

KIC 007431838

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})
007431838-01	OBS	No	3.037009	134.329176	43.8	2.017	19.4	18.9	2.04	8421	1.42	7108.02
007431838-02	OBS	No	0.607368	132.094157	13.1	4.791	13.6	16.2	2.04	8421	0.75	60777.18

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007431838-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_KIC_POS
007431838-02	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD—CENT_FEW_DIFFS

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

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

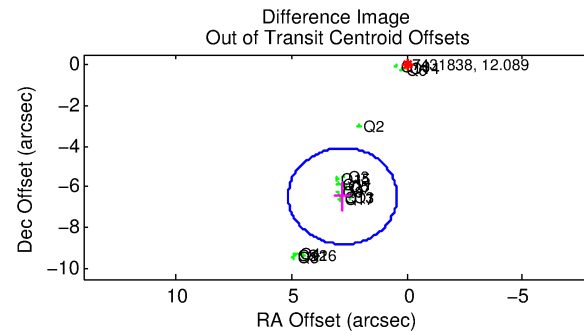
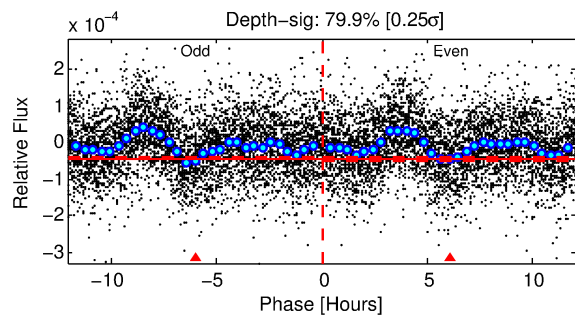
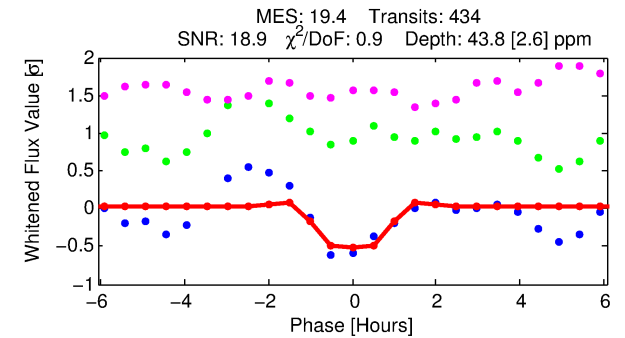
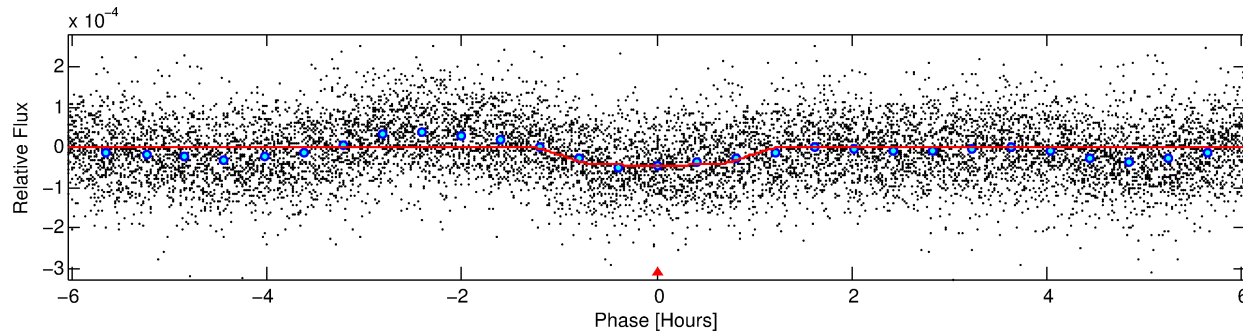
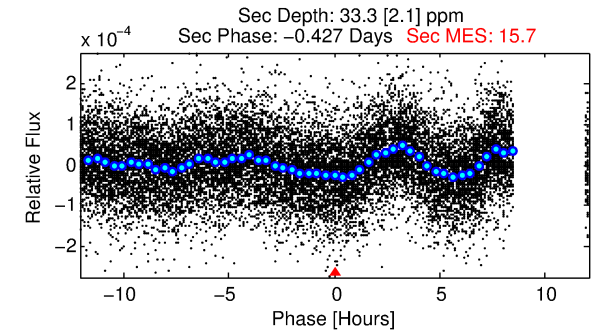
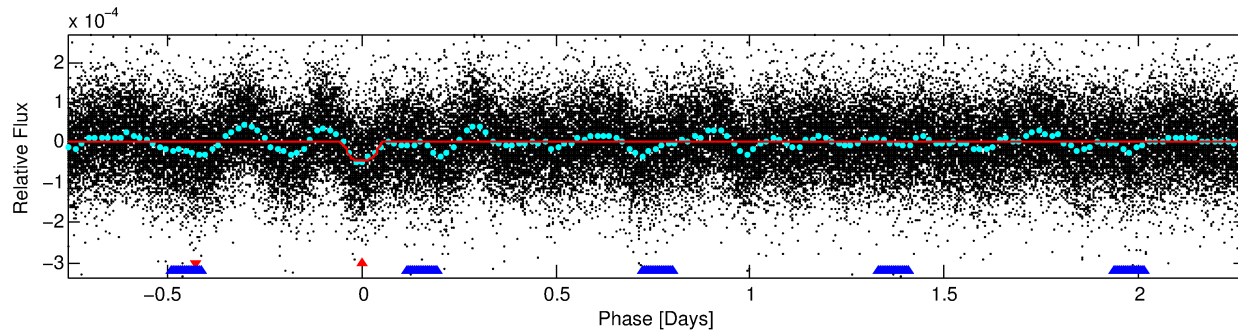
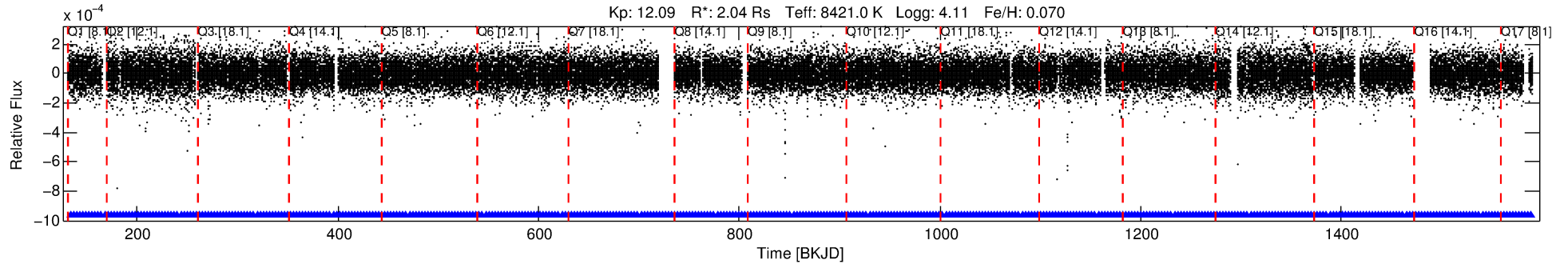
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 007431838-01

No Significant Match Found

DV One-Page Summary

KIC: 7431838 Candidate: 1 of 2 Period: 3.037 d



DV Fit Results:

Period = 3.03701 [0.00001] d
Epoch = 134.3292 [0.0017] BKJD
Rp/R* = 0.0064 [0.0008]
a/R* = 9.51 [6.82]
b = 0.58 [0.84]
Seff = 7108.02 [2429.05]
Teq = 2341 [200] K
Rp = 1.42 [0.41] Re
a = 0.0513 [0.0109] AU
Ag = 24.09 [9.42] [2.45σ]
Teffp = 8020 [621] K [8.70σ]

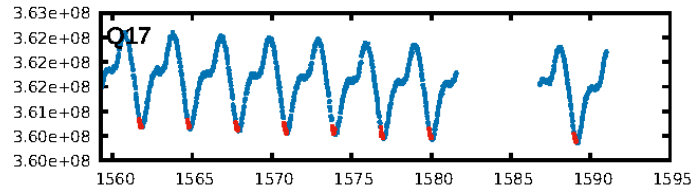
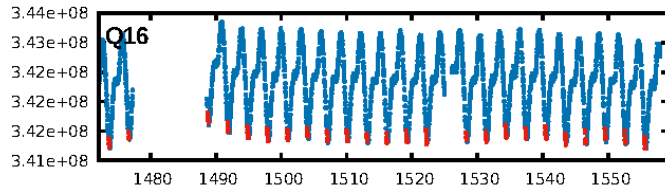
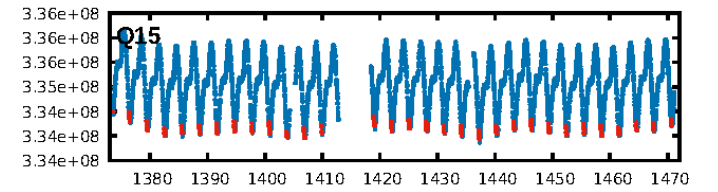
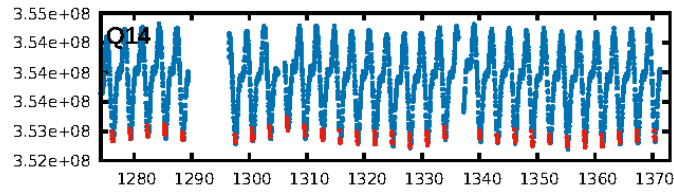
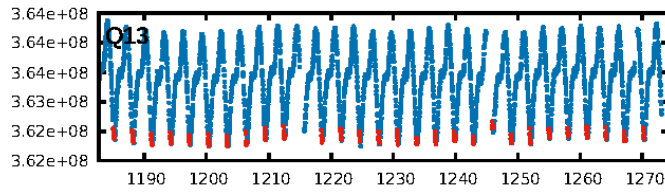
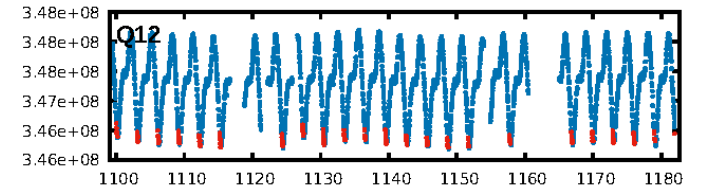
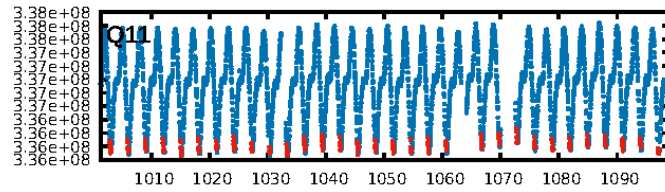
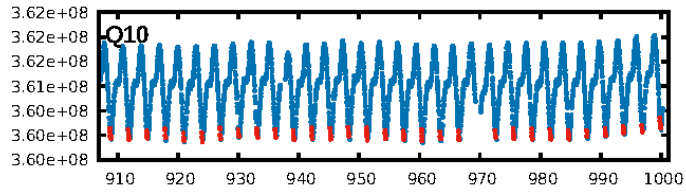
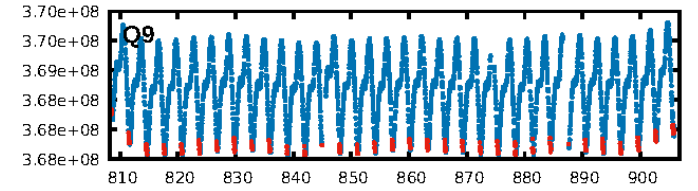
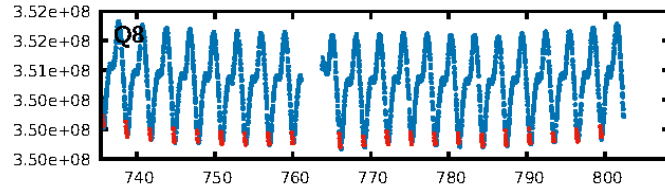
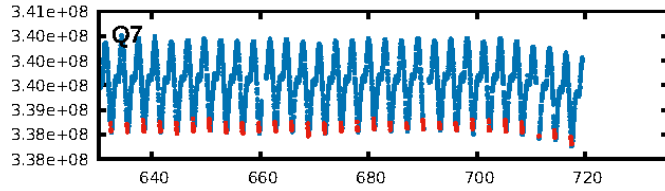
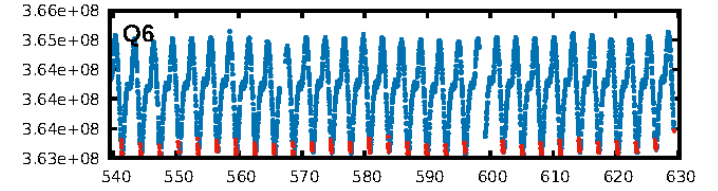
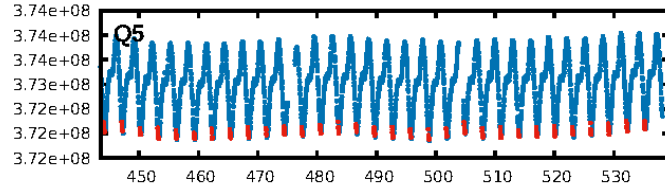
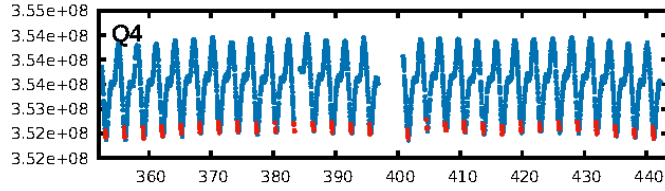
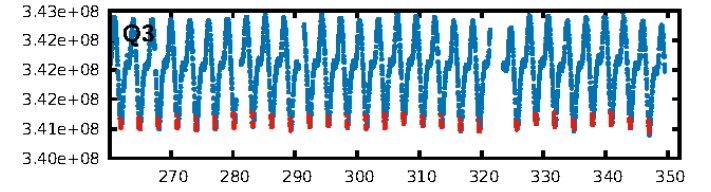
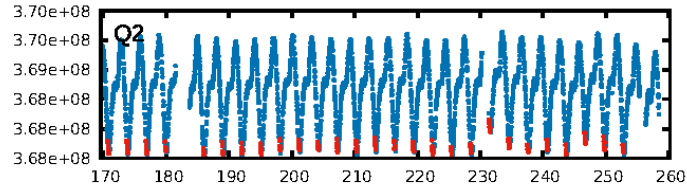
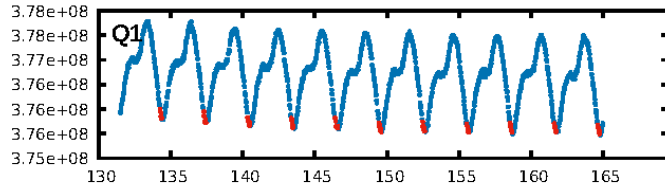
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [11.22σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [415/415]
GhostDiagnostic-chr: -7.679
Centroid-sig: 0.0%
Centroid-so: 1.484 arcsec [1.91σ]
OotOffset-rm: 7.023 arcsec [8.95σ]
KicOffset-rm: 0.143 arcsec [1.69σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 1.00 [17/17]
DiffImageOverlap-fno: 0.00 [0/17]

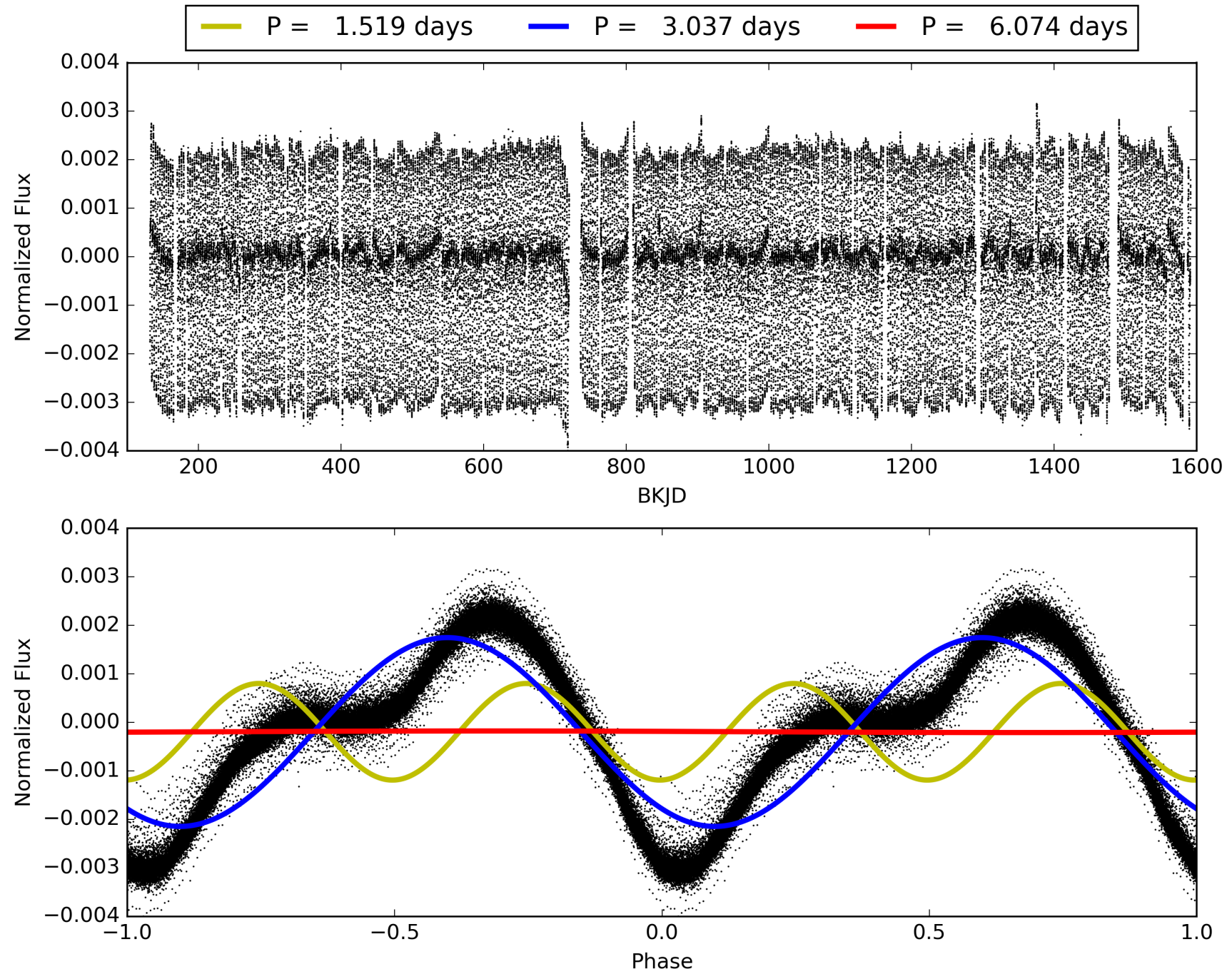
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 09:41:40 Z

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

TCE 007431838-01, PDC Light Curves

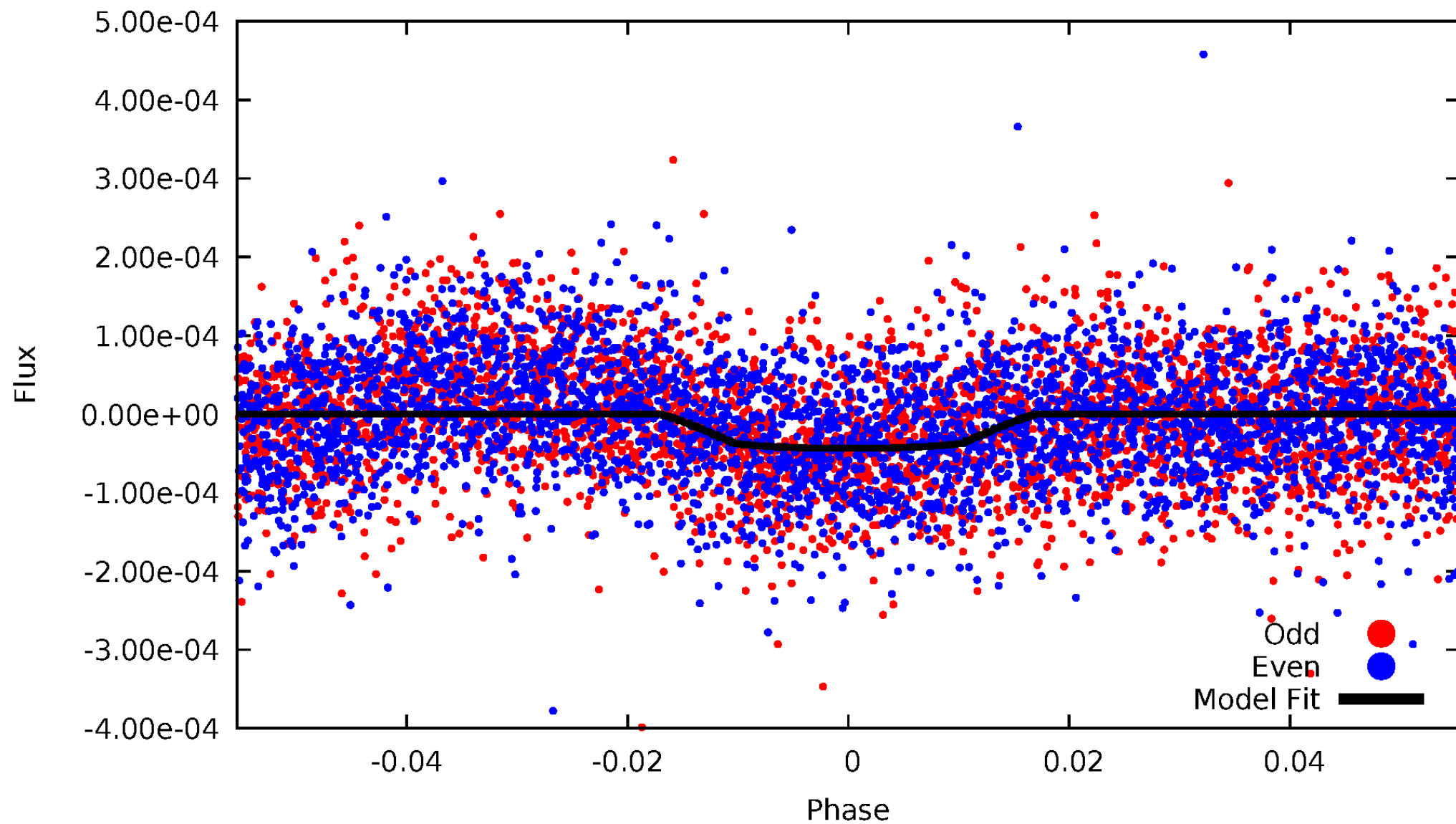


TCE 007431838-01



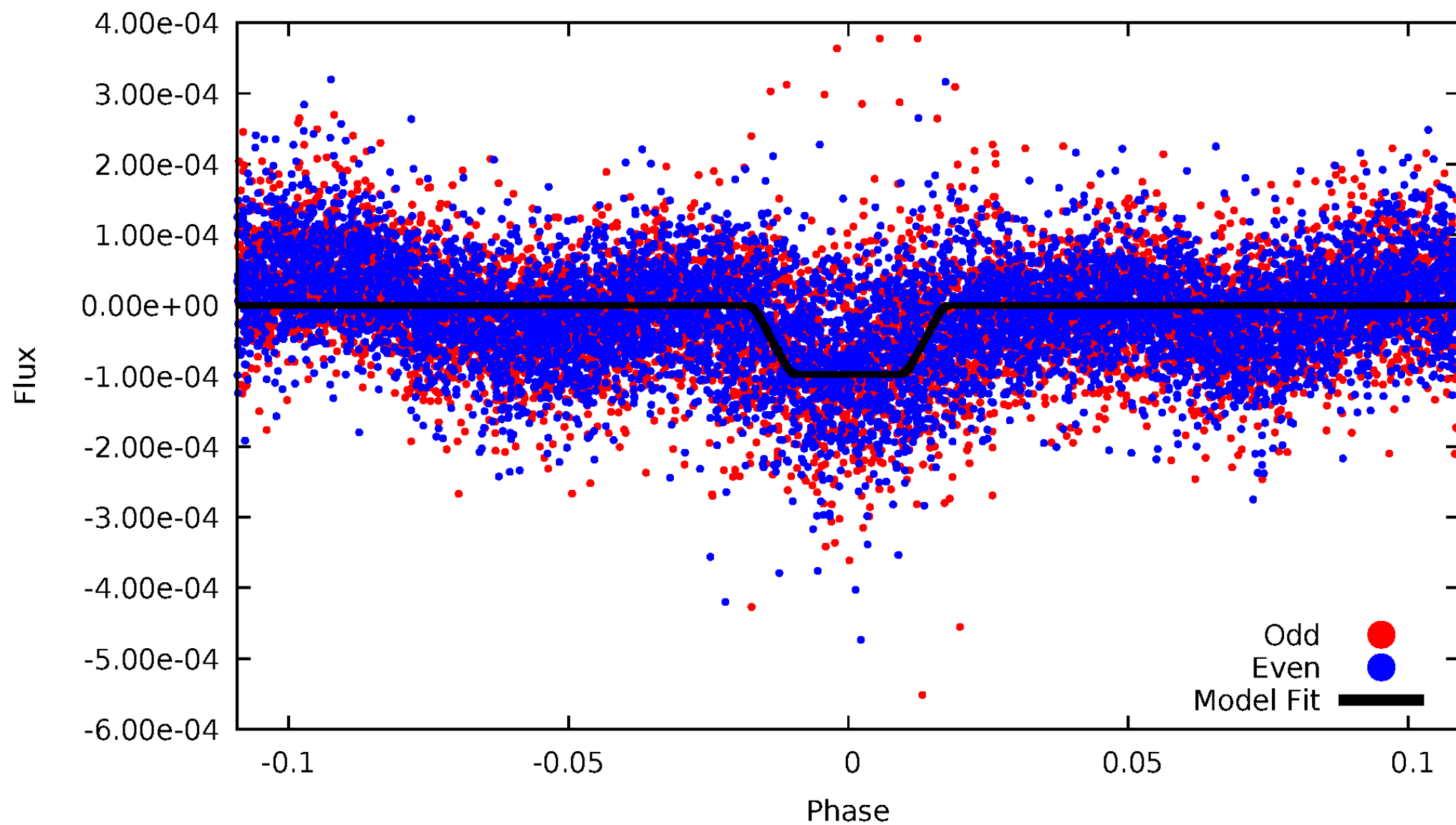
DV Odd/Even

TCE 007431838-01



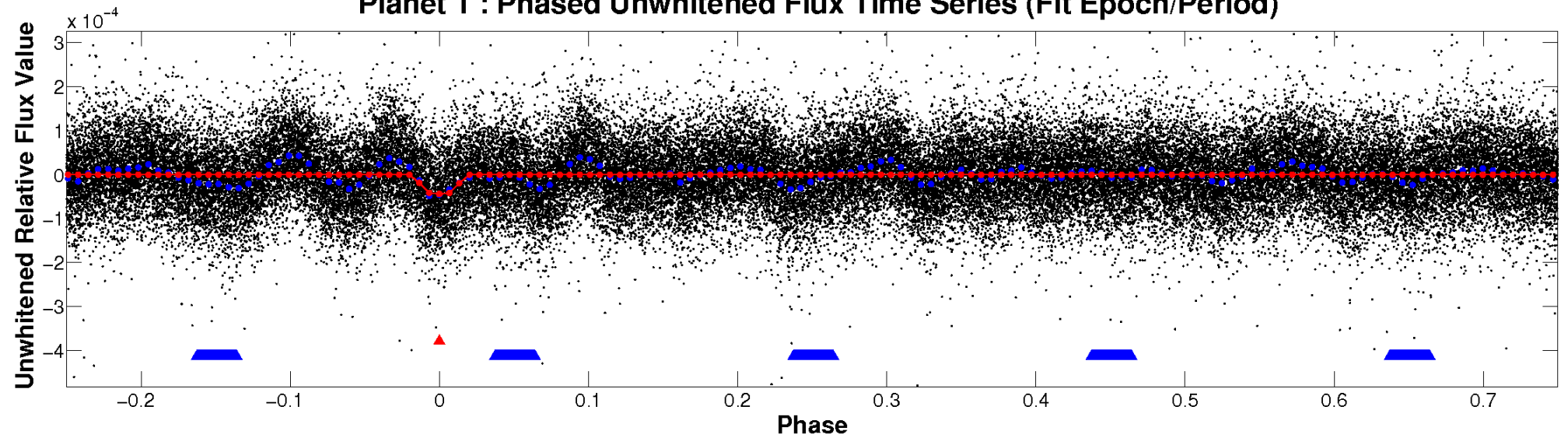
ALT Odd/Even

TCE 007431838-01

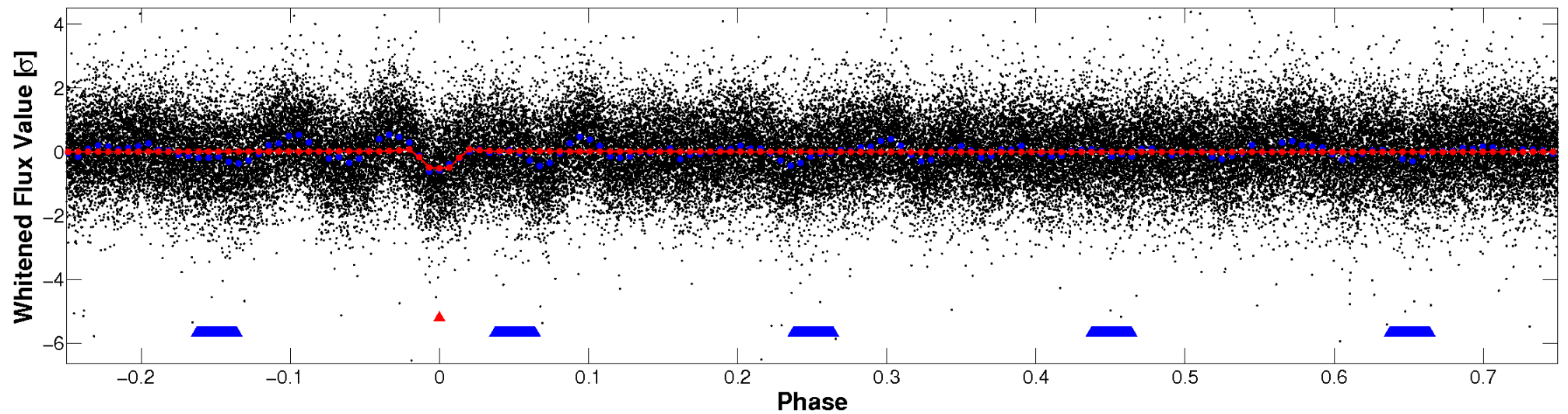


Non-Whitened Vs. Whitened Light Curve

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

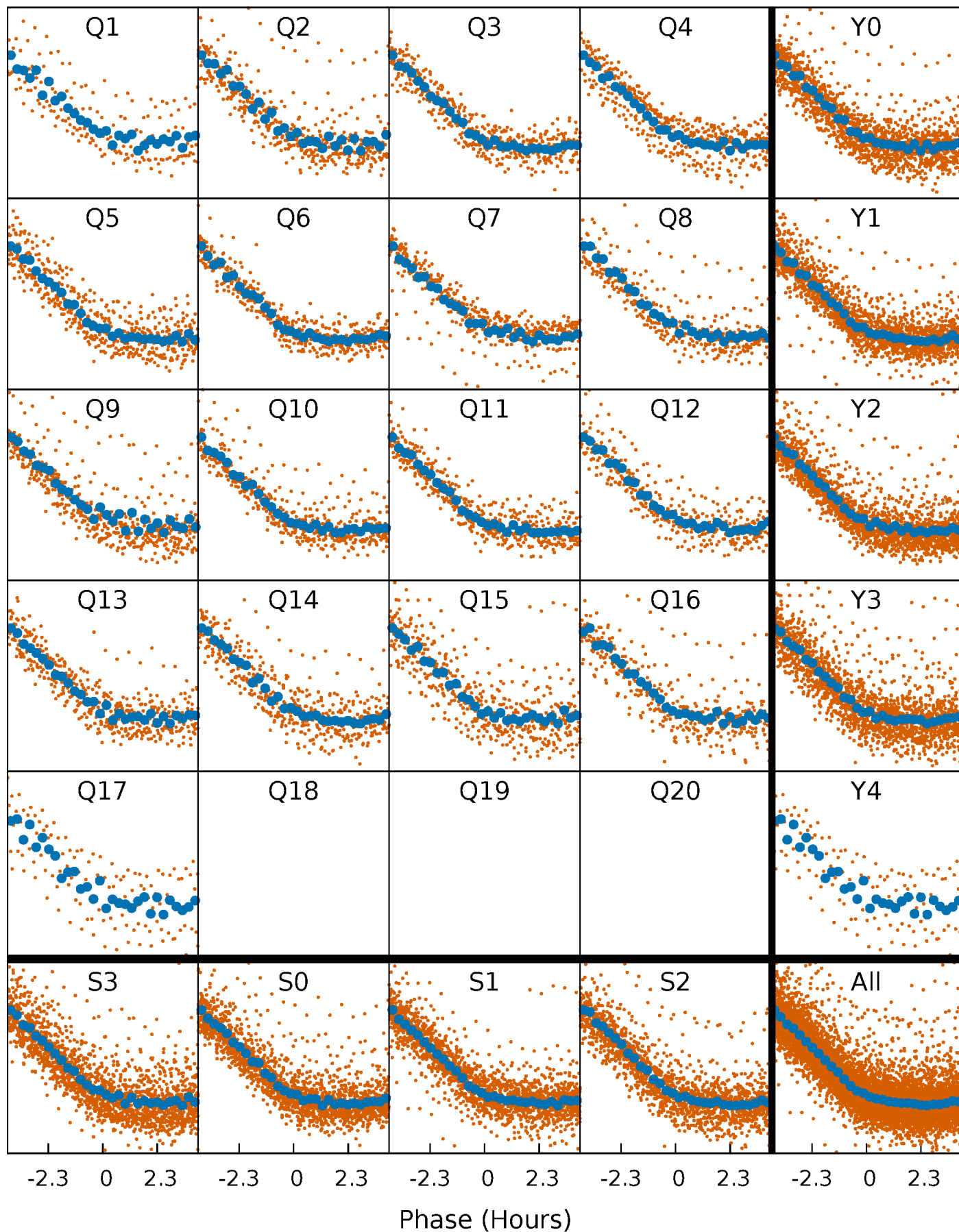


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



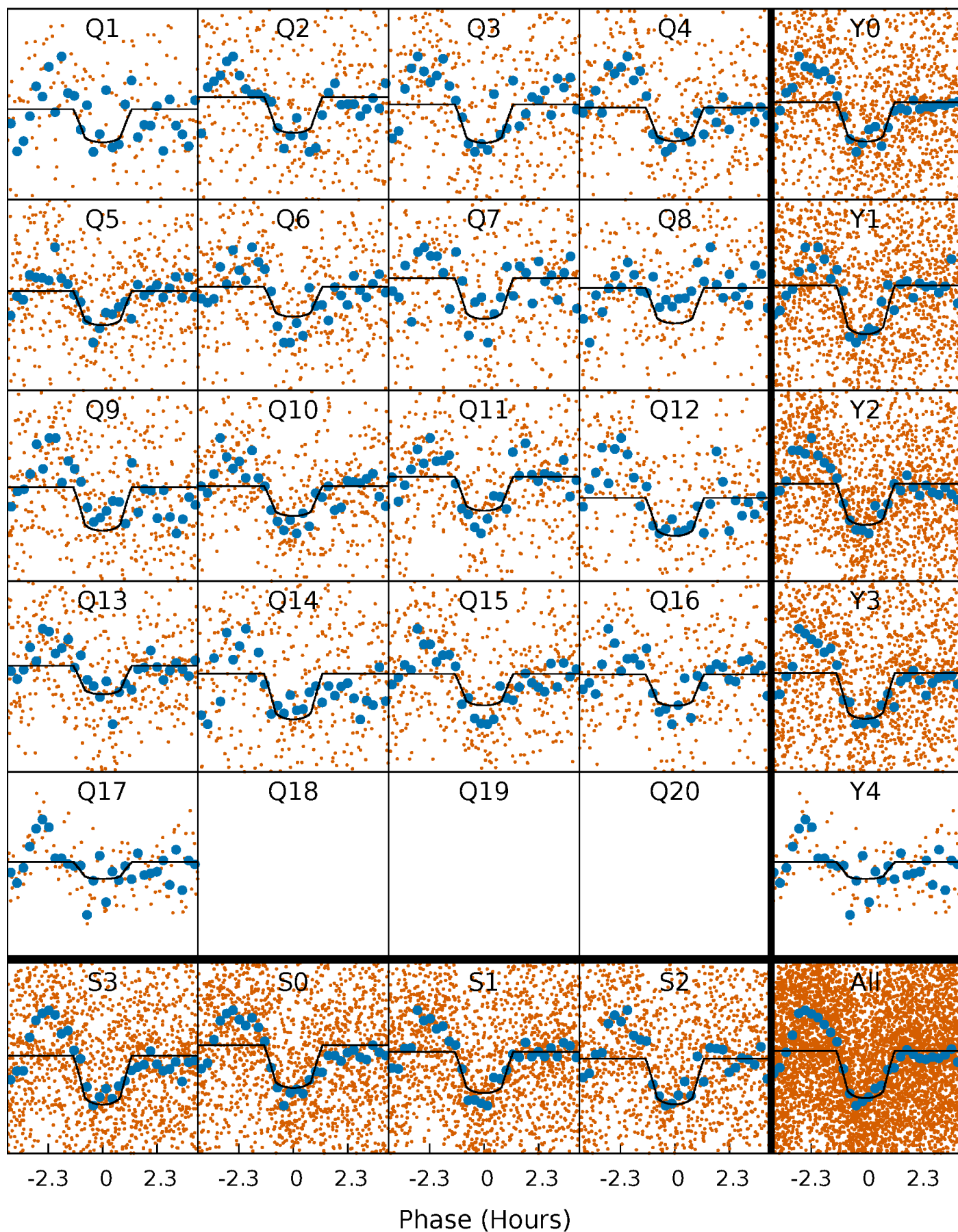
PDC Quarter-Phased Transit Curves

TCE 007431838-01 P= 3.037009 Days $T_0=134.329176$ (BKJD)



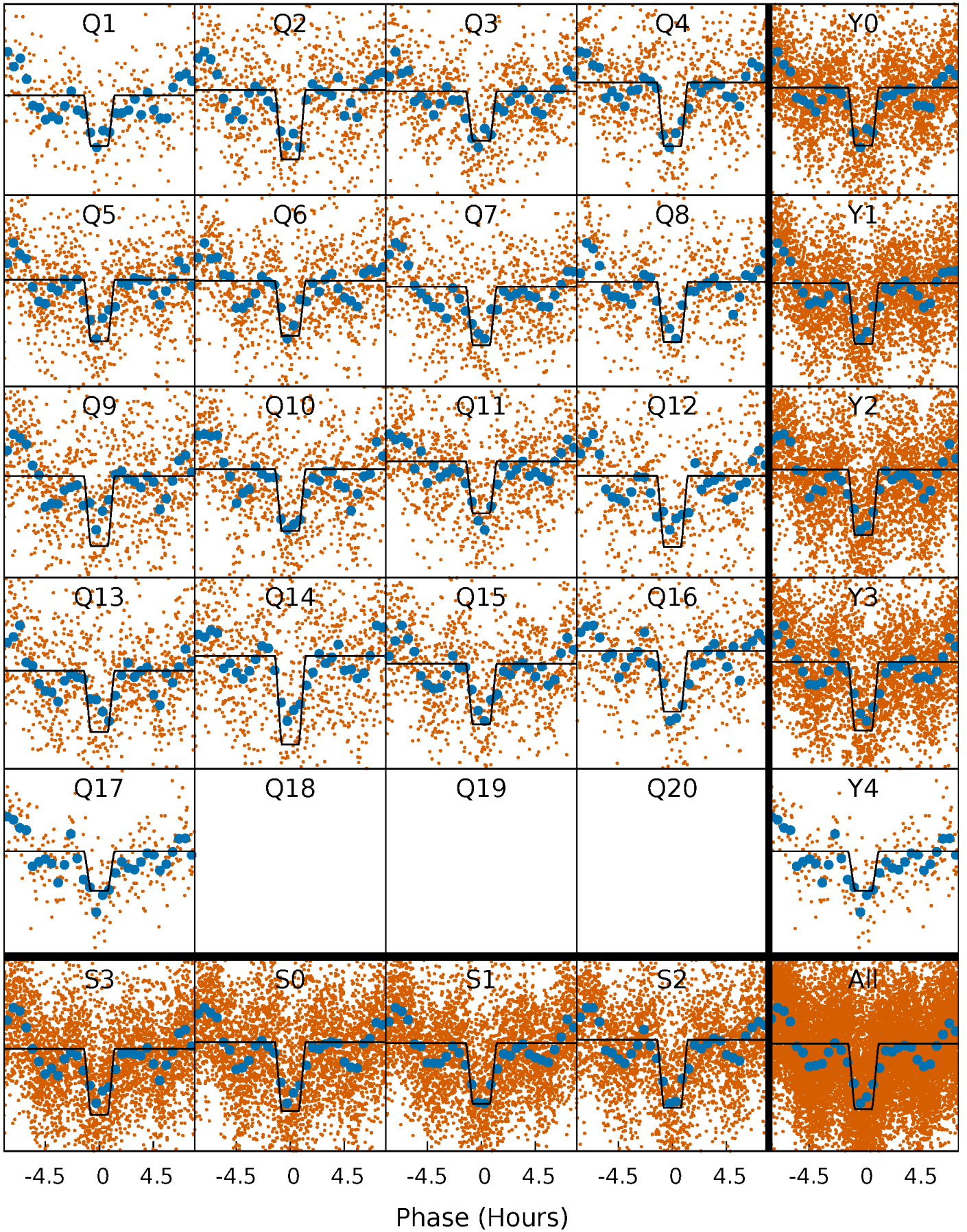
DV Quarter-Phased Transit Curves

TCE 007431838-01 P= 3.037009 Days $T_0=134.329176$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

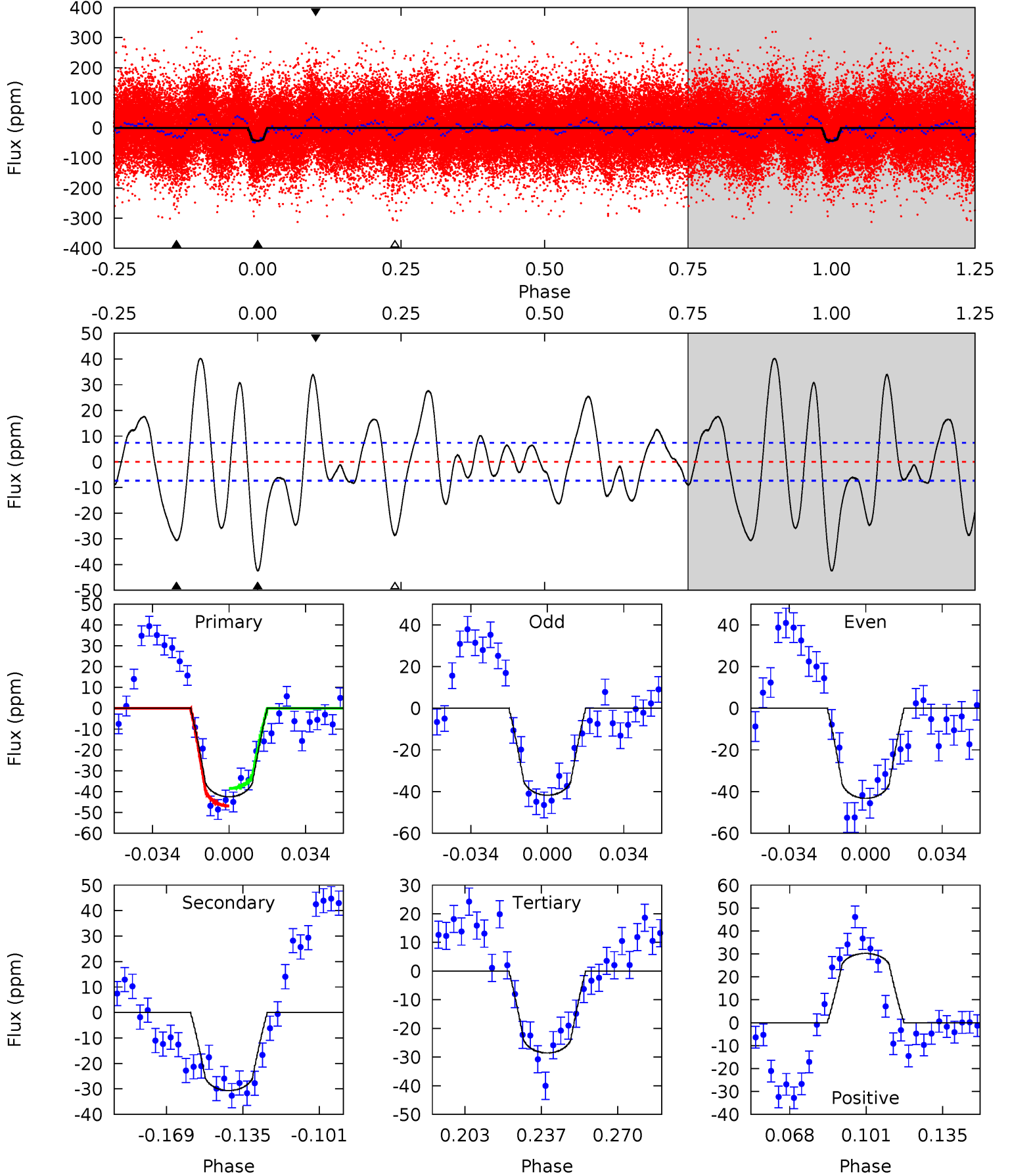
TCE 007431838-01 P= 3.036981 Days $T_0=134.330057$ (BKJD)



DV Model-Shift Uniqueness Test

007431838-01, P = 3.037009 Days, E = 131.292167 Days

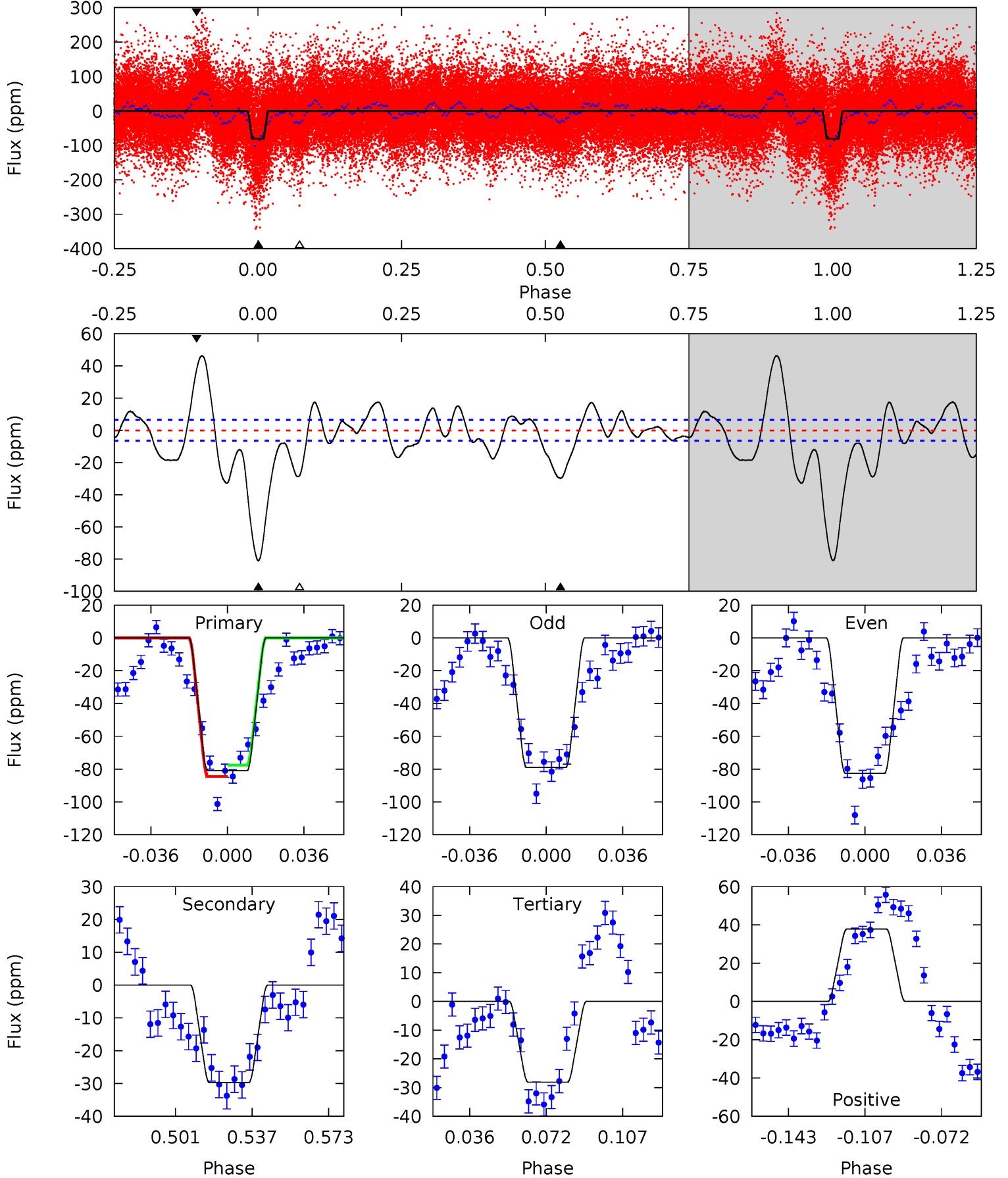
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
27.6	19.9	18.5	19.6	4.79	2.12	8.81	9.03	7.96	1.34	0.28	0.49	0.98	0.49	2.72



Alt Model-Shift Uniqueness Test

007431838-01, P = 3.036981 Days, E = 131.293076 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
59.6	21.9	20.7	27.9	4.78	2.10	9.75	38.9	31.7	1.21	-5.98	1.28	1.06	0.36	2.53



Stellar Parameters For KIC 007431838

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	8421^{+232}_{-364}	$4.110^{+0.126}_{-0.154}$	$0.070^{+0.300}_{-0.450}$	$2.037^{+0.538}_{-0.404}$	$1.949^{+0.366}_{-0.366}$	$0.325^{+0.206}_{-0.147}$
	+3%/-4%	+3%/-4%	+429%/-643%	+26%/-20%	+19%/-19%	+63%/-45%
Source	KIC0	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 007431838-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-31 ± 2	$1.43^{+0.26}_{-0.23}$	3281^{+202}_{-207}	7625^{+725}_{-562}	22^{+8}_{-6}
Alt.	-30 ± 1	$2.23^{+0.35}_{-0.30}$	3267^{+216}_{-195}	5937^{+339}_{-293}	$8.660^{+2.656}_{-2.058}$

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

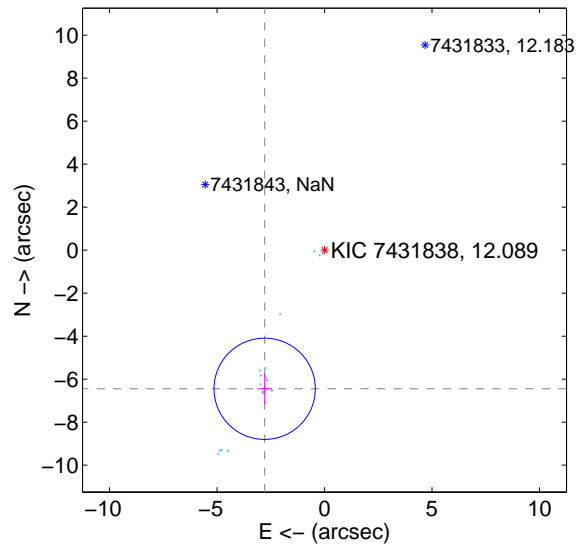
Supplemental centroid analysis for 007431838-01. Kepler magnitude: 12.09. Transit SNR 18.85

There are 17 quarters with good PRF difference image offsets

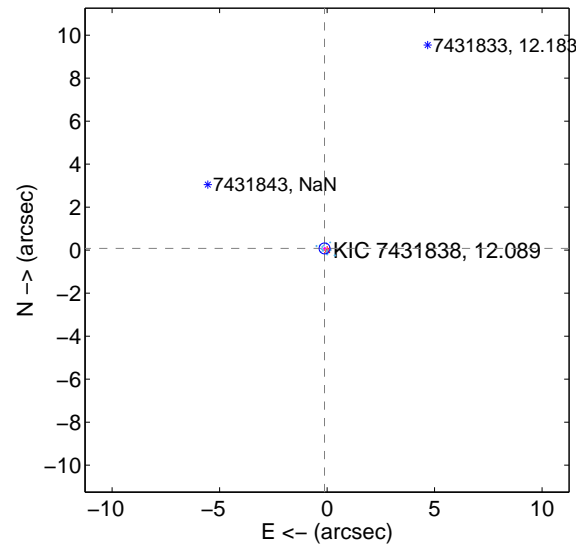
The OOT PRF centroid is offset from the target star catalog position by about 7.10 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	7.023 ± 0.785	8.95	2.785 ± 0.342	-6.447 ± 0.713
PRF-fit source offset from KIC position	0.143 ± 0.085	1.69	0.118 ± 0.082	0.080 ± 0.078
photometric centroid source offset	1.48 ± 0.78	1.91	0.90 ± 0.55	-1.18 ± 0.88

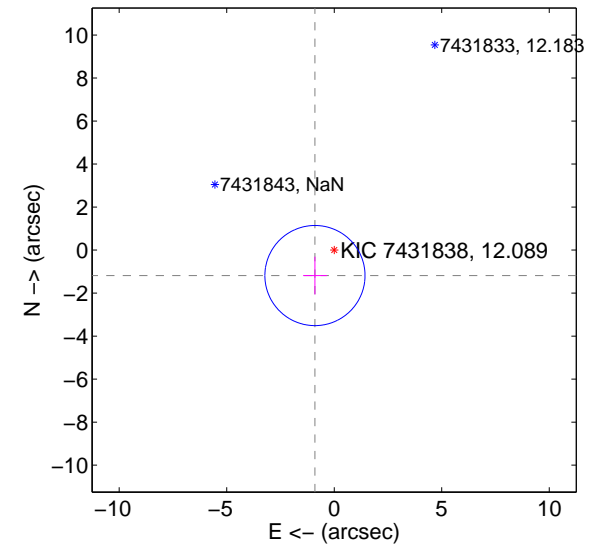
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

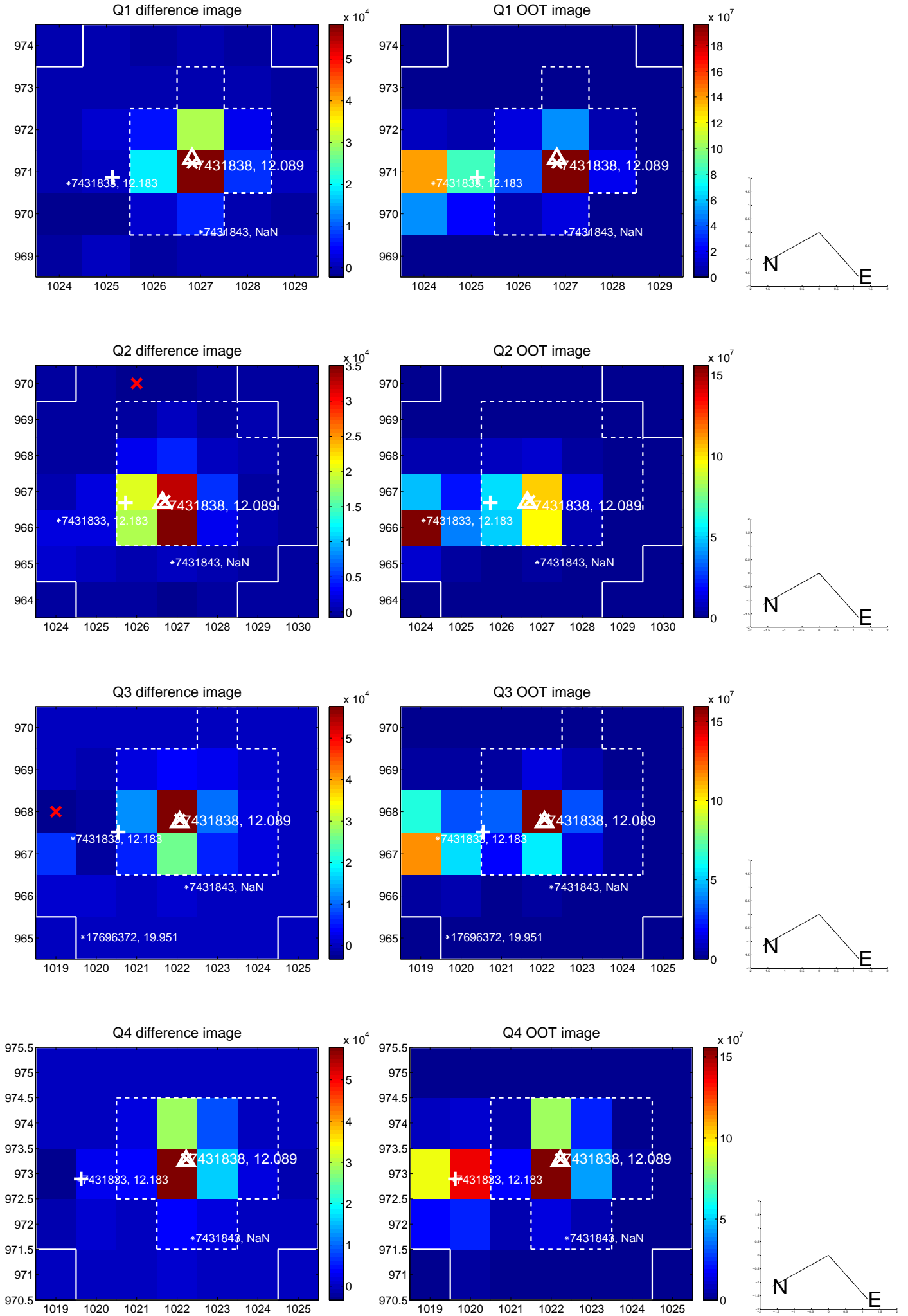


offset from photometric centroids

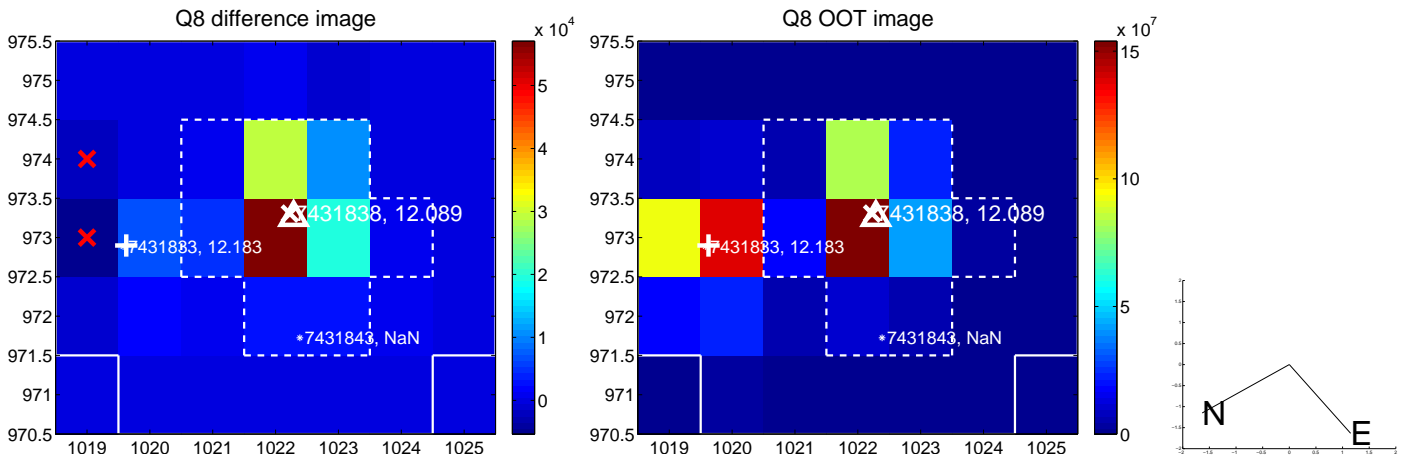
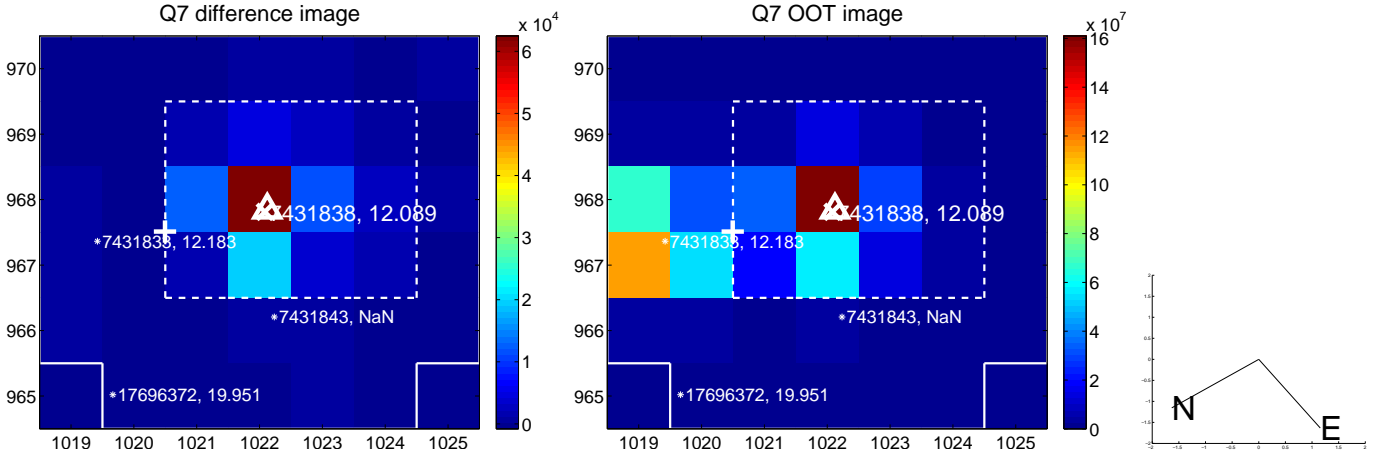
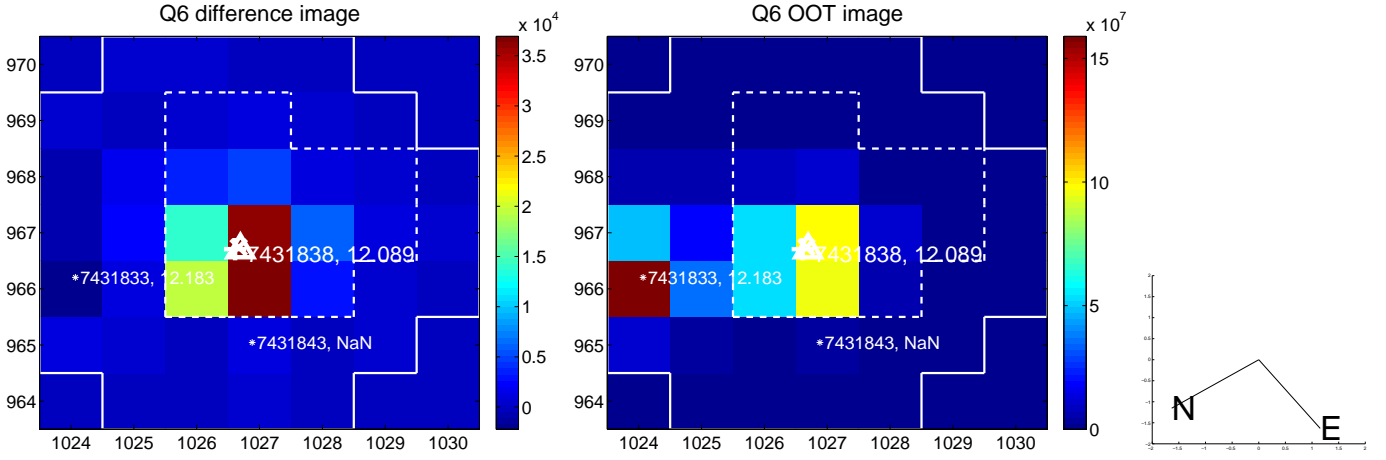
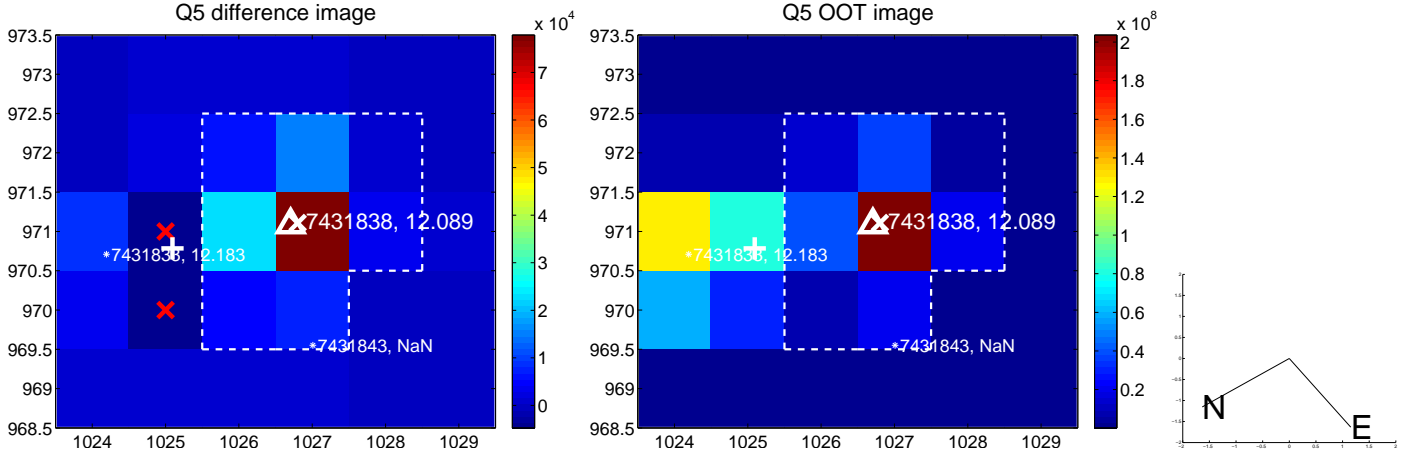


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

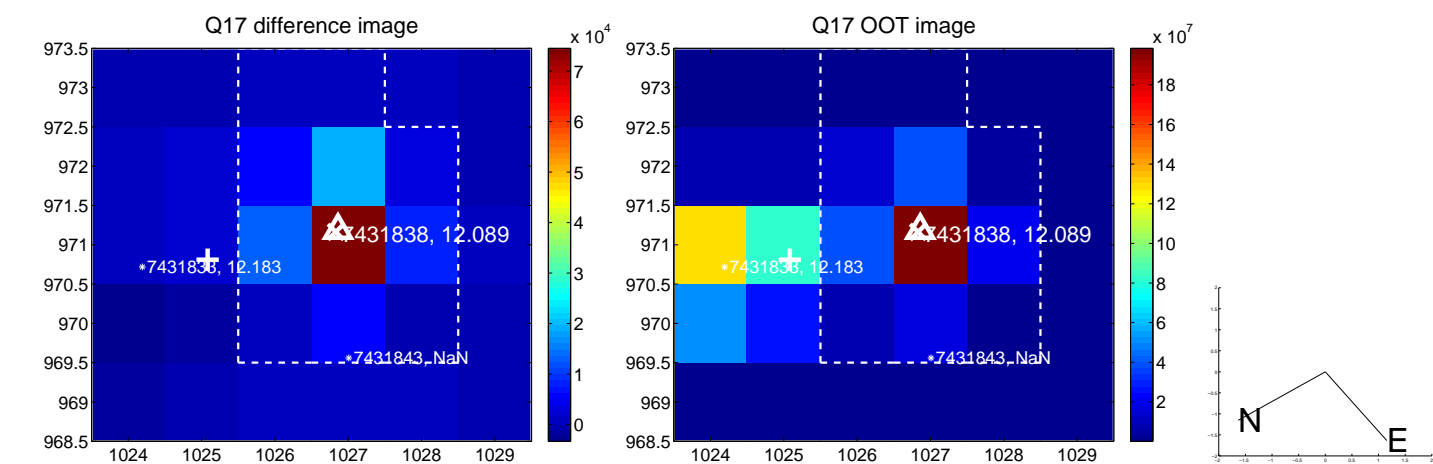
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



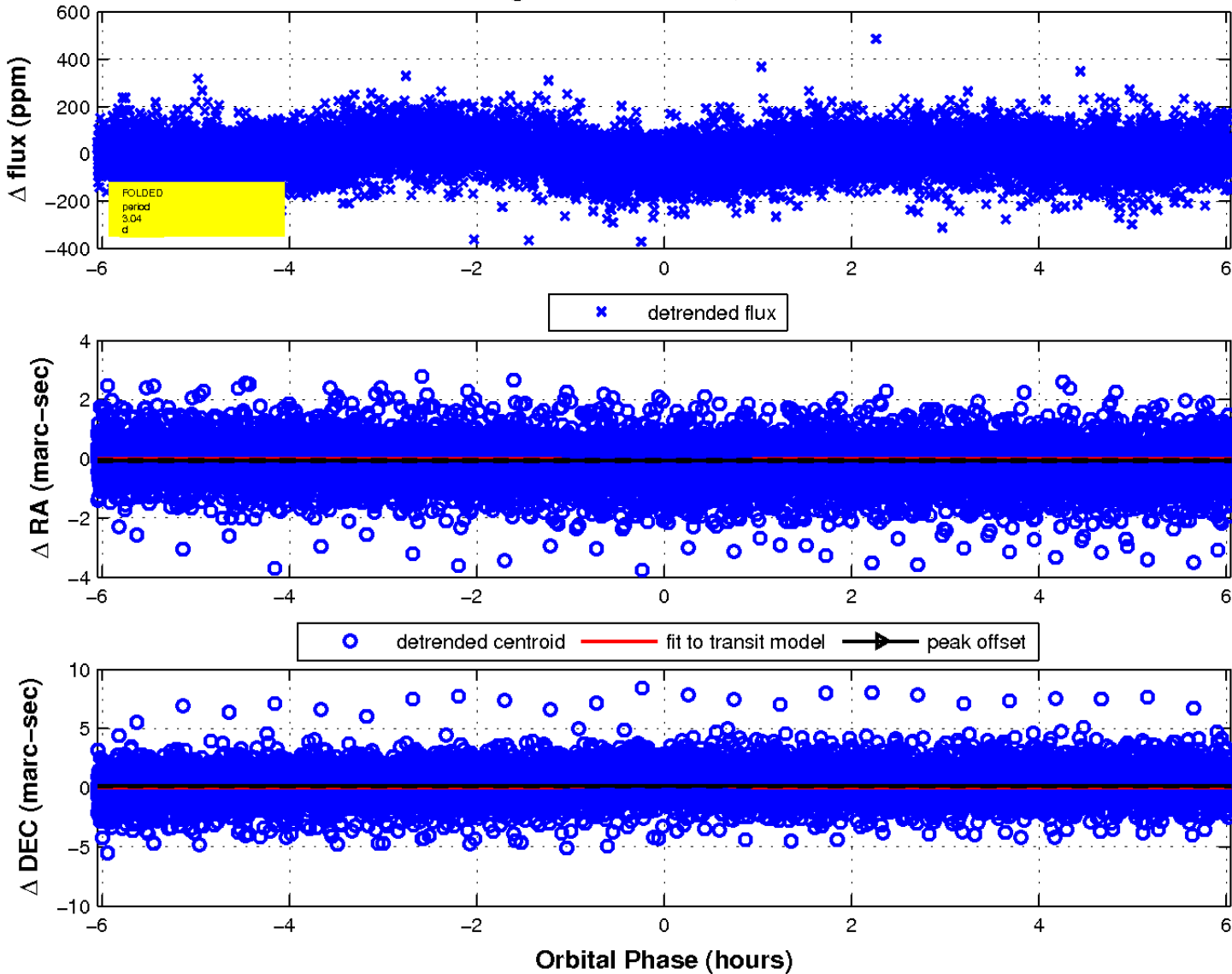
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

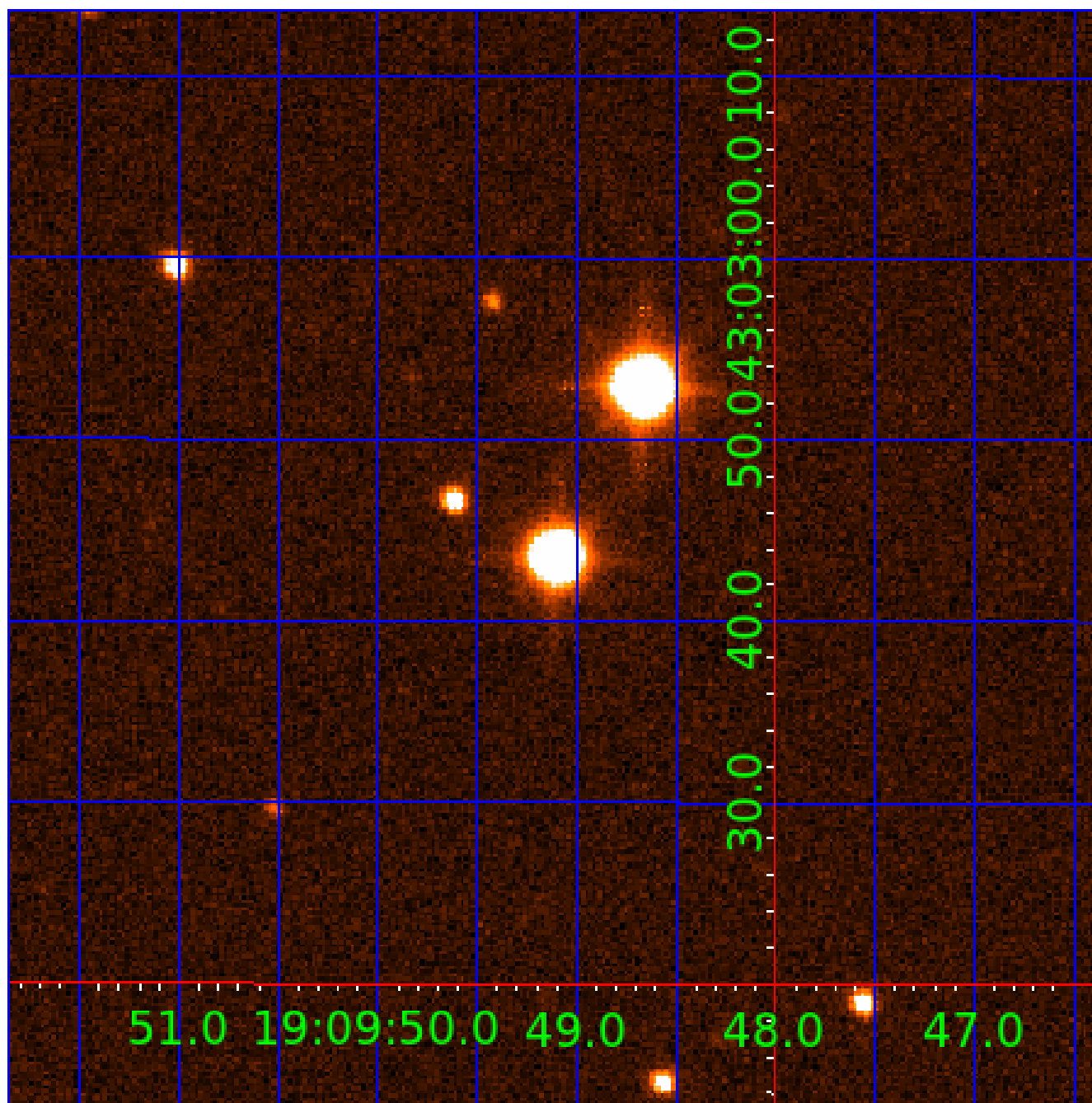


fluxWeightedCentroids, Planet 1 of 2



UKIRT Image

Declination



KIC 007431838

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})
007431838-01	OBS	No	3.037009	134.329176	43.8	2.017	19.4	18.9	2.04	8421	1.42	7108.02
007431838-02	OBS	No	0.607368	132.094157	13.1	4.791	13.6	16.2	2.04	8421	0.75	60777.18

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007431838-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_KIC_POS
007431838-02	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD—CENT_FEW_DIFFS

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

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

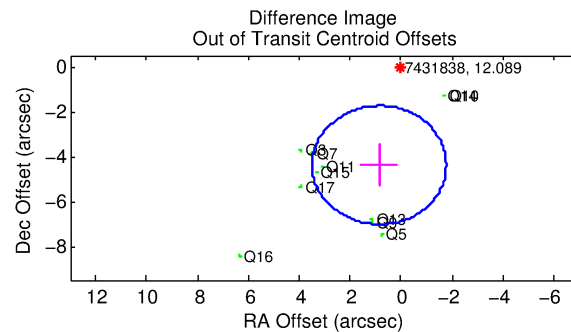
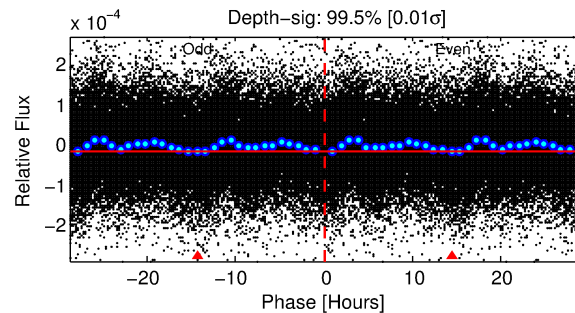
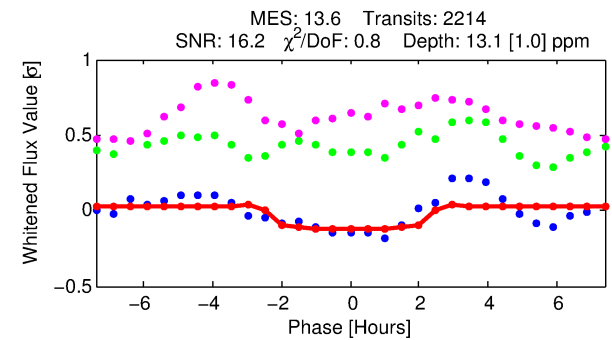
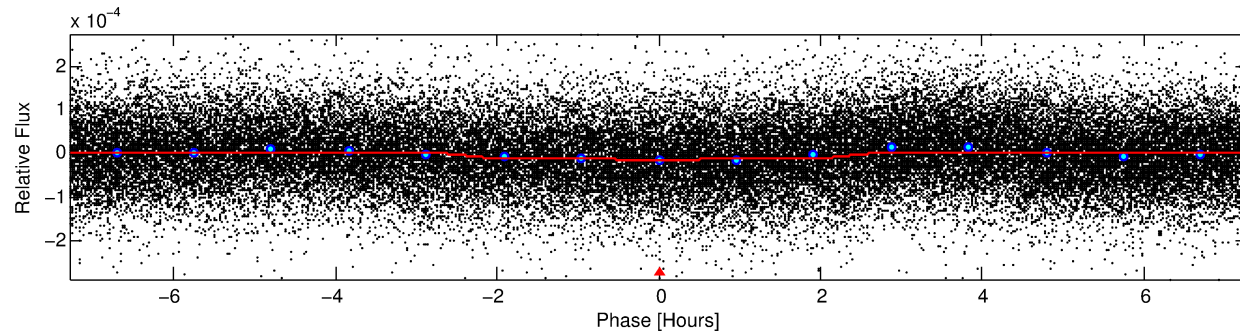
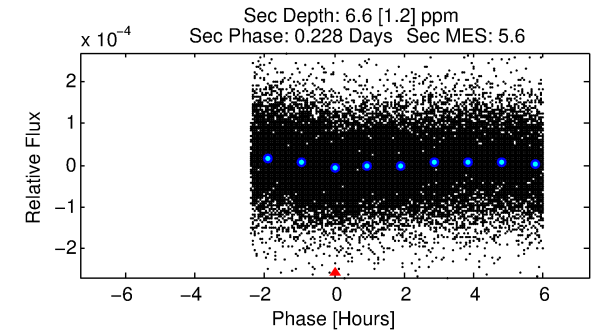
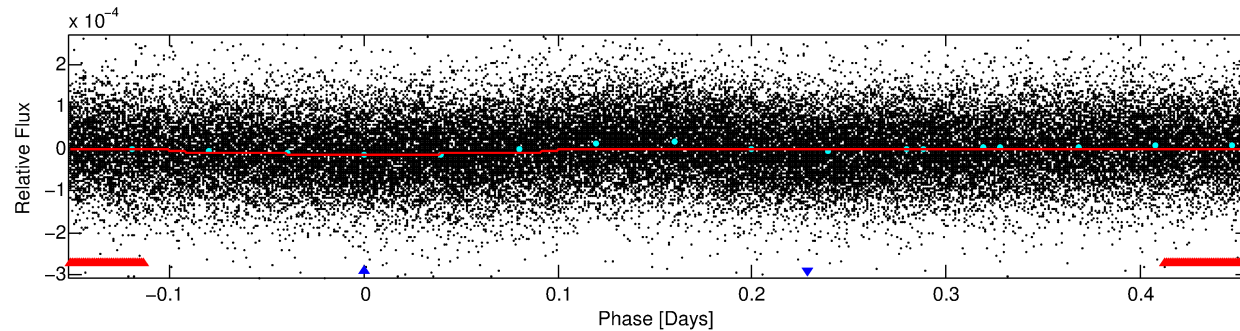
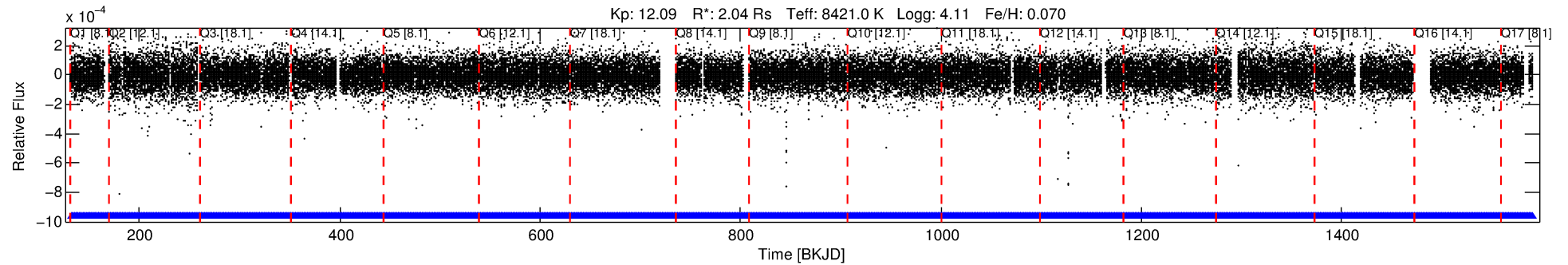
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 007431838-02

No Significant Match Found

DV One-Page Summary

KIC: 7431838 Candidate: 2 of 2 Period: 0.607 d



DV Fit Results:

Period = 0.60737 [0.00001] d
Epoch = 132.0942 [0.0025] BKJD
Rp/R* = 0.0034 [0.0018]
a/R* = 1.17 [0.97]
b = 0.10 [31.29]
Seff = 60777.18 [20769.61]
Teq = 4004 [342] K
Rp = 0.75 [0.44] Re
a = 0.0175 [0.0037] AU
Ag = 2.00 [2.22] [0.45σ]
Teffp = 7360 [2000] K [1.65σ]

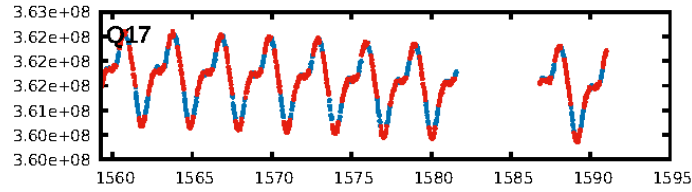
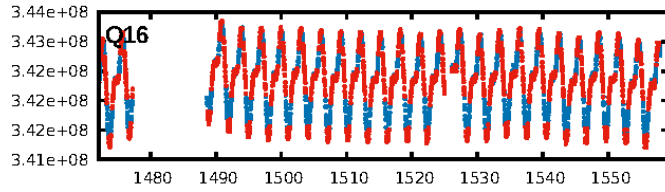
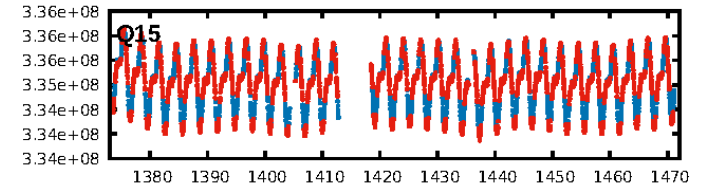
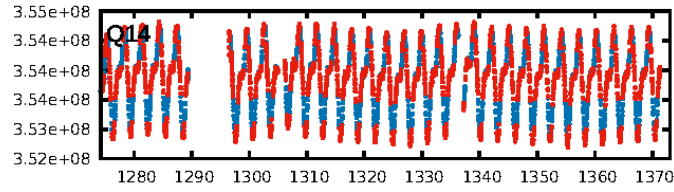
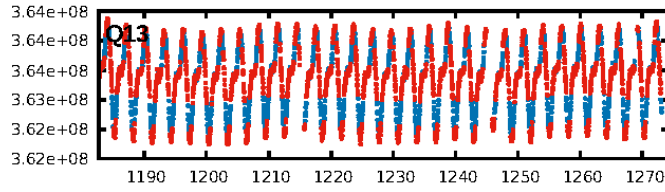
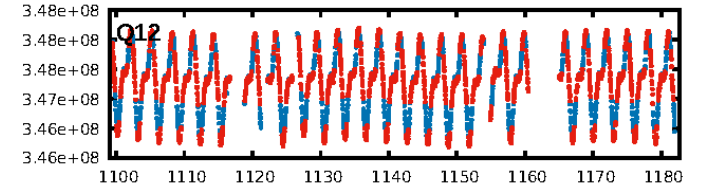
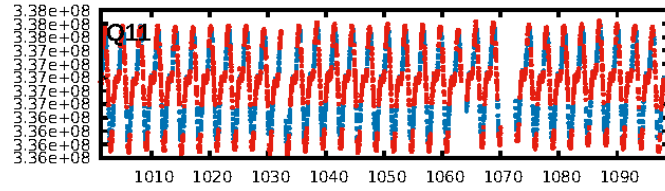
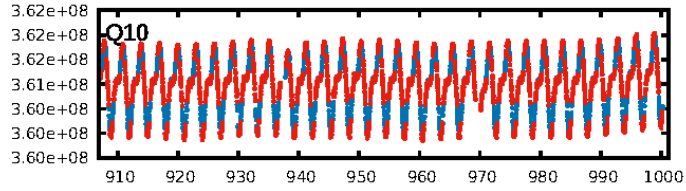
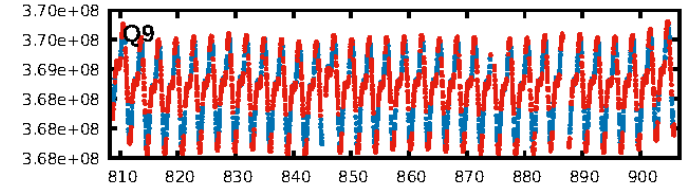
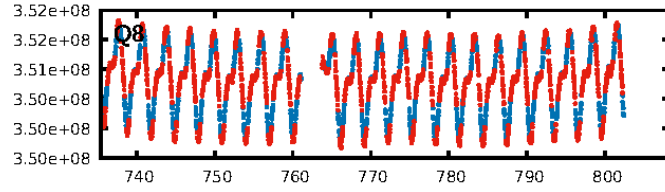
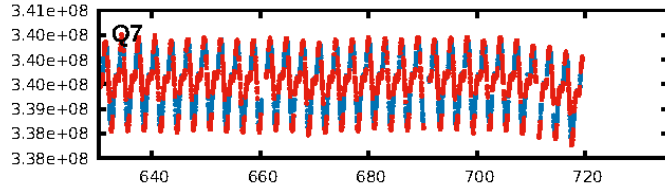
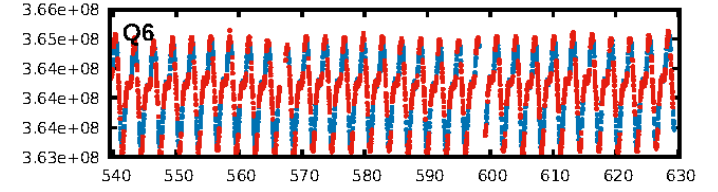
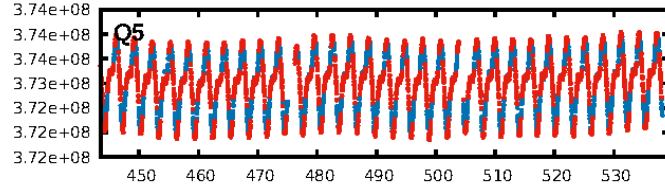
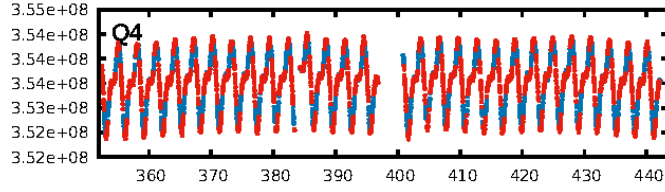
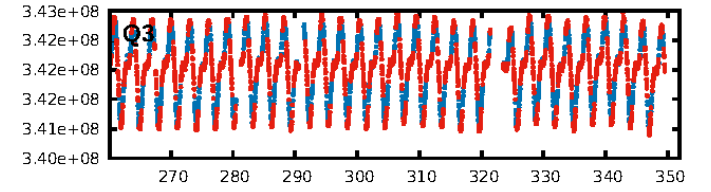
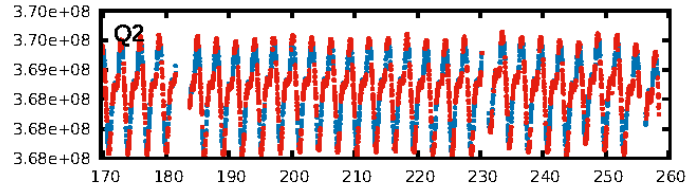
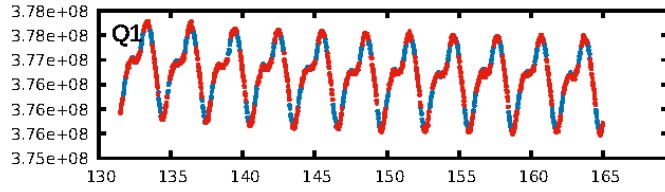
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [11.22σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGoF-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [2113/2113]
GhostDiagnostic-chr: 2.735
Centroid-sig: 0.0%
Centroid-so: 1.483 arcsec [1.43σ]
OotOffset-rm: 4.468 arcsec [5.08σ]
KicOffset-rm: 0.689 arcsec [1.46σ]
OotOffset-st: 2/4/1/4 [11]
KicOffset-st: 2/4/1/4 [11]
DiffImageQuality-fgm: 0.00 [0/11]
DiffImageOverlap-fno: 1.00 [17/17]

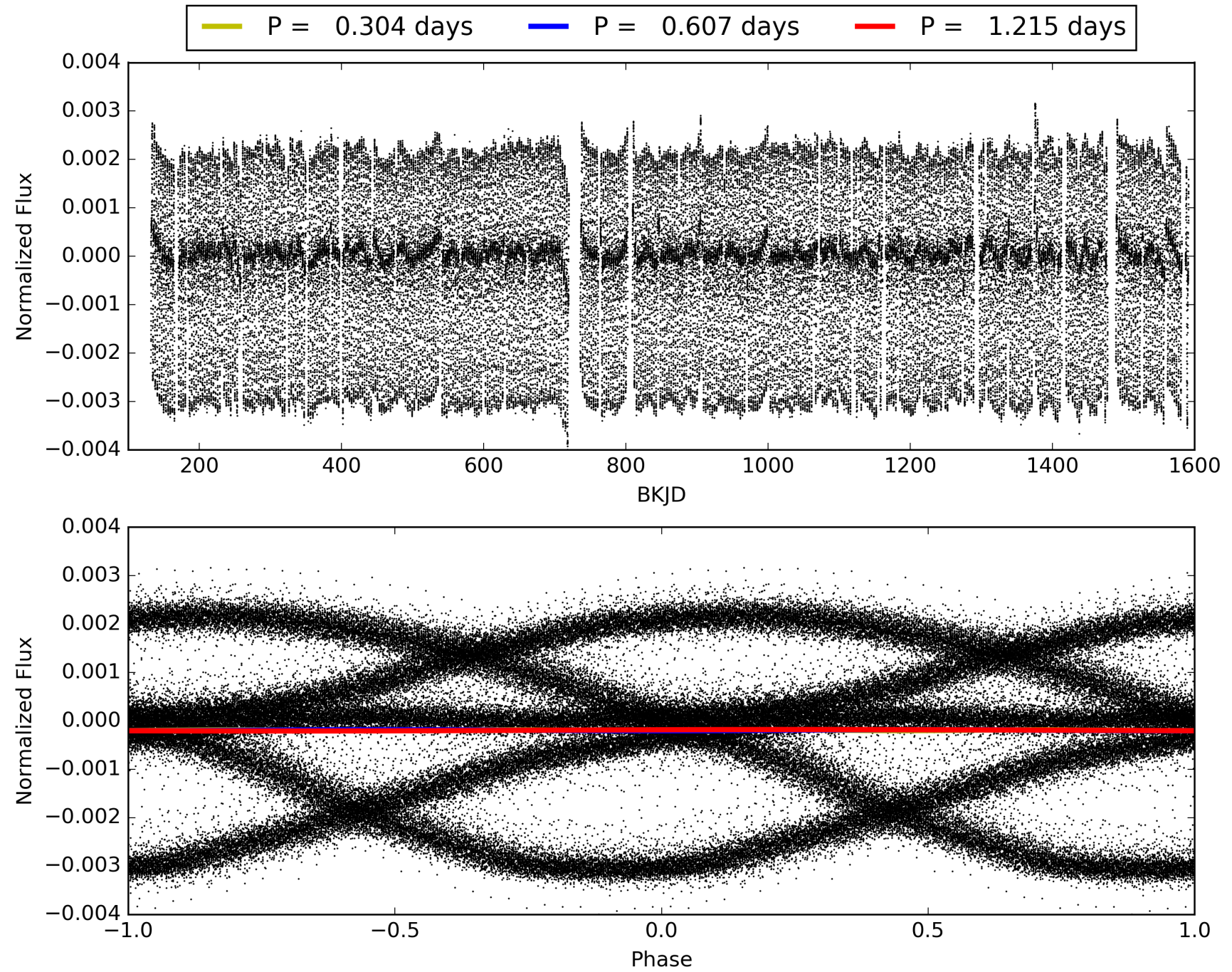
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 09:41:51 Z

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

TCE 007431838-02, PDC Light Curves

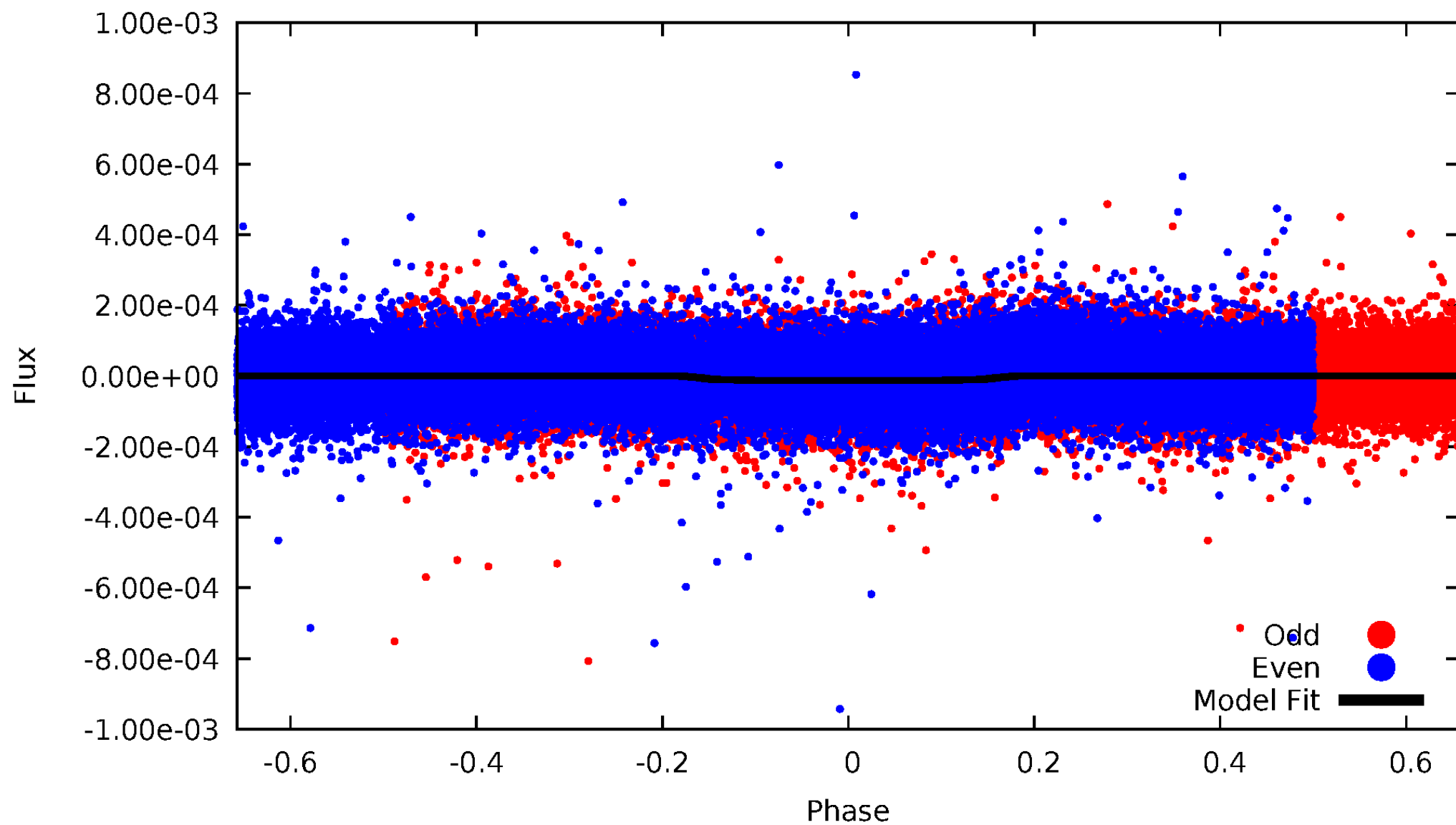


TCE 007431838-02



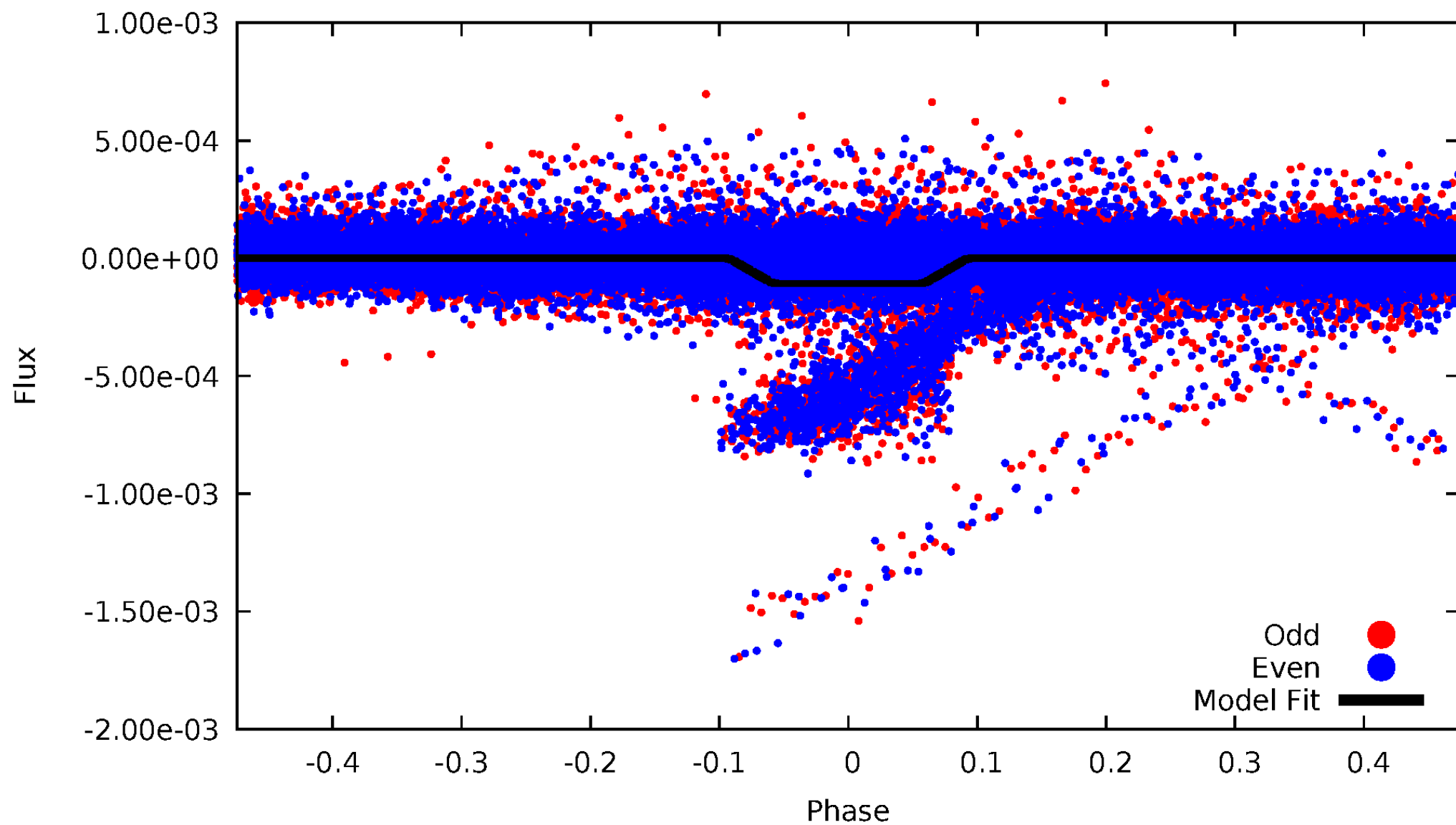
DV Odd/Even

TCE 007431838-02



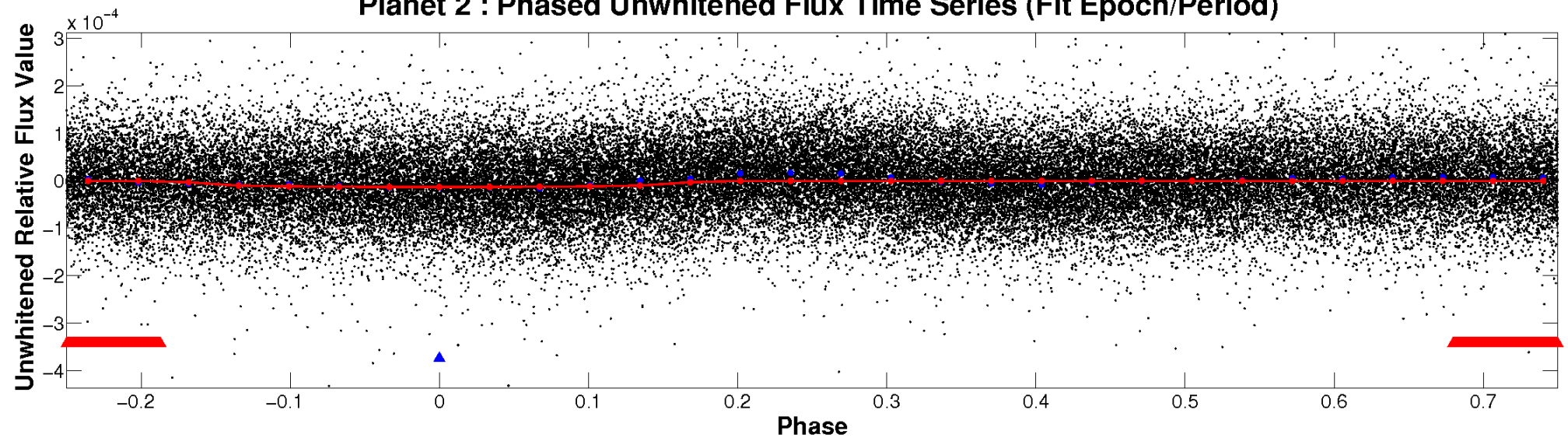
ALT Odd/Even

TCE 007431838-02

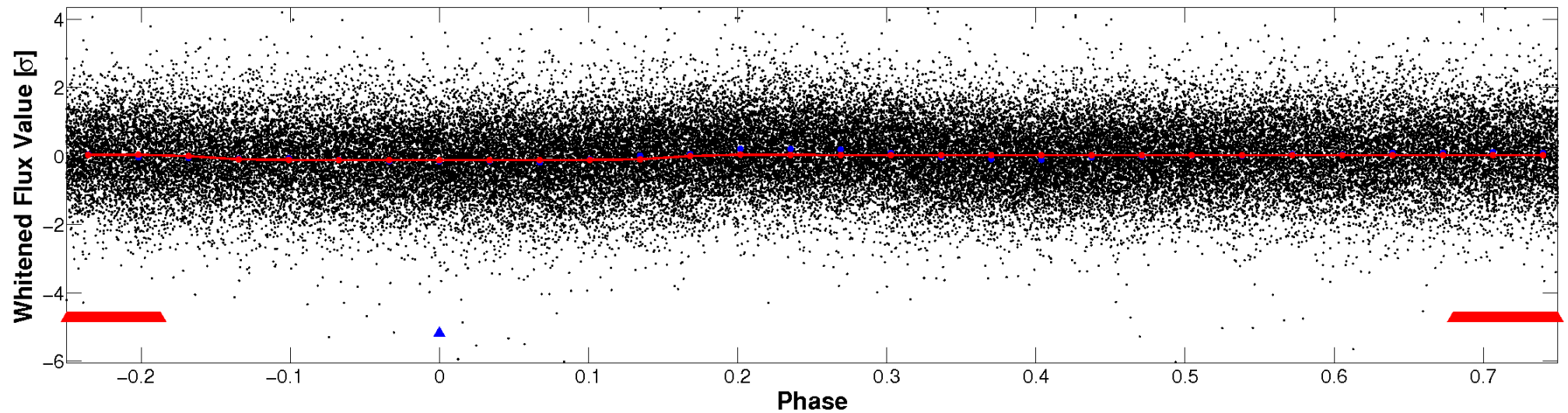


Non-Whitened Vs. Whitened Light Curve

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

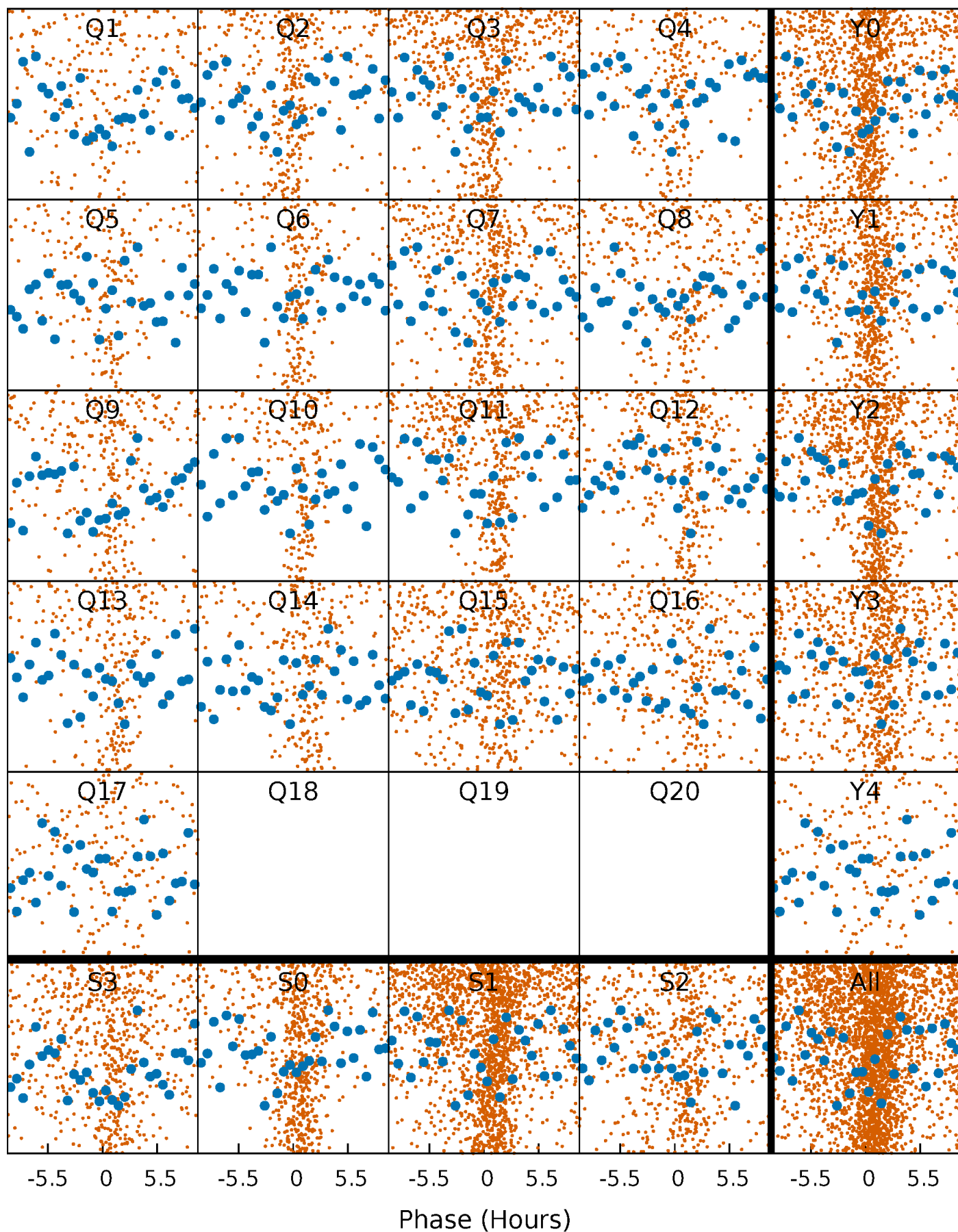


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



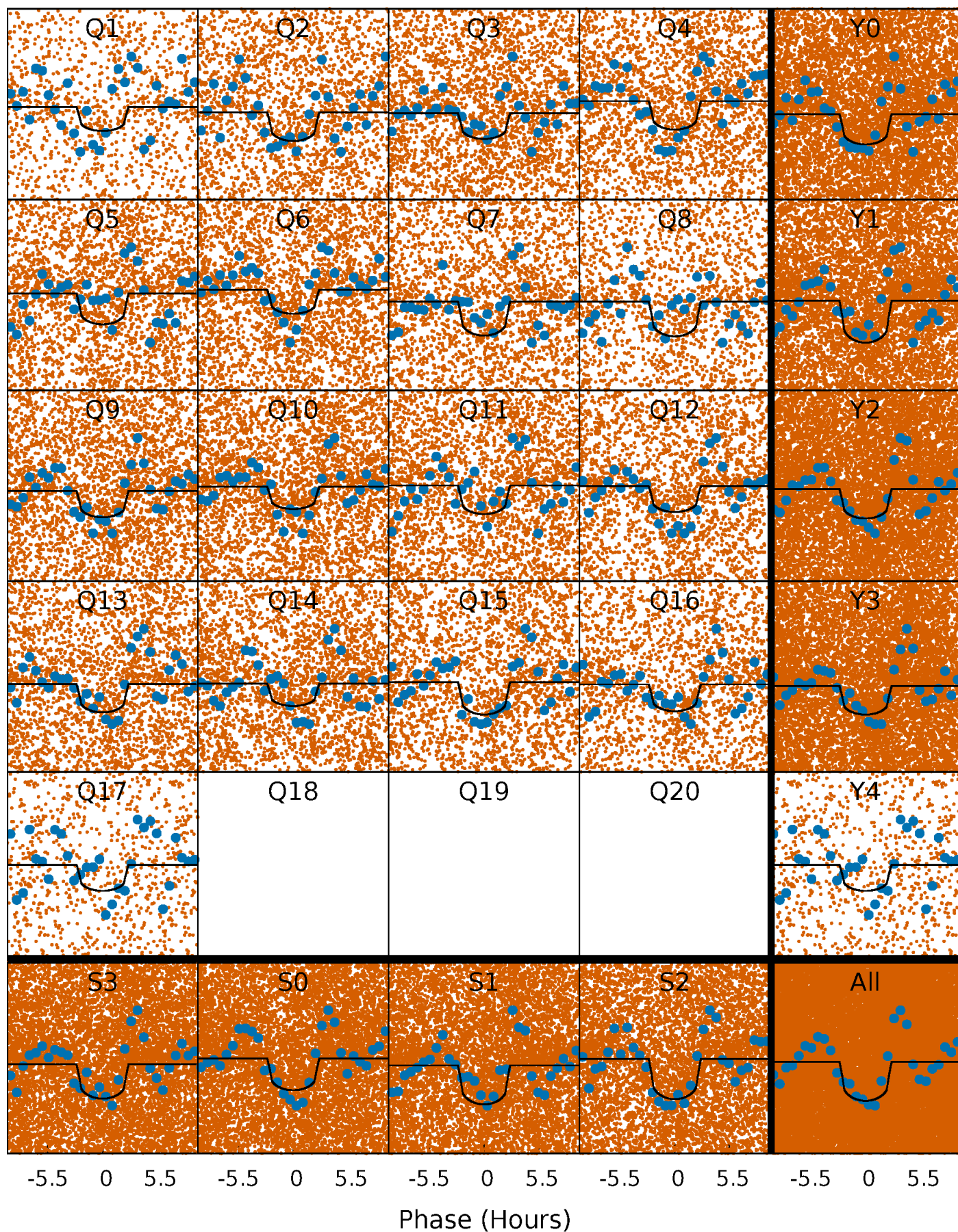
PDC Quarter-Phased Transit Curves

TCE 007431838-02 P= 0.607368 Days $T_0=132.094157$ (BKJD)



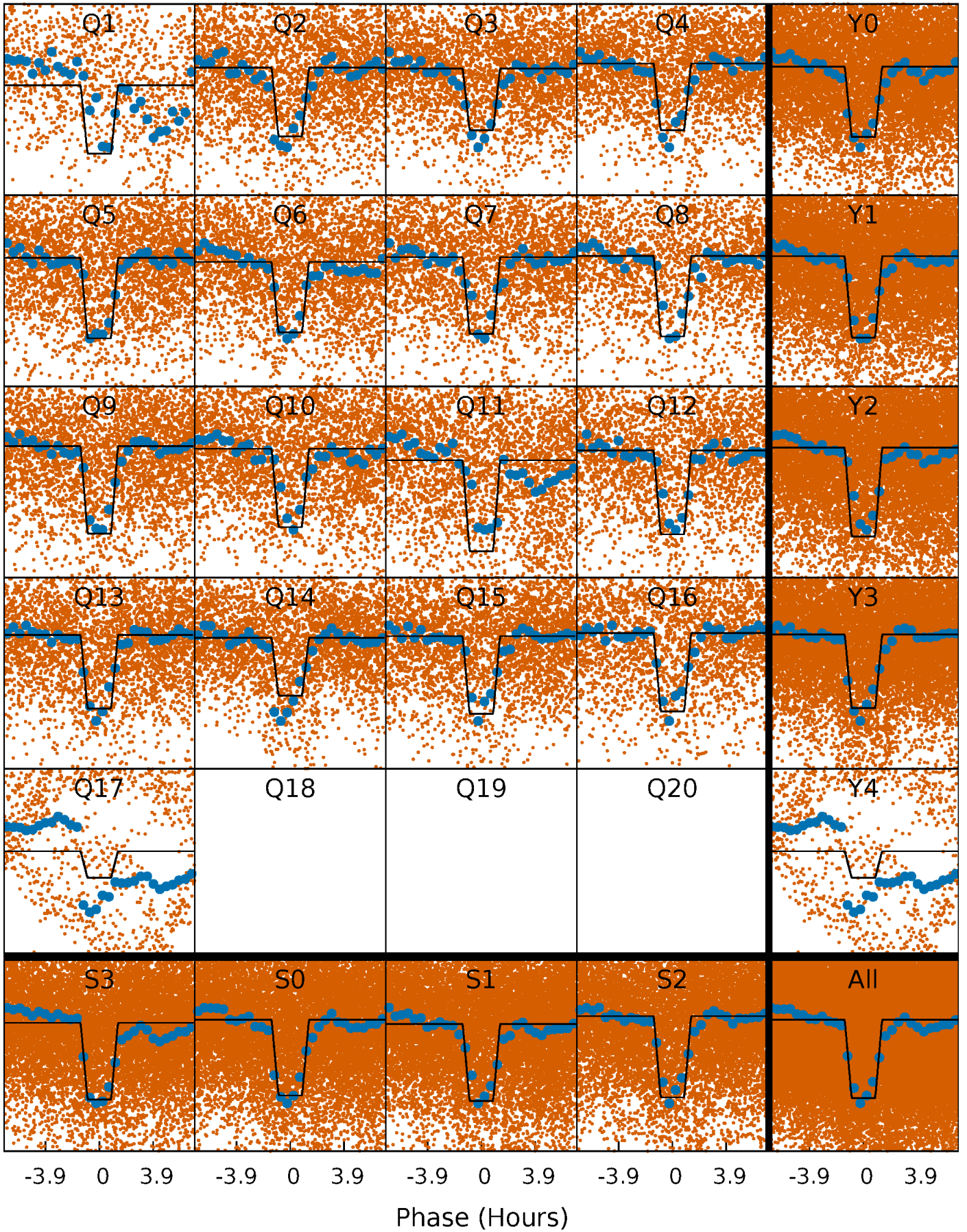
DV Quarter-Phased Transit Curves

TCE 007431838-02 P= 0.607368 Days $T_0=132.094157$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

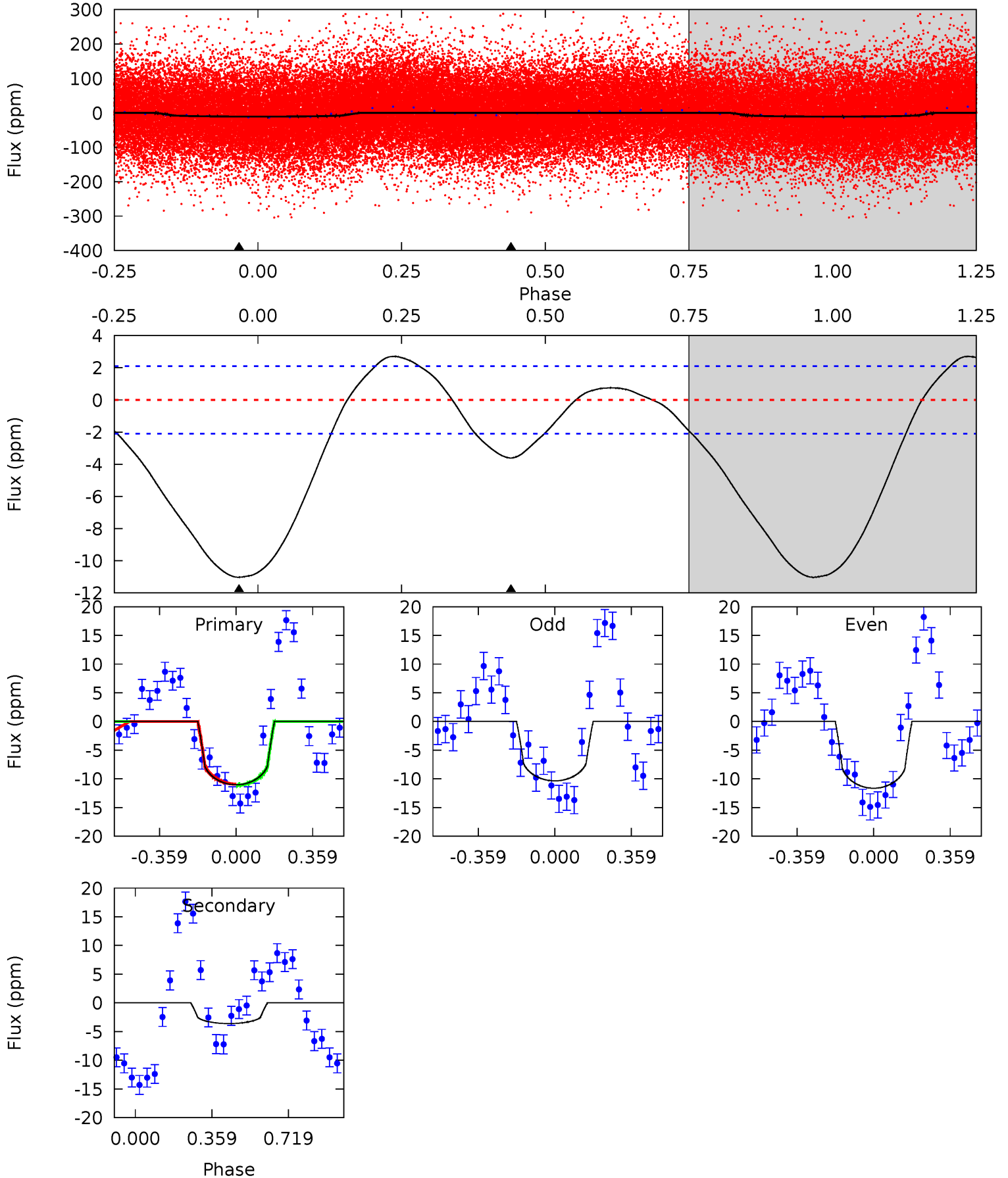
TCE 007431838-02 P= 0.607398 Days $T_0=132.098703$ (BKJD)



DV Model-Shift Uniqueness Test

007431838-02, P = 0.607368 Days, E = 131.486789 Days

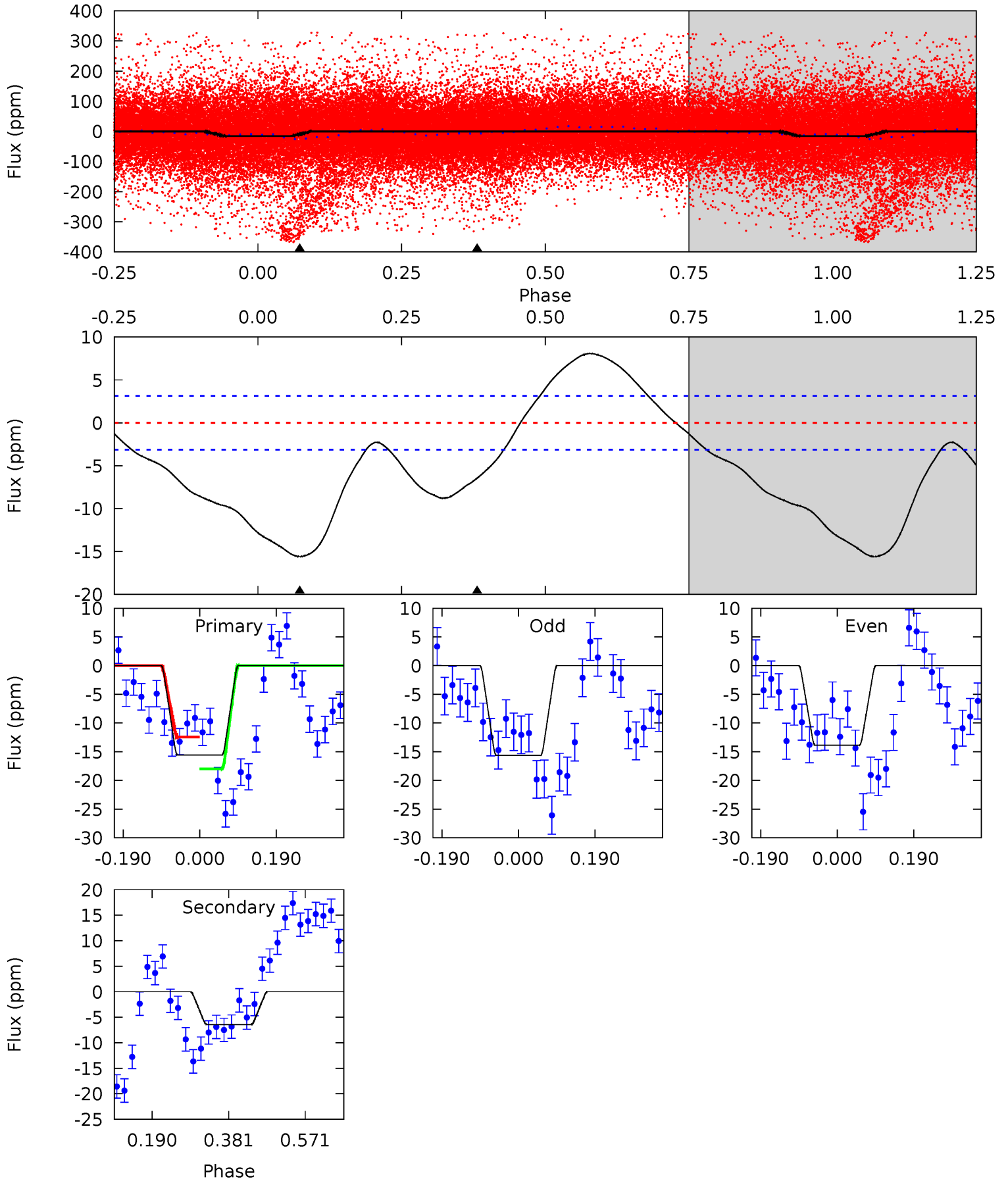
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
22.5	7.38	0	0	4.29	0.92	2.58	22.5	22.5	7.38	7.38	1.32	1.16	0.20	0.20



Alt Model-Shift Uniqueness Test

007431838-02, P = 0.607398 Days, E = 131.491305 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
22.0	9.08	0	0	4.43	1.31	7.07	22.0	22.0	9.08	9.08	1.26	4.82	0.34	0



Stellar Parameters For KIC 007431838

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	8421^{+232}_{-364}	$4.110^{+0.126}_{-0.154}$	$0.070^{+0.300}_{-0.450}$	$2.037^{+0.538}_{-0.404}$	$1.949^{+0.366}_{-0.366}$	$0.325^{+0.206}_{-0.147}$
	+3%/-4%	+3%/-4%	+429%/-643%	+26%/-20%	+19%/-19%	+63%/-45%
Source	KIC0	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 007431838-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-4 ± 0	$0.77^{+0.42}_{-0.38}$	5605^{+366}_{-337}	5575^{+2993}_{-1672}	$1.055^{+2.797}_{-0.636}$
Alt.	-6 ± 1	$2.29^{+0.52}_{-0.45}$	5573^{+378}_{-328}	-3699^{+6616}_{-448}	$0.203^{+0.115}_{-0.068}$

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

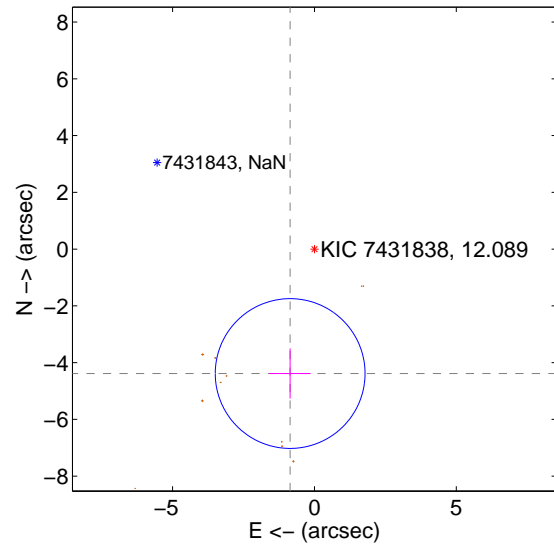
Supplemental centroid analysis for 007431838-02. Kepler magnitude: 12.09. Transit SNR 16.18

There are 0 quarters with good PRF difference image offsets

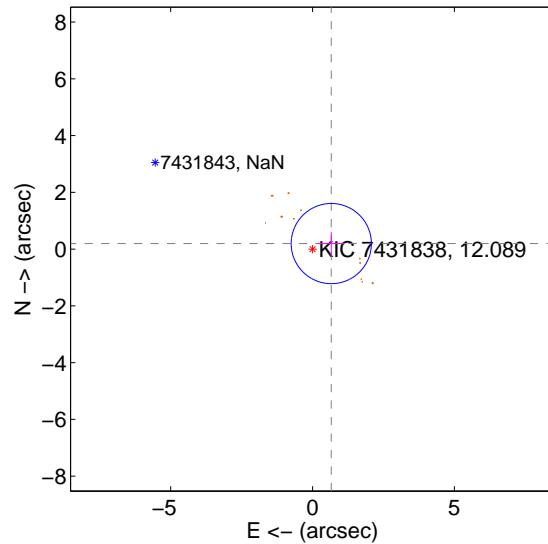
The OOT PRF centroid is offset from the target star catalog position by about 7.09 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	4.468 ± 0.880	5.08	0.856 ± 0.722	-4.385 ± 0.885
PRF-fit source offset from KIC position	0.689 ± 0.471	1.46	-0.661 ± 0.476	0.194 ± 0.406
photometric centroid source offset	1.48 ± 1.03	1.43	0.75 ± 0.67	-1.28 ± 1.13

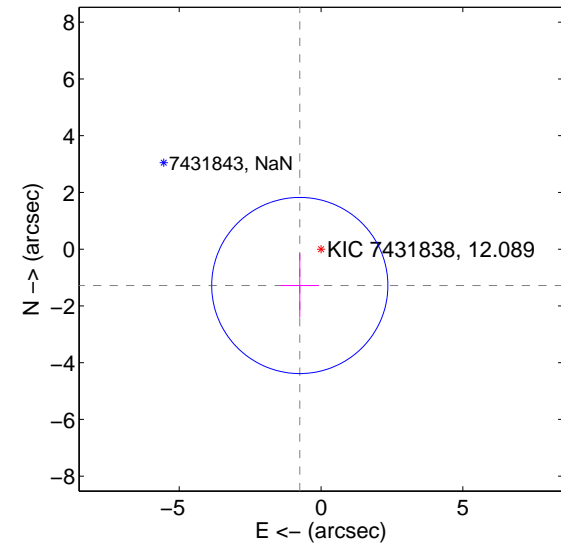
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

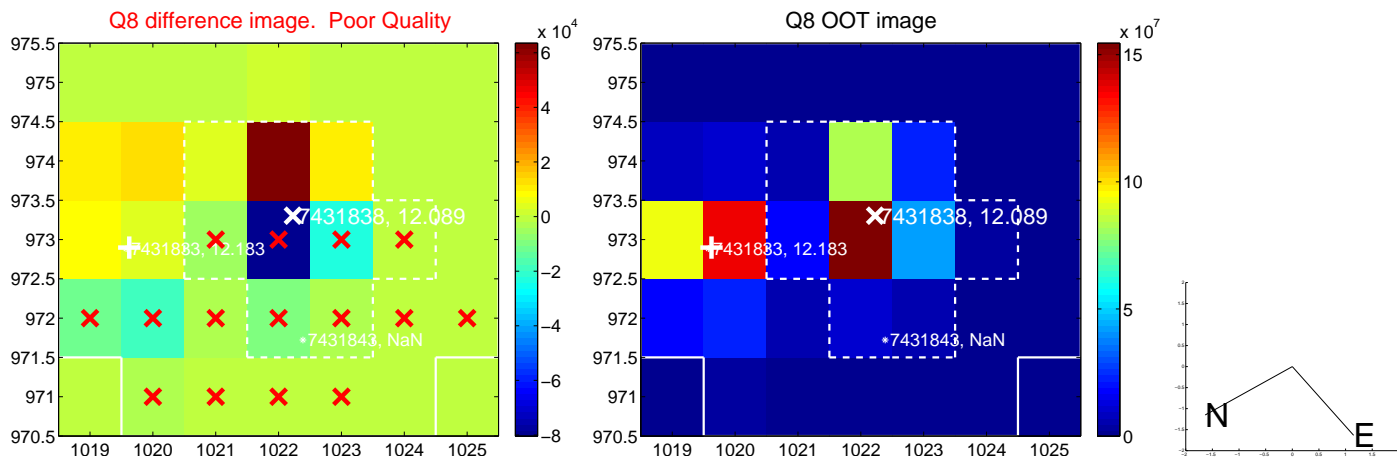
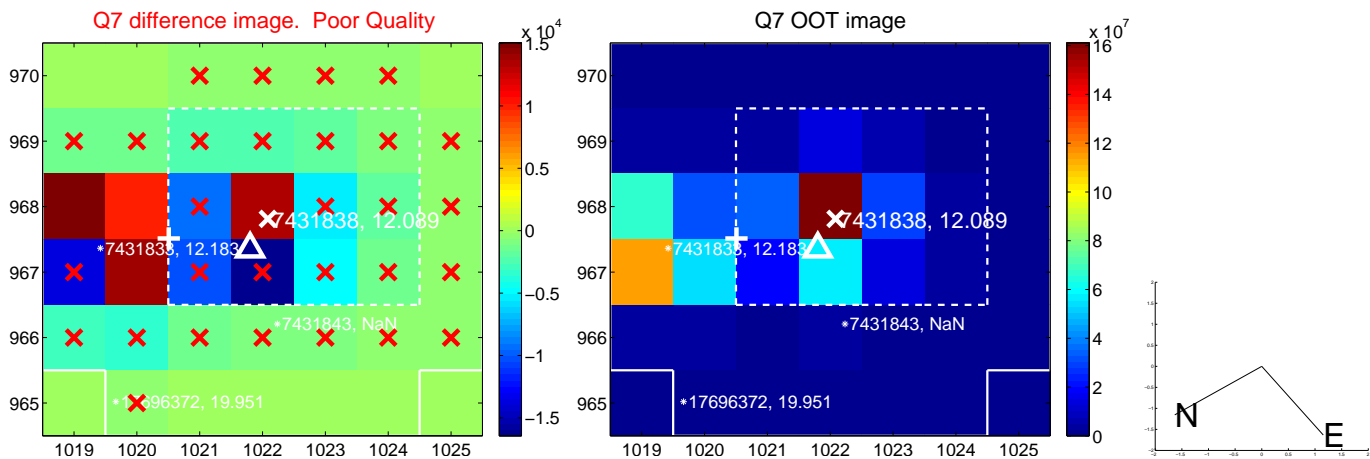
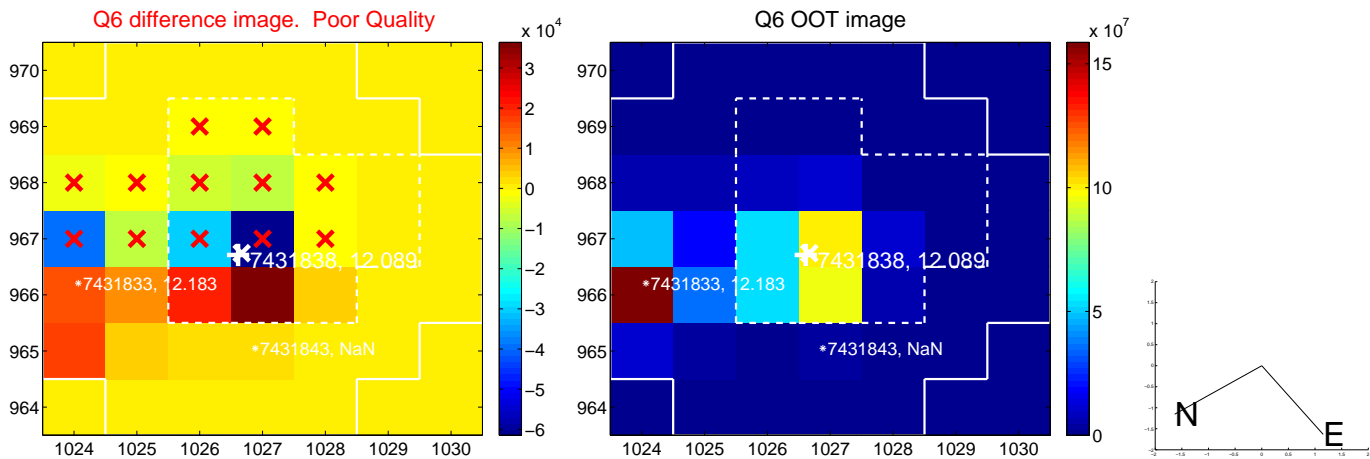
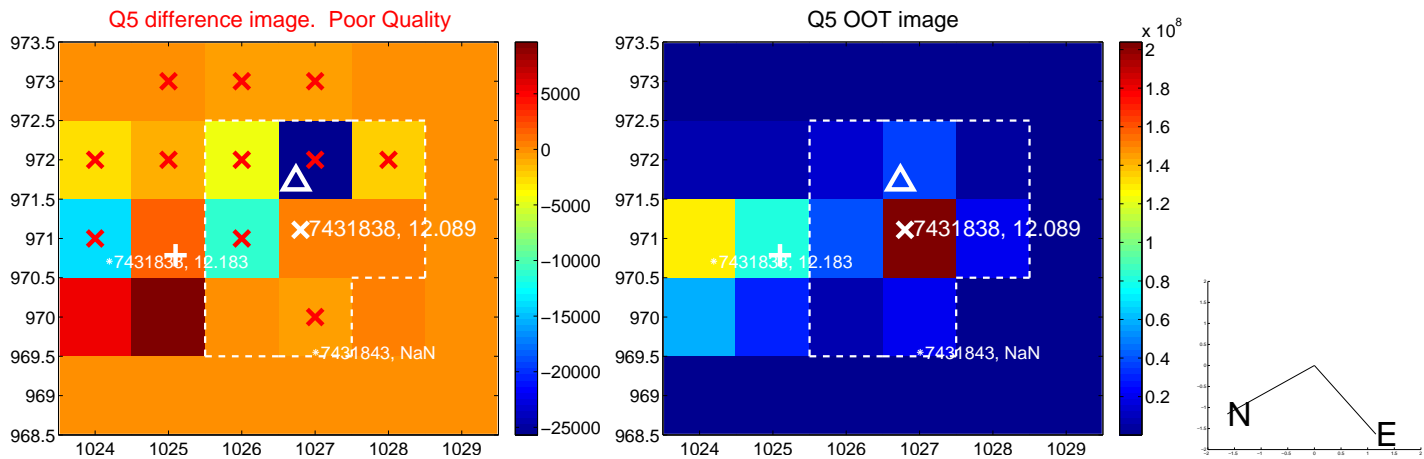


offset from photometric centroids

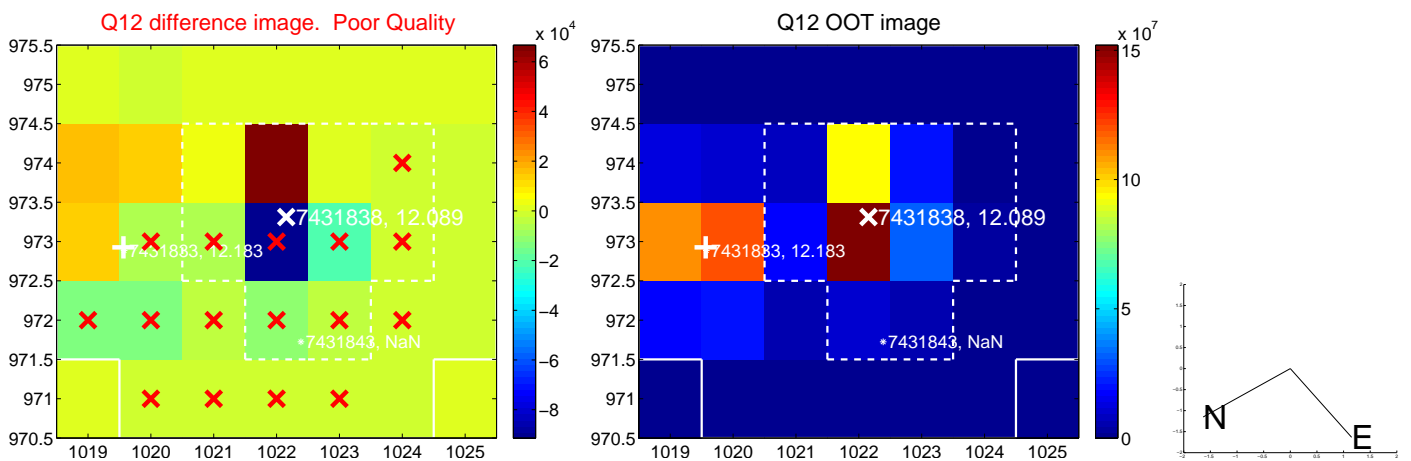
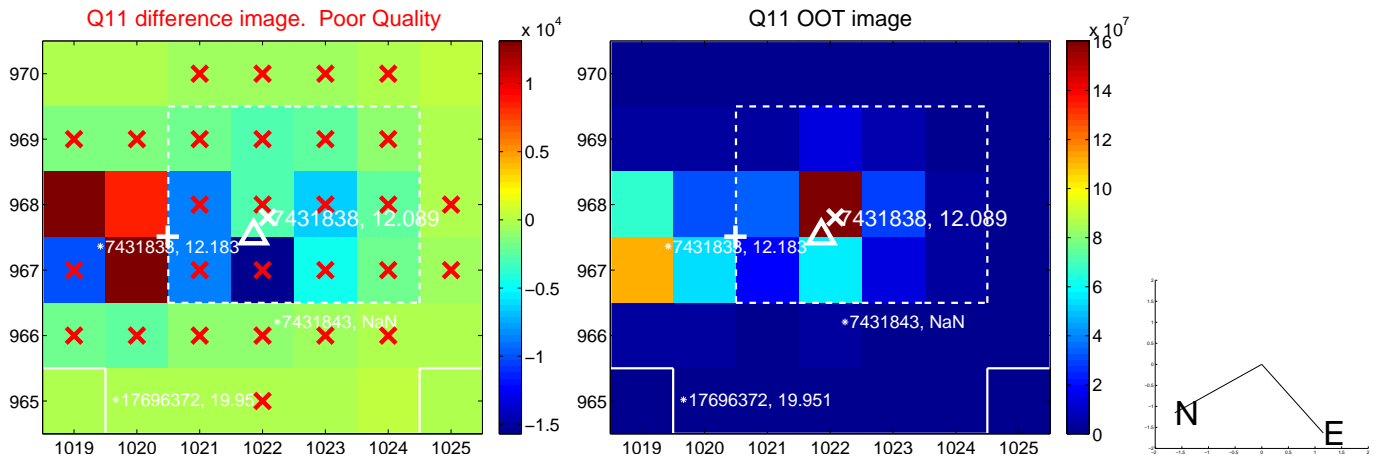
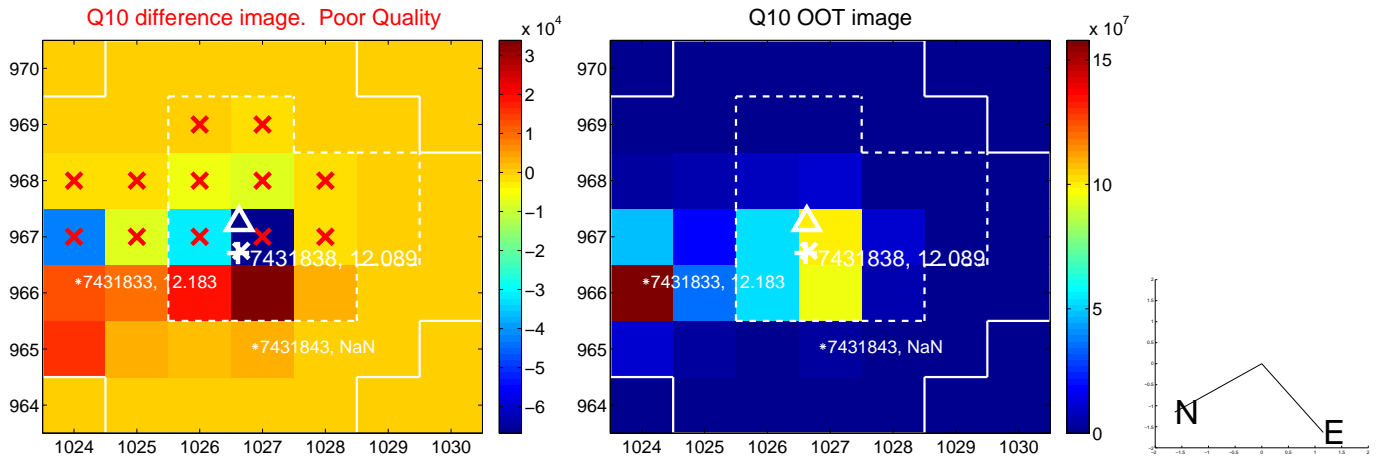
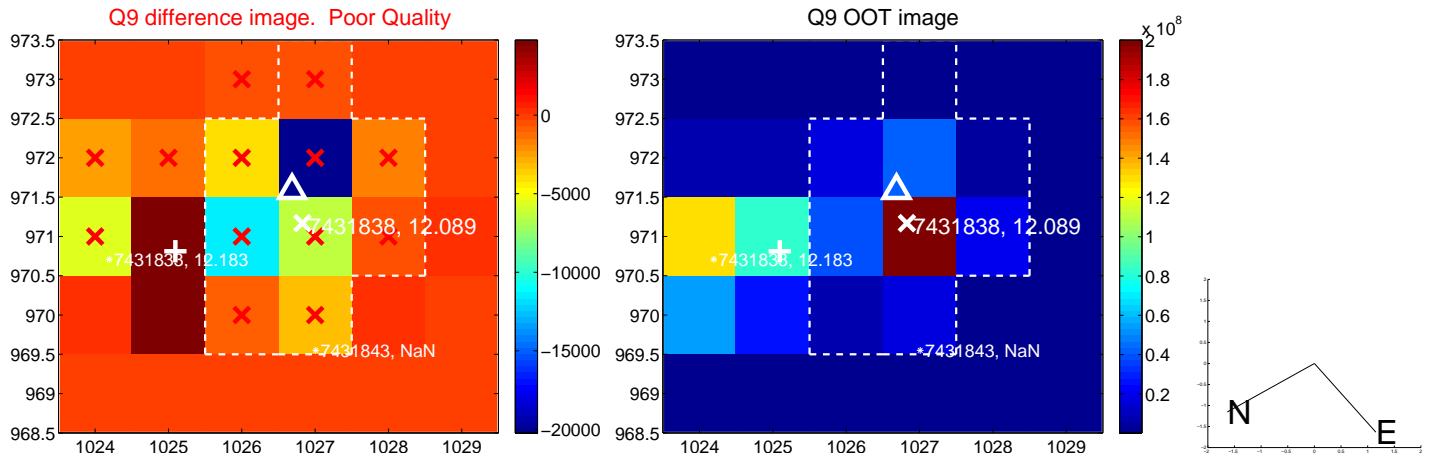


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

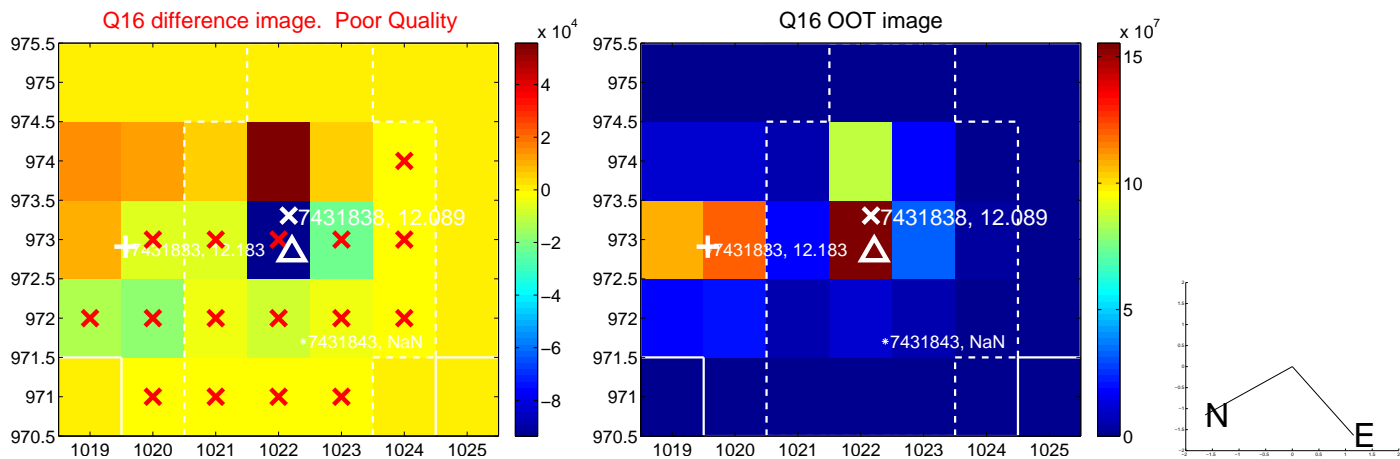
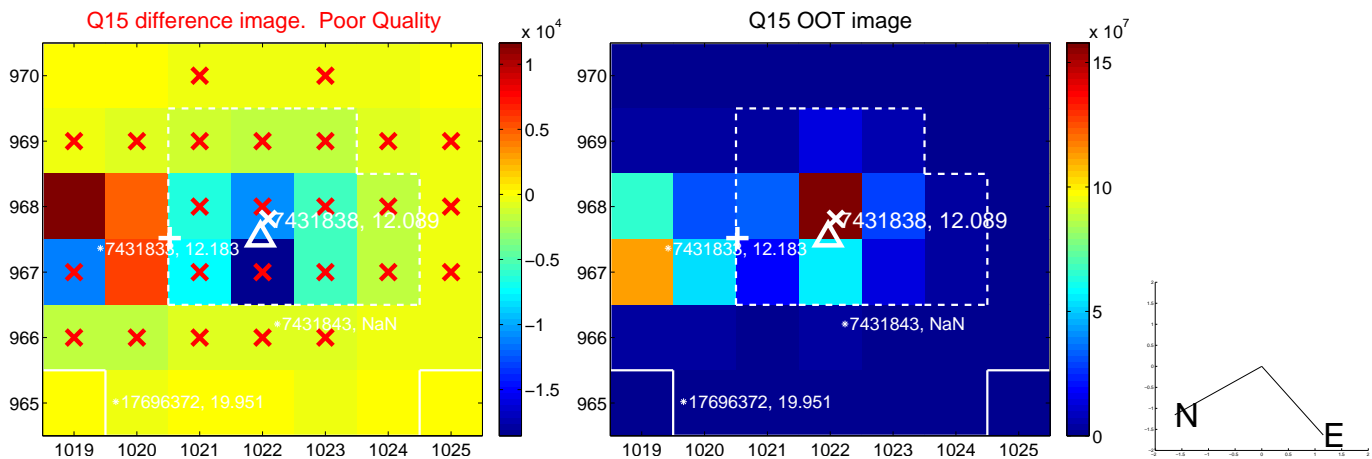
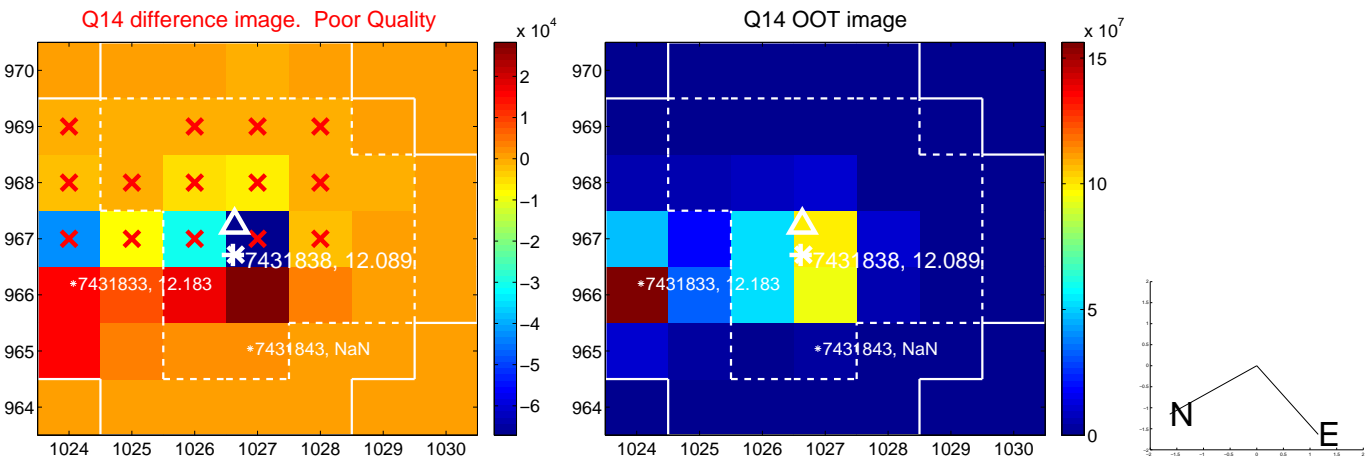
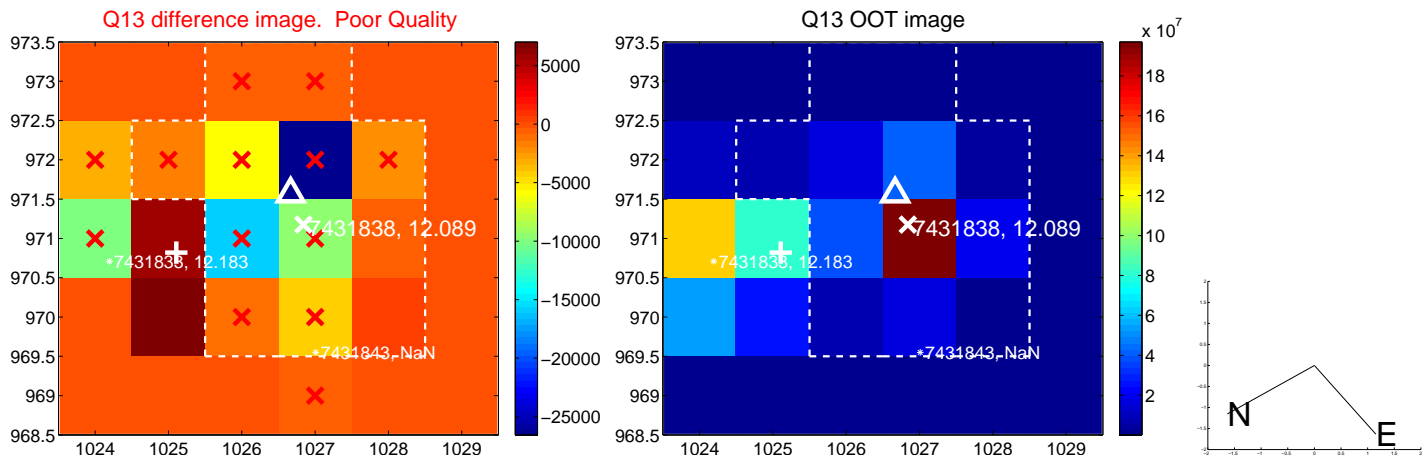
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



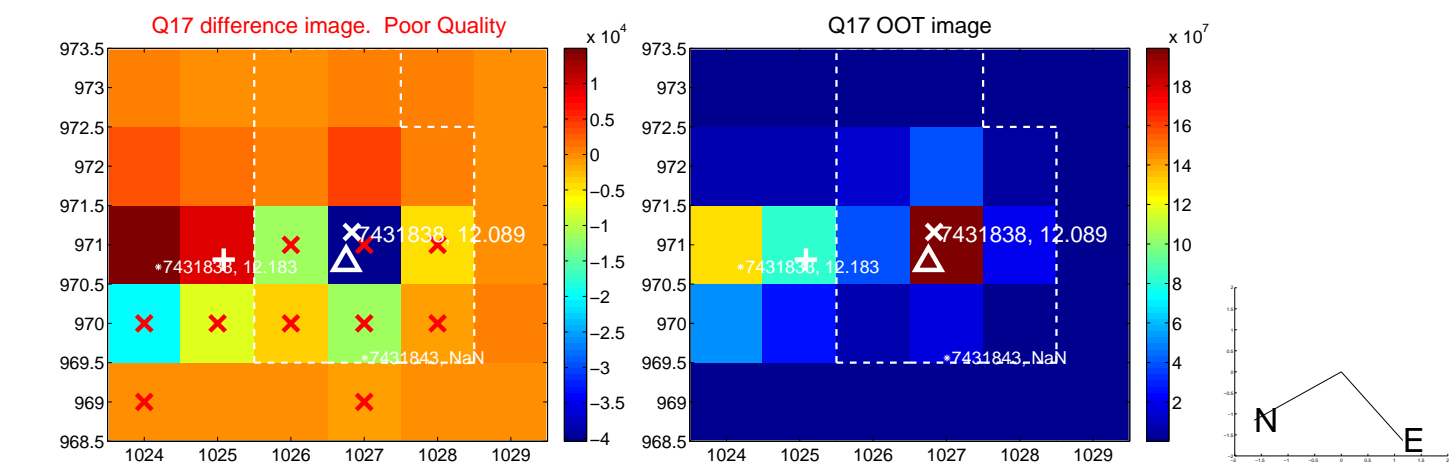
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



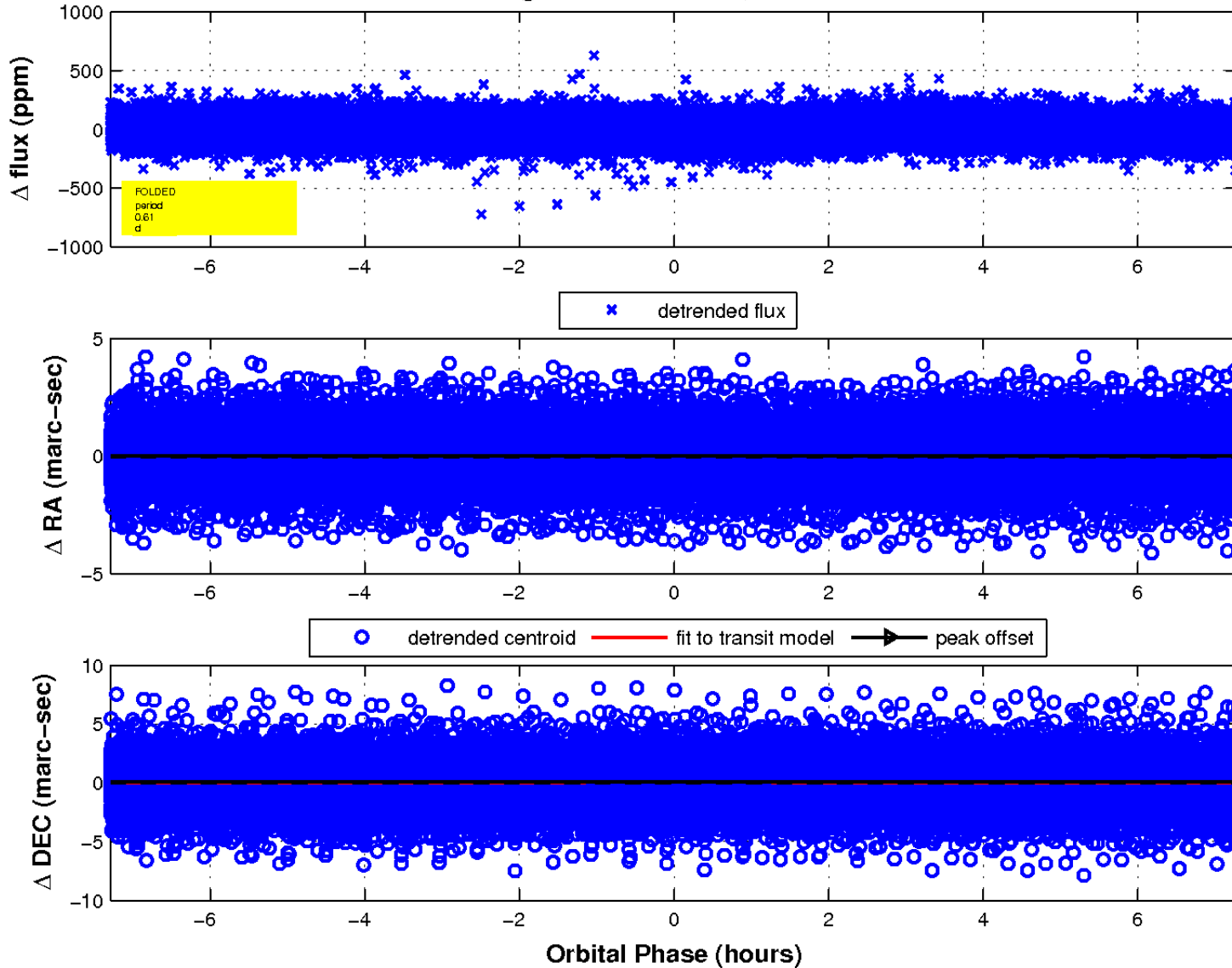
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 2 of 2



UKIRT Image

Declination

