

KIC 002010414

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})
002010414-01	OBS	No	2.555614	133.271262	0.0	7.132	8.2	0.0	1.87	6881	0.00	4433.85
002010414-02	OBS	No	2.555390	133.180375	41.3	27.583	9.6	9.3	1.87	6881	1.24	4434.37

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
002010414-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—SWEET_NTL—LPP_DV—LPP_ALT
002010414-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD—CENT_FEW_MEAS

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

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

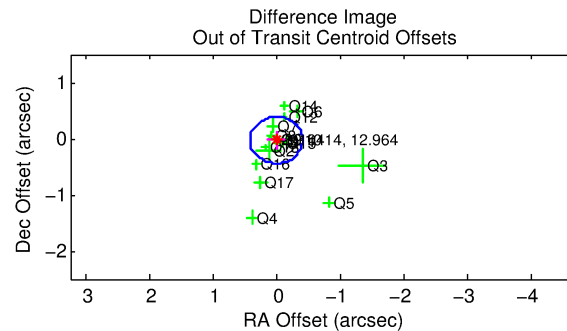
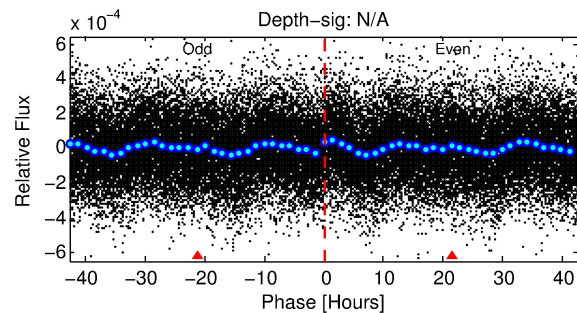
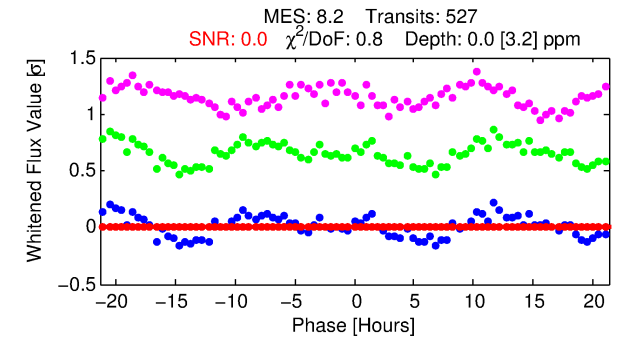
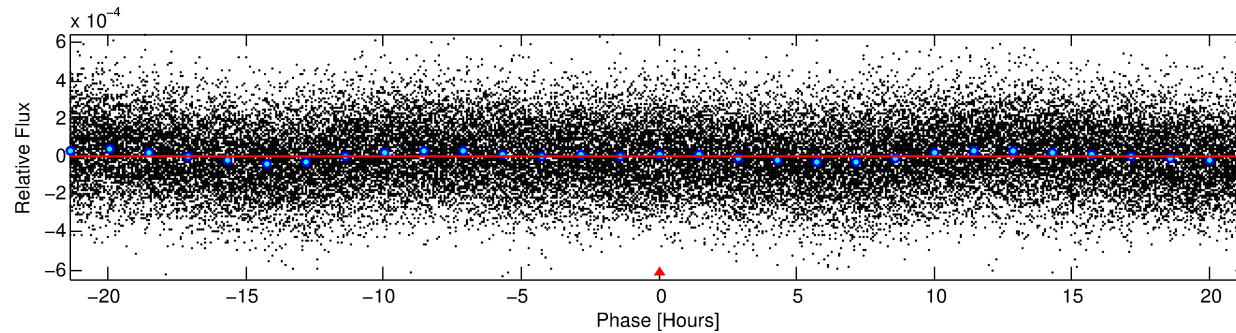
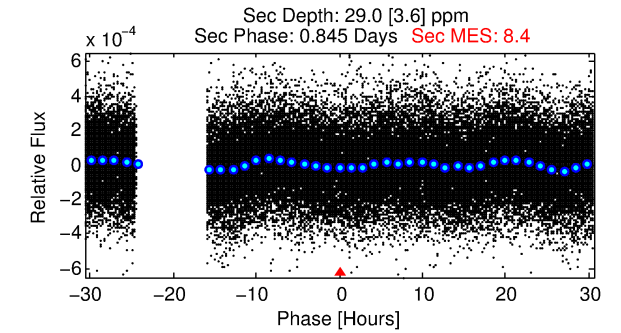
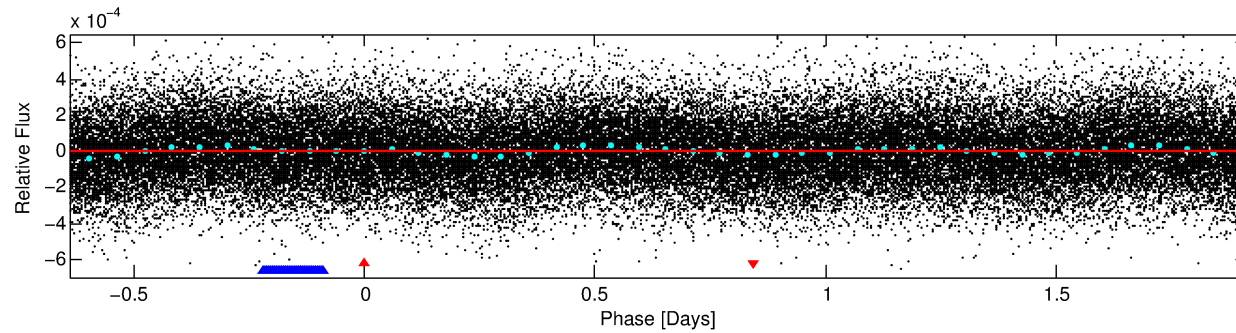
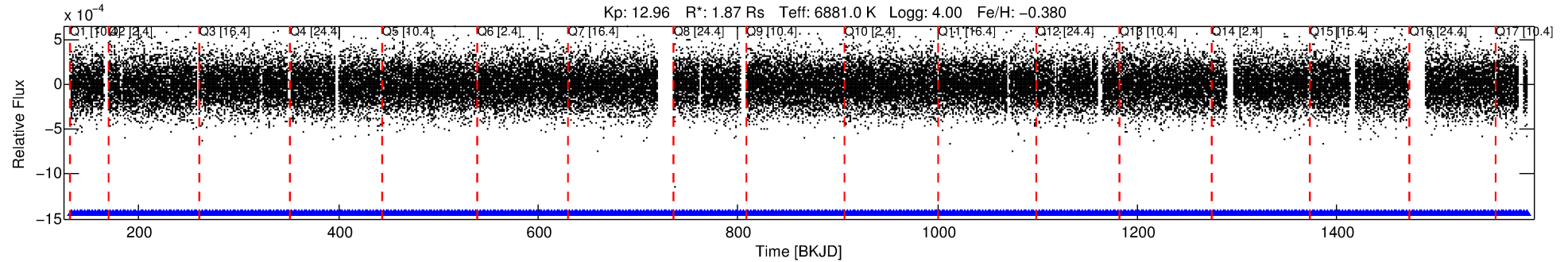
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 002010414-01

No Significant Match Found

DV One-Page Summary

KIC: 2010414 Candidate: 1 of 2 Period: 2.556 d



DV Fit Results:

Period = 2.55561 [141.61267] d
Epoch = 133.2713 [27733.8246] BKJD
Rp/R* = 0.0000 [0.8499]
a/R* = 1.11 [6584.47]
b = 0.98 [4842.20]
Seff = 4433.85 [327590.13]
Teq = 2081 [38434] K
Rp = 0.00 [173.06] Re
a = 0.0397 [1.4672] AU
Ag = 78414649.90 [47947694584465.71] m
Teffp = 302734 [46279083795] K

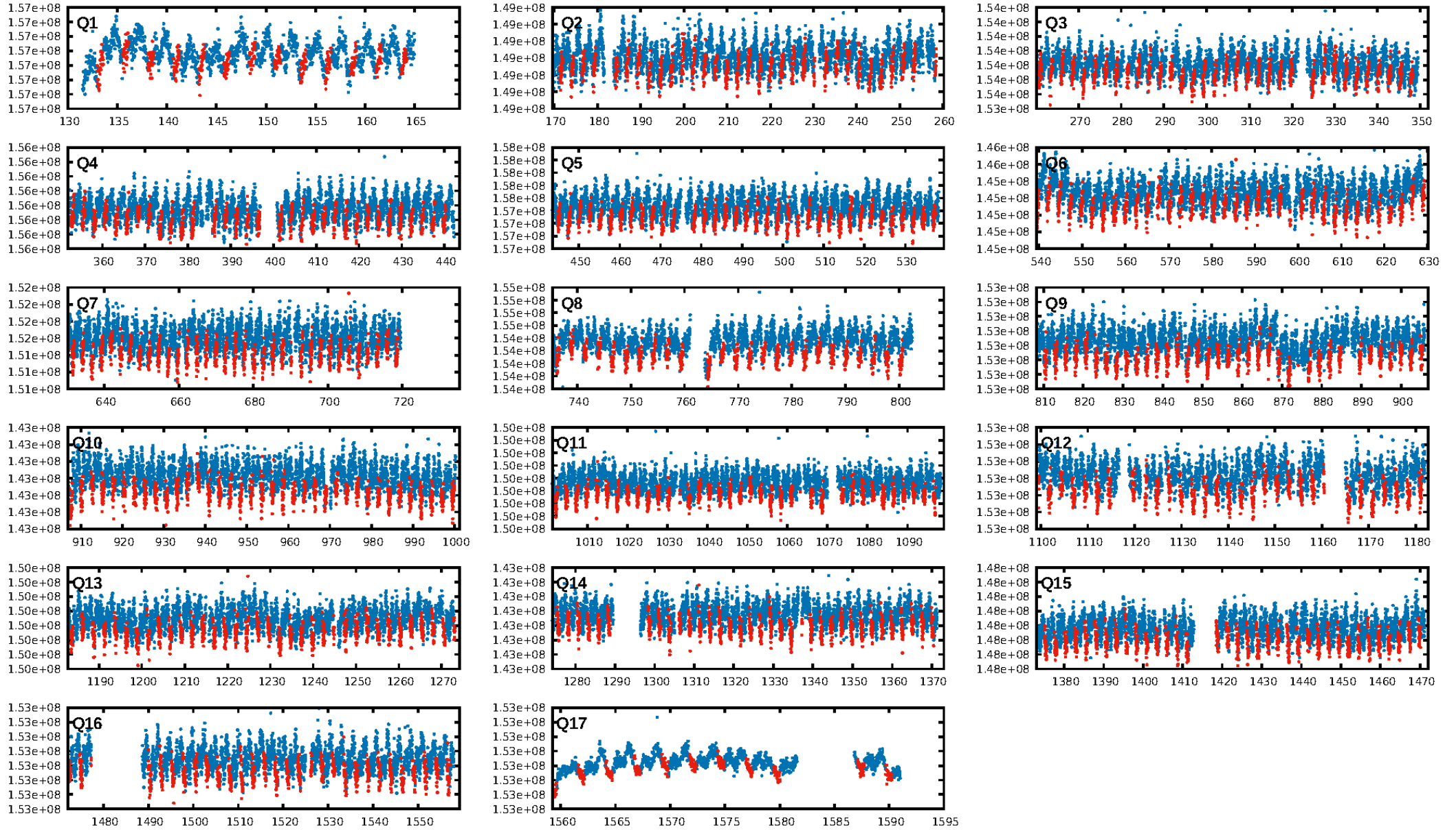
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00e]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [503/503]
GhostDiagnostic-chr: N/A
Centroid-sig: N/A
Centroid-so: N/A
OutOffset-rm: 0.030 arcsec [0.22σ]
OutOffset-rm: 0.122 arcsec [0.81σ]
OutOffset-st: 4/4/4/4 [16]
KicOffset-st: 4/4/4/4 [16]
DiffImageQuality-fgm: 1.00 [16/16]
DiffImageOverlap-fno: 0.00 [0/17]

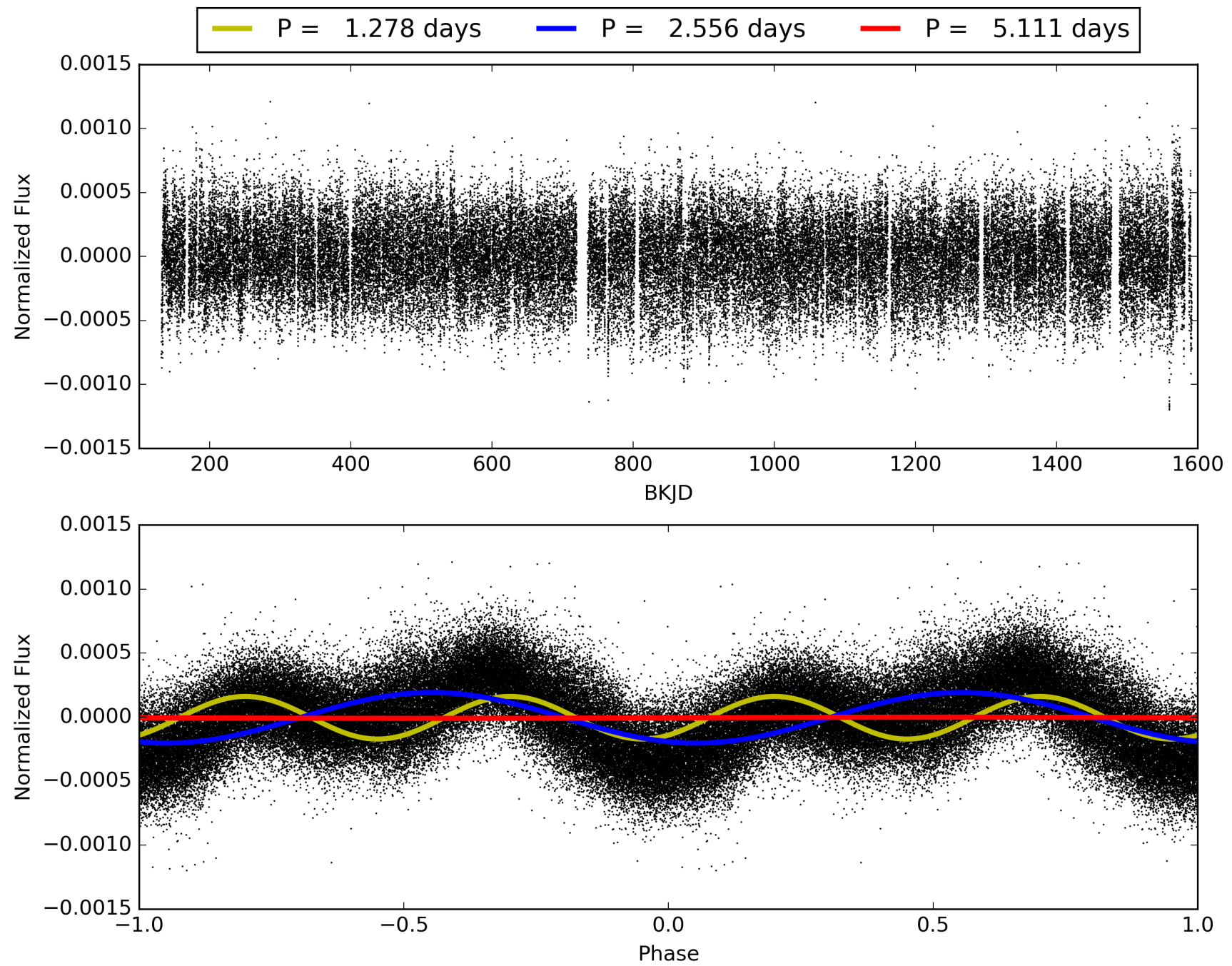
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 002010414-01, PDC Light Curves

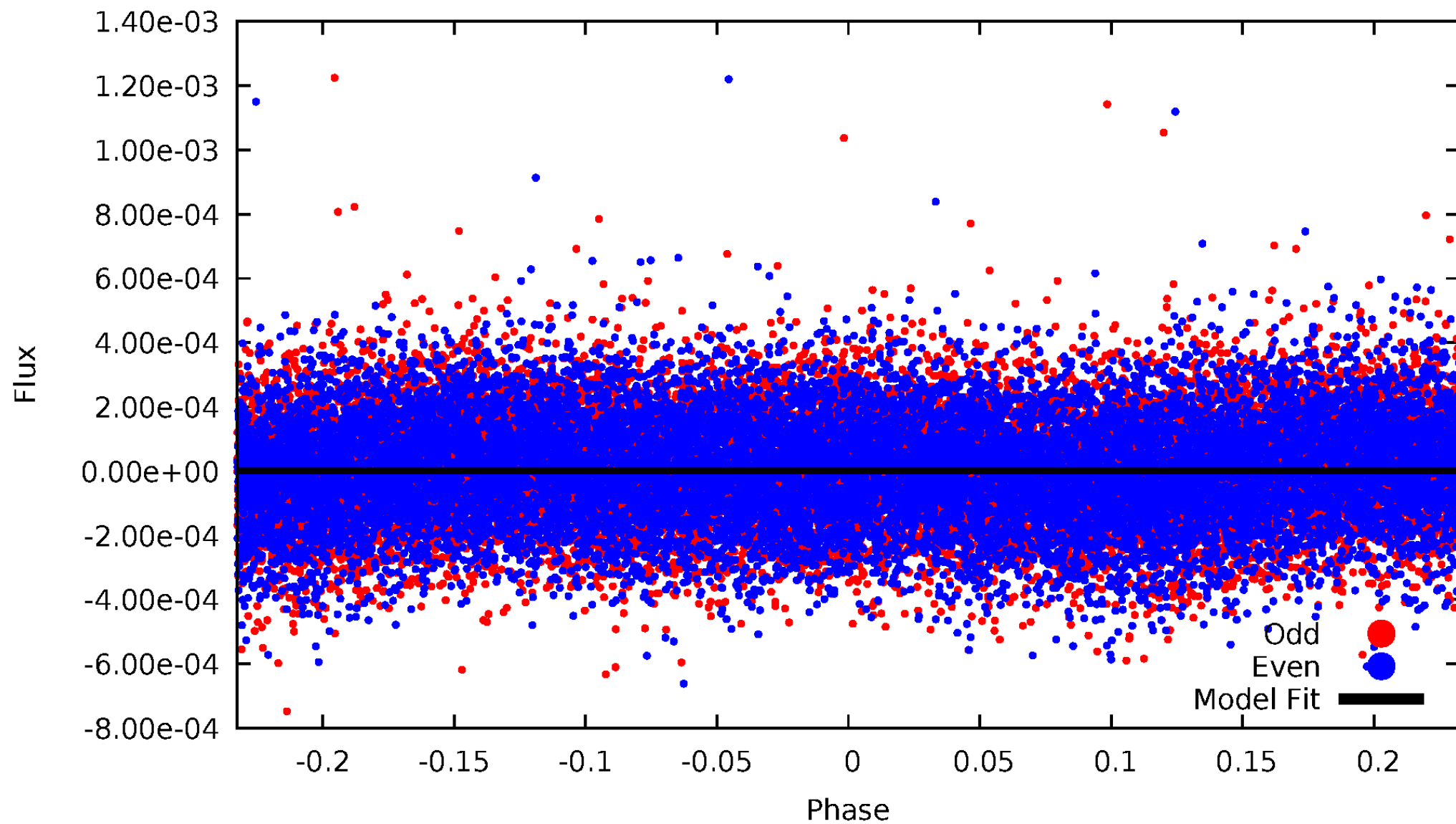


TCE 002010414-01



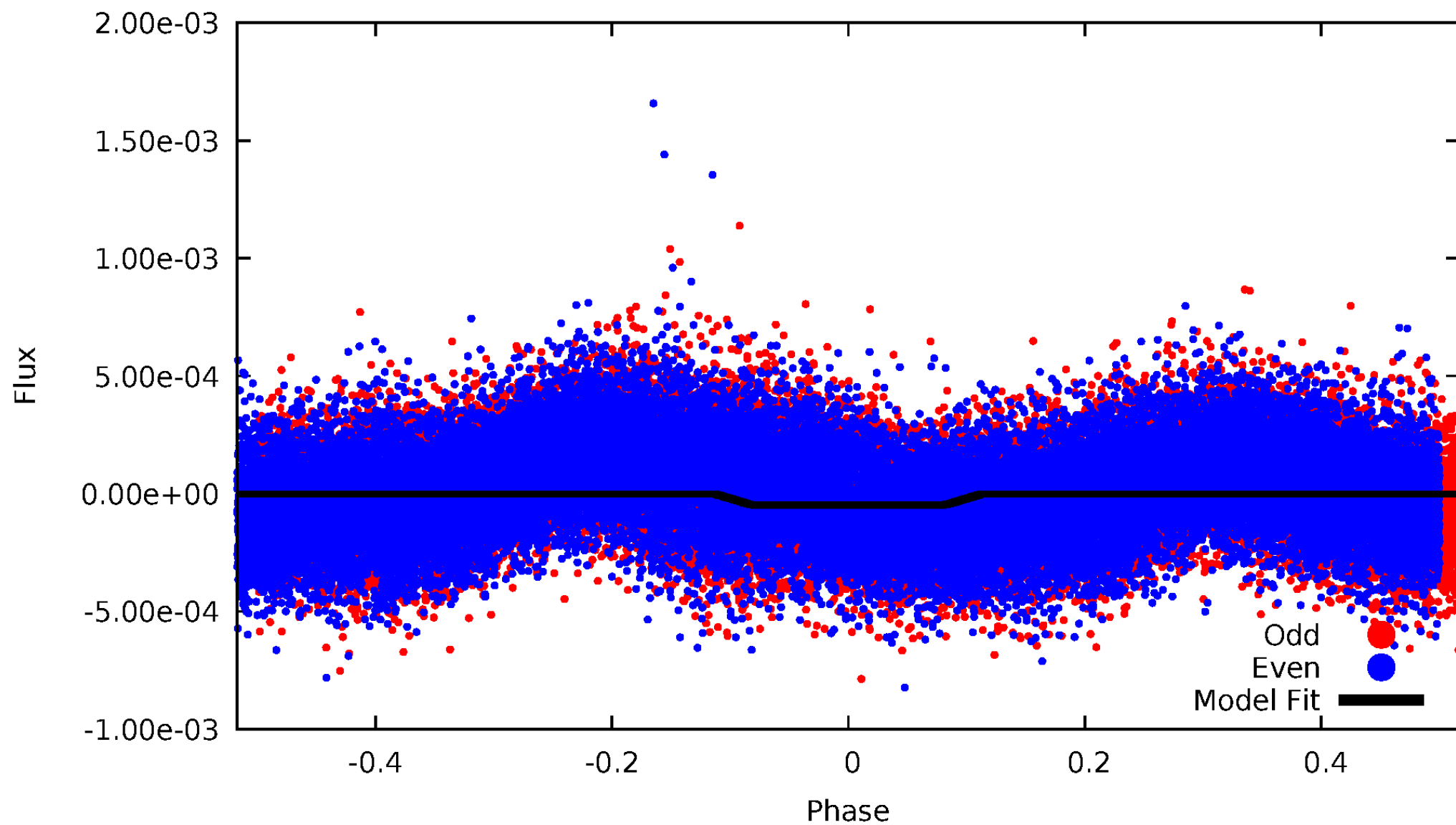
DV Odd/Even

TCE 002010414-01

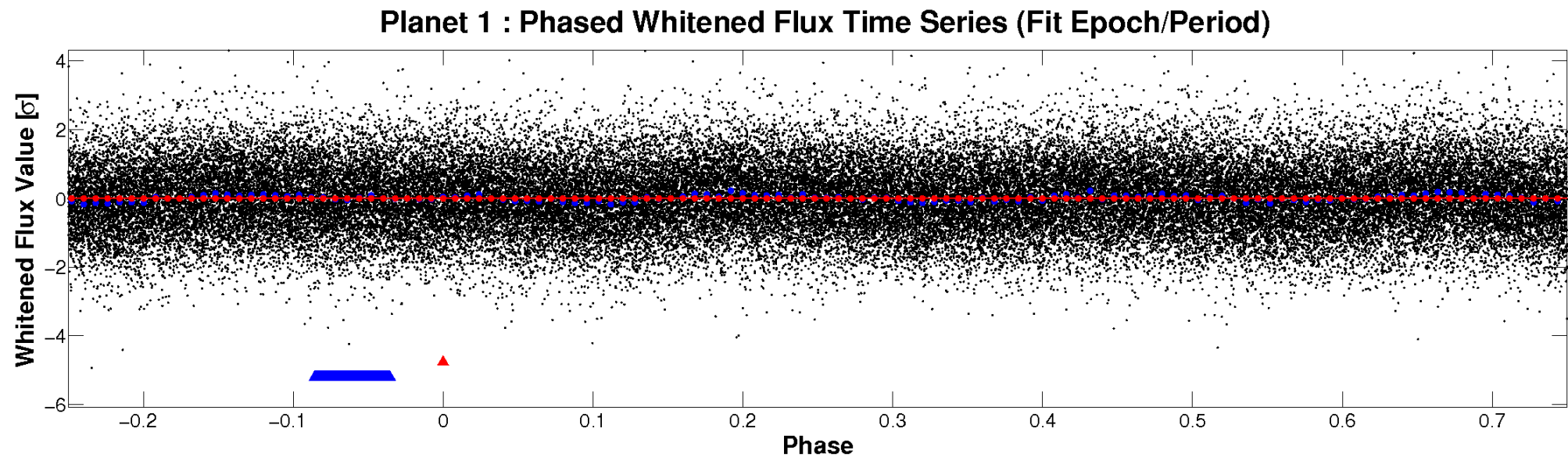
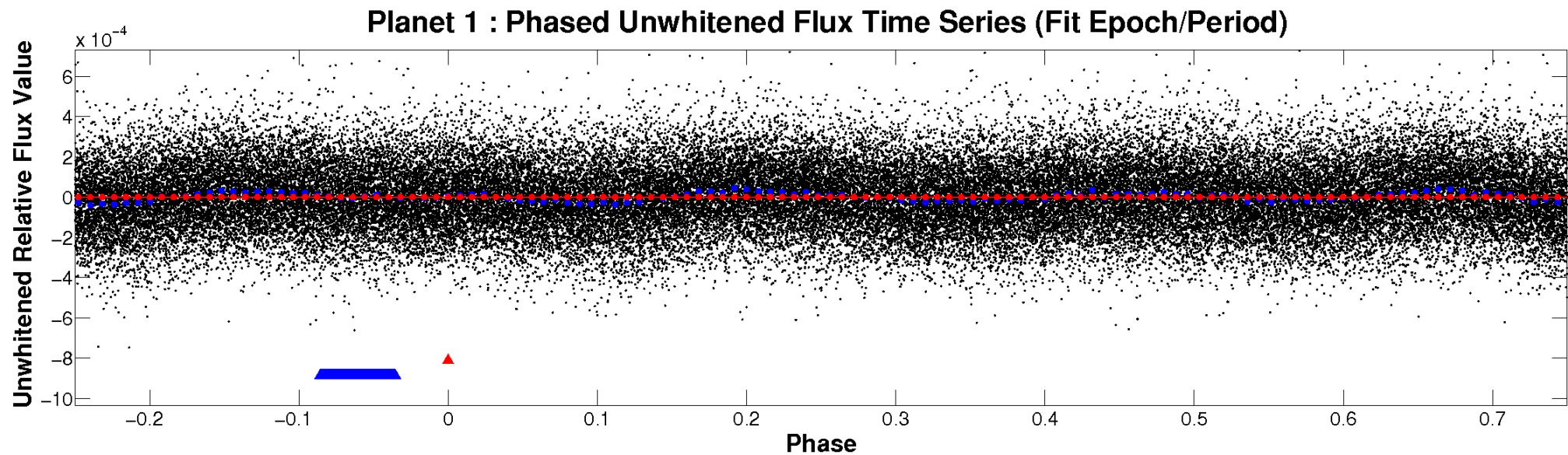


ALT Odd/Even

TCE 002010414-01

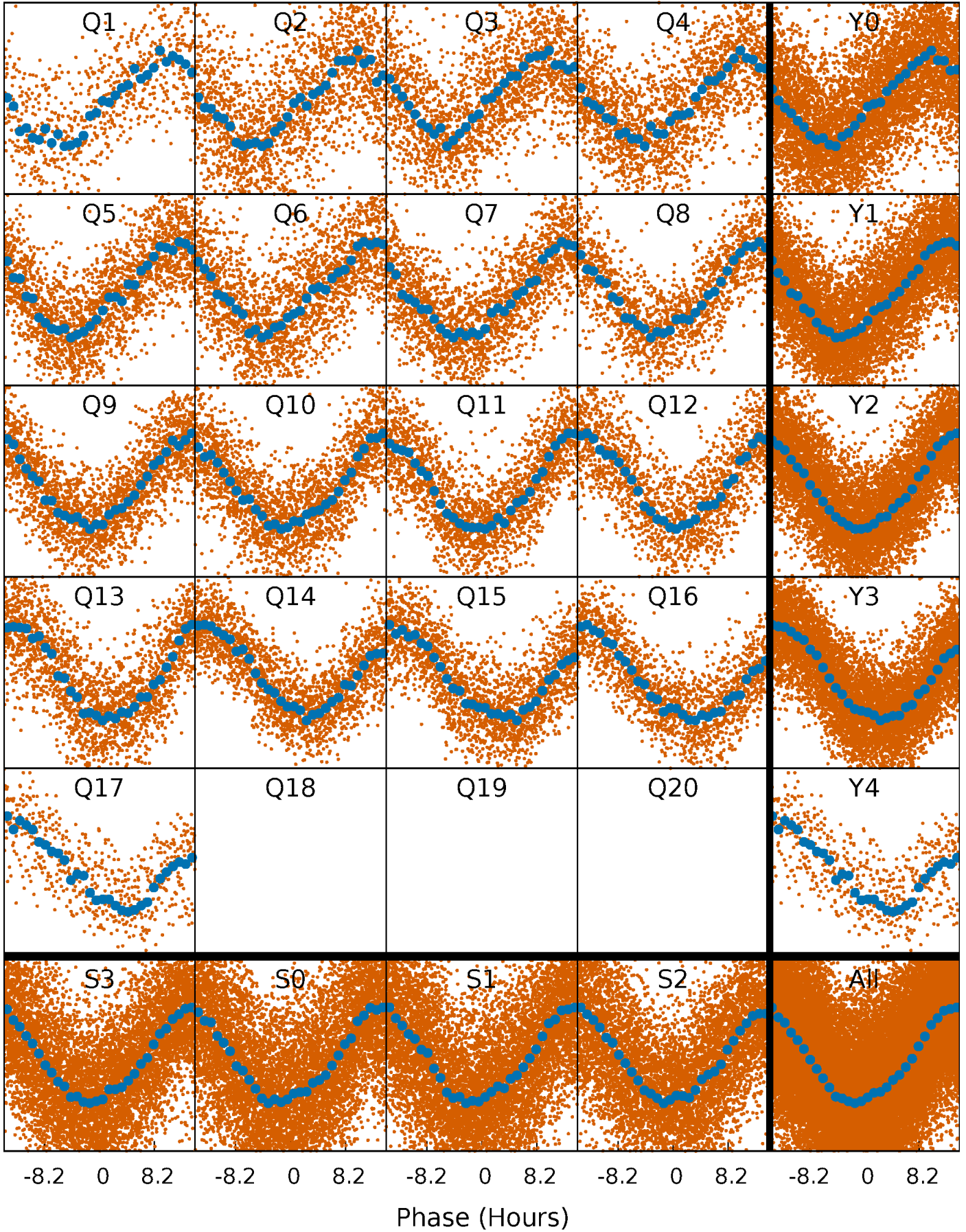


Non-Whitened Vs. Whitened Light Curve



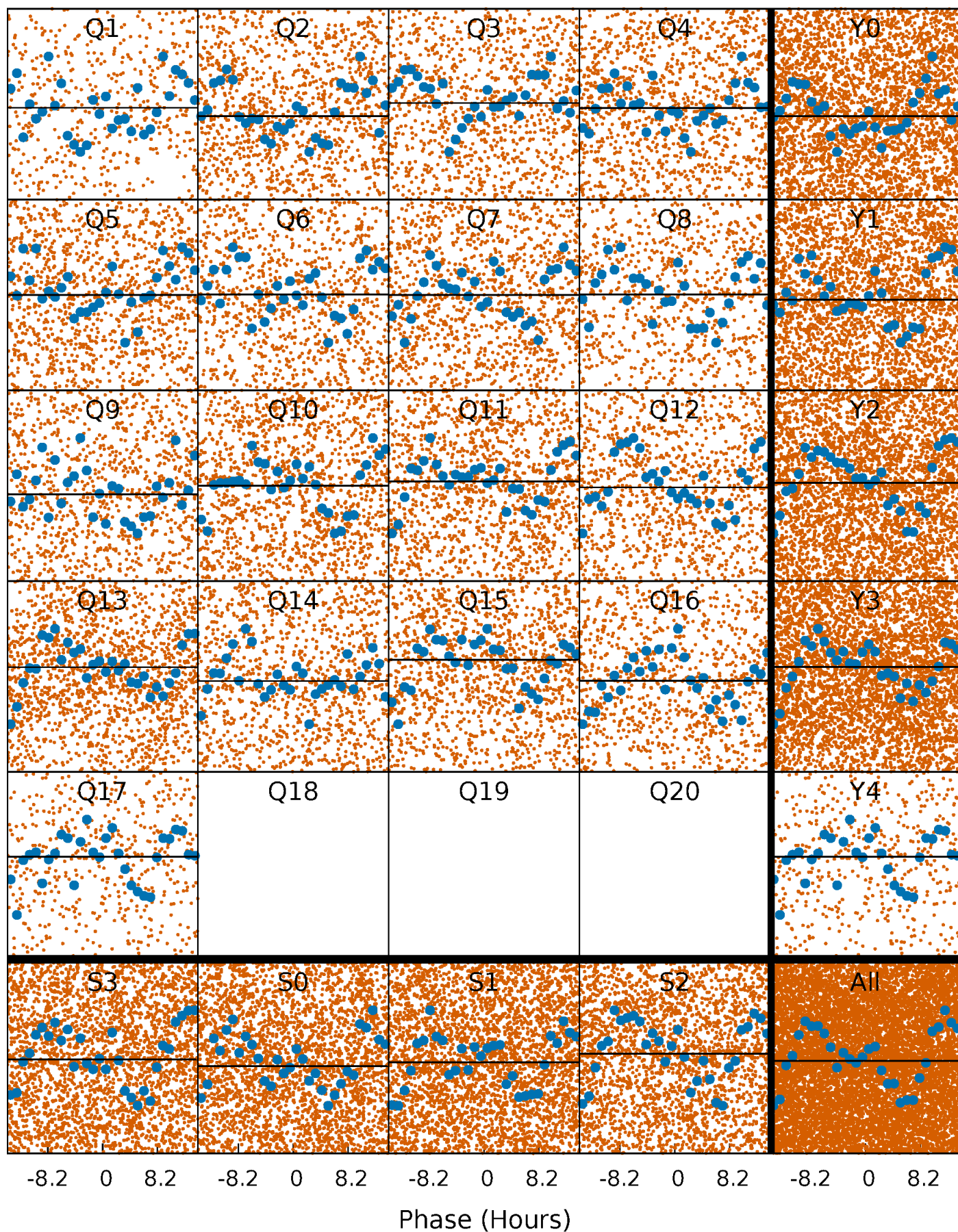
PDC Quarter-Phased Transit Curves

TCE 002010414-01 P= 2.555614 Days $T_0=133.271262$ (BKJD)



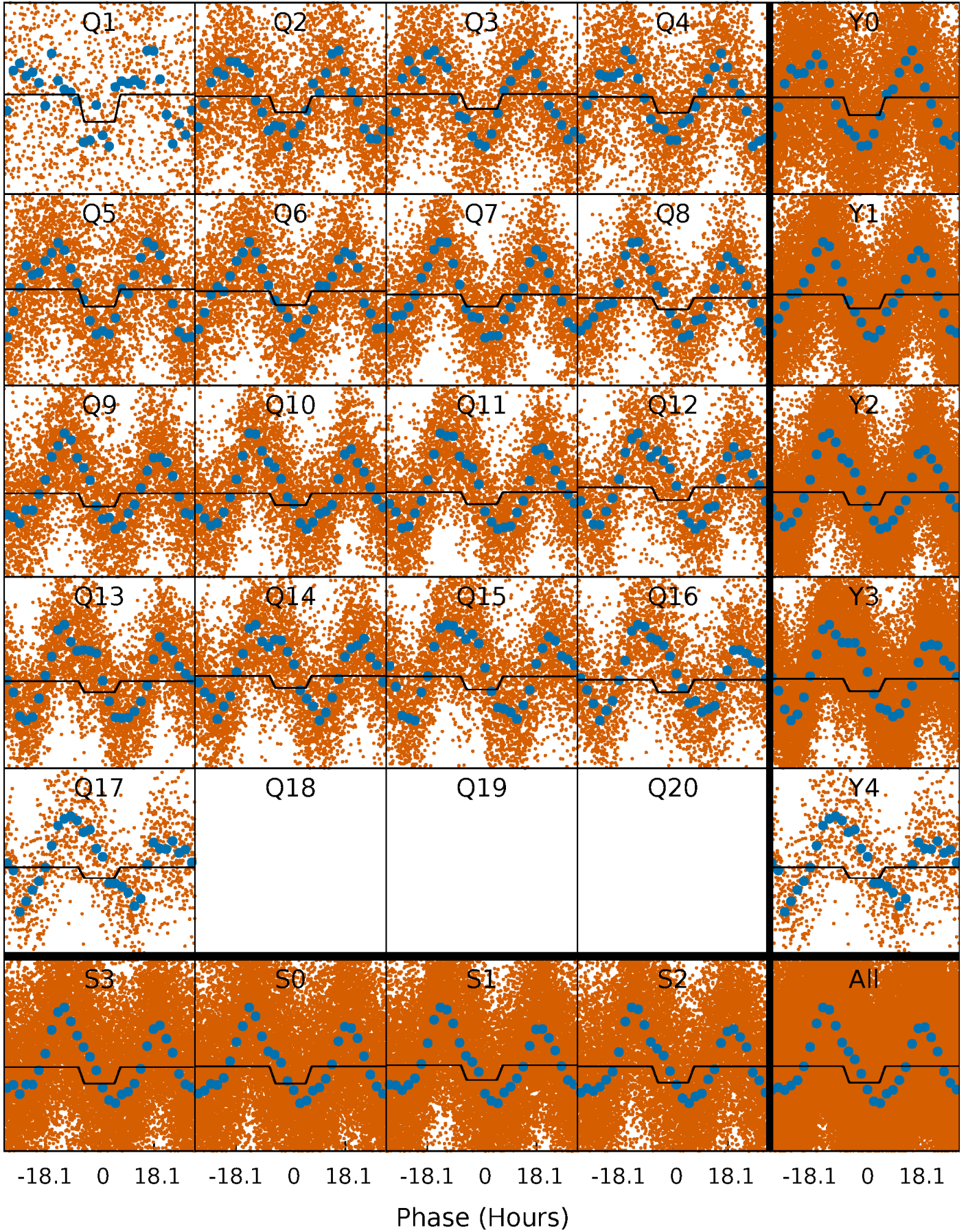
DV Quarter-Phased Transit Curves

TCE 002010414-01 P= 2.555614 Days $T_0=133.271262$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

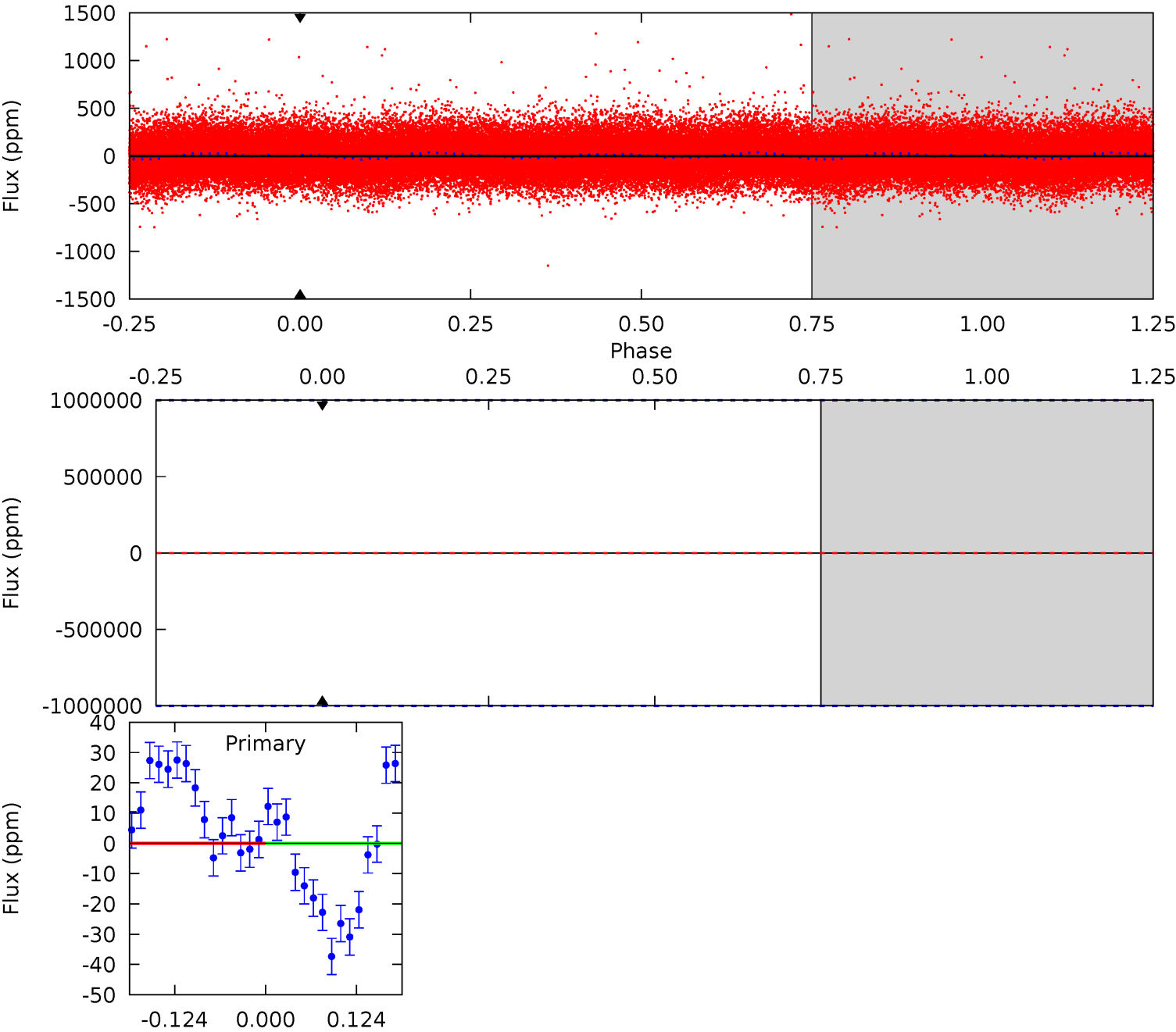
TCE 002010414-01 P= 2.555553 Days $T_0=133.010422$ (BKJD)



DV Model-Shift Uniqueness Test

002010414-01, P = 2.555614 Days, E = 130.715648 Days

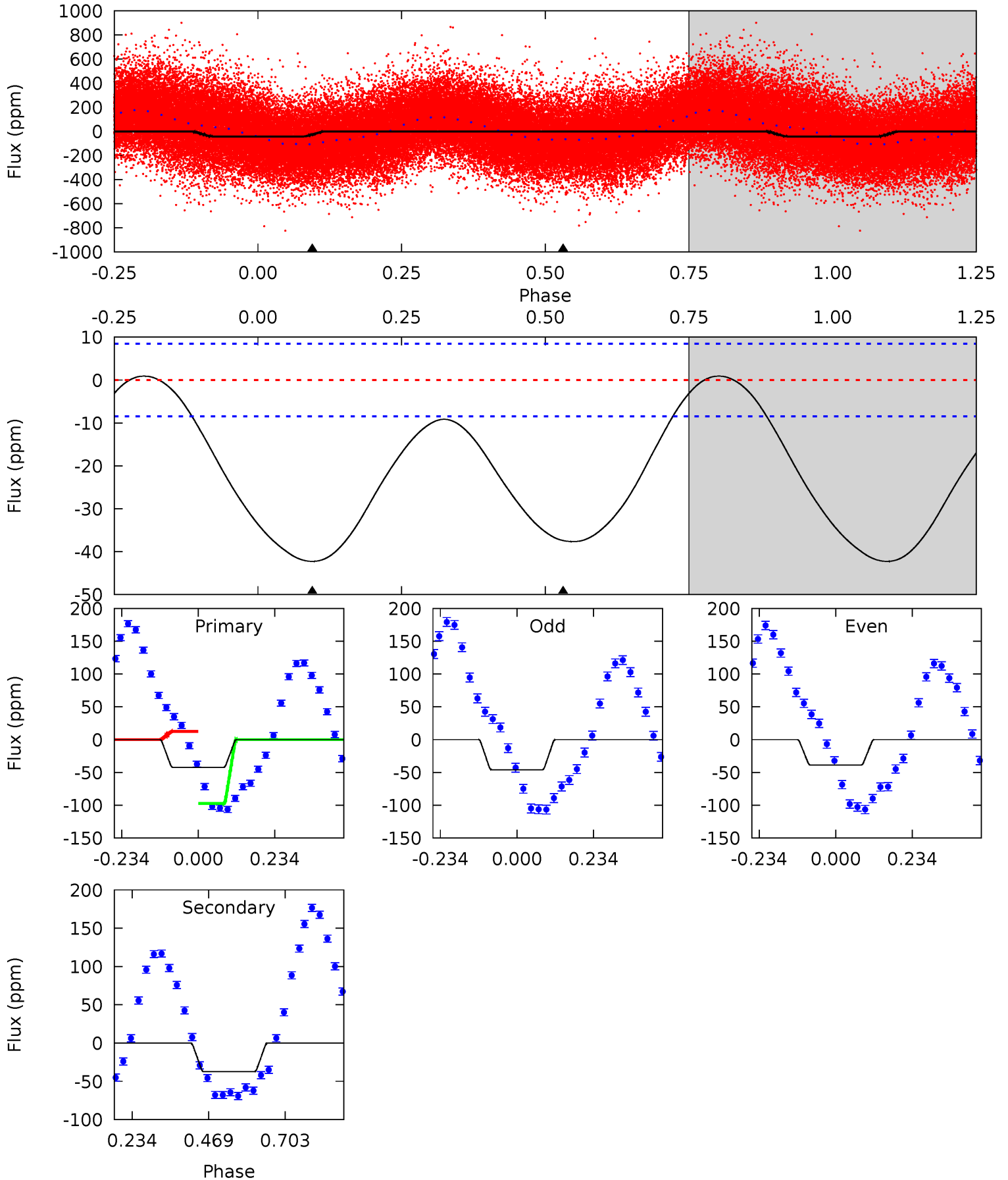
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



Alt Model-Shift Uniqueness Test

002010414-01, P = 2.555553 Days, E = 130.454869 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
21.9	19.4	0	0	4.38	1.19	0.70	21.9	21.9	19.4	19.4	1.85	1.01	0.02	29.2



Stellar Parameters For KIC 002010414

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6881^{+72}_{-92}	$4.003^{+0.182}_{-0.112}$	$-0.380^{+0.150}_{-0.100}$	$1.866^{+0.335}_{-0.409}$	$1.281^{+0.131}_{-0.119}$	$0.278^{+0.246}_{-0.096}$
	+1%/-1%	+5%/-3%	+39%/-26%	+18%/-22%	+10%/-9%	+89%/-35%
Source	SPE68	SPE68	SPE68	DSEP		

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

Secondary Eclipse Parameters for KIC 002010414-01 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	0 ± 1000000	$114.91^{+122.17}_{-80.18}$	836^{+433}_{-171}	2436^{+3486}_{-8291}	$2.364^{+1626.763}_{-1326.260}$
Alt.	-37 ± 2	$113.19^{+135.10}_{-80.92}$	851^{+410}_{-187}	-1169^{+3356}_{-729}	$0.298^{+3.659}_{-0.260}$

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 $A_{obs} \gg 1.0$

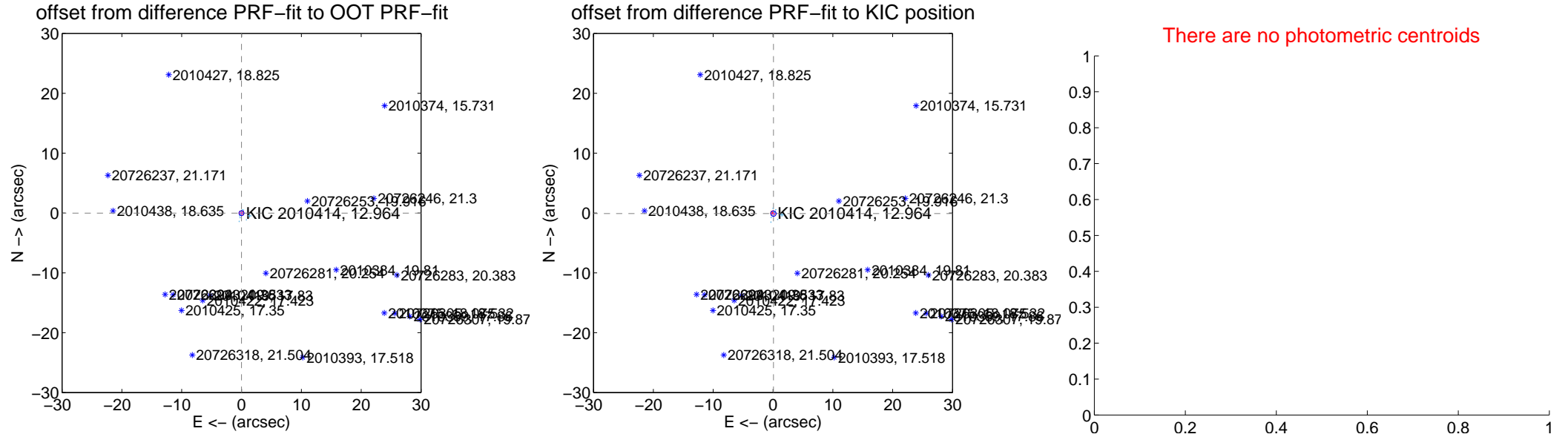
DV Centroid Data

Supplemental centroid analysis for 002010414-01. Kepler magnitude: 12.96. Transit SNR 0.00

There are 16 quarters with good PRF difference image offsets

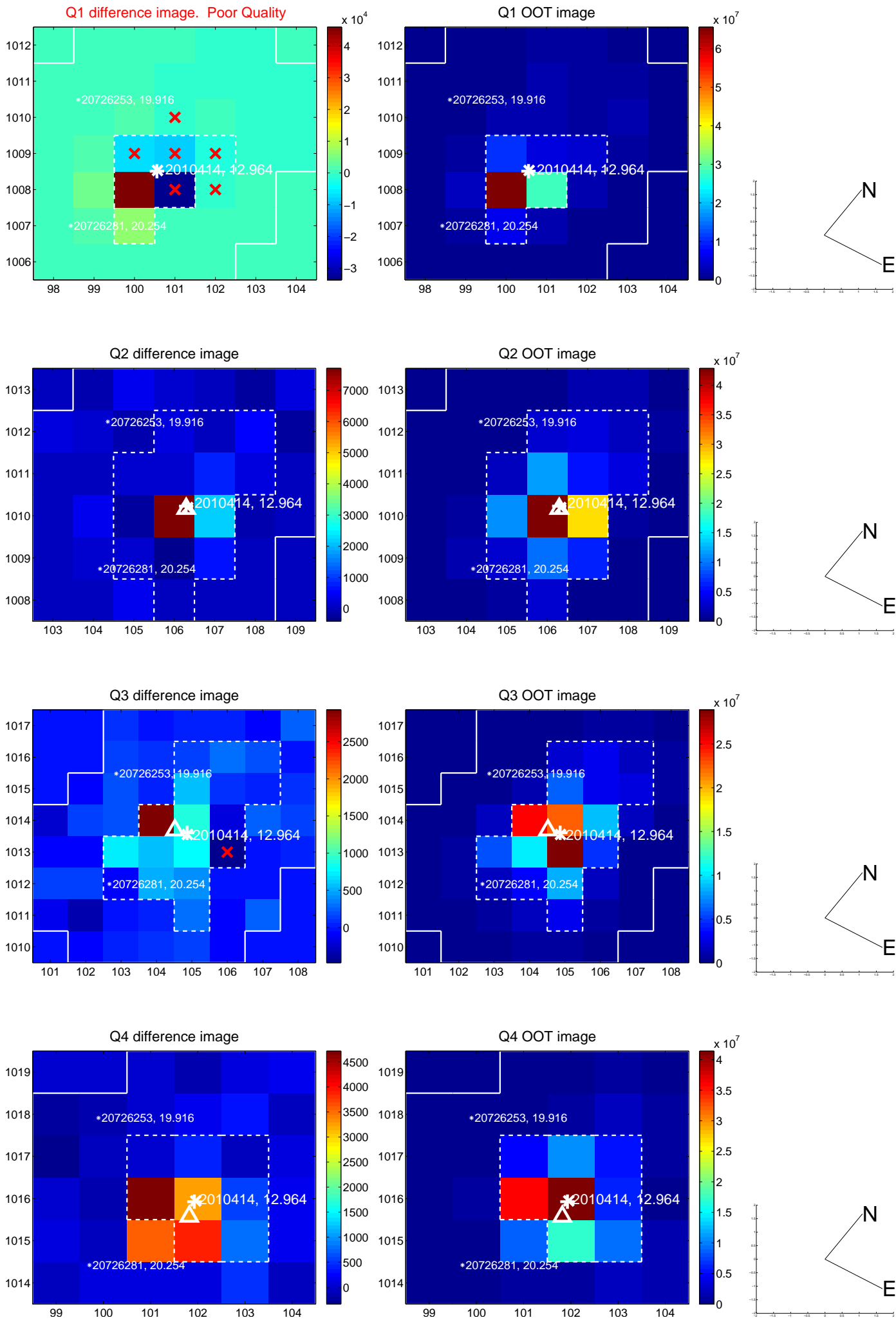
The direct PRF centroid is offset from the target star catalog position by about 0.06 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.030 ± 0.138	0.22	0.011 ± 0.124	-0.028 ± 0.140
PRF-fit source offset from KIC position	0.122 ± 0.151	0.81	-0.072 ± 0.128	-0.099 ± 0.159
photometric centroid source offset	—	—	—	—

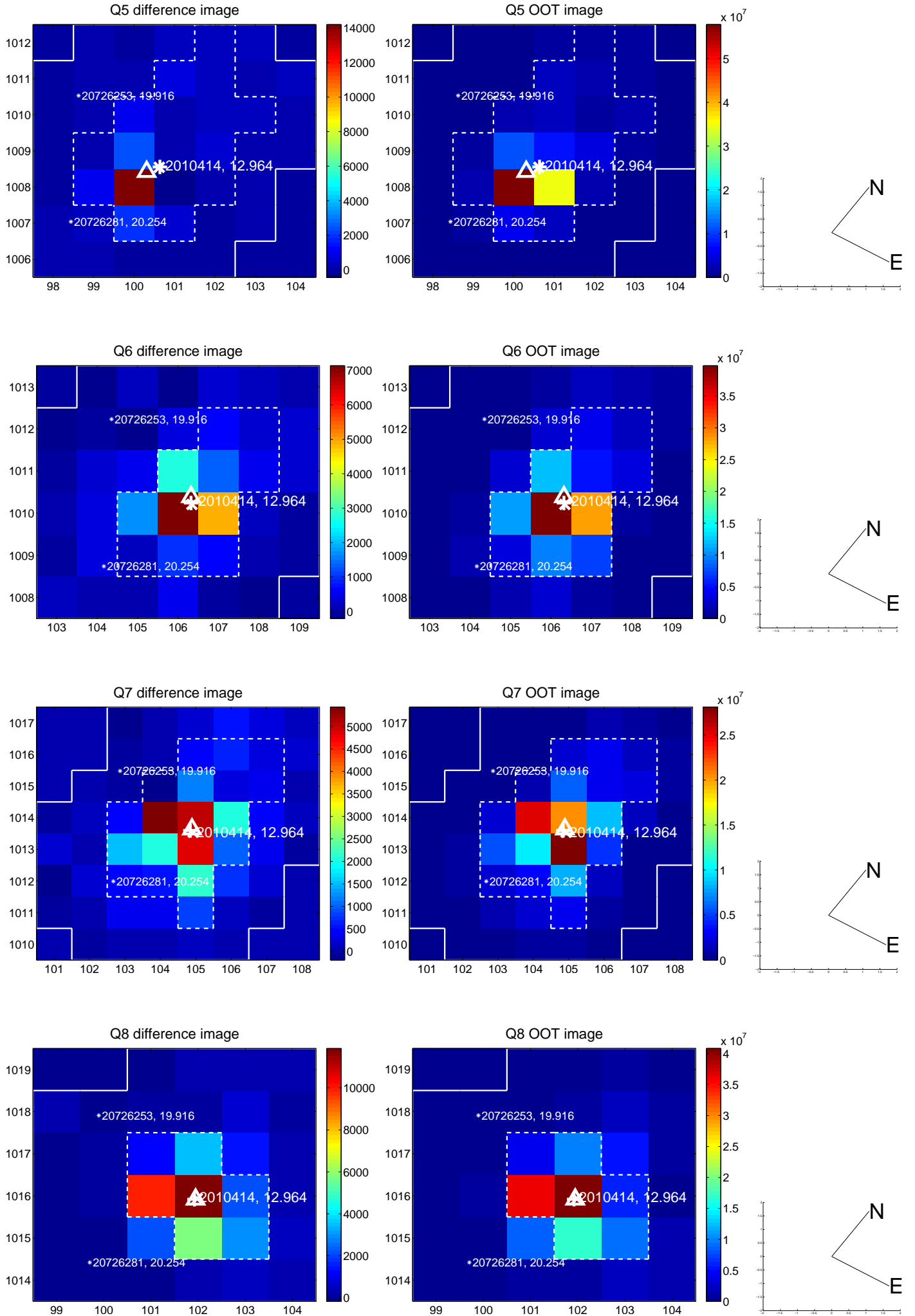


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

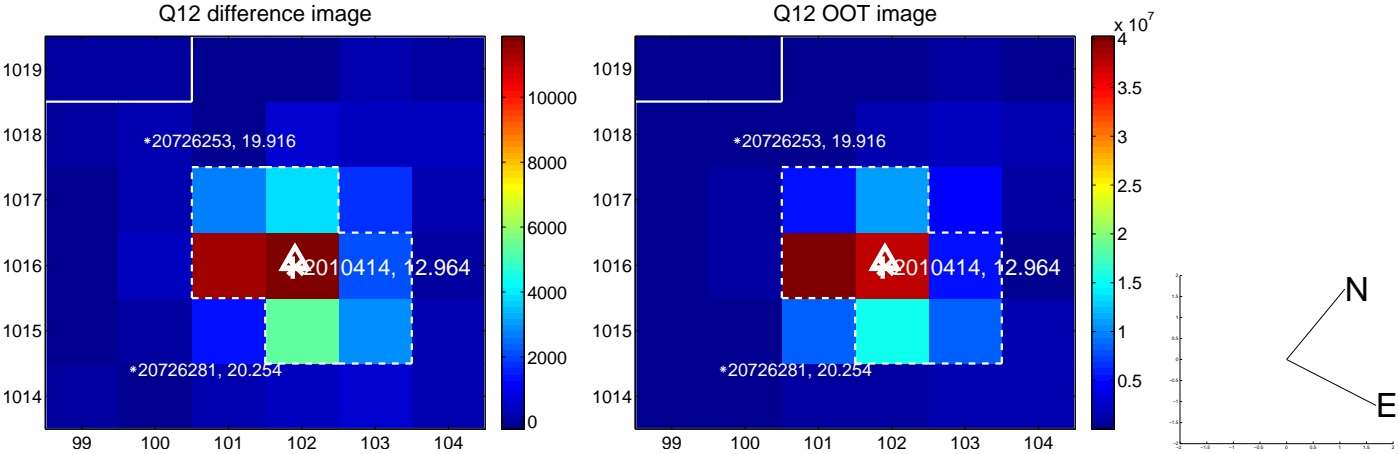
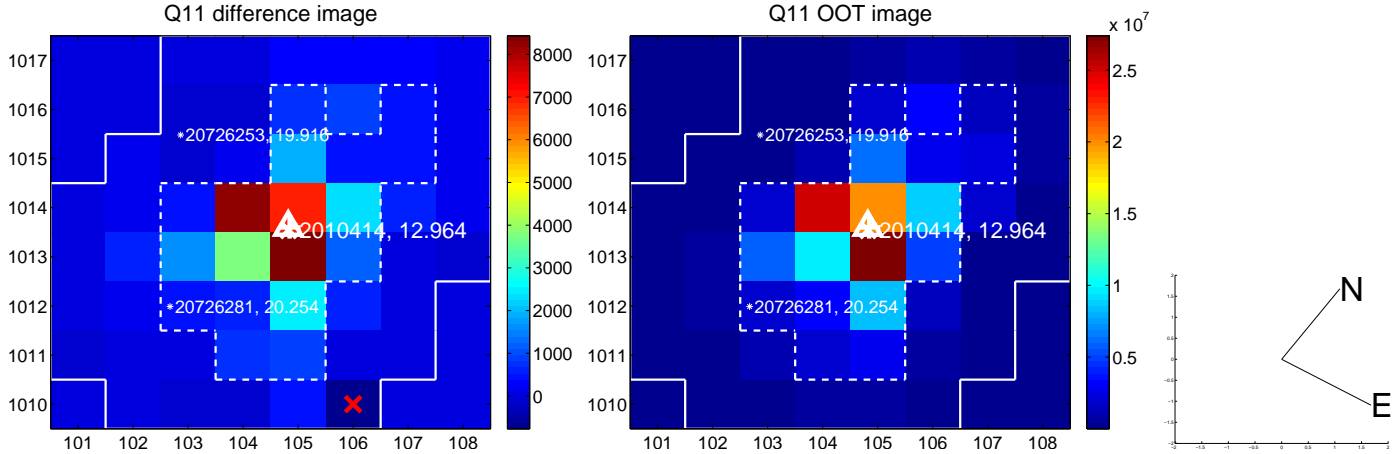
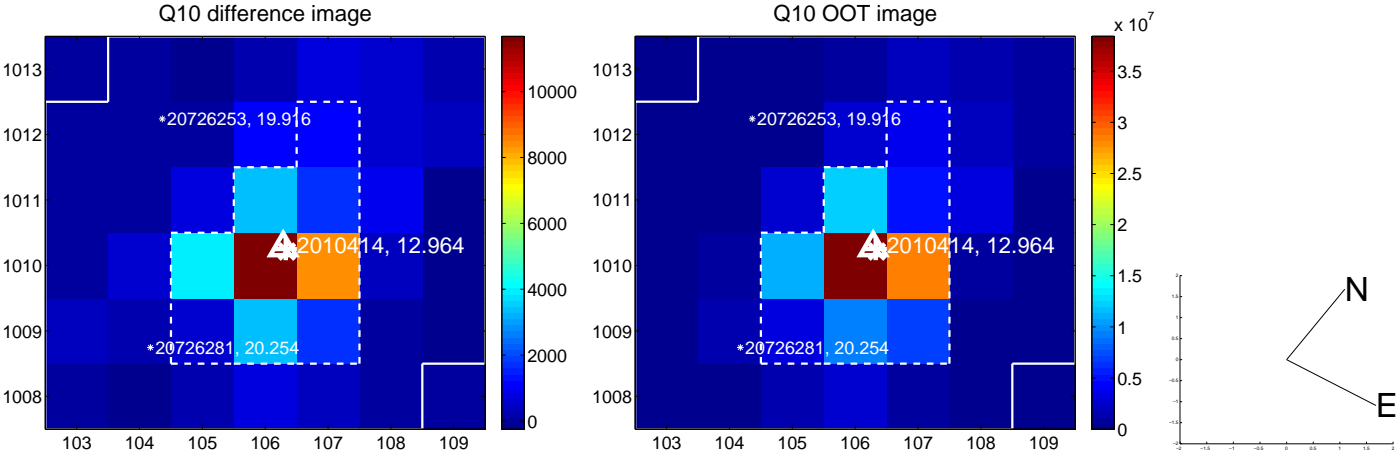
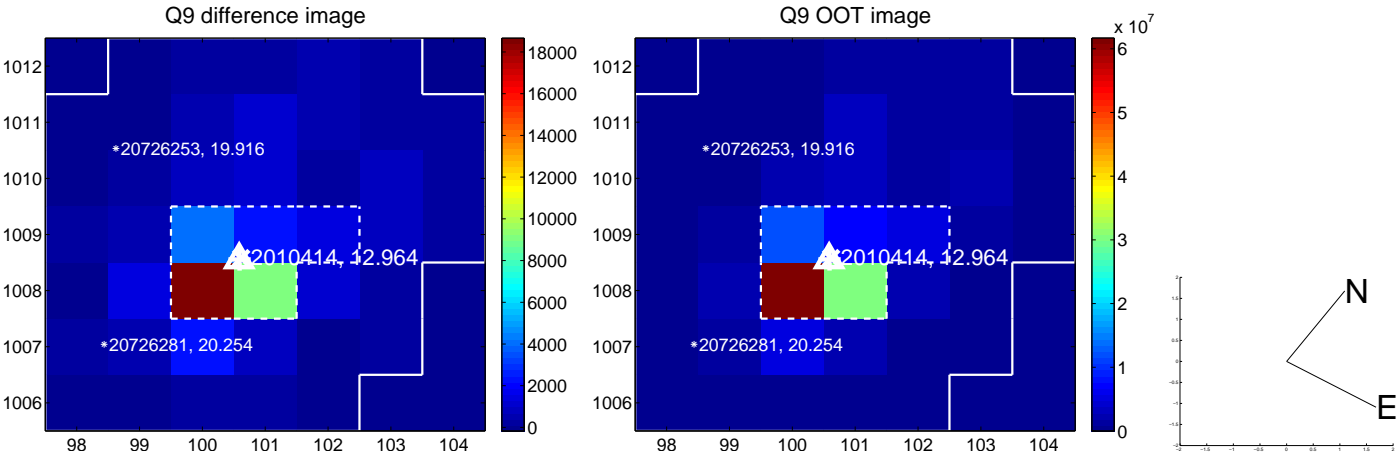
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



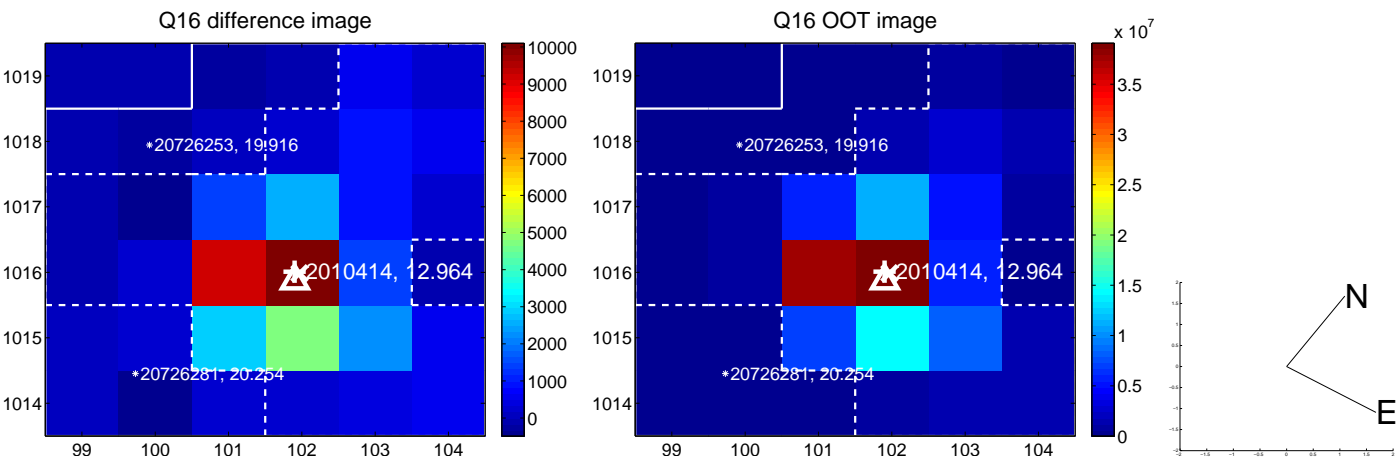
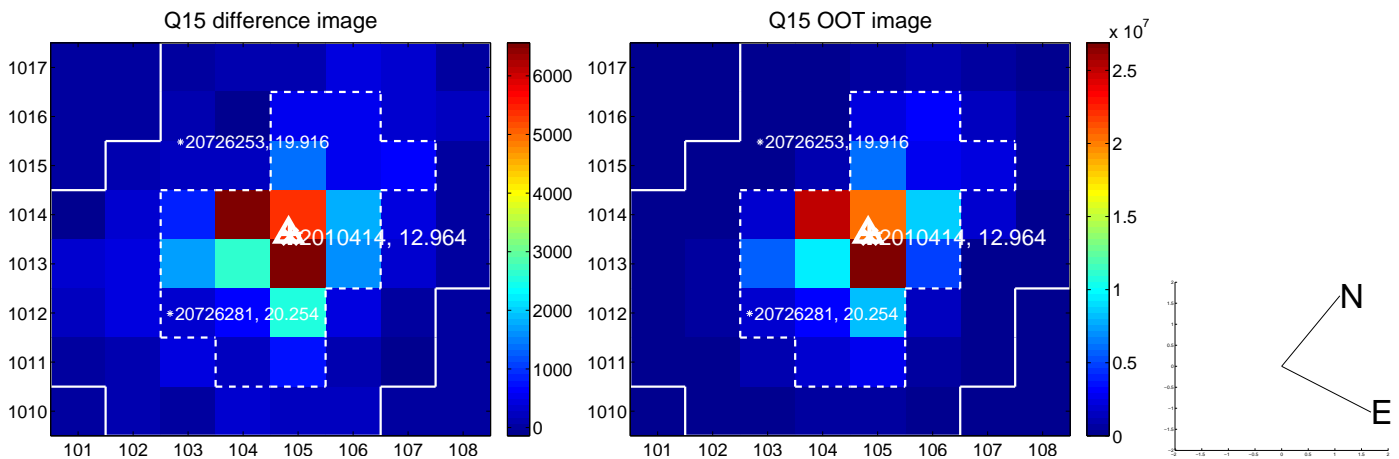
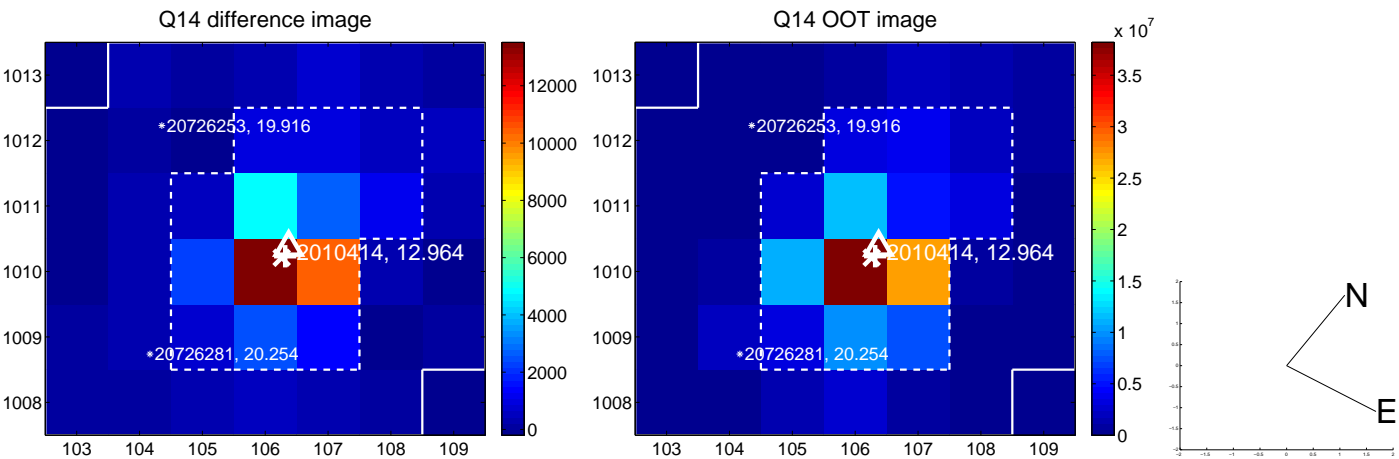
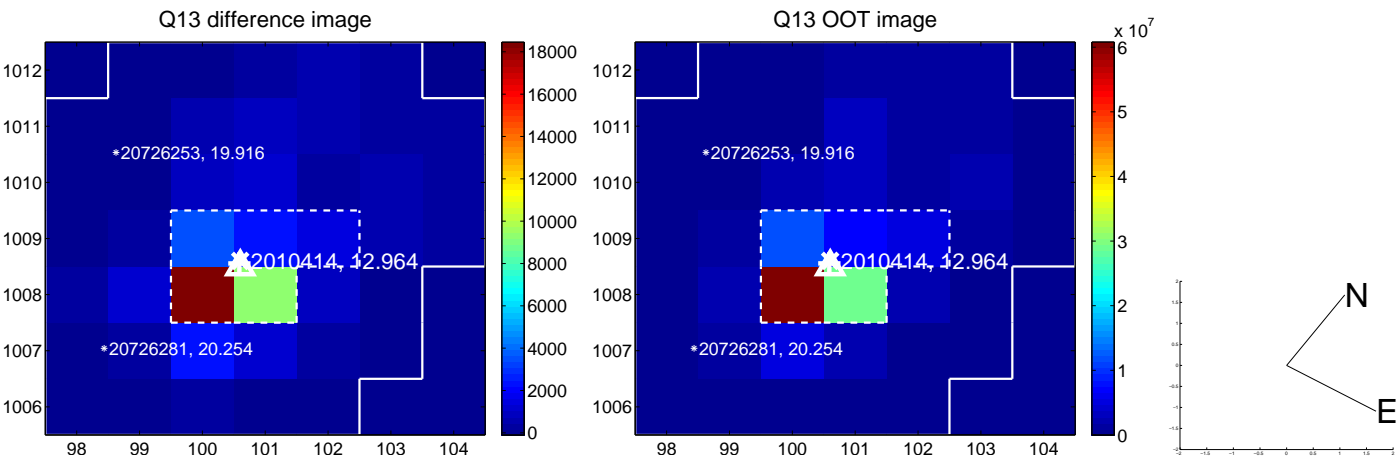
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



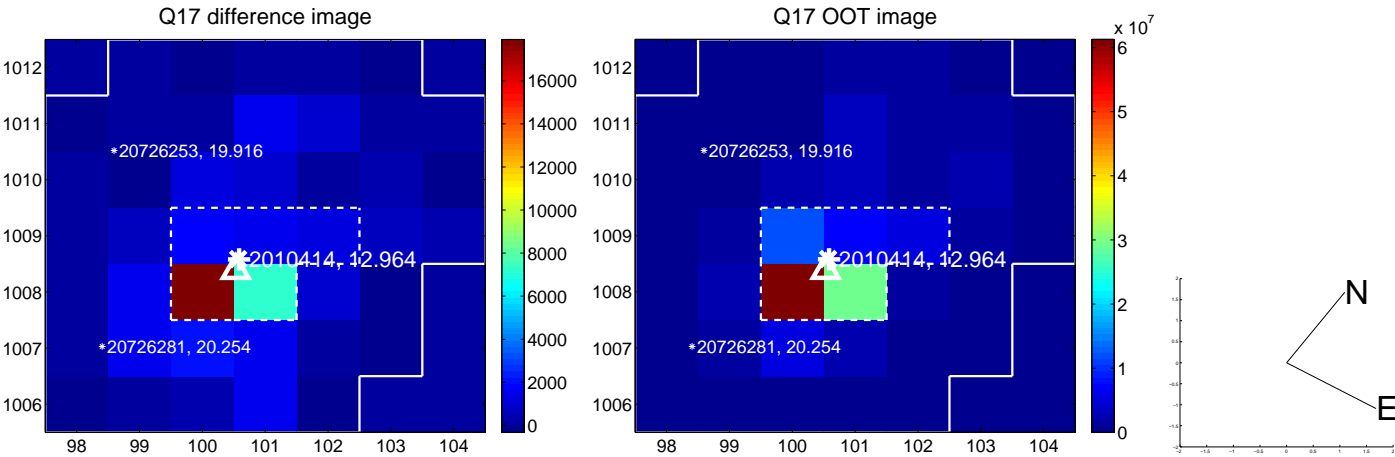
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



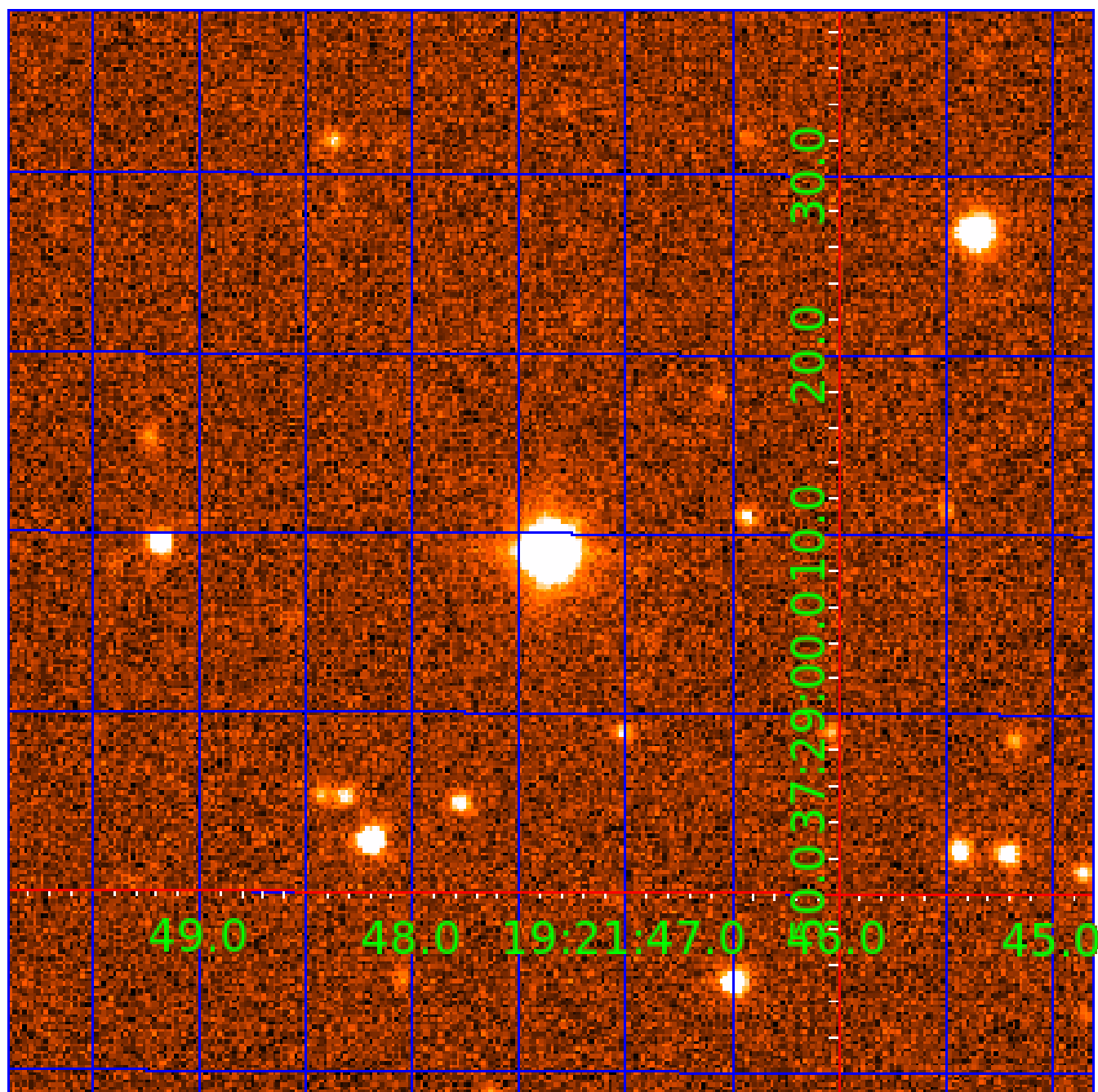
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



folded centroid time series figure for this object.

UKIRT Image

Declination



KIC 002010414

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})
002010414-01	OBS	No	2.555614	133.271262	0.0	7.132	8.2	0.0	1.87	6881	0.00	4433.85
002010414-02	OBS	No	2.555390	133.180375	41.3	27.583	9.6	9.3	1.87	6881	1.24	4434.37

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
002010414-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—SWEET_NTL—LPP_DV—LPP_ALT
002010414-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD—CENT_FEW_MEAS

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

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

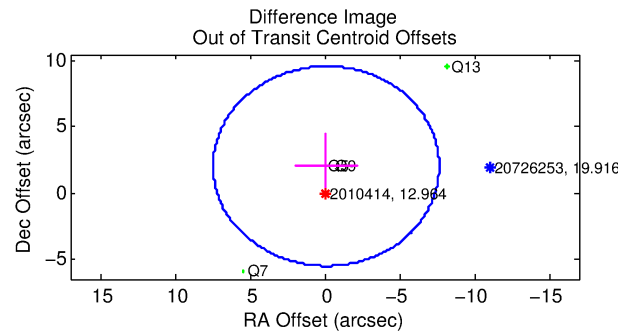
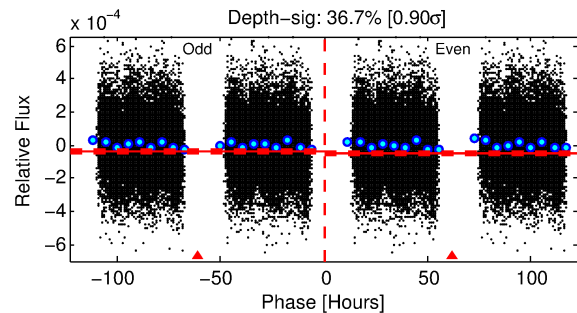
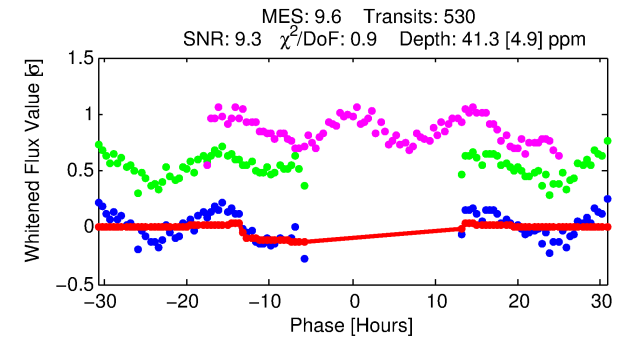
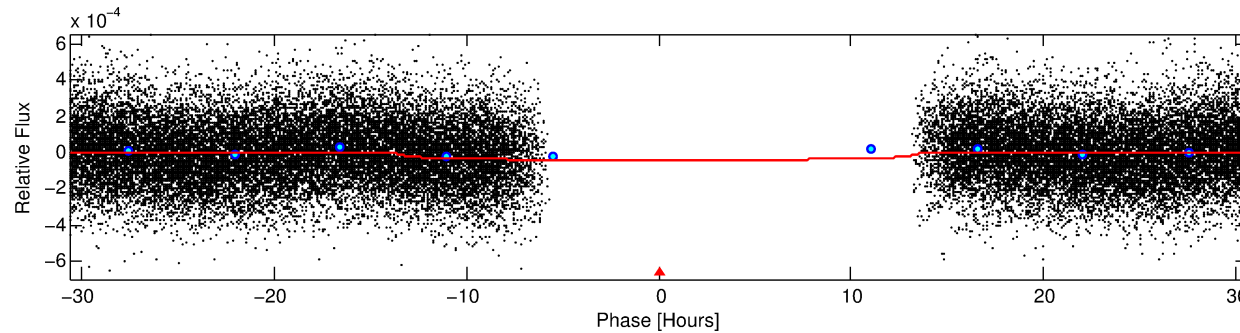
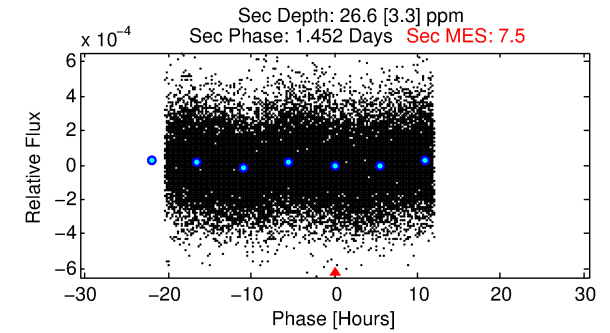
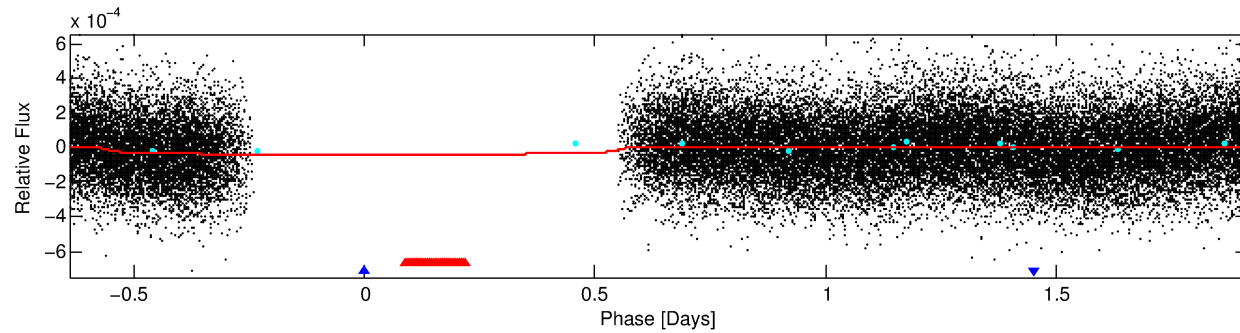
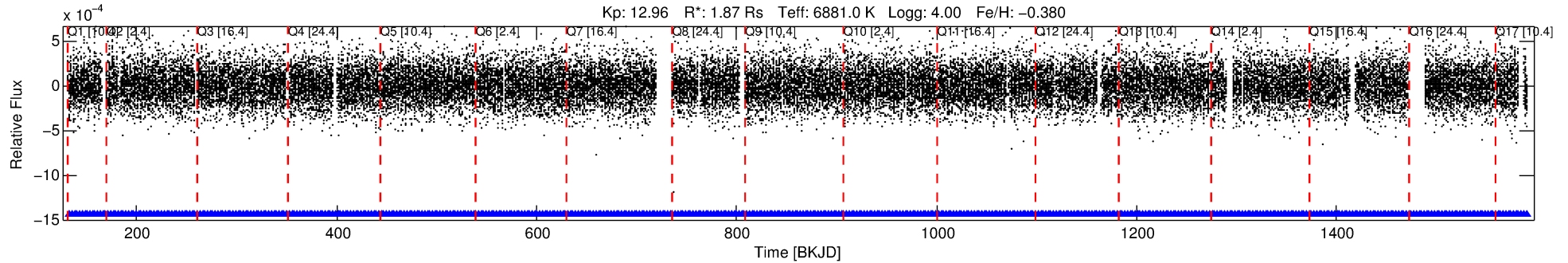
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 002010414-02

No Significant Match Found

DV One-Page Summary

KIC: 2010414 Candidate: 2 of 2 Period: 2.555 d



DV Fit Results:

Period = 2.55539 [0.00005] d
Epoch = 133.1804 [0.0171] BKJD
Rp/R* = 0.0061 [0.0010]
a/R* = 1.02 [0.03]
b = 0.47 [1.56]
Seff = 4434.37 [1418.07]
Teq = 2081 [166] K
Rp = 1.24 [0.34] Re
a = 0.0397 [0.0080] AU
Ag = 15.04 [7.05] [1.99σ]
Teffp = 6336 [555] K [7.34σ]

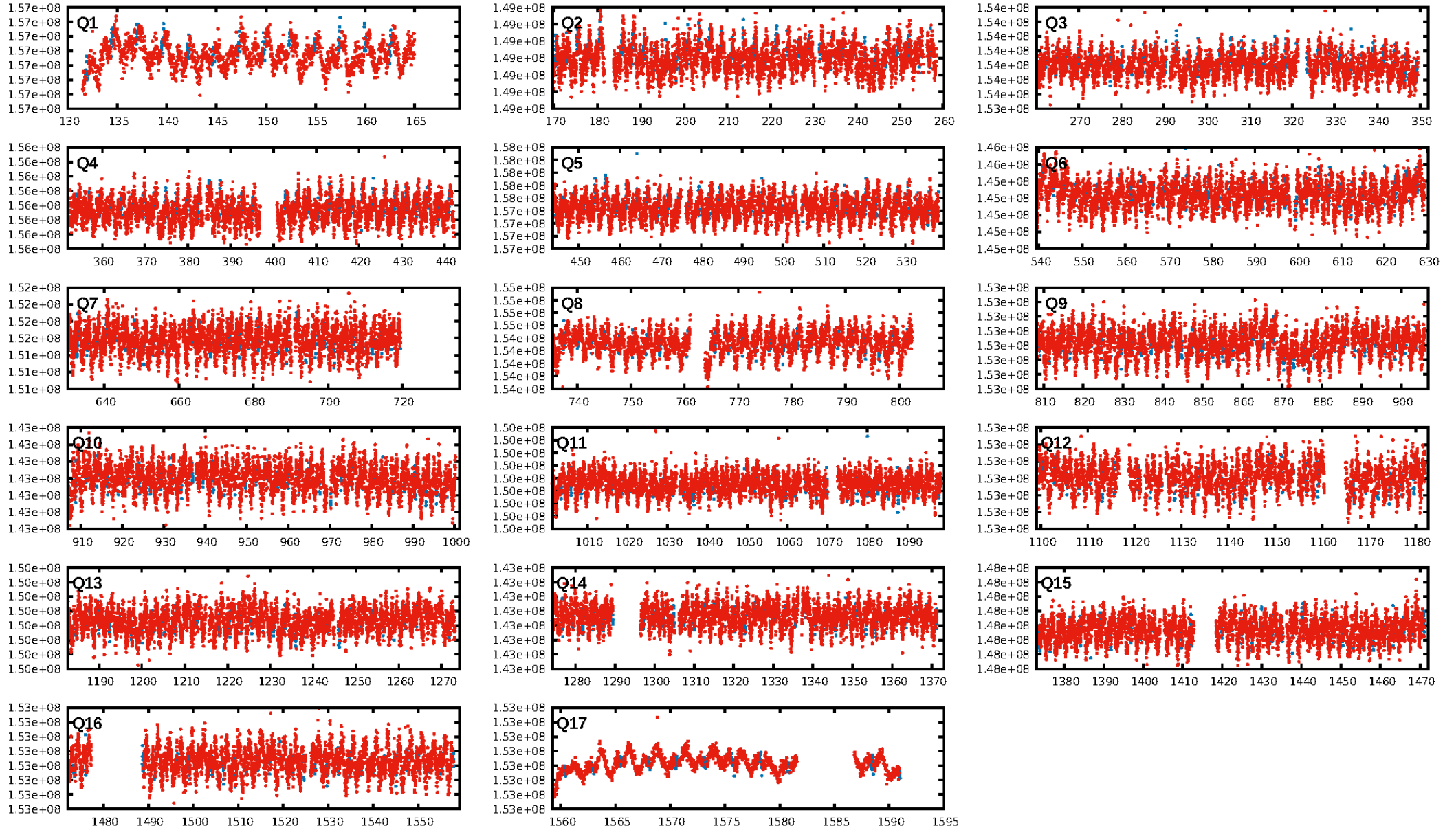
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.0% [0.00σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [506/506]
GhostDiagnostic-chr: 0.82
Centroid-sig: 0.6%
Centroid-so: 0.207 arcsec [0.54σ]
OotOffset-rm: 2.040 arcsec [0.81σ]
OotOffset-st: 0/1/0/3 [4]
KicOffset-rm: 2.065 arcsec [0.71σ]
KicOffset-st: 0/1/0/3 [4]
DiffImageQuality-fgm: 0.50 [2/4]
DiffImageOverlap-fno: 0.00 [0/17]

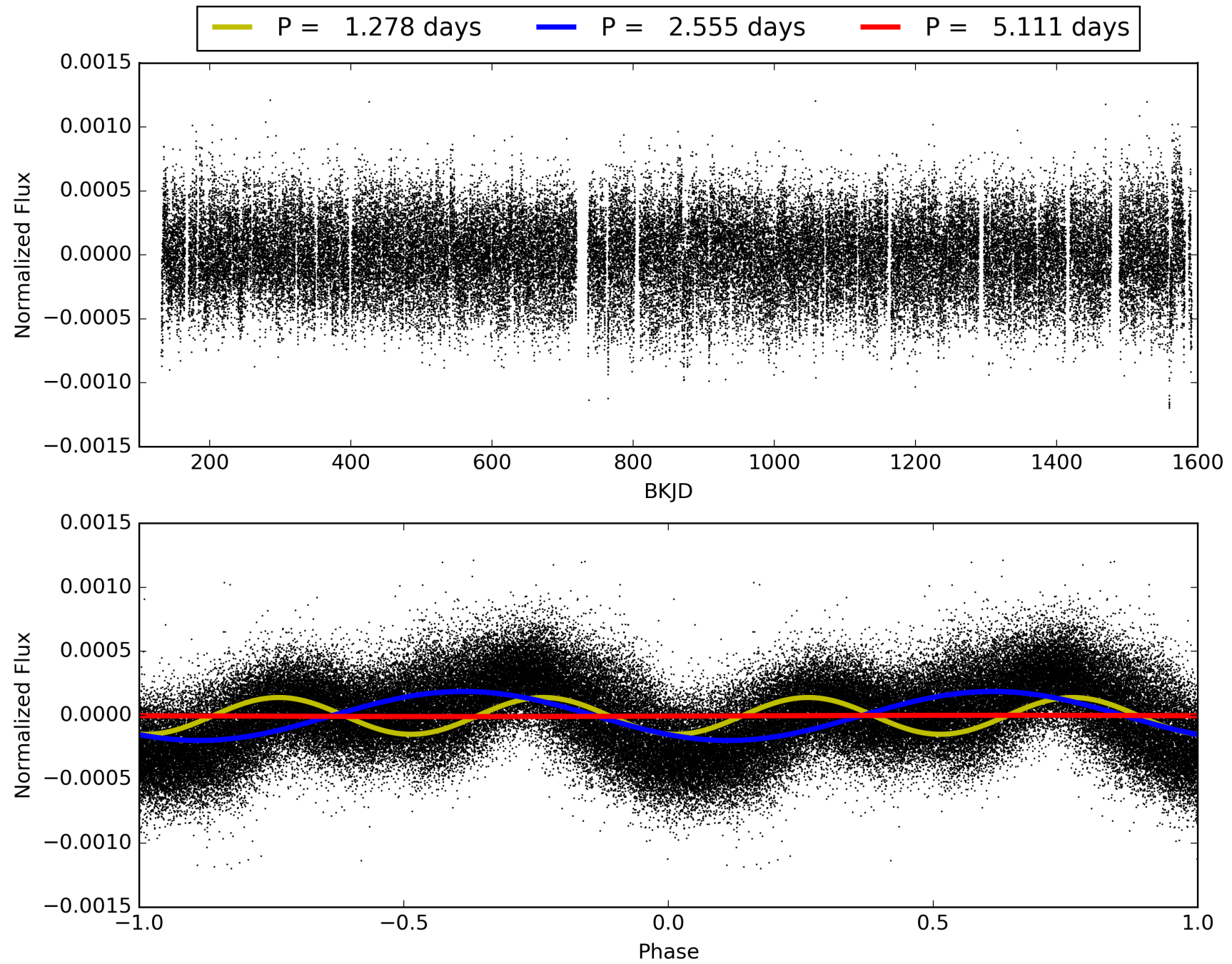
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 22:58:46 Z

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

TCE 002010414-02, PDC Light Curves

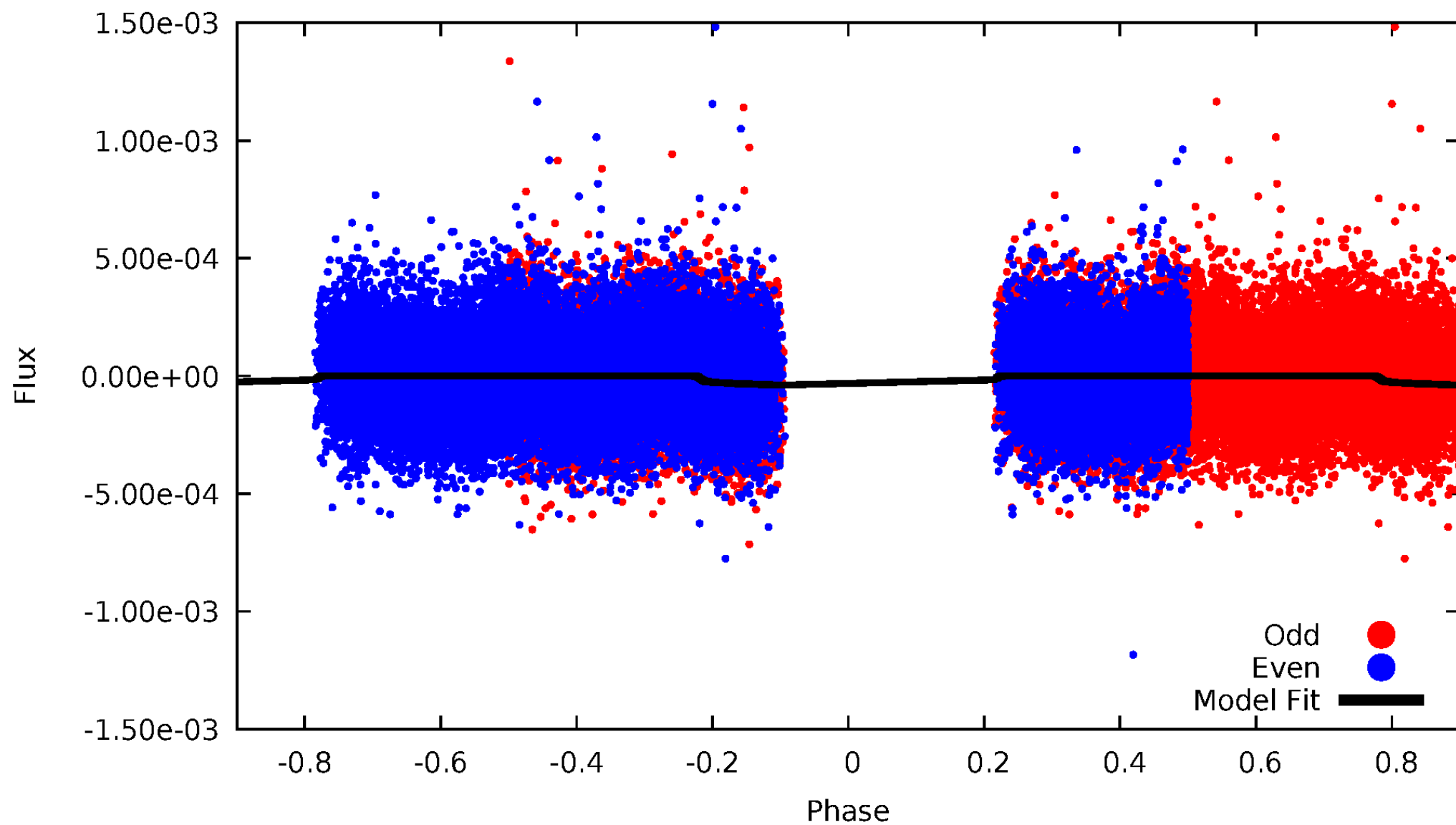


TCE 002010414-02



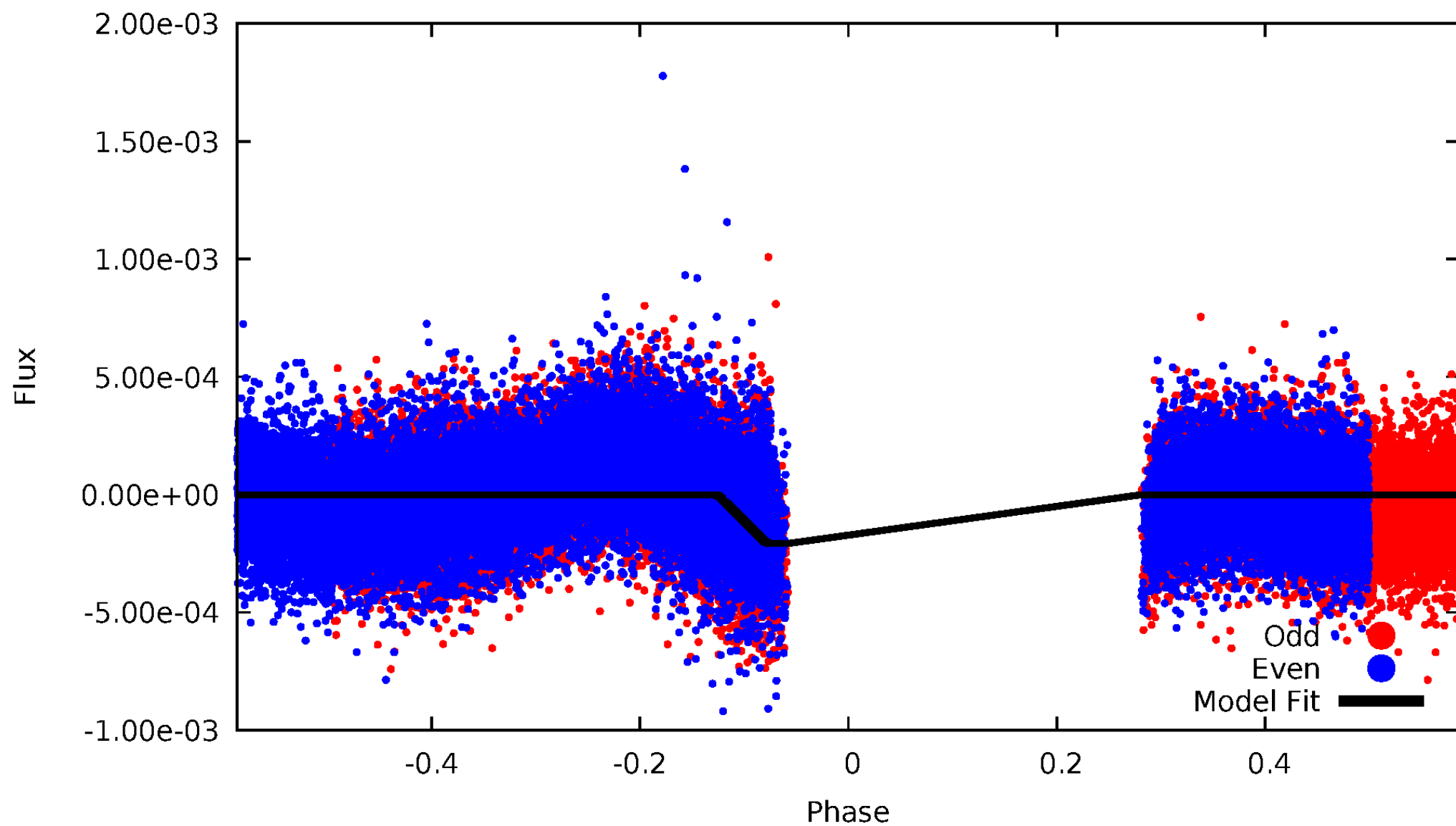
DV Odd/Even

TCE 002010414-02



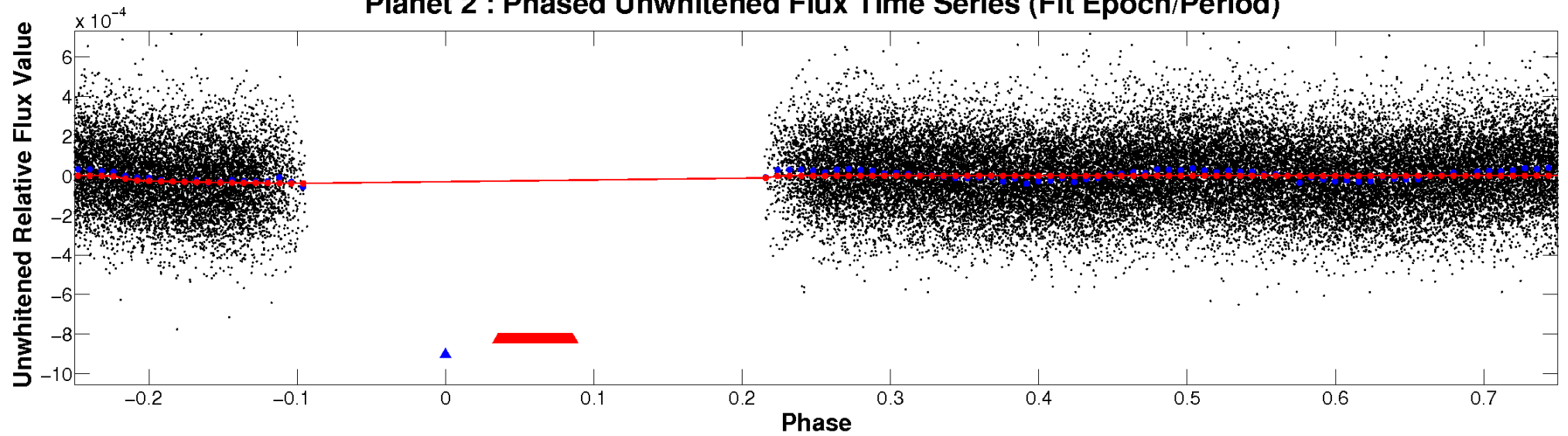
ALT Odd/Even

TCE 002010414-02

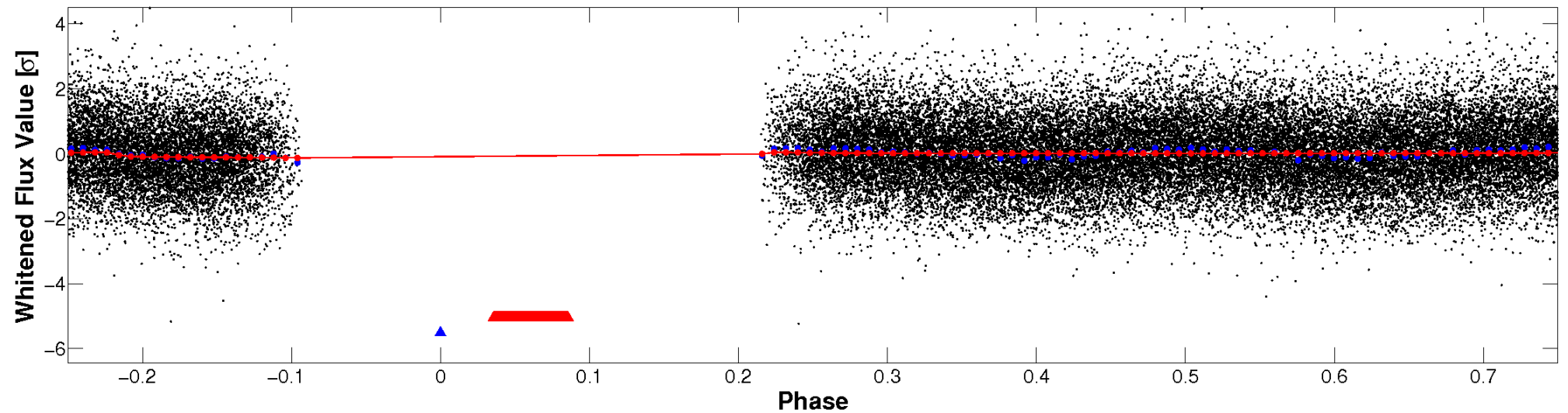


Non-Whitened Vs. Whitened Light Curve

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

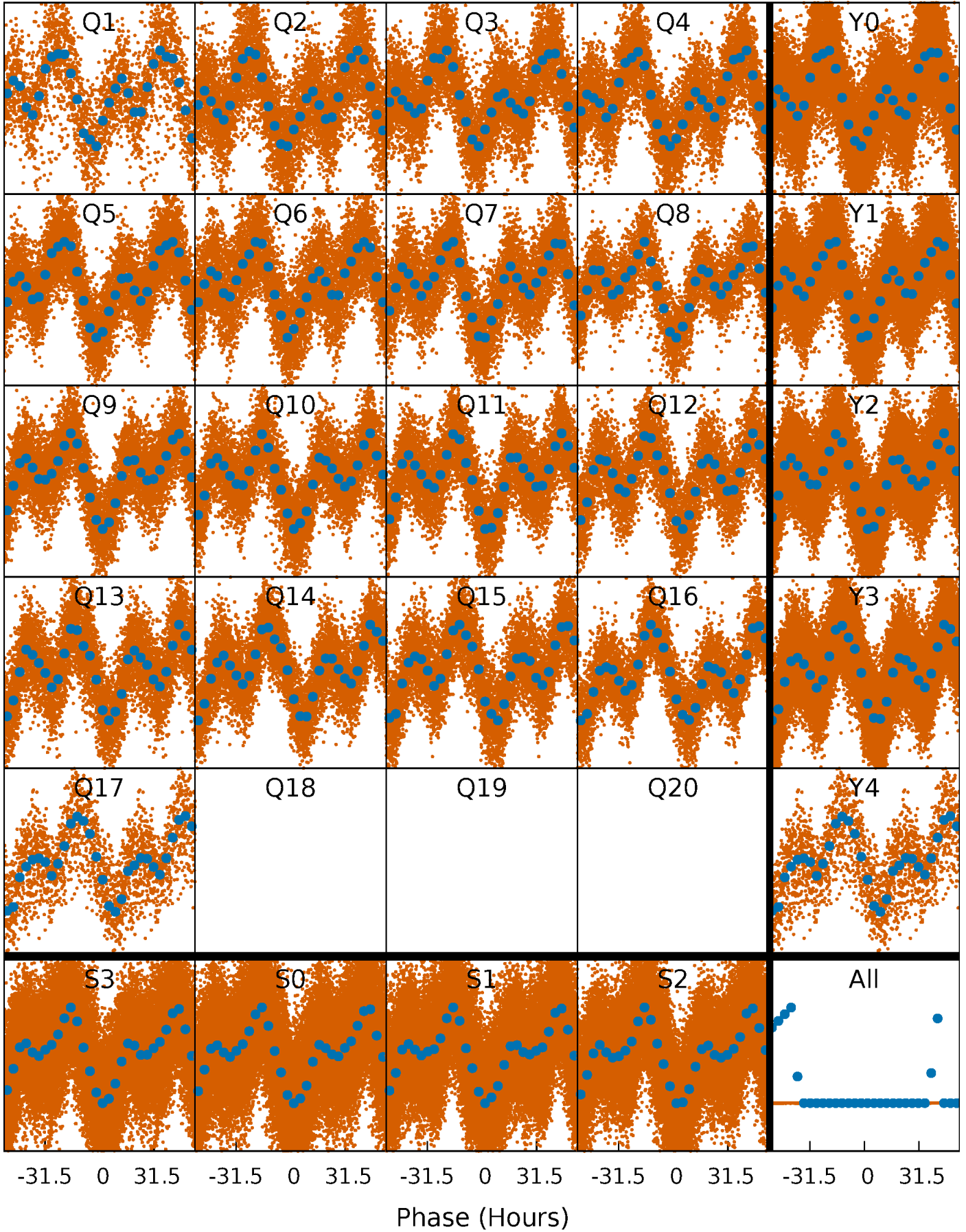


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



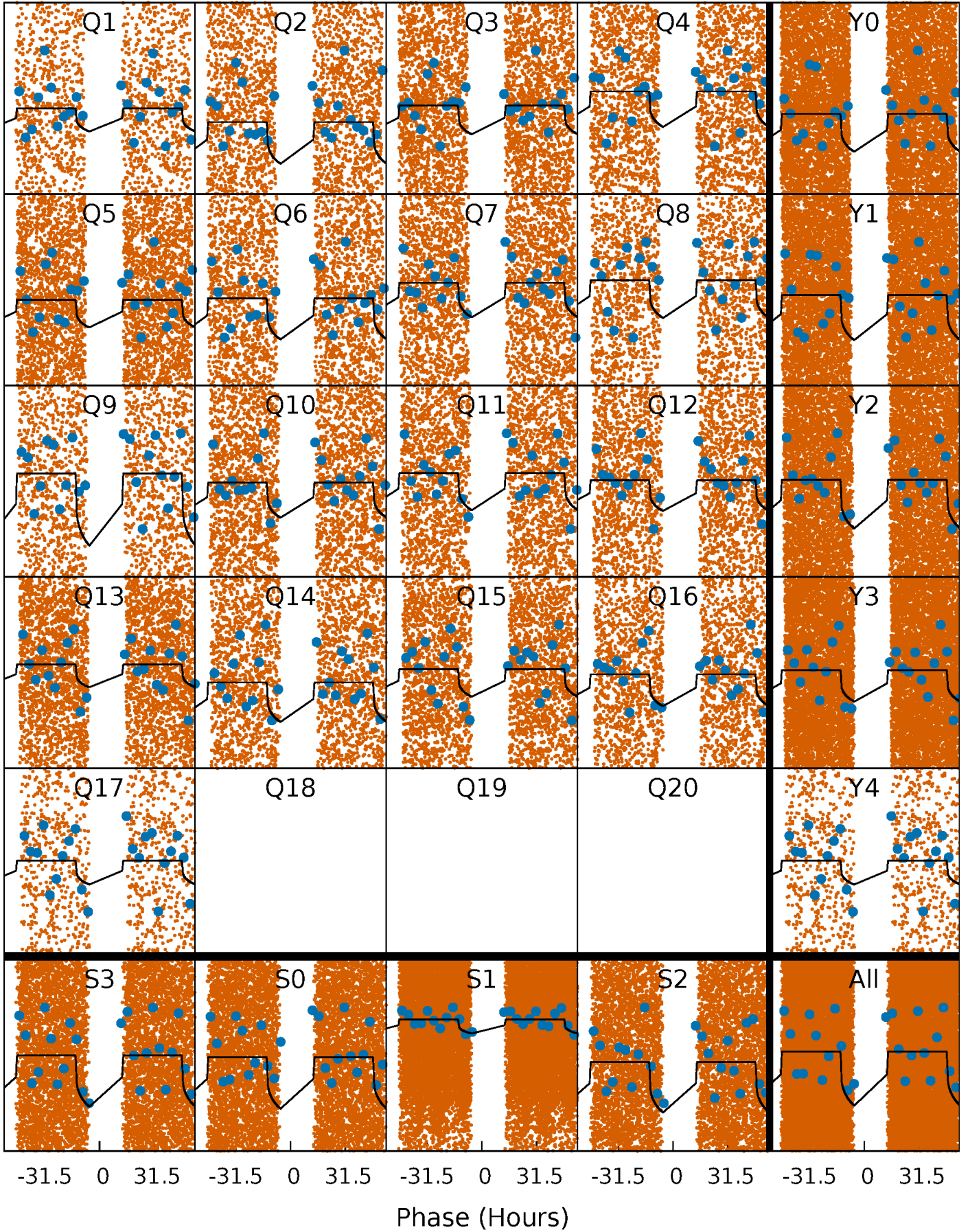
PDC Quarter-Phased Transit Curves

TCE 002010414-02 P= 2.555390 Days $T_0=133.180374$ (BKJD)



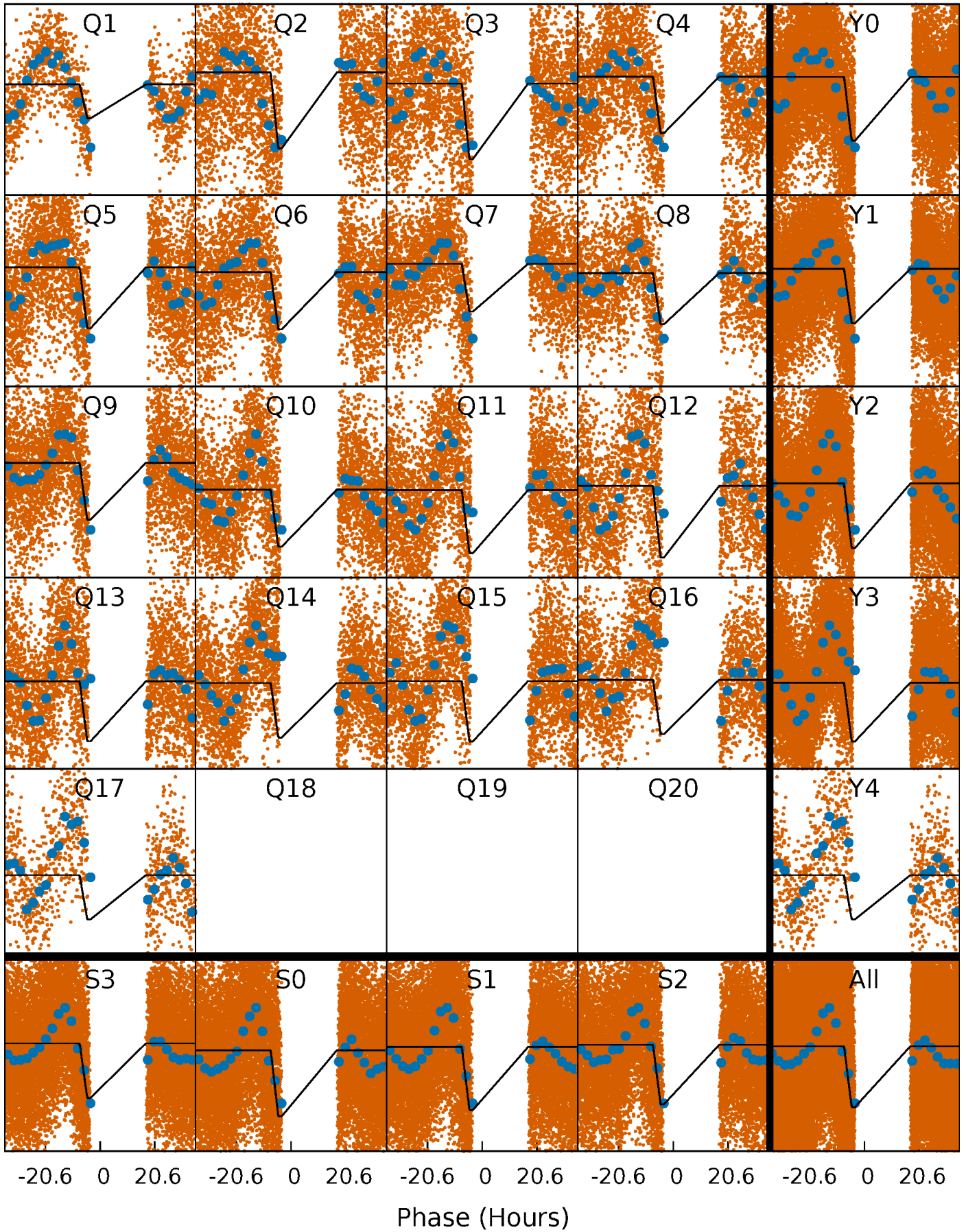
DV Quarter-Phased Transit Curves

TCE 002010414-02 P= 2.555390 Days $T_0=133.180374$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

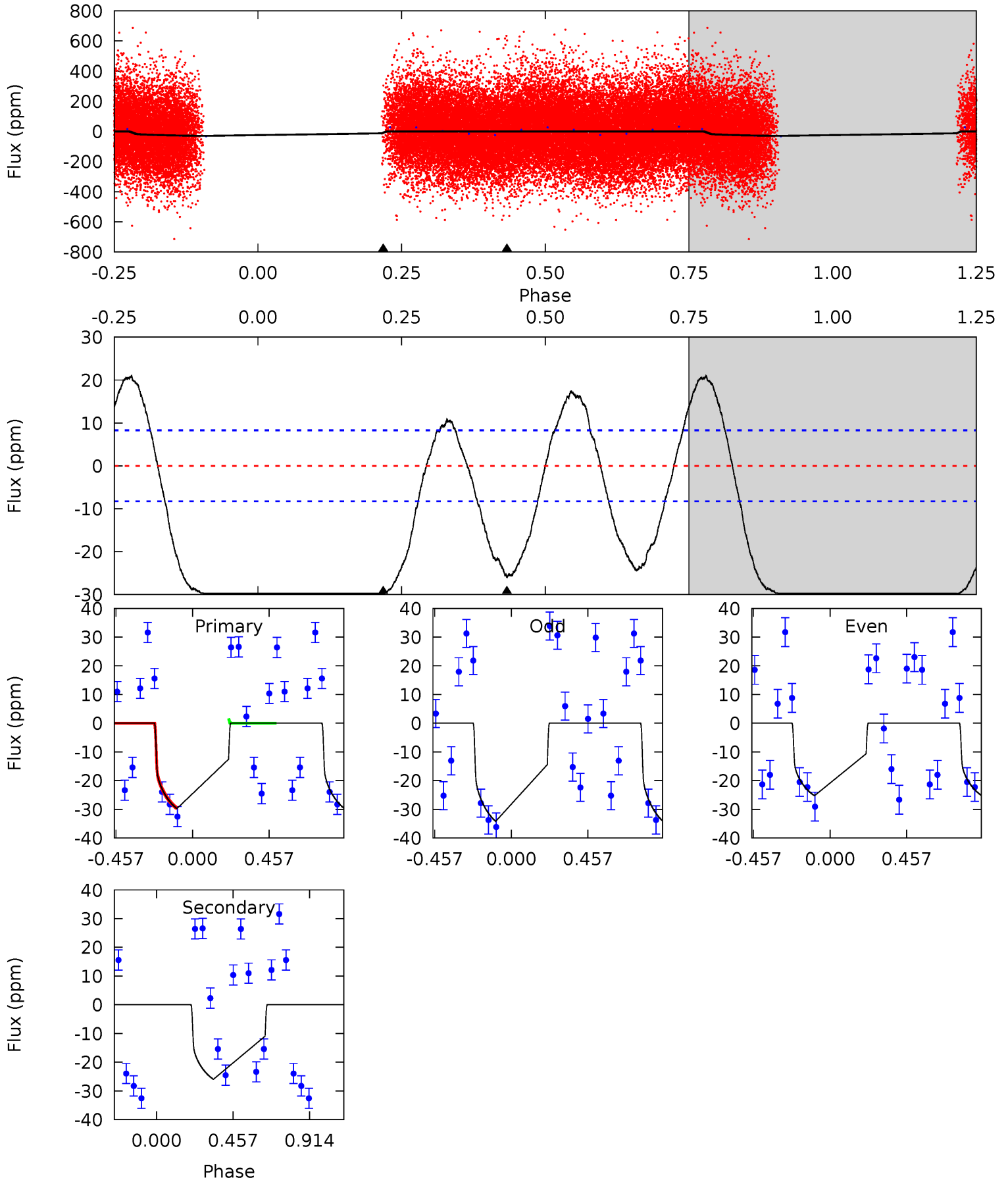
TCE 002010414-02 P= 2.555698 Days $T_0=132.962337$ (BKJD)



DV Model-Shift Uniqueness Test

002010414-02, P = 2.555390 Days, E = 130.624984 Days

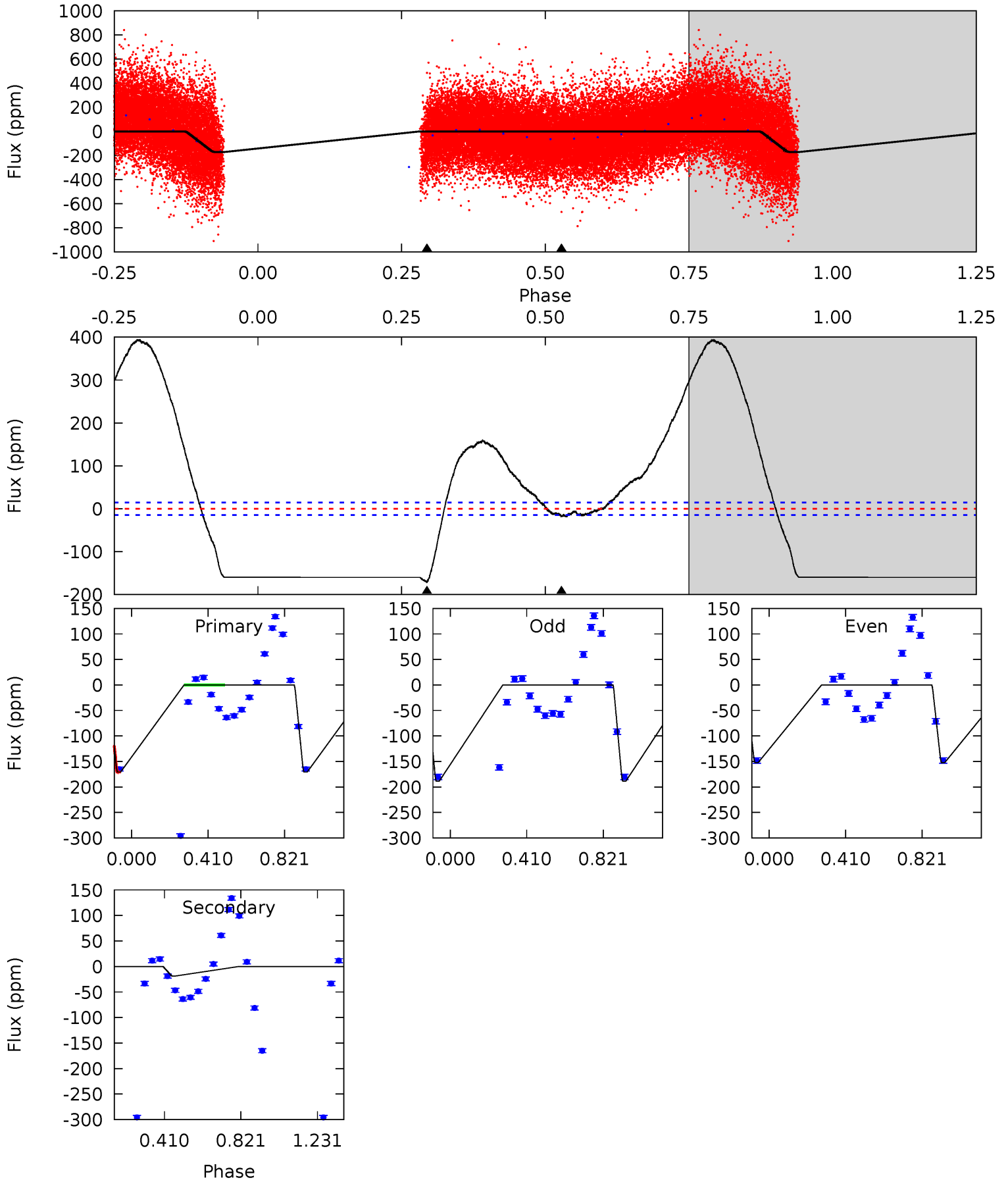
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
15.2	13.3	0	0	4.24	0.74	6.25	15.2	15.2	13.3	13.3	2.27	0.98	0.41	1.97



Alt Model-Shift Uniqueness Test

002010414-02, P = 2.555698 Days, E = 130.406639 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
50.1	5.46	0	0	4.26	0.82	24.4	50.1	50.1	5.46	5.46	5.34	0	0.70	0



Stellar Parameters For KIC 002010414

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6881^{+72}_{-92}	$4.003^{+0.182}_{-0.112}$	$-0.380^{+0.150}_{-0.100}$	$1.866^{+0.335}_{-0.409}$	$1.281^{+0.131}_{-0.119}$	$0.278^{+0.246}_{-0.096}$
	+1%/-1%	+5%/-3%	+39%/-26%	+18%/-22%	+10%/-9%	+89%/-35%
Source	SPE68	SPE68	SPE68	DSEP		

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

Secondary Eclipse Parameters for KIC 002010414-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-26 ± 2	$1.22^{+0.24}_{-0.24}$	2894^{+149}_{-163}	6231^{+656}_{-498}	15^{+8}_{-5}
Alt.	-19 ± 3	$2.92^{+0.38}_{-0.39}$	2897^{+140}_{-165}	3934^{+193}_{-215}	$1.918^{+0.704}_{-0.551}$

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 $A_{\text{obs}} \gg 1.0$

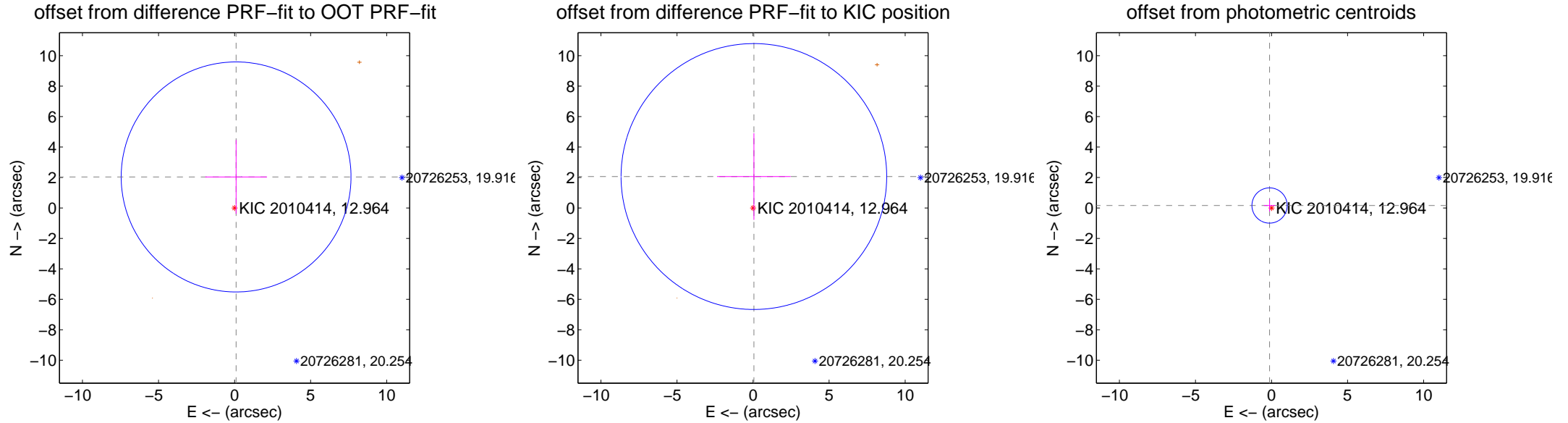
DV Centroid Data

Supplemental centroid analysis for 002010414-02. Kepler magnitude: 12.96. Transit SNR 9.31

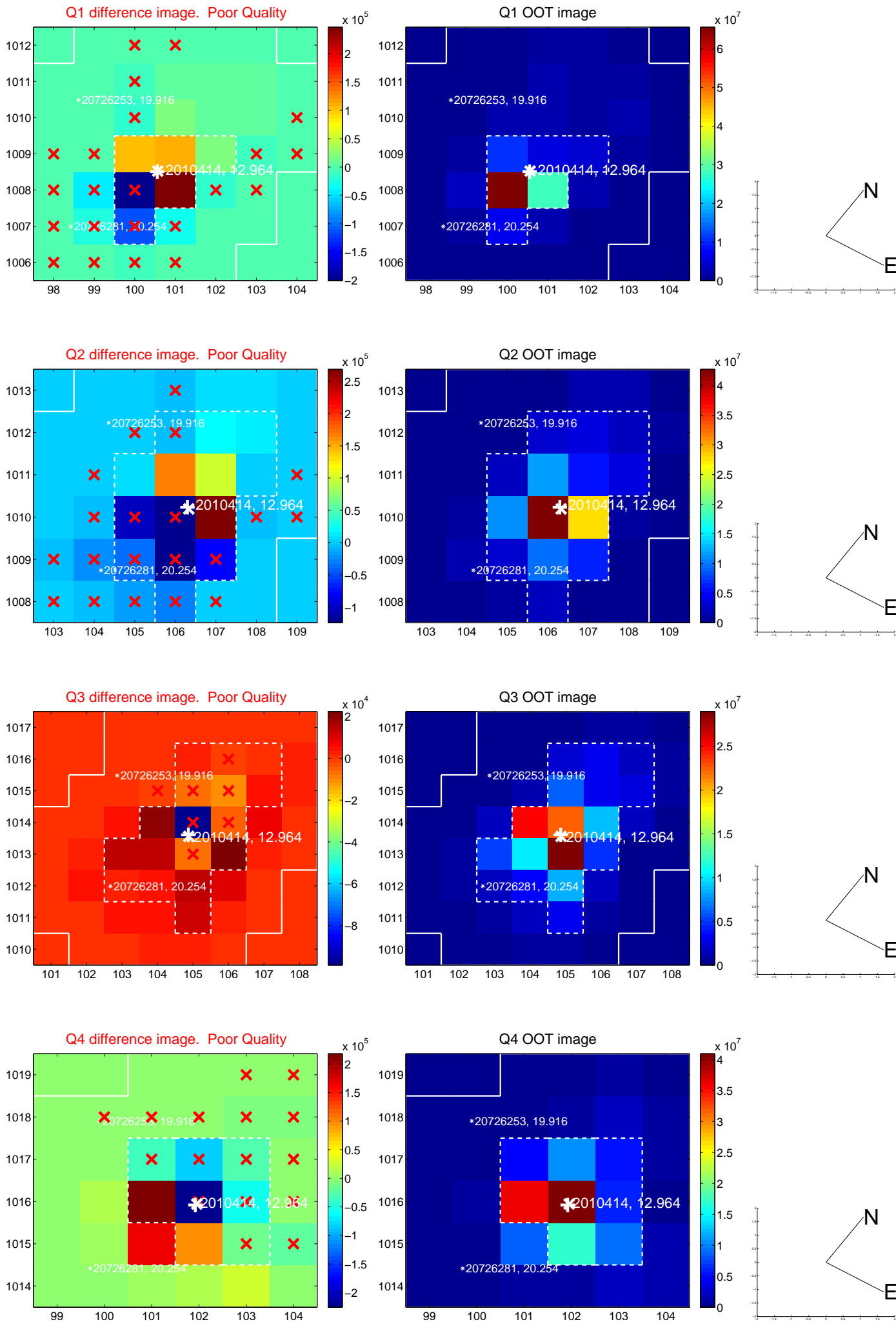
There are 2 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.17 arcsec

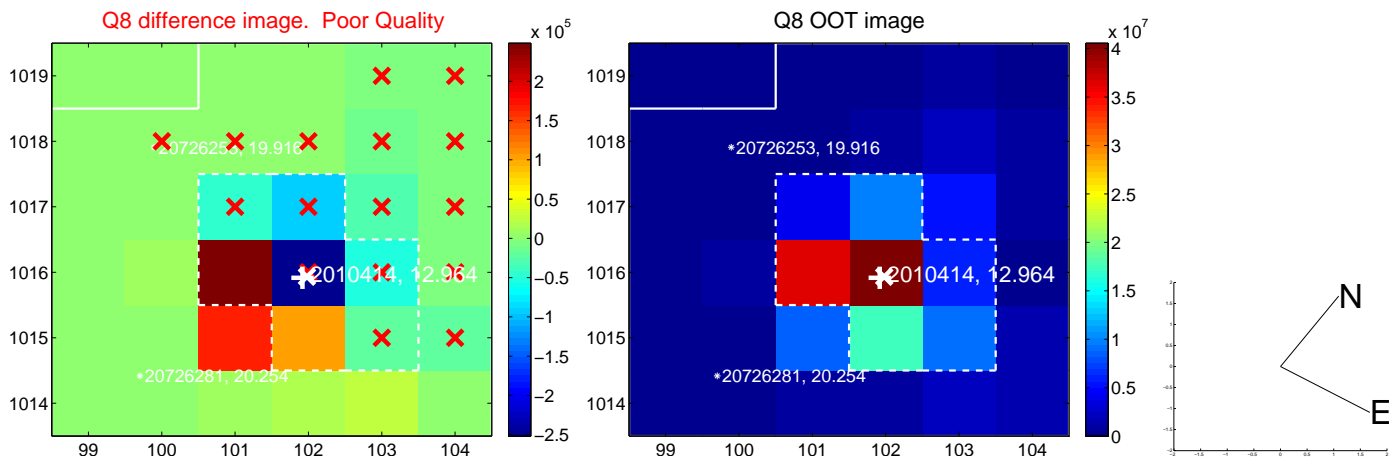
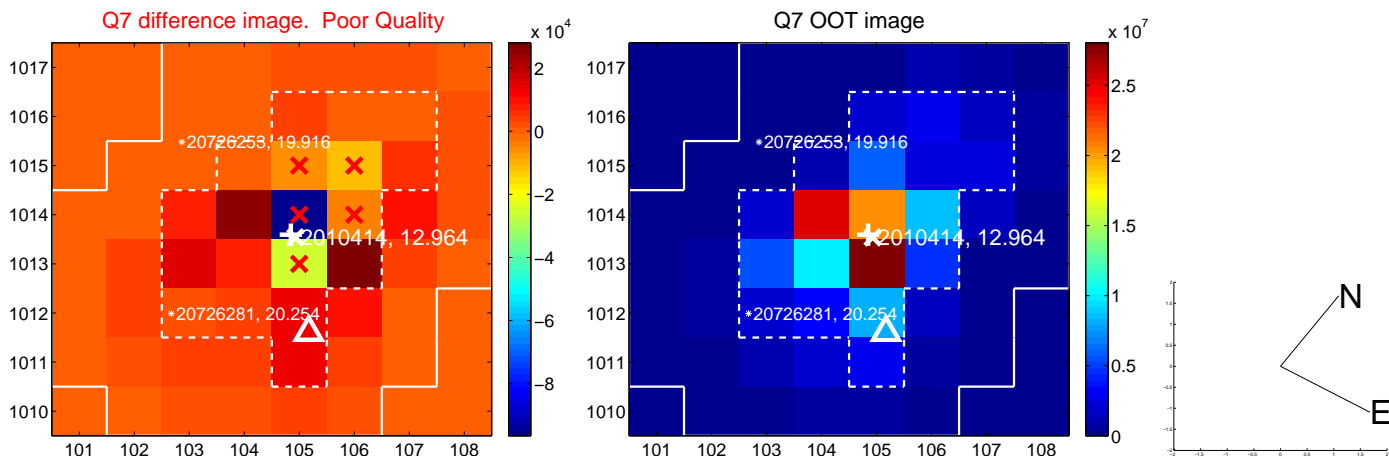
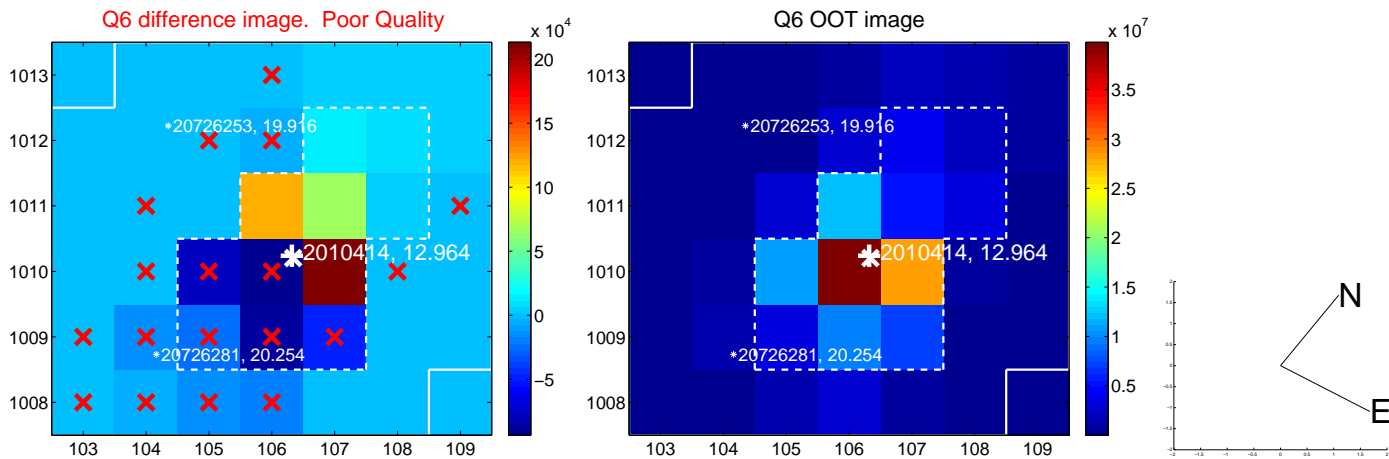
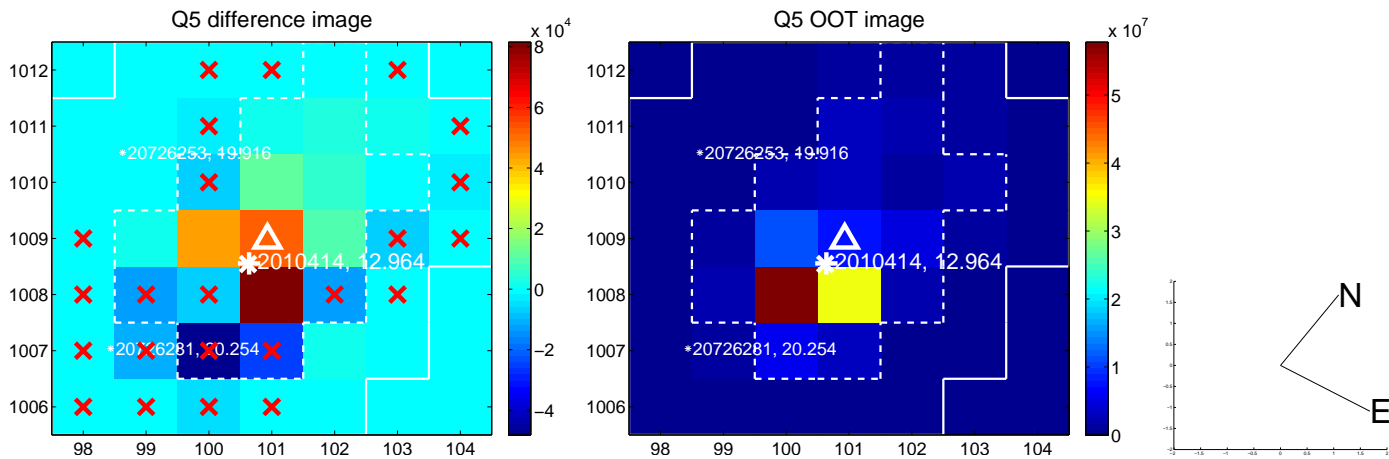
	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	2.040 ± 2.519	0.81	-0.100 ± 2.031	2.037 ± 2.423
PRF-fit source offset from KIC position	2.065 ± 2.911	0.71	-0.055 ± 2.425	2.064 ± 2.848
photometric centroid source offset	0.21 ± 0.39	0.54	0.13 ± 0.37	0.16 ± 0.40



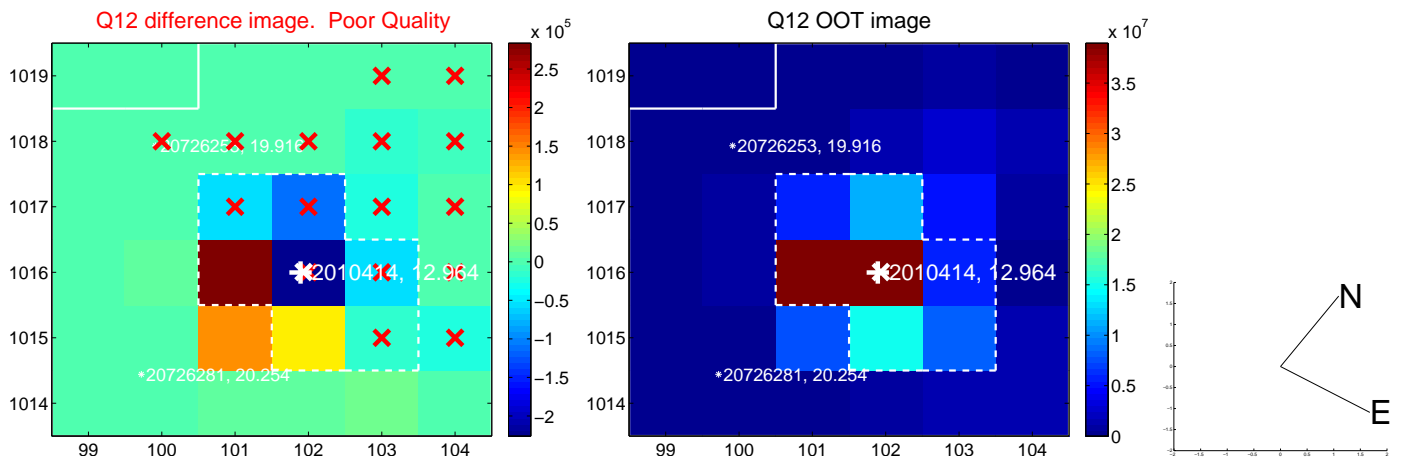
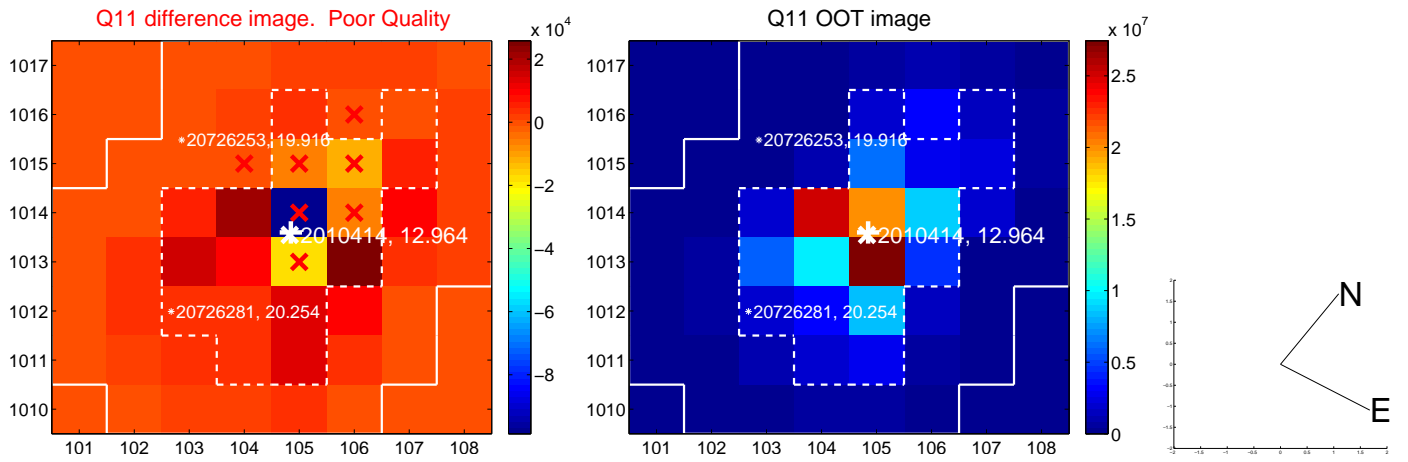
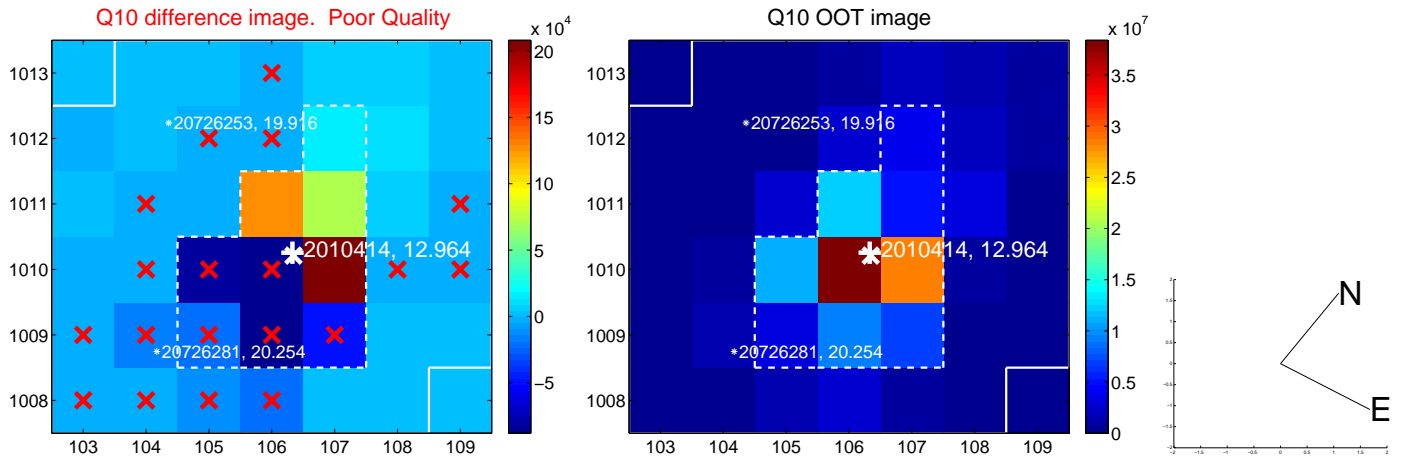
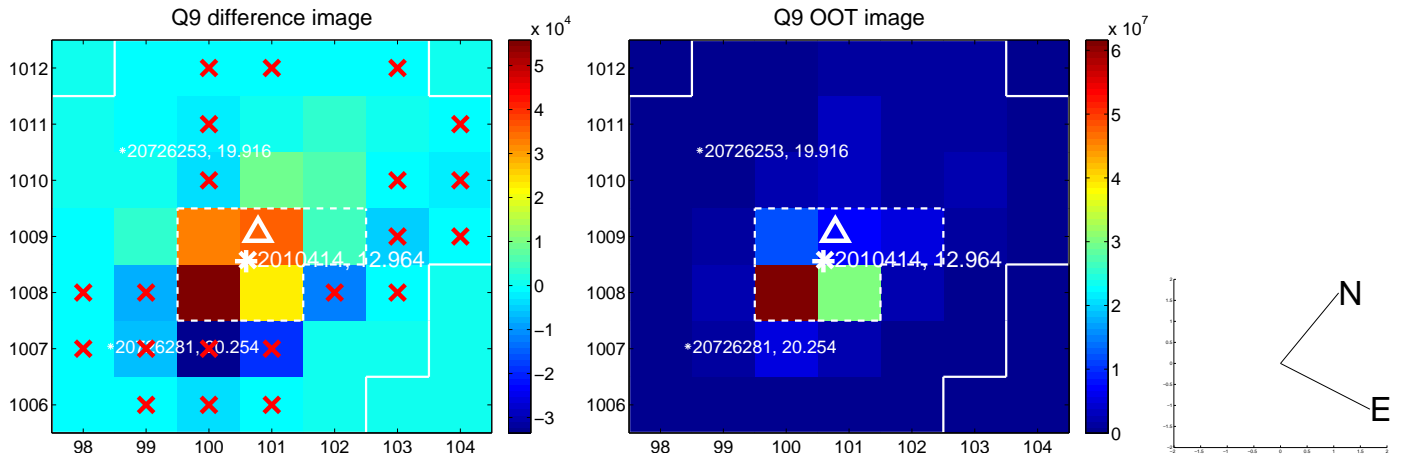
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



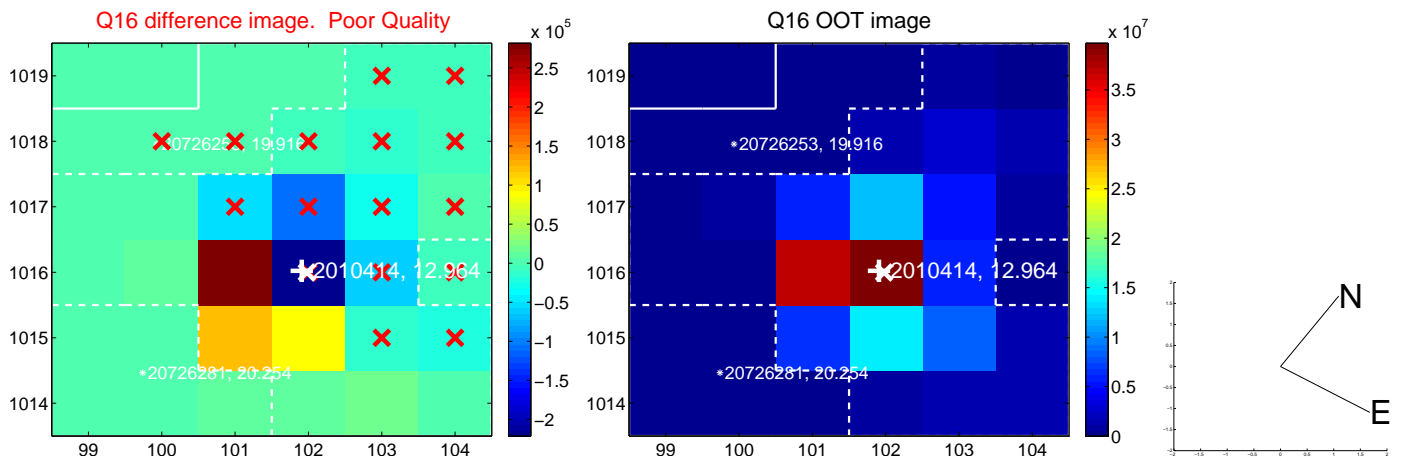
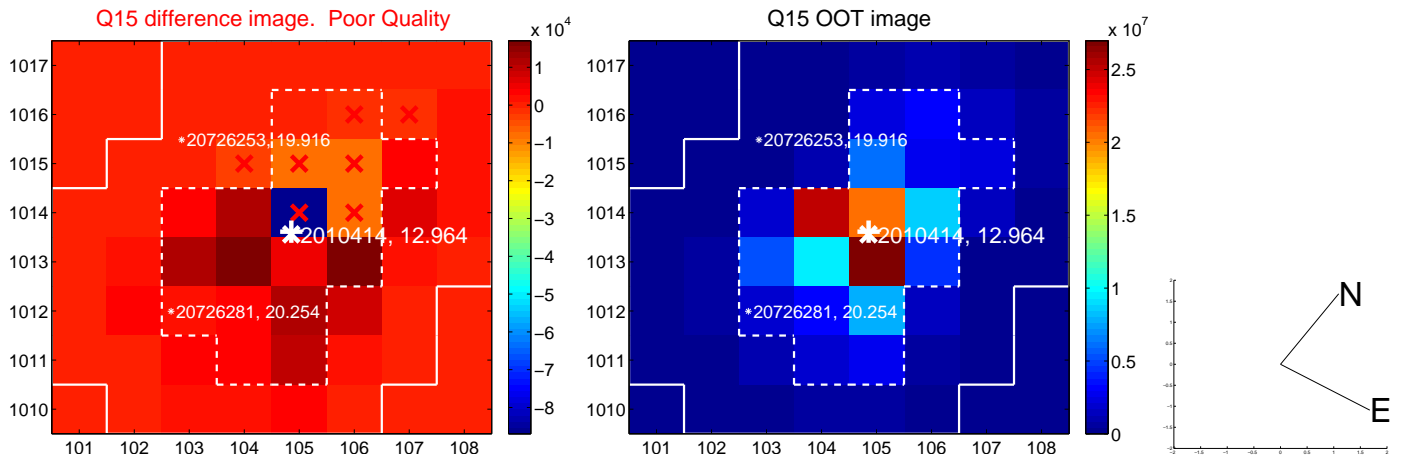
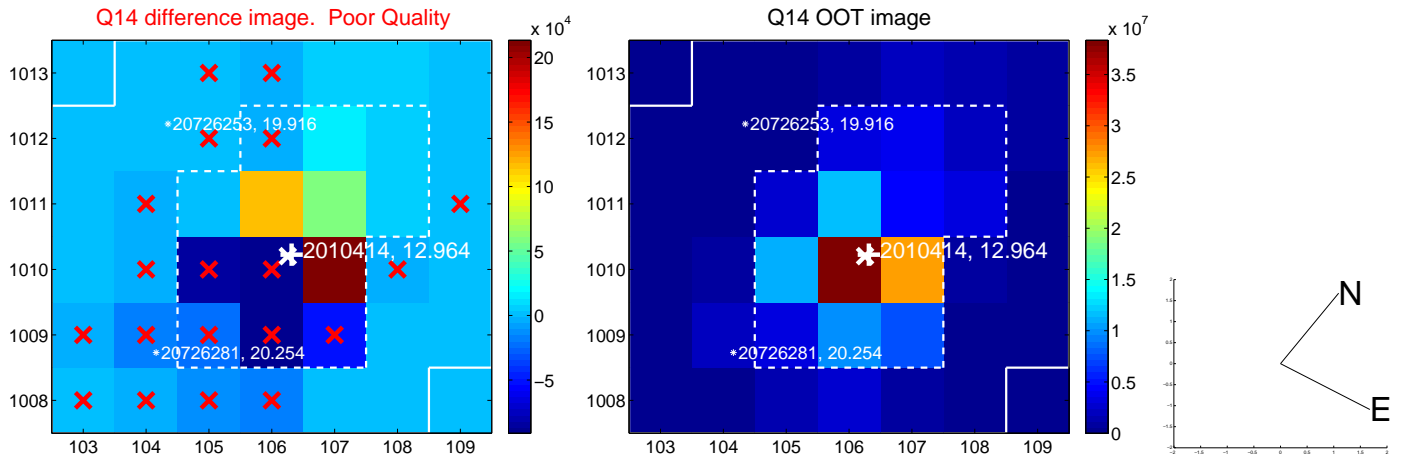
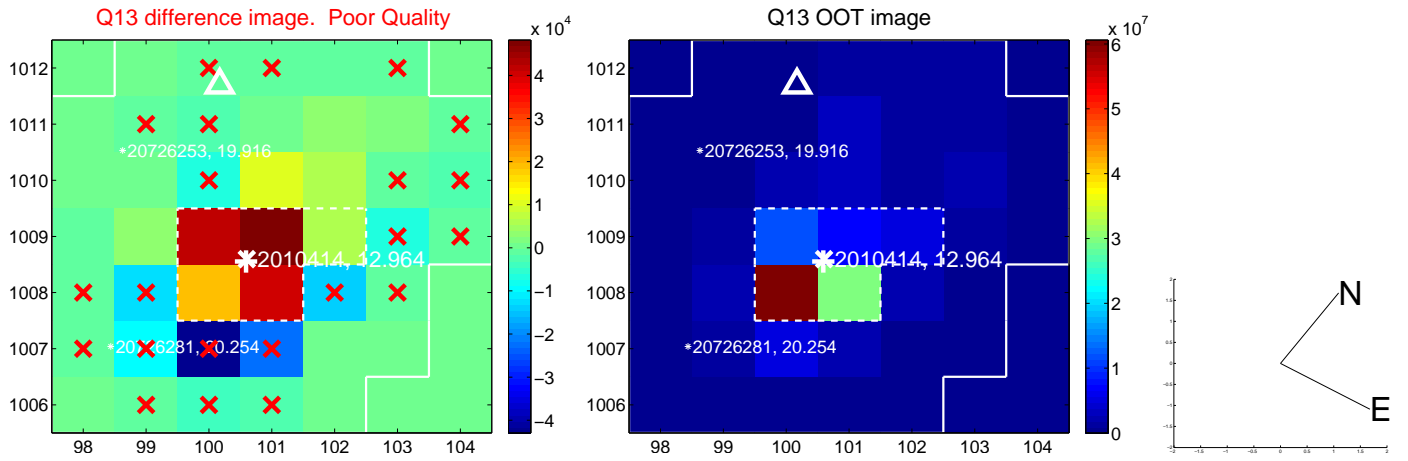
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



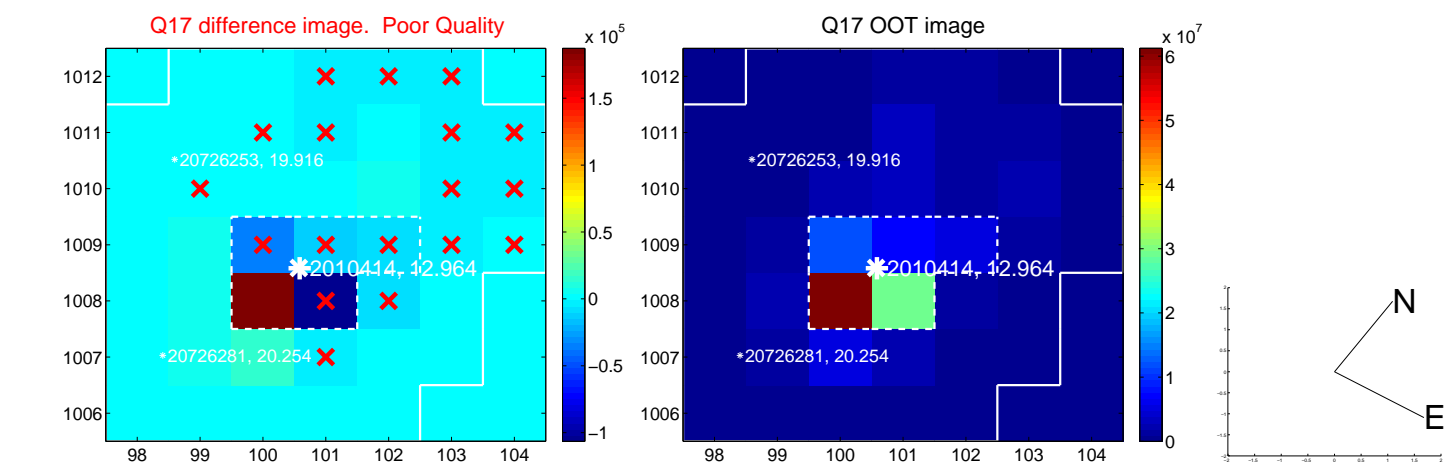
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



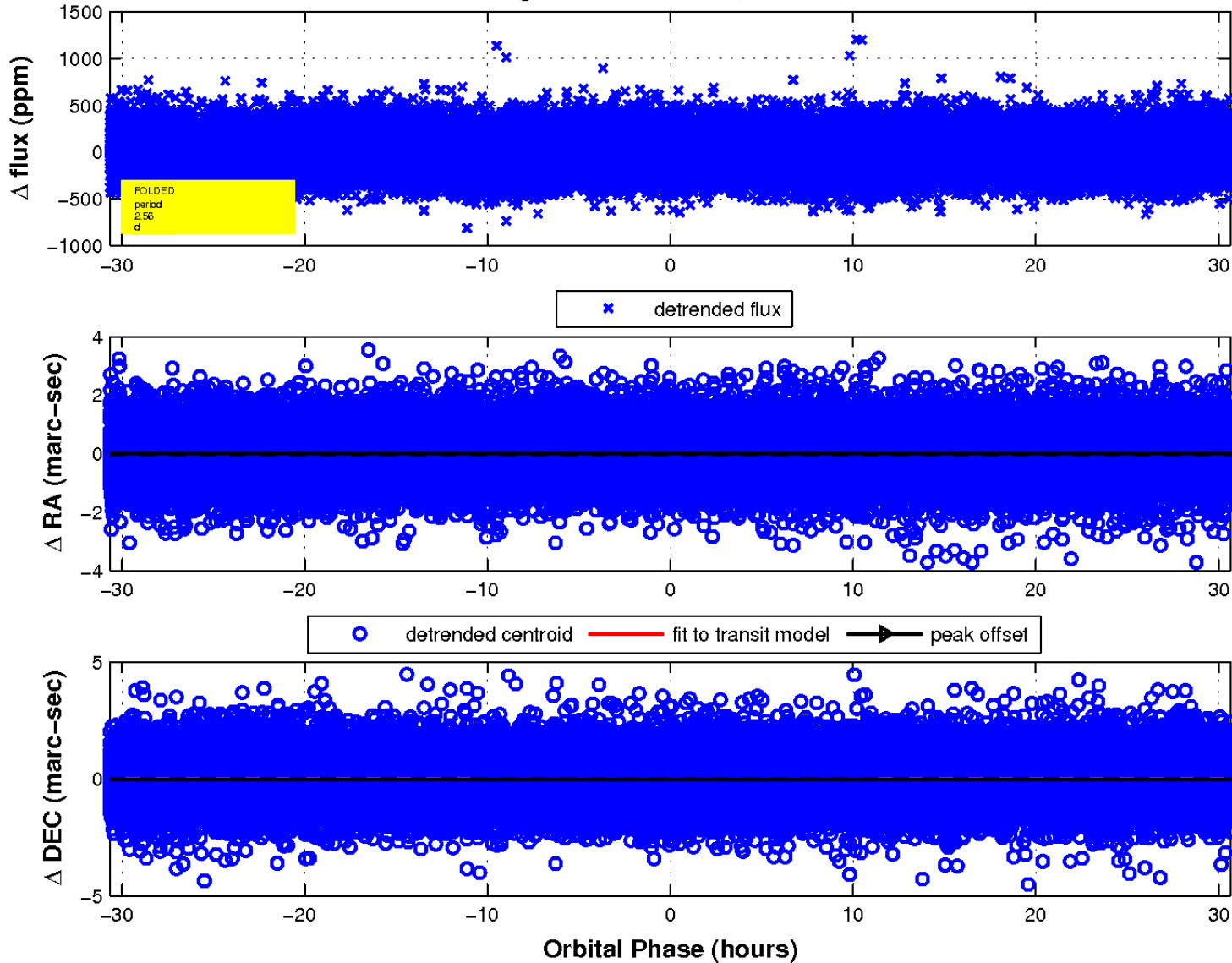
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 2 of 2



UKIRT Image

Declination

