

KIC 008588940

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})
008588940-01	OBS	No	1.525702	132.636669	8.2	11.086	7.7	3.6	2.79	6235	0.83	12234.93
008588940-04	OBS	No	35.114645	139.486242	247.7	3.543	14.0	11.7	2.79	6235	5.09	186.89

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008588940-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV
008588940-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT

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

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

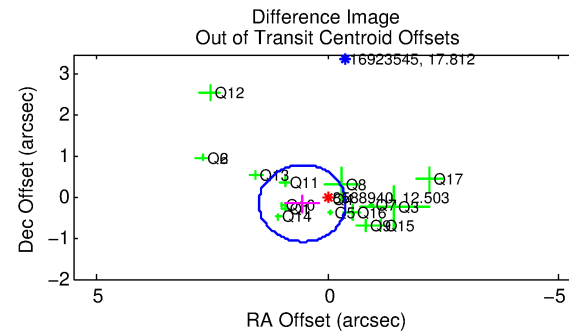
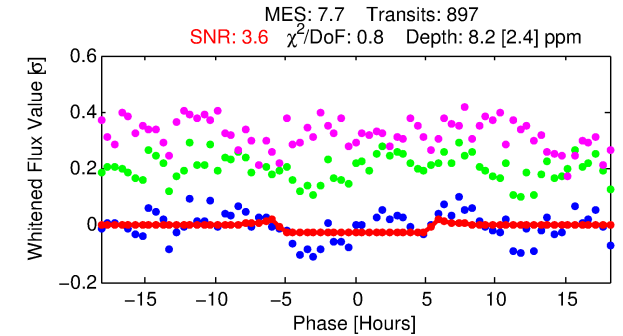
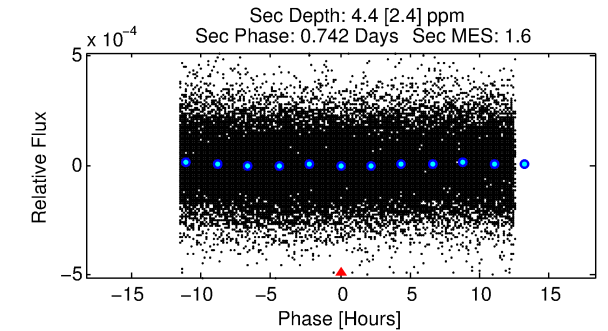
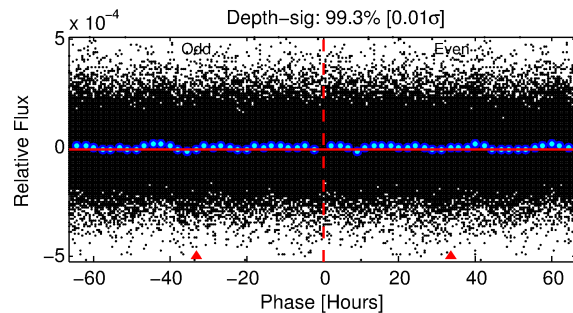
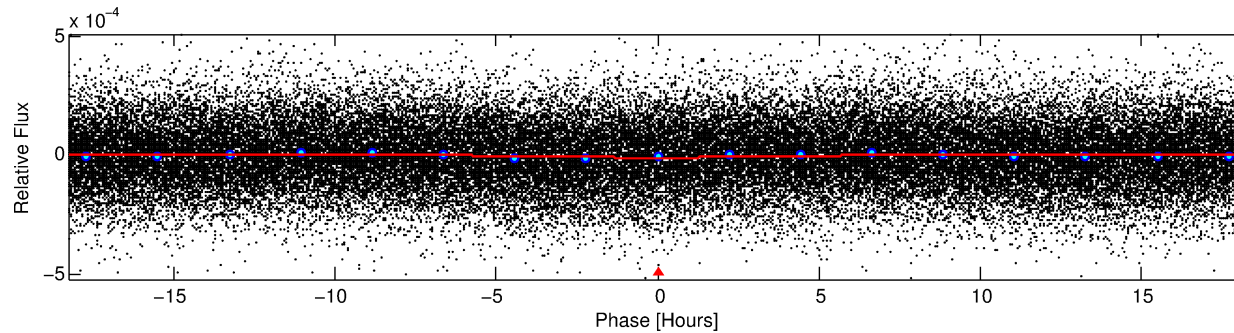
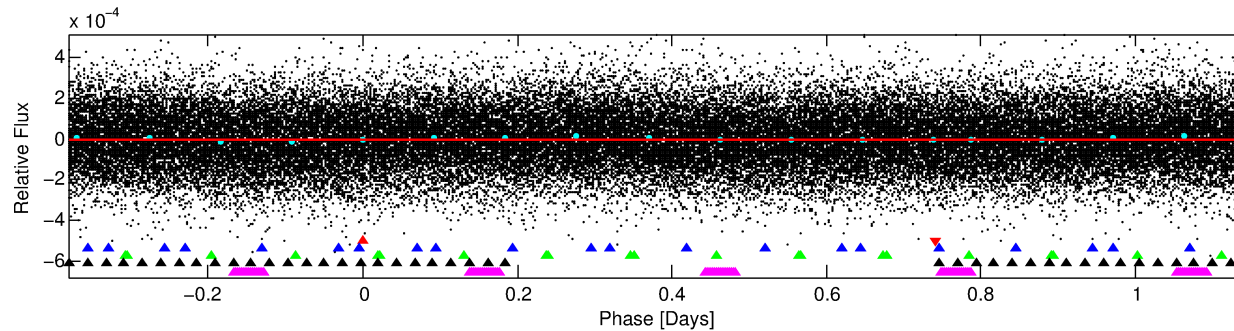
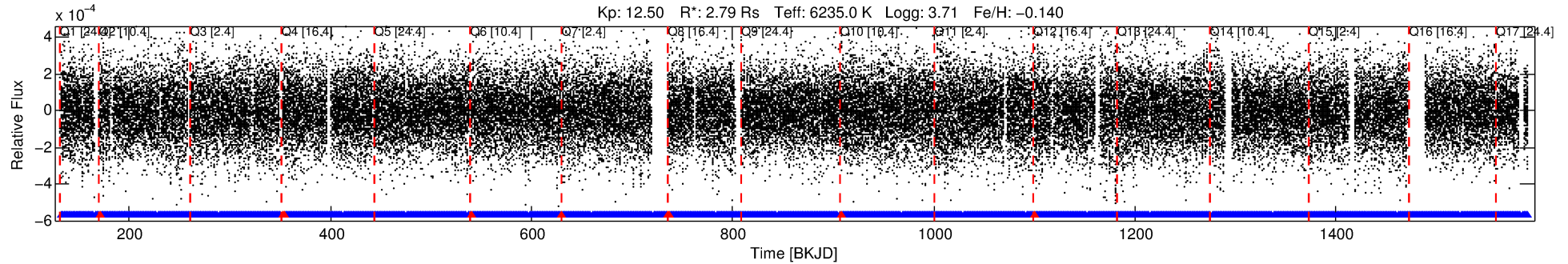
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008588940-01

No Significant Match Found

DV One-Page Summary

KIC: 8588940 Candidate: 1 of 5 Period: 1.526 d



DV Fit Results:

Period = 1.52570 [0.00005] d
Epoch = 132.6367 [0.0127] BKJD
Rp/R* = 0.0027 [0.0029]
a/R* = 1.16 [1.62]
b = 0.58 [6.26]
Seff = 12234.93 [6690.40]
Teq = 2682 [367] K
Rp = 0.83 [0.92] Re
a = 0.0293 [0.0099] AU
Ag = 2.99 [6.64] [0.30 σ]
Teffp = 5452 [2944] K [0.93 σ]

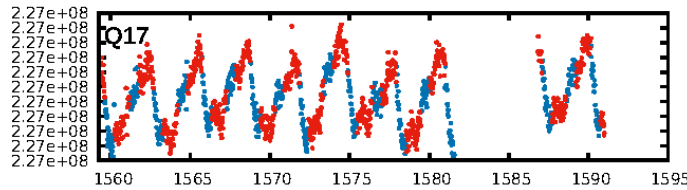
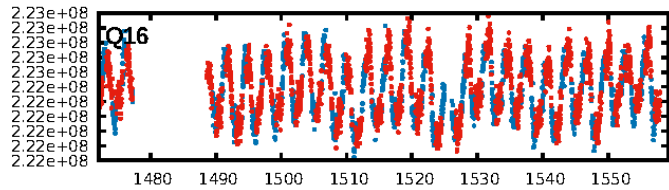
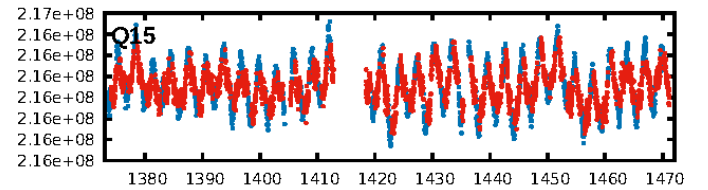
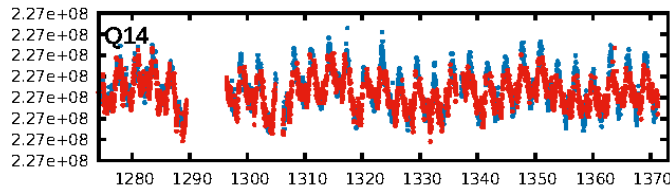
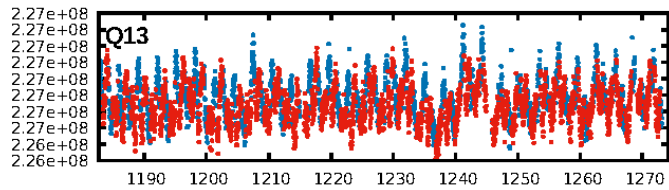
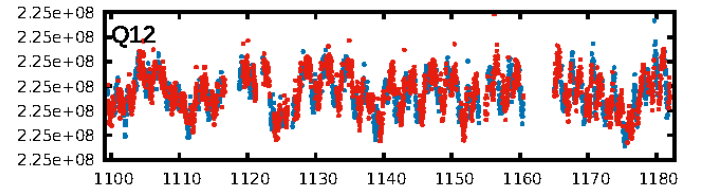
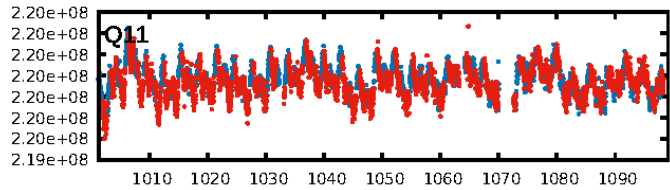
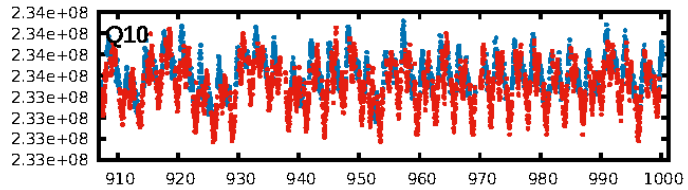
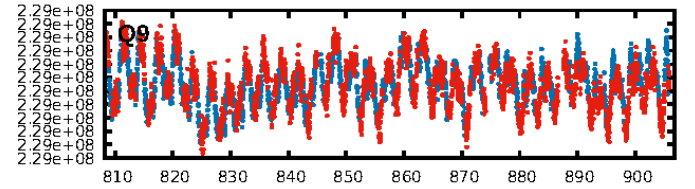
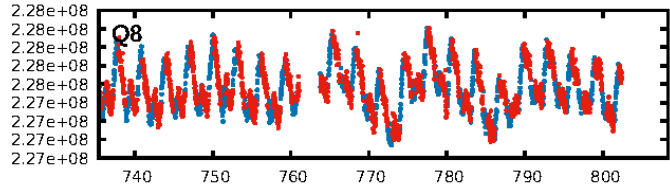
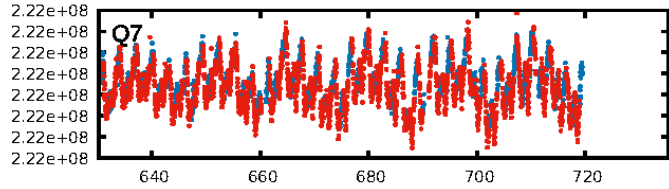
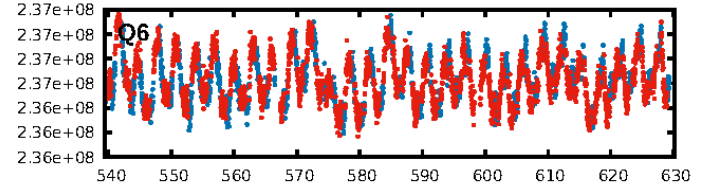
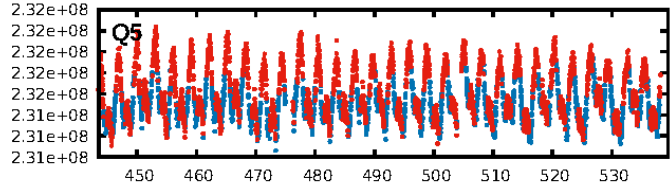
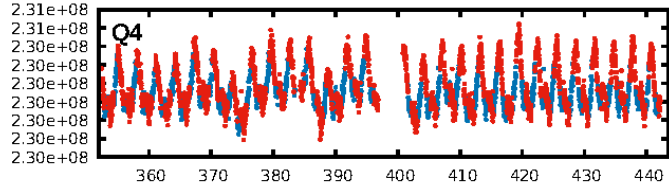
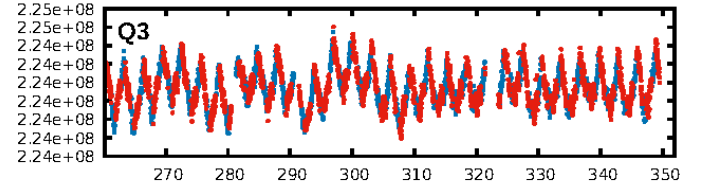
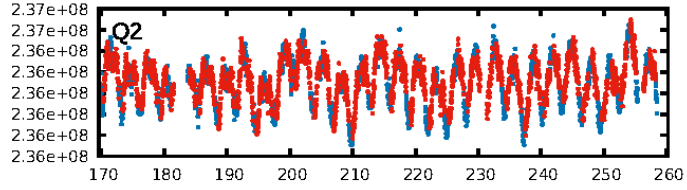
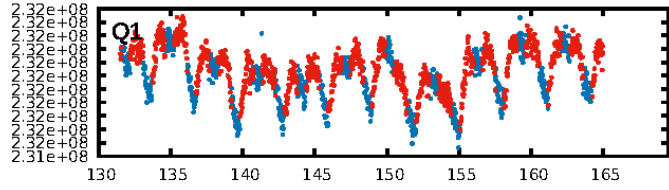
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 95.0% [1.96 σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 1.45e-07
RollingBand-fgt: 0.99 [847/856]
GhostDiagnostic-chr: 0.4558
Centroid-sig: 51.2%
Centroid-so: 1.206 arcsec [0.66 σ]
OotOffset-rm: 0.564 arcsec [1.80 σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-rm: 0.585 arcsec [2.00 σ]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 0.41 [7/17]
DiffImageOverlap-fno: 1.00 [17/17]

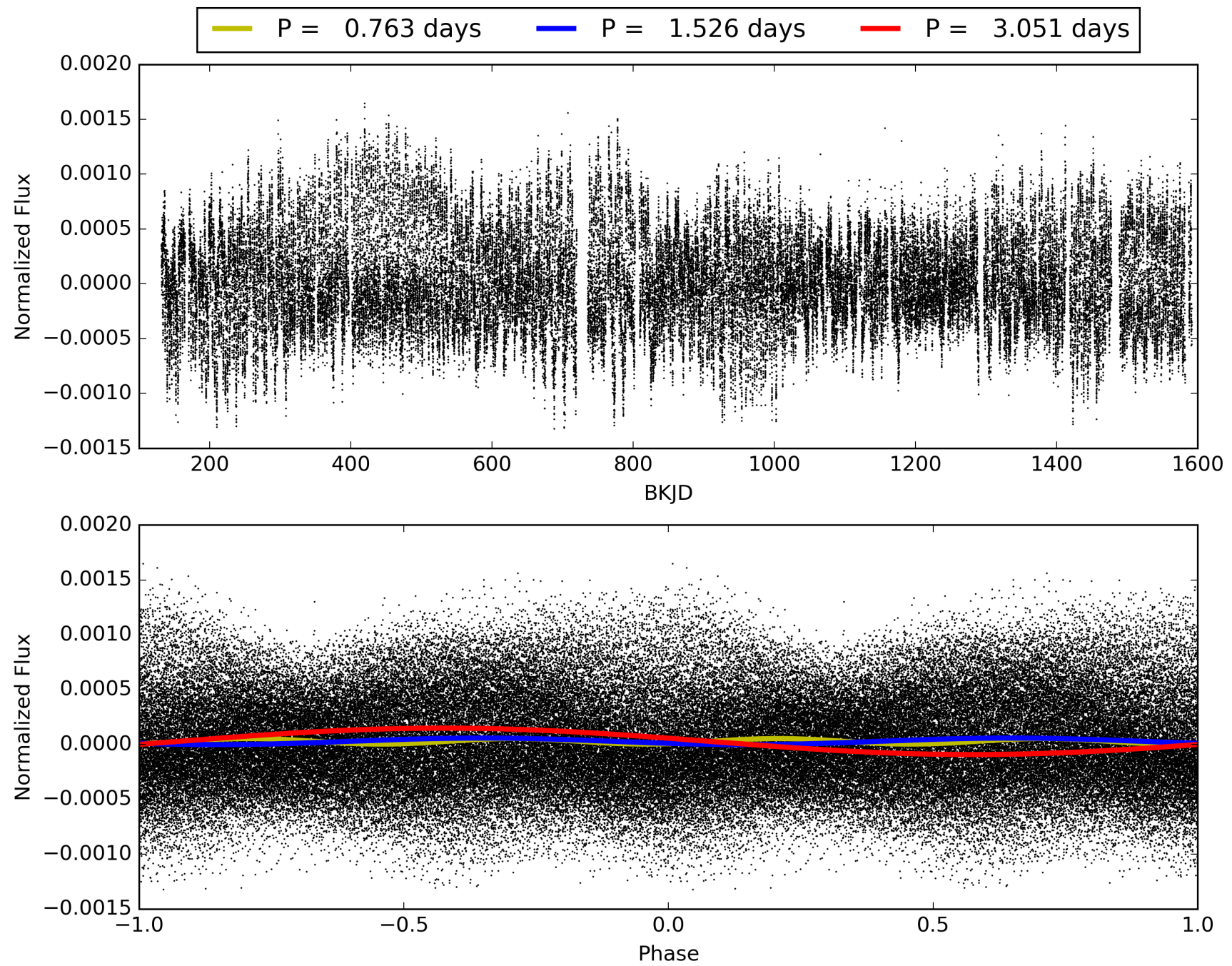
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 13:40:07 Z

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

TCE 008588940-01, PDC Light Curves

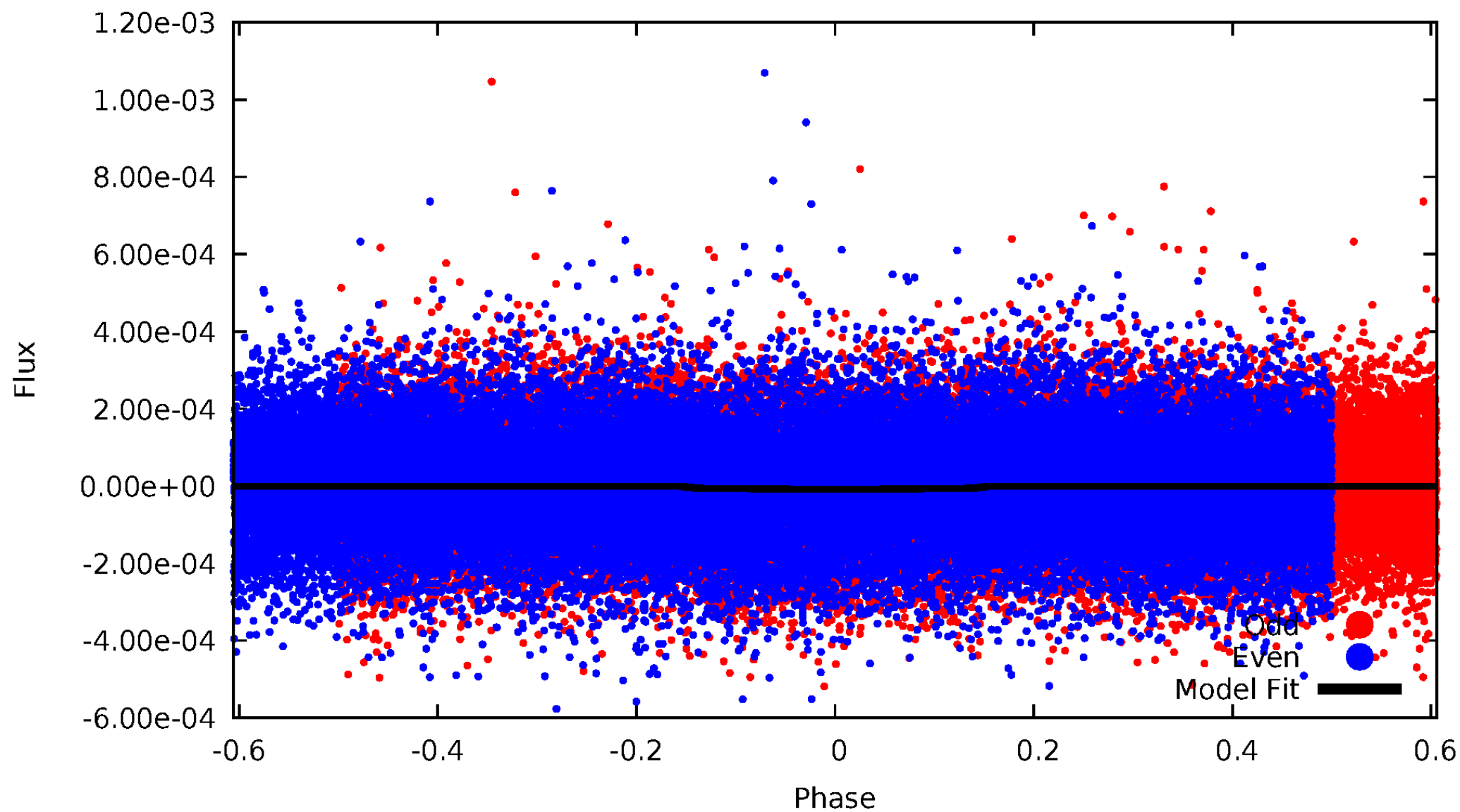


TCE 008588940-01



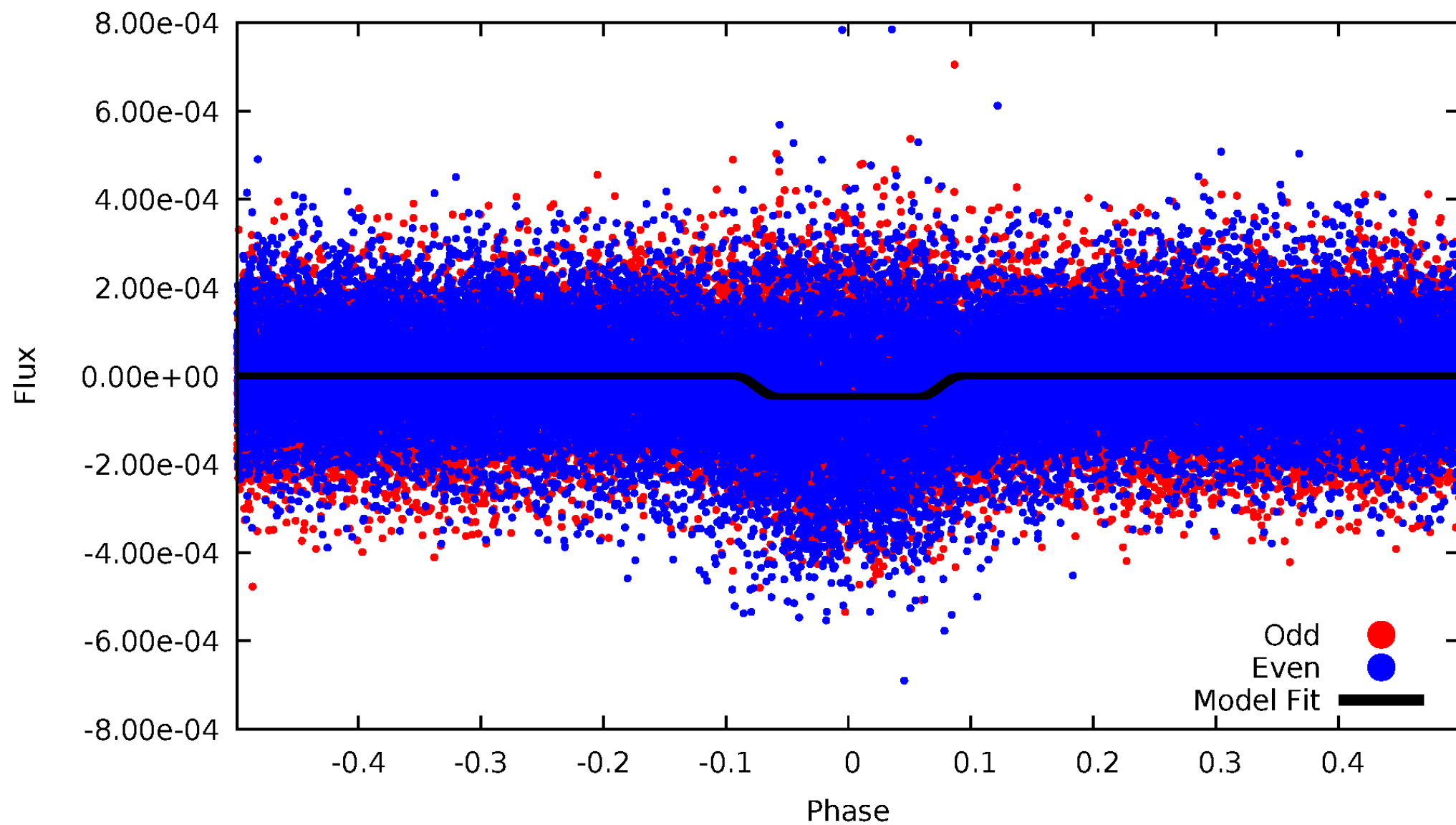
DV Odd/Even

TCE 008588940-01

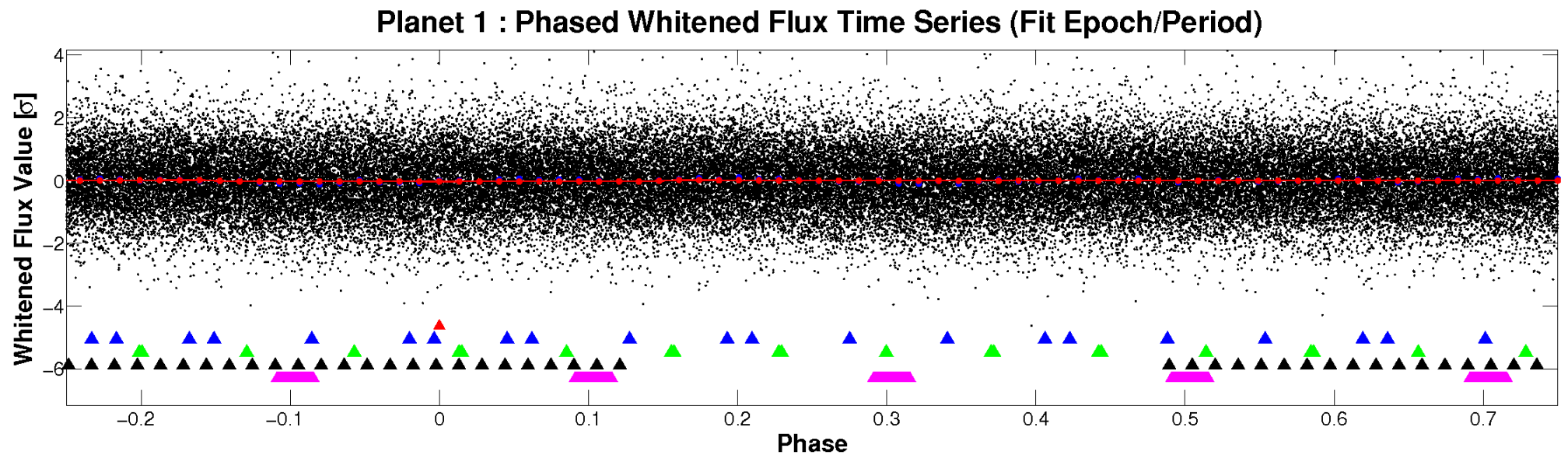
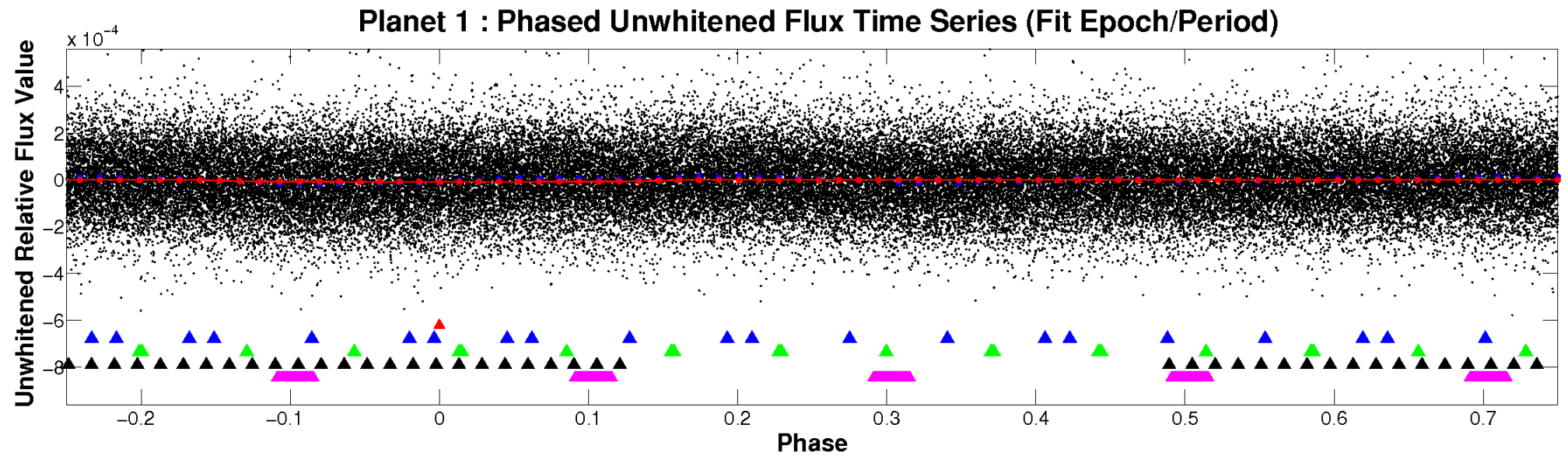


ALT Odd/Even

TCE 008588940-01

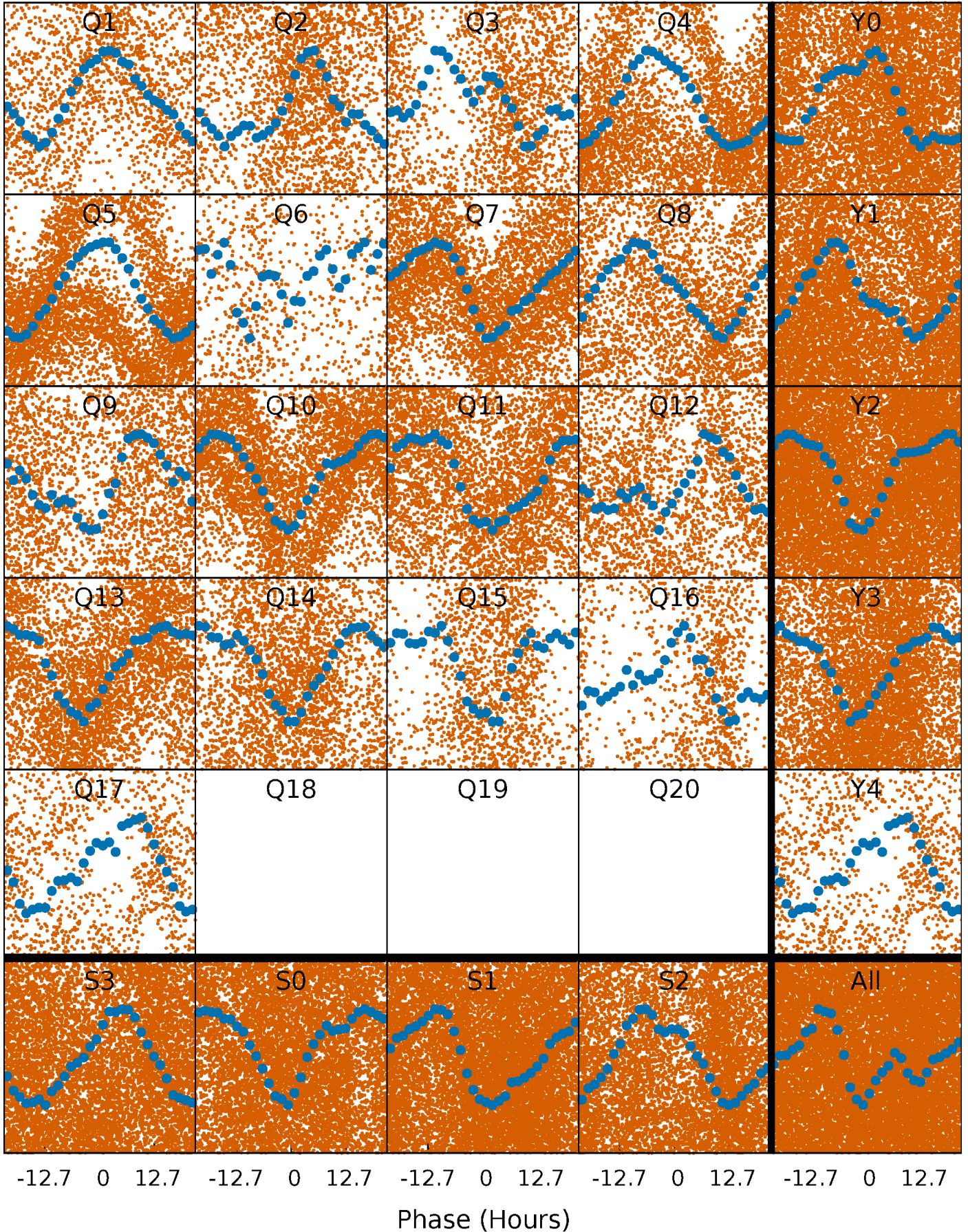


Non-Whitened Vs. Whitened Light Curve



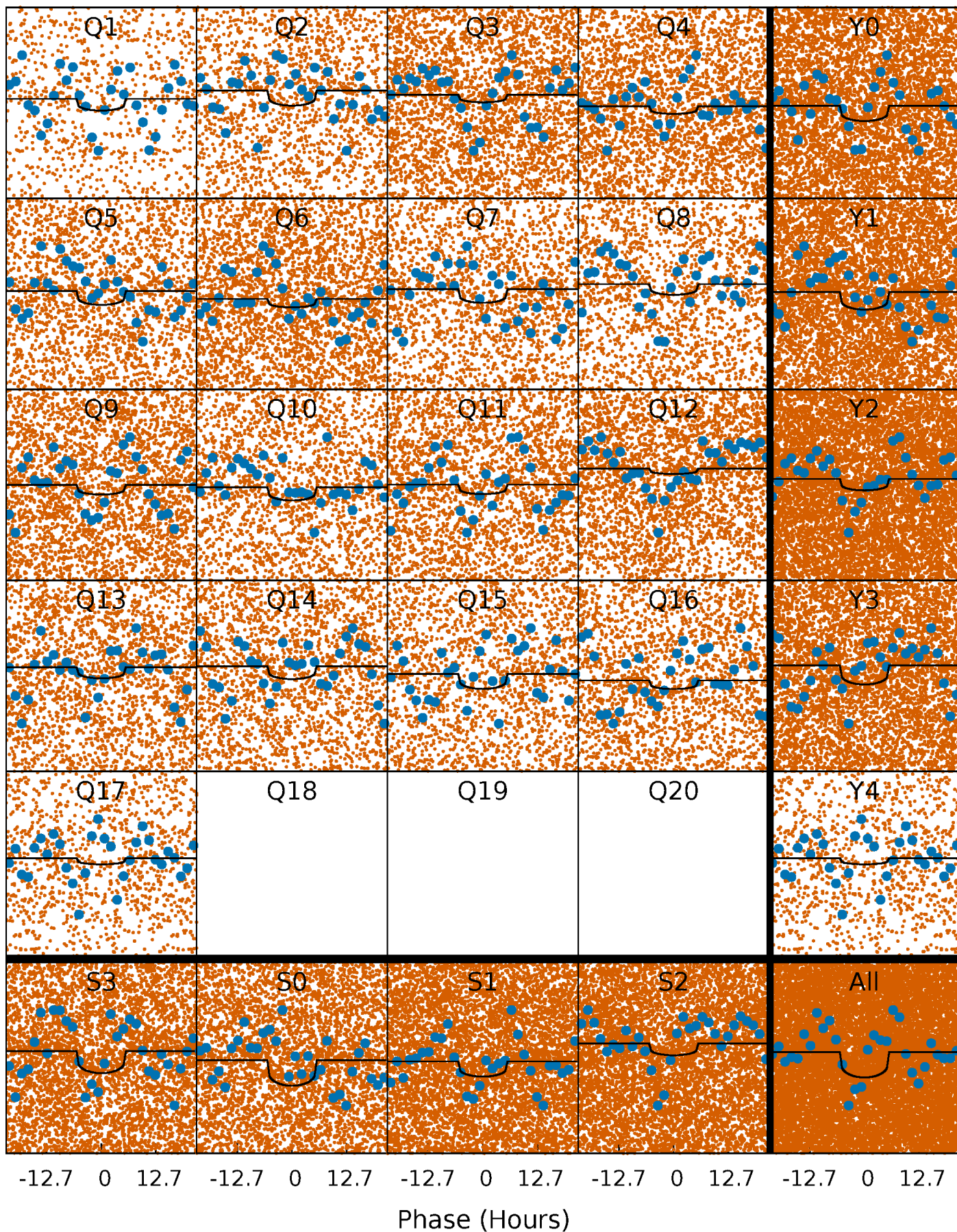
PDC Quarter-Phased Transit Curves

TCE 008588940-01 P= 1.525702 Days $T_0=132.636669$ (BKJD)



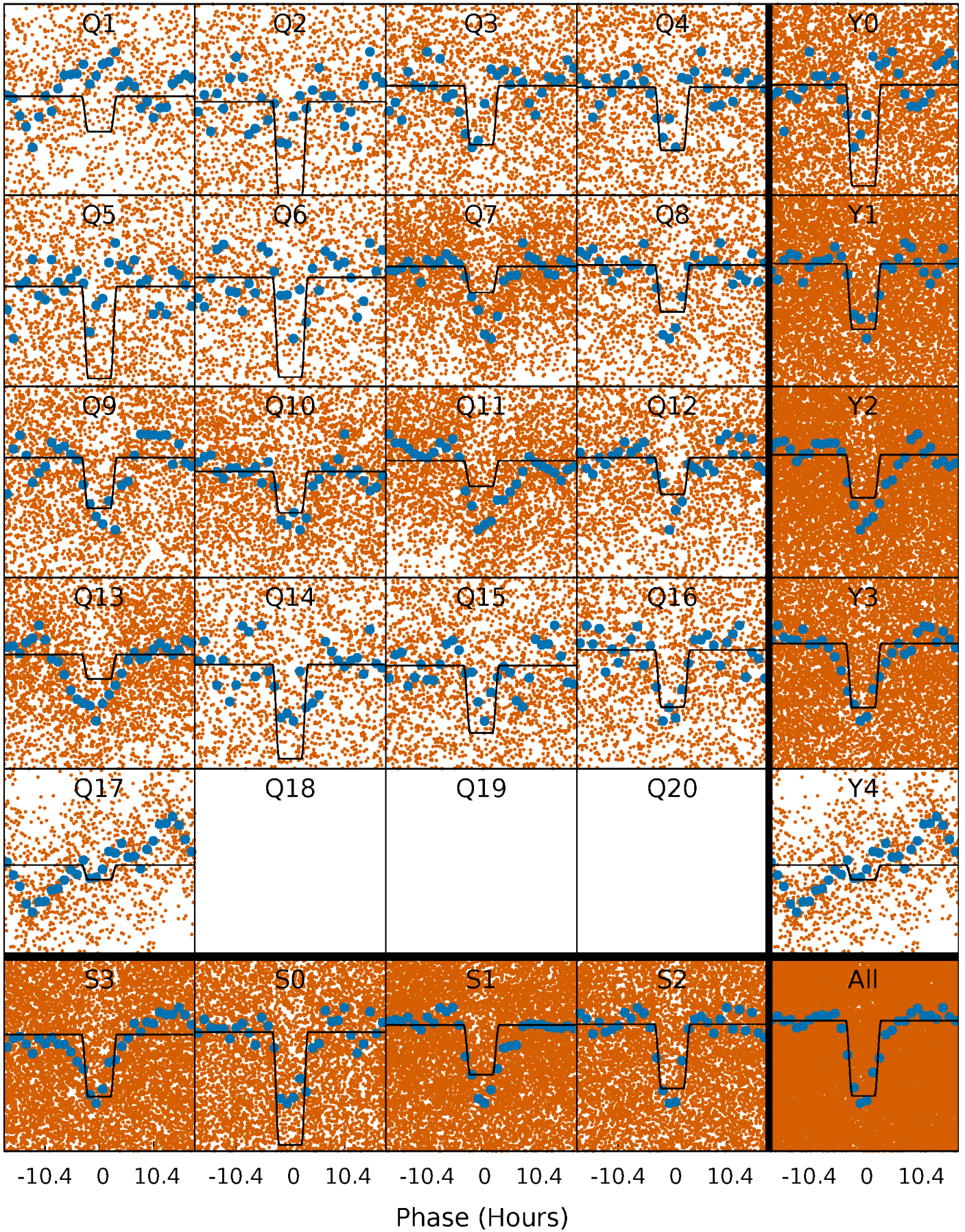
DV Quarter-Phased Transit Curves

TCE 008588940-01 P= 1.525702 Days $T_0=132.636669$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

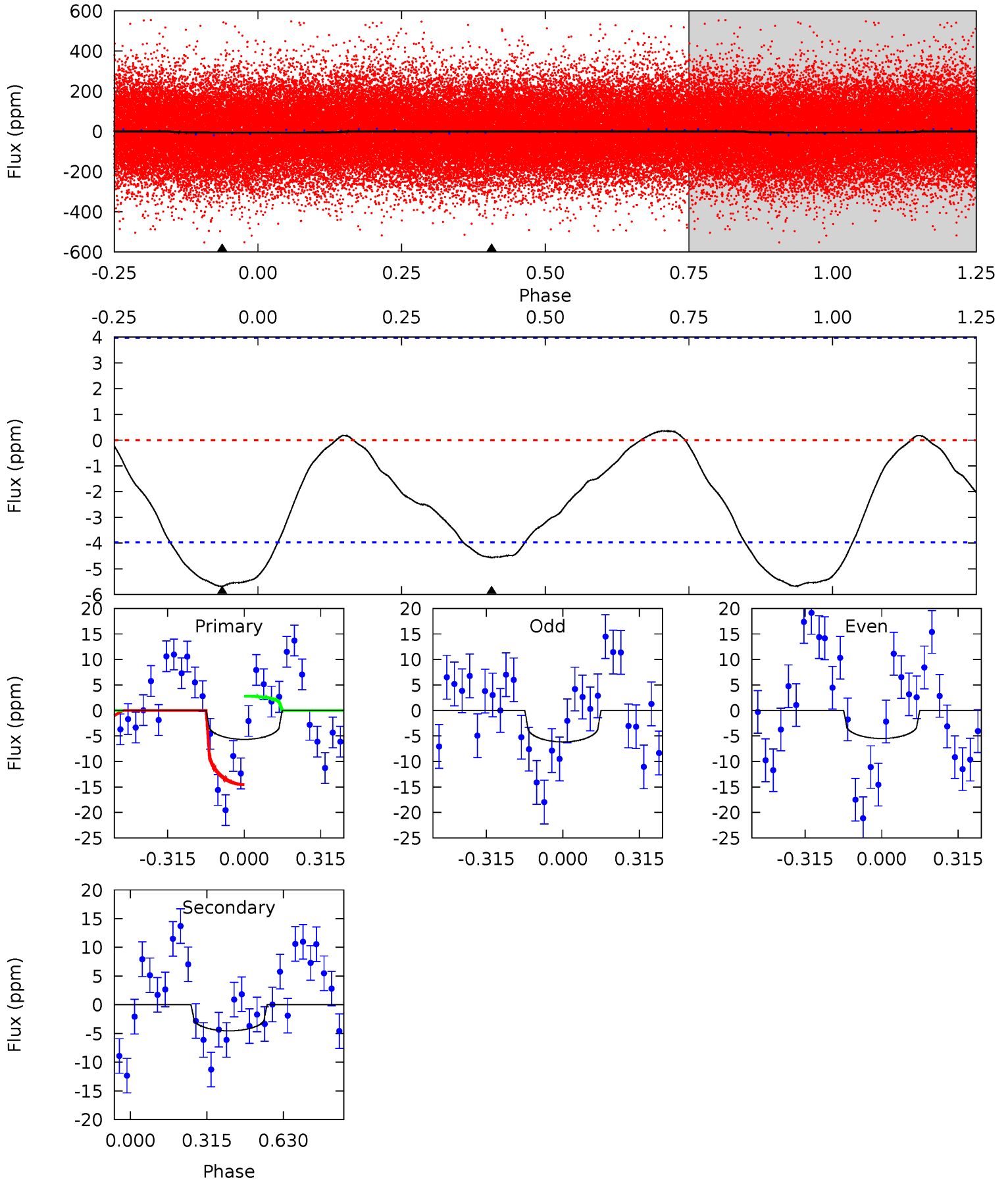
TCE 008588940-01 P= 1.525509 Days $T_0=132.642572$ (BKJD)



DV Model-Shift Uniqueness Test

008588940-01, P = 1.525702 Days, E = 131.110967 Days

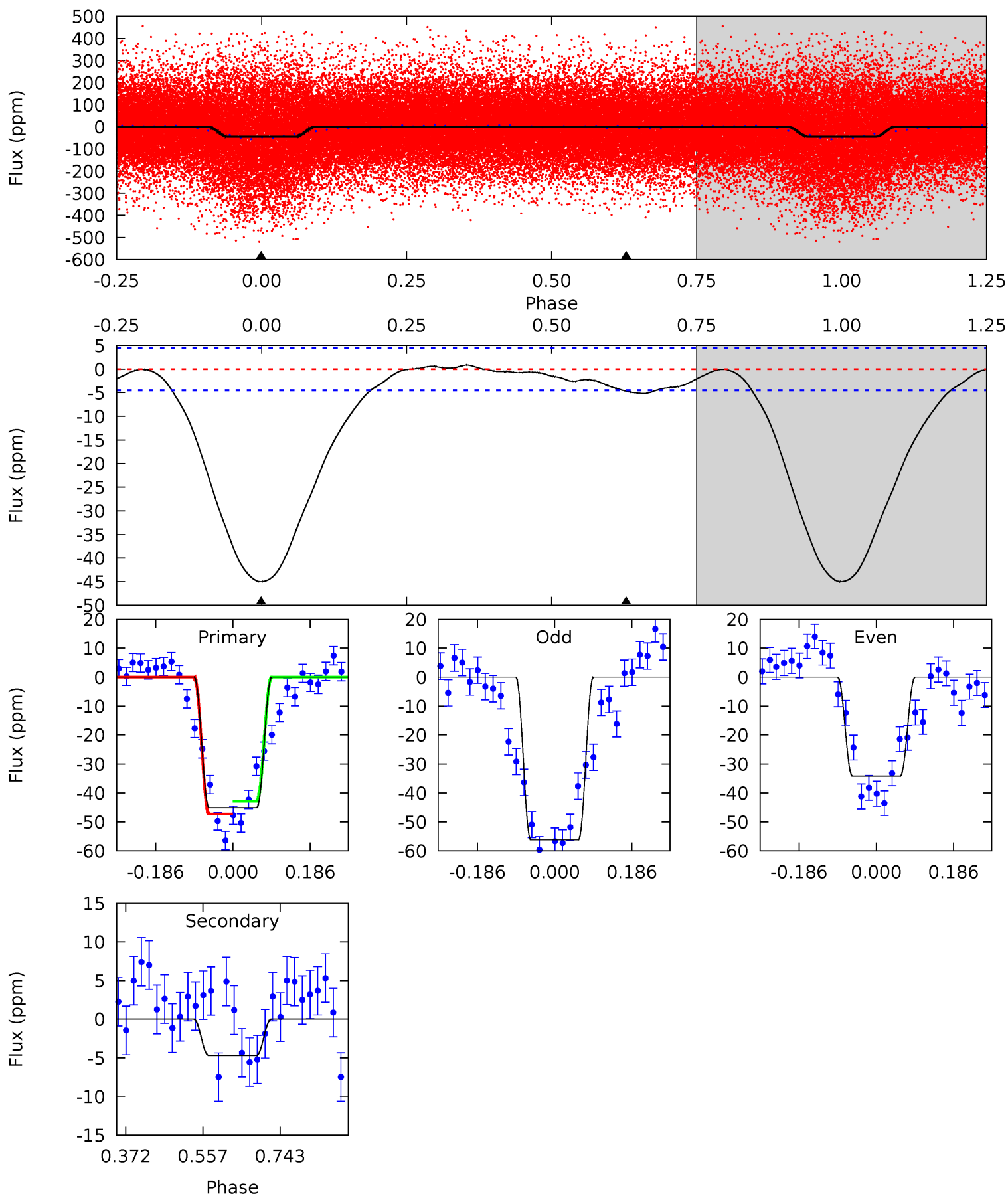
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.18	4.95	0	0	4.32	1.00	0.31	6.18	6.18	4.95	4.95	0.37	0.81	0.06	6.23



Alt Model-Shift Uniqueness Test

008588940-01, P = 1.525509 Days, E = 131.117063 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
44.6	4.64	0	0	4.43	1.32	1.28	44.6	44.6	4.64	4.64	11.0	1.01	0.02	2.24



Stellar Parameters For KIC 008588940

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	ρ_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6235^{+171}_{-152}	$3.707^{+0.312}_{-0.098}$	$-0.140^{+0.300}_{-0.250}$	$2.786^{+0.430}_{-1.003}$	$1.442^{+0.231}_{-0.308}$	$0.094^{+0.192}_{-0.029}$
	+3%/-2%	+8%/-3%	+214%/-179%	+15%/-36%	+16%/-21%	+205%/-31%
Source	PHO1	FLK73	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 008588940-01 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-5 ± 1	$0.96^{+0.79}_{-0.60}$	3702^{+215}_{-335}	4937^{+3338}_{-1280}	$2.394^{+15.796}_{-1.683}$
Alt.	-5 ± 1	$1.95^{+0.95}_{-0.78}$	3699^{+220}_{-319}	3462^{+1010}_{-6126}	$0.593^{+1.139}_{-0.331}$

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

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

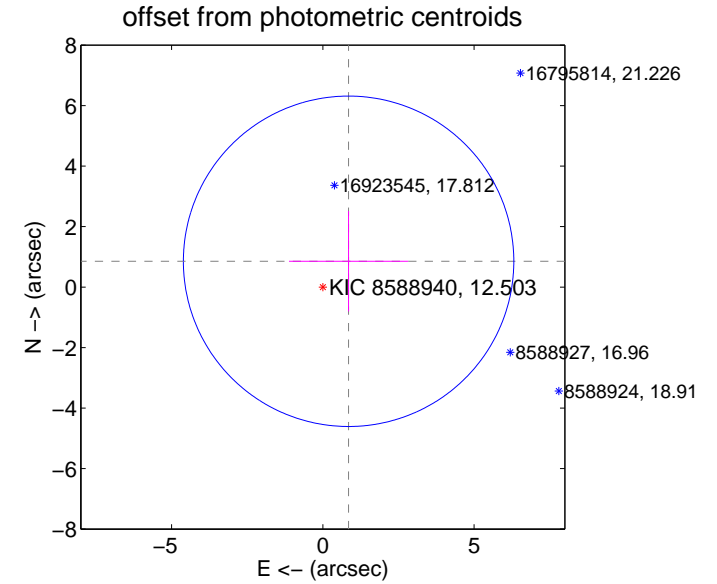
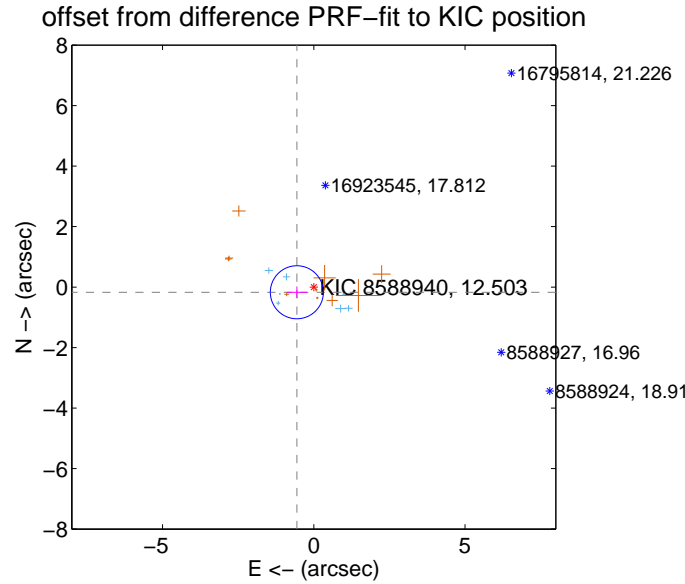
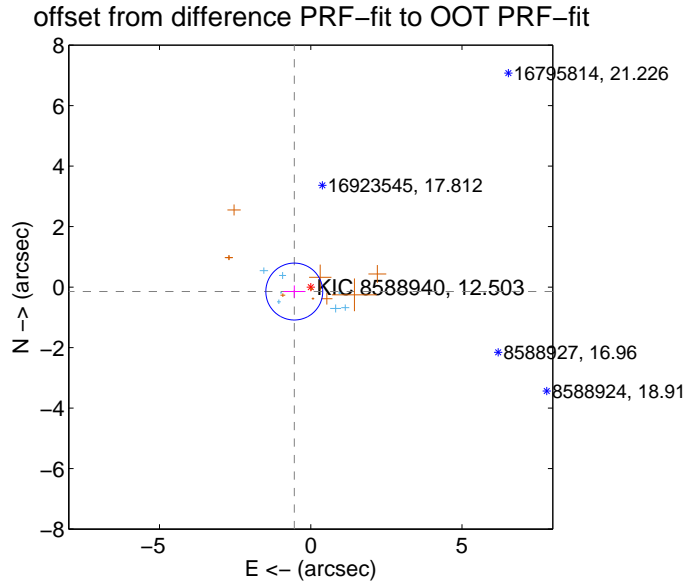
DV Centroid Data

Supplemental centroid analysis for 008588940-01. Kepler magnitude: 12.50. Transit SNR 3.58

There are 7 quarters with good PRF difference image offsets

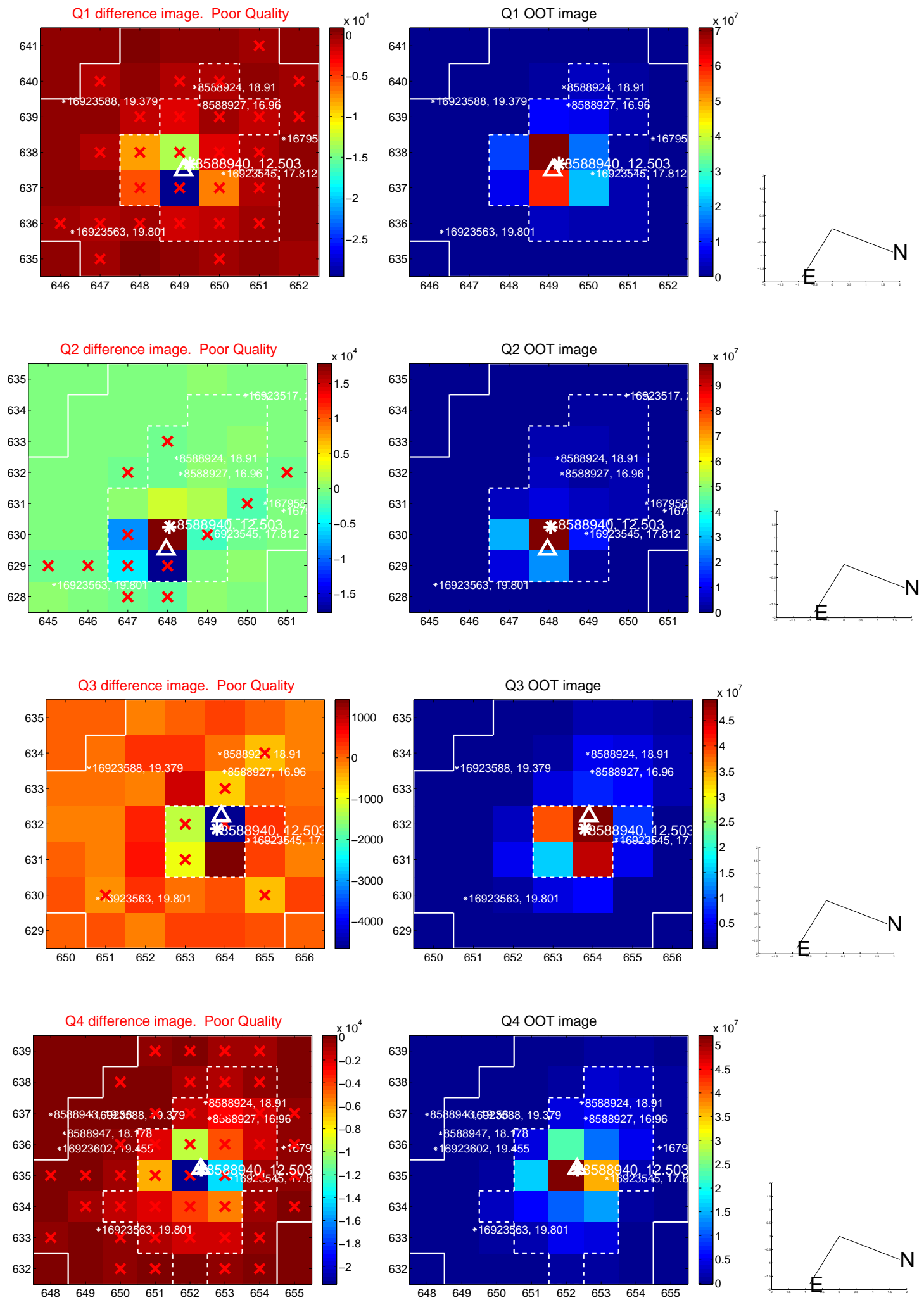
The direct PRF centroid is offset from the target star catalog position by about 0.04 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.564 ± 0.314	1.80	0.544 ± 0.357	-0.147 ± 0.204
PRF-fit source offset from KIC position	0.585 ± 0.292	2.00	0.560 ± 0.333	-0.171 ± 0.193
photometric centroid source offset	1.21 ± 1.82	0.66	-0.85 ± 1.97	0.85 ± 1.66

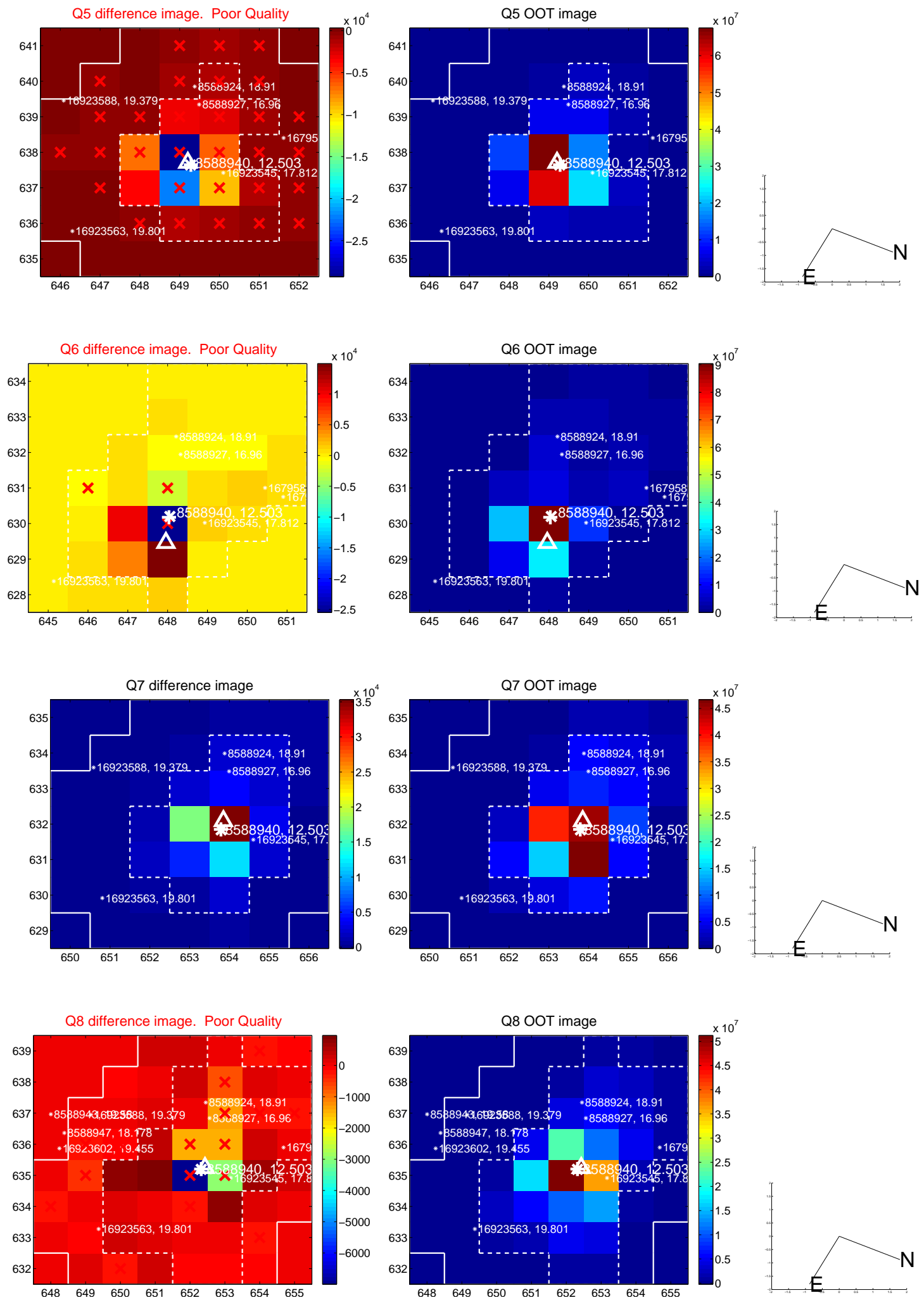


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

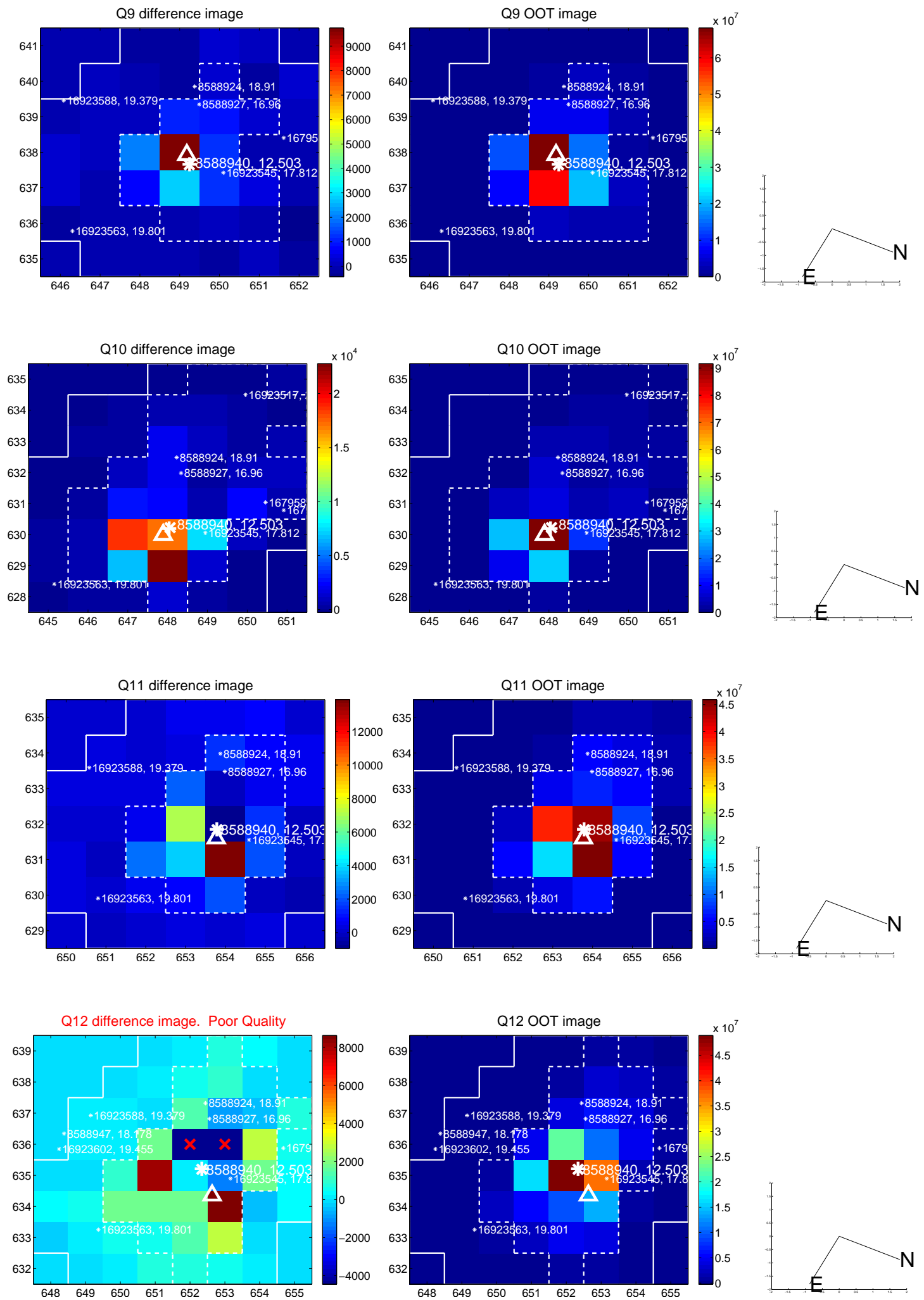
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



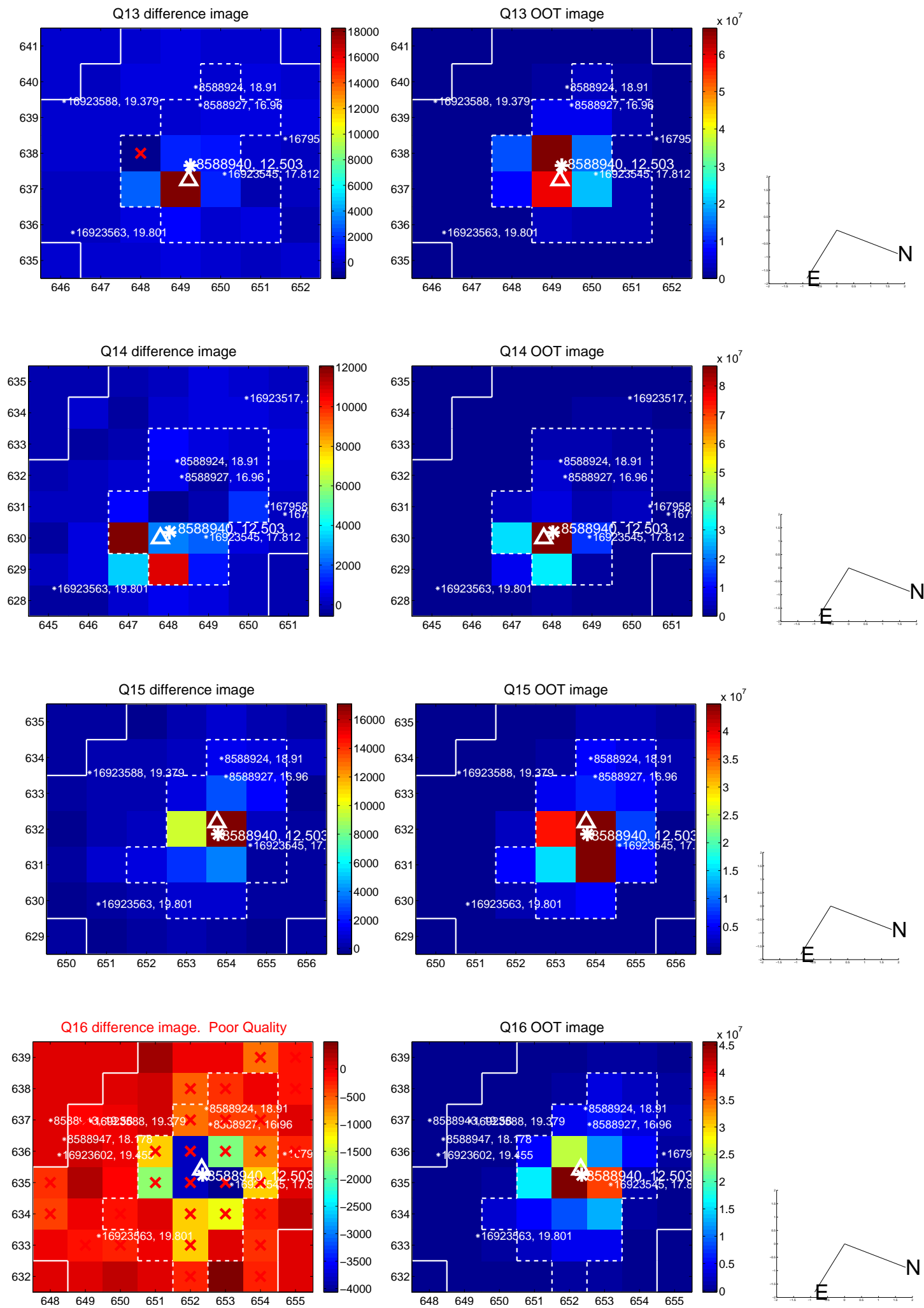
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



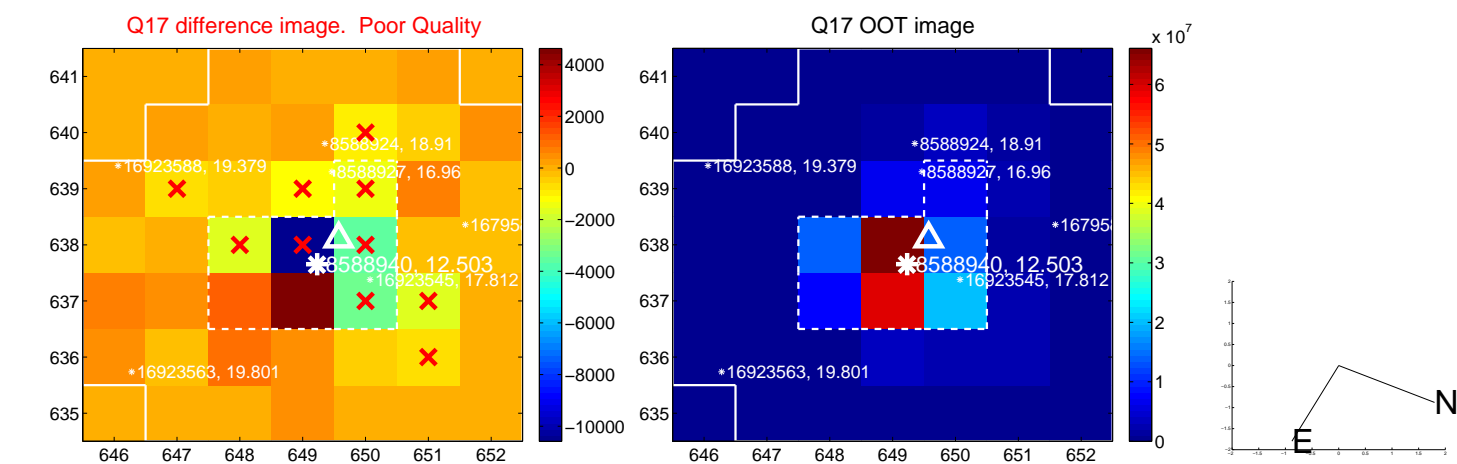
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



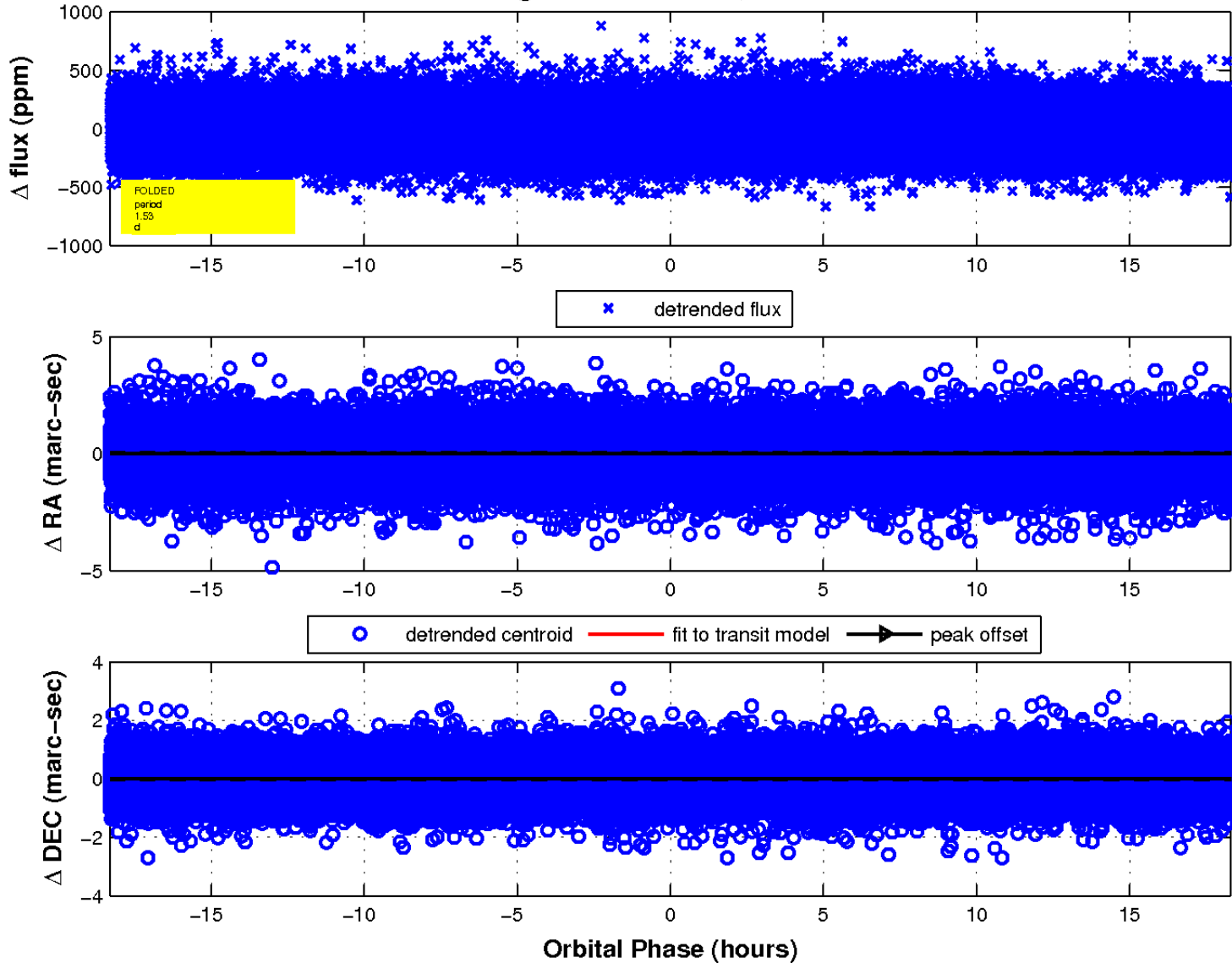
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



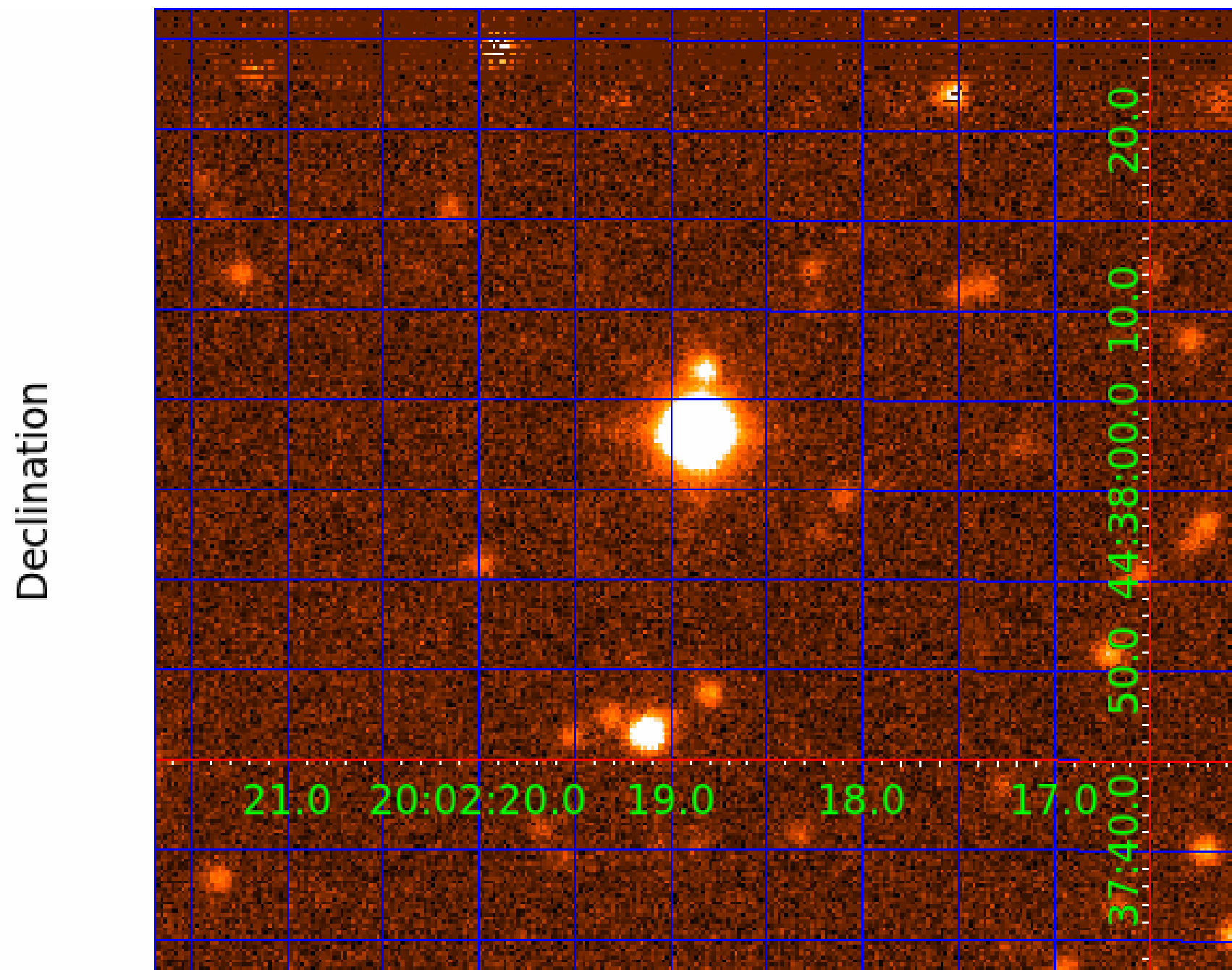
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



fluxWeightedCentroids, Planet 1 of 5



UKIRT Image



KIC 008588940

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})
008588940-01	OBS	No	1.525702	132.636669	8.2	11.086	7.7	3.6	2.79	6235	0.83	12234.93
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Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008588940-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV
008588940-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT

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

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

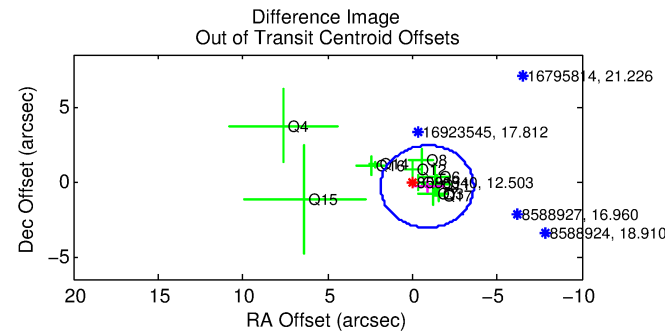
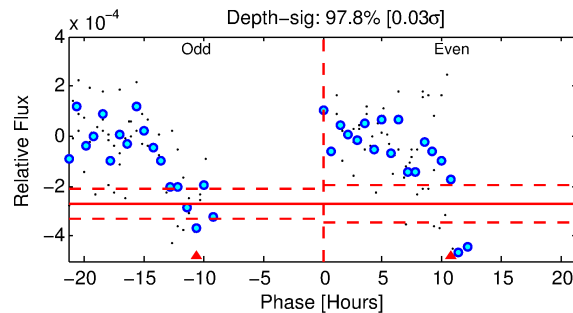
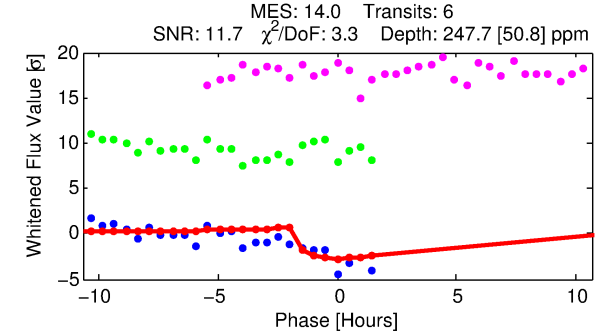
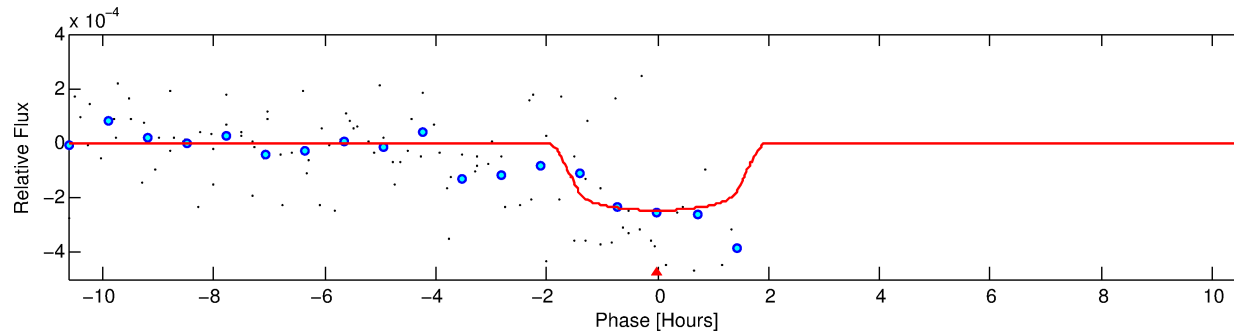
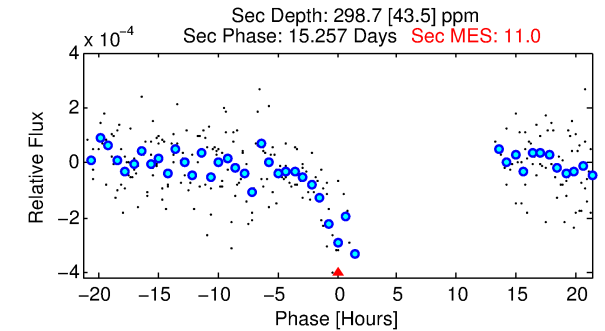
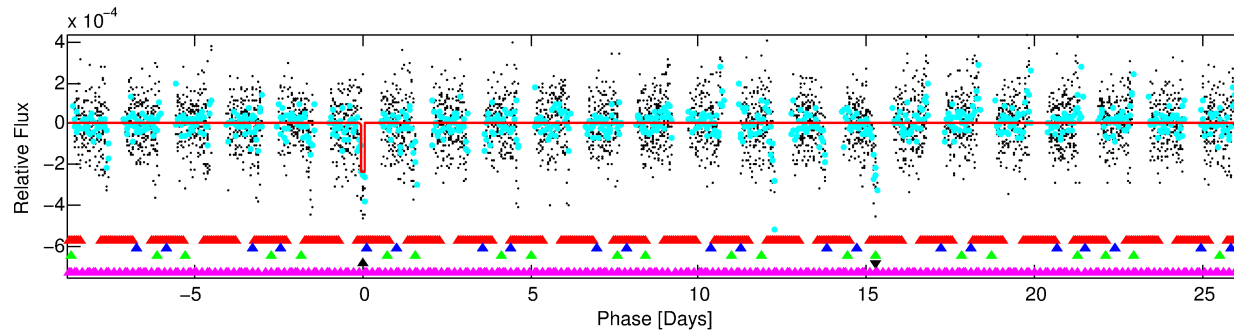
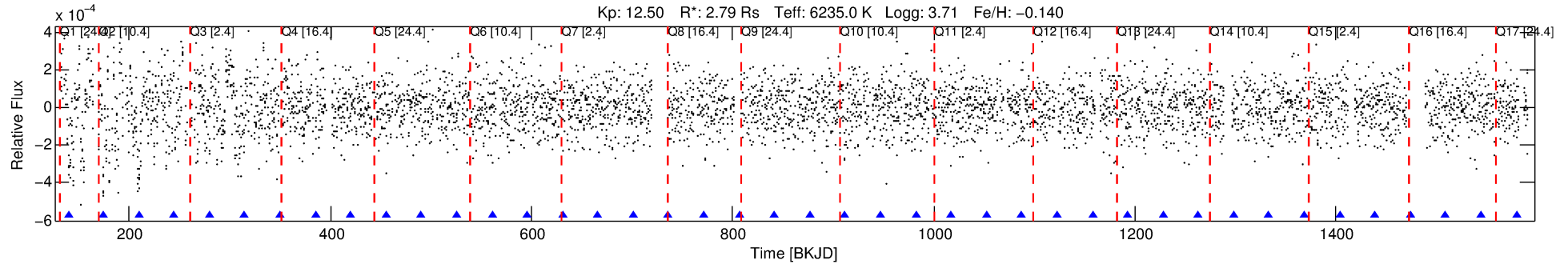
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008588940-04

No Significant Match Found

DV One-Page Summary

KIC: 8588940 Candidate: 4 of 5 Period: 35.115 d



DV Fit Results:

Period = 35.11465 [0.00522] d
Epoch = 139.4862 [0.0169] BKJD
Rp/R* = 0.0167 [0.0232]
a/R* = 37.77 [288.08]
b = 0.89 [1.83]
Seff = 186.89 [102.19]
Teq = 943 [129] K
Rp = 5.09 [7.28] Re
a = 0.2371 [0.0804] AU
Ag = 357.23 [1008.78] [0.35σ]
Teffp = 6337 [4396] K [1.23σ]

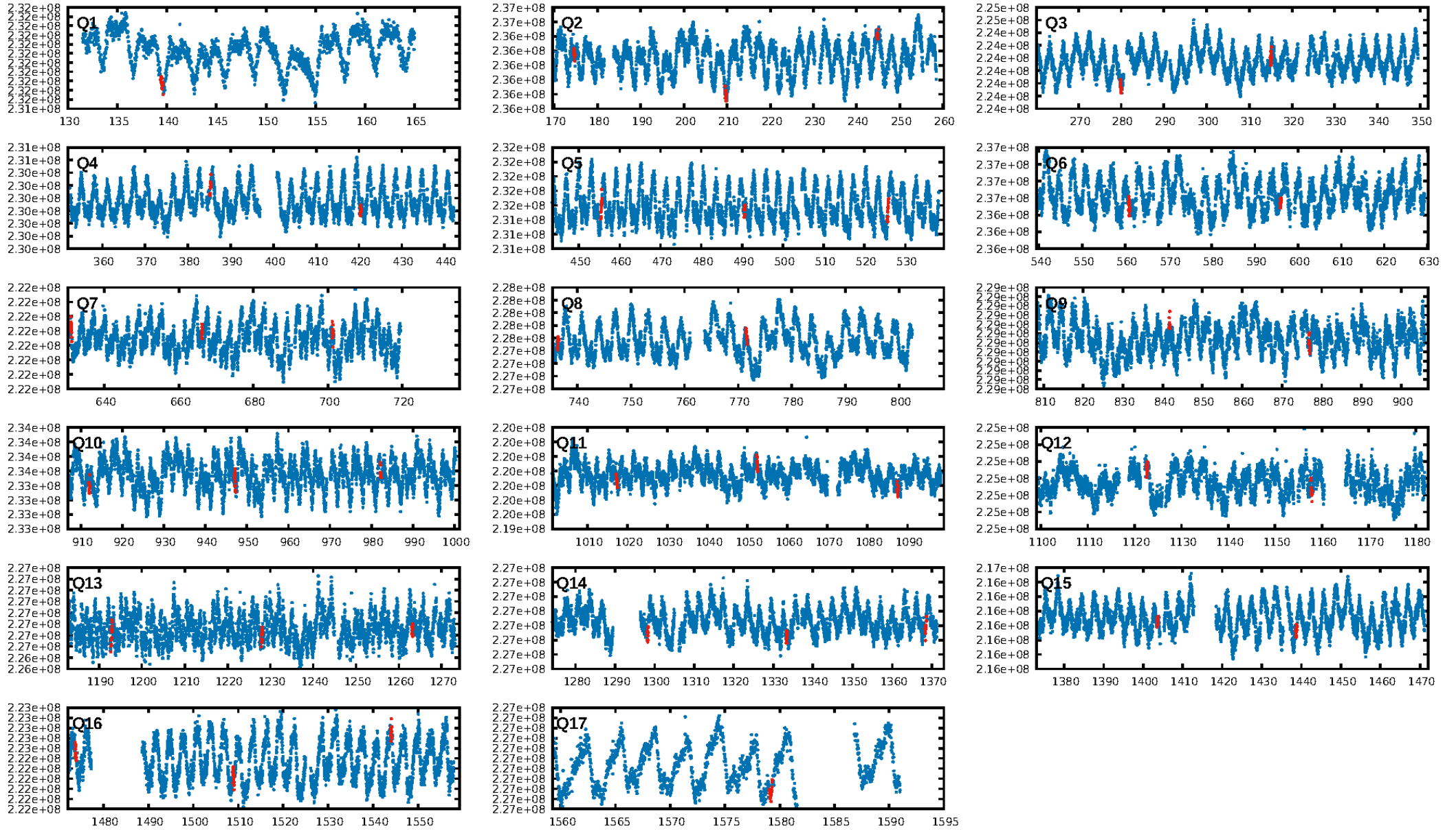
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [203.71σ]
LongPeriod-sig: 100.0% [92.56σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 21.0%
Bootstrap-pfa: 6.67e-31
RollingBand-fgt: 1.00 [5/5]
GhostDiagnostic-chr: 0.8023
Centroid-sig: 92.3%
Centroid-so: 0.186 arcsec [0.36σ]
OotOffset-rm: 0.932 arcsec [1.02σ]
KicOffset-rm: 0.976 arcsec [1.21σ]
OotOffset-st: 2/4/4/2 [12]
KicOffset-st: 2/4/4/2 [12]
DiffImageQuality-fgm: 0.42 [5/12]
DiffImageOverlap-fno: 0.18 [3/17]

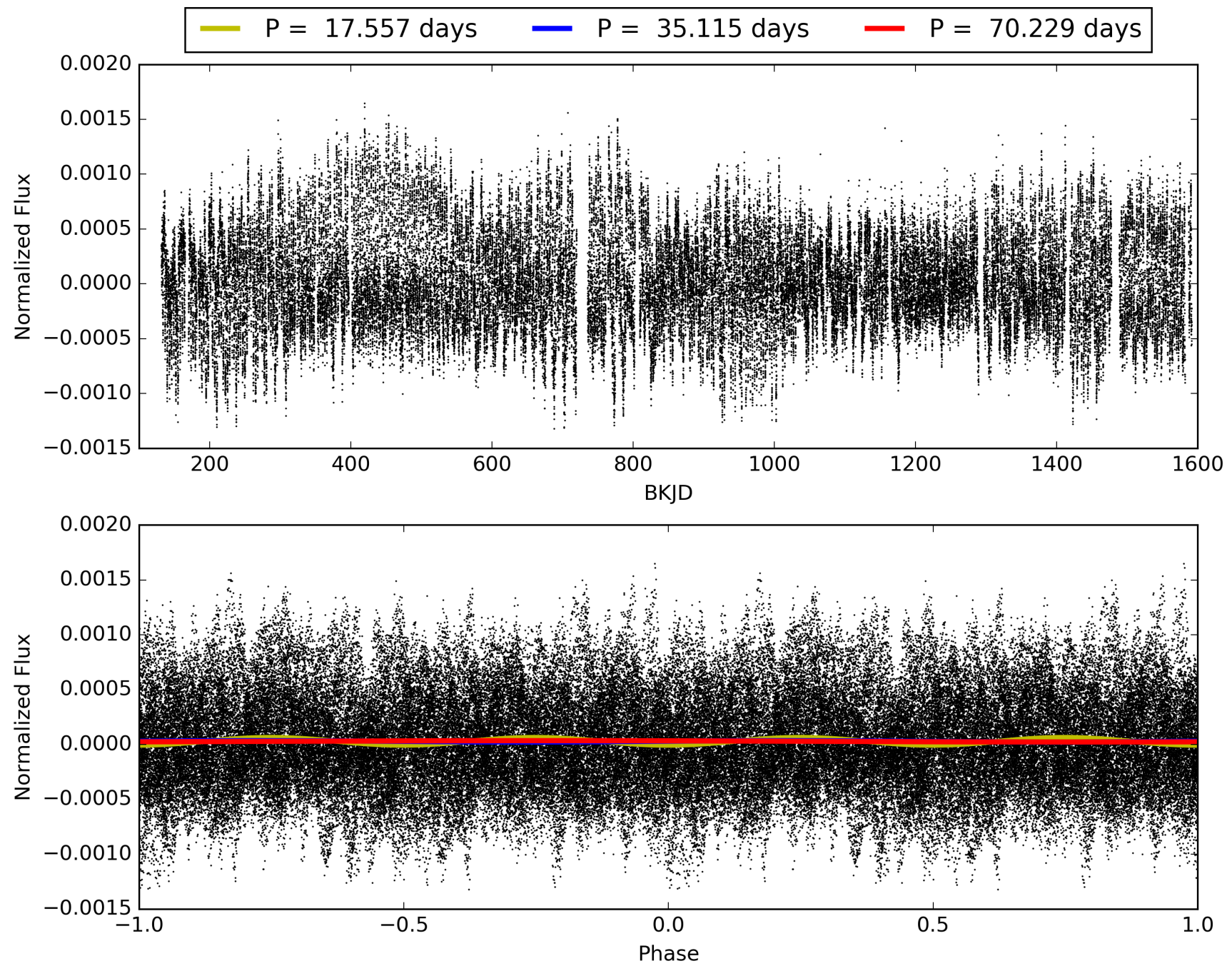
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 00588940-04, PDC Light Curves

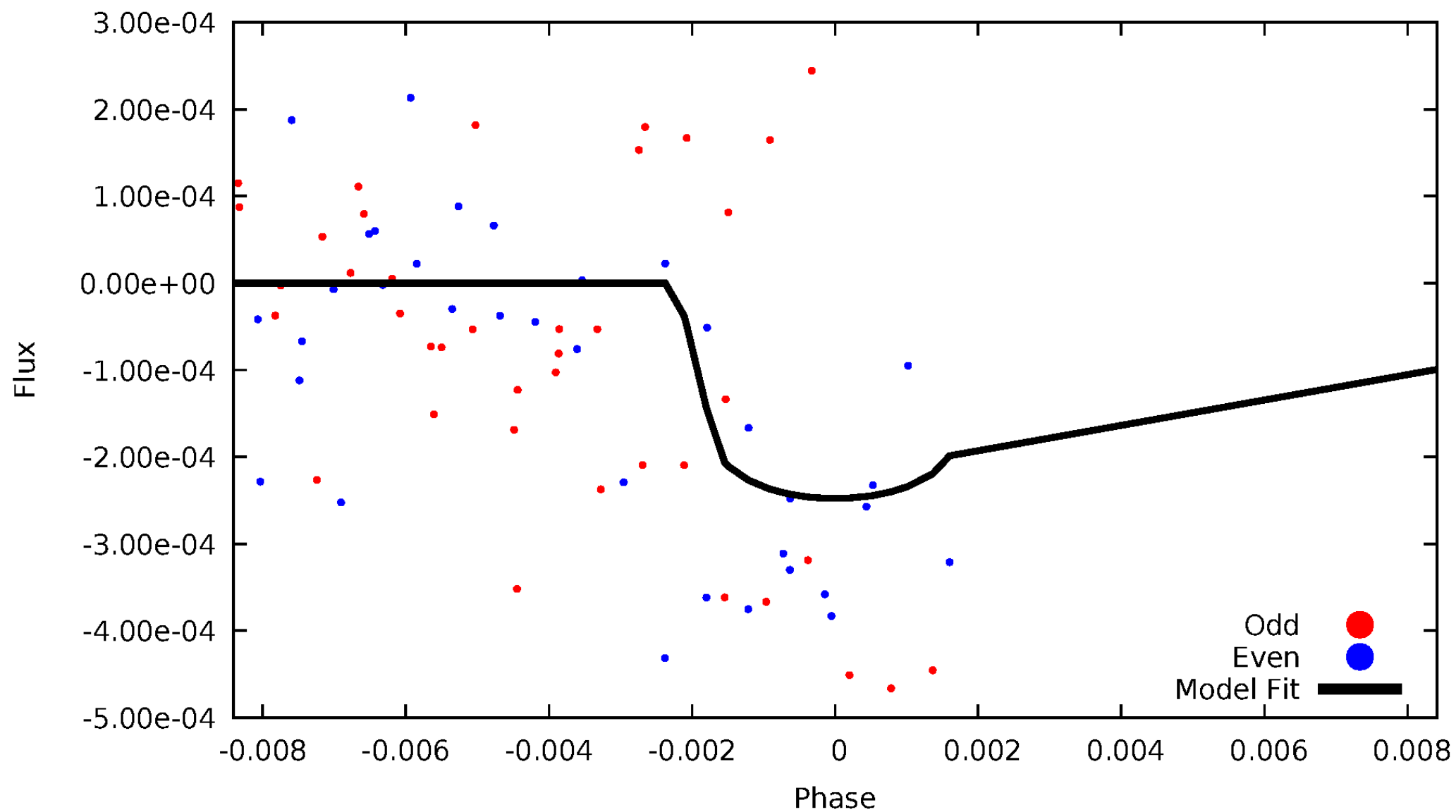


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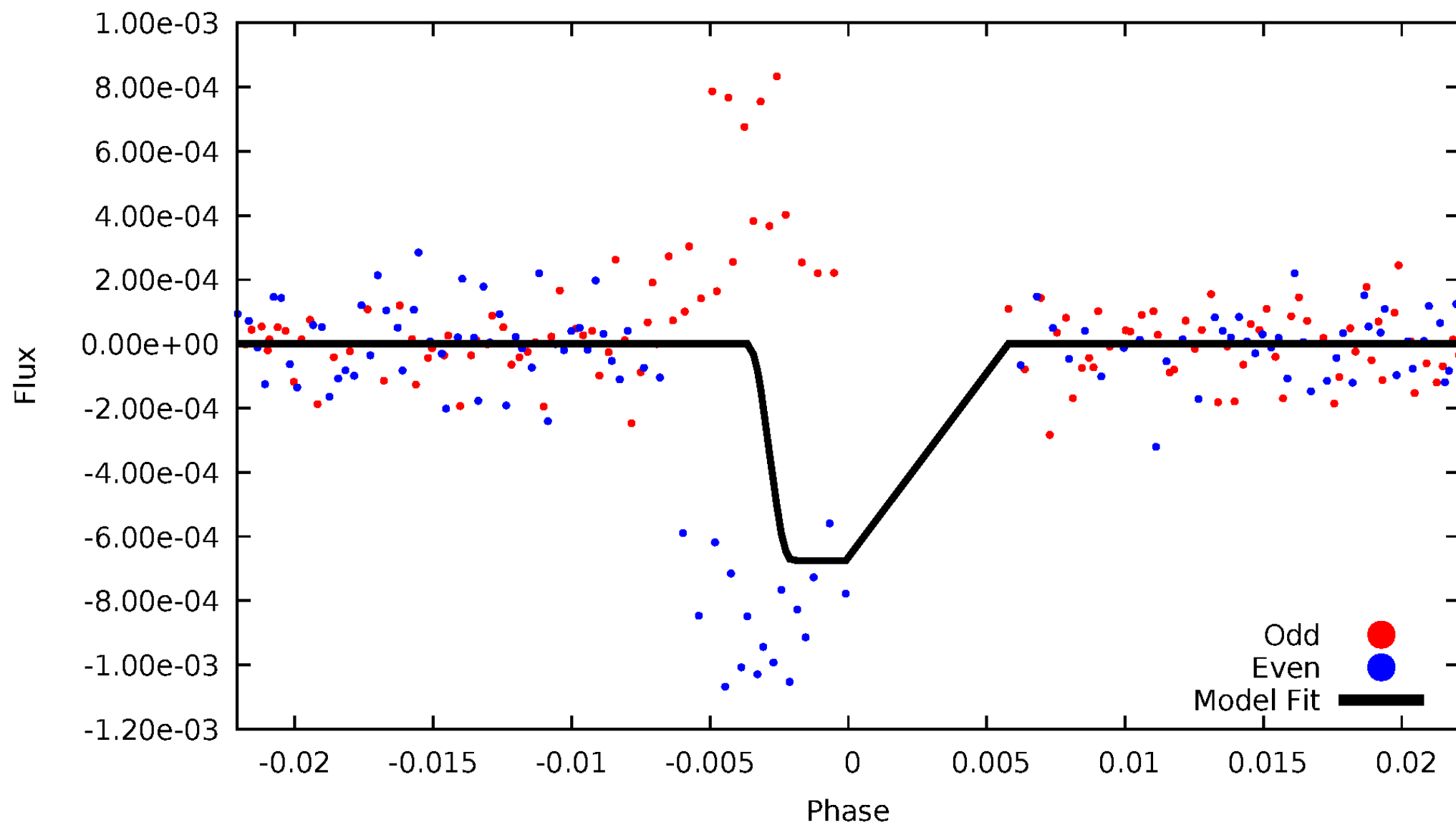
DV Odd/Even

TCE 008588940-04



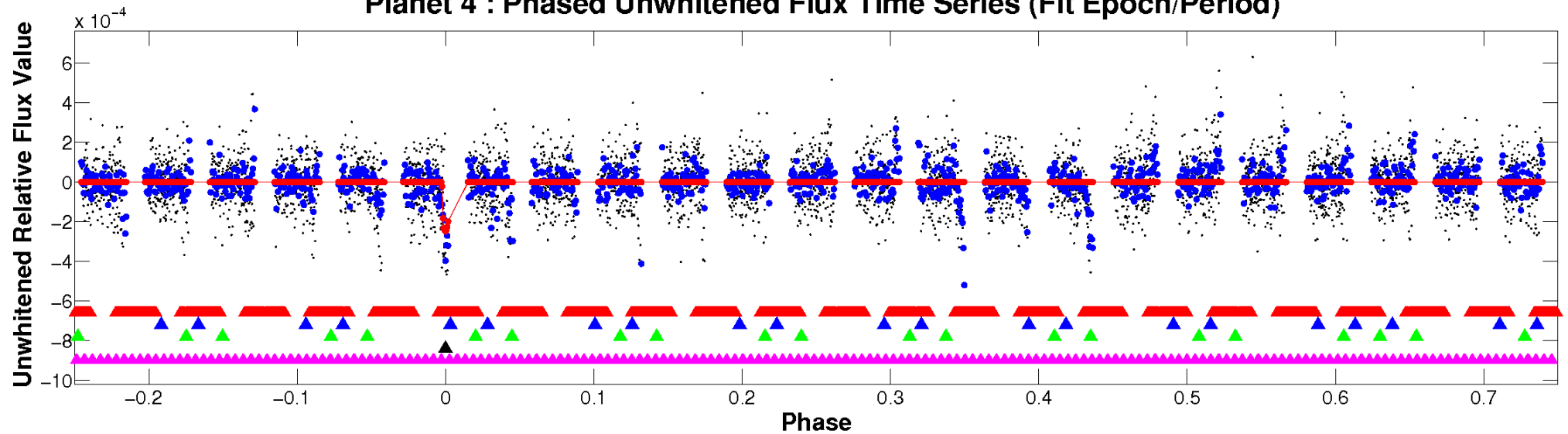
ALT Odd/Even

TCE 008588940-04

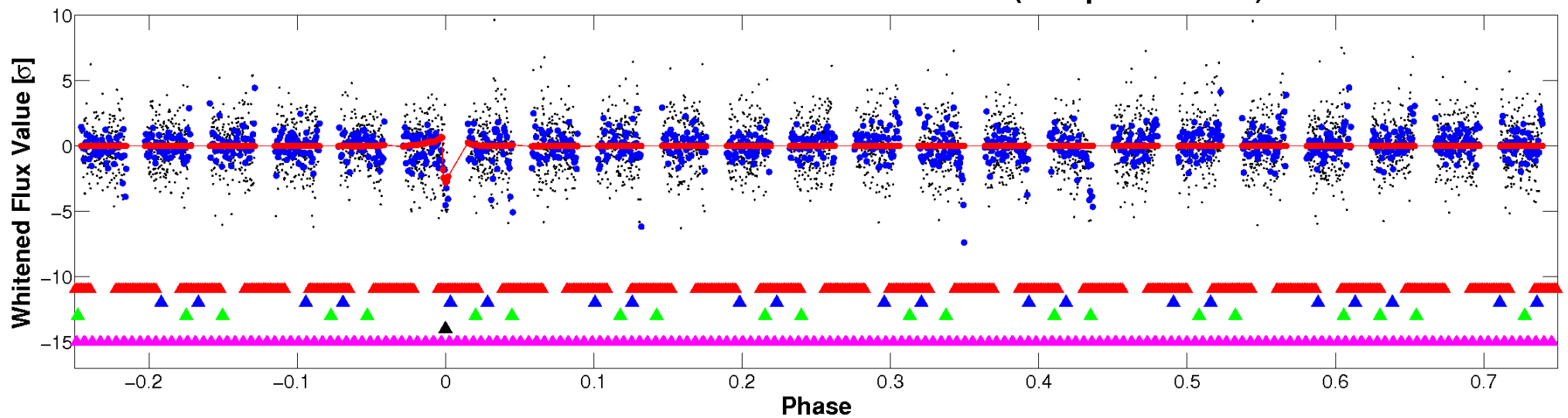


Non-Whitened Vs. Whitened Light Curve

Planet 4 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

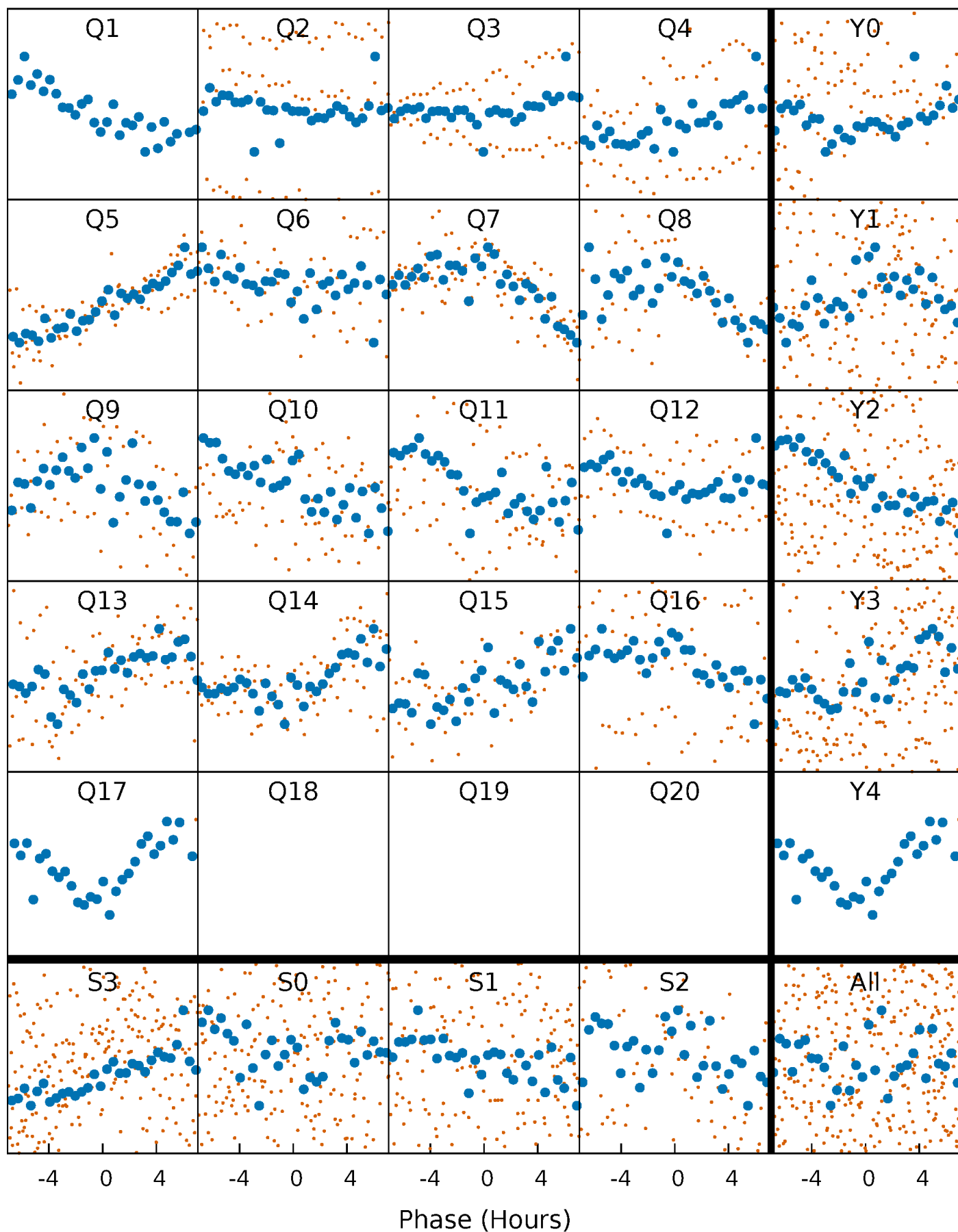


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



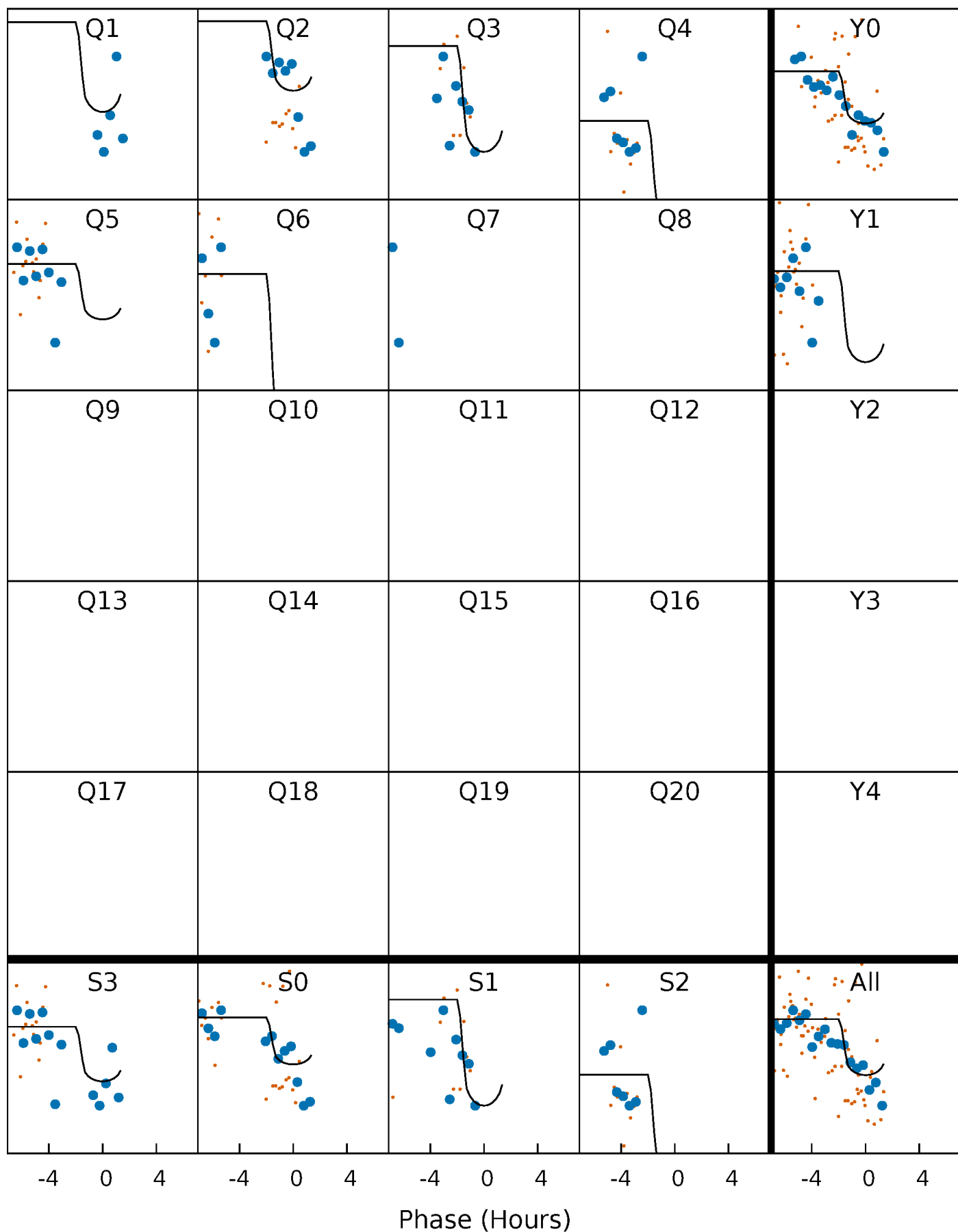
PDC Quarter-Phased Transit Curves

TCE 008588940-04 P= 35.114645 Days $T_0=139.486242$ (BKJD)



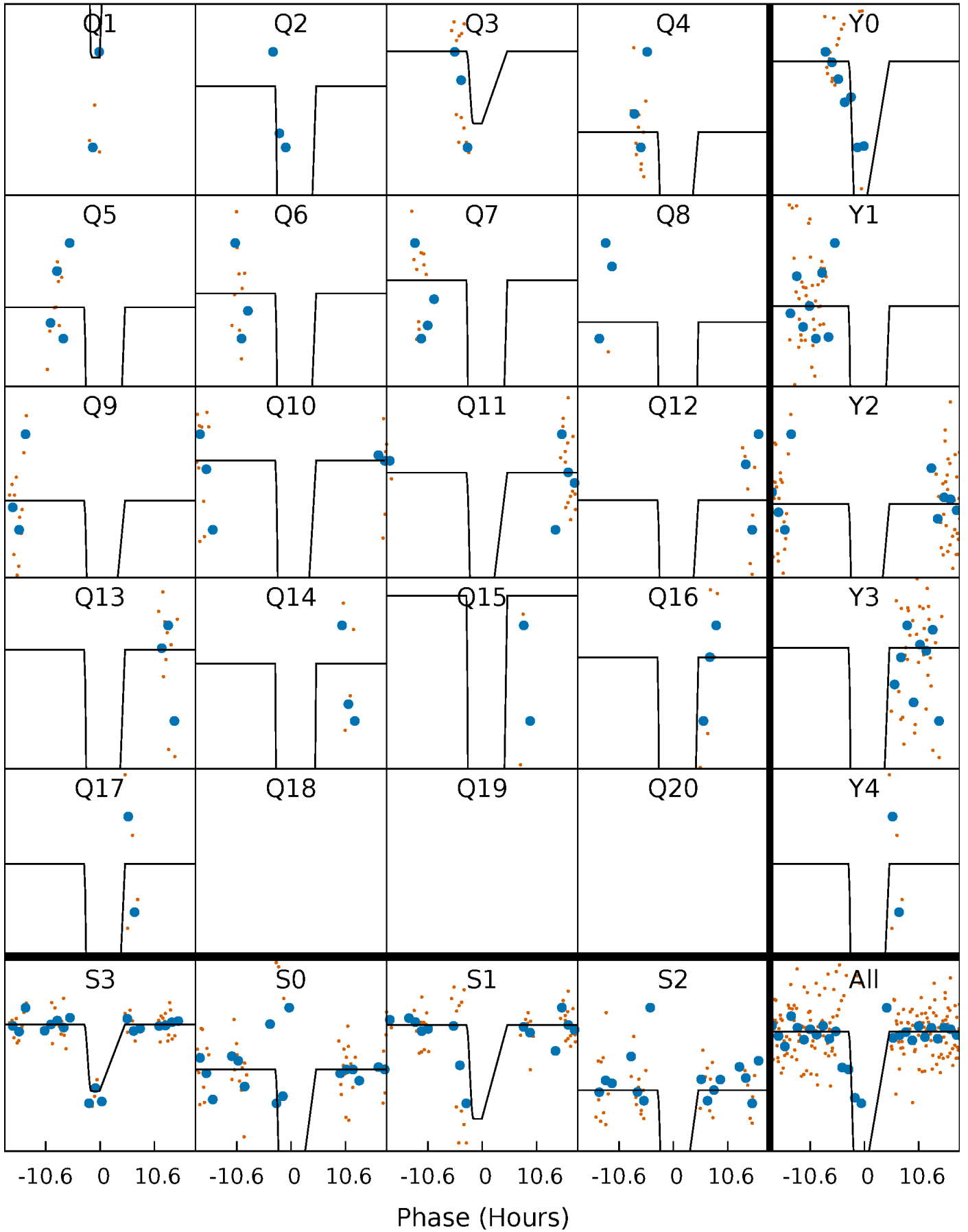
DV Quarter-Phased Transit Curves

TCE 008588940-04 $P = 35.114645$ Days $T_0 = 139.486242$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

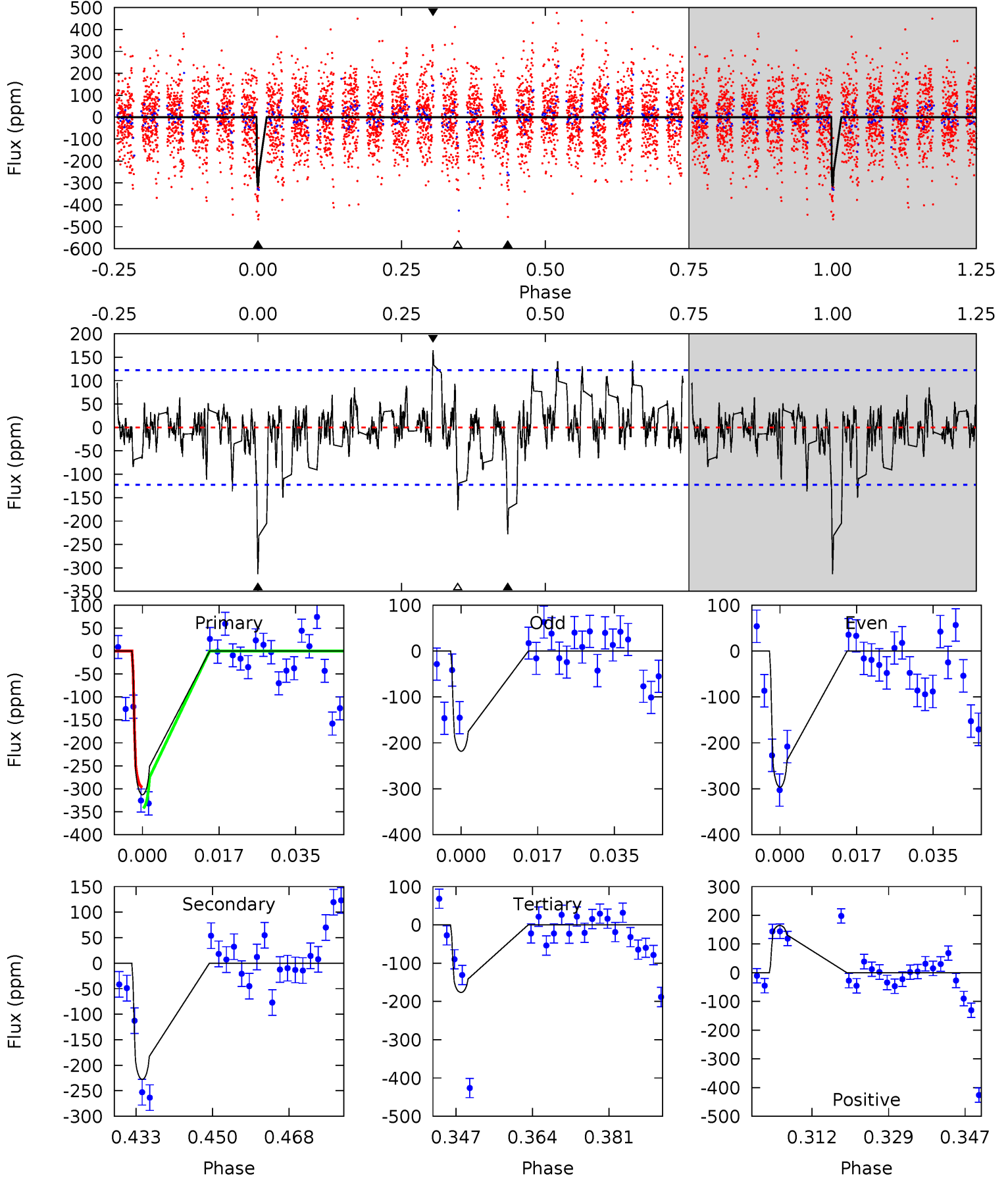
TCE 008588940-04 P= 35.121263 Days $T_0=139.545727$ (BKJD)



DV Model-Shift Uniqueness Test

008588940-04, P = 35.114645 Days, E = 104.371597 Days

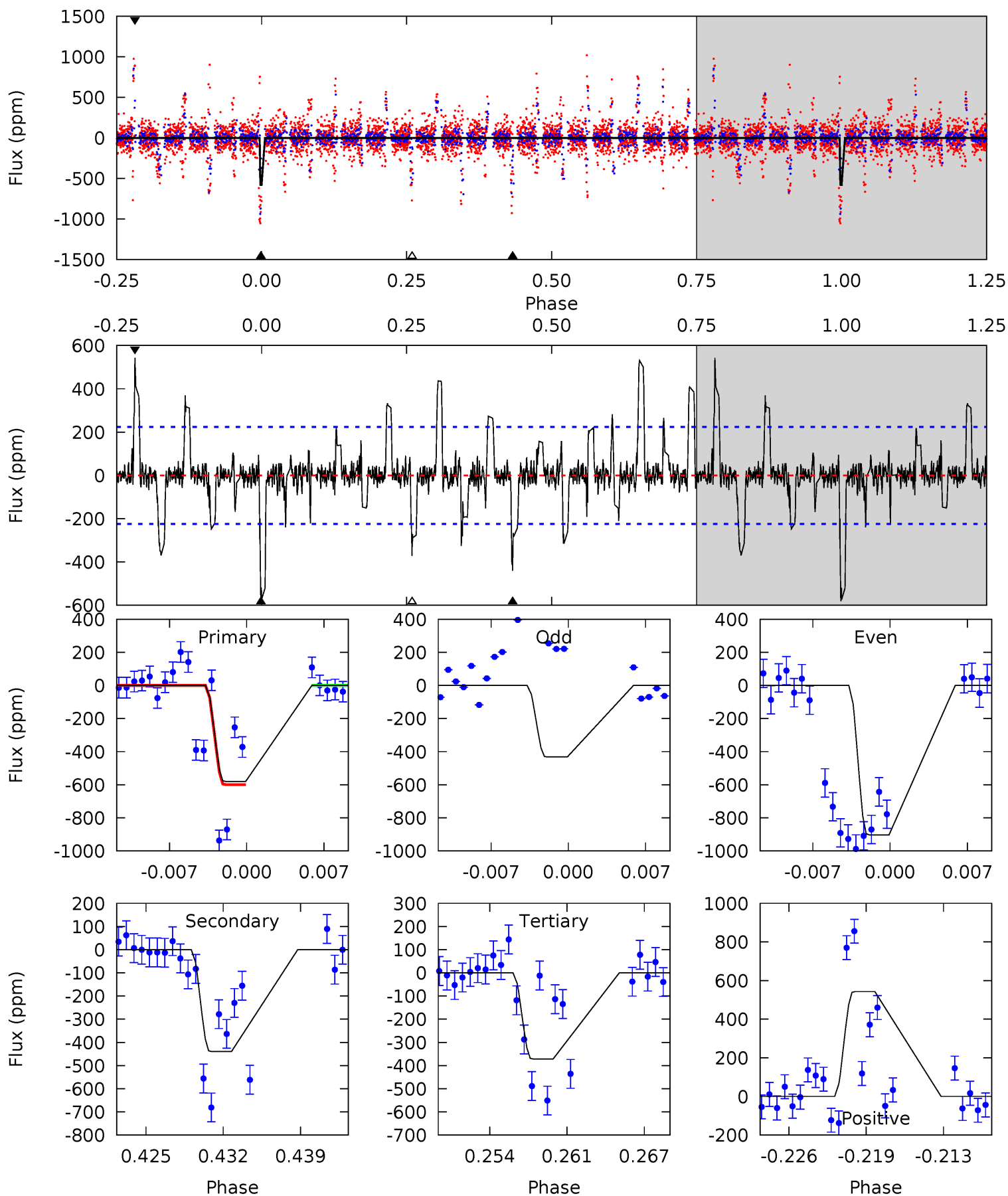
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.6	9.16	7.10	6.64	4.92	2.38	1.49	5.50	5.96	2.06	2.53	1.62	0.89	0.35	0.84



Alt Model-Shift Uniqueness Test

008588940-04, P = 35.121263 Days, E = 104.424464 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.2	10.0	8.46	12.4	5.10	2.70	1.68	4.75	0.85	1.54	-2.35	5.06	0	0.48	0



Stellar Parameters For KIC 008588940

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6235^{+171}_{-152}	$3.707^{+0.312}_{-0.098}$	$-0.140^{+0.300}_{-0.250}$	$2.786^{+0.430}_{-1.003}$	$1.442^{+0.231}_{-0.308}$	$0.094^{+0.192}_{-0.029}$
	+3%/-2%	+8%/-3%	+214%/-179%	+15%/-36%	+16%/-21%	+205%/-31%
Source	PHO1	FLK73	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 008588940-04 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-228 ± 25	$6.81^{+5.47}_{-4.46}$	1293^{+75}_{-115}	5041^{+3812}_{-978}	151^{+1198}_{-103}
Alt.	-440 ± 44	$8.58^{+6.64}_{-5.52}$	1292^{+78}_{-108}	5211^{+3653}_{-1014}	188^{+1158}_{-130}

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 $A_{obs} \gg 1.0$

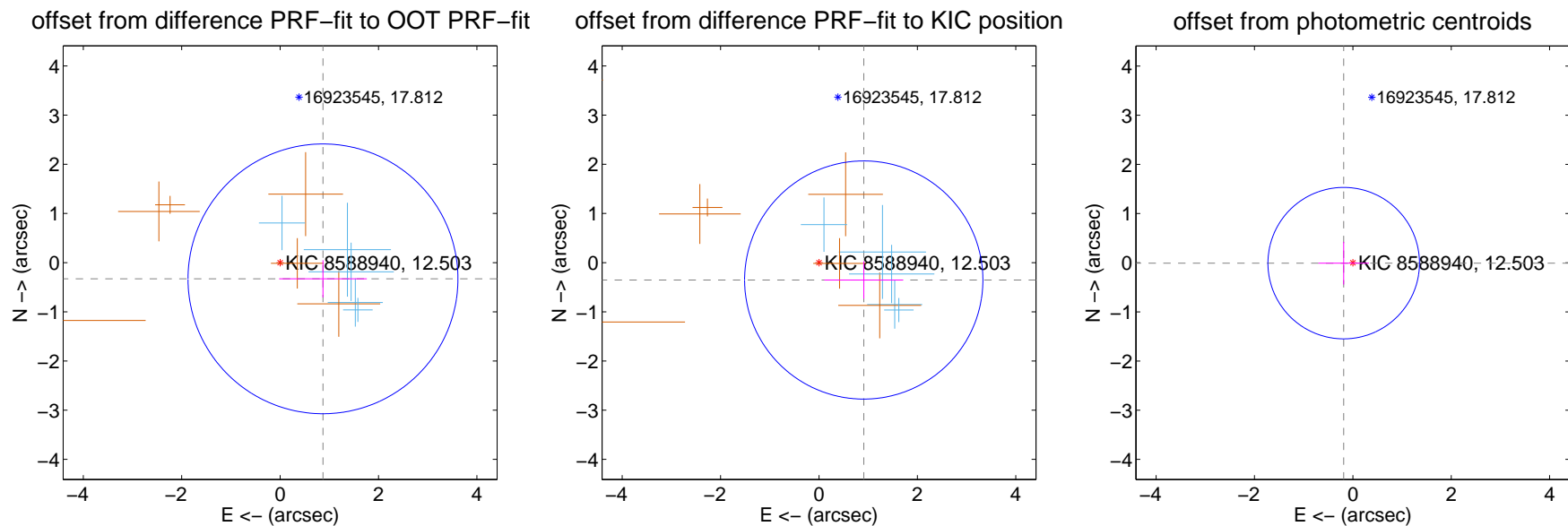
DV Centroid Data

Supplemental centroid analysis for 008588940-04. Kepler magnitude: 12.50. Transit SNR 11.67

There are 5 quarters with good PRF difference image offsets

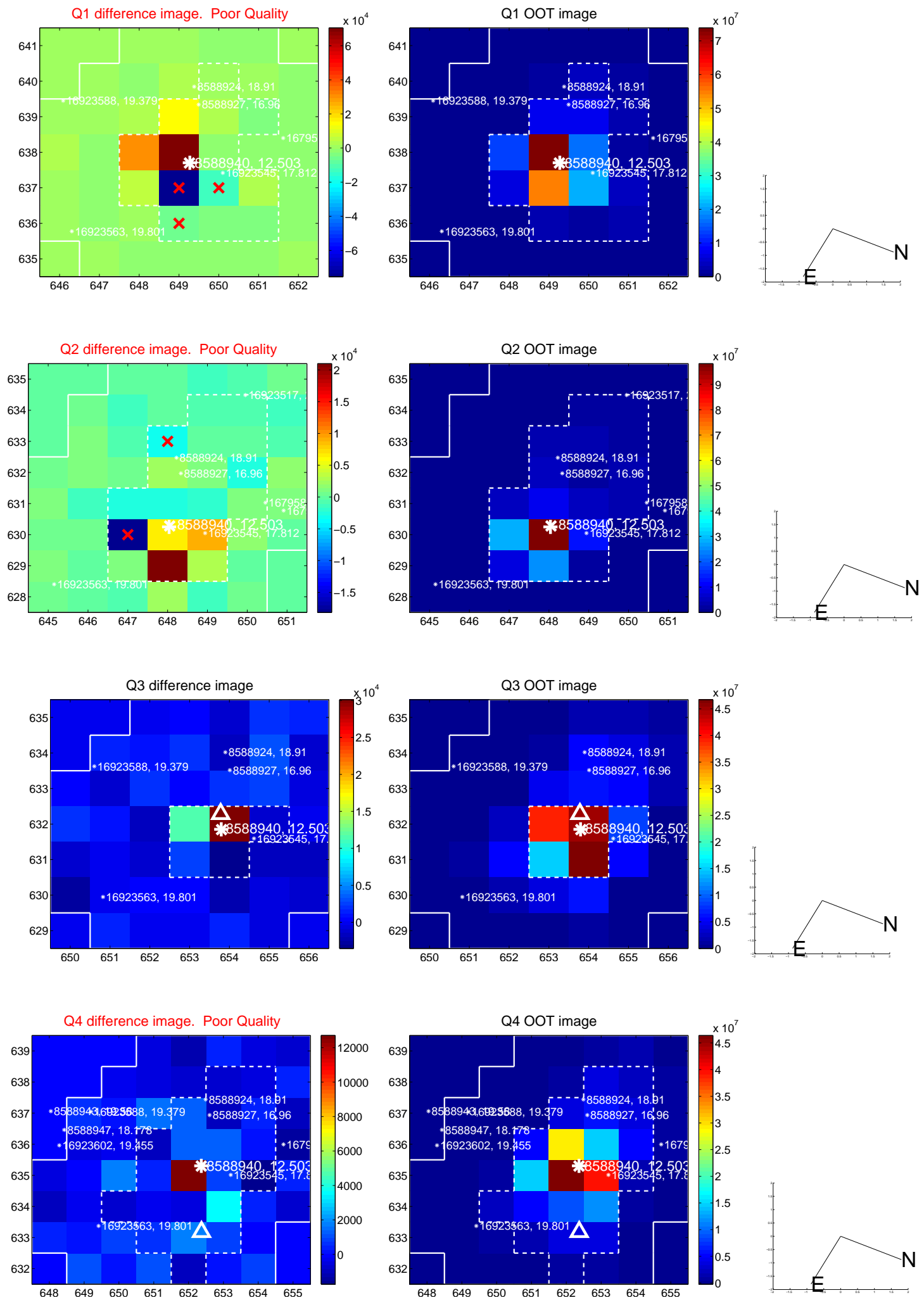
The direct PRF centroid is offset from the target star catalog position by about 0.04 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.932 ± 0.914	1.02	-0.872 ± 0.890	-0.330 ± 0.379
PRF-fit source offset from KIC position	0.976 ± 0.807	1.21	-0.910 ± 0.799	-0.353 ± 0.381
photometric centroid source offset	0.19 ± 0.51	0.36	0.19 ± 0.51	-0.01 ± 0.43

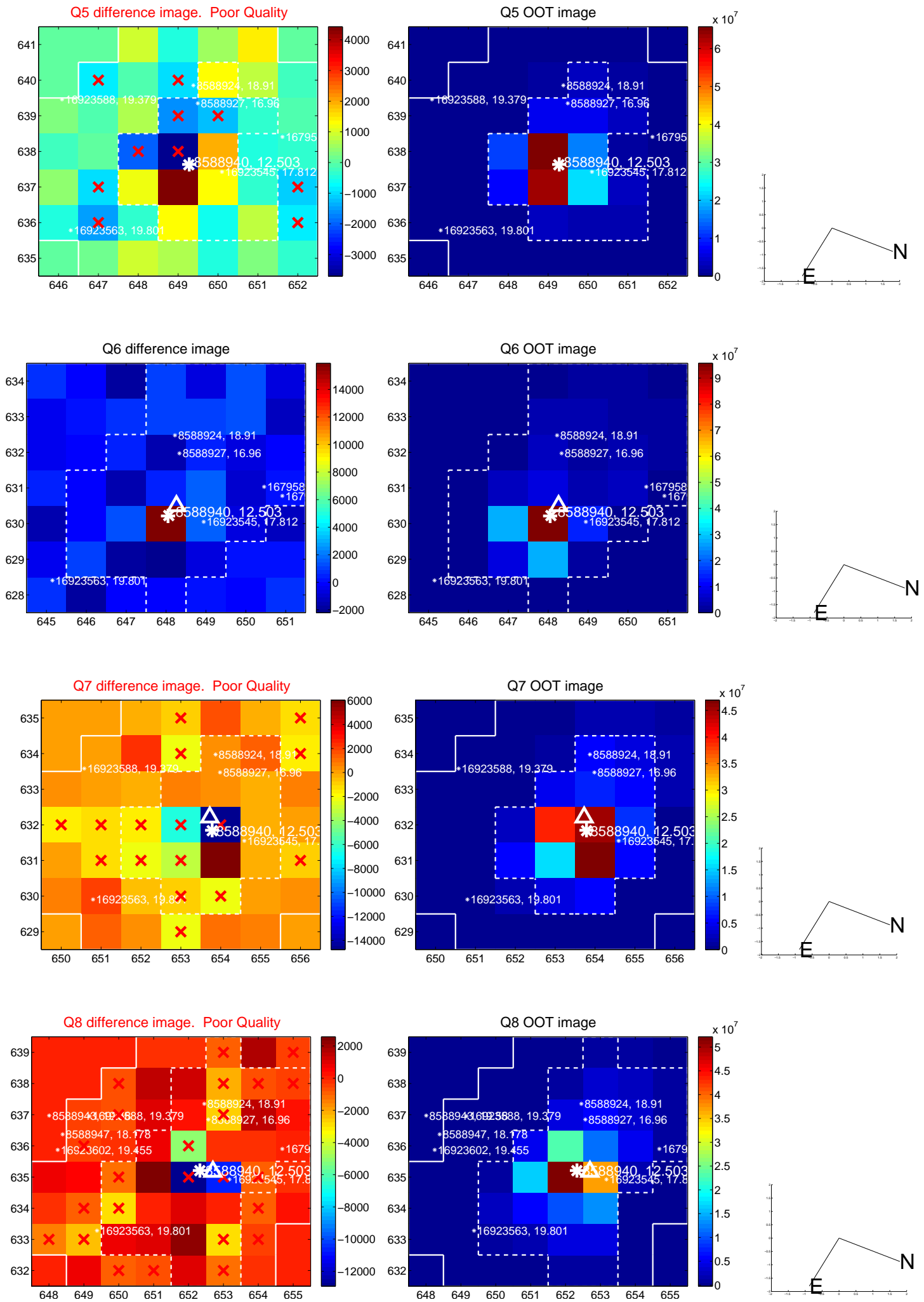


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

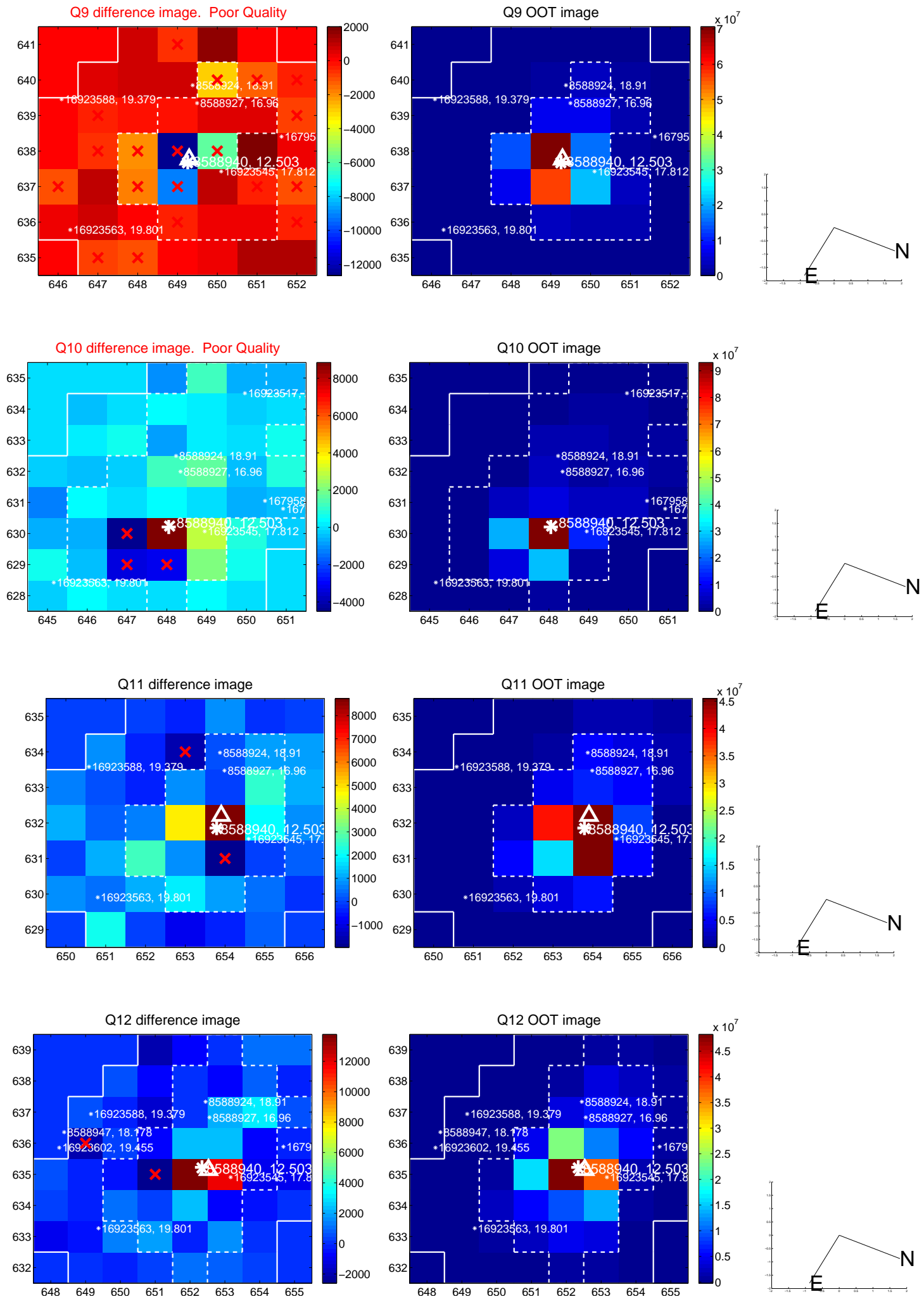
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



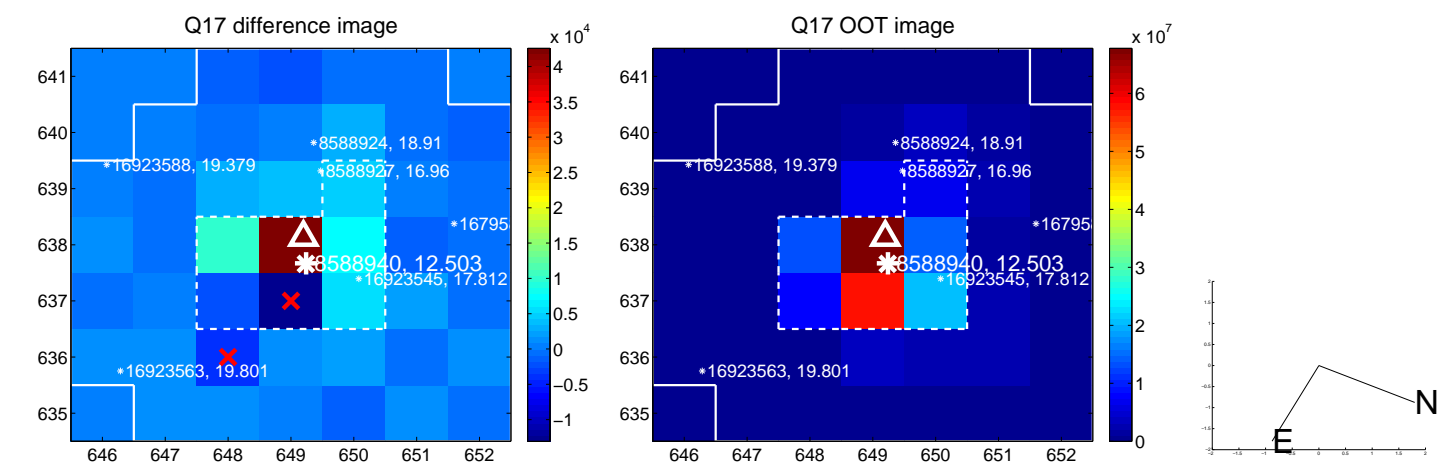
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



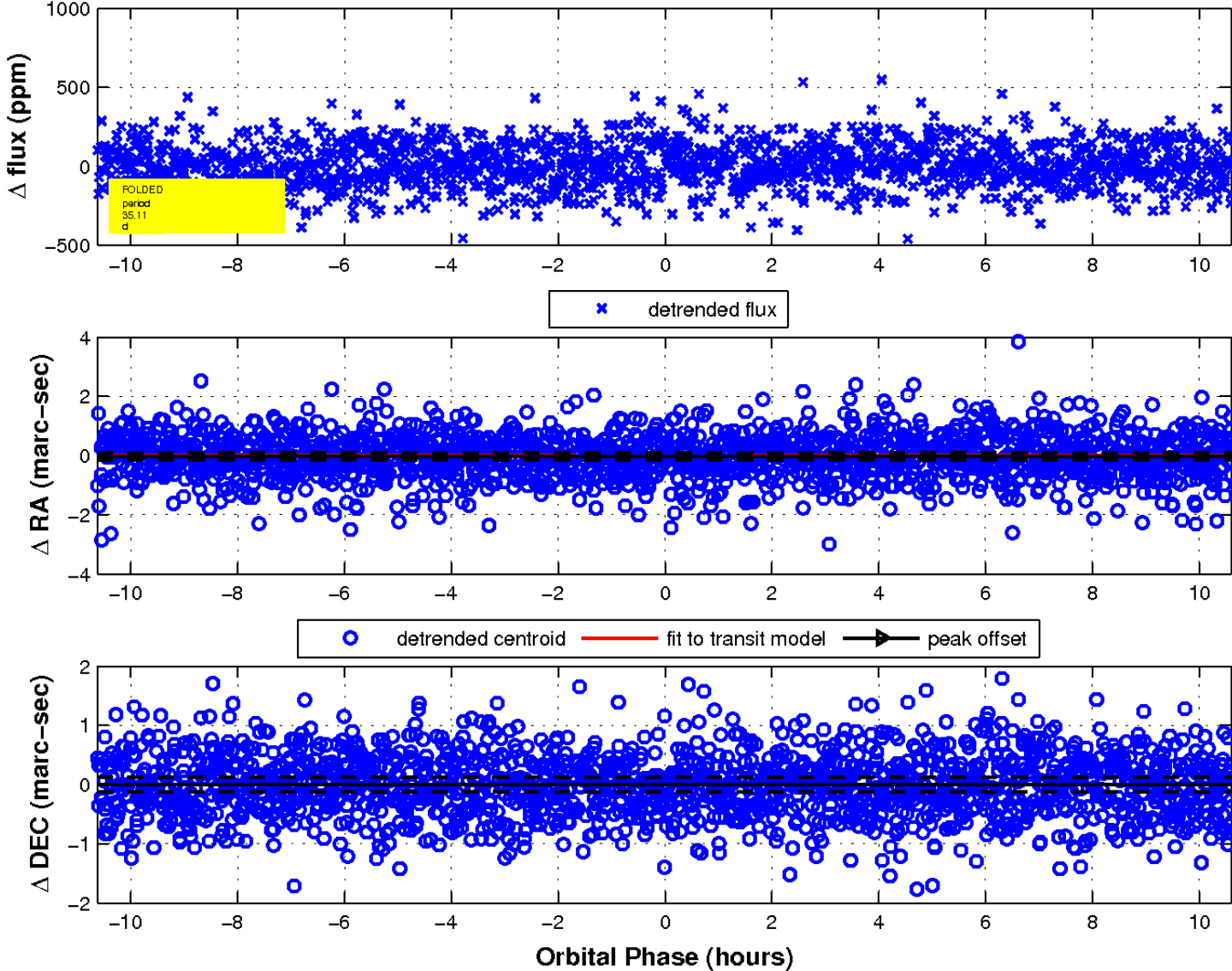
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 4 of 5



UKIRT Image

