45e−55
RollingBand−fgt: 0.98 [1518/1543]
GhostDiagnostic−chr: −0.4173

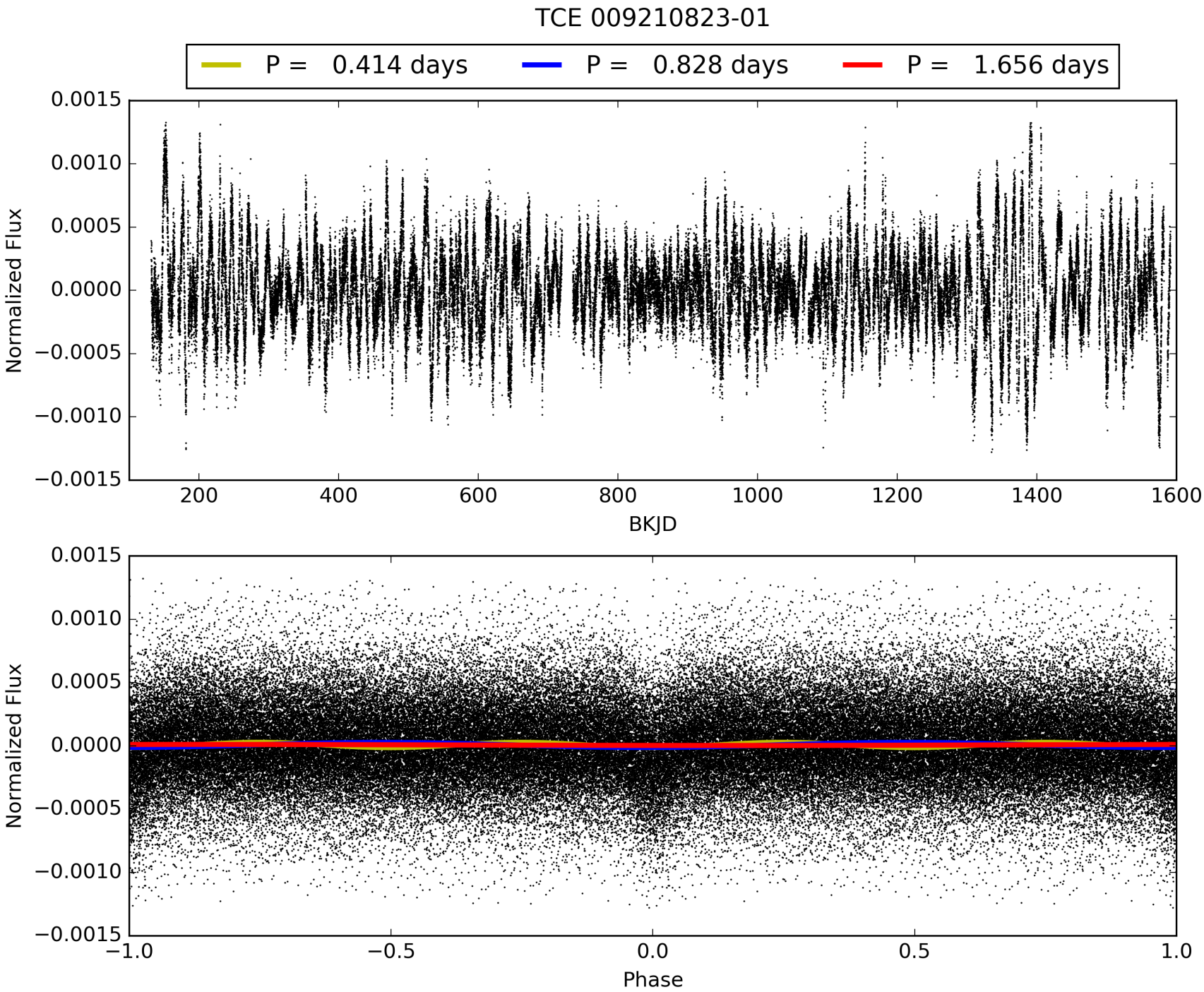
Centroid−sig: N/A
Centroid−so: N/A
OotOffset−rm: 14.954 arcsec [219.40σ]
KicOffset−rm: 15.075 arcsec [217.01σ]
OotOffset−st: 0/0/1/1 [2]
KicOffset−st: 0/0/1/1 [2]
DiffImageQuality−fgm: 1.00 [2/2]
DiffImageOverlap−fno: 1.00 [17/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29−Jan−2016 14:38:13 Z

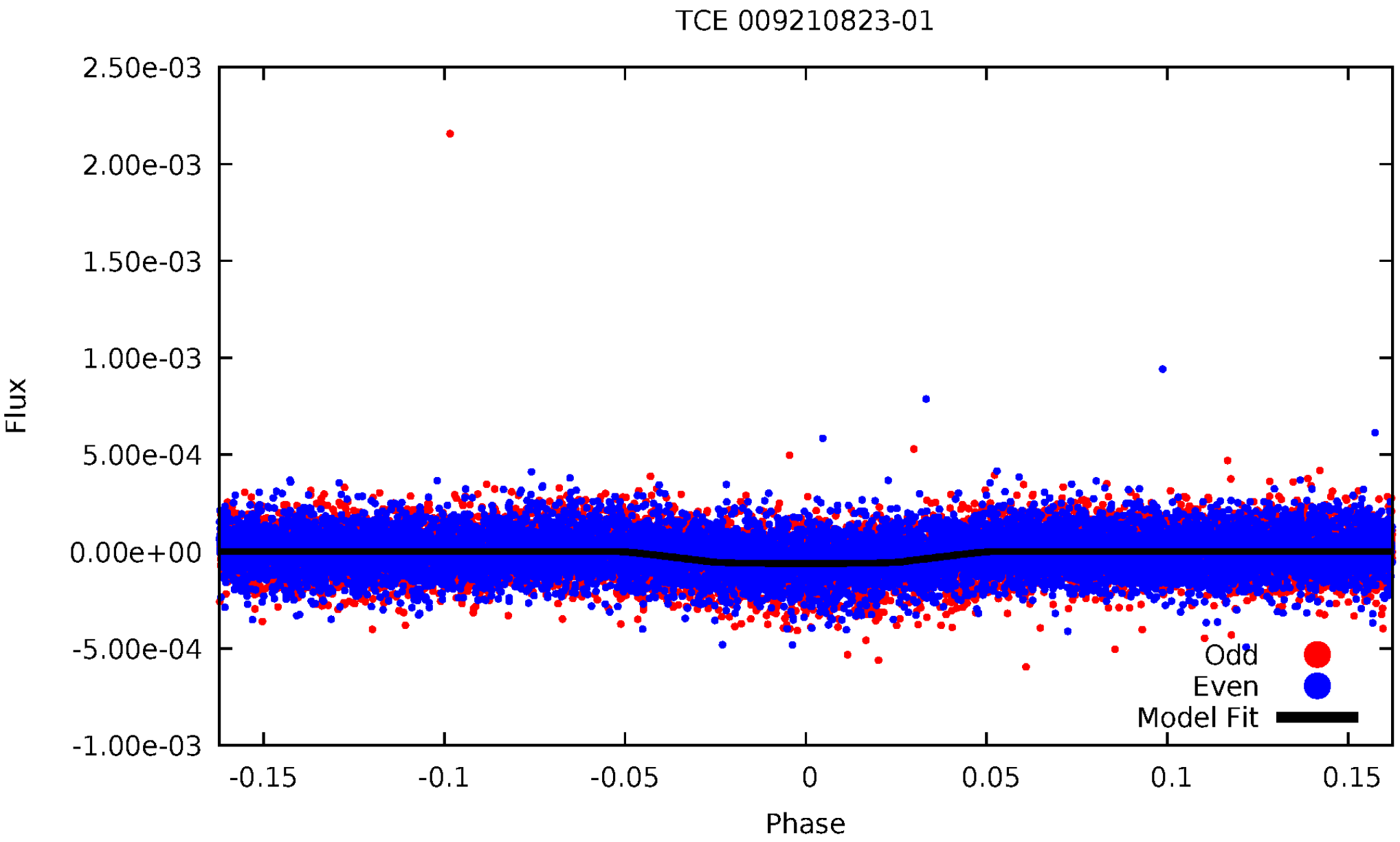
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 009210823-01, PDC Light Curves

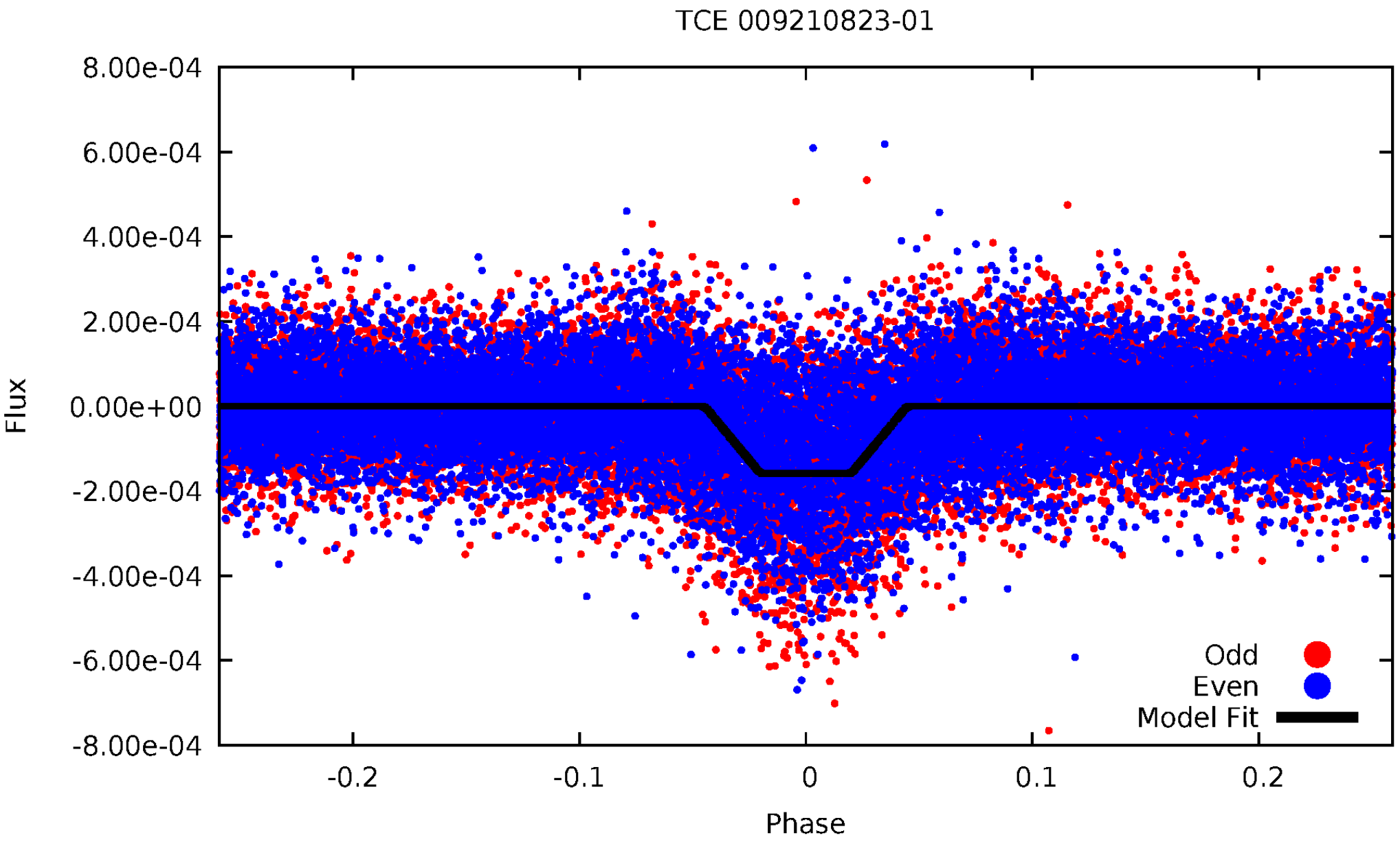



TCE 009210823-01
P = 0.414 days
P = 0.828 days
P = 1.656 days
Normalized Flux
BKJD
Normalized Flux
Phase

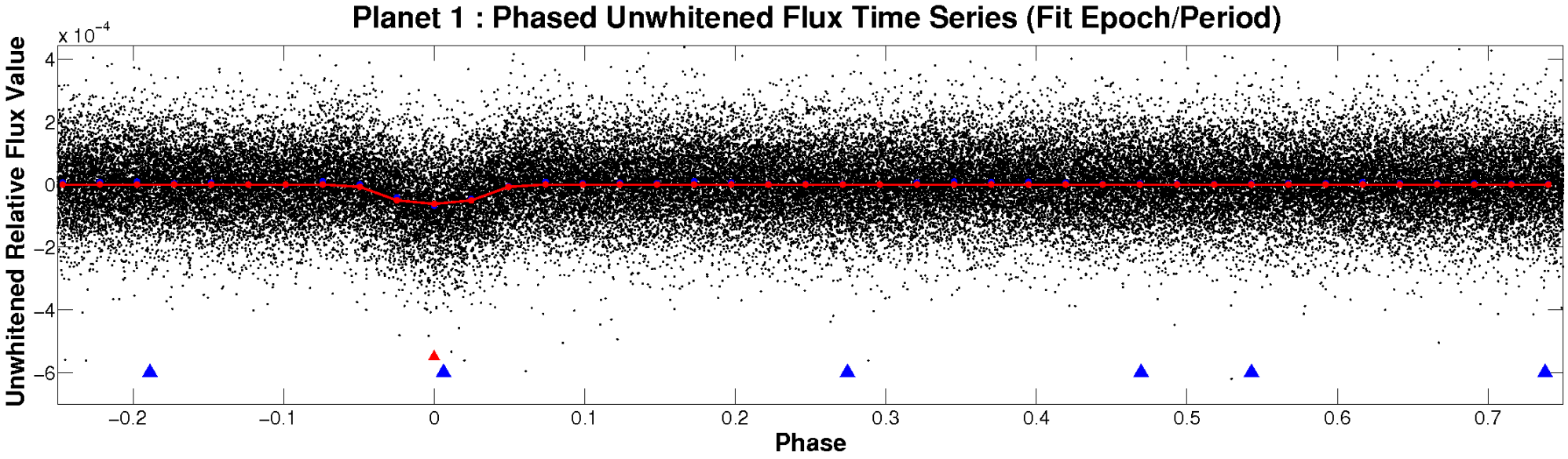
DV Odd/Even

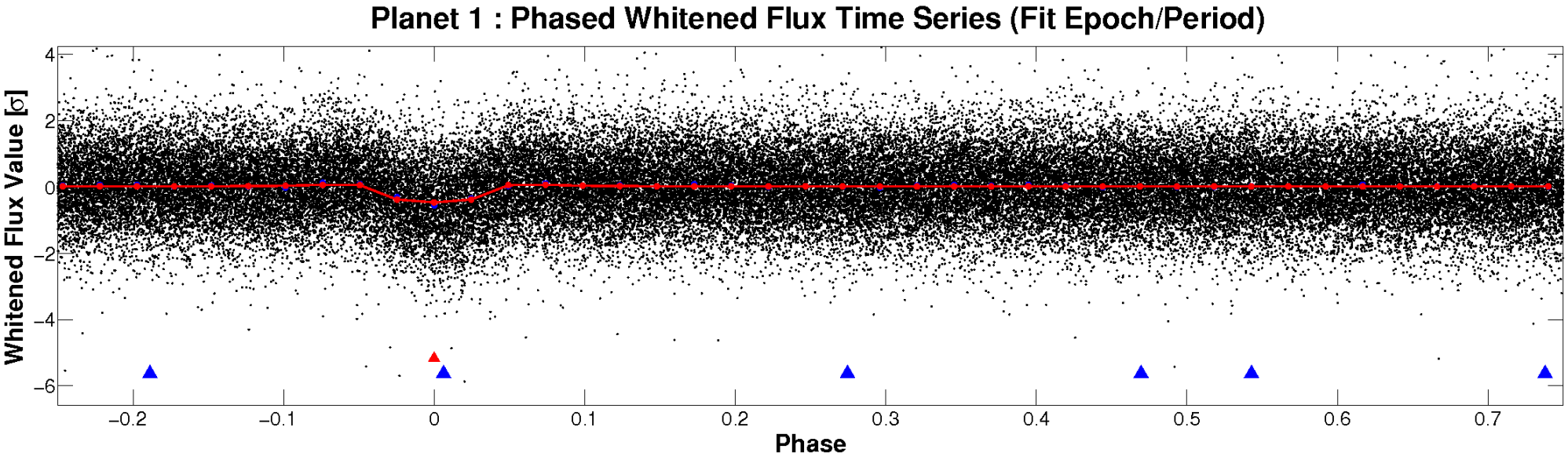

TCE 009210823-01
2.50e-03
2.00e-03
1.50e-03
1.00e-03
5.00e-04
0.00e+00
-5.00e-04
-1.00e-03
Flux
-0.15
-0.1
-0.05
0
0.05
0.1
0.15
Phase
Odd
Even
Model Fit

ALT Odd/Even


TCE 009210823-01
8.00e-04
6.00e-04
4.00e-04
2.00e-04
0.00e+00
-2.00e-04
-4.00e-04
-6.00e-04
-8.00e-04
Flux
-0.2
-0.1
0
0.1
0.2
Phase
Odd
Even
Model Fit

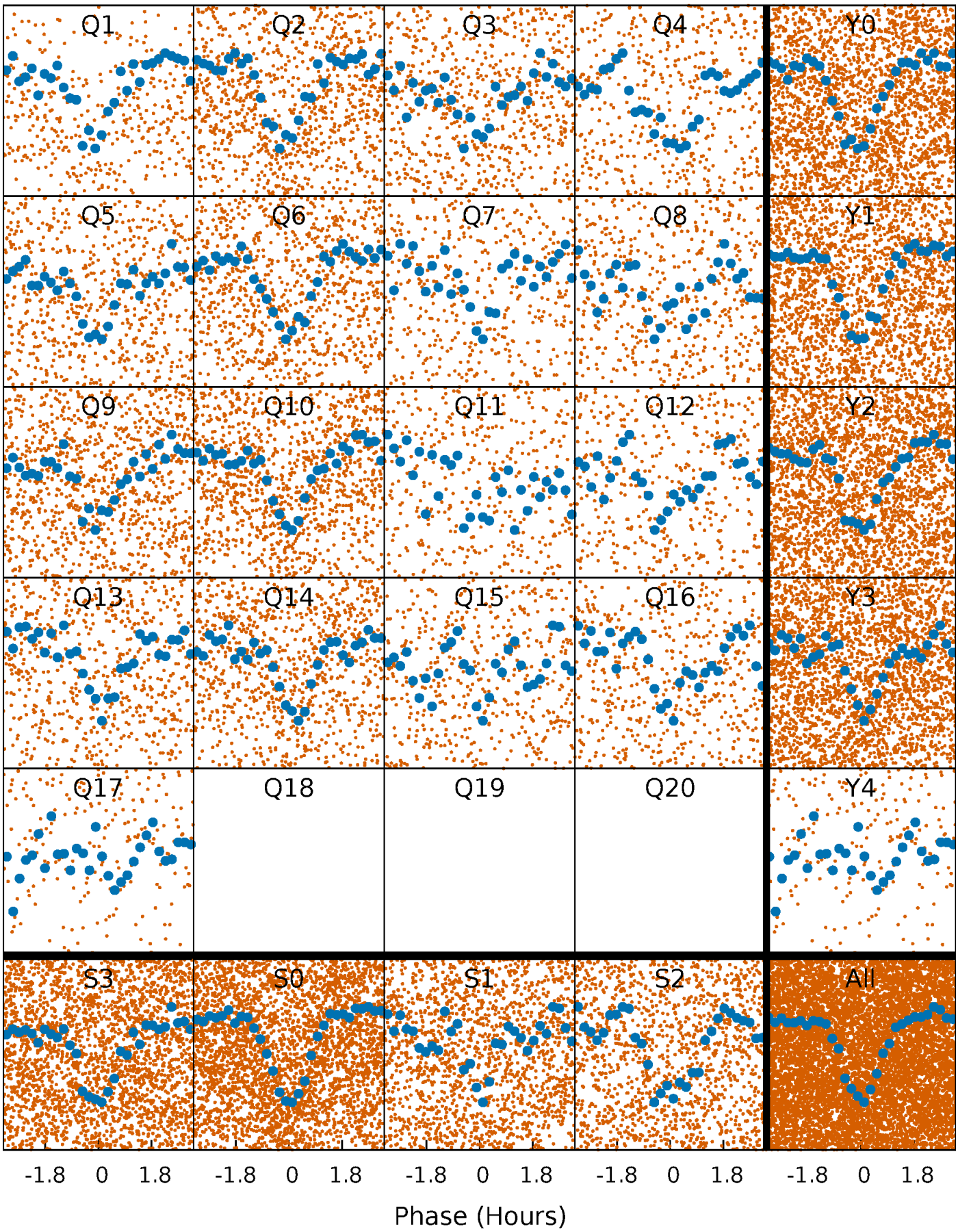
Non-Whitened Vs. Whitened Light Curve





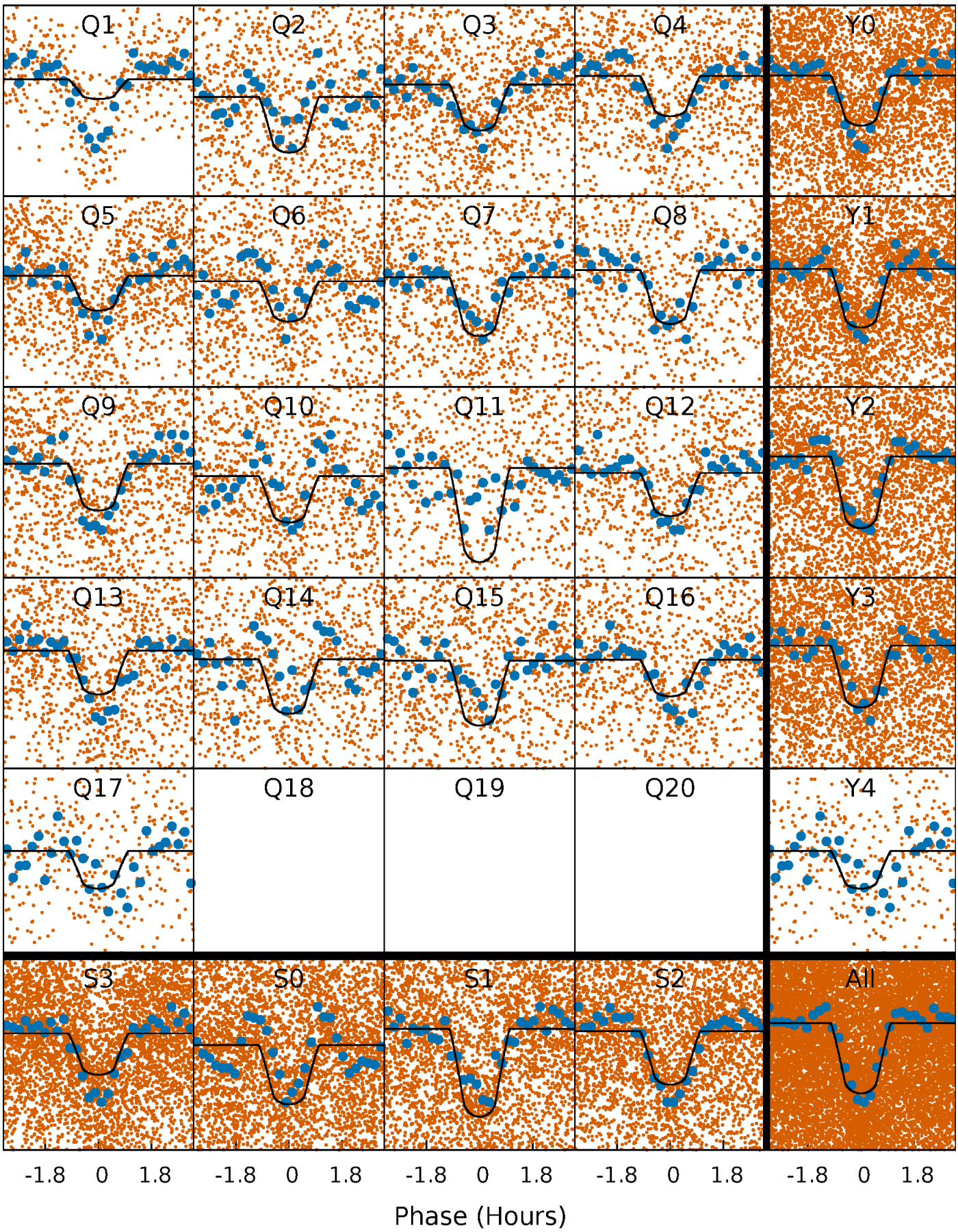
PDC Quarter-Phased Transit Curves

TCE 009210823-01 P= 0.828196 Days T_0=131.587467 (BKJD)



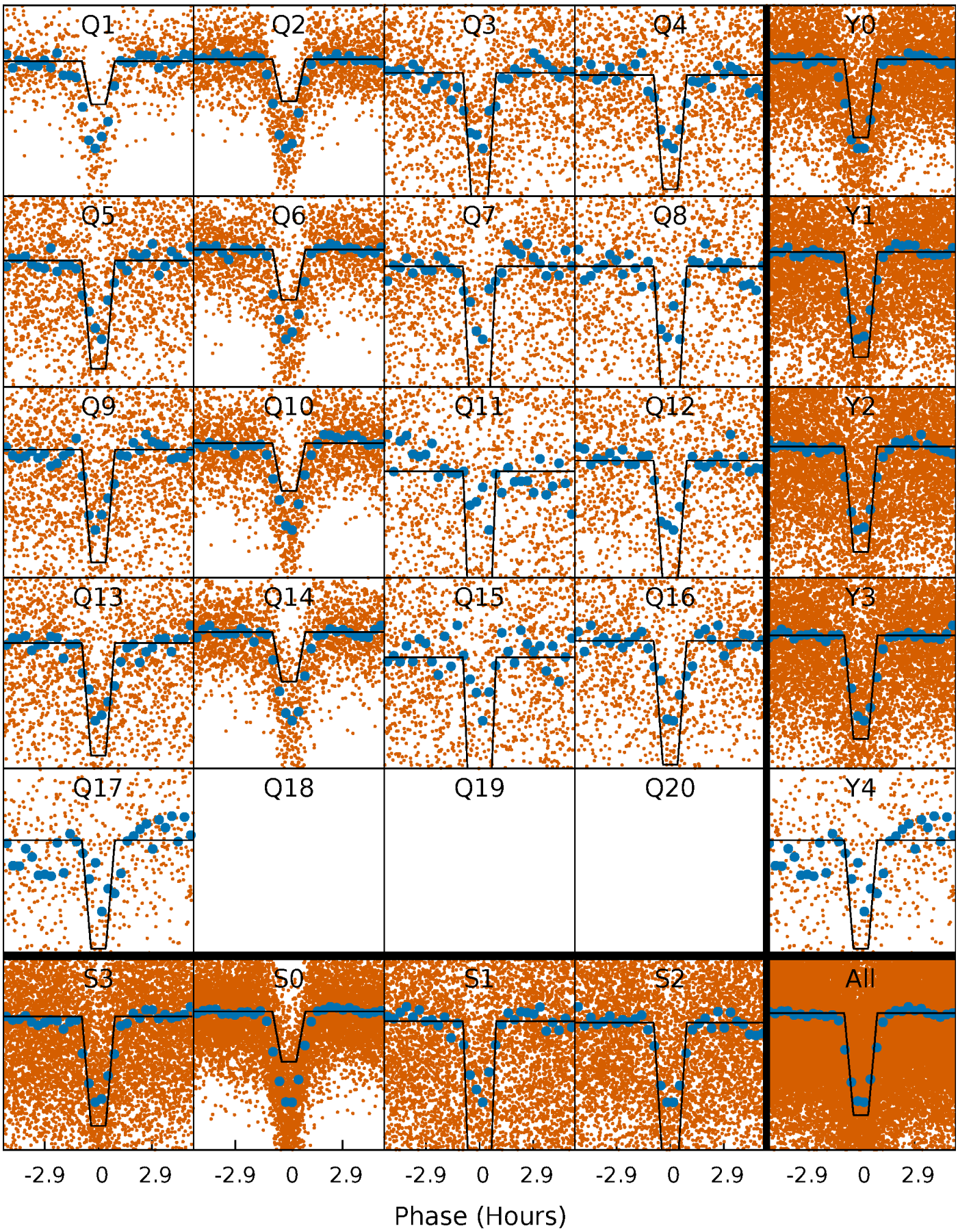
DV Quarter-Phased Transit Curves

TCE 009210823-01 P= 0.828196 Days T_0=131.587467 (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

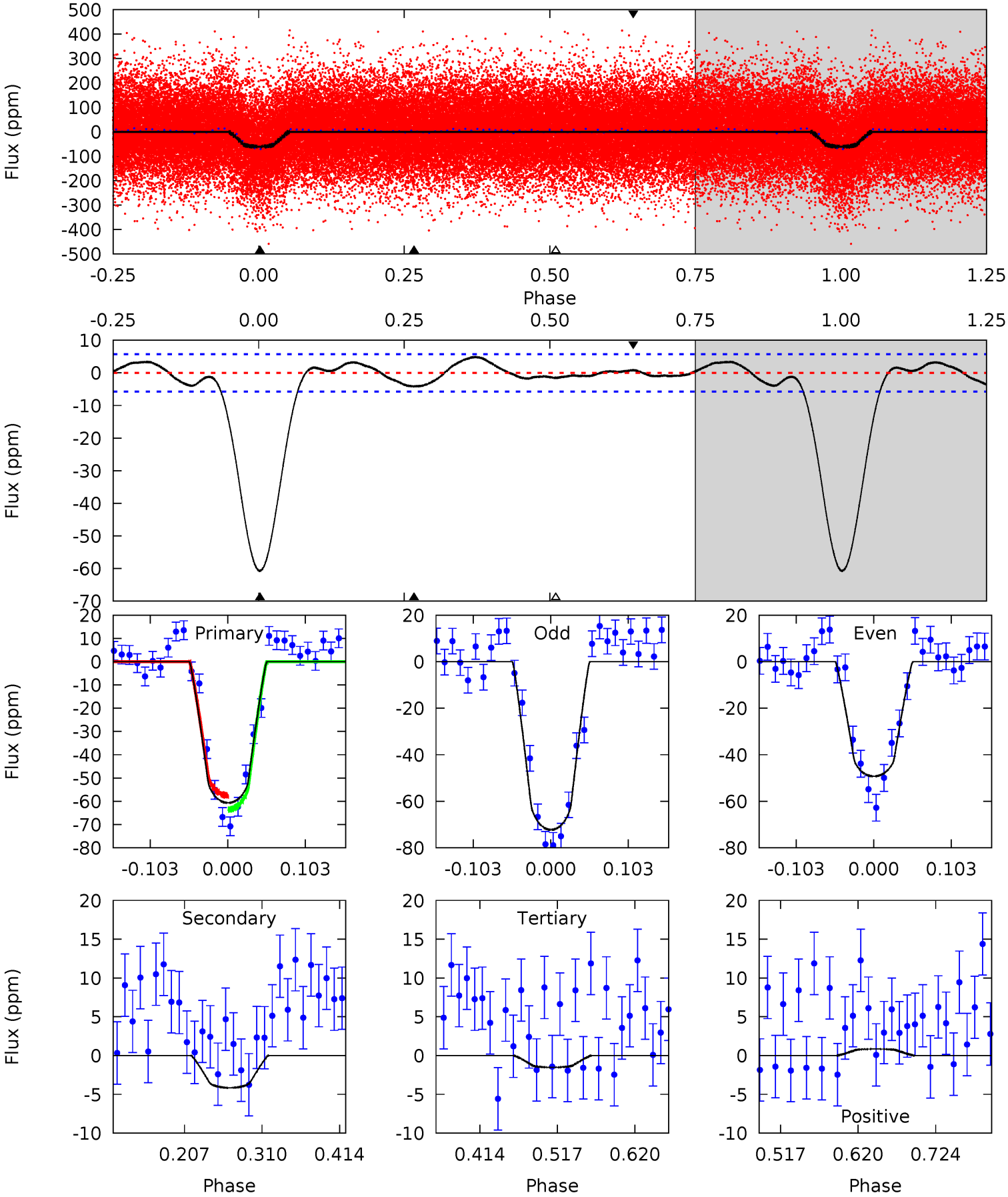
TCE 009210823-01 P= 0.828200 Days T_0=131.585911 (BKJD)



DV Model-Shift Uniqueness Test

009210823-01, P = 0.828196 Days, E = 130.759271 Days

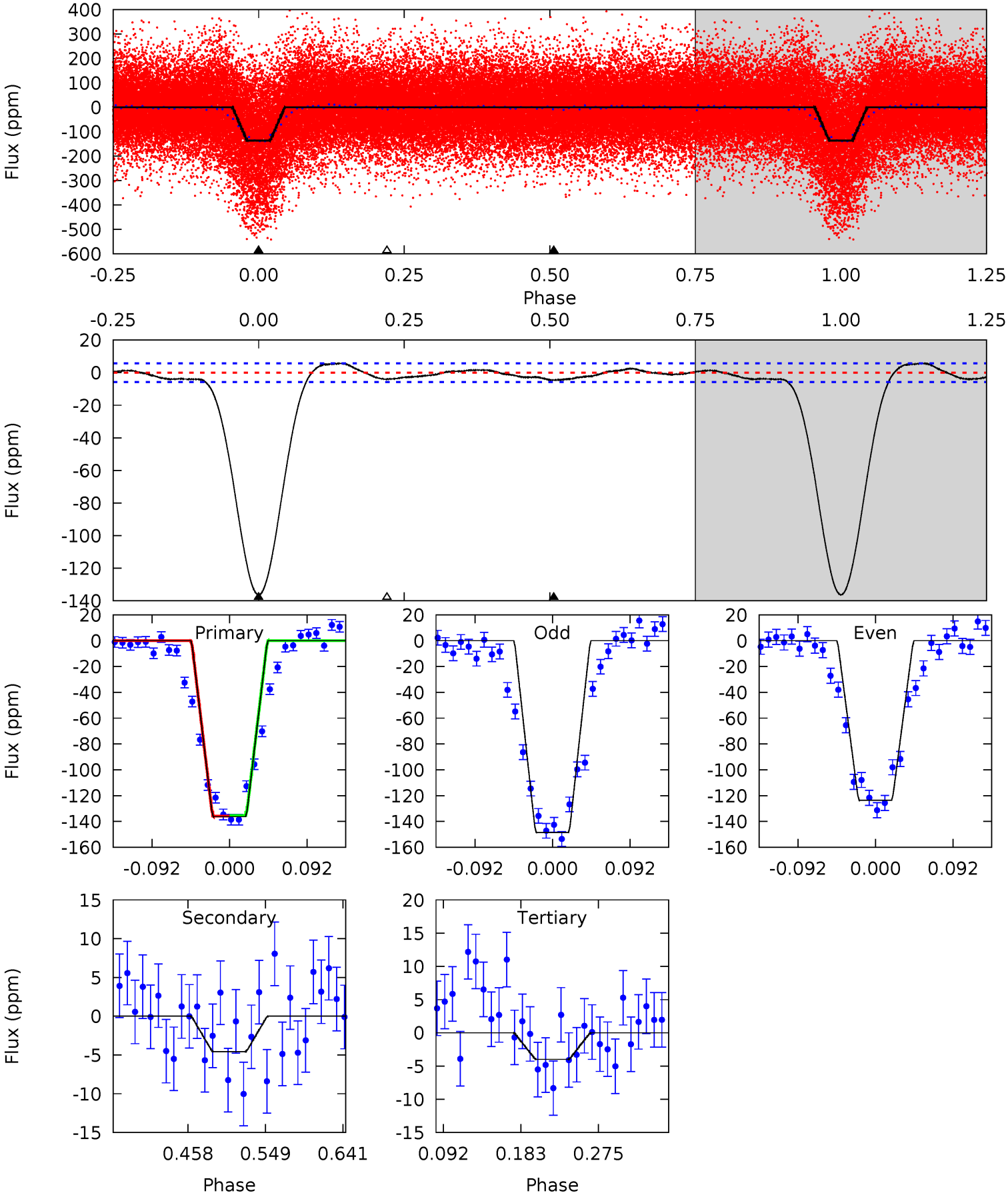
Pri	Sec	Ter	Pos	FA_1	FA_2	F_{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
48.3	3.31	1.21	0.67	4.56	1.63	1.51	47.1	47.6	2.10	2.64	9.14	1.00	0.07	2.39



Alt Model-Shift Uniqueness Test

009210823-01, P = 0.828200 Days, E = 130.757711 Days

Pri	Sec	Ter	Pos	FA_1	FA_2	F_{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
108.7	3.65	3.18	0	4.58	1.69	2.07	105.5	108.7	0.48	3.65	9.91	1.17	0.04	0.18



Stellar Parameters For KIC 009210823

	$T_{\rm eff}(K)$	$\log(g)$	[Fe/H]	R ($R_\odot$)	M($M_\odot$)	$p_\star$ (g·cm^{-3})
	5812^{+175}_{-157}	$3.598^{+0.367}_{-0.122}$	$-0.100^{+0.350}_{-0.300}$	$3.227^{+0.737}_{-1.369}$	$1.504^{+0.181}_{-0.423}$	$0.063^{+0.195}_{-0.024}$
	+3%/-3%	+10%/-3%	+350%/-300%	+23%/-42%	+12%/-28%	+309%/-38%
Source	PHO1	FLK73	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 009210823-01 / KOI 0090.01

Detrend	Depth (ppm)	R_p ($R_\oplus$)	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-4±1	$2.81^{+0.78}_{-0.79}$	4479^{+333}_{-461}	-3680^{+613}_{-316}	$0.108^{+0.102}_{-0.047}$
Alt.	-5±1	$4.16^{+0.95}_{-1.10}$	4476^{+337}_{-500}	-3838^{+387}_{-247}	$0.056^{+0.047}_{-0.022}$

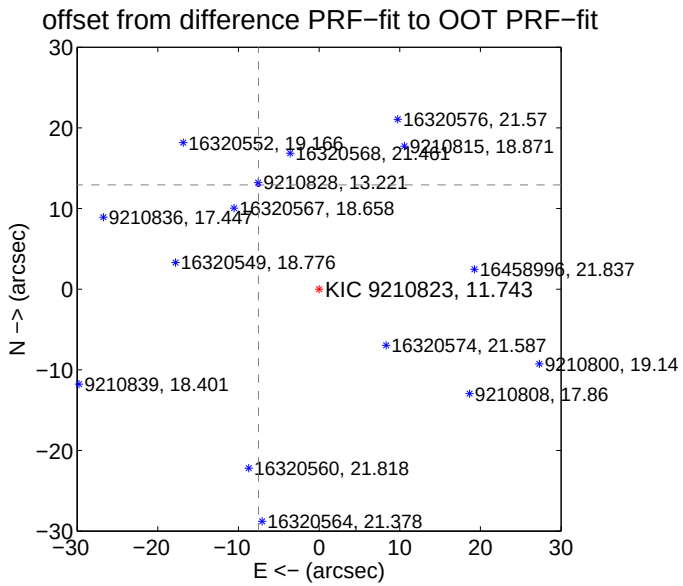
T_{max} = Theoretical Maximum Planetary Temperature
T_{obs} = Observed Planetary Temperature (Assuming A=0.3)
A_{obs} = Observed Albedo (Assuming T=0)

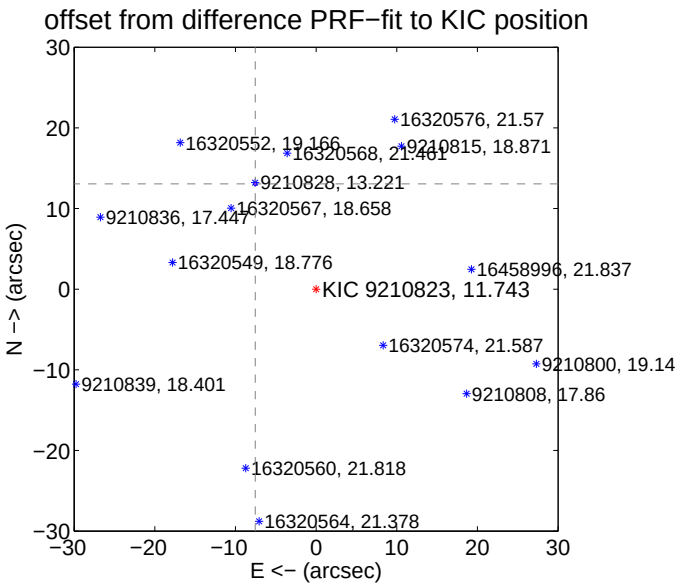
If a secondary eclipse is present, the system is likely an EB if $T_{obs} \gg T_{max}$ AND $A_{obs} \gg 1.0$

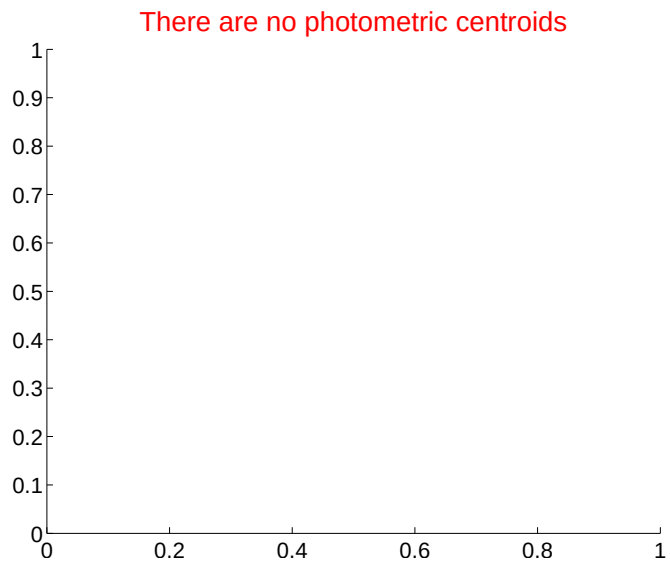
DV Centroid Data

Supplemental centroid analysis for 009210823-01. Kepler magnitude: 11.74. Transit SNR 29.03
There are 2 quarters with good PRF difference image offsets
The direct PRF centroid is offset from the target star catalog position by about 0.12 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	14.954 ± 0.068	219.40	7.521 ± 0.067	12.925 ± 0.069
PRF-fit source offset from KIC position	15.075 ± 0.069	217.01	7.539 ± 0.073	13.054 ± 0.067
photometric centroid source offset	—	—	—	—

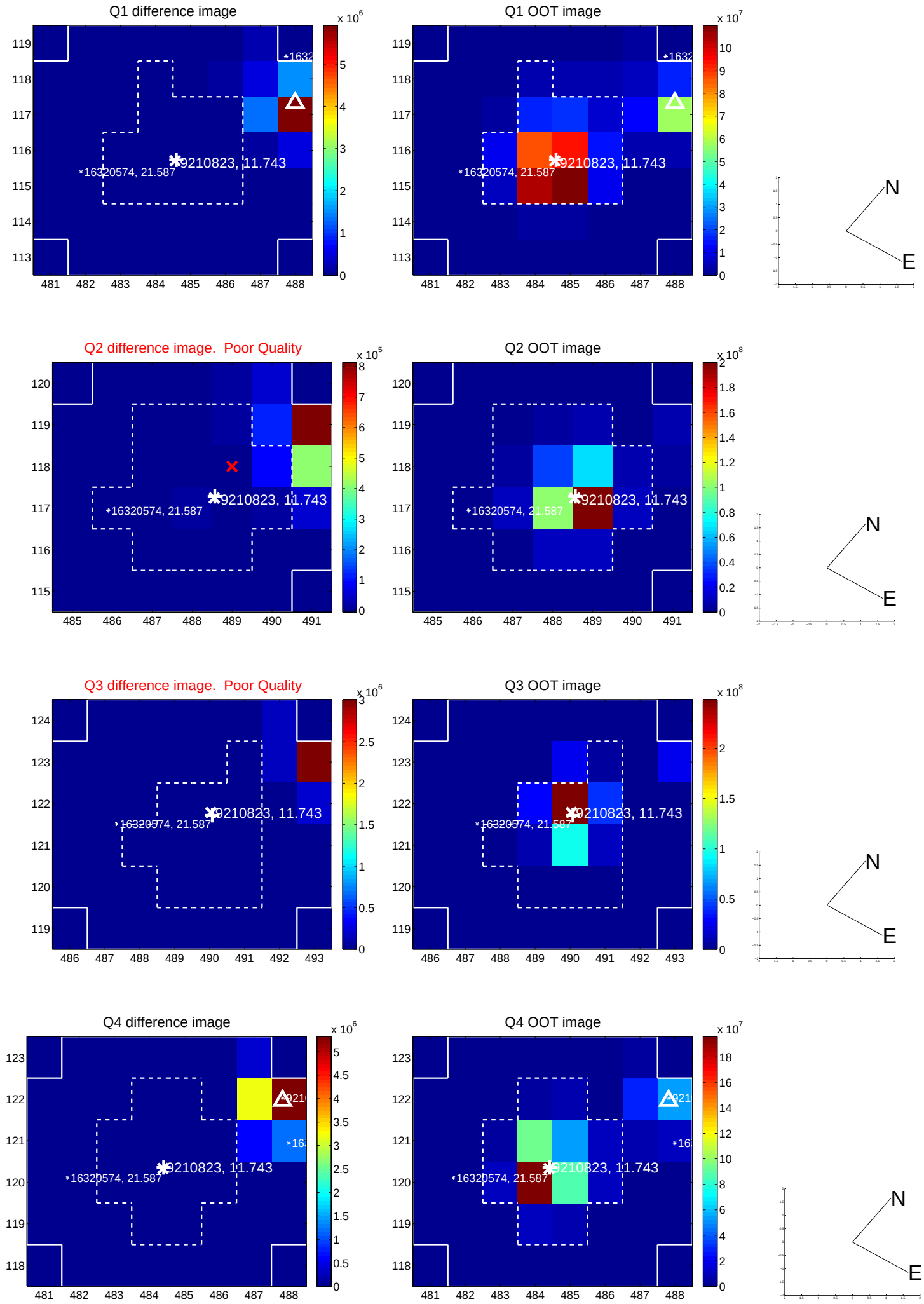




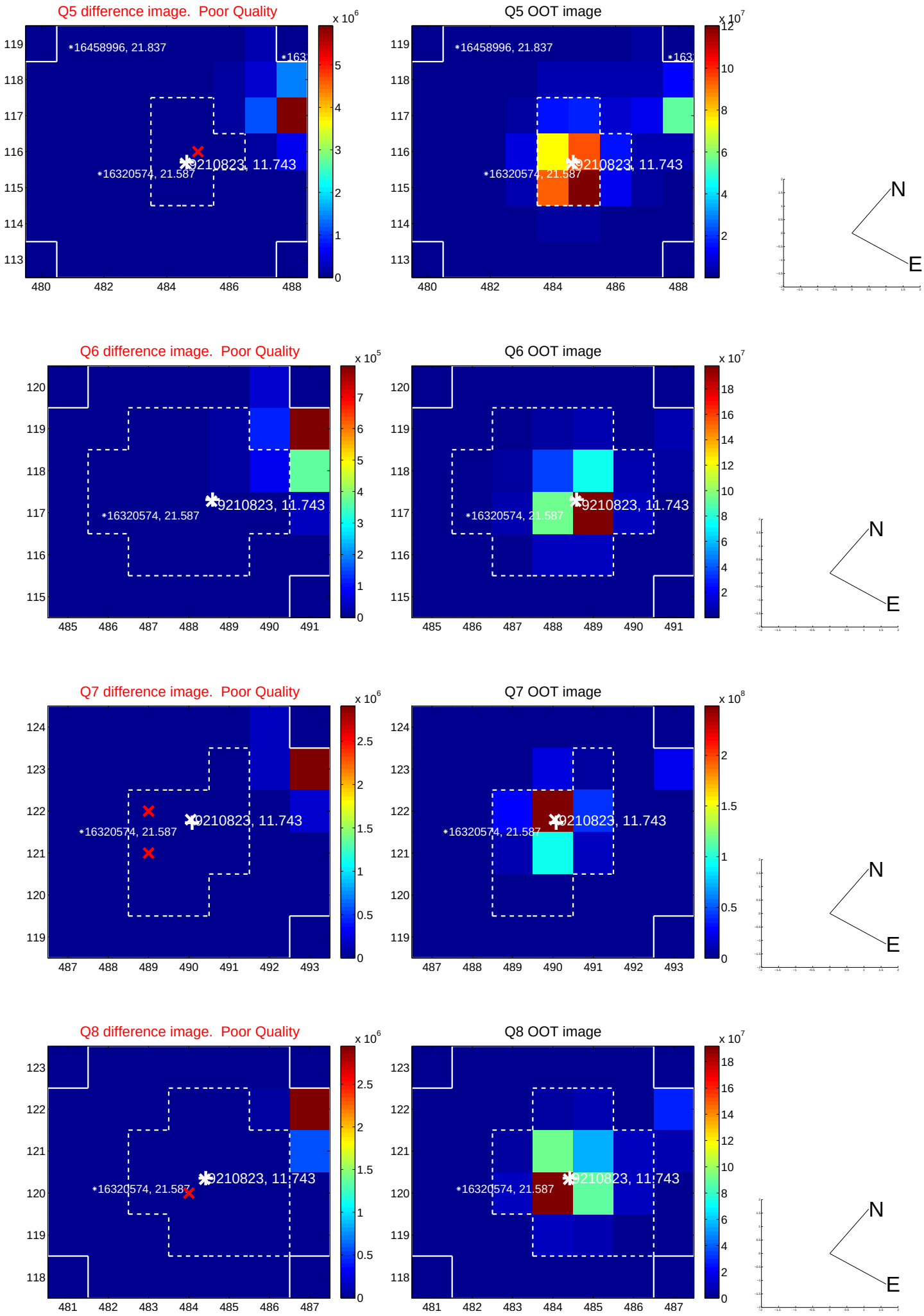


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one-σ uncertainty. Blue circle: three-σ. Red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

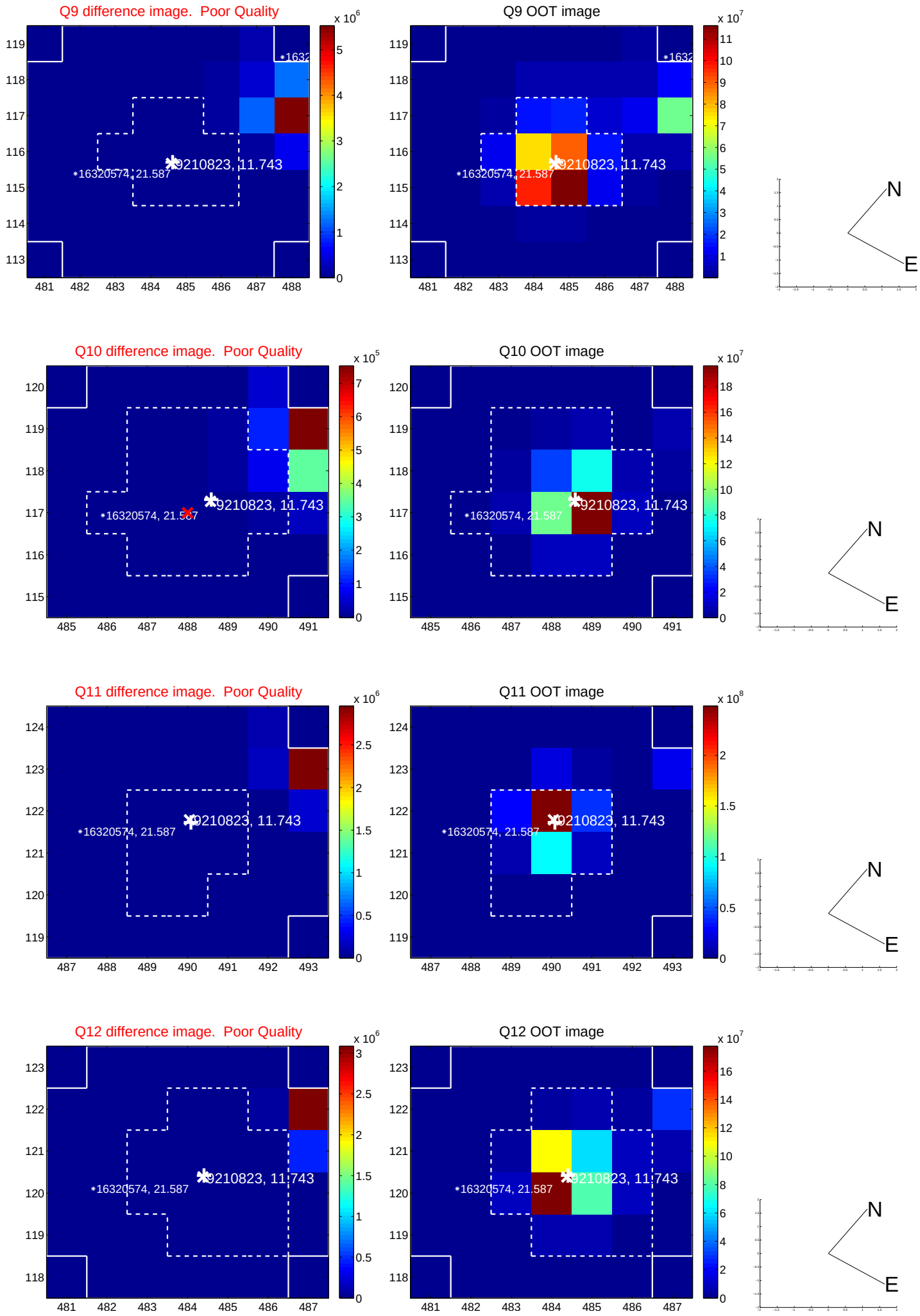
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.



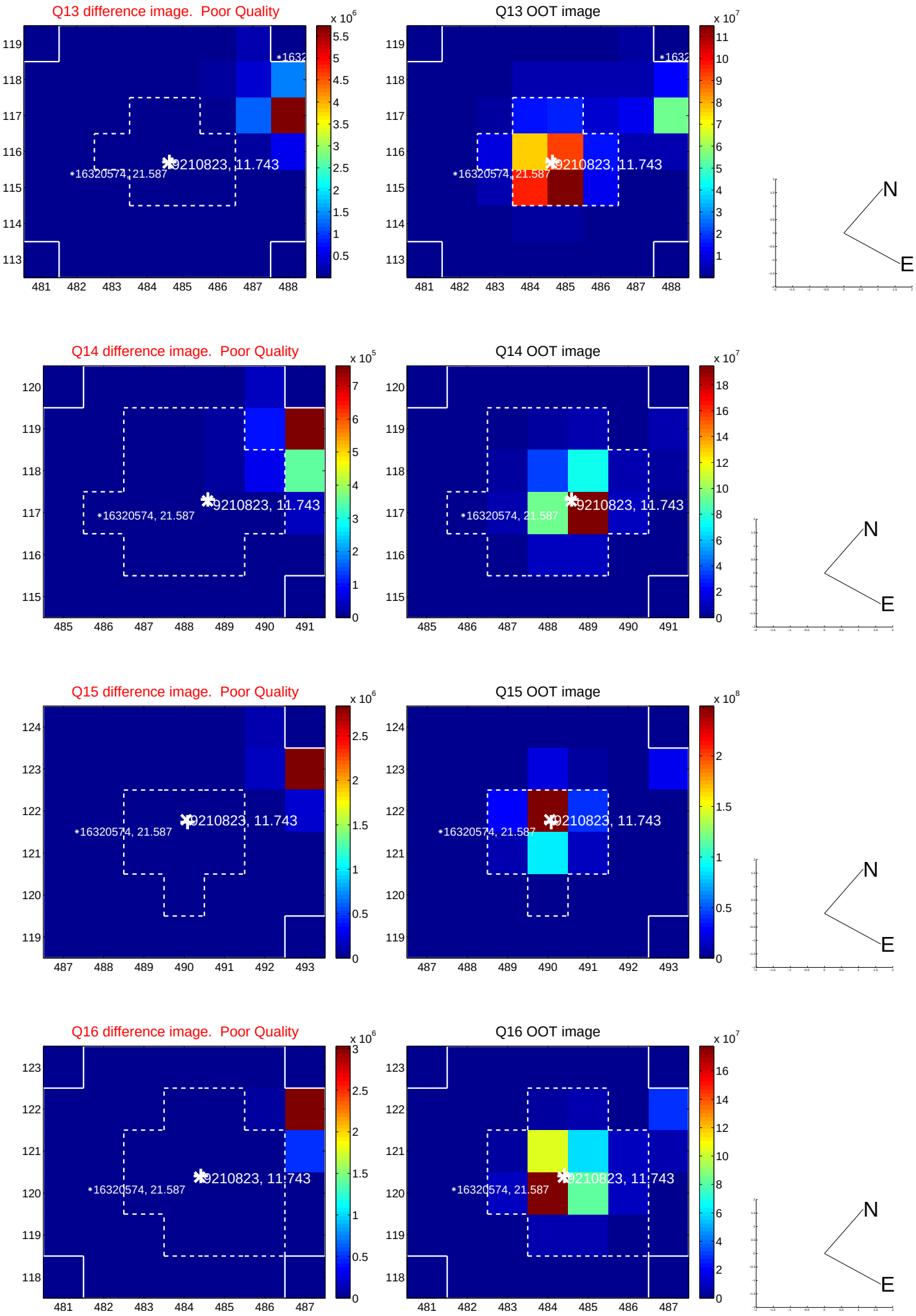
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.



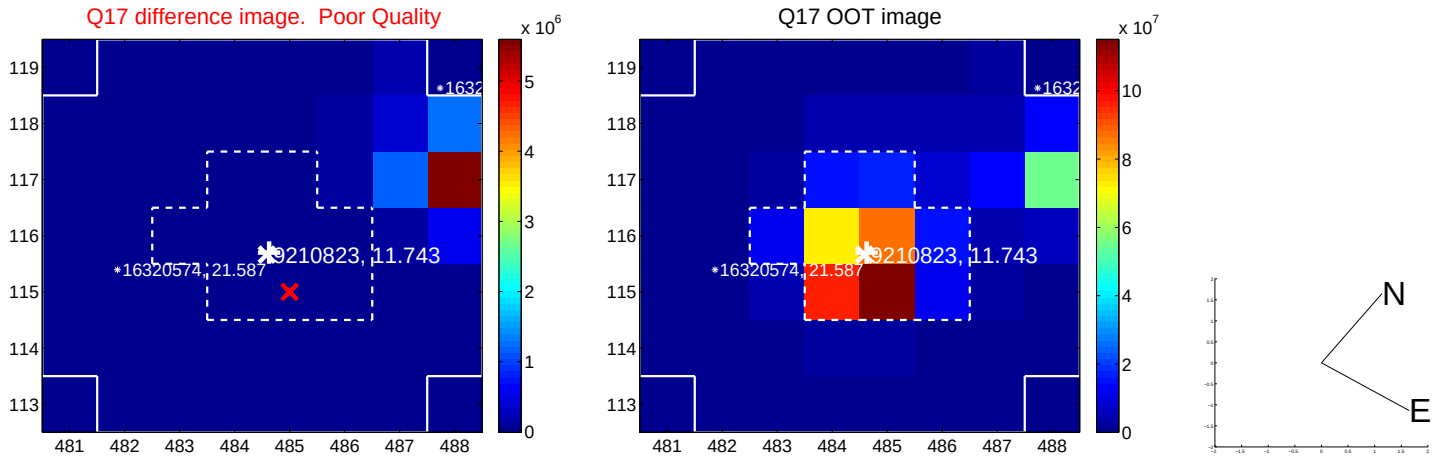
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.

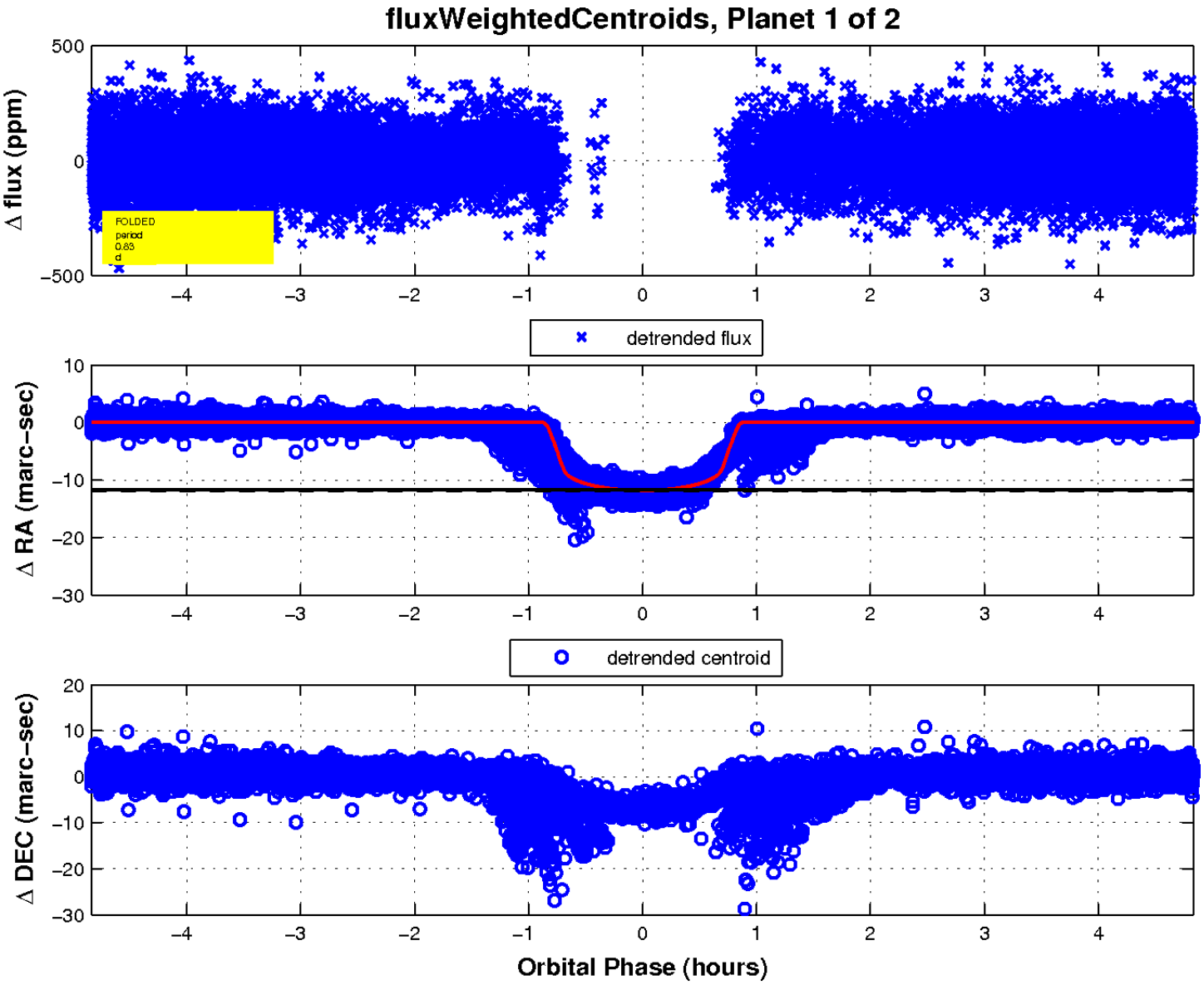


white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.

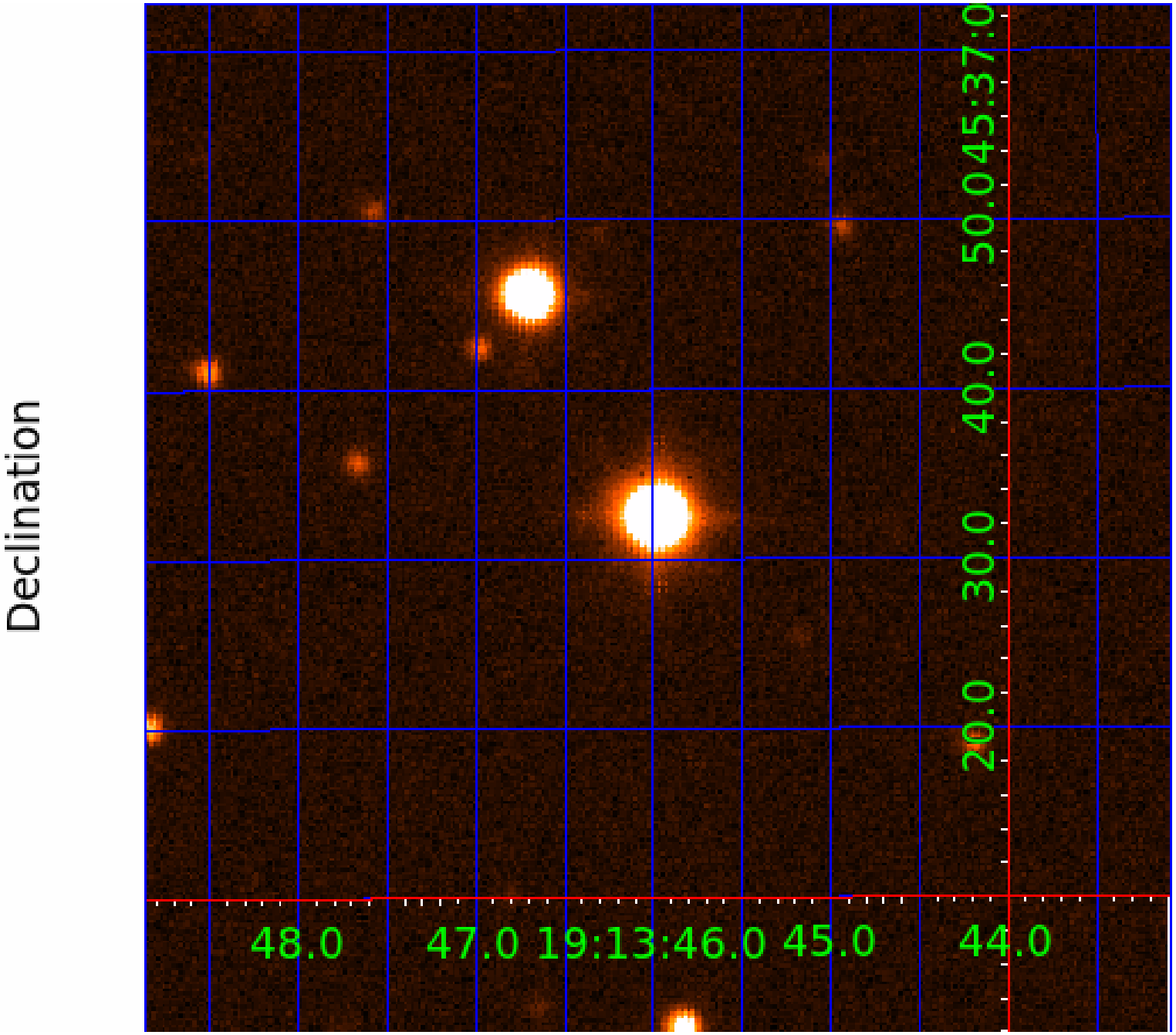


white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.





UKIRT Image



KIC 009210823

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 ($S_\oplus$)
009210823-01	OBS	0090.01	0.828196	131.587467	62.4	1.612	16.9	29.0	3.23	5812	3.03	27198.92
009210823-02	OBS	No	222.178856	272.769815	257.2	2.409	7.3	7.8	3.23	5812	6.24	15.72

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009210823-01	OBS	FP	0.00	0	0	1	1	CENT_RESOLVED_OFFSET—EPHEM_MATCH
009210823-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS

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.

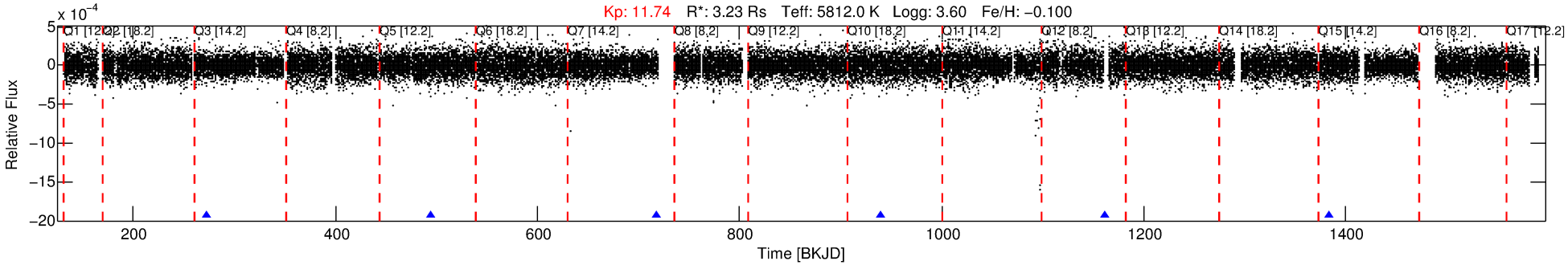
Ephemeris Match Information For 009210823-02

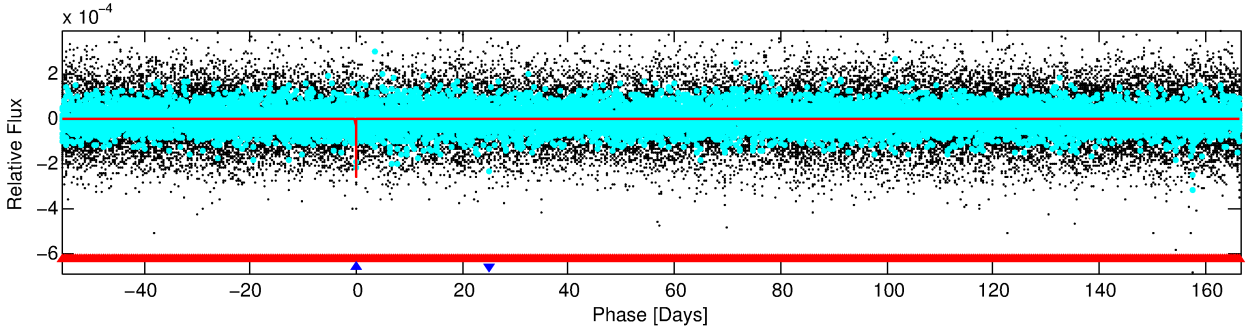
No Significant Match Found

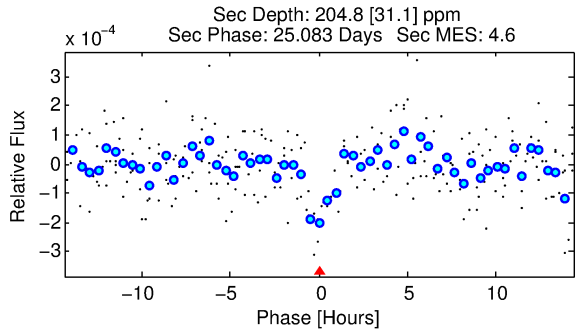
DV One-Page Summary

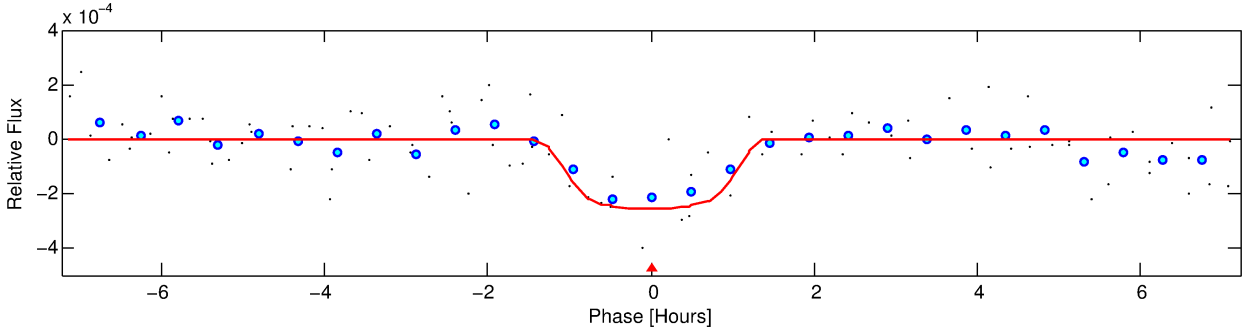
KIC: 9210823 Candidate: 2 of 2 Period: 222.179 d
KOI: K00090 Corr: No Ephemeris Match

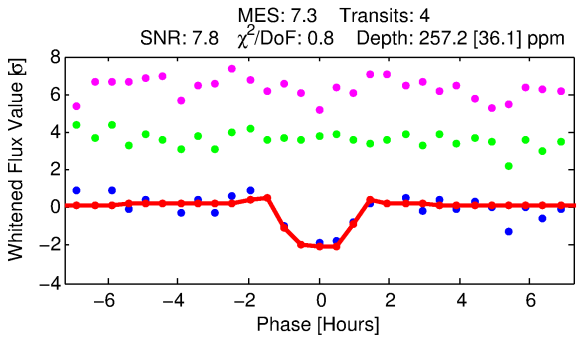
Kp: 11.74 R*: 3.23 Rs Teff: 5812.0 K Logg: 3.60 Fe/H: −0.100

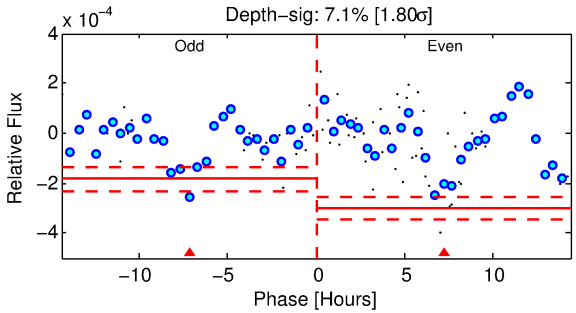












DV Fit Results:

Period = 222.17886 [0.00138] d
Epoch = 272.7698 [0.0043] BKJD
Rp/R* = 0.0177 [0.0124]
a/R* = 311.29 [1081.19]
b = 0.92 [0.62]

Seff = 15.72 [10.09]
Teq = 508 [81] K
Rp = 6.24 [5.10] Re
a = 0.8229 [0.3285] AU

Ag = 1959.83 [3019.85] [0.65σ]
Teffp = 5223 [1843] K [2.56σ]

DV Diagnostic Results:

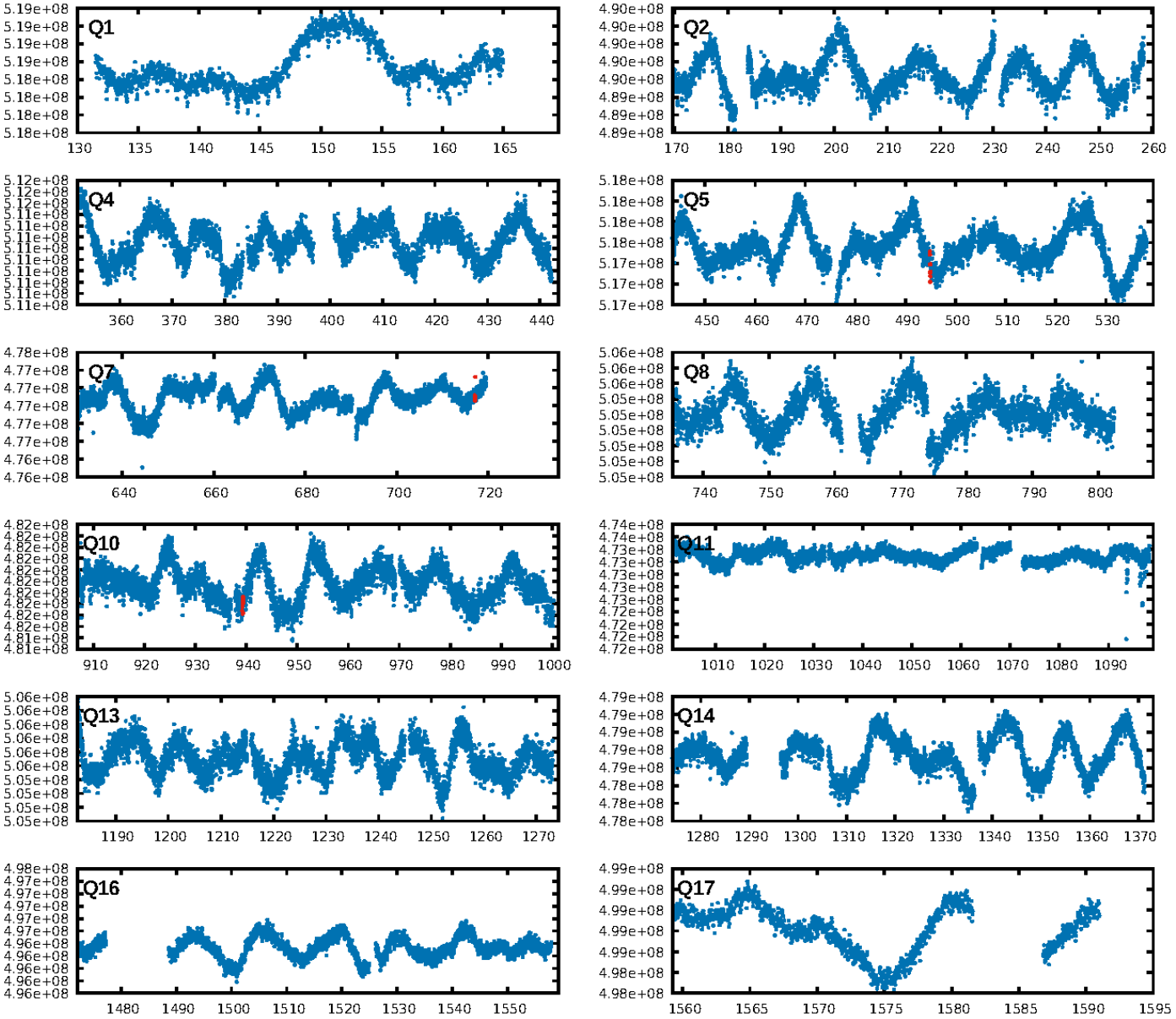
ShortPeriod−sig: 100.0% [1832.74σ]
LongPeriod−sig: N/A
ModelChiSquare2−sig: 20.2%
ModelChiSquareGof−sig: 91.7%
Bootstrap−pfa: 4.65e−10
RollingBand−fgt: 1.00 [4/4]
GhostDiagnostic−chr: 81.97

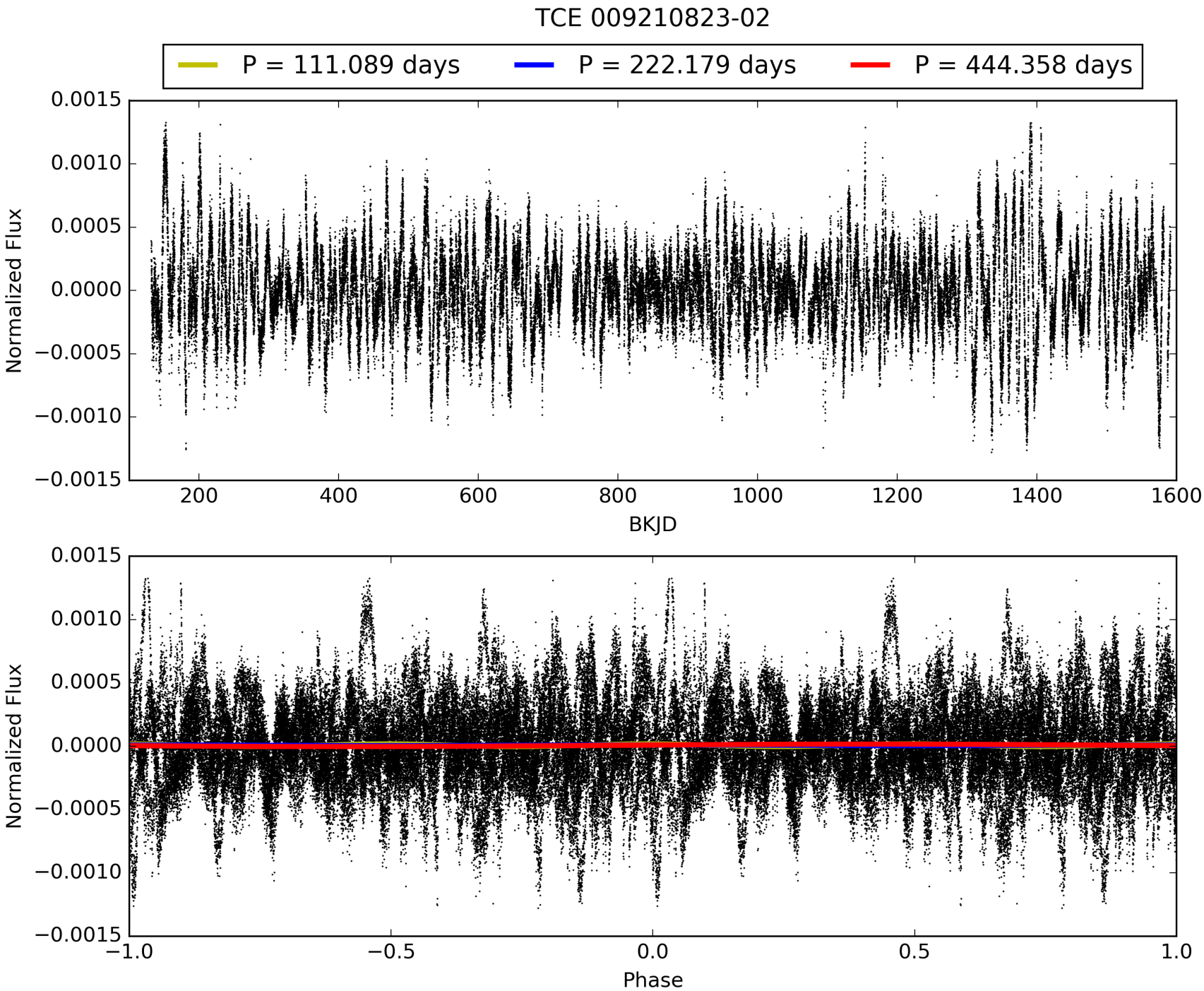
Centroid−sig: N/A
Centroid−so: 0.879 arcsec [0.87σ]
OotOffset−rm: N/A
KicOffset−rm: N/A
OotOffset−st: 0/0/0/0 [0]
KicOffset−st: 0/0/0/0 [0]
DiffImageQuality−fgm: N/A
DiffImageOverlap−fno: 0.20 [1/5]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29−Jan−2016 14:38:30 Z

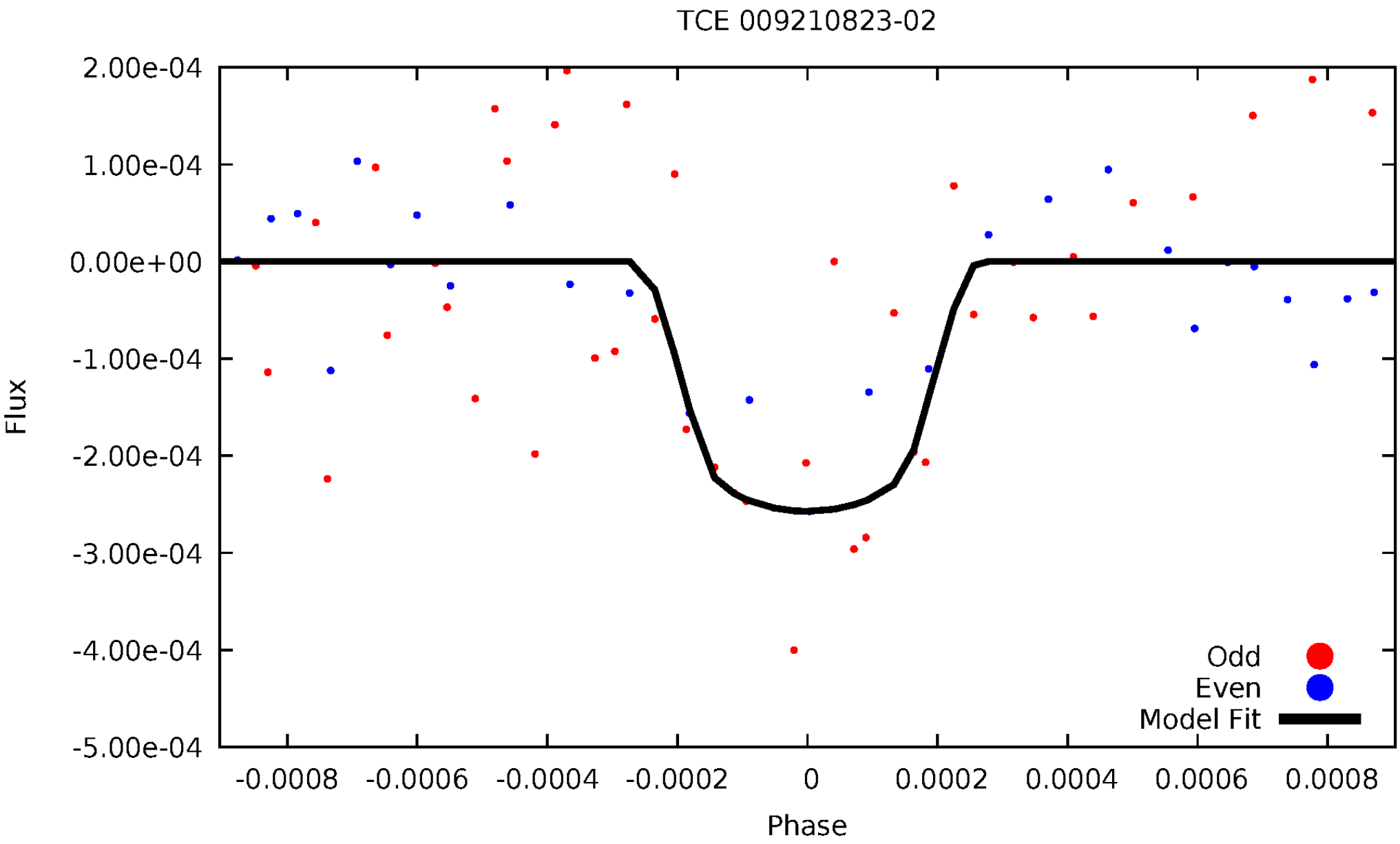
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 009210823-02, PDC Light Curves

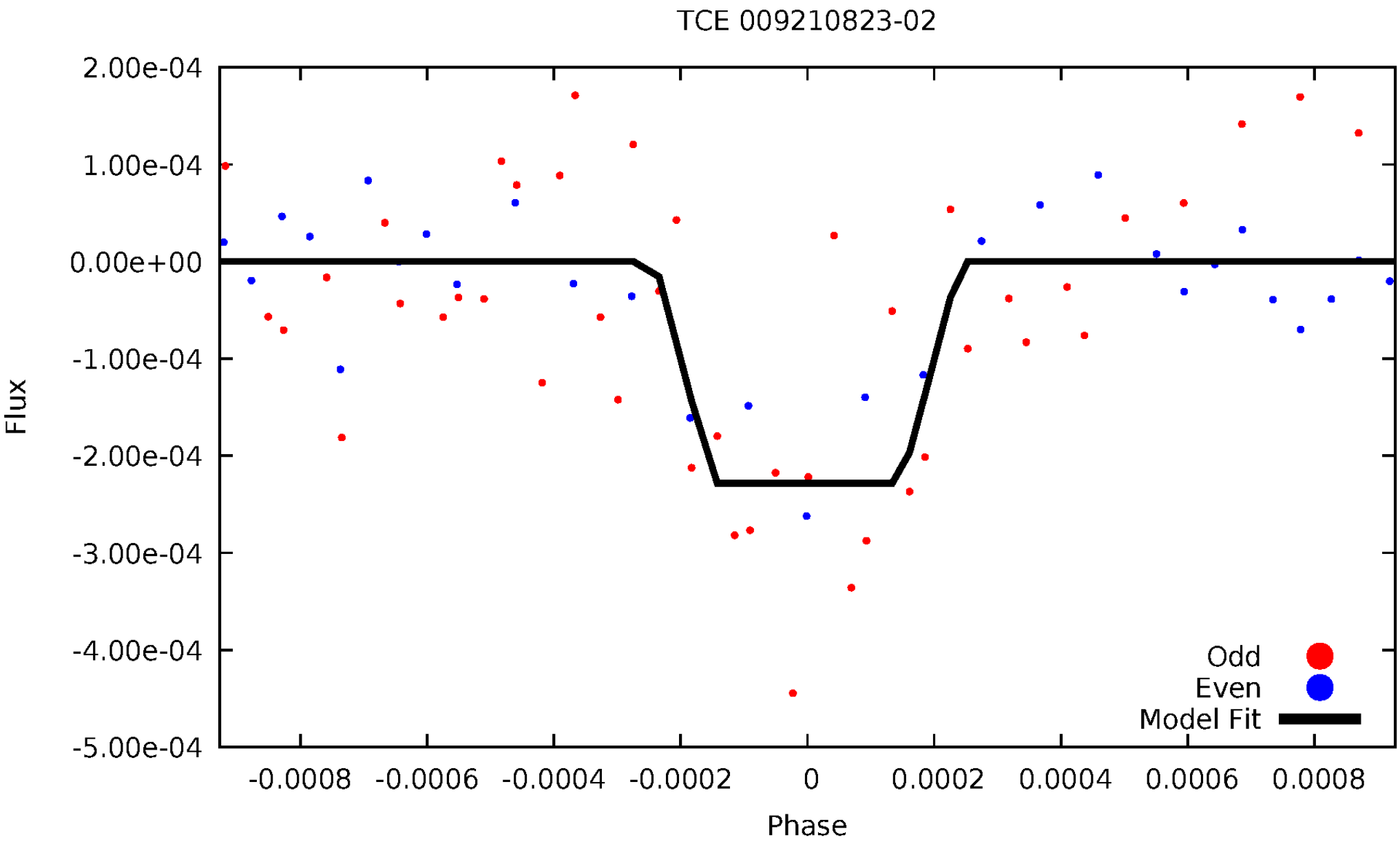



TCE 009210823-02
P = 111.089 days
P = 222.179 days
P = 444.358 days
Normalized Flux
0.0015
0.0010
0.0005
0.0000
−0.0005
−0.0010
−0.0015
200
400
600
800
1000
1200
1400
1600
BKJD
Normalized Flux
0.0015
0.0010
0.0005
0.0000
−0.0005
−0.0010
−0.0015
−1.0
−0.5
0.0
0.5
1.0
Phase

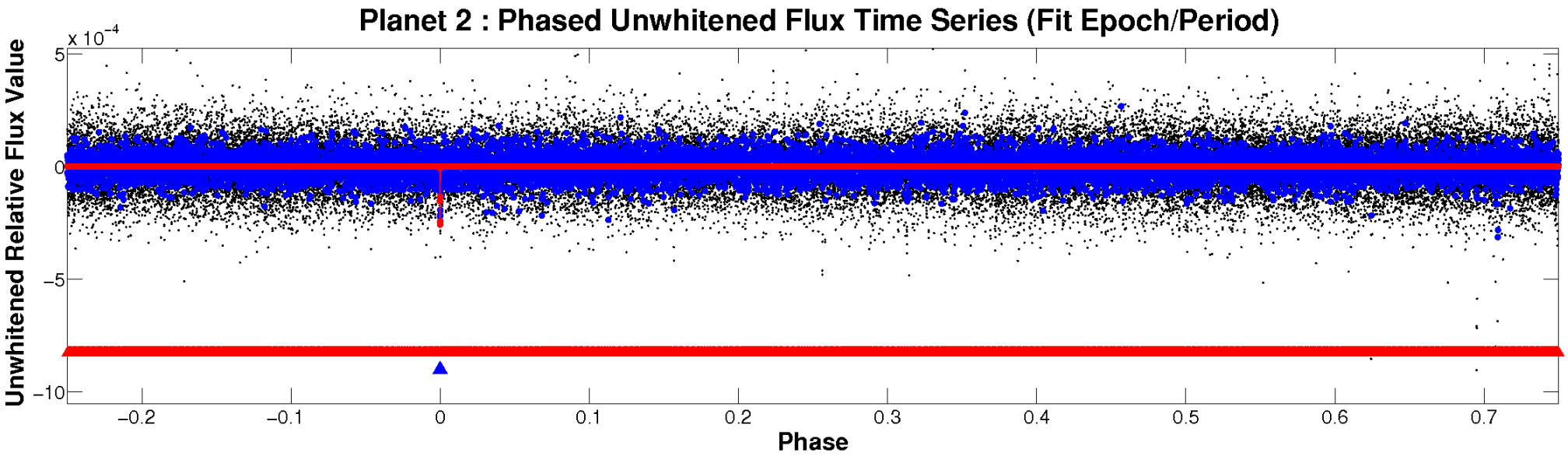
DV Odd/Even

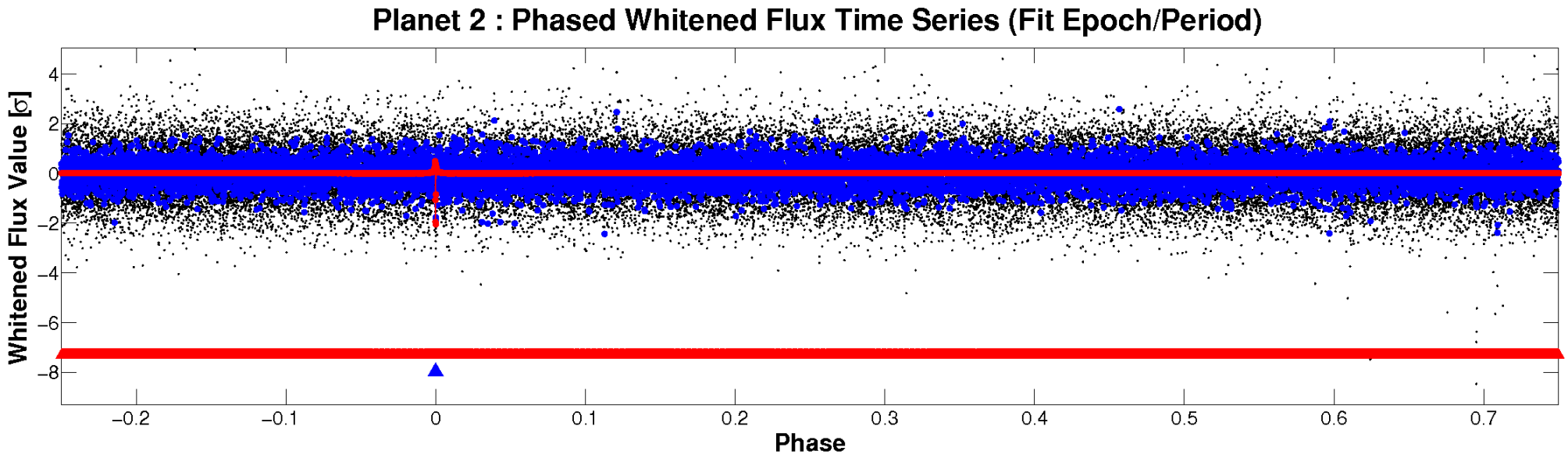

TCE 009210823-02
2.00e-04
1.00e-04
0.00e+00
-1.00e-04
-2.00e-04
-3.00e-04
-4.00e-04
-5.00e-04
Flux
-0.0008
-0.0006
-0.0004
-0.0002
0
0.0002
0.0004
0.0006
0.0008
Phase
Odd
Even
Model Fit

ALT Odd/Even


TCE 009210823-02
2.00e-04
1.00e-04
0.00e+00
-1.00e-04
-2.00e-04
-3.00e-04
-4.00e-04
-5.00e-04
Flux
-0.0008
-0.0006
-0.0004
-0.0002
0
0.0002
0.0004
0.0006
0.0008
Phase
Odd
Even
Model Fit

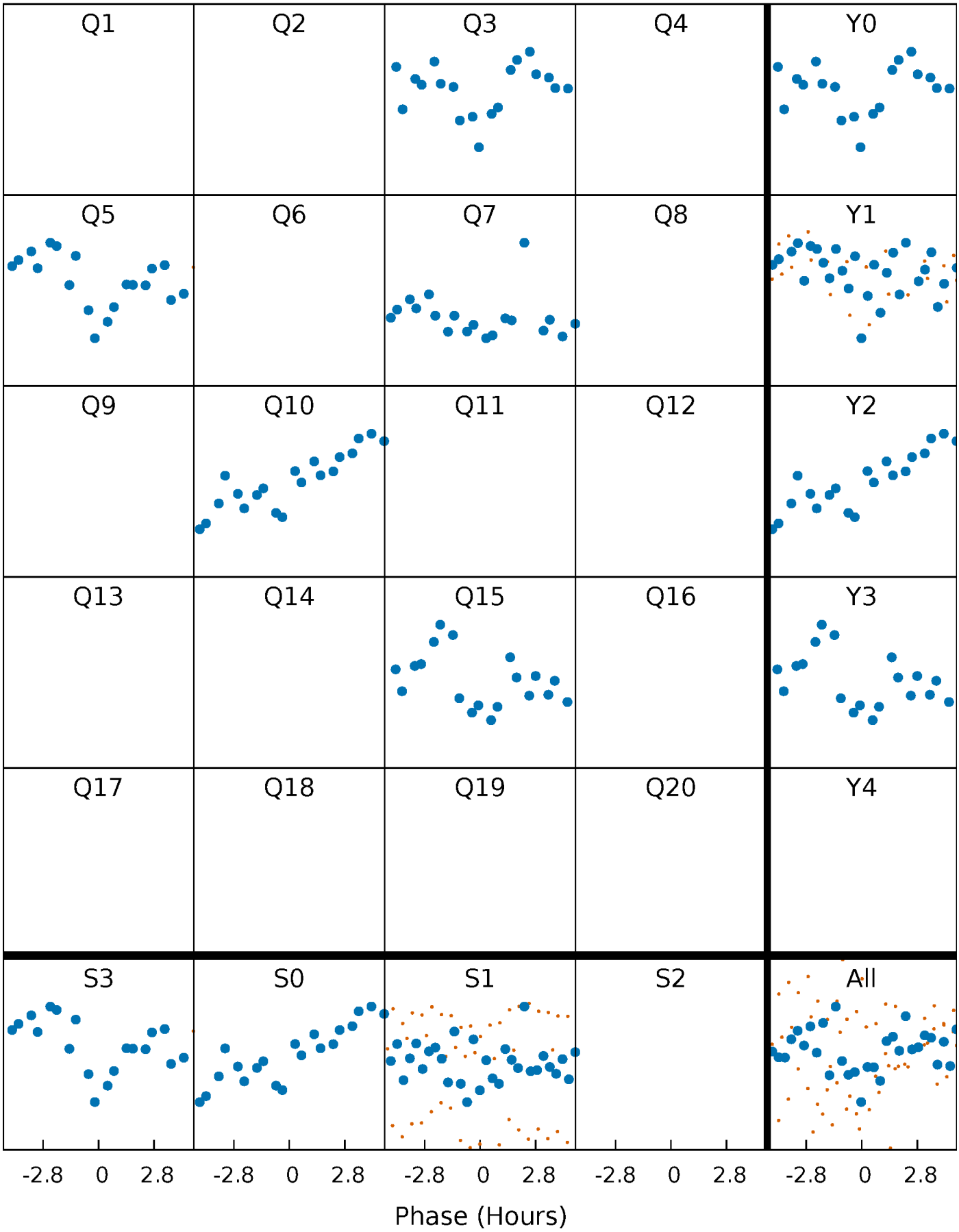
Non-Whitened Vs. Whitened Light Curve





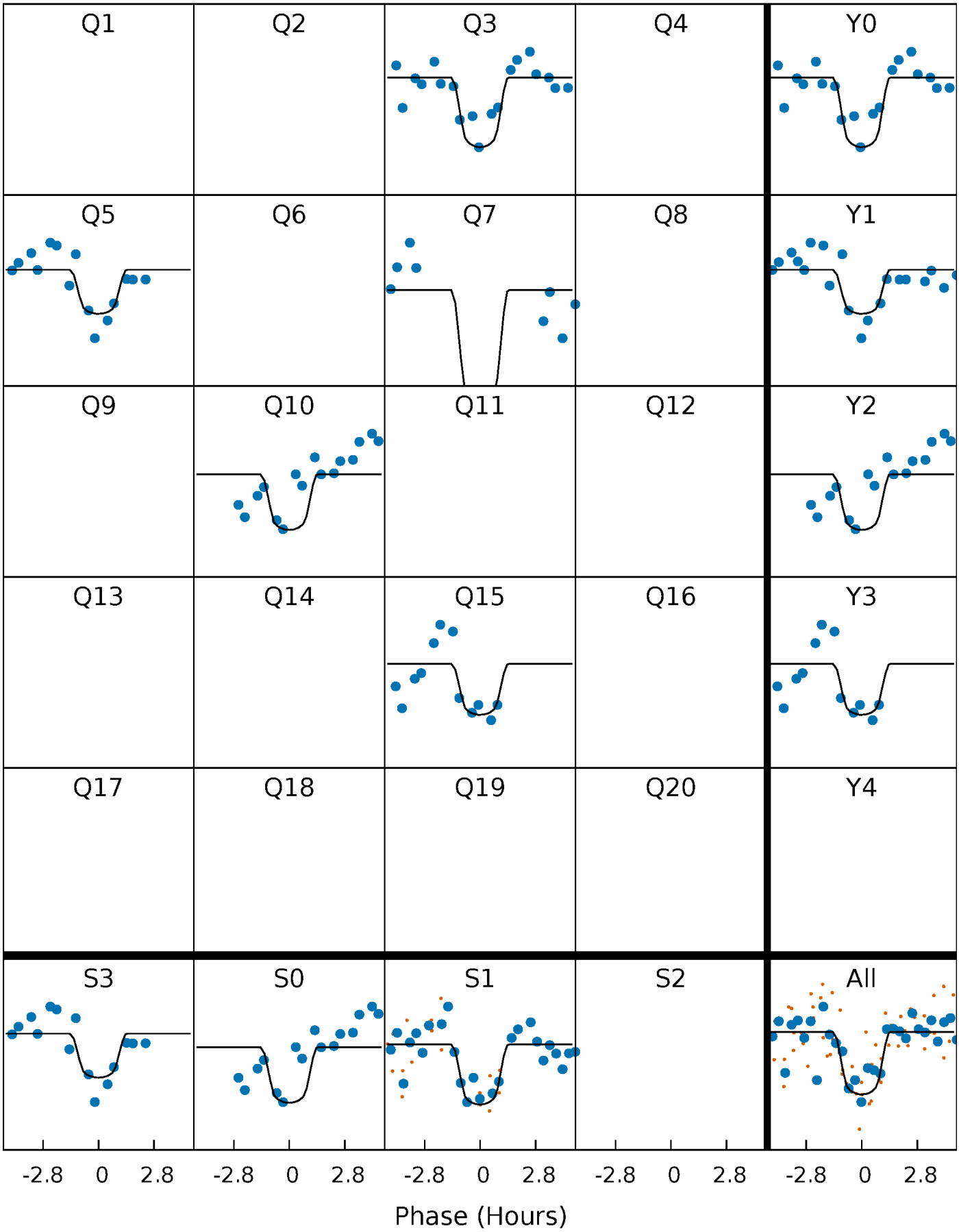
PDC Quarter-Phased Transit Curves

TCE 009210823-02 P=222.178856 Days T_0=272.769815 (BKJD)



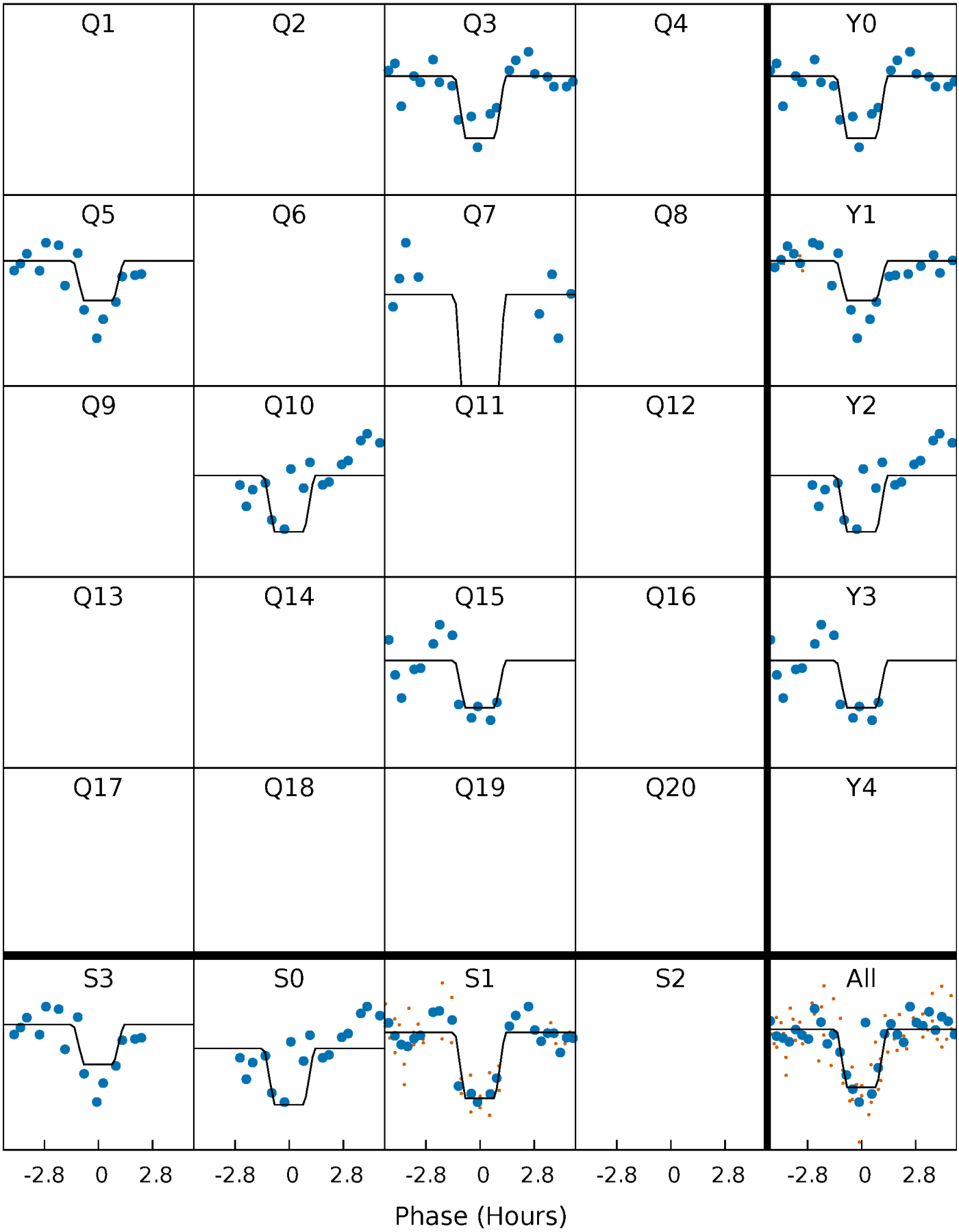
DV Quarter-Phased Transit Curves

TCE 009210823-02 P=222.178856 Days T_0=272.769815 (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

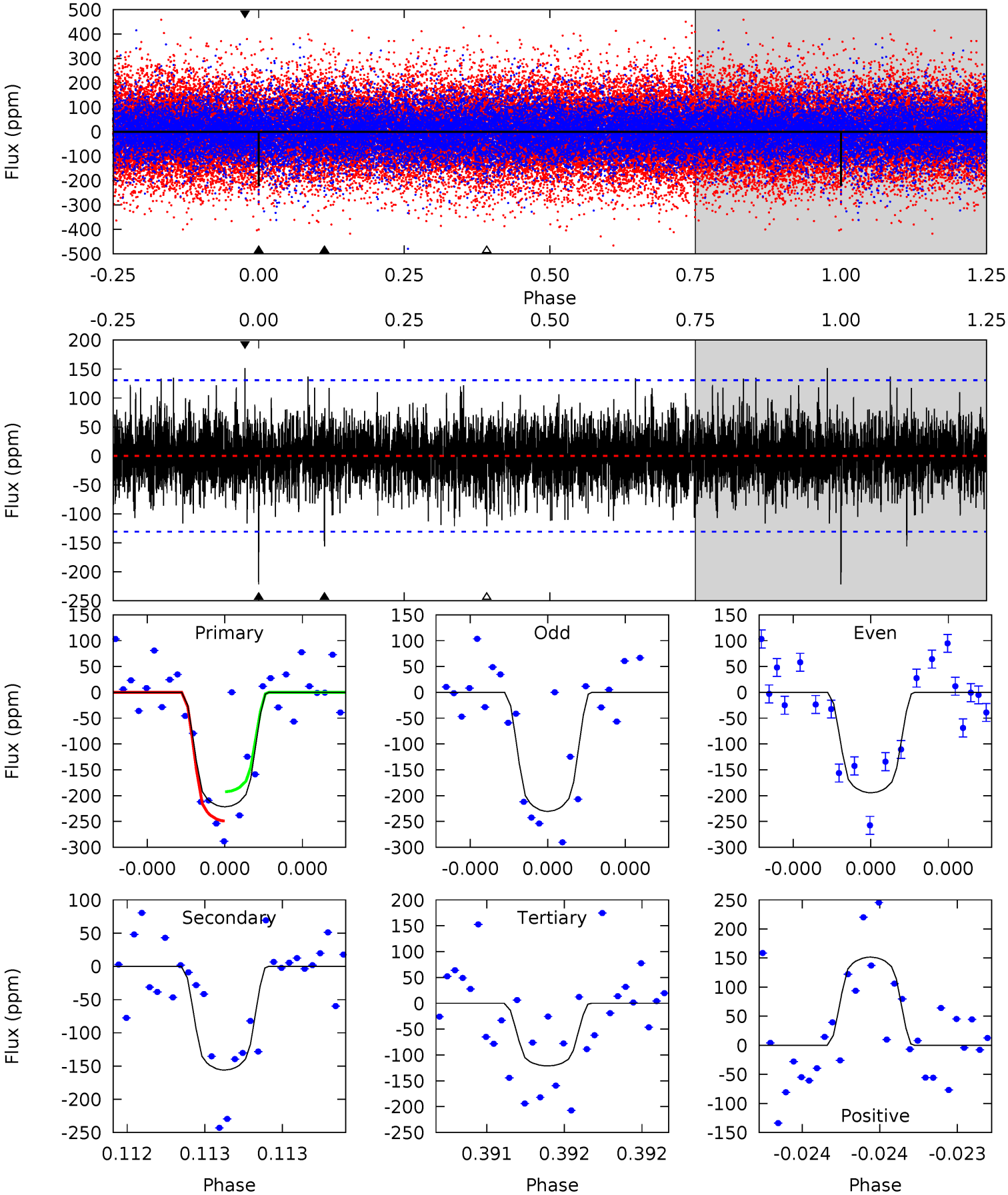
TCE 009210823-02 P=222.178529 Days T_0=272.770667 (BKJD)



DV Model-Shift Uniqueness Test

009210823-02, P = 222.178856 Days, E = 50.590959 Days

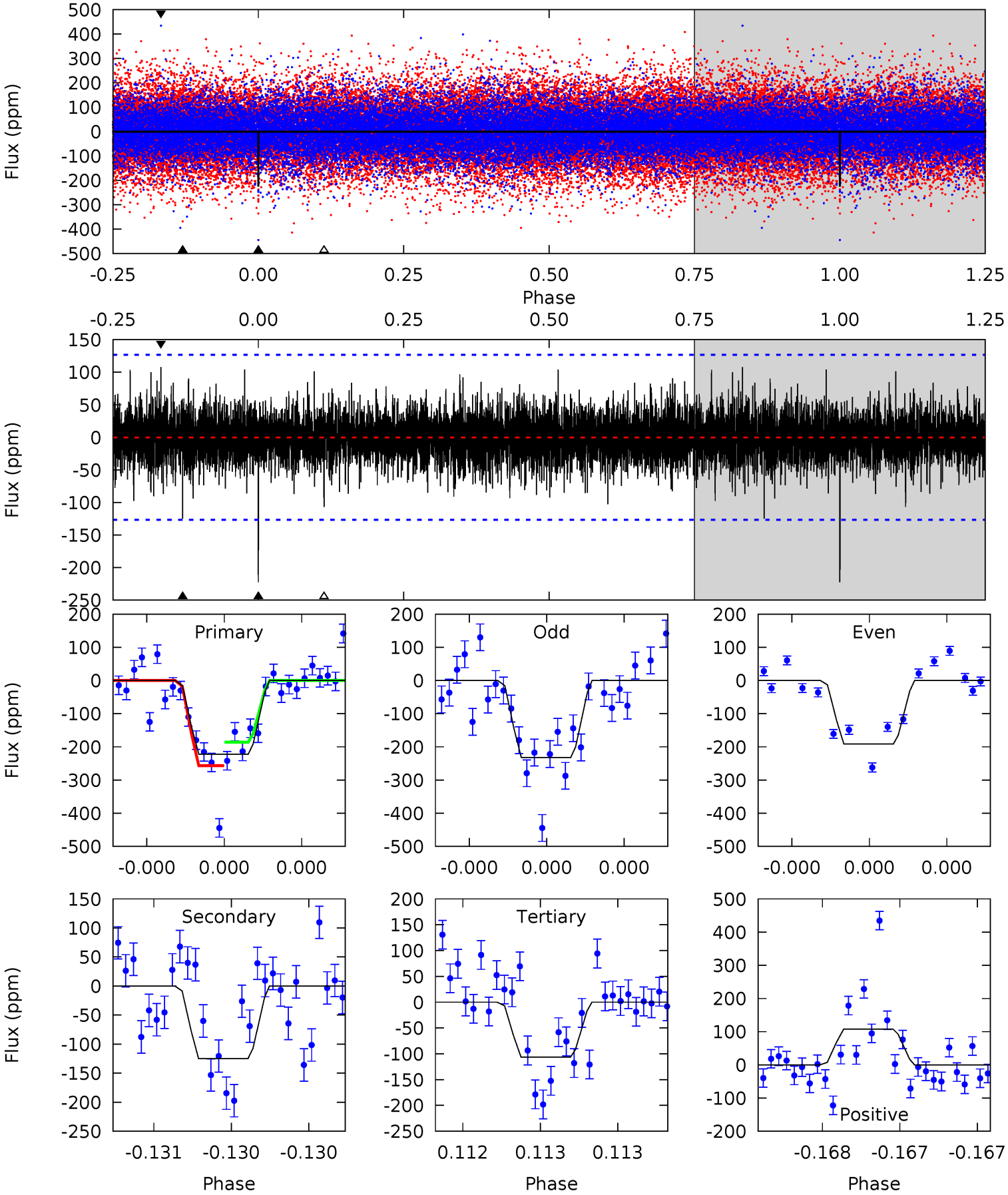
Pri	Sec	Ter	Pos	FA_1	FA_2	F_{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.46	6.67	5.18	6.48	5.58	3.49	1.52	4.29	2.99	1.49	0.19	0.67	0.96	0.41	1.20



Alt Model-Shift Uniqueness Test

009210823-02, P = 222.178529 Days, E = 50.592138 Days

Pri	Sec	Ter	Pos	FA_1	FA_2	F_{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.82	5.52	4.70	4.75	5.60	3.52	1.20	5.11	5.06	0.82	0.77	0.80	0.95	0.33	1.56



Stellar Parameters For KIC 009210823

	$T_{\rm eff}(K)$	$\log(g)$	[Fe/H]	R ($R_\odot$)	M($M_\odot$)	$p_\star$ (g·cm^{-3})
	5812^{+175}_{-157}	$3.598^{+0.367}_{-0.122}$	$-0.100^{+0.350}_{-0.300}$	$3.227^{+0.737}_{-1.369}$	$1.504^{+0.181}_{-0.423}$	$0.063^{+0.195}_{-0.024}$
	+3%/-3%	+10%/-3%	+350%/-300%	+23%/-42%	+12%/-28%	+309%/-38%
Source	PHO1	FLK73	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 009210823-02 / KOI

Detrend	Depth (ppm)	R_p ($R_\oplus$)	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-156±23	$5.90^{+4.41}_{-3.46}$	696^{+51}_{-75}	4871^{+2574}_{-875}	1603^{+7615}_{-1039}
Alt.	-125±23	$5.20^{+4.59}_{-3.01}$	695^{+48}_{-74}	4922^{+2380}_{-1024}	1639^{+8052}_{-1163}

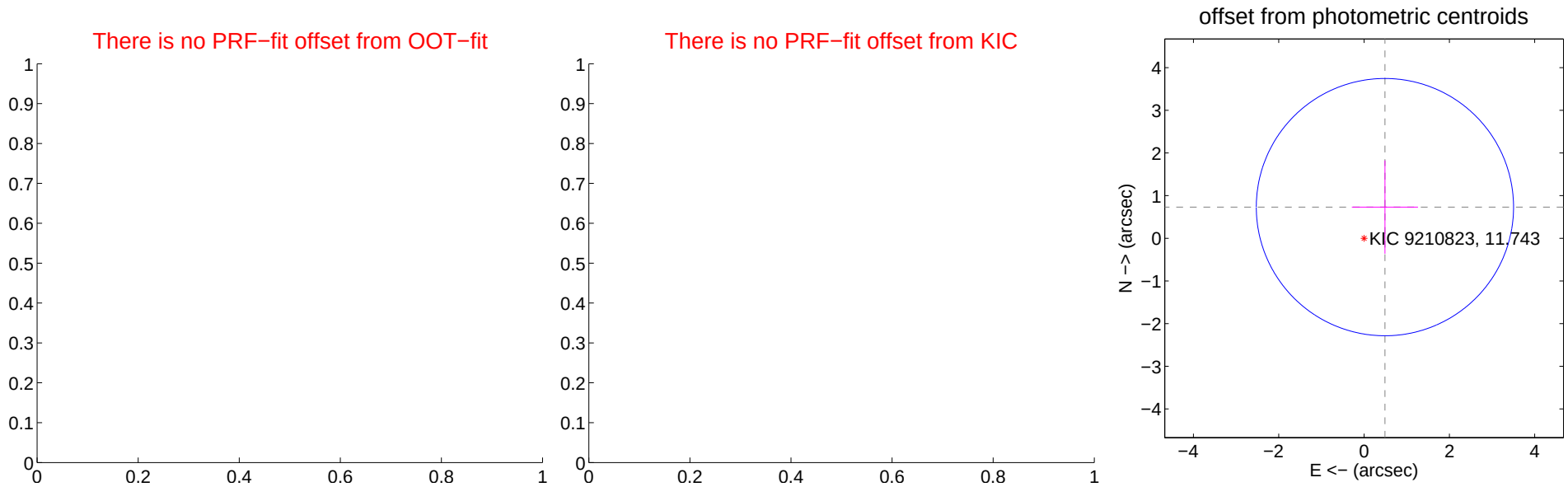
T_{max} = Theoretical Maximum Planetary Temperature
T_{obs} = Observed Planetary Temperature (Assuming A=0.3)
A_{obs} = Observed Albedo (Assuming T=0)

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

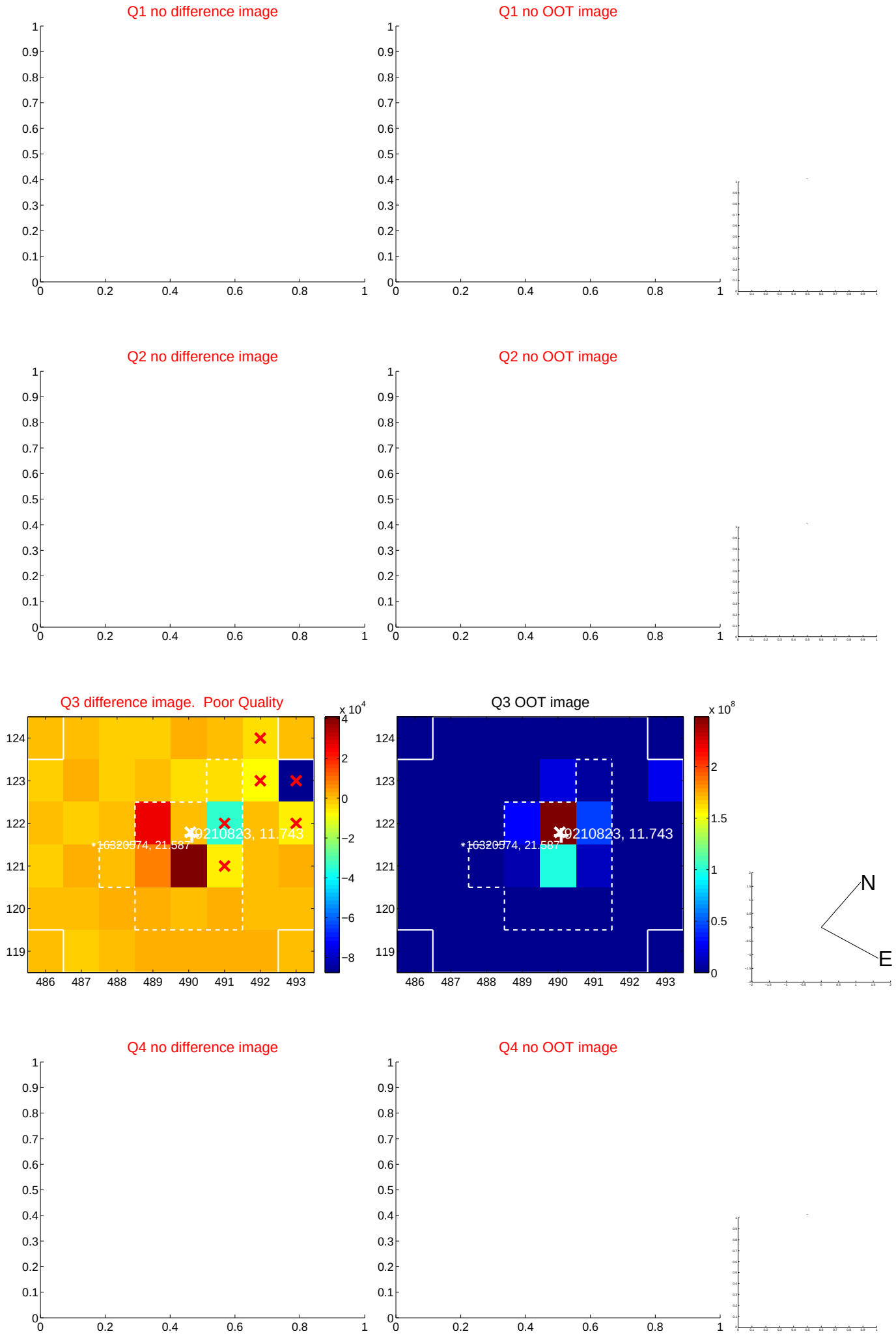
Supplemental centroid analysis for 009210823-02. Kepler magnitude: 11.74. Transit SNR 7.78
There are 0 quarters with good PRF difference image offsets
The direct PRF centroid is offset from the target star catalog position by about NaN arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	—	—	—	—
PRF-fit source offset from KIC position	—	—	—	—
photometric centroid source offset	0.88 ± 1.01	0.87	-0.49 ± 0.78	0.73 ± 1.09

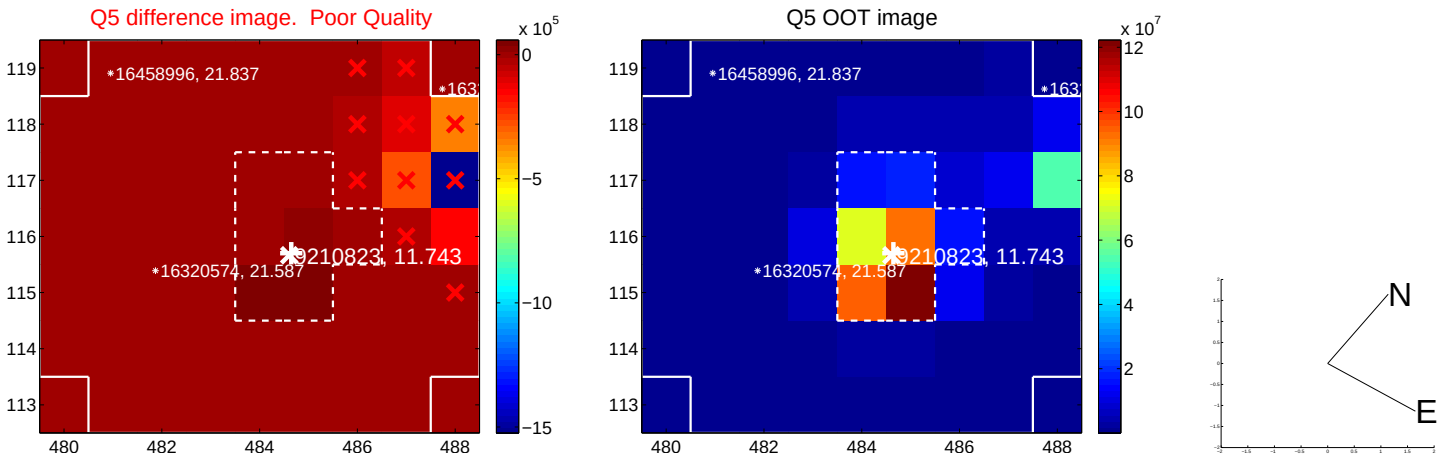


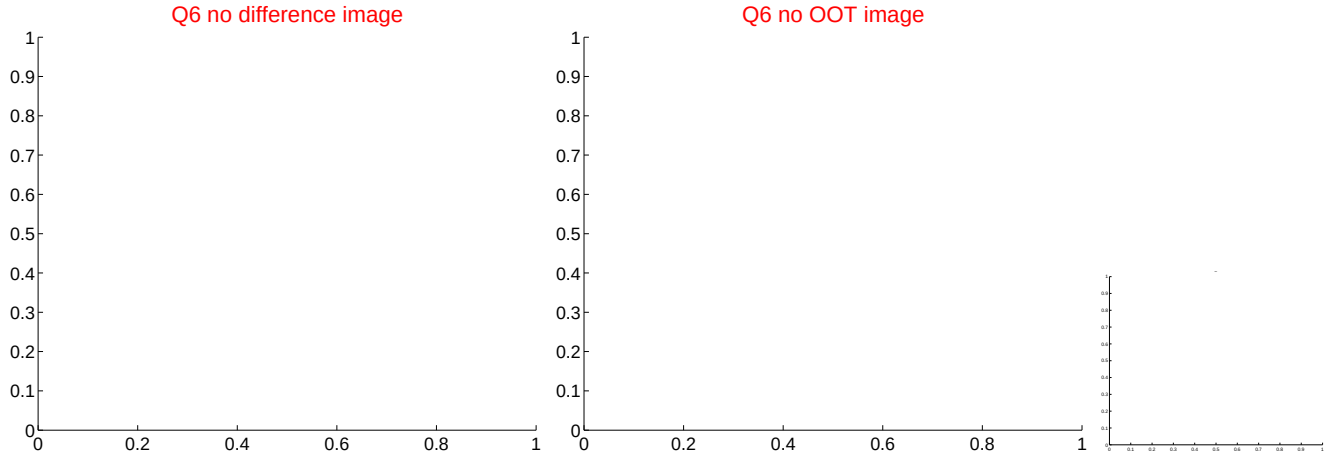
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one-σ uncertainty. Blue circle: three-σ. Red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

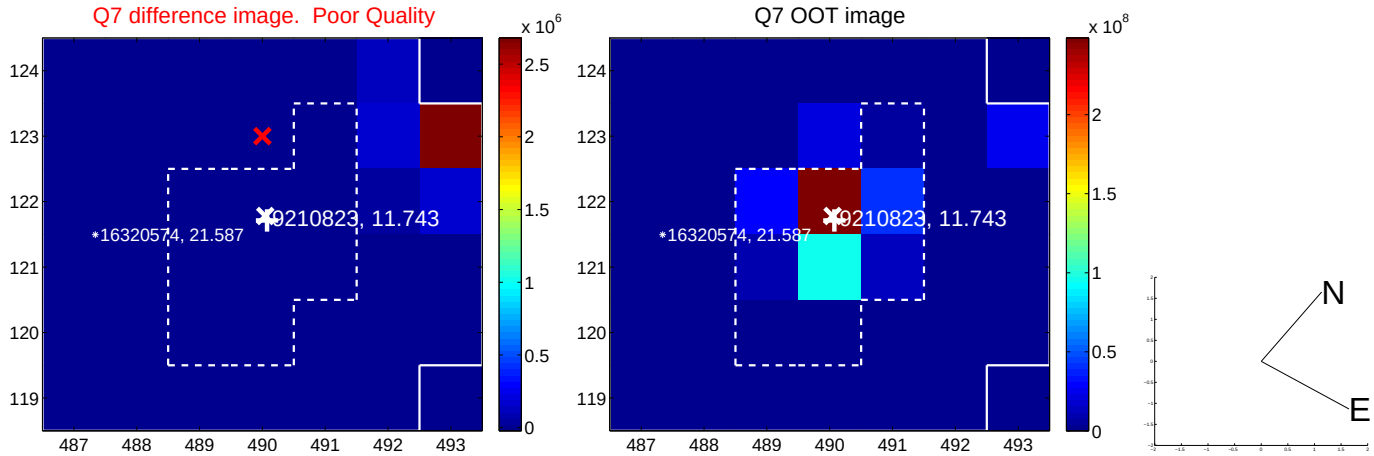
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.

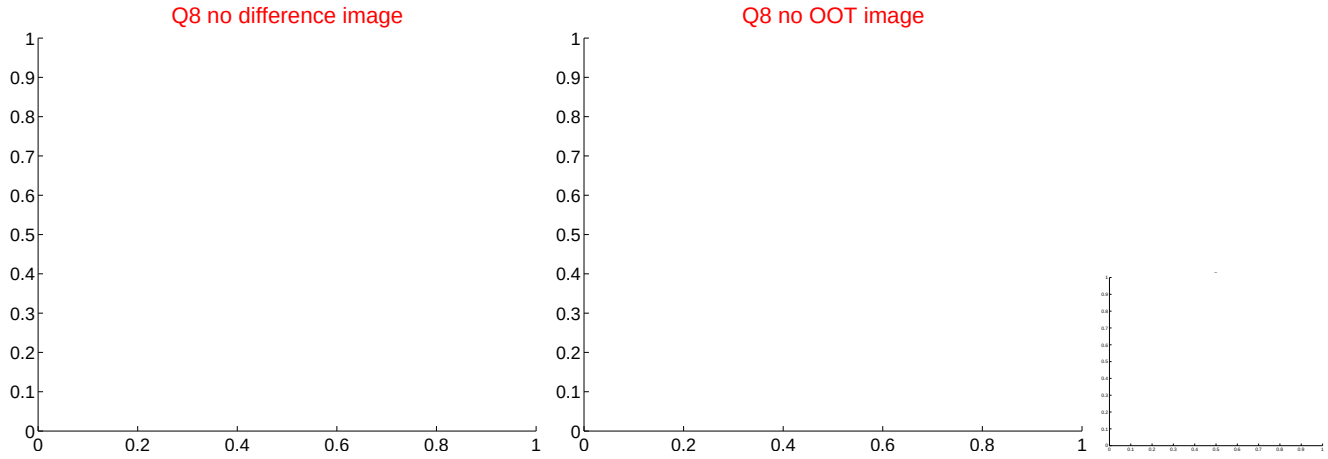


white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.

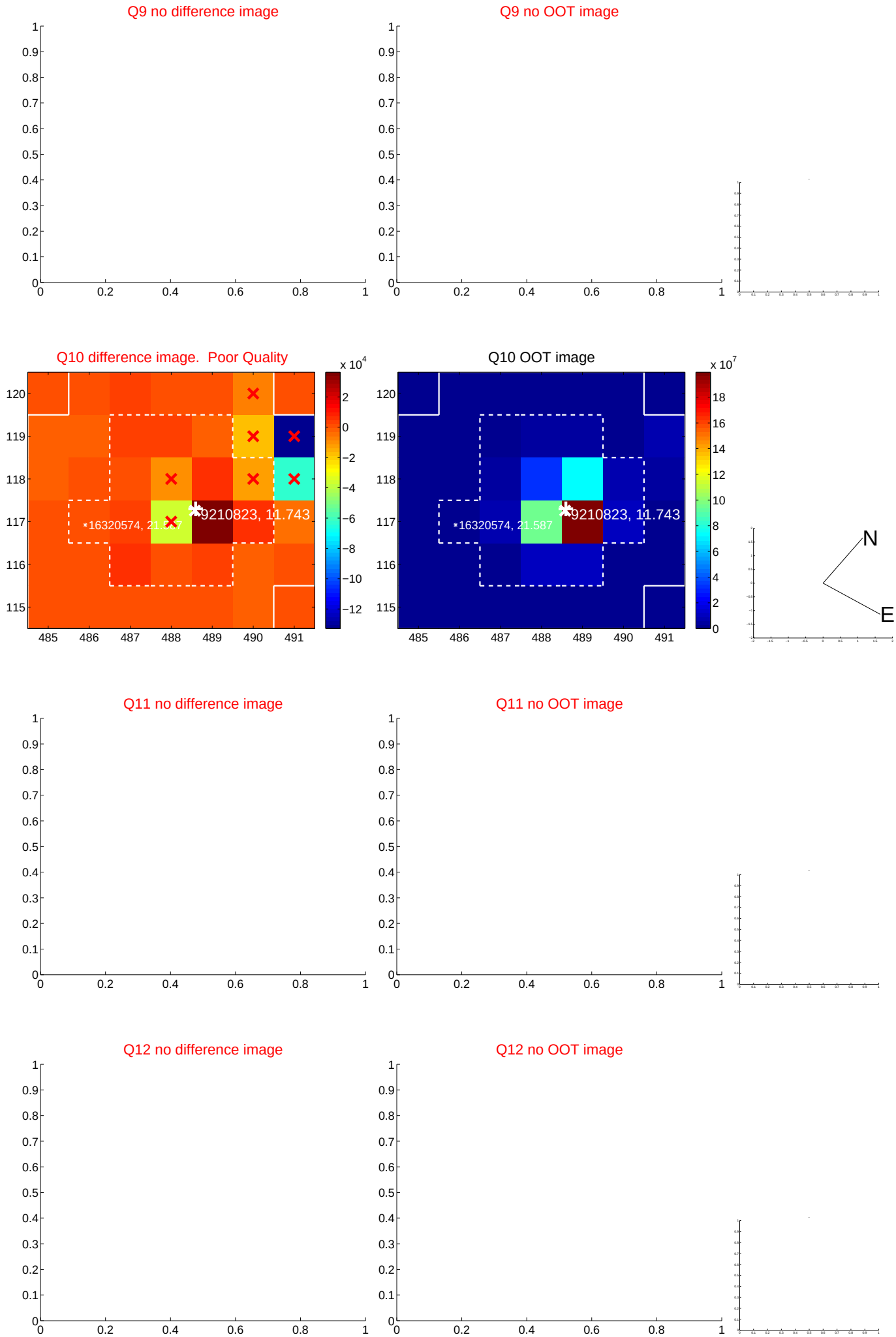








white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.



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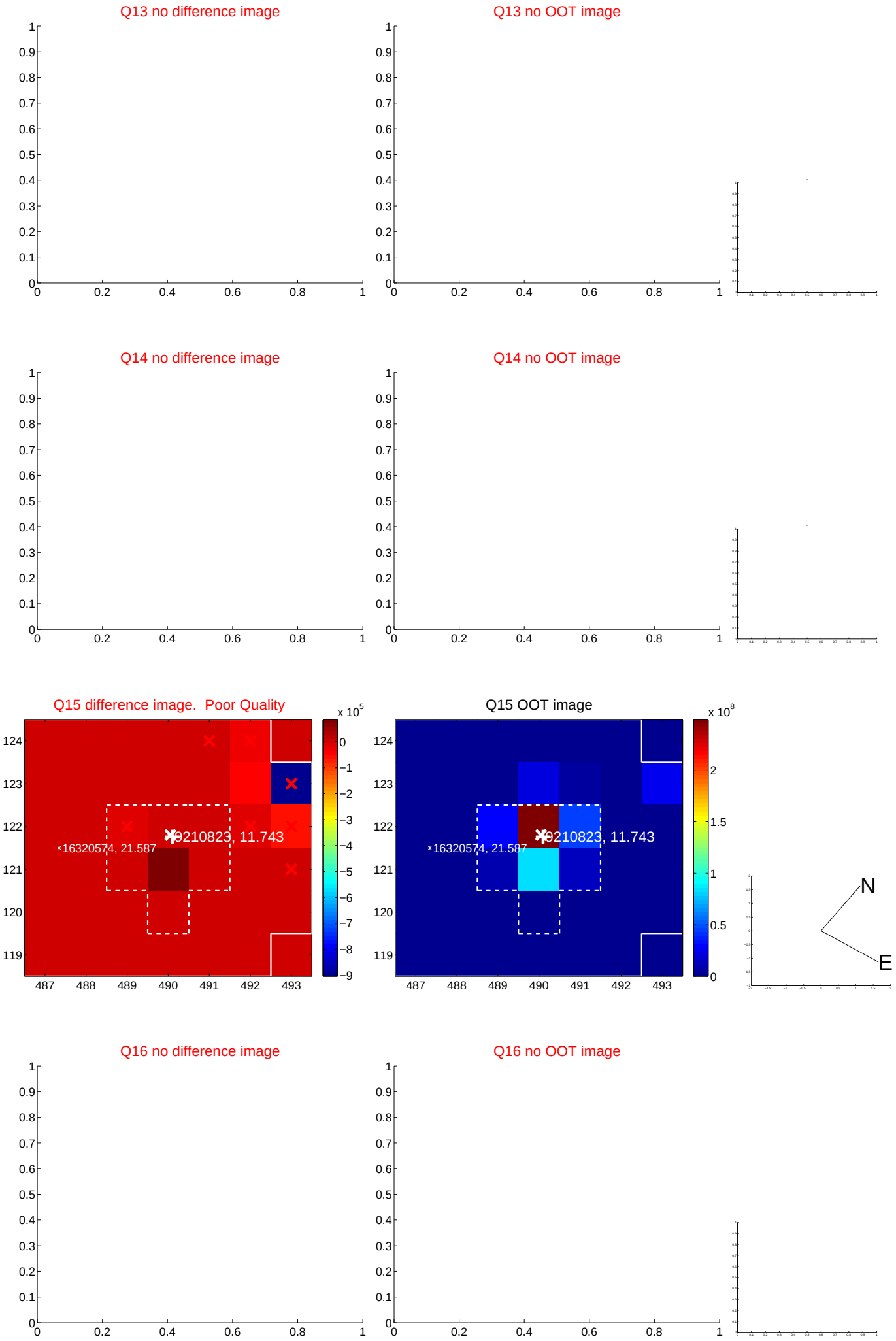
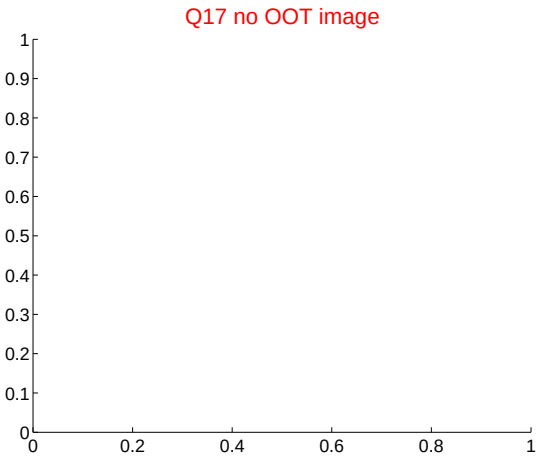
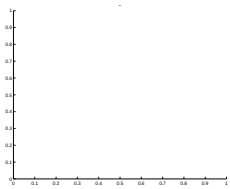
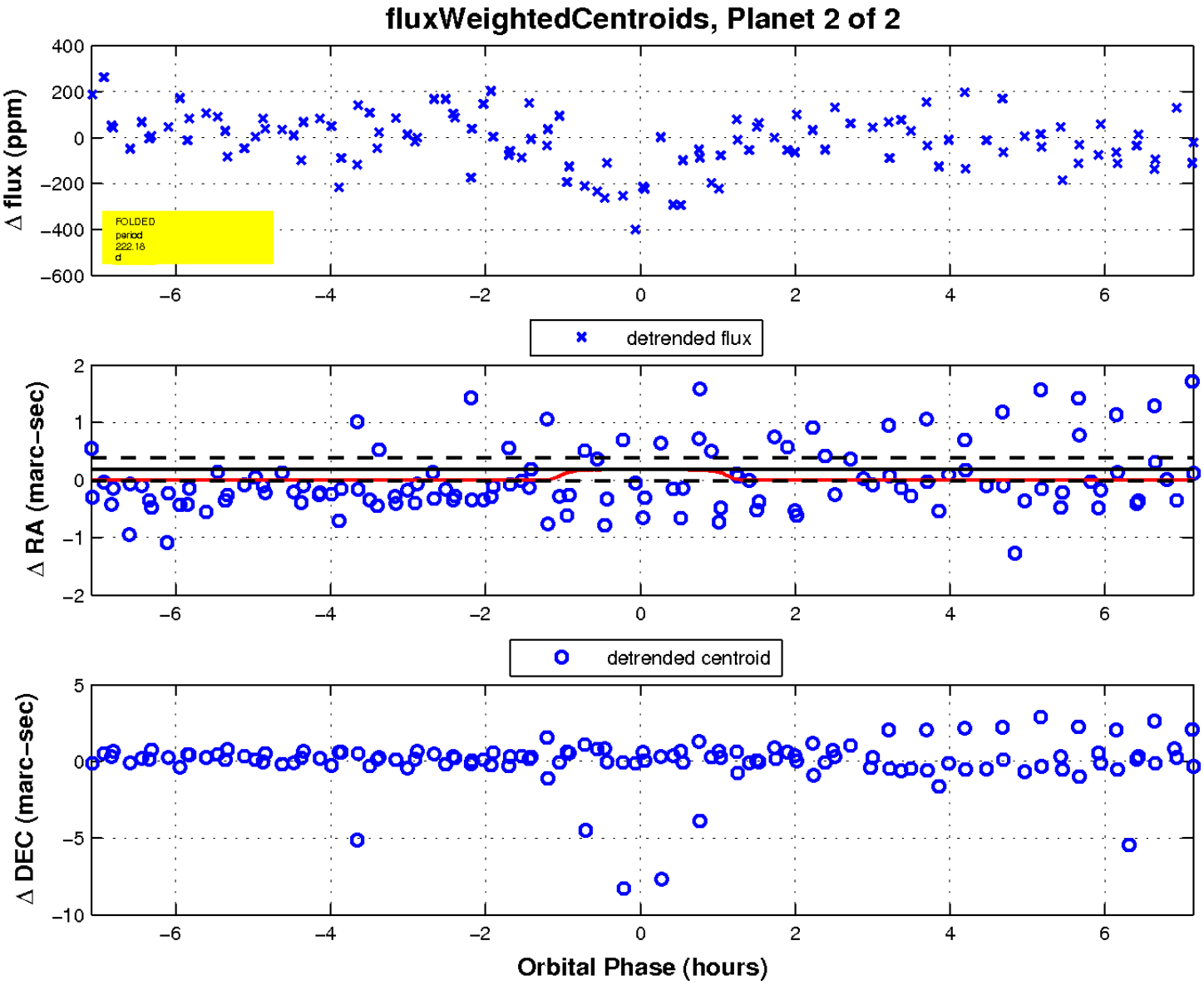
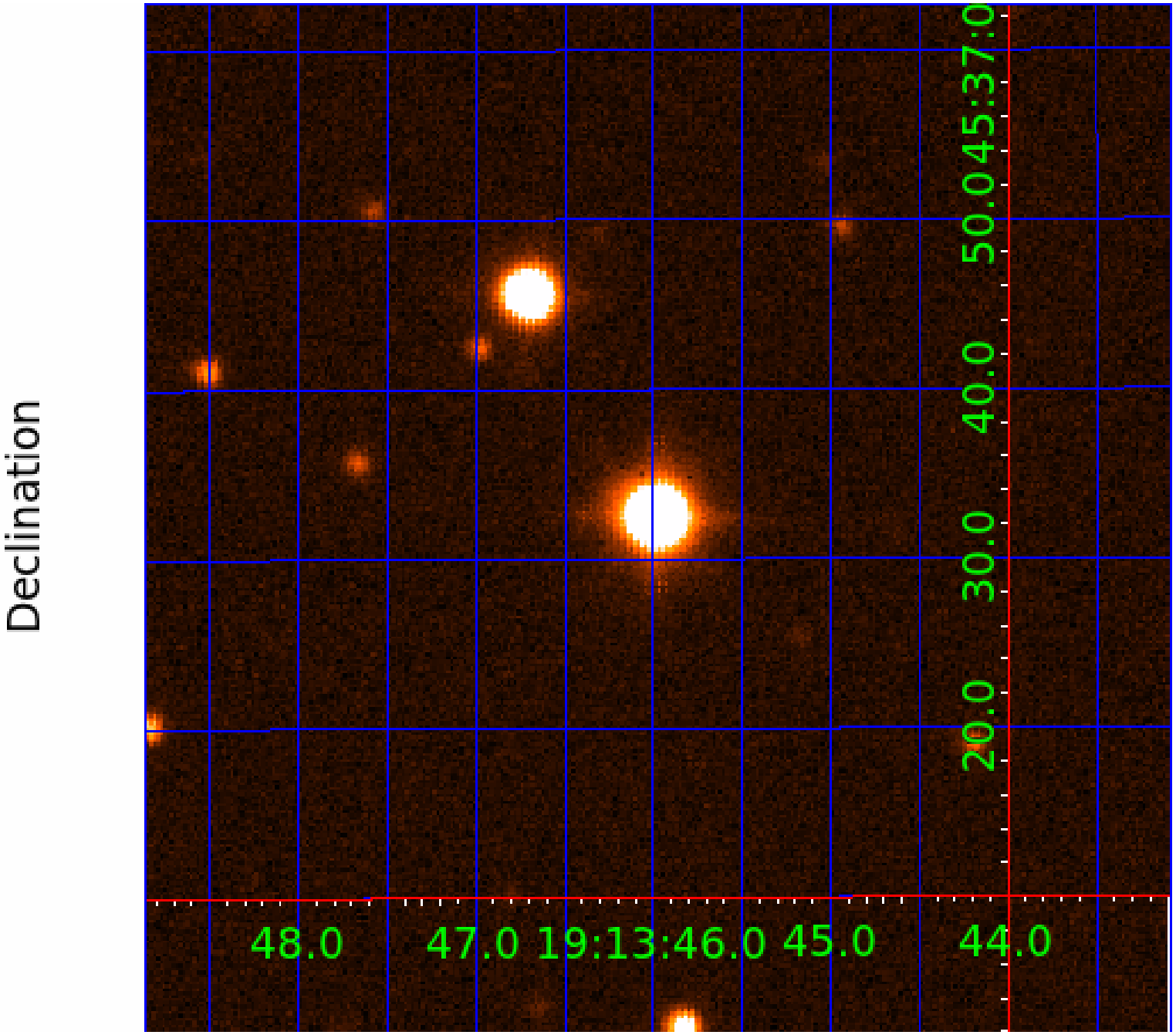


white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.







UKIRT Image