KIC 009115039

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 ($S_\oplus$)
009115039-01	OBS	No	1.042986	131.553686	17.2	7.748	8.3	9.7	1.48	6680	0.71	8357.54
009115039-02	OBS	No	17.542812	148.151216	229.0	1.288	11.4	9.8	1.48	6680	2.40	193.93
009115039-03	OBS	No	27.035069	152.460805	383.5	1.163	10.8	10.4	1.48	6680	3.25	108.95
009115039-04	OBS	No	26.564566	132.691176	185.7	2.967	12.4	9.5	1.48	6680	2.23	111.53
009115039-05	OBS	No	11.950278	133.822951	321.2	0.937	10.0	10.9	1.48	6680	2.71	323.55
009115039-06	OBS	No	10.113701	141.211810	184.1	1.337	9.6	8.7	1.48	6680	2.34	404.18
009115039-07	OBS	No	13.333071	140.695541	294.4	0.637	10.9	13.2	1.48	6680	2.68	279.60

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009115039-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT
009115039-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS—HALO_GHOST
009115039-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
009115039-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
009115039-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—CENT_FEW_DIFFS
009115039-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
009115039-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—CENT_FEW_DIFFS

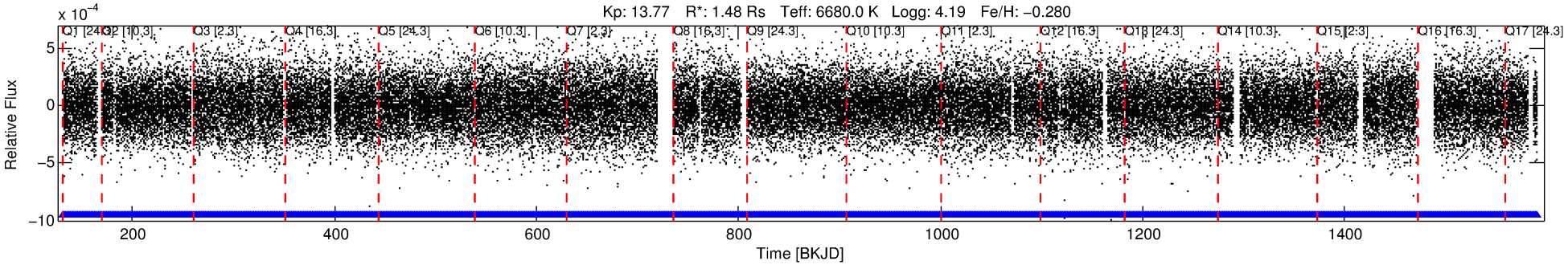
Notes: OBS = Observed. INJ = Injected. INV = Inverted. SCR = Scrambled.
N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.
See `http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col` for comment definitions.

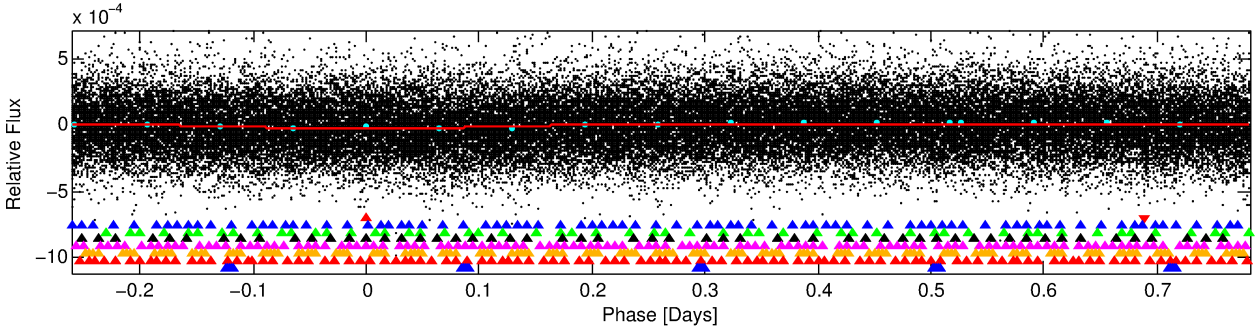
Ephemeris Match Information For 009115039-01

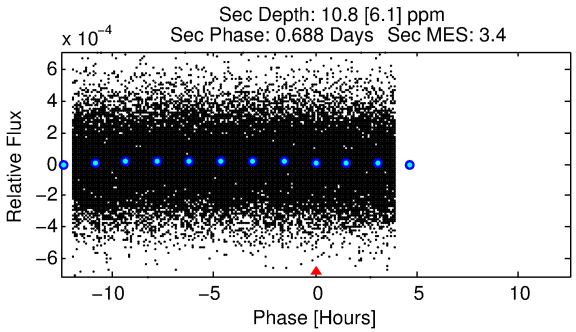
No Significant Match Found

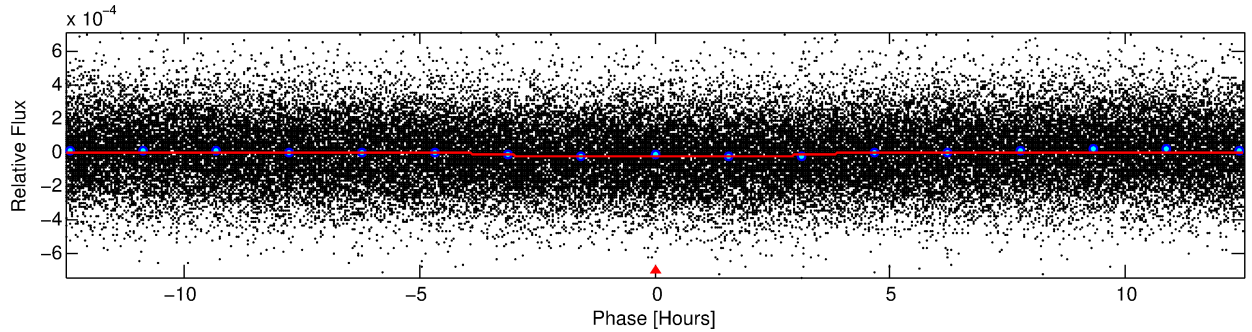
DV One-Page Summary

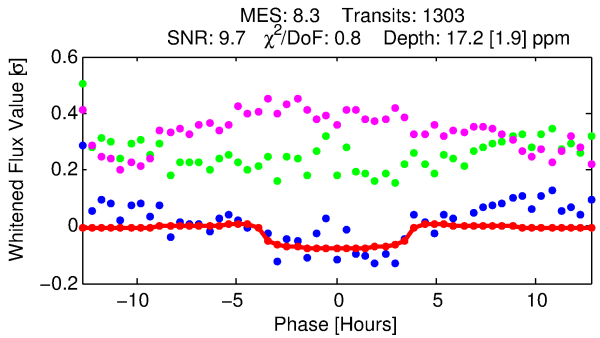
KIC: 9115039 Candidate: 1 of 8 Period: 1.043 d

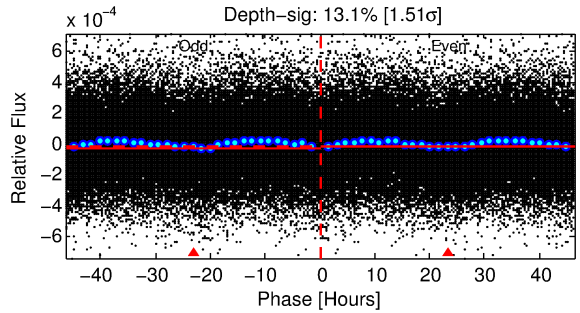


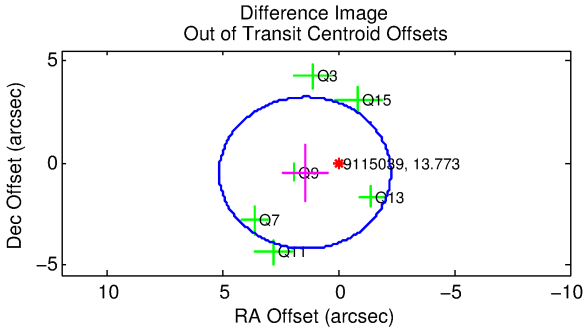












DV Fit Results:

Period = 1.04299 [0.00002] d
Epoch = 131.5537 [0.0071] BKJD
Rp/R* = 0.0044 [0.0024]
a/R* = 1.05 [0.34]
b = 0.89 [0.76]

Seff = 8357.54 [3012.53]
Teq = 2438 [220] K
Rp = 0.71 [0.44] Re
a = 0.0216 [0.0051] AU

Ag = 5.45 [6.97] [0.64σ]
Teffp = 5760 [1790] K [1.84σ]

DV Diagnostic Results:

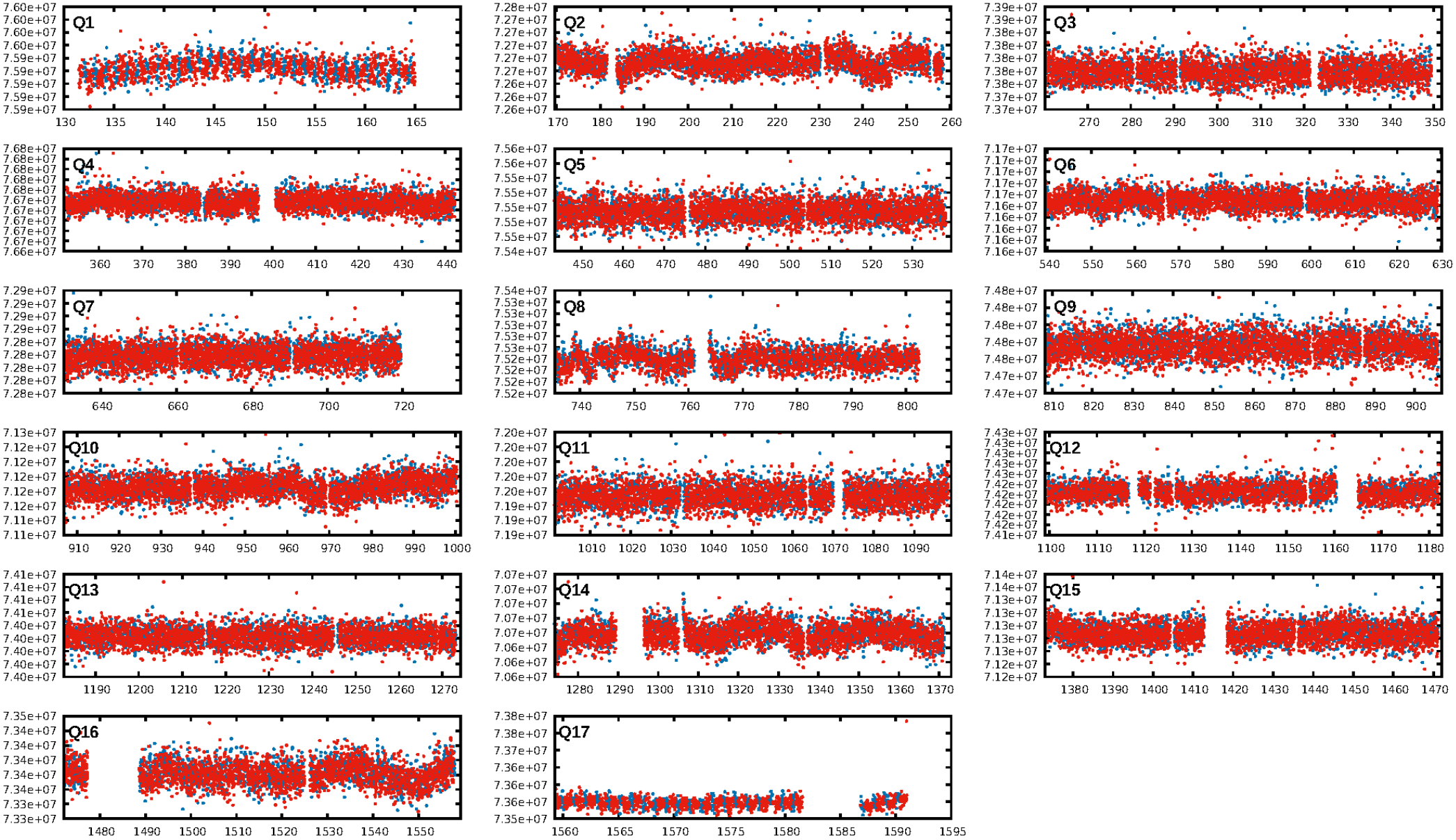
ShortPeriod−sig: N/A
LongPeriod−sig: 100.0% [27.69σ]
ModelChiSquare2−sig: N/A
ModelChiSquareGof−sig: N/A
Bootstrap−pfa: 3.46e−35
RollingBand−fgt: 1.00 [1244/1244]
GhostDiagnostic−chr: 2.178

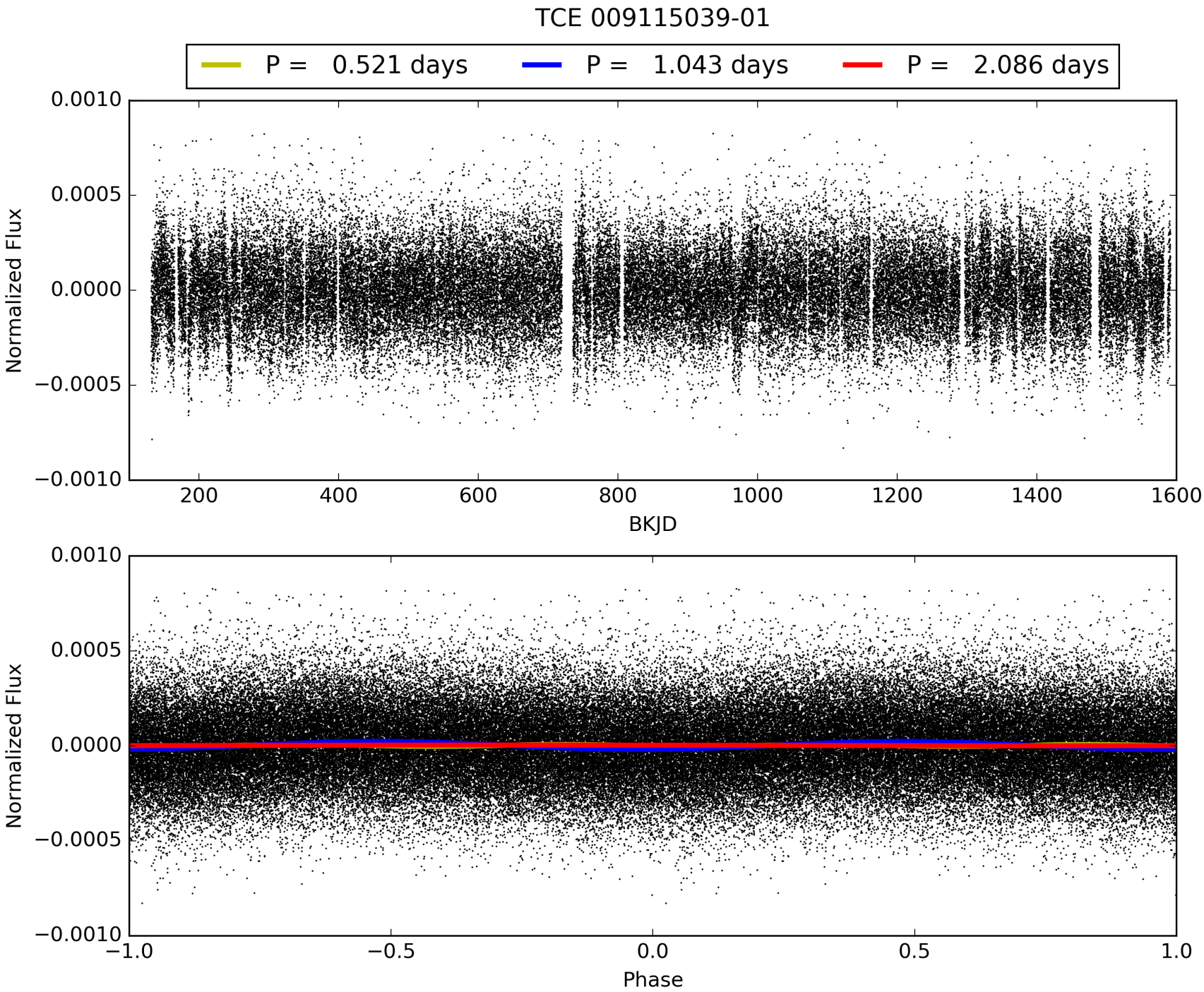
Centroid−sig: 2.3%
Centroid−so: 2.032 arcsec [1.49σ]
OotOffset−rm: 1.540 arcsec [1.25σ]
KicOffset−rm: 1.537 arcsec [1.48σ]
OotOffset−st: 0/4/0/2 [6]
KicOffset−st: 0/4/0/2 [6]
DiffImageQuality−fgm: 0.33 [2/6]
DiffImageOverlap−fno: 1.00 [17/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01−Feb−2016 13:01:37 Z

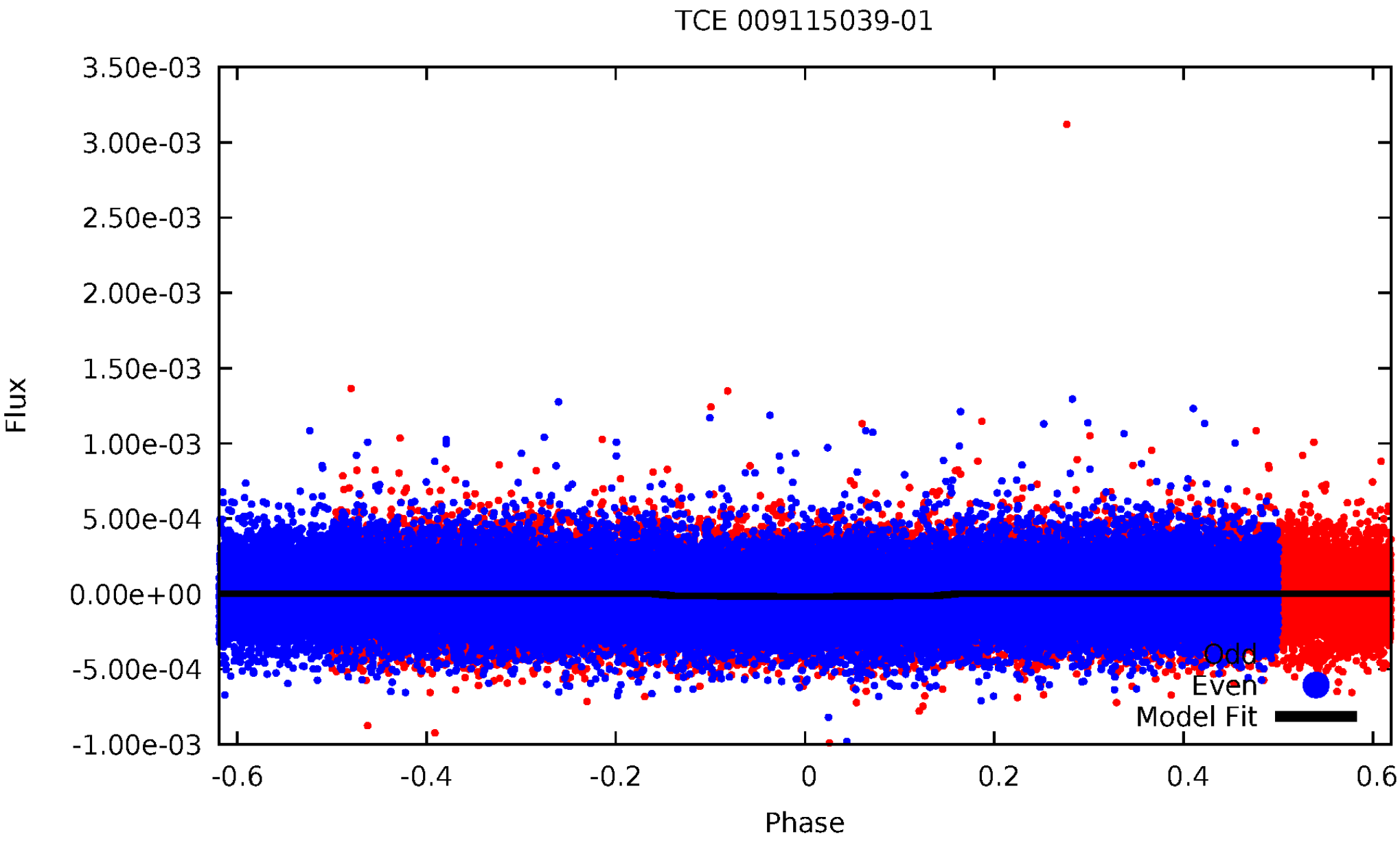
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 009115039-01, PDC Light Curves

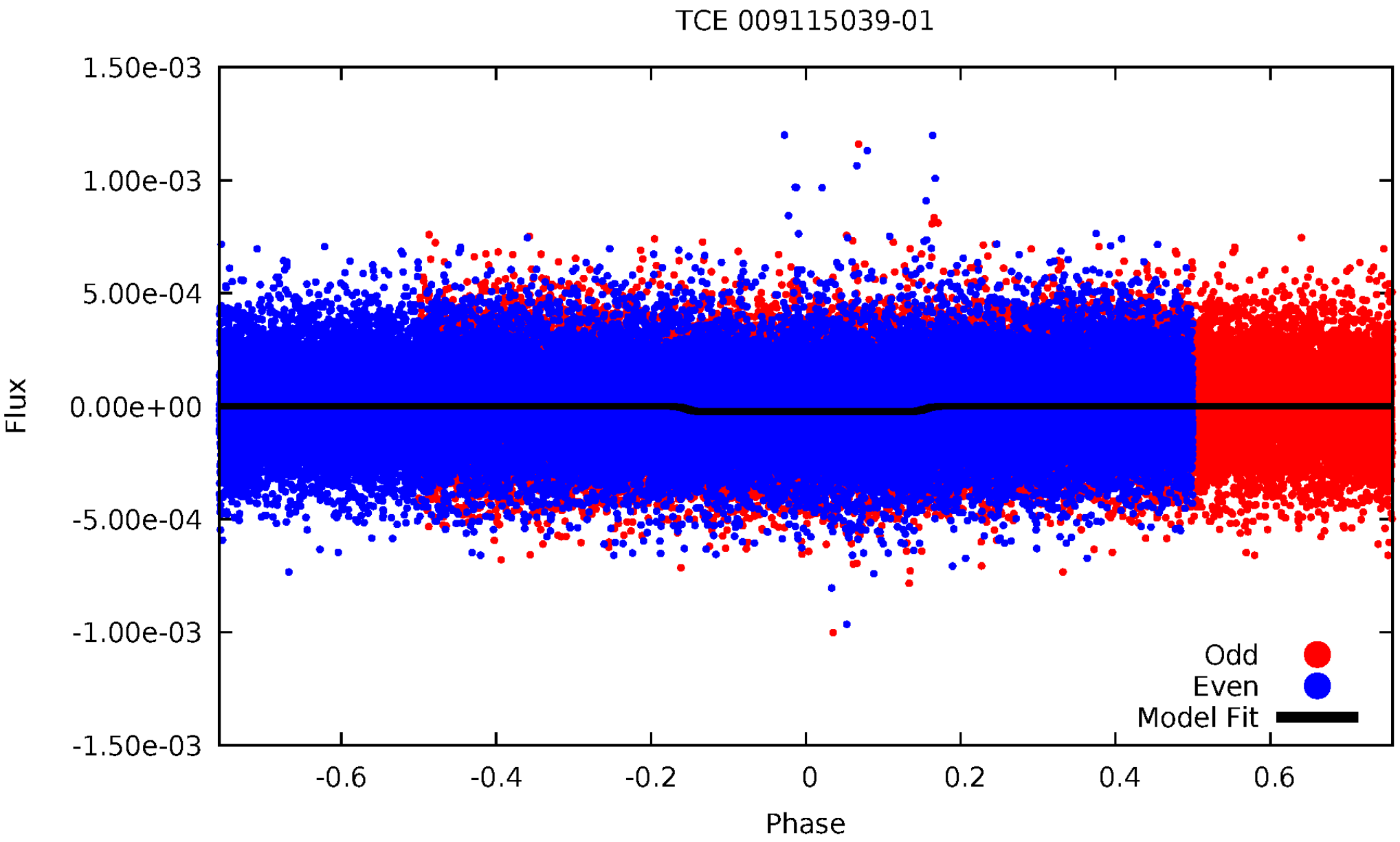



TCE 009115039-01
P = 0.521 days
P = 1.043 days
P = 2.086 days
Normalized Flux
0.0010
0.0005
0.0000
−0.0005
−0.0010
200
400
600
800
1000
1200
1400
1600
BKJD
Normalized Flux
0.0010
0.0005
0.0000
−0.0005
−0.0010
−1.0
−0.5
0.0
0.5
1.0
Phase

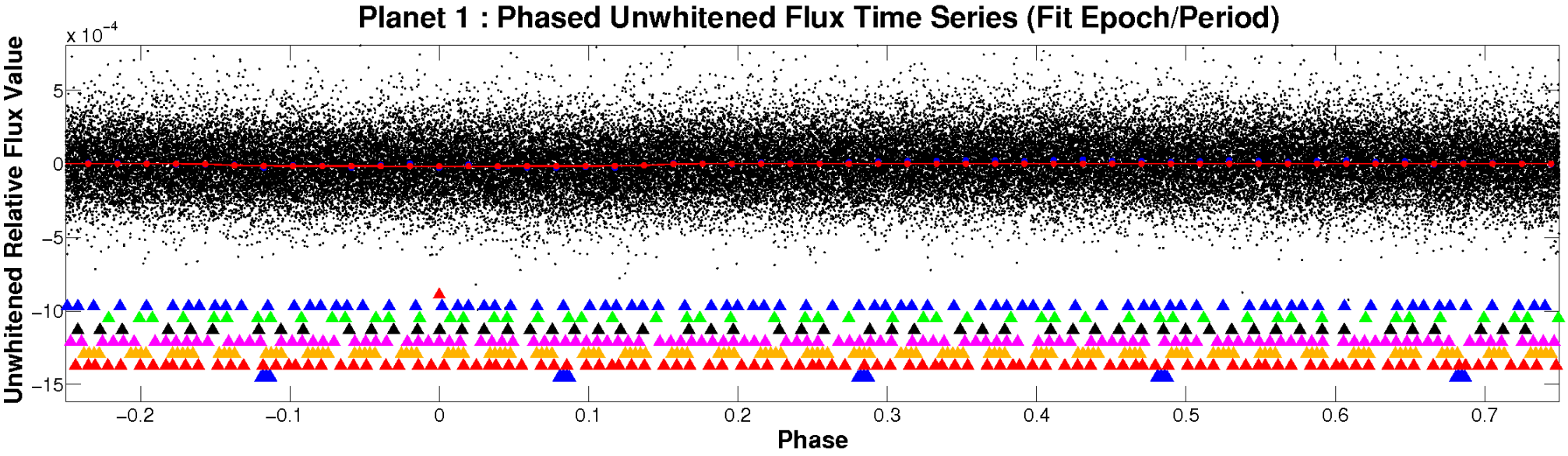
DV Odd/Even

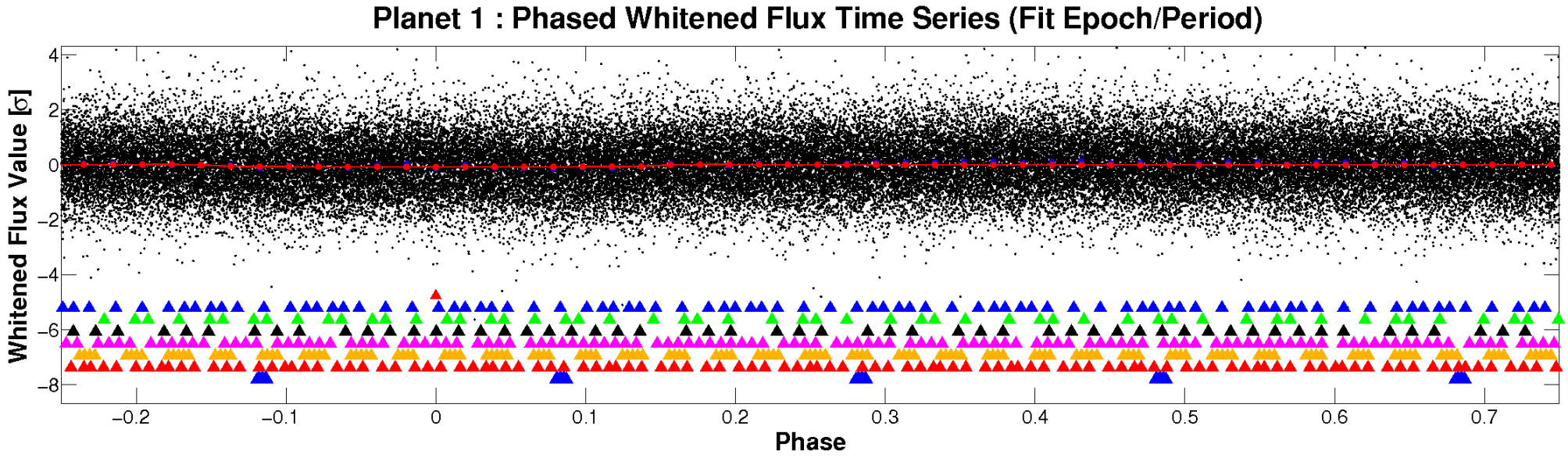

TCE 009115039-01
3.50e-03
3.00e-03
2.50e-03
2.00e-03
1.50e-03
1.00e-03
5.00e-04
0.00e+00
-5.00e-04
-1.00e-03
Flux
-0.6
-0.4
-0.2
0
0.2
0.4
0.6
Phase
Odd
Even
Model Fit

ALT Odd/Even


TCE 009115039-01
1.50e-03
1.00e-03
5.00e-04
0.00e+00
-5.00e-04
-1.00e-03
-1.50e-03
Flux
-0.6
-0.4
-0.2
0
0.2
0.4
0.6
Phase
Odd
Even
Model Fit

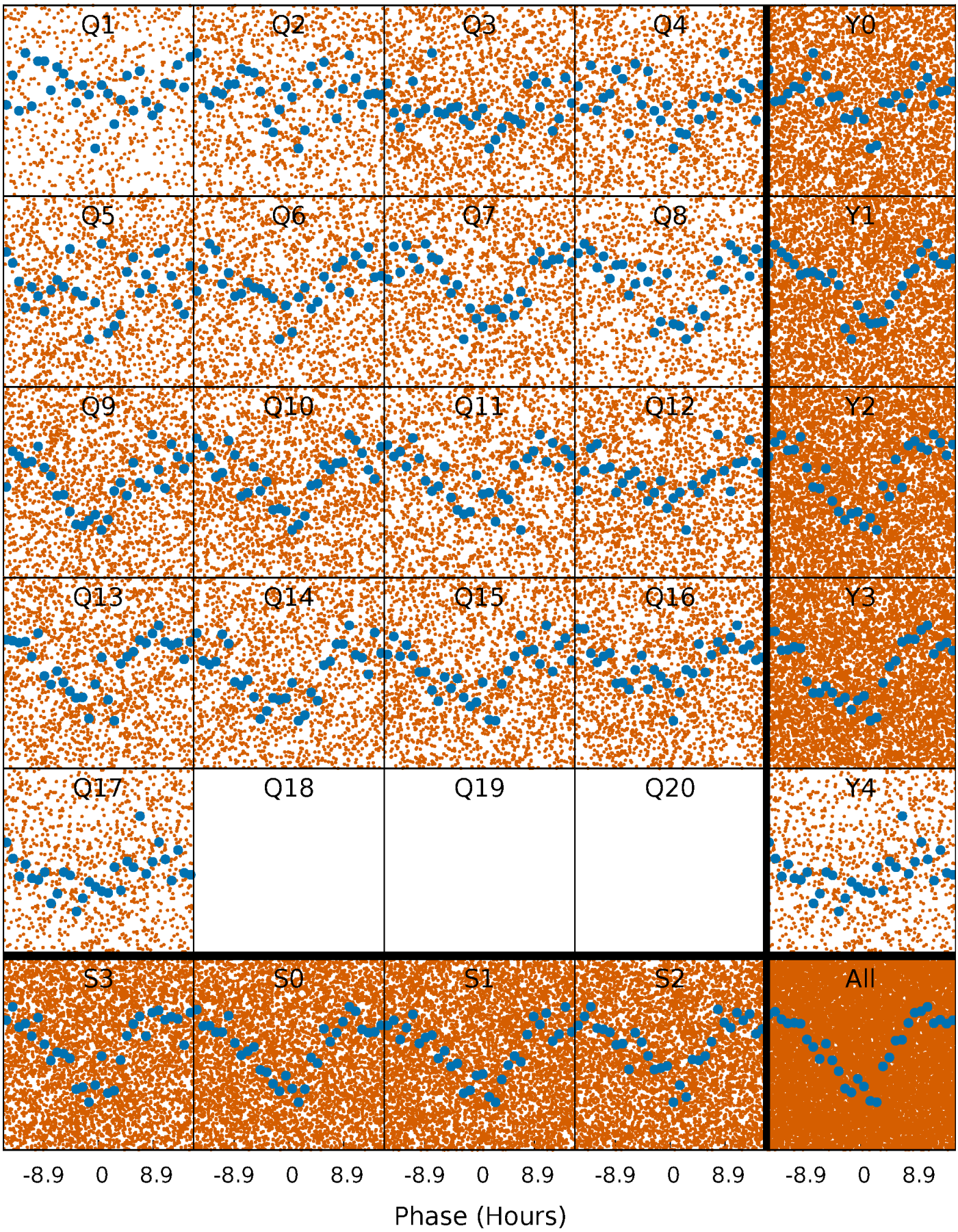
Non-Whitened Vs. Whitened Light Curve





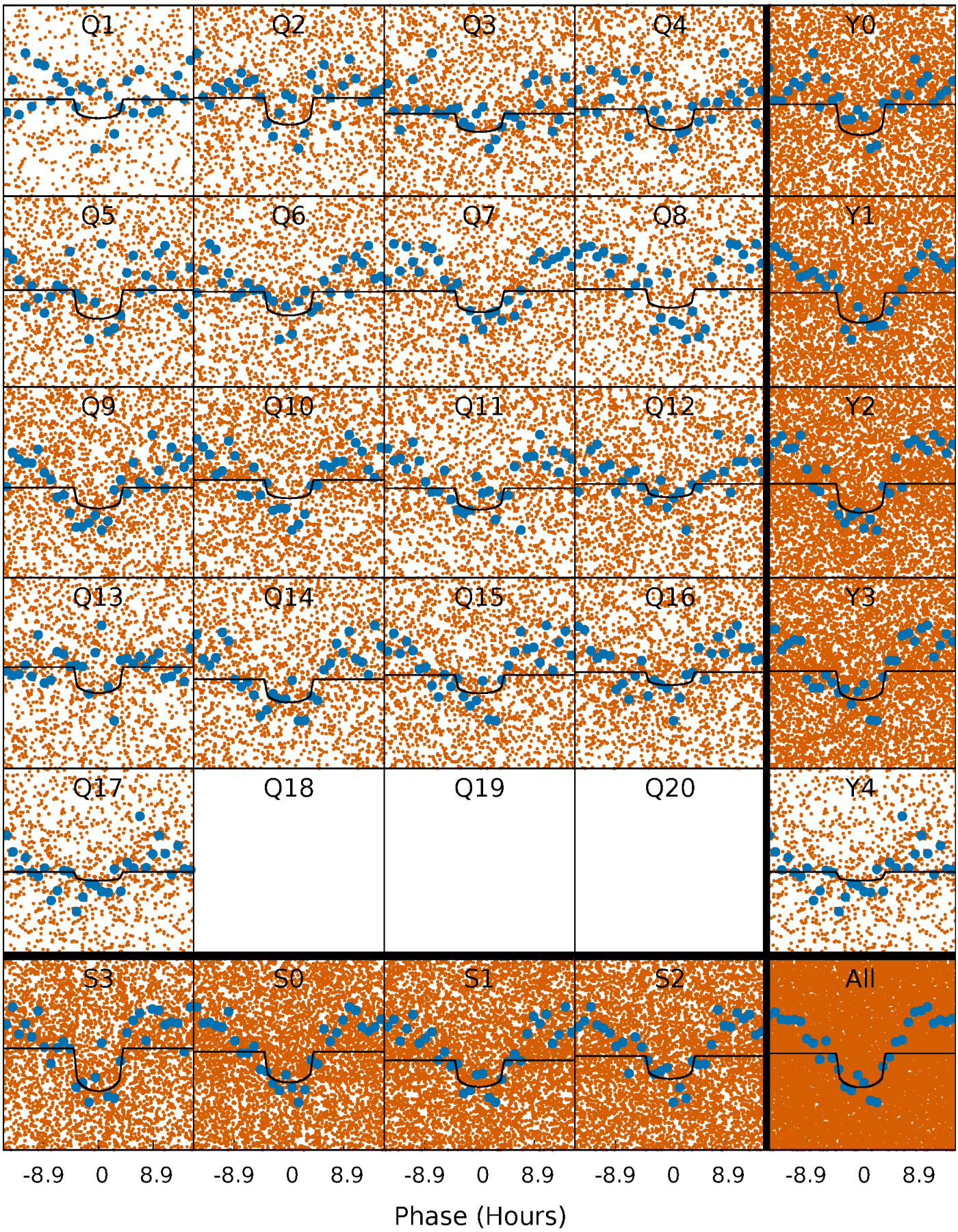
PDC Quarter-Phased Transit Curves

TCE 009115039-01 P= 1.042986 Days T_0=131.553686 (BKJD)



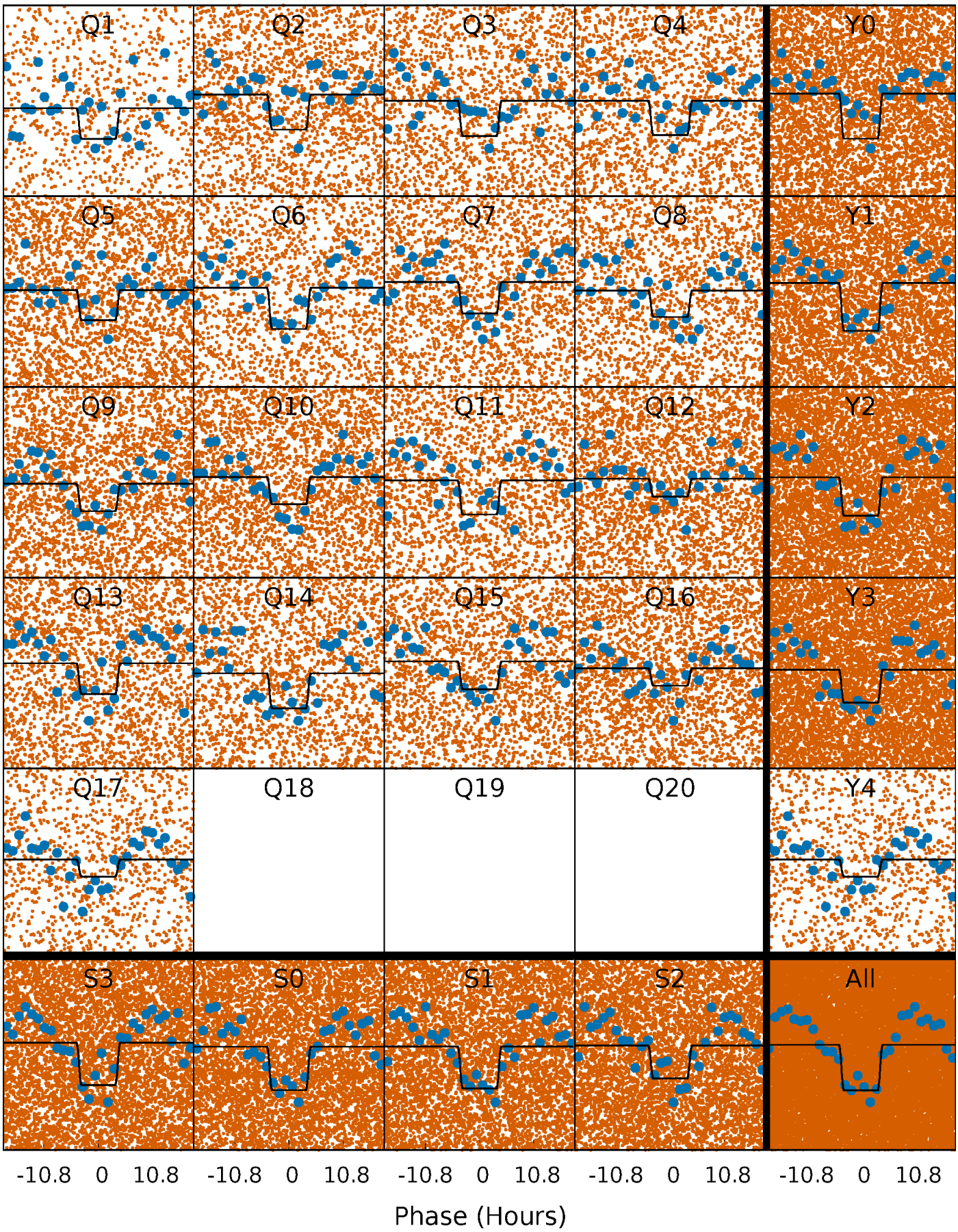
DV Quarter-Phased Transit Curves

TCE 009115039-01 P= 1.042986 Days T_0=131.553686 (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

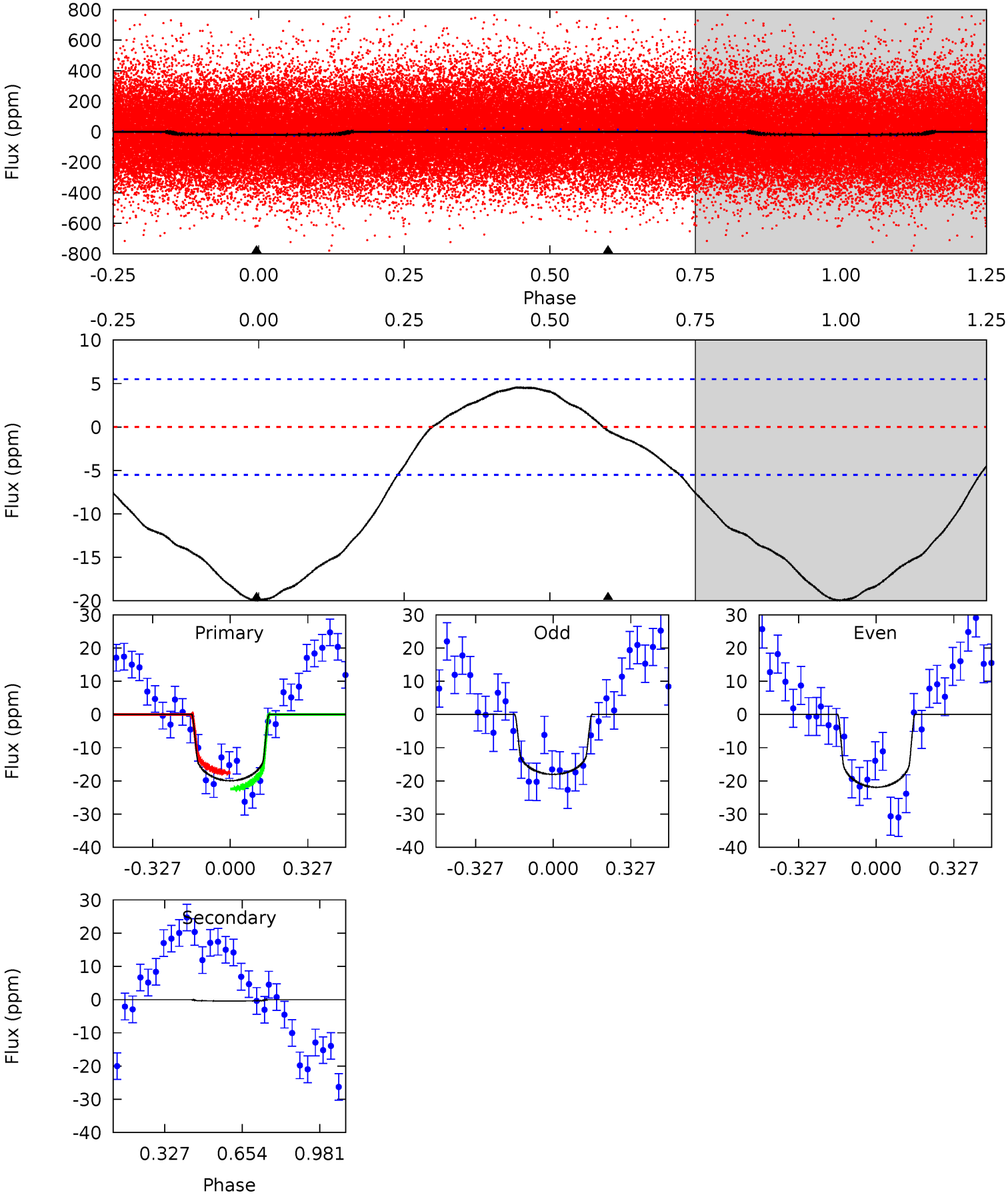
TCE 009115039-01 P= 1.042973 Days T_0=131.556990 (BKJD)



DV Model-Shift Uniqueness Test

009115039-01, P = 1.042986 Days, E = 130.510700 Days

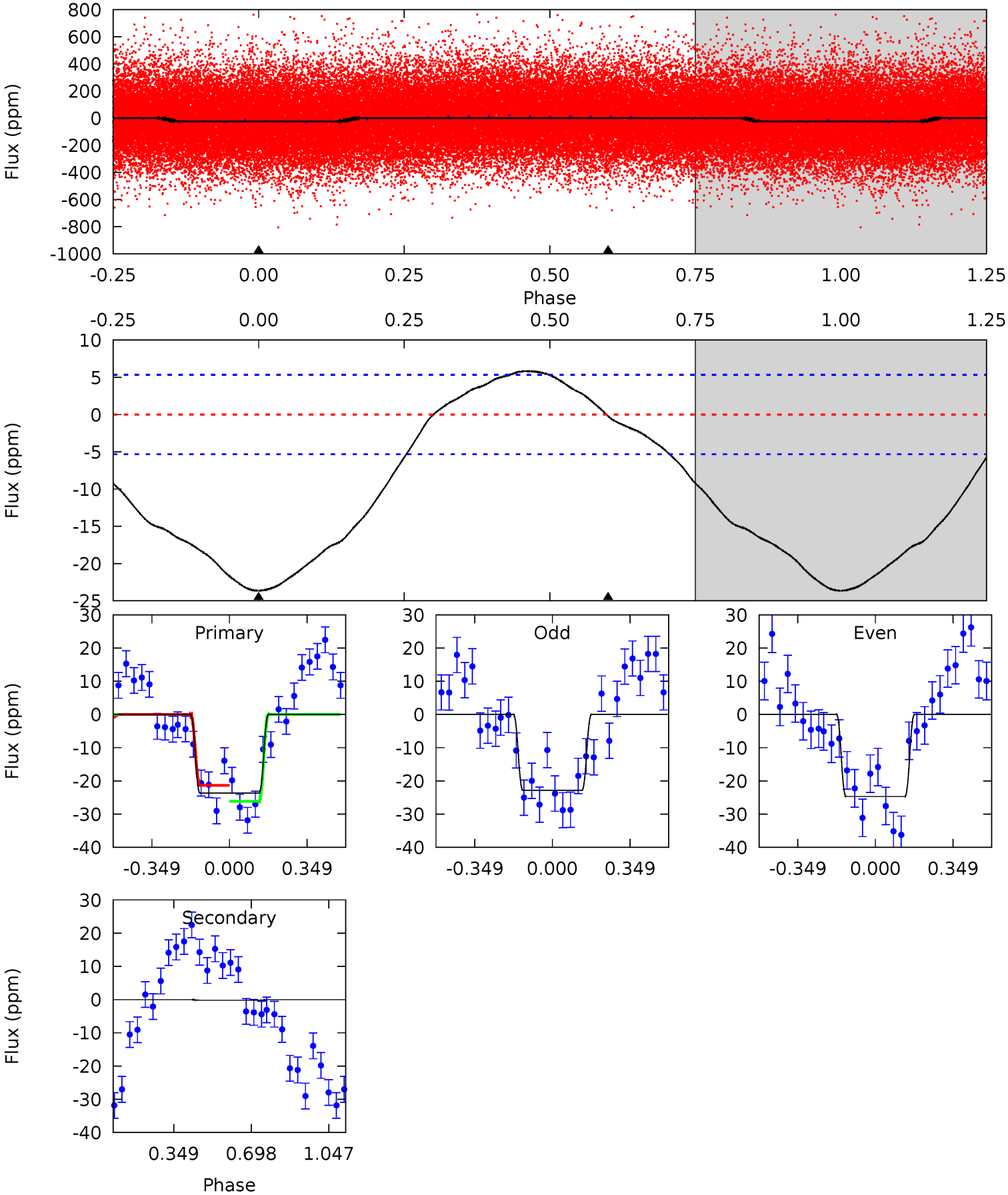
Pri	Sec	Ter	Pos	FA_1	FA_2	F_{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
15.6	0.33	0	0	4.31	0.98	1.58	15.6	15.6	0.33	0.33	1.51	1.07	0.19	1.89



Alt Model-Shift Uniqueness Test

009115039-01, P = 1.042973 Days, E = 130.514017 Days

Pri	Sec	Ter	Pos	FA_1	FA_2	F_{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
19.0	0.17	0	0	4.30	0.94	2.00	19.0	19.0	0.17	0.17	0.75	0.97	0.20	1.93



Stellar Parameters For KIC 009115039

	$T_{\rm eff}(K)$	$\log(g)$	[Fe/H]	R ($R_\odot$)	$M(M_\odot)$	$p_\star$ (g·cm^{-3})
	6680^{+189}_{-236}	$4.190^{+0.158}_{-0.175}$	$-0.280^{+0.250}_{-0.300}$	$1.478^{+0.431}_{-0.352}$	$1.241^{+0.189}_{-0.189}$	$0.542^{+0.500}_{-0.263}$
	+3%/-4%	+4%/-4%	+89%/-107%	+29%/-24%	+15%/-15%	+92%/-48%
Source	PHO1	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 009115039-01 / KOI

Detrend	Depth (ppm)	R_p ($R_\oplus$)	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-0±1	$0.74^{+0.41}_{-0.40}$	3418^{+249}_{-243}	-3041^{+7091}_{-807}	$0.145^{+1.121}_{-0.563}$
Alt.	-0±1	$0.79^{+0.44}_{-0.39}$	3429^{+237}_{-227}	-3149^{+6697}_{-773}	$0.087^{+0.716}_{-0.570}$

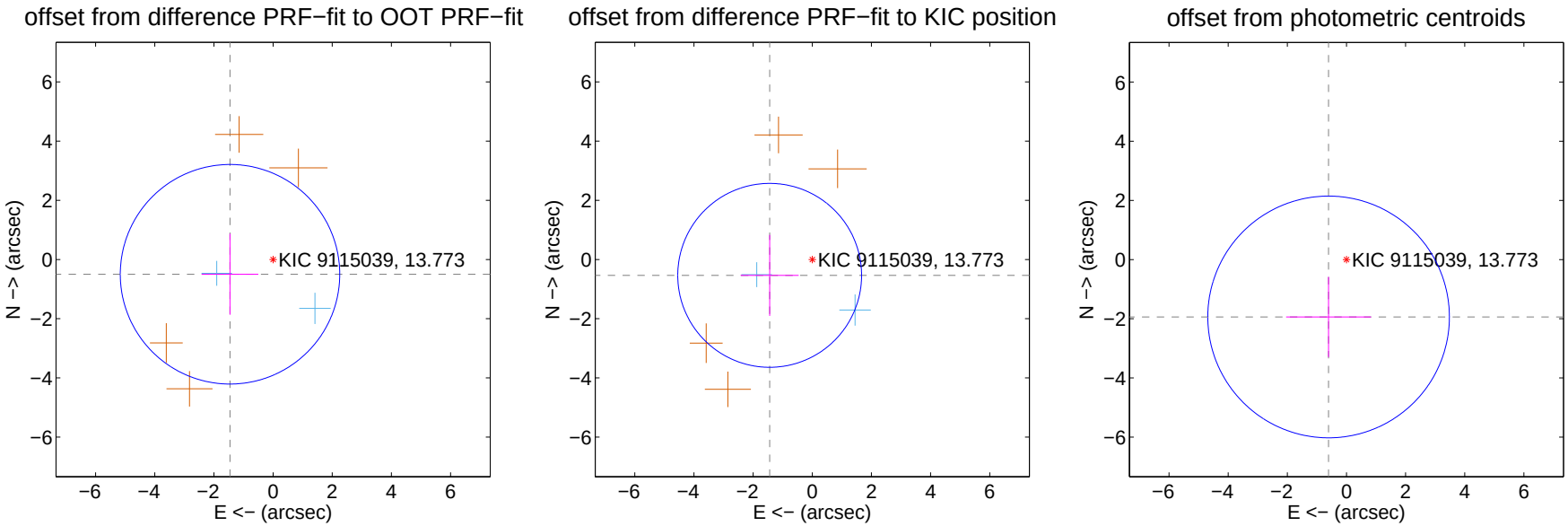
T_{max} = Theoretical Maximum Planetary Temperature
T_{obs} = Observed Planetary Temperature (Assuming A=0.3)
A_{obs} = Observed Albedo (Assuming T=0)

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

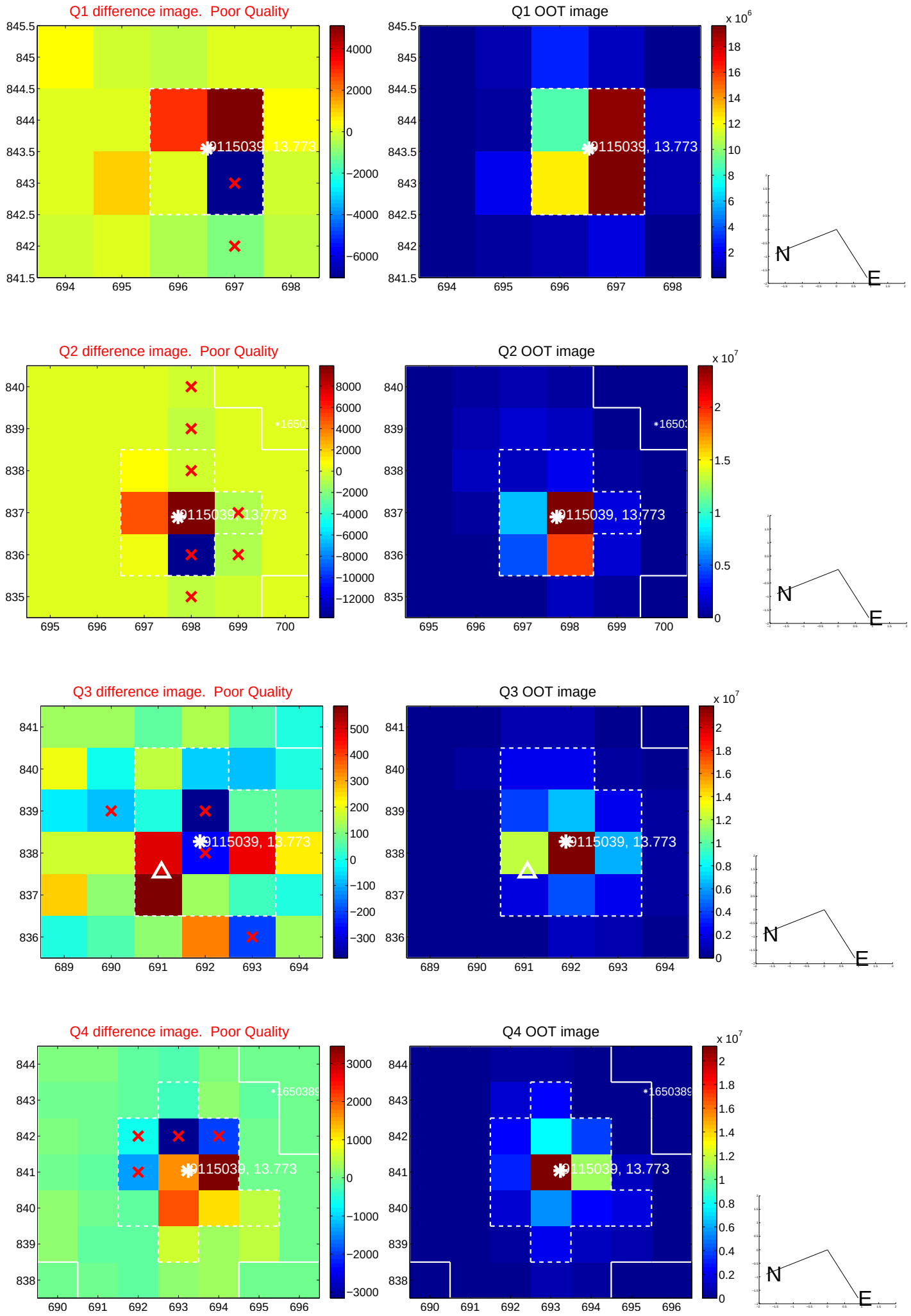
Supplemental centroid analysis for 009115039-01. Kepler magnitude: 13.77. Transit SNR 9.69
There are 2 quarters with good PRF difference image offsets
The direct PRF centroid is offset from the target star catalog position by about 0.03 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.540 ± 1.237	1.25	1.457 ± 0.958	-0.499 ± 1.368
PRF-fit source offset from KIC position	1.537 ± 1.036	1.48	1.441 ± 0.981	-0.535 ± 1.369
photometric centroid source offset	2.03 ± 1.36	1.49	0.60 ± 1.44	-1.94 ± 1.35

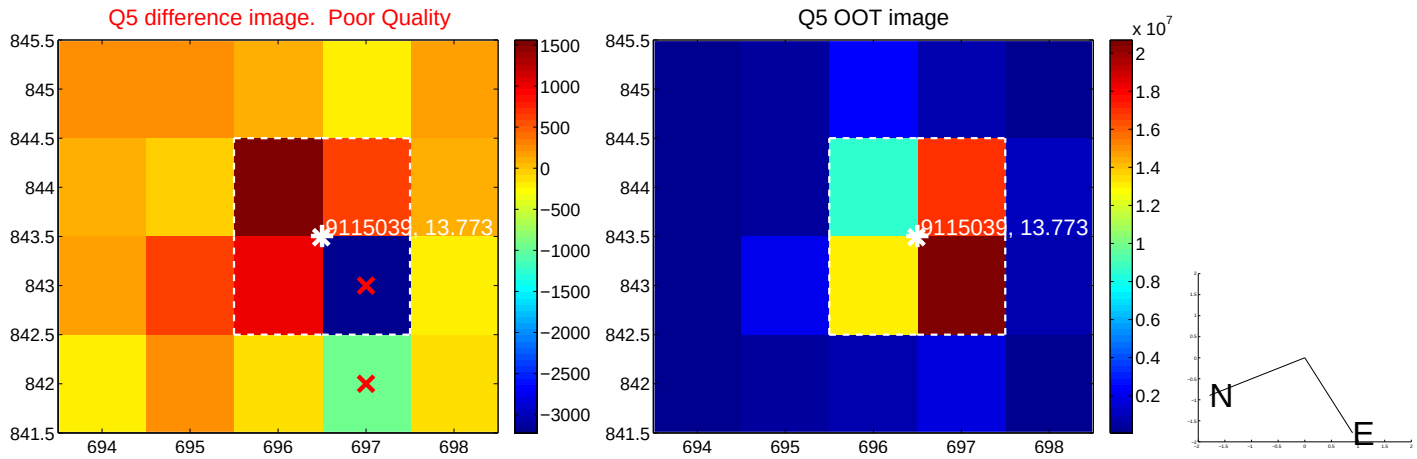


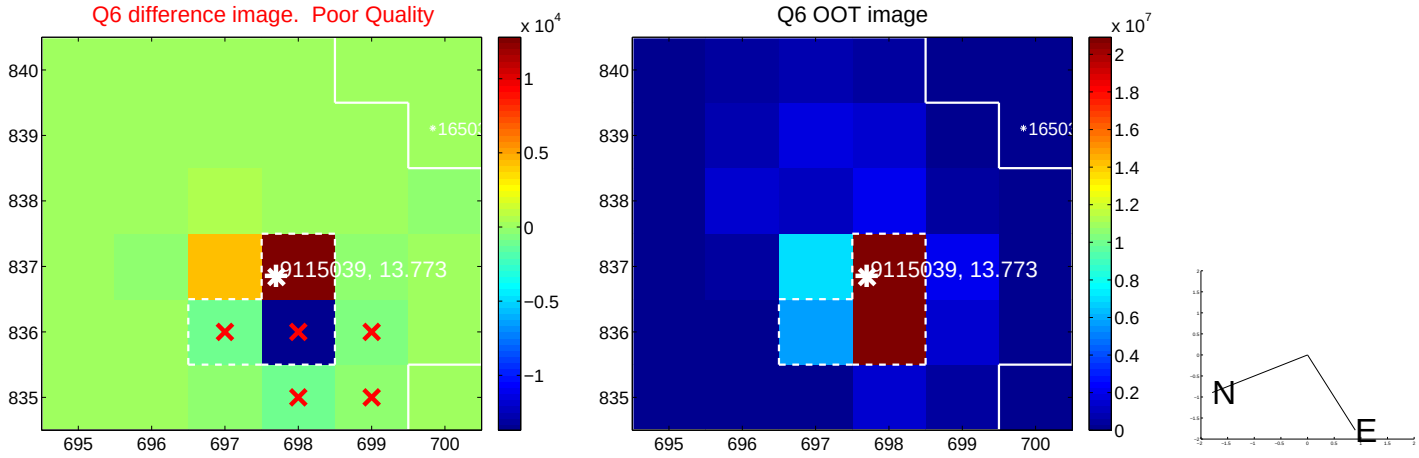
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one-σ uncertainty. Blue circle: three-σ. Red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

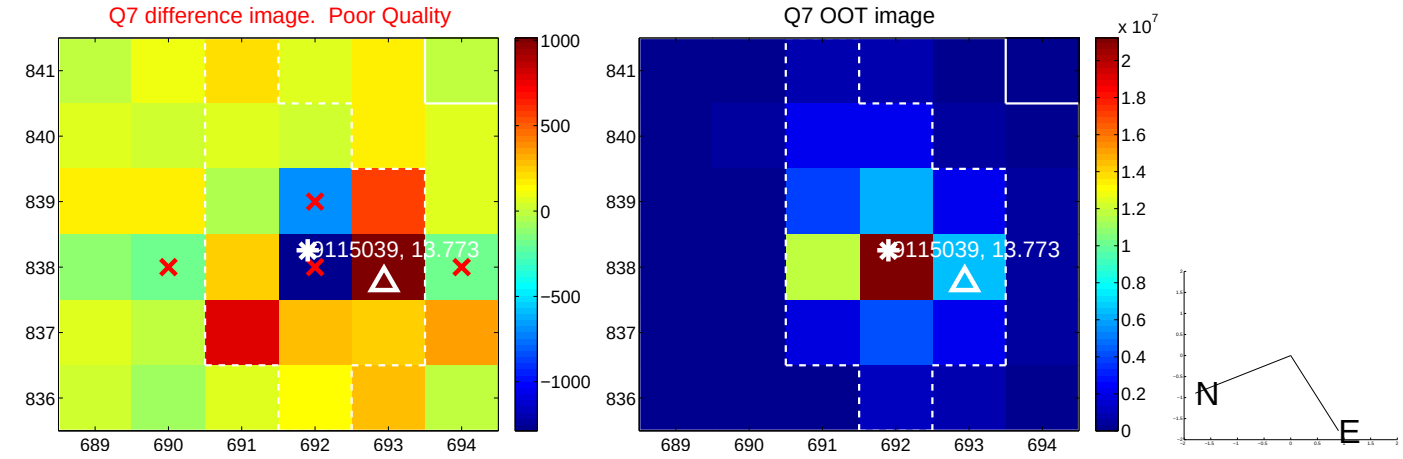
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.

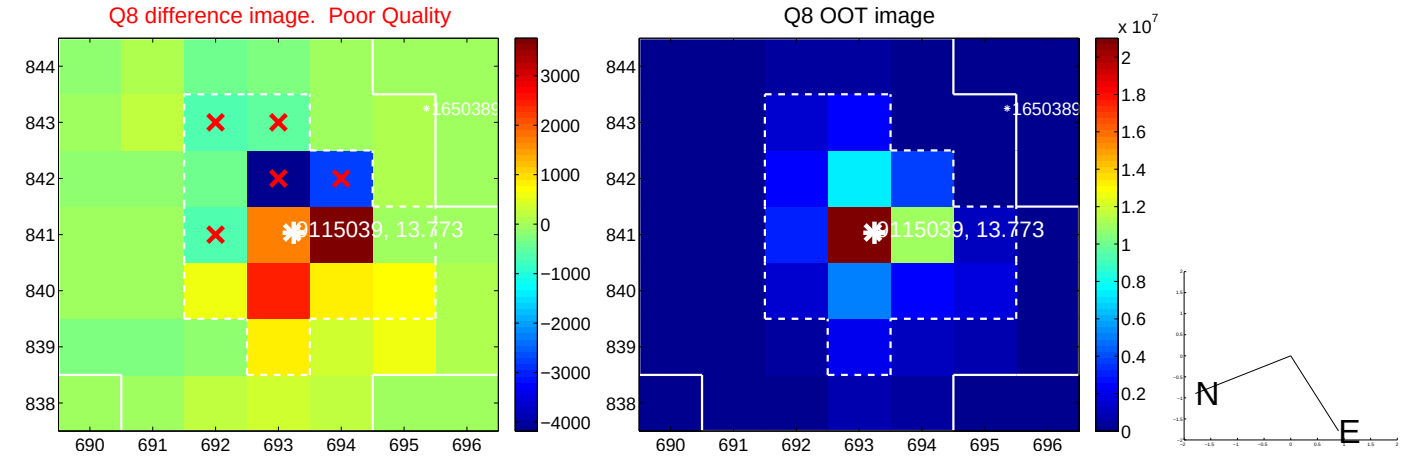


white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.

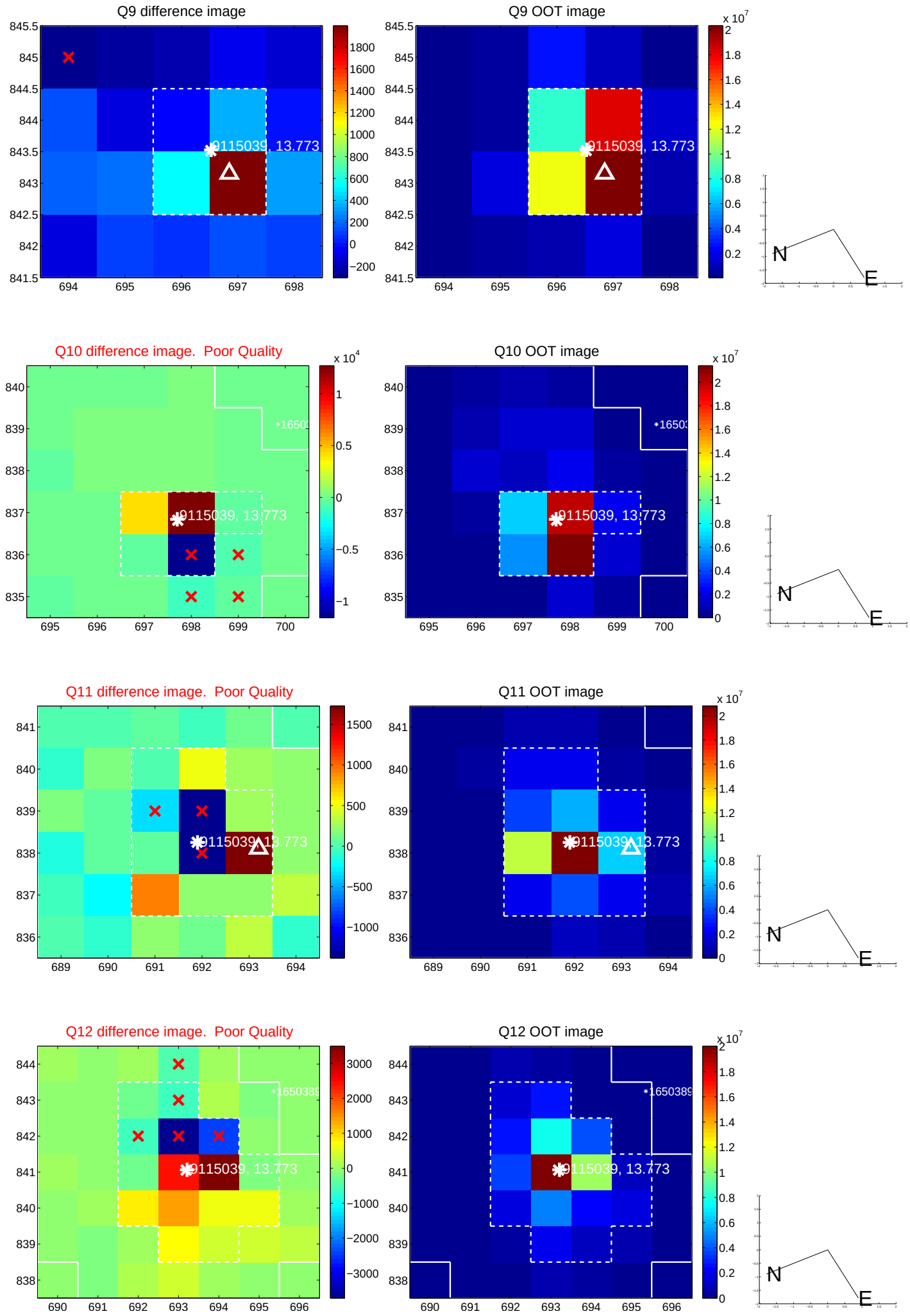




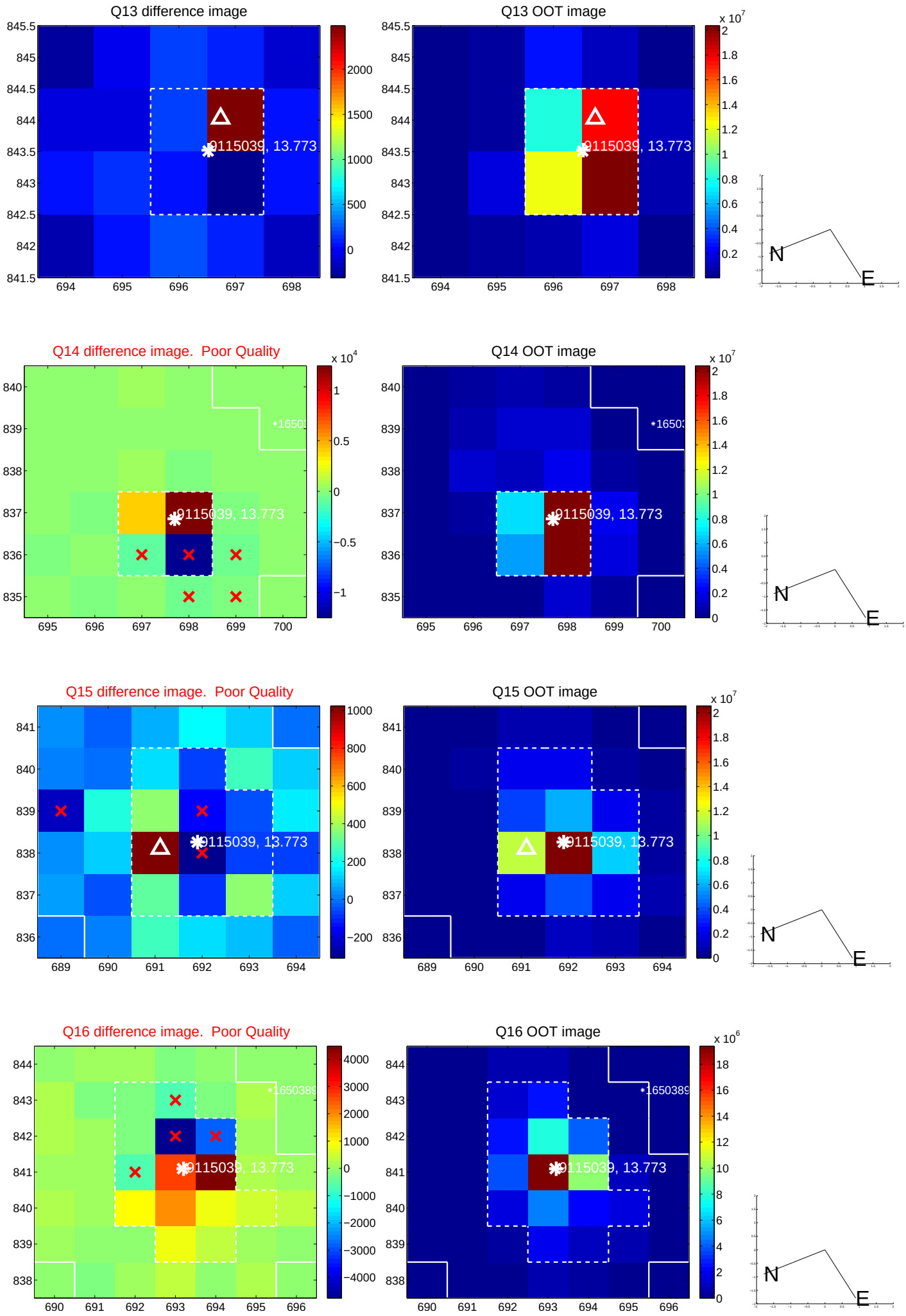




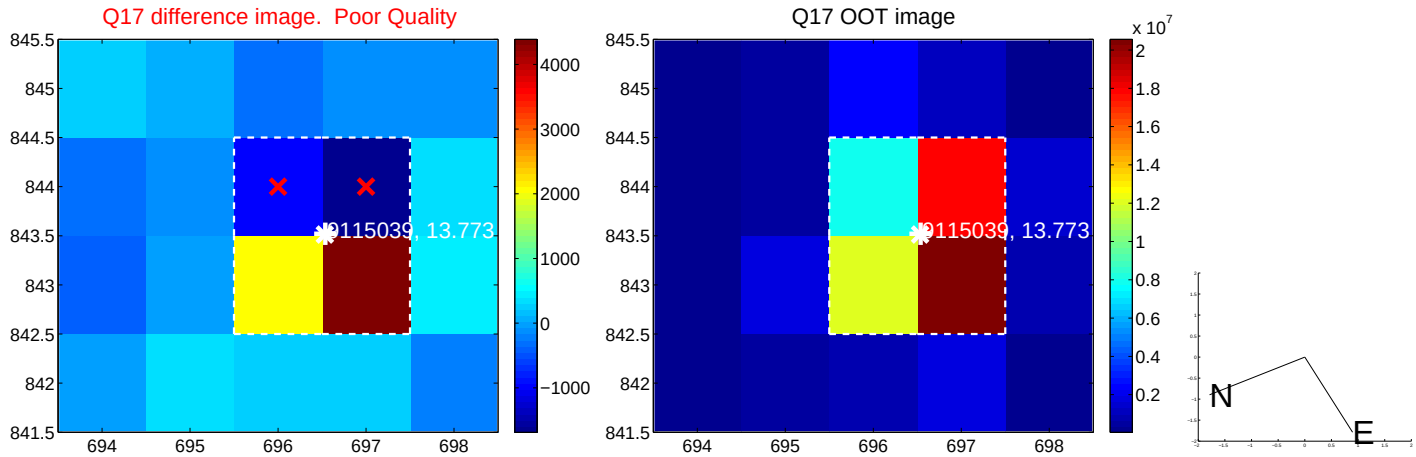
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.

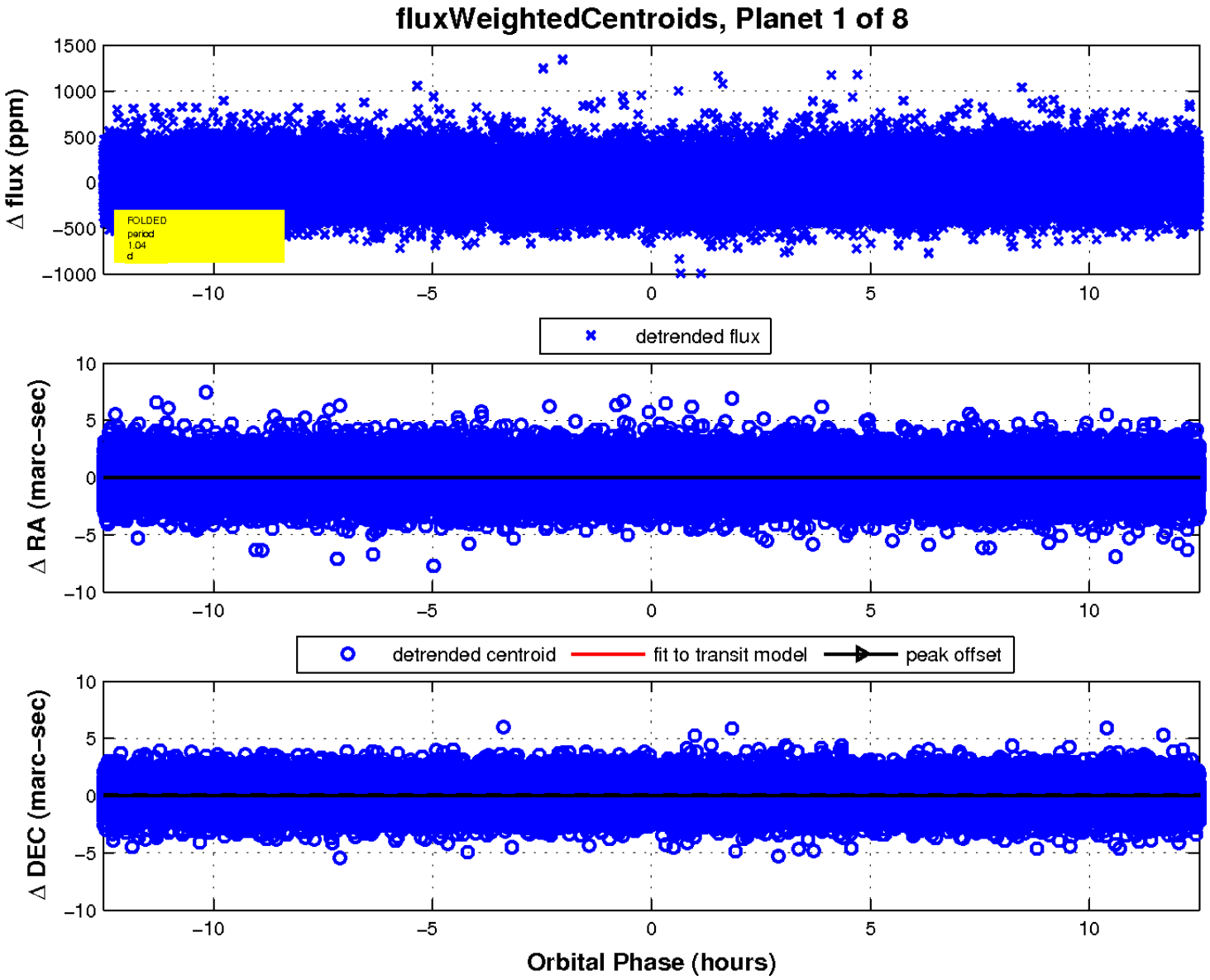


white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.

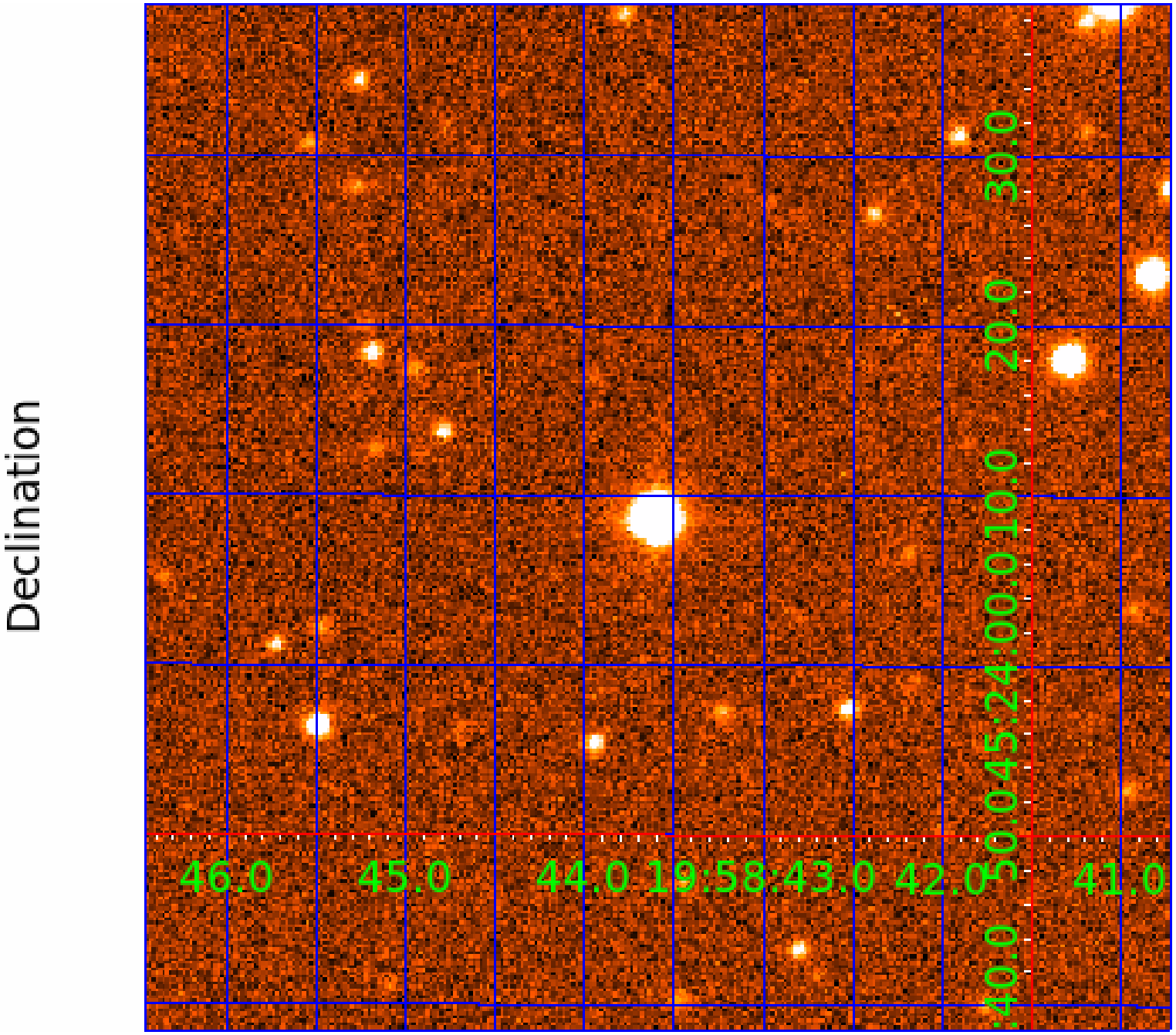


white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.





UKIRT Image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45.0
44.0
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42.0
41.0
40.0
50.0
45.0
24:00.0
10.0
20.0
30.0

KIC 009115039

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 ($S_\oplus$)
009115039-01	OBS	No	1.042986	131.553686	17.2	7.748	8.3	9.7	1.48	6680	0.71	8357.54
009115039-02	OBS	No	17.542812	148.151216	229.0	1.288	11.4	9.8	1.48	6680	2.40	193.93
009115039-03	OBS	No	27.035069	152.460805	383.5	1.163	10.8	10.4	1.48	6680	3.25	108.95
009115039-04	OBS	No	26.564566	132.691176	185.7	2.967	12.4	9.5	1.48	6680	2.23	111.53
009115039-05	OBS	No	11.950278	133.822951	321.2	0.937	10.0	10.9	1.48	6680	2.71	323.55
009115039-06	OBS	No	10.113701	141.211810	184.1	1.337	9.6	8.7	1.48	6680	2.34	404.18
009115039-07	OBS	No	13.333071	140.695541	294.4	0.637	10.9	13.2	1.48	6680	2.68	279.60

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009115039-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT
009115039-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS—HALO_GHOST
009115039-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
009115039-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
009115039-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—CENT_FEW_DIFFS
009115039-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
009115039-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—CENT_FEW_DIFFS

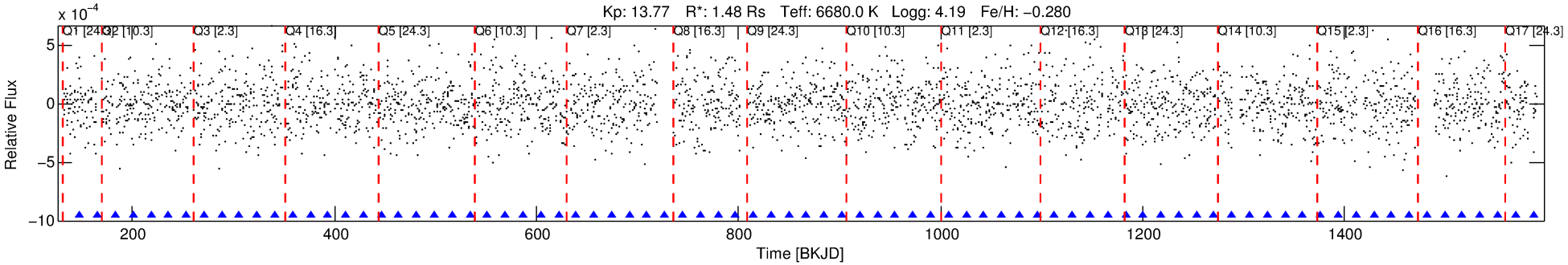
Notes: OBS = Observed. INJ = Injected. INV = Inverted. SCR = Scrambled.
N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.
See `http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col` for comment definitions.

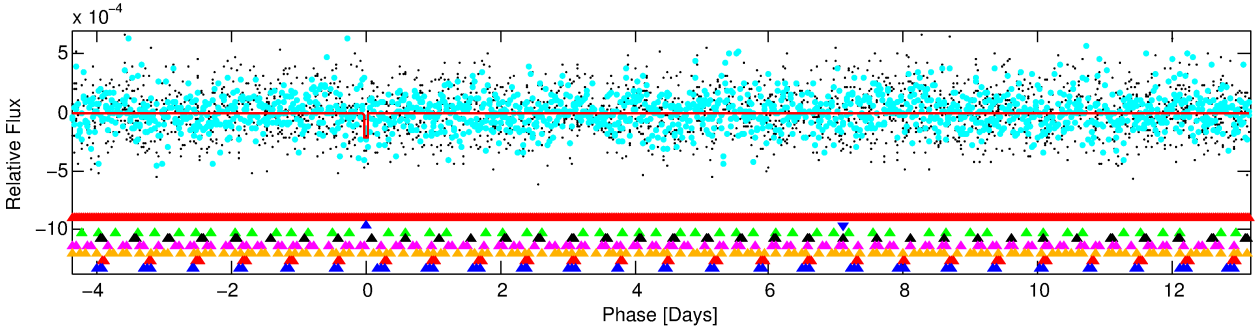
Ephemeris Match Information For 009115039-02

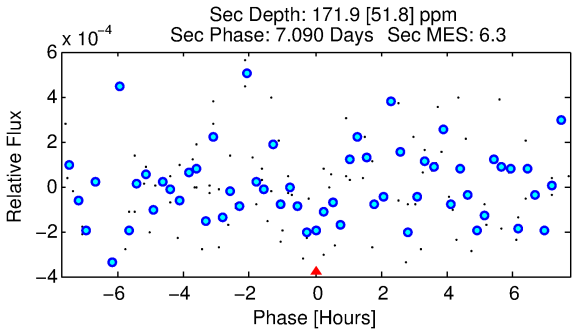
No Significant Match Found

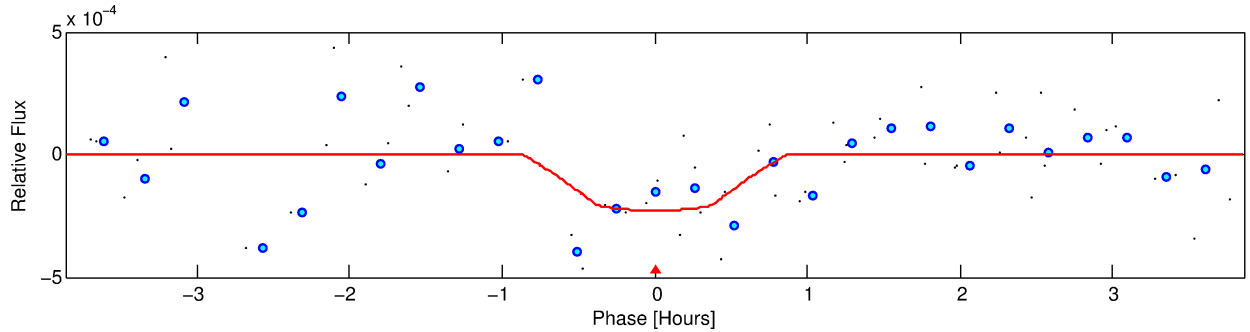
DV One-Page Summary

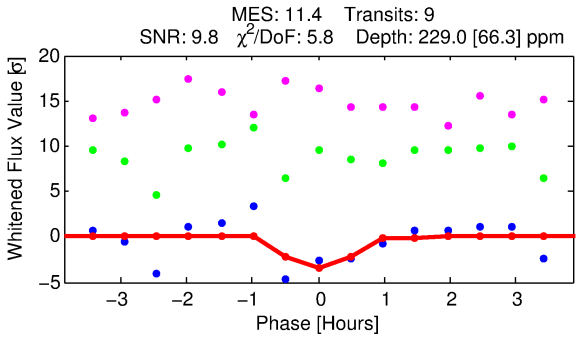
KIC: 9115039 Candidate: 2 of 8 Period: 17.543 d

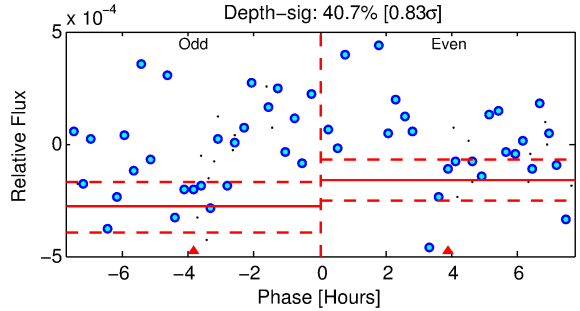


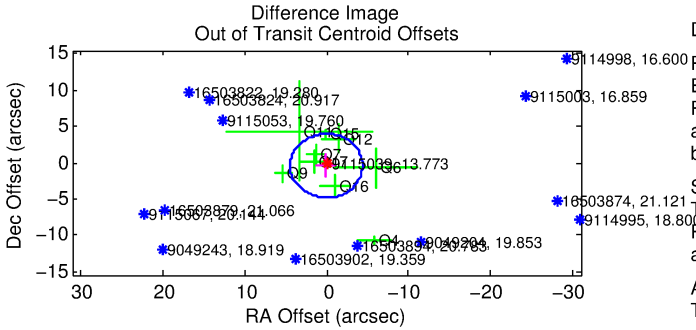












DV Fit Results:

Period = 17.54281 [0.00026] d
Epoch = 148.1512 [0.0148] BKJD
Rp/R* = 0.0149 [0.0163]
a/R* = 76.69 [468.95]
b = 0.70 [4.54]

Seff = 193.93 [69.90]
Teq = 952 [86] K
Rp = 2.40 [2.71] Re
a = 0.1418 [0.0335] AU

Ag = 328.73 [731.85] [0.45σ]
Teffp = 6265 [3455] K [1.54σ]

DV Diagnostic Results:

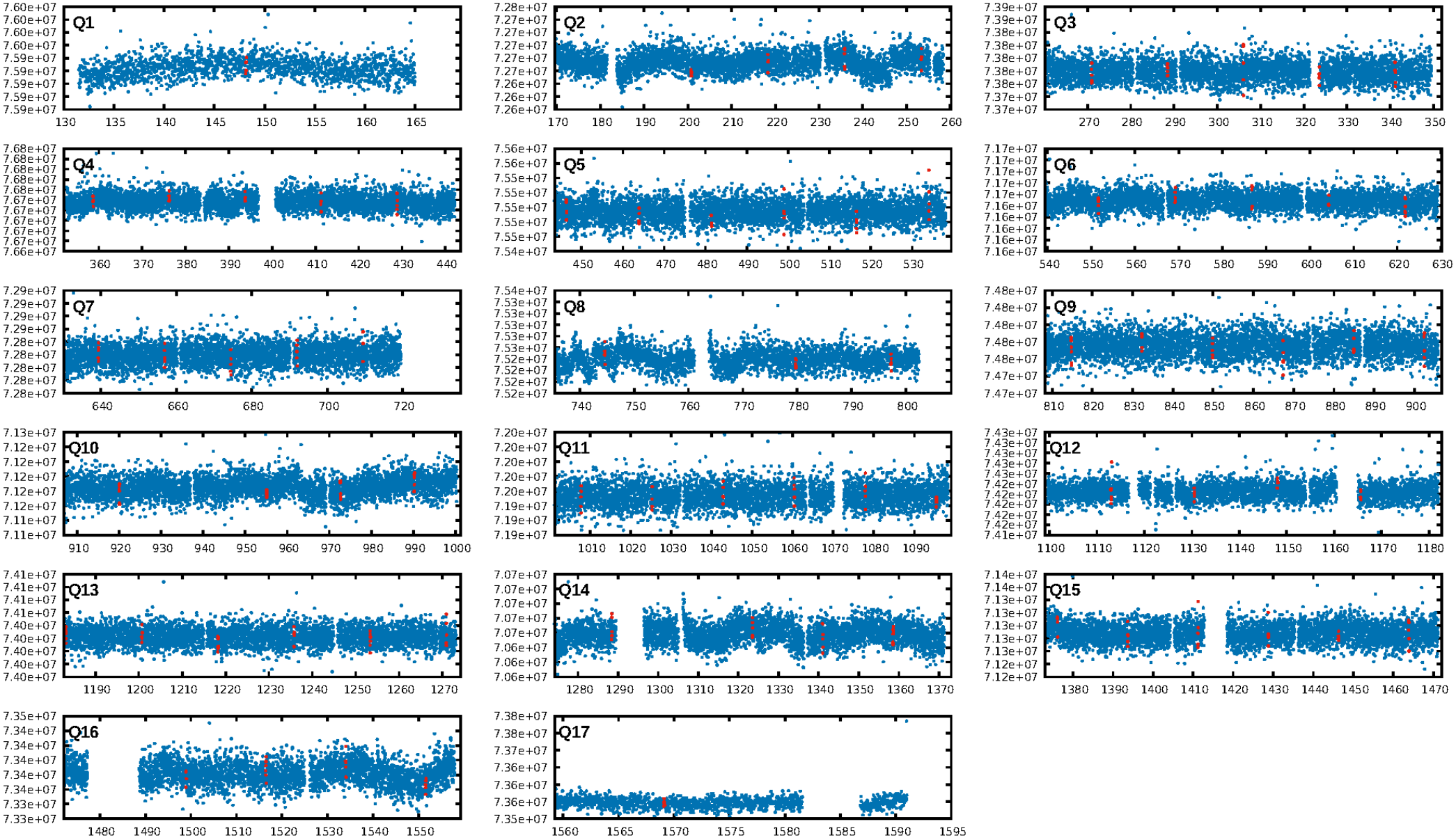
ShortPeriod−sig: 100.0% [70.33σ]
LongPeriod−sig: 100.0% [9.71σ]
ModelChiSquare2−sig: 0.0%
ModelChiSquareGof−sig: 0.0%
Bootstrap−pfa: 1.03e−28
RollingBand−fgt: 1.00 [9/9]
GhostDiagnostic−chr: −0.08037

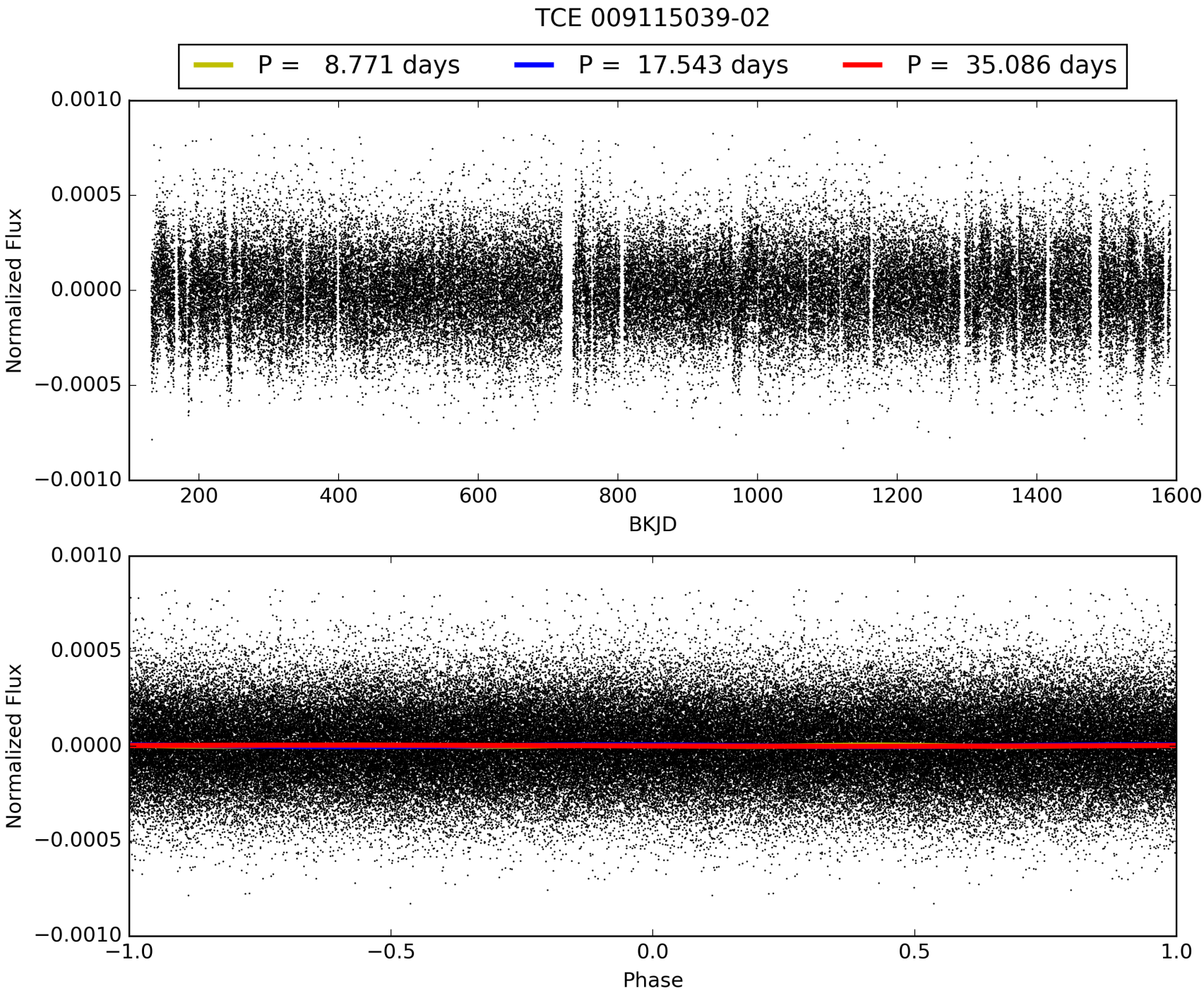
Centroid−sig: 56.0%
Centroid−so: 0.611 arcsec [0.59σ]
OotOffset−rm: 0.434 arcsec [0.29σ]
KicOffset−rm: 0.470 arcsec [0.33σ]
OotOffset−st: 1/3/3/2 [9]
KicOffset−st: 1/3/3/2 [9]
DiffImageQuality−fgm: 0.00 [0/9]
DiffImageOverlap−fno: 0.71 [12/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01−Feb−2016 13:01:48 Z

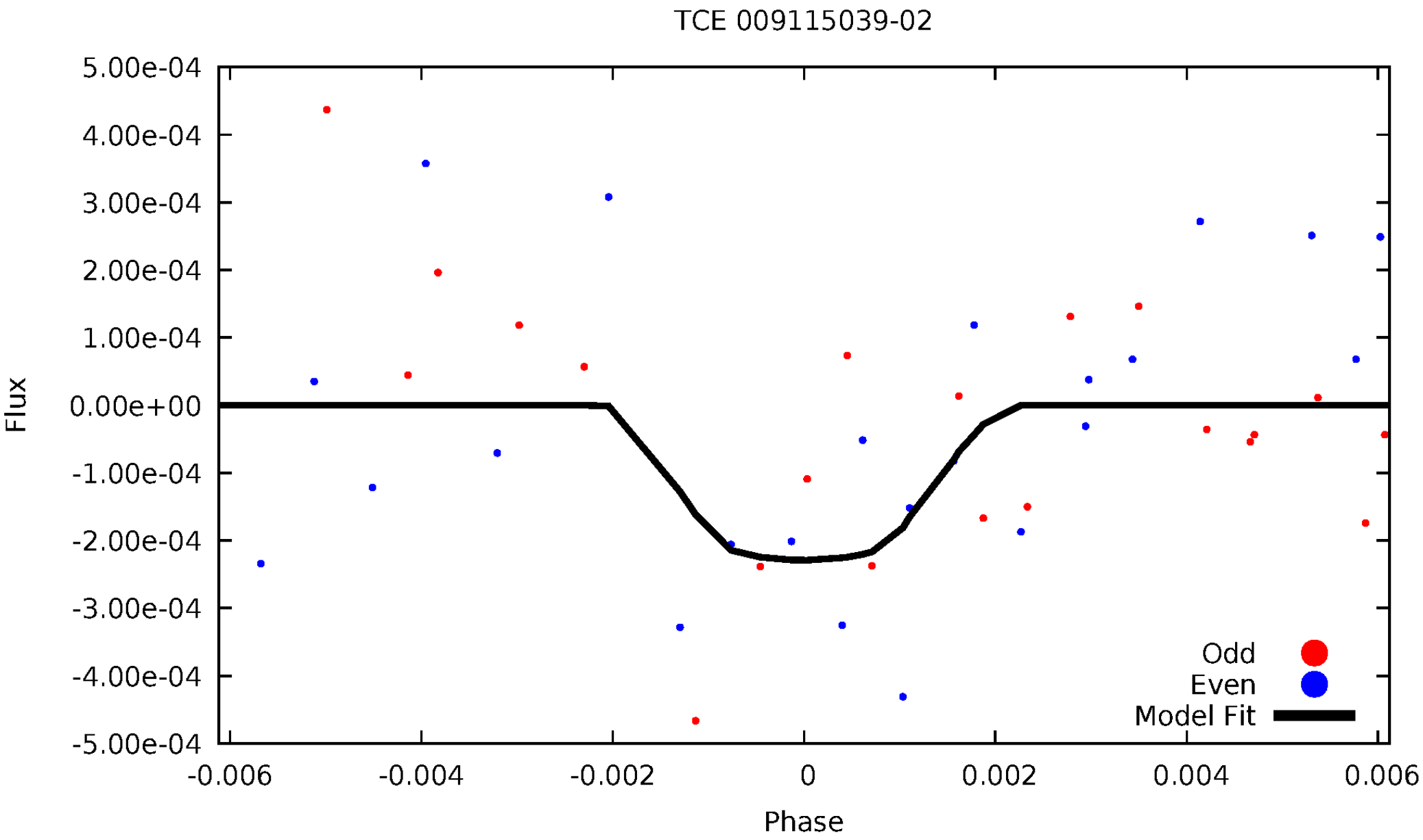
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 009115039-02, PDC Light Curves

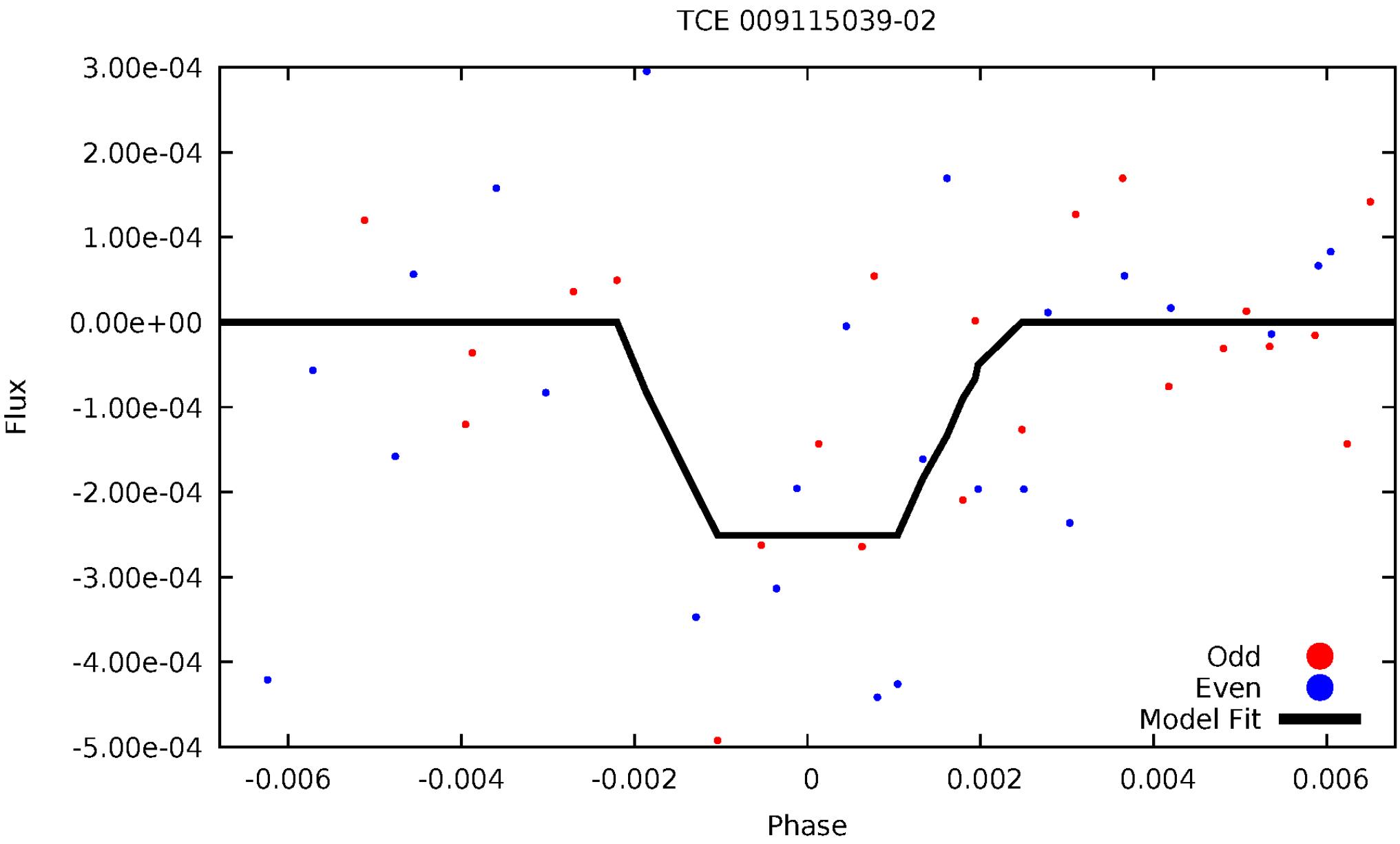



TCE 009115039-02
P = 8.771 days
P = 17.543 days
P = 35.086 days
Normalized Flux
0.0010
0.0005
0.0000
−0.0005
−0.0010
200
400
600
800
1000
1200
1400
1600
BKJD
Normalized Flux
0.0010
0.0005
0.0000
−0.0005
−0.0010
−1.0
−0.5
0.0
0.5
1.0
Phase

DV Odd/Even


TCE 009115039-02
5.00e-04
4.00e-04
3.00e-04
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
-0.006
-0.004
-0.002
0
0.002
0.004
0.006
Phase
Odd
Even
Model Fit

ALT Odd/Even


TCE 009115039-02
3.00e-04
2.00e-04
1.00e-04
0.00e+00
-1.00e-04
-2.00e-04
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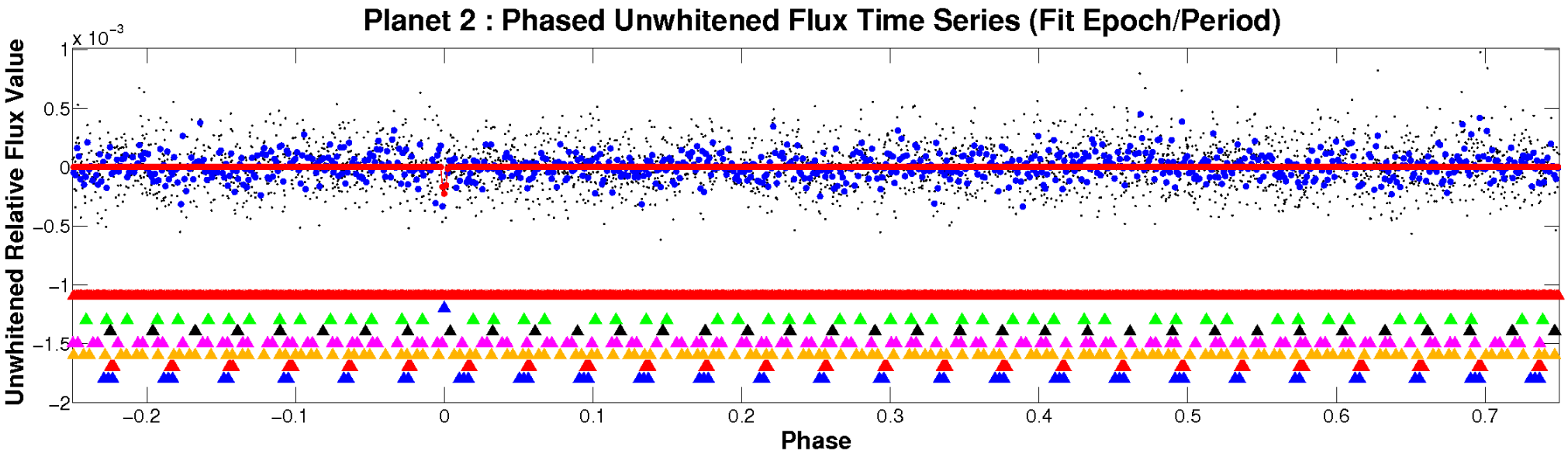
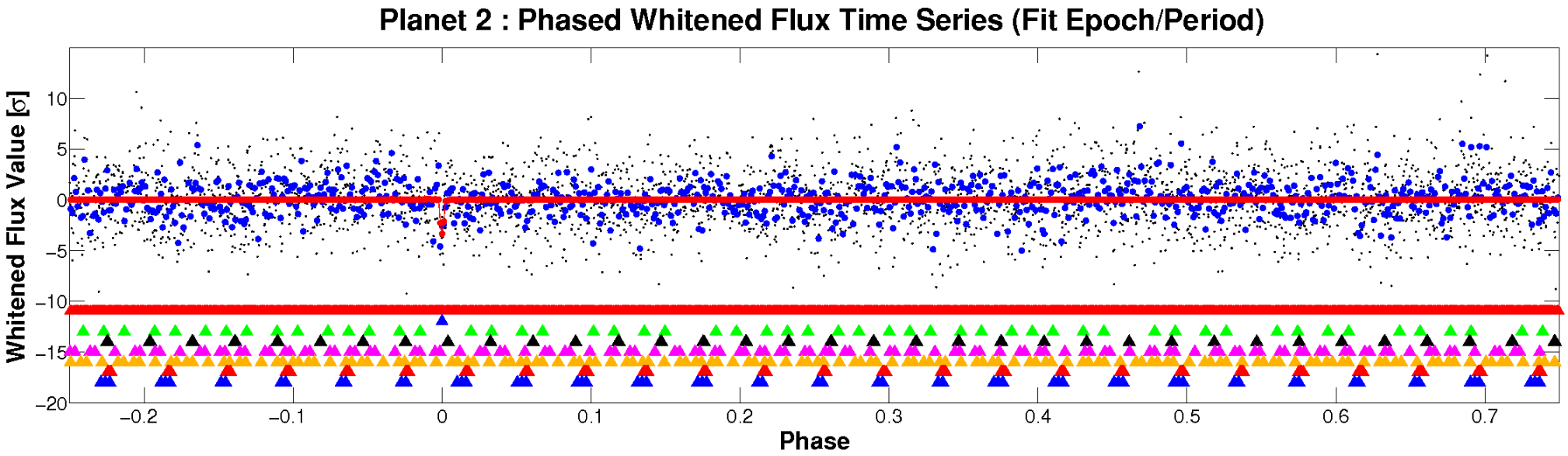
-4.00e-04
-5.00e-04
Flux
-0.006
-0.004
-0.002
0
0.002
0.004
0.006
Phase
Odd
Even
Model Fit

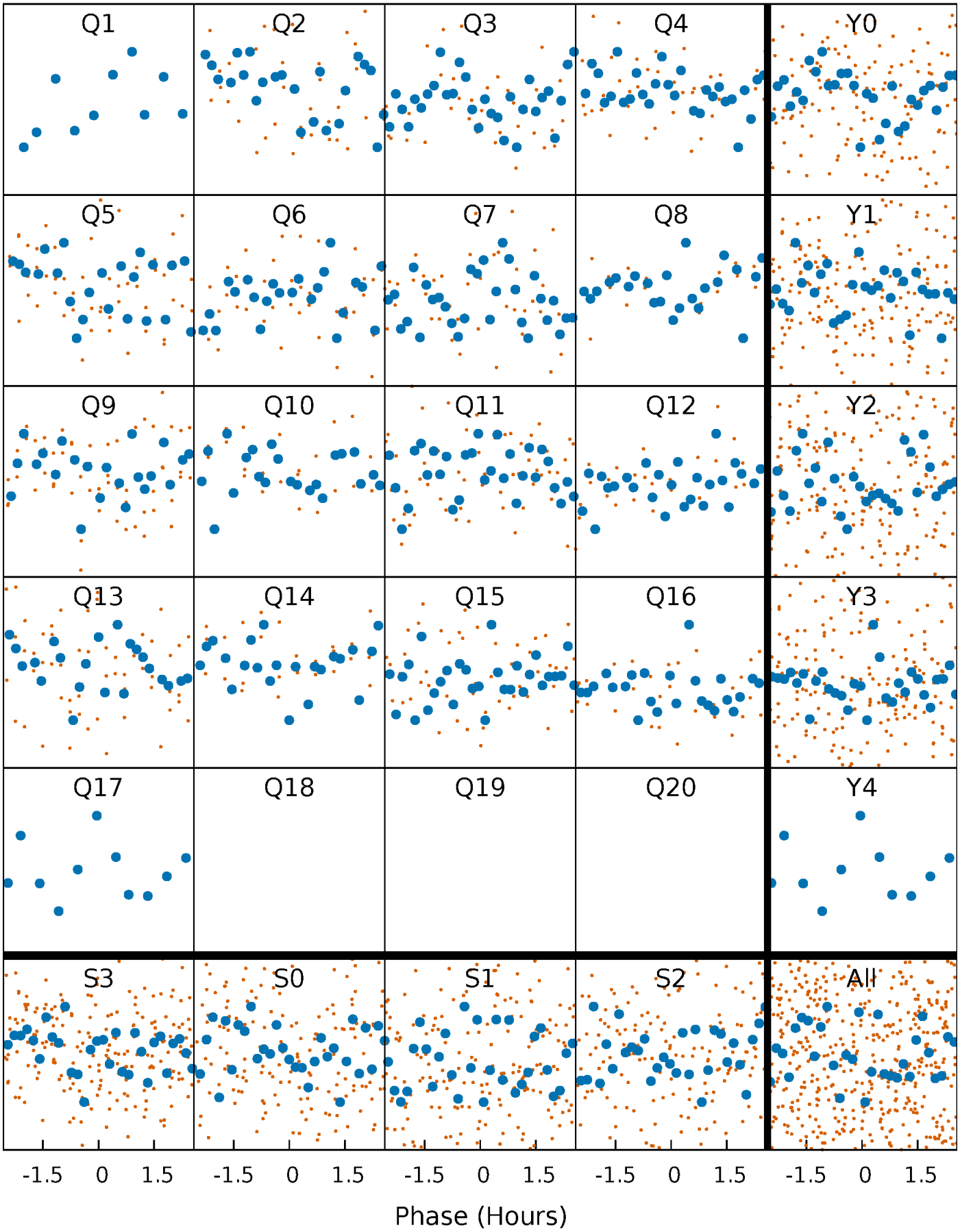
Non-Whitened Vs. Whitened Light Curve





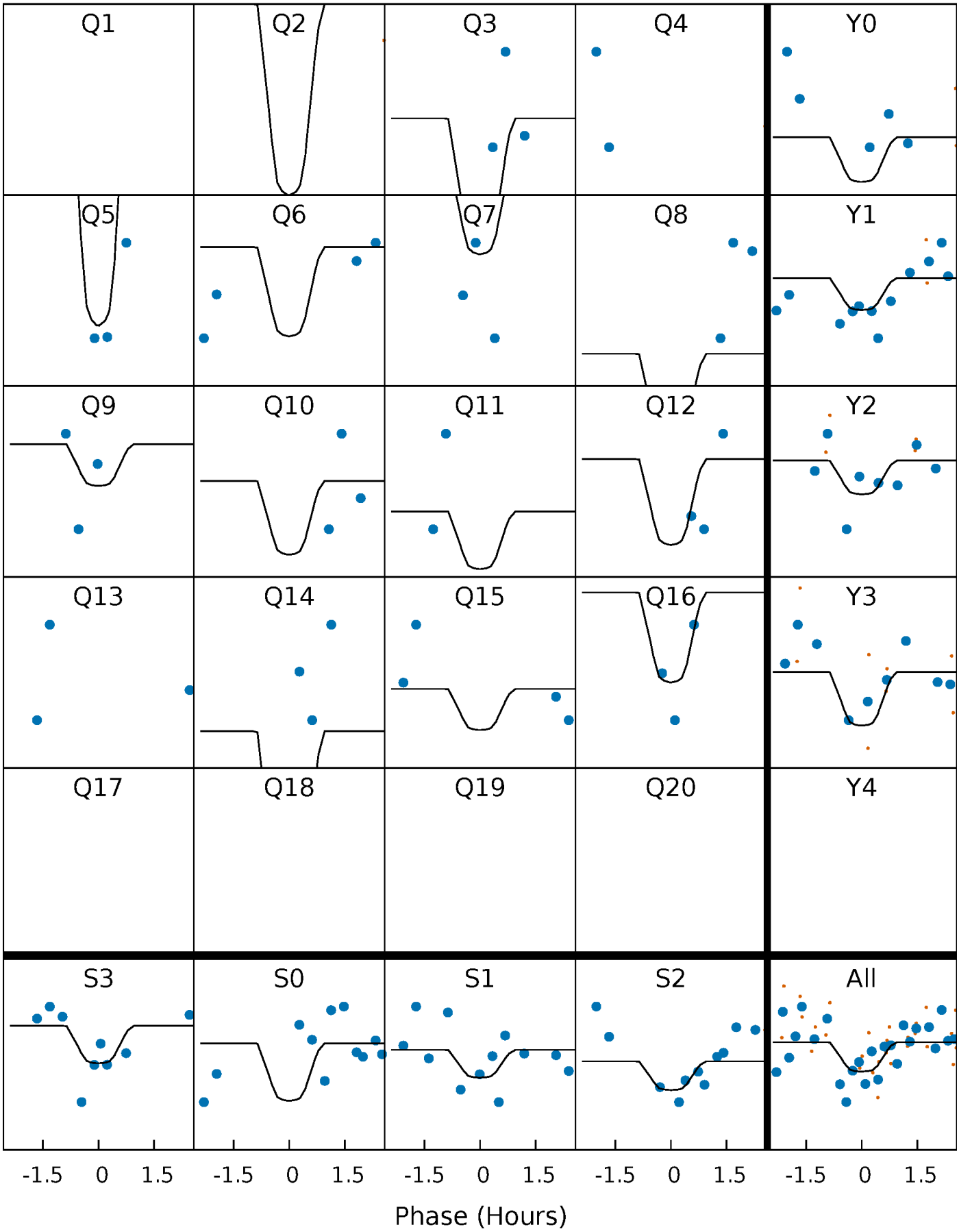
PDC Quarter-Phased Transit Curves

TCE 009115039-02 P= 17.542812 Days T_0=148.151216 (BKJD)



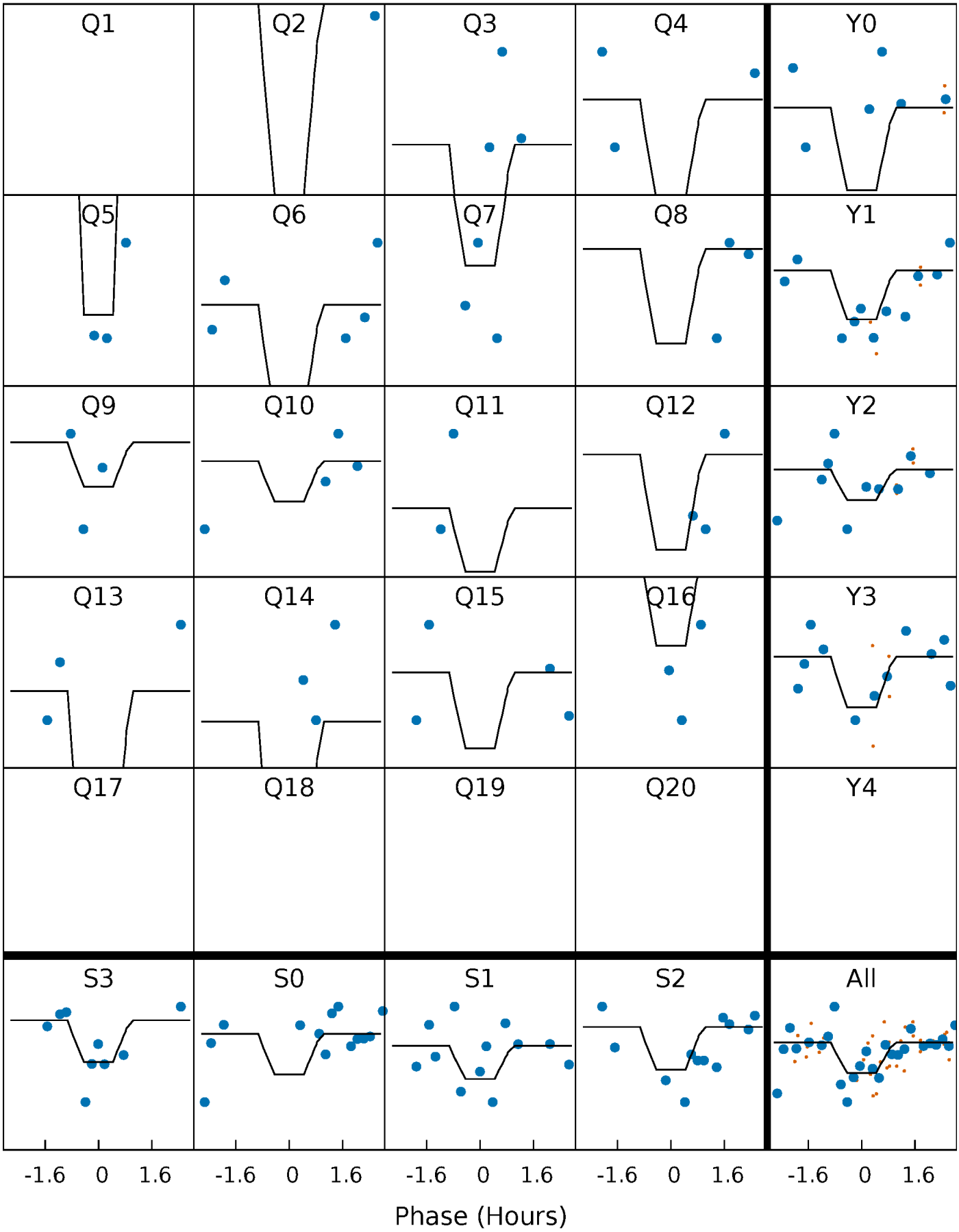
DV Quarter-Phased Transit Curves

TCE 009115039-02 P= 17.542812 Days T_0=148.151216 (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

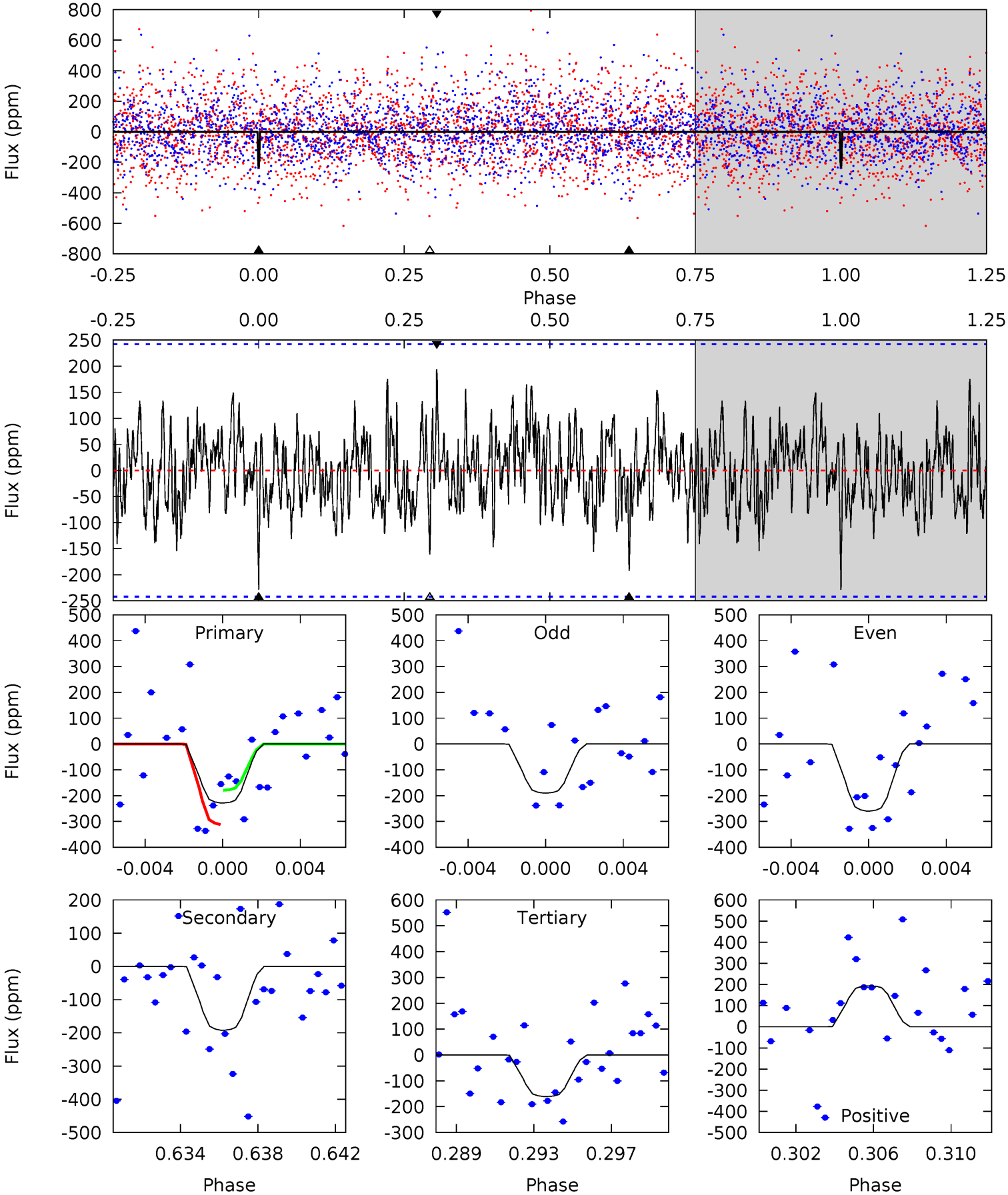
TCE 009115039-02 P= 17.542673 Days T_0=148.155236 (BKJD)



DV Model-Shift Uniqueness Test

009115039-02, P = 17.542812 Days, E = 130.608404 Days

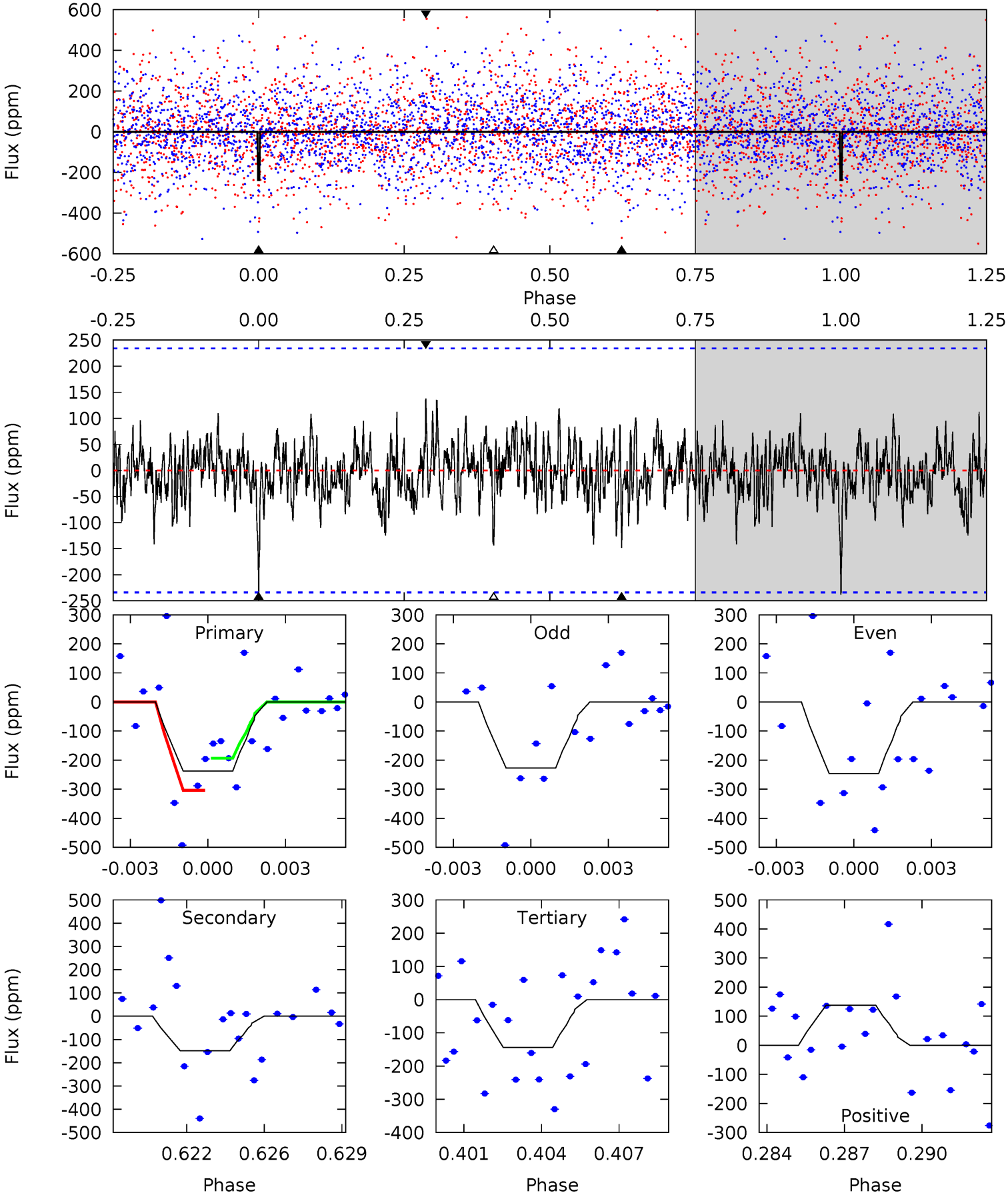
Pri	Sec	Ter	Pos	FA_1	FA_2	F_{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4.90	4.13	3.45	4.16	5.19	2.85	1.29	1.45	0.75	0.67	-0.03	0.77	0.72	0.46	1.32



Alt Model-Shift Uniqueness Test

009115039-02, P = 17.542673 Days, E = 130.612563 Days

Pri	Sec	Ter	Pos	FA_1	FA_2	F_{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.33	3.33	3.22	3.09	5.24	2.94	0.99	2.10	2.24	0.11	0.24	0.22	0.67	0.37	1.12



Stellar Parameters For KIC 009115039

	$T_{\rm eff}(K)$	$\log(g)$	[Fe/H]	R ($R_\odot$)	$M(M_\odot)$	$p_\star$ (g·cm^{-3})
	6680^{+189}_{-236}	$4.190^{+0.158}_{-0.175}$	$-0.280^{+0.250}_{-0.300}$	$1.478^{+0.431}_{-0.352}$	$1.241^{+0.189}_{-0.189}$	$0.542^{+0.500}_{-0.263}$
	+3%/-4%	+4%/-4%	+89%/-107%	+29%/-24%	+15%/-15%	+92%/-48%
Source	PHO1	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 009115039-02 / KOI

Detrend	Depth (ppm)	R_p ($R_\oplus$)	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-193±47	$3.04^{+2.47}_{-1.93}$	1331^{+102}_{-86}	5721^{+4775}_{-1272}	229^{+1493}_{-160}
Alt.	-149±45	$3.22^{+2.54}_{-2.09}$	1334^{+103}_{-95}	5256^{+3971}_{-1102}	155^{+1072}_{-110}

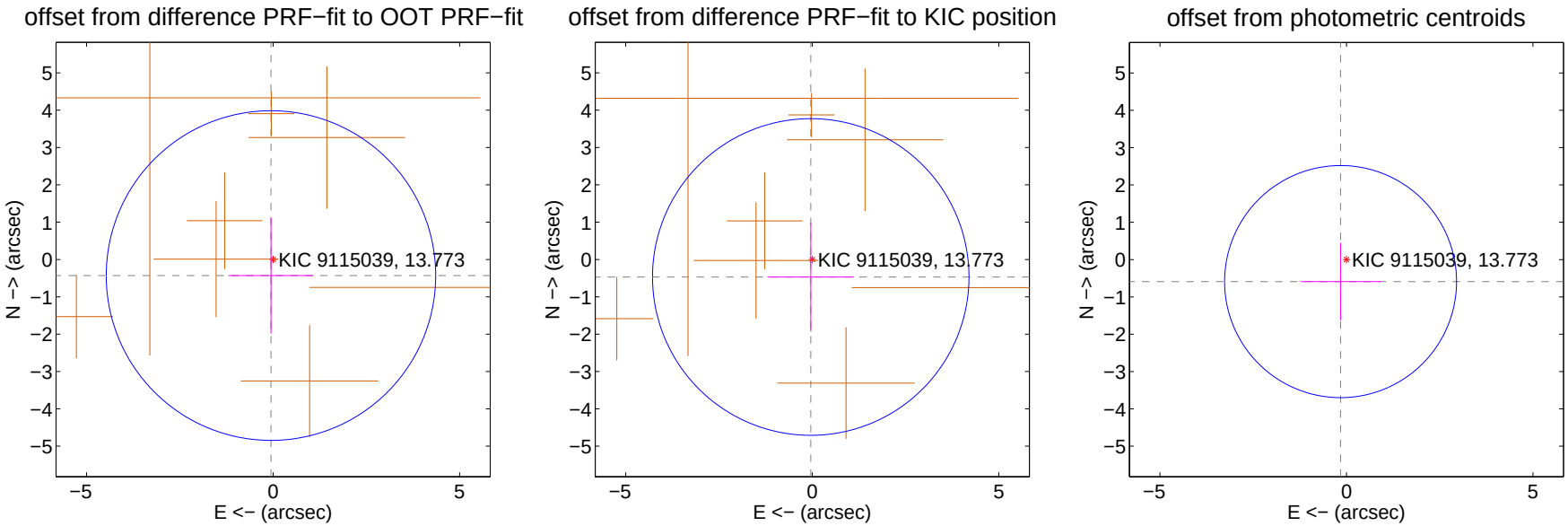
T_{max} = Theoretical Maximum Planetary Temperature
T_{obs} = Observed Planetary Temperature (Assuming A=0.3)
A_{obs} = Observed Albedo (Assuming T=0)

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

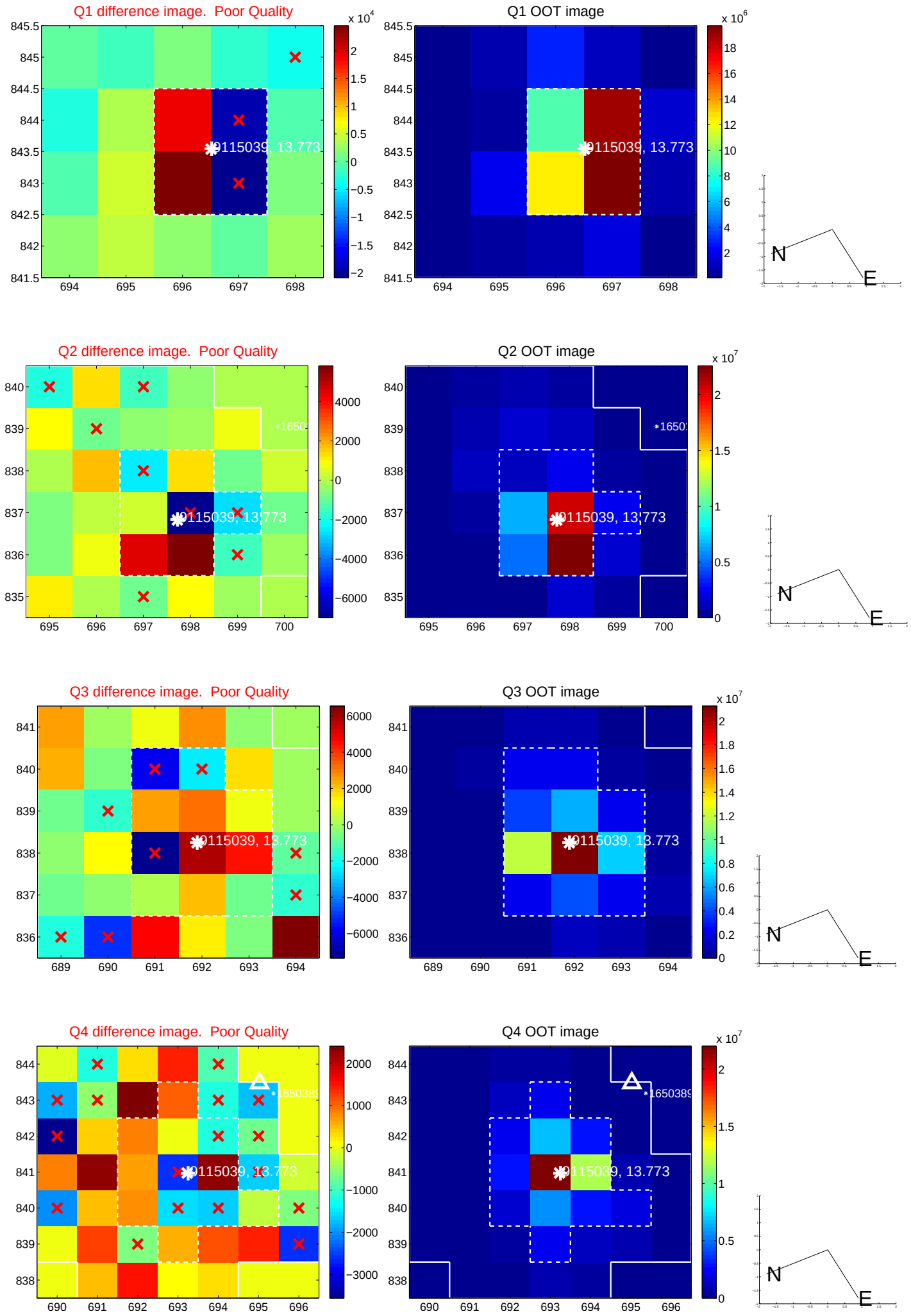
Supplemental centroid analysis for 009115039-02. Kepler magnitude: 13.77. Transit SNR 9.80
There are 0 quarters with good PRF difference image offsets
The direct PRF centroid is offset from the target star catalog position by about 0.04 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.434 ± 1.471	0.29	0.057 ± 1.138	-0.430 ± 1.552
PRF-fit source offset from KIC position	0.470 ± 1.414	0.33	0.041 ± 1.159	-0.468 ± 1.461
photometric centroid source offset	0.61 ± 1.04	0.59	0.16 ± 1.07	-0.59 ± 1.03

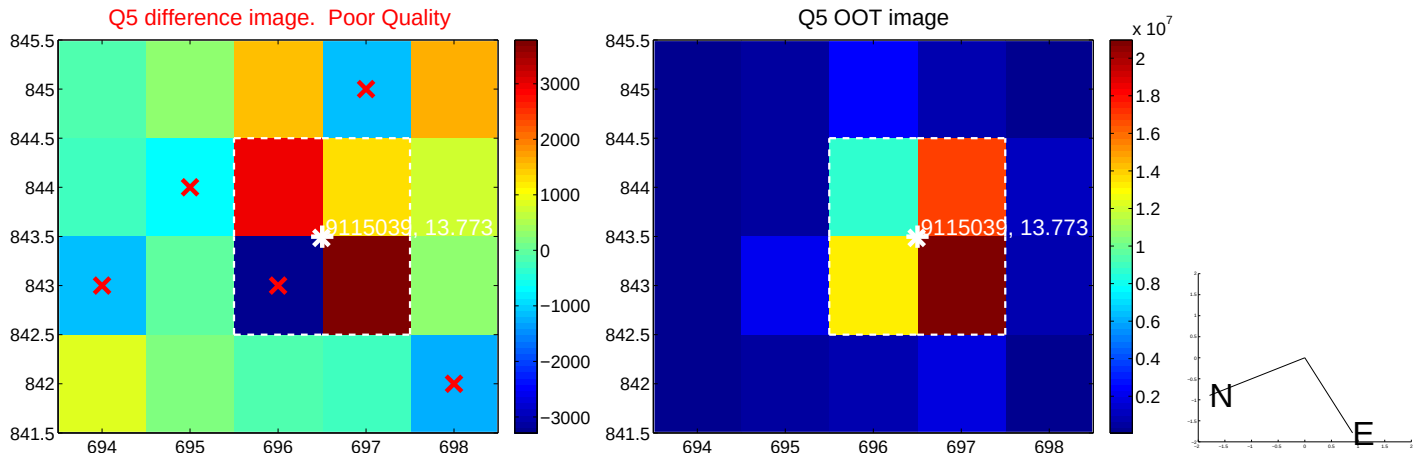


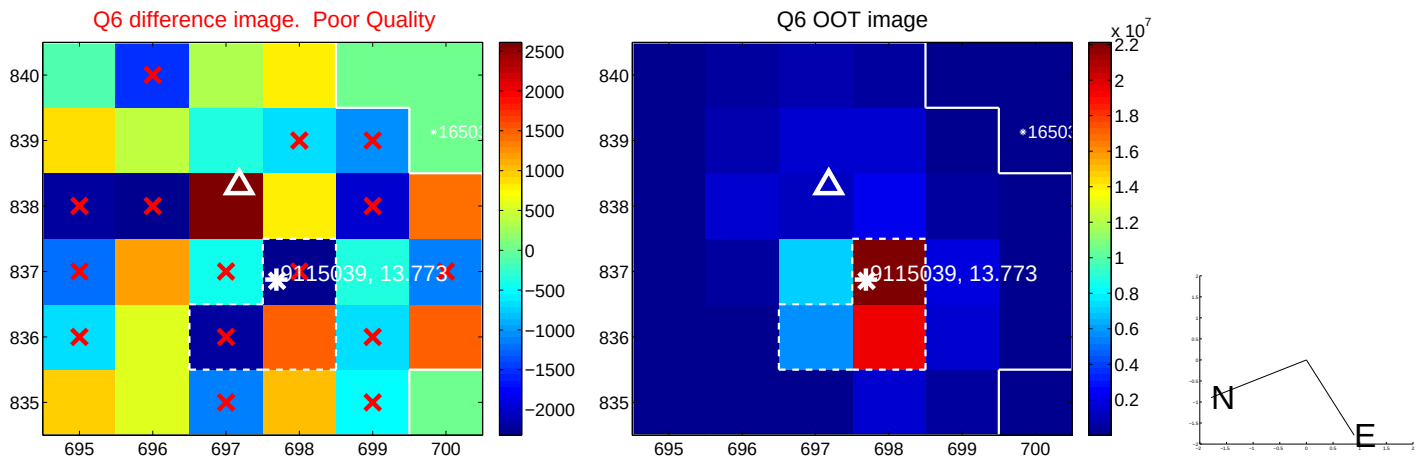
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one-σ uncertainty. Blue circle: three-σ. Red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

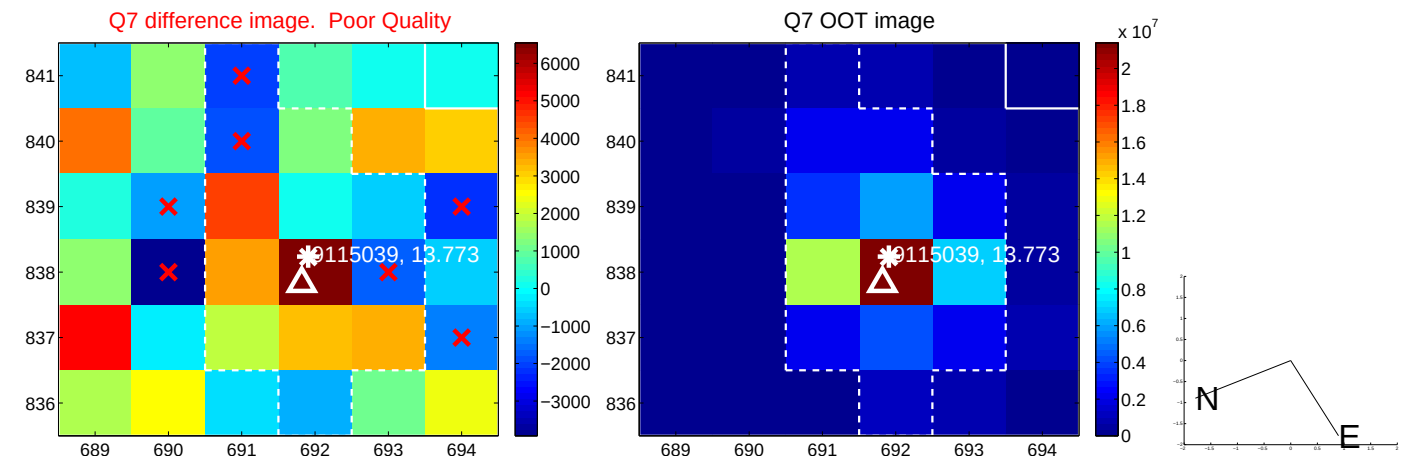
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.

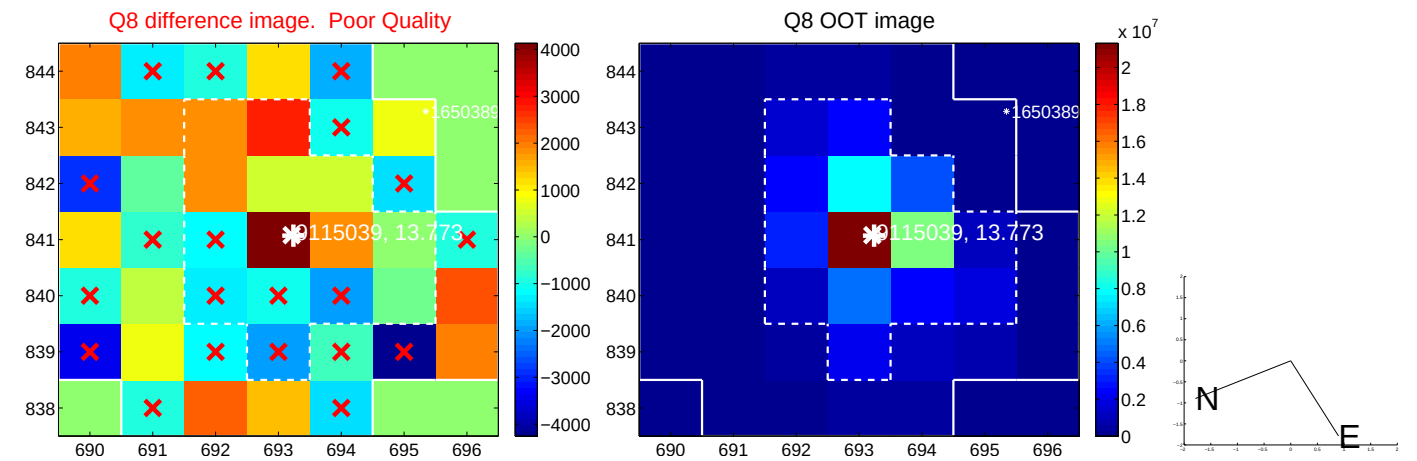


white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.

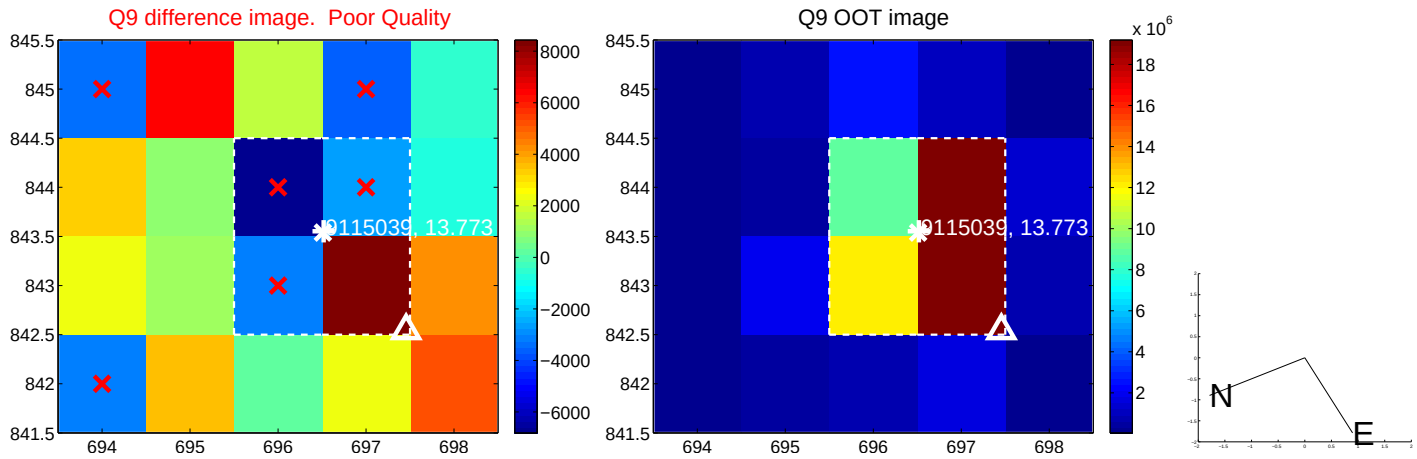


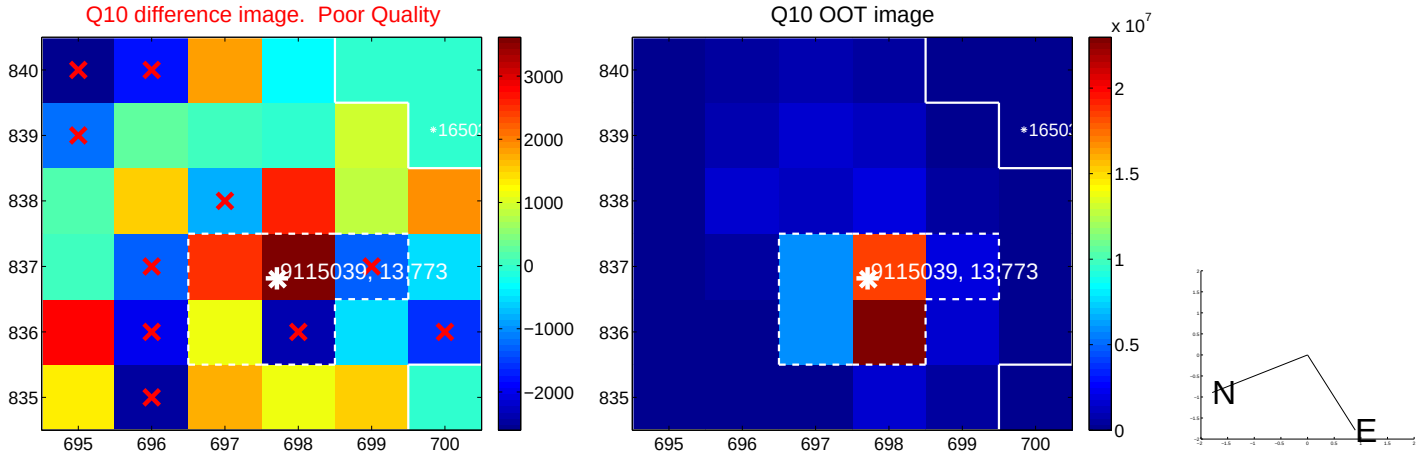


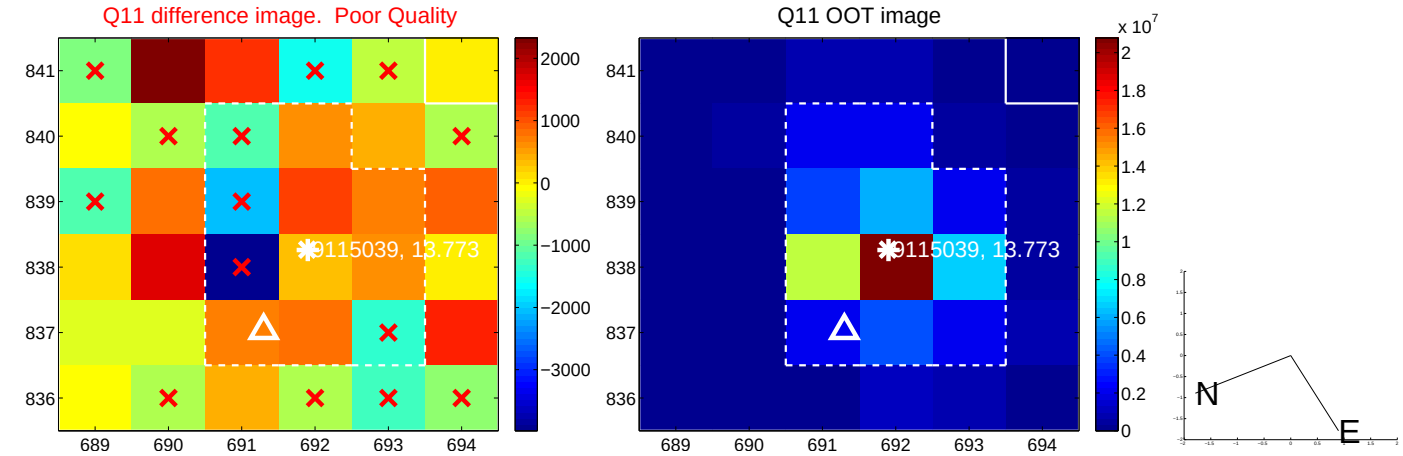


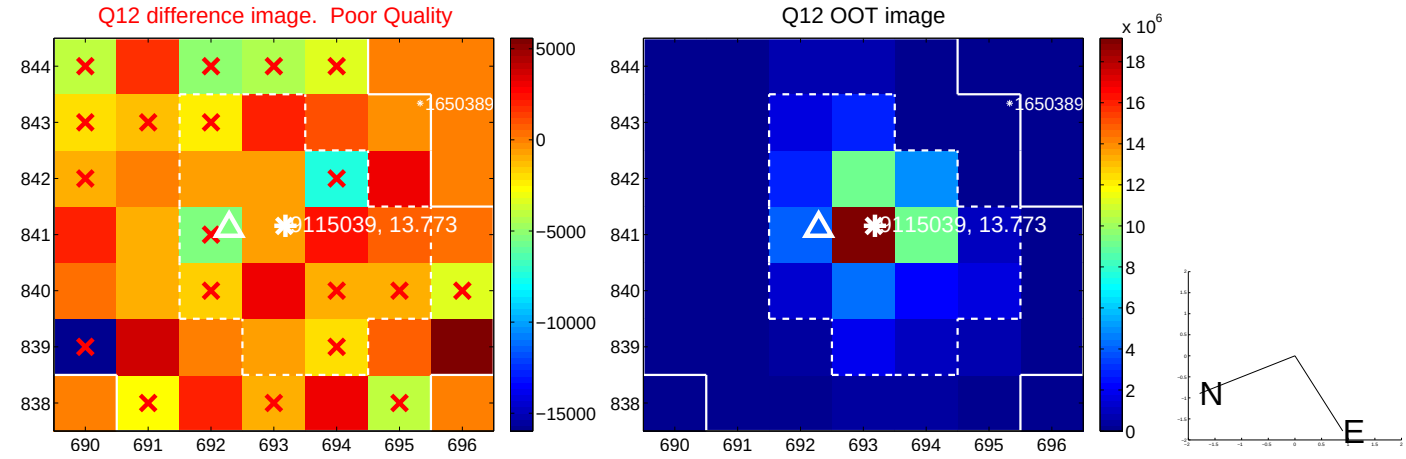


white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.

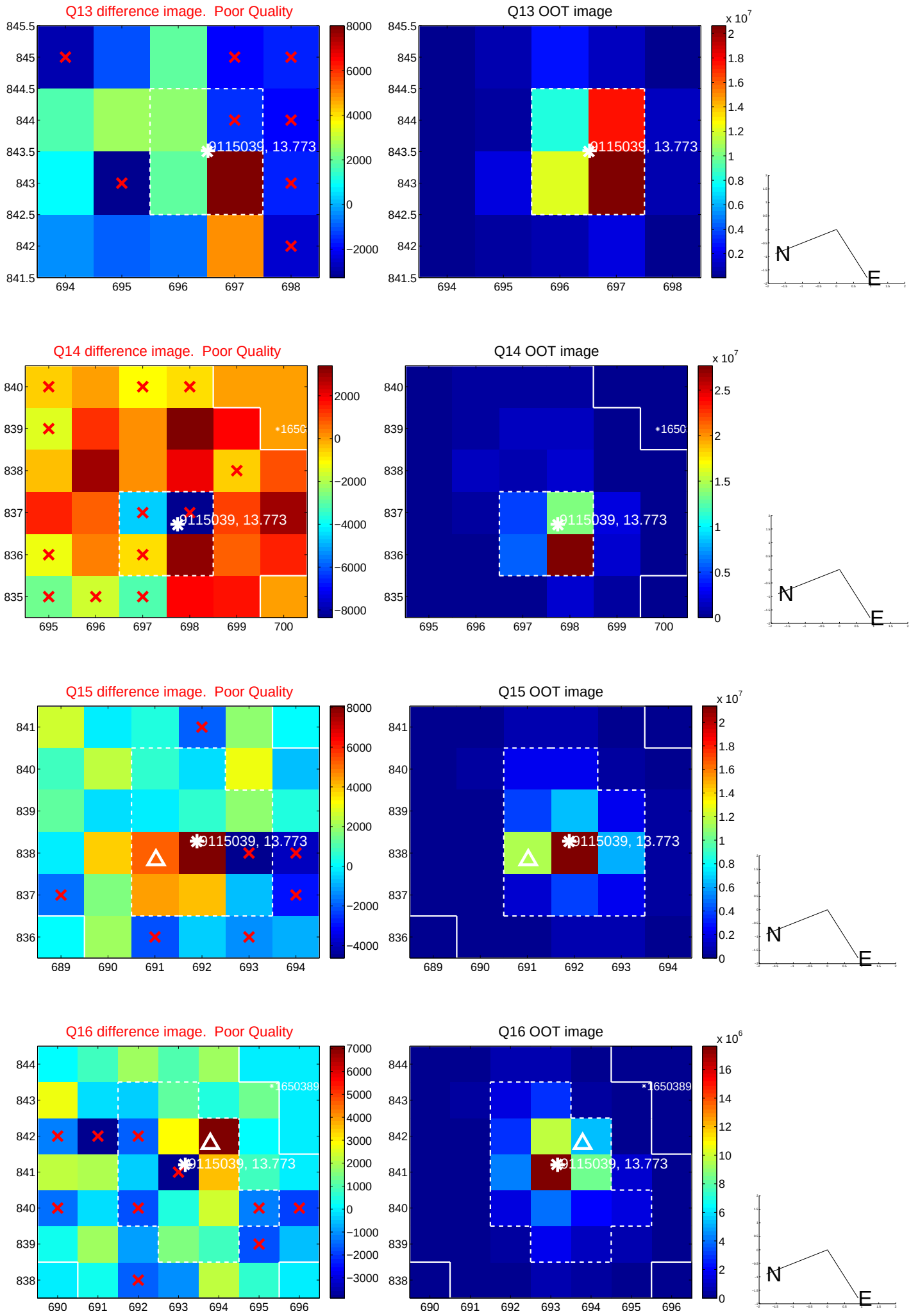




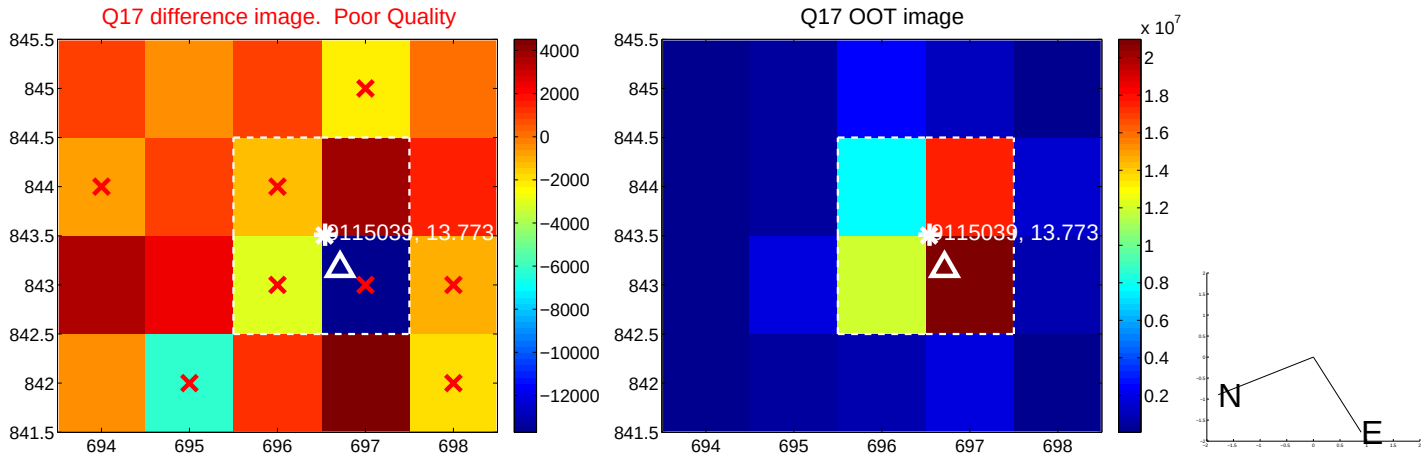


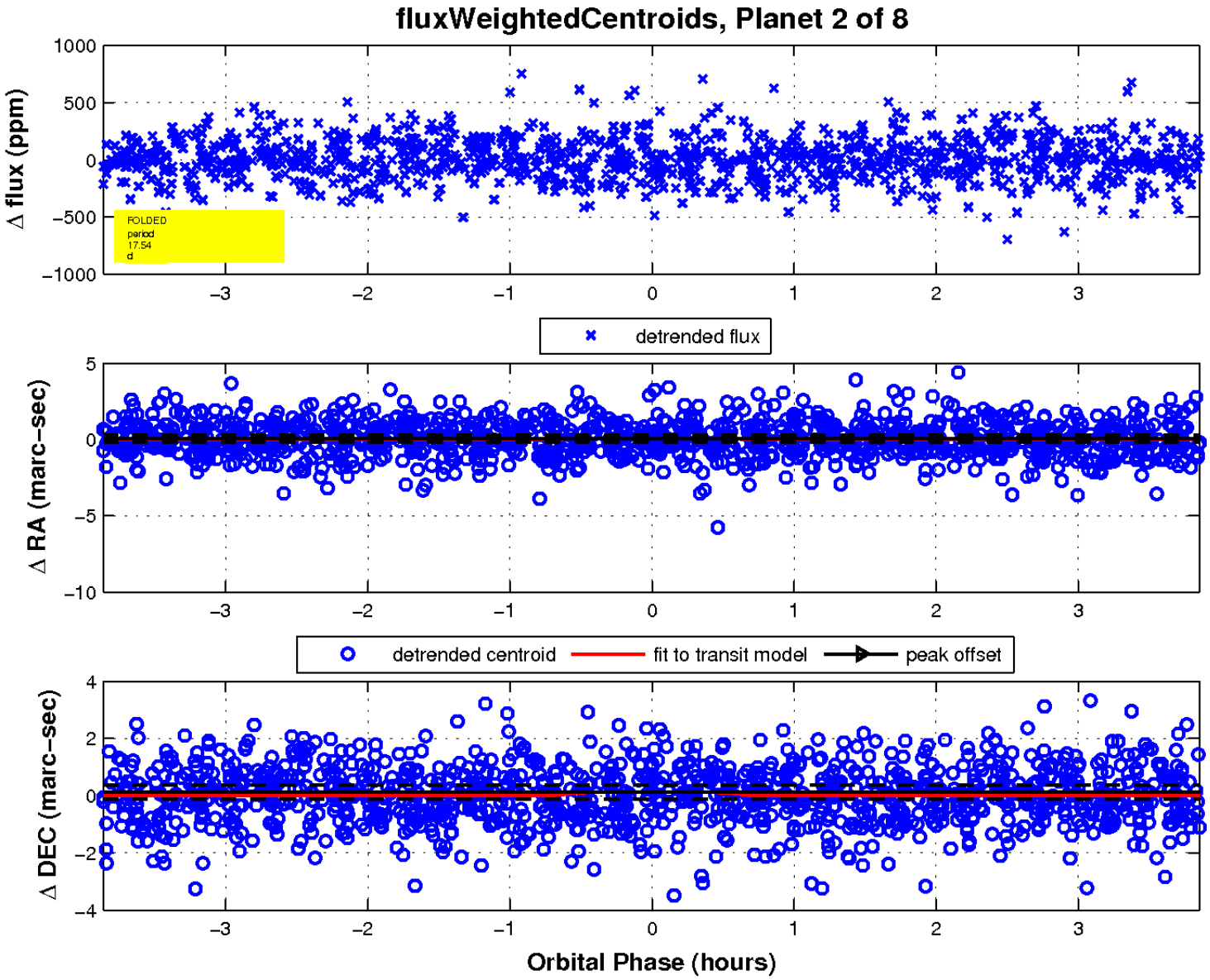


white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.

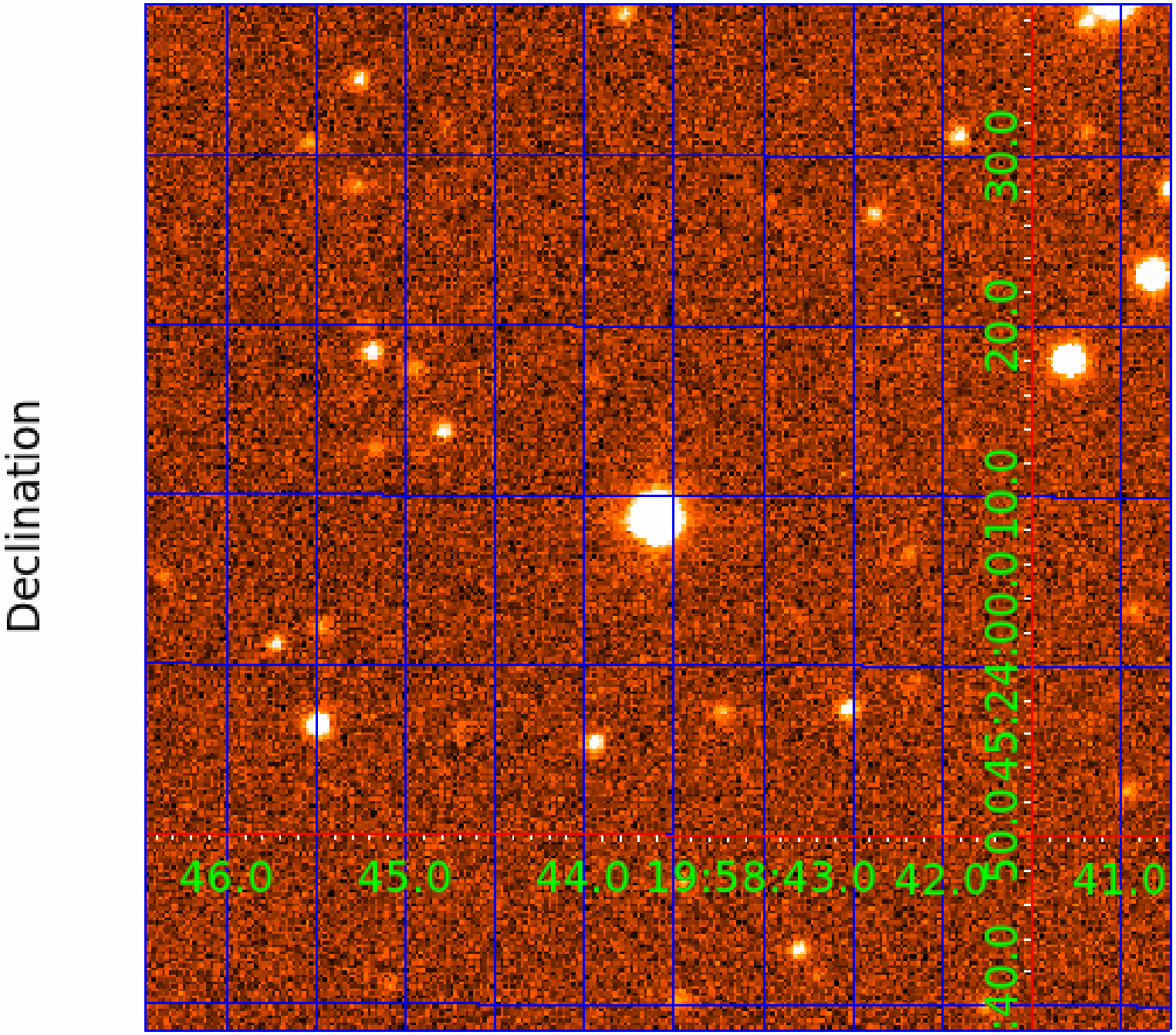


white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.





UKIRT Image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10.0
20.0
30.0

KIC 009115039

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 ($S_\oplus$)
009115039-01	OBS	No	1.042986	131.553686	17.2	7.748	8.3	9.7	1.48	6680	0.71	8357.54
009115039-02	OBS	No	17.542812	148.151216	229.0	1.288	11.4	9.8	1.48	6680	2.40	193.93
009115039-03	OBS	No	27.035069	152.460805	383.5	1.163	10.8	10.4	1.48	6680	3.25	108.95
009115039-04	OBS	No	26.564566	132.691176	185.7	2.967	12.4	9.5	1.48	6680	2.23	111.53
009115039-05	OBS	No	11.950278	133.822951	321.2	0.937	10.0	10.9	1.48	6680	2.71	323.55
009115039-06	OBS	No	10.113701	141.211810	184.1	1.337	9.6	8.7	1.48	6680	2.34	404.18
009115039-07	OBS	No	13.333071	140.695541	294.4	0.637	10.9	13.2	1.48	6680	2.68	279.60

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009115039-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT
009115039-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS—HALO_GHOST
009115039-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
009115039-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
009115039-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—CENT_FEW_DIFFS
009115039-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
009115039-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—CENT_FEW_DIFFS

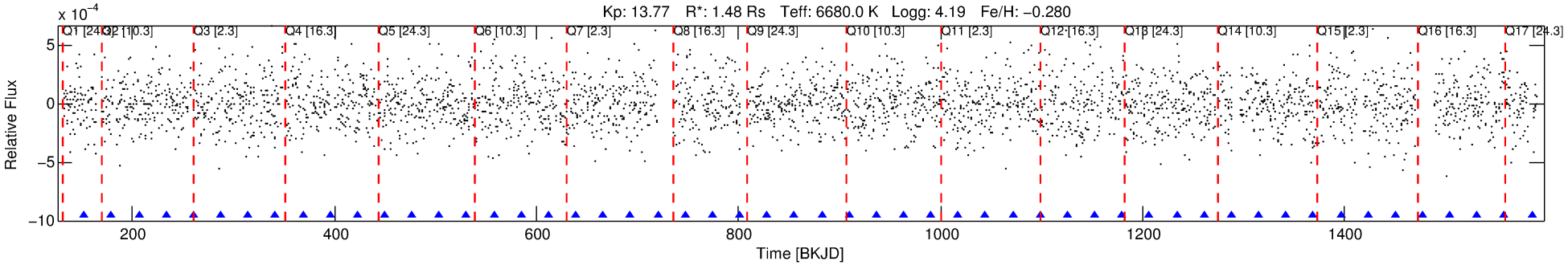
Notes: OBS = Observed. INJ = Injected. INV = Inverted. SCR = Scrambled.
N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.
See `http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col` for comment definitions.

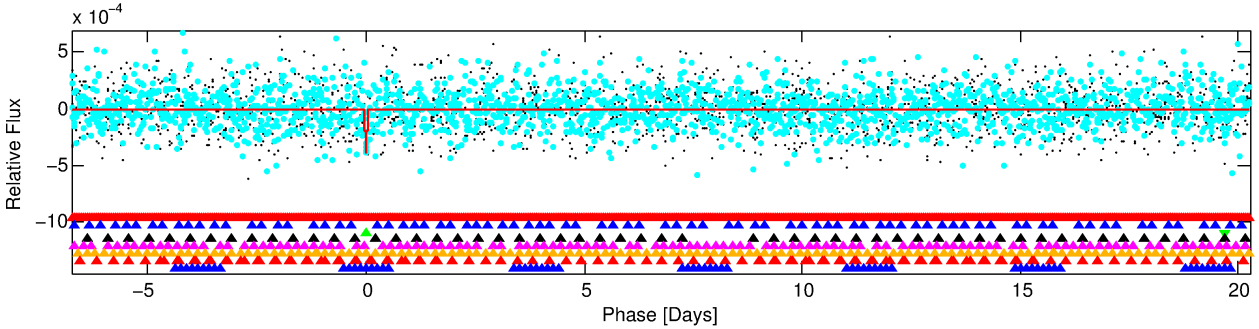
Ephemeris Match Information For 009115039-03

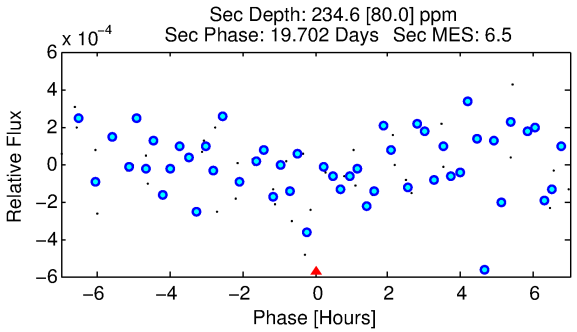
No Significant Match Found

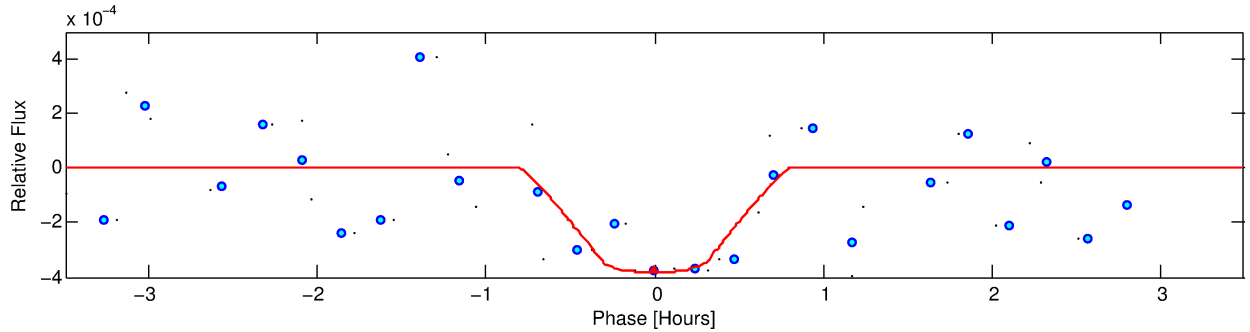
DV One-Page Summary

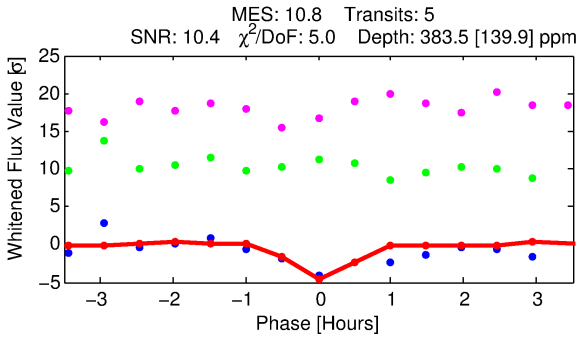
KIC: 9115039 Candidate: 3 of 8 Period: 27.035 d

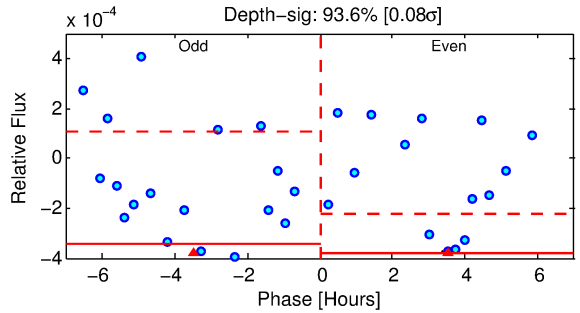


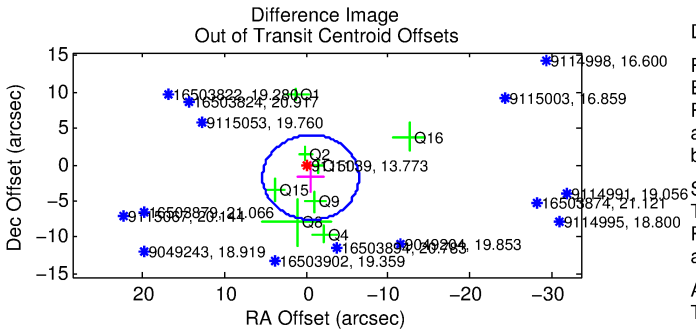












DV Fit Results:

Period = 27.03507 [0.00040] d
Epoch = 152.4608 [0.0104] BKJD
Rp/R* = 0.0202 [0.0836]
a/R* = 105.77 [2511.01]
b = 0.83 [9.16]

Seff = 108.95 [39.27]
Teq = 824 [74] K
Rp = 3.25 [13.51] Re
a = 0.1891 [0.0447] AU

Ag = 436.92 [3628.54] [0.12σ]
Teffp = 5823 [12083] K [0.41σ]

DV Diagnostic Results:

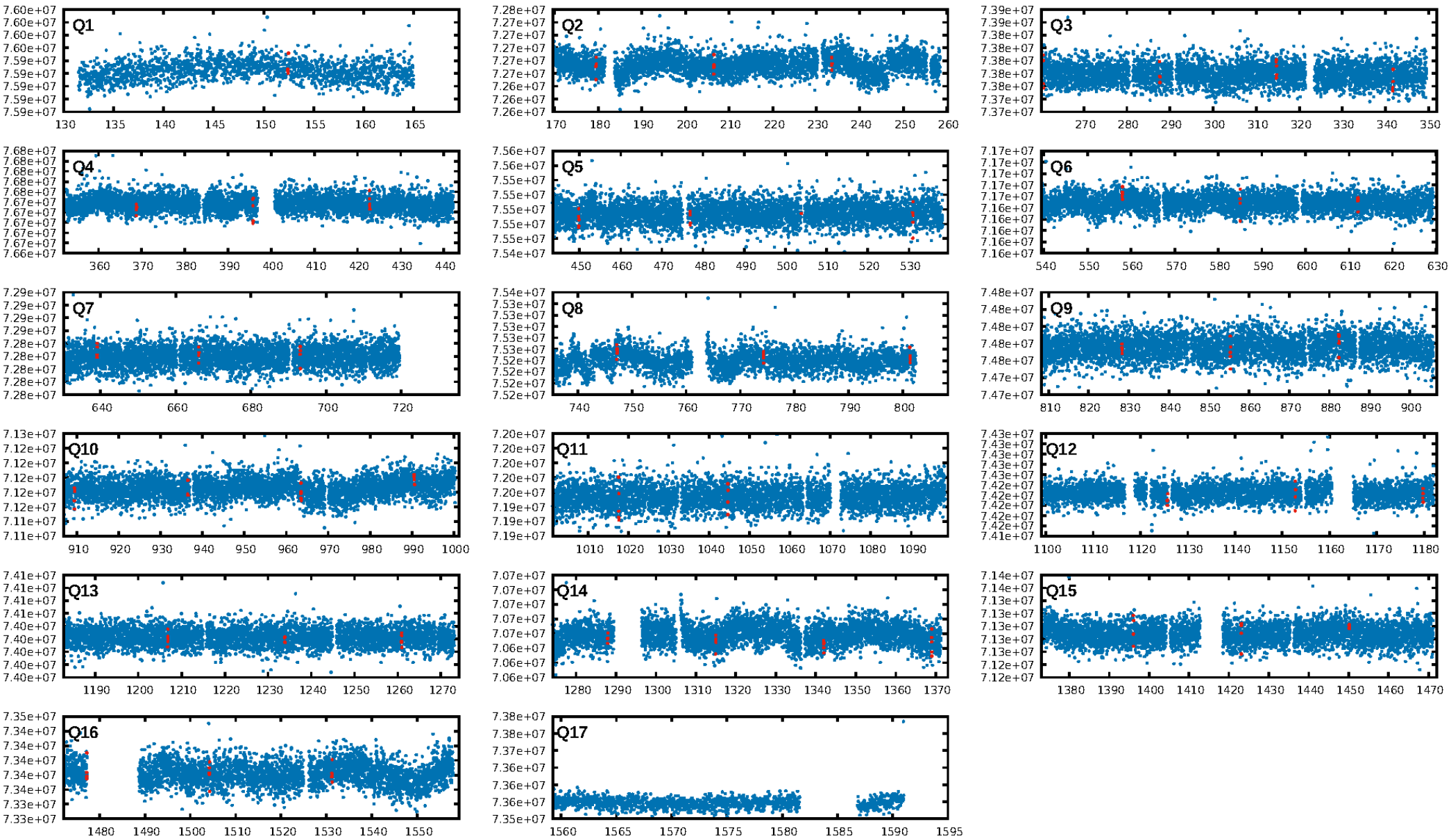
ShortPeriod−sig: 100.0% [3.54σ]
LongPeriod−sig: N/A
ModelChiSquare2−sig: 0.5%
ModelChiSquareGof−sig: 13.1%
Bootstrap−pfa: 5.68e−18
RollingBand−fgt: 1.00 [5/5]
GhostDiagnostic−chr: −1.469

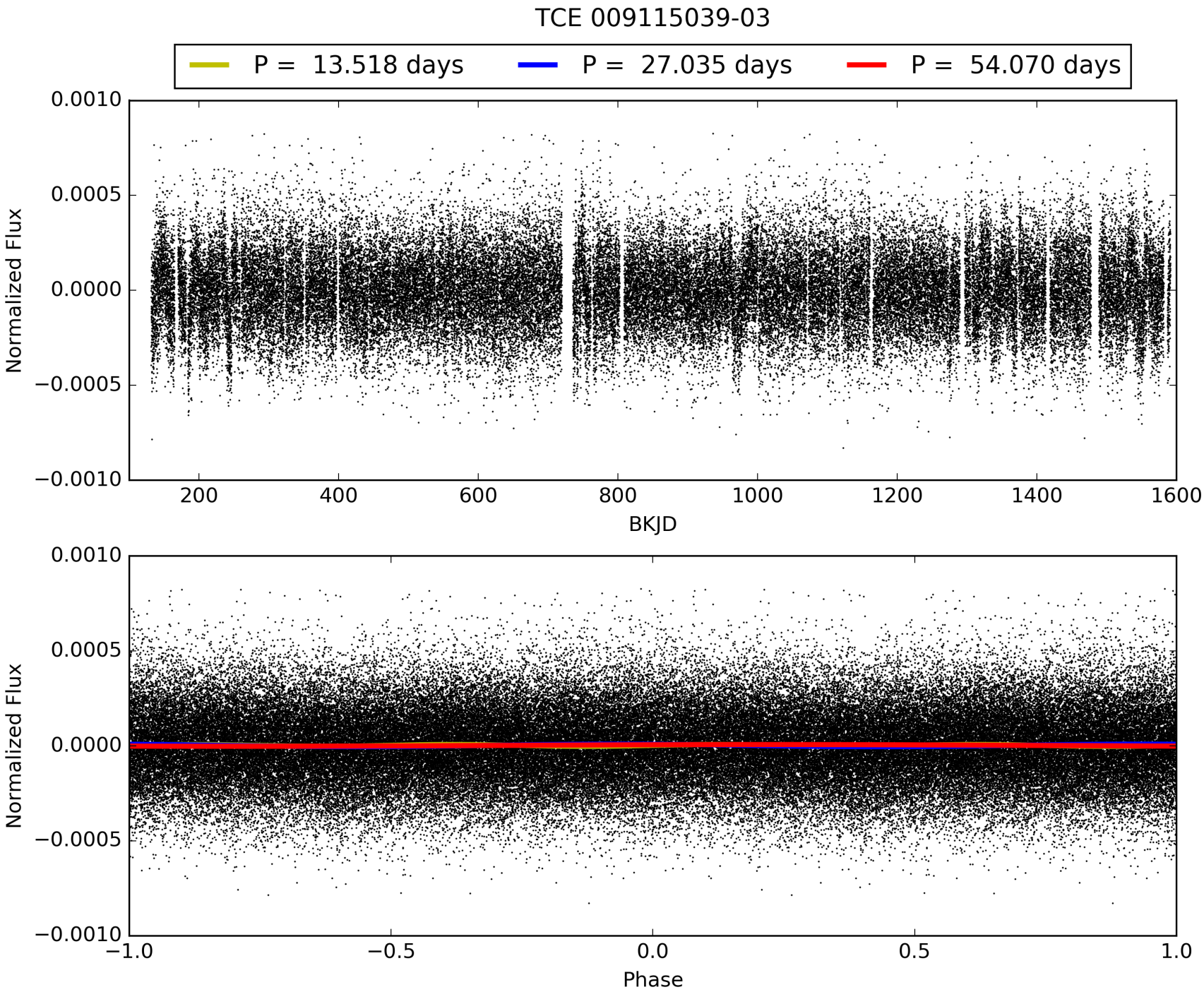
Centroid−sig: 0.3%
Centroid−so: 1.643 arcsec [1.94σ]
OotOffset−rm: 1.845 arcsec [0.94σ]
KicOffset−rm: 1.891 arcsec [0.94σ]
OotOffset−st: 1/2/3/2 [8]
KicOffset−st: 1/2/3/2 [8]
DiffImageQuality−fgm: 0.00 [0/8]
DiffImageOverlap−fno: 0.31 [5/16]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01−Feb−2016 13:01:51 Z

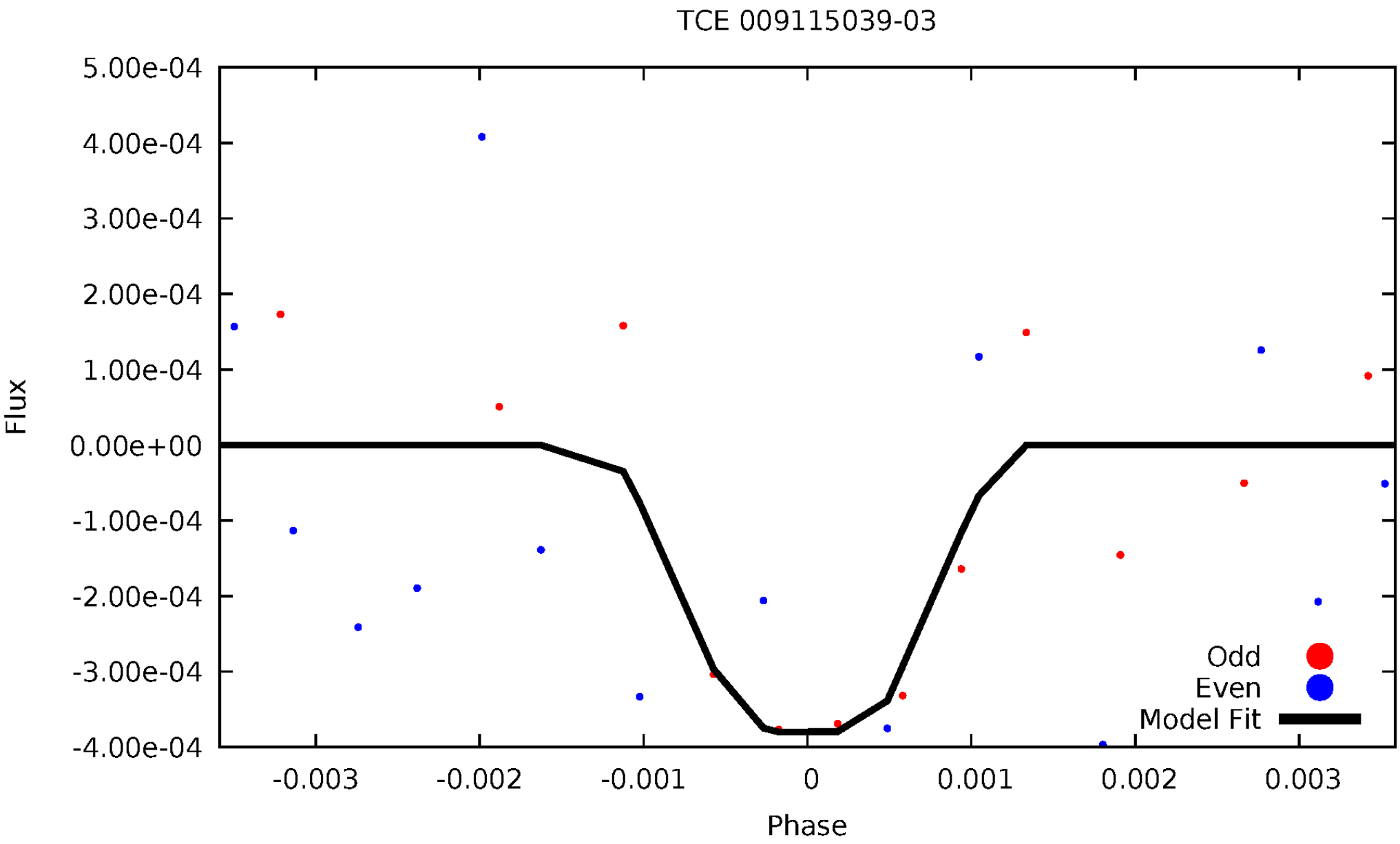
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 009115039-03, PDC Light Curves

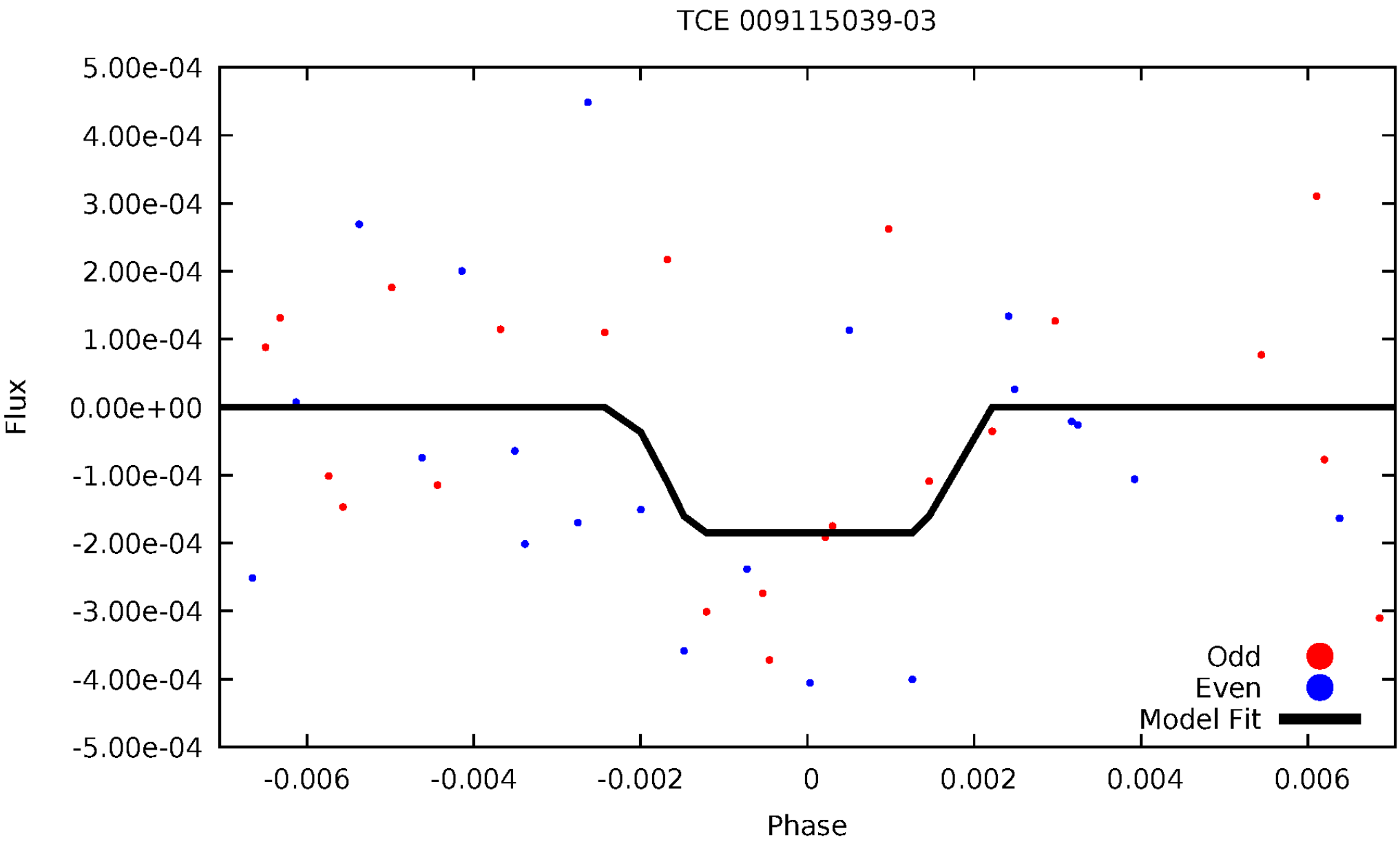



TCE 009115039-03
P = 13.518 days
P = 27.035 days
P = 54.070 days
Normalized Flux
0.0010
0.0005
0.0000
−0.0005
−0.0010
200
400
600
800
1000
1200
1400
1600
BKJD
Normalized Flux
0.0010
0.0005
0.0000
−0.0005
−0.0010
−1.0
−0.5
0.0
0.5
1.0
Phase

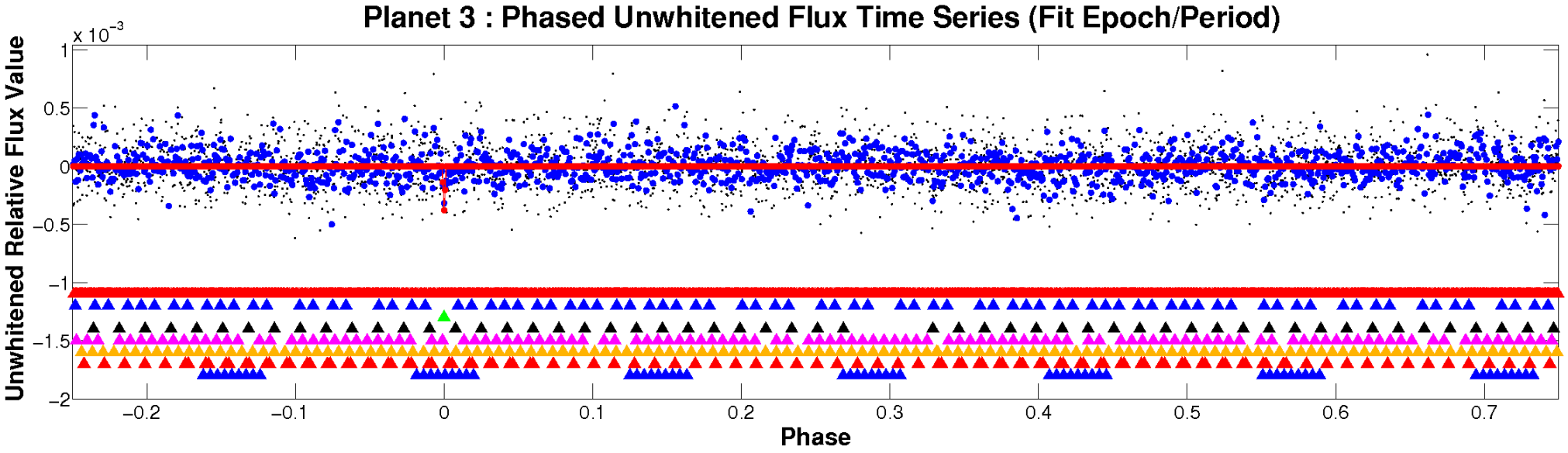
DV Odd/Even

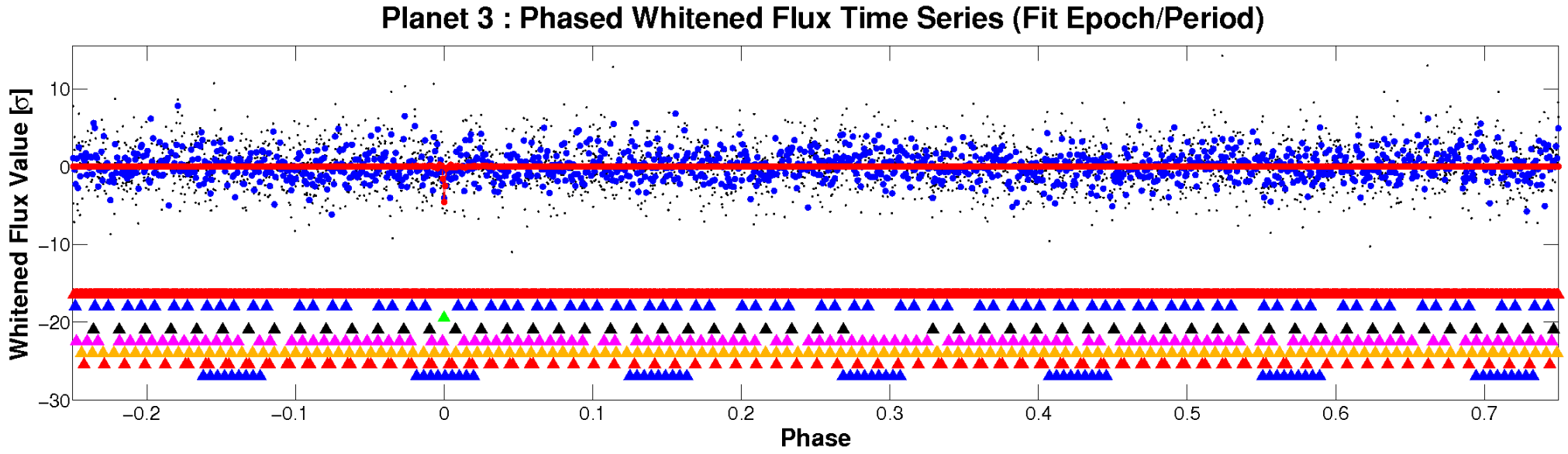

TCE 009115039-03
5.00e-04
4.00e-04
3.00e-04
2.00e-04
1.00e-04
0.00e+00
-1.00e-04
-2.00e-04
-3.00e-04
-4.00e-04
Flux
-0.003
-0.002
-0.001
0
0.001
0.002
0.003
Phase
Odd
Even
Model Fit

ALT Odd/Even


TCE 009115039-03
5.00e-04
4.00e-04
3.00e-04
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
-0.006
-0.004
-0.002
0
0.002
0.004
0.006
Phase
Odd
Even
Model Fit

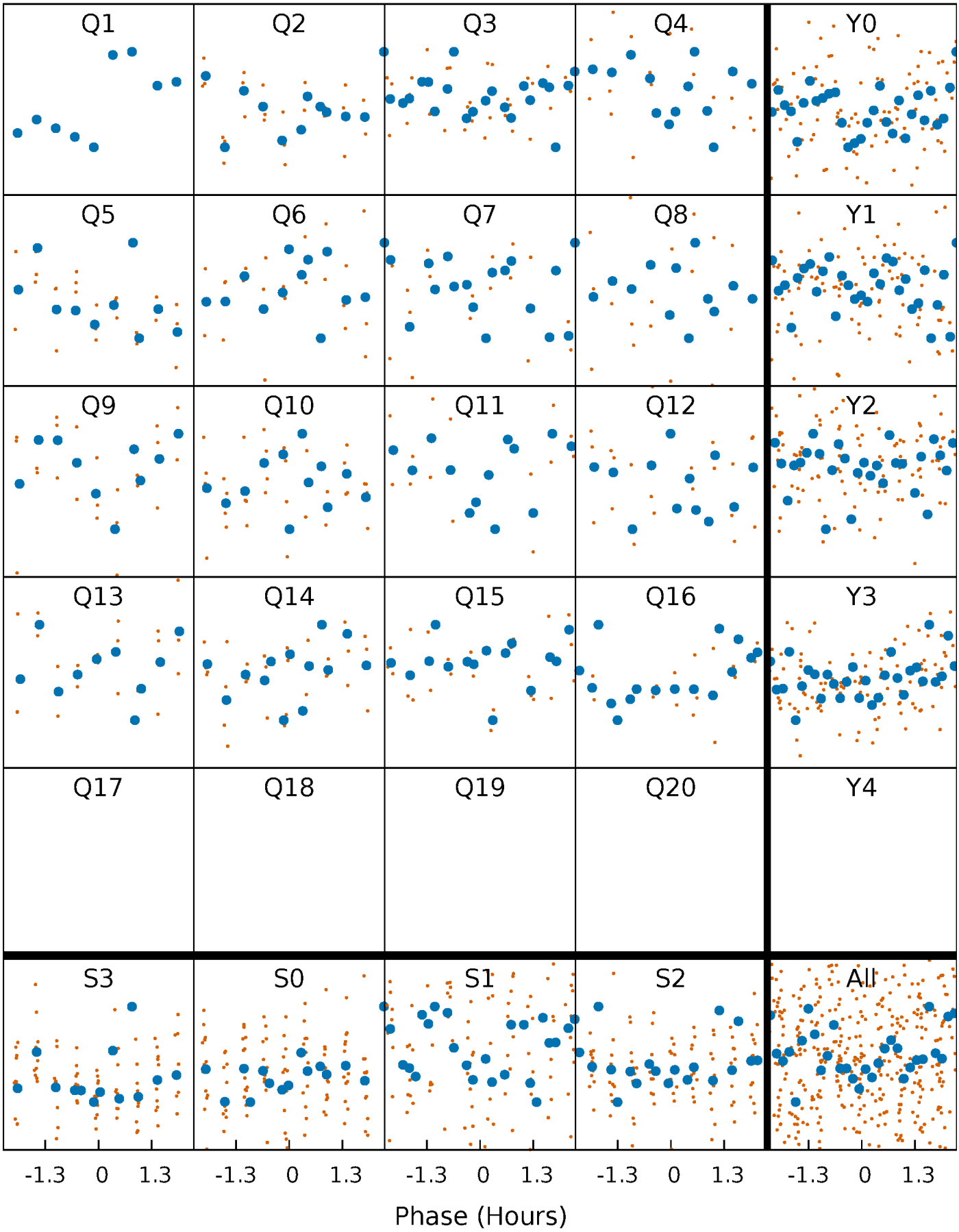
Non-Whitened Vs. Whitened Light Curve





PDC Quarter-Phased Transit Curves

TCE 009115039-03 P= 27.035069 Days T_0=152.460805 (BKJD)



DV Quarter-Phased Transit Curves

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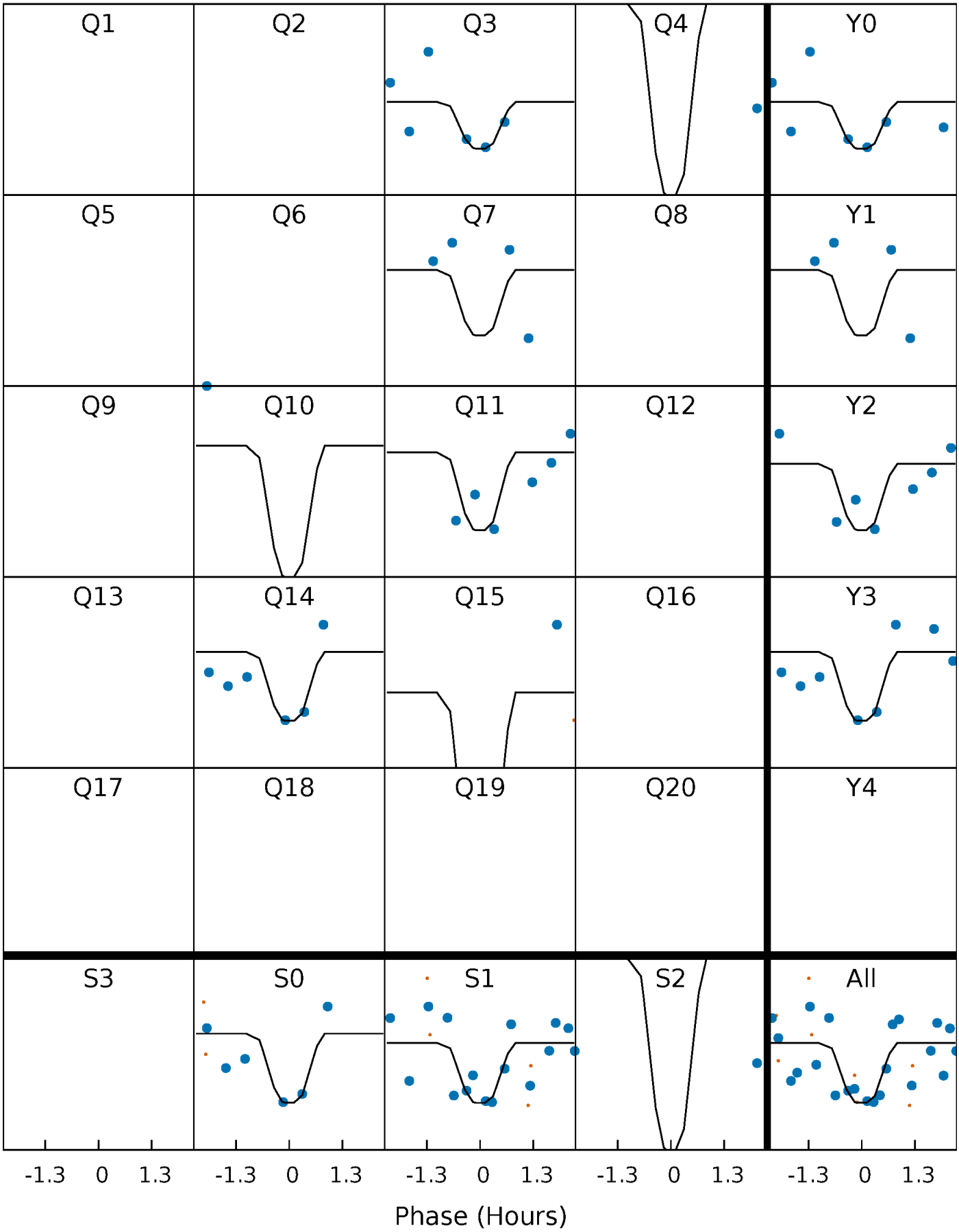
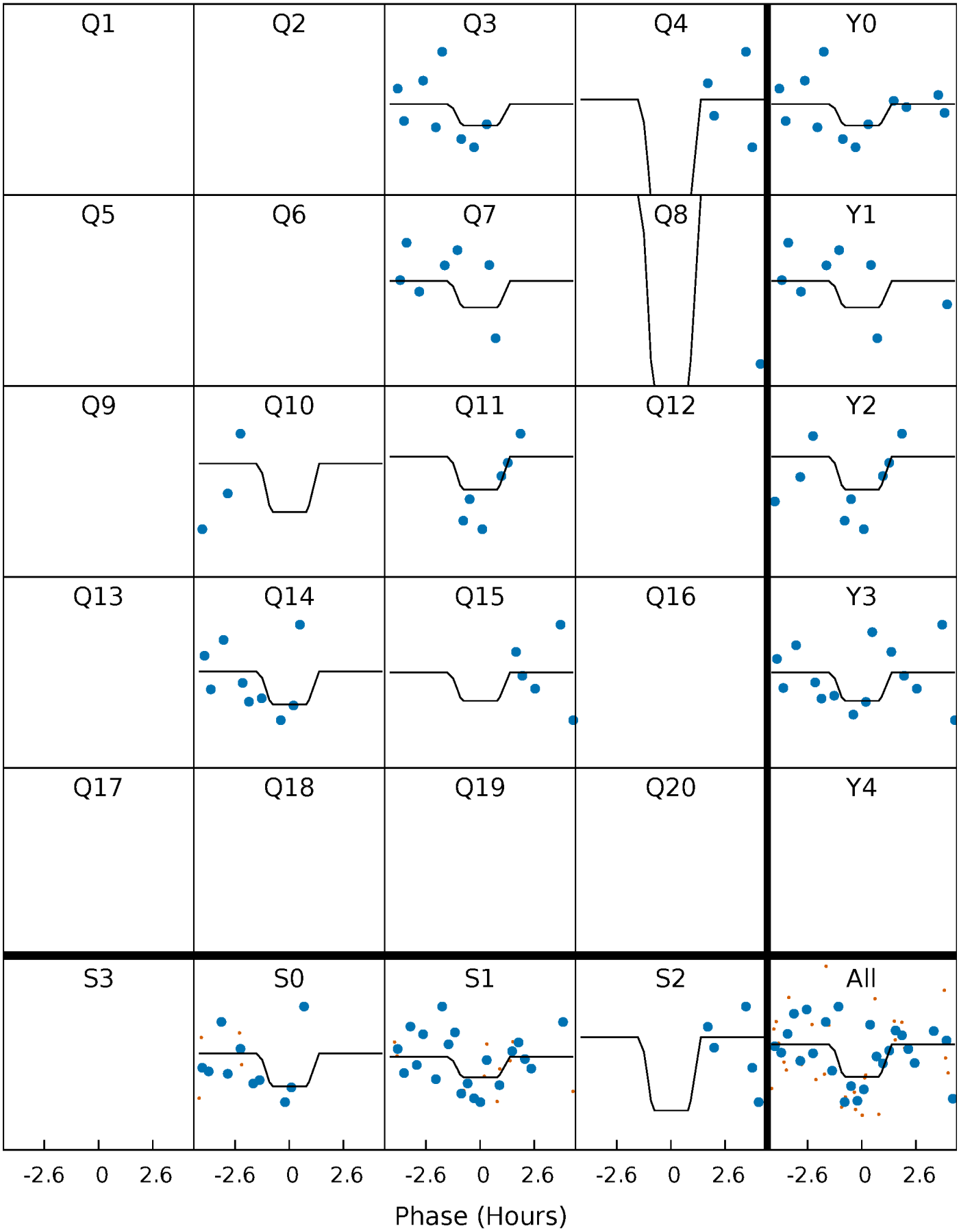


Alt. Detrend Quarter-Phased Transit Curves

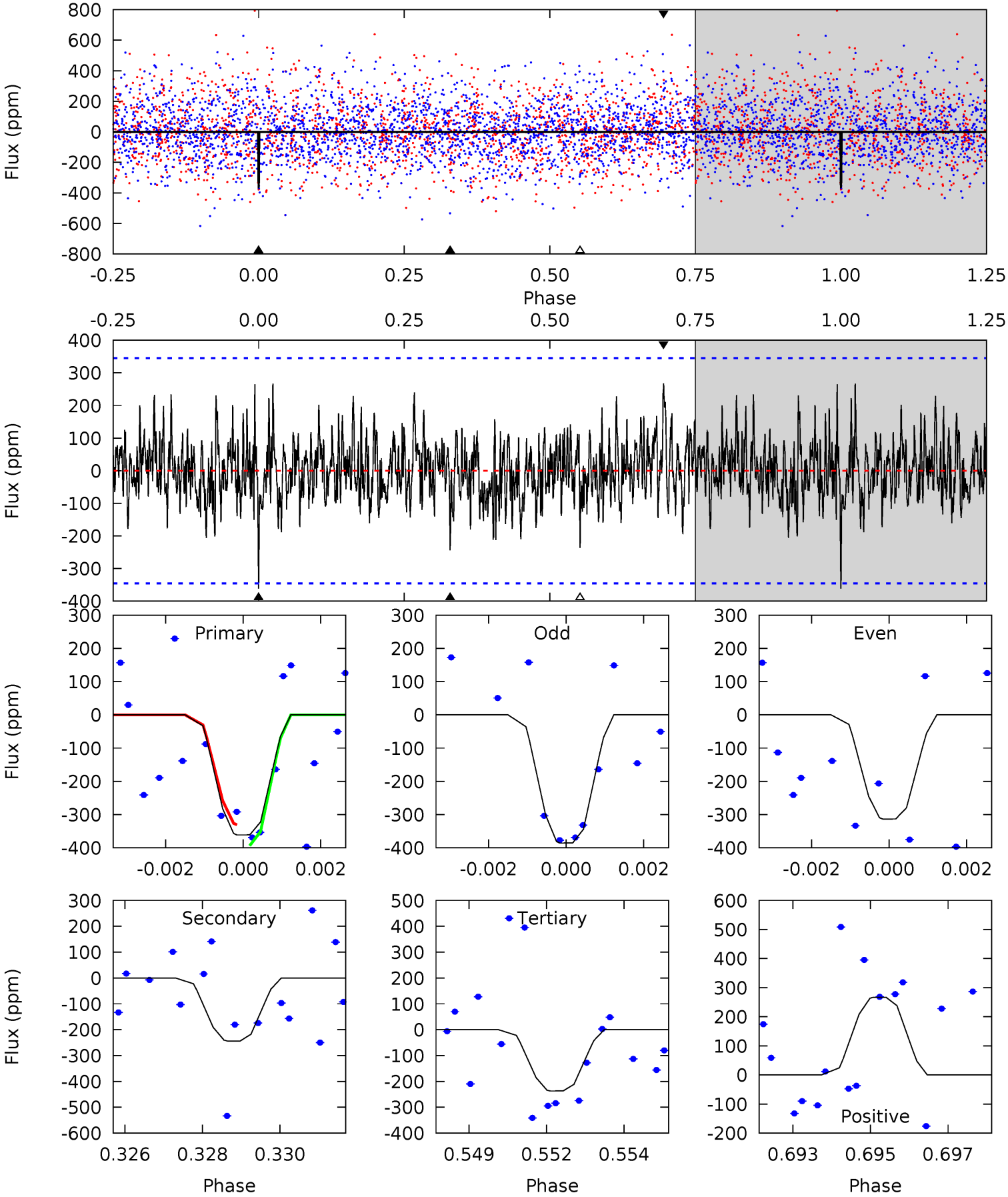
TCE 009115039-03 P= 27.034874 Days T_0=152.479442 (BKJD)



DV Model-Shift Uniqueness Test

009115039-03, P = 27.035069 Days, E = 125.425736 Days

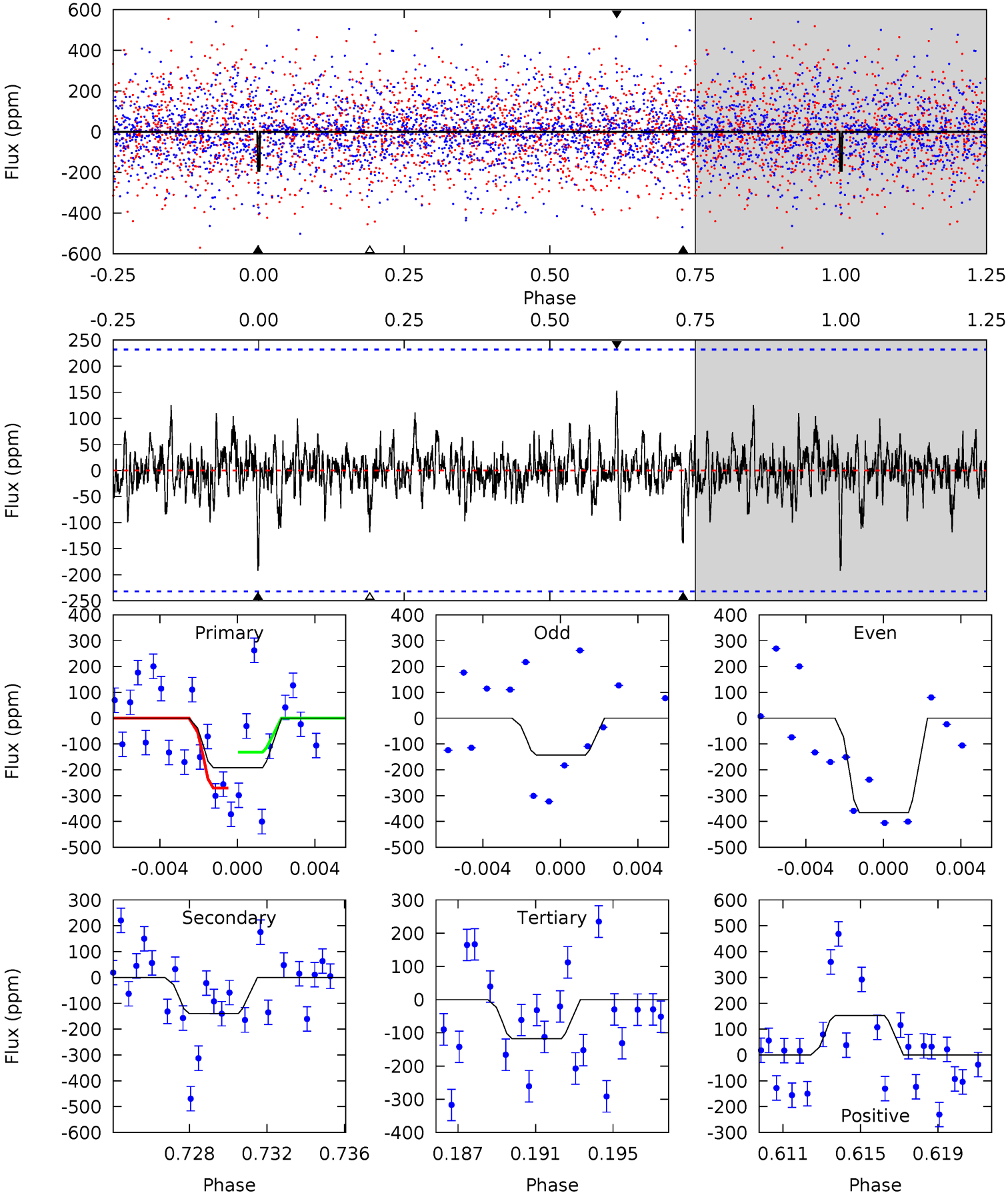
Pri	Sec	Ter	Pos	FA_1	FA_2	F_{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.56	3.75	3.64	4.11	5.31	3.07	1.22	1.91	1.45	0.10	-0.36	0.53	0.97	0.42	0.48



Alt Model-Shift Uniqueness Test

009115039-03, P = 27.034874 Days, E = 125.444568 Days

Pri	Sec	Ter	Pos	FA_1	FA_2	F_{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4.31	3.13	2.65	3.43	5.20	2.89	0.75	1.66	0.88	0.49	-0.30	2.31	0.99	0.44	1.54



Stellar Parameters For KIC 009115039

	$T_{\rm eff}(K)$	$\log(g)$	[Fe/H]	R ($R_\odot$)	$M(M_\odot)$	$p_\star$ (g·cm^{-3})
	6680^{+189}_{-236}	$4.190^{+0.158}_{-0.175}$	$-0.280^{+0.250}_{-0.300}$	$1.478^{+0.431}_{-0.352}$	$1.241^{+0.189}_{-0.189}$	$0.542^{+0.500}_{-0.263}$
	+3%/-4%	+4%/-4%	+89%/-107%	+29%/-24%	+15%/-15%	+92%/-48%
Source	PHO1	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 009115039-03 / KOI

Detrend	Depth (ppm)	R_p ($R_\oplus$)	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-244±65	$10.78^{+11.07}_{-7.47}$	1151^{+94}_{-78}	3633^{+2174}_{-683}	41^{+415}_{-31}
Alt.	-140±45	$10.44^{+11.32}_{-7.20}$	1158^{+81}_{-82}	3380^{+1764}_{-684}	26^{+236}_{-21}

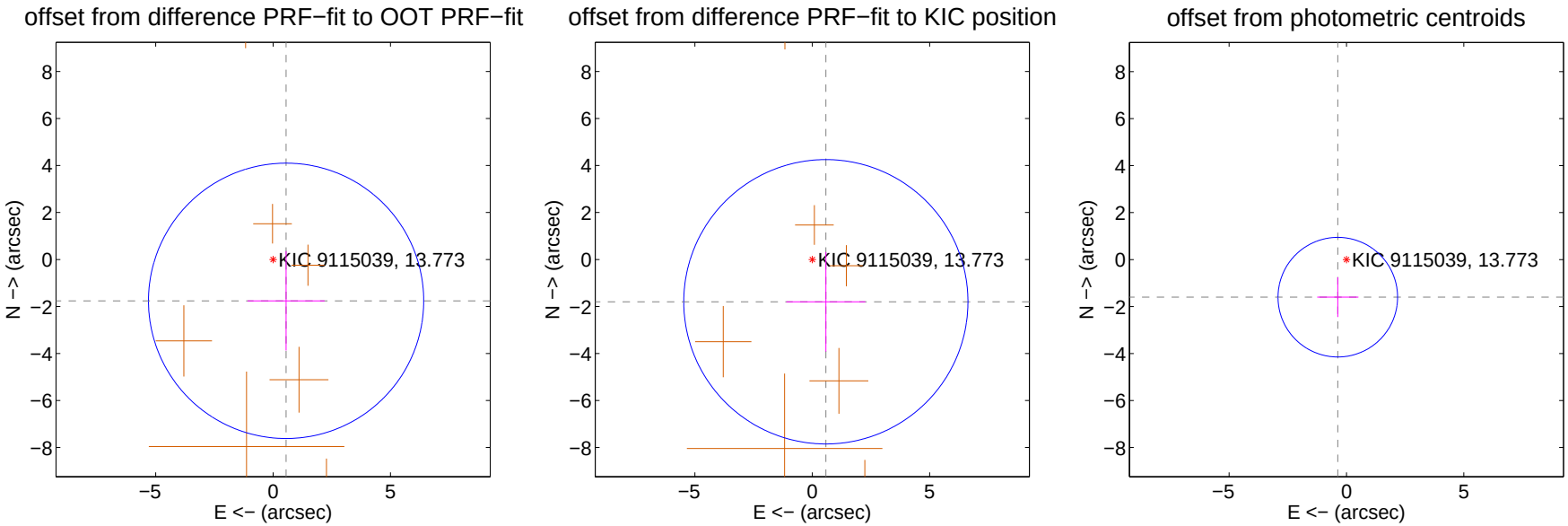
T_{max} = Theoretical Maximum Planetary Temperature
T_{obs} = Observed Planetary Temperature (Assuming A=0.3)
A_{obs} = Observed Albedo (Assuming T=0)

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

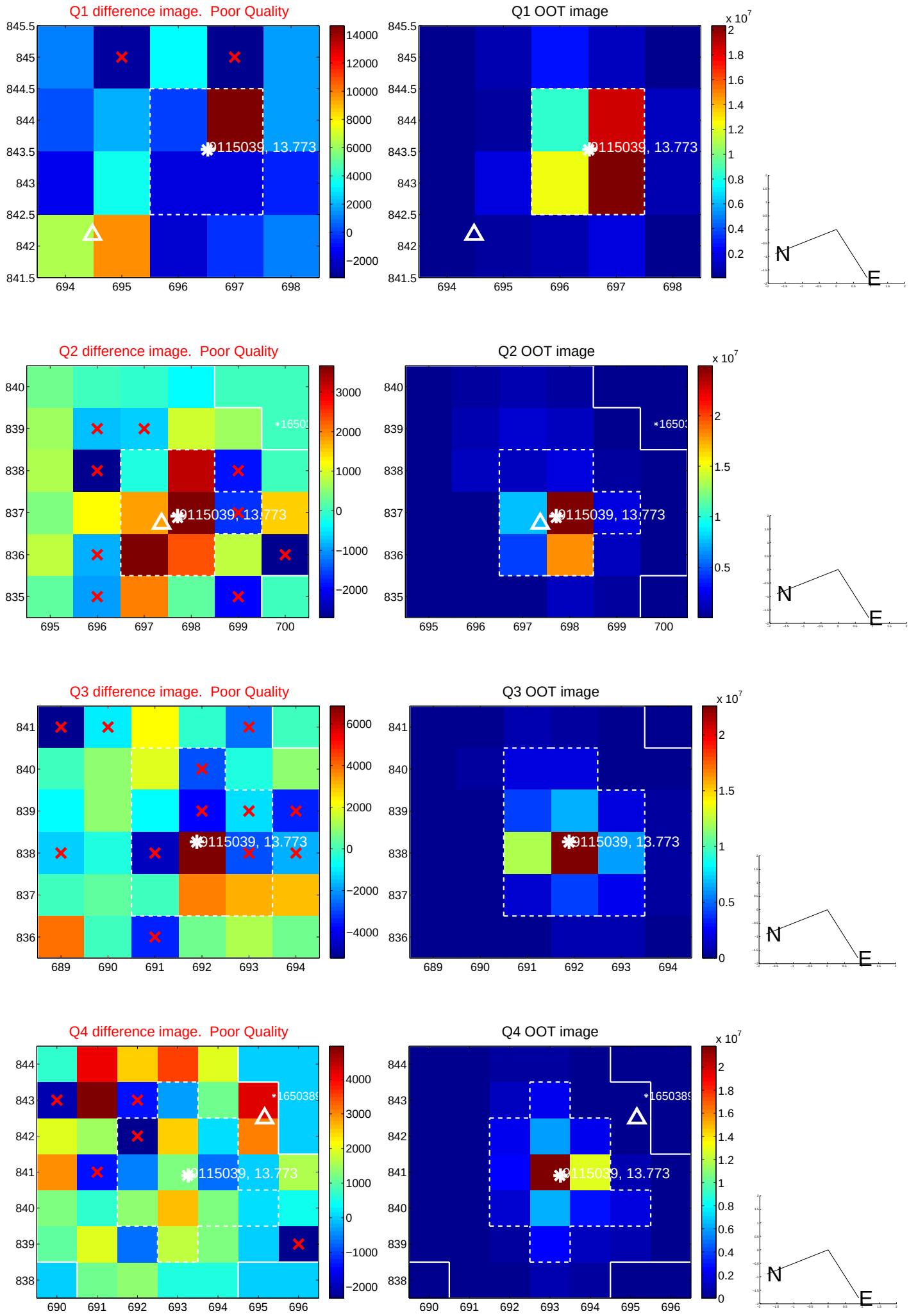
Supplemental centroid analysis for 009115039-03. Kepler magnitude: 13.77. Transit SNR 10.44
There are 0 quarters with good PRF difference image offsets
The direct PRF centroid is offset from the target star catalog position by about 0.11 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.845 ± 1.954	0.94	-0.554 ± 1.642	-1.760 ± 2.115
PRF-fit source offset from KIC position	1.891 ± 2.017	0.94	-0.579 ± 1.684	-1.800 ± 2.118
photometric centroid source offset	1.64 ± 0.85	1.94	0.37 ± 0.88	-1.60 ± 0.85

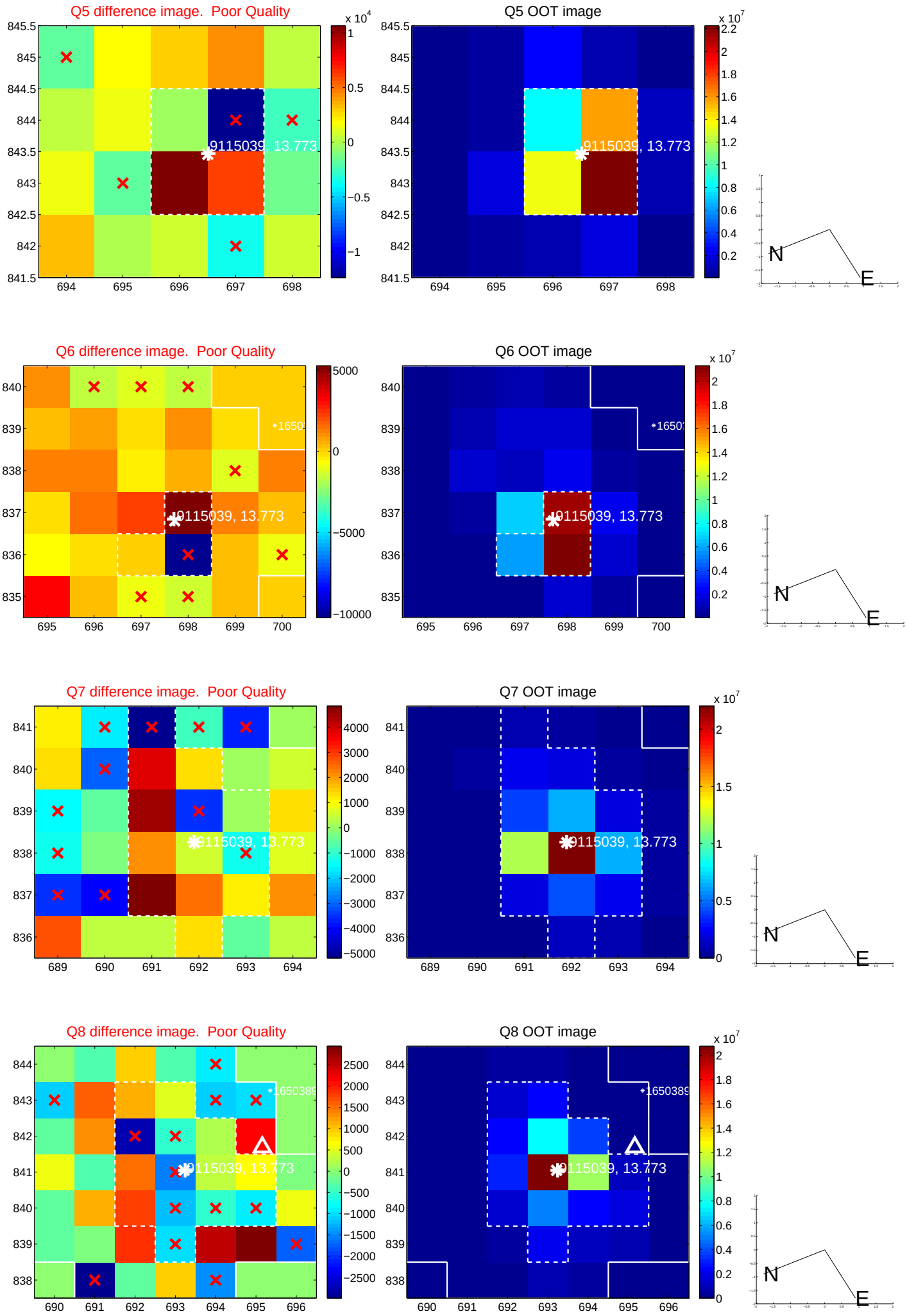


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one-σ uncertainty. Blue circle: three-σ. Red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

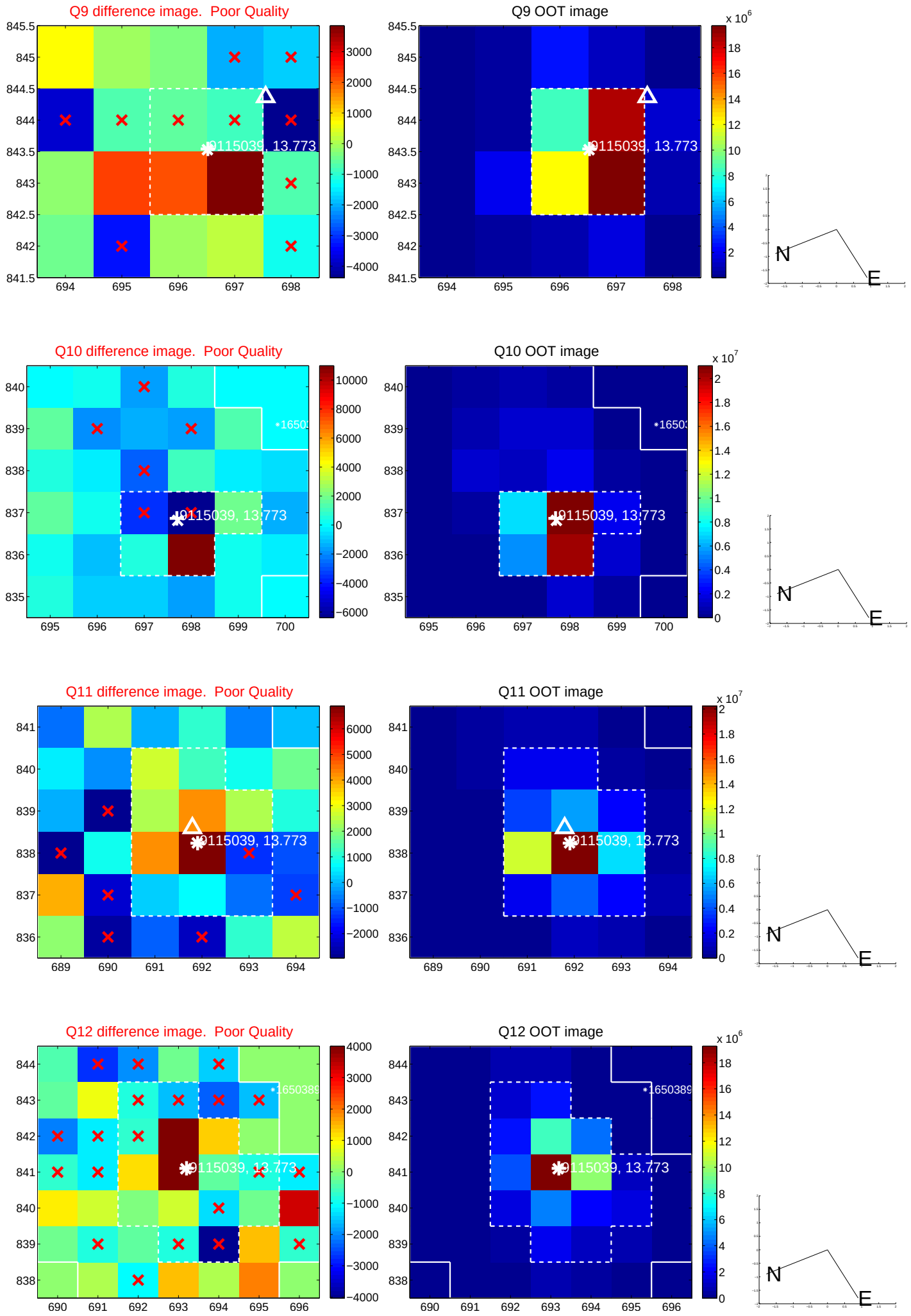
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.



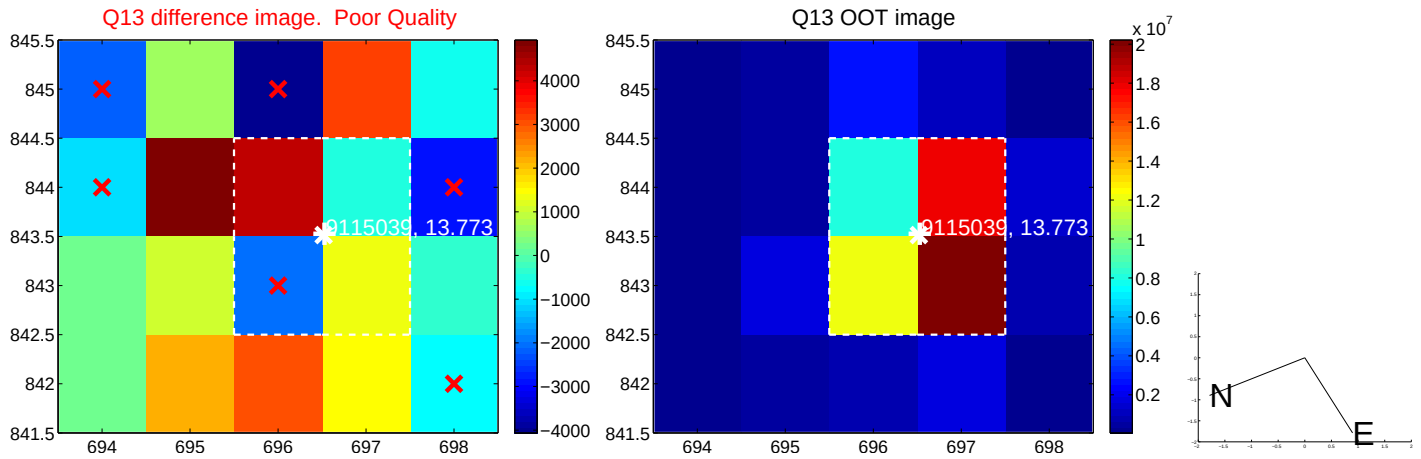
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.

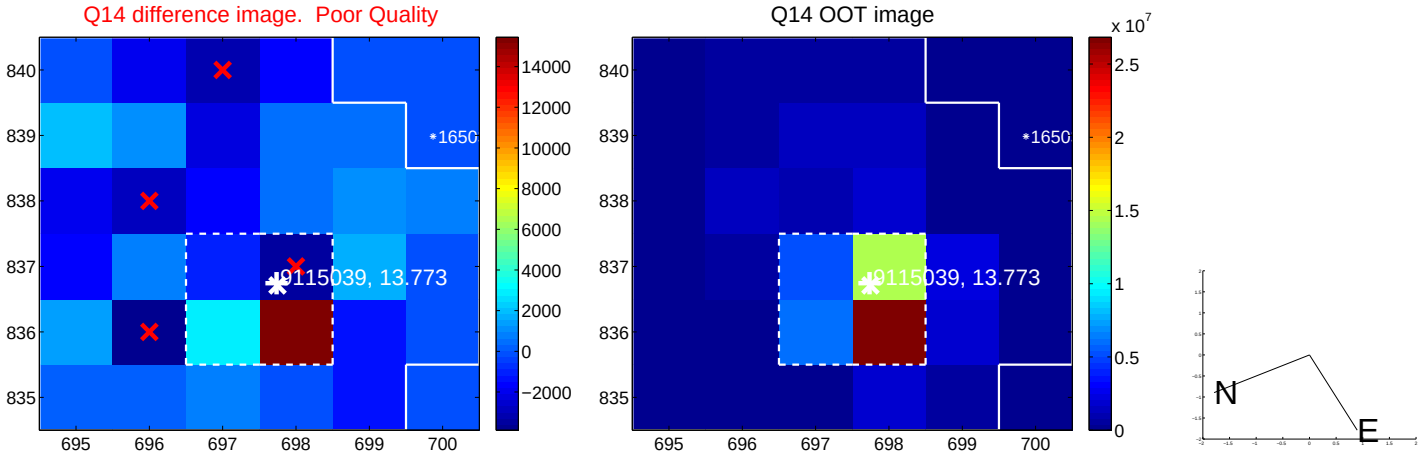


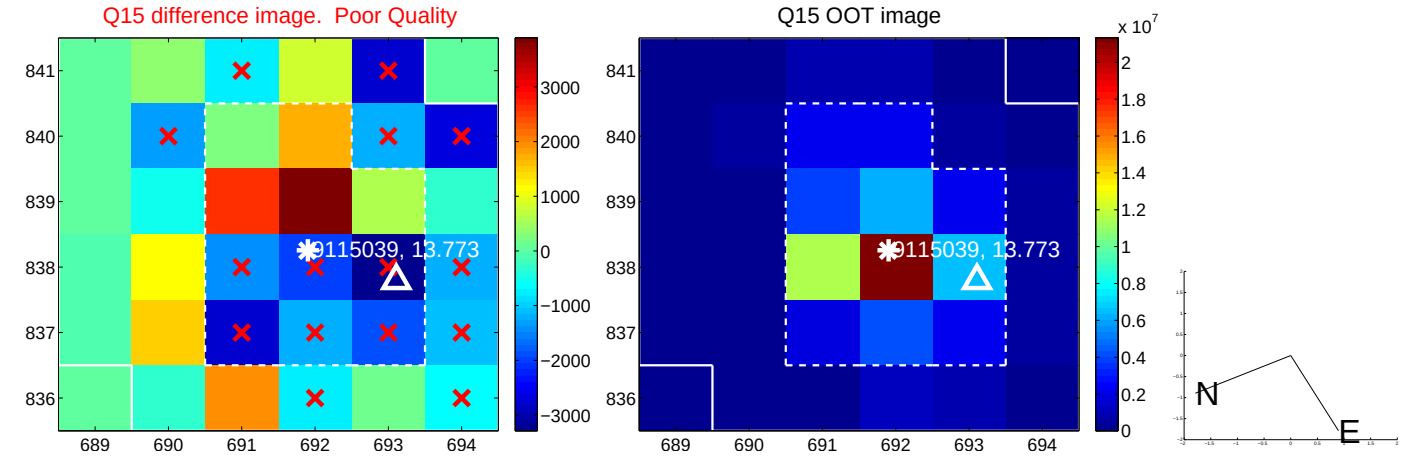
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.

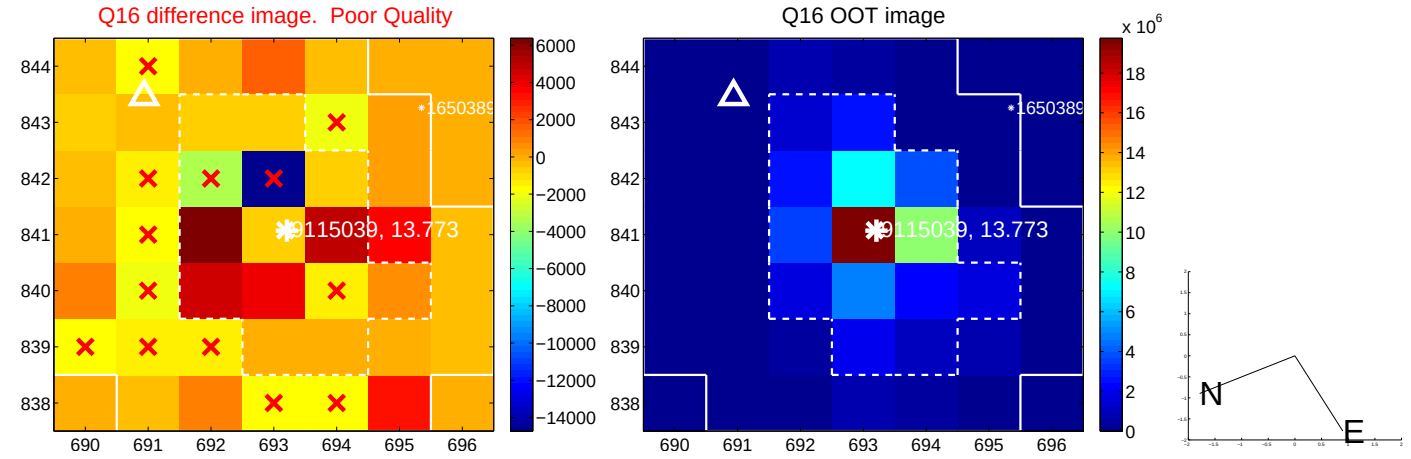


white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.

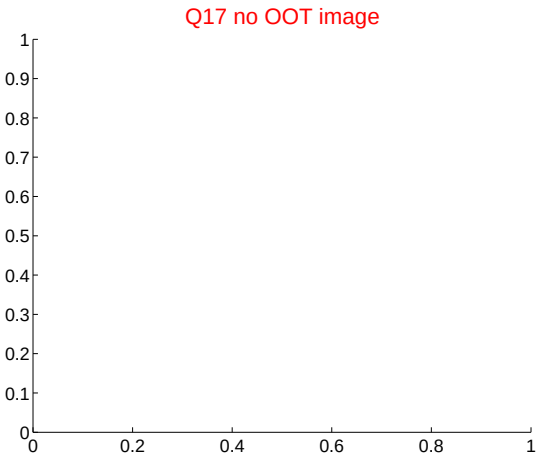


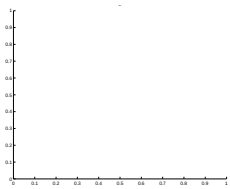


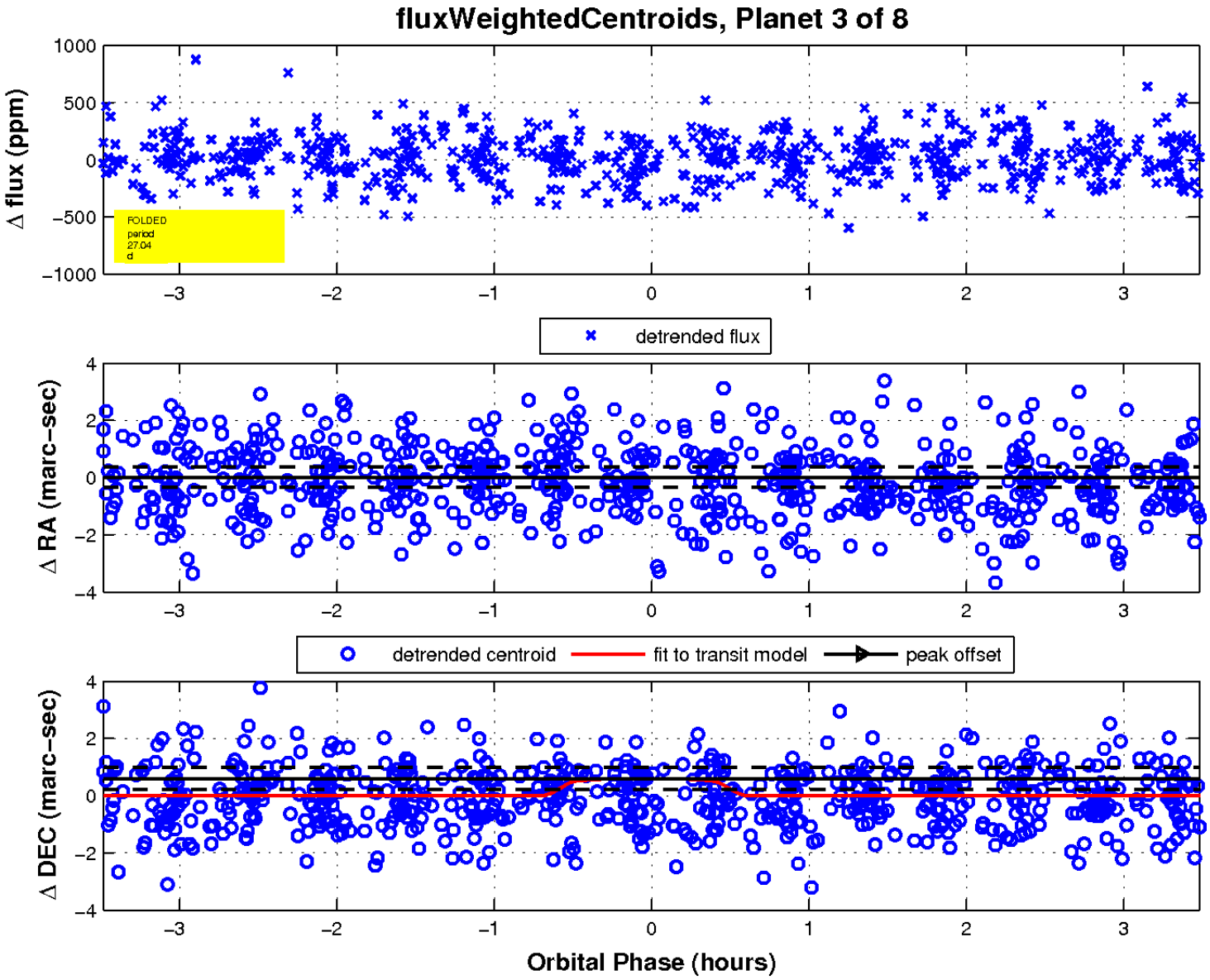




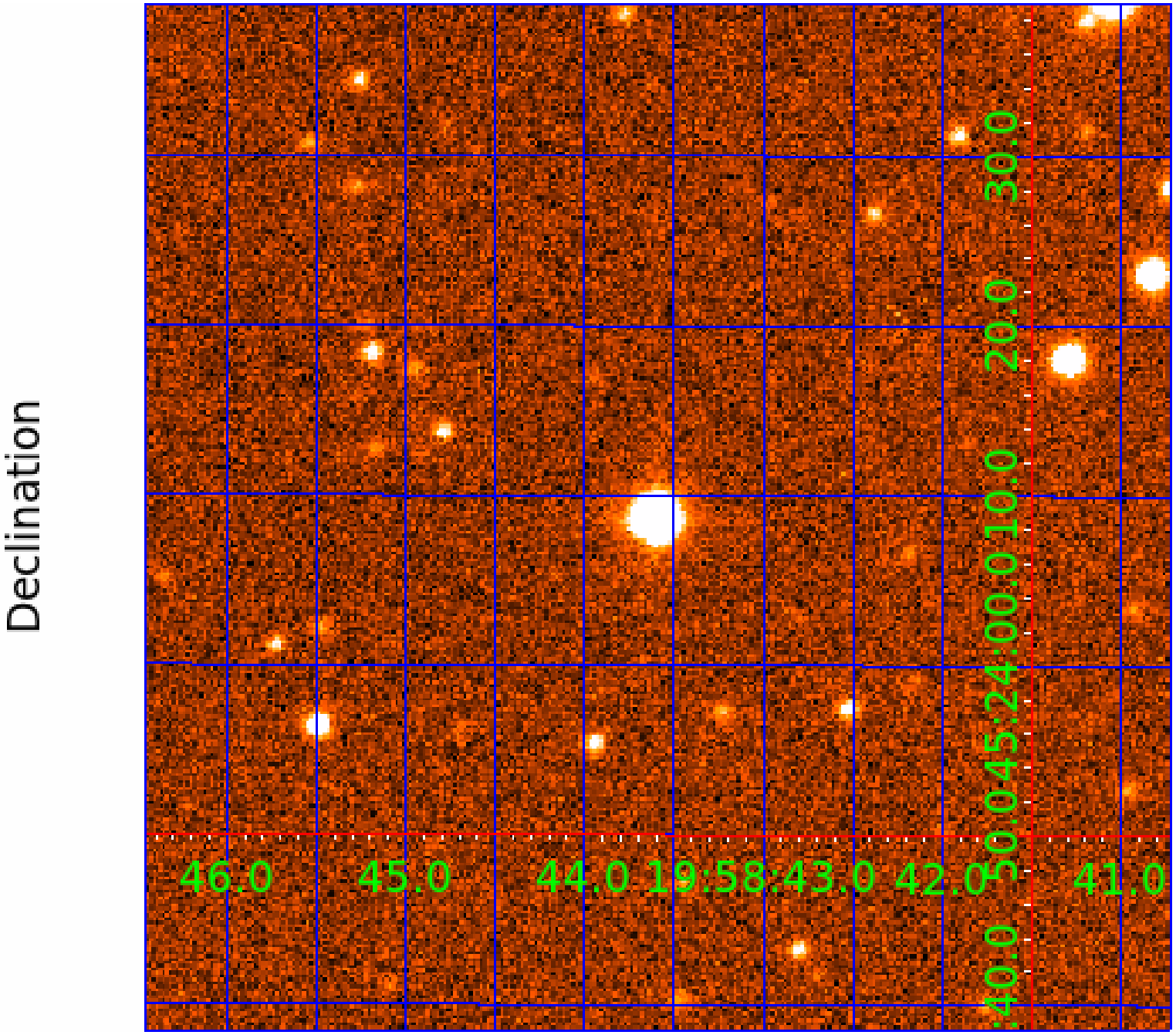
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.







UKIRT Image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50.0
45.0
24:00.0
10.0
20.0
30.0

KIC 009115039

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 ($S_\oplus$)
009115039-01	OBS	No	1.042986	131.553686	17.2	7.748	8.3	9.7	1.48	6680	0.71	8357.54
009115039-02	OBS	No	17.542812	148.151216	229.0	1.288	11.4	9.8	1.48	6680	2.40	193.93
009115039-03	OBS	No	27.035069	152.460805	383.5	1.163	10.8	10.4	1.48	6680	3.25	108.95
009115039-04	OBS	No	26.564566	132.691176	185.7	2.967	12.4	9.5	1.48	6680	2.23	111.53
009115039-05	OBS	No	11.950278	133.822951	321.2	0.937	10.0	10.9	1.48	6680	2.71	323.55
009115039-06	OBS	No	10.113701	141.211810	184.1	1.337	9.6	8.7	1.48	6680	2.34	404.18
009115039-07	OBS	No	13.333071	140.695541	294.4	0.637	10.9	13.2	1.48	6680	2.68	279.60

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009115039-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT
009115039-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS—HALO_GHOST
009115039-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
009115039-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
009115039-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—CENT_FEW_DIFFS
009115039-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
009115039-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—CENT_FEW_DIFFS

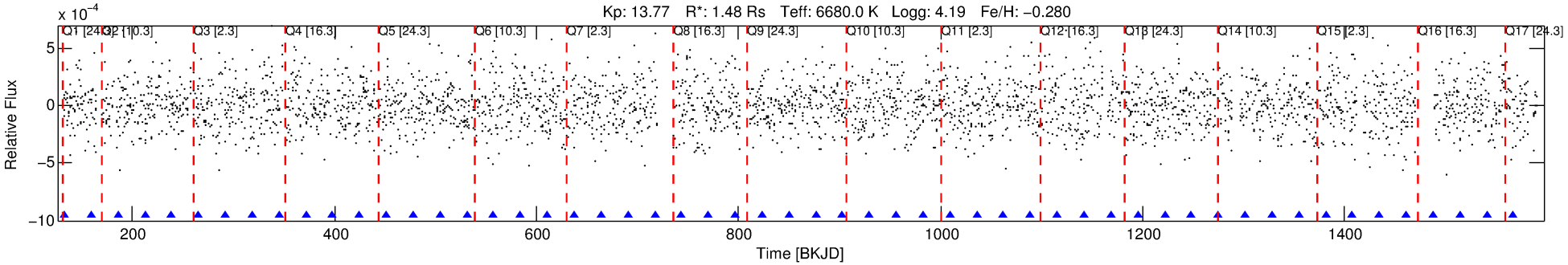
Notes: OBS = Observed. INJ = Injected. INV = Inverted. SCR = Scrambled.
N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.
See `http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col` for comment definitions.

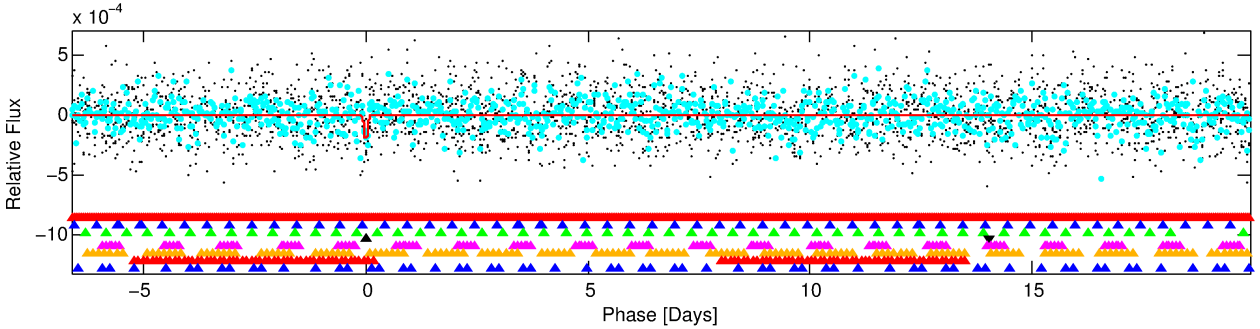
Ephemeris Match Information For 009115039-04

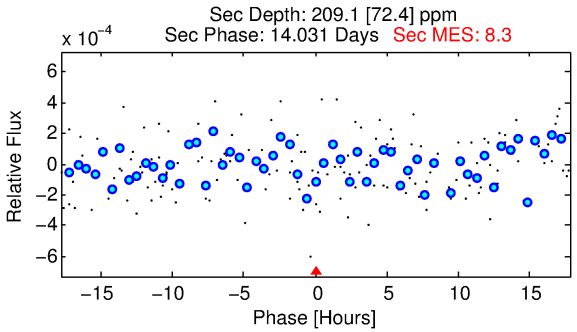
No Significant Match Found

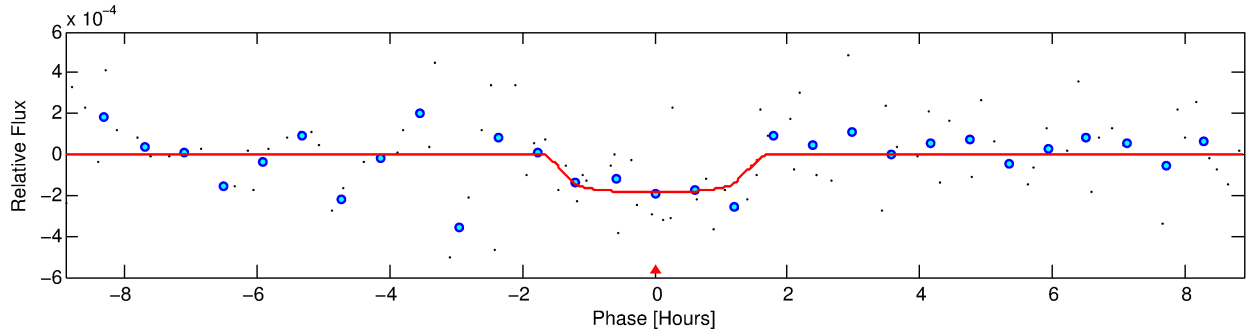
DV One-Page Summary

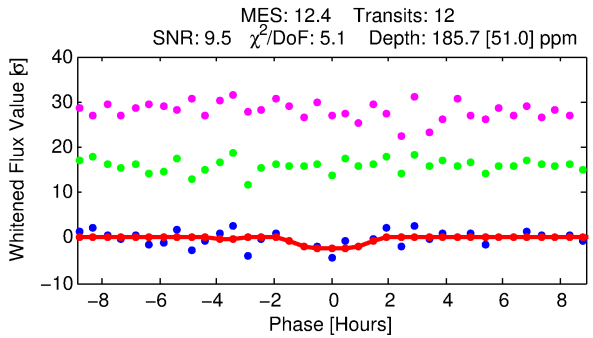
KIC: 9115039 Candidate: 4 of 8 Period: 26.565 d

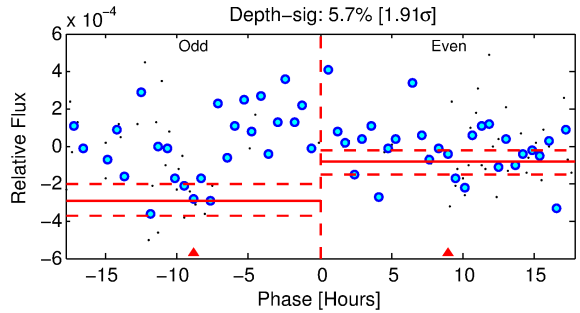


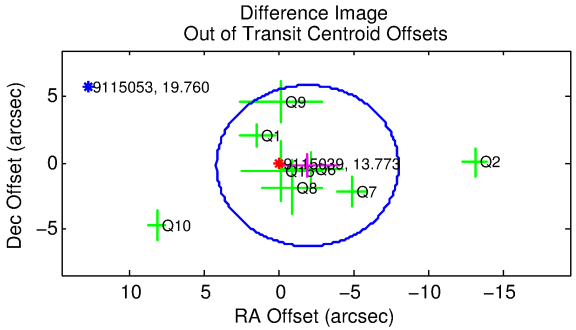












DV Fit Results:

Period = 26.56457 [0.00054] d
Epoch = 132.6912 [0.0150] BKJD
Rp/R* = 0.0138 [0.0230]
a/R* = 42.31 [407.11]
b = 0.80 [4.27]

Seff = 111.53 [40.20]
Teq = 829 [75] K
Rp = 2.23 [3.77] Re
a = 0.1869 [0.0442] AU

Ag = 810.70 [2729.77] [0.30σ]
Teffp = 6836 [5732] K [1.05σ]

DV Diagnostic Results:

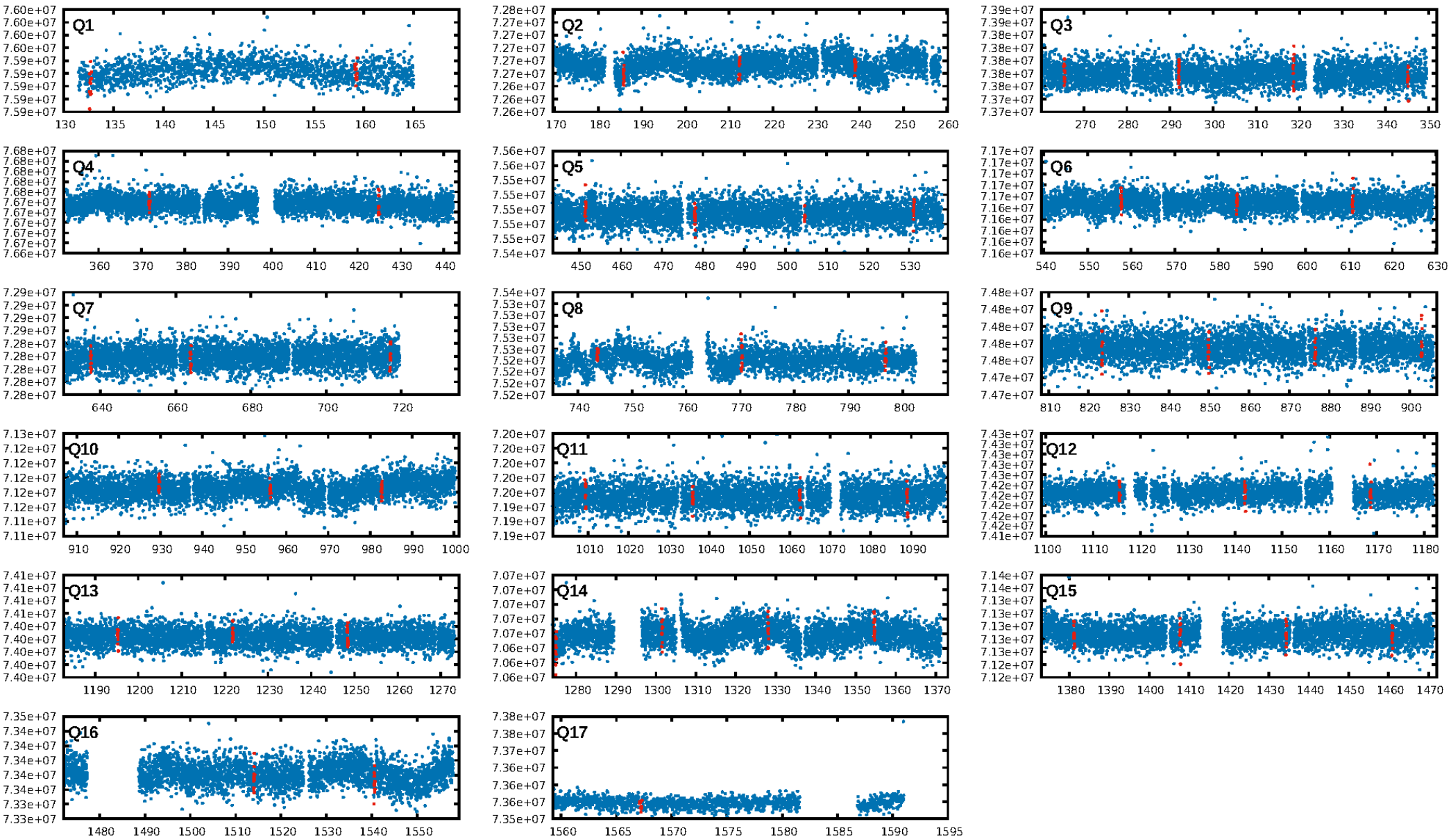
ShortPeriod−sig: 100.0% [5.79σ]
LongPeriod−sig: 100.0% [3.54σ]
ModelChiSquare2−sig: 0.1%
ModelChiSquareGof−sig: 98.9%
Bootstrap−pfa: 1.11e−12
RollingBand−fgt: 1.00 [10/10]
GhostDiagnostic−chr: −2.468

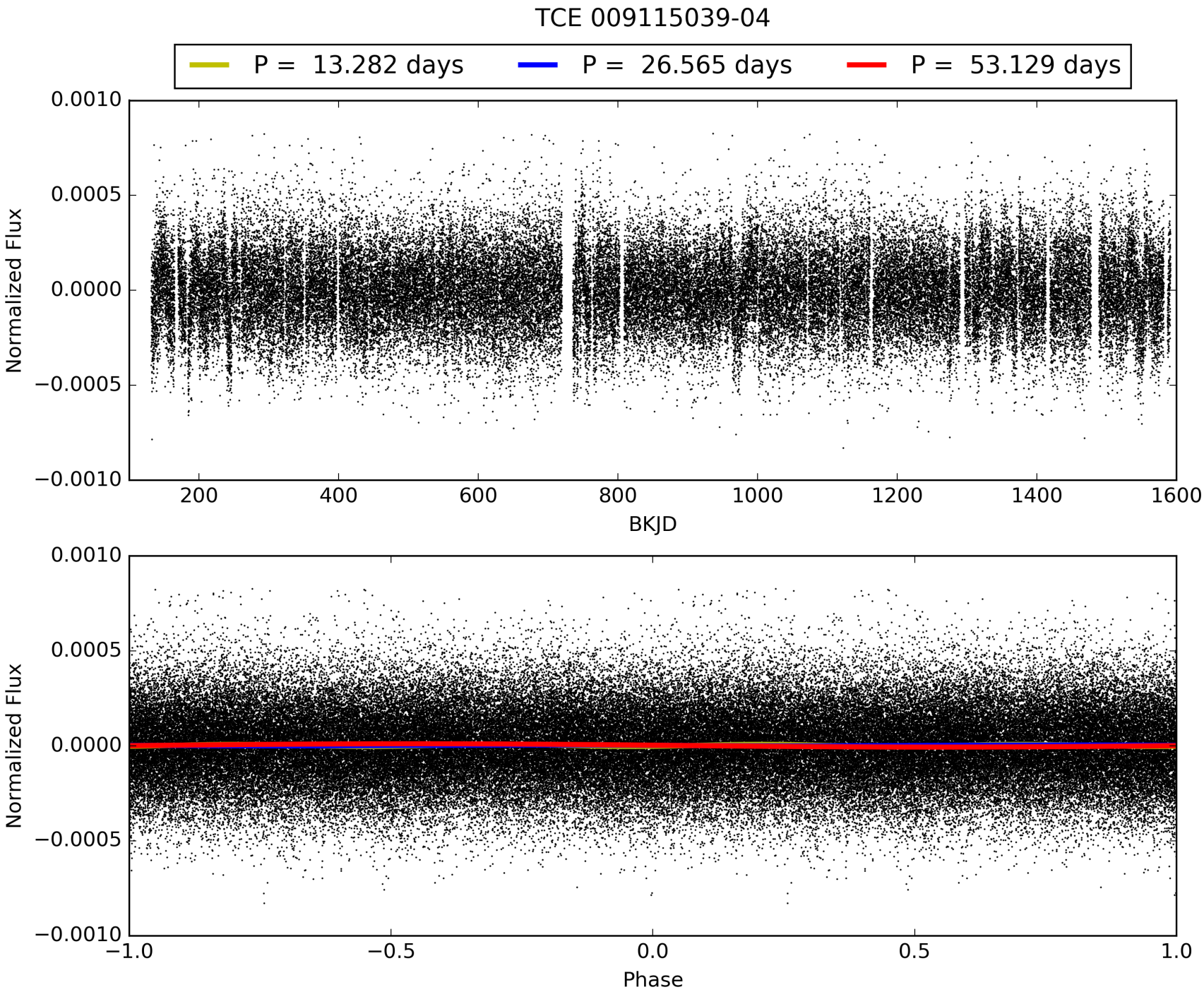
Centroid−sig: 2.5%
Centroid−so: 1.728 arcsec [1.70σ]
OotOffset−rm: 1.972 arcsec [0.97σ]
KicOffset−rm: 1.986 arcsec [0.94σ]
OotOffset−st: 3/2/1/2 [8]
KicOffset−st: 3/2/1/2 [8]
DiffImageQuality−fgm: 0.12 [1/8]
DiffImageOverlap−fno: 0.29 [5/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01−Feb−2016 13:01:54 Z

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

TCE 009115039-04, PDC Light Curves




TCE 009115039-04
P = 13.282 days
P = 26.565 days
P = 53.129 days
Normalized Flux
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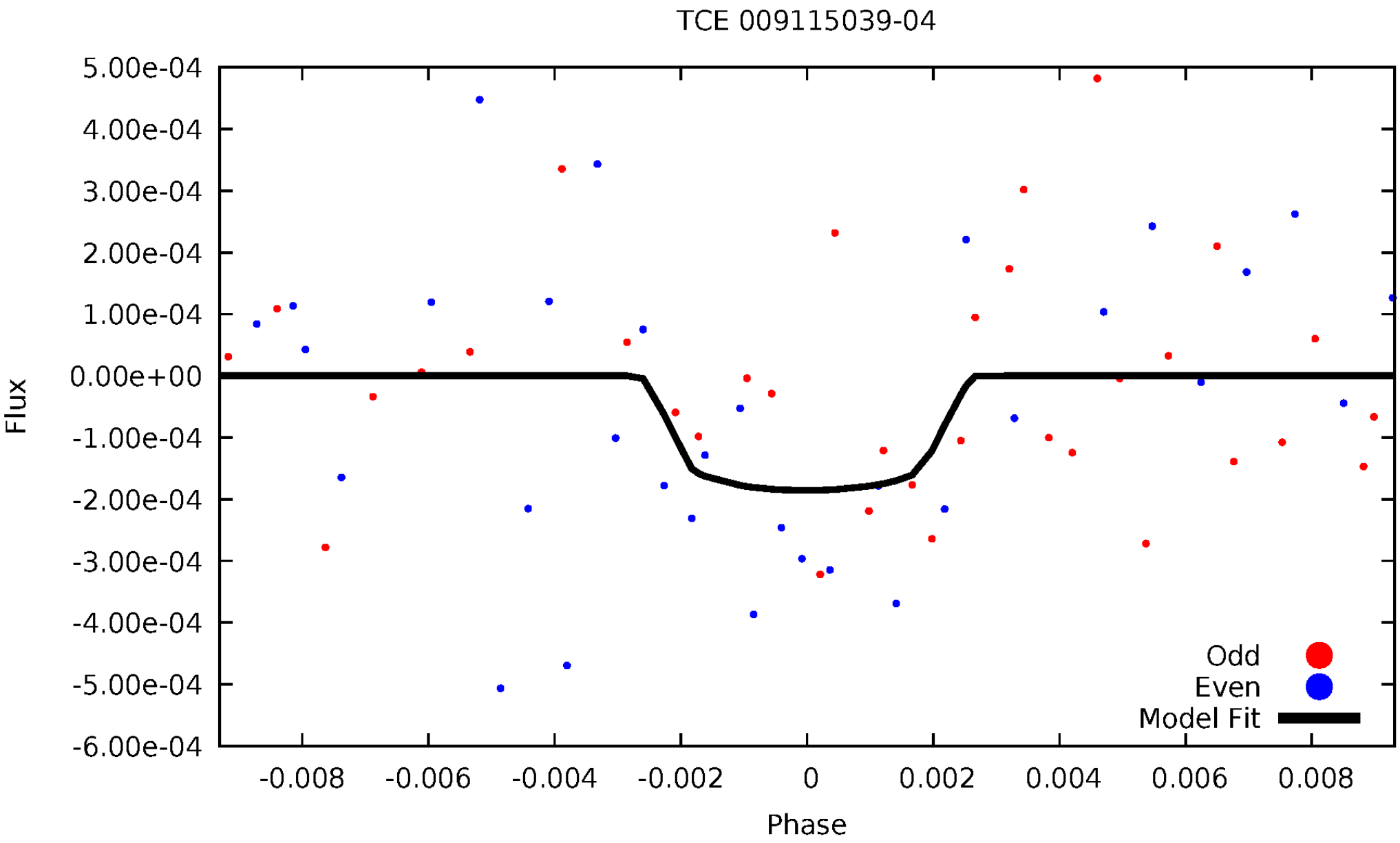
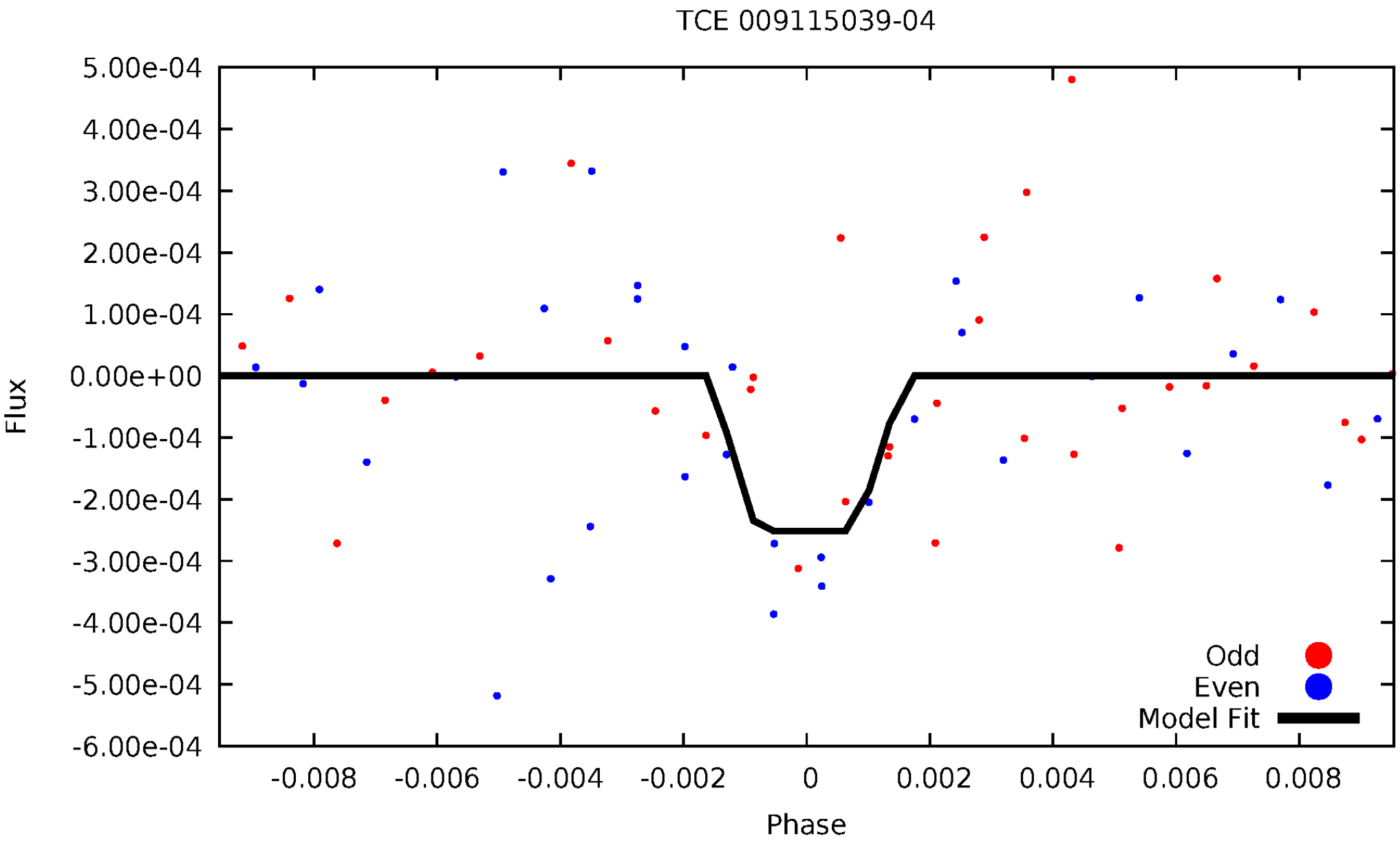
0.0005
0.0000
−0.0005
−0.0010
200
400
600
800
1000
1200
1400
1600
BKJD
Normalized Flux
0.0010
0.0005
0.0000
−0.0005
−0.0010
−1.0
−0.5
0.0
0.5
1.0
Phase

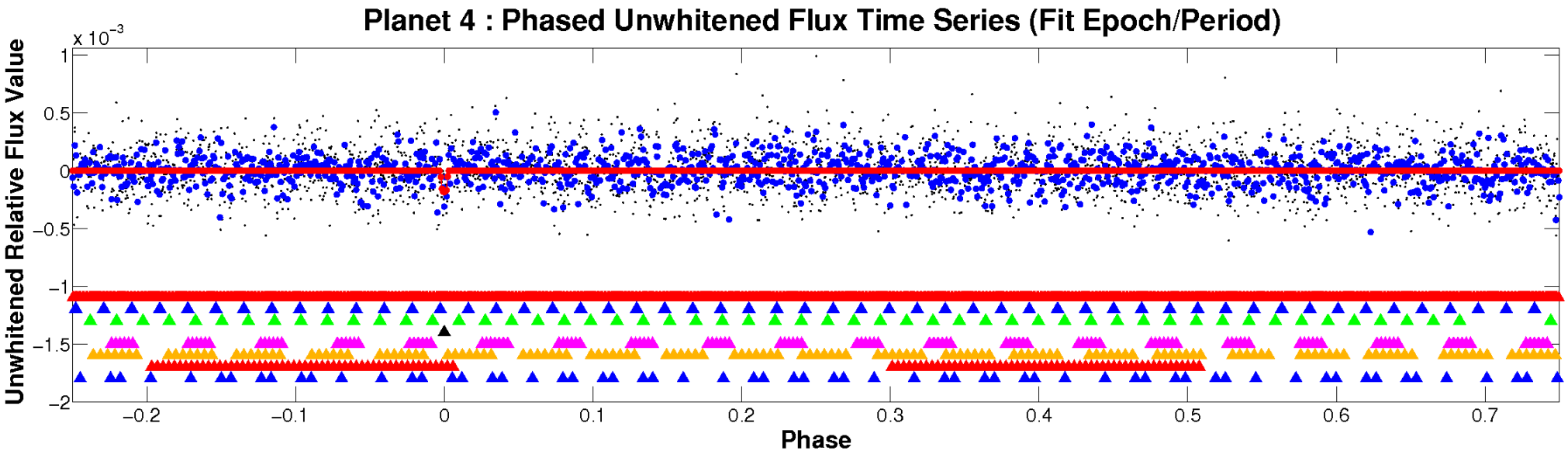
DV Odd/Even

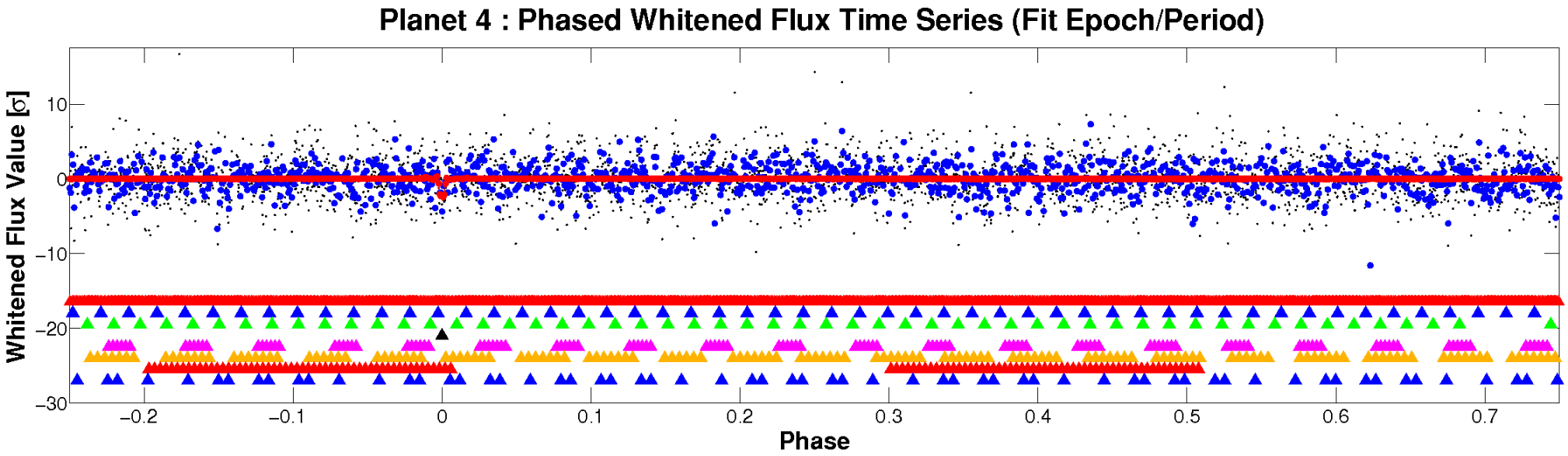

TCE 009115039-04
5.00e-04
4.00e-04
3.00e-04
2.00e-04
1.00e-04
0.00e+00
-1.00e-04
-2.00e-04
-3.00e-04
-4.00e-04
-5.00e-04
-6.00e-04
Flux
-0.008
-0.006
-0.004
-0.002
0
0.002
0.004
0.006
0.008
Phase
Odd
Even
Model Fit

ALT Odd/Even


TCE 009115039-04
5.00e-04
4.00e-04
3.00e-04
2.00e-04
1.00e-04
0.00e+00
-1.00e-04
-2.00e-04
-3.00e-04
-4.00e-04
-5.00e-04
-6.00e-04
Flux
-0.008
-0.006
-0.004
-0.002
0
0.002
0.004
0.006
0.008
Phase
Odd
Even
Model Fit

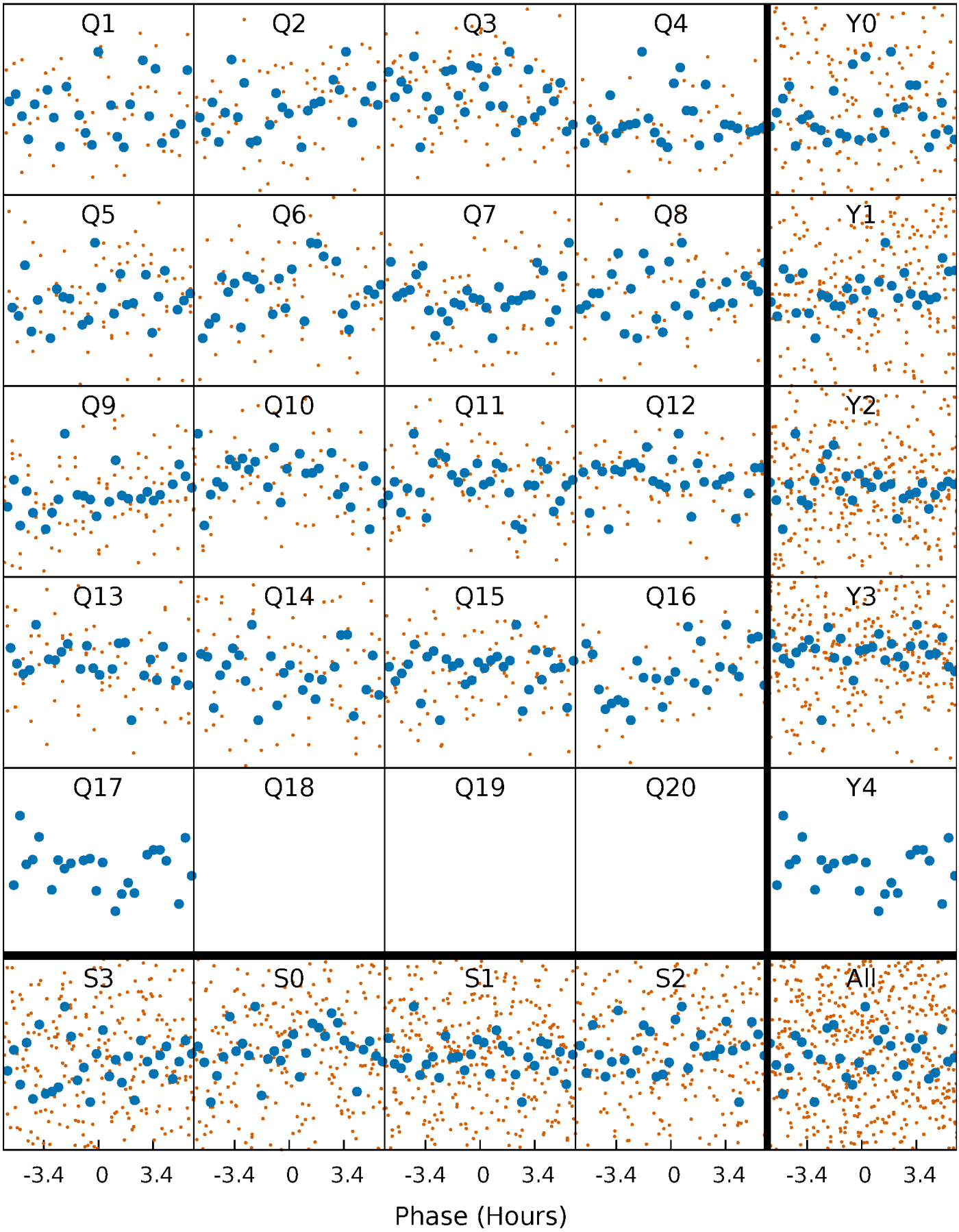
Non-Whitened Vs. Whitened Light Curve





PDC Quarter-Phased Transit Curves

TCE 009115039-04 P= 26.564566 Days T_0=132.691176 (BKJD)



DV Quarter-Phased Transit Curves

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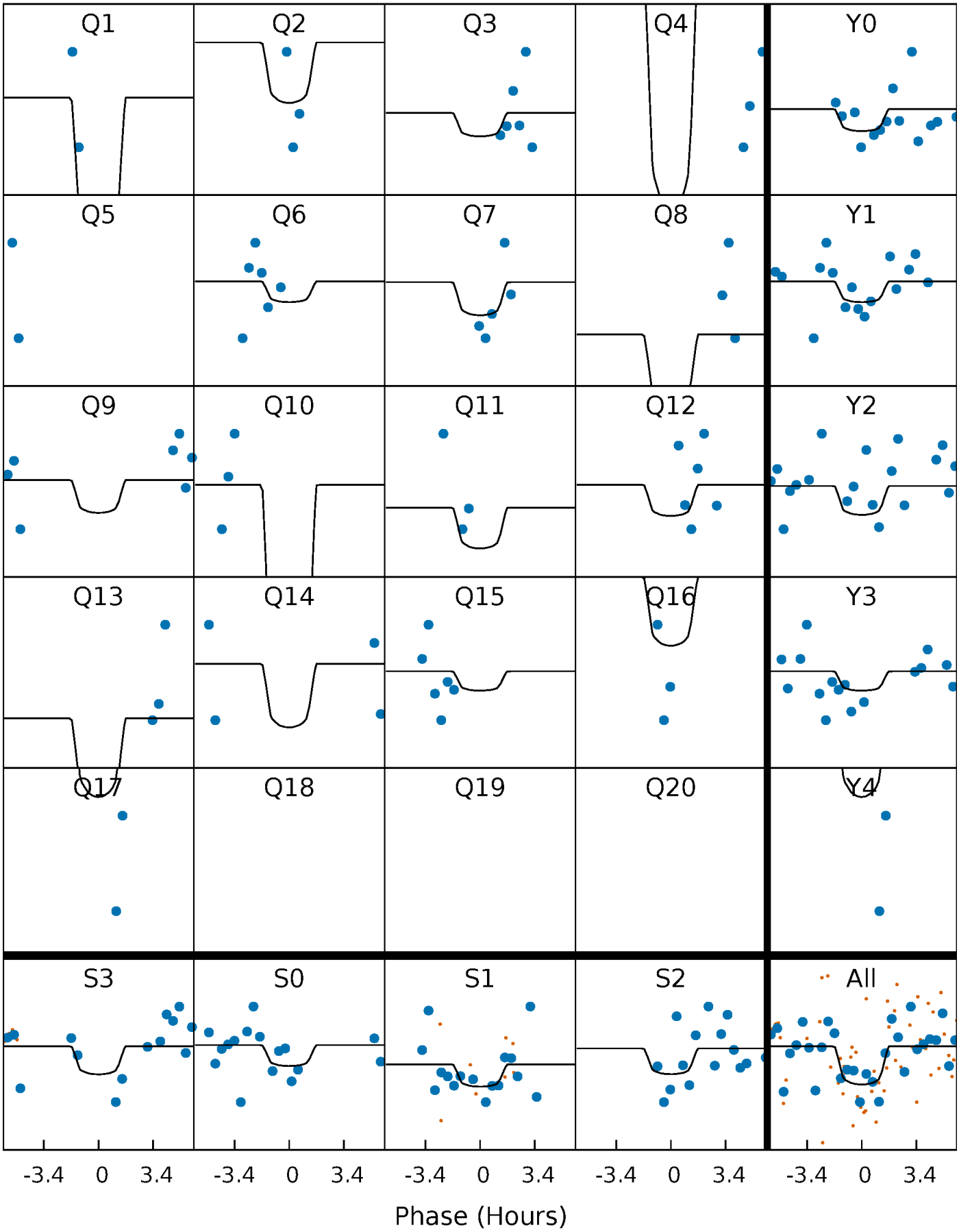
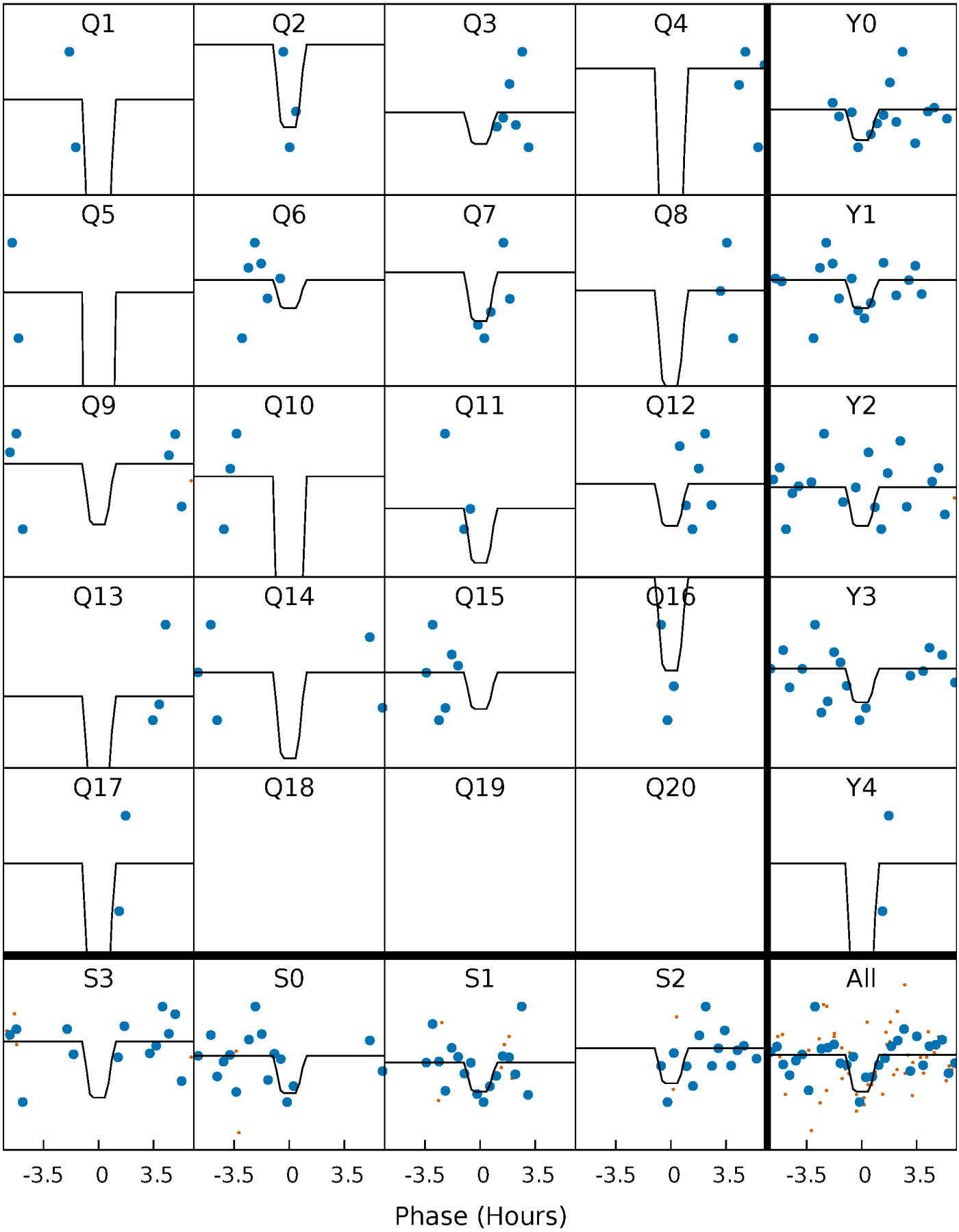


Alt. Detrend Quarter-Phased Transit Curves

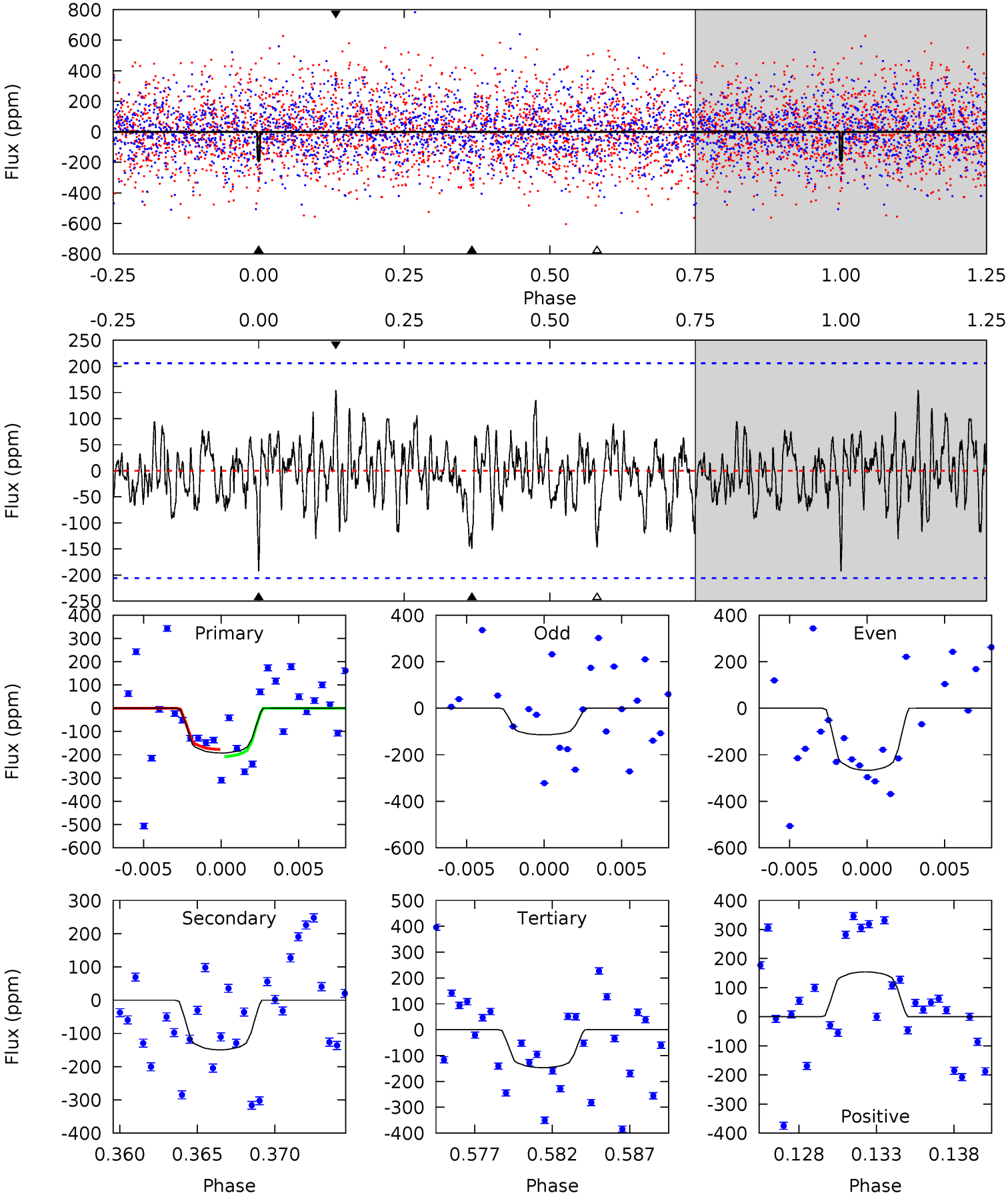
TCE 009115039-04 P= 26.564207 Days T_0=132.701497 (BKJD)



DV Model-Shift Uniqueness Test

009115039-04, P = 26.564566 Days, E = 106.126610 Days

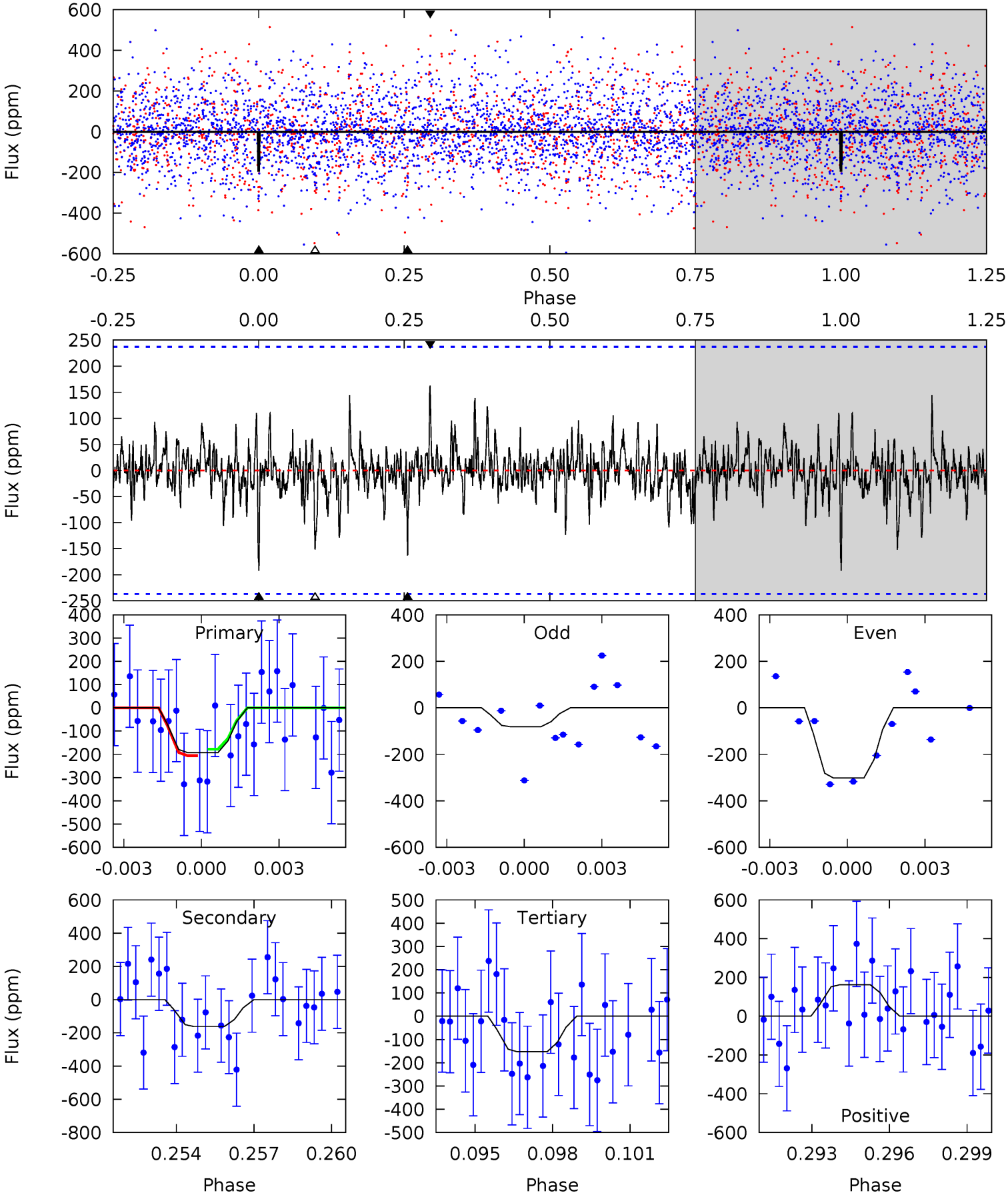
Pri	Sec	Ter	Pos	FA_1	FA_2	F_{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4.83	3.75	3.68	3.87	5.16	2.81	1.17	1.15	0.96	0.07	-0.12	1.90	0.97	0.45	0.39



Alt Model-Shift Uniqueness Test

009115039-04, P = 26.564207 Days, E = 106.137290 Days

Pri	Sec	Ter	Pos	FA_1	FA_2	F_{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4.26	3.59	3.37	3.60	5.26	2.97	0.85	0.89	0.66	0.22	-0.01	2.54	0.68	0.46	0.31



Stellar Parameters For KIC 009115039

	$T_{\rm eff}(K)$	$\log(g)$	[Fe/H]	R ($R_\odot$)	$M(M_\odot)$	$p_\star$ (g·cm^{-3})
	6680^{+189}_{-236}	$4.190^{+0.158}_{-0.175}$	$-0.280^{+0.250}_{-0.300}$	$1.478^{+0.431}_{-0.352}$	$1.241^{+0.189}_{-0.189}$	$0.542^{+0.500}_{-0.263}$
	+3%/-4%	+4%/-4%	+89%/-107%	+29%/-24%	+15%/-15%	+92%/-48%
Source	PHO1	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 009115039-04 / KOI

Detrend	Depth (ppm)	R_p ($R_\oplus$)	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-149±40	$3.48^{+3.30}_{-2.32}$	1160^{+81}_{-77}	5081^{+3772}_{-1181}	225^{+1671}_{-167}
Alt.	-162±45	$3.66^{+3.43}_{-2.40}$	1162^{+78}_{-84}	4996^{+3560}_{-1099}	220^{+1486}_{-162}

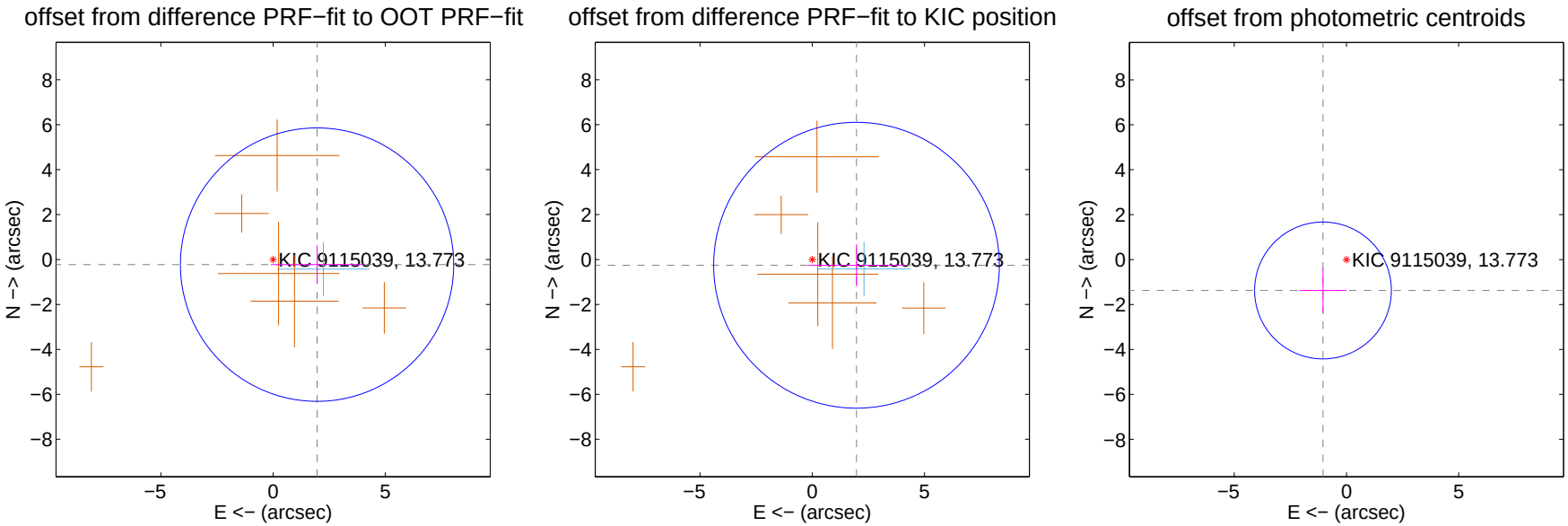
T_{max} = Theoretical Maximum Planetary Temperature
T_{obs} = Observed Planetary Temperature (Assuming A=0.3)
A_{obs} = Observed Albedo (Assuming T=0)

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

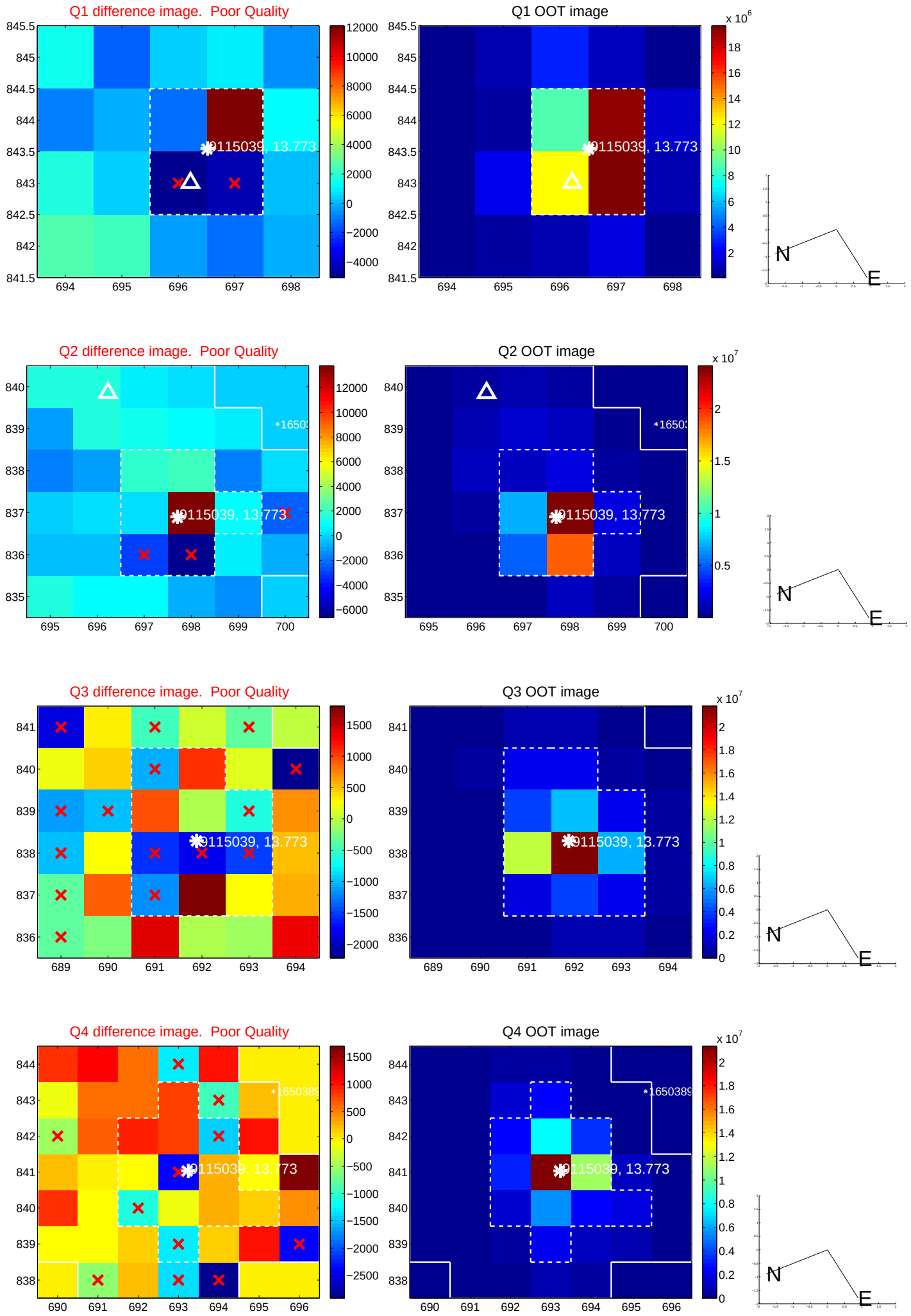
Supplemental centroid analysis for 009115039-04. Kepler magnitude: 13.77. Transit SNR 9.47
There are 1 quarters with good PRF difference image offsets
The direct PRF centroid is offset from the target star catalog position by about 0.03 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.972 ± 2.029	0.97	-1.959 ± 2.068	-0.228 ± 0.852
PRF-fit source offset from KIC position	1.986 ± 2.121	0.94	-1.970 ± 2.156	-0.256 ± 0.942
photometric centroid source offset	1.73 ± 1.02	1.70	1.05 ± 1.05	-1.38 ± 1.00

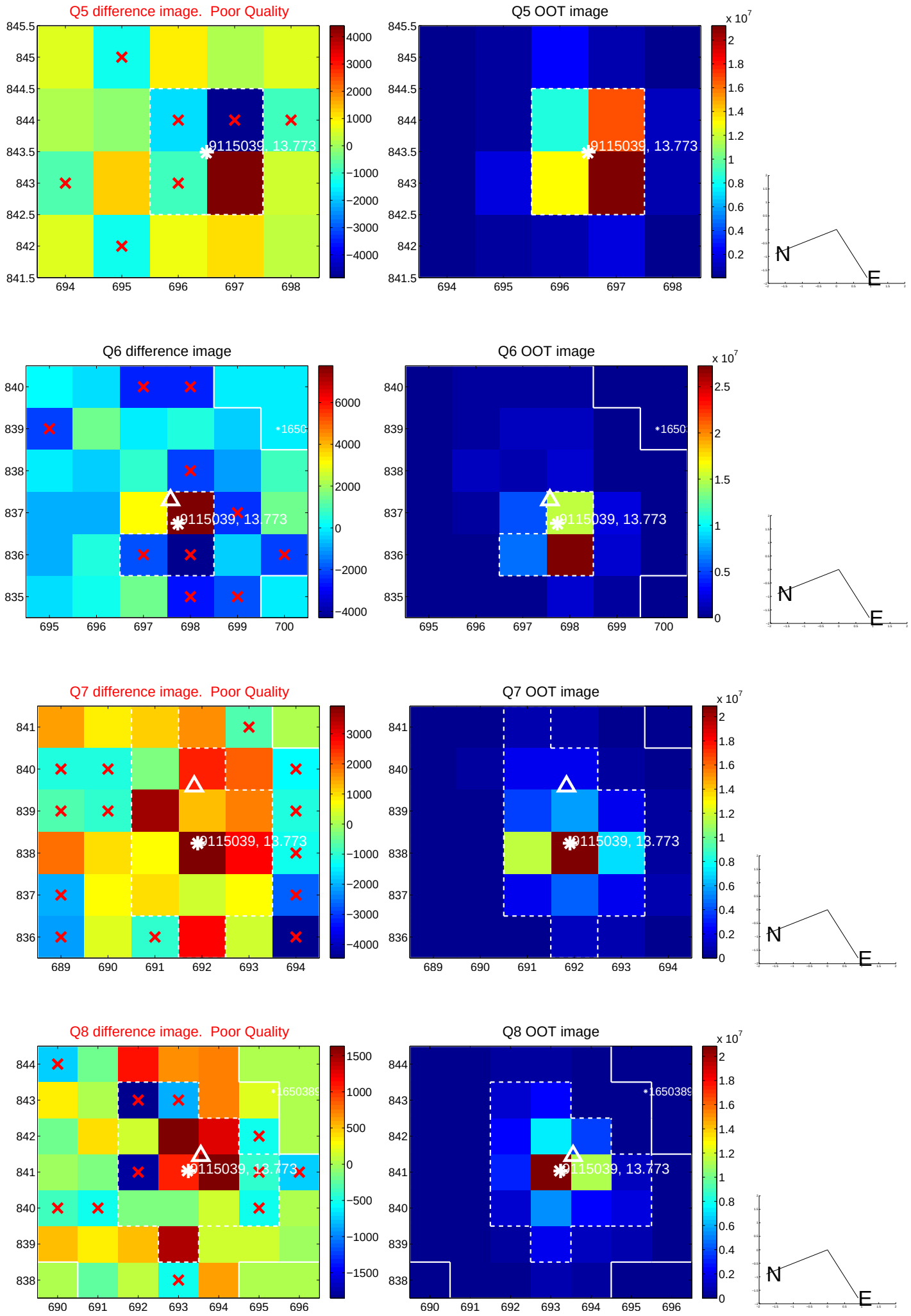


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one-σ uncertainty. Blue circle: three-σ. Red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

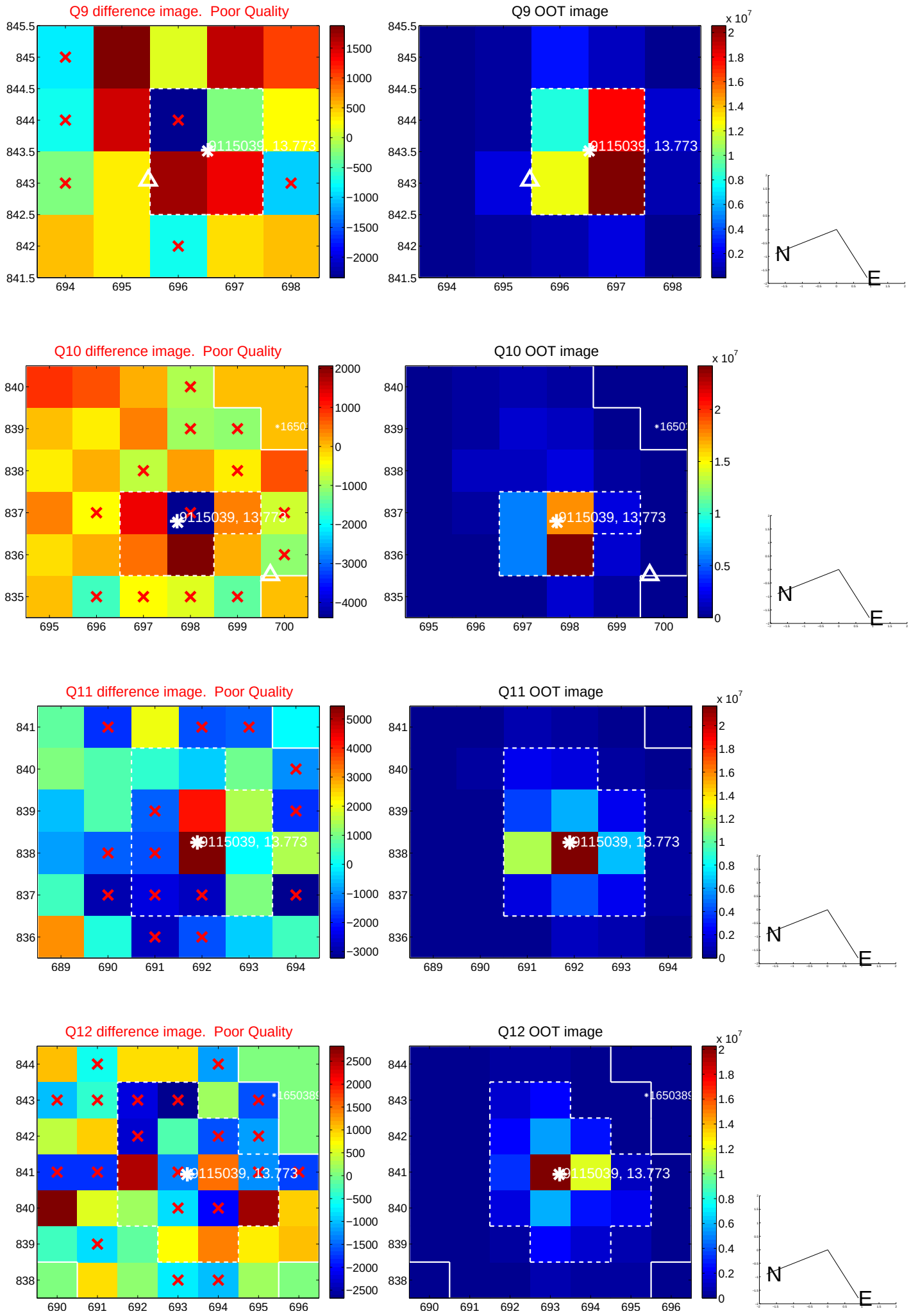
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.



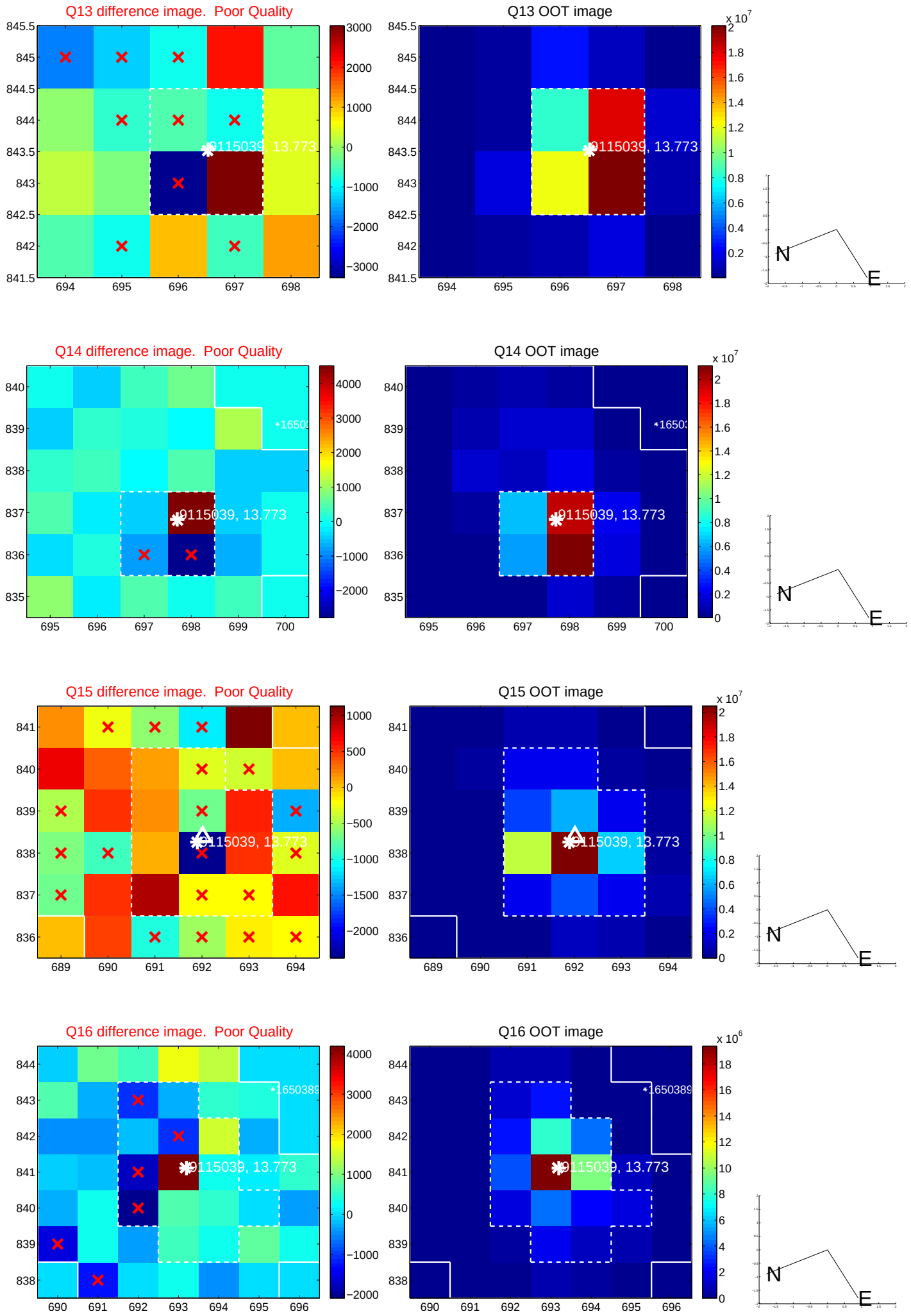
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.



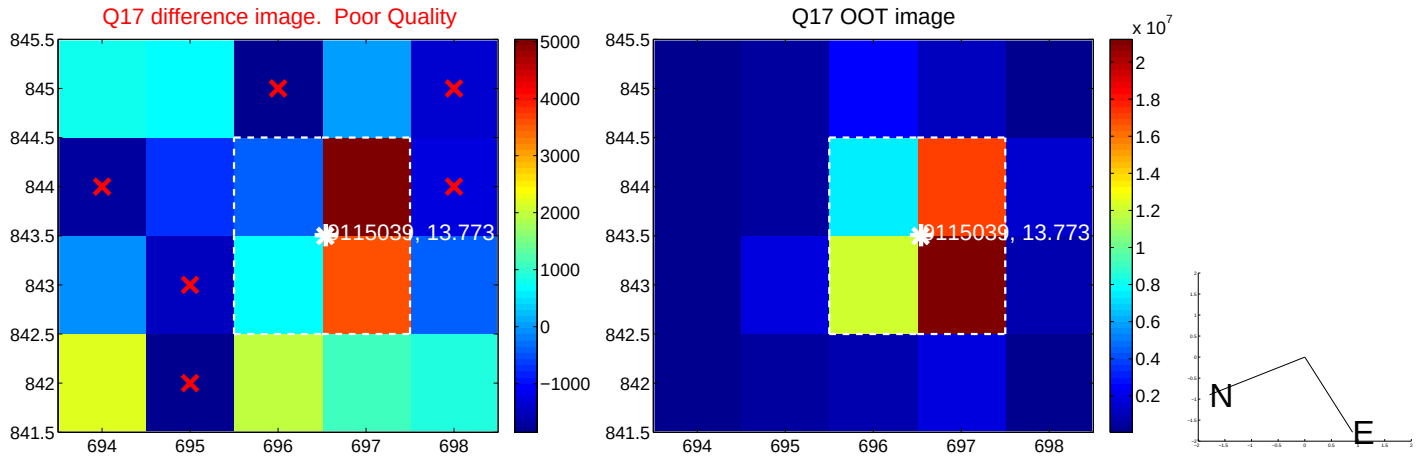
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.

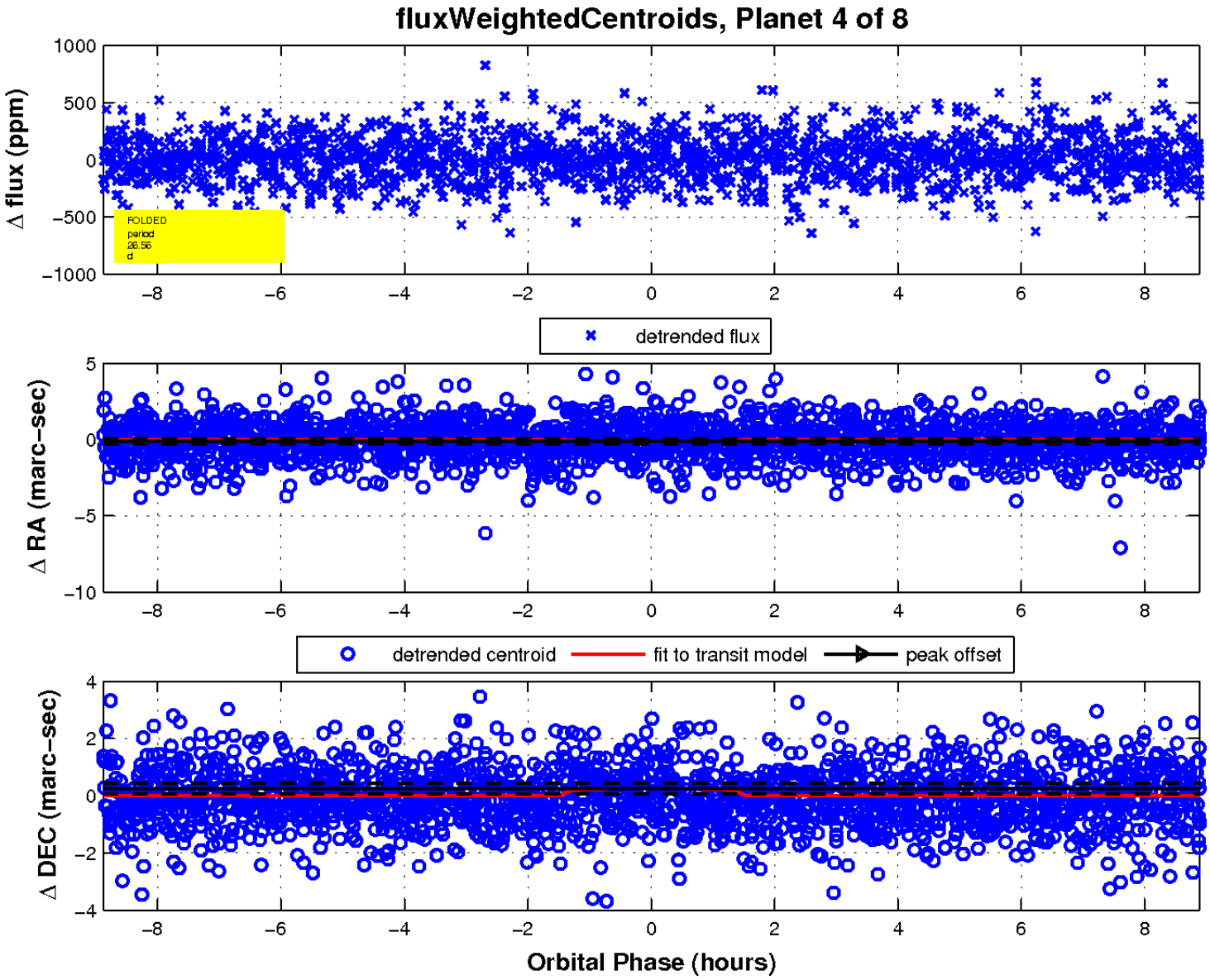


white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.

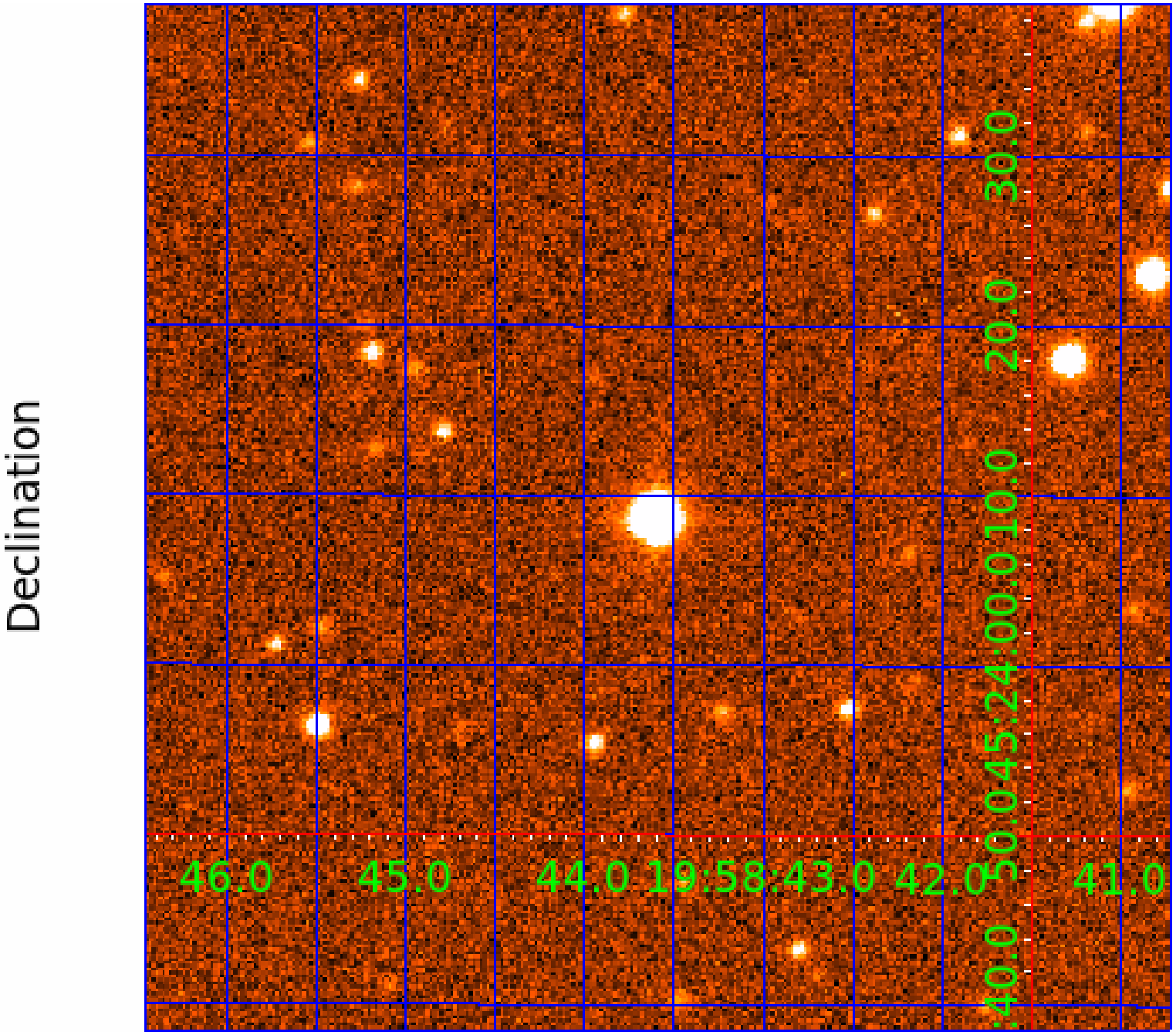


white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.





UKIRT Image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41.0
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50.0
45.0
24:00.0
10.0
20.0
30.0

KIC 009115039

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 ($S_\oplus$)
009115039-01	OBS	No	1.042986	131.553686	17.2	7.748	8.3	9.7	1.48	6680	0.71	8357.54
009115039-02	OBS	No	17.542812	148.151216	229.0	1.288	11.4	9.8	1.48	6680	2.40	193.93
009115039-03	OBS	No	27.035069	152.460805	383.5	1.163	10.8	10.4	1.48	6680	3.25	108.95
009115039-04	OBS	No	26.564566	132.691176	185.7	2.967	12.4	9.5	1.48	6680	2.23	111.53
009115039-05	OBS	No	11.950278	133.822951	321.2	0.937	10.0	10.9	1.48	6680	2.71	323.55
009115039-06	OBS	No	10.113701	141.211810	184.1	1.337	9.6	8.7	1.48	6680	2.34	404.18
009115039-07	OBS	No	13.333071	140.695541	294.4	0.637	10.9	13.2	1.48	6680	2.68	279.60

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009115039-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT
009115039-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS—HALO_GHOST
009115039-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
009115039-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
009115039-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—CENT_FEW_DIFFS
009115039-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
009115039-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—CENT_FEW_DIFFS

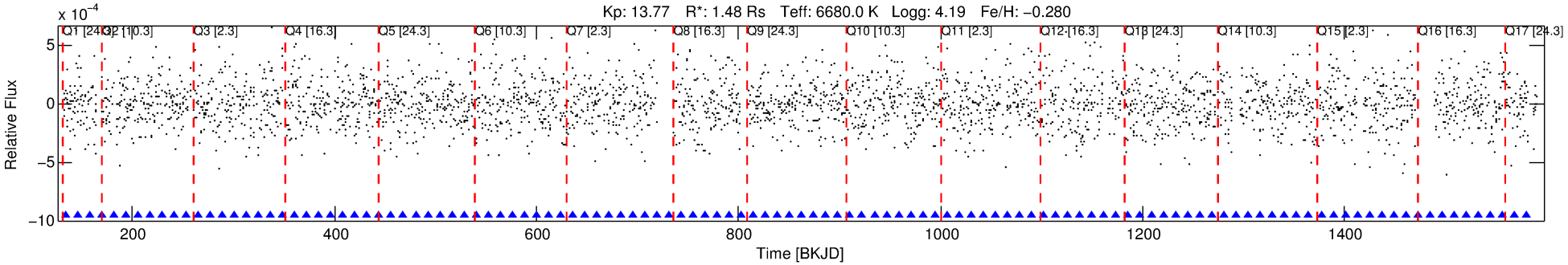
Notes: OBS = Observed. INJ = Injected. INV = Inverted. SCR = Scrambled.
N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.
See `http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col` for comment definitions.

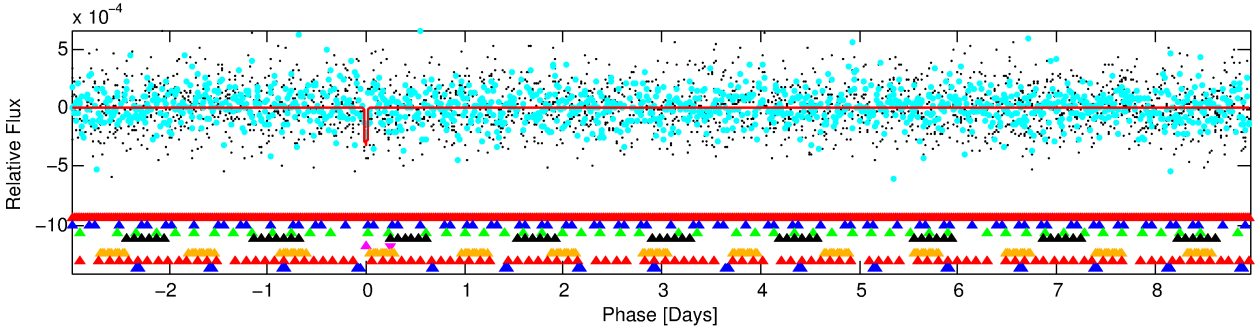
Ephemeris Match Information For 009115039-05

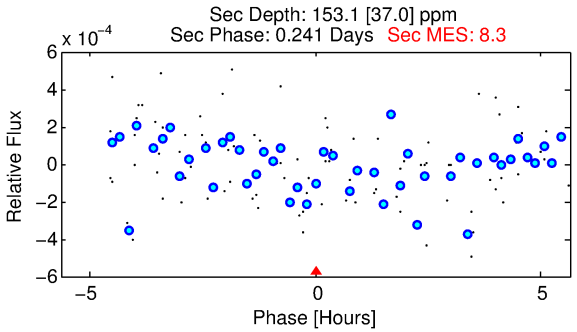
No Significant Match Found

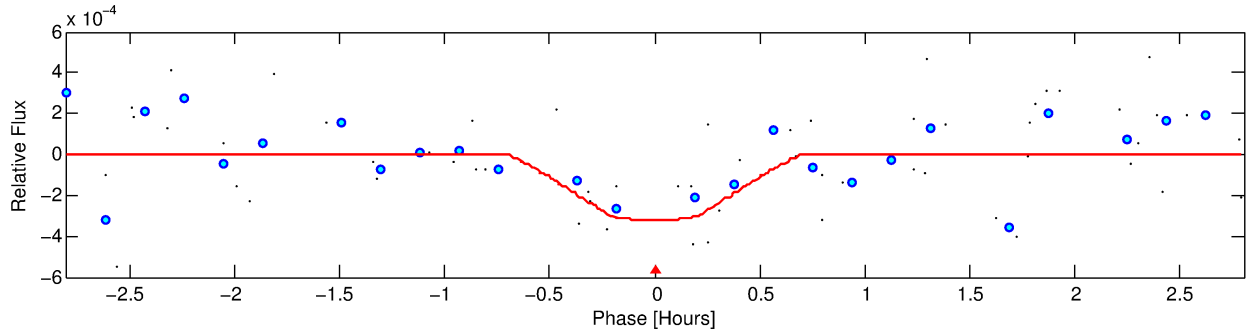
DV One-Page Summary

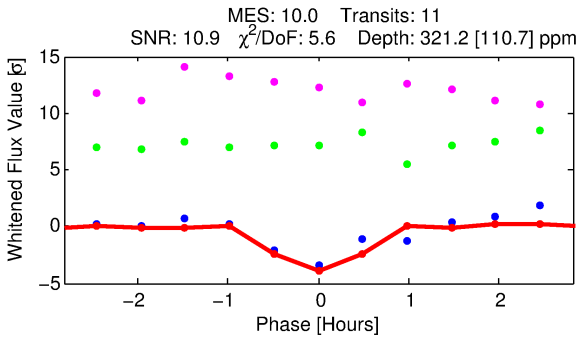
KIC: 9115039 Candidate: 5 of 8 Period: 11.950 d

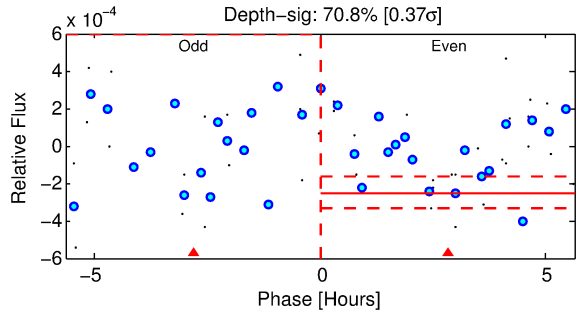


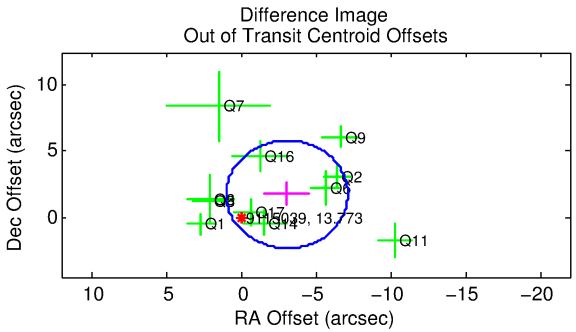












DV Fit Results:

Period = 11.95028 [0.00015] d
Epoch = 133.8230 [0.0103] BKJD
Rp/R* = 0.0168 [0.0511]
a/R* = 95.48 [1619.43]
b = 0.27 [58.02]

Seff = 323.55 [116.63]
Teq = 1081 [97] K
Rp = 2.71 [8.29] Re
a = 0.1097 [0.0259] AU

Ag = 137.94 [840.88] [0.16σ]
Teffp = 5730 [8722] K [0.53σ]

DV Diagnostic Results:

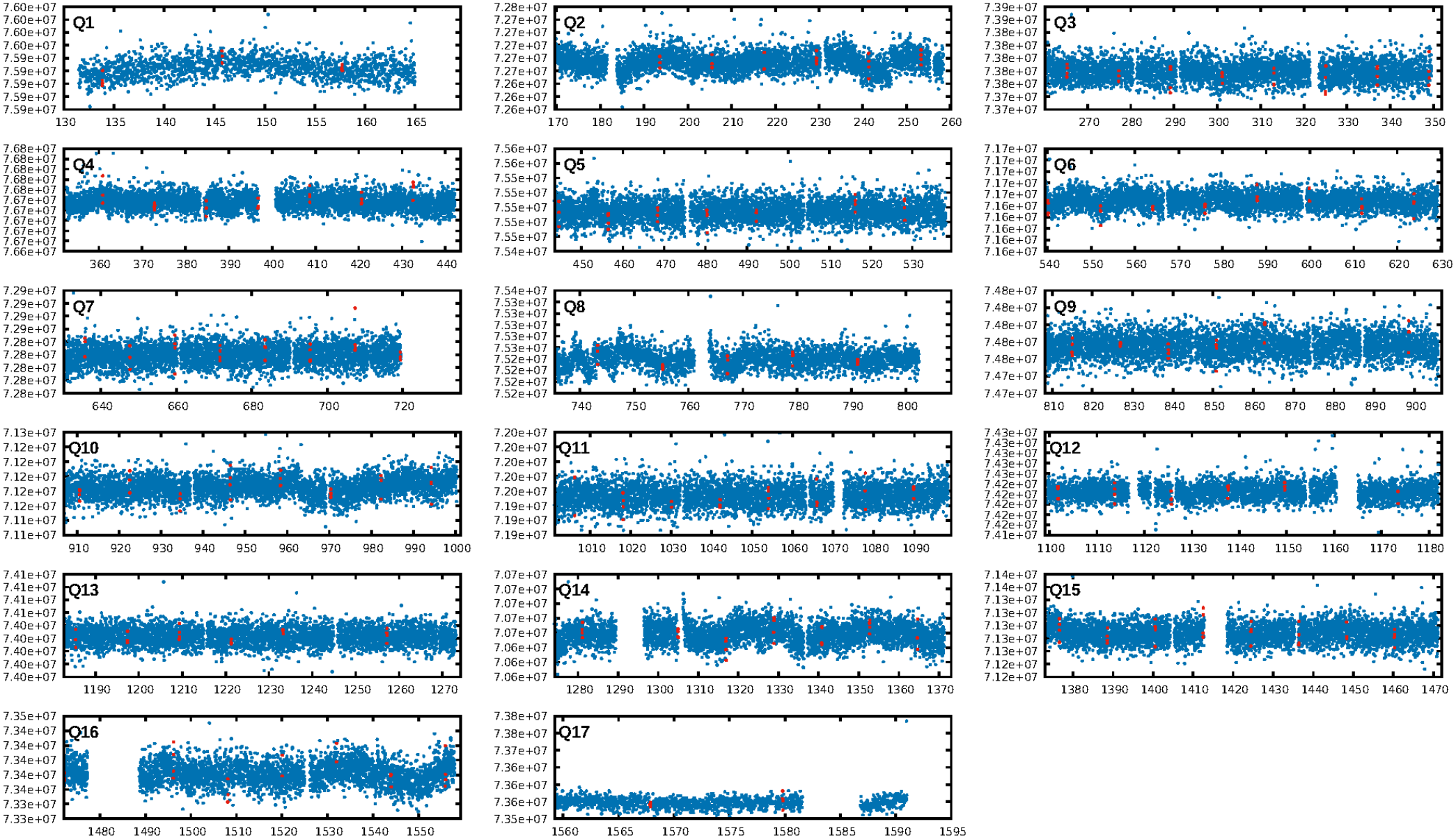
ShortPeriod−sig: 100.0% [27.00σ]
LongPeriod−sig: 100.0% [29.28σ]
ModelChiSquare2−sig: 0.0%
ModelChiSquareGof−sig: 17.2%
Bootstrap−pfa: 6.39e−10
RollingBand−fgt: 1.00 [11/11]
GhostDiagnostic−chr: −1.364

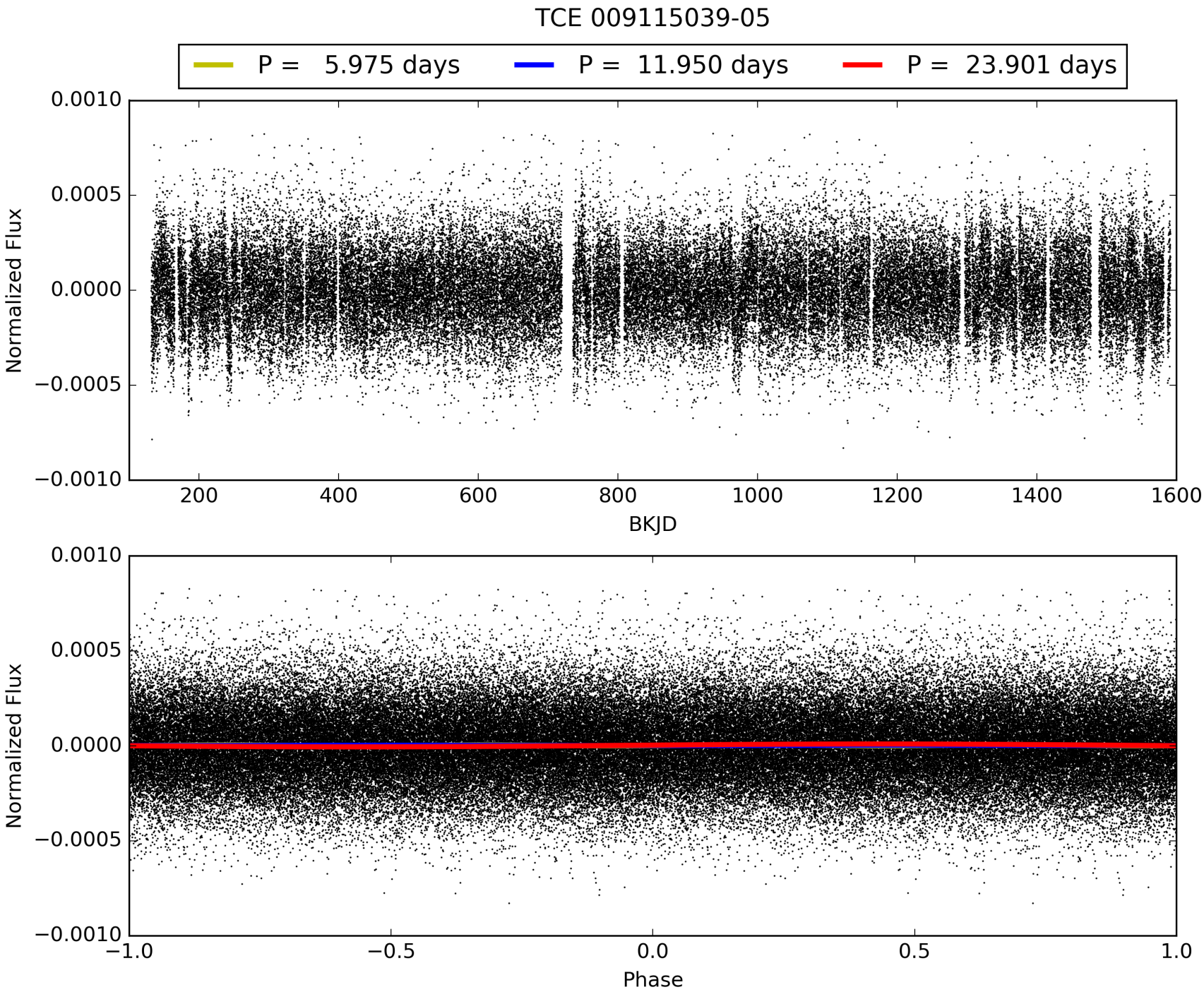
Centroid−sig: 31.5%
Centroid−so: 0.924 arcsec [1.26σ]
OotOffset−rm: 3.544 arcsec [2.61σ]
KicOffset−rm: 3.546 arcsec [2.59σ]
OotOffset−st: 3/3/2/3 [11]
KicOffset−st: 3/3/2/3 [11]
DiffImageQuality−fgm: 0.09 [1/11]
DiffImageOverlap−fno: 0.82 [14/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01−Feb−2016 13:01:57 Z

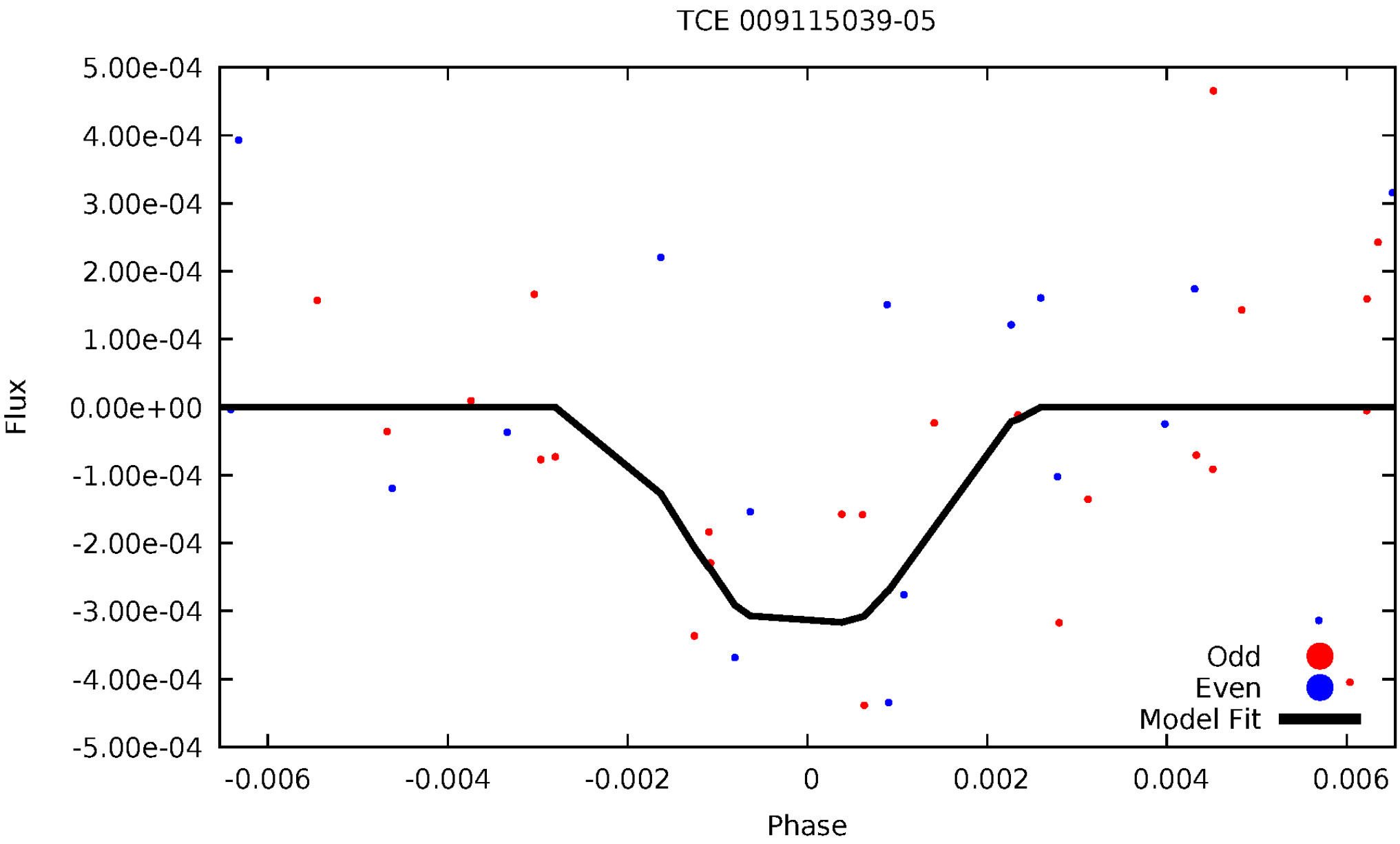
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 009115039-05, PDC Light Curves




TCE 009115039-05
P = 5.975 days
P = 11.950 days
P = 23.901 days
Normalized Flux
0.0010
0.0005
0.0000
−0.0005
−0.0010
200
400
600
800
1000
1200
1400
1600
BKJD
Normalized Flux
0.0010
0.0005
0.0000
−0.0005
−0.0010
−1.0
−0.5
0.0
0.5
1.0
Phase

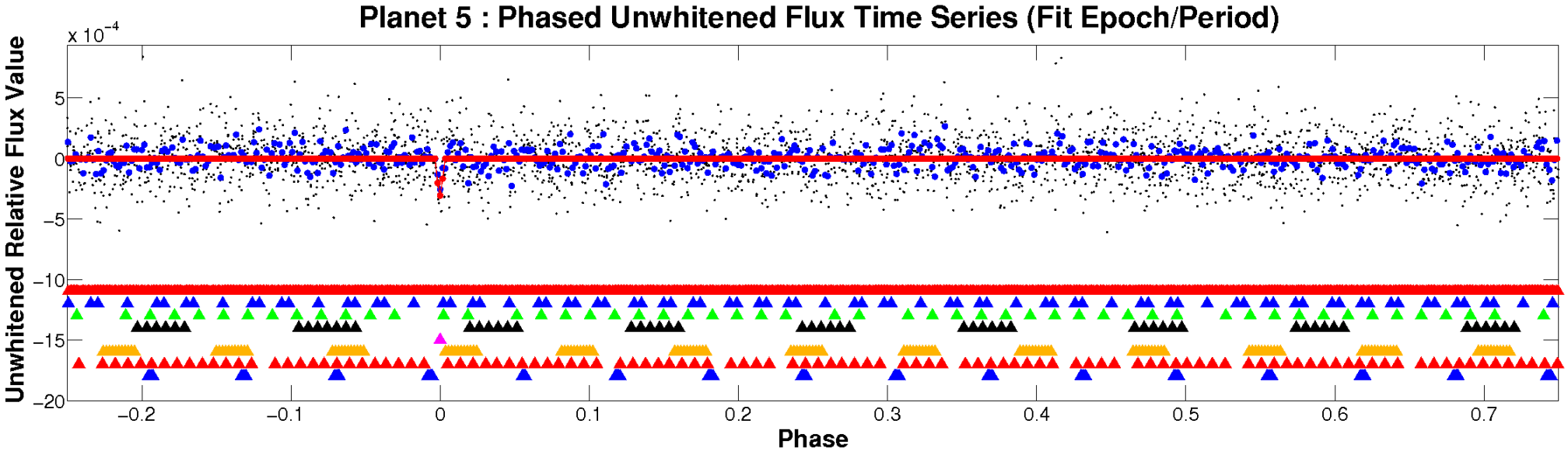
DV Odd/Even

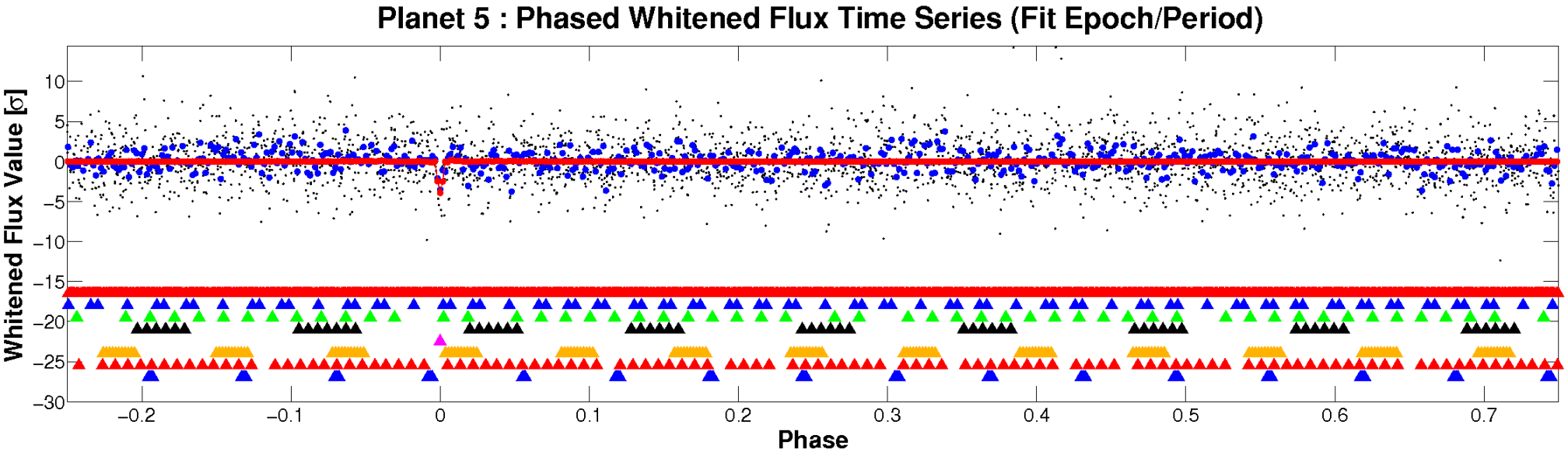

TCE 009115039-05
5.00e-04
4.00e-04
3.00e-04
2.00e-04
1.00e-04
0.00e+00
-1.00e-04
-2.00e-04
-3.00e-04
-4.00e-04
-5.00e-04
Flux
-0.006
-0.004
-0.002
0
0.002
0.004
0.006
Phase
Odd
Even
Model Fit

ALT Odd/Even

This plot does not exist for this TCE.

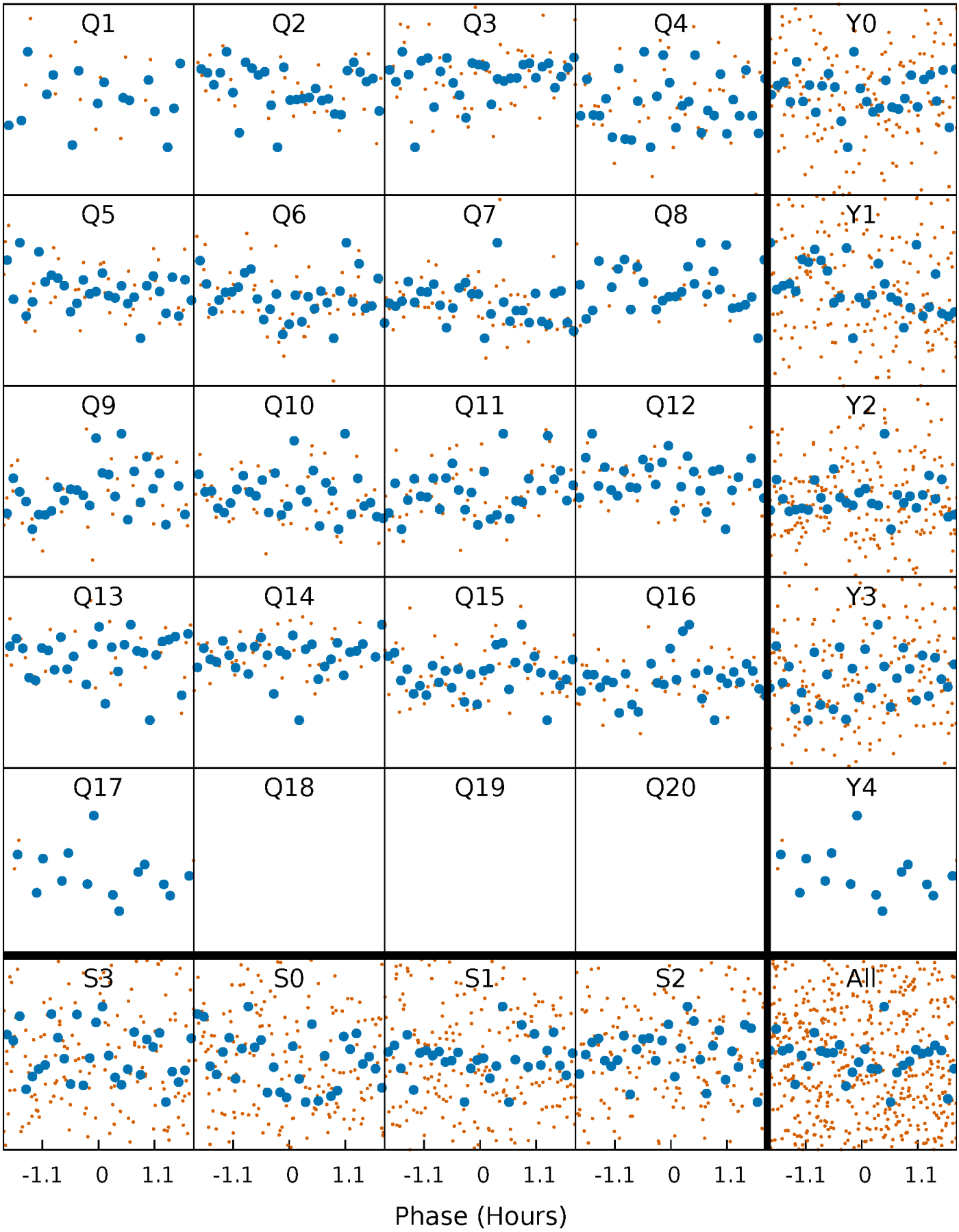
Non-Whitened Vs. Whitened Light Curve





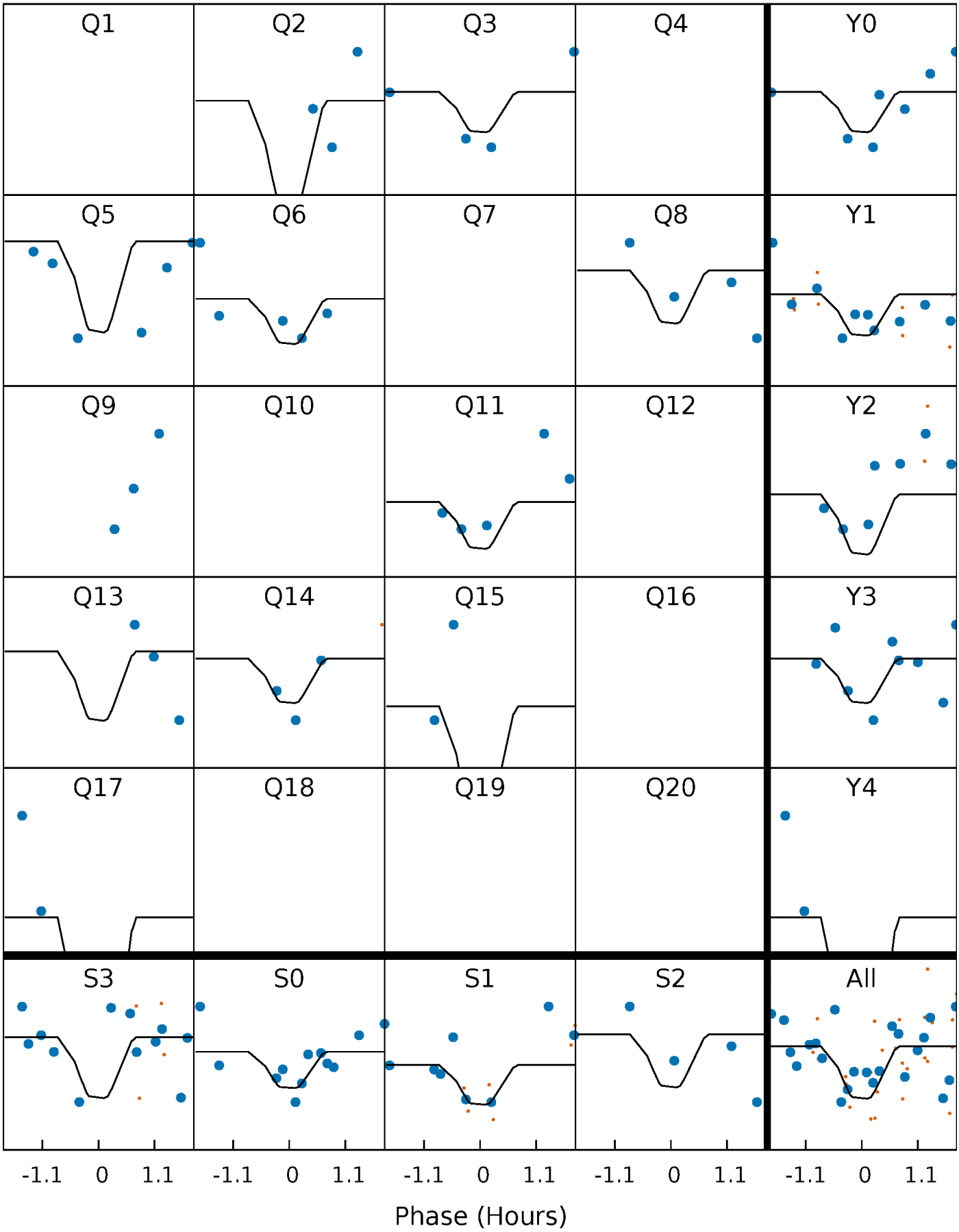
PDC Quarter-Phased Transit Curves

TCE 009115039-05 P= 11.950278 Days T_0=133.822951 (BKJD)



DV Quarter-Phased Transit Curves

TCE 009115039-05 P= 11.950278 Days T_0=133.822951 (BKJD)

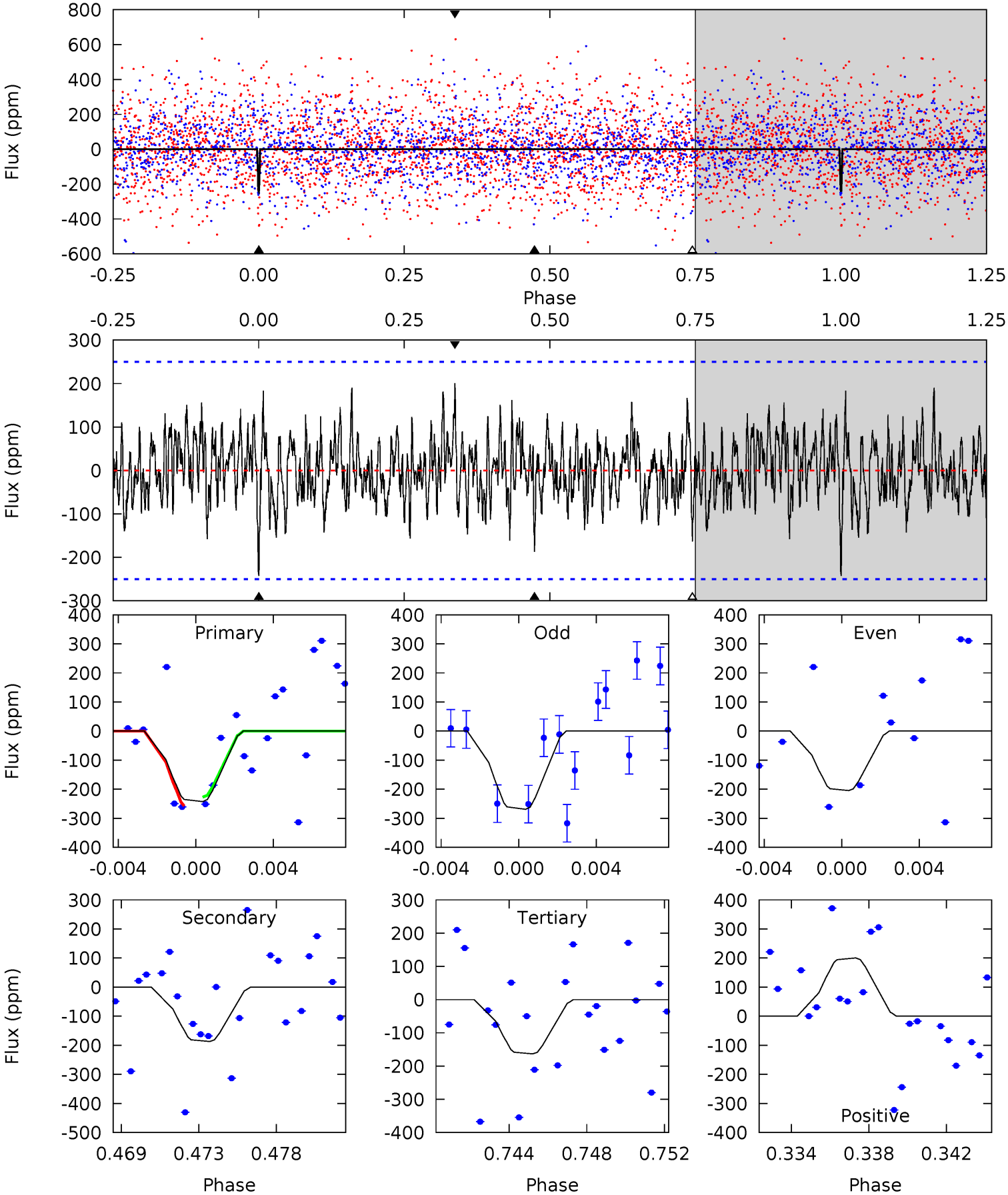


This plot does not exist for this TCE.

DV Model-Shift Uniqueness Test

009115039-05, P = 11.950278 Days, E = 121.872673 Days

Pri	Sec	Ter	Pos	FA_1	FA_2	F_{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.03	3.88	3.39	4.16	5.19	2.86	1.29	1.65	0.88	0.49	-0.28	0.67	1.01	0.45	0.30



Alt Model-Shift Uniqueness Test

This plot does not exist for this TCE.

Stellar Parameters For KIC 009115039

	$T_{\rm eff}(K)$	$\log(g)$	[Fe/H]	R ($R_\odot$)	$M(M_\odot)$	$p_\star$ (g·cm^{-3})
	6680^{+189}_{-236}	$4.190^{+0.158}_{-0.175}$	$-0.280^{+0.250}_{-0.300}$	$1.478^{+0.431}_{-0.352}$	$1.241^{+0.189}_{-0.189}$	$0.542^{+0.500}_{-0.263}$
	+3%/-4%	+4%/-4%	+89%/-107%	+29%/-24%	+15%/-15%	+92%/-48%
Source	PHO1	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 009115039-05 / KOI

Detrend	Depth (ppm)	R_p ($R_\oplus$)	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-187±48	$6.44^{+6.43}_{-4.31}$	1510^{+120}_{-96}	4193^{+2402}_{-916}	29^{+227}_{-22}
Alt.	N/A	N/A	N/A	N/A	N/A

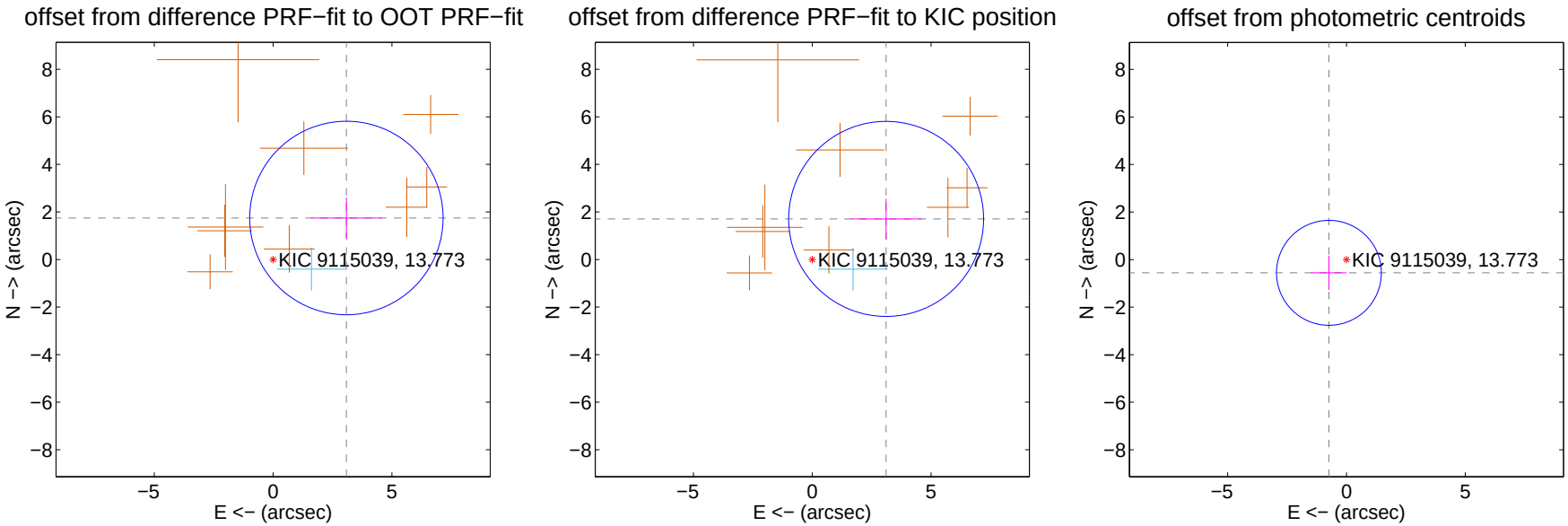
T_{max} = Theoretical Maximum Planetary Temperature
T_{obs} = Observed Planetary Temperature (Assuming A=0.3)
A_{obs} = Observed Albedo (Assuming T=0)

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

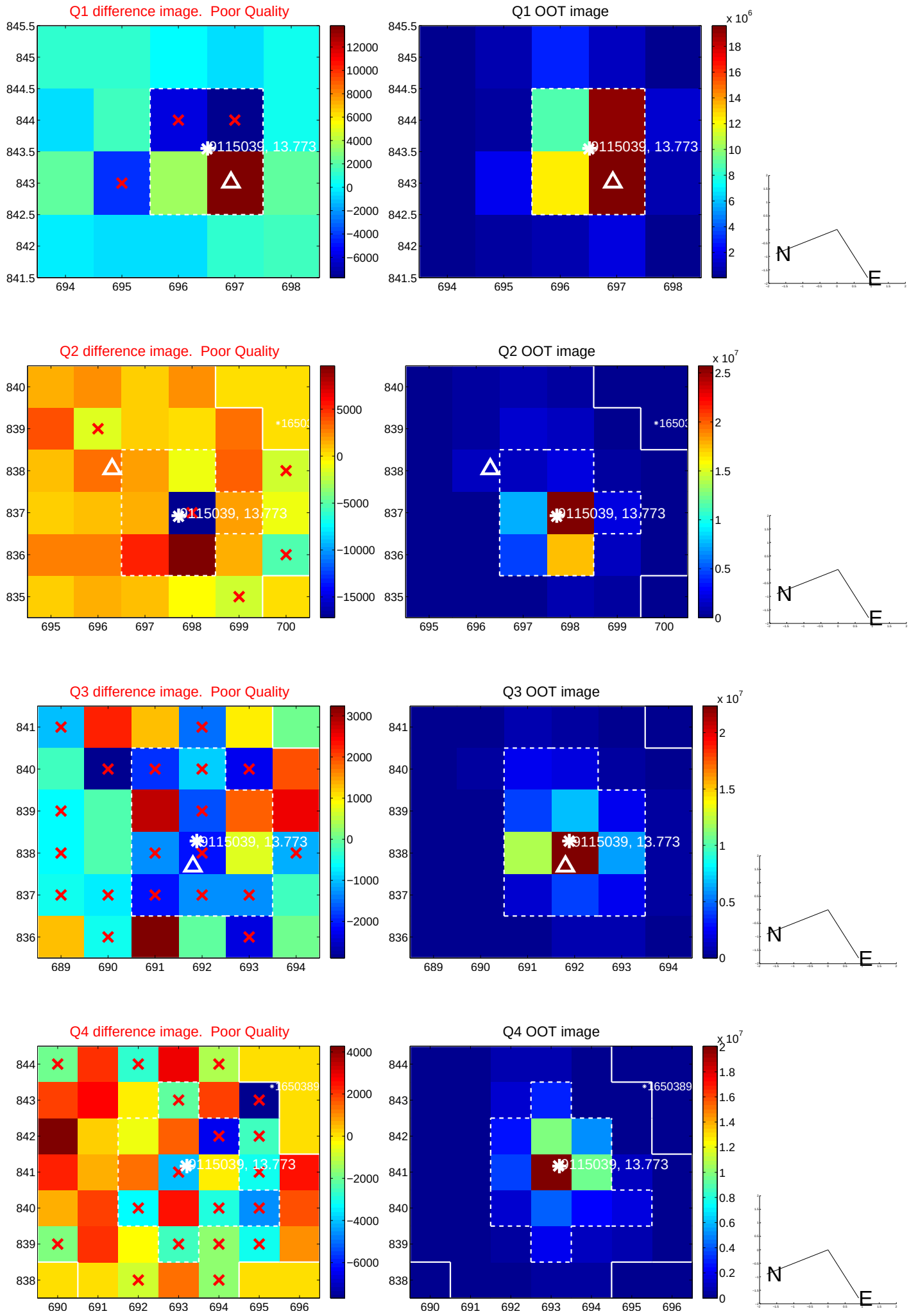
Supplemental centroid analysis for 009115039-05. Kepler magnitude: 13.77. Transit SNR 10.93
There are 1 quarters with good PRF difference image offsets
The direct PRF centroid is offset from the target star catalog position by about 0.04 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	3.544 ± 1.356	2.61	-3.084 ± 1.482	1.746 ± 0.853
PRF-fit source offset from KIC position	3.546 ± 1.367	2.59	-3.108 ± 1.488	1.708 ± 0.850
photometric centroid source offset	0.92 ± 0.74	1.26	0.74 ± 0.74	-0.56 ± 0.72

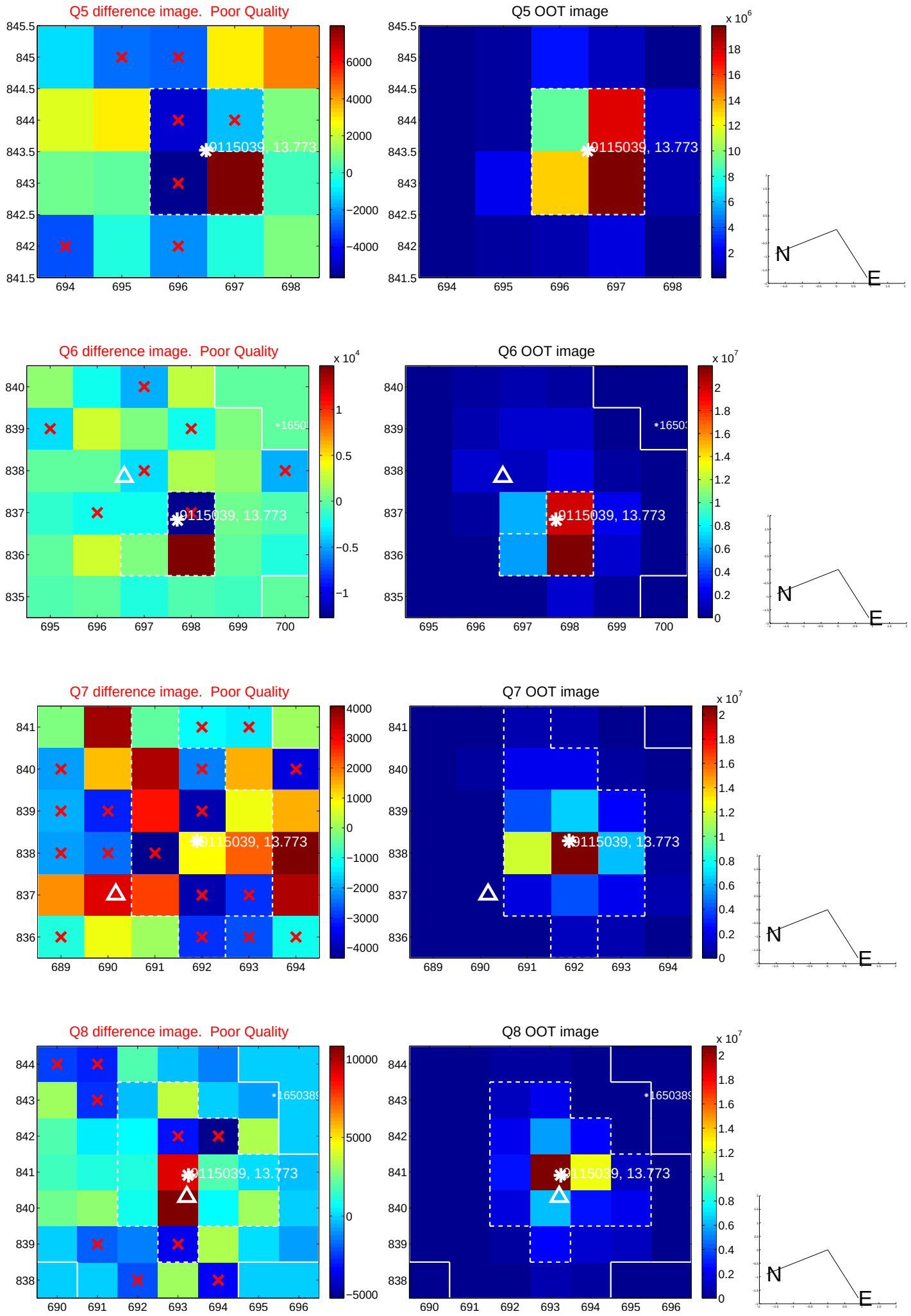


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one-σ uncertainty. Blue circle: three-σ. Red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

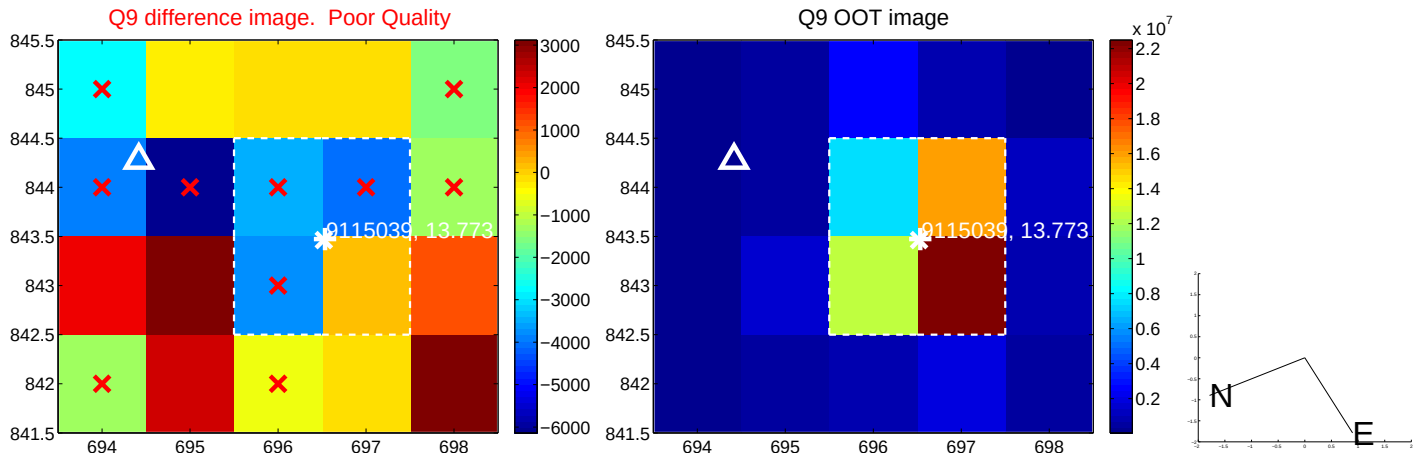
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.

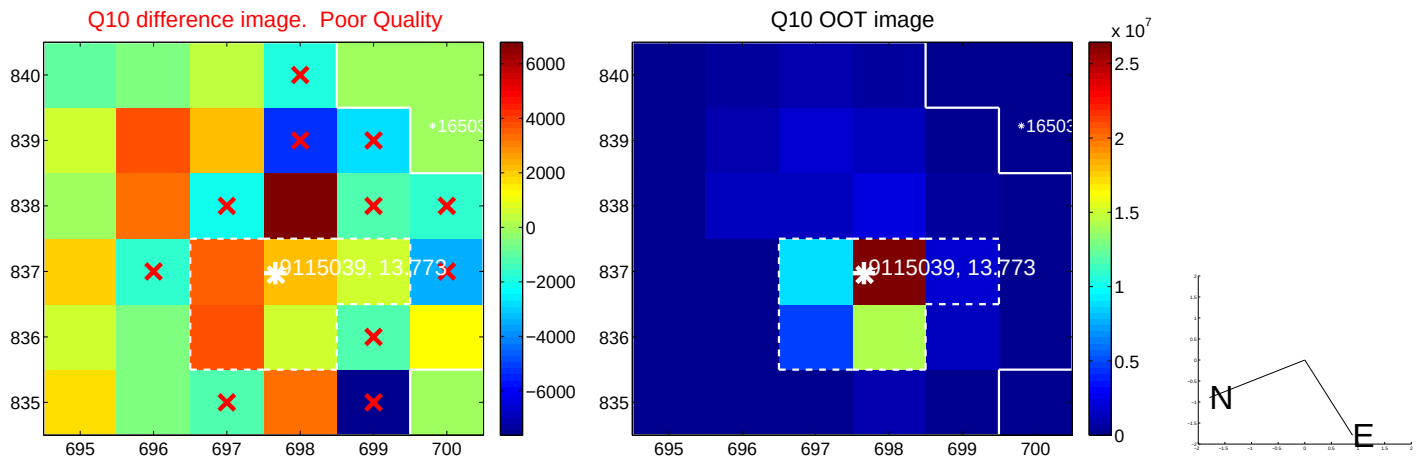


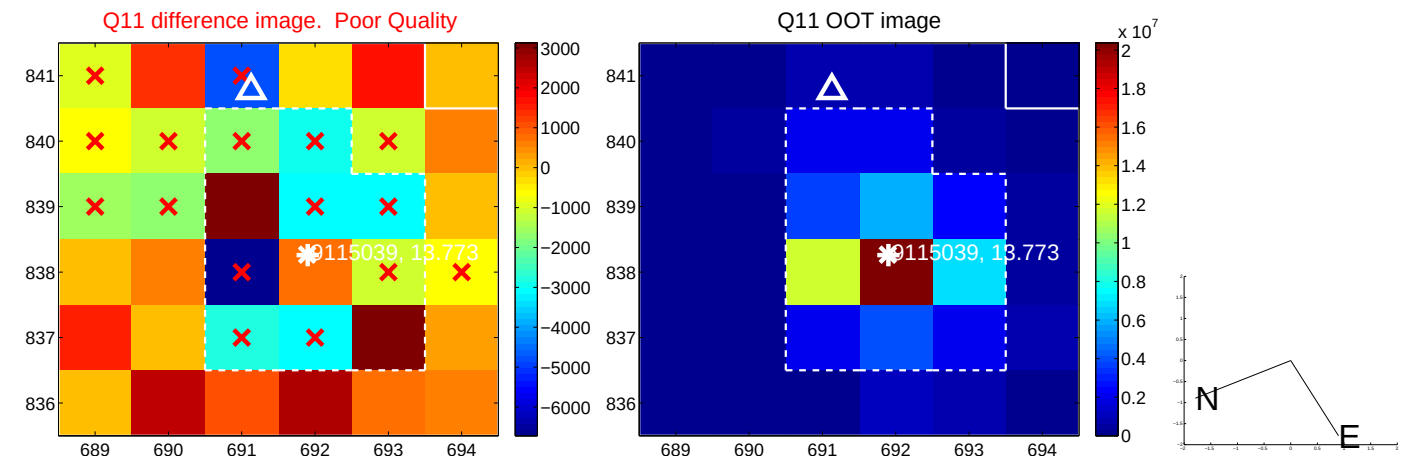
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.

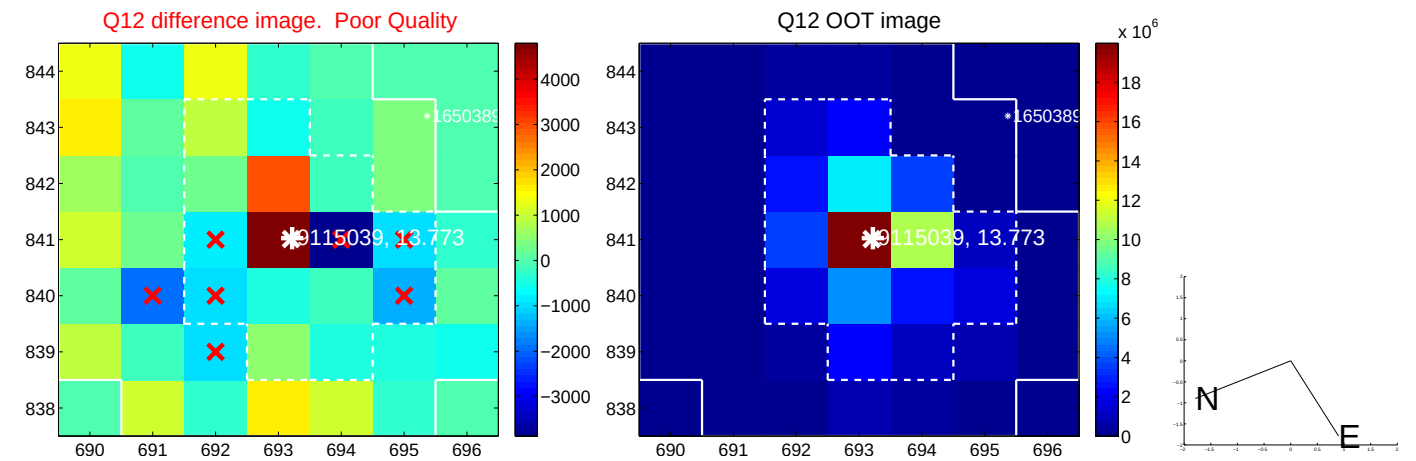


white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.

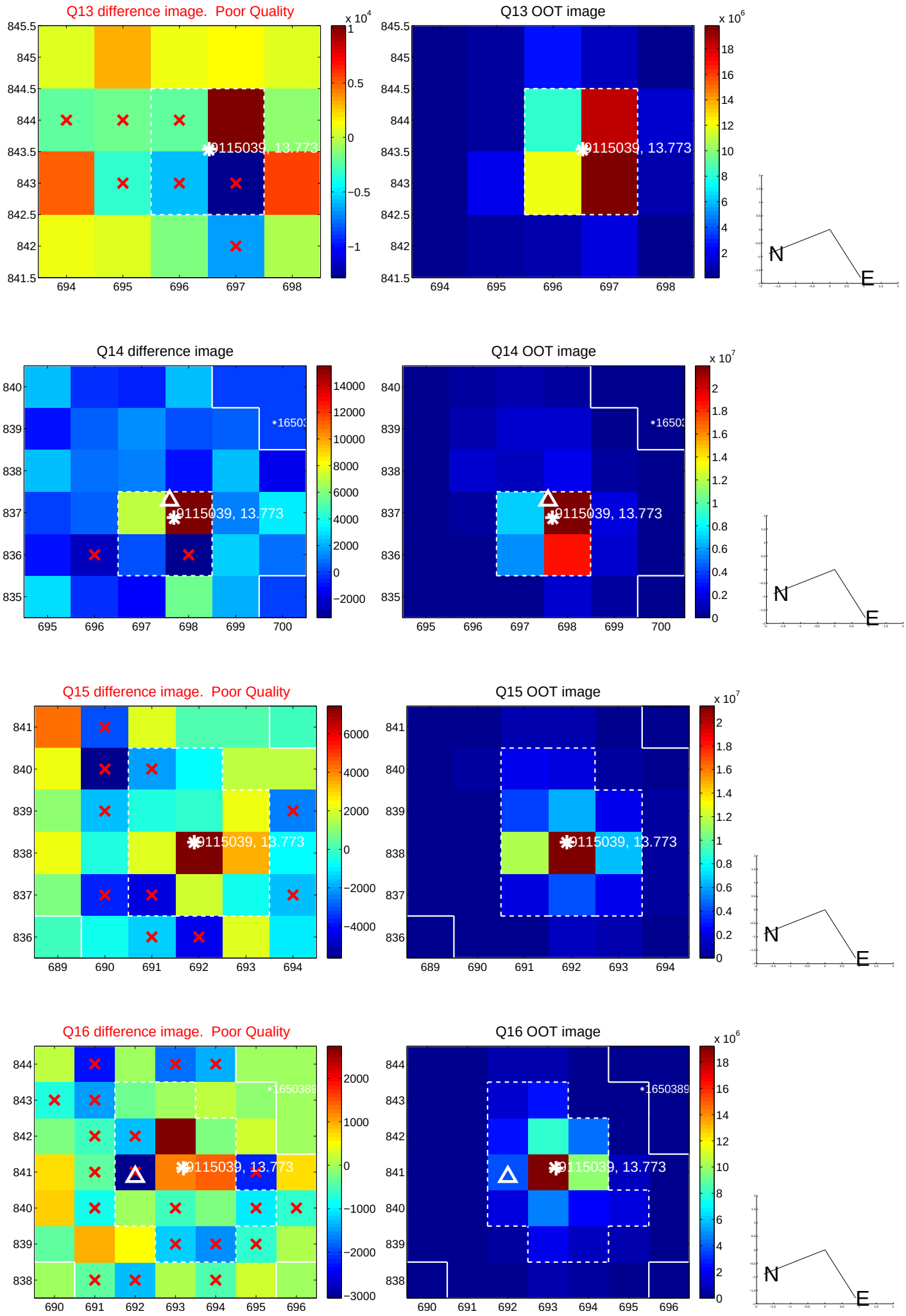




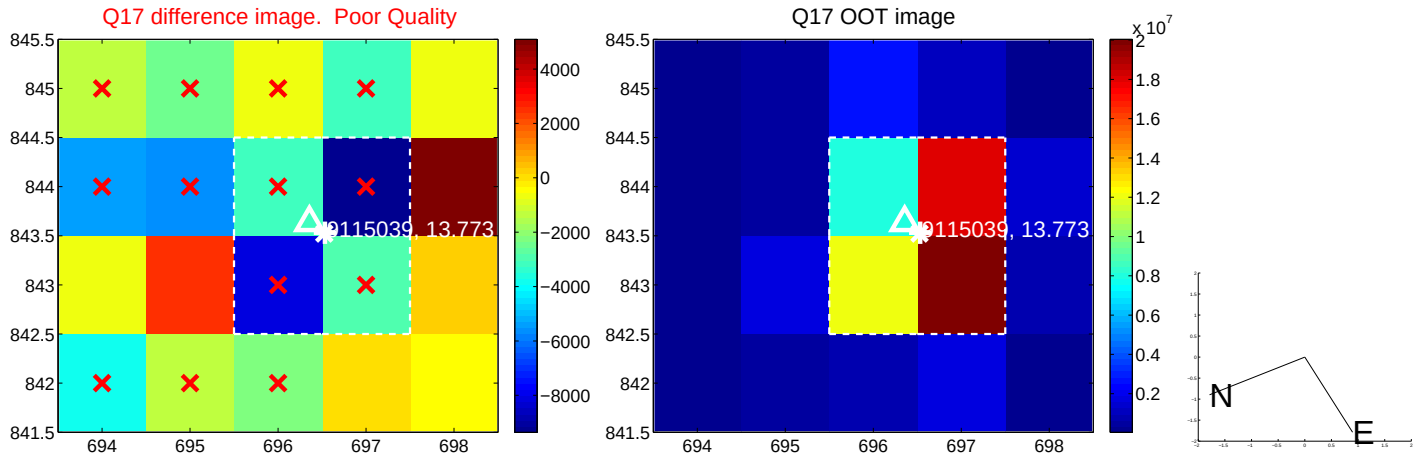


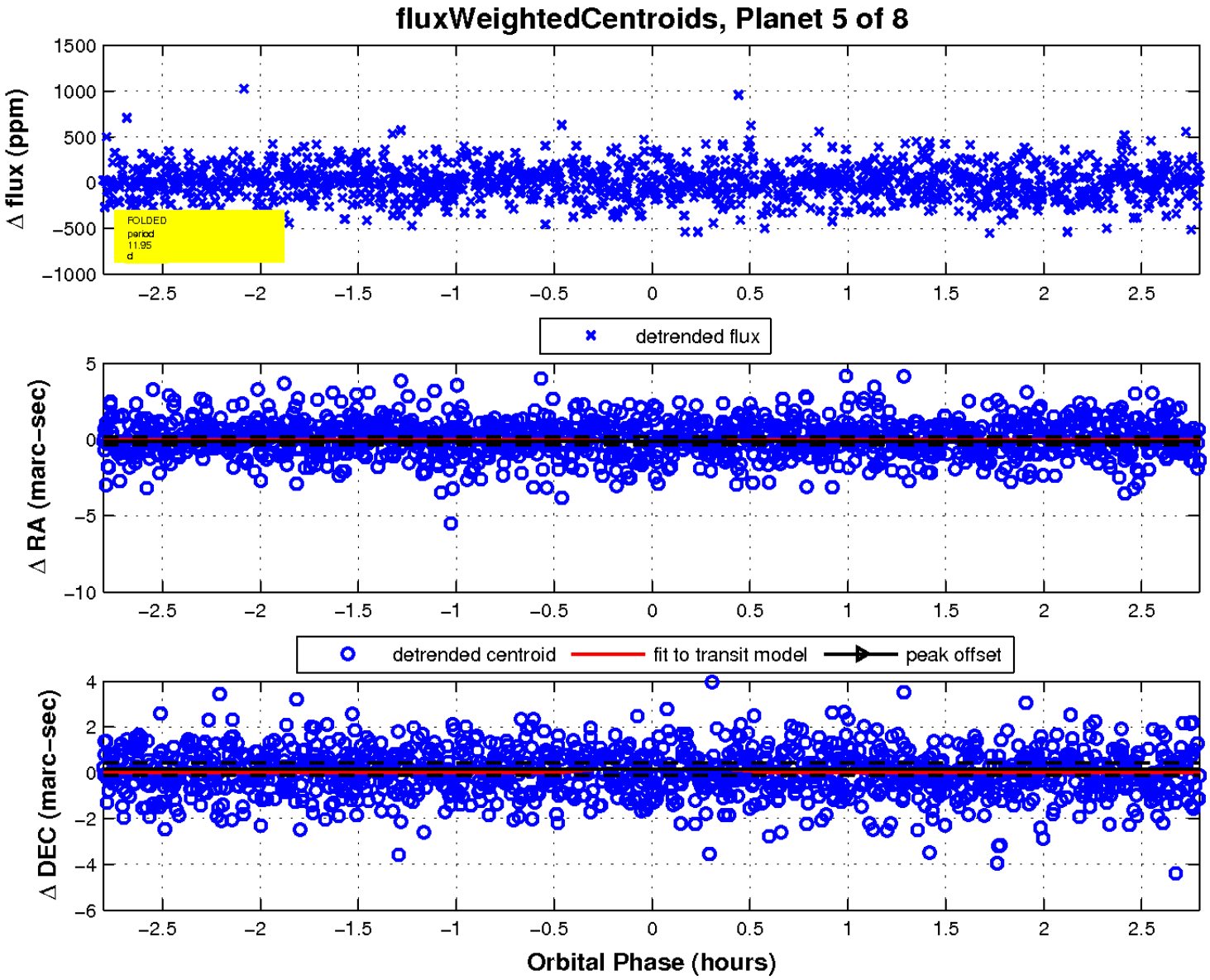


white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.

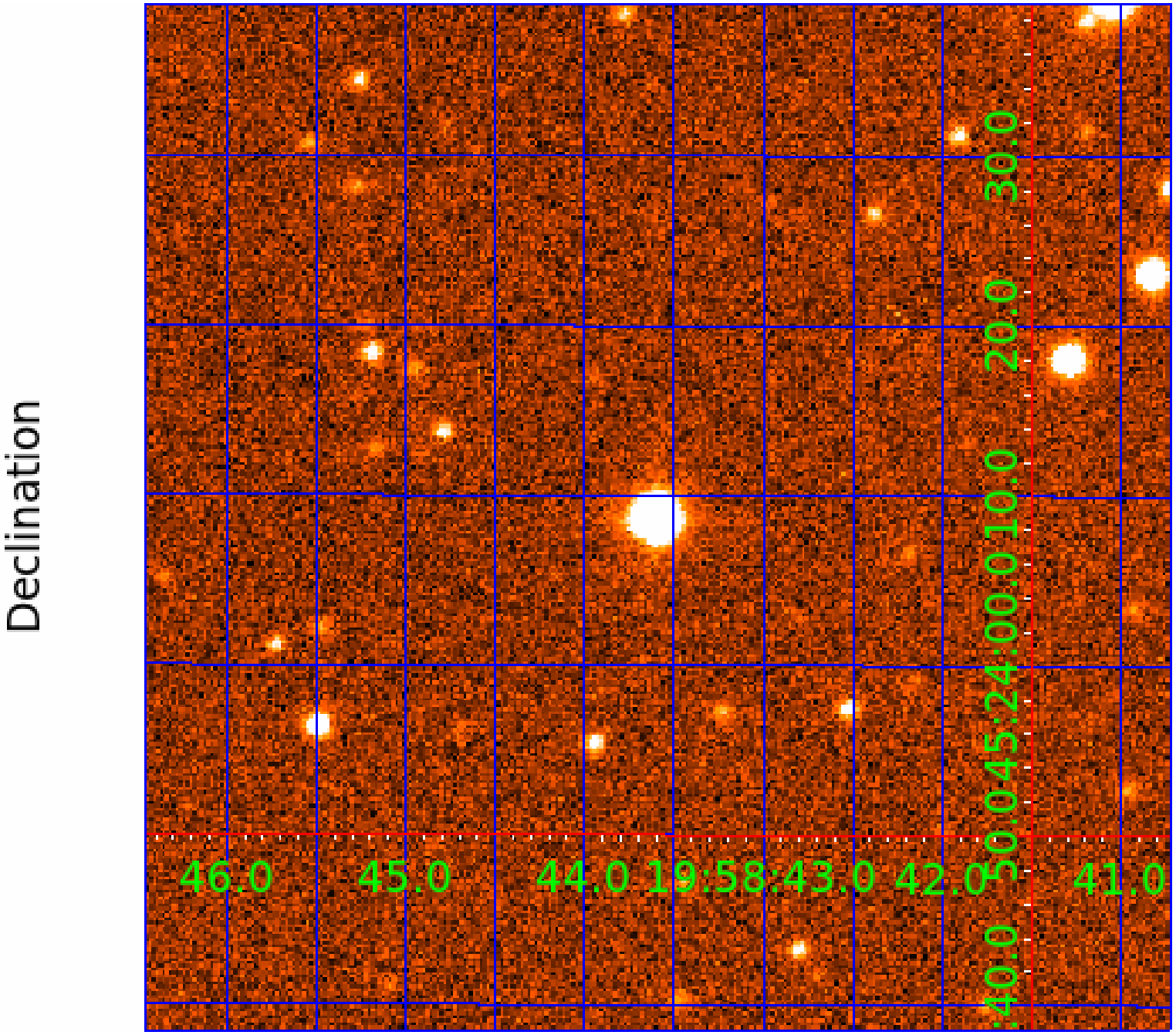


white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.





UKIRT Image


Declination
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10.0
20.0
30.0

KIC 009115039

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 ($S_\oplus$)
009115039-01	OBS	No	1.042986	131.553686	17.2	7.748	8.3	9.7	1.48	6680	0.71	8357.54
009115039-02	OBS	No	17.542812	148.151216	229.0	1.288	11.4	9.8	1.48	6680	2.40	193.93
009115039-03	OBS	No	27.035069	152.460805	383.5	1.163	10.8	10.4	1.48	6680	3.25	108.95
009115039-04	OBS	No	26.564566	132.691176	185.7	2.967	12.4	9.5	1.48	6680	2.23	111.53
009115039-05	OBS	No	11.950278	133.822951	321.2	0.937	10.0	10.9	1.48	6680	2.71	323.55
009115039-06	OBS	No	10.113701	141.211810	184.1	1.337	9.6	8.7	1.48	6680	2.34	404.18
009115039-07	OBS	No	13.333071	140.695541	294.4	0.637	10.9	13.2	1.48	6680	2.68	279.60

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009115039-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT
009115039-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS—HALO_GHOST
009115039-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
009115039-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
009115039-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—CENT_FEW_DIFFS
009115039-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
009115039-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—CENT_FEW_DIFFS

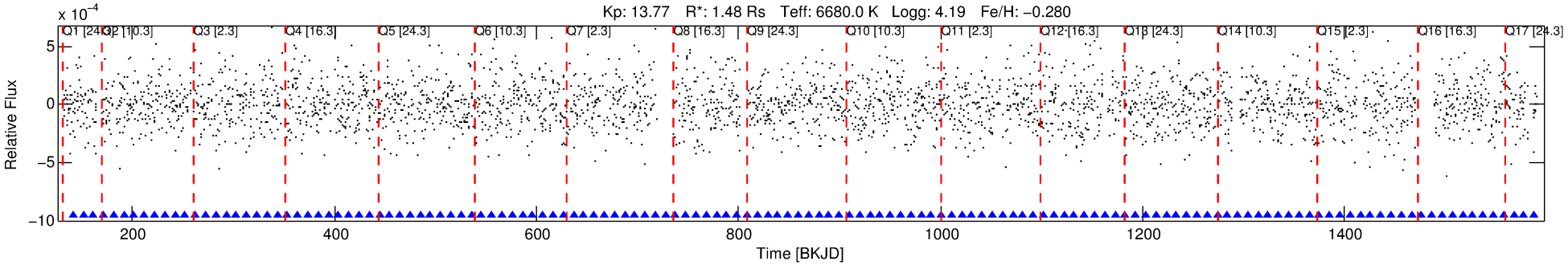
Notes: OBS = Observed. INJ = Injected. INV = Inverted. SCR = Scrambled.
N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.
See `http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col` for comment definitions.

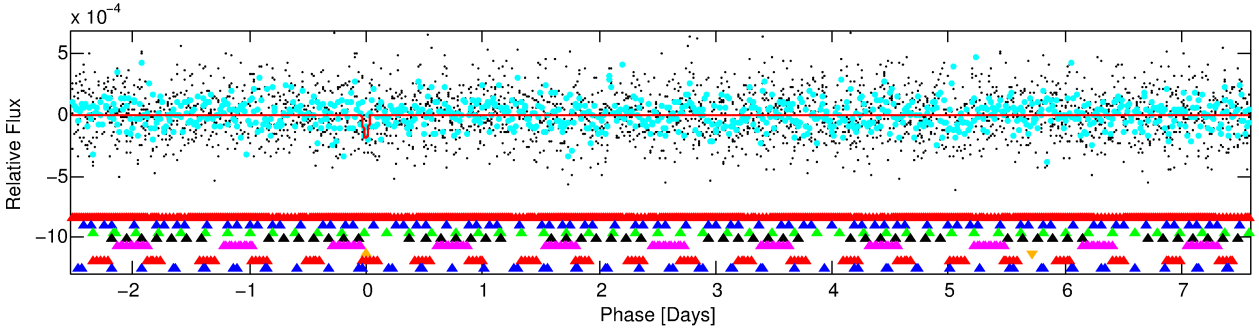
Ephemeris Match Information For 009115039-06

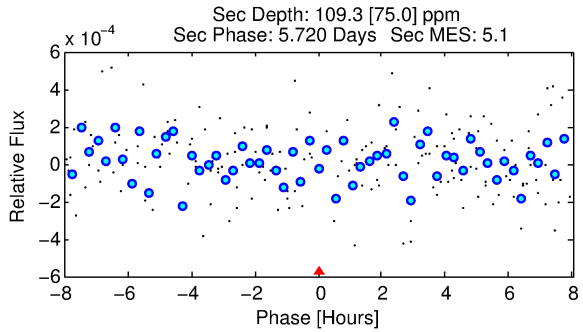
No Significant Match Found

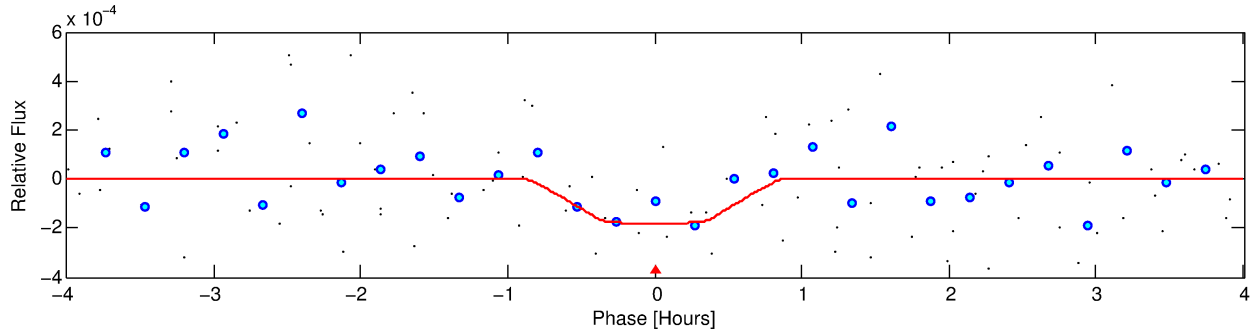
DV One-Page Summary

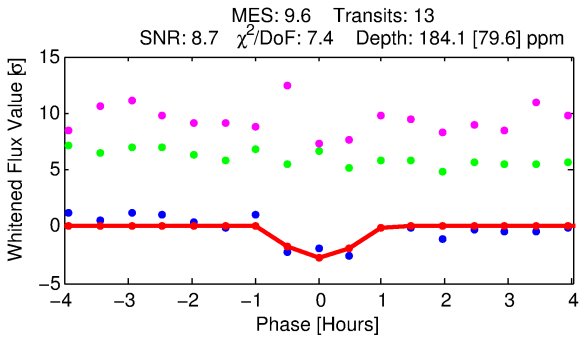
KIC: 9115039 Candidate: 6 of 8 Period: 10.114 d

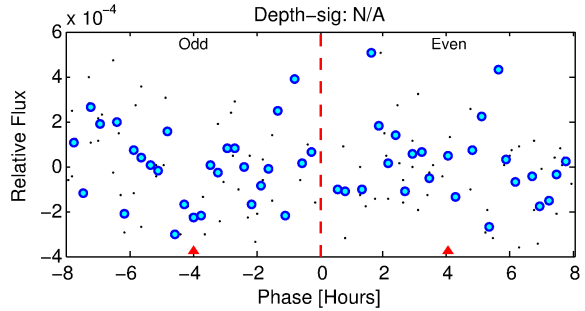


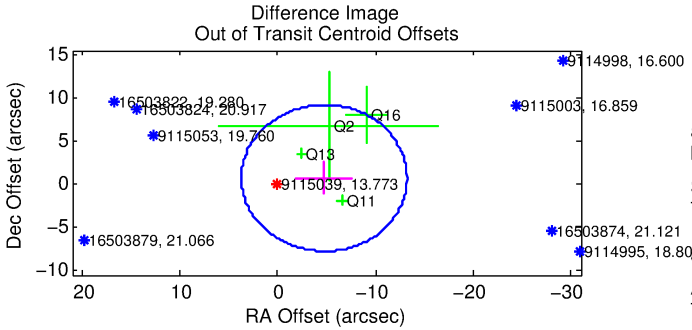












DV Fit Results:

Period = 10.11370 [0.00021] d
Epoch = 141.2118 [0.0130] BKJD
Rp/R* = 0.0145 [0.0332]
a/R* = 27.33 [363.02]
b = 0.90 [2.93]

Seff = 404.18 [145.69]
Teq = 1143 [103] K
Rp = 2.34 [5.40] Re
a = 0.0982 [0.0232] AU

Ag = 105.71 [490.29] [0.21σ]
Teffp = 5668 [6559] K [0.69σ]

DV Diagnostic Results:

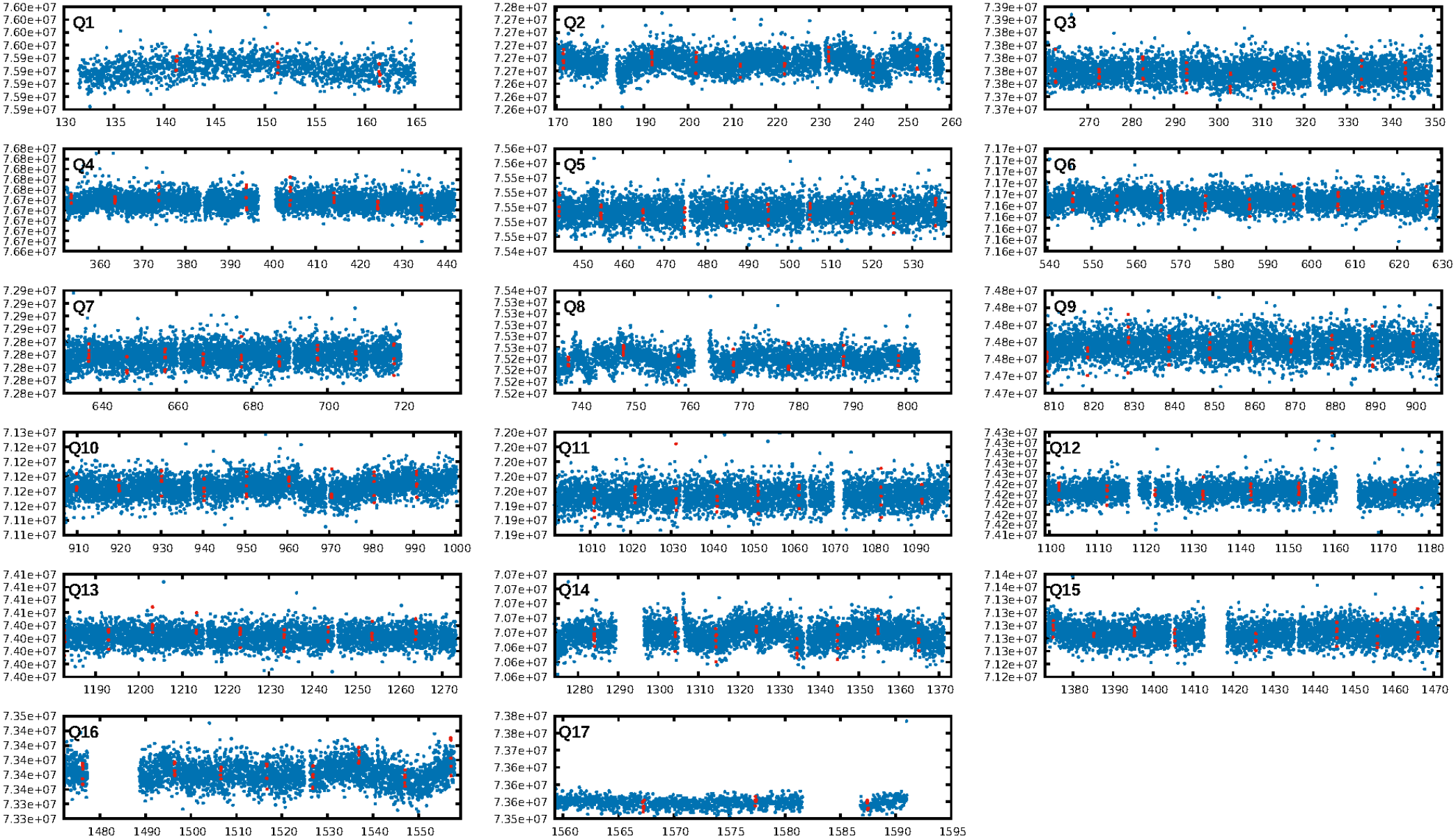
ShortPeriod−sig: 100.0% [27.69σ]
LongPeriod−sig: 100.0% [27.00σ]
ModelChiSquare2−sig: 0.0%
ModelChiSquareGof−sig: 0.0%
Bootstrap−pfa: 5.73e−69
RollingBand−fgt: 1.00 [13/13]
GhostDiagnostic−chr: −1.285

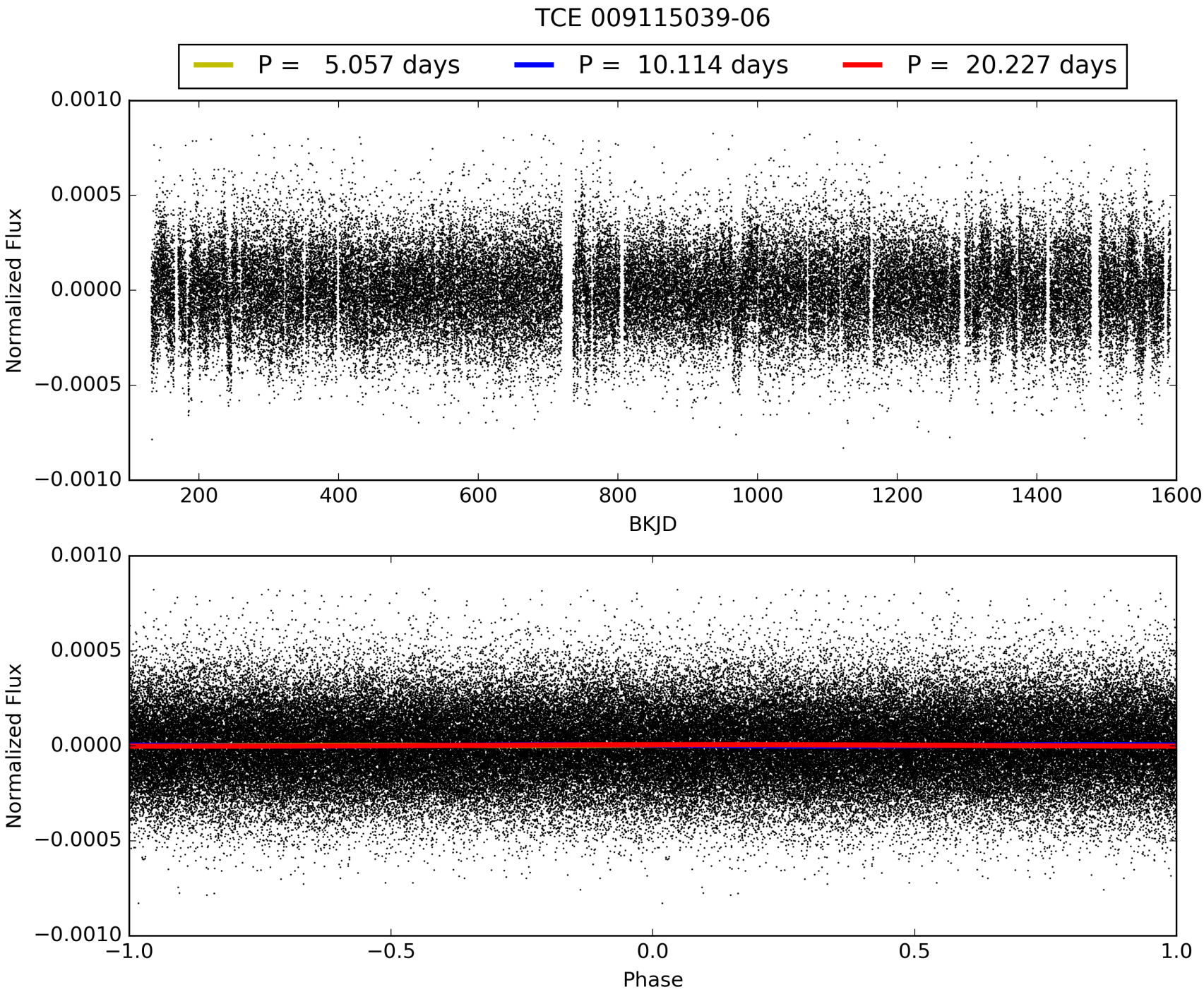
Centroid−sig: 4.8%
Centroid−so: 1.110 arcsec [1.15σ]
OotOffset−rm: 4.812 arcsec [1.70σ]
KicOffset−rm: 4.812 arcsec [1.70σ]
OotOffset−st: 1/1/1/1 [4]
KicOffset−st: 1/1/1/1 [4]
DiffImageQuality−fgm: 0.00 [0/4]
DiffImageOverlap−fno: 0.82 [14/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01−Feb−2016 13:02:00 Z

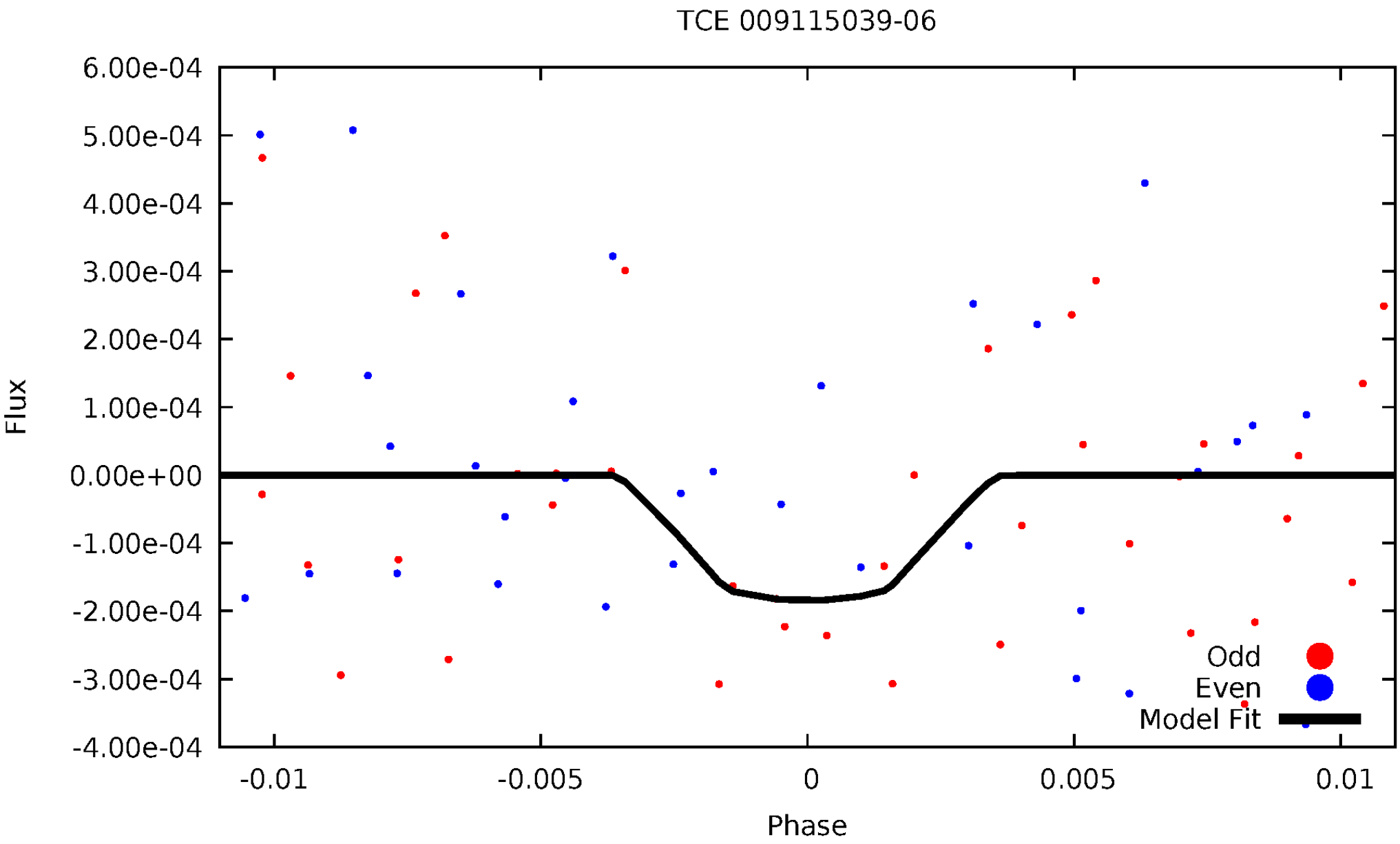
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 009115039-06, PDC Light Curves

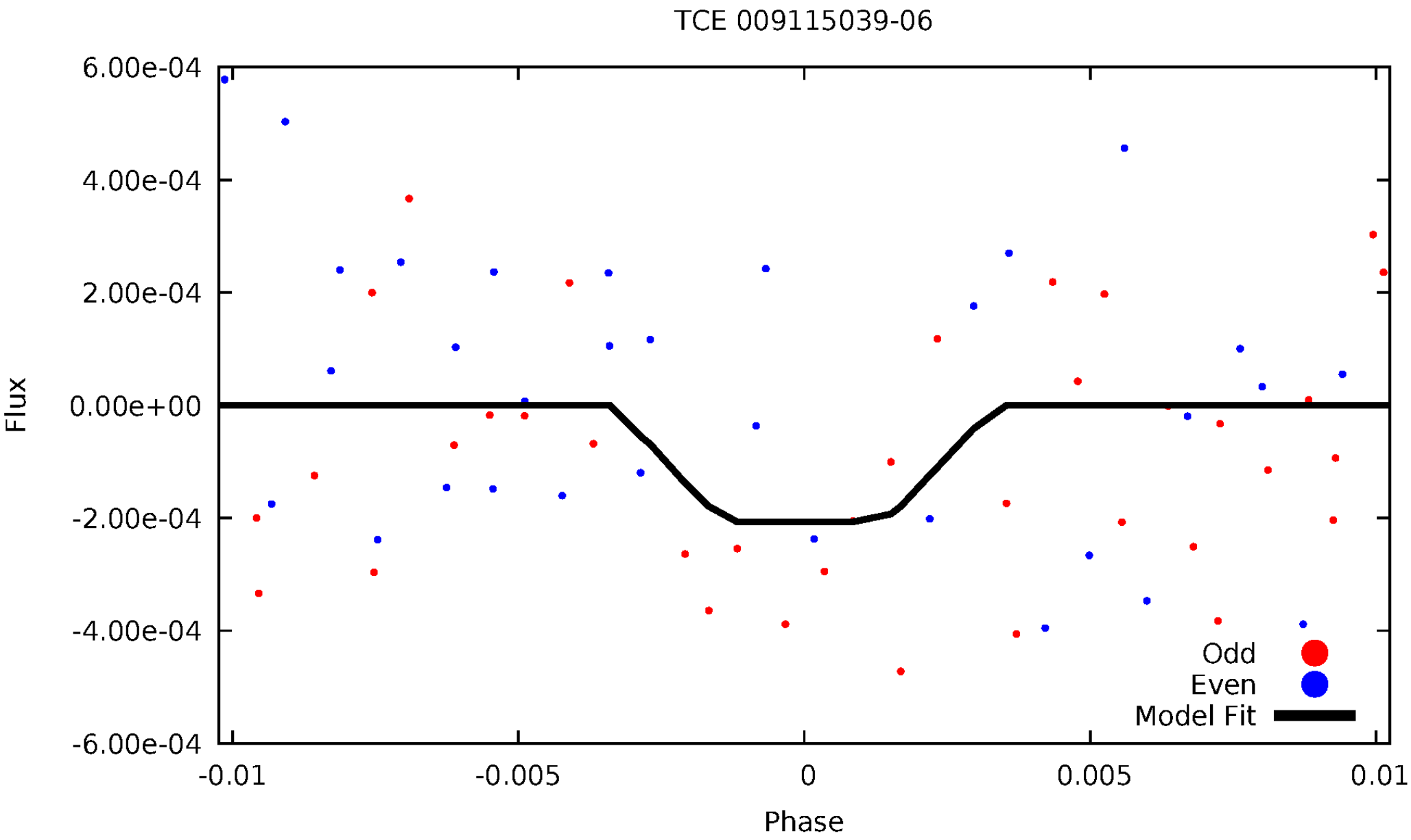



TCE 009115039-06
P = 5.057 days
P = 10.114 days
P = 20.227 days
Normalized Flux
0.0010
0.0005
0.0000
−0.0005
−0.0010
200
400
600
800
1000
1200
1400
1600
BKJD
Normalized Flux
0.0010
0.0005
0.0000
−0.0005
−0.0010
−1.0
−0.5
0.0
0.5
1.0
Phase

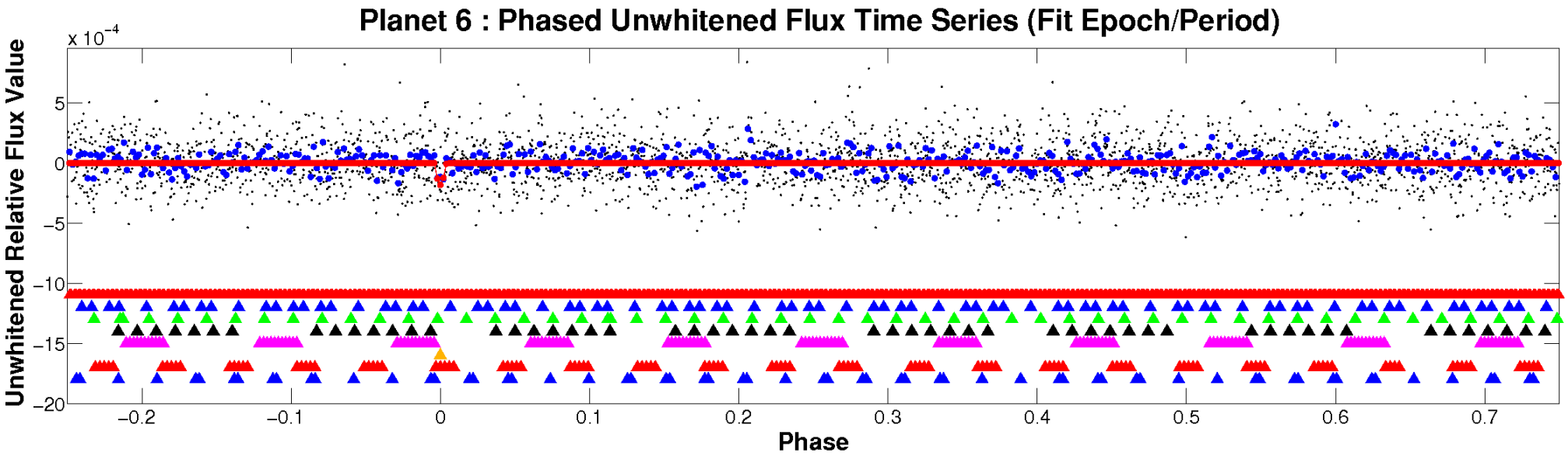
DV Odd/Even

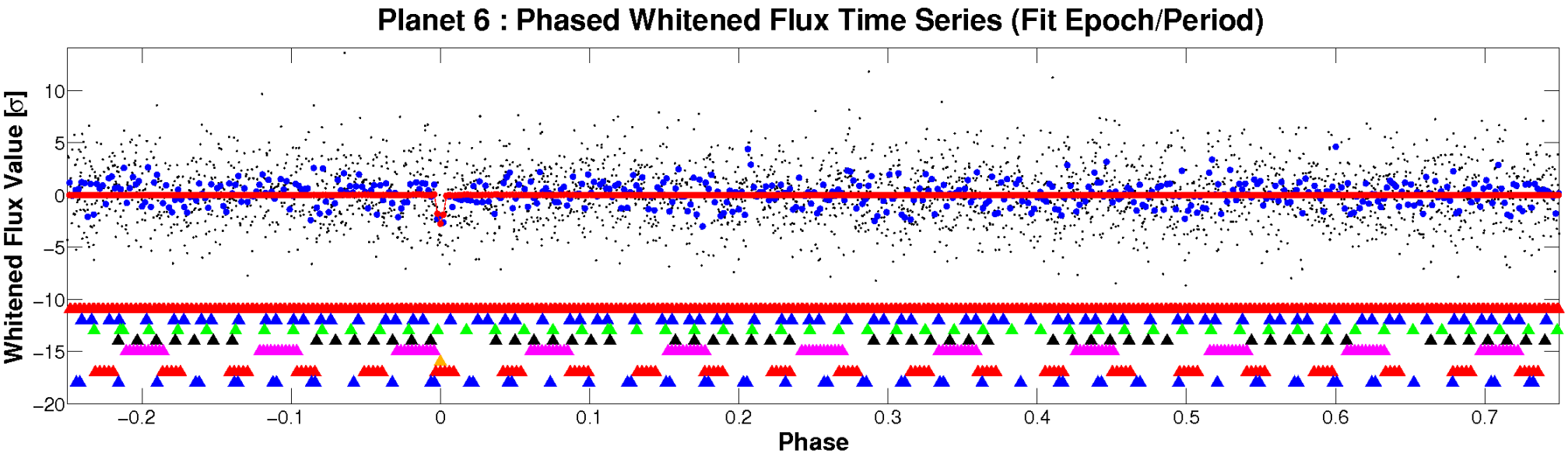

TCE 009115039-06
6.00e-04
5.00e-04
4.00e-04
3.00e-04
2.00e-04
1.00e-04
0.00e+00
-1.00e-04
-2.00e-04
-3.00e-04
-4.00e-04
Flux
-0.01
-0.005
0
0.005
0.01
Phase
Odd
Even
Model Fit

ALT Odd/Even


TCE 009115039-06
6.00e-04
4.00e-04
2.00e-04
0.00e+00
-2.00e-04
-4.00e-04
-6.00e-04
Flux
-0.01
-0.005
0
0.005
0.01
Phase
Odd
Even
Model Fit

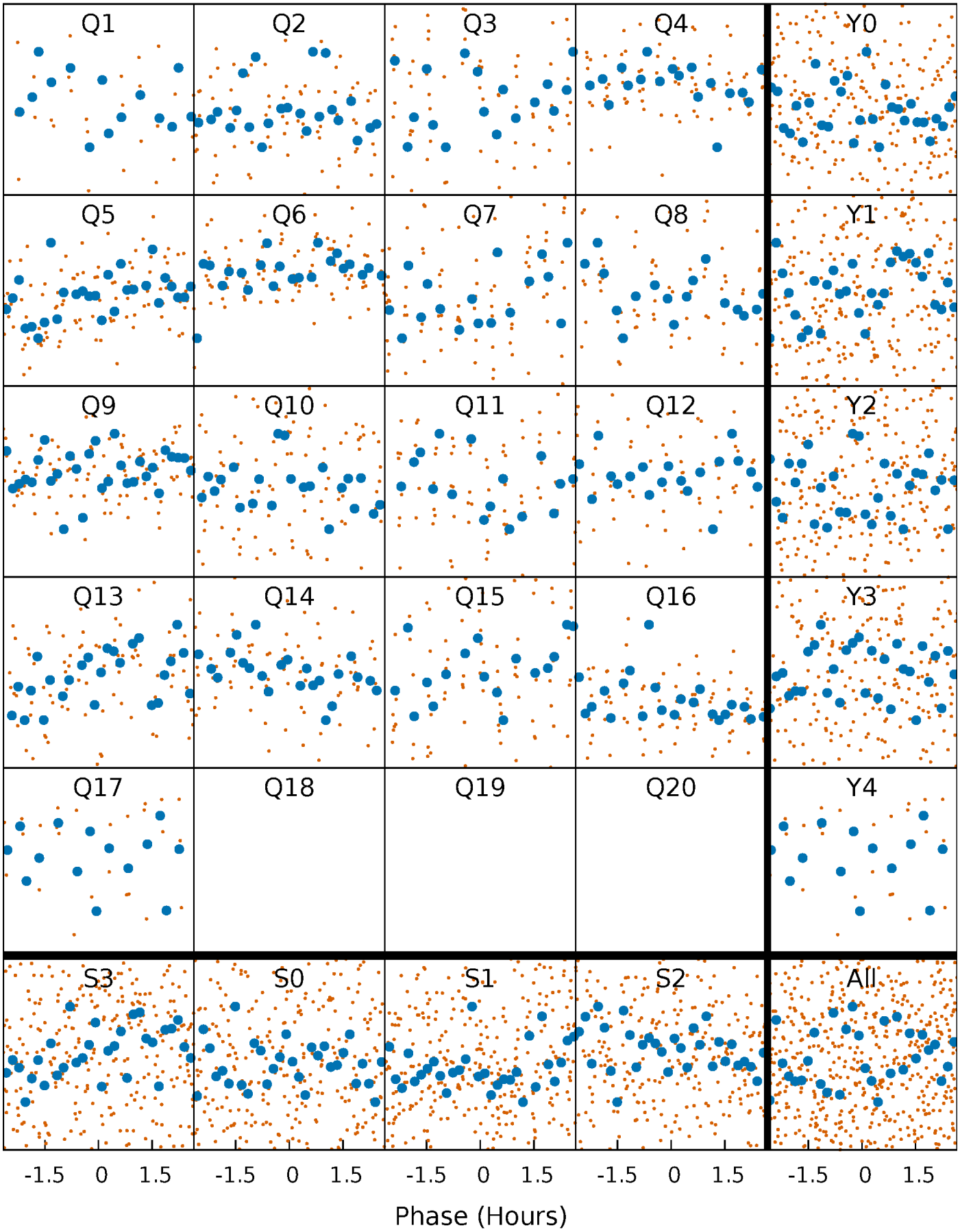
Non-Whitened Vs. Whitened Light Curve





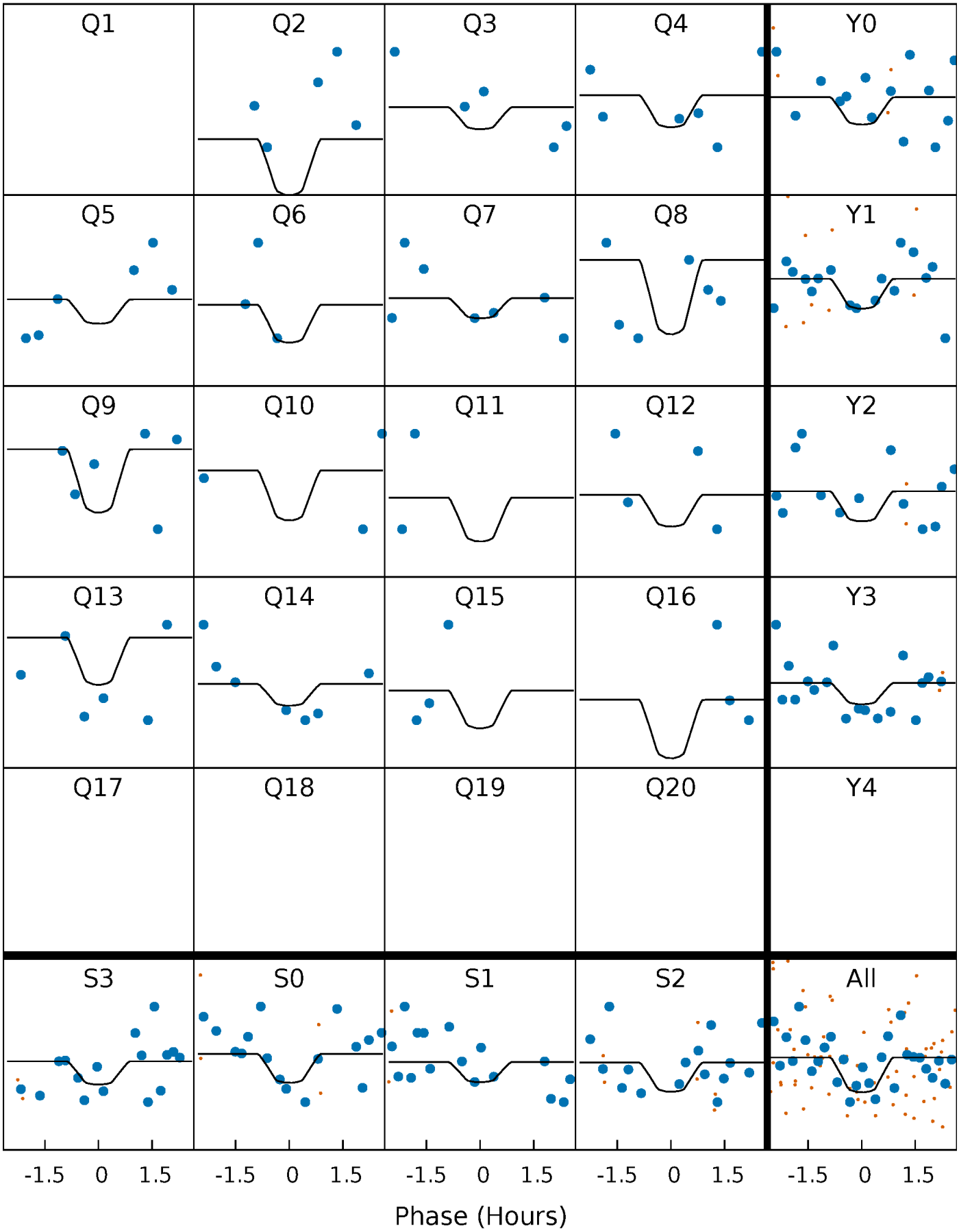
PDC Quarter-Phased Transit Curves

TCE 009115039-06 P= 10.113701 Days T_0=141.211810 (BKJD)



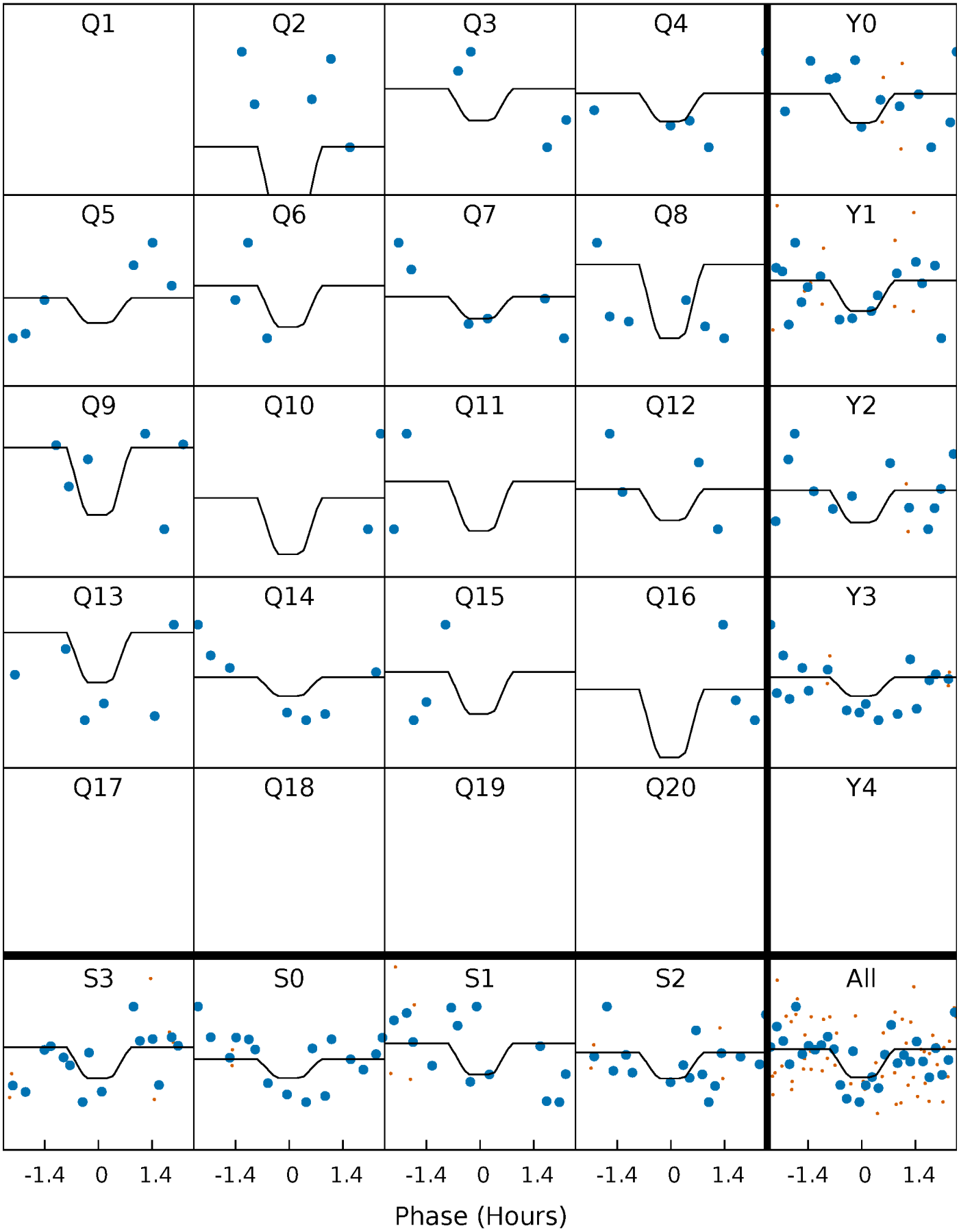
DV Quarter-Phased Transit Curves

TCE 009115039-06 P= 10.113701 Days T_0=141.211810 (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

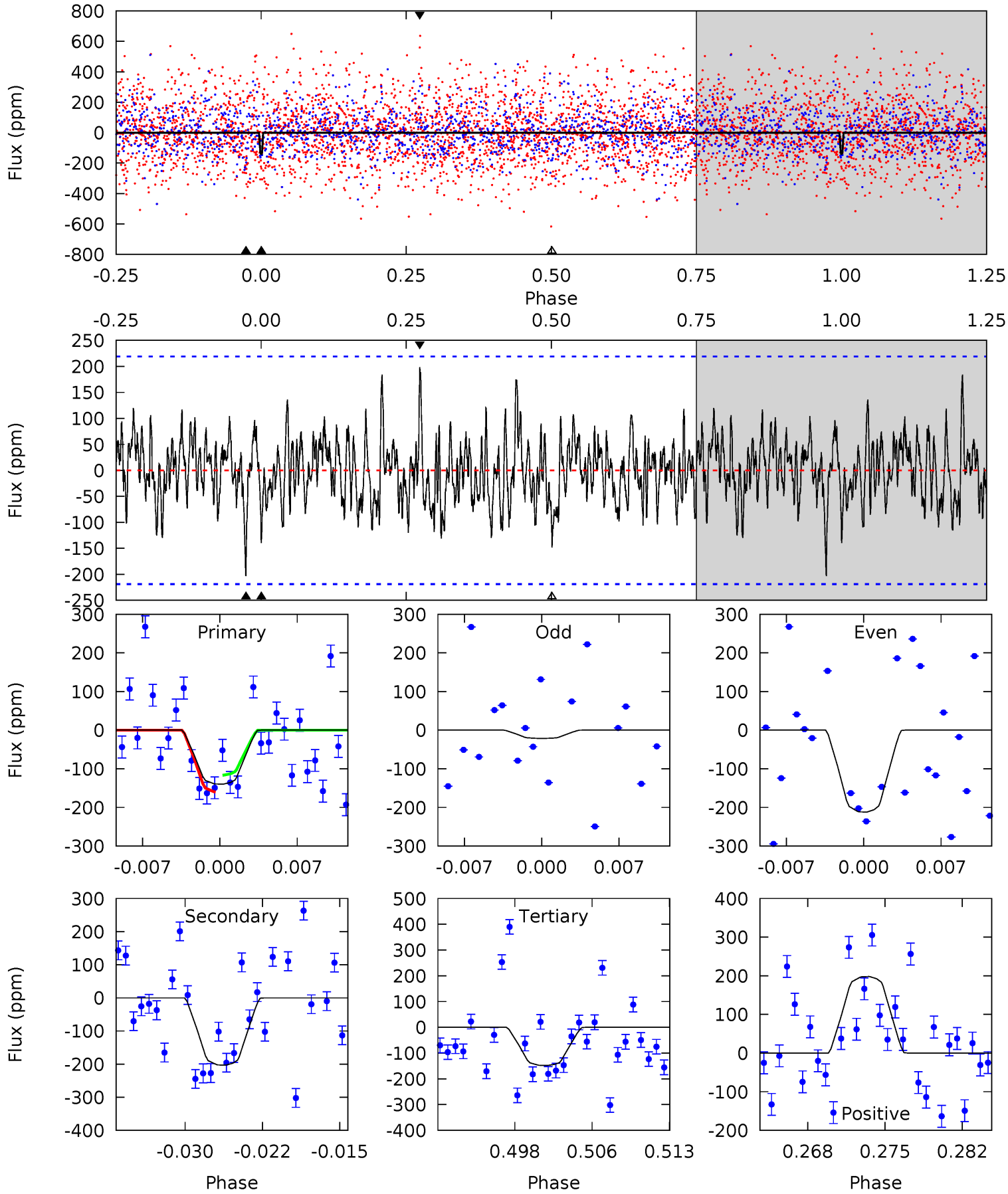
TCE 009115039-06 P= 10.113596 Days T_0=141.223203 (BKJD)



DV Model-Shift Uniqueness Test

009115039-06, P = 10.113701 Days, E = 131.098109 Days

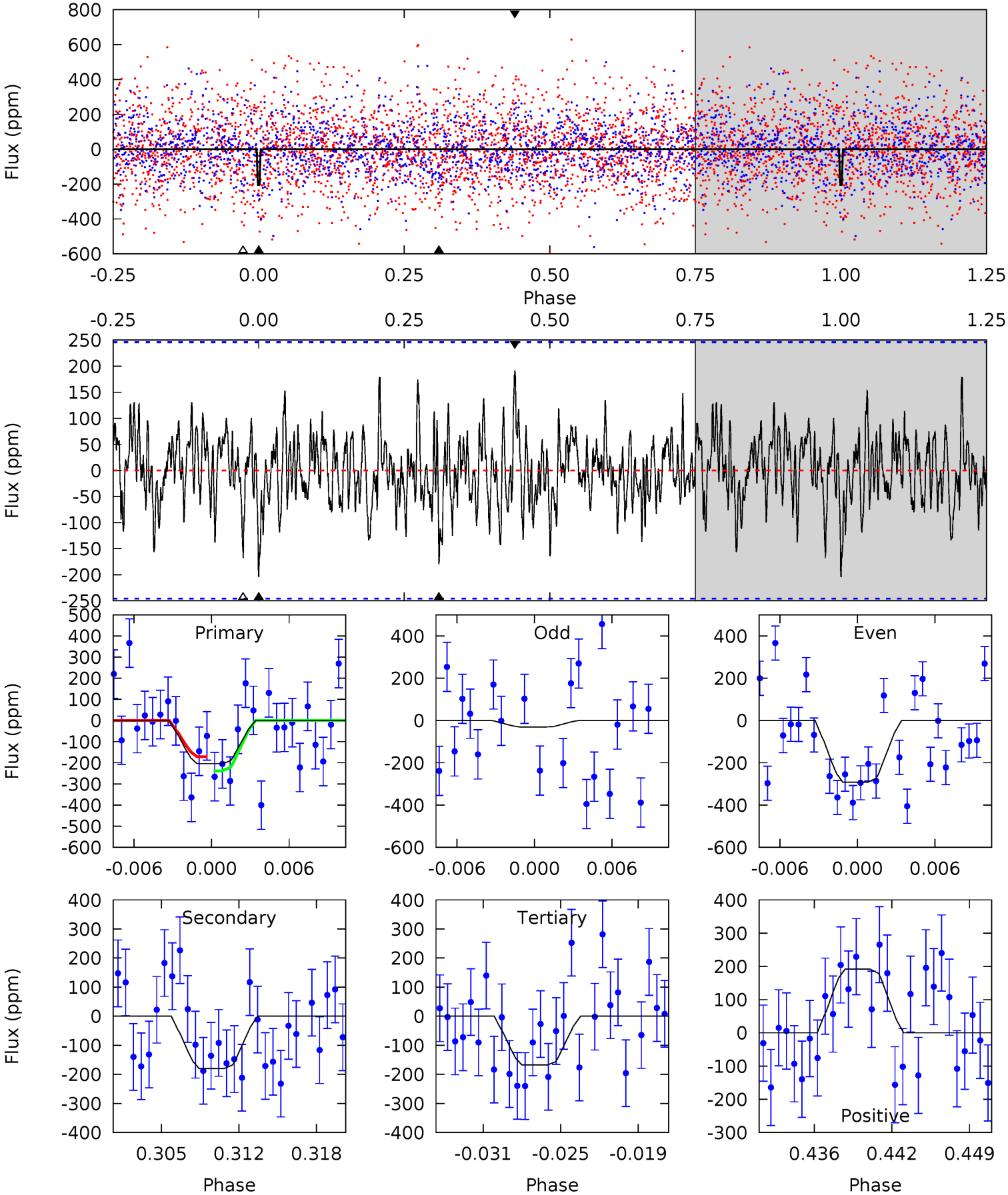
Pri	Sec	Ter	Pos	FA_1	FA_2	F_{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3.24	4.71	3.44	4.60	5.08	2.68	1.28	-0.19	-1.35	1.28	0.12	2.24	0.96	0.49	0.50



Alt Model-Shift Uniqueness Test

009115039-06, P = 10.113596 Days, E = 131.109607 Days

Pri	Sec	Ter	Pos	FA_1	FA_2	F_{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4.25	3.74	3.49	3.99	5.12	2.74	1.20	0.76	0.26	0.25	-0.25	2.65	0.75	0.48	0.69



Stellar Parameters For KIC 009115039

	$T_{\rm eff}(K)$	$\log(g)$	[Fe/H]	R ($R_\odot$)	$M(M_\odot)$	$p_\star$ (g·cm^{-3})
	6680^{+189}_{-236}	$4.190^{+0.158}_{-0.175}$	$-0.280^{+0.250}_{-0.300}$	$1.478^{+0.431}_{-0.352}$	$1.241^{+0.189}_{-0.189}$	$0.542^{+0.500}_{-0.263}$
	+3%/-4%	+4%/-4%	+89%/-107%	+29%/-24%	+15%/-15%	+92%/-48%
Source	PHO1	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 009115039-06 / KOI

Detrend	Depth (ppm)	R_p ($R_\oplus$)	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-203±43	$4.74^{+4.49}_{-3.31}$	1604^{+113}_{-109}	4775^{+4025}_{-1012}	48^{+465}_{-35}
Alt.	-180±48	$4.74^{+4.29}_{-3.35}$	1606^{+127}_{-104}	4652^{+3707}_{-1049}	43^{+389}_{-32}

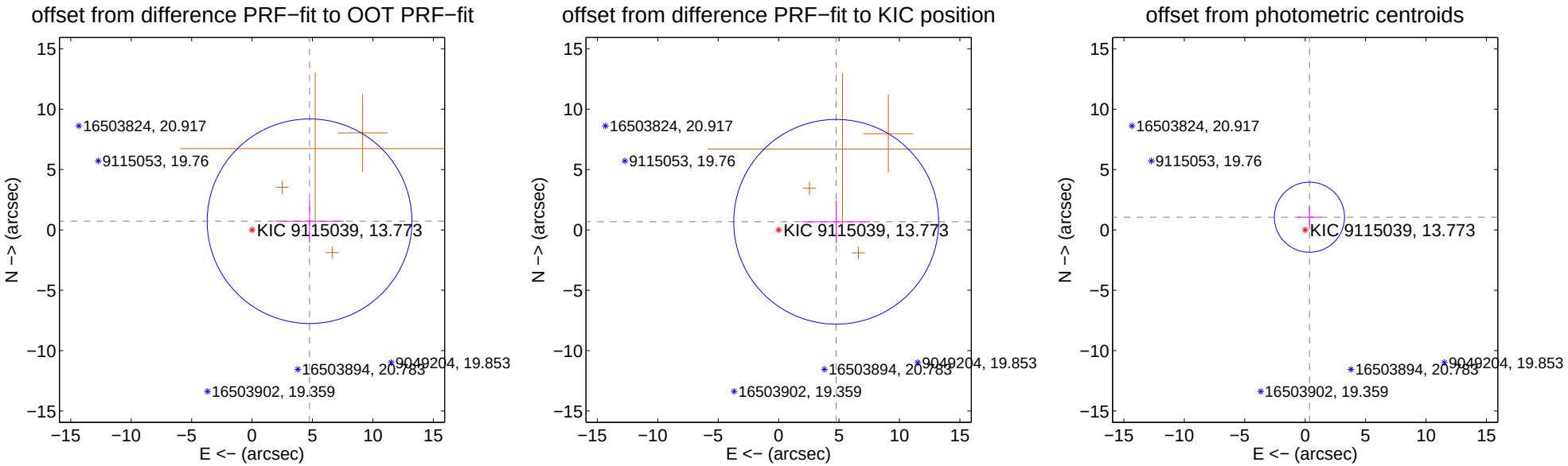
T_{max} = Theoretical Maximum Planetary Temperature
T_{obs} = Observed Planetary Temperature (Assuming A=0.3)
A_{obs} = Observed Albedo (Assuming T=0)

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

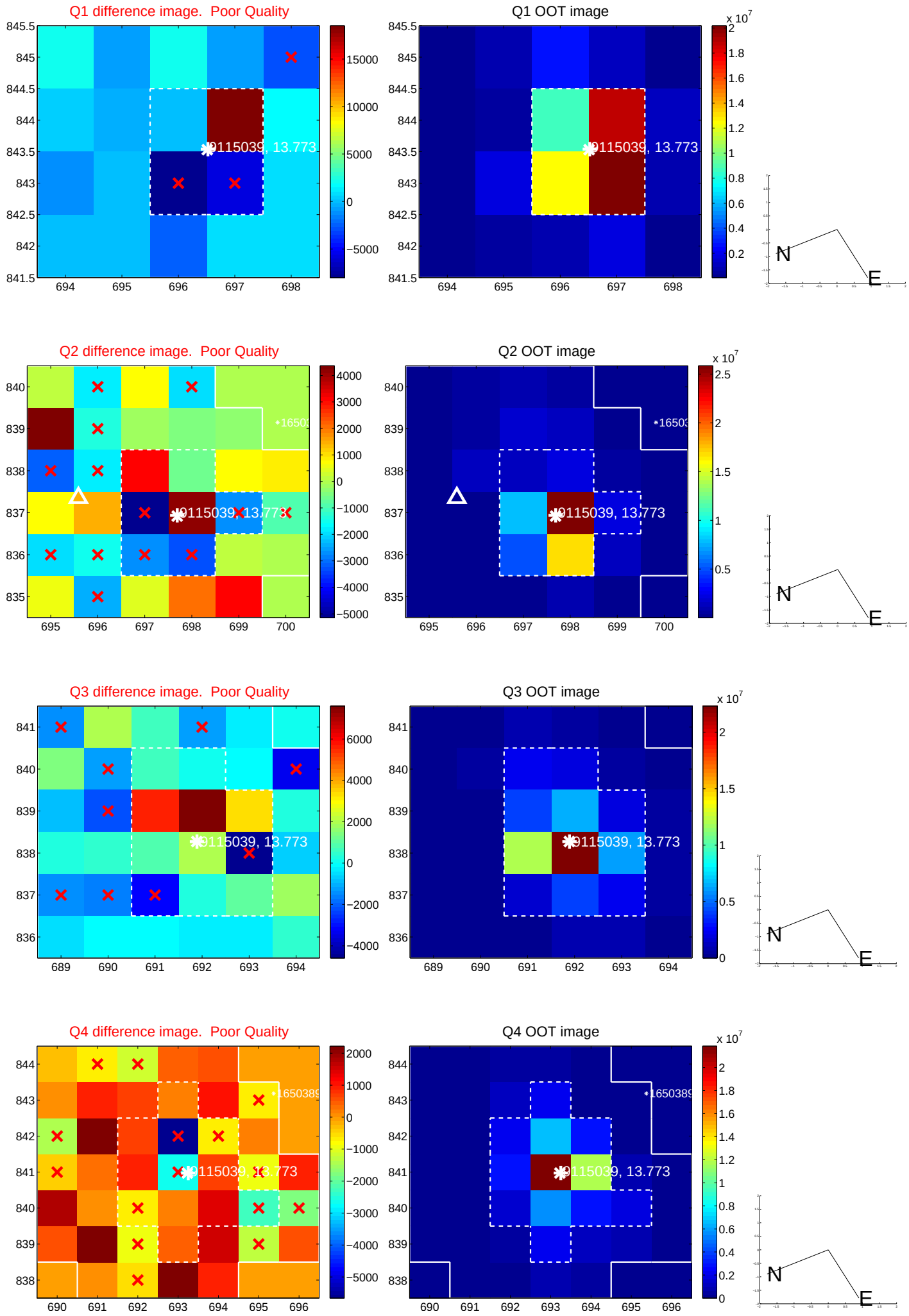
Supplemental centroid analysis for 009115039-06. Kepler magnitude: 13.77. Transit SNR 8.73
There are 0 quarters with good PRF difference image offsets
The direct PRF centroid is offset from the target star catalog position by about 0.10 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	4.812 ± 2.824	1.70	-4.758 ± 2.843	0.718 ± 1.784
PRF-fit source offset from KIC position	4.812 ± 2.826	1.70	-4.765 ± 2.843	0.672 ± 1.784
photometric centroid source offset	1.11 ± 0.97	1.15	-0.36 ± 0.99	1.05 ± 0.96

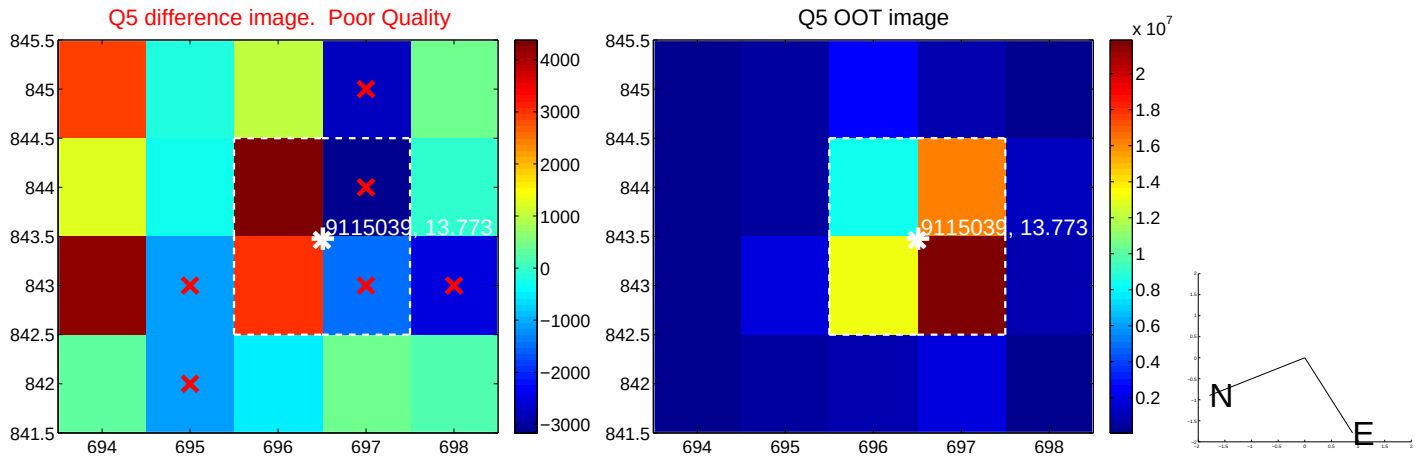


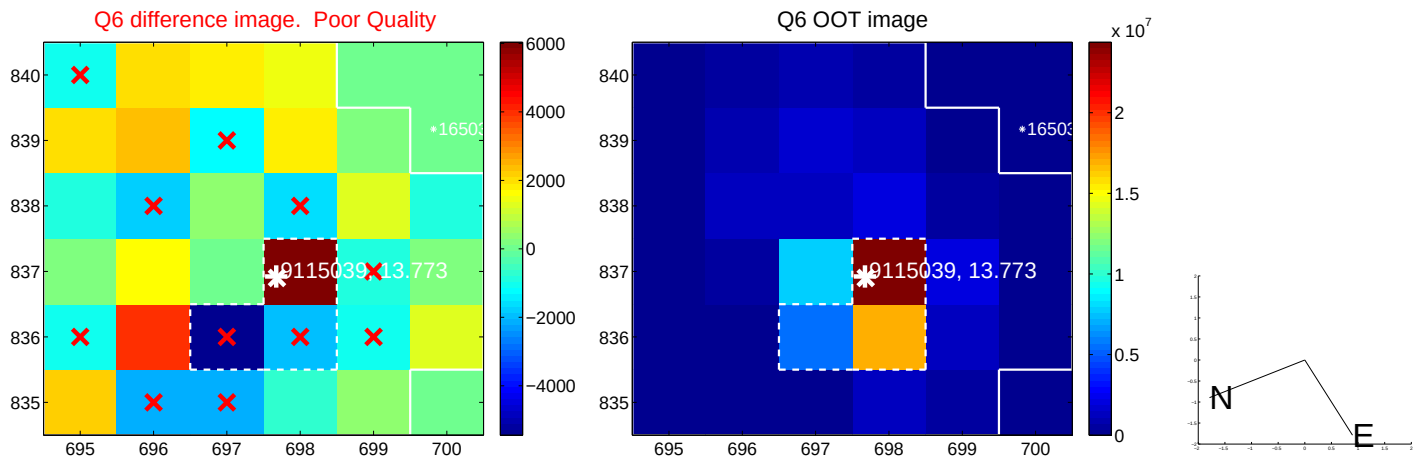
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one-σ uncertainty. Blue circle: three-σ. Red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

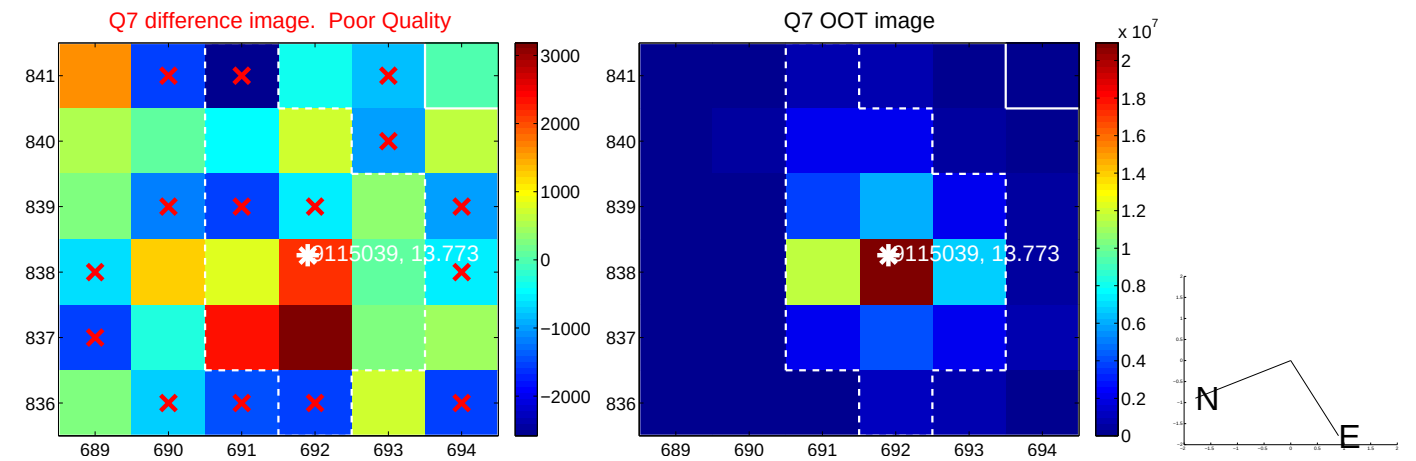
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.

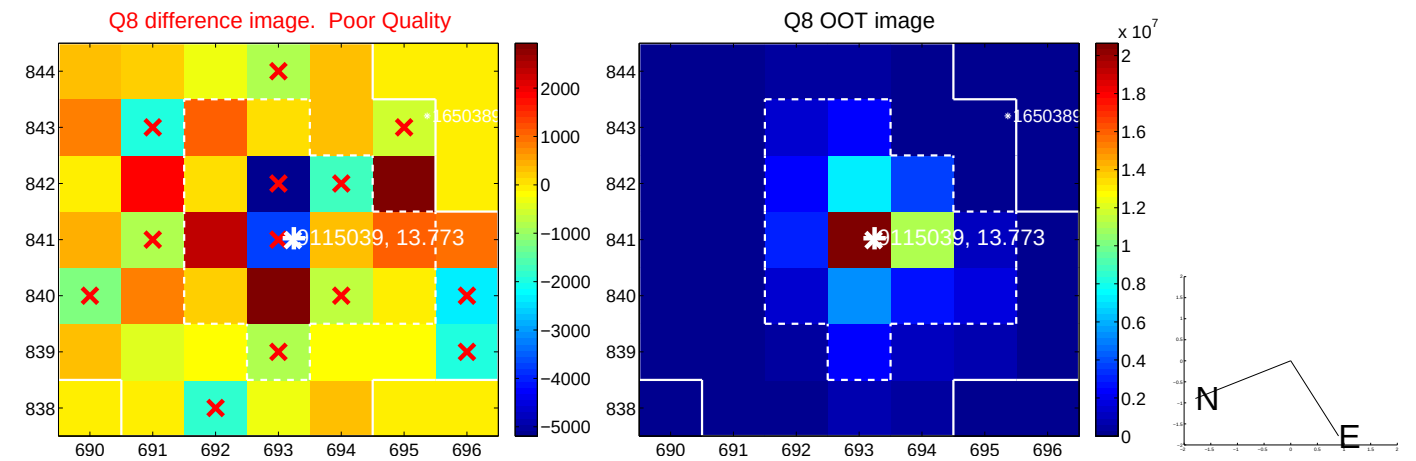


white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.

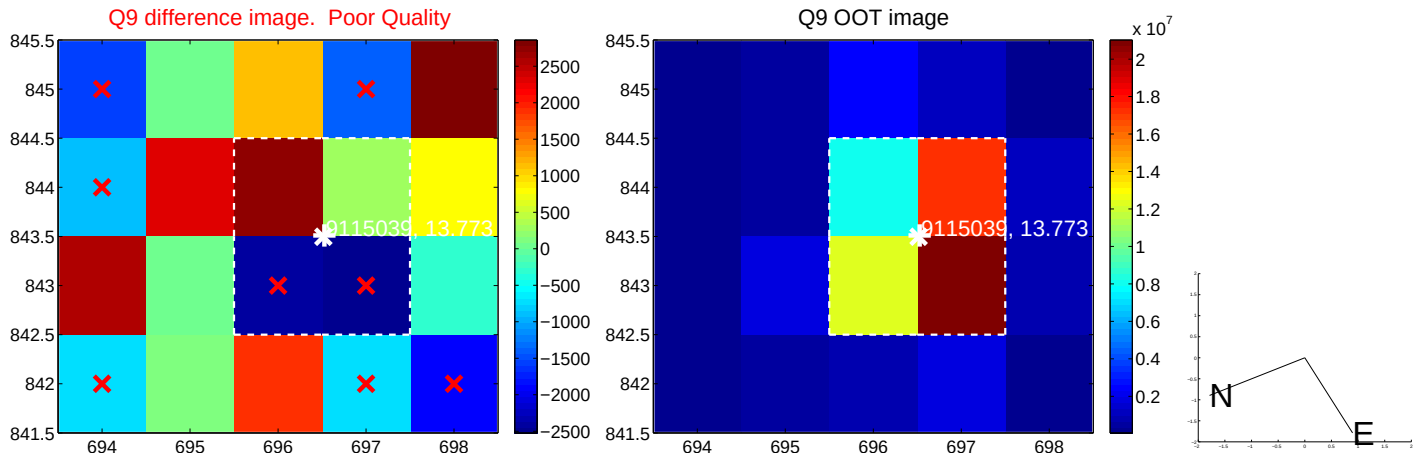


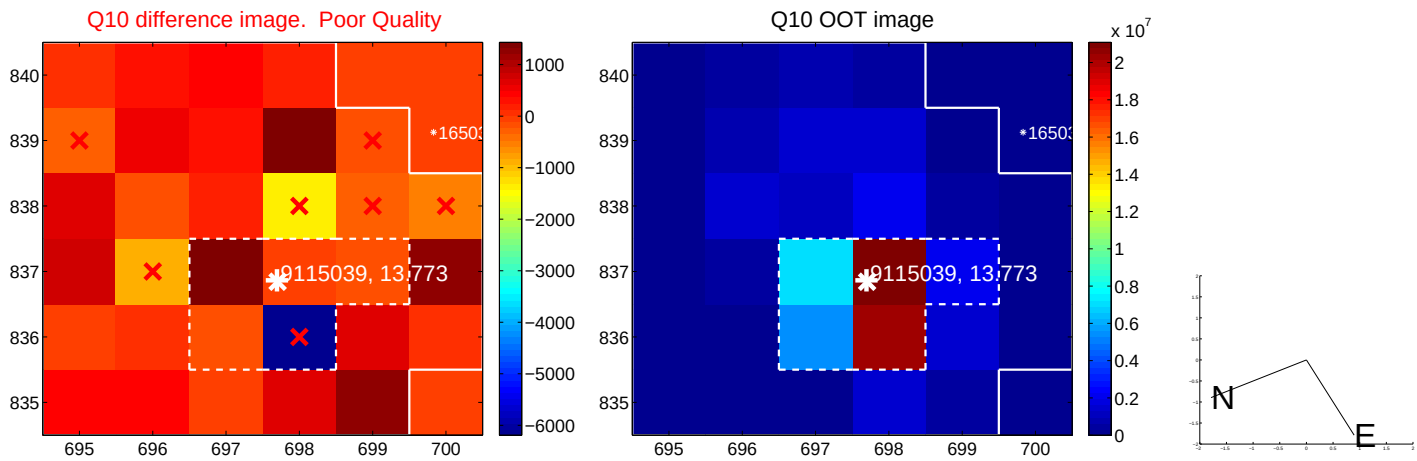


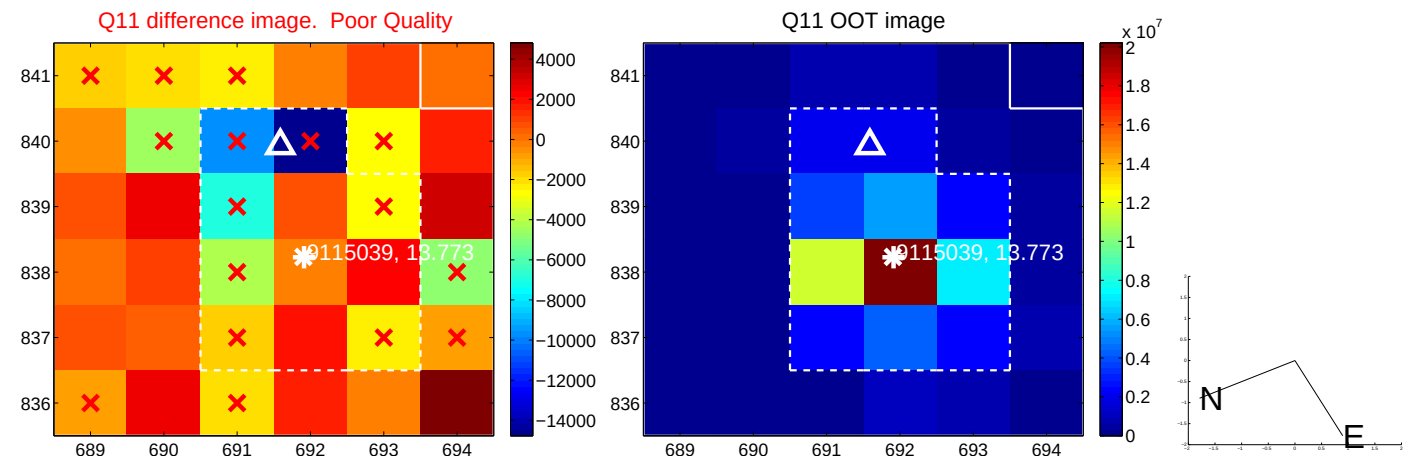


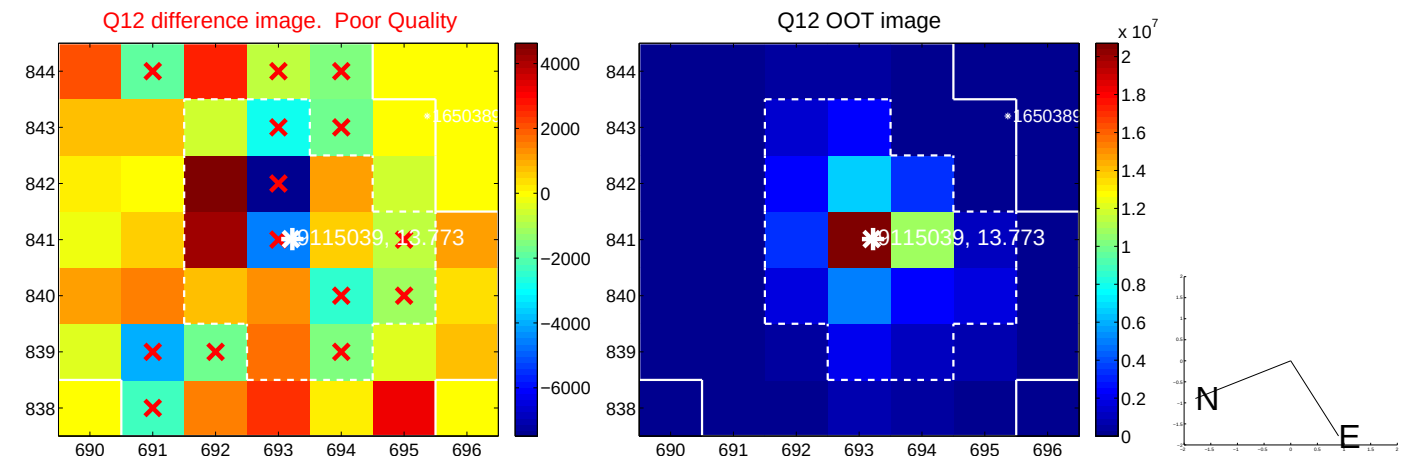


white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.

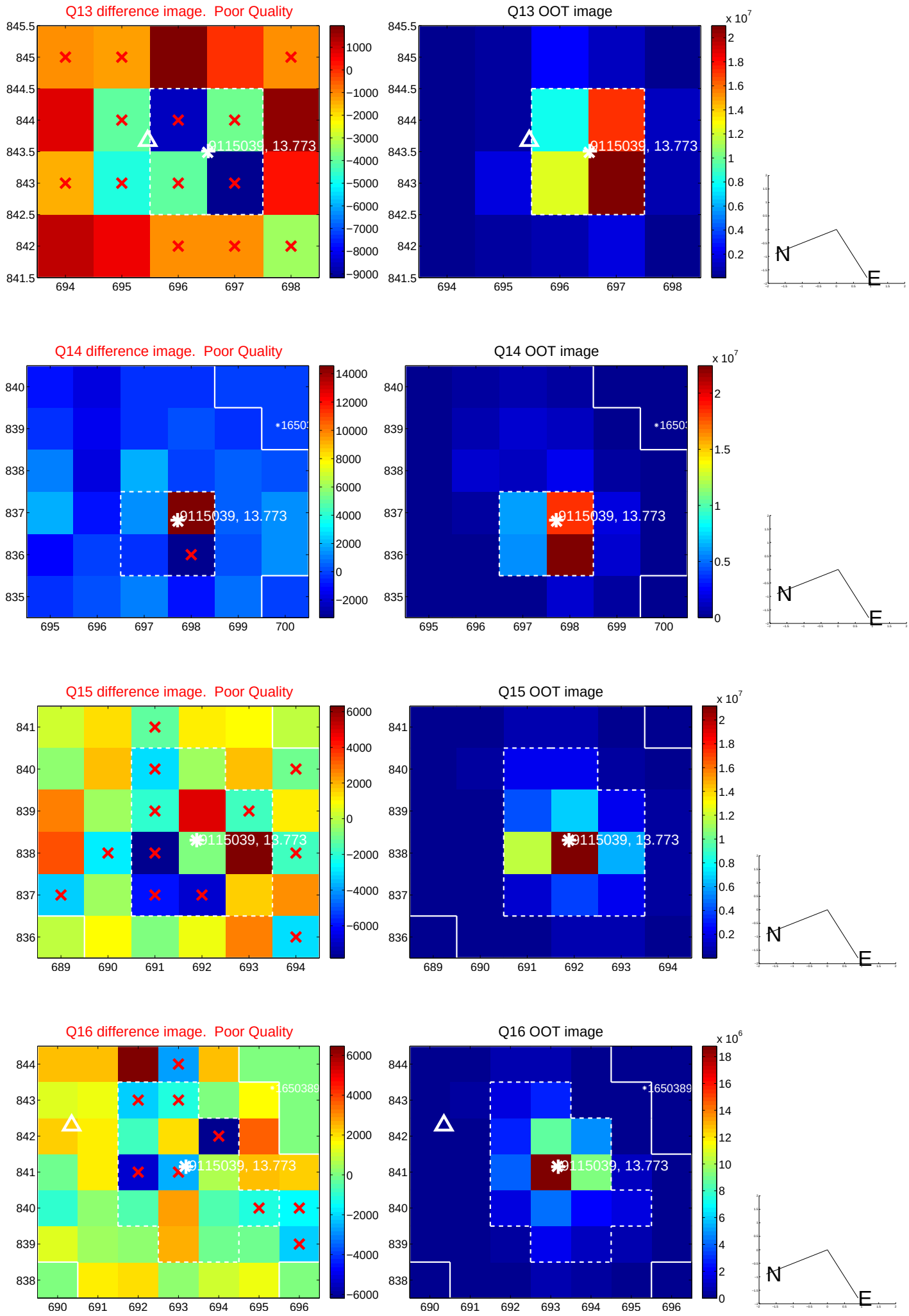




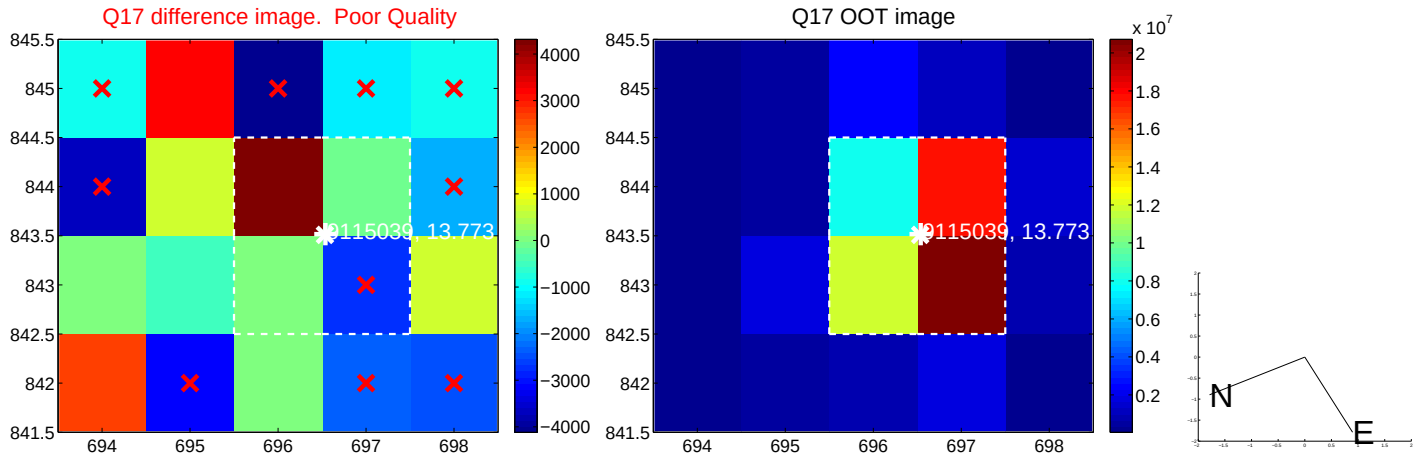


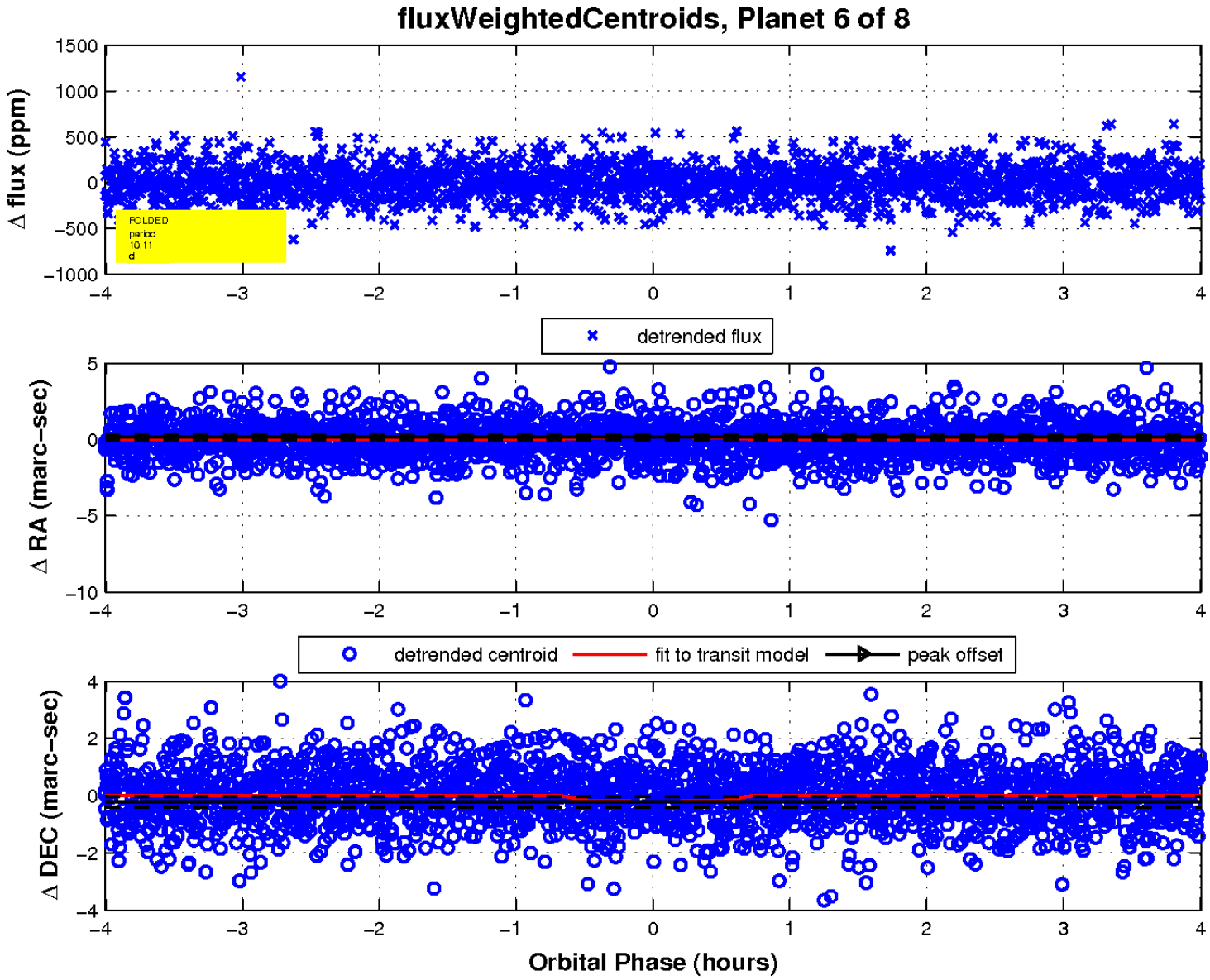


white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.

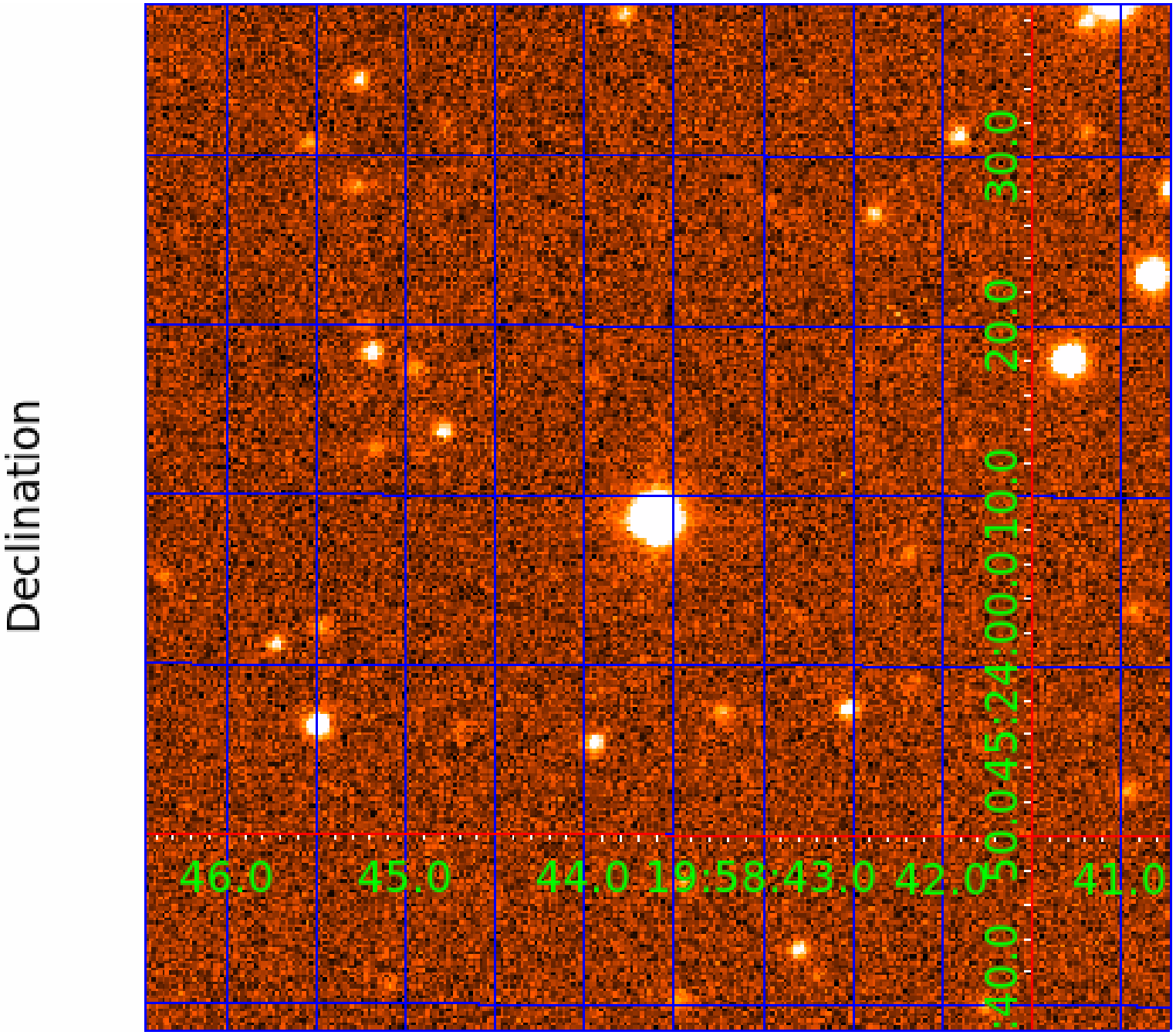


white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.





UKIRT Image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KIC 009115039

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 ($S_\oplus$)
009115039-01	OBS	No	1.042986	131.553686	17.2	7.748	8.3	9.7	1.48	6680	0.71	8357.54
009115039-02	OBS	No	17.542812	148.151216	229.0	1.288	11.4	9.8	1.48	6680	2.40	193.93
009115039-03	OBS	No	27.035069	152.460805	383.5	1.163	10.8	10.4	1.48	6680	3.25	108.95
009115039-04	OBS	No	26.564566	132.691176	185.7	2.967	12.4	9.5	1.48	6680	2.23	111.53
009115039-05	OBS	No	11.950278	133.822951	321.2	0.937	10.0	10.9	1.48	6680	2.71	323.55
009115039-06	OBS	No	10.113701	141.211810	184.1	1.337	9.6	8.7	1.48	6680	2.34	404.18
009115039-07	OBS	No	13.333071	140.695541	294.4	0.637	10.9	13.2	1.48	6680	2.68	279.60

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009115039-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT
009115039-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS—HALO_GHOST
009115039-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
009115039-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
009115039-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—CENT_FEW_DIFFS
009115039-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
009115039-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—CENT_FEW_DIFFS

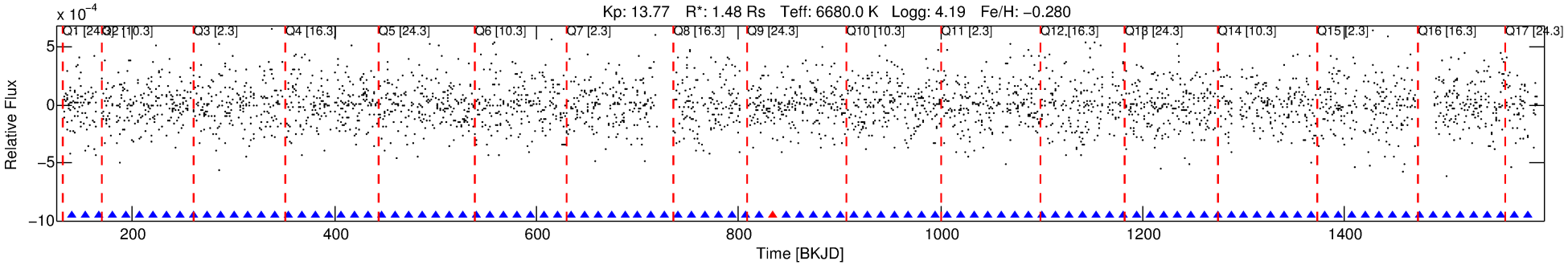
Notes: OBS = Observed. INJ = Injected. INV = Inverted. SCR = Scrambled.
N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.
See `http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col` for comment definitions.

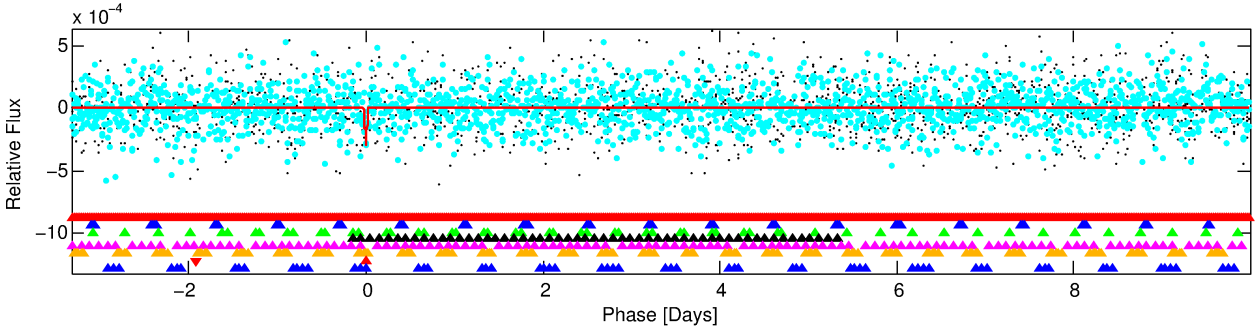
Ephemeris Match Information For 009115039-07

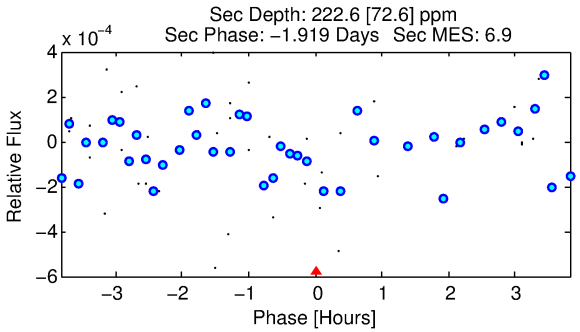
No Significant Match Found

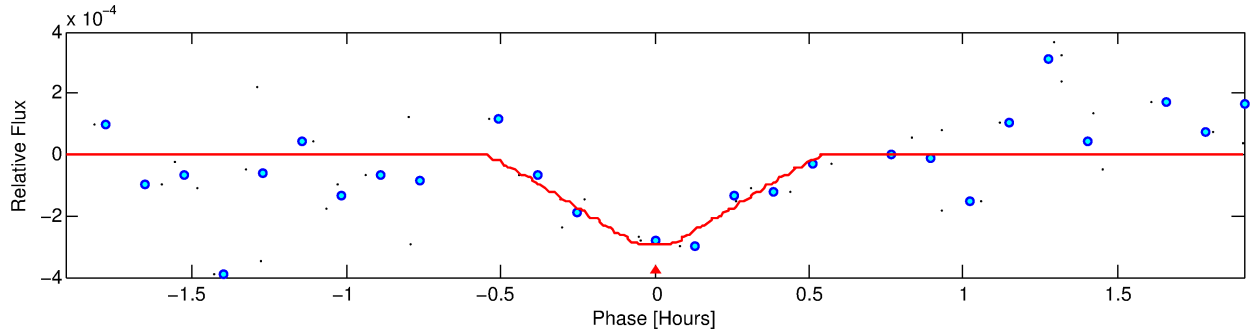
DV One-Page Summary

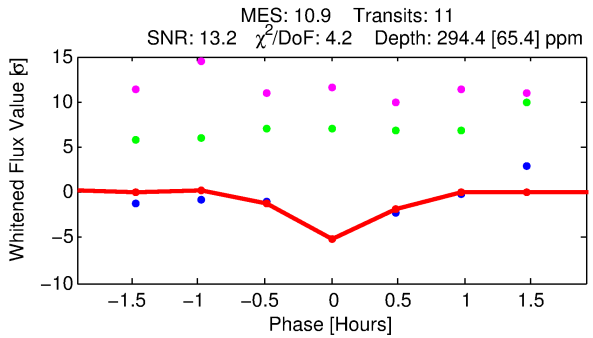
KIC: 9115039 Candidate: 7 of 8 Period: 13.333 d

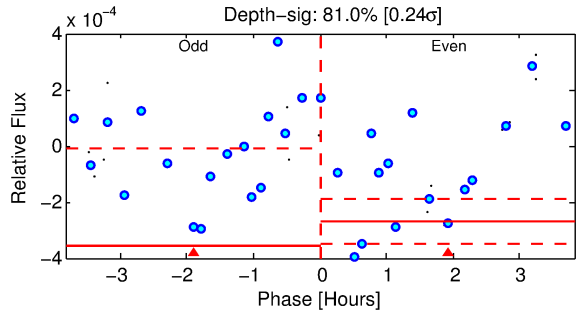


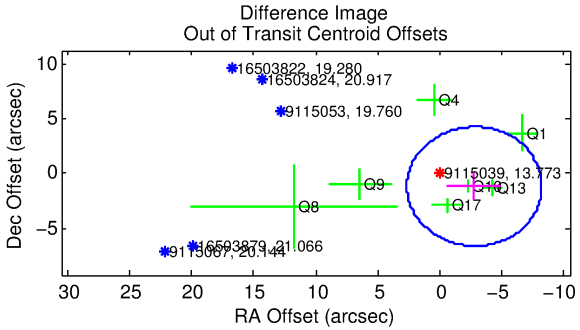












DV Fit Results:

Period = 13.33307 [0.00011] d
Epoch = 140.6955 [0.0058] BKJD
Rp/R* = 0.0166 [0.0138]
a/R* = 141.28 [655.67]
b = 0.50 [6.86]

Seff = 279.60 [100.79]
Teq = 1043 [94] K
Rp = 2.68 [2.35] Re
a = 0.1181 [0.0279] AU

Ag = 237.09 [407.23] [0.58σ]
Teffp = 6326 [2675] K [1.97σ]

DV Diagnostic Results:

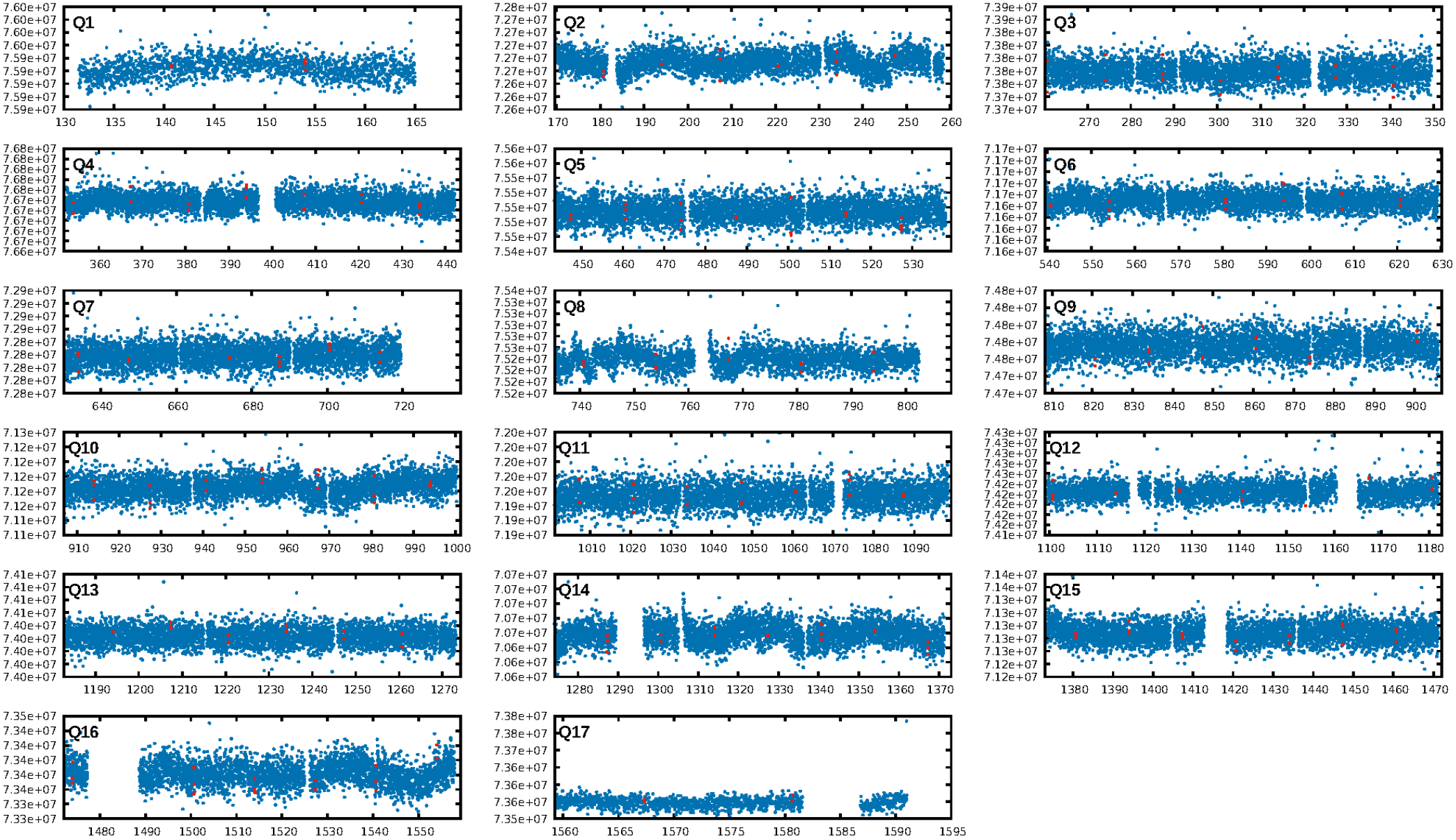
ShortPeriod−sig: 100.0% [29.28σ]
LongPeriod−sig: 100.0% [70.33σ]
ModelChiSquare2−sig: 94.1%
ModelChiSquareGof−sig: 99.3%
Bootstrap−pfa: 4.45e−11
RollingBand−fgt: 0.90 [9/10]
GhostDiagnostic−chr: −6.045

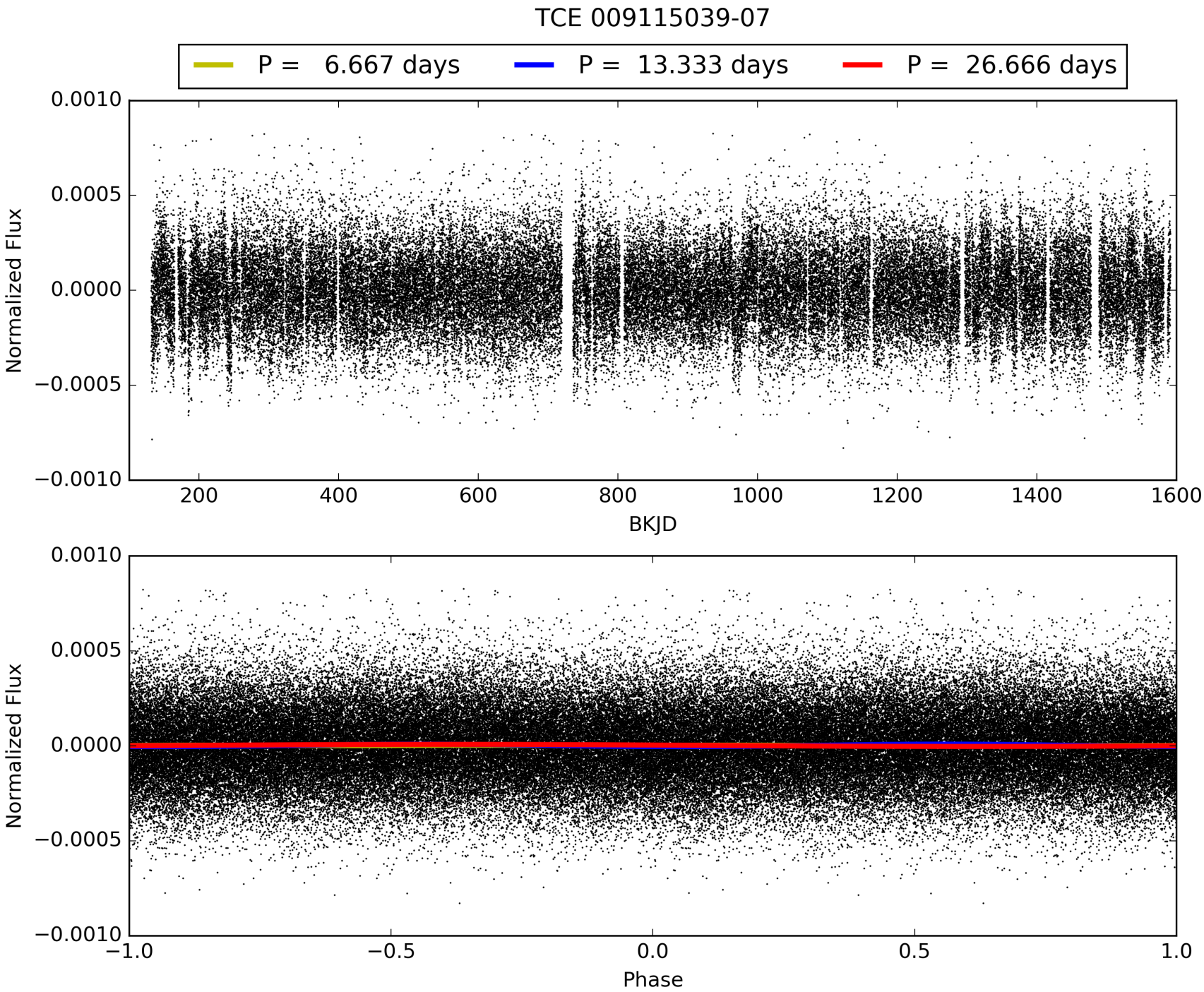
Centroid−sig: 69.5%
Centroid−so: 0.591 arcsec [0.56σ]
OotOffset−rm: 3.024 arcsec [1.67σ]
KicOffset−rm: 3.075 arcsec [1.22σ]
OotOffset−st: 1/0/2/4 [7]
KicOffset−st: 1/0/2/4 [7]
DiffImageQuality−fgm: 0.00 [0/7]
DiffImageOverlap−fno: 0.83 [10/12]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01−Feb−2016 13:02:04 Z

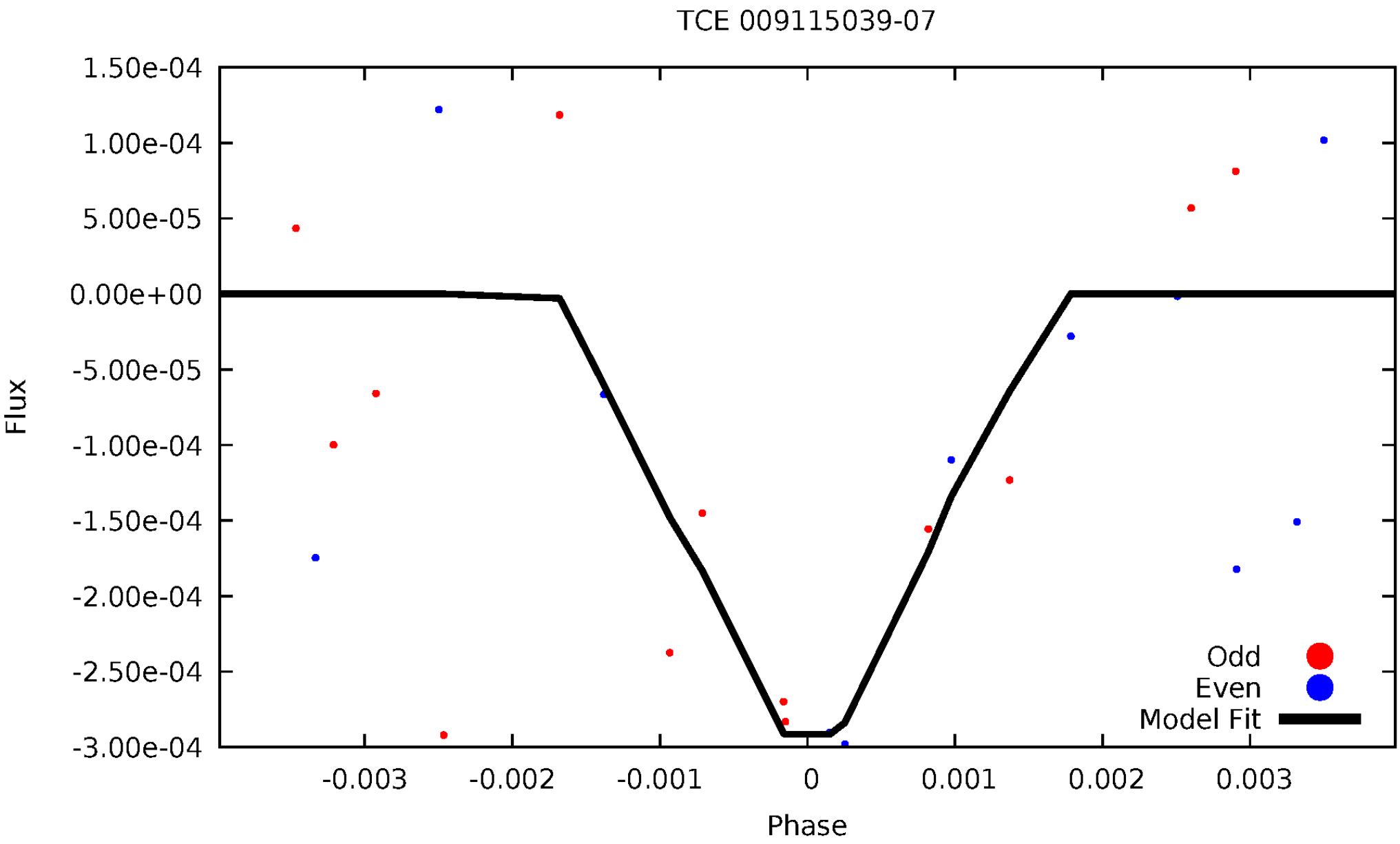
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 009115039-07, PDC Light Curves




TCE 009115039-07
P = 6.667 days
P = 13.333 days
P = 26.666 days
Normalized Flux
0.0010
0.0005
0.0000
−0.0005
−0.0010
200
400
600
800
1000
1200
1400
1600
BKJD
Normalized Flux
0.0010
0.0005
0.0000
−0.0005
−0.0010
−1.0
−0.5
0.0
0.5
1.0
Phase

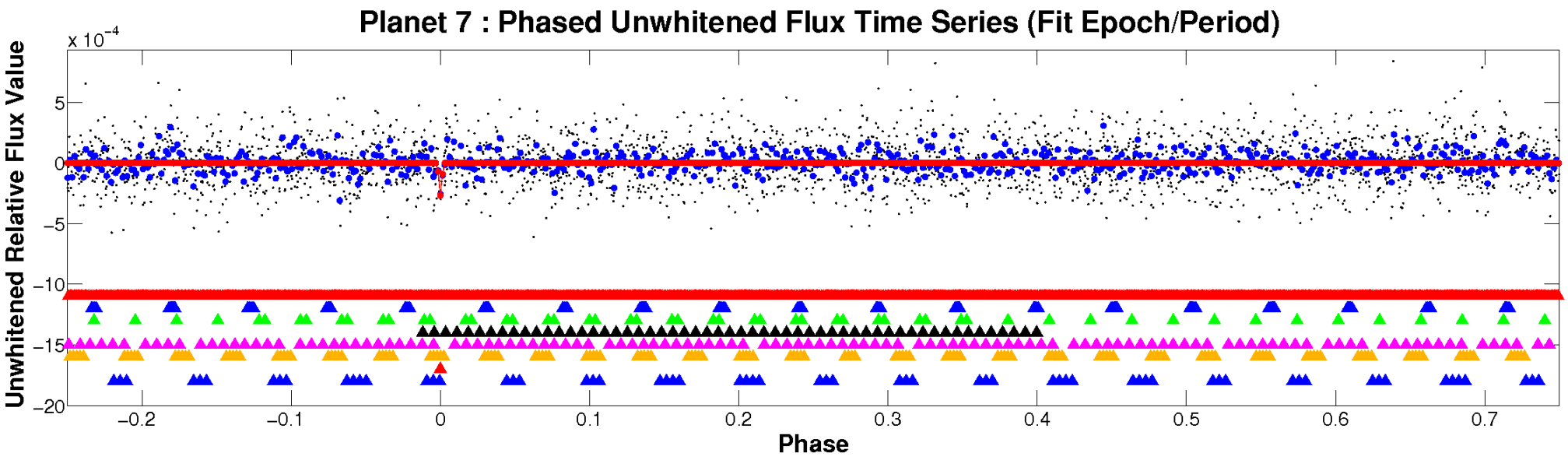
DV Odd/Even

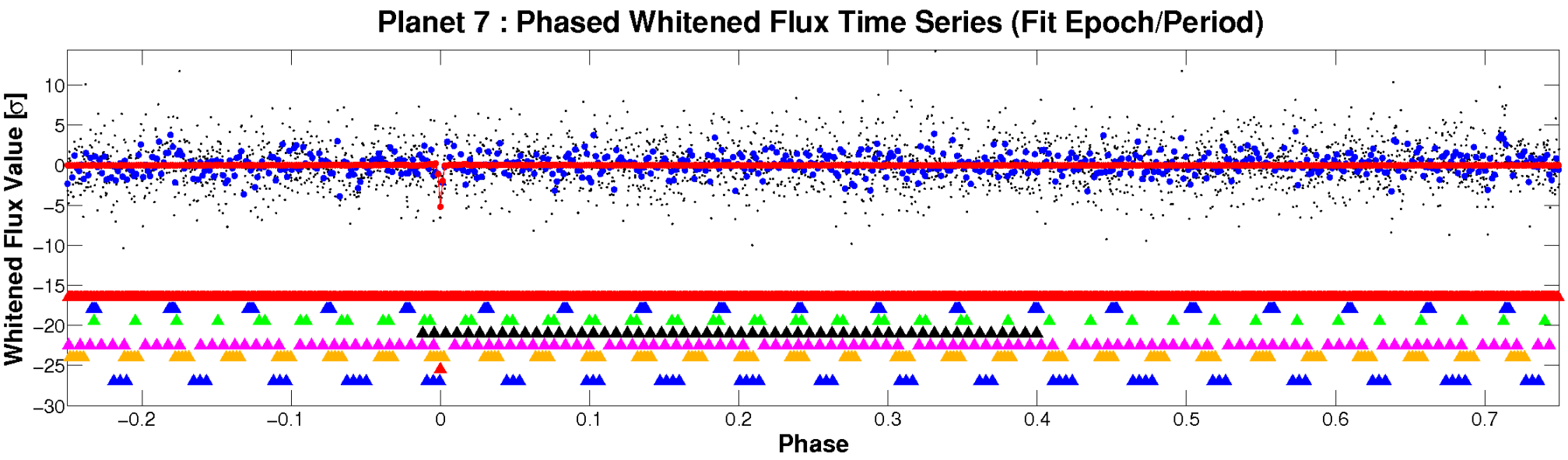

TCE 009115039-07
1.50e-04
1.00e-04
5.00e-05
0.00e+00
-5.00e-05
-1.00e-04
-1.50e-04
-2.00e-04
-2.50e-04
-3.00e-04
Flux
-0.003
-0.002
-0.001
0
0.001
0.002
0.003
Phase
Odd
Even
Model Fit

ALT Odd/Even

This plot does not exist for this TCE.

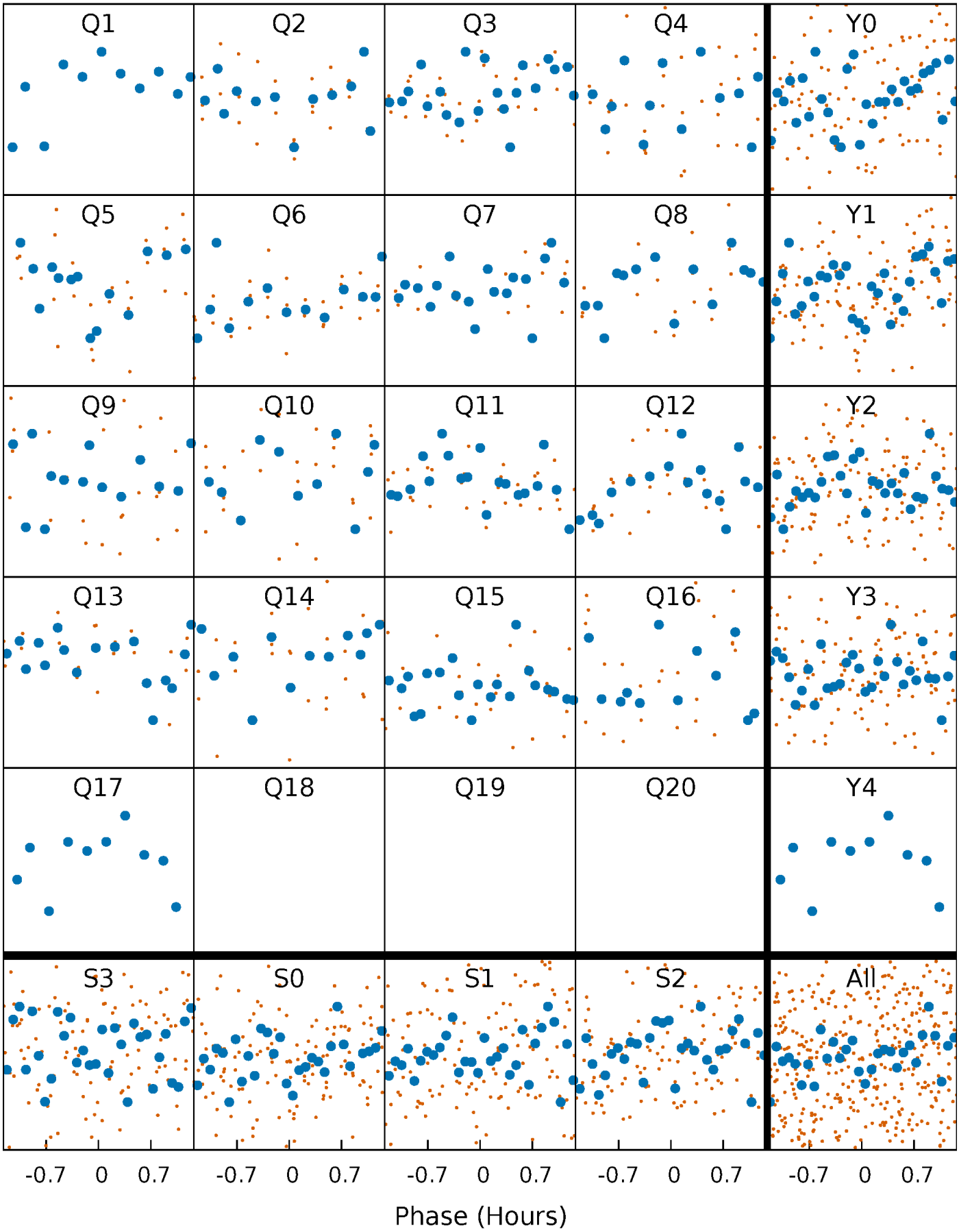
Non-Whitened Vs. Whitened Light Curve





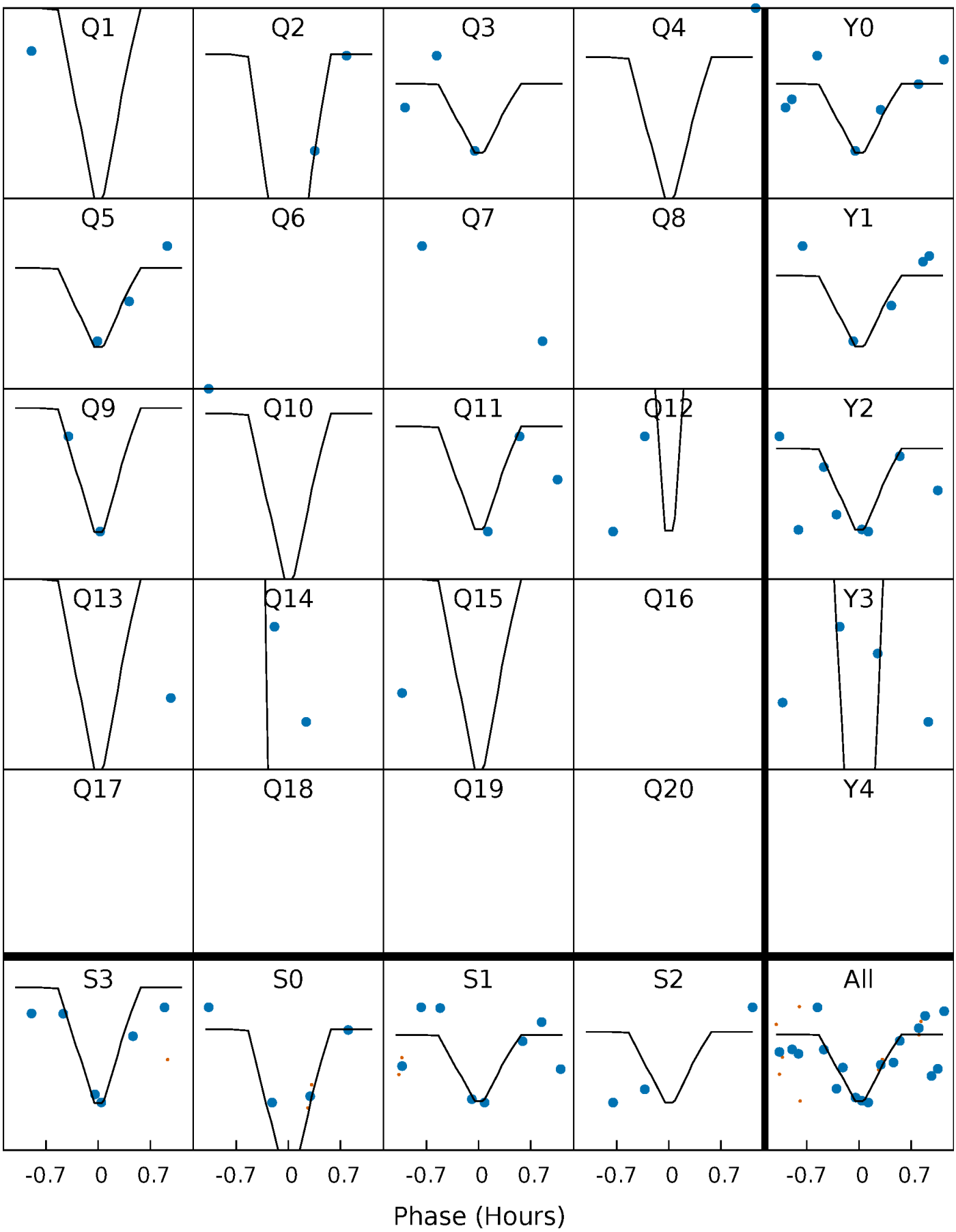
PDC Quarter-Phased Transit Curves

TCE 009115039-07 P= 13.333071 Days T_0=140.695541 (BKJD)



DV Quarter-Phased Transit Curves

TCE 009115039-07 P= 13.333071 Days T_0=140.695541 (BKJD)

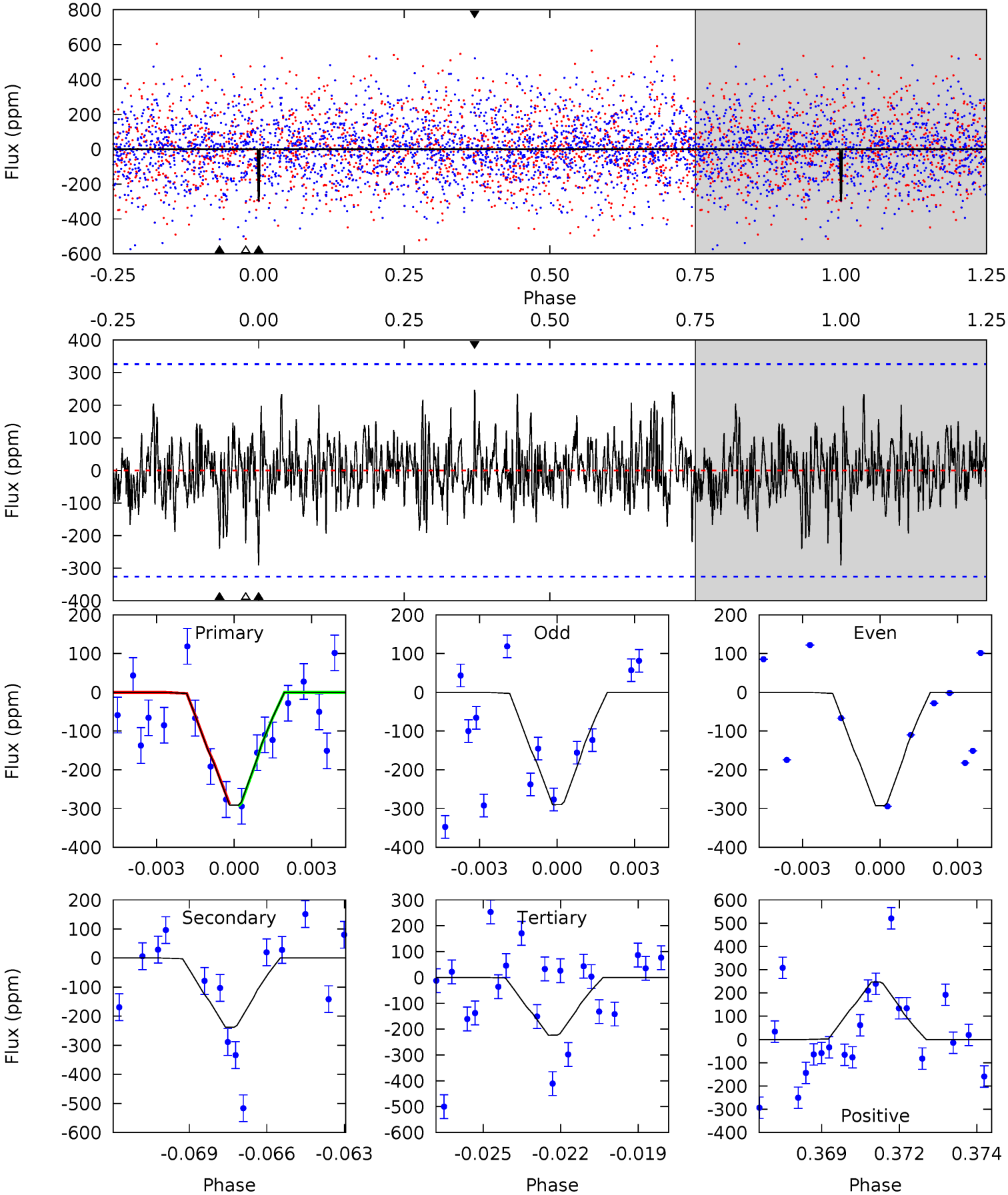


This plot does not exist for this TCE.

DV Model-Shift Uniqueness Test

009115039-07, P = 13.333071 Days, E = 127.362470 Days

Pri	Sec	Ter	Pos	FA_1	FA_2	F_{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4.71	3.85	3.61	3.99	5.27	2.99	1.18	1.10	0.71	0.23	-0.15	0.02	0.98	0.46	0.04



Alt Model-Shift Uniqueness Test

This plot does not exist for this TCE.

Stellar Parameters For KIC 009115039

	$T_{\rm eff}(K)$	$\log(g)$	[Fe/H]	R ($R_\odot$)	M($M_\odot$)	$p_\star$ (g·cm^{-3})
	6680^{+189}_{-236}	$4.190^{+0.158}_{-0.175}$	$-0.280^{+0.250}_{-0.300}$	$1.478^{+0.431}_{-0.352}$	$1.241^{+0.189}_{-0.189}$	$0.542^{+0.500}_{-0.263}$
	+3%/-4%	+4%/-4%	+89%/-107%	+29%/-24%	+15%/-15%	+92%/-48%
Source	PHO1	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 009115039-07 / KOI

Detrend	Depth (ppm)	R_p ($R_\oplus$)	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-238±62	$2.97^{+2.13}_{-1.78}$	1460^{+103}_{-96}	6002^{+4712}_{-1279}	200^{+1095}_{-134}
Alt.	N/A	N/A	N/A	N/A	N/A

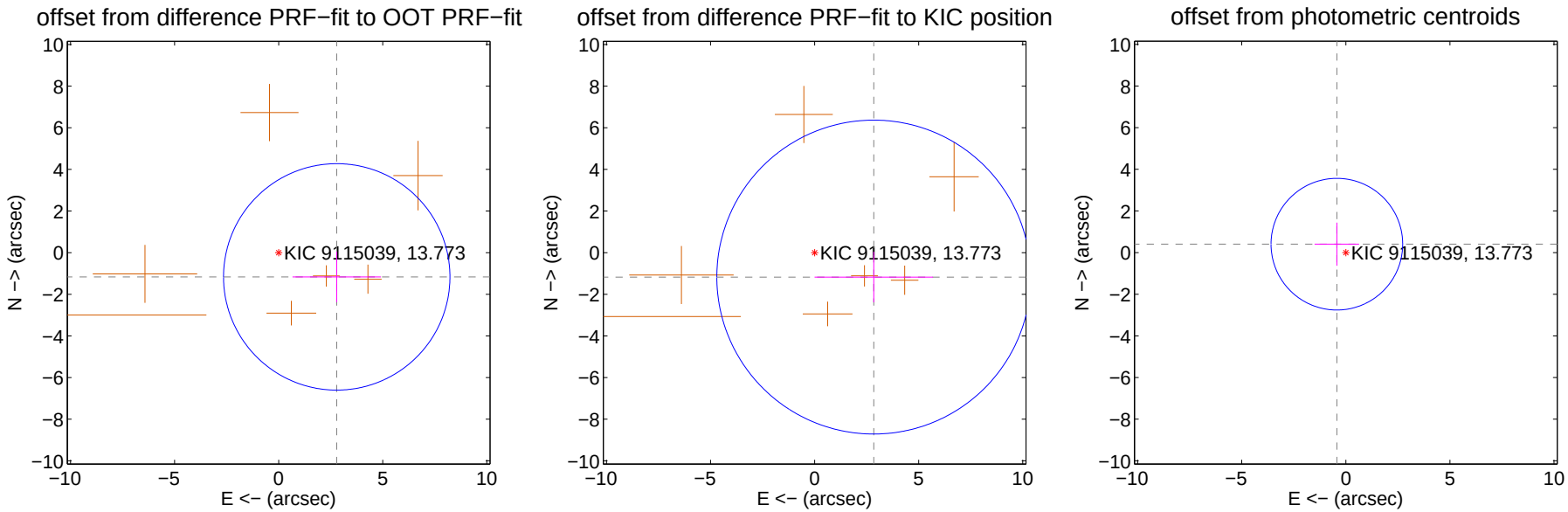
T_{max} = Theoretical Maximum Planetary Temperature
T_{obs} = Observed Planetary Temperature (Assuming A=0.3)
A_{obs} = Observed Albedo (Assuming T=0)

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

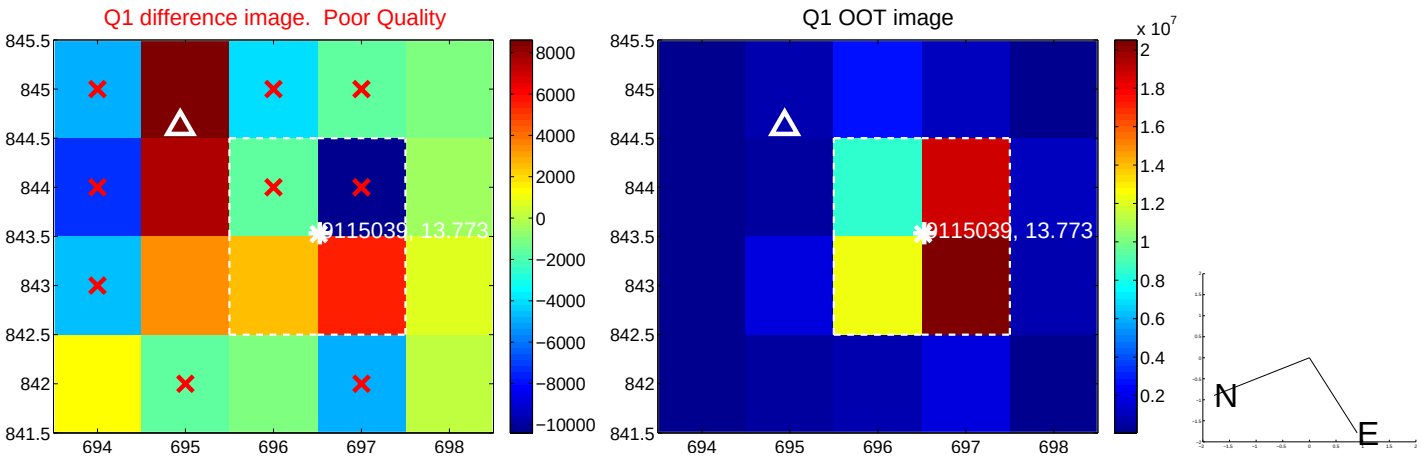
Supplemental centroid analysis for 009115039-07. Kepler magnitude: 13.77. Transit SNR 13.17
There are 0 quarters with good PRF difference image offsets
The direct PRF centroid is offset from the target star catalog position by about 0.04 arcsec

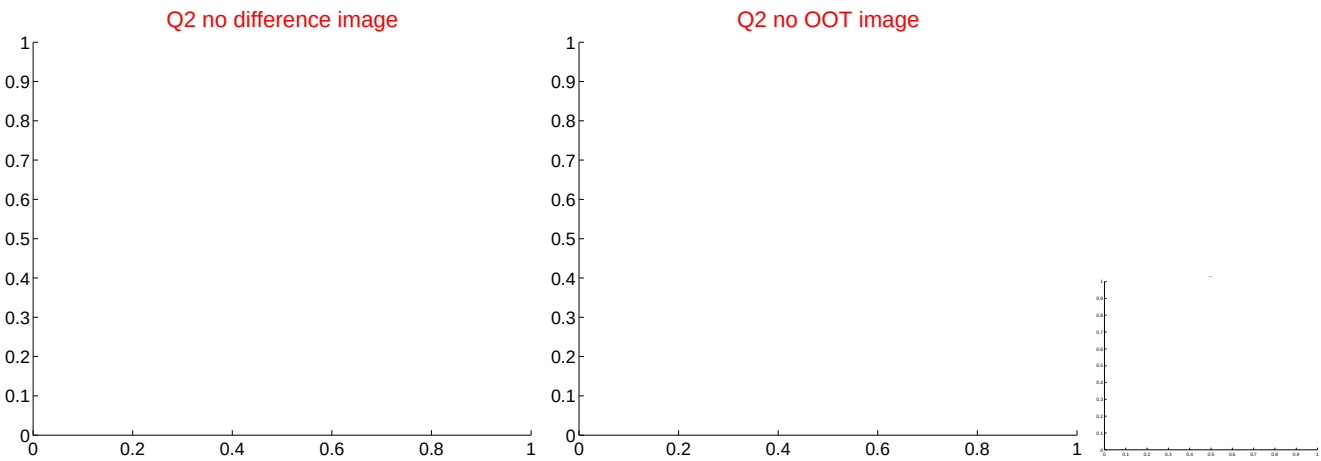
	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	3.024 ± 1.813	1.67	-2.791 ± 2.124	-1.164 ± 1.214
PRF-fit source offset from KIC position	3.075 ± 2.514	1.22	-2.842 ± 2.845	-1.173 ± 1.212
photometric centroid source offset	0.59 ± 1.05	0.56	0.43 ± 1.07	0.40 ± 1.04

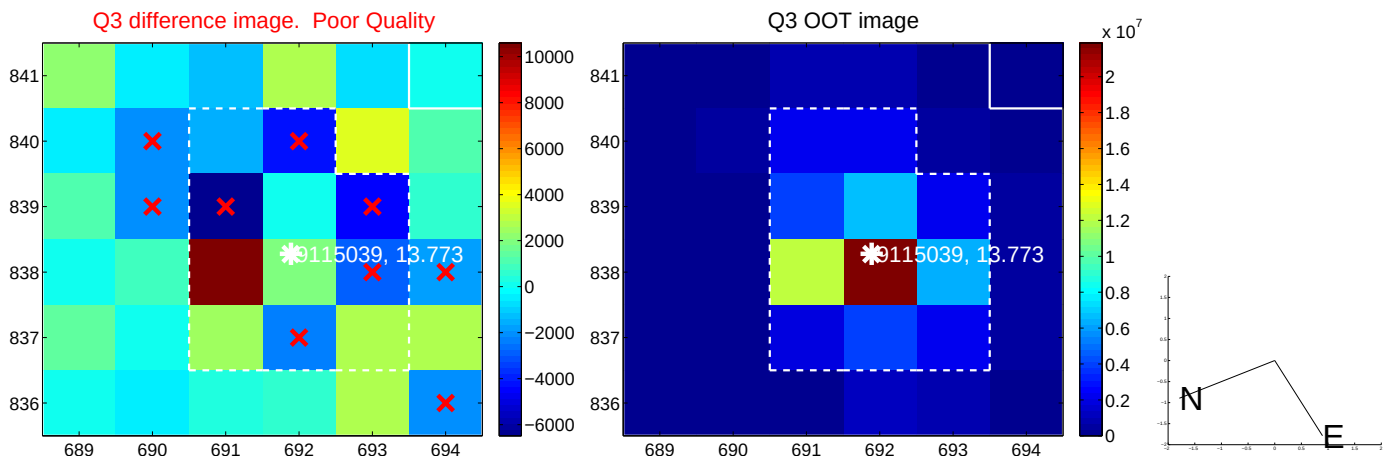


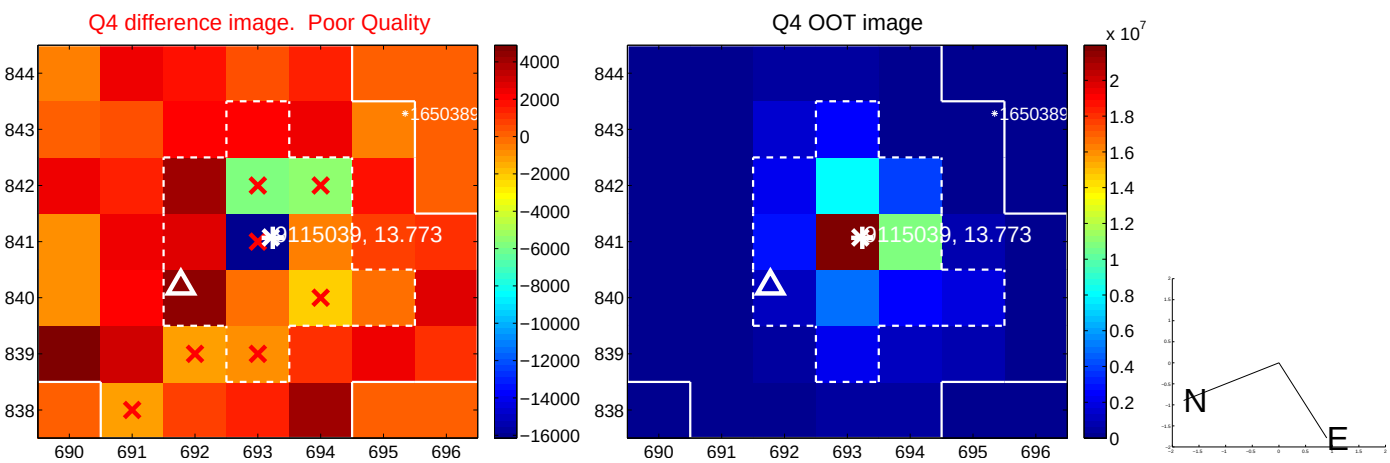
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one-σ uncertainty. Blue circle: three-σ. Red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

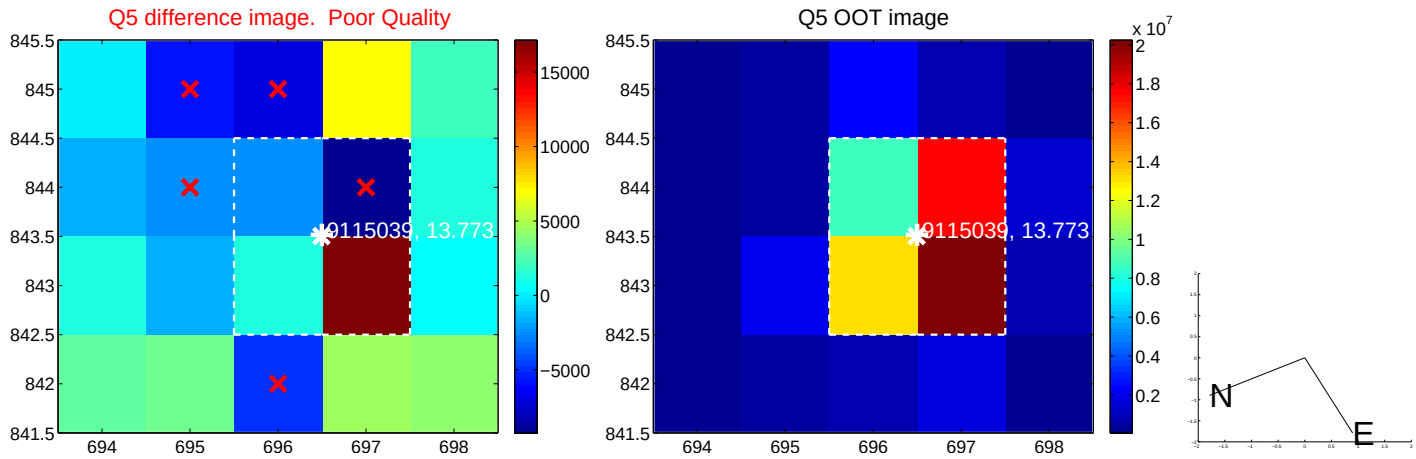


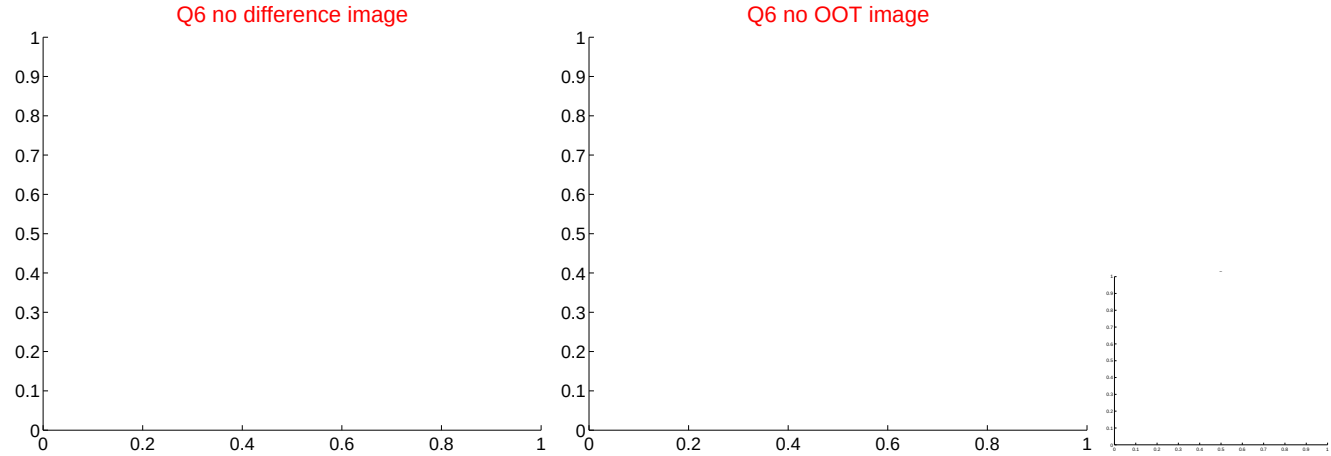


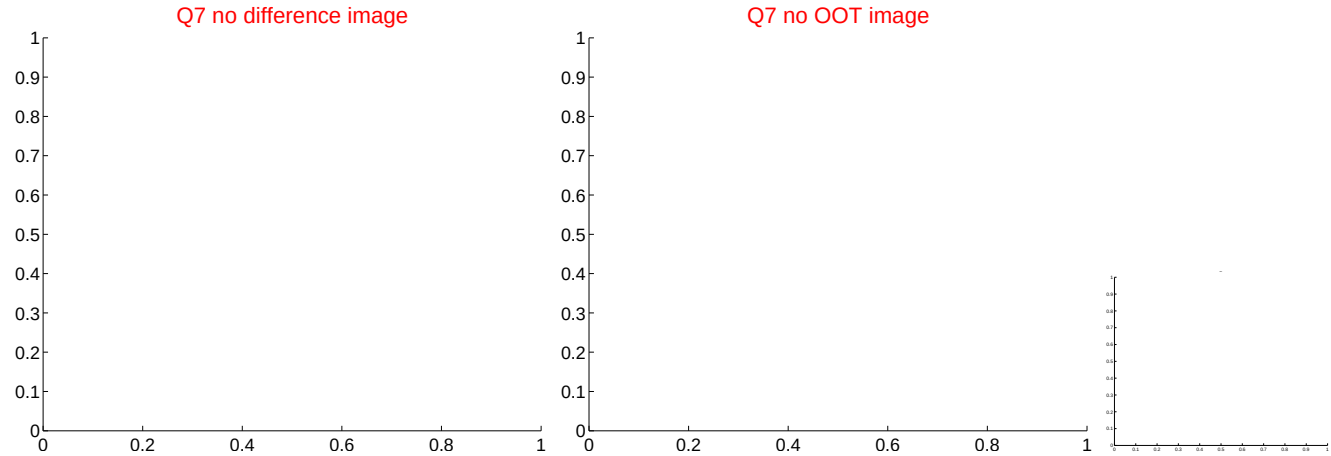


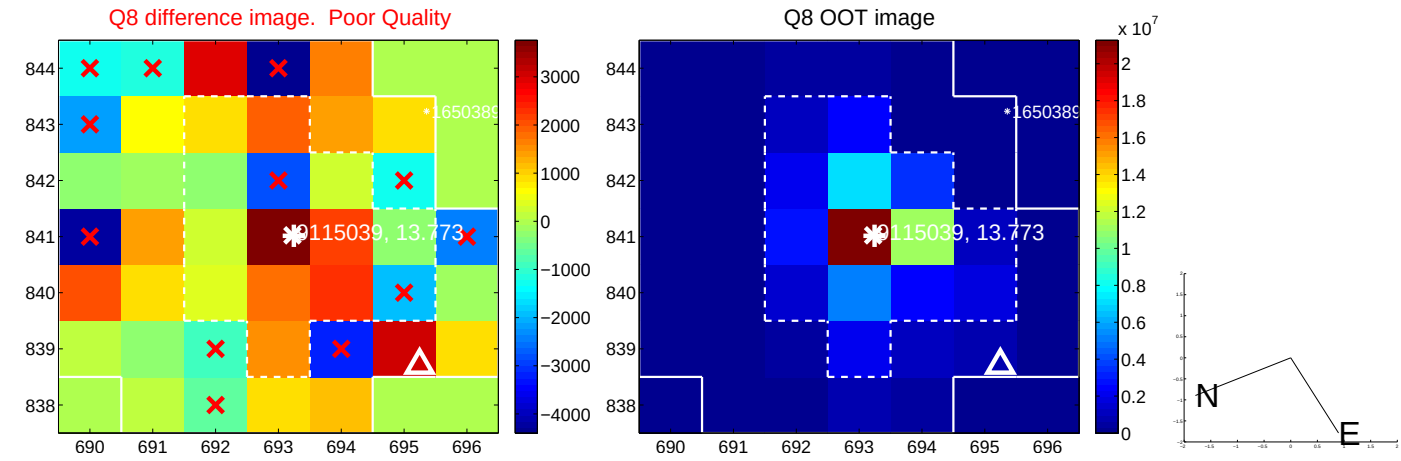


white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.

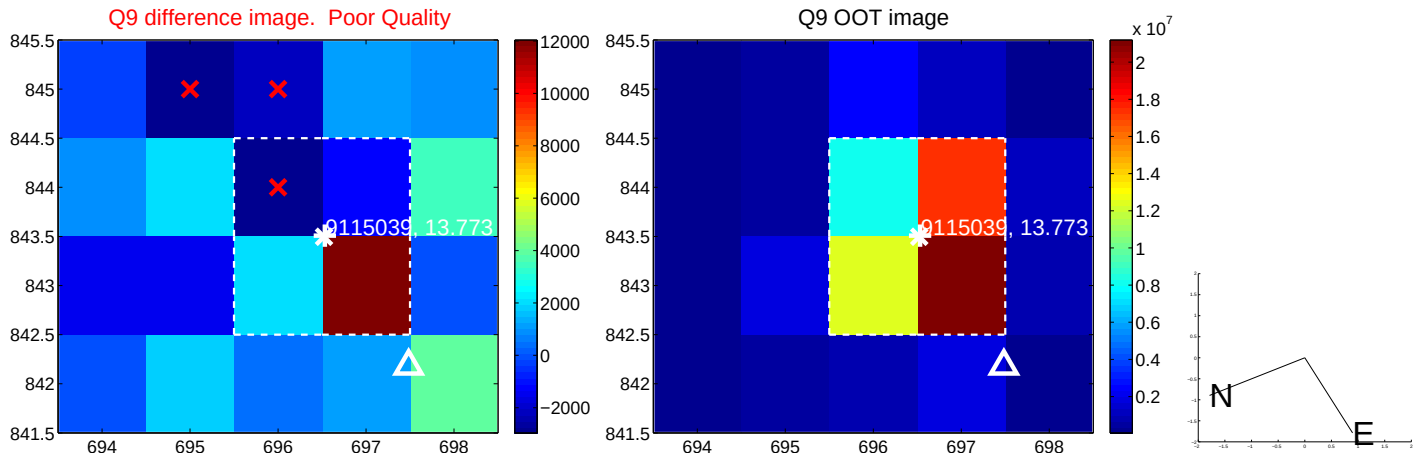


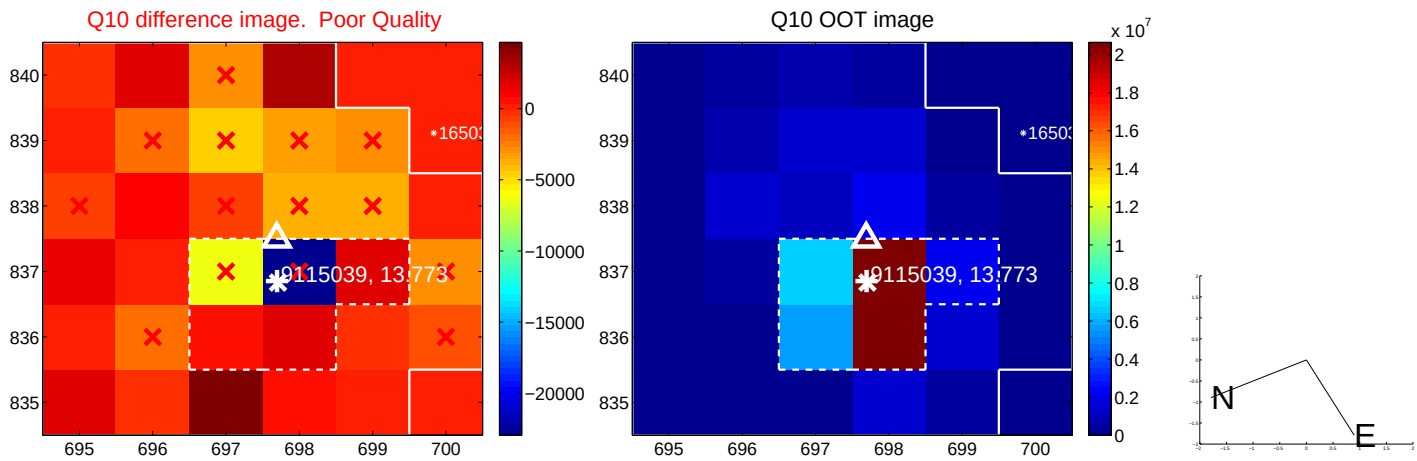


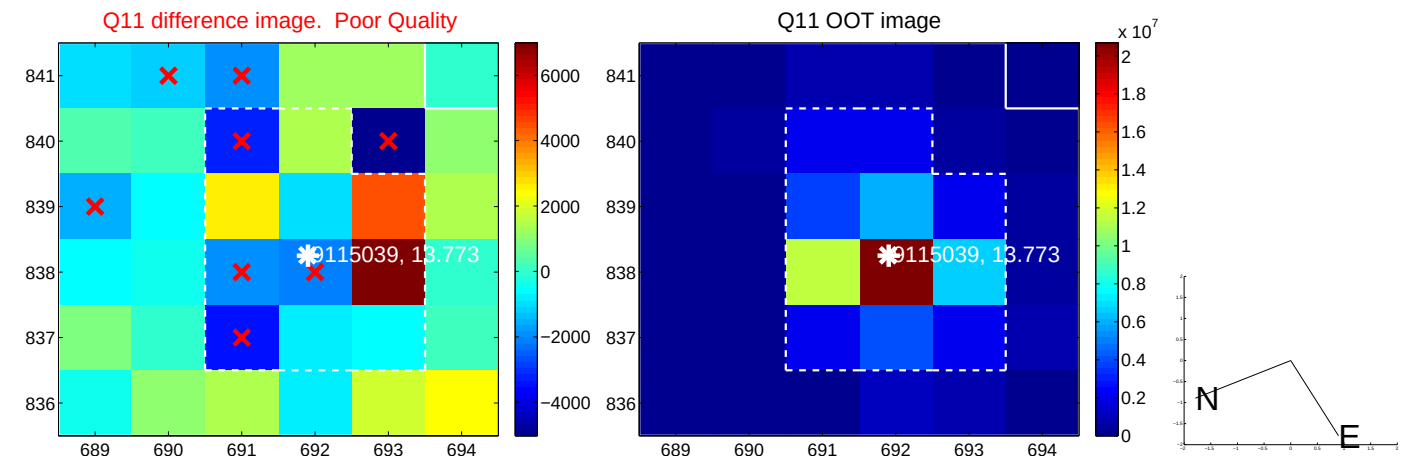


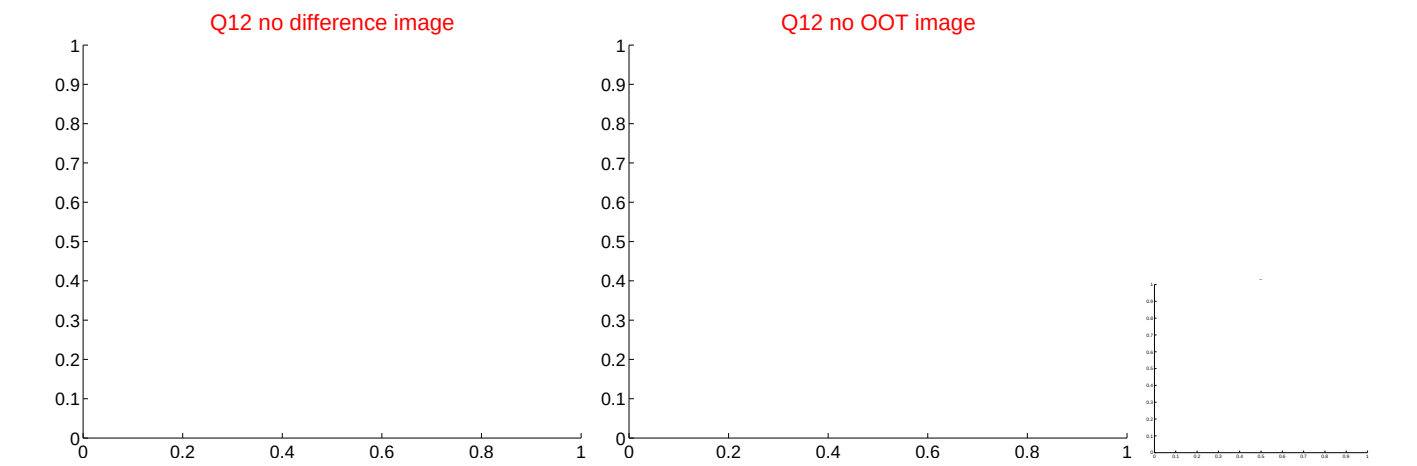


white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.

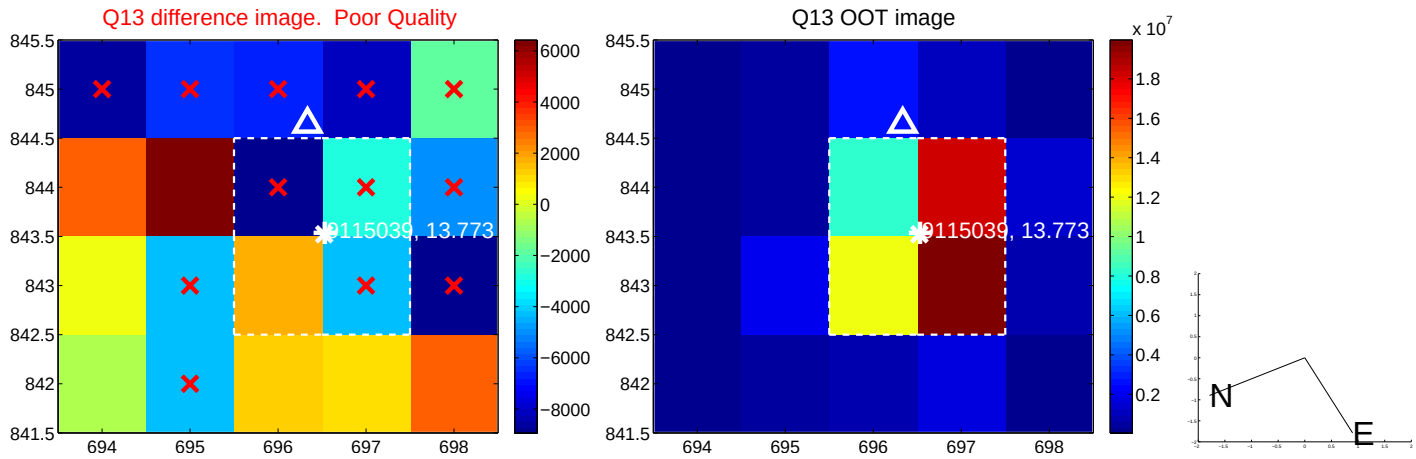


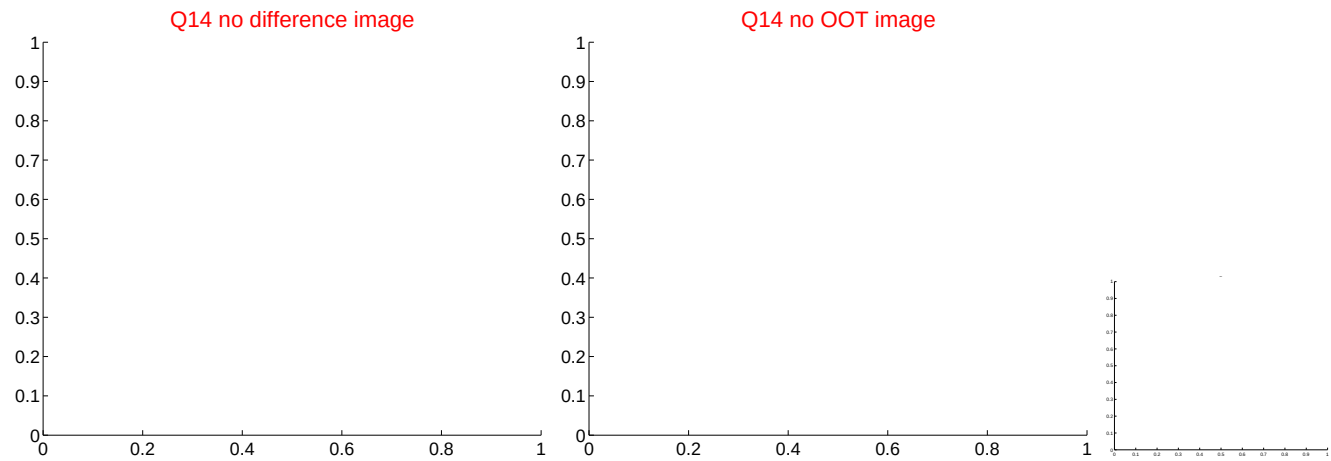


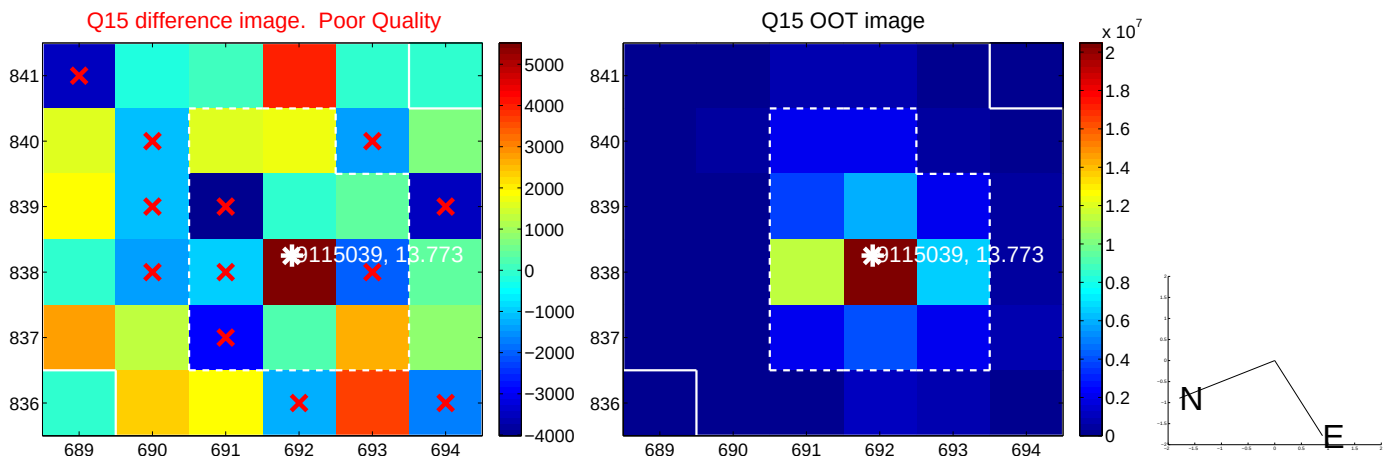


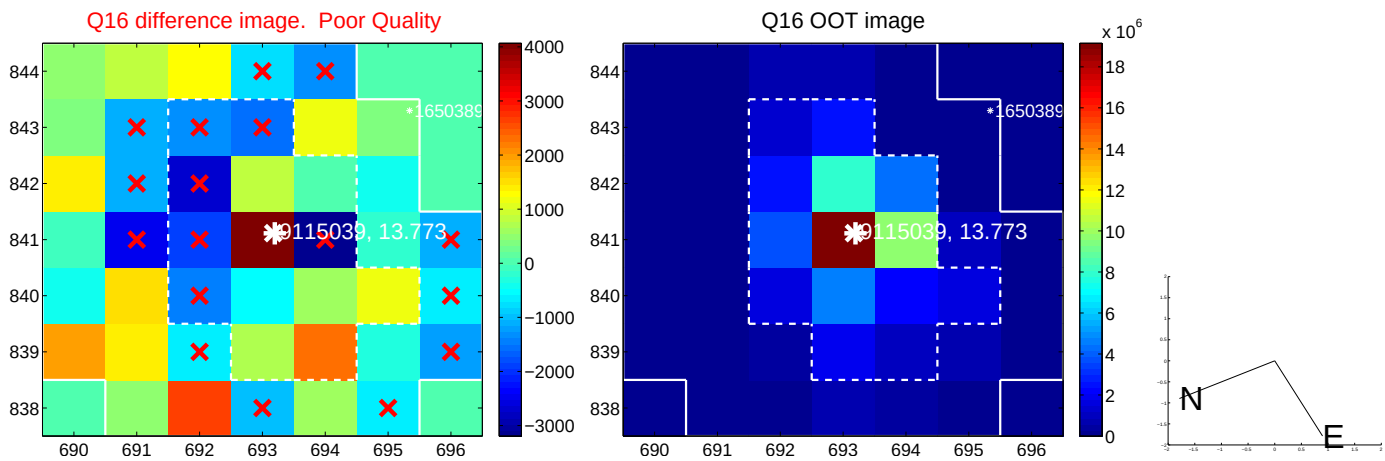


white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.

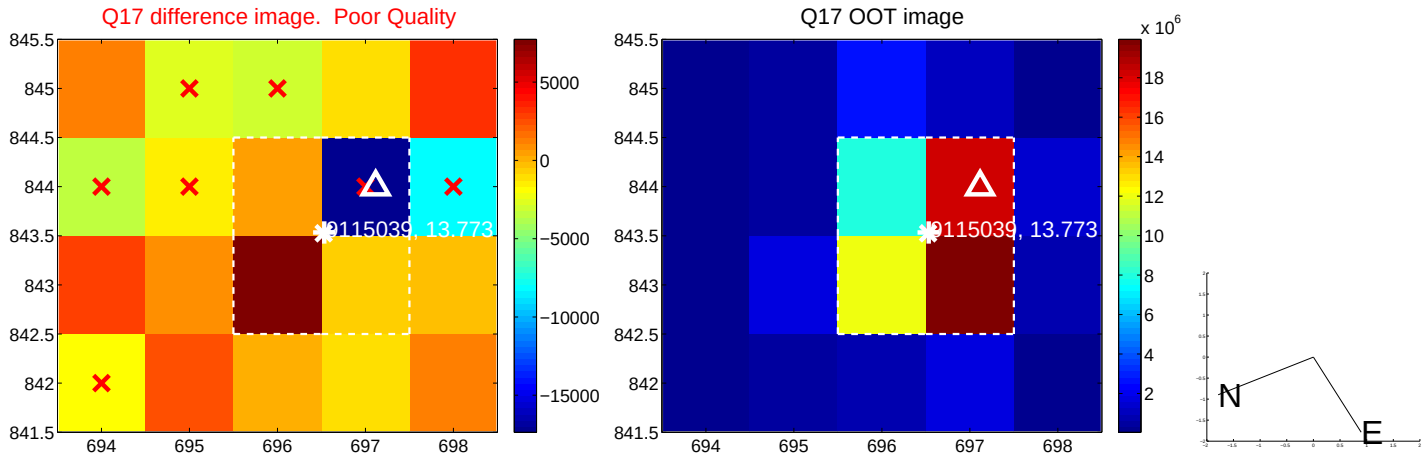


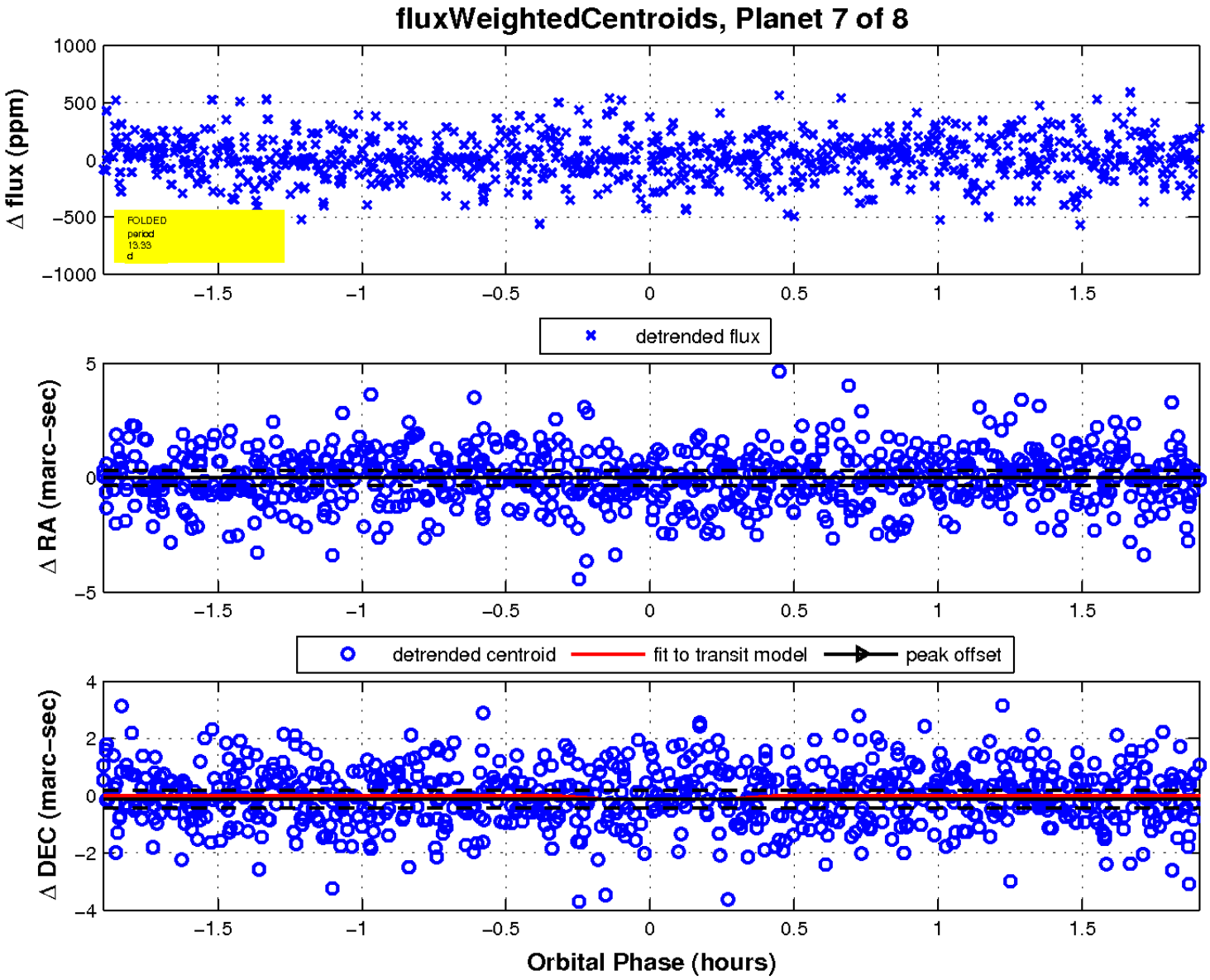




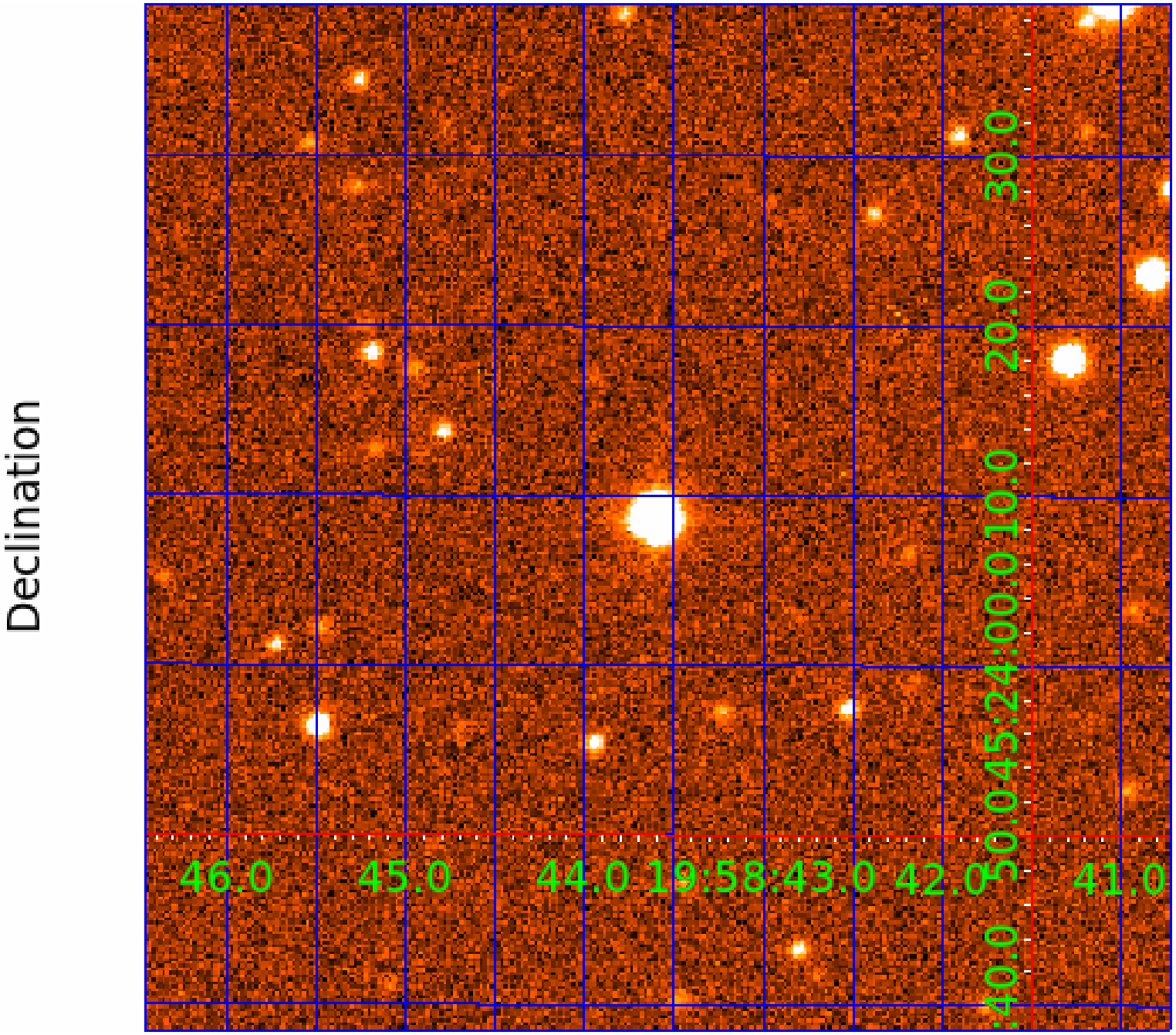


white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.





UKIRT Image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