

KIC 008971294

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})
008971294-01	OBS	No	1.327295	132.678149	32.3	4.807	10.4	9.8	1.52	6308	1.00	5627.35
008971294-02	OBS	No	370.320862	312.293134	293.4	12.557	7.4	7.6	1.52	6308	3.11	3.09

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008971294-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV
008971294-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL

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

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

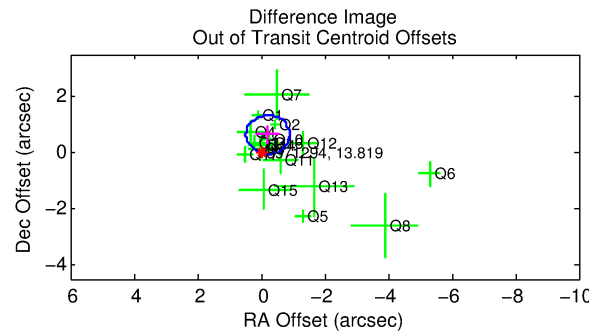
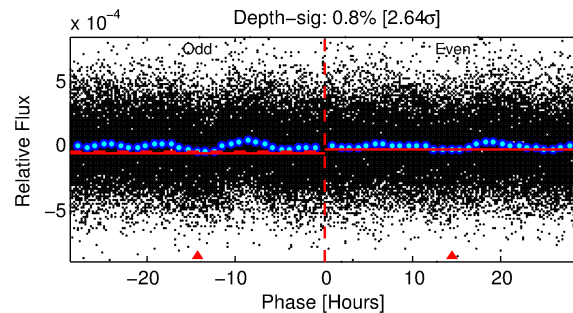
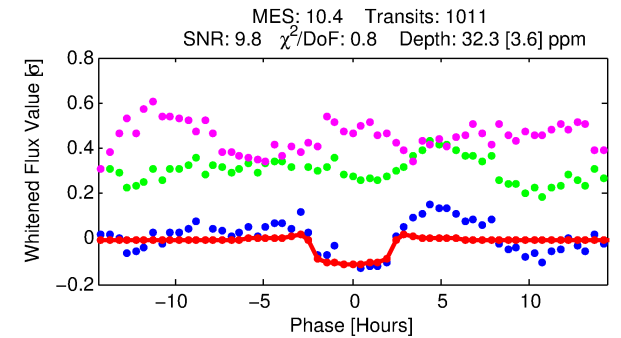
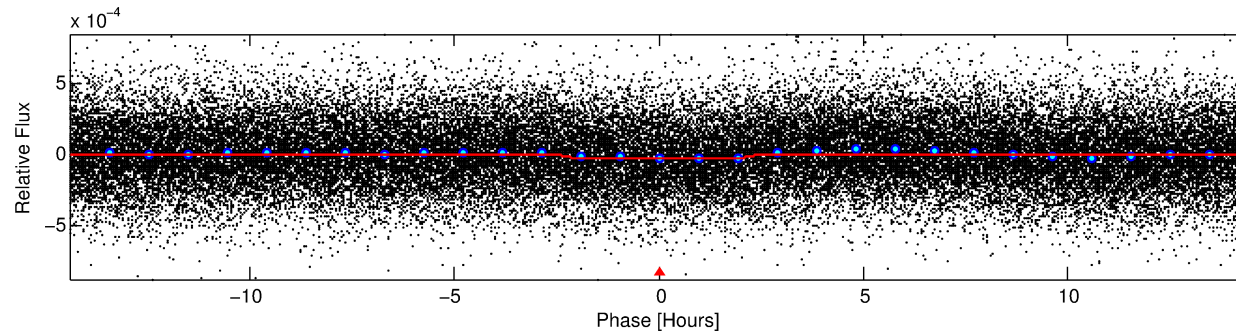
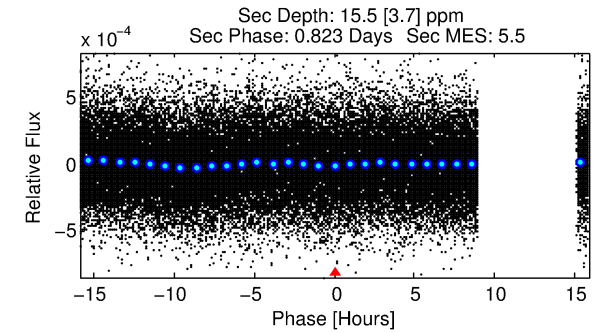
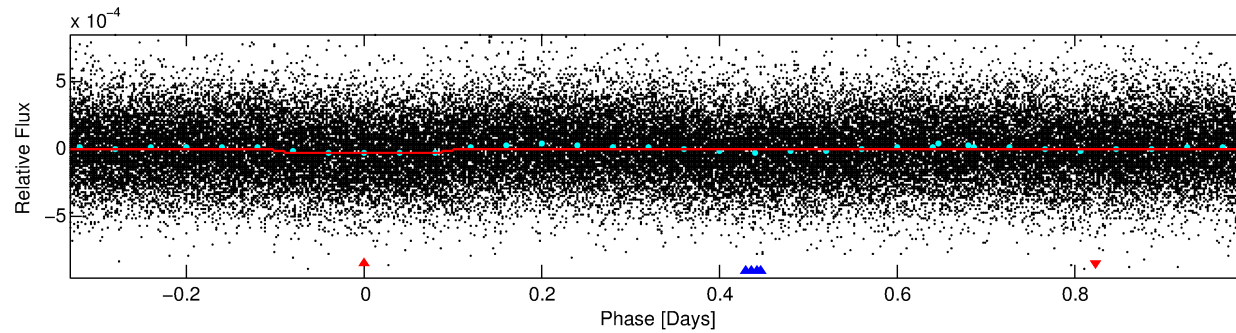
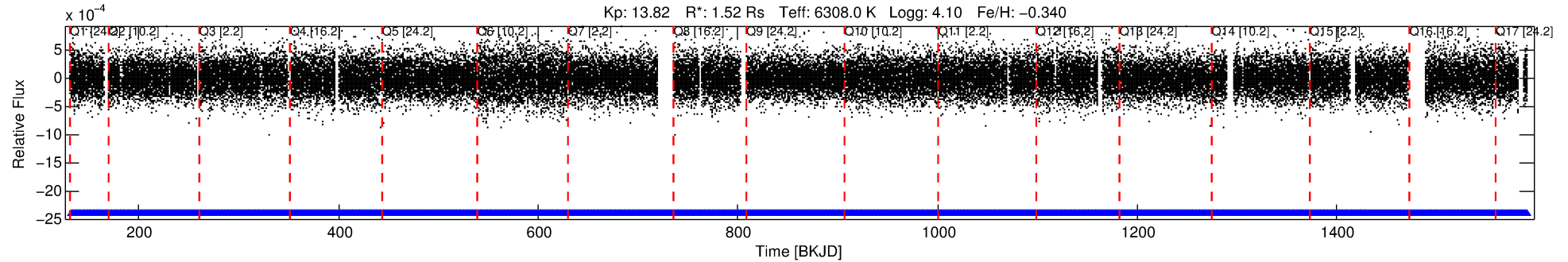
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008971294-01

No Significant Match Found

DV One-Page Summary

KIC: 8971294 Candidate: 1 of 2 Period: 1.327 d



DV Fit Results:

Period = 1.32729 [0.00001] d
Epoch = 132.6781 [0.0045] BKJD
Rp/R* = 0.0060 [0.0025]
a/R* = 1.37 [1.50]
b = 0.88 [0.58]
Seff = 5627.35 [2914.23]
Teq = 2209 [286] K
Rp = 1.00 [0.52] Re
a = 0.0241 [0.0075] AU
Ag = 4.96 [4.95] [0.80σ]
Teffp = 5095 [1115] K [2.51σ]

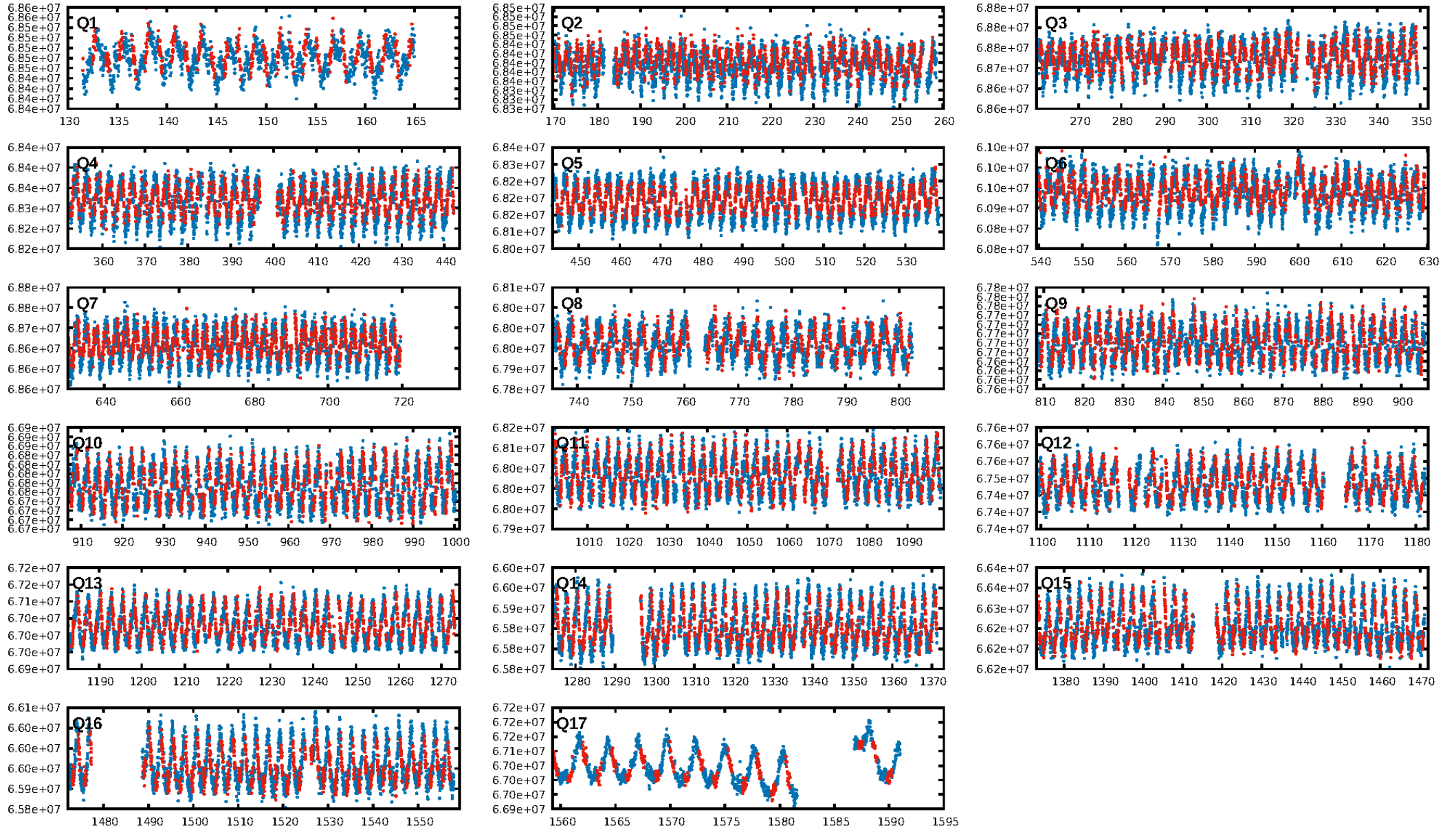
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [658.66σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 1.28e-18
RollingBand-fgt: 1.00 [966/966]
GhostDiagnostic-chr: -17.5
Centroid-sig: 0.7%
Centroid-so: 1.528 arcsec [1.79σ]
OotOffset-rm: 0.673 arcsec [2.94σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-rm: 0.788 arcsec [3.33σ]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 0.47 [8/17]
DiffImageOverlap-fno: 1.00 [17/17]

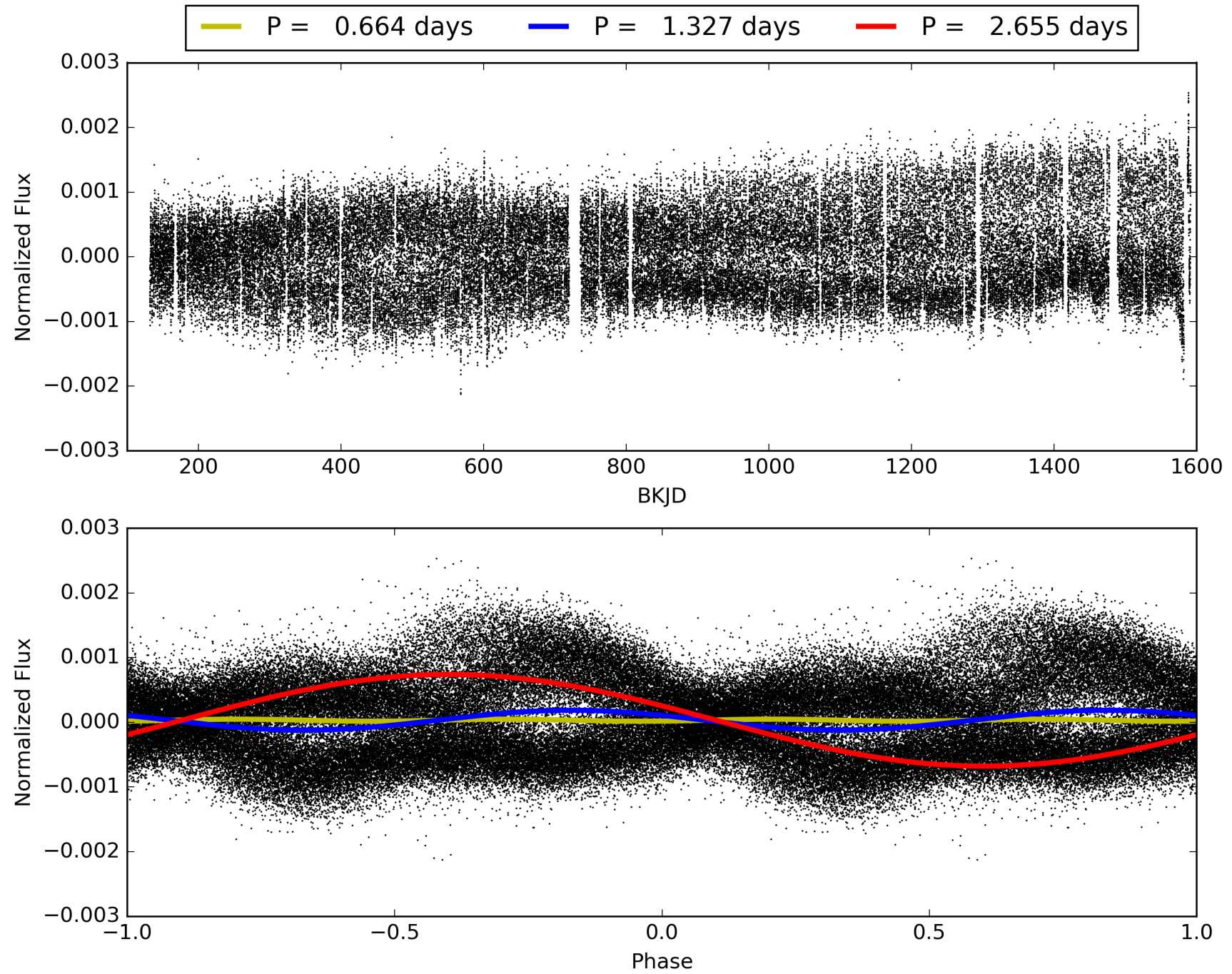
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 05:59:58 Z

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

TCE 008971294-01, PDC Light Curves

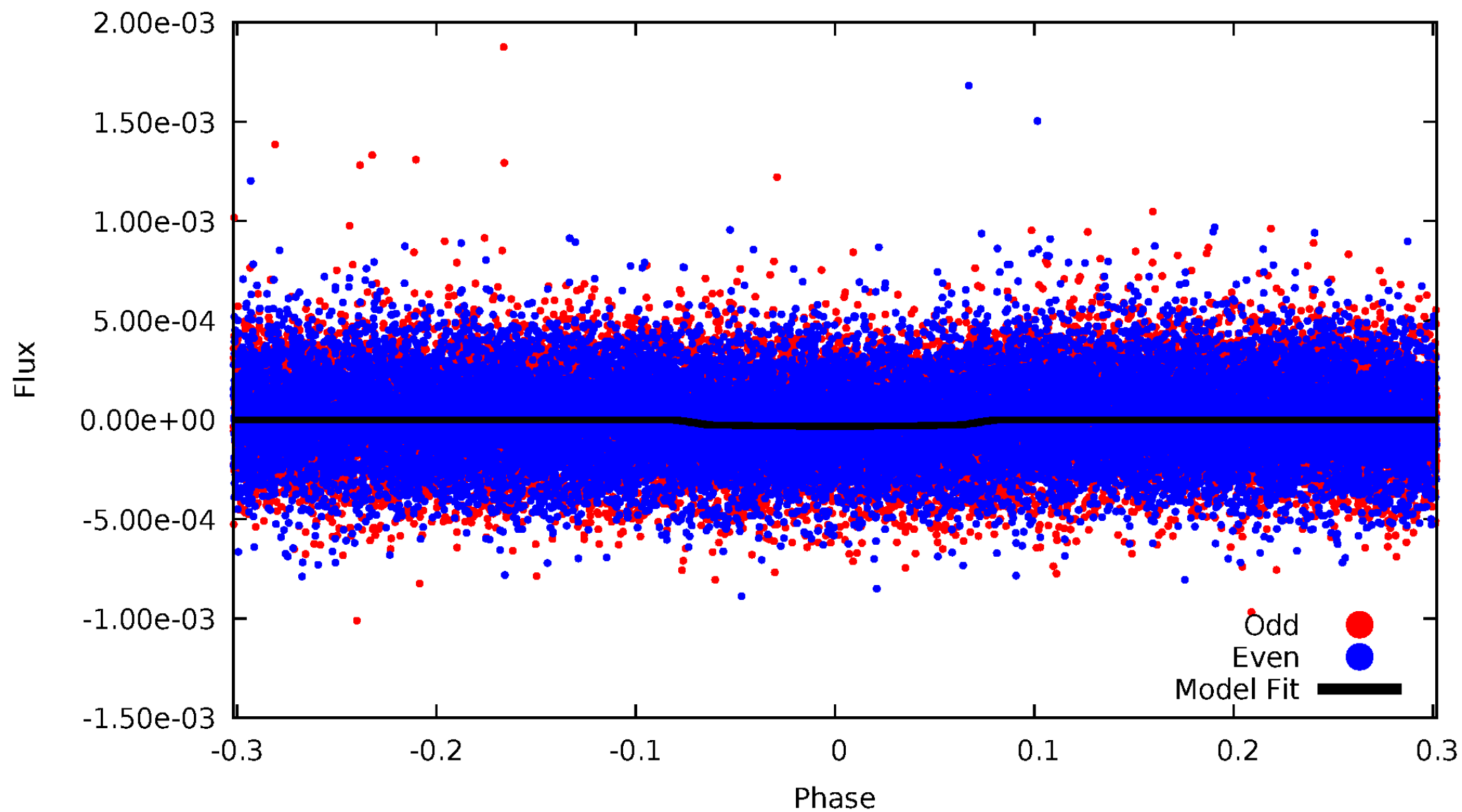


TCE 008971294-01



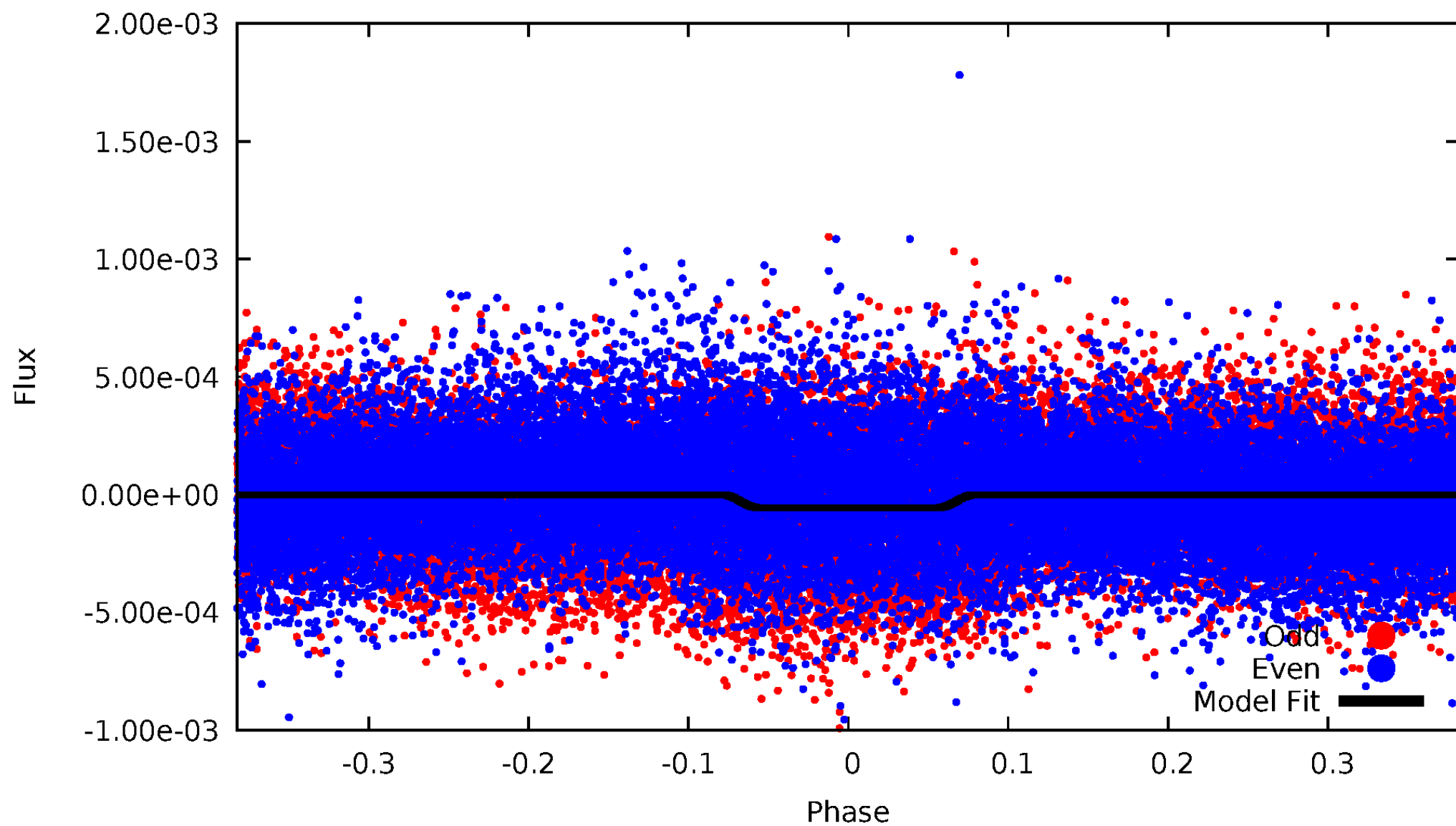
DV Odd/Even

TCE 008971294-01



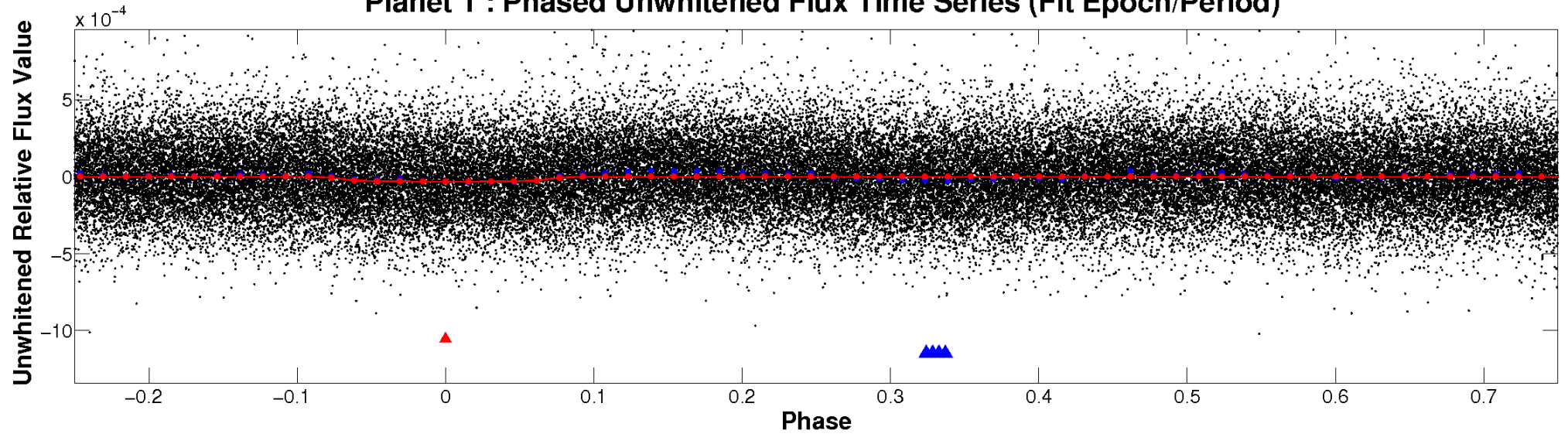
ALT Odd/Even

TCE 008971294-01

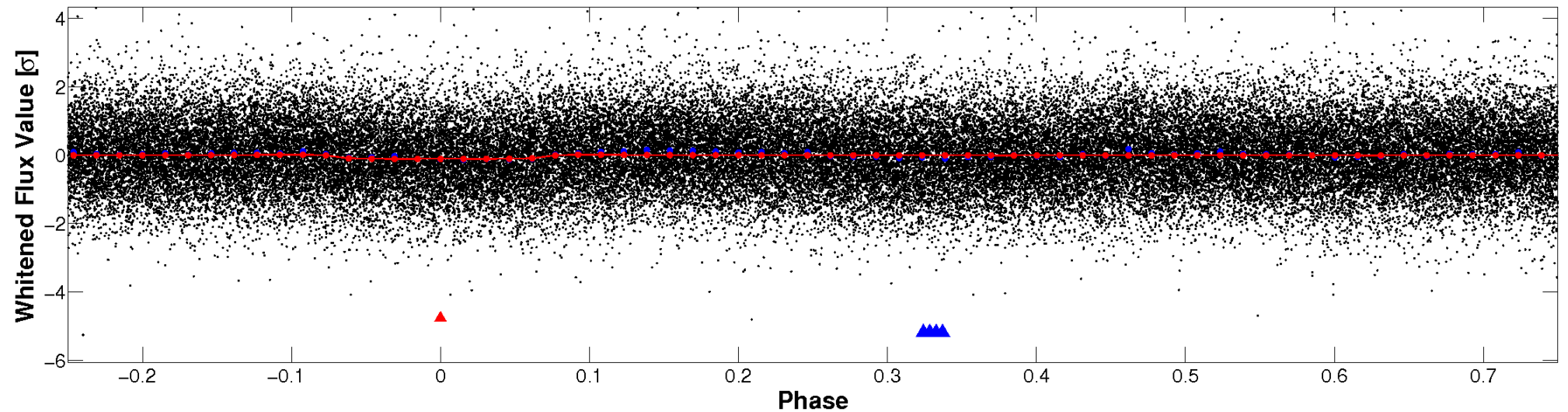


Non-Whitened Vs. Whitened Light Curve

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

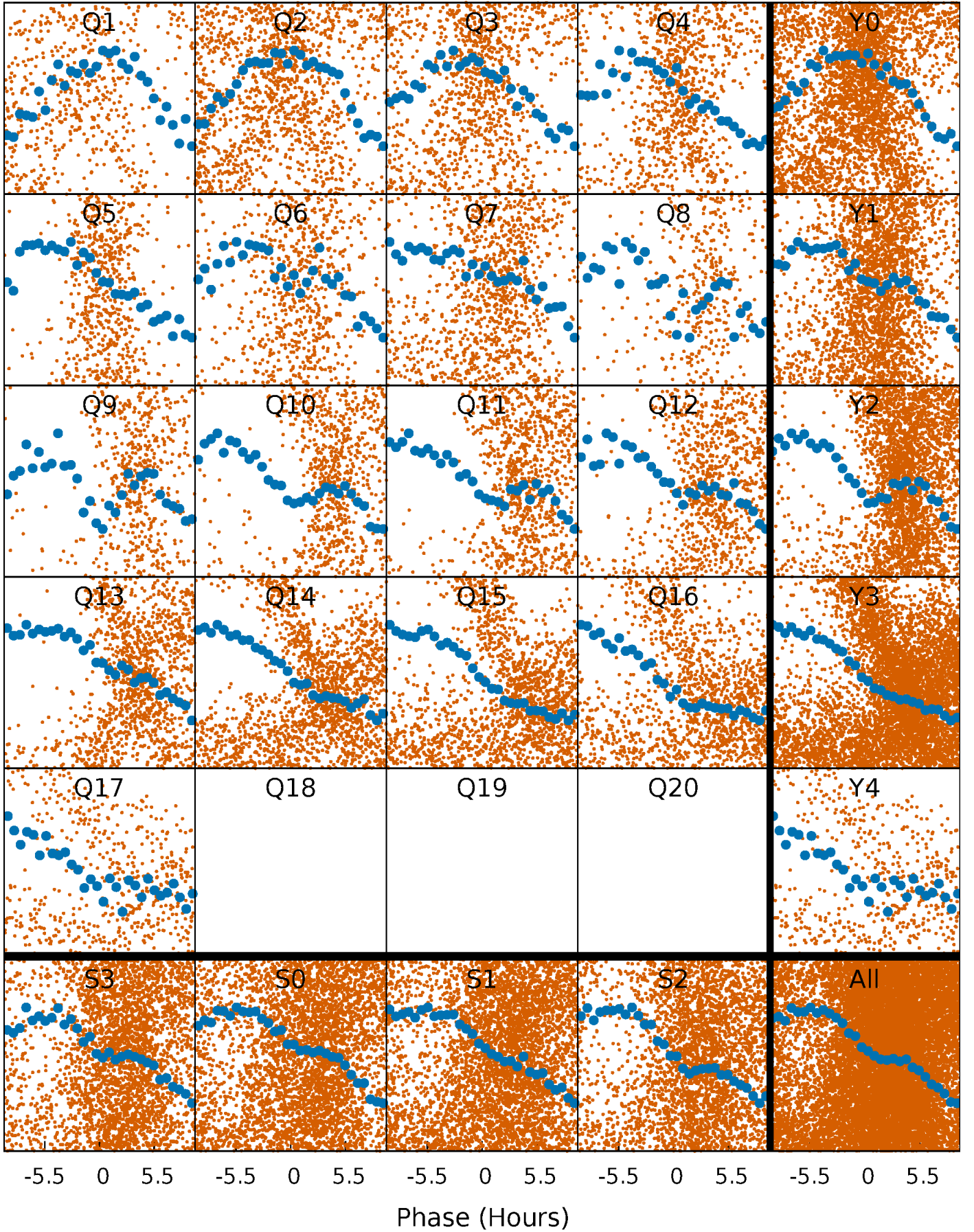


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



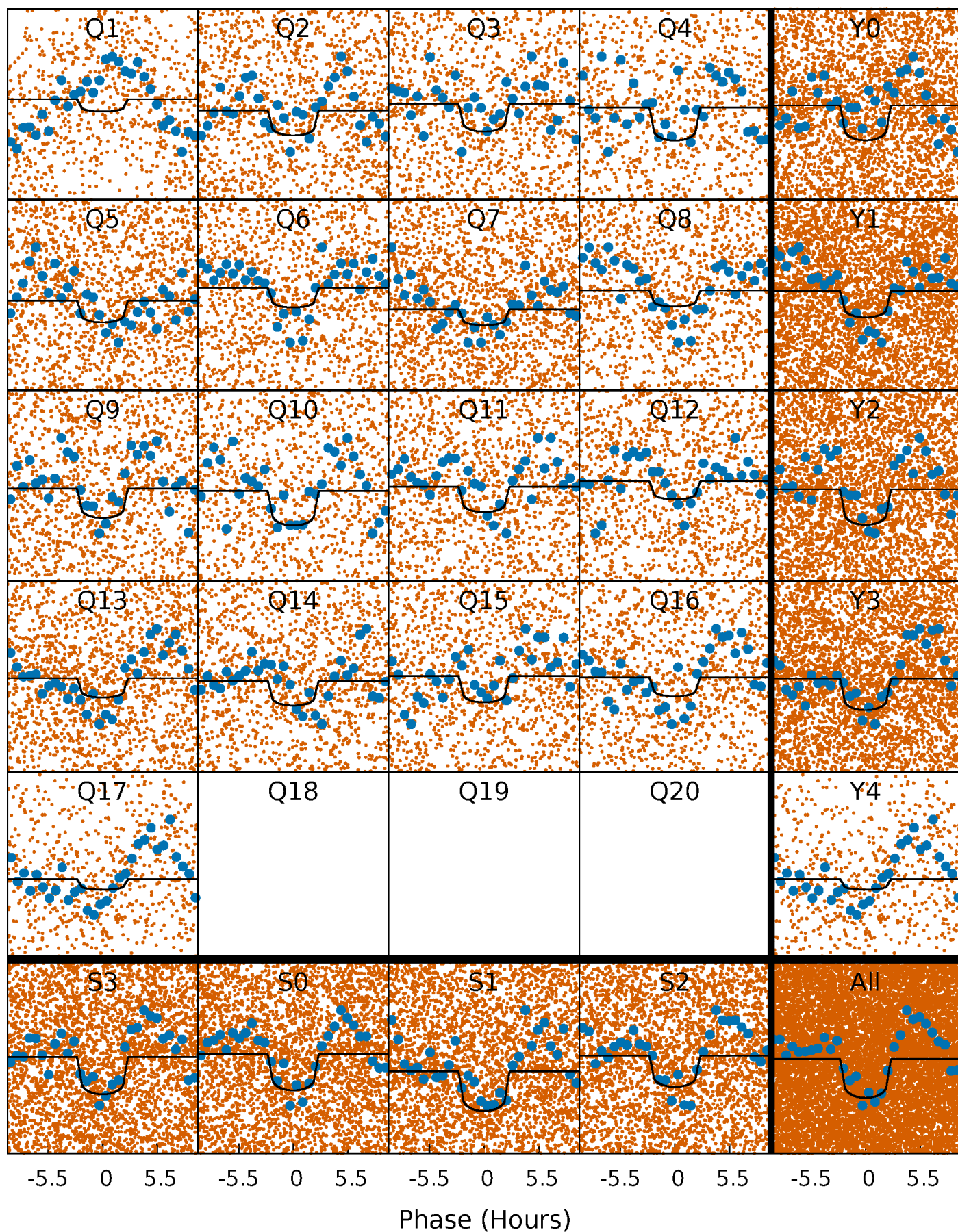
PDC Quarter-Phased Transit Curves

TCE 008971294-01 P= 1.327295 Days $T_0=132.678149$ (BKJD)



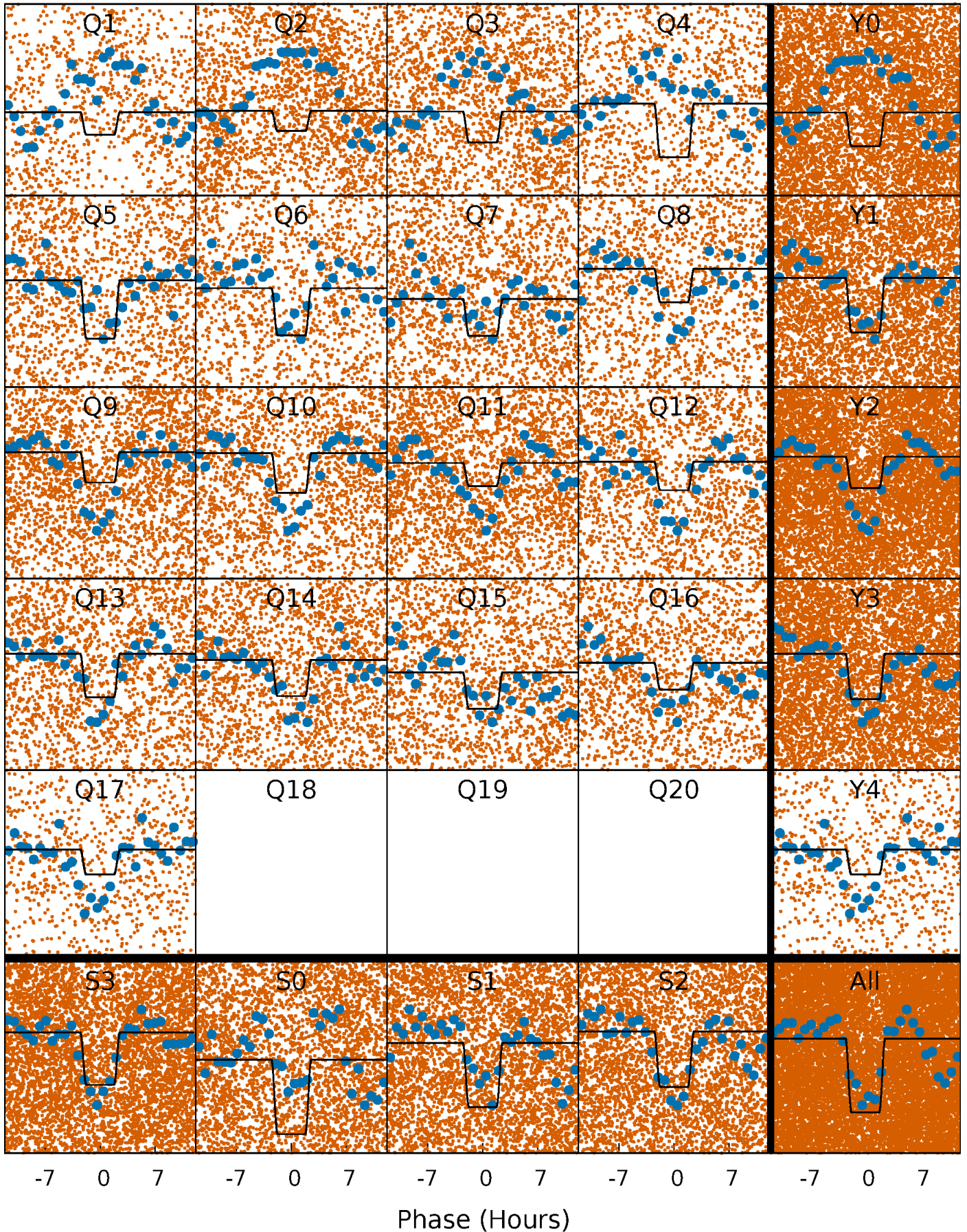
DV Quarter-Phased Transit Curves

TCE 008971294-01 P= 1.327295 Days $T_0=132.678149$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

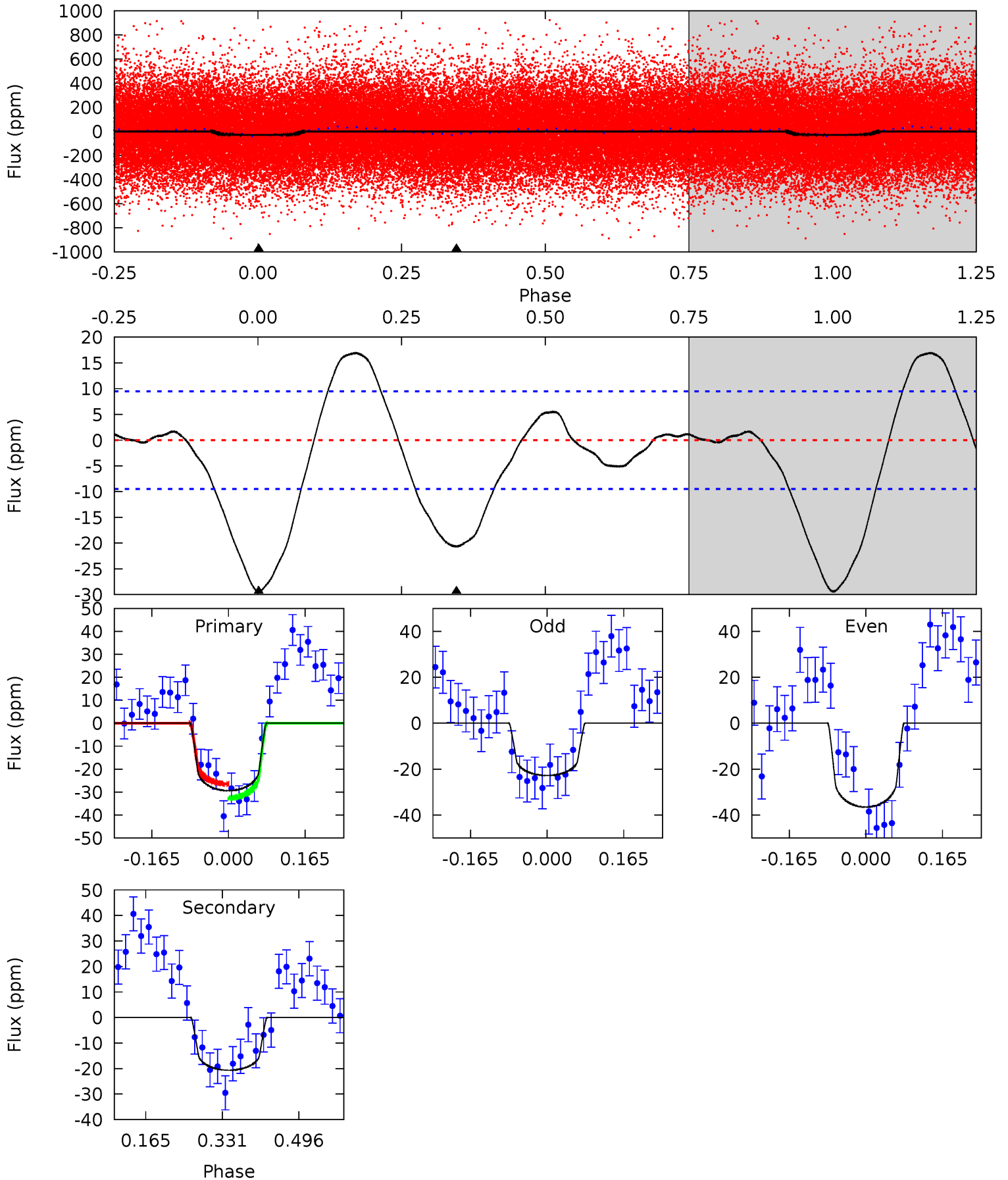
TCE 008971294-01 P= 1.327357 Days $T_0=132.655553$ (BKJD)



DV Model-Shift Uniqueness Test

008971294-01, P = 1.327295 Days, E = 131.350854 Days

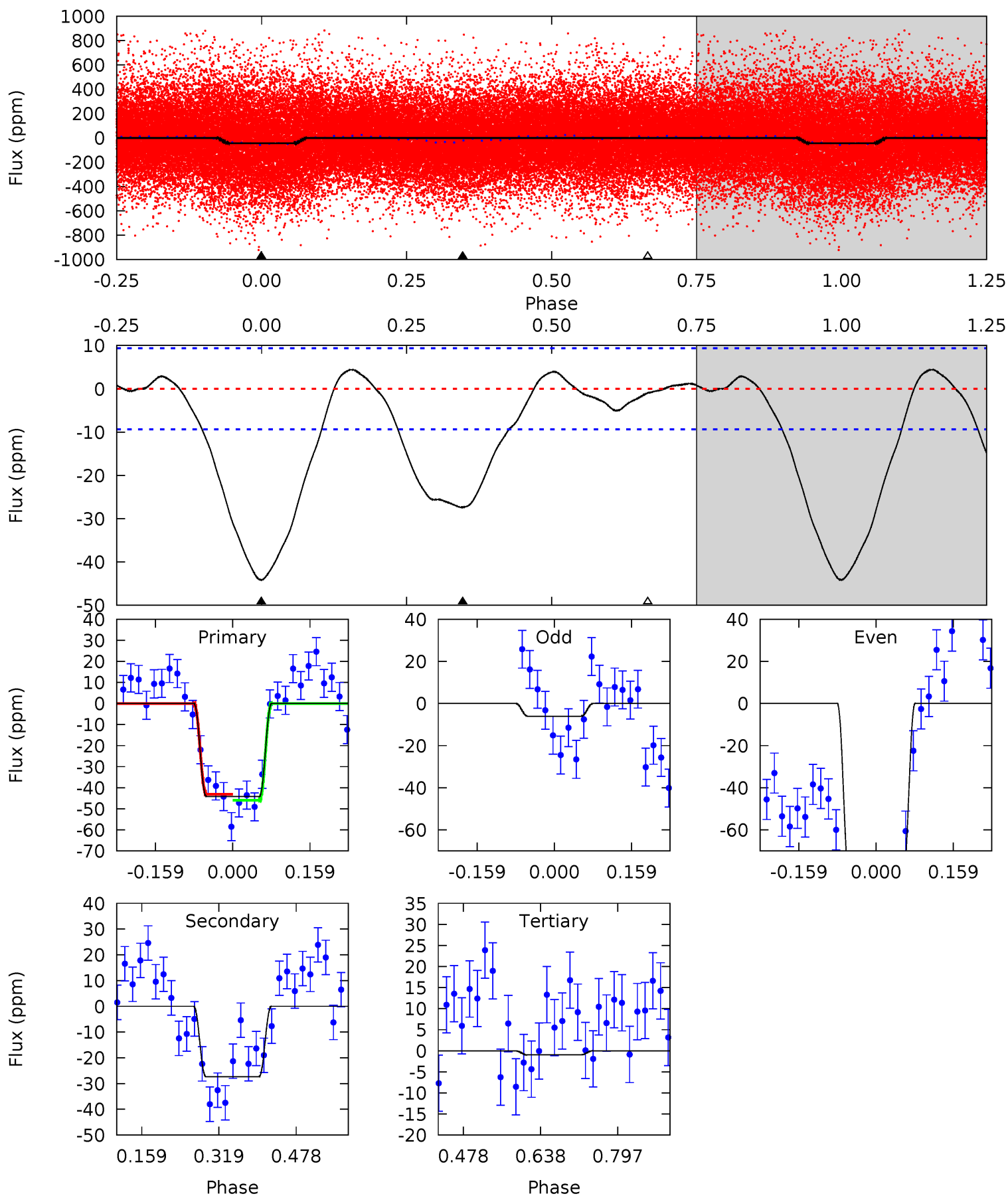
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.8	9.72	0	0	4.46	1.39	1.99	13.8	13.8	9.72	9.72	3.24	1.05	0.37	1.45



Alt Model-Shift Uniqueness Test

008971294-01, P = 1.327357 Days, E = 131.328196 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
21.0	13.0	0.47	0	4.47	1.41	1.08	20.6	21.0	12.6	13.0	18.1	0.94	0.09	0.69



Stellar Parameters For KIC 008971294

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6308^{+176}_{-220}	$4.100^{+0.293}_{-0.158}$	$-0.340^{+0.300}_{-0.300}$	$1.516^{+0.401}_{-0.490}$	$1.055^{+0.180}_{-0.131}$	$0.427^{+0.729}_{-0.210}$
	+3%/-3%	+7%/-4%	+88%/-88%	+26%/-32%	+17%/-12%	+171%/-49%
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 008971294-01 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-21 ± 2	$0.94^{+0.47}_{-0.37}$	3060^{+221}_{-288}	5494^{+1582}_{-842}	$7.488^{+13.249}_{-4.041}$
Alt.	-27 ± 2	$1.22^{+0.49}_{-0.45}$	3052^{+237}_{-271}	5197^{+1229}_{-632}	$5.950^{+9.158}_{-2.944}$

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 $A_{obs} \gg 1.0$

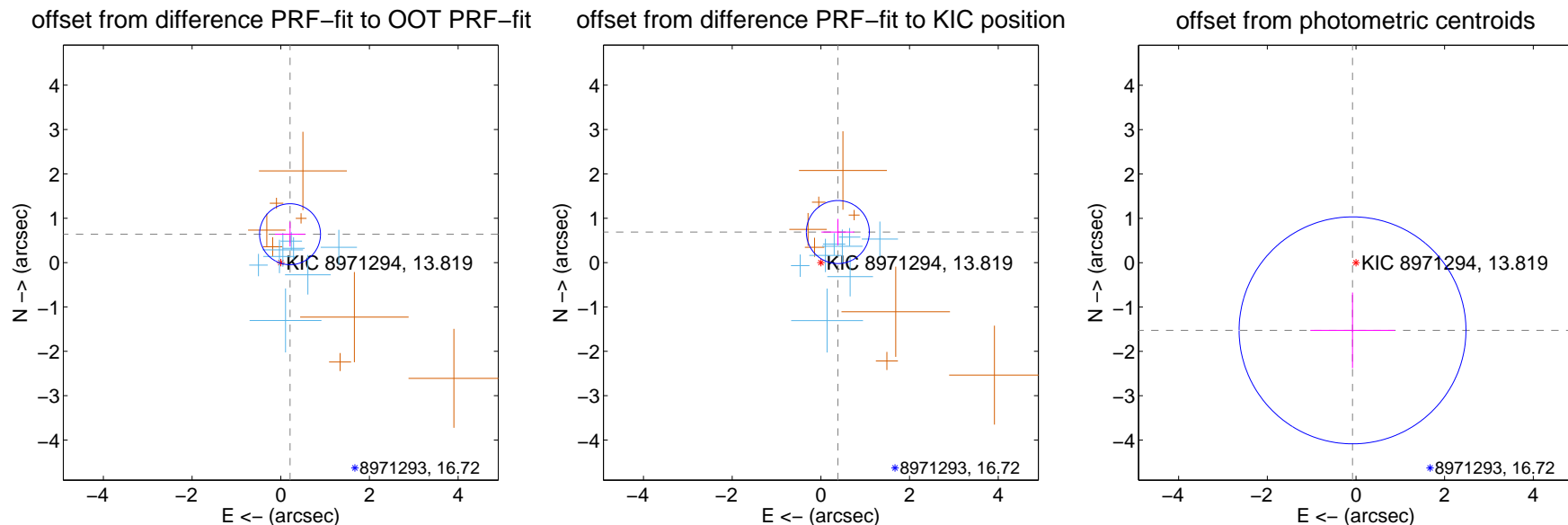
DV Centroid Data

Supplemental centroid analysis for 008971294-01. Kepler magnitude: 13.82. Transit SNR 9.77

There are 8 quarters with good PRF difference image offsets

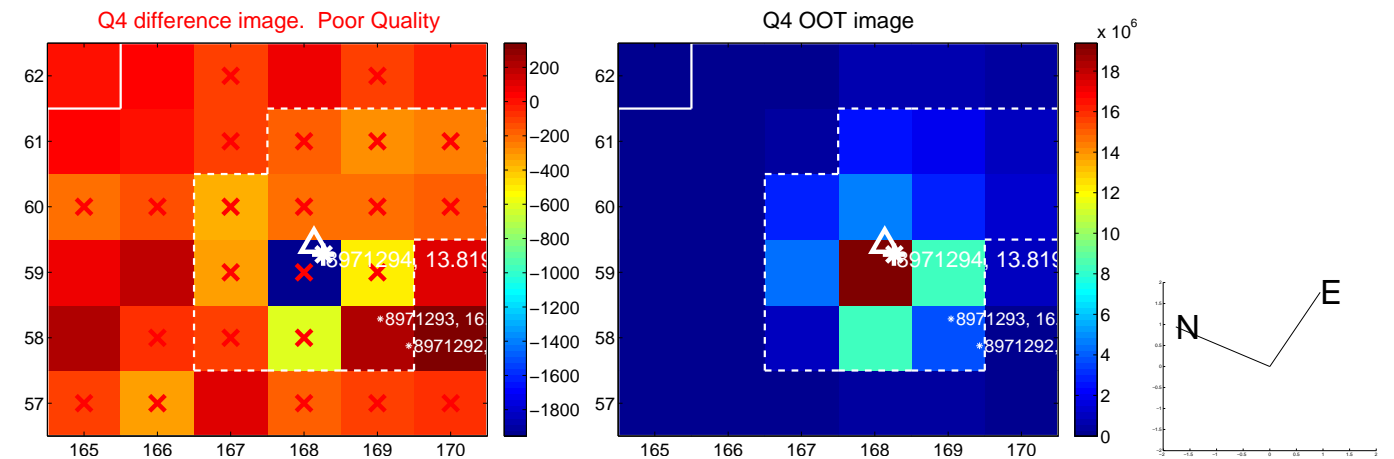
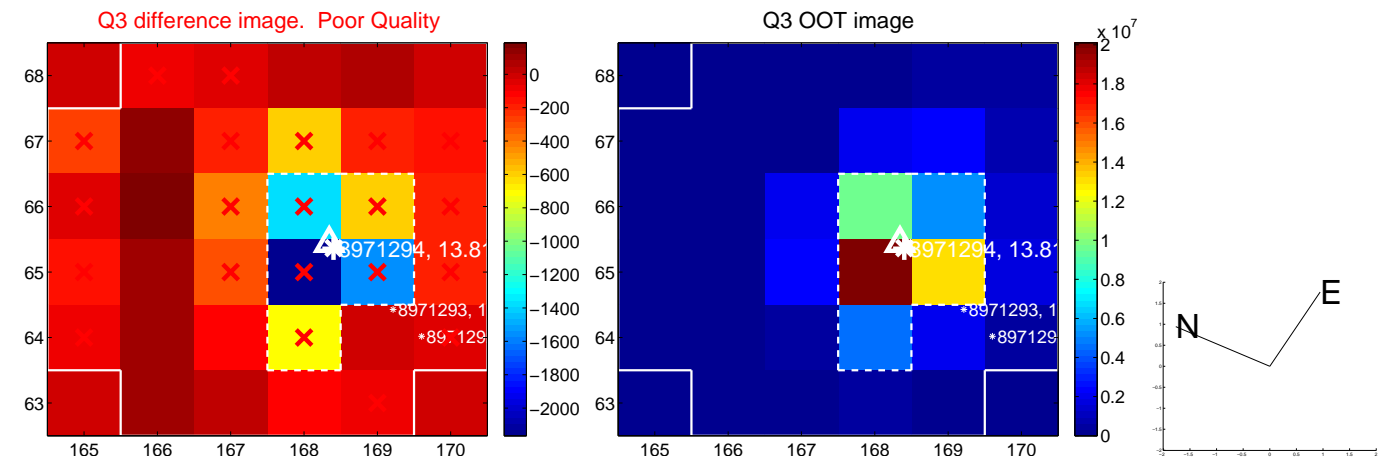
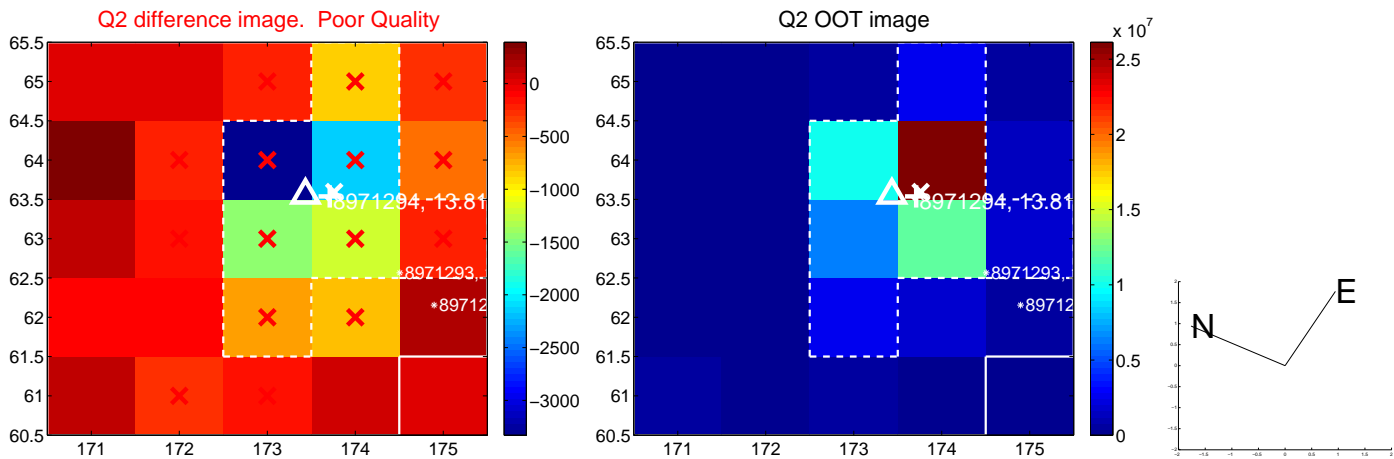
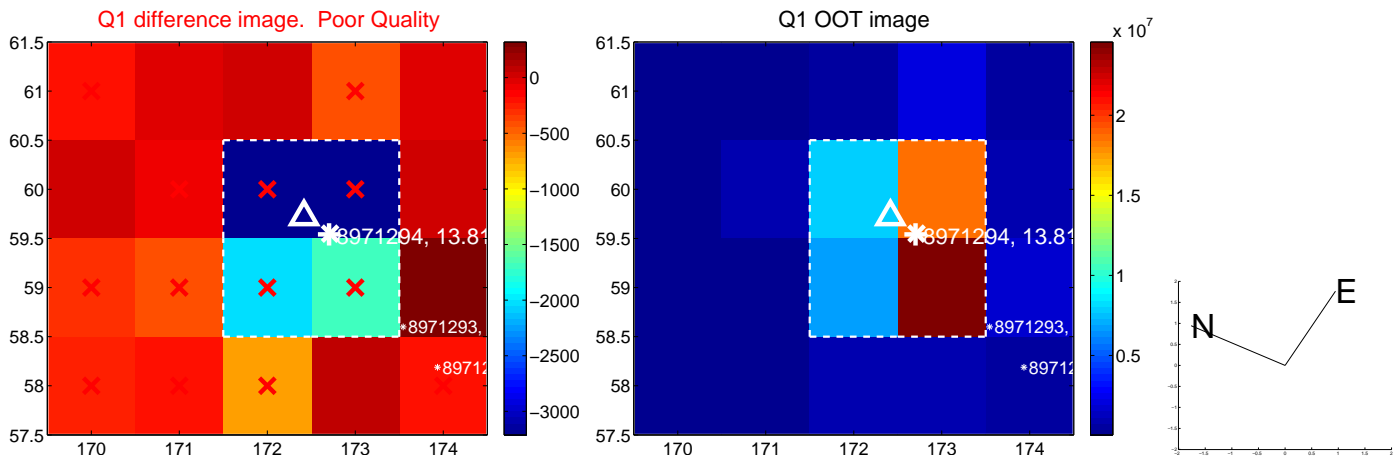
The direct PRF centroid is offset from the target star catalog position by about 0.04 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.673 ± 0.229	2.94	-0.209 ± 0.340	0.640 ± 0.276
PRF-fit source offset from KIC position	0.788 ± 0.237	3.33	-0.383 ± 0.371	0.689 ± 0.297
photometric centroid source offset	1.53 ± 0.85	1.79	0.08 ± 0.95	-1.53 ± 0.85

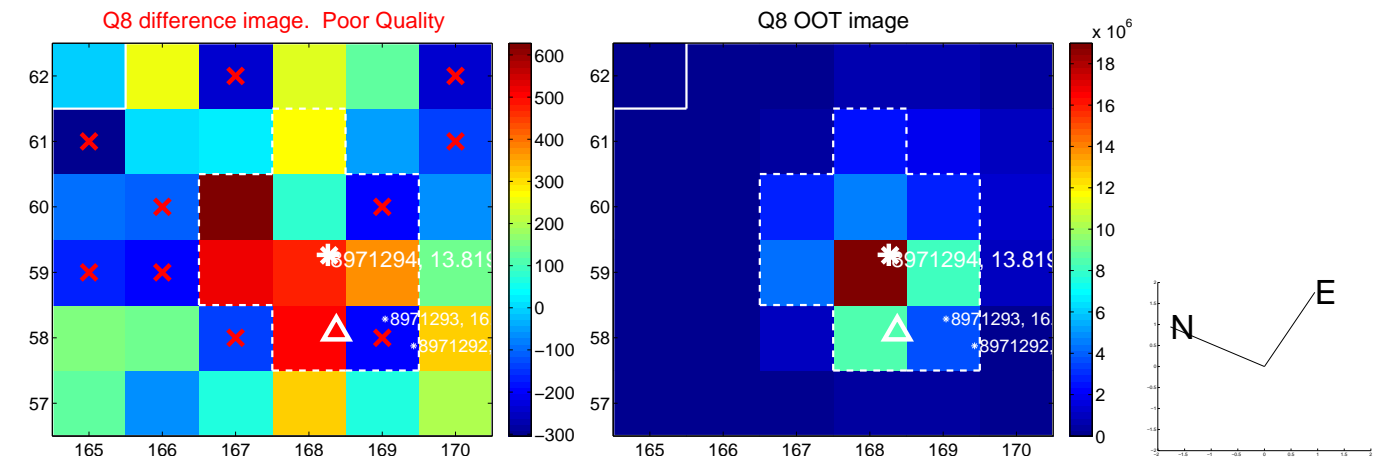
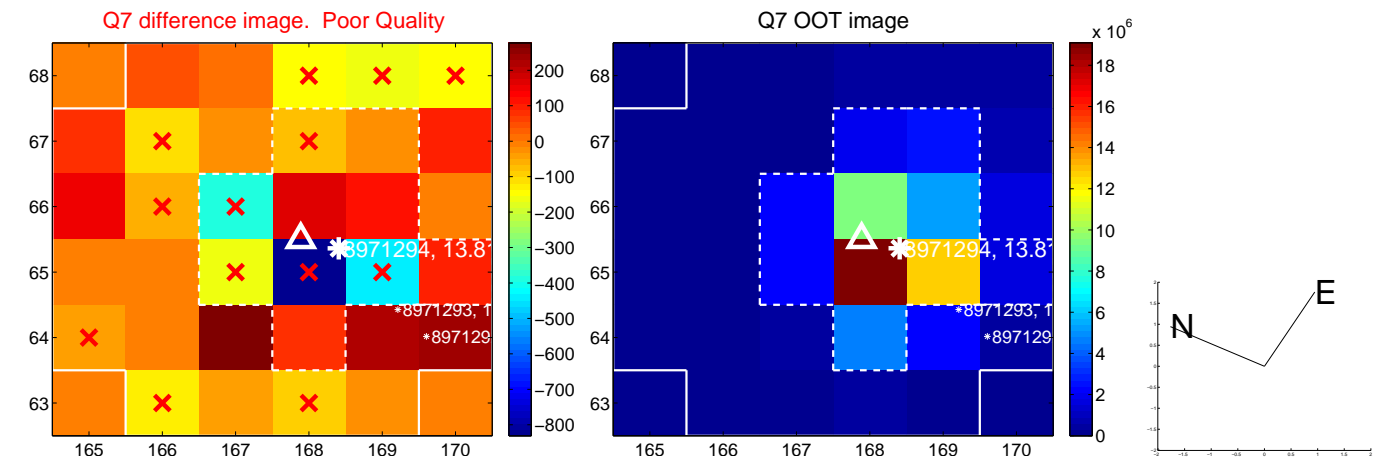
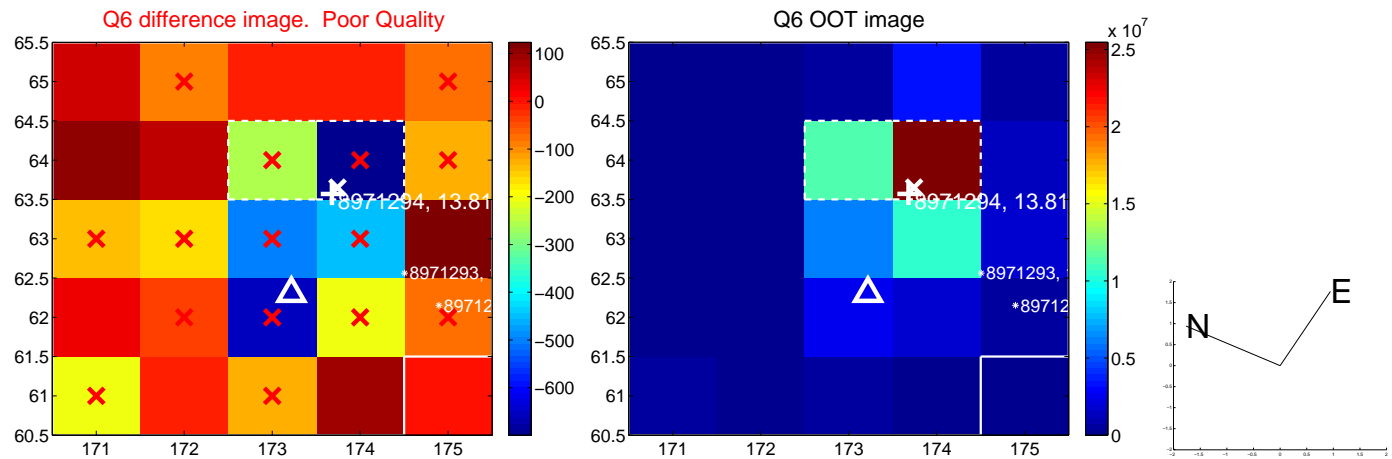
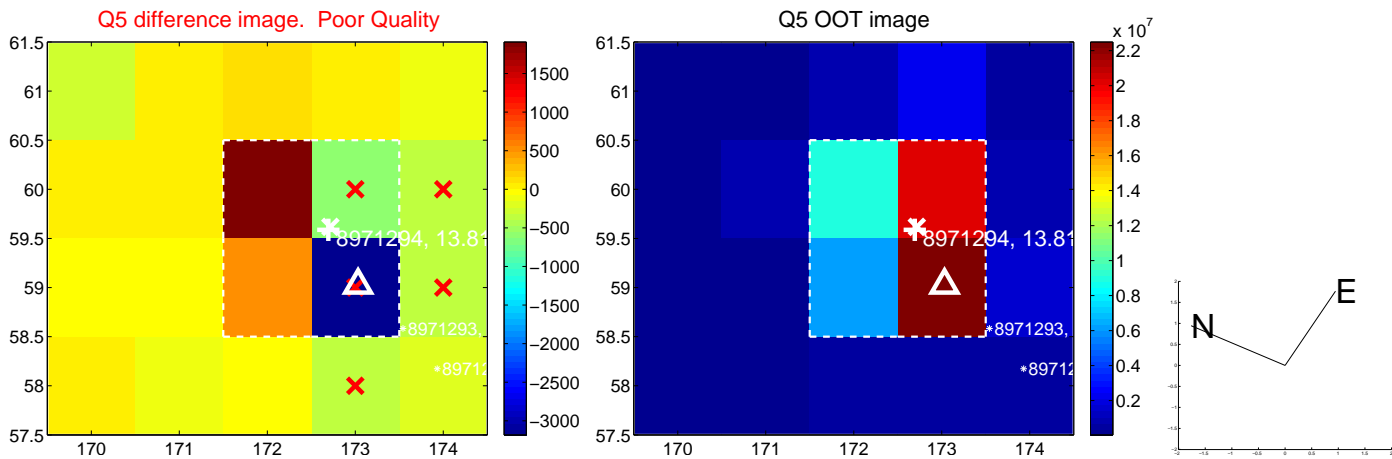


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

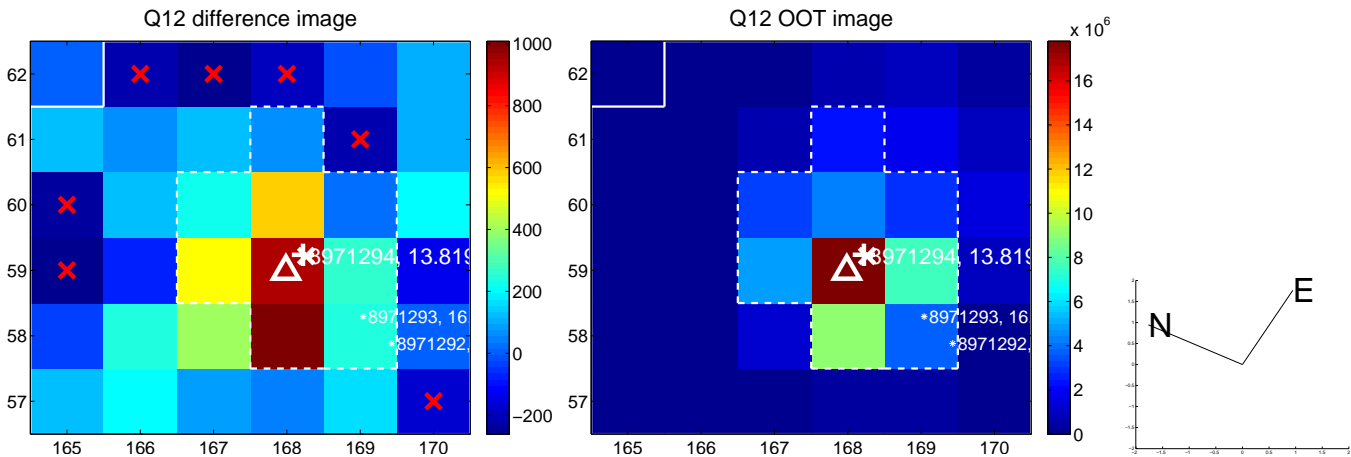
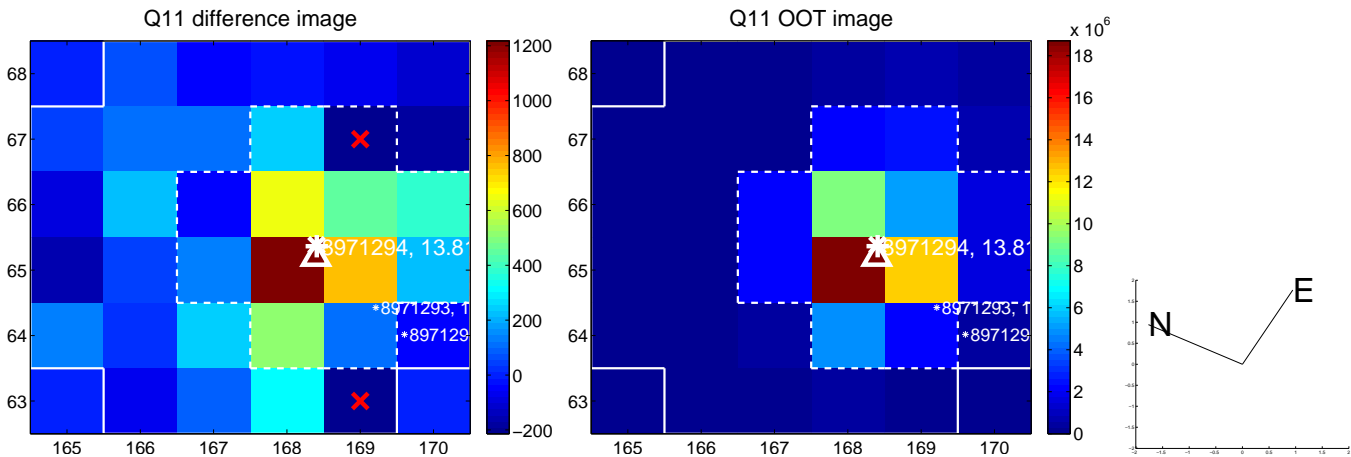
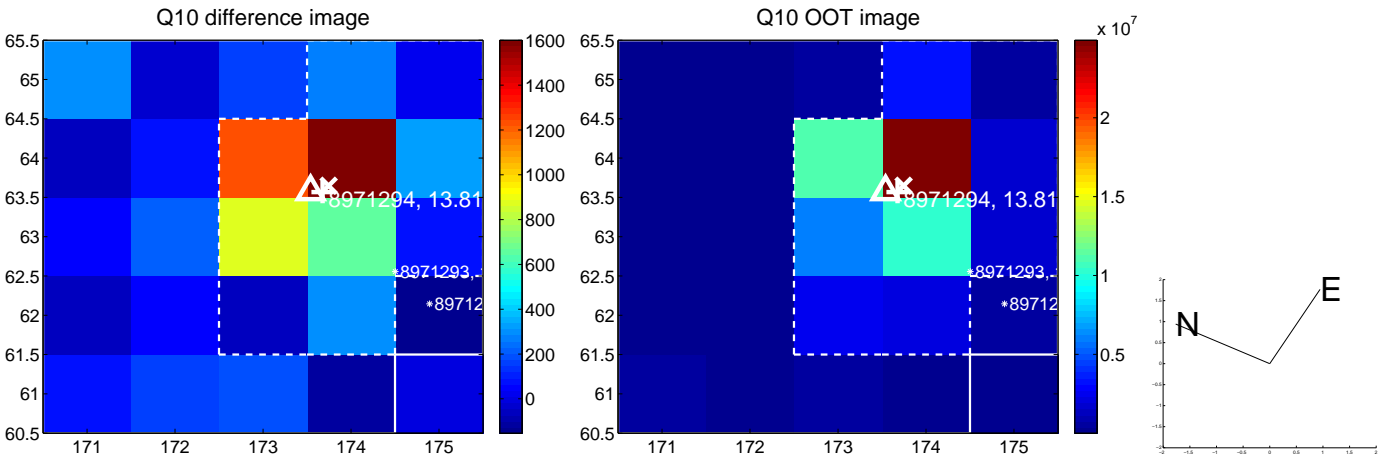
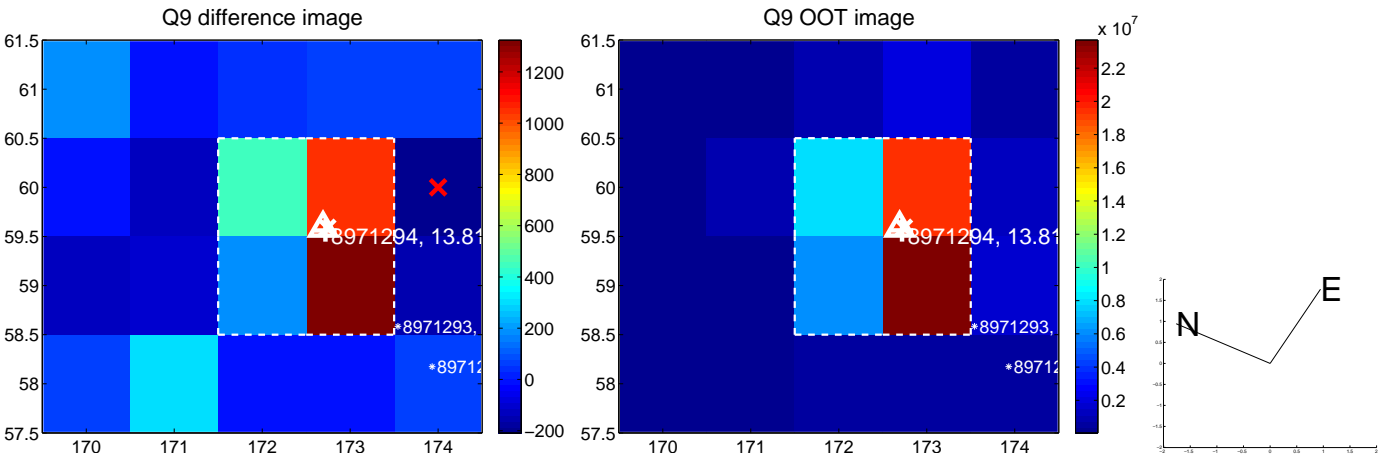
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



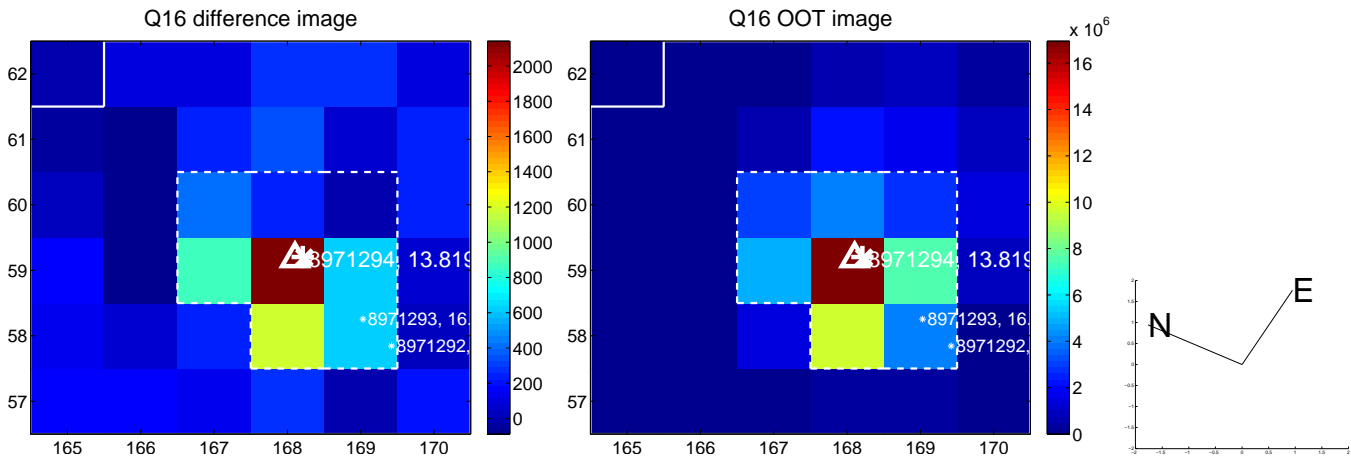
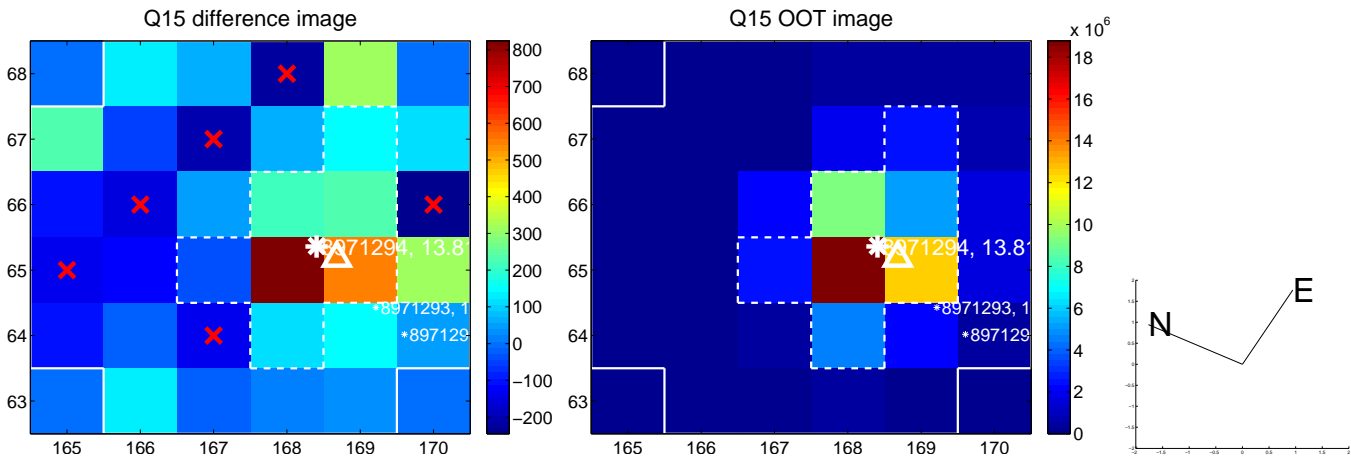
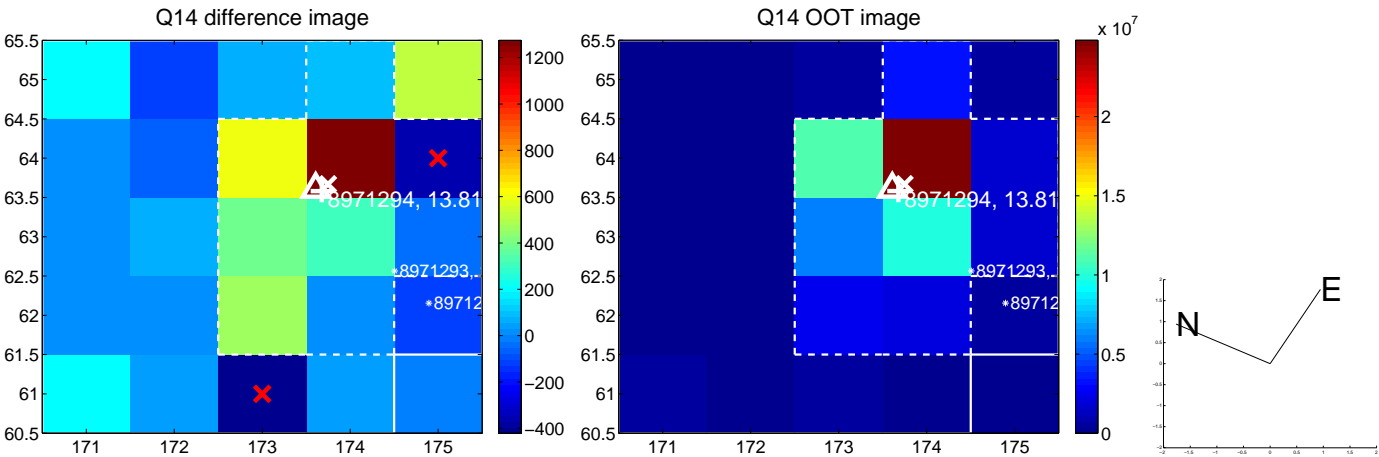
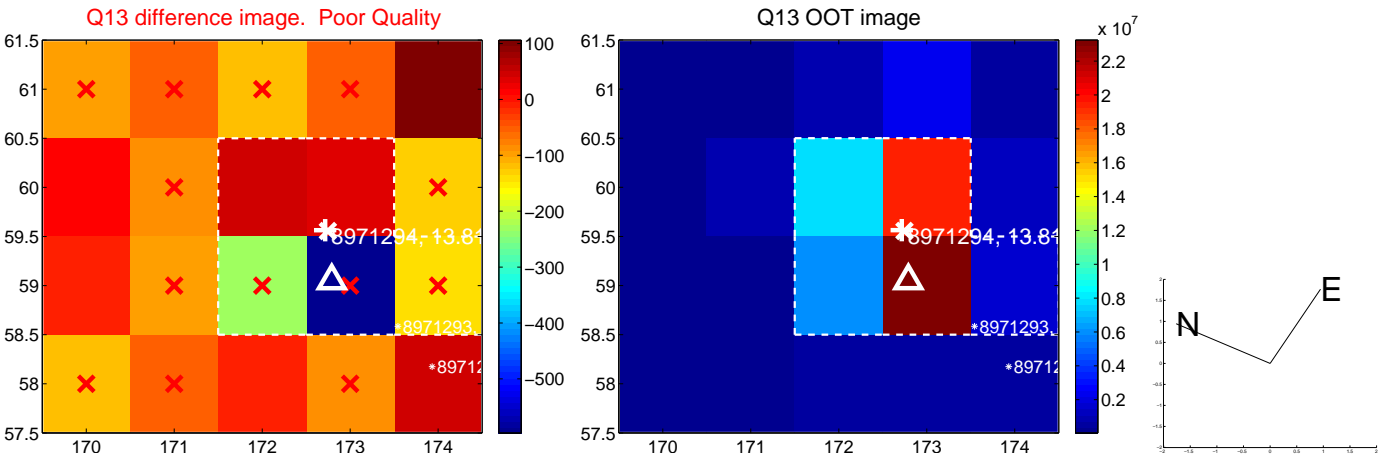
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



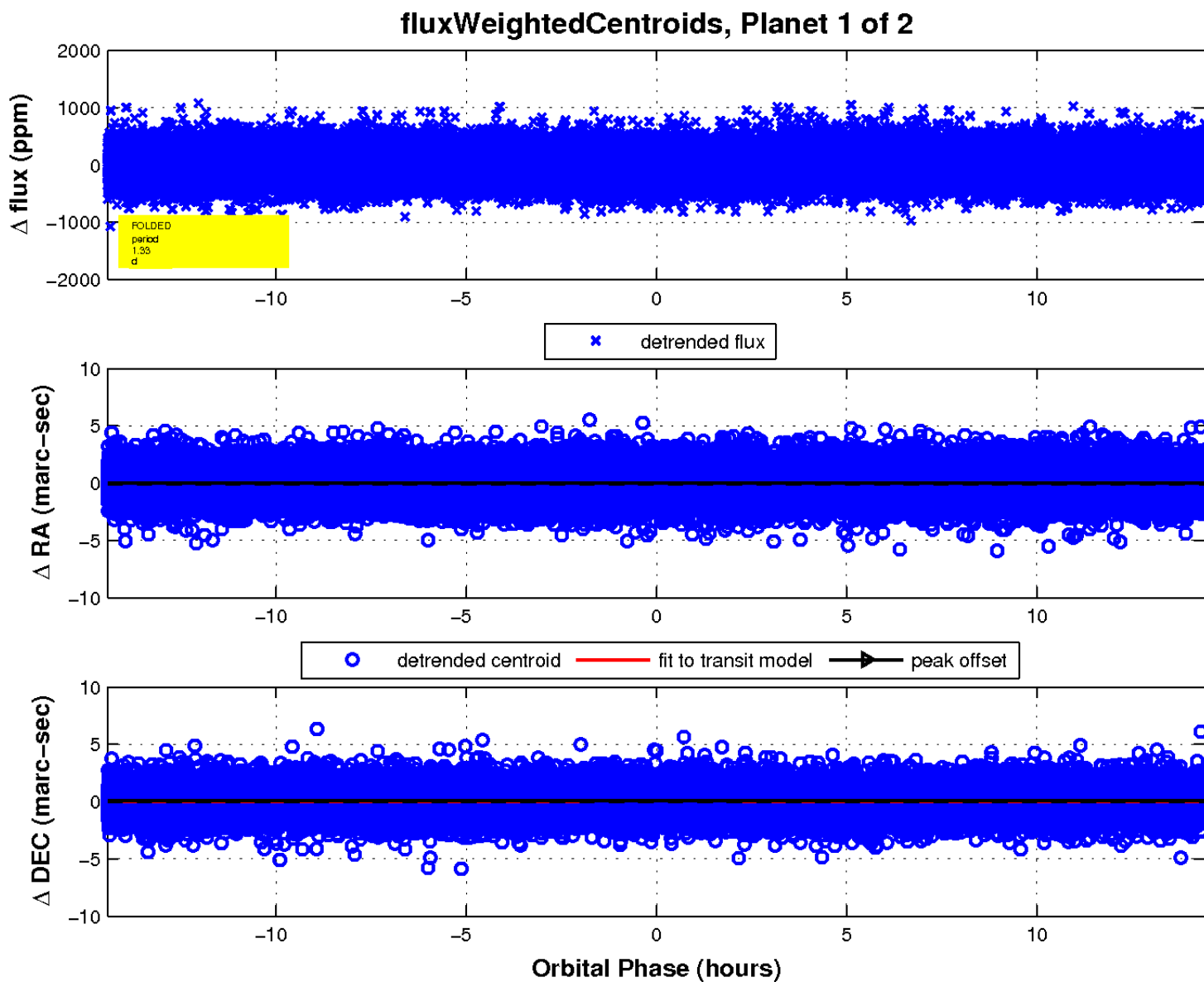
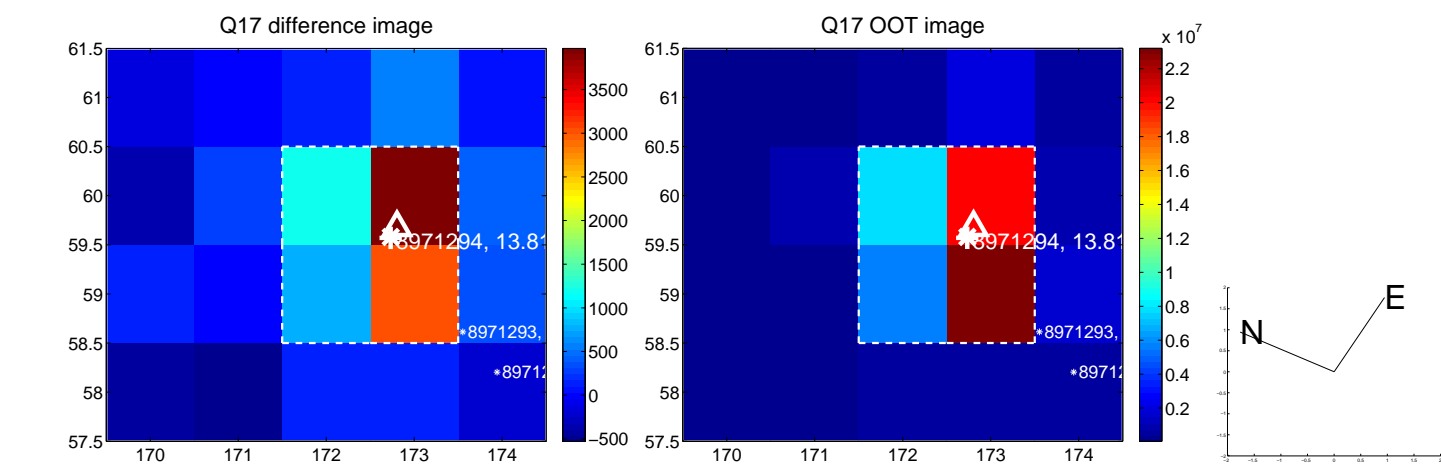
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

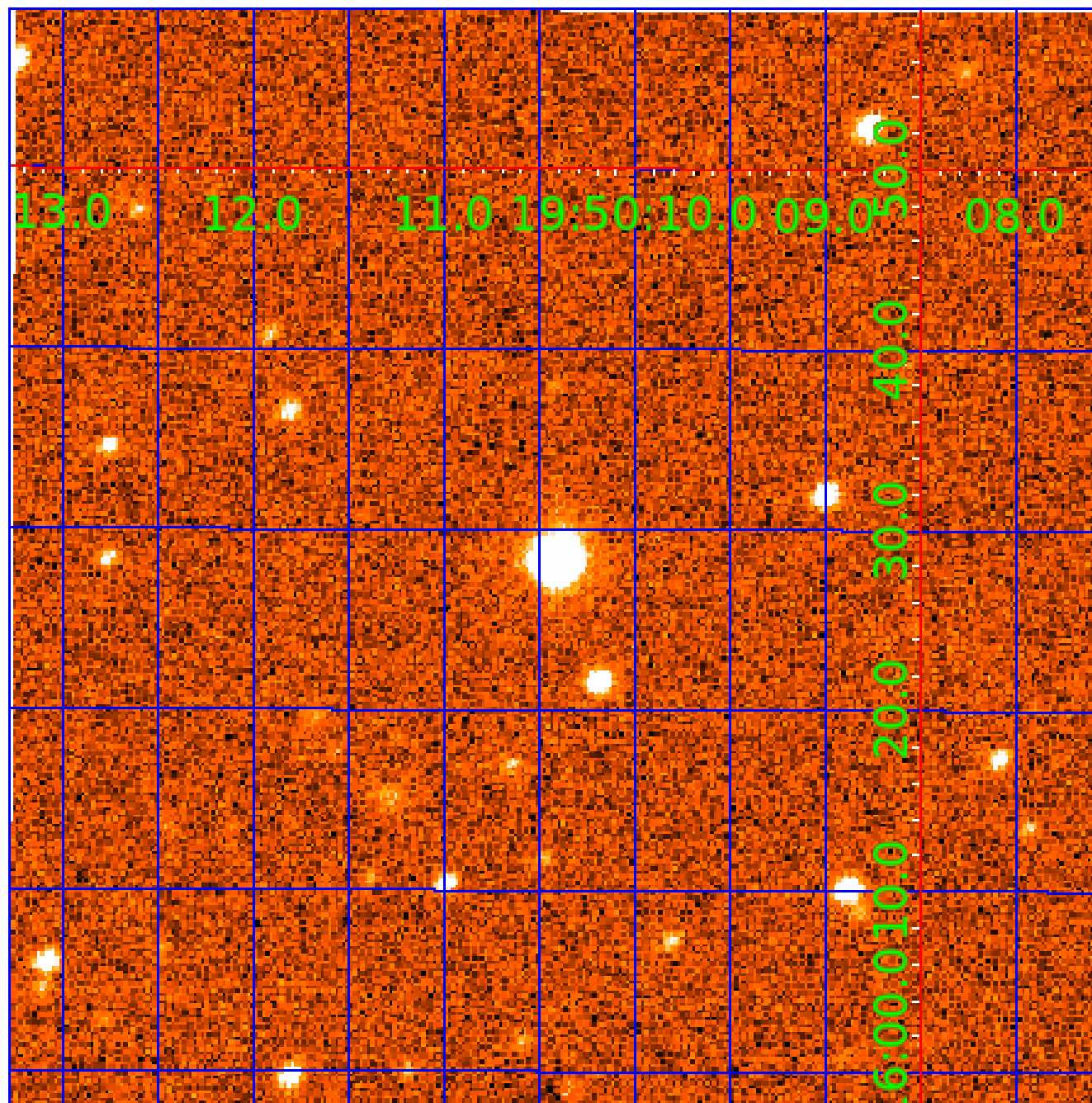


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 008971294

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})
008971294-01	OBS	No	1.327295	132.678149	32.3	4.807	10.4	9.8	1.52	6308	1.00	5627.35
008971294-02	OBS	No	370.320862	312.293134	293.4	12.557	7.4	7.6	1.52	6308	3.11	3.09

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008971294-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV
008971294-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL

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

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

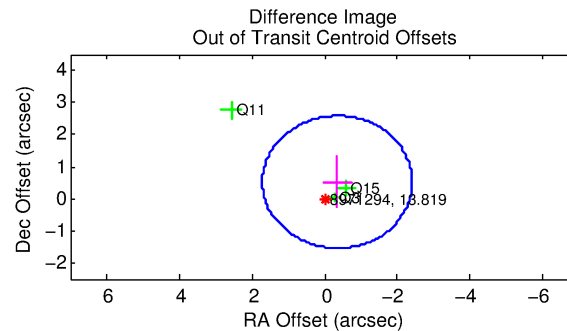
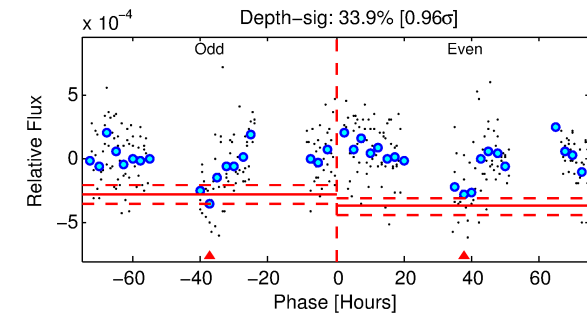
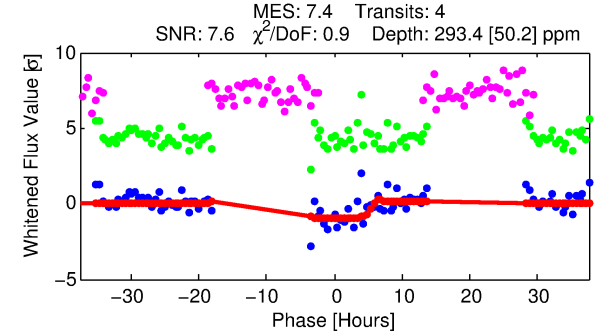
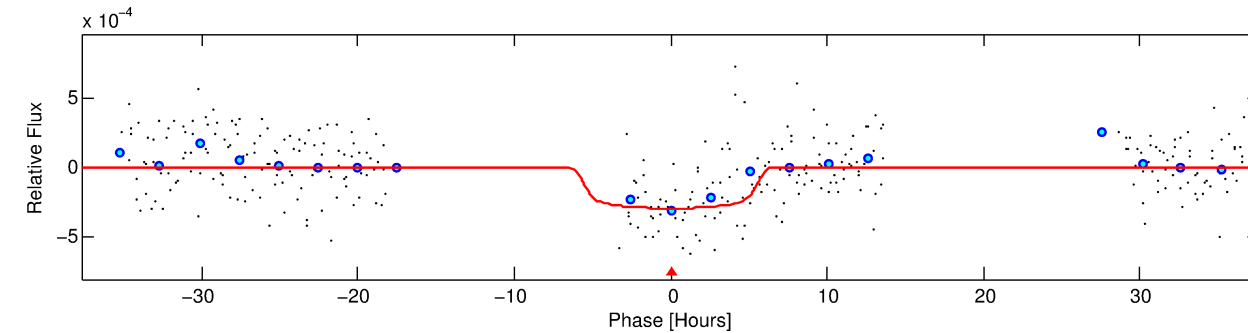
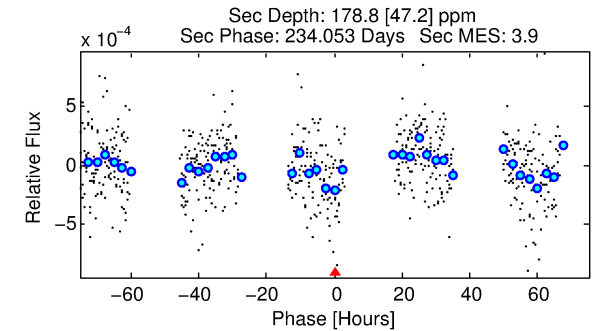
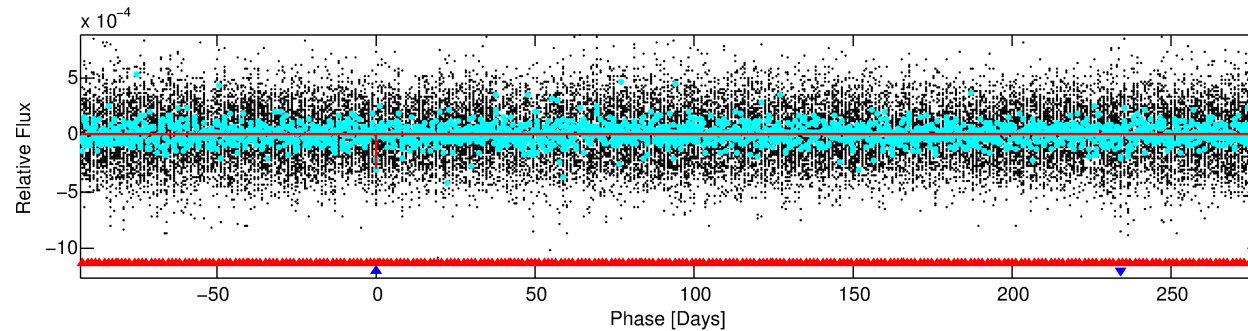
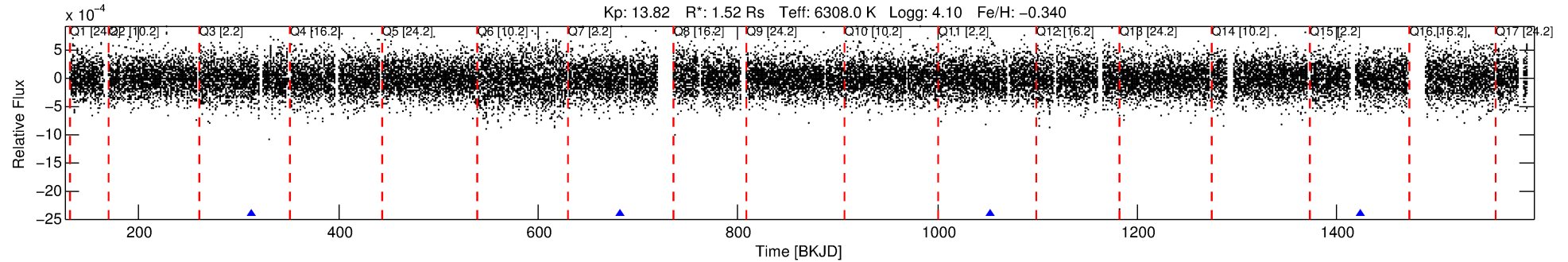
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008971294-02

No Significant Match Found

DV One-Page Summary

KIC: 8971294 Candidate: 2 of 2 Period: 370.321 d



DV Fit Results:

Period = 370.32086 [0.01544] d
Epoch = 312.2931 [0.1254] BKJD
Rp/R* = 0.0188 [0.0030]
a/R* = 96.22 [91.09]
b = 0.92 [0.11]
Seff = 3.09 [1.60]
Teq = 338 [44] K
Rp = 3.11 [1.12] Re
a = 1.0277 [0.3201] AU
Ag = 10732.23 [6946.00] [1.54σ]
Teffp = 5319 [579] K [8.58σ]

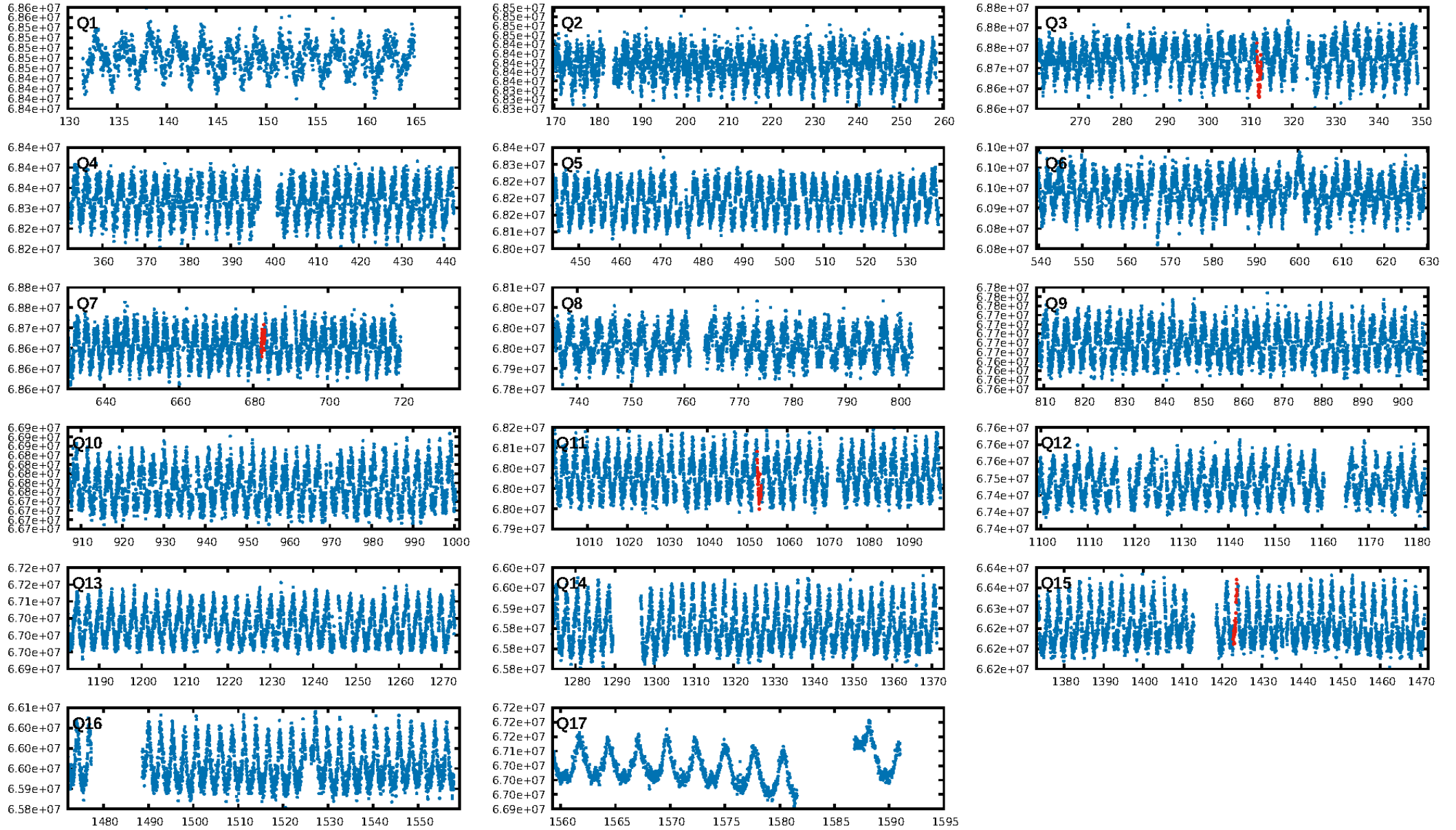
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [658.66σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 78.9%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 4.45e-10
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: 2.612
Centroid-sig: 0.1%
Centroid-so: 2.508 arcsec [2.27σ]
OotOffset-rm: 0.626 arcsec [0.91σ]
KicOffset-rm: 0.651 arcsec [0.99σ]
OotOffset-st: 0/3/0/0 [3]
KicOffset-st: 0/3/0/0 [3]
DiffImageQuality-fgm: 0.67 [2/3]
DiffImageOverlap-fno: 0.00 [0/4]

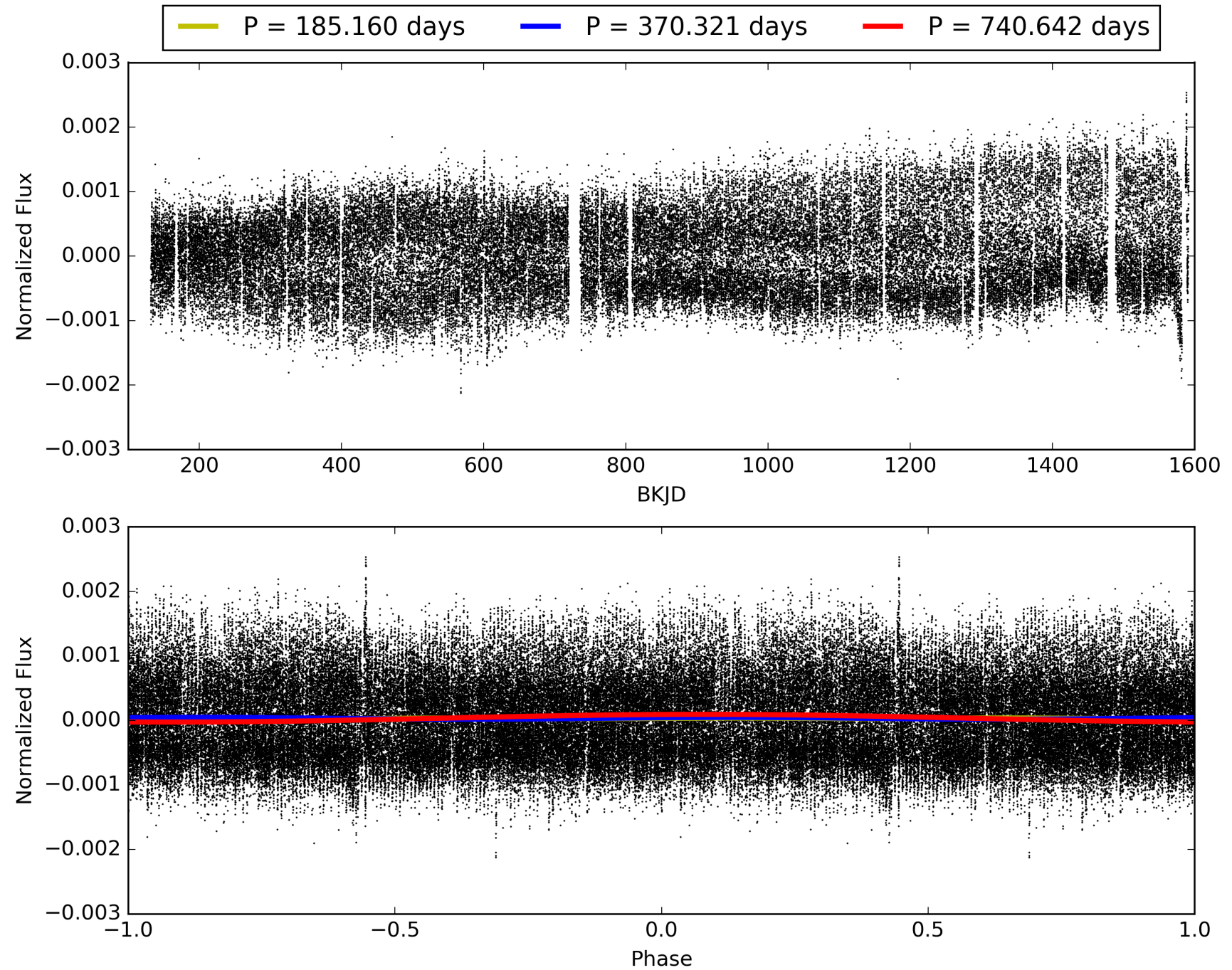
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 06:00:10 Z

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

TCE 008971294-02, PDC Light Curves

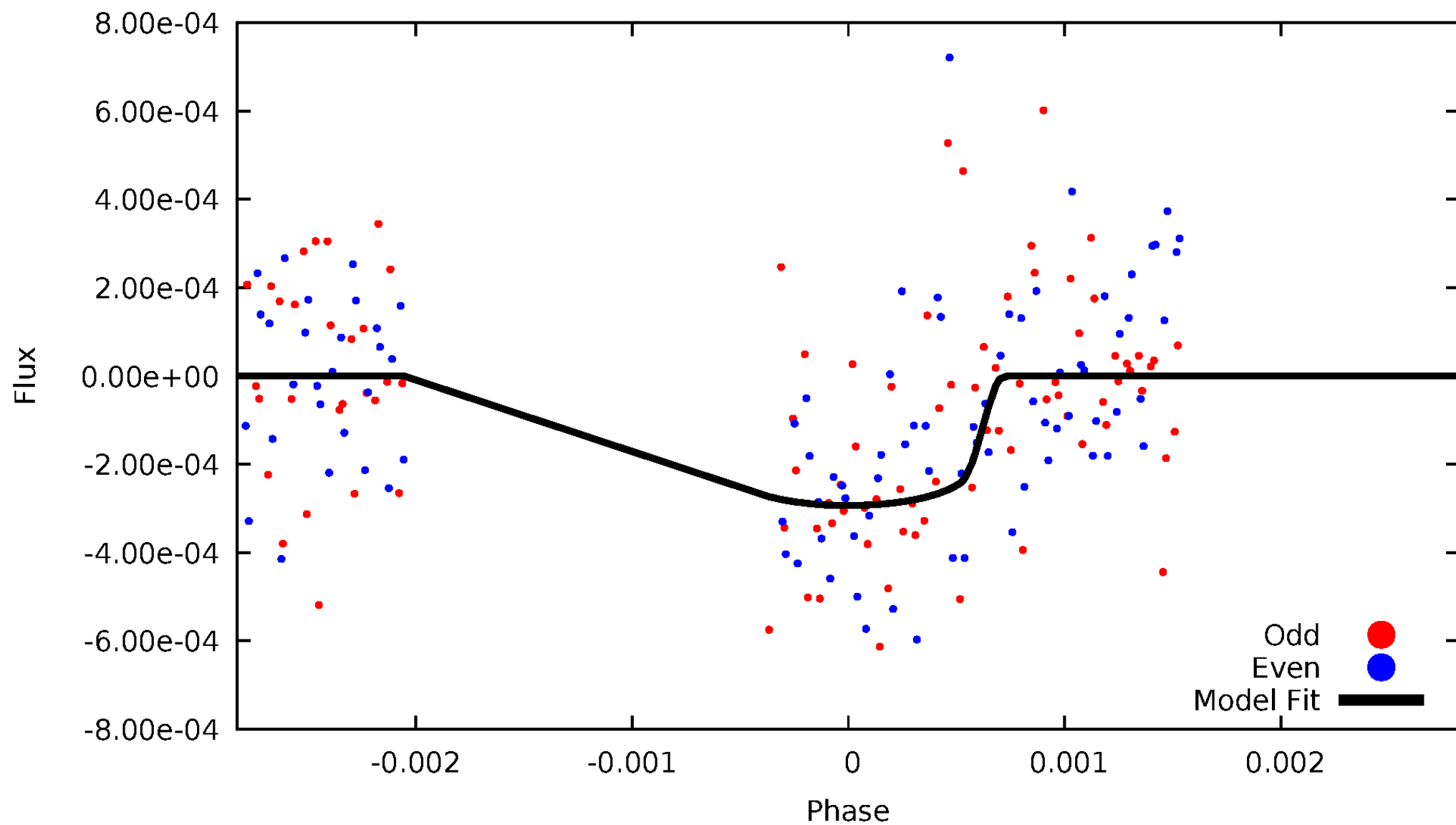


TCE 008971294-02



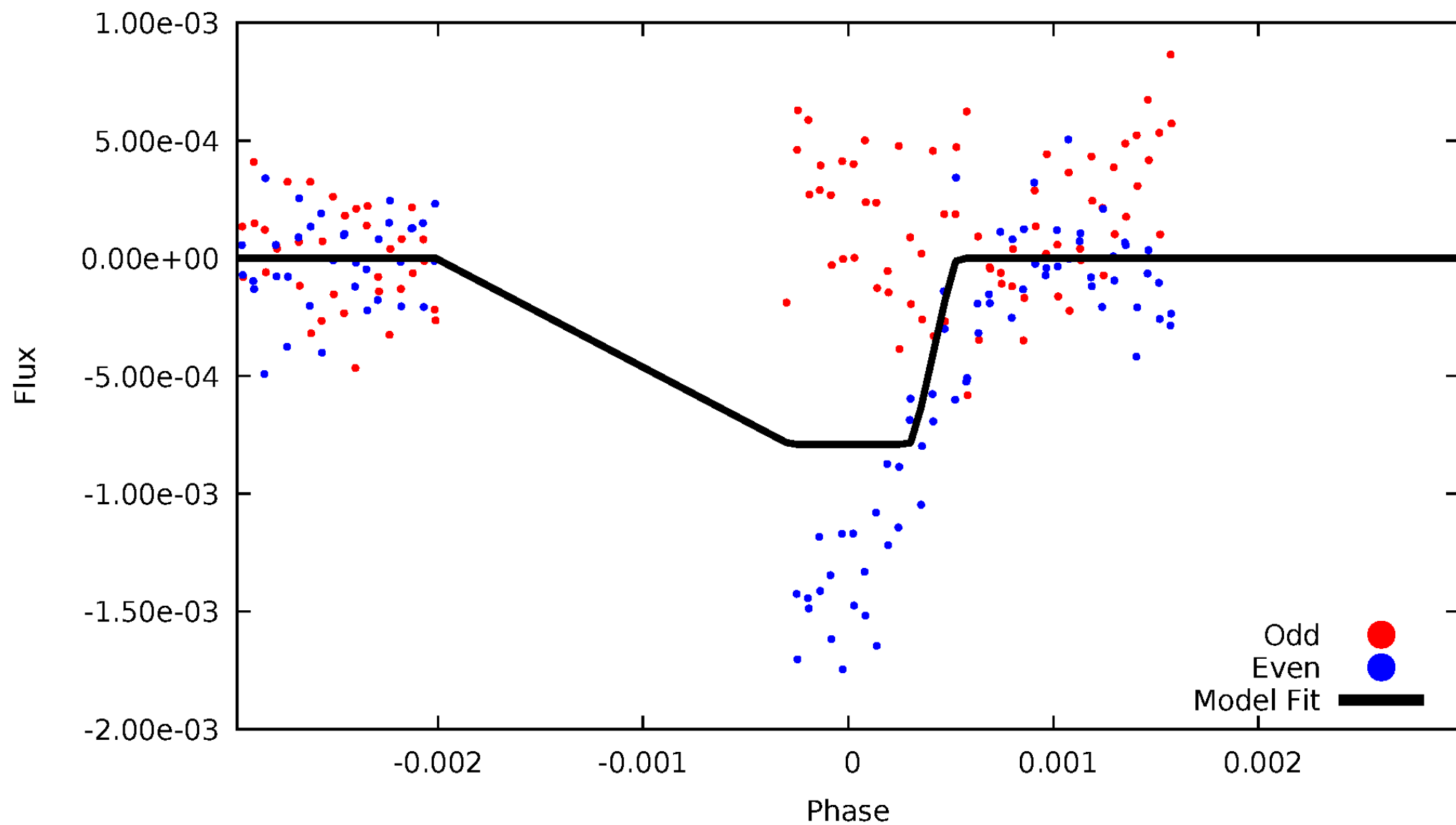
DV Odd/Even

TCE 008971294-02



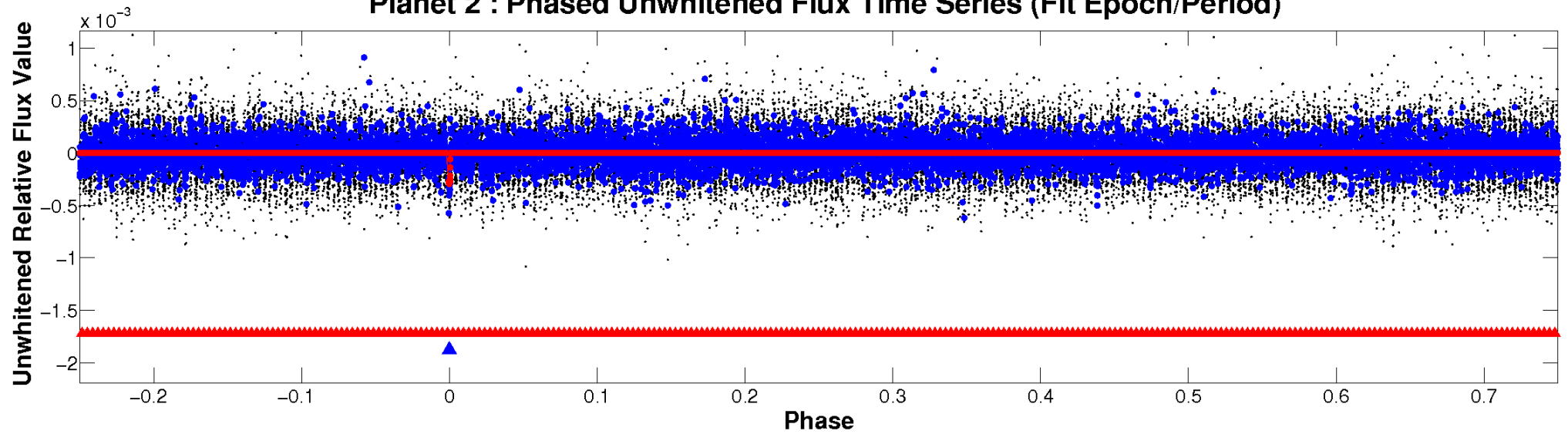
ALT Odd/Even

TCE 008971294-02

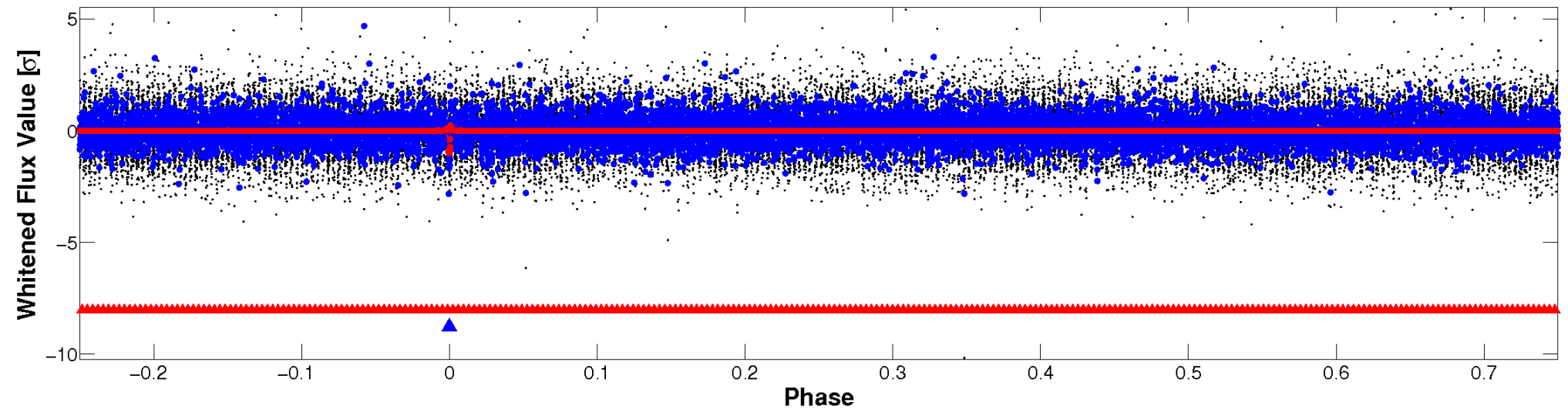


Non-Whitened Vs. Whitened Light Curve

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

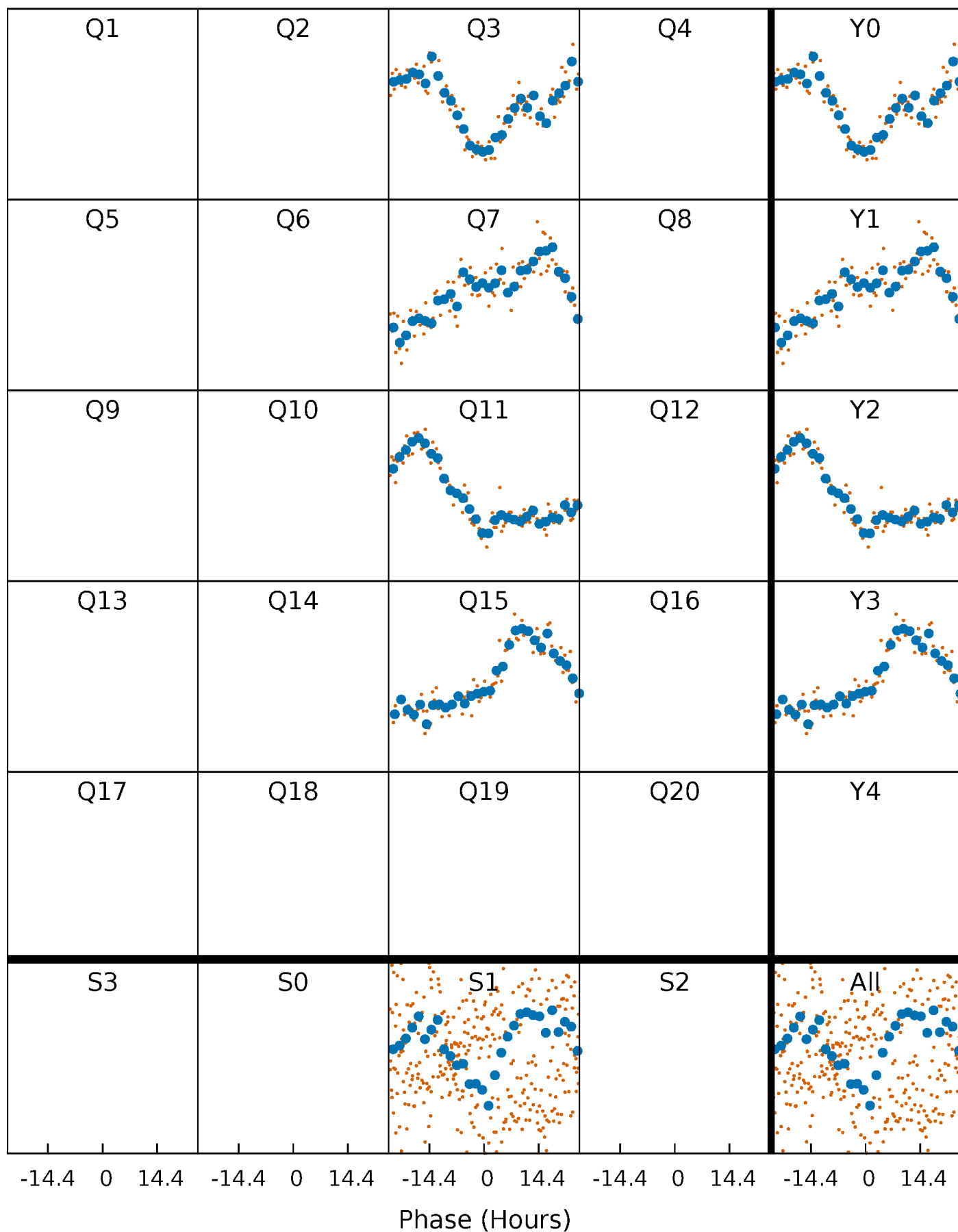


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



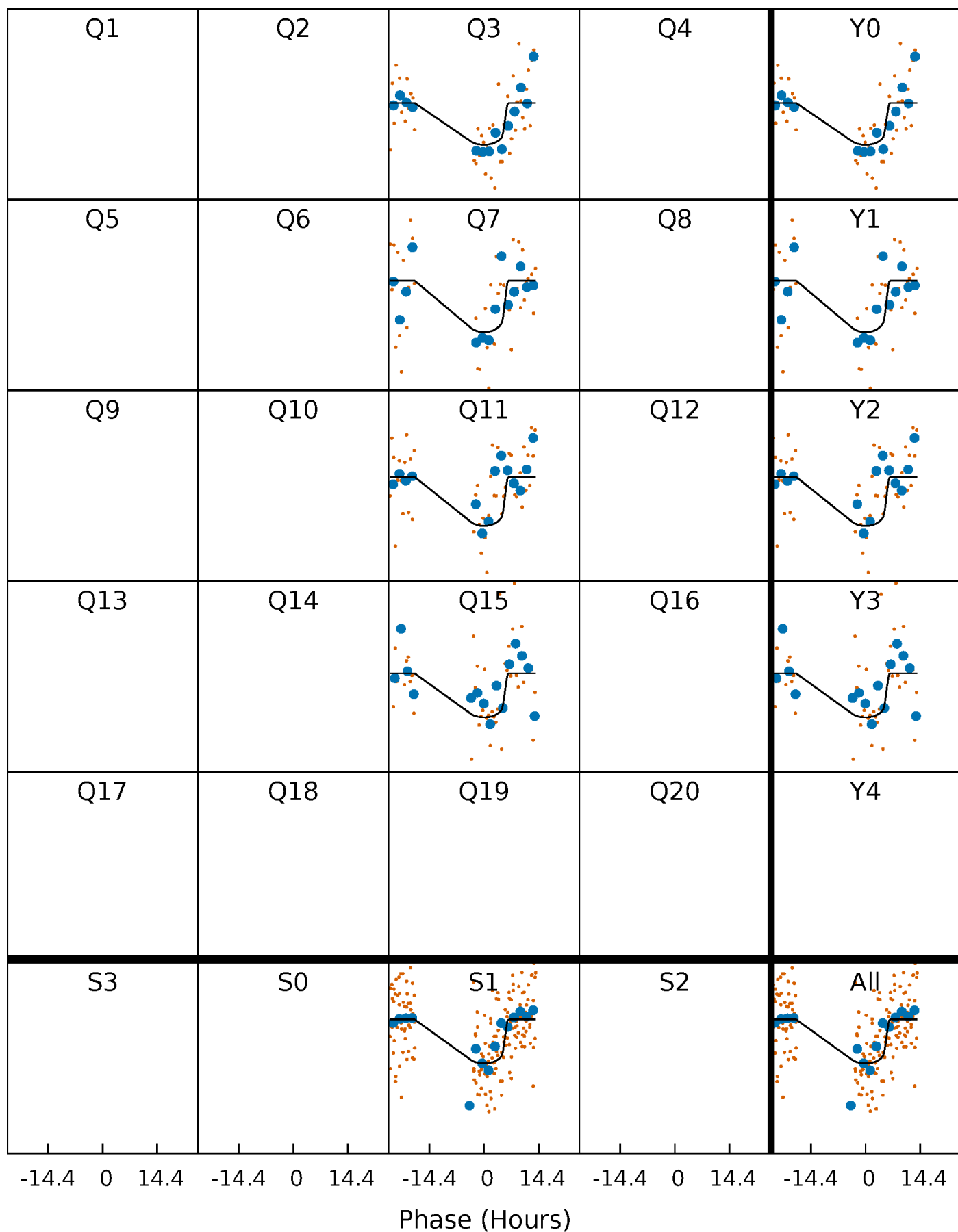
PDC Quarter-Phased Transit Curves

TCE 008971294-02 $P=370.320862$ Days $T_0=312.293134$ (BKJD)



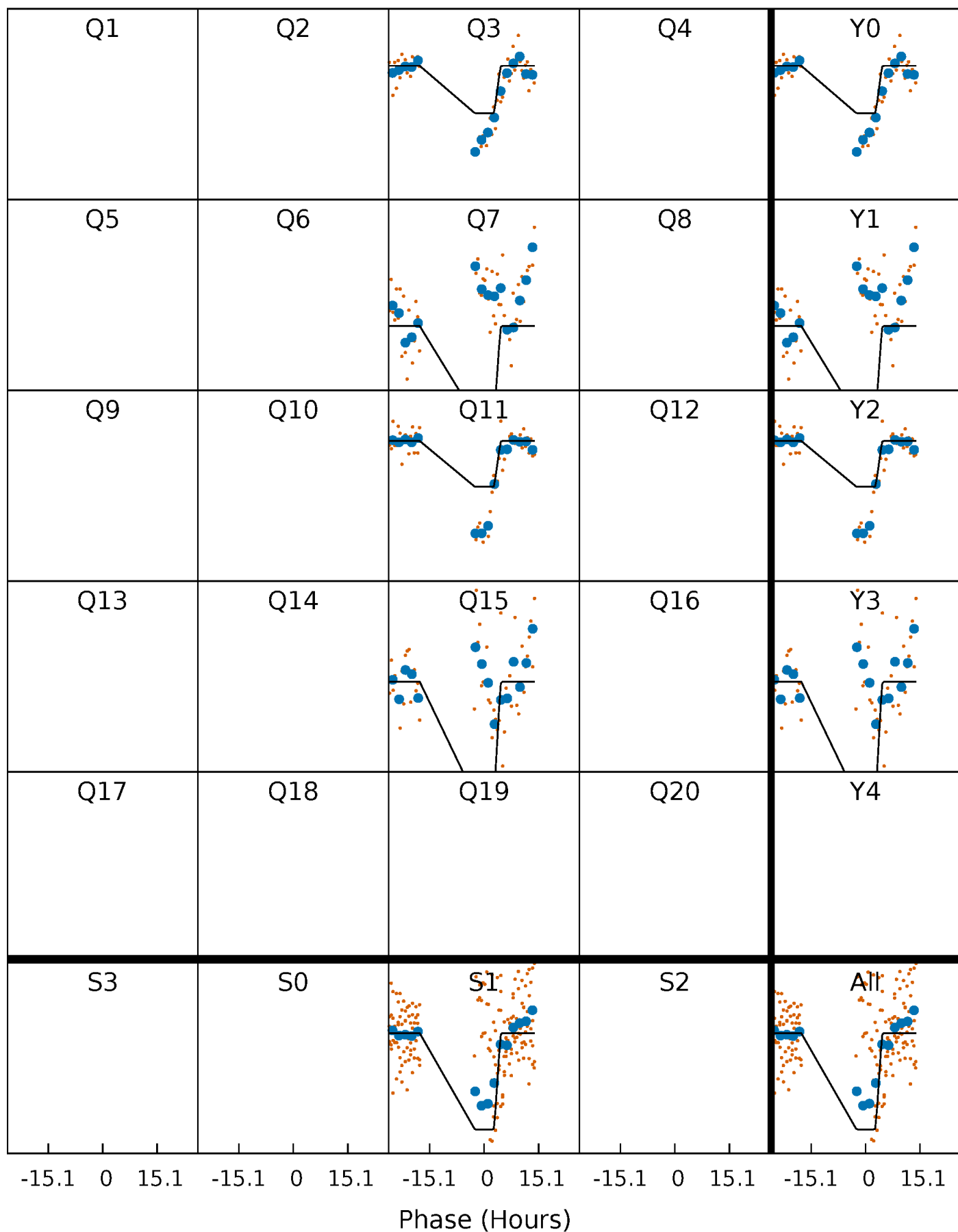
DV Quarter-Phased Transit Curves

TCE 008971294-02 P=370.320862 Days $T_0=312.293134$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

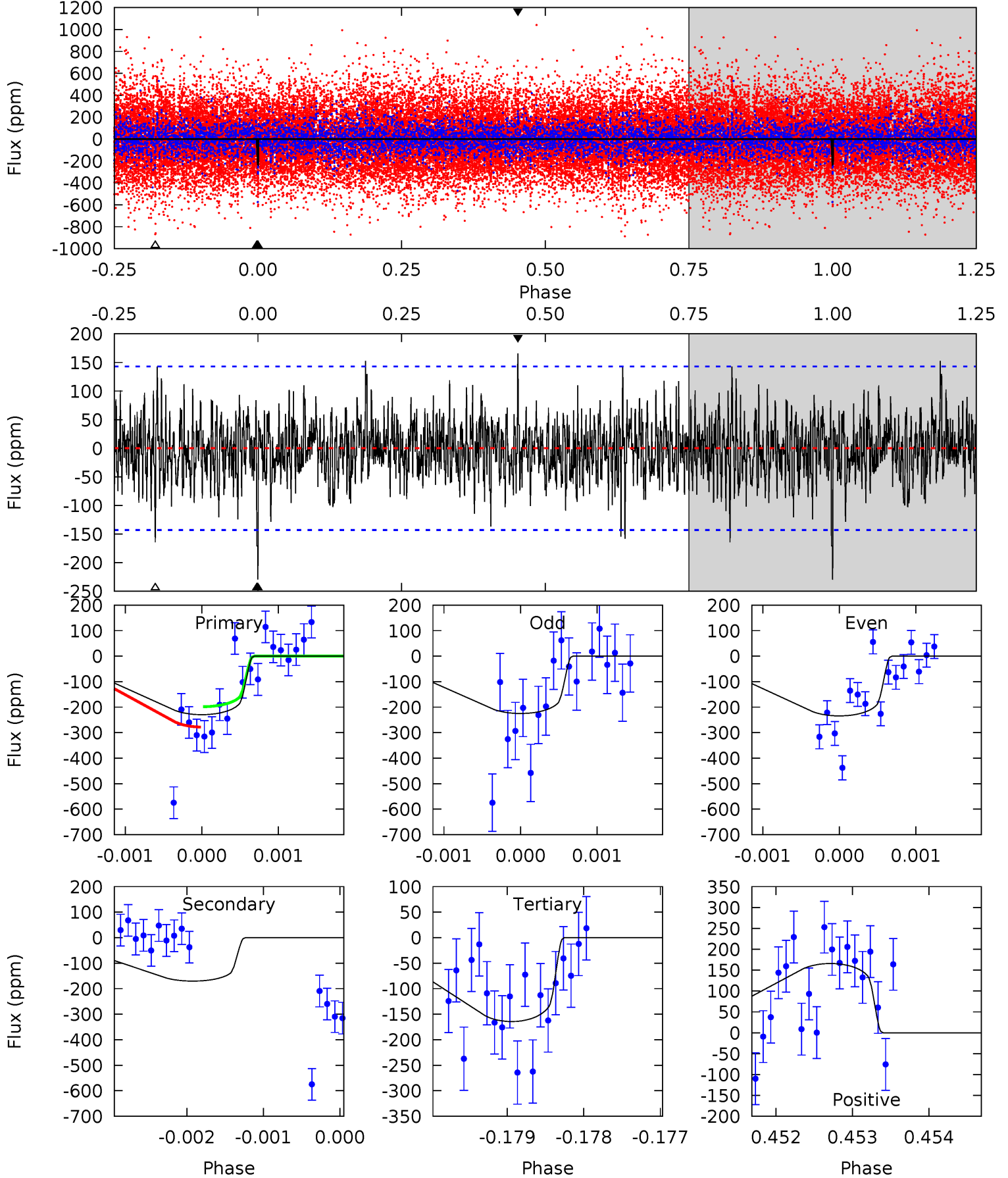
TCE 008971294-02 P=370.317408 Days $T_0=312.279293$ (BKJD)



DV Model-Shift Uniqueness Test

008971294-02, P = 370.320862 Days, E = 312.293134 Days

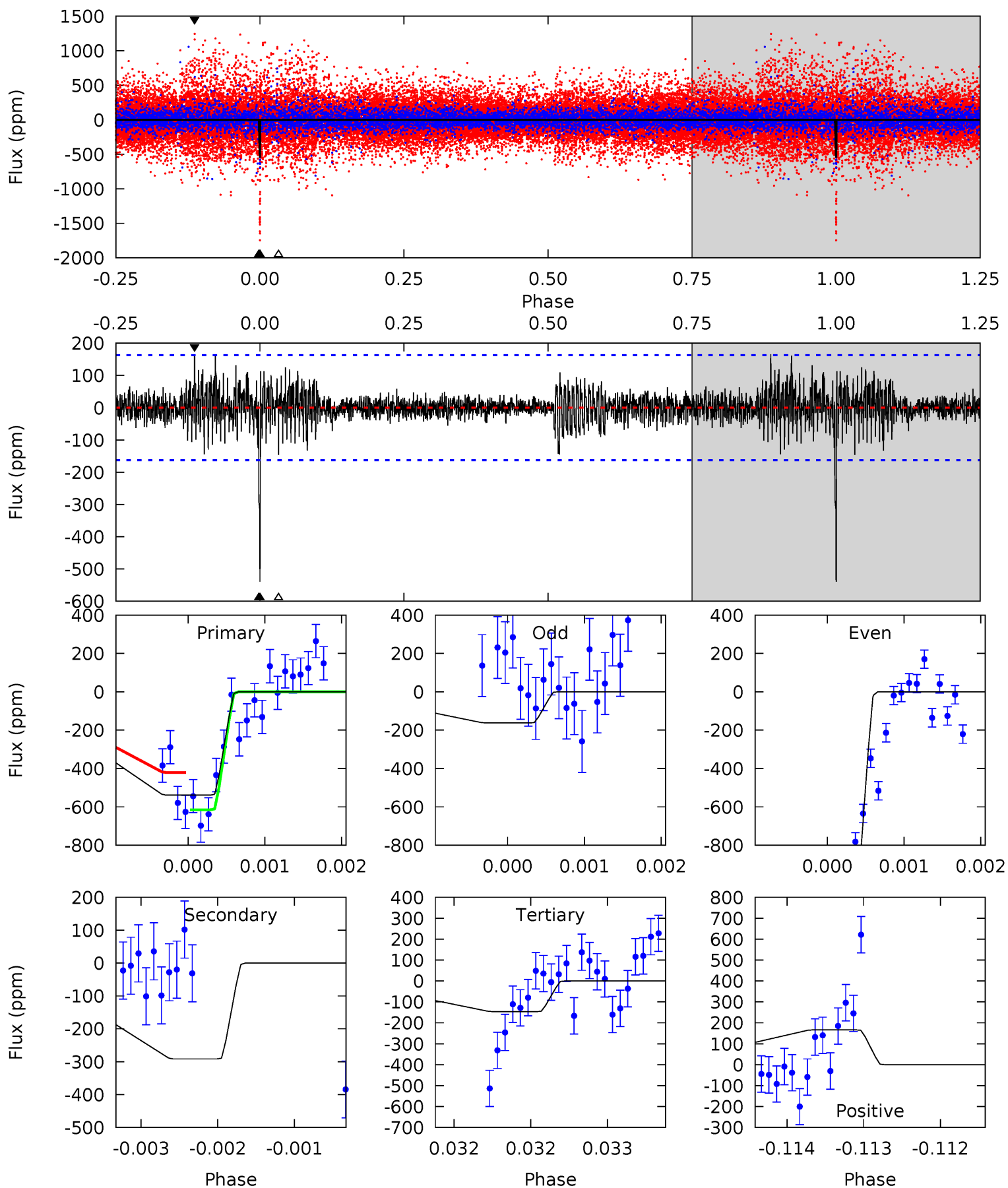
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.73	6.48	6.25	6.31	5.44	3.27	1.63	2.48	2.43	0.22	0.17	0.18	1.02	0.42	1.42



Alt Model-Shift Uniqueness Test

008971294-02, P = 370.317408 Days, E = 312.279293 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
18.1	9.80	4.92	5.58	5.47	3.33	1.03	13.2	12.5	4.89	4.22	18.8	0.95	0.24	2.98



Stellar Parameters For KIC 008971294

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6308^{+176}_{-220}	$4.100^{+0.293}_{-0.158}$	$-0.340^{+0.300}_{-0.300}$	$1.516^{+0.401}_{-0.490}$	$1.055^{+0.180}_{-0.131}$	$0.427^{+0.729}_{-0.210}$
	+3%/-3%	+7%/-4%	+88%/-88%	+26%/-32%	+17%/-12%	+171%/-49%
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 008971294-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-170 ± 26	$3.10^{+0.71}_{-0.75}$	464^{+41}_{-43}	5257^{+506}_{-391}	10473^{+7764}_{-3621}
Alt.	-292 ± 30	$4.56^{+0.96}_{-0.86}$	465^{+37}_{-41}	4998^{+295}_{-270}	8245^{+4537}_{-2654}

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

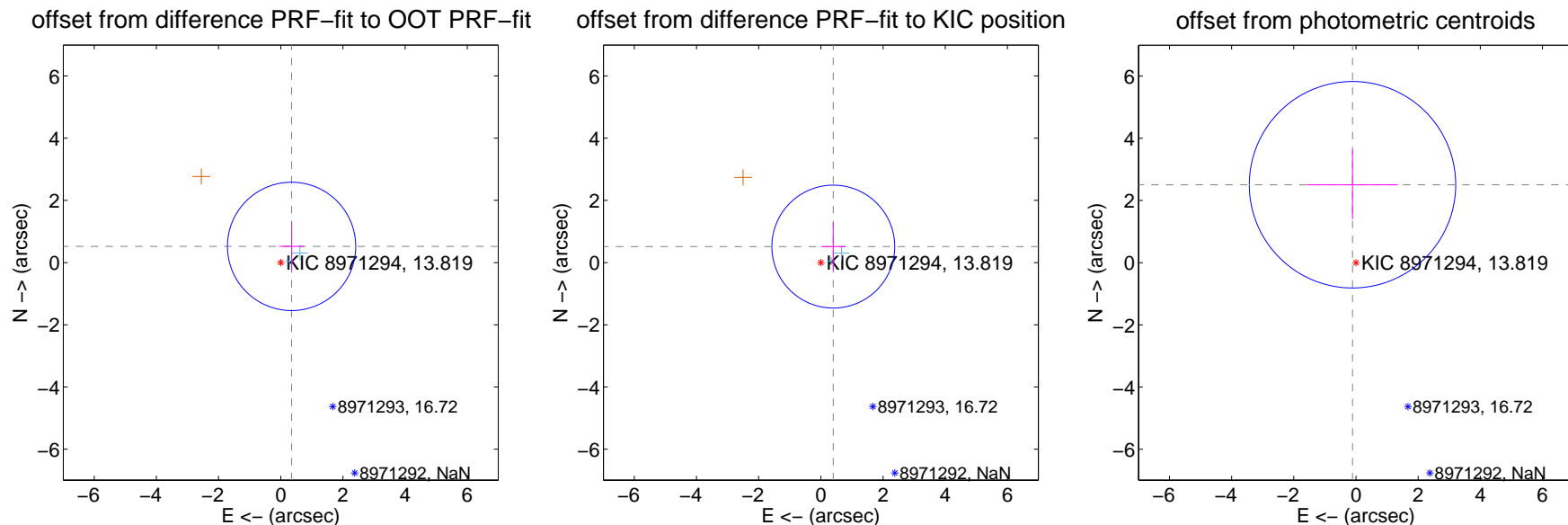
DV Centroid Data

Supplemental centroid analysis for 008971294-02. Kepler magnitude: 13.82. Transit SNR 7.61

There are 2 quarters with good PRF difference image offsets

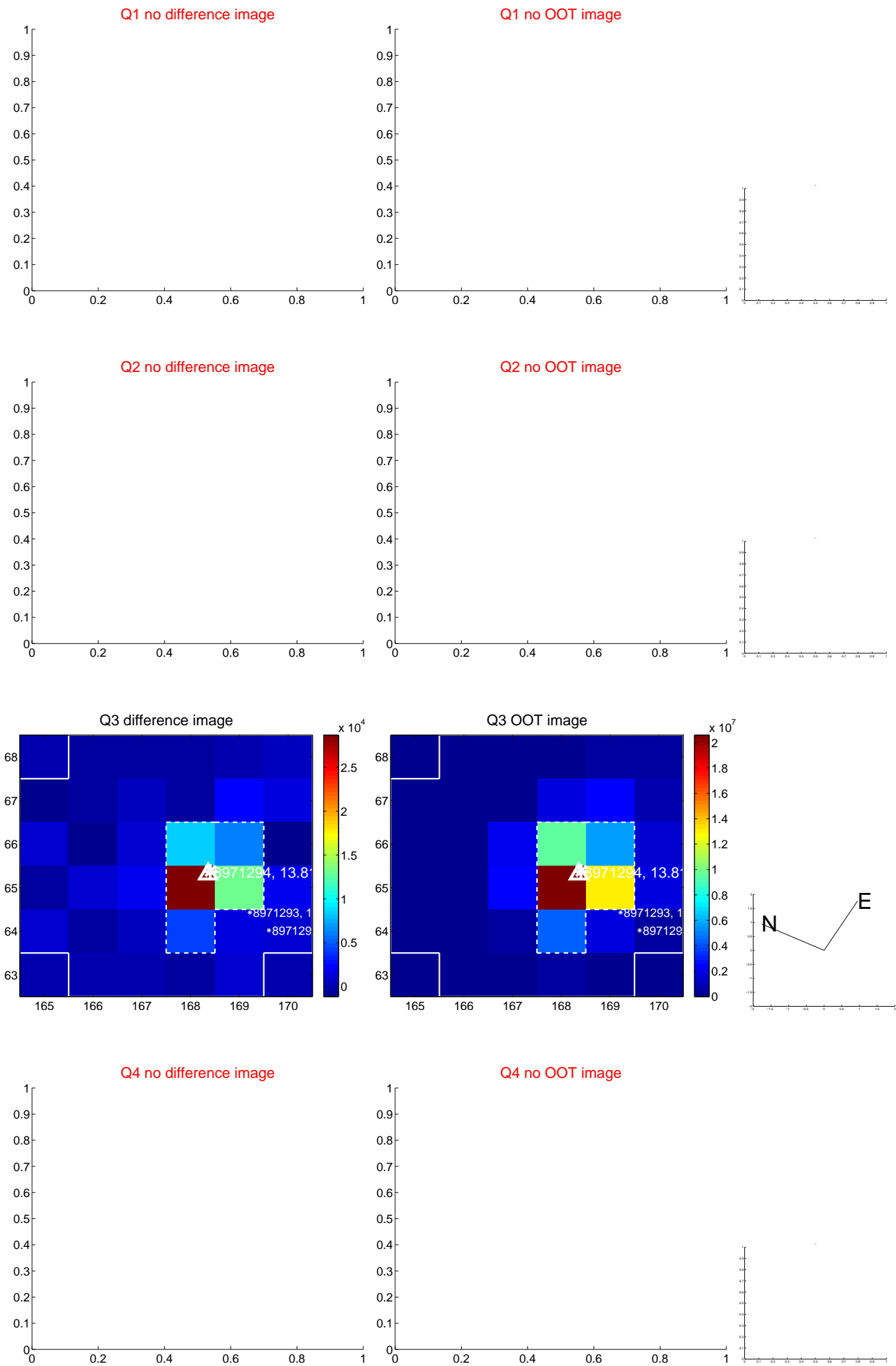
The direct PRF centroid is offset from the target star catalog position by about 0.05 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.626 ± 0.688	0.91	-0.348 ± 0.397	0.521 ± 0.783
PRF-fit source offset from KIC position	0.651 ± 0.658	0.99	-0.400 ± 0.396	0.514 ± 0.776
photometric centroid source offset	2.51 ± 1.11	2.27	0.11 ± 1.46	2.51 ± 1.11



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

Q5 no difference image



Q5 no OOT image



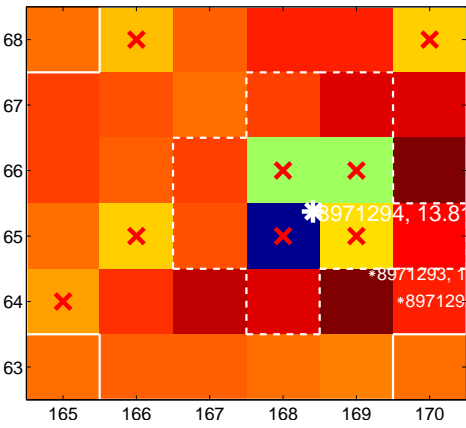
Q6 no difference image



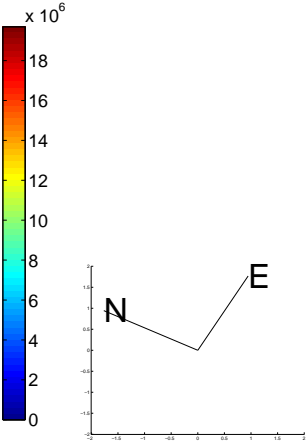
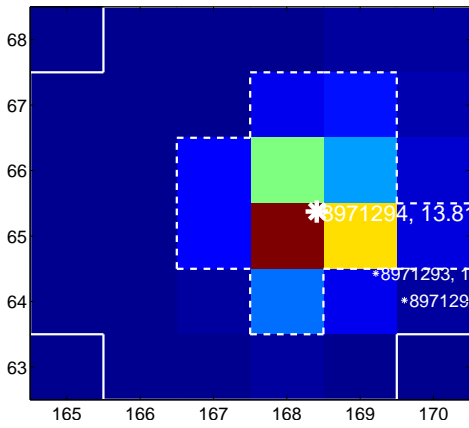
Q6 no OOT image



Q7 difference image. Poor Quality



Q7 OOT image



Q8 no difference image



Q8 no OOT image



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

Q9 no difference image



Q9 no OOT image



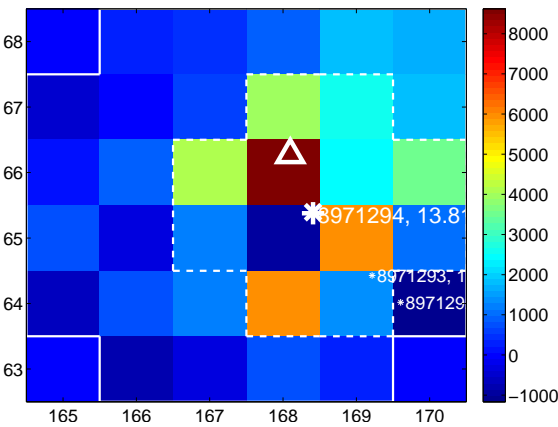
Q10 no difference image



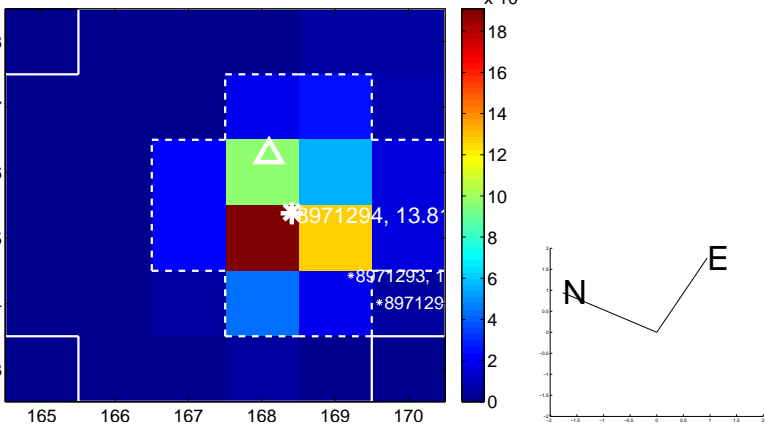
Q10 no OOT image



Q11 difference image. Poor Quality



Q11 OOT image



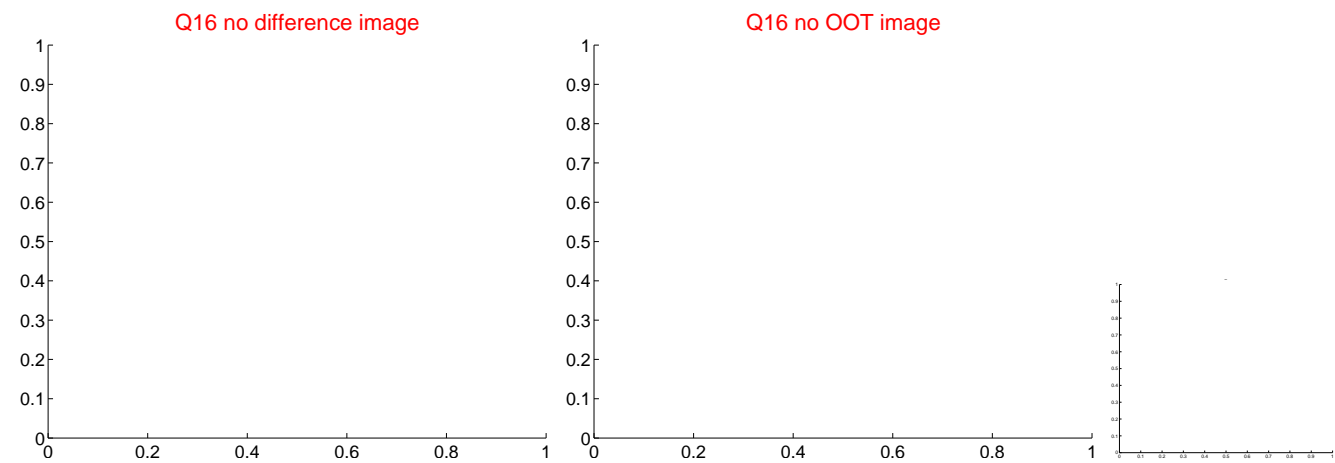
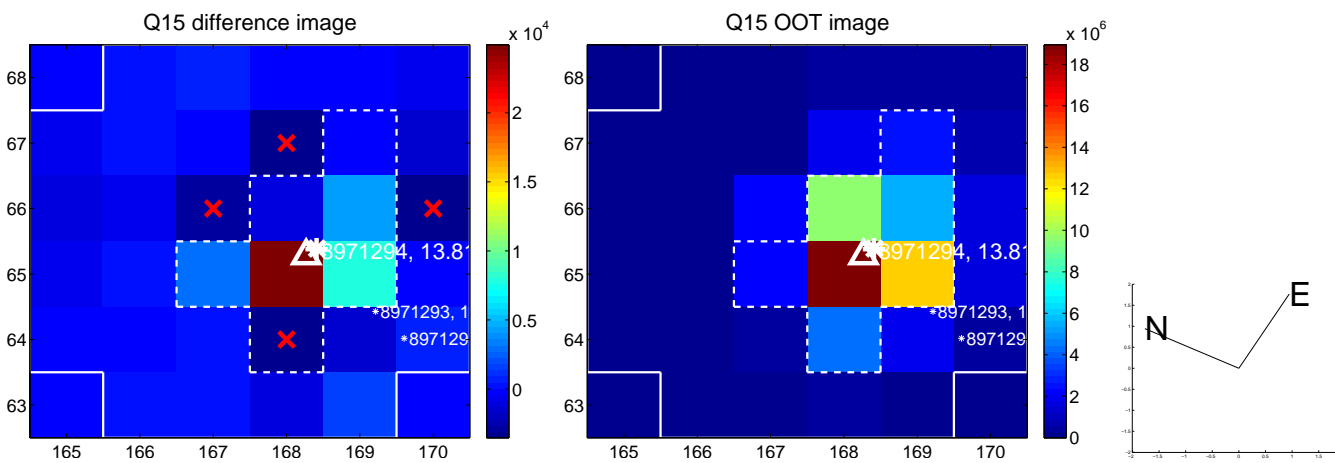
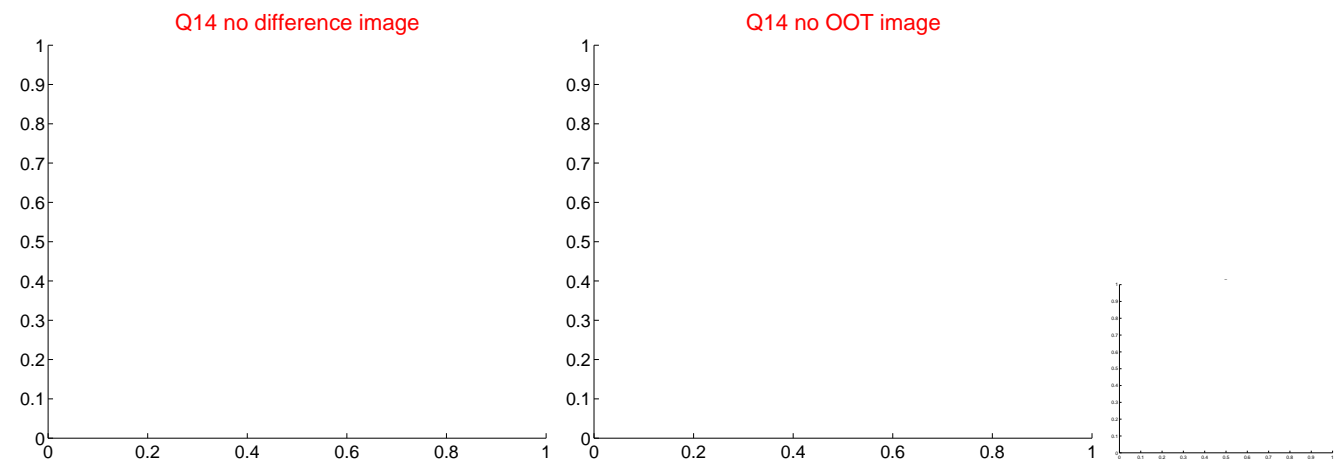
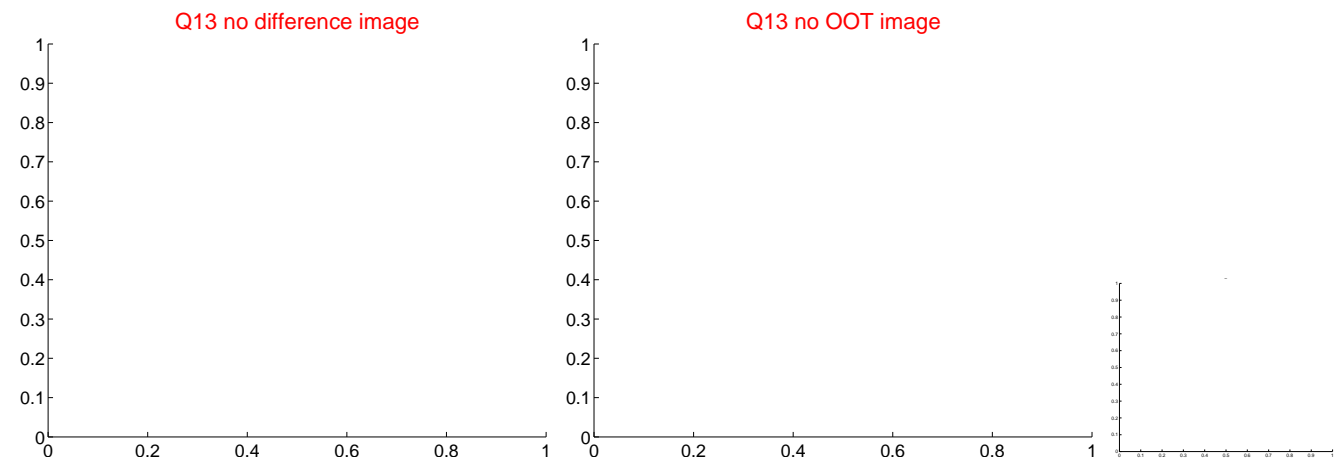
Q12 no difference image



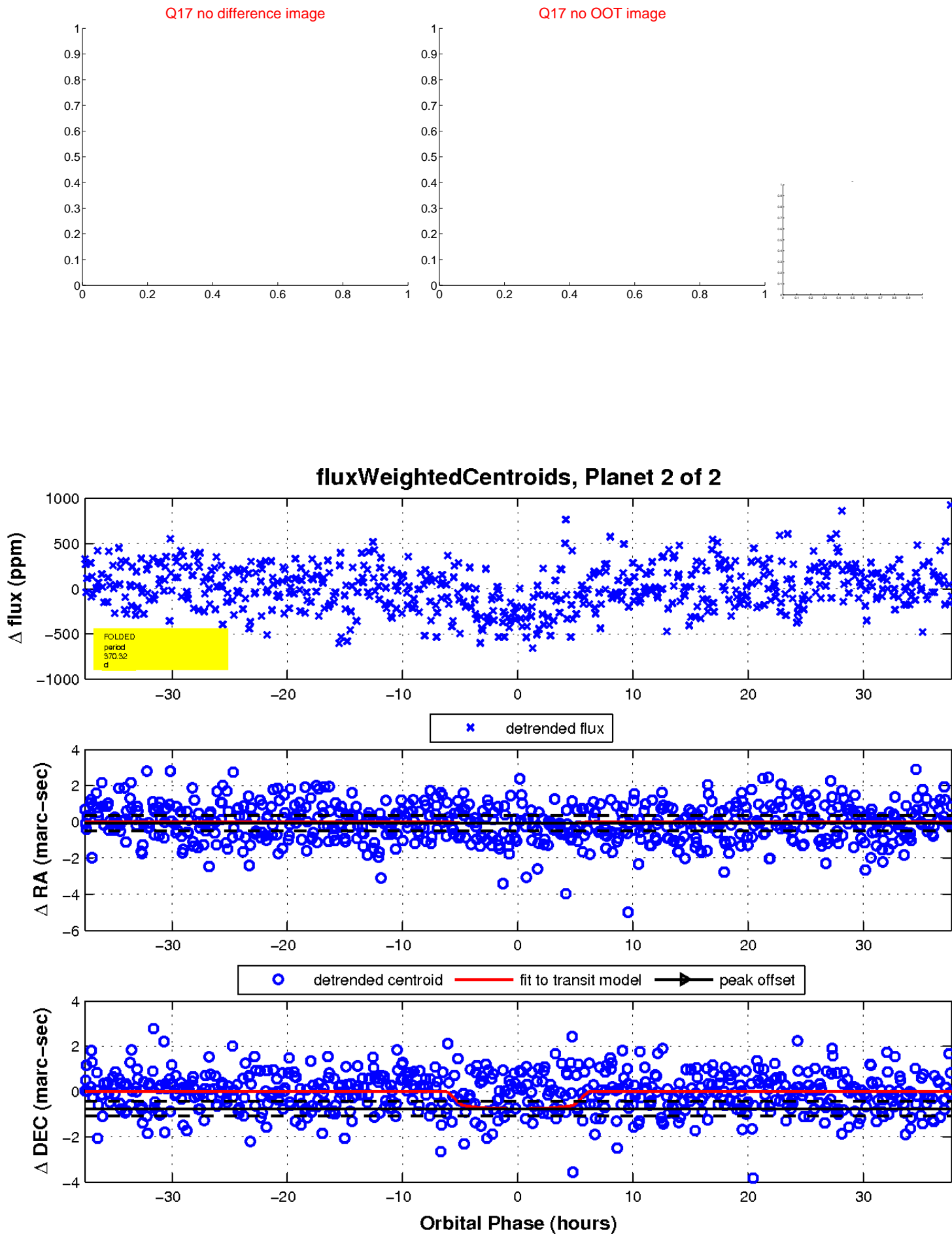
Q12 no OOT image



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

