

KIC 004551328

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})
004551328-01	OBS	1324.01	1.044108	132.096335	433.5	1.125	20.9	34.6	0.88	5359	2.23	1570.00
004551328-02	OBS	No	1.044099	131.701707	837.8	3.500	8.0	-1.0	0.88	5359	2.49	1570.01

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004551328-01	OBS	FP	0.00	0	1	1	0	MOD_SEC_ALT—HAS_SEC_TCE—CENT_UNRESOLVED_OFFSET
004551328-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE—CENT_NOFITS

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.

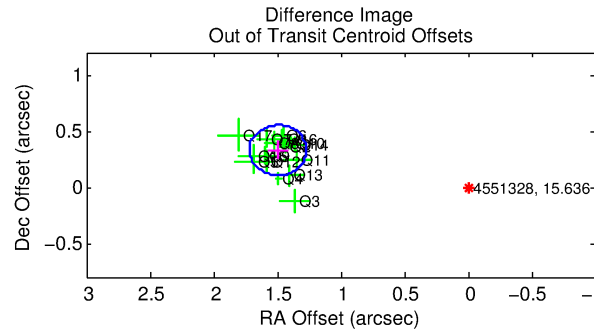
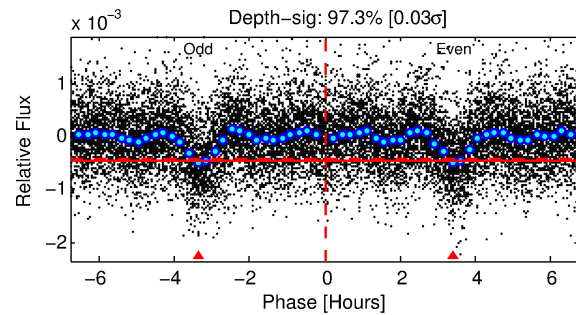
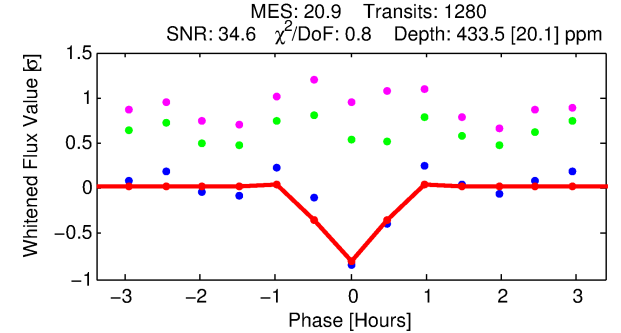
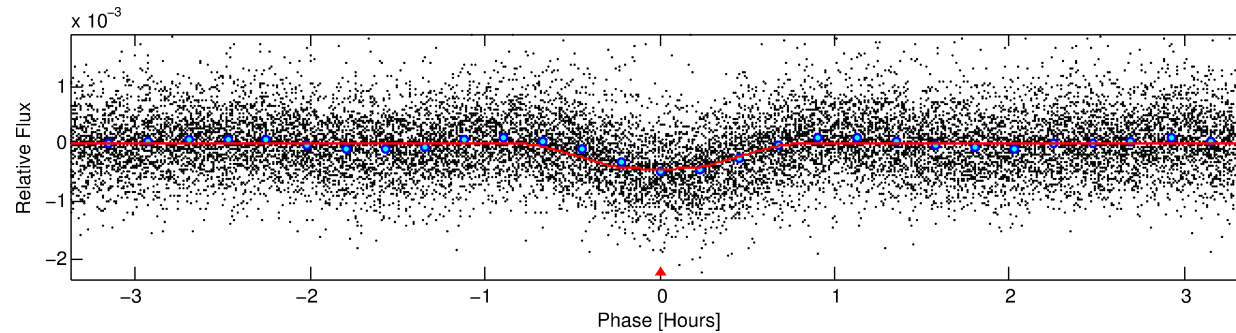
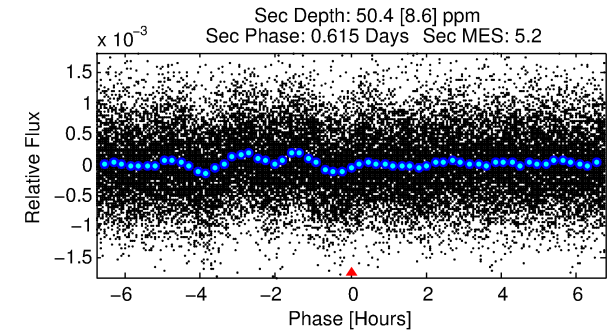
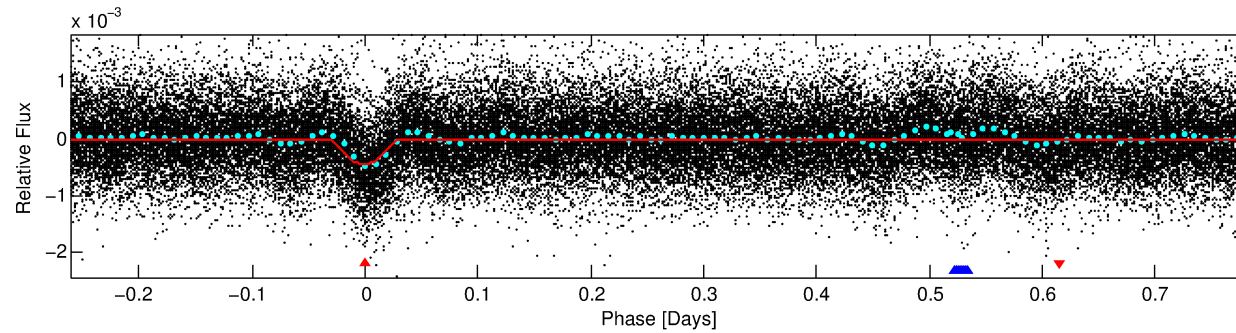
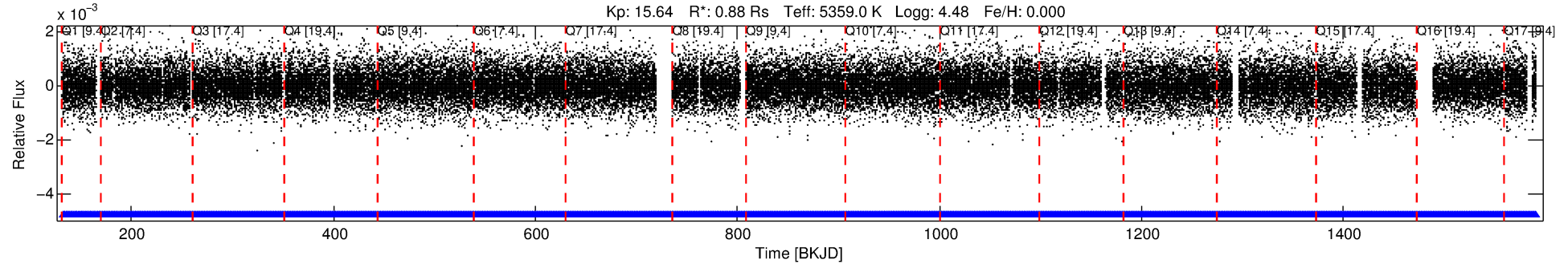
Ephemeris Match Information For 004551328-01

No Significant Match Found

DV One-Page Summary

KIC: 4551328 Candidate: 1 of 2 Period: 1.044 d
KOI: K01324 Corr: No Ephemeris Match

Kp: 15.64 R*: 0.88 Rs Teff: 5359.0 K Logg: 4.48 Fe/H: 0.000



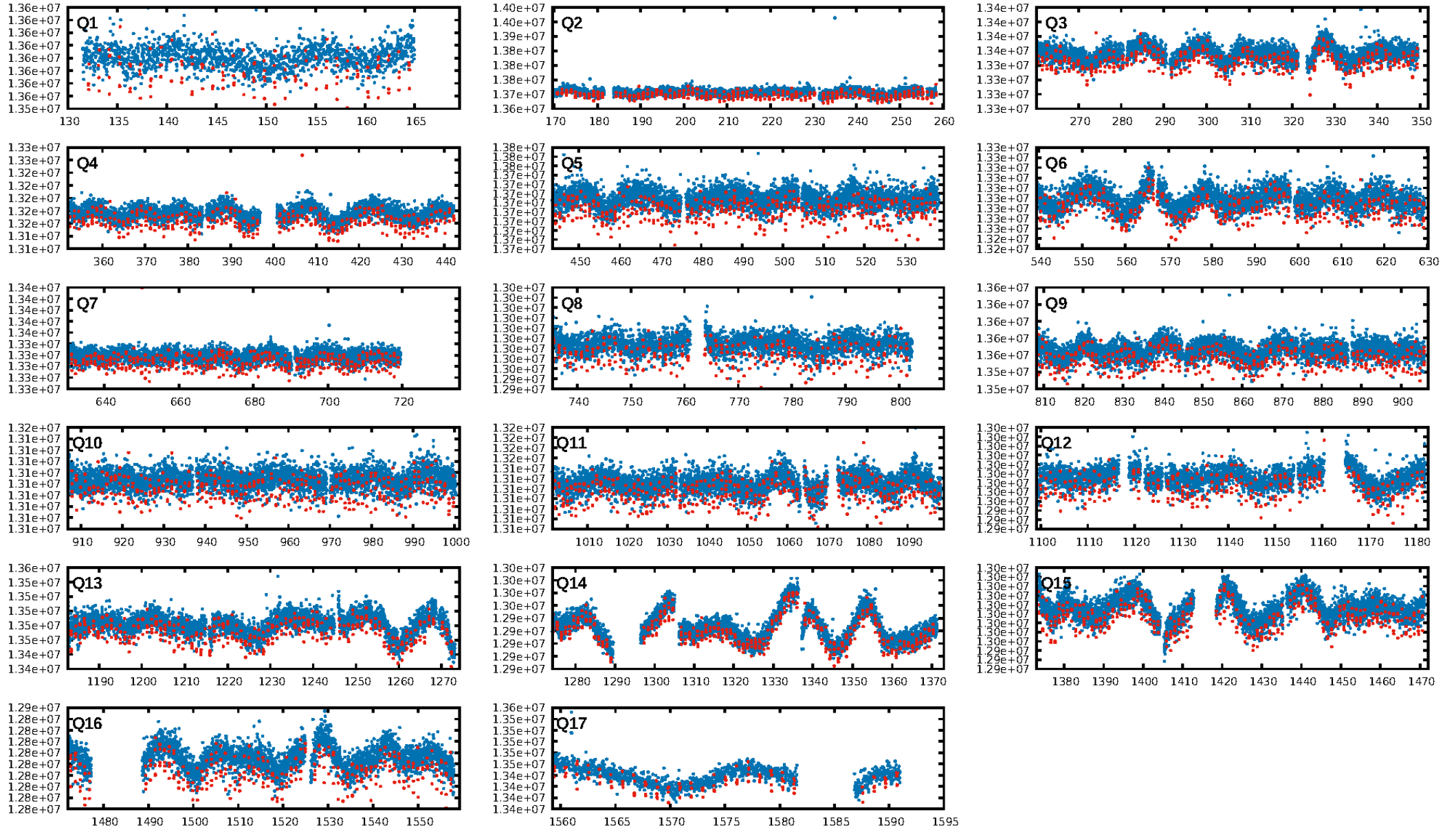
DV Fit Results:

Period = 1.04411 [0.00000] d
Epoch = 132.0963 [0.0005] BKJD
Rp/R* = 0.0232 [0.0059]
a/R* = 3.56 [3.48]
b = 0.90 [0.23]
Seff = 1570.00 [438.53]
Teq = 1605 [112] K
Rp = 2.22 [0.70] Re
a = 0.0190 [0.0031] AU
Ag = 2.03 [1.20] [0.86σ]
Teff = 2963 [408] K [3.21σ]

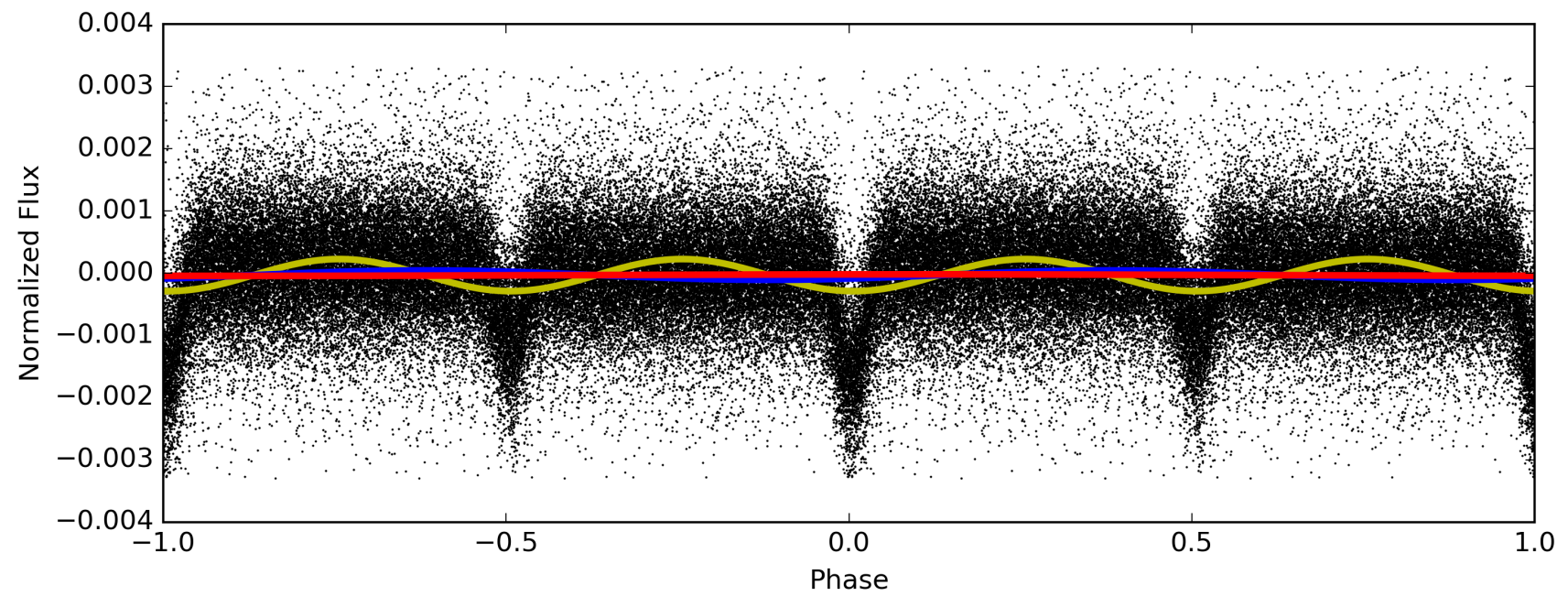
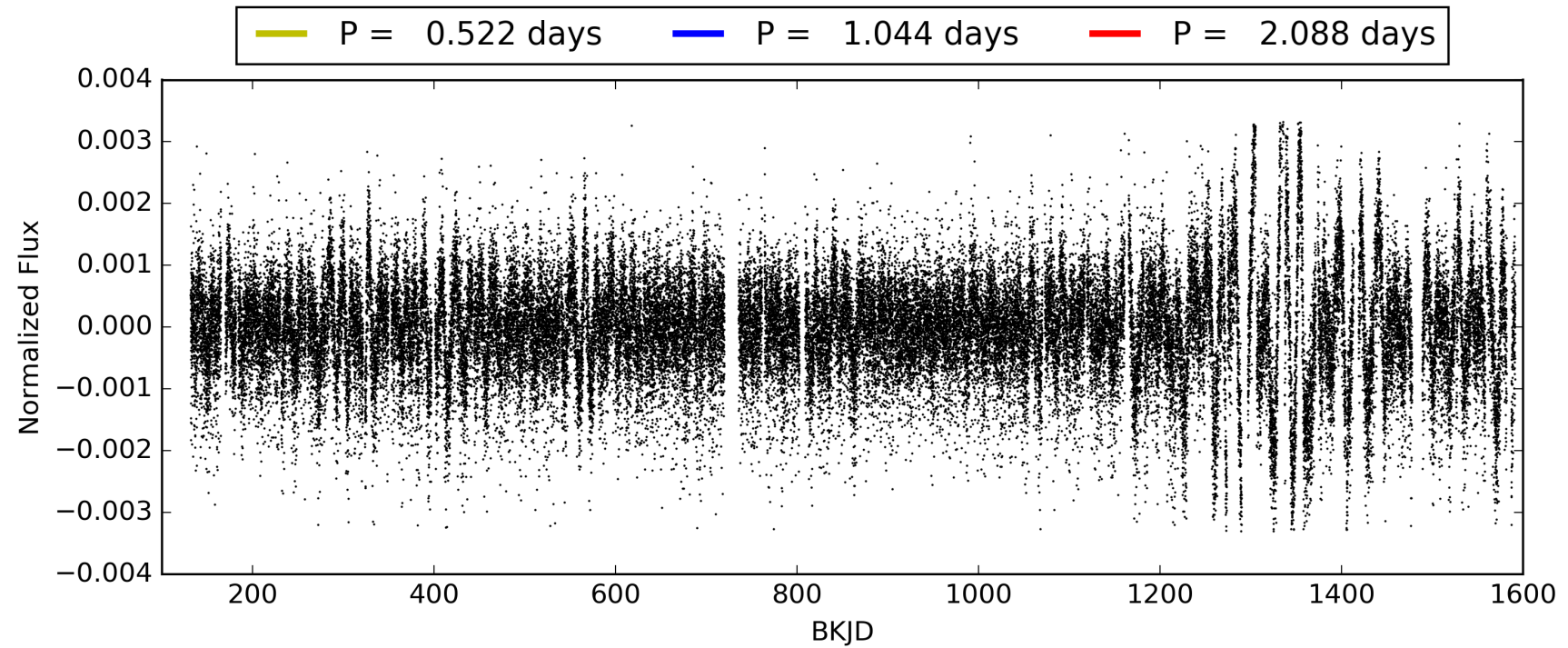
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 7.54e-86
RollingBand-fgt: 1.00 [1222/1222]
GhostDiagnostic-chr: 1.005
Centroid-sig: 0.0%
Centroid-so: 4.550 arcsec [10.81σ]
OotOffset-rm: 1.531 arcsec [20.56σ]
KicOffset-rm: 1.556 arcsec [20.93σ]
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]

TCE 004551328-01, PDC Light Curves

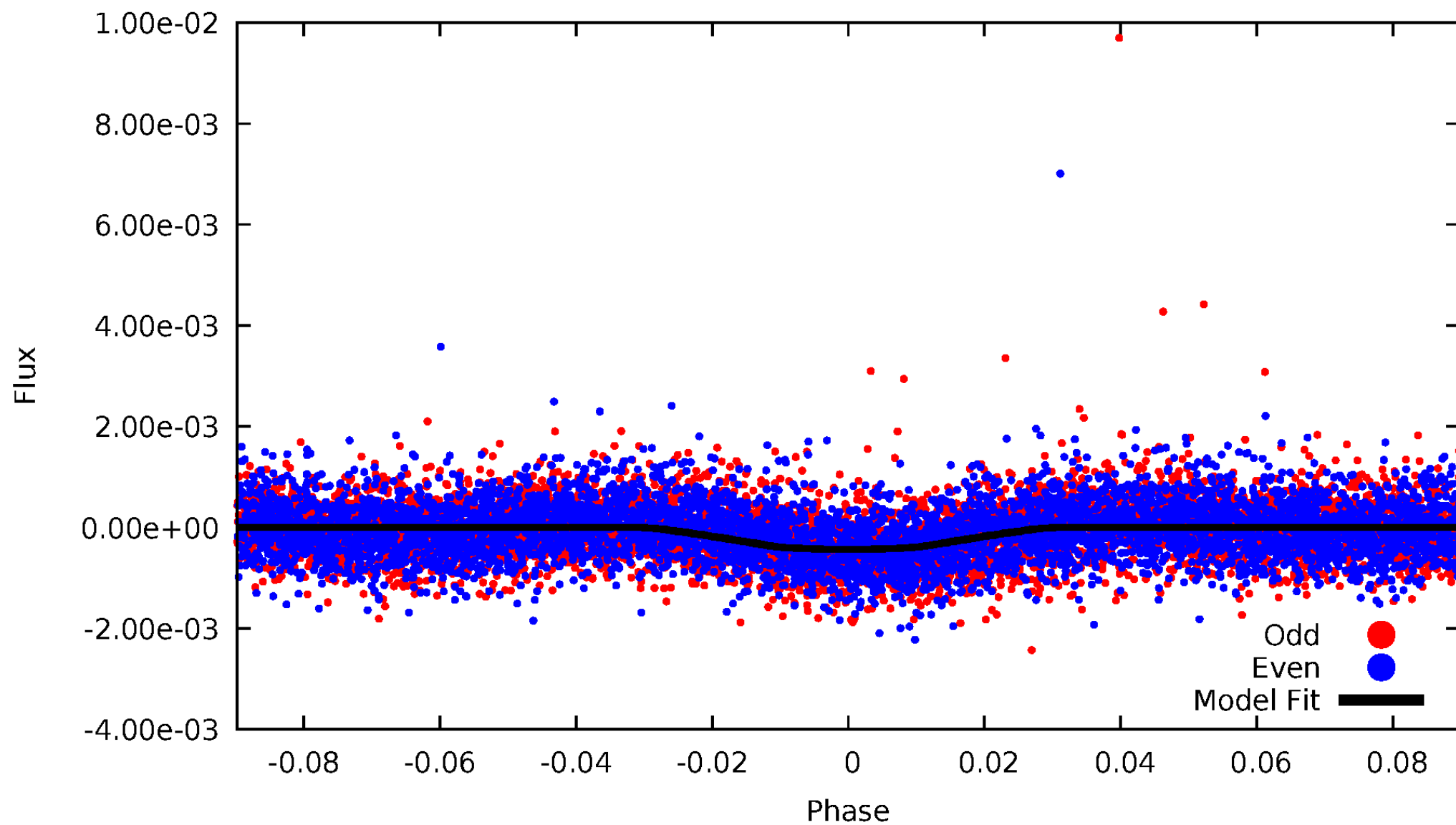


TCE 004551328-01



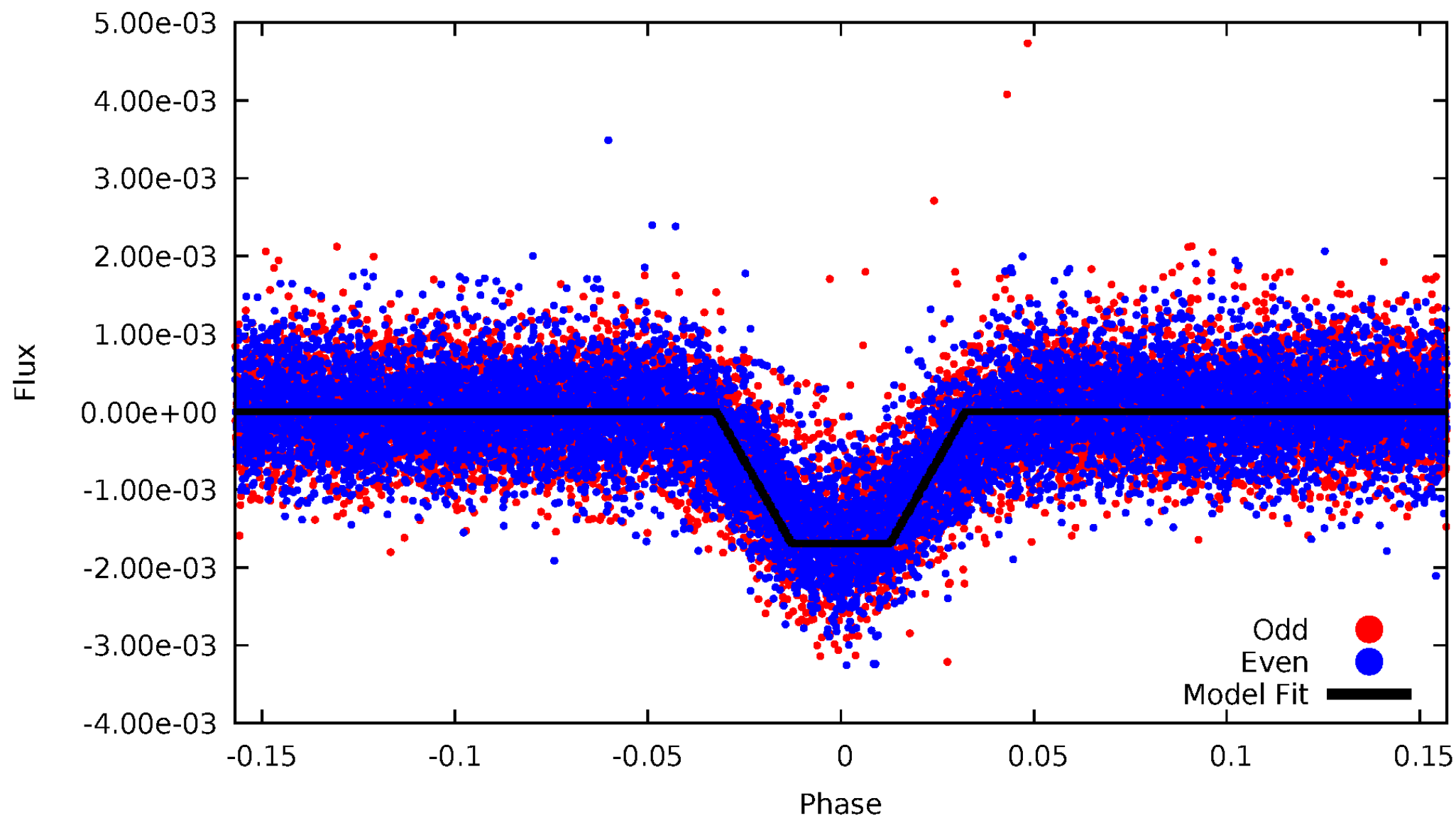
DV Odd/Even

TCE 004551328-01



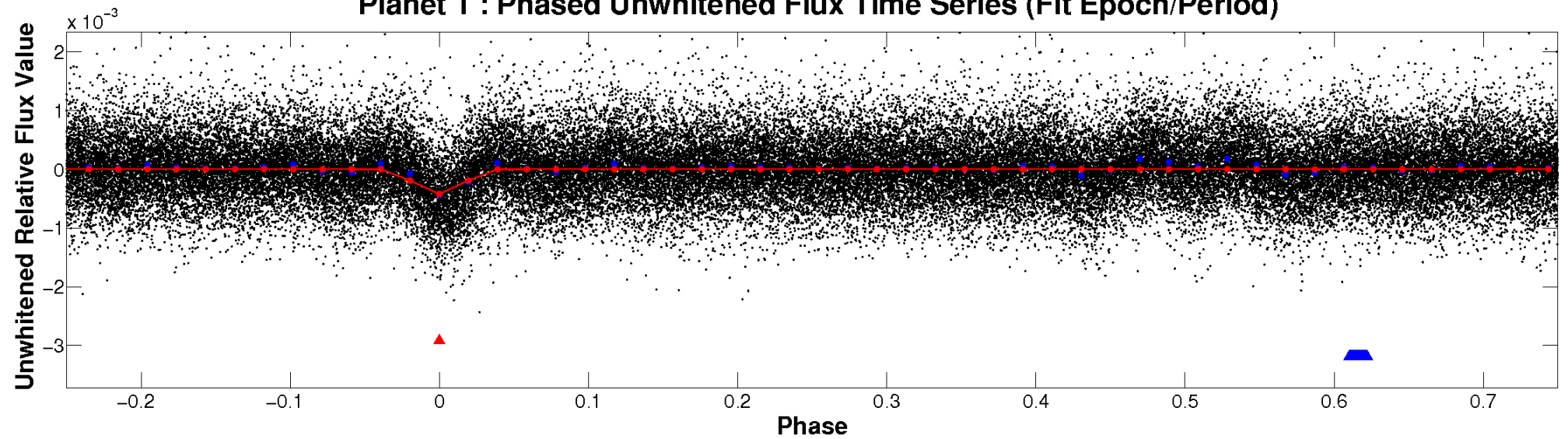
ALT Odd/Even

TCE 004551328-01

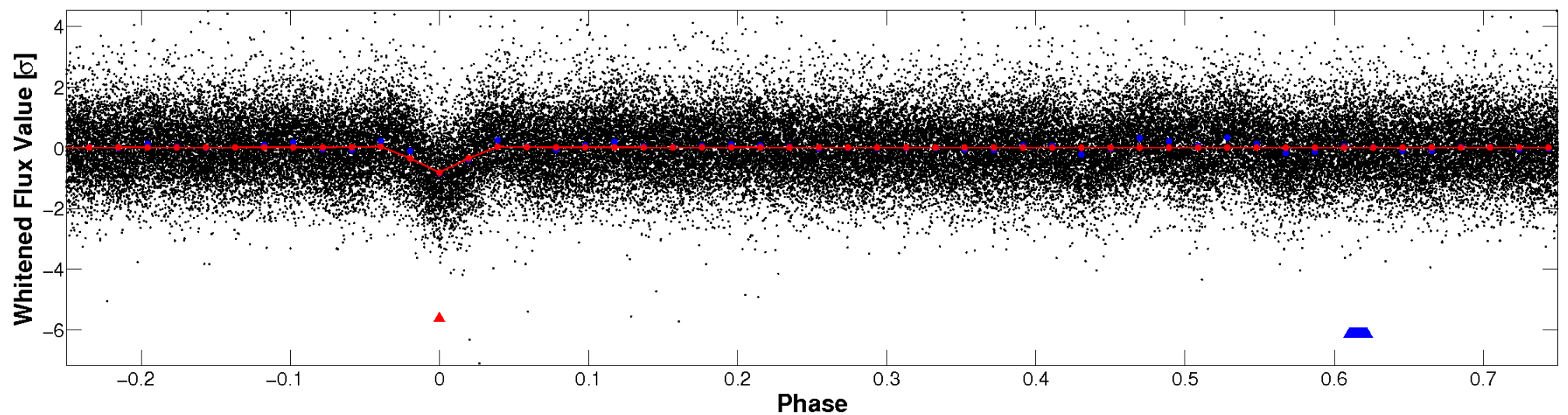


Non-Whitened Vs. Whitened Light Curve

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

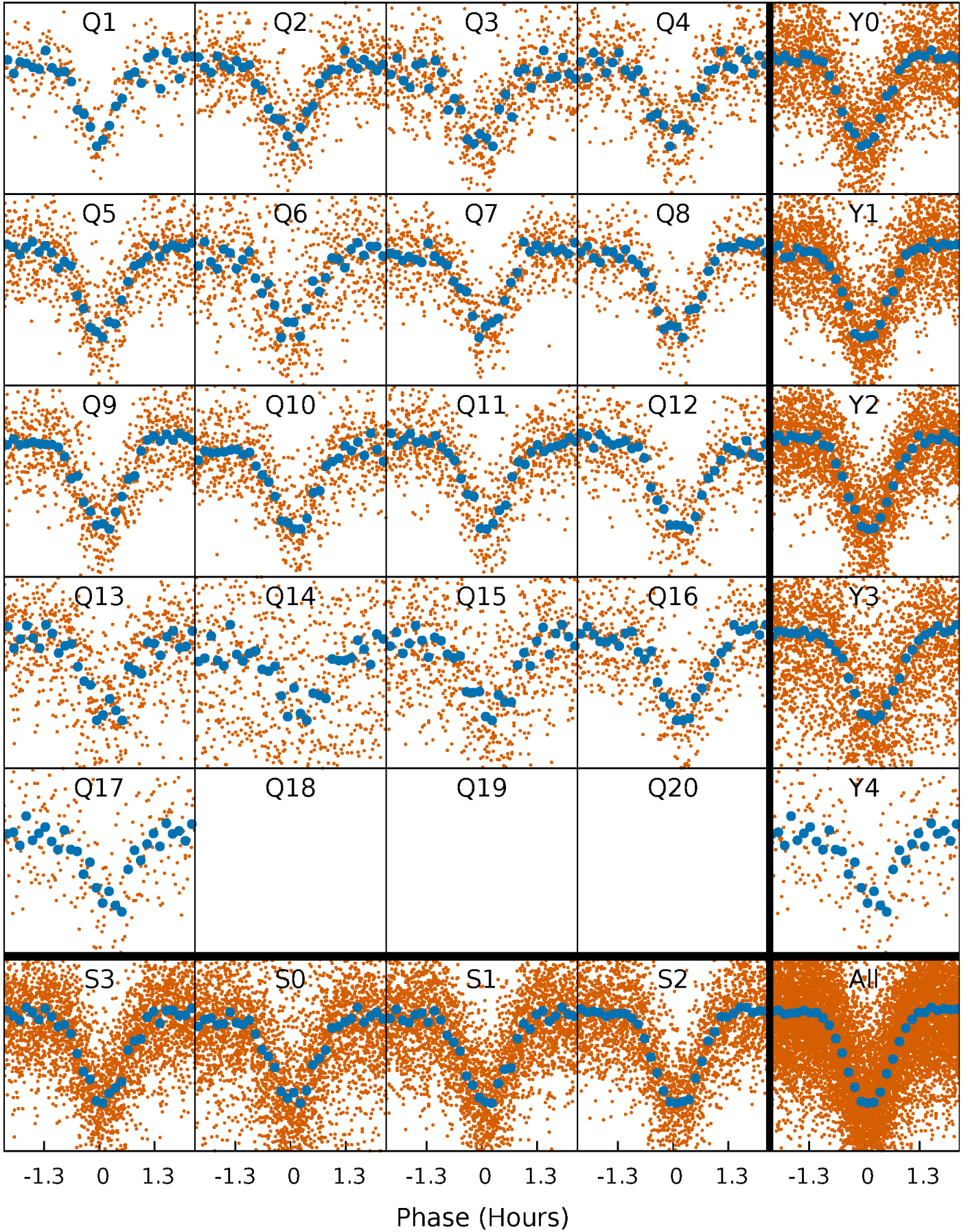


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



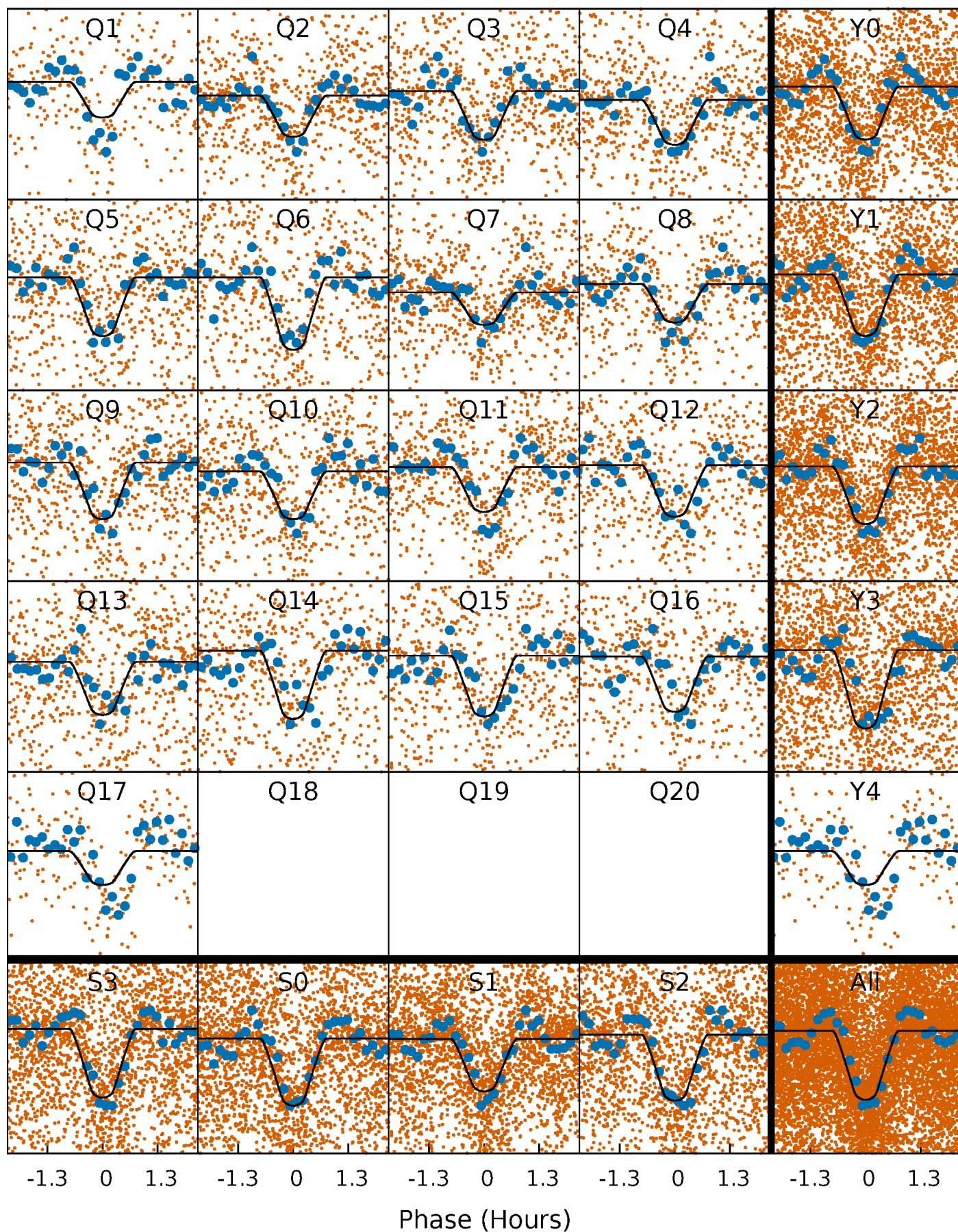
PDC Quarter-Phased Transit Curves

TCE 004551328-01 P= 1.044108 Days $T_0=132.096335$ (BKJD)



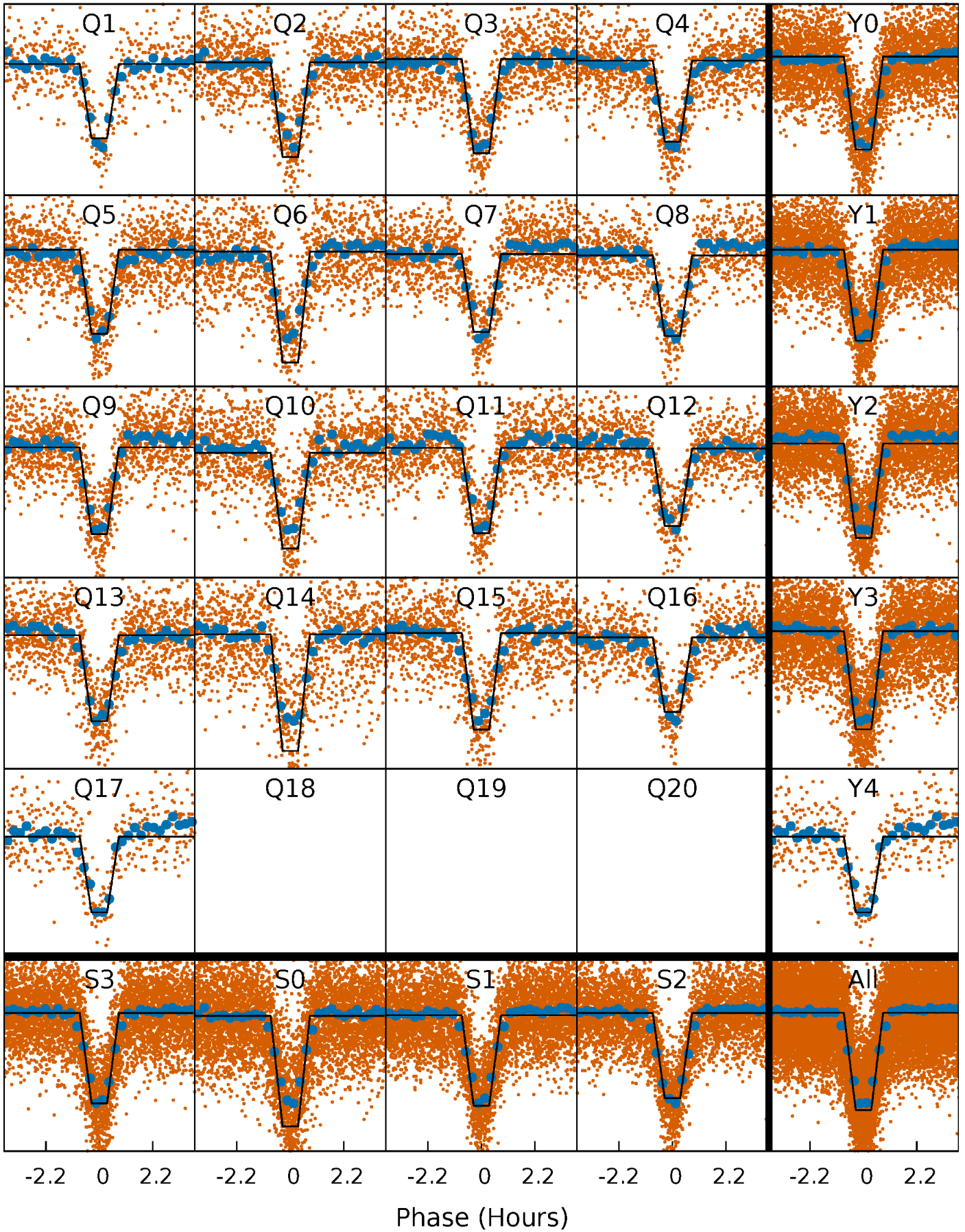
DV Quarter-Phased Transit Curves

TCE 004551328-01 P= 1.044108 Days $T_0=132.096335$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

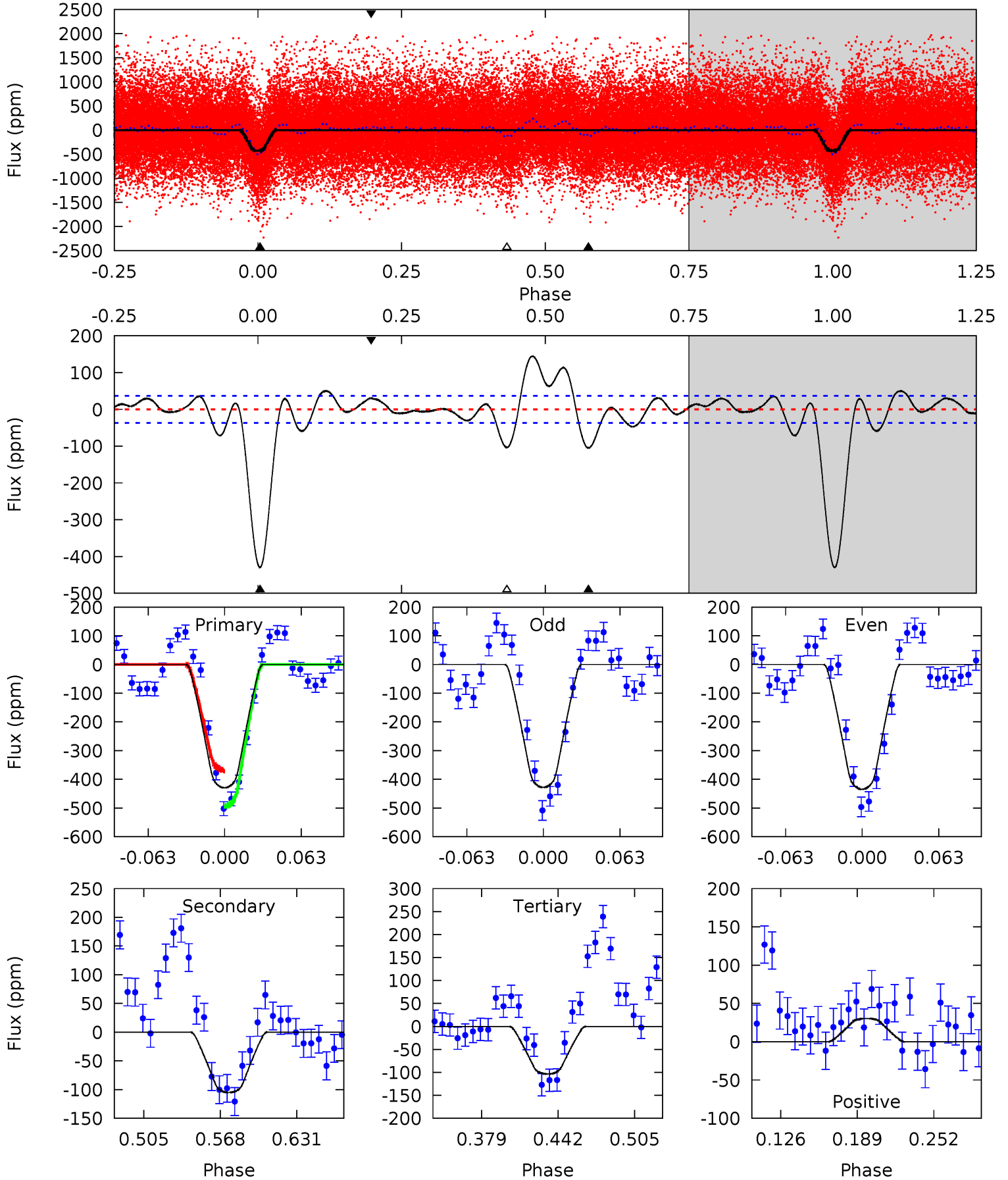
TCE 004551328-01 P= 1.044117 Days $T_0=132.093978$ (BKJD)



DV Model-Shift Uniqueness Test

004551328-01, P = 1.044108 Days, E = 131.052227 Days

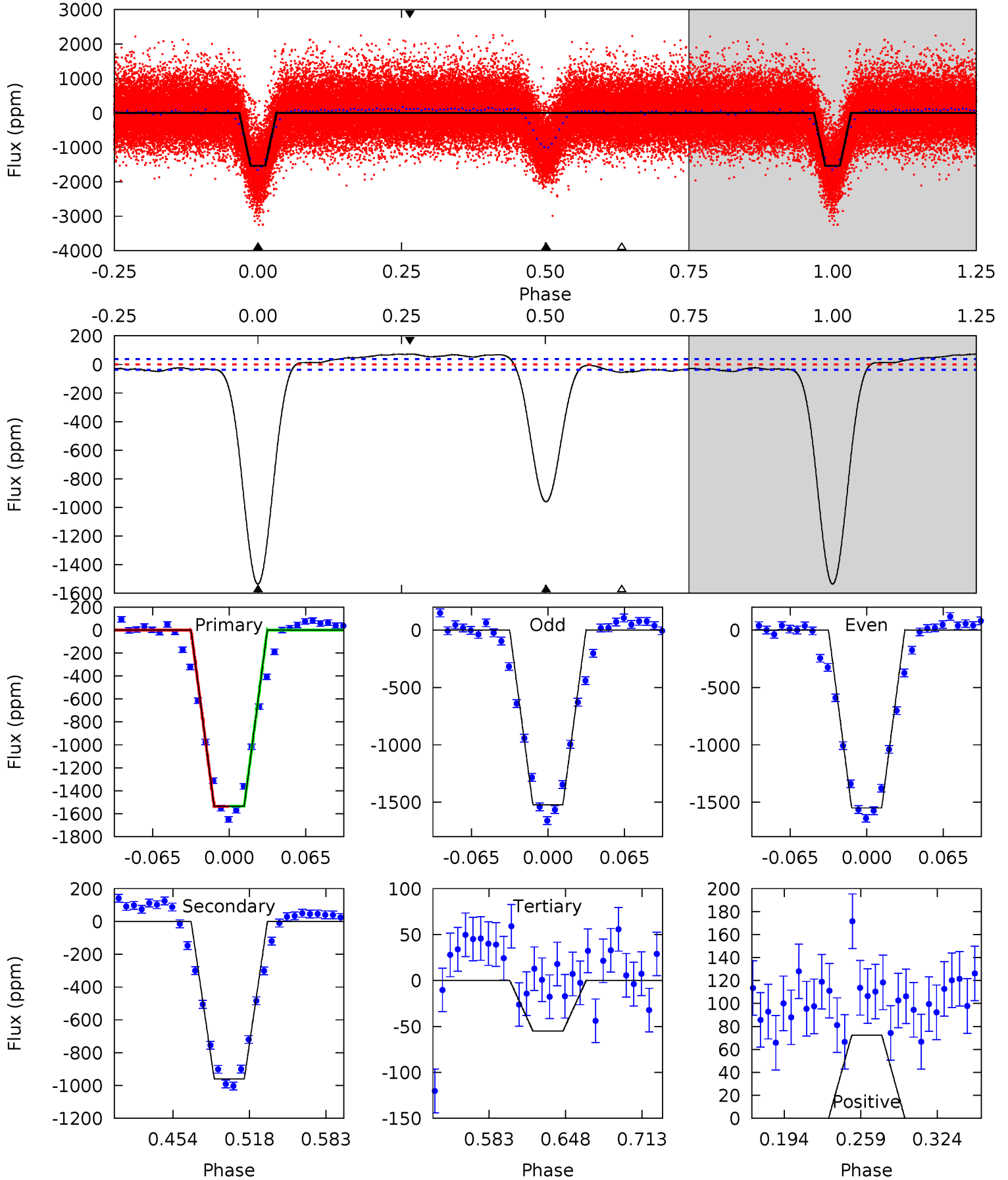
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
54.5	13.3	13.1	3.85	4.66	1.86	5.15	41.3	50.6	0.19	9.47	0.41	0.98	0.25	7.95



Alt Model-Shift Uniqueness Test

004551328-01, P = 1.044117 Days, E = 131.049861 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
190.5	119.1	6.83	8.96	4.66	1.85	5.74	183.6	181.5	112.3	110.2	1.70	1.00	0.04	0.15



Stellar Parameters For KIC 004551328

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5359^{+176}_{-160}	$4.478^{+0.092}_{-0.138}$	$0.000^{+0.250}_{-0.300}$	$0.878^{+0.166}_{-0.102}$	$0.847^{+0.096}_{-0.072}$	$1.760^{+0.653}_{-0.666}$
	+3%/-3%	+2%/-3%	+inf%/-inf%	+19%/-12%	+11%/-9%	+37%/-38%
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 004551328-01 / KOI 1324.01

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-105 ± 8	$2.26^{+0.63}_{-0.65}$	2250^{+131}_{-99}	3835^{+536}_{-315}	$4.155^{+3.962}_{-1.638}$
Alt.	-961 ± 8	$4.01^{+0.71}_{-0.62}$	2254^{+127}_{-104}	4727^{+339}_{-289}	12^{+5}_{-3}

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

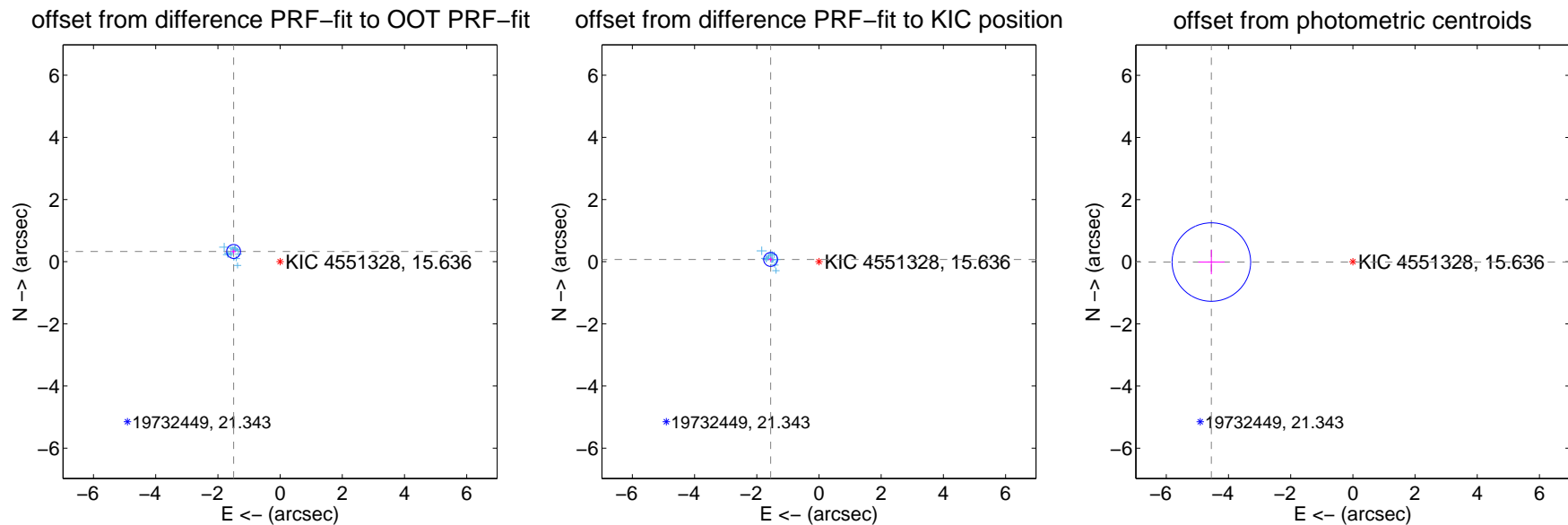
DV Centroid Data

Supplemental centroid analysis for 004551328-01. Kepler magnitude: 15.64. Transit SNR 34.56

There are 17 quarters with good PRF difference image offsets

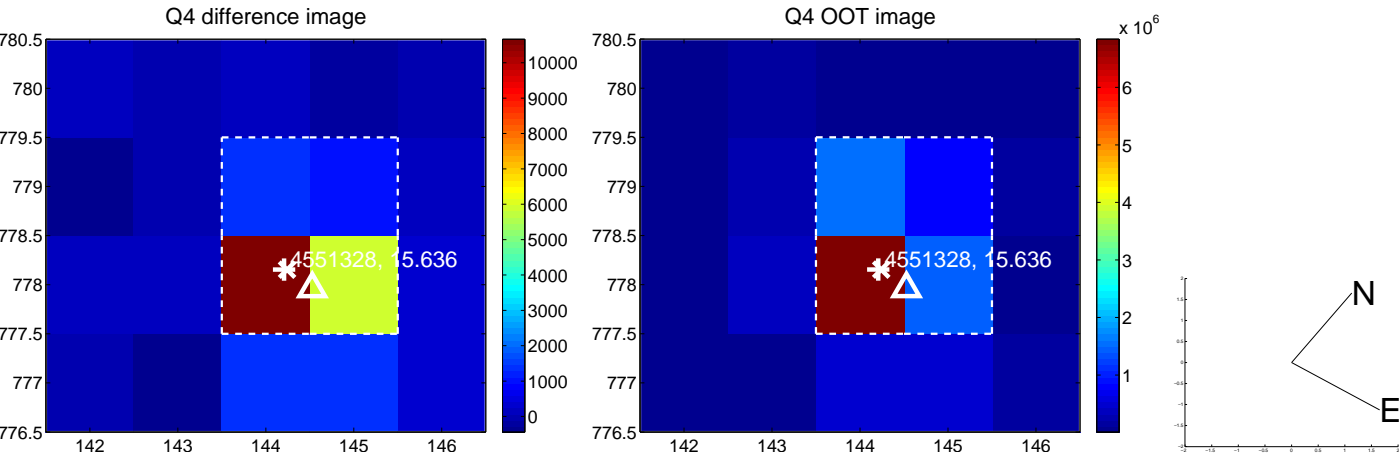
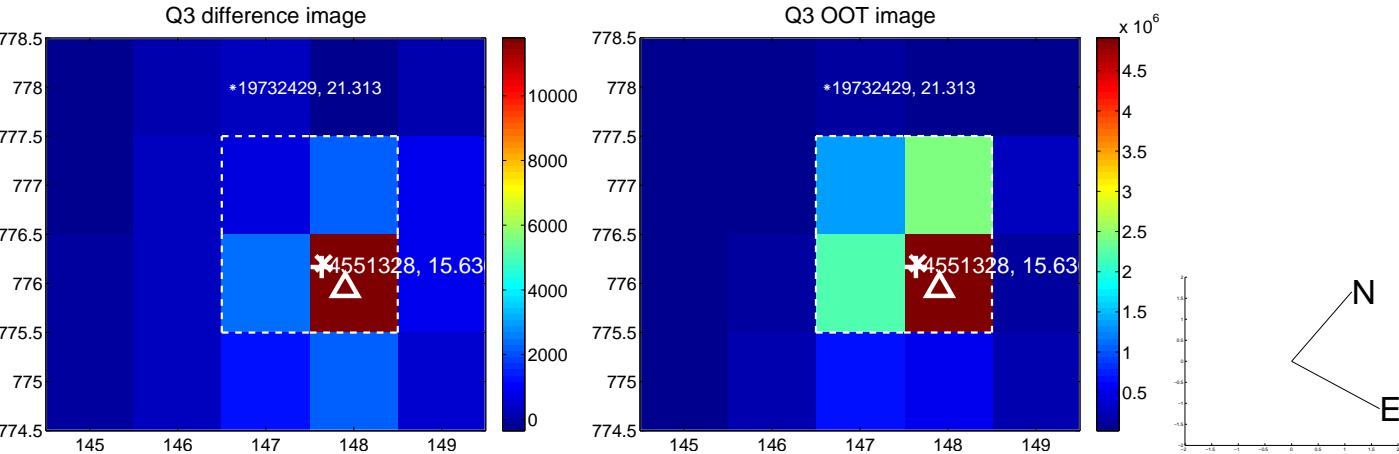
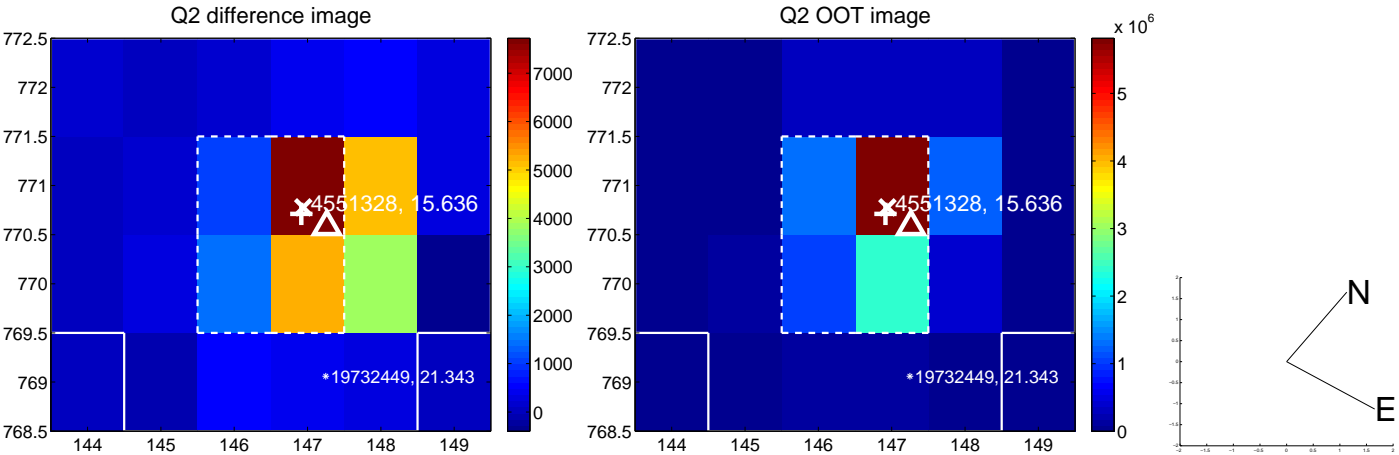
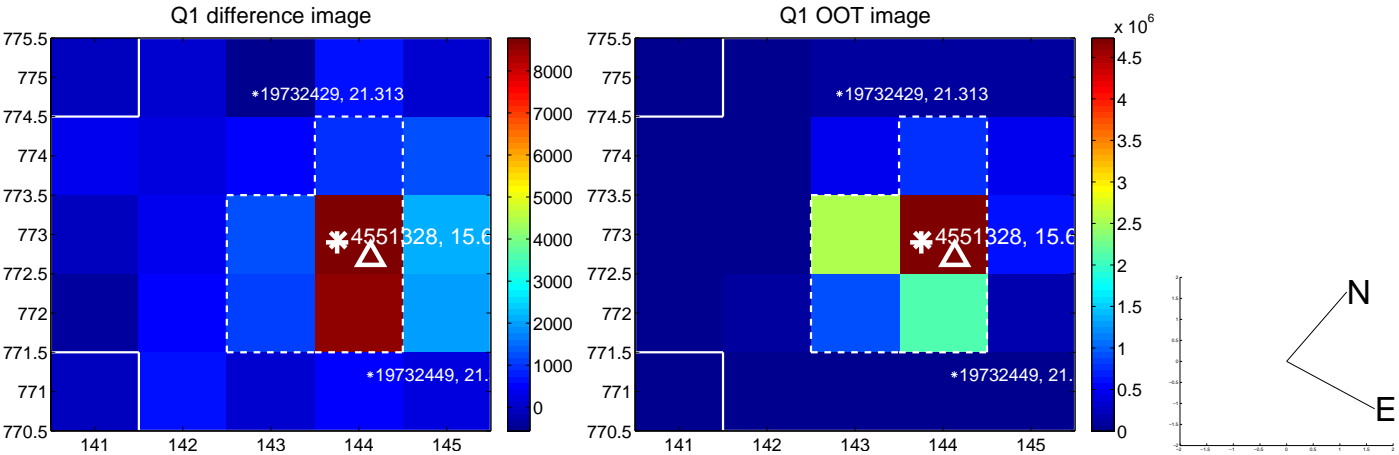
The direct PRF centroid is offset from the target star catalog position by about 0.13 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.531 ± 0.074	20.56	1.495 ± 0.074	0.329 ± 0.076
PRF-fit source offset from KIC position	1.556 ± 0.074	20.93	1.554 ± 0.074	0.072 ± 0.076
photometric centroid source offset	4.55 ± 0.42	10.81	4.55 ± 0.42	-0.01 ± 0.39

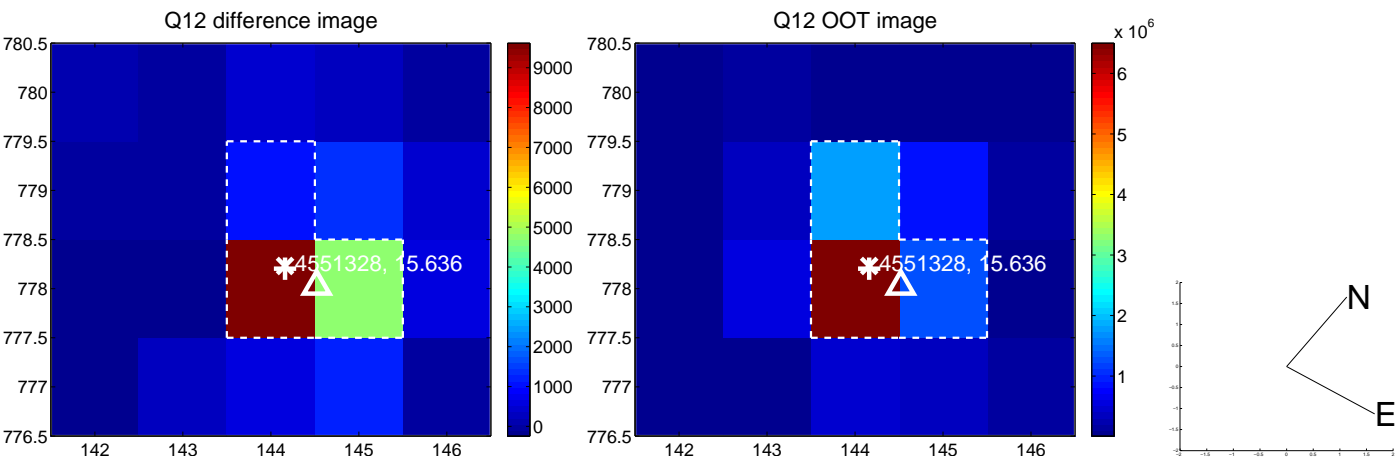
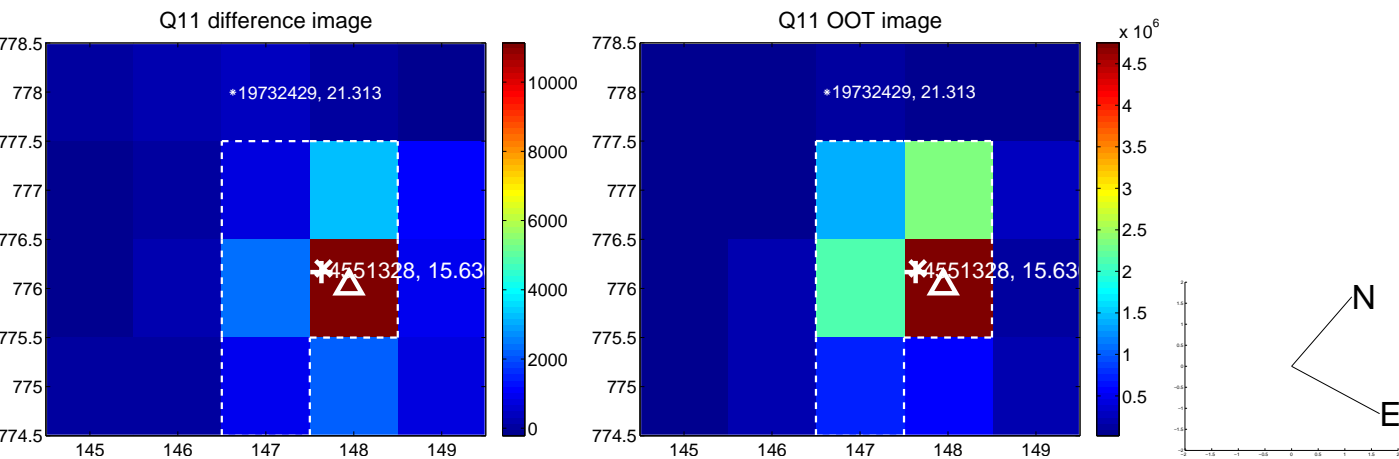
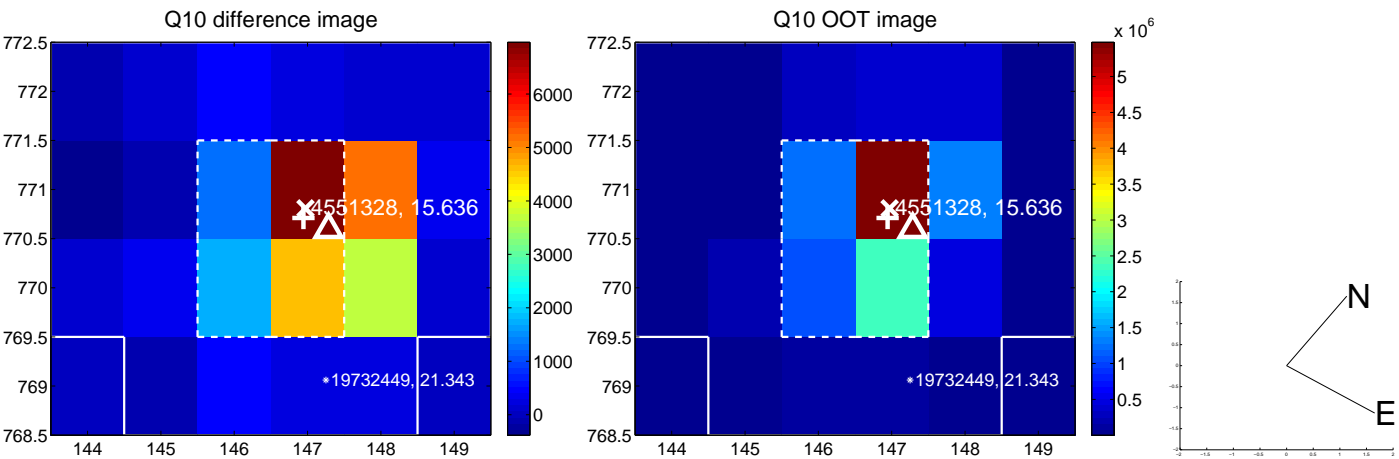
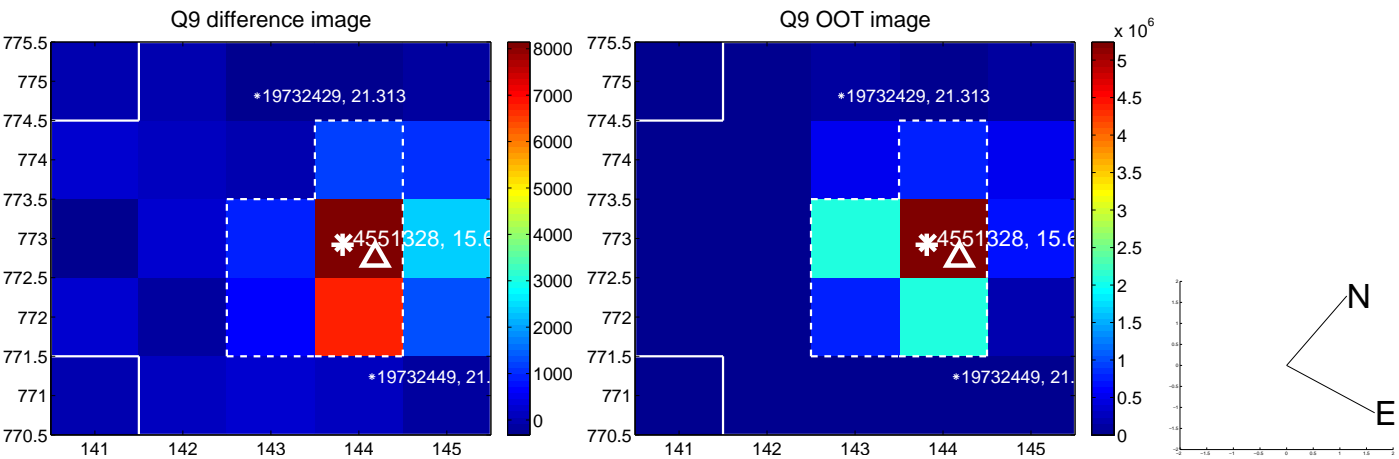


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

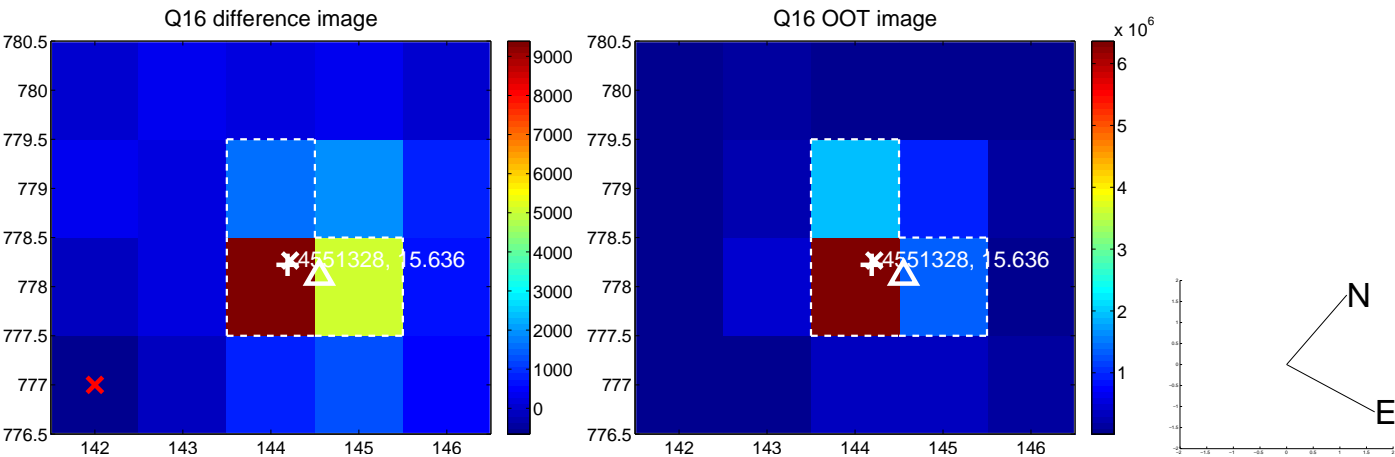
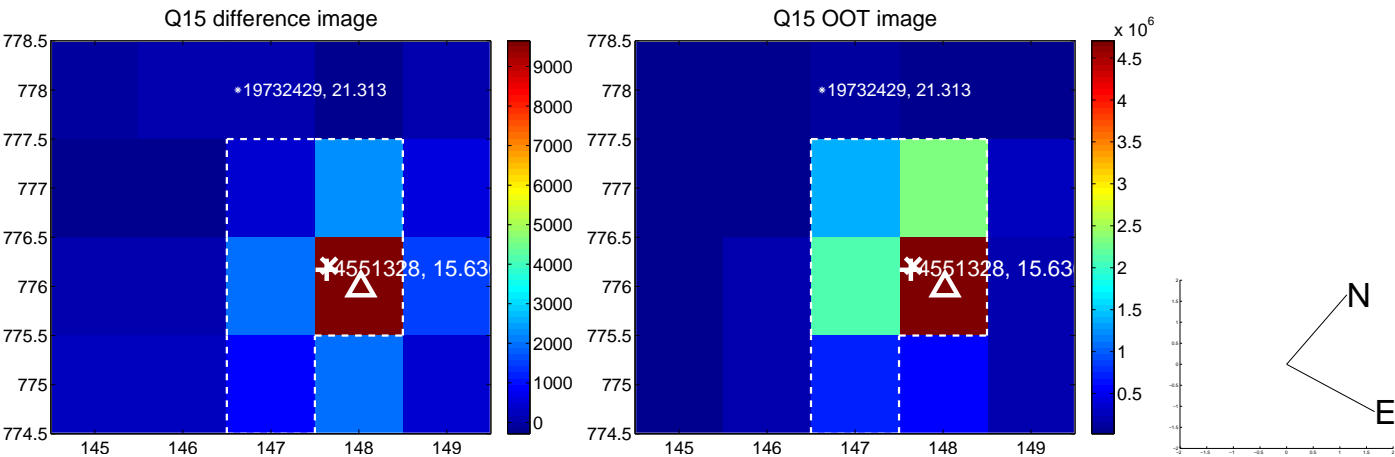
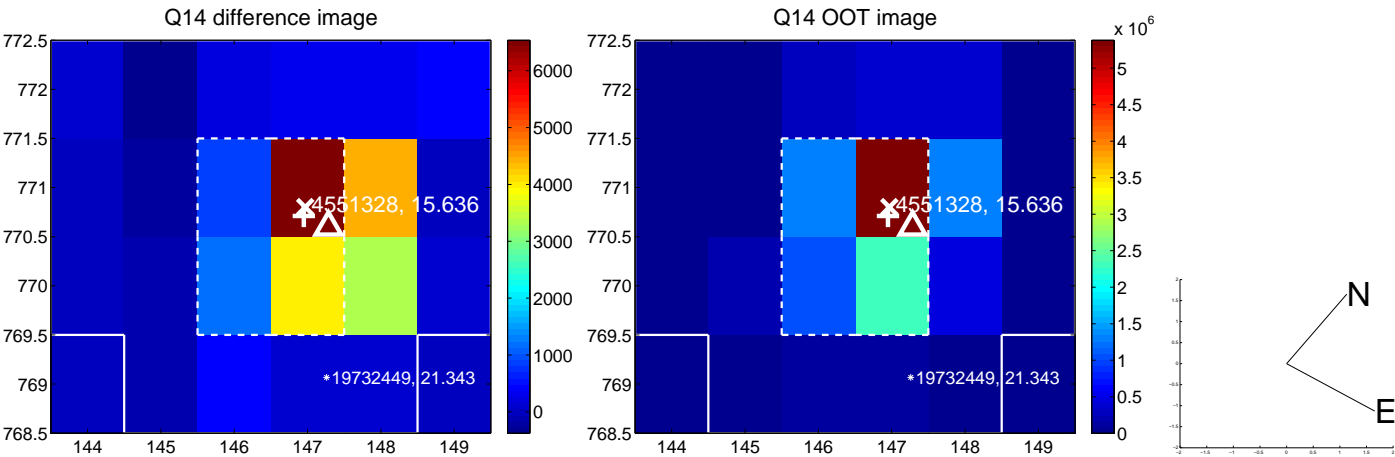
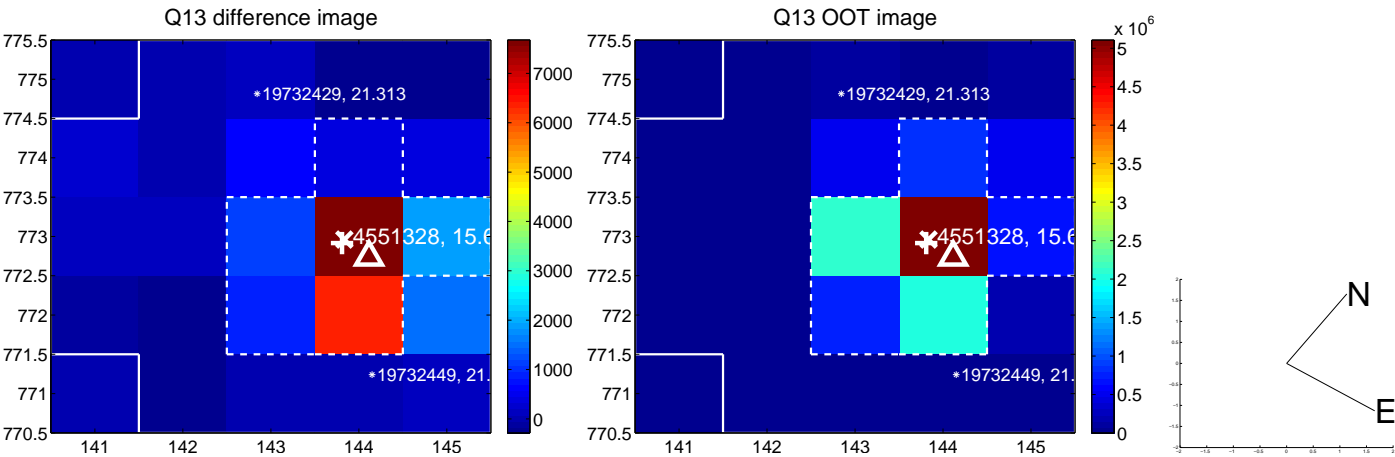
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



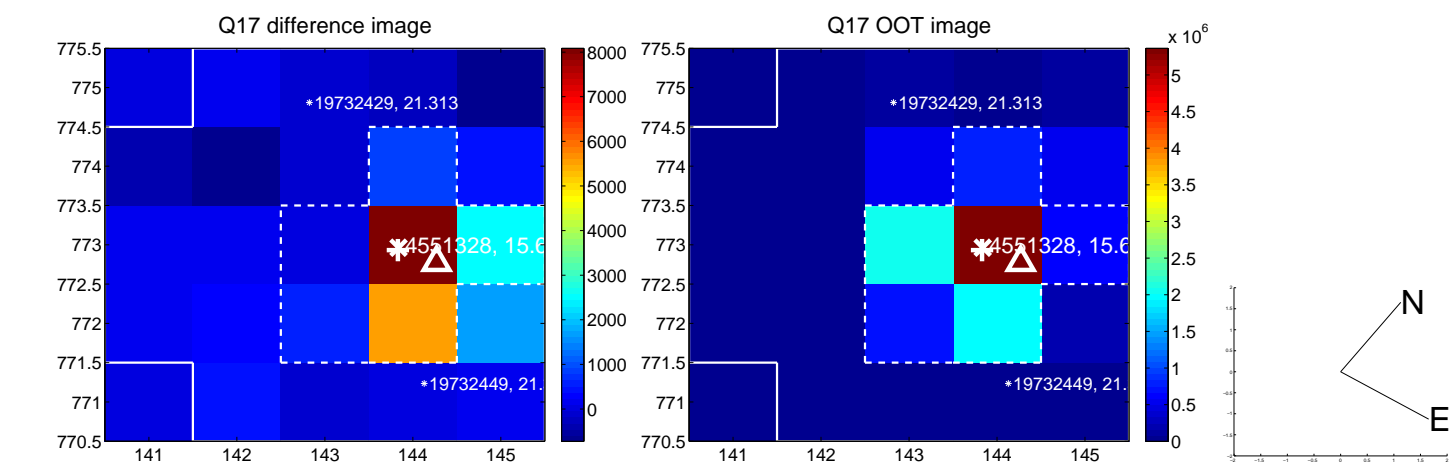
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



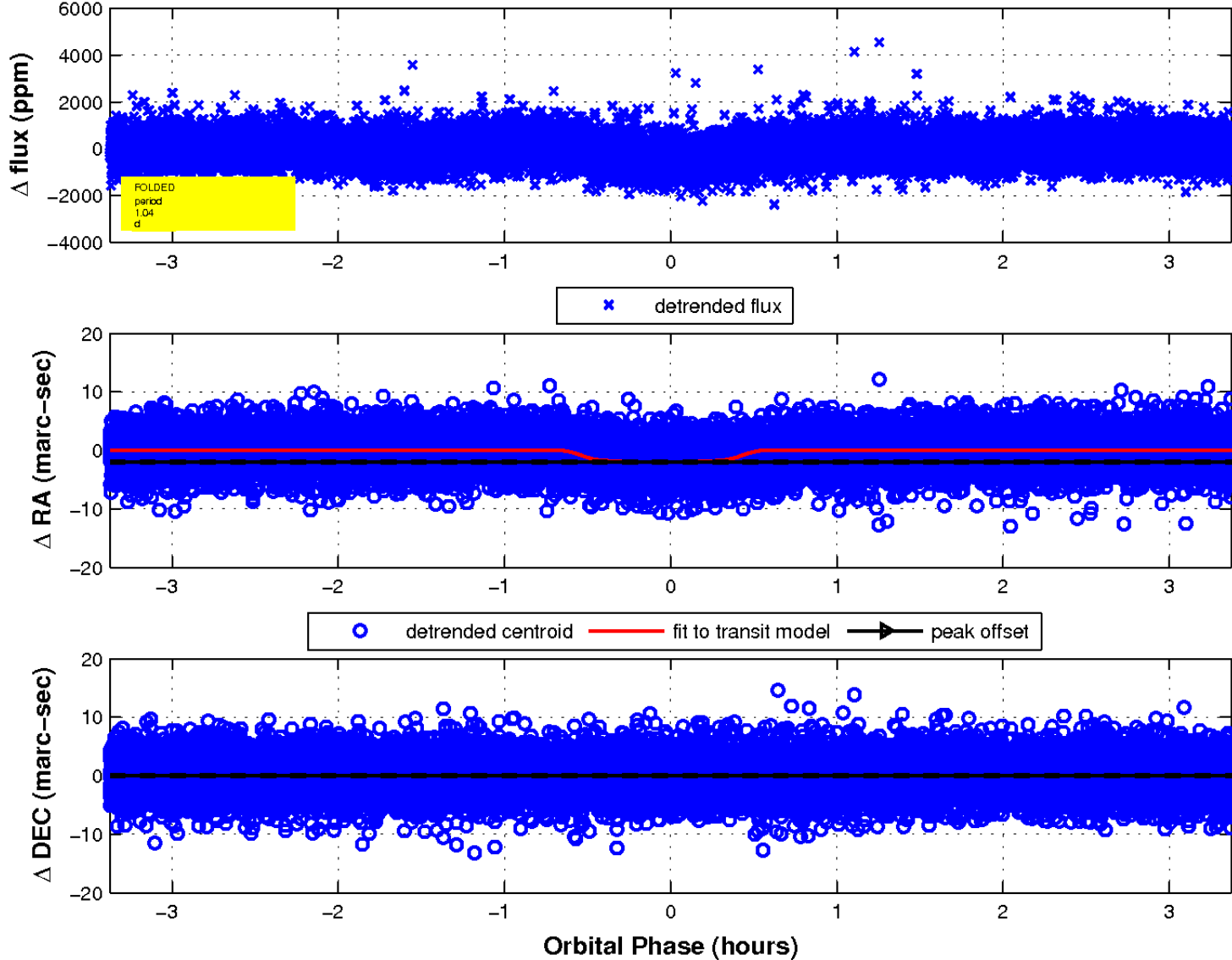
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

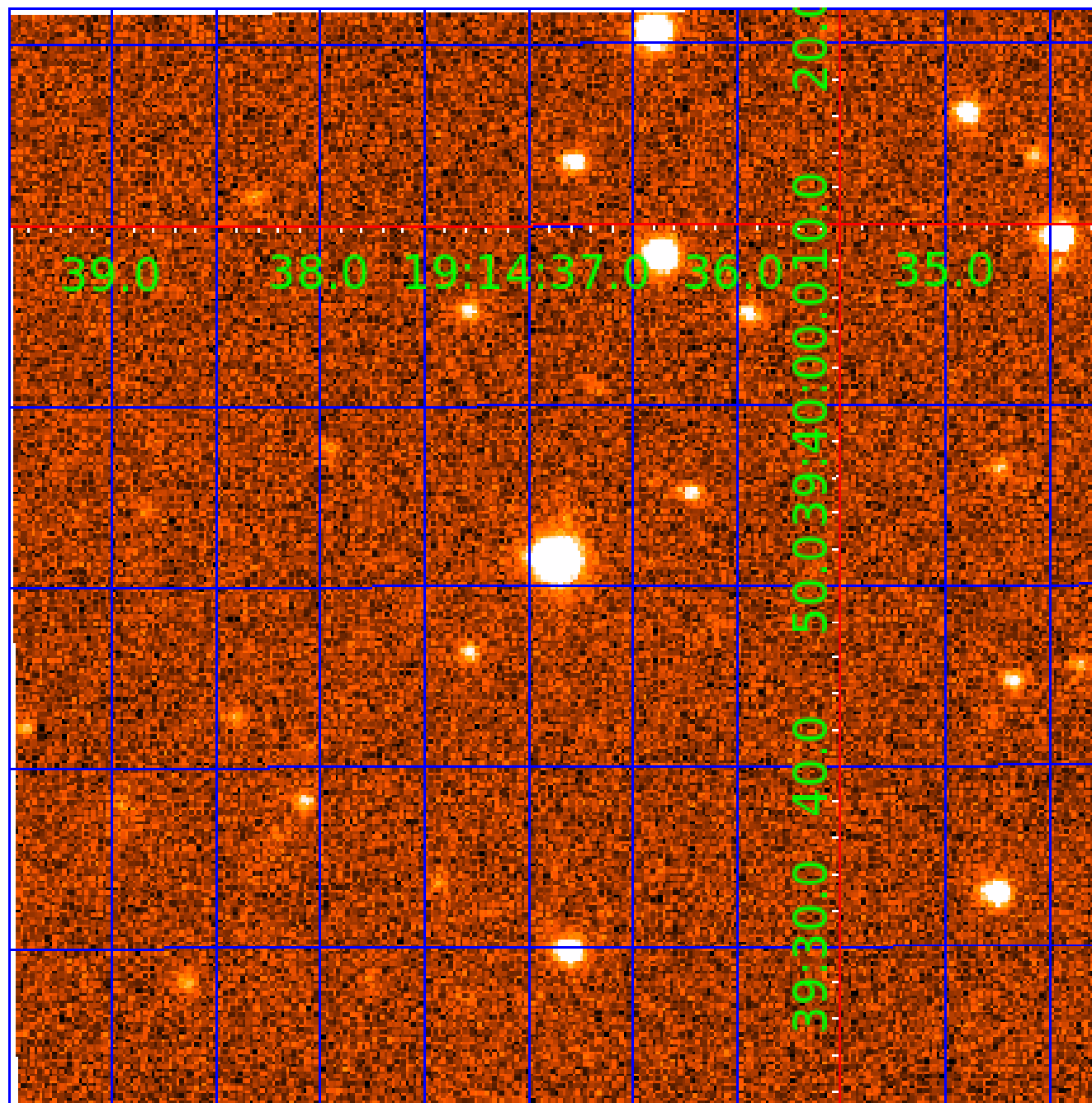


fluxWeightedCentroids, Planet 1 of 2



UKIRT Image

Declination



KIC 004551328

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})
004551328-01	OBS	1324.01	1.044108	132.096335	433.5	1.125	20.9	34.6	0.88	5359	2.23	1570.00
004551328-02	OBS	No	1.044099	131.701707	837.8	3.500	8.0	-1.0	0.88	5359	2.49	1570.01

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004551328-01	OBS	FP	0.00	0	1	1	0	MOD_SEC_ALT—HAS_SEC_TCE—CENT_UNRESOLVED_OFFSET
004551328-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE—CENT_NOFITS

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 004551328-02

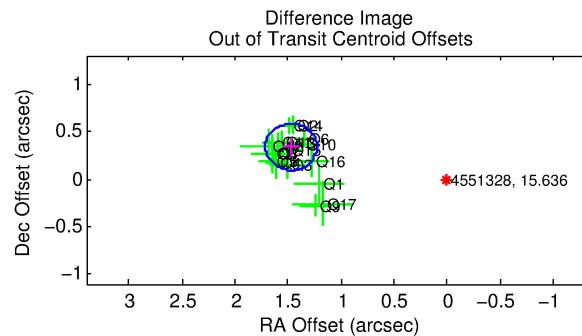
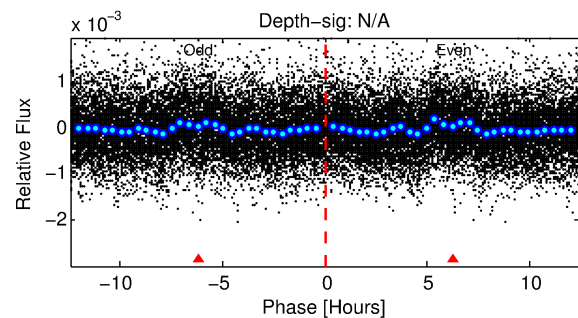
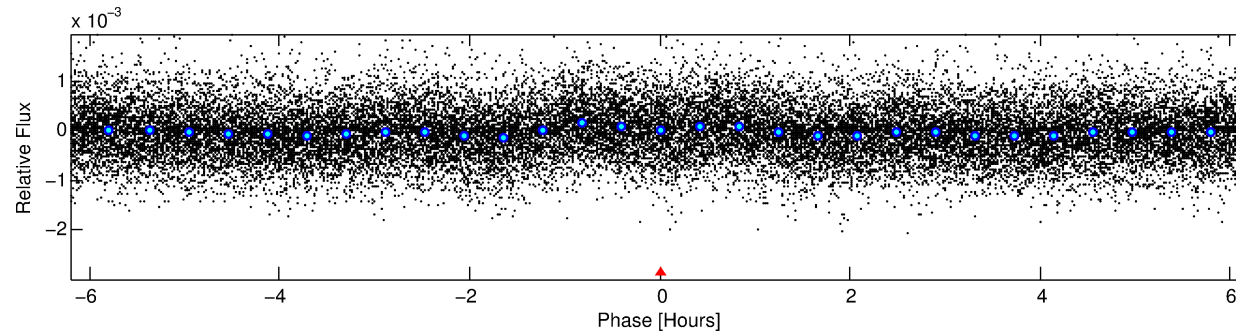
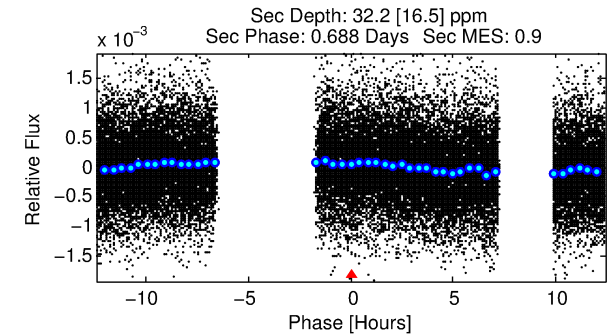
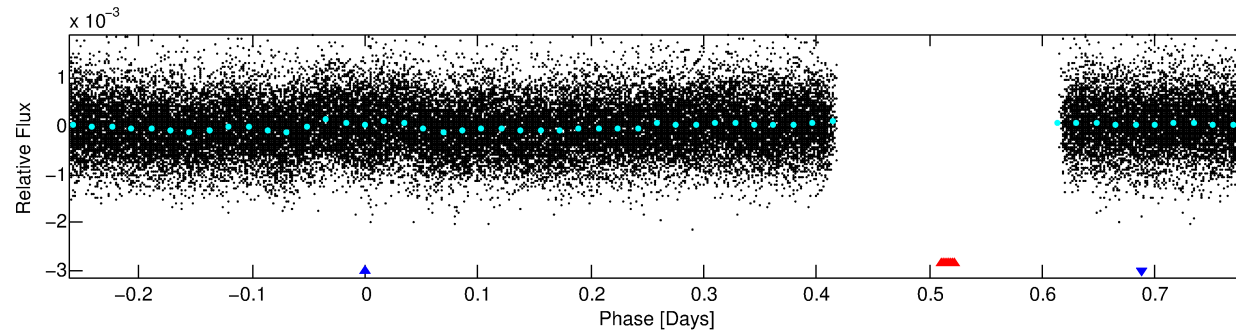
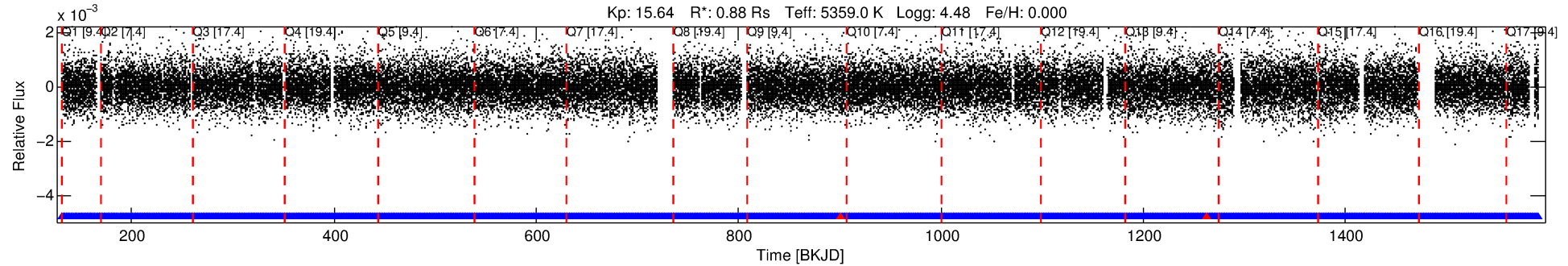
No Significant Match Found

DV One-Page Summary

KIC: 4551328 Candidate: 2 of 2 Period: 1.044 d

KOI: K01324 Corr: No Ephemeris Match

Kp: 15.64 R*: 0.88 Rs Teff: 5359.0 K Logg: 4.48 Fe/H: 0.000



TPS TCE Results:

Period = 1.04410 d

Epoch = 131.7017 BKJD

DV fit results are unavailable

DV Diagnostic Results:

ShortPeriod-sig: N/A

LongPeriod-sig: 0.0% [0.00σ]

ModelChiSquare2-sig: N/A

ModelChiSquareGoF-sig: N/A

Bootstrap-pfa: 1.38e-16

RollingBand-fgt: 1.00 [1221/1223]

GhostDiagnostic-chr: -0.7582

Centroid-sig: 0.0%

Centroid-so: 1.063 arcsec [7.05σ]

OotOffset-rm: 1.508 arcsec [18.53σ]

KicOffset-rm: 1.513 arcsec [19.56σ]

OotOffset-st: 4/4/4/5 [17]

KicOffset-st: 4/4/4/5 [17]

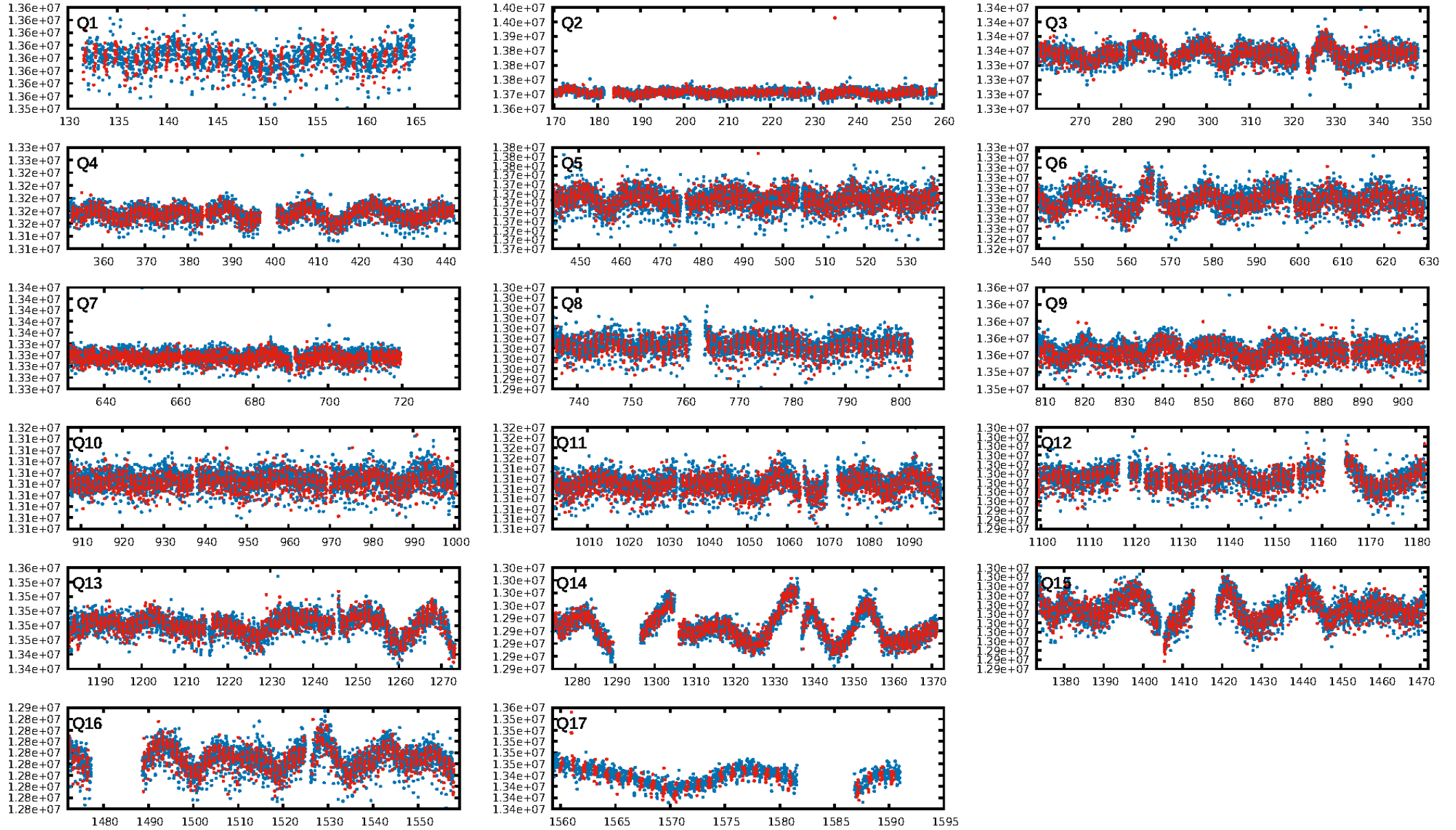
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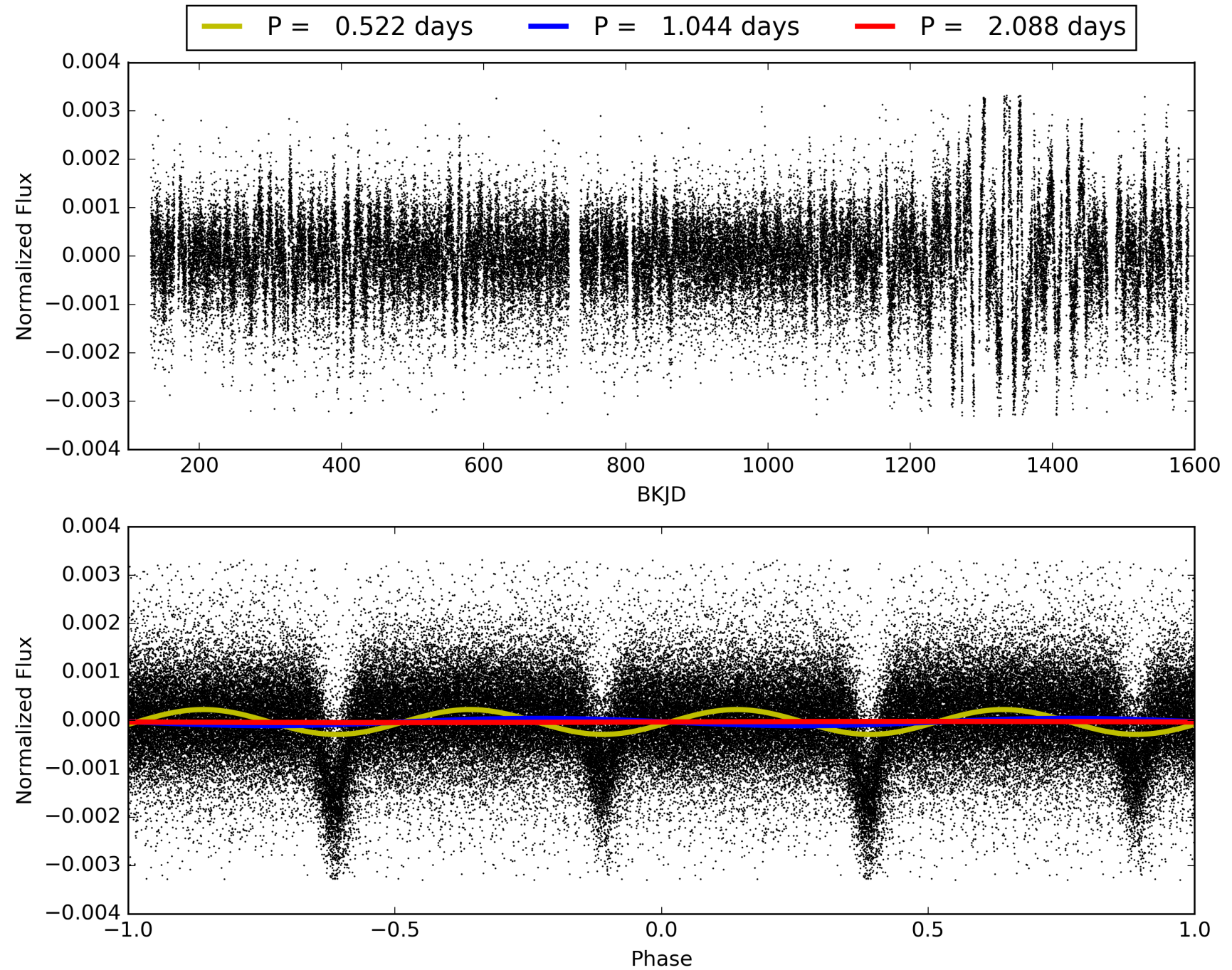
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 00:50:02 Z

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

TCE 004551328-02, PDC Light Curves

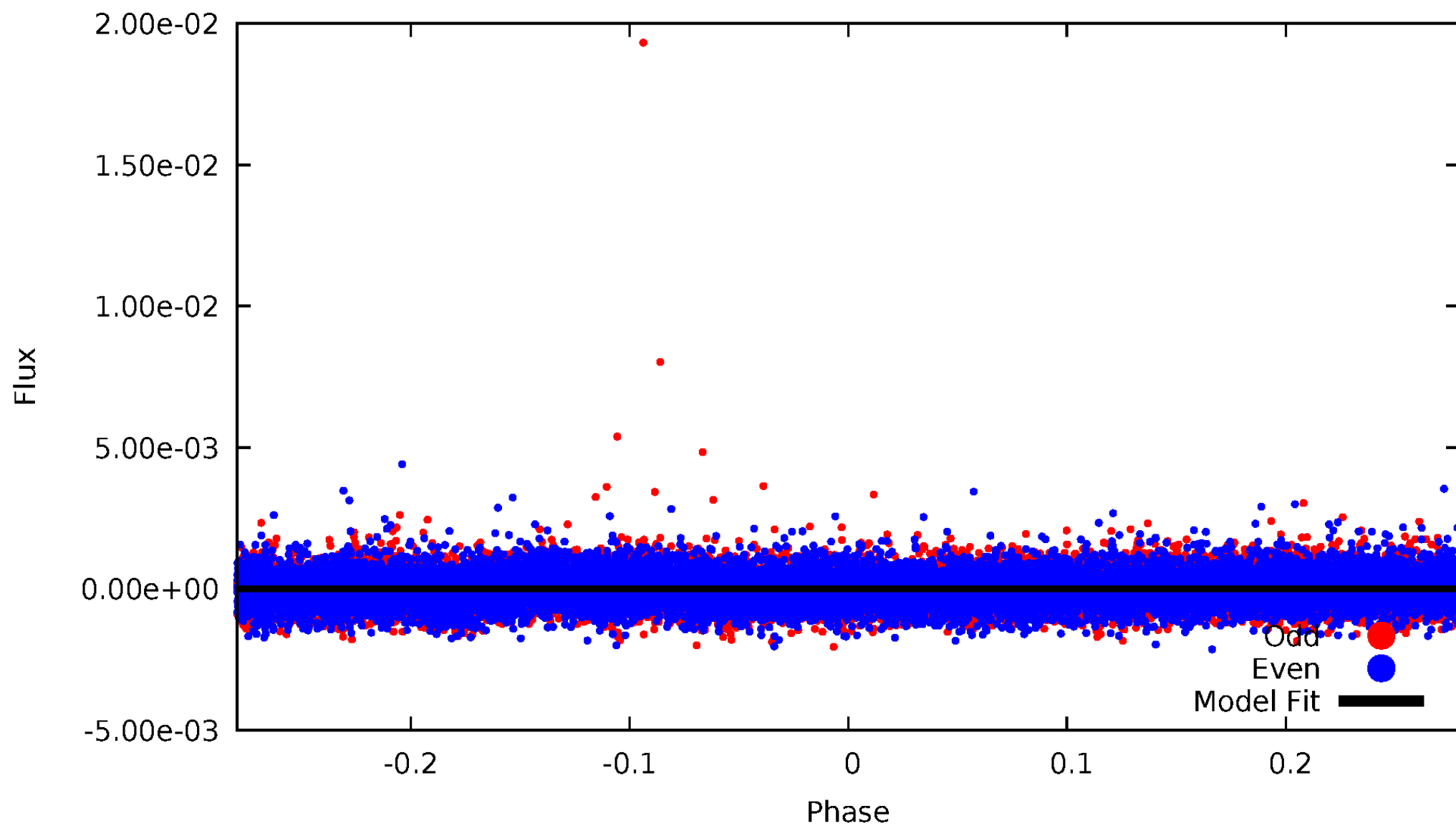


TCE 004551328-02



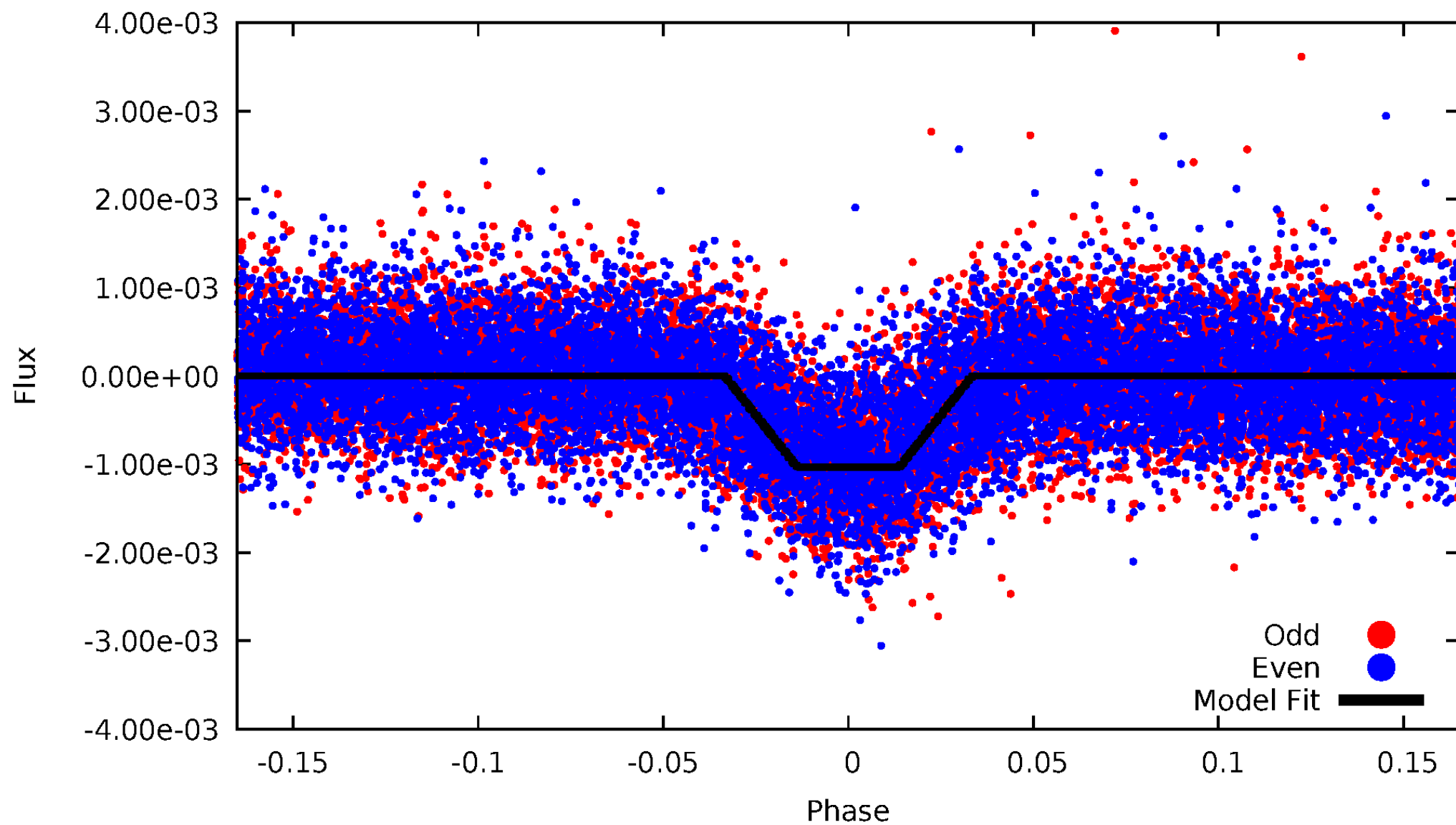
DV Odd/Even

TCE 004551328-02



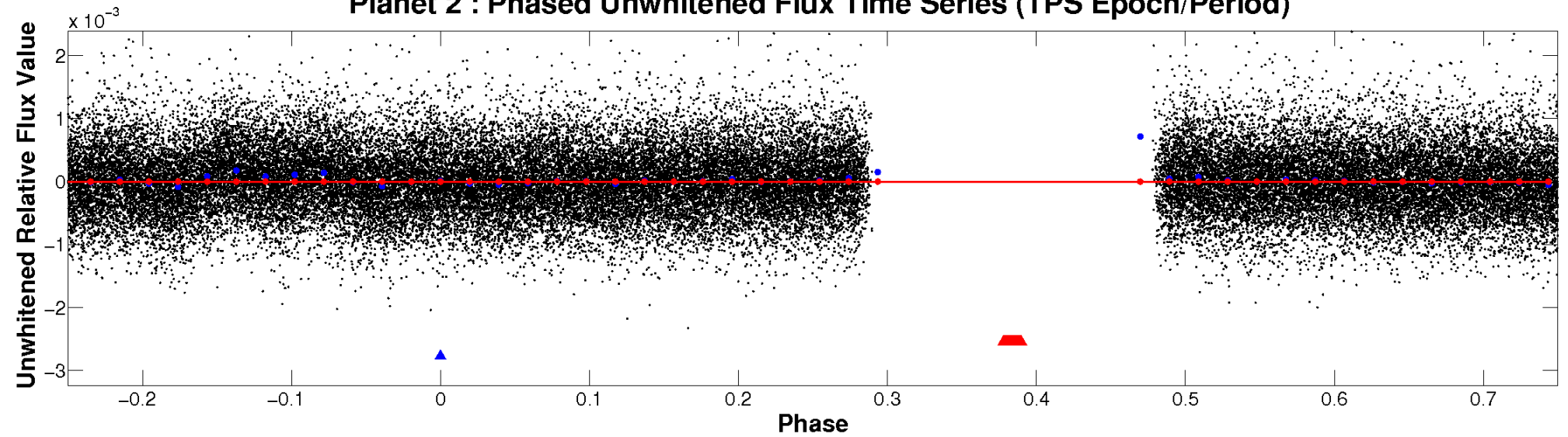
ALT Odd/Even

TCE 004551328-02



Non-Whitened Vs. Whitened Light Curve

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

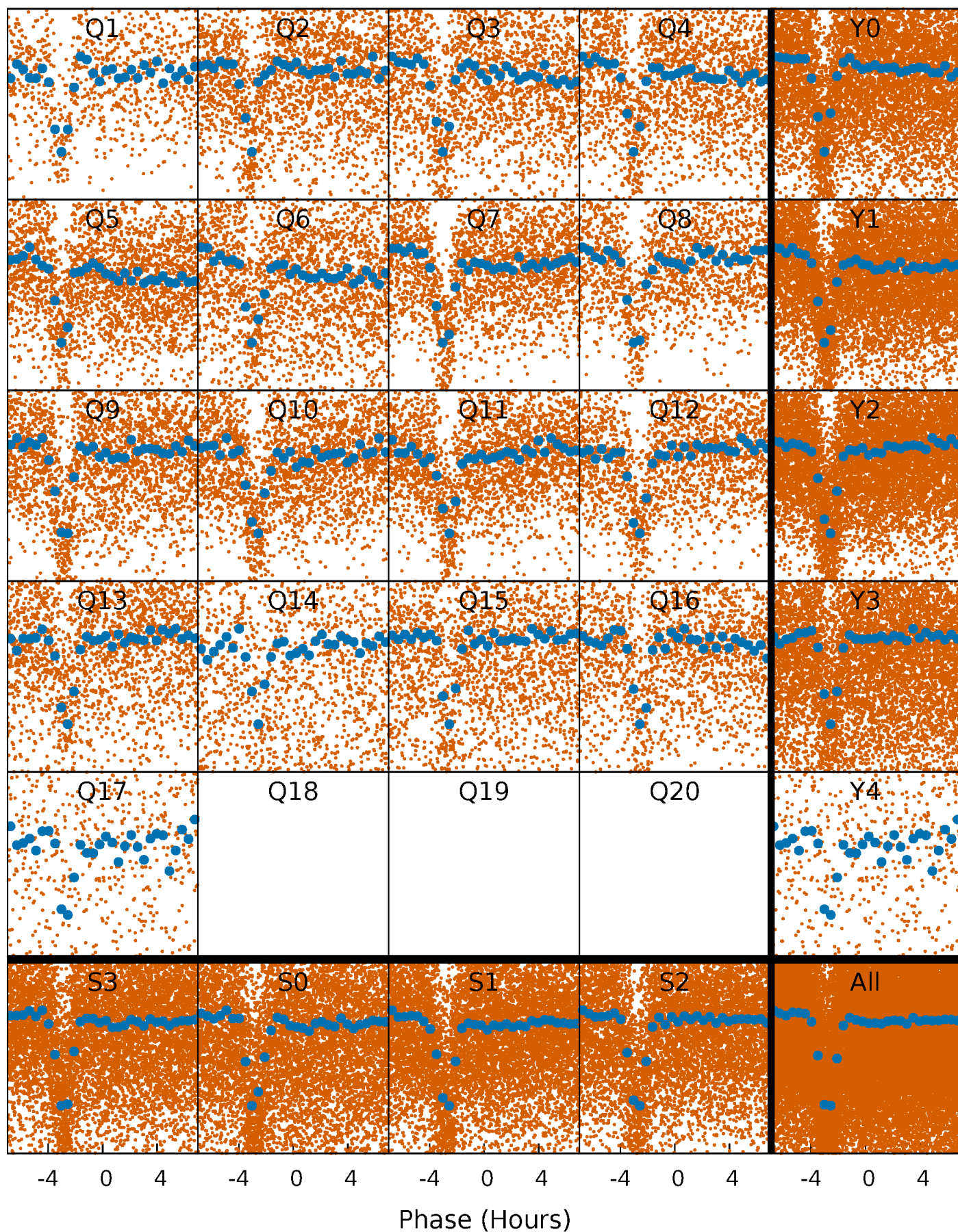


Planet 2 : Phased Whitened Flux Time Series (TPS Epoch/Period)



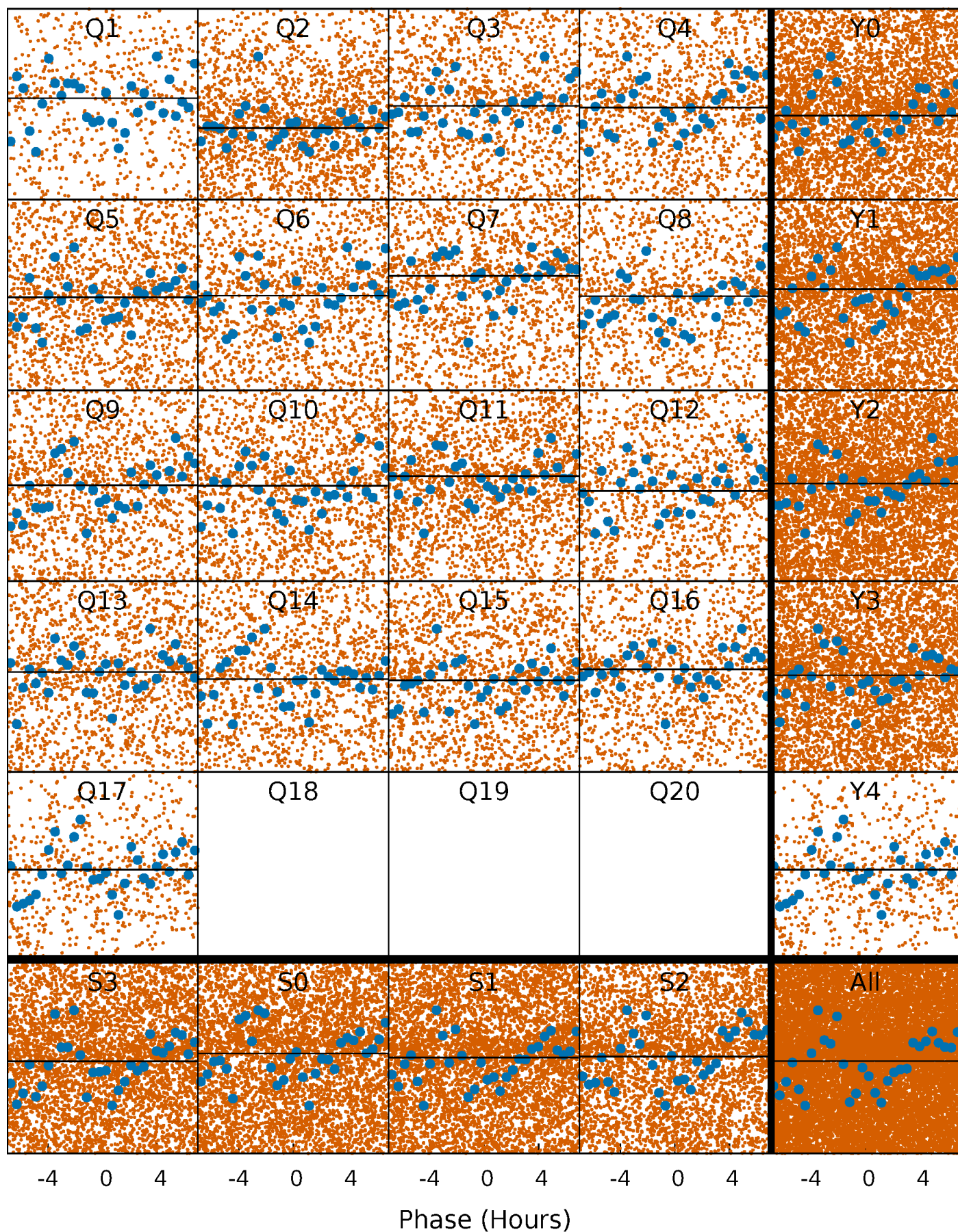
PDC Quarter-Phased Transit Curves

TCE 004551328-02 P= 1.044099 Days $T_0=131.701707$ (BKJD)



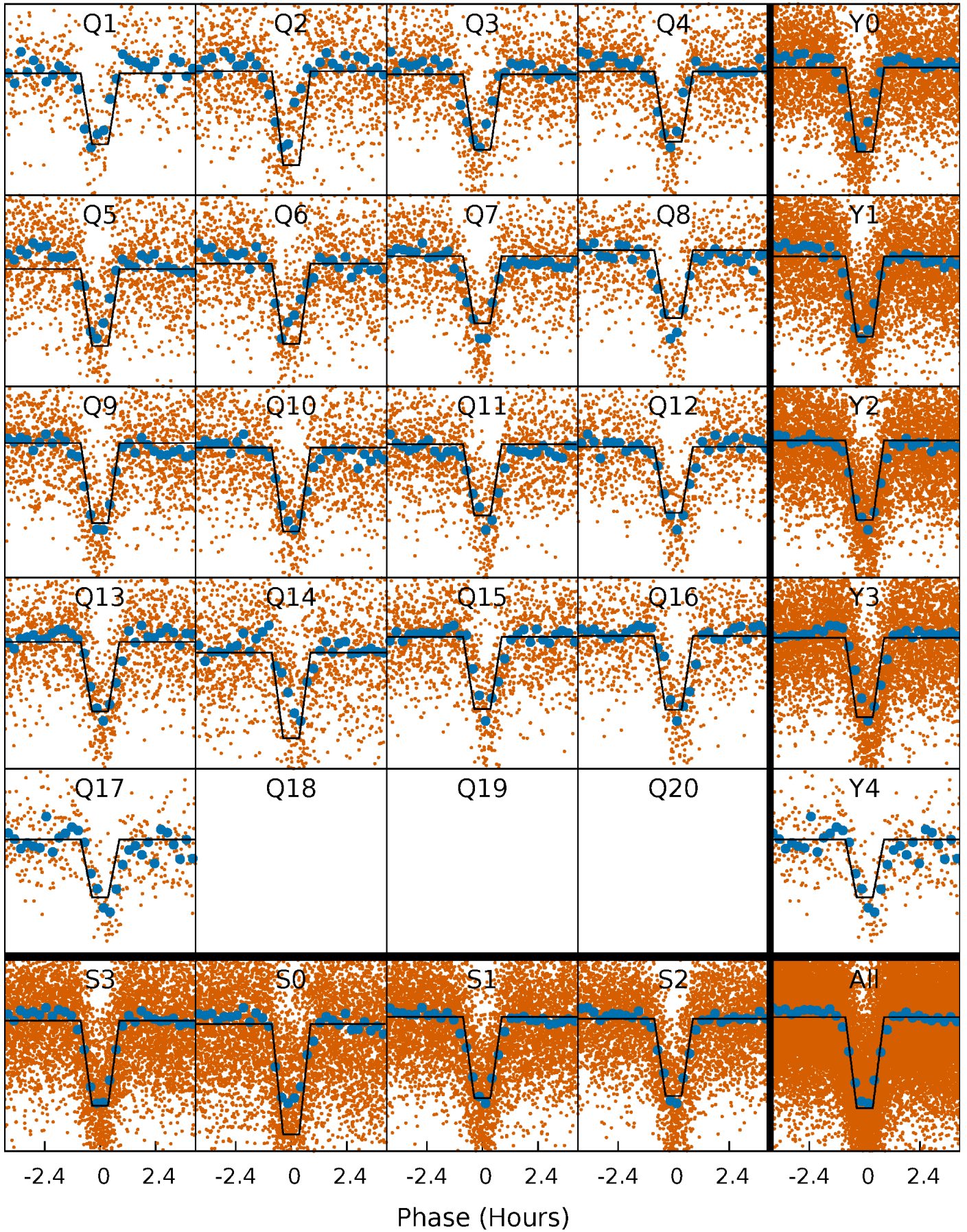
DV Quarter-Phased Transit Curves

TCE 004551328-02 P= 1.044099 Days $T_0=131.701707$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

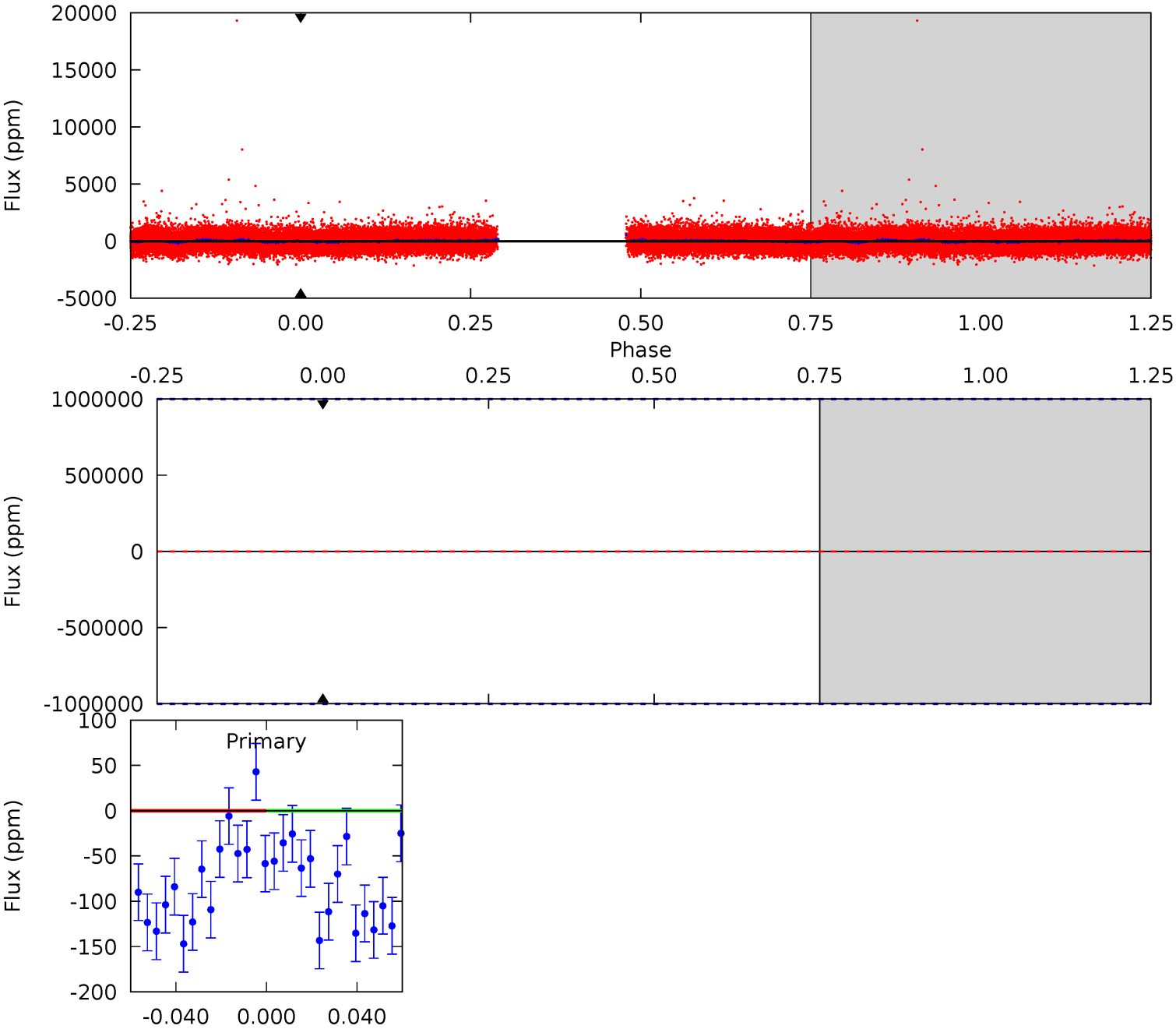
TCE 004551328-02 P= 1.044099 Days $T_0=131.585979$ (BKJD)



DV Model-Shift Uniqueness Test

004551328-02, P = 1.044099 Days, E = 130.657608 Days

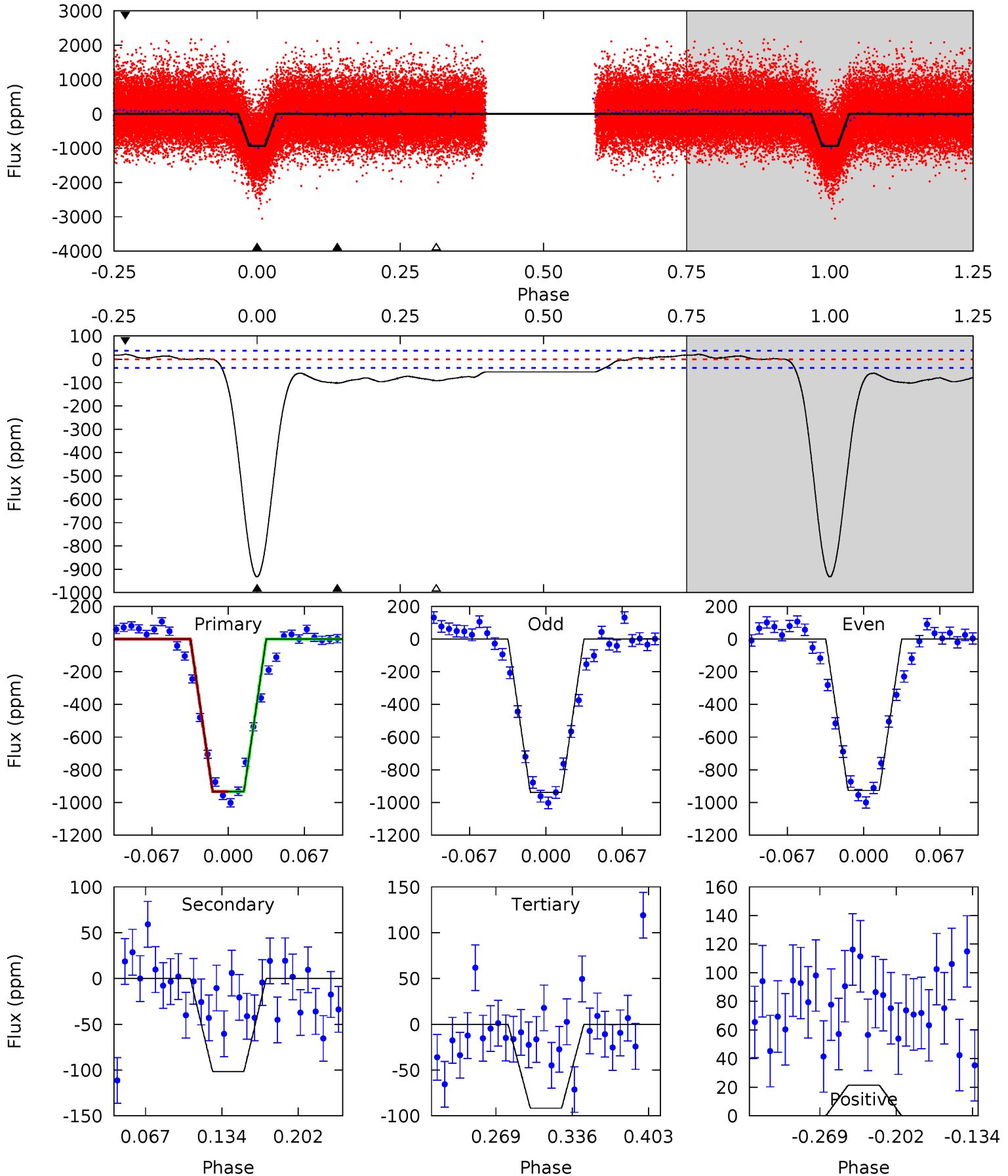
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



Alt Model-Shift Uniqueness Test

004551328-02, P = 1.044099 Days, E = 130.541880 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
118.0	12.9	11.6	2.70	4.65	1.83	5.40	106.4	115.3	1.27	10.2	0.72	0.98	0.02	0.02



Stellar Parameters For KIC 004551328

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5359^{+176}_{-160}	$4.478^{+0.092}_{-0.138}$	$0.000^{+0.250}_{-0.300}$	$0.878^{+0.166}_{-0.102}$	$0.847^{+0.096}_{-0.072}$	$1.760^{+0.653}_{-0.666}$
	+3%/-3%	+2%/-3%	+inf%/-inf%	+19%/-12%	+11%/-9%	+37%/-38%
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 004551328-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	0 ± 1000000	$7.75^{+8.02}_{-5.48}$	2255^{+126}_{-111}	4306^{+13829}_{-18492}	$7.471^{+697.139}_{-486.273}$
Alt.	-102 ± 8	$7.89^{+7.74}_{-5.34}$	2264^{+125}_{-116}	1919^{+1769}_{-4454}	$0.318^{+2.765}_{-0.234}$

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 $A_{obs} \gg 1.0$

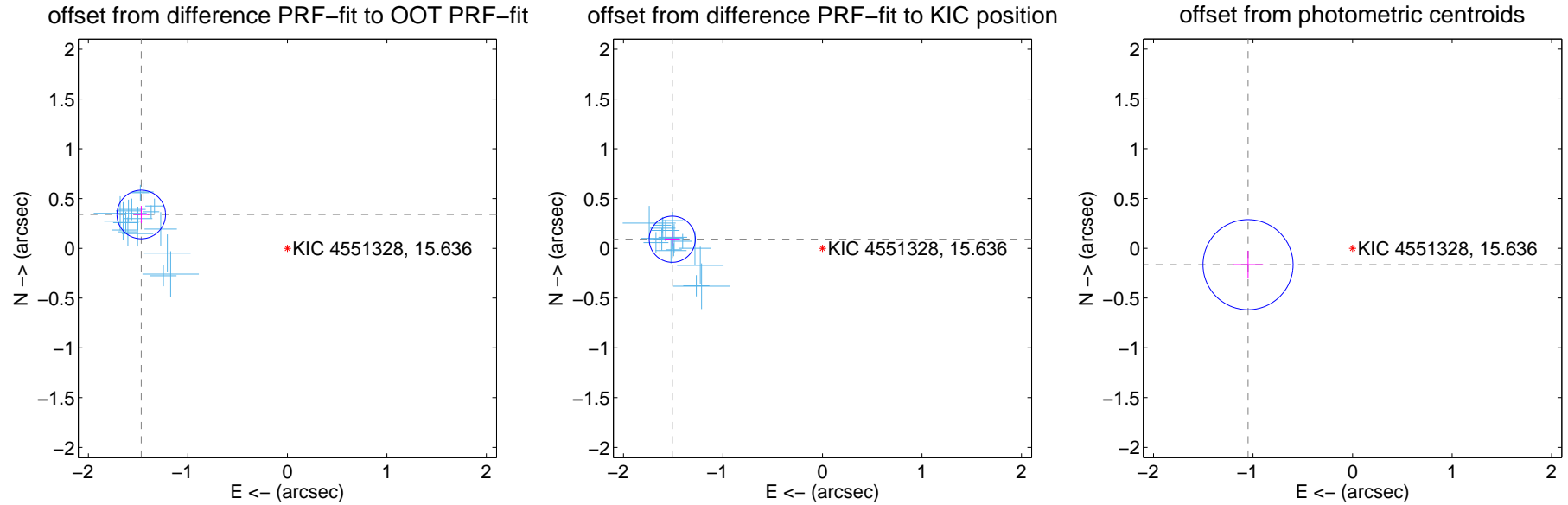
DV Centroid Data

Supplemental centroid analysis for 004551328-02. Kepler magnitude: 15.64. Transit SNR -1.00

There are 17 quarters with good PRF difference image offsets

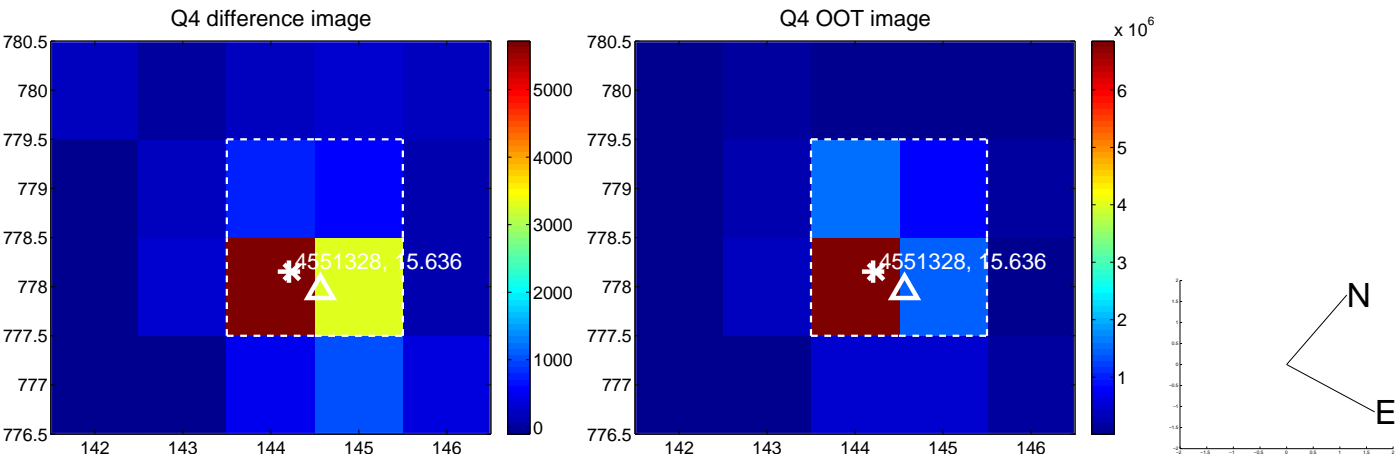
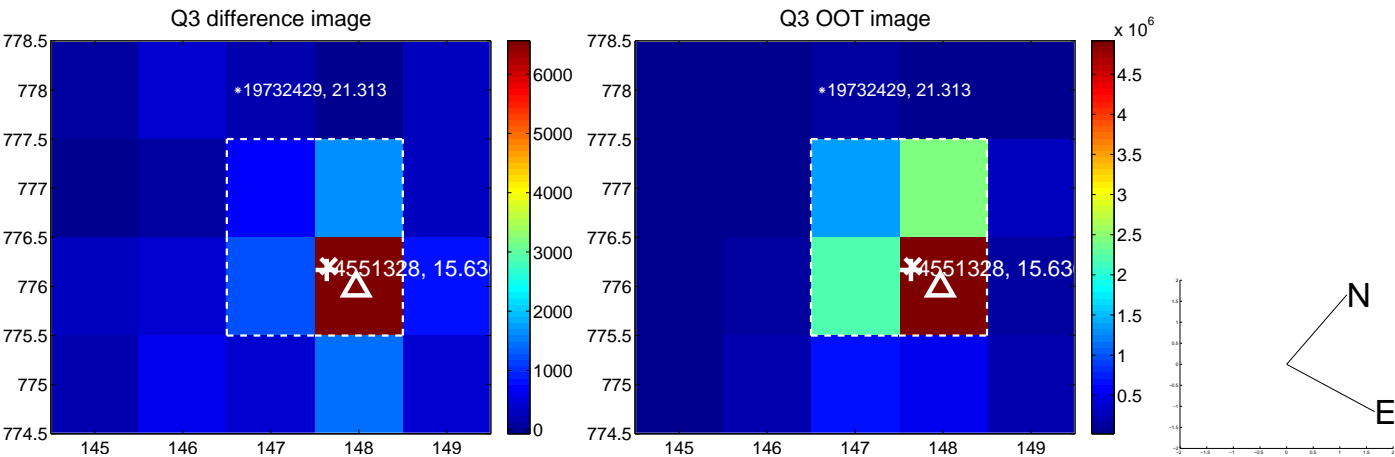
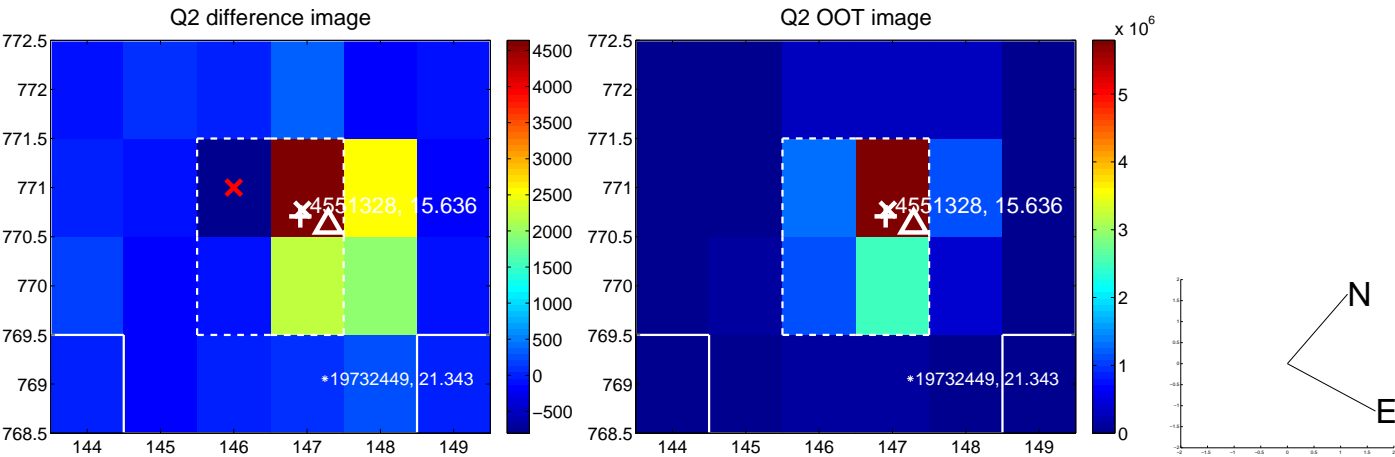
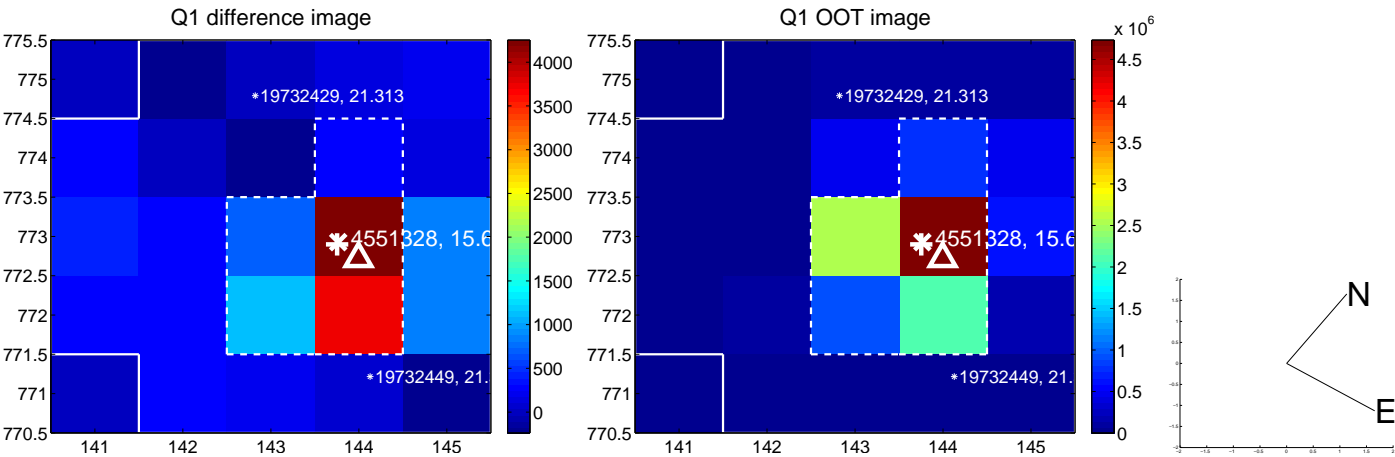
The direct PRF centroid is offset from the target star catalog position by about 0.13 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.508 ± 0.081	18.53	1.469 ± 0.078	0.340 ± 0.087
PRF-fit source offset from KIC position	1.513 ± 0.077	19.56	1.510 ± 0.077	0.092 ± 0.074
photometric centroid source offset	1.06 ± 0.15	7.05	1.05 ± 0.15	-0.16 ± 0.14

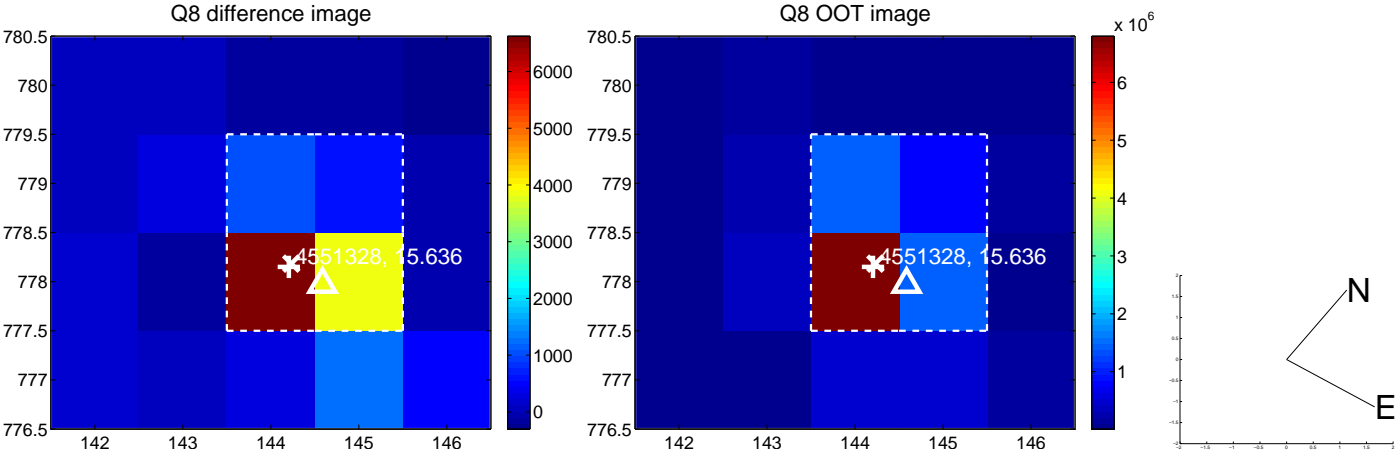
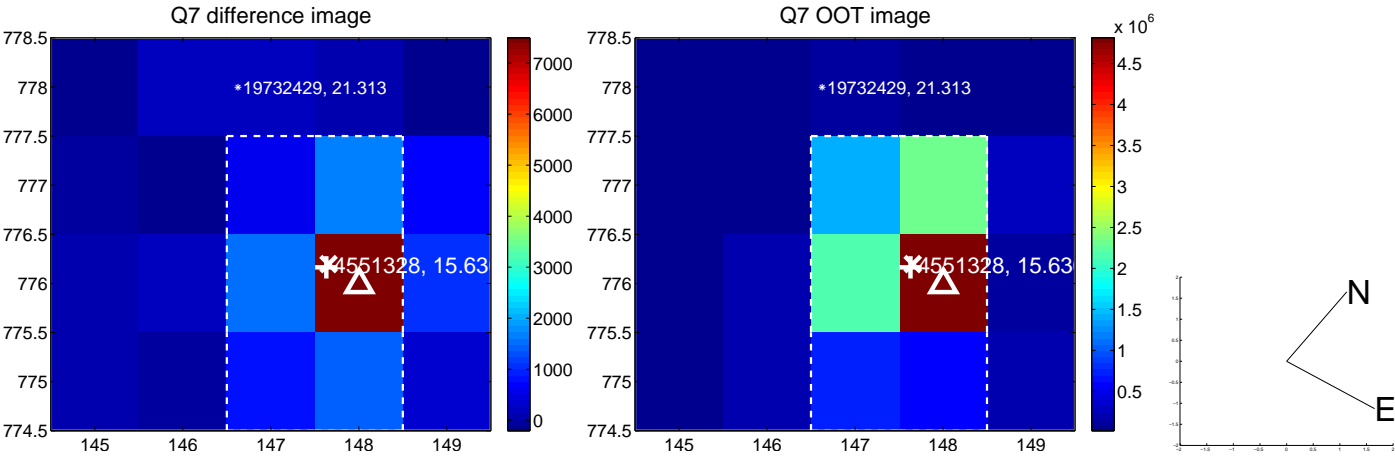
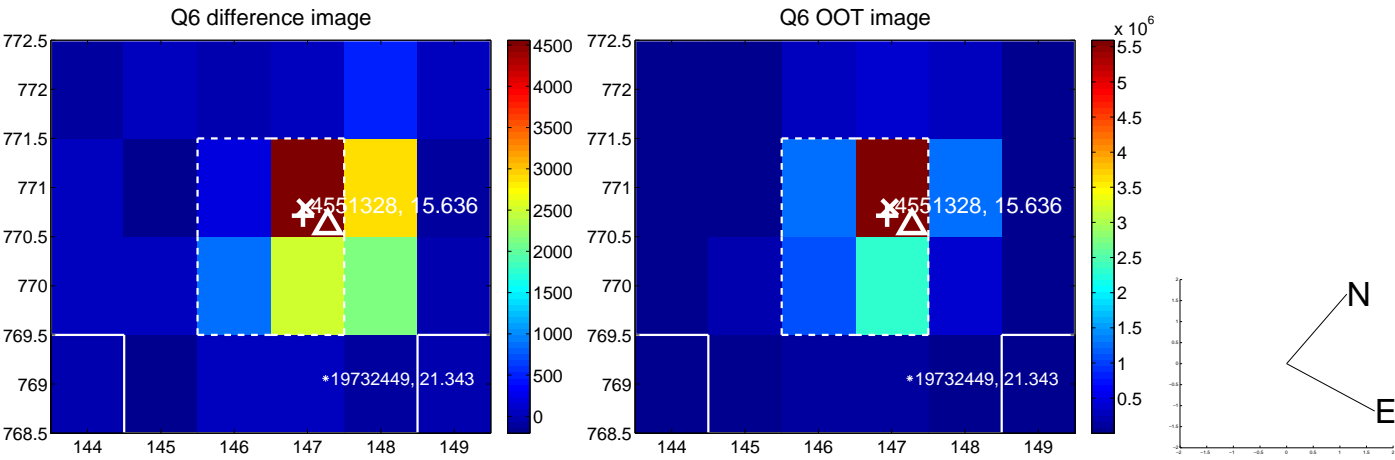
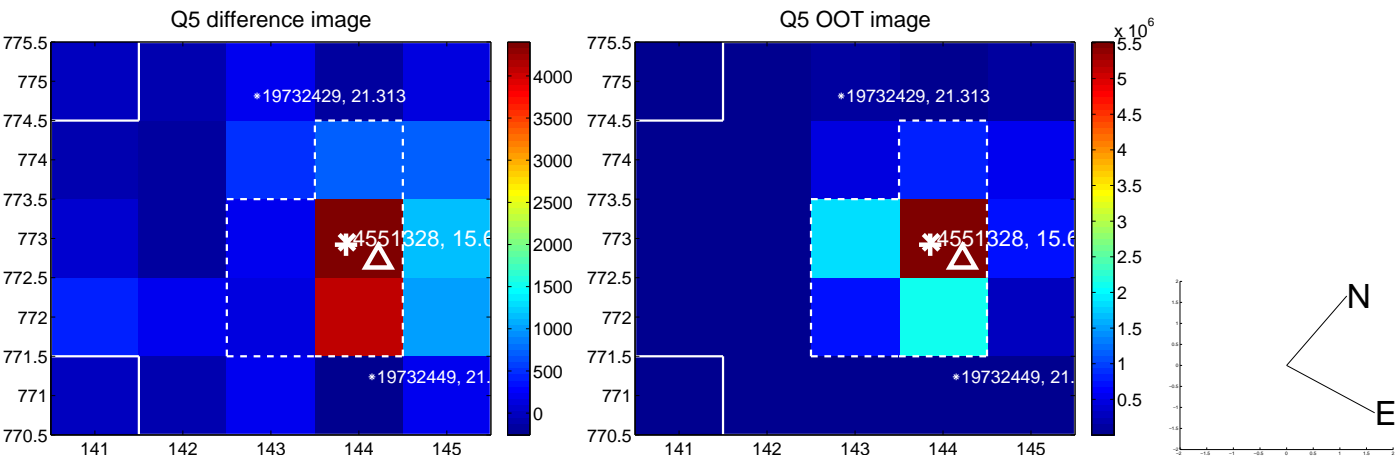


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

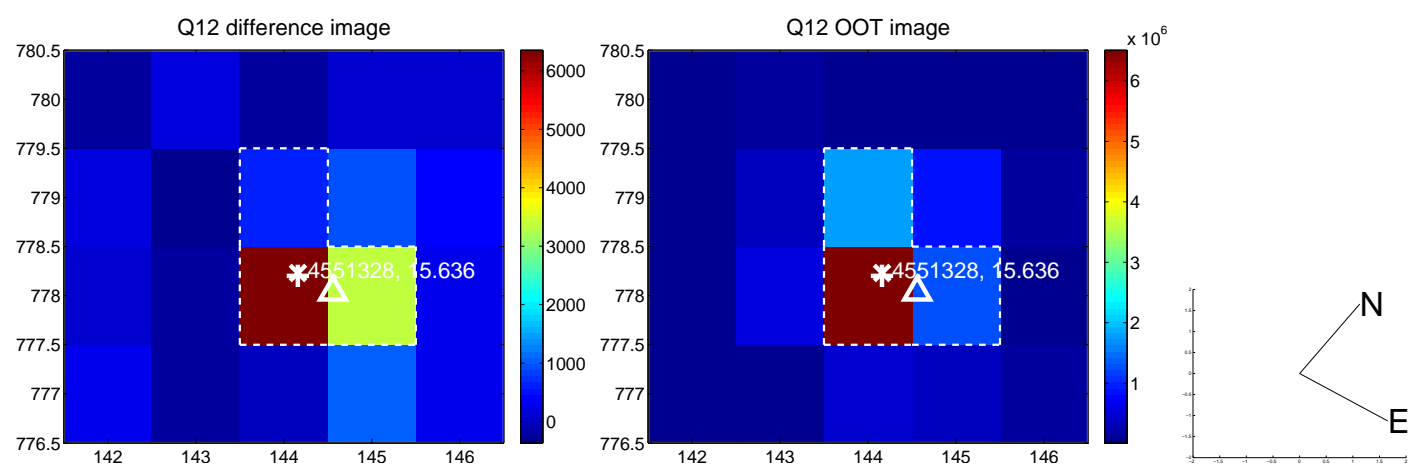
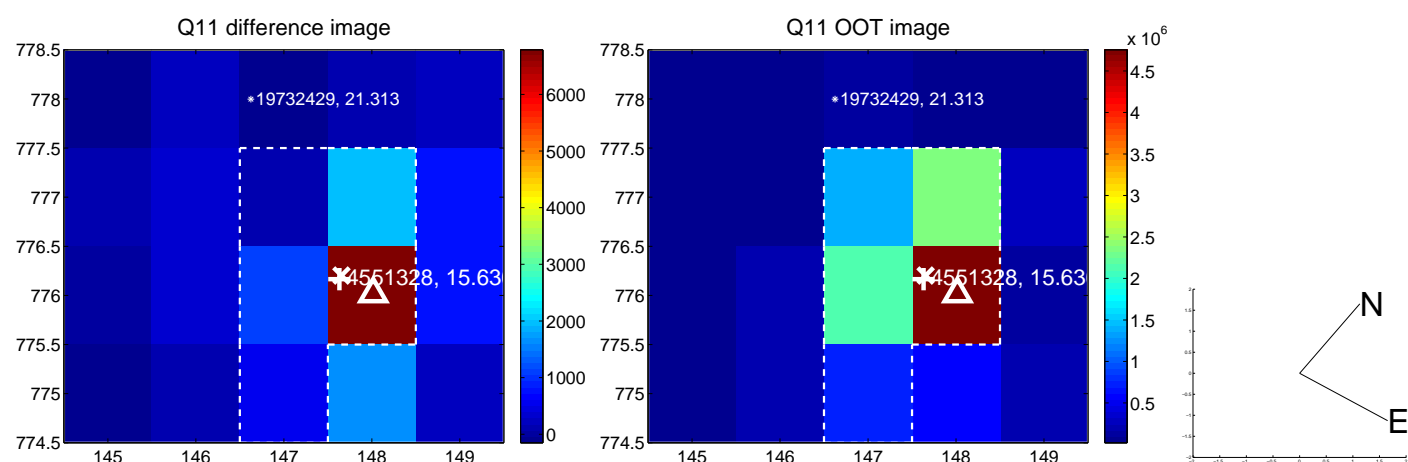
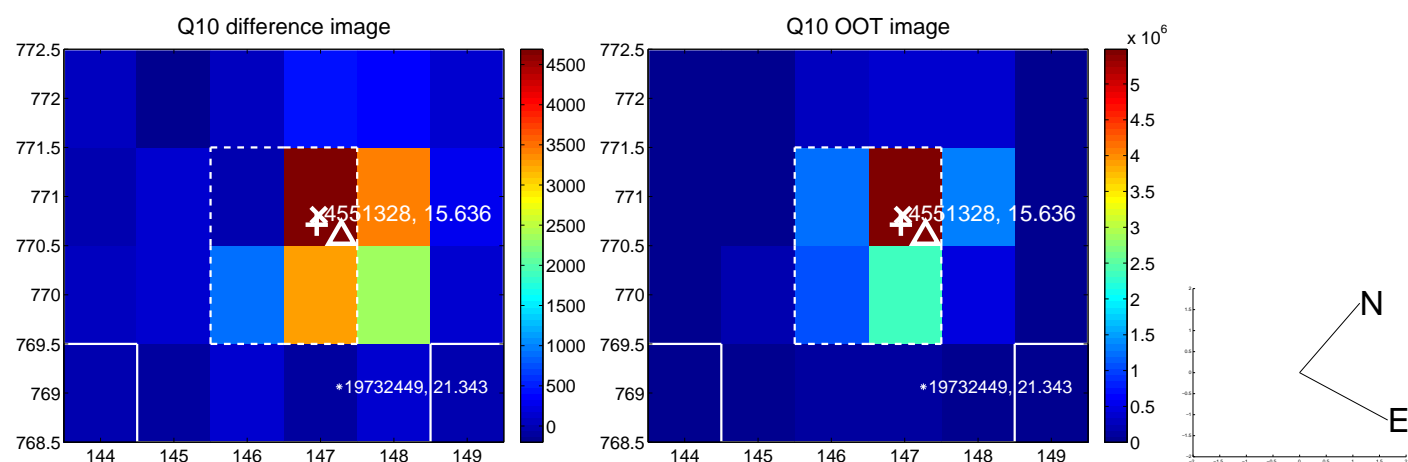
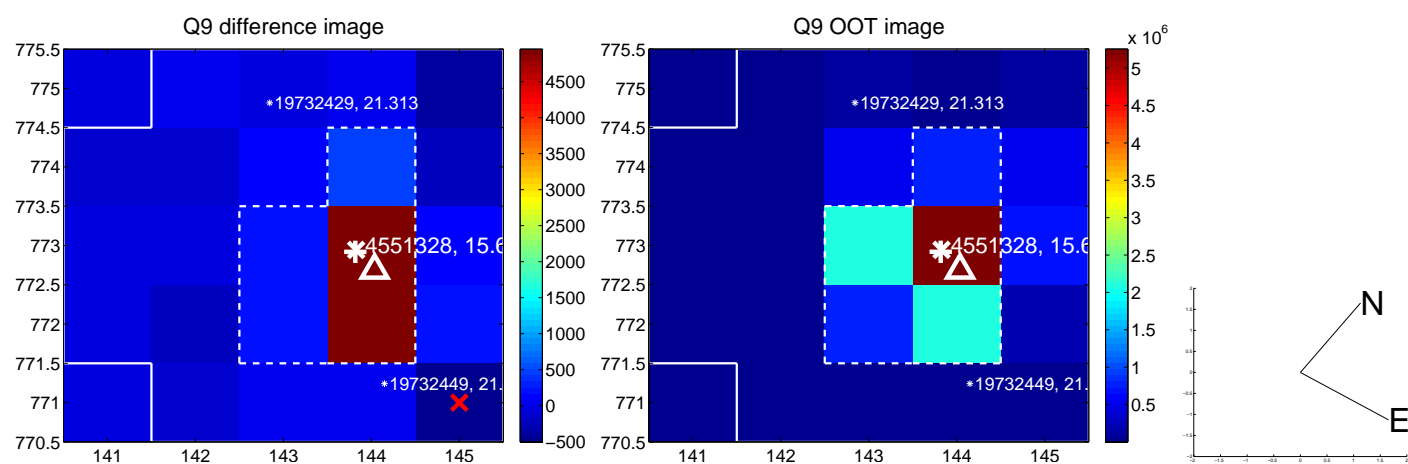
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



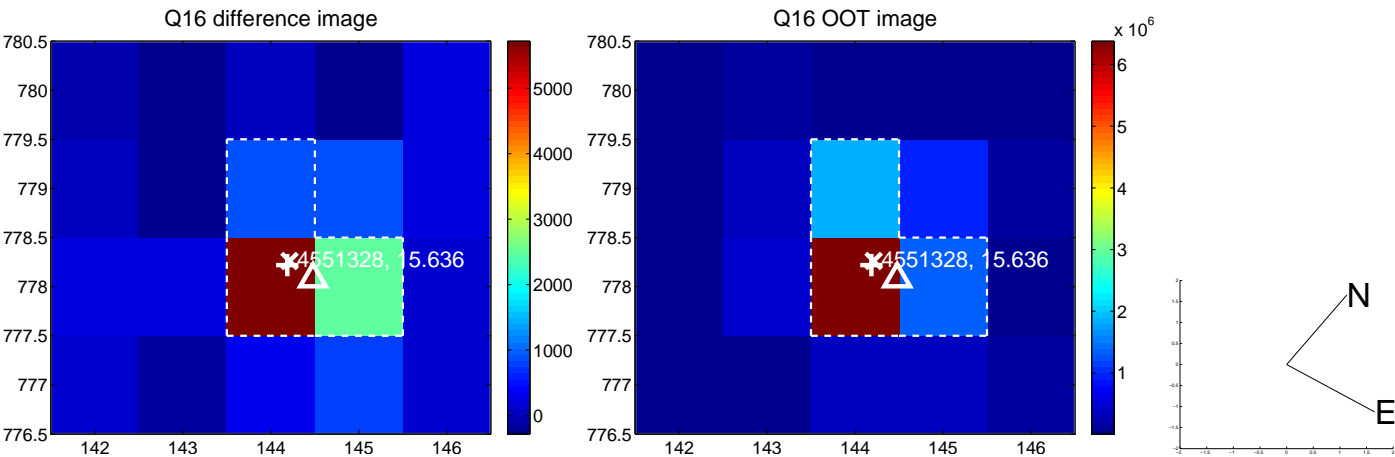
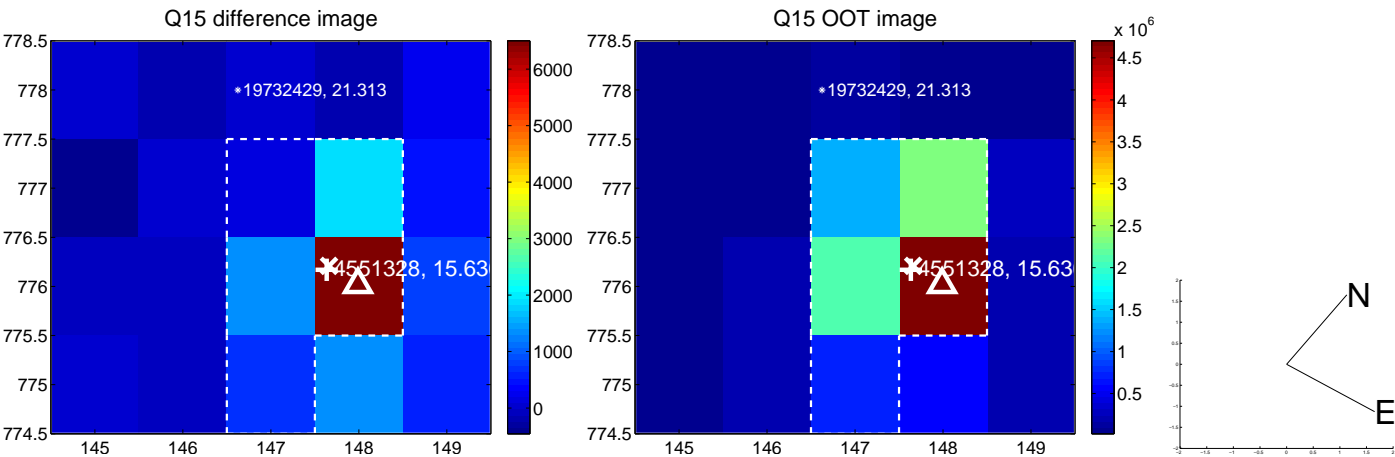
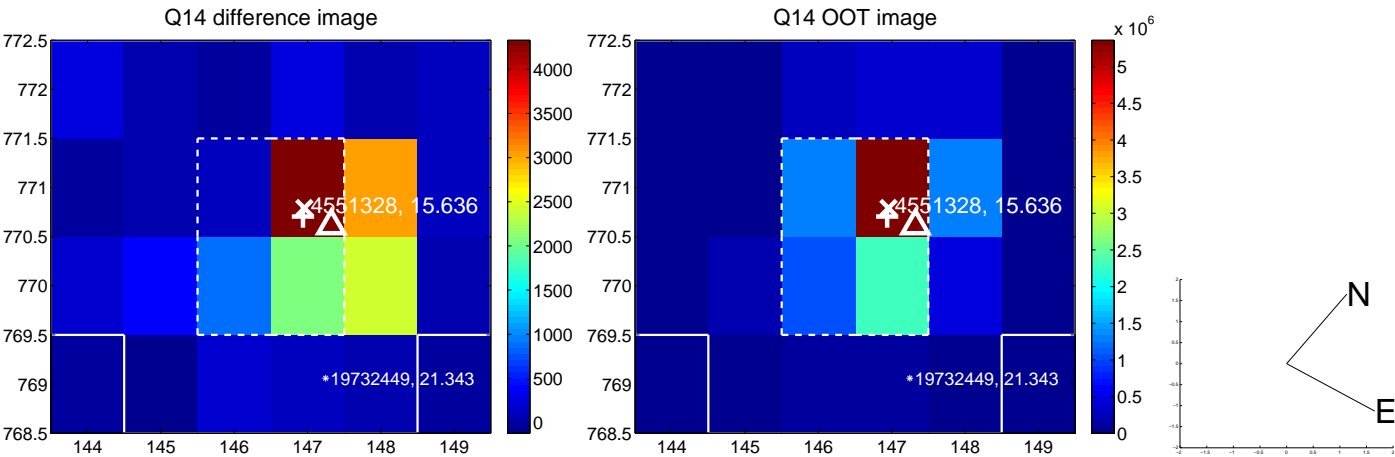
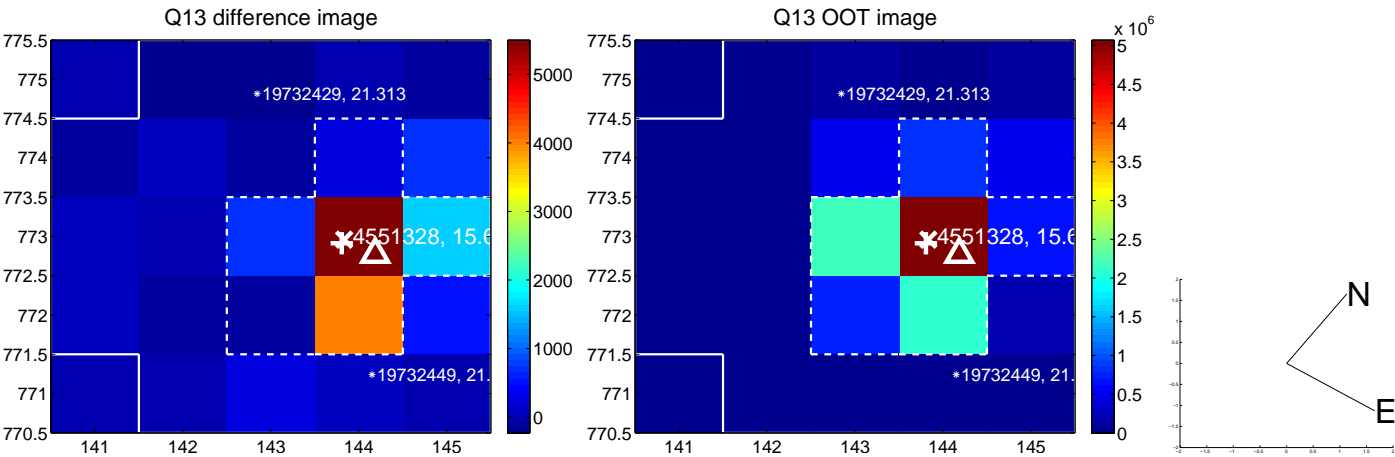
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



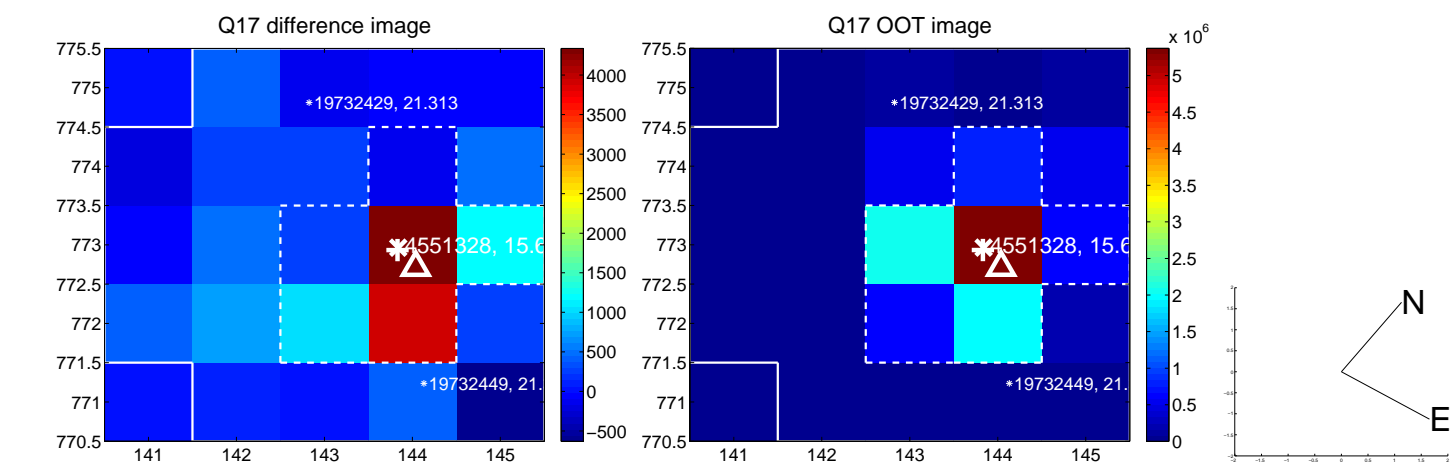
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



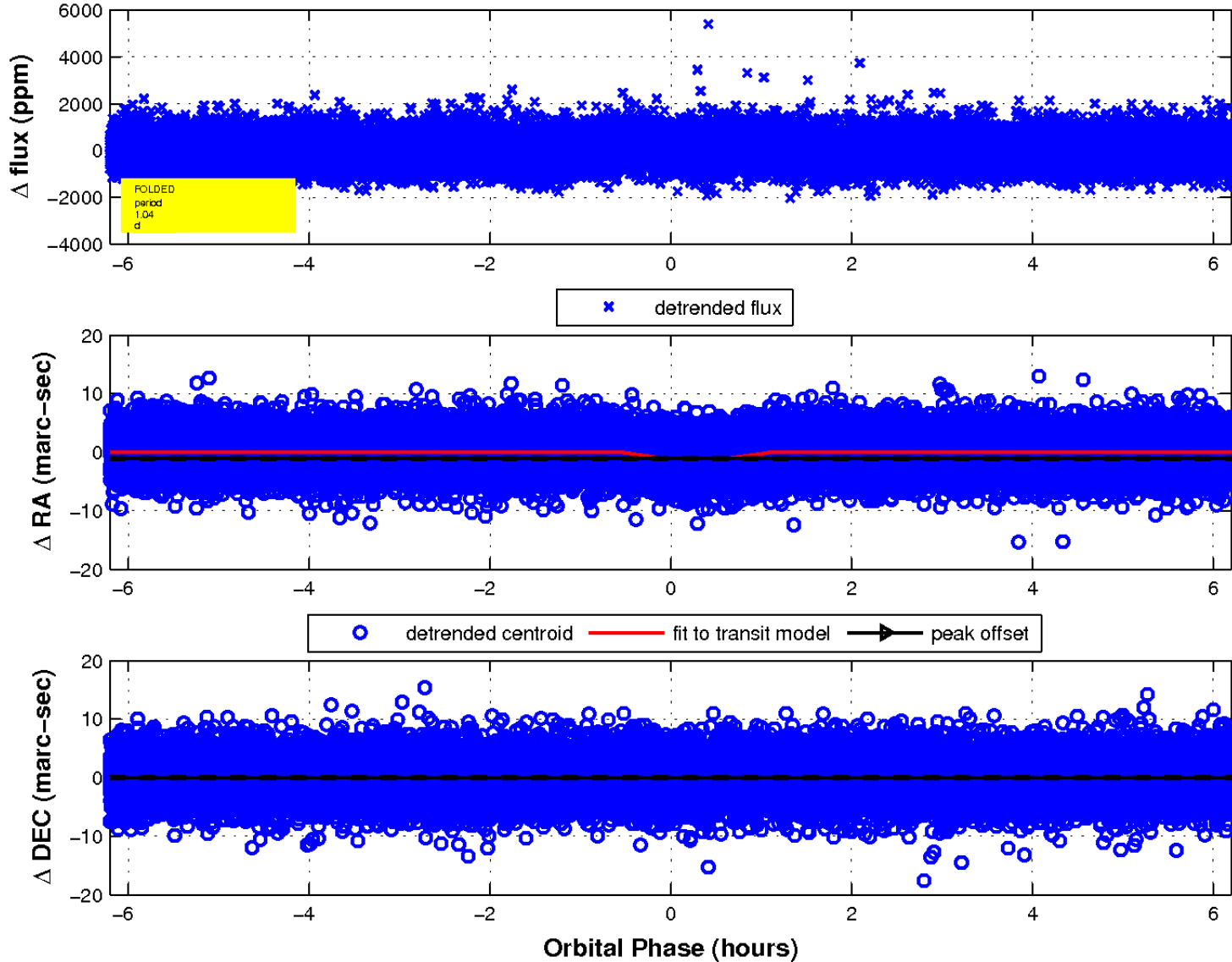
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 2 of 2



UKIRT Image

Declination

