

KIC 006450067

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})
006450067-01	OBS	No	5.359622	135.015218	591.1	16.166	12.6	14.9	0.73	5154	2.97	116.25
006450067-02	OBS	No	5.359179	134.233781	923.3	27.409	11.6	15.2	0.73	5154	2.73	116.26

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006450067-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV—CENT_KIC_POS
006450067-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—LPP_DV—SAME_NTL_PERIOD—CENT_KIC_POS

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

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

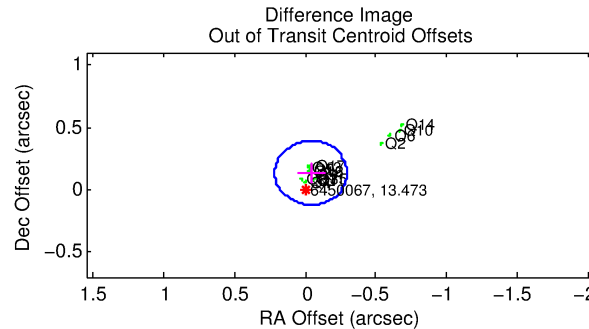
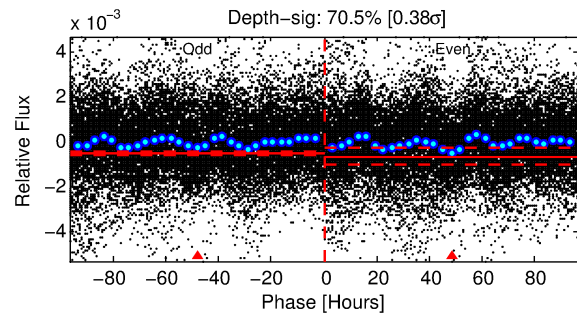
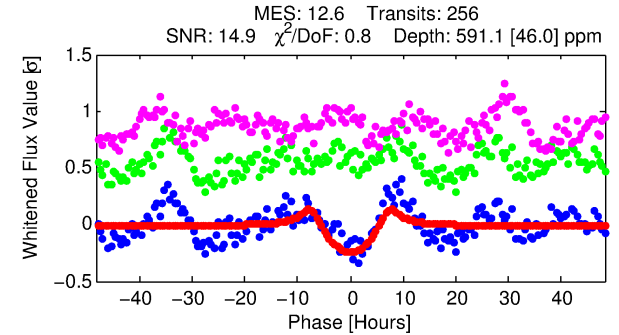
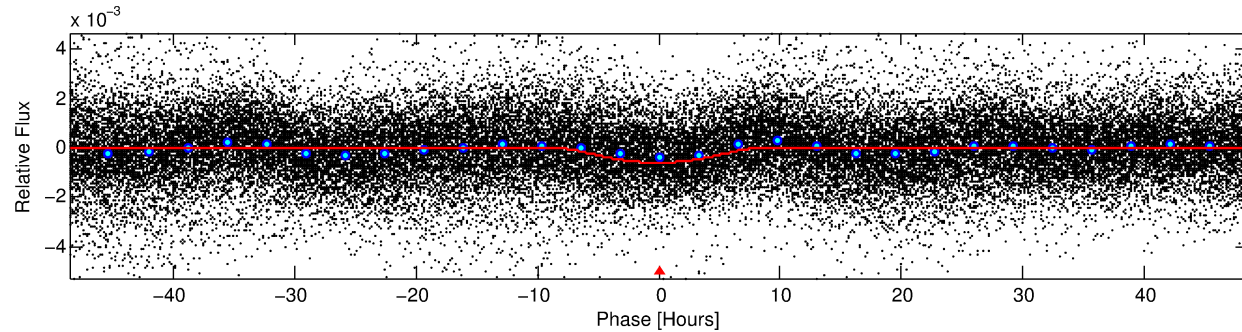
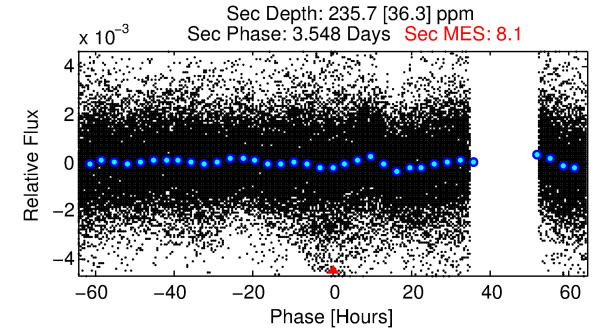
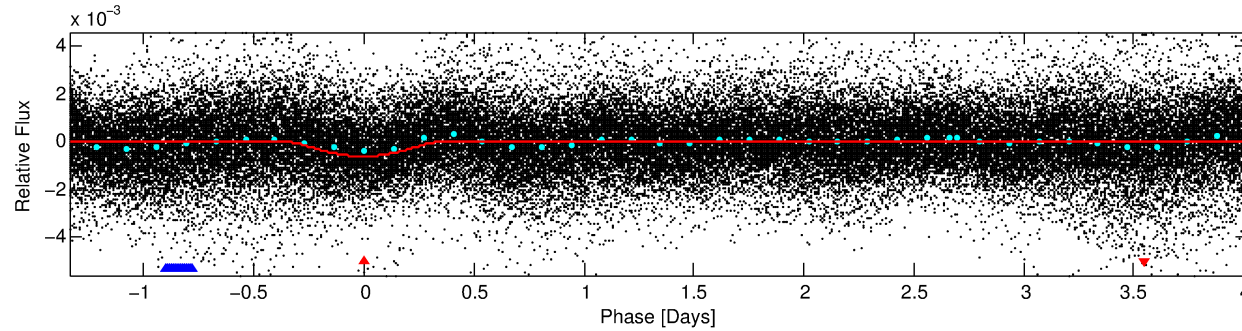
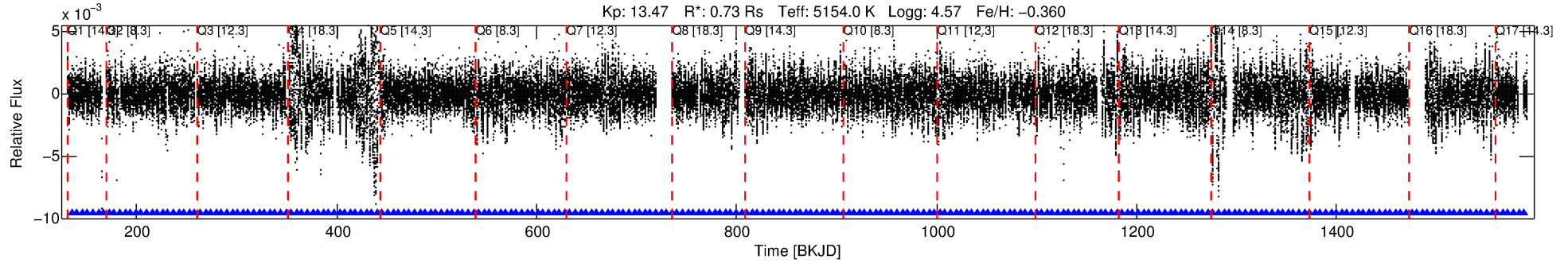
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 006450067-01

No Significant Match Found

DV One-Page Summary

KIC: 6450067 Candidate: 1 of 2 Period: 5.360 d



DV Fit Results:

Period = 5.35962 [0.00010] d
Epoch = 135.0152 [0.0155] BKJD
Rp/R* = 0.0373 [0.0158]
a/R* = 1.29 [0.06]
b = 0.99 [0.03]
Seff = 116.25 [22.02]
Teff = 837 [40] K
Rp = 2.97 [1.30] Re
a = 0.0537 [0.0051] AU
Ag = 42.49 [36.86] [1.13σ]
Teffp = 3305 [718] K [3.43σ]

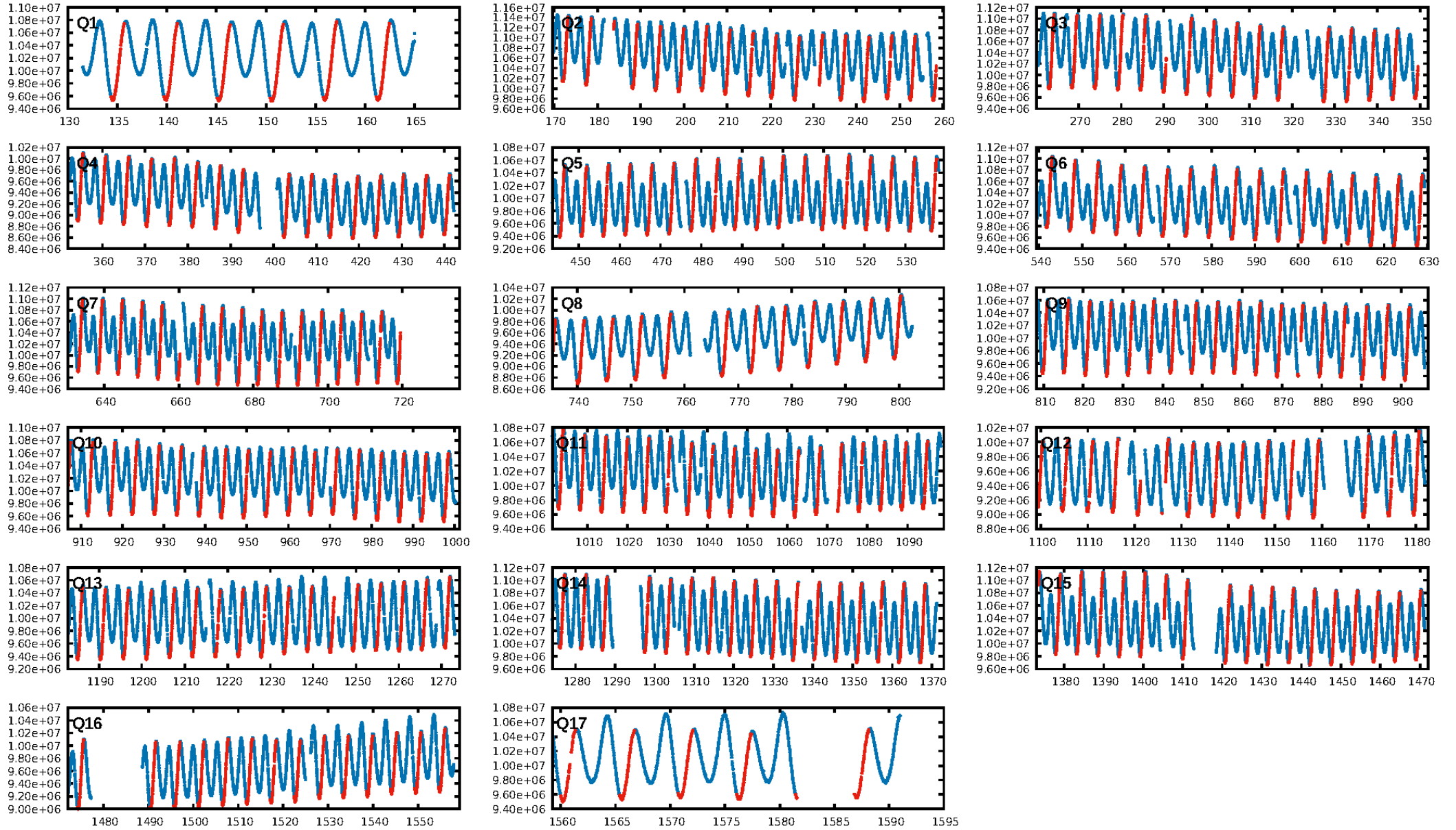
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 2.44e-33
RollingBand-fgt: 1.00 [245/245]
GhostDiagnostic-chr: 0.5406
Centroid-sig: 0.0%
Centroid-so: 2.087 arcsec [2.03σ]
OotOffset-rm: 0.140 arcsec [1.64σ]
KicOffset-rm: 0.460 arcsec [6.68σ]
OotOffset-st: 4/4/4/4 [16]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 1.00 [17/17]
DiffImageOverlap-fno: 0.00 [0/17]

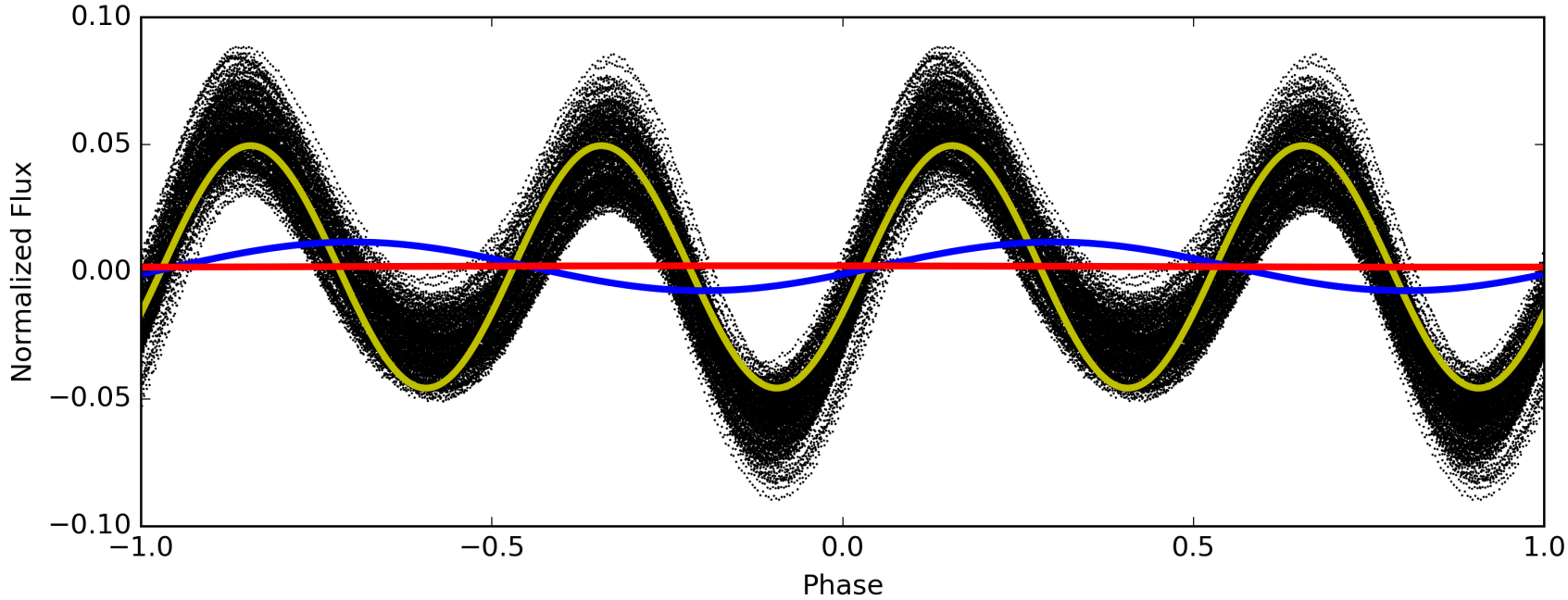
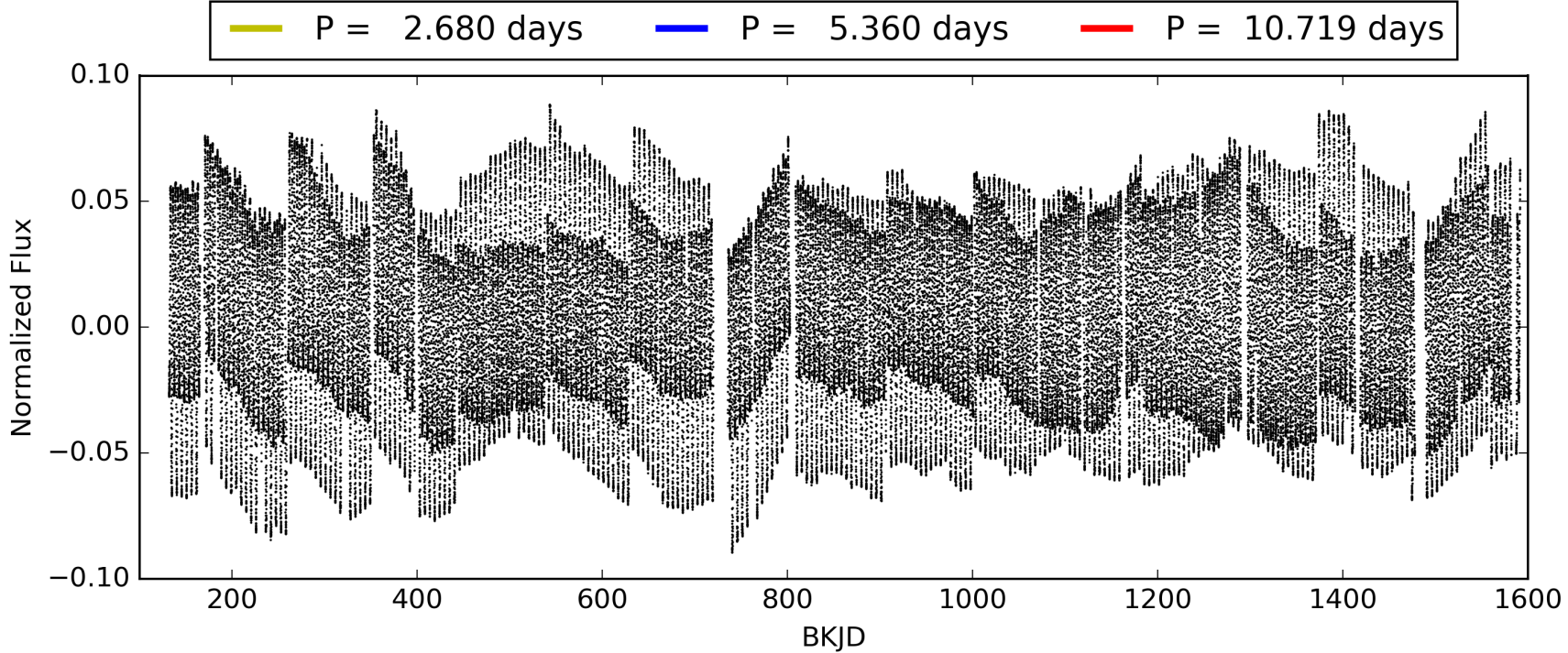
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 09:24:52 Z

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

TCE 006450067-01, PDC Light Curves

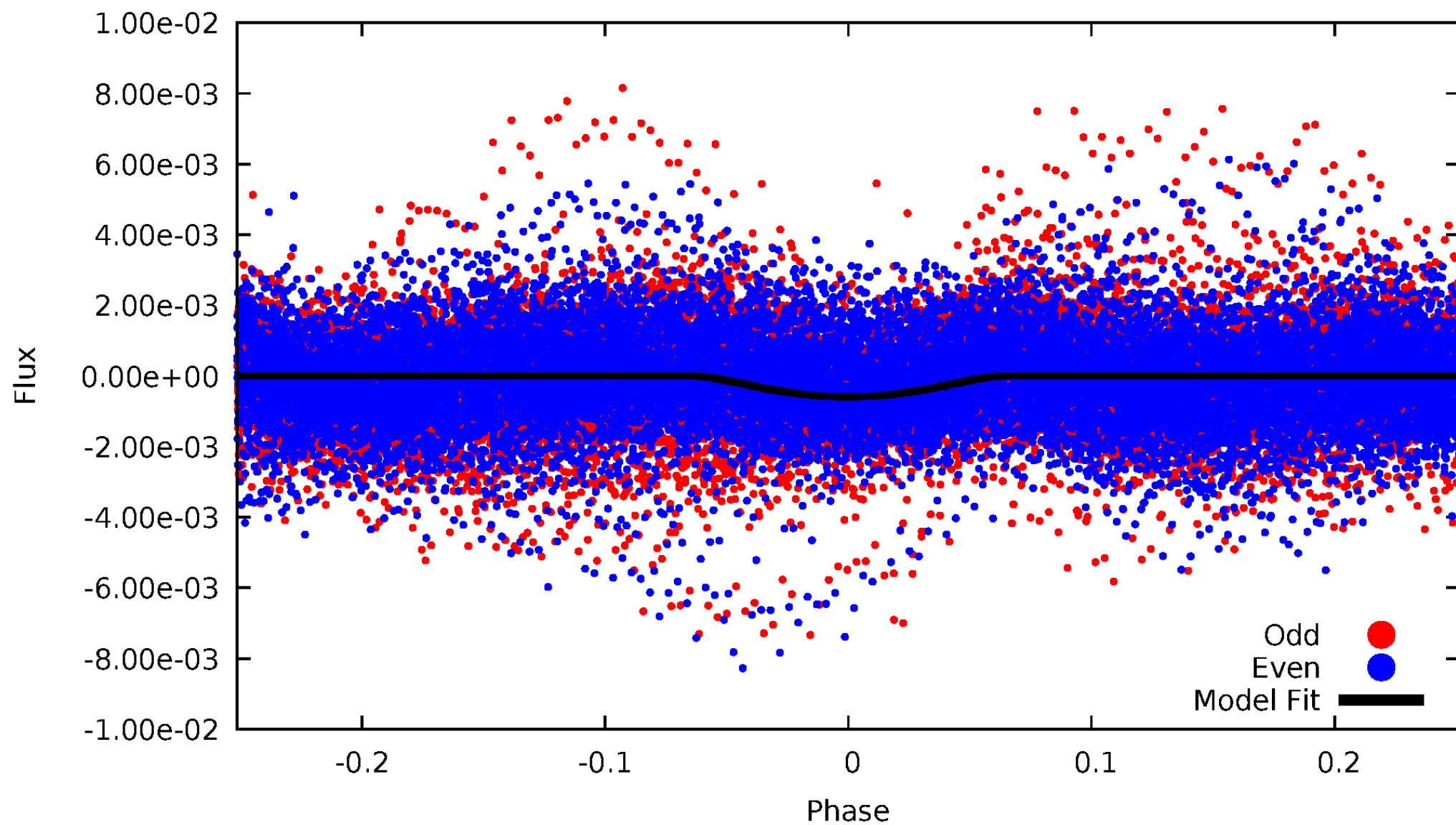


TCE 006450067-01



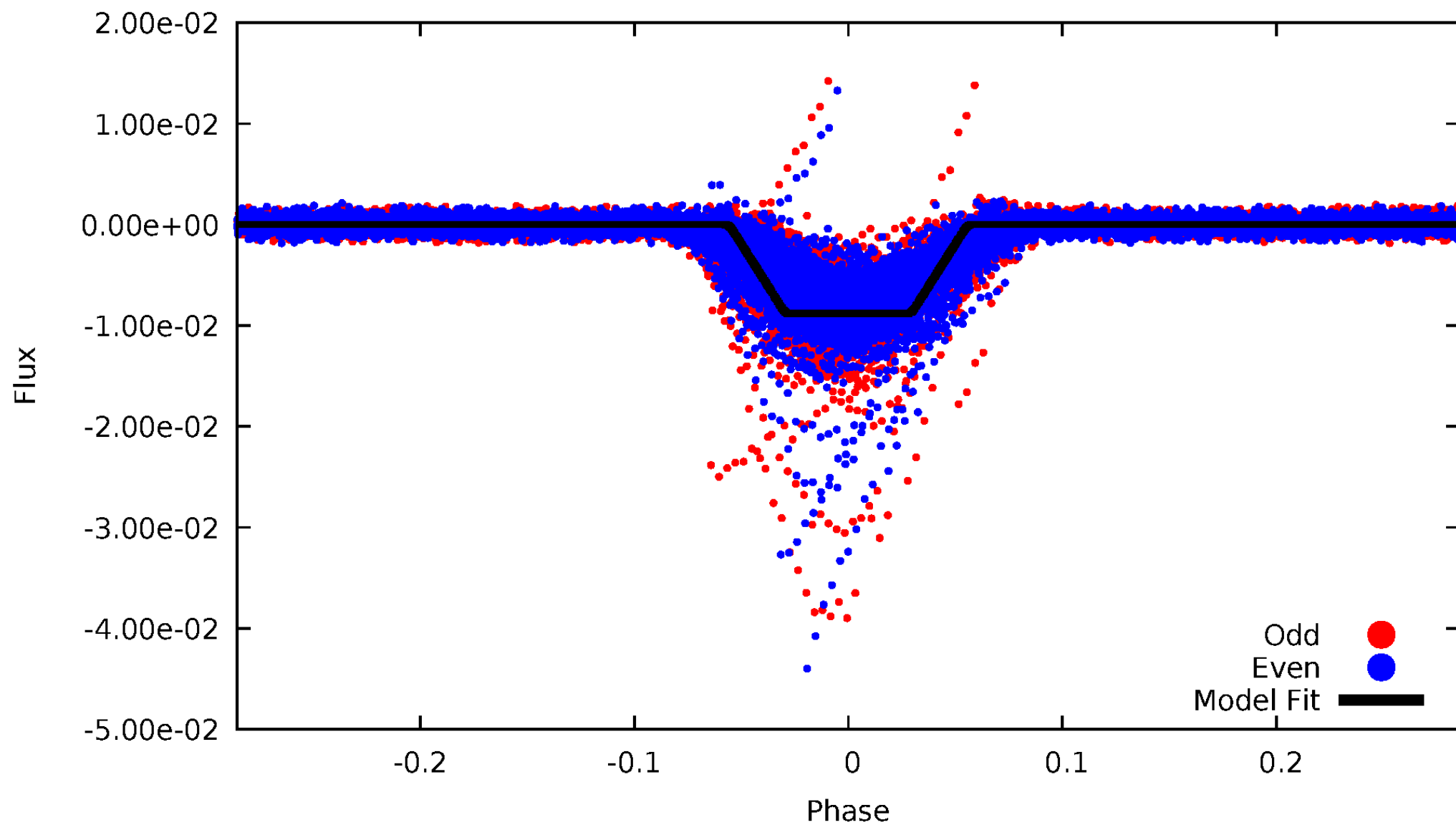
DV Odd/Even

TCE 006450067-01



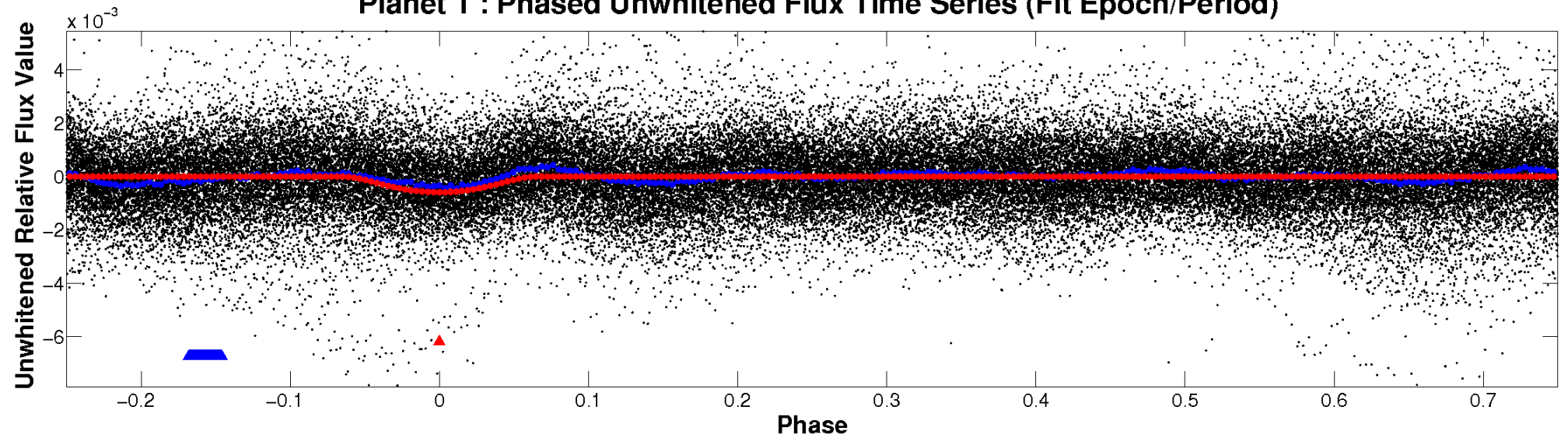
ALT Odd/Even

TCE 006450067-01

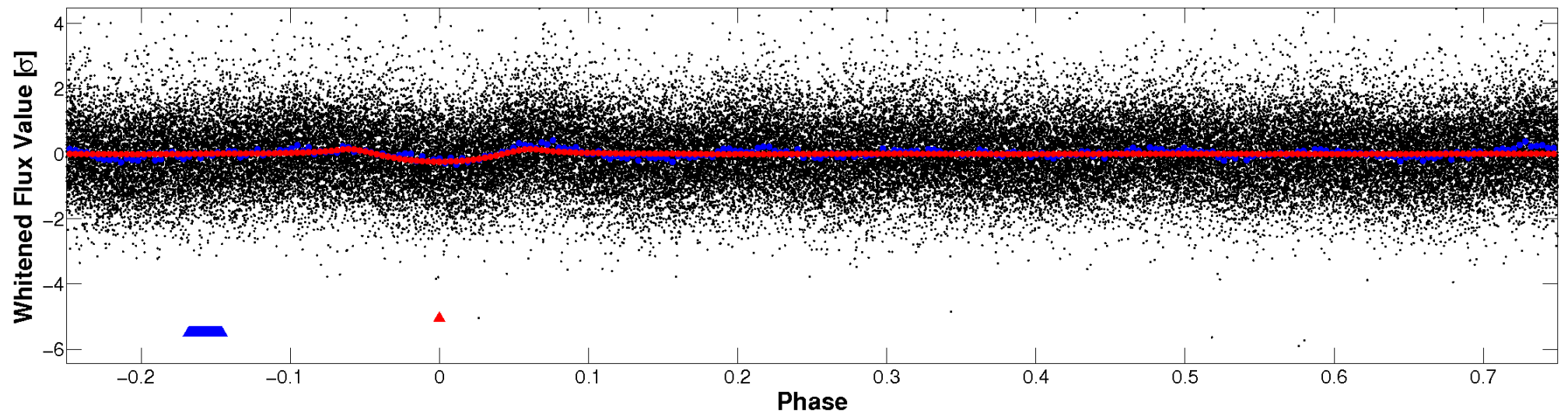


Non-Whitened Vs. Whitened Light Curve

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

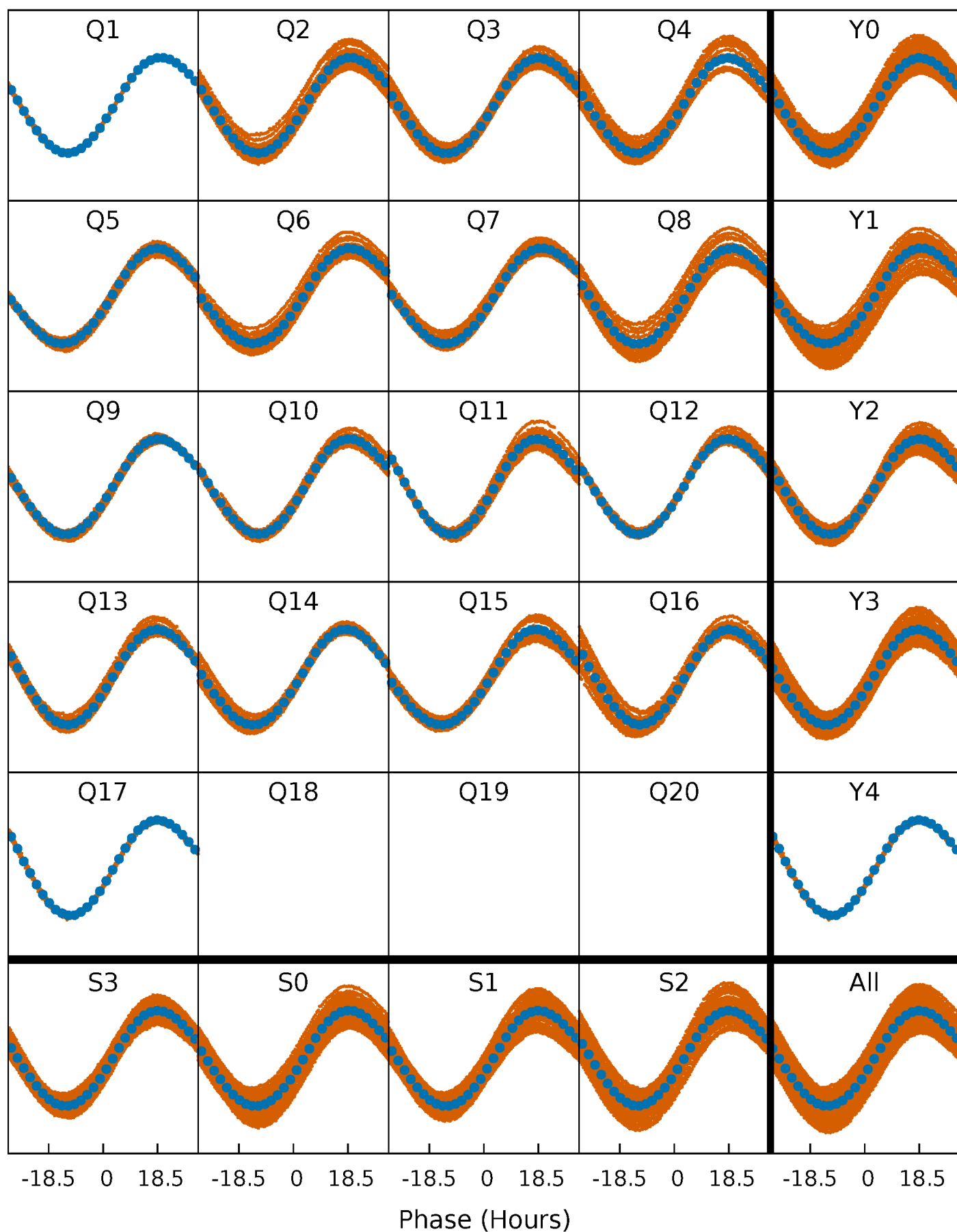


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



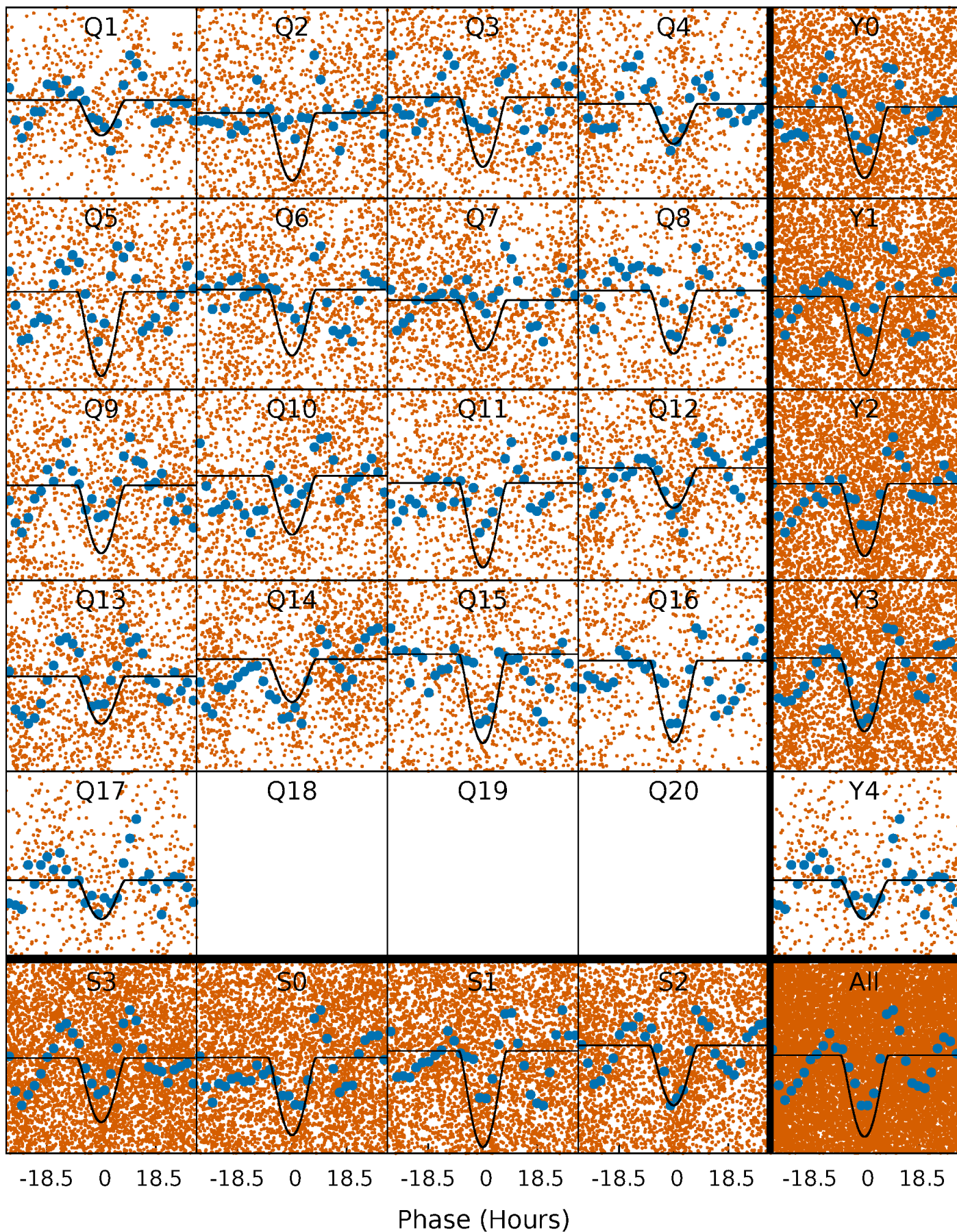
PDC Quarter-Phased Transit Curves

TCE 006450067-01 P= 5.359622 Days $T_0=135.015218$ (BKJD)



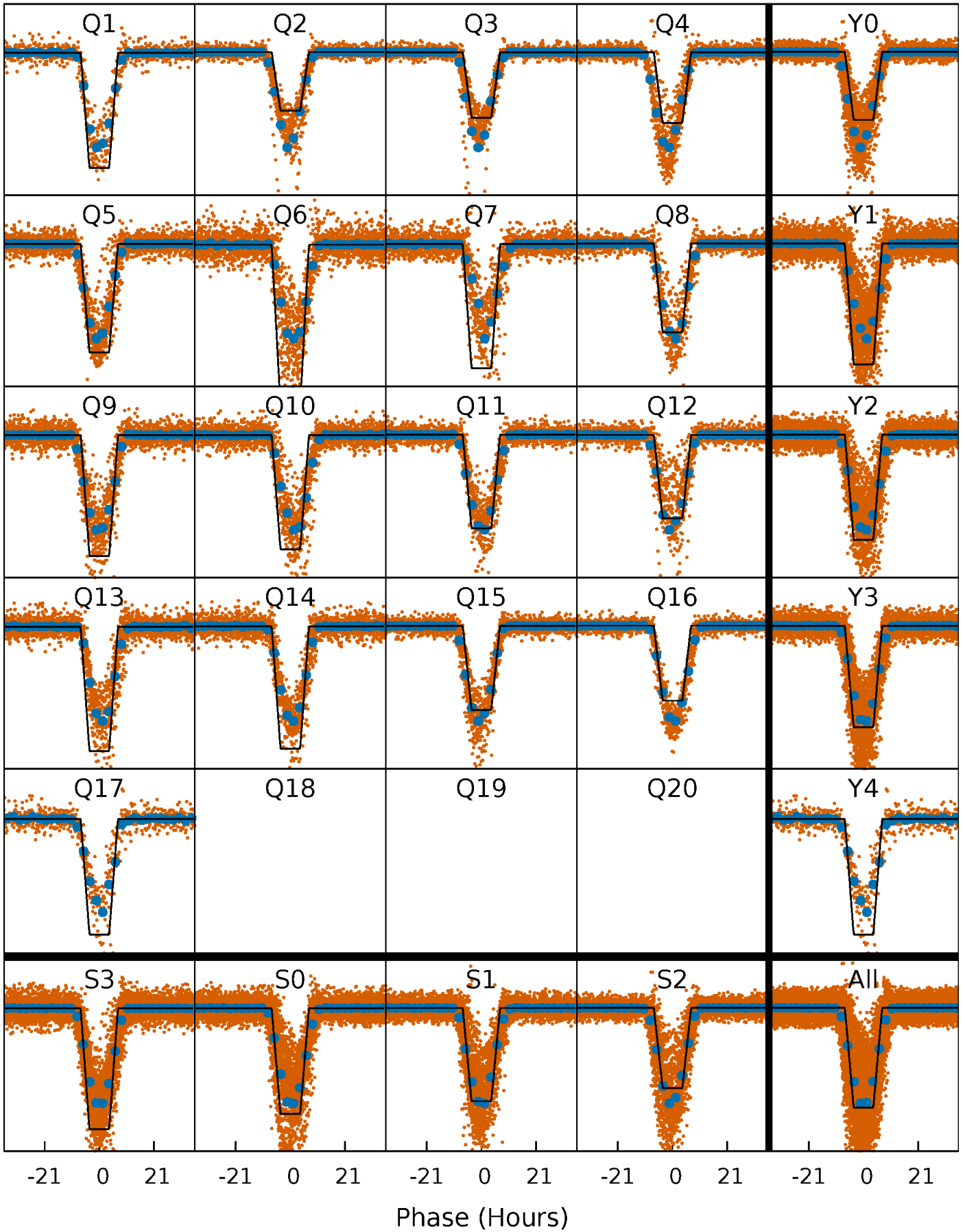
DV Quarter-Phased Transit Curves

TCE 006450067-01 P= 5.359622 Days $T_0=135.015218$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

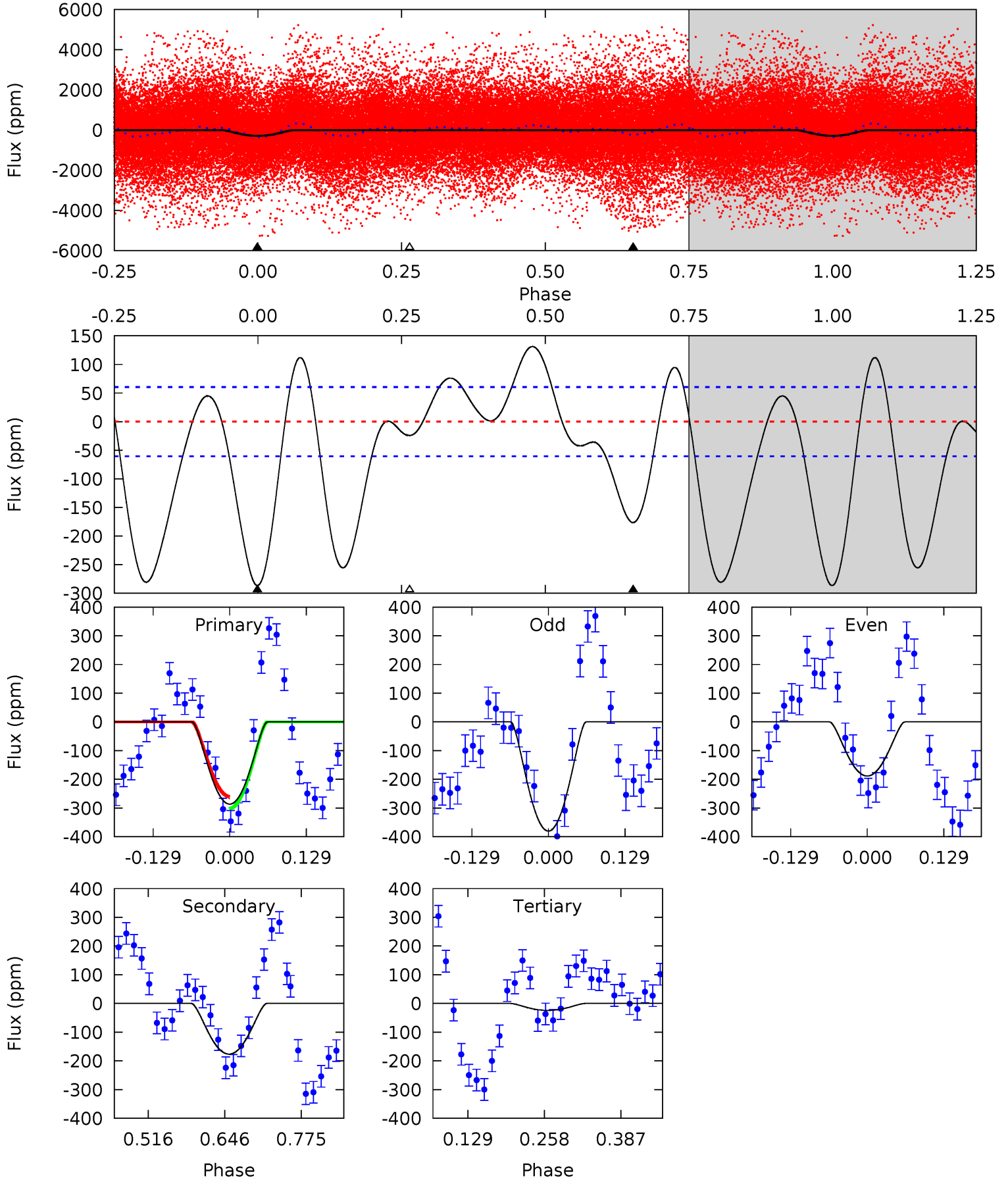
TCE 006450067-01 P= 5.359283 Days $T_0=135.029263$ (BKJD)



DV Model-Shift Uniqueness Test

006450067-01, P = 5.359622 Days, E = 129.655596 Days

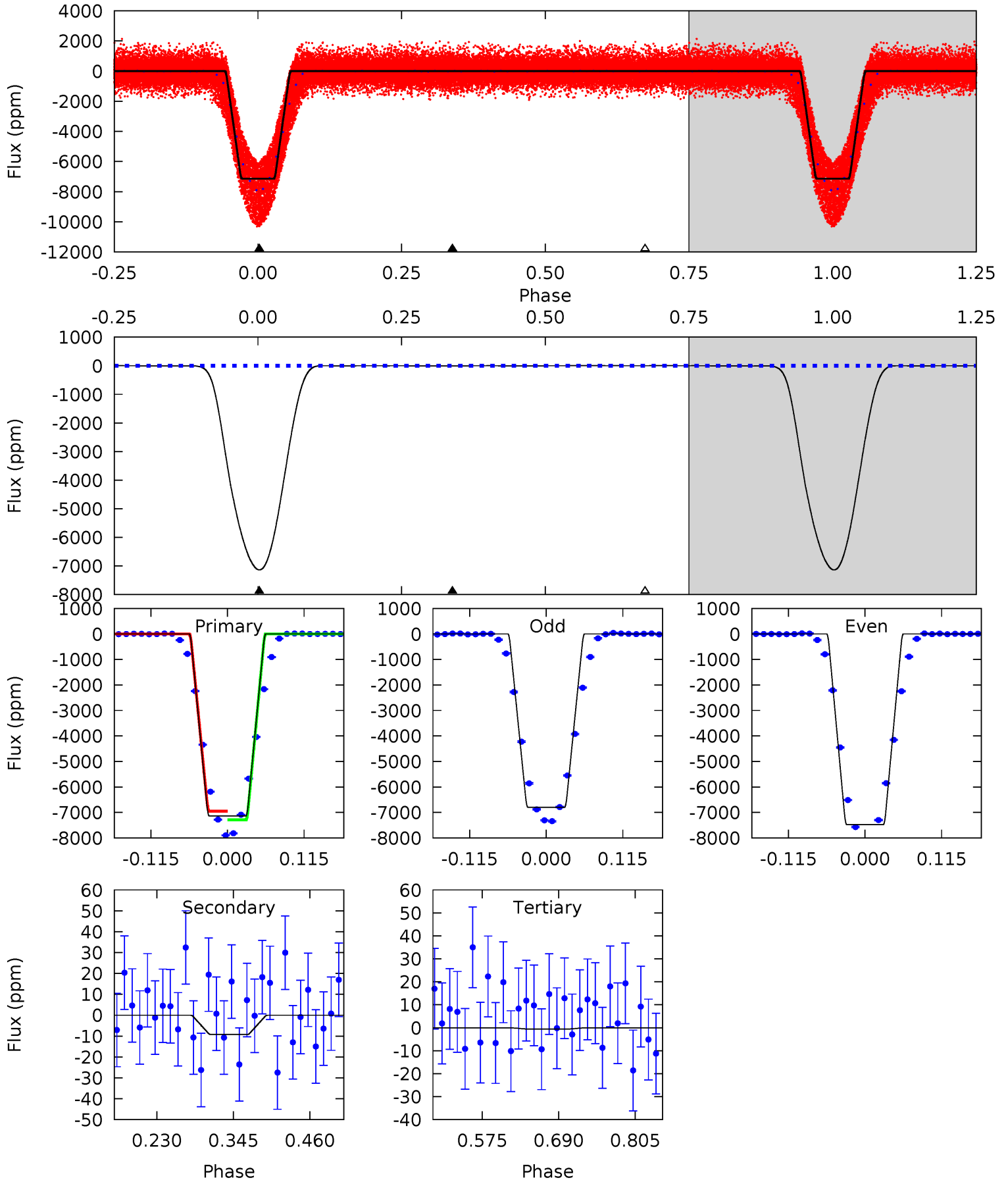
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
21.4	13.2	1.81	0	4.51	1.52	9.23	19.6	21.4	11.3	13.2	7.15	0.94	0.31	1.48



Alt Model-Shift Uniqueness Test

006450067-01, P = 5.359283 Days, E = 129.669980 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1040	1.34	0.09	0	4.54	1.58	0.57	1039	1040	1.25	1.34	48.6	1.10	0.00	24.0



Stellar Parameters For KIC 006450067

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5154^{+179}_{-179}	$4.570^{+0.065}_{-0.058}$	$-0.360^{+0.300}_{-0.300}$	$0.728^{+0.089}_{-0.073}$	$0.719^{+0.095}_{-0.059}$	$2.622^{+0.792}_{-0.558}$
	+3%/-3%	+1%/-1%	+83%/-83%	+12%/-10%	+13%/-8%	+30%/-21%
Source	PHO54	PHO54	PHO54	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

Secondary Eclipse Parameters for KIC 006450067-01 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-176 ± 13	$2.92^{+1.35}_{-1.17}$	1168^{+53}_{-54}	3525^{+704}_{-400}	33^{+62}_{-18}
Alt.	-9 ± 7	$7.42^{+1.42}_{-1.25}$	1169^{+53}_{-51}	-1587^{+3468}_{-330}	$0.268^{+0.241}_{-0.211}$

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

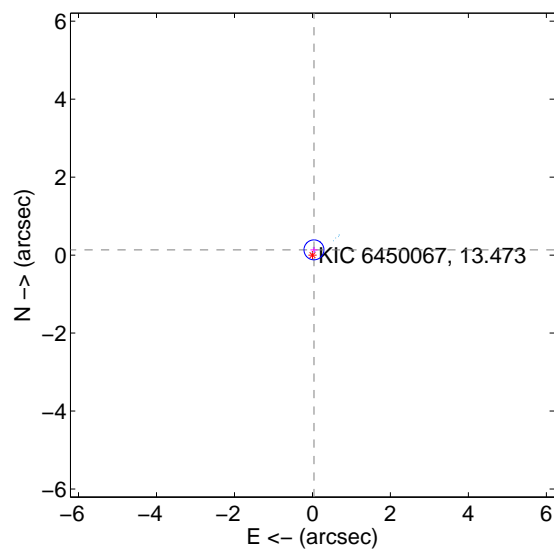
Supplemental centroid analysis for 006450067-01. Kepler magnitude: 13.47. Transit SNR 14.91

There are 17 quarters with good PRF difference image offsets

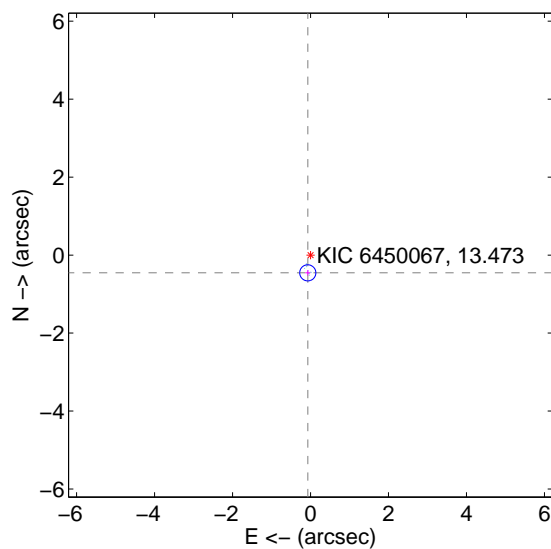
The direct PRF centroid is offset from the target star catalog position by about 0.61 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.140 ± 0.085	1.64	-0.039 ± 0.092	0.135 ± 0.076
PRF-fit source offset from KIC position	0.460 ± 0.069	6.68	0.070 ± 0.067	-0.455 ± 0.069
photometric centroid source offset	2.09 ± 1.03	2.03	-2.07 ± 1.03	0.26 ± 0.50

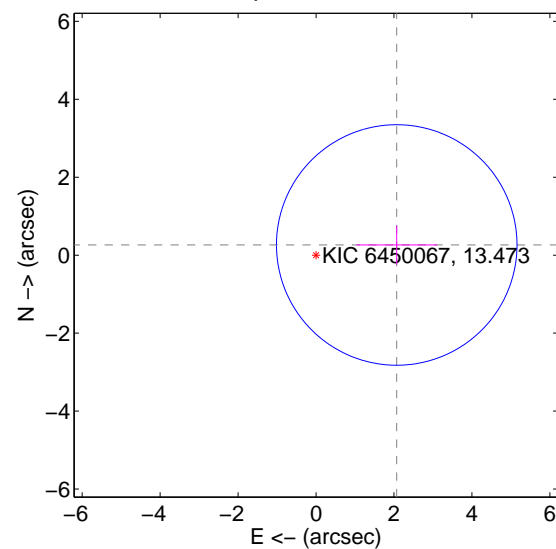
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

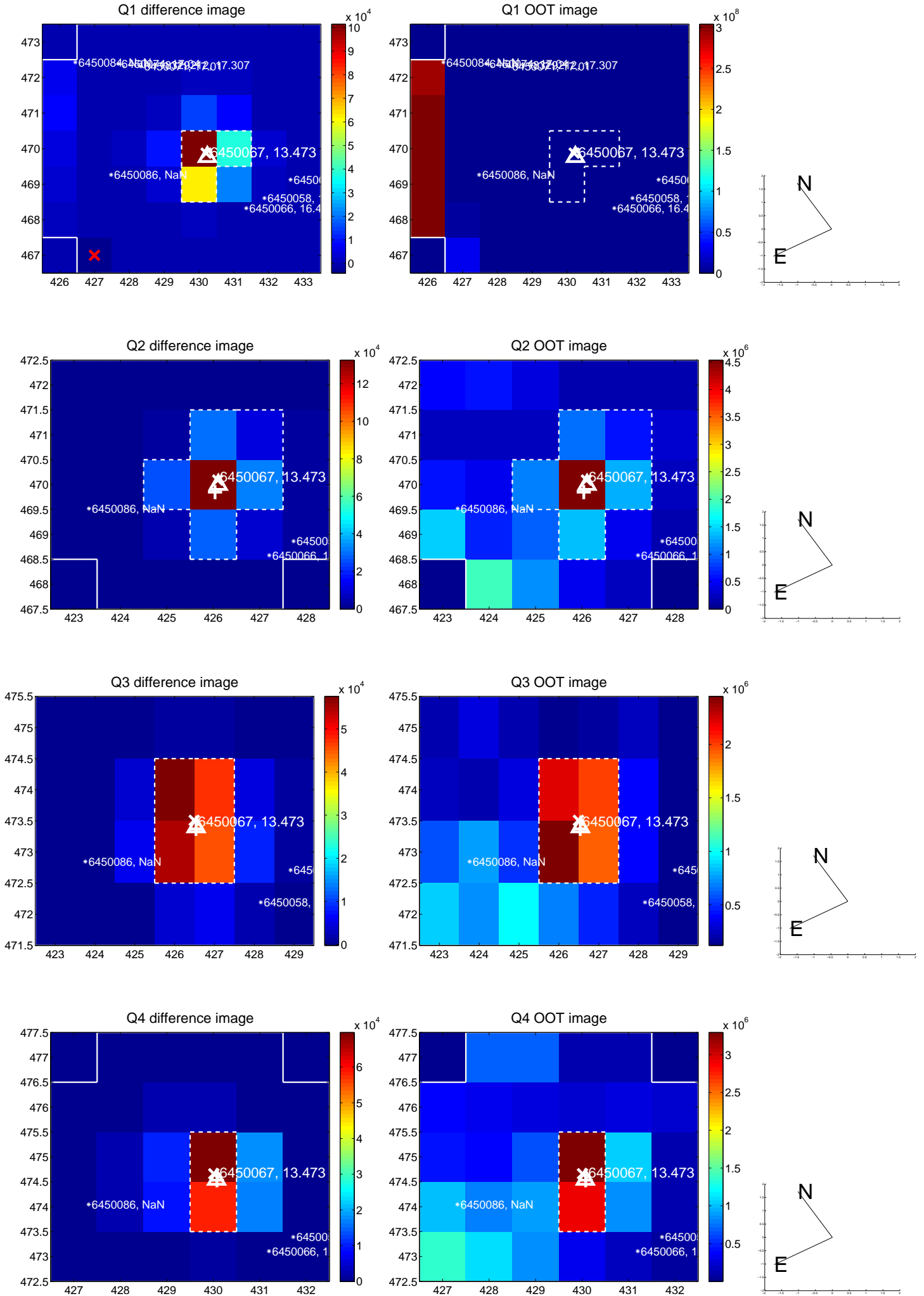


offset from photometric centroids

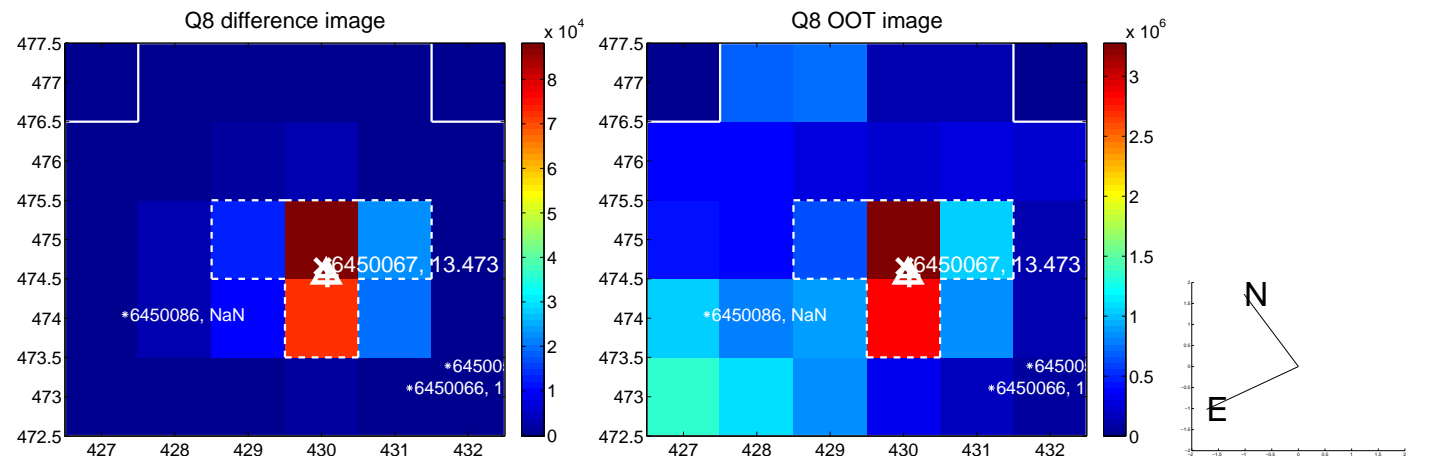
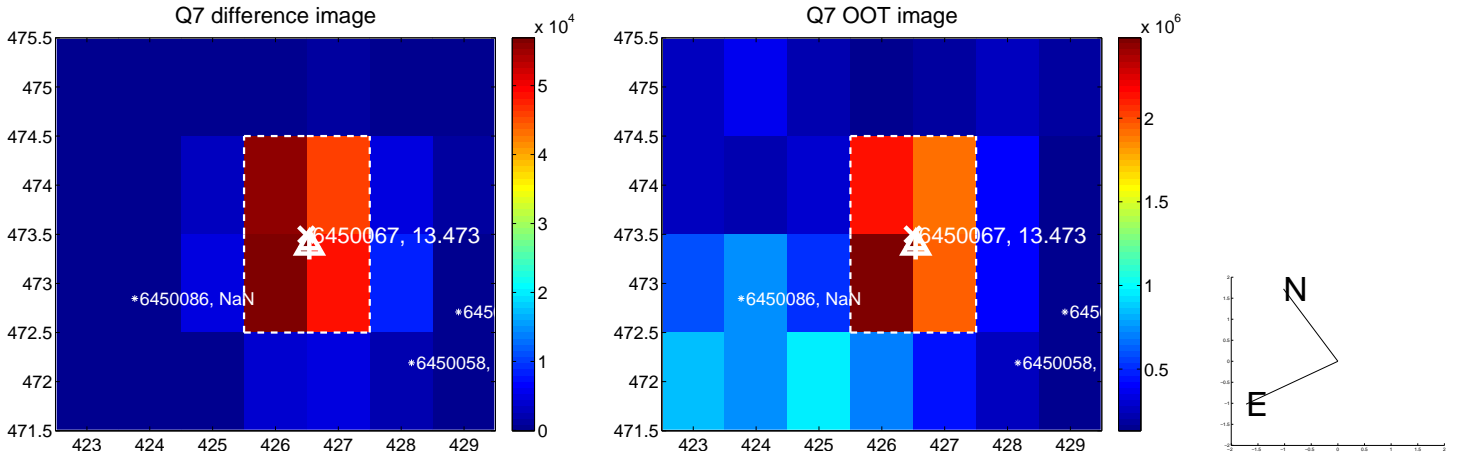
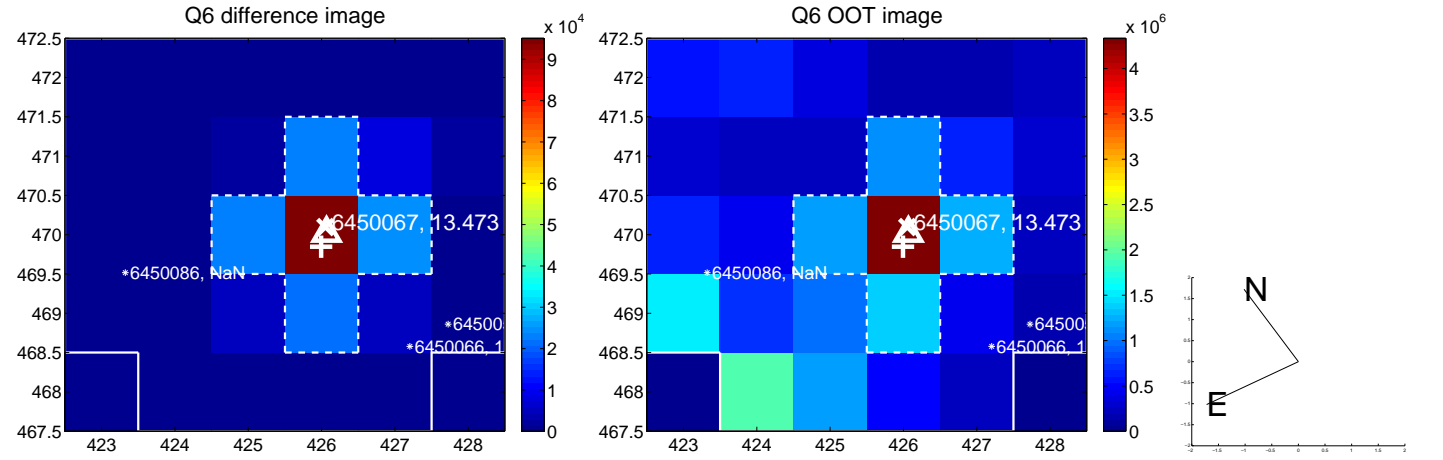
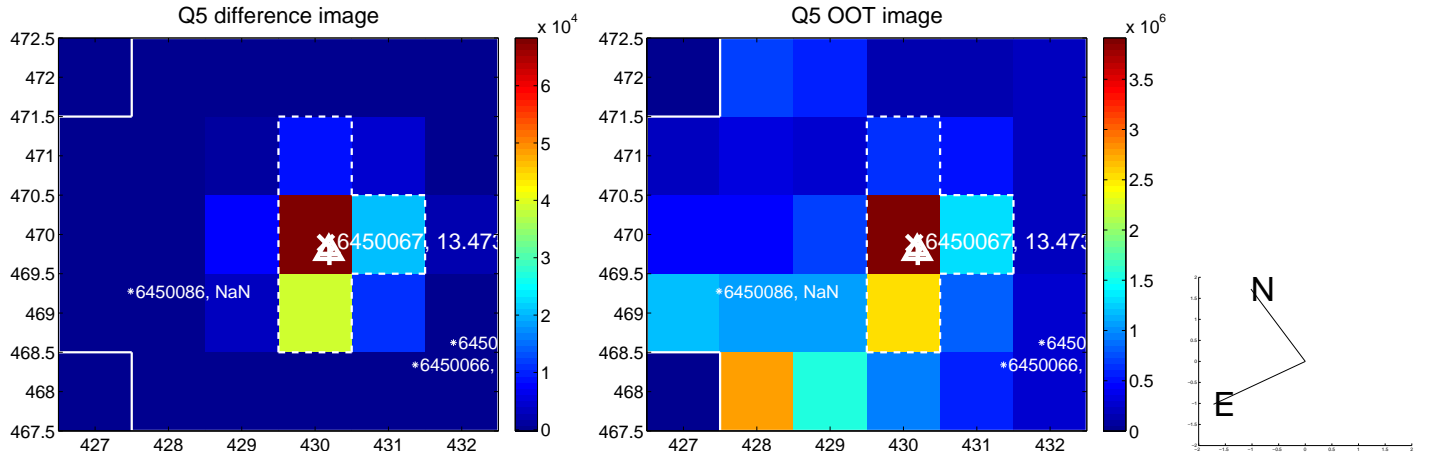


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

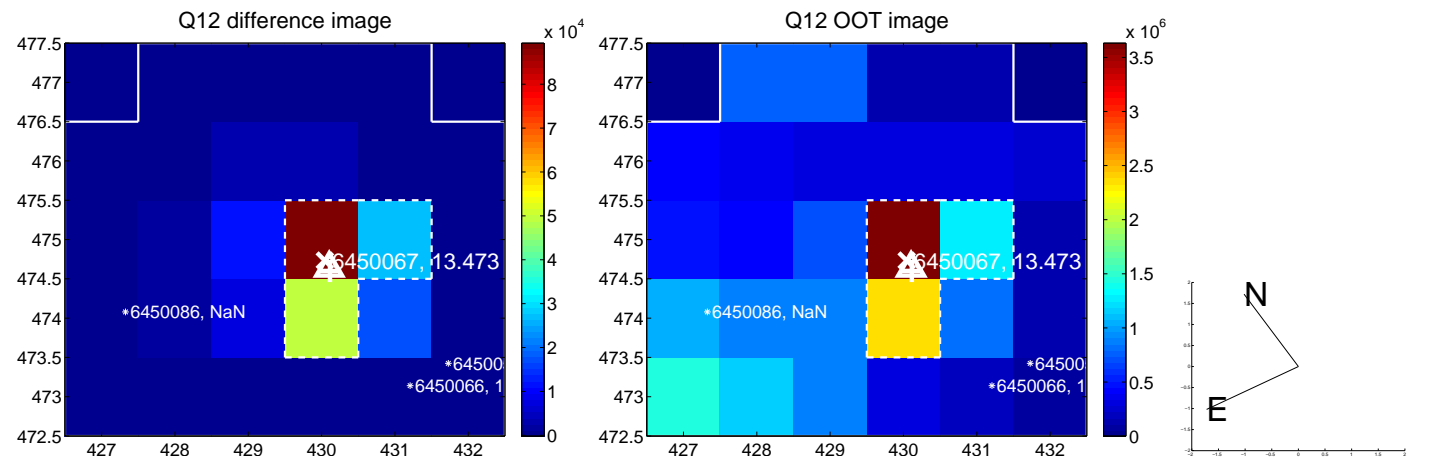
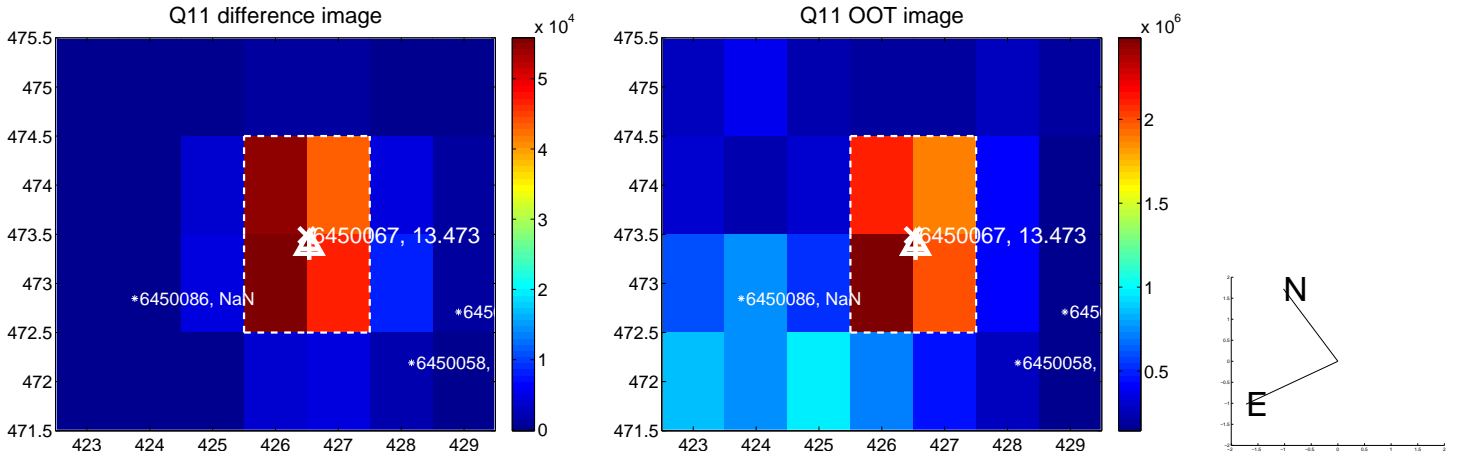
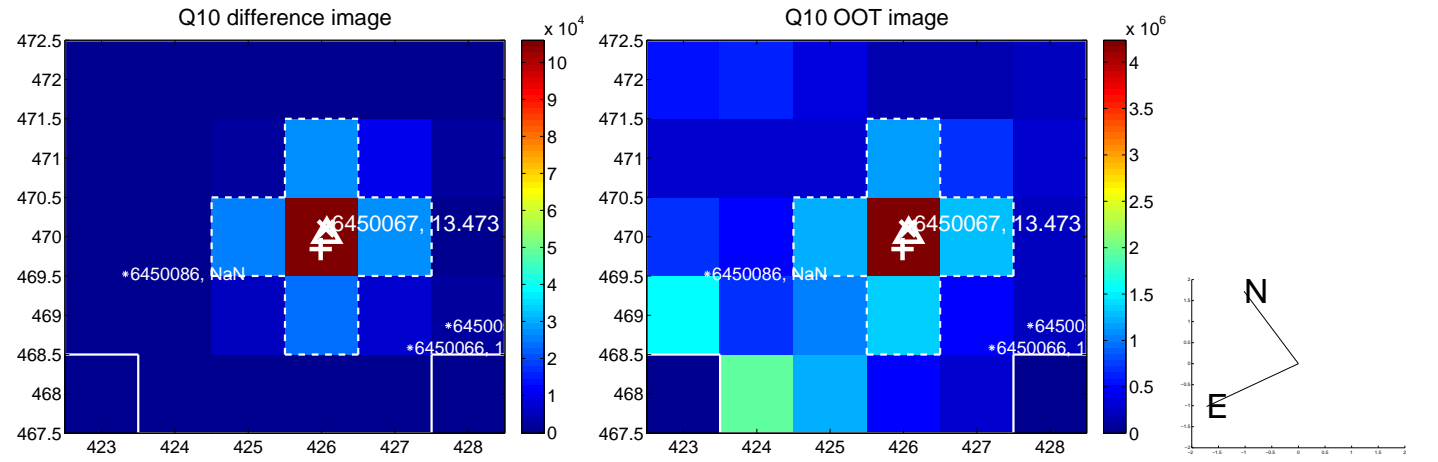
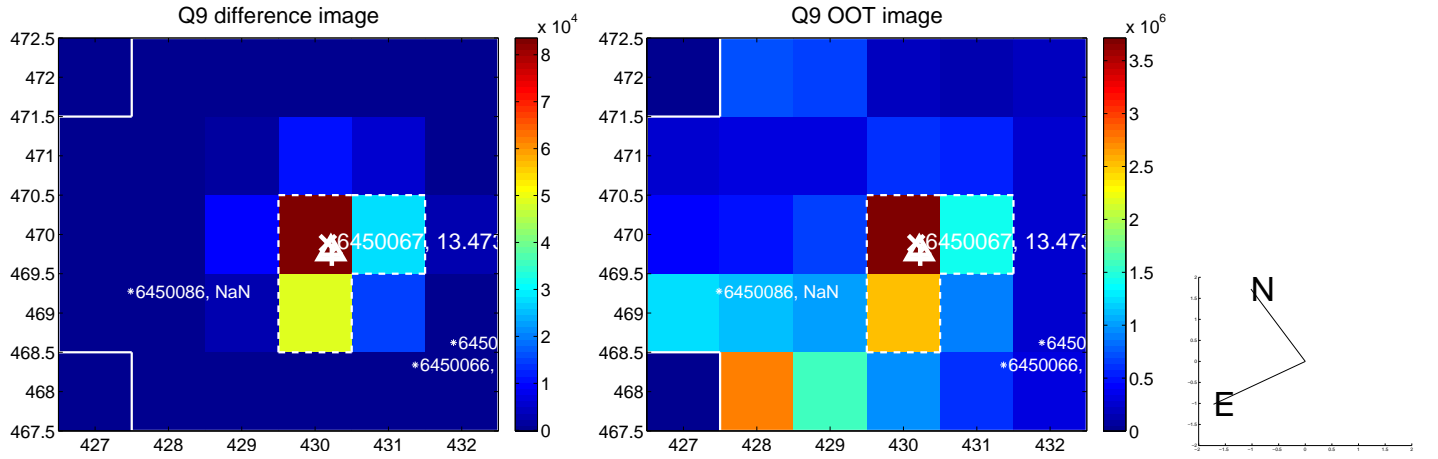
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



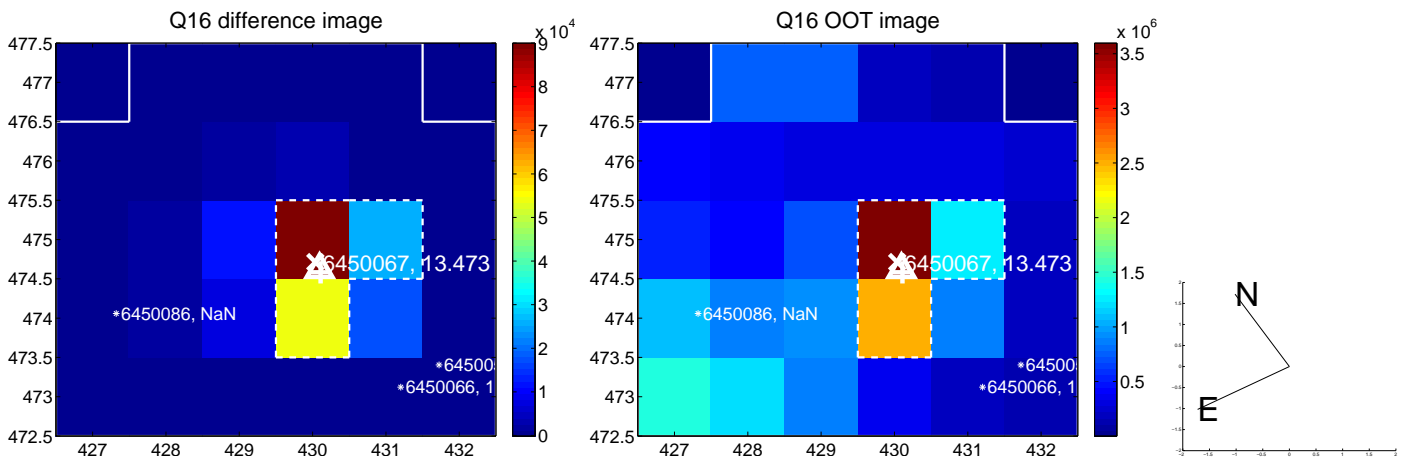
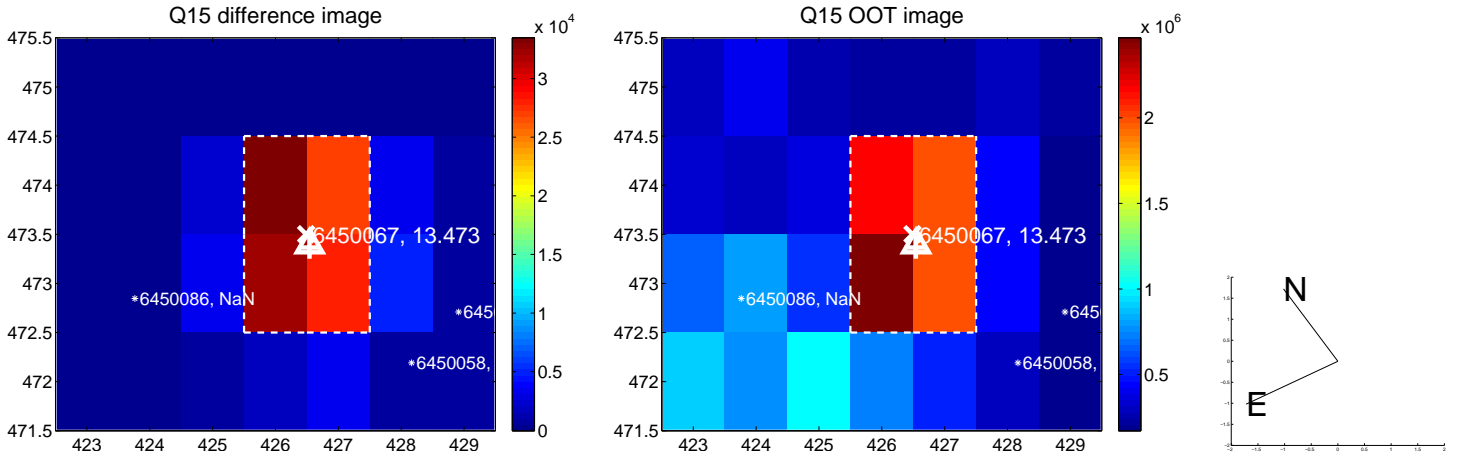
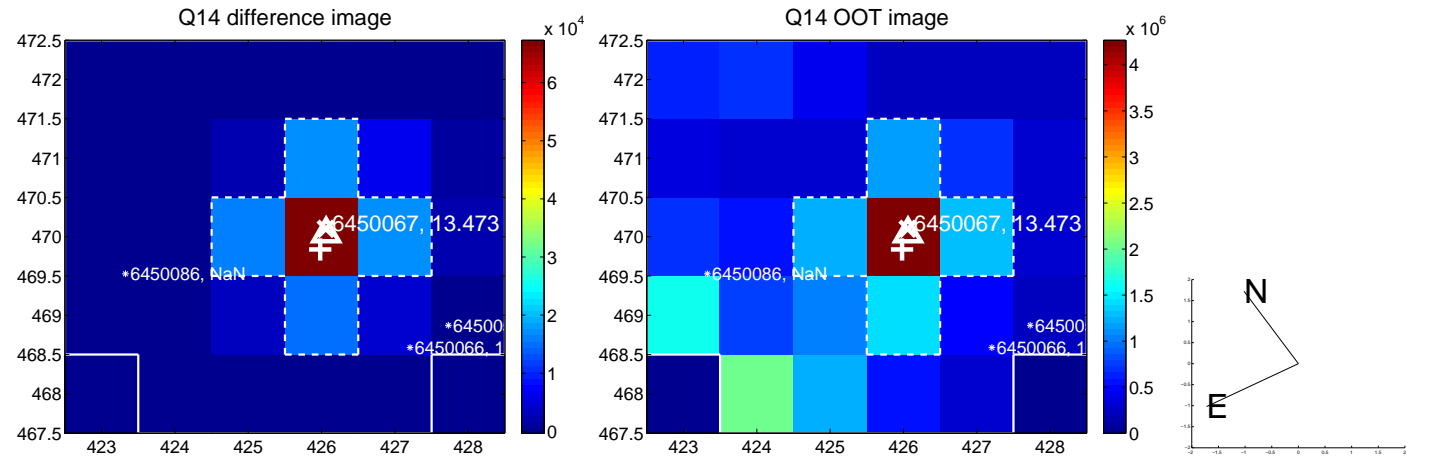
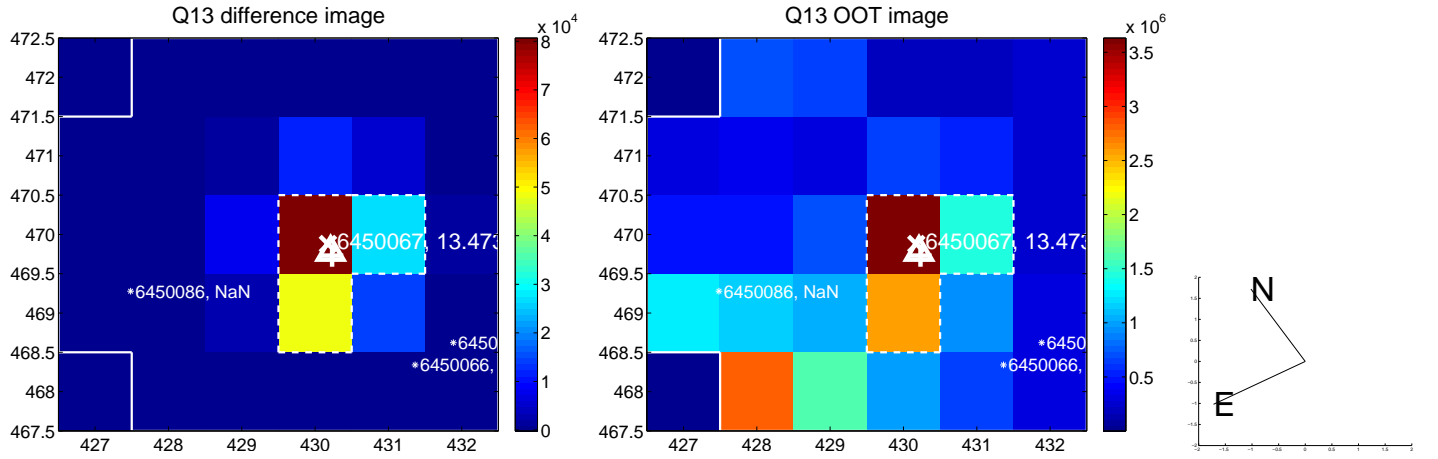
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



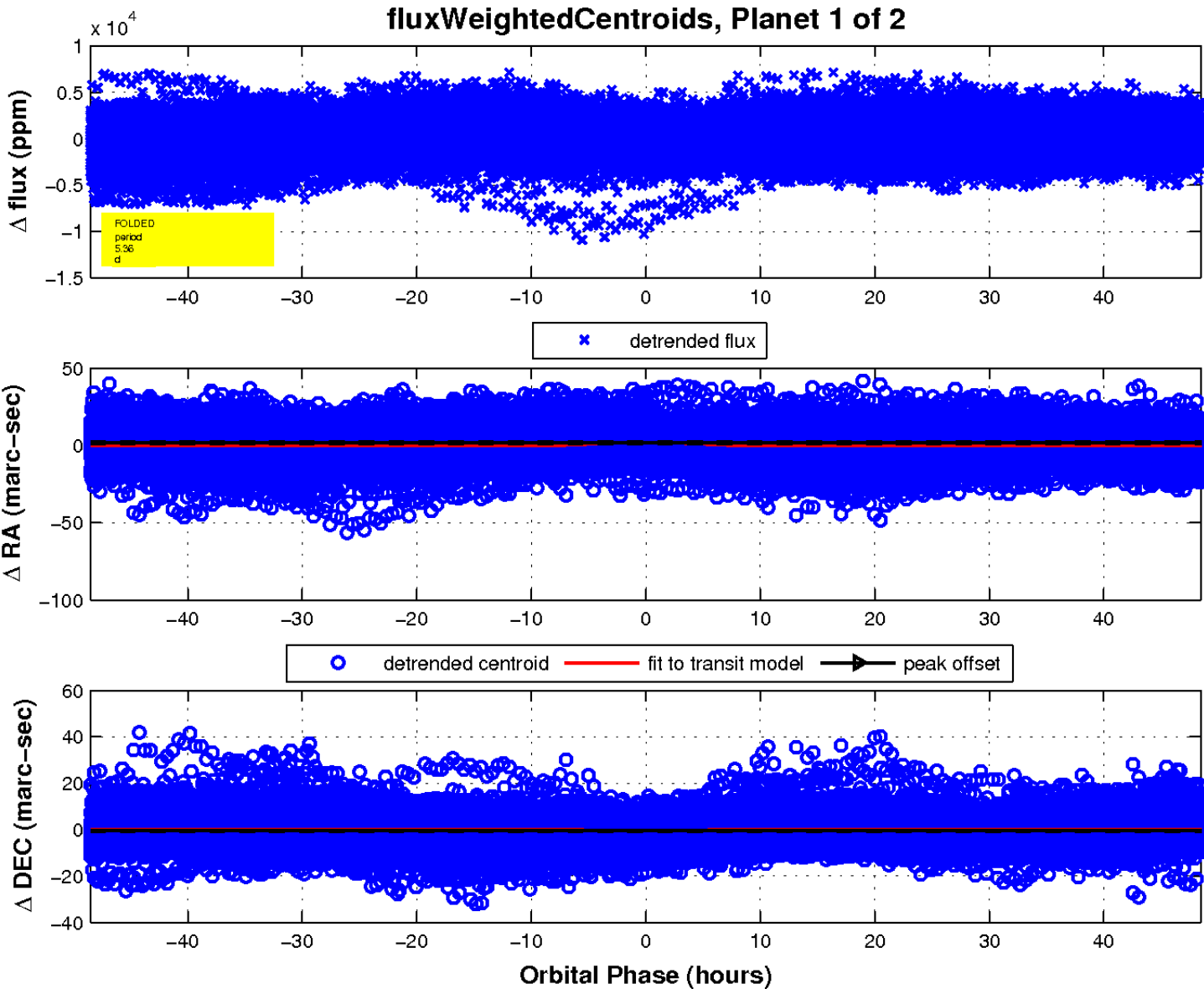
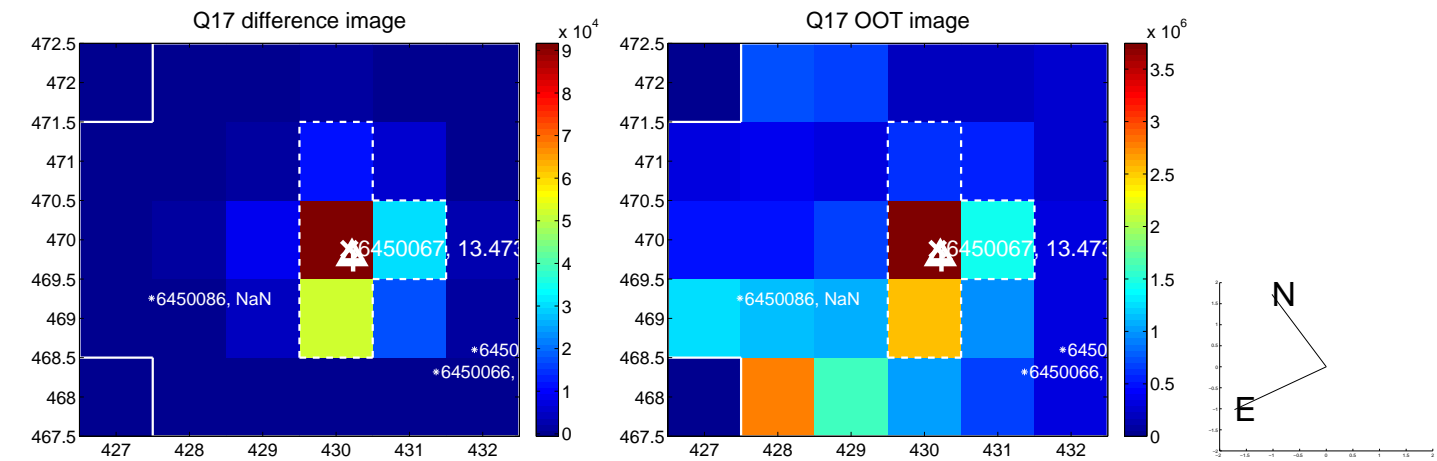
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



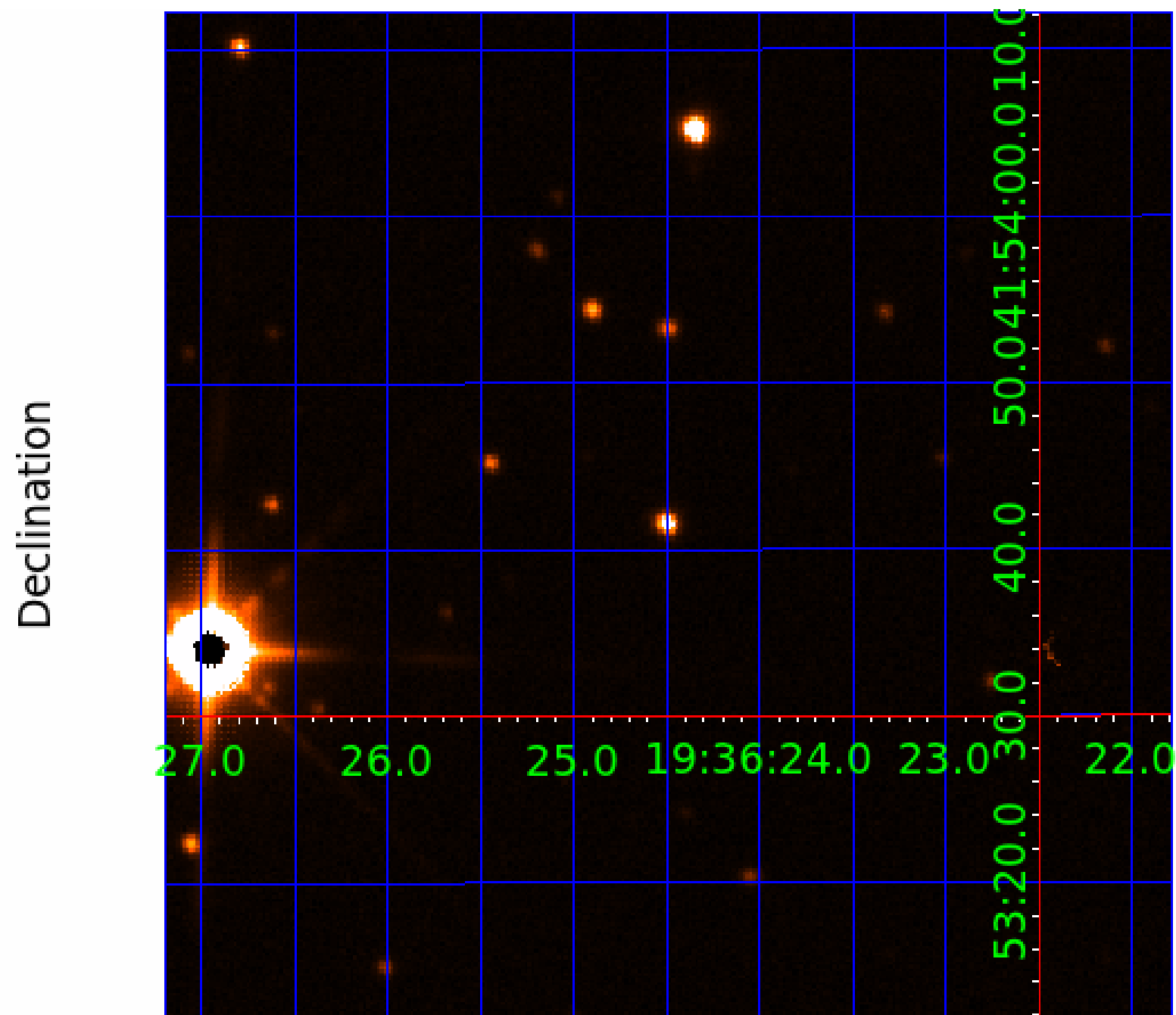
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image



KIC 006450067

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})
006450067-01	OBS	No	5.359622	135.015218	591.1	16.166	12.6	14.9	0.73	5154	2.97	116.25
006450067-02	OBS	No	5.359179	134.233781	923.3	27.409	11.6	15.2	0.73	5154	2.73	116.26

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006450067-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV—CENT_KIC_POS
006450067-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—LPP_DV—SAME_NTL_PERIOD—CENT_KIC_POS

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

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

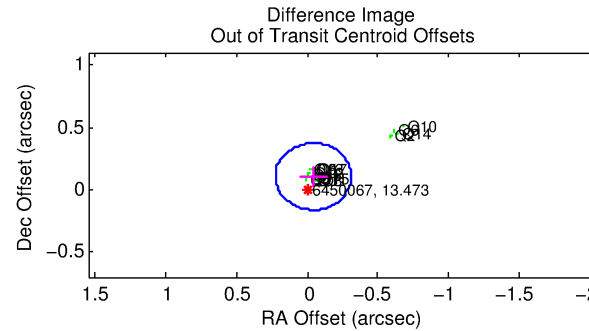
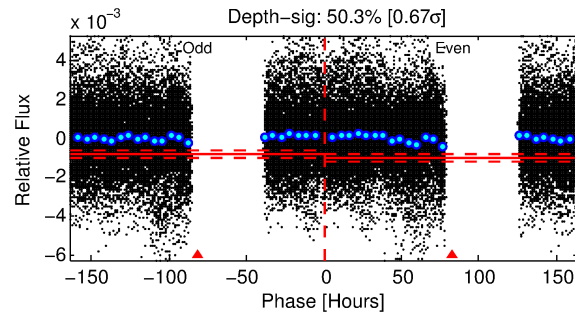
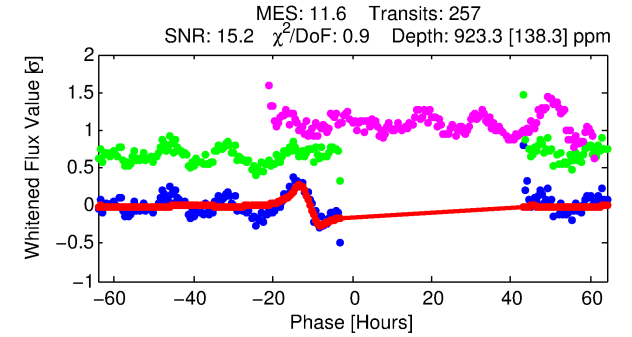
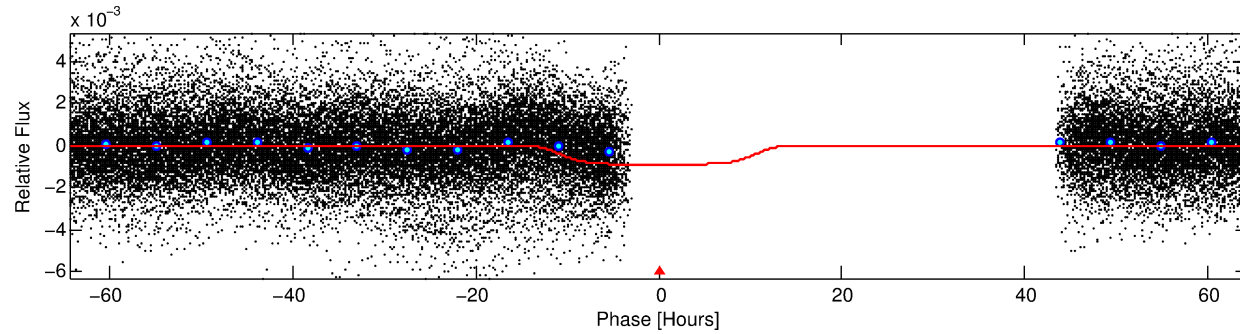
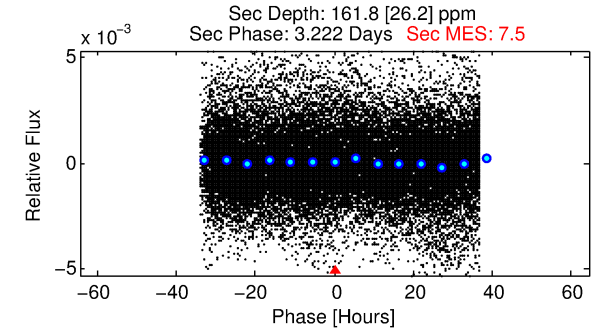
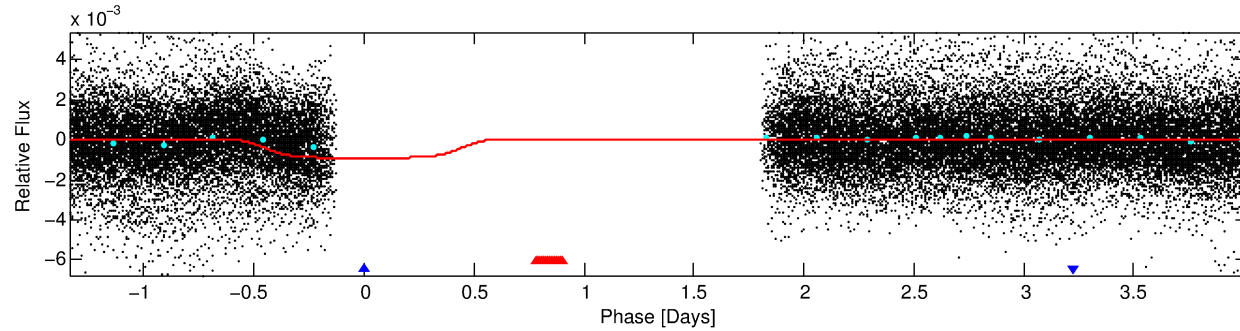
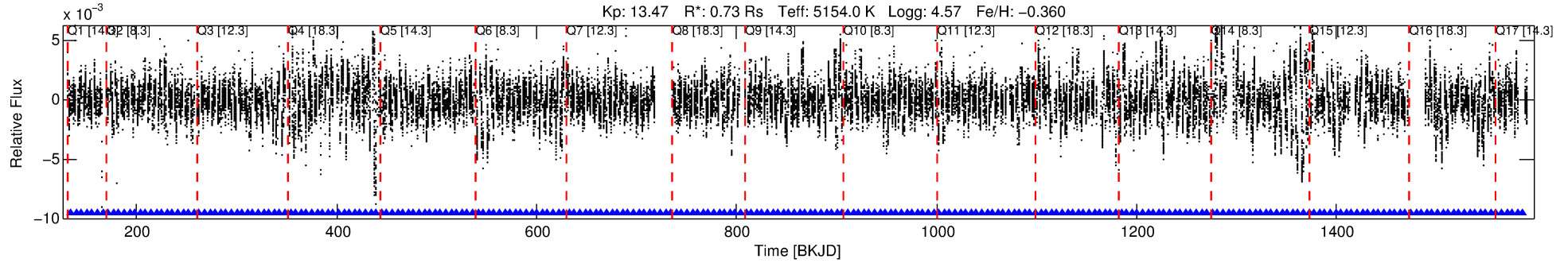
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 006450067-02

No Significant Match Found

DV One-Page Summary

KIC: 6450067 Candidate: 2 of 2 Period: 5.359 d



DV Fit Results:

Period = 5.35918 [0.00009] d
Epoch = 134.2338 [0.1090] BKJD
Rp/R* = 0.0344 [0.0018]
a/R* = 1.20 [0.05]
b = 0.92 [0.03]
Seff = 116.26 [22.03]
Teq = 837 [40] K
Rp = 2.73 [0.36] Re
a = 0.0537 [0.0051] AU
Ag = 34.45 [7.95] [4.21σ]
Teffp = 3136 [185] K [12.13σ]

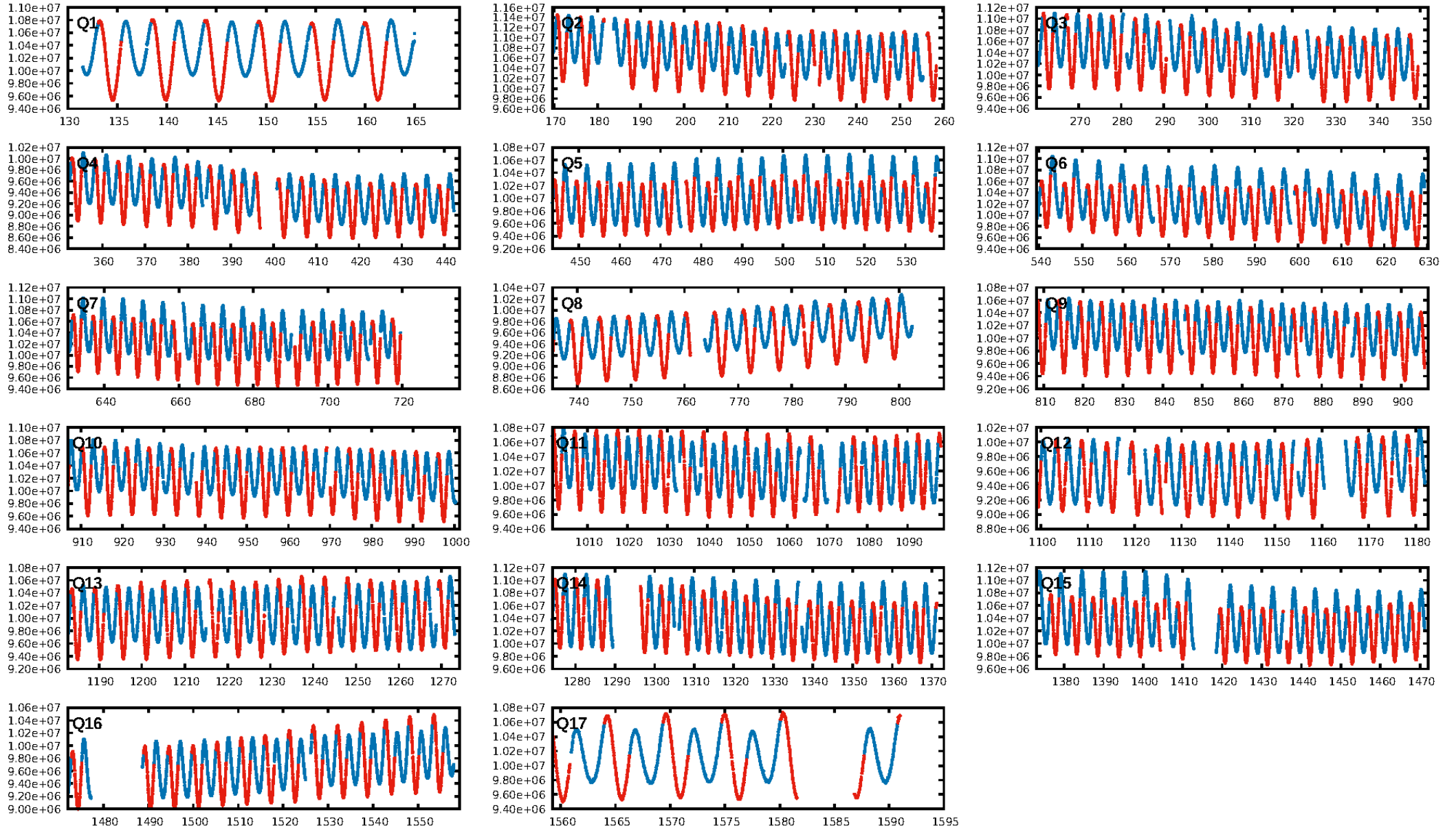
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.0% [0.00σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 1.89e-31
RollingBand-fgt: 1.00 [246/246]
GhostDiagnostic-chr: 0.6593
Centroid-sig: 0.0%
Centroid-so: 3.175 arcsec [5.56σ]
OotOffset-rm: 0.112 arcsec [1.26σ]
OotOffset-st: 4/4/4/4 [16]
KicOffset-rm: 0.467 arcsec [6.69σ]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 1.00 [17/17]
DiffImageOverlap-fno: 0.00 [0/17]

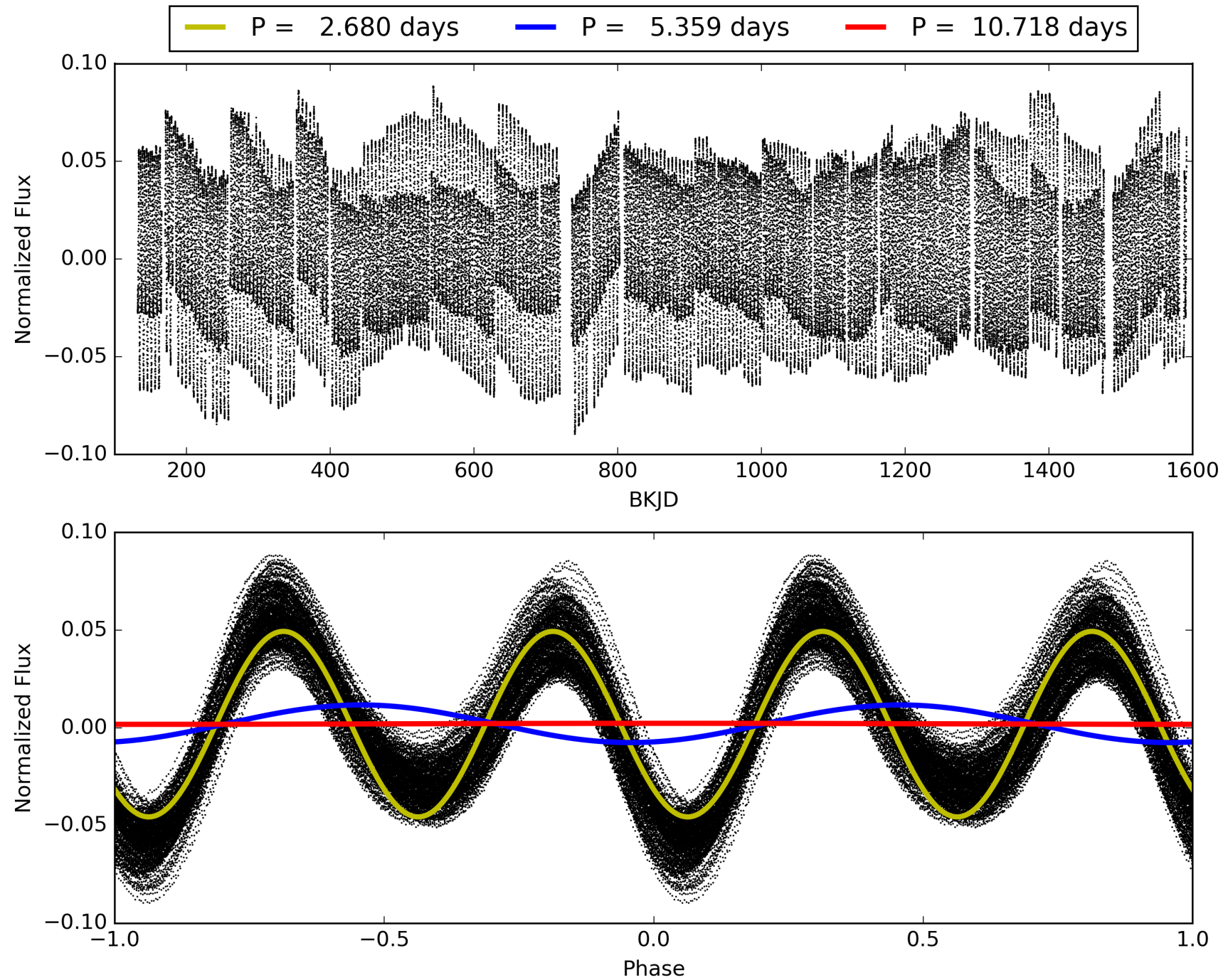
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 09:25:05 Z

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

TCE 006450067-02, PDC Light Curves

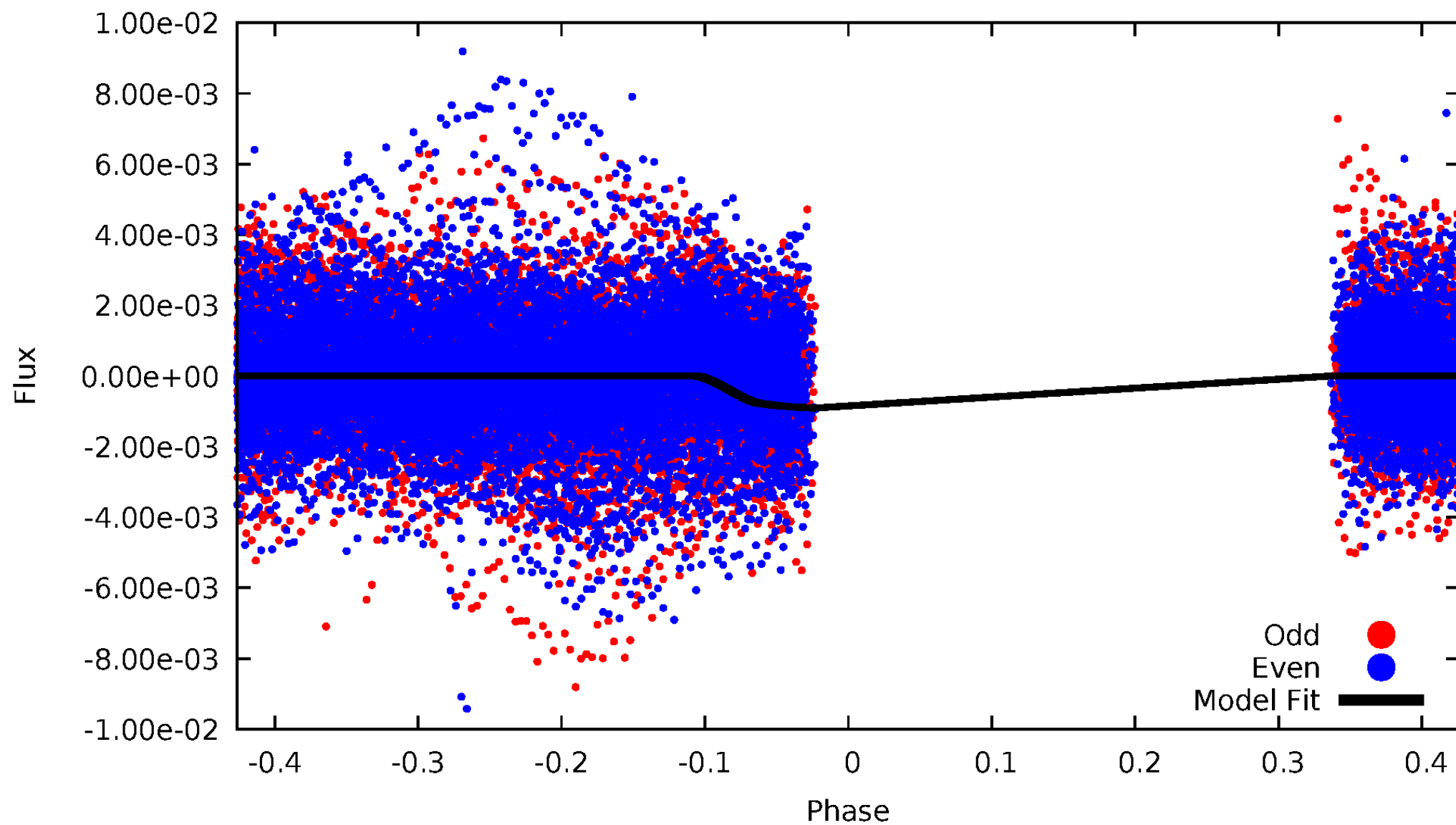


TCE 006450067-02



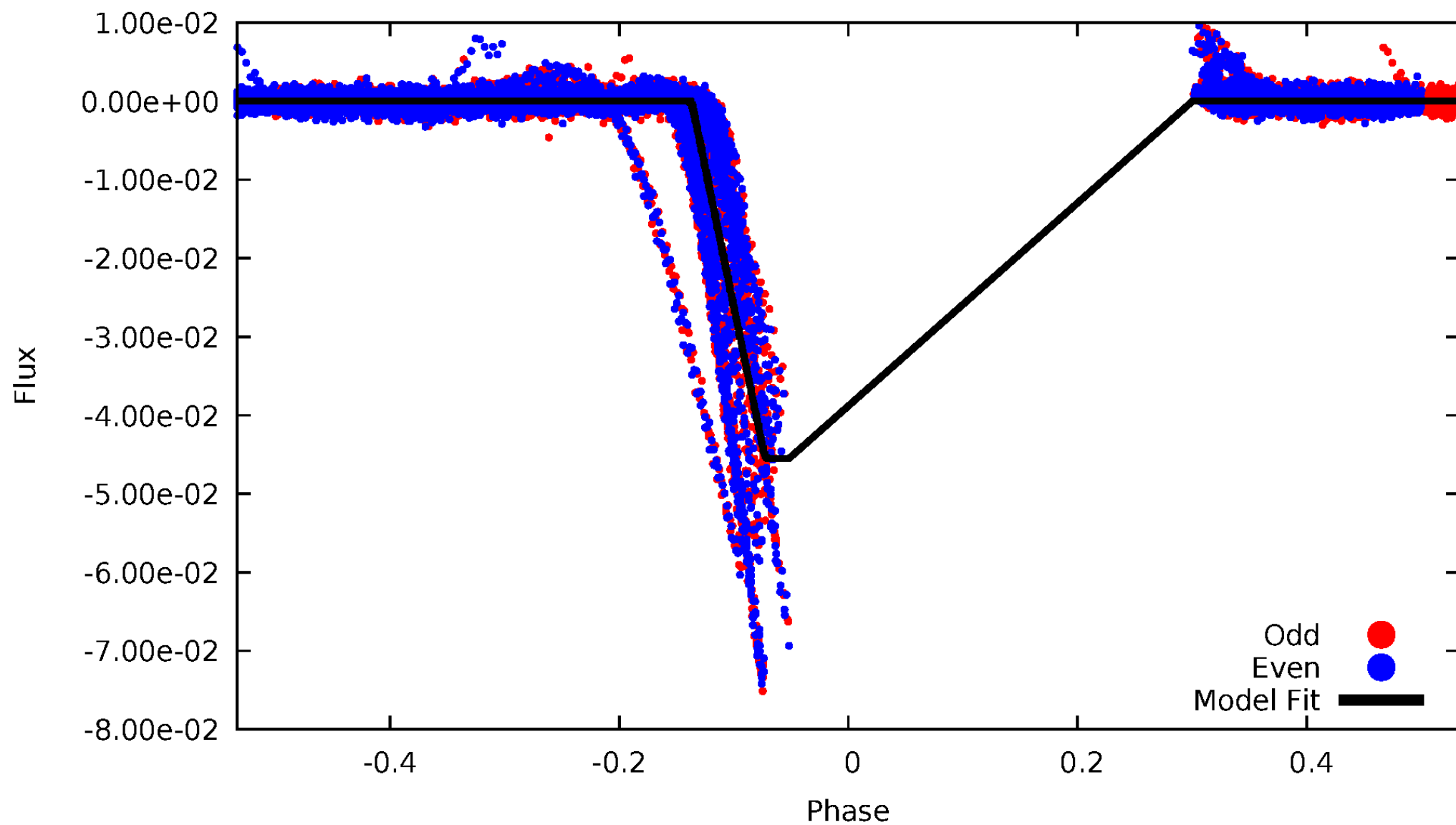
DV Odd/Even

TCE 006450067-02



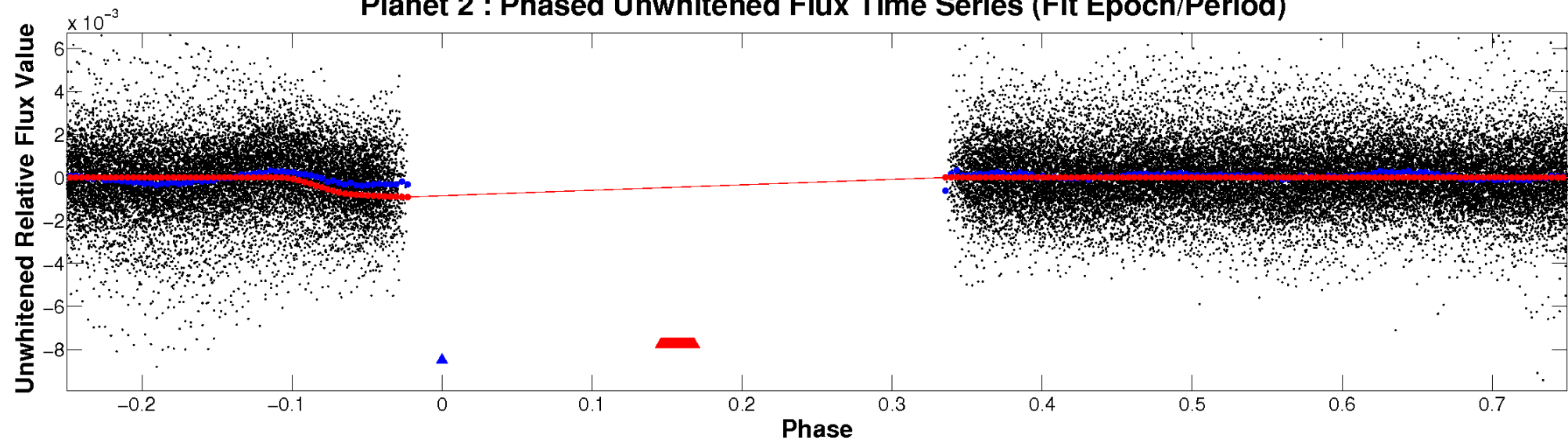
ALT Odd/Even

TCE 006450067-02

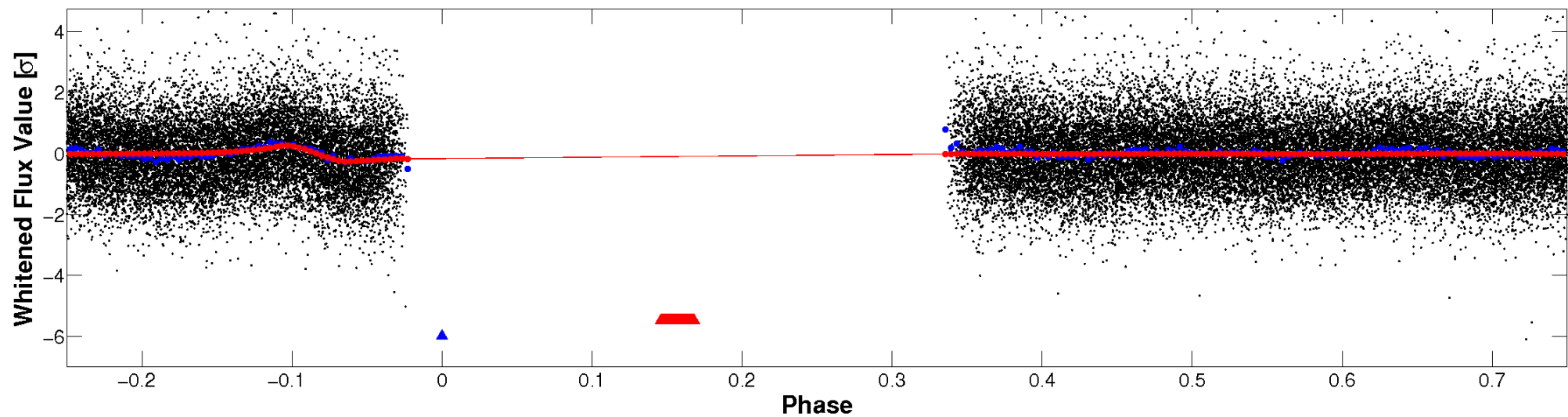


Non-Whitened Vs. Whitened Light Curve

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

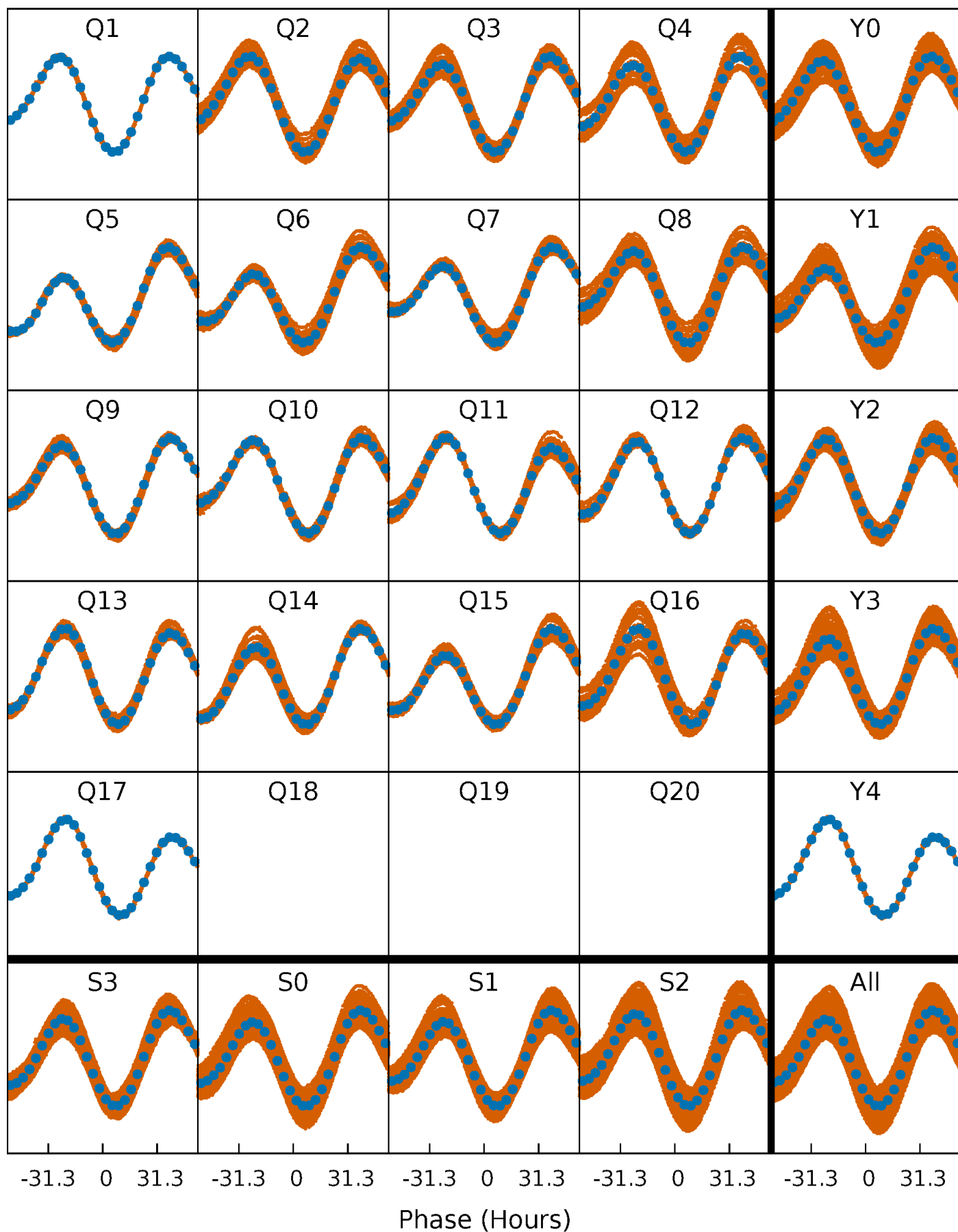


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



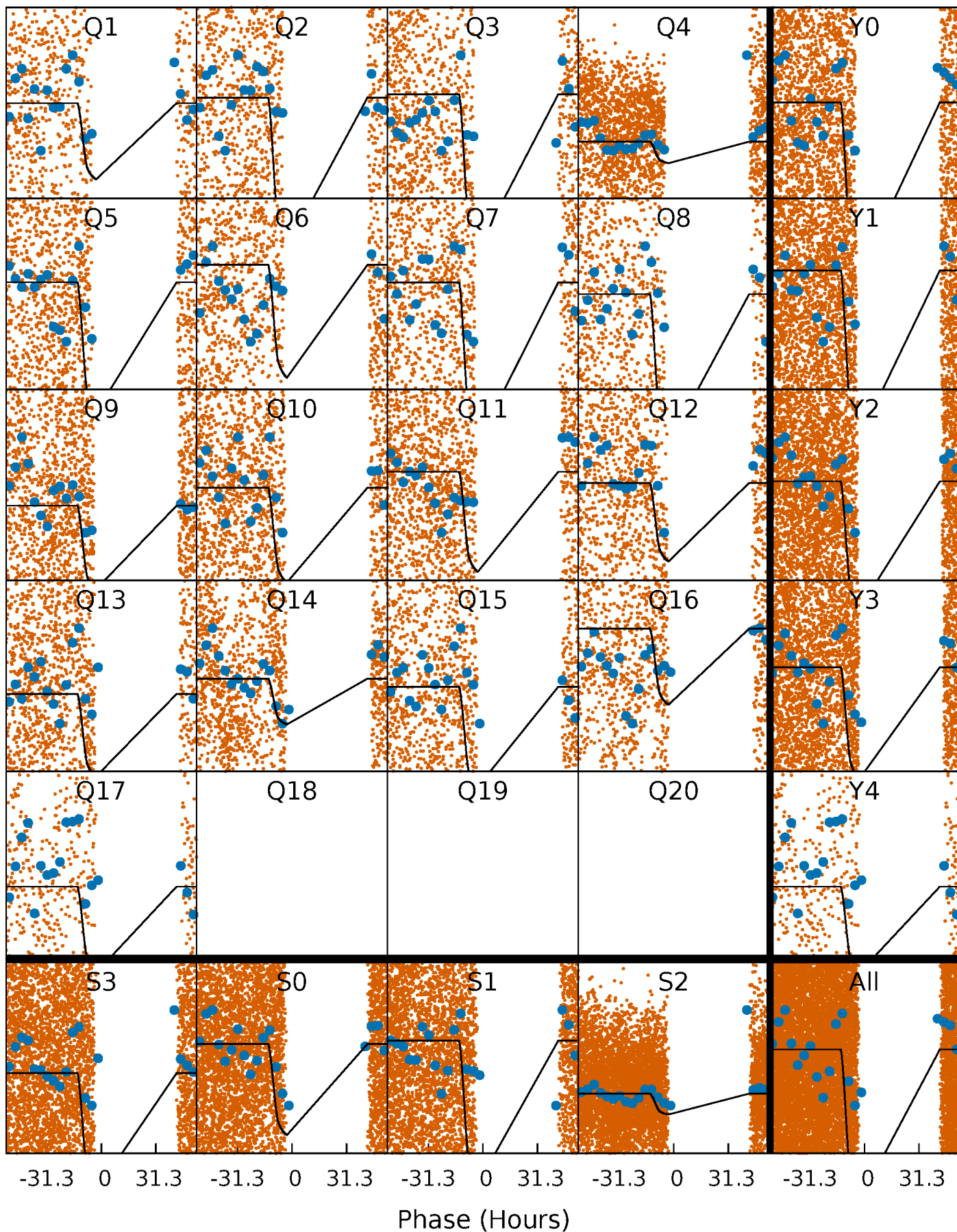
PDC Quarter-Phased Transit Curves

TCE 006450067-02 P= 5.359179 Days $T_0=134.233781$ (BKJD)



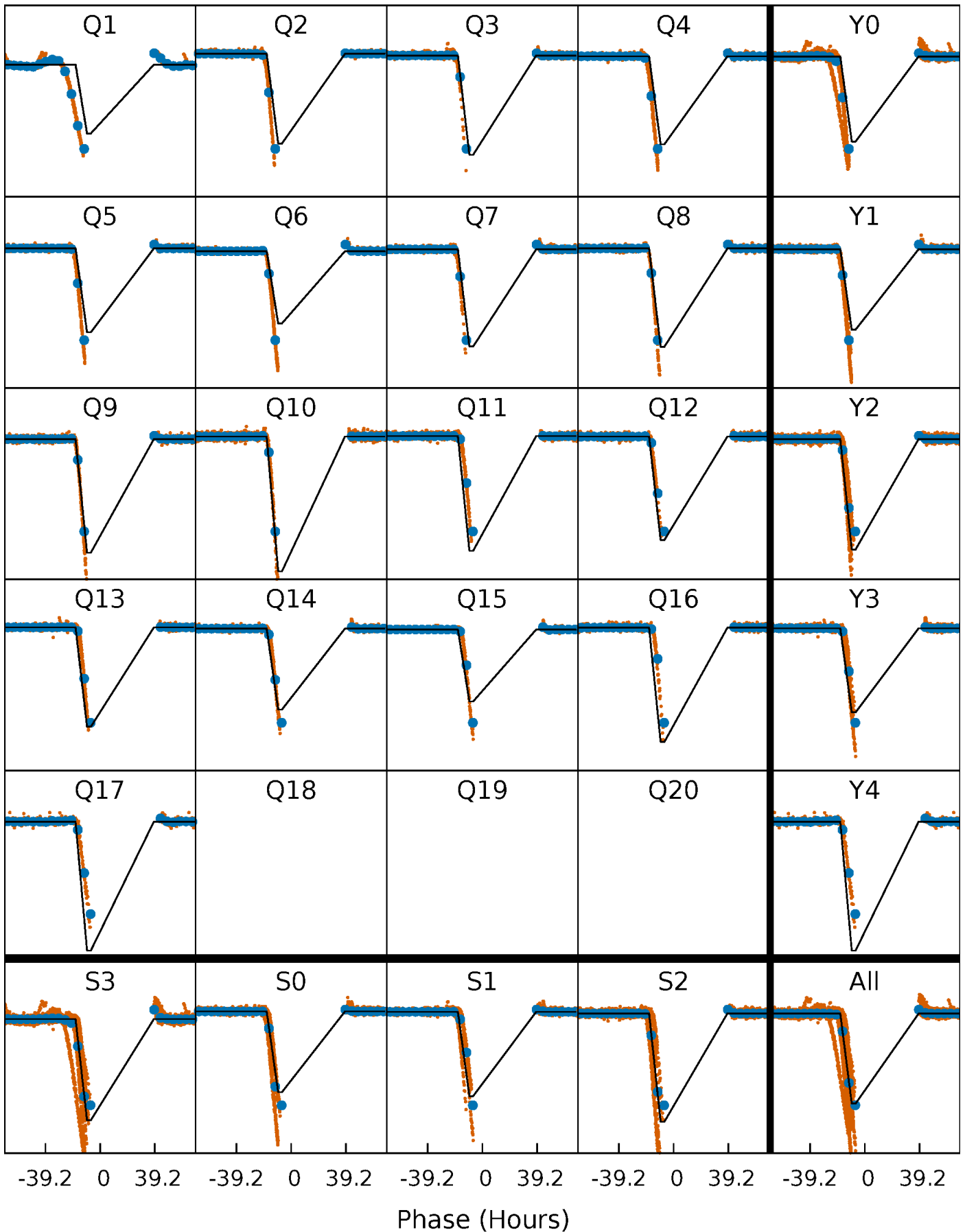
DV Quarter-Phased Transit Curves

TCE 006450067-02 P= 5.359179 Days $T_0=134.233781$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

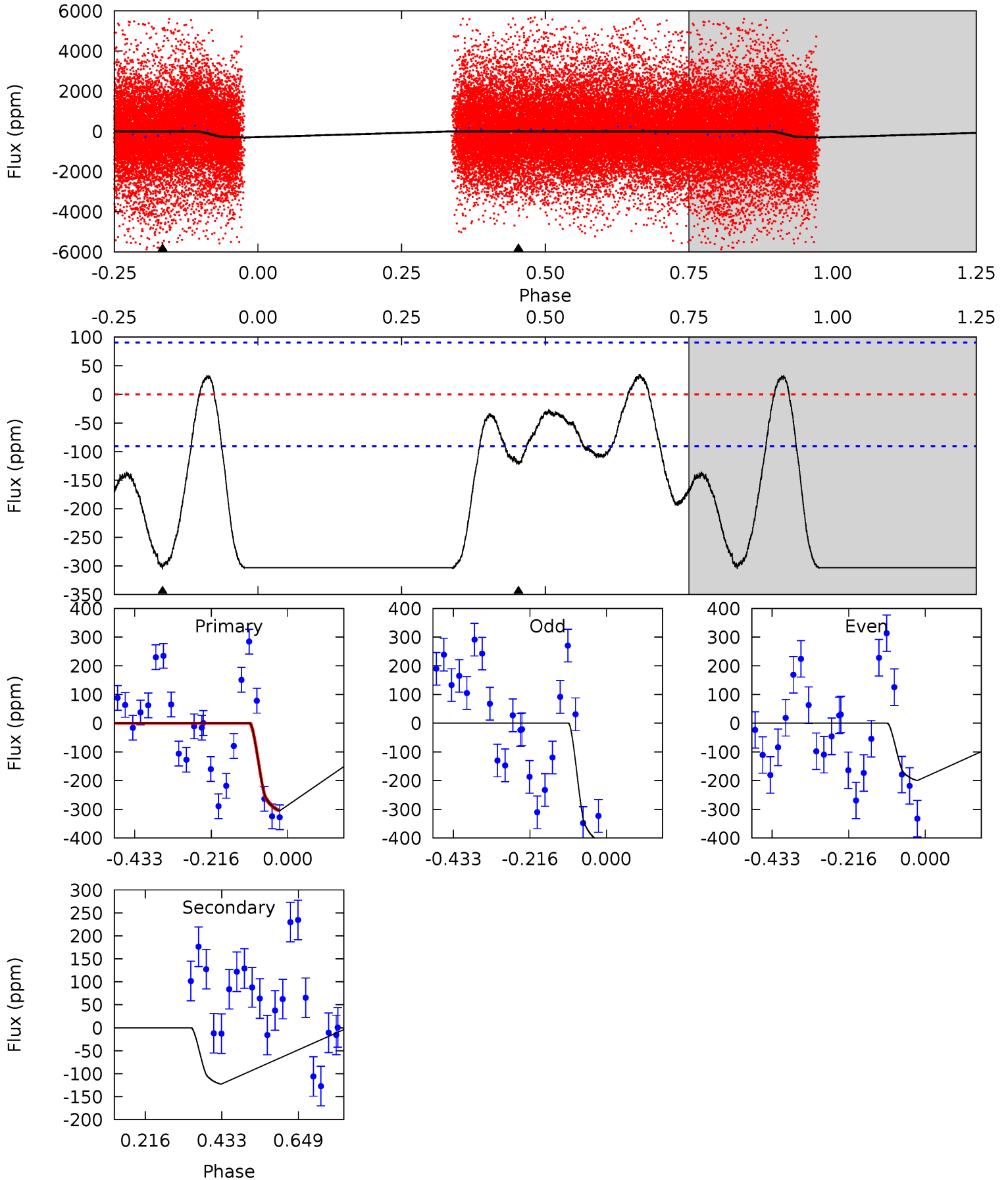
TCE 006450067-02 P= 5.358857 Days $T_0=134.429834$ (BKJD)



DV Model-Shift Uniqueness Test

006450067-02, P = 5.359179 Days, E = 128.874602 Days

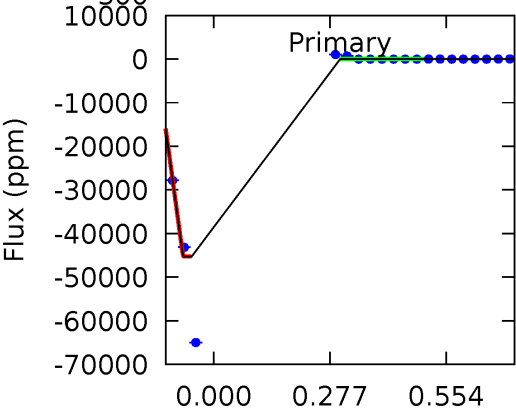
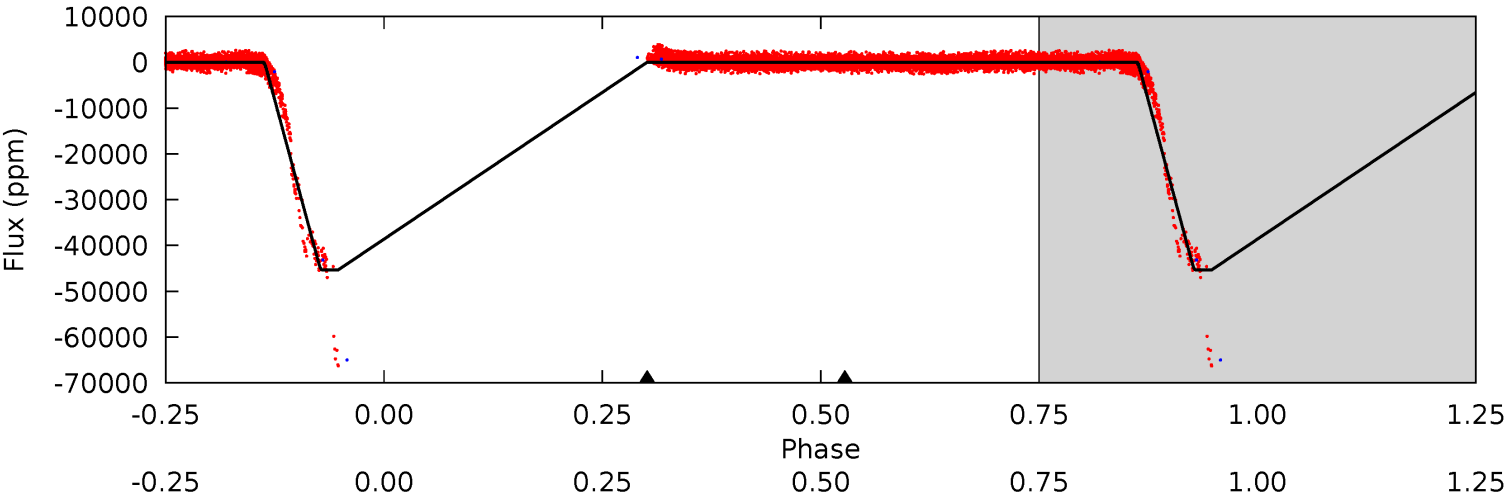
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
14.8	5.97	0	0	4.40	1.24	2.10	14.8	14.8	5.97	5.97	5.23	0	0.10	0



Alt Model-Shift Uniqueness Test

006450067-02, P = 5.358857 Days, E = 129.070977 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	4.35	1.09	0	0	0	0	0	0	0	0	0



Stellar Parameters For KIC 006450067

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5154^{+179}_{-179}	$4.570^{+0.065}_{-0.058}$	$-0.360^{+0.300}_{-0.300}$	$0.728^{+0.089}_{-0.073}$	$0.719^{+0.095}_{-0.059}$	$2.622^{+0.792}_{-0.558}$
	+3%/-3%	+1%/-1%	+83%/-83%	+12%/-10%	+13%/-8%	+30%/-21%
Source	PHO54	PHO54	PHO54	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

Secondary Eclipse Parameters for KIC 006450067-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-123±21	$2.71^{+0.25}_{-0.19}$	1172^{+46}_{-52}	3411^{+134}_{-134}	27^{+6}_{-5}
Alt.	-0±66	$16.94^{+1.25}_{-0.97}$	1170^{+48}_{-53}	-1951^{+3670}_{-175}	$0.009^{+0.367}_{-0.352}$

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

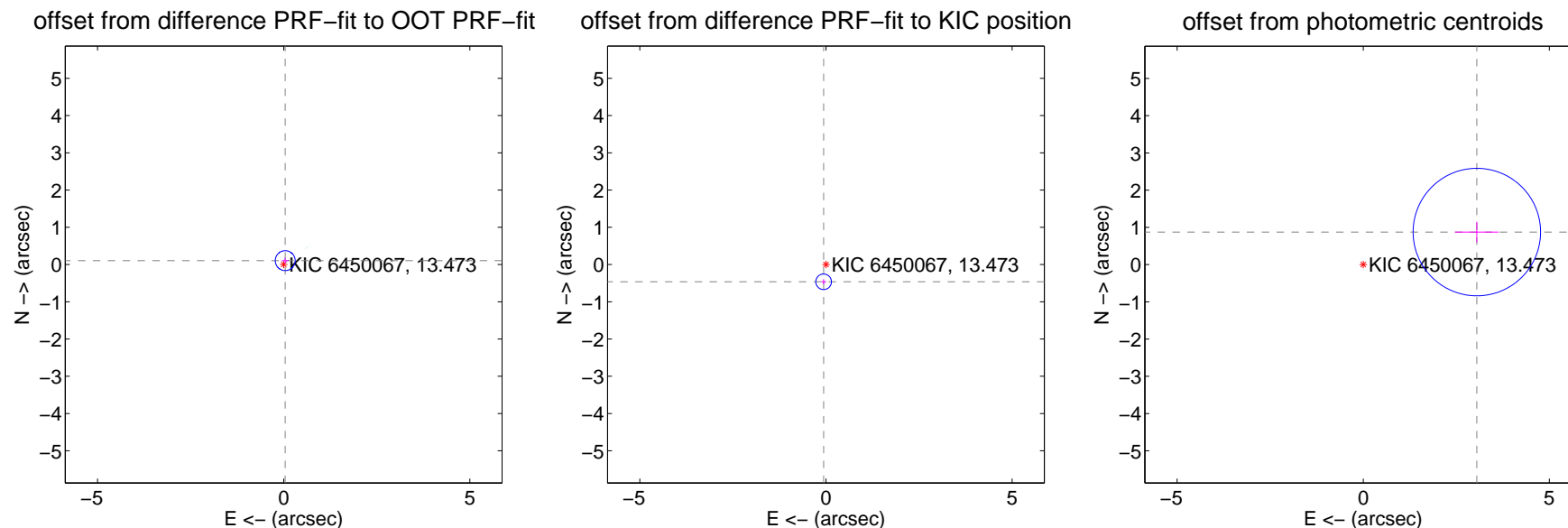
DV Centroid Data

Supplemental centroid analysis for 006450067-02. Kepler magnitude: 13.47. Transit SNR 15.16

There are 17 quarters with good PRF difference image offsets

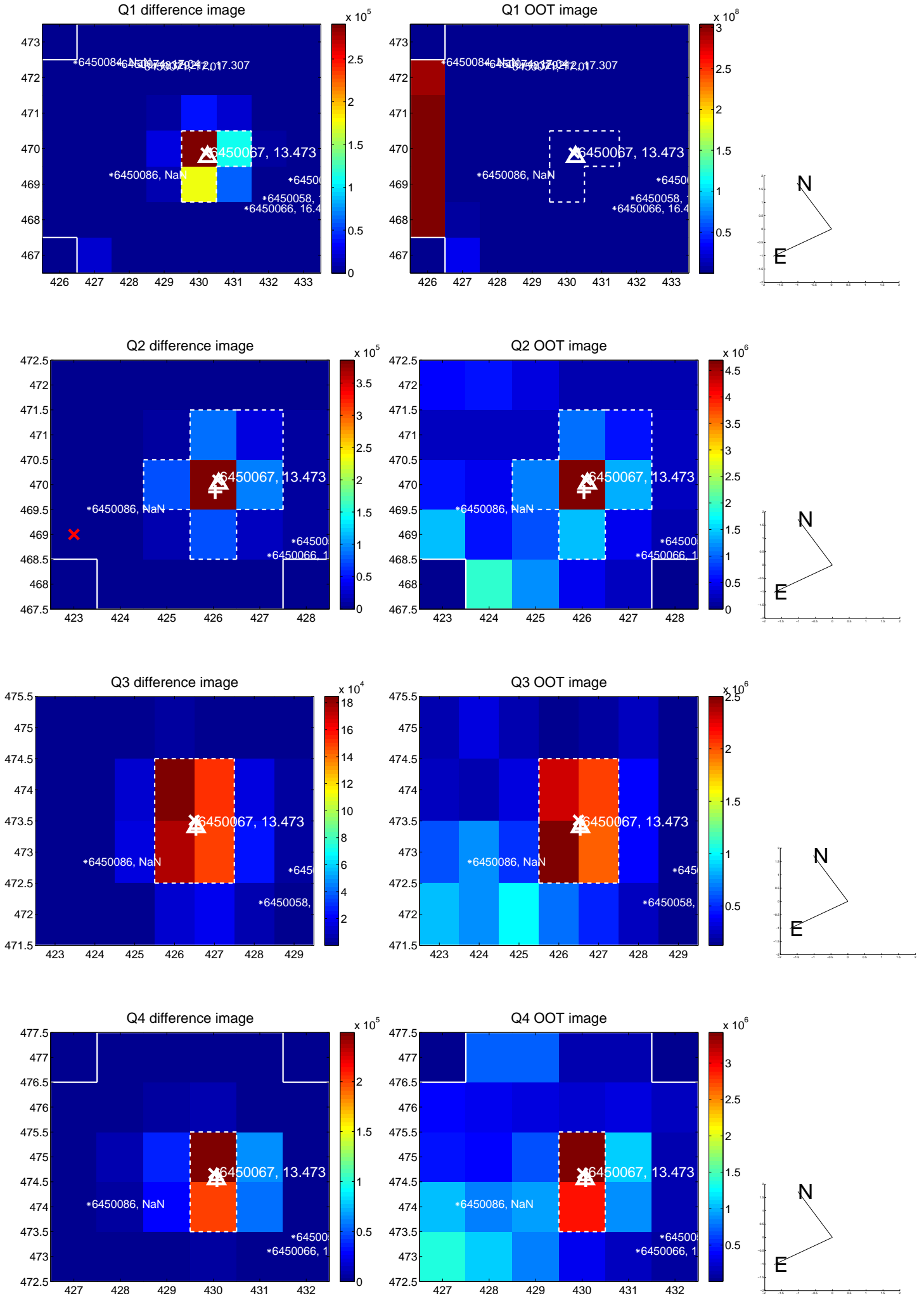
The direct PRF centroid is offset from the target star catalog position by about 0.60 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.112 ± 0.089	1.26	-0.041 ± 0.093	0.104 ± 0.077
PRF-fit source offset from KIC position	0.467 ± 0.070	6.69	0.063 ± 0.067	-0.463 ± 0.070
photometric centroid source offset	3.17 ± 0.57	5.56	-3.05 ± 0.59	0.87 ± 0.28

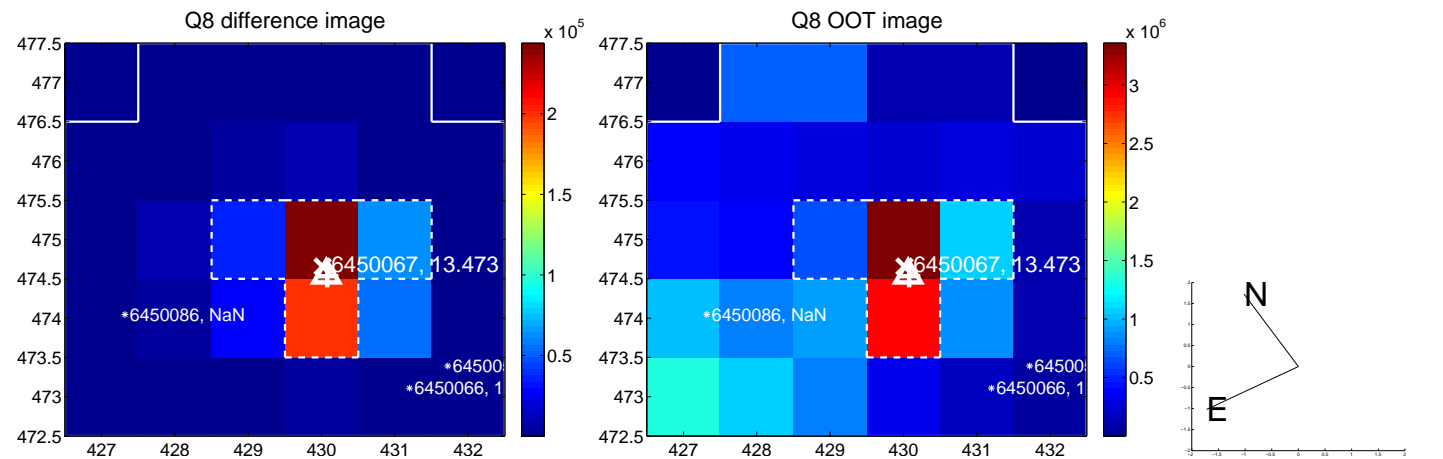
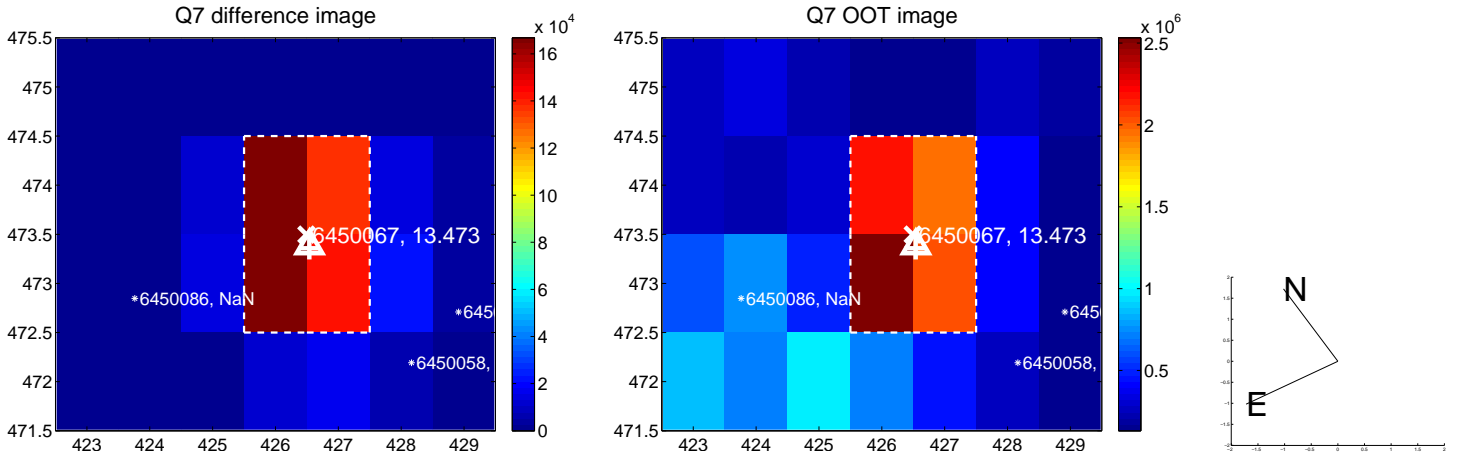
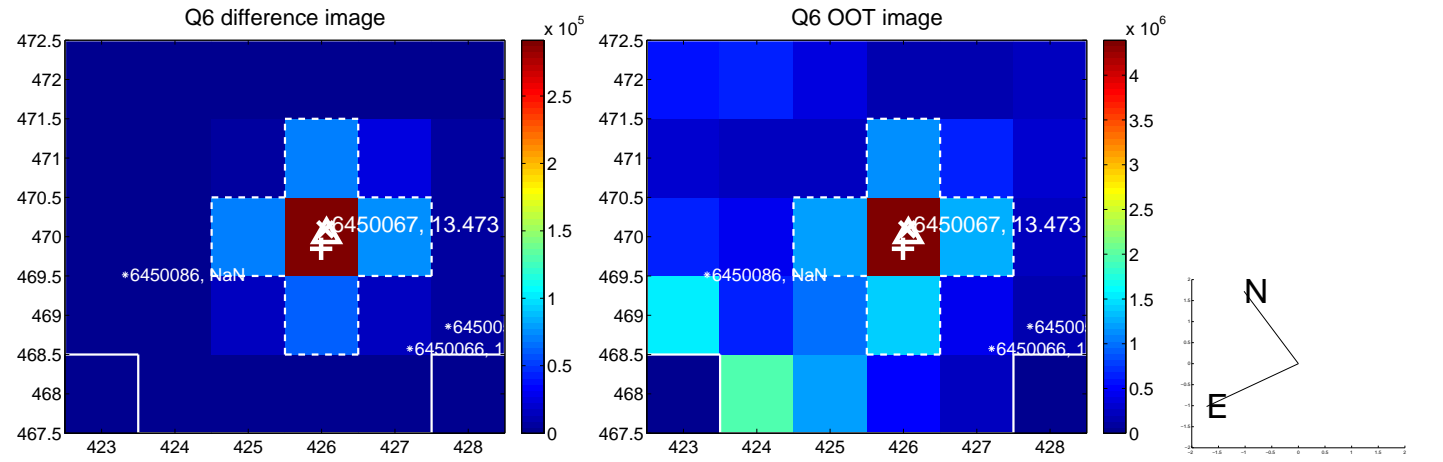
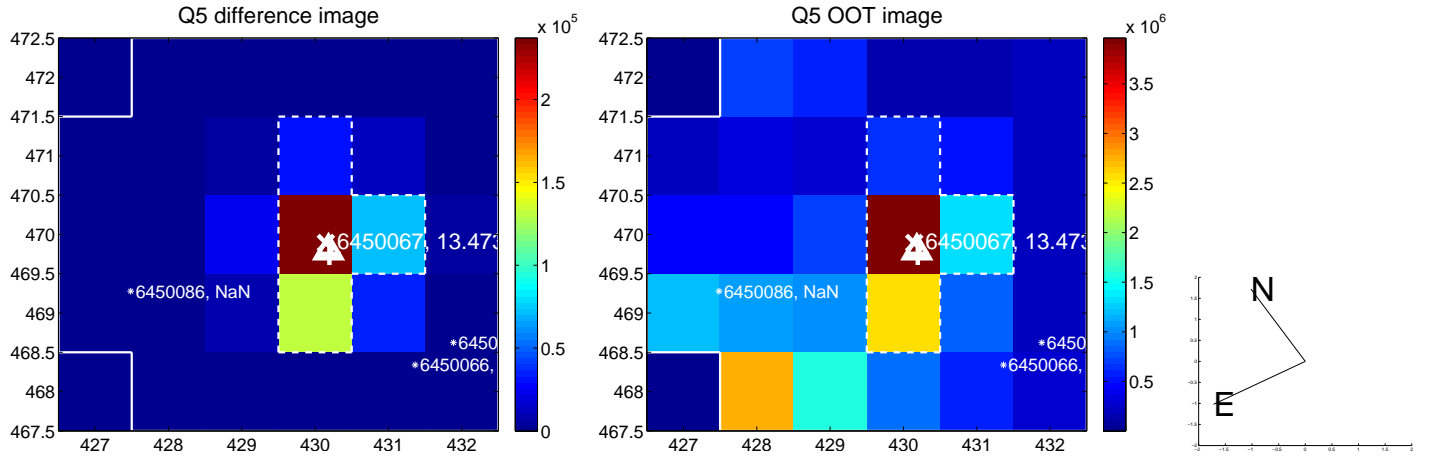


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

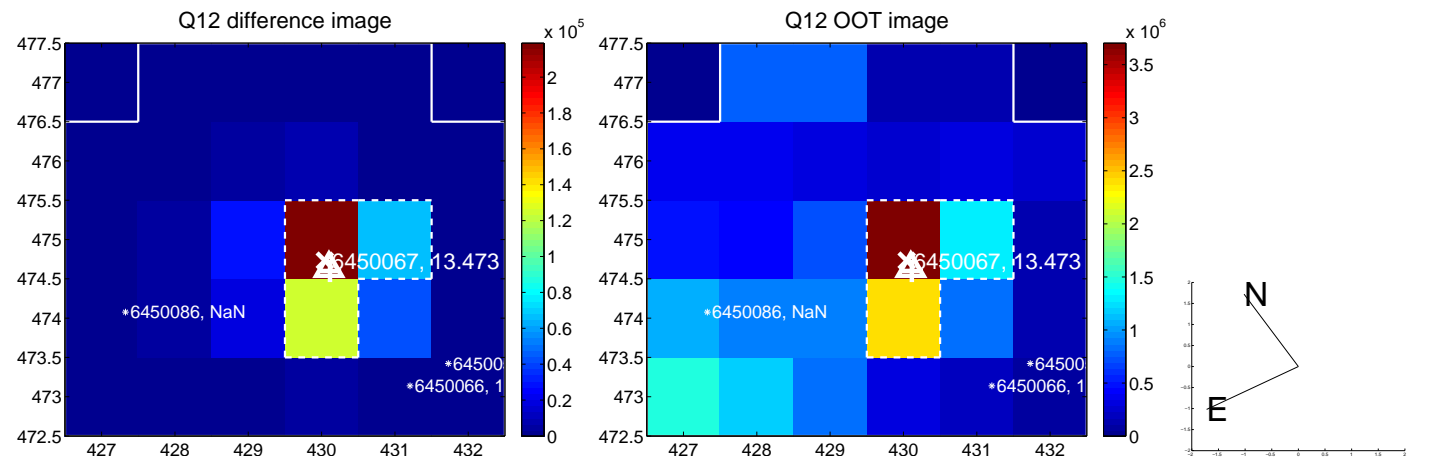
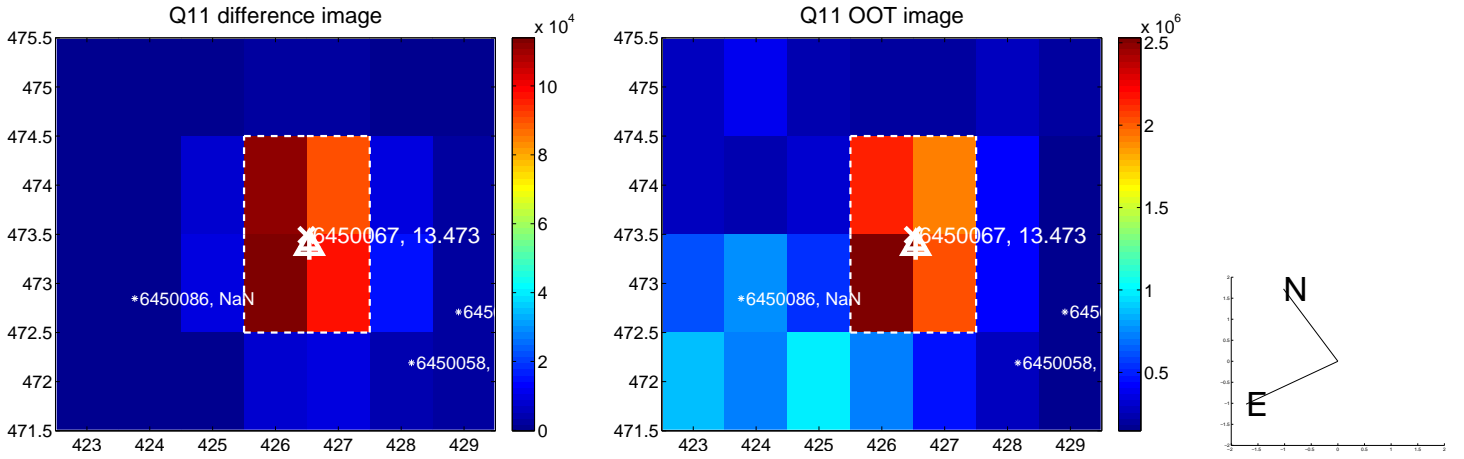
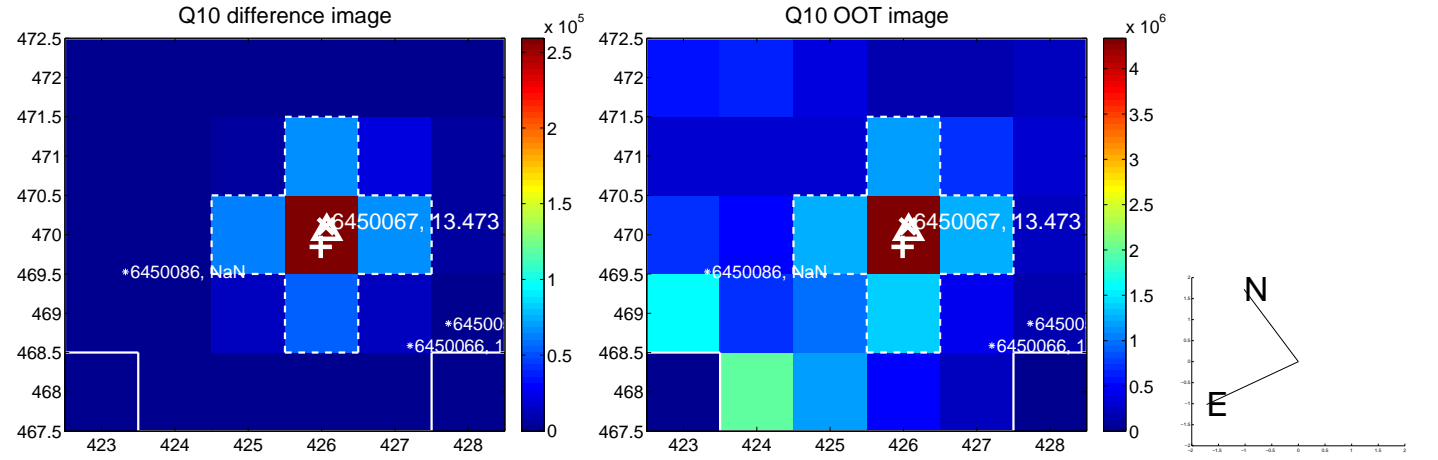
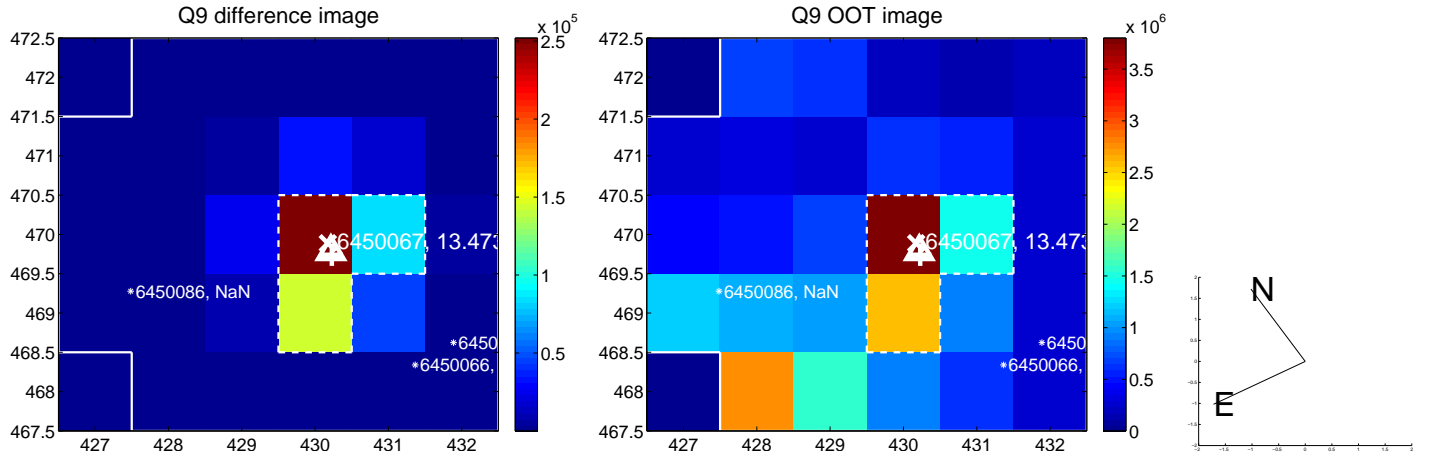
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



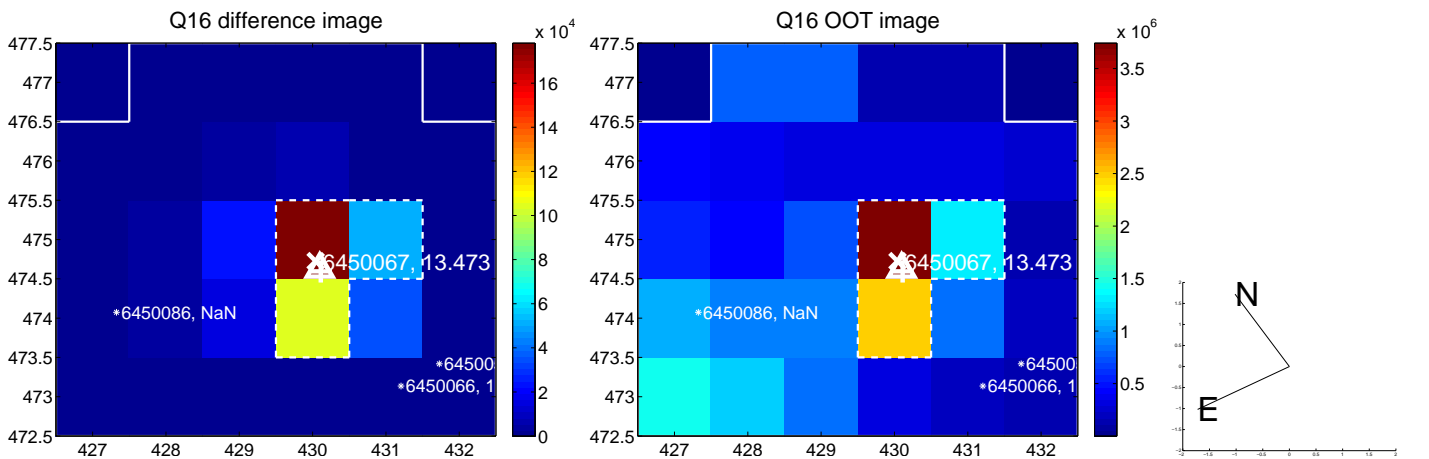
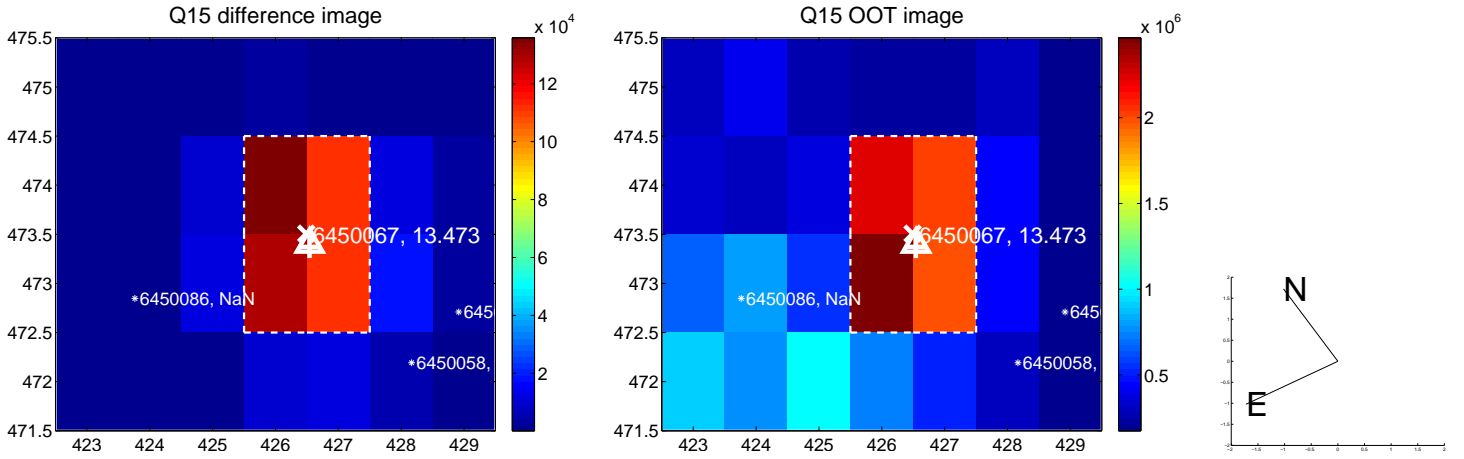
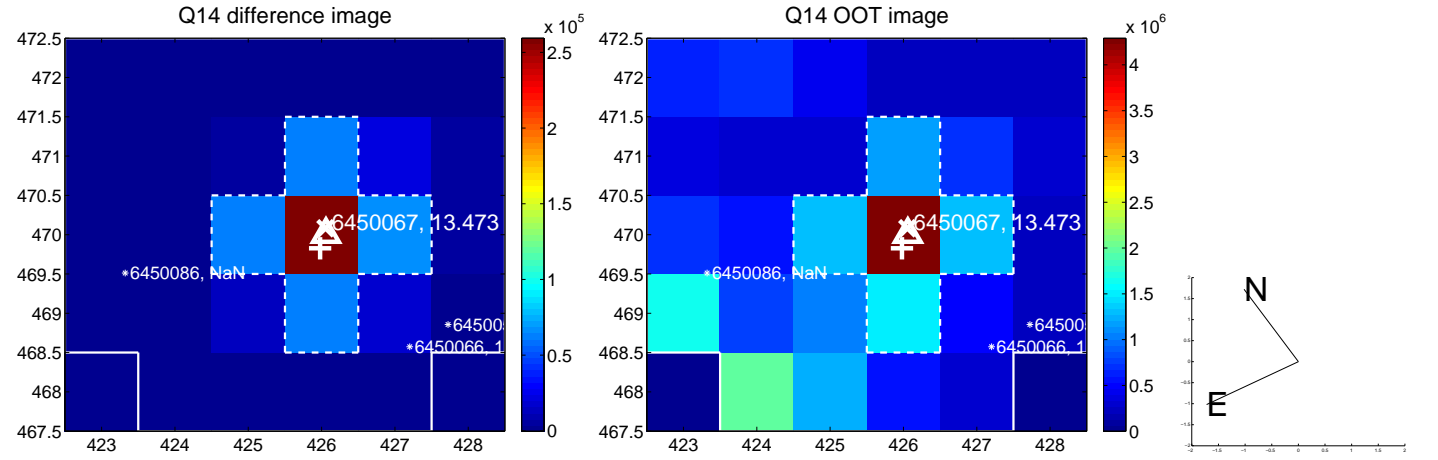
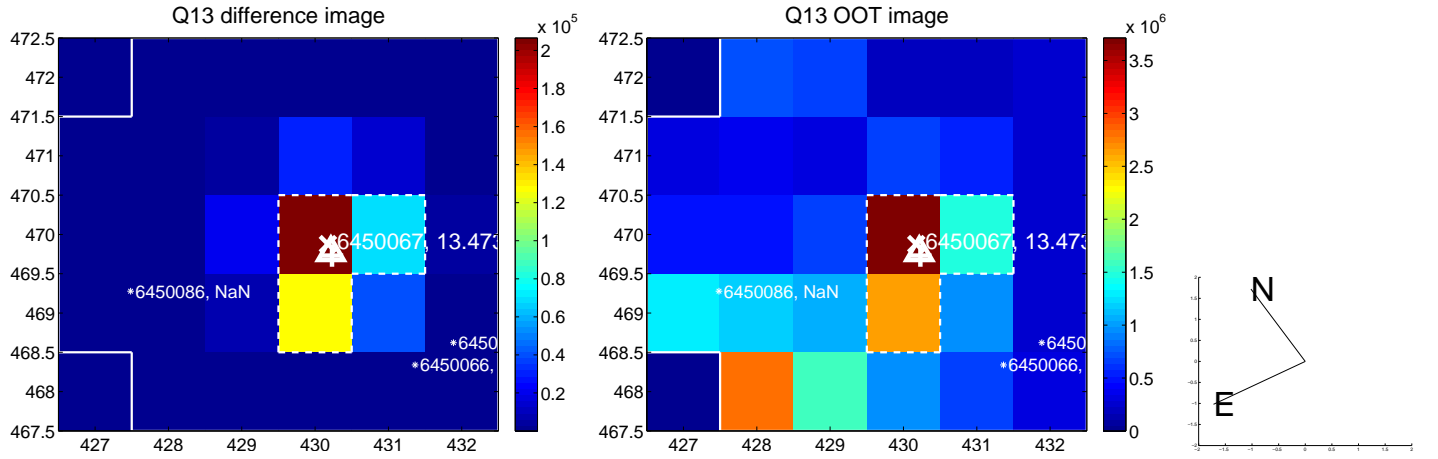
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



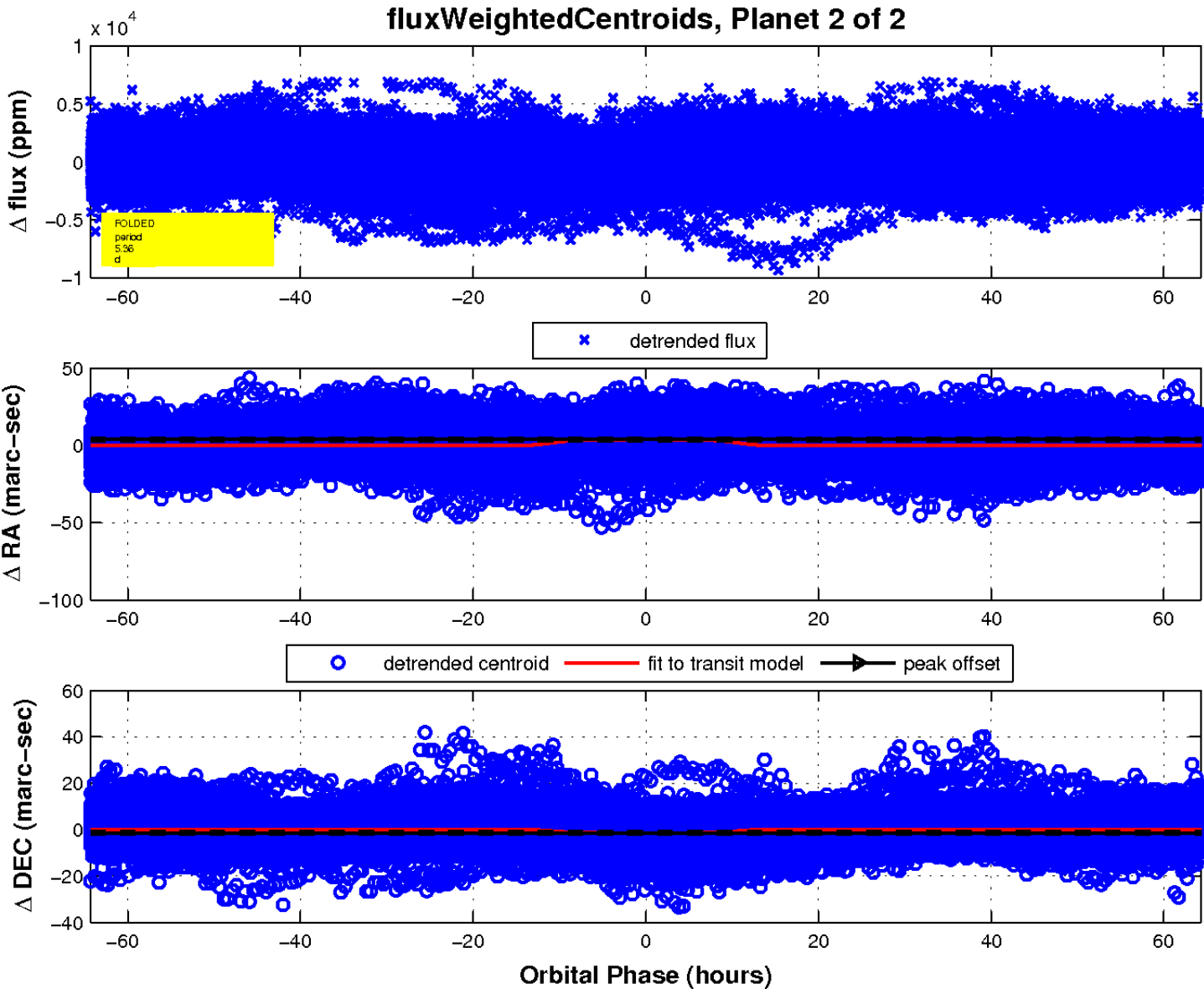
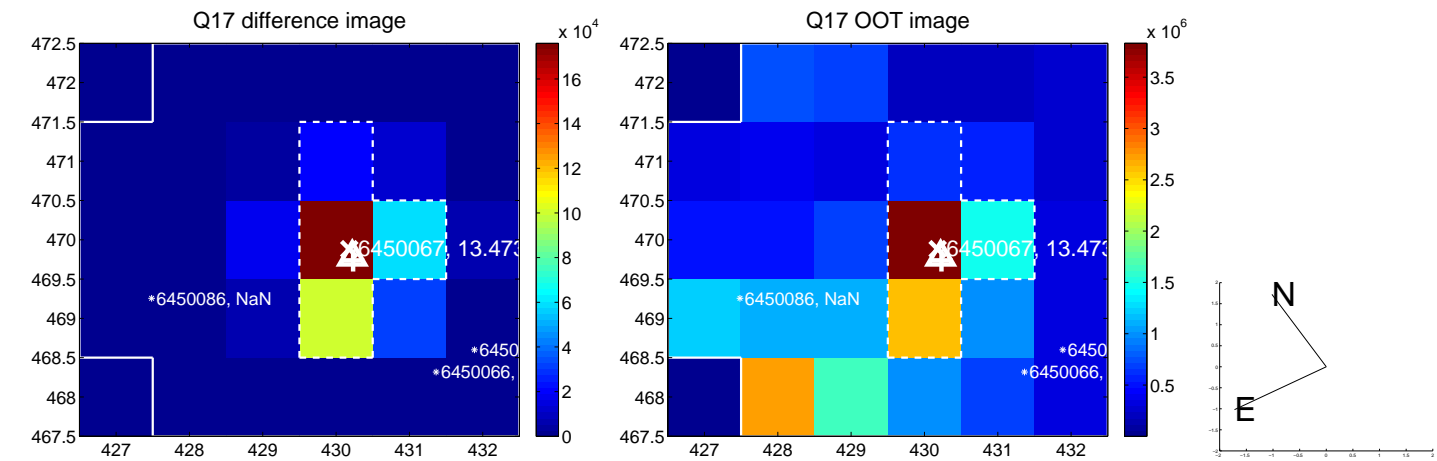
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image

