

KIC 009729691

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})
009729691-01	OBS	1751.01	8.689299	133.661885	1093.0	2.703	61.4	65.3	0.90	5211	3.30	88.41
009729691-02	OBS	1751.02	20.997157	132.069884	947.9	3.868	27.8	31.2	0.90	5211	5.17	27.26

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009729691-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT
009729691-02	OBS	FP	0.00	0	1	0	0	DEEP_V_SHAPED

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

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

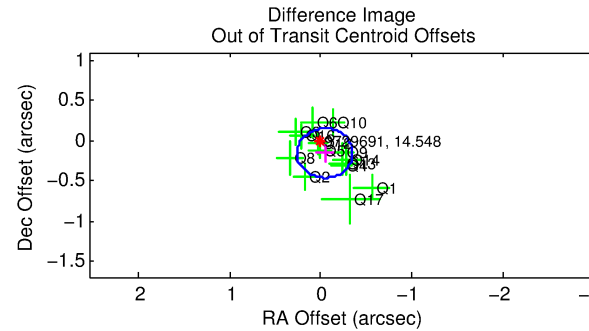
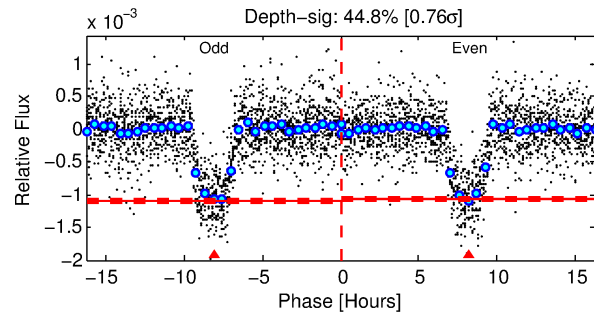
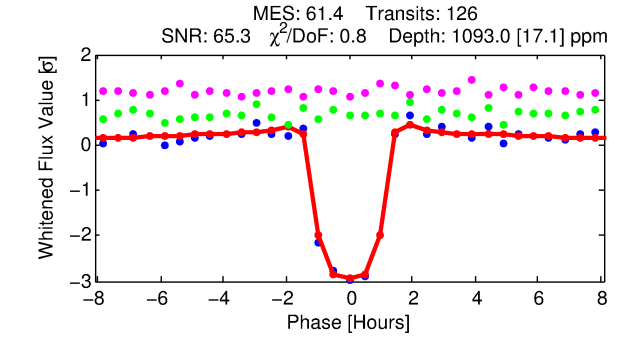
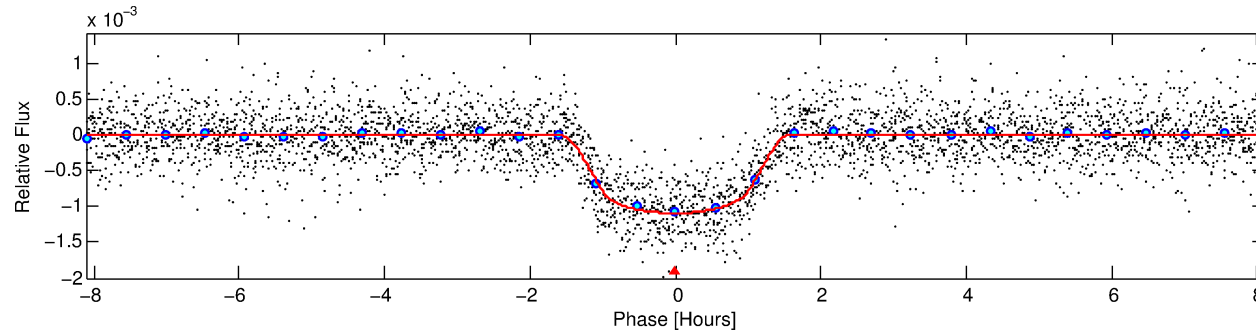
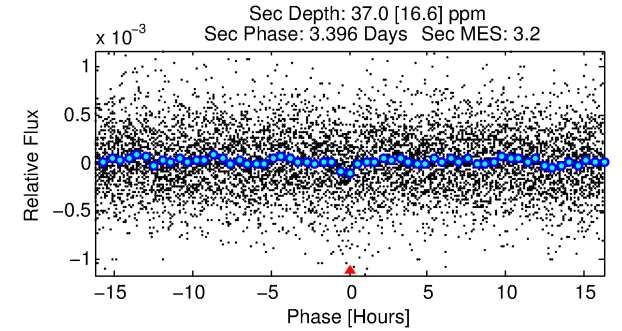
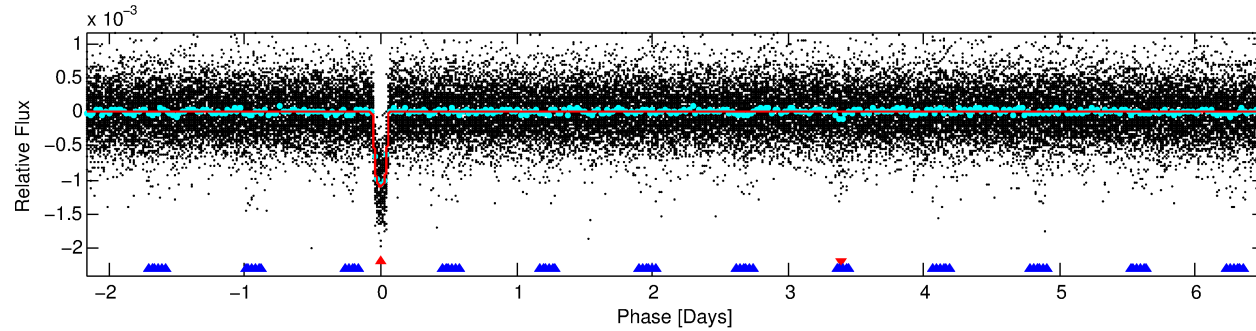
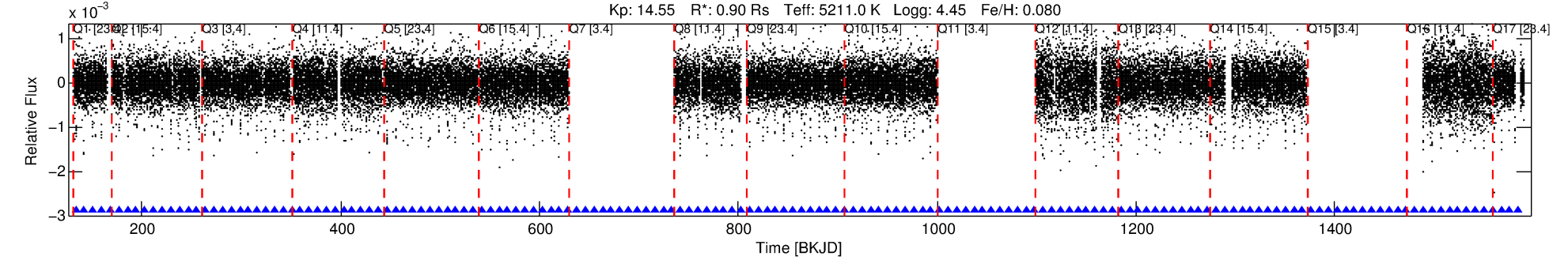
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009729691-01

No Significant Match Found

DV One-Page Summary

KIC: 9729691 Candidate: 1 of 2 Period: 8.689 d
KOI: K01751.01 Corr: 0.979



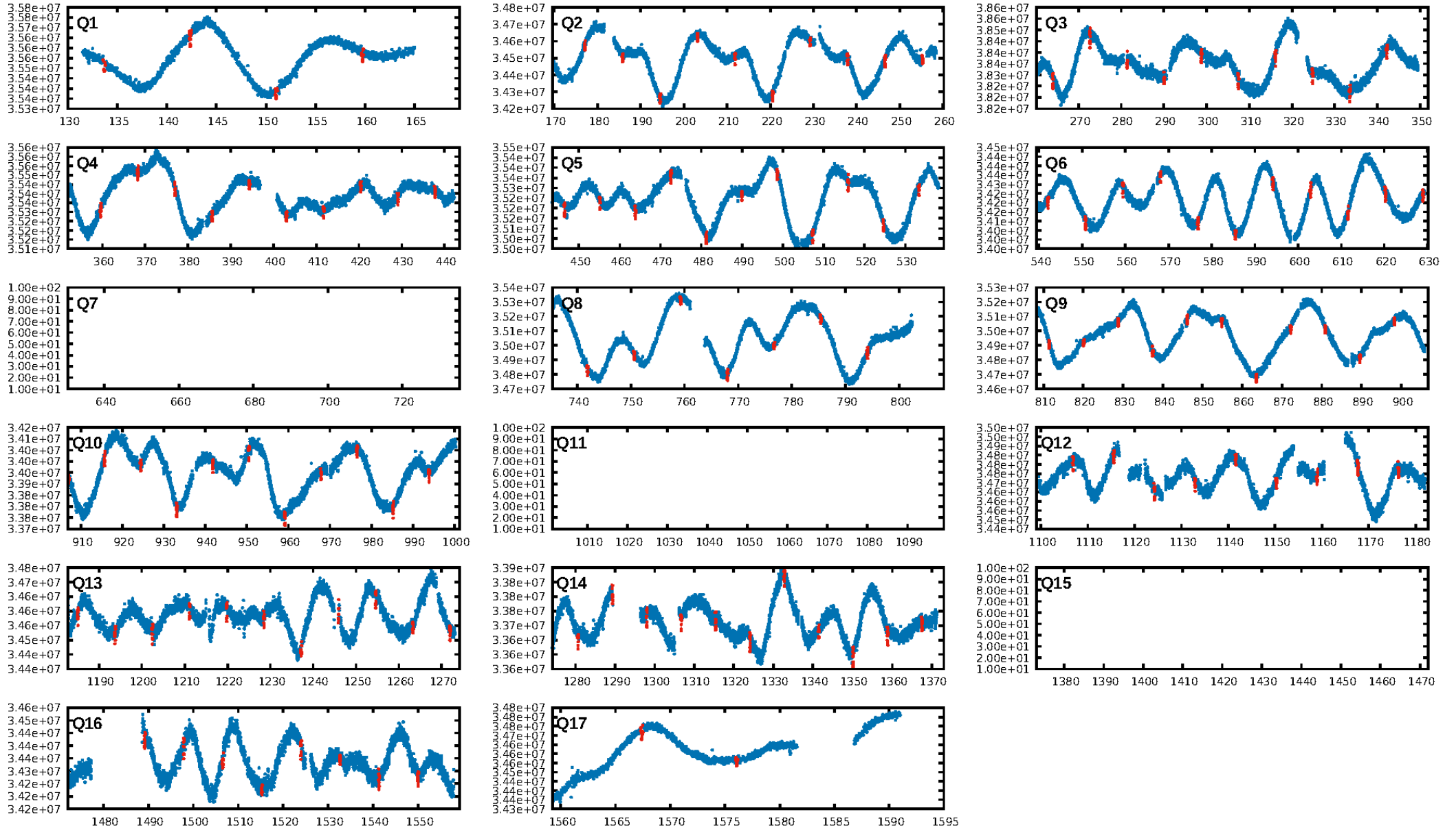
DV Fit Results:

Period = 8.68930 [0.00001] d
Epoch = 133.6619 [0.0008] BKJD
Rp/R* = 0.0338 [0.0038]
a/R* = 16.31 [6.81]
b = 0.79 [0.20]
Seff = 88.41 [29.96]
Teff = 782 [66] K
Rp = 3.30 [0.78] Re
a = 0.0774 [0.0151] AU
Ag = 11.20 [6.61] [1.54σ]
Teffp = 2211 [288] K [4.83σ]

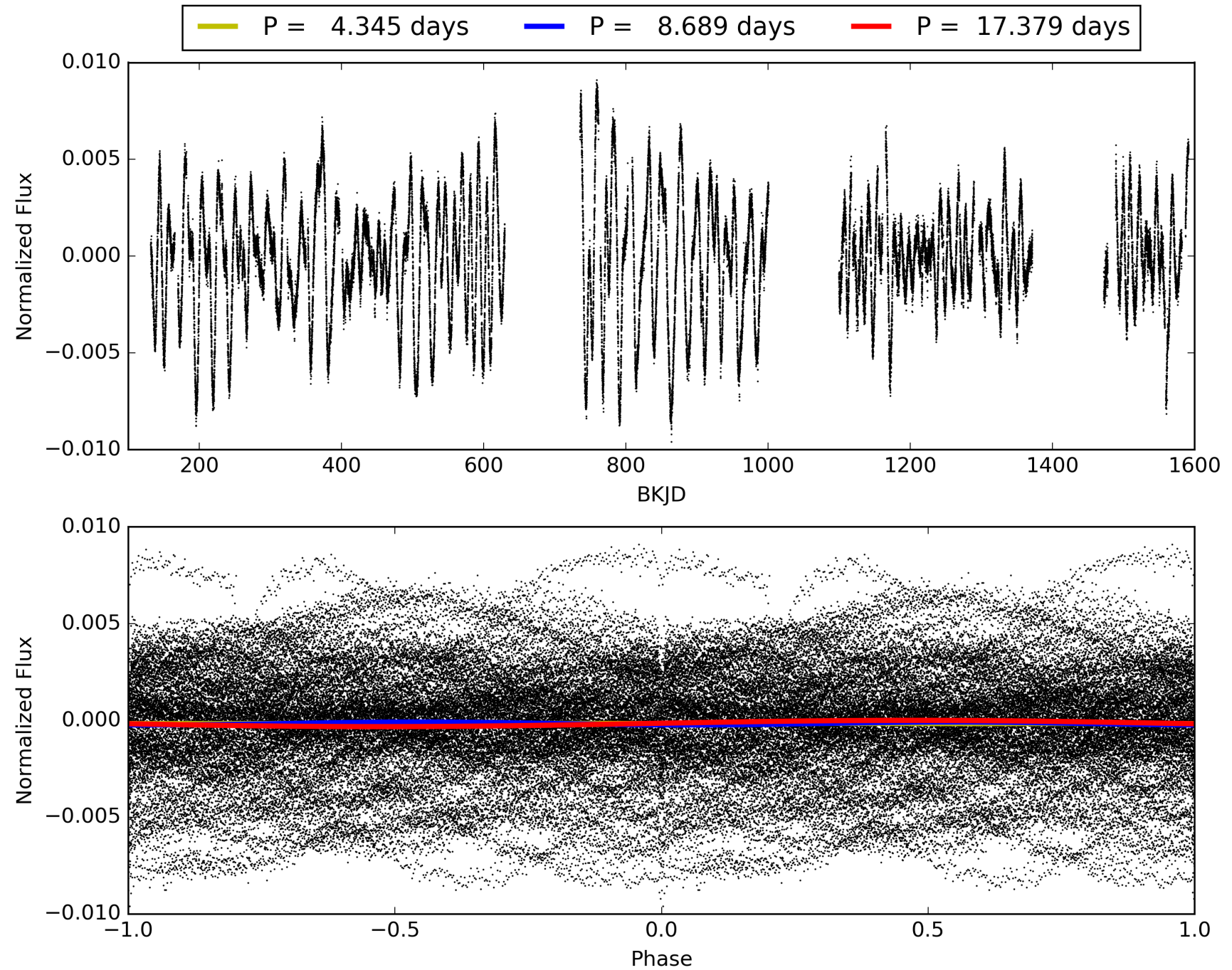
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [62.60σ]
ModelChiSquare2-sig: 98.4%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 1.00 [120/120]
GhostDiagnostic-chr: 3.121
Centroid-sig: 67.2%
Centroid-so: 0.128 arcsec [0.63σ]
OotOffset-rm: 0.163 arcsec [1.59σ]
KicOffset-rm: 0.224 arcsec [2.01σ]
OotOffset-st: 4/1/4/5 [14]
KicOffset-st: 4/1/4/5 [14]
DiffImageQuality-fgm: 1.00 [14/14]
DiffImageOverlap-fno: 1.00 [14/14]

TCE 009729691-01, PDC Light Curves

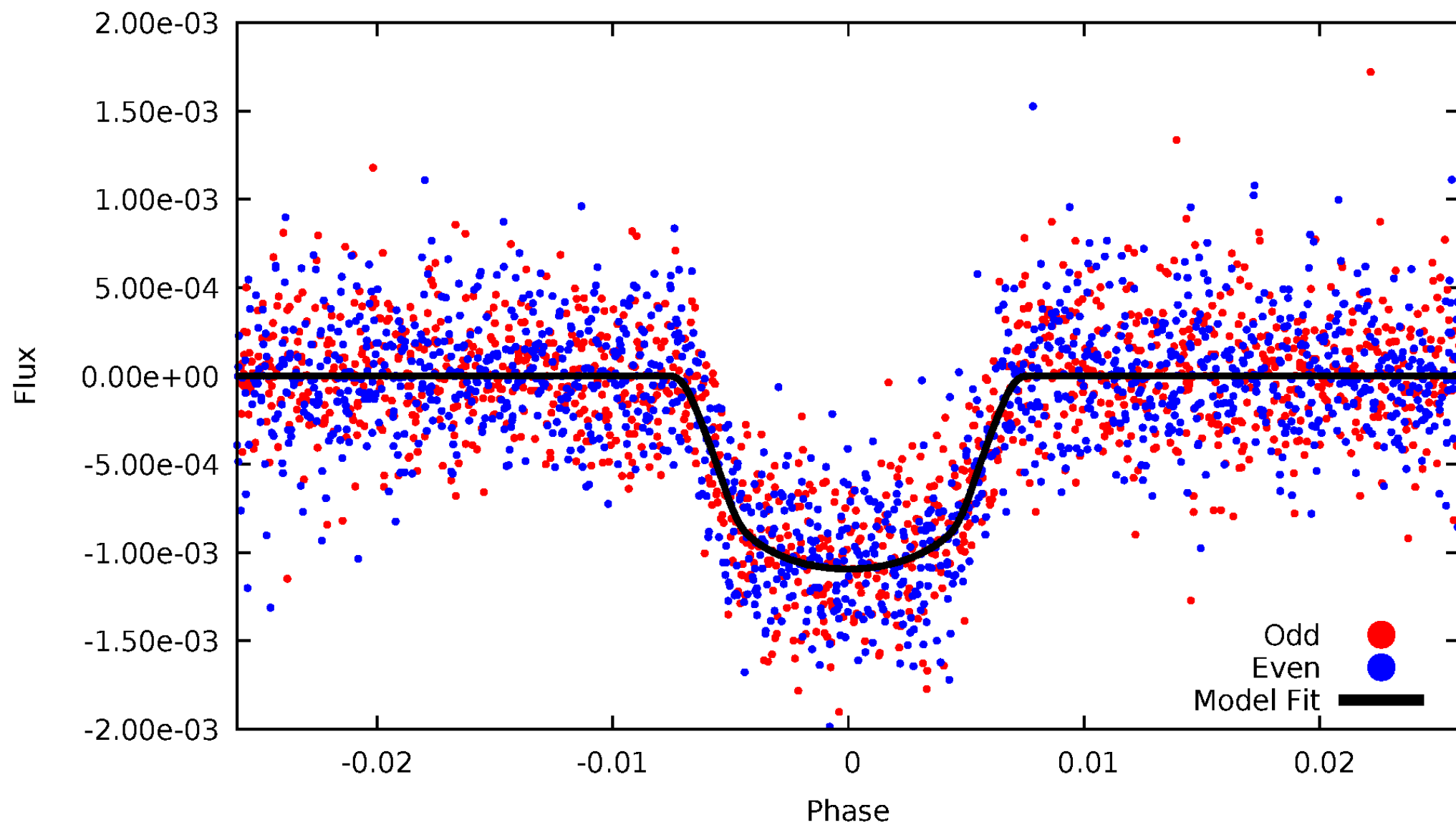


TCE 009729691-01



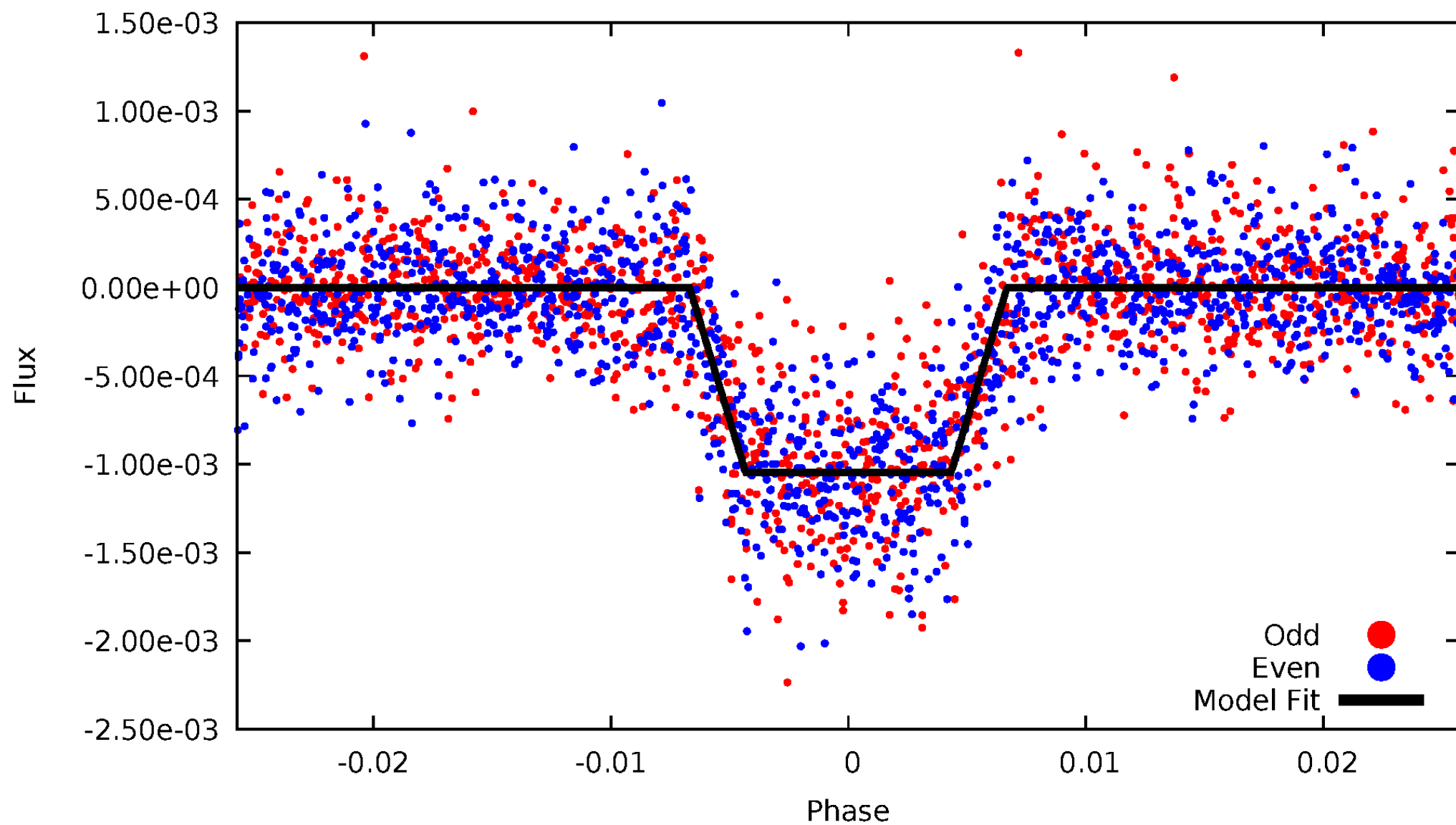
DV Odd/Even

TCE 009729691-01



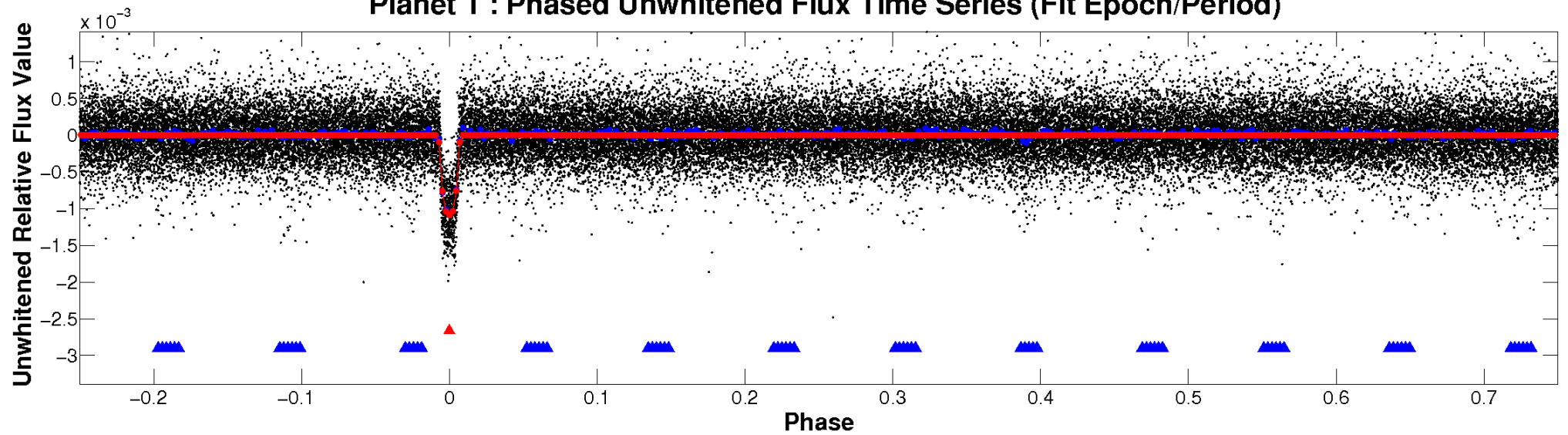
ALT Odd/Even

TCE 009729691-01

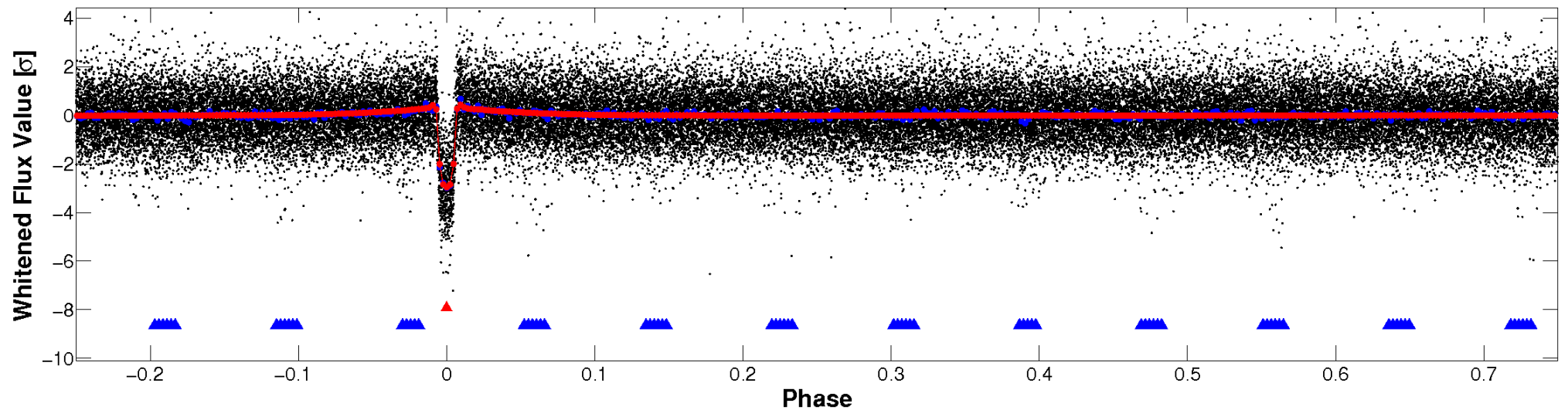


Non-Whitened Vs. Whitened Light Curve

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

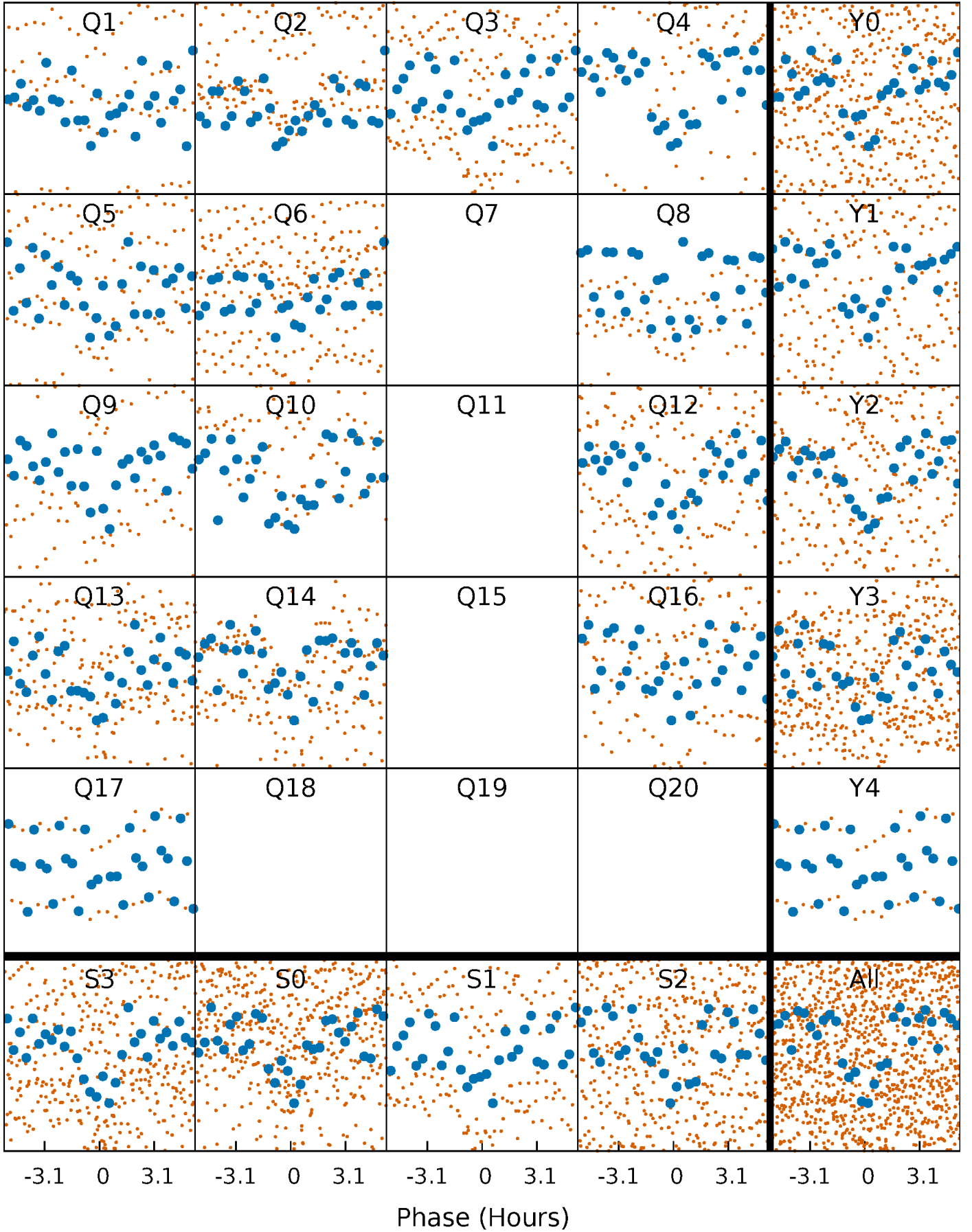


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



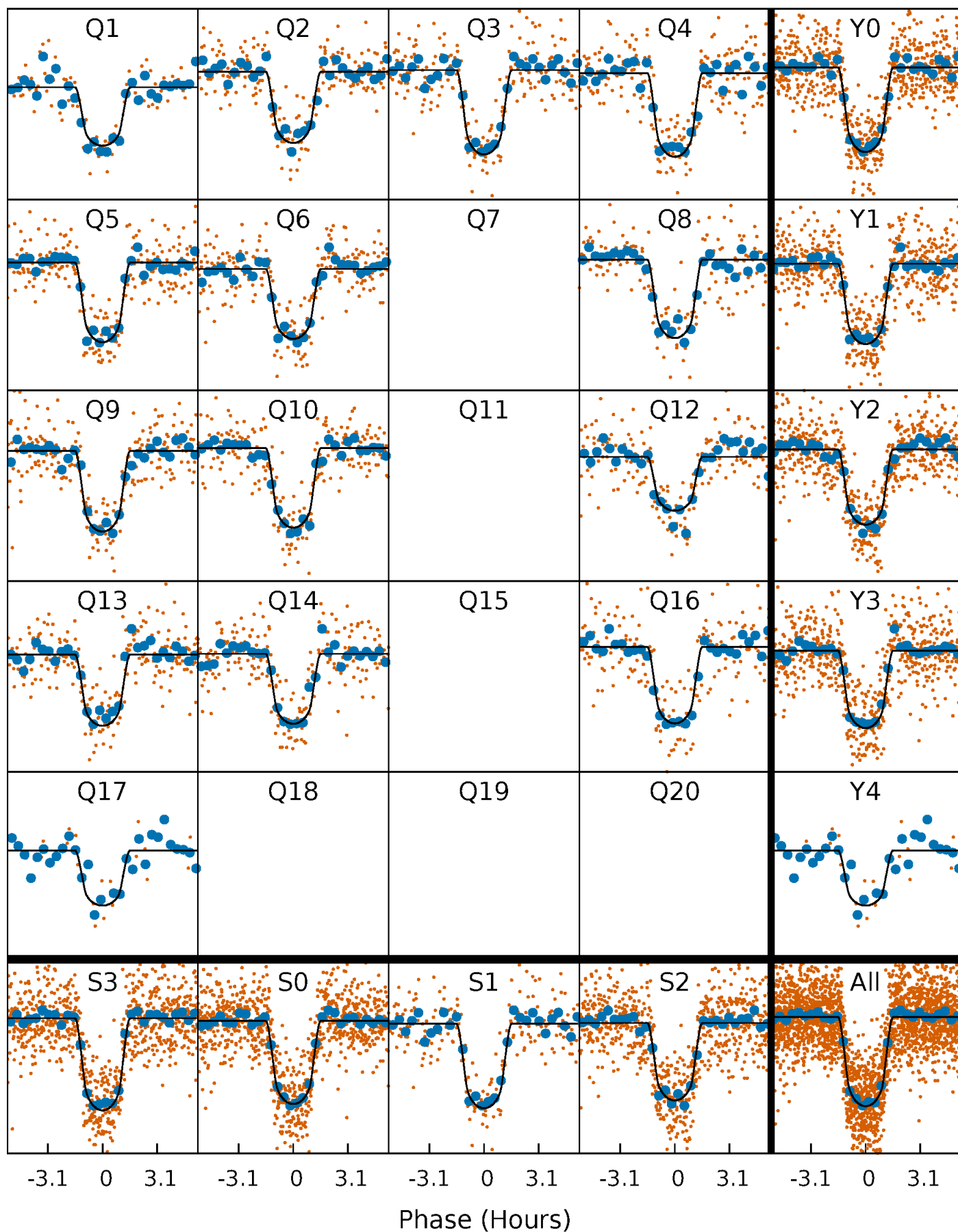
PDC Quarter-Phased Transit Curves

TCE 009729691-01 P= 8.689299 Days $T_0=133.661885$ (BKJD)



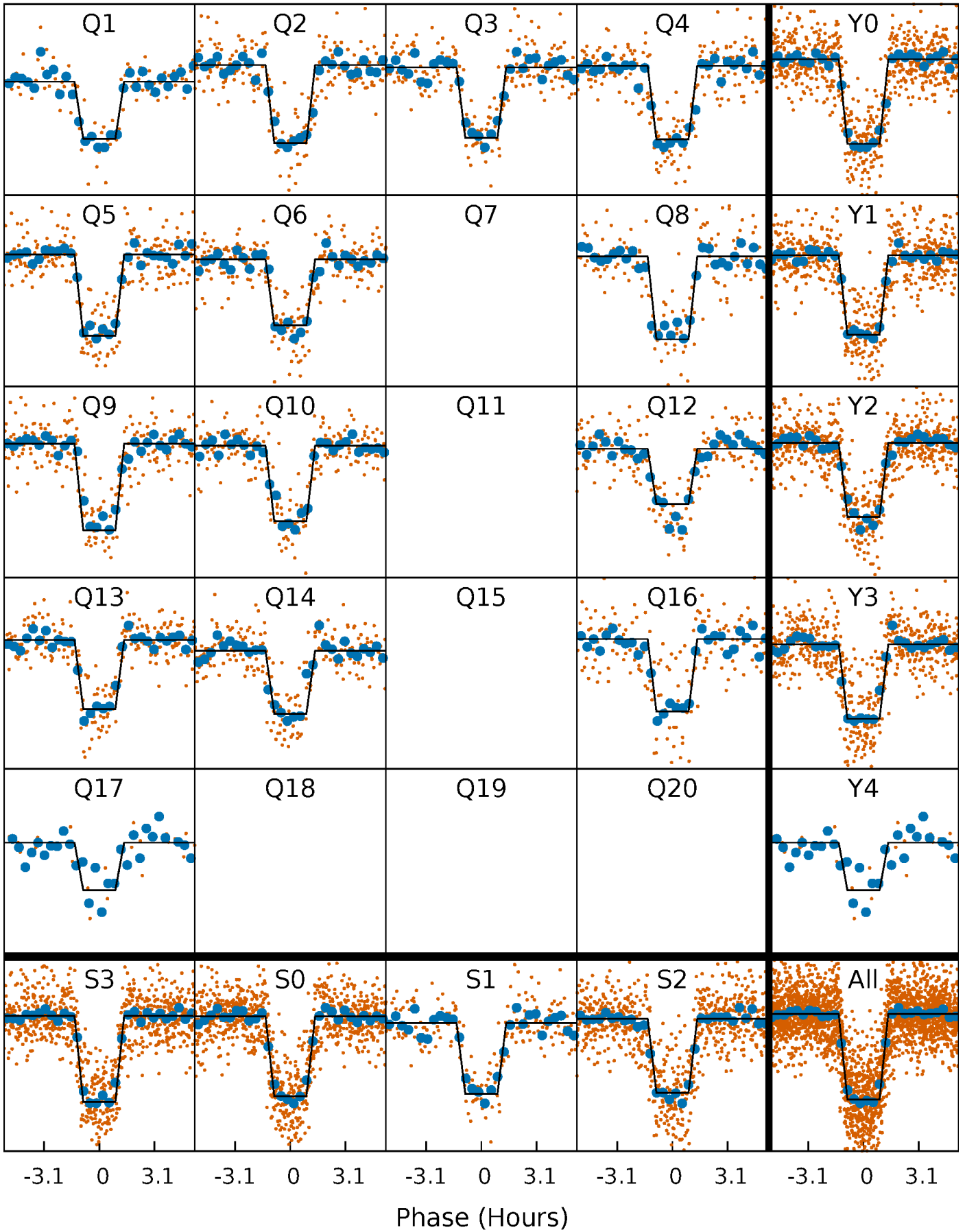
DV Quarter-Phased Transit Curves

TCE 009729691-01 P= 8.689299 Days $T_0=133.661885$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

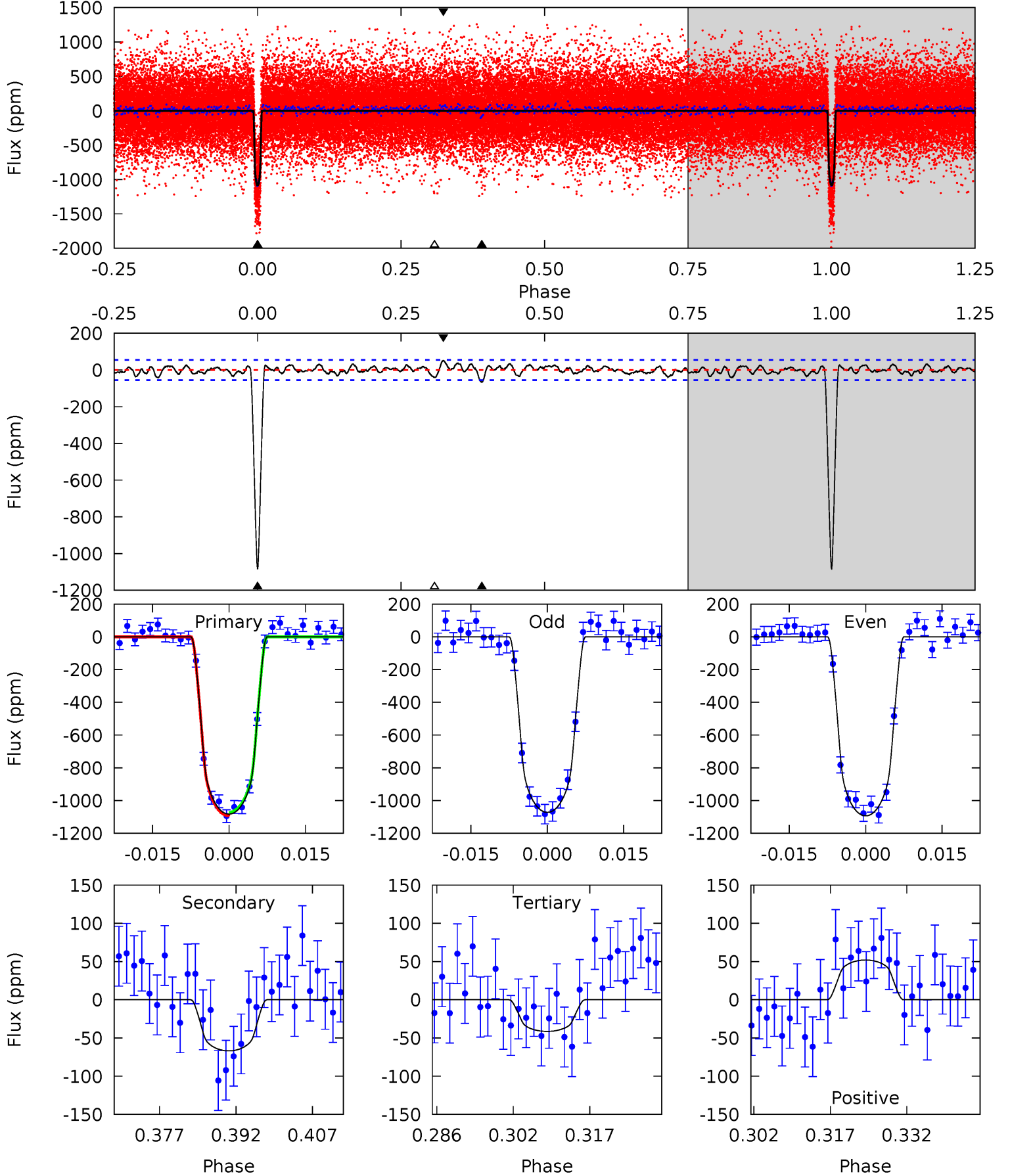
TCE 009729691-01 P= 8.689349 Days $T_0=133.657981$ (BKJD)



DV Model-Shift Uniqueness Test

009729691-01, P = 8.689299 Days, E = 124.972586 Days

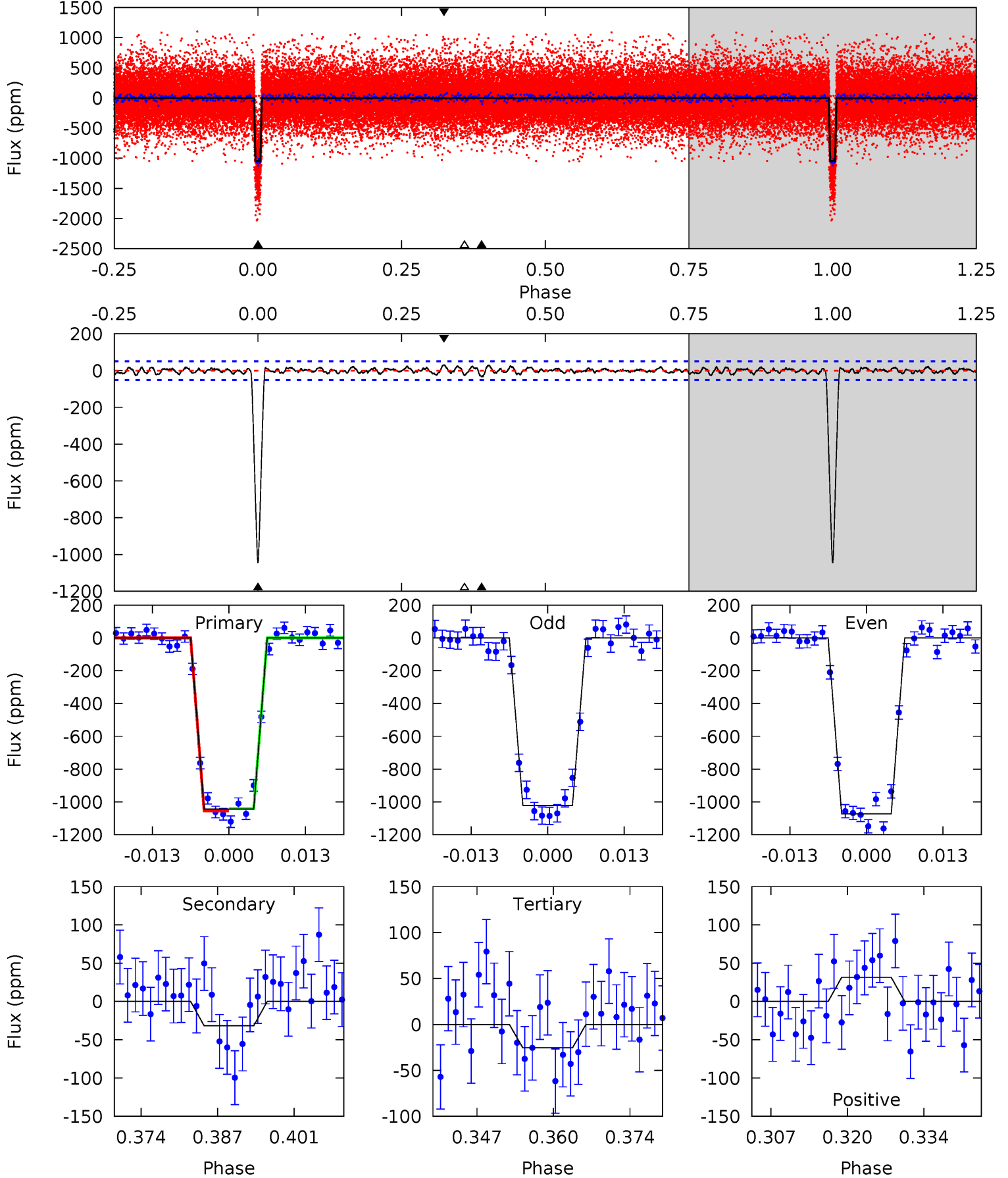
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
97.4	6.02	3.72	4.68	4.95	2.43	1.48	93.7	92.7	2.29	1.34	0.96	1.02	0.05	0.94



Alt Model-Shift Uniqueness Test

009729691-01, P = 8.689349 Days, E = 124.968632 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
101.1	3.07	2.47	3.04	4.97	2.47	0.97	98.6	98.0	0.60	0.03	2.50	1.00	0.03	0.68



Stellar Parameters For KIC 009729691

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5211^{+181}_{-163}	$4.447^{+0.120}_{-0.180}$	$0.080^{+0.250}_{-0.300}$	$0.895^{+0.186}_{-0.129}$	$0.817^{+0.104}_{-0.064}$	$1.607^{+0.784}_{-0.723}$
	+3%/-3%	+3%/-4%	+312%/-375%	+21%/-14%	+13%/-8%	+49%/-45%
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 009729691-01 / KOI 1751.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-67 ± 11	$3.34^{+0.60}_{-0.50}$	1102^{+76}_{-64}	3142^{+156}_{-134}	19^{+9}_{-5}
Alt.	-32 ± 10	$3.25^{+0.53}_{-0.51}$	1102^{+66}_{-62}	2847^{+161}_{-164}	$9.698^{+5.270}_{-3.548}$

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 $A_{obs} \gg 1.0$

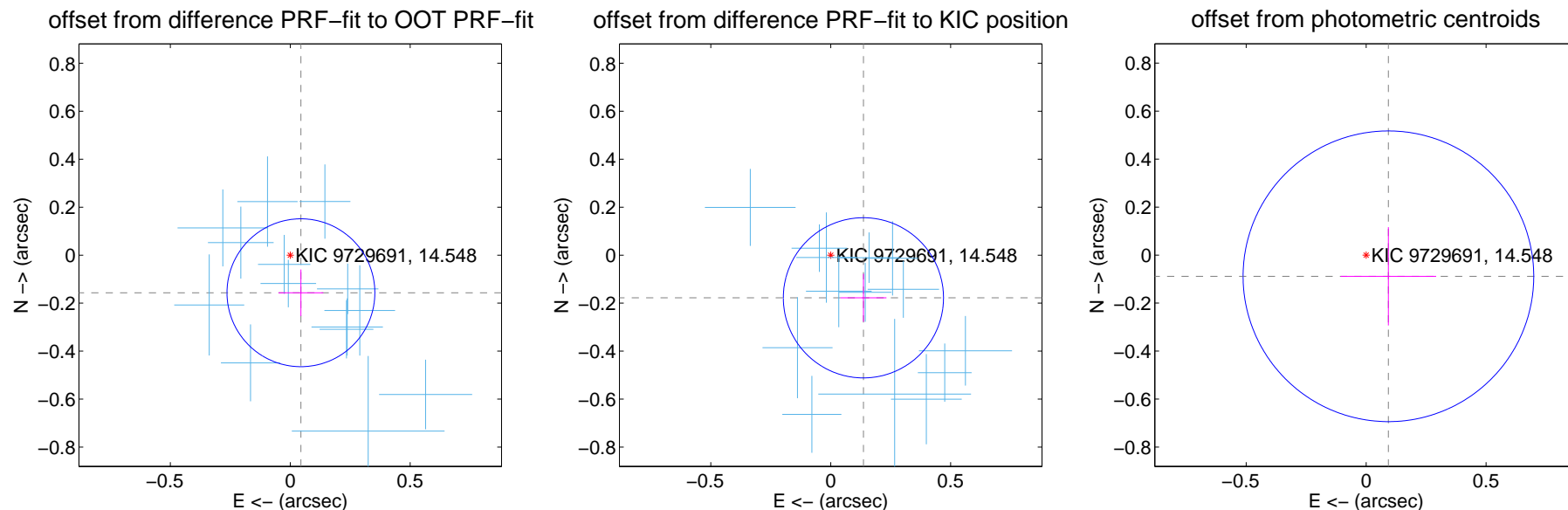
DV Centroid Data

Supplemental centroid analysis for 009729691-01. Kepler magnitude: 14.55. Transit SNR 65.31

There are 14 quarters with good PRF difference image offsets

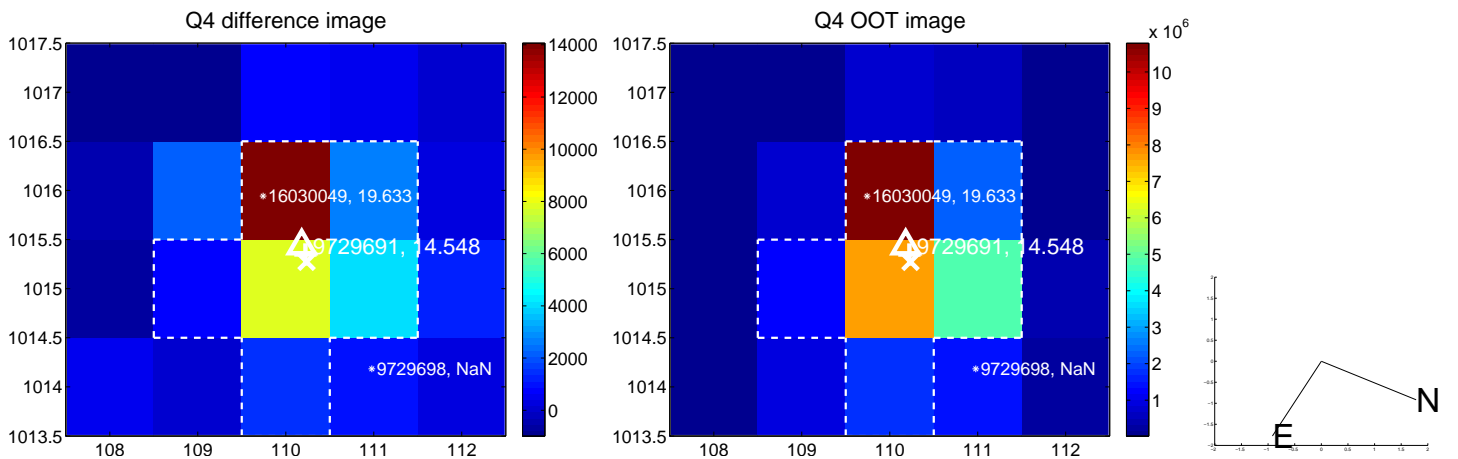
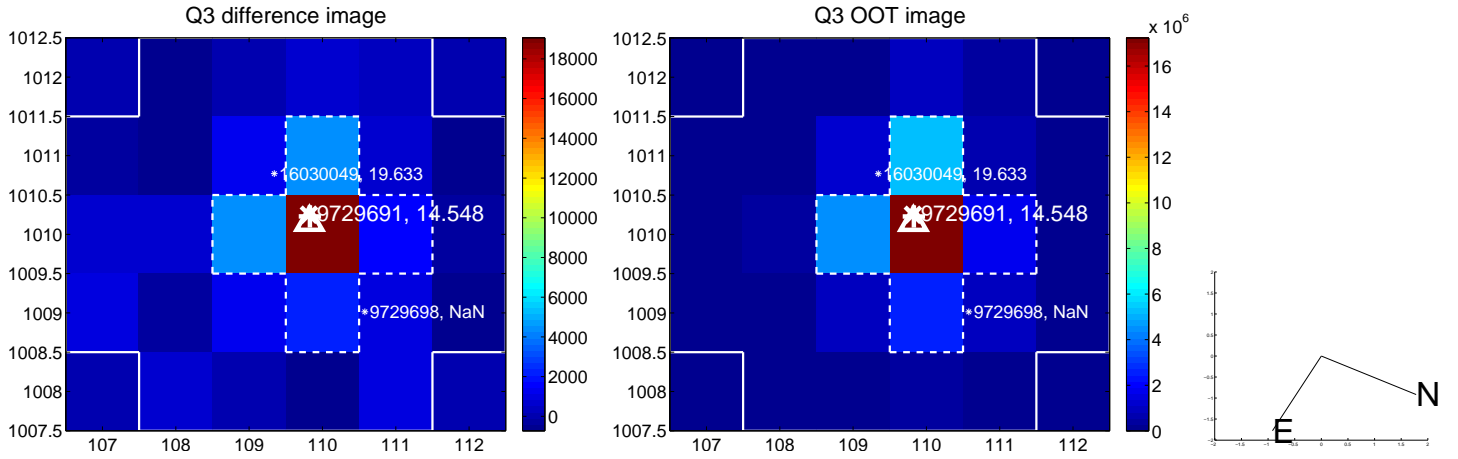
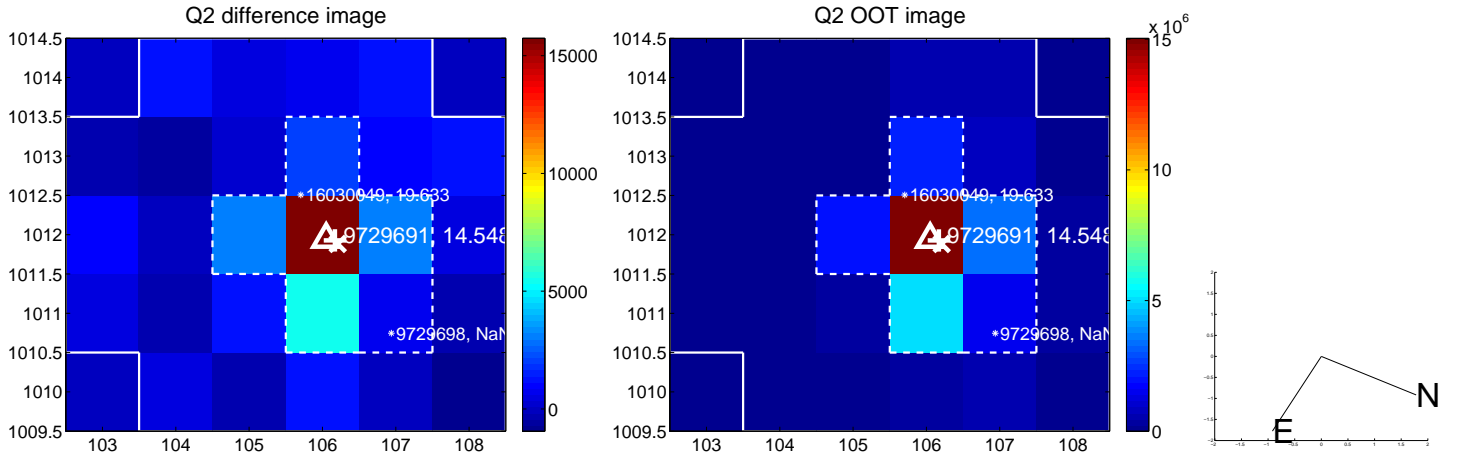
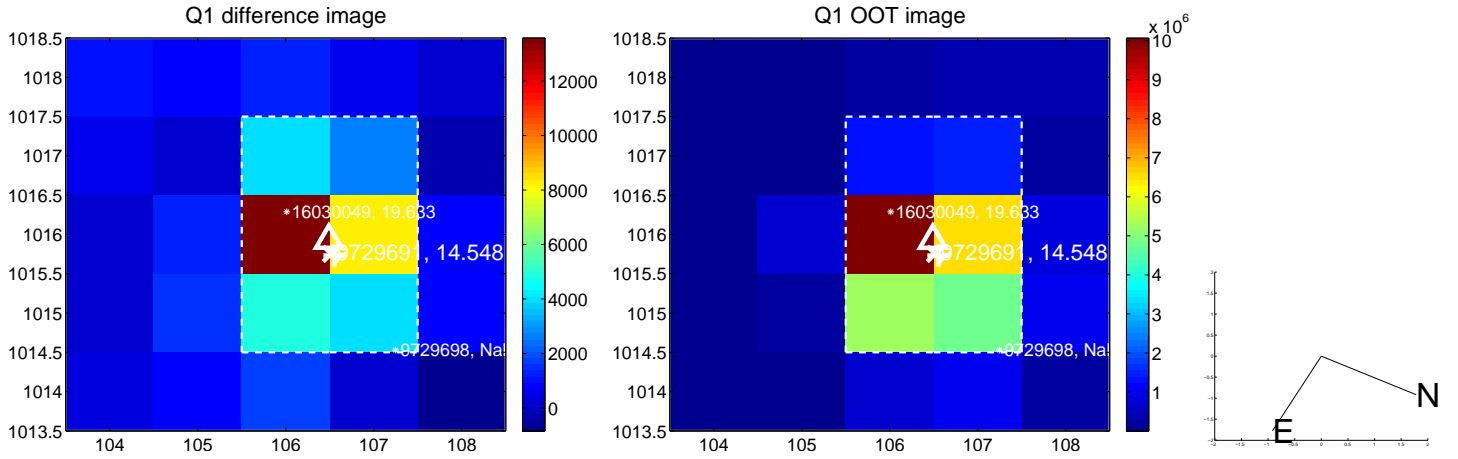
The direct PRF centroid is offset from the target star catalog position by about 0.17 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.163 ± 0.103	1.59	-0.044 ± 0.093	-0.157 ± 0.097
PRF-fit source offset from KIC position	0.224 ± 0.111	2.01	-0.136 ± 0.096	-0.178 ± 0.100
photometric centroid source offset	0.13 ± 0.20	0.63	-0.09 ± 0.20	-0.09 ± 0.20

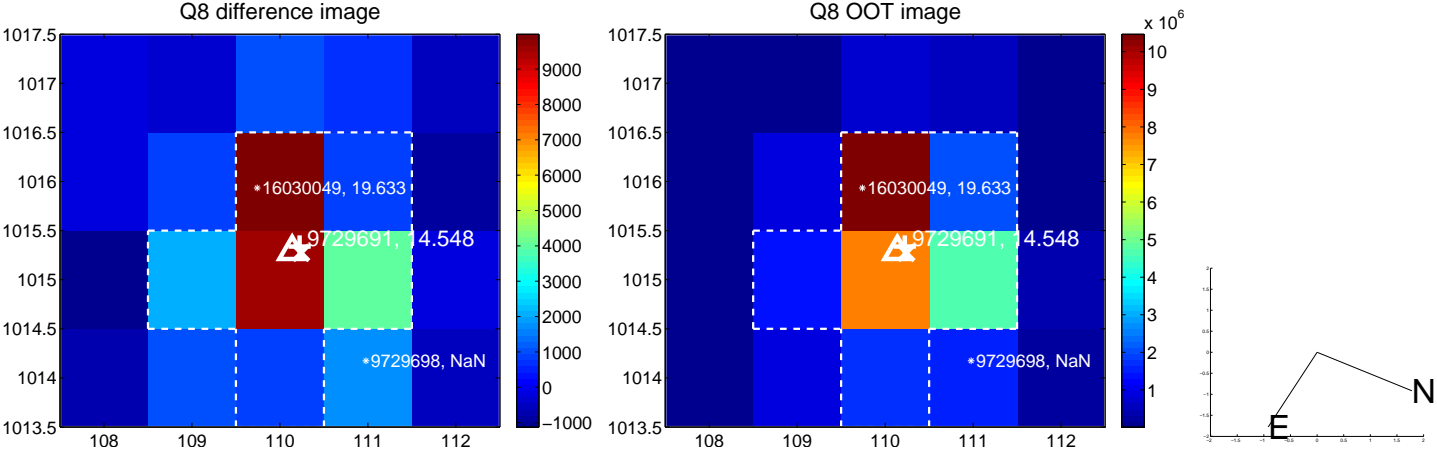
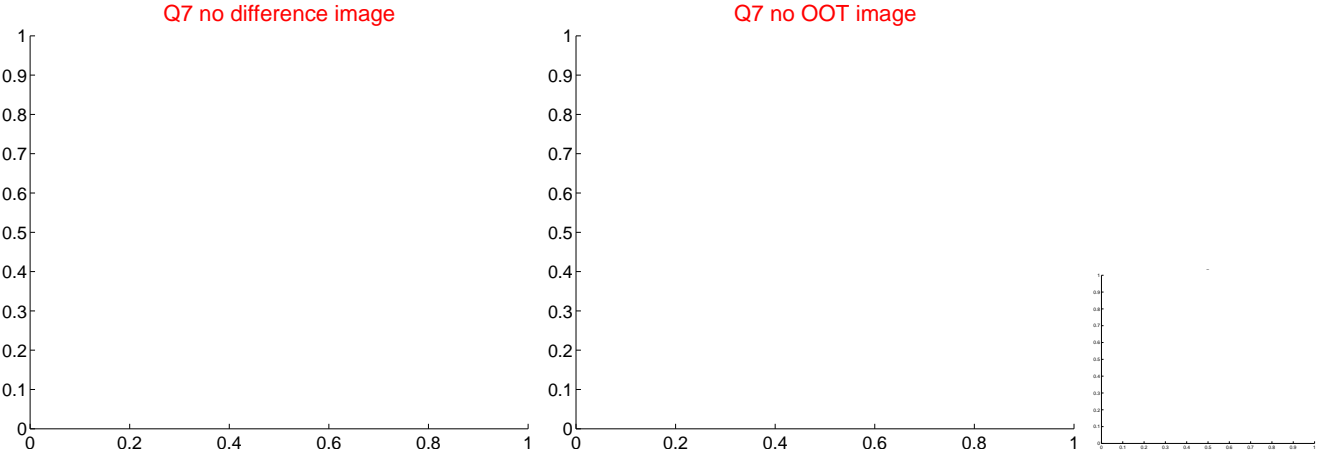
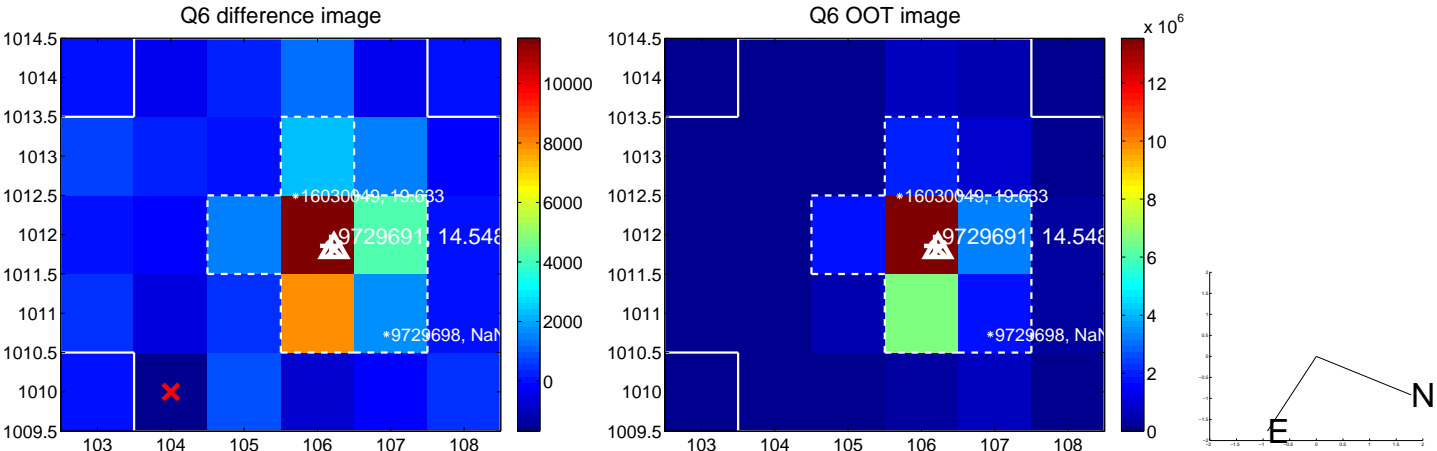
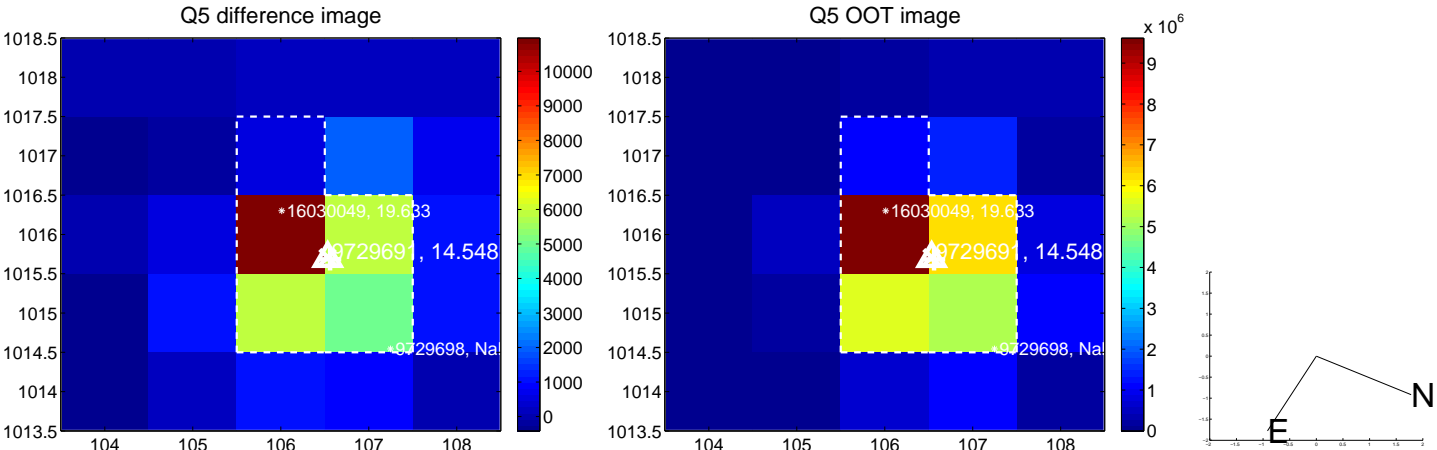


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

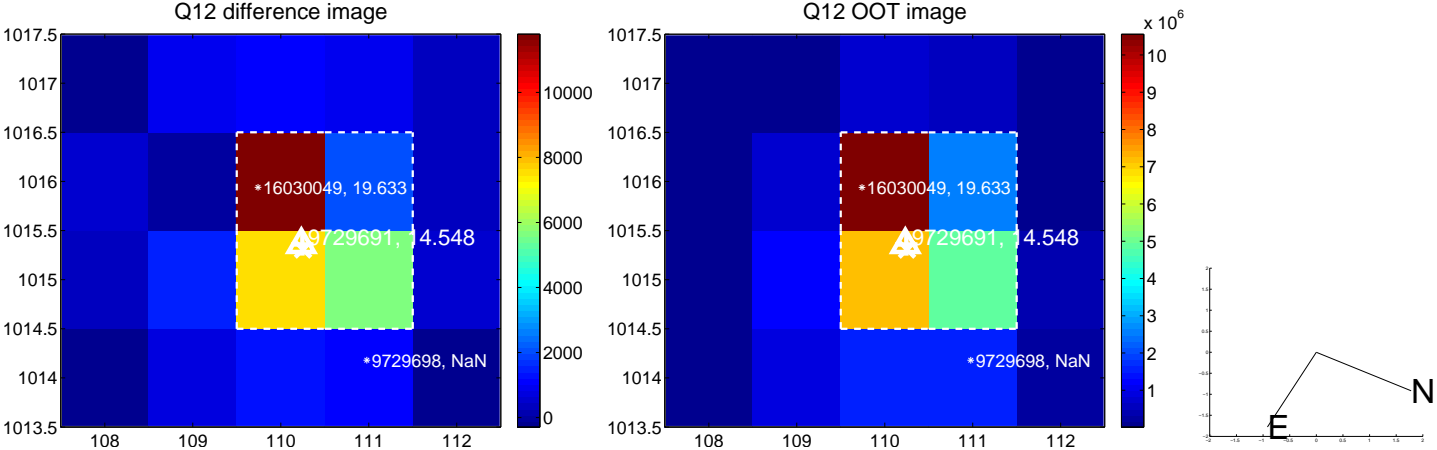
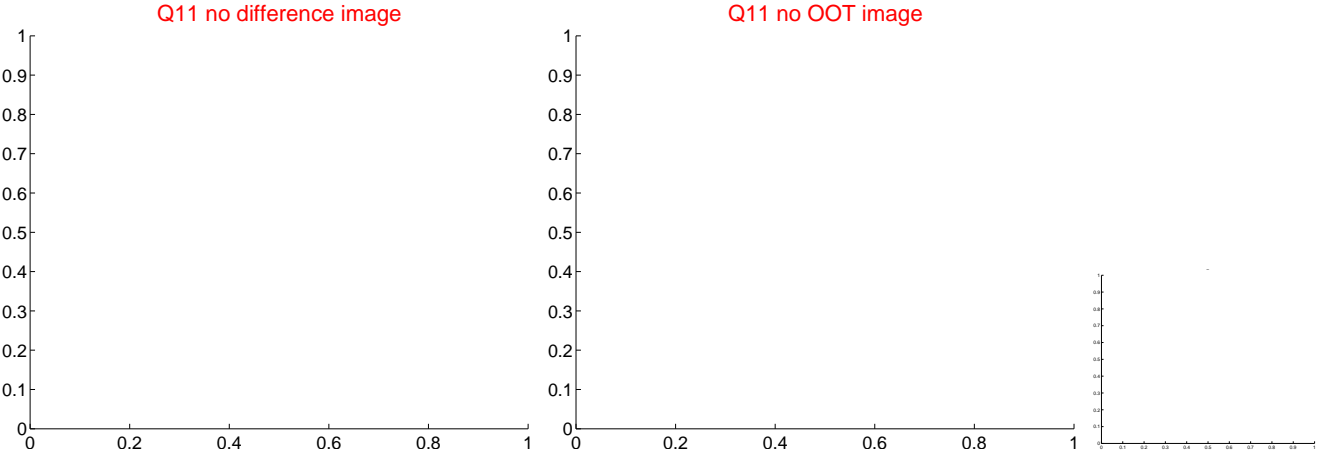
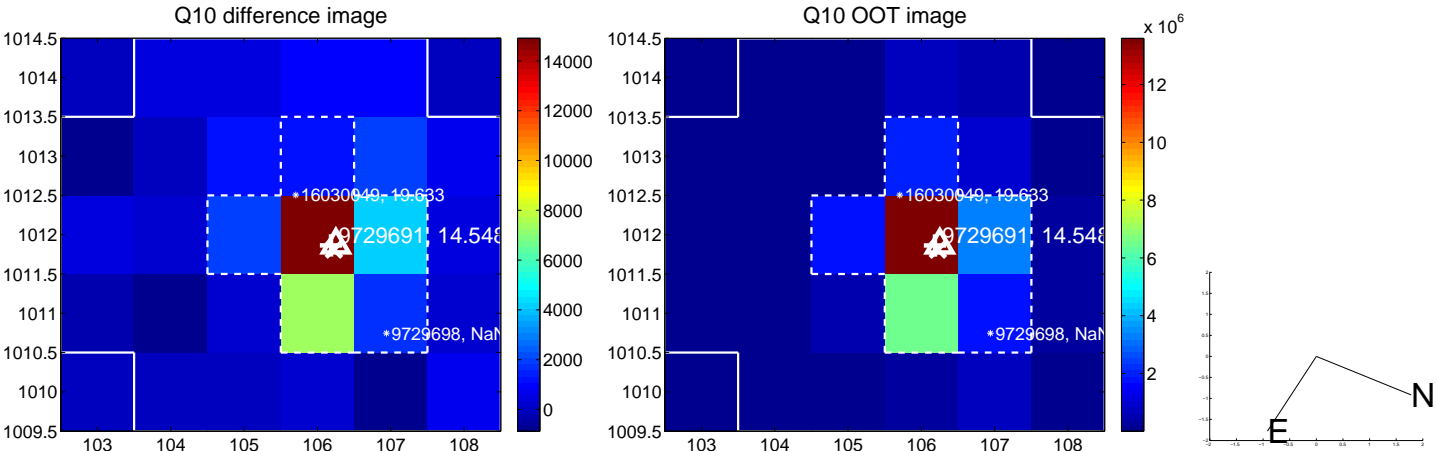
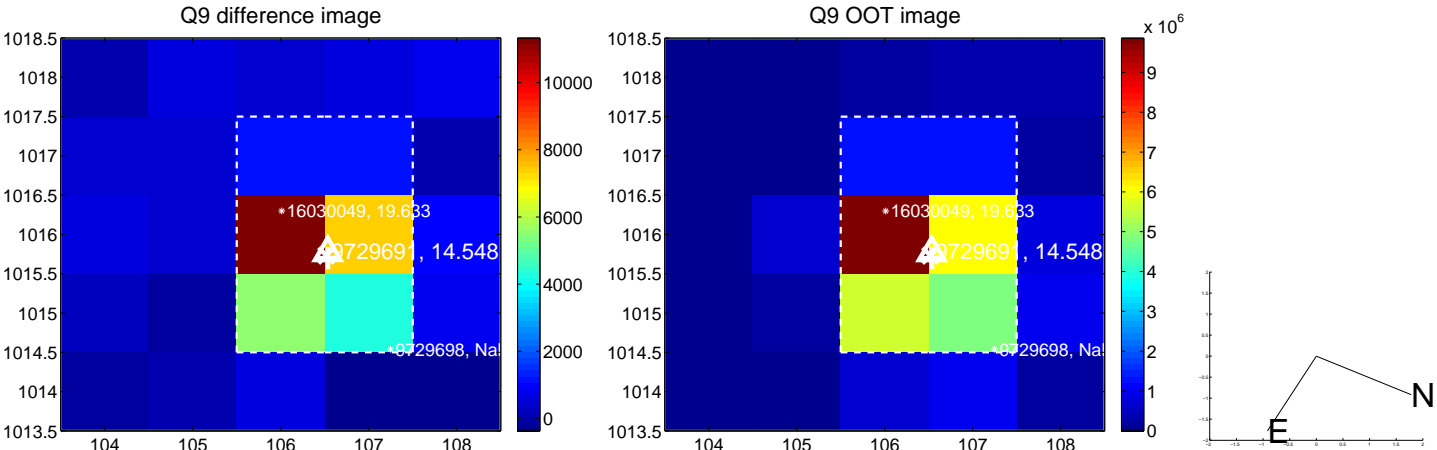
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



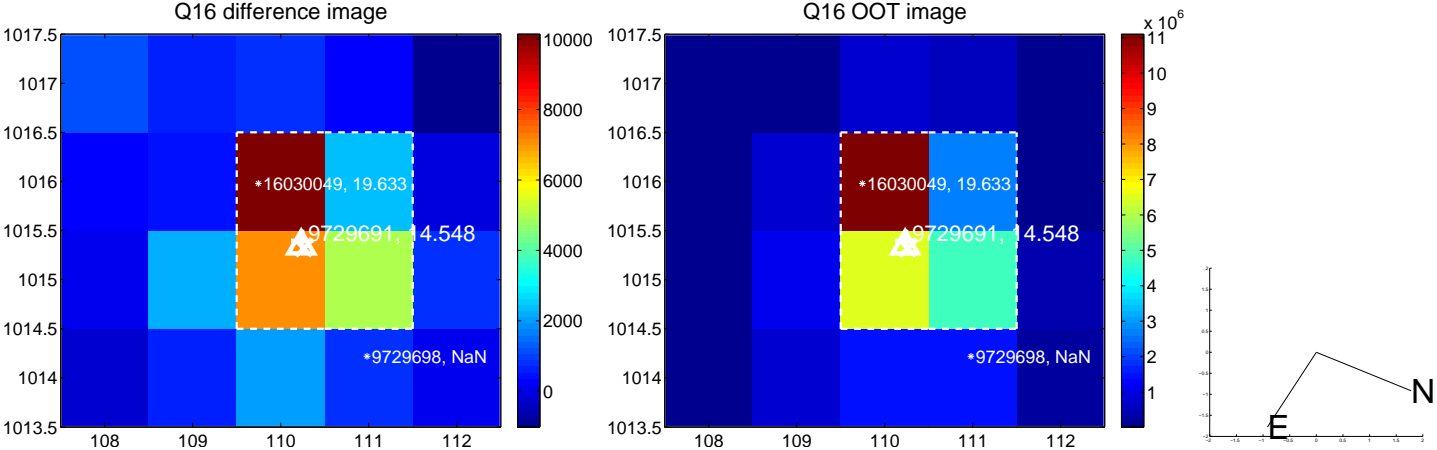
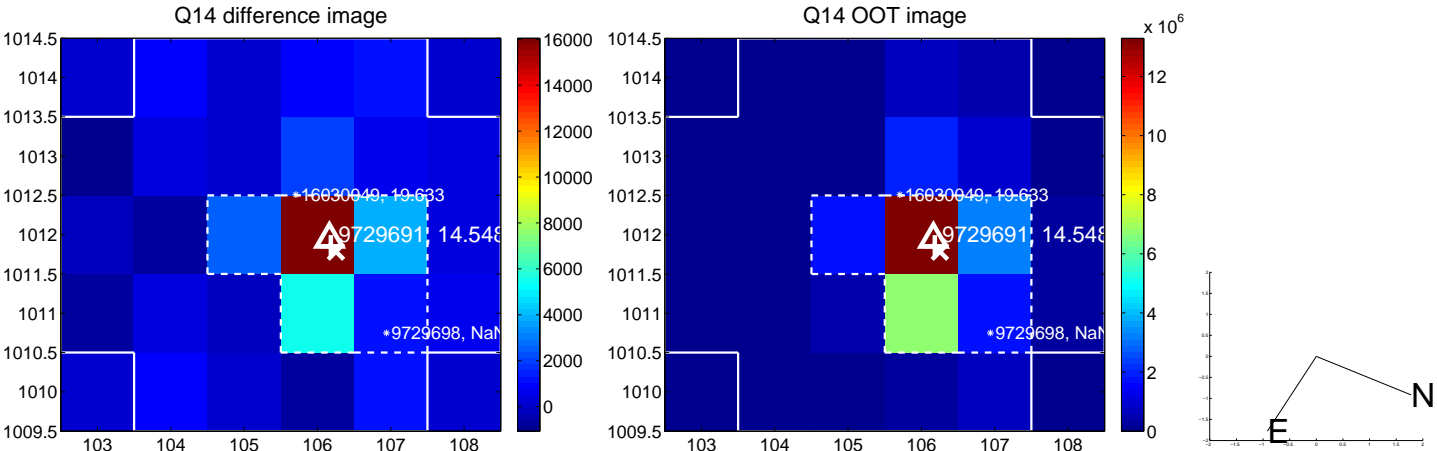
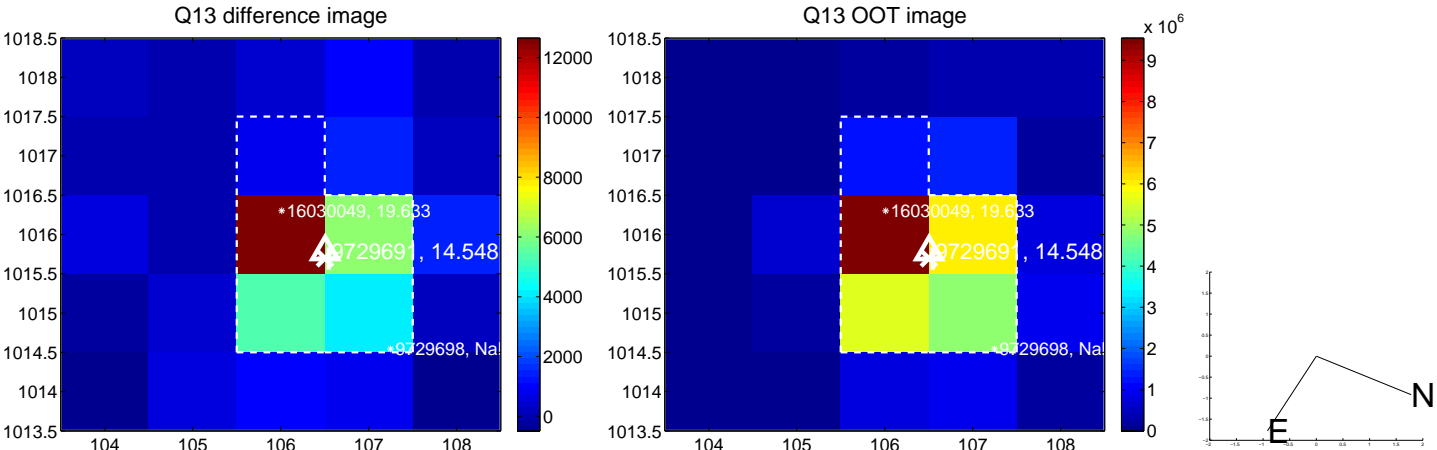
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

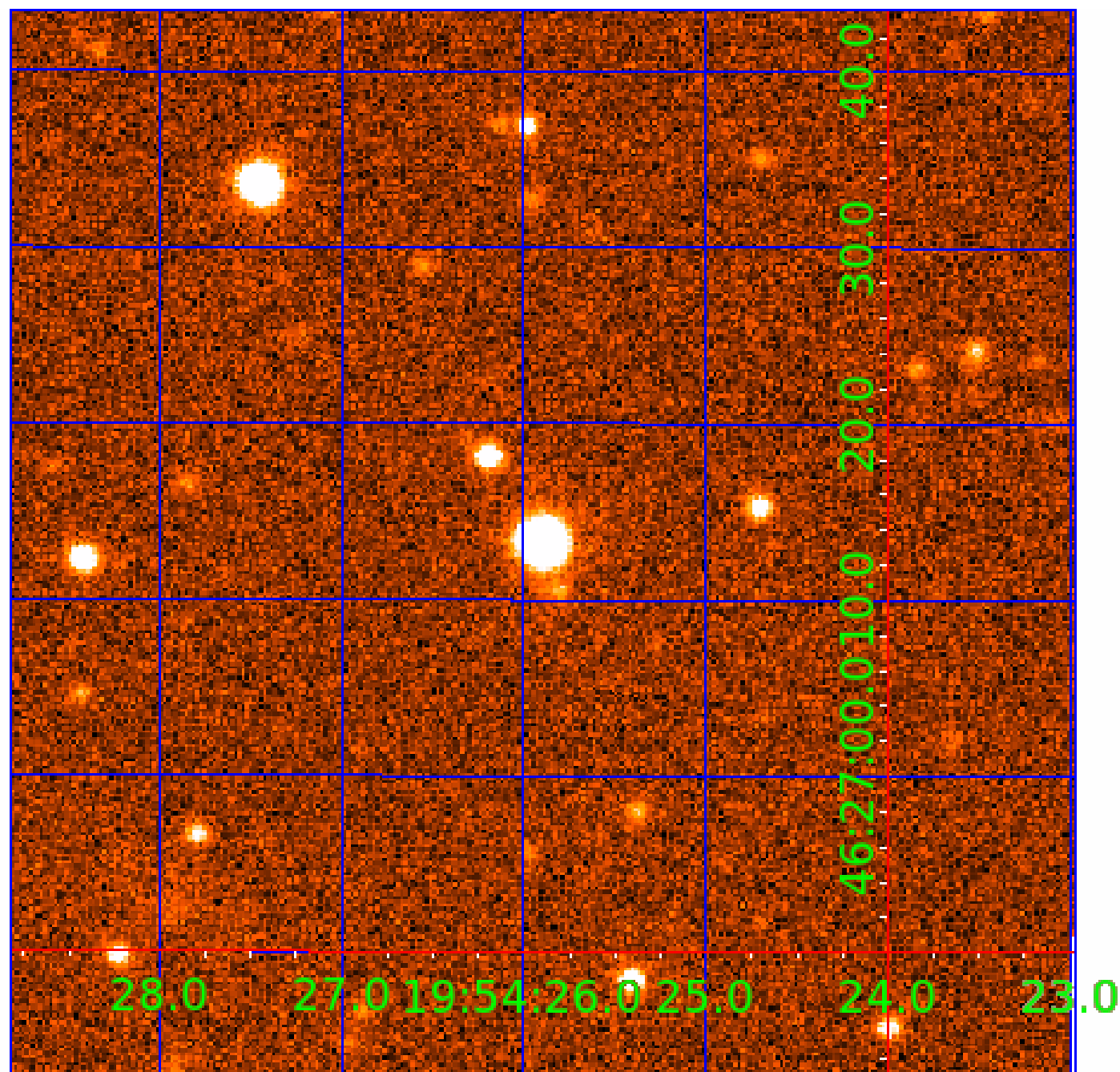


white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009729691

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})
009729691-01	OBS	1751.01	8.689299	133.661885	1093.0	2.703	61.4	65.3	0.90	5211	3.30	88.41
009729691-02	OBS	1751.02	20.997157	132.069884	947.9	3.868	27.8	31.2	0.90	5211	5.17	27.26

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009729691-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT
009729691-02	OBS	FP	0.00	0	1	0	0	DEEP_V_SHAPED

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.

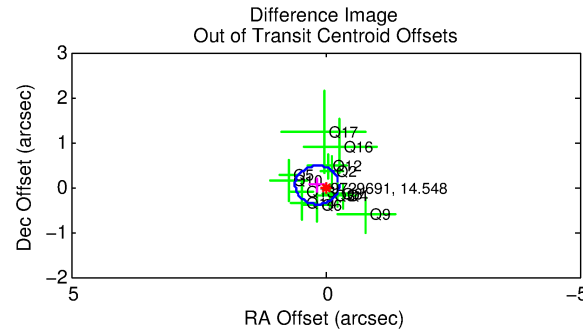
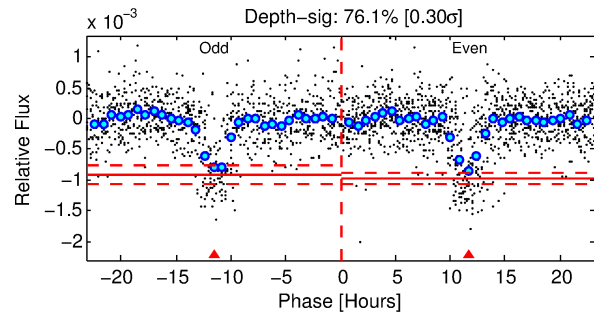
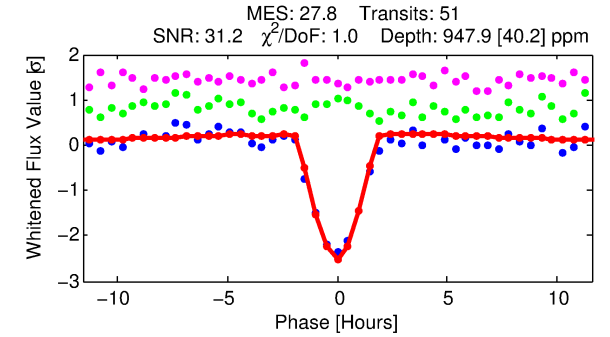
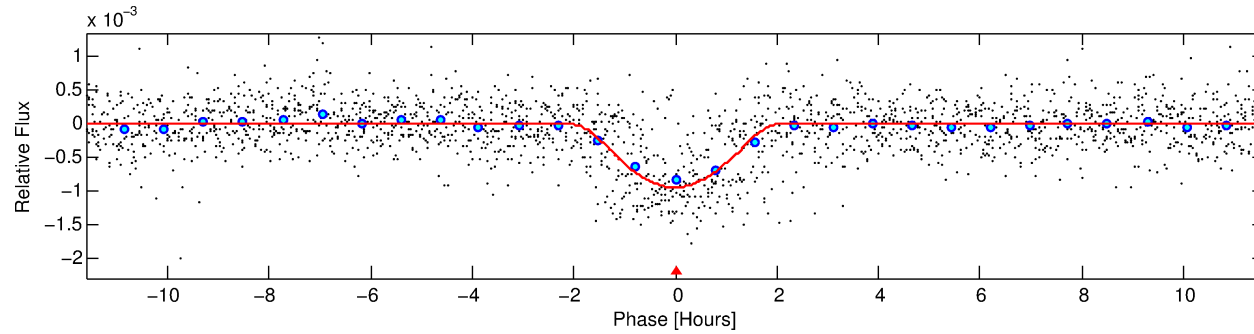
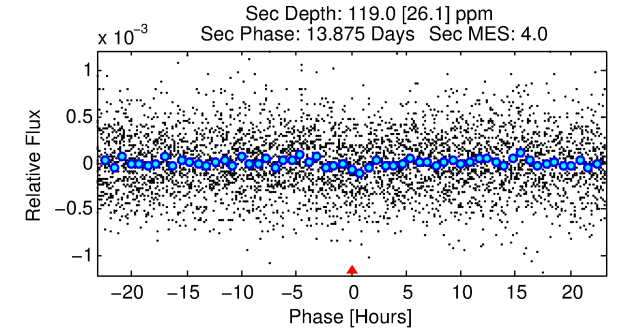
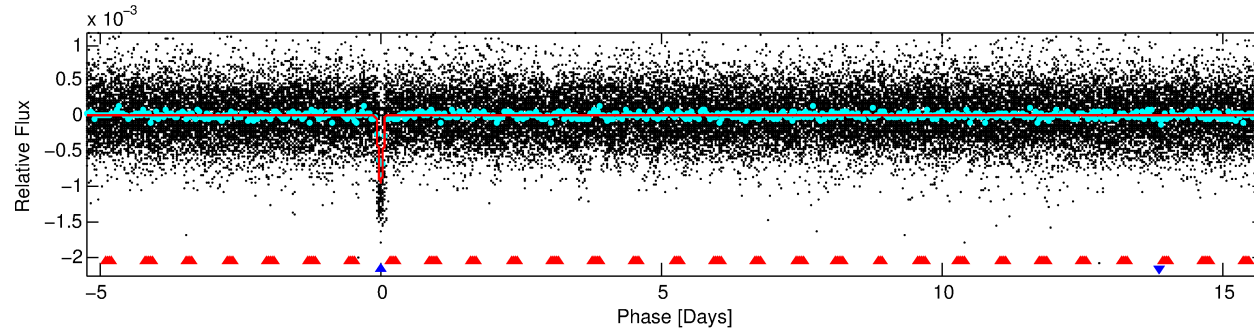
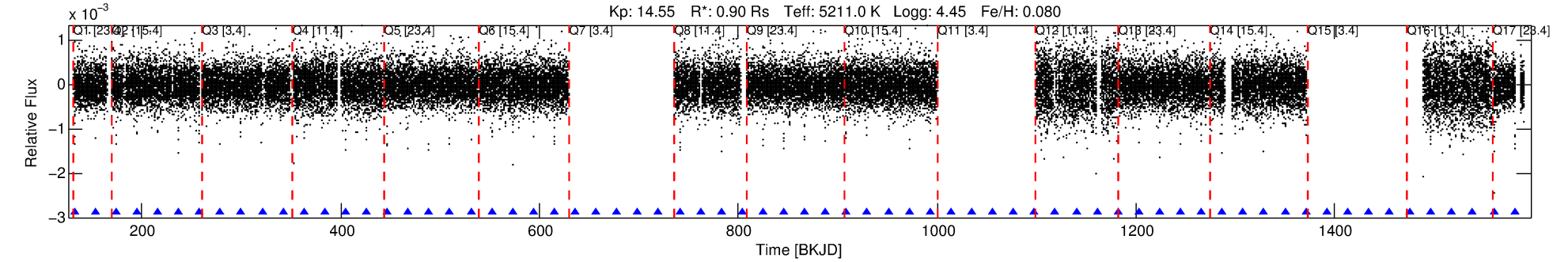
Ephemeris Match Information For 009729691-02

No Significant Match Found

DV One-Page Summary

KIC: 9729691 Candidate: 2 of 2 Period: 20.997 d

KOI: K01751.02 Corr: 0.881



DV Fit Results:

Period = 20.99716 [0.00007] d
Epoch = 132.0699 [0.0025] BKJD
Rp/R* = 0.0529 [0.0534]
a/R* = 14.48 [3.80]
b = 0.99 [0.08]
Seff = 27.26 [9.24]
Teff = 583 [49] K
Rp = 5.16 [5.33] Re
a = 0.1393 [0.0273] AU
Ag = 47.65 [97.93] [0.48 σ]
Teffp = 2367 [1205] K [1.48 σ]

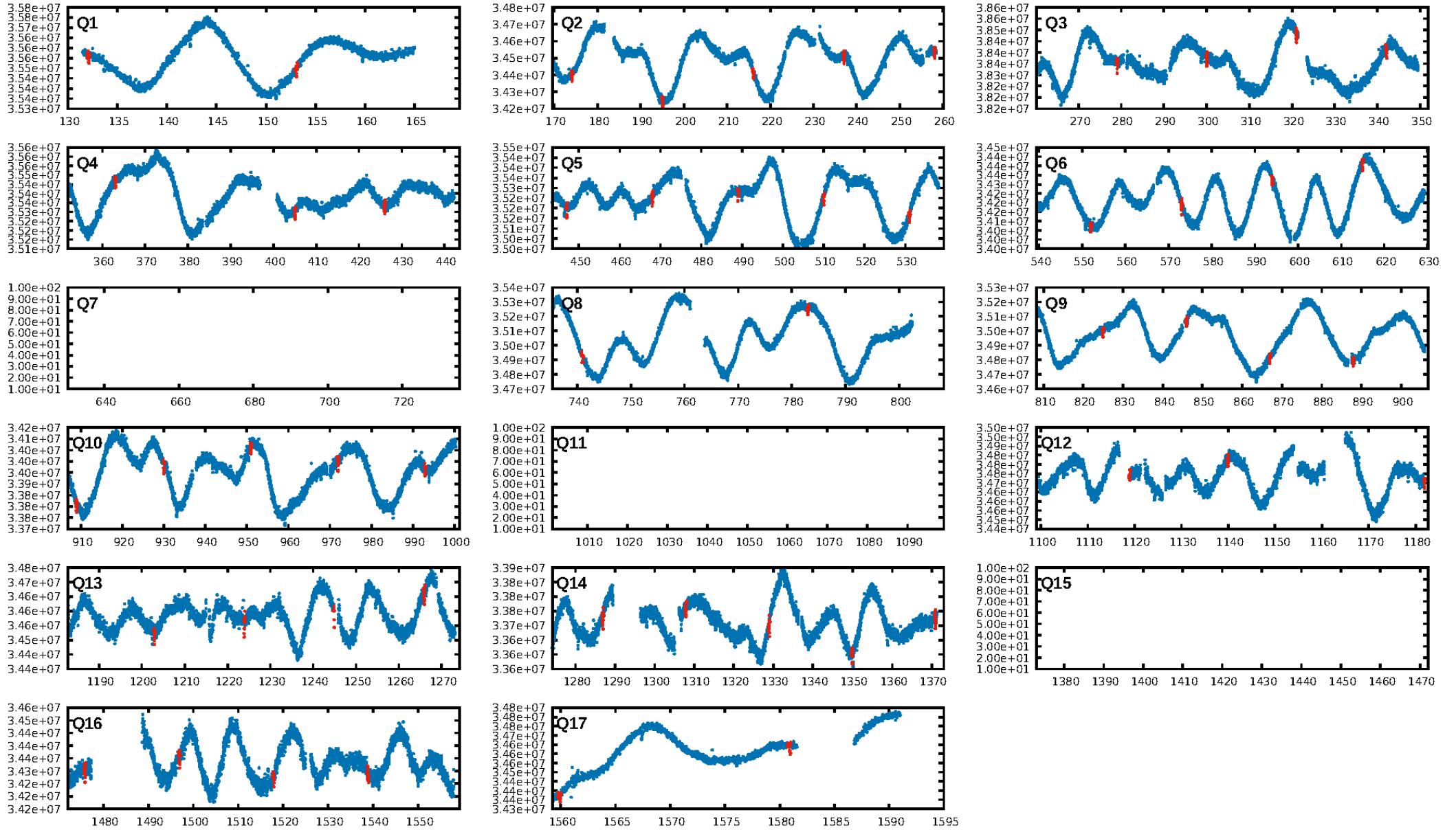
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [62.60 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 16.5%
ModelChiSquareGof-sig: 98.4%
Bootstrap-pfa: 1.64e-162
RollingBand-fgt: 1.00 [47/47]
GhostDiagnostic-chr: 2.376
Centroid-sig: 5.2%
Centroid-so: 0.510 arcsec [1.33 σ]
OotOffset-rm: 0.173 arcsec [1.21 σ]
KicOffset-rm: 0.089 arcsec [0.59 σ]
OotOffset-st: 4/1/4/4 [13]
KicOffset-st: 4/1/4/4 [13]
DiffImageQuality-fgm: 0.85 [11/13]
DiffImageOverlap-fno: 1.00 [14/14]

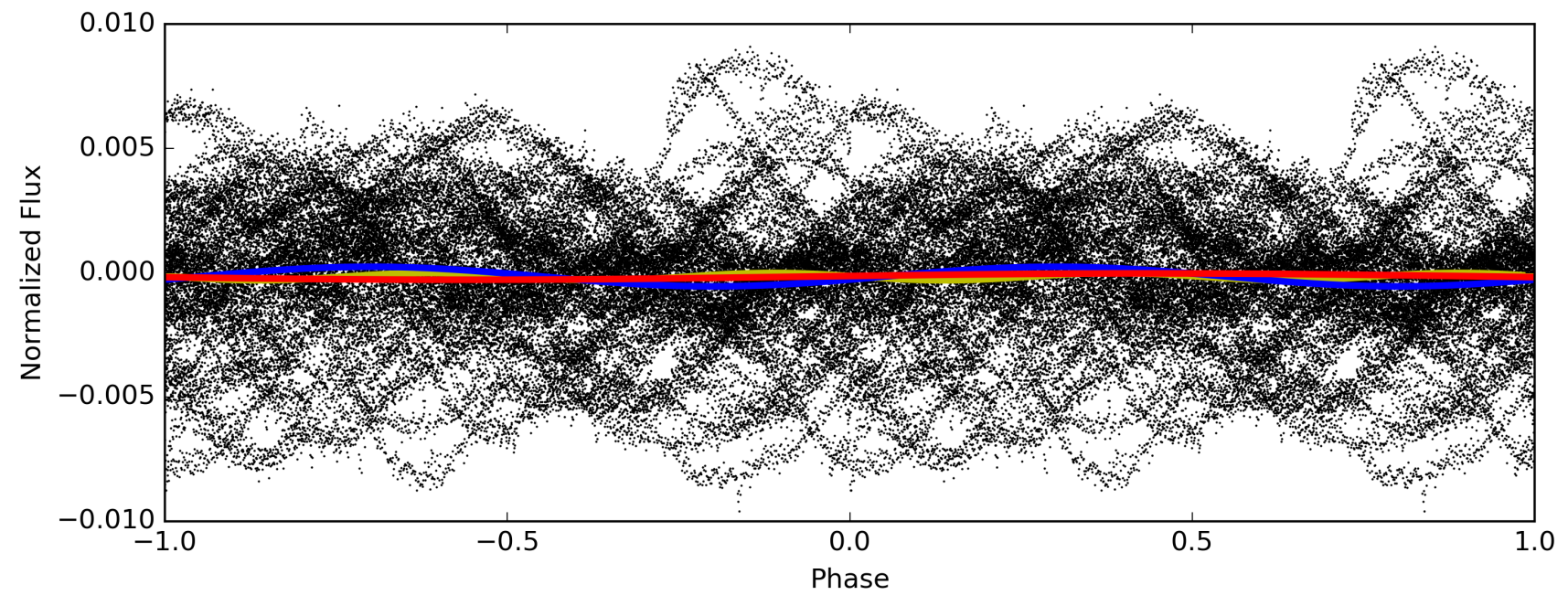
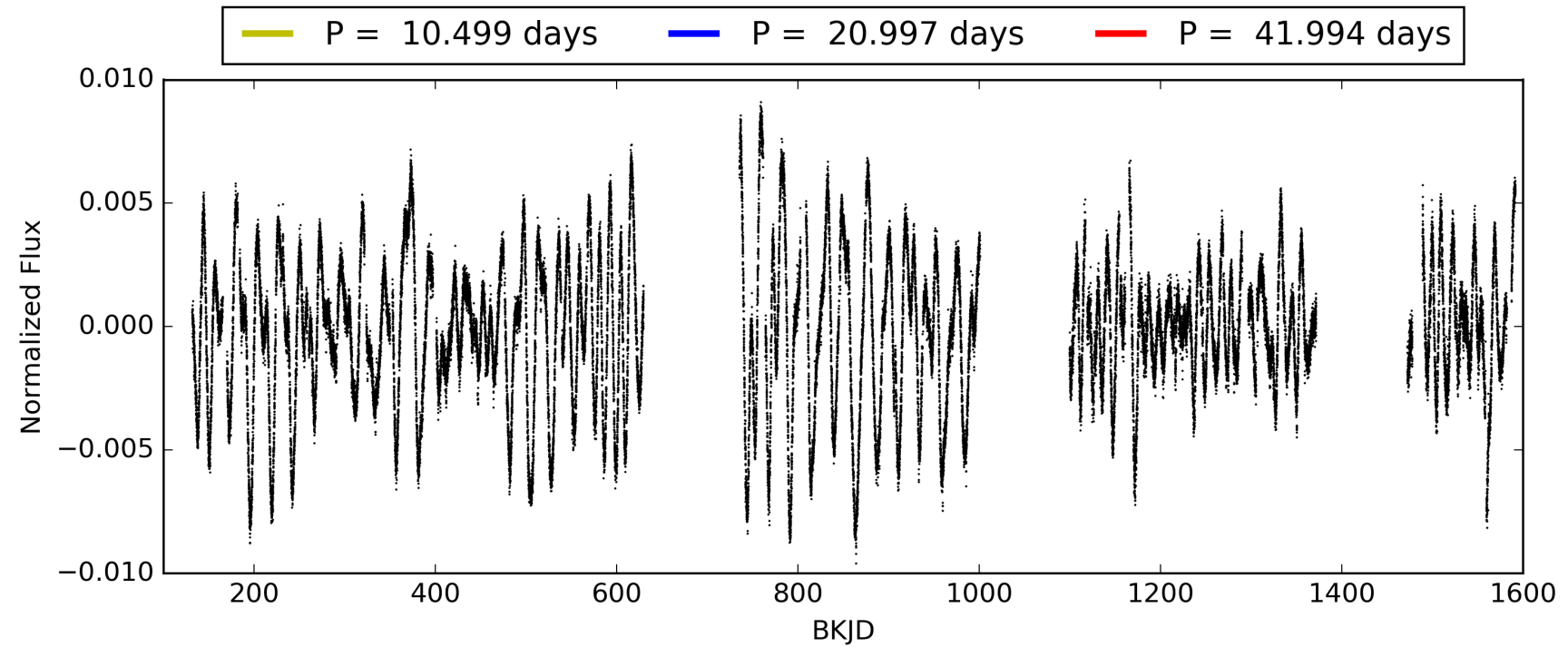
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 14:46:56 Z

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

TCE 009729691-02, PDC Light Curves

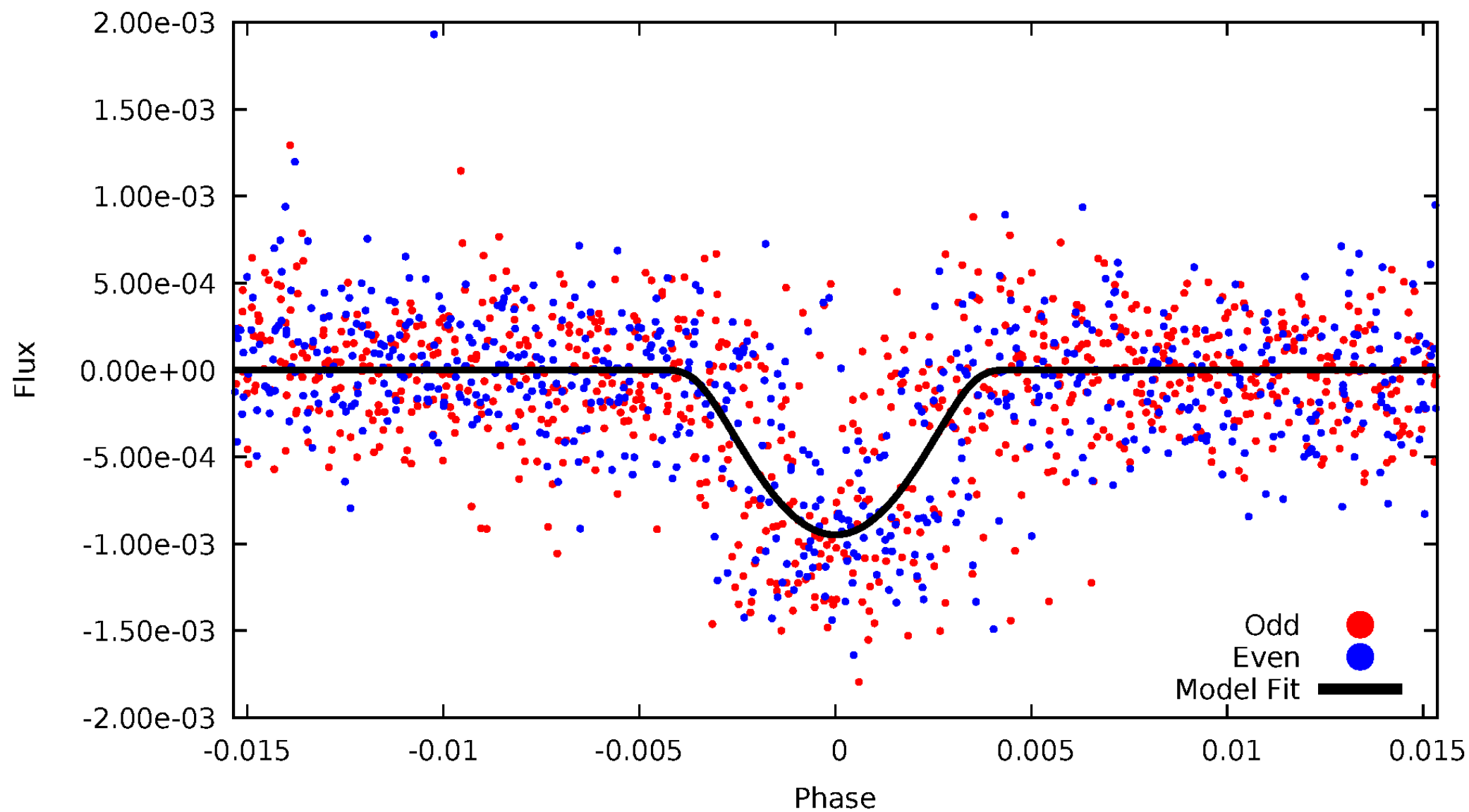


TCE 009729691-02



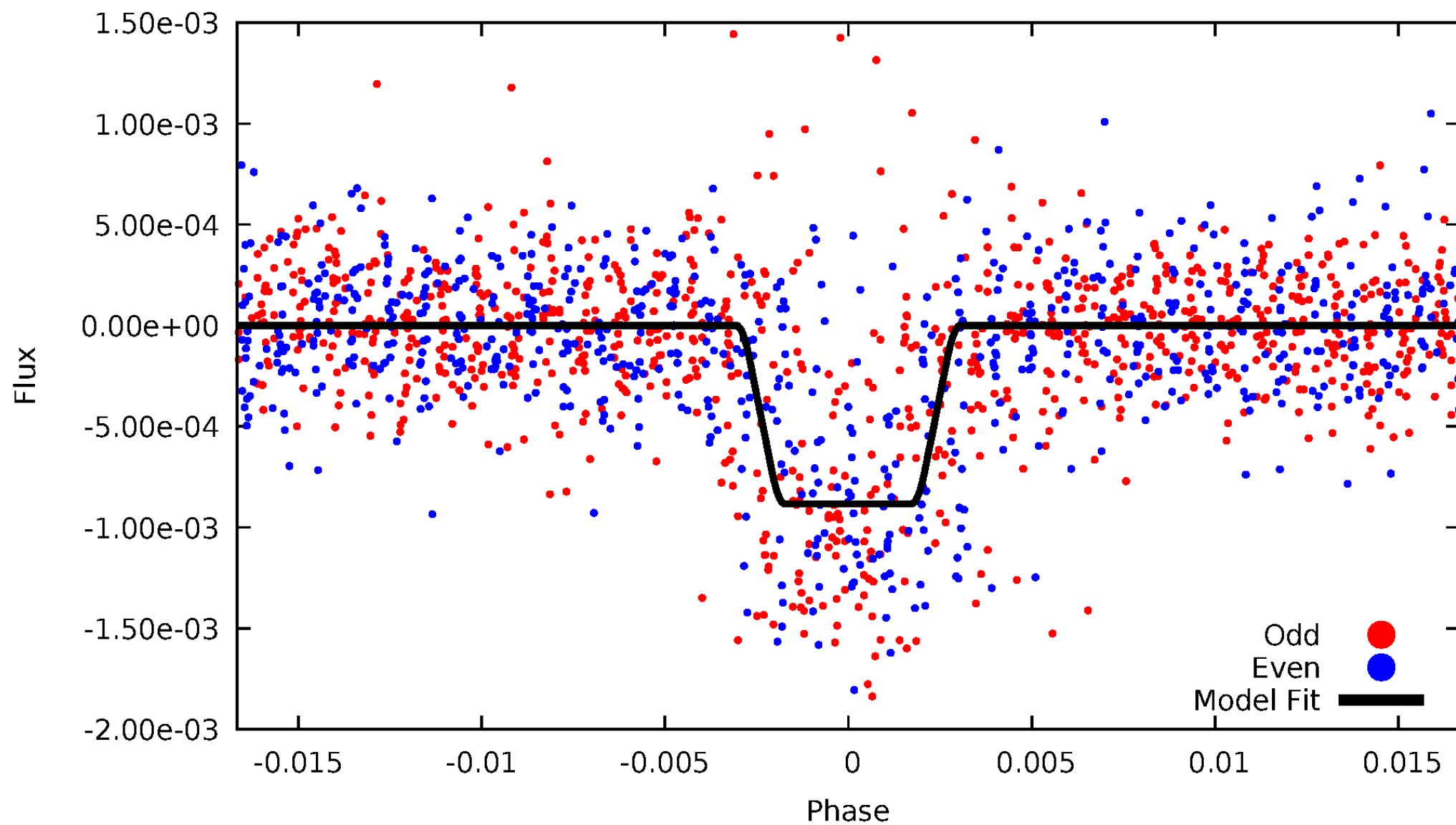
DV Odd/Even

TCE 009729691-02



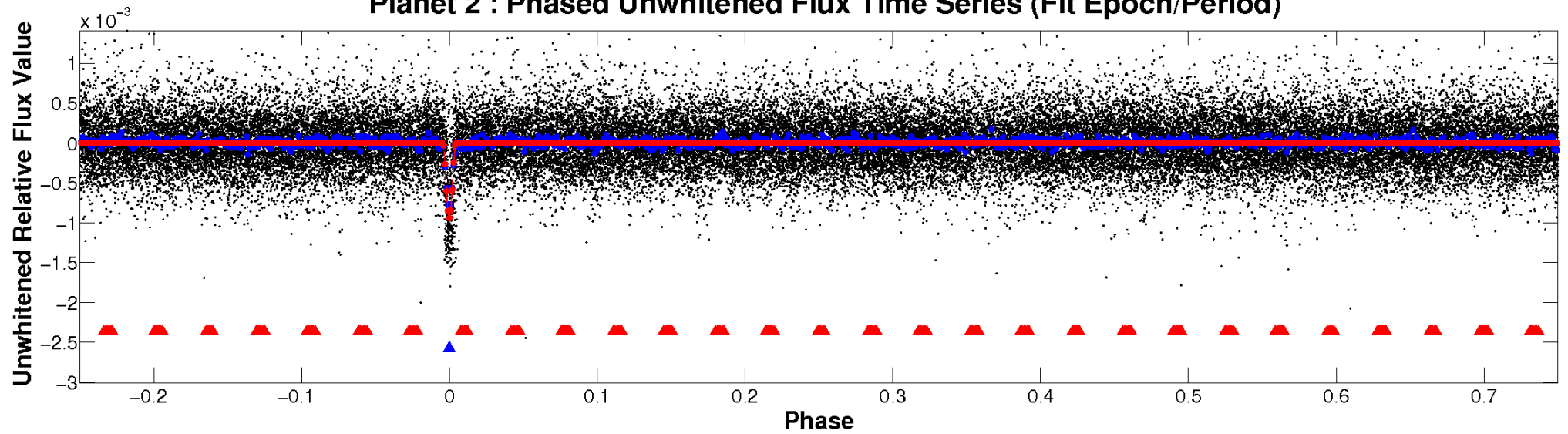
ALT Odd/Even

TCE 009729691-02

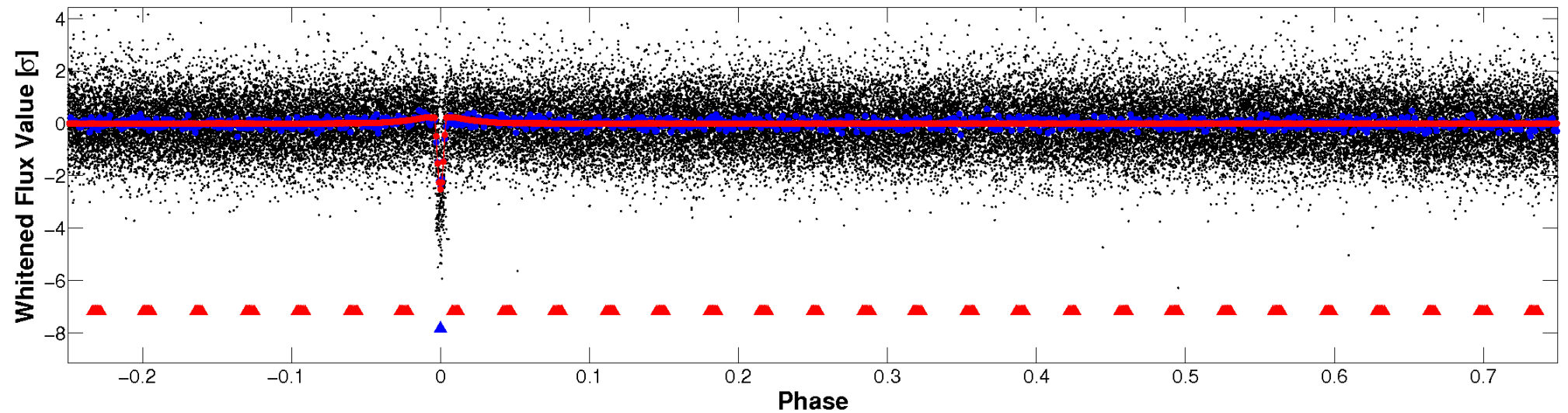


Non-Whitened Vs. Whitened Light Curve

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

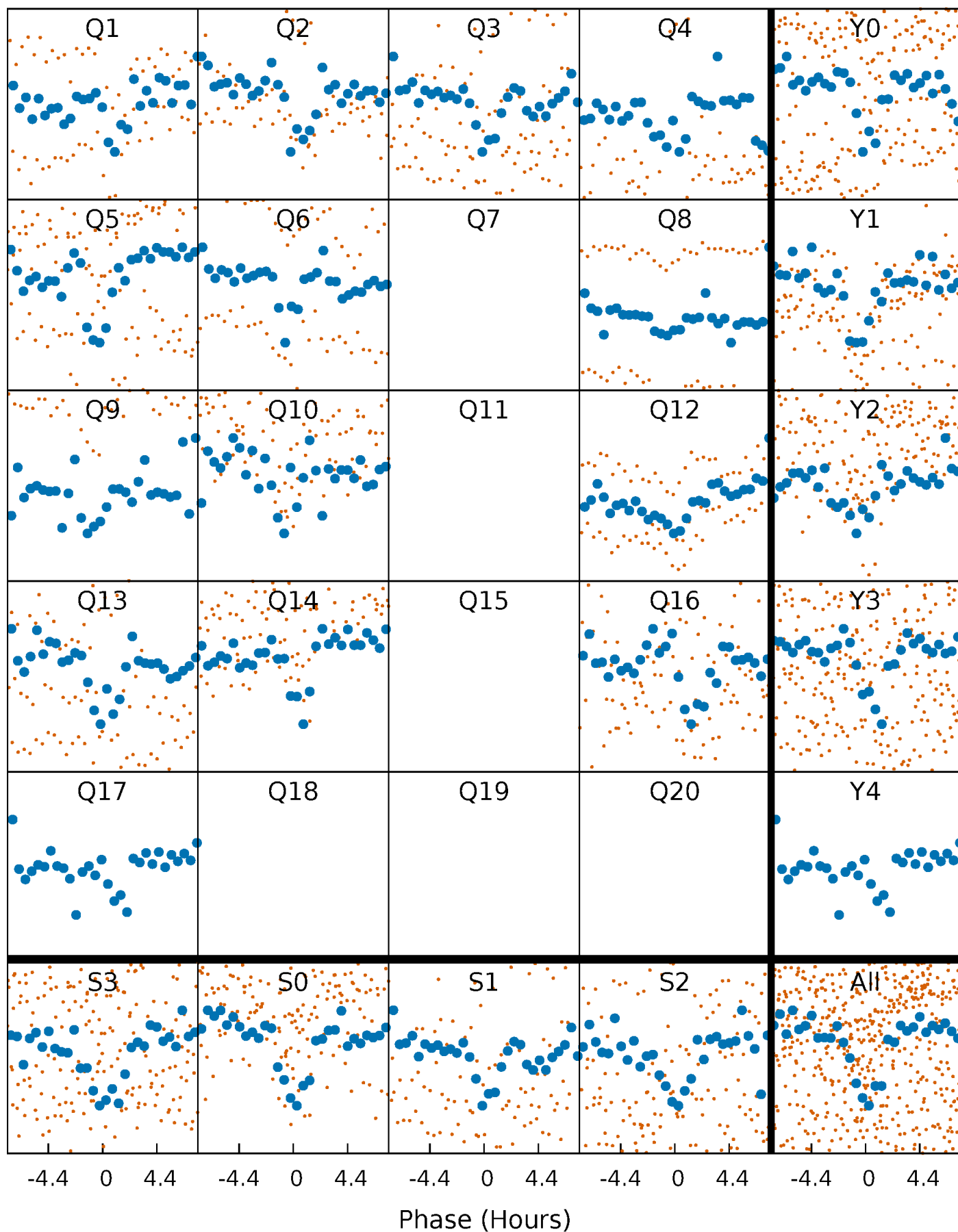


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



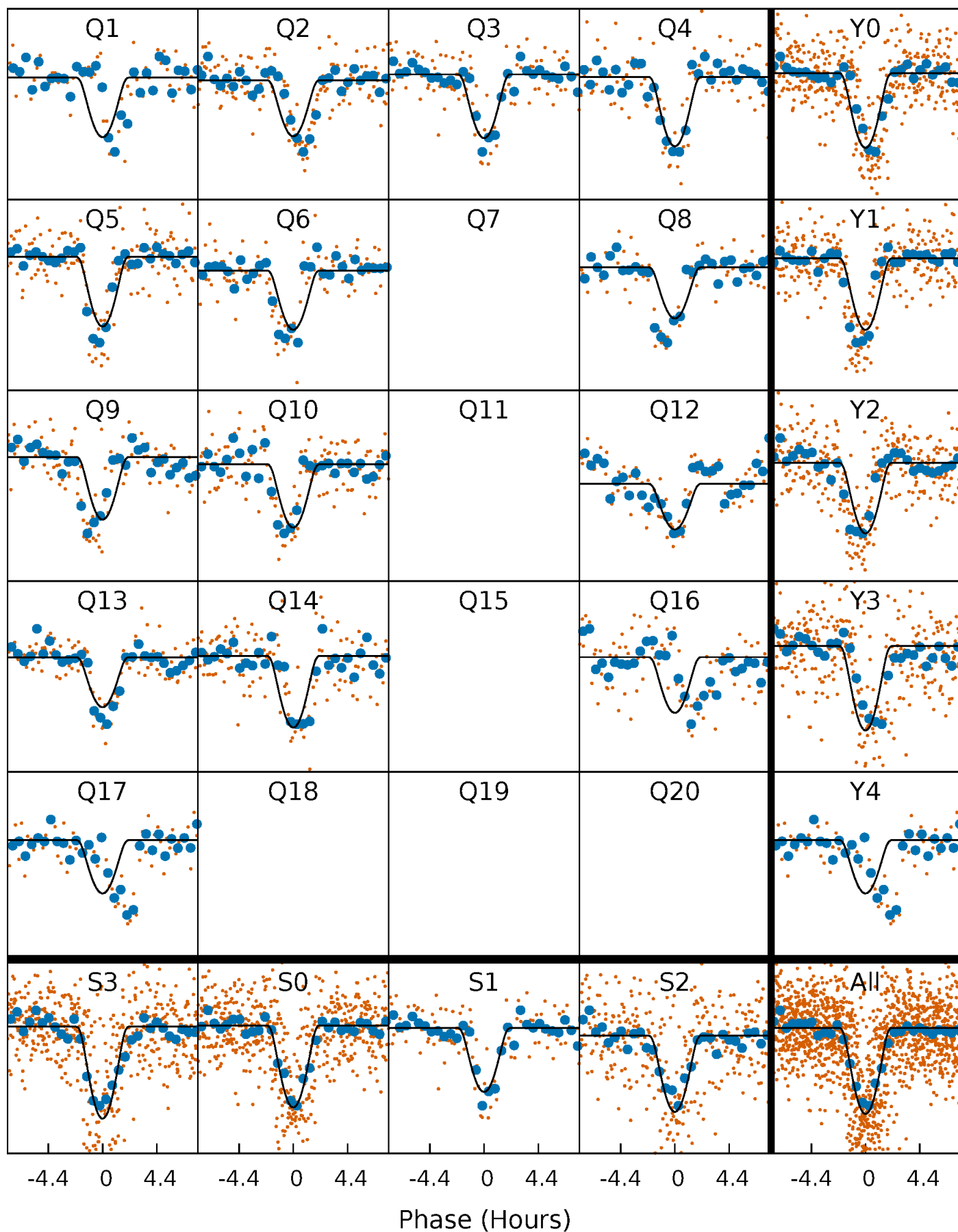
PDC Quarter-Phased Transit Curves

TCE 009729691-02 P= 20.997157 Days $T_0=132.069884$ (BKJD)



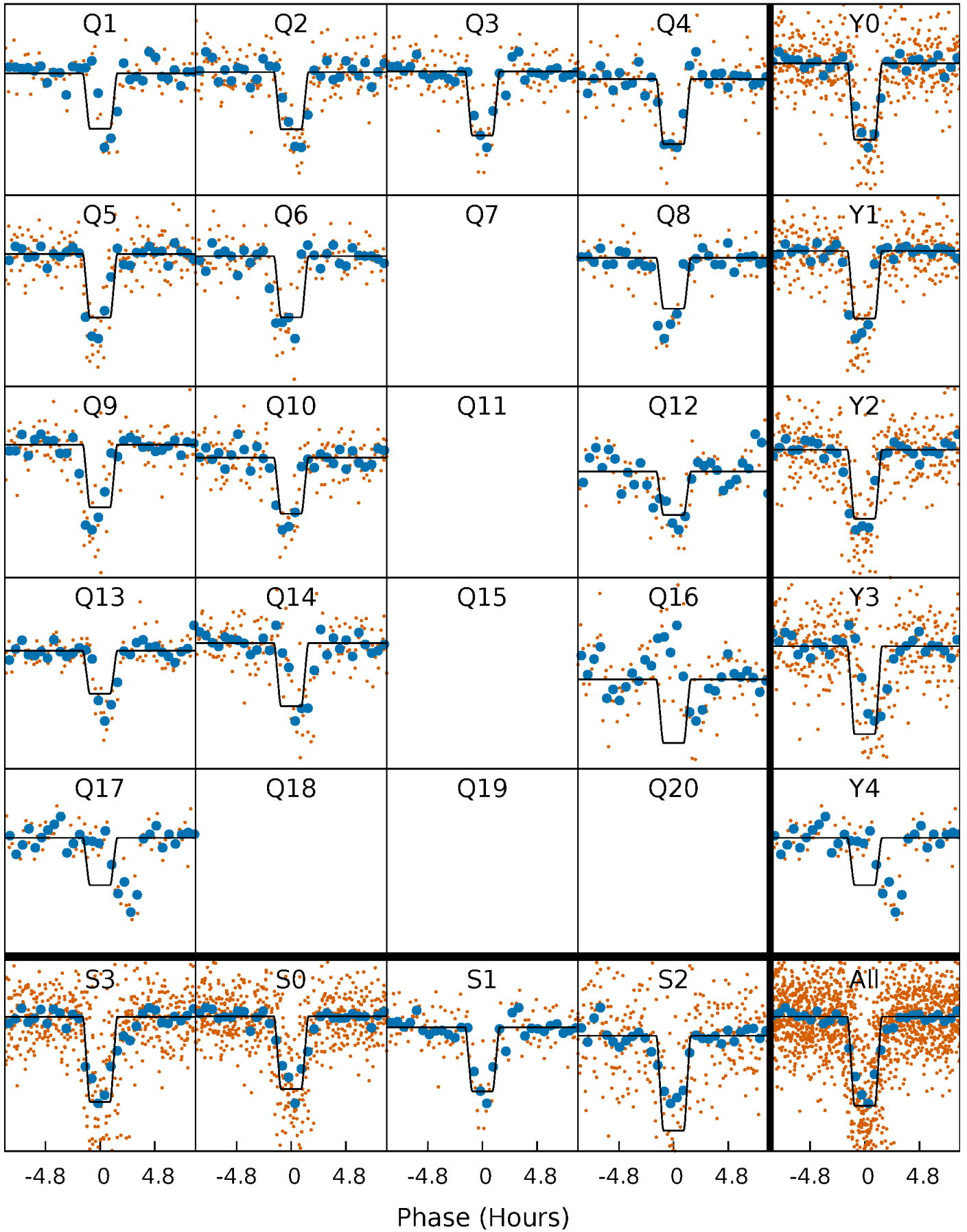
DV Quarter-Phased Transit Curves

TCE 009729691-02 P= 20.997157 Days $T_0=132.069884$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

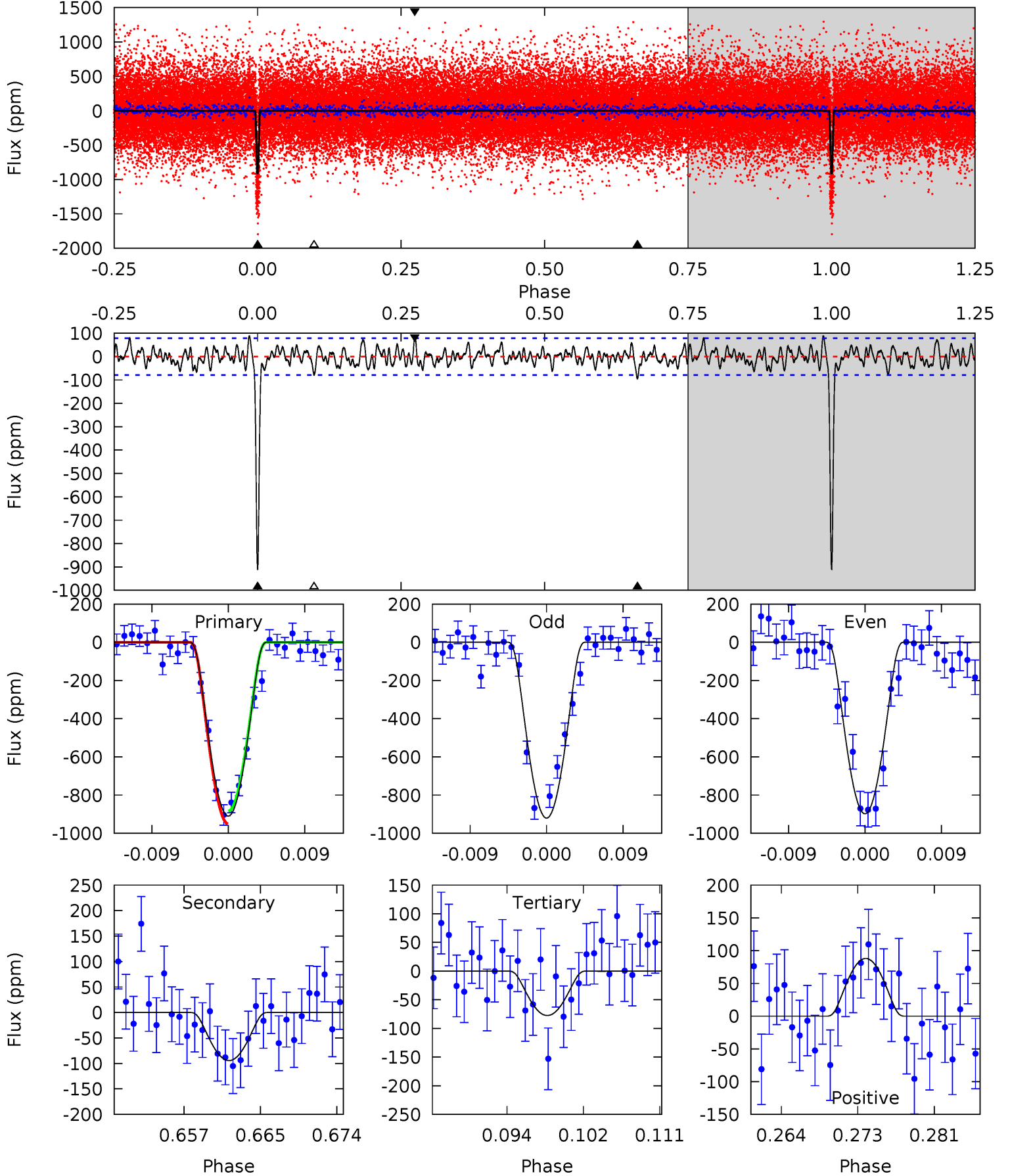
TCE 009729691-02 P= 20.996648 Days $T_0=132.081997$ (BKJD)



DV Model-Shift Uniqueness Test

009729691-02, $P = 20.997157$ Days, $E = 111.072727$ Days

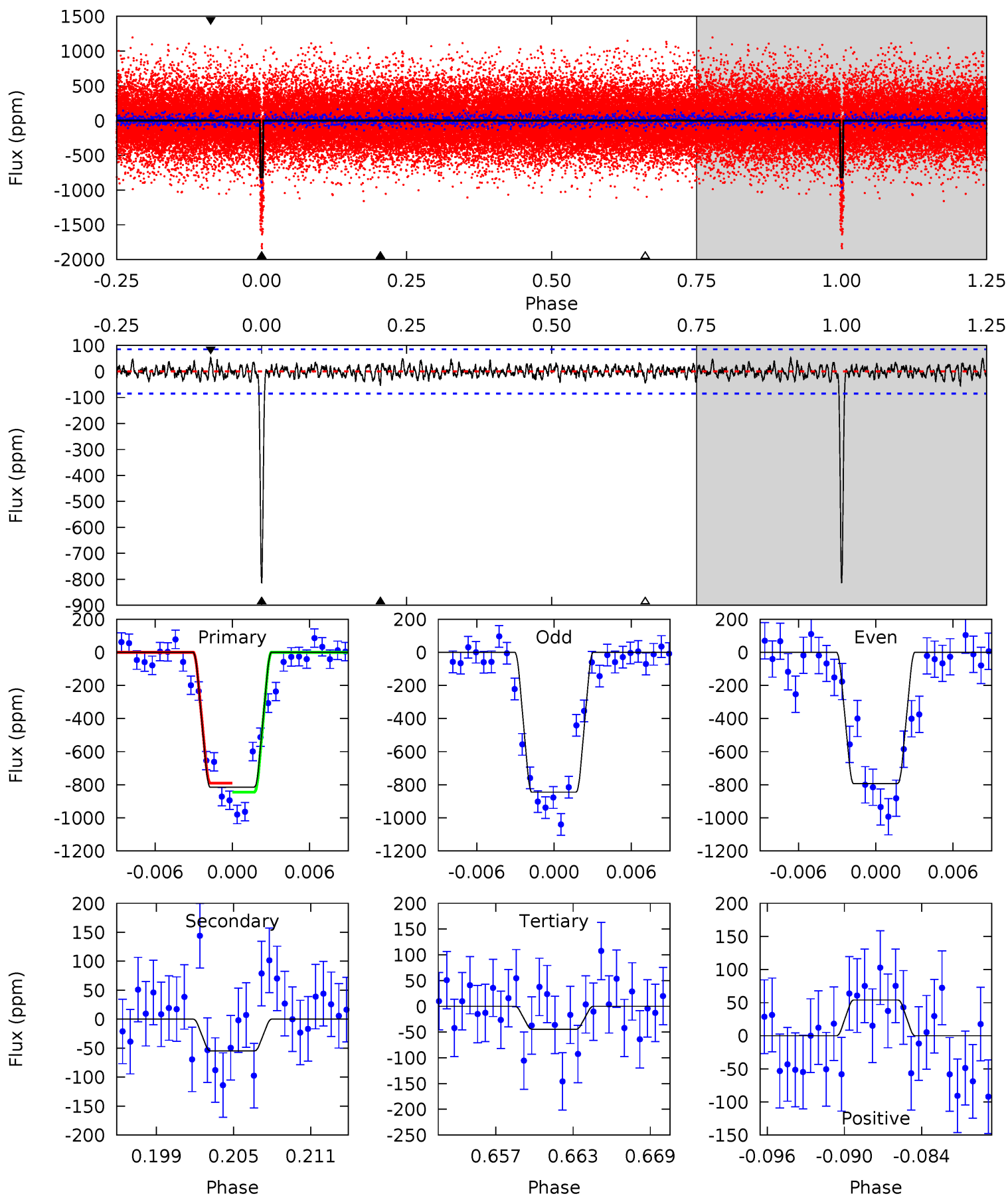
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
58.5	6.06	4.98	5.66	5.06	2.63	1.77	53.5	52.8	1.08	0.41	0.72	0.96	0.09	2.15



Alt Model-Shift Uniqueness Test

009729691-02, $P = 20.996648$ Days, $E = 111.085349$ Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
49.1	3.29	2.68	3.25	5.12	2.75	0.96	46.4	45.8	0.62	0.05	1.56	0.90	0.06	1.63



Stellar Parameters For KIC 009729691

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5211^{+181}_{-163}	$4.447^{+0.120}_{-0.180}$	$0.080^{+0.250}_{-0.300}$	$0.895^{+0.186}_{-0.129}$	$0.817^{+0.104}_{-0.064}$	$1.607^{+0.784}_{-0.723}$
	+3%/-3%	+3%/-4%	+312%/-375%	+21%/-14%	+13%/-8%	+49%/-45%
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 009729691-02 / KOI 1751.02

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-94 ± 16	$6.15^{+4.72}_{-3.88}$	823^{+56}_{-50}	2787^{+1021}_{-394}	26^{+171}_{-18}
Alt.	-55 ± 17	$4.82^{+4.83}_{-3.07}$	821^{+56}_{-45}	2759^{+911}_{-436}	25^{+149}_{-19}

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

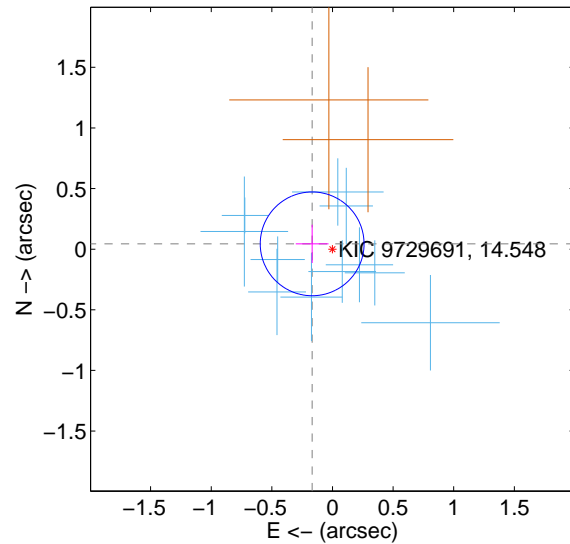
Supplemental centroid analysis for 009729691-02. Kepler magnitude: 14.55. Transit SNR 31.15

There are 11 quarters with good PRF difference image offsets

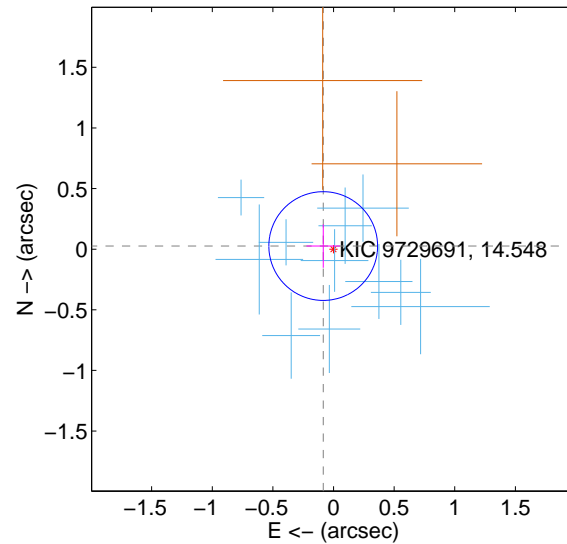
The direct PRF centroid is offset from the target star catalog position by about 0.17 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.173 ± 0.143	1.21	0.168 ± 0.135	0.044 ± 0.158
PRF-fit source offset from KIC position	0.089 ± 0.149	0.59	0.085 ± 0.138	0.026 ± 0.179
photometric centroid source offset	0.51 ± 0.38	1.33	-0.07 ± 0.38	-0.50 ± 0.38

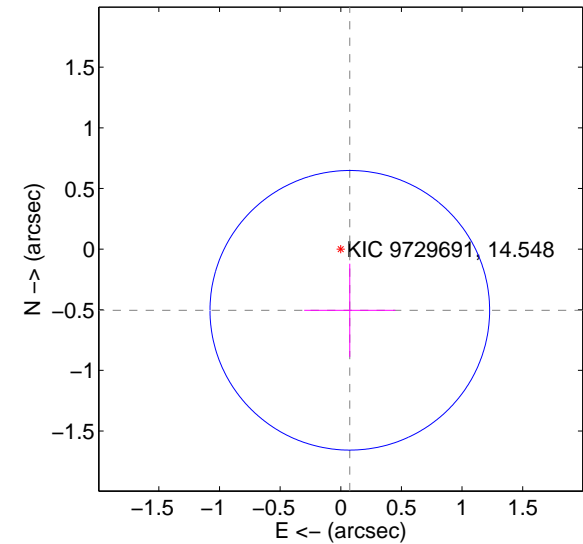
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

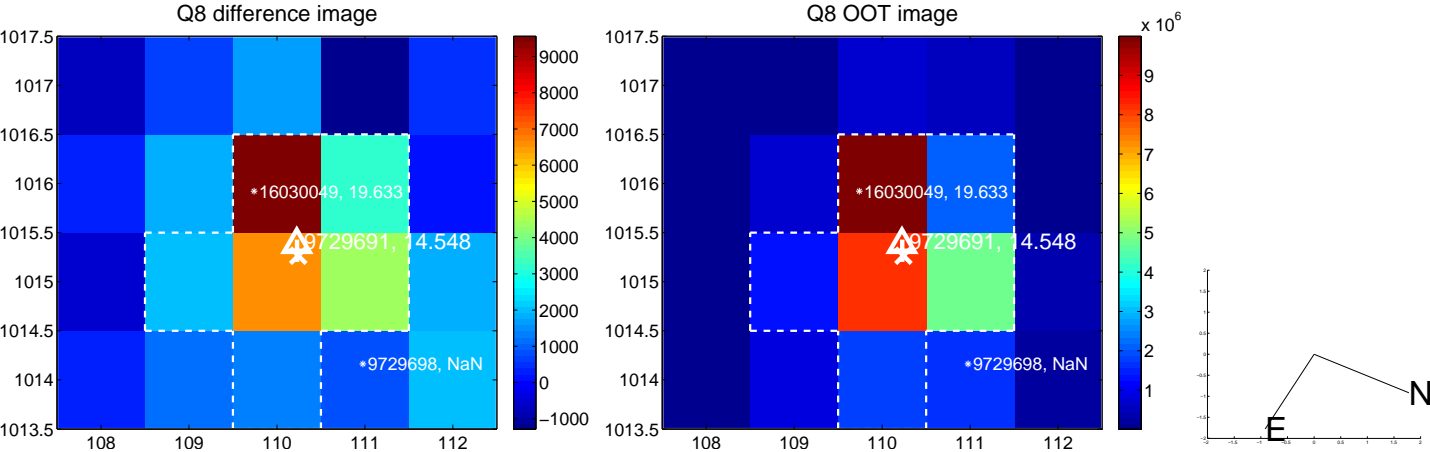
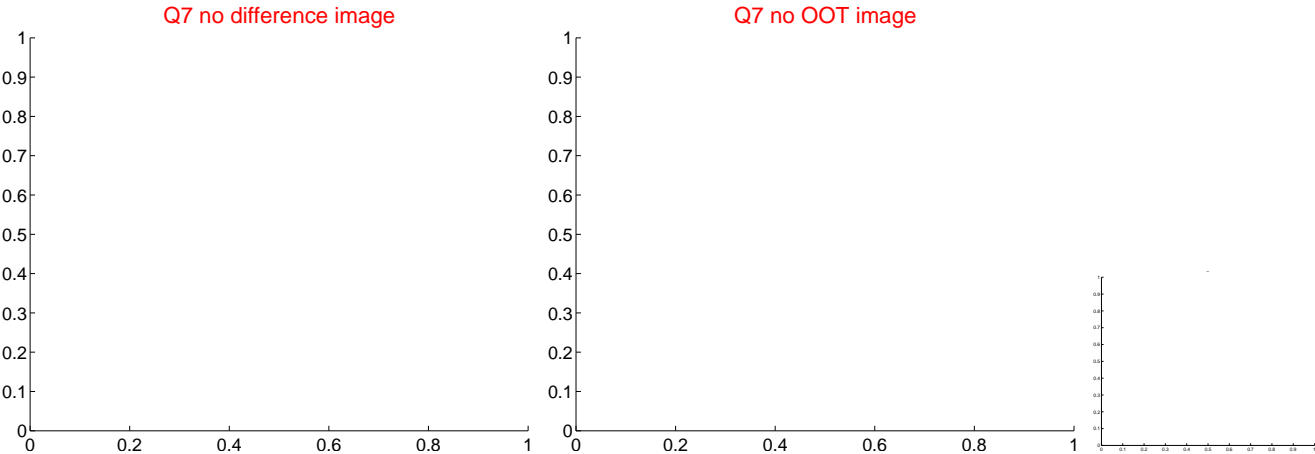
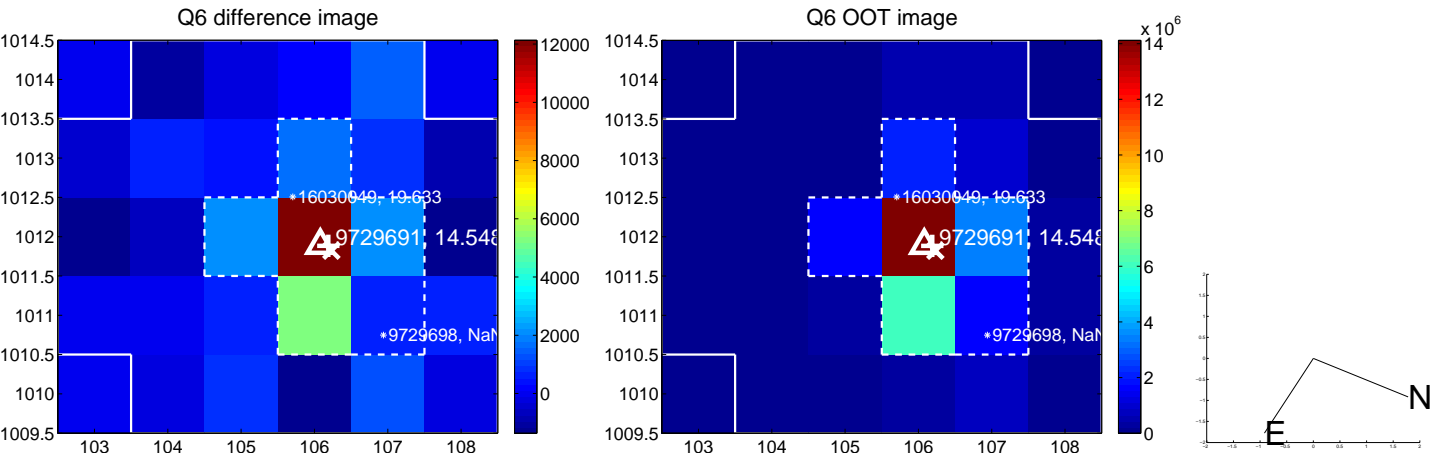
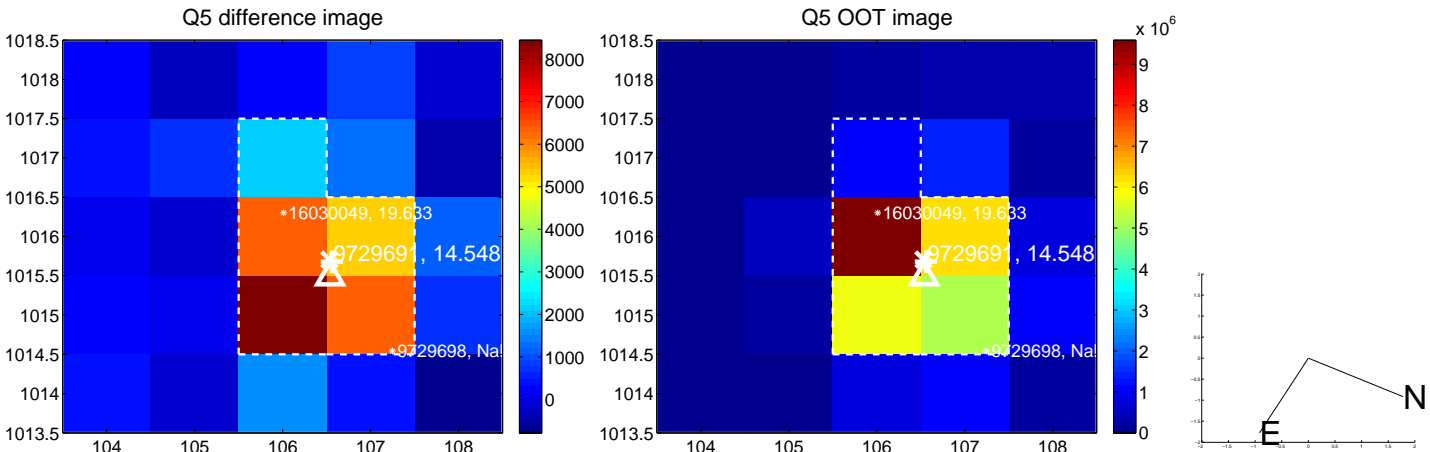


offset from photometric centroids

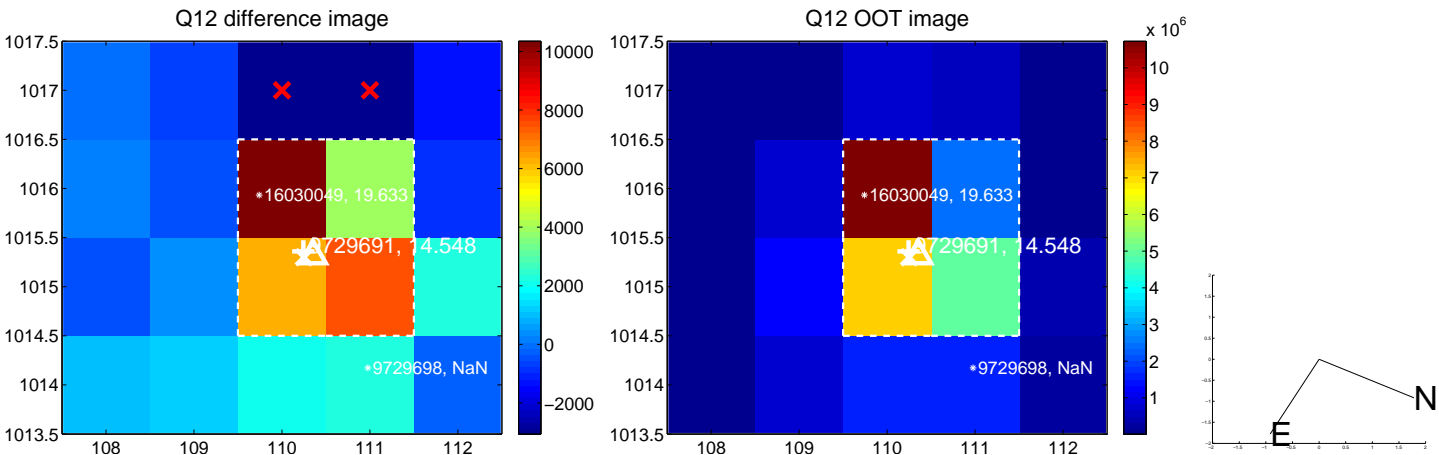
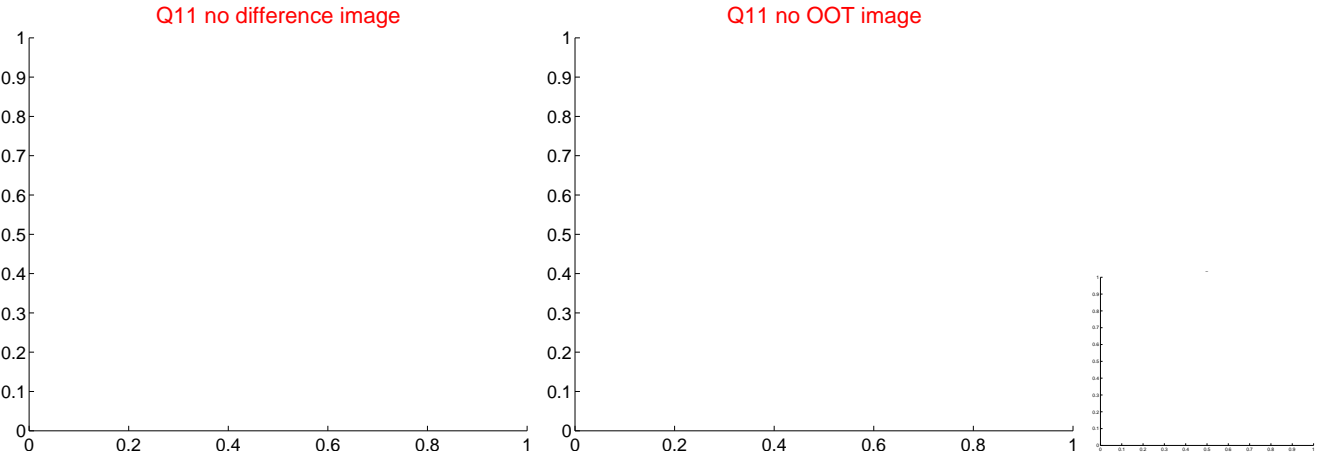
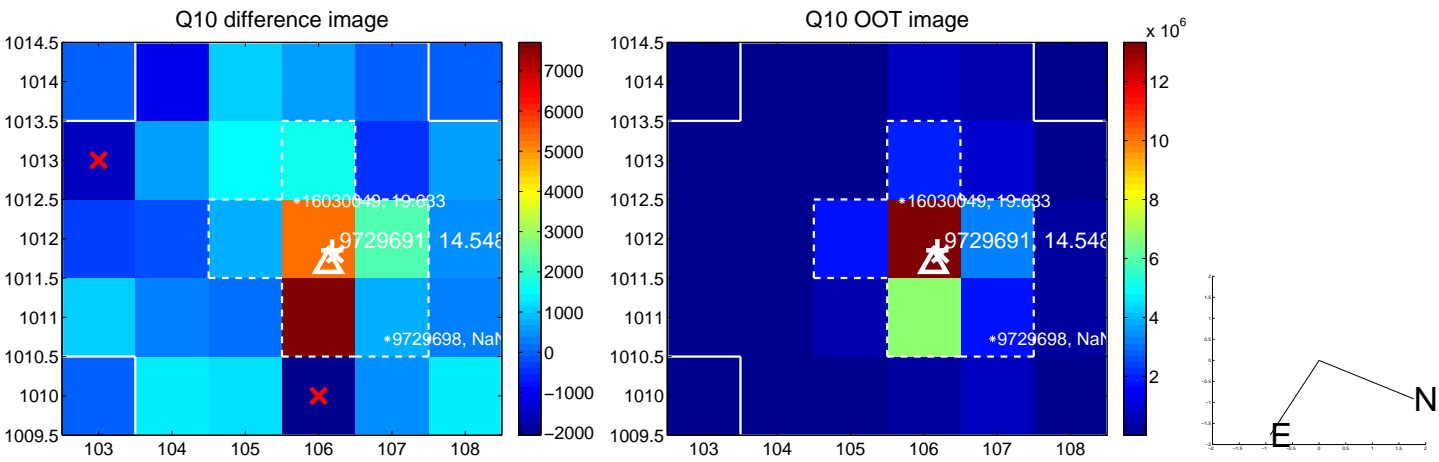
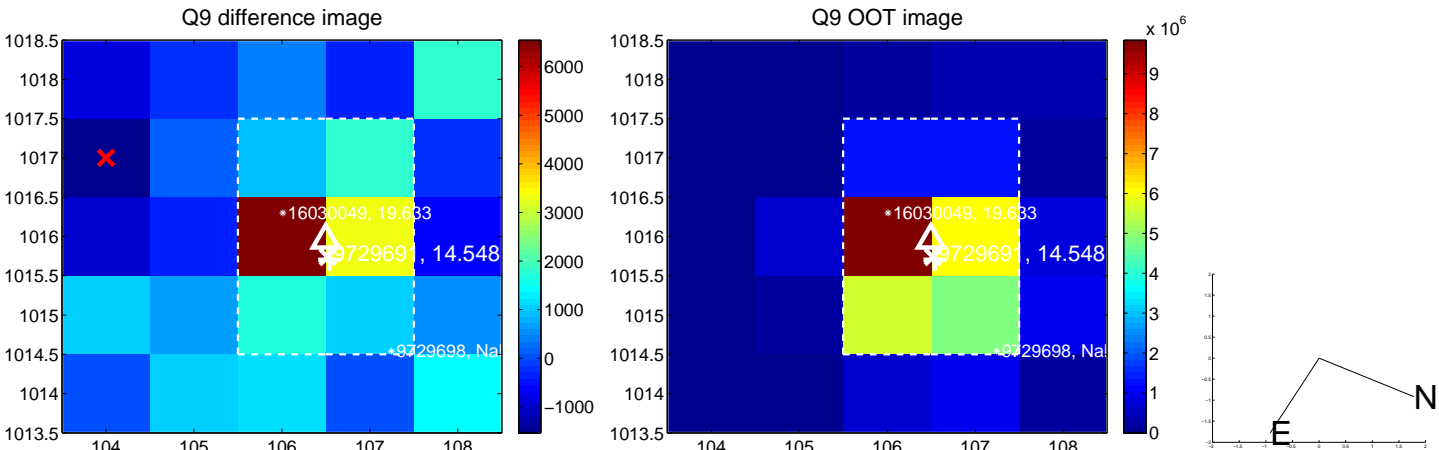


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

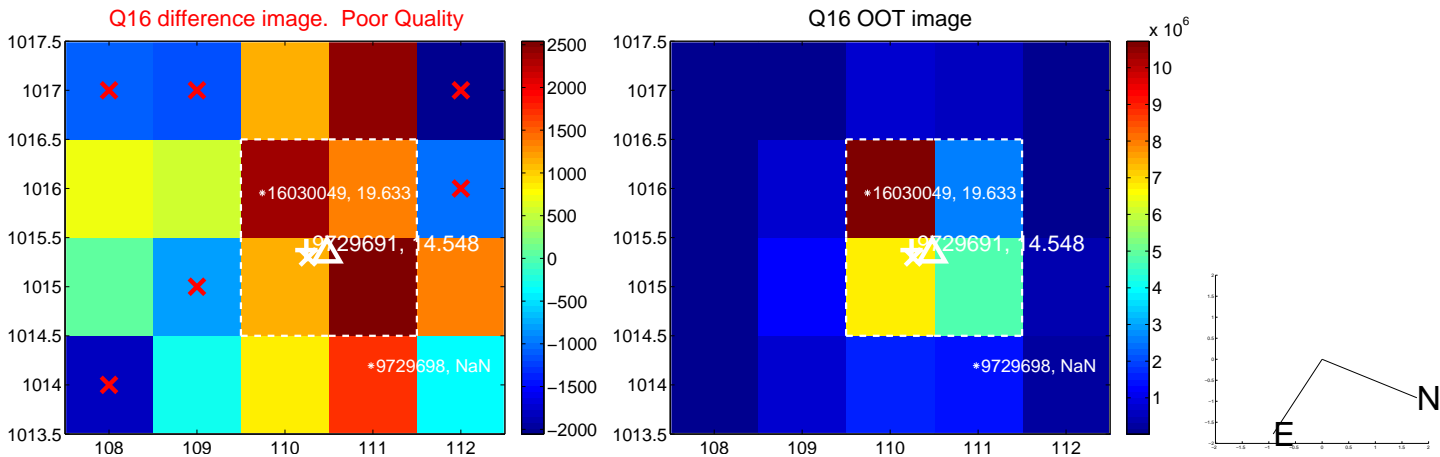
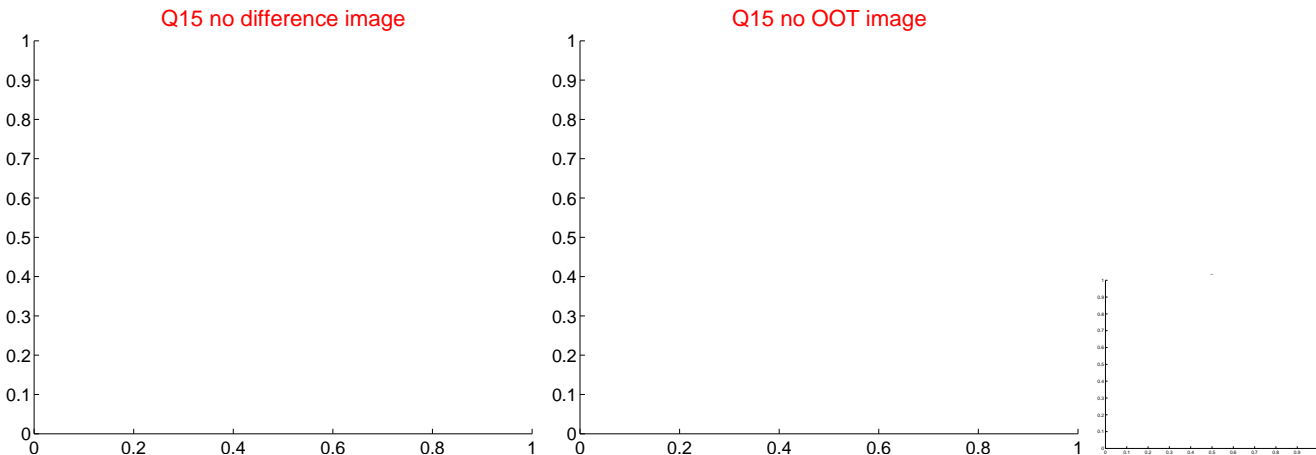
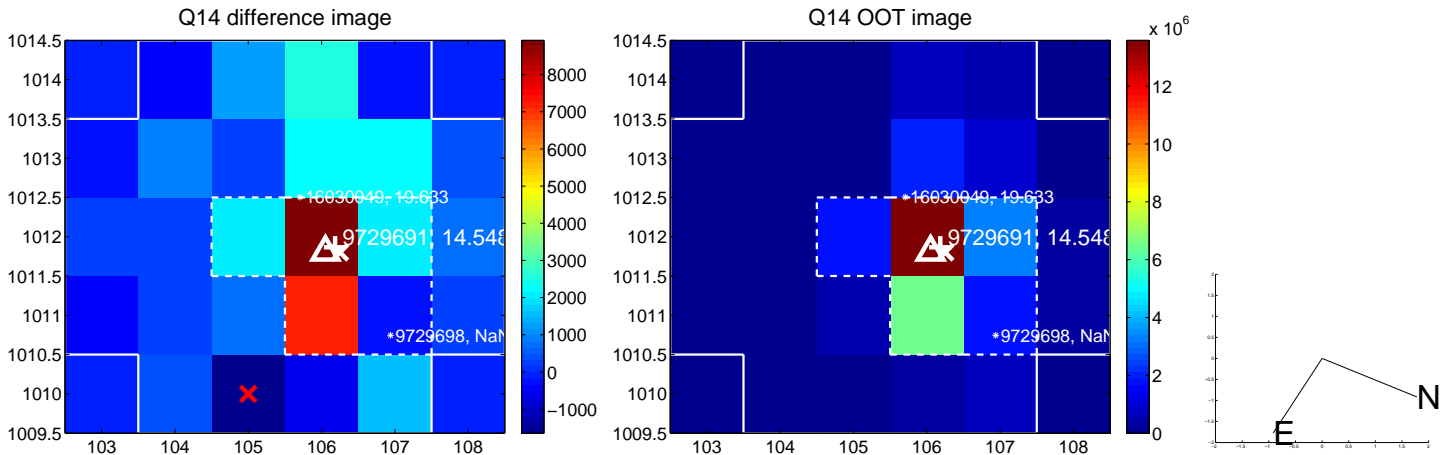
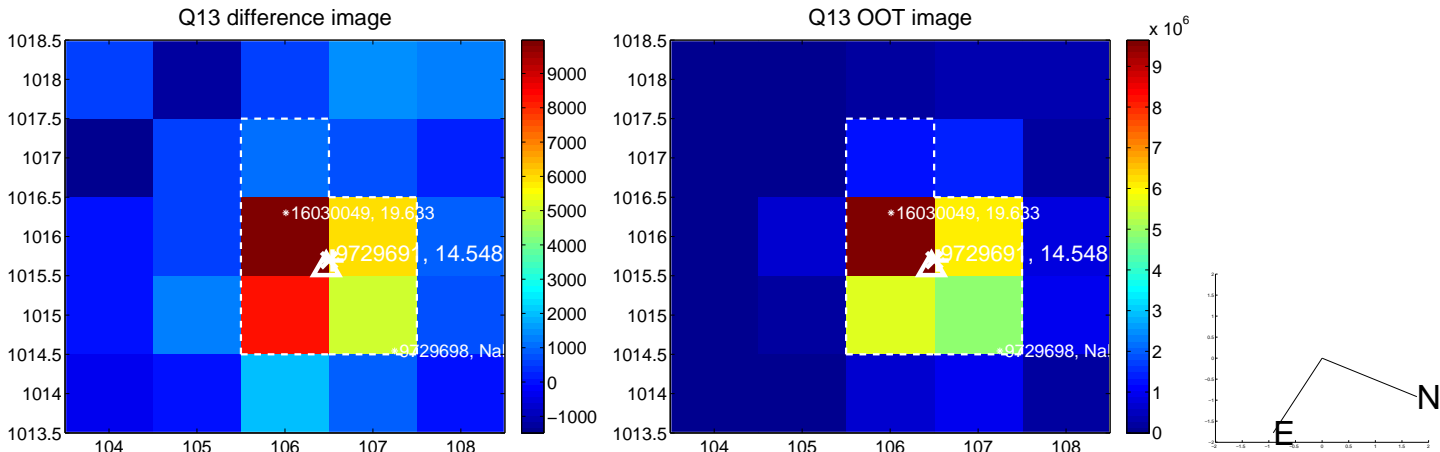
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



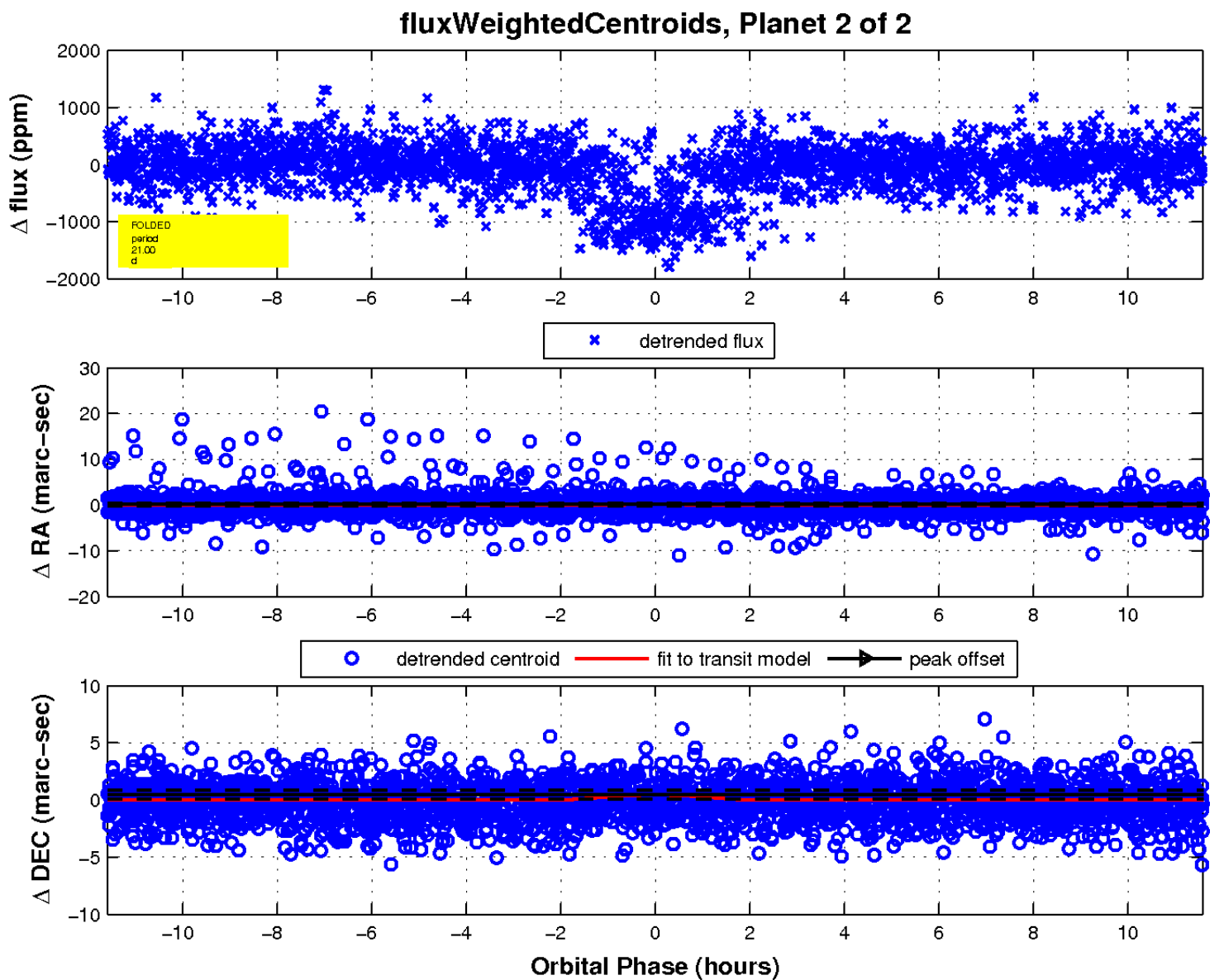
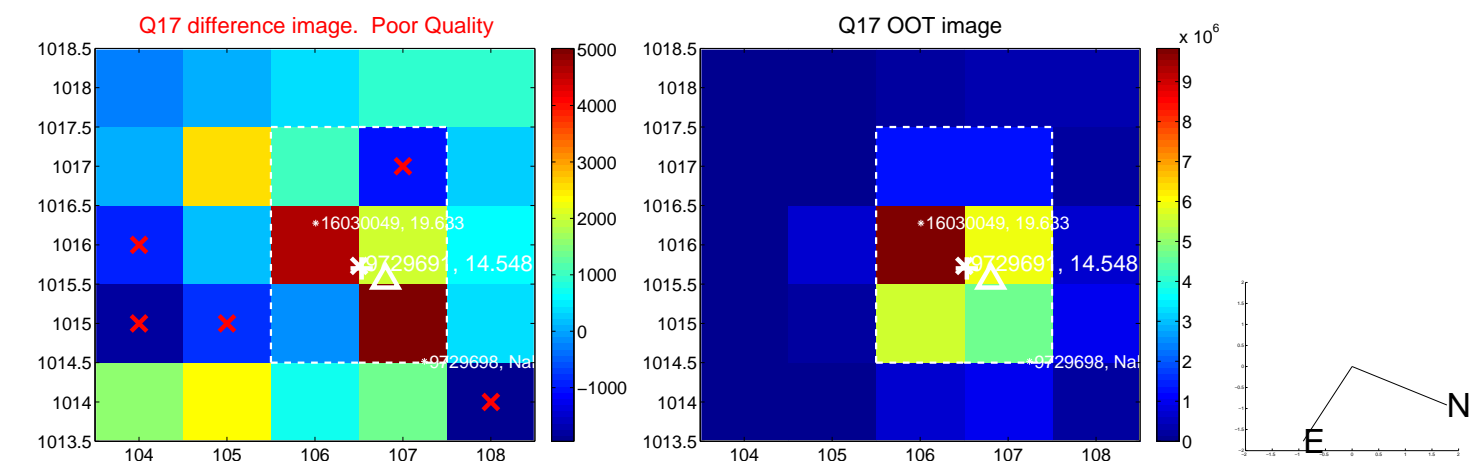
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



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



UKIRT Image

Declination

