

KIC 012647018

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})
012647018-01	OBS	No	1.296908	132.535743	20.8	9.030	8.3	11.1	1.65	5657	0.74	4448.09
012647018-02	OBS	No	53.083783	172.243518	341.8	3.269	11.3	10.6	1.65	5657	3.64	31.53
012647018-03	OBS	No	89.370051	187.811407	293.6	4.582	9.1	8.9	1.65	5657	3.44	15.74
012647018-04	OBS	No	24.853298	152.045089	100.5	3.762	9.0	5.1	1.65	5657	1.76	86.74
012647018-05	OBS	No	27.619166	134.768352	320.1	1.346	11.5	11.7	1.65	5657	2.93	75.35
012647018-06	OBS	No	32.503712	147.954093	220.4	4.386	9.5	11.5	1.65	5657	2.46	60.65
012647018-07	OBS	No	33.918495	133.285052	183.5	4.022	8.4	8.3	1.65	5657	2.47	57.30
012647018-09	OBS	No	36.652668	140.779741	233.3	3.001	8.8	8.7	1.65	5657	2.92	51.67

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
012647018-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT
012647018-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
012647018-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
012647018-04	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS—HALO_GHOST
012647018-05	OBS	FP	0.00	1	0	1	0	TRANS_GAPPED—MOD_NONUNIQ_DV—CENT_FEW_MEAS—HALO_GHOST
012647018-06	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS—HALO_GHOST
012647018-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
012647018-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—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.

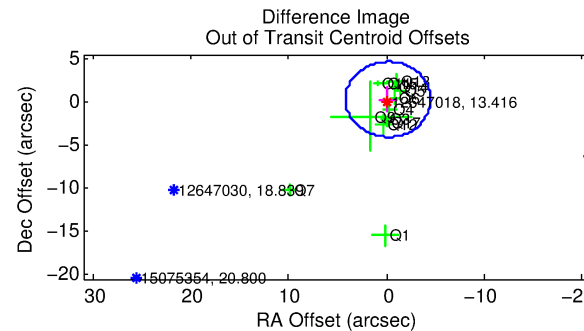
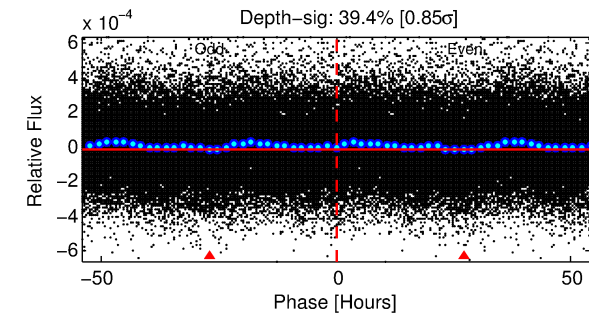
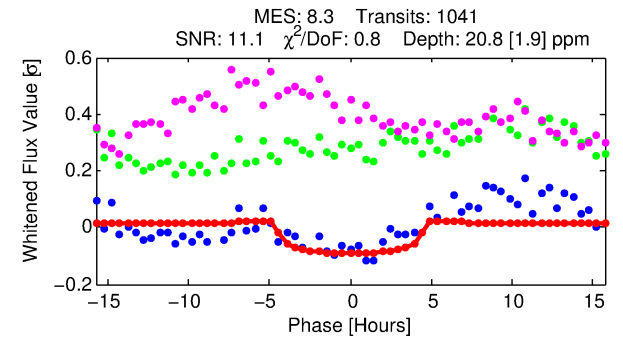
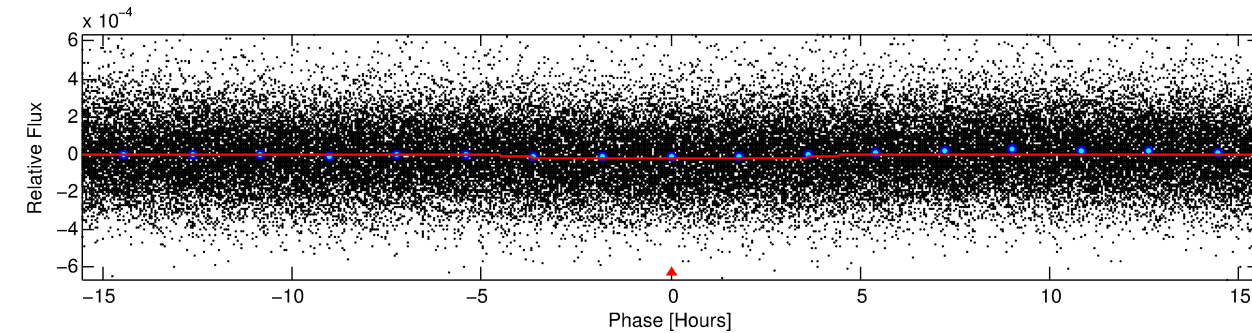
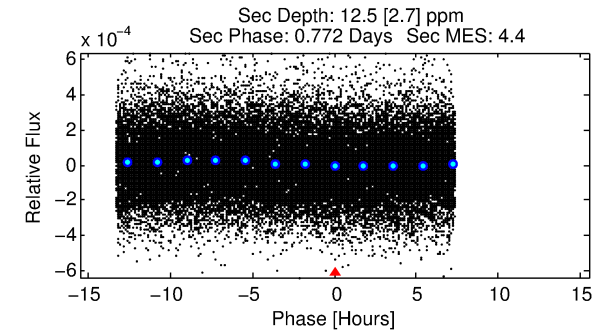
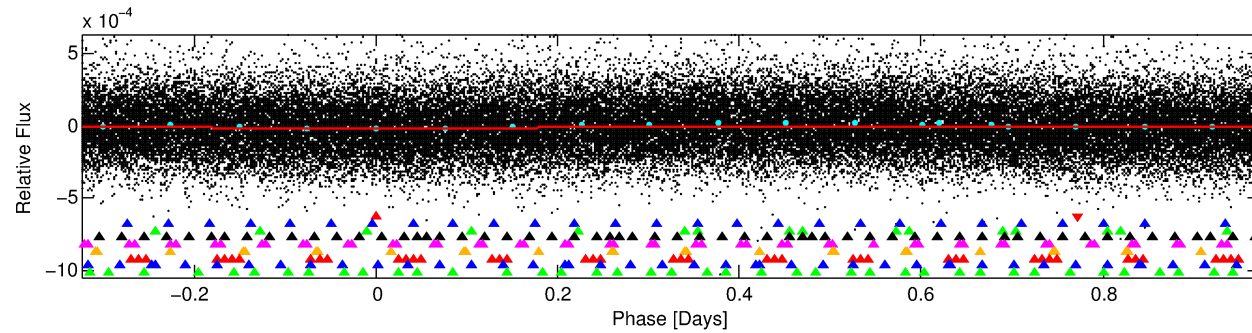
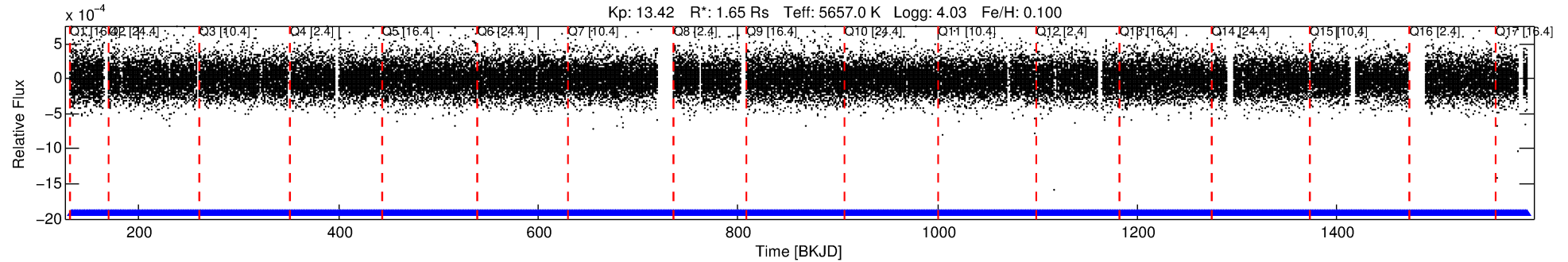
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 012647018-01

No Significant Match Found

DV One-Page Summary

KIC: 12647018 Candidate: 1 of 9 Period: 1.297 d



DV Fit Results:

Period = 1.29691 [0.00002] d
Epoch = 132.5357 [0.0071] BKJD
Rp/R* = 0.0041 [0.0045]
a/R* = 1.27 [2.21]
b = 0.06 [77.53]
Seff = 4448.09 [3159.89]
Teq = 2082 [370] K
Rp = 0.74 [0.86] Re
a = 0.0237 [0.0099] AU
Ag = 7.02 [16.25] [0.37σ]
Teffp = 5241 [2892] K [1.08σ]

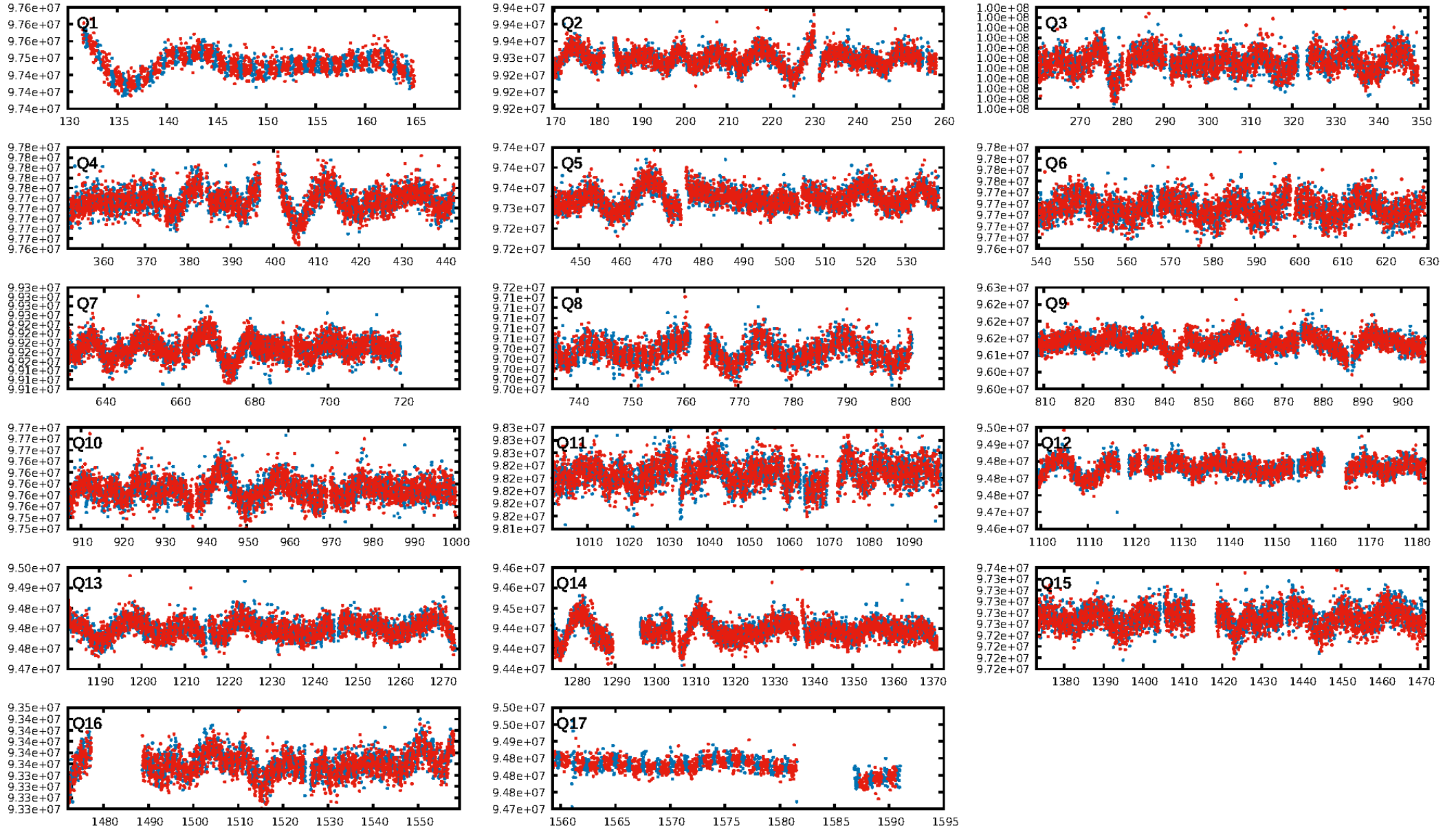
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [57.79σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 1.32e-13
RollingBand-fgt: 1.00 [994/994]
GhostDiagnostic-chr: 33.07
Centroid-sig: 41.8%
Centroid-so: 1.600 arcsec [1.41σ]
OotOffset-rm: 0.326 arcsec [0.22σ]
OotOffset-st: 2/4/2/5 [13]
KicOffset-rm: 0.518 arcsec [0.36σ]
KicOffset-st: 2/4/2/5 [13]
DiffImageQuality-fgm: 0.54 [7/13]
DiffImageOverlap-fno: 1.00 [17/17]

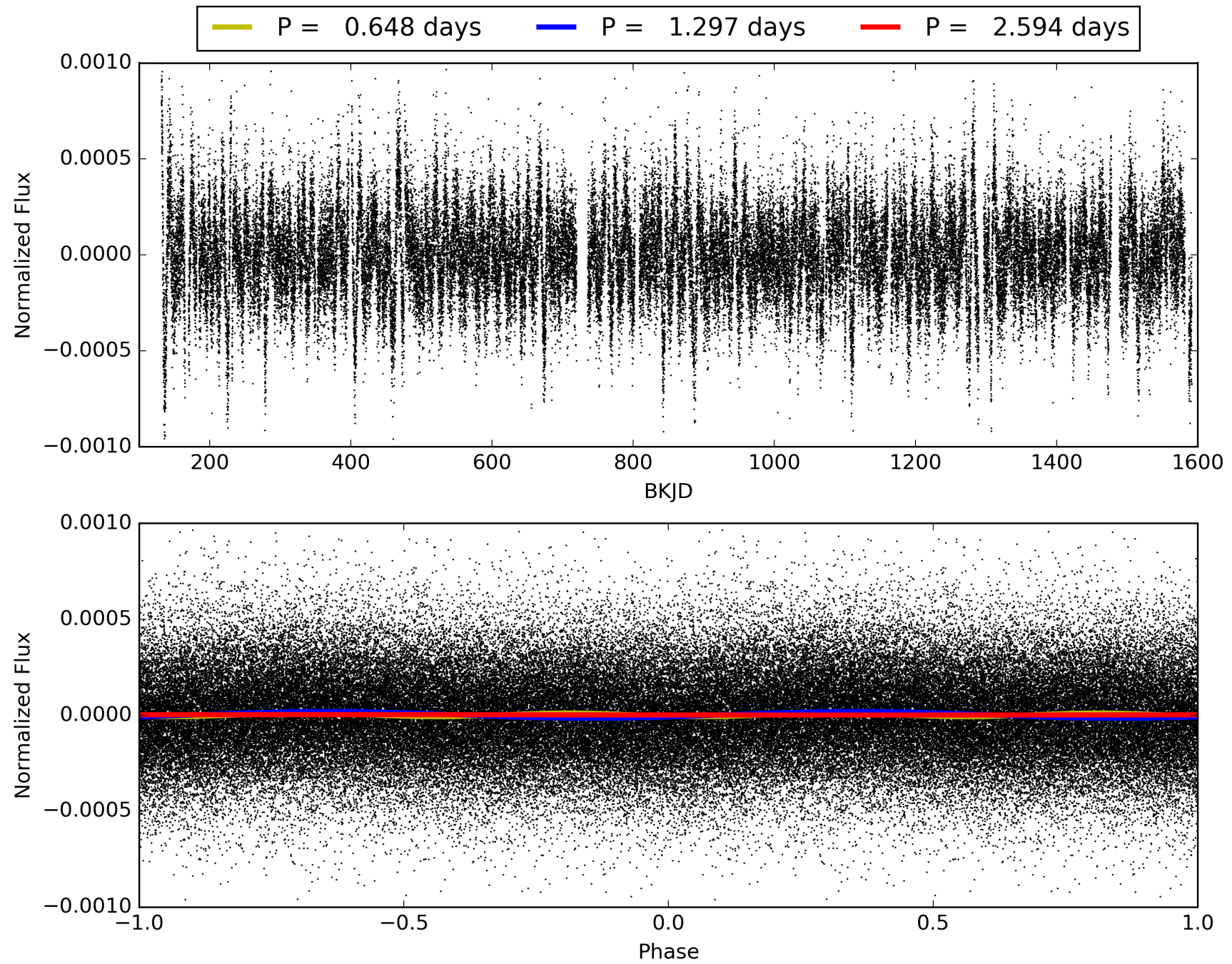
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 05:13:55 Z

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

TCE 012647018-01, PDC Light Curves

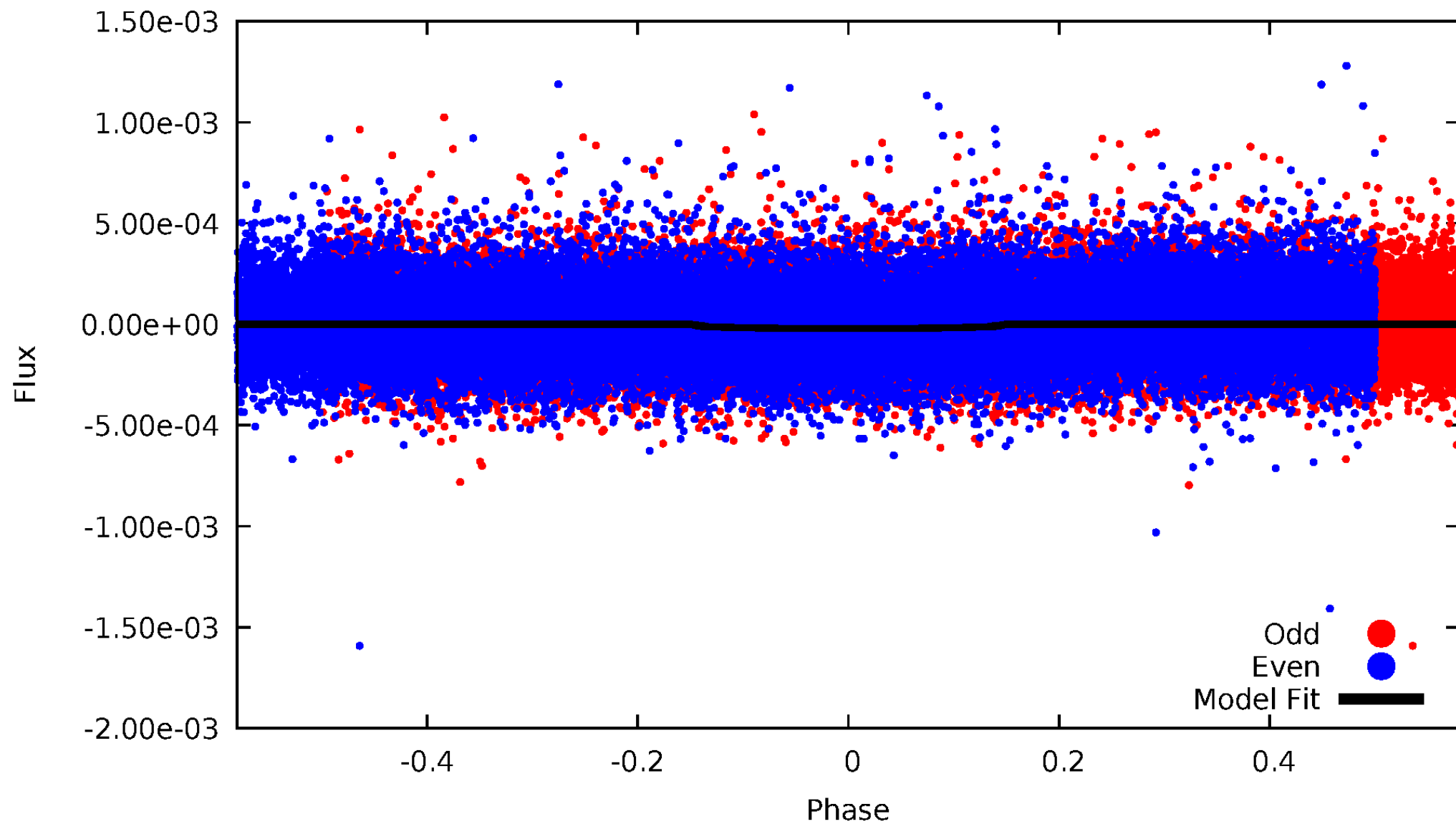


TCE 012647018-01



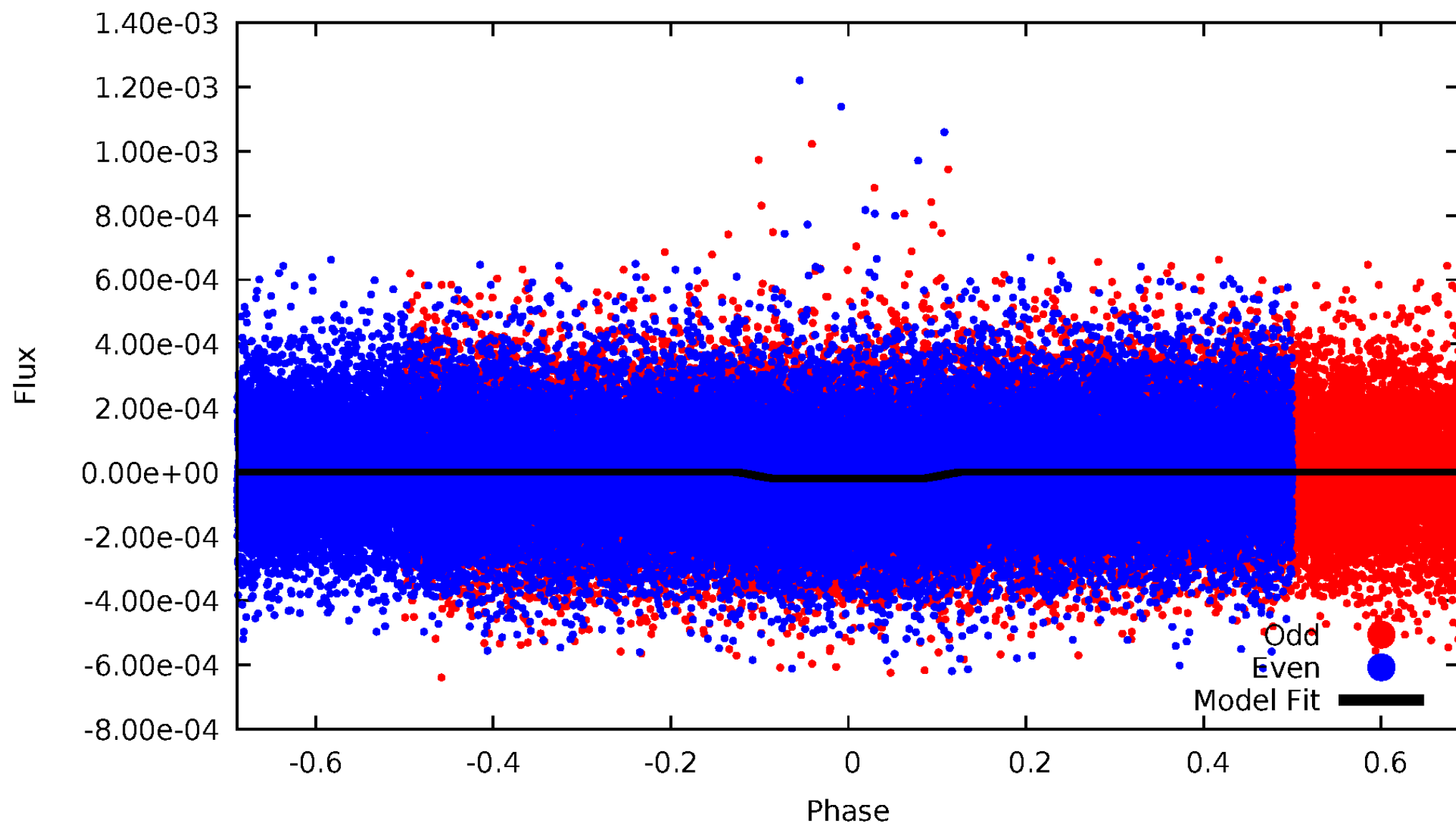
DV Odd/Even

TCE 012647018-01

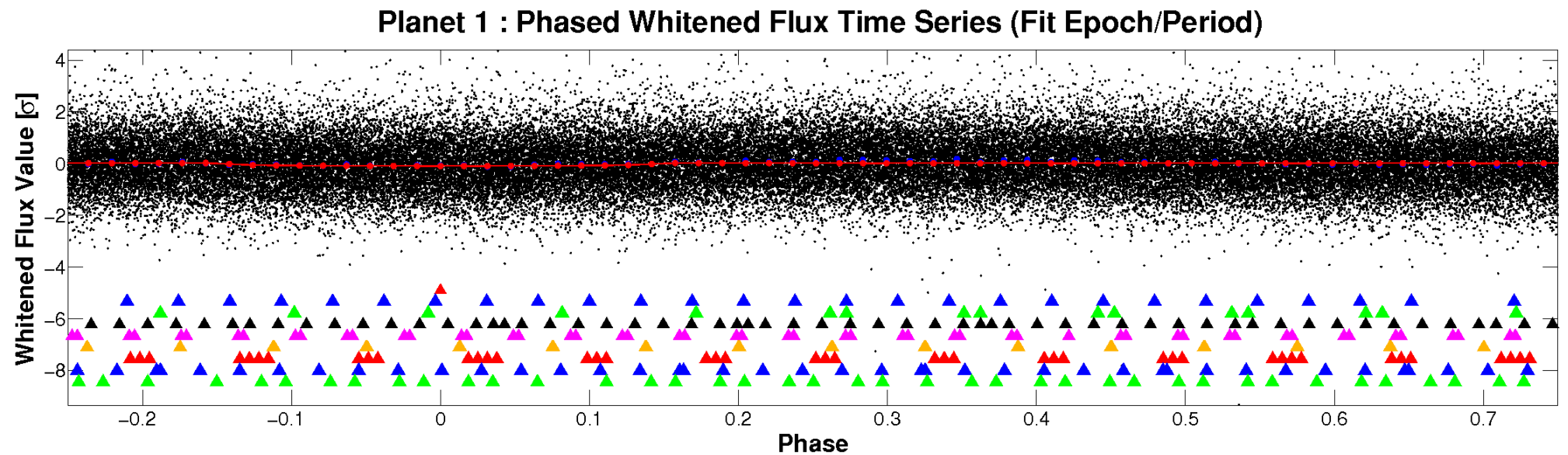
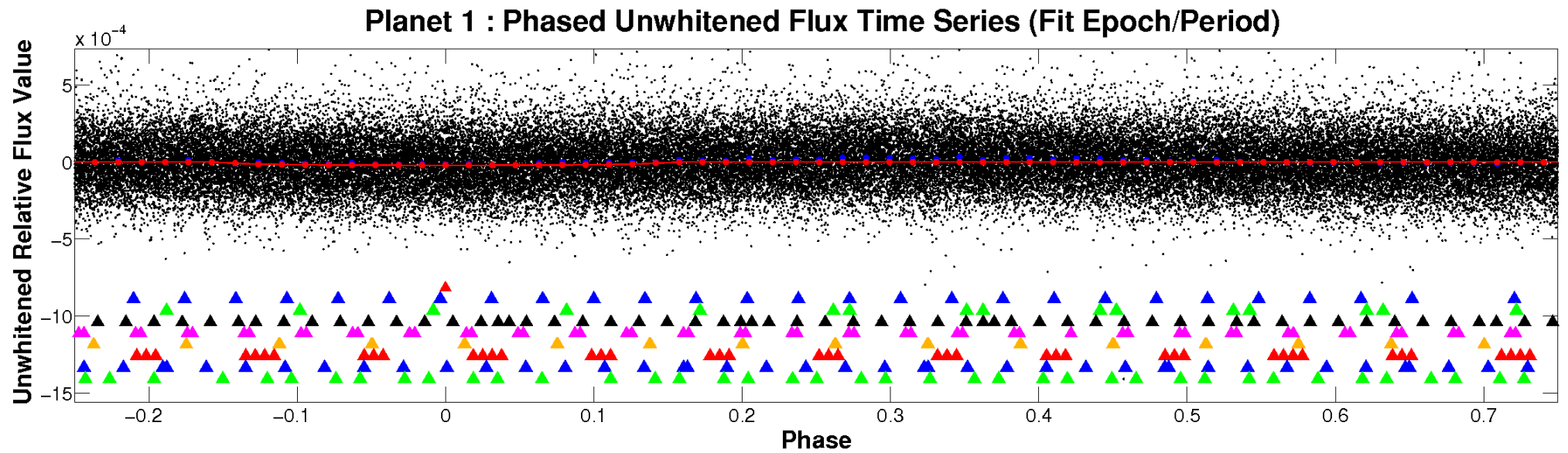


ALT Odd/Even

TCE 012647018-01

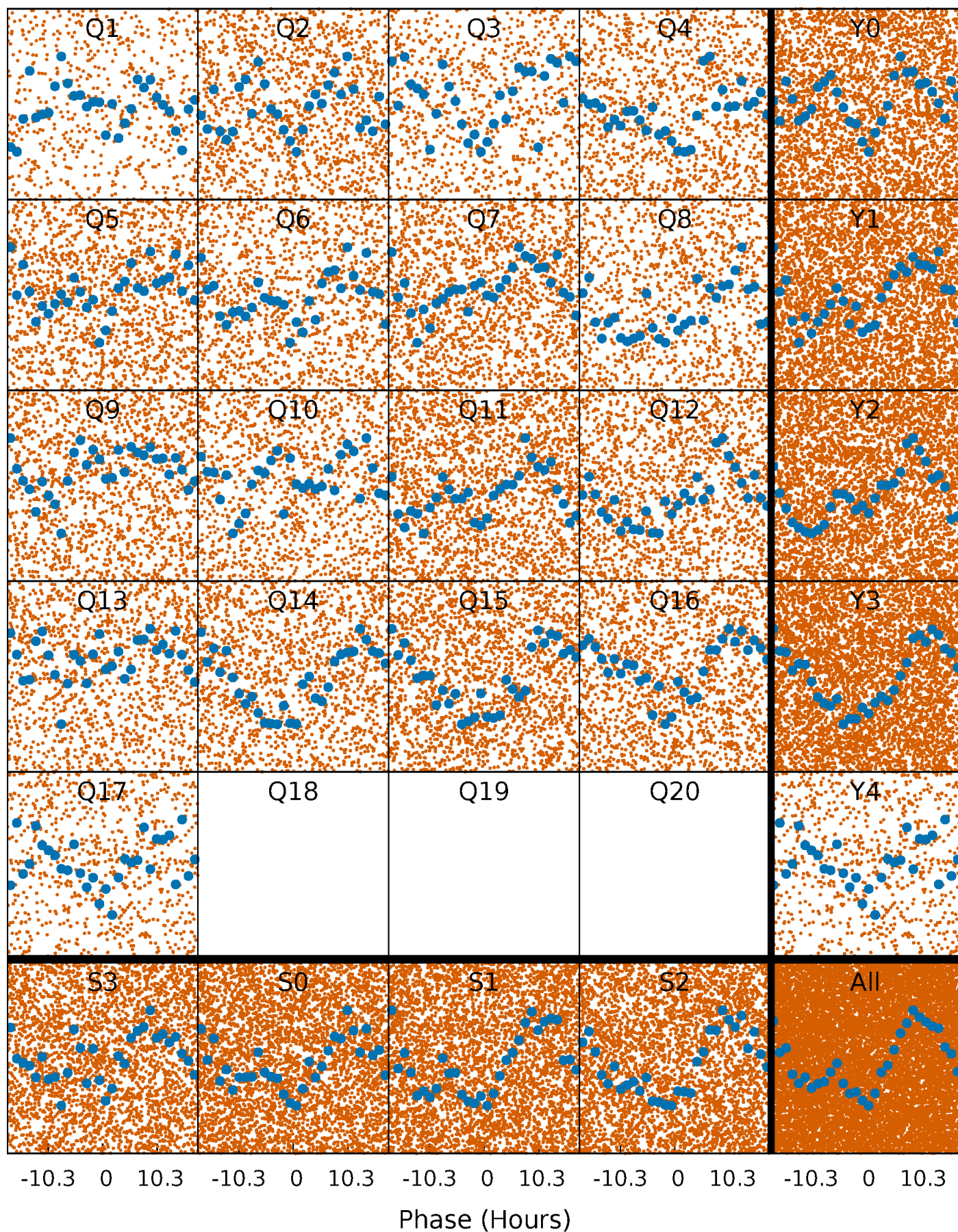


Non-Whitened Vs. Whitened Light Curve



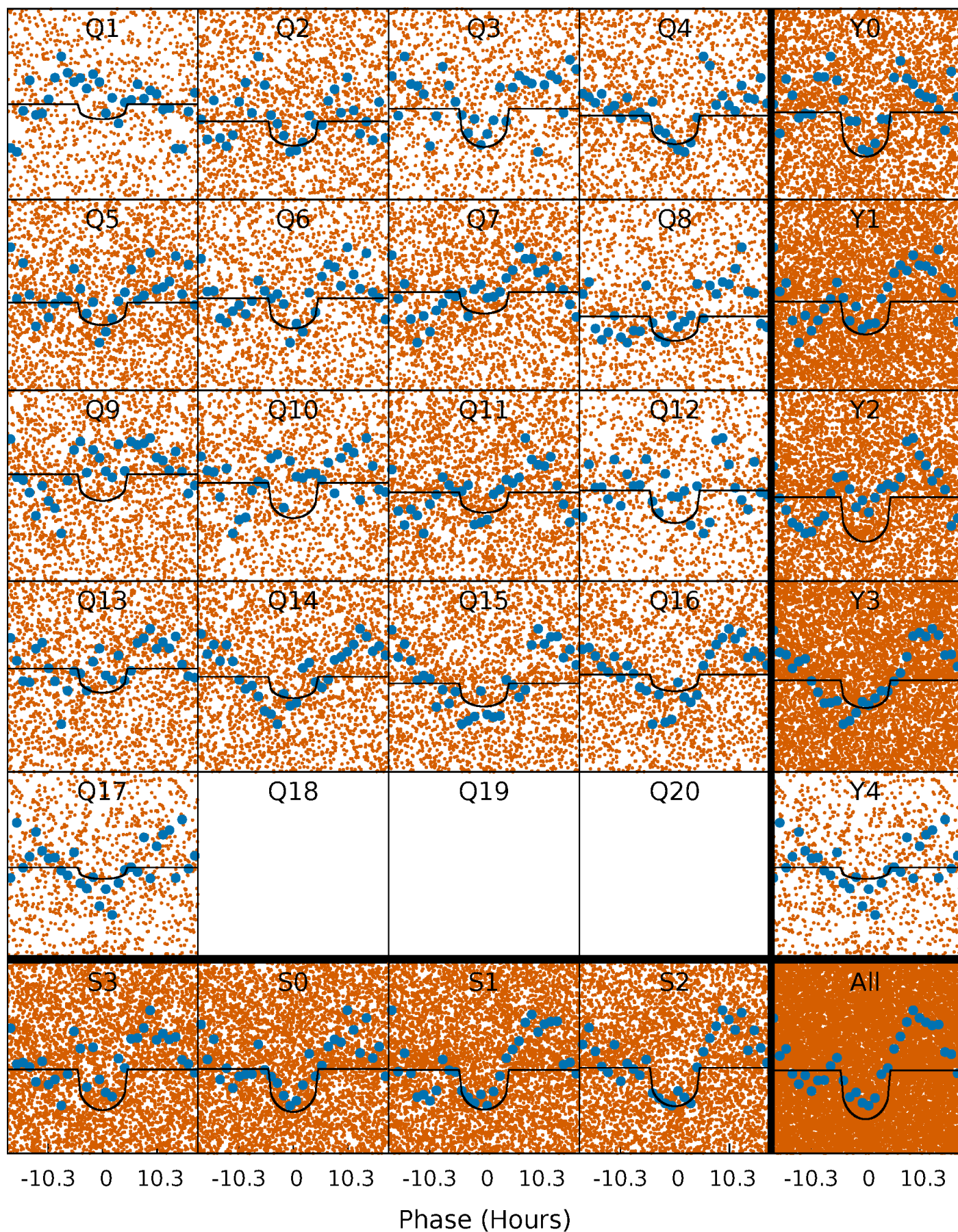
PDC Quarter-Phased Transit Curves

TCE 012647018-01 P= 1.296908 Days $T_0=132.535743$ (BKJD)



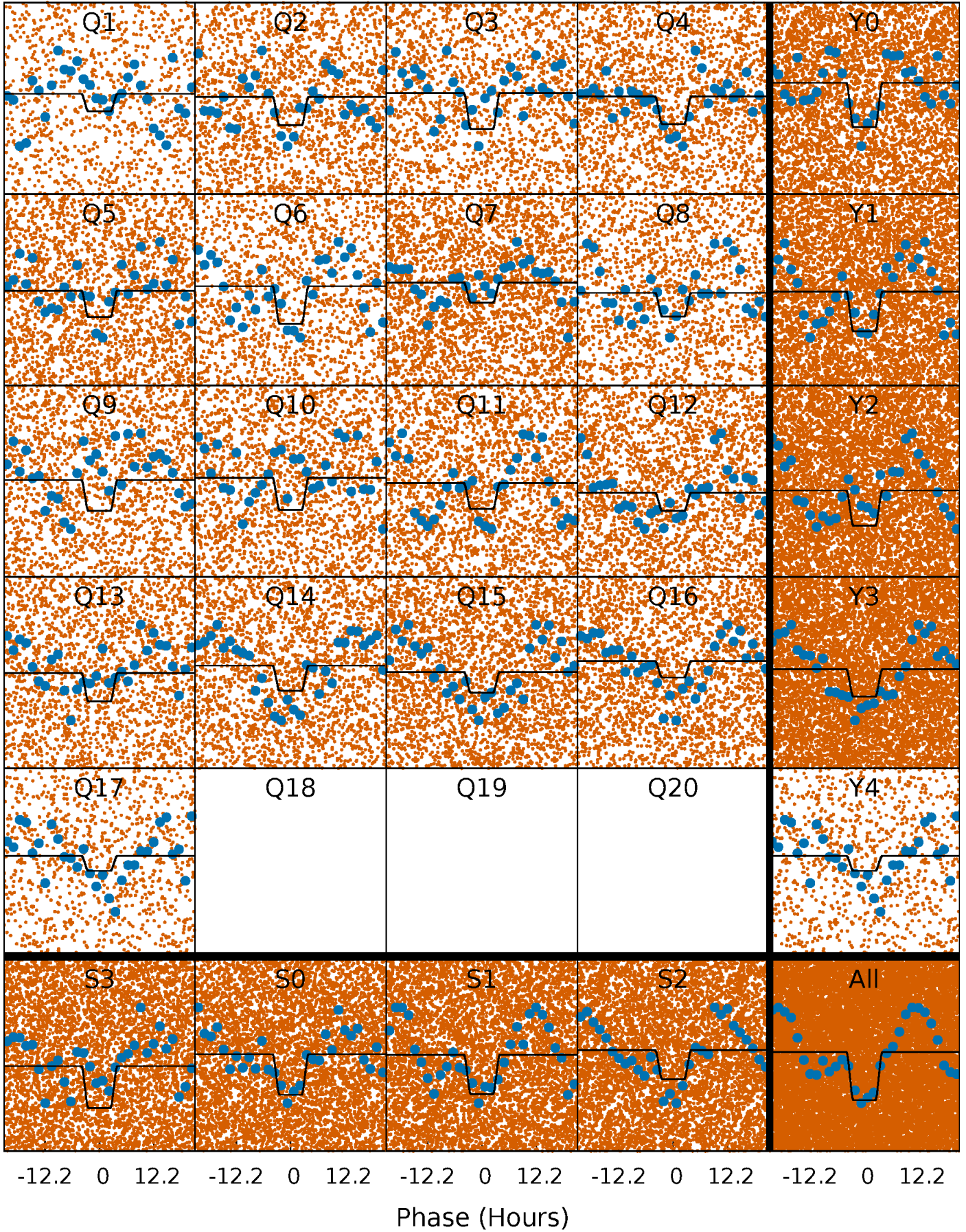
DV Quarter-Phased Transit Curves

TCE 012647018-01 P= 1.296908 Days $T_0=132.535743$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

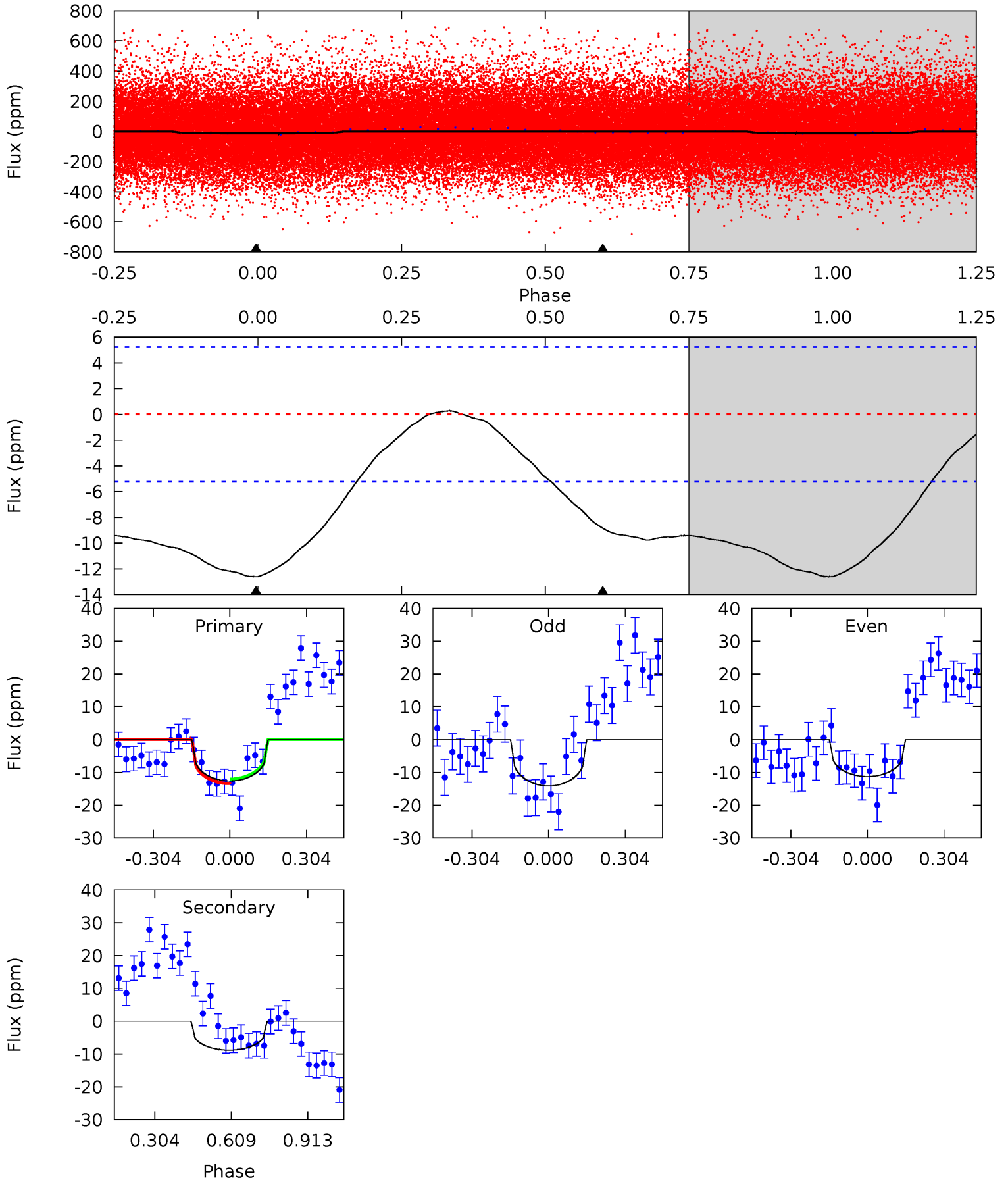
TCE 012647018-01 P= 1.296796 Days $T_0=132.565889$ (BKJD)



DV Model-Shift Uniqueness Test

012647018-01, P = 1.296908 Days, E = 131.238835 Days

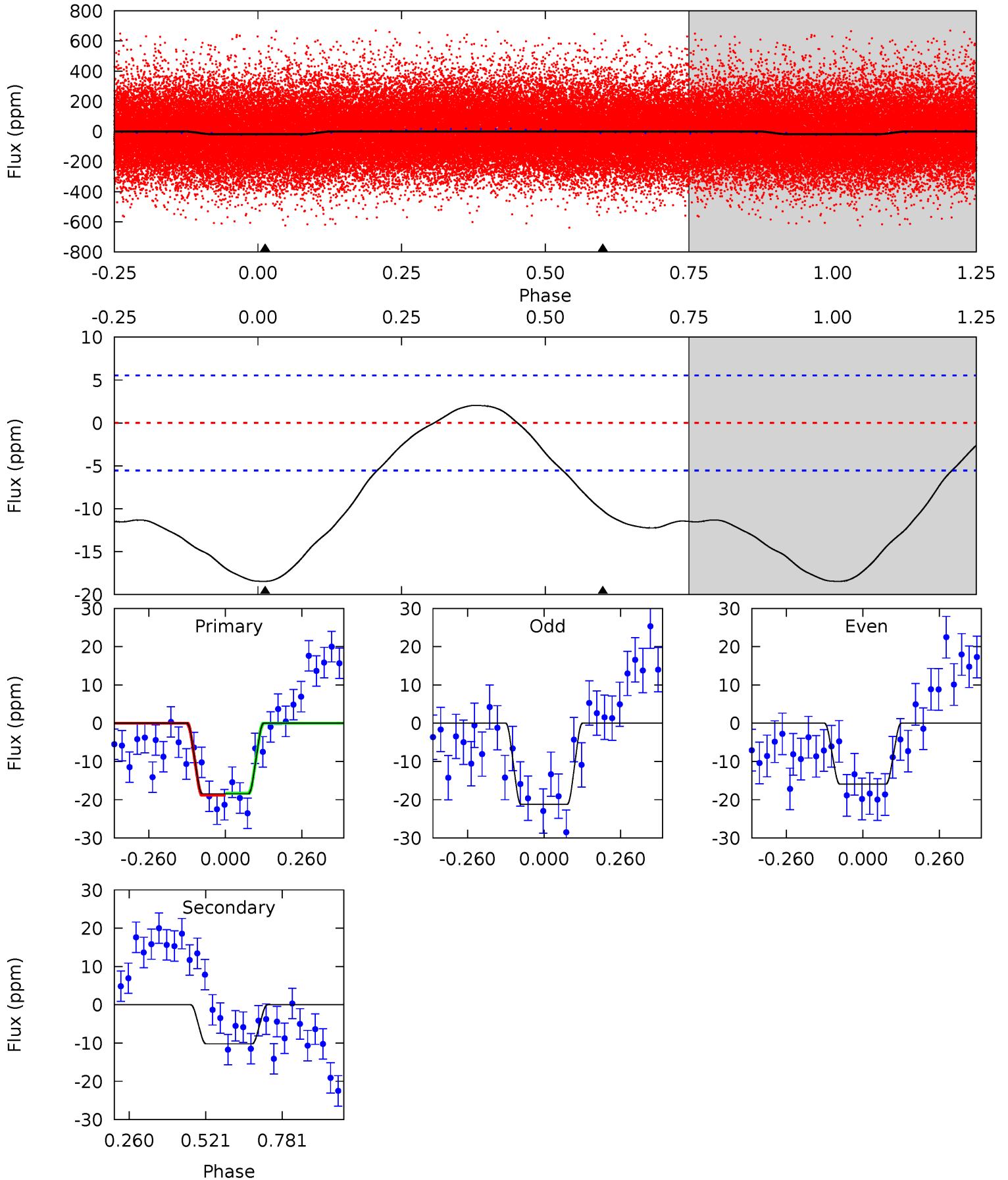
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.4	7.32	0	0	4.33	1.03	0.48	10.4	10.4	7.32	7.32	1.19	1.05	0.02	0.58



Alt Model-Shift Uniqueness Test

012647018-01, P = 1.296796 Days, E = 131.269093 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
14.5	8.01	0	0	4.36	1.13	0.92	14.5	14.5	8.01	8.01	2.09	0.96	0.10	0.20



Stellar Parameters For KIC 012647018

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	ρ_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5657^{+152}_{-152}	$4.026^{+0.424}_{-0.133}$	$0.100^{+0.250}_{-0.250}$	$1.649^{+0.351}_{-0.652}$	$1.053^{+0.126}_{-0.139}$	$0.331^{+1.086}_{-0.128}$
	+3%/-3%	+11%/-3%	+250%/-250%	+21%/-40%	+12%/-13%	+328%/-39%
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 012647018-01 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-9 ± 1	$0.88^{+0.72}_{-0.56}$	2860^{+217}_{-303}	4315^{+2549}_{-883}	$3.575^{+22.208}_{-2.518}$
Alt.	-10 ± 1	$0.86^{+0.79}_{-0.51}$	2856^{+205}_{-316}	4481^{+2293}_{-944}	$4.200^{+22.487}_{-3.020}$

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

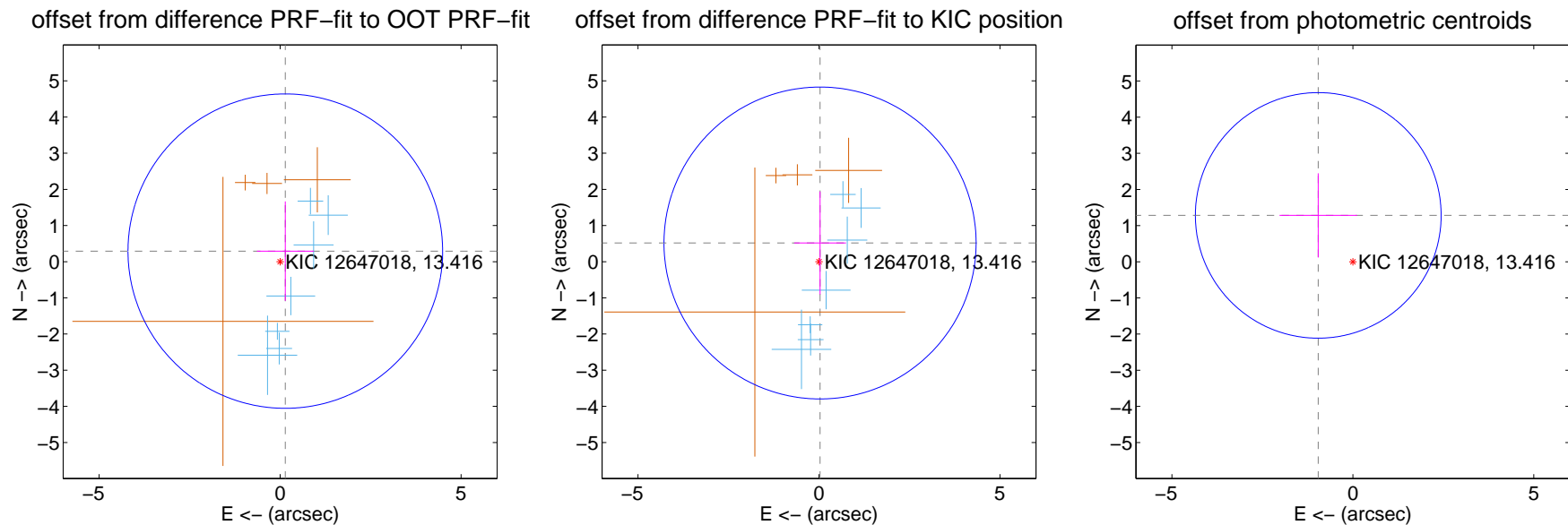
DV Centroid Data

Supplemental centroid analysis for 012647018-01. Kepler magnitude: 13.42. Transit SNR 11.07

There are 7 quarters with good PRF difference image offsets

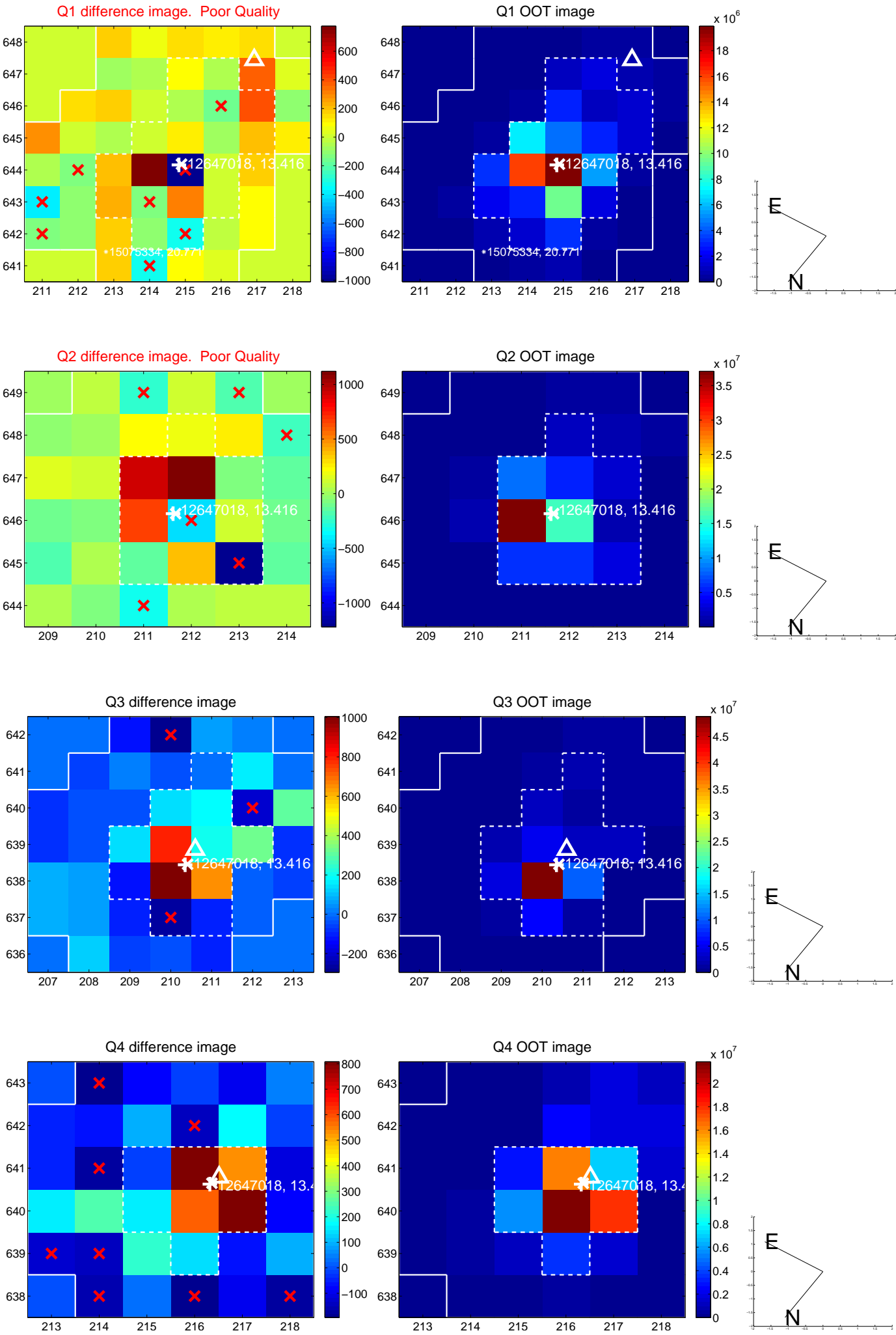
The direct PRF centroid is offset from the target star catalog position by about 0.32 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.326 ± 1.449	0.22	-0.144 ± 0.785	0.292 ± 1.374
PRF-fit source offset from KIC position	0.518 ± 1.437	0.36	-0.029 ± 0.715	0.517 ± 1.422
photometric centroid source offset	1.60 ± 1.13	1.41	0.96 ± 1.07	1.28 ± 1.17

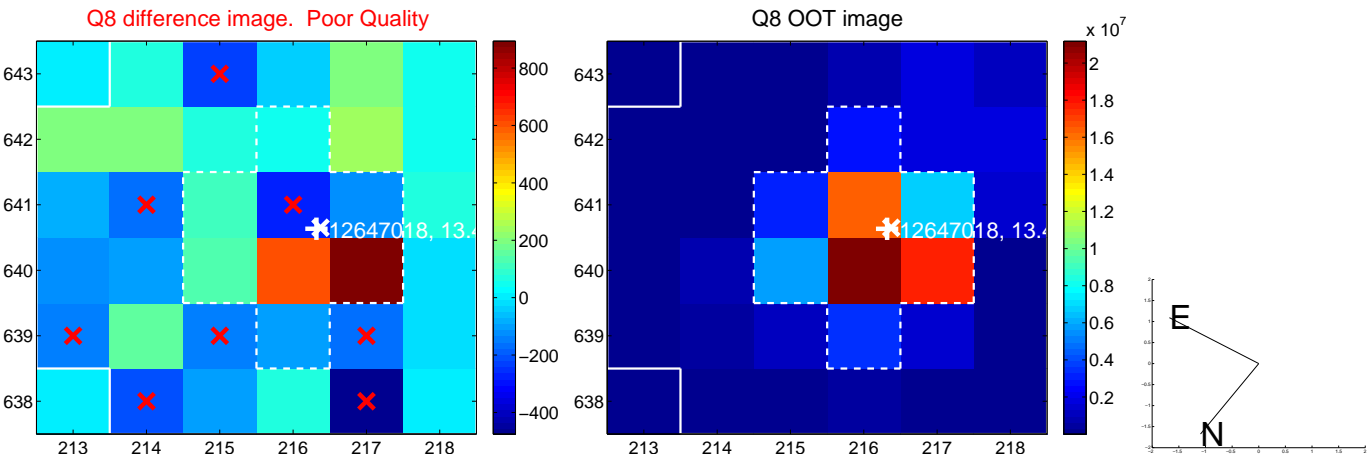
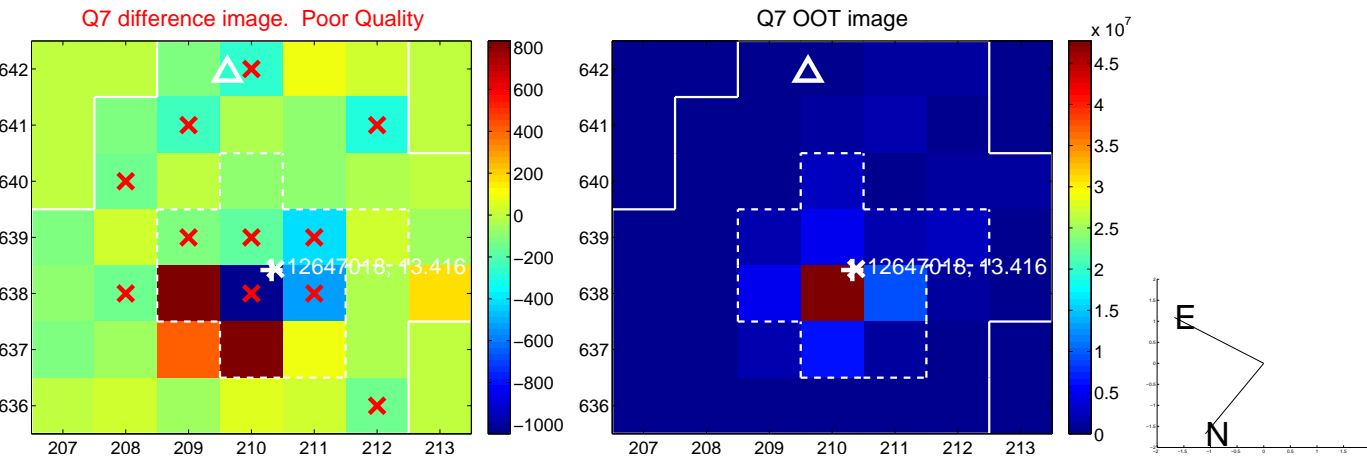
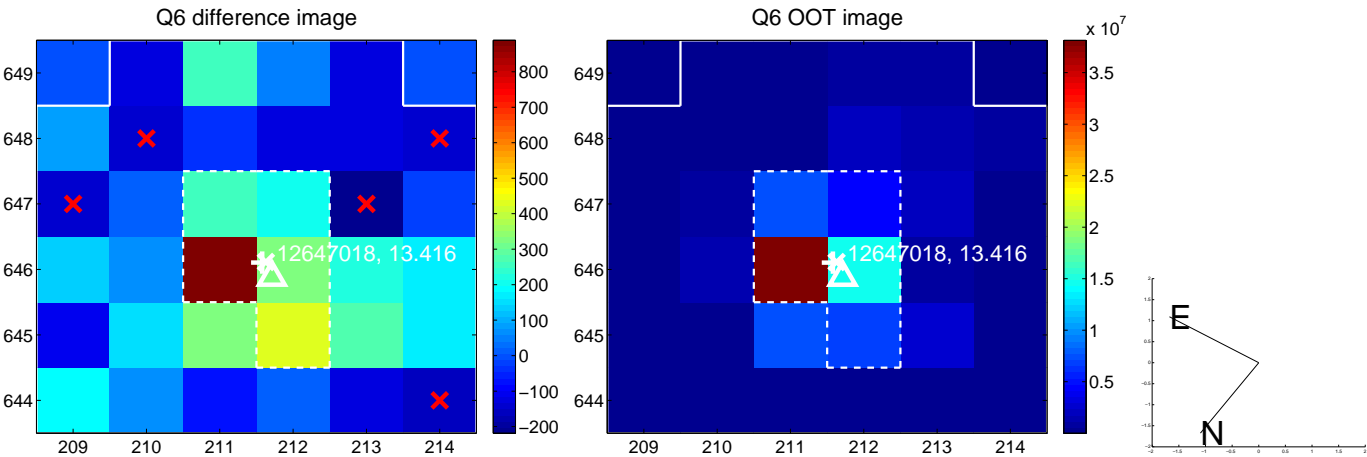
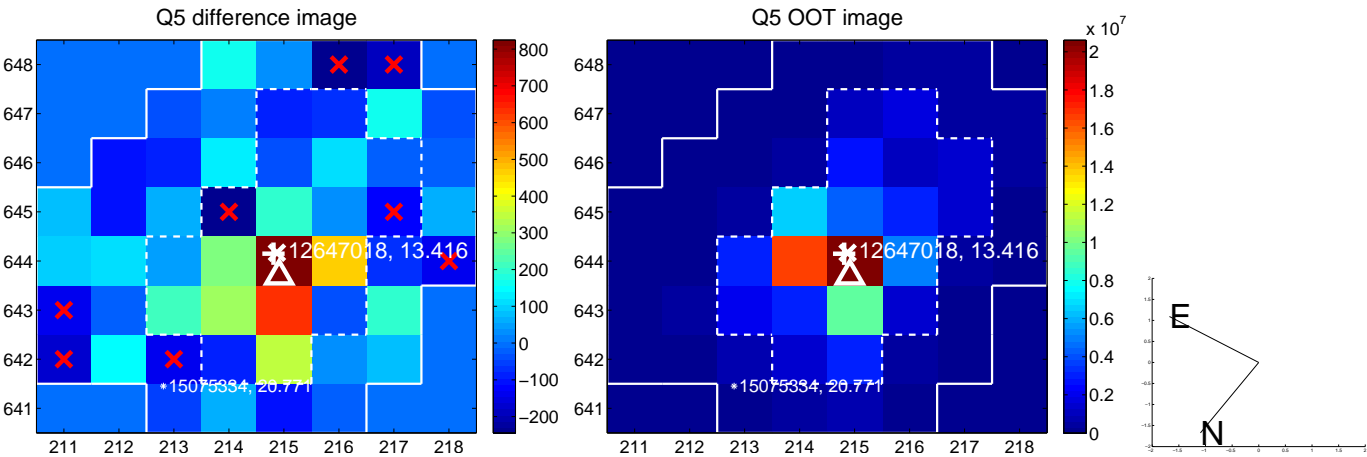


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

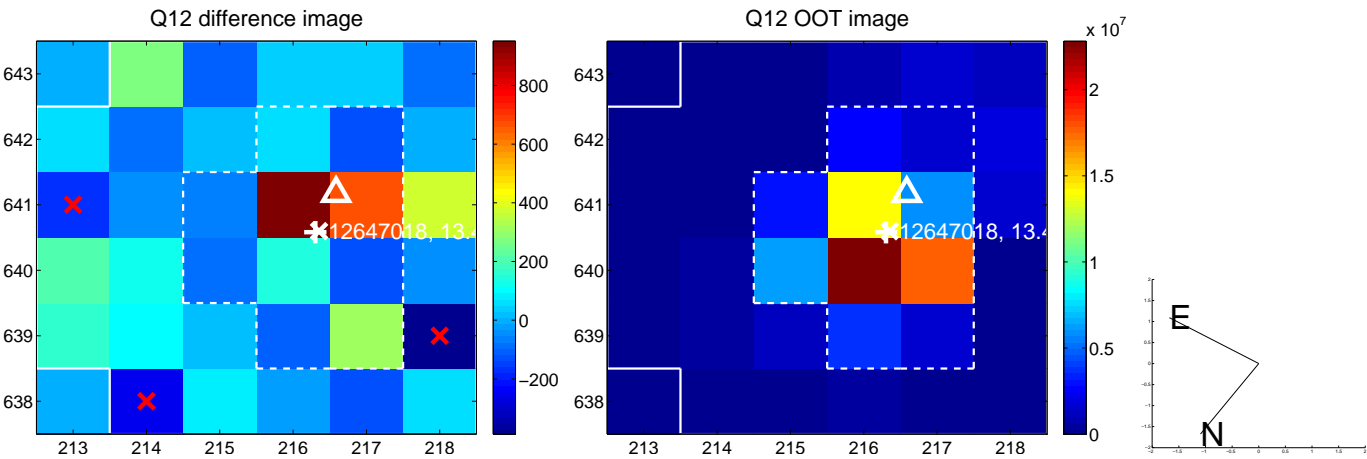
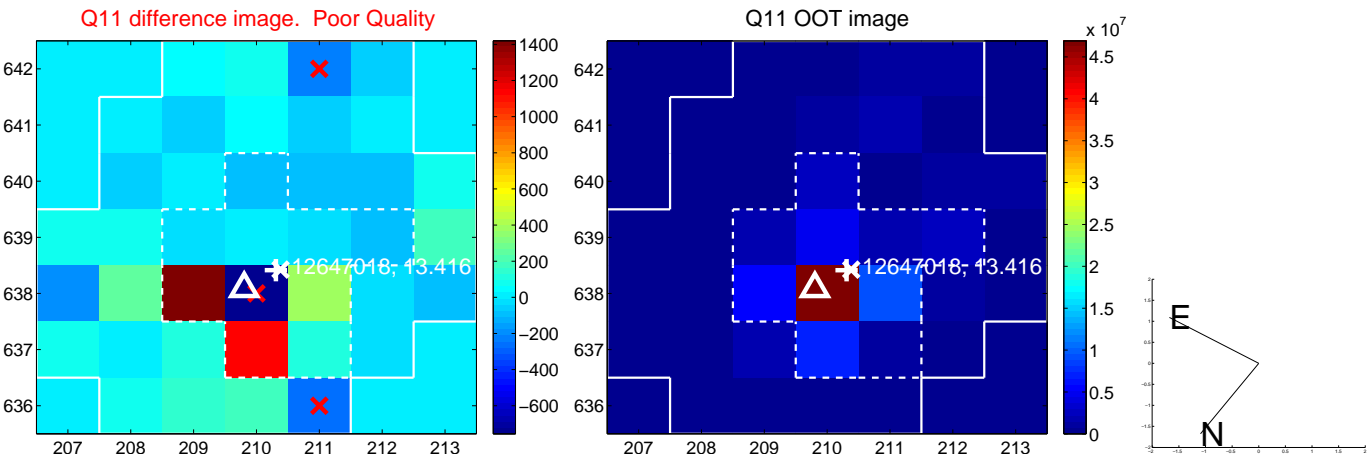
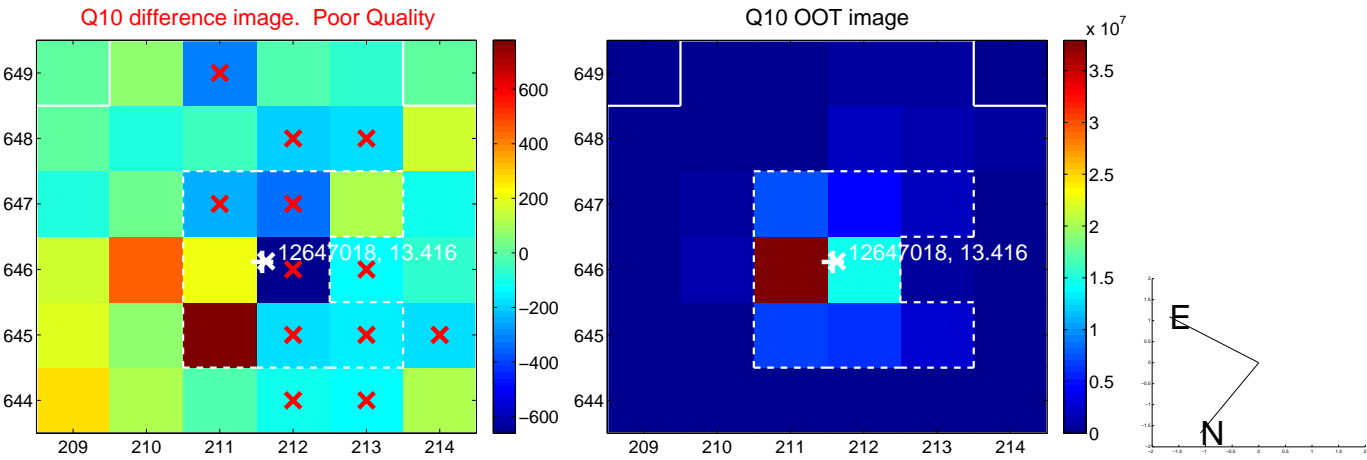
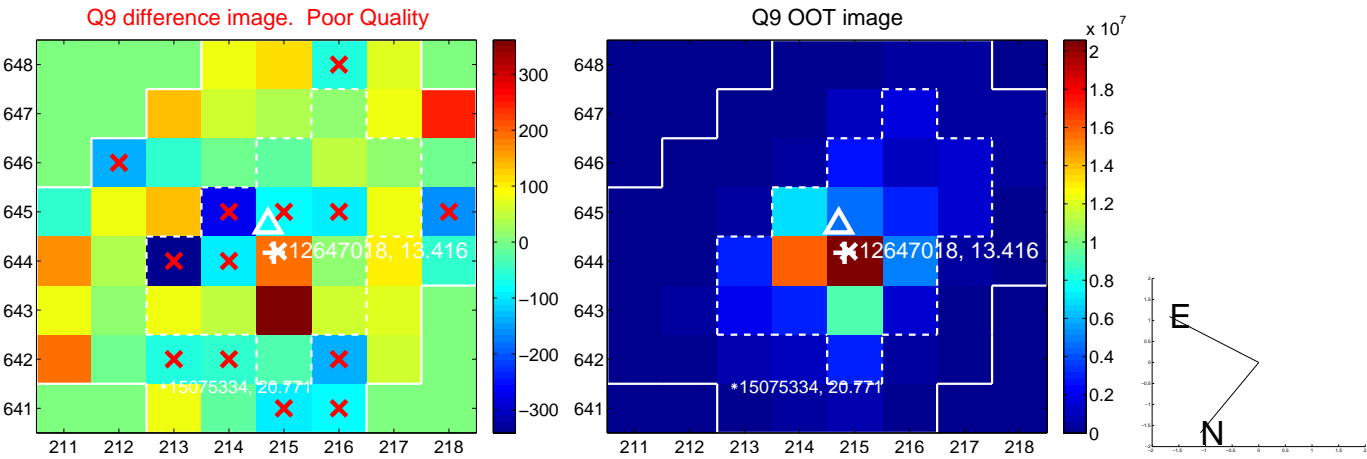
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



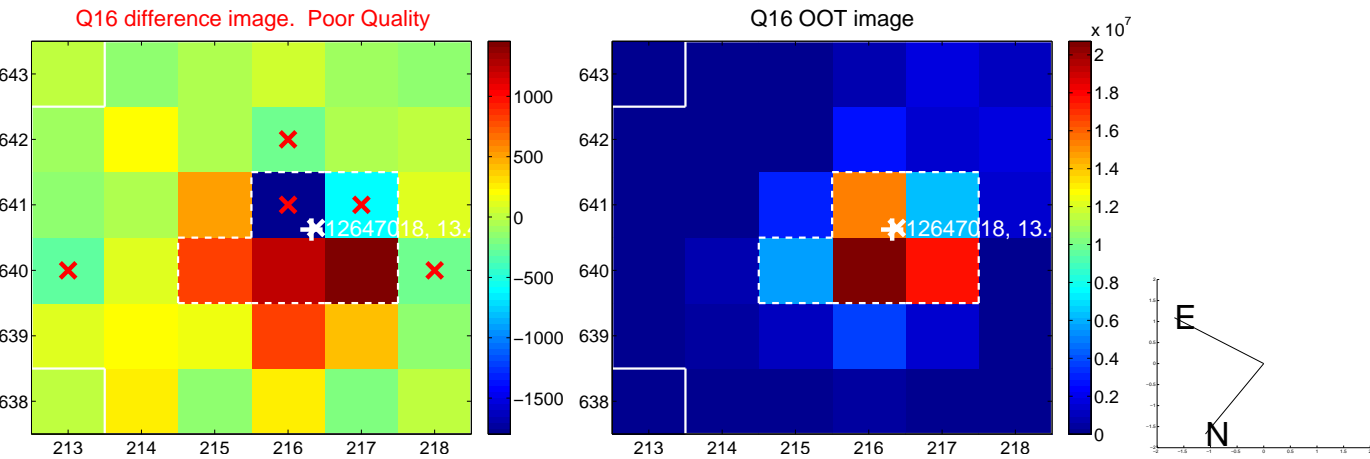
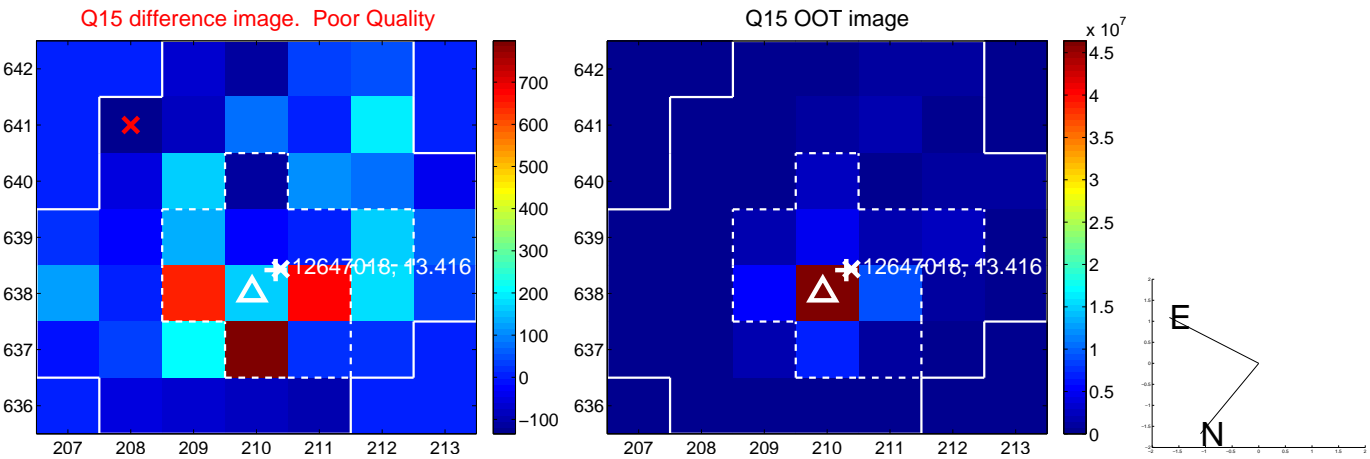
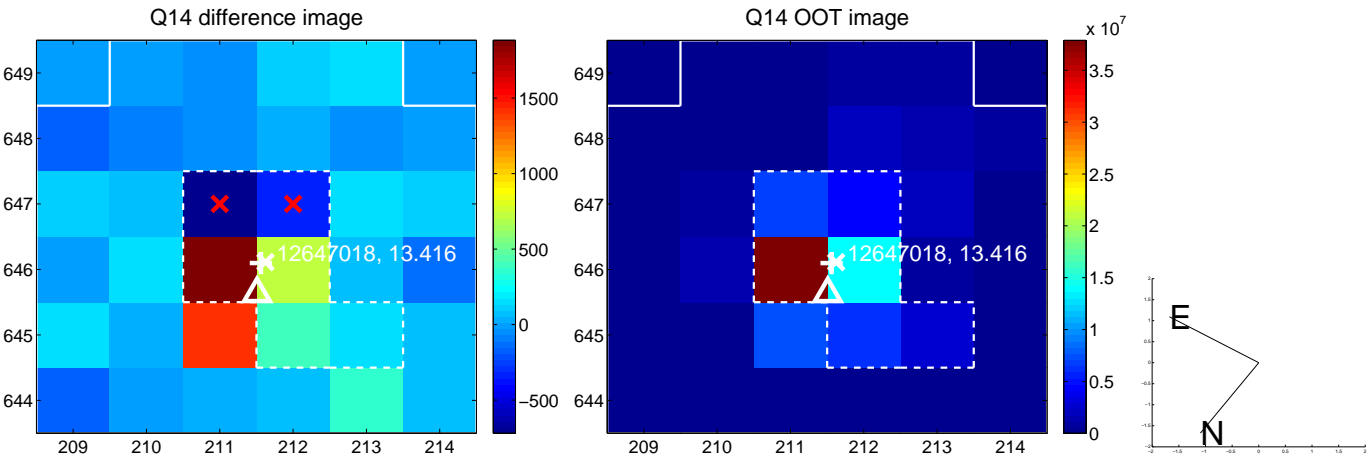
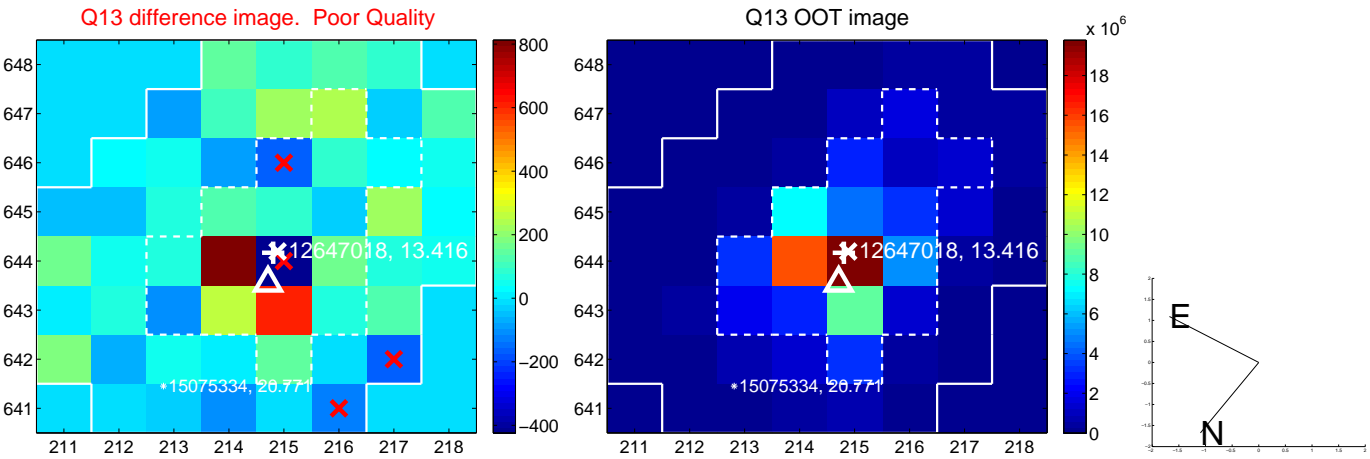
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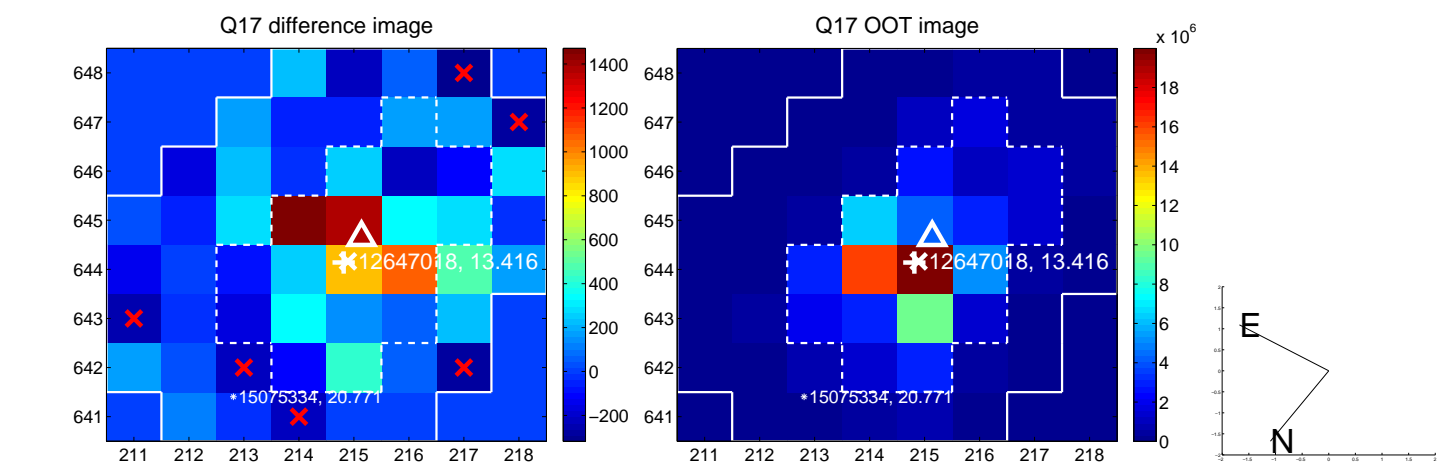
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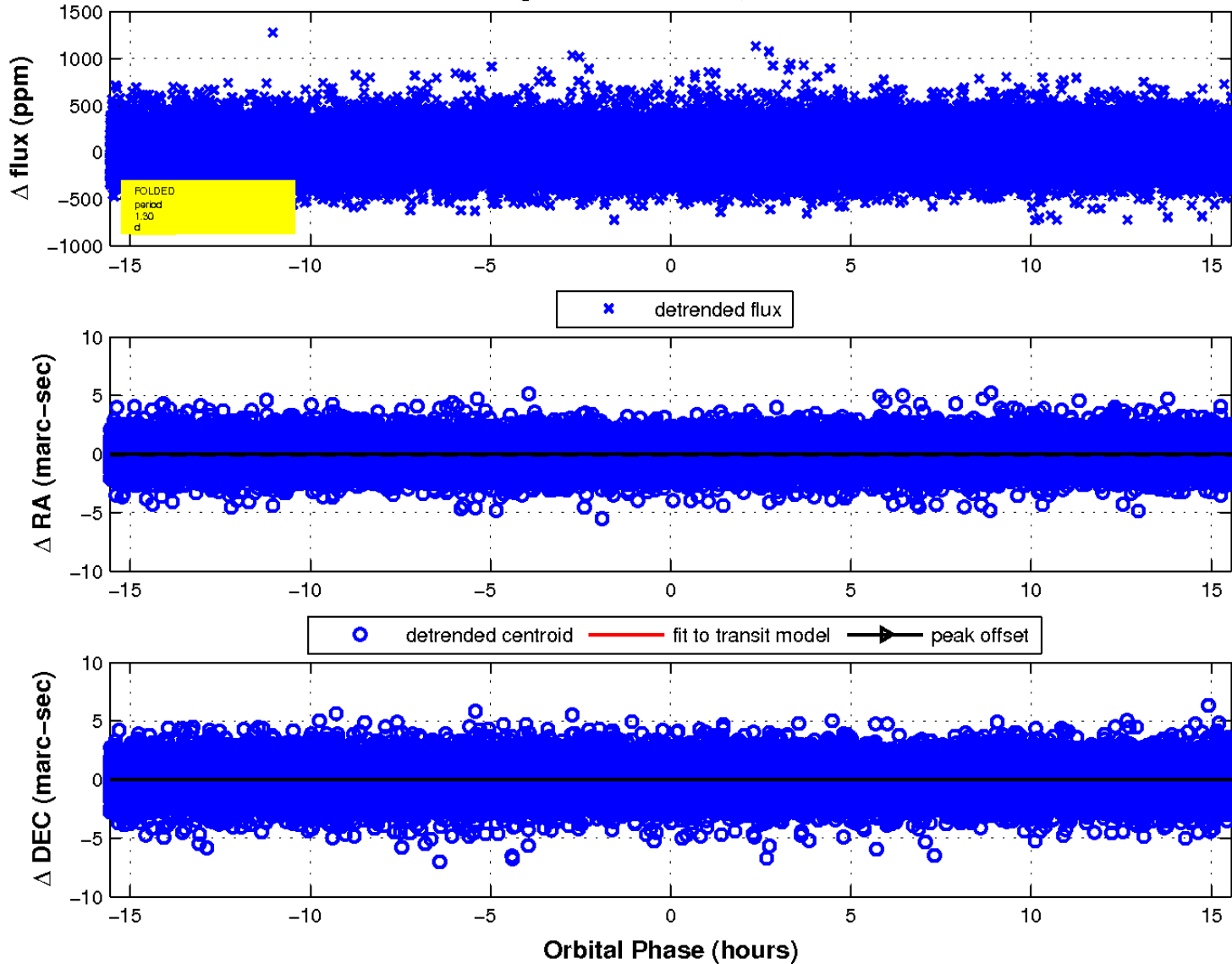
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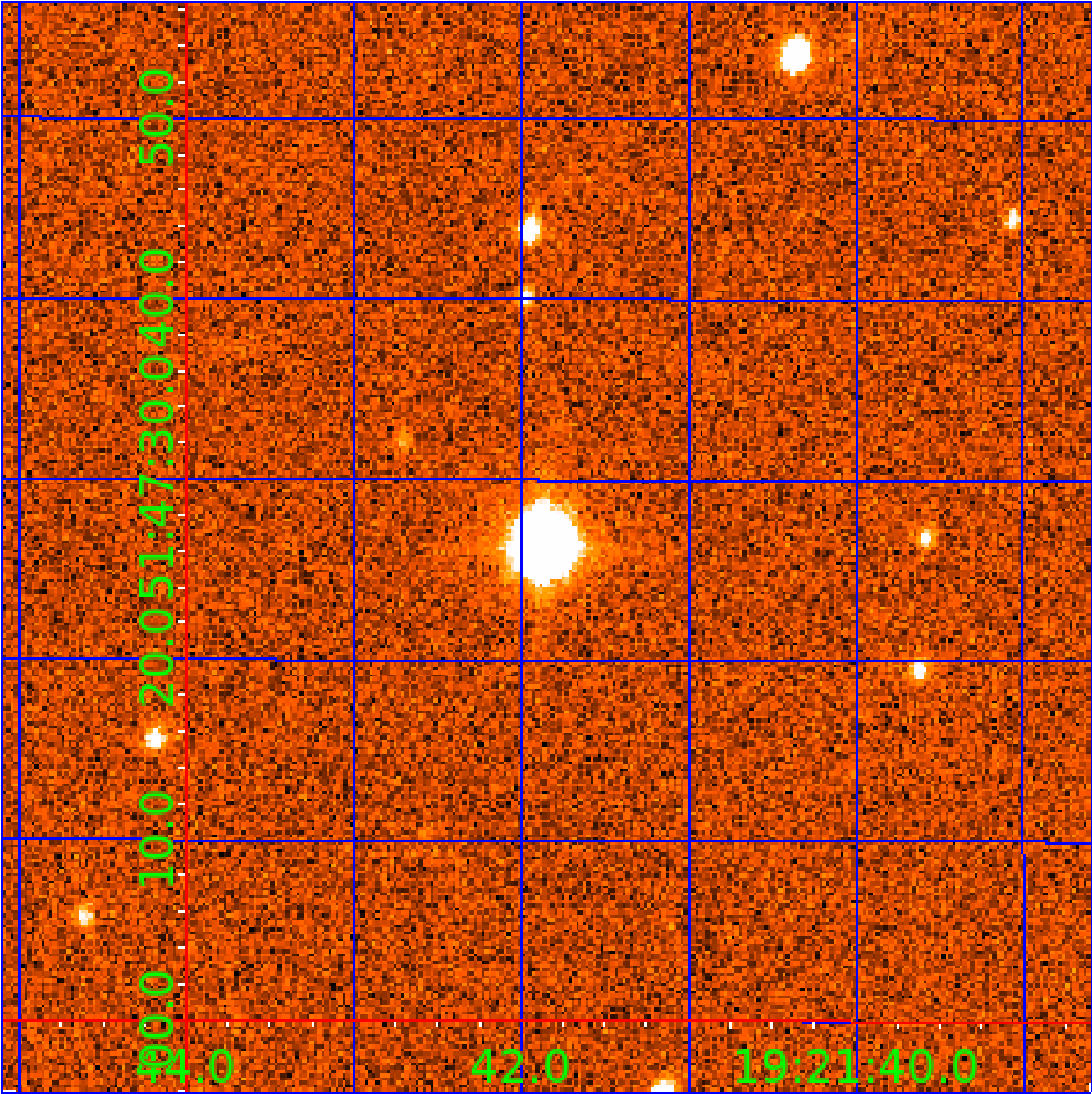


fluxWeightedCentroids, Planet 1 of 9



UKIRT Image

Declination



KIC 012647018

Q1-17 DR25 TCE Parameters

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012647018-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
012647018-04	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS—HALO_GHOST
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012647018-06	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS—HALO_GHOST
012647018-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
012647018-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—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.

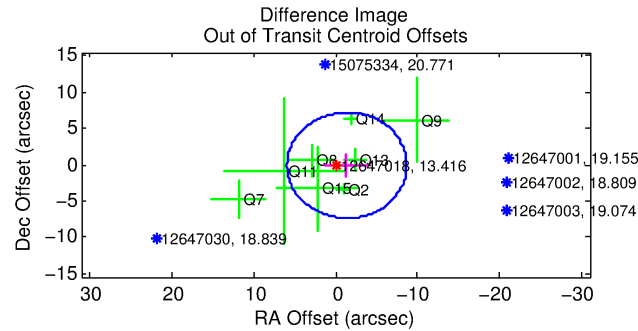
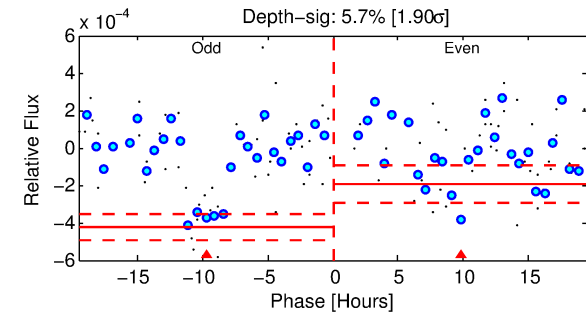
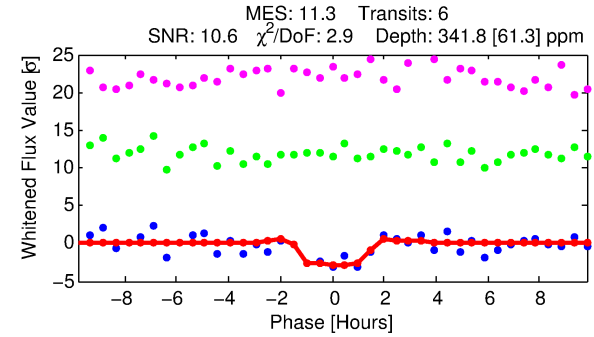
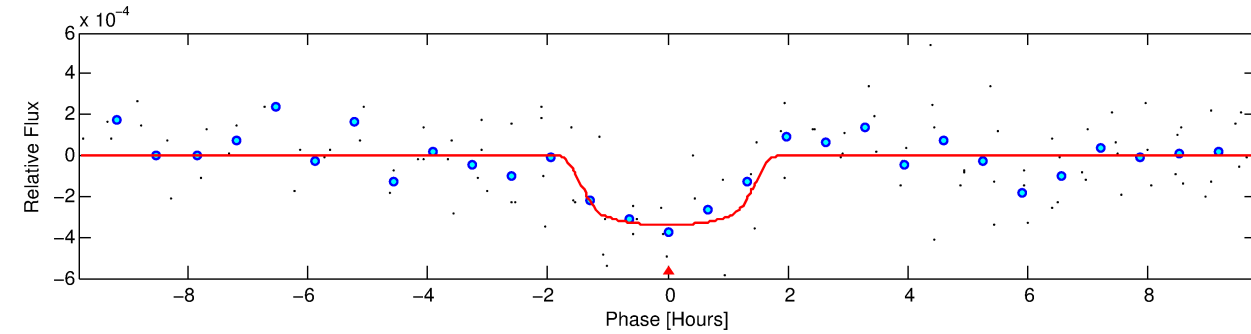
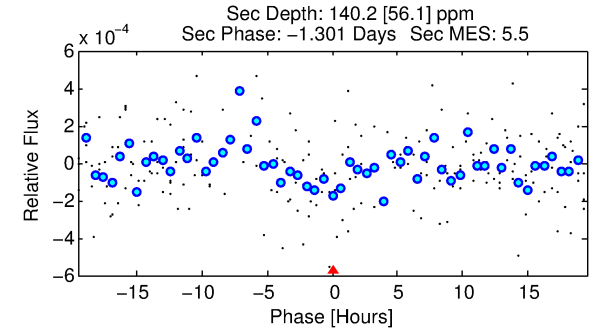
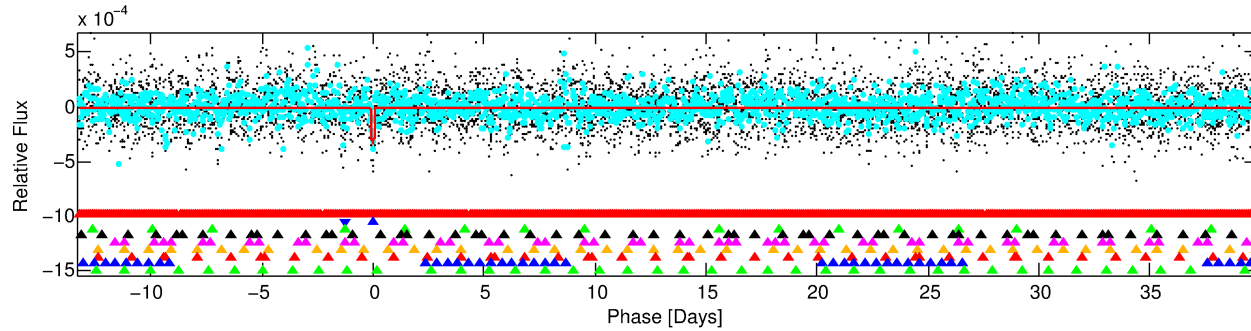
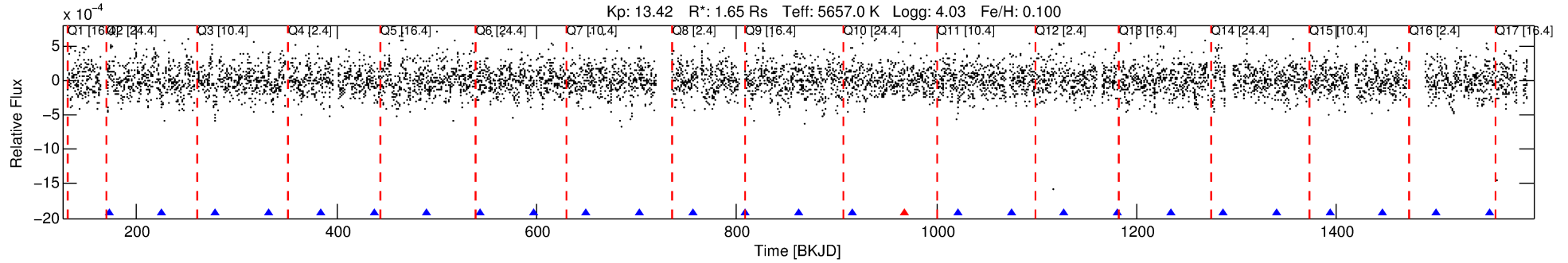
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 012647018-02

No Significant Match Found

DV One-Page Summary

KIC: 12647018 Candidate: 2 of 9 Period: 53.084 d



DV Fit Results:

Period = 53.08378 [0.00085] d
Epoch = 172.2435 [0.0094] BKJD
Rp/R* = 0.0202 [0.0251]
a/R* = 59.58 [338.42]
b = 0.90 [1.23]
Seff = 31.53 [22.40]
Teff = 604 [107] K
Rp = 3.64 [4.74] Re
a = 0.2813 [0.1178] AU
Ag = 460.05 [1201.02] [0.38σ]
Teffp = 4327 [2722] K [1.37σ]

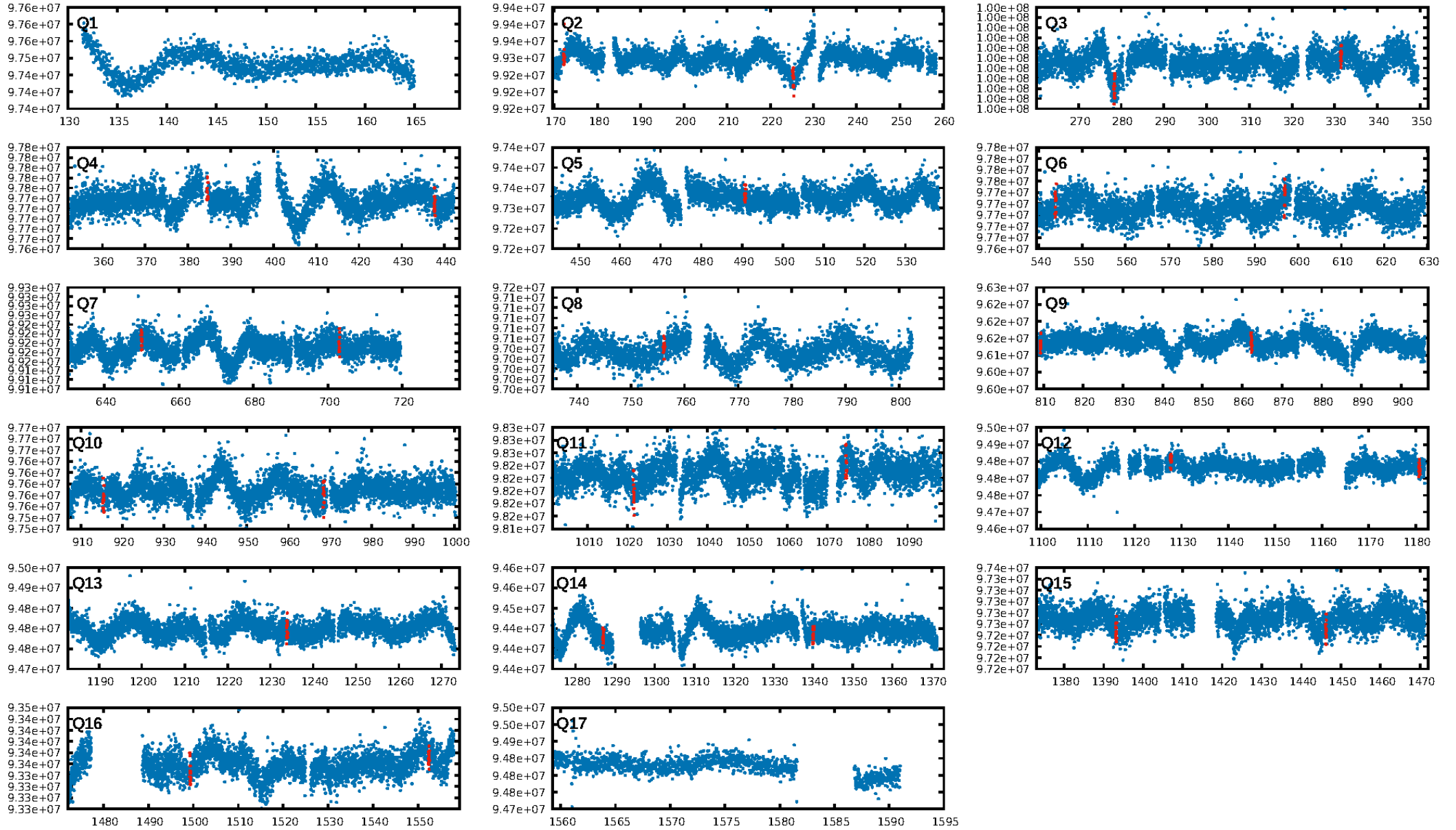
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [88.88σ]
LongPeriod-sig: 100.0% [154.72σ]
ModelChiSquare2-sig: 0.5%
ModelChiSquareGof-sig: 64.3%
Bootstrap-pfa: 3.42e-18
RollingBand-fgt: 0.83 [5/6]
GhostDiagnostic-chr: 4.162
Centroid-sig: 93.8%
Centroid-so: 0.583 arcsec [0.83σ]
OotOffset-rm: 1.359 arcsec [0.56σ]
OotOffset-st: 2/3/1/2 [8]
KicOffset-rm: 1.181 arcsec [0.55σ]
KicOffset-st: 2/3/1/2 [8]
DiffImageQuality-fgm: 0.00 [0/8]
DiffImageOverlap-fno: 0.27 [4/15]

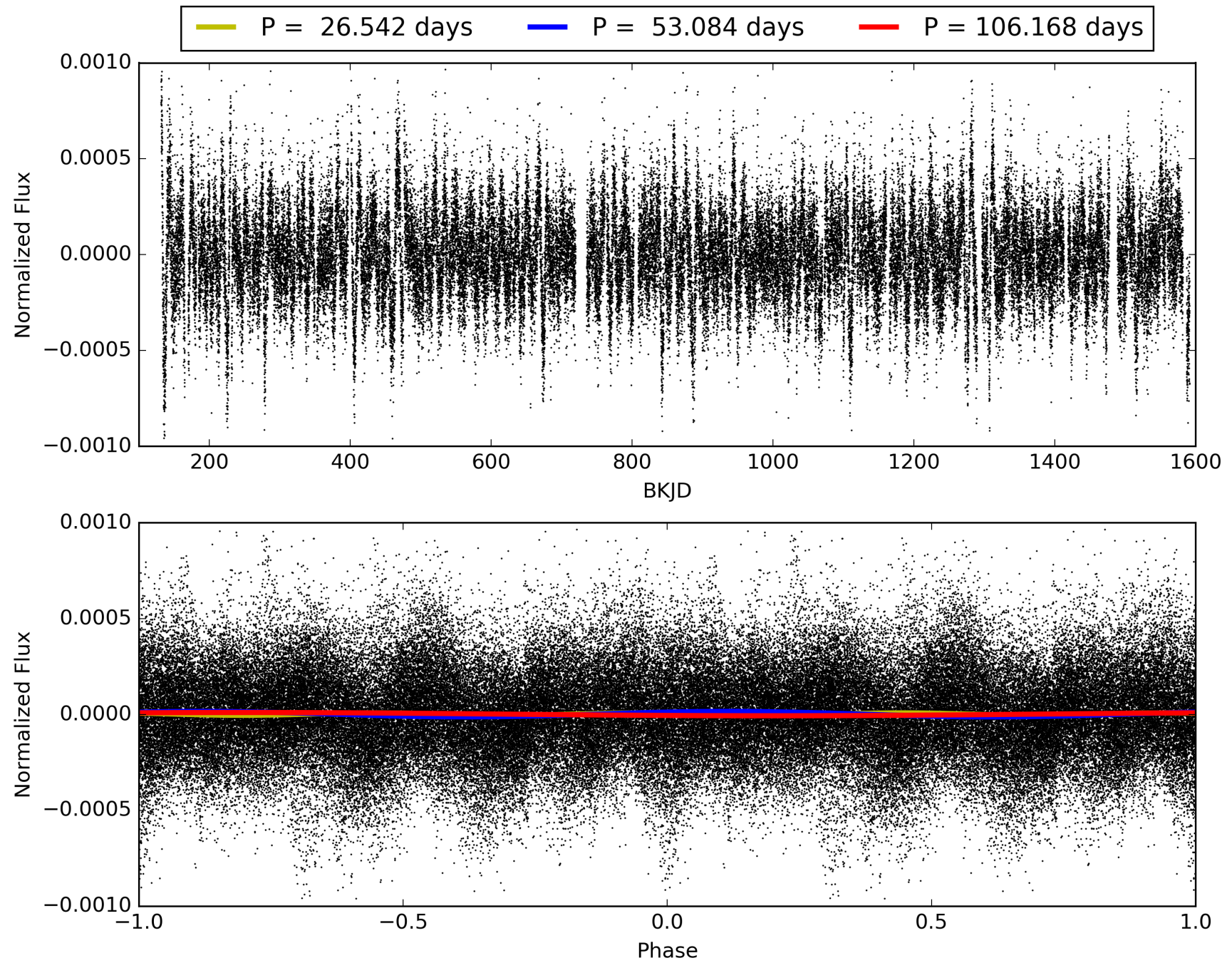
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 05:14:06 Z

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

TCE 012647018-02, PDC Light Curves

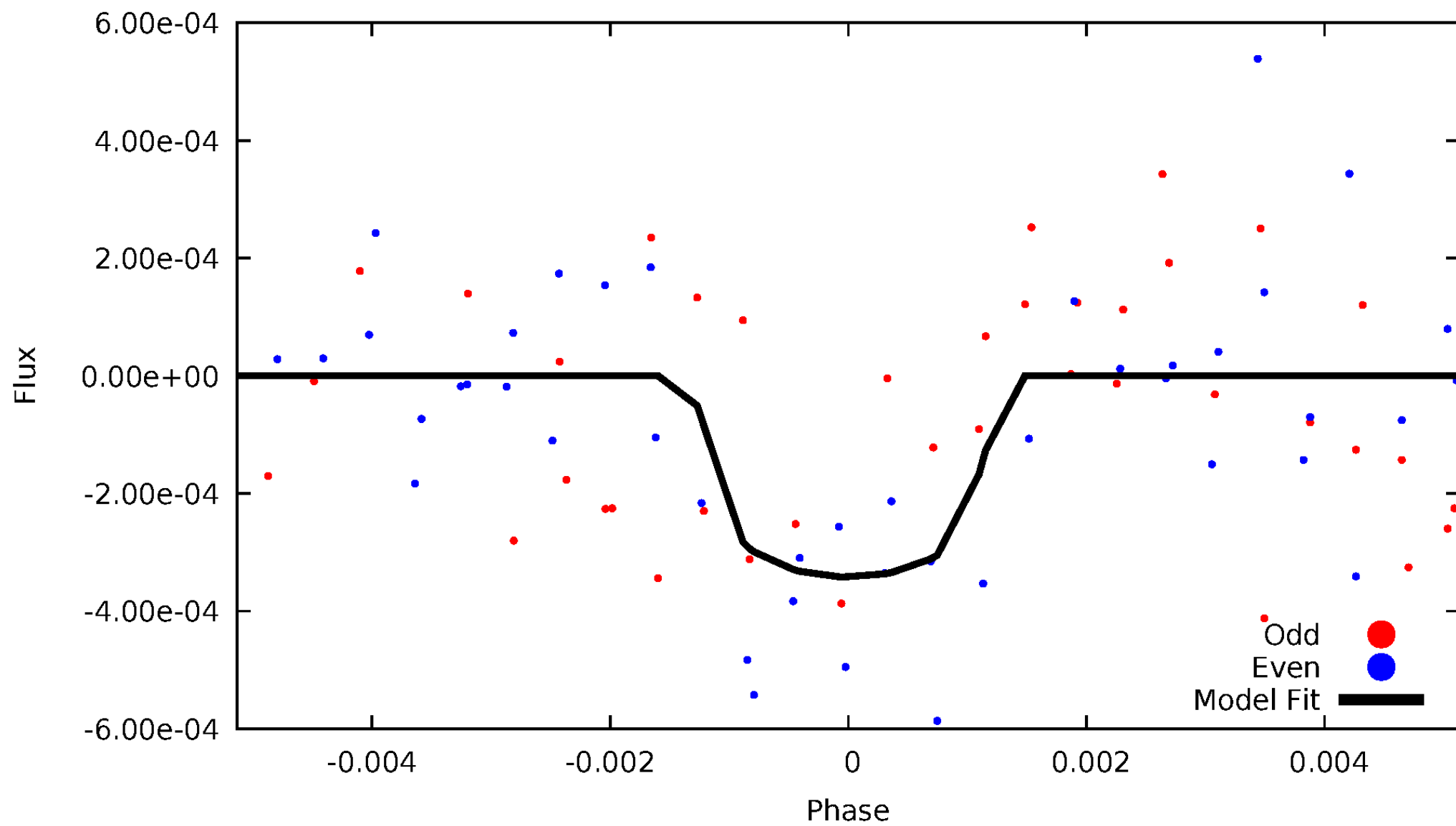


TCE 012647018-02



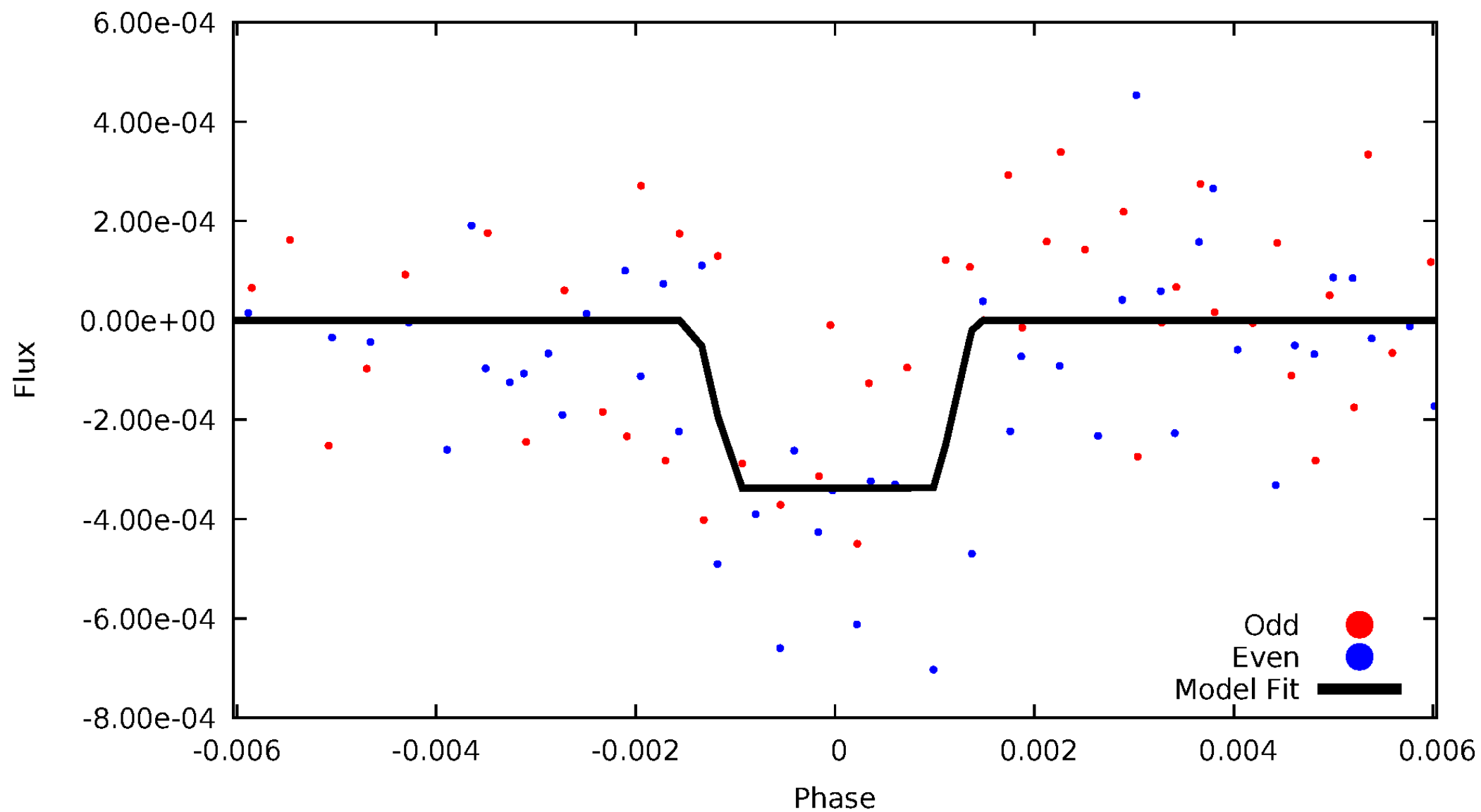
DV Odd/Even

TCE 012647018-02



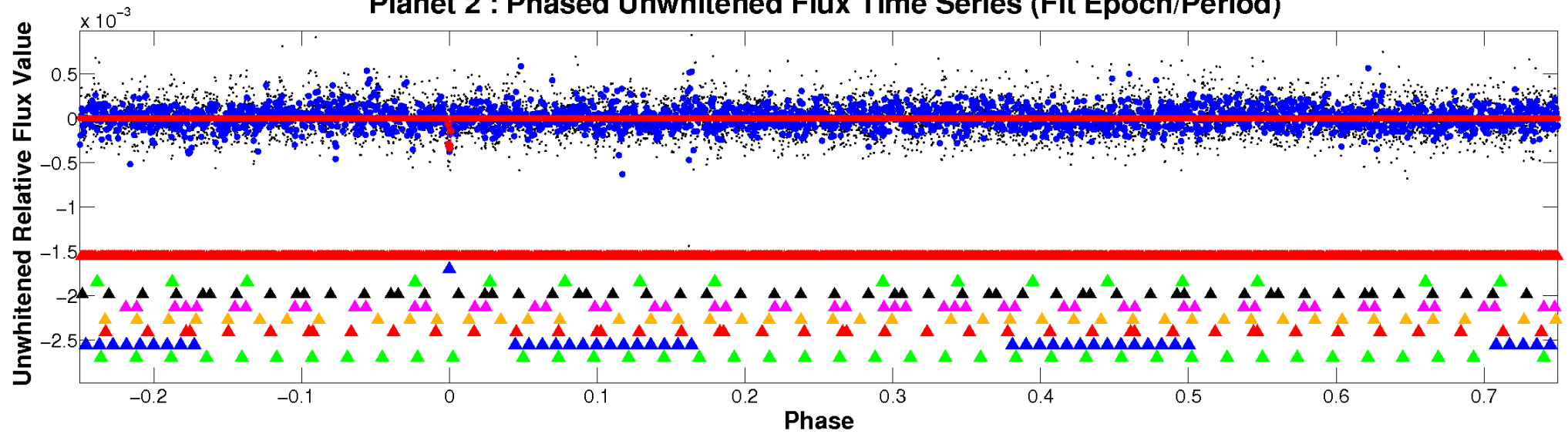
ALT Odd/Even

TCE 012647018-02

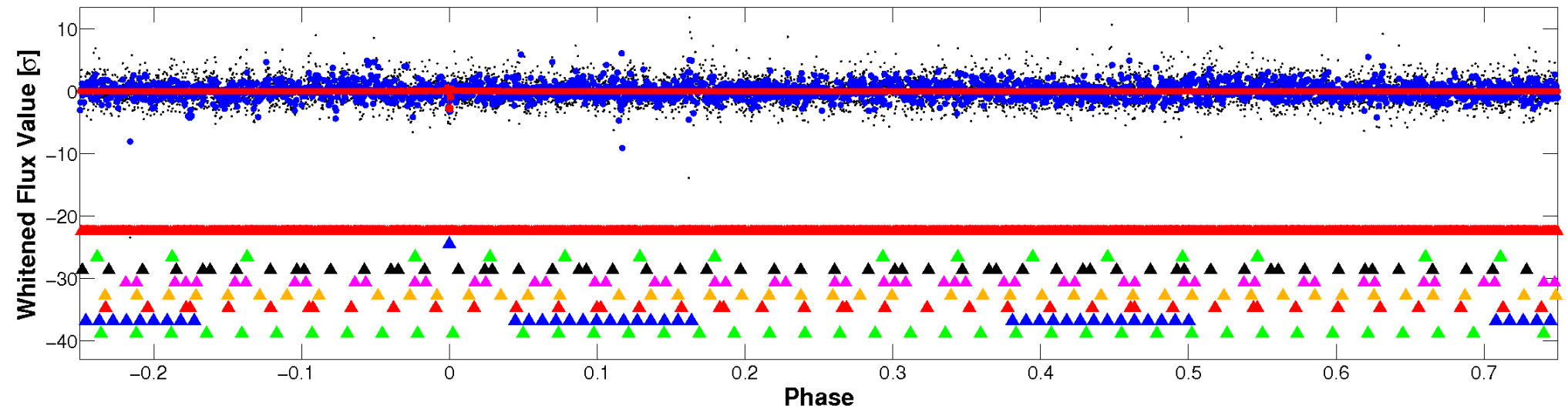


Non-Whitened Vs. Whitened Light Curve

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

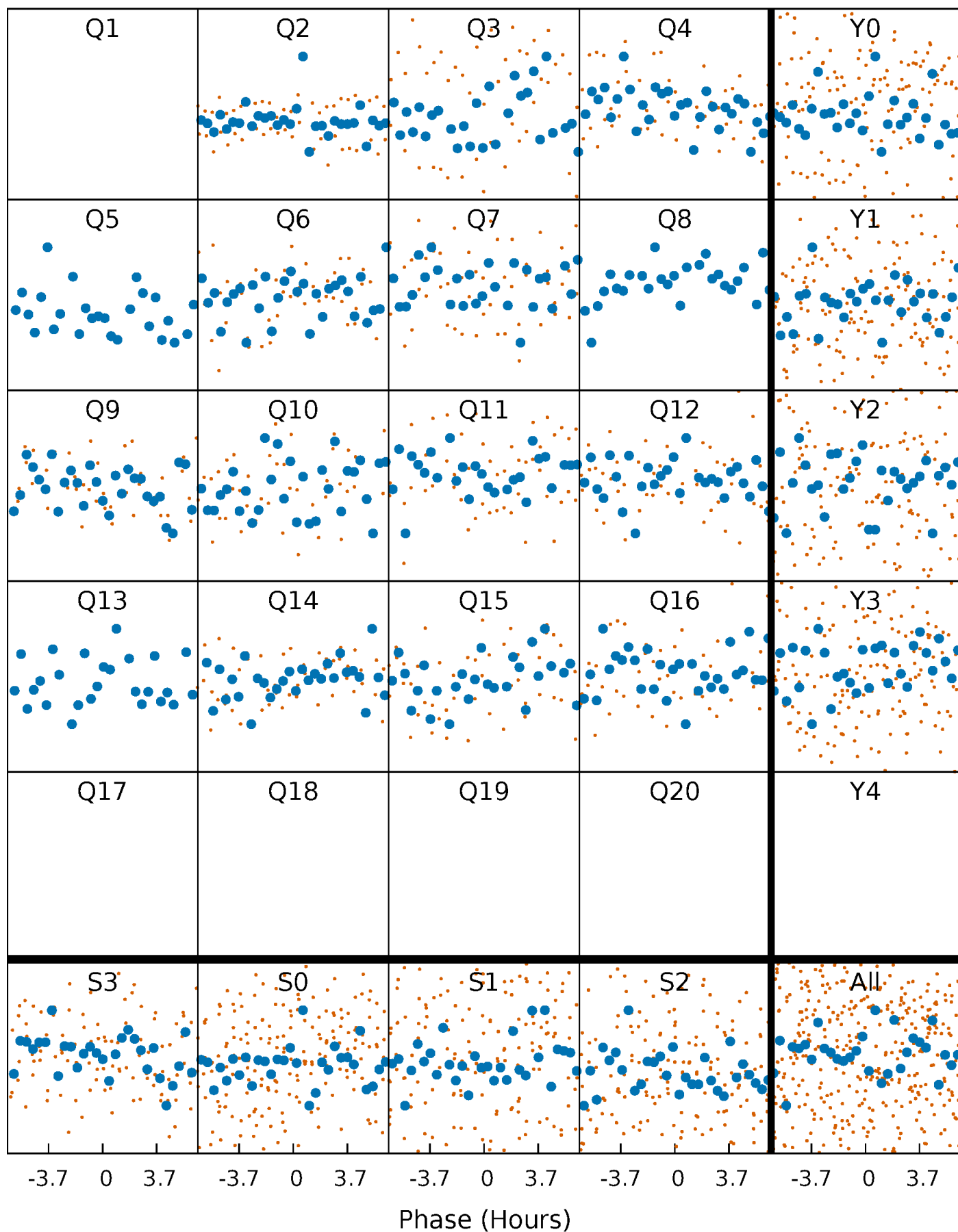


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



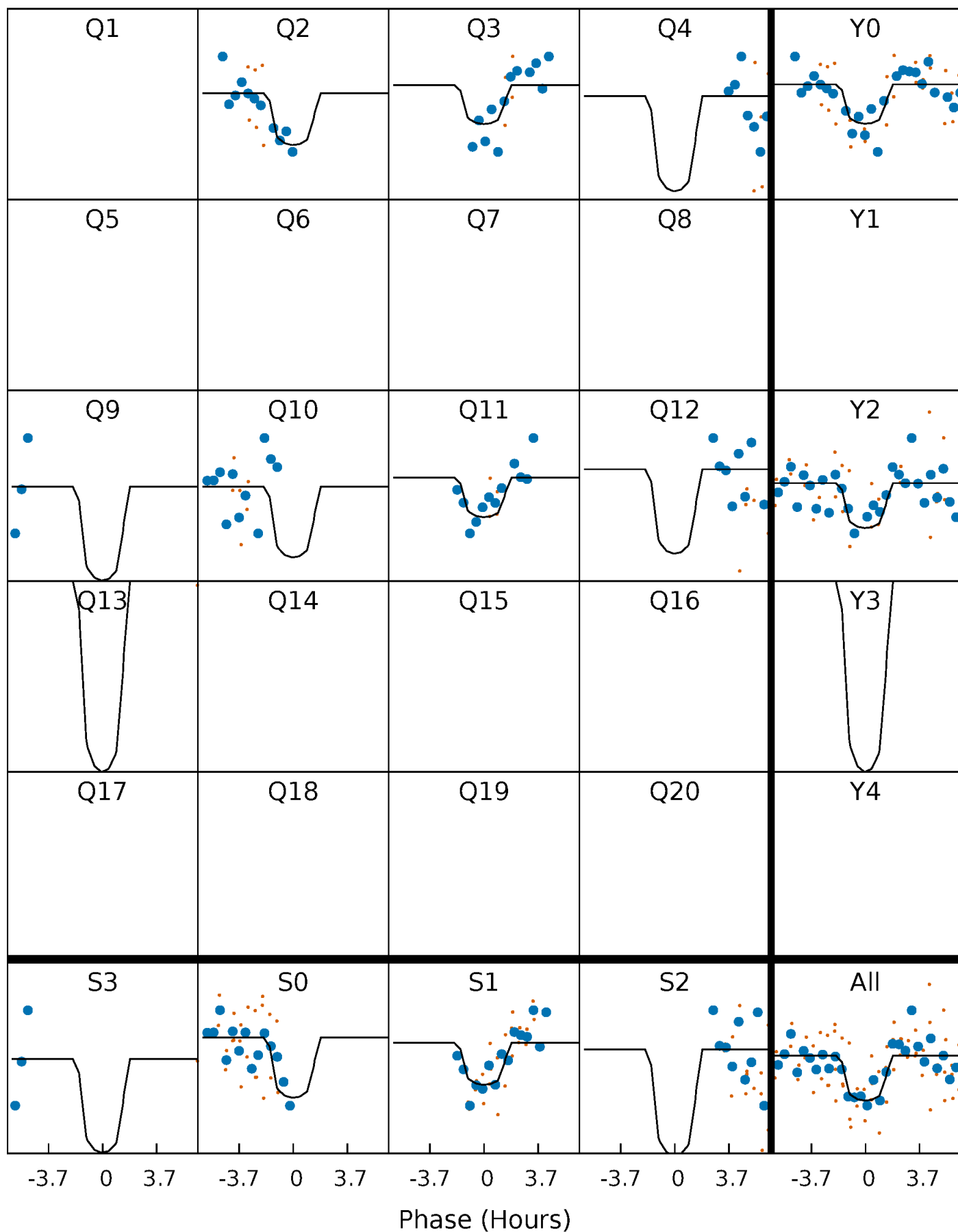
PDC Quarter-Phased Transit Curves

TCE 012647018-02 P= 53.083783 Days $T_0=172.243518$ (BKJD)



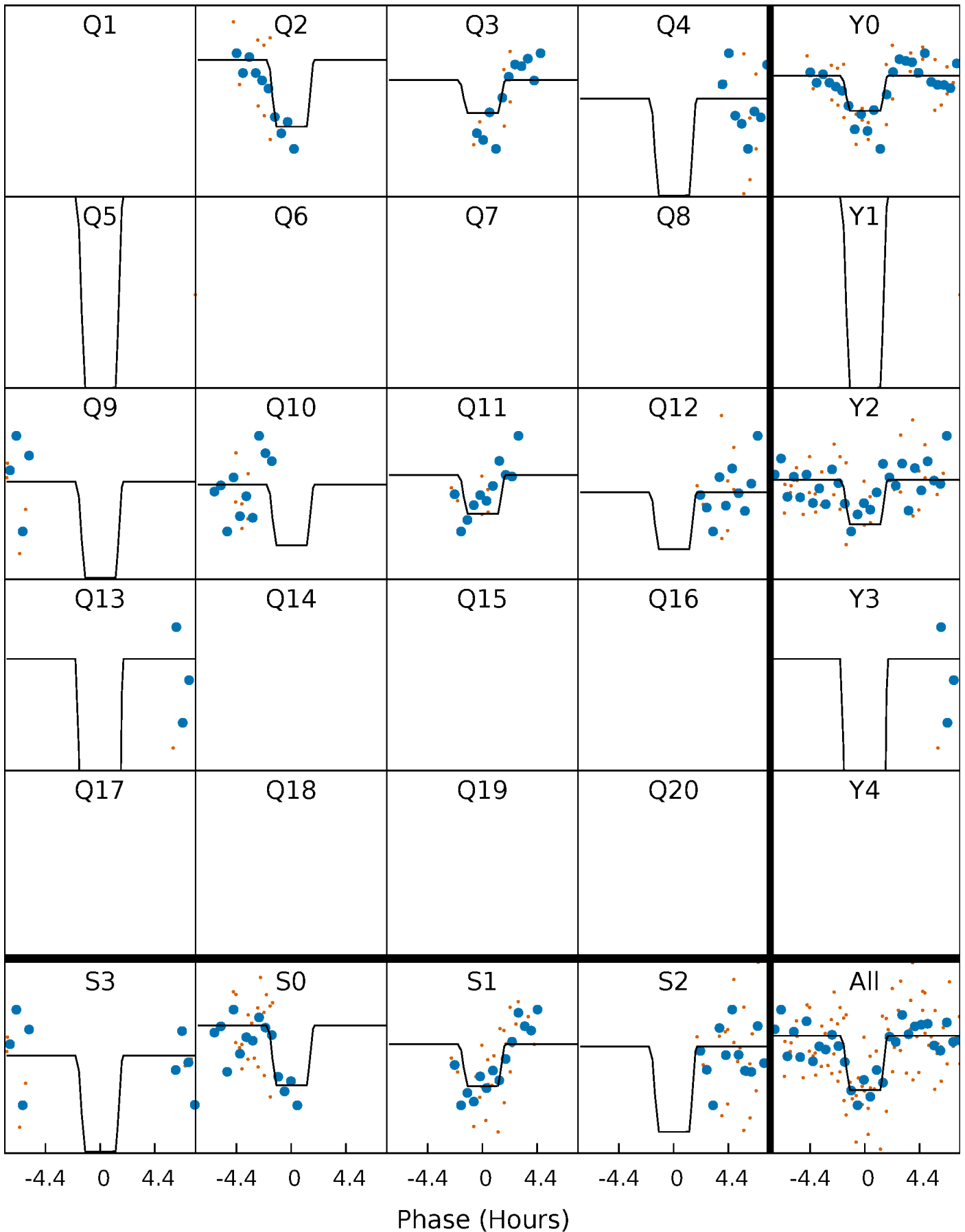
DV Quarter-Phased Transit Curves

TCE 012647018-02 P= 53.083783 Days $T_0=172.243518$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

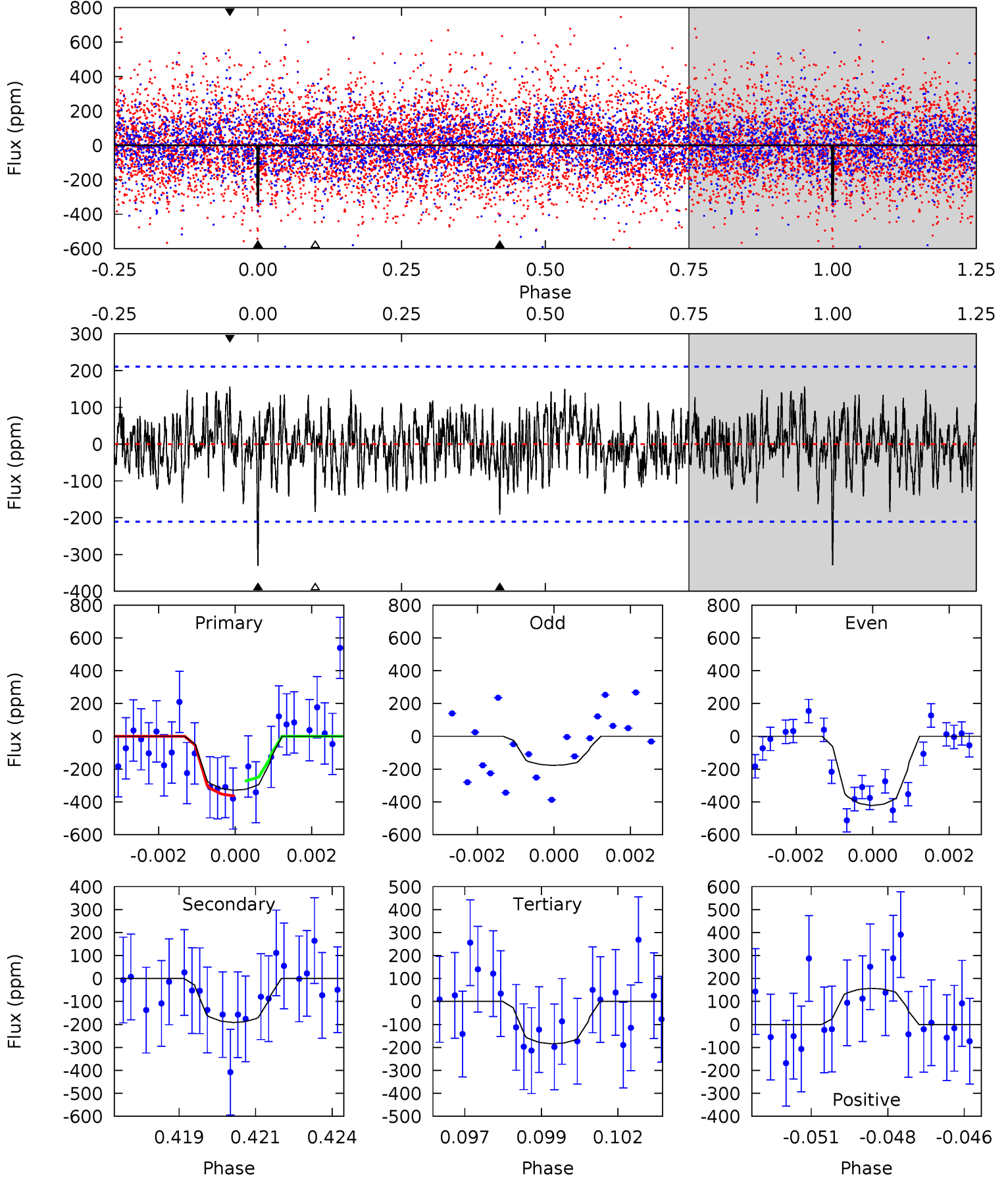
TCE 012647018-02 P= 53.085956 Days $T_0=172.226359$ (BKJD)



DV Model-Shift Uniqueness Test

012647018-02, $P = 53.083783$ Days, $E = 119.159735$ Days

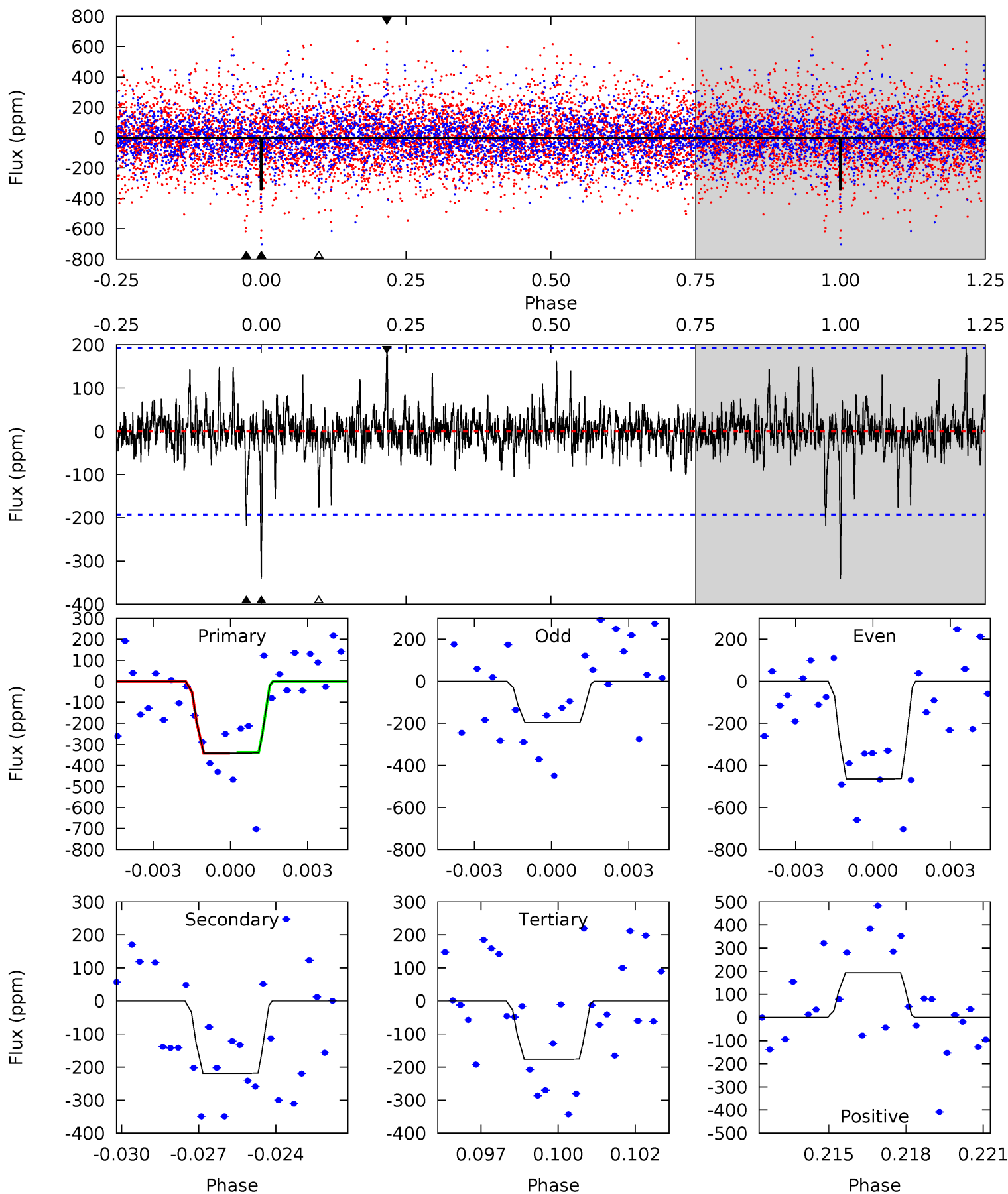
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.25	4.80	4.63	3.94	5.29	3.03	1.42	3.63	4.32	0.18	0.87	3.00	0.65	0.32	1.11



Alt Model-Shift Uniqueness Test

012647018-02, P = 53.085956 Days, E = 119.140403 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.34	5.99	4.82	5.31	5.27	3.00	1.00	4.52	4.03	1.17	0.68	3.65	0.90	0.36	0.05



Stellar Parameters For KIC 012647018

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5657^{+152}_{-152}	$4.026^{+0.424}_{-0.133}$	$0.100^{+0.250}_{-0.250}$	$1.649^{+0.351}_{-0.652}$	$1.053^{+0.126}_{-0.139}$	$0.331^{+1.086}_{-0.128}$
	+3%/-3%	+11%/-3%	+250%/-250%	+21%/-40%	+12%/-13%	+328%/-39%
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 012647018-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-191 ± 40	$4.41^{+4.14}_{-2.98}$	828^{+59}_{-107}	4198^{+2874}_{-753}	427^{+3461}_{-318}
Alt.	-219 ± 37	$4.24^{+3.84}_{-3.03}$	831^{+57}_{-93}	4486^{+3481}_{-892}	548^{+5655}_{-402}

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

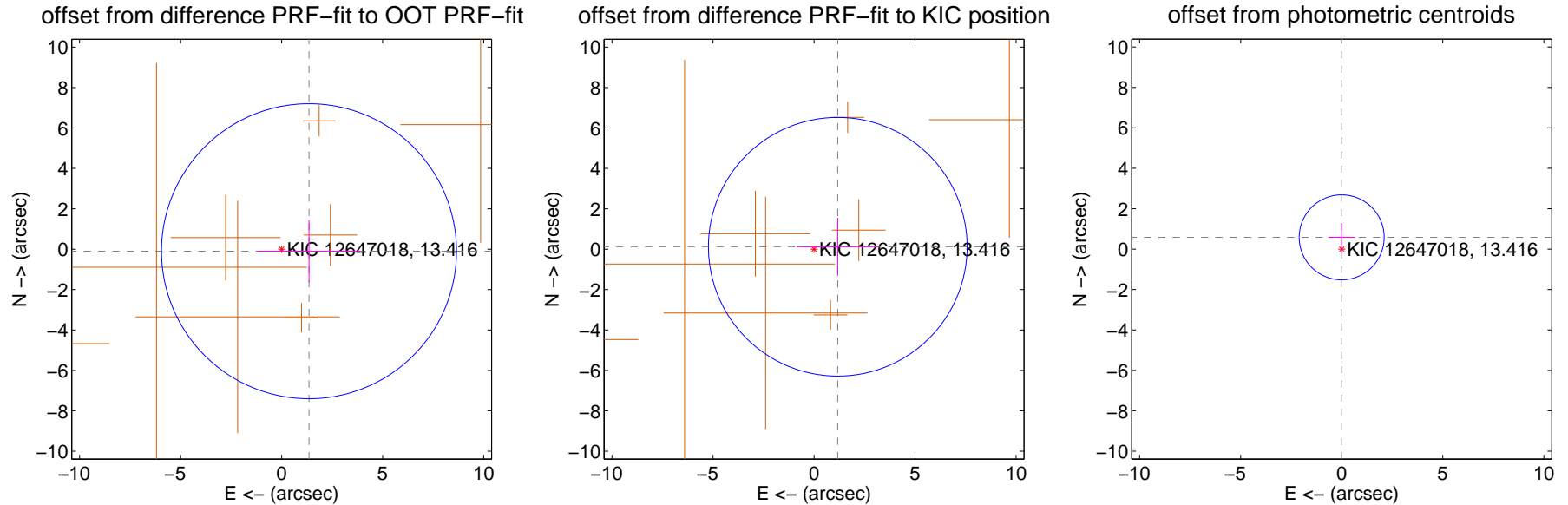
DV Centroid Data

Supplemental centroid analysis for 012647018-02. Kepler magnitude: 13.42. Transit SNR 10.56

There are 0 quarters with good PRF difference image offsets

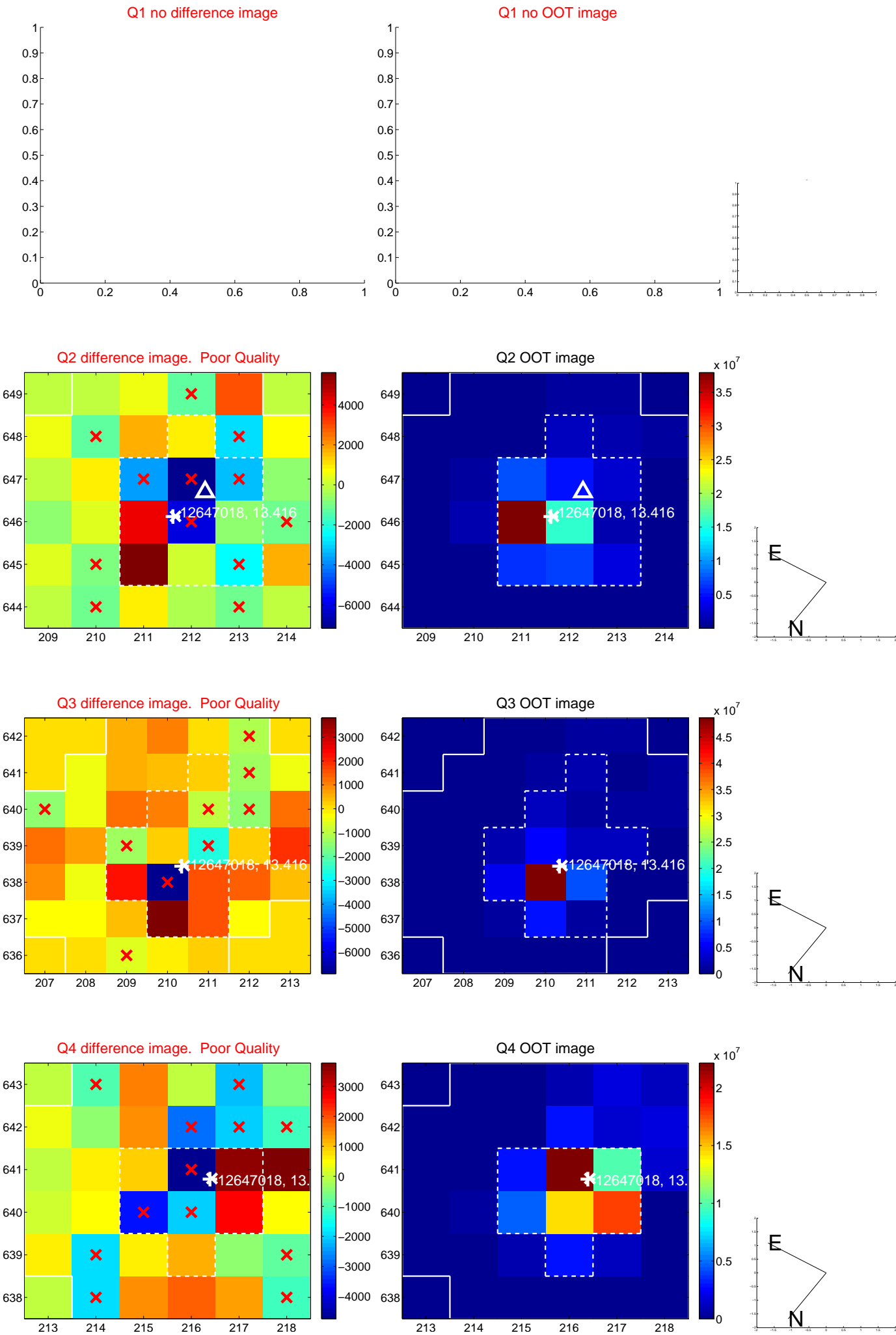
The direct PRF centroid is offset from the target star catalog position by about 0.29 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.359 ± 2.433	0.56	-1.355 ± 2.526	-0.101 ± 1.544
PRF-fit source offset from KIC position	1.181 ± 2.134	0.55	-1.175 ± 2.038	0.120 ± 1.432
photometric centroid source offset	0.58 ± 0.70	0.83	0.00 ± 0.66	0.58 ± 0.70

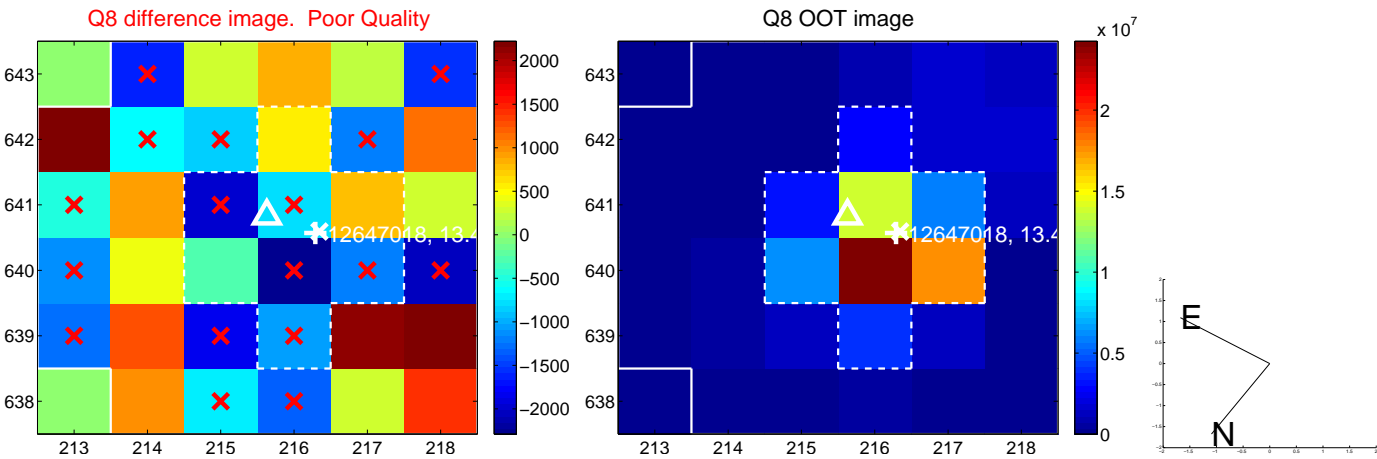
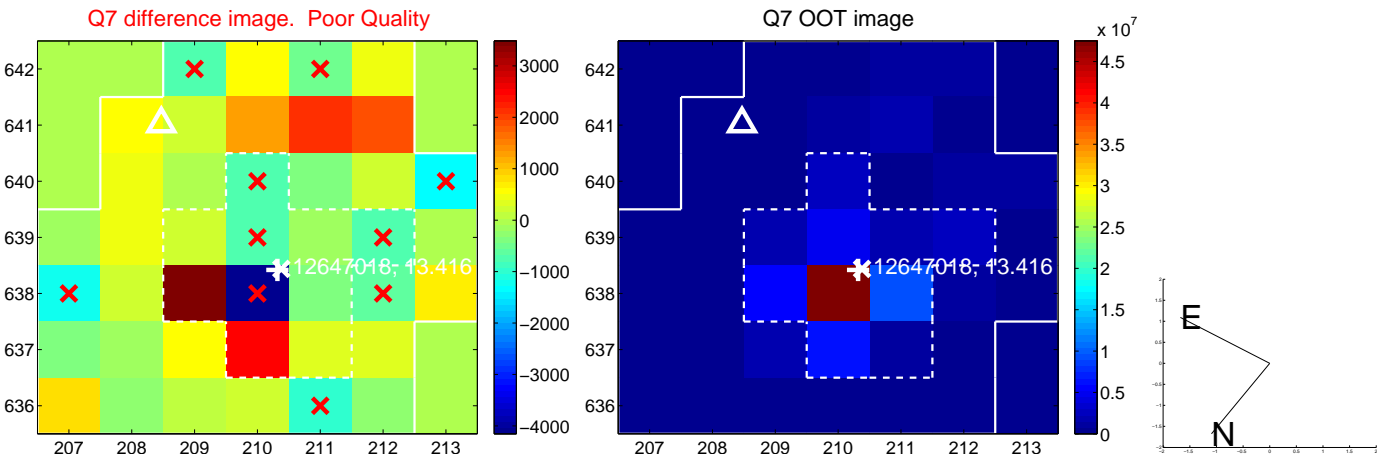
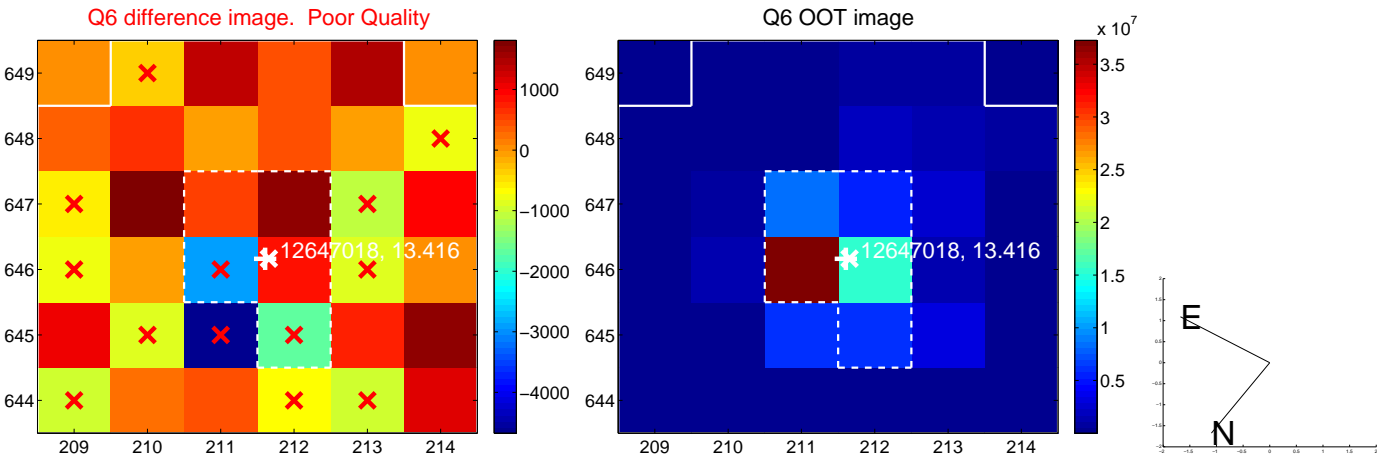
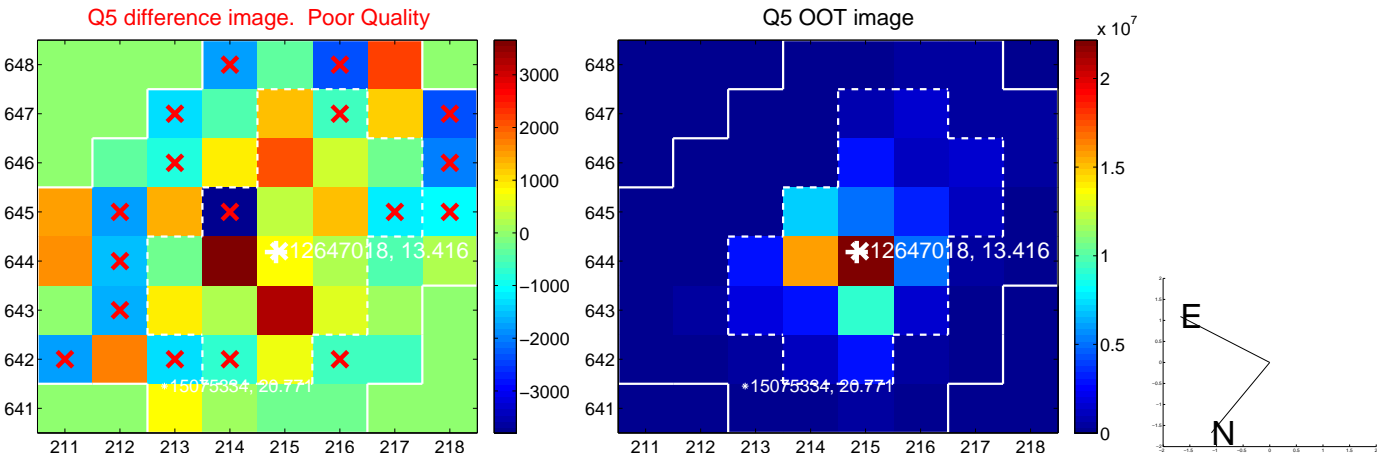


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

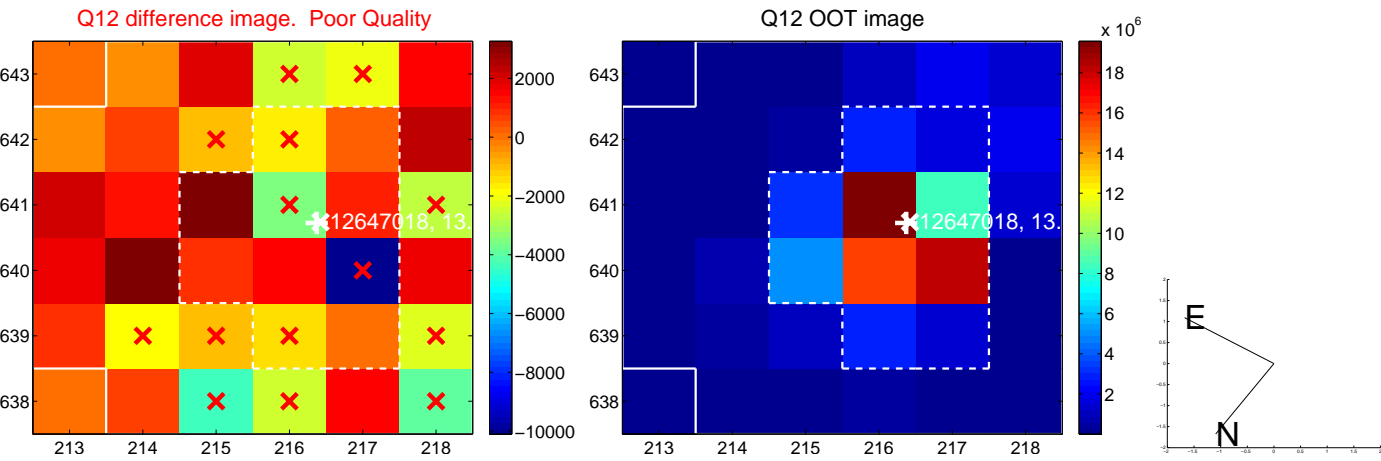
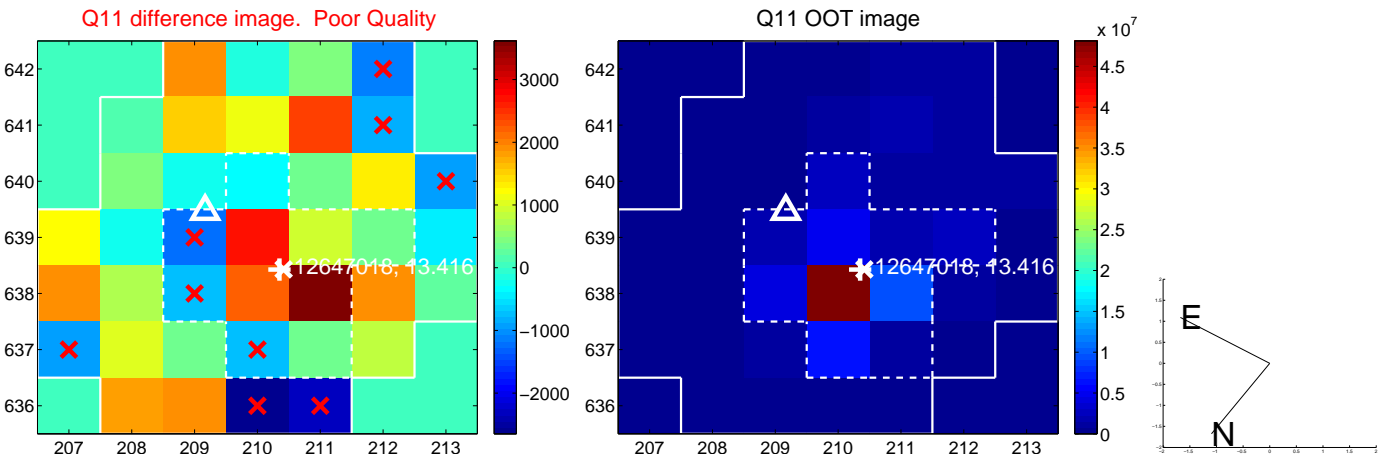
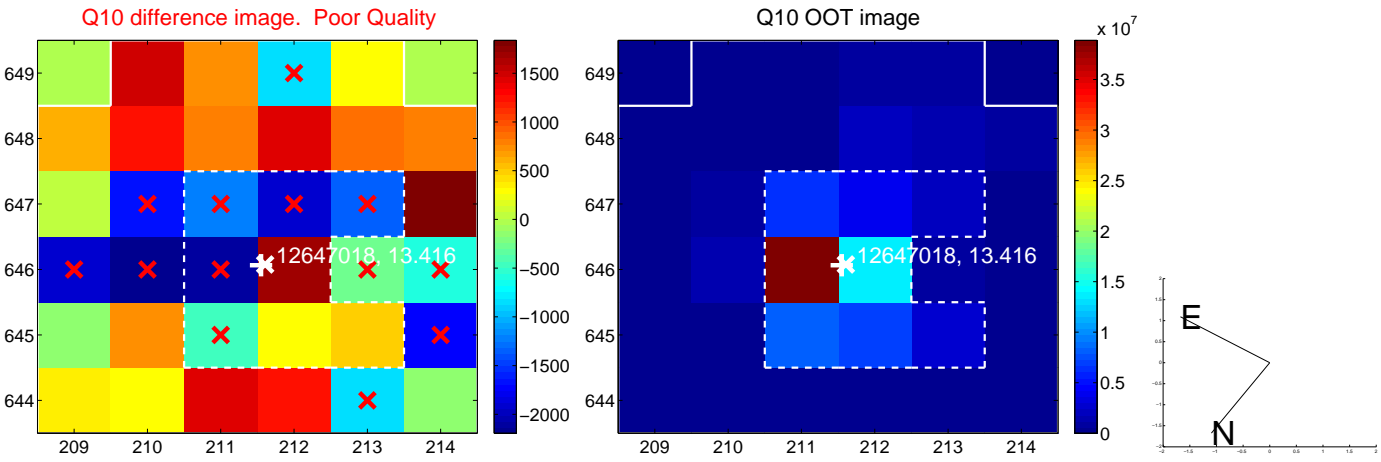
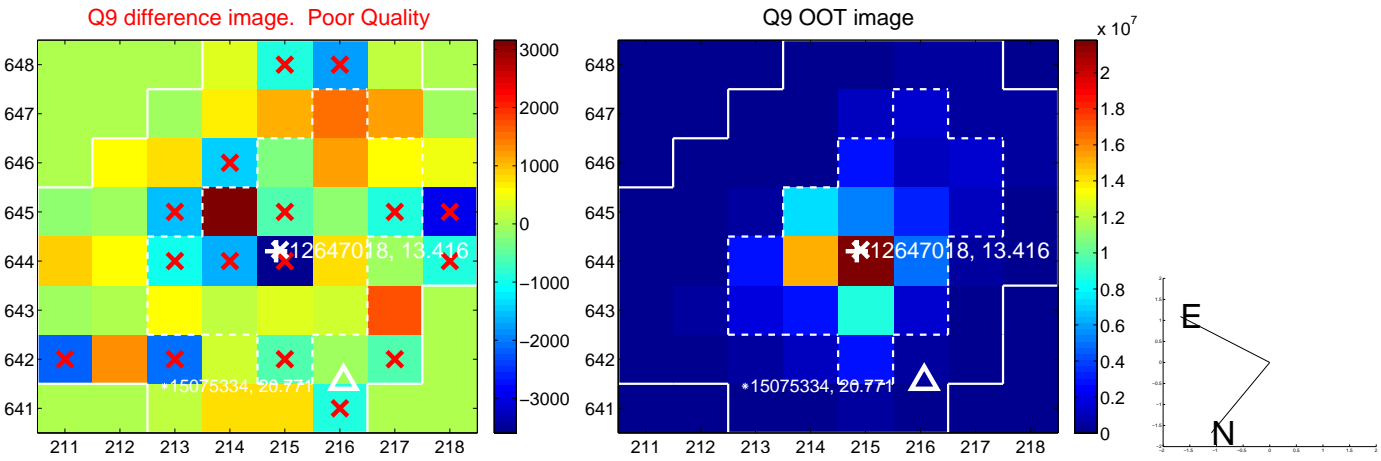
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



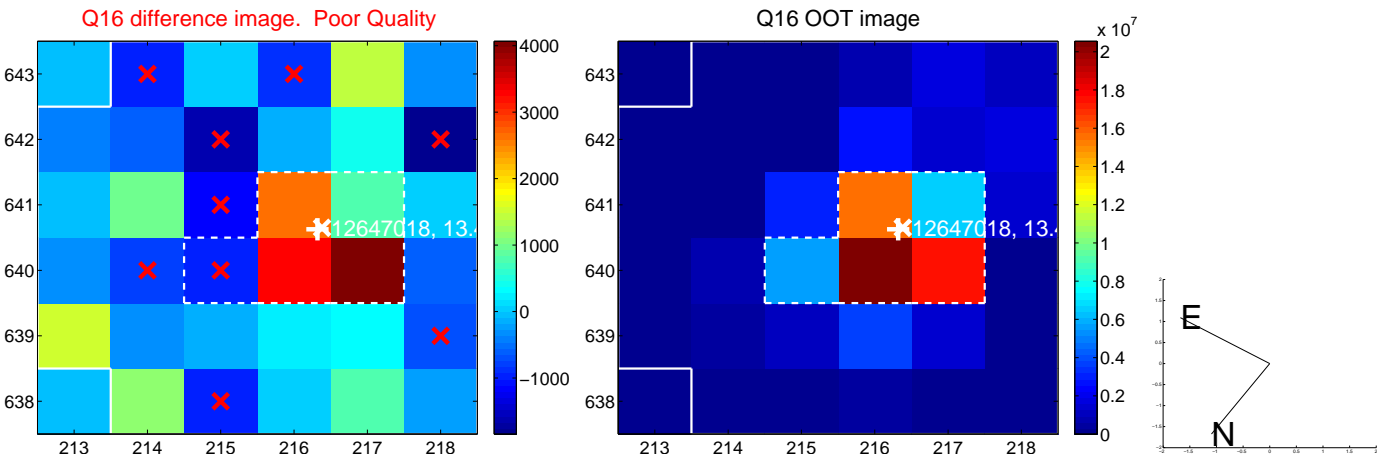
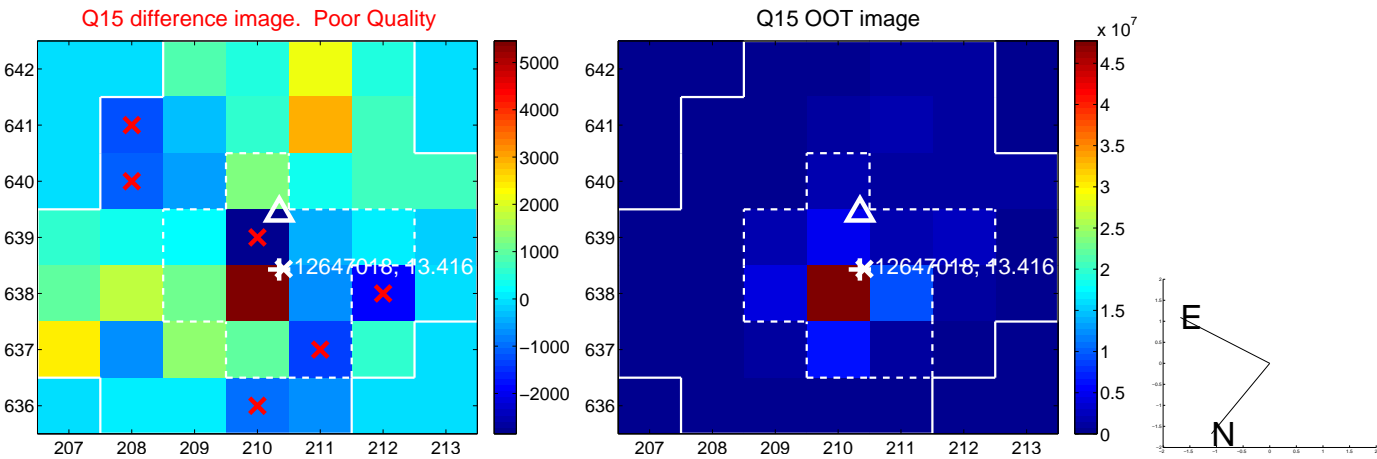
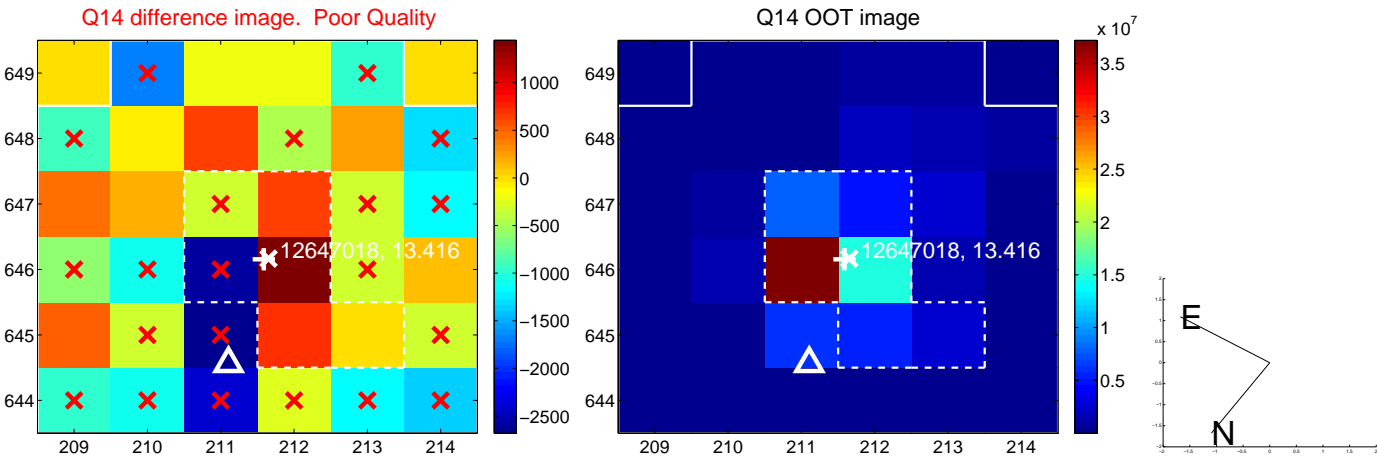
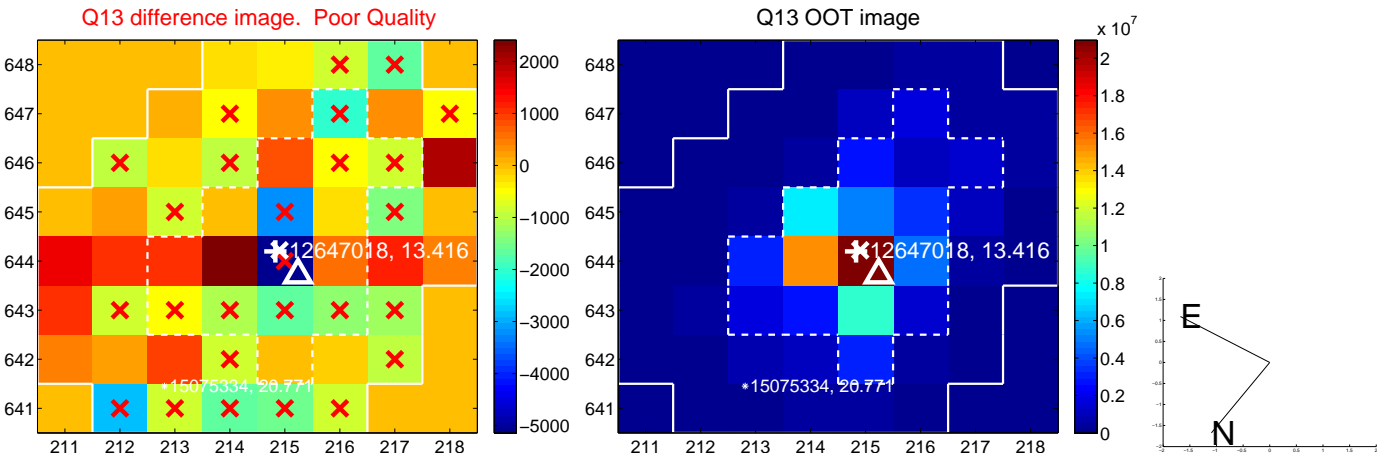
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



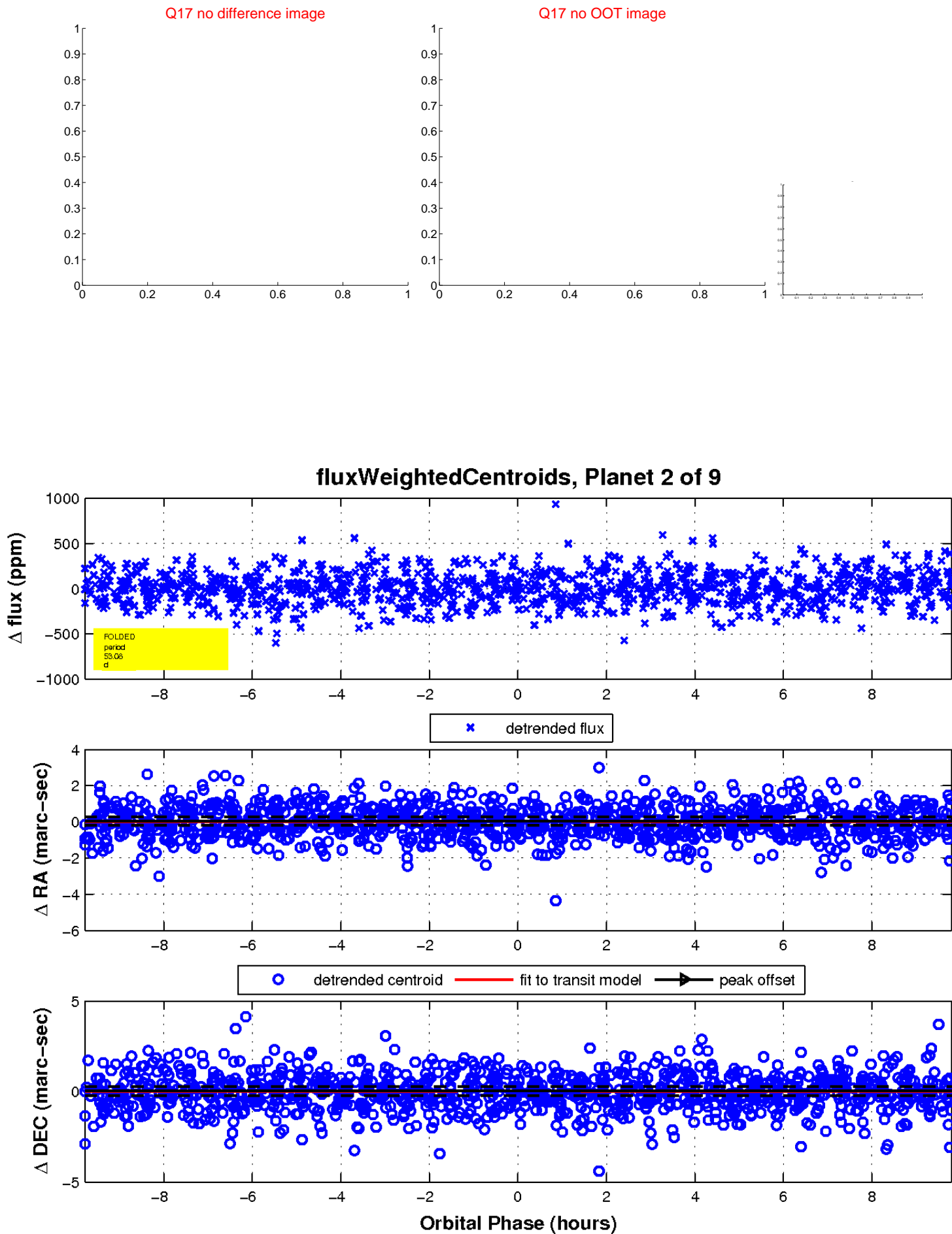
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

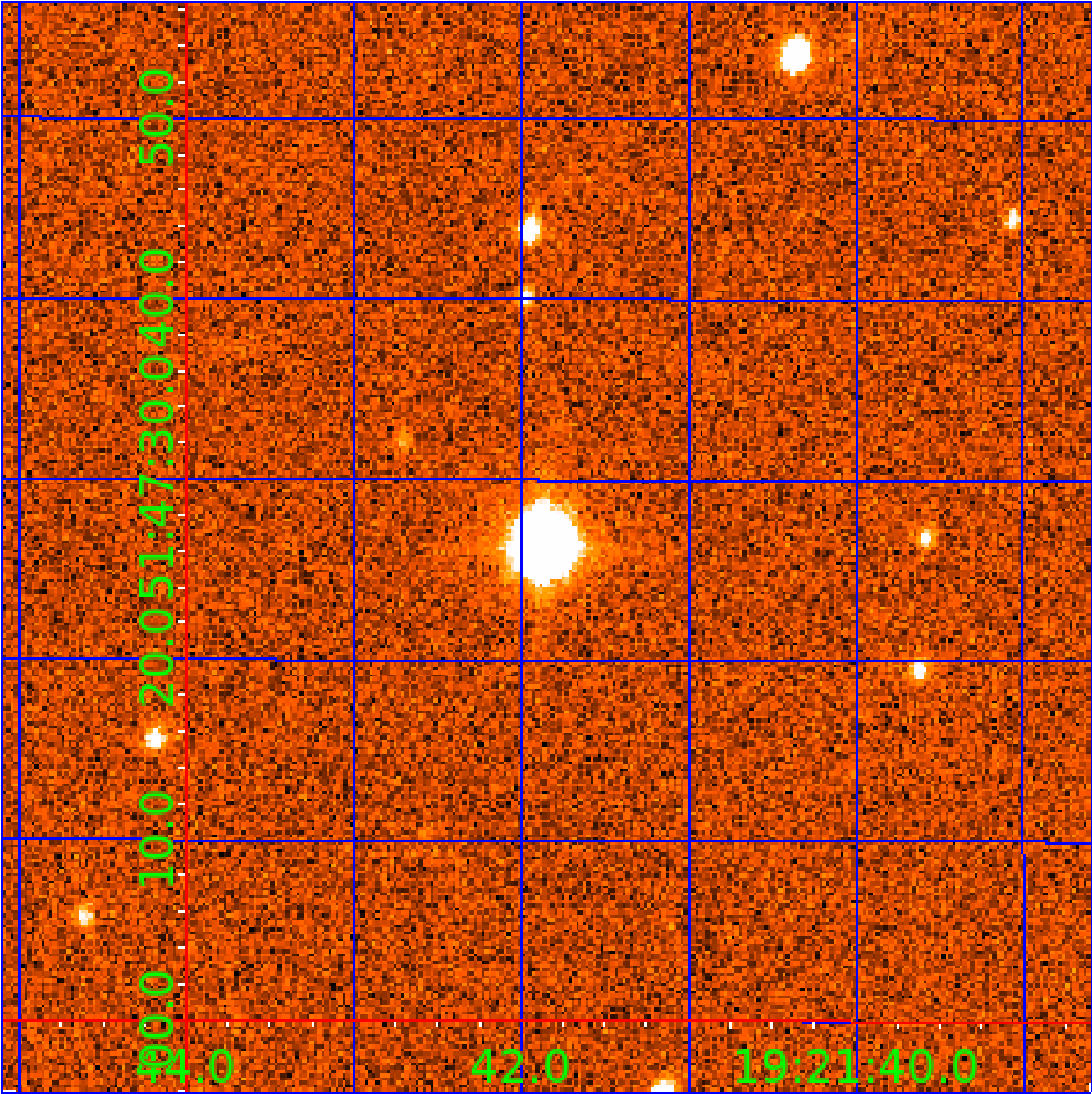


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 012647018

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})
012647018-01	OBS	No	1.296908	132.535743	20.8	9.030	8.3	11.1	1.65	5657	0.74	4448.09
012647018-02	OBS	No	53.083783	172.243518	341.8	3.269	11.3	10.6	1.65	5657	3.64	31.53
012647018-03	OBS	No	89.370051	187.811407	293.6	4.582	9.1	8.9	1.65	5657	3.44	15.74
012647018-04	OBS	No	24.853298	152.045089	100.5	3.762	9.0	5.1	1.65	5657	1.76	86.74
012647018-05	OBS	No	27.619166	134.768352	320.1	1.346	11.5	11.7	1.65	5657	2.93	75.35
012647018-06	OBS	No	32.503712	147.954093	220.4	4.386	9.5	11.5	1.65	5657	2.46	60.65
012647018-07	OBS	No	33.918495	133.285052	183.5	4.022	8.4	8.3	1.65	5657	2.47	57.30
012647018-09	OBS	No	36.652668	140.779741	233.3	3.001	8.8	8.7	1.65	5657	2.92	51.67

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
012647018-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT
012647018-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
012647018-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
012647018-04	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS—HALO_GHOST
012647018-05	OBS	FP	0.00	1	0	1	0	TRANS_GAPPED—MOD_NONUNIQ_DV—CENT_FEW_MEAS—HALO_GHOST
012647018-06	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS—HALO_GHOST
012647018-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
012647018-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—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.

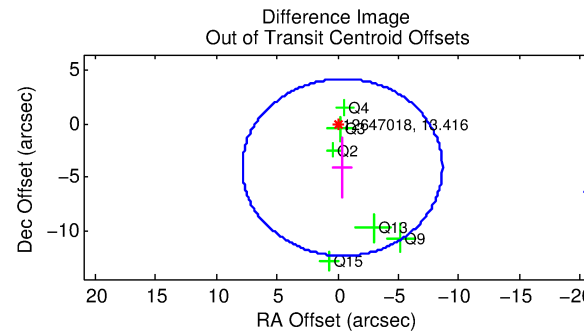
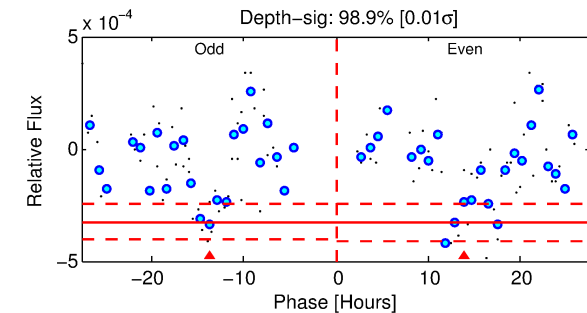
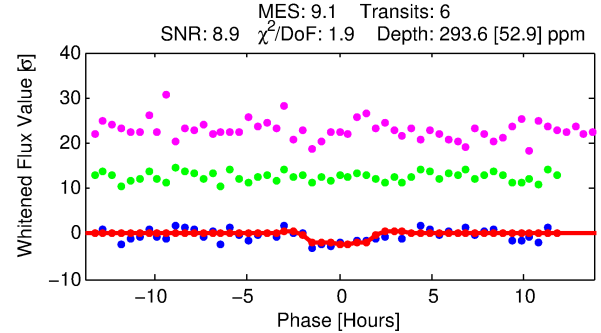
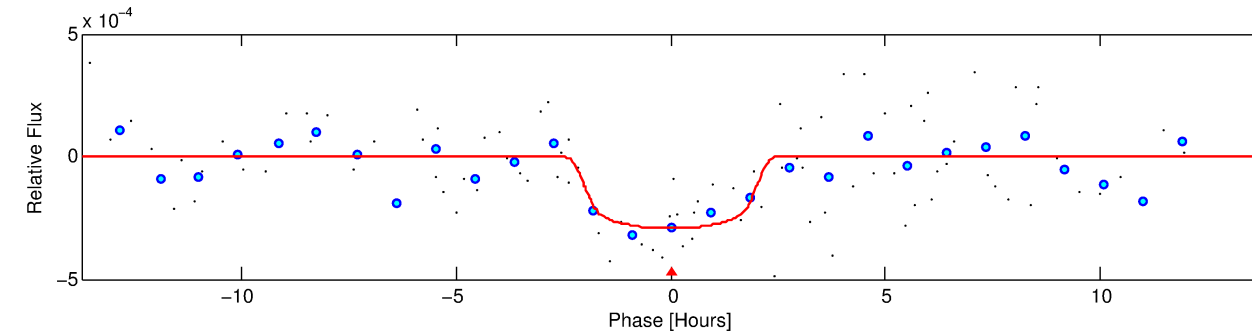
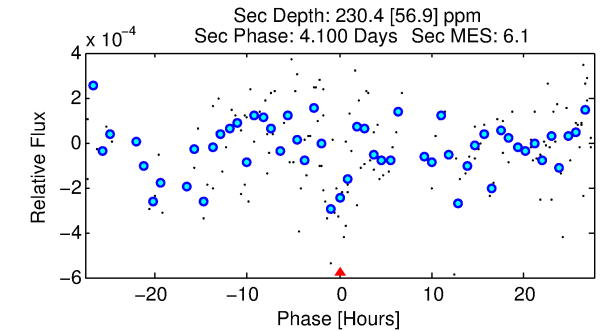
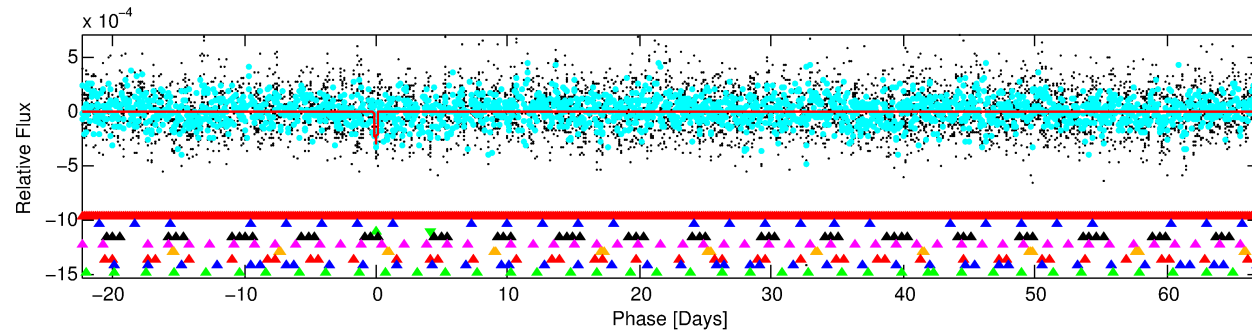
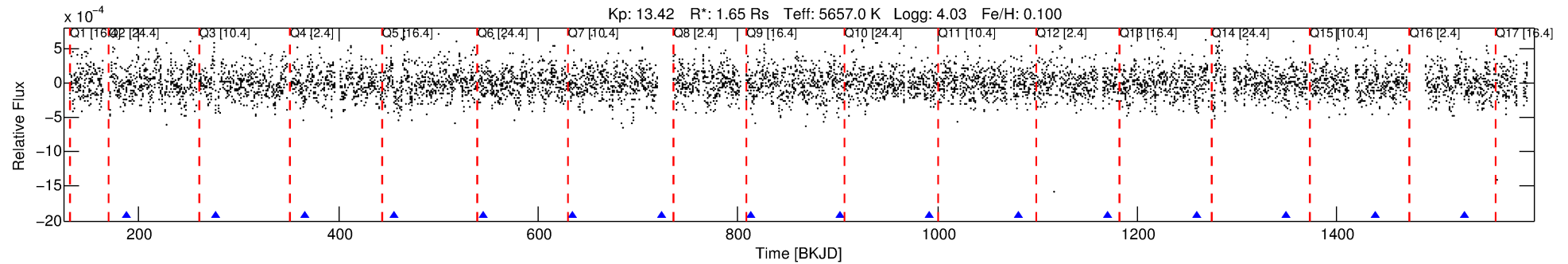
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 012647018-03

No Significant Match Found

DV One-Page Summary

KIC: 12647018 Candidate: 3 of 9 Period: 89.370 d



DV Fit Results:

Period = 89.37005 [0.00144] d
Epoch = 187.8114 [0.0120] BKJD
Rp/R* = 0.0191 [0.0087]
a/R* = 66.16 [133.13]
b = 0.92 [0.36]
Seff = 15.74 [11.18]
Teq = 508 [90] K
Rp = 3.44 [2.07] Re
a = 0.3981 [0.1667] AU
Ag = 1699.93 [1998.30] [0.85 σ]
Teffp = 5043 [1196] K [3.78 σ]

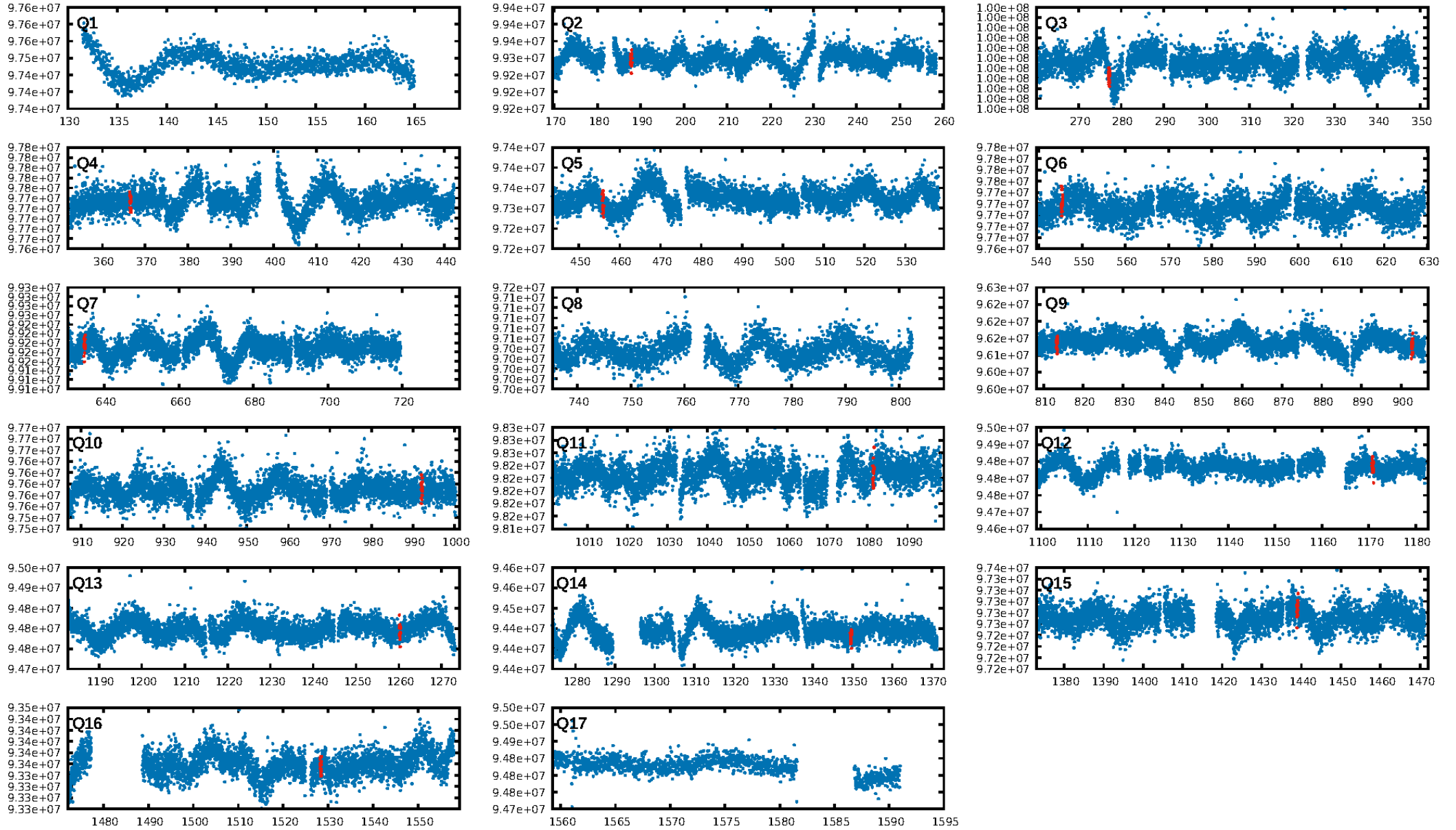
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [154.72 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 56.2%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 2.30e-12
RollingBand-fgt: 1.00 [6/6]
GhostDiagnostic-chr: -0.3628
Centroid-sig: 0.3%
Centroid-so: 1.935 arcsec [2.12 σ]
OotOffset-rm: 4.088 arcsec [1.48 σ]
KicOffset-rm: 3.867 arcsec [1.40 σ]
OotOffset-st: 1/2/1/2 [6]
KicOffset-st: 1/2/1/2 [6]
DiffImageQuality-fgm: 0.17 [1/6]
DiffImageOverlap-fno: 0.00 [0/14]

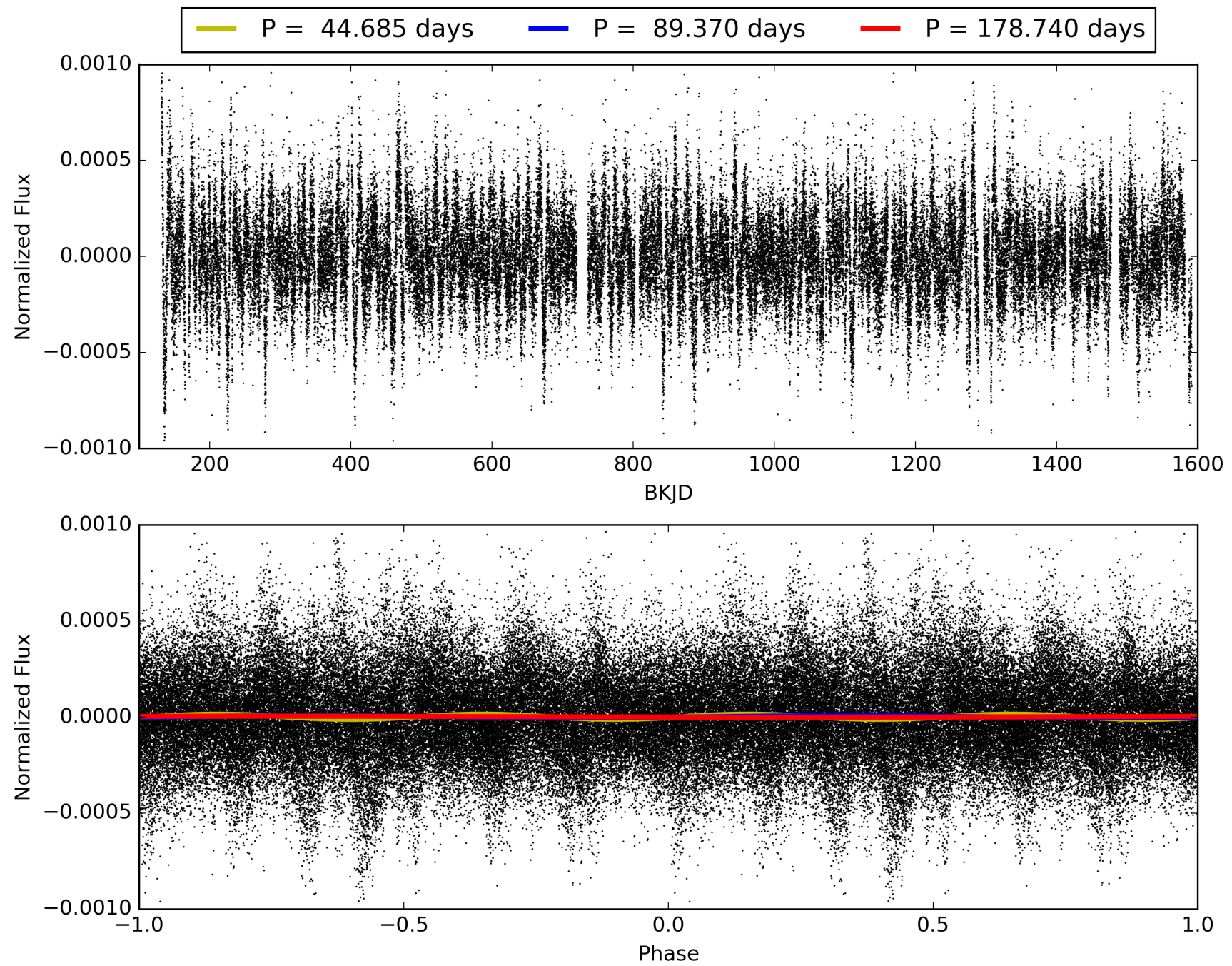
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 05:14:10 Z

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

TCE 012647018-03, PDC Light Curves

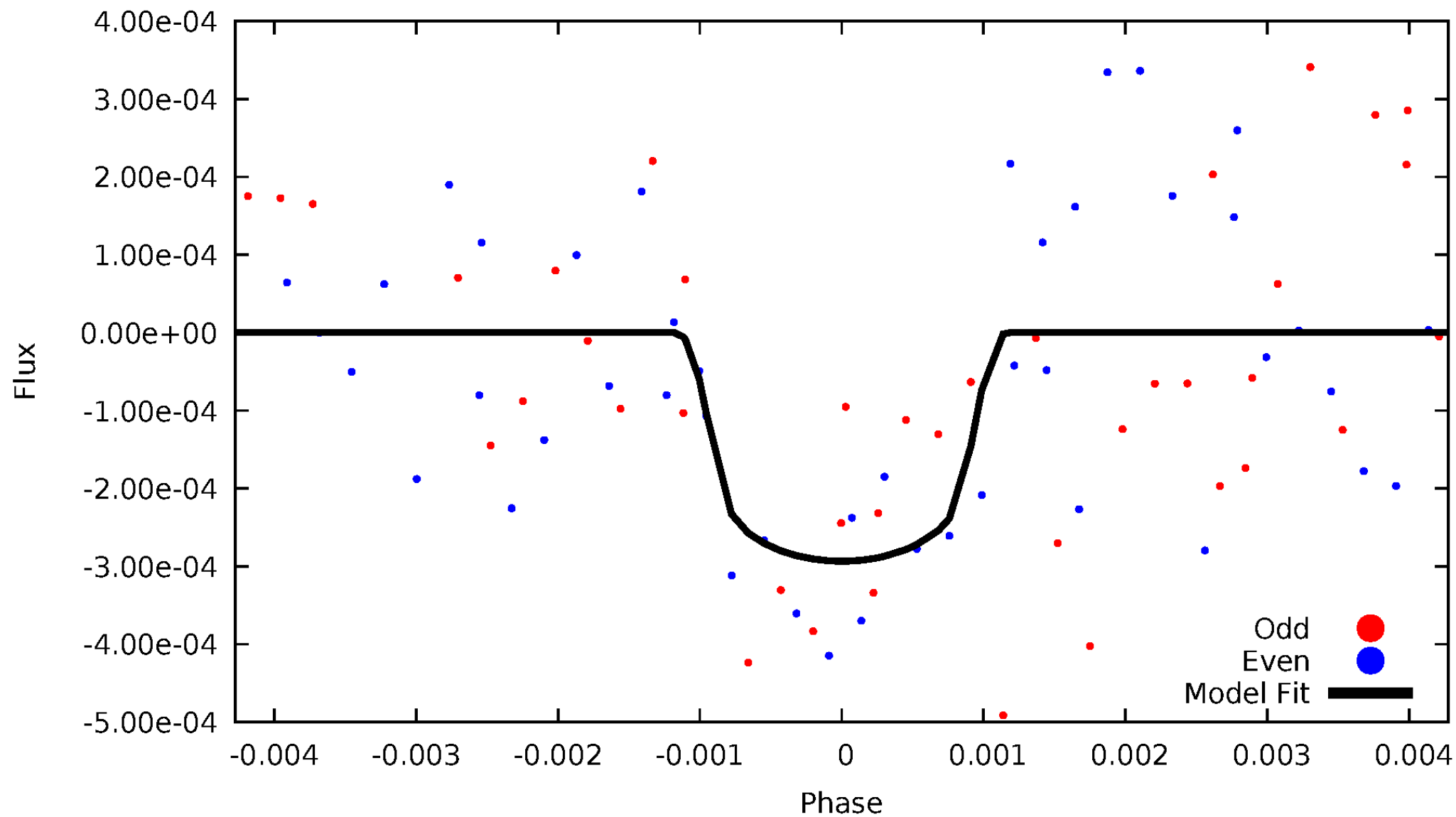


TCE 012647018-03



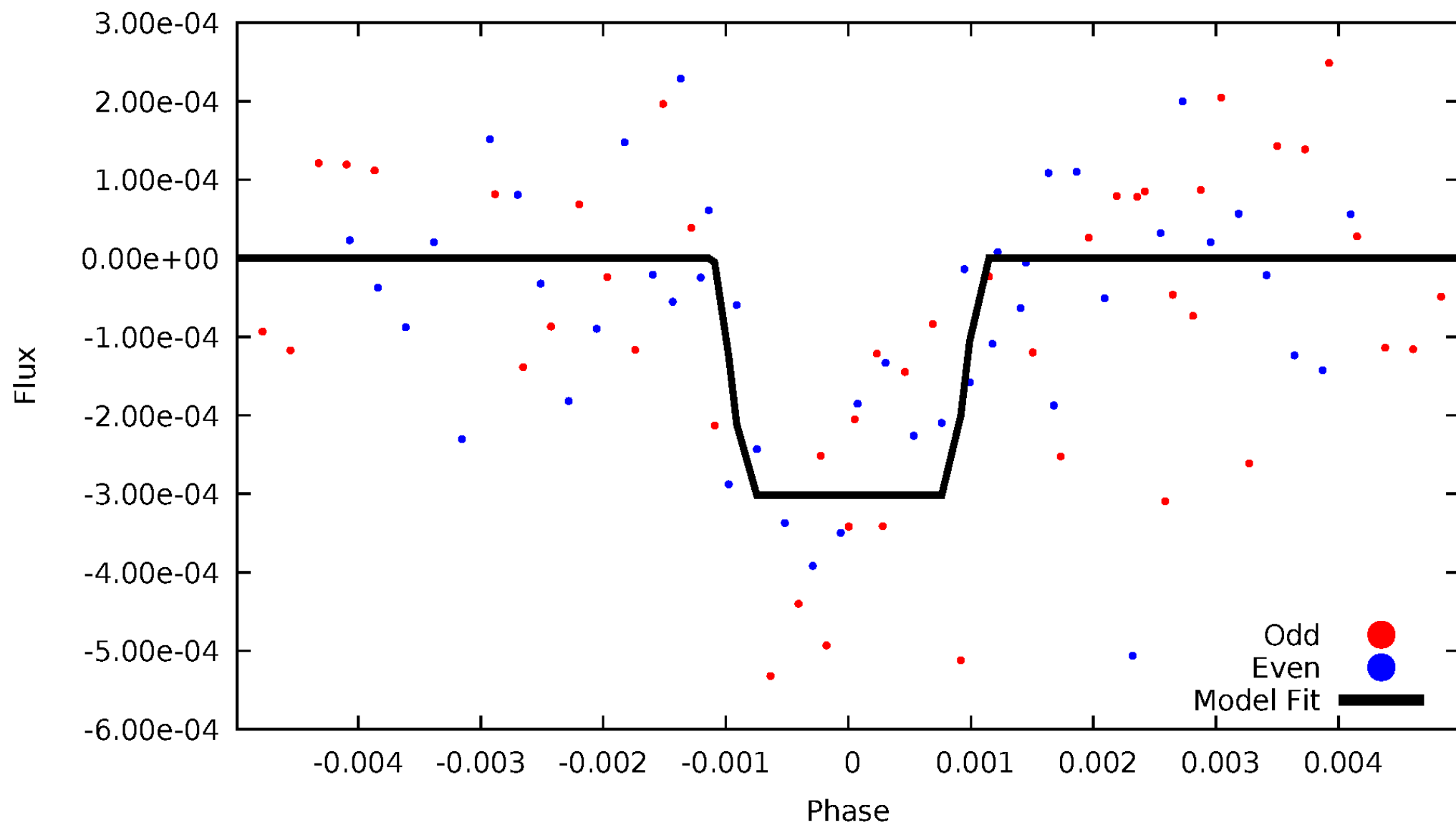
DV Odd/Even

TCE 012647018-03



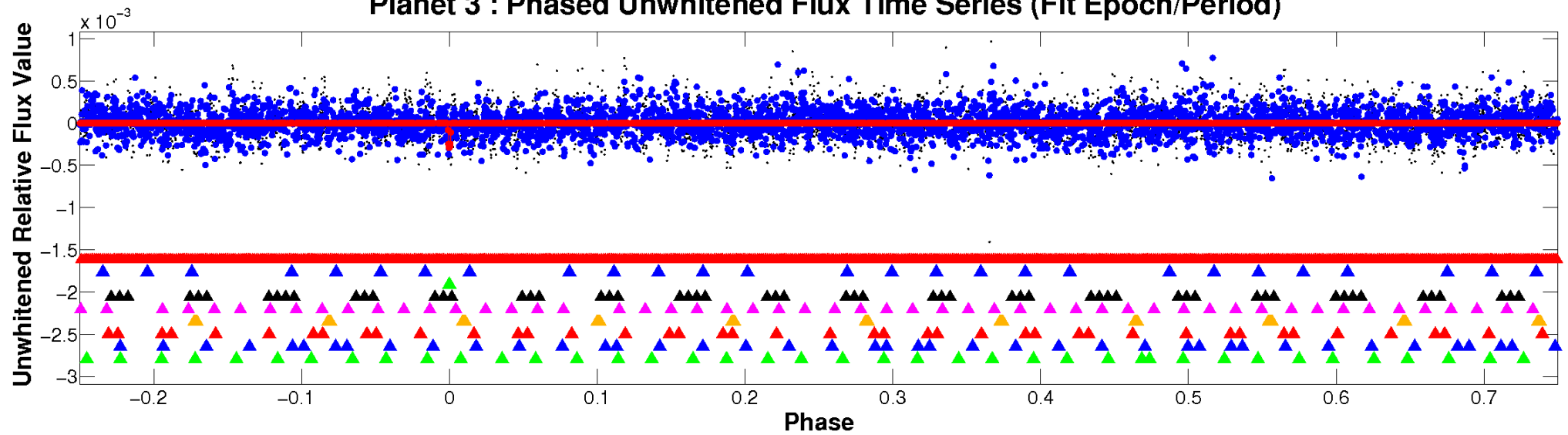
ALT Odd/Even

TCE 012647018-03

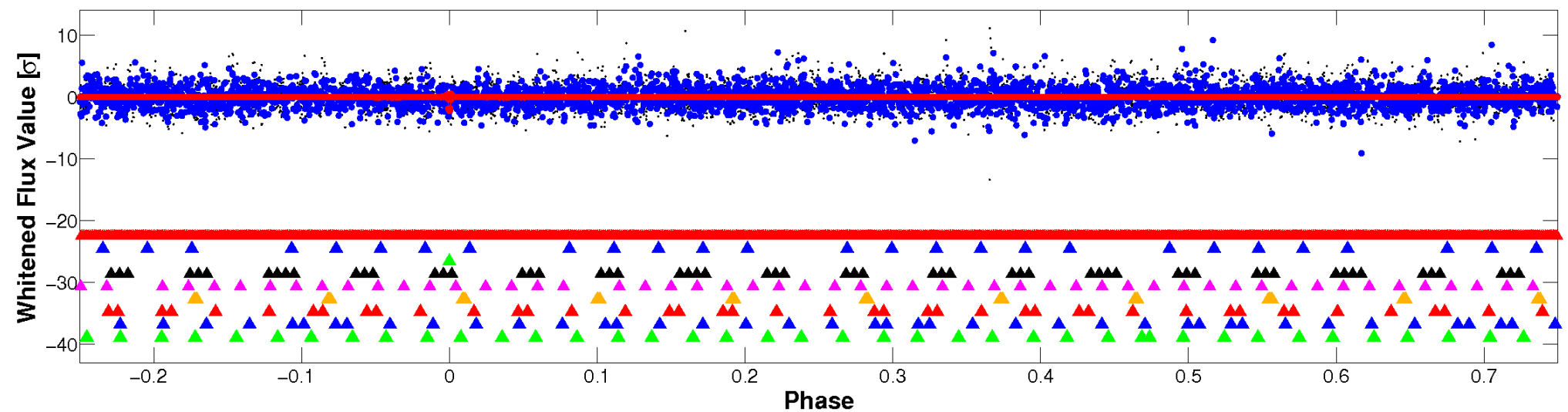


Non-Whitened Vs. Whitened Light Curve

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

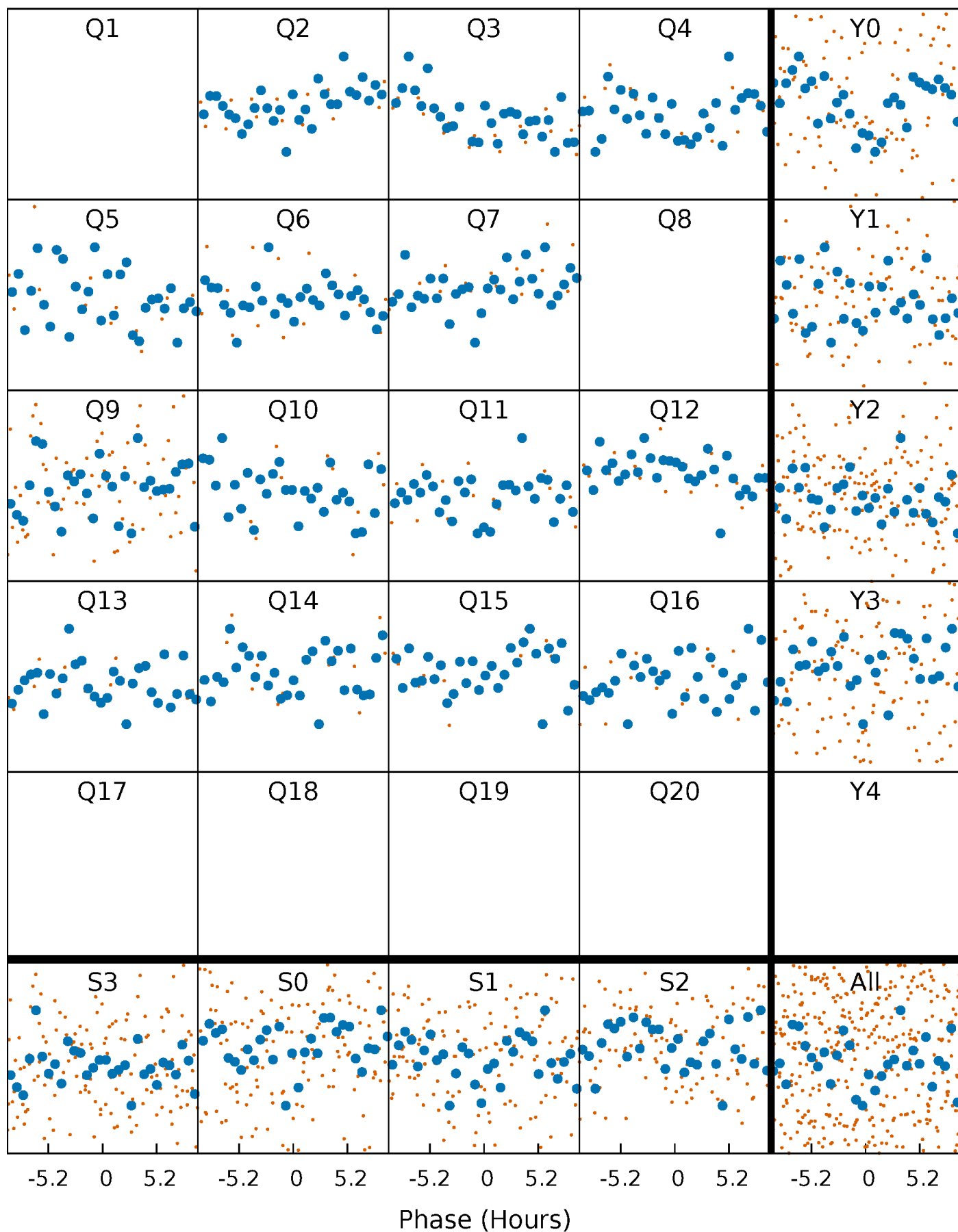


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



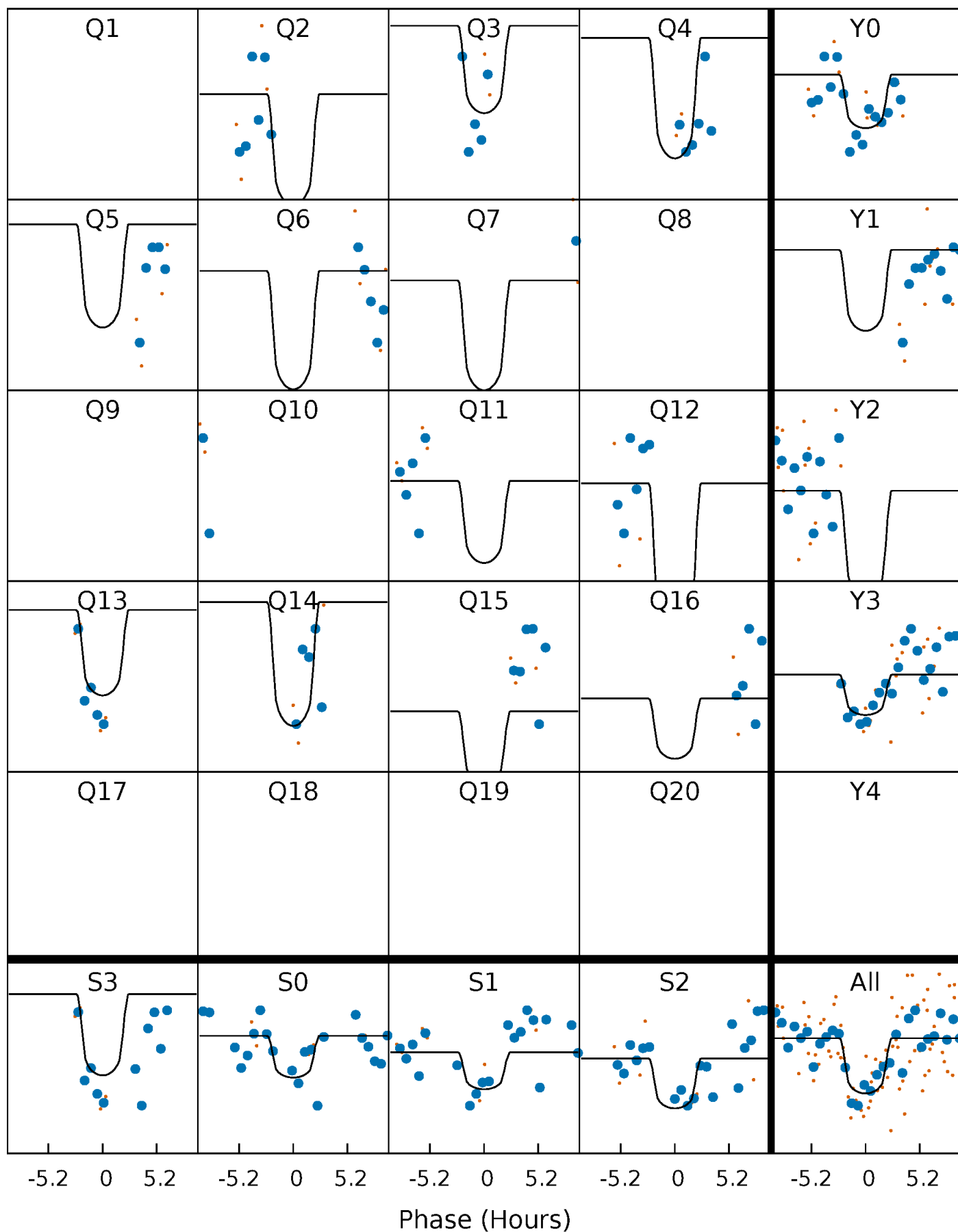
PDC Quarter-Phased Transit Curves

TCE 012647018-03 P= 89.370051 Days $T_0=187.811407$ (BKJD)



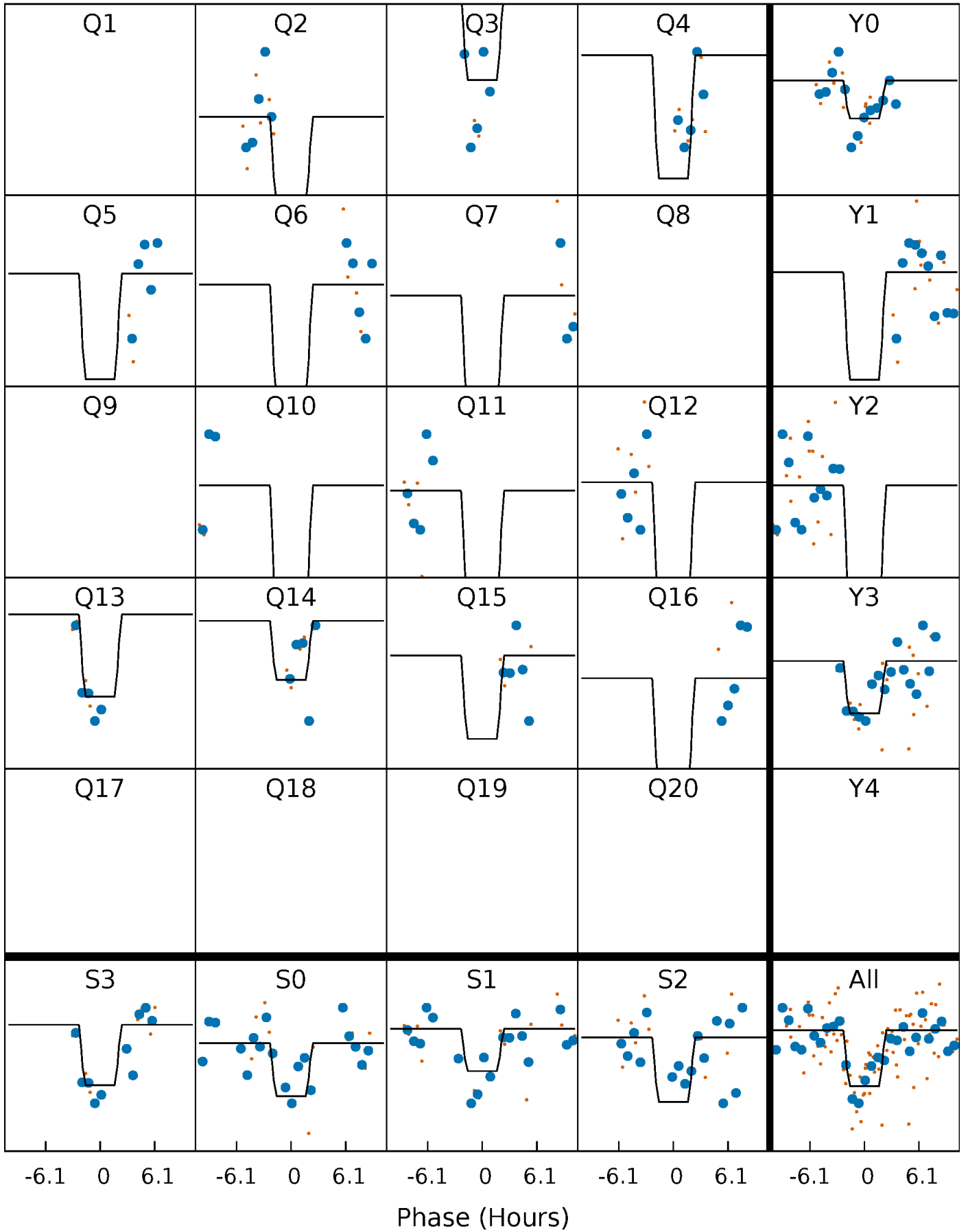
DV Quarter-Phased Transit Curves

TCE 012647018-03 P= 89.370051 Days $T_0=187.811407$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

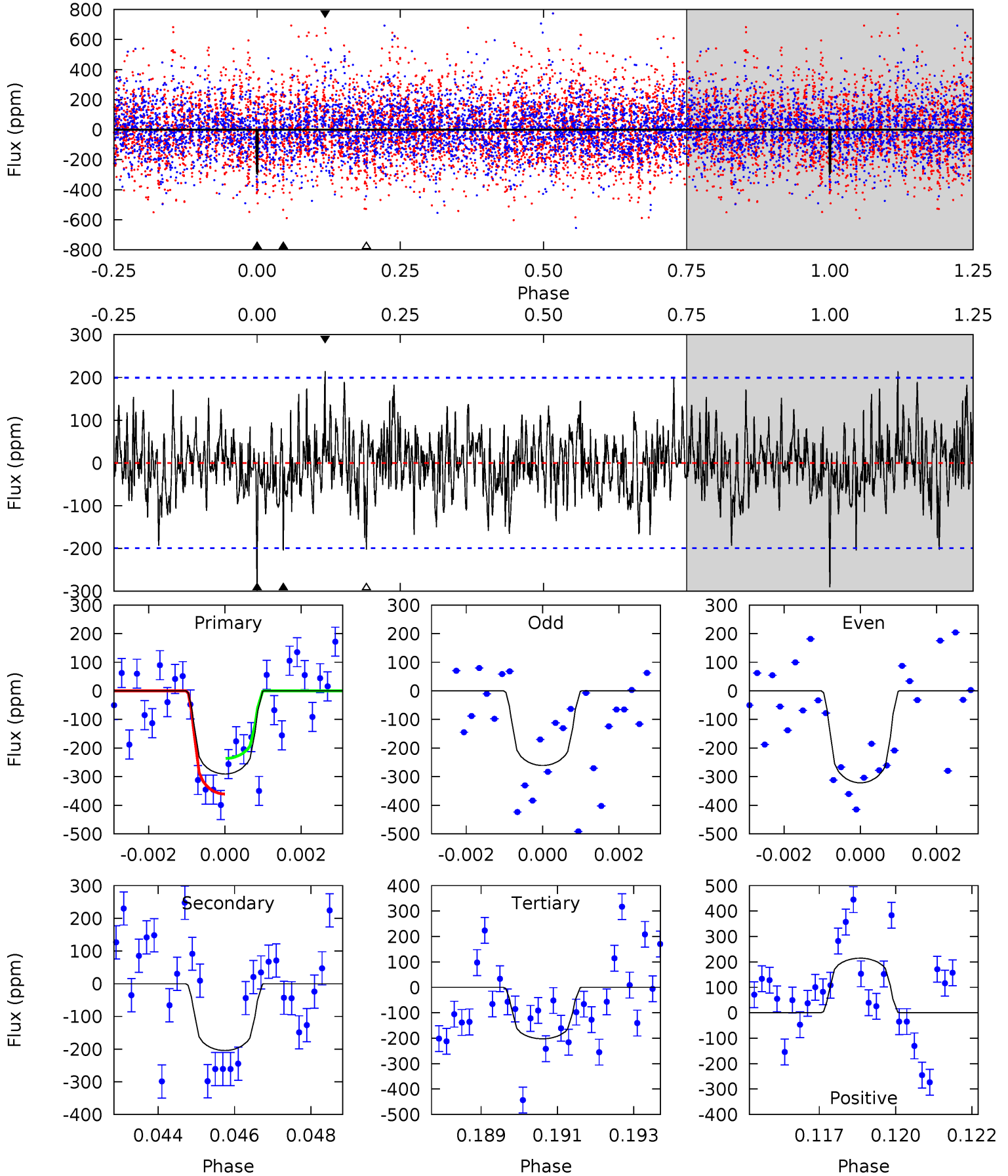
TCE 012647018-03 P= 89.371862 Days $T_0=187.807500$ (BKJD)



DV Model-Shift Uniqueness Test

012647018-03, P = 89.370051 Days, E = 98.441356 Days

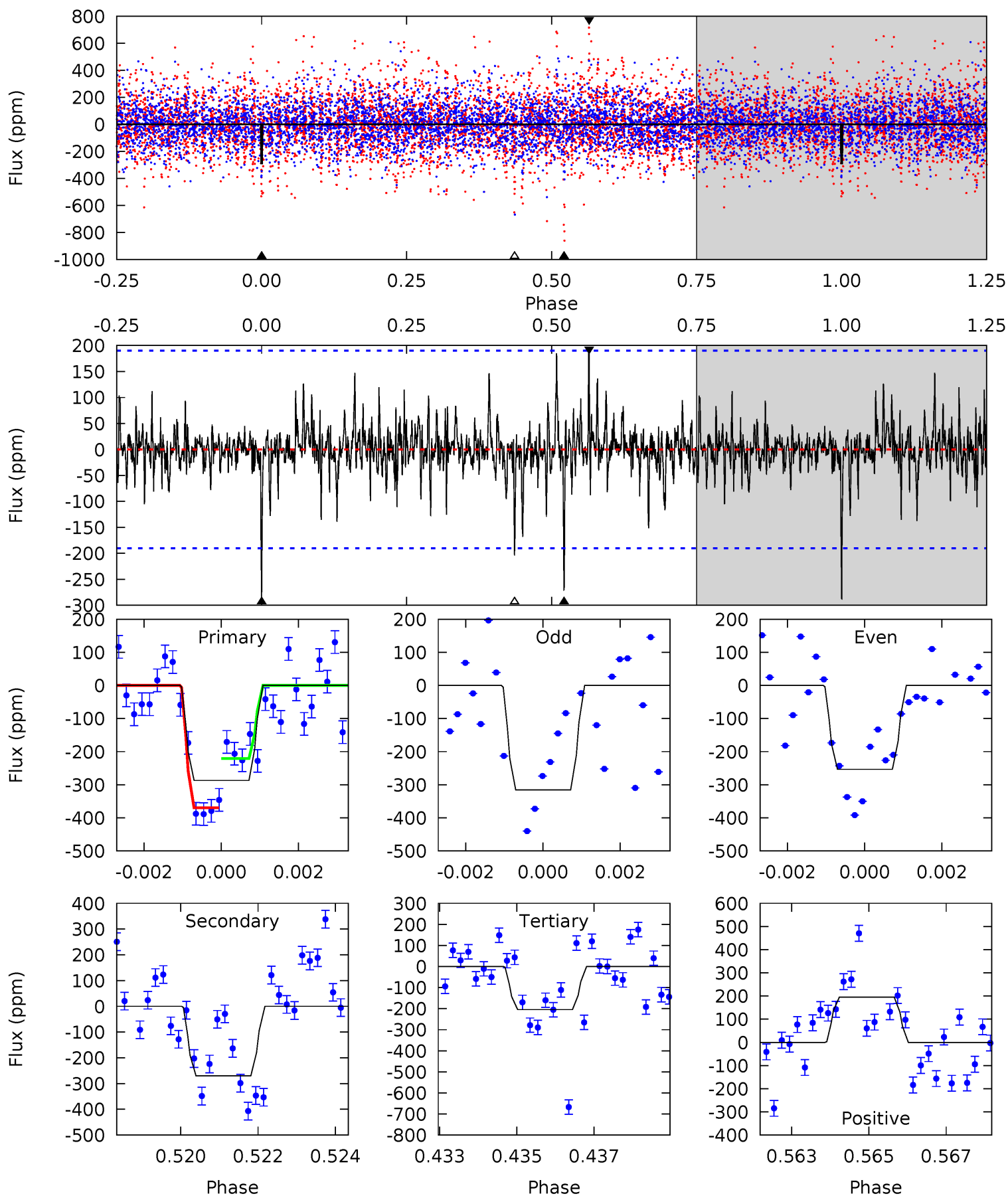
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.74	5.44	5.39	5.71	5.30	3.05	1.62	2.35	2.02	0.05	-0.28	0.81	1.01	0.42	1.65



Alt Model-Shift Uniqueness Test

012647018-03, P = 89.371862 Days, E = 98.435638 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.02	7.55	5.71	5.46	5.32	3.07	1.16	2.31	2.56	1.84	2.09	0.87	1.02	0.41	2.07



Stellar Parameters For KIC 012647018

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5657^{+152}_{-152}	$4.026^{+0.424}_{-0.133}$	$0.100^{+0.250}_{-0.250}$	$1.649^{+0.351}_{-0.652}$	$1.053^{+0.126}_{-0.139}$	$0.331^{+1.086}_{-0.128}$
	+3%/-3%	+11%/-3%	+250%/-250%	+21%/-40%	+12%/-13%	+328%/-39%
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 012647018-03 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-204 ± 38	$3.19^{+1.59}_{-1.44}$	695^{+50}_{-82}	4980^{+1425}_{-736}	1783^{+4151}_{-1026}
Alt.	-270 ± 36	$2.80^{+1.73}_{-1.32}$	698^{+52}_{-88}	5510^{+2114}_{-911}	3015^{+7828}_{-1875}

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

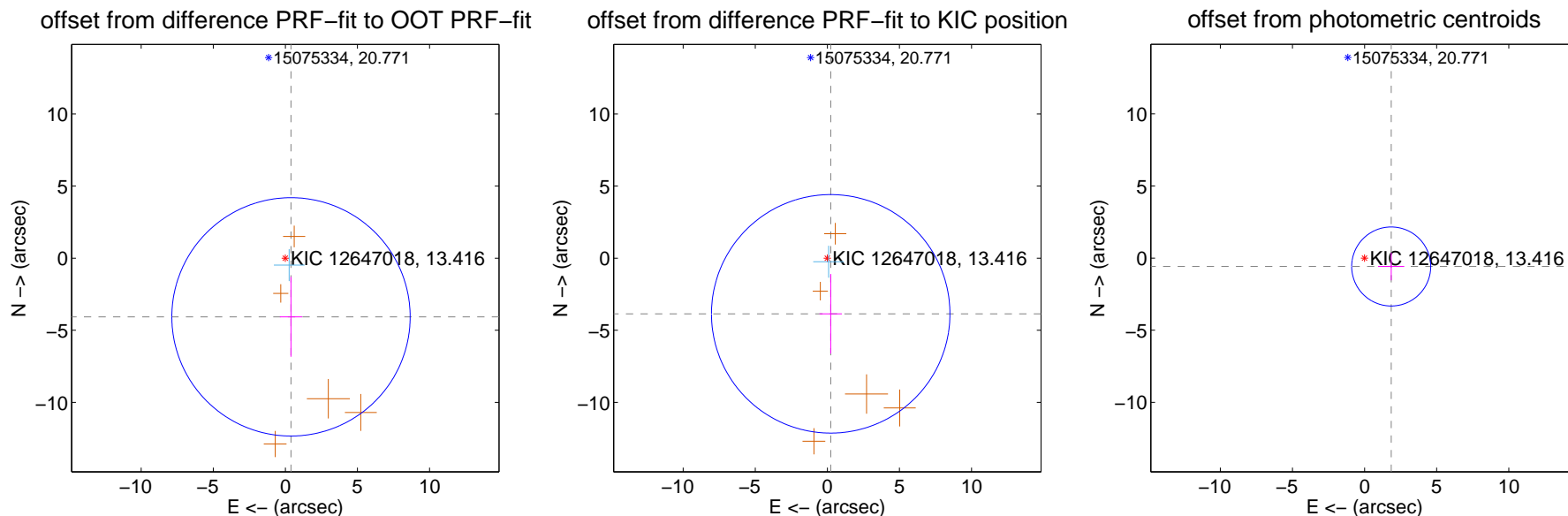
DV Centroid Data

Supplemental centroid analysis for 012647018-03. Kepler magnitude: 13.42. Transit SNR 8.91

There are 1 quarters with good PRF difference image offsets

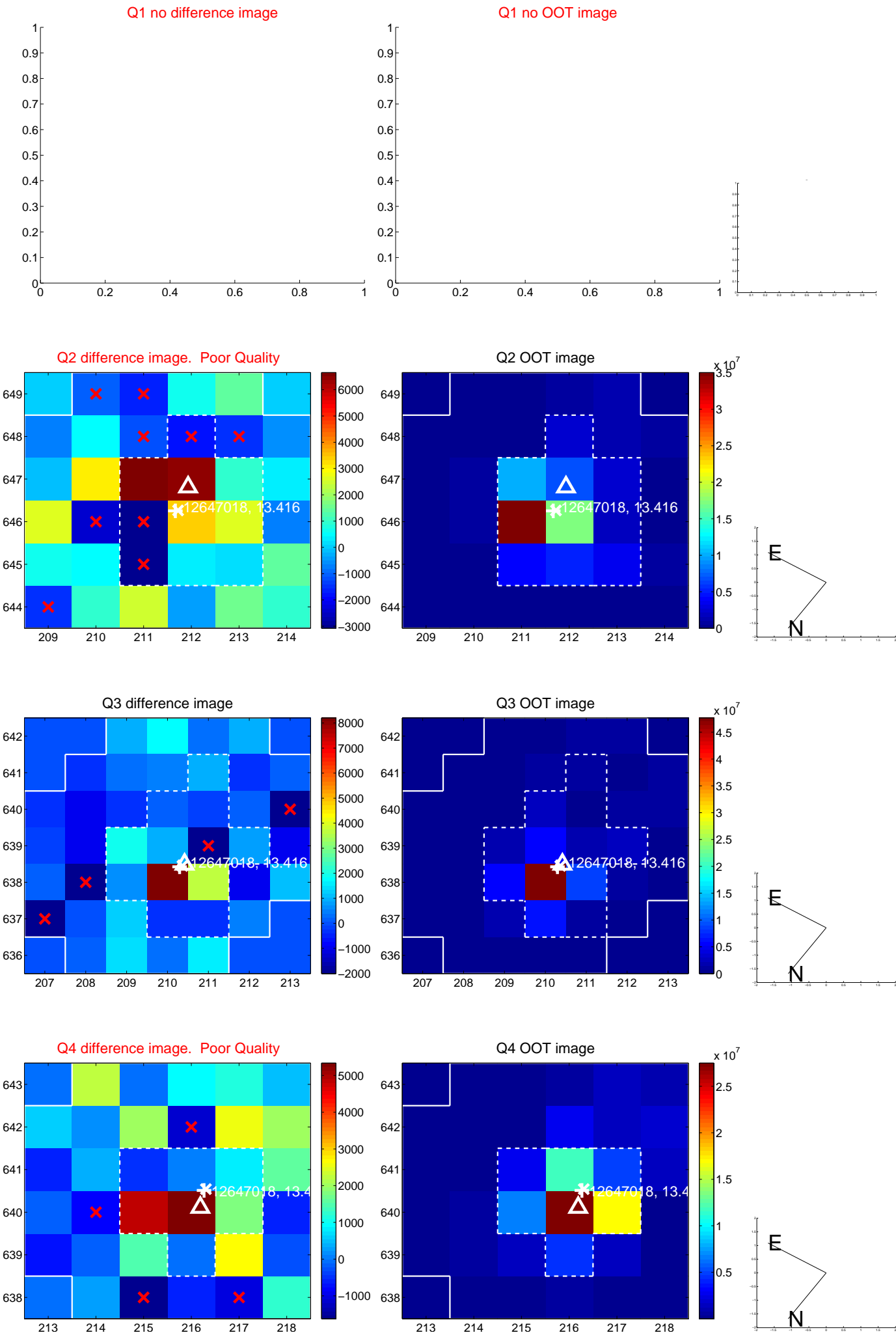
The direct PRF centroid is offset from the target star catalog position by about 0.29 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	4.088 ± 2.754	1.48	-0.391 ± 0.777	-4.070 ± 2.766
PRF-fit source offset from KIC position	3.867 ± 2.756	1.40	-0.232 ± 0.777	-3.860 ± 2.761
photometric centroid source offset	1.93 ± 0.91	2.12	-1.85 ± 0.91	-0.58 ± 0.96

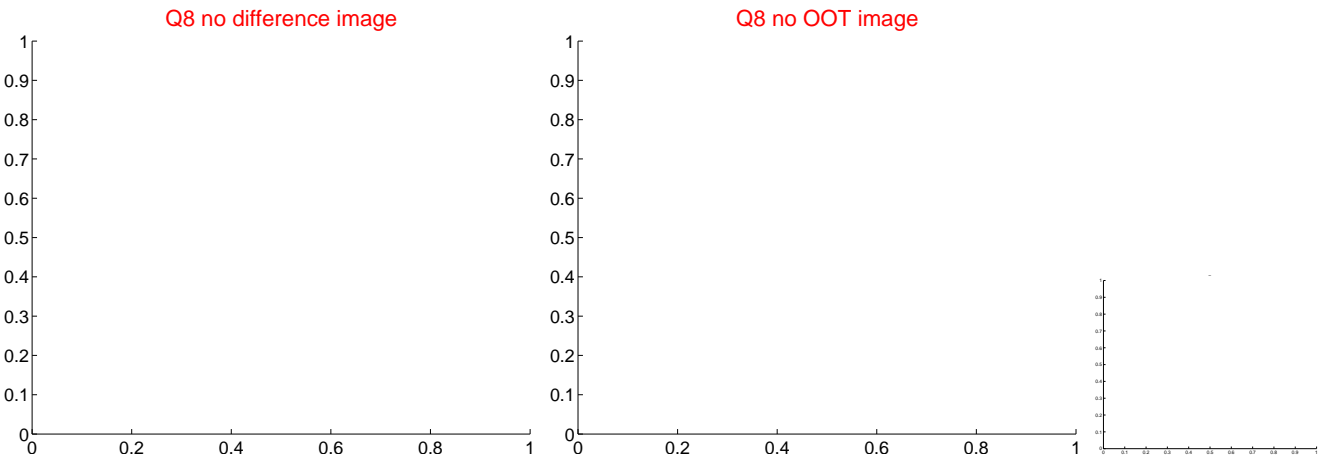
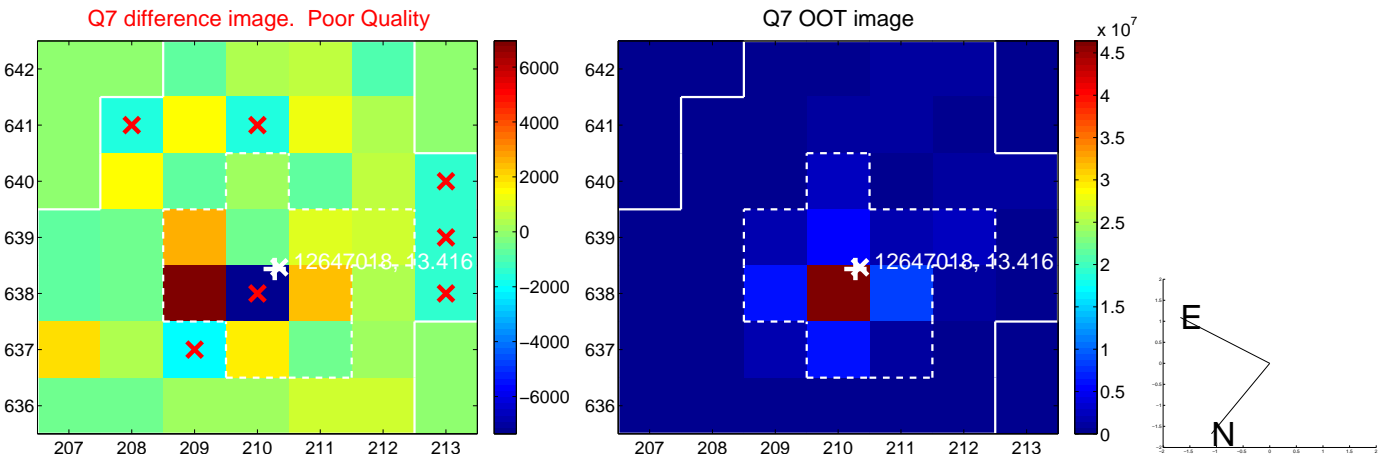
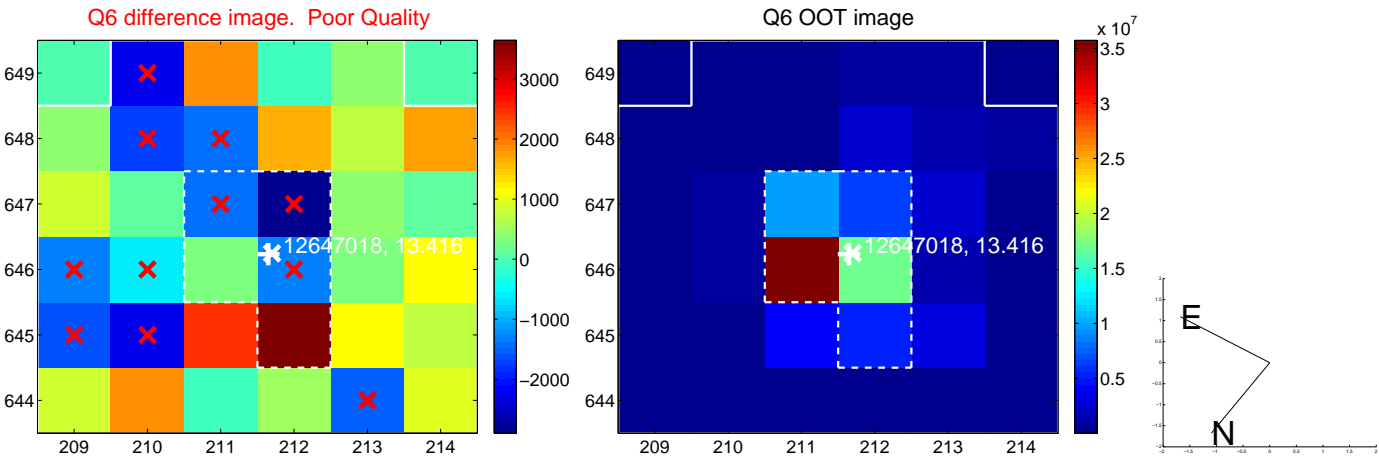
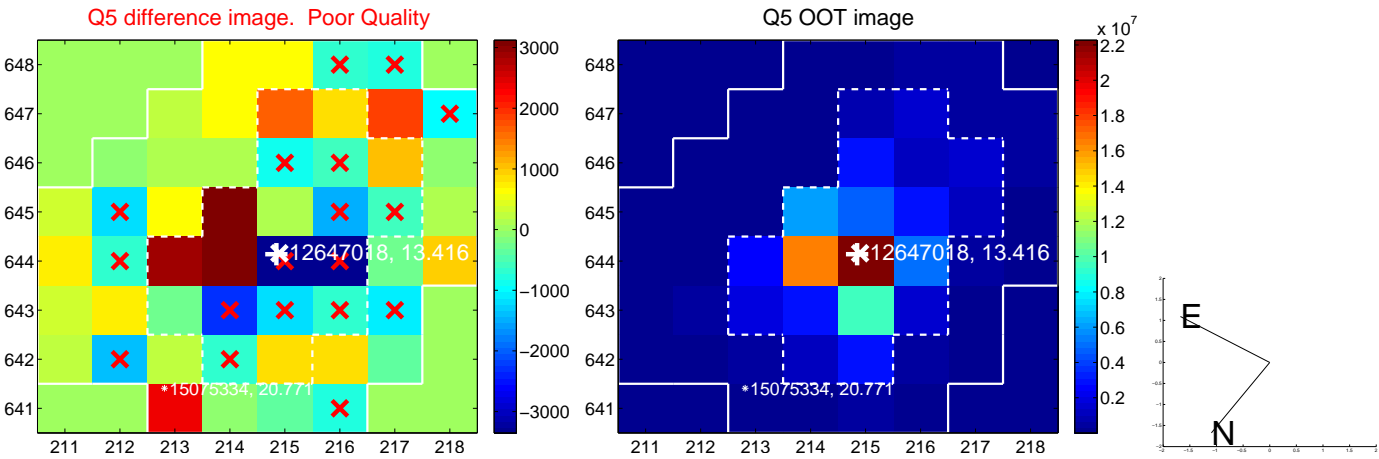


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

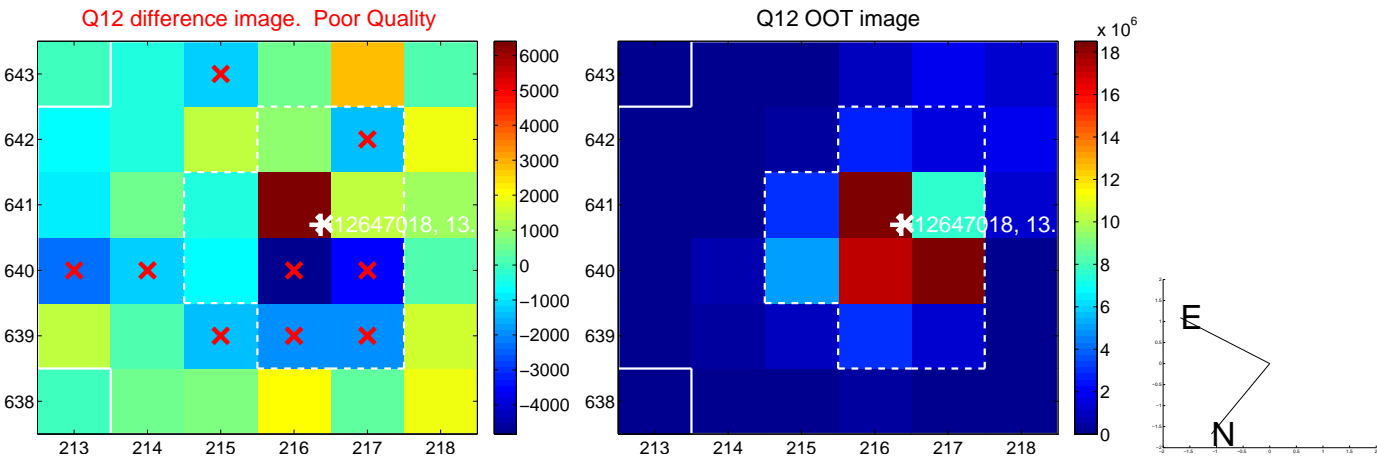
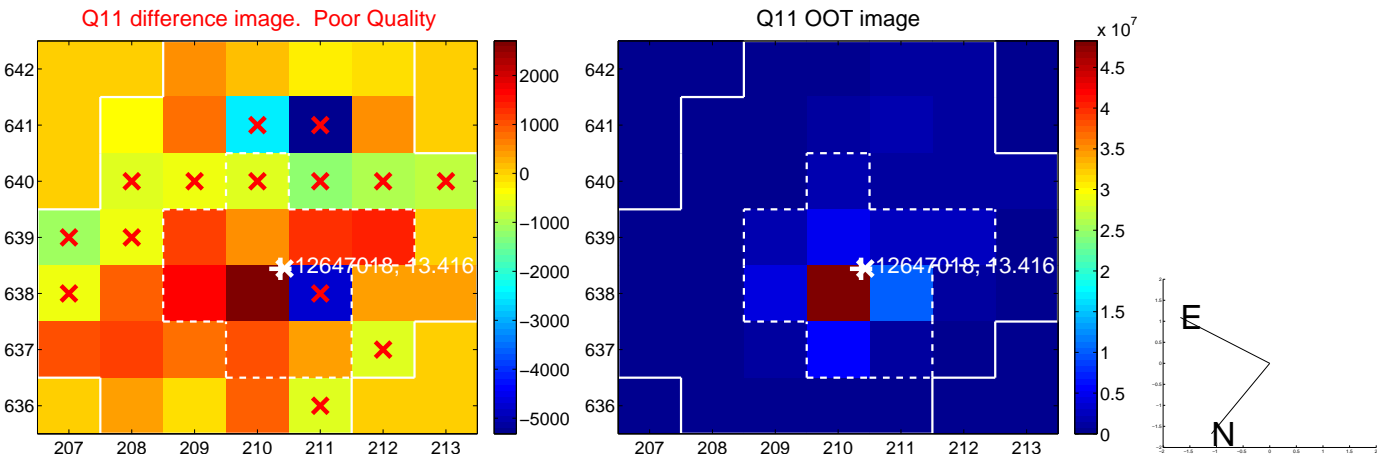
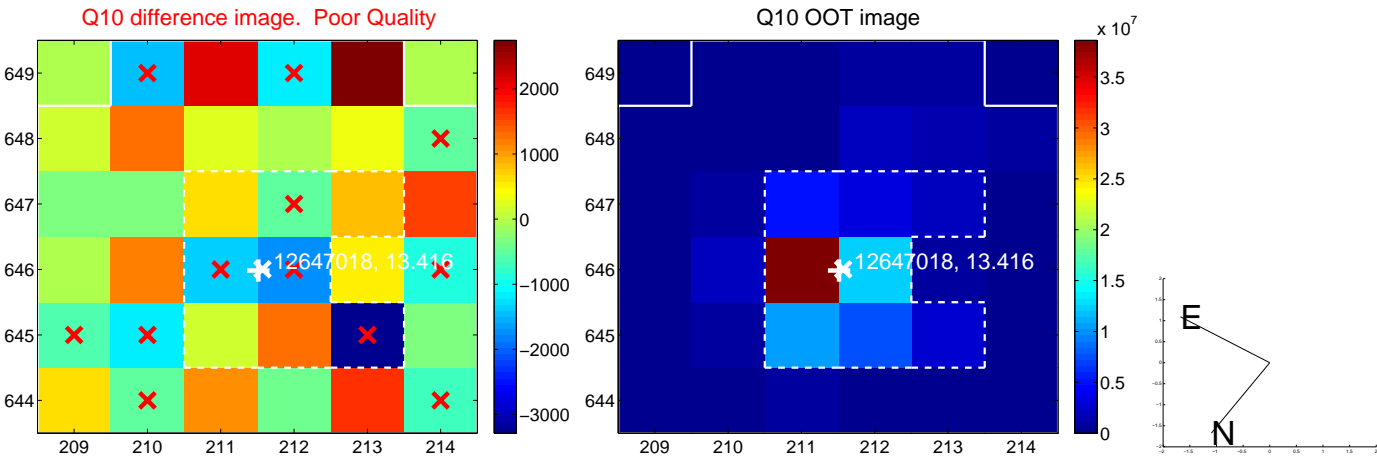
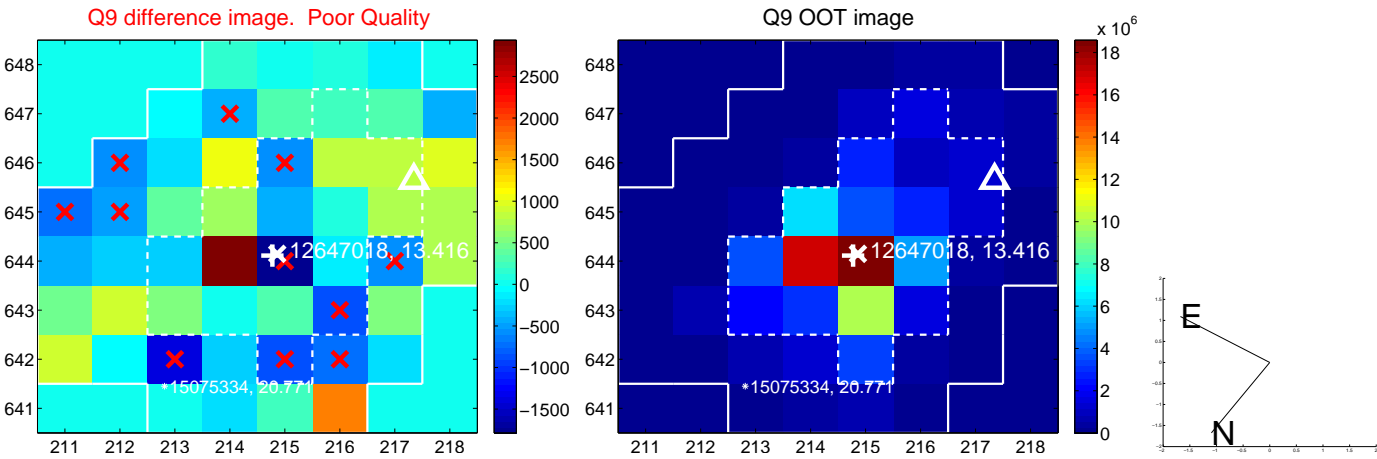
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



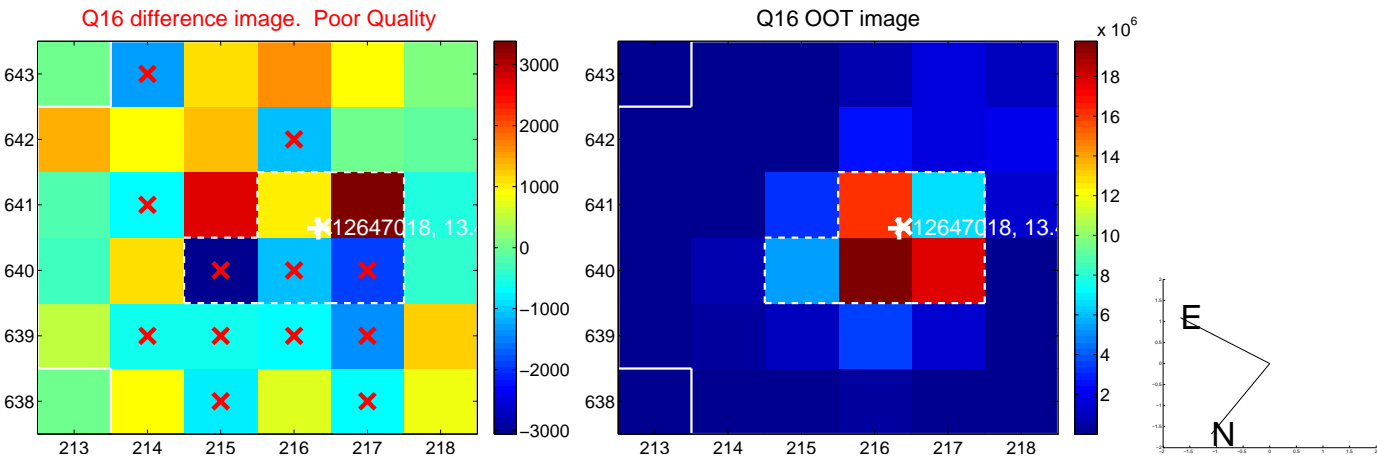
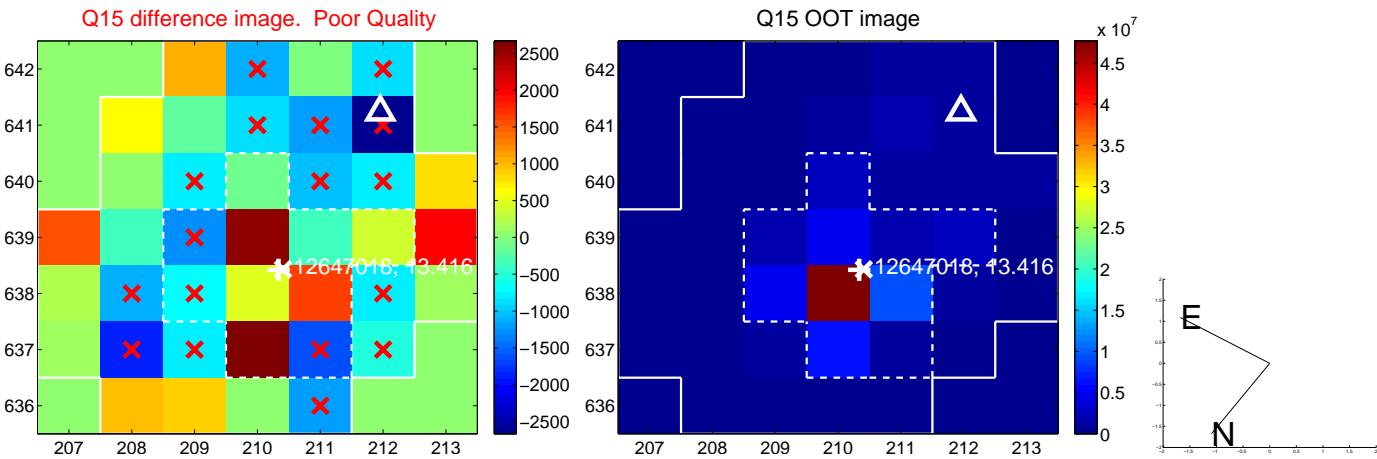
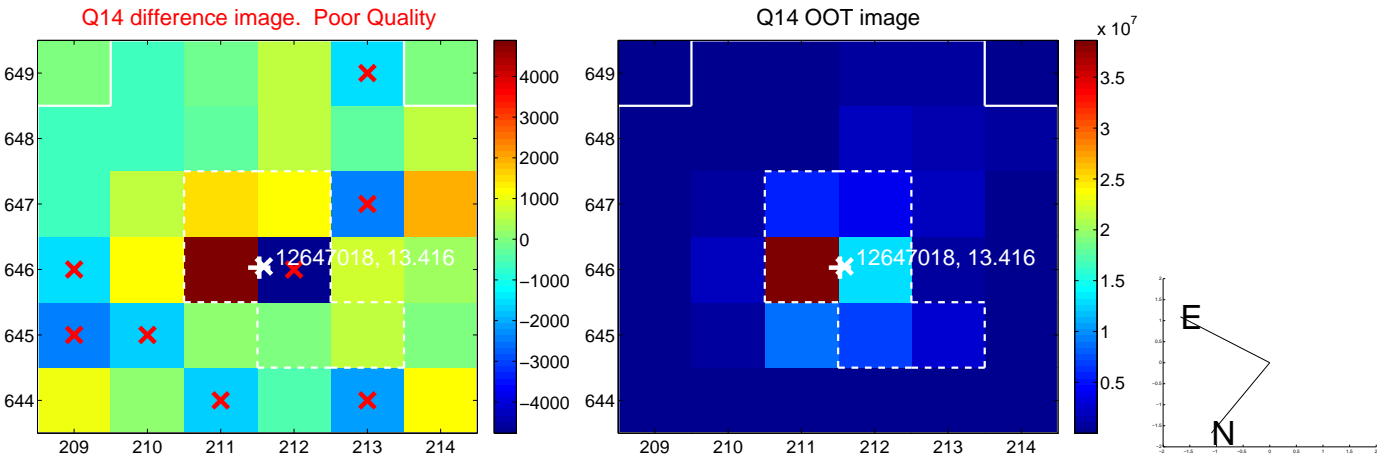
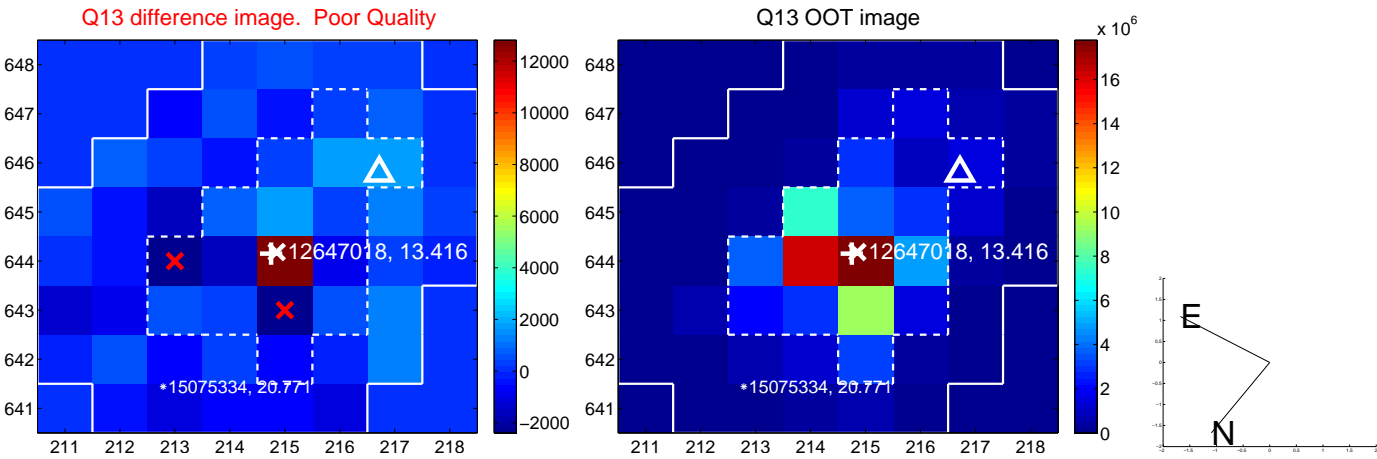
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



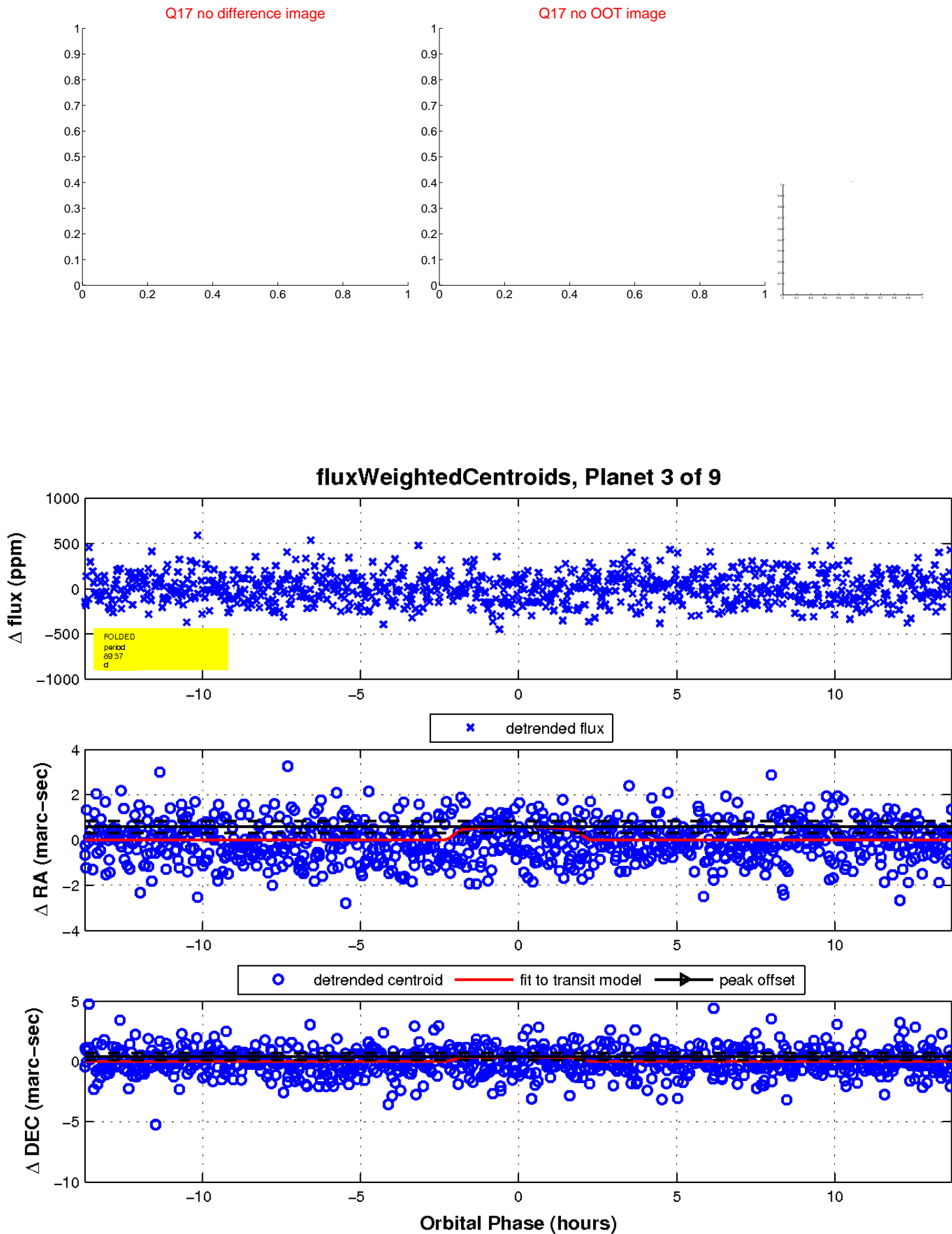
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

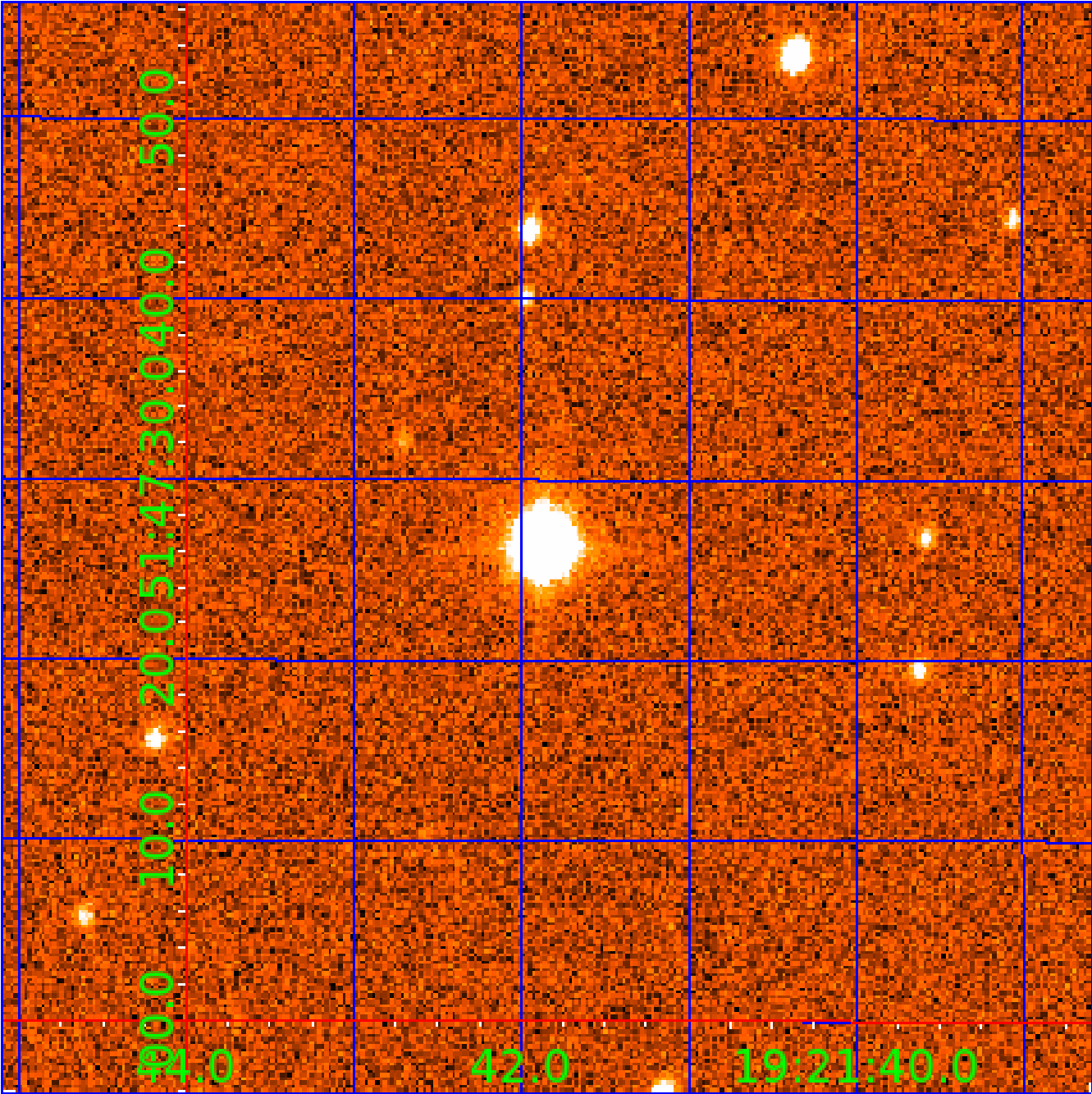


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 012647018

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})
012647018-01	OBS	No	1.296908	132.535743	20.8	9.030	8.3	11.1	1.65	5657	0.74	4448.09
012647018-02	OBS	No	53.083783	172.243518	341.8	3.269	11.3	10.6	1.65	5657	3.64	31.53
012647018-03	OBS	No	89.370051	187.811407	293.6	4.582	9.1	8.9	1.65	5657	3.44	15.74
012647018-04	OBS	No	24.853298	152.045089	100.5	3.762	9.0	5.1	1.65	5657	1.76	86.74
012647018-05	OBS	No	27.619166	134.768352	320.1	1.346	11.5	11.7	1.65	5657	2.93	75.35
012647018-06	OBS	No	32.503712	147.954093	220.4	4.386	9.5	11.5	1.65	5657	2.46	60.65
012647018-07	OBS	No	33.918495	133.285052	183.5	4.022	8.4	8.3	1.65	5657	2.47	57.30
012647018-09	OBS	No	36.652668	140.779741	233.3	3.001	8.8	8.7	1.65	5657	2.92	51.67

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
012647018-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT
012647018-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
012647018-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
012647018-04	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS—HALO_GHOST
012647018-05	OBS	FP	0.00	1	0	1	0	TRANS_GAPPED—MOD_NONUNIQ_DV—CENT_FEW_MEAS—HALO_GHOST
012647018-06	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS—HALO_GHOST
012647018-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
012647018-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—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.

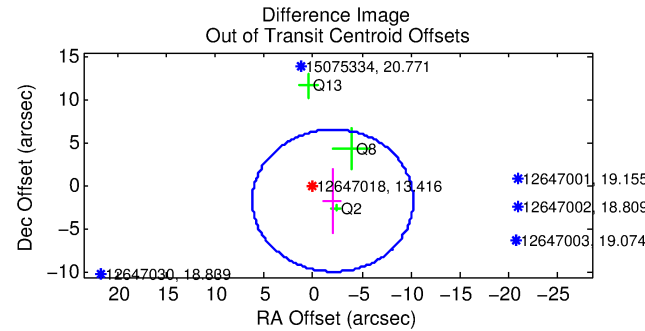
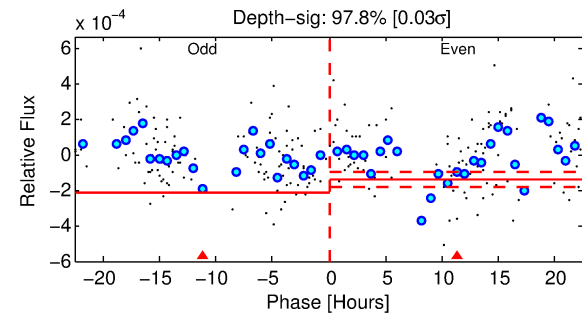
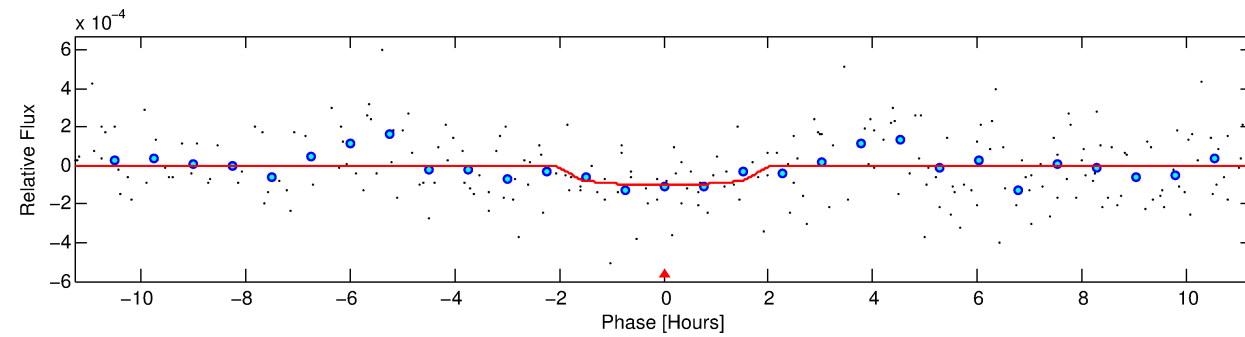
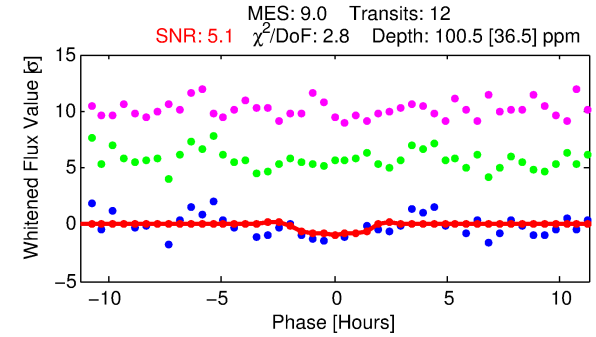
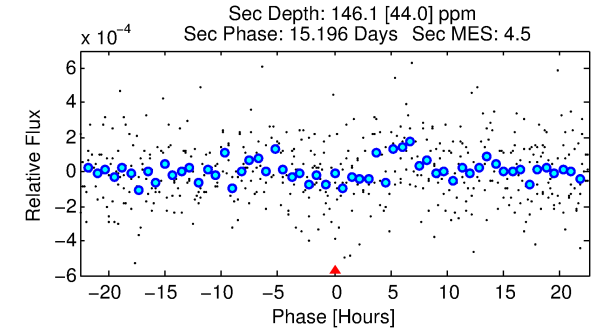
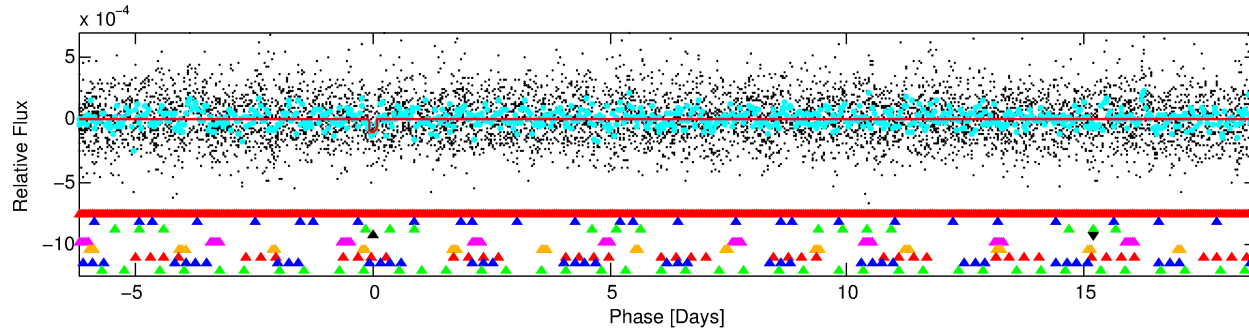
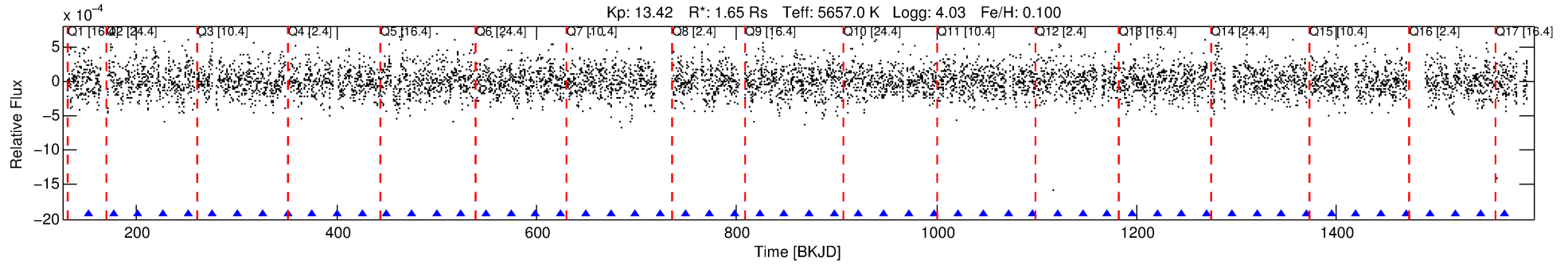
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 012647018-04

No Significant Match Found

DV One-Page Summary

KIC: 12647018 Candidate: 4 of 9 Period: 24.853 d



DV Fit Results:

Period = 24.85330 [0.00085] d
Epoch = 152.0451 [0.0288] BKJD
Rp/R* = 0.0098 [0.0337]
a/R* = 37.22 [539.72]
b = 0.69 [11.19]
Seff = 86.74 [61.62]
Teq = 778 [138] K
Rp = 1.76 [6.11] Re
a = 0.1696 [0.0710] AU
Ag = 747.07 [5188.62] [0.14σ]
Teffp = 6290 [10867] K [0.51σ]

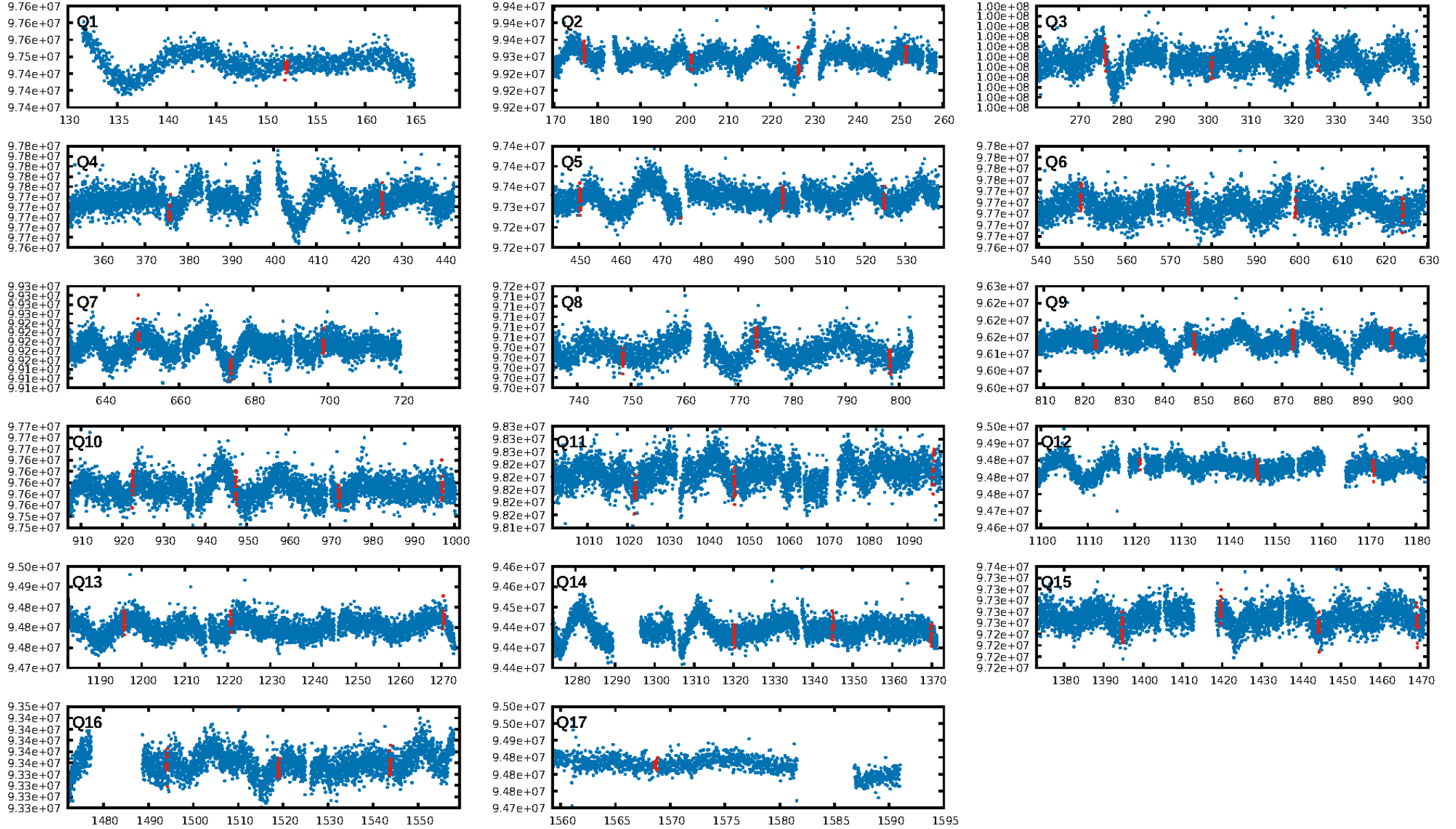
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [57.79σ]
LongPeriod-sig: 100.0% [16.61σ]
ModelChiSquare2-sig: 11.4%
ModelChiSquareGof-sig: 99.9%
Bootstrap-pfa: 4.07e-48
RollingBand-fgt: 1.00 [12/12]
GhostDiagnostic-chr: 0.1493
Centroid-sig: 9.5%
Centroid-so: 2.654 arcsec [1.65σ]
OotOffset-rm: 2.611 arcsec [0.95σ]
KicOffset-rm: 2.383 arcsec [1.37σ]
OotOffset-st: 1/0/1/1 [3]
KicOffset-st: 1/0/1/1 [3]
DiffImageQuality-fgm: 0.00 [0/3]
DiffImageOverlap-fno: 0.31 [5/16]

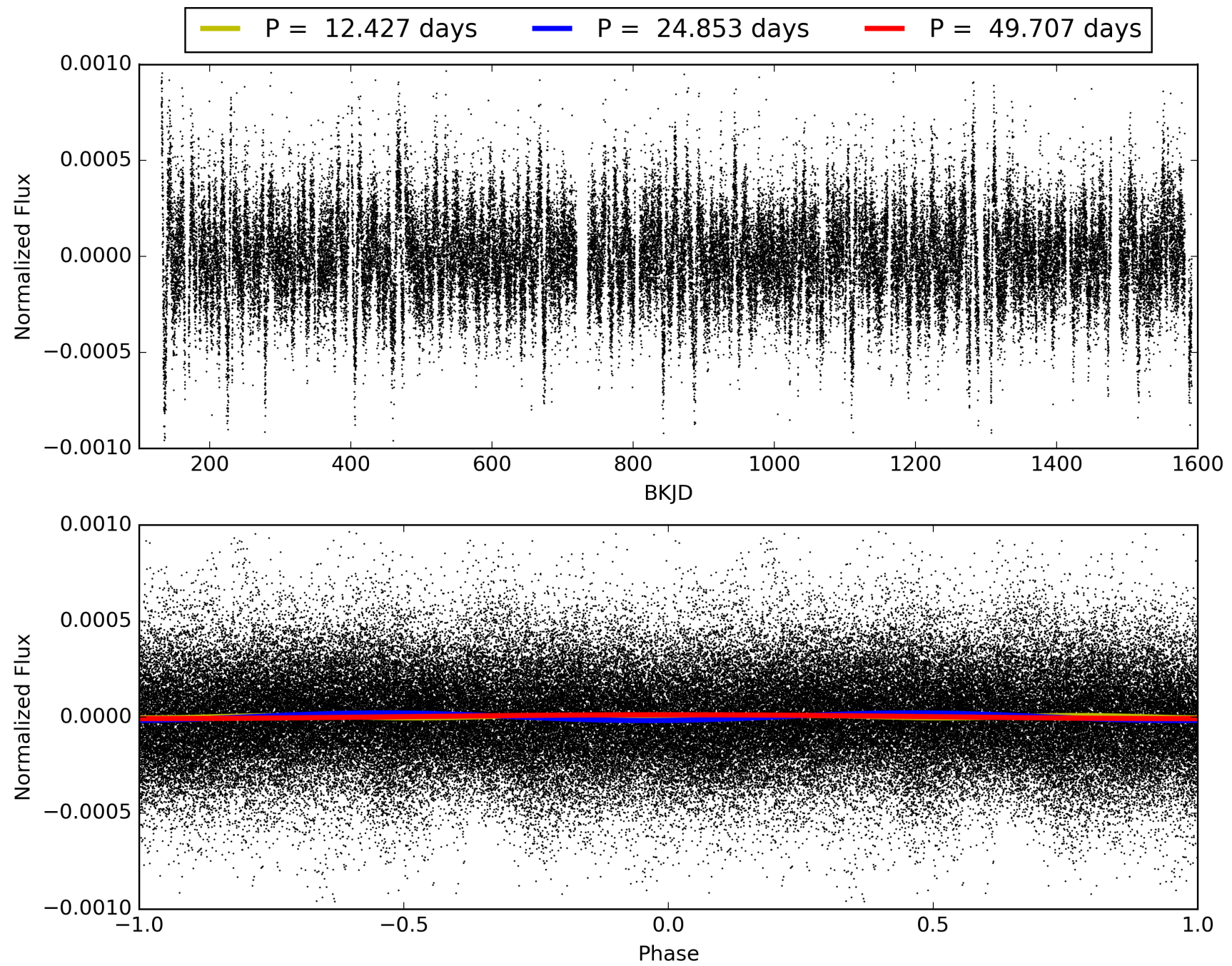
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 05:14:13 Z

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

TCE 012647018-04, PDC Light Curves

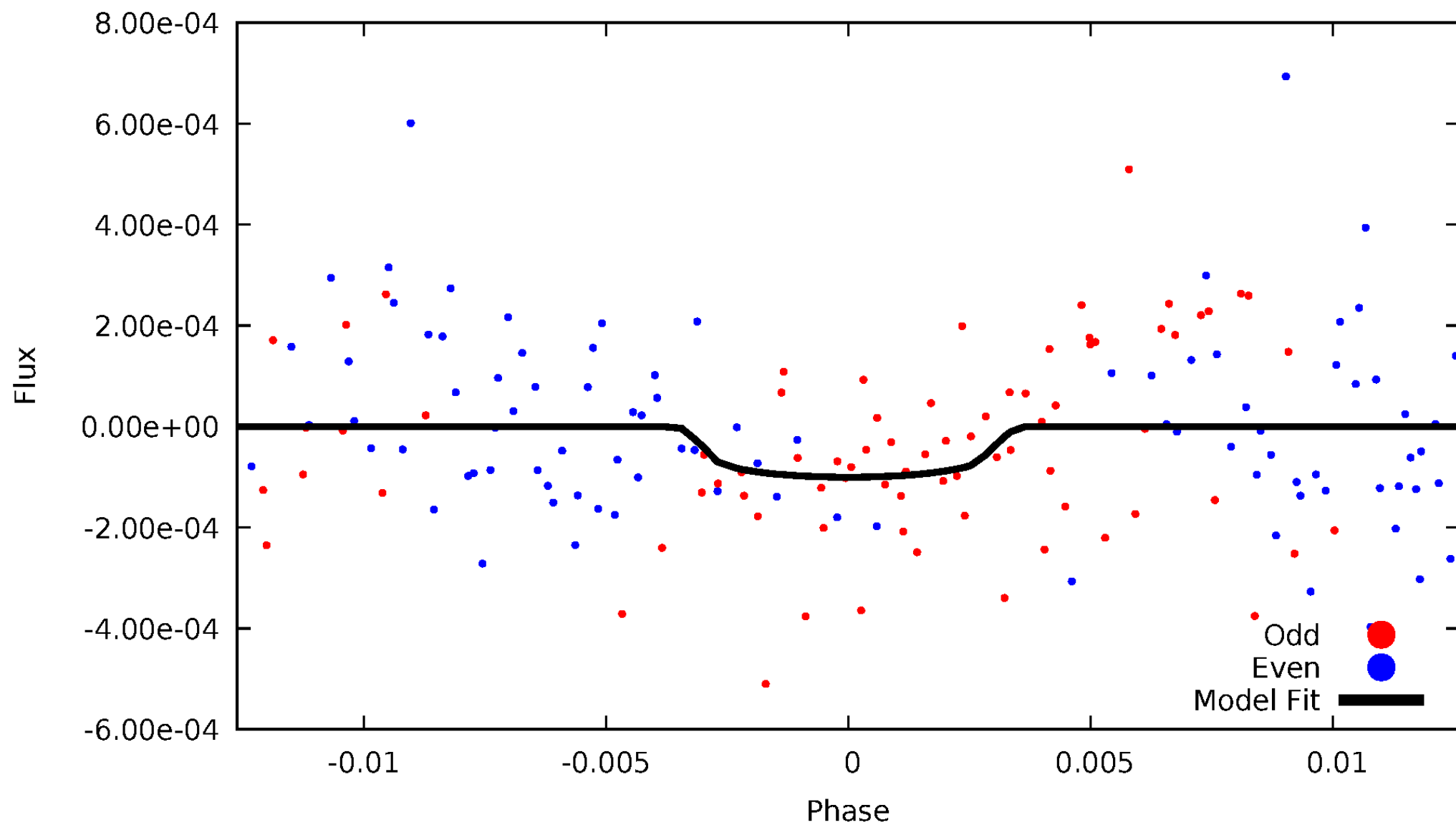


TCE 012647018-04



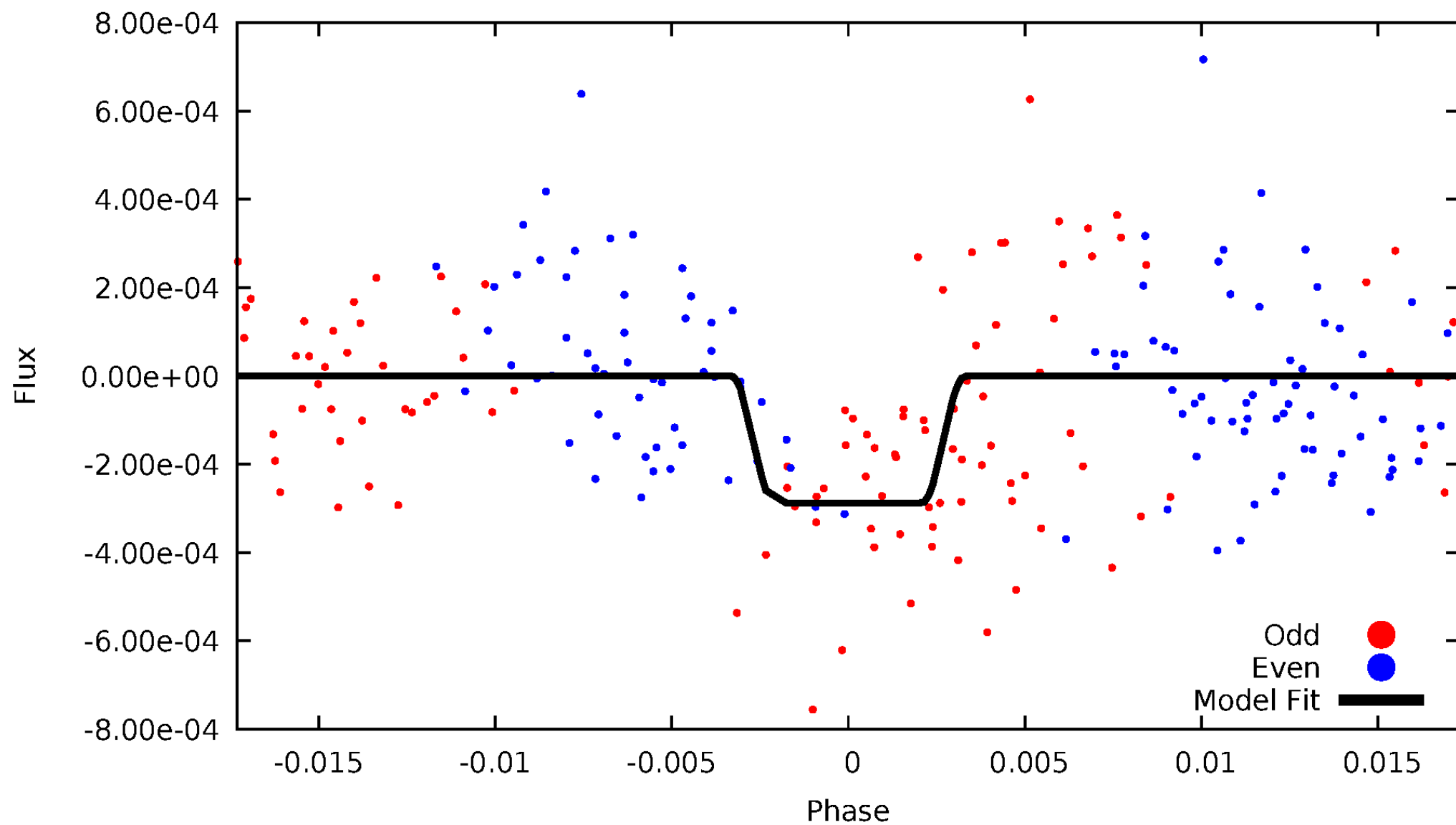
DV Odd/Even

TCE 012647018-04



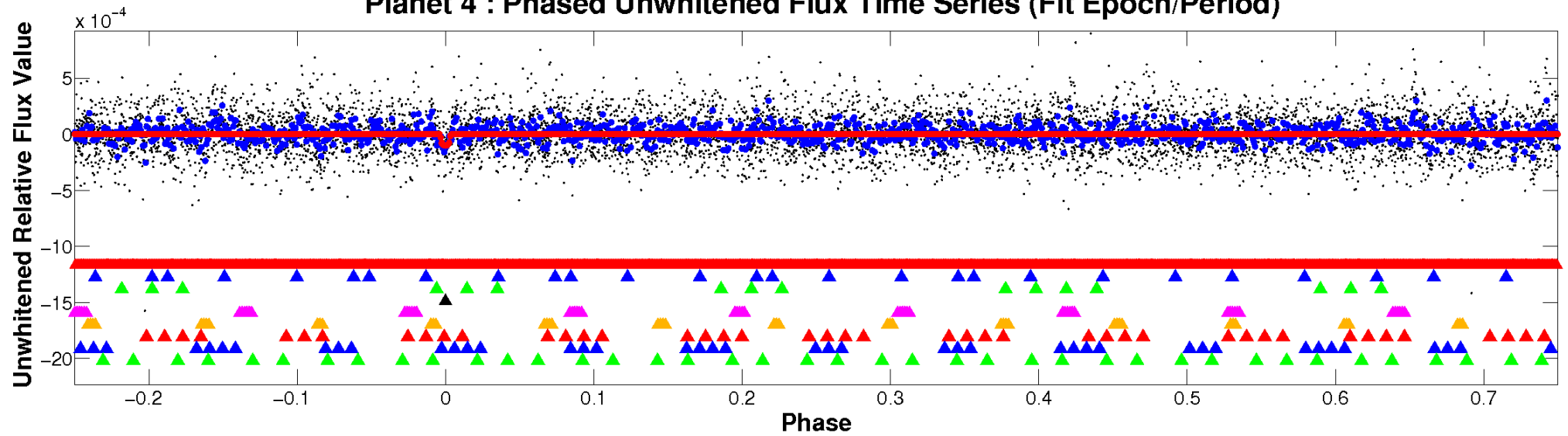
ALT Odd/Even

TCE 012647018-04

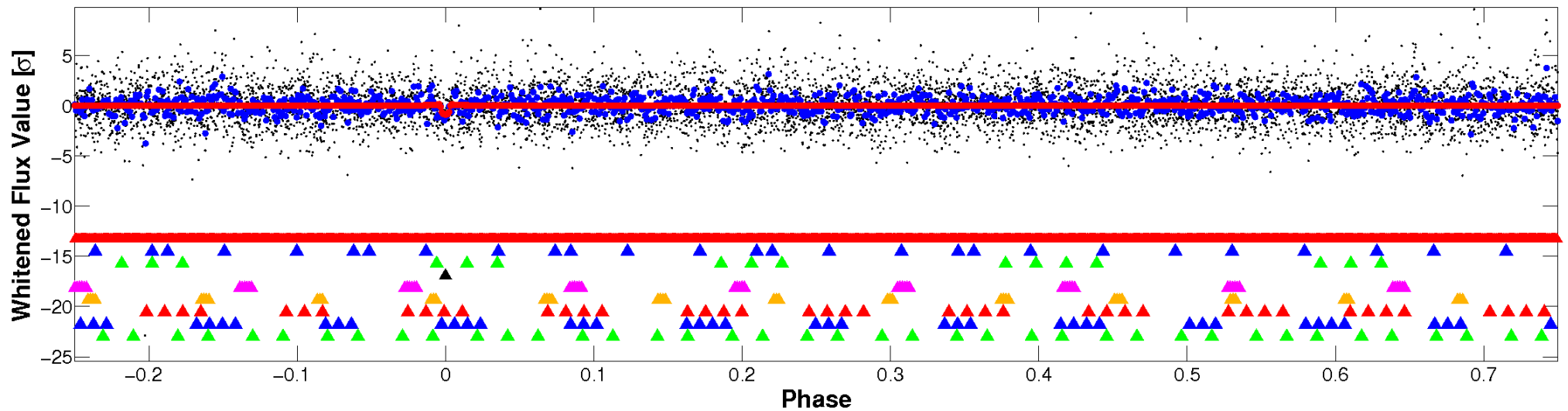


Non-Whitened Vs. Whitened Light Curve

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

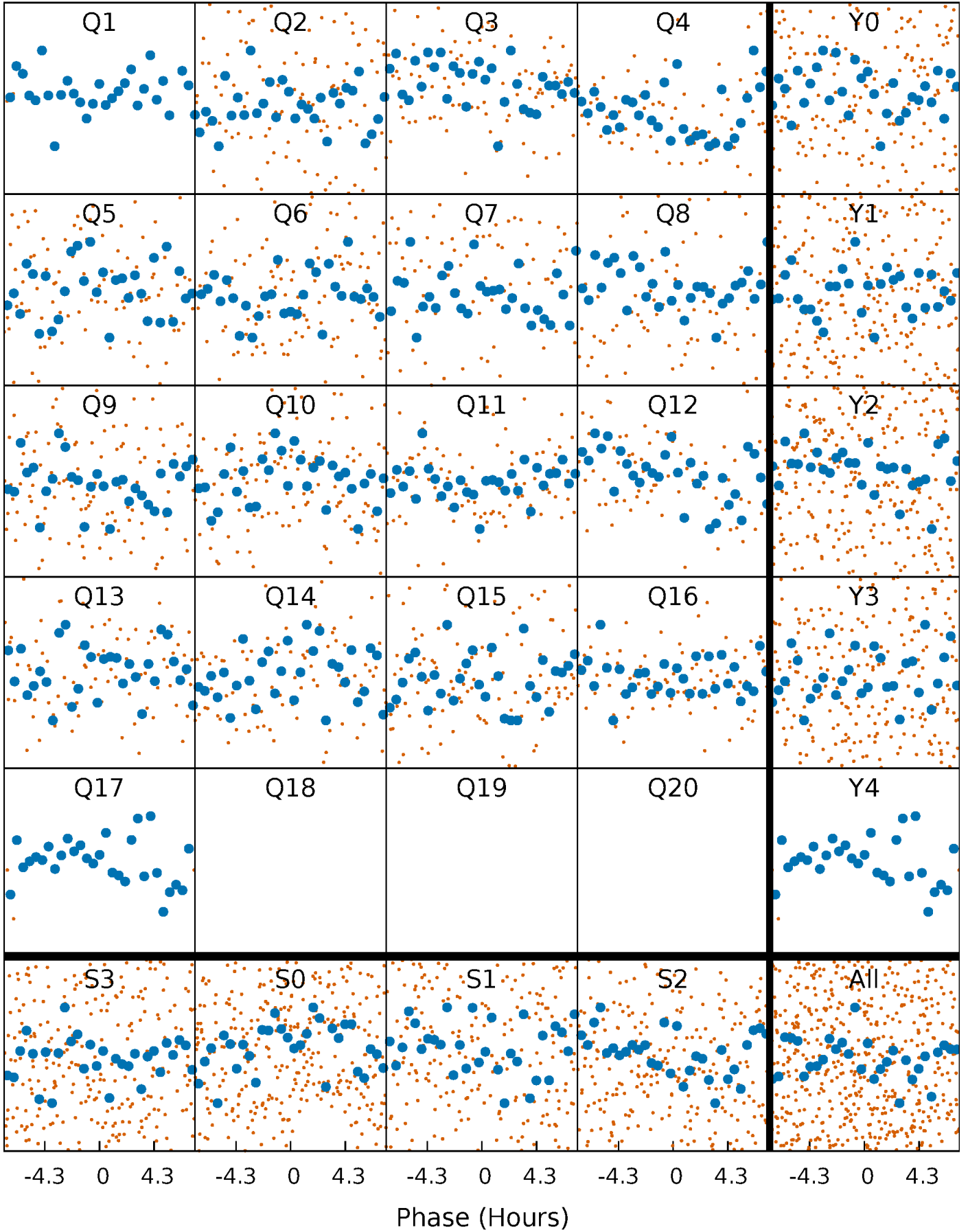


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



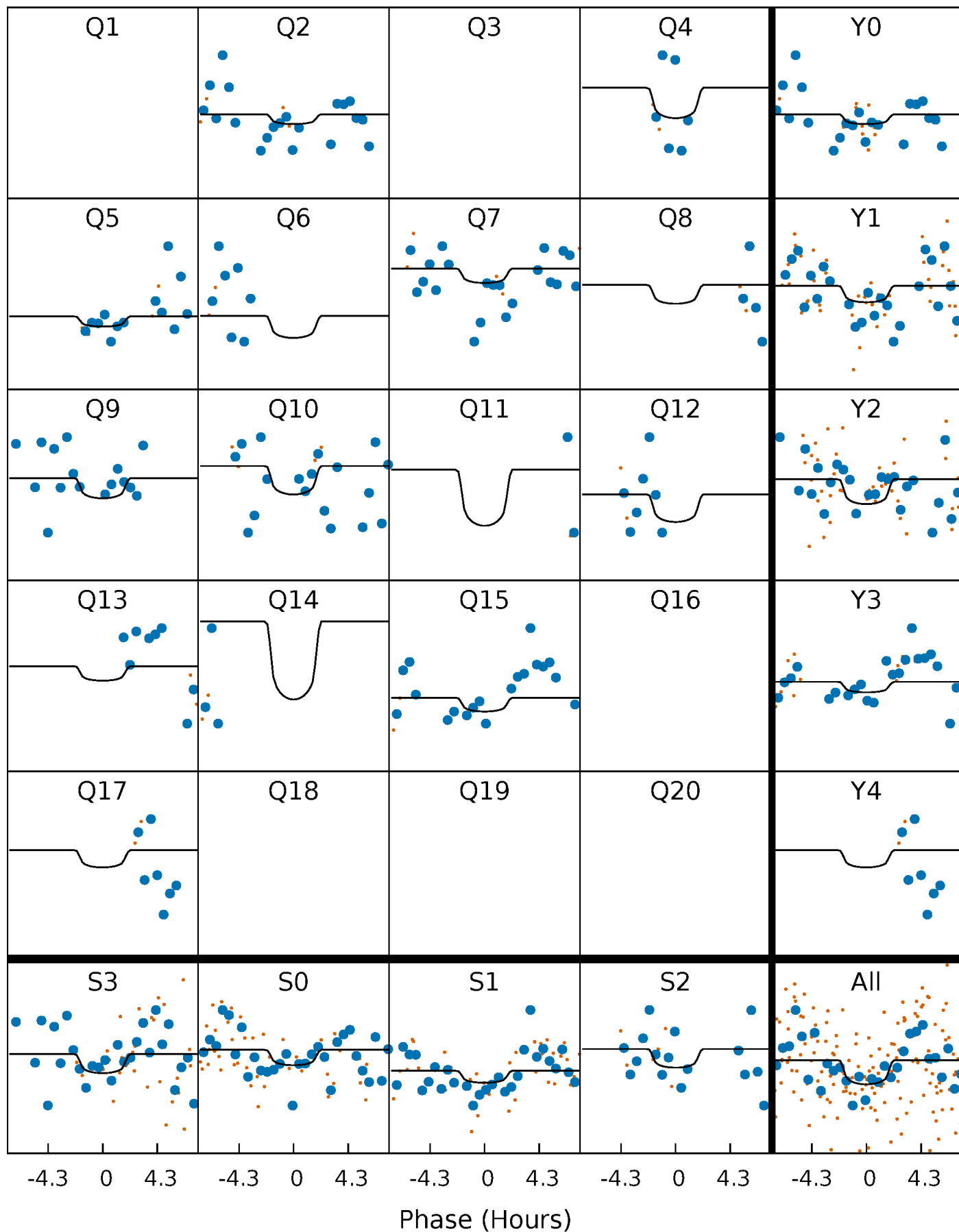
PDC Quarter-Phased Transit Curves

TCE 012647018-04 P= 24.853298 Days $T_0=152.045089$ (BKJD)



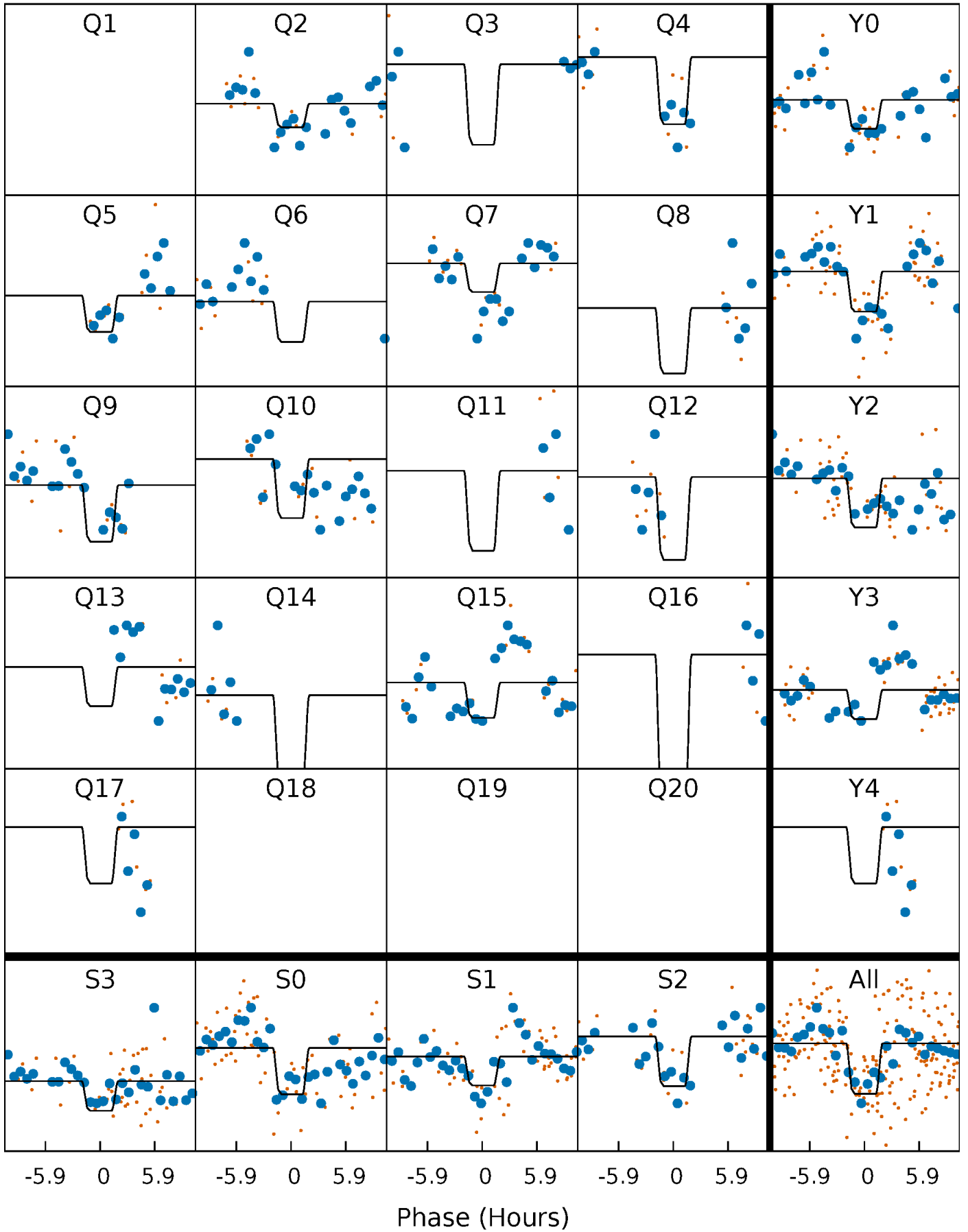
DV Quarter-Phased Transit Curves

TCE 012647018-04 P= 24.853298 Days $T_0=152.045089$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

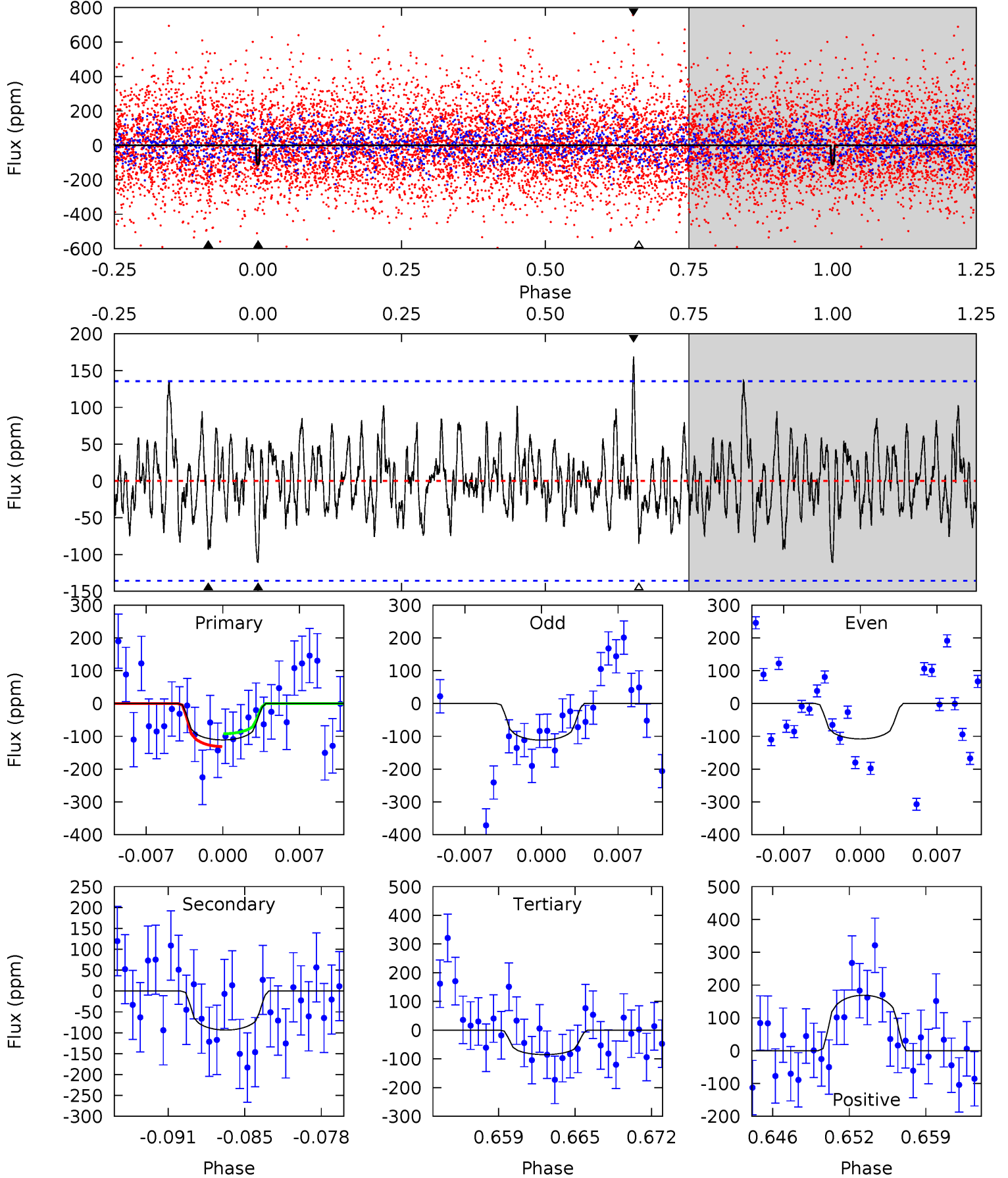
TCE 012647018-04 P= 24.854418 Days $T_0=152.004118$ (BKJD)



DV Model-Shift Uniqueness Test

012647018-04, P = 24.853298 Days, E = 127.191791 Days

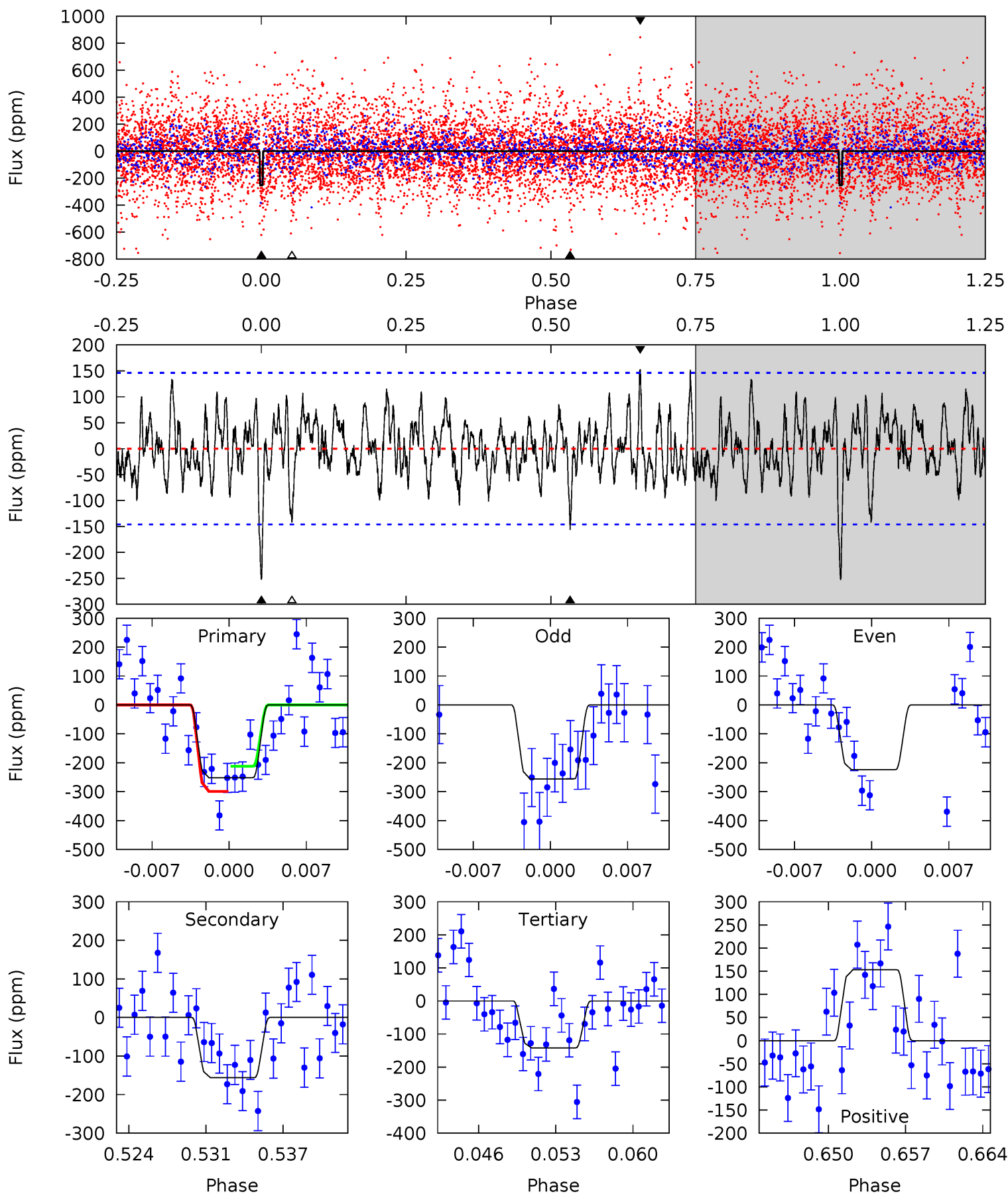
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4.19	3.52	3.21	6.37	5.11	2.72	1.43	0.98	-2.18	0.31	-2.84	0.05	1.07	0.60	0.73



Alt Model-Shift Uniqueness Test

012647018-04, P = 24.854418 Days, E = 127.149700 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.79	5.46	4.97	5.36	5.10	2.71	1.64	3.82	3.44	0.49	0.10	0.43	1.09	0.38	1.50



Stellar Parameters For KIC 012647018

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5657^{+152}_{-152}	$4.026^{+0.424}_{-0.133}$	$0.100^{+0.250}_{-0.250}$	$1.649^{+0.351}_{-0.652}$	$1.053^{+0.126}_{-0.139}$	$0.331^{+1.086}_{-0.128}$
	+3%/-3%	+11%/-3%	+250%/-250%	+21%/-40%	+12%/-13%	+328%/-39%
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 012647018-04 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-94 ± 27	$4.57^{+4.34}_{-3.33}$	1069^{+73}_{-127}	3709^{+2659}_{-673}	68^{+979}_{-51}
Alt.	-156 ± 29	$5.01^{+4.52}_{-3.43}$	1065^{+81}_{-111}	3980^{+2399}_{-758}	99^{+879}_{-73}

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

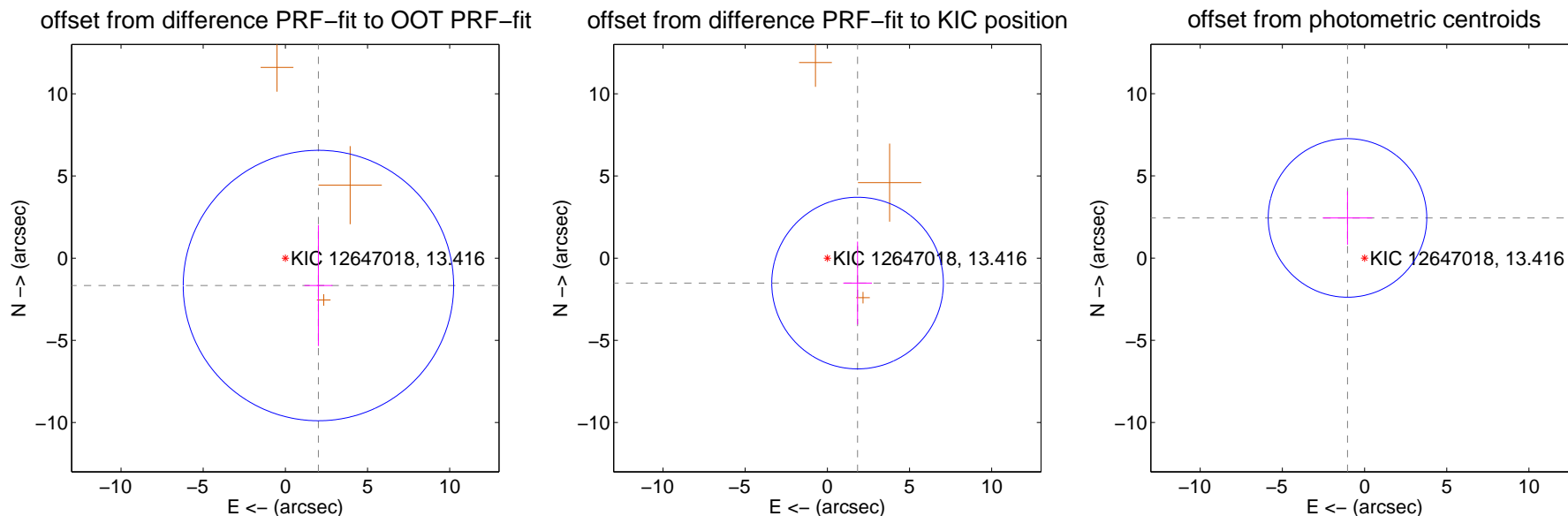
DV Centroid Data

Supplemental centroid analysis for 012647018-04. Kepler magnitude: 13.42. Transit SNR 5.09

There are 0 quarters with good PRF difference image offsets

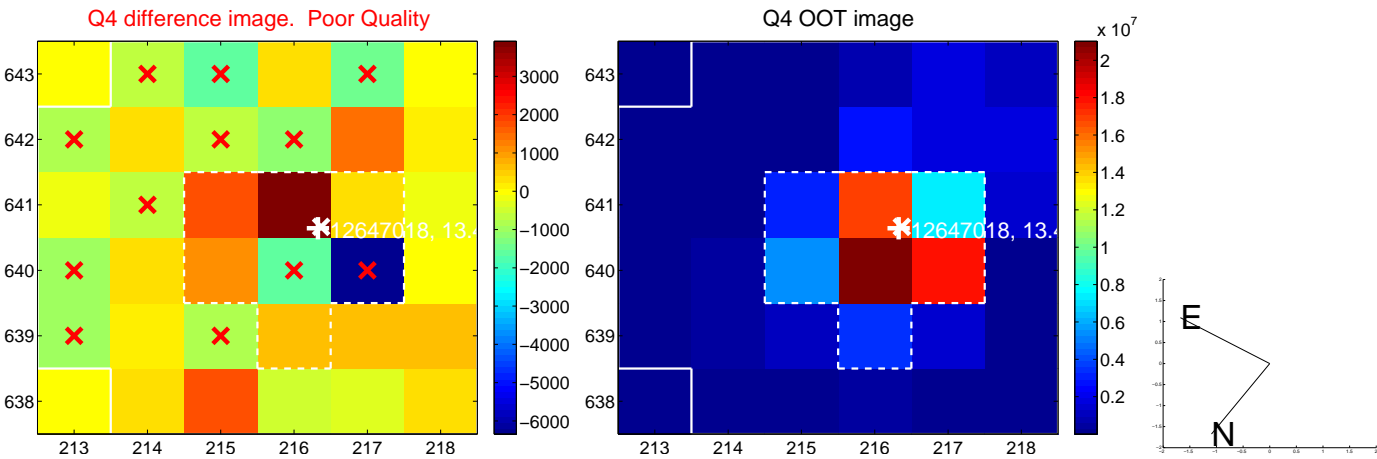
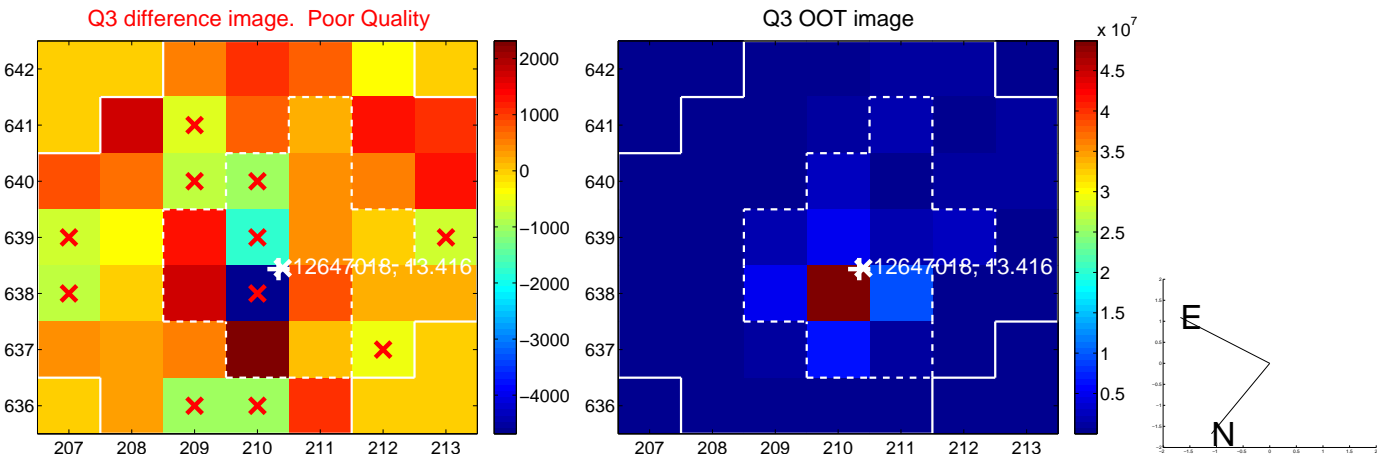
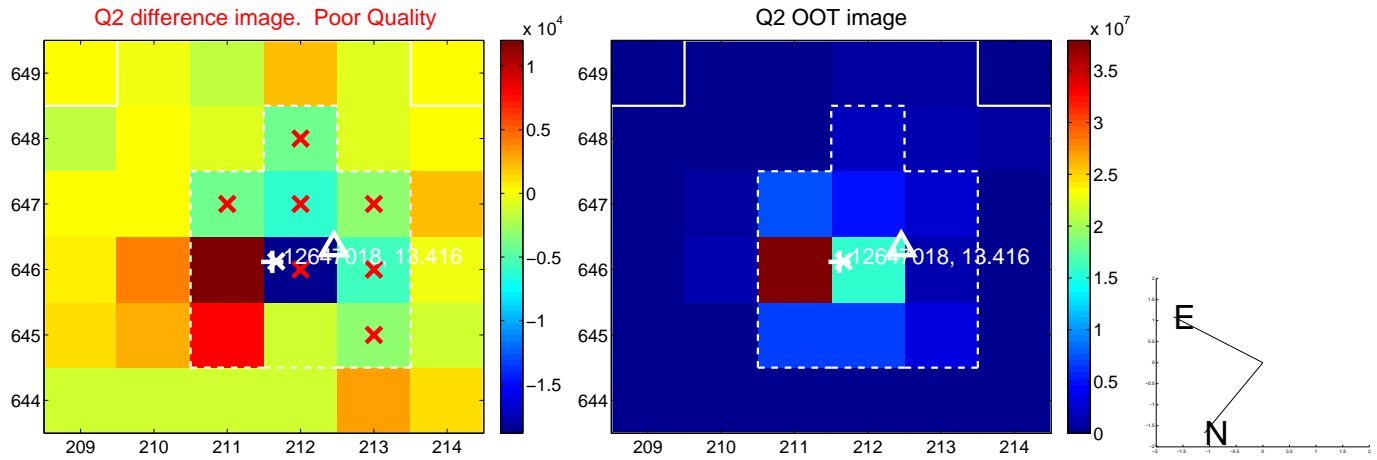
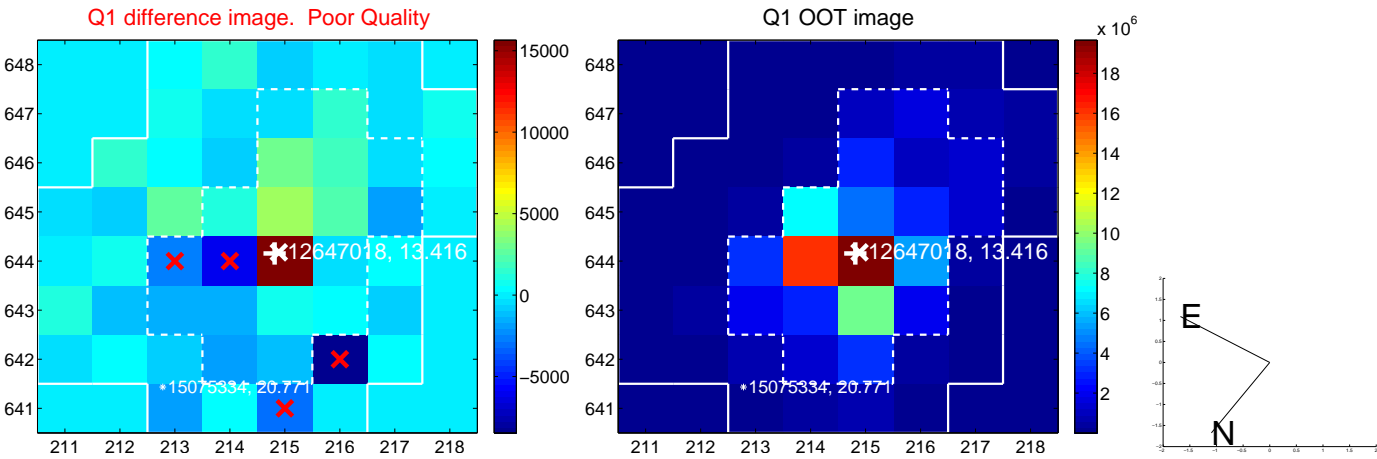
The direct PRF centroid is offset from the target star catalog position by about 0.37 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	2.611 ± 2.742	0.95	-2.012 ± 0.851	-1.665 ± 3.679
PRF-fit source offset from KIC position	2.383 ± 1.740	1.37	-1.838 ± 0.871	-1.516 ± 2.523
photometric centroid source offset	2.65 ± 1.61	1.65	1.04 ± 1.51	2.44 ± 1.62

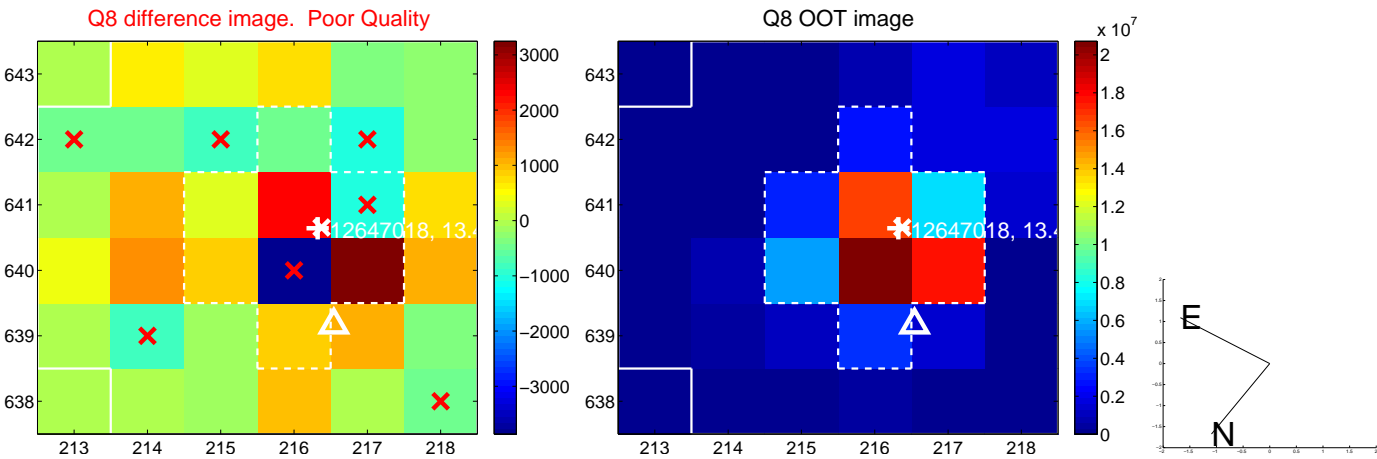
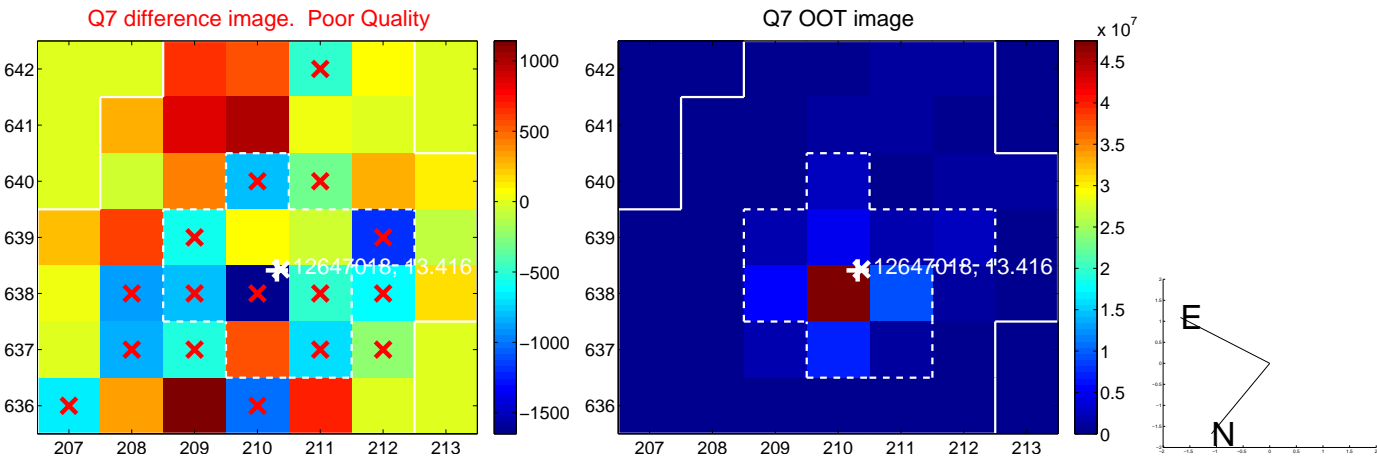
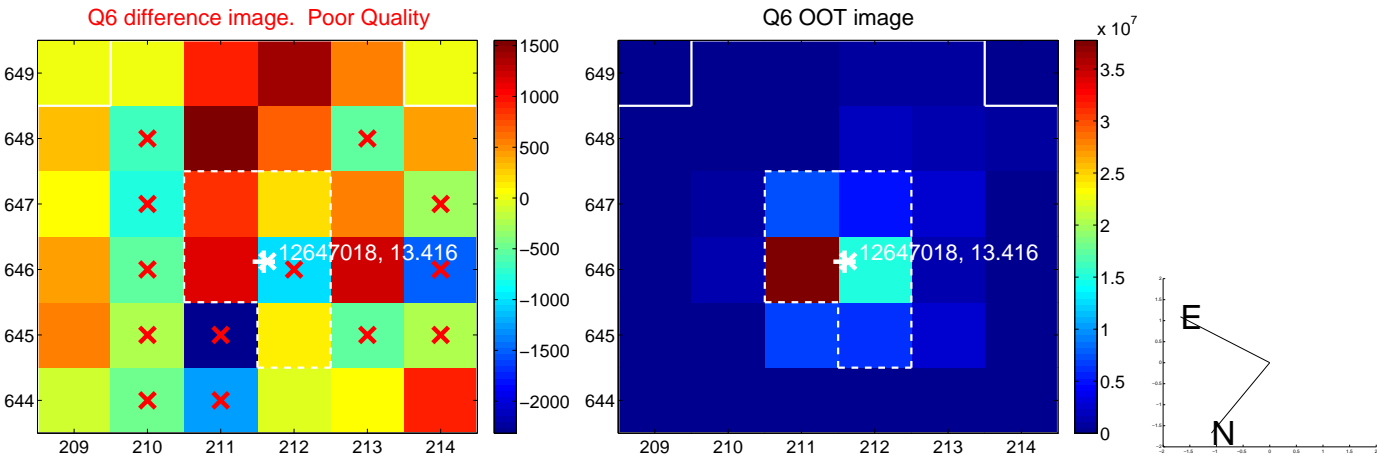
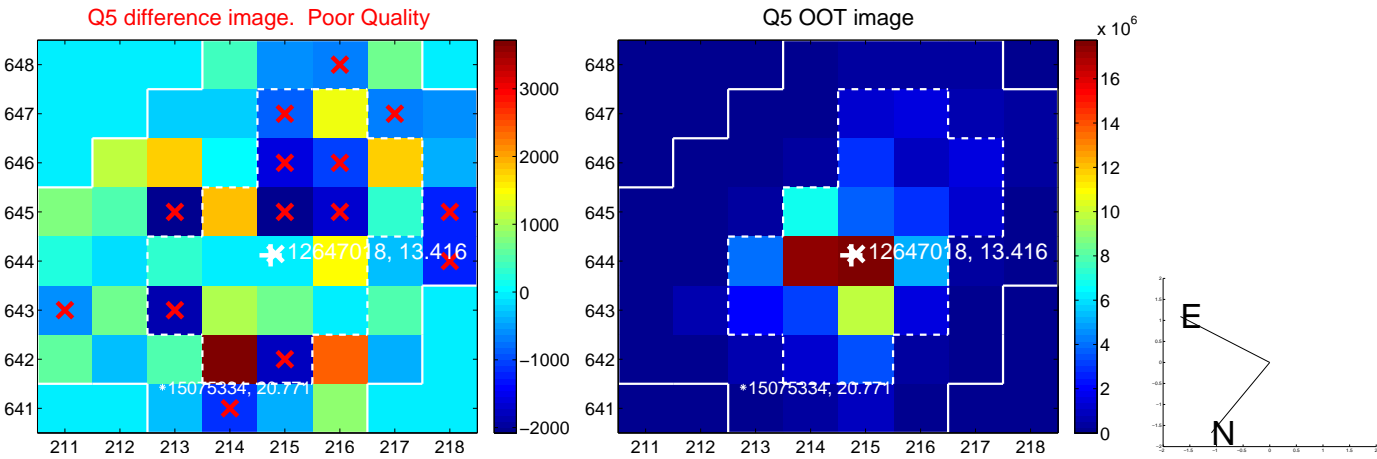


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

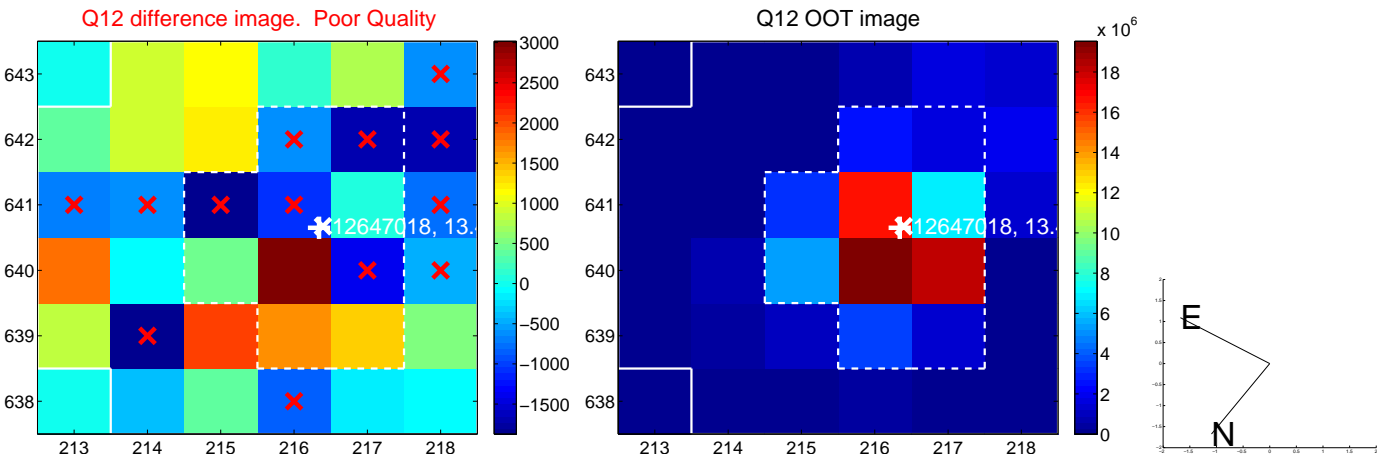
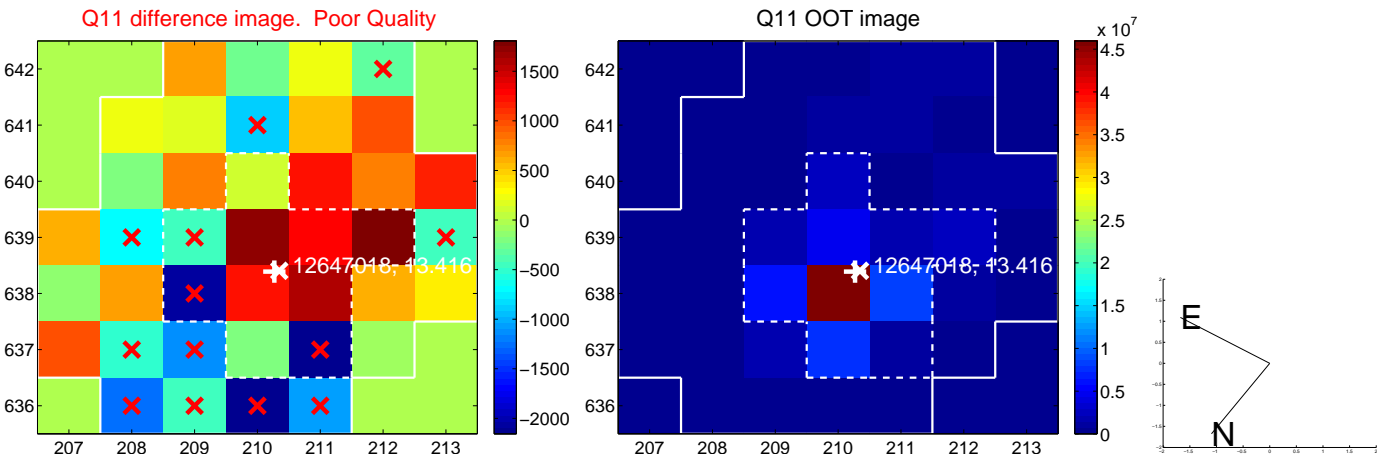
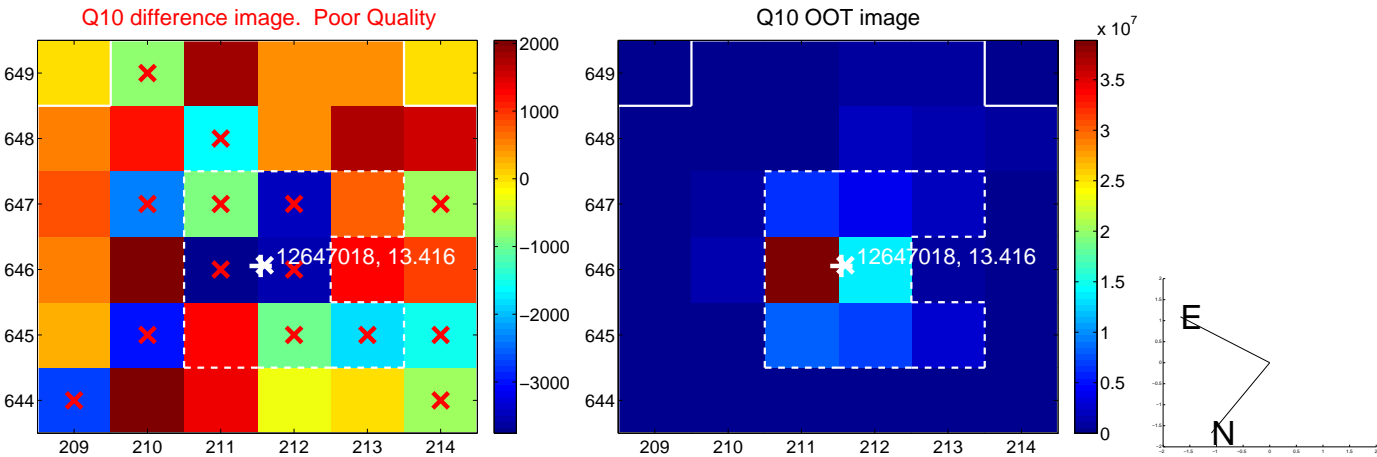
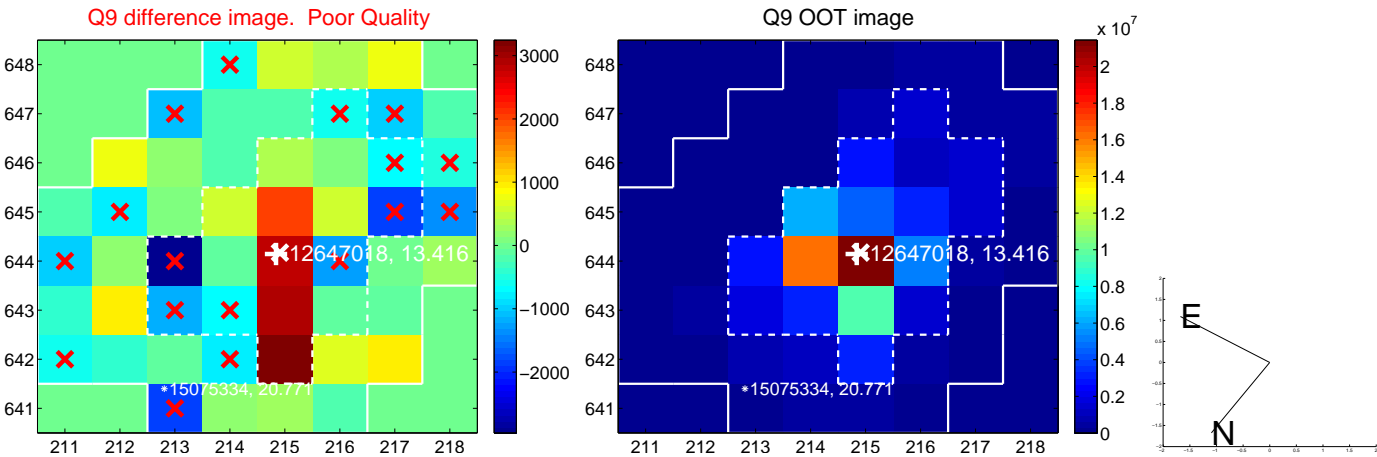
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



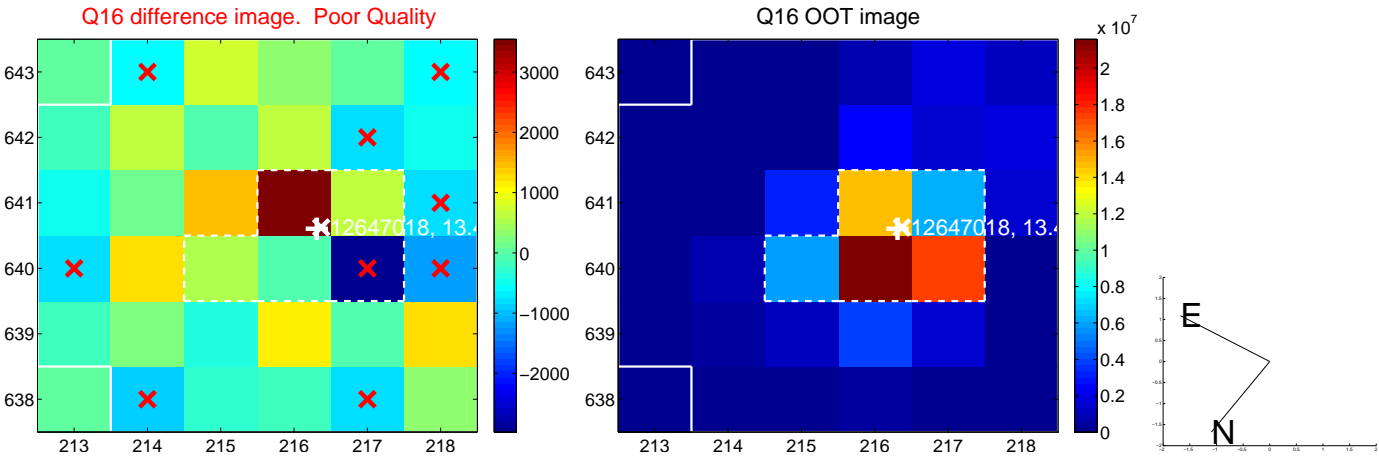
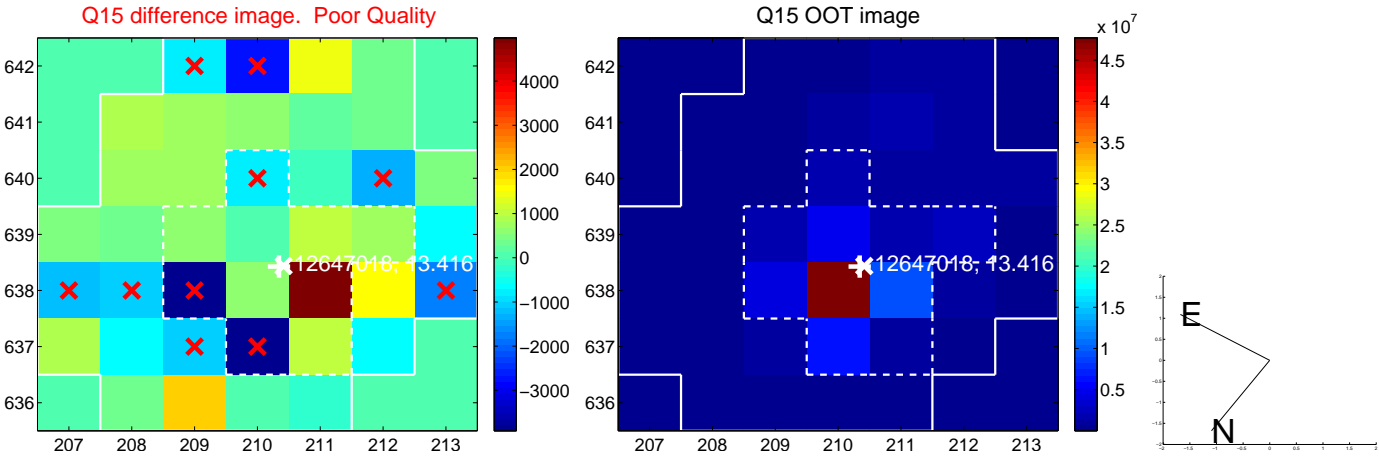
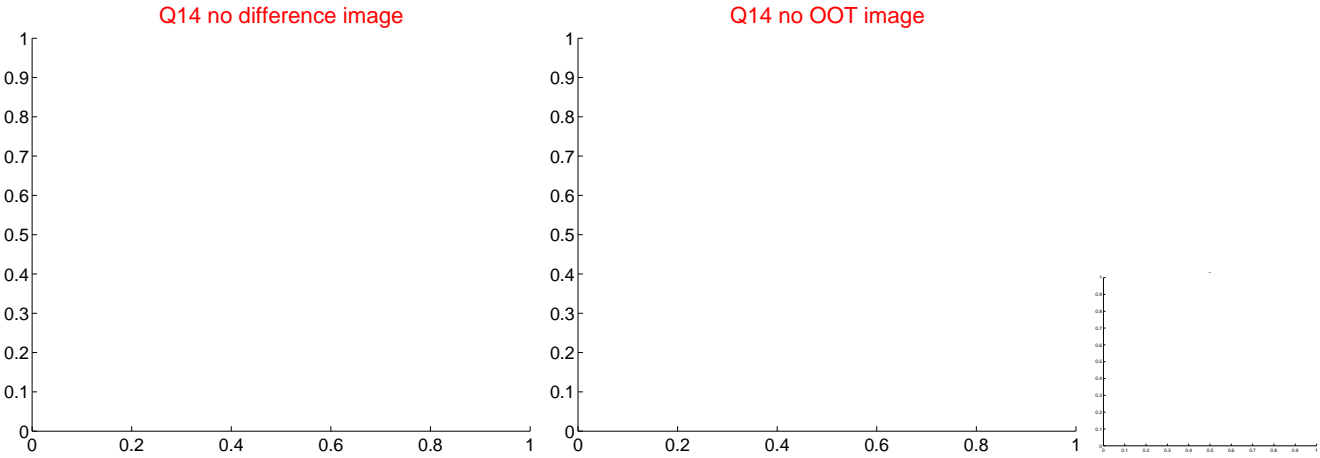
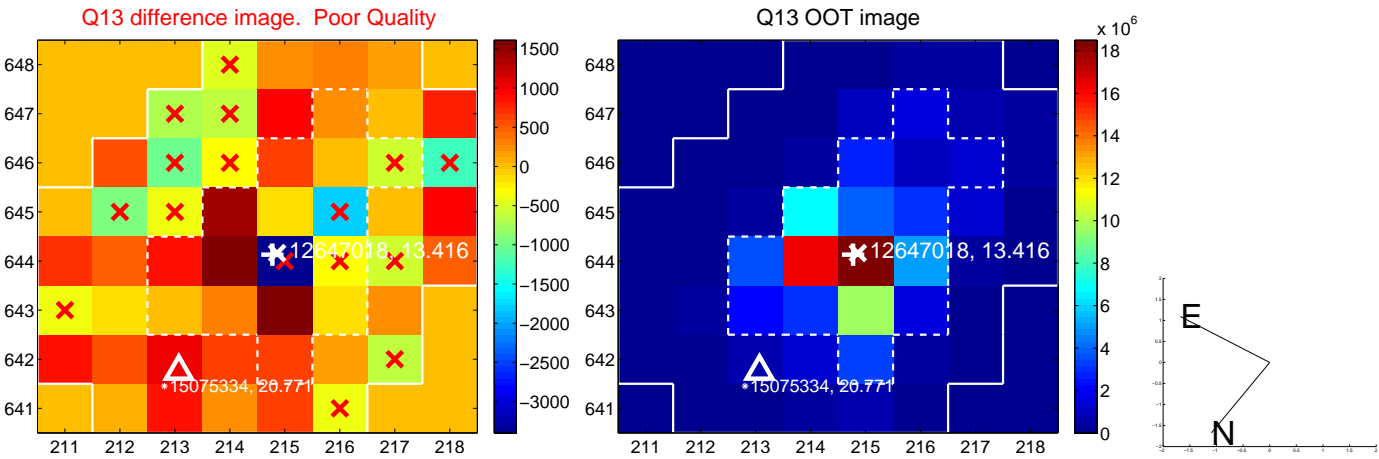
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



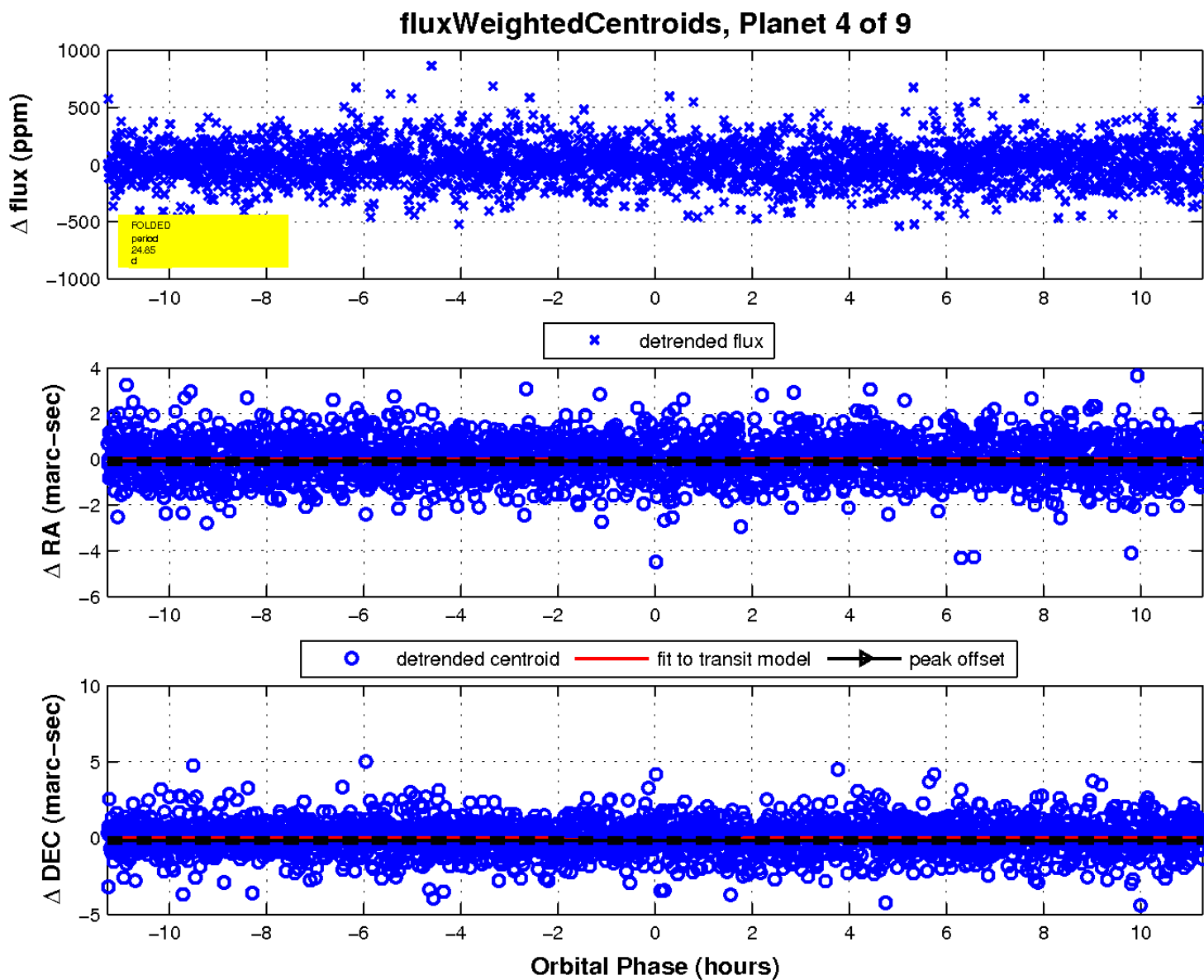
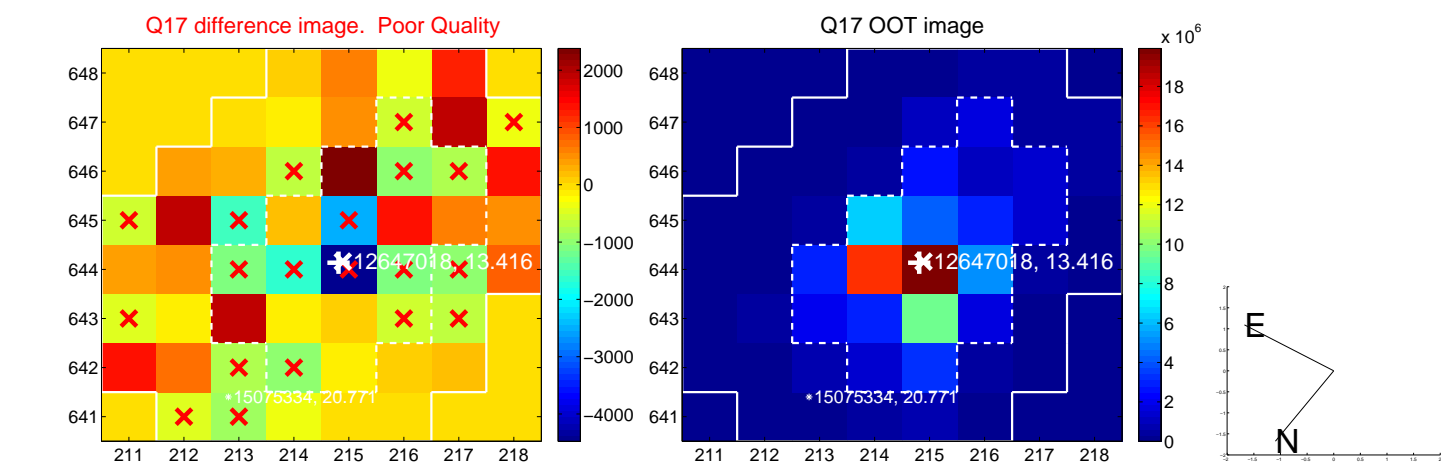
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

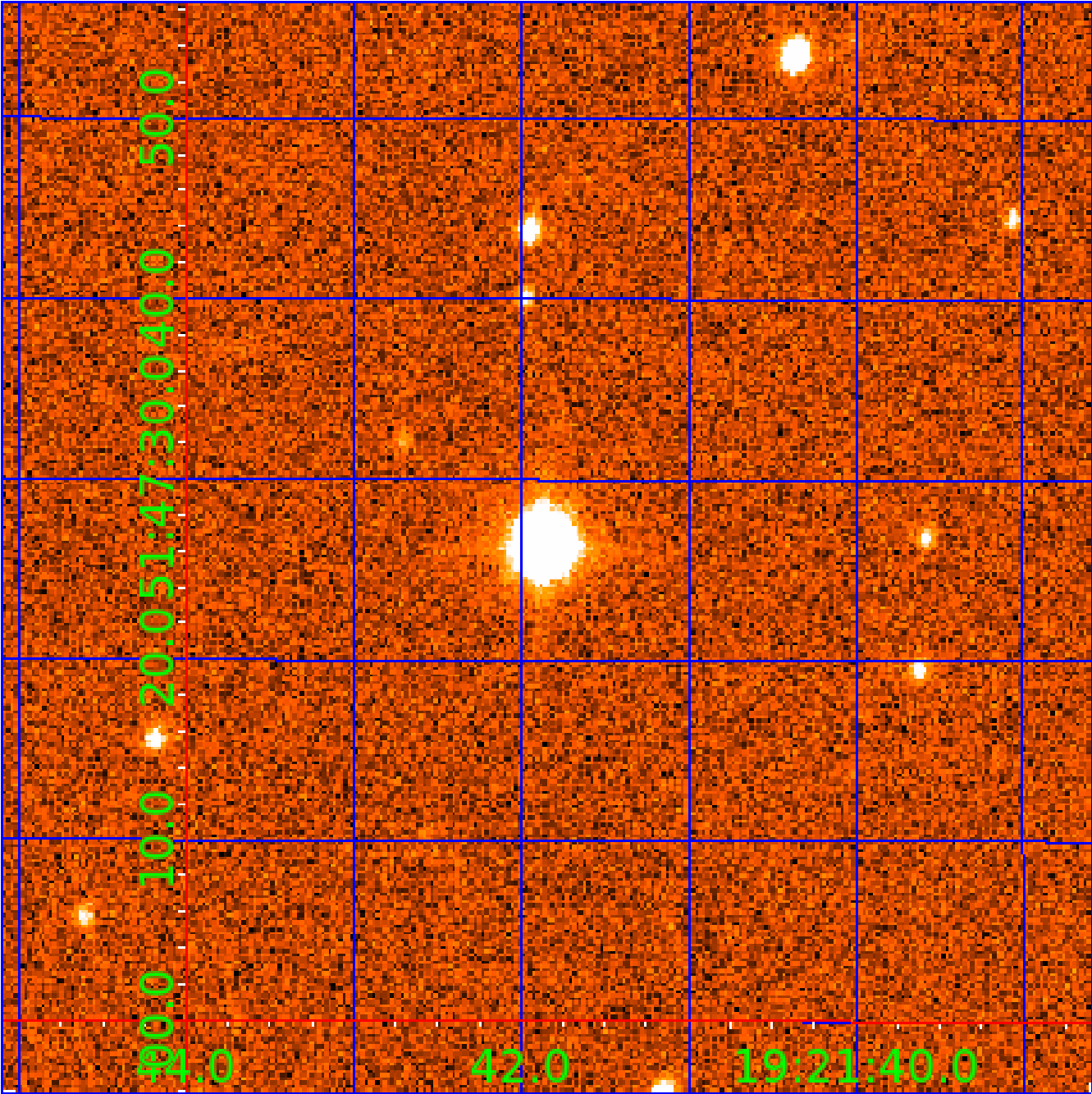


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 012647018

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})
012647018-01	OBS	No	1.296908	132.535743	20.8	9.030	8.3	11.1	1.65	5657	0.74	4448.09
012647018-02	OBS	No	53.083783	172.243518	341.8	3.269	11.3	10.6	1.65	5657	3.64	31.53
012647018-03	OBS	No	89.370051	187.811407	293.6	4.582	9.1	8.9	1.65	5657	3.44	15.74
012647018-04	OBS	No	24.853298	152.045089	100.5	3.762	9.0	5.1	1.65	5657	1.76	86.74
012647018-05	OBS	No	27.619166	134.768352	320.1	1.346	11.5	11.7	1.65	5657	2.93	75.35
012647018-06	OBS	No	32.503712	147.954093	220.4	4.386	9.5	11.5	1.65	5657	2.46	60.65
012647018-07	OBS	No	33.918495	133.285052	183.5	4.022	8.4	8.3	1.65	5657	2.47	57.30
012647018-09	OBS	No	36.652668	140.779741	233.3	3.001	8.8	8.7	1.65	5657	2.92	51.67

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
012647018-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT
012647018-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
012647018-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
012647018-04	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS—HALO_GHOST
012647018-05	OBS	FP	0.00	1	0	1	0	TRANS_GAPPED—MOD_NONUNIQ_DV—CENT_FEW_MEAS—HALO_GHOST
012647018-06	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS—HALO_GHOST
012647018-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
012647018-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—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.

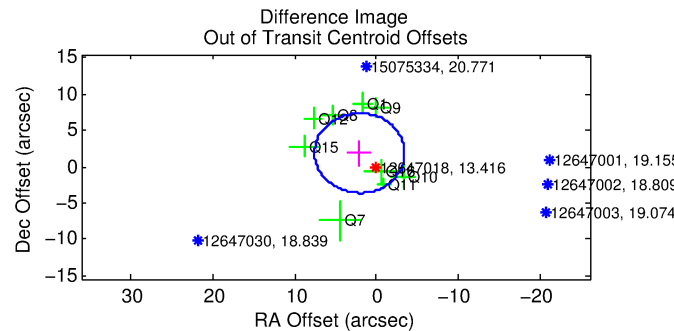
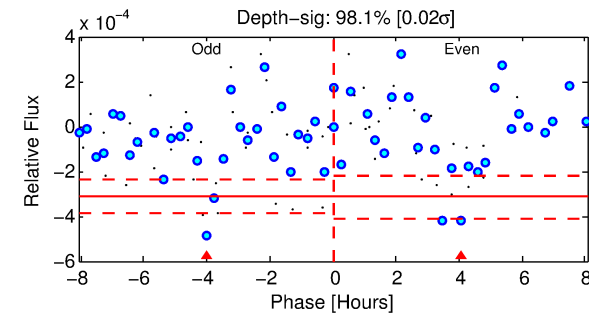
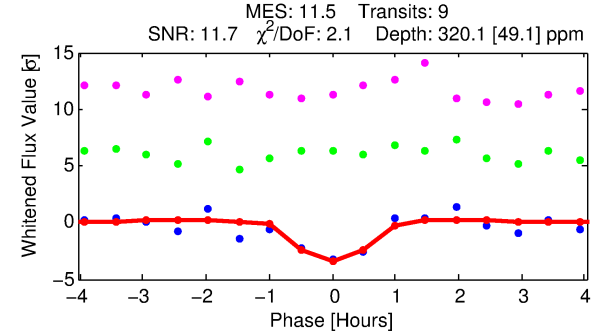
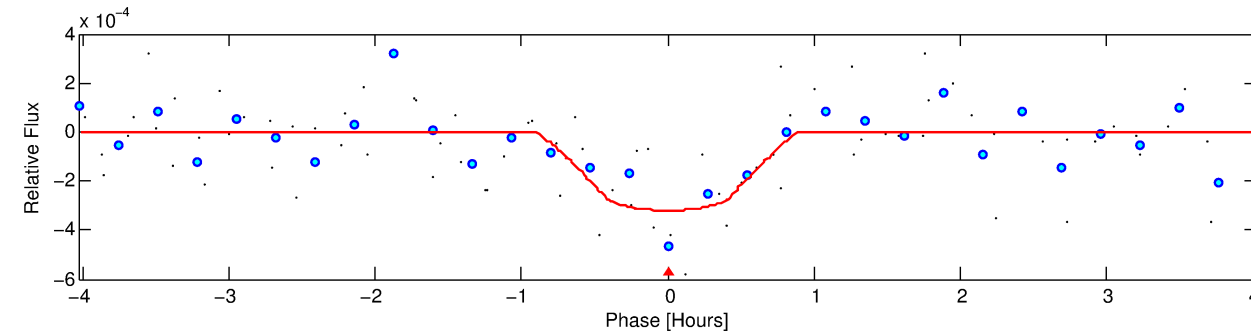
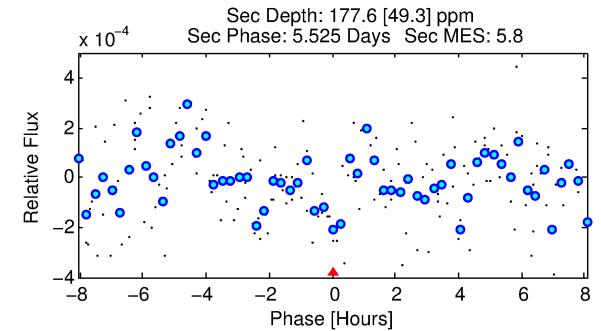
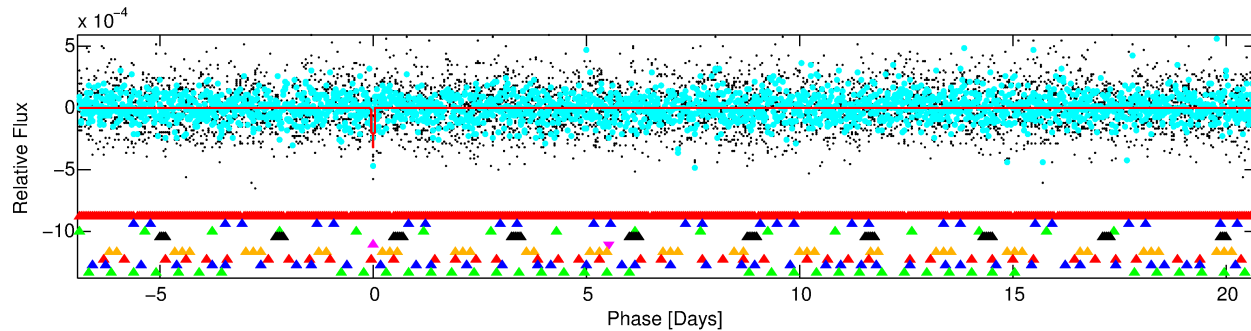
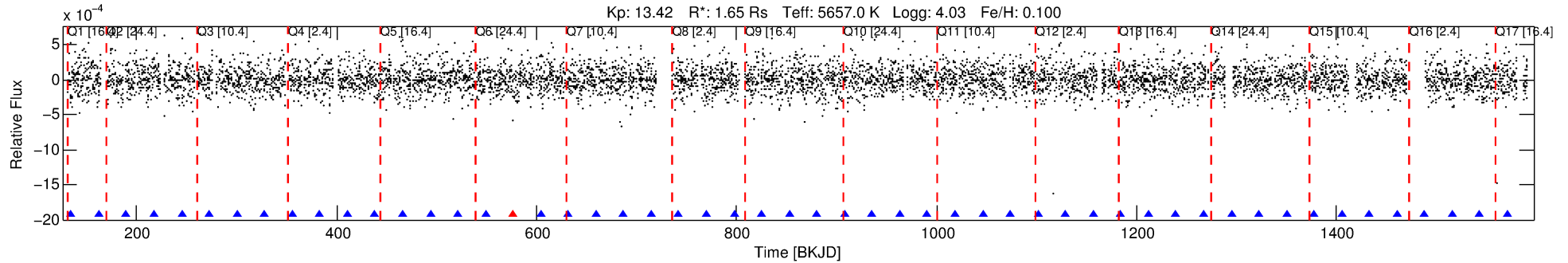
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 012647018-05

No Significant Match Found

DV One-Page Summary

KIC: 12647018 Candidate: 5 of 9 Period: 27.619 d



DV Fit Results:

Period = 27.61917 [0.00024] d
Epoch = 134.7684 [0.0072] BKJD
Rp/R* = 0.0163 [0.0445]
a/R* = 158.20 [1815.52]
b = 0.12 [95.03]
Seff = 75.35 [53.53]
Teff = 751 [133] K
Rp = 2.93 [8.09] Re
a = 0.1820 [0.0762] AU
Ag = 377.59 [2085.43] [0.18 σ]
Teffp = 5120 [7014] K [0.62 σ]

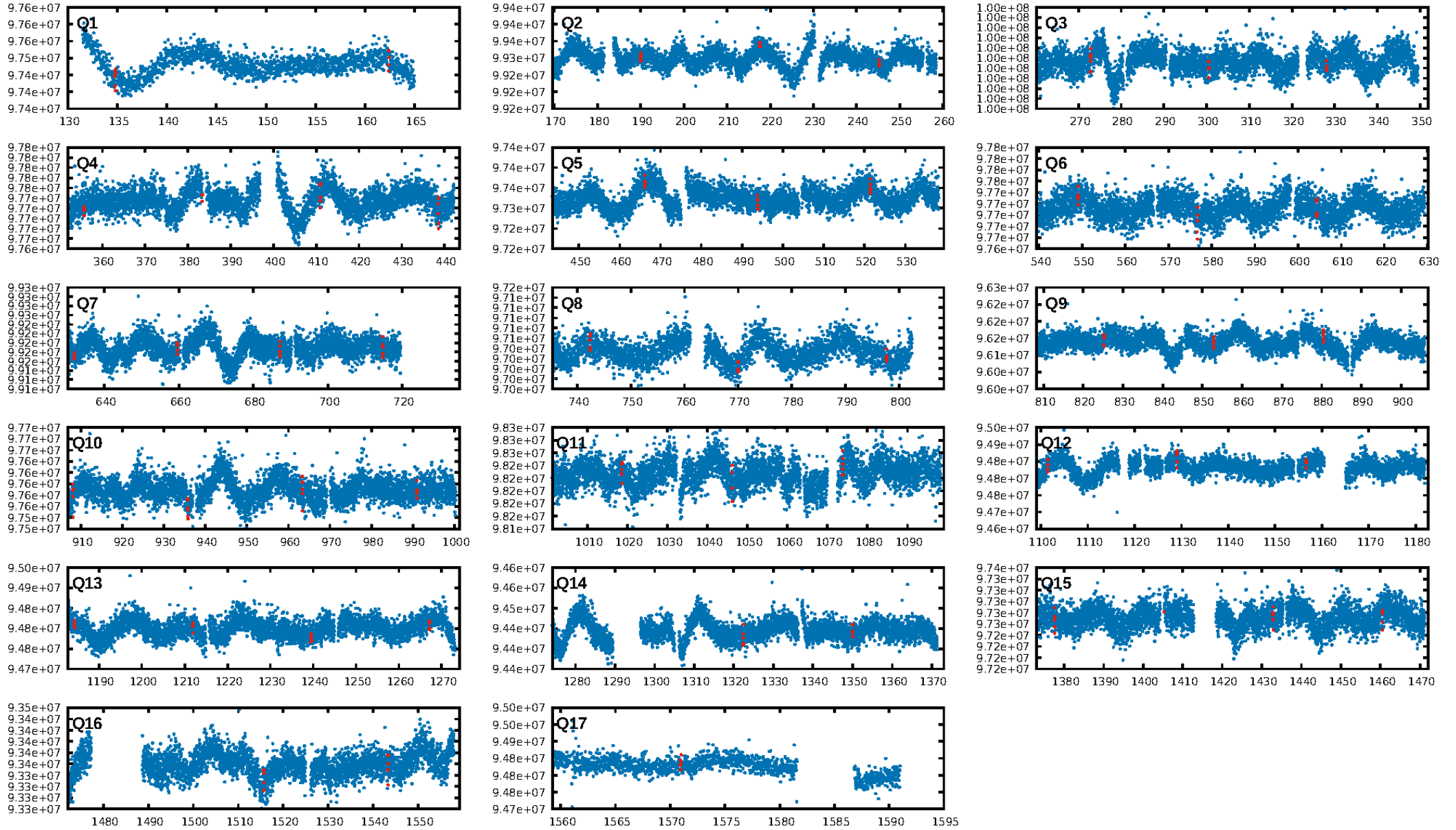
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [16.61 σ]
LongPeriod-sig: 100.0% [25.55 σ]
ModelChiSquare2-sig: 1.4%
ModelChiSquareGof-sig: 33.4%
Bootstrap-pfa: 9.23e-12
RollingBand-fgt: 0.89 [8/9]
GhostDiagnostic-chr: -0.07989
Centroid-sig: 98.0%
Centroid-so: 0.779 arcsec [0.89 σ]
OotOffset-rm: 2.796 arcsec [1.53 σ]
KicOffset-rm: 3.071 arcsec [1.81 σ]
OotOffset-st: 1/3/3/2 [9]
KicOffset-st: 1/3/3/2 [9]
DiffImageQuality-fgm: 0.00 [0/9]
DiffImageOverlap-fno: 0.82 [14/17]

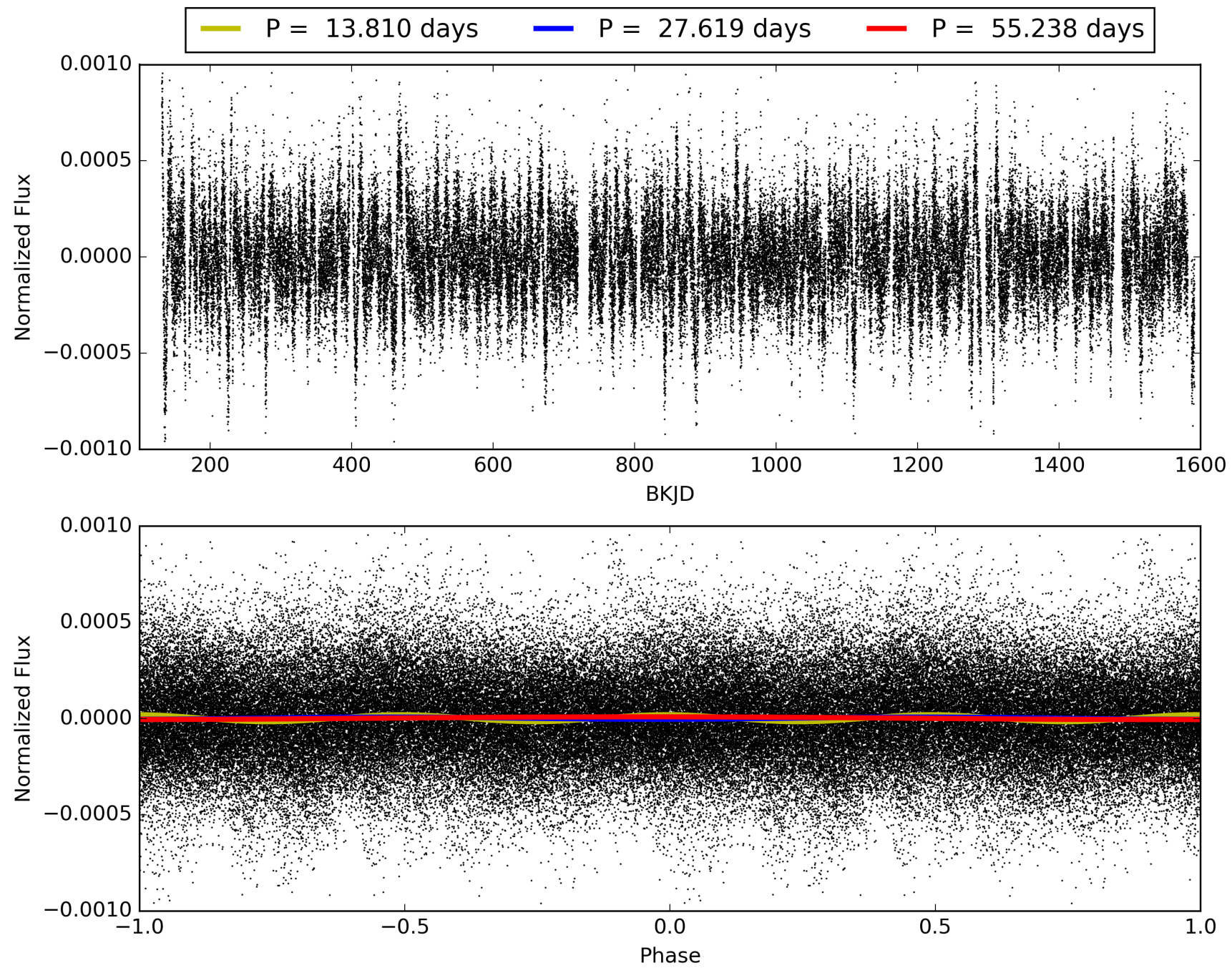
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 05:14:16 Z

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

TCE 012647018-05, PDC Light Curves

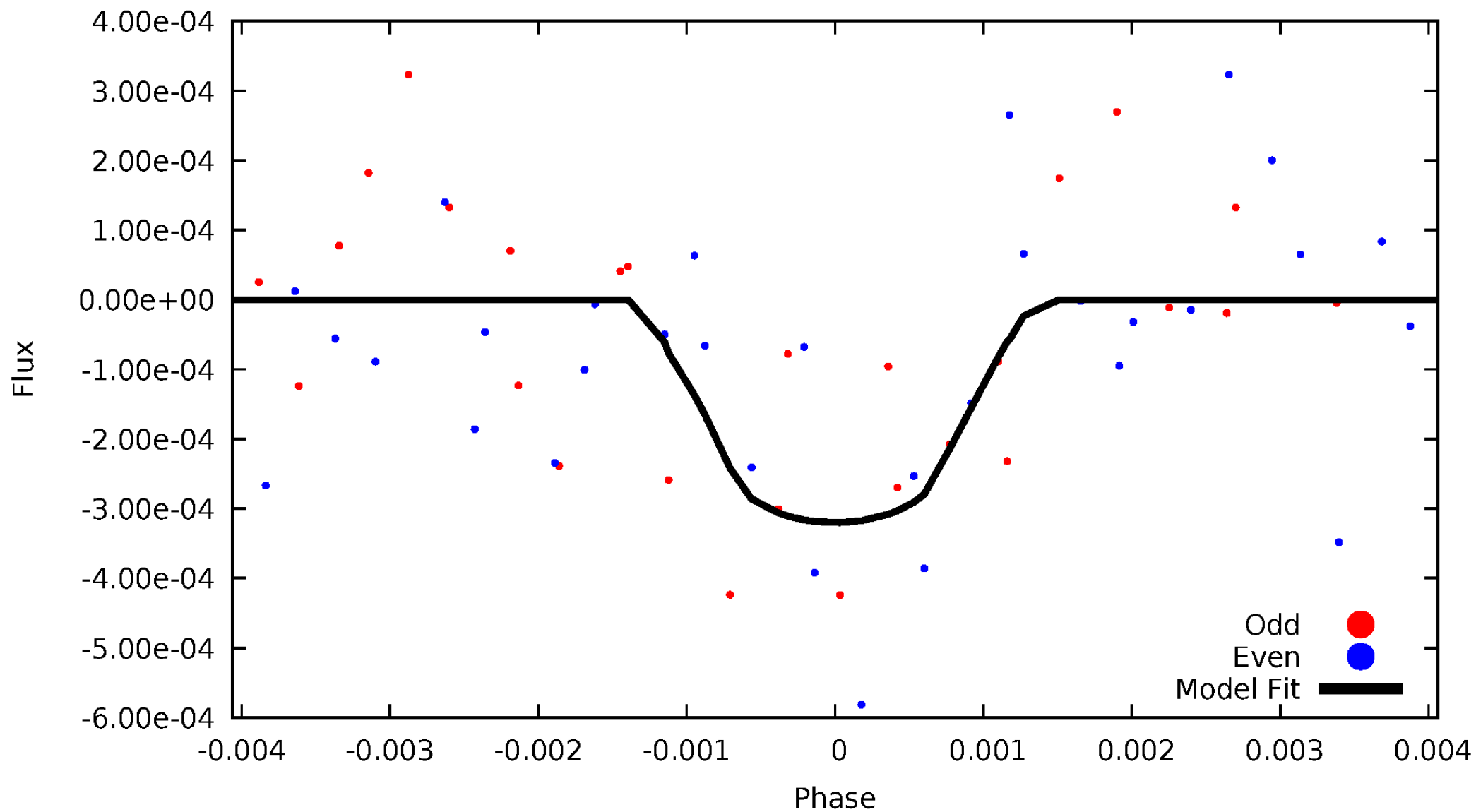


TCE 012647018-05



DV Odd/Even

TCE 012647018-05

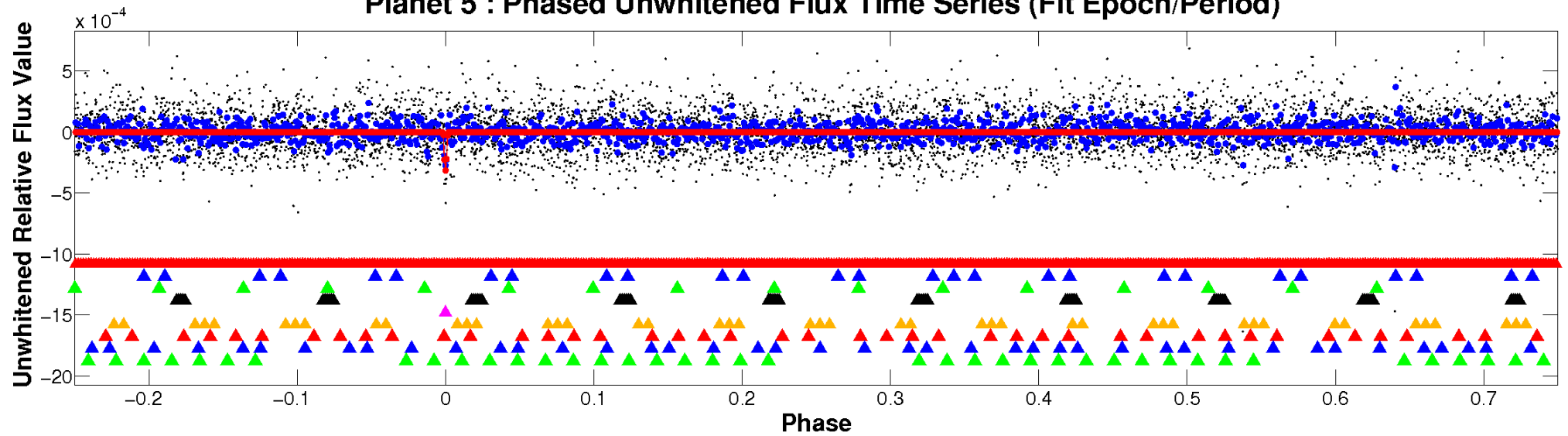


ALT Odd/Even

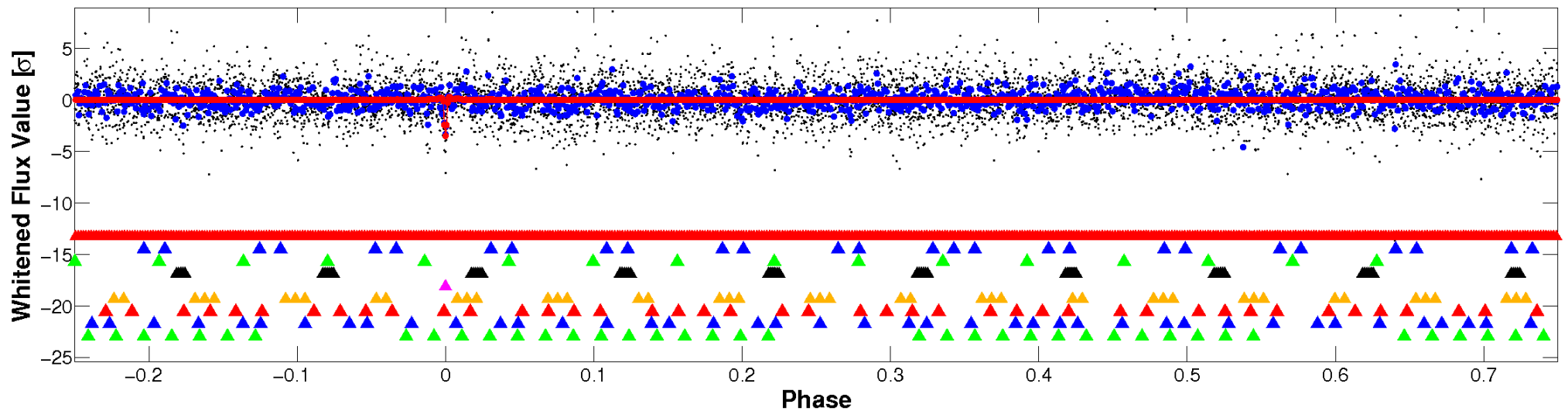
This plot does not exist for this TCE.

Non-Whitened Vs. Whitened Light Curve

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

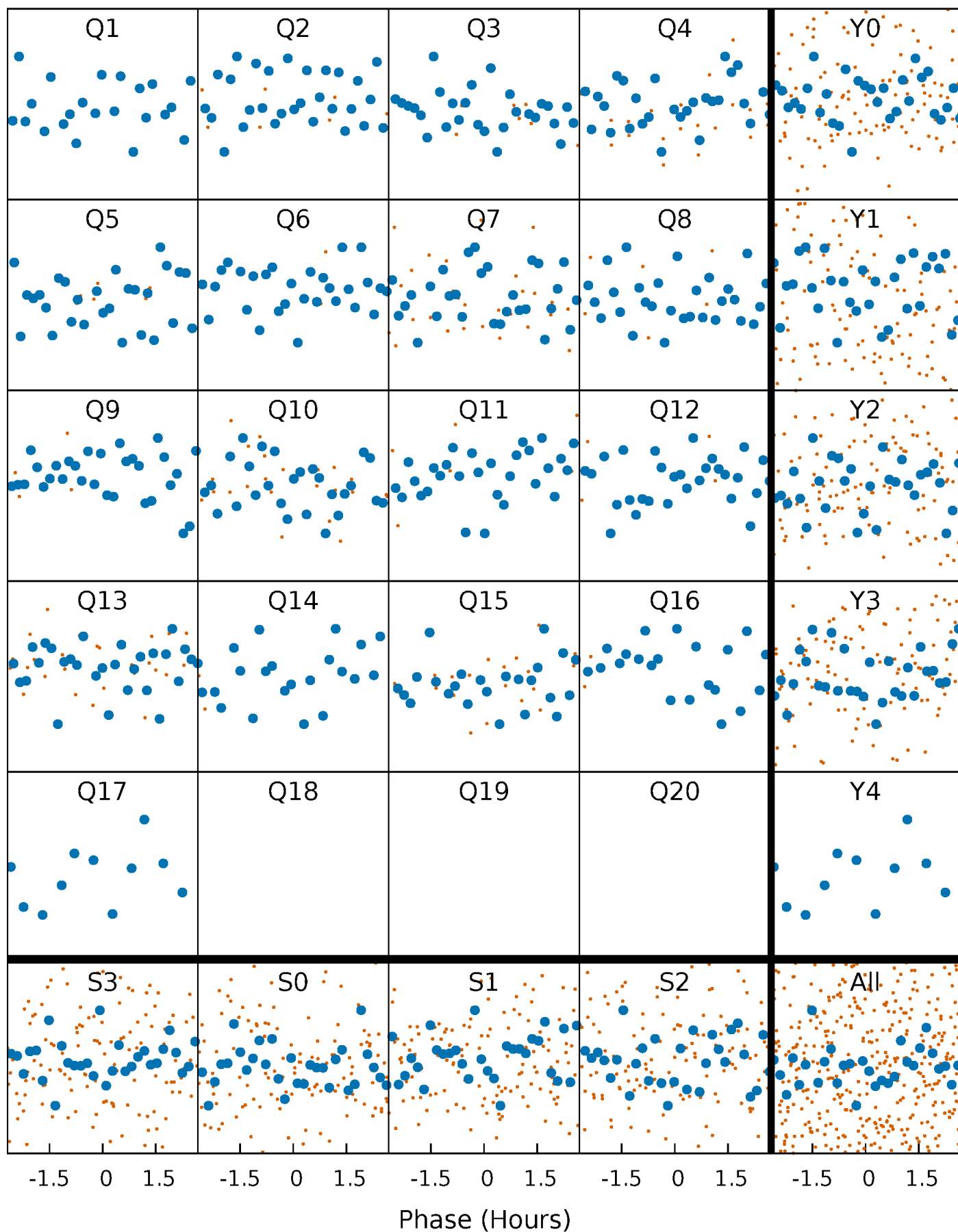


Planet 5 : Phased Whitened Flux Time Series (Fit Epoch/Period)



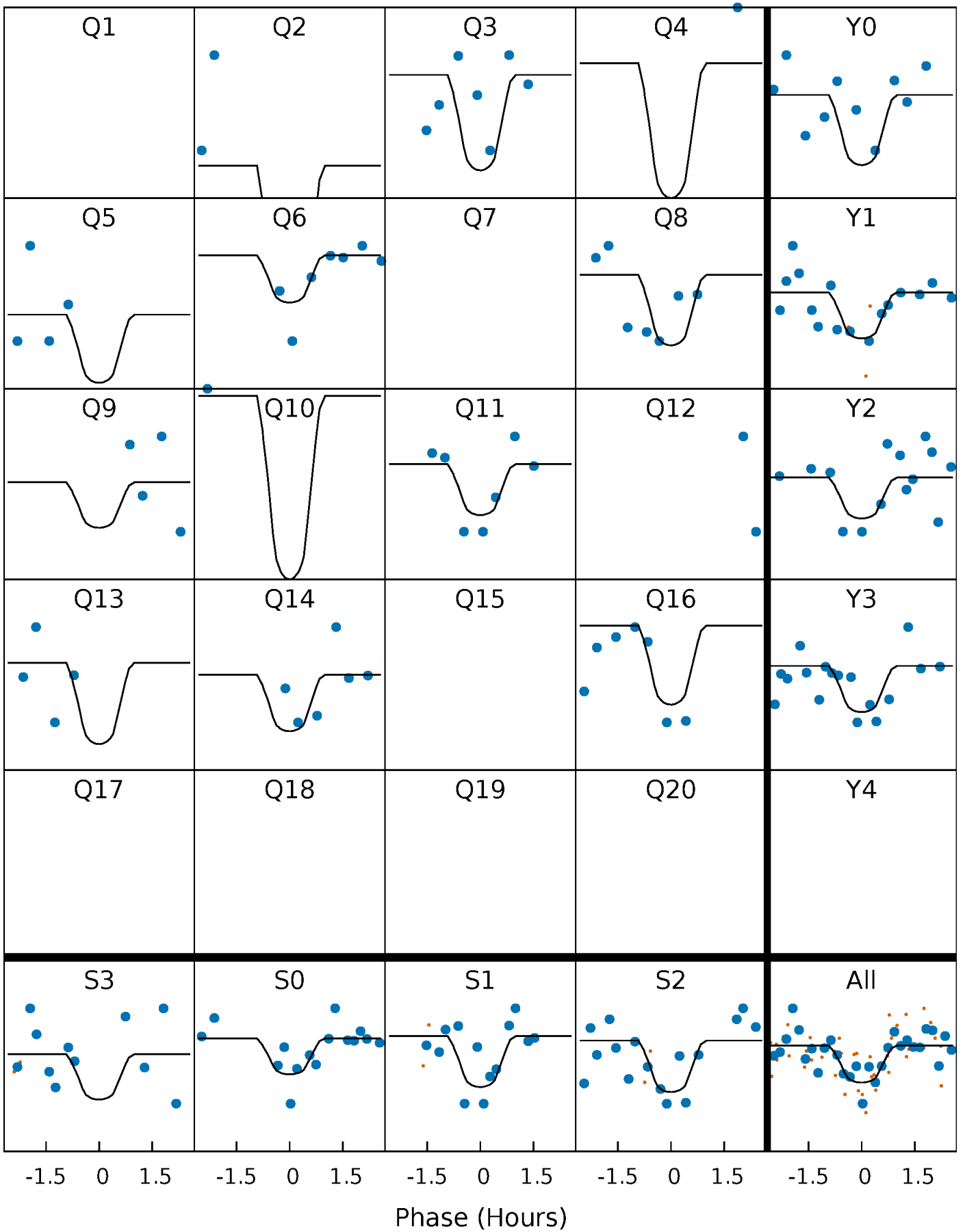
PDC Quarter-Phased Transit Curves

TCE 012647018-05 P= 27.619166 Days $T_0=134.768352$ (BKJD)



DV Quarter-Phased Transit Curves

TCE 012647018-05 P= 27.619166 Days $T_0=134.768352$ (BKJD)

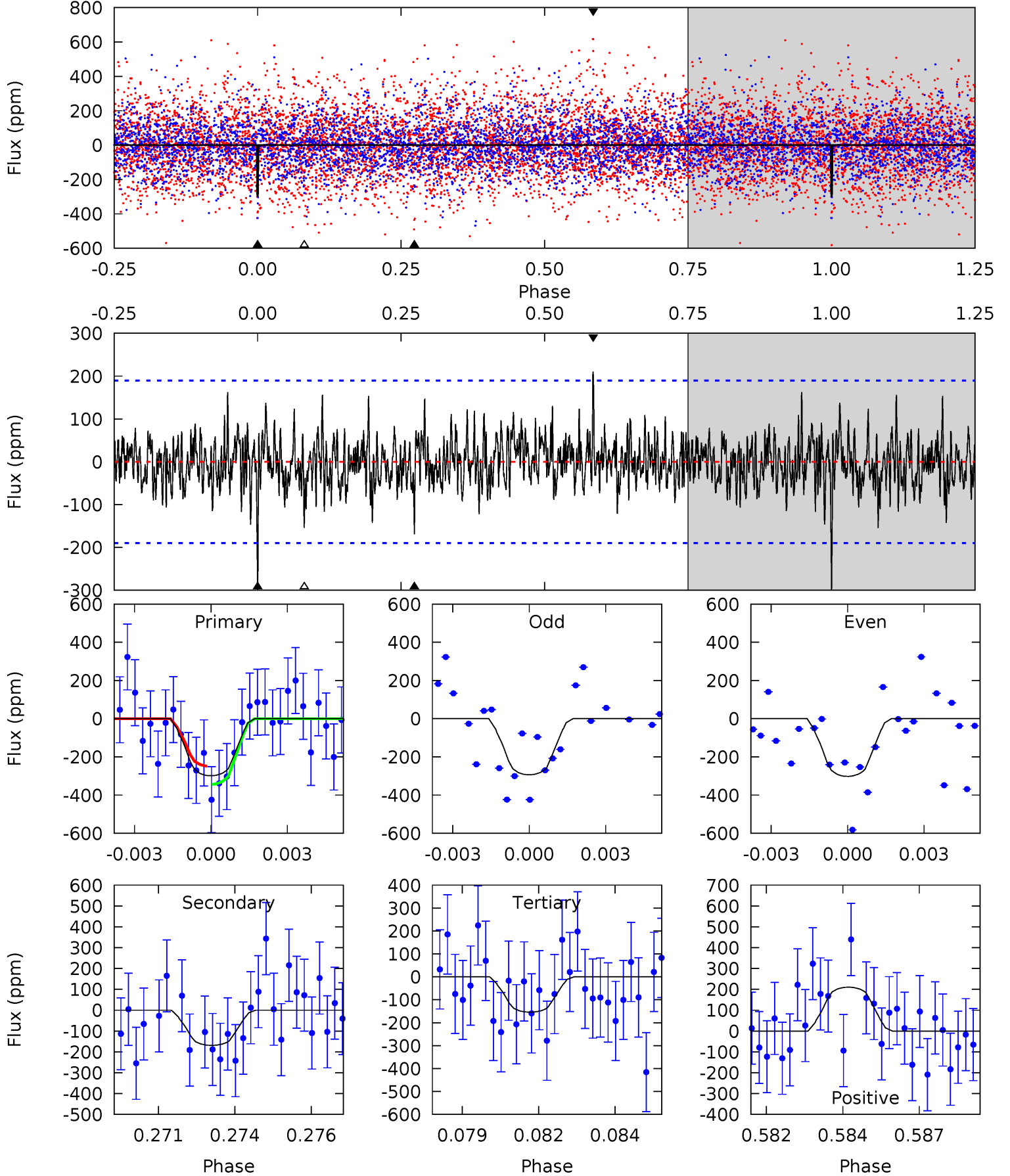


This plot does not exist for this TCE.

DV Model-Shift Uniqueness Test

012647018-05, $P = 27.619166$ Days, $E = 107.149186$ Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.31	4.70	4.29	5.85	5.28	3.01	1.30	4.03	2.46	0.41	-1.16	0.12	0.98	0.41	1.31



Alt Model-Shift Uniqueness Test

This plot does not exist for this TCE.

Stellar Parameters For KIC 012647018

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5657^{+152}_{-152}	$4.026^{+0.424}_{-0.133}$	$0.100^{+0.250}_{-0.250}$	$1.649^{+0.351}_{-0.652}$	$1.053^{+0.126}_{-0.139}$	$0.331^{+1.086}_{-0.128}$
	+3%/-3%	+11%/-3%	+250%/-250%	+21%/-40%	+12%/-13%	+328%/-39%
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 012647018-05 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-169 ± 36	$6.19^{+6.54}_{-4.06}$	1030^{+76}_{-116}	3722^{+1897}_{-726}	82^{+581}_{-64}
Alt.	N/A	N/A	N/A	N/A	N/A

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

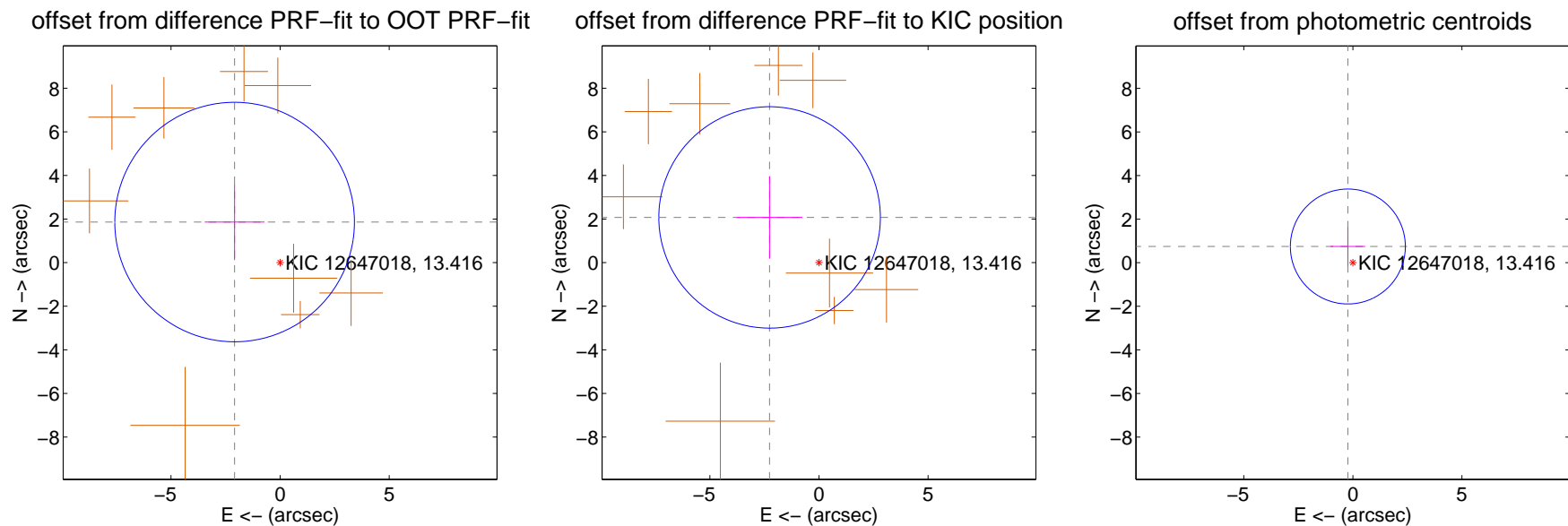
DV Centroid Data

Supplemental centroid analysis for 012647018-05. Kepler magnitude: 13.42. Transit SNR 11.72

There are 0 quarters with good PRF difference image offsets

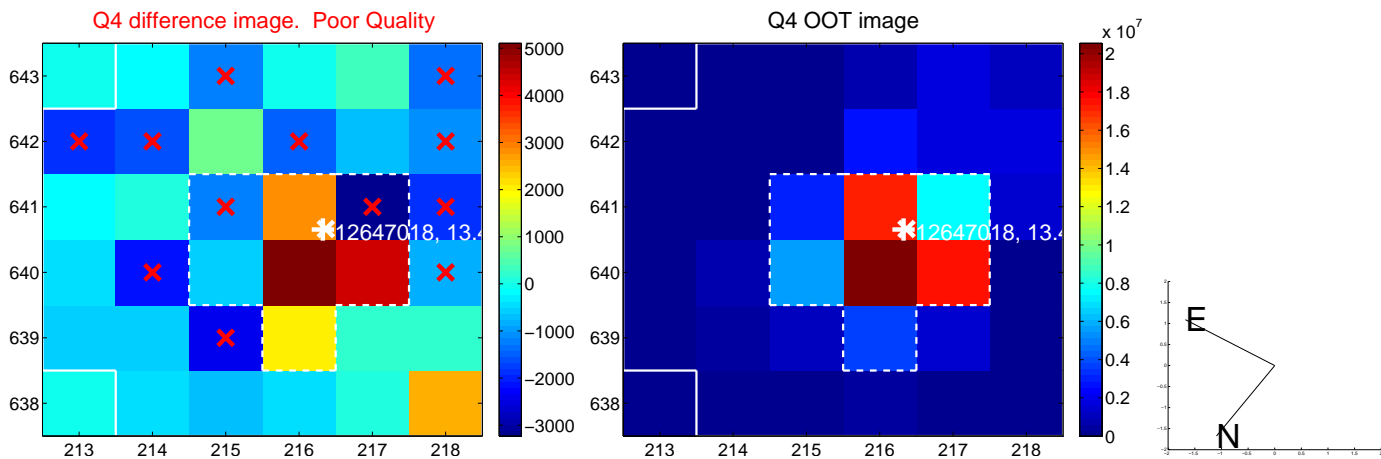
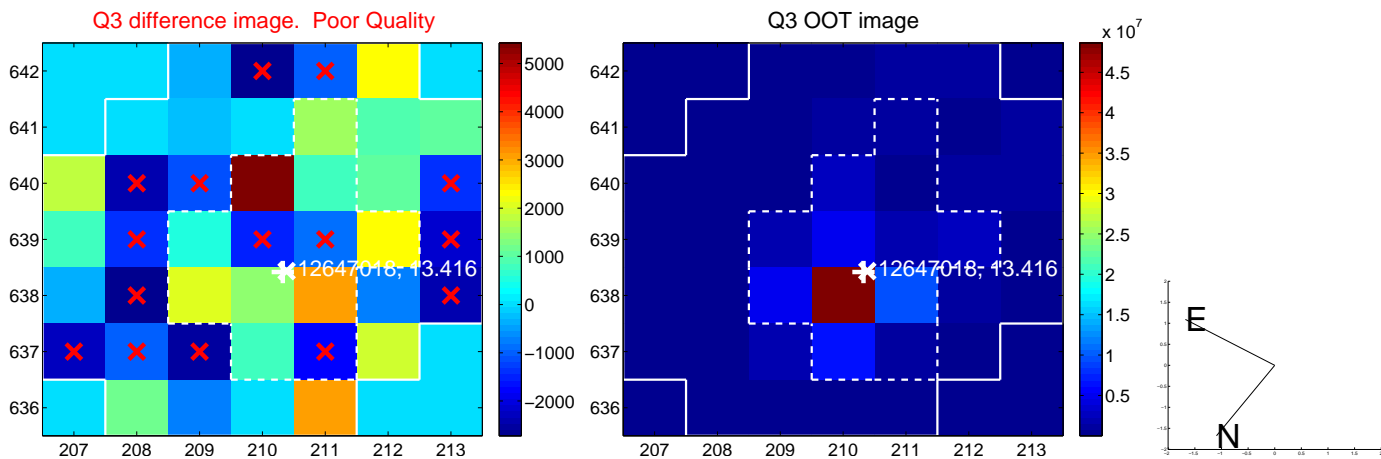
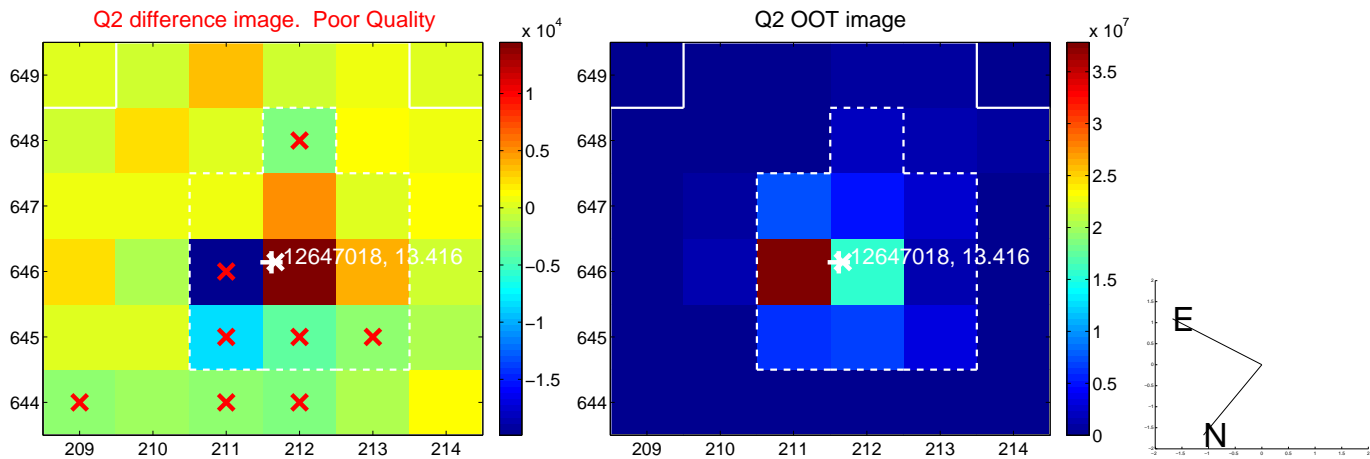
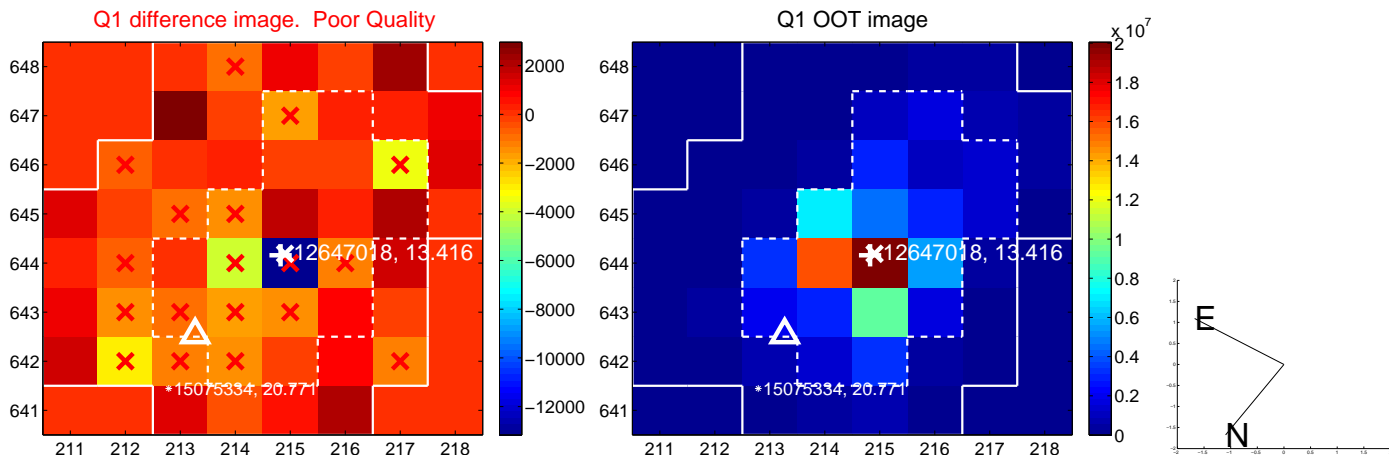
The direct PRF centroid is offset from the target star catalog position by about 0.27 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	2.796 ± 1.831	1.53	2.086 ± 1.373	1.862 ± 1.749
PRF-fit source offset from KIC position	3.071 ± 1.692	1.81	2.264 ± 1.506	2.074 ± 1.891
photometric centroid source offset	0.78 ± 0.88	0.89	0.23 ± 0.80	0.74 ± 0.89

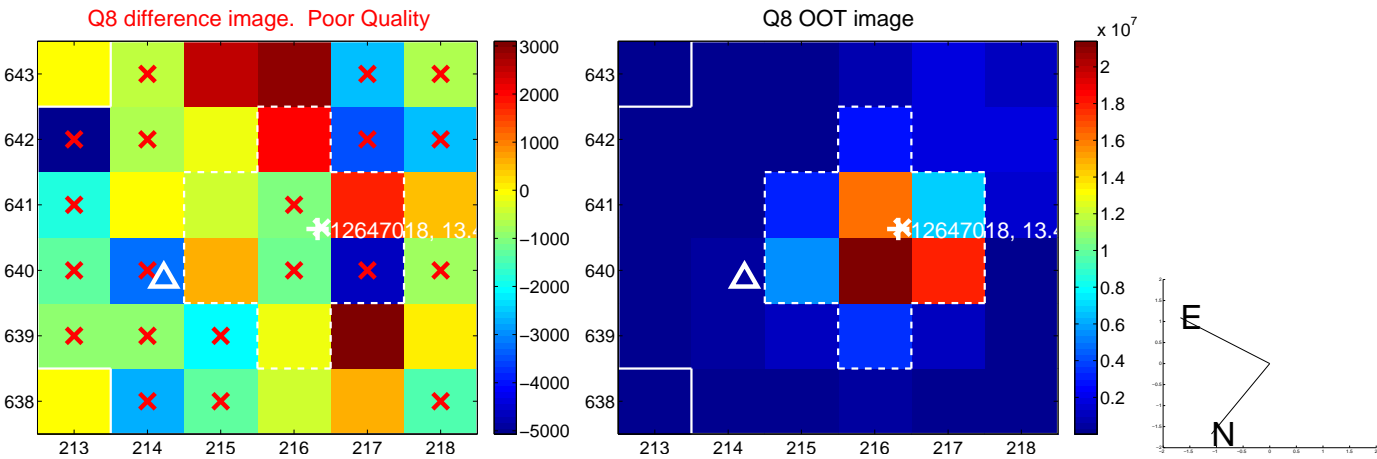
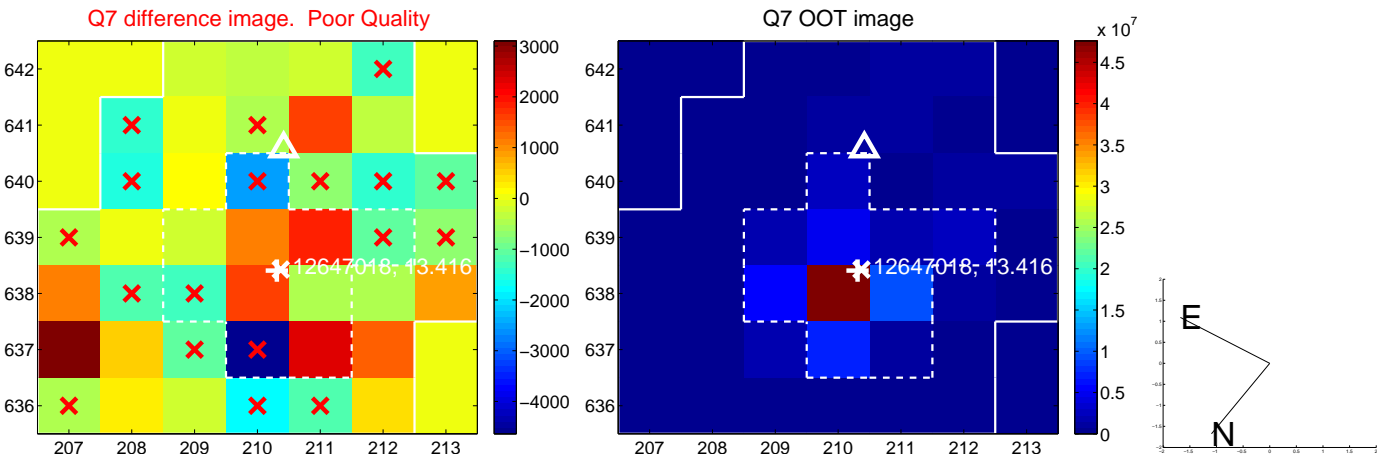
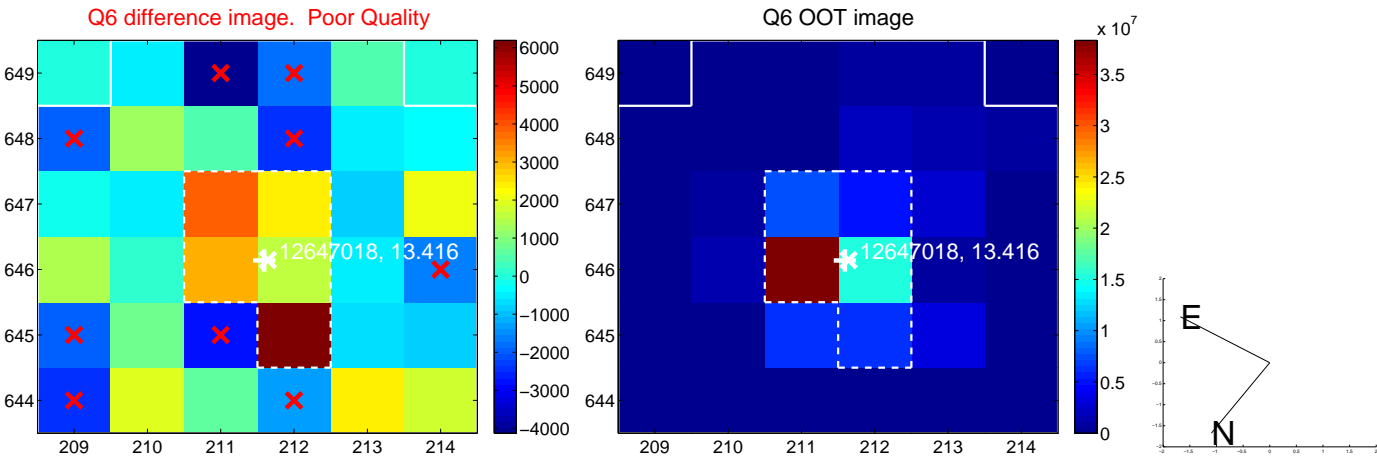
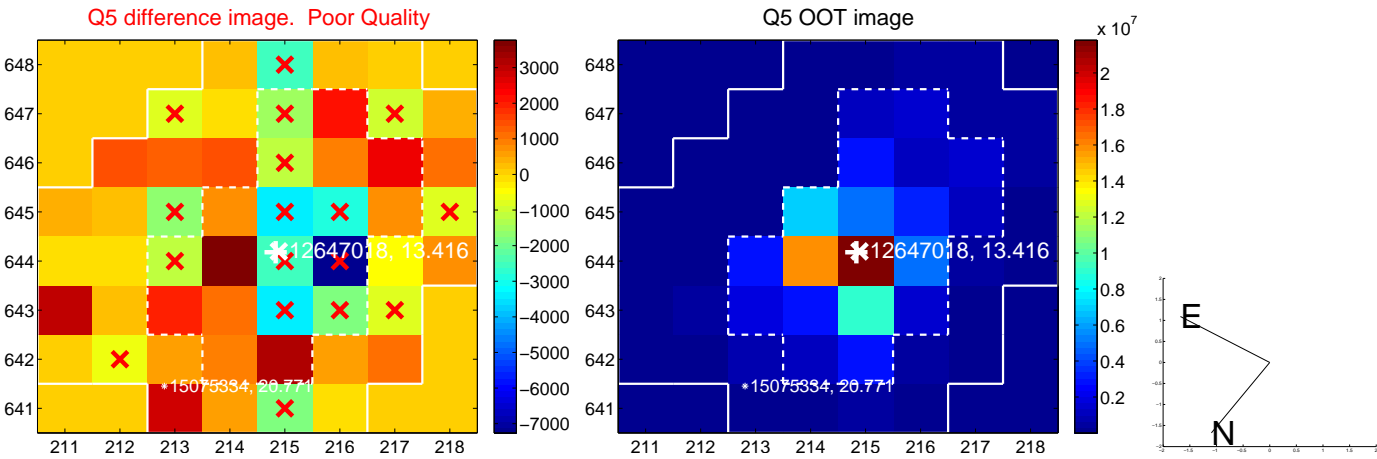


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

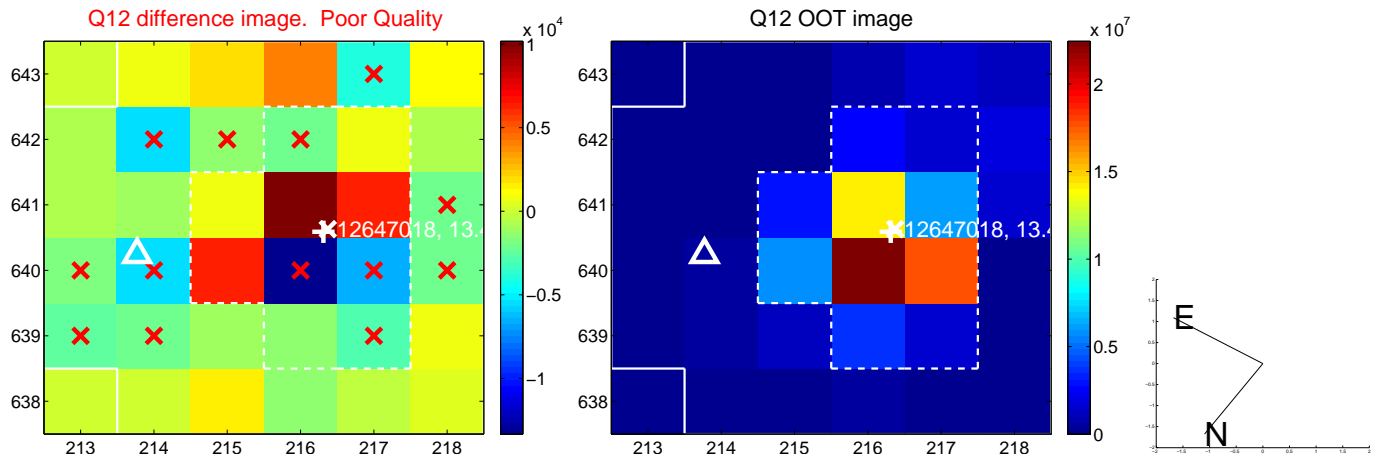
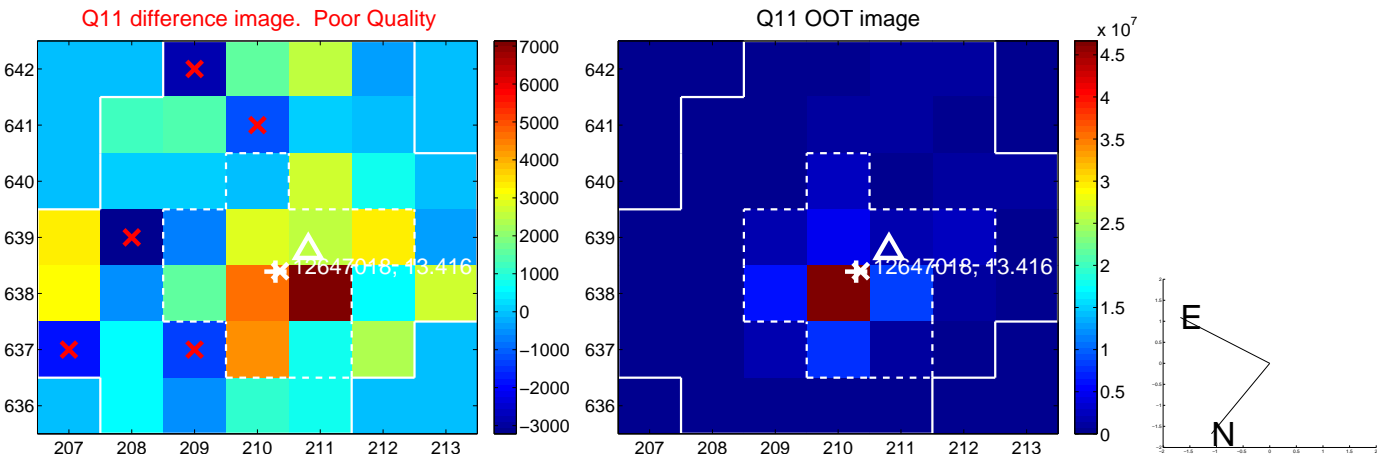
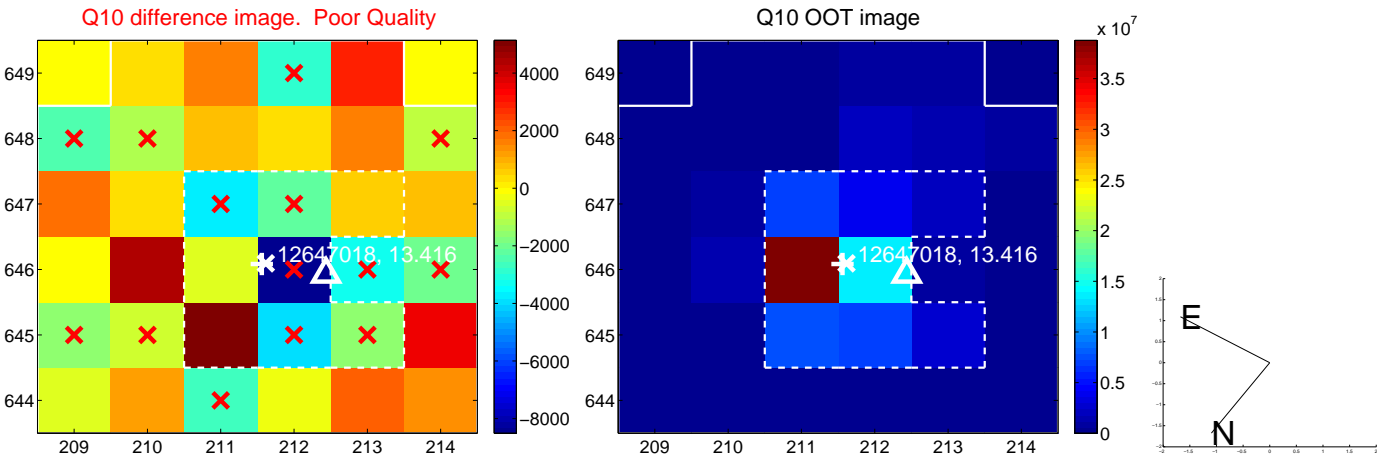
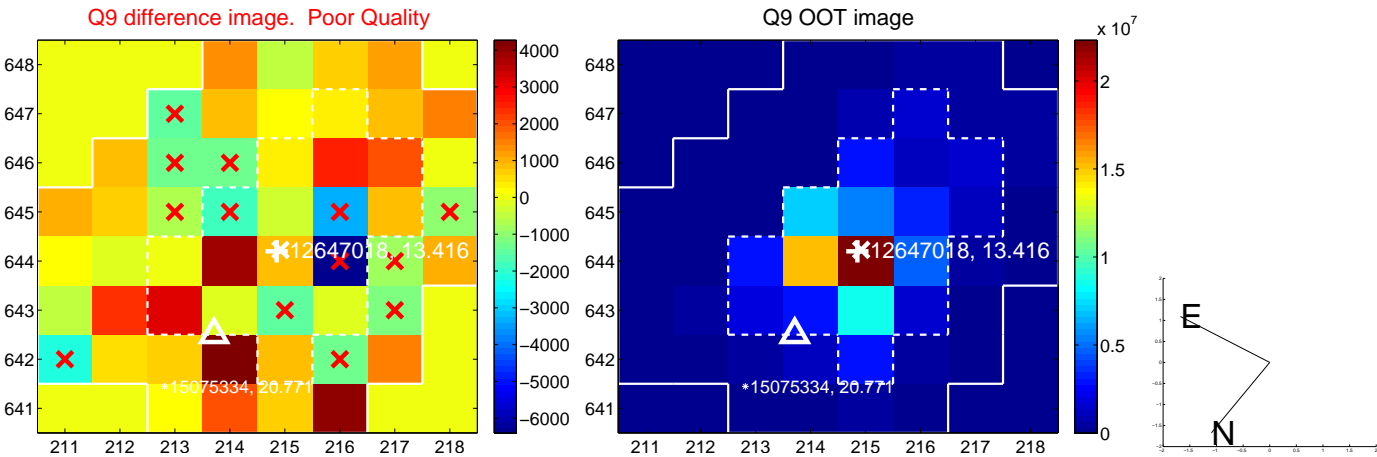
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



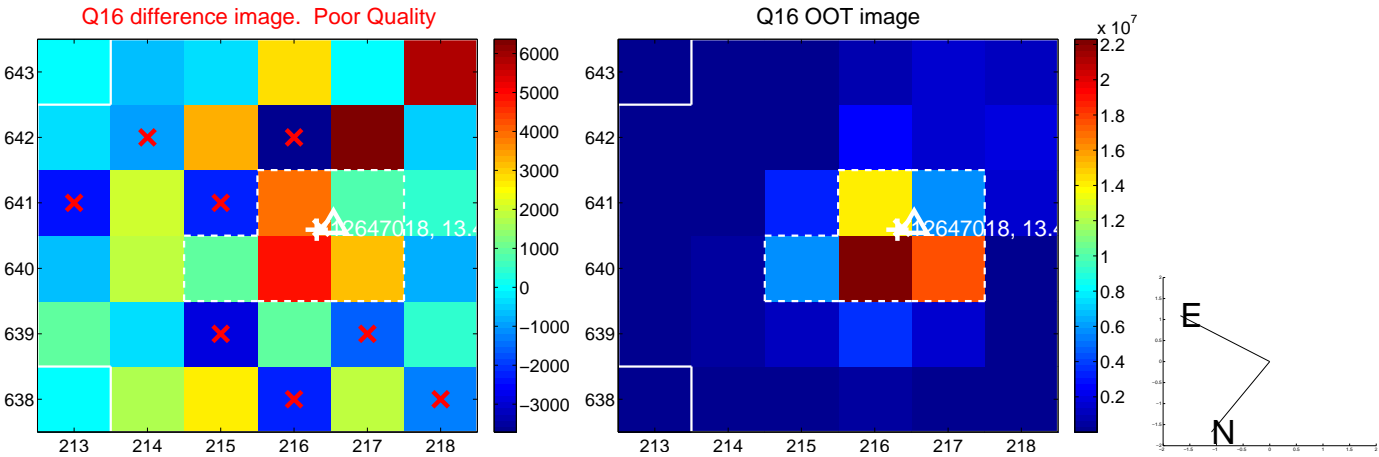
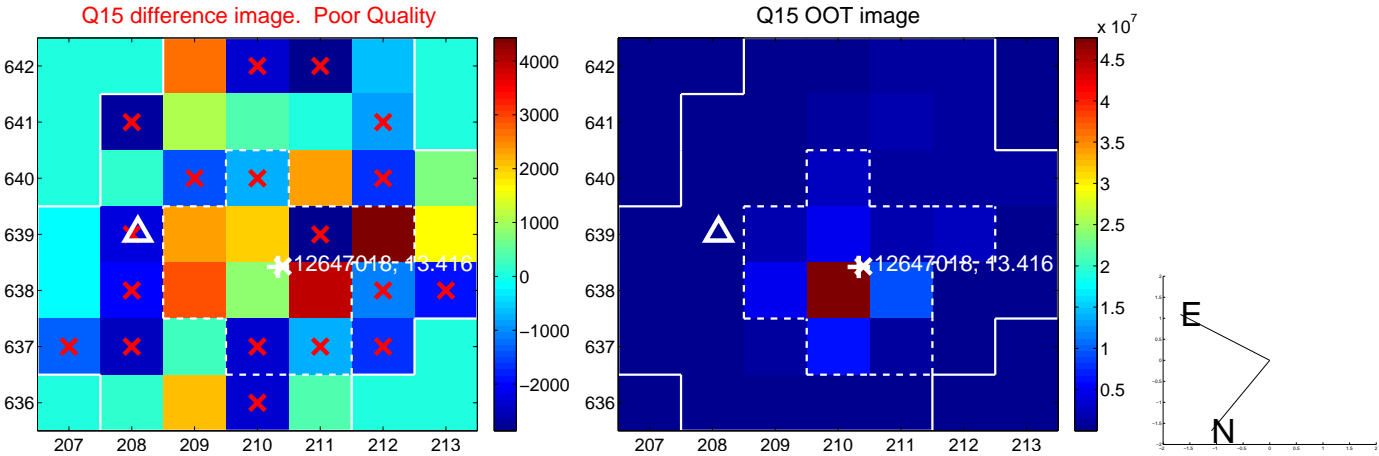
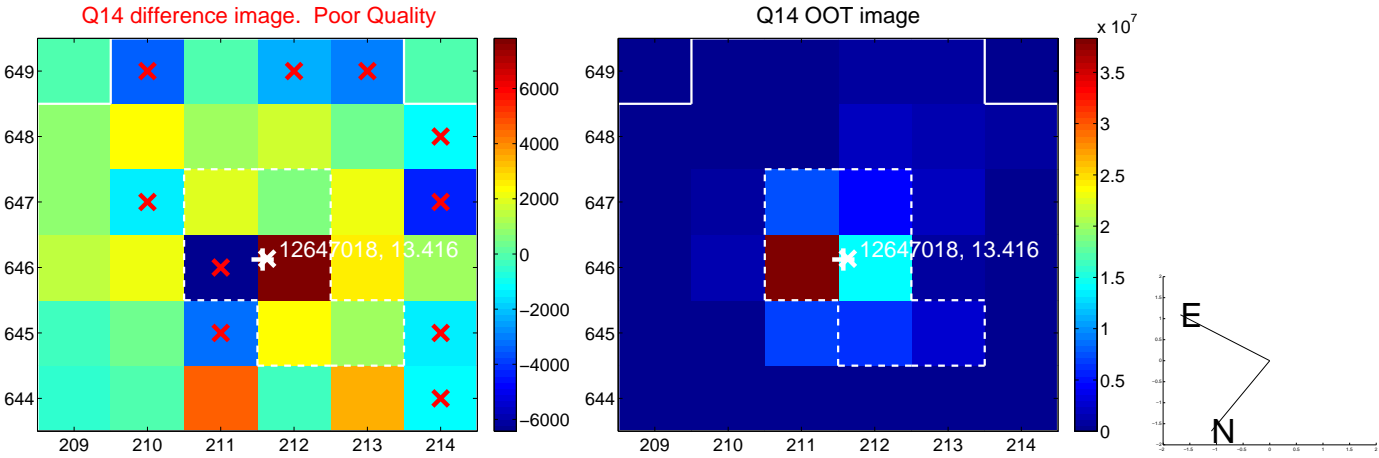
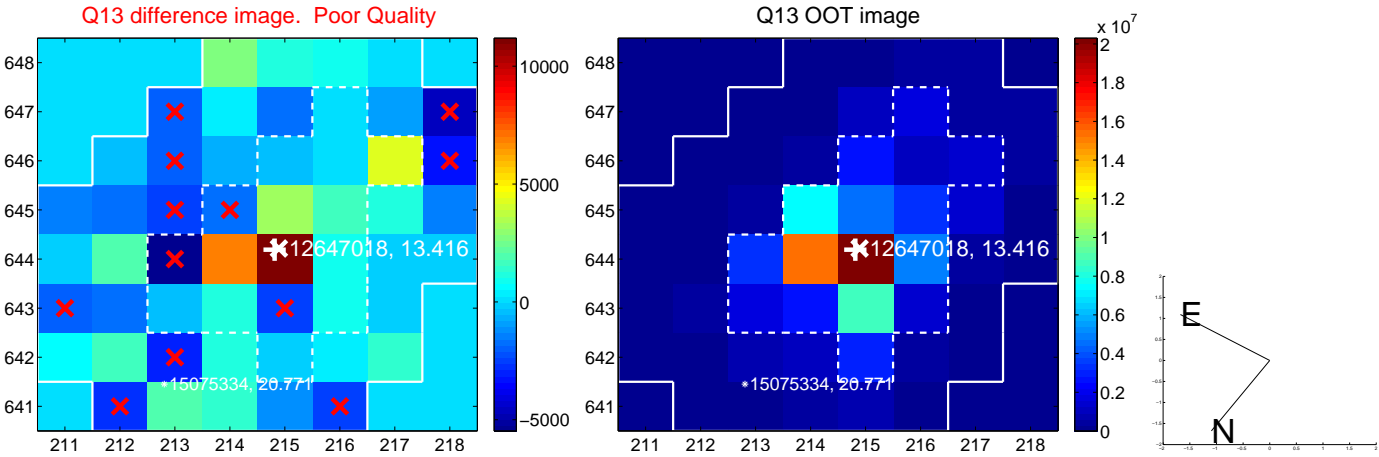
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



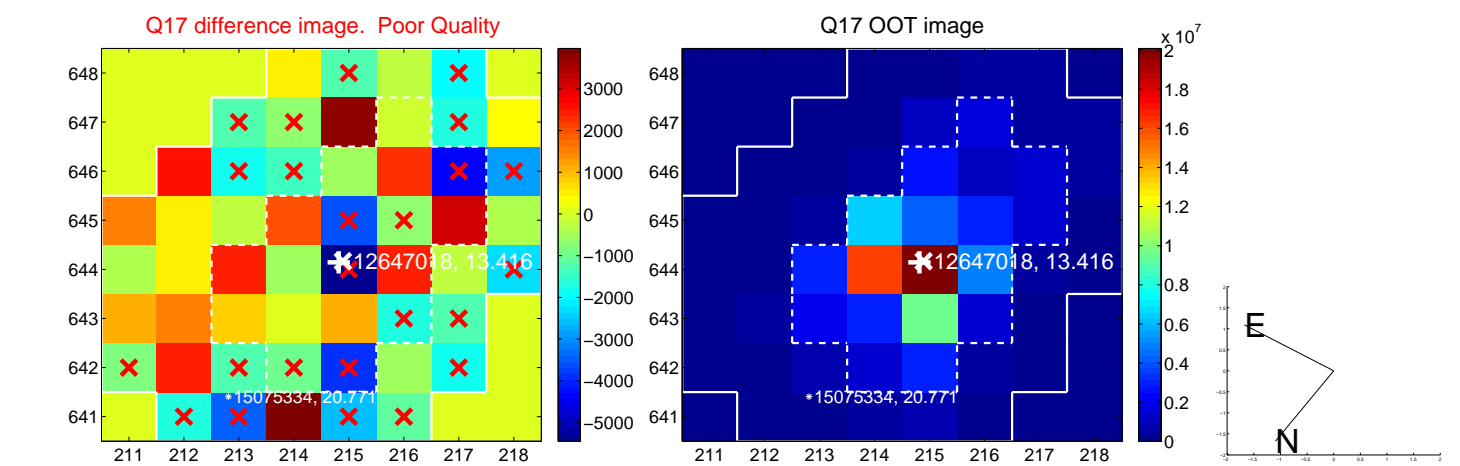
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



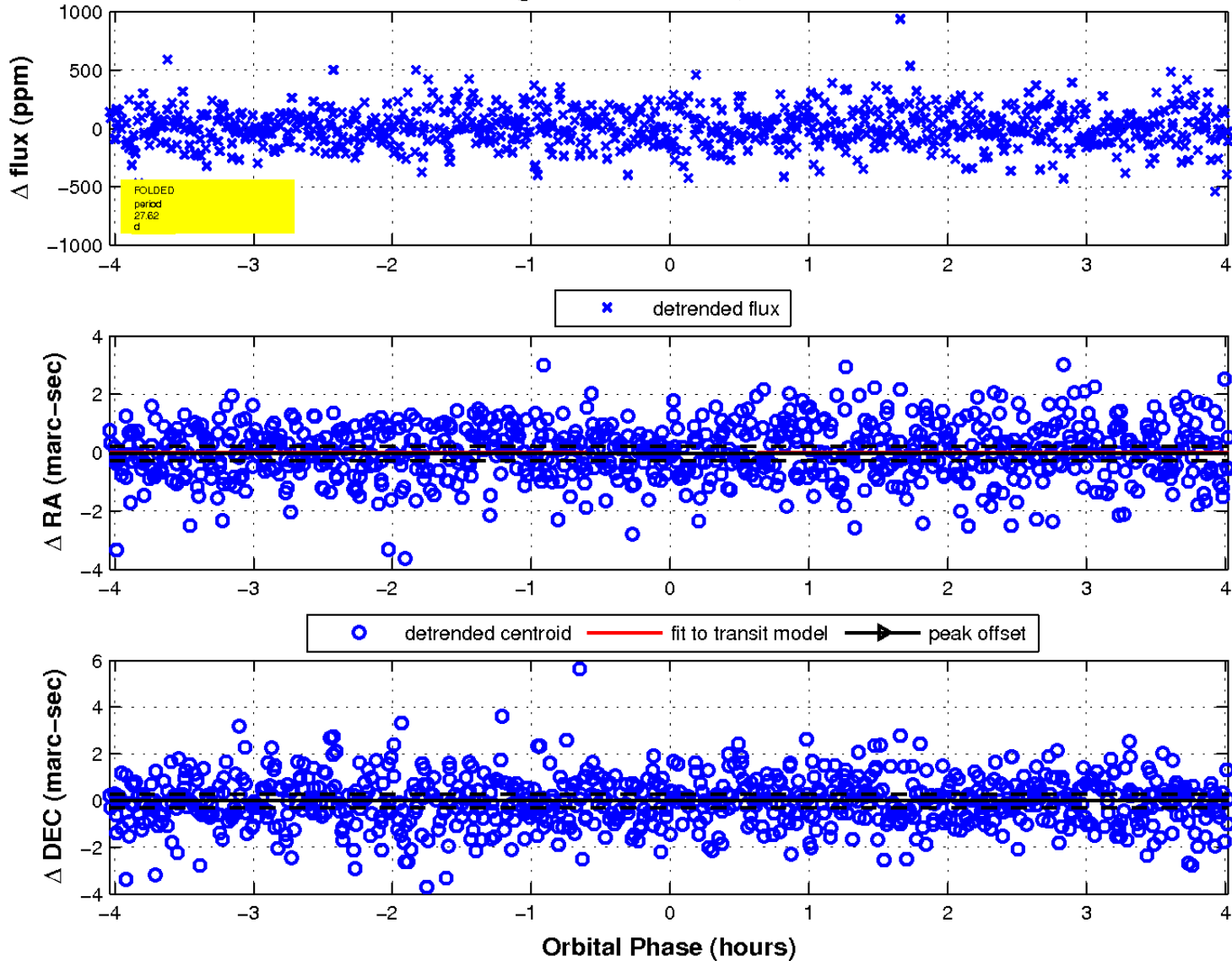
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

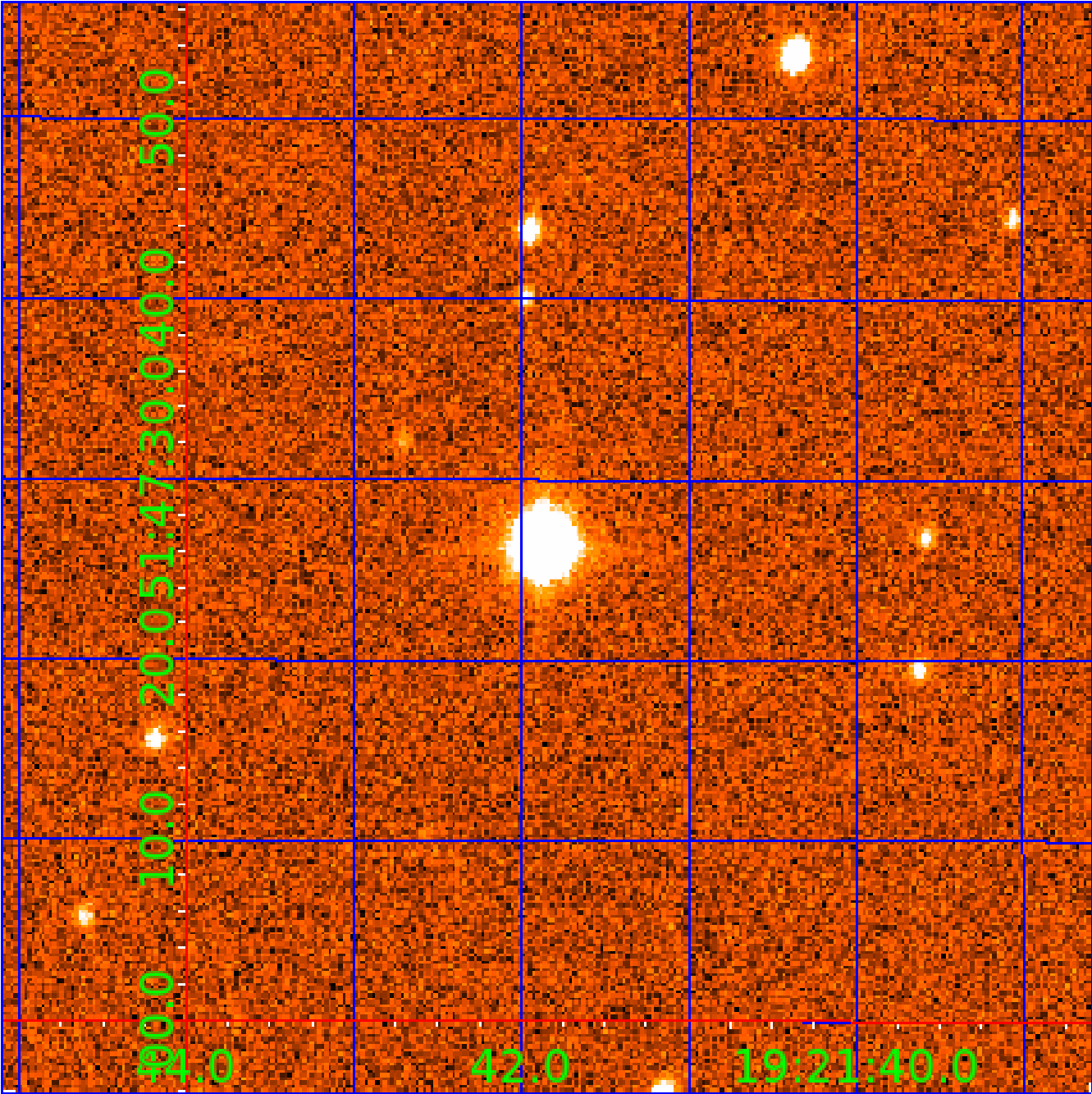


fluxWeightedCentroids, Planet 5 of 9



UKIRT Image

Declination



KIC 012647018

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})
012647018-01	OBS	No	1.296908	132.535743	20.8	9.030	8.3	11.1	1.65	5657	0.74	4448.09
012647018-02	OBS	No	53.083783	172.243518	341.8	3.269	11.3	10.6	1.65	5657	3.64	31.53
012647018-03	OBS	No	89.370051	187.811407	293.6	4.582	9.1	8.9	1.65	5657	3.44	15.74
012647018-04	OBS	No	24.853298	152.045089	100.5	3.762	9.0	5.1	1.65	5657	1.76	86.74
012647018-05	OBS	No	27.619166	134.768352	320.1	1.346	11.5	11.7	1.65	5657	2.93	75.35
012647018-06	OBS	No	32.503712	147.954093	220.4	4.386	9.5	11.5	1.65	5657	2.46	60.65
012647018-07	OBS	No	33.918495	133.285052	183.5	4.022	8.4	8.3	1.65	5657	2.47	57.30
012647018-09	OBS	No	36.652668	140.779741	233.3	3.001	8.8	8.7	1.65	5657	2.92	51.67

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
012647018-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT
012647018-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
012647018-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
012647018-04	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS—HALO_GHOST
012647018-05	OBS	FP	0.00	1	0	1	0	TRANS_GAPPED—MOD_NONUNIQ_DV—CENT_FEW_MEAS—HALO_GHOST
012647018-06	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS—HALO_GHOST
012647018-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
012647018-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—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.

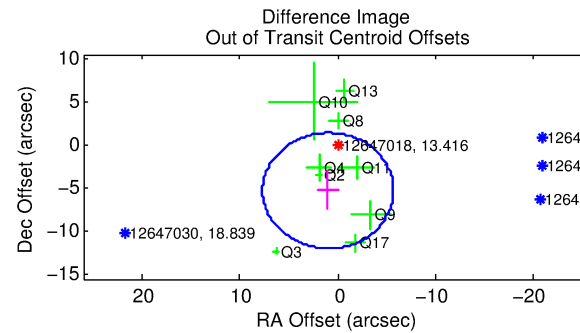
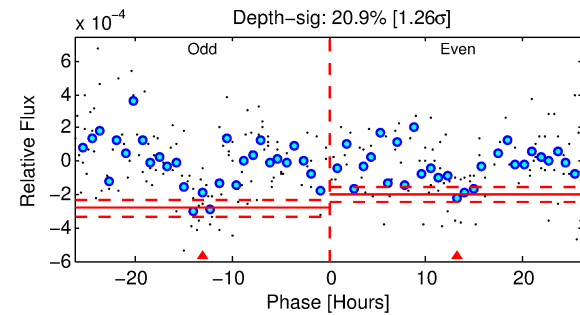
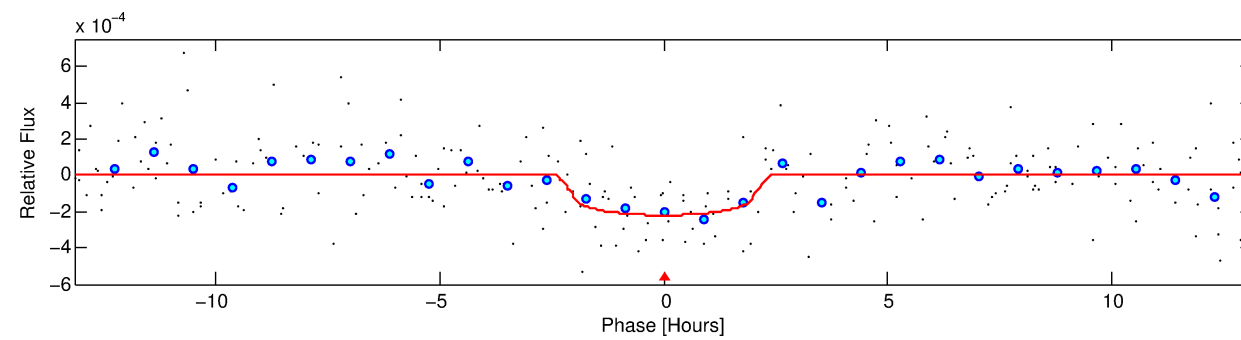
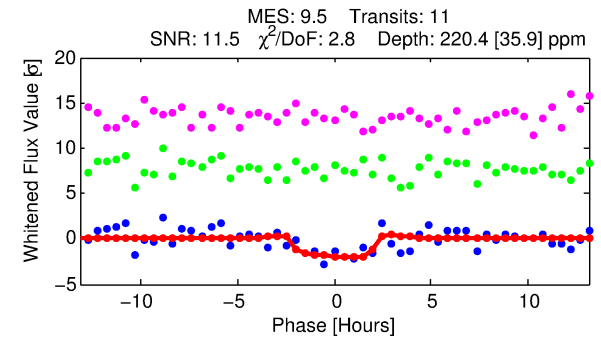
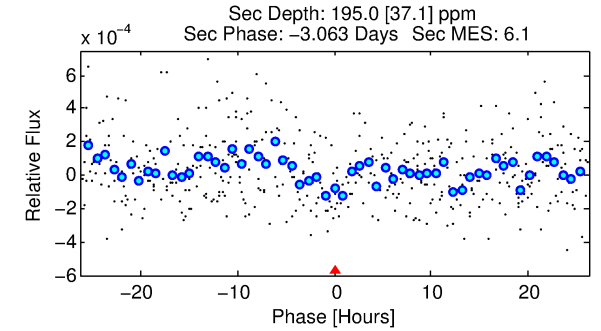
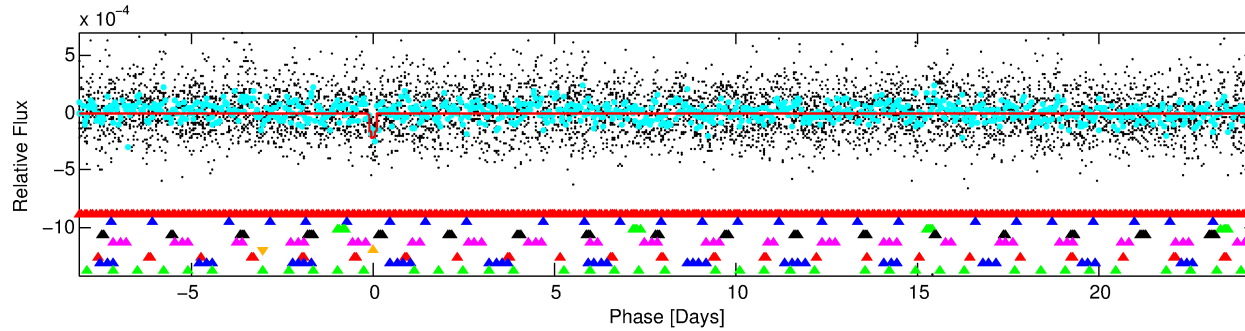
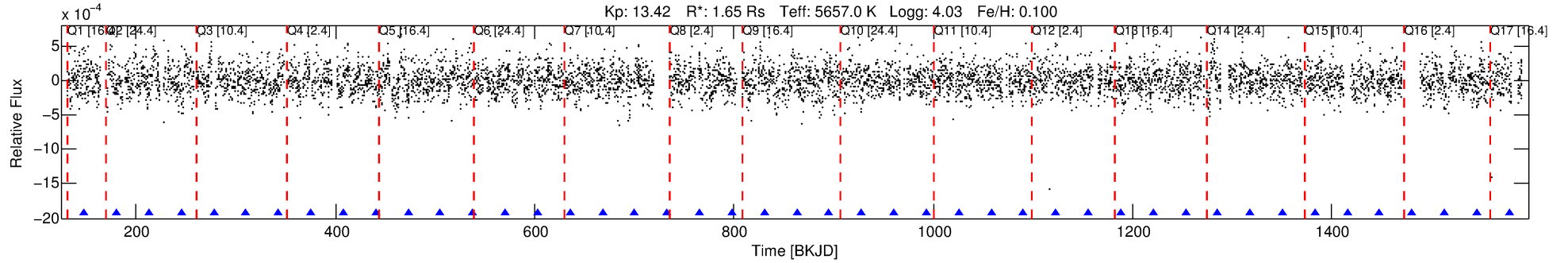
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 012647018-06

No Significant Match Found

DV One-Page Summary

KIC: 12647018 Candidate: 6 of 9 Period: 32.504 d



DV Fit Results:

Period = 32.50371 [0.00055] d
Epoch = 147.9541 [0.0156] BKJD
Rp/R* = 0.0137 [0.0488]
a/R* = 52.68 [782.80]
b = 0.40 [31.37]
Seff = 60.65 [43.08]
Teq = 712 [126] K
Rp = 2.46 [8.84] Re
a = 0.2028 [0.0849] AU
Ag = 727.07 [5213.80] [0.14σ]
Teff = 5713 [10194] K [0.49σ]

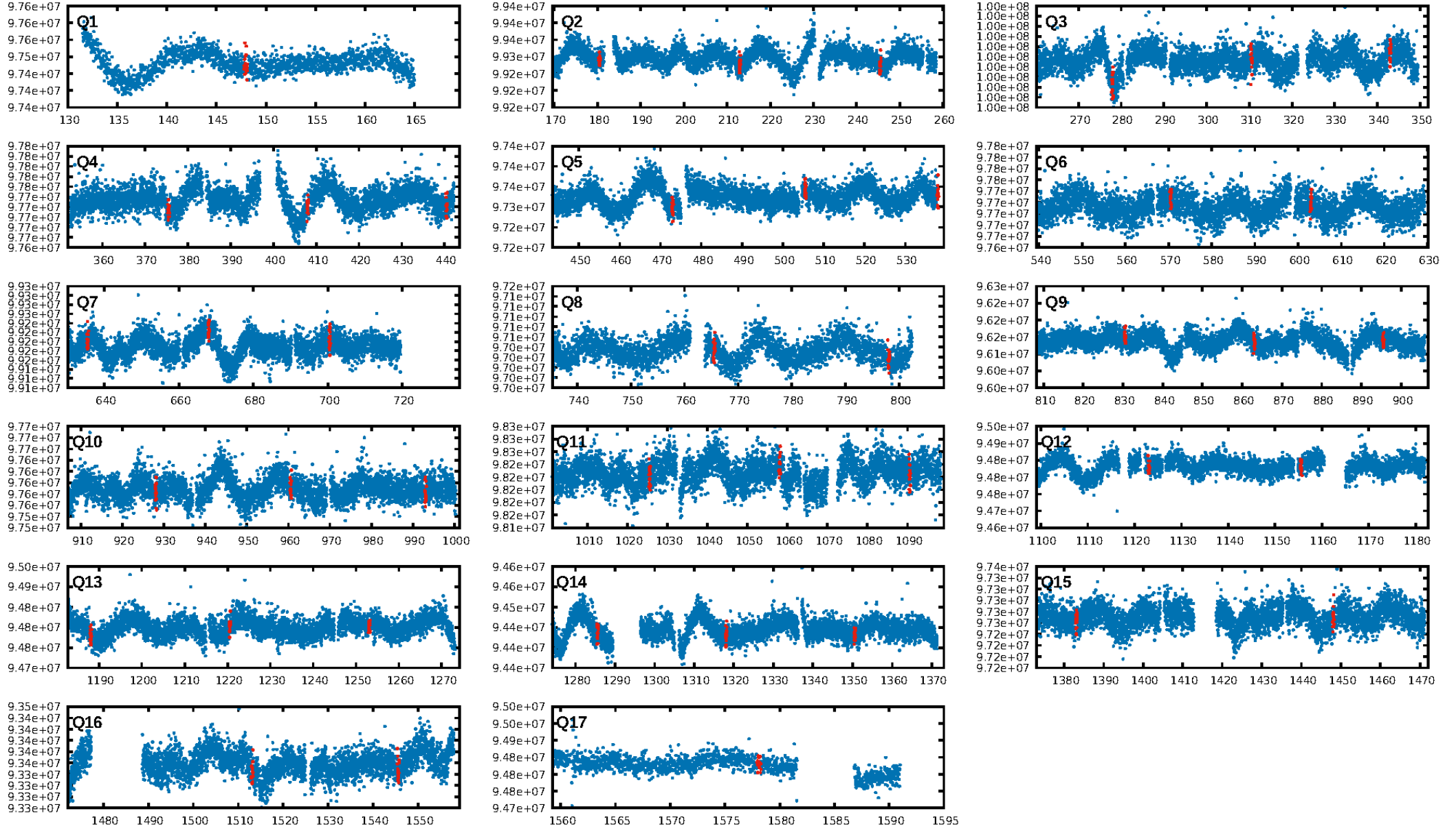
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [25.55σ]
LongPeriod-sig: 100.0% [5.71σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 94.5%
Bootstrap-pfa: 2.88e-09
RollingBand-fgt: 1.00 [11/11]
GhostDiagnostic-chr: -0.01272
Centroid-sig: 4.6%
Centroid-so: 1.711 arcsec [2.23σ]
OotOffset-rm: 5.369 arcsec [2.41σ]
OotOffset-st: 2/2/2/3 [9]
KicOffset-rm: 3.150 arcsec [1.82σ]
KicOffset-st: 2/2/2/3 [9]
DiffImageQuality-fgm: 0.00 [0/9]
DiffImageOverlap-fno: 0.18 [3/17]

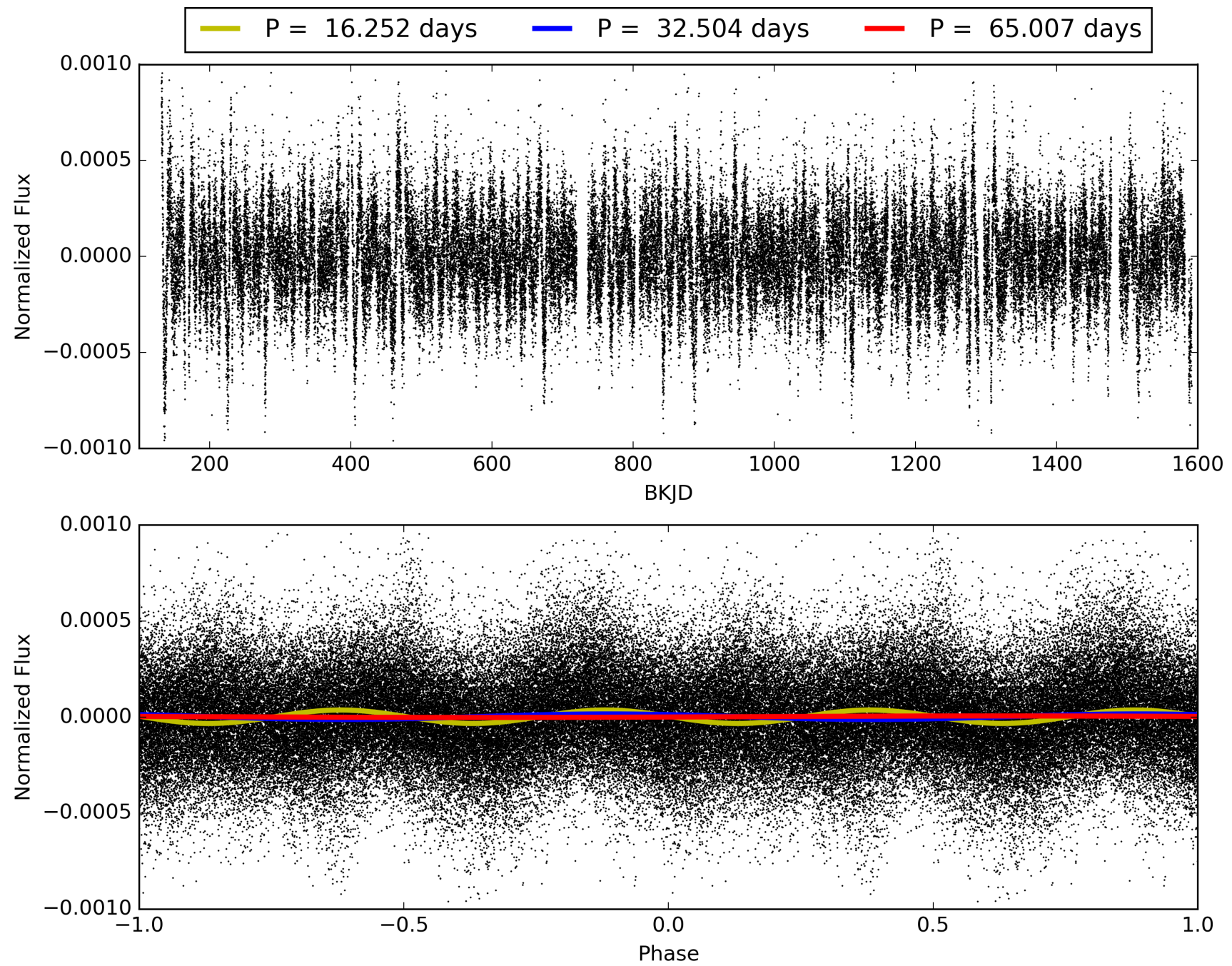
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 05:14:20 Z

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

TCE 012647018-06, PDC Light Curves

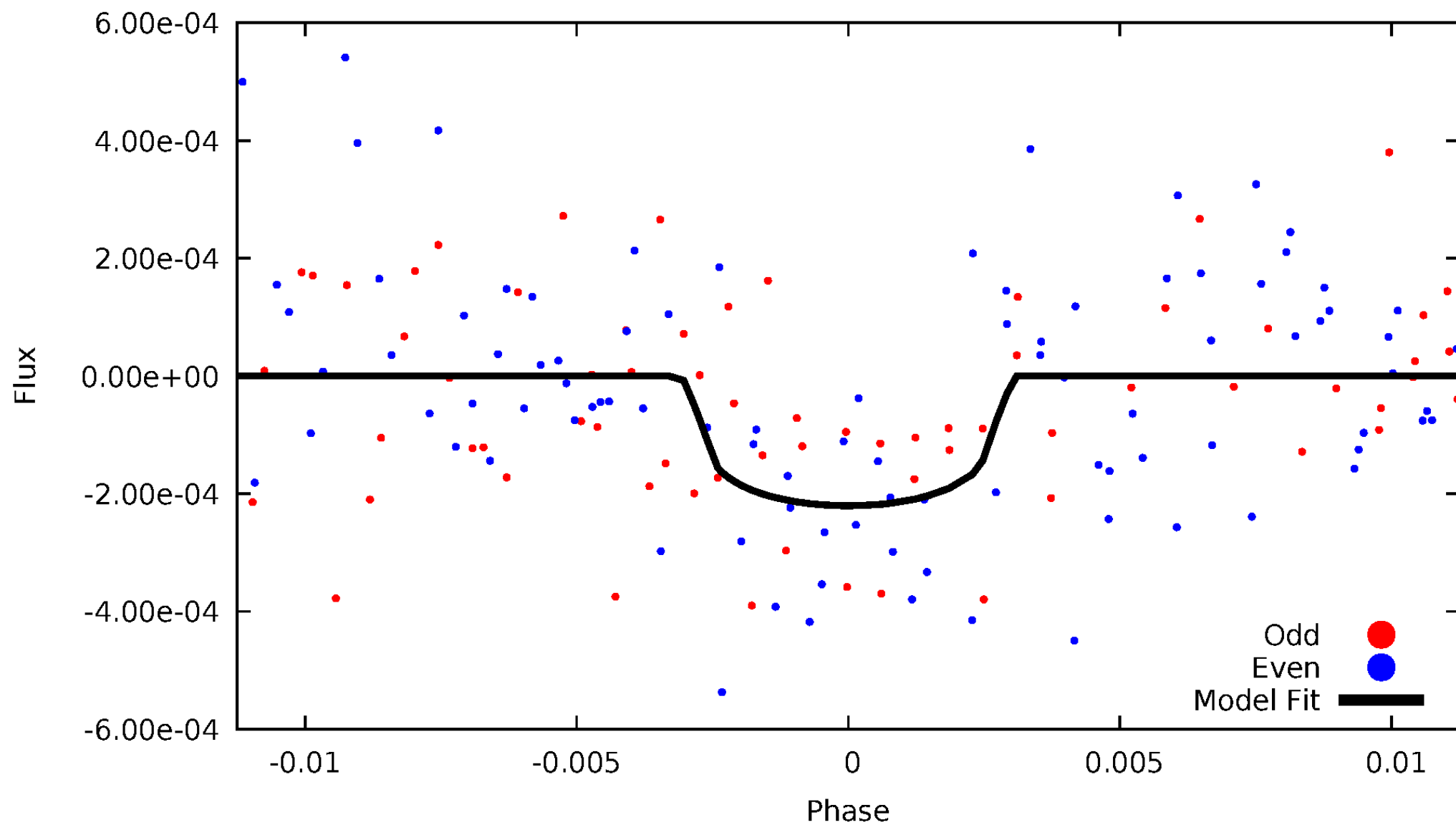


TCE 012647018-06



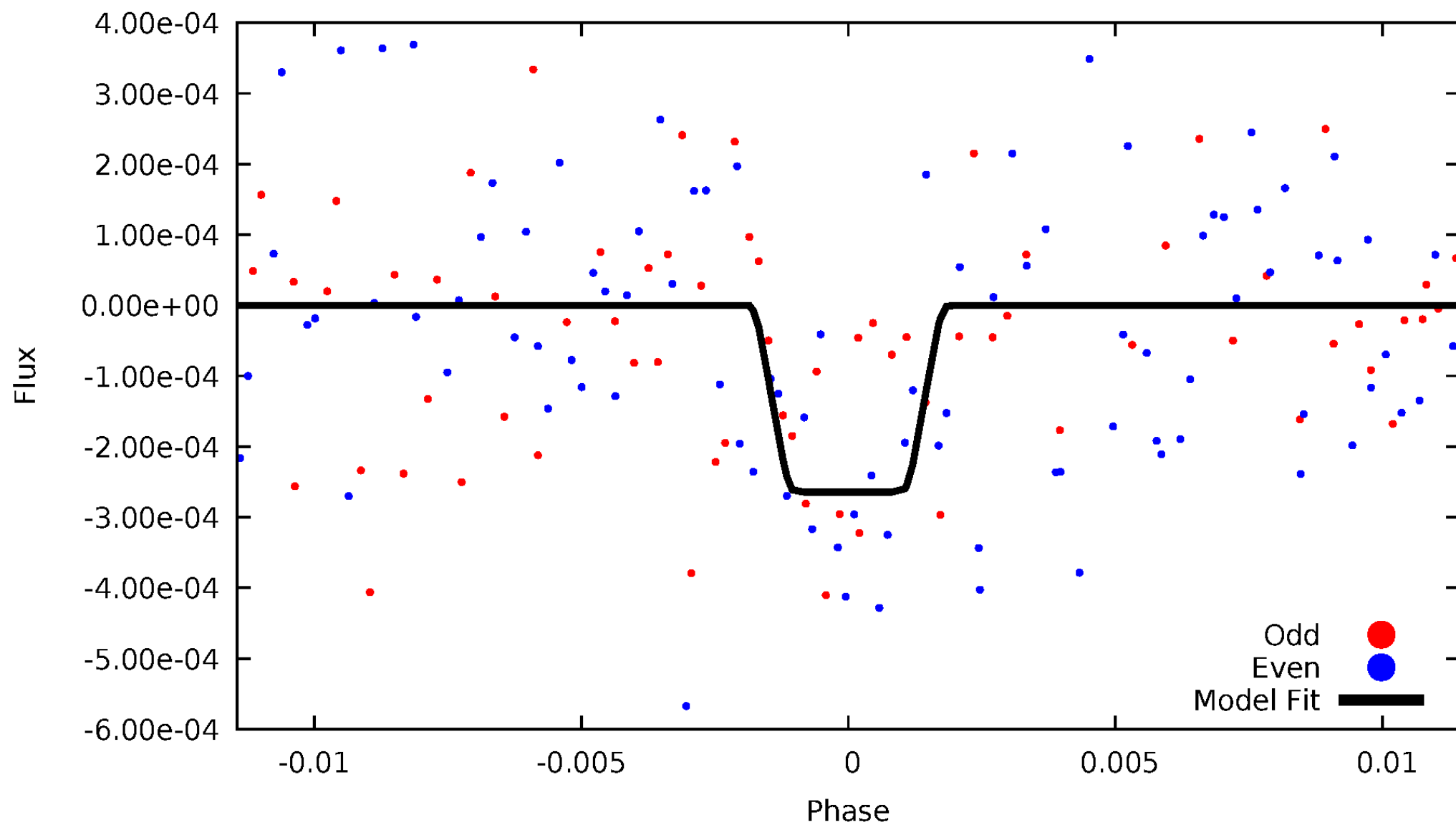
DV Odd/Even

TCE 012647018-06



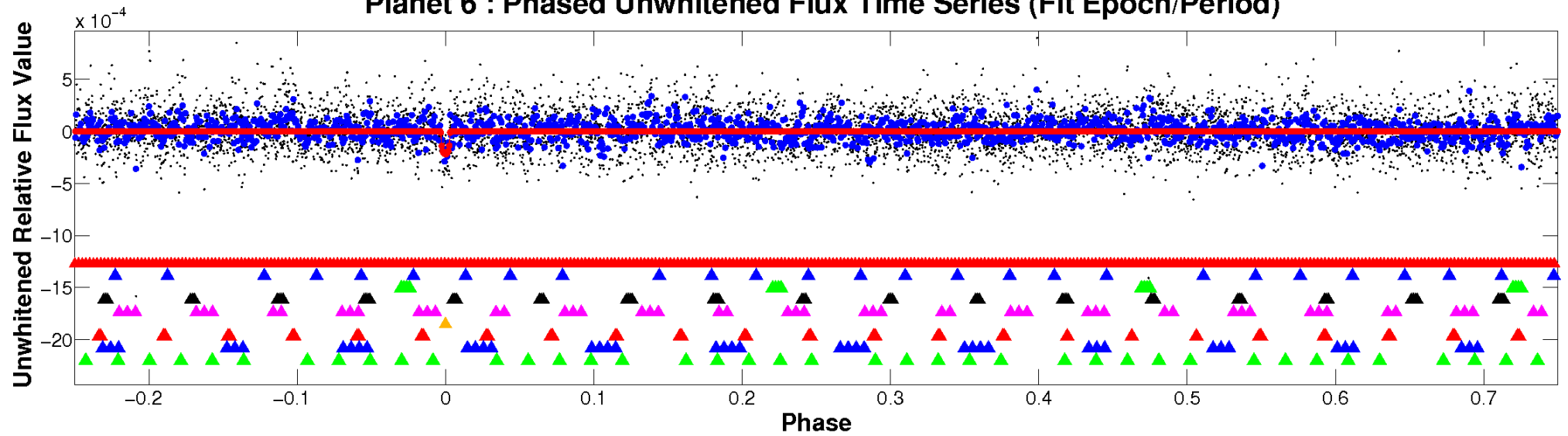
ALT Odd/Even

TCE 012647018-06

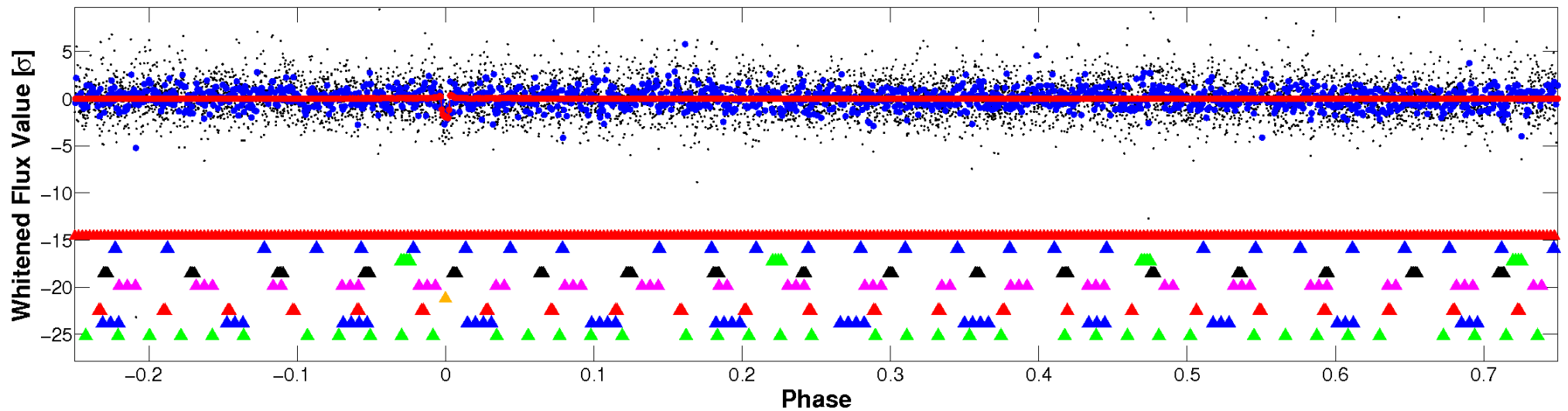


Non-Whitened Vs. Whitened Light Curve

Planet 6 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

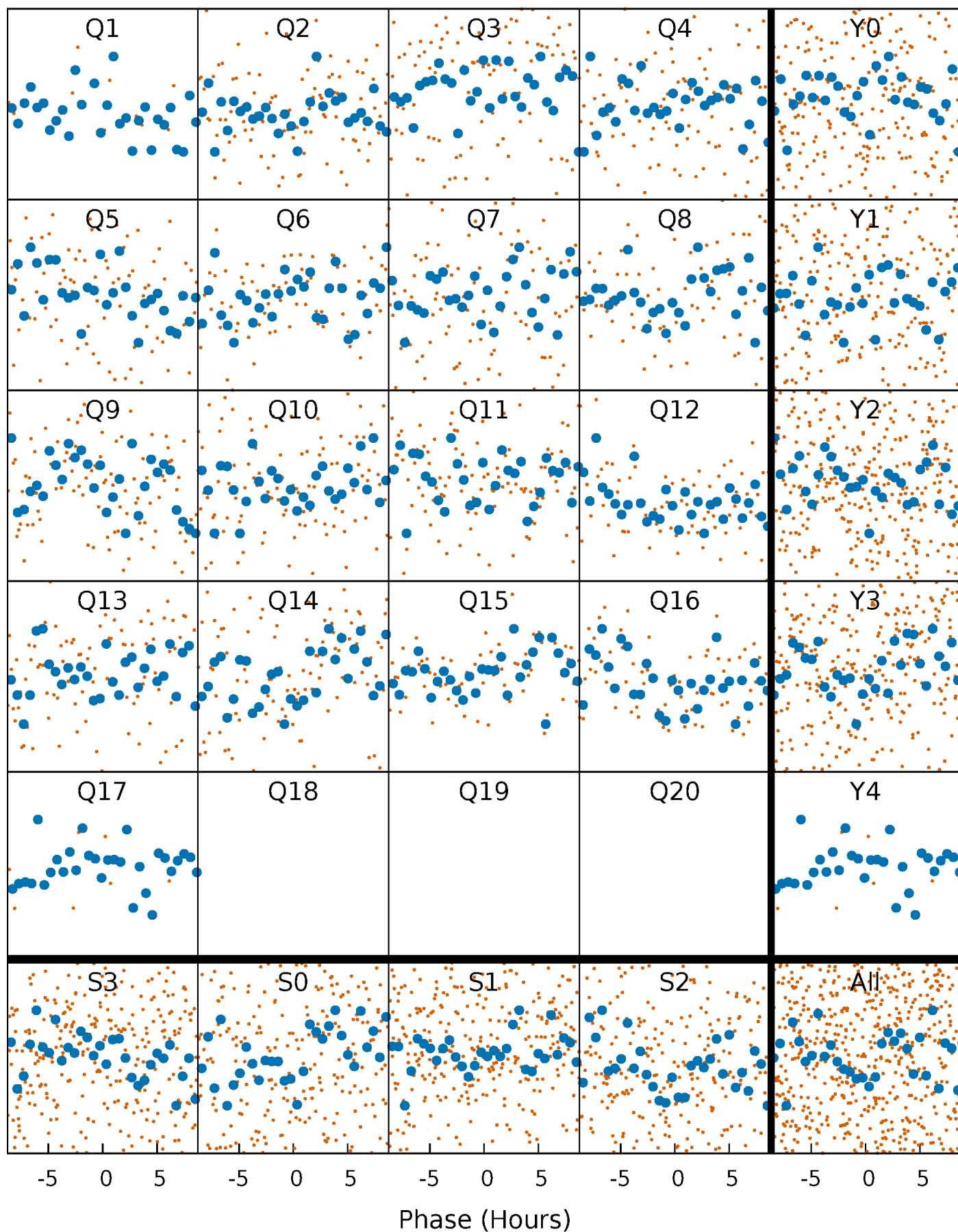


Planet 6 : Phased Whitened Flux Time Series (Fit Epoch/Period)



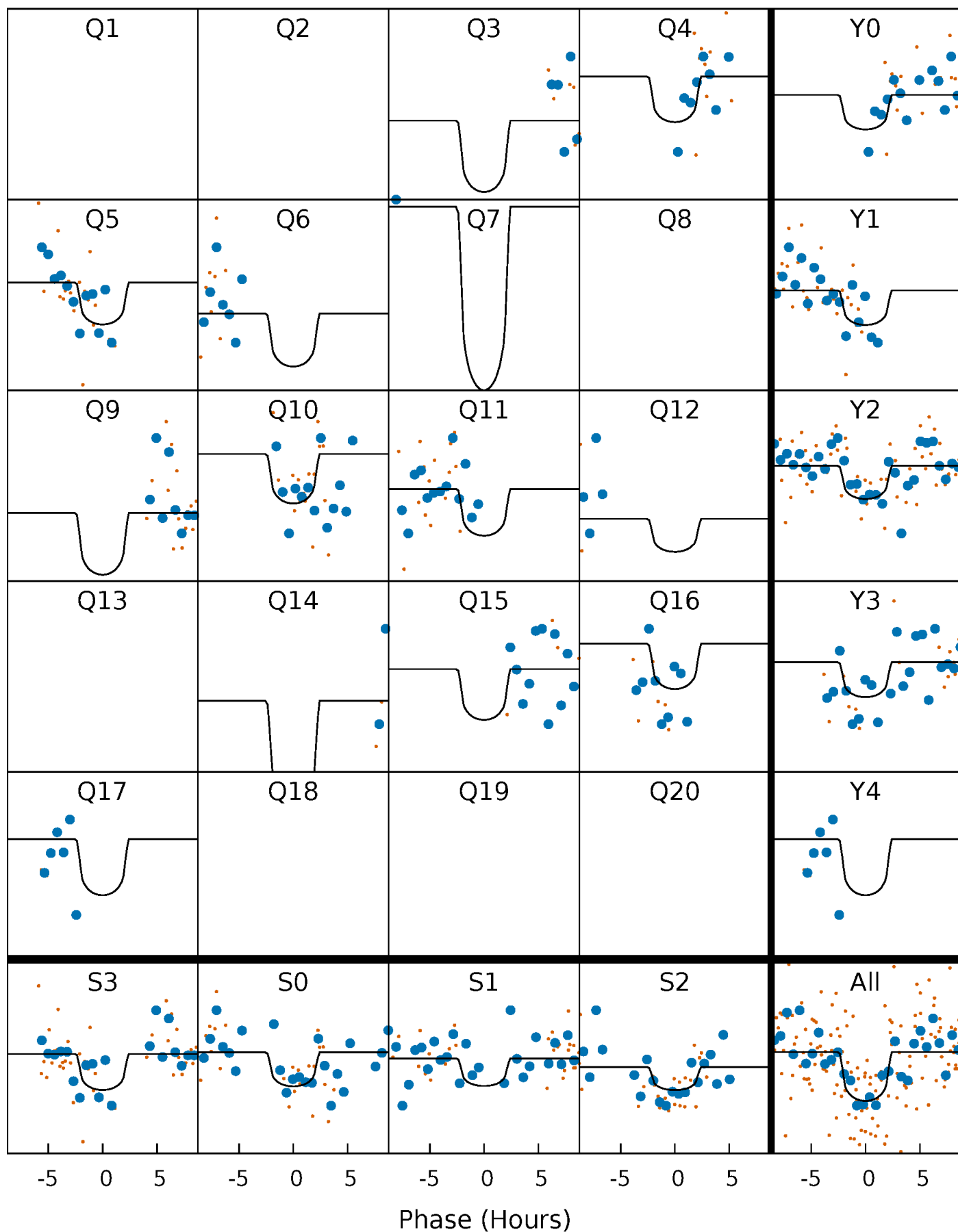
PDC Quarter-Phased Transit Curves

TCE 012647018-06 P= 32.503712 Days $T_0=147.954093$ (BKJD)



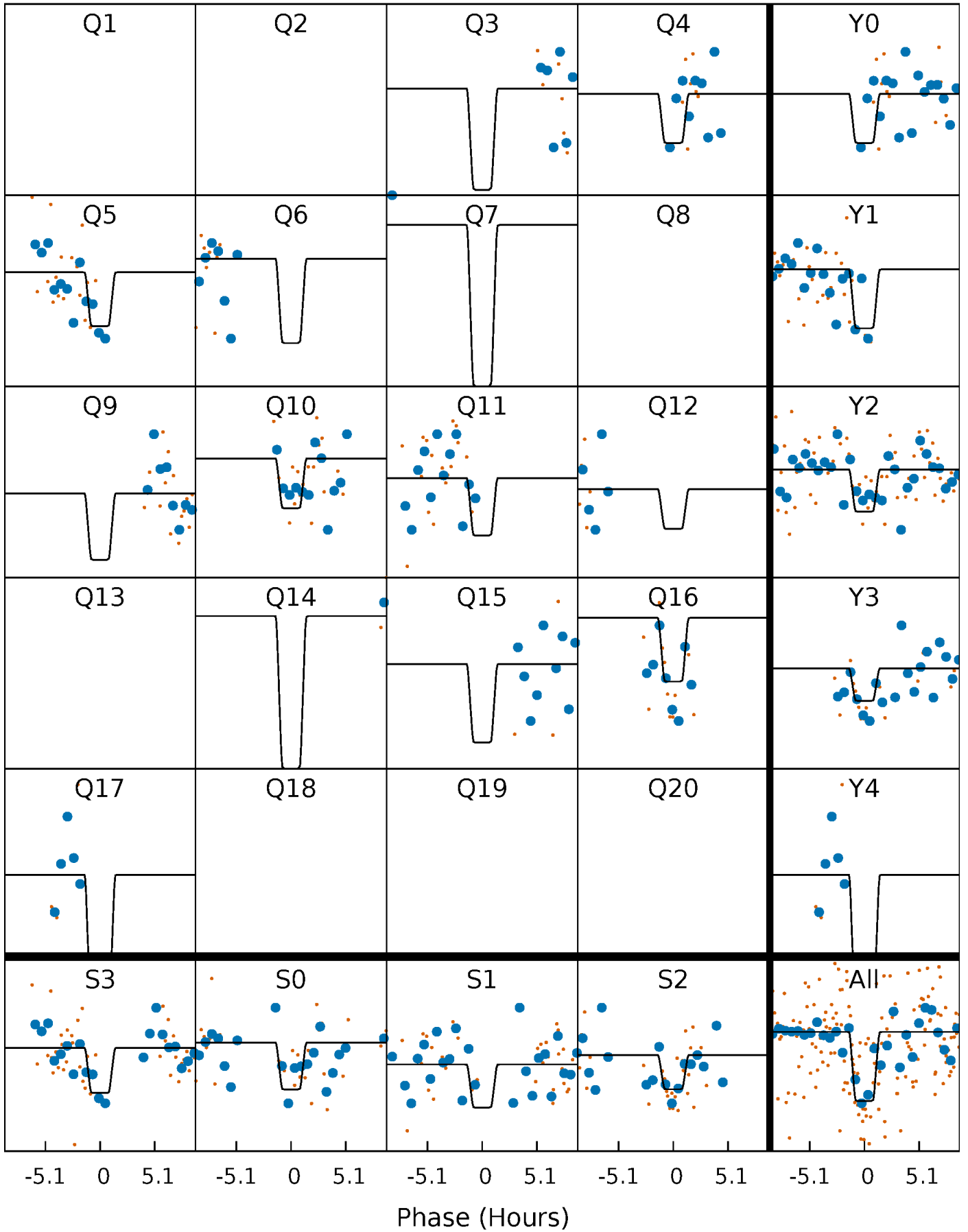
DV Quarter-Phased Transit Curves

TCE 012647018-06 P= 32.503712 Days $T_0=147.954093$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

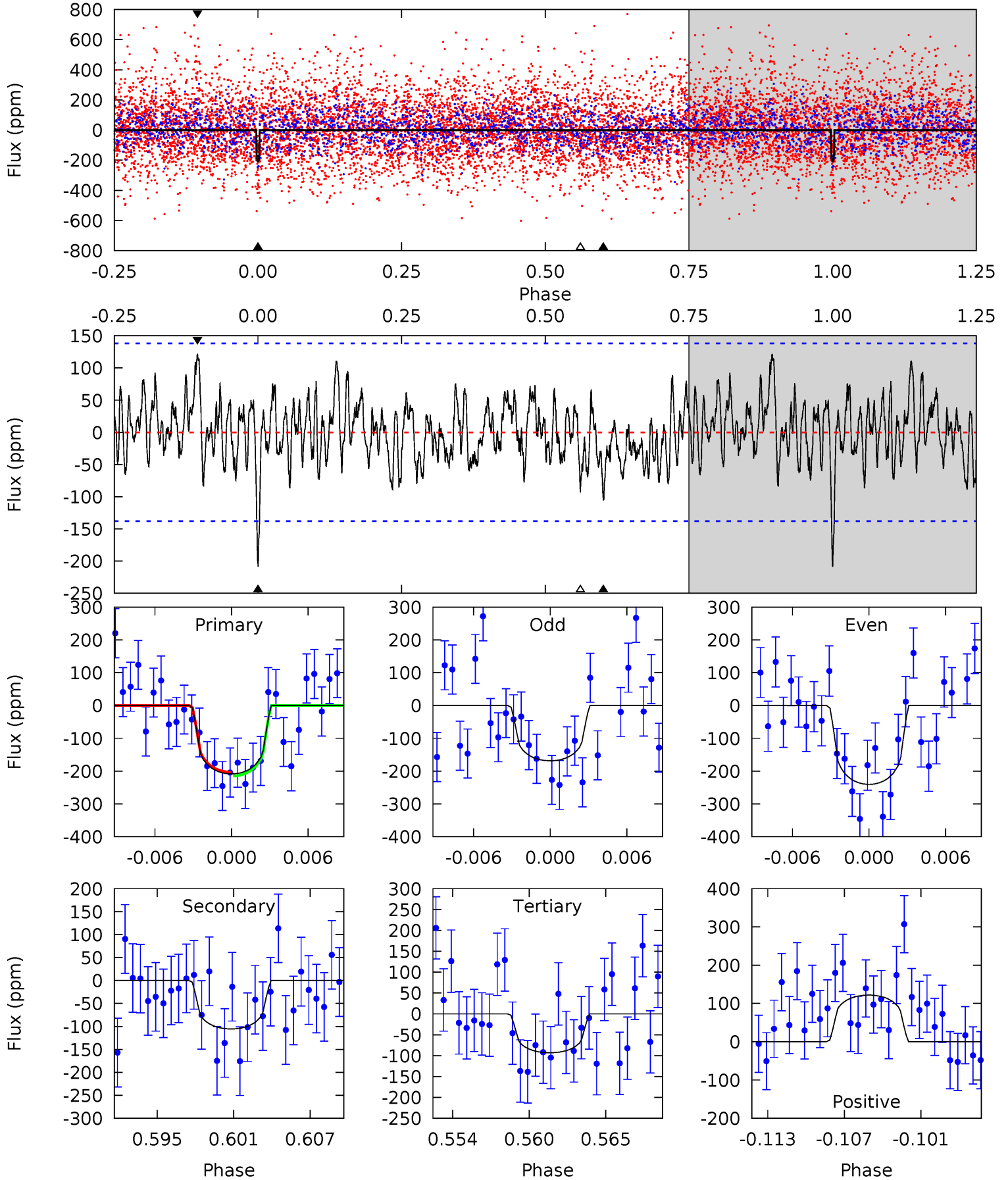
TCE 012647018-06 P= 32.501679 Days $T_0=147.997515$ (BKJD)



DV Model-Shift Uniqueness Test

012647018-06, $P = 32.503712$ Days, $E = 115.450381$ Days

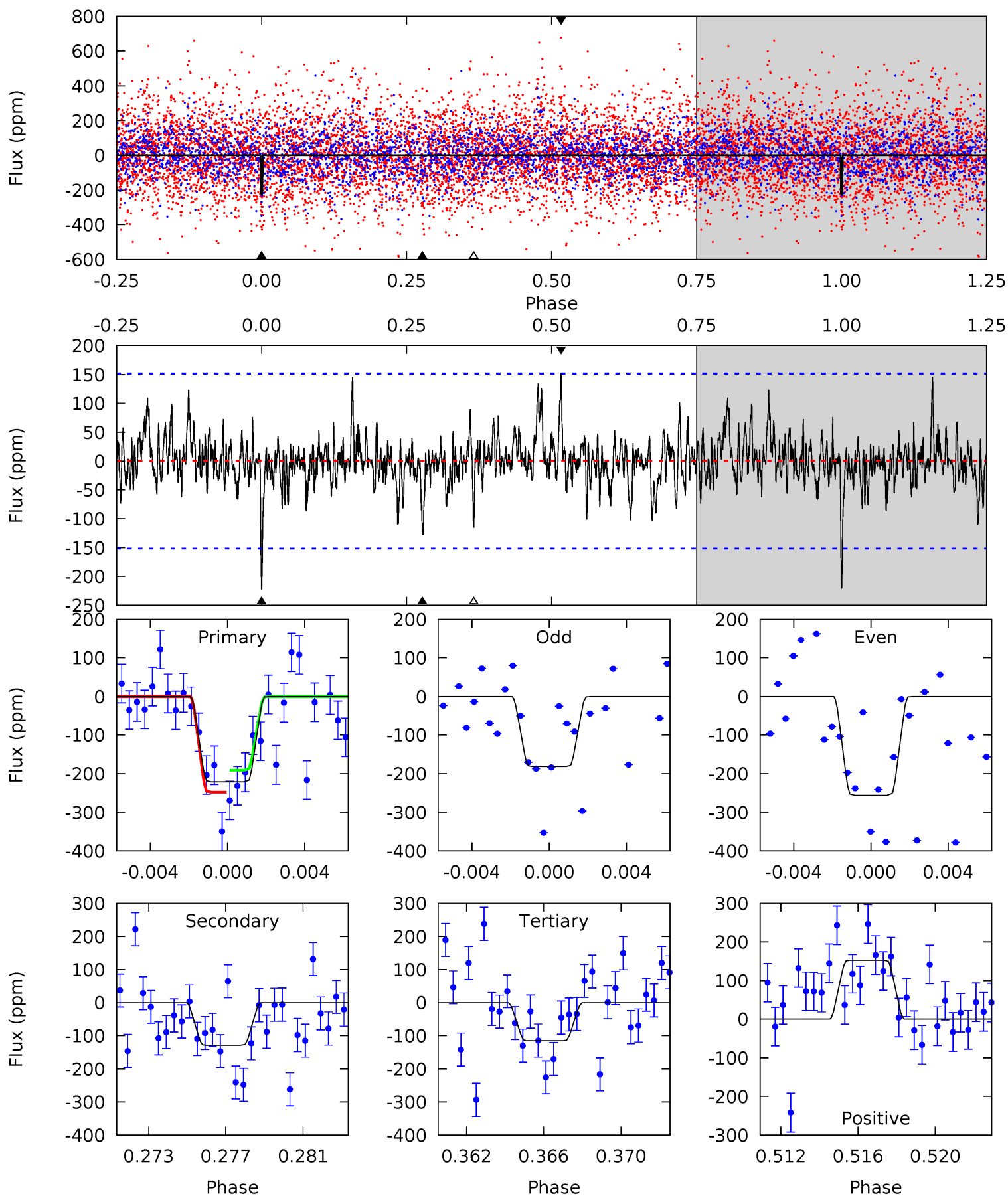
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.75	3.92	3.46	4.53	5.12	2.75	1.48	4.29	3.22	0.46	-0.60	1.33	0.78	0.37	0.22



Alt Model-Shift Uniqueness Test

012647018-06, P = 32.501679 Days, E = 115.495836 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.60	4.42	3.97	5.26	5.21	2.89	1.23	3.63	2.34	0.46	-0.83	1.28	0.89	0.41	0.99



Stellar Parameters For KIC 012647018

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5657^{+152}_{-152}	$4.026^{+0.424}_{-0.133}$	$0.100^{+0.250}_{-0.250}$	$1.649^{+0.351}_{-0.652}$	$1.053^{+0.126}_{-0.139}$	$0.331^{+1.086}_{-0.128}$
	+3%/-3%	+11%/-3%	+250%/-250%	+21%/-40%	+12%/-13%	+328%/-39%
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 012647018-06 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-106 ± 27	$6.64^{+6.64}_{-4.86}$	978^{+70}_{-117}	3357^{+1955}_{-594}	55^{+601}_{-43}
Alt.	-129 ± 29	$6.66^{+6.66}_{-4.82}$	977^{+70}_{-115}	3470^{+2169}_{-608}	63^{+812}_{-47}

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

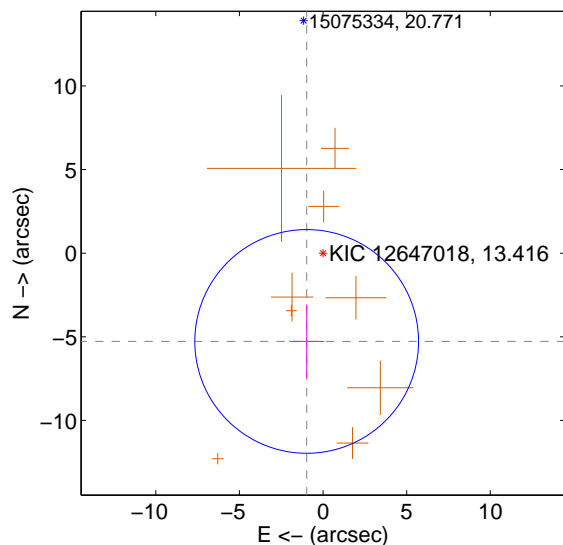
Supplemental centroid analysis for 012647018-06. Kepler magnitude: 13.42. Transit SNR 11.45

There are 0 quarters with good PRF difference image offsets

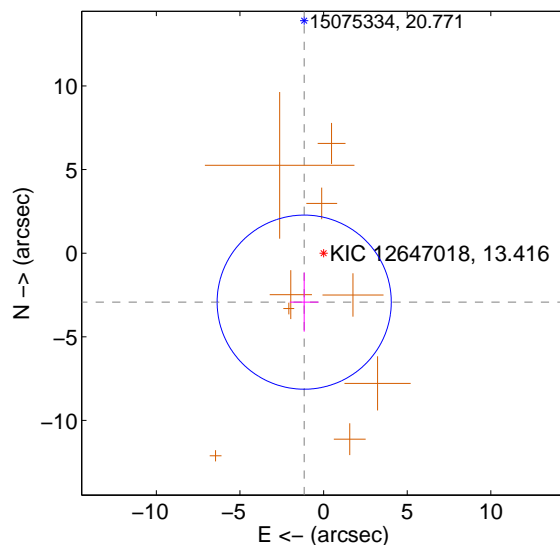
The direct PRF centroid is offset from the target star catalog position by about 0.31 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	5.369 ± 2.230	2.41	0.978 ± 1.034	-5.279 ± 2.203
PRF-fit source offset from KIC position	3.150 ± 1.736	1.82	1.159 ± 0.863	-2.929 ± 1.767
photometric centroid source offset	1.71 ± 0.77	2.23	-0.35 ± 0.71	1.67 ± 0.77

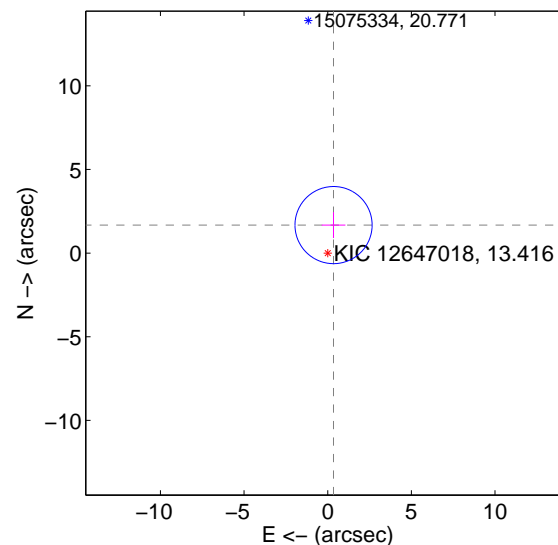
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

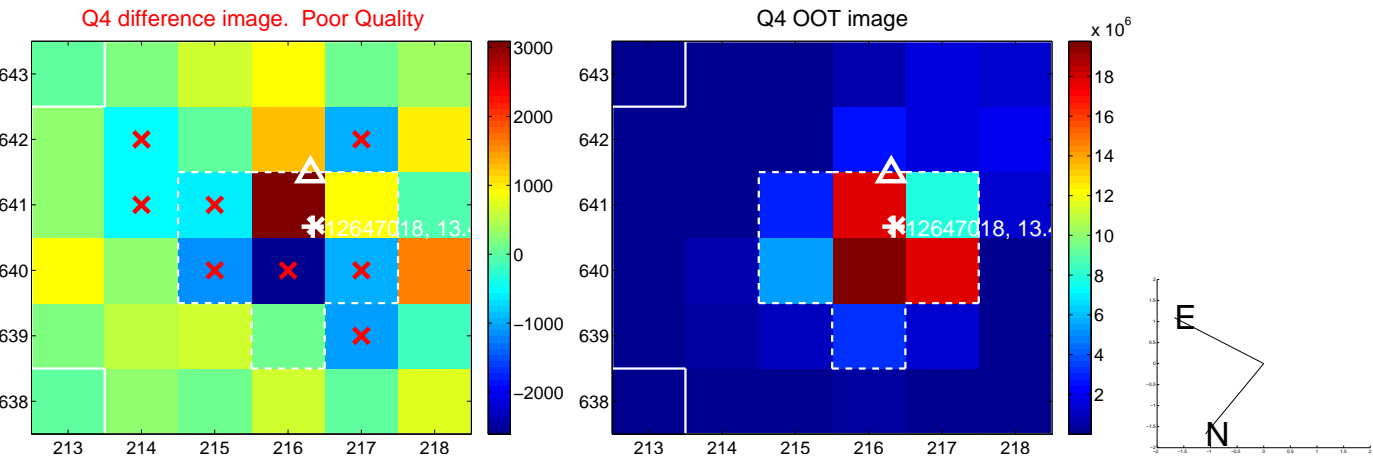
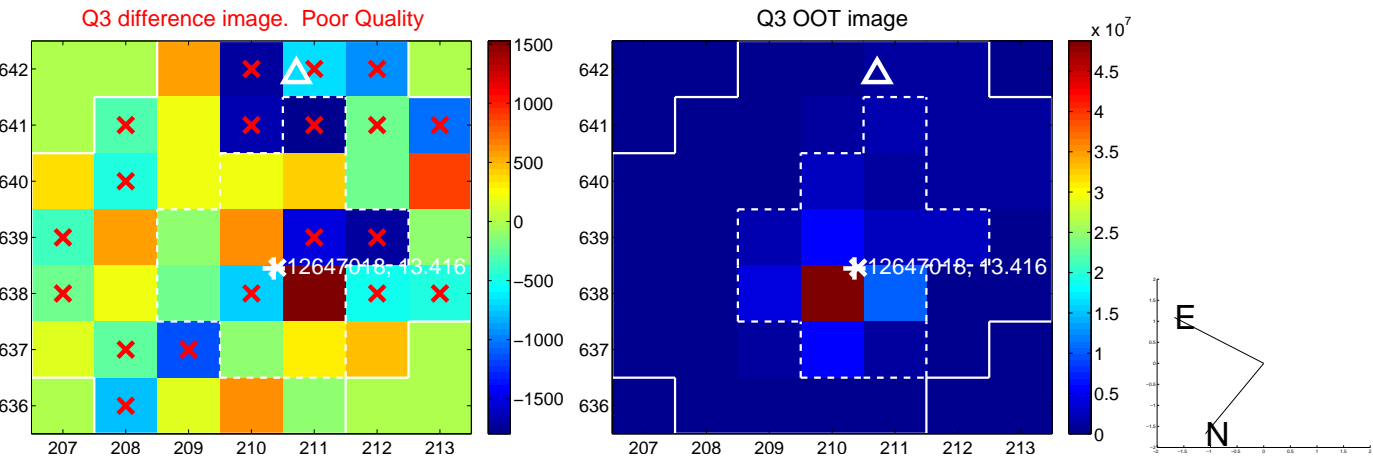
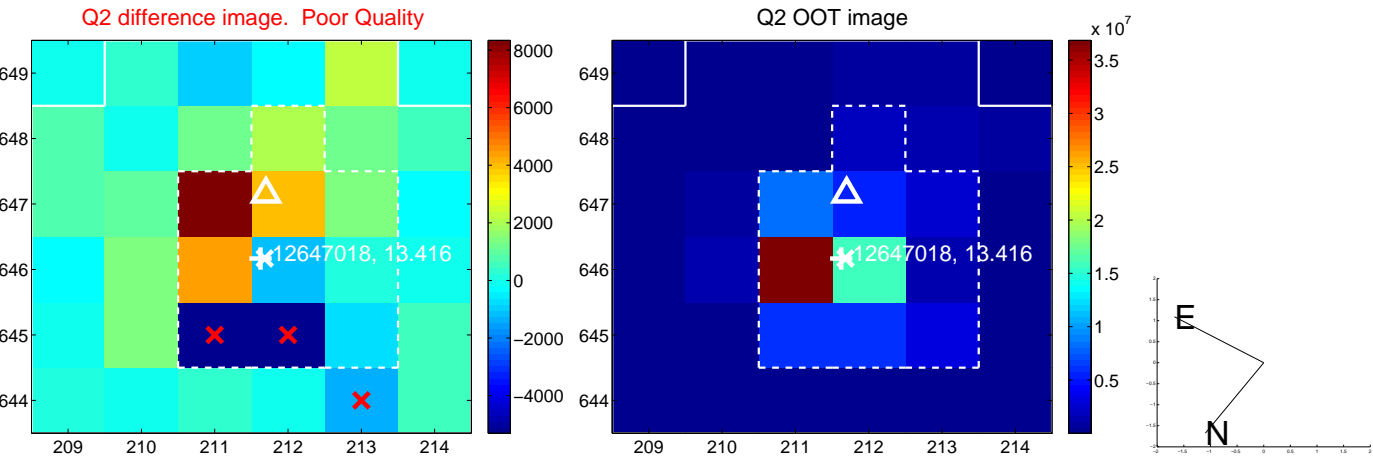
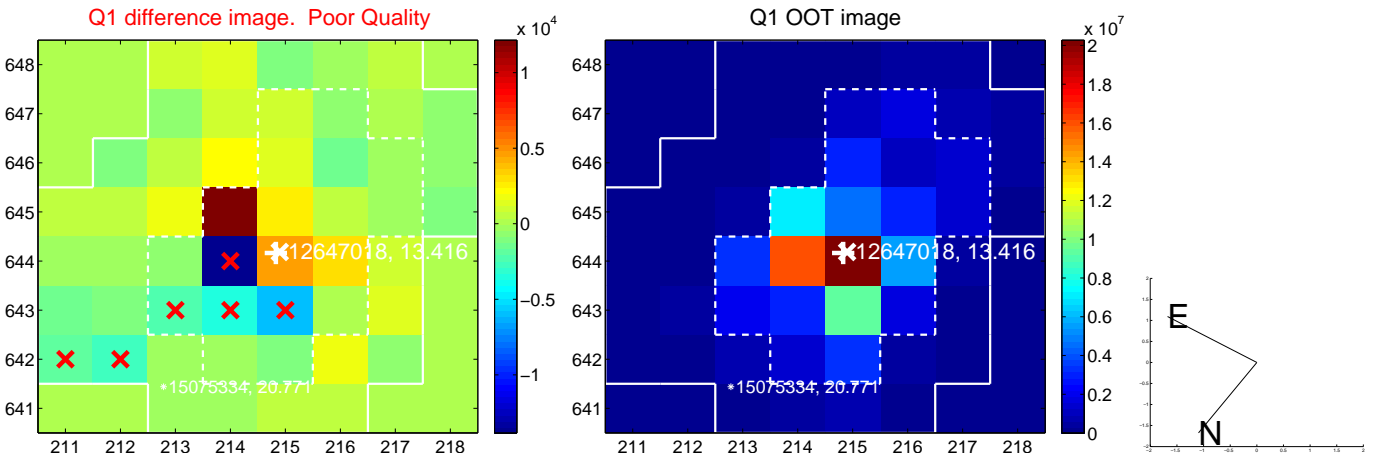


offset from photometric centroids

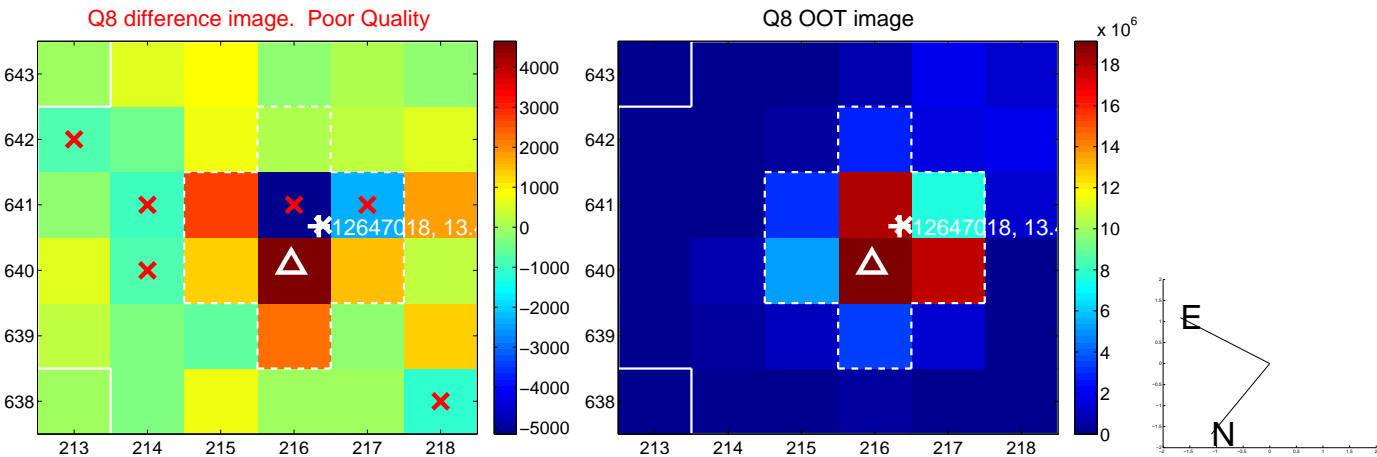
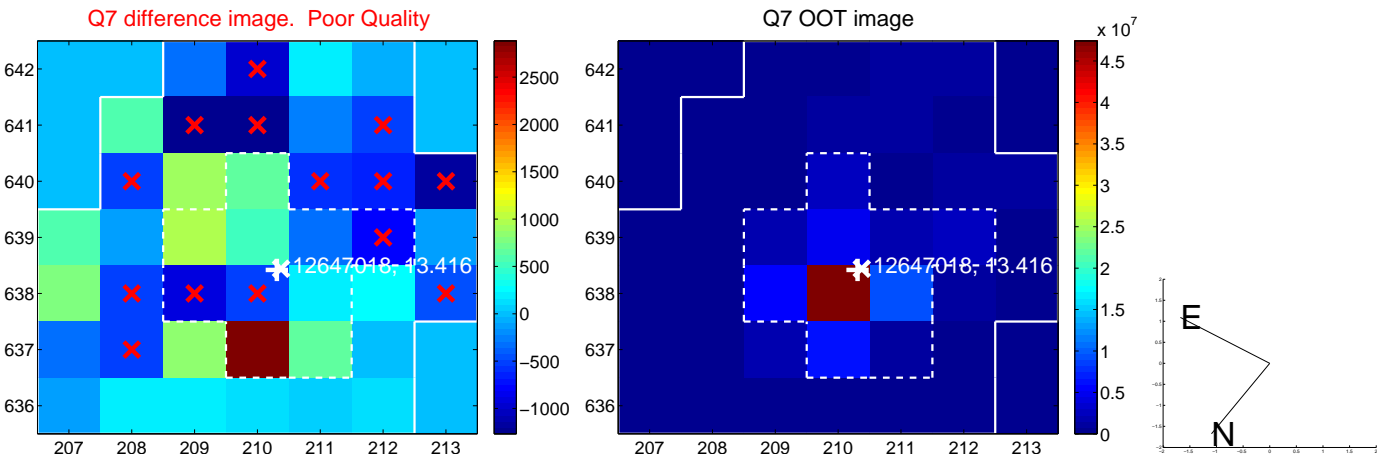
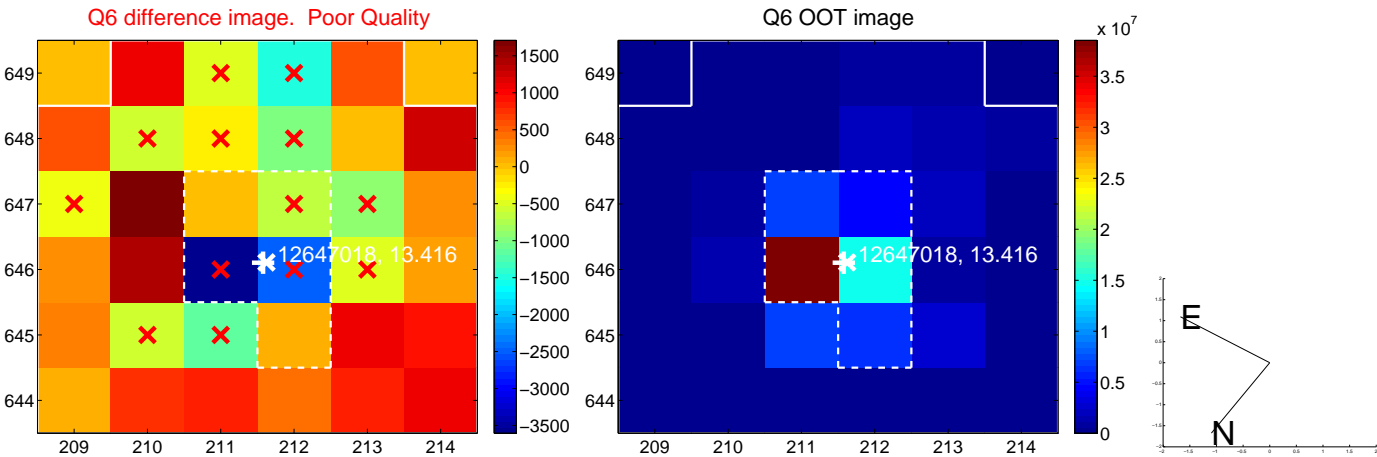
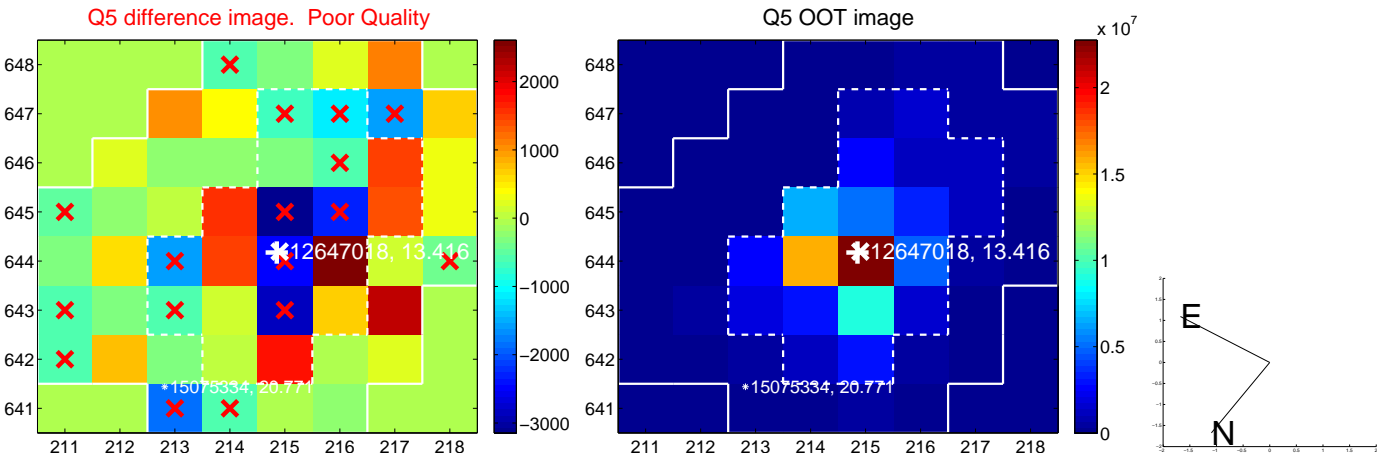


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

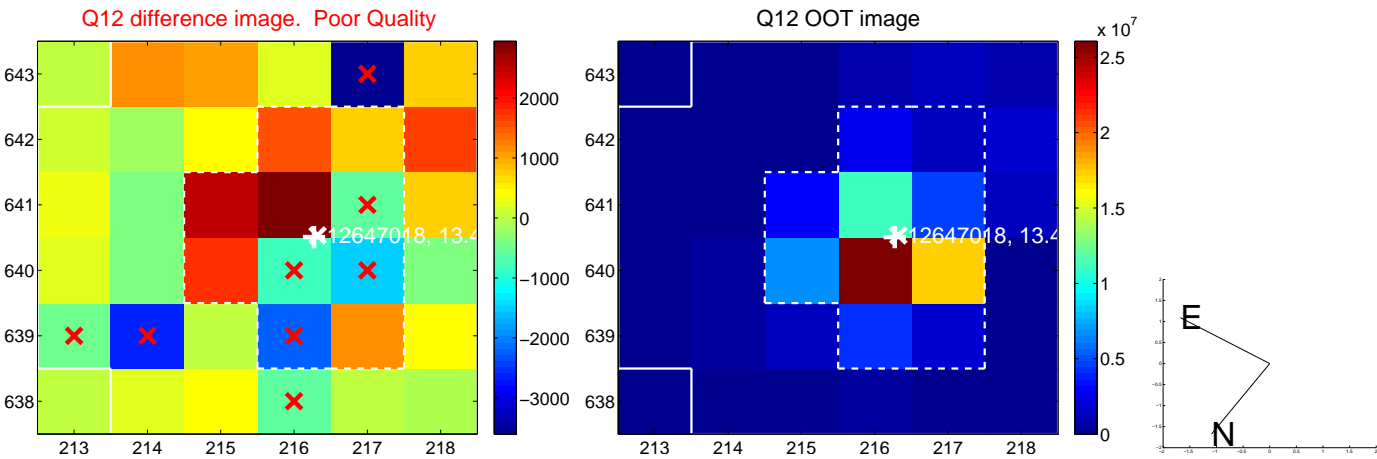
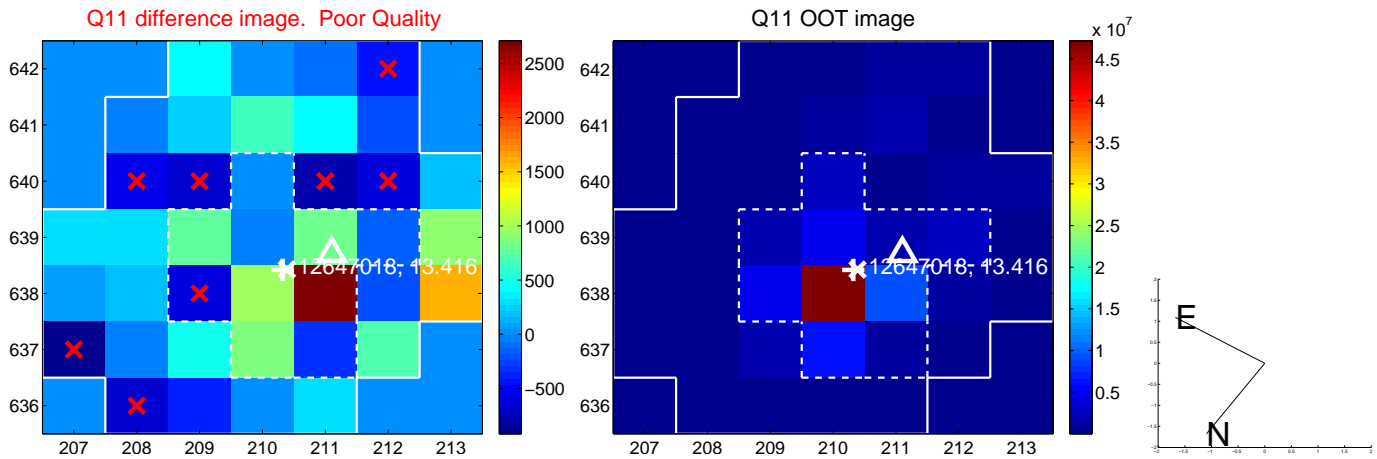
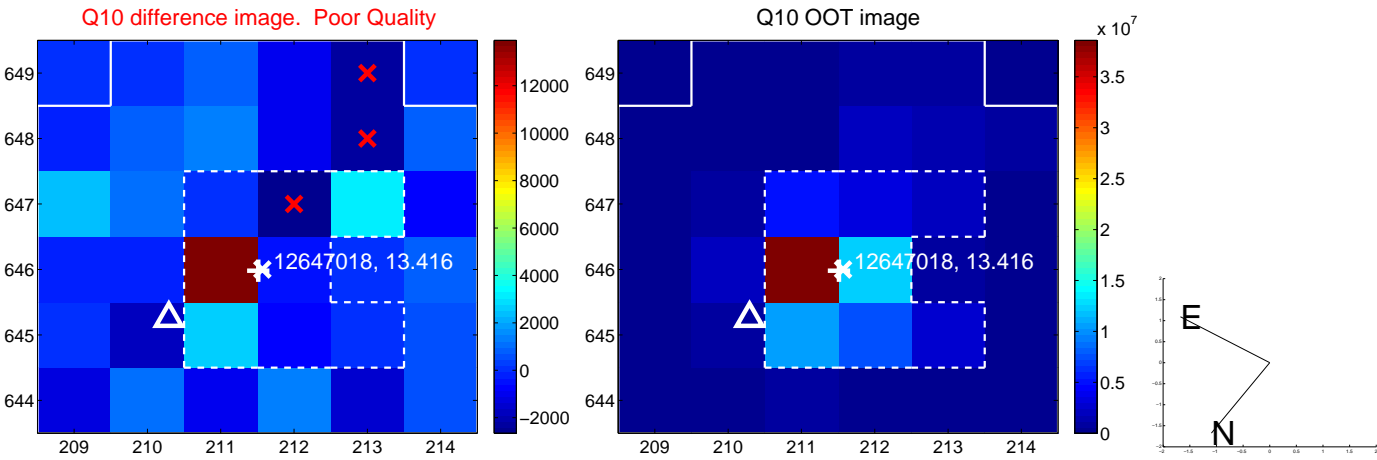
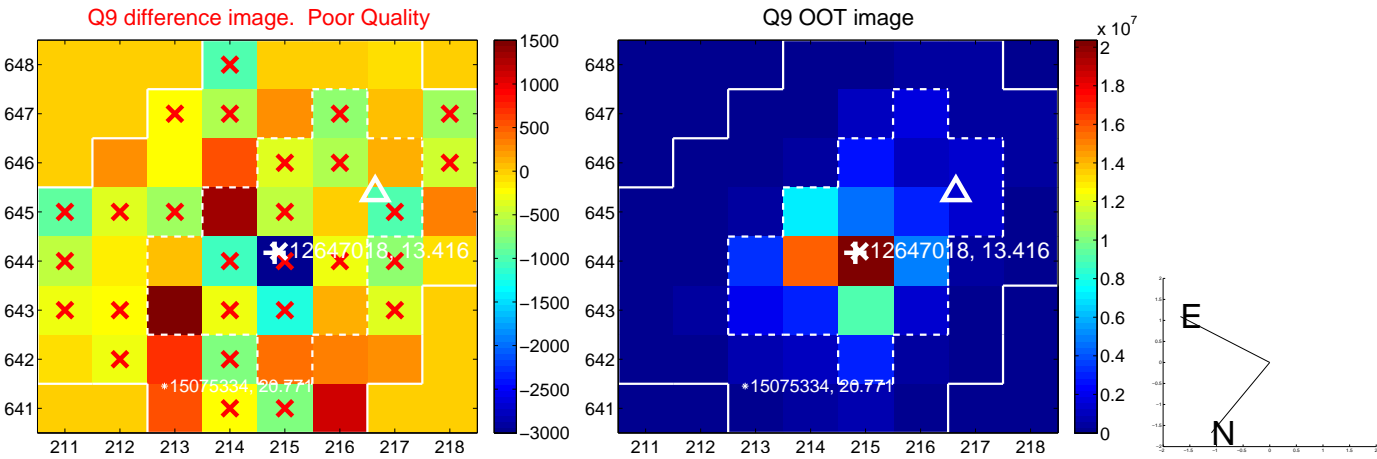
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



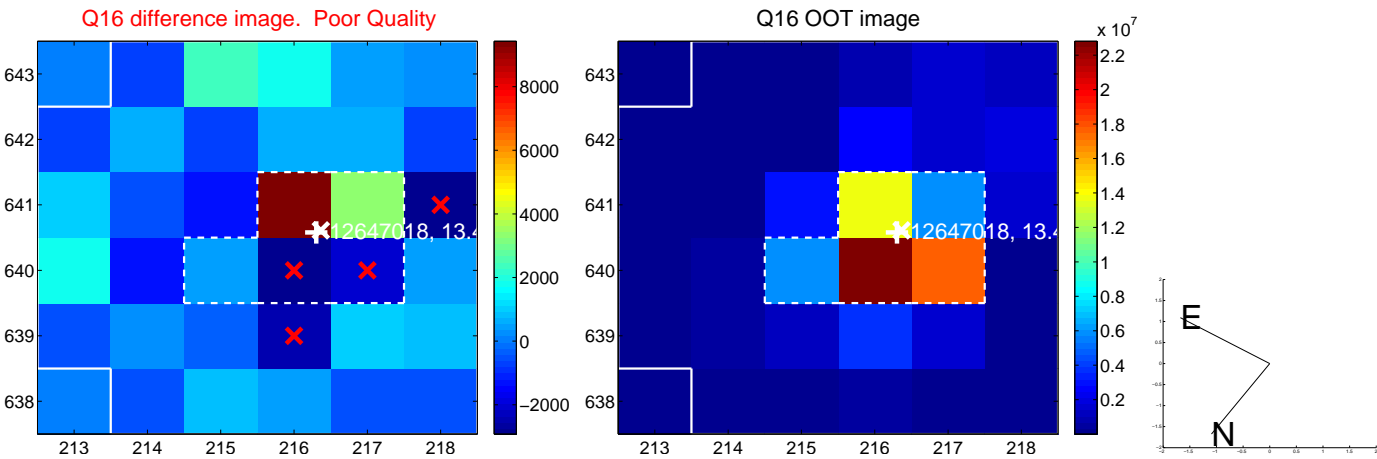
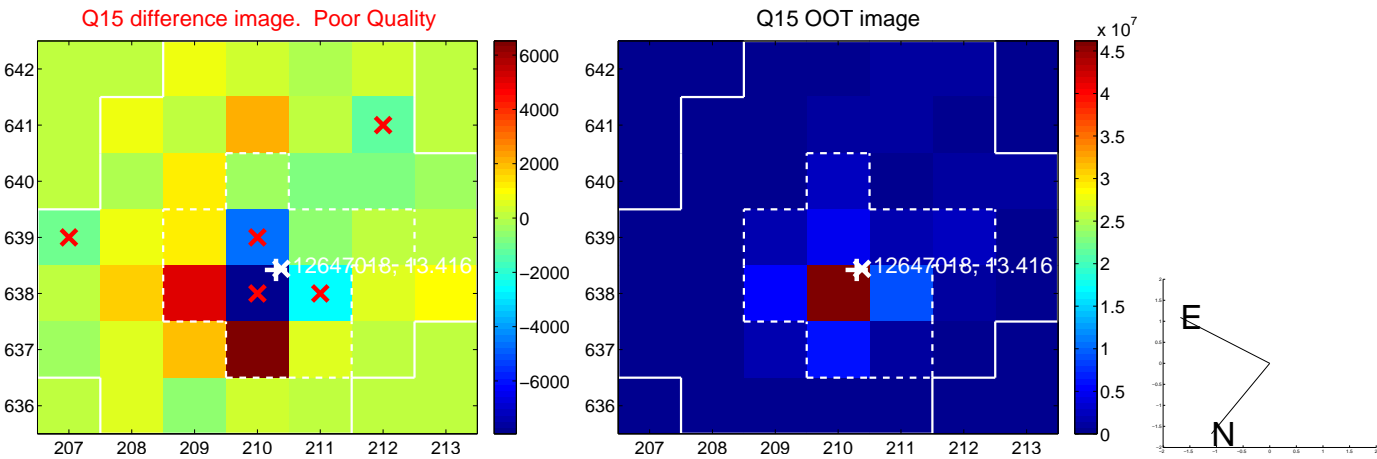
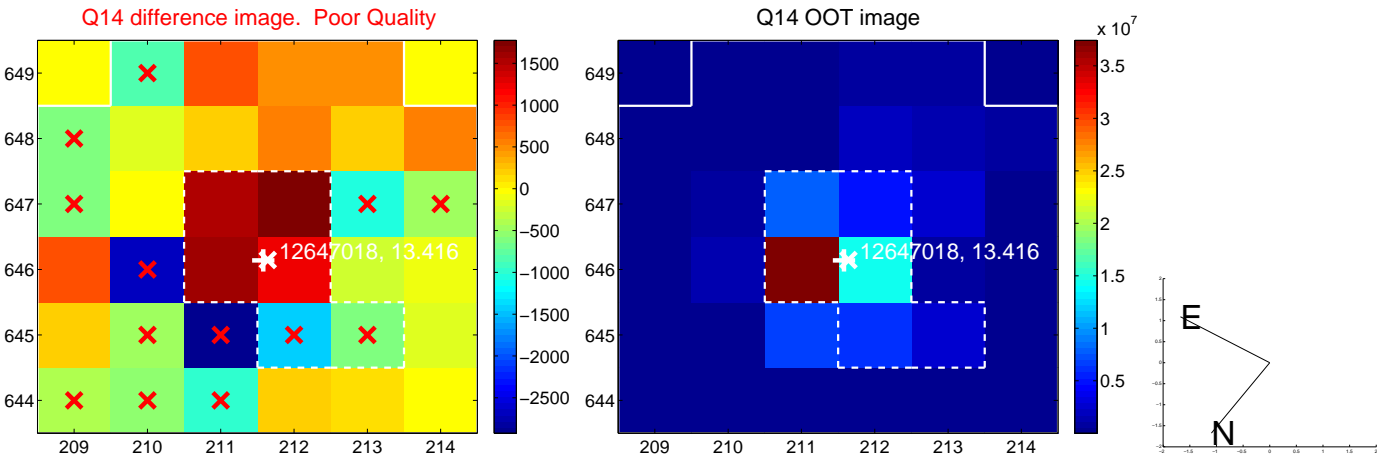
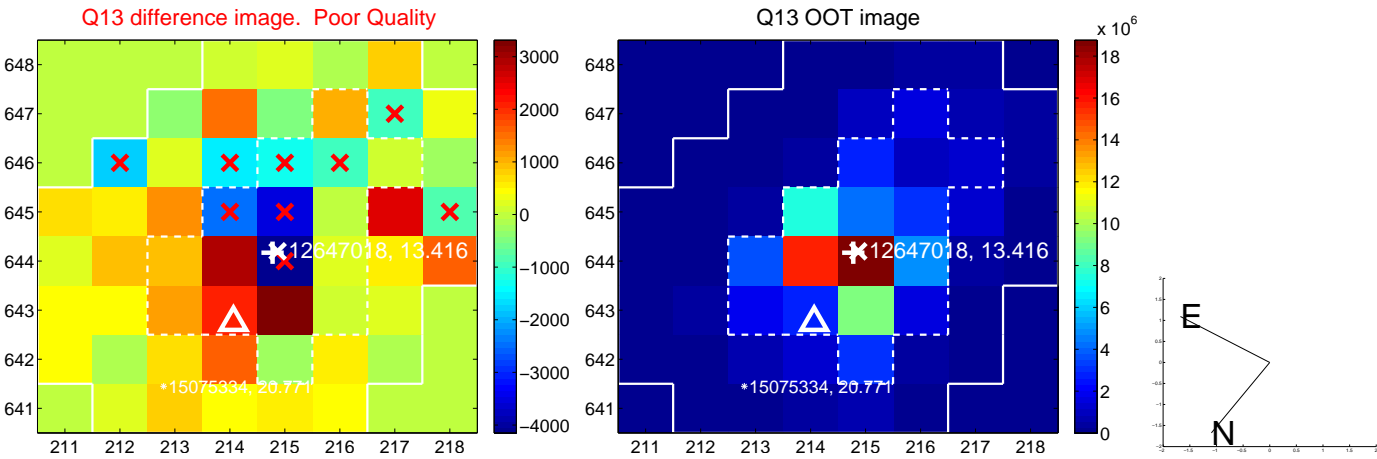
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



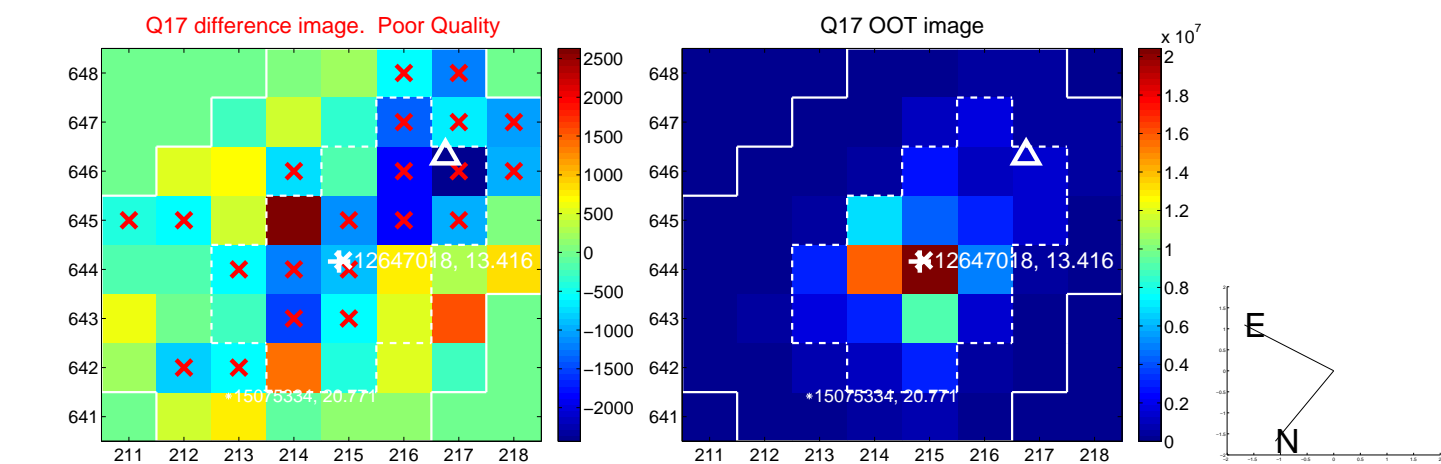
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



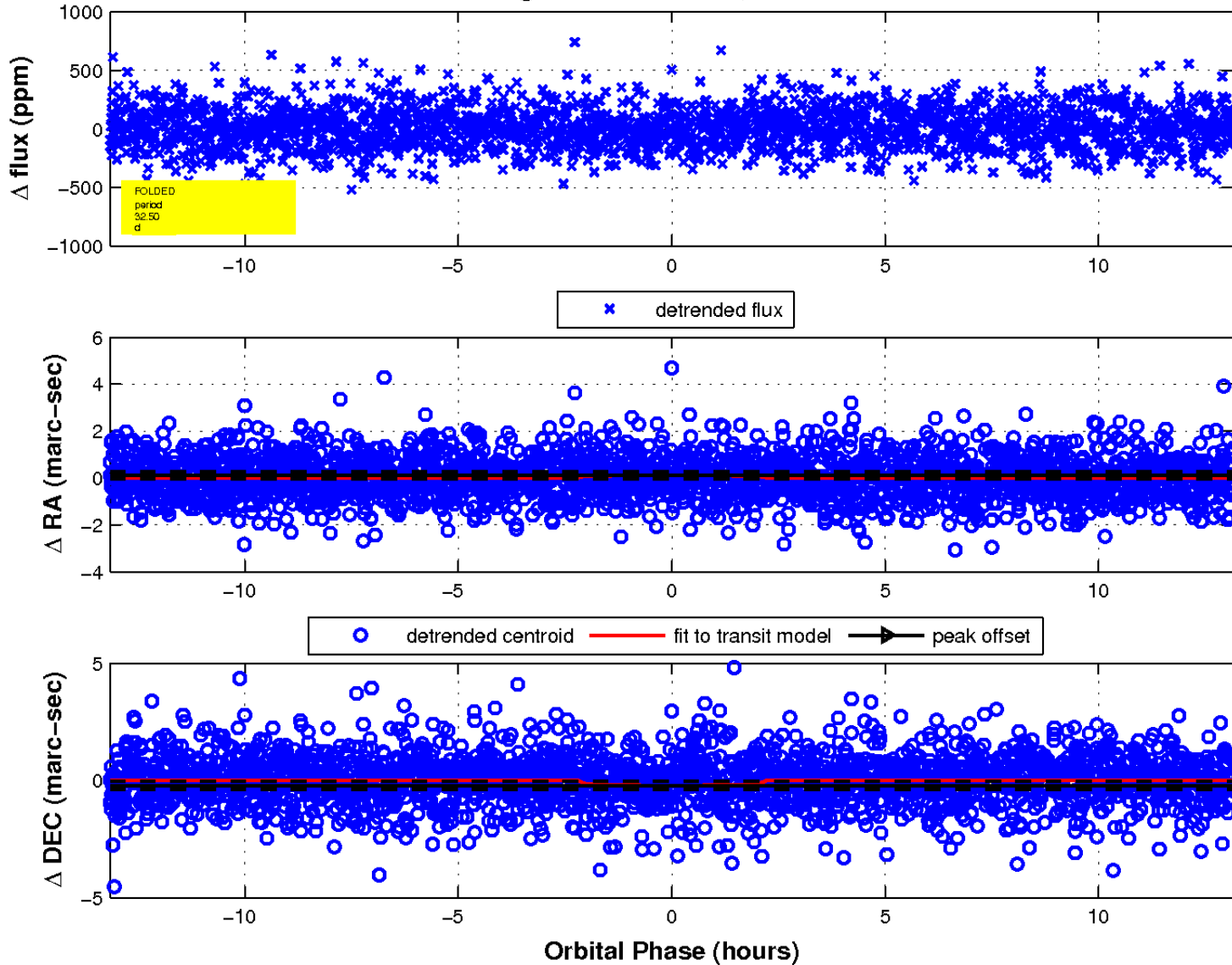
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

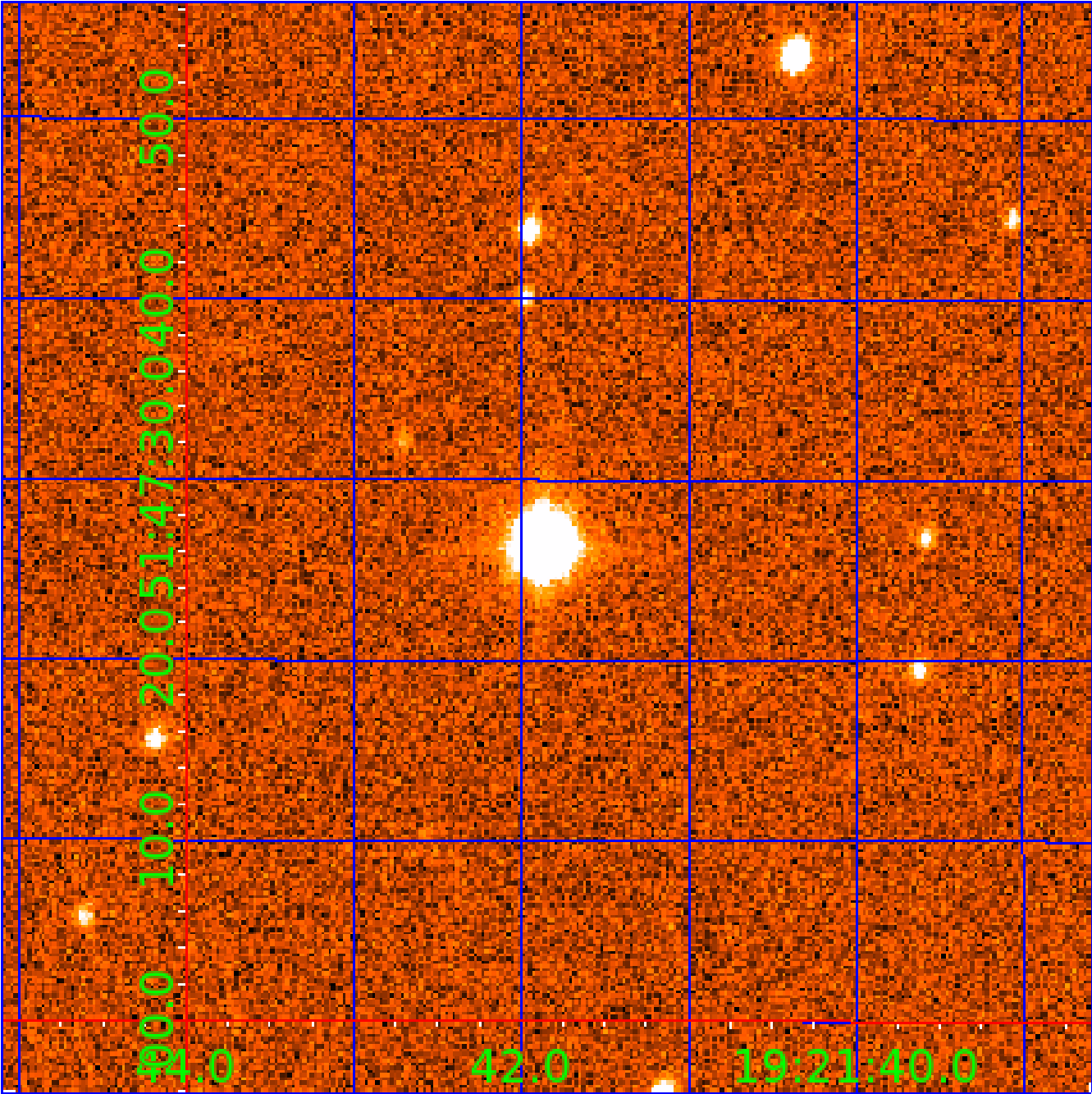


fluxWeightedCentroids, Planet 6 of 9



UKIRT Image

Declination



KIC 012647018

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})
012647018-01	OBS	No	1.296908	132.535743	20.8	9.030	8.3	11.1	1.65	5657	0.74	4448.09
012647018-02	OBS	No	53.083783	172.243518	341.8	3.269	11.3	10.6	1.65	5657	3.64	31.53
012647018-03	OBS	No	89.370051	187.811407	293.6	4.582	9.1	8.9	1.65	5657	3.44	15.74
012647018-04	OBS	No	24.853298	152.045089	100.5	3.762	9.0	5.1	1.65	5657	1.76	86.74
012647018-05	OBS	No	27.619166	134.768352	320.1	1.346	11.5	11.7	1.65	5657	2.93	75.35
012647018-06	OBS	No	32.503712	147.954093	220.4	4.386	9.5	11.5	1.65	5657	2.46	60.65
012647018-07	OBS	No	33.918495	133.285052	183.5	4.022	8.4	8.3	1.65	5657	2.47	57.30
012647018-09	OBS	No	36.652668	140.779741	233.3	3.001	8.8	8.7	1.65	5657	2.92	51.67

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
012647018-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT
012647018-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
012647018-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
012647018-04	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS—HALO_GHOST
012647018-05	OBS	FP	0.00	1	0	1	0	TRANS_GAPPED—MOD_NONUNIQ_DV—CENT_FEW_MEAS—HALO_GHOST
012647018-06	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS—HALO_GHOST
012647018-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
012647018-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—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.

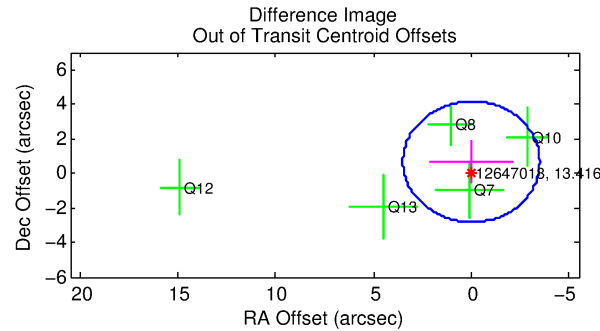
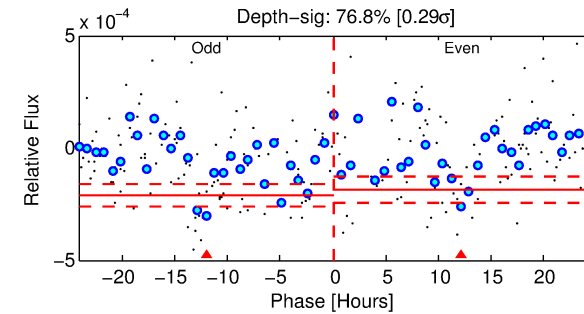
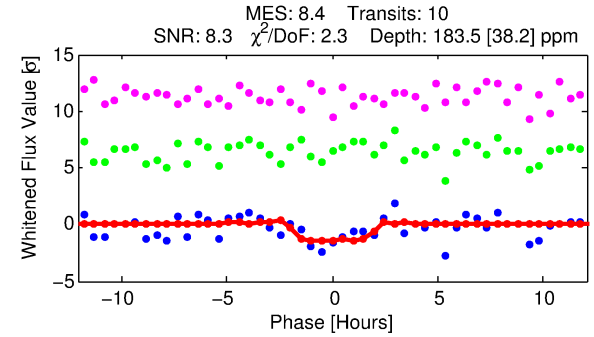
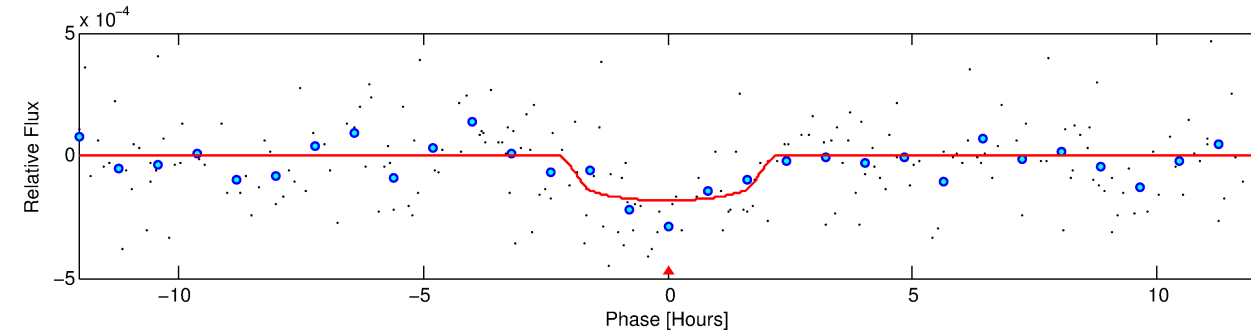
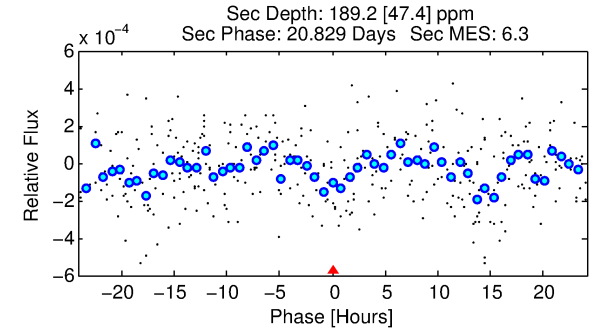
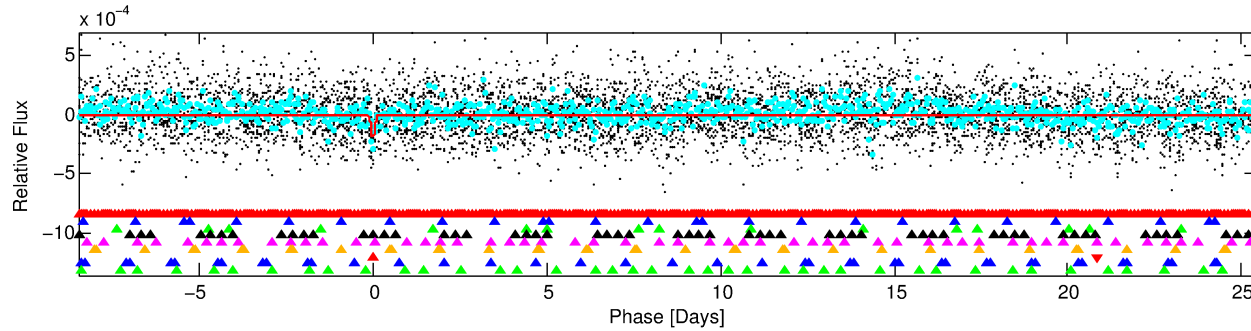
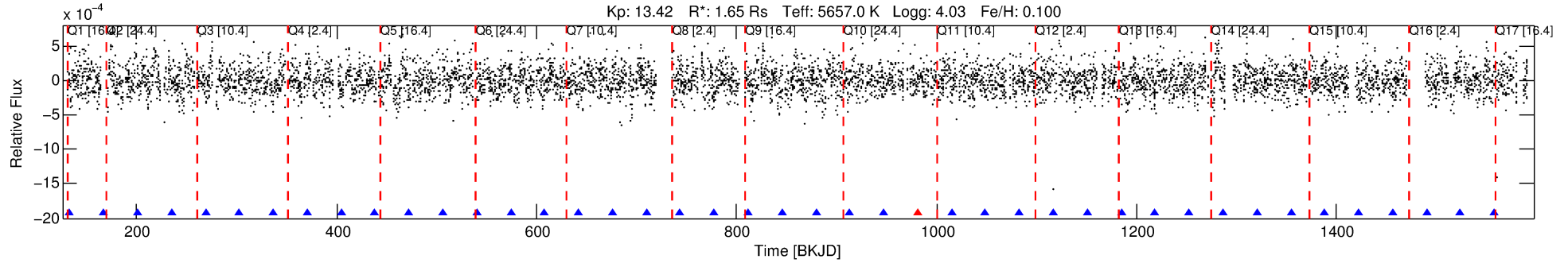
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 012647018-07

No Significant Match Found

DV One-Page Summary

KIC: 12647018 Candidate: 7 of 9 Period: 33.918 d



DV Fit Results:

Period = 33.91850 [0.00058] d
Epoch = 133.2851 [0.0136] BKJD
Rp/R* = 0.0137 [0.0253]
a/R* = 40.94 [327.40]
b = 0.79 [3.88]
Seff = 57.30 [40.70]
Teff = 702 [125] K
Rp = 2.47 [4.65] Re
a = 0.2087 [0.0874] AU
Ag = 742.39 [2789.89] [0.27σ]
Teffp = 5662 [5228] K [0.95σ]

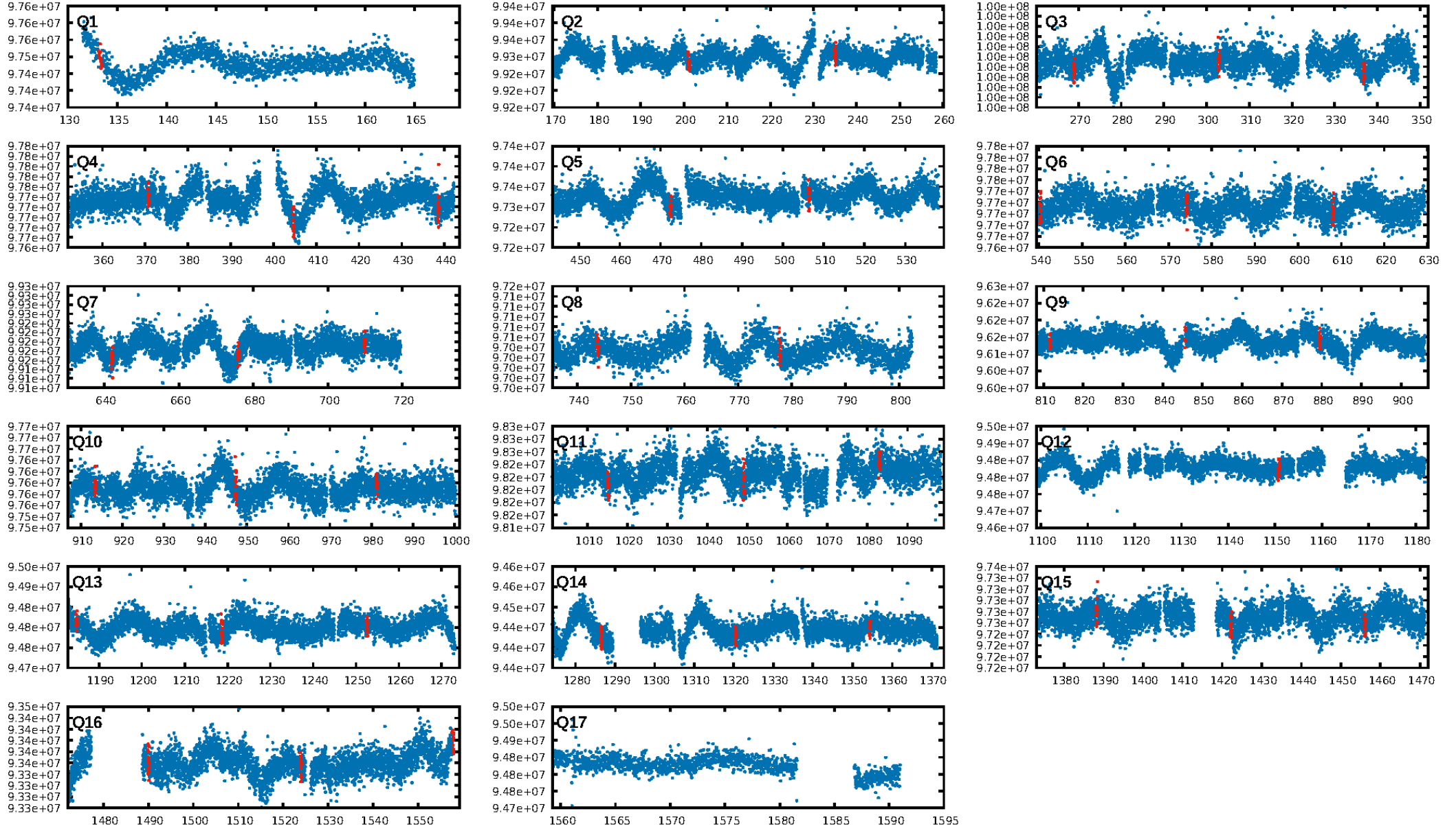
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [5.71σ]
LongPeriod-sig: 92.4% [1.77σ]
ModelChiSquare2-sig: 0.1%
ModelChiSquareGof-sig: 99.9%
Bootstrap-pfa: 1.84e-11
RollingBand-fgt: 0.89 [8/9]
GhostDiagnostic-chr: -1.095
Centroid-sig: 0.4%
Centroid-so: 1.575 arcsec [1.73σ]
OotOffset-rm: 0.671 arcsec [0.58σ]
KicOffset-rm: 0.874 arcsec [0.72σ]
OotOffset-st: 1/1/2/1 [5]
KicOffset-st: 1/1/2/1 [5]
DiffImageQuality-fgm: 0.00 [0/5]
DiffImageOverlap-fno: 0.25 [4/16]

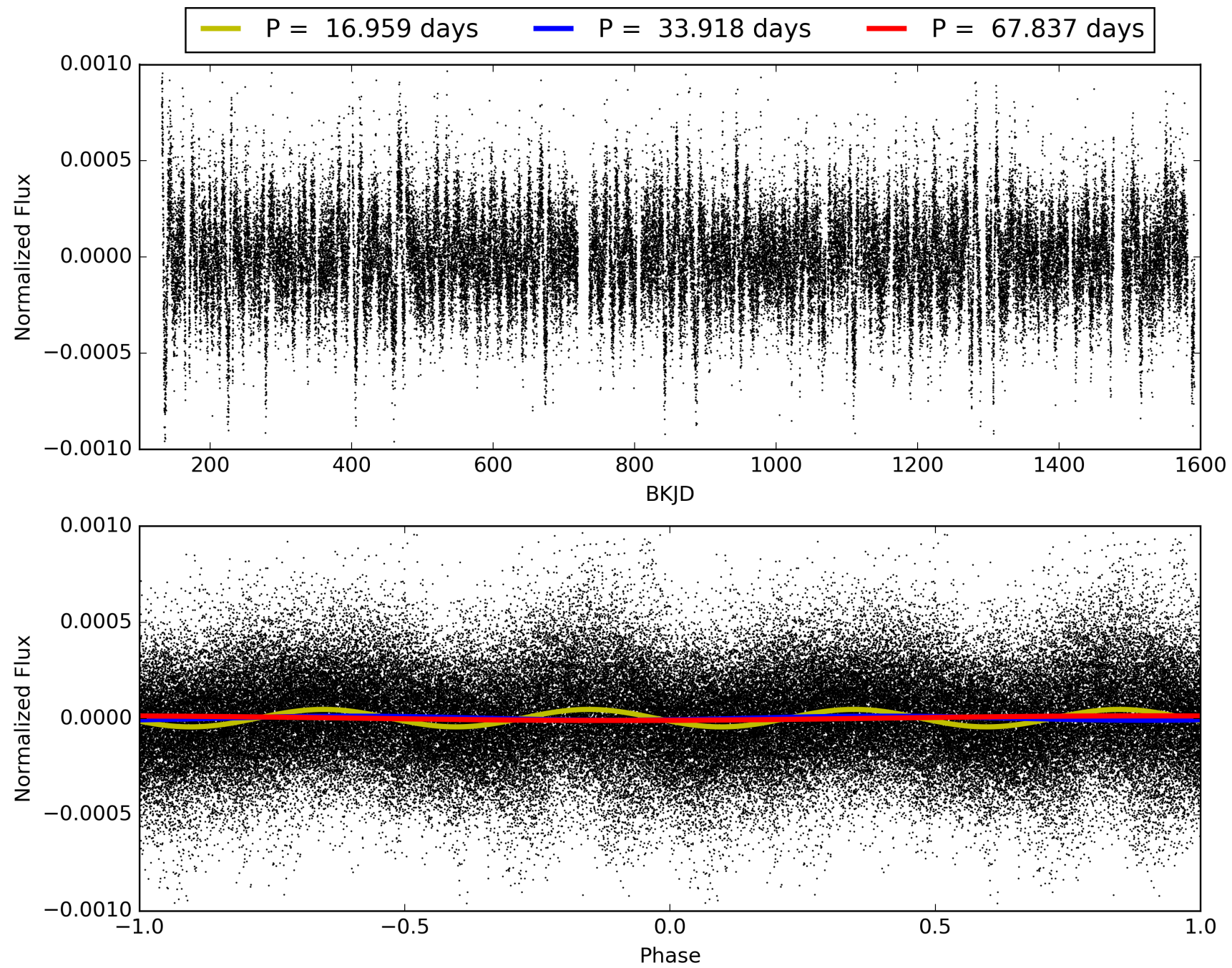
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 05:14:23 Z

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

TCE 012647018-07, PDC Light Curves

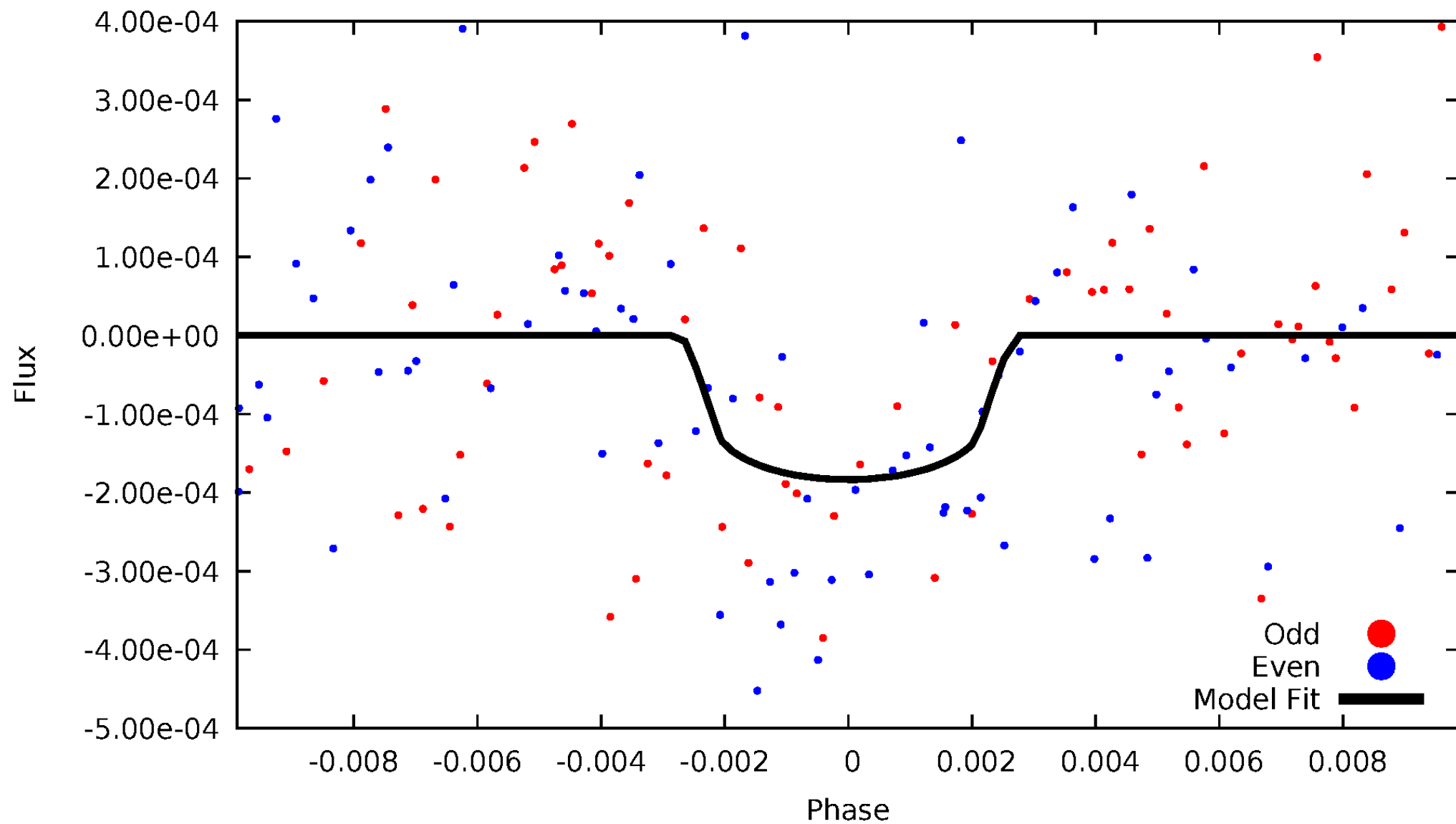


TCE 012647018-07



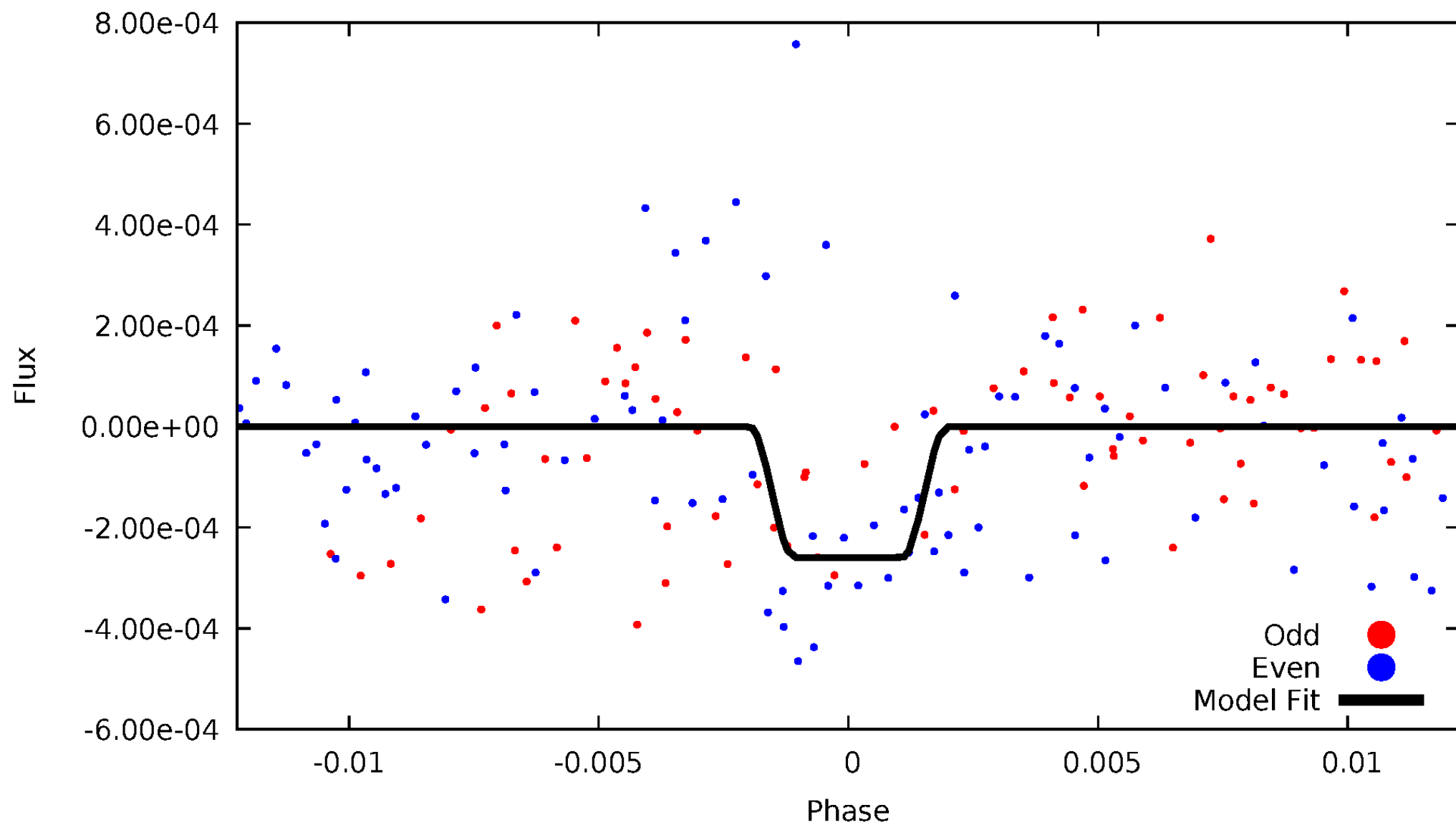
DV Odd/Even

TCE 012647018-07



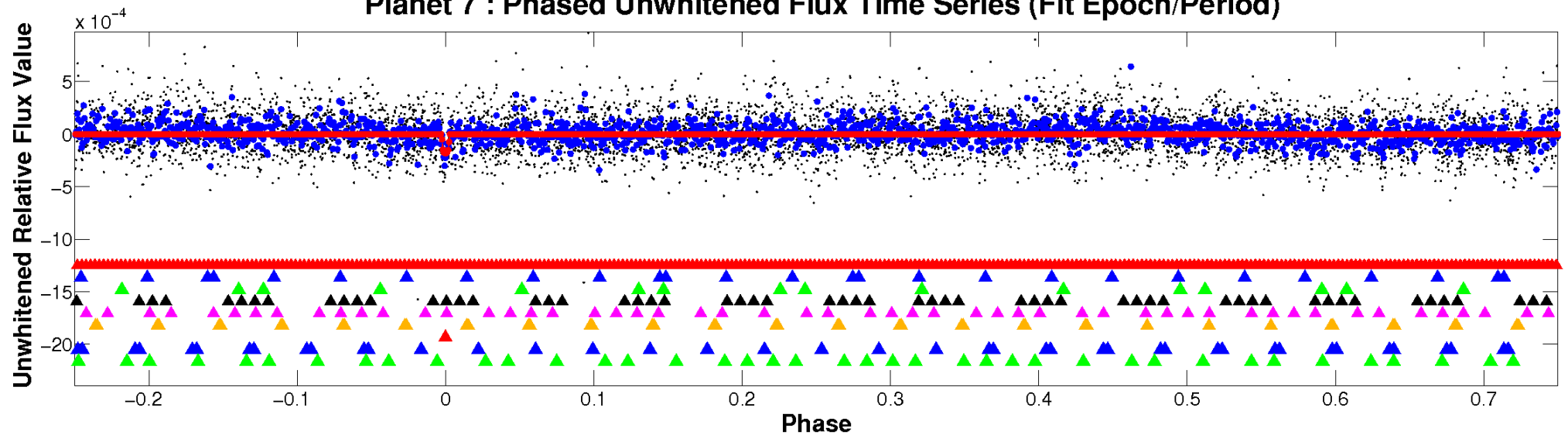
ALT Odd/Even

TCE 012647018-07

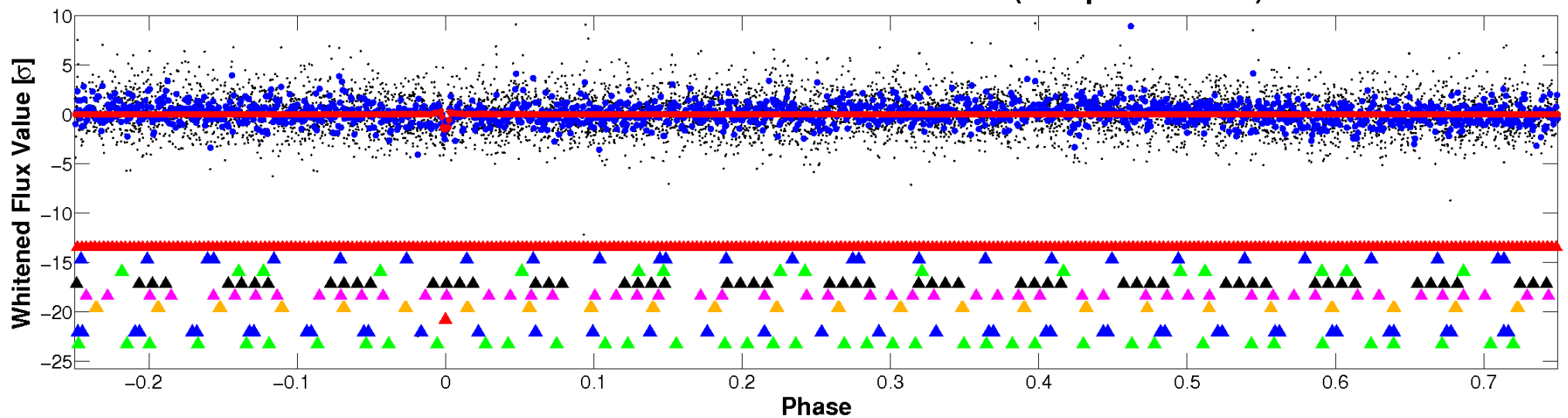


Non-Whitened Vs. Whitened Light Curve

Planet 7 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

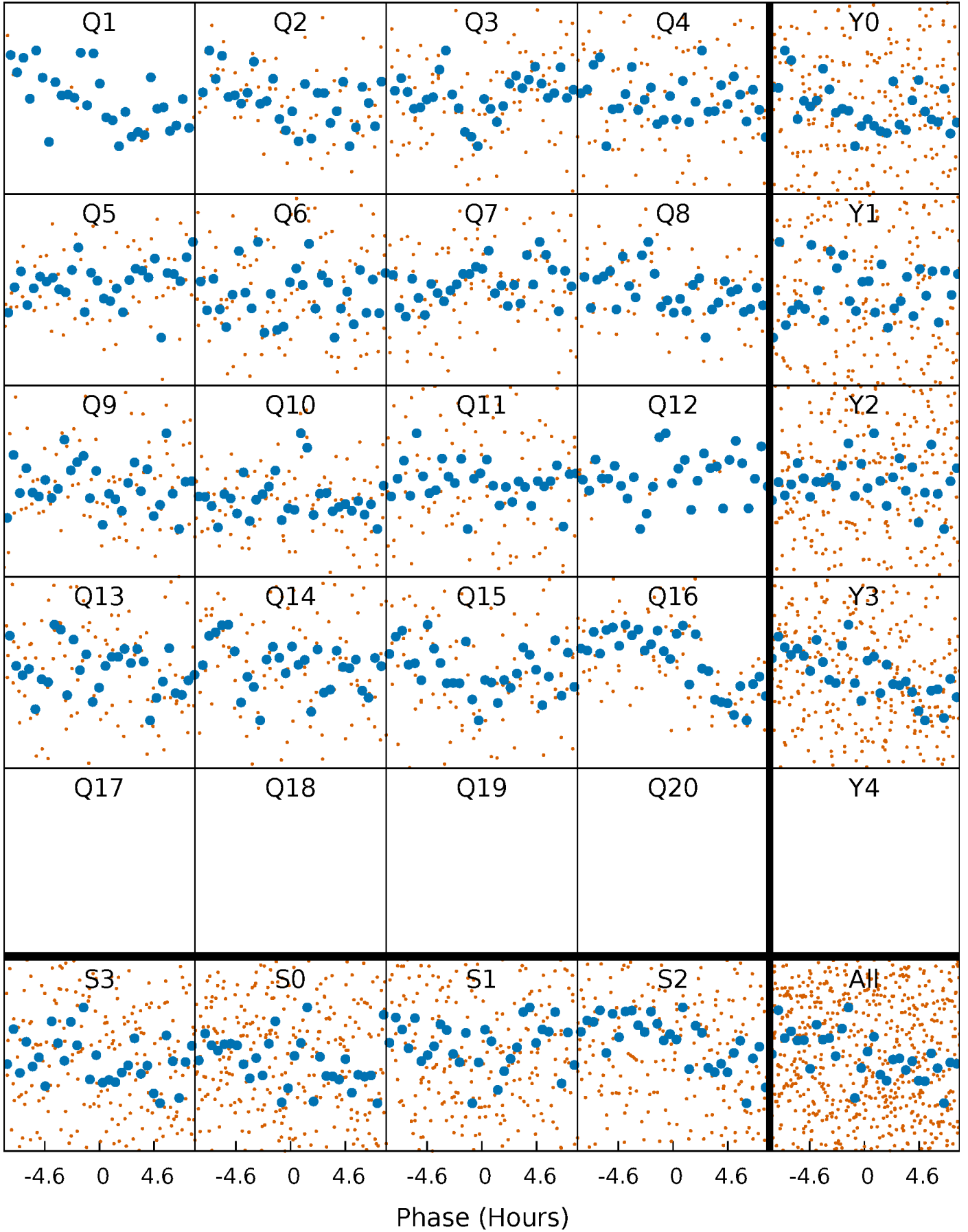


Planet 7 : Phased Whitened Flux Time Series (Fit Epoch/Period)



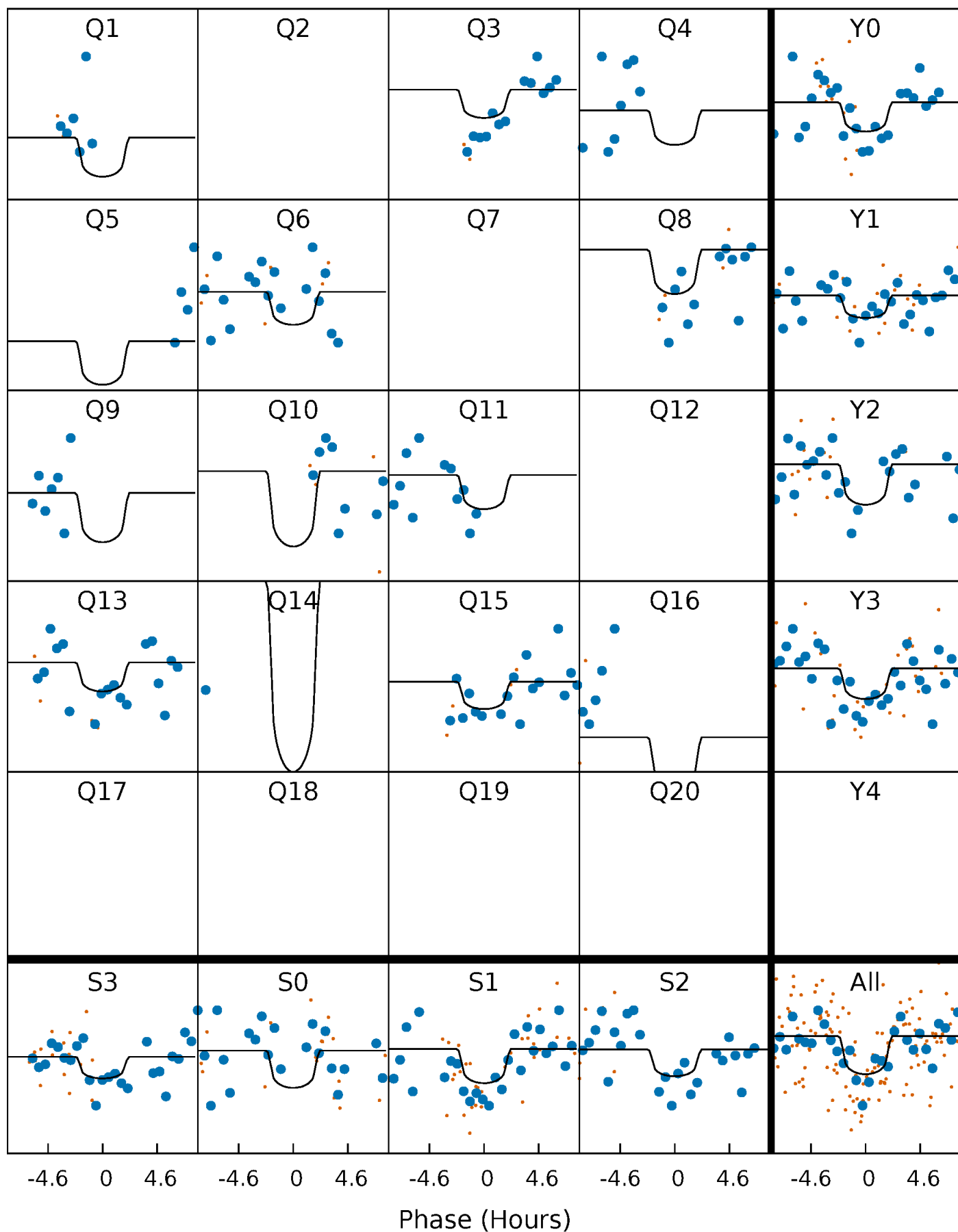
PDC Quarter-Phased Transit Curves

TCE 012647018-07 P= 33.918495 Days $T_0=133.285052$ (BKJD)



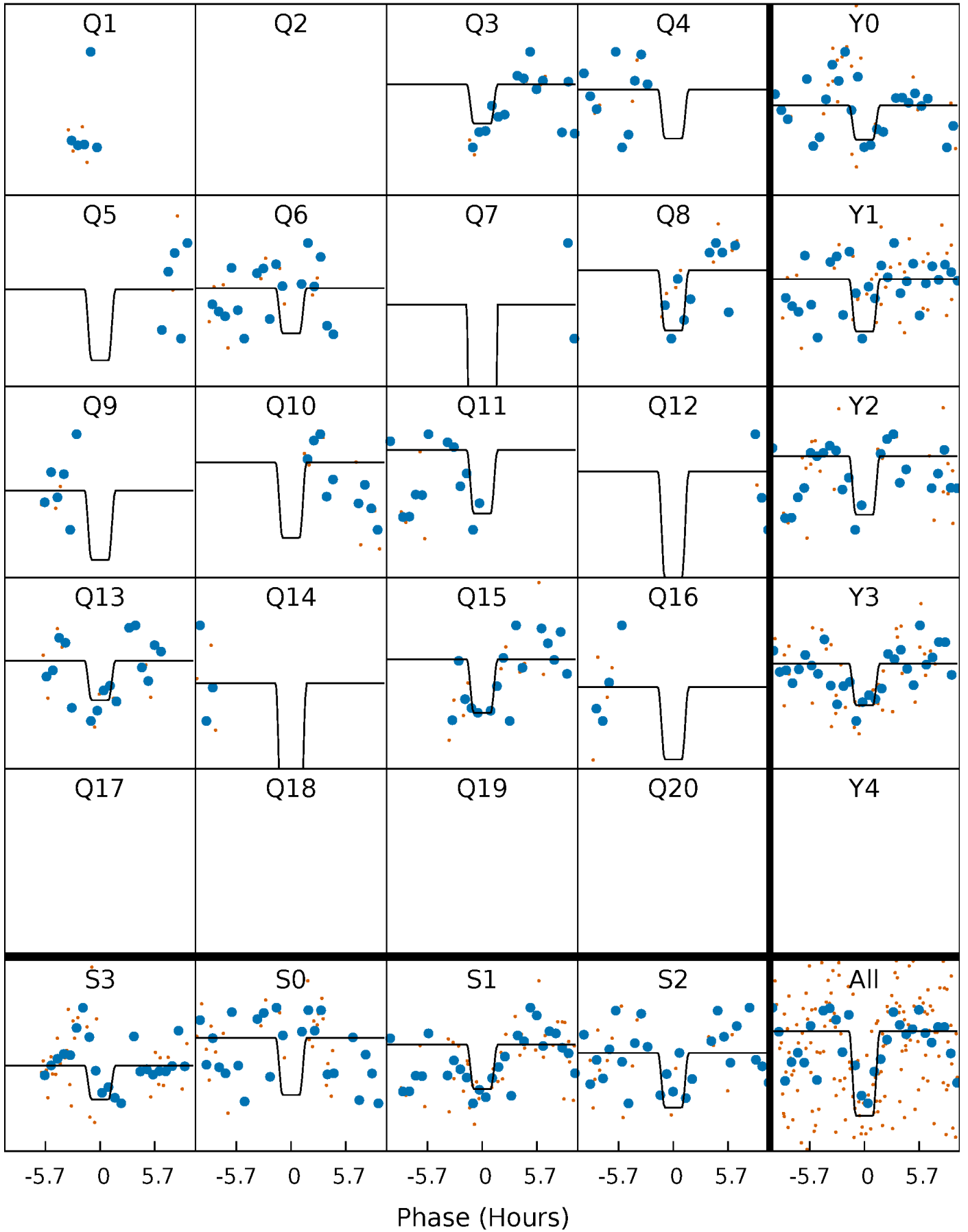
DV Quarter-Phased Transit Curves

TCE 012647018-07 P= 33.918495 Days $T_0=133.285052$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

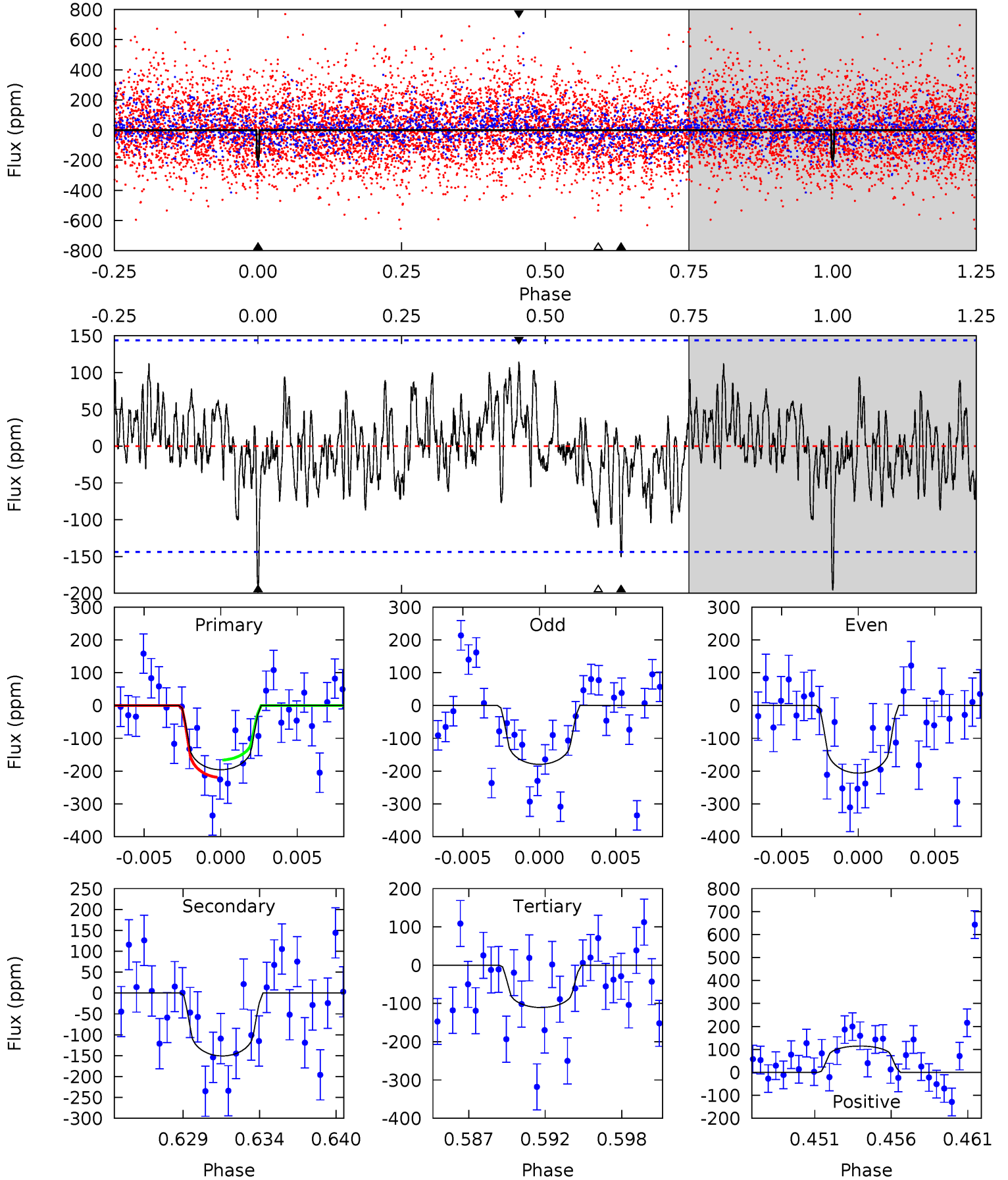
TCE 012647018-07 $P = 33.919367$ Days $T_0 = 133.264024$ (BKJD)



DV Model-Shift Uniqueness Test

012647018-07, P = 33.918495 Days, E = 99.366557 Days

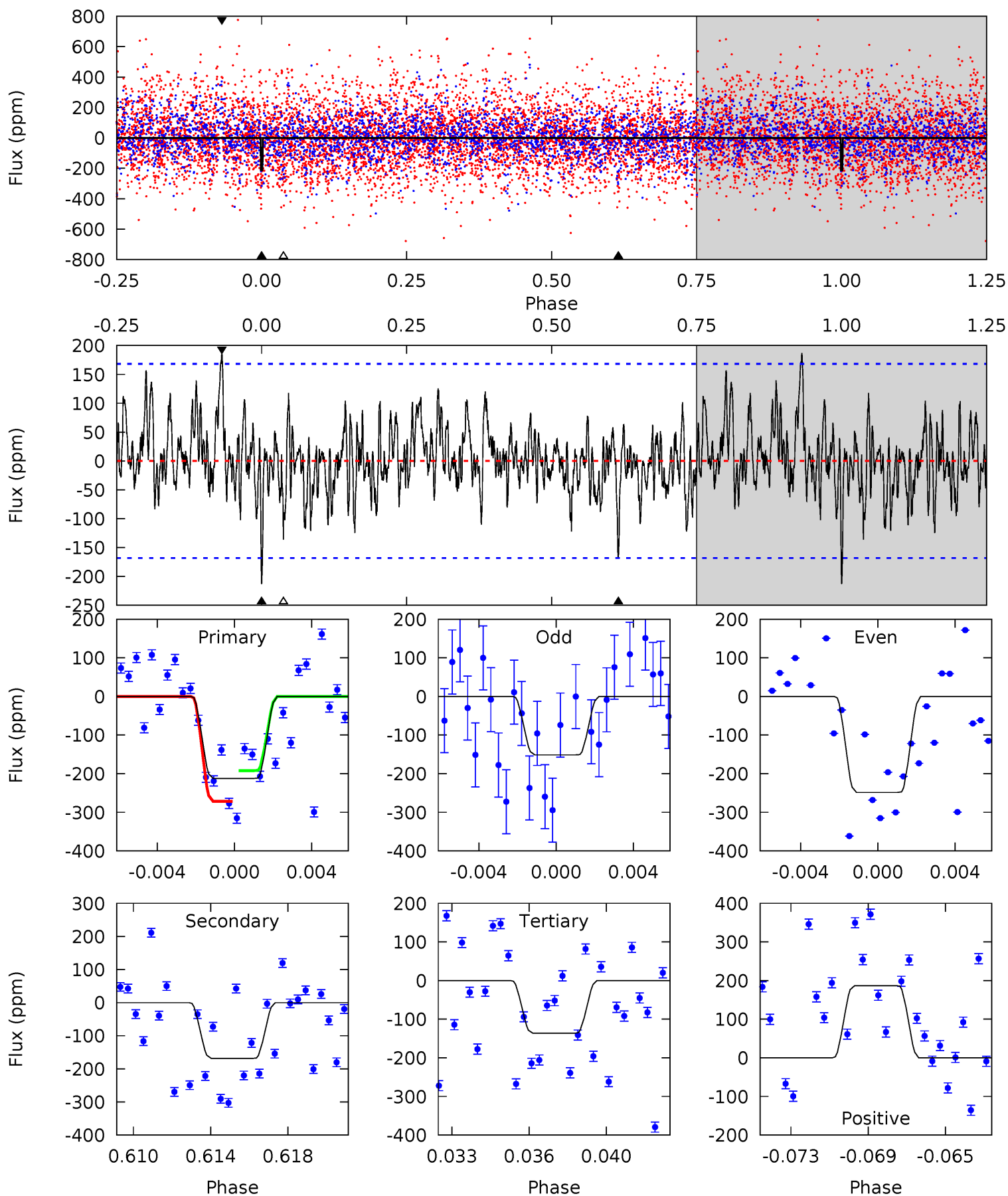
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.01	5.39	3.96	4.10	5.15	2.79	1.48	3.05	2.91	1.44	1.29	0.47	0.57	0.37	0.94



Alt Model-Shift Uniqueness Test

012647018-07, P = 33.919367 Days, E = 99.344657 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.59	5.22	4.23	5.80	5.22	2.91	1.46	2.36	0.79	1.00	-0.57	1.48	0.50	0.47	1.20



Stellar Parameters For KIC 012647018

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5657^{+152}_{-152}	$4.026^{+0.424}_{-0.133}$	$0.100^{+0.250}_{-0.250}$	$1.649^{+0.351}_{-0.652}$	$1.053^{+0.126}_{-0.139}$	$0.331^{+1.086}_{-0.128}$
	+3%/-3%	+11%/-3%	+250%/-250%	+21%/-40%	+12%/-13%	+328%/-39%
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 012647018-07 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-151 ± 28	$3.90^{+3.93}_{-2.72}$	966^{+67}_{-110}	4285^{+3091}_{-841}	243^{+2330}_{-183}
Alt.	-168 ± 32	$4.14^{+4.00}_{-2.61}$	961^{+69}_{-99}	4248^{+2350}_{-809}	231^{+1399}_{-171}

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 $A_{obs} \gg 1.0$

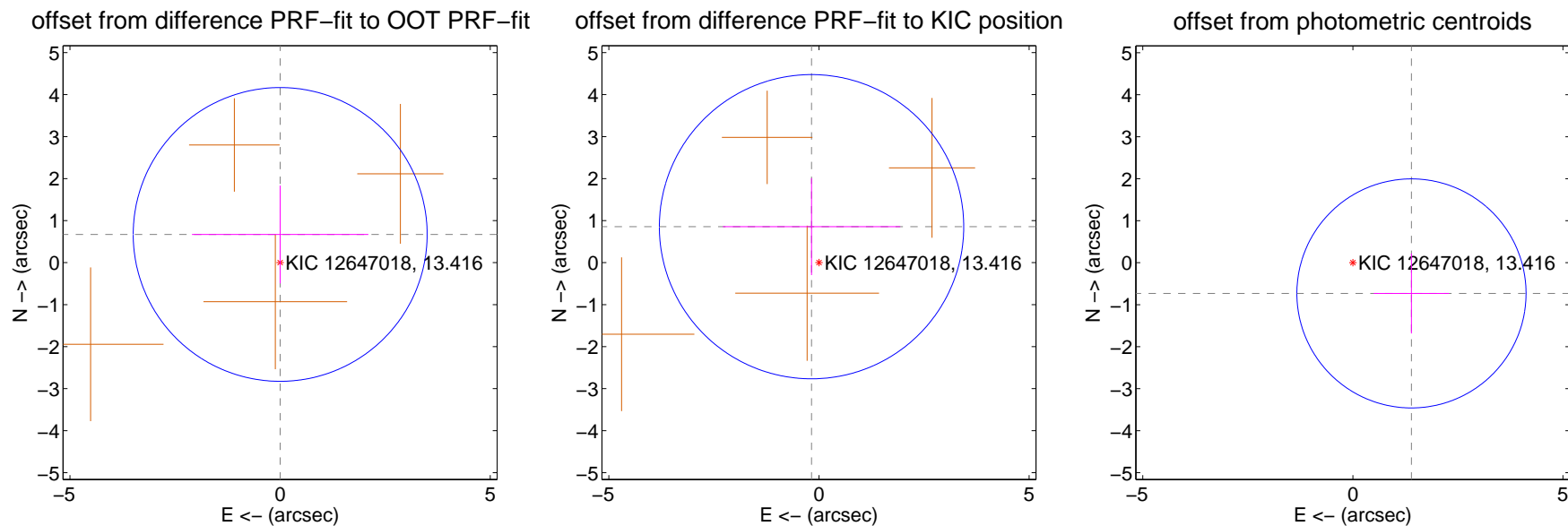
DV Centroid Data

Supplemental centroid analysis for 012647018-07. Kepler magnitude: 13.42. Transit SNR 8.32

There are 0 quarters with good PRF difference image offsets

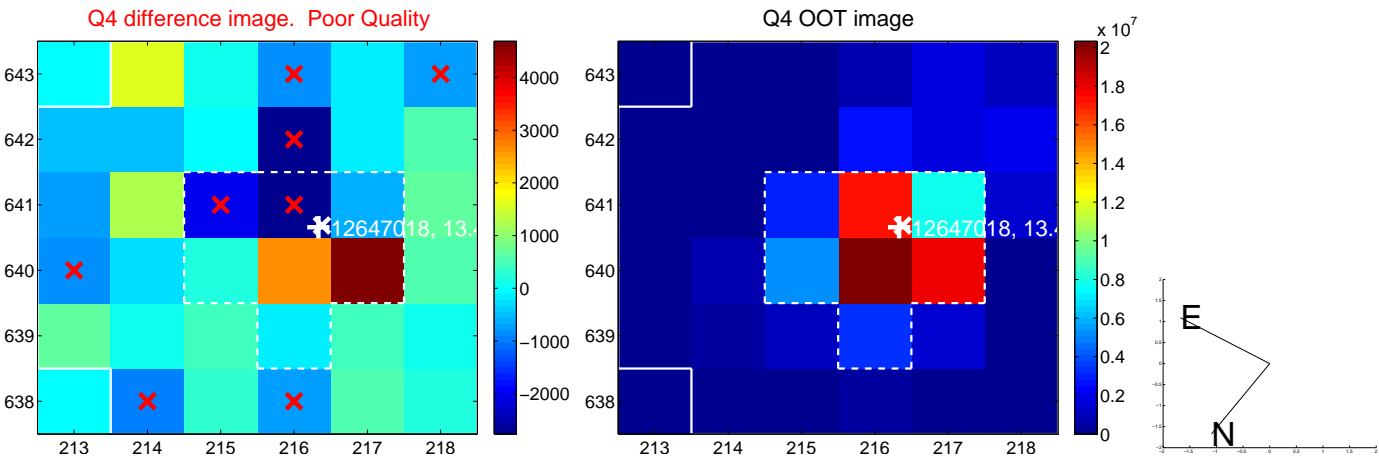
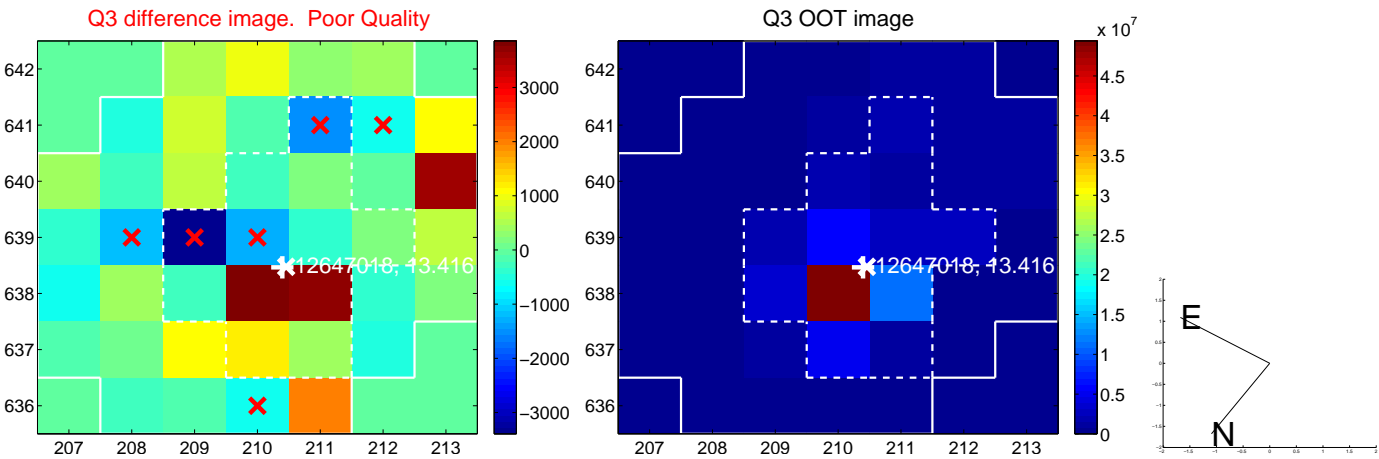
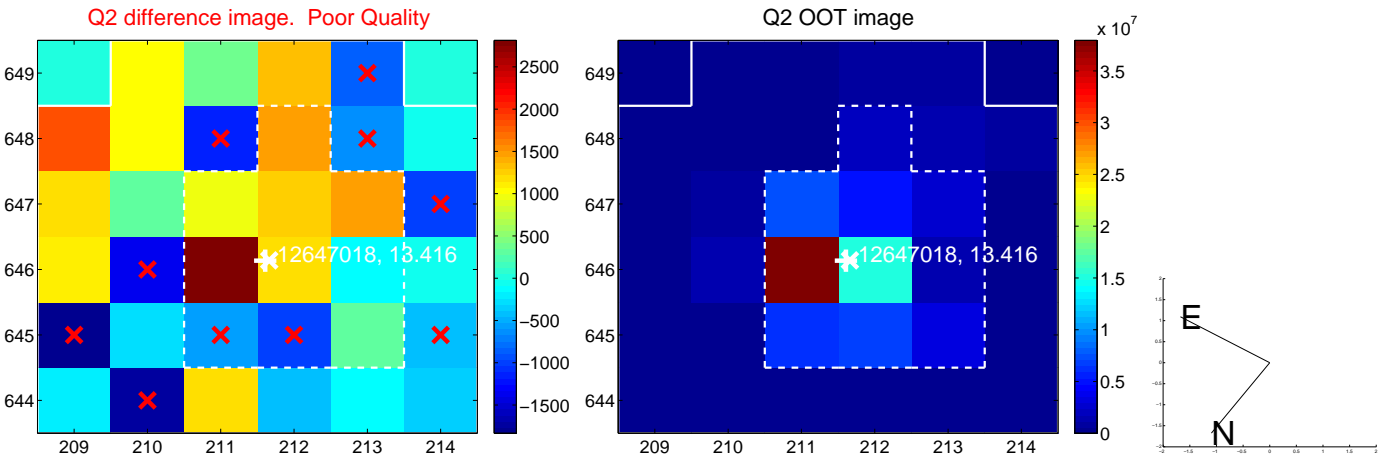
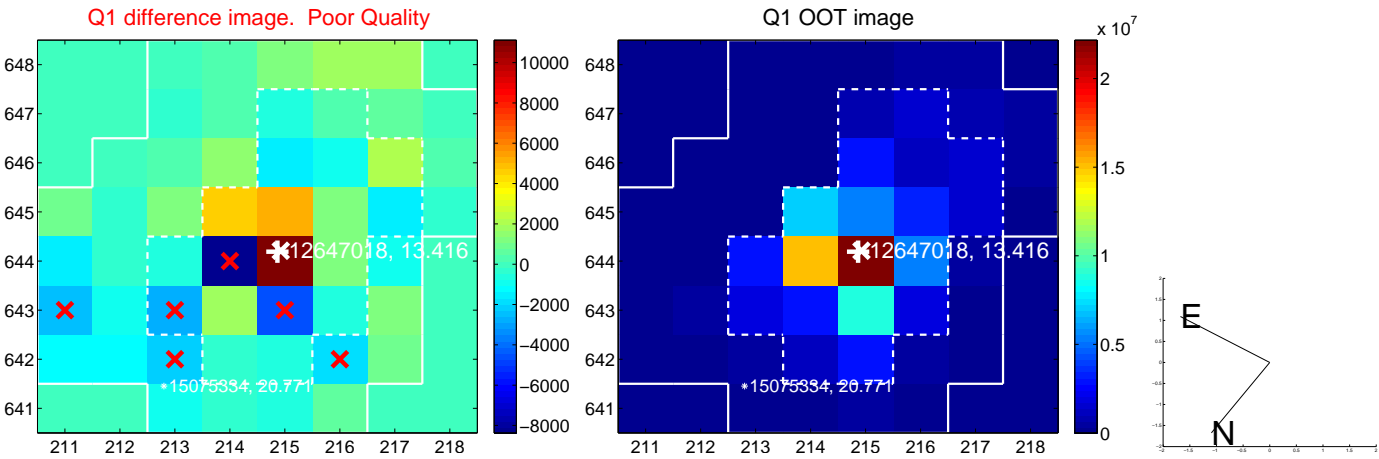
The direct PRF centroid is offset from the target star catalog position by about 0.31 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.671 ± 1.166	0.58	-0.002 ± 2.099	0.671 ± 1.166
PRF-fit source offset from KIC position	0.874 ± 1.207	0.72	0.177 ± 2.110	0.856 ± 1.153
photometric centroid source offset	1.57 ± 0.91	1.73	-1.39 ± 0.90	-0.73 ± 0.95

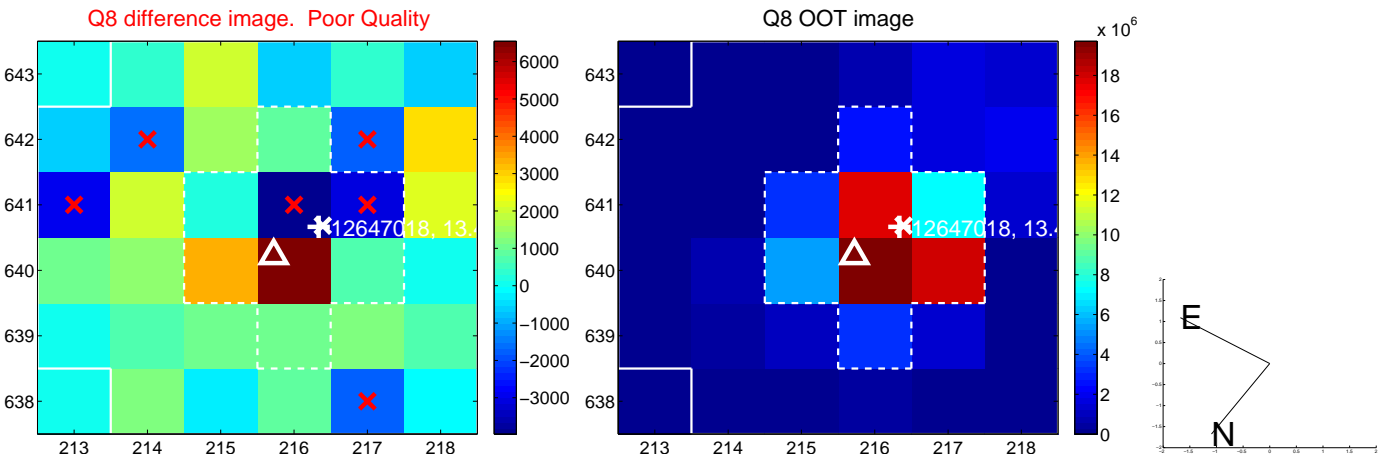
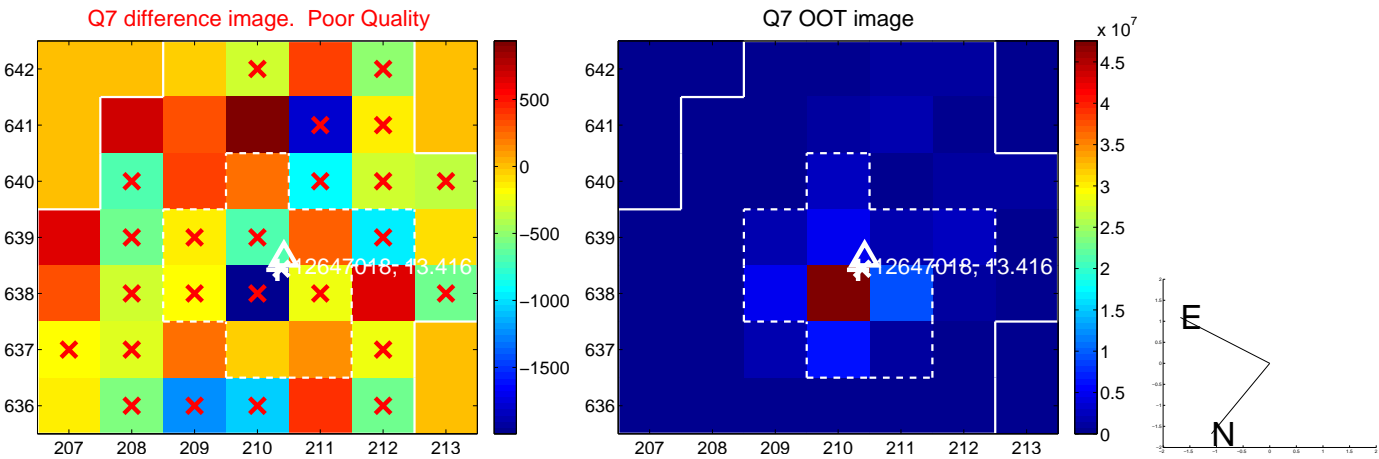
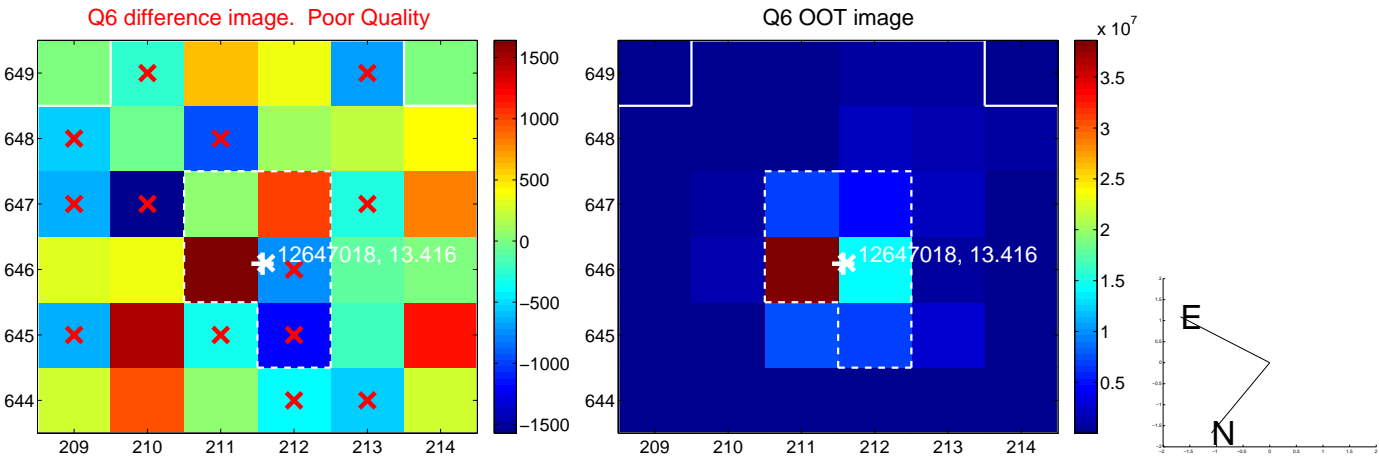
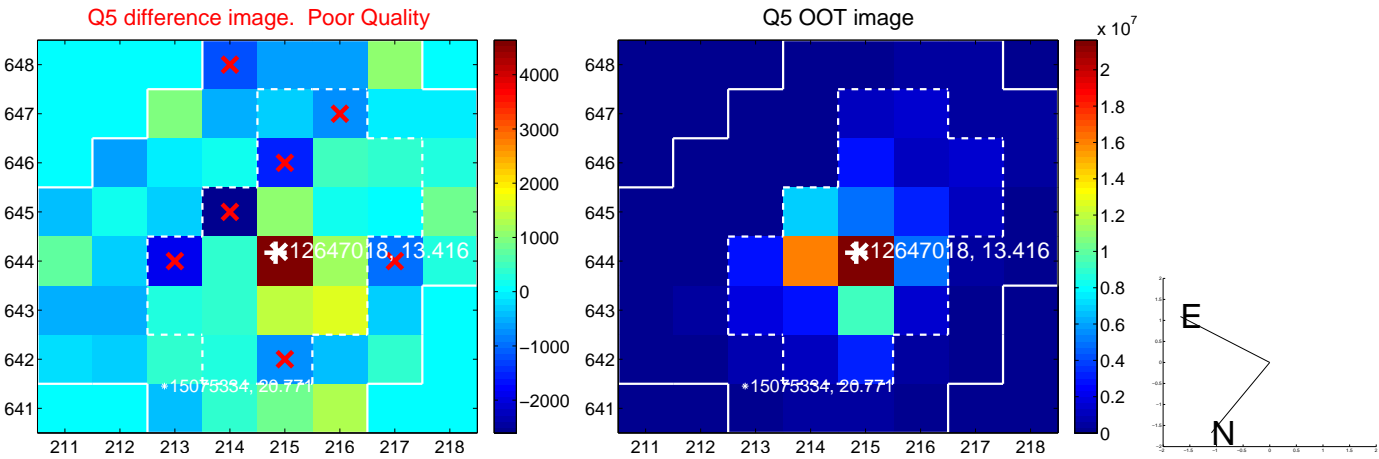


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

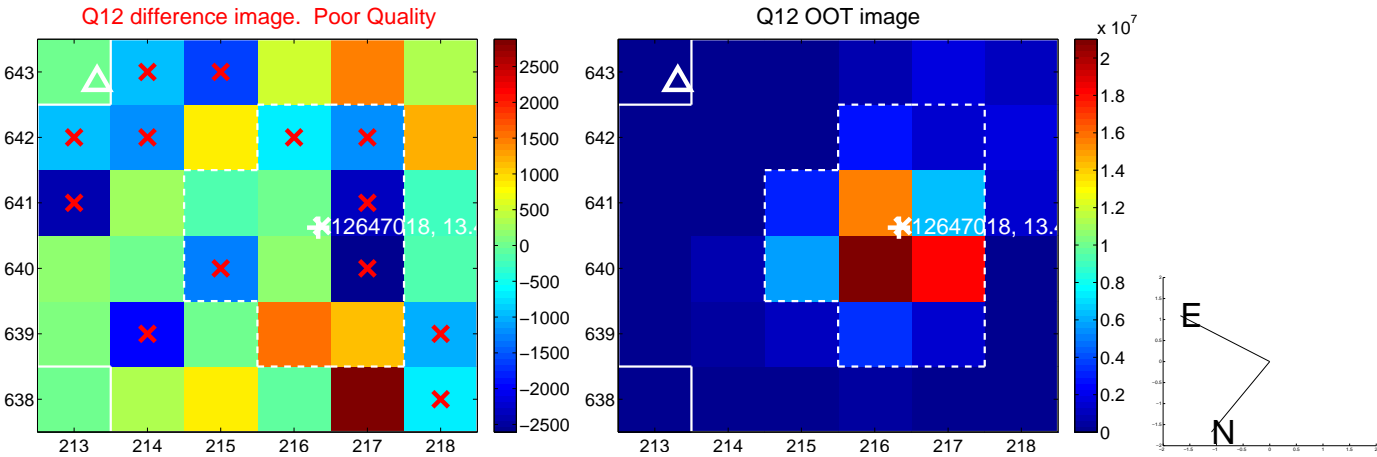
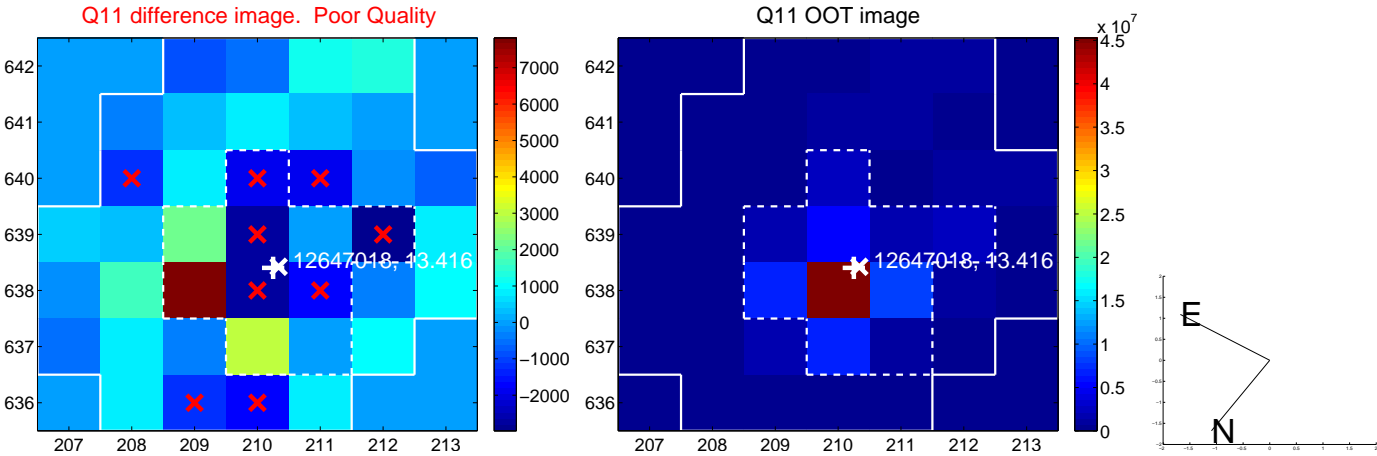
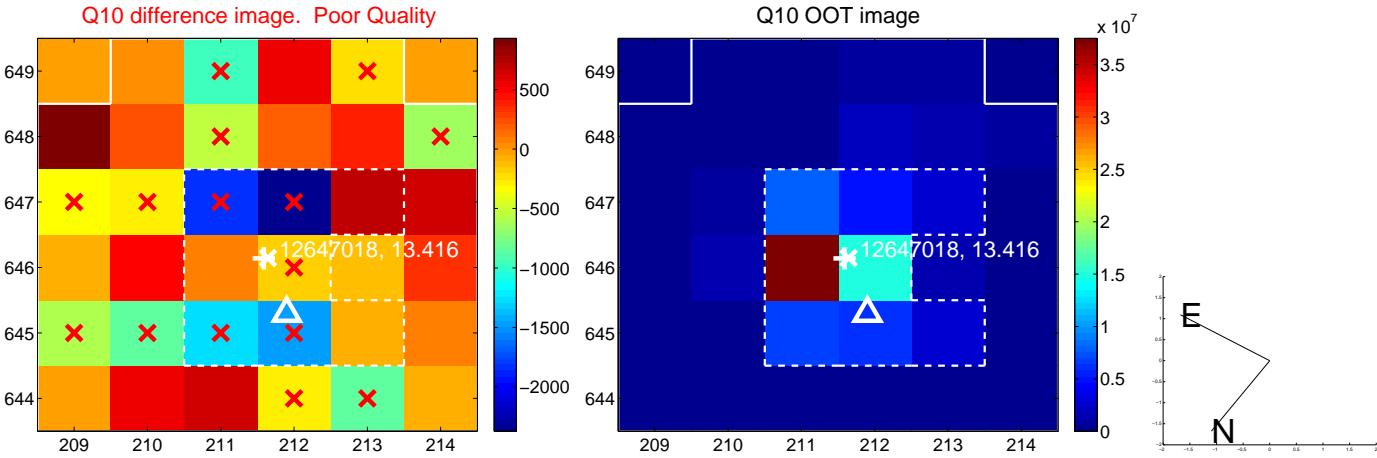
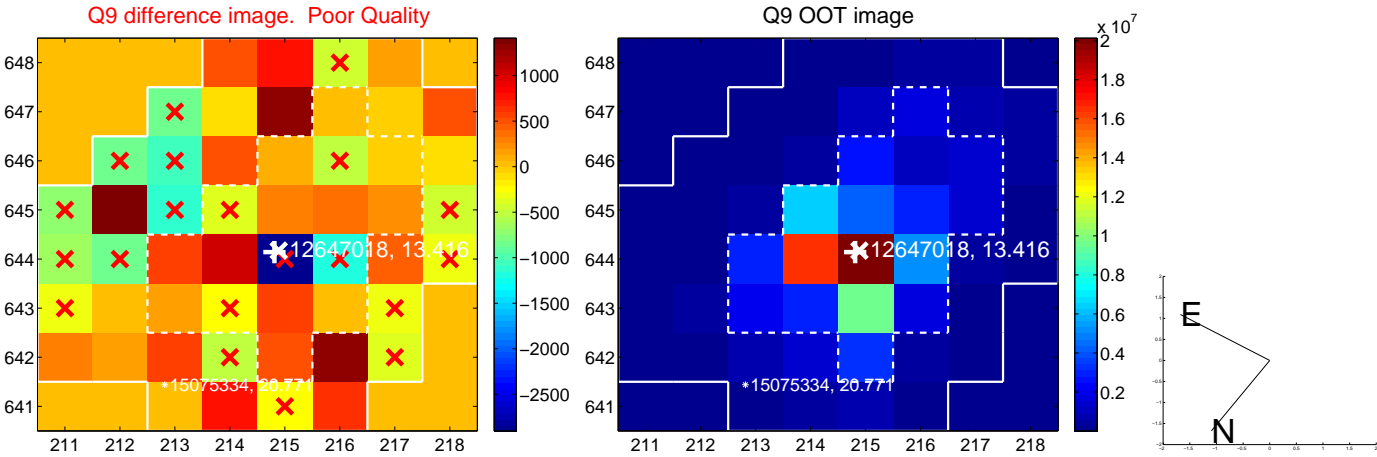
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



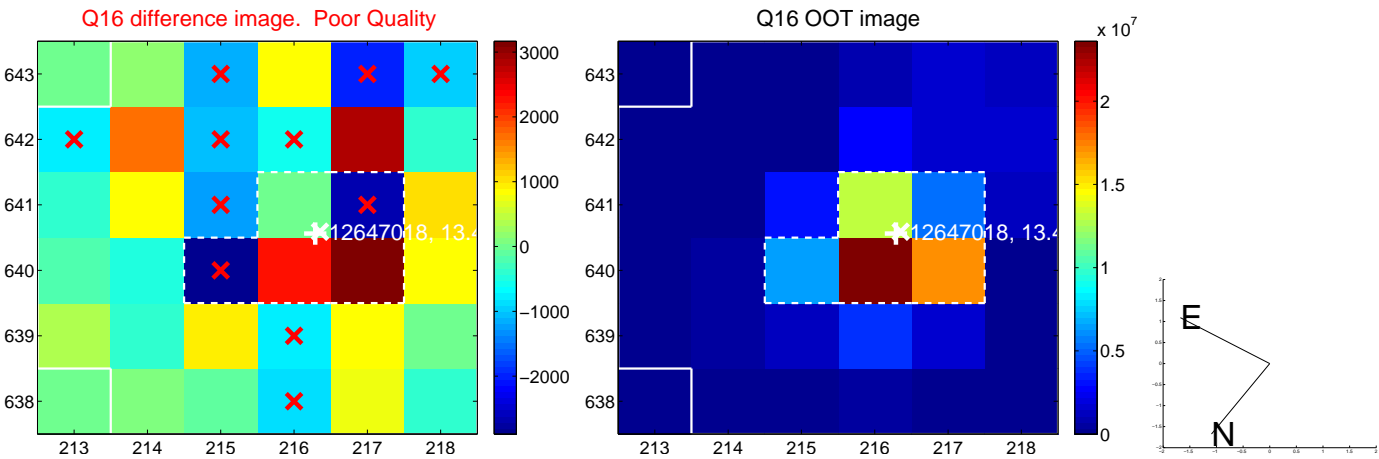
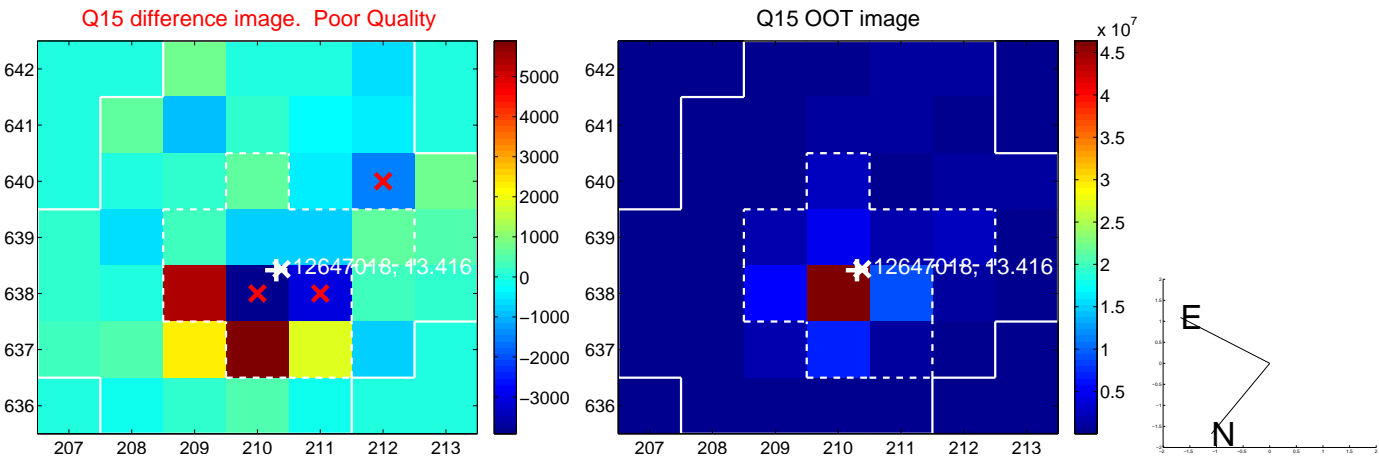
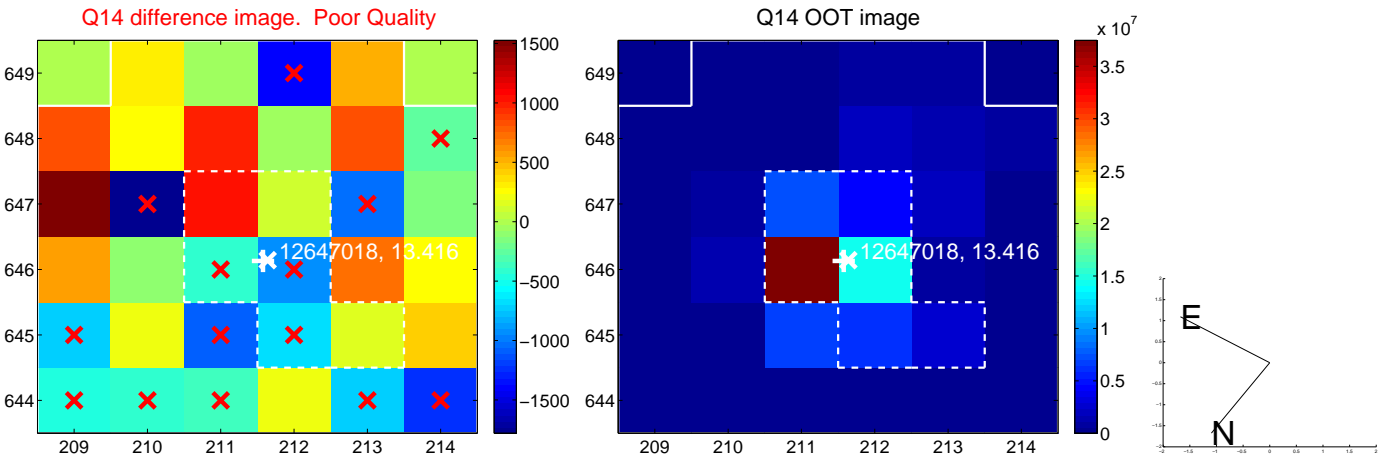
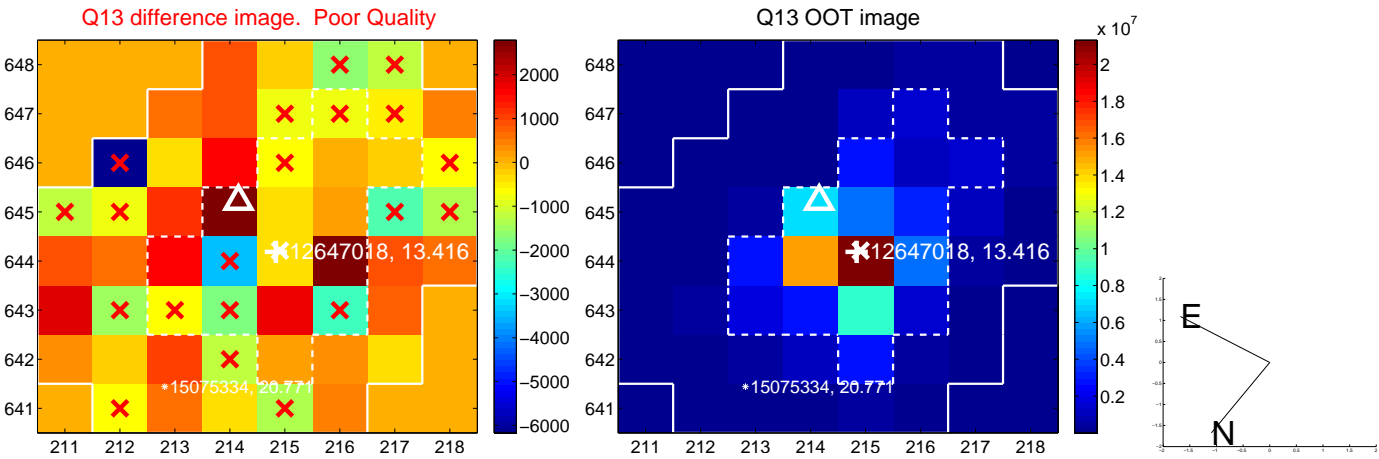
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



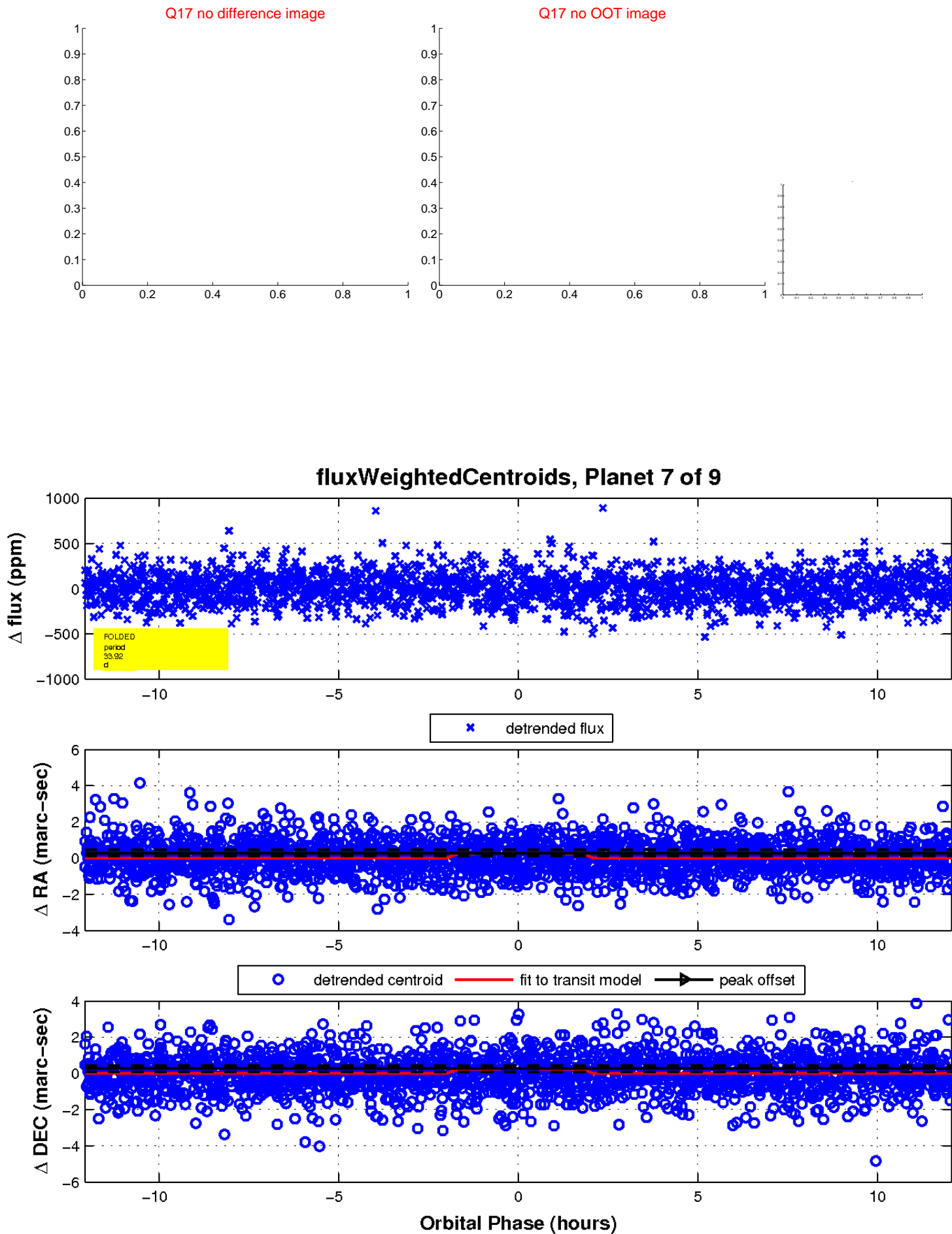
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

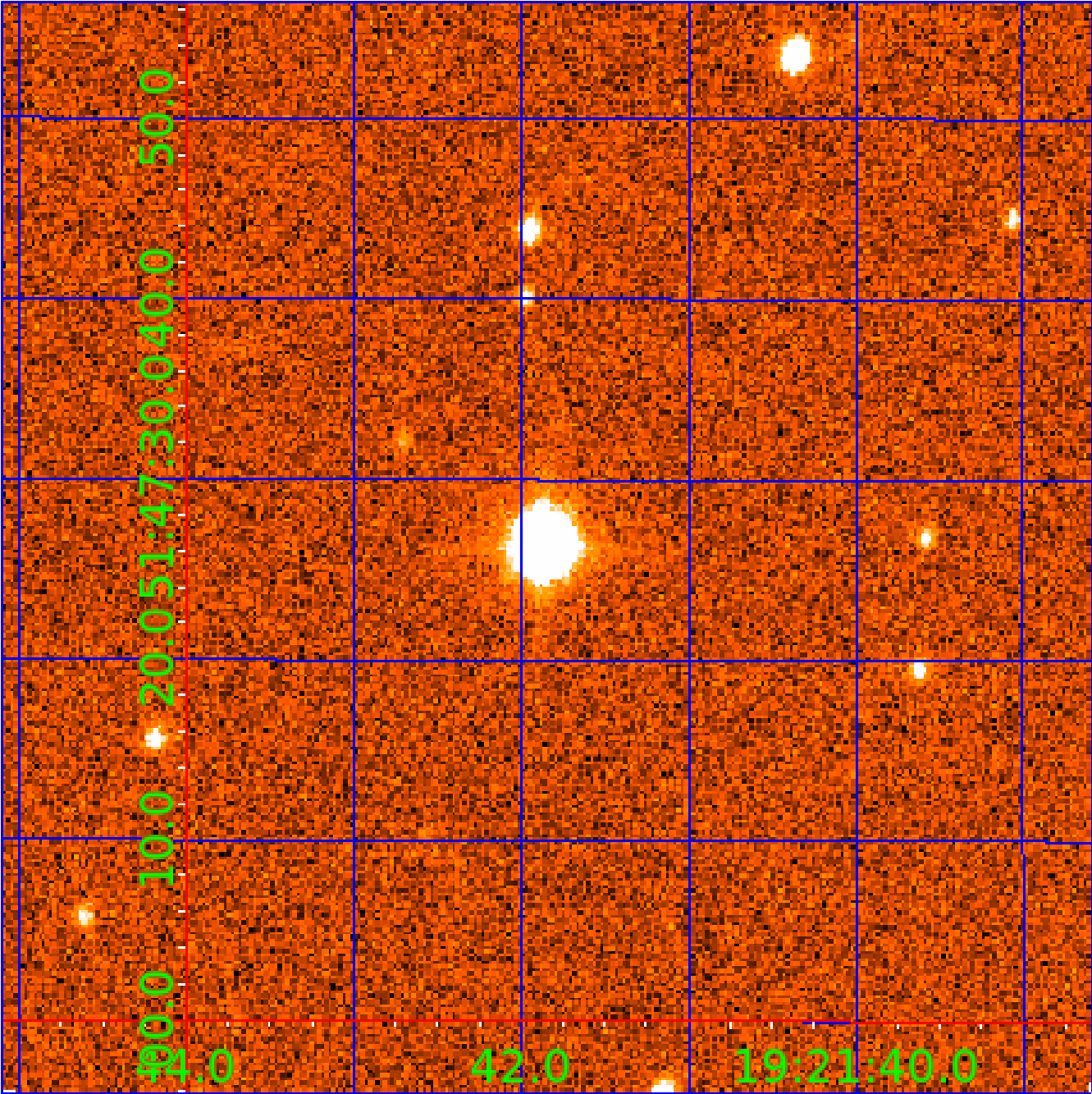


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 012647018

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})
012647018-01	OBS	No	1.296908	132.535743	20.8	9.030	8.3	11.1	1.65	5657	0.74	4448.09
012647018-02	OBS	No	53.083783	172.243518	341.8	3.269	11.3	10.6	1.65	5657	3.64	31.53
012647018-03	OBS	No	89.370051	187.811407	293.6	4.582	9.1	8.9	1.65	5657	3.44	15.74
012647018-04	OBS	No	24.853298	152.045089	100.5	3.762	9.0	5.1	1.65	5657	1.76	86.74
012647018-05	OBS	No	27.619166	134.768352	320.1	1.346	11.5	11.7	1.65	5657	2.93	75.35
012647018-06	OBS	No	32.503712	147.954093	220.4	4.386	9.5	11.5	1.65	5657	2.46	60.65
012647018-07	OBS	No	33.918495	133.285052	183.5	4.022	8.4	8.3	1.65	5657	2.47	57.30
012647018-09	OBS	No	36.652668	140.779741	233.3	3.001	8.8	8.7	1.65	5657	2.92	51.67

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
012647018-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT
012647018-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
012647018-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
012647018-04	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS—HALO_GHOST
012647018-05	OBS	FP	0.00	1	0	1	0	TRANS_GAPPED—MOD_NONUNIQ_DV—CENT_FEW_MEAS—HALO_GHOST
012647018-06	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS—HALO_GHOST
012647018-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
012647018-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—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.

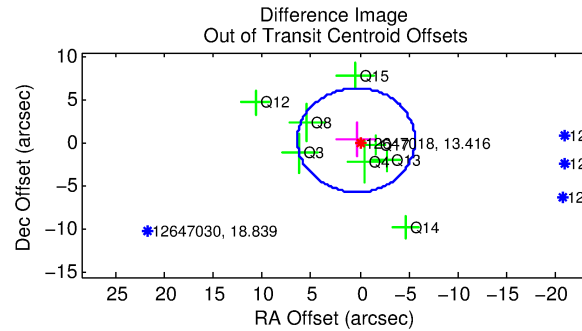
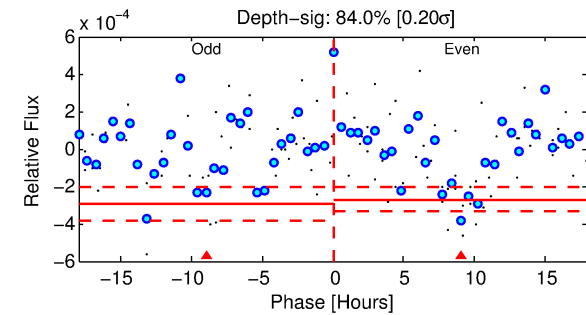
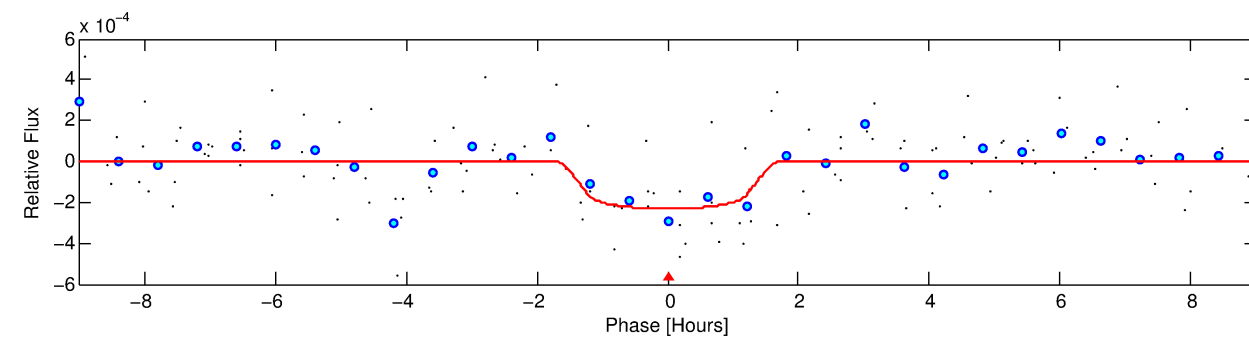
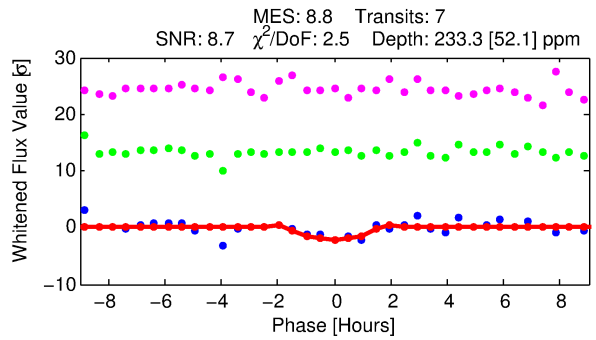
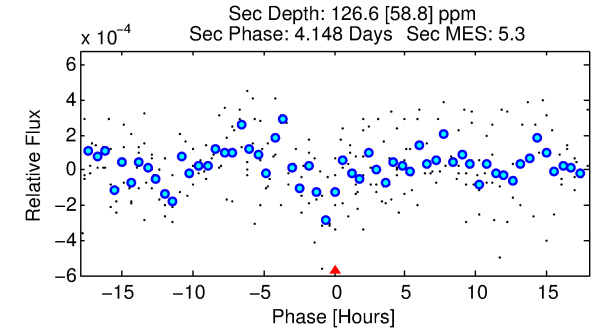
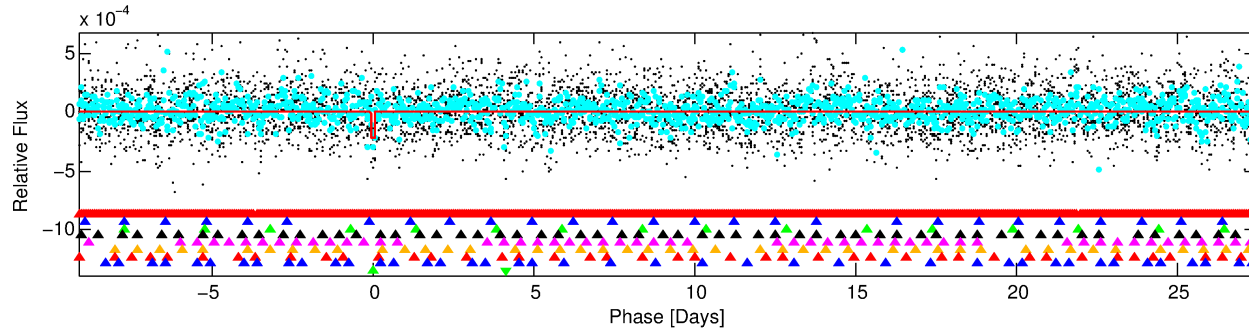
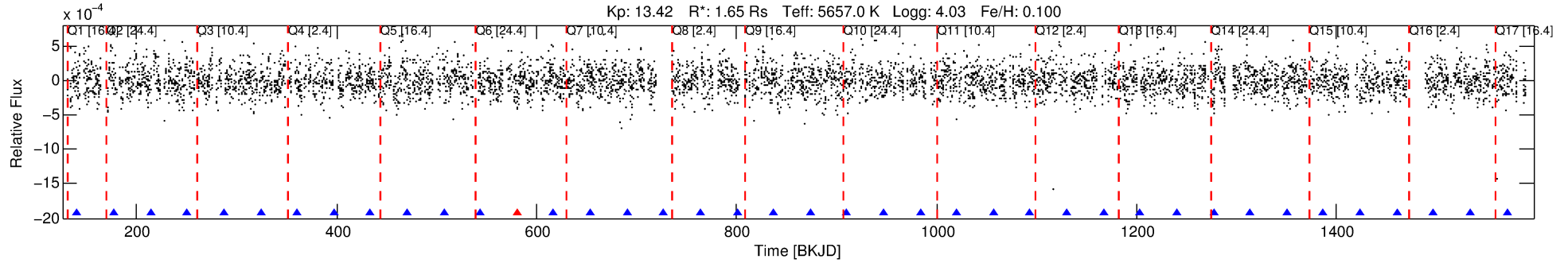
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 012647018-09

No Significant Match Found

DV One-Page Summary

KIC: 12647018 Candidate: 9 of 9 Period: 36.653 d



DV Fit Results:

Period = 36.65267 [0.00082] d
Epoch = 140.7797 [0.0217] BKJD
Rp/R* = 0.0162 [0.0271]
a/R* = 49.89 [368.72]
b = 0.86 [2.20]
Seff = 51.67 [36.71]
Teq = 684 [121] K
Rp = 2.92 [5.02] Re
a = 0.2197 [0.0920] AU
Ag = 395.75 [1366.96] [0.29 σ]
Teffp = 4714 [3988] K [1.01 σ]

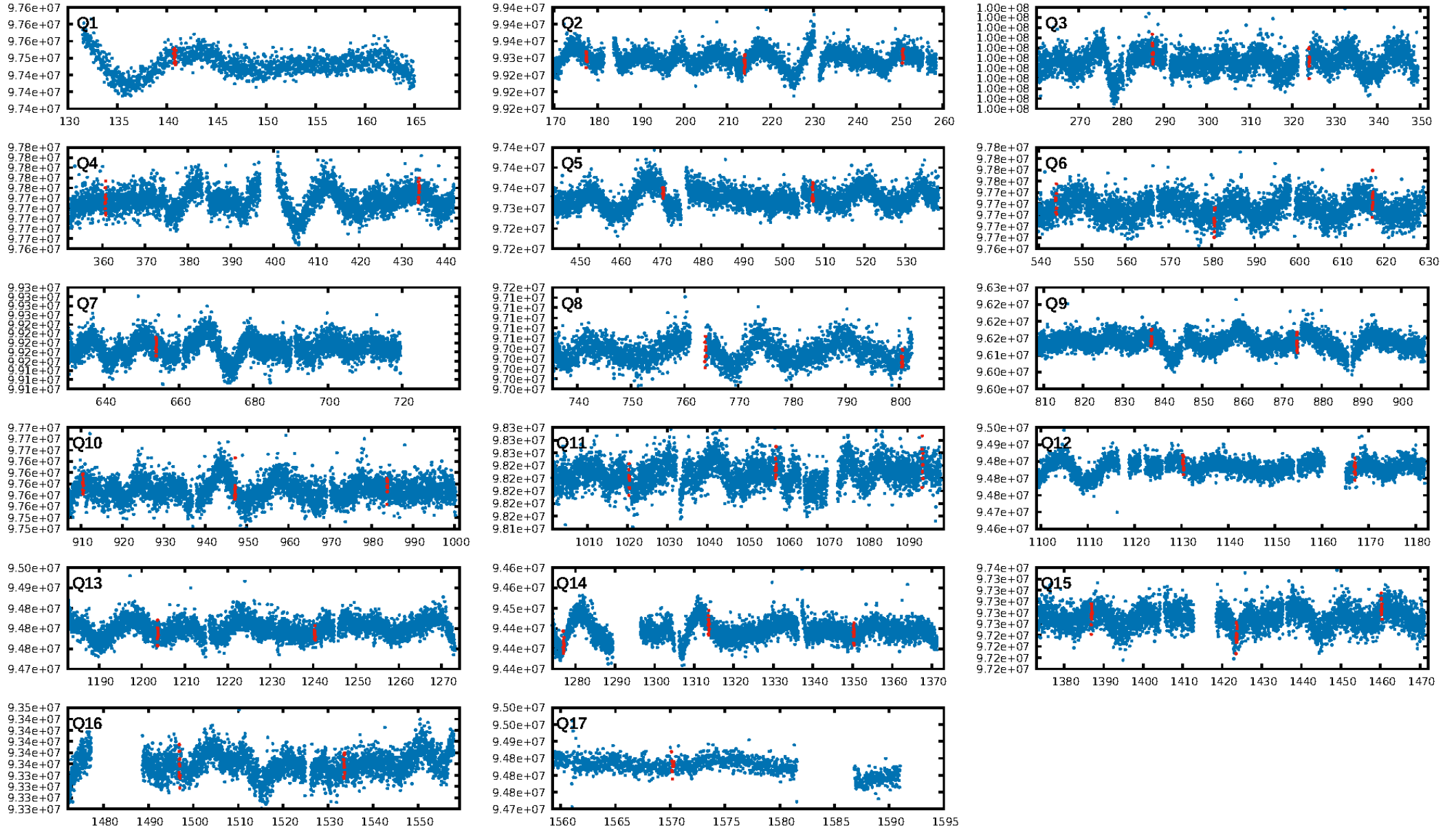
DV Diagnostic Results:

ShortPeriod-sig: 95.0% [1.96 σ]
LongPeriod-sig: 100.0% [88.88 σ]
ModelChiSquare2-sig: 0.8%
ModelChiSquareGof-sig: 23.8%
Bootstrap-pfa: 3.50e-09
RollingBand-fgt: 0.83 [5/6]
GhostDiagnostic-chr: -2.001
Centroid-sig: 47.4%
Centroid-so: 1.019 arcsec [1.18 σ]
OotOffset-rm: 0.520 arcsec [0.26 σ]
KicOffset-rm: 0.803 arcsec [0.33 σ]
OotOffset-st: 1/2/3/2 [8]
KicOffset-st: 1/2/3/2 [8]
DiffImageQuality-fgm: 0.00 [0/8]
DiffImageOverlap-fno: 0.47 [8/17]

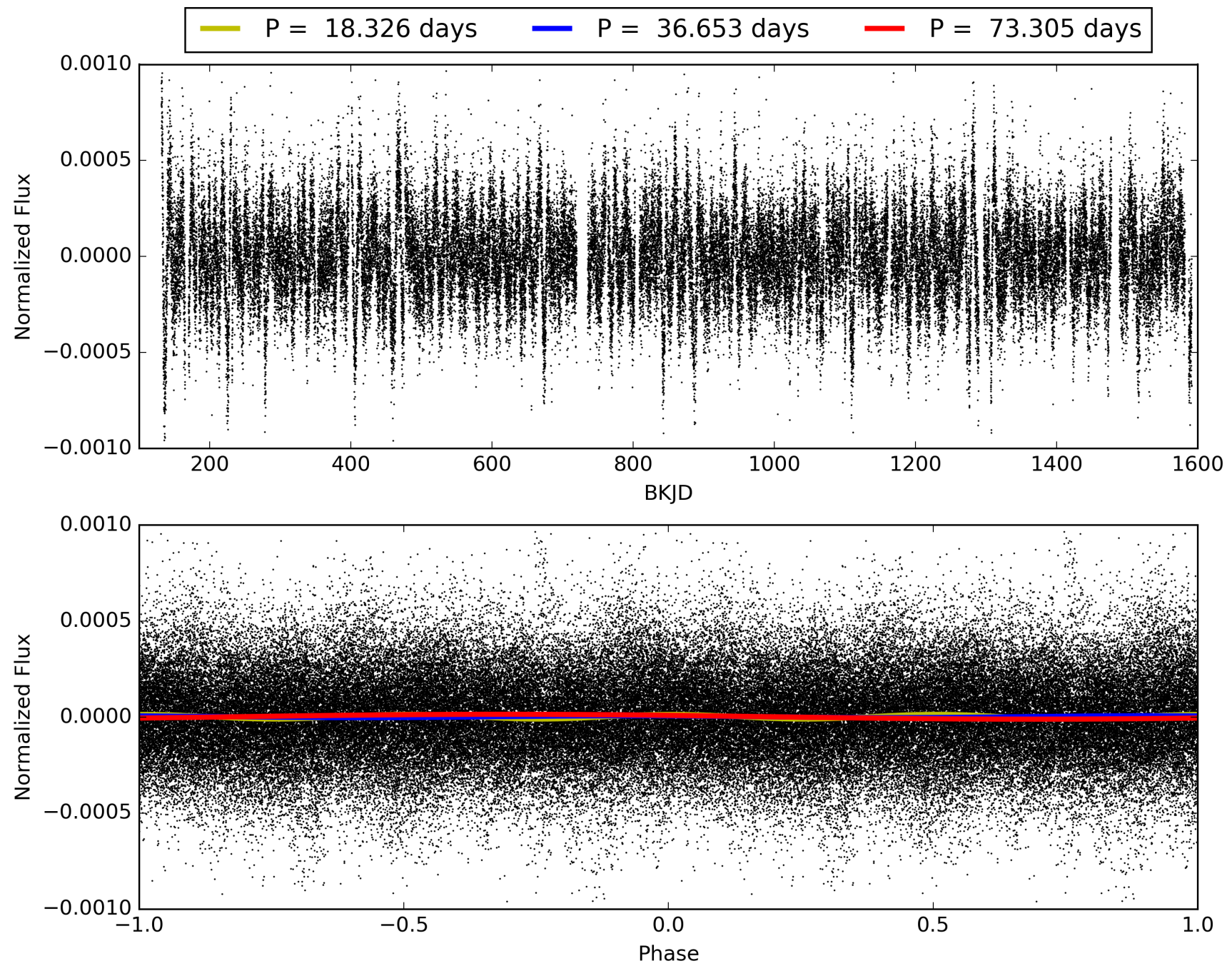
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 05:14:30 Z

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

TCE 012647018-09, PDC Light Curves

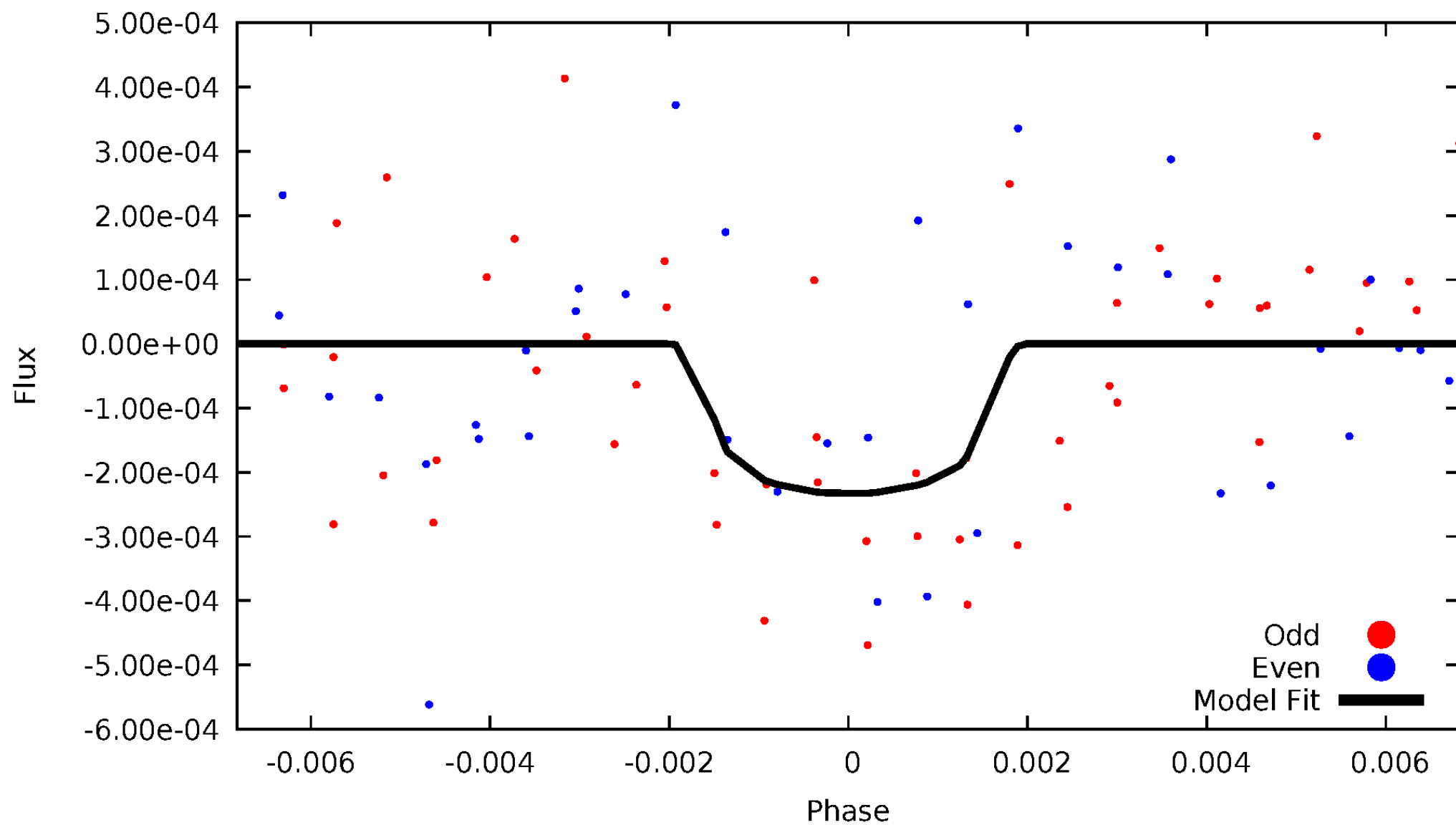


TCE 012647018-09



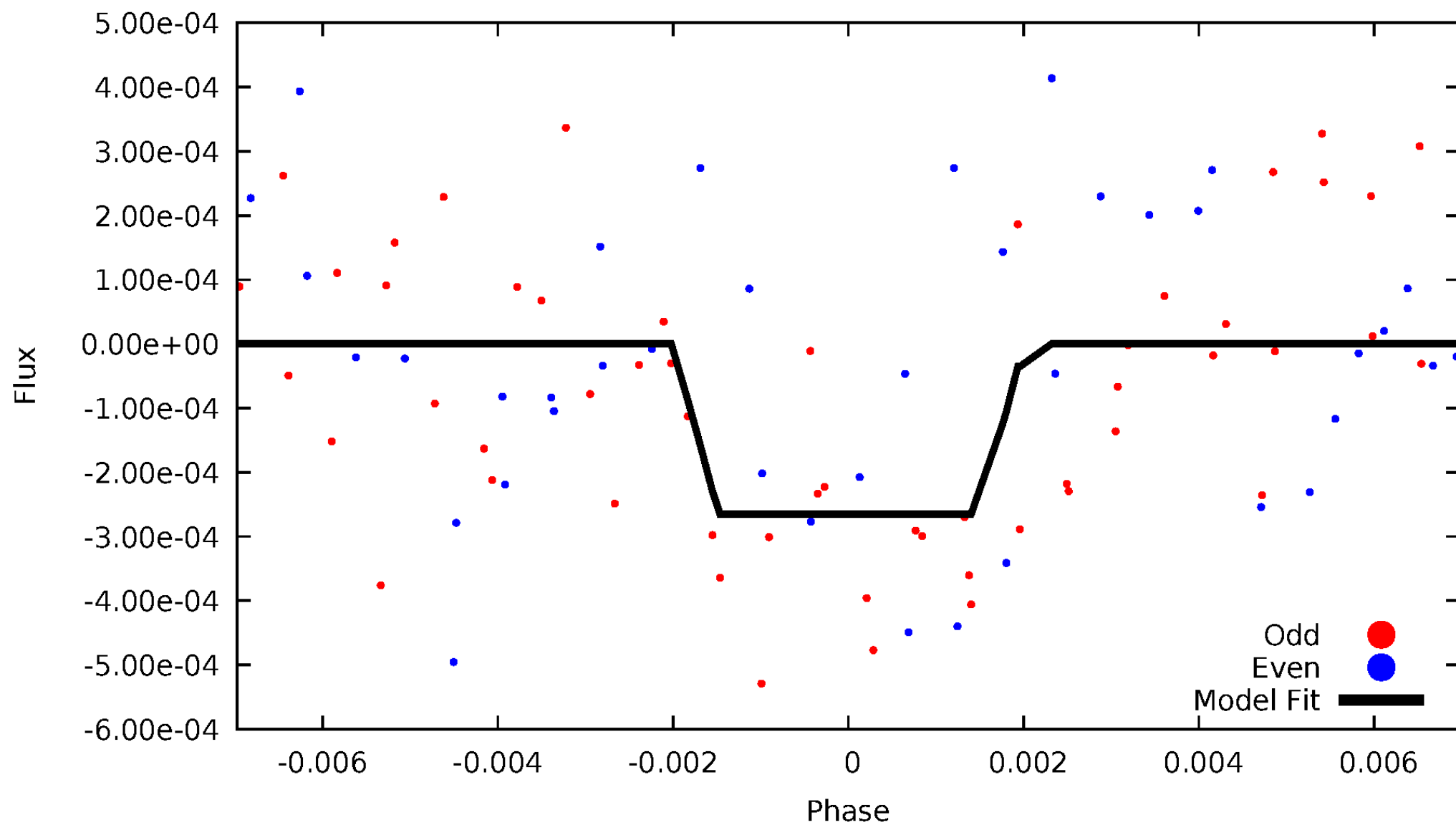
DV Odd/Even

TCE 012647018-09



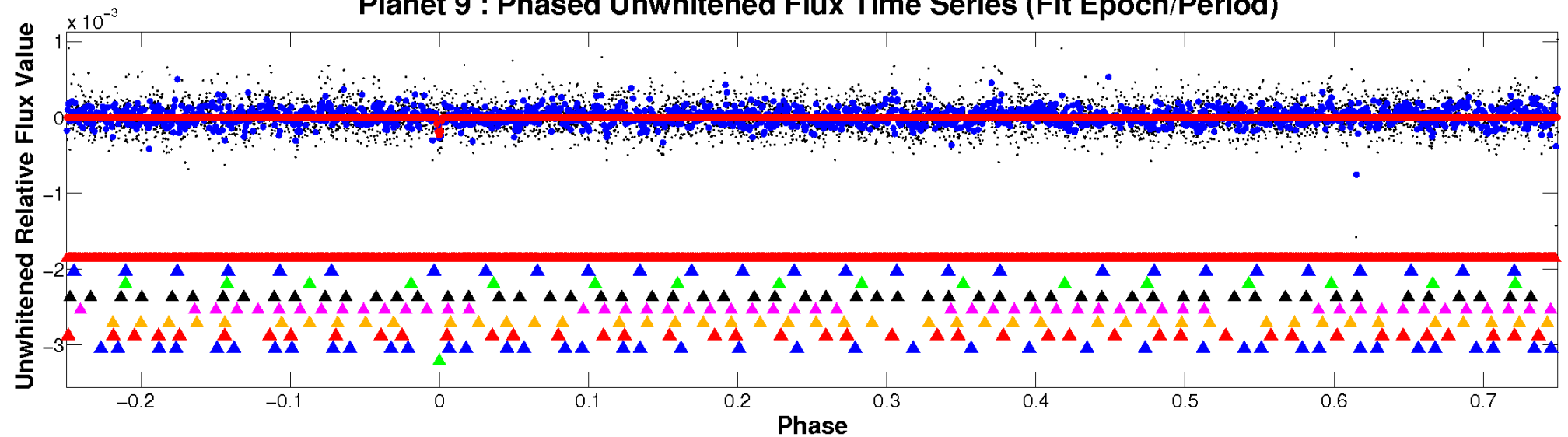
ALT Odd/Even

TCE 012647018-09

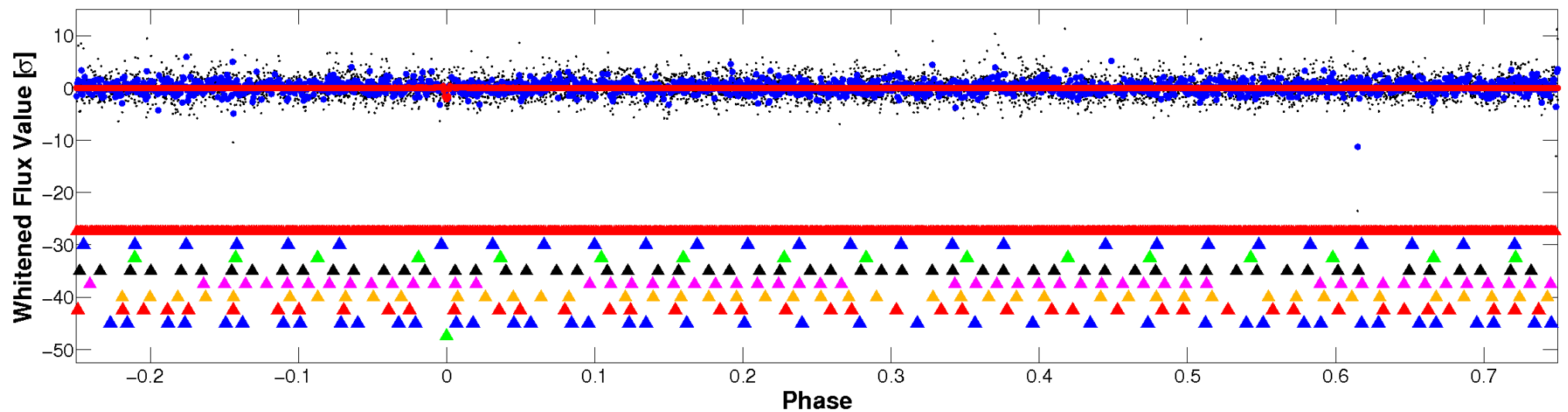


Non-Whitened Vs. Whitened Light Curve

Planet 9 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

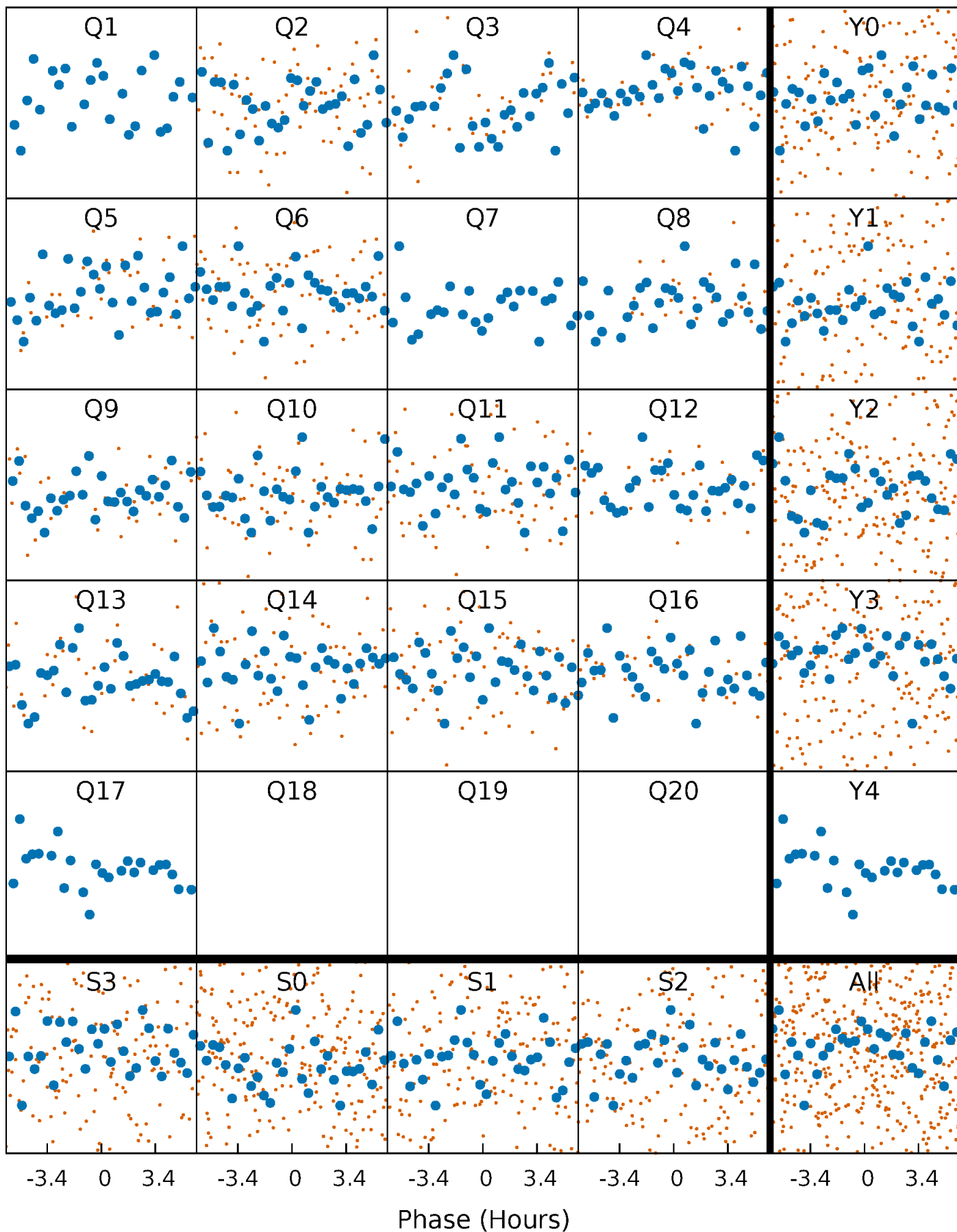


Planet 9 : Phased Whitened Flux Time Series (Fit Epoch/Period)



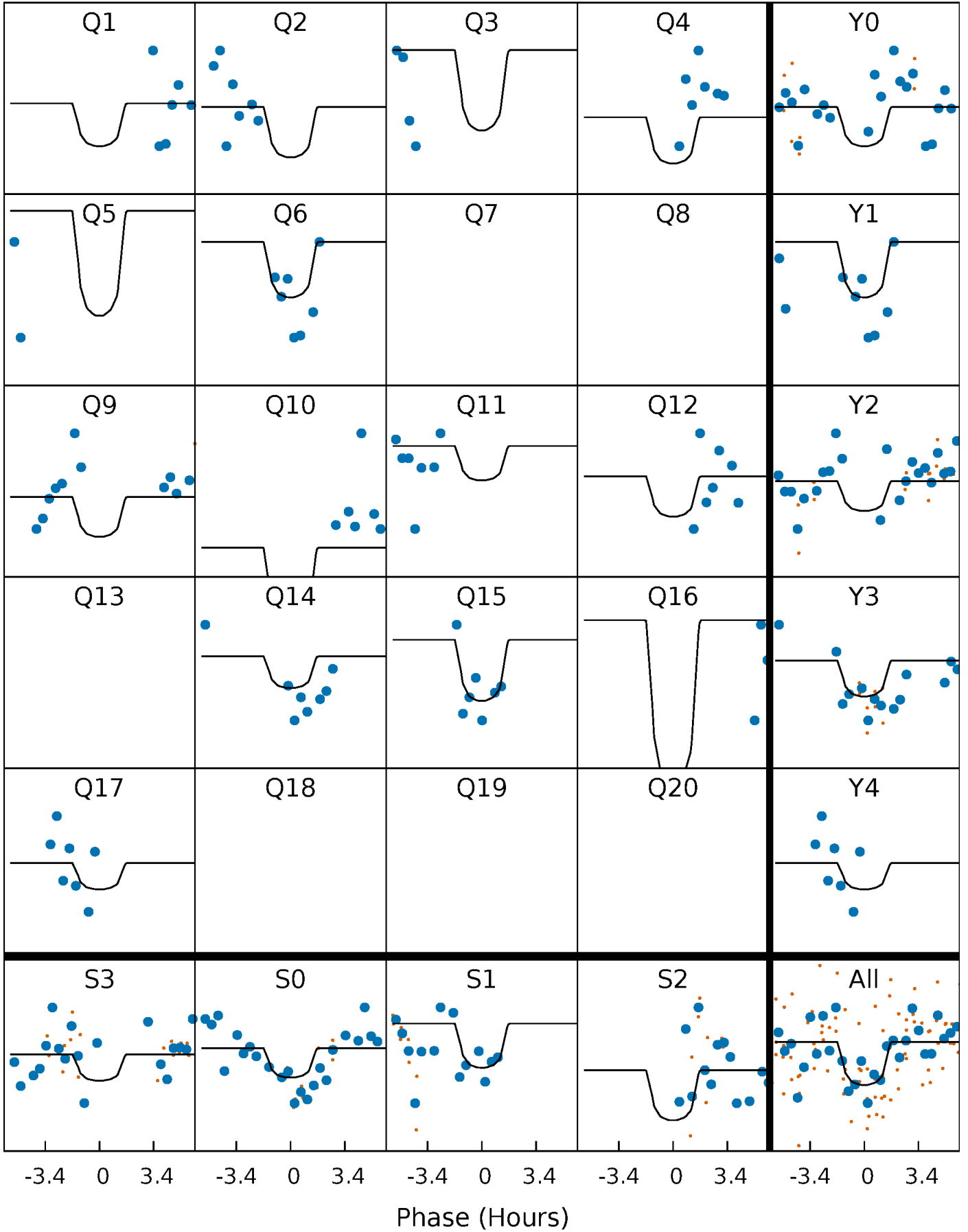
PDC Quarter-Phased Transit Curves

TCE 012647018-09 P= 36.652668 Days $T_0=140.779742$ (BKJD)



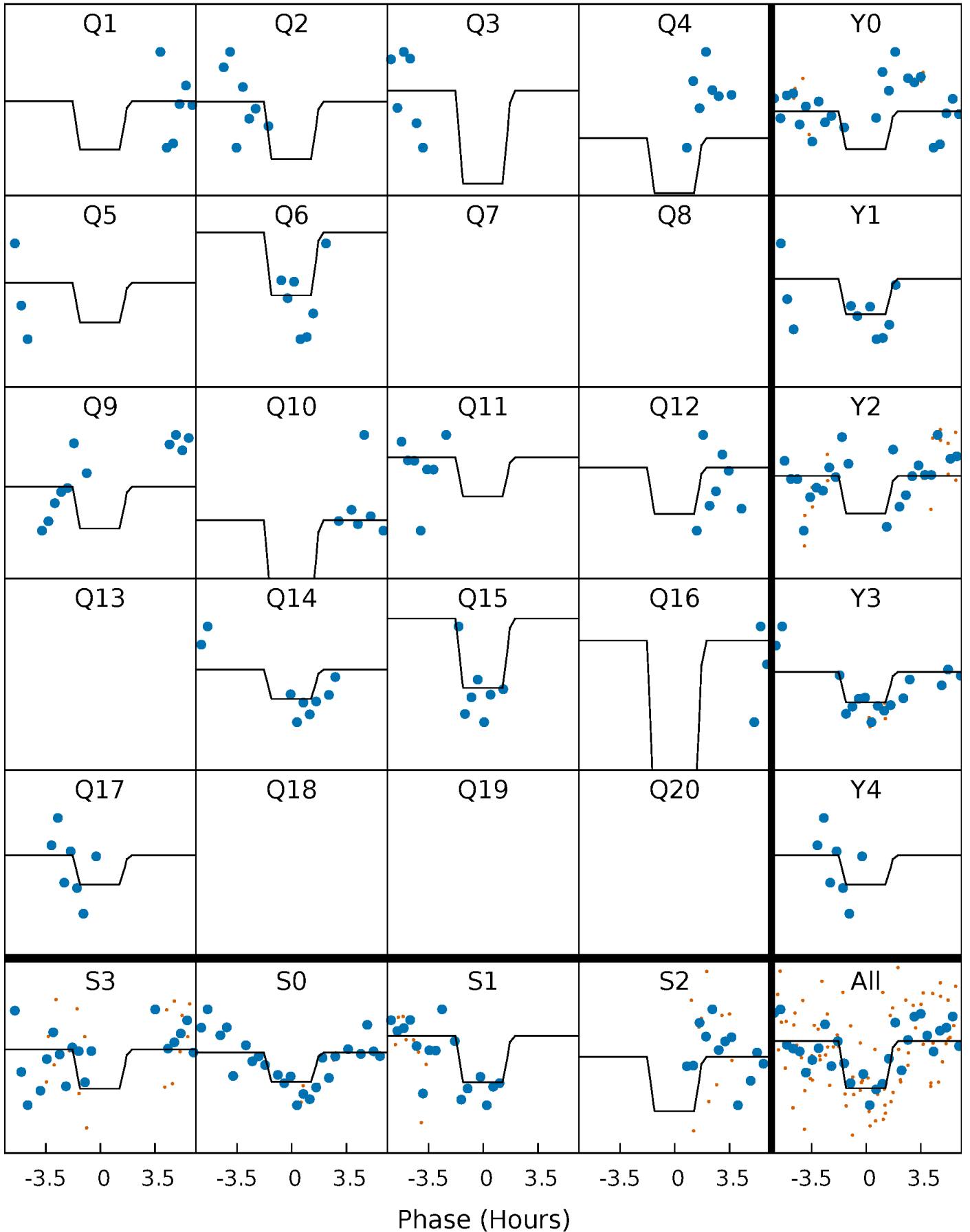
DV Quarter-Phased Transit Curves

TCE 012647018-09 P= 36.652668 Days $T_0=140.779742$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

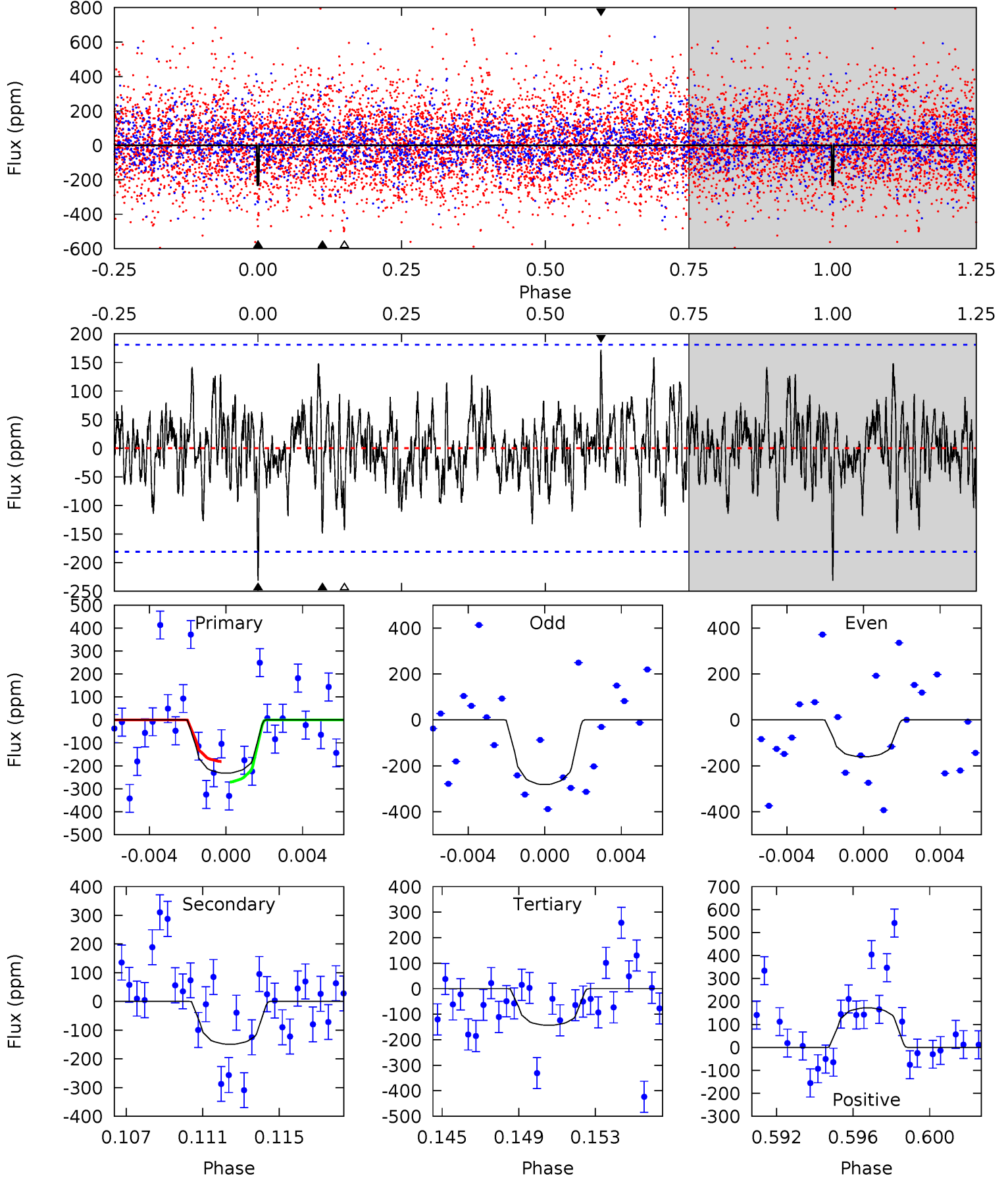
TCE 012647018-09 P= 36.653236 Days $T_0=140.759556$ (BKJD)



DV Model-Shift Uniqueness Test

012647018-09, P = 36.652668 Days, E = 104.127074 Days

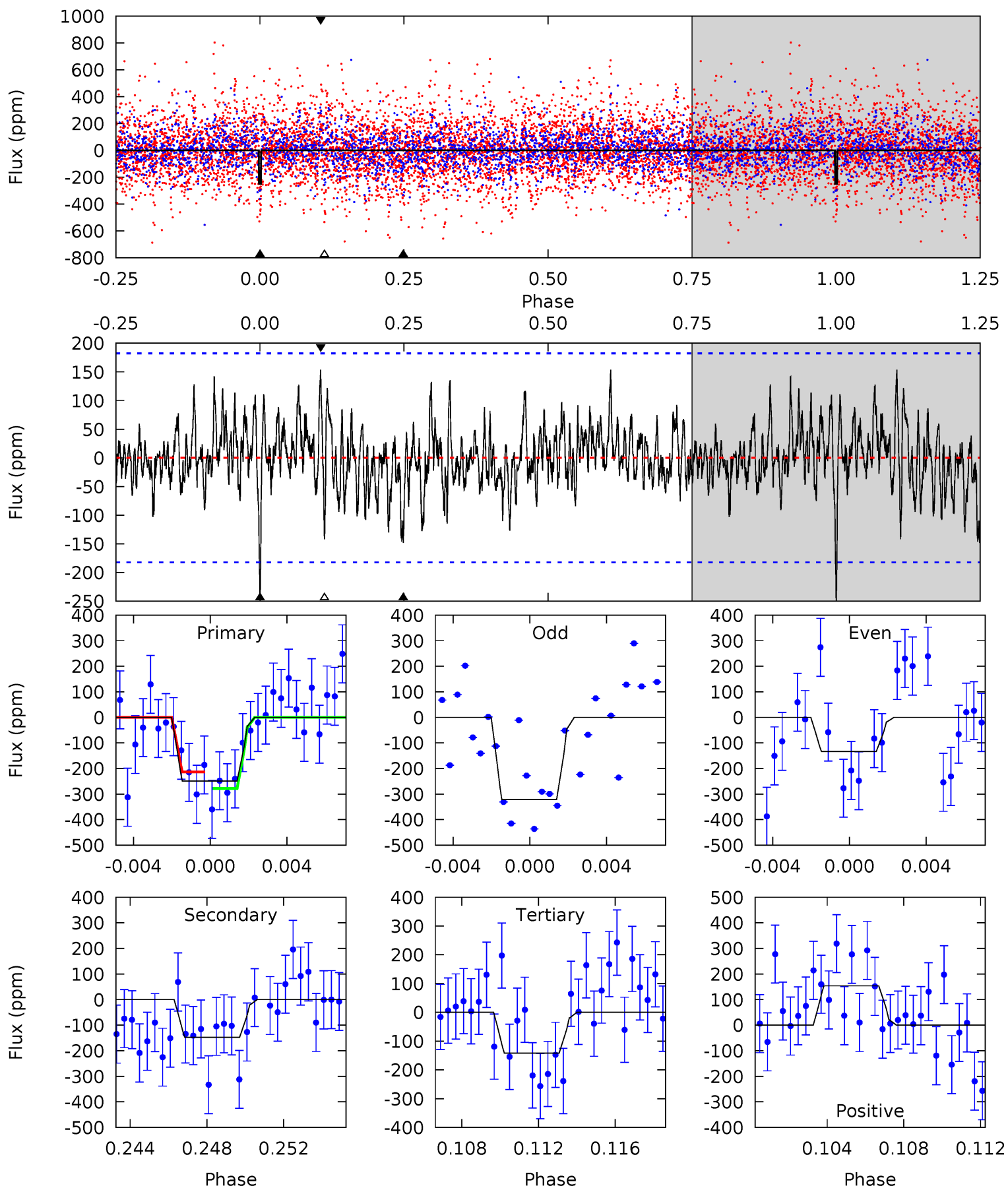
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.66	4.28	4.11	4.94	5.21	2.89	1.40	2.55	1.72	0.17	-0.65	1.70	0.68	0.43	1.28



Alt Model-Shift Uniqueness Test

012647018-09, P = 36.653236 Days, E = 104.106320 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.10	4.22	4.04	4.39	5.20	2.88	1.32	3.06	2.72	0.18	-0.16	2.63	0.60	0.38	0.91



Stellar Parameters For KIC 012647018

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5657^{+152}_{-152}	$4.026^{+0.424}_{-0.133}$	$0.100^{+0.250}_{-0.250}$	$1.649^{+0.351}_{-0.652}$	$1.053^{+0.126}_{-0.139}$	$0.331^{+1.086}_{-0.128}$
	+3%/-3%	+11%/-3%	+250%/-250%	+21%/-40%	+12%/-13%	+328%/-39%
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 012647018-09 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-149 ± 35	$4.16^{+4.08}_{-2.88}$	936^{+69}_{-100}	4178^{+2895}_{-842}	230^{+2107}_{-173}
Alt.	-148 ± 35	$4.23^{+4.27}_{-2.82}$	937^{+64}_{-102}	4140^{+2484}_{-807}	217^{+1869}_{-164}

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 $A_{obs} \gg 1.0$

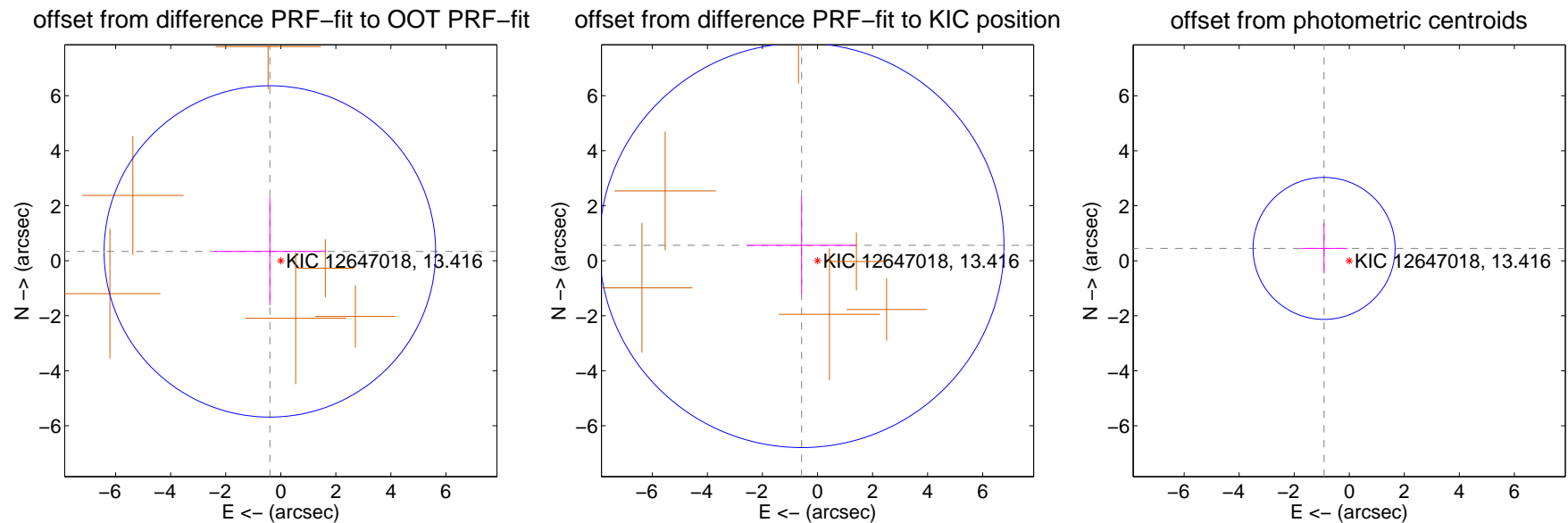
DV Centroid Data

Supplemental centroid analysis for 012647018-09. Kepler magnitude: 13.42. Transit SNR 8.67

There are 0 quarters with good PRF difference image offsets

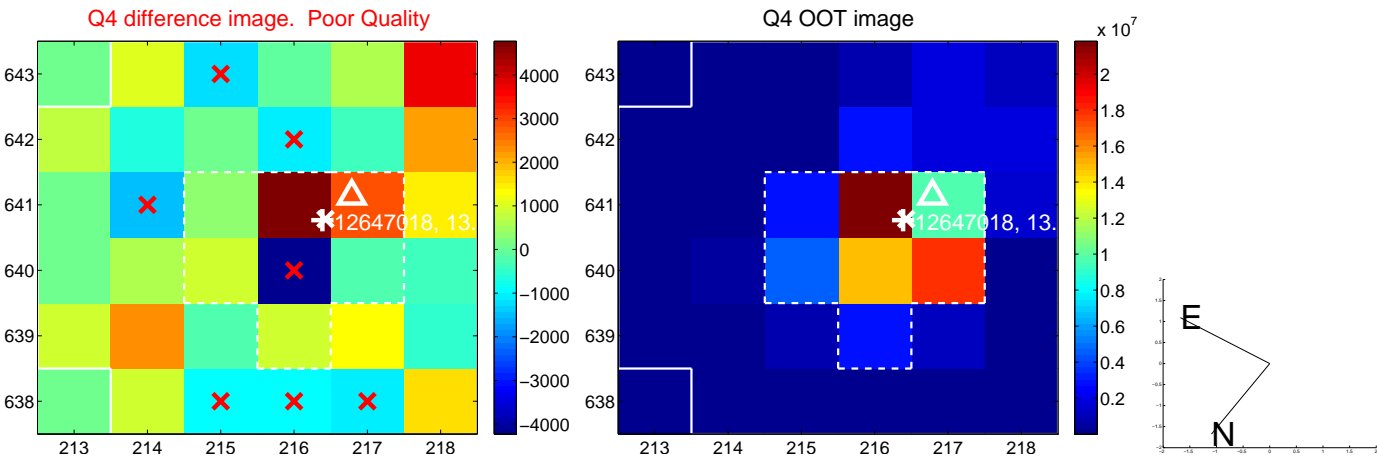
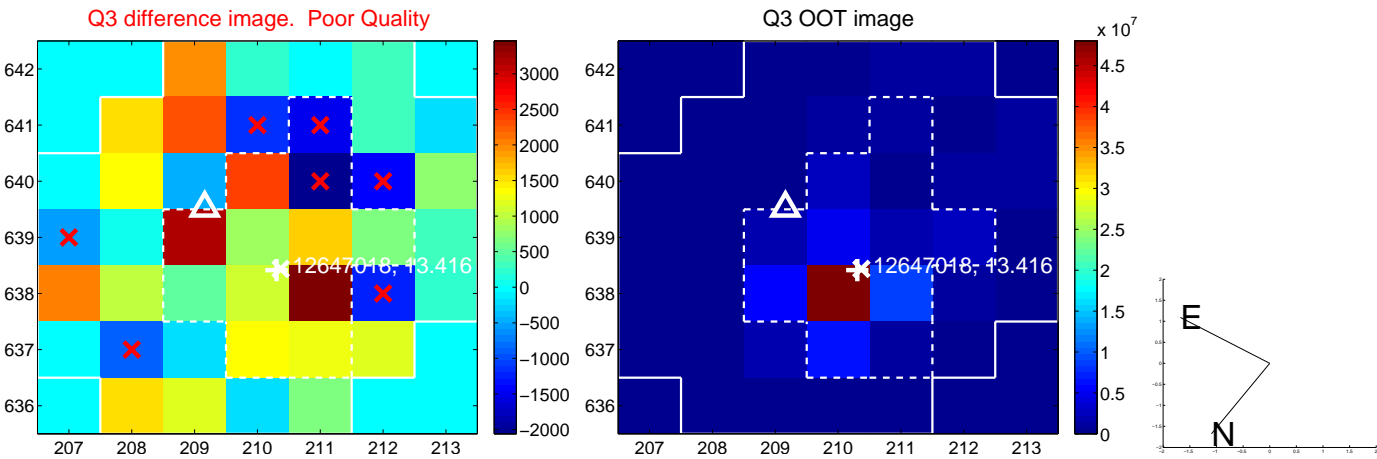
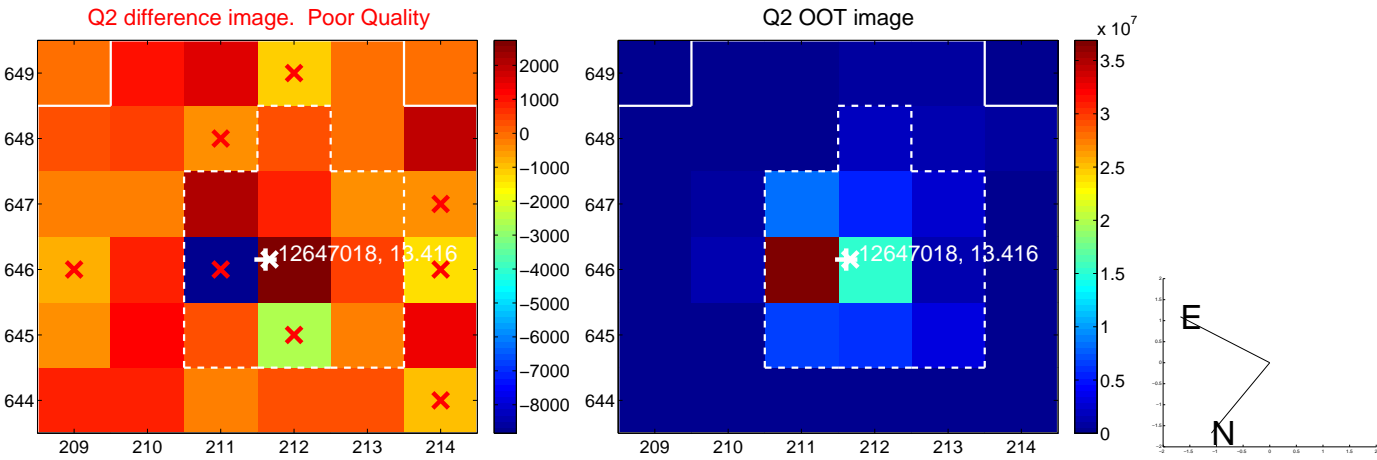
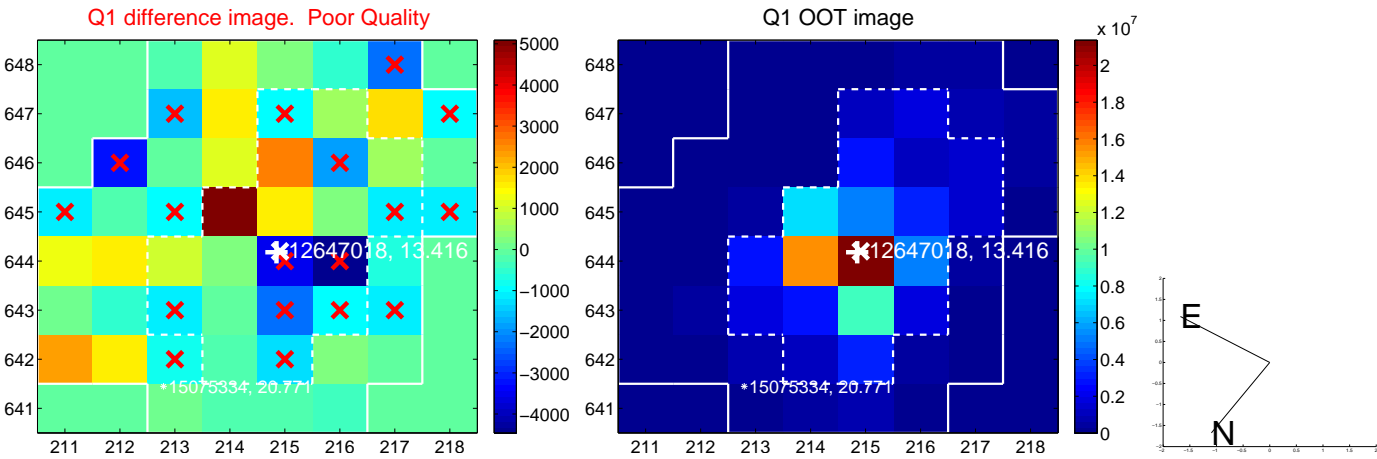
The direct PRF centroid is offset from the target star catalog position by about 0.32 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.520 ± 2.007	0.26	0.396 ± 2.042	0.337 ± 1.958
PRF-fit source offset from KIC position	0.803 ± 2.450	0.33	0.576 ± 1.987	0.559 ± 1.771
photometric centroid source offset	1.02 ± 0.86	1.18	0.91 ± 0.85	0.45 ± 0.91

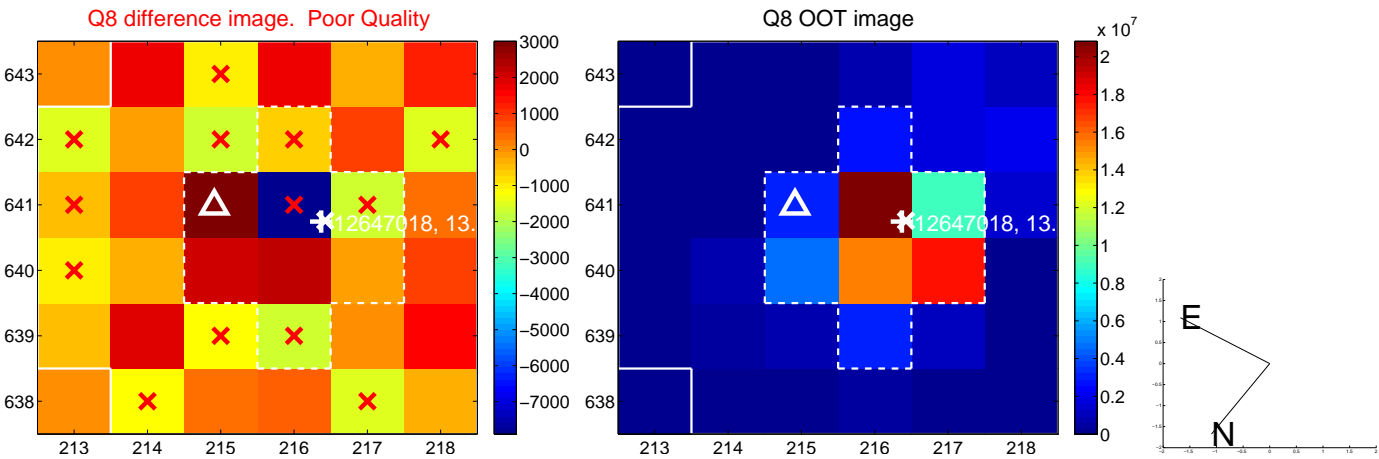
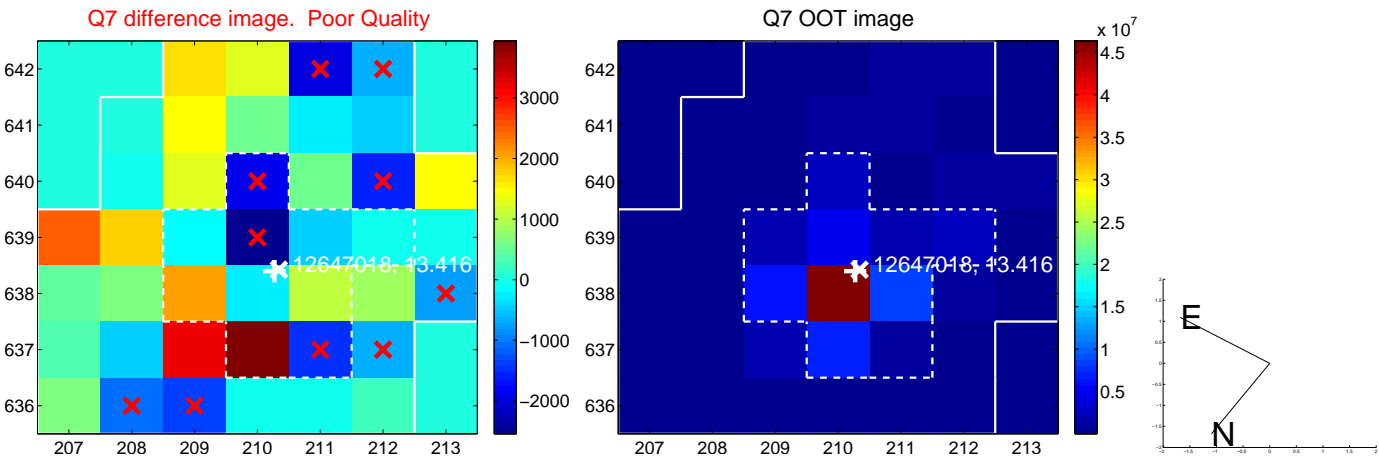
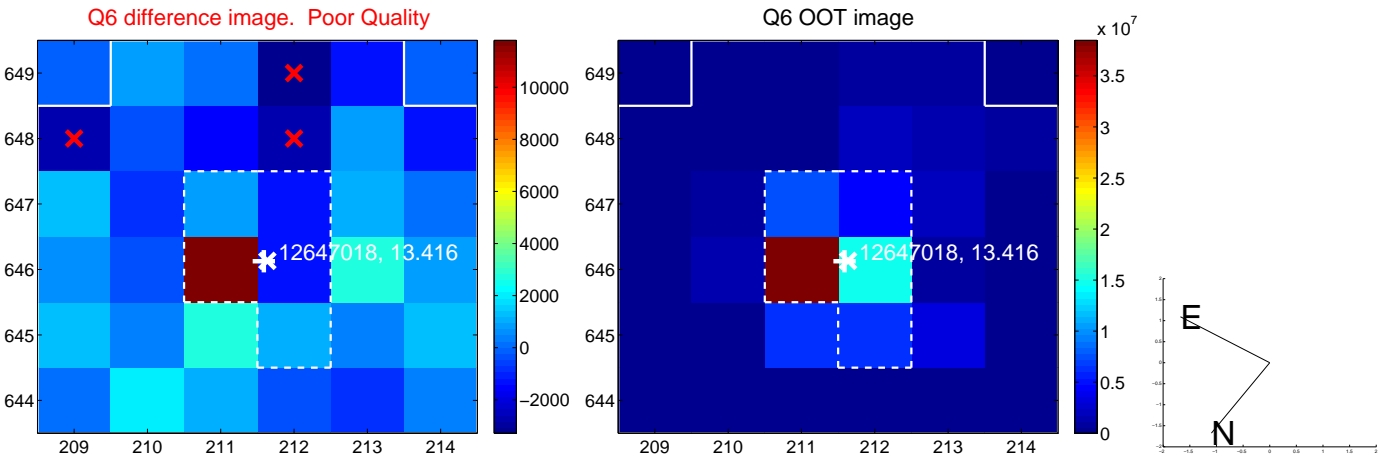
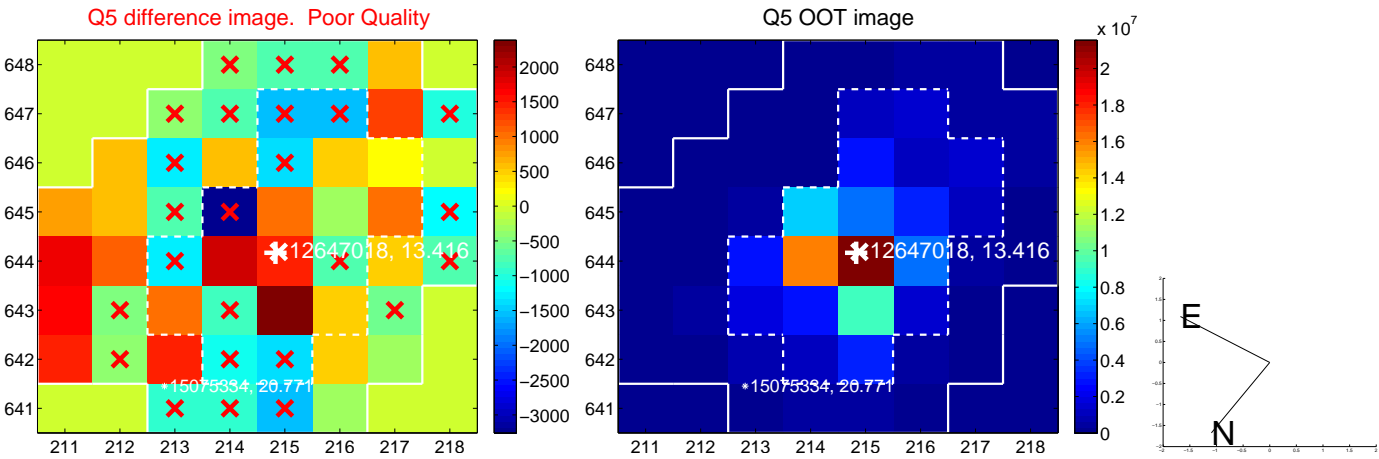


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

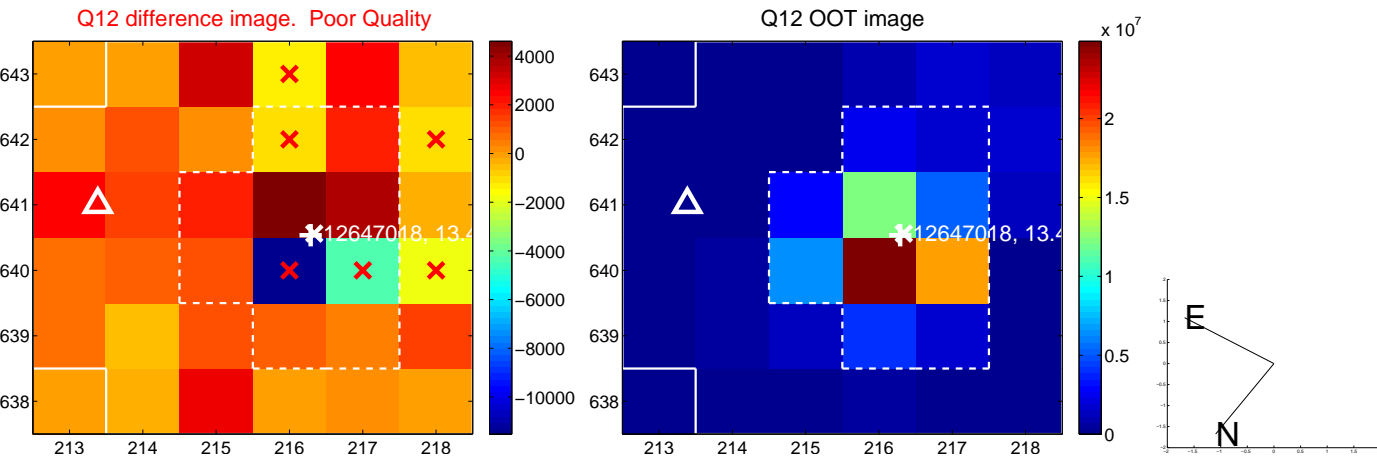
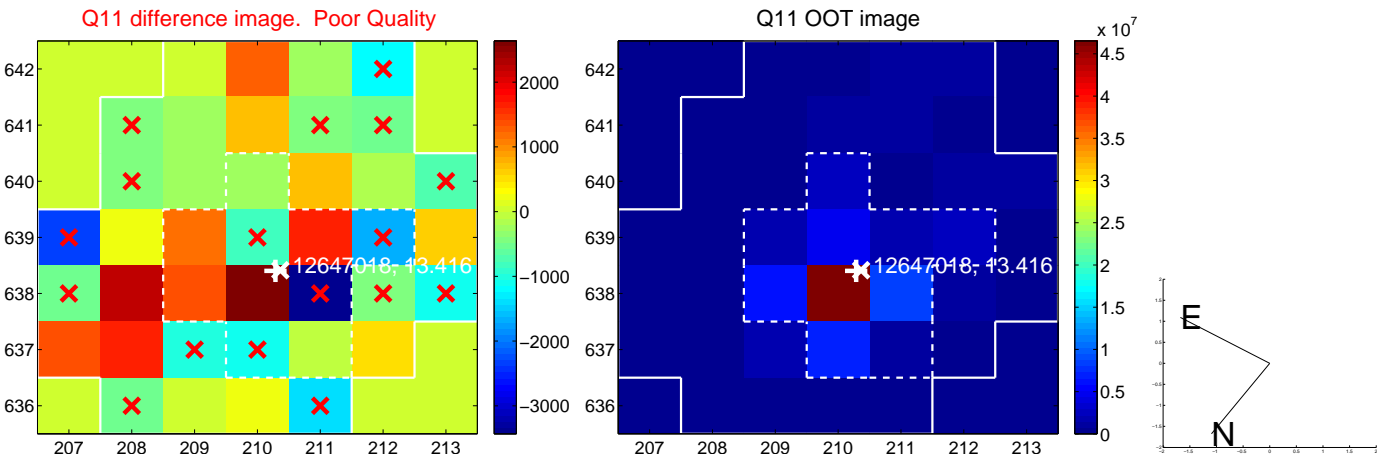
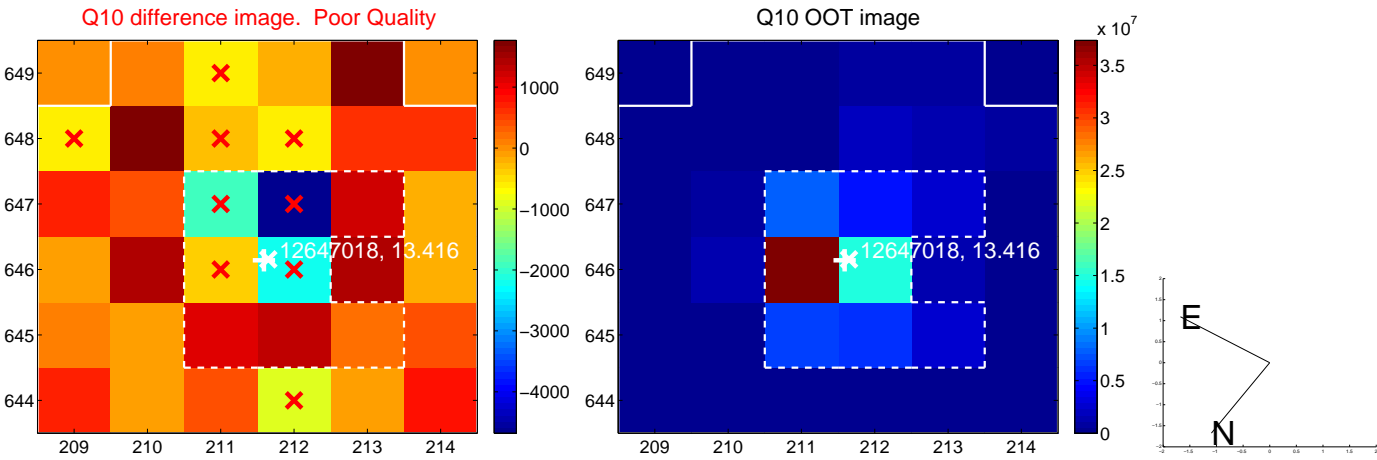
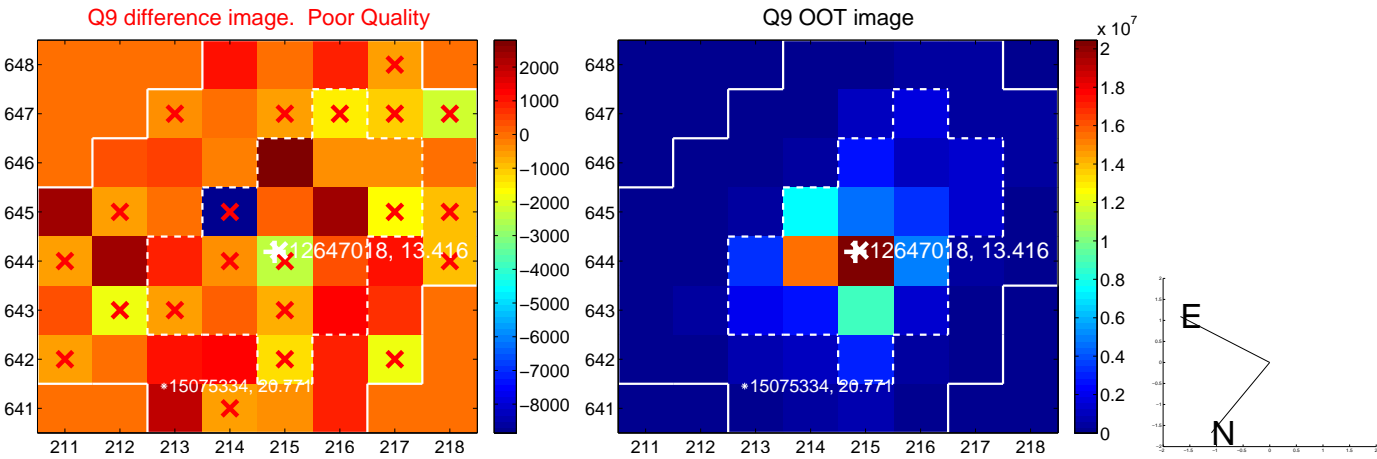
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



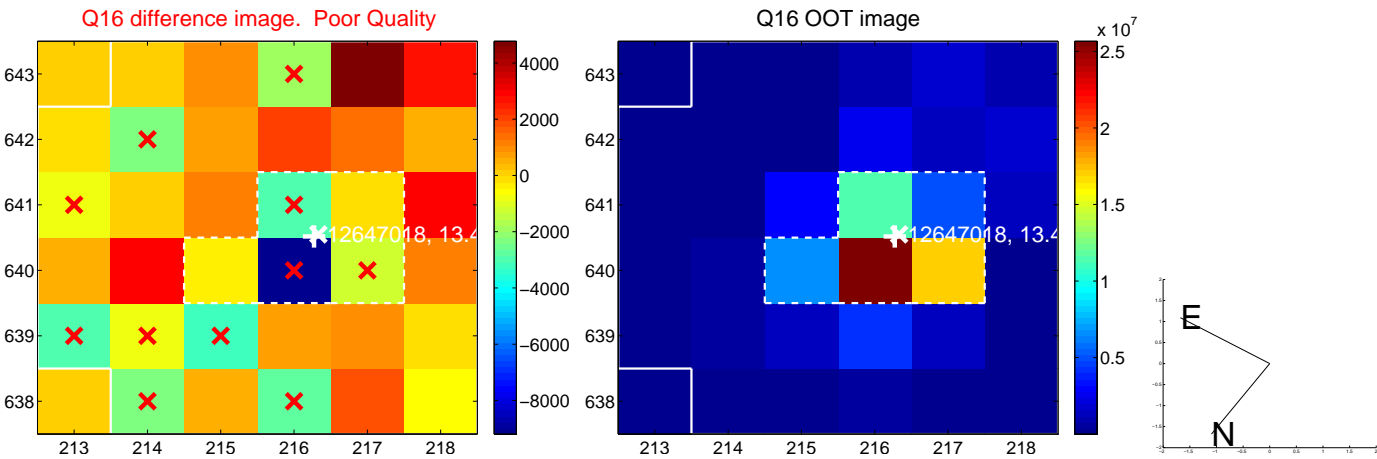
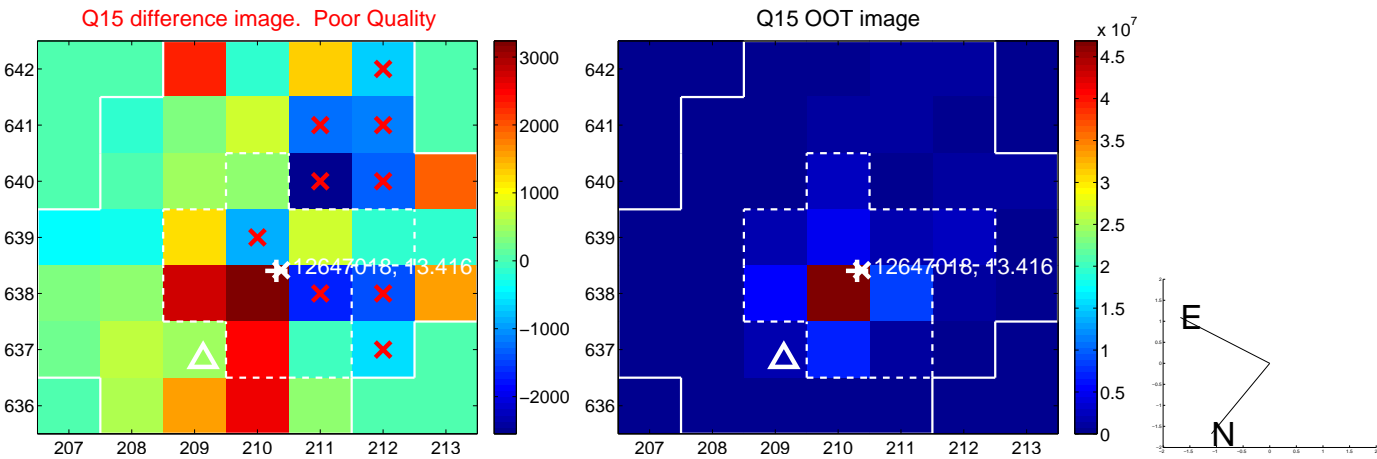
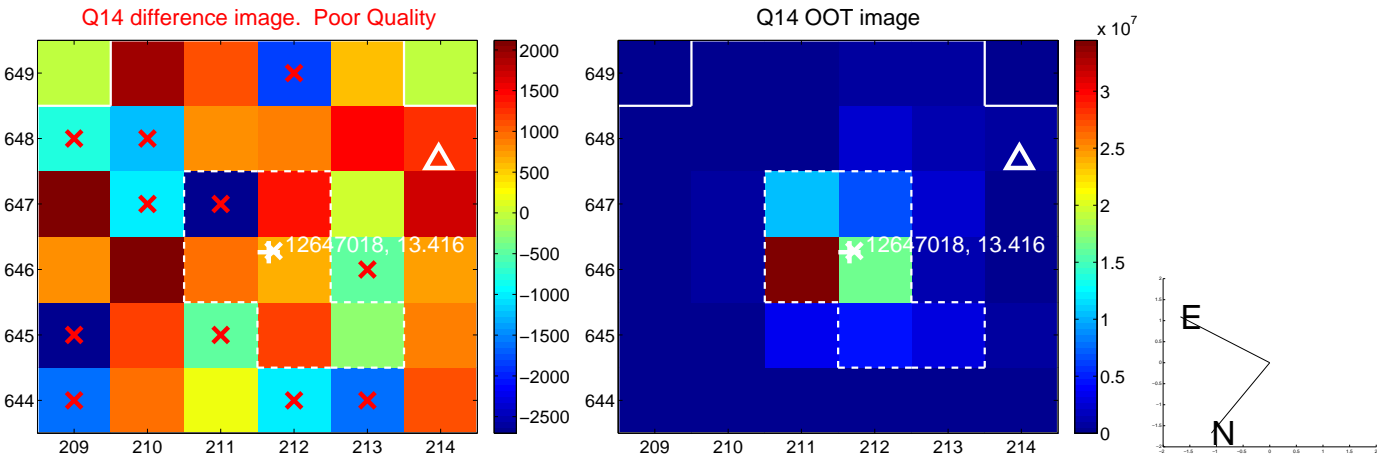
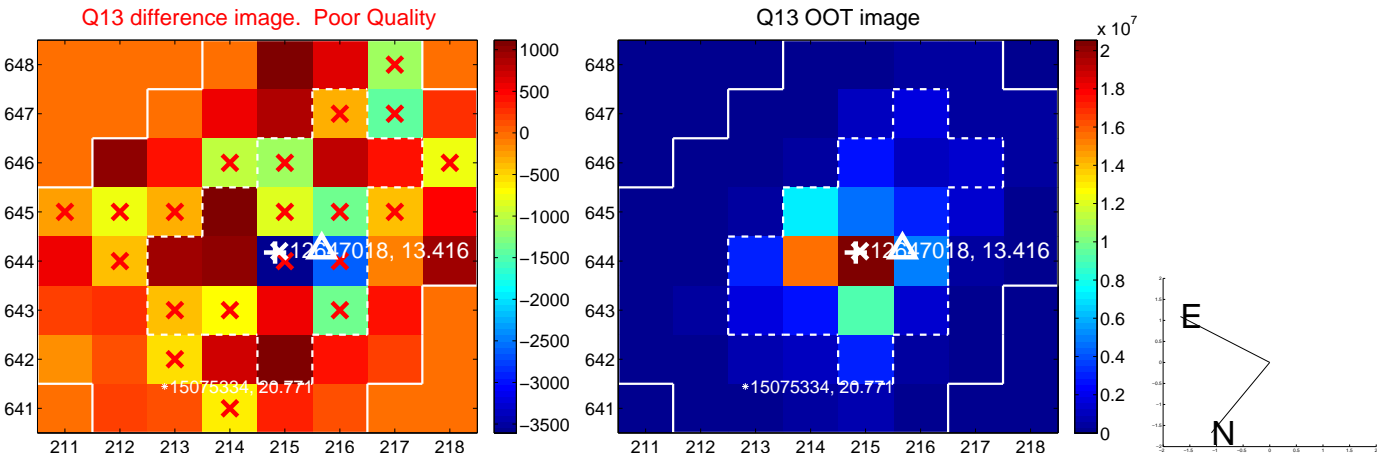
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



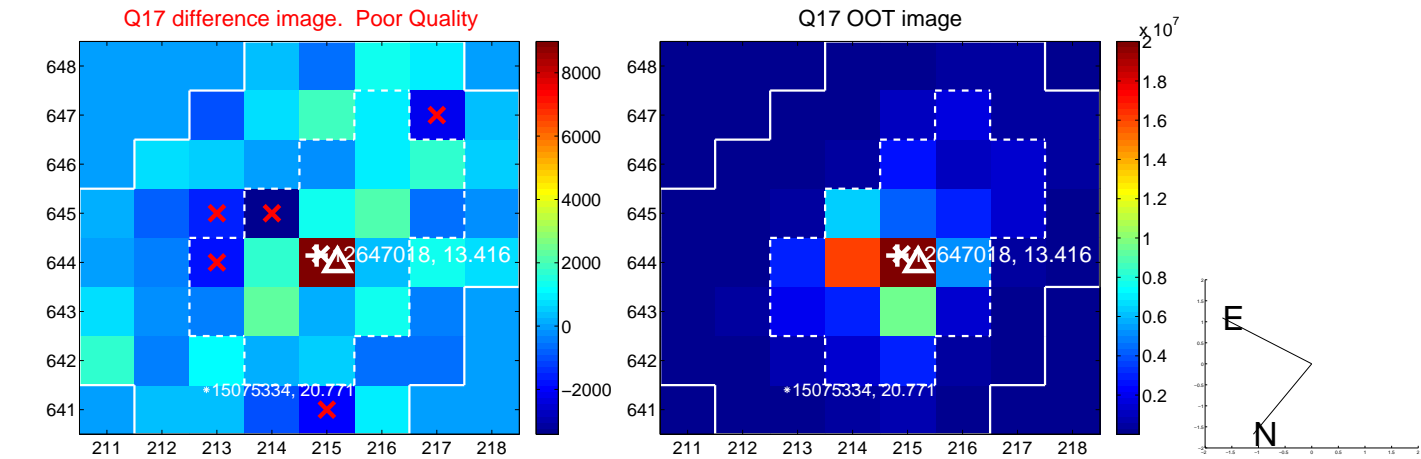
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



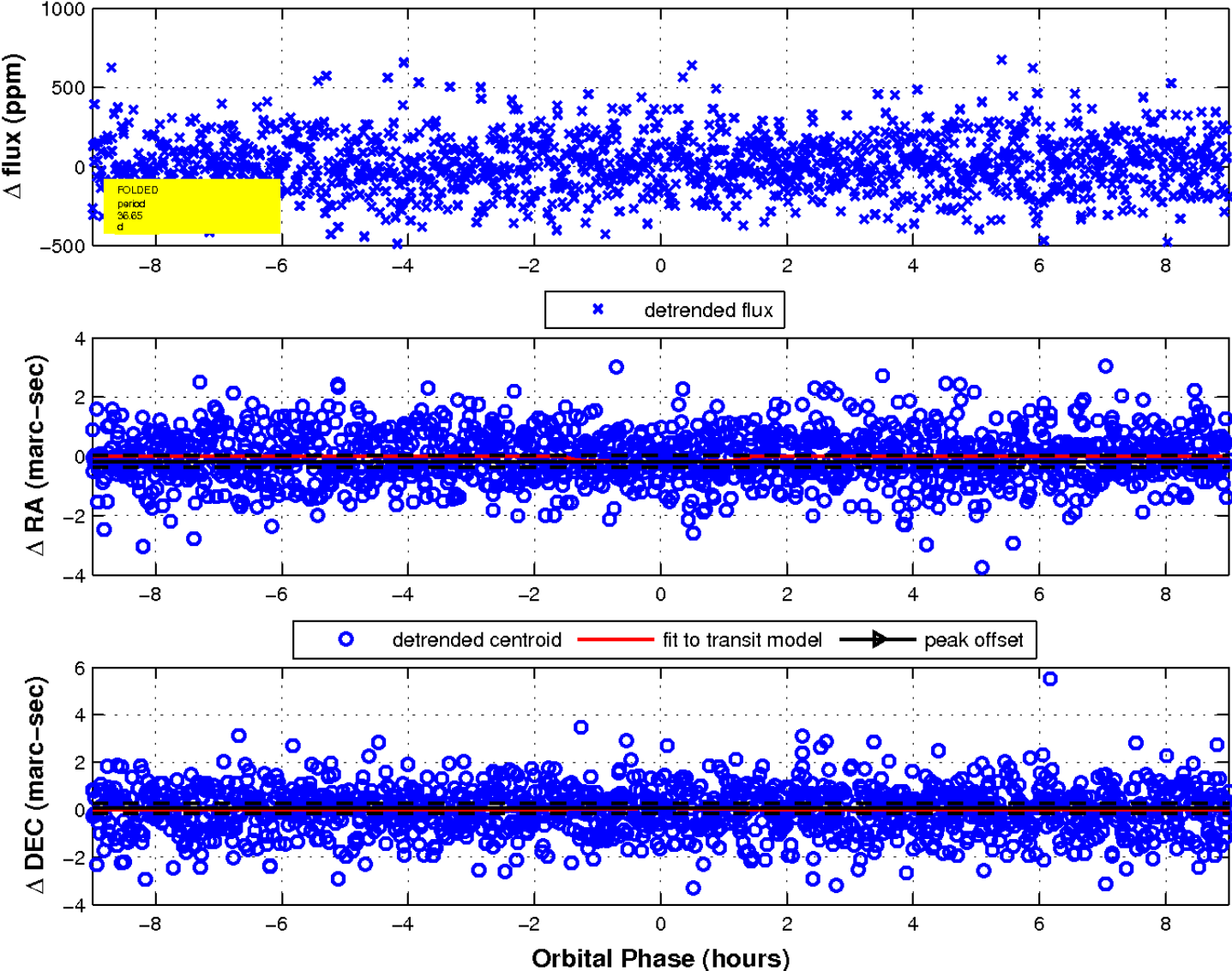
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



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UKIRT Image

Declination

