

KIC 002310284

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})
002310284-01	OBS	No	677.258979	152.439967	7783.0	17.645	23.3	9.2	1.34	6818	12.87	1.27
002310284-02	OBS	No	613.588856	234.603276	9602.3	17.146	13.7	10.5	1.34	6818	14.47	1.45
002310284-03	OBS	No	1.399292	131.614436	64.5	2.723	10.4	4.6	1.34	6818	1.22	4815.01
002310284-04	OBS	No	604.458286	306.785229	7562.1	10.406	16.1	8.2	1.34	6818	12.85	1.48
002310284-05	OBS	No	604.457023	308.309365	7616.3	8.683	15.1	8.1	1.34	6818	20.74	1.48

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
002310284-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS
002310284-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
002310284-03	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV
002310284-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL_TRACKER—LPP_DV—MOD_TER_DV—CENT_FEW_DIFFS
002310284-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—SAME_NTL_PERIOD

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

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

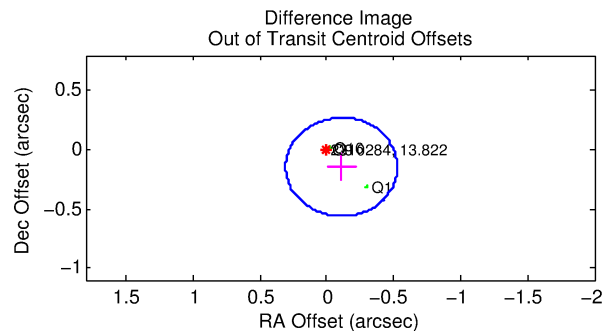
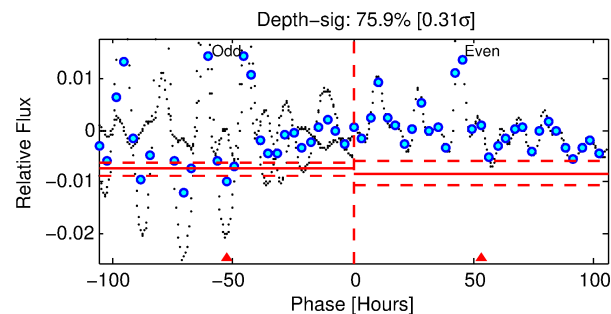
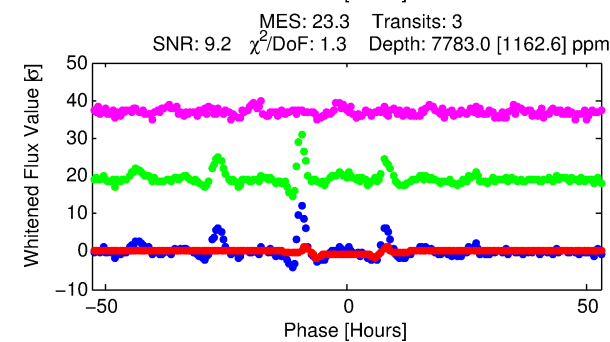
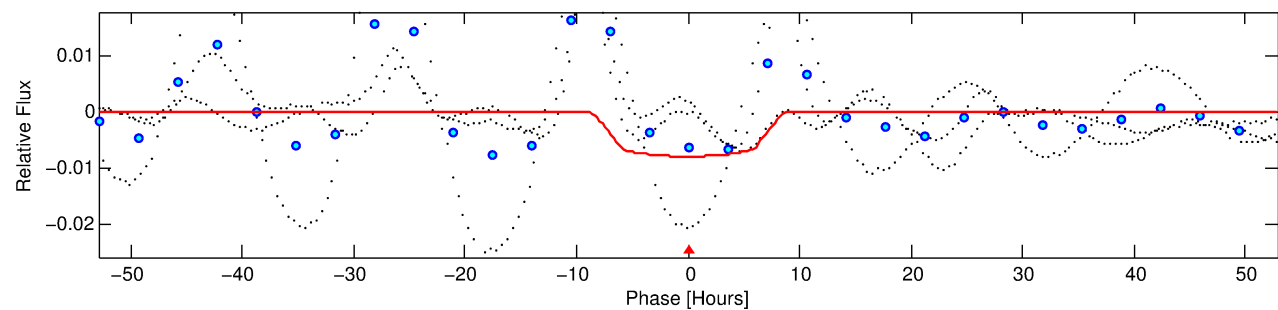
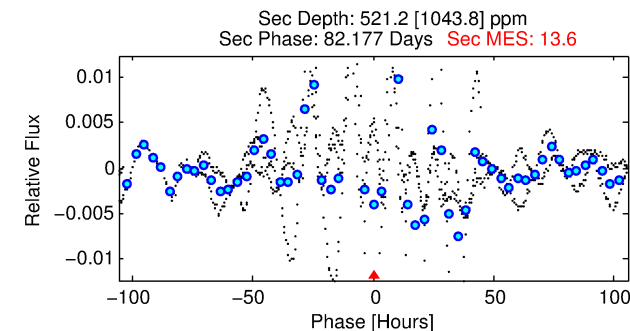
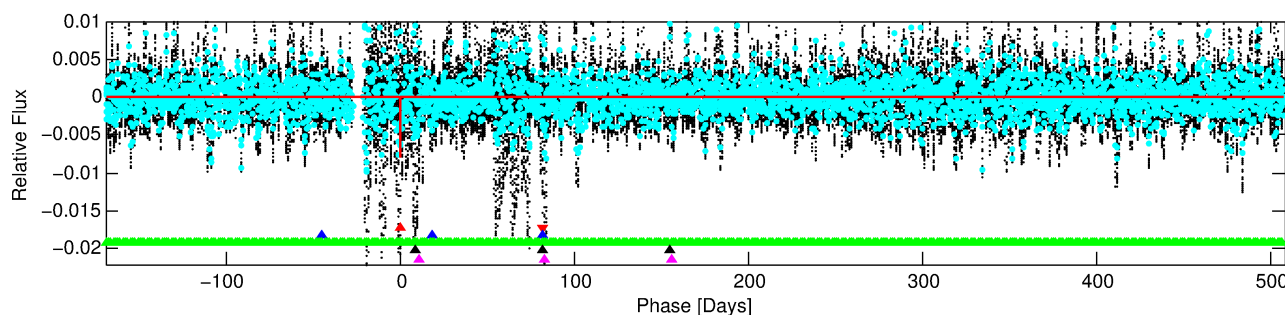
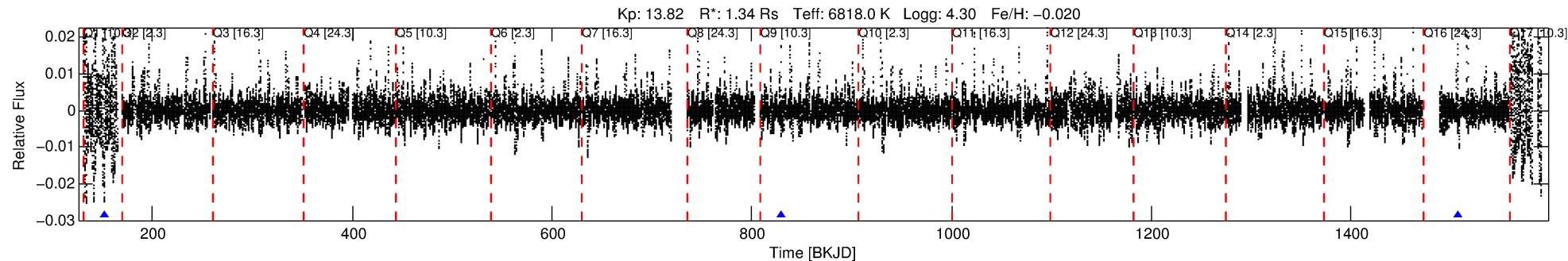
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 002310284-01

No Significant Match Found

DV One-Page Summary

KIC: 2310284 Candidate: 1 of 5 Period: 677.259 d



DV Fit Results:

Period = 677.25898 [0.00784] d
Epoch = 152.4400 [0.0111] BKJD
Rp/R* = 0.0880 [0.0064]
a/R* = 229.73 [9.59]
b = 0.75 [0.02]
Seff = 1.27 [0.54]
Teq = 271 [29] K
Rp = 12.87 [4.40] Re
a = 1.6576 [0.4557] AU
Ag = 4753.32 [9725.04] [0.49σ]
Teffp = 3473 [1750] K [1.83σ]

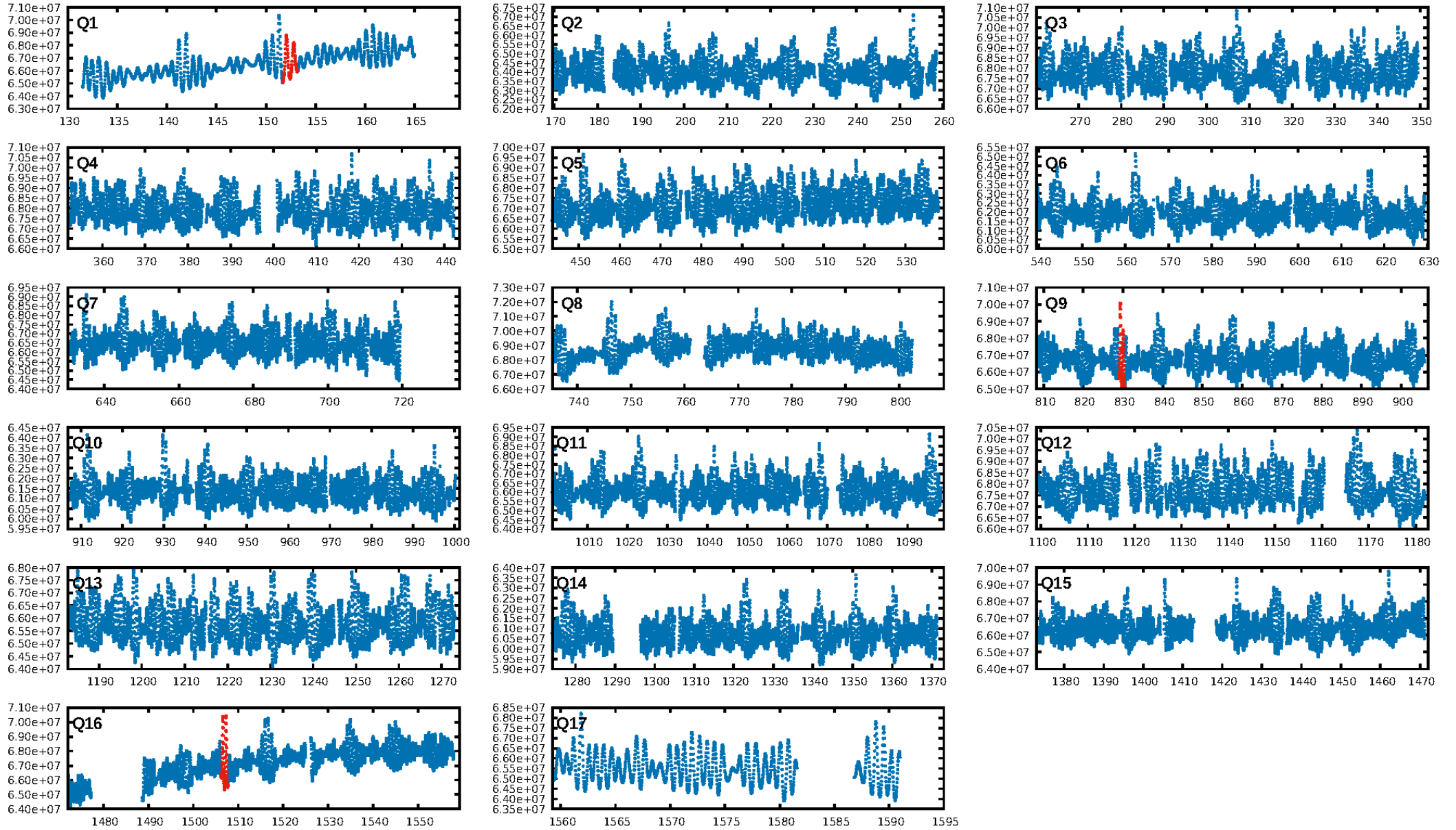
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [62.11σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 31.8%
ModelChiSquareGof-sig: 48.8%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [2/2]
GhostDiagnostic-chr: -26.38
Centroid-sig: 97.6%
Centroid-so: 0.413 arcsec [7.98σ]
OotOffset-rm: 0.181 arcsec [1.31σ]
KicOffset-rm: 0.167 arcsec [1.39σ]
OotOffset-st: 0/0/1/2 [3]
KicOffset-st: 0/0/1/2 [3]
DiffImageQuality-fgm: 1.00 [3/3]
DiffImageOverlap-fno: 0.00 [0/3]

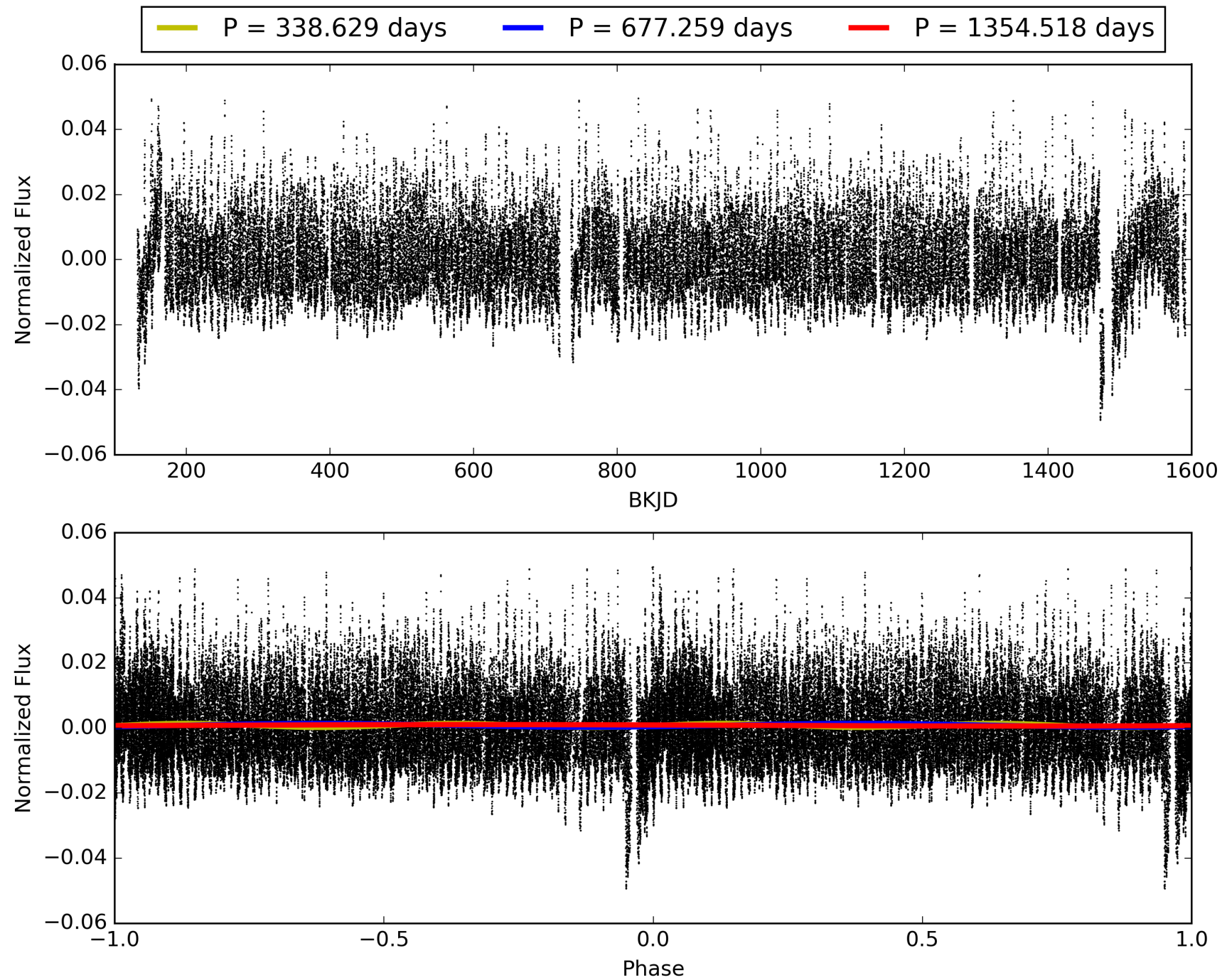
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 06:12:15 Z

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

TCE 002310284-01, PDC Light Curves

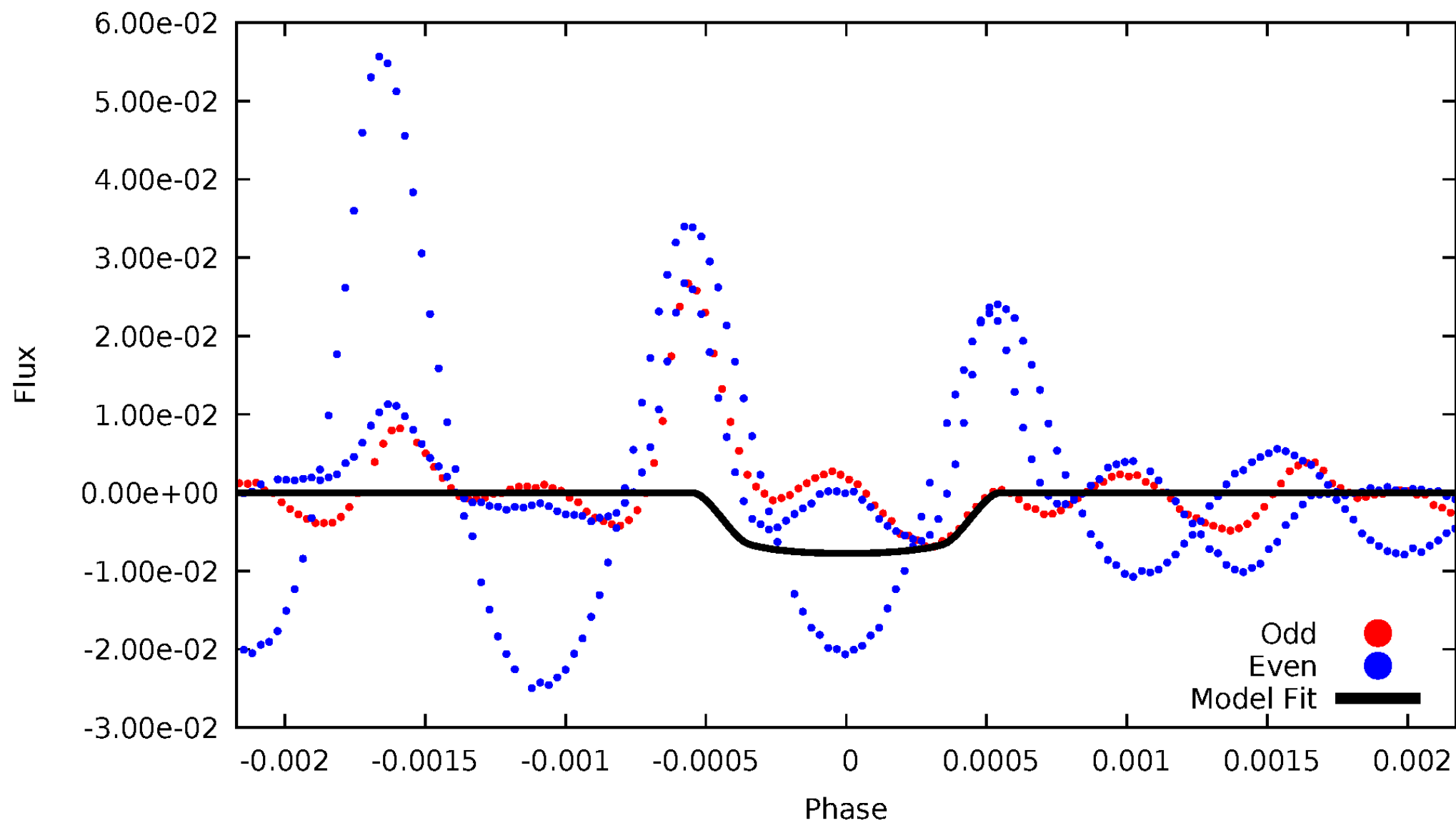


TCE 002310284-01



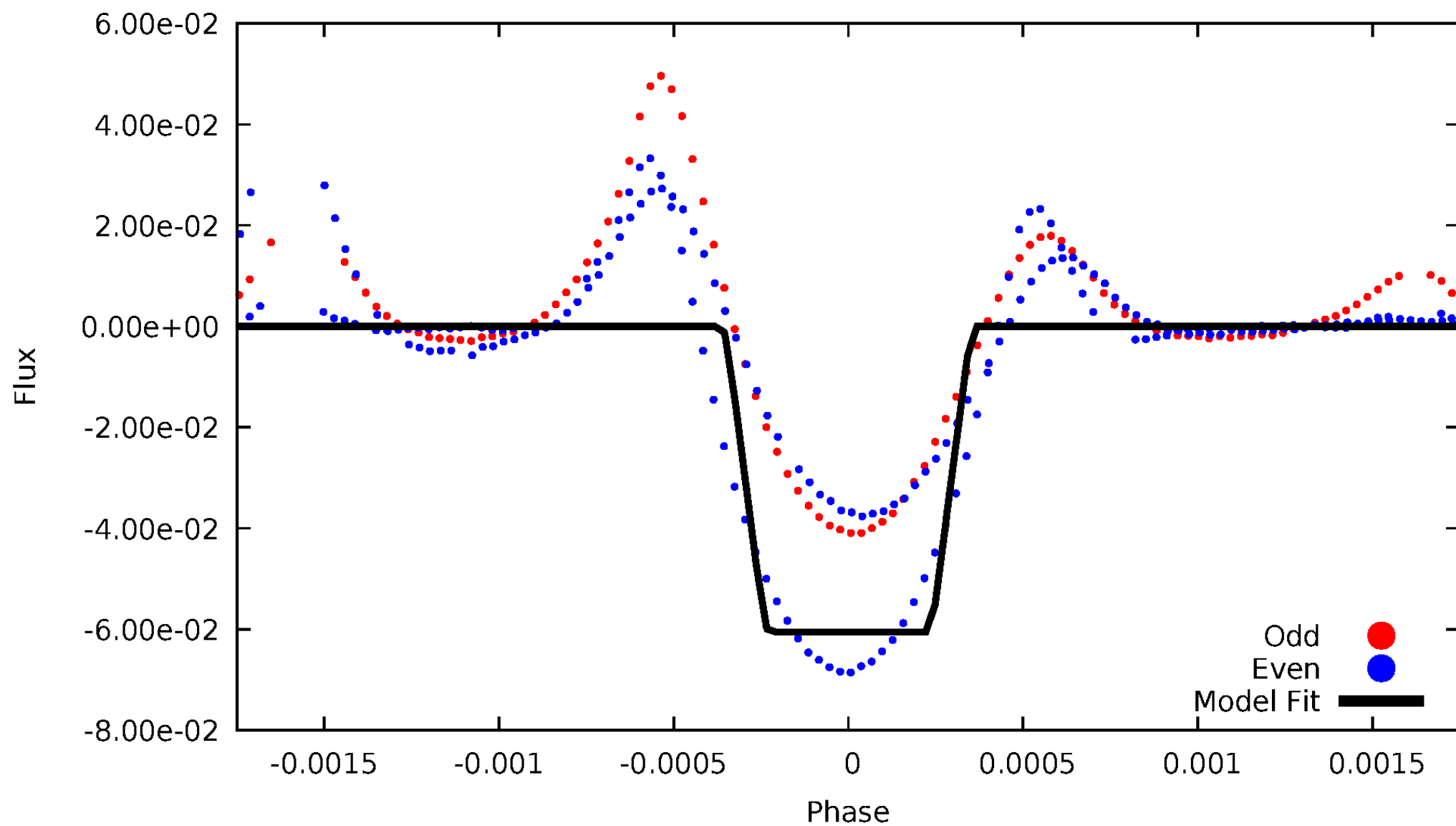
DV Odd/Even

TCE 002310284-01



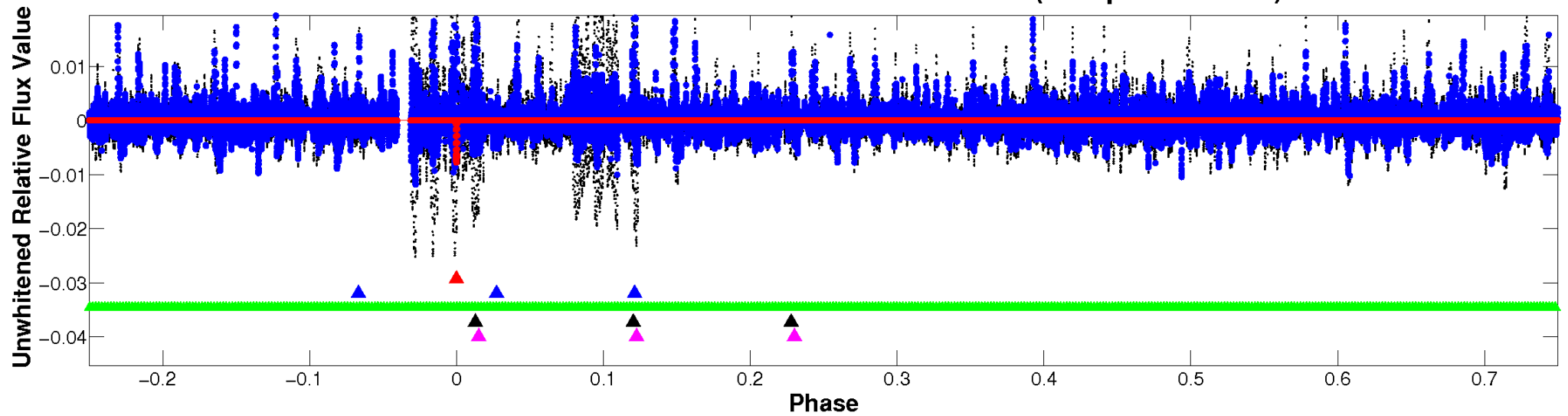
ALT Odd/Even

TCE 002310284-01

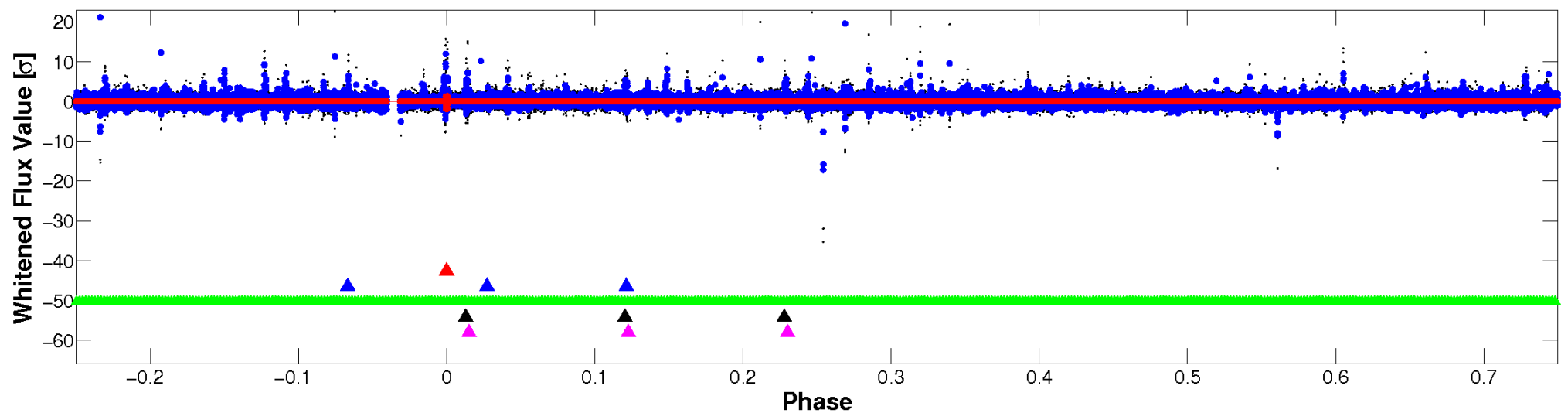


Non-Whitened Vs. Whitened Light Curve

Planet 1 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

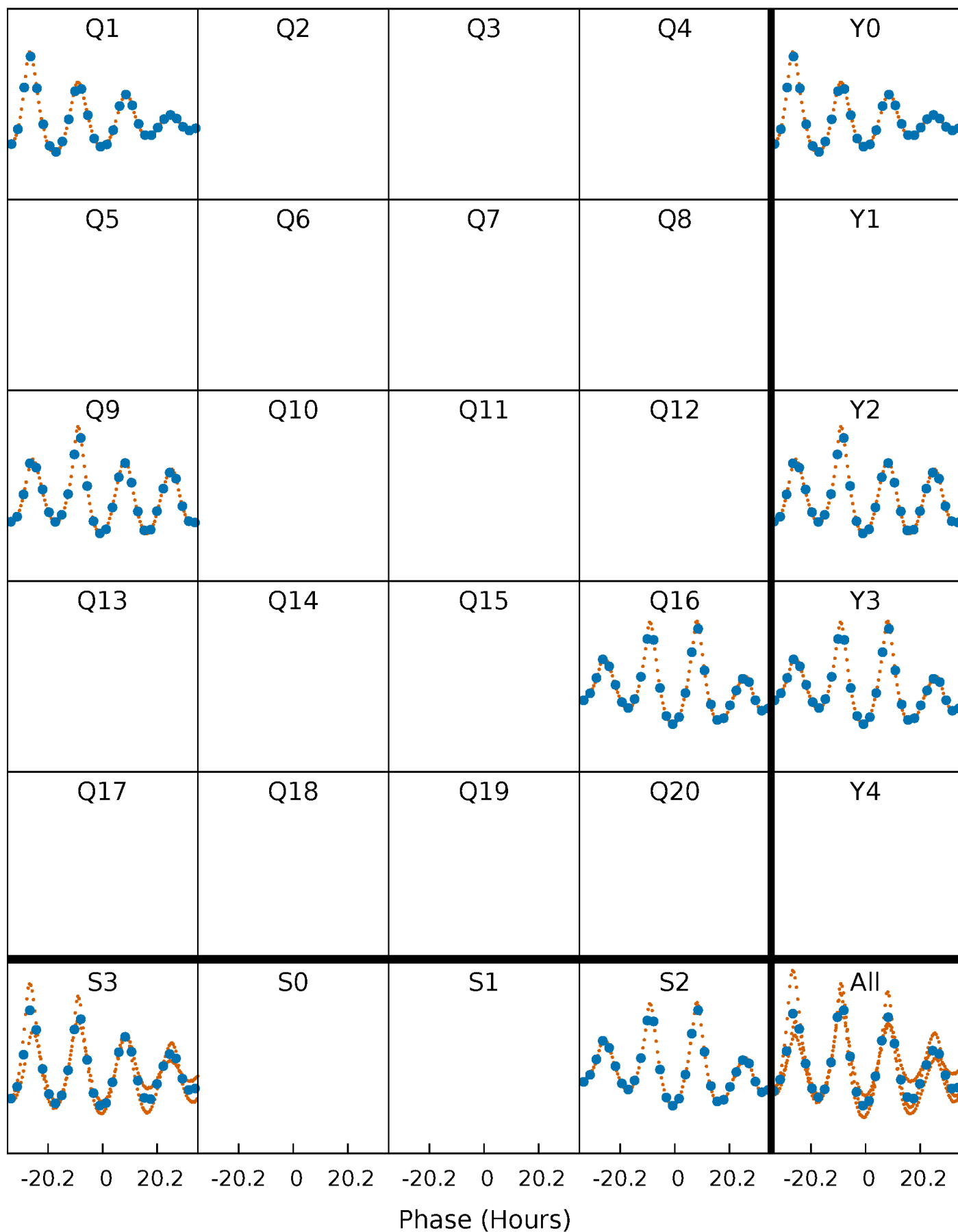


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



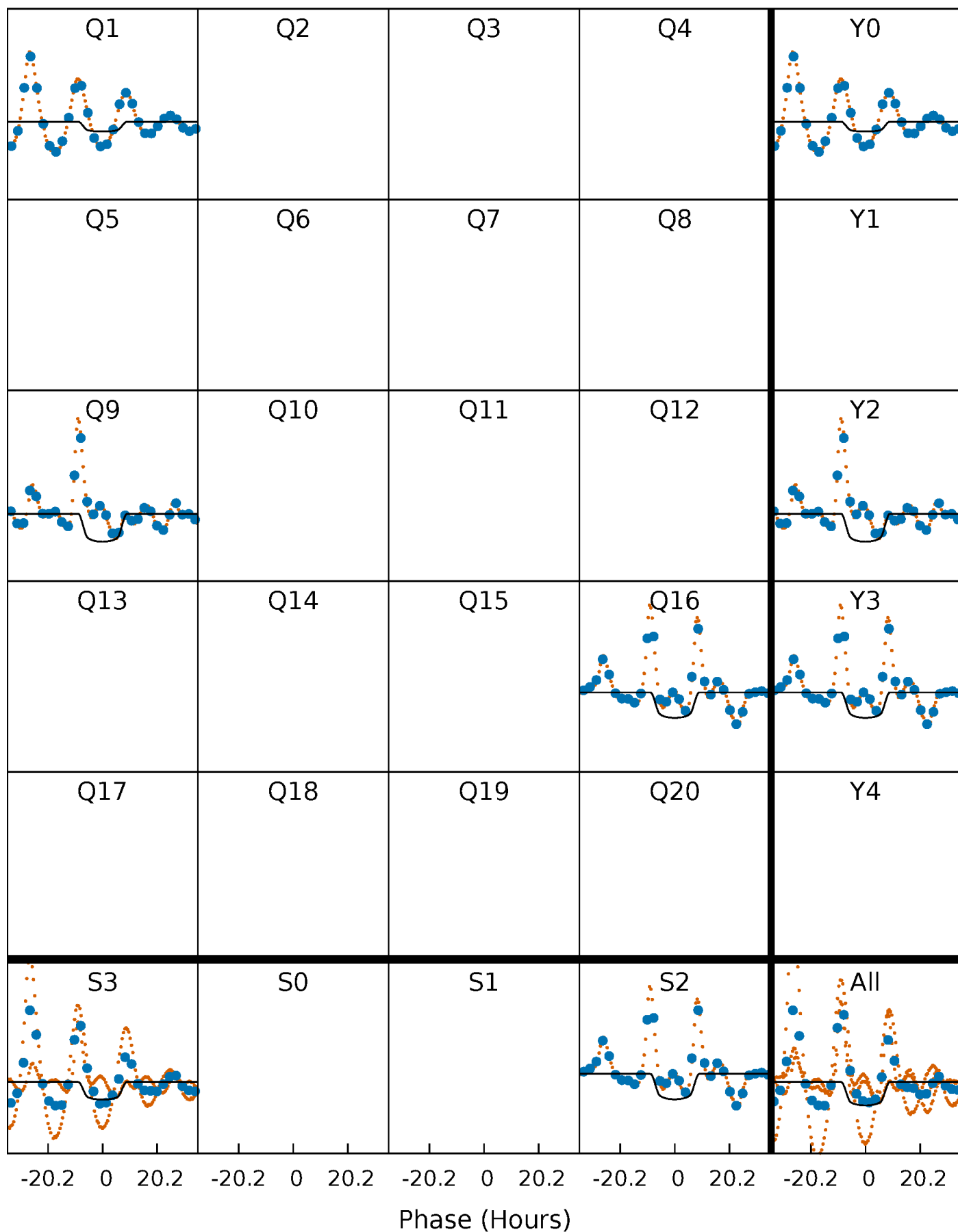
PDC Quarter-Phased Transit Curves

TCE 002310284-01 P=677.258979 Days $T_0=152.439967$ (BKJD)



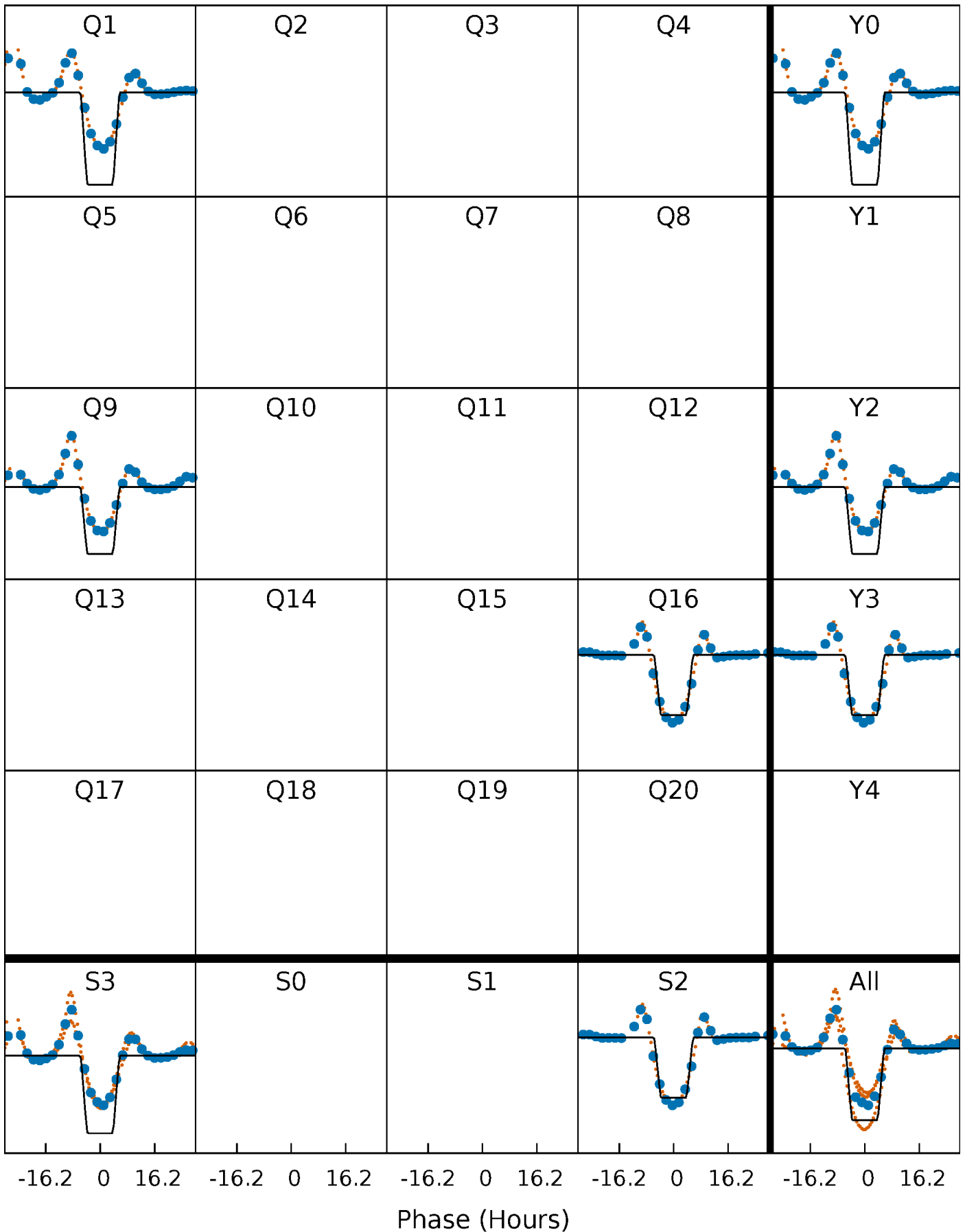
DV Quarter-Phased Transit Curves

TCE 002310284-01 P=677.258979 Days $T_0=152.439967$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

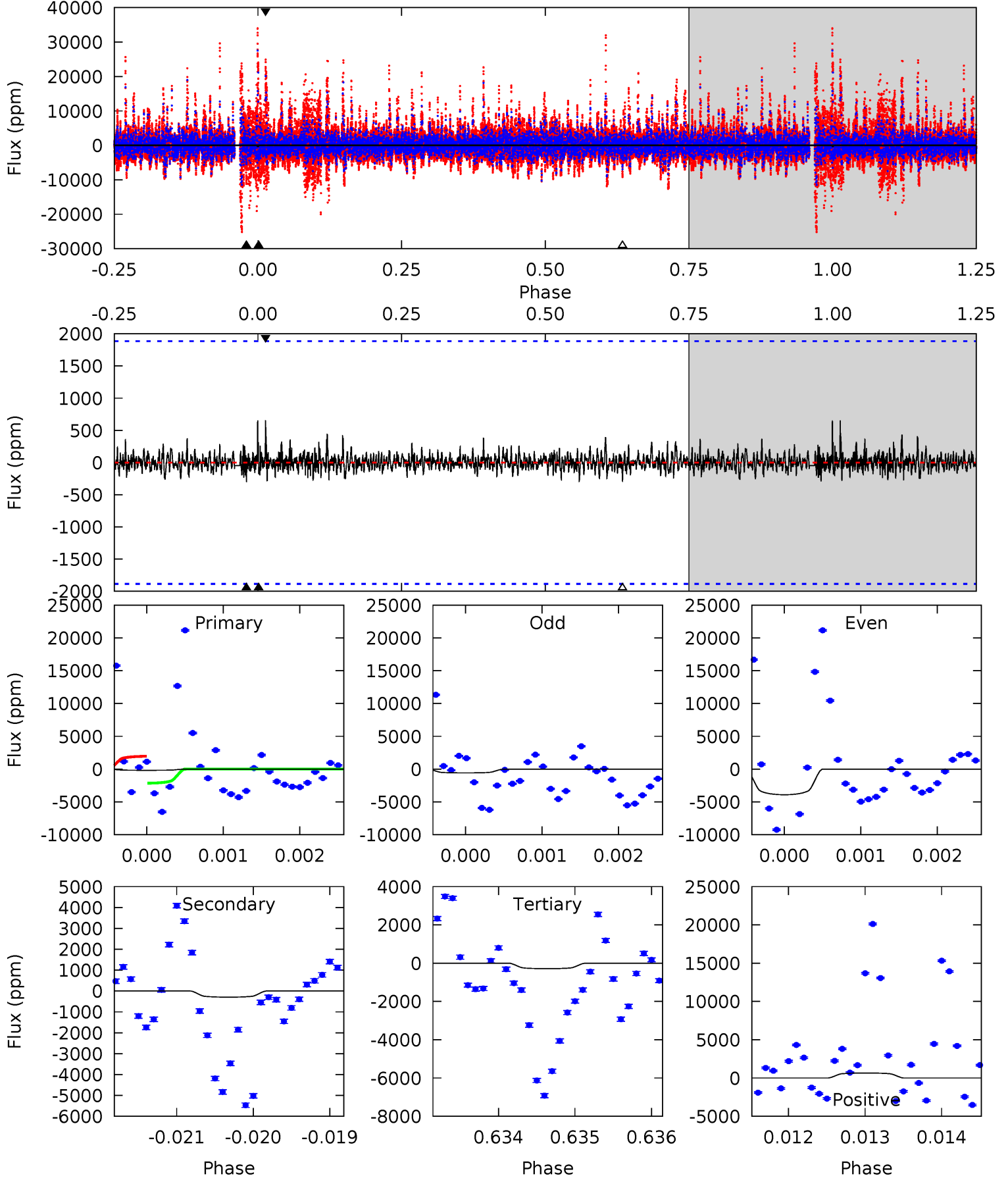
TCE 002310284-01 P=677.270346 Days $T_0=152.410468$ (BKJD)



DV Model-Shift Uniqueness Test

002310284-01, P = 677.258979 Days, E = 152.439967 Days

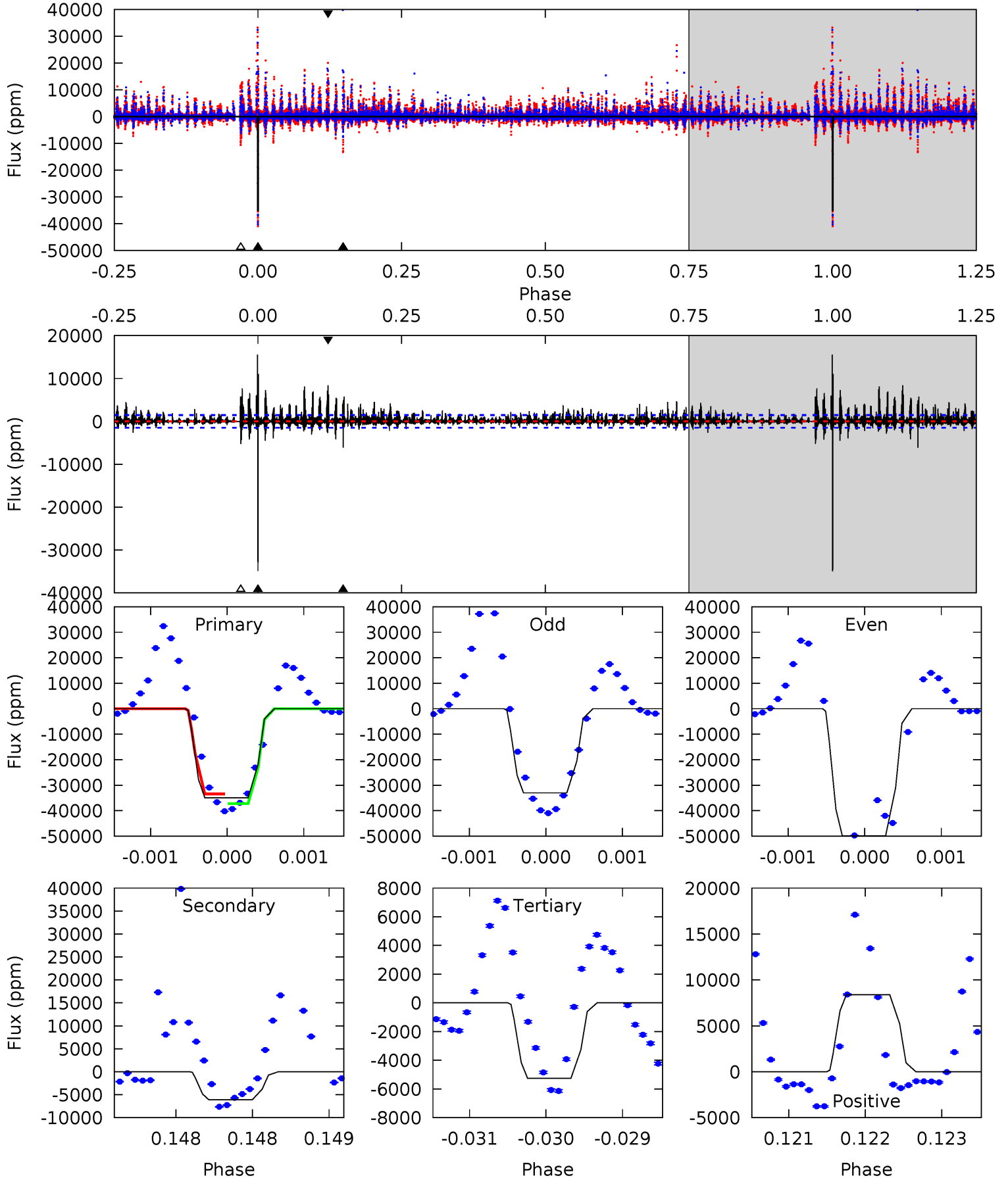
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0.52	0.85	0.83	1.88	5.43	3.26	0.29	-0.31	-1.37	0.02	-1.04	4.59	2.32	0.69	0.29



Alt Model-Shift Uniqueness Test

002310284-01, P = 677.270346 Days, E = 152.410468 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
129.7	22.7	19.5	31.1	5.52	3.39	3.19	110.2	98.5	3.19	-8.43	34.5	1.27	0.31	6.97



Stellar Parameters For KIC 002310284

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6818^{+165}_{-283}	$4.305^{+0.070}_{-0.210}$	$-0.020^{+0.250}_{-0.350}$	$1.341^{+0.448}_{-0.192}$	$1.331^{+0.190}_{-0.190}$	$0.777^{+0.297}_{-0.411}$
	+2%/-4%	+2%/-5%	+1250%/-1750%	+33%/-14%	+14%/-14%	+38%/-53%
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 002310284-01 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-293 ± 347	$13.20^{+2.46}_{-1.55}$	383^{+26}_{-20}	3517^{+469}_{-6125}	2559^{+2907}_{-2806}
Alt.	-6114 ± 269	$36.99^{+6.45}_{-3.53}$	383^{+28}_{-20}	4107^{+98}_{-114}	6645^{+1393}_{-1591}

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 $A_{obs} \gg 1.0$

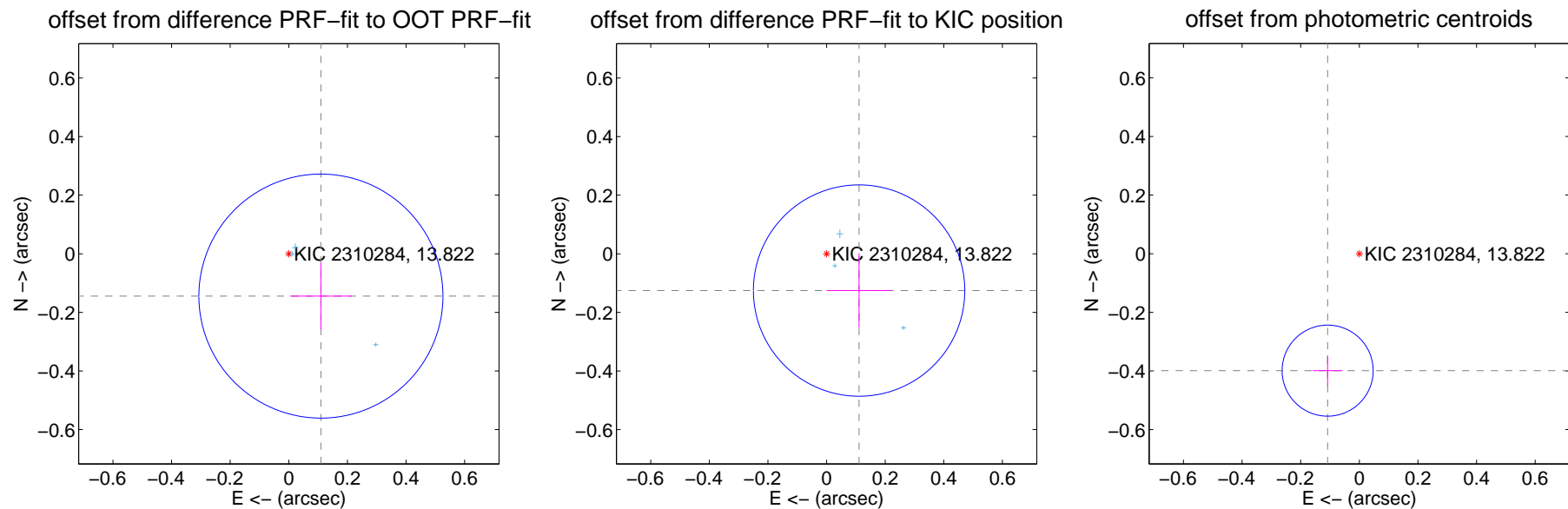
DV Centroid Data

Supplemental centroid analysis for 002310284-01. Kepler magnitude: 13.82. Transit SNR 9.23

There are 3 quarters with good PRF difference image offsets

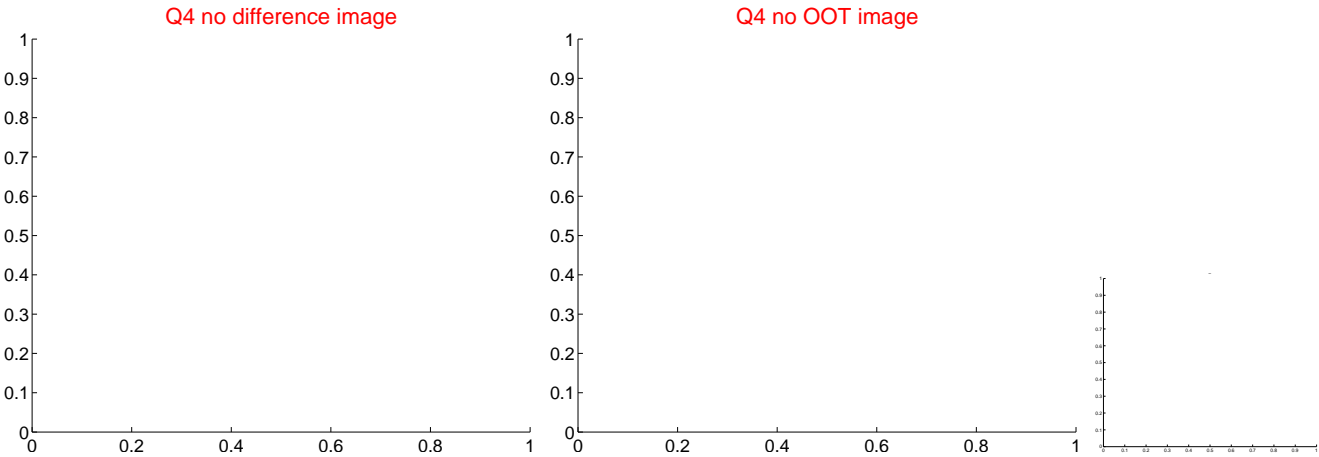
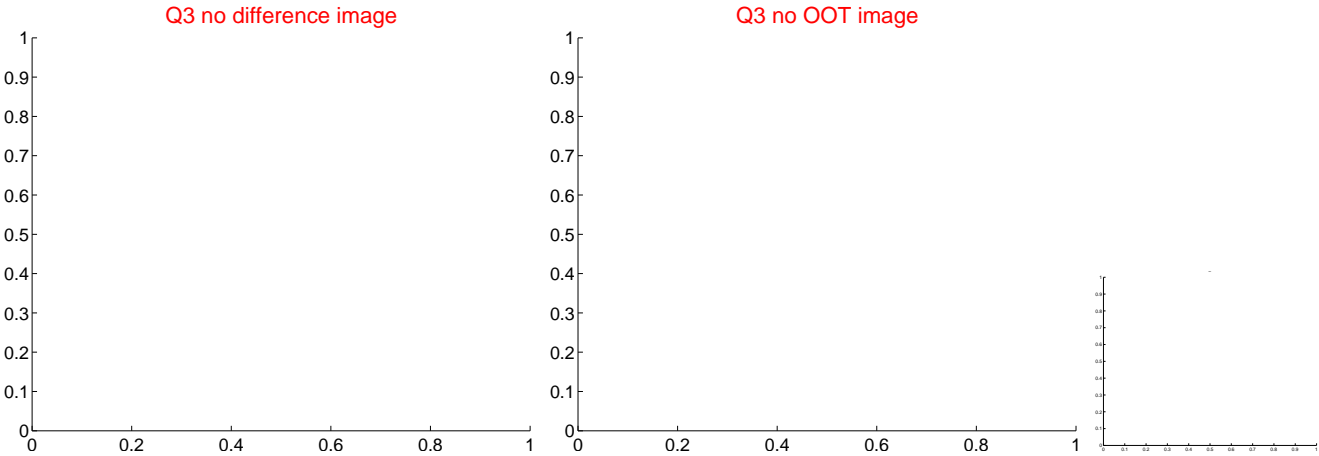
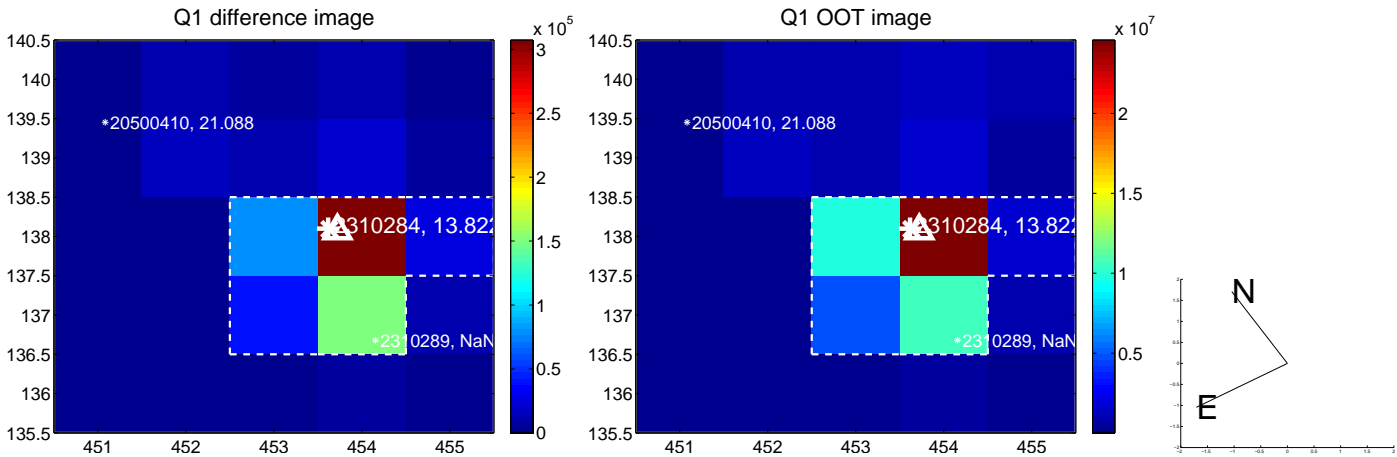
The direct PRF centroid is offset from the target star catalog position by about 0.05 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.181 ± 0.139	1.31	-0.110 ± 0.105	-0.144 ± 0.113
PRF-fit source offset from KIC position	0.167 ± 0.120	1.39	-0.111 ± 0.111	-0.125 ± 0.127
photometric centroid source offset	0.41 ± 0.05	7.98	0.11 ± 0.05	-0.40 ± 0.05



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.

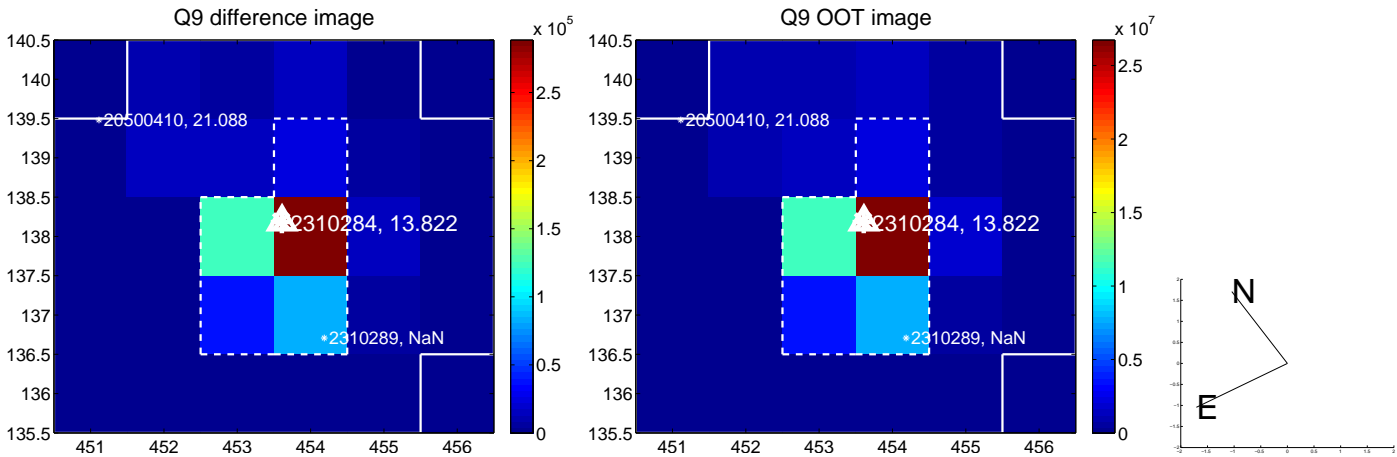
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



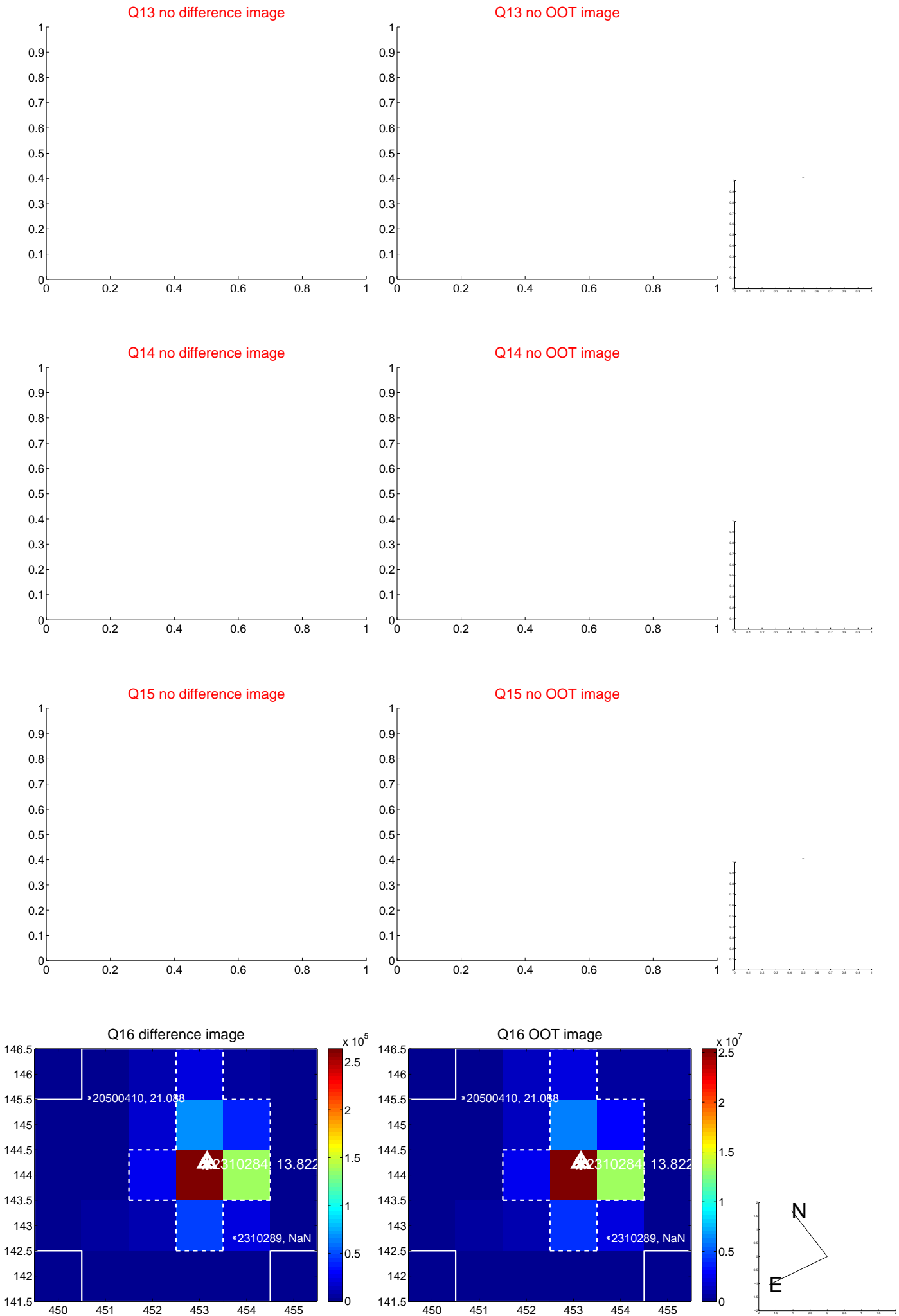
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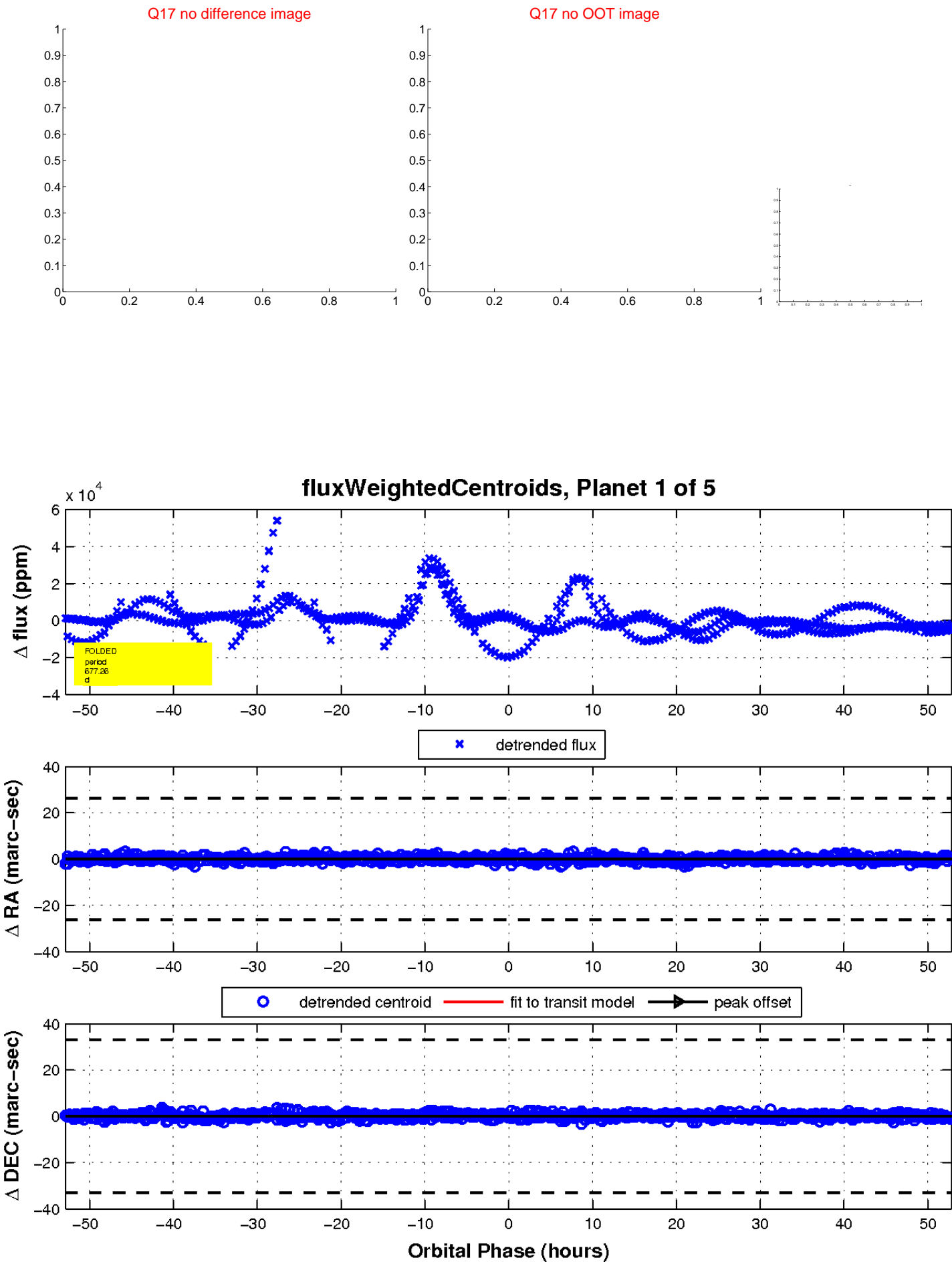
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

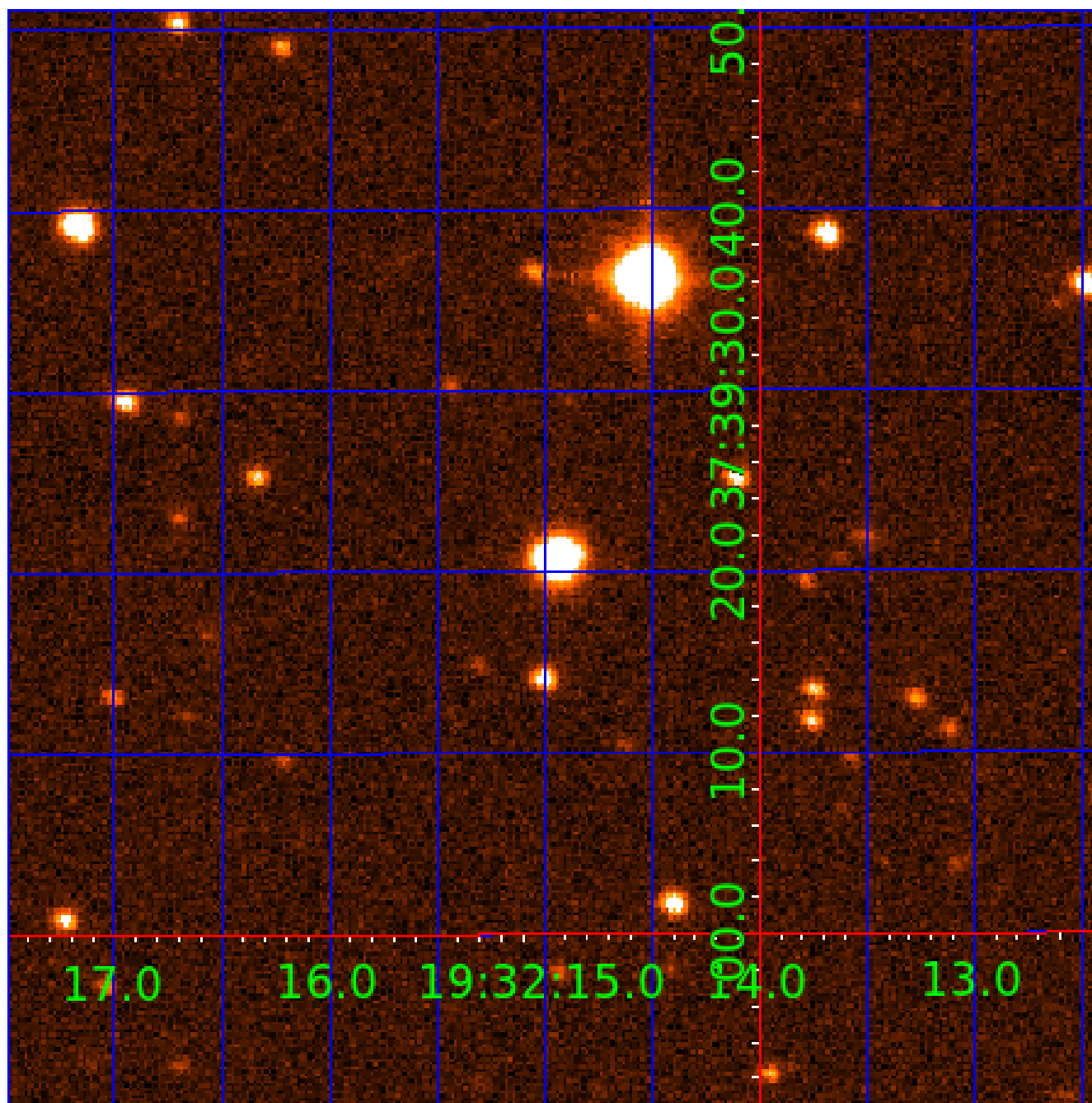


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 002310284

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})
002310284-01	OBS	No	677.258979	152.439967	7783.0	17.645	23.3	9.2	1.34	6818	12.87	1.27
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Robovetter Results

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002310284-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
002310284-03	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV
002310284-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL_TRACKER—LPP_DV—MOD_TER_DV—CENT_FEW_DIFFS
002310284-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—SAME_NTL_PERIOD

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

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

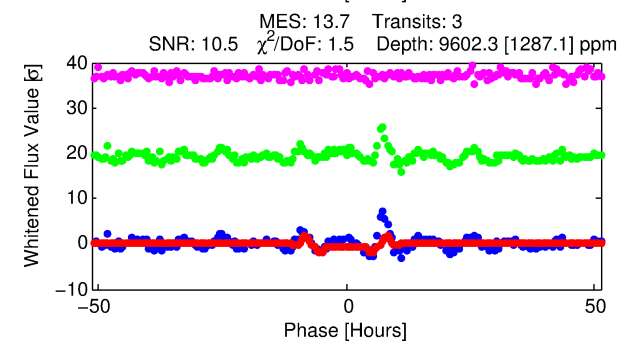
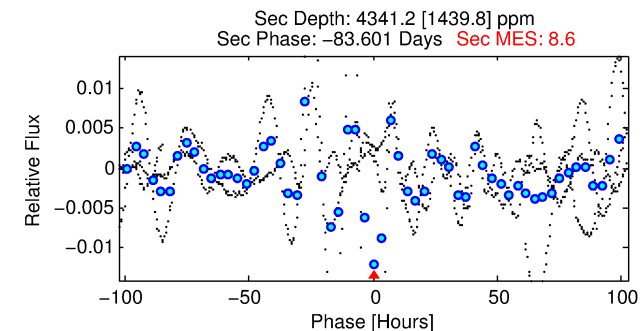
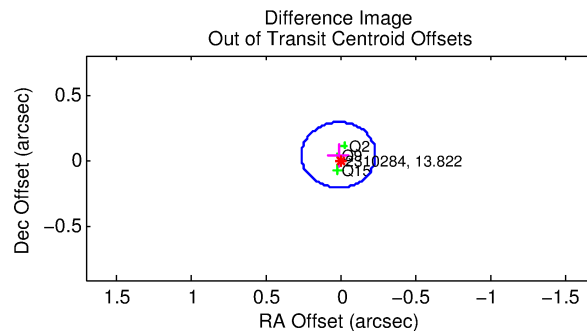
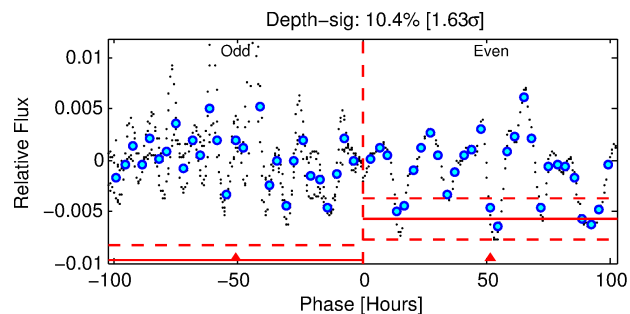
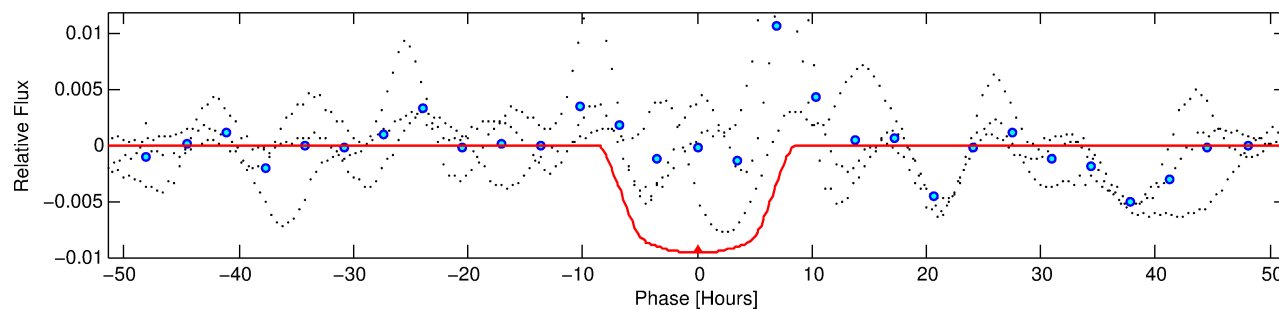
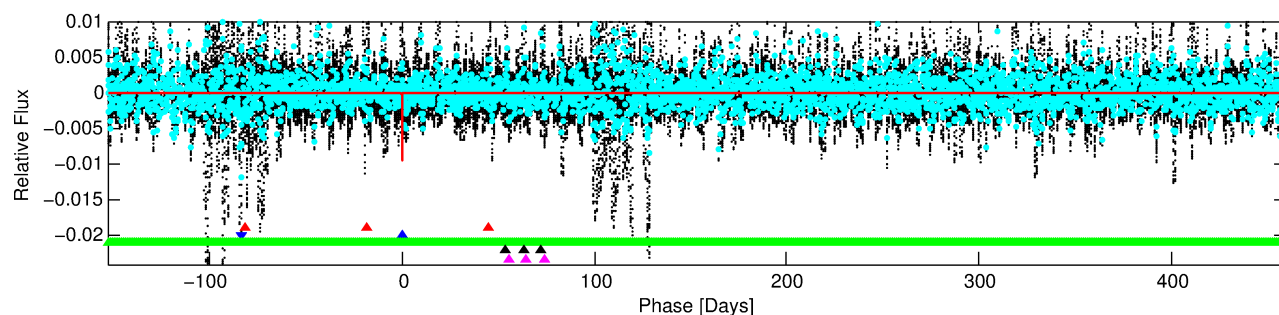
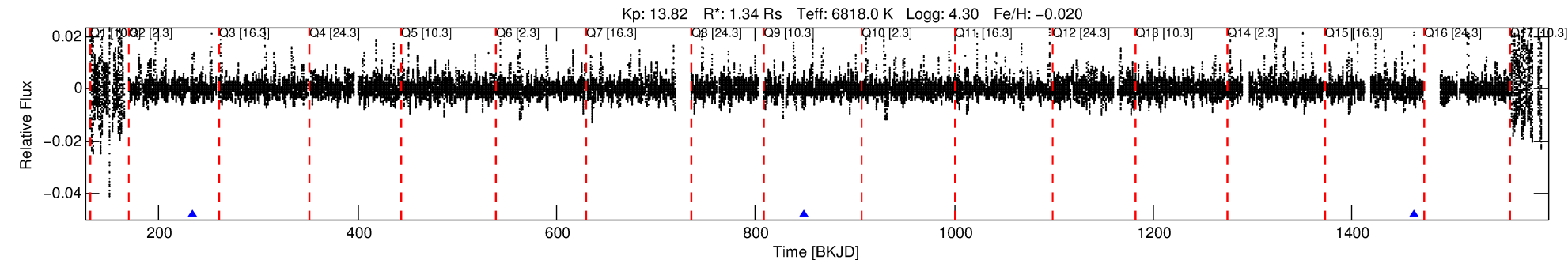
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 002310284-02

No Significant Match Found

DV One-Page Summary

KIC: 2310284 Candidate: 2 of 5 Period: 613.589 d



DV Fit Results:

Period = 613.58886 [0.00692] d
Epoch = 234.6033 [0.0086] BKJD
Rp/R* = 0.0989 [0.0065]
a/R* = 209.44 [7.62]
b = 0.79 [0.02]
Seff = 1.45 [0.62]
Teq = 280 [30] K
Rp = 14.47 [4.93] Re
a = 1.5520 [0.4267] AU
Ag = 27475.00 [14553.49] [1.89 σ]
Teffp = 5565 [547] K [9.65 σ]

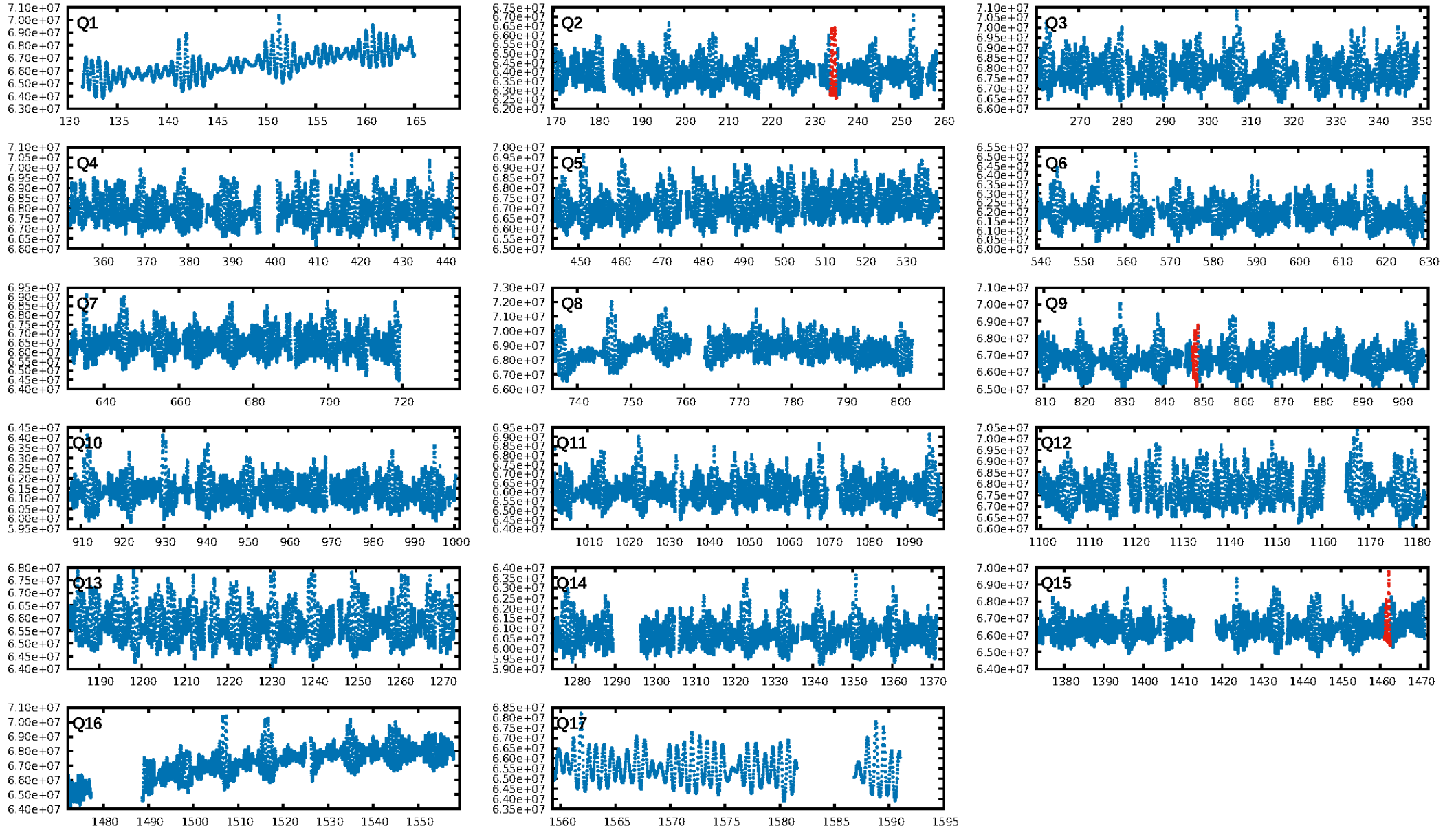
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [10.93 σ]
LongPeriod-sig: 100.0% [62.11 σ]
ModelChiSquare2-sig: 0.2%
ModelChiSquareGof-sig: 14.4%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 1.211
Centroid-sig: 22.3%
Centroid-so: 0.406 arcsec [5.05 σ]
OotOffset-rm: 0.047 arcsec [0.56 σ]
KicOffset-rm: 0.037 arcsec [0.52 σ]
OotOffset-st: 1/1/0/1 [3]
KicOffset-st: 1/1/0/1 [3]
DiffImageQuality-fgm: 0.67 [2/3]
DiffImageOverlap-fno: 0.00 [0/3]

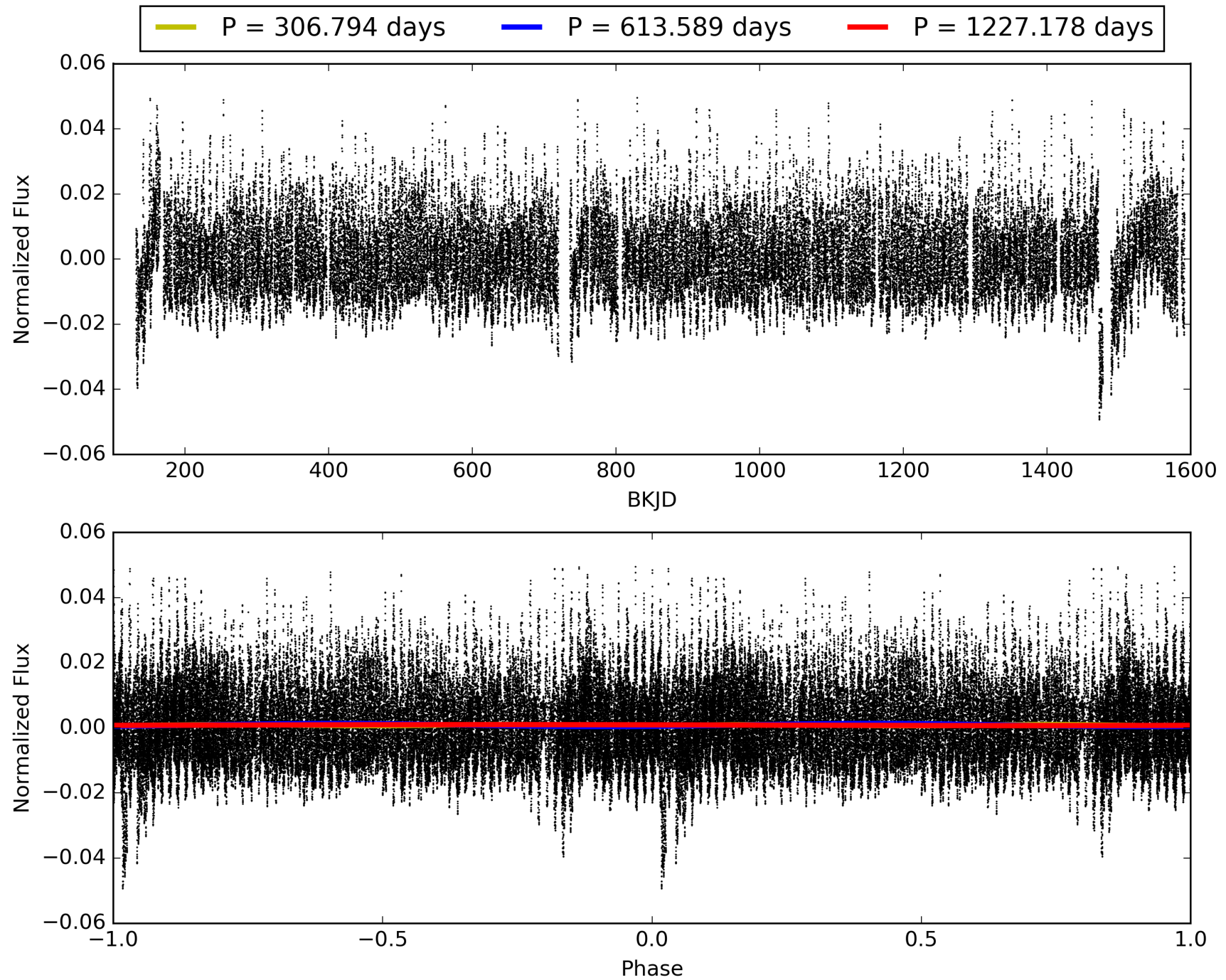
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 06:12:25 Z

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

TCE 002310284-02, PDC Light Curves

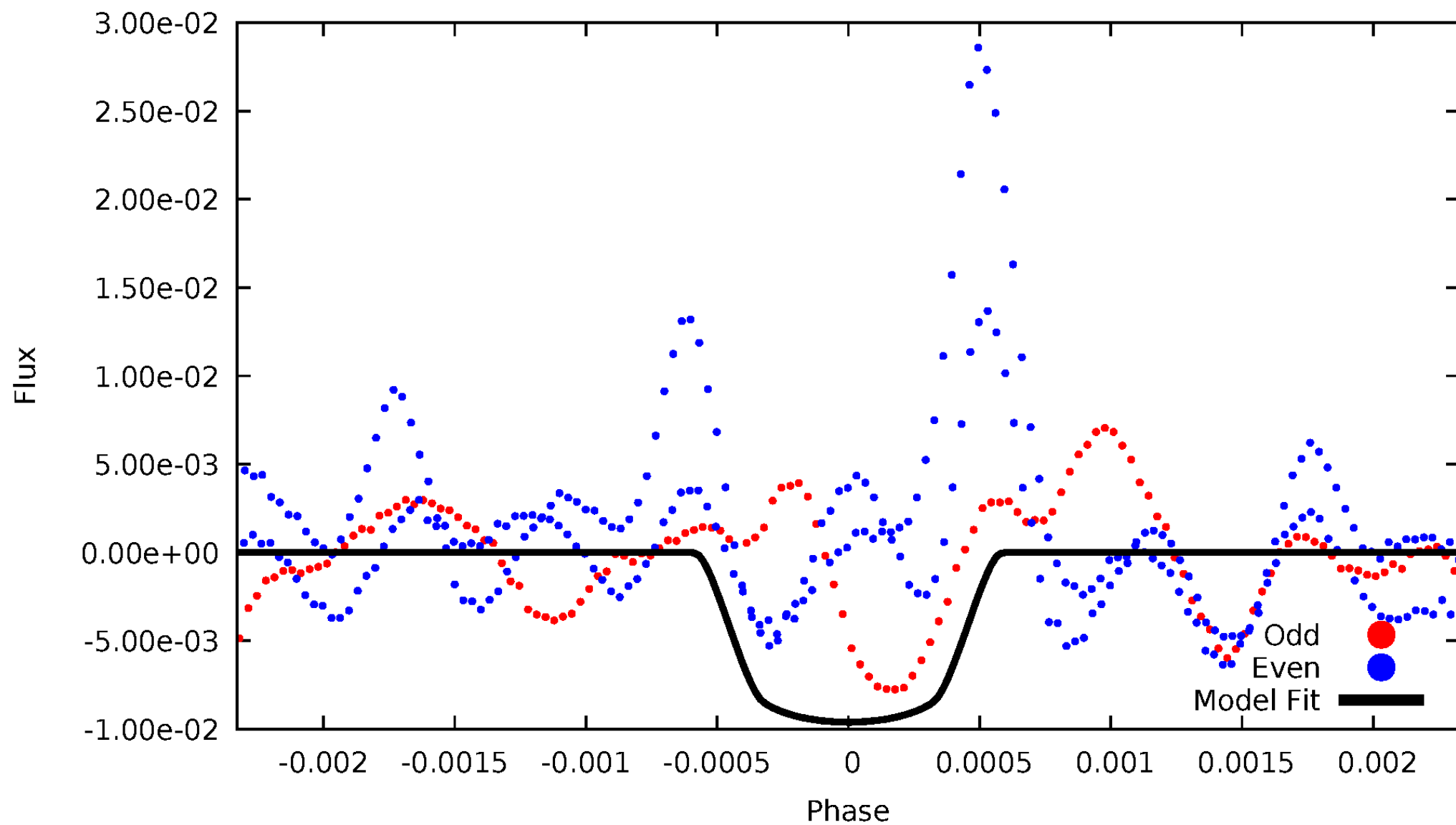


TCE 002310284-02



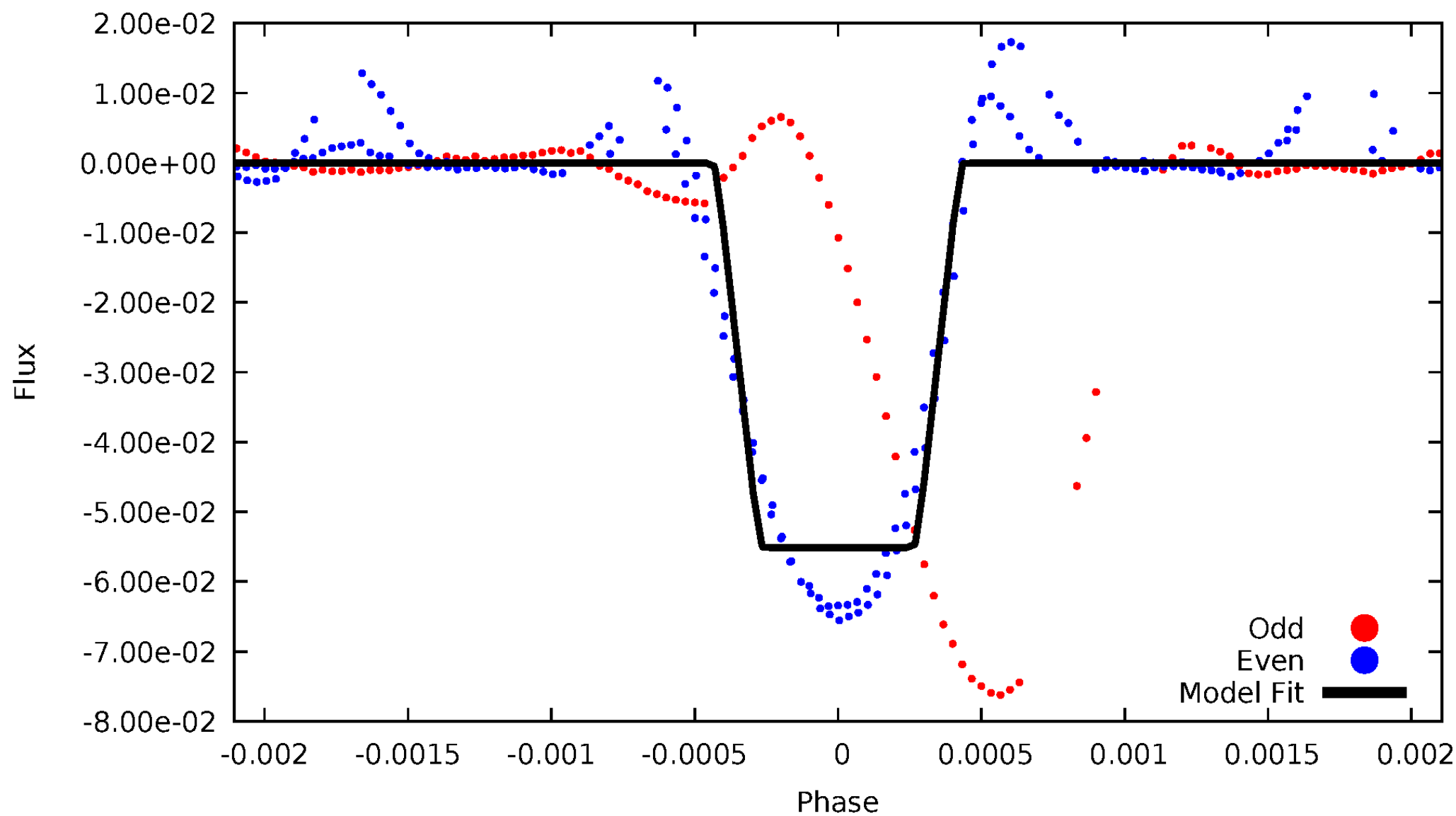
DV Odd/Even

TCE 002310284-02



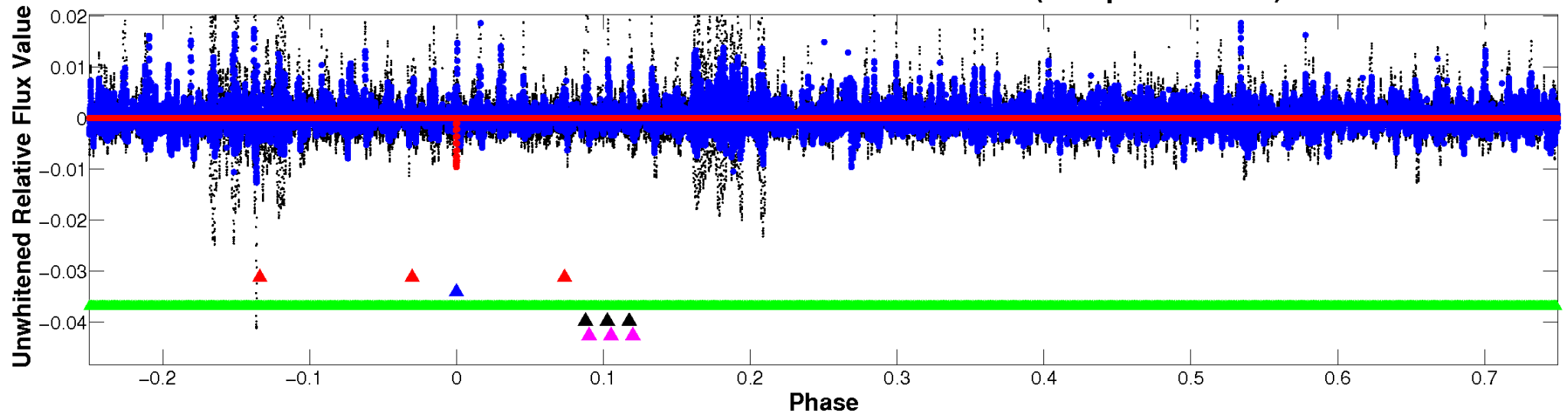
ALT Odd/Even

TCE 002310284-02

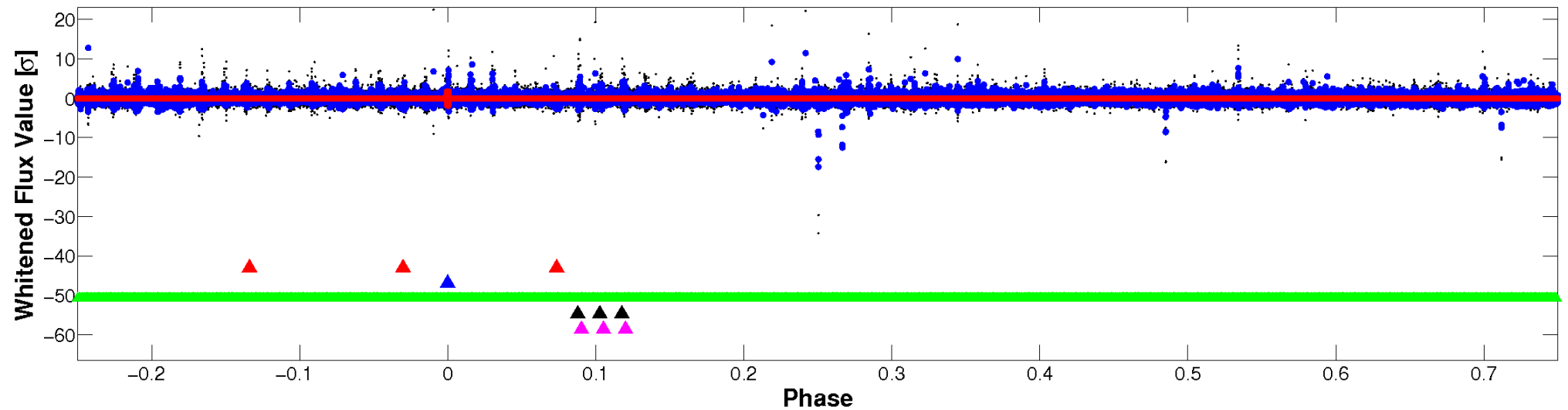


Non-Whitened Vs. Whitened Light Curve

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

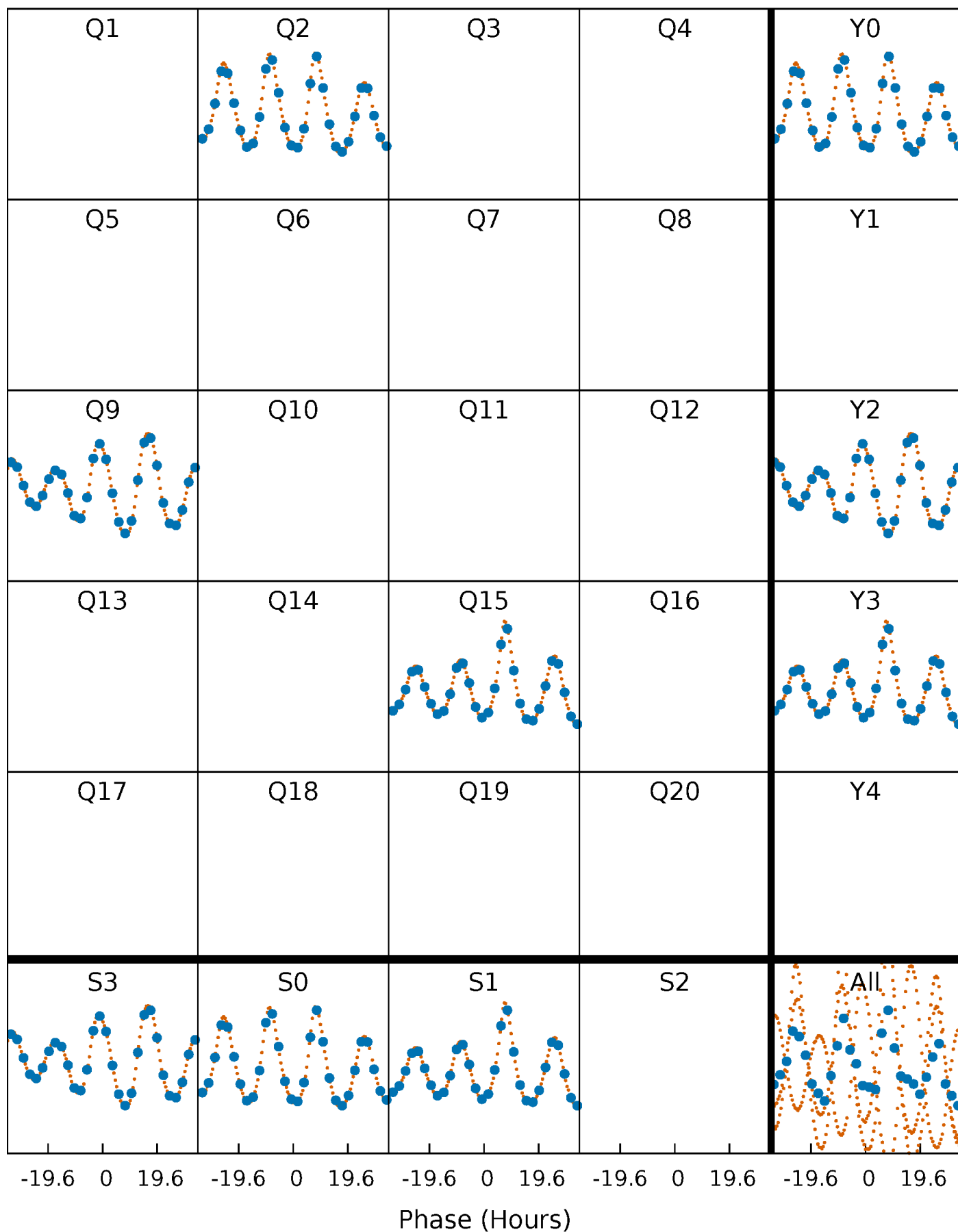


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



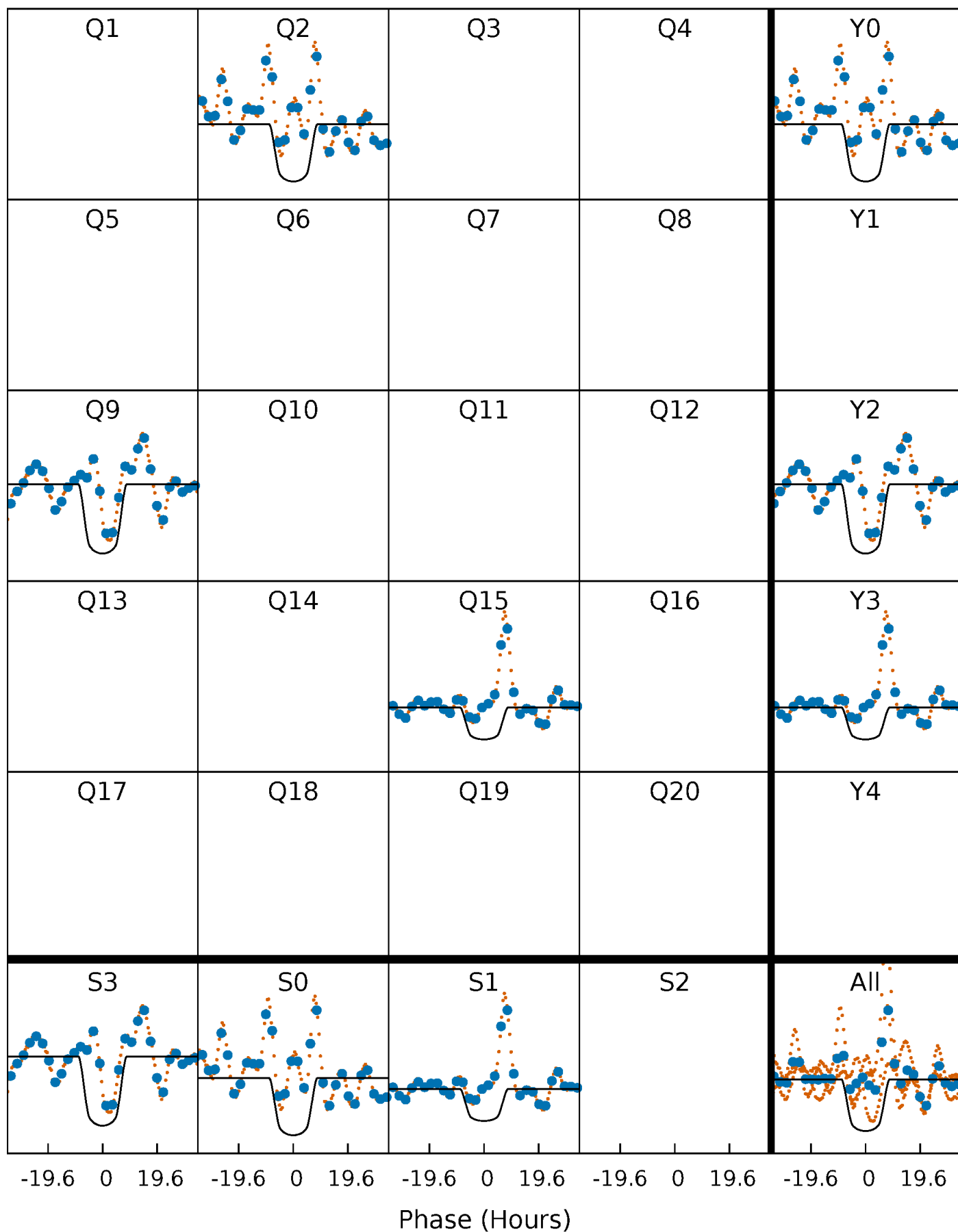
PDC Quarter-Phased Transit Curves

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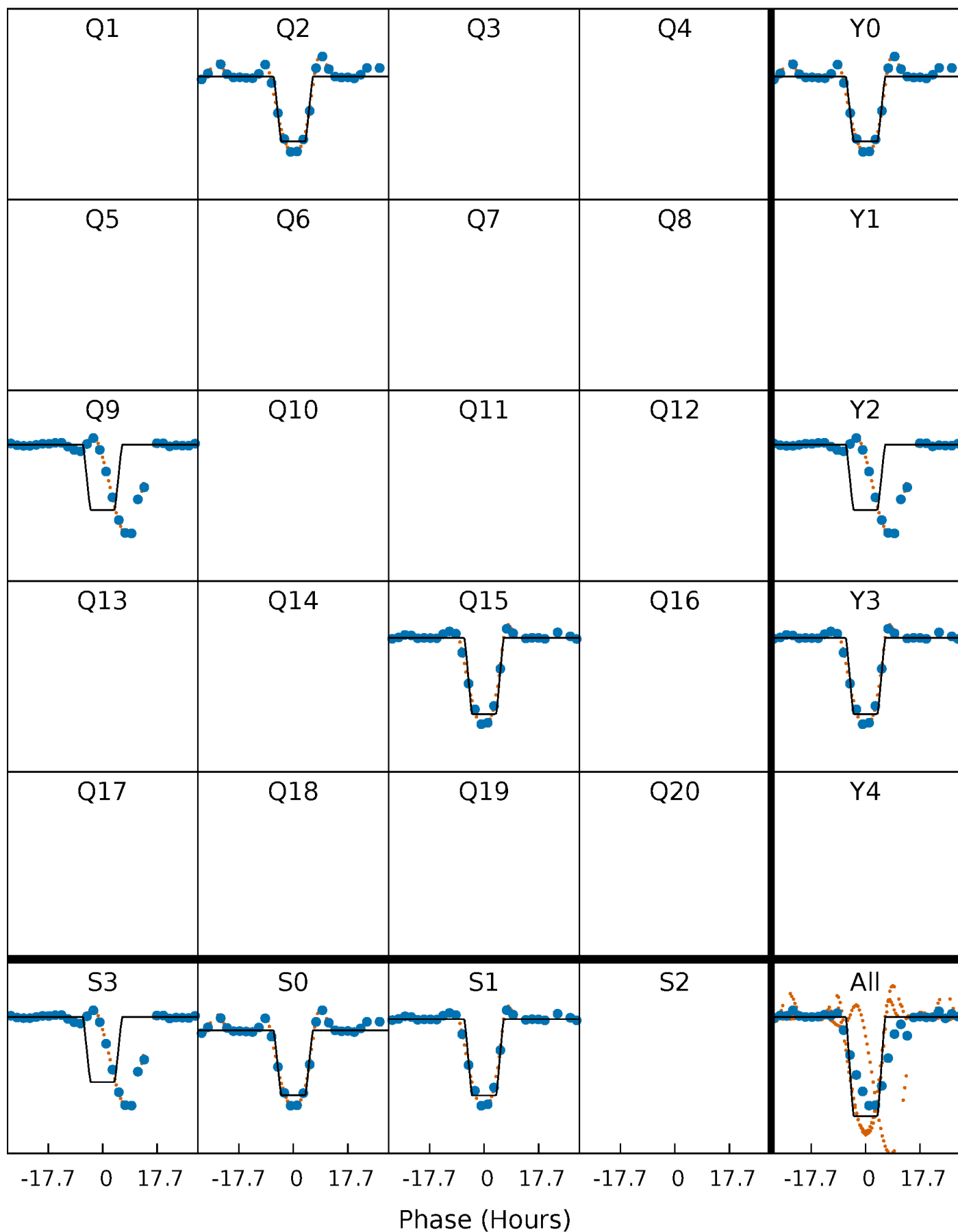
DV Quarter-Phased Transit Curves

TCE 002310284-02 P=613.588856 Days $T_0=234.603276$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

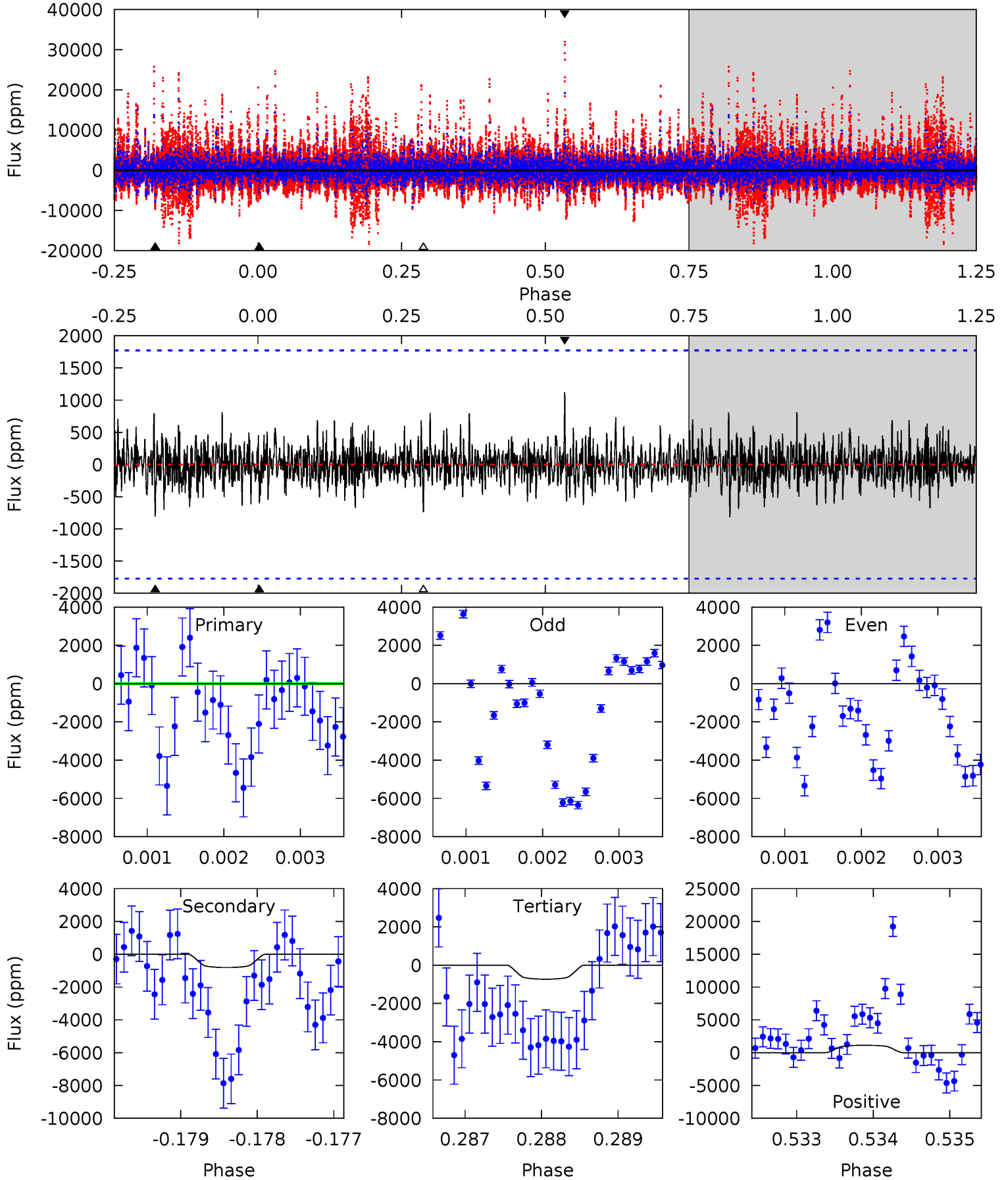
TCE 002310284-02 P=613.599373 Days $T_0=234.599500$ (BKJD)



DV Model-Shift Uniqueness Test

002310284-02, P = 613.588856 Days, E = 234.603276 Days

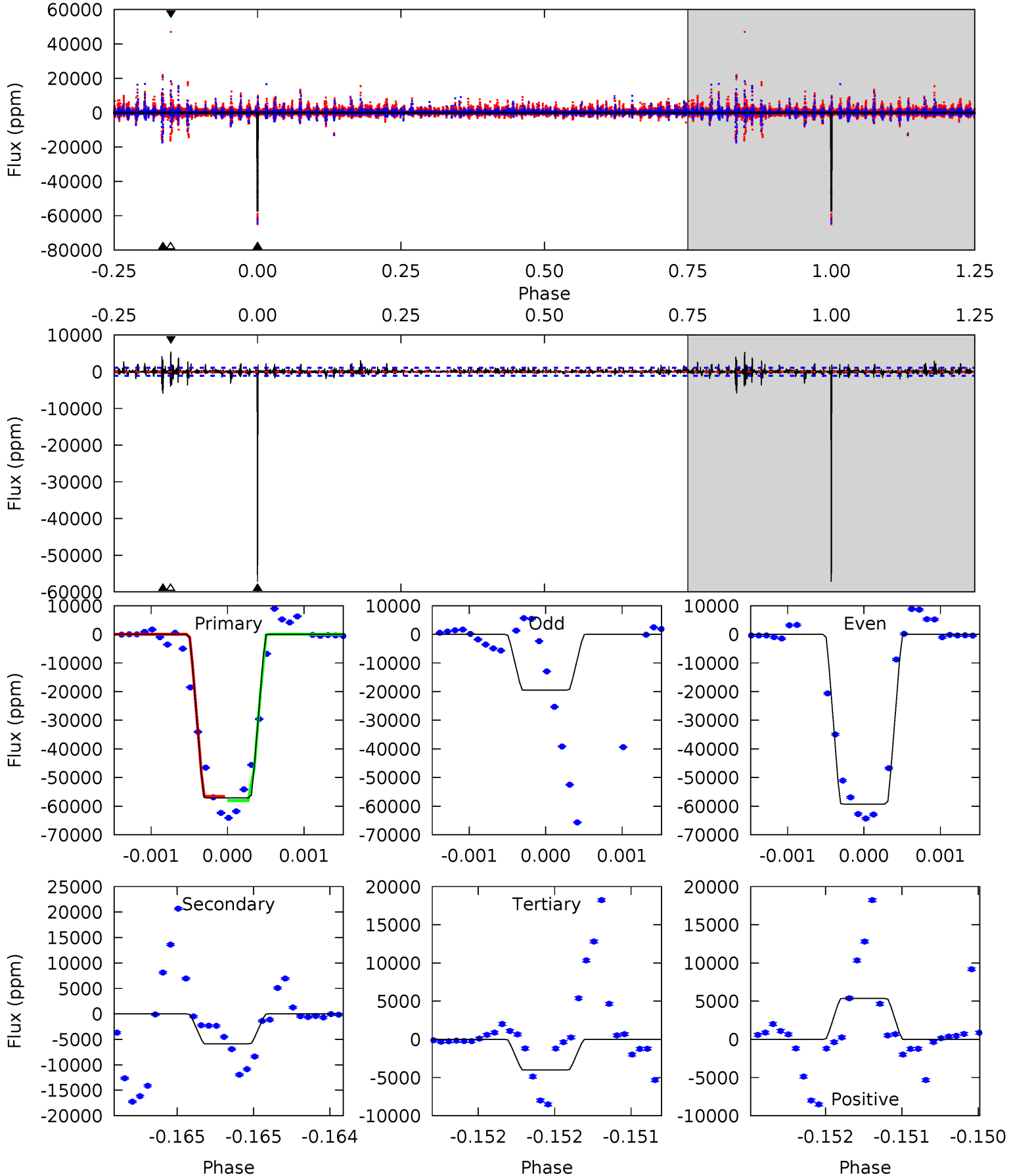
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1.74	2.48	2.24	3.43	5.42	3.25	0.66	-0.51	-1.70	0.24	-0.95	1.44	0.25	0.58	0.27



Alt Model-Shift Uniqueness Test

002310284-02, P = 613.599373 Days, E = 234.599500 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
291.5	29.9	20.5	27.3	5.48	3.33	1.94	271.0	264.1	9.47	2.63	90.0	0.80	0.09	3.79



Stellar Parameters For KIC 002310284

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6818^{+165}_{-283}	$4.305^{+0.070}_{-0.210}$	$-0.020^{+0.250}_{-0.350}$	$1.341^{+0.448}_{-0.192}$	$1.331^{+0.190}_{-0.190}$	$0.777^{+0.297}_{-0.411}$
	+2%/-4%	+2%/-5%	+1250%/-1750%	+33%/-14%	+14%/-14%	+38%/-53%
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 002310284-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-810 ± 327	$15.01^{+2.83}_{-1.77}$	397^{+31}_{-22}	3959^{+254}_{-369}	4551^{+2328}_{-2133}
Alt.	-5871 ± 196	$35.37^{+5.94}_{-3.35}$	396^{+29}_{-23}	4143^{+96}_{-112}	6163^{+1159}_{-1566}

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

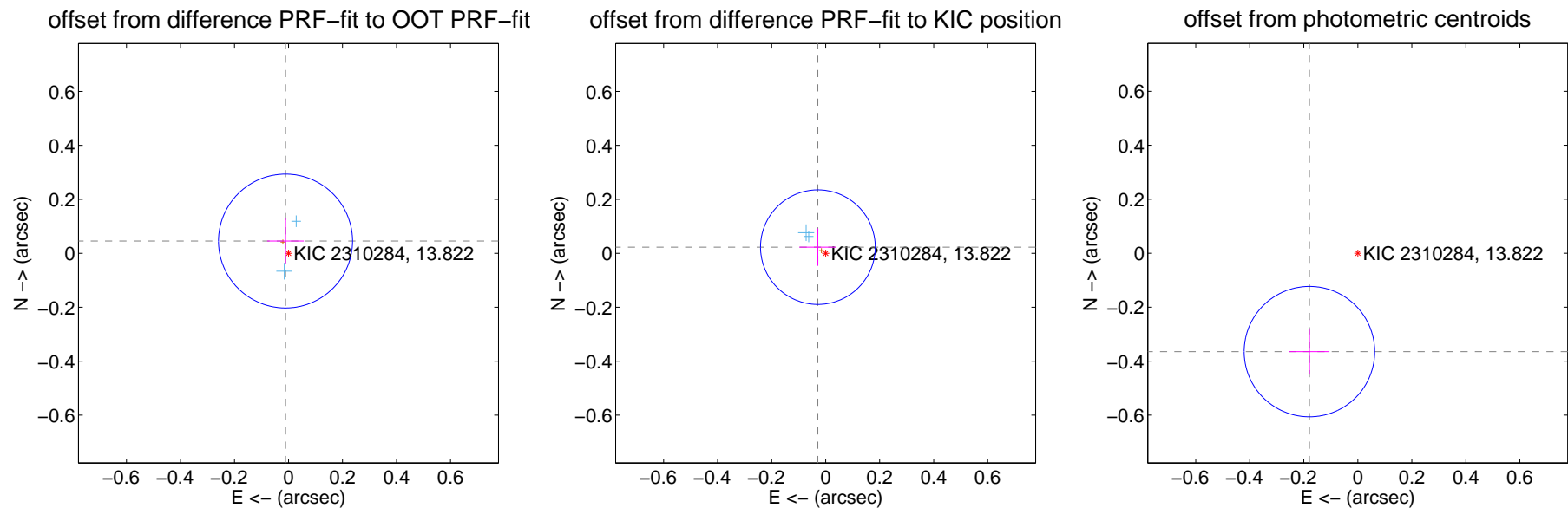
DV Centroid Data

Supplemental centroid analysis for 002310284-02. Kepler magnitude: 13.82. Transit SNR 10.54

There are 2 quarters with good PRF difference image offsets

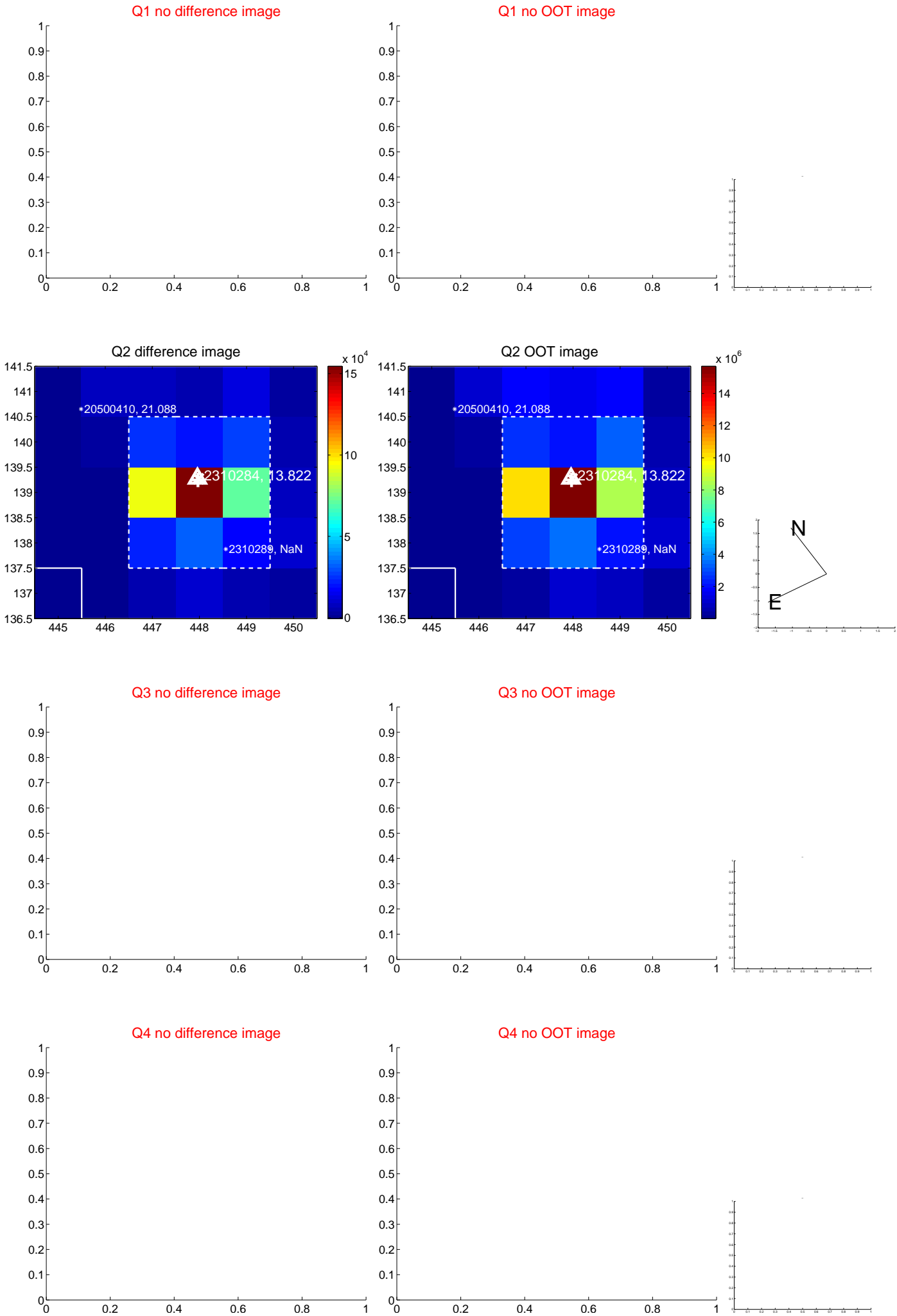
The direct PRF centroid is offset from the target star catalog position by about 0.15 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.047 ± 0.083	0.56	0.011 ± 0.068	0.045 ± 0.085
PRF-fit source offset from KIC position	0.037 ± 0.071	0.52	0.029 ± 0.069	0.023 ± 0.069
photometric centroid source offset	0.41 ± 0.08	5.05	0.18 ± 0.07	-0.36 ± 0.08



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.

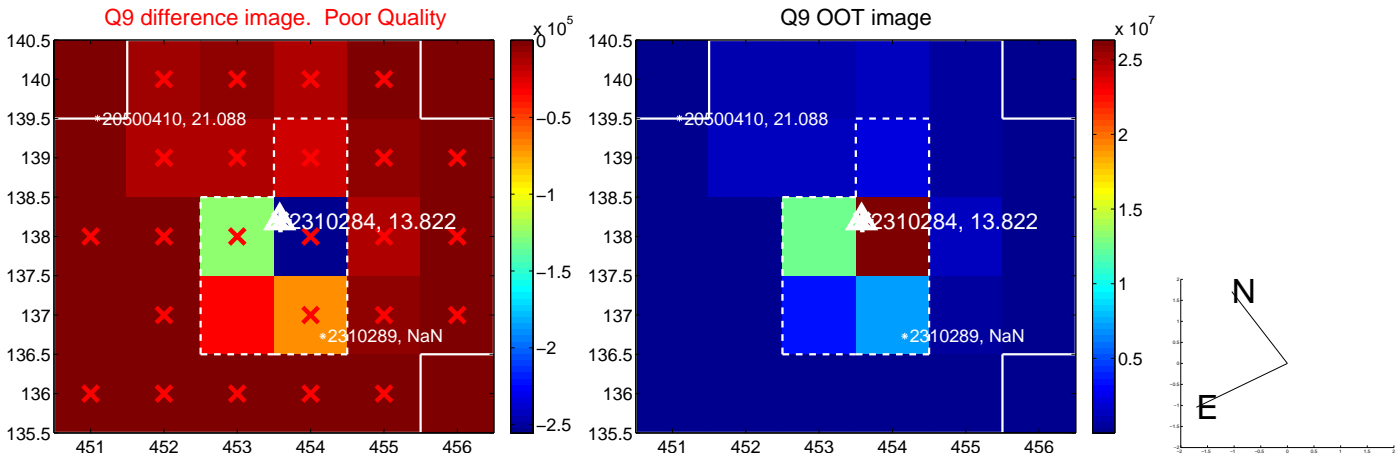
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



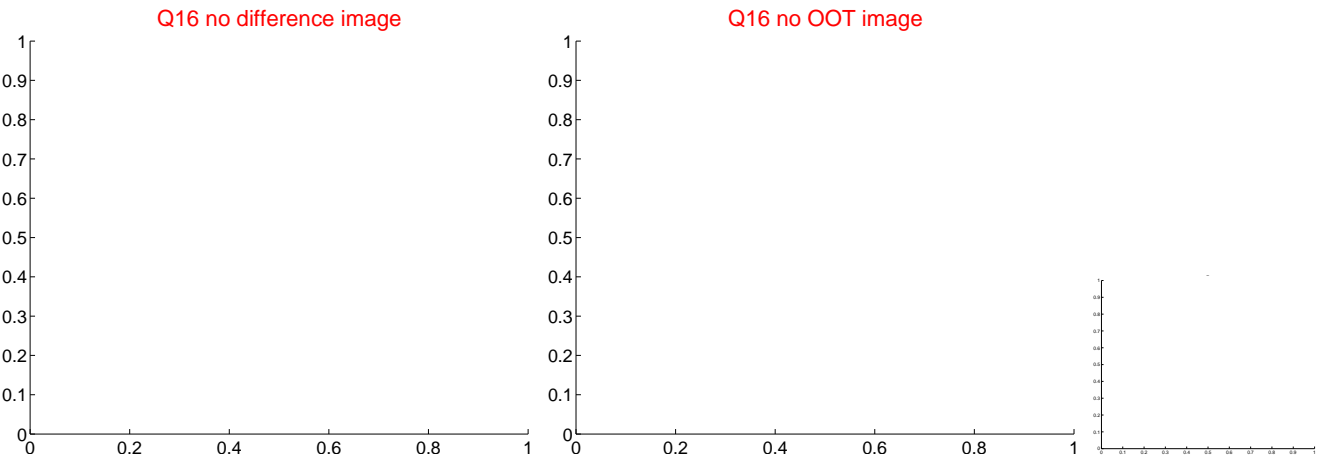
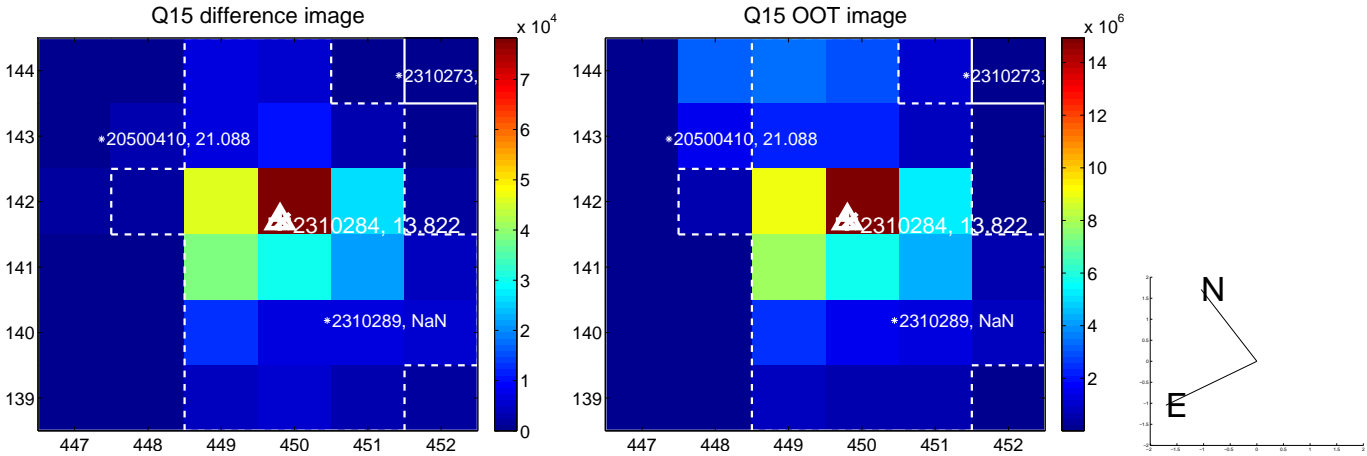
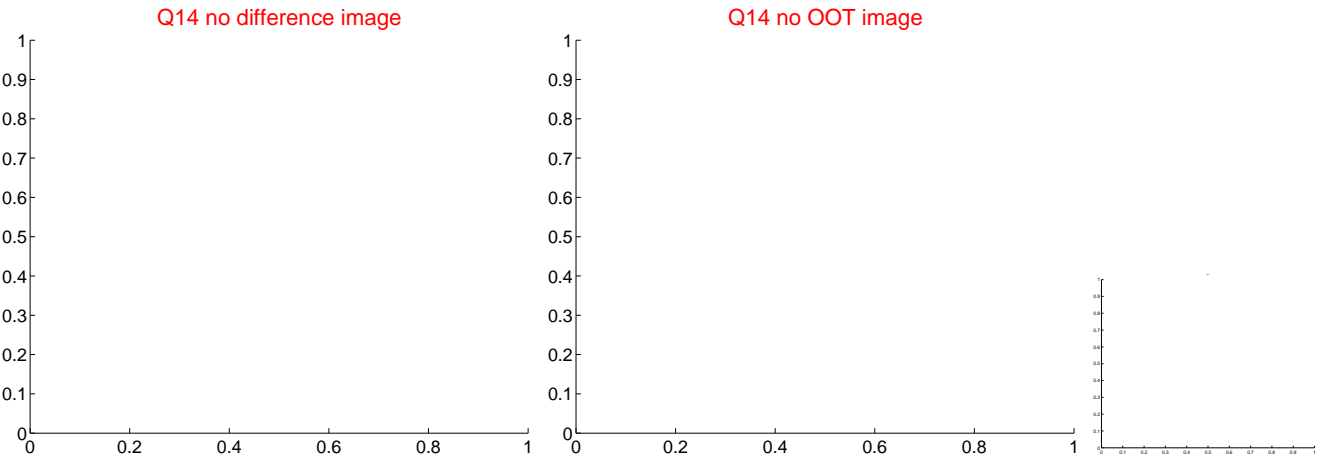
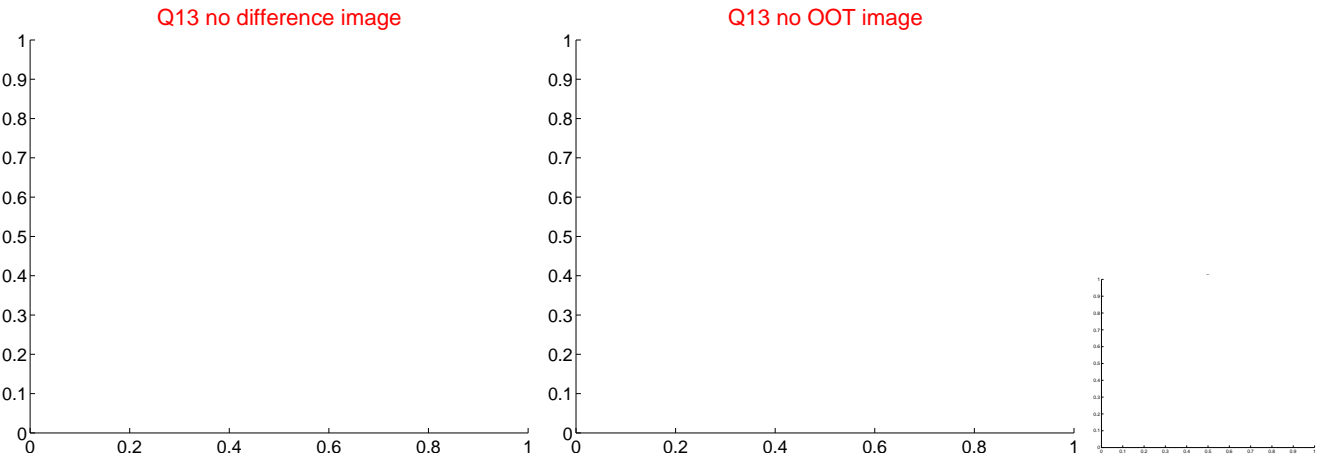
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



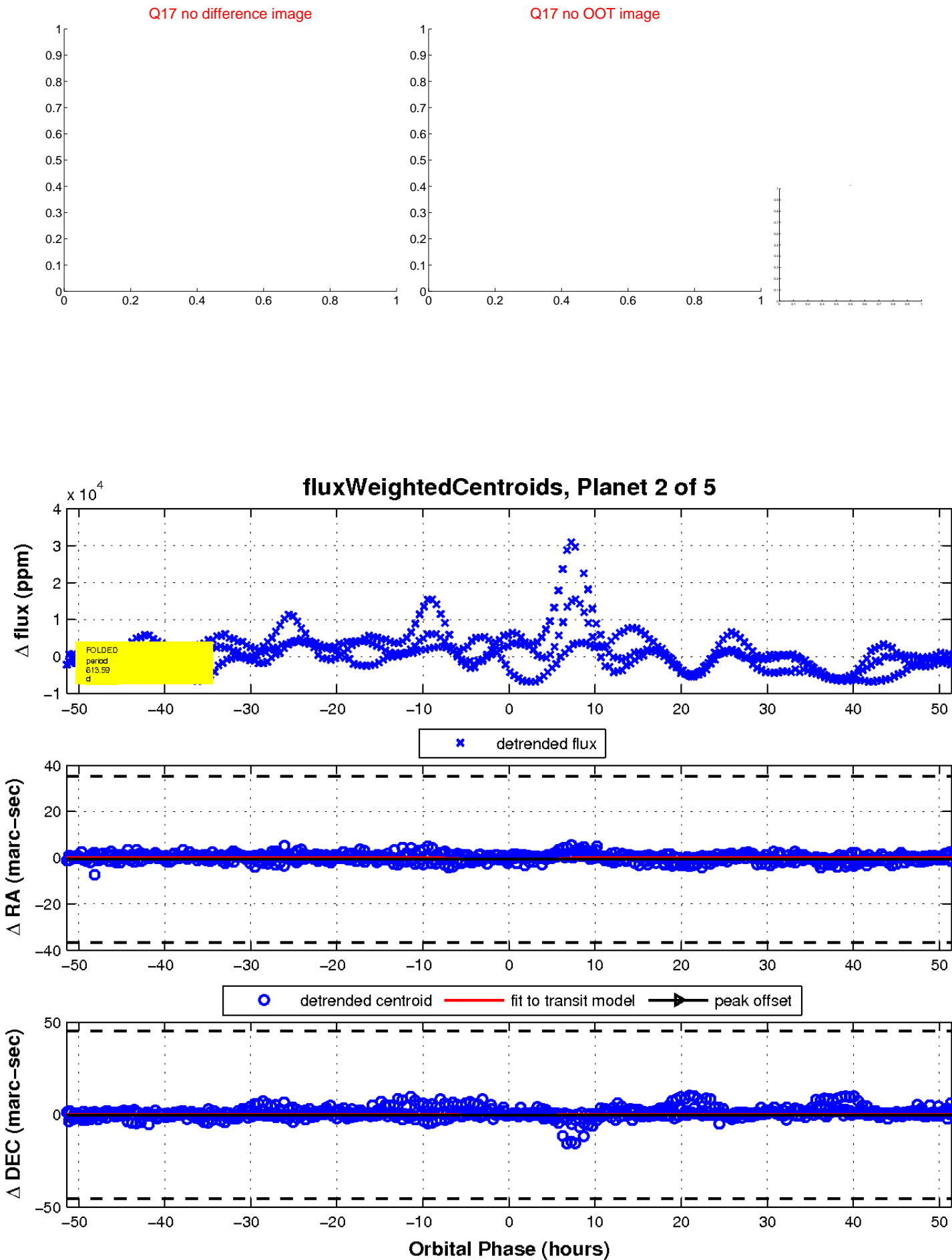
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

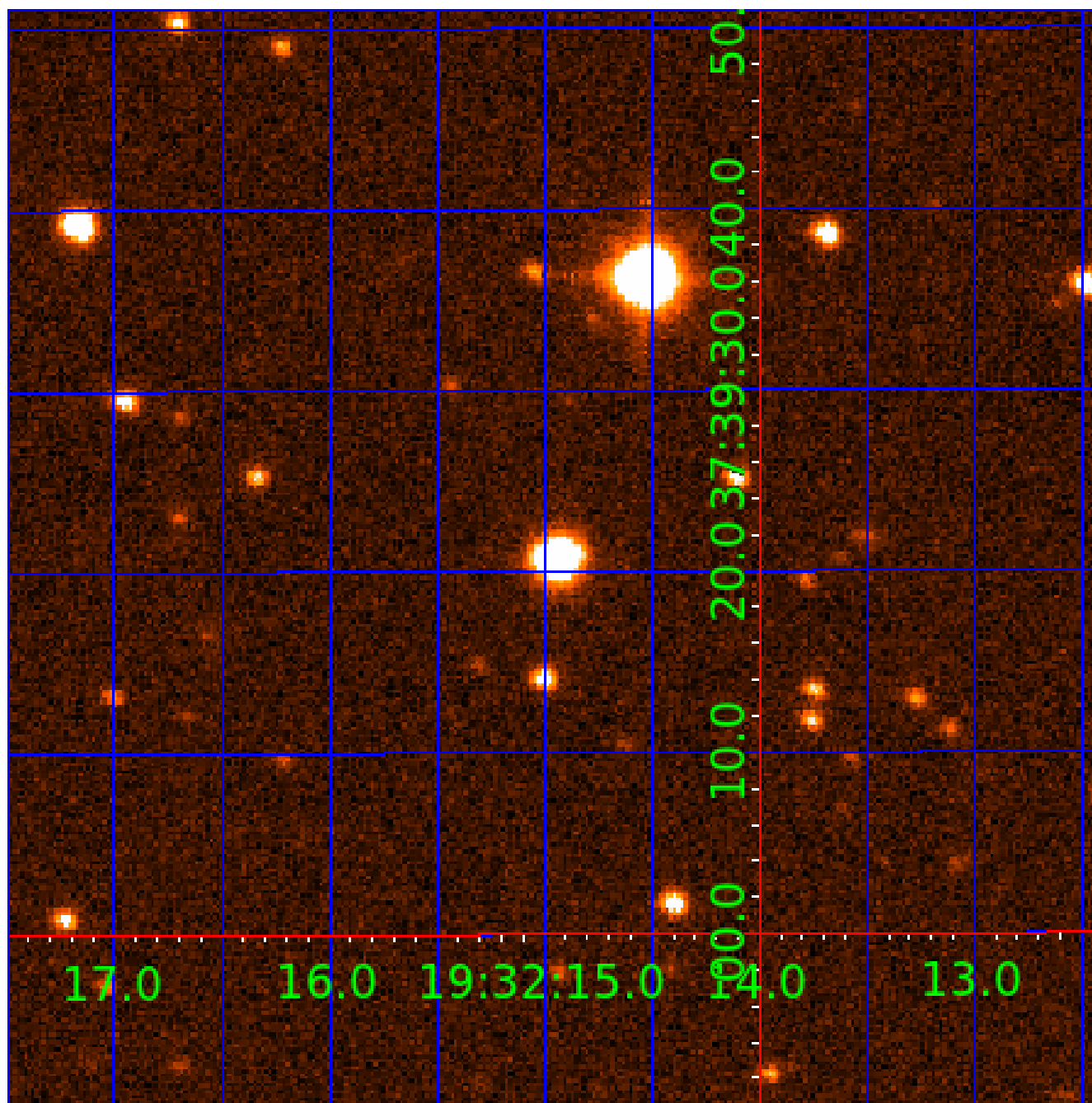


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 002310284

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})
002310284-01	OBS	No	677.258979	152.439967	7783.0	17.645	23.3	9.2	1.34	6818	12.87	1.27
002310284-02	OBS	No	613.588856	234.603276	9602.3	17.146	13.7	10.5	1.34	6818	14.47	1.45
002310284-03	OBS	No	1.399292	131.614436	64.5	2.723	10.4	4.6	1.34	6818	1.22	4815.01
002310284-04	OBS	No	604.458286	306.785229	7562.1	10.406	16.1	8.2	1.34	6818	12.85	1.48
002310284-05	OBS	No	604.457023	308.309365	7616.3	8.683	15.1	8.1	1.34	6818	20.74	1.48

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
002310284-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS
002310284-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
002310284-03	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV
002310284-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL_TRACKER—LPP_DV—MOD_TER_DV—CENT_FEW_DIFFS
002310284-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—SAME_NTL_PERIOD

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

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

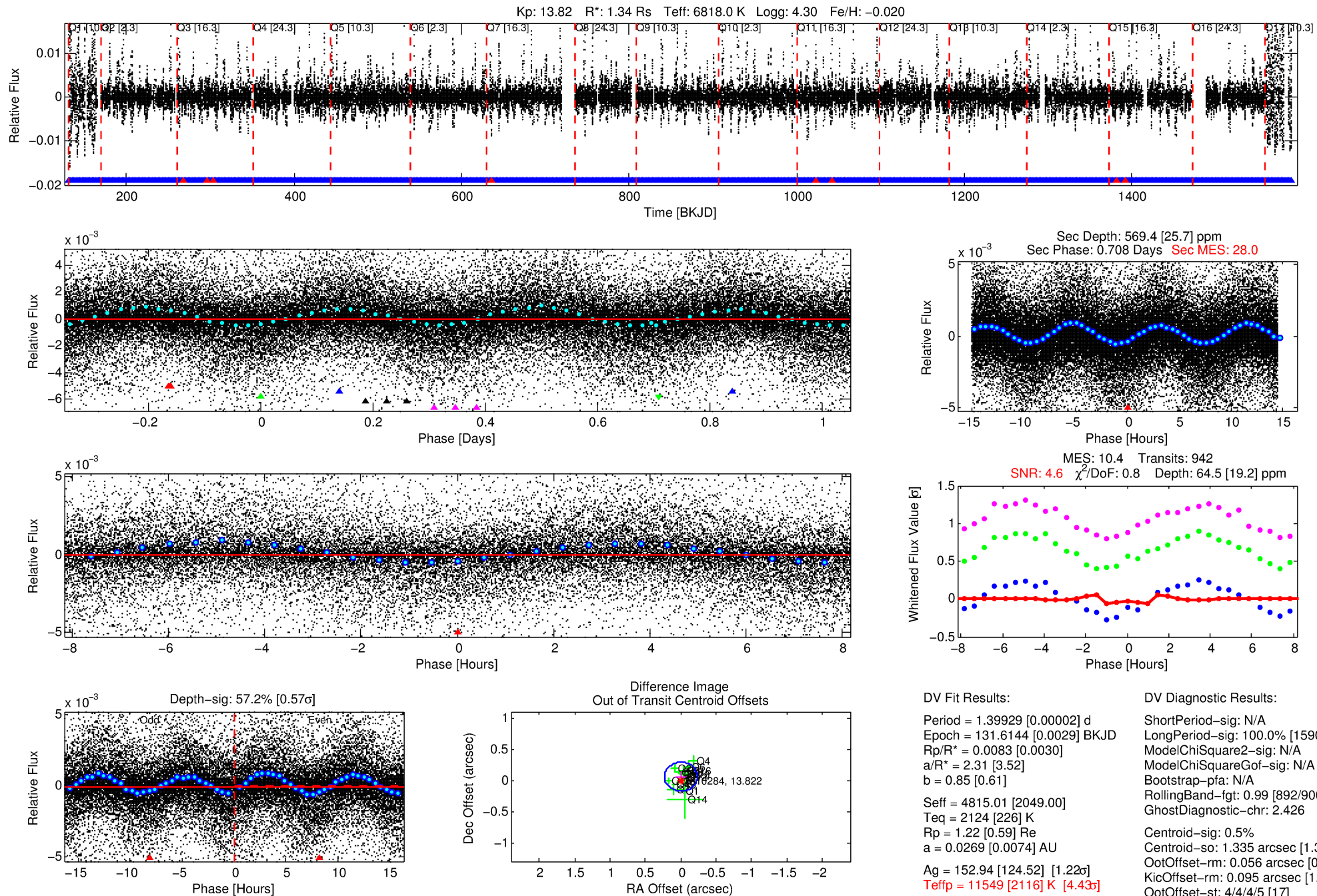
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 002310284-03

No Significant Match Found

DV One-Page Summary

KIC: 2310284 Candidate: 3 of 5 Period: 1.399 d



DV Fit Results:

Period = 1.39929 [0.00002] d
Epoch = 131.6144 [0.0029] BKJD
Rp/R* = 0.0083 [0.0030]
a/R* = 2.31 [3.52]
b = 0.85 [0.61]
Seff = 4815.01 [2049.00]
Teq = 2124 [226] K
Rp = 1.22 [0.59] Re
a = 0.0269 [0.0074] AU
Ag = 152.94 [124.52] [1.22 σ]
Teff = 11549 [2116] K [4.43 σ]

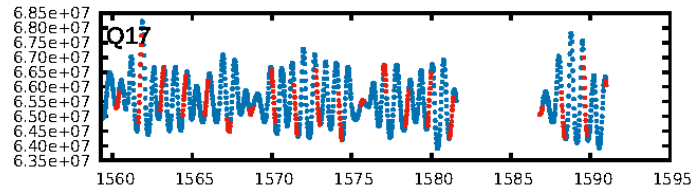
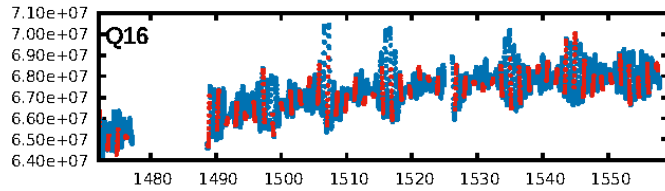
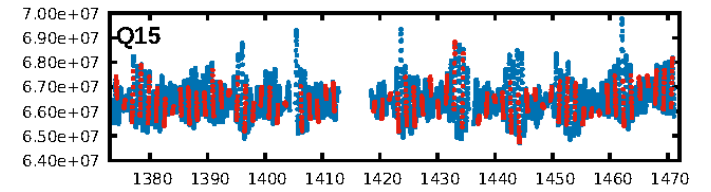
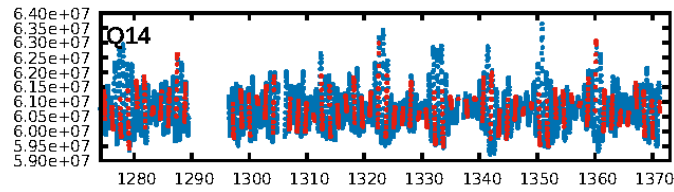
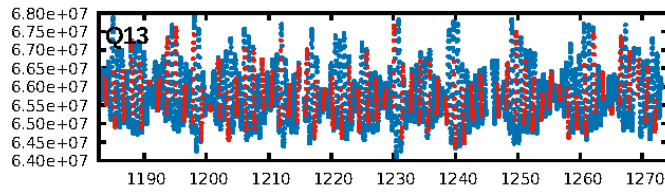
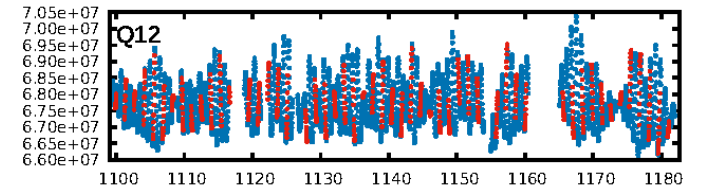
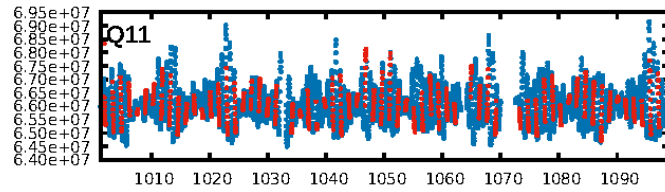
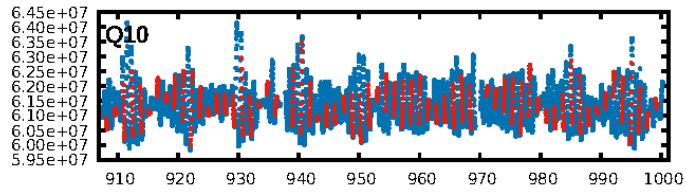
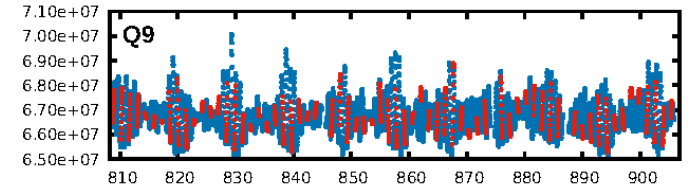
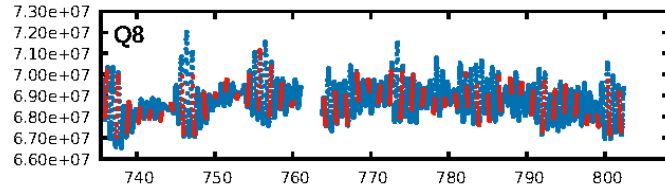
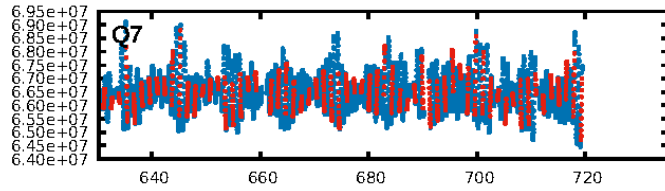
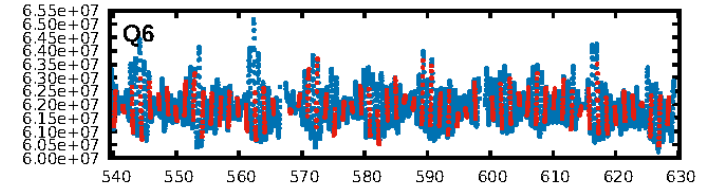
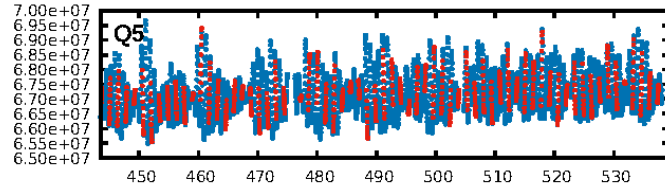
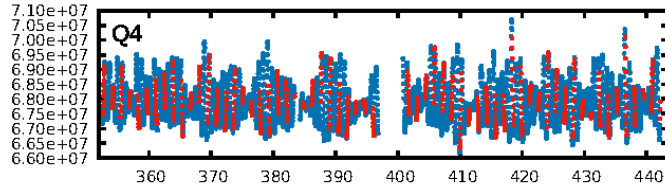
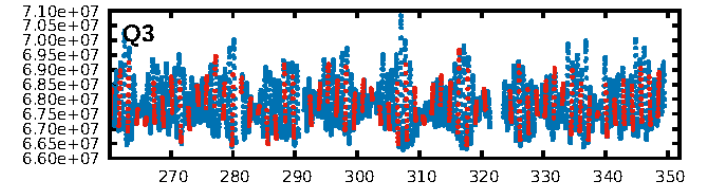
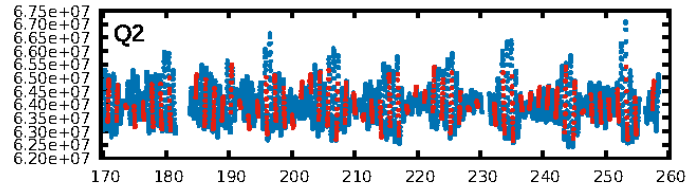
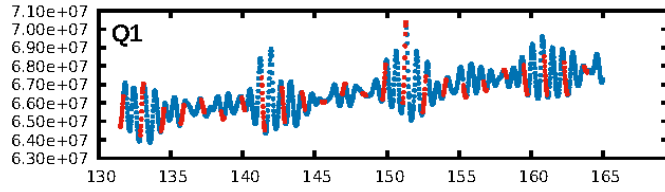
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [1590.53 σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGoF-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 0.99 [892/900]
GhostDiagnostic-chr: 2.426
Centroid-sig: 0.5%
Centroid-so: 1.335 arcsec [1.31 σ]
OotOffset-rm: 0.056 arcsec [0.73 σ]
KicOffset-rm: 0.095 arcsec [1.27 σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 1.00 [17/17]
DiffImageOverlap-fno: 1.00 [17/17]

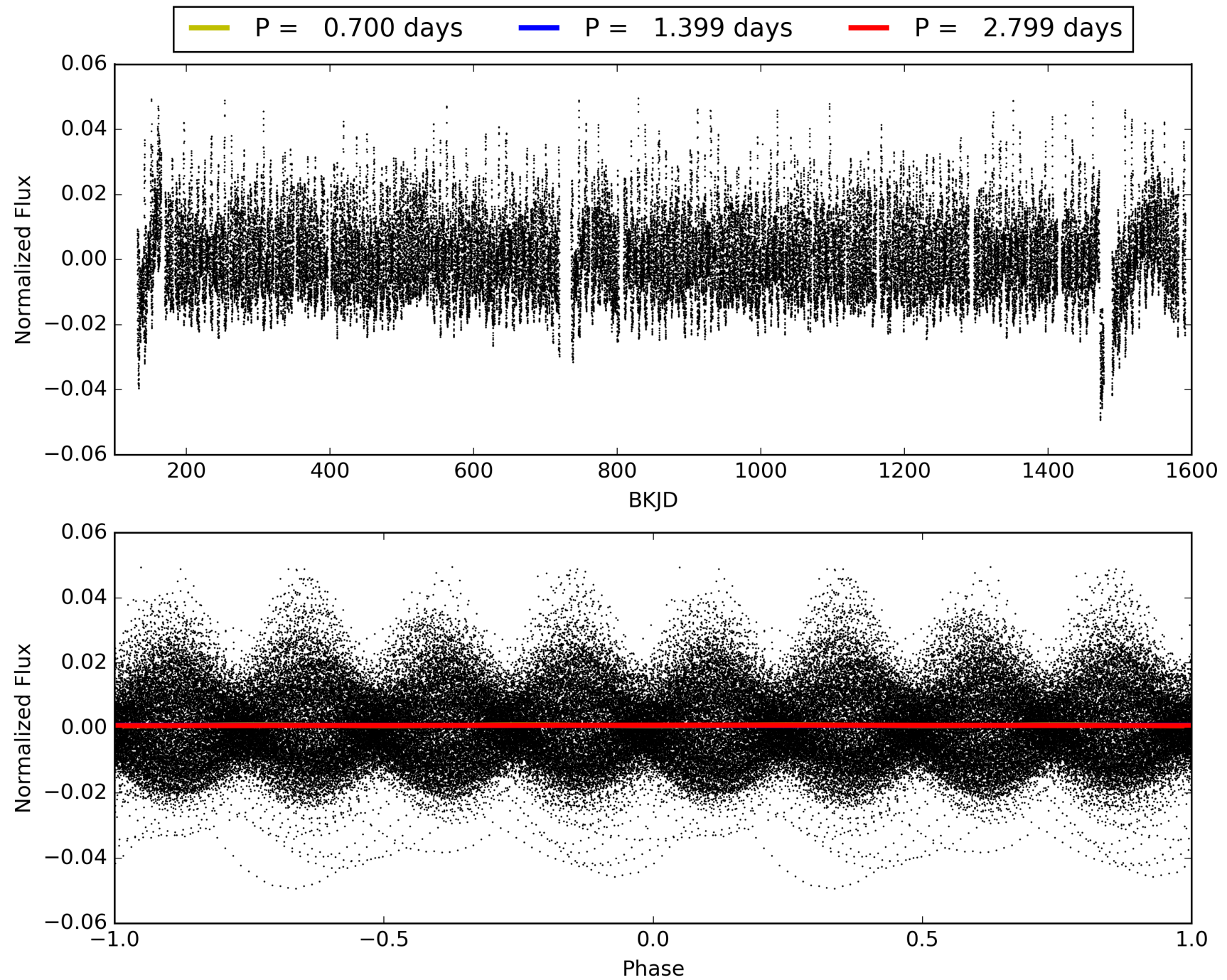
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 06:12:32 Z

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

TCE 002310284-03, PDC Light Curves

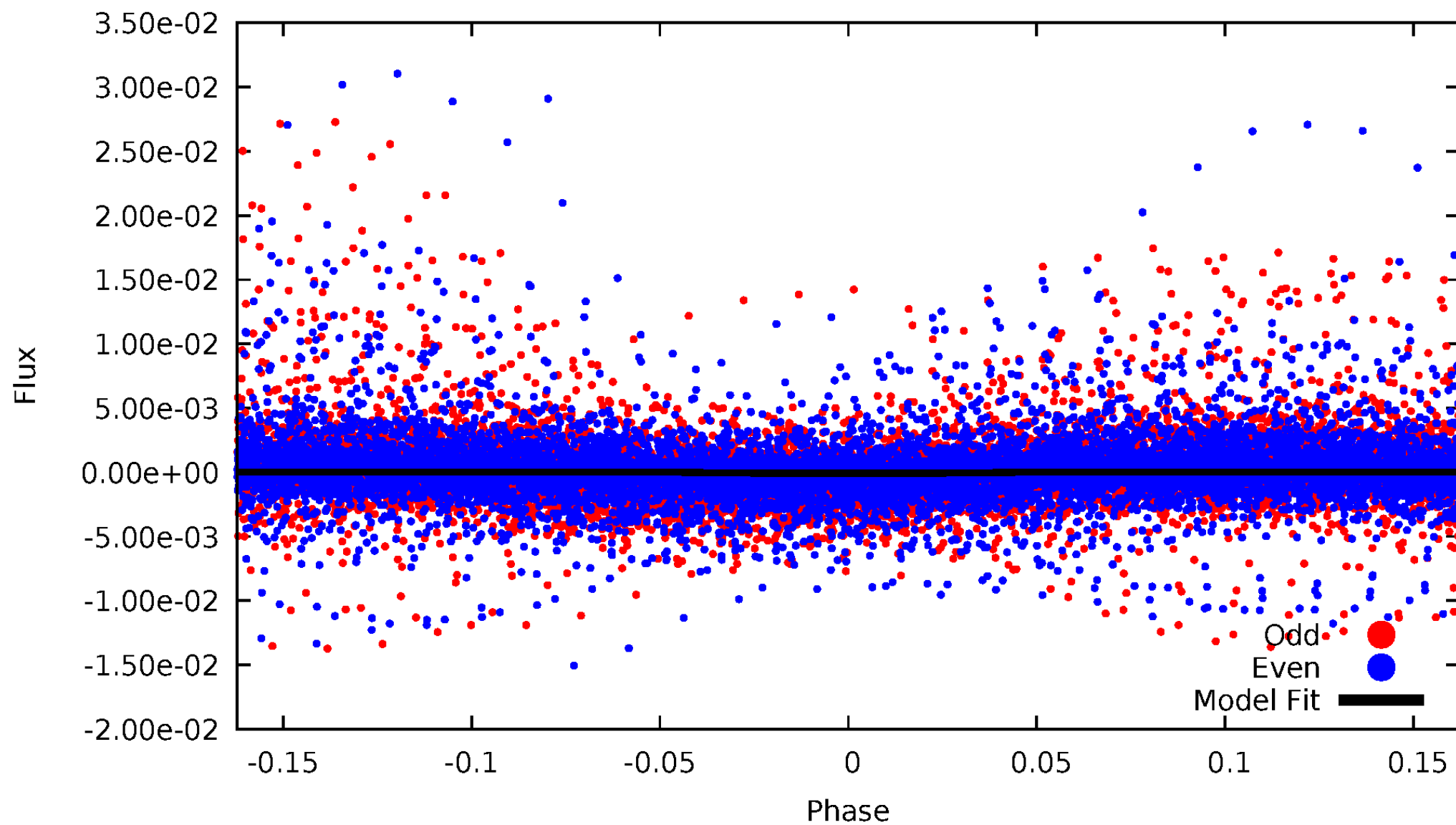


TCE 002310284-03



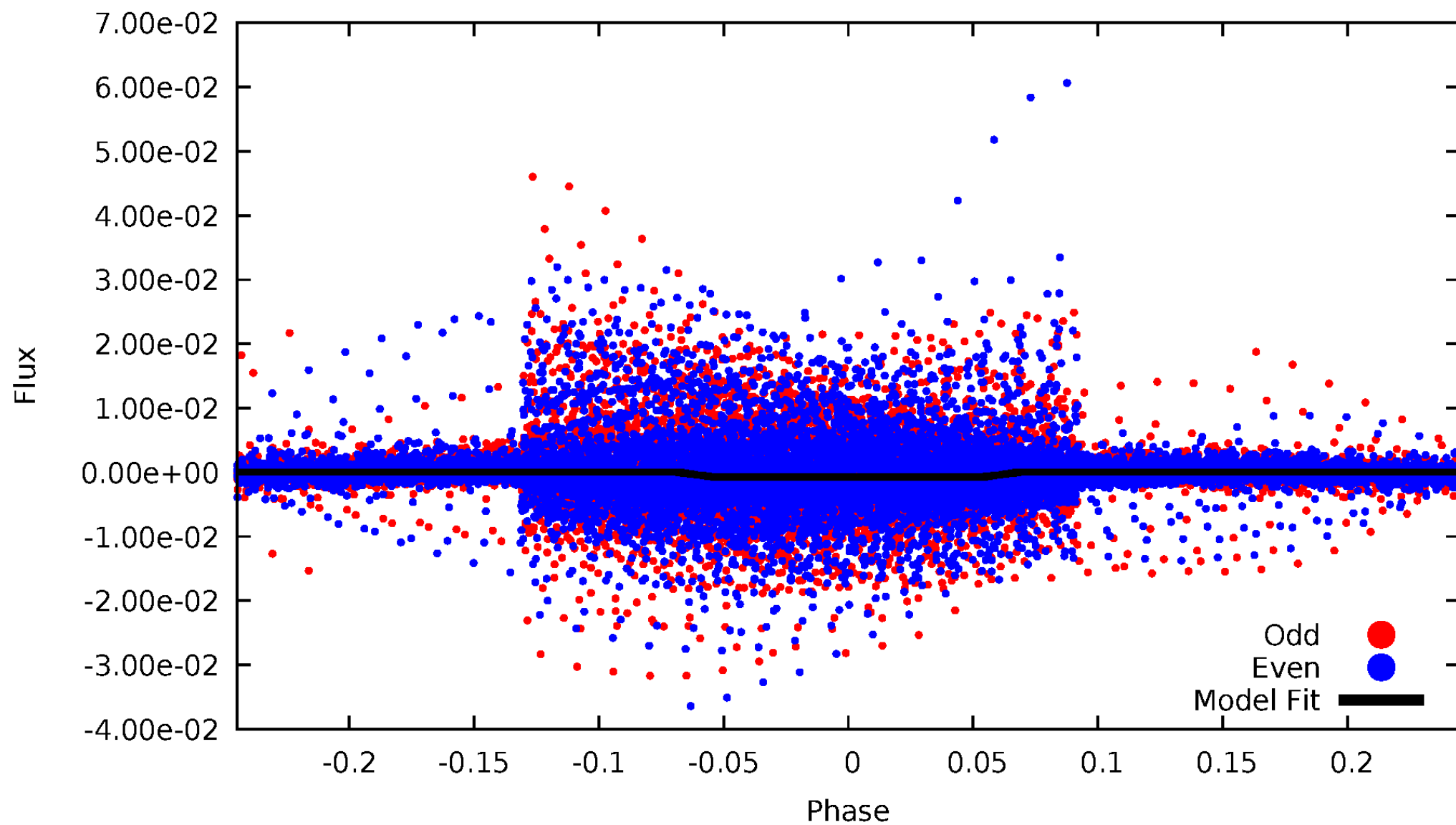
DV Odd/Even

TCE 002310284-03



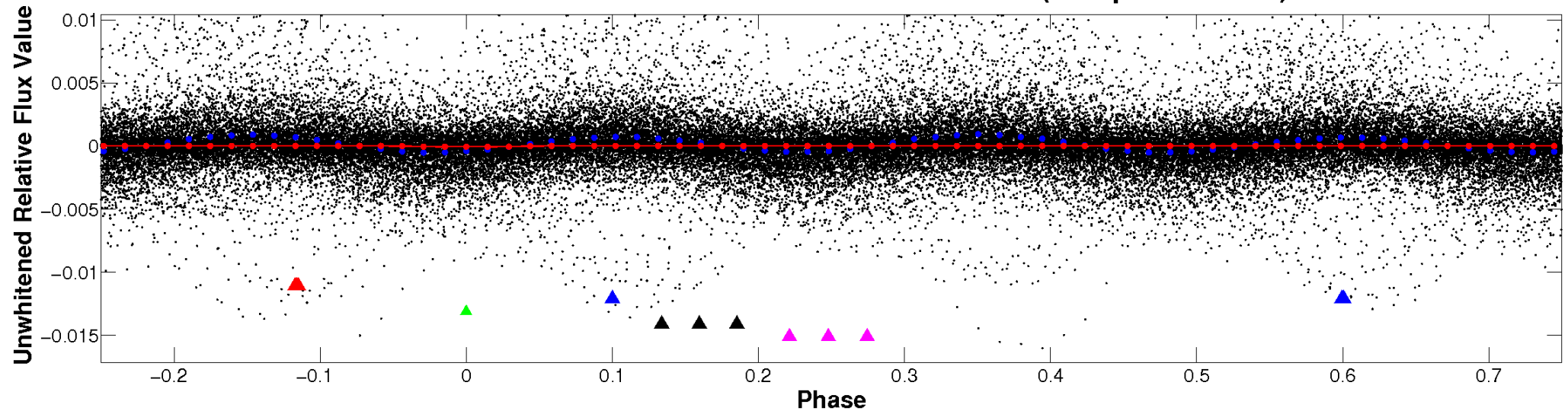
ALT Odd/Even

TCE 002310284-03

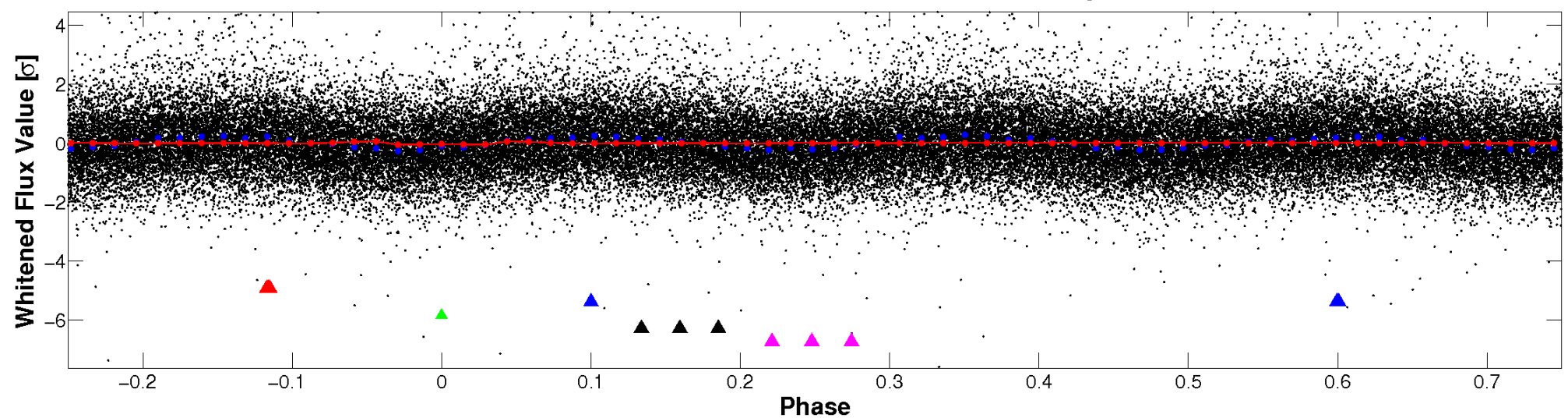


Non-Whitened Vs. Whitened Light Curve

Planet 3 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

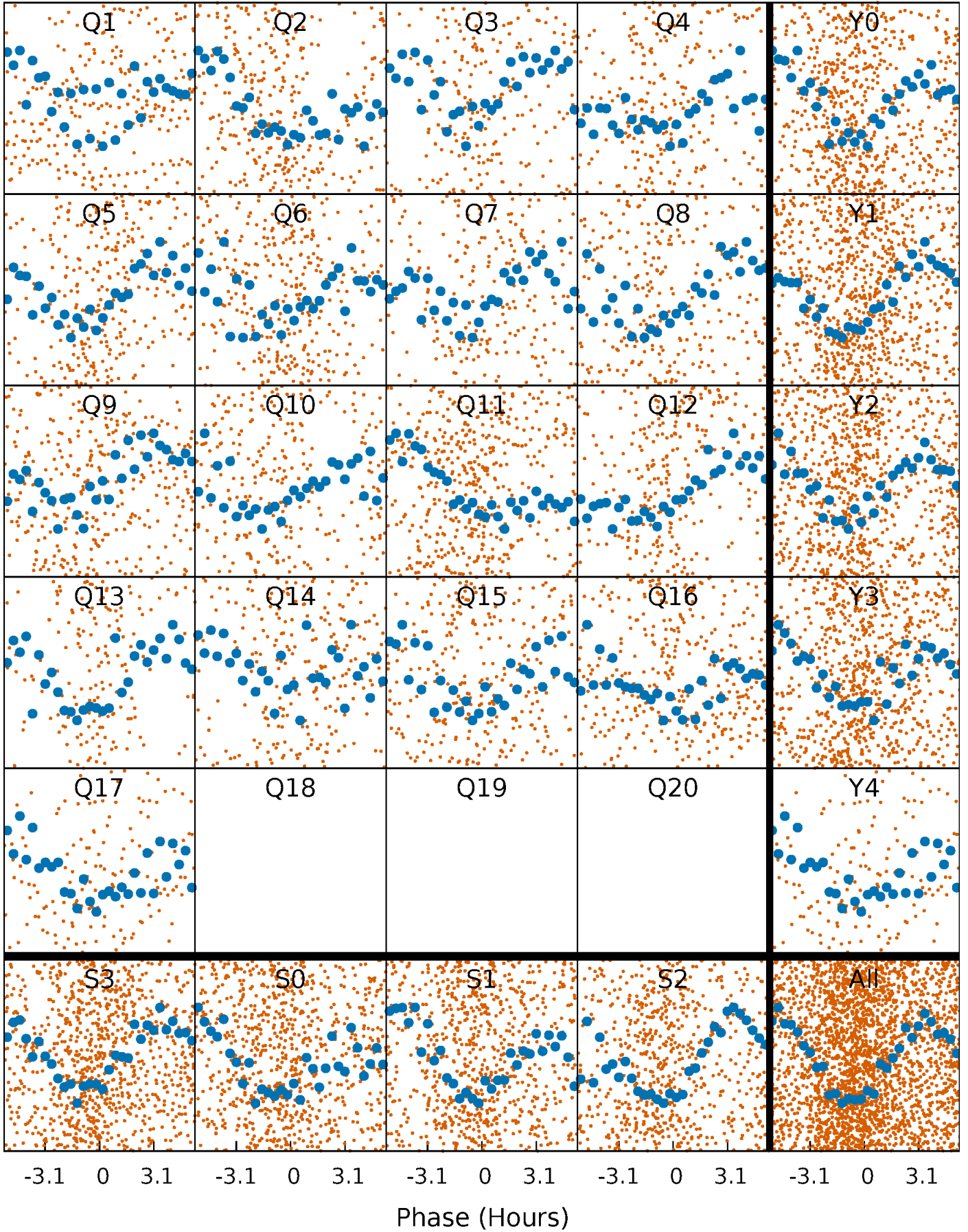


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



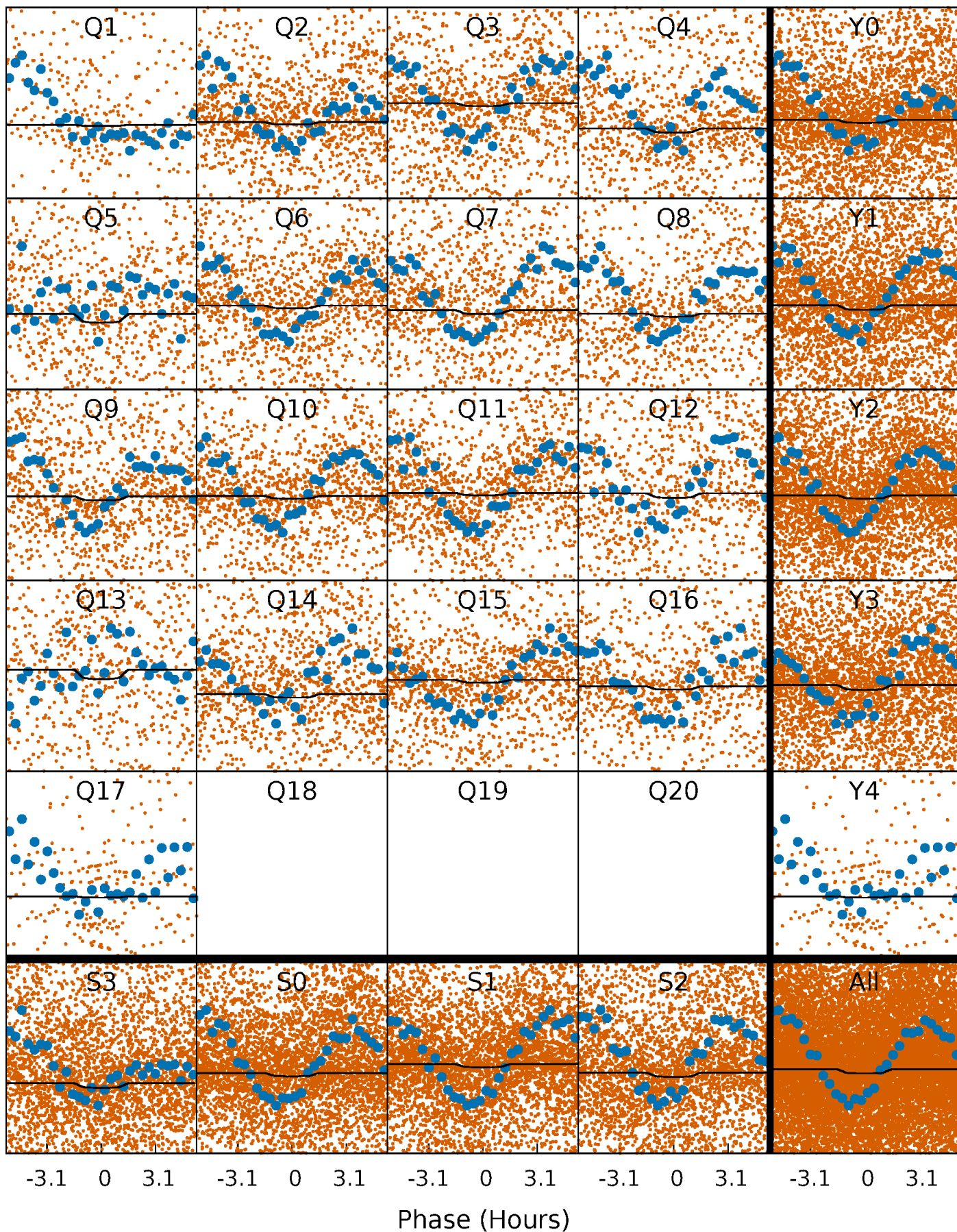
PDC Quarter-Phased Transit Curves

TCE 002310284-03 P= 1.399292 Days $T_0=131.614436$ (BKJD)



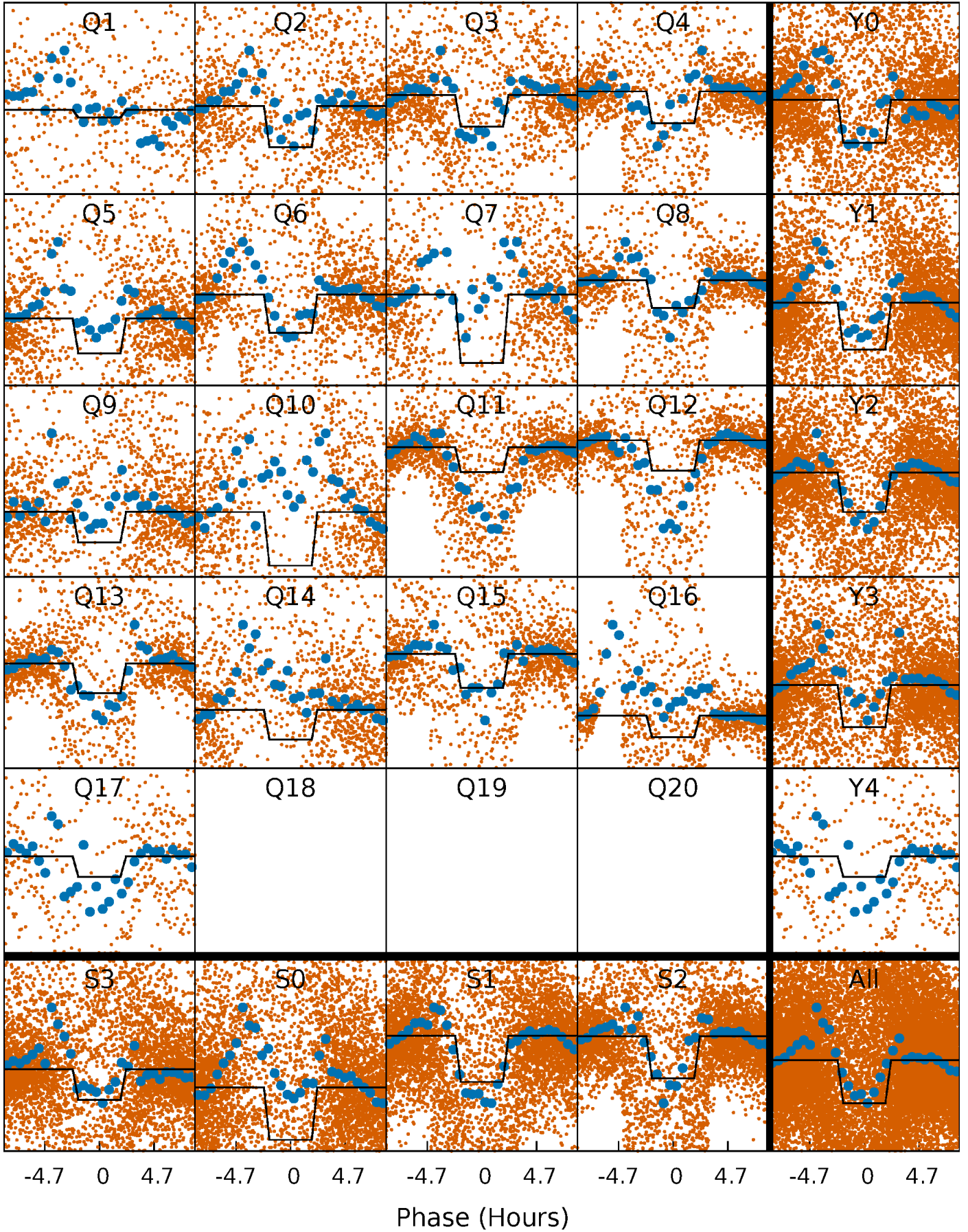
DV Quarter-Phased Transit Curves

TCE 002310284-03 P= 1.399292 Days $T_0=131.614436$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

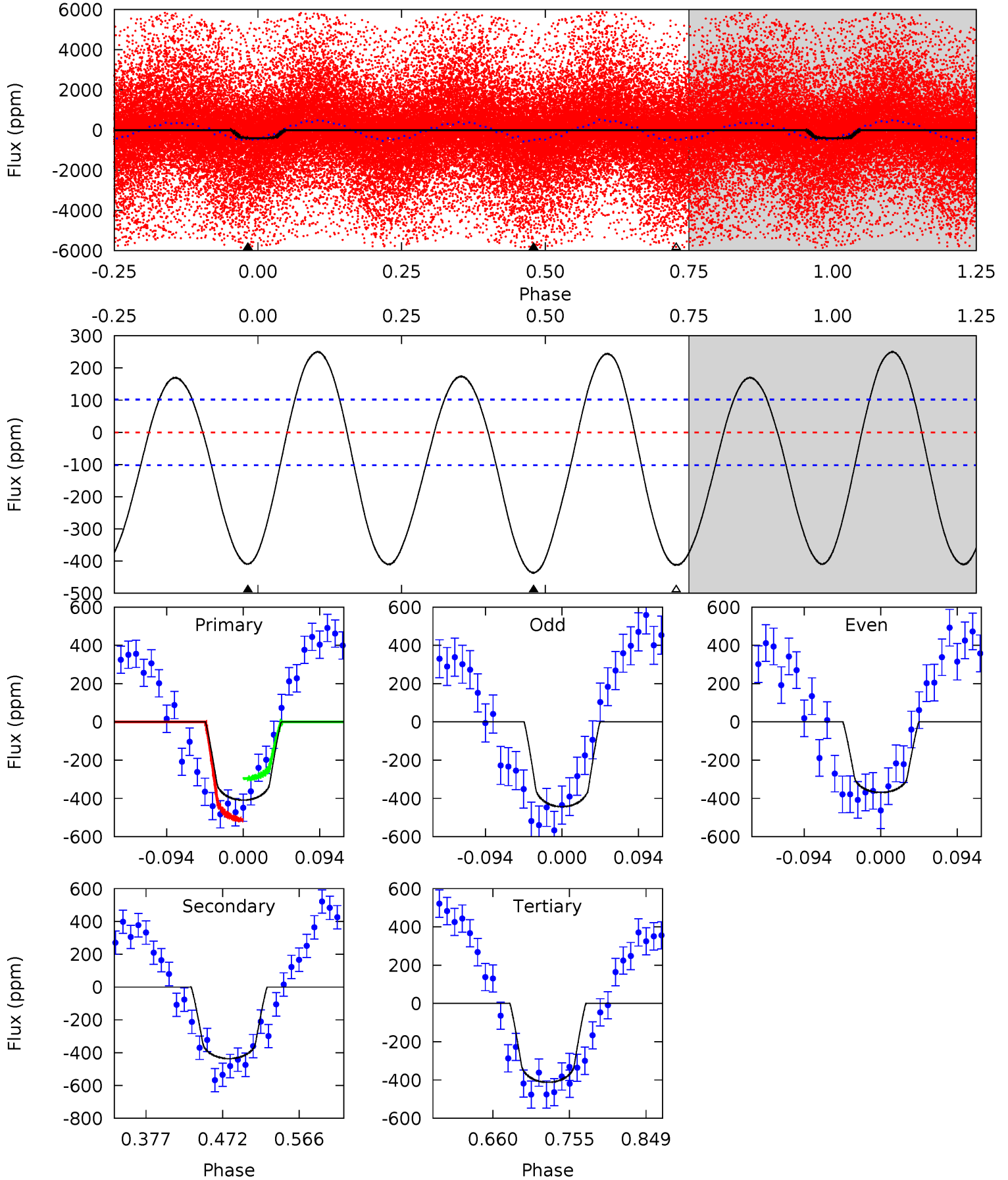
TCE 002310284-03 P= 1.399282 Days $T_0=131.601015$ (BKJD)



DV Model-Shift Uniqueness Test

002310284-03, P = 1.399292 Days, E = 130.215144 Days

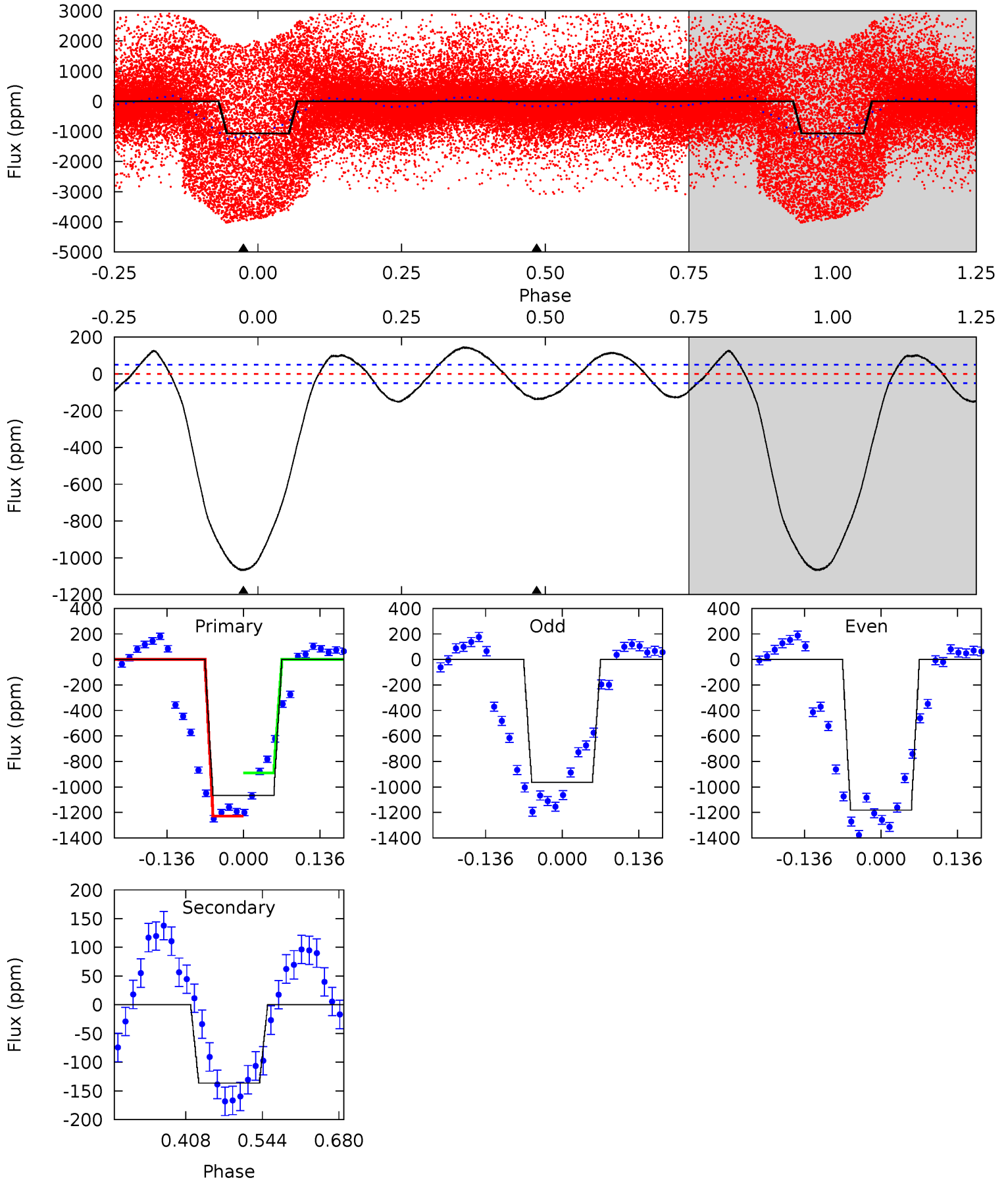
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
18.4	19.6	18.5	0	4.58	1.67	10.3	-0.14	18.4	1.08	19.6	1.69	2.23	0.36	4.91



Alt Model-Shift Uniqueness Test

002310284-03, P = 1.399282 Days, E = 130.201733 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
96.4	12.3	0	0	4.50	1.49	7.99	96.4	96.4	12.3	12.3	10.1	0.68	0.12	0



Stellar Parameters For KIC 002310284

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R \text{ (R}_{\odot})$	$M(\text{M}_{\odot})$	$p_{\star} \text{ (g}\cdot\text{cm}^{-3})$
	6818^{+165}_{-283}	$4.305^{+0.070}_{-0.210}$	$-0.020^{+0.250}_{-0.350}$	$1.341^{+0.448}_{-0.192}$	$1.331^{+0.190}_{-0.190}$	$0.777^{+0.297}_{-0.411}$
	+2%/-4%	+2%/-5%	+1250%/-1750%	+33%/-14%	+14%/-14%	+38%/-53%
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 002310284-03 / KOI

Detrend	Depth (ppm)	$R_p \text{ (R}_{\oplus})$	$T_{\text{max}} \text{ (K)}$	$T_{\text{obs}} \text{ (K)}$	A_{obs}
DV	-436 ± 22	$1.28^{+0.47}_{-0.50}$	3021^{+229}_{-180}	12636^{+6991}_{-2699}	106^{+169}_{-50}
Alt.	-136 ± 11	$4.05^{+0.72}_{-0.63}$	3009^{+222}_{-162}	4531^{+297}_{-256}	$3.215^{+1.195}_{-0.844}$

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

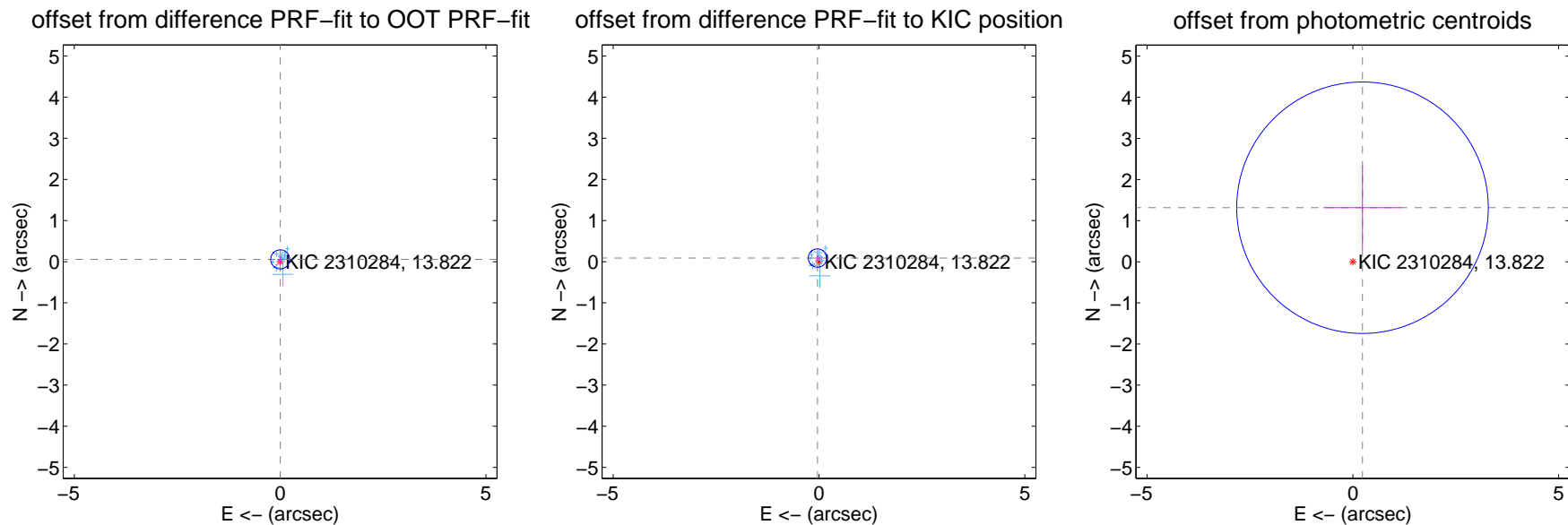
DV Centroid Data

Supplemental centroid analysis for 002310284-03. Kepler magnitude: 13.82. Transit SNR 4.65

There are 17 quarters with good PRF difference image offsets

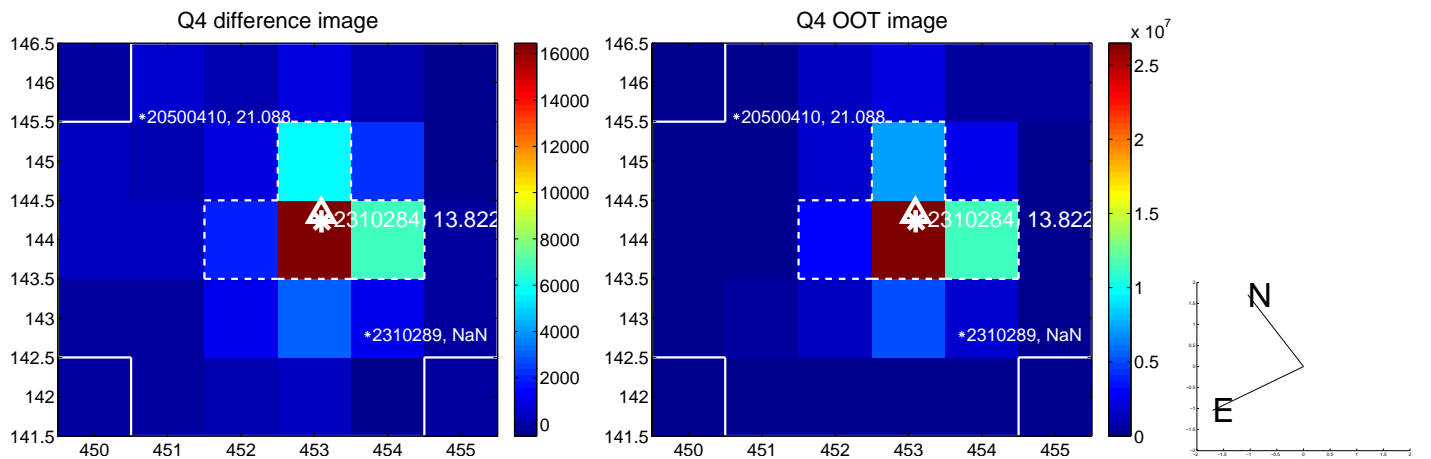
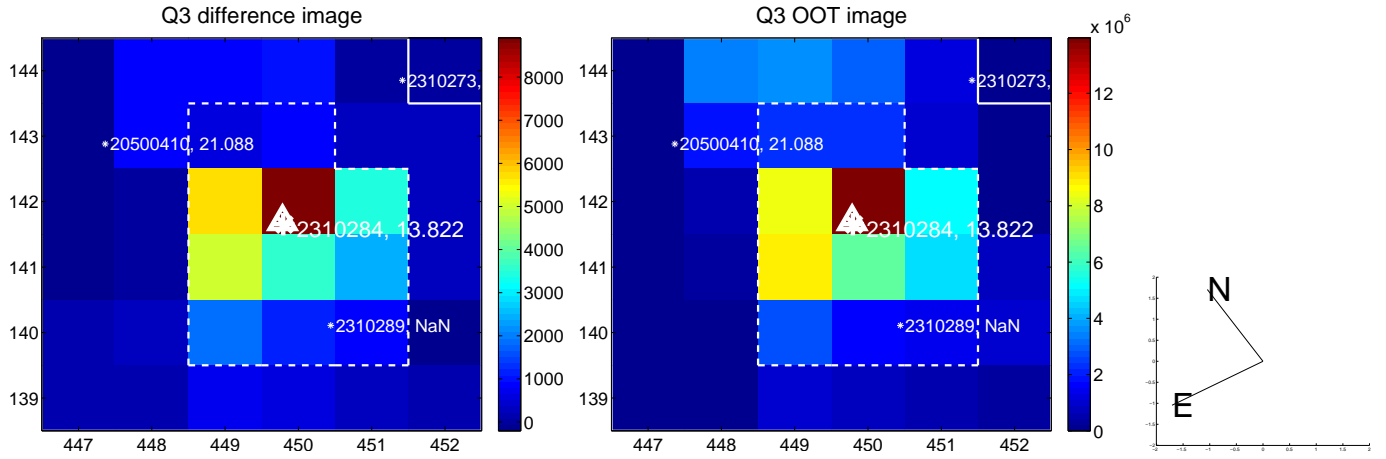
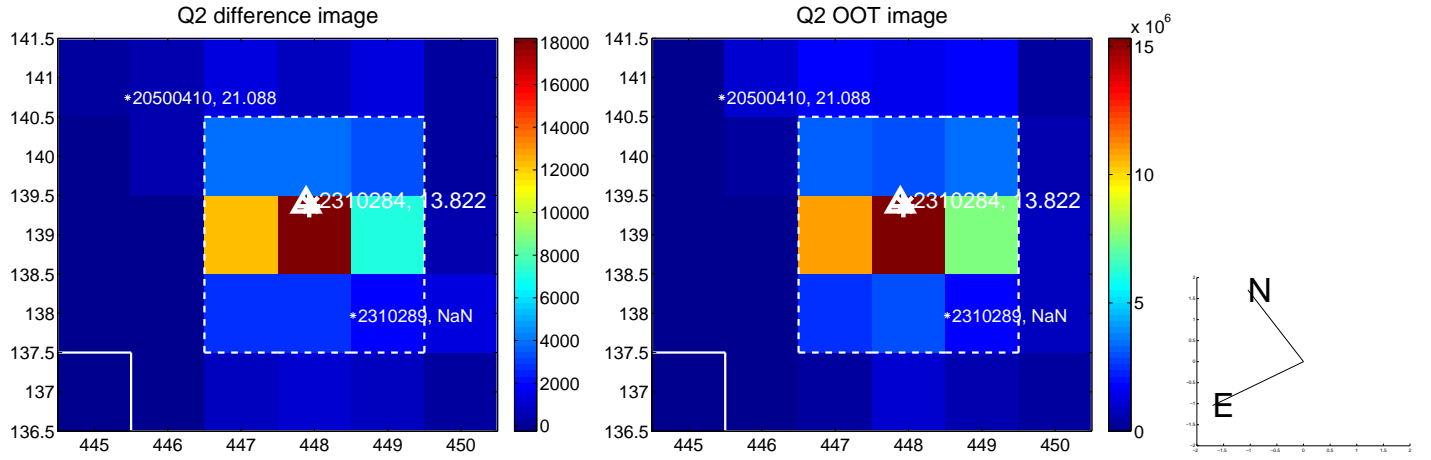
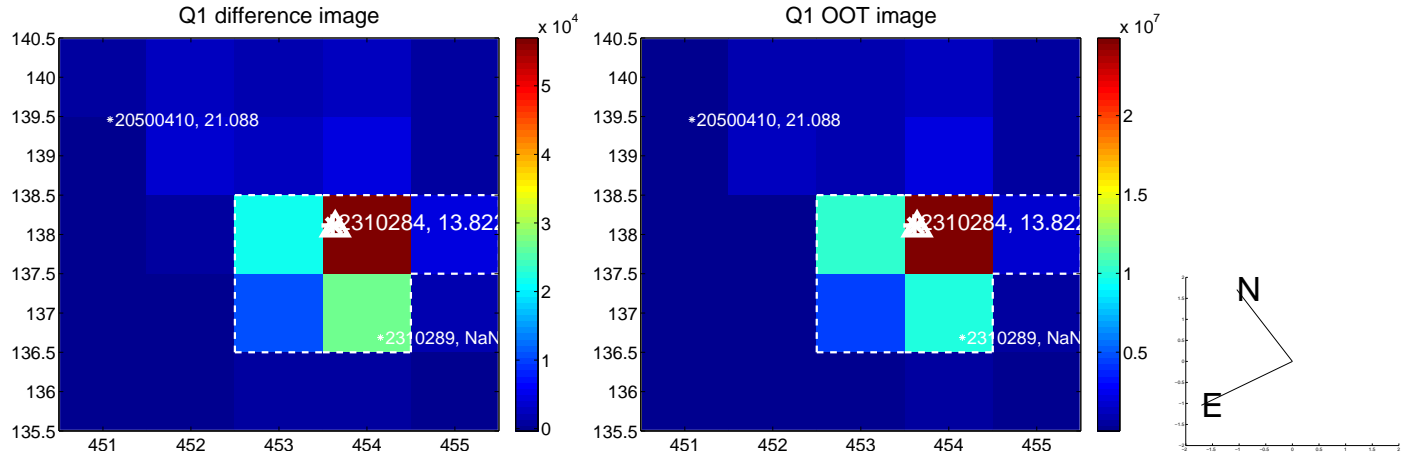
The direct PRF centroid is offset from the target star catalog position by about 0.04 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.056 ± 0.077	0.73	-0.003 ± 0.070	0.056 ± 0.077
PRF-fit source offset from KIC position	0.095 ± 0.075	1.27	0.036 ± 0.071	0.088 ± 0.076
photometric centroid source offset	1.34 ± 1.02	1.31	-0.23 ± 0.95	1.31 ± 1.02

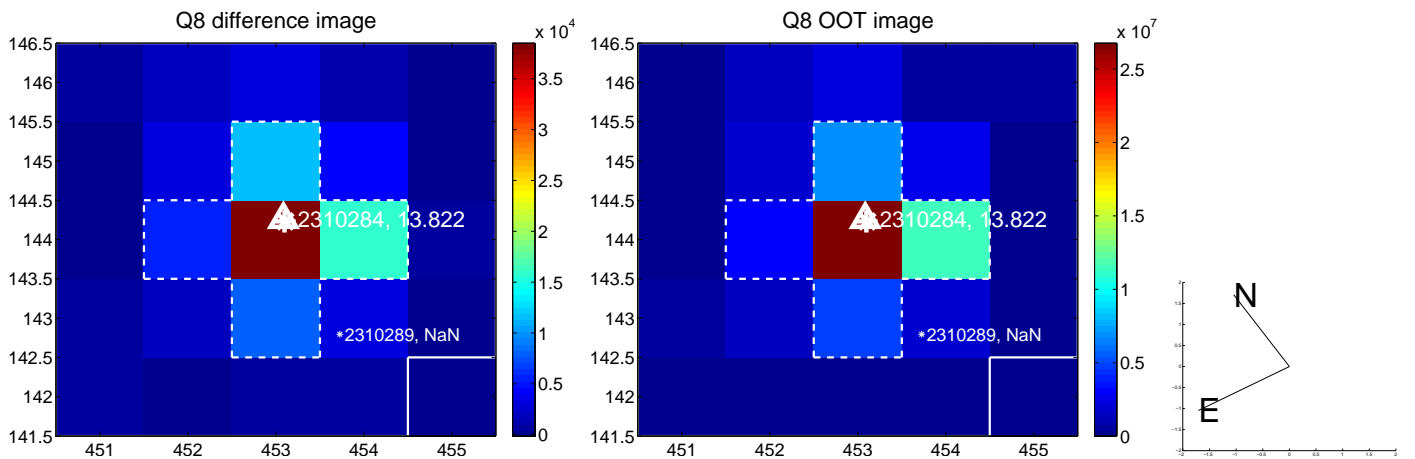
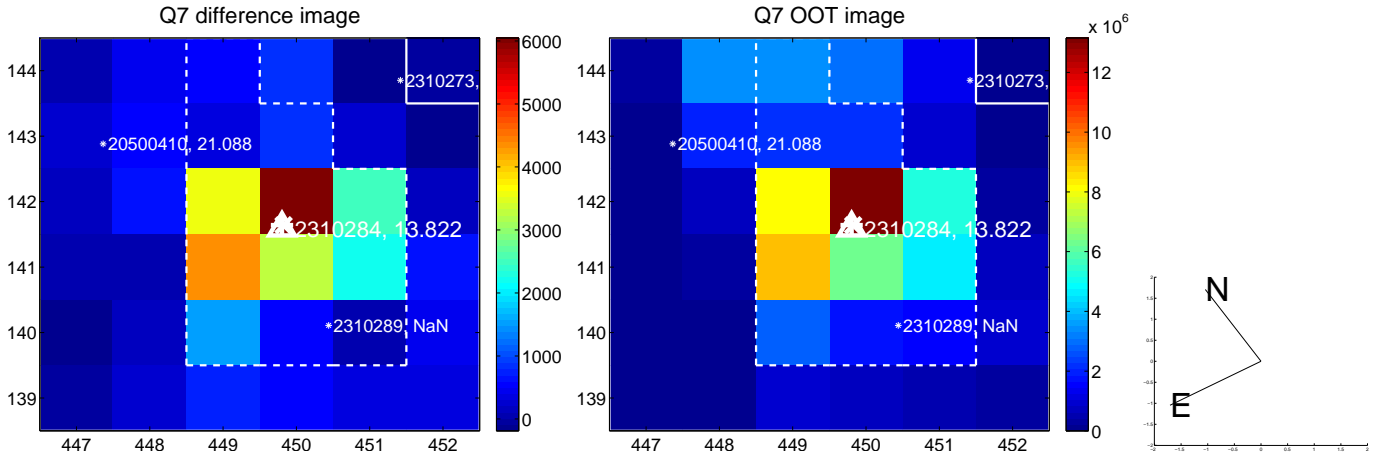
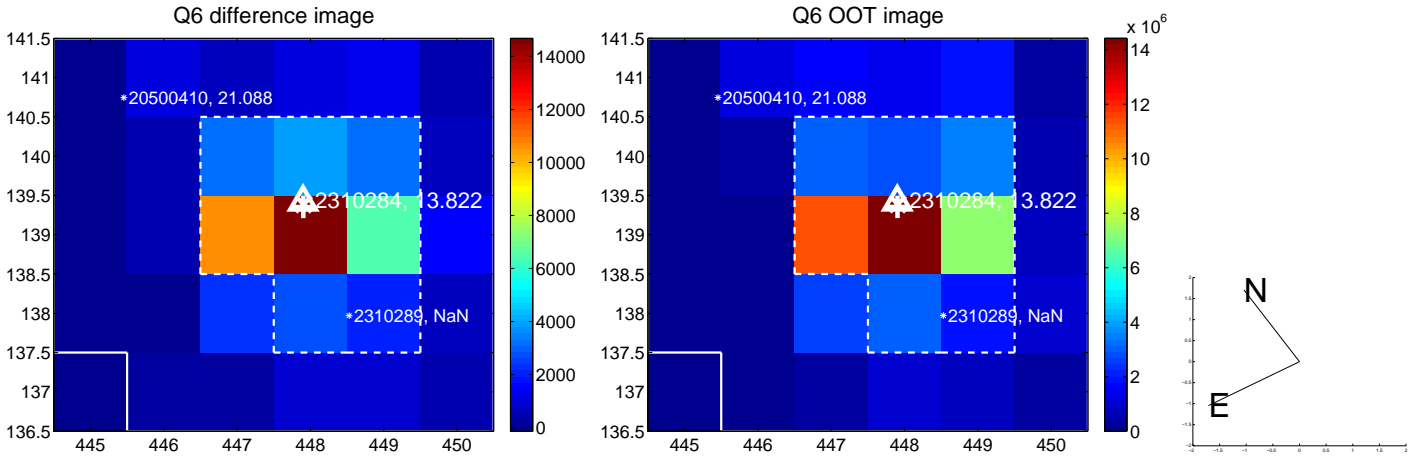
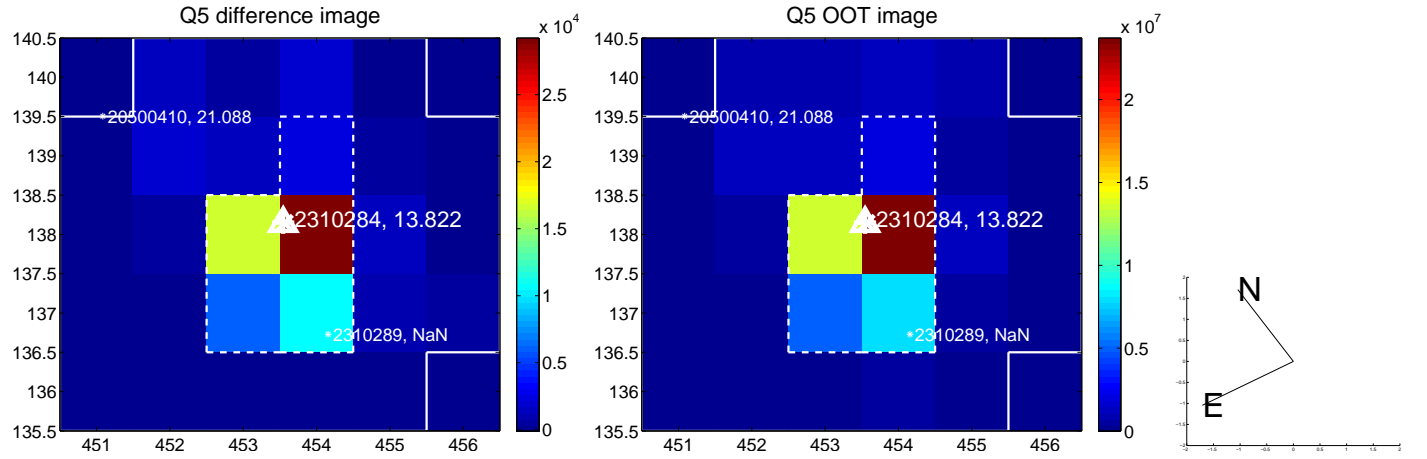


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

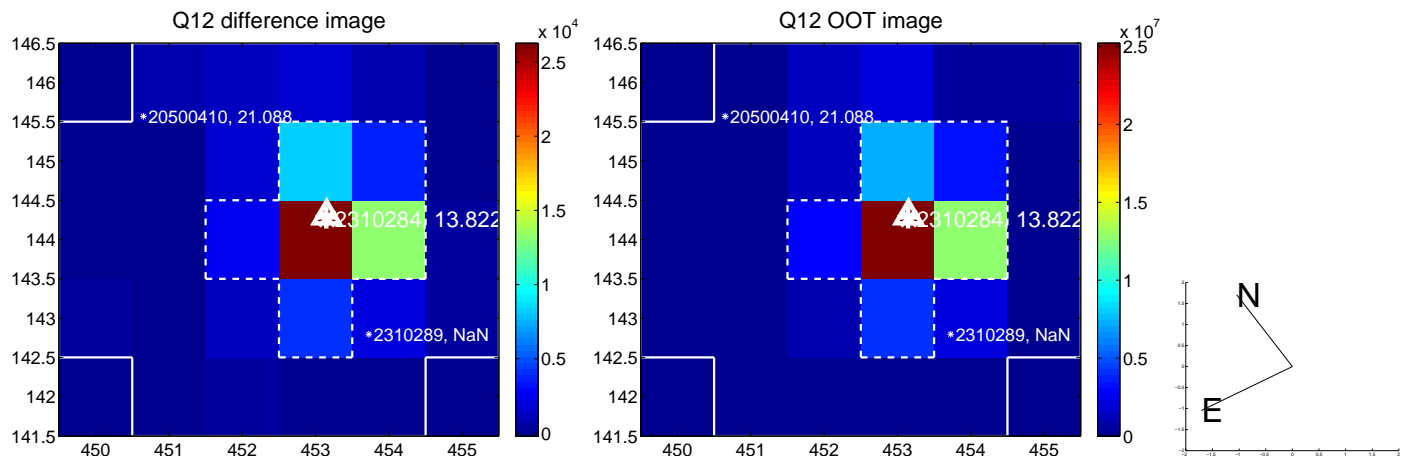
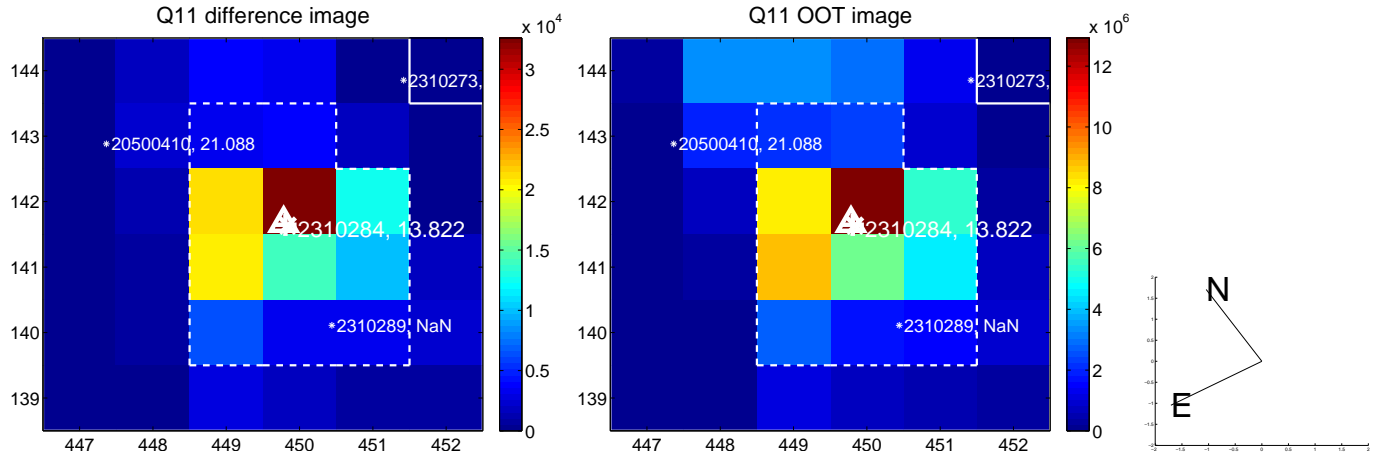
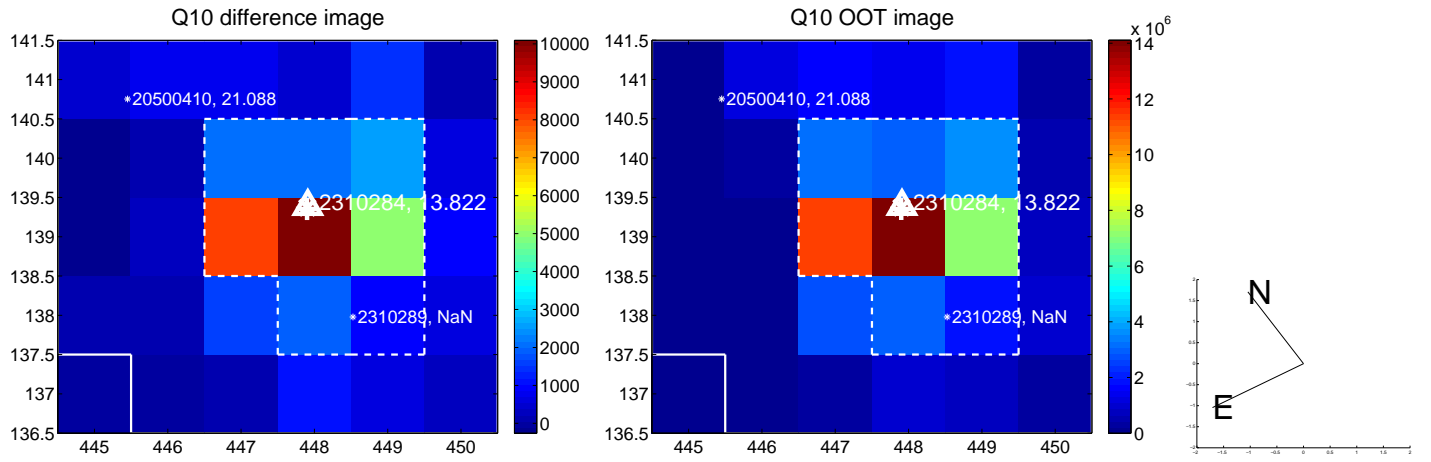
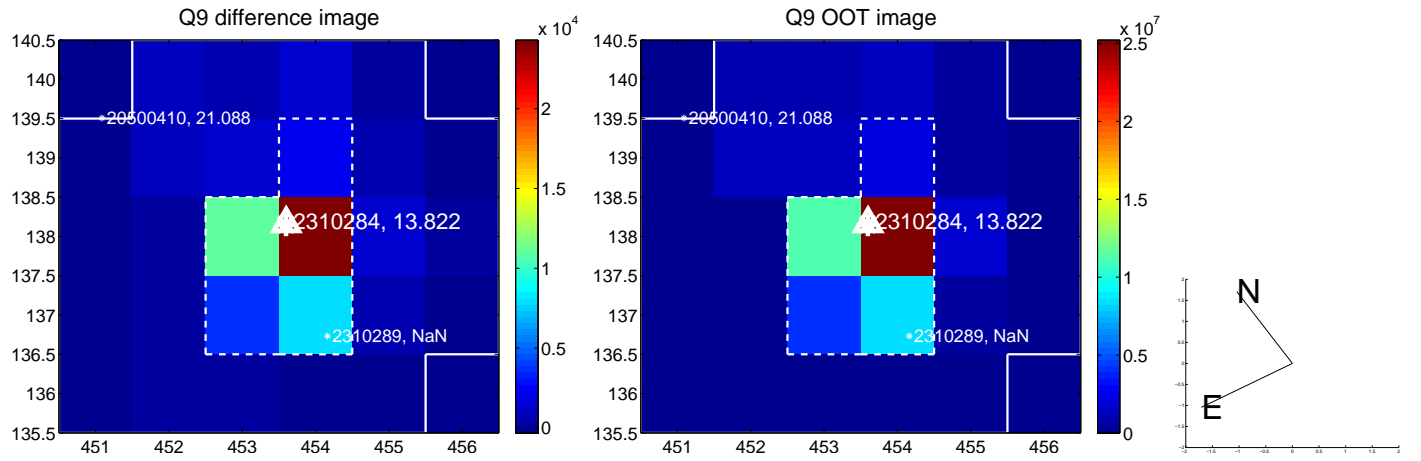
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



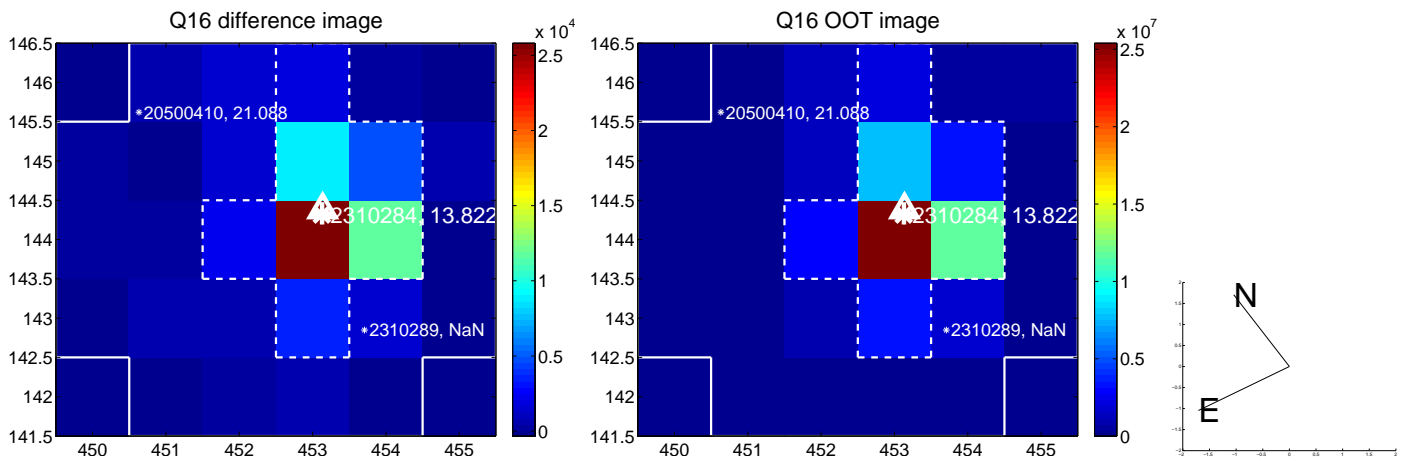
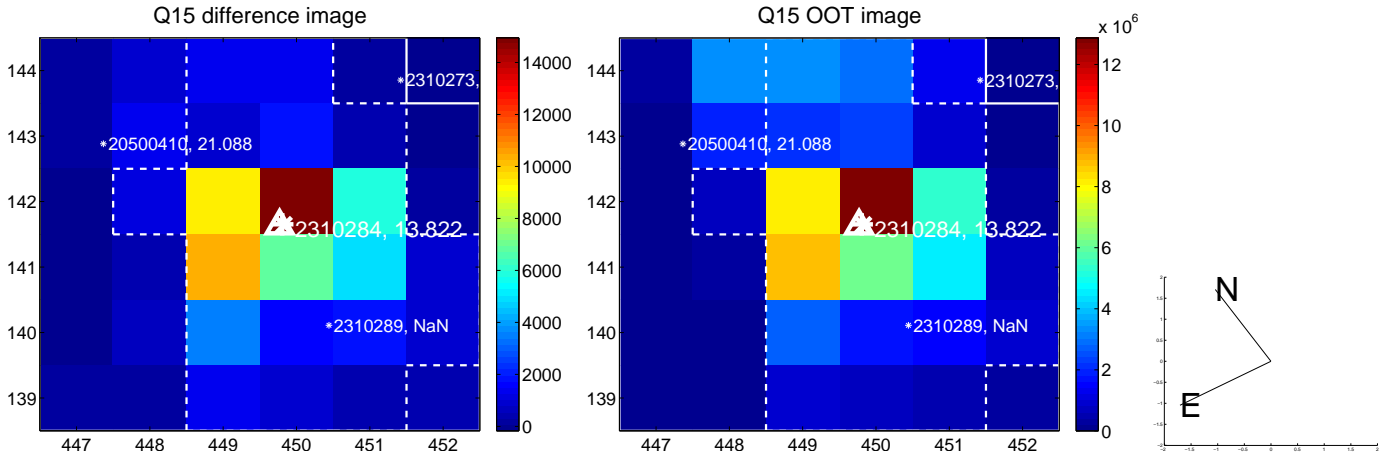
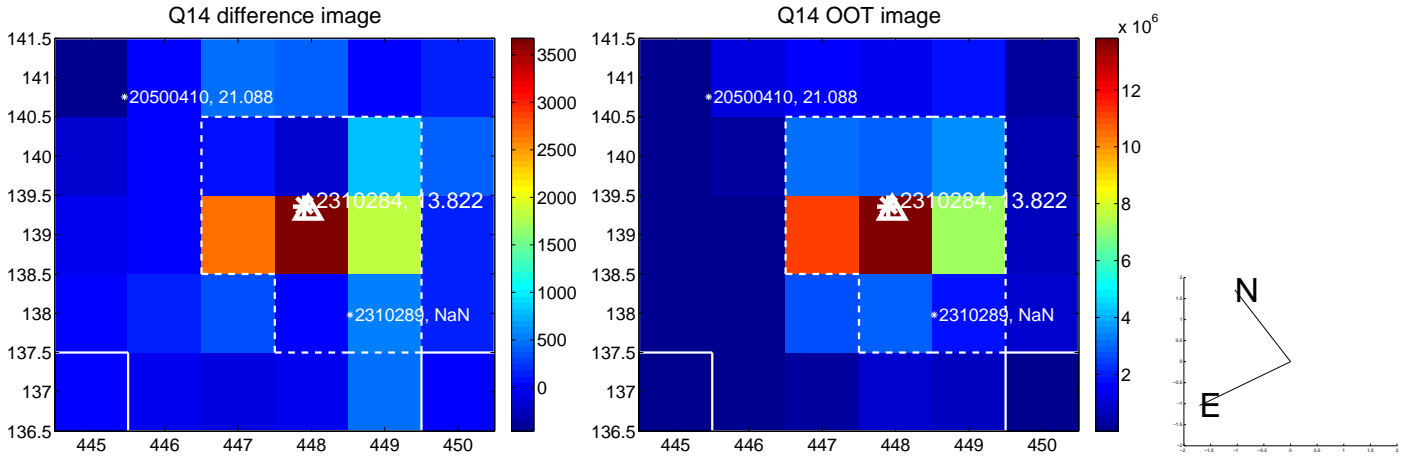
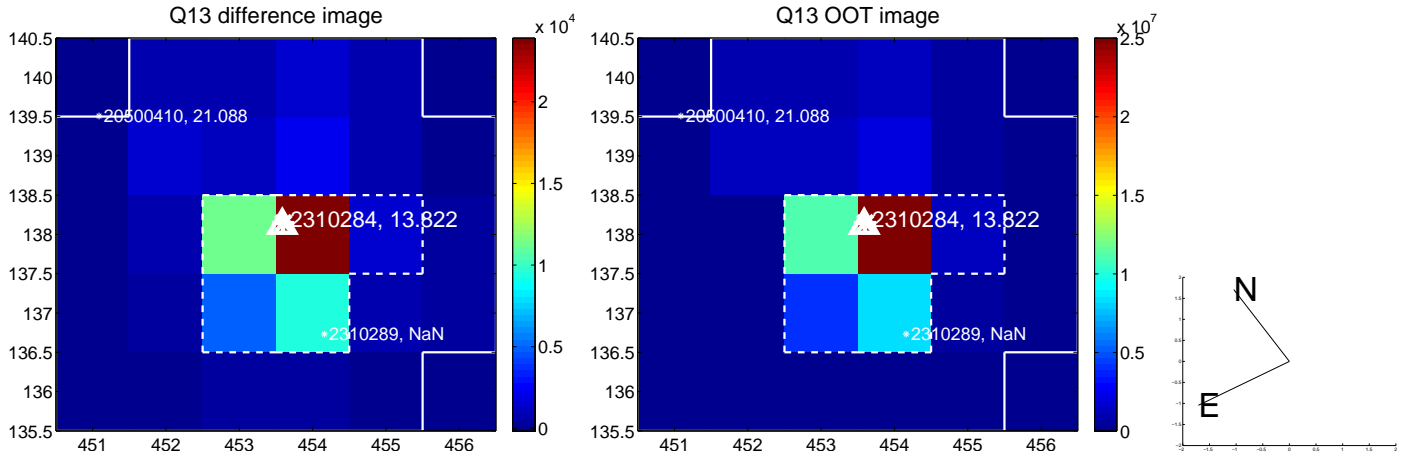
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



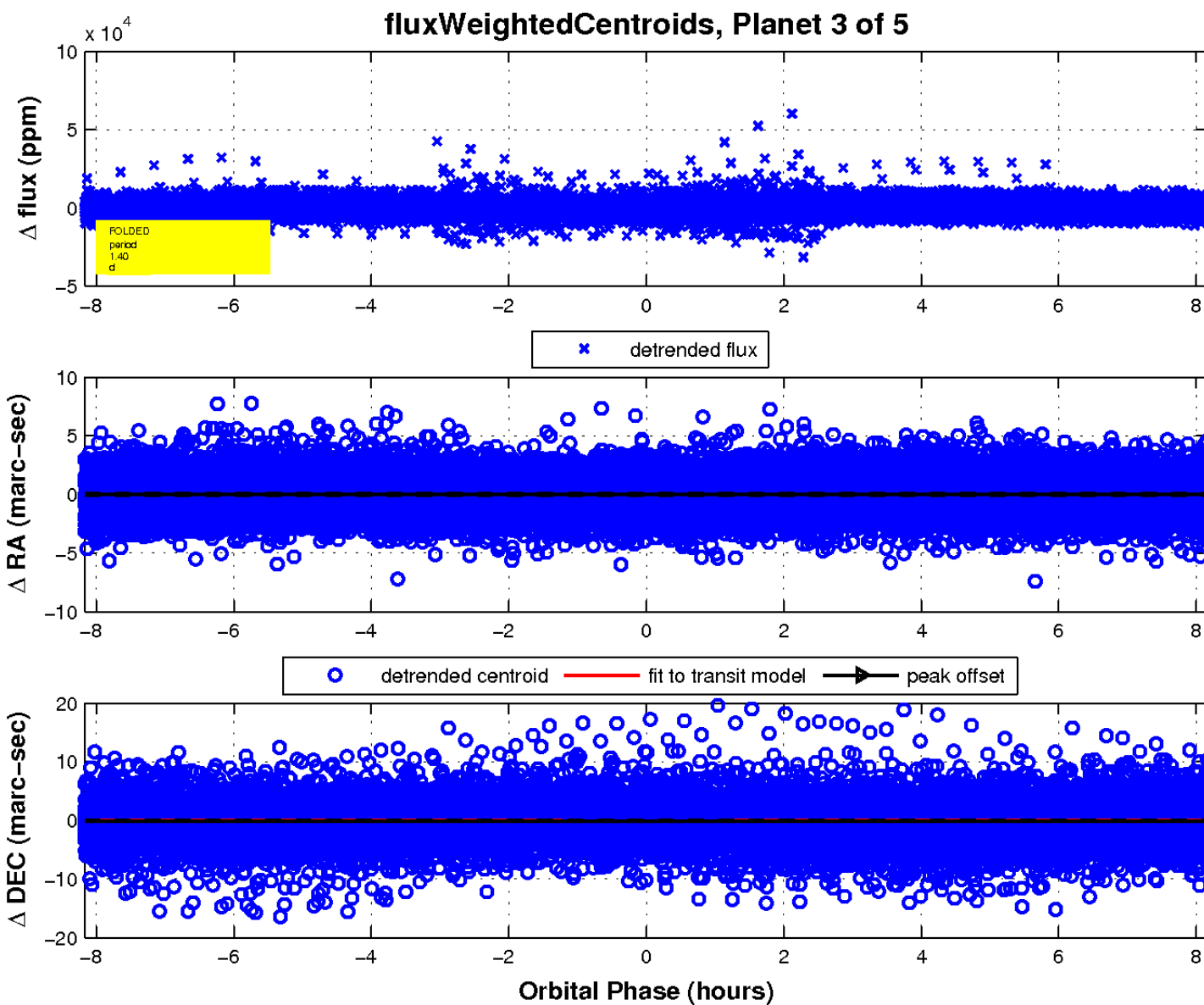
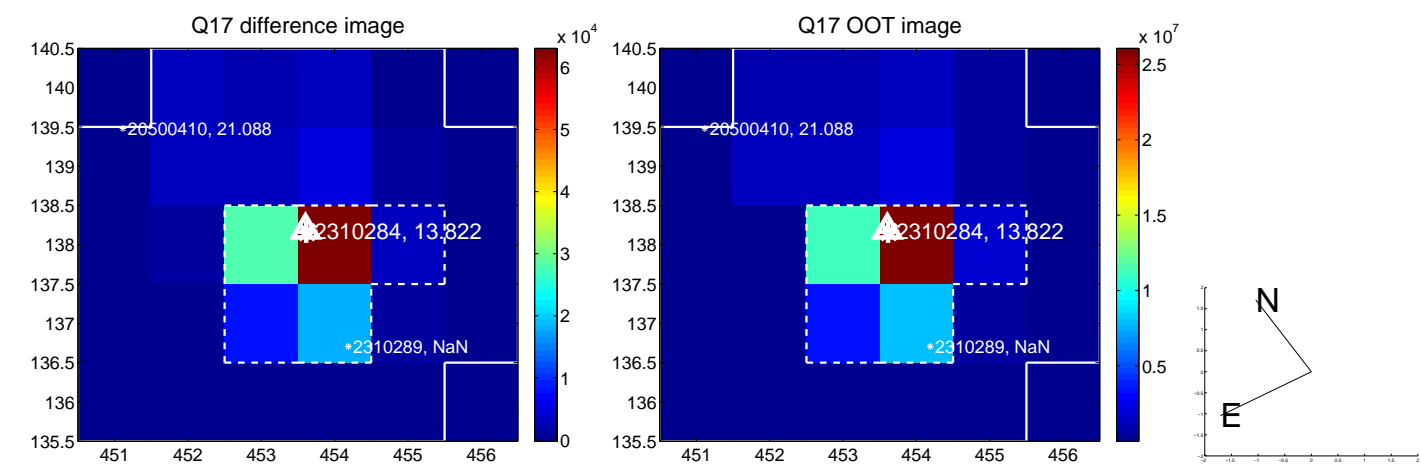
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

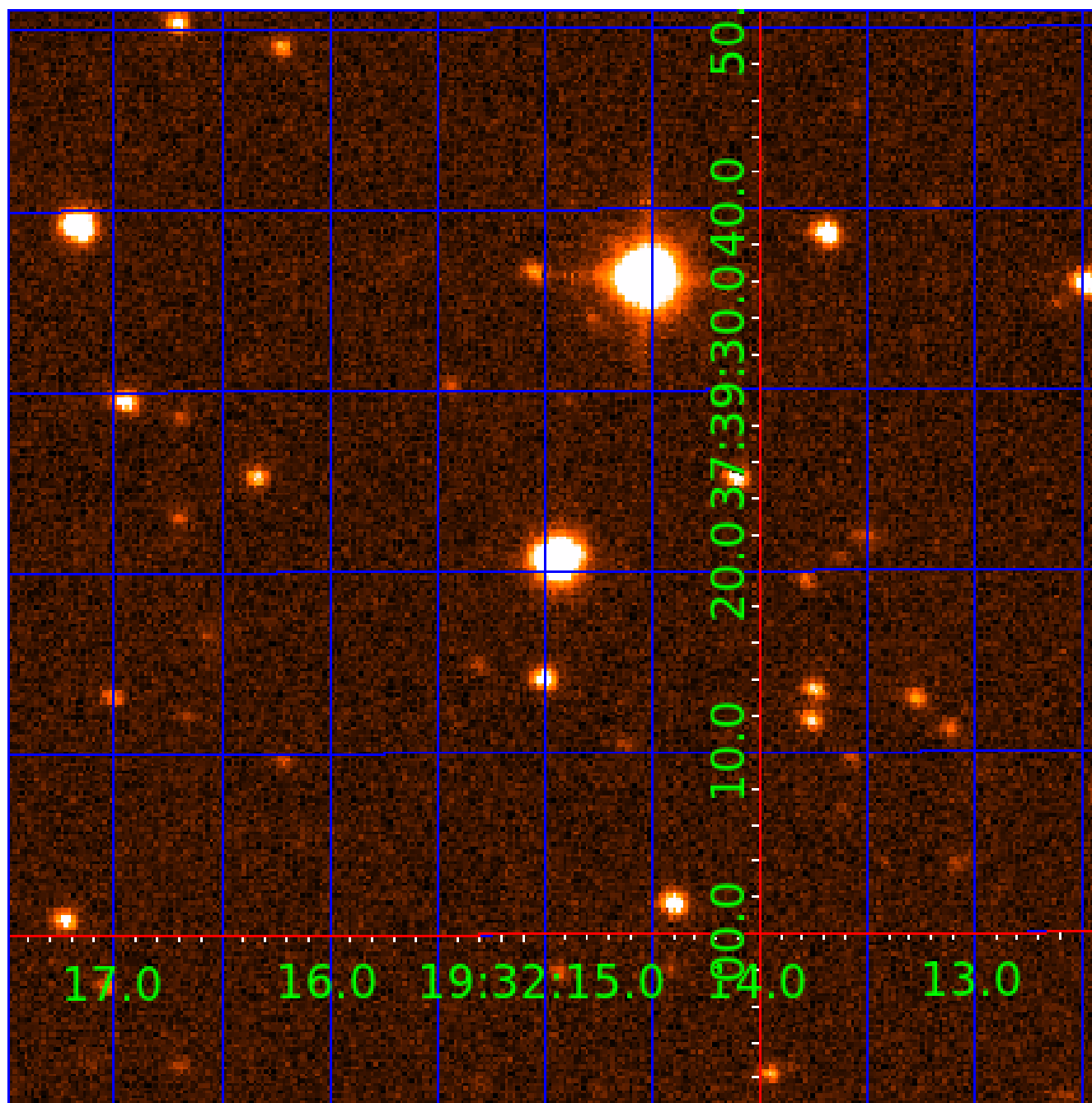


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 002310284

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})
002310284-01	OBS	No	677.258979	152.439967	7783.0	17.645	23.3	9.2	1.34	6818	12.87	1.27
002310284-02	OBS	No	613.588856	234.603276	9602.3	17.146	13.7	10.5	1.34	6818	14.47	1.45
002310284-03	OBS	No	1.399292	131.614436	64.5	2.723	10.4	4.6	1.34	6818	1.22	4815.01
002310284-04	OBS	No	604.458286	306.785229	7562.1	10.406	16.1	8.2	1.34	6818	12.85	1.48
002310284-05	OBS	No	604.457023	308.309365	7616.3	8.683	15.1	8.1	1.34	6818	20.74	1.48

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
002310284-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS
002310284-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
002310284-03	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV
002310284-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL_TRACKER—LPP_DV—MOD_TER_DV—CENT_FEW_DIFFS
002310284-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—SAME_NTL_PERIOD

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

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

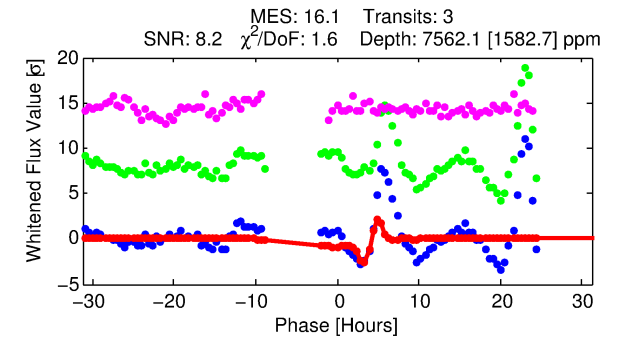
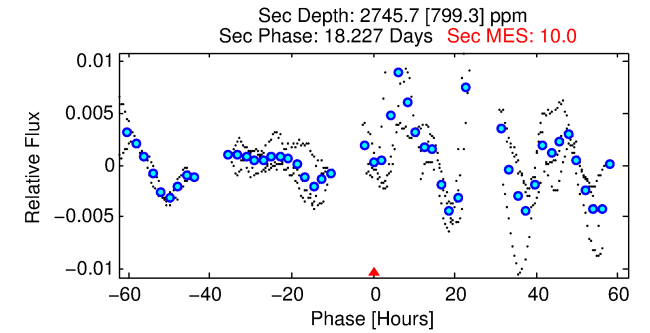
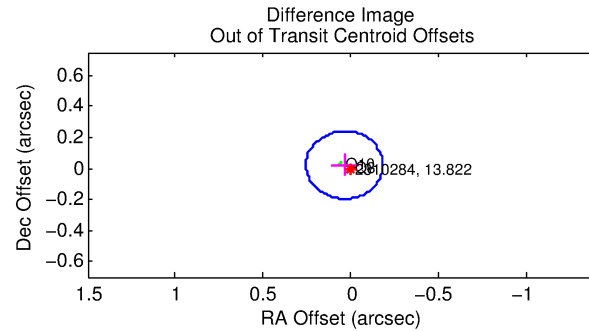
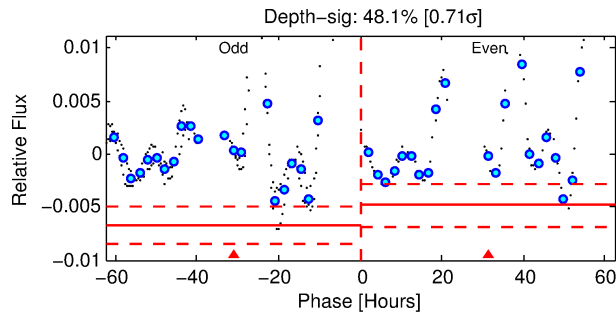
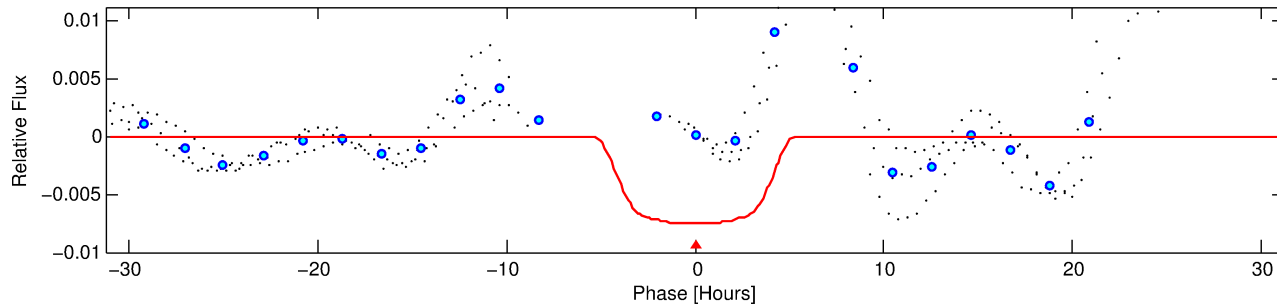
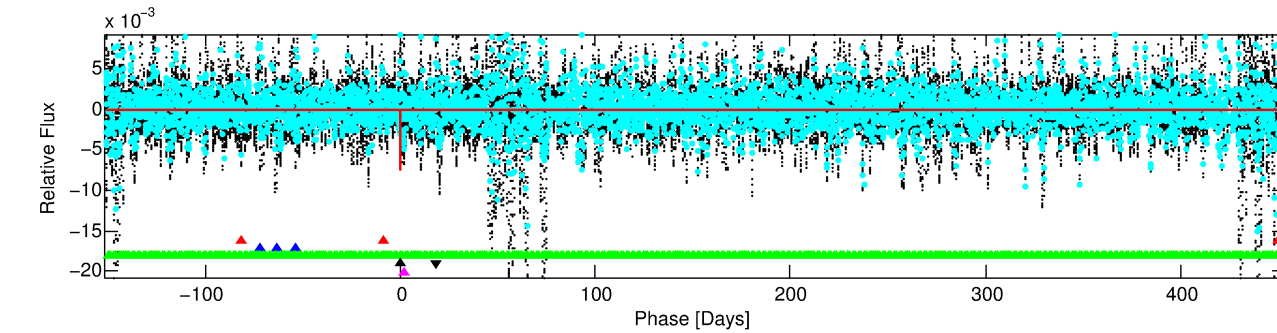
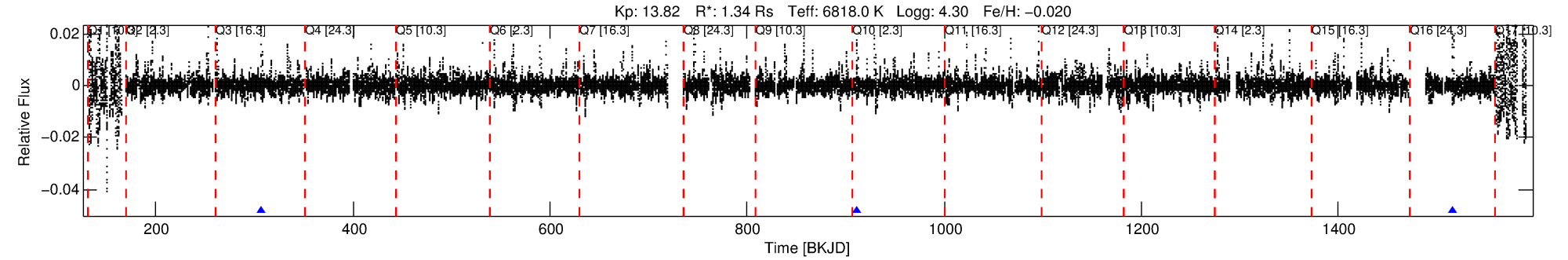
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 002310284-04

No Significant Match Found

DV One-Page Summary

KIC: 2310284 Candidate: 4 of 5 Period: 604.458 d



DV Fit Results:

Period = 604.45829 [0.00661] d
Epoch = 306.7852 [0.0459] BKJD
Rp/R* = 0.0878 [0.0097]
a/R* = 331.33 [69.48]
b = 0.79 [0.05]
Seff = 1.47 [0.63]
Teq = 281 [30] K
Rp = 12.85 [4.52] Re
a = 1.5366 [0.4224] AU
Ag = 21597.28 [11578.82] [1.87 σ]
Teff = 5267 [529] K [9.41 σ]

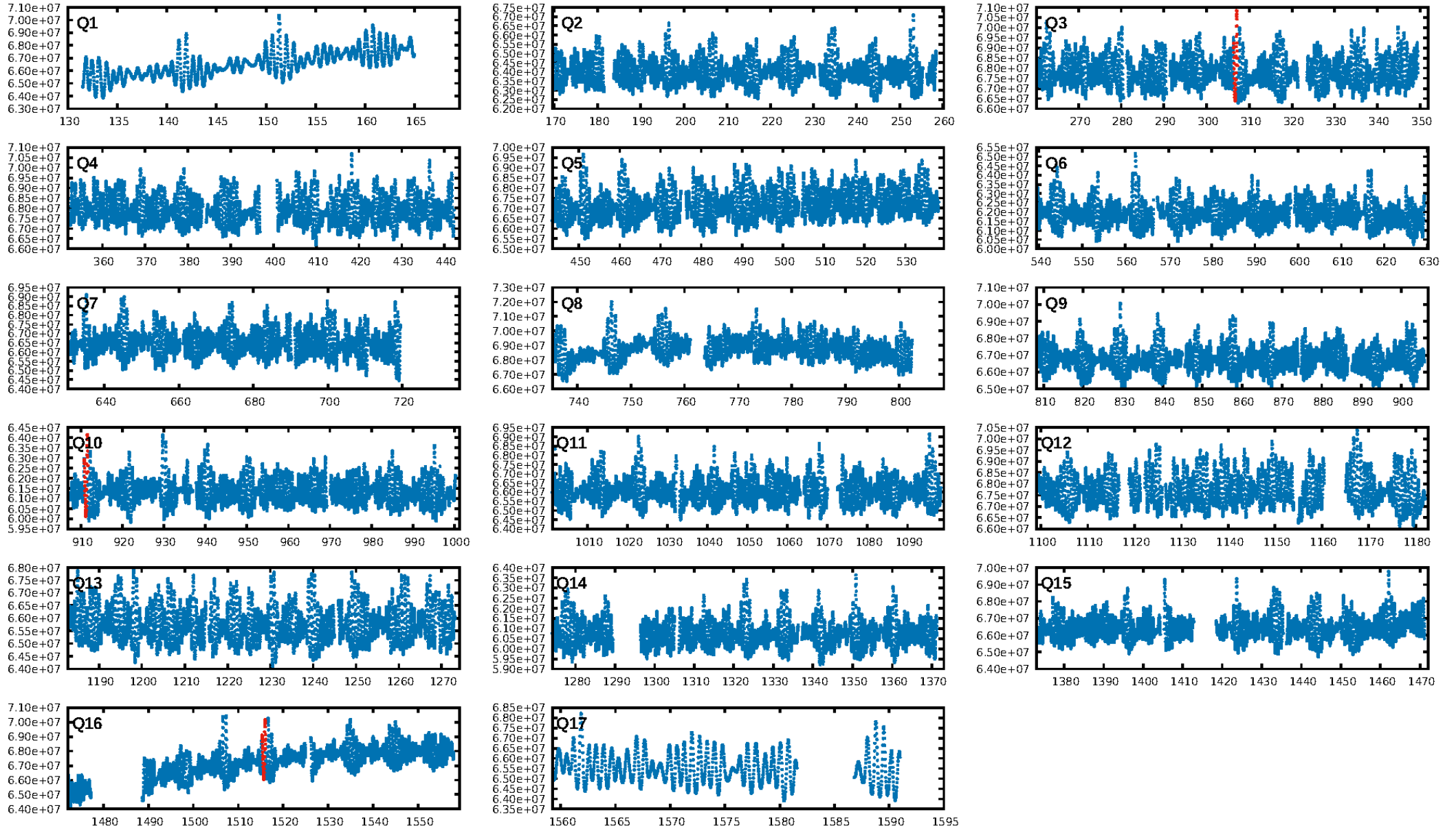
DV Diagnostic Results:

ShortPeriod-sig: 0.2% [0.00 σ]
LongPeriod-sig: 100.0% [10.93 σ]
ModelChiSquare2-sig: 1.0%
ModelChiSquareGof-sig: 99.6%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 6.411
Centroid-sig: 60.6%
Centroid-so: 0.342 arcsec [2.51 σ]
OotOffset-rm: 0.044 arcsec [0.60 σ]
KicOffset-rm: 0.072 arcsec [1.03 σ]
OotOffset-st: 1/1/0/0 [2]
KicOffset-st: 1/1/0/0 [2]
DiffImageQuality-fgm: 1.00 [2/2]
DiffImageOverlap-fno: 0.00 [0/2]

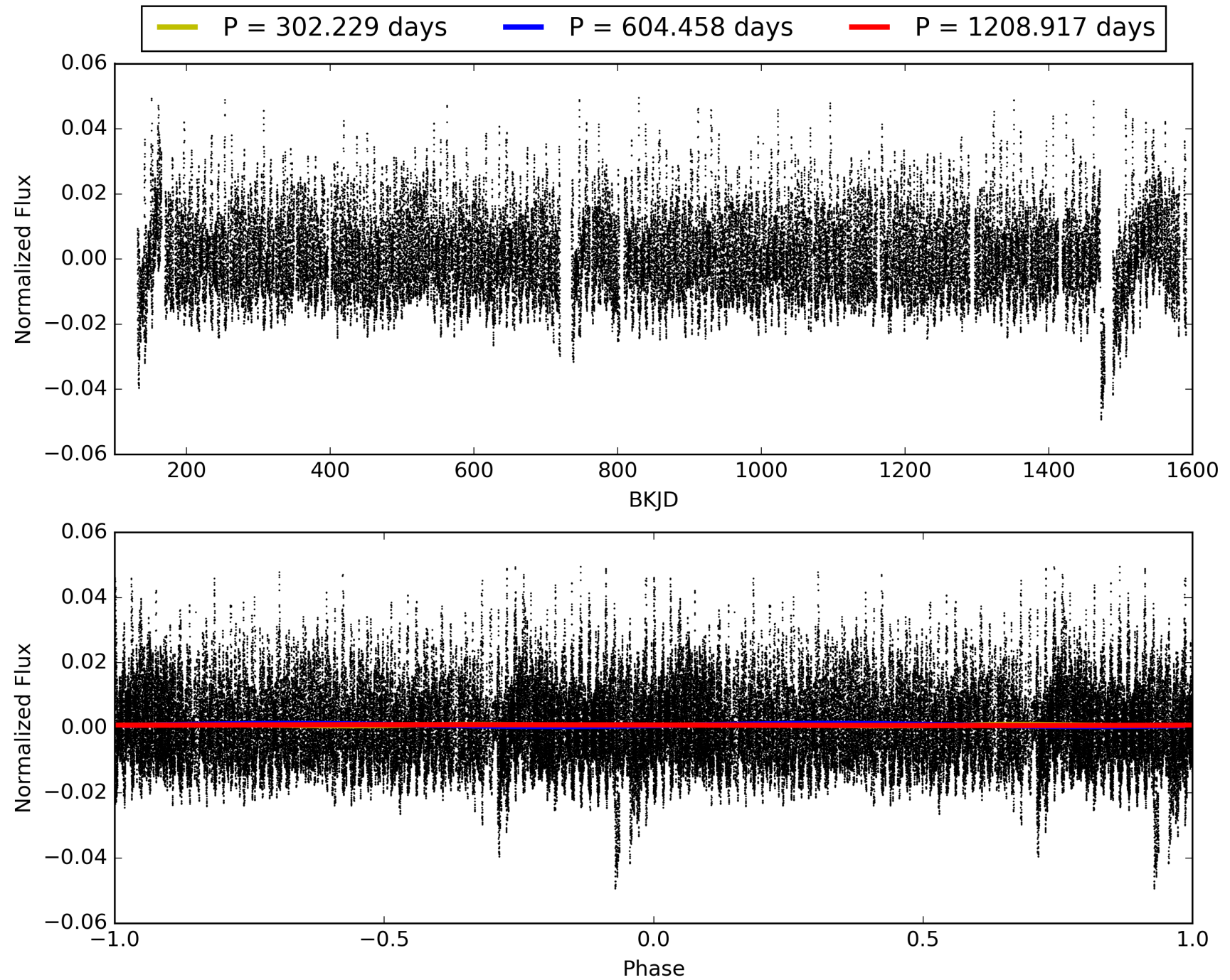
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 06:12:45 Z

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

TCE 002310284-04, PDC Light Curves

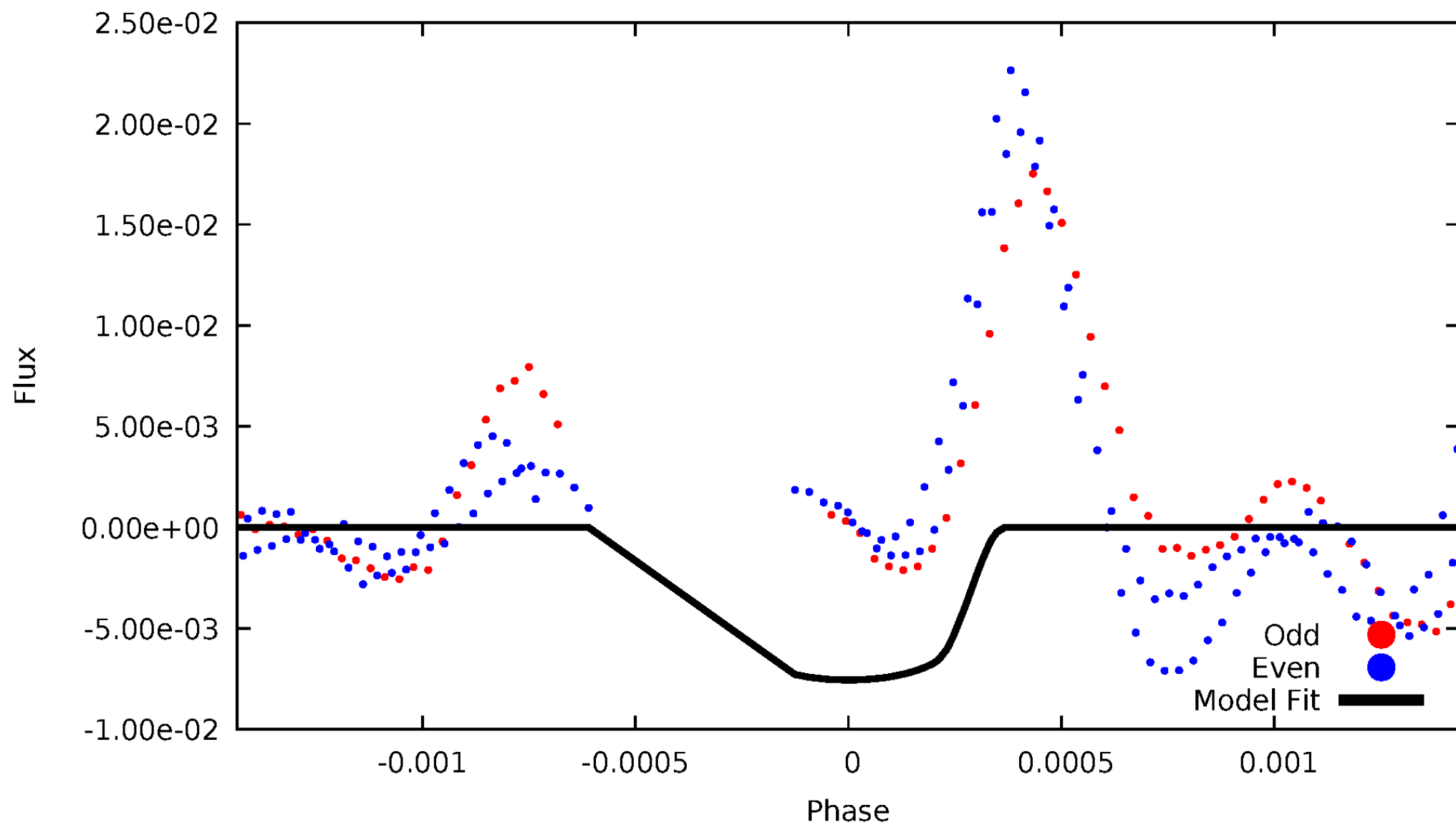


TCE 002310284-04



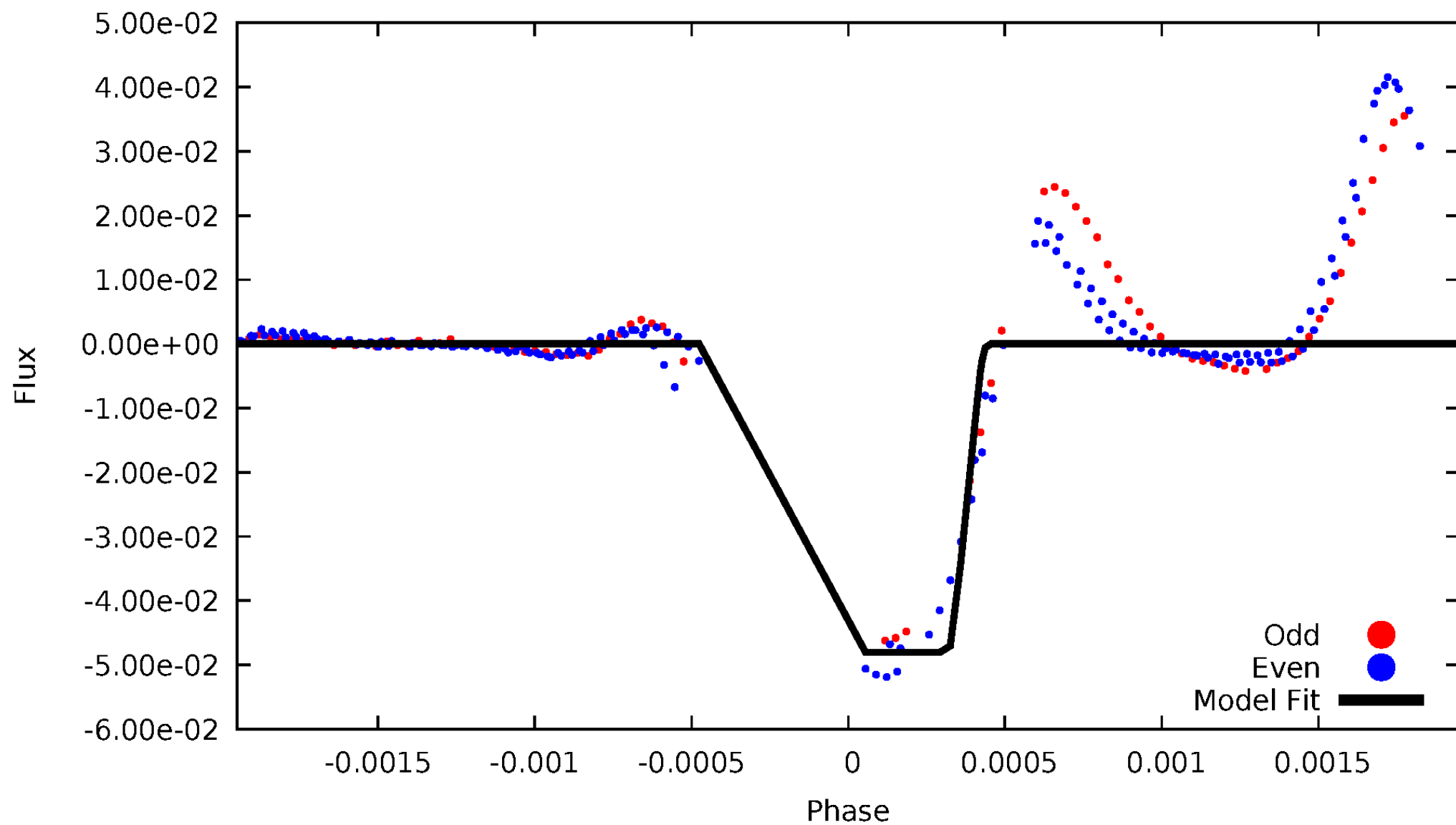
DV Odd/Even

TCE 002310284-04



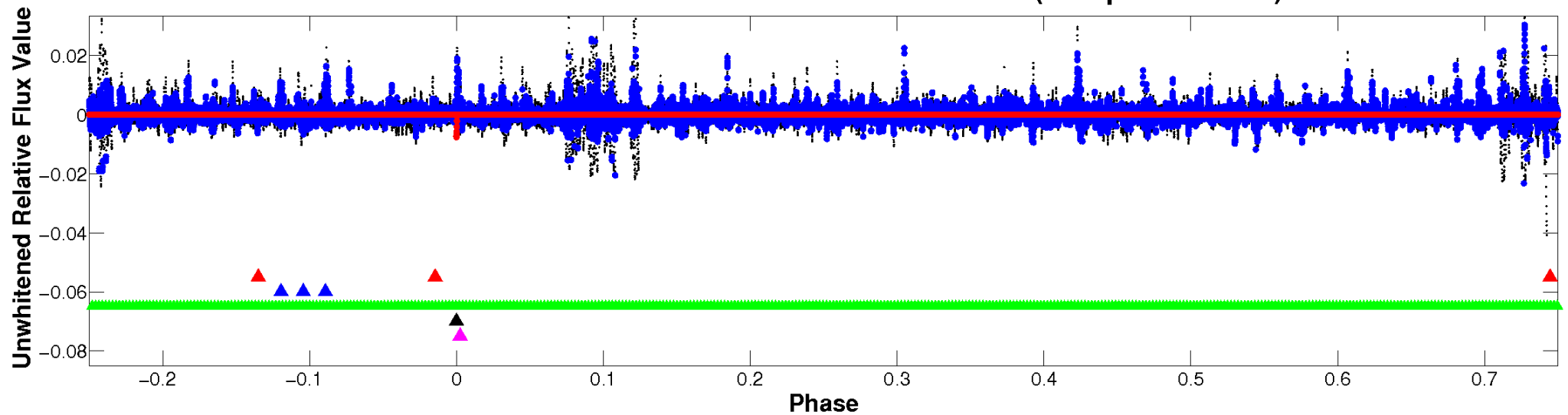
ALT Odd/Even

TCE 002310284-04

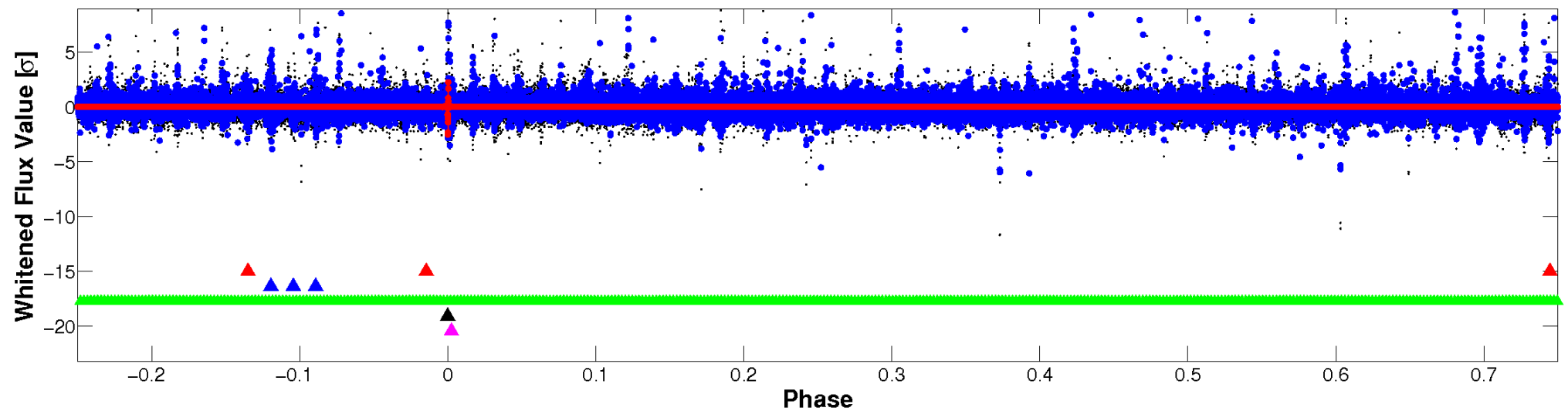


Non-Whitened Vs. Whitened Light Curve

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

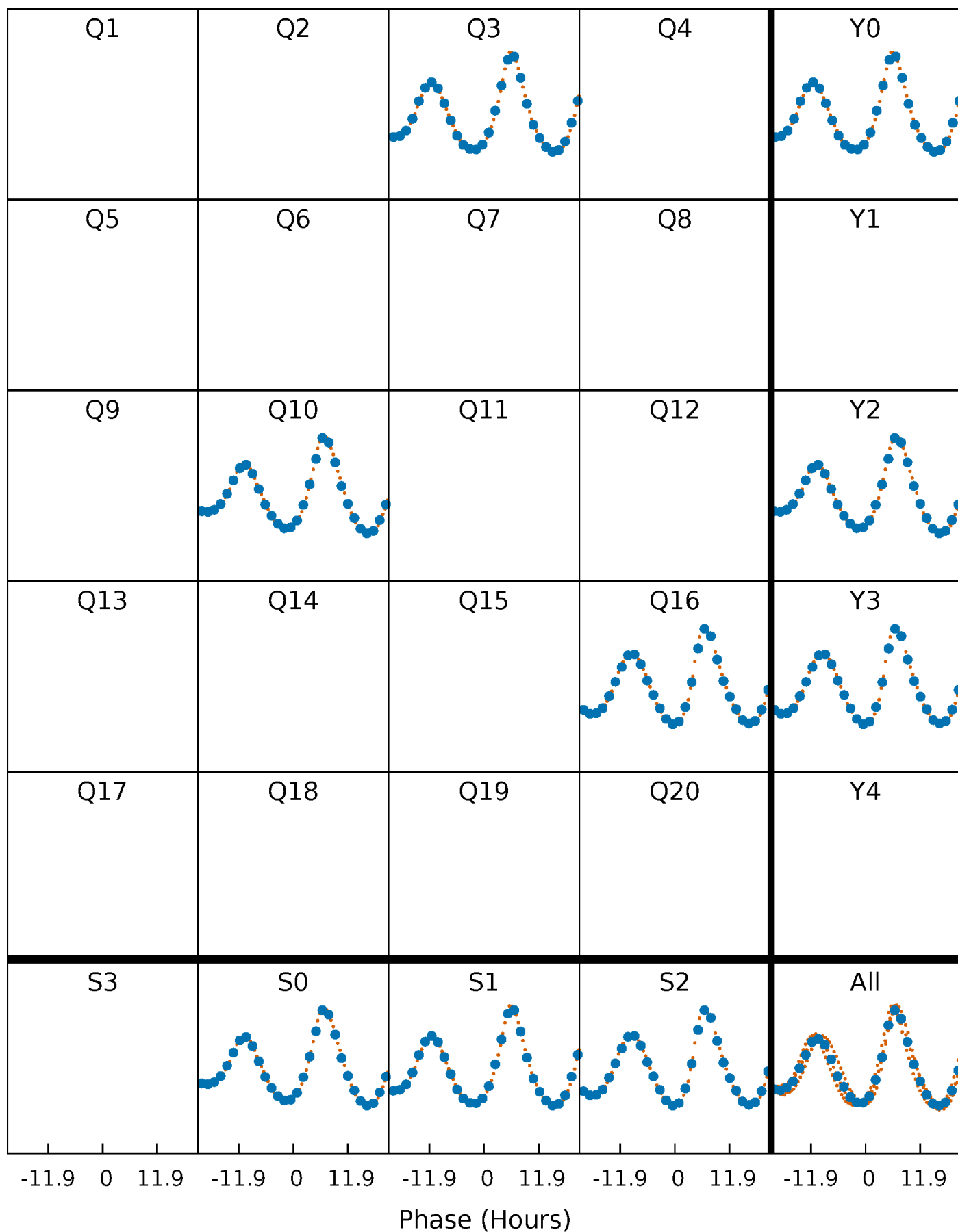


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



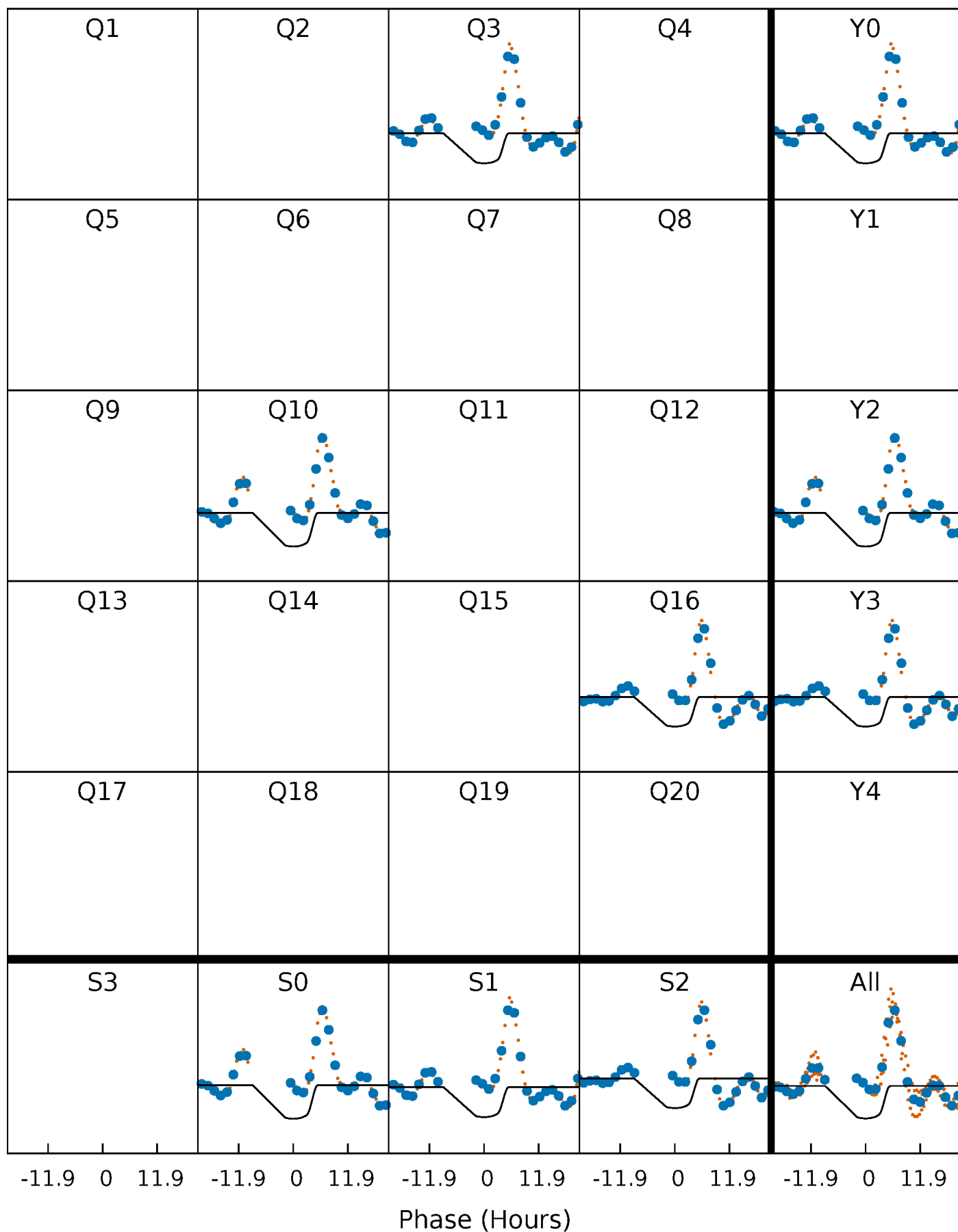
PDC Quarter-Phased Transit Curves

TCE 002310284-04 $P=604.458286$ Days $T_0=306.785229$ (BKJD)



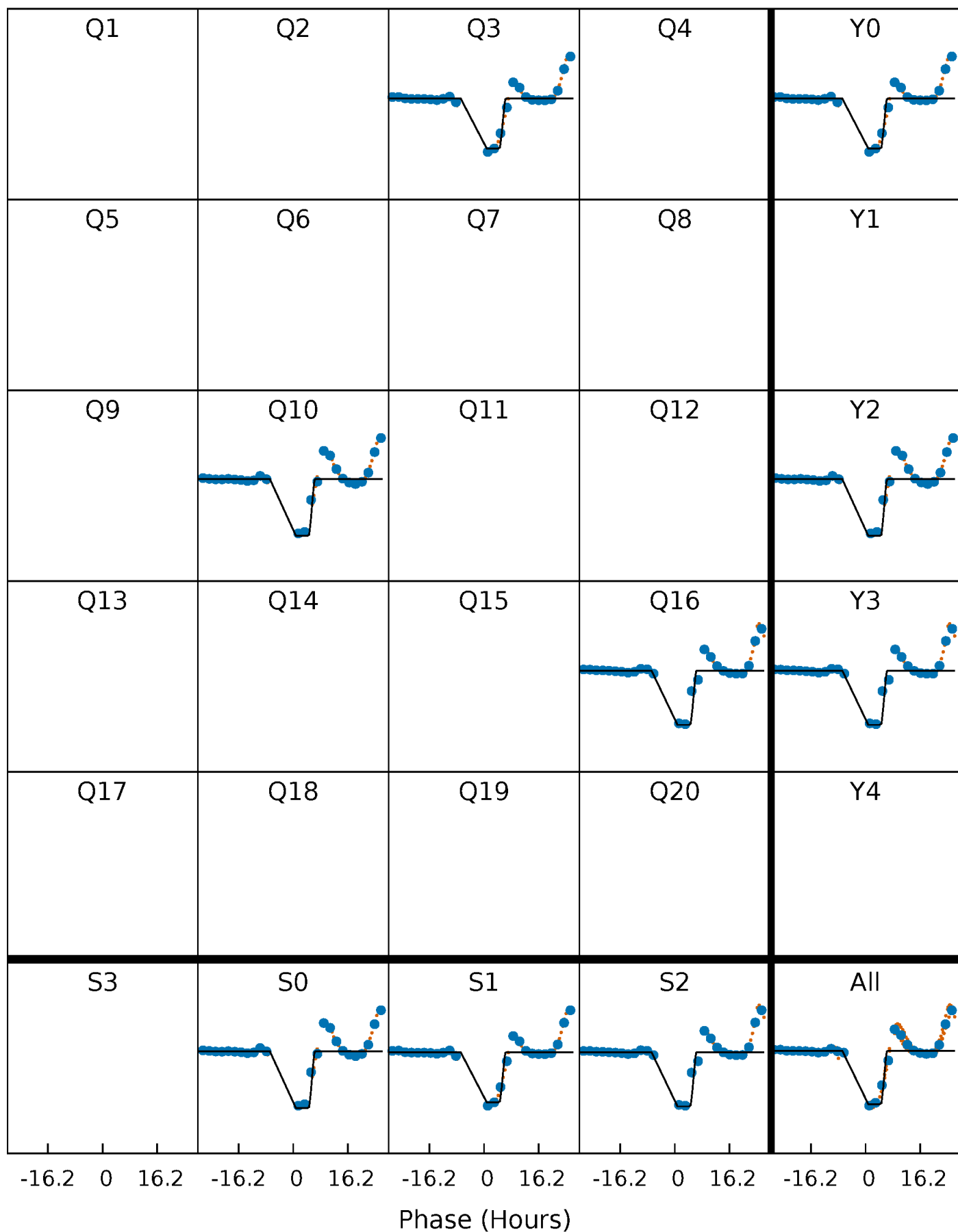
DV Quarter-Phased Transit Curves

TCE 002310284-04 $P=604.458286$ Days $T_0=306.785229$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

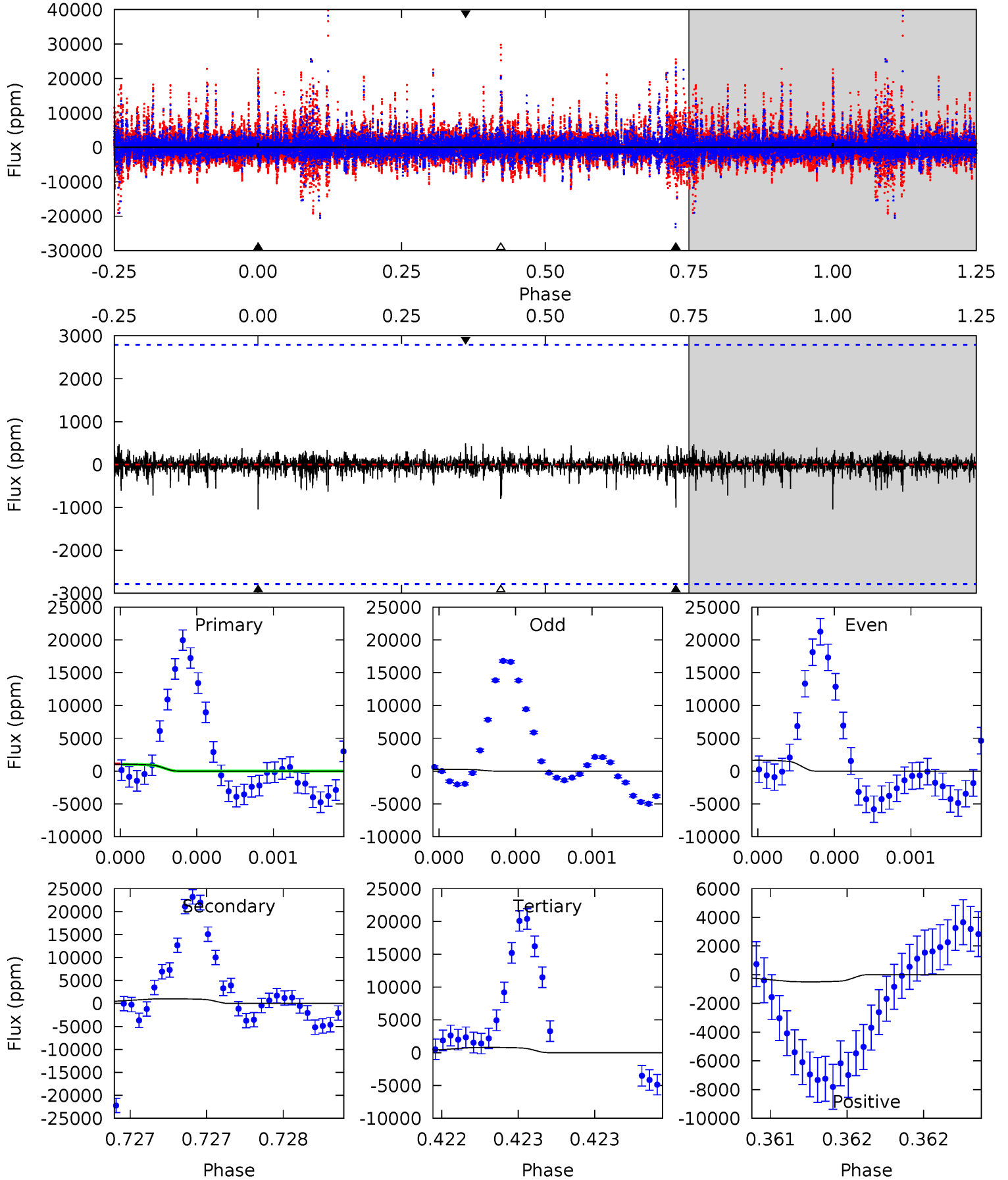
TCE 002310284-04 $P=604.472383$ Days $T_0=306.676211$ (BKJD)



DV Model-Shift Uniqueness Test

002310284-04, P = 604.458286 Days, E = 306.785229 Days

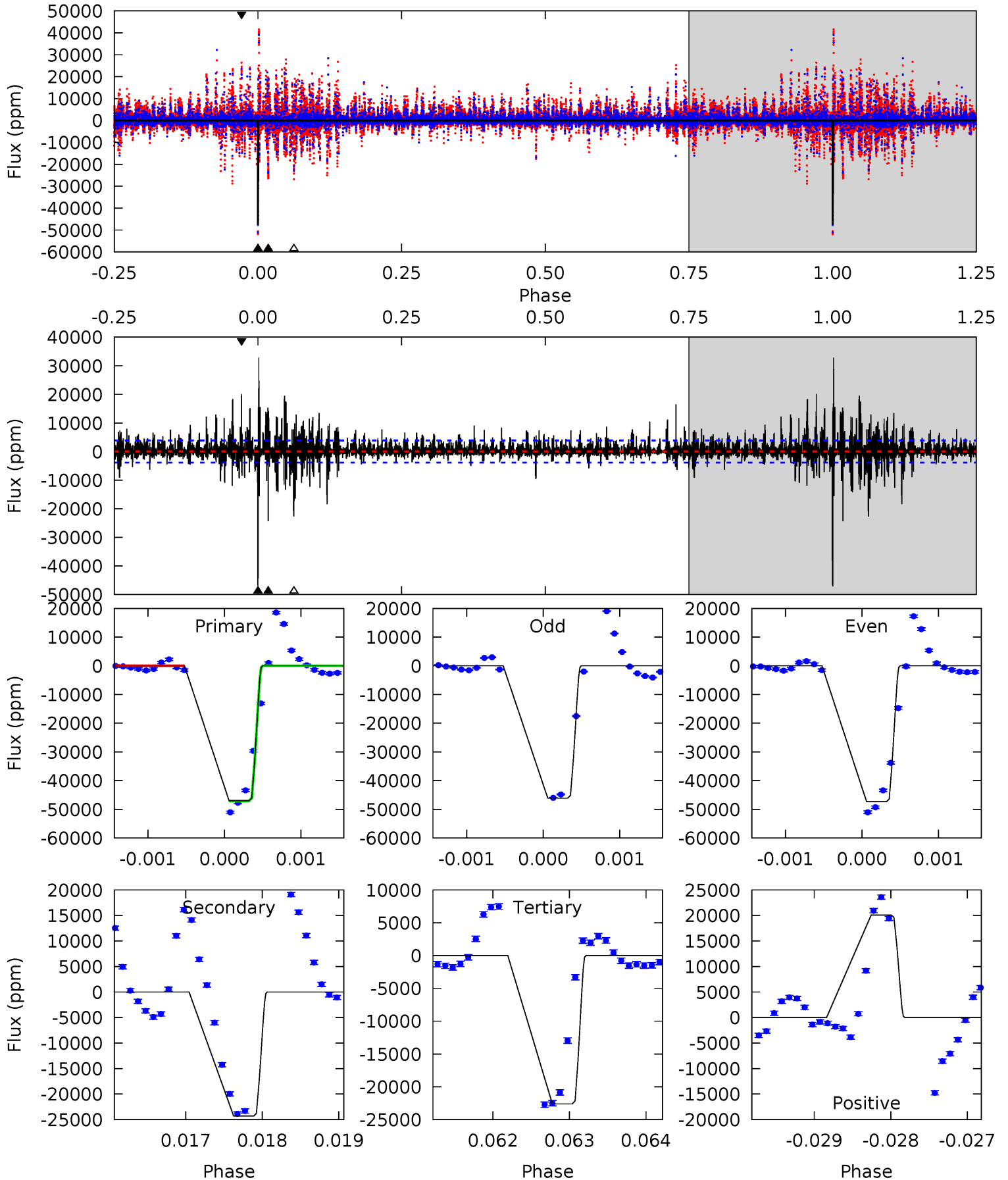
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2.09	2.00	1.59	0.99	5.57	3.48	0.25	0.50	1.10	0.41	1.02	1.25	1.21	0.32	0.05



Alt Model-Shift Uniqueness Test

002310284-04, P = 604.472383 Days, E = 306.676211 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
66.4	34.3	31.9	28.3	5.47	3.32	3.25	34.5	38.1	2.40	5.97	0.70	1.00	0.41	0



Stellar Parameters For KIC 002310284

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6818^{+165}_{-283}	$4.305^{+0.070}_{-0.210}$	$-0.020^{+0.250}_{-0.350}$	$1.341^{+0.448}_{-0.192}$	$1.331^{+0.190}_{-0.190}$	$0.777^{+0.297}_{-0.411}$
	+2%/-4%	+2%/-5%	+1250%/-1750%	+33%/-14%	+14%/-14%	+38%/-53%
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 002310284-04 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-1002 ± 500	$13.21^{+2.64}_{-1.84}$	398^{+31}_{-23}	4273^{+401}_{-479}	6912^{+4556}_{-3482}
Alt.	-24306 ± 708	$32.89^{+6.08}_{-3.28}$	399^{+29}_{-22}	5752^{+180}_{-216}	29340^{+5907}_{-7435}

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 $A_{obs} \gg 1.0$

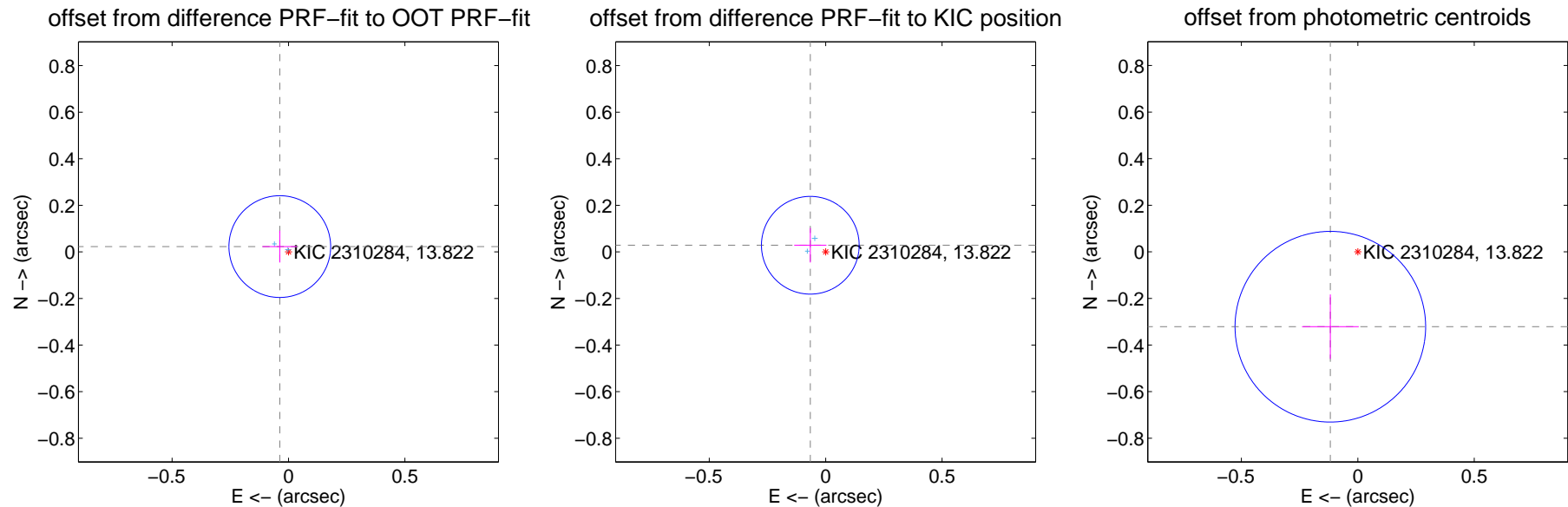
DV Centroid Data

Supplemental centroid analysis for 002310284-04. Kepler magnitude: 13.82. Transit SNR 8.16

There are 2 quarters with good PRF difference image offsets

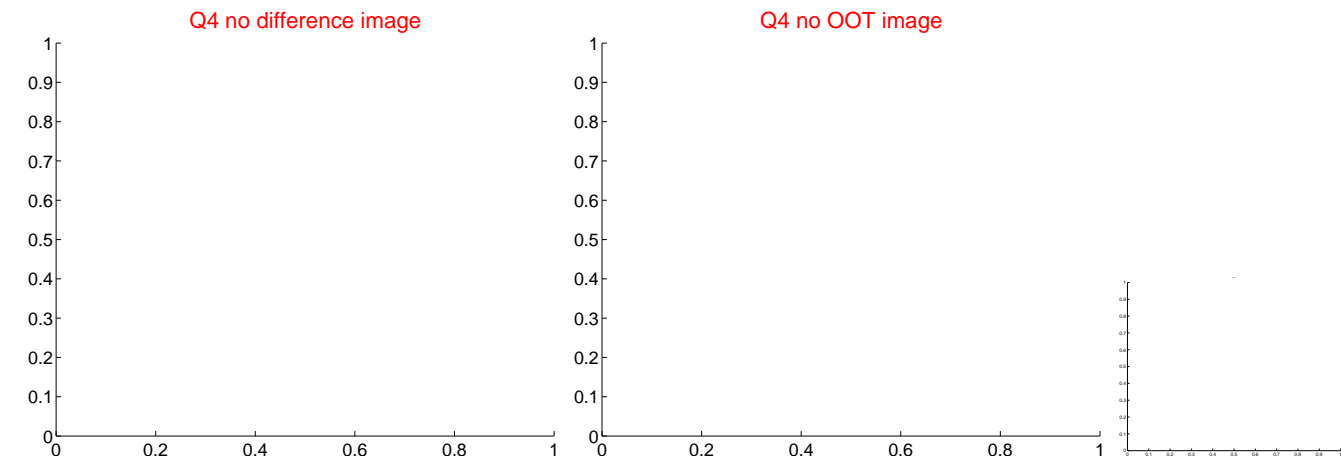
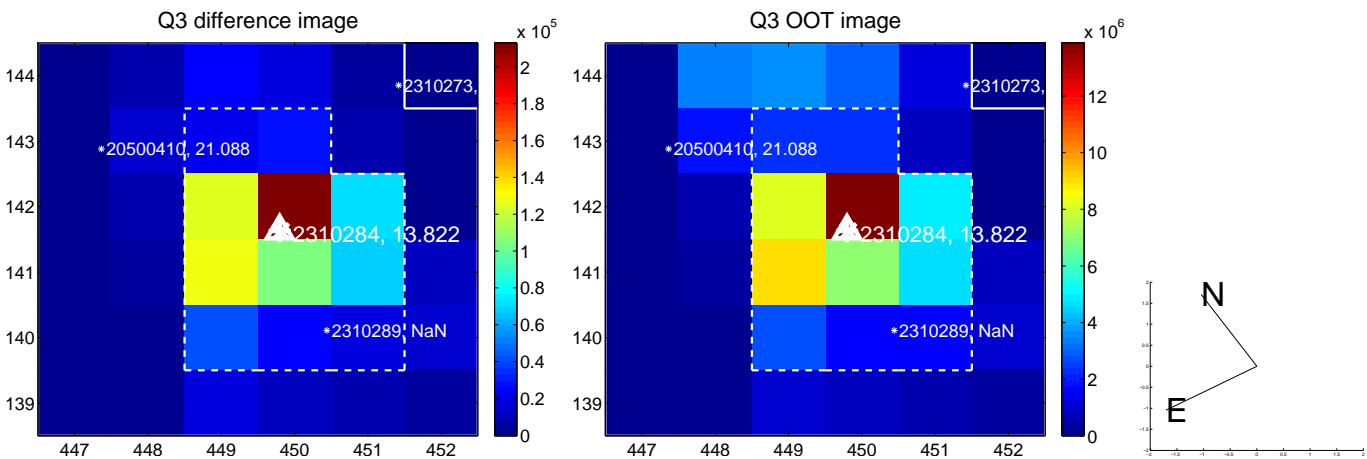
The direct PRF centroid is offset from the target star catalog position by about 0.04 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.044 ± 0.073	0.60	0.037 ± 0.074	0.023 ± 0.068
PRF-fit source offset from KIC position	0.072 ± 0.070	1.03	0.066 ± 0.069	0.029 ± 0.074
photometric centroid source offset	0.34 ± 0.14	2.51	0.12 ± 0.12	-0.32 ± 0.14



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.

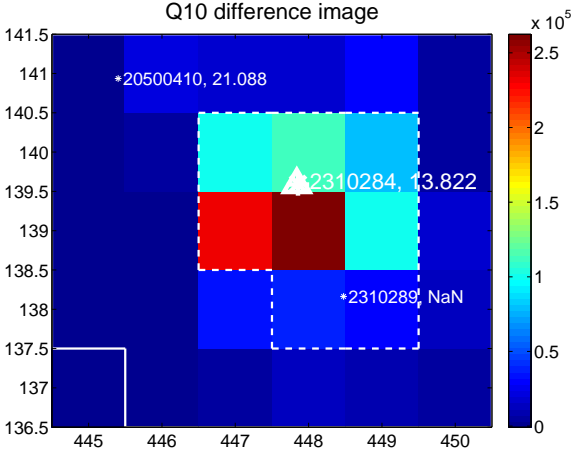
Q9 no difference image



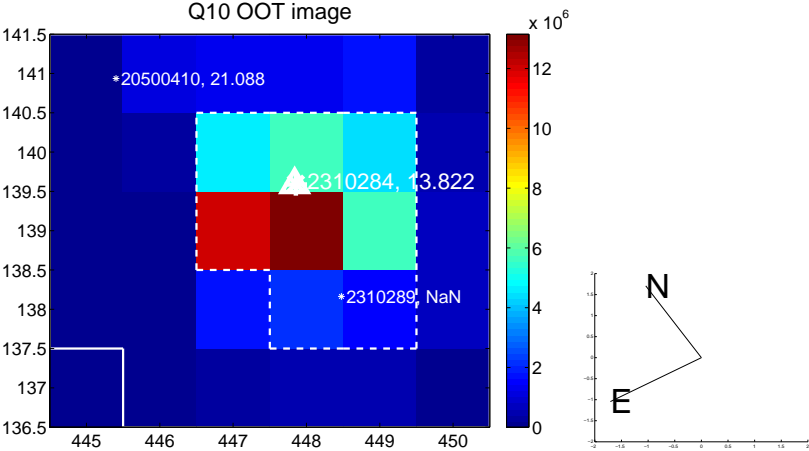
Q9 no OOT image



Q10 difference image



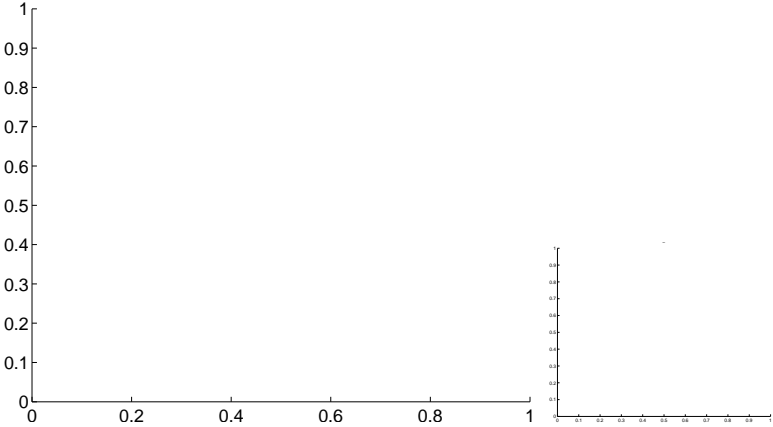
Q10 OOT image



Q11 no difference image



Q11 no OOT image



Q12 no difference image



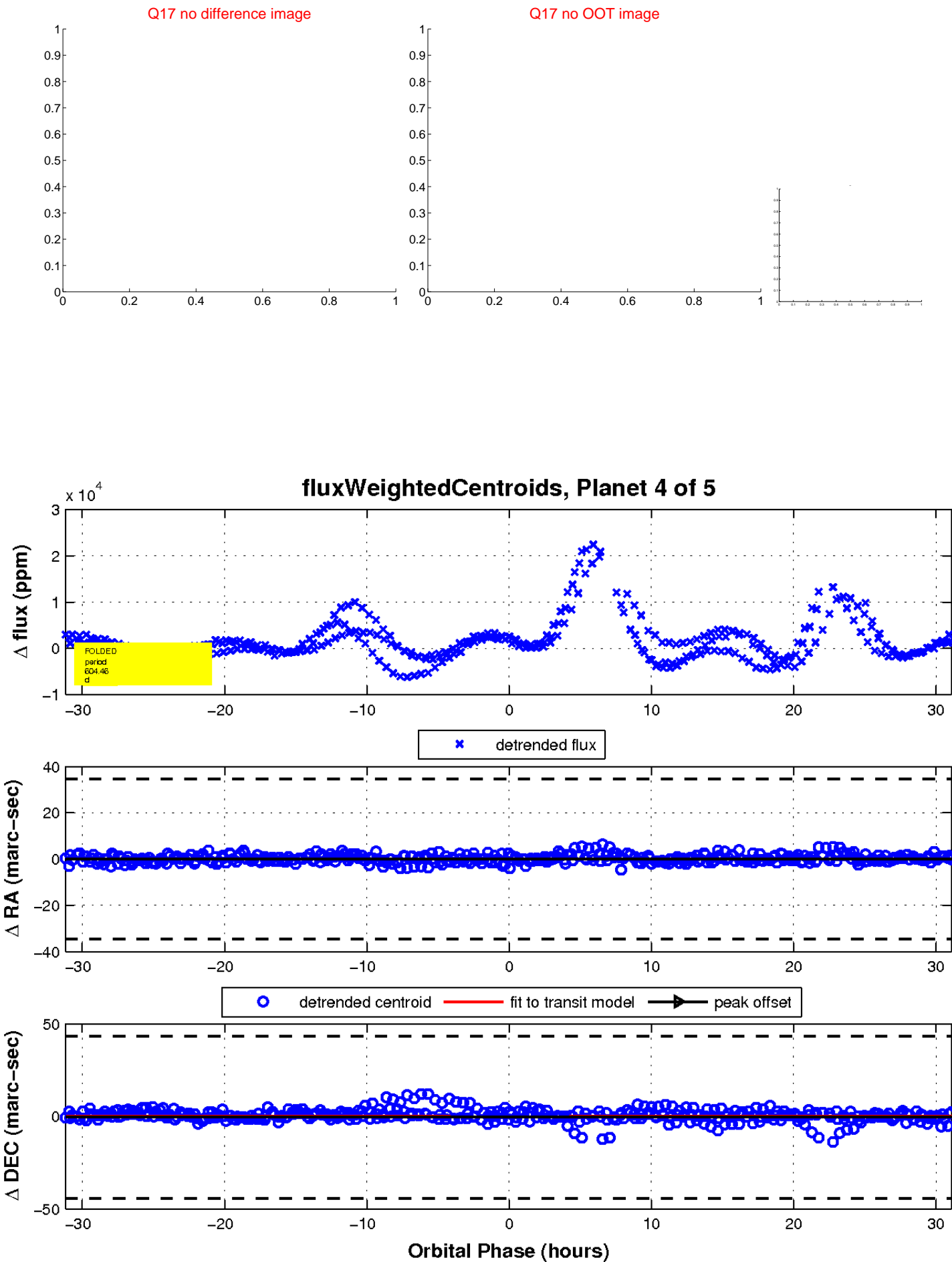
Q12 no OOT image



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

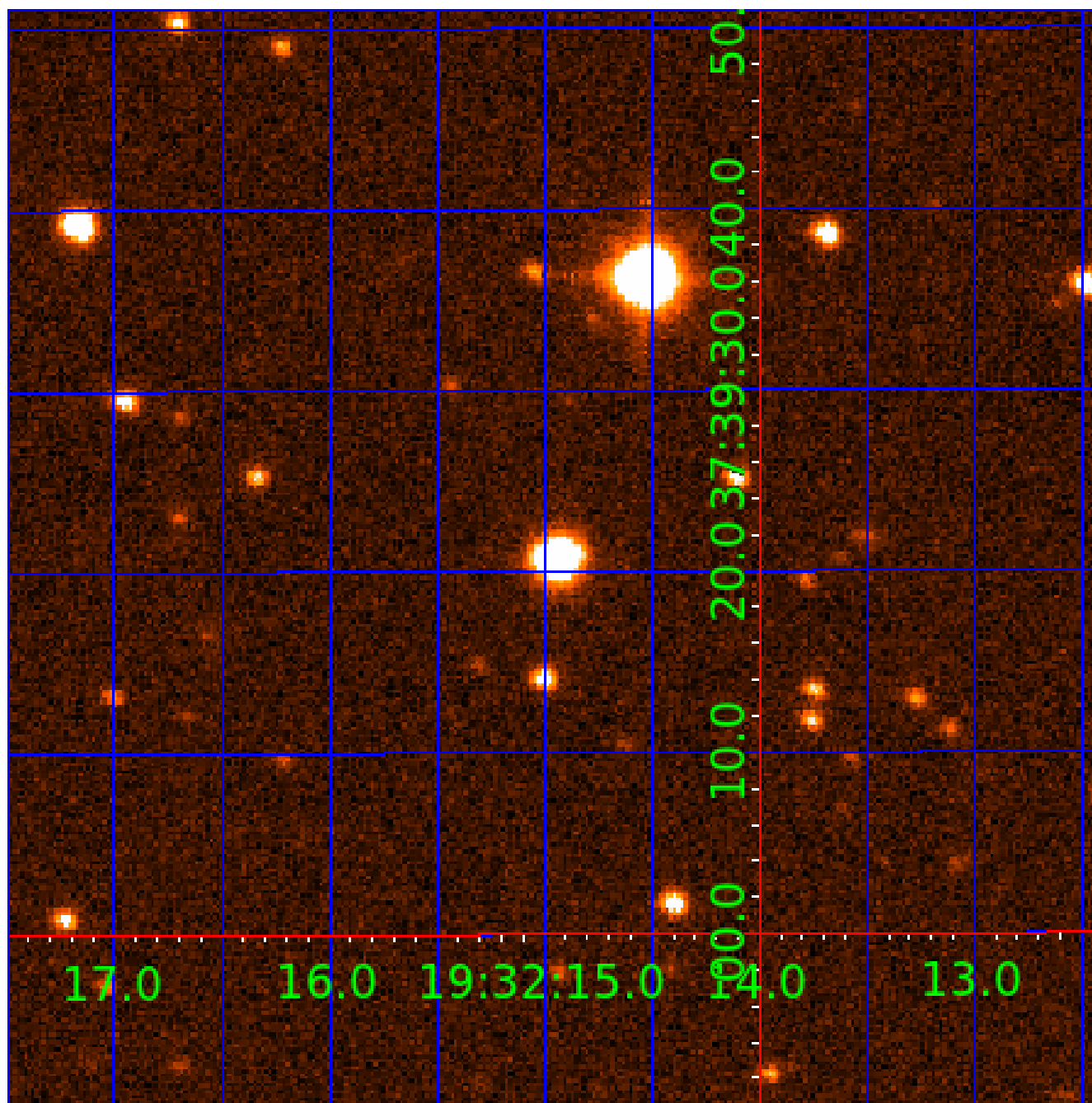


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 002310284

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})
002310284-01	OBS	No	677.258979	152.439967	7783.0	17.645	23.3	9.2	1.34	6818	12.87	1.27
002310284-02	OBS	No	613.588856	234.603276	9602.3	17.146	13.7	10.5	1.34	6818	14.47	1.45
002310284-03	OBS	No	1.399292	131.614436	64.5	2.723	10.4	4.6	1.34	6818	1.22	4815.01
002310284-04	OBS	No	604.458286	306.785229	7562.1	10.406	16.1	8.2	1.34	6818	12.85	1.48
002310284-05	OBS	No	604.457023	308.309365	7616.3	8.683	15.1	8.1	1.34	6818	20.74	1.48

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
002310284-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS
002310284-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
002310284-03	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV
002310284-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL_TRACKER—LPP_DV—MOD_TER_DV—CENT_FEW_DIFFS
002310284-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—SAME_NTL_PERIOD

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

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

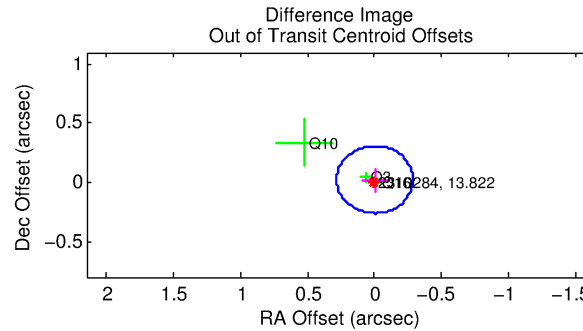
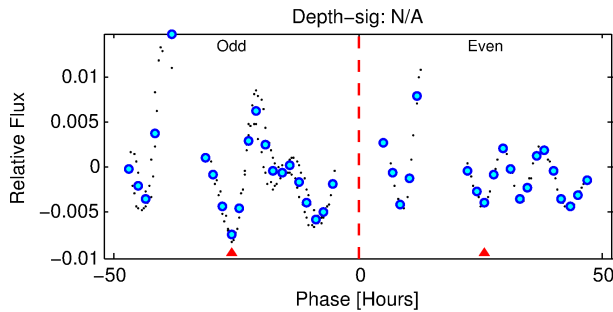
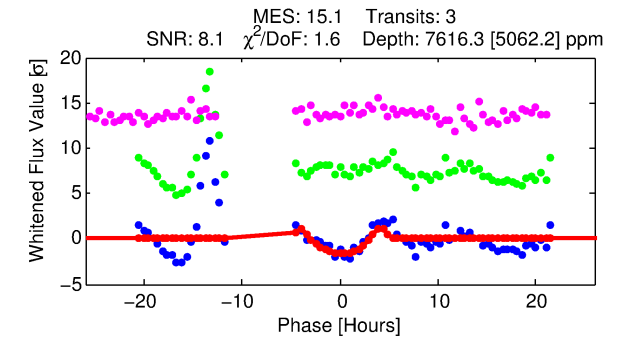
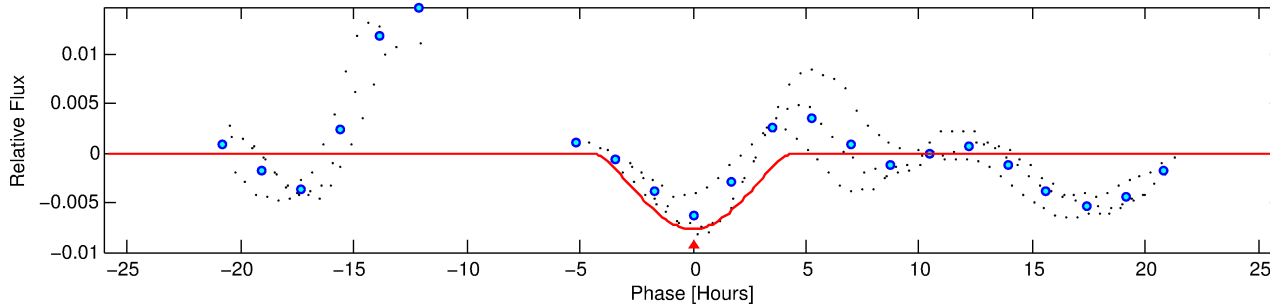
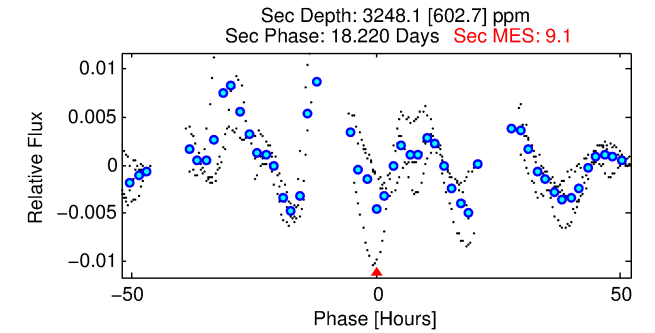
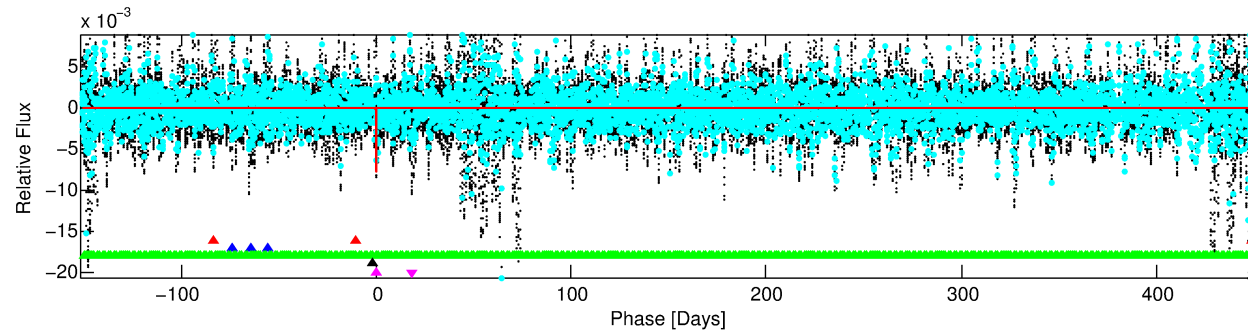
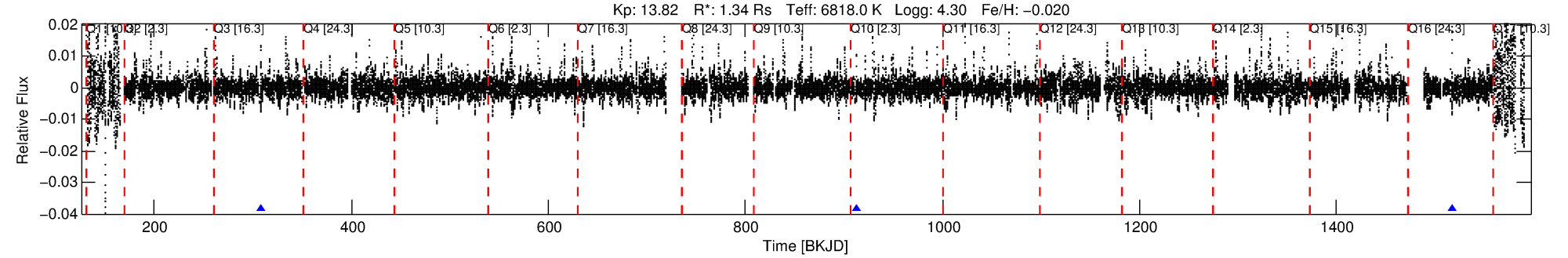
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 002310284-05

No Significant Match Found

DV One-Page Summary

KIC: 2310284 Candidate: 5 of 5 Period: 604.457 d



DV Fit Results:

Period = 604.45702 [0.01292] d
Epoch = 308.3094 [0.0149] BKJD
Rp/R* = 0.1418 [0.2374]
a/R* = 293.05 [76.69]
b = 1.00 [0.27]
Seff = 1.47 [0.63]
Teff = 281 [30] K
Rp = 20.74 [35.42] Re
a = 1.5366 [0.4224] AU
Ag = 9805.06 [33111.06] [0.30σ]
Teffp = 4323 [3629] K [1.1σ]

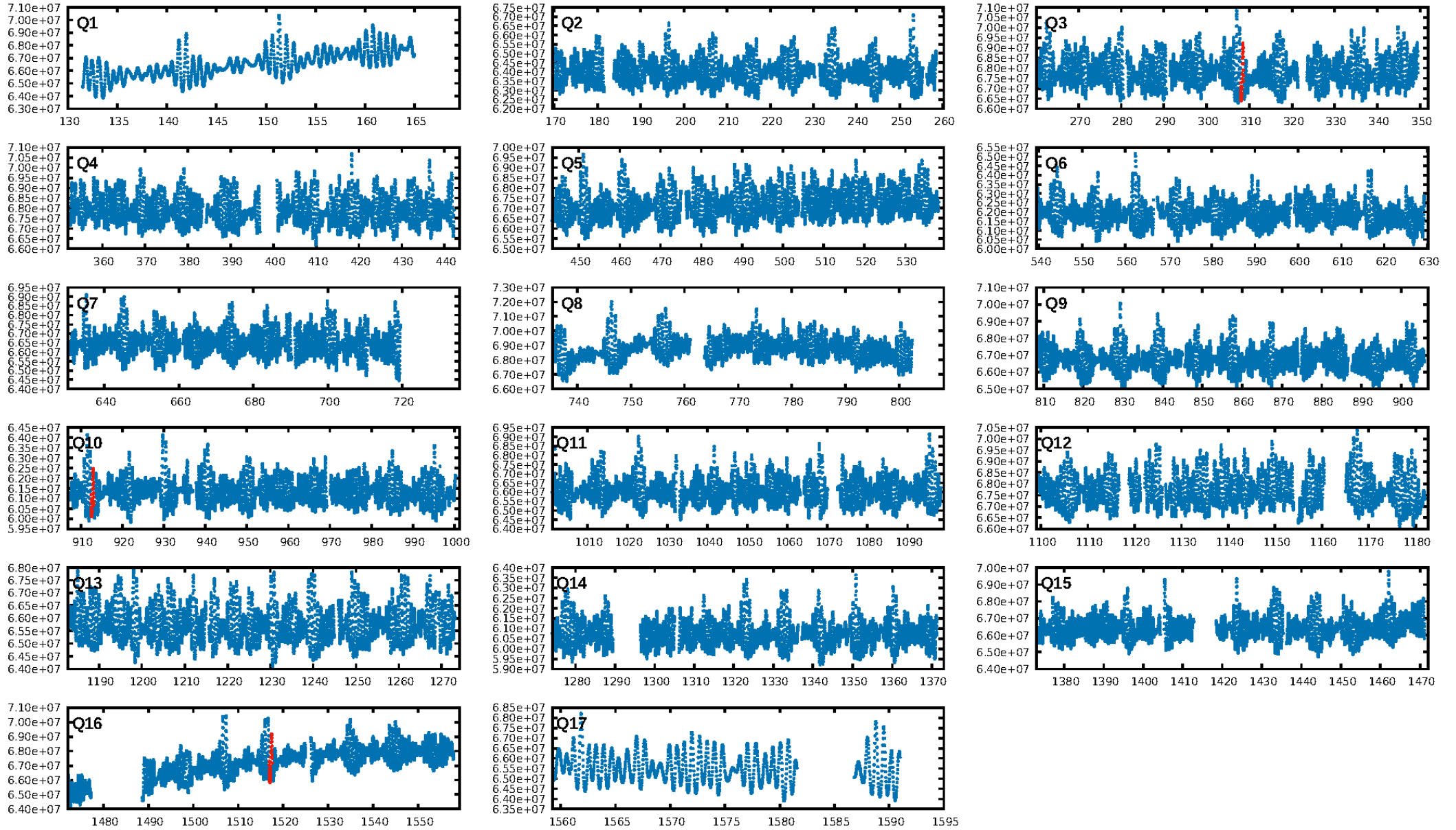
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [1590.53σ]
LongPeriod-sig: 0.2% [0.00σ]
ModelChiSquare2-sig: 8.2%
ModelChiSquareGof-sig: 99.4%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 1.108
Centroid-sig: 96.7%
Centroid-so: 0.429 arcsec [2.43σ]
OotOffset-rm: 0.023 arcsec [0.24σ]
KicOffset-rm: 0.067 arcsec [0.71σ]
OotOffset-st: 1/1/1/0 [3]
KicOffset-st: 1/1/1/0 [3]
DiffImageQuality-fgm: 1.00 [3/3]
DiffImageOverlap-fno: 0.00 [0/3]

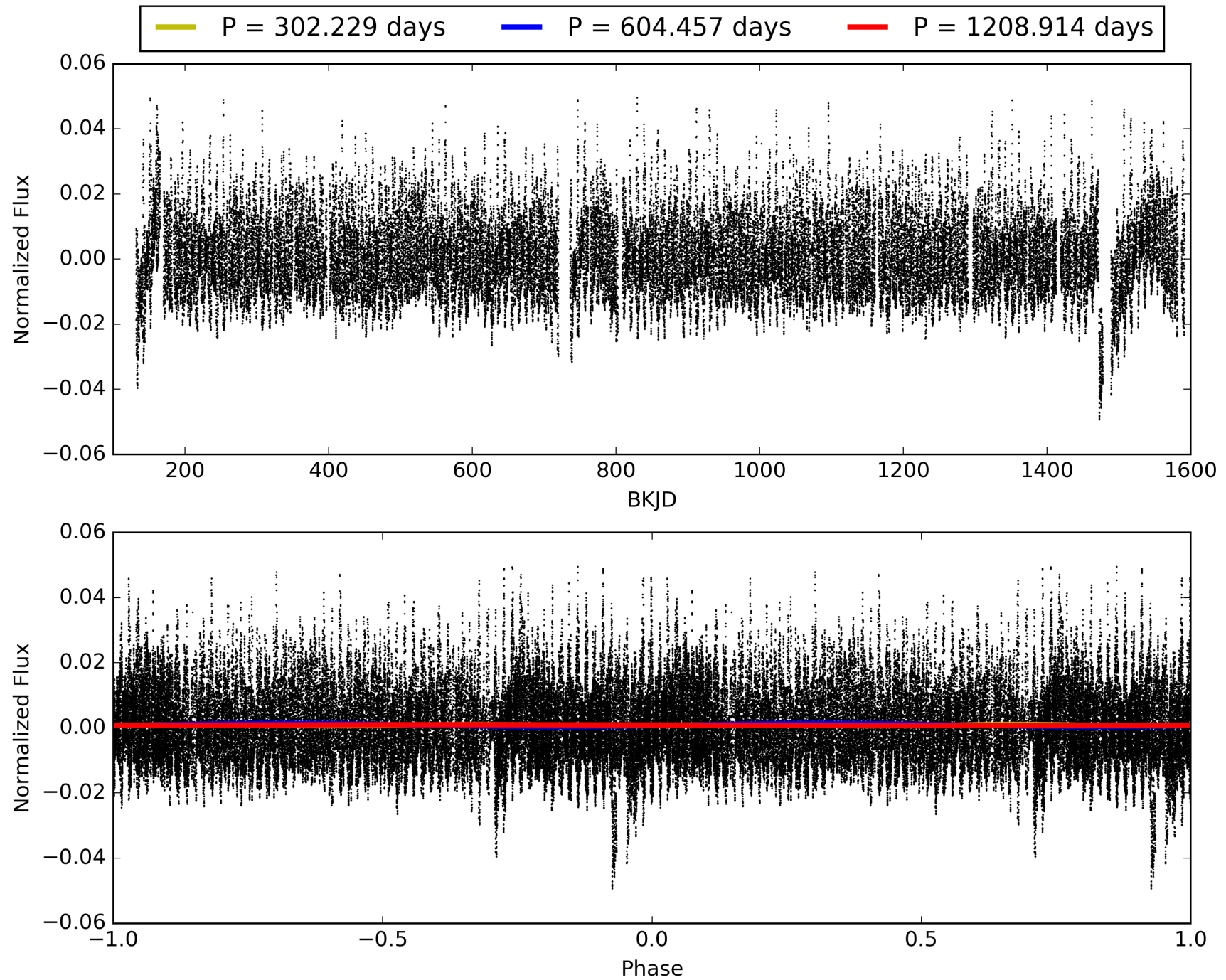
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 06:12:55 Z

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

TCE 002310284-05, PDC Light Curves

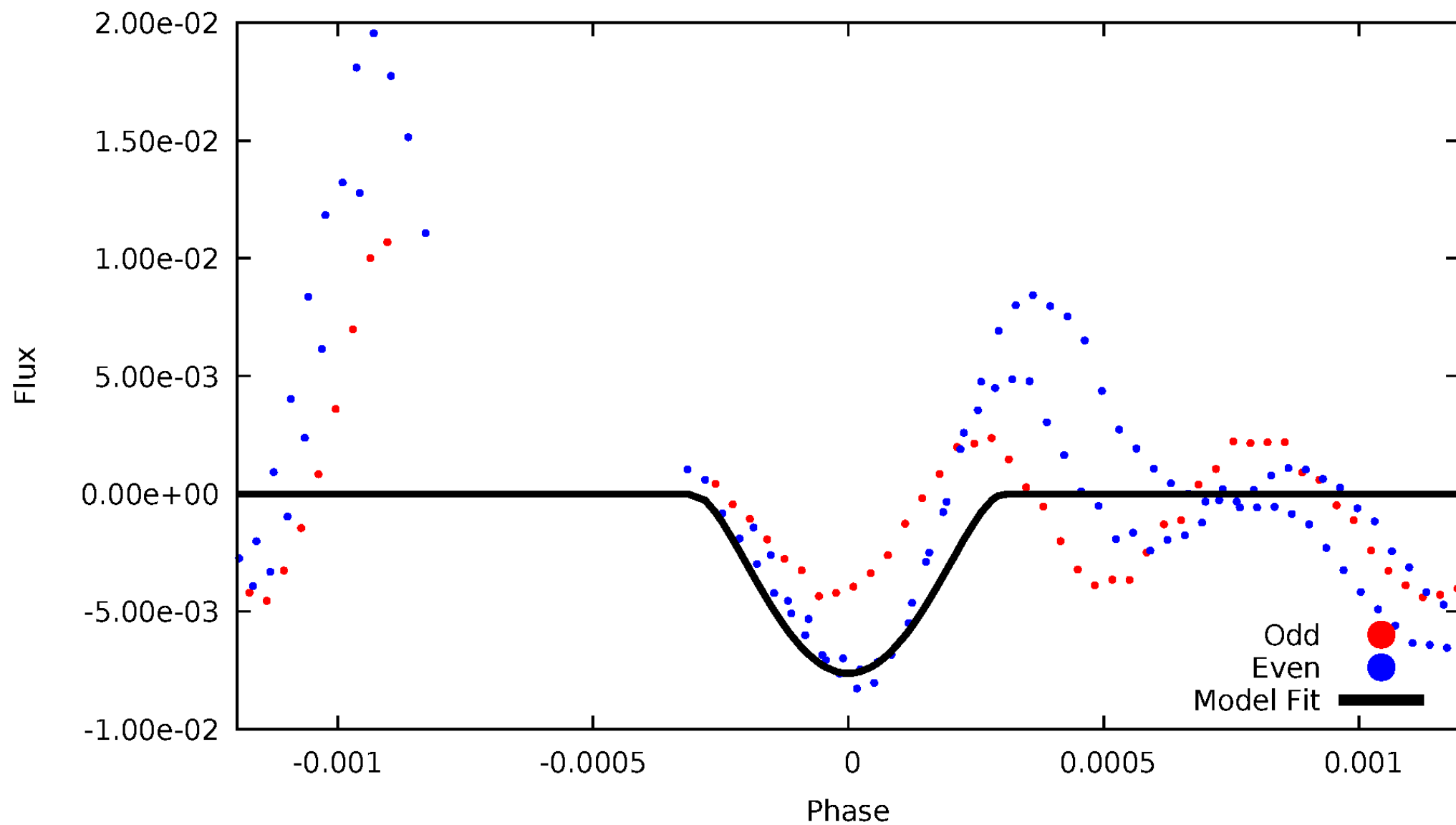


TCE 002310284-05



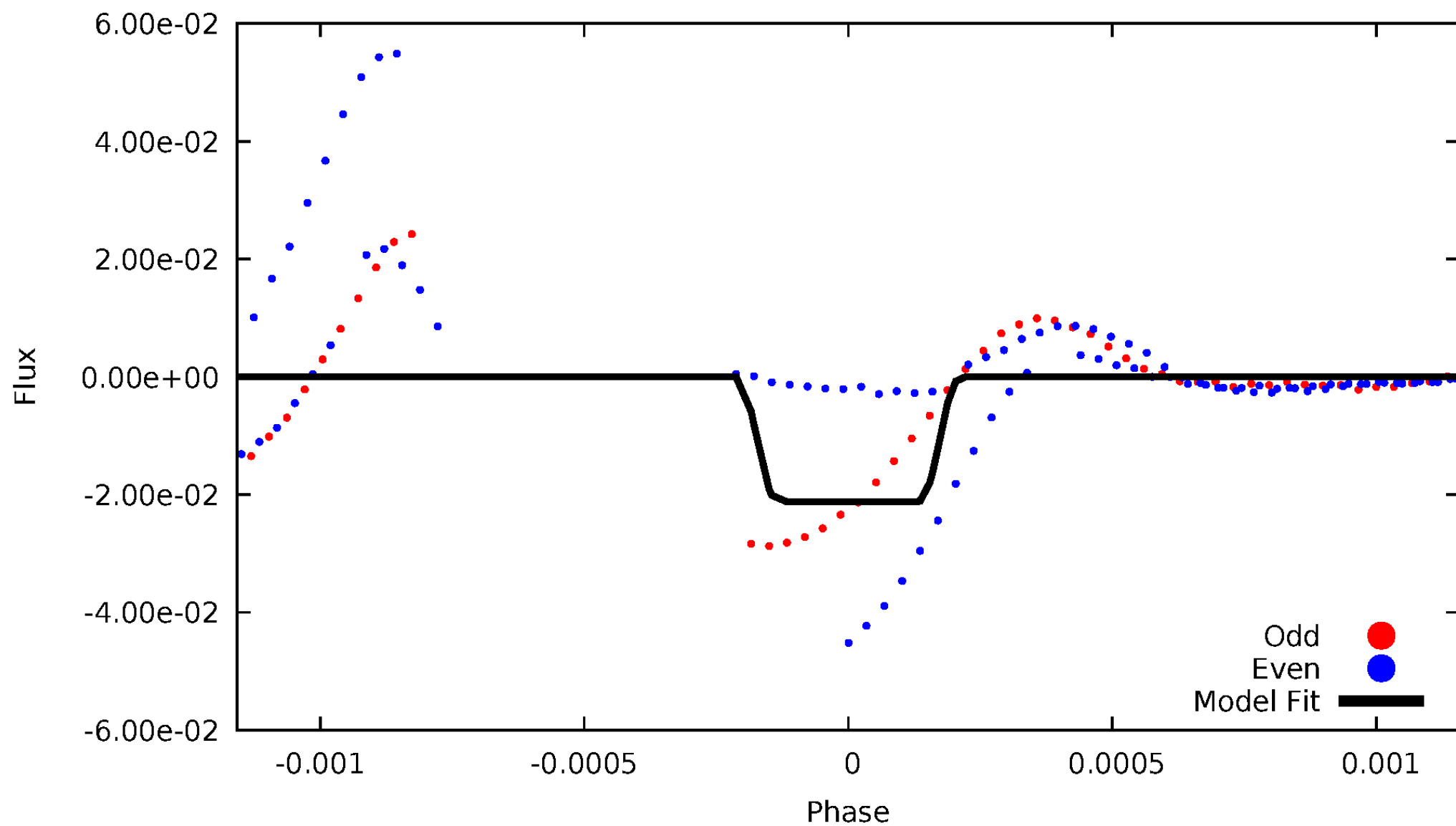
DV Odd/Even

TCE 002310284-05



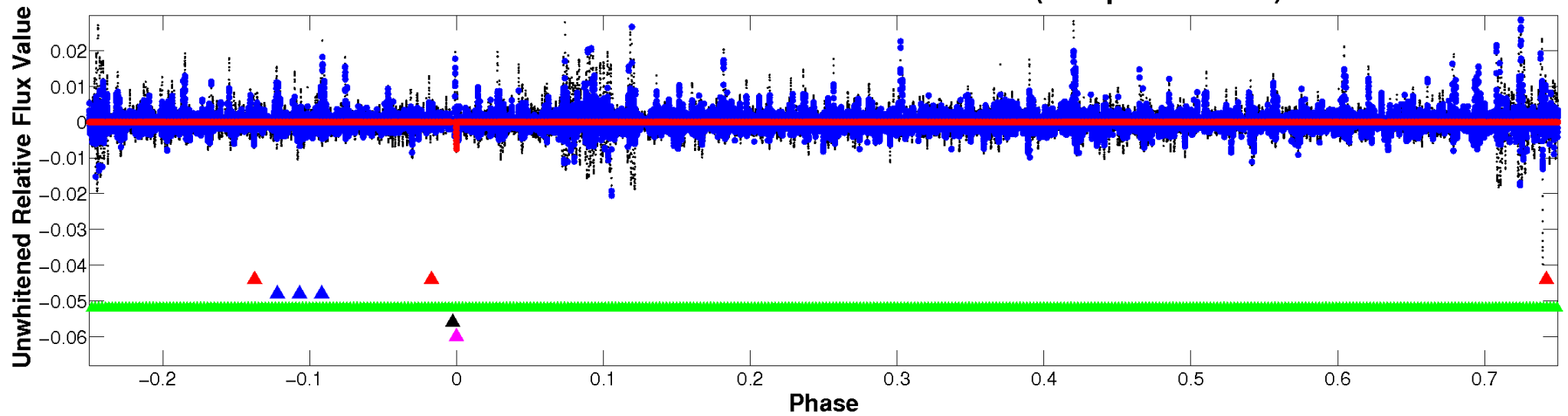
ALT Odd/Even

TCE 002310284-05

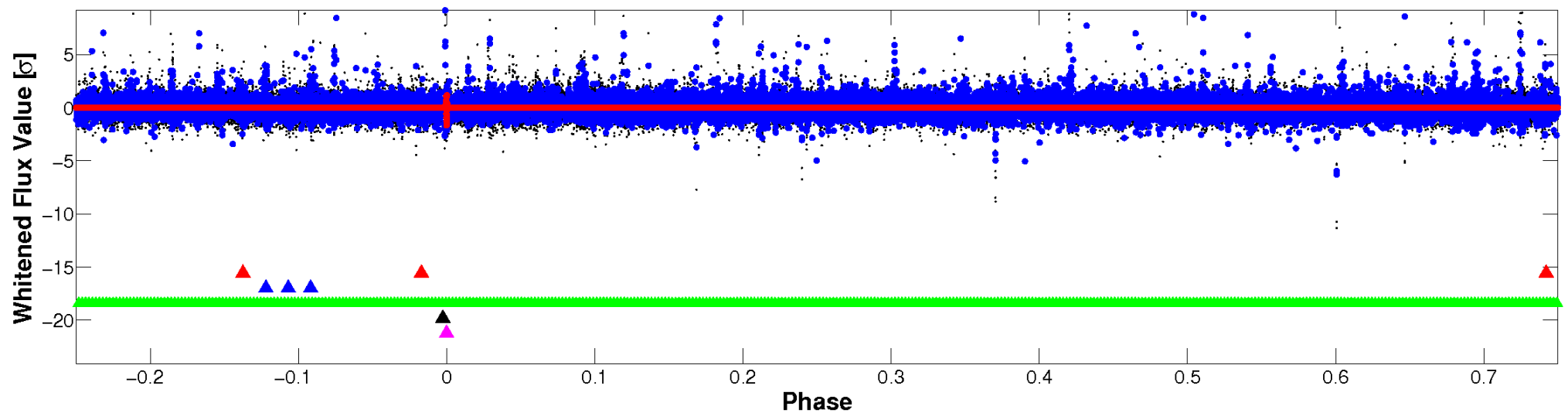


Non-Whitened Vs. Whitened Light Curve

Planet 5 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

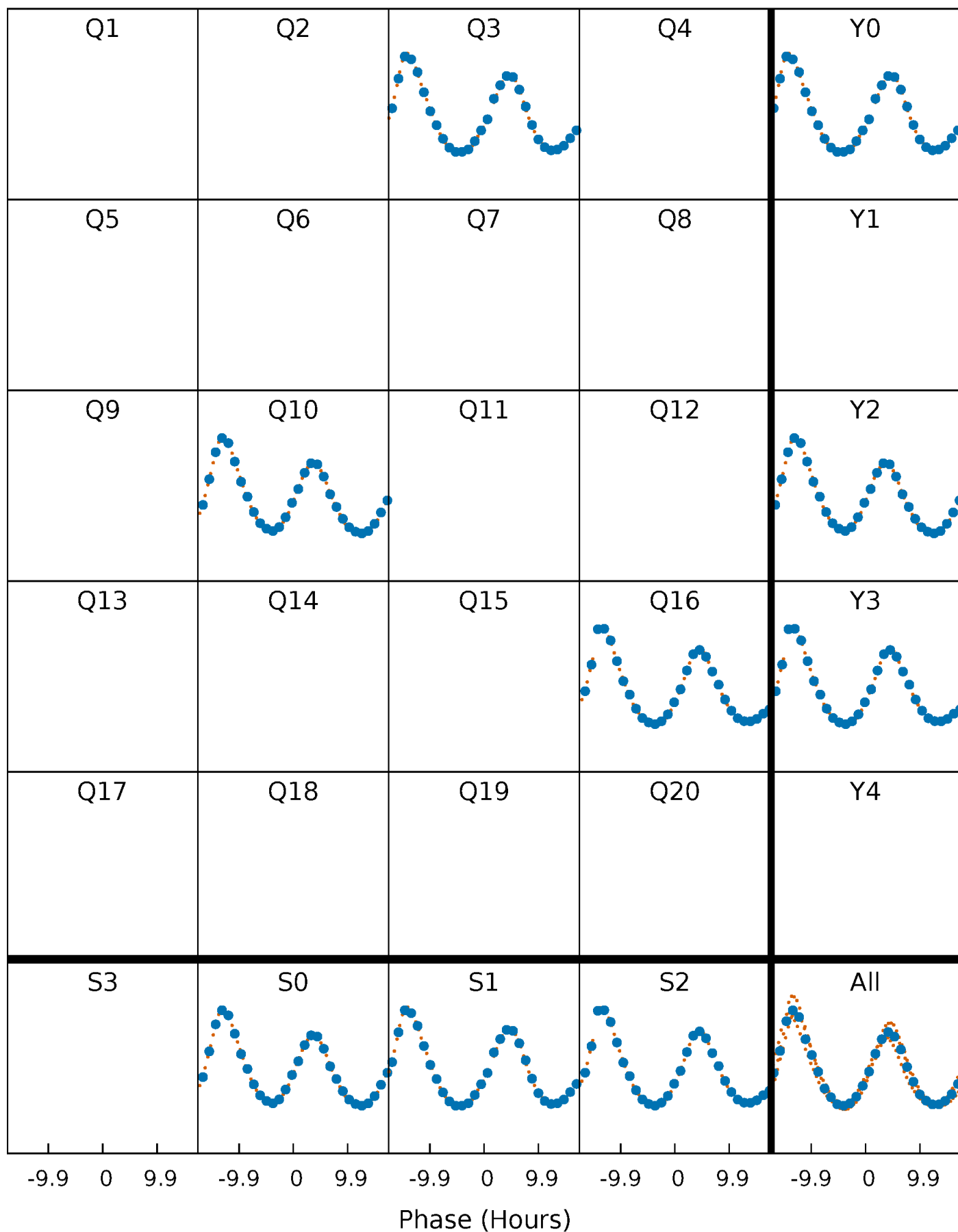


Planet 5 : Phased Whitened Flux Time Series (Fit Epoch/Period)



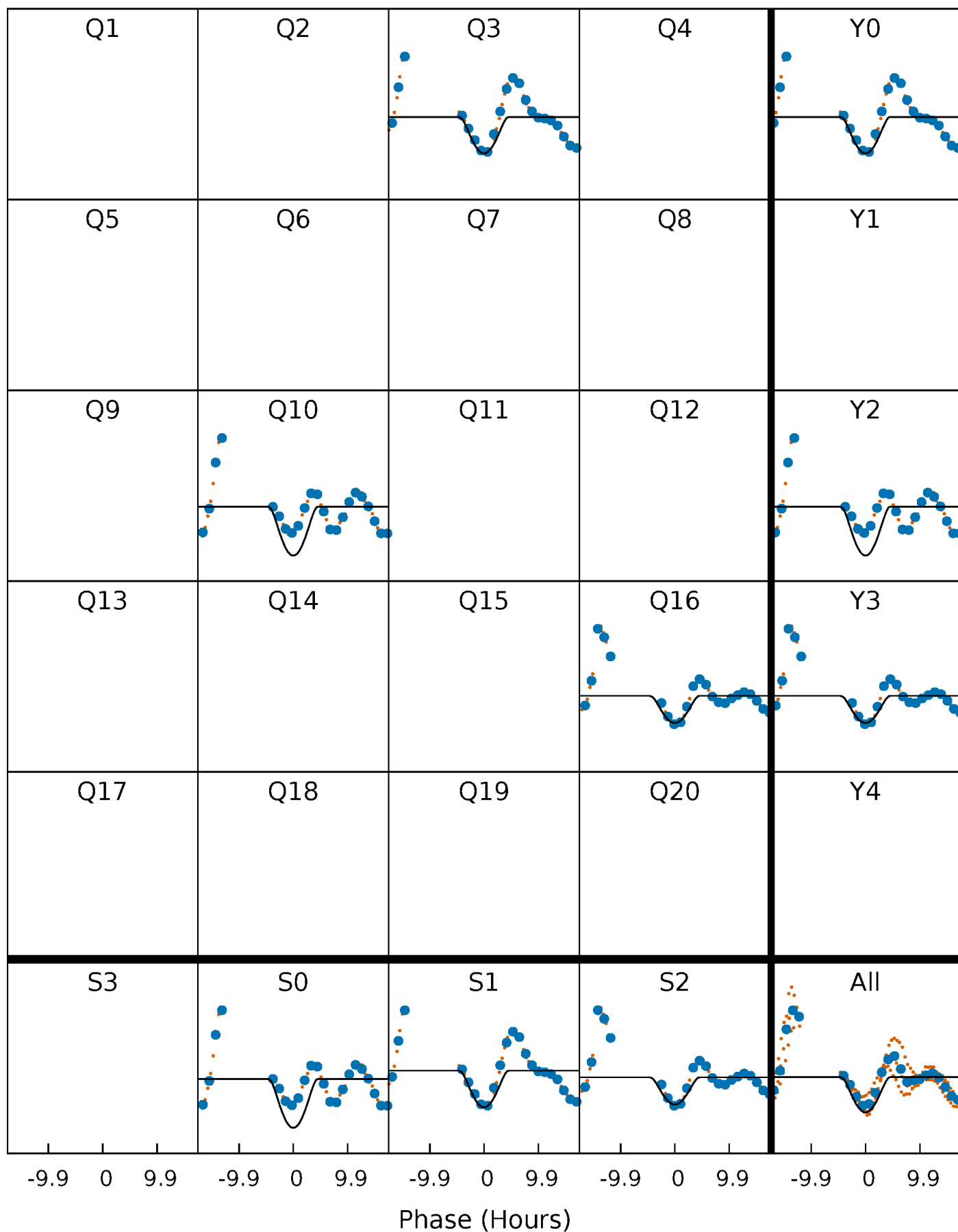
PDC Quarter-Phased Transit Curves

TCE 002310284-05 $P=604.457023$ Days $T_0=308.309365$ (BKJD)



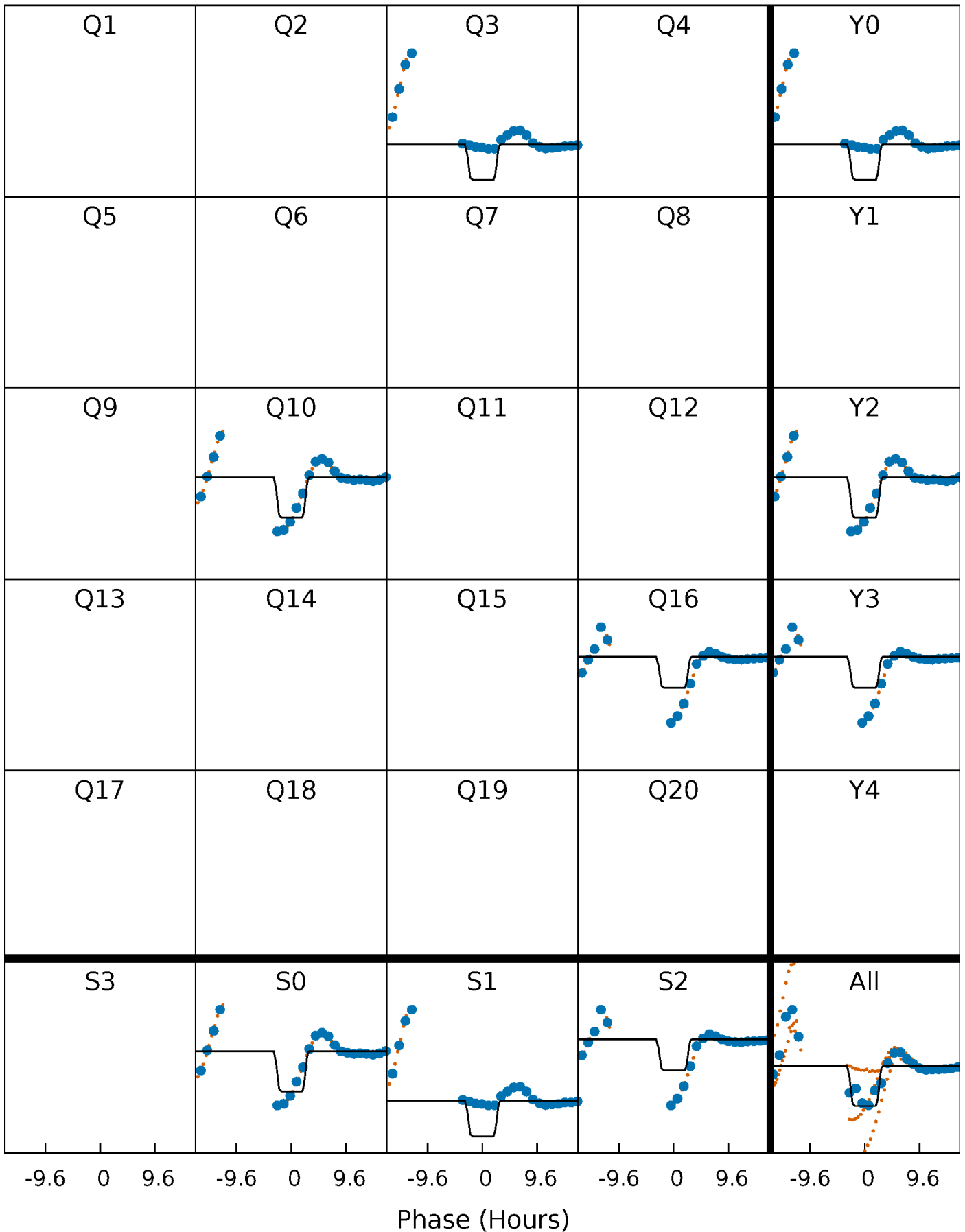
DV Quarter-Phased Transit Curves

TCE 002310284-05 $P=604.457023$ Days $T_0=308.309365$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

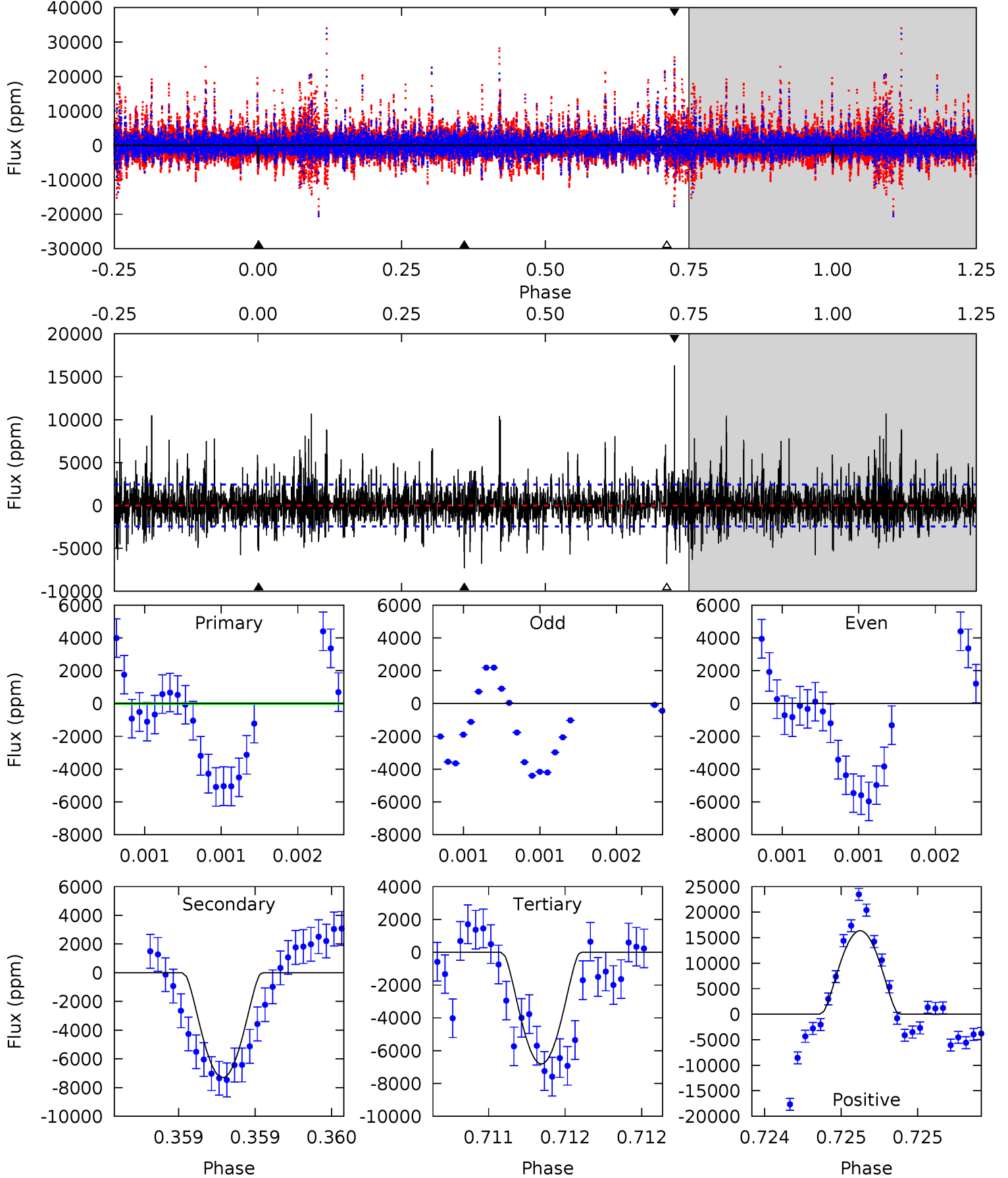
TCE 002310284-05 $P=604.472383$ Days $T_0=308.247715$ (BKJD)



DV Model-Shift Uniqueness Test

002310284-05, P = 604.457023 Days, E = 308.309365 Days

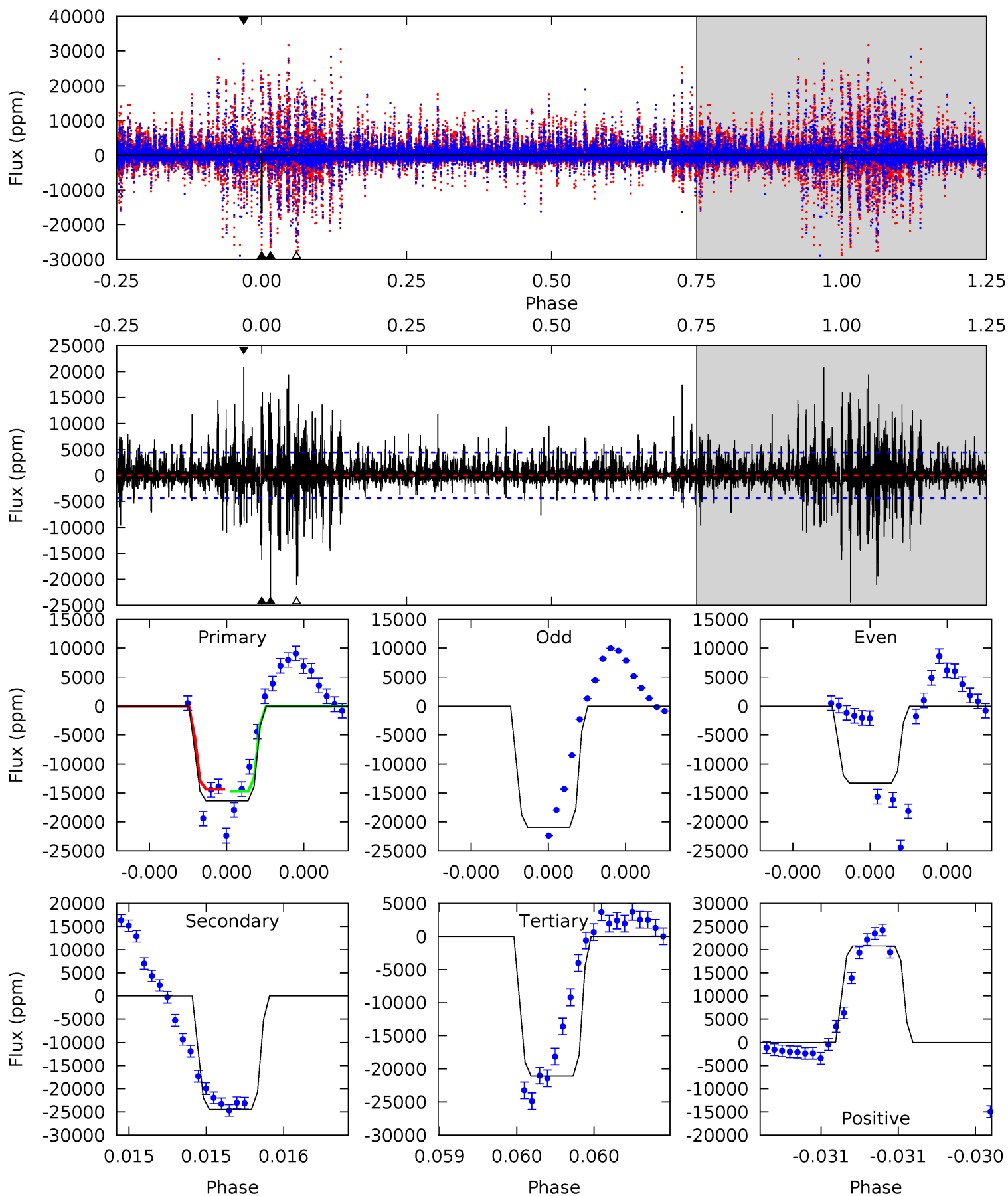
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.1	16.6	15.5	37.1	5.54	3.43	4.13	-3.38	-25.1	1.14	-20.5	3.67	0.85	0.69	0.99



Alt Model-Shift Uniqueness Test

002310284-05, P = 604.472383 Days, E = 308.247715 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
20.6	30.9	26.6	26.2	5.60	3.52	2.83	-5.99	-5.63	4.26	4.63	6.02	0.96	0.46	0.24



Stellar Parameters For KIC 002310284

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6818^{+165}_{-283}	$4.305^{+0.070}_{-0.210}$	$-0.020^{+0.250}_{-0.350}$	$1.341^{+0.448}_{-0.192}$	$1.331^{+0.190}_{-0.190}$	$0.777^{+0.297}_{-0.411}$
	+2%/-4%	+2%/-5%	+1250%/-1750%	+33%/-14%	+14%/-14%	+38%/-53%
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 002310284-05 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-7302 ± 440	$34.85^{+33.34}_{-23.49}$	398^{+30}_{-21}	4376^{+2913}_{-918}	7649^{+66016}_{-5627}
Alt.	-24478 ± 793	$34.89^{+31.63}_{-21.77}$	399^{+30}_{-23}	5704^{+4307}_{-1346}	$26679^{+157545}_{-19182}$

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

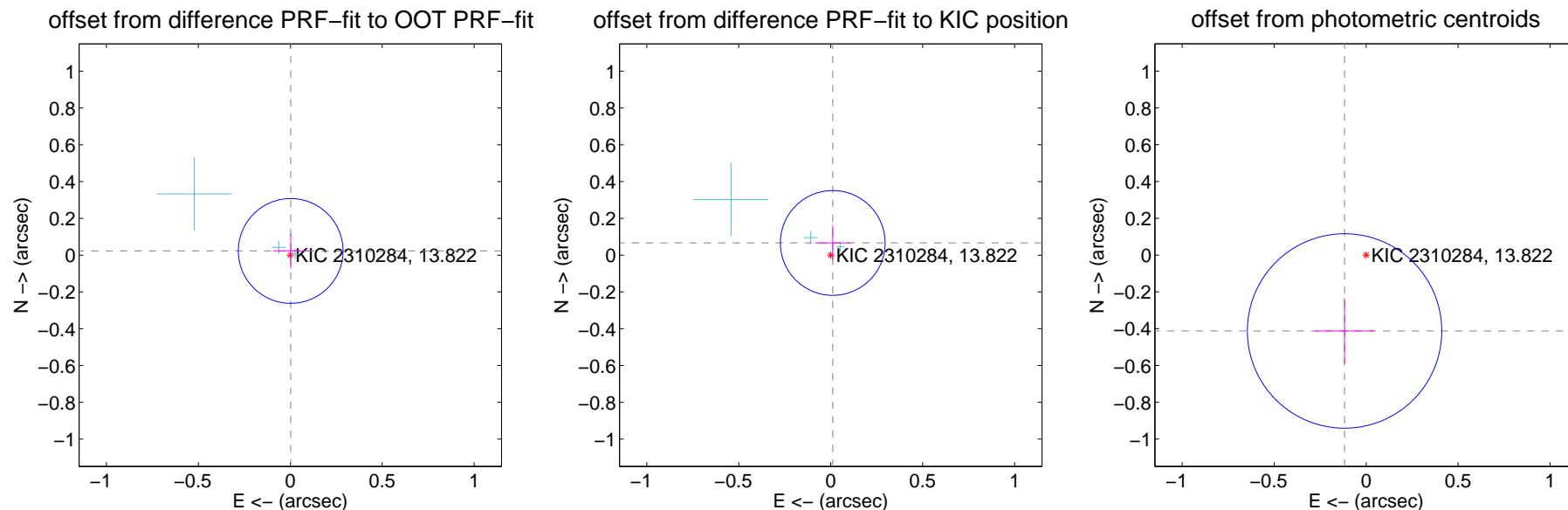
DV Centroid Data

Supplemental centroid analysis for 002310284-05. Kepler magnitude: 13.82. Transit SNR 8.14

There are 3 quarters with good PRF difference image offsets

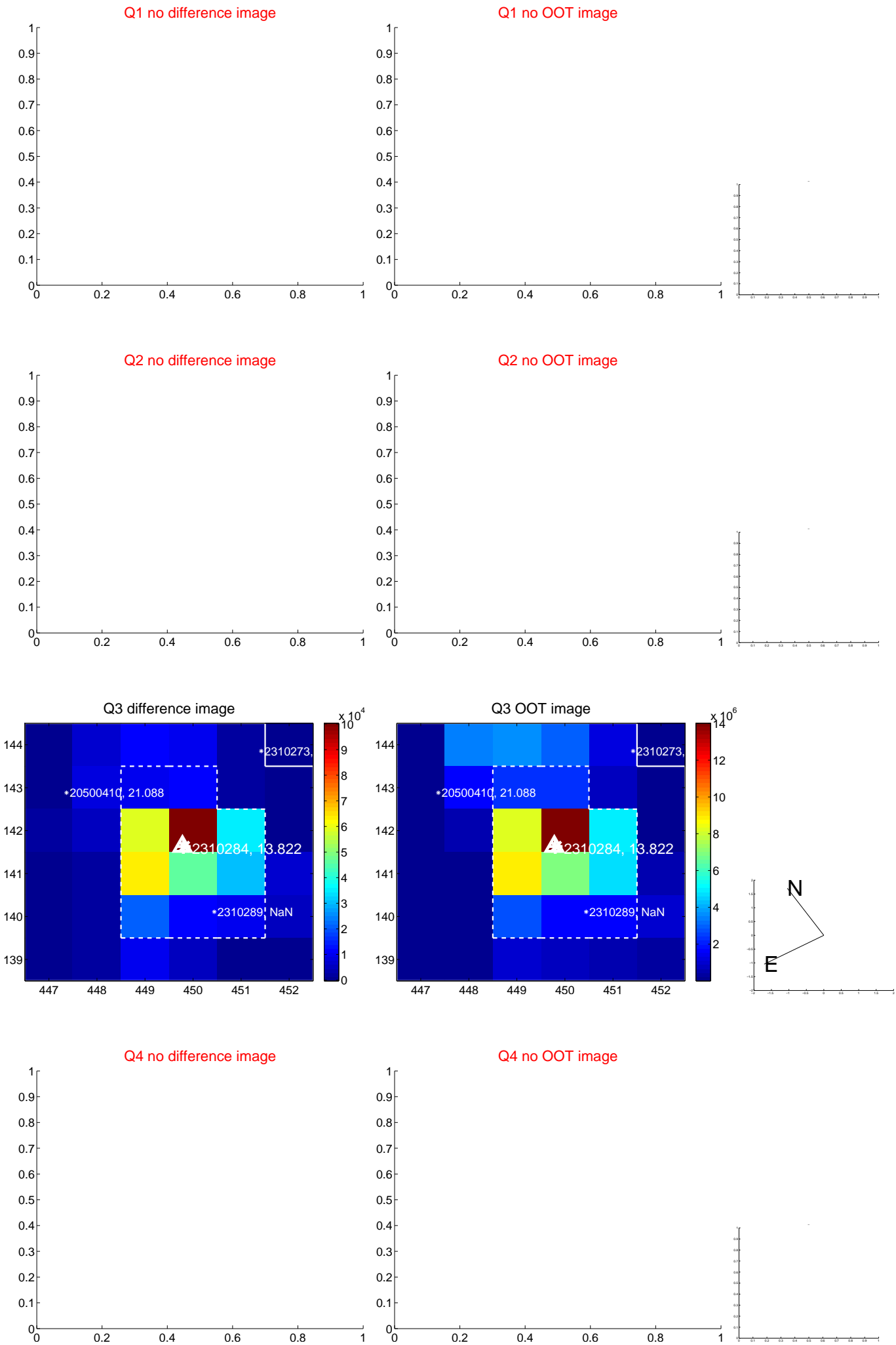
The direct PRF centroid is offset from the target star catalog position by about 0.05 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.023 ± 0.095	0.24	-0.002 ± 0.096	0.023 ± 0.095
PRF-fit source offset from KIC position	0.067 ± 0.095	0.71	-0.011 ± 0.096	0.066 ± 0.095
photometric centroid source offset	0.43 ± 0.18	2.43	0.12 ± 0.16	-0.41 ± 0.18



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

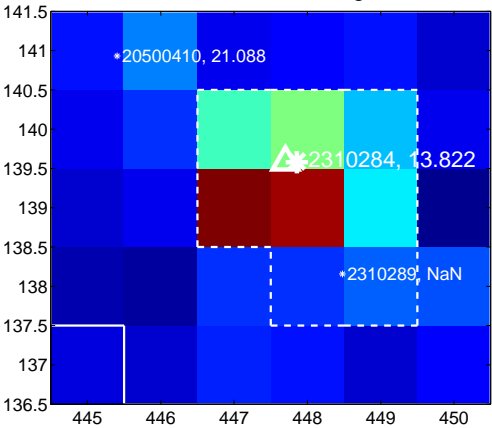
Q9 no difference image



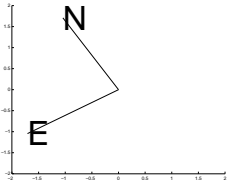
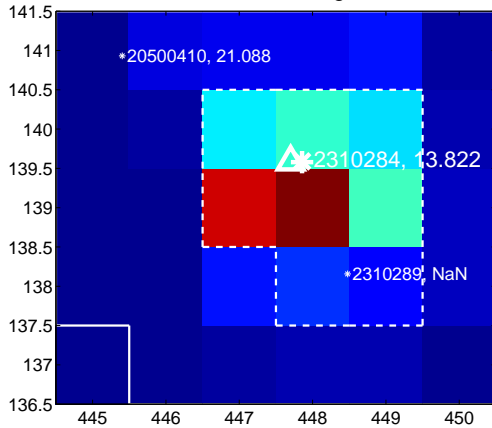
Q9 no OOT image



Q10 difference image



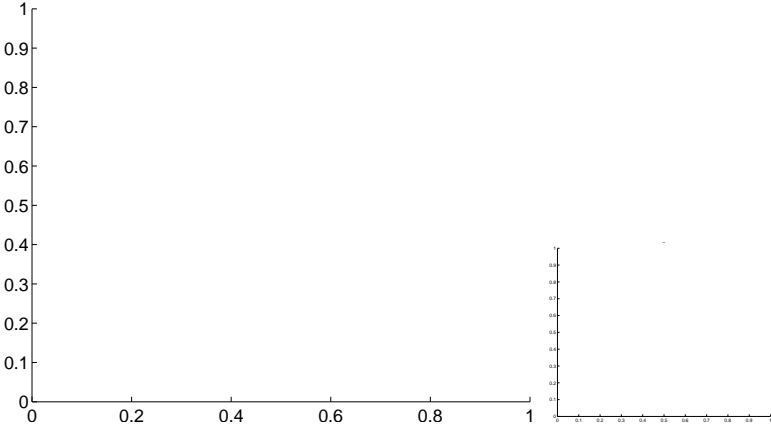
Q10 OOT image



Q11 no difference image



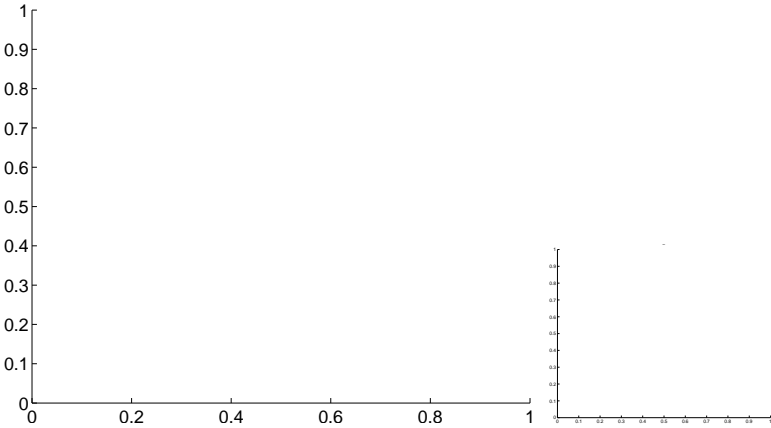
Q11 no OOT image



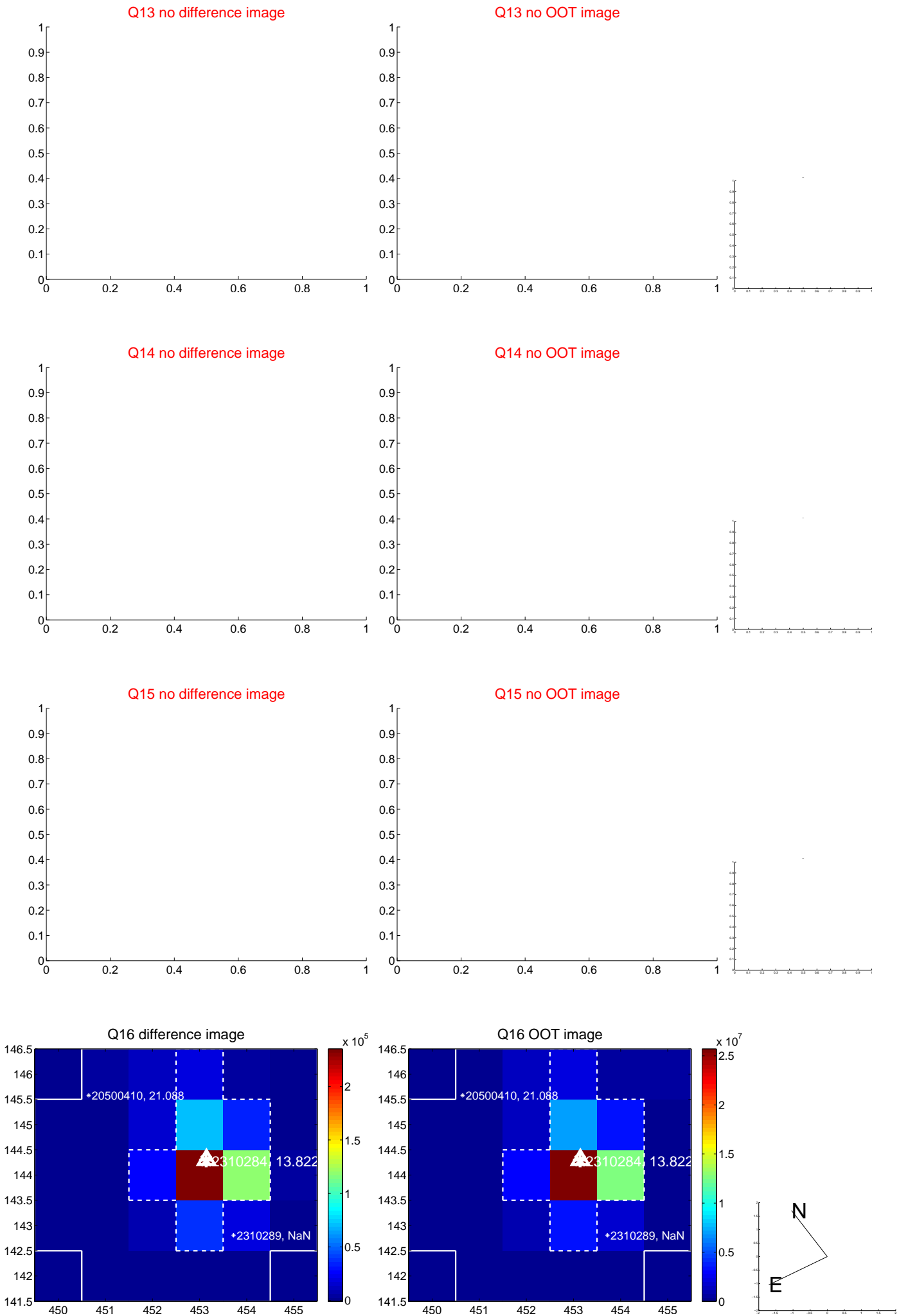
Q12 no difference image



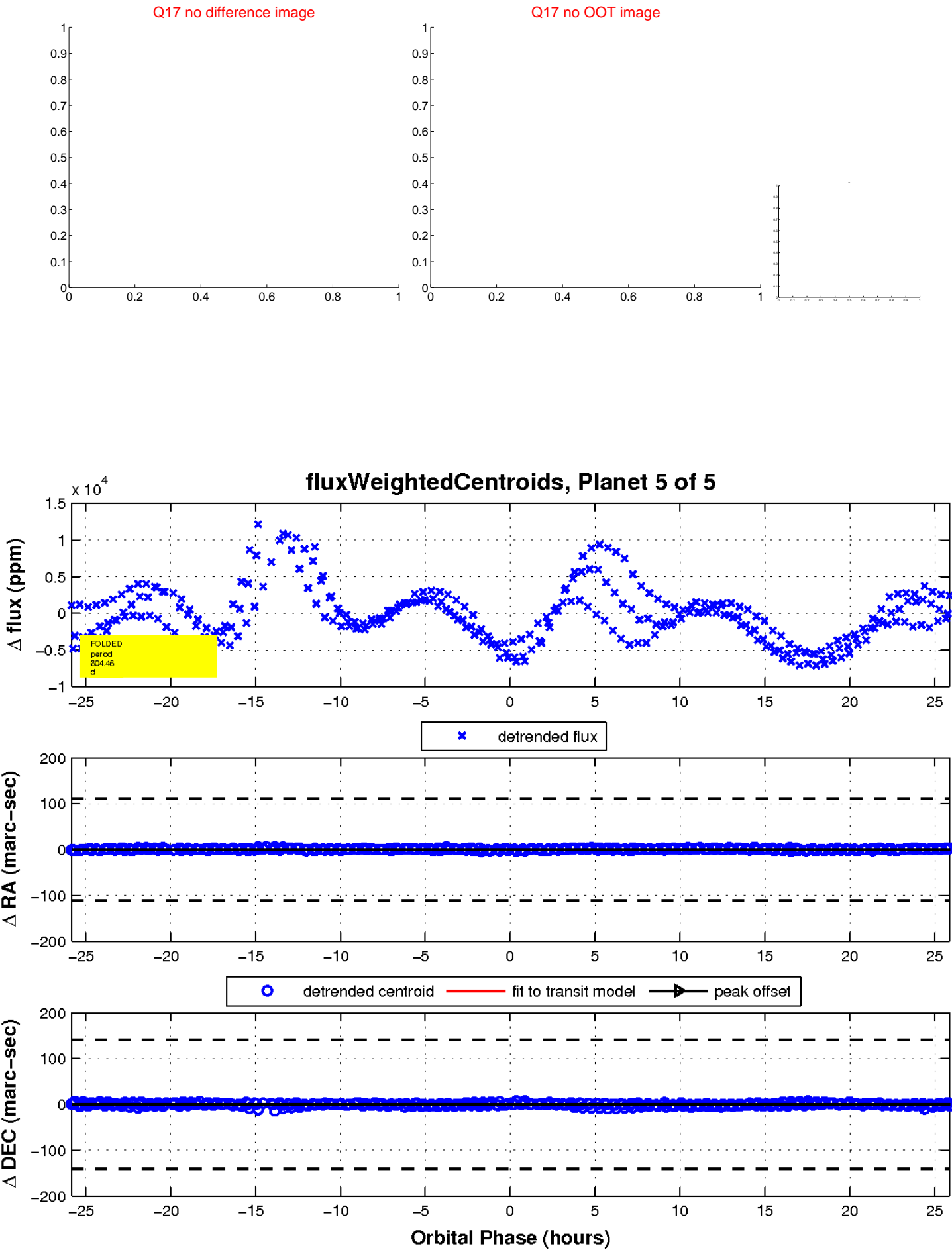
Q12 no OOT image



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.



UKIRT Image

Declination

