KIC 006509175

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 ($S_\oplus$)
006509175-01	OBS	No	1.199616	131.694268	288.7	1.836	9.4	10.1	3.99	7474	7.97	57553.95
006509175-02	OBS	No	4.799782	135.392503	198.4	4.168	8.9	4.5	3.99	7474	6.60	9060.86

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006509175-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_SATURATED
006509175-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_SKYE_ZUMA_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED

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.

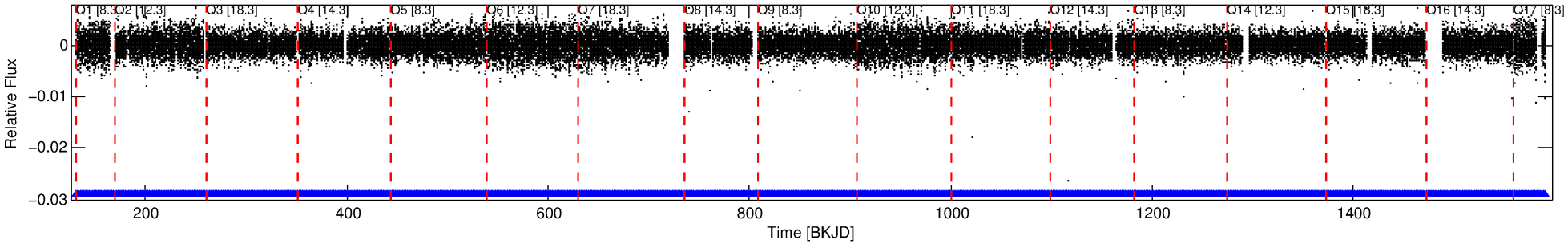
Ephemeris Match Information For 006509175-01

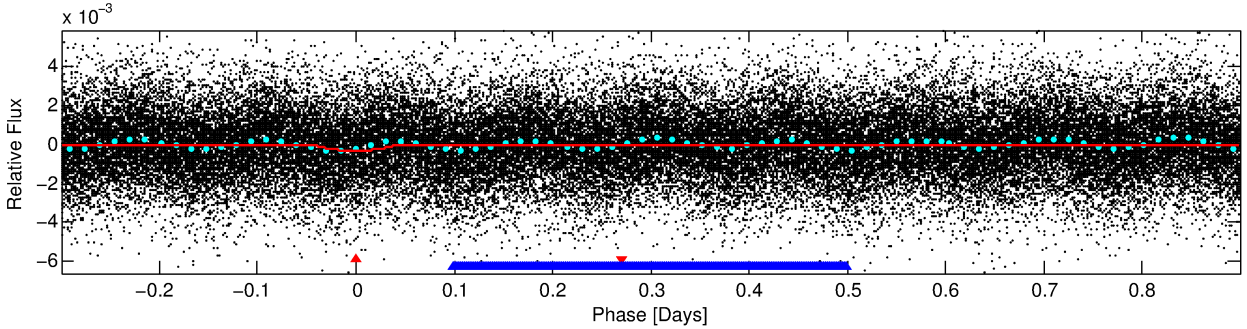
No Significant Match Found

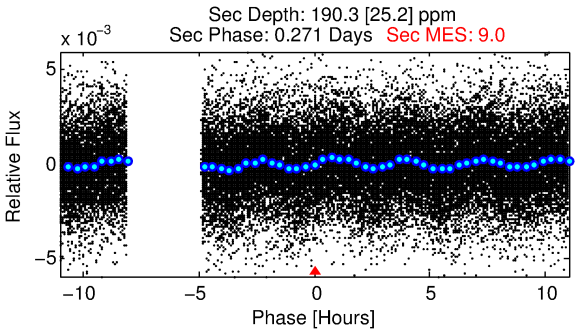
DV One-Page Summary

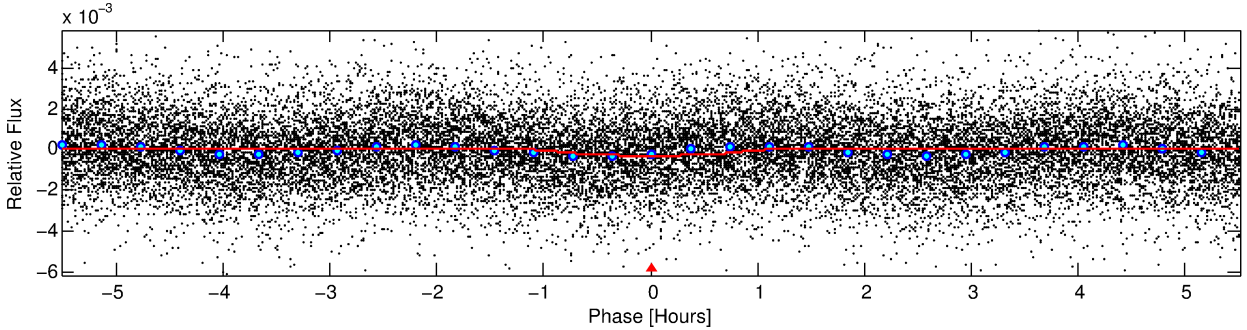
KIC: 6509175 Candidate: 1 of 2 Period: 1.200 d

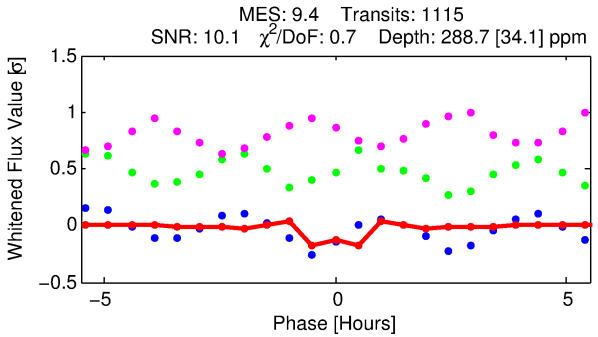
Kp: 9.98 R*: 3.99 Rs Teff: 7474.0 K Logg: 3.54 Fe/H: −0.260

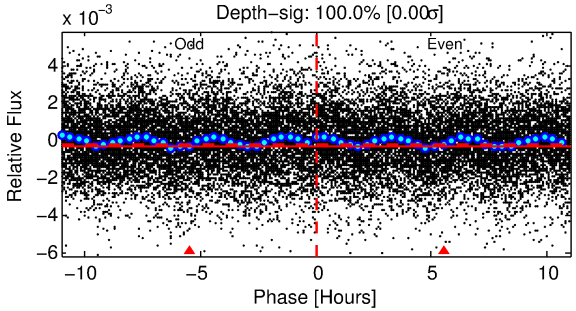


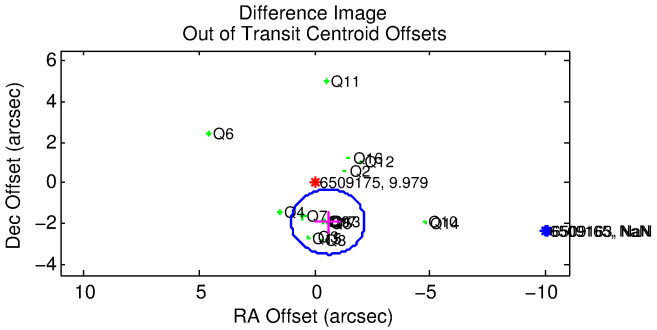












DV Fit Results:

Period = 1.19962 [0.00001] d
Epoch = 131.6943 [0.0011] BKJD
Rp/R* = 0.0183 [0.0036]
a/R* = 2.56 [2.16]
b = 0.90 [0.21]

Seff = 57553.95 [18442.38]
Teq = 3950 [316] K
Rp = 7.97 [2.20] Re
a = 0.0278 [0.0053] AU

Ag = 1.27 [0.66] [0.41σ]
Teffp = 6483 [688] K [3.35σ]

DV Diagnostic Results:

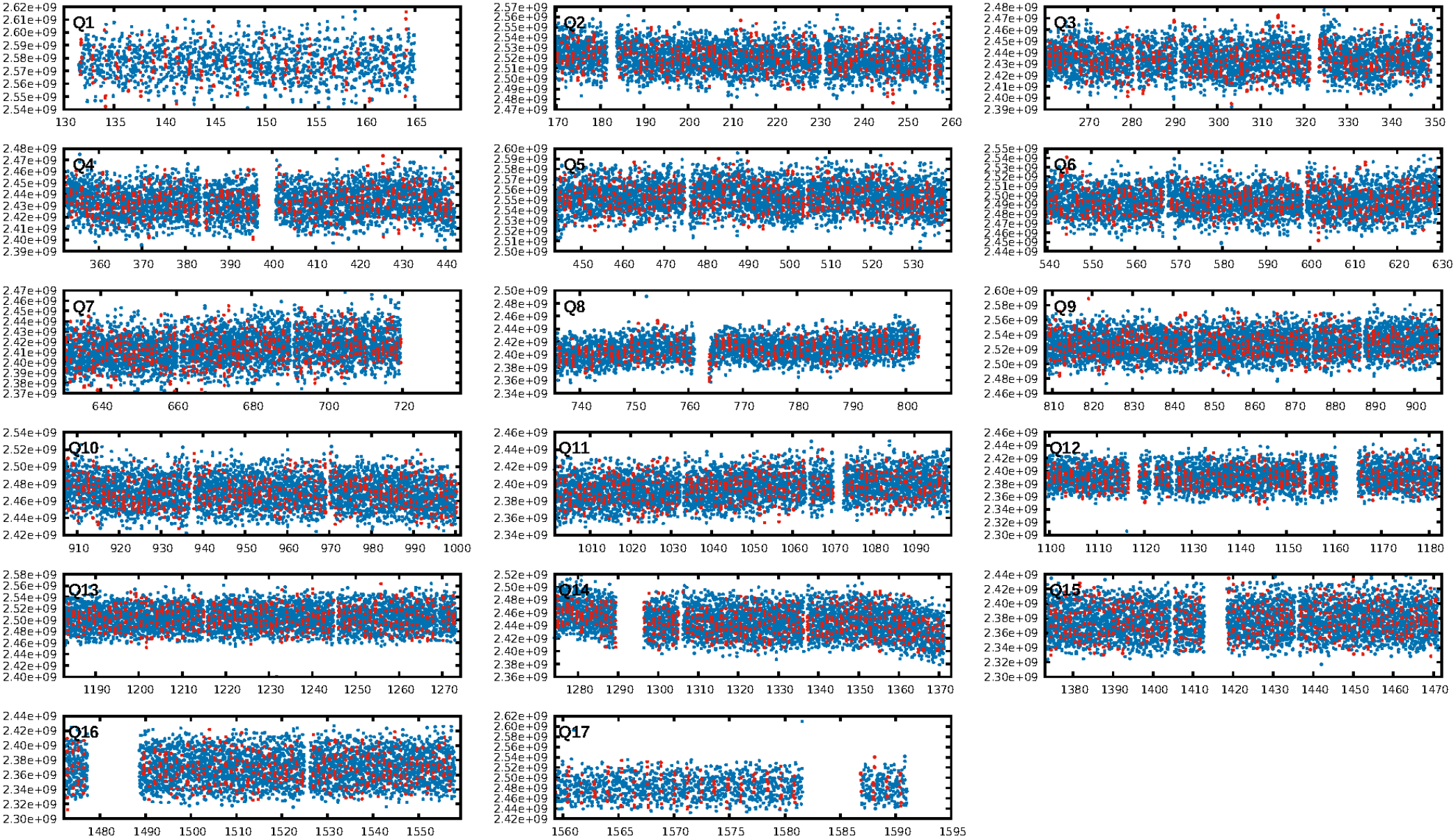
ShortPeriod−sig: N/A
LongPeriod−sig: 100.0% [18.97σ]
ModelChiSquare2−sig: N/A
ModelChiSquareGof−sig: N/A
Bootstrap−pfa: 6.16e−47
RollingBand−fgt: 1.00 [1064/1064]
GhostDiagnostic−chr: N/A

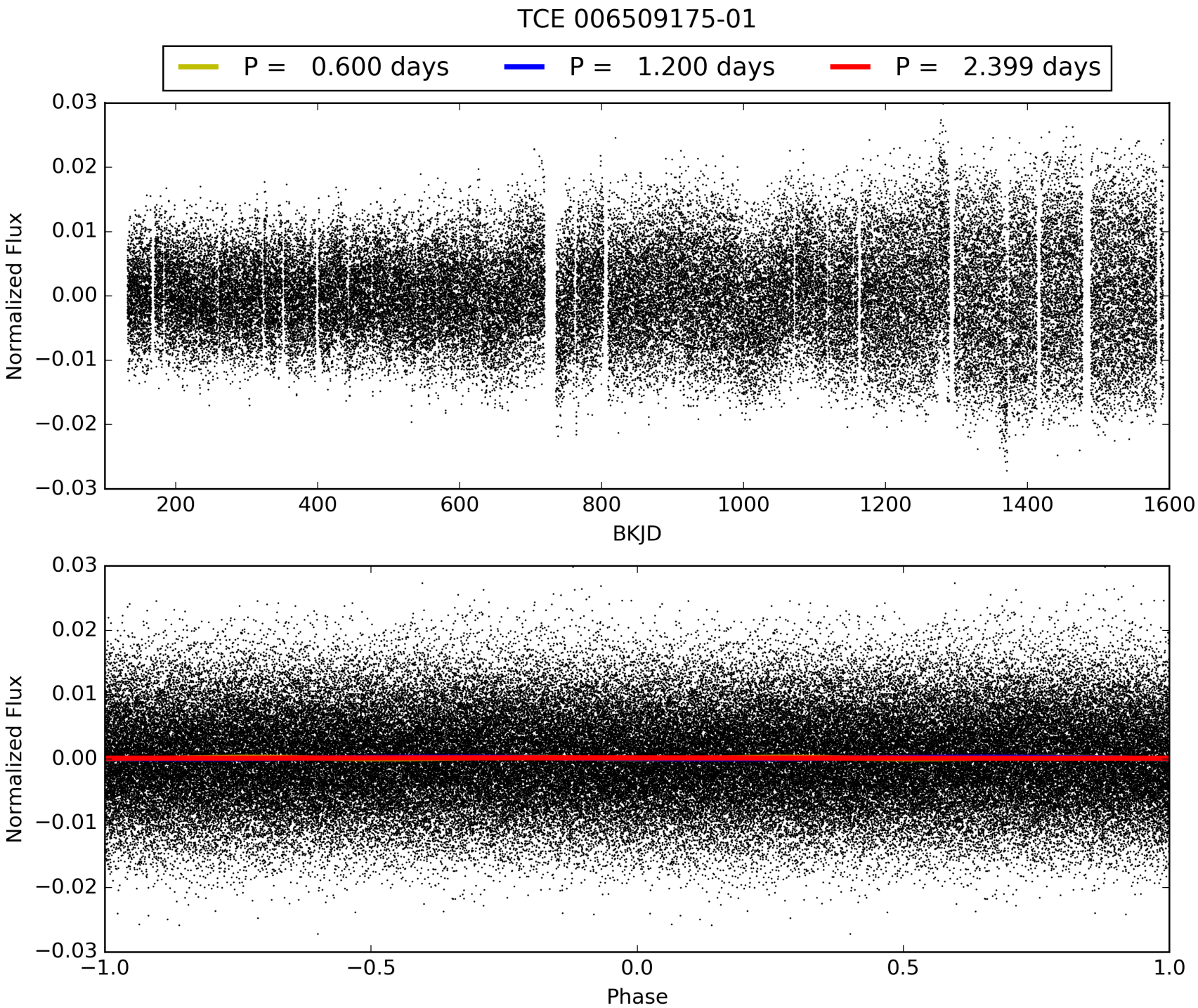
Centroid−sig: 0.0%
Centroid−so: 0.860 arcsec [7.42σ]
OotOffset−rm: 1.986 arcsec [3.73σ]
KicOffset−rm: 2.225 arcsec [3.68σ]
OotOffset−st: 4/4/4/5 [17]
KicOffset−st: 4/4/4/5 [17]
DiffImageQuality−fgm: 0.00 [0/17]
DiffImageOverlap−fno: 1.00 [17/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01−Feb−2016 14:46:51 Z

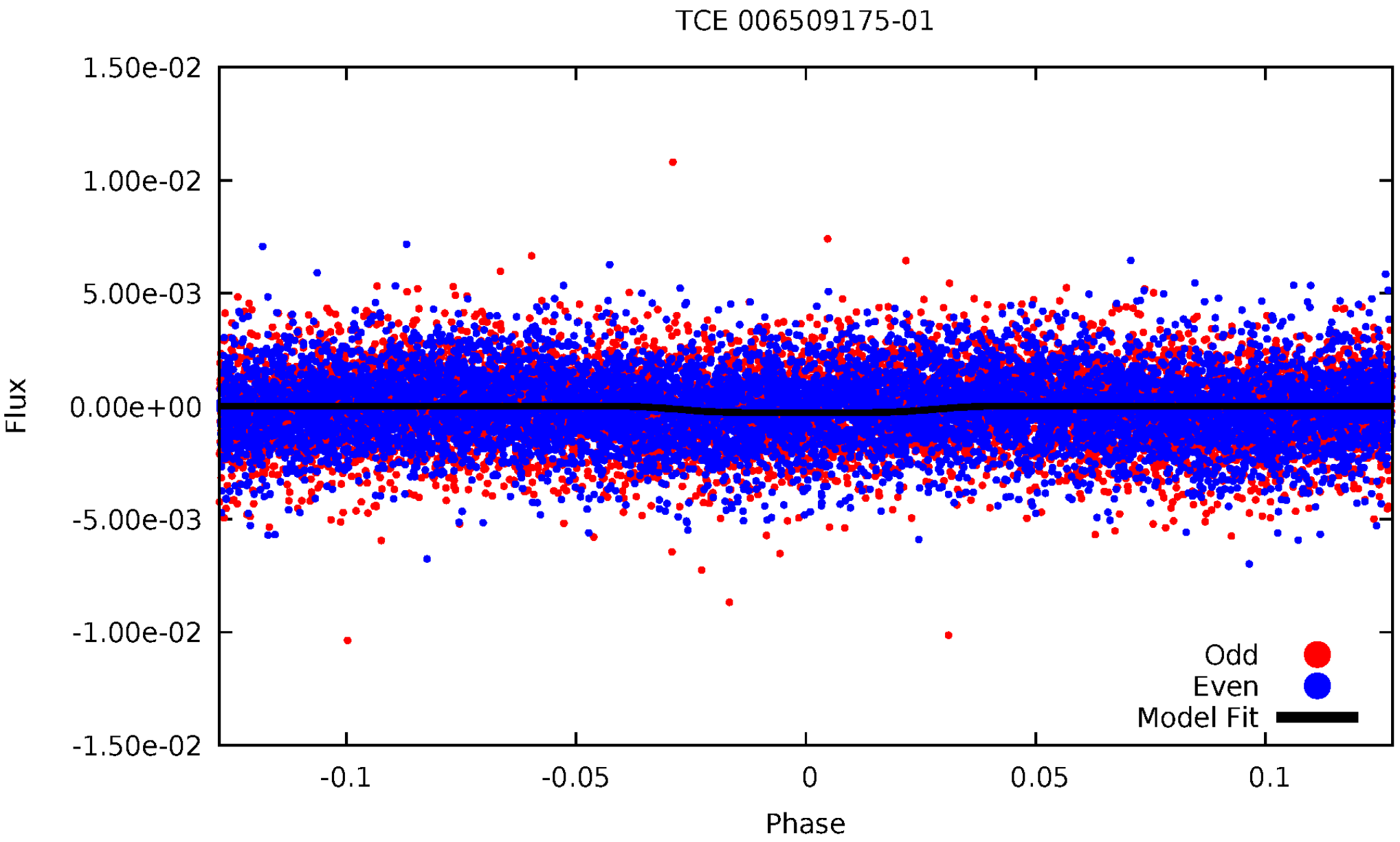
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 006509175-01, PDC Light Curves

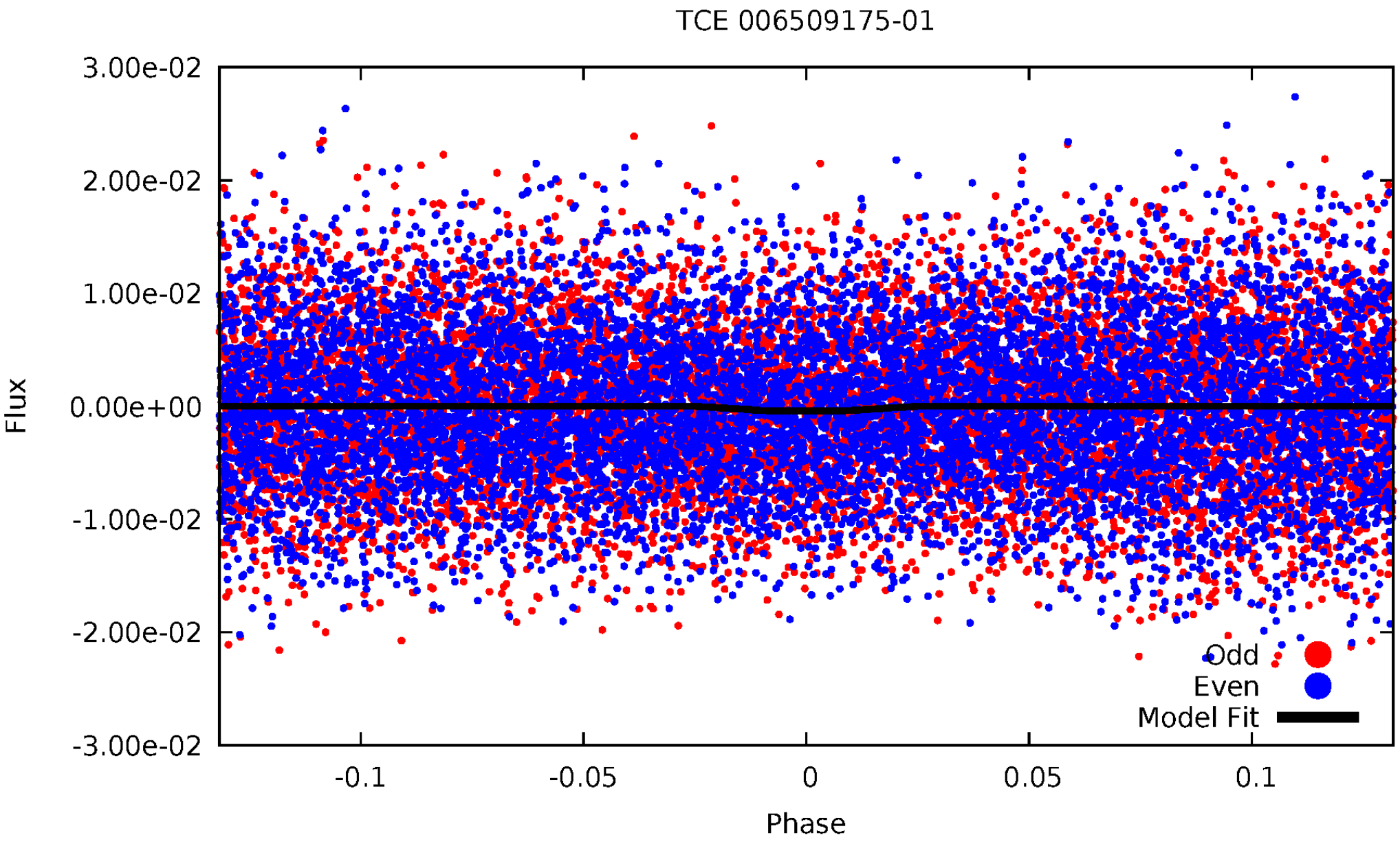



TCE 006509175-01
P = 0.600 days
P = 1.200 days
P = 2.399 days
Normalized Flux
BKJD
Normalized Flux
Phase

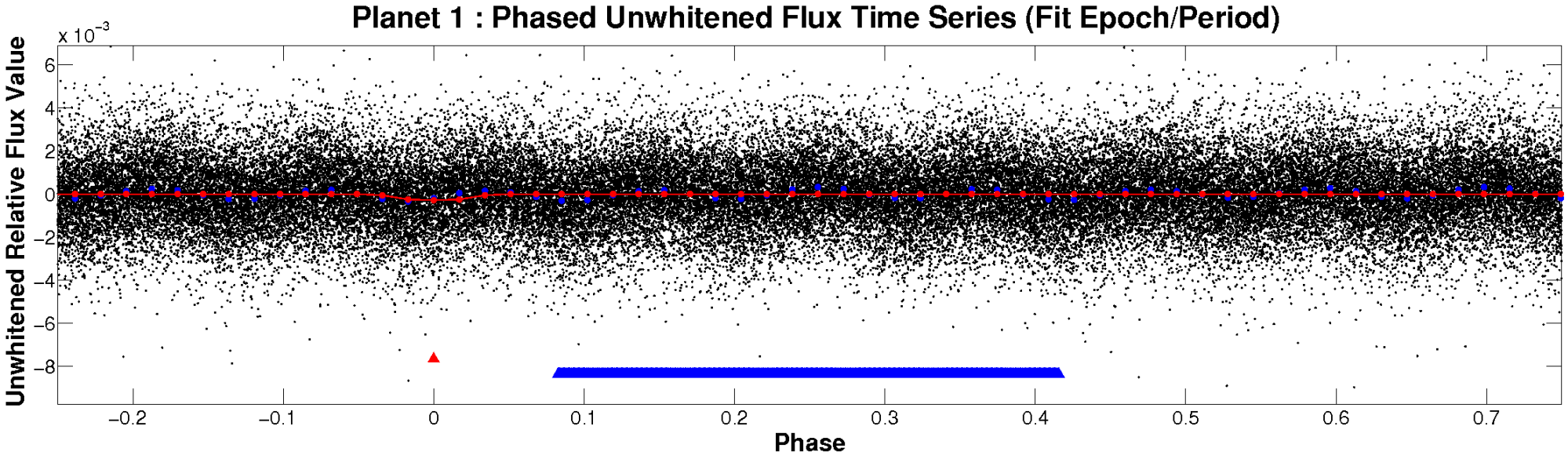
DV Odd/Even

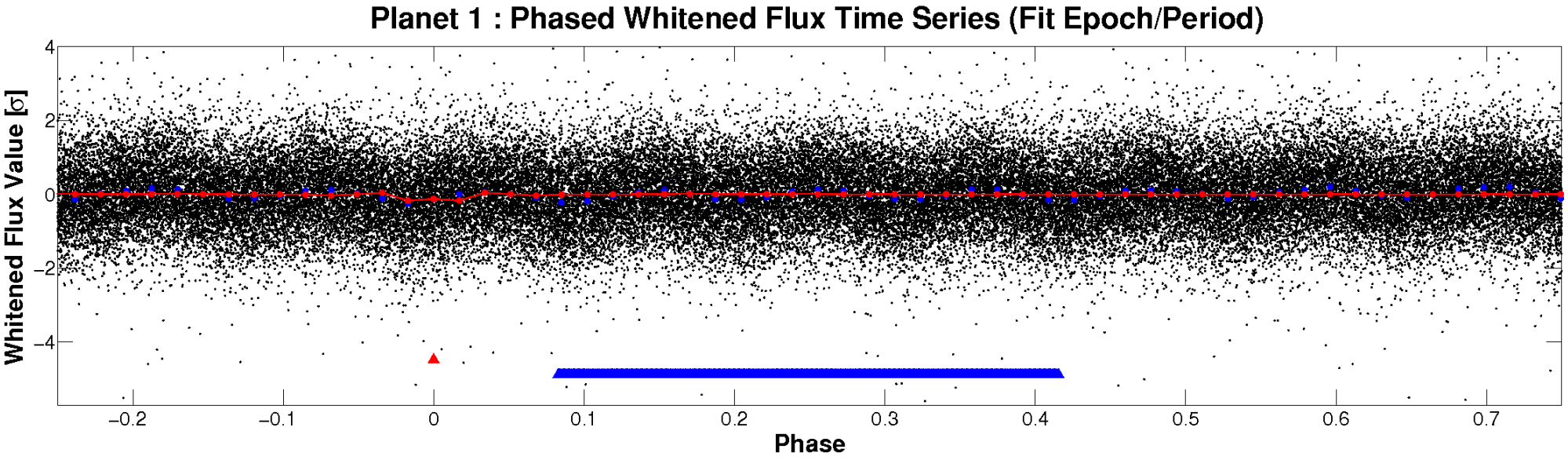

TCE 006509175-01
1.50e-02
1.00e-02
5.00e-03
0.00e+00
-5.00e-03
-1.00e-02
-1.50e-02
Flux
-0.1
-0.05
0
0.05
0.1
Phase
Odd
Even
Model Fit

ALT Odd/Even


TCE 006509175-01
3.00e-02
2.00e-02
1.00e-02
0.00e+00
-1.00e-02
-2.00e-02
-3.00e-02
Flux
-0.1
-0.05
0
0.05
0.1
Phase
Odd
Even
Model Fit

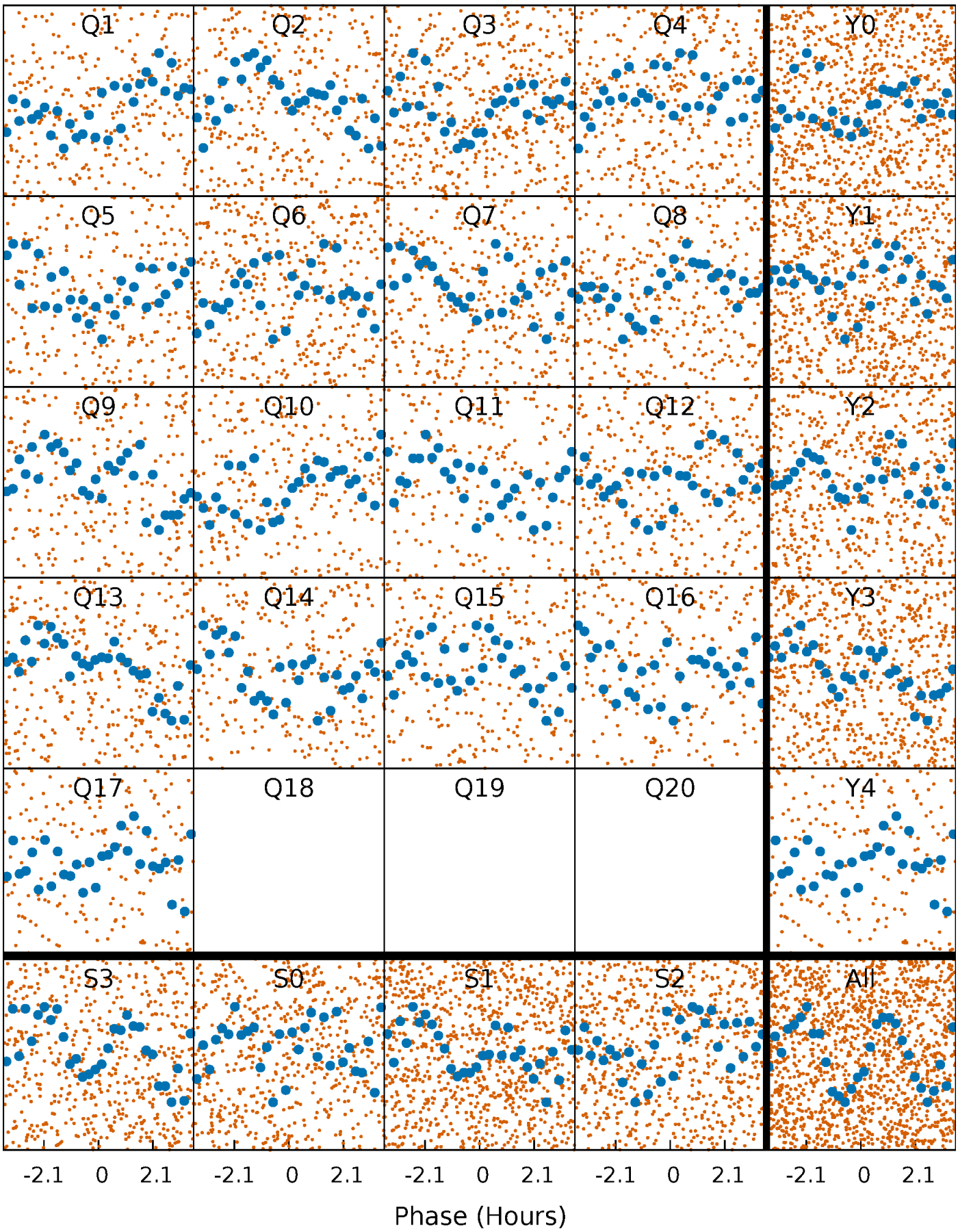
Non-Whitened Vs. Whitened Light Curve





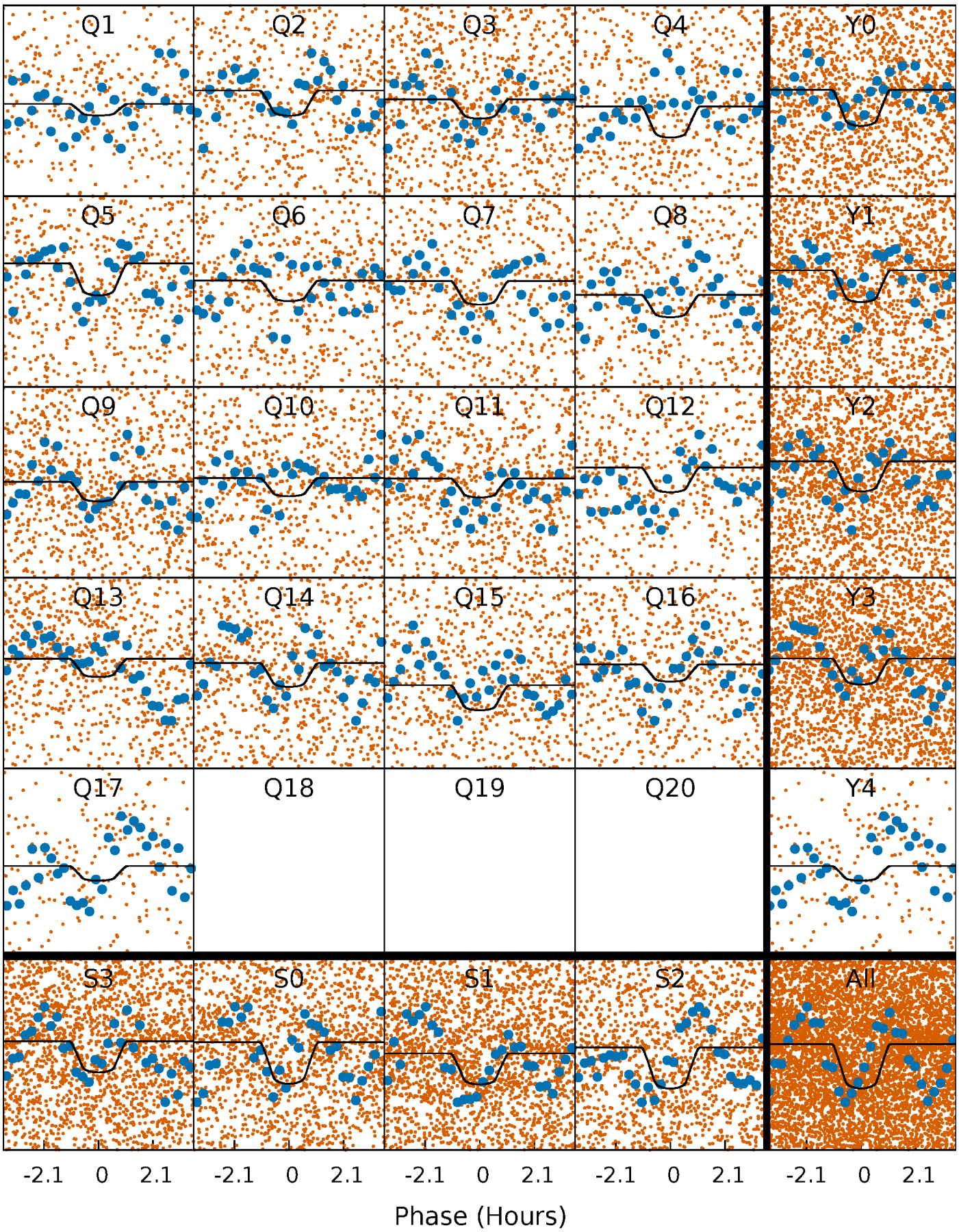
PDC Quarter-Phased Transit Curves

TCE 006509175-01 P= 1.199616 Days T_0=131.694268 (BKJD)



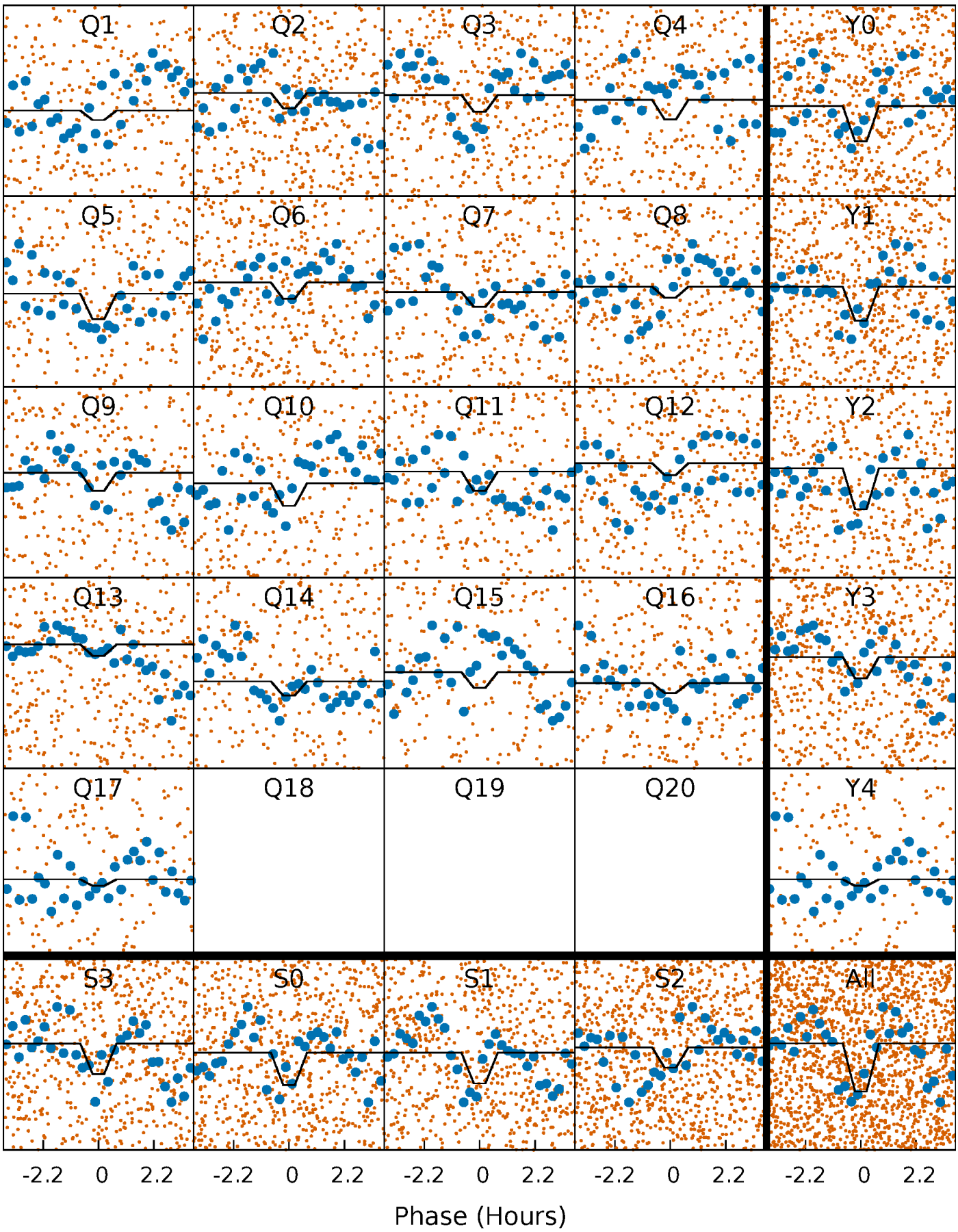
DV Quarter-Phased Transit Curves

TCE 006509175-01 P= 1.199616 Days T_0=131.694268 (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

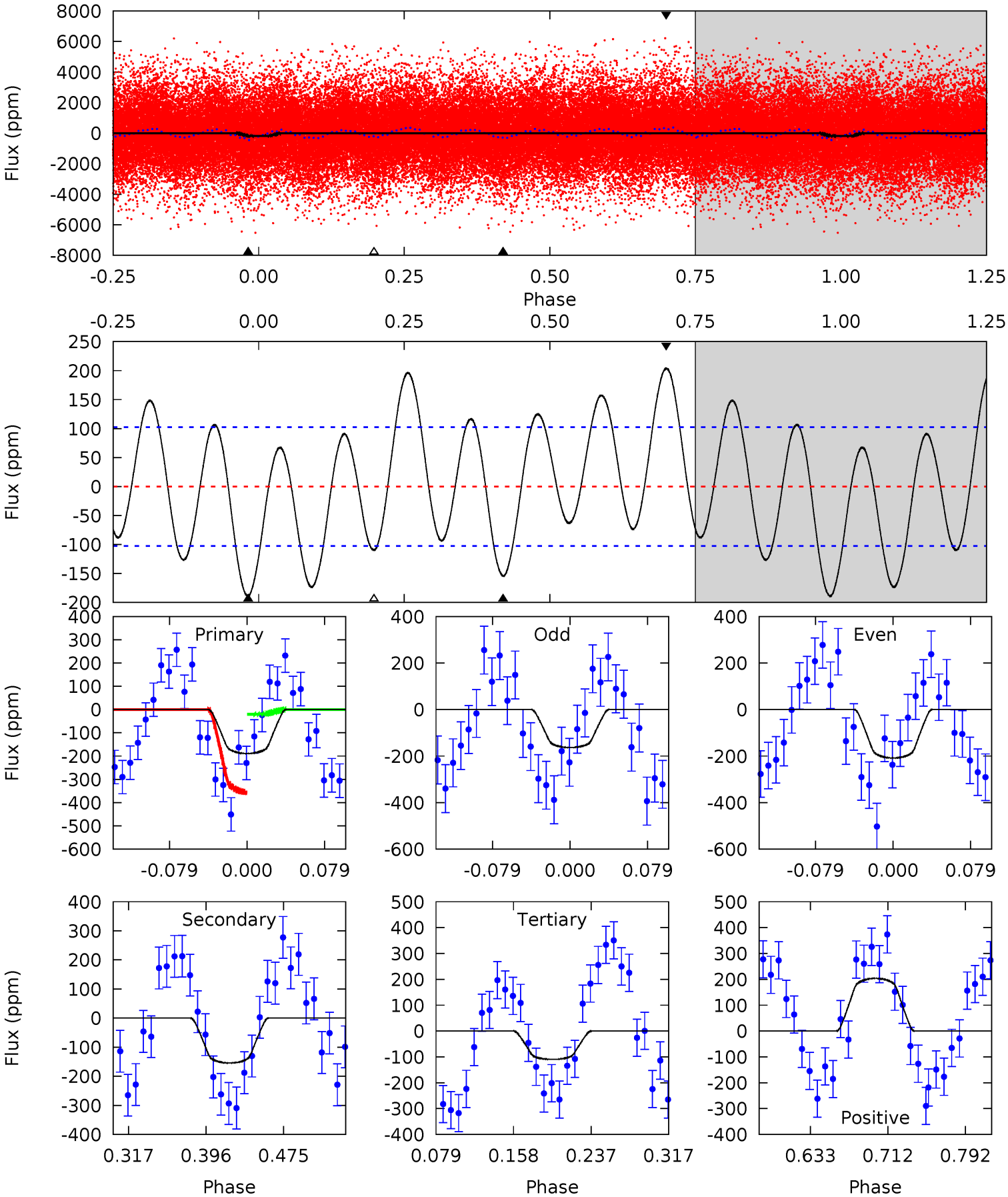
TCE 006509175-01 P= 1.199600 Days T_0=131.694209 (BKJD)



DV Model-Shift Uniqueness Test

006509175-01, P = 1.199616 Days, E = 130.494652 Days

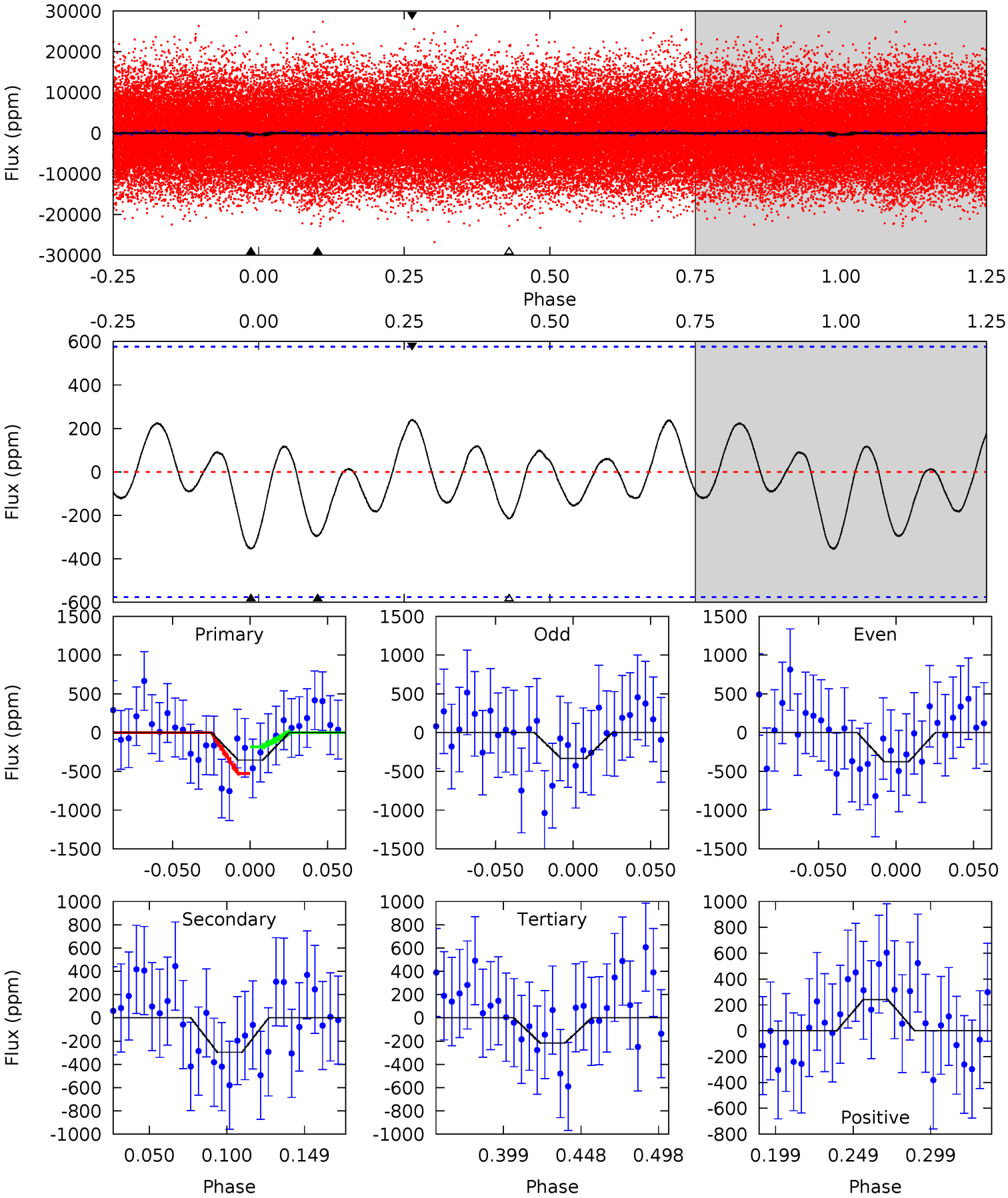
Pri	Sec	Ter	Pos	FA_1	FA_2	F_{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.51	6.95	4.94	9.17	4.61	1.76	4.43	3.57	-0.66	2.01	-2.22	1.02	1.06	0.52	7.57



Alt Model-Shift Uniqueness Test

006509175-01, P = 1.199600 Days, E = 130.494609 Days

Pri	Sec	Ter	Pos	FA_1	FA_2	F_{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2.89	2.42	1.78	1.97	4.71	1.96	0.95	1.11	0.92	0.64	0.45	0.16	0.73	0.41	1.42



Stellar Parameters For KIC 006509175

	$T_{\rm eff}(K)$	$\log(g)$	[Fe/H]	R ($R_\odot$)	$M(M_\odot)$	$p_\star$ (g·cm^{-3})
	7474^{+134}_{-149}	$3.535^{+0.184}_{-0.057}$	$-0.260^{+0.150}_{-0.150}$	$3.986^{+0.256}_{-0.769}$	$1.988^{+0.040}_{-0.179}$	$0.044^{+0.039}_{-0.008}$
	+2%/-2%	+5%/-2%	+58%/-58%	+6%/-19%	+2%/-9%	+87%/-19%
Source	SPE4	SPE4	SPE4	DSEP		

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

Secondary Eclipse Parameters for KIC 006509175-01 / KOI

Detrend	Depth (ppm)	R_p ($R_\oplus$)	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-154±22	$7.76^{+1.67}_{-1.82}$	5474^{+188}_{-293}	5599^{+957}_{-744}	$1.102^{+0.784}_{-0.394}$
Alt.	-296±122	$8.58^{+1.62}_{-1.64}$	5471^{+181}_{-309}	6358^{+1168}_{-1147}	$1.643^{+1.199}_{-0.779}$

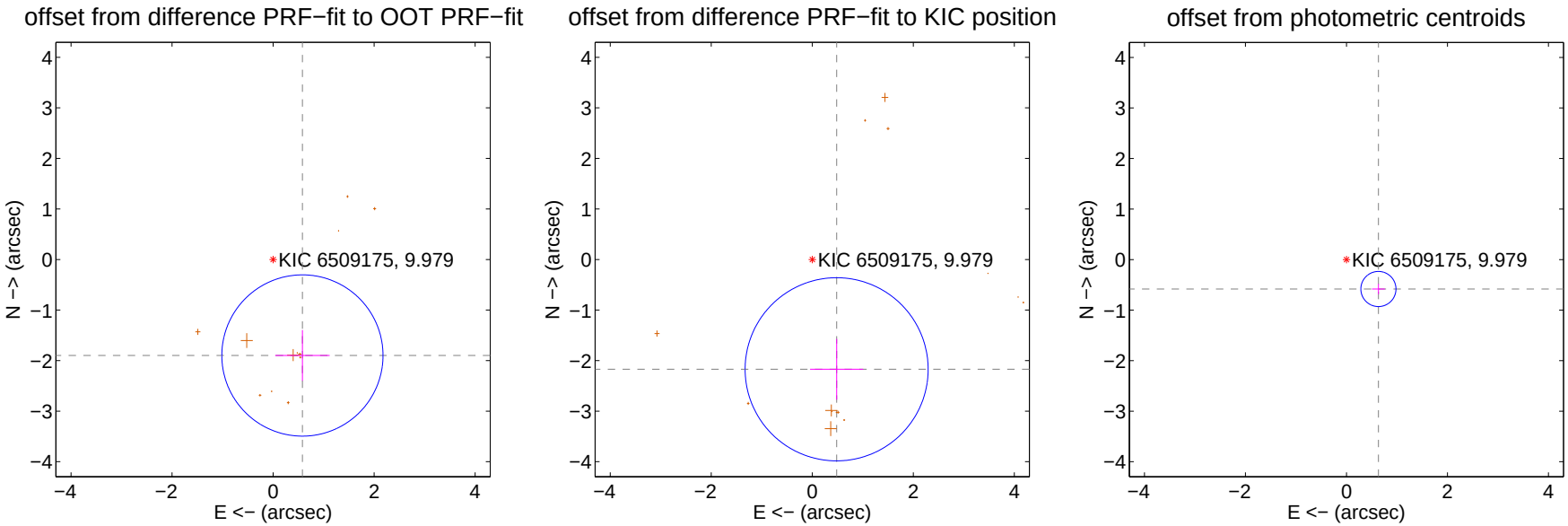
T_{max} = Theoretical Maximum Planetary Temperature
T_{obs} = Observed Planetary Temperature (Assuming A=0.3)
A_{obs} = Observed Albedo (Assuming T=0)

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

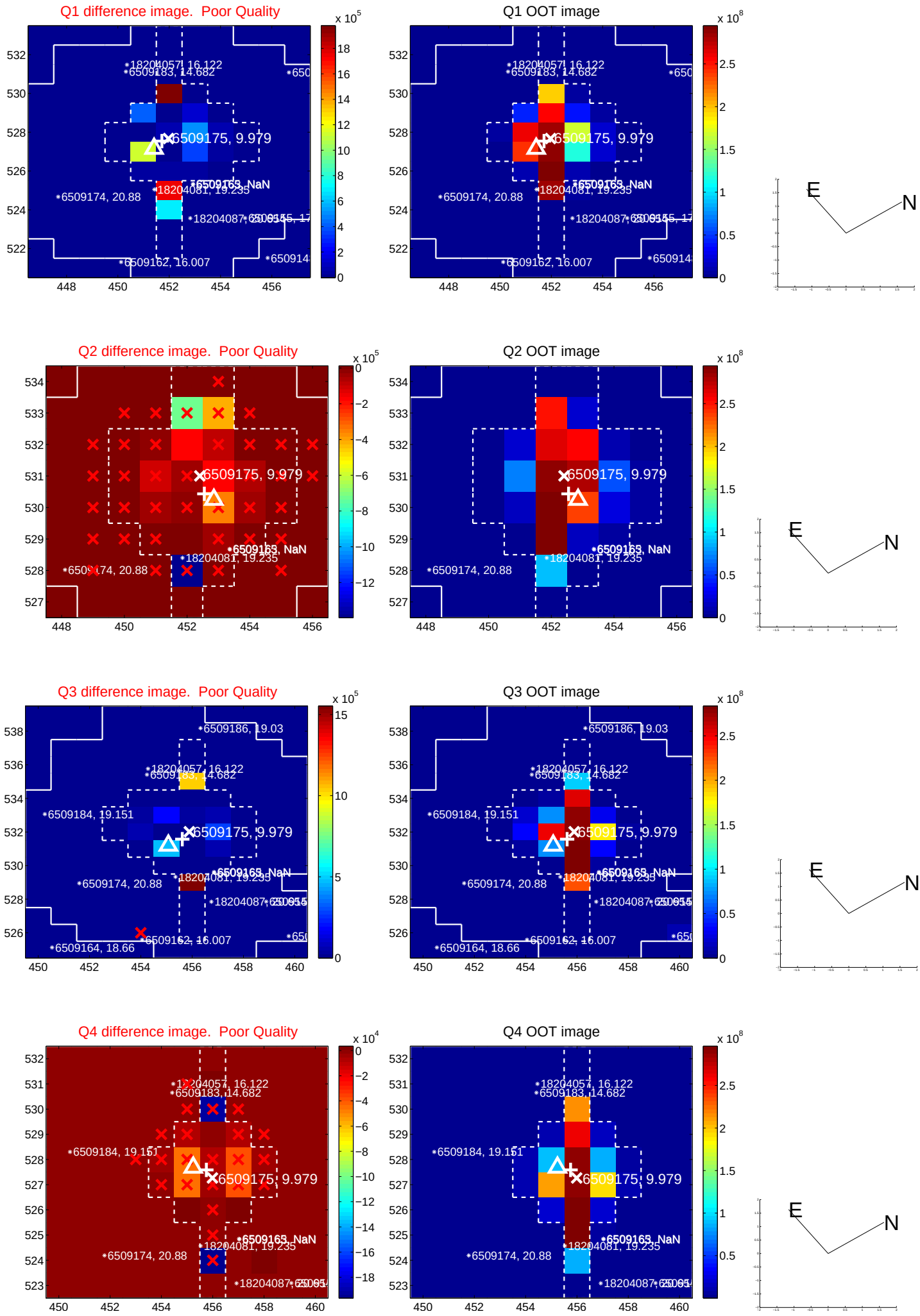
Supplemental centroid analysis for 006509175-01. Kepler magnitude: 9.98. Transit SNR 10.14
There are 0 quarters with good PRF difference image offsets
The direct PRF centroid is offset from the target star catalog position by about 1.10 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.986 ± 0.532	3.73	-0.580 ± 0.539	-1.899 ± 0.502
PRF-fit source offset from KIC position	2.225 ± 0.604	3.68	-0.482 ± 0.526	-2.172 ± 0.601
photometric centroid source offset	0.86 ± 0.12	7.42	-0.63 ± 0.13	-0.58 ± 0.10

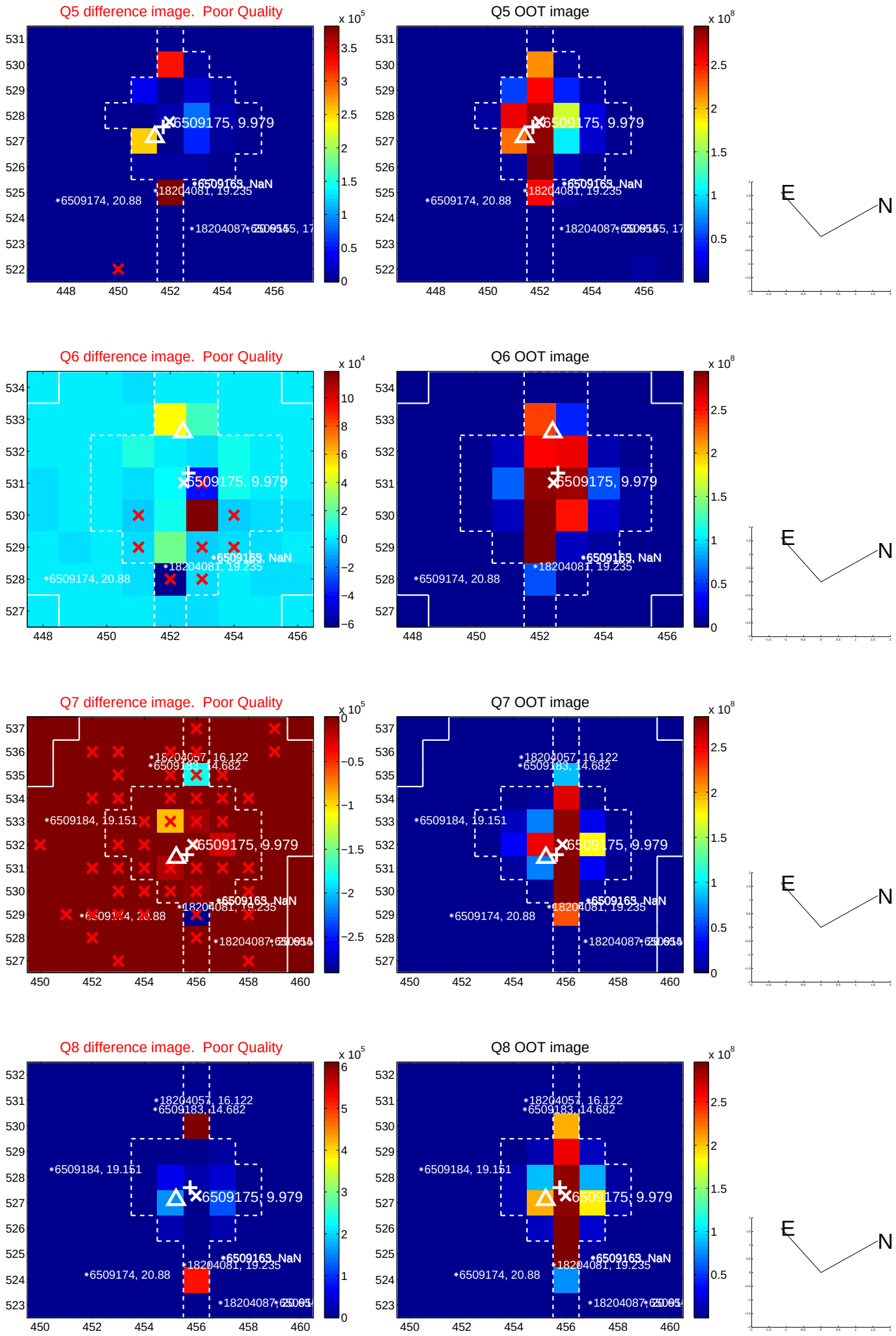


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one-σ uncertainty. Blue circle: three-σ. Red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

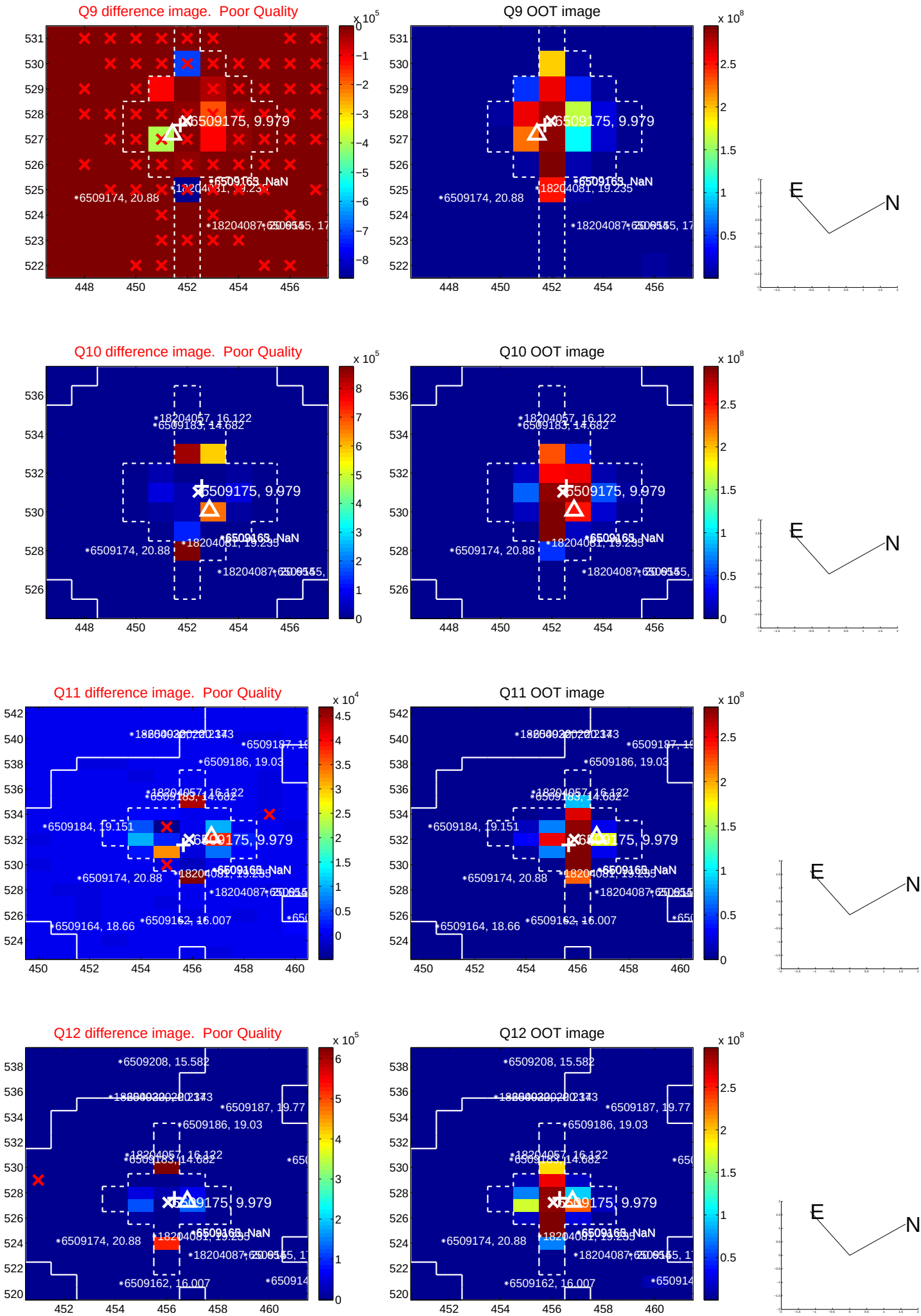
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.



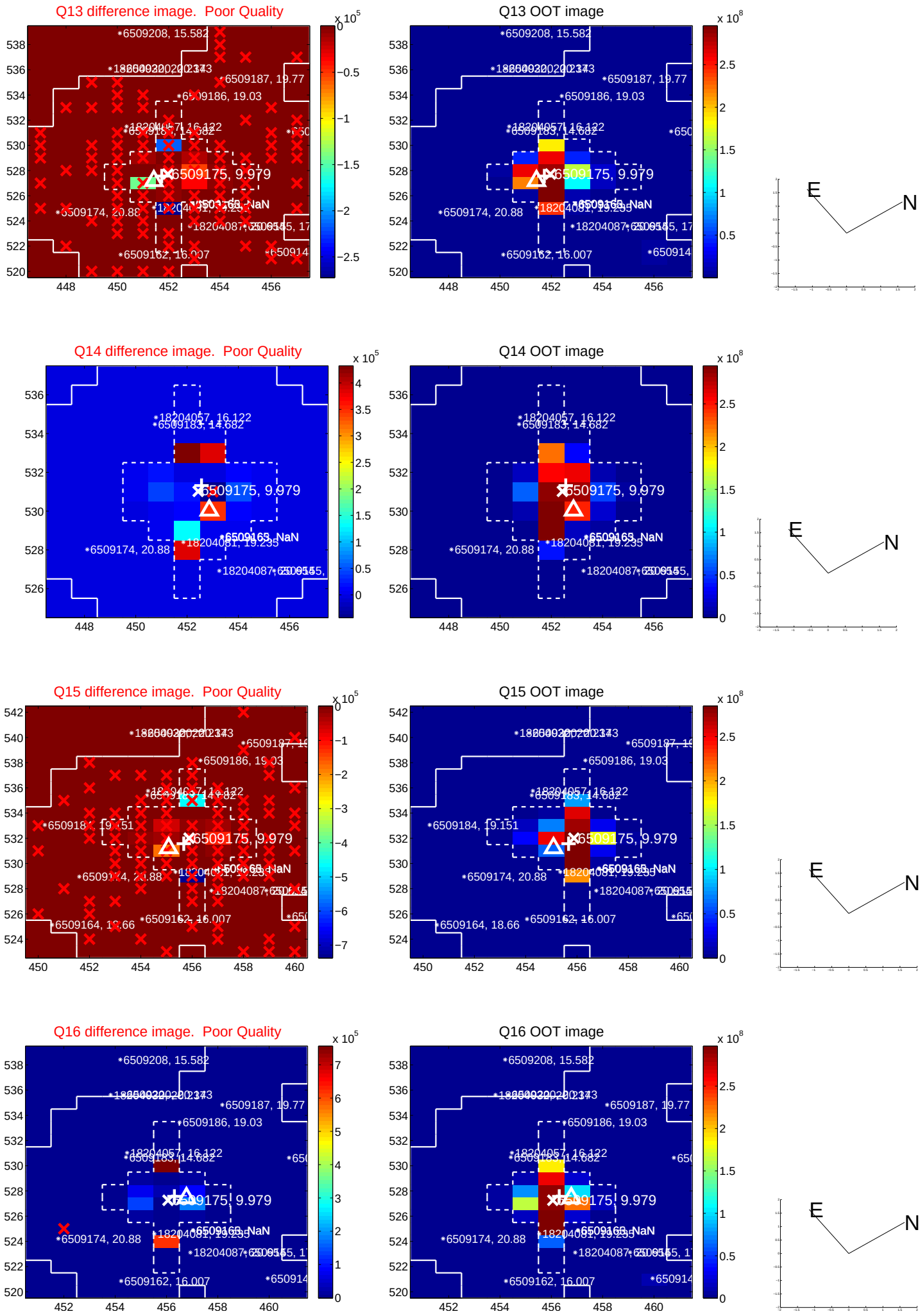
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.



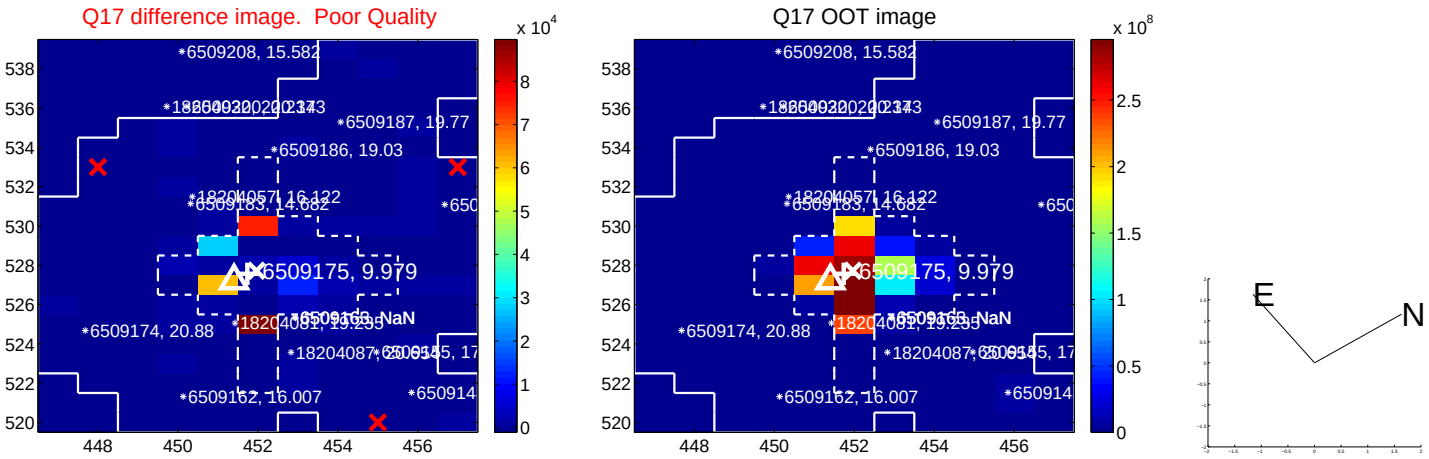
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.

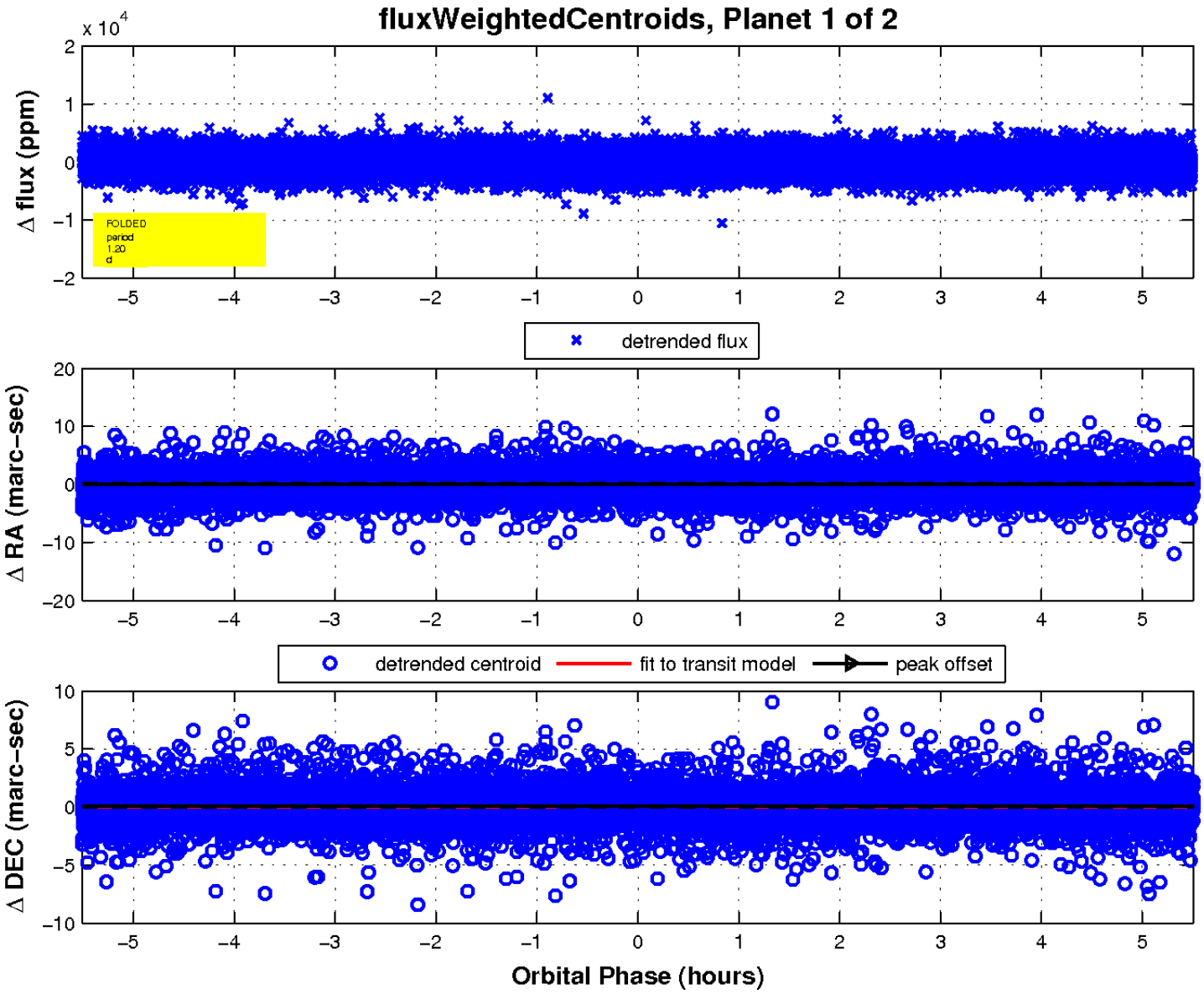


white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.

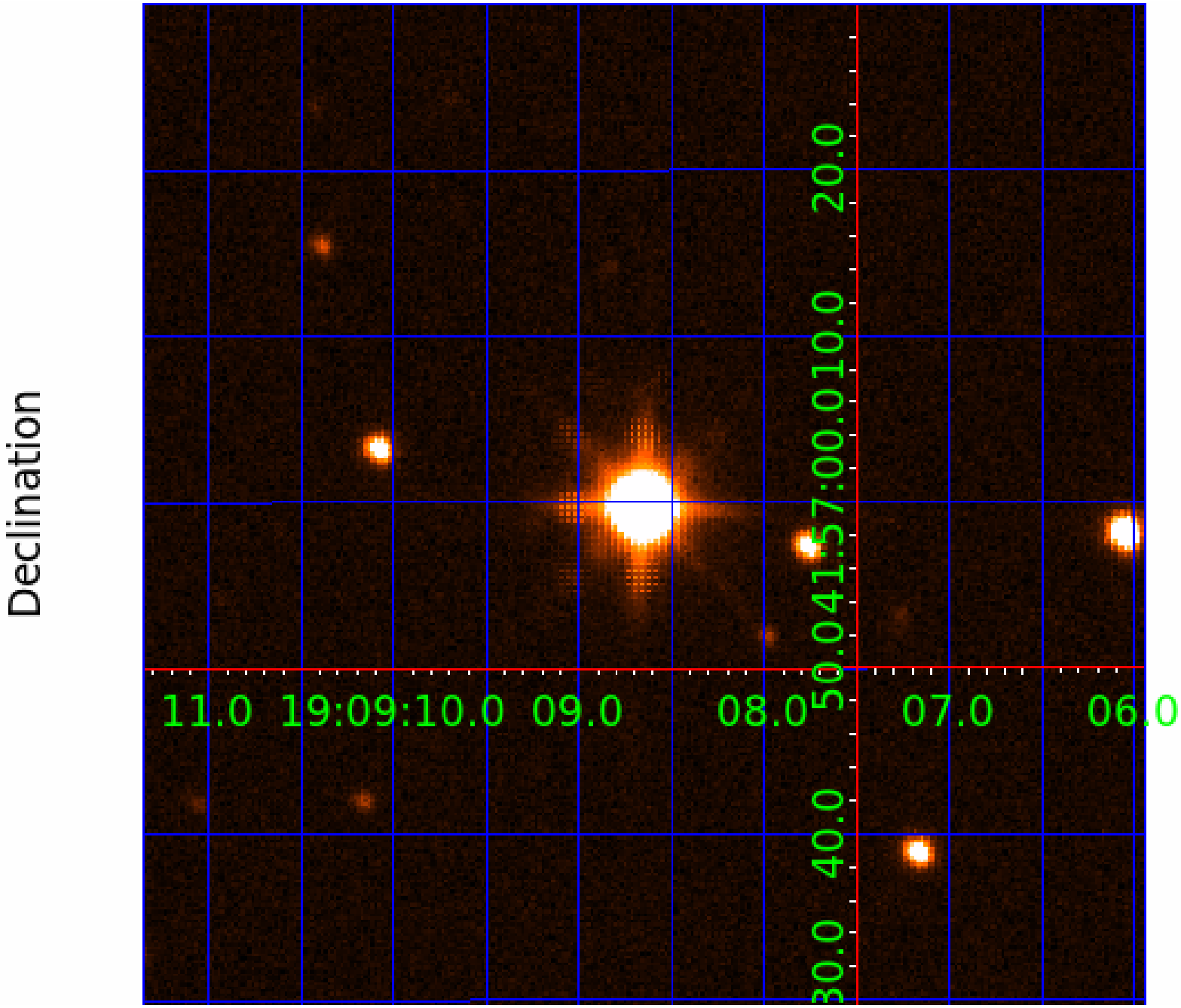


white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.





UKIRT Image


Declination
11.0
19:09:10.0
09.0
08.0
07.0
06.0
20.0
10.0
57:00.0
50.0
41:
40.0
30.0

KIC 006509175

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 ($S_\oplus$)
006509175-01	OBS	No	1.199616	131.694268	288.7	1.836	9.4	10.1	3.99	7474	7.97	57553.95
006509175-02	OBS	No	4.799782	135.392503	198.4	4.168	8.9	4.5	3.99	7474	6.60	9060.86

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006509175-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_SATURATED
006509175-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_SKYE_ZUMA_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED

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.

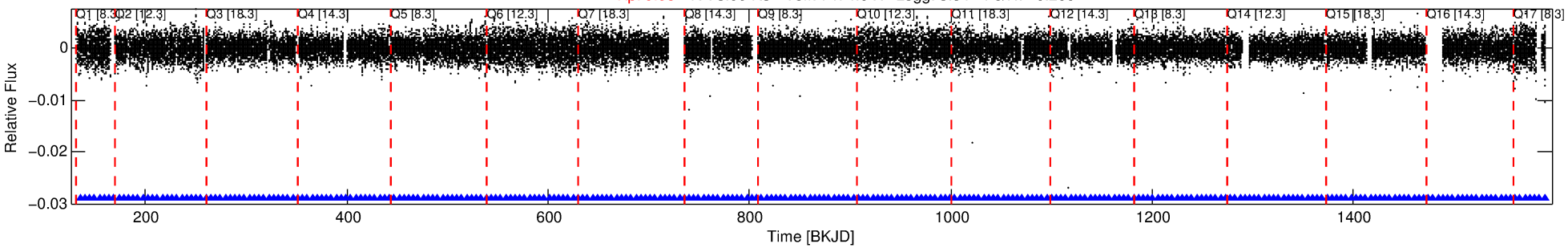
Ephemeris Match Information For 006509175-02

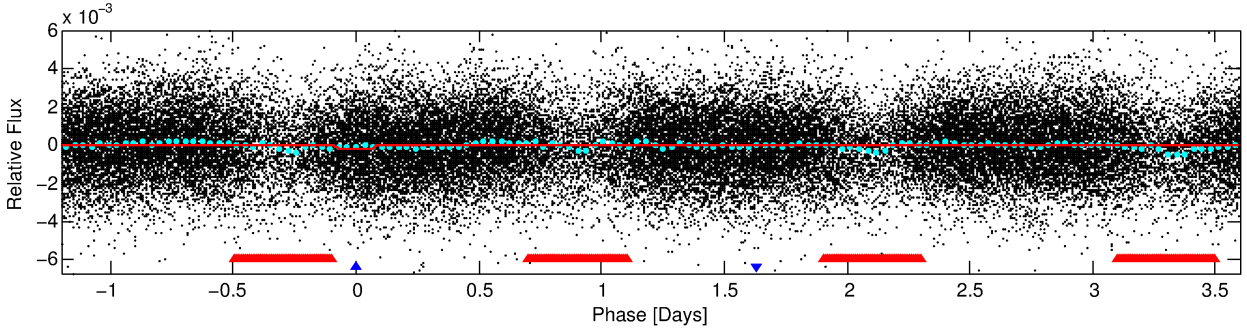
No Significant Match Found

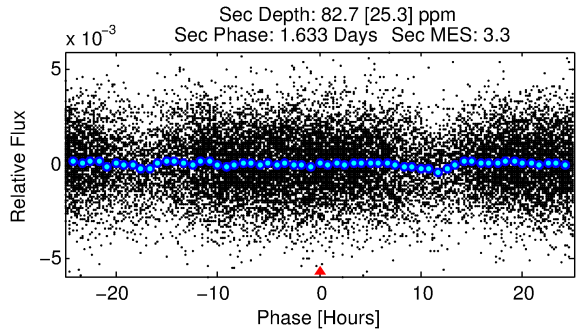
DV One-Page Summary

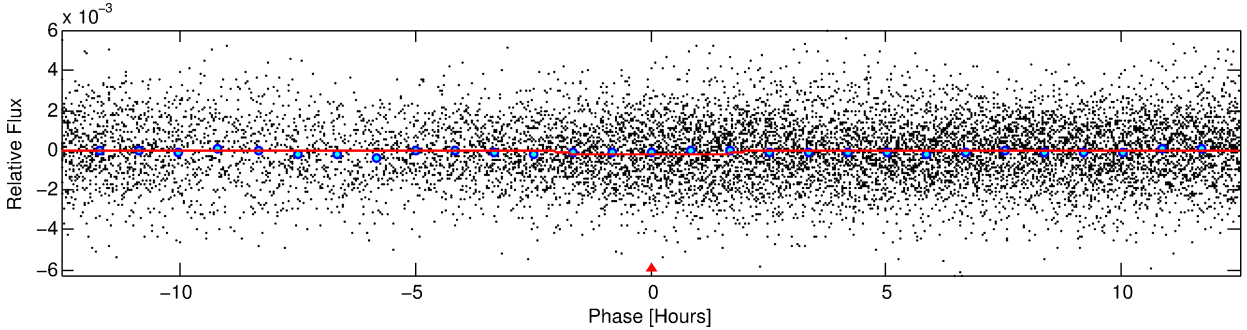
KIC: 6509175 Candidate: 2 of 2 Period: 4.800 d

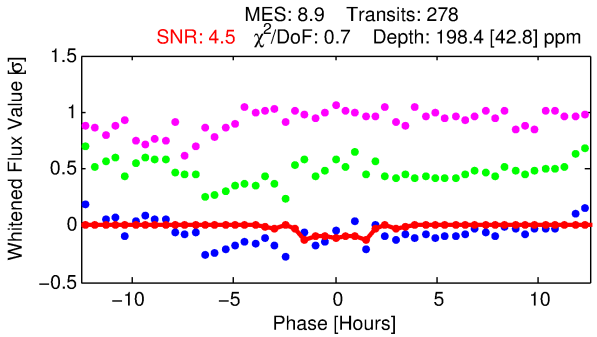
Kp: 9.98 R*: 3.99 Rs Teff: 7474.0 K Logg: 3.54 Fe/H: −0.260

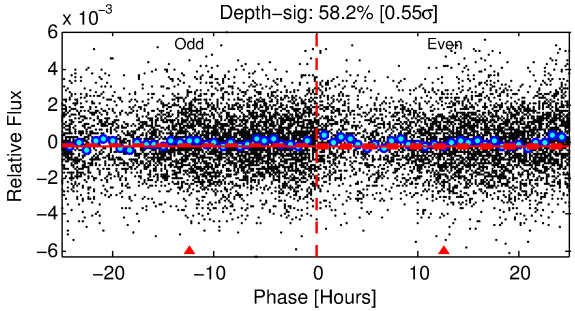


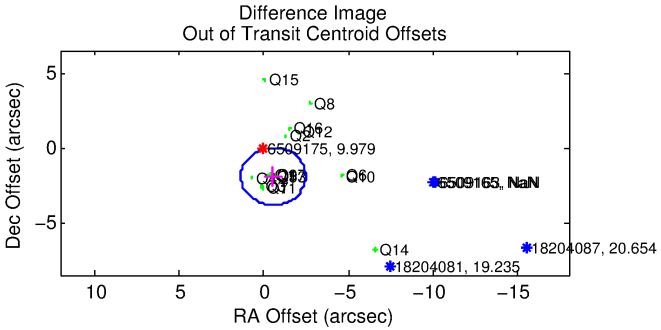












DV Fit Results:

Period = 4.79978 [0.00005] d
Epoch = 135.3925 [0.0061] BKJD
Rp/R* = 0.0152 [0.0046]
a/R* = 4.22 [6.28]
b = 0.90 [0.33]

Seff = 9060.86 [2903.43]
Teq = 2488 [199] K
Rp = 6.60 [2.38] Re
a = 0.0700 [0.0134] AU

Ag = 5.12 [3.83] [1.07σ]
Teffp = 5785 [993] K [3.25σ]

DV Diagnostic Results:

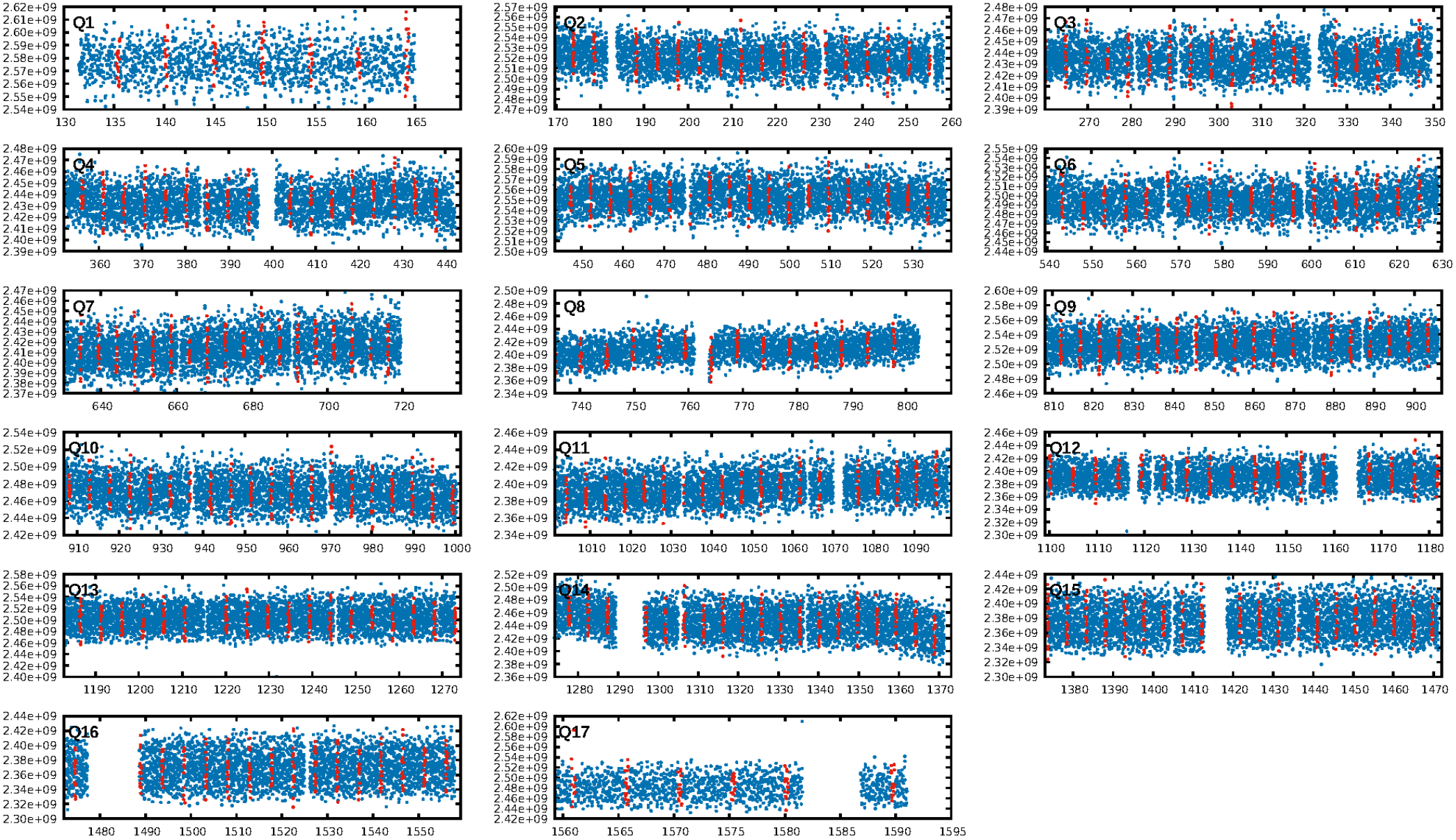
ShortPeriod−sig: 100.0% [18.97σ]
LongPeriod−sig: N/A
ModelChiSquare2−sig: N/A
ModelChiSquareGof−sig: N/A
Bootstrap−pfa: 2.83e−18
RollingBand−fgt: 1.00 [265/265]
GhostDiagnostic−chr: N/A

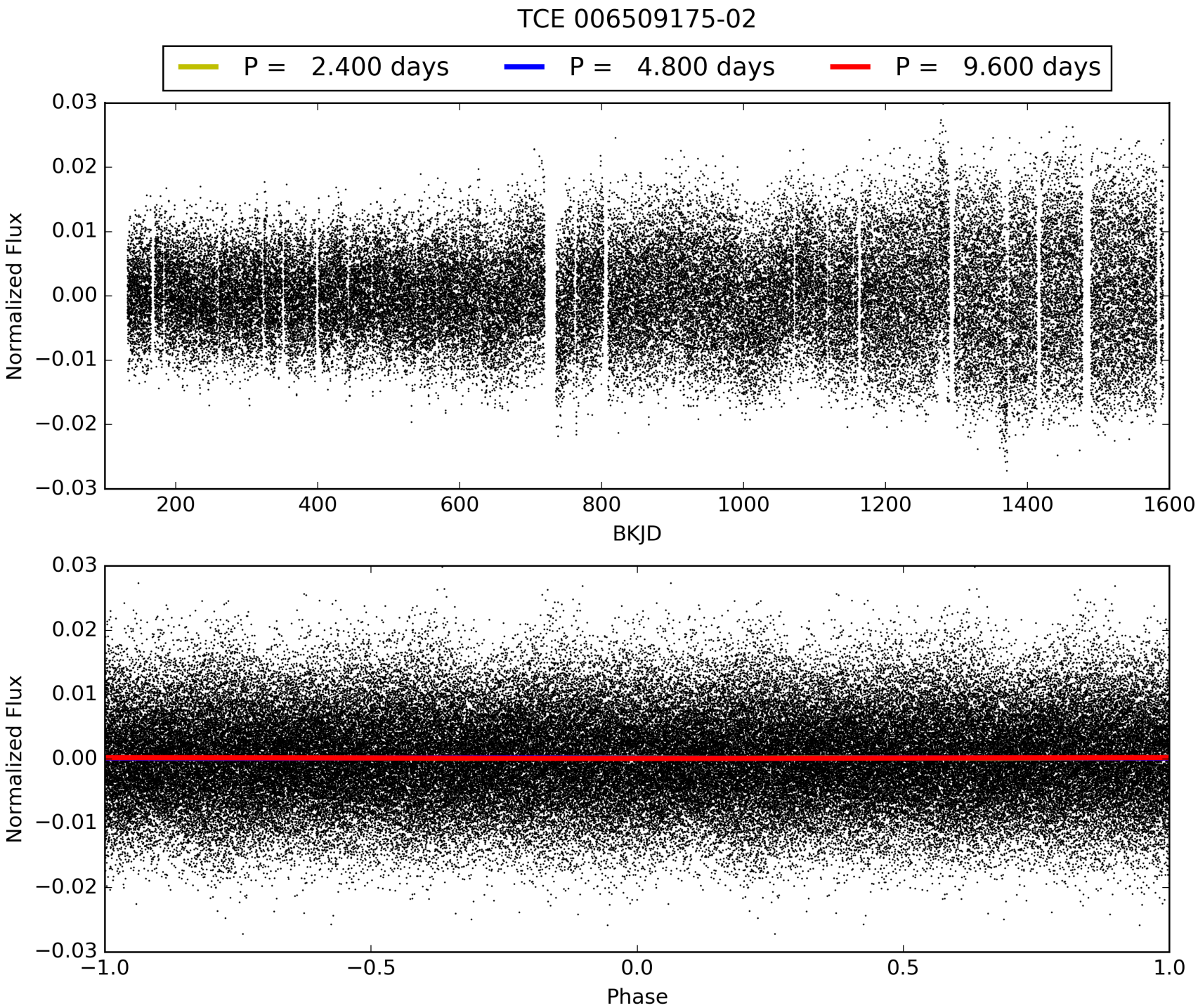
Centroid−sig: 0.2%
Centroid−so: 1.131 arcsec [4.72σ]
OotOffset−rm: 2.001 arcsec [3.14σ]
KicOffset−rm: 2.513 arcsec [3.46σ]
OotOffset−st: 4/4/4/5 [17]
KicOffset−st: 4/4/4/5 [17]
DiffImageQuality−fgm: 0.00 [0/17]
DiffImageOverlap−fno: 0.24 [4/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01−Feb−2016 14:47:00 Z

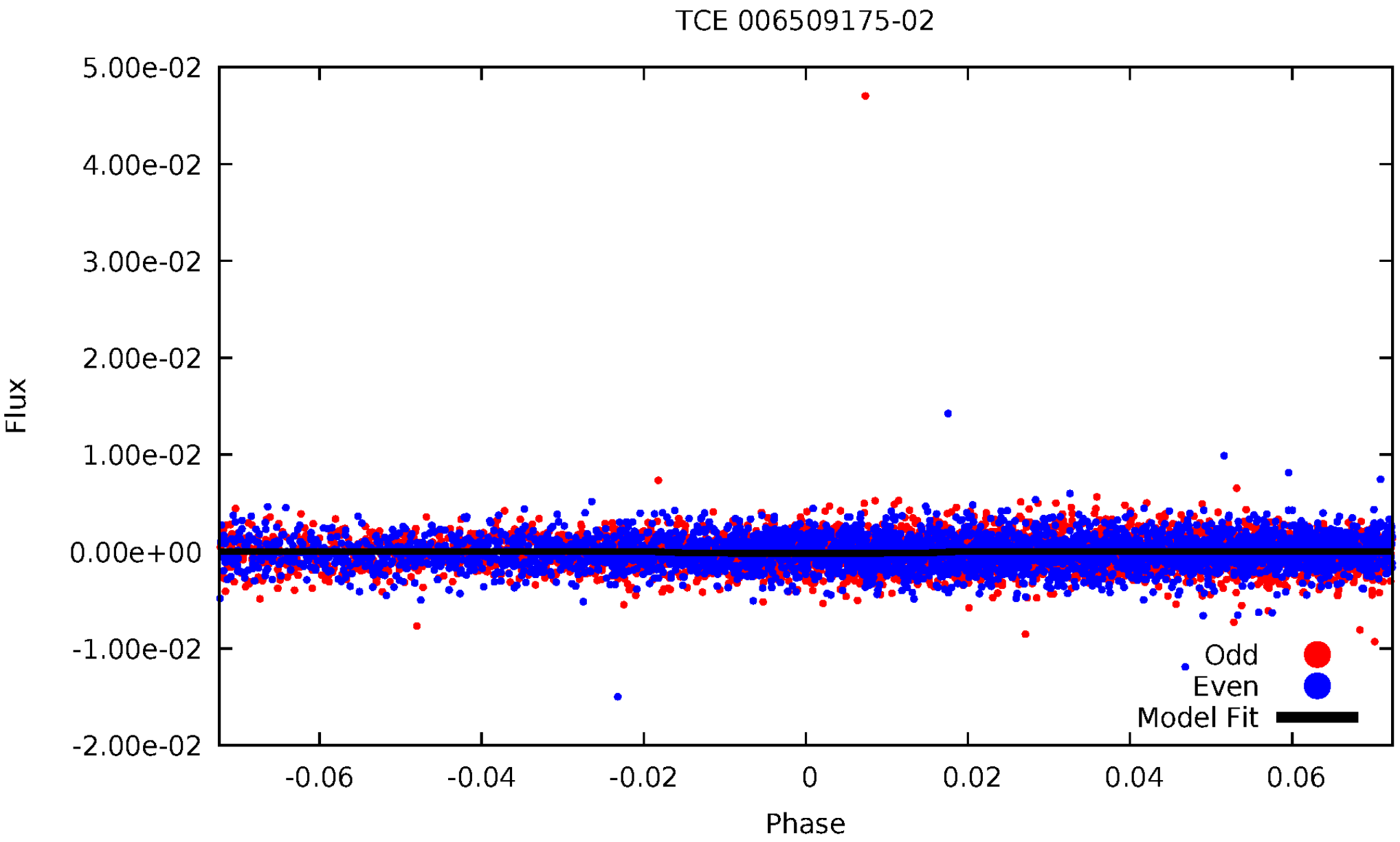
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 006509175-02, PDC Light Curves

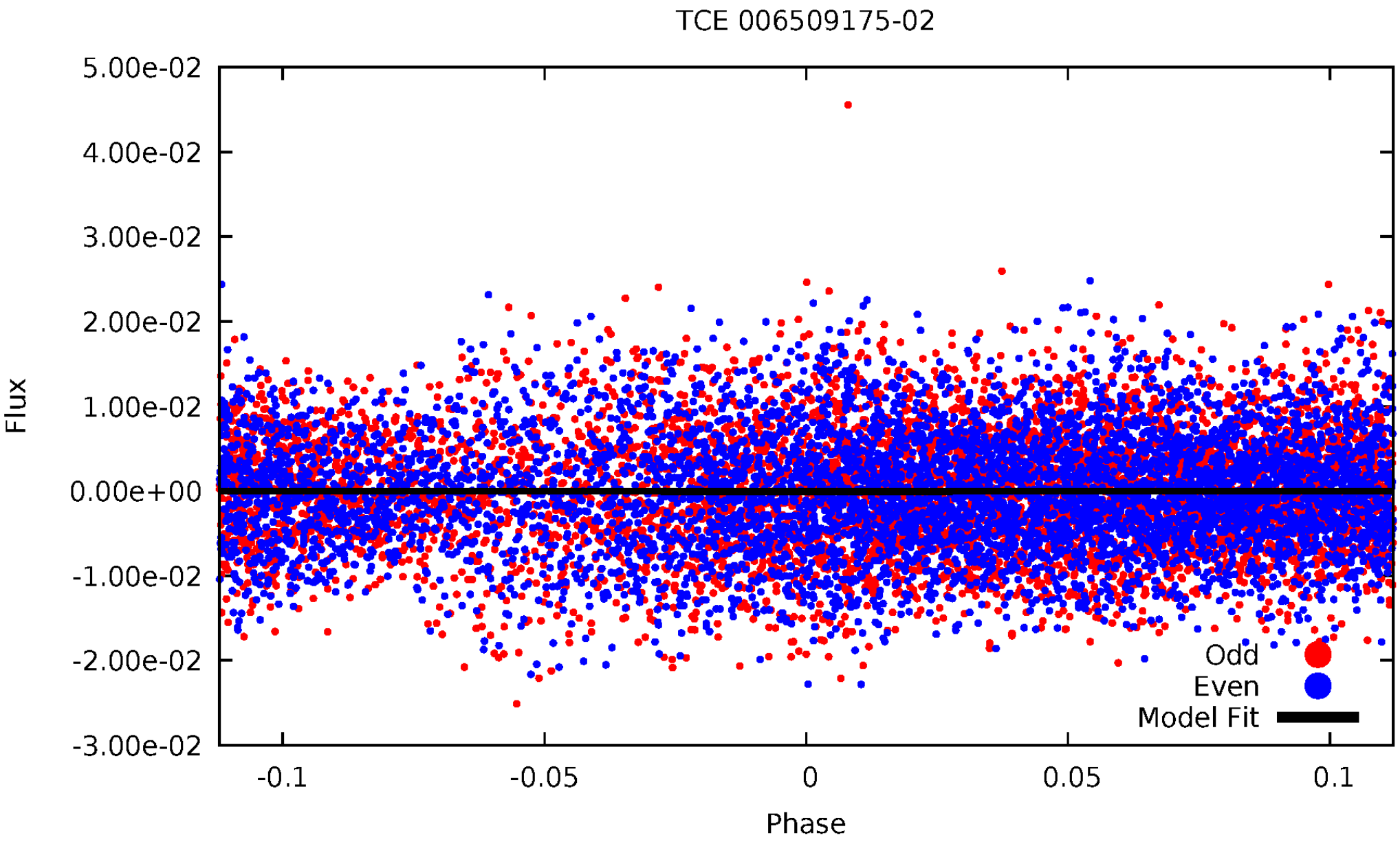



TCE 006509175-02
P = 2.400 days
P = 4.800 days
P = 9.600 days
Normalized Flux
BKJD
Normalized Flux
Phase

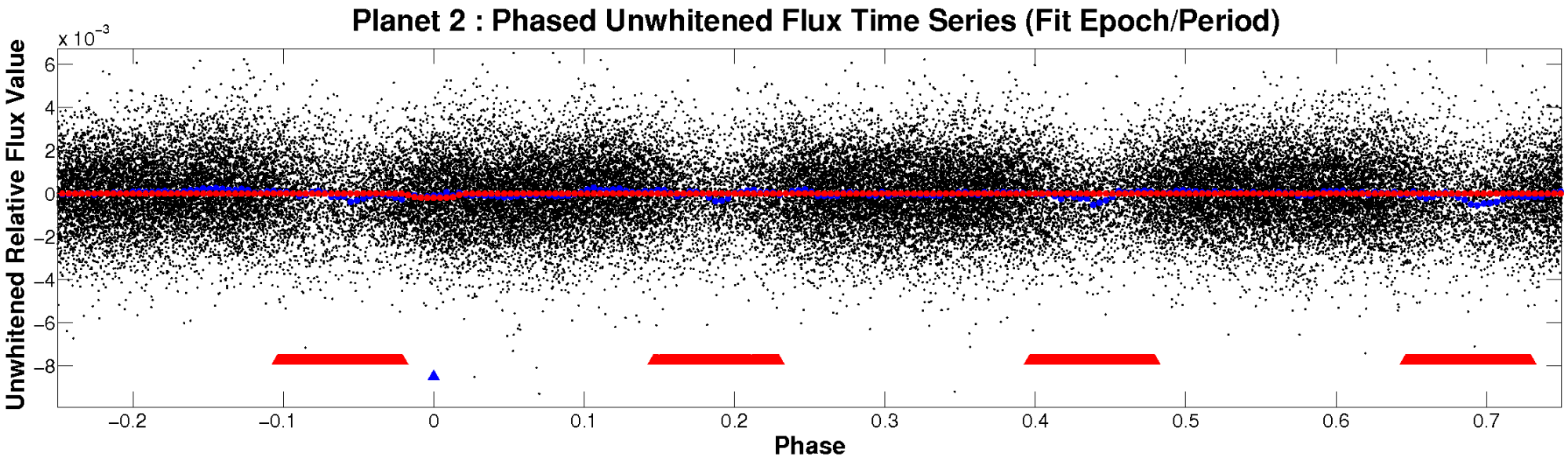
DV Odd/Even

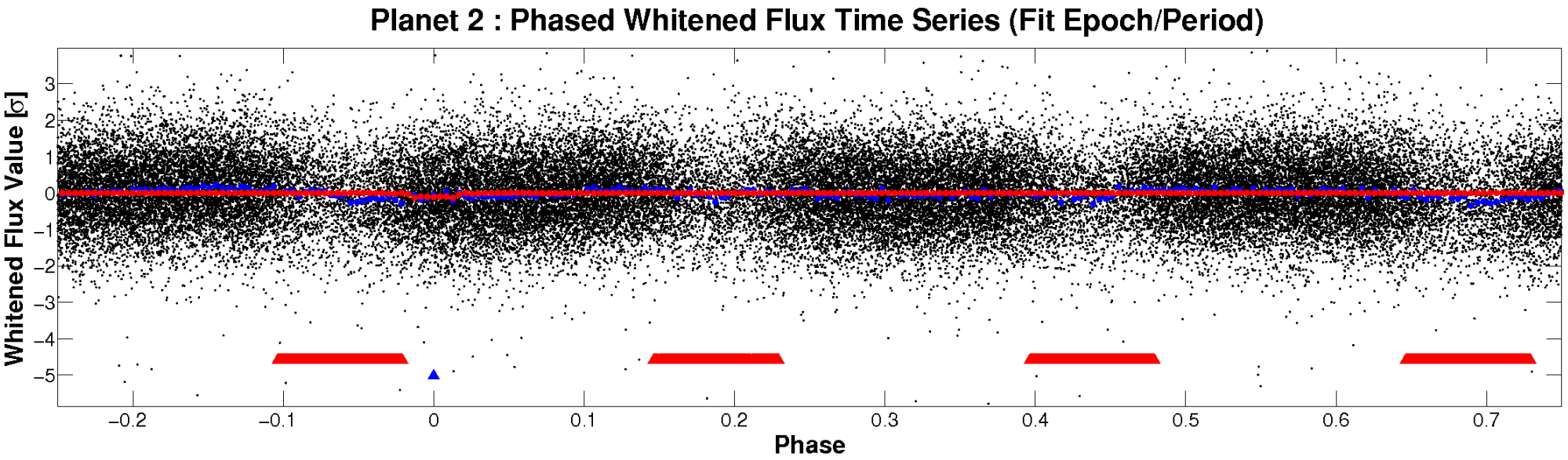

TCE 006509175-02
5.00e-02
4.00e-02
3.00e-02
2.00e-02
1.00e-02
0.00e+00
-1.00e-02
-2.00e-02
Flux
-0.06
-0.04
-0.02
0
0.02
0.04
0.06
Phase
Odd
Even
Model Fit

ALT Odd/Even


TCE 006509175-02
5.00e-02
4.00e-02
3.00e-02
2.00e-02
1.00e-02
0.00e+00
-1.00e-02
-2.00e-02
-3.00e-02
Flux
-0.1
-0.05
0
0.05
0.1
Phase
Odd
Even
Model Fit

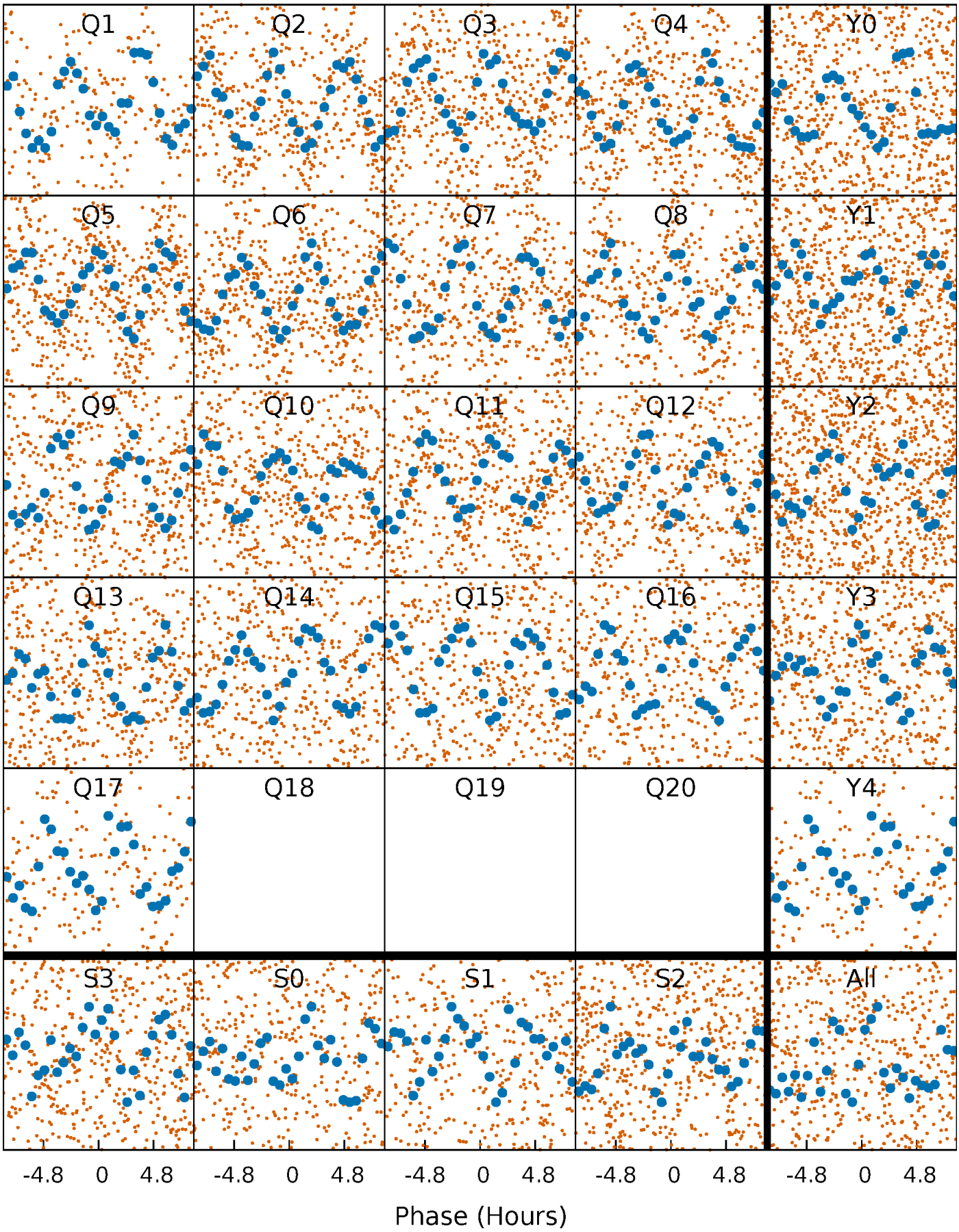
Non-Whitened Vs. Whitened Light Curve





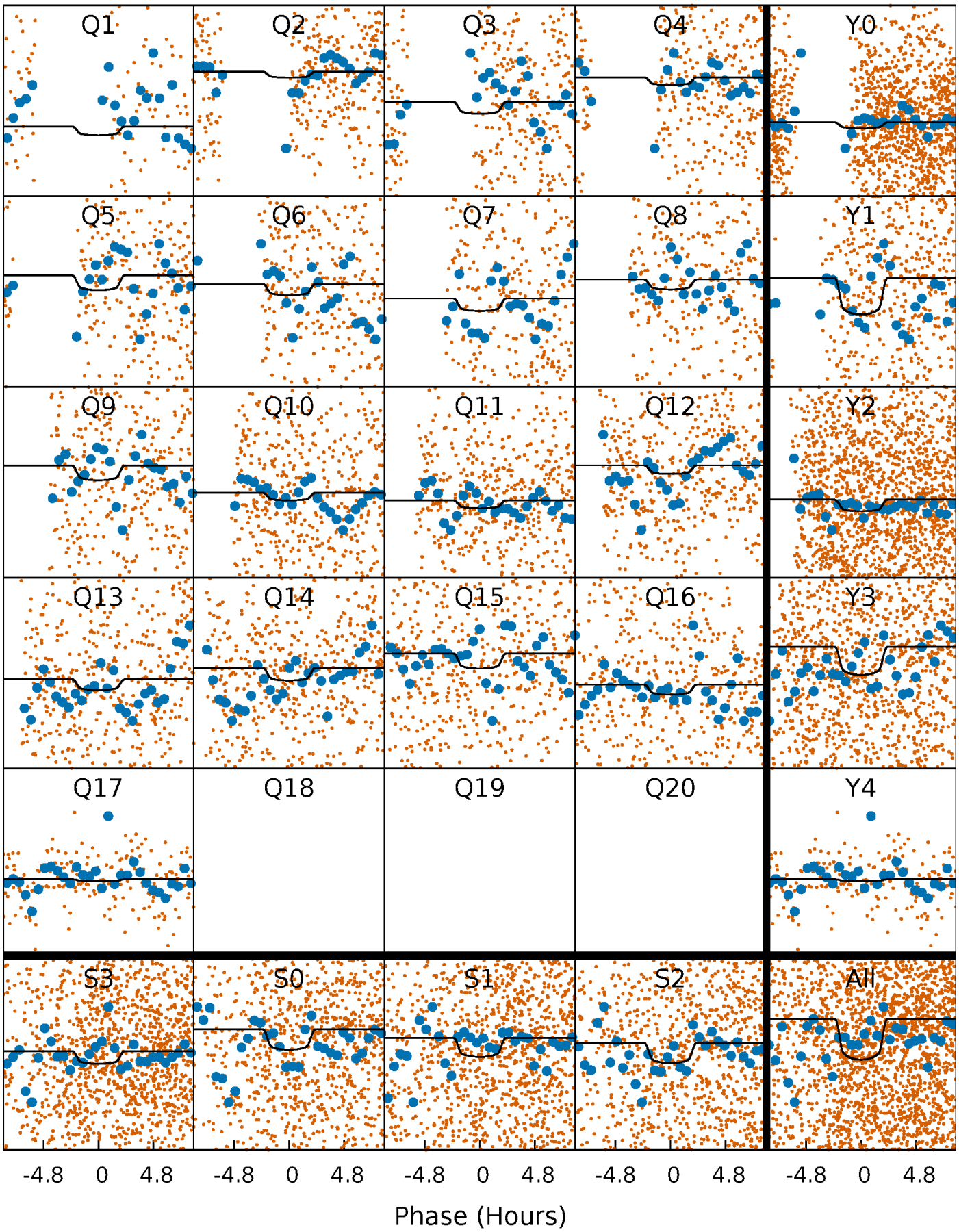
PDC Quarter-Phased Transit Curves

TCE 006509175-02 P= 4.799782 Days T_0=135.392504 (BKJD)



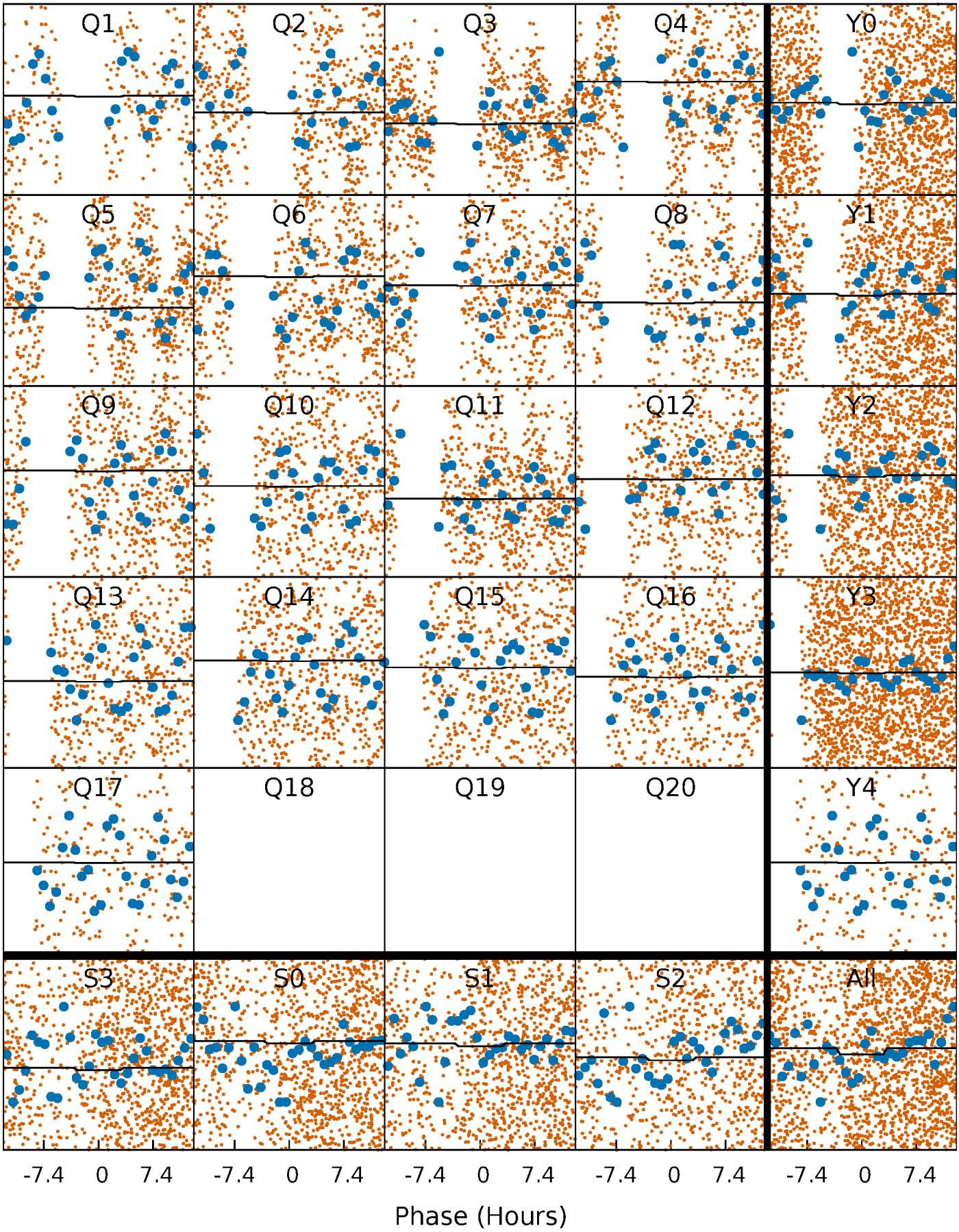
DV Quarter-Phased Transit Curves

TCE 006509175-02 P= 4.799782 Days T_0=135.392504 (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

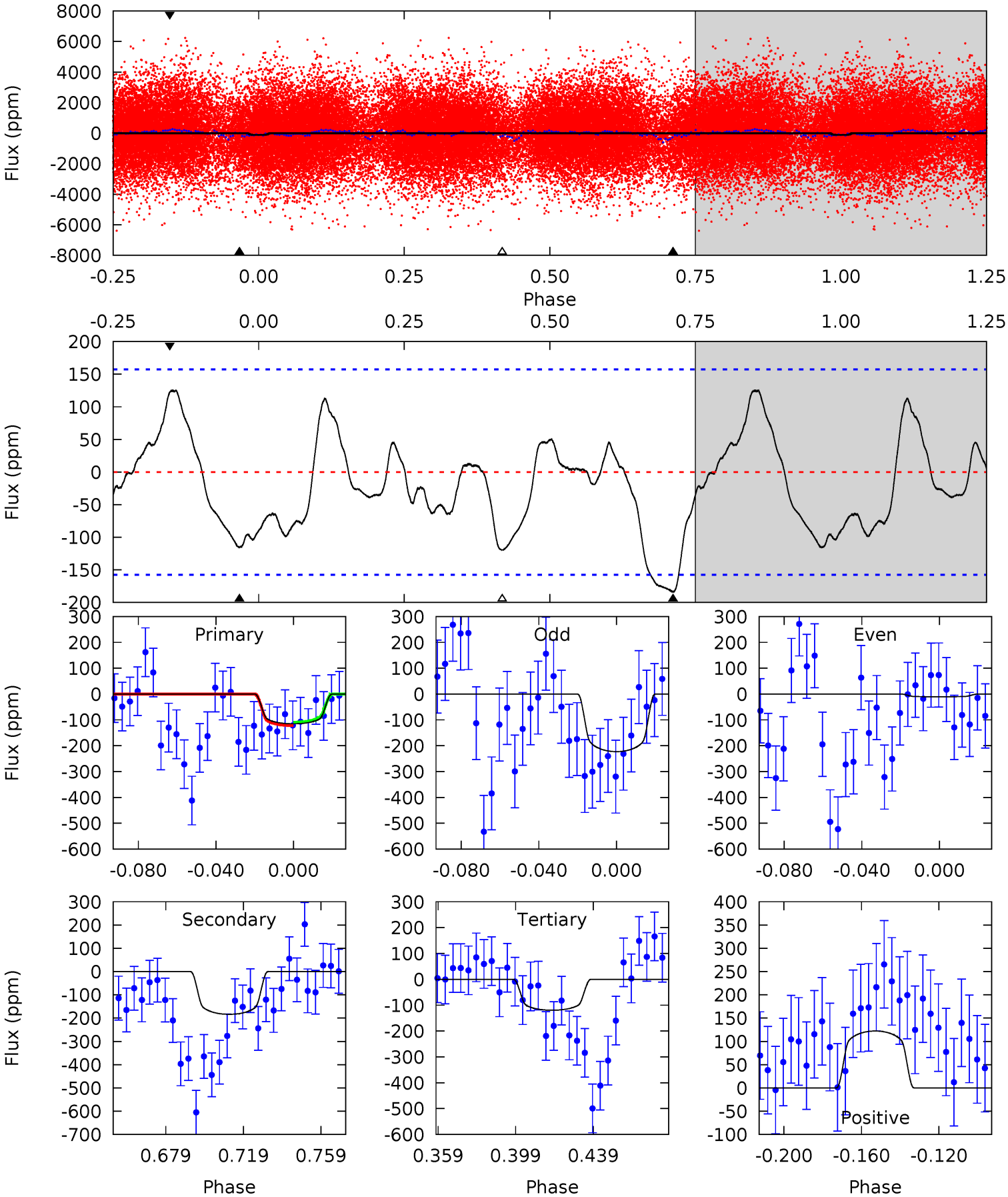
TCE 006509175-02 P= 4.799831 Days T_0=135.374880 (BKJD)



DV Model-Shift Uniqueness Test

006509175-02, P = 4.799782 Days, E = 130.592722 Days

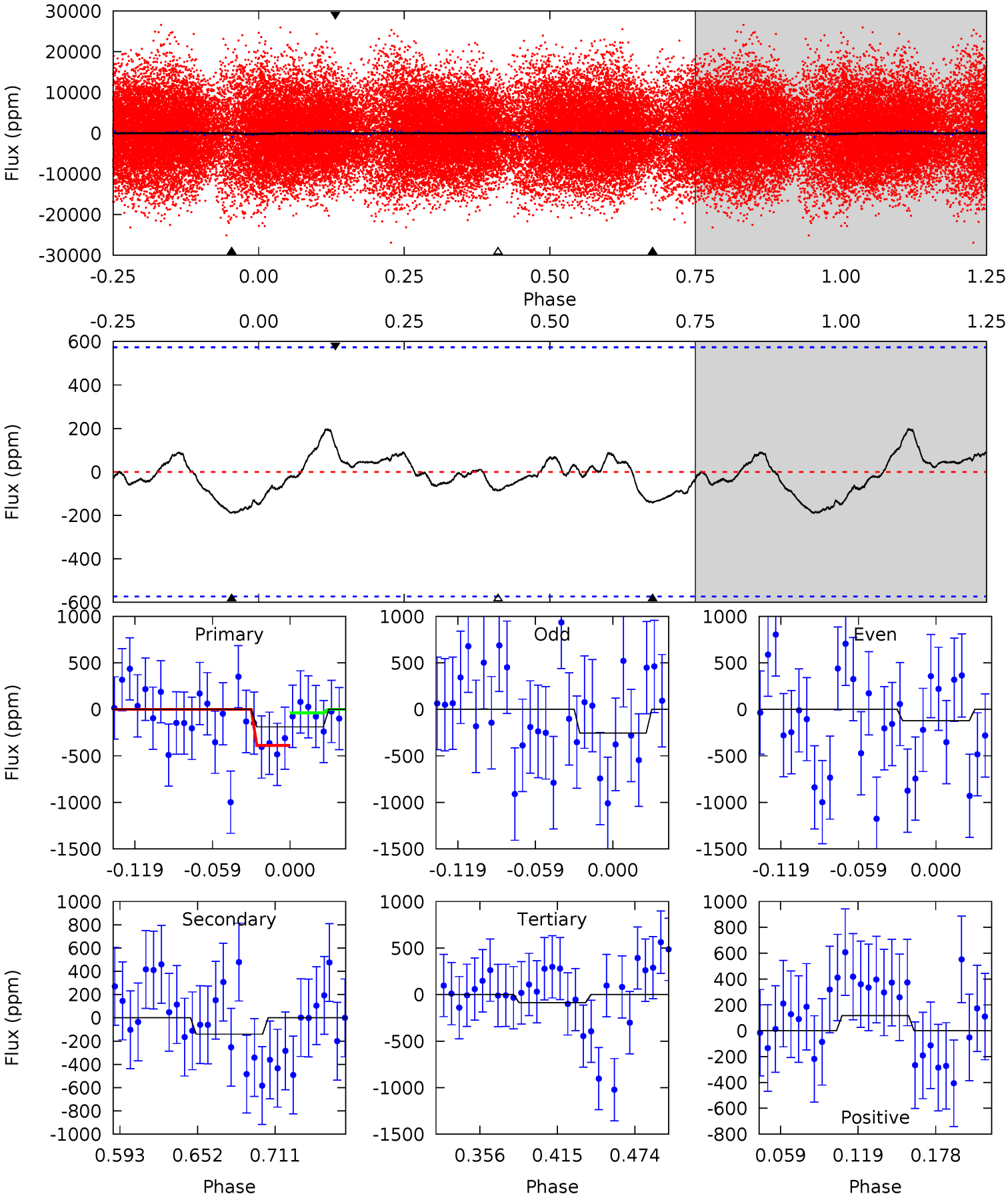
Pri	Sec	Ter	Pos	FA_1	FA_2	F_{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3.48	5.55	3.61	3.69	4.75	2.05	1.69	-0.13	-0.21	1.94	1.86	3.21	0.15	0.41	0.20



Alt Model-Shift Uniqueness Test

006509175-02, P = 4.799831 Days, E = 130.575049 Days

Pri	Sec	Ter	Pos	FA_1	FA_2	F_{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1.53	1.14	0.70	0.96	4.67	1.89	0.48	0.83	0.57	0.44	0.18	0.53	0.82	0.51	1.40



Stellar Parameters For KIC 006509175

	$T_{\rm eff}(K)$	$\log(g)$	[Fe/H]	R ($R_\odot$)	$M(M_\odot)$	$p_\star$ (g·cm^{-3})
	7474^{+134}_{-149}	$3.535^{+0.184}_{-0.057}$	$-0.260^{+0.150}_{-0.150}$	$3.986^{+0.256}_{-0.769}$	$1.988^{+0.040}_{-0.179}$	$0.044^{+0.039}_{-0.008}$
	+2%/-2%	+5%/-2%	+58%/-58%	+6%/-19%	+2%/-9%	+87%/-19%
Source	SPE4	SPE4	SPE4	DSEP		

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

Secondary Eclipse Parameters for KIC 006509175-02 / KOI

Detrend	Depth (ppm)	R_p ($R_\oplus$)	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-184±33	$6.36^{+2.13}_{-2.03}$	3451^{+114}_{-182}	6913^{+1841}_{-967}	12^{+14}_{-5}
Alt.	-140±123	$3.87^{+1.93}_{-1.82}$	3440^{+124}_{-180}	8284^{+6825}_{-3549}	22^{+82}_{-19}

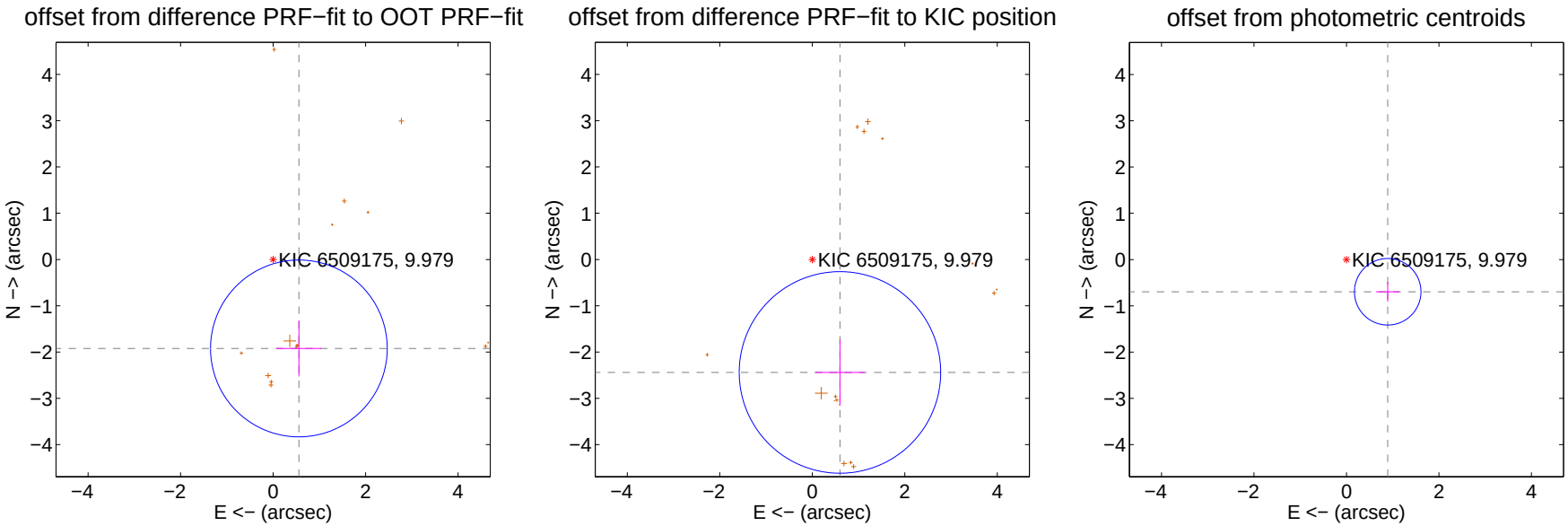
T_{max} = Theoretical Maximum Planetary Temperature
T_{obs} = Observed Planetary Temperature (Assuming A=0.3)
A_{obs} = Observed Albedo (Assuming T=0)

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

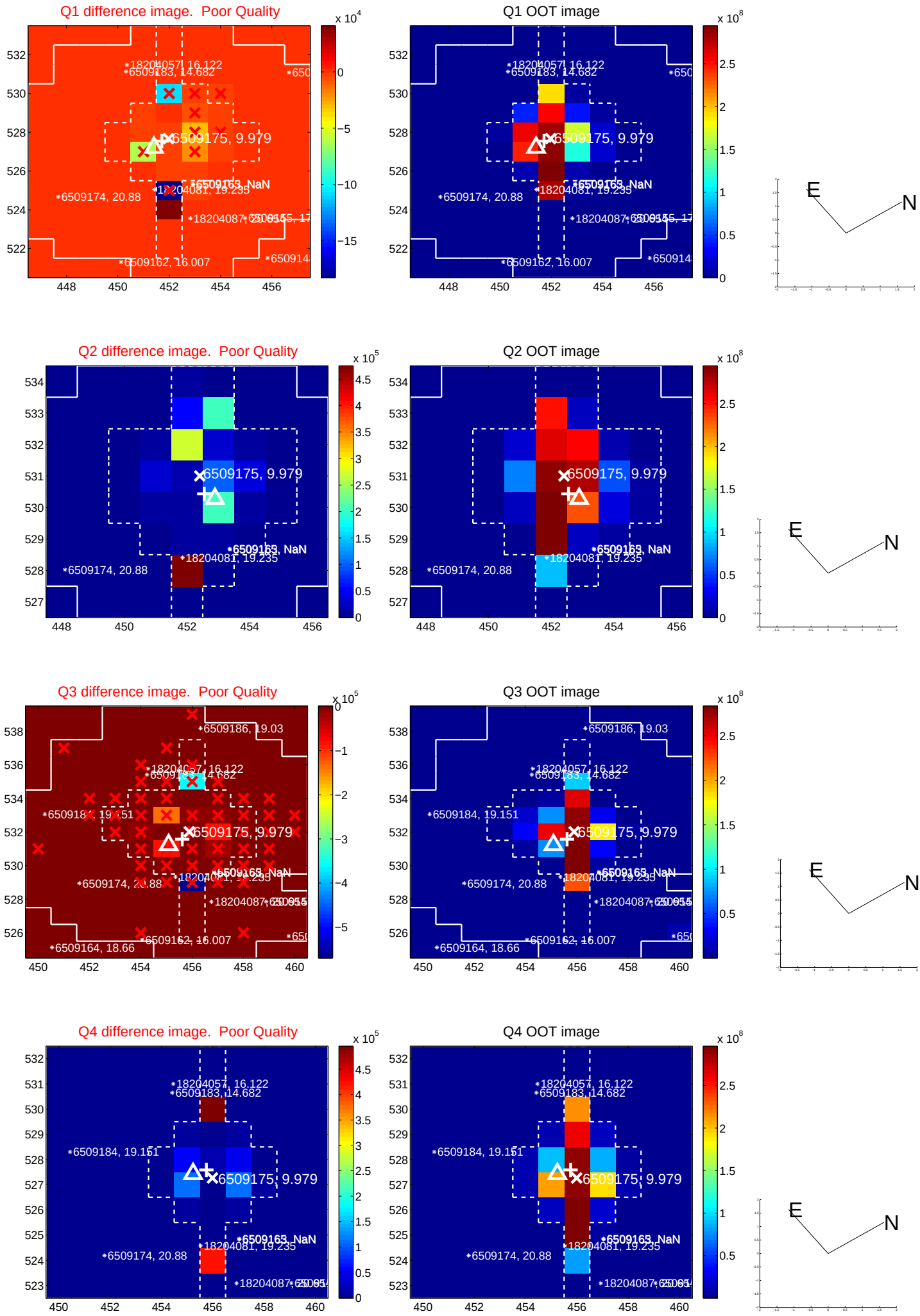
Supplemental centroid analysis for 006509175-02. Kepler magnitude: 9.98. Transit SNR 4.55
There are 0 quarters with good PRF difference image offsets
The direct PRF centroid is offset from the target star catalog position by about 1.10 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	2.001 ± 0.637	3.14	-0.558 ± 0.488	-1.922 ± 0.606
PRF-fit source offset from KIC position	2.513 ± 0.726	3.46	-0.598 ± 0.536	-2.440 ± 0.709
photometric centroid source offset	1.13 ± 0.24	4.72	-0.89 ± 0.26	-0.70 ± 0.21

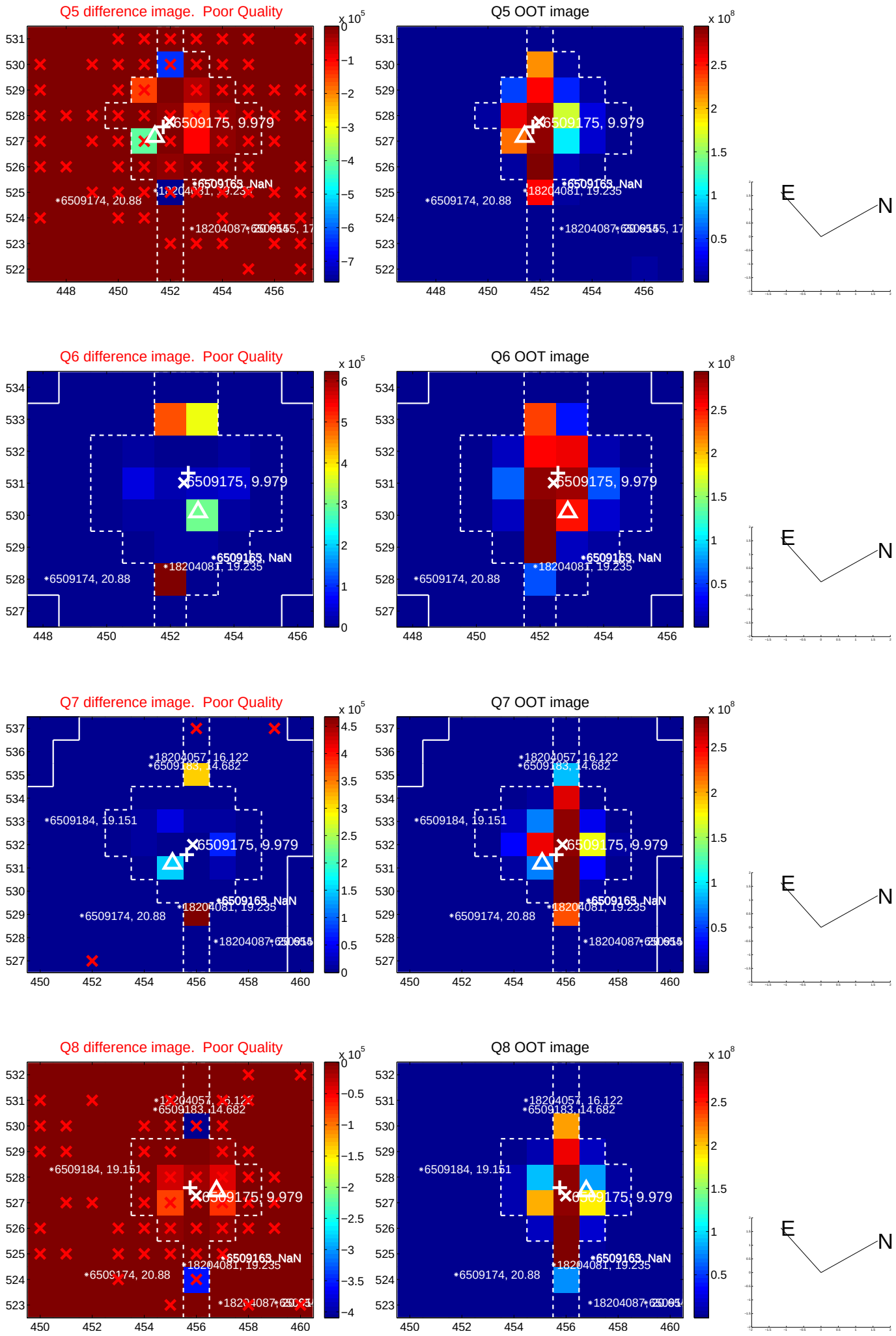


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one-σ uncertainty. Blue circle: three-σ. Red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

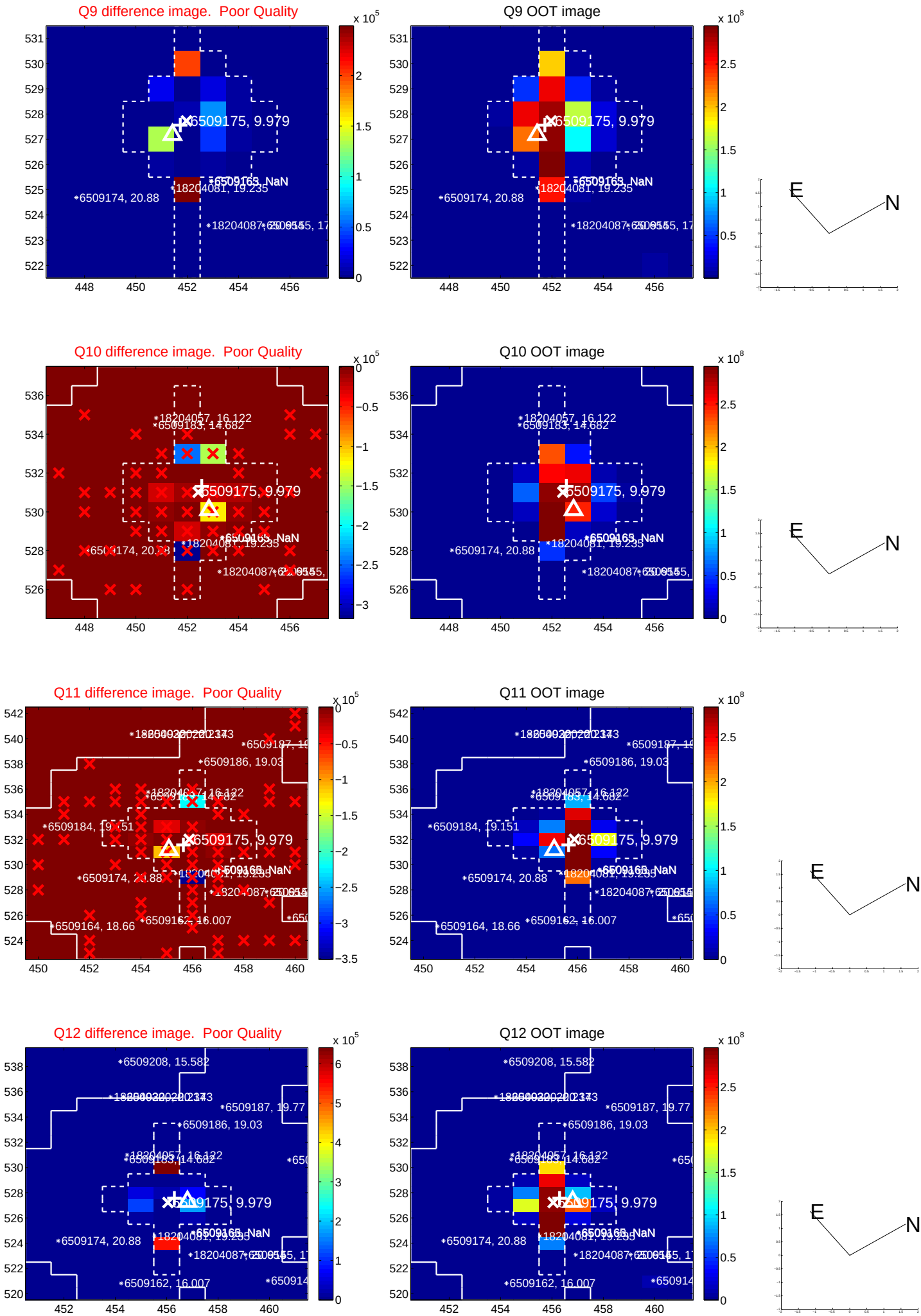
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.



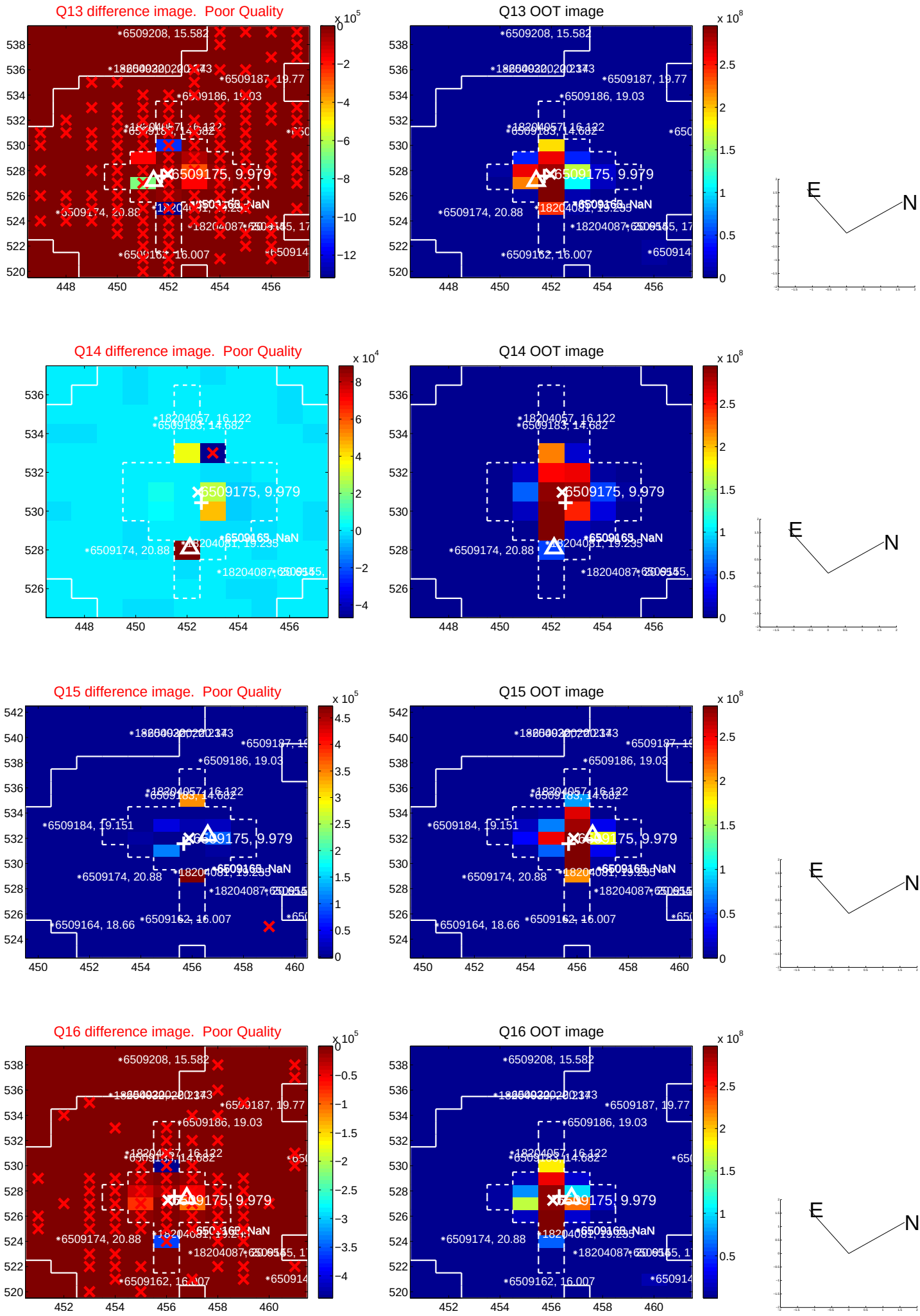
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.



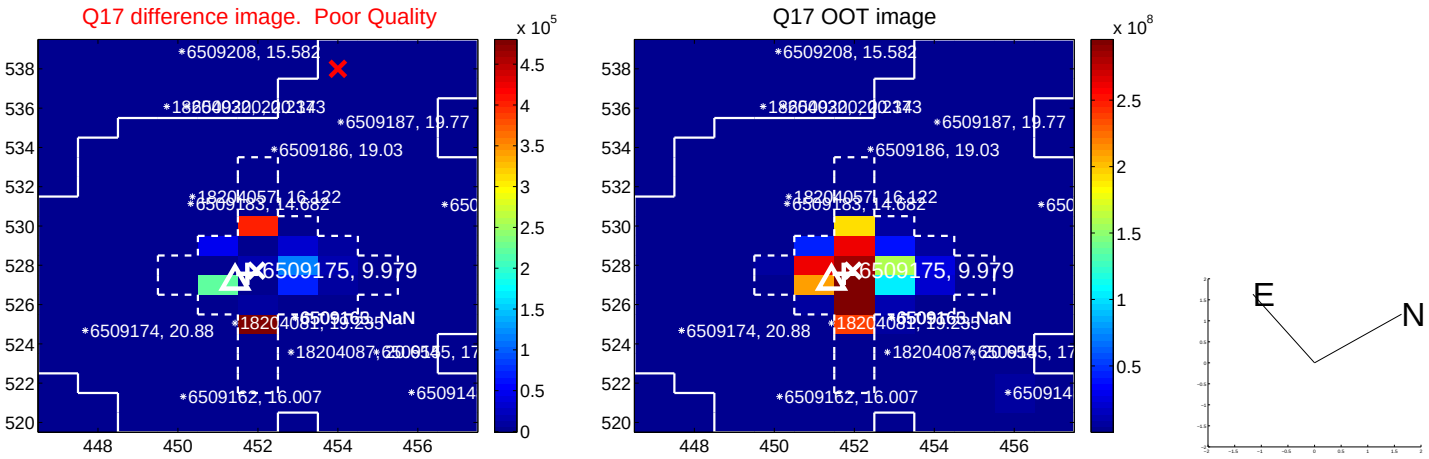
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.

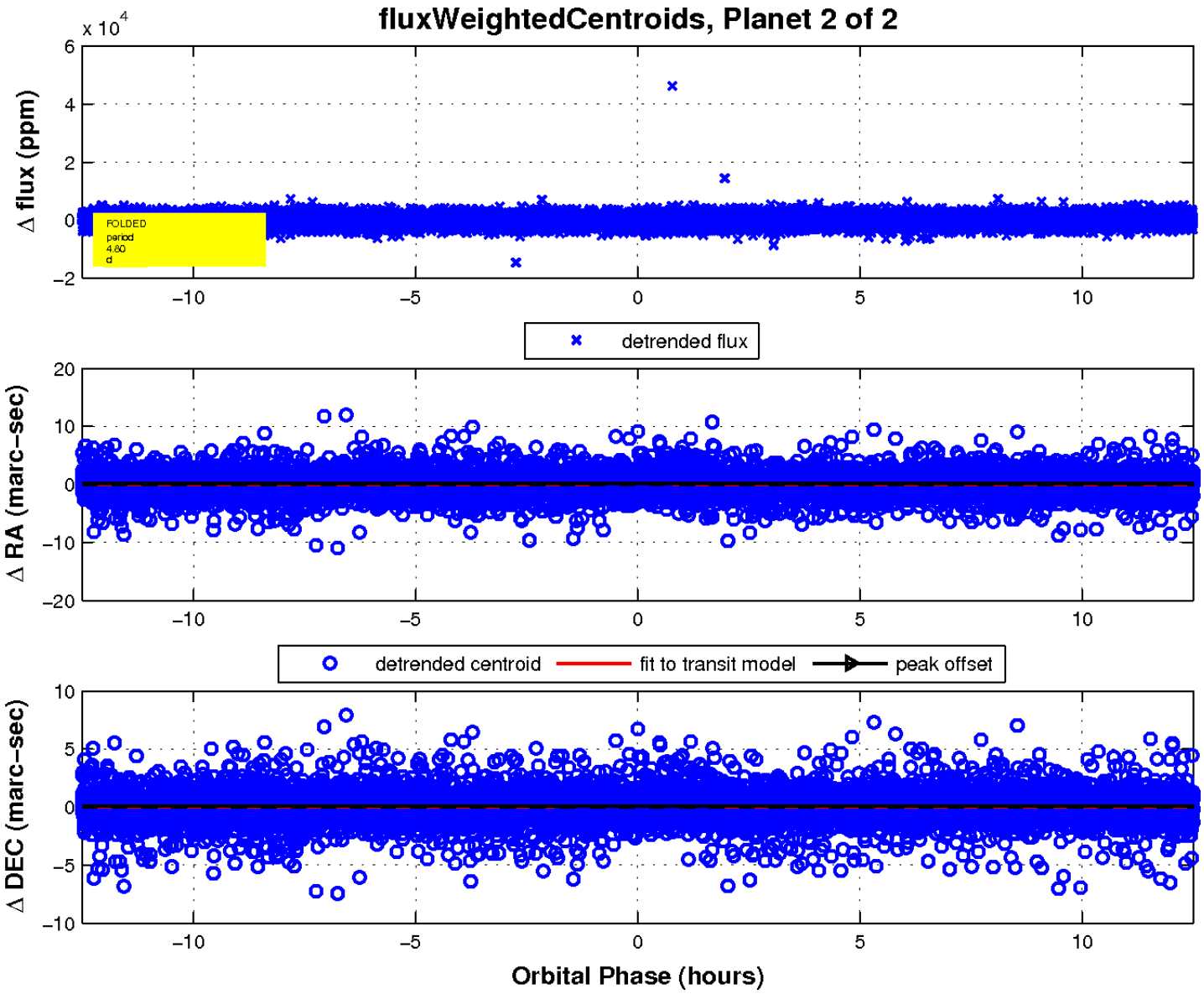


white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.

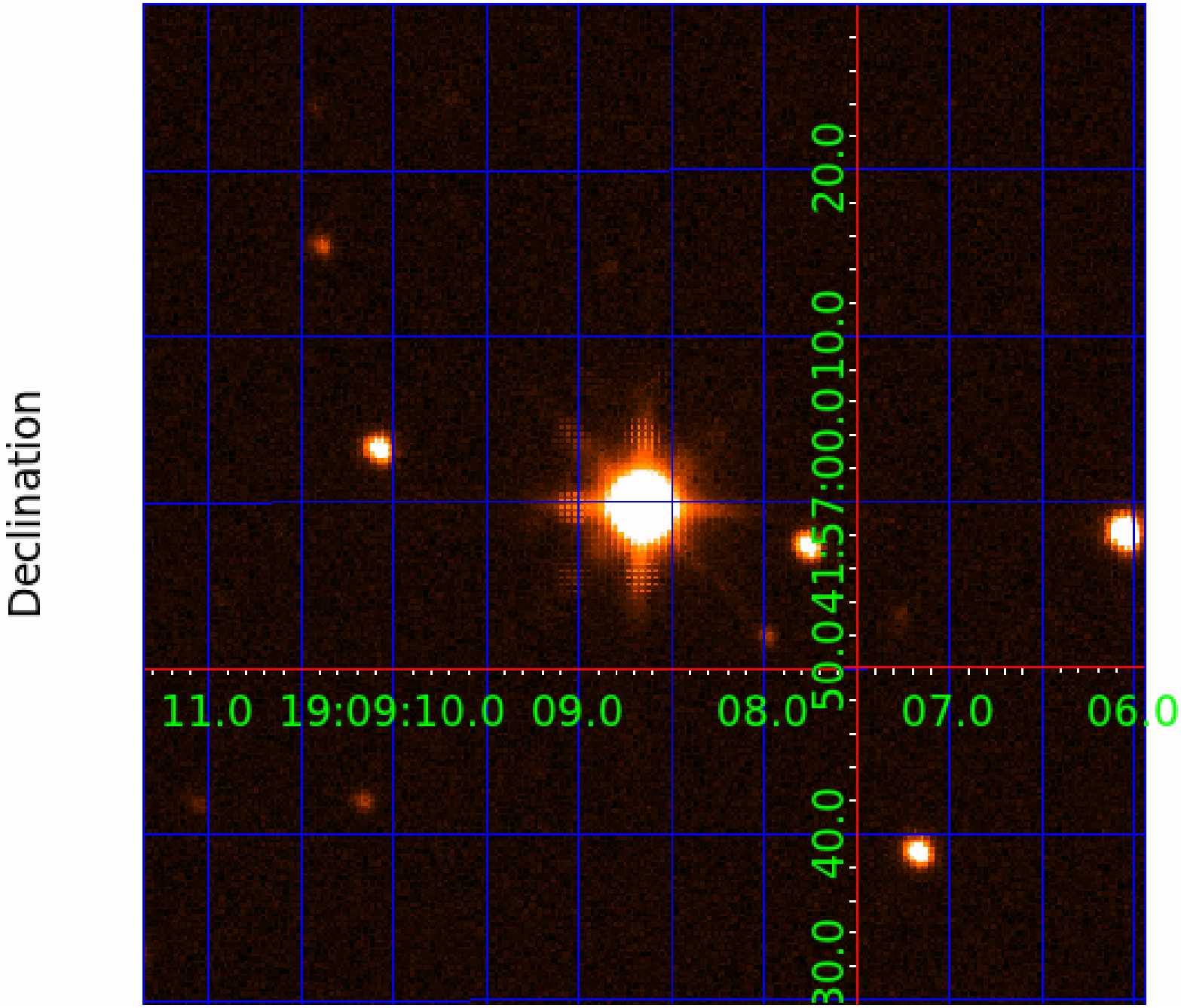


white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.





UKIRT Image


Declination
11.0
19:09:10.0
09.0
08.0
07.0
06.0
20.0
10.0
57:00.0
50.0
41:
40.0
30.0