

KIC 004562615

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})
004562615-01	OBS	No	0.702412	131.848068	40.3	3.001	9.4	10.7	1.65	6939	1.22	19609.09
004562615-02	OBS	No	2.713686	132.876742	78.0	3.373	8.1	9.0	1.65	6939	1.69	3234.70

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004562615-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT
004562615-02	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT

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

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

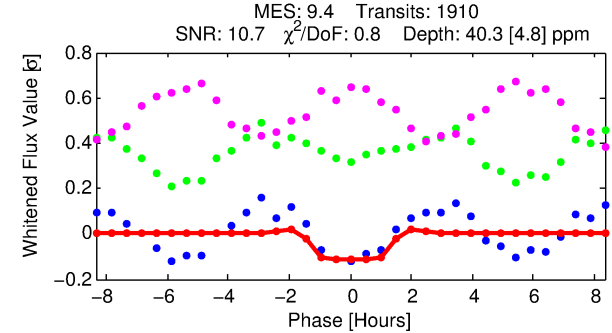
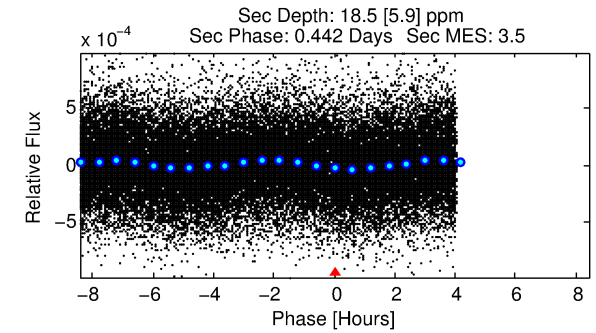
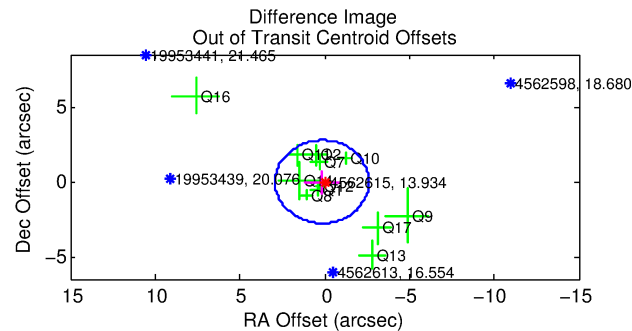
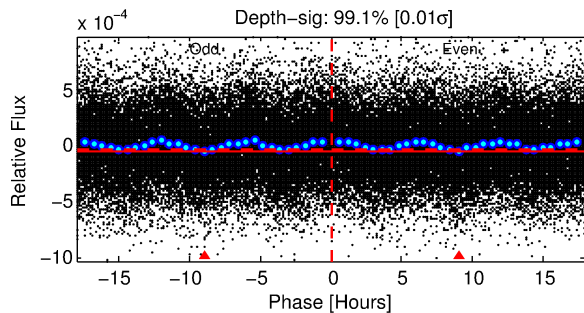
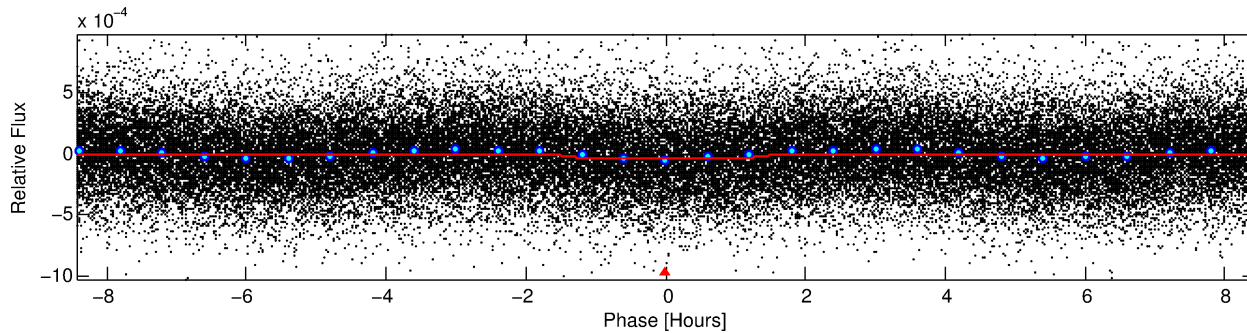
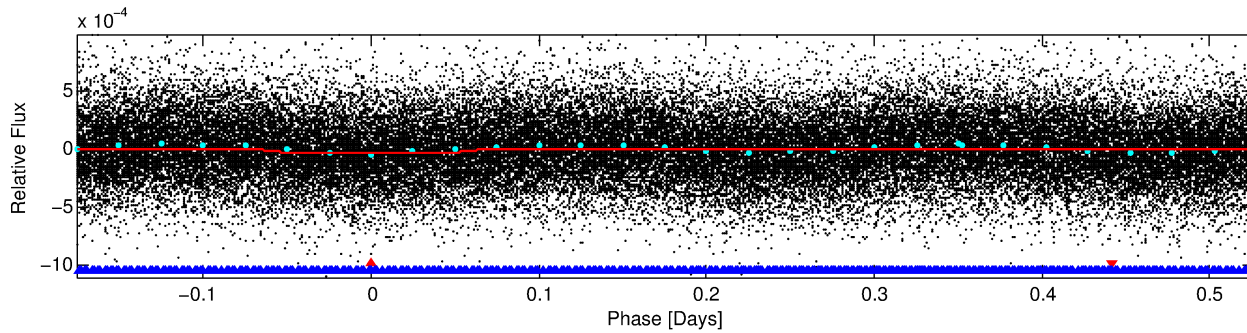
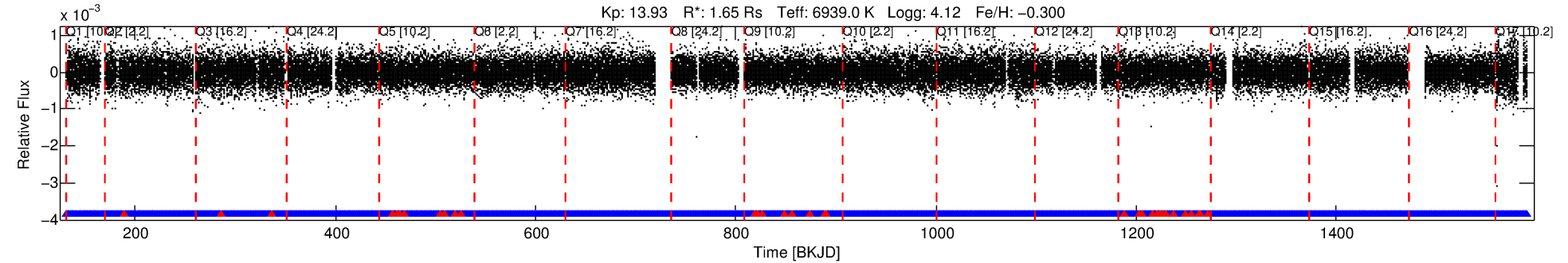
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004562615-01

No Significant Match Found

DV One-Page Summary

KIC: 4562615 Candidate: 1 of 2 Period: 0.702 d



DV Fit Results:

Period = 0.70241 [0.00001] d
 Epoch = 131.8481 [0.0025] BKJD
 Rp/R* = 0.0068 [0.0025]
 a/R* = 1.23 [0.97]
 b = 0.90 [0.48]
 Seff = 19609.09 [7407.76]
 Teq = 3017 [285] K
 Rp = 1.22 [0.57] Re
 a = 0.0170 [0.0040] AU
 Ag = 1.98 [1.74] [0.56 σ]
 Tefp = 5532 [1147] K [2.13 σ]

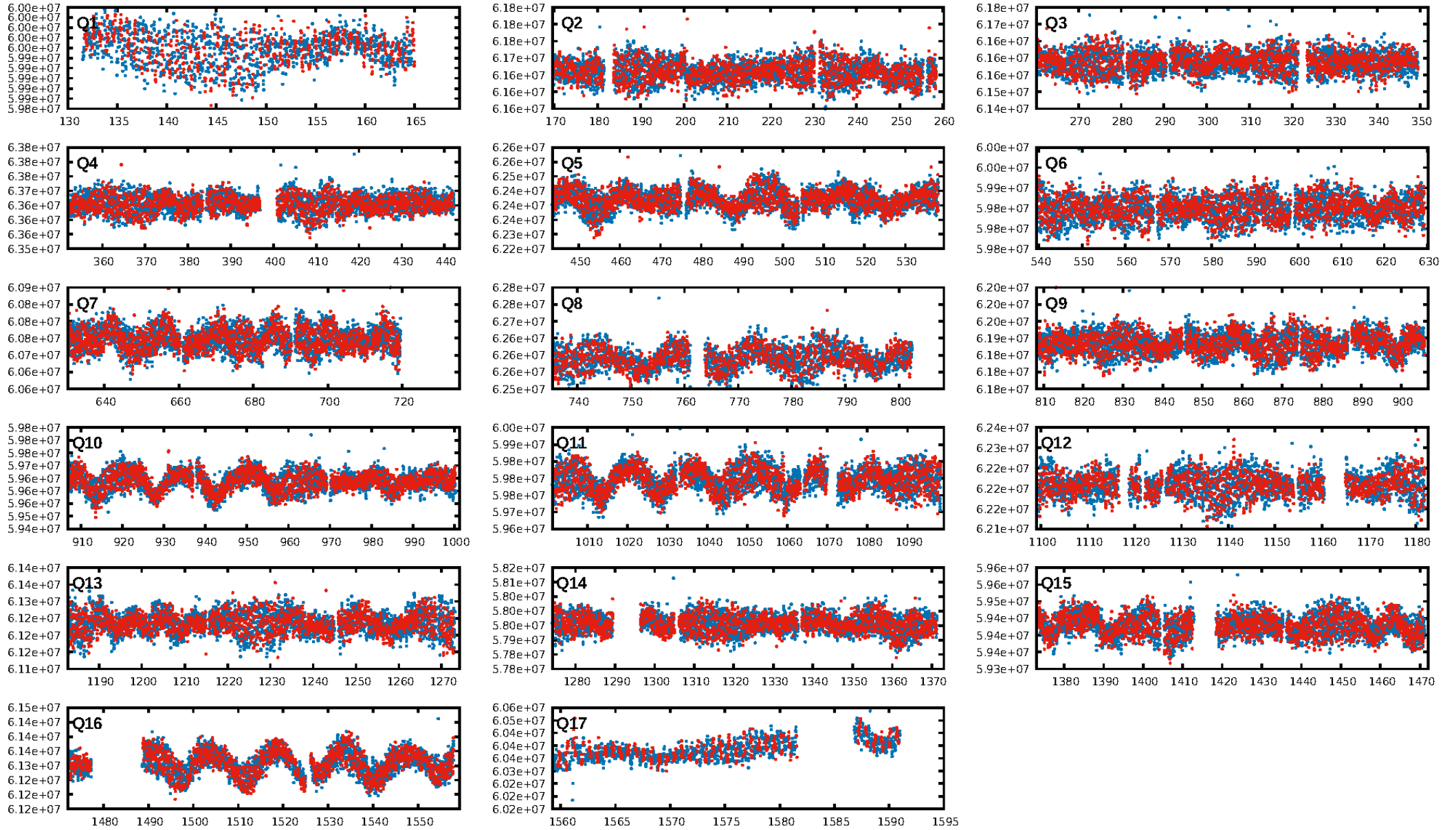
DV Diagnostic Results:

ShortPeriod-sig: N/A
 LongPeriod-sig: 100.0% [10.69 σ]
 ModelChiSquare2-sig: N/A
 ModelChiSquareGof-sig: N/A
 Bootstrap-pfa: 1.51e-14
 RollingBand-fgt: 0.98 [1789/1824]
 GhostDiagnostic-chr: 2.272
 Centroid-sig: 30.3%
 Centroid-so: 0.845 arcsec [0.98 σ]
 OotOffset-rm: 0.162 arcsec [0.18 σ]
 OotOffset-st: 3/2/3/4 [12]
 KicOffset-rm: 0.173 arcsec [0.23 σ]
 KicOffset-st: 3/2/3/4 [12]
 DiffImageQuality-fgm: 0.42 [5/12]
 DiffImageOverlap-fno: 1.00 [17/17]

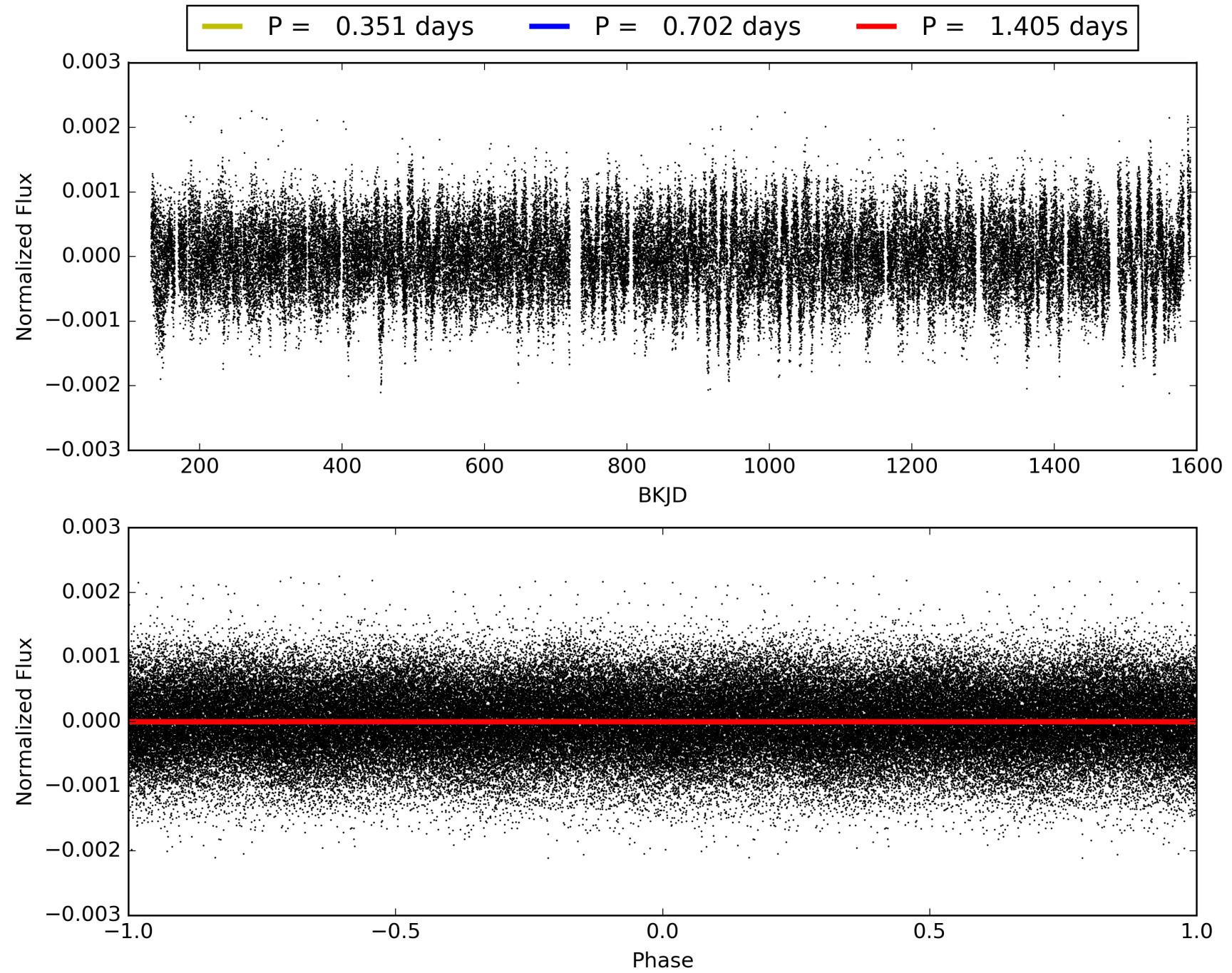
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 12:00:25 Z

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

TCE 004562615-01, PDC Light Curves

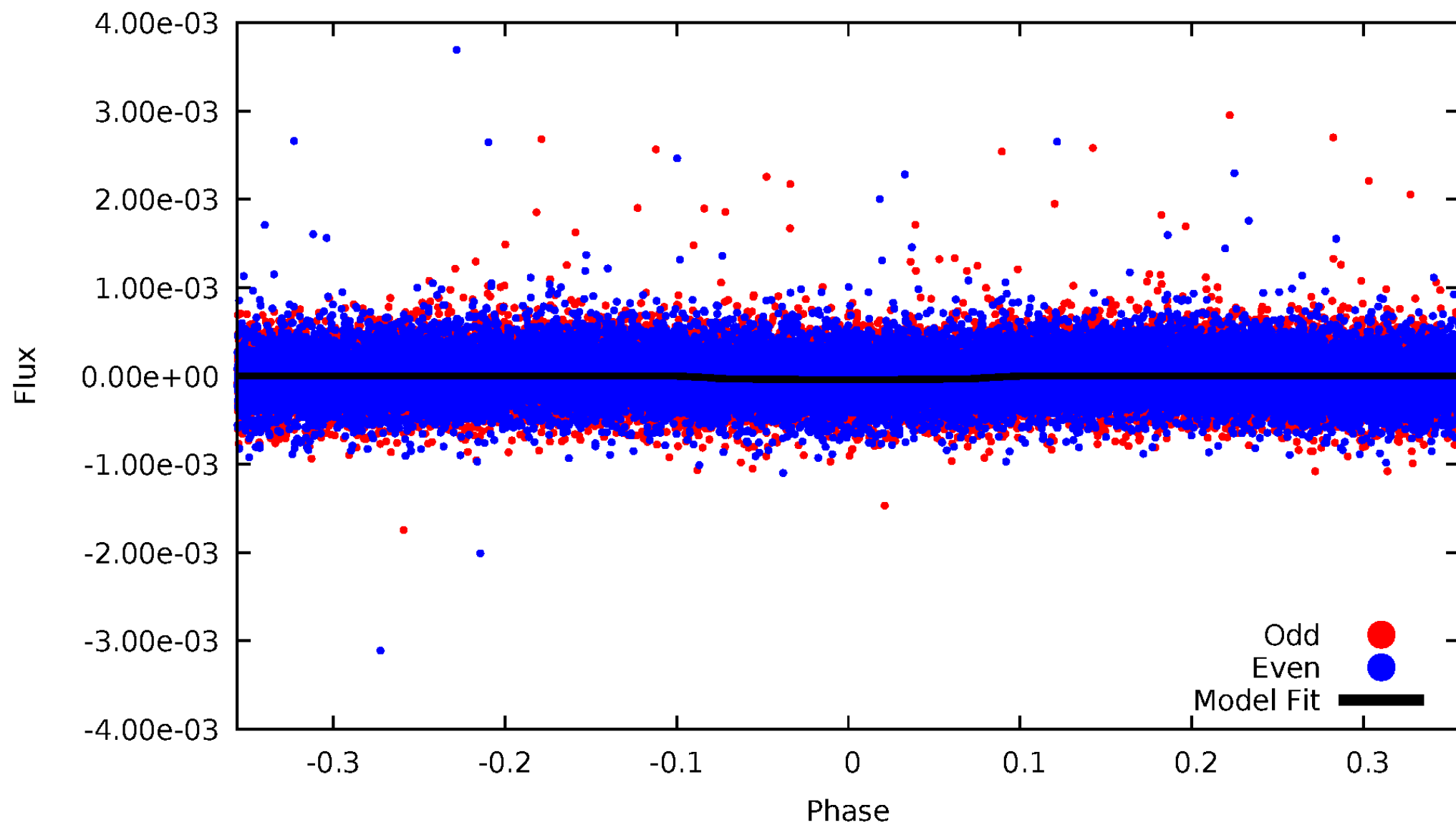


TCE 004562615-01



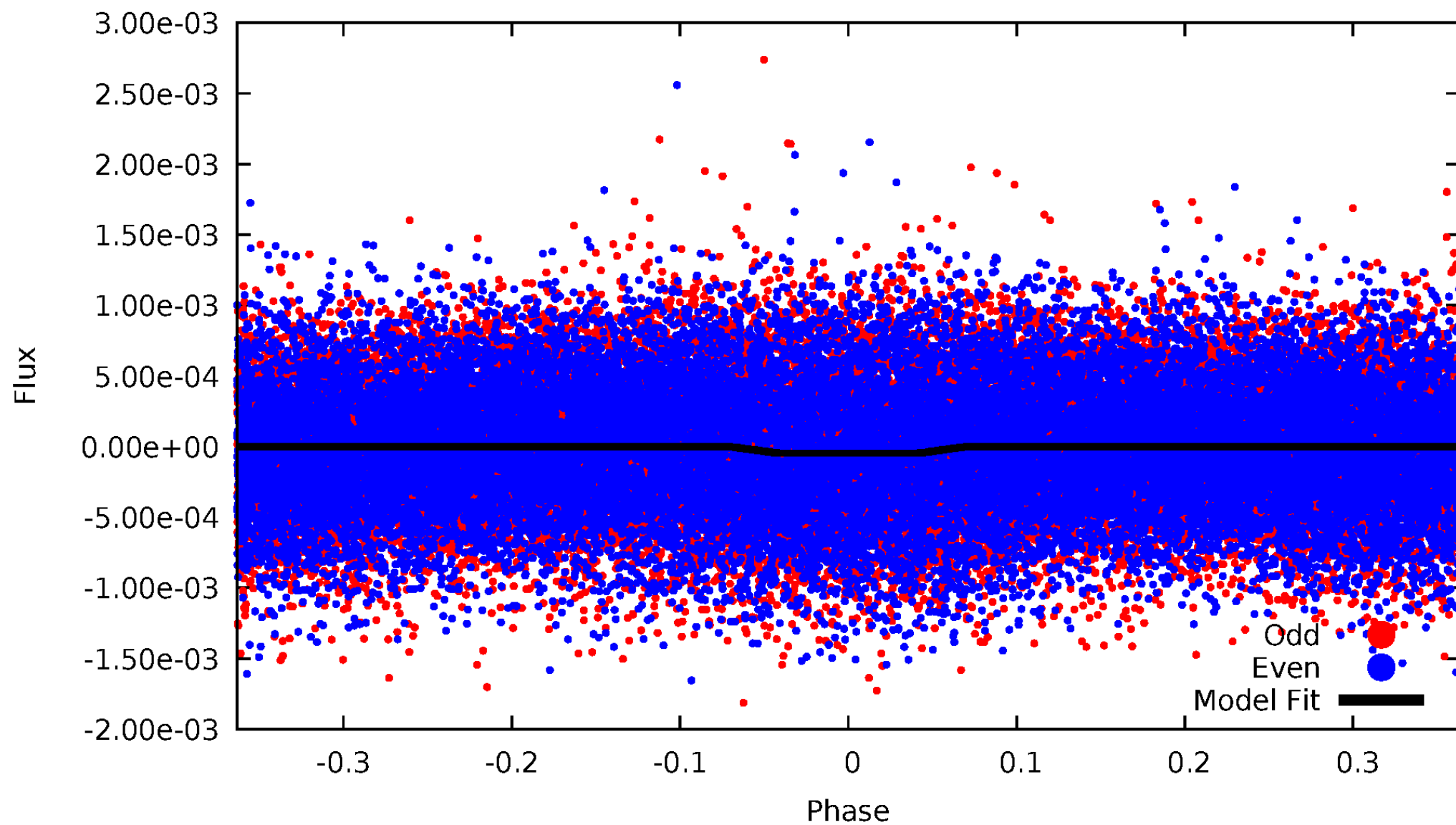
DV Odd/Even

TCE 004562615-01

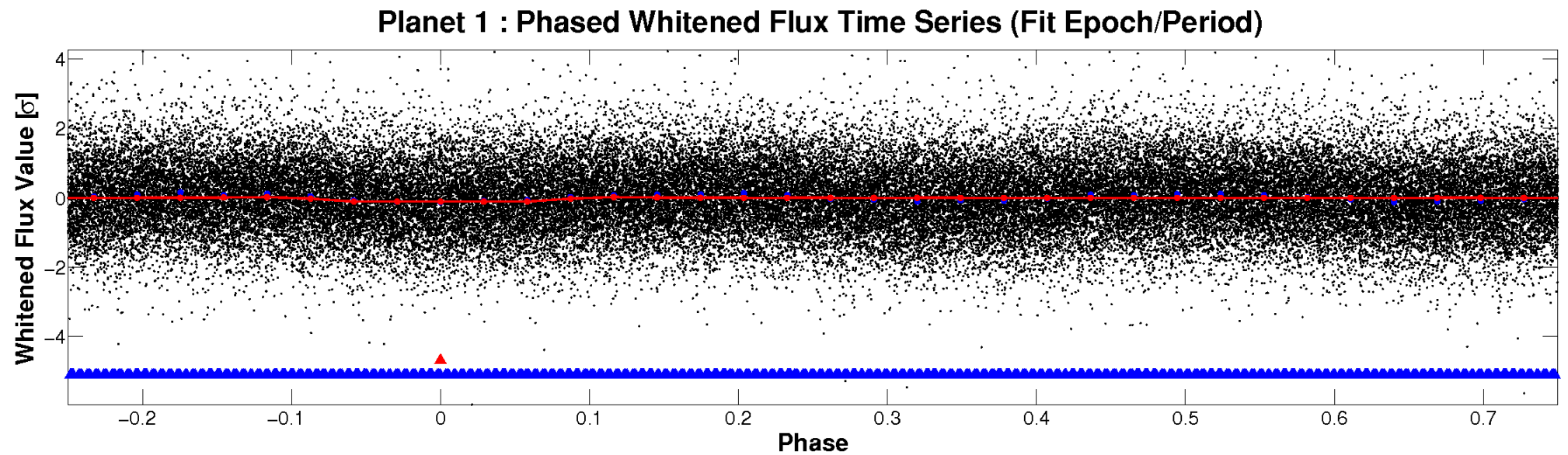
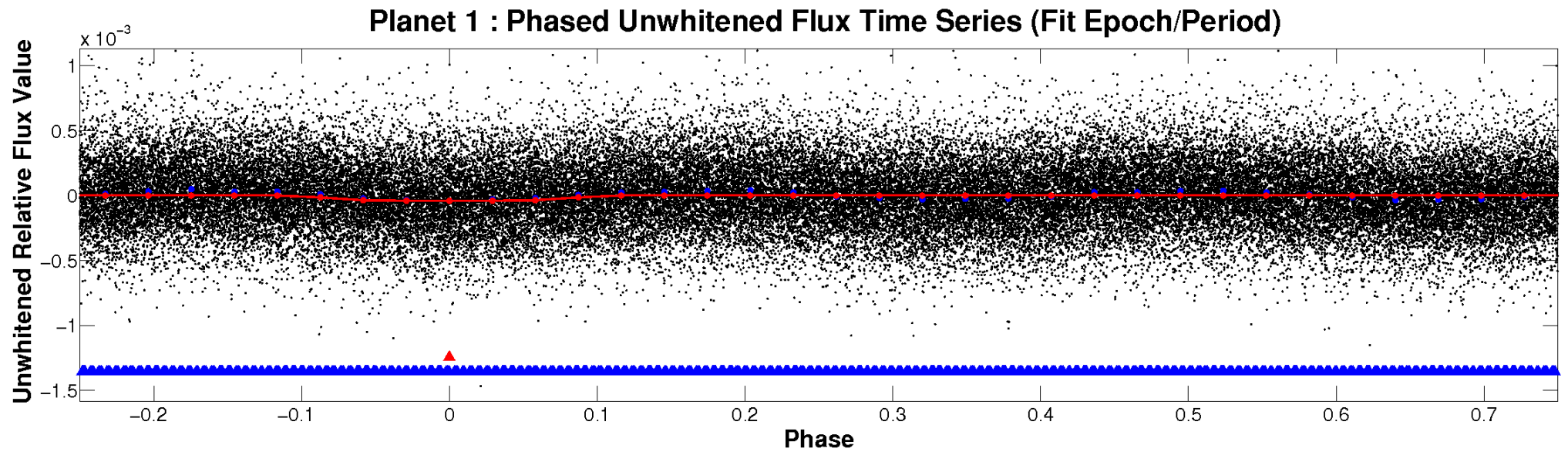


ALT Odd/Even

TCE 004562615-01

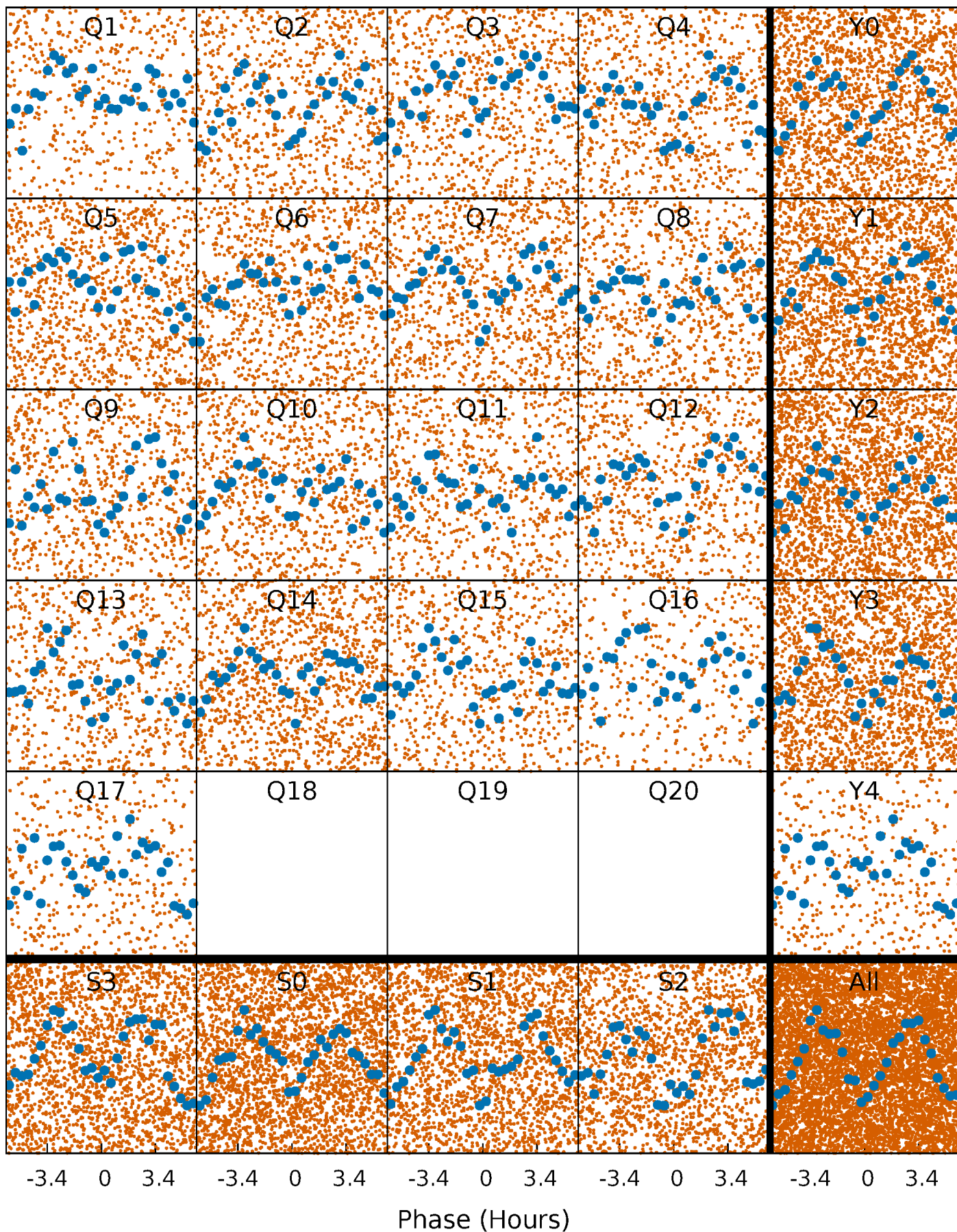


Non-Whitened Vs. Whitened Light Curve



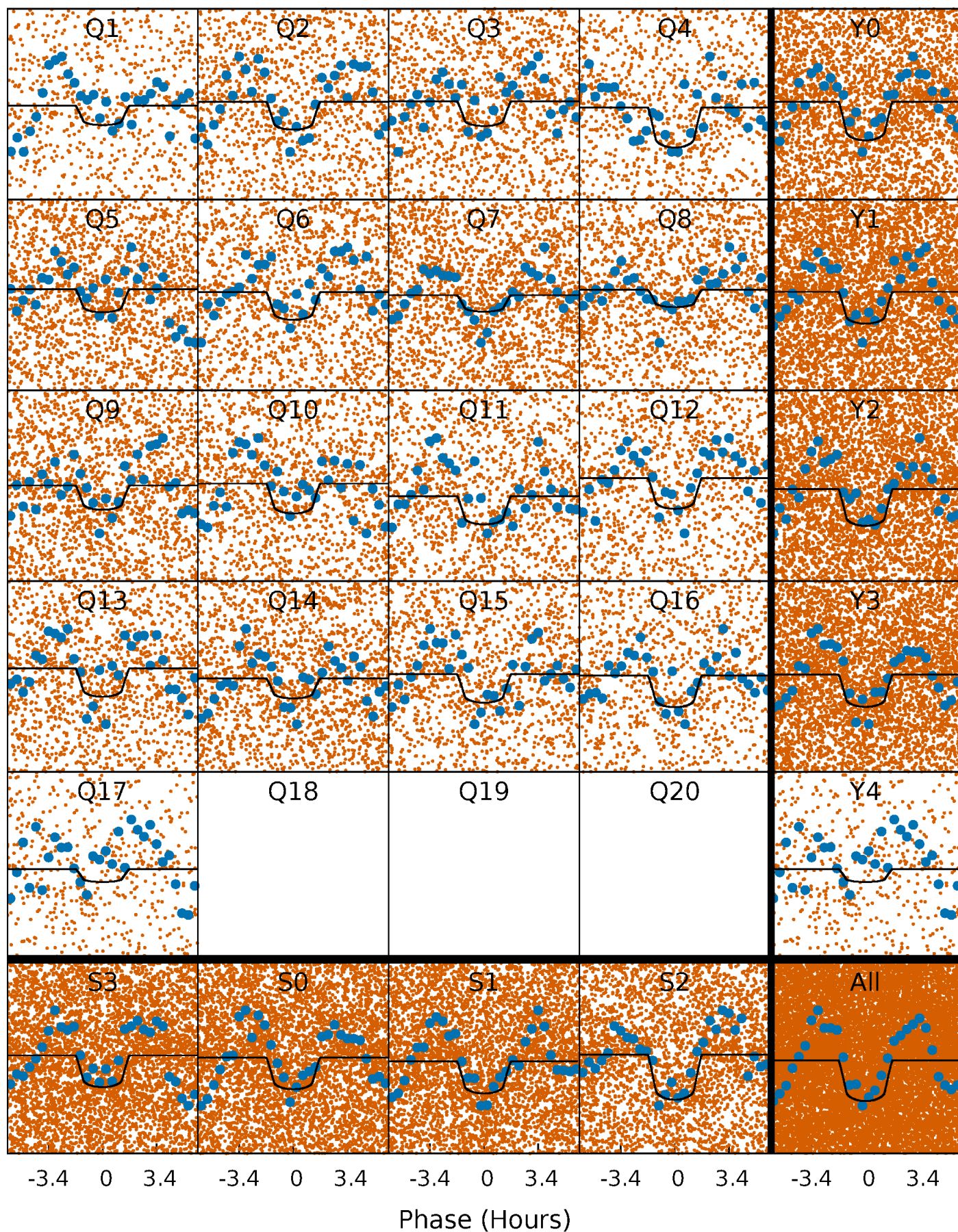
PDC Quarter-Phased Transit Curves

TCE 004562615-01 P= 0.702412 Days $T_0=131.848068$ (BKJD)



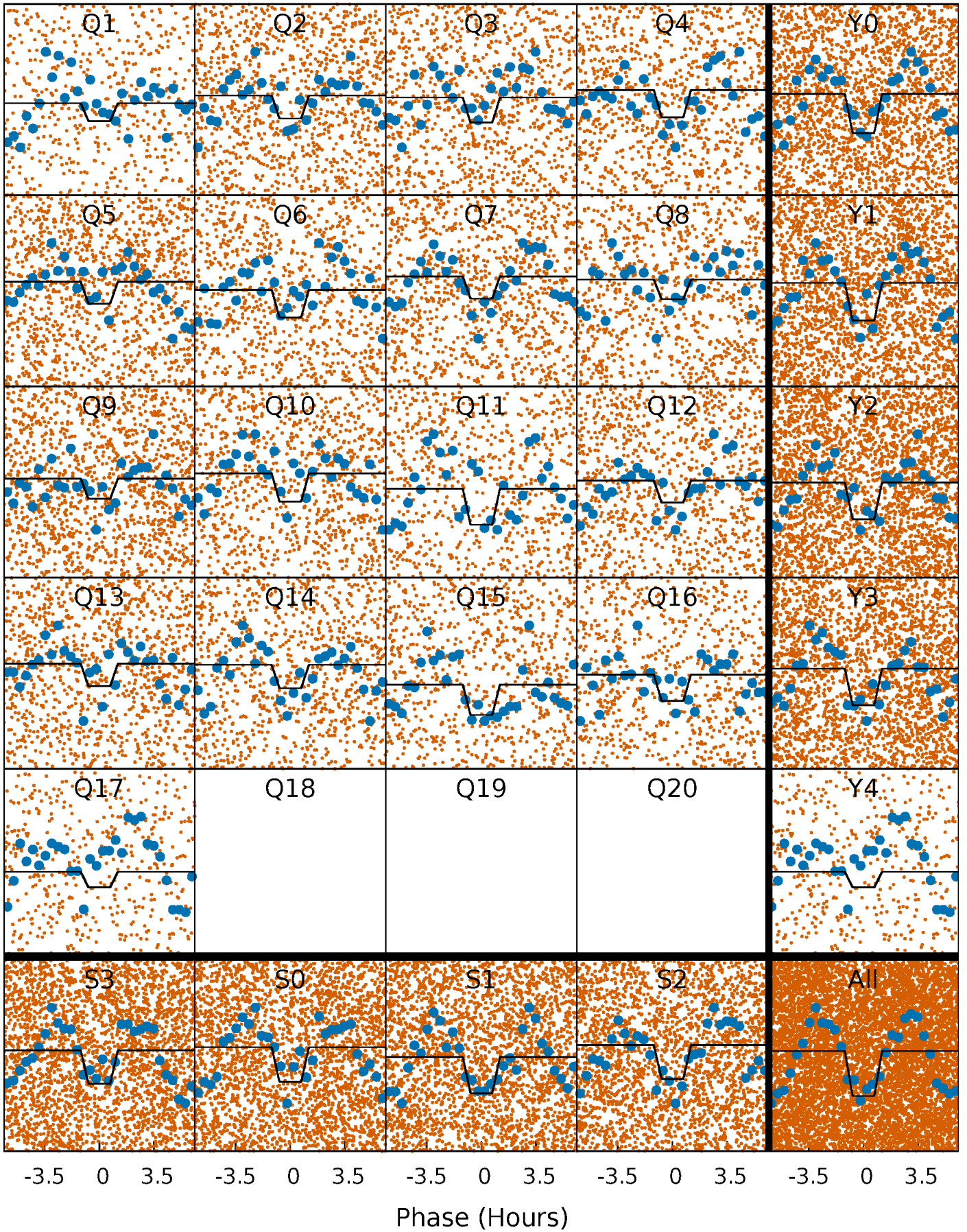
DV Quarter-Phased Transit Curves

TCE 004562615-01 P= 0.702412 Days $T_0=131.848068$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

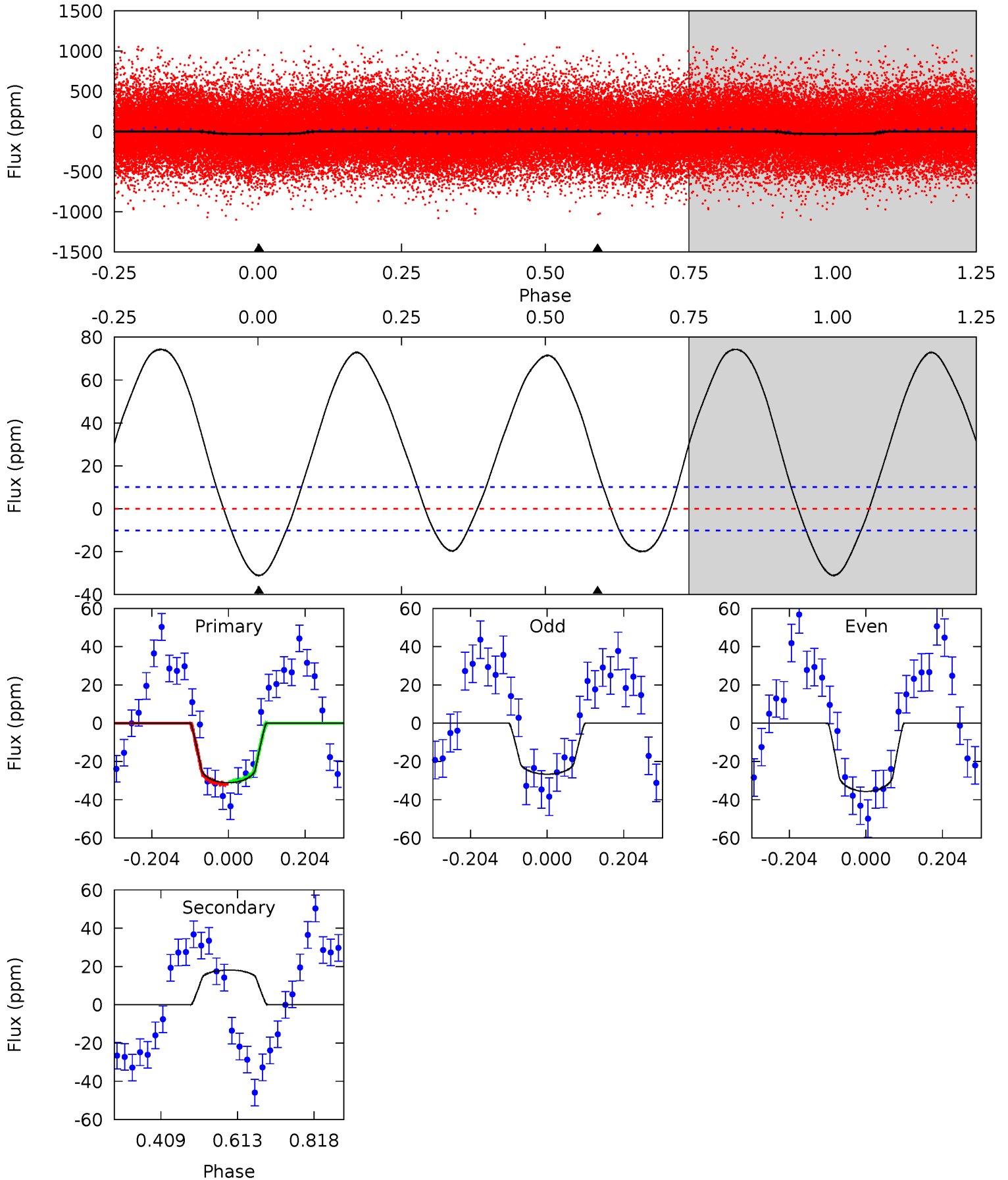
TCE 004562615-01 P= 0.702414 Days $T_0=131.847931$ (BKJD)



DV Model-Shift Uniqueness Test

004562615-01, P = 0.702412 Days, E = 131.145656 Days

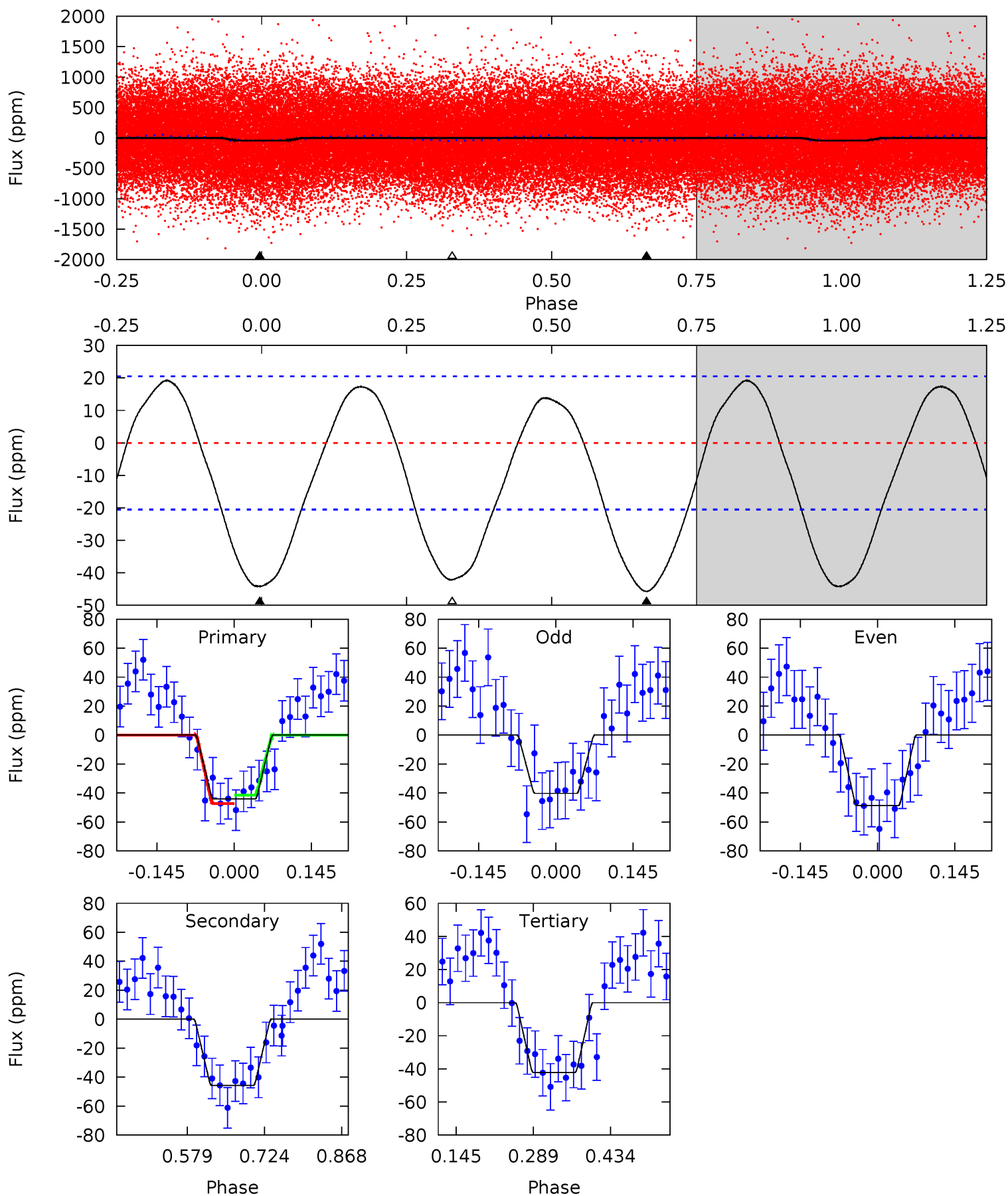
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.6	-7.94	0	0	4.41	1.27	11.4	13.6	13.6	-7.94	-7.94	2.00	0.84	0.70	0.31



Alt Model-Shift Uniqueness Test

004562615-01, P = 0.702414 Days, E = 131.145517 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.65	10.00	9.21	0	4.49	1.46	4.80	0.44	9.65	0.79	10.00	0.91	0.89	0.30	0.58



Stellar Parameters For KIC 004562615

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6939^{+192}_{-288}	$4.125^{+0.185}_{-0.185}$	$-0.300^{+0.250}_{-0.300}$	$1.651^{+0.460}_{-0.414}$	$1.329^{+0.190}_{-0.232}$	$0.416^{+0.481}_{-0.194}$
	+3%/-4%	+4%/-4%	+83%/-100%	+28%/-25%	+14%/-17%	+116%/-47%
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 004562615-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	18 ± 2	$1.21^{+0.52}_{-0.43}$	4220^{+300}_{-303}	-5662^{+630}_{-1326}	$-1.937^{+0.981}_{-2.825}$
Alt.	-46 ± 5	$1.24^{+0.52}_{-0.44}$	4226^{+320}_{-330}	6693^{+2233}_{-1102}	$4.719^{+6.894}_{-2.390}$

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

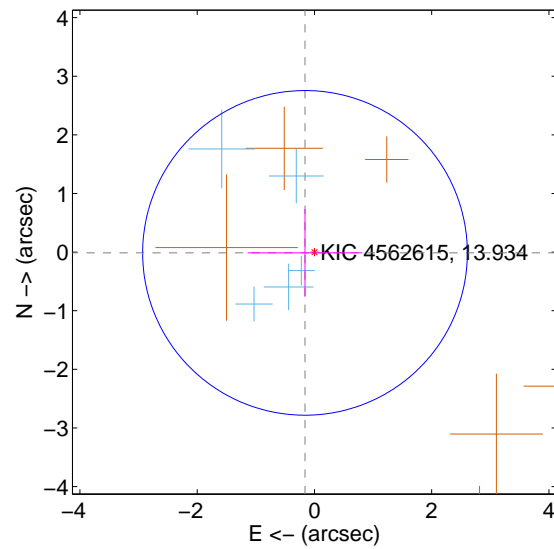
Supplemental centroid analysis for 004562615-01. Kepler magnitude: 13.93. Transit SNR 10.71

There are 5 quarters with good PRF difference image offsets

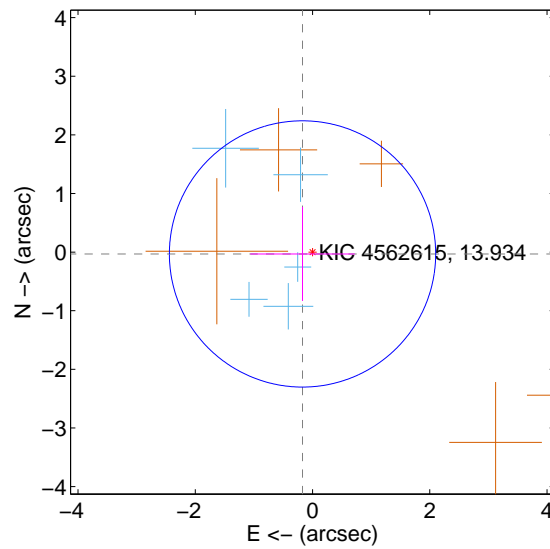
The direct PRF centroid is offset from the target star catalog position by about 0.14 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.162 ± 0.923	0.18	0.161 ± 0.979	-0.013 ± 0.748
PRF-fit source offset from KIC position	0.173 ± 0.757	0.23	0.171 ± 0.891	-0.031 ± 0.803
photometric centroid source offset	0.85 ± 0.86	0.98	0.41 ± 0.84	-0.74 ± 0.87

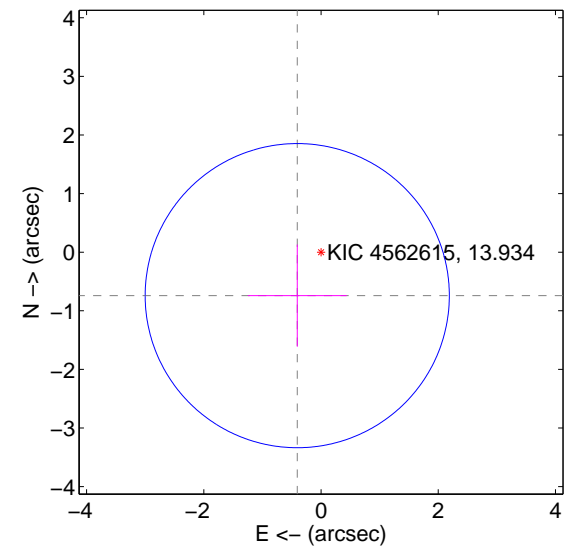
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

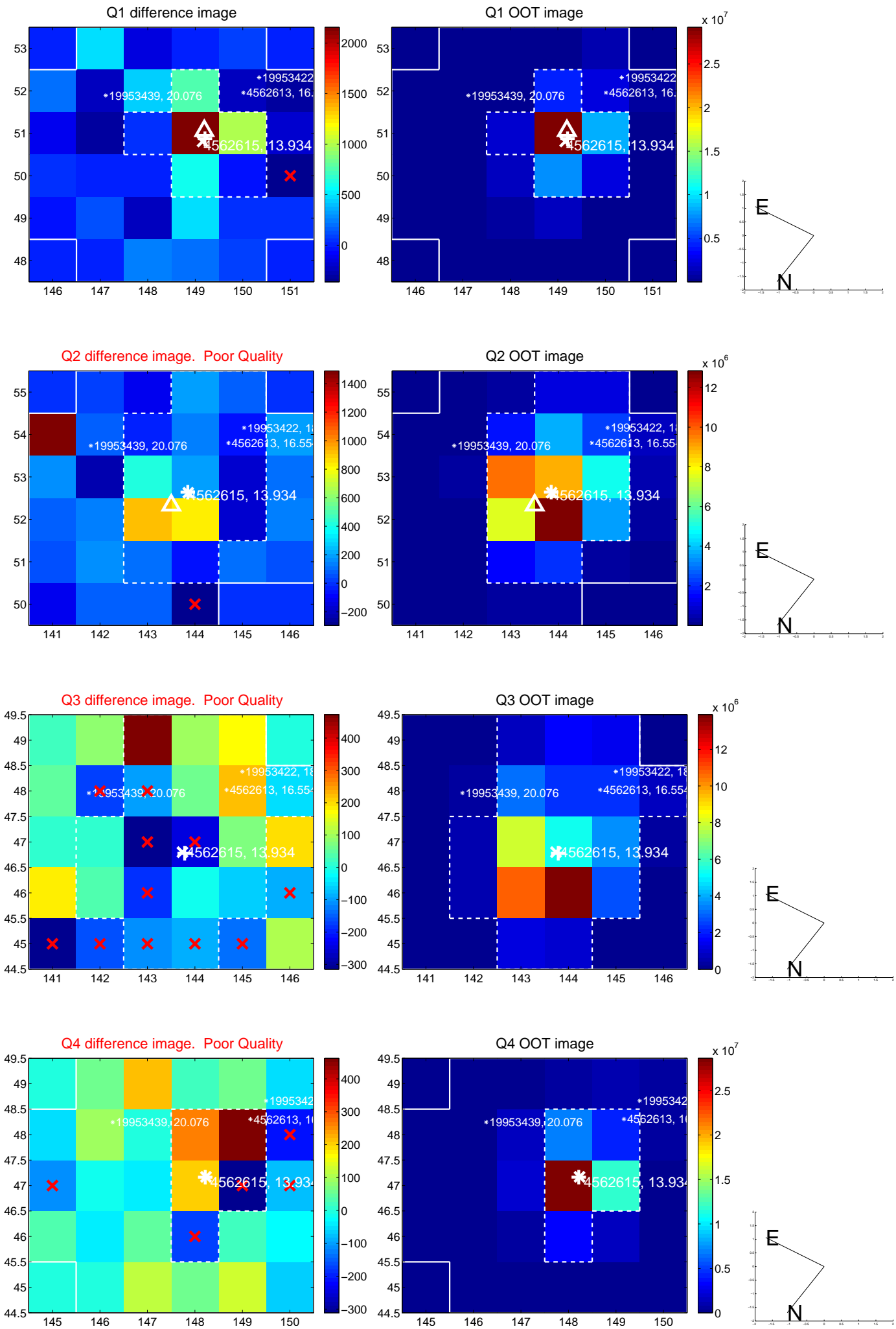


offset from photometric centroids

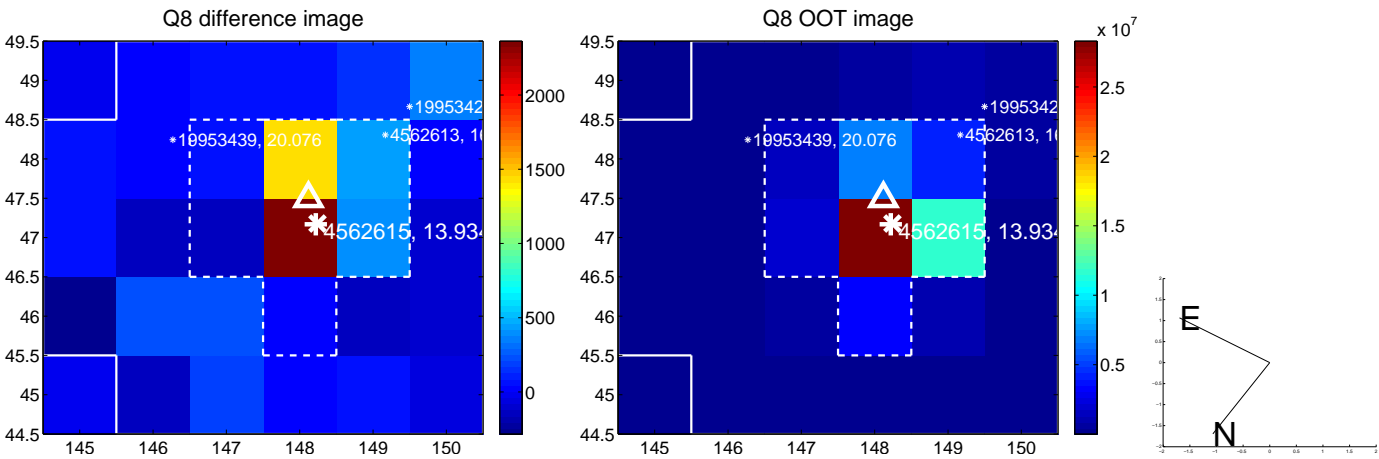
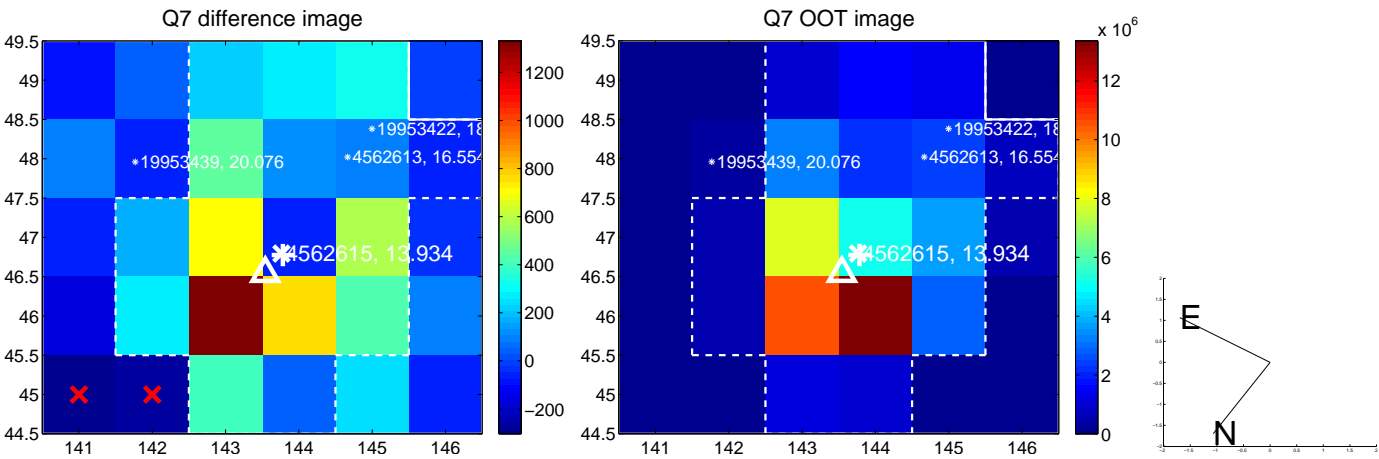
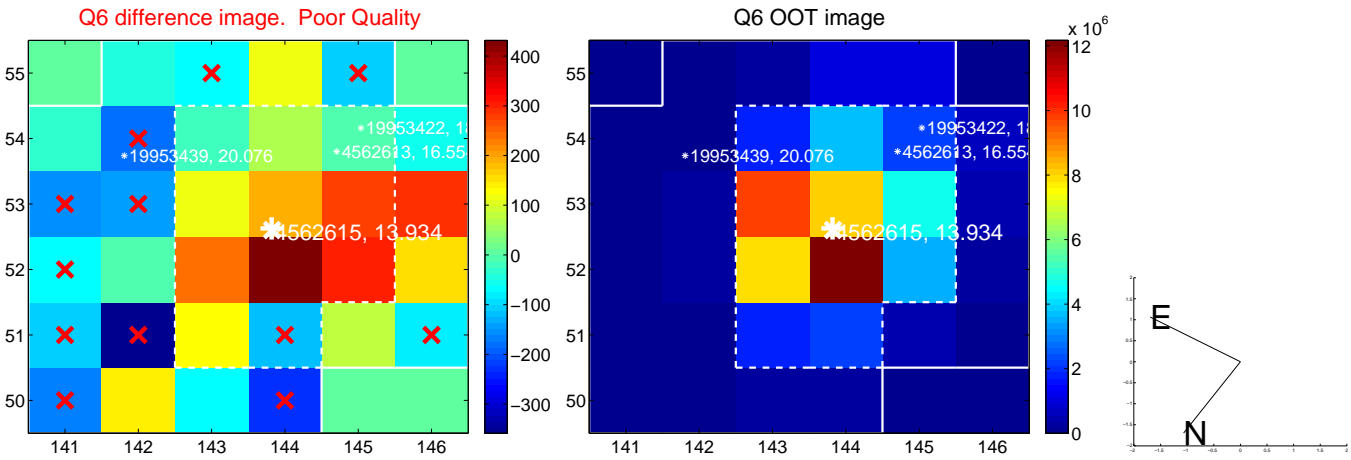
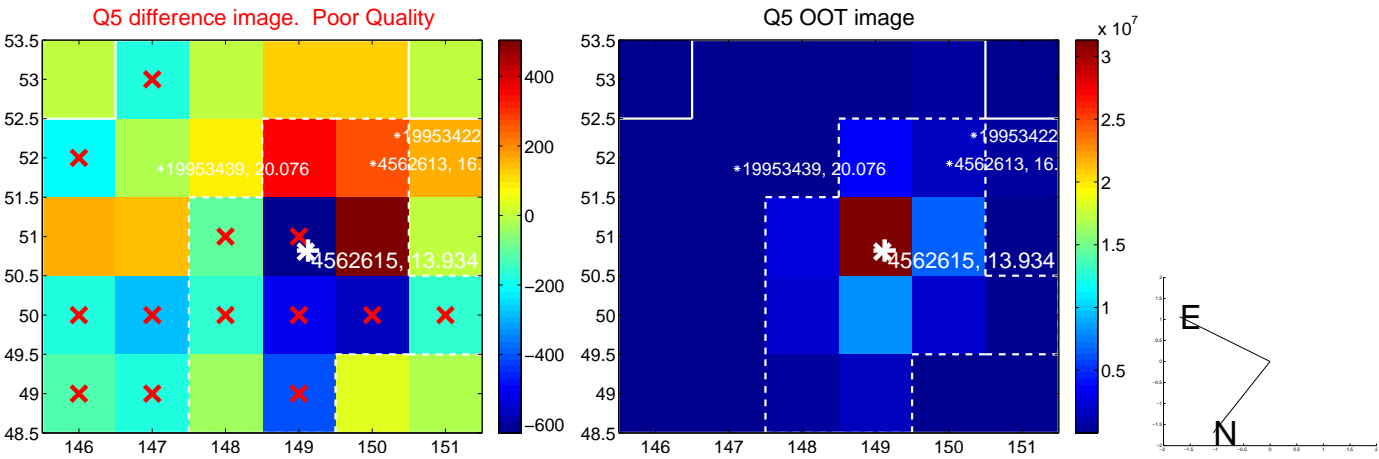


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

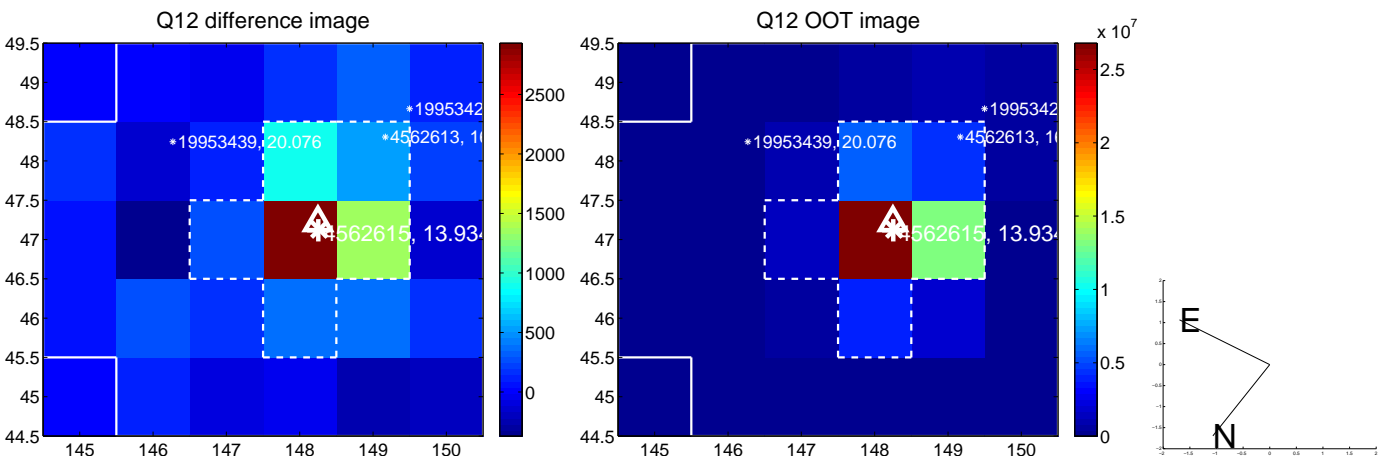
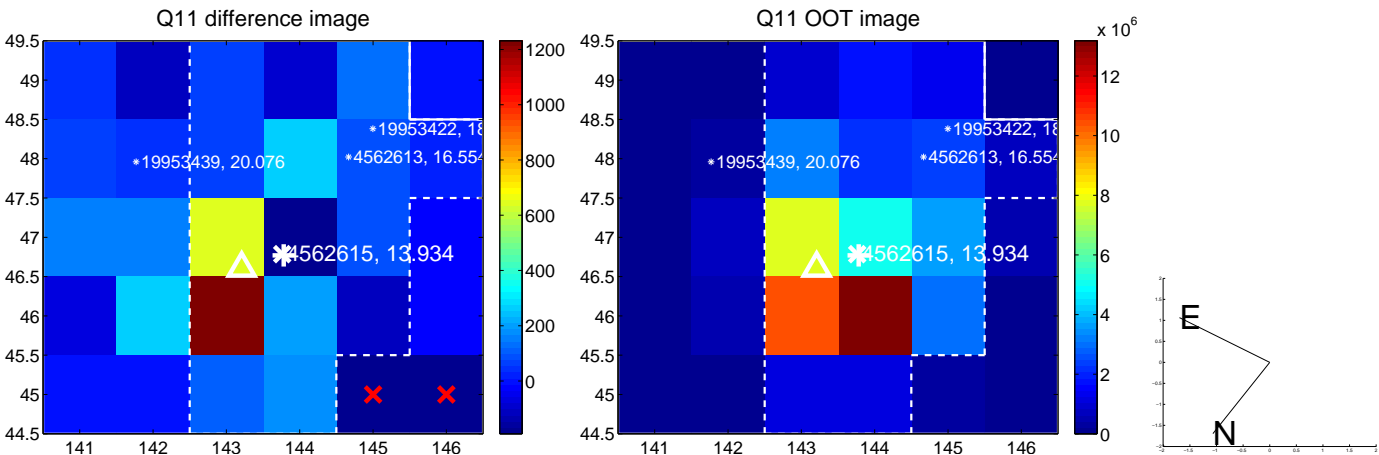
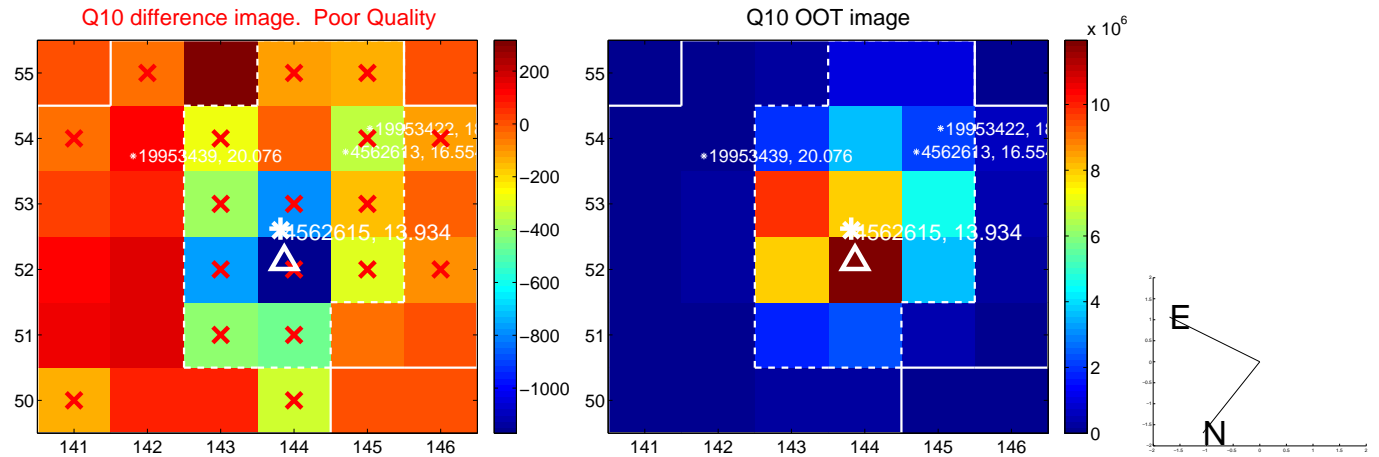
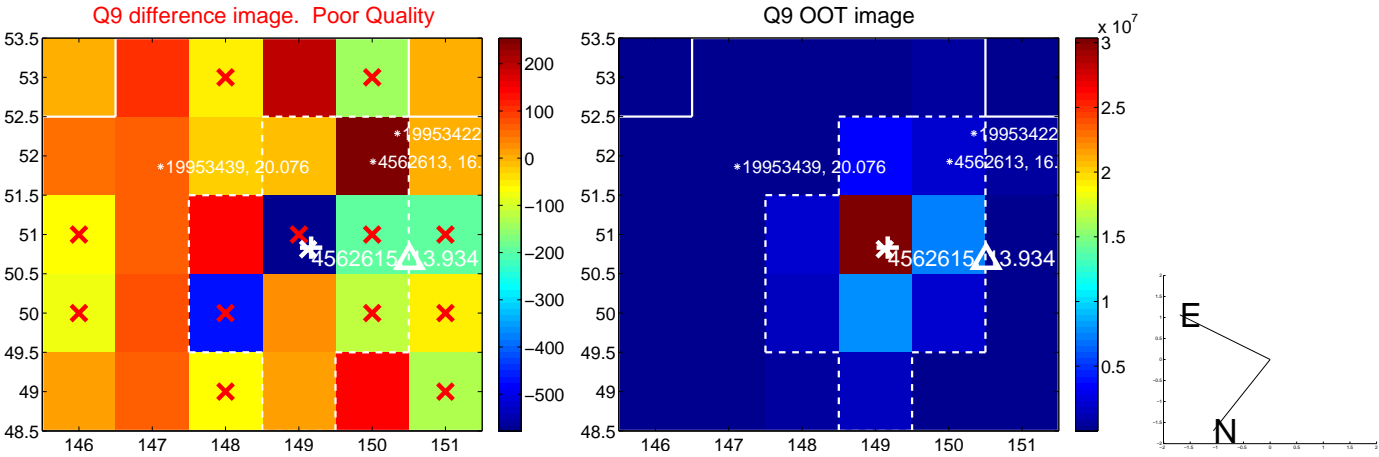
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



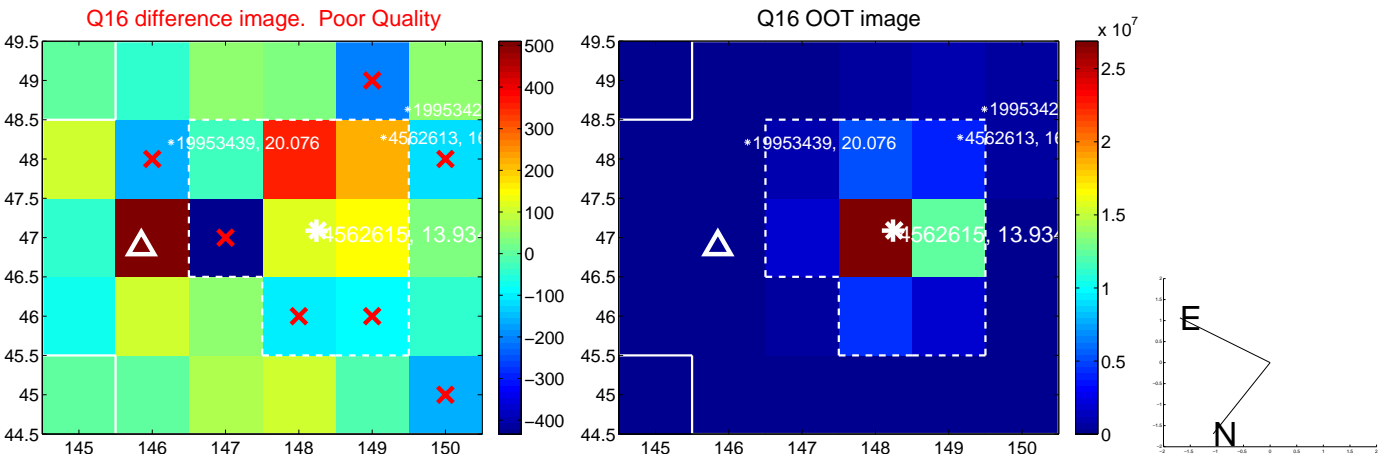
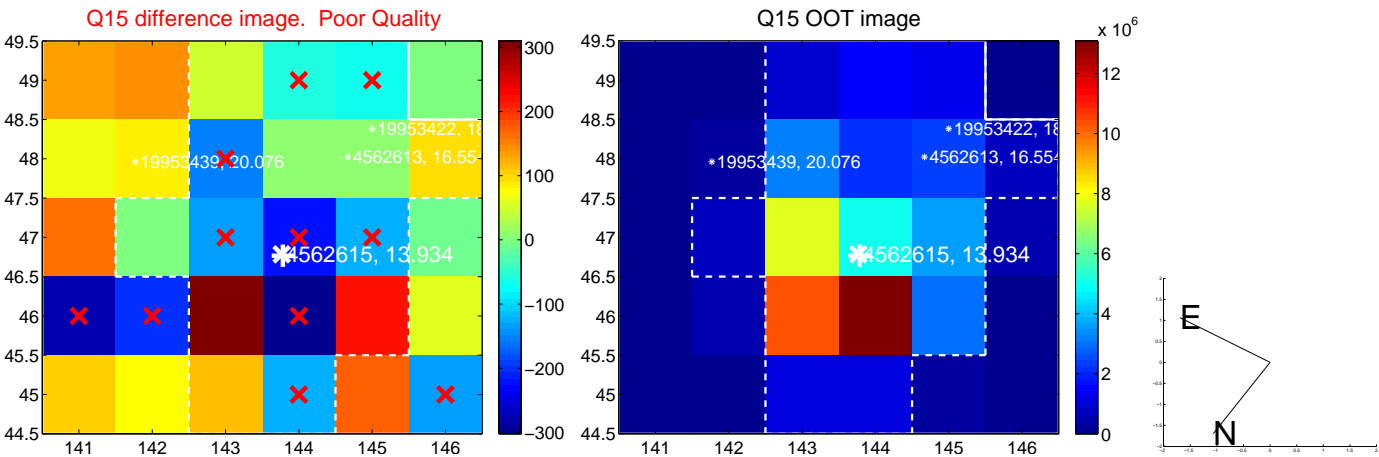
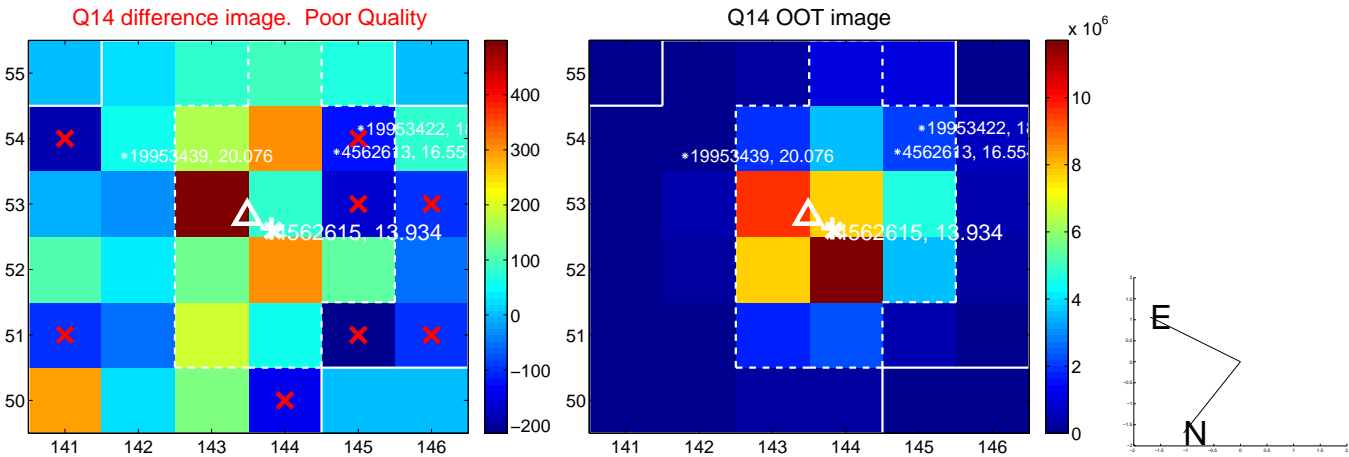
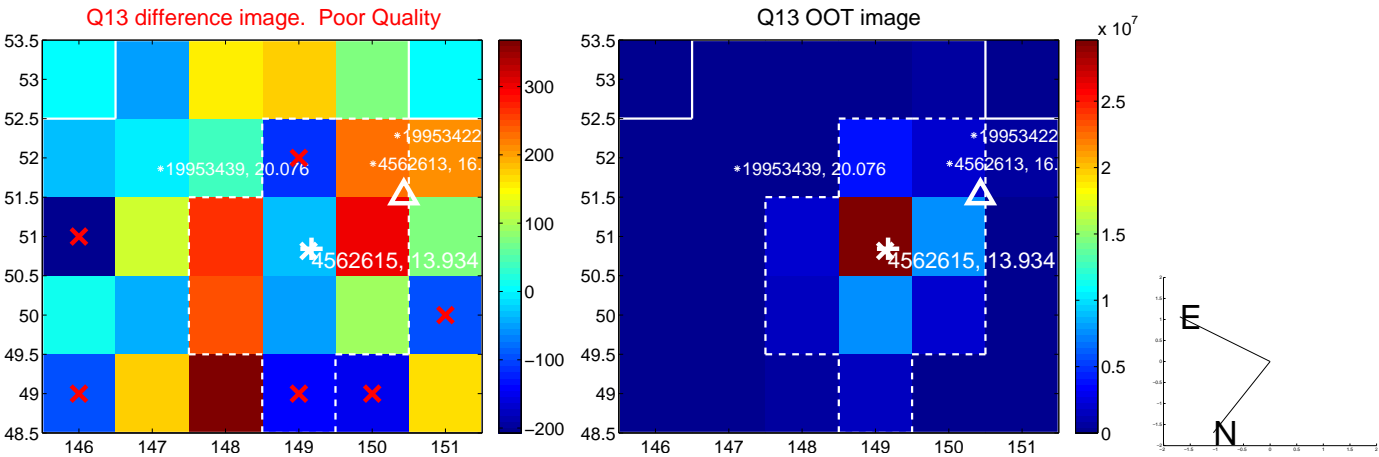
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



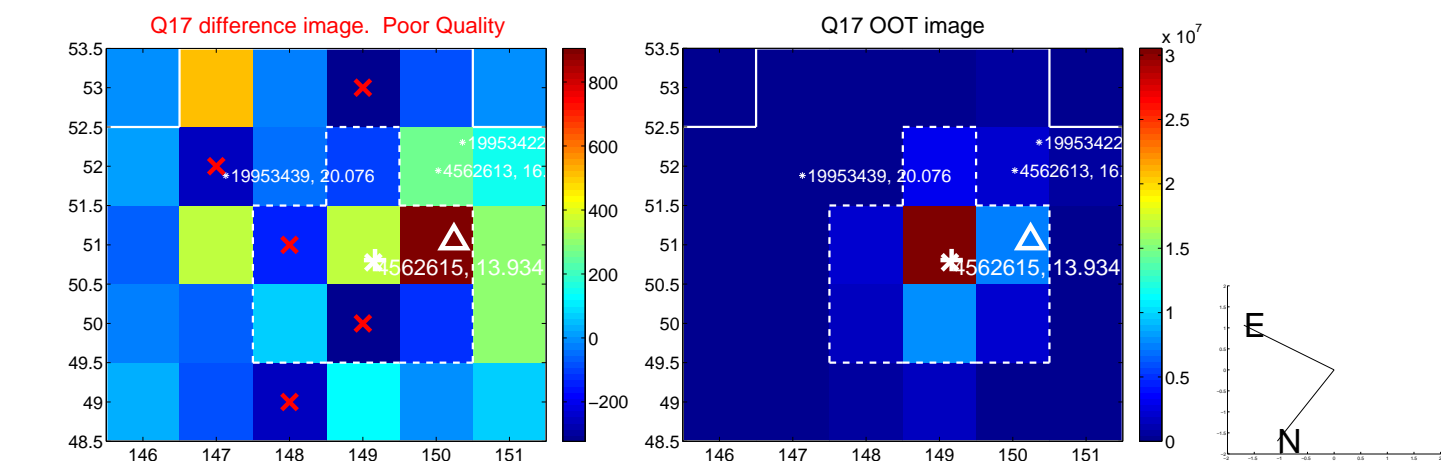
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



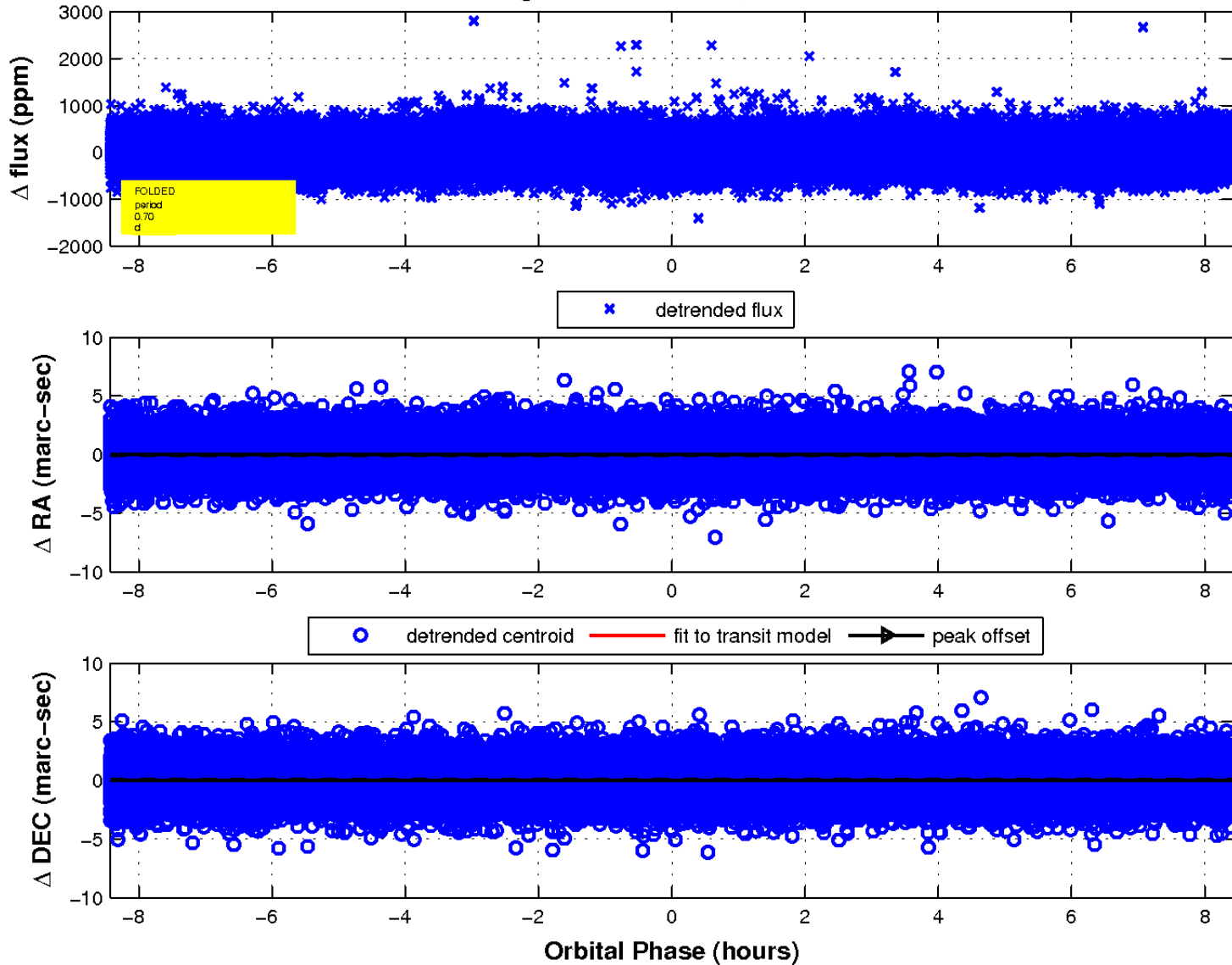
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

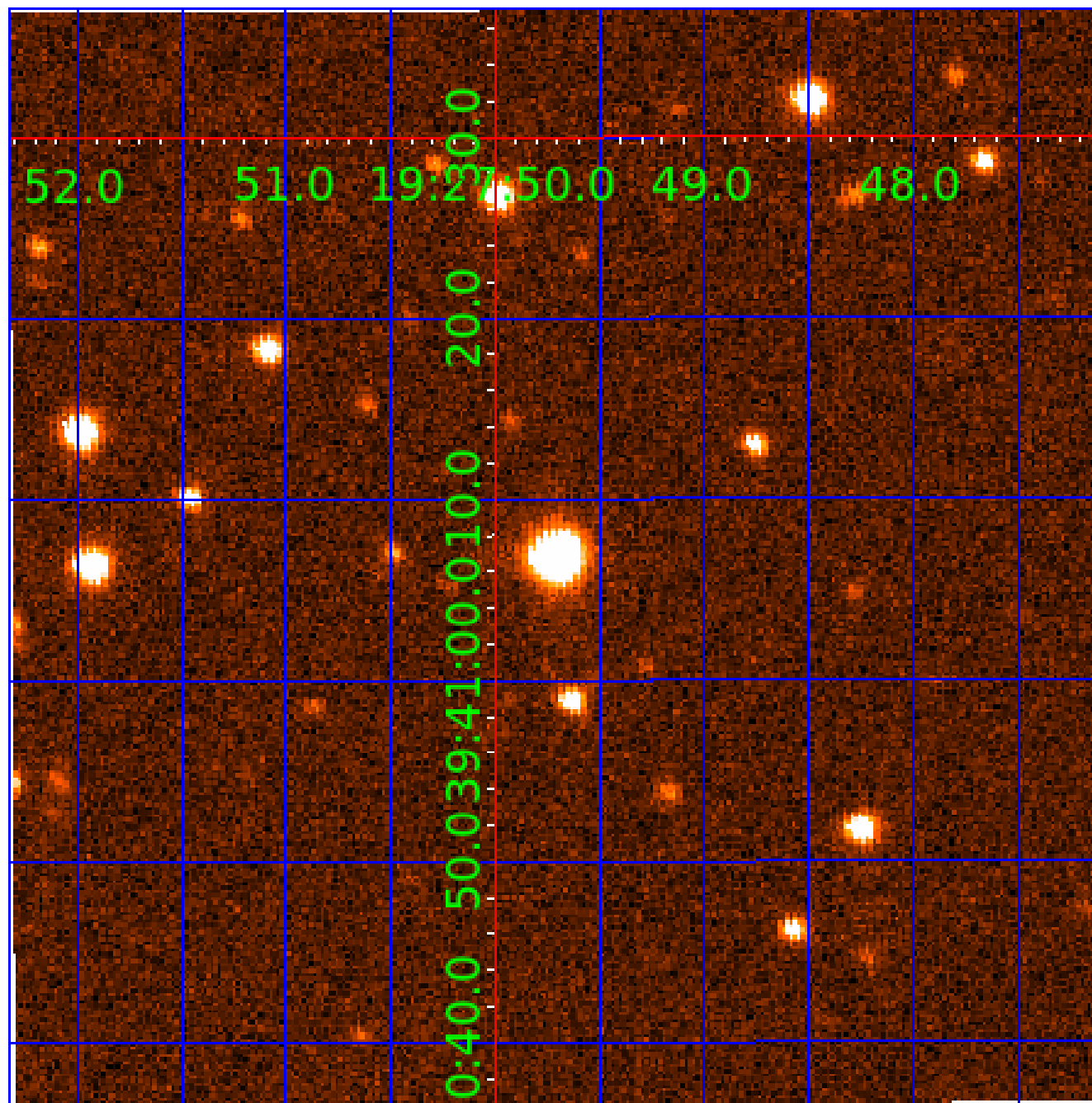


fluxWeightedCentroids, Planet 1 of 2



UKIRT Image

Declination



KIC 004562615

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})
004562615-01	OBS	No	0.702412	131.848068	40.3	3.001	9.4	10.7	1.65	6939	1.22	19609.09
004562615-02	OBS	No	2.713686	132.876742	78.0	3.373	8.1	9.0	1.65	6939	1.69	3234.70

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004562615-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT
004562615-02	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT

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

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

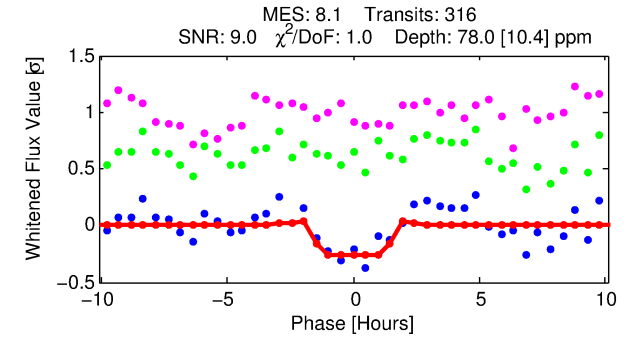
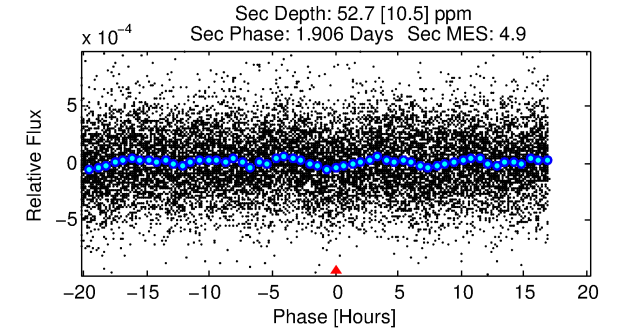
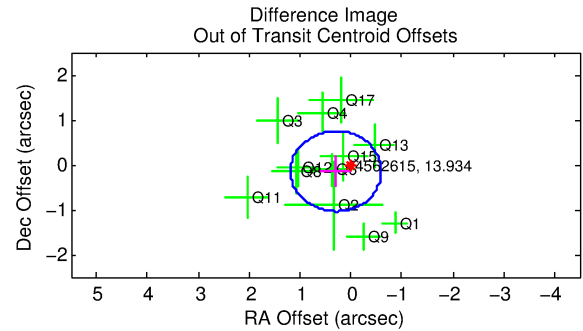
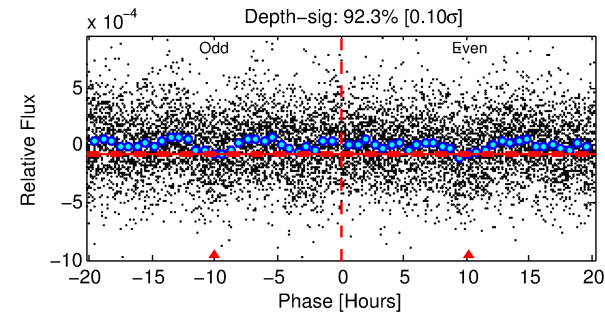
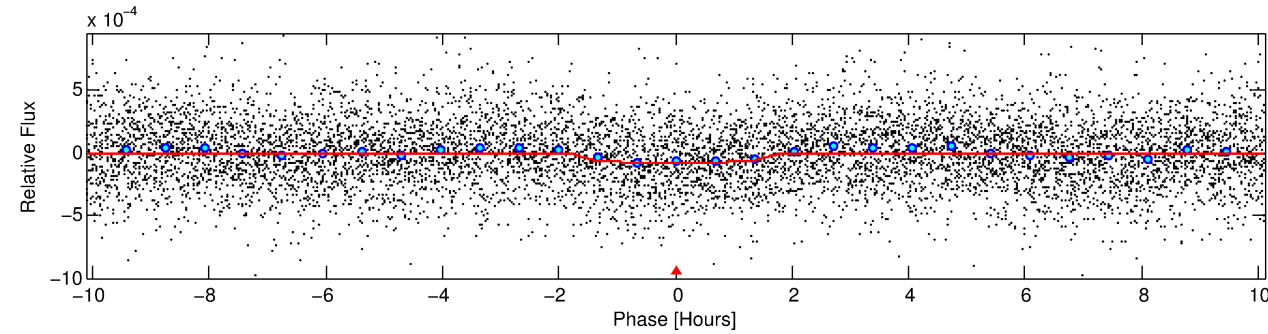
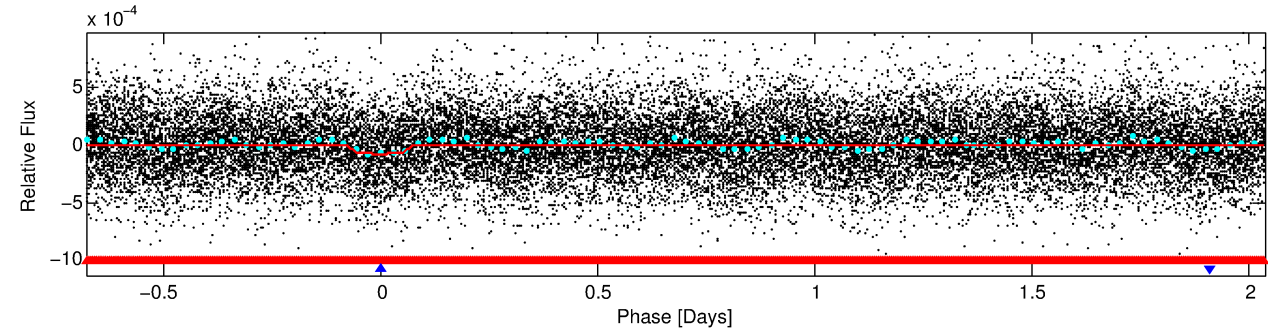
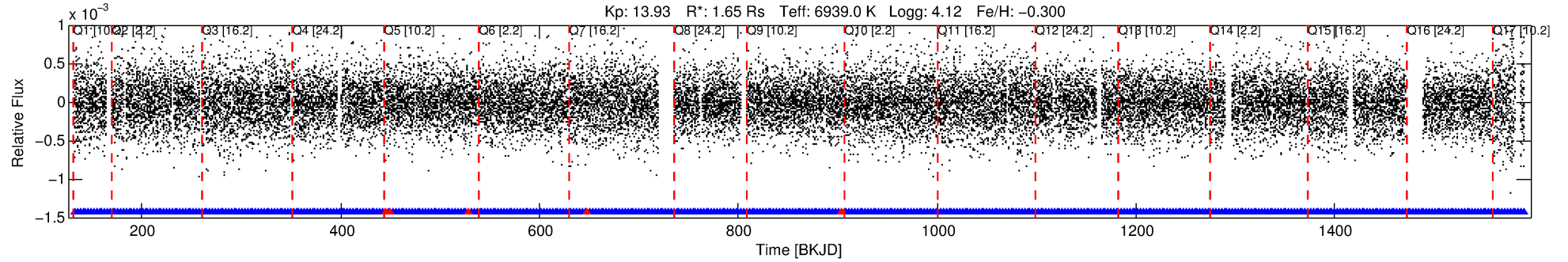
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004562615-02

No Significant Match Found

DV One-Page Summary

KIC: 4562615 Candidate: 2 of 2 Period: 2.714 d



DV Fit Results:

Period = 2.71369 [0.00002] d
Epoch = 132.8767 [0.0047] BKJD
Rp/R* = 0.0094 [0.0046]
a/R* = 3.04 [8.15]
b = 0.89 [0.69]
Seff = 3234.70 [1221.98]
Teff = 1923 [182] K
Rp = 1.69 [0.95] Re
a = 0.0418 [0.0098] AU
Ag = 17.86 [18.92] [0.89 σ]
Teffp = 6112 [1555] K [2.68 σ]

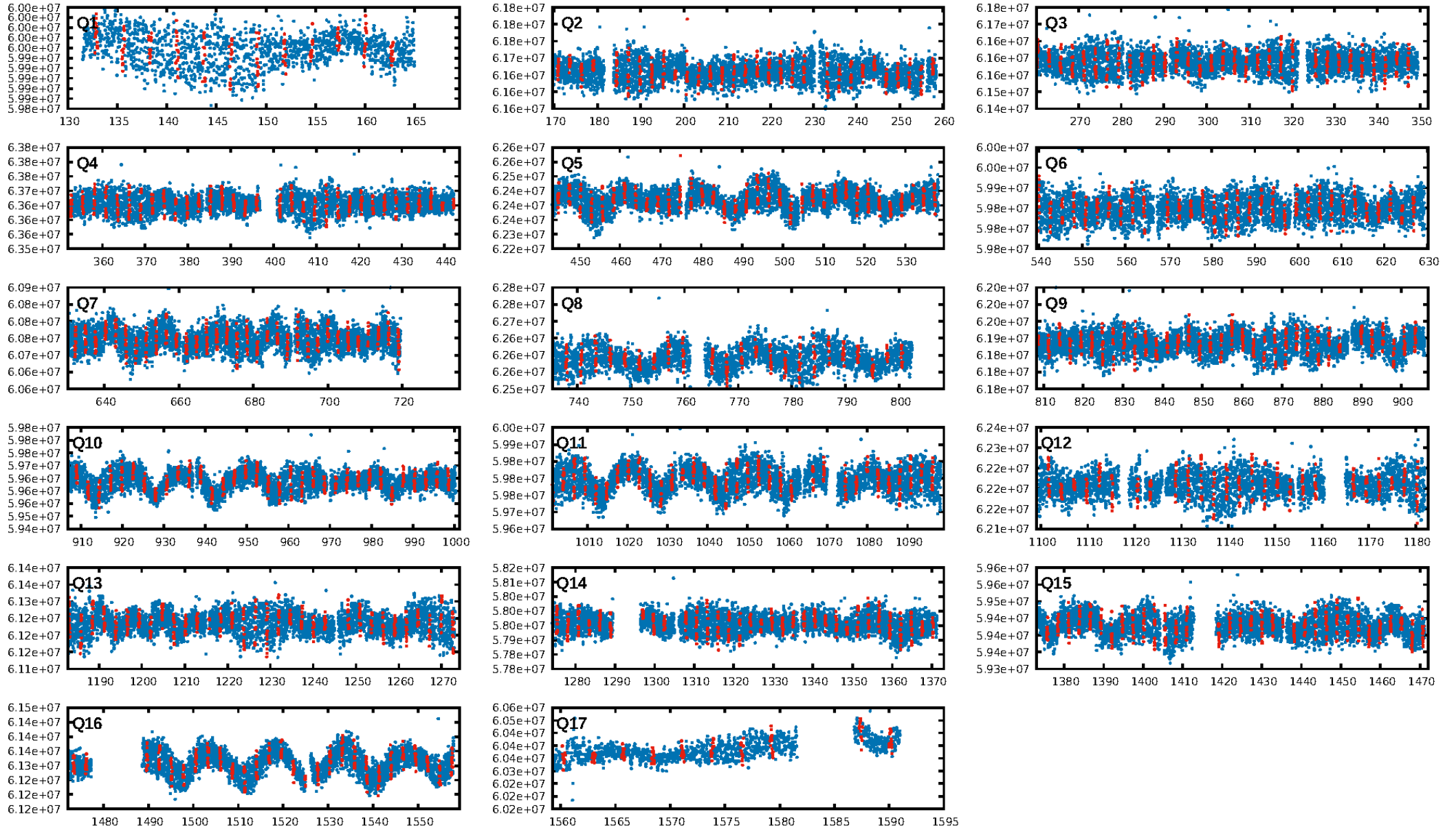
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [10.69 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 5.57e-11
RollingBand-fgt: 0.98 [296/301]
GhostDiagnostic-chr: 0.2596
Centroid-sig: 59.0%
Centroid-so: 0.502 arcsec [0.62 σ]
OotOffset-rm: 0.331 arcsec [1.11 σ]
KicOffset-rm: 0.246 arcsec [0.86 σ]
OotOffset-st: 2/3/3/4 [12]
KicOffset-st: 2/3/3/4 [12]
DiffImageQuality-fgm: 0.50 [6/12]
DiffImageOverlap-fno: 0.00 [0/17]

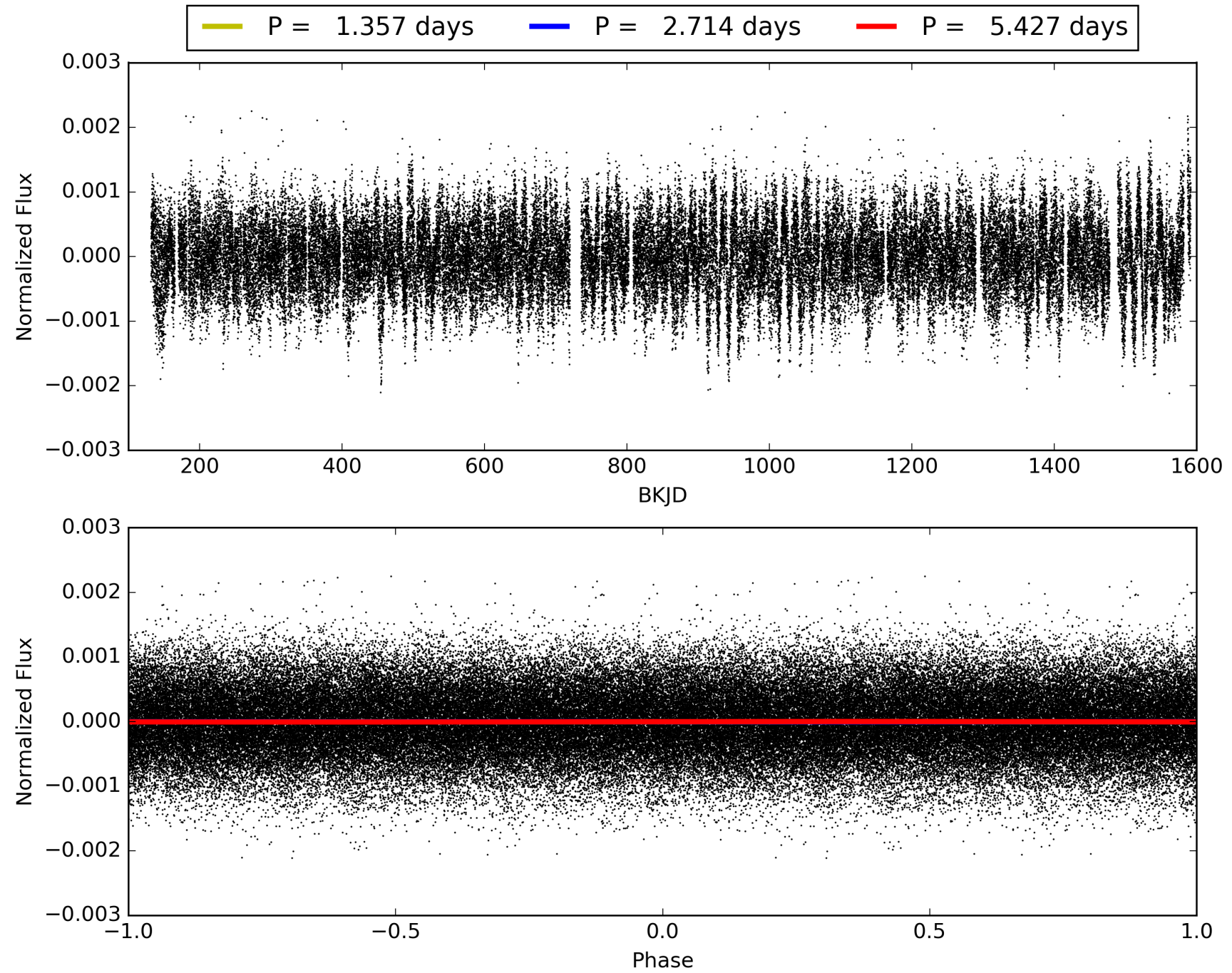
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 12:00:36 Z

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

TCE 004562615-02, PDC Light Curves

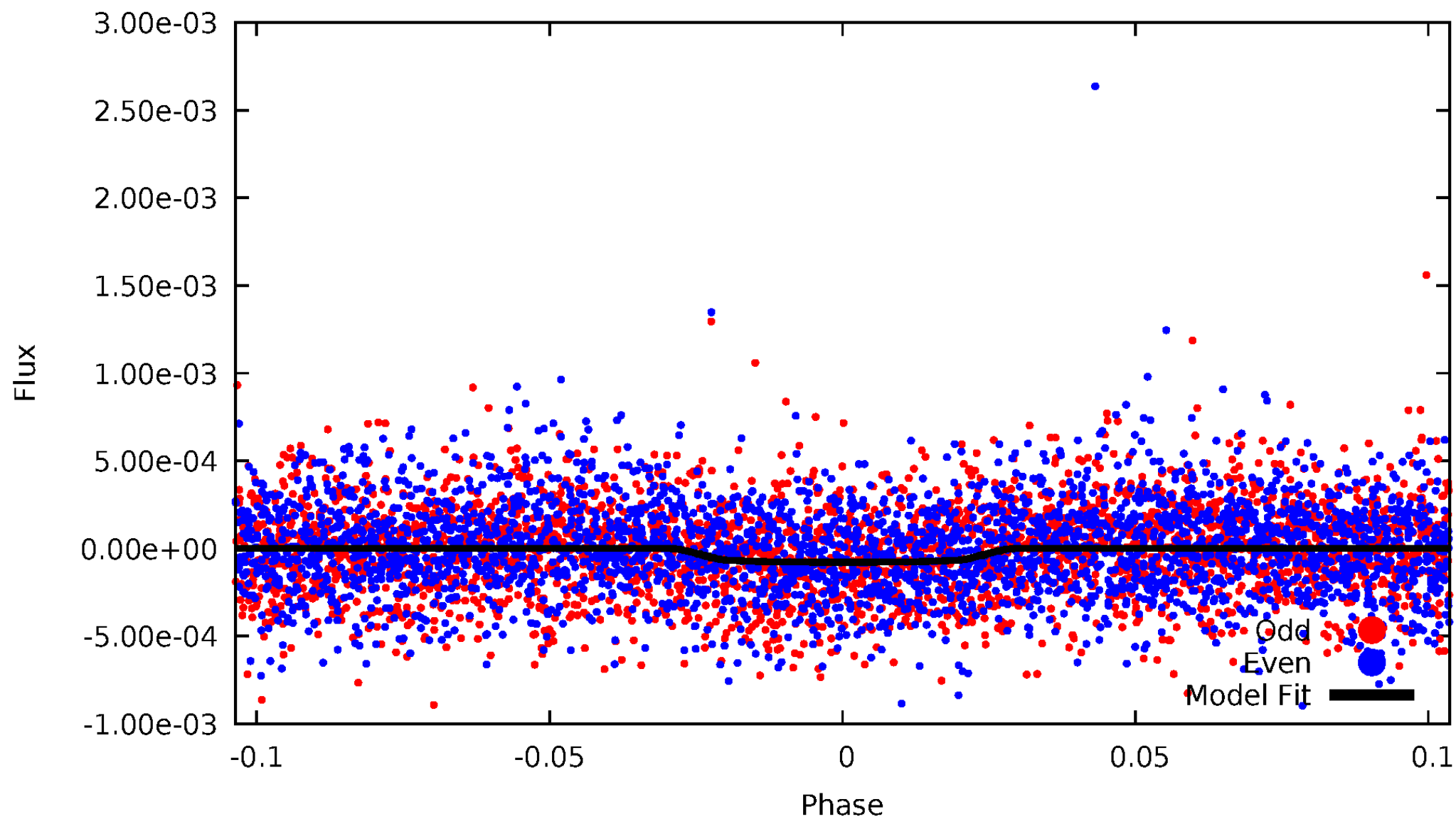


TCE 004562615-02



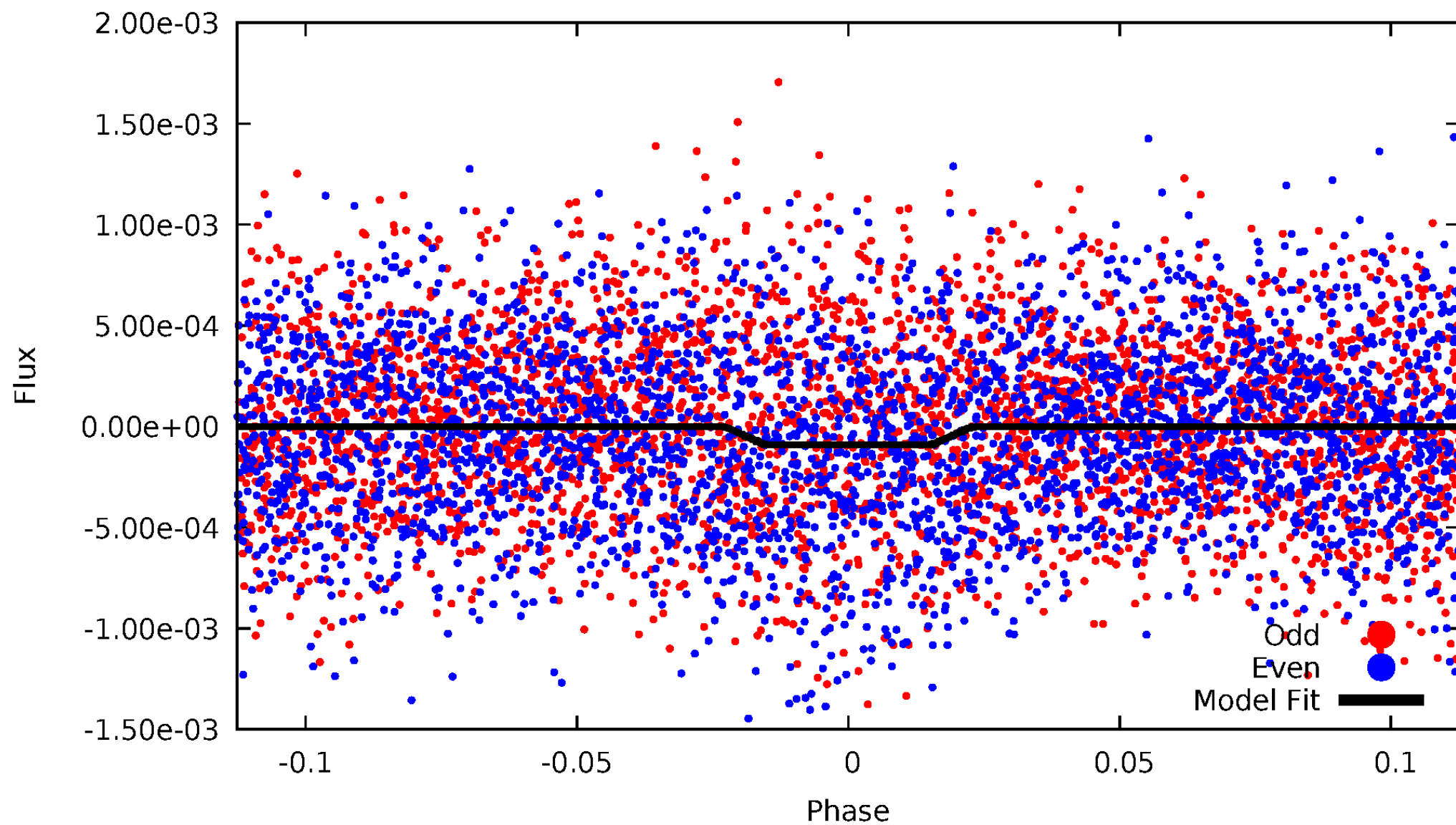
DV Odd/Even

TCE 004562615-02



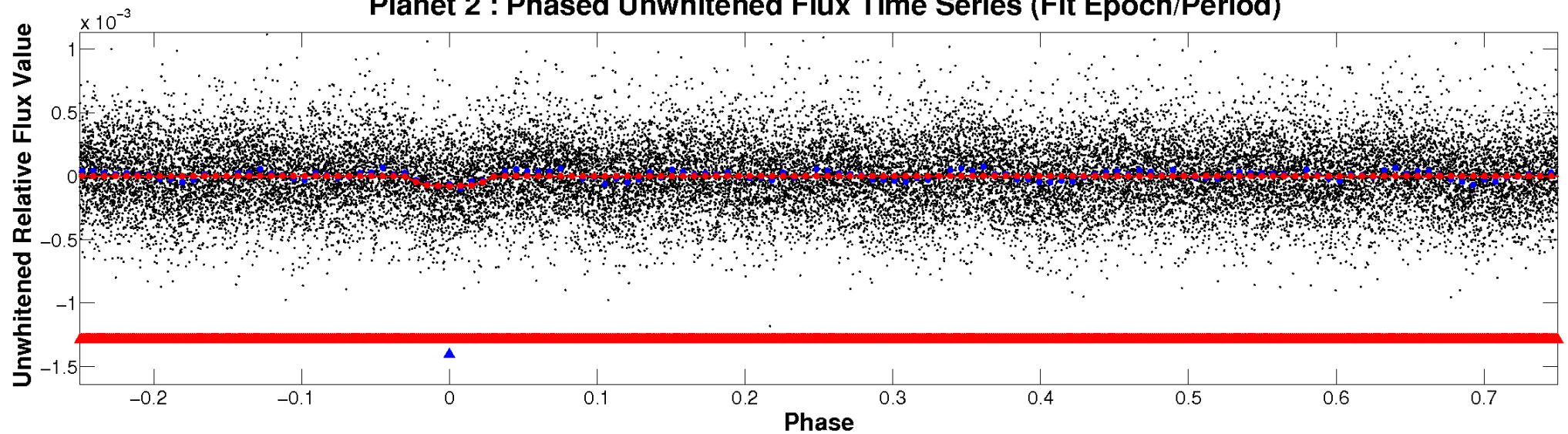
ALT Odd/Even

TCE 004562615-02

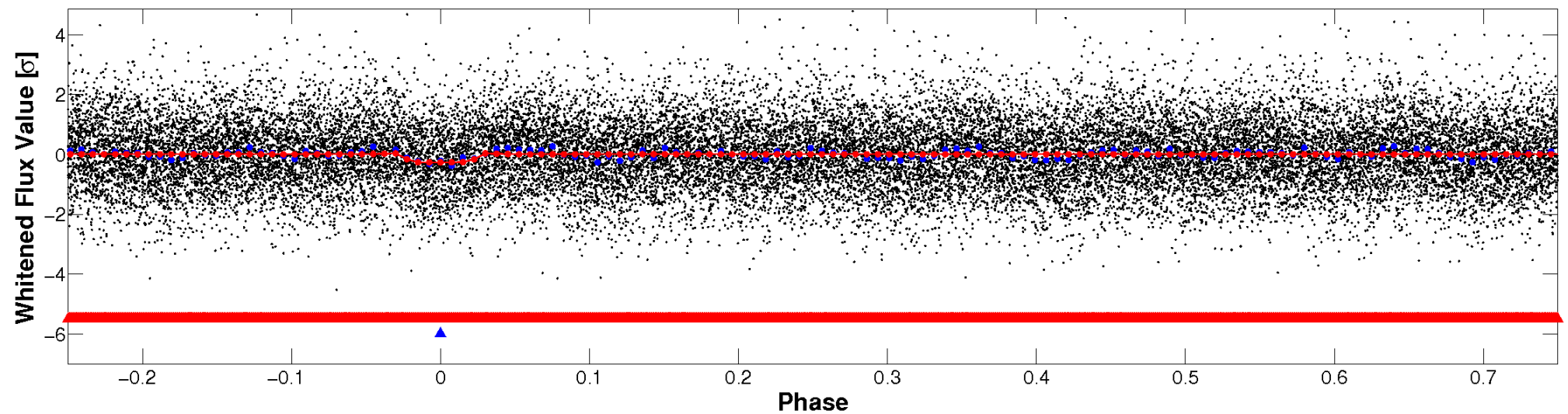


Non-Whitened Vs. Whitened Light Curve

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

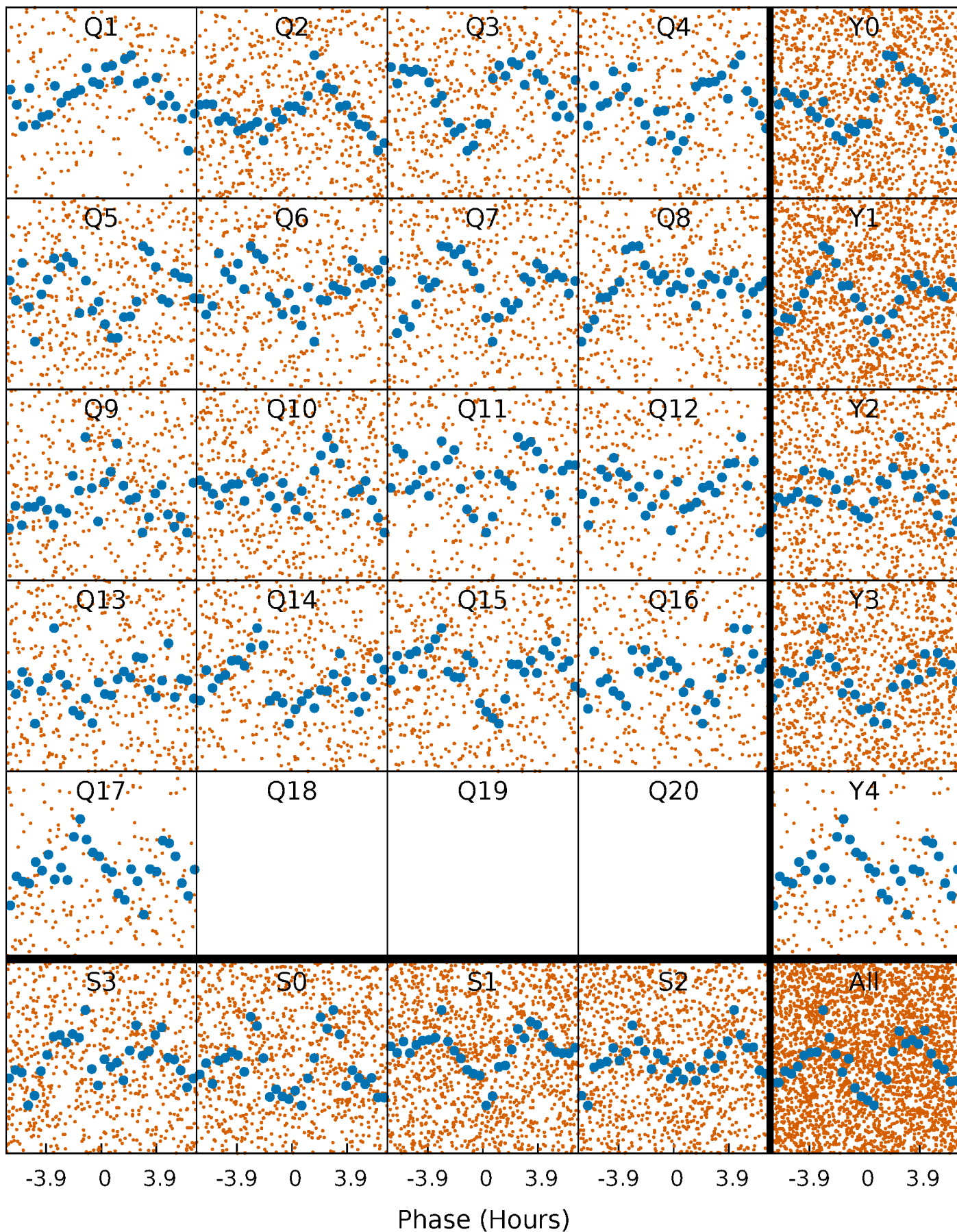


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



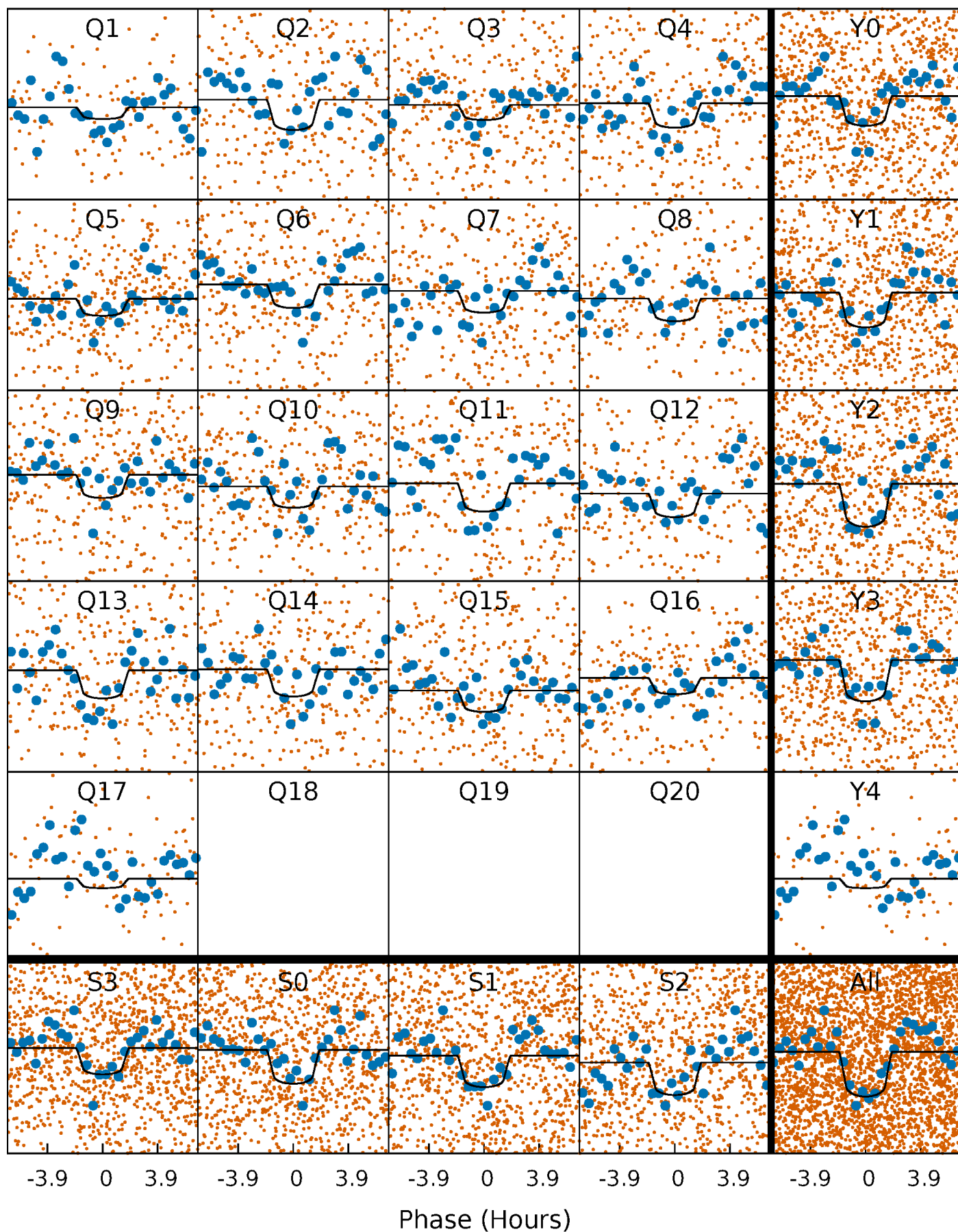
PDC Quarter-Phased Transit Curves

TCE 004562615-02 P= 2.713686 Days $T_0=132.876742$ (BKJD)



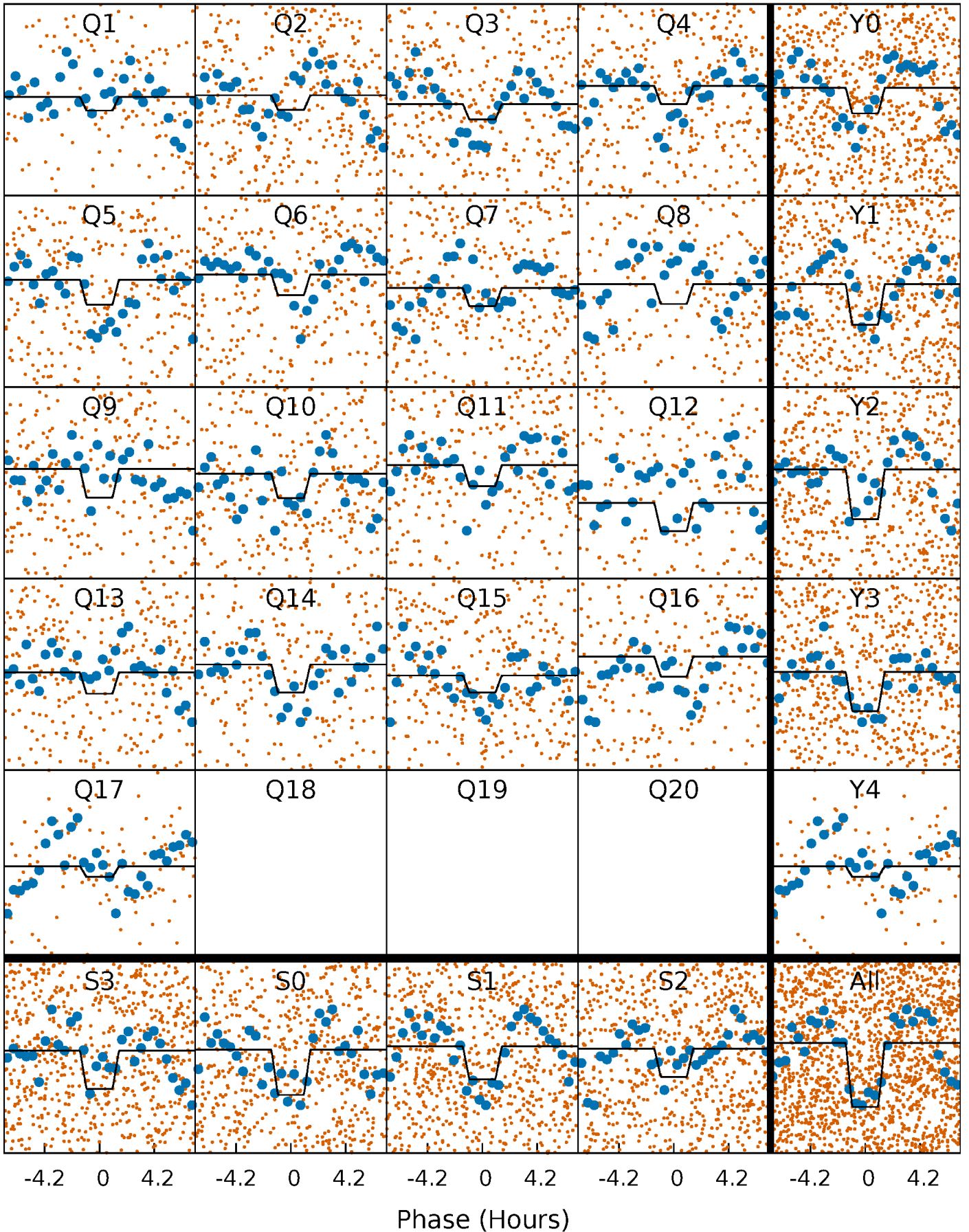
DV Quarter-Phased Transit Curves

TCE 004562615-02 P= 2.713686 Days $T_0=132.876742$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

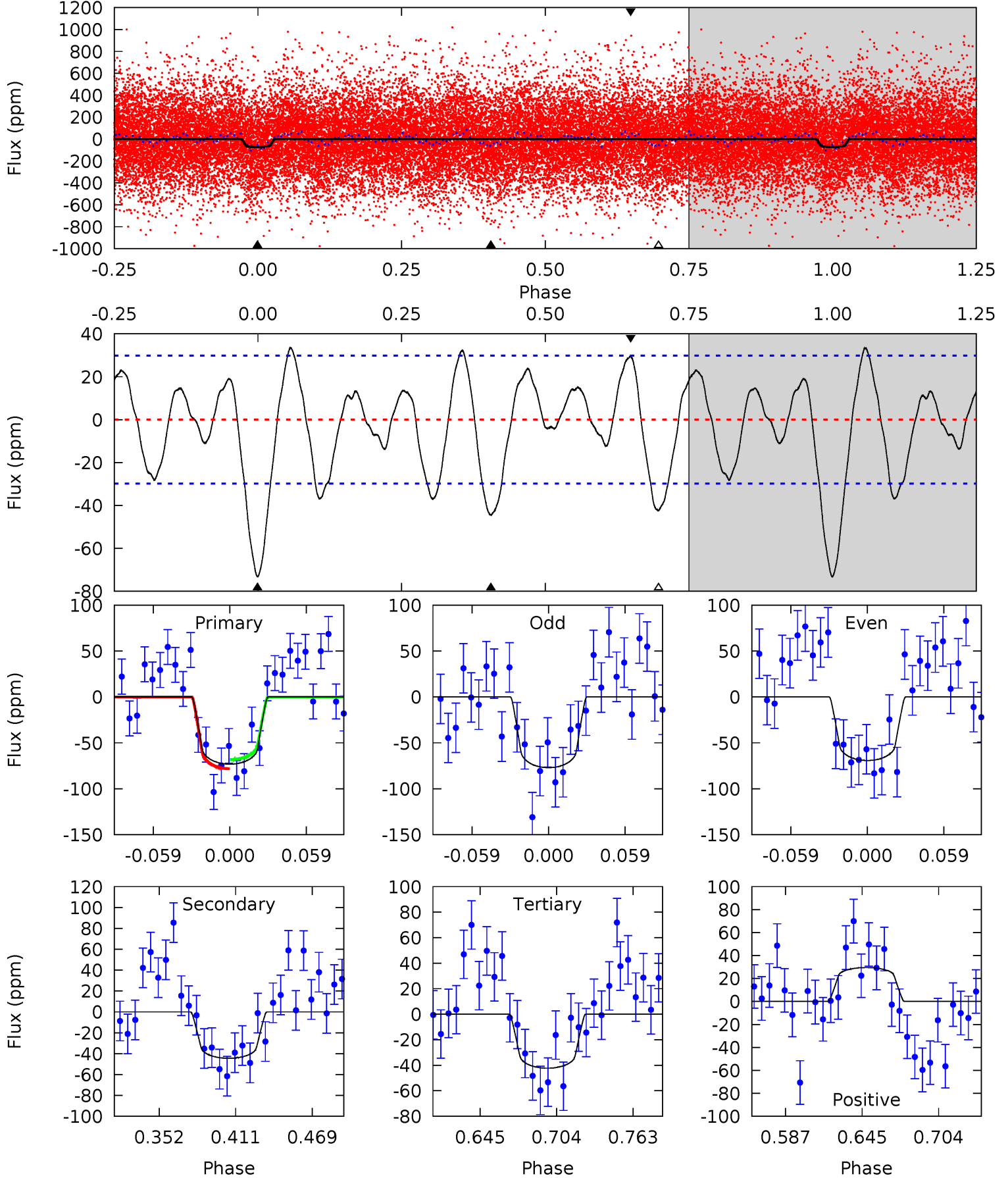
TCE 004562615-02 P= 2.713727 Days $T_0=132.865596$ (BKJD)



DV Model-Shift Uniqueness Test

004562615-02, P = 2.713686 Days, E = 130.163056 Days

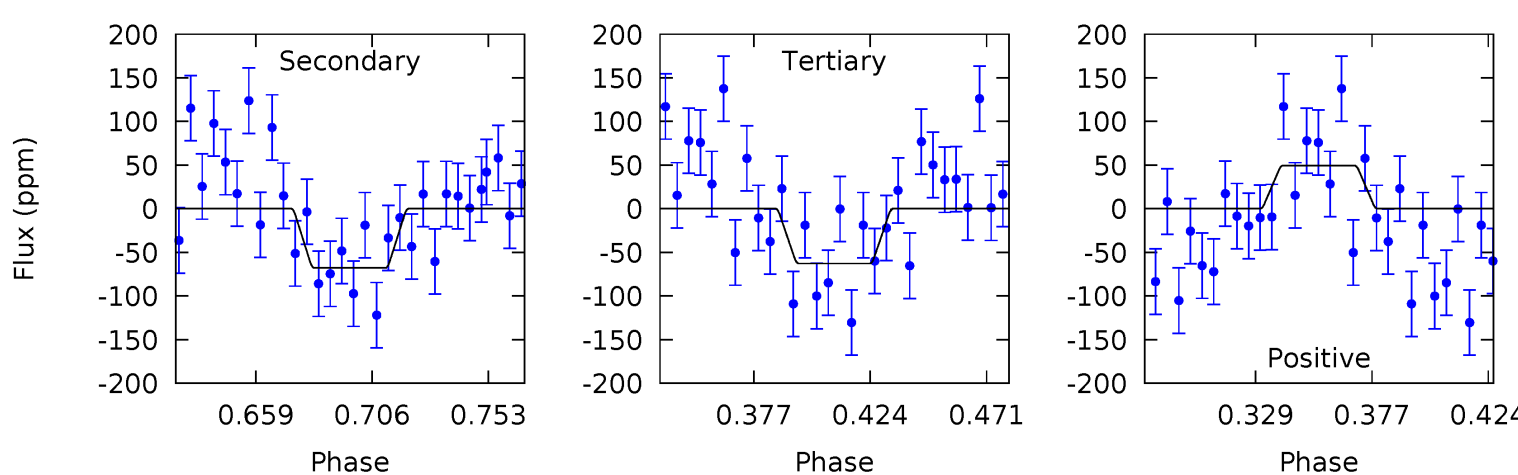
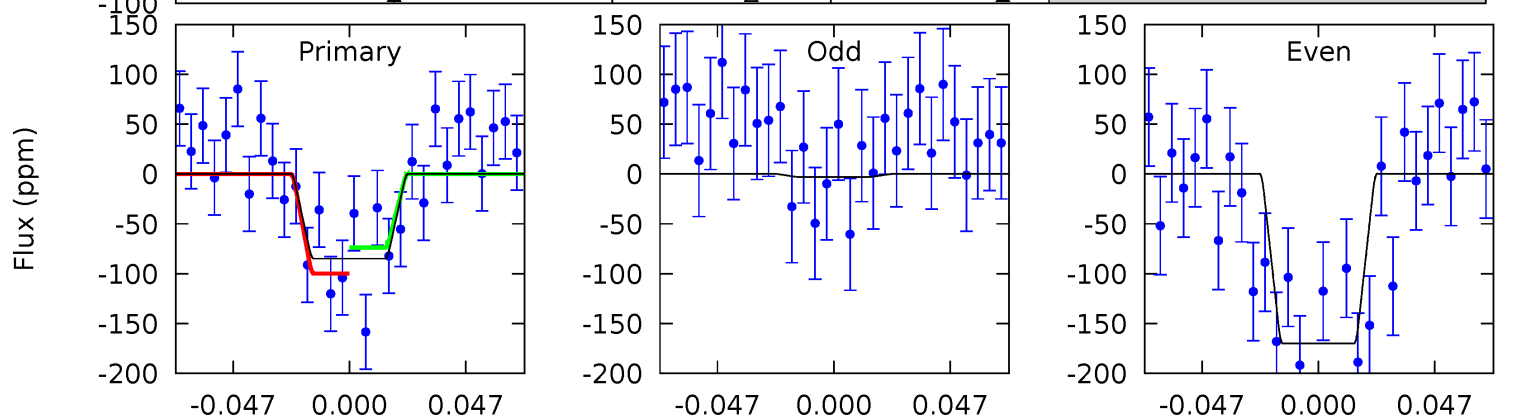
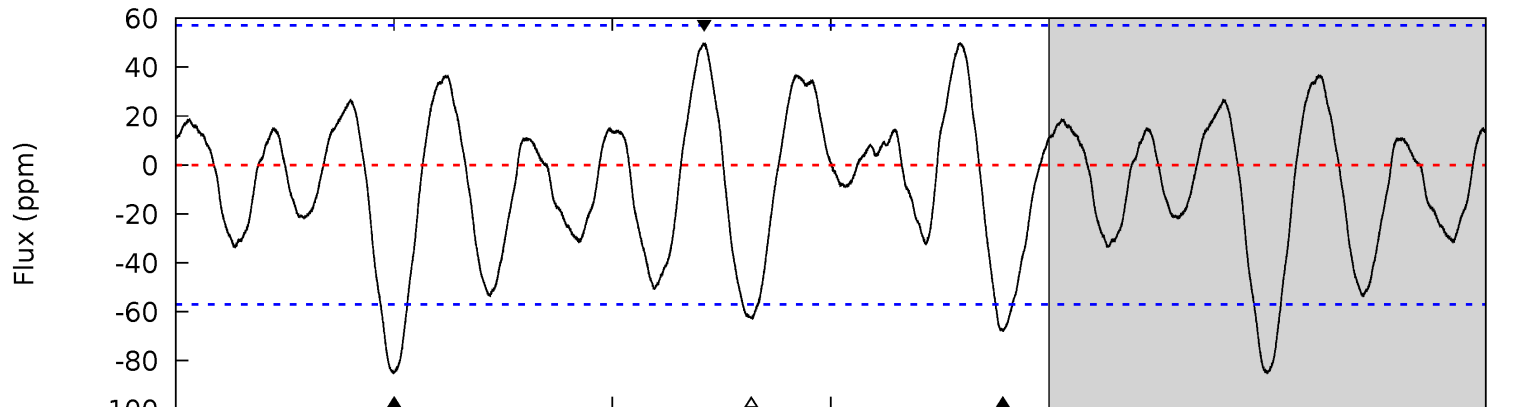
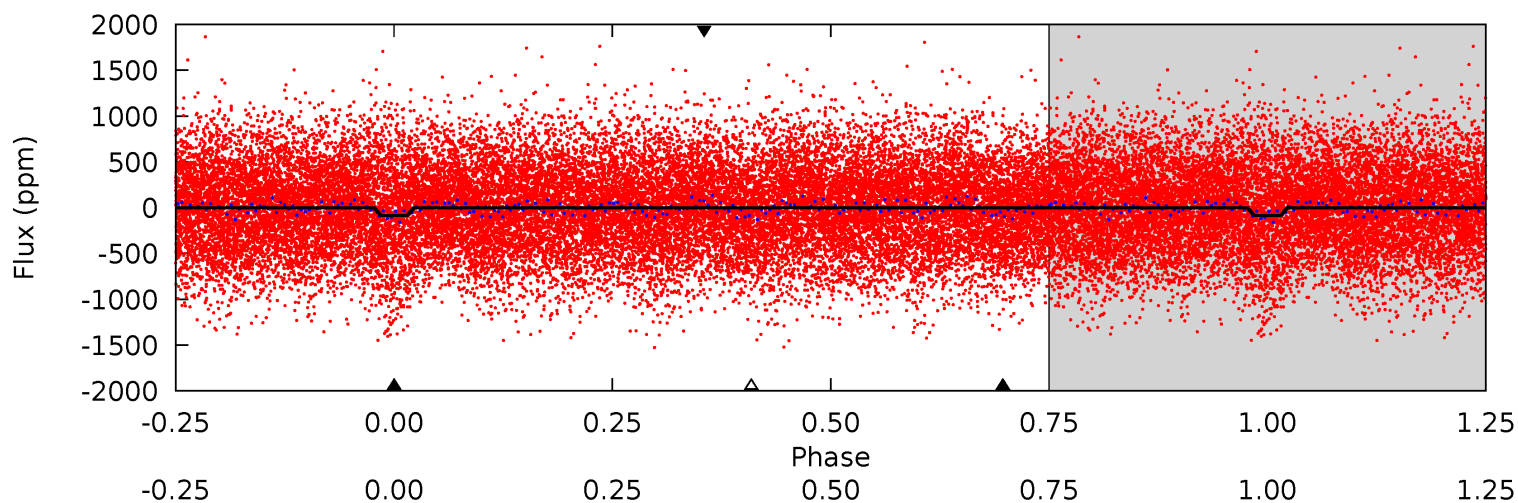
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.5	6.97	6.63	4.62	4.68	1.89	2.77	4.84	6.85	0.33	2.34	0.61	1.05	0.31	0.78



Alt Model-Shift Uniqueness Test

004562615-02, P = 2.713727 Days, E = 130.151869 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.02	5.59	5.19	4.10	4.72	1.99	2.12	1.84	2.92	0.41	1.49	6.89	1.33	0.37	1.09



Stellar Parameters For KIC 004562615

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6939^{+192}_{-288}	$4.125^{+0.185}_{-0.185}$	$-0.300^{+0.250}_{-0.300}$	$1.651^{+0.460}_{-0.414}$	$1.329^{+0.190}_{-0.232}$	$0.416^{+0.481}_{-0.194}$
	+3%/-4%	+4%/-4%	+83%/-100%	+28%/-25%	+14%/-17%	+116%/-47%
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 004562615-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-44 ± 6	$1.68^{+0.93}_{-0.77}$	2673^{+199}_{-205}	5749^{+2135}_{-997}	15^{+36}_{-9}
Alt.	-68 ± 12	$1.74^{+0.89}_{-0.79}$	2682^{+199}_{-193}	6246^{+2404}_{-1073}	20^{+48}_{-11}

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 $A_{obs} \gg 1.0$

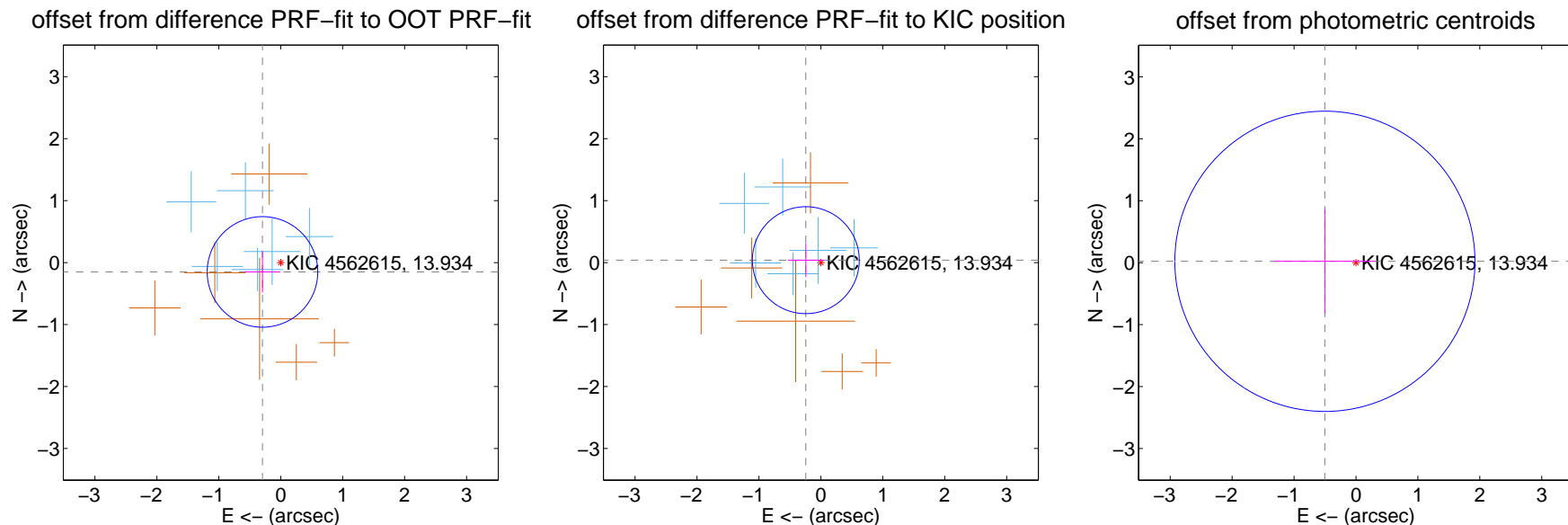
DV Centroid Data

Supplemental centroid analysis for 004562615-02. Kepler magnitude: 13.93. Transit SNR 9.03

There are 6 quarters with good PRF difference image offsets

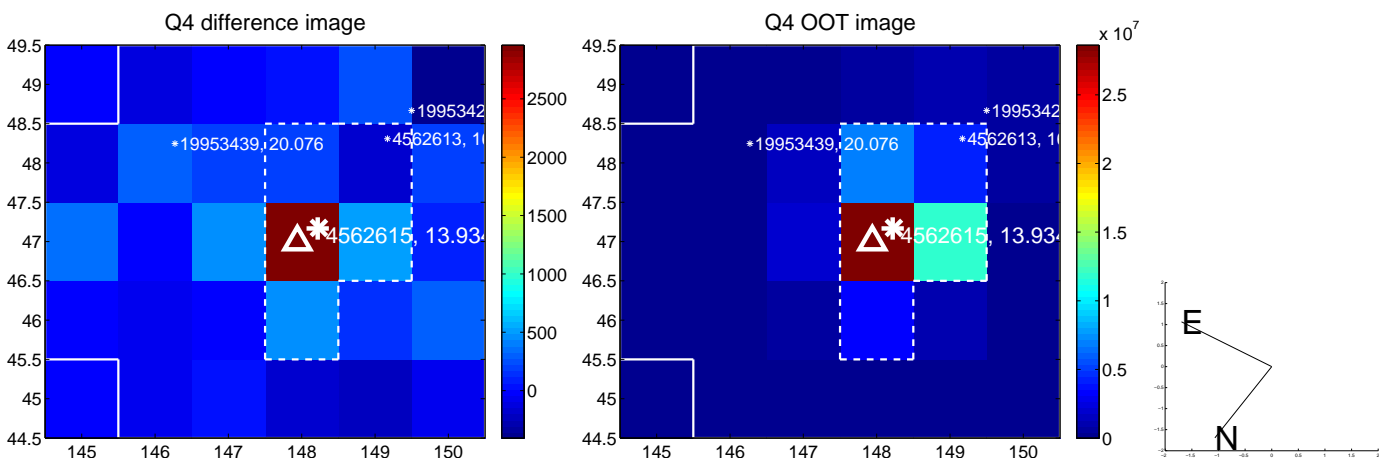
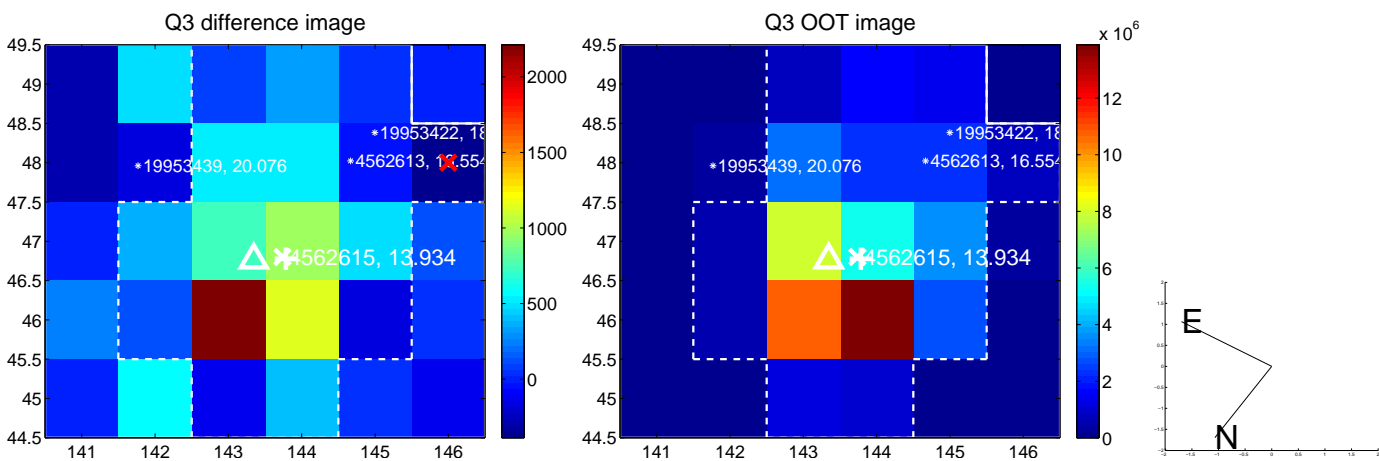
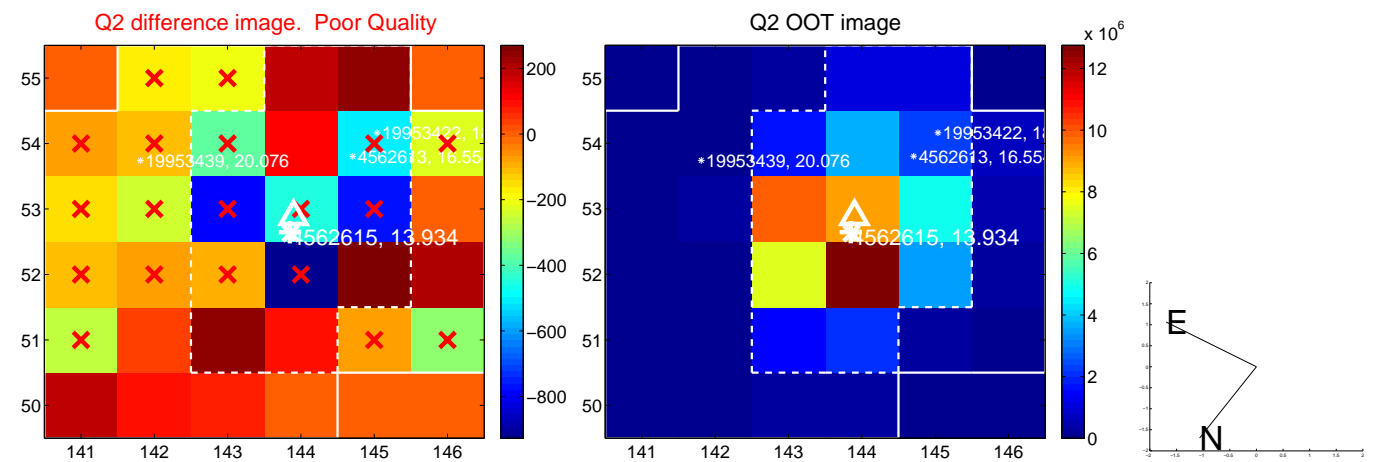
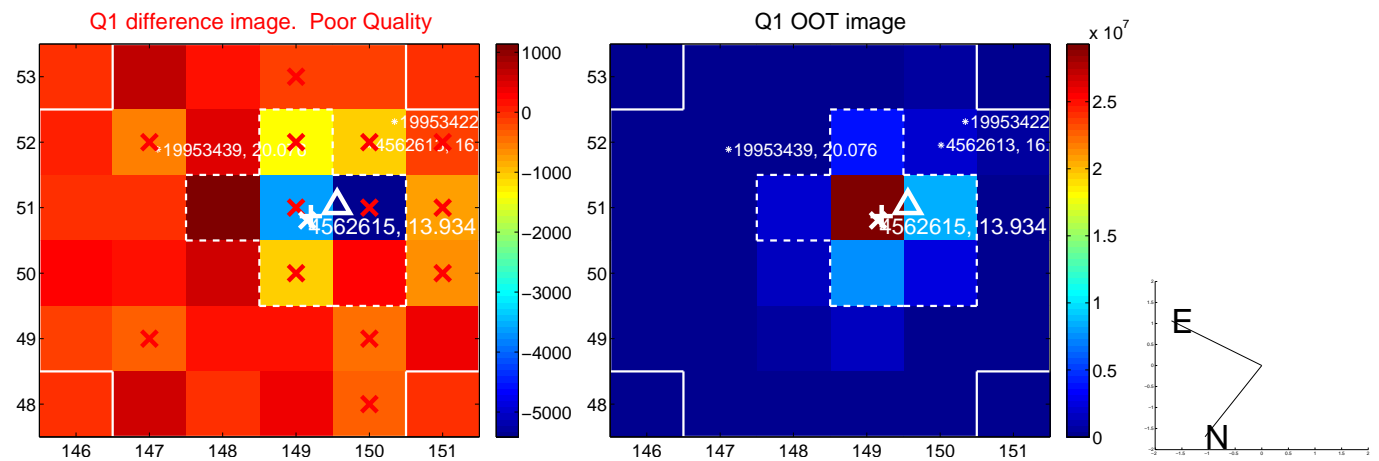
The direct PRF centroid is offset from the target star catalog position by about 0.14 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.331 ± 0.297	1.11	0.295 ± 0.288	-0.151 ± 0.331
PRF-fit source offset from KIC position	0.246 ± 0.288	0.86	0.243 ± 0.288	0.039 ± 0.274
photometric centroid source offset	0.50 ± 0.81	0.62	0.50 ± 0.81	0.02 ± 0.84

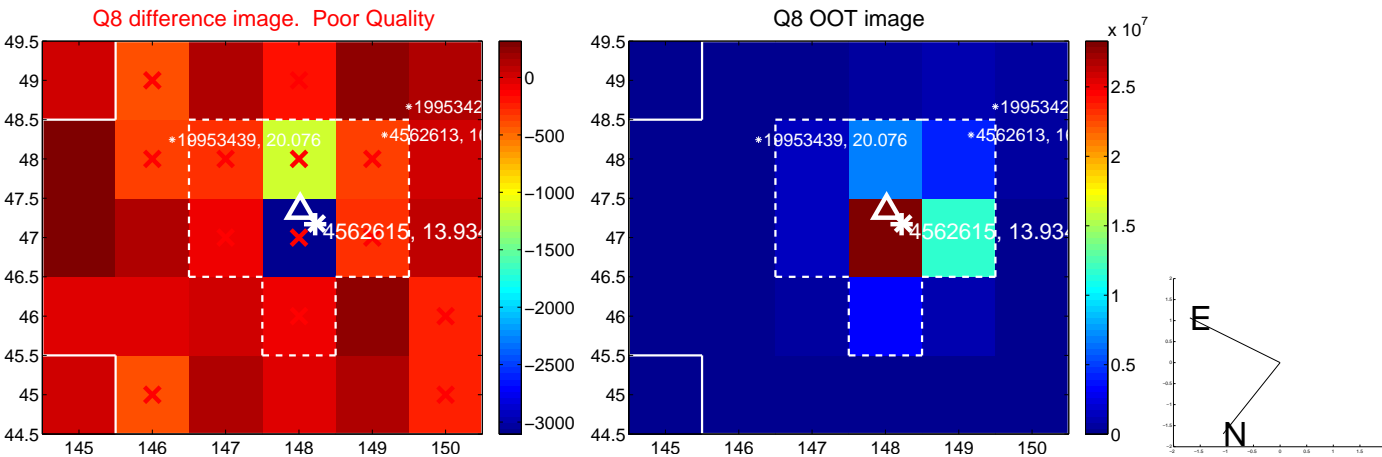
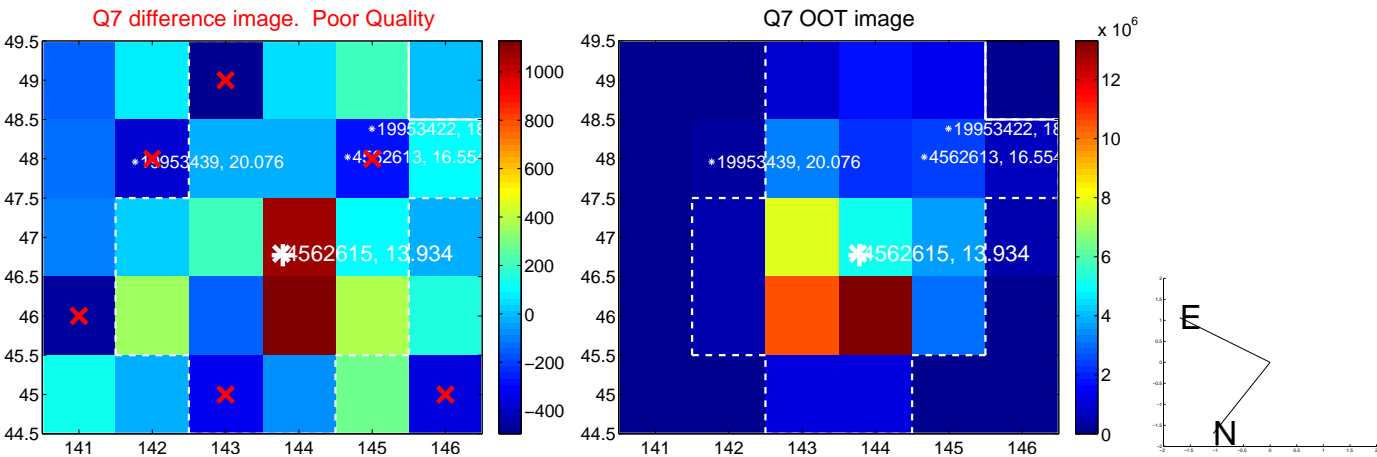
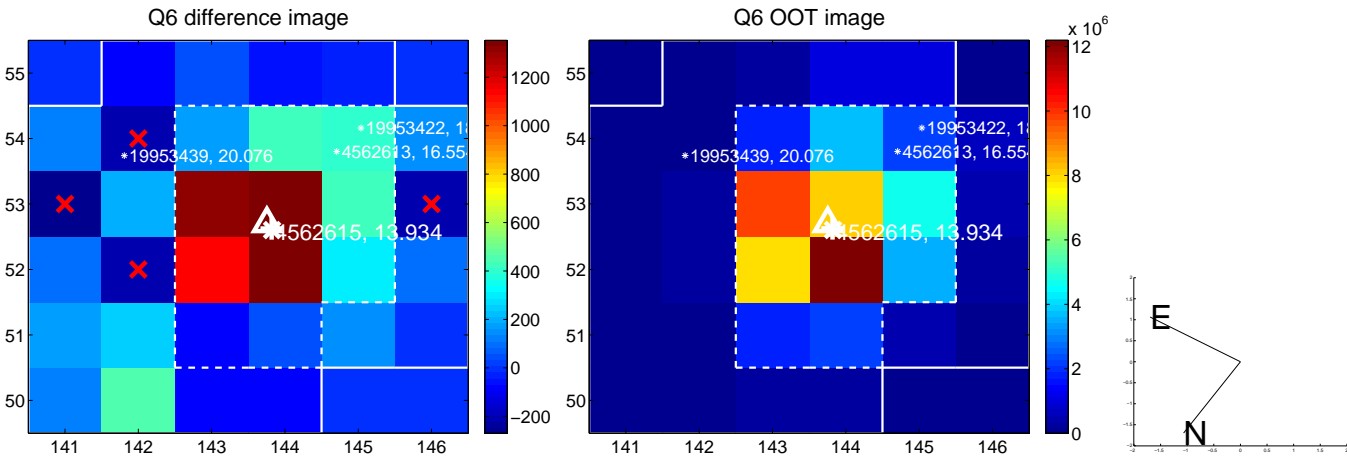
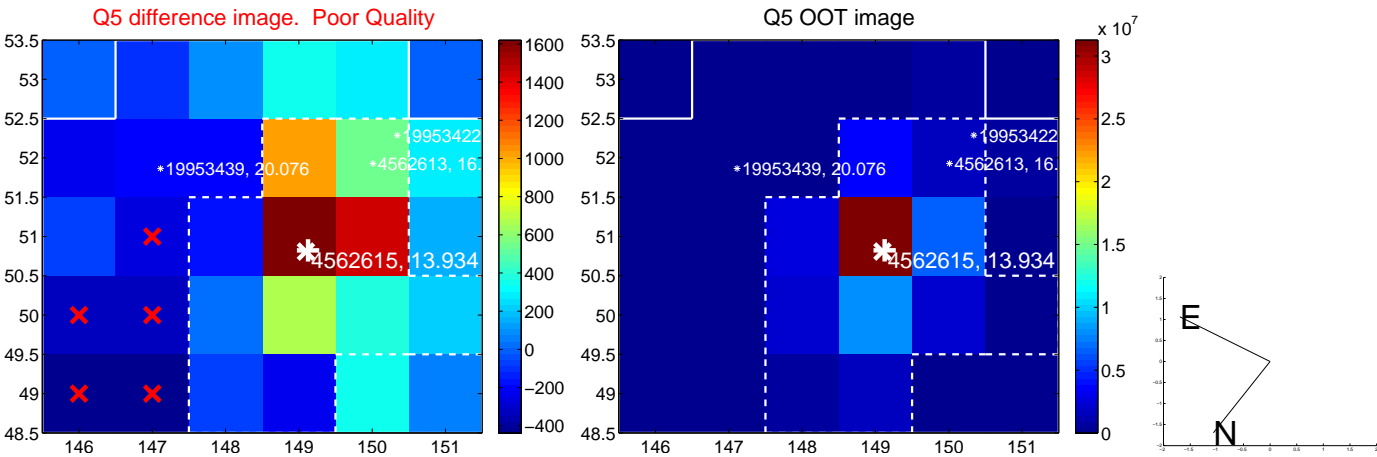


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

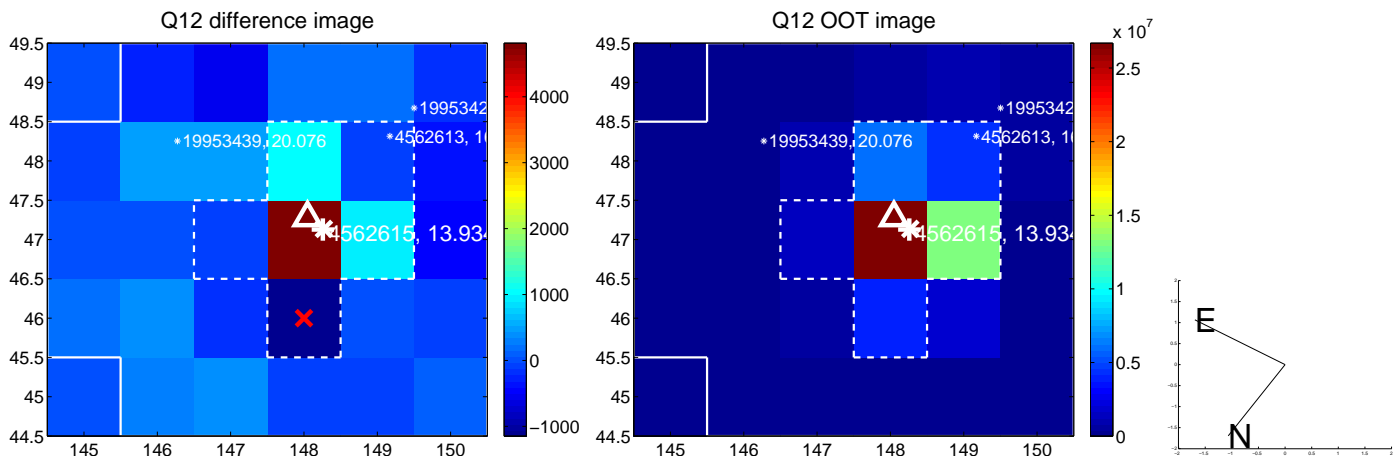
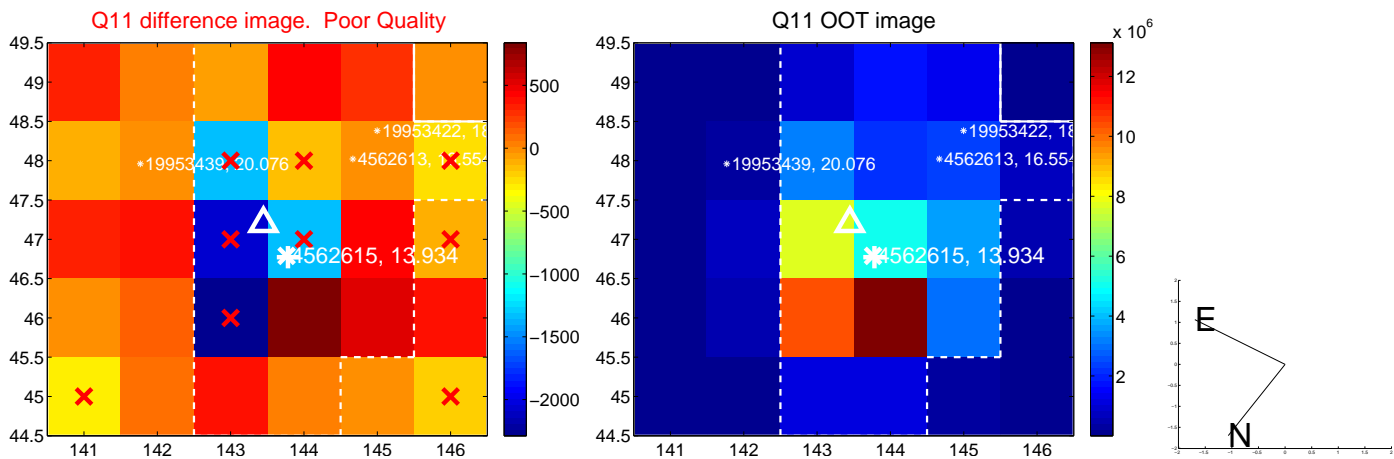
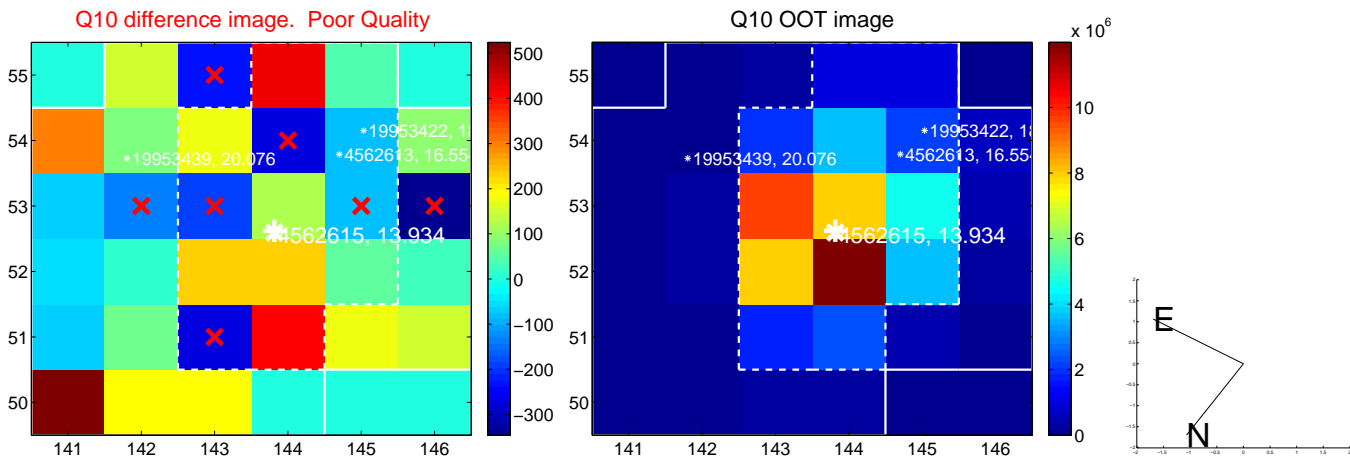
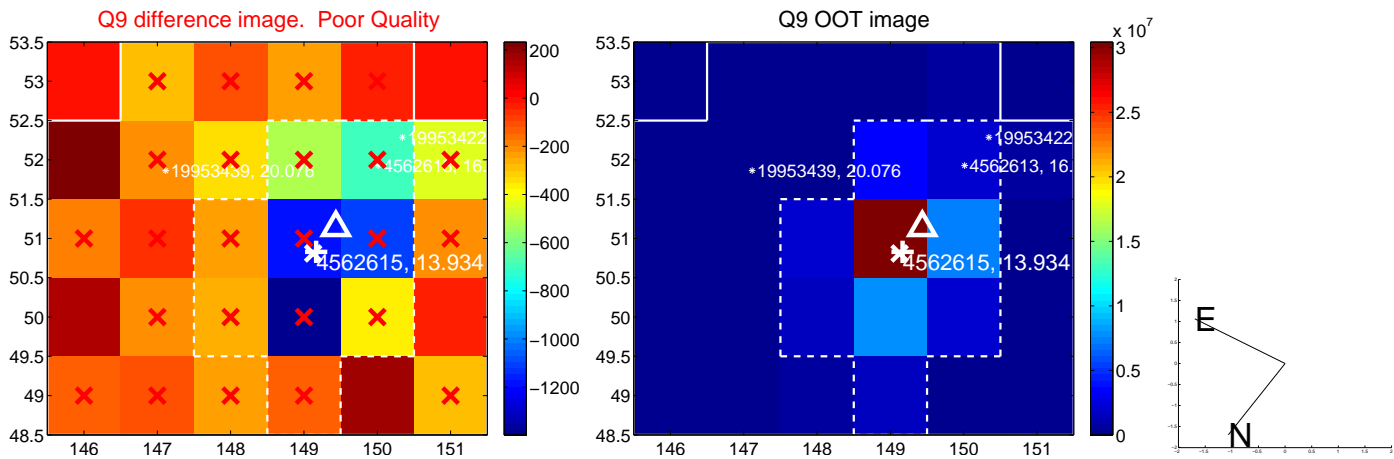
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



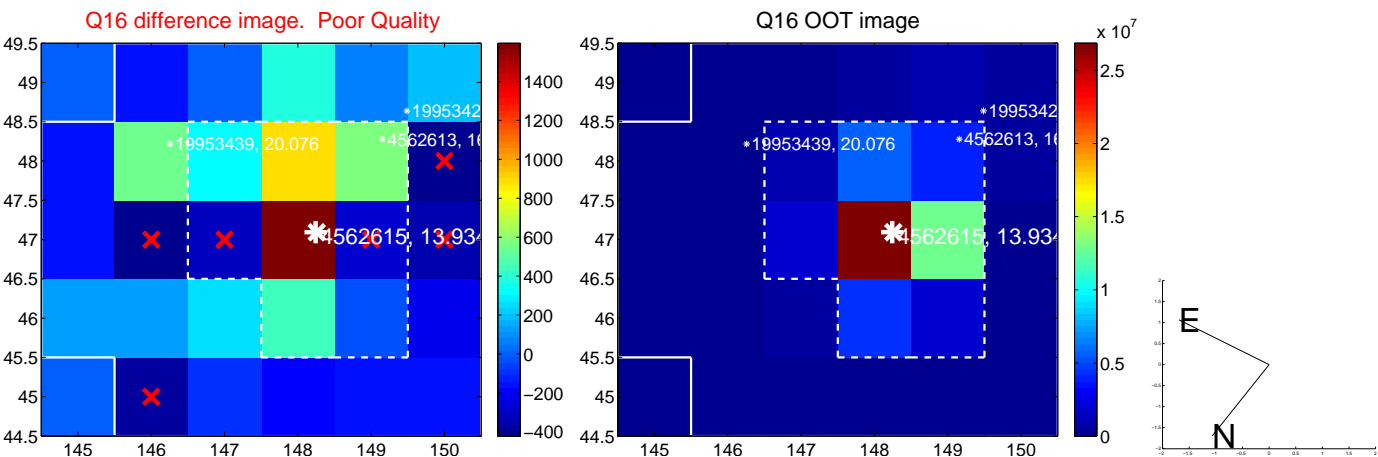
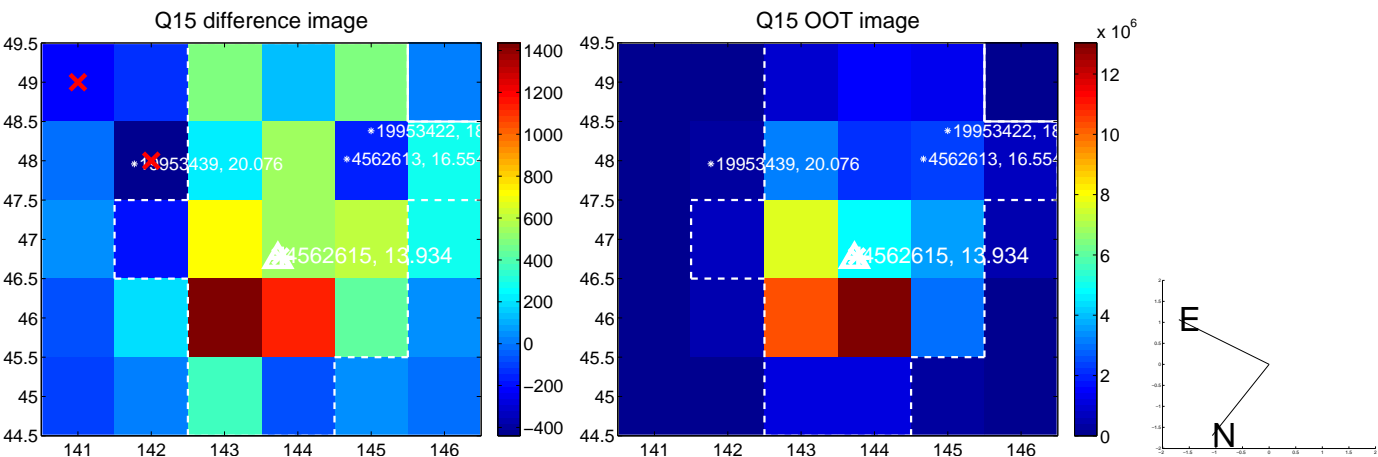
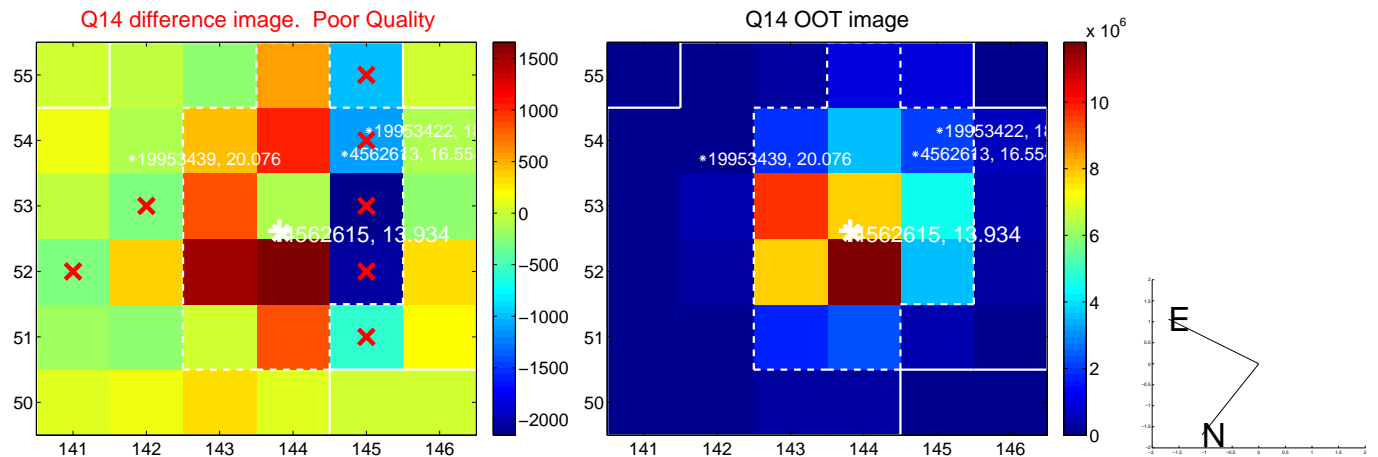
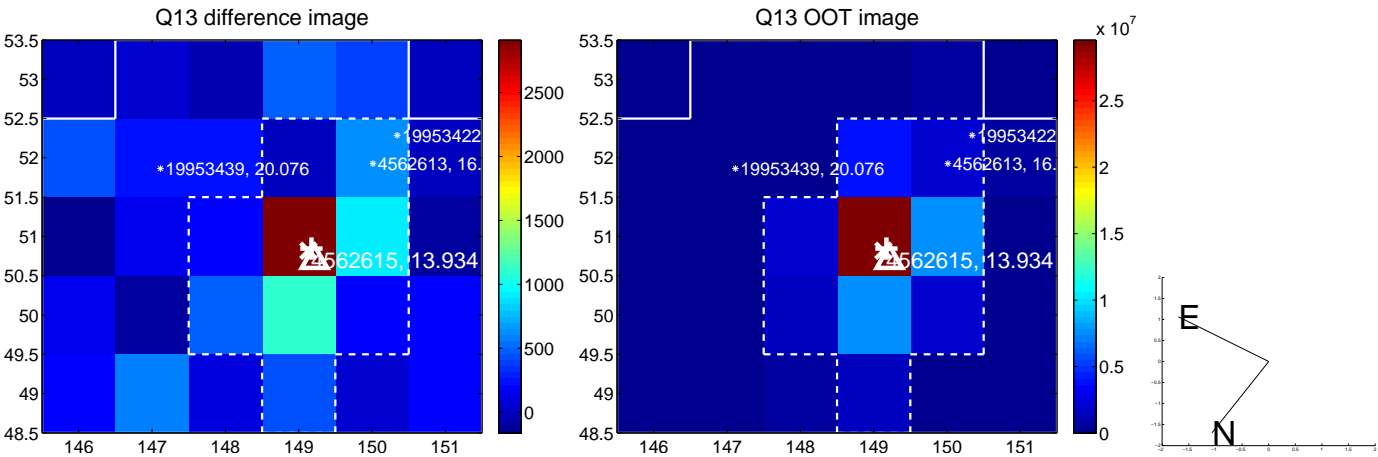
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



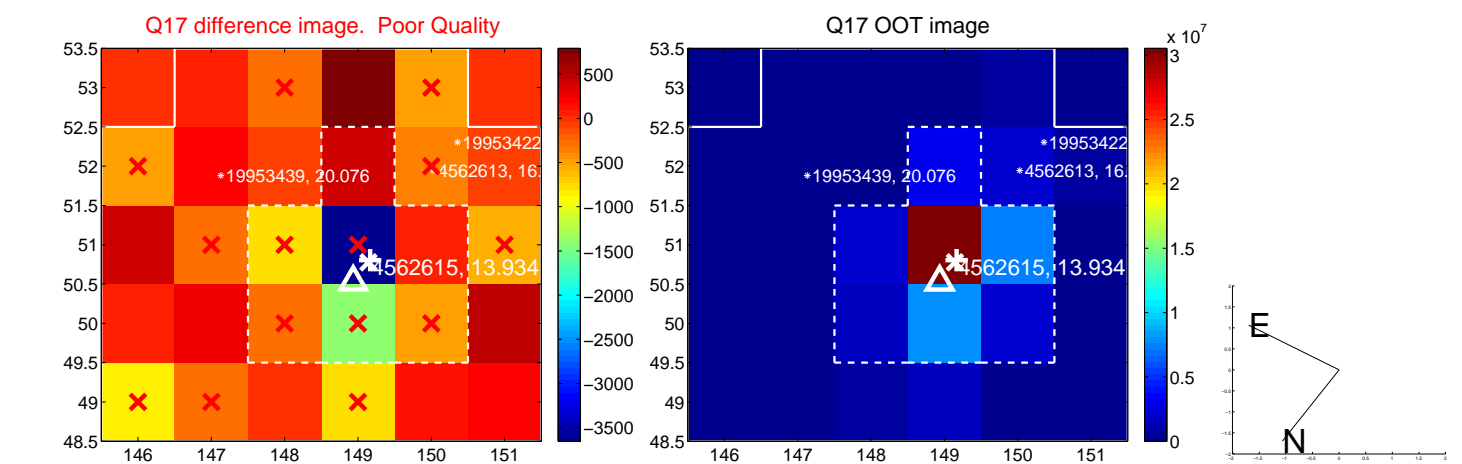
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



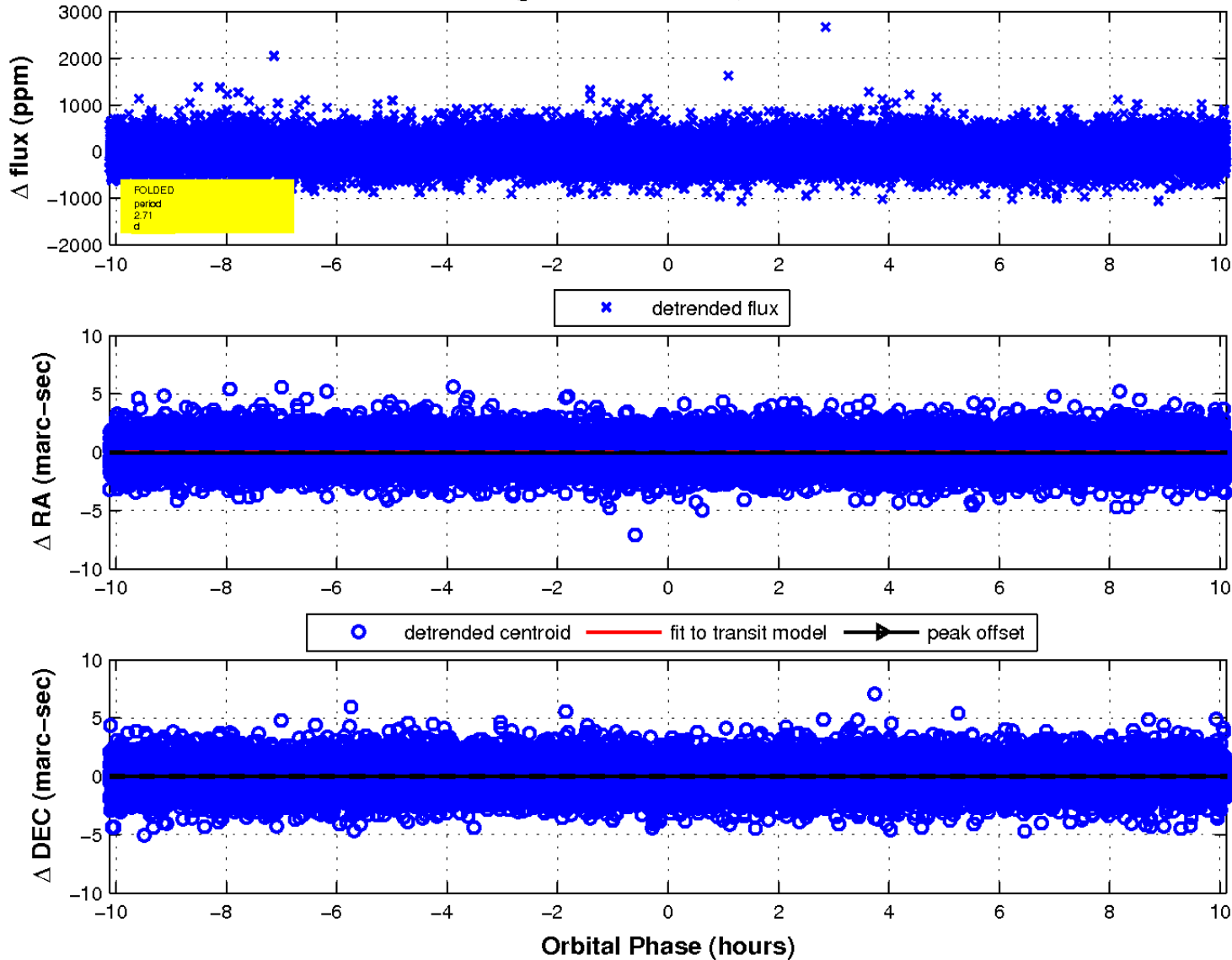
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 2 of 2



UKIRT Image

Declination

