

KIC 006209677

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})
006209677-01	OBS	1750.01	7.768449	138.068674	211.3	3.931	20.5	22.3	0.92	5447	1.56	118.21
006209677-02	OBS	1750.02	2.537398	132.350739	84.7	1.669	10.3	10.5	0.92	5447	1.01	525.51

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006209677-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT
006209677-02	OBS	PC	1.00	0	0	0	0	NO_COMMENT

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.

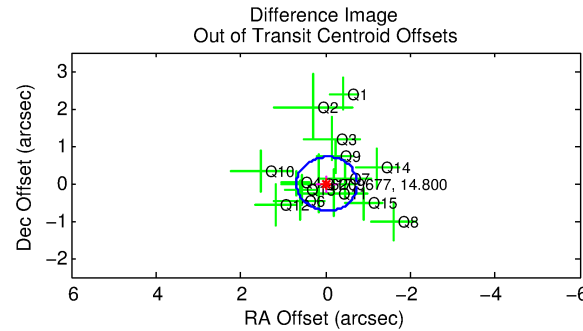
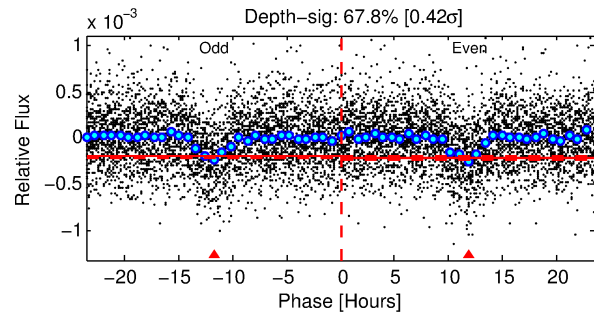
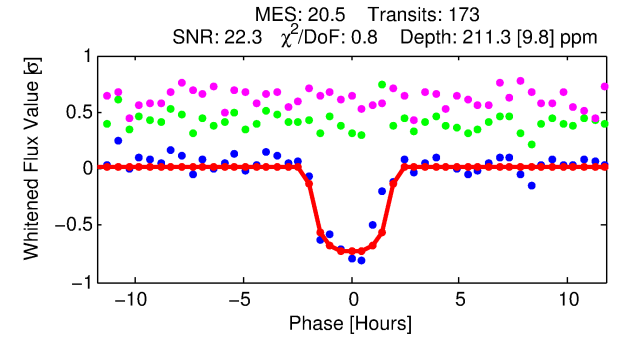
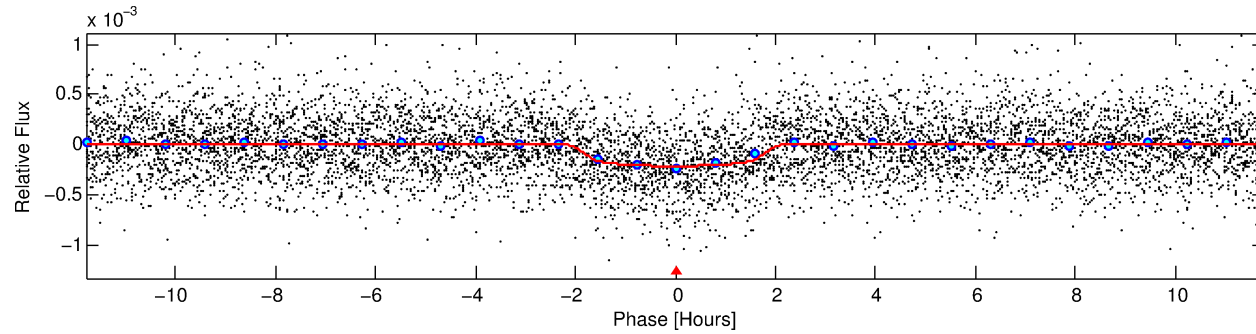
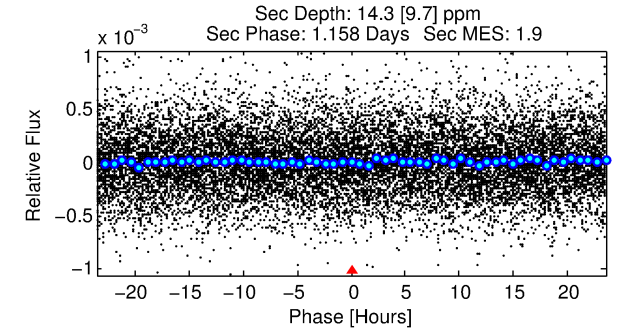
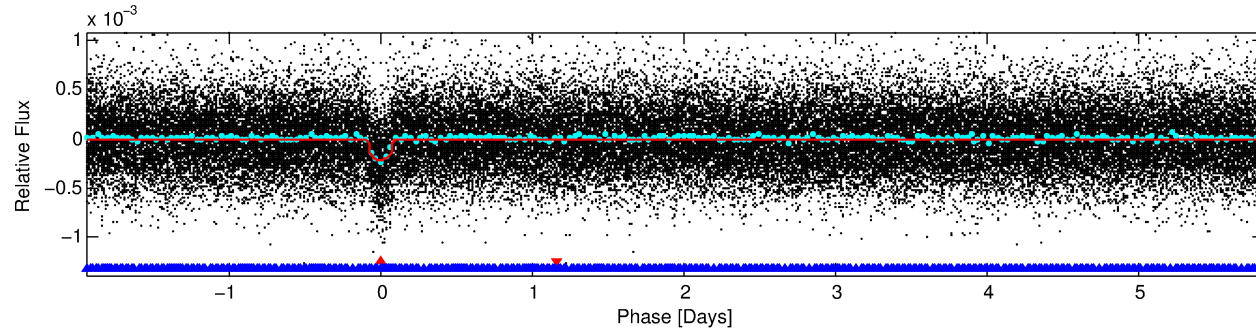
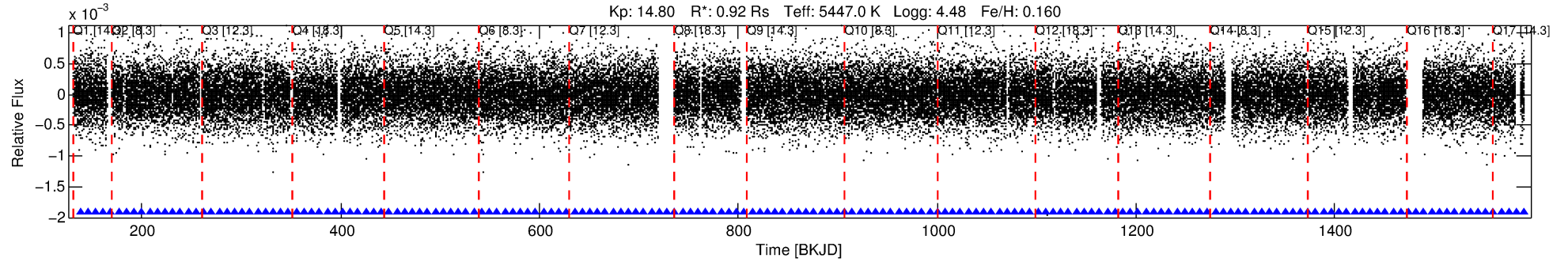
Ephemeris Match Information For 006209677-01

No Significant Match Found

DV One-Page Summary

KIC: 6209677 Candidate: 1 of 2 Period: 7.768 d

KOI: K01750.01 Corr: 0.947



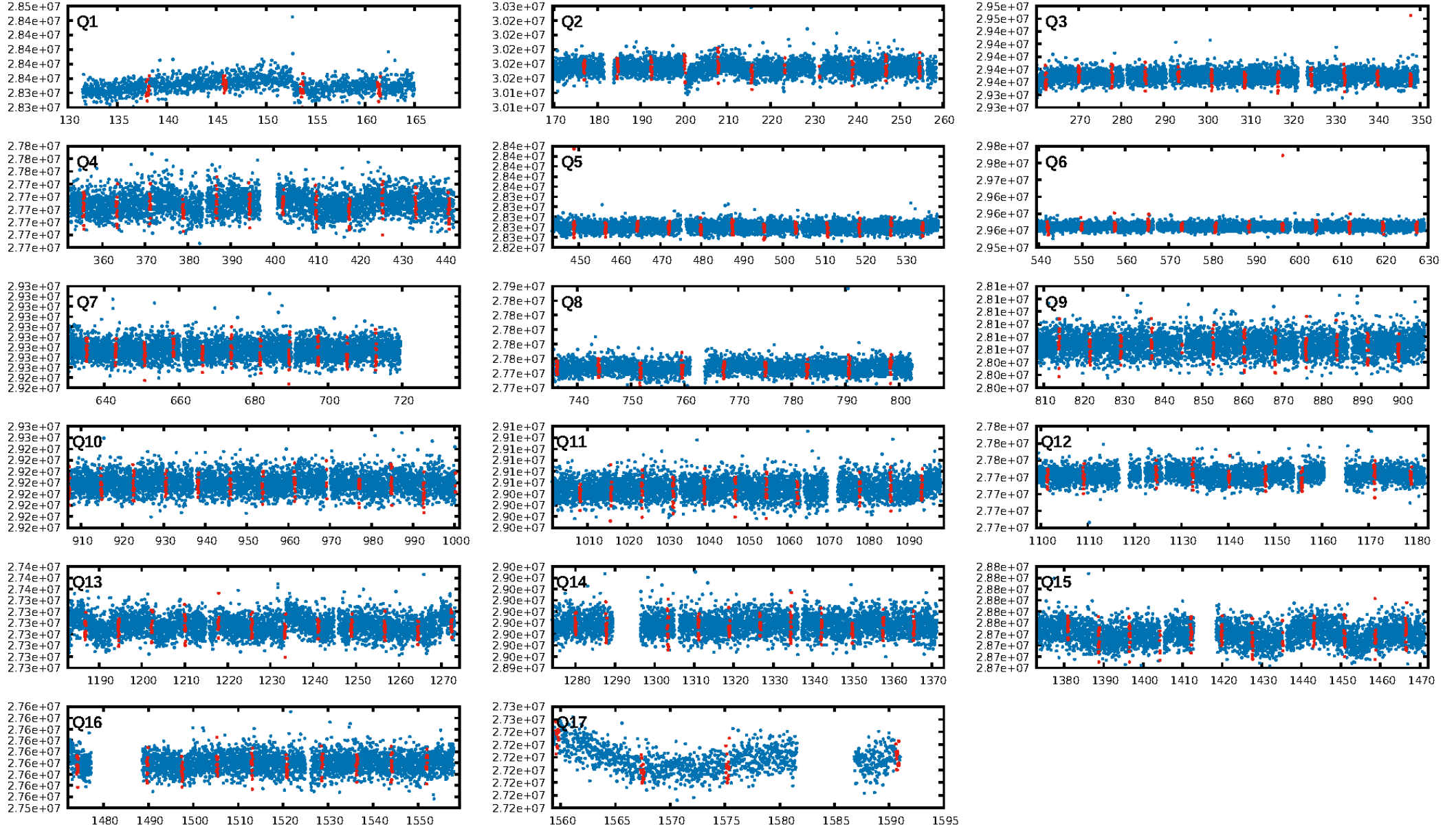
DV Fit Results:

Period = 7.76845 [0.00004] d
Epoch = 138.0687 [0.0035] BKJD
Rp/R* = 0.0156 [0.0051]
a/R* = 7.98 [10.88]
b = 0.87 [0.40]
Seff = 118.21 [21.04]
Teff = 841 [37] K
Rp = 1.56 [0.54] Re
a = 0.0749 [0.0079] AU
Ag = 18.16 [17.39] [0.99σ]
Teffp = 2684 [634] K [2.90σ]

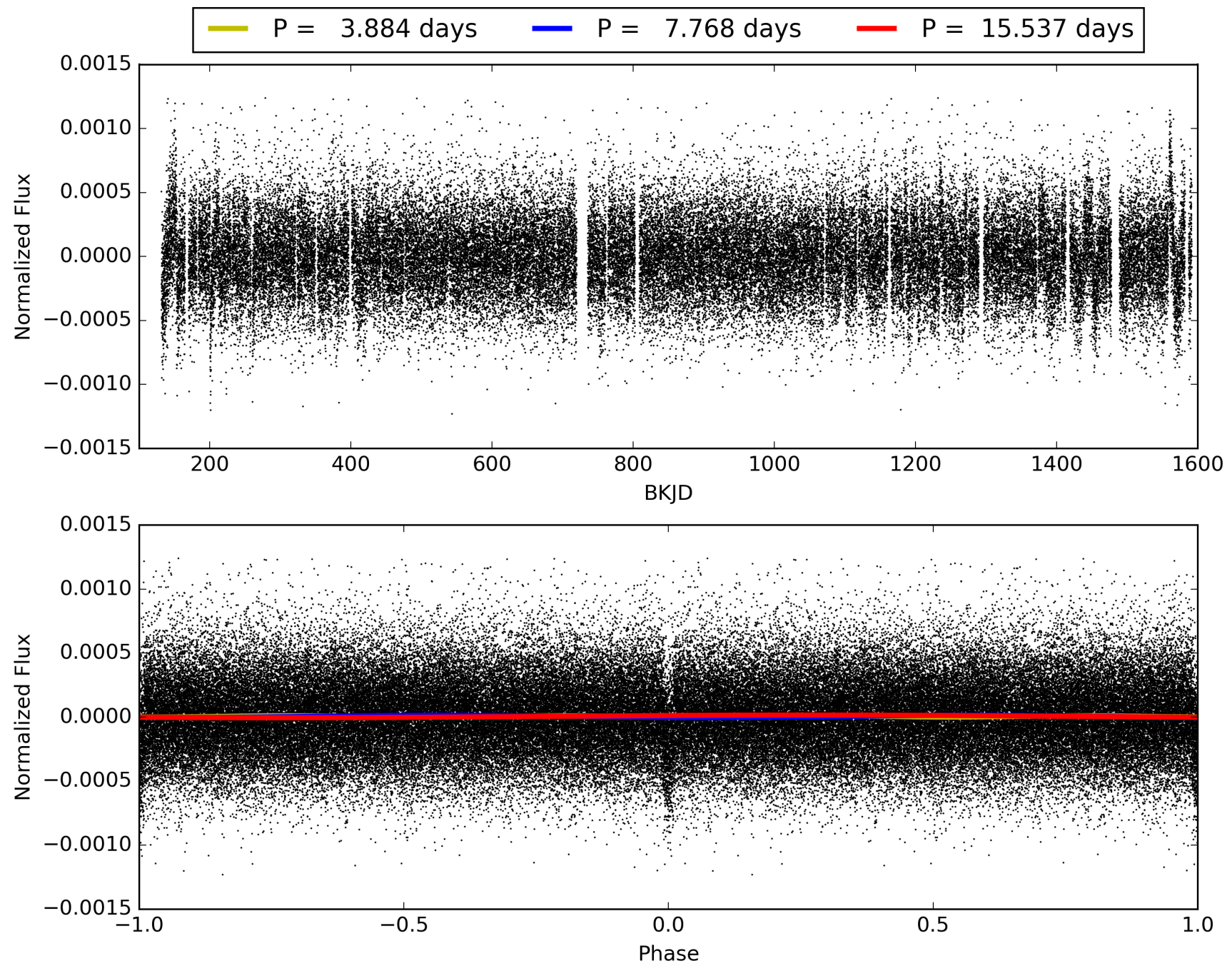
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [29.40σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 99.8%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 2.43e-90
RollingBand-fgt: 1.00 [165/165]
GhostDiagnostic-chr: 2.993
Centroid-sig: 0.4%
Centroid-so: 0.943 arcsec [1.55σ]
OotOffset-rm: 0.036 arcsec [0.15σ]
KicOffset-rm: 0.155 arcsec [0.68σ]
OotOffset-st: 4/4/3/4 [15]
KicOffset-st: 4/4/3/4 [15]
DiffImageQuality-fgm: 0.93 [14/15]
DiffImageOverlap-fno: 1.00 [17/17]

TCE 006209677-01, PDC Light Curves

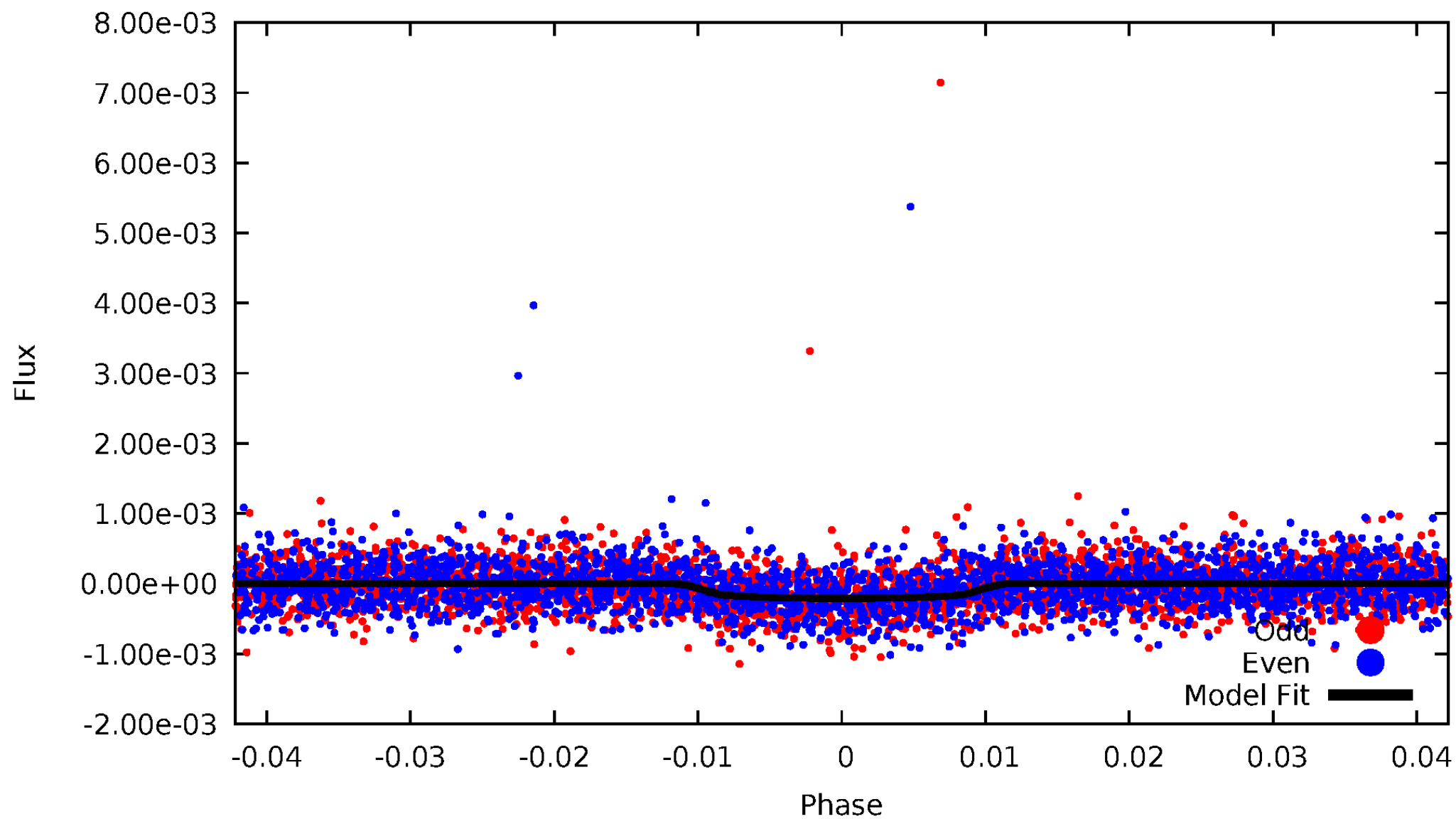


TCE 006209677-01



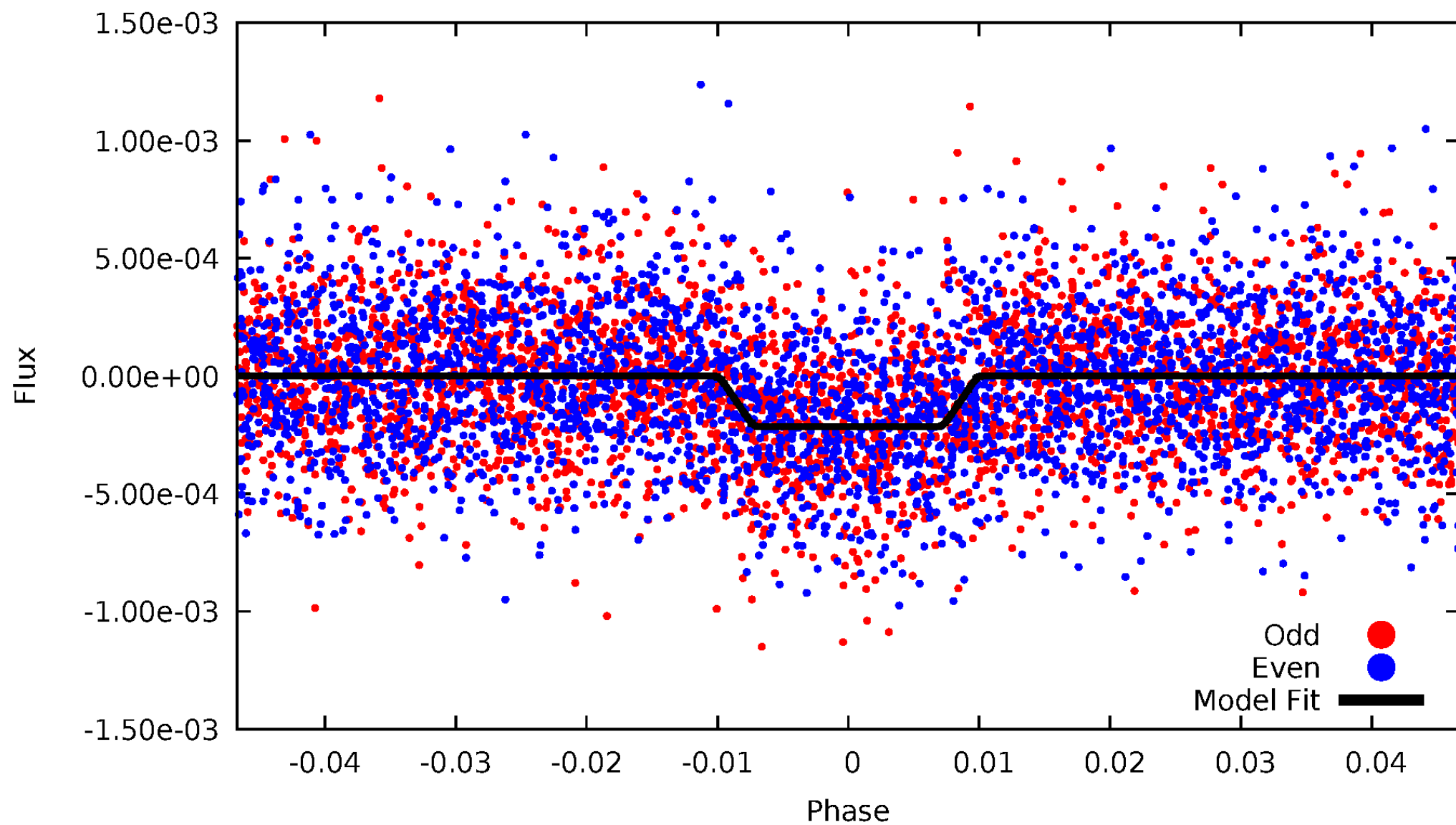
DV Odd/Even

TCE 006209677-01



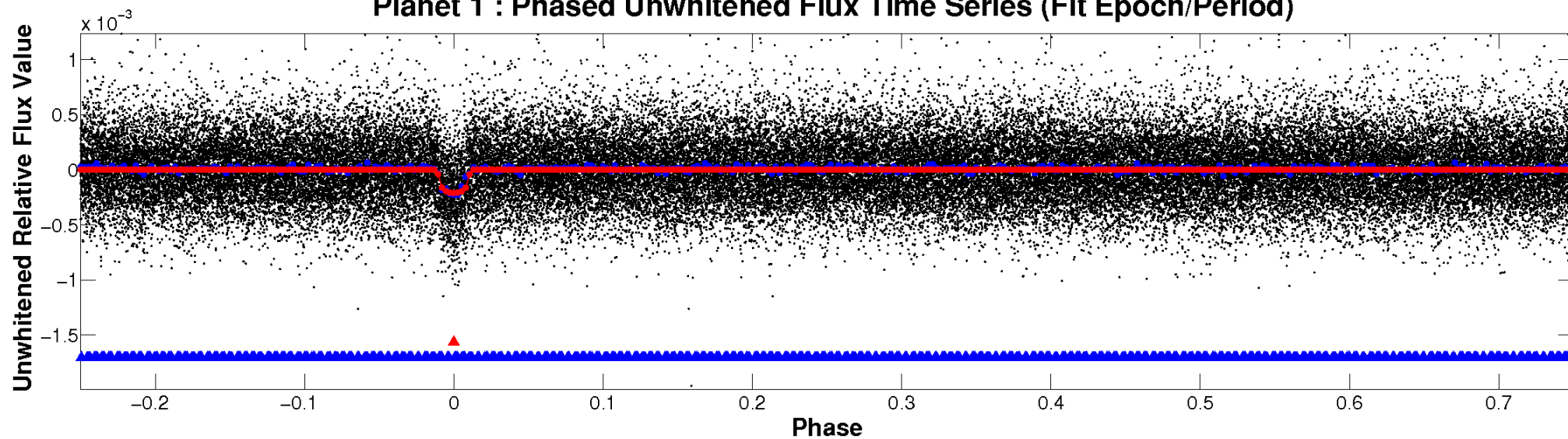
ALT Odd/Even

TCE 006209677-01

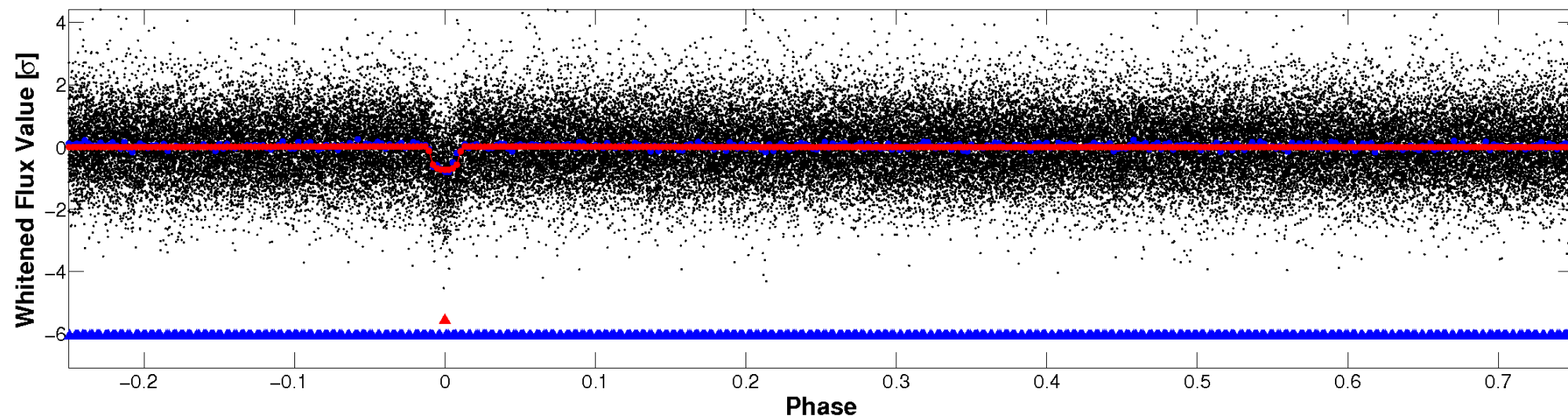


Non-Whitened Vs. Whitened Light Curve

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

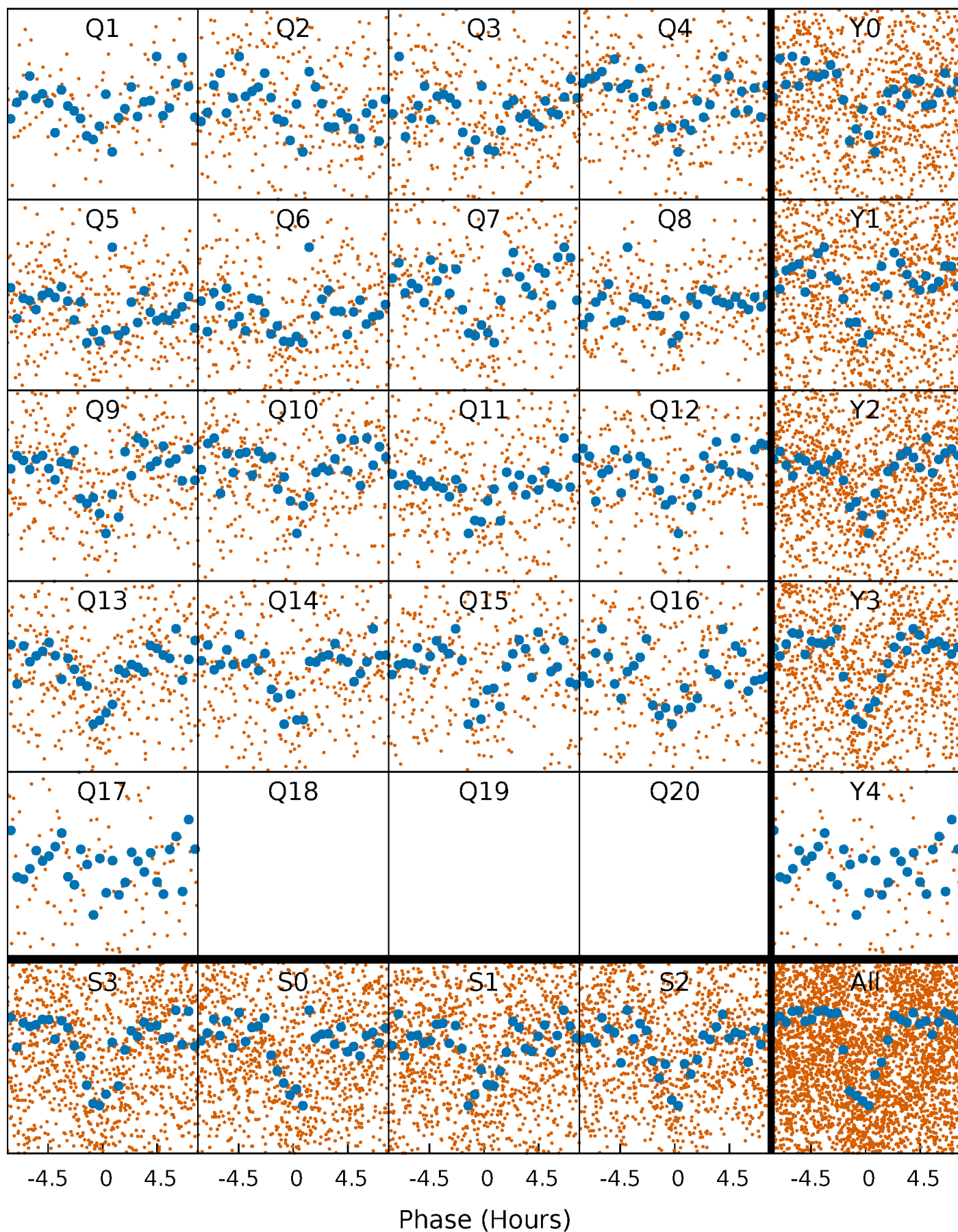


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



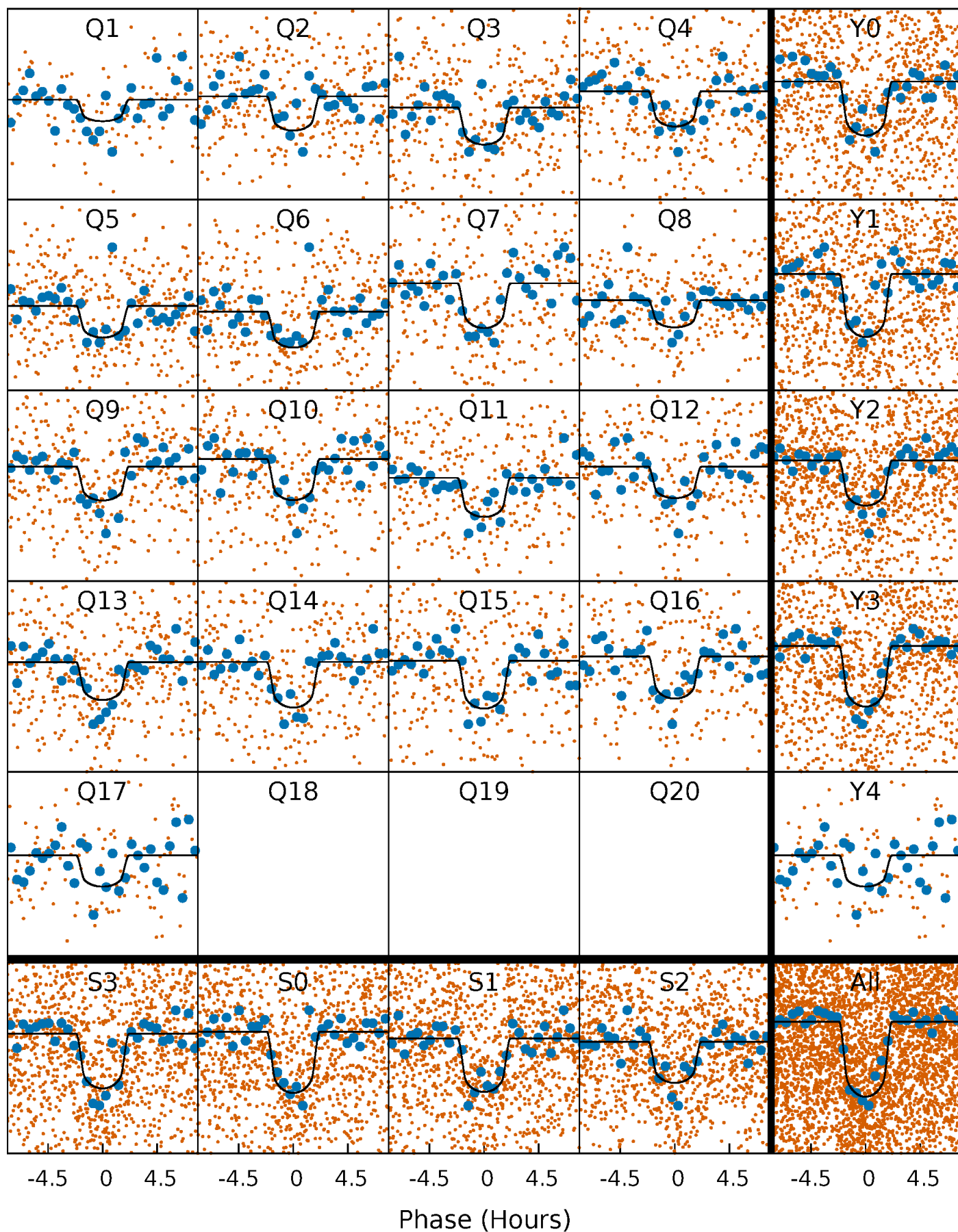
PDC Quarter-Phased Transit Curves

TCE 006209677-01 P= 7.768449 Days $T_0=138.068674$ (BKJD)



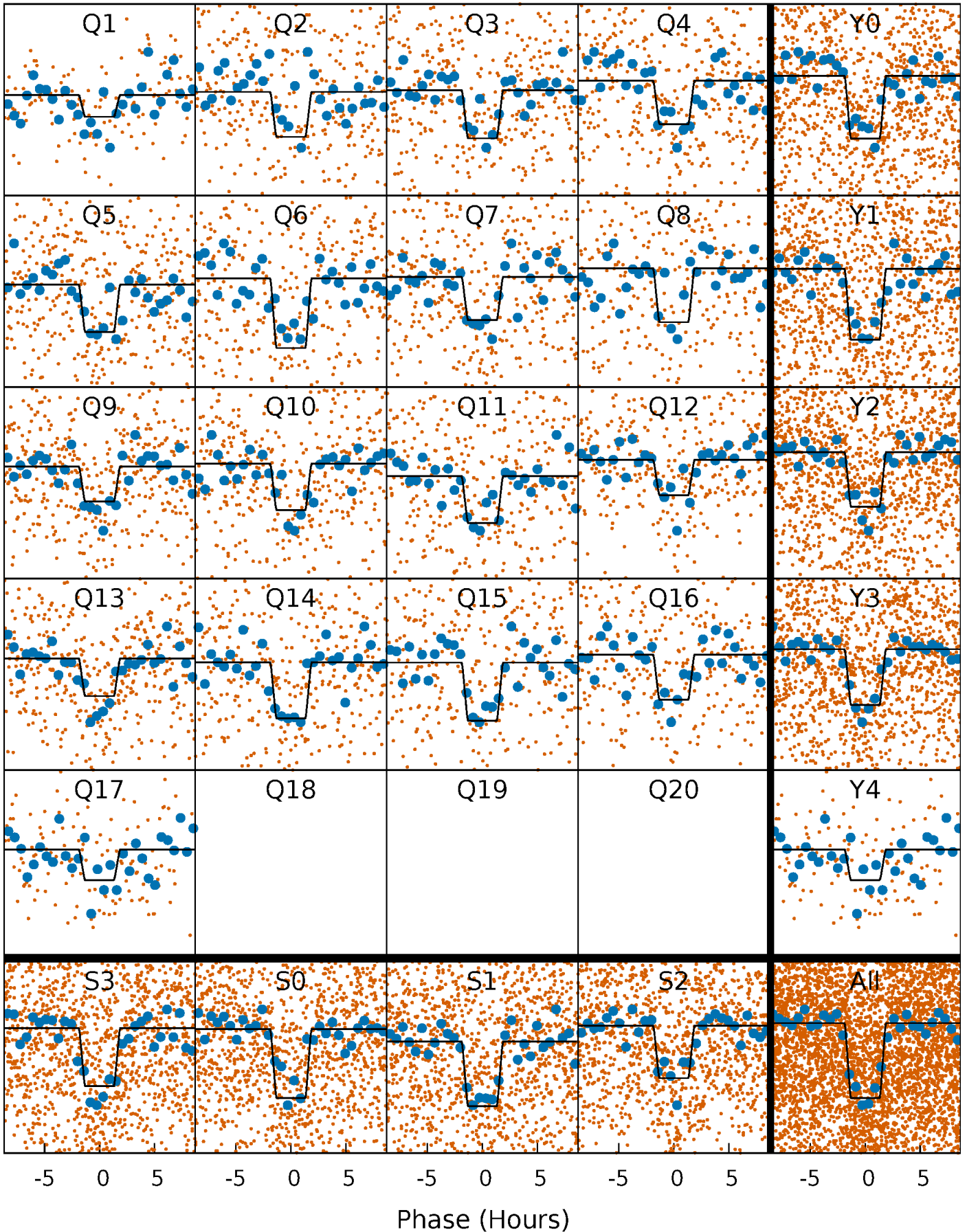
DV Quarter-Phased Transit Curves

TCE 006209677-01 P= 7.768449 Days $T_0=138.068674$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

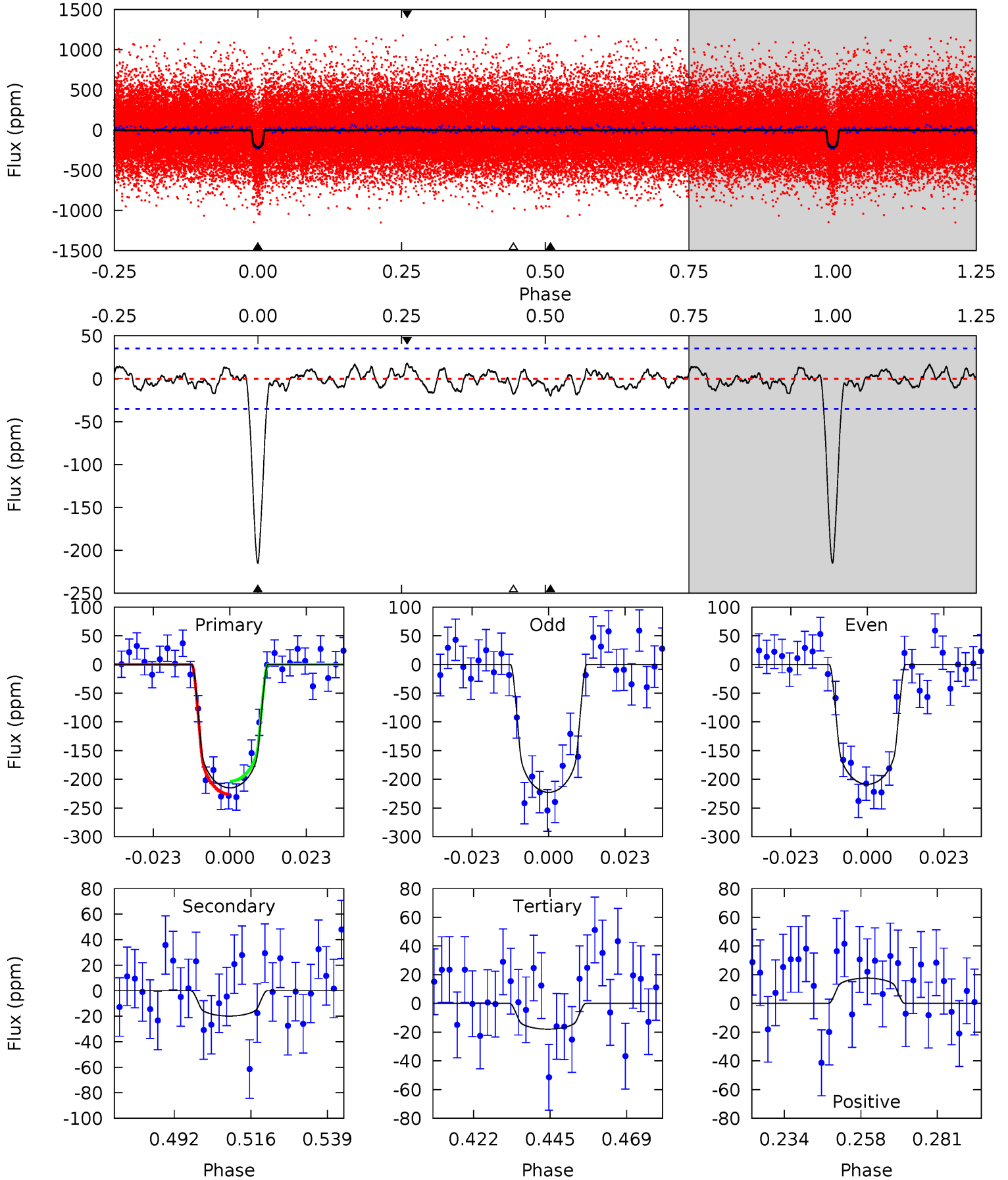
TCE 006209677-01 P= 7.768465 Days $T_0=138.063572$ (BKJD)



DV Model-Shift Uniqueness Test

006209677-01, P = 7.768449 Days, E = 130.300225 Days

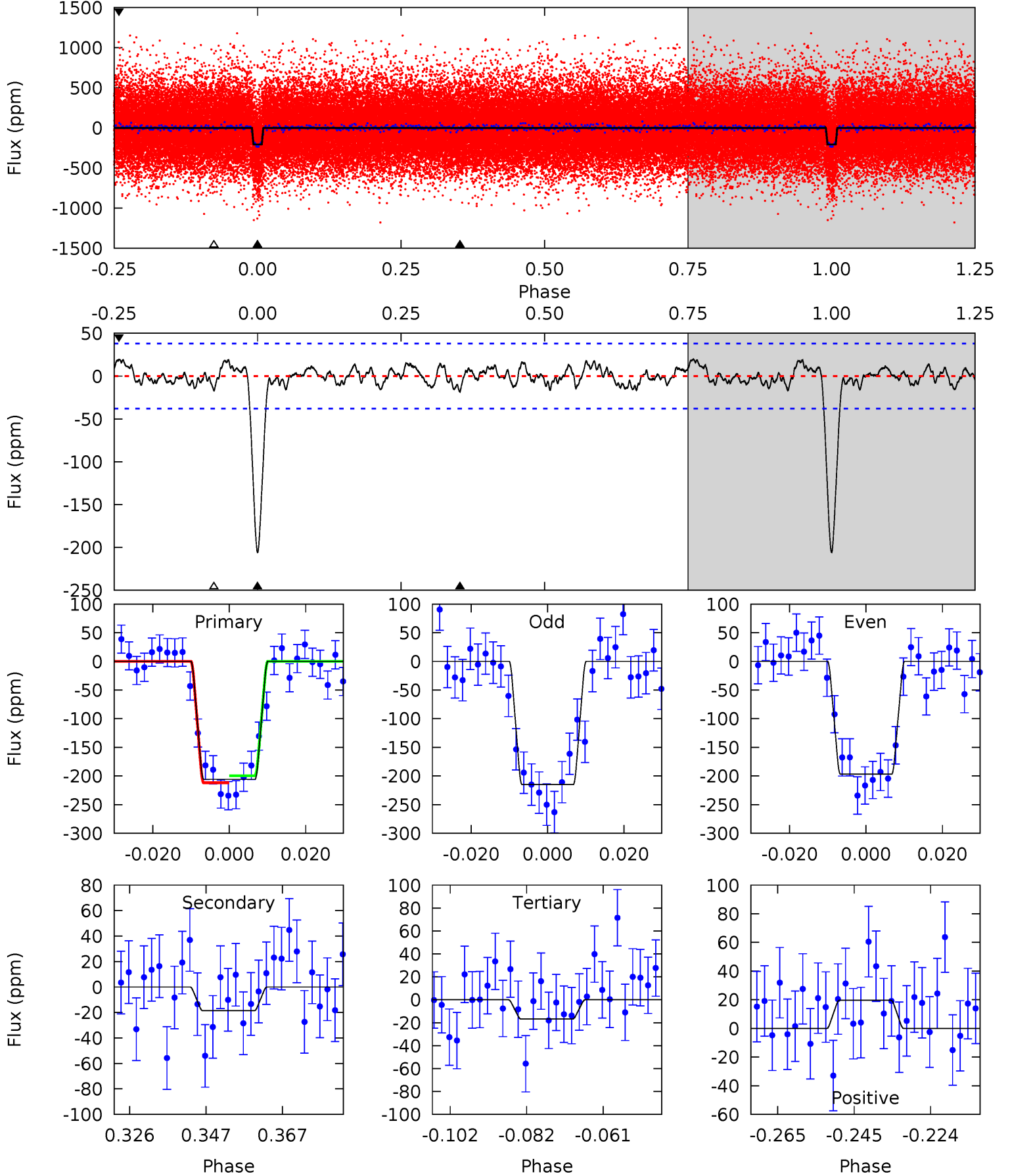
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
29.6	2.74	2.47	2.43	4.86	2.27	1.05	27.1	27.2	0.27	0.31	0.97	0.91	0.08	1.56



Alt Model-Shift Uniqueness Test

006209677-01, P = 7.768465 Days, E = 130.295107 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
26.5	2.40	2.17	2.54	4.89	2.32	1.05	24.3	23.9	0.23	-0.14	1.17	1.05	0.09	0.78



Stellar Parameters For KIC 006209677

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5447^{+81}_{-81}	$4.481^{+0.053}_{-0.098}$	$0.160^{+0.150}_{-0.150}$	$0.917^{+0.102}_{-0.063}$	$0.928^{+0.048}_{-0.053}$	$1.694^{+0.330}_{-0.477}$
	+1%/-1%	+1%/-2%	+94%/-94%	+11%/-7%	+5%/-6%	+19%/-28%
Source	SPE90	SPE90	SPE90	DSEP		

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

Secondary Eclipse Parameters for KIC 006209677-01 / KOI 1750.01

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-20 ± 7	$1.64^{+0.51}_{-0.55}$	1184^{+39}_{-33}	3351^{+514}_{-299}	22^{+31}_{-10}
Alt.	-19 ± 8	$1.46^{+0.55}_{-0.56}$	1179^{+42}_{-32}	3440^{+659}_{-379}	26^{+49}_{-14}

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

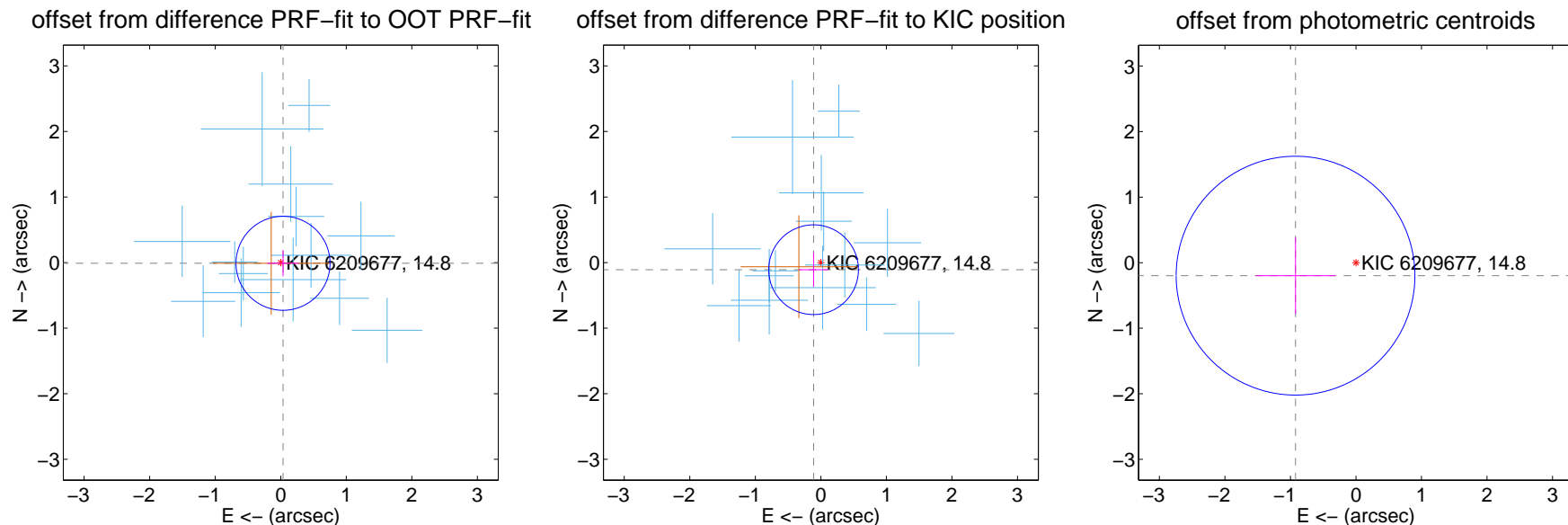
DV Centroid Data

Supplemental centroid analysis for 006209677-01. Kepler magnitude: 14.80. Transit SNR 22.26

There are 14 quarters with good PRF difference image offsets

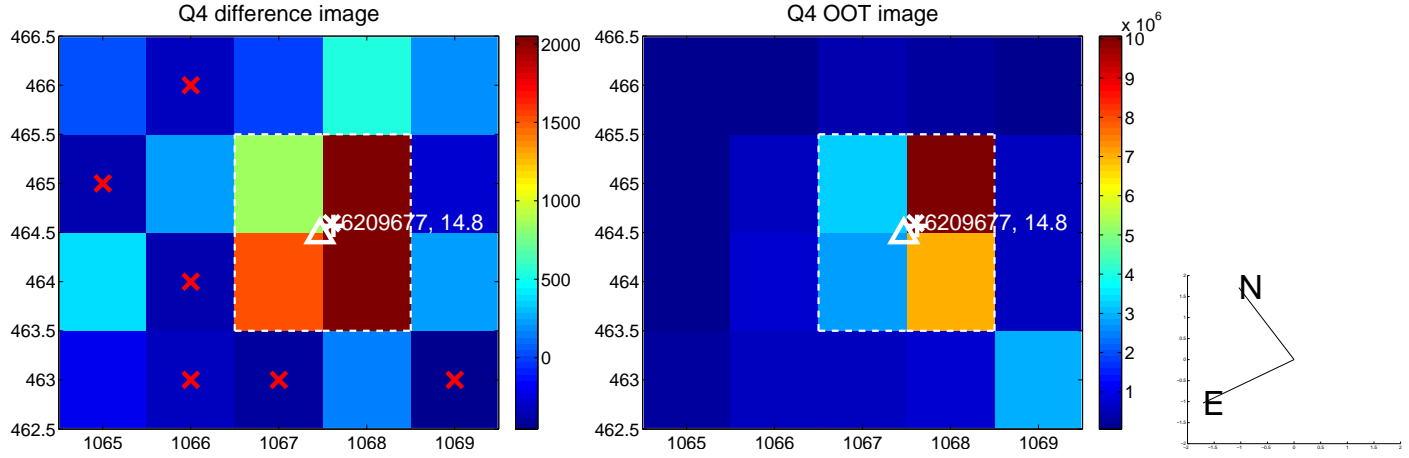
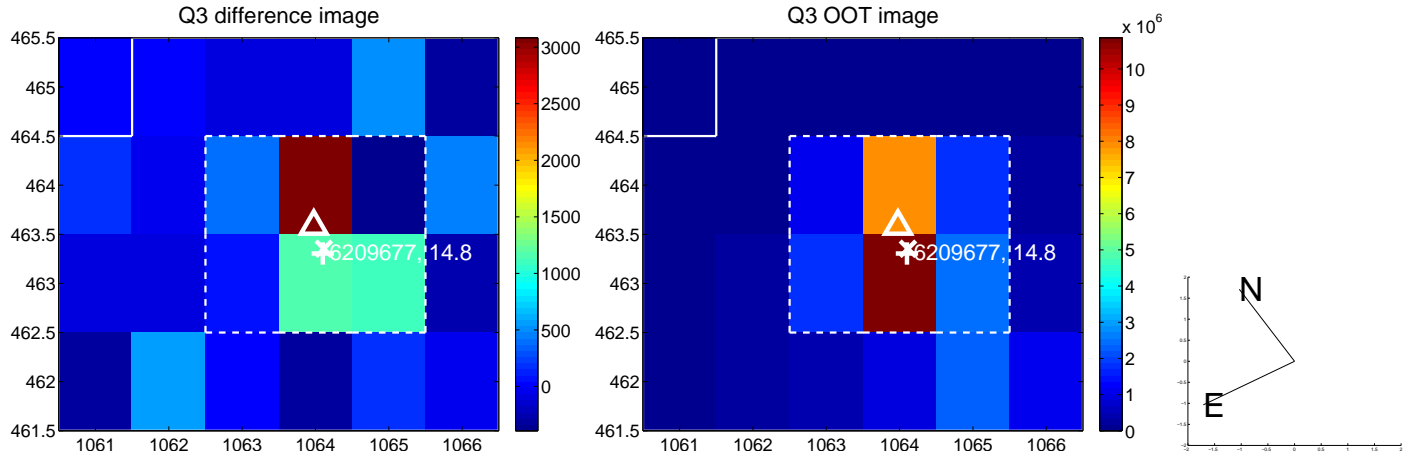
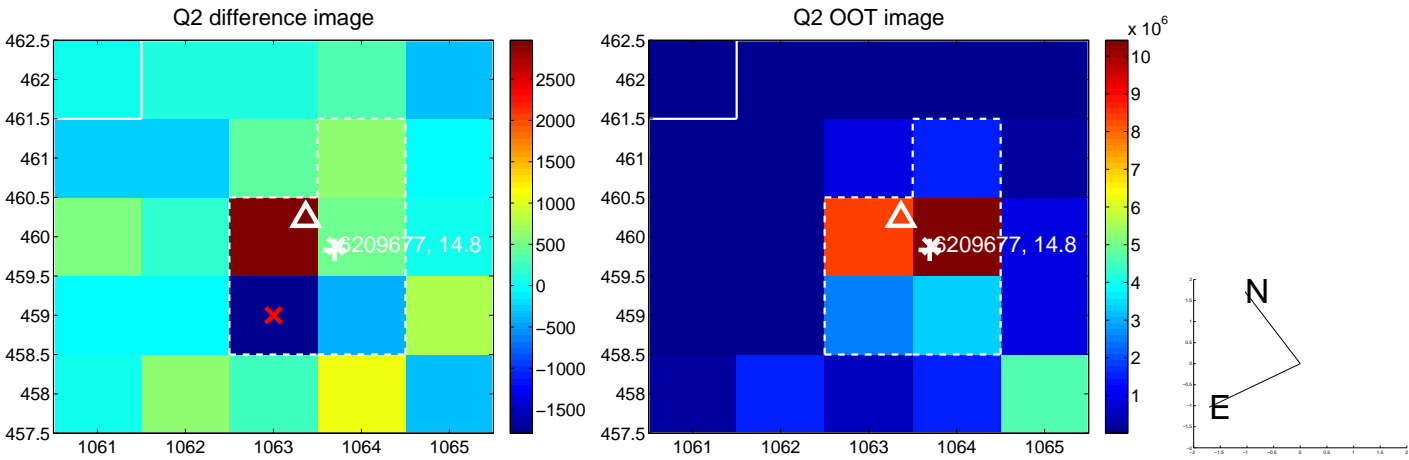
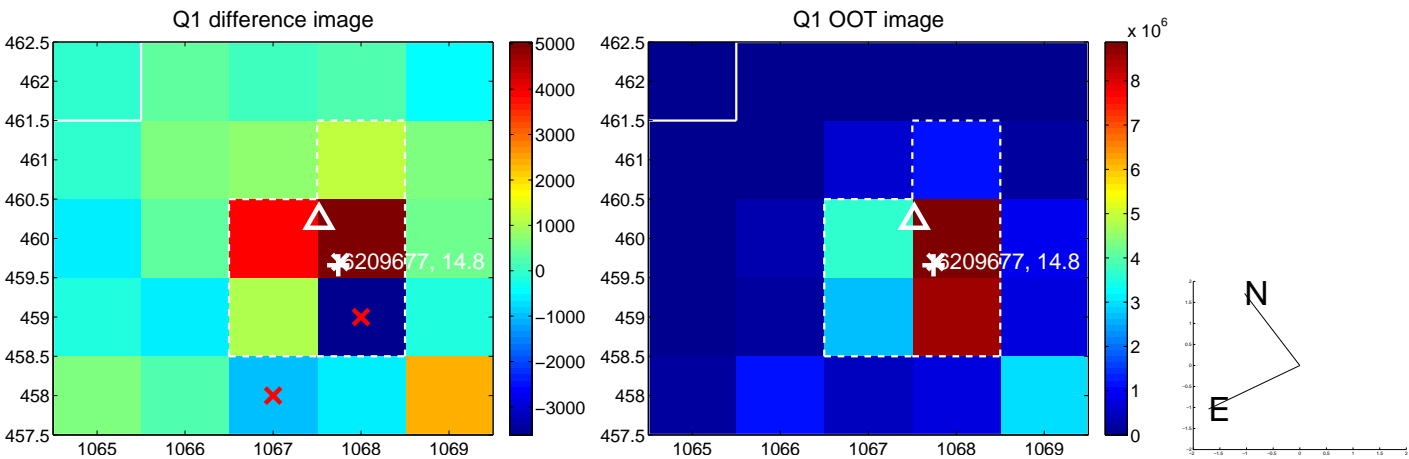
The direct PRF centroid is offset from the target star catalog position by about 0.20 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.036 ± 0.239	0.15	-0.035 ± 0.242	-0.010 ± 0.198
PRF-fit source offset from KIC position	0.155 ± 0.228	0.68	0.111 ± 0.221	-0.108 ± 0.257
photometric centroid source offset	0.94 ± 0.61	1.55	0.92 ± 0.61	-0.20 ± 0.58

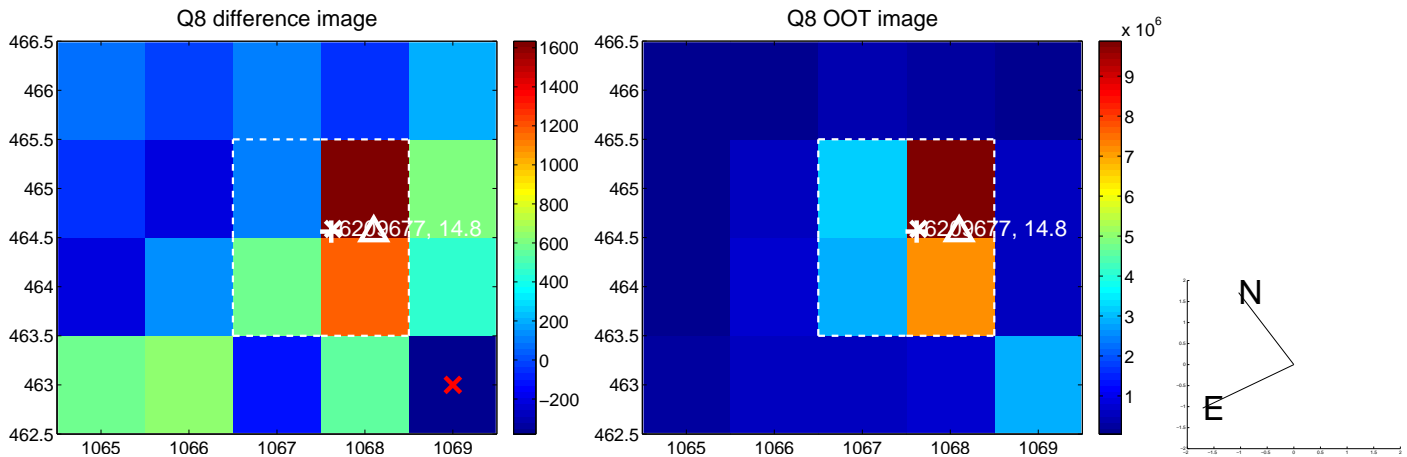
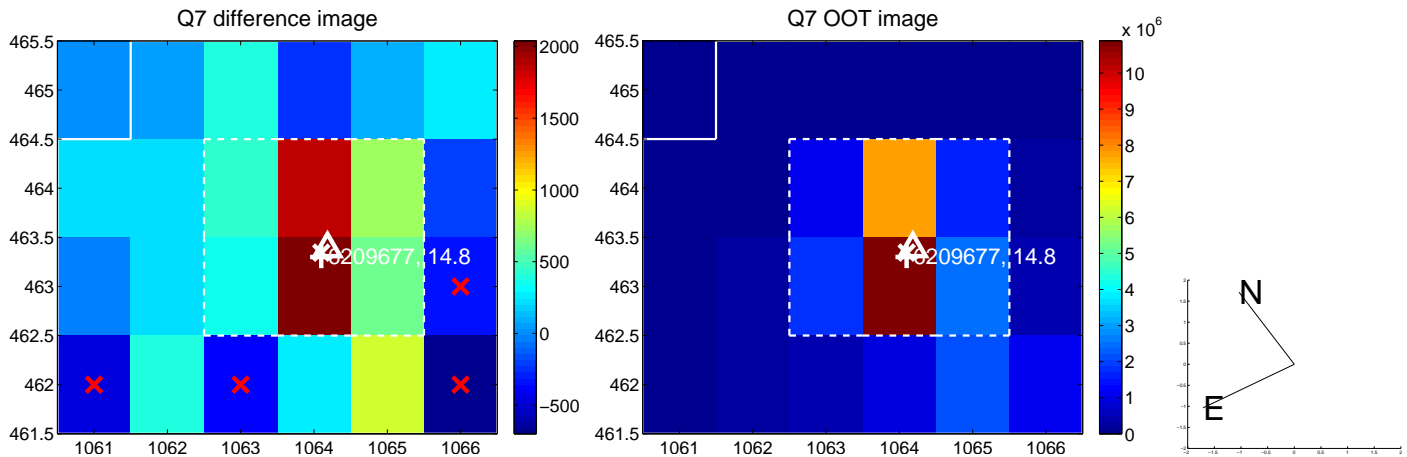
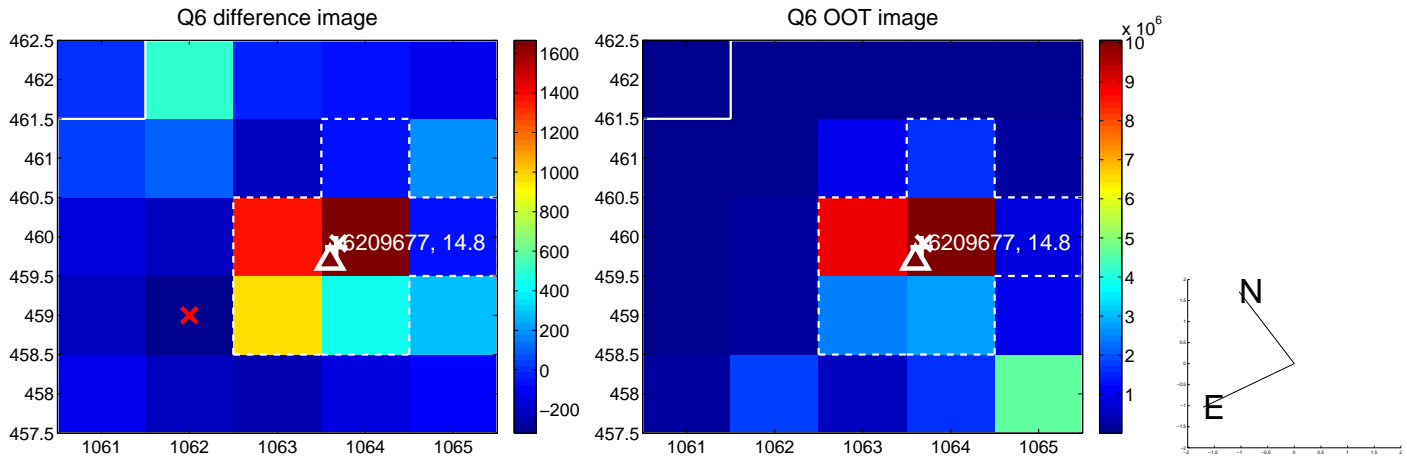
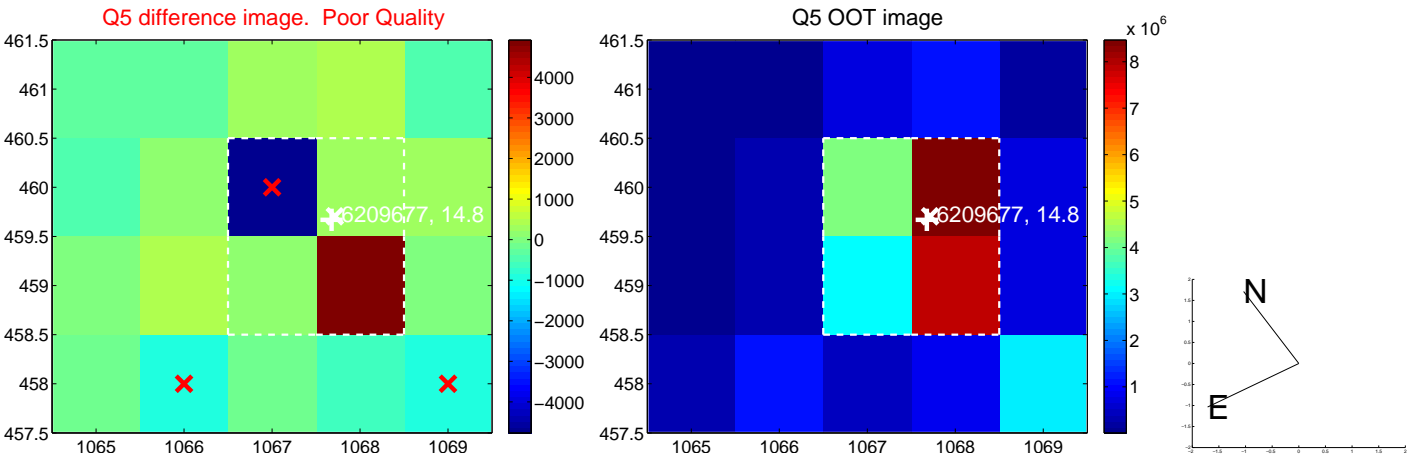


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

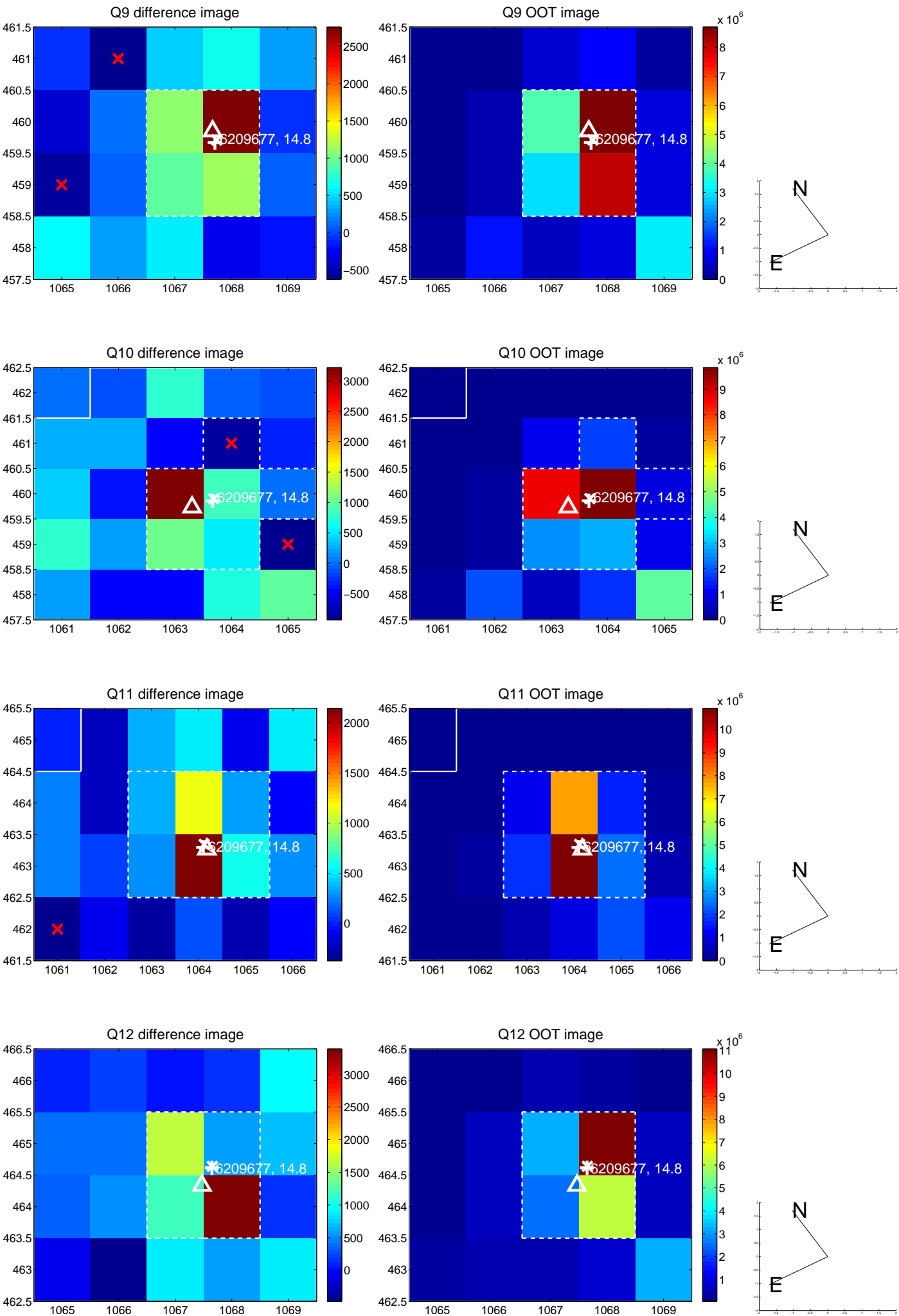
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



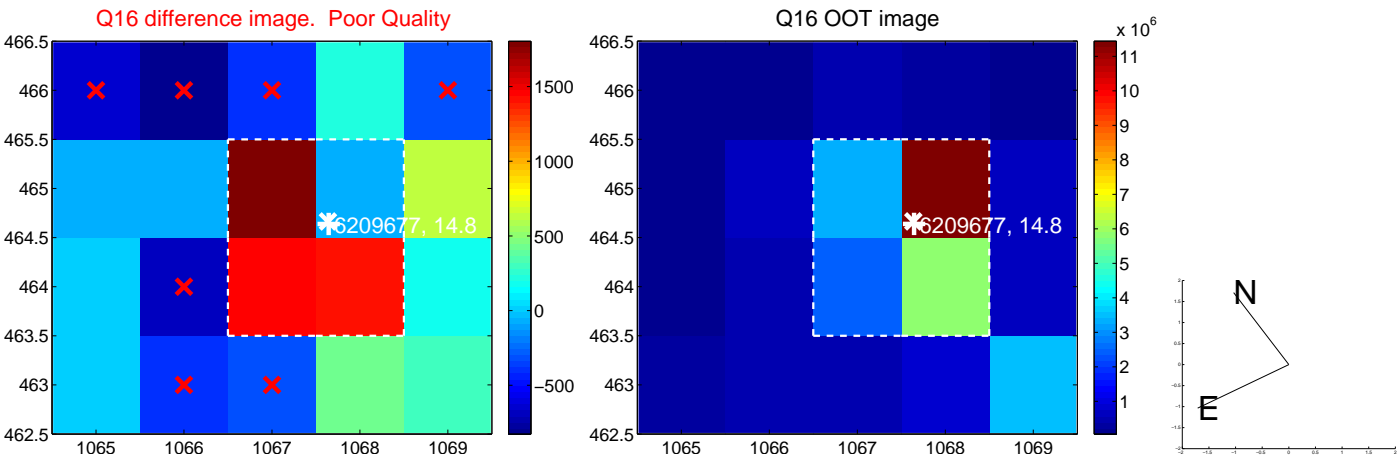
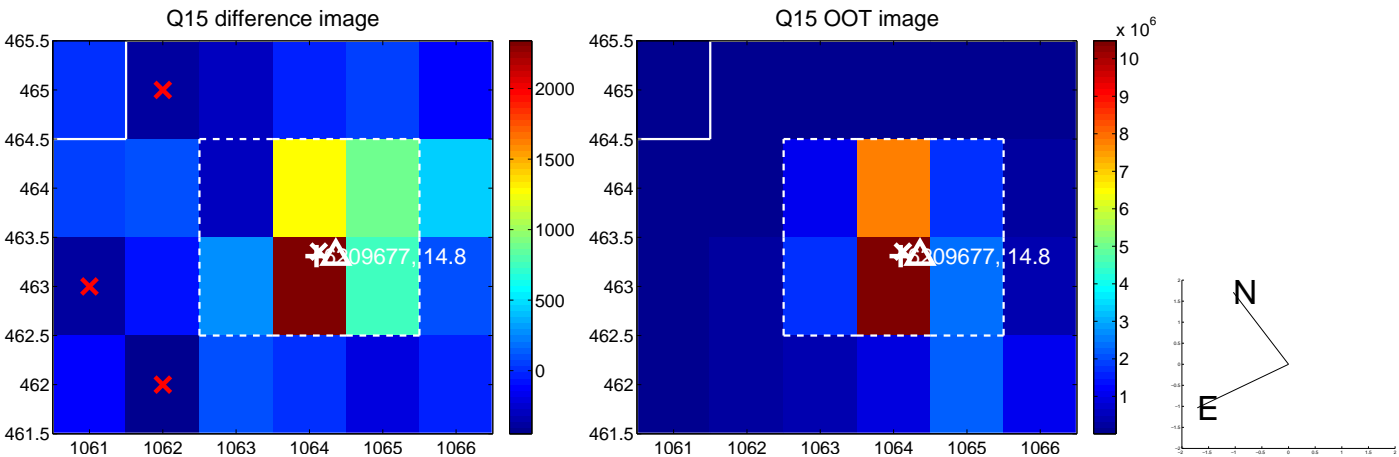
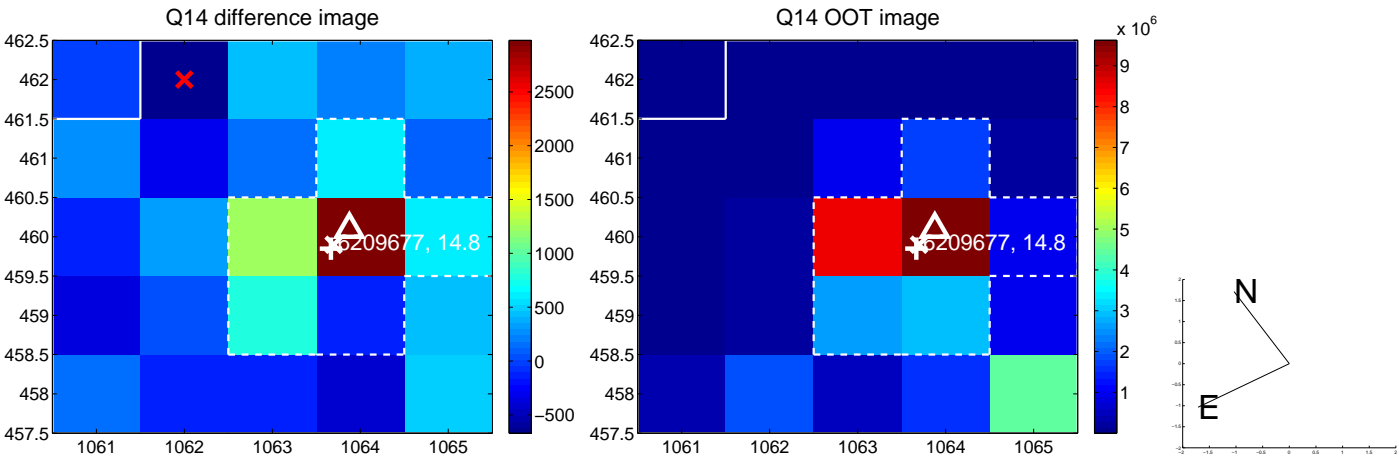
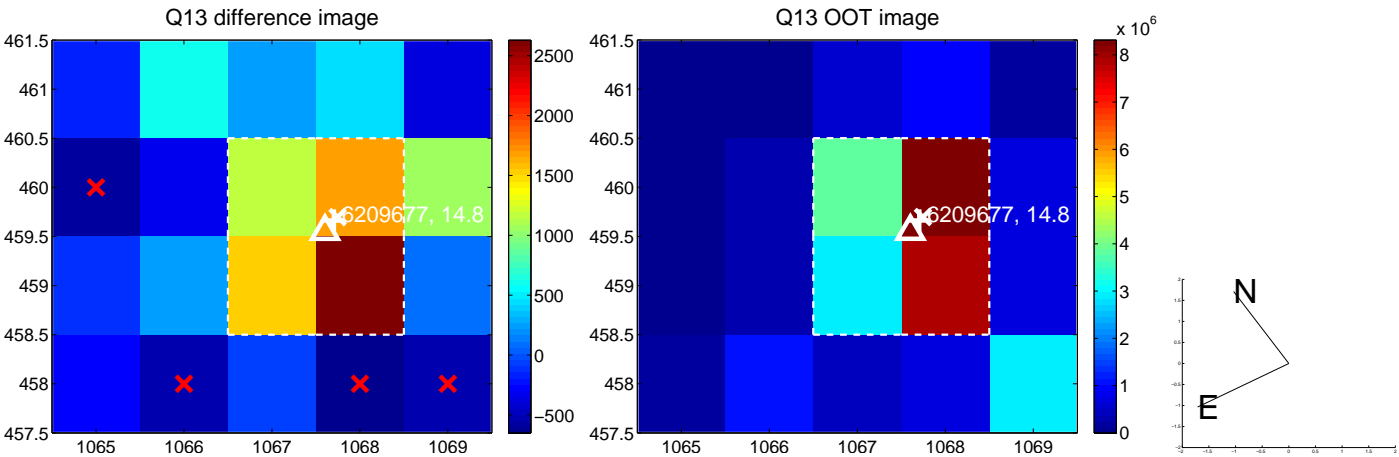
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



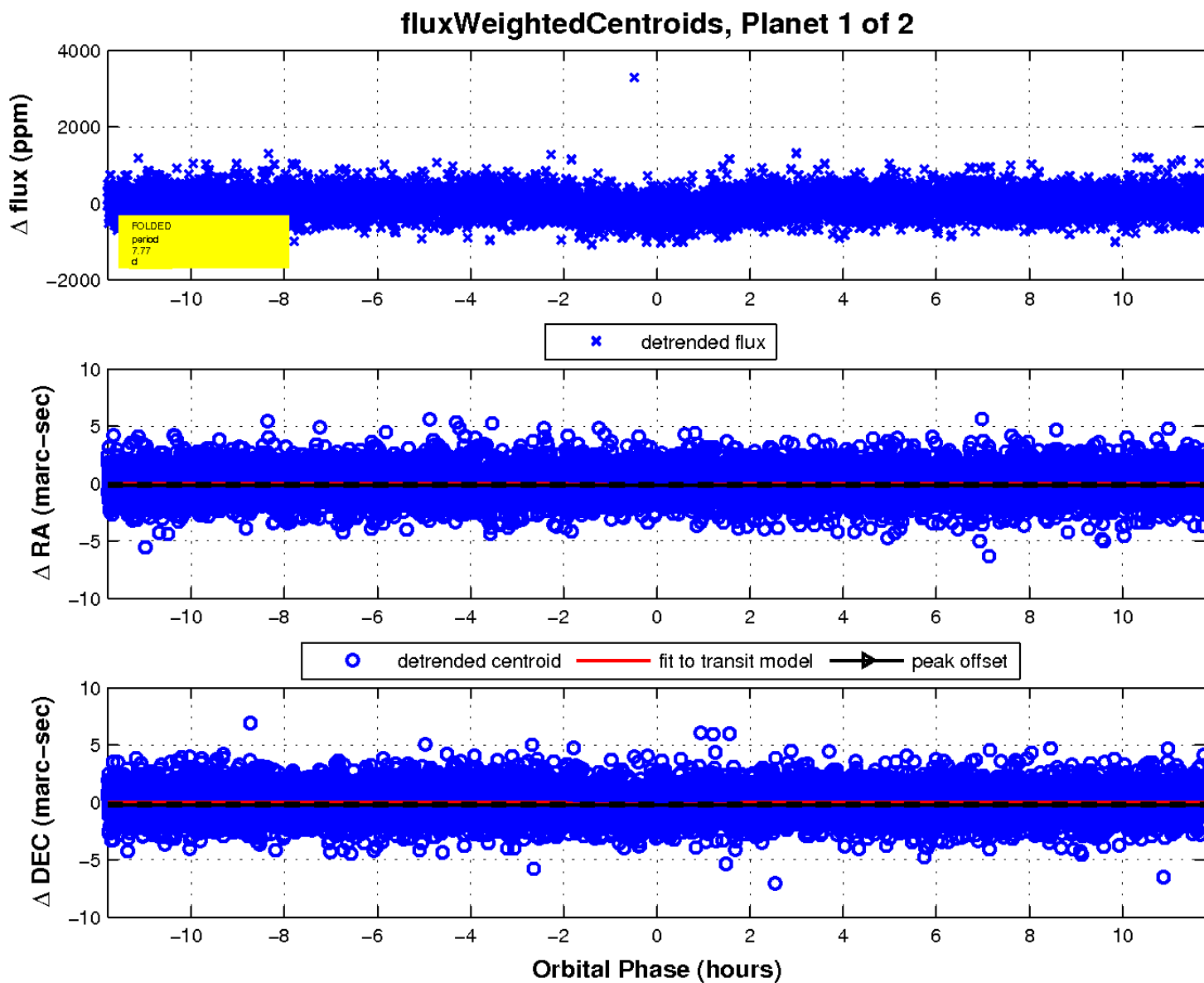
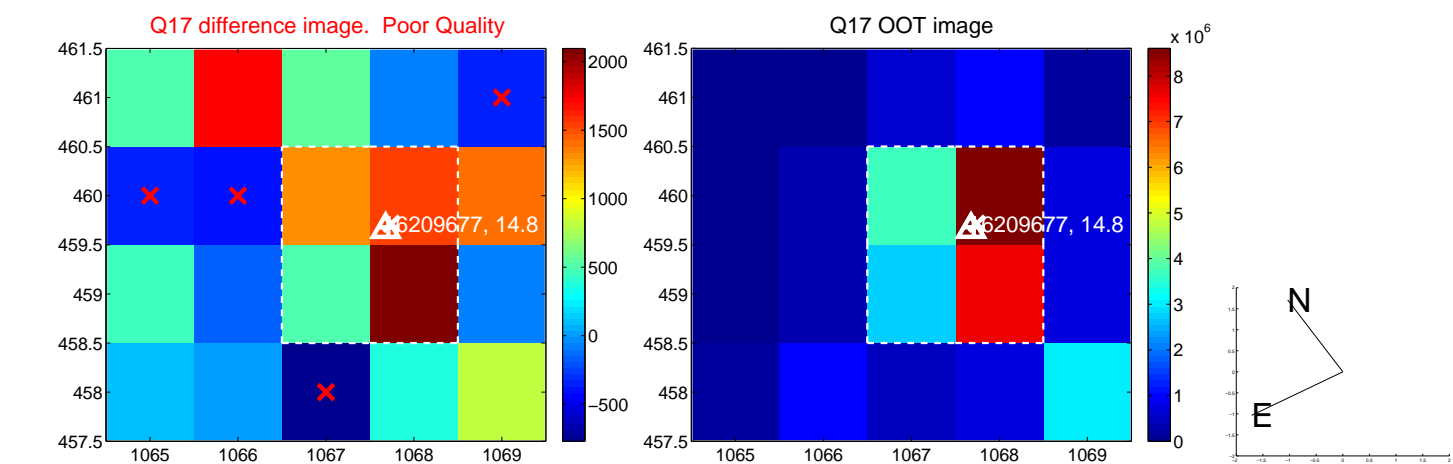
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

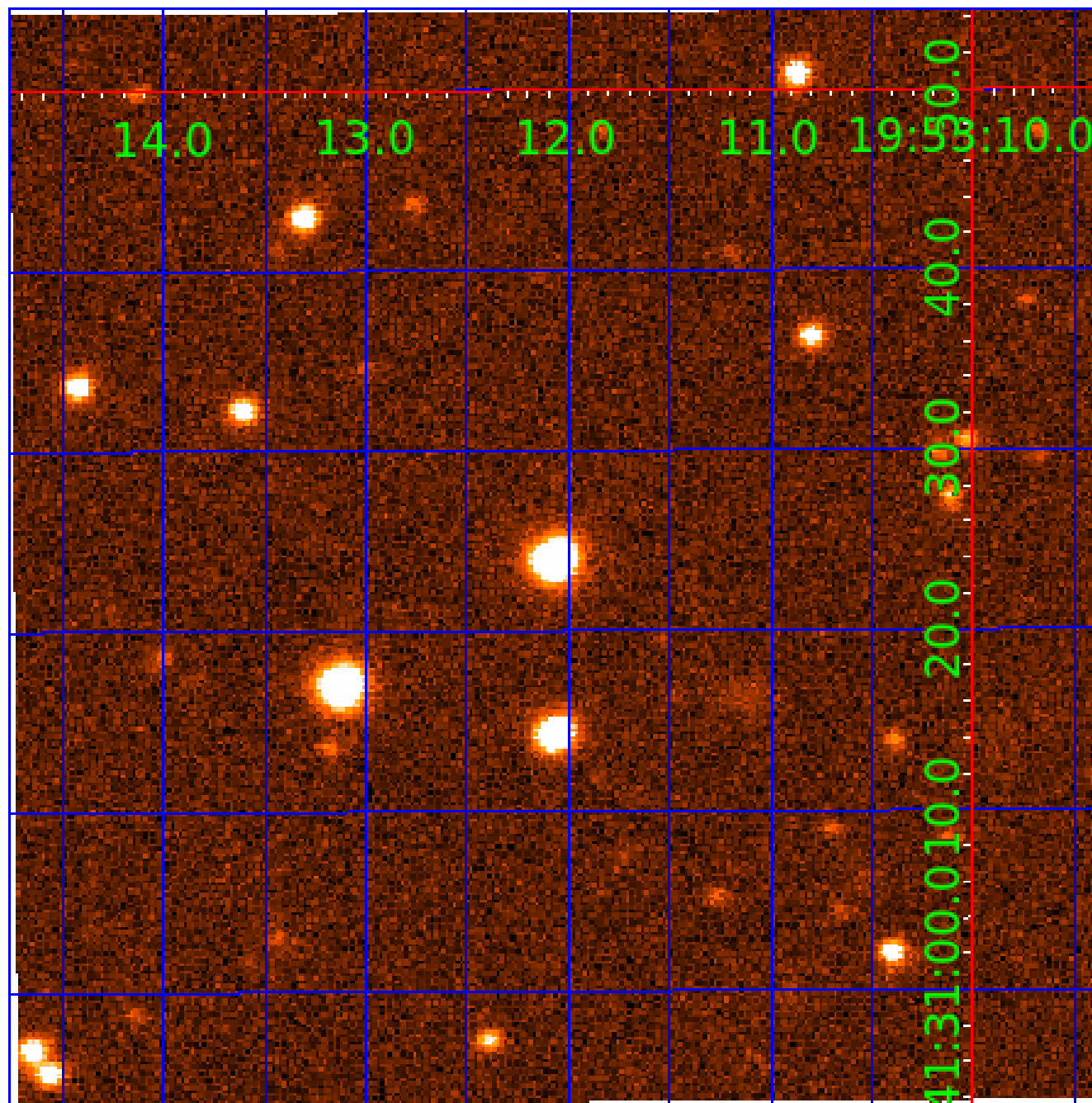


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 006209677

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})
006209677-01	OBS	1750.01	7.768449	138.068674	211.3	3.931	20.5	22.3	0.92	5447	1.56	118.21
006209677-02	OBS	1750.02	2.537398	132.350739	84.7	1.669	10.3	10.5	0.92	5447	1.01	525.51

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006209677-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT
006209677-02	OBS	PC	1.00	0	0	0	0	NO_COMMENT

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

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

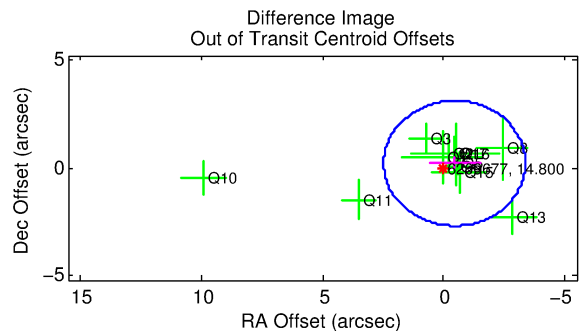
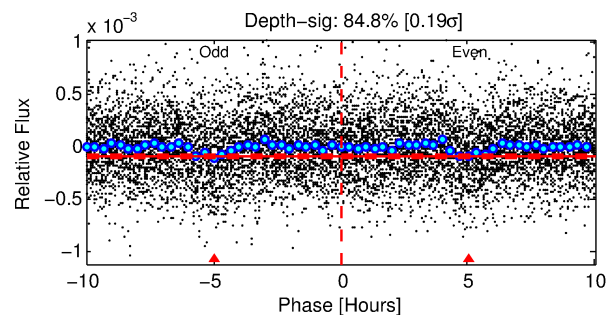
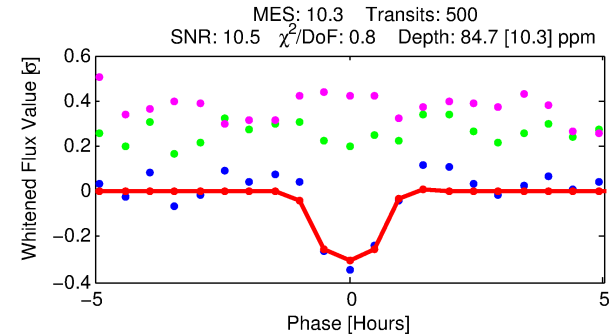
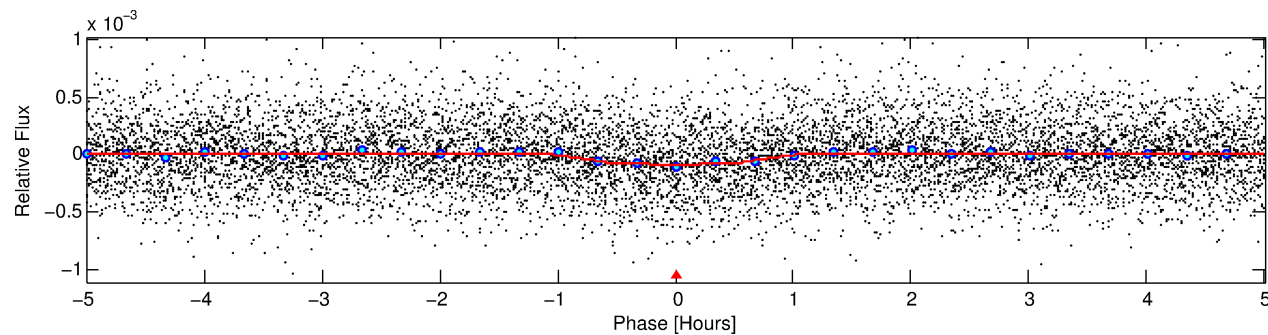
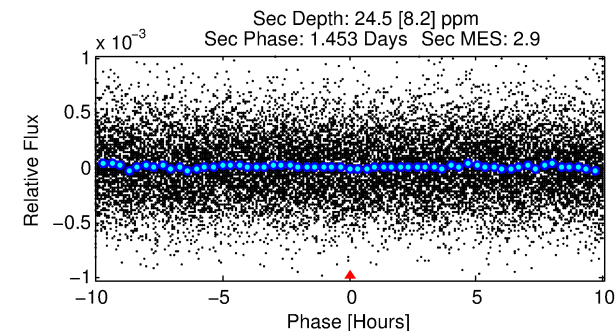
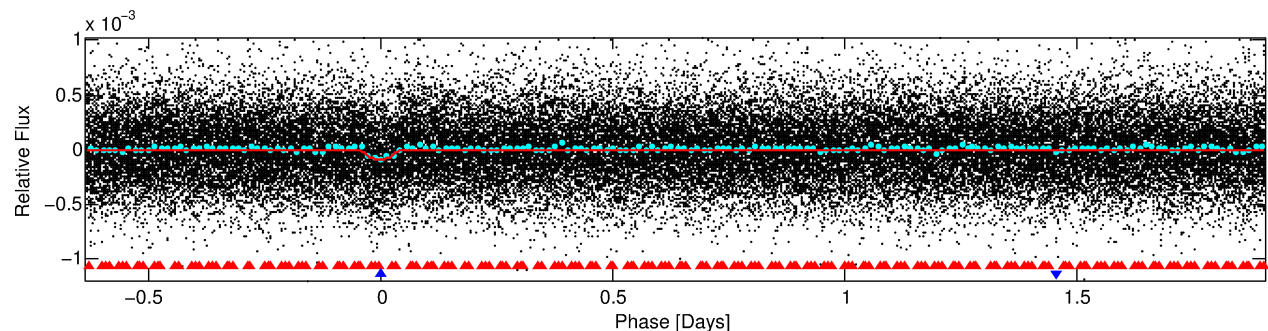
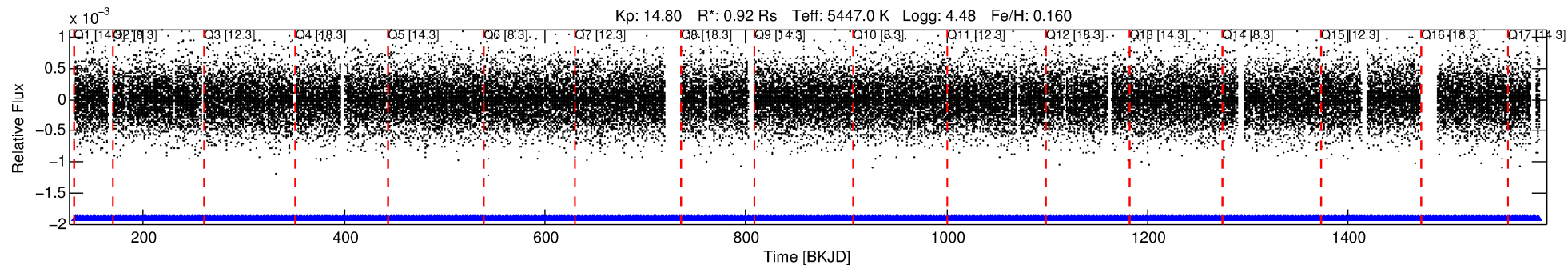
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 006209677-02

No Significant Match Found

DV One-Page Summary

KIC: 6209677 Candidate: 2 of 2 Period: 2.537 d
KOI: K01750.02 Corr: 0.931



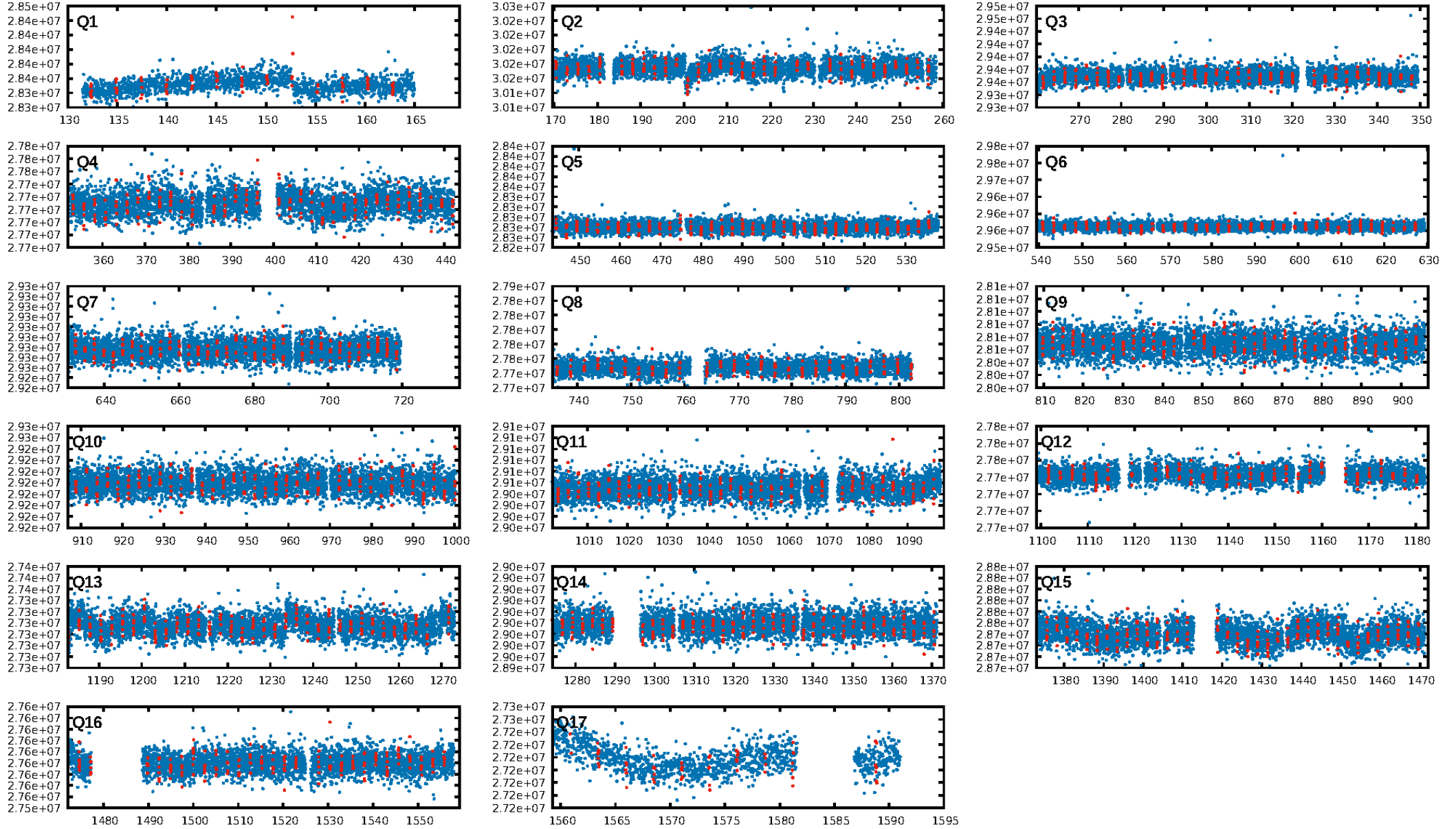
DV Fit Results:

Period = 2.53740 [0.00001] d
Epoch = 132.3507 [0.0028] BKJD
Rp/R* = 0.0101 [0.0074]
a/R* = 5.61 [17.11]
b = 0.89 [0.75]
Seff = 525.52 [93.52]
Teff = 1221 [54] K
Rp = 1.01 [0.74] Re
a = 0.0355 [0.0038] AU
Ag = 16.71 [25.18] [0.62σ]
Teffp = 3817 [1430] K [1.81σ]

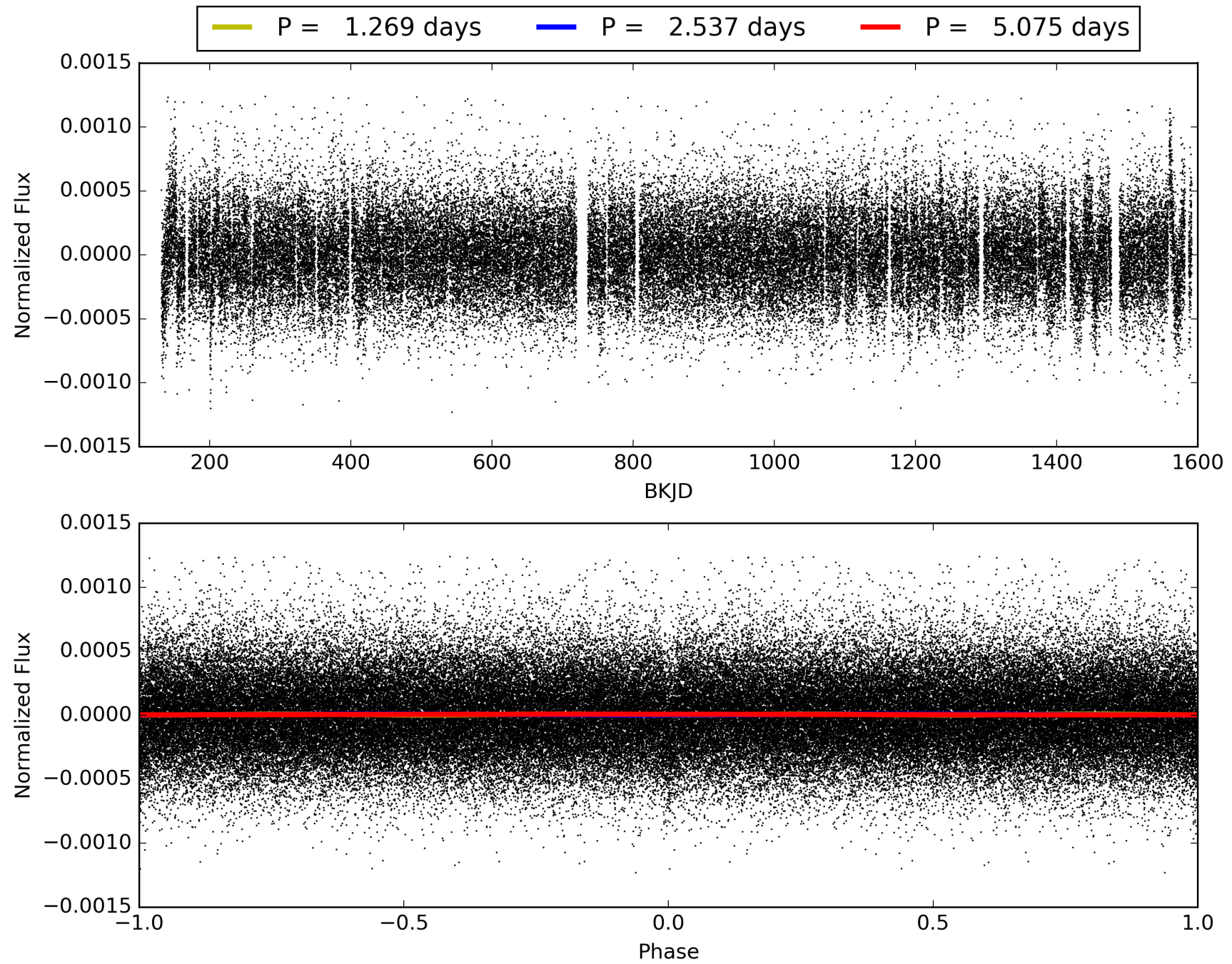
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [29.40σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 1.73e-24
RollingBand-fgt: 1.00 [478/478]
GhostDiagnostic-chr: 1.438
Centroid-sig: 9.0%
Centroid-so: 0.743 arcsec [0.56σ]
OotOffset-rm: 0.494 arcsec [0.51σ]
KicOffset-rm: 0.297 arcsec [0.34σ]
OotOffset-st: 3/4/2/3 [12]
KicOffset-st: 3/4/2/3 [12]
DiffImageQuality-fgm: 0.50 [6/12]
DiffImageOverlap-fno: 1.00 [17/17]

TCE 006209677-02, PDC Light Curves

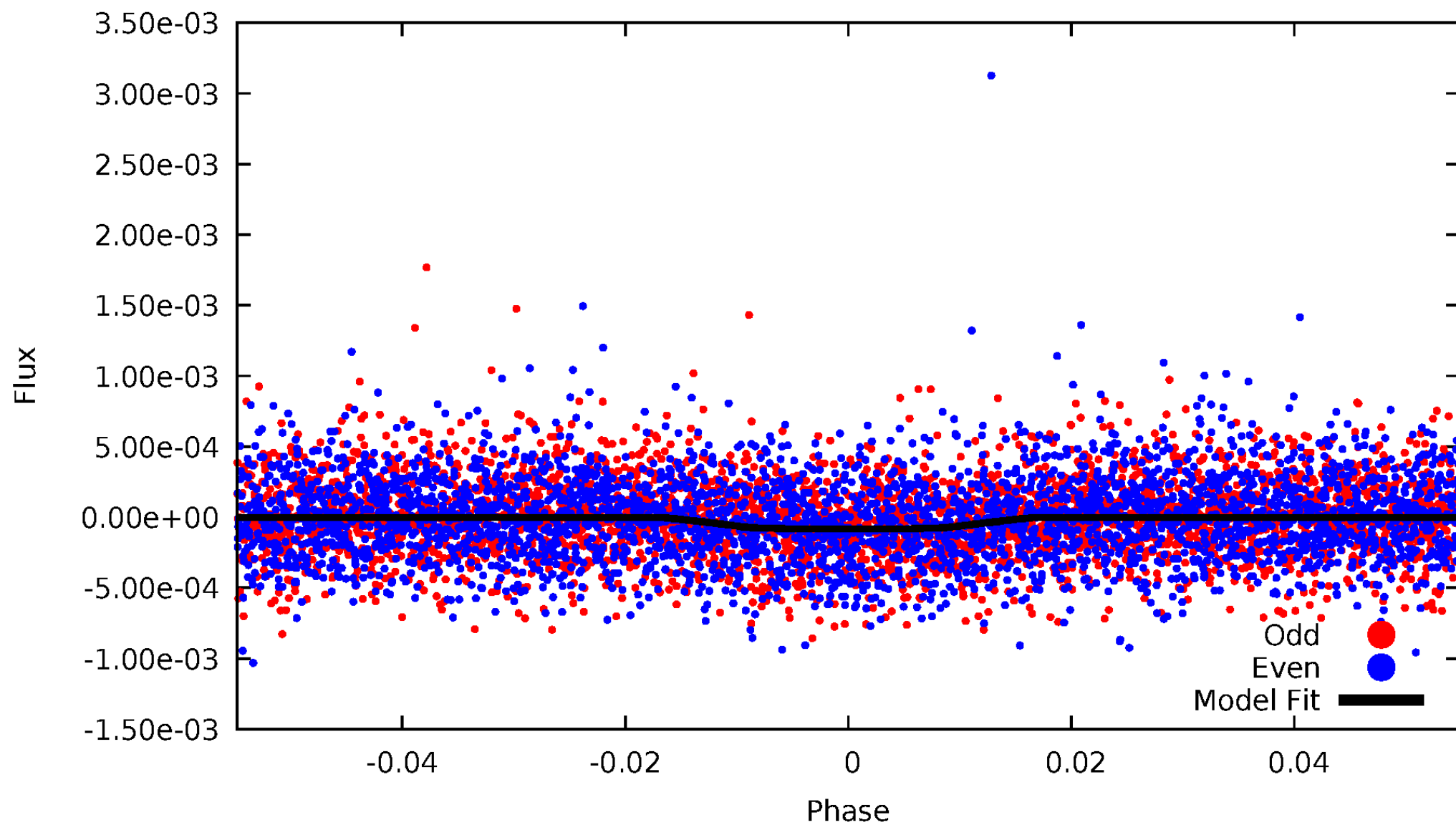


TCE 006209677-02



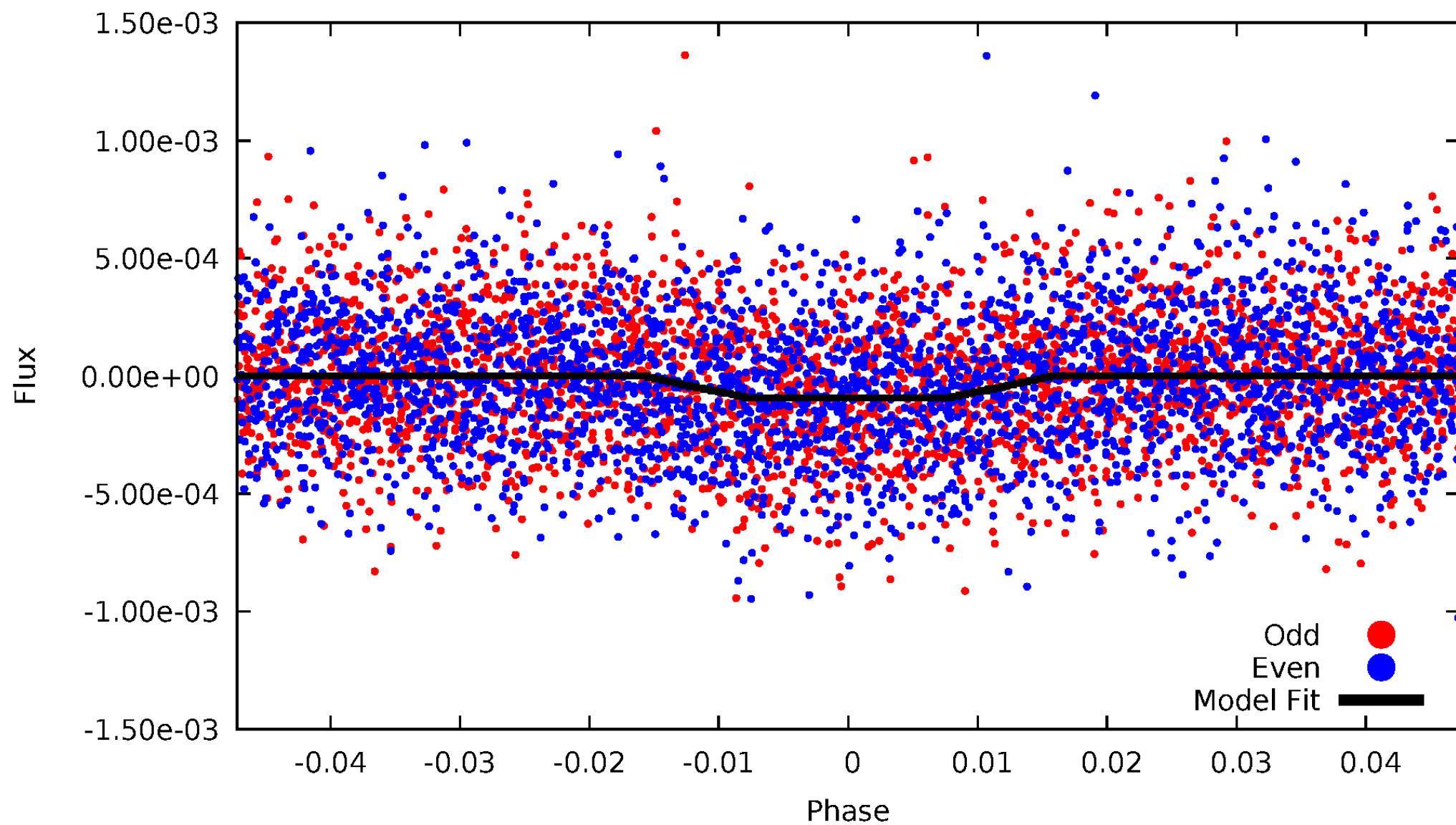
DV Odd/Even

TCE 006209677-02



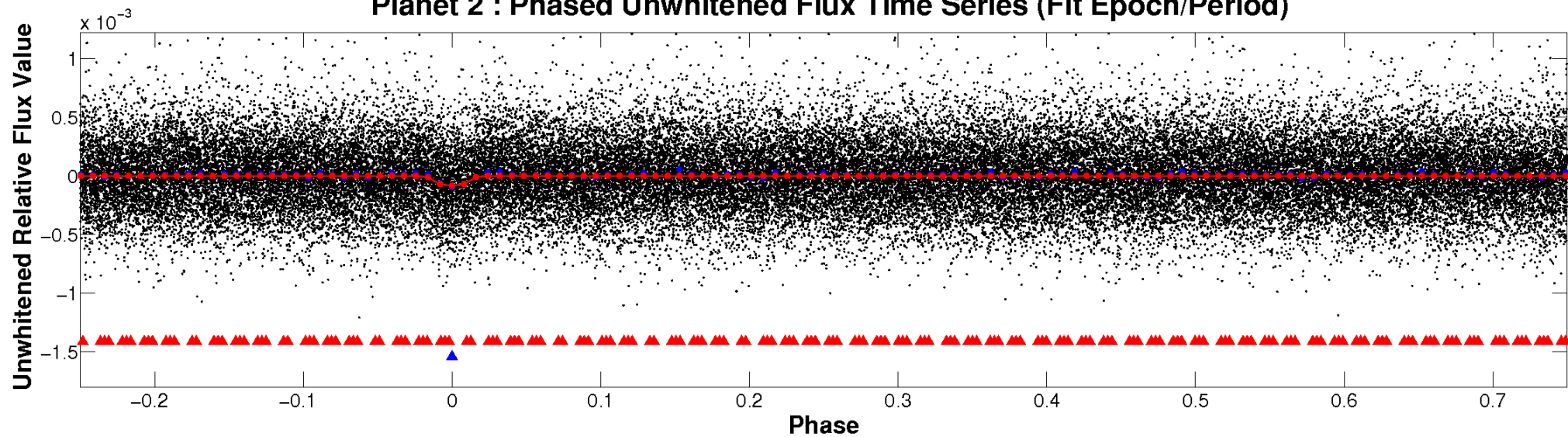
ALT Odd/Even

TCE 006209677-02

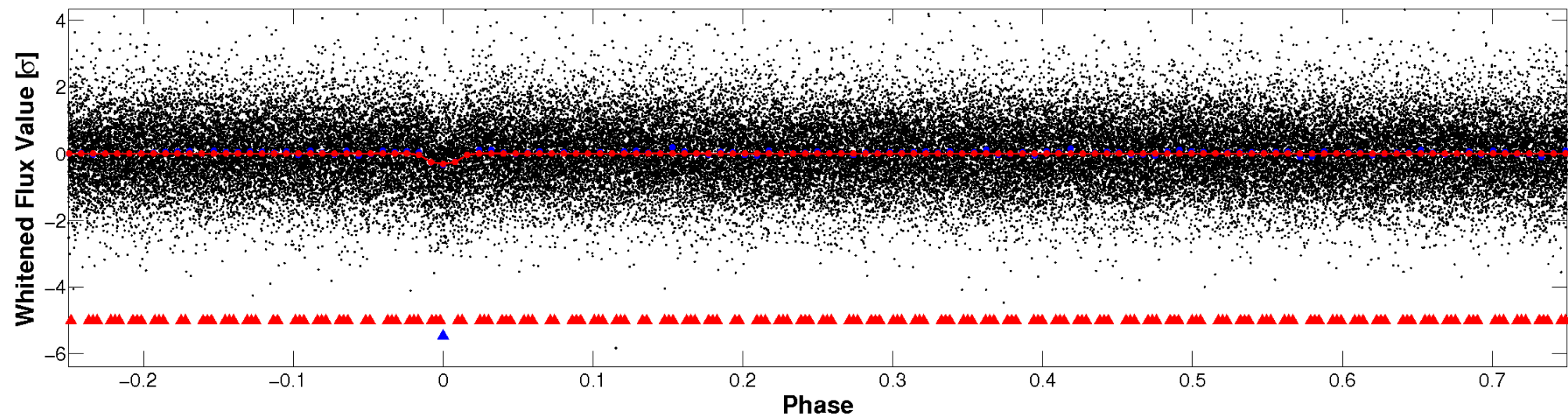


Non-Whitened Vs. Whitened Light Curve

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

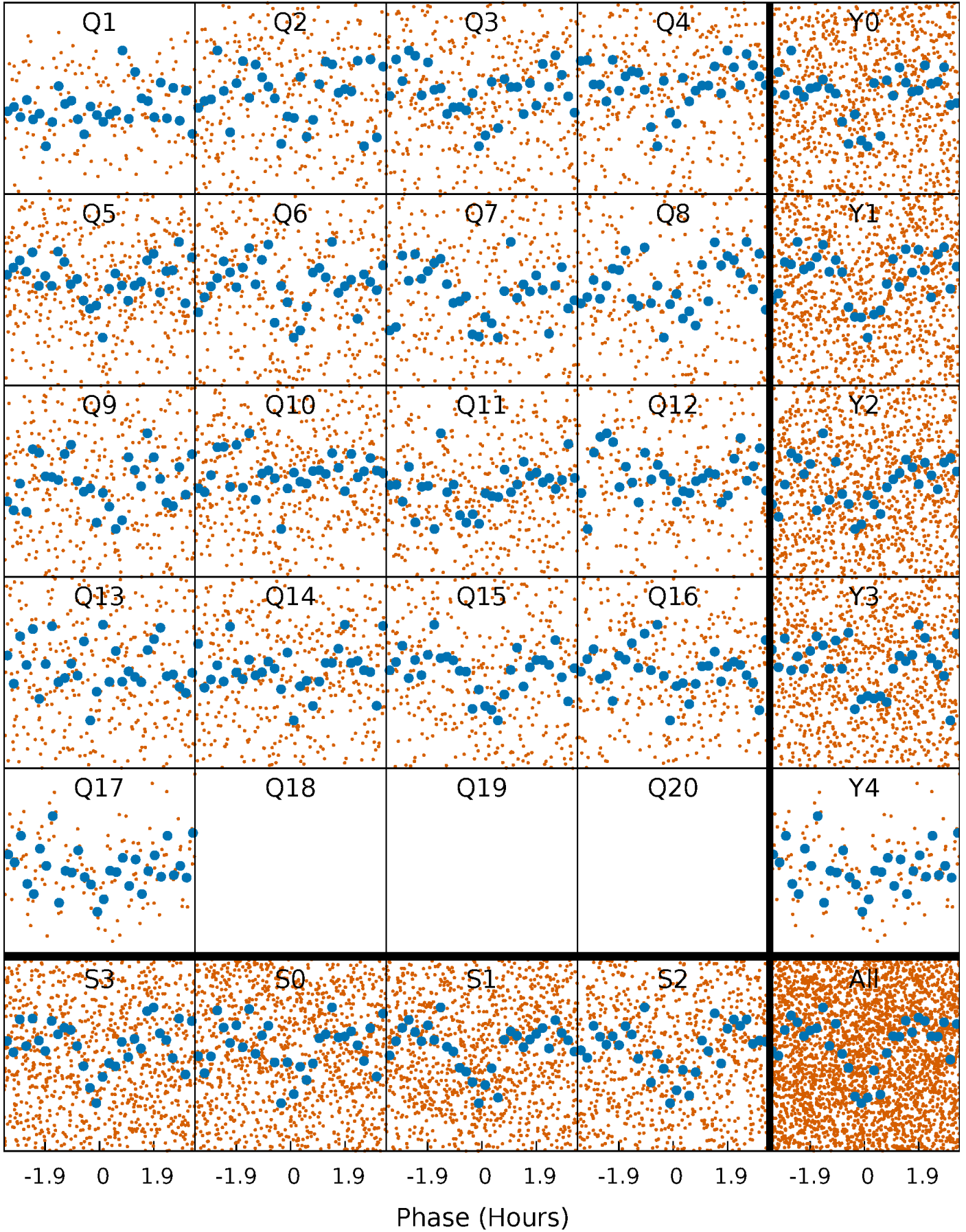


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



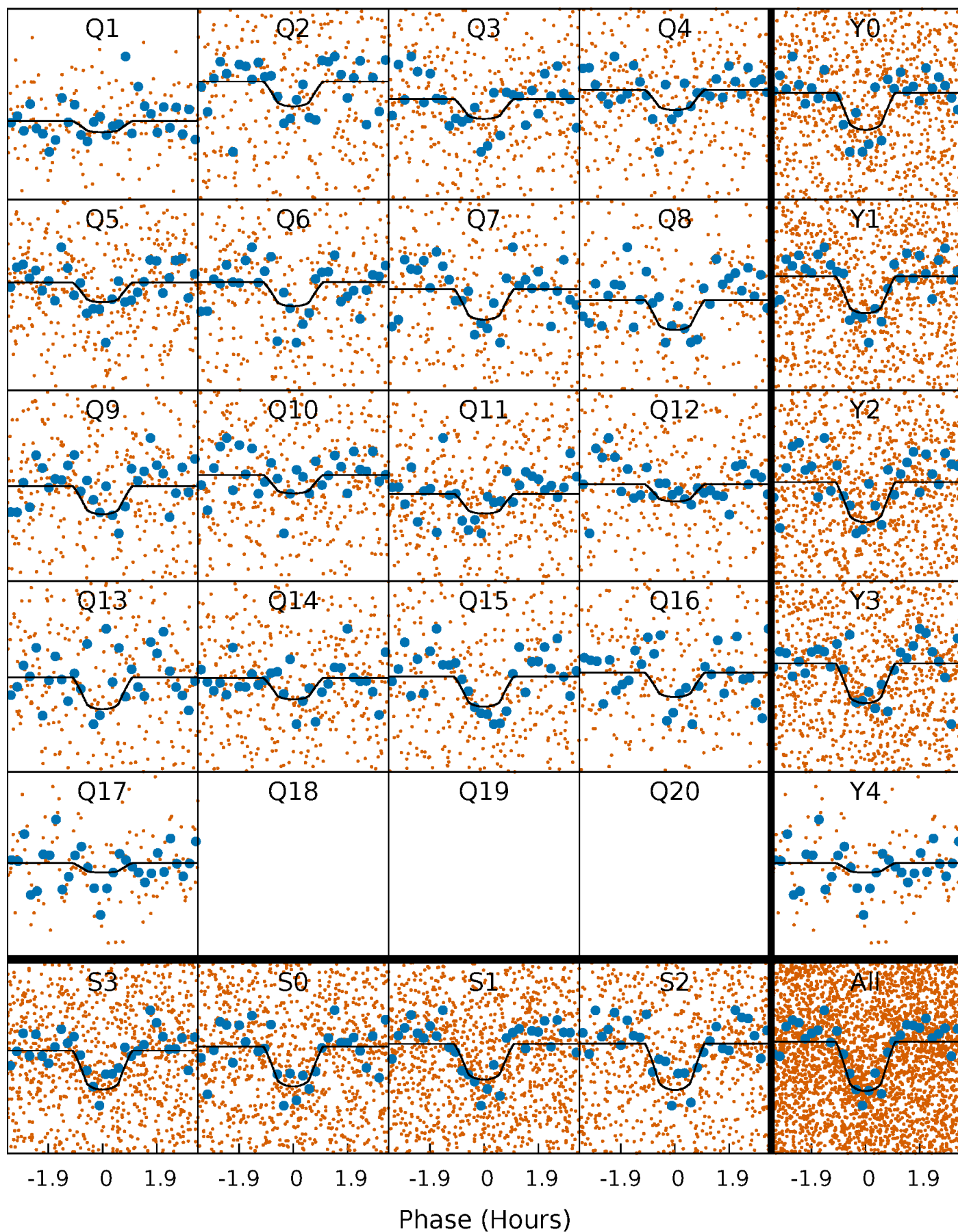
PDC Quarter-Phased Transit Curves

TCE 006209677-02 P= 2.537398 Days $T_0=132.350739$ (BKJD)



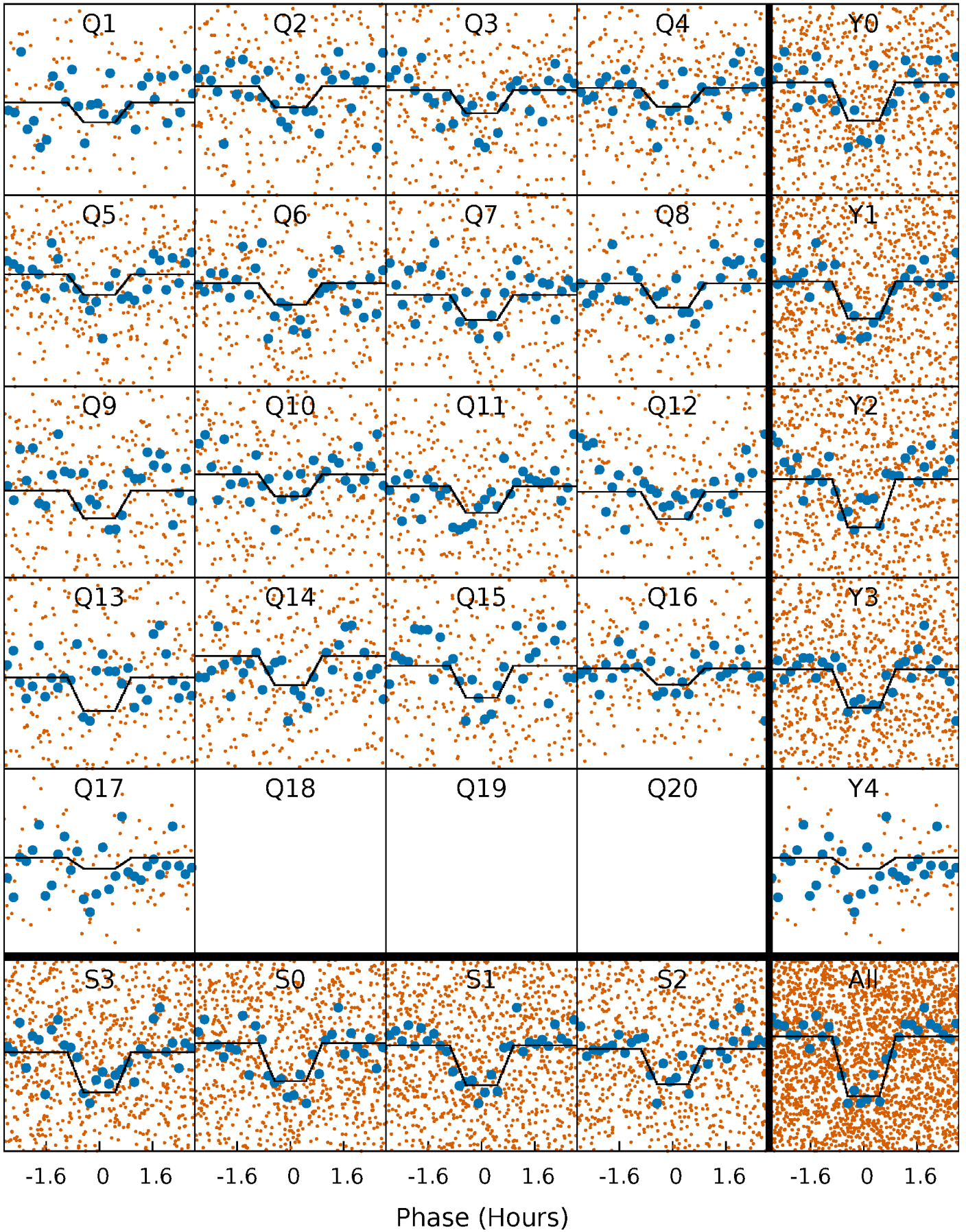
DV Quarter-Phased Transit Curves

TCE 006209677-02 P= 2.537398 Days $T_0=132.350739$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

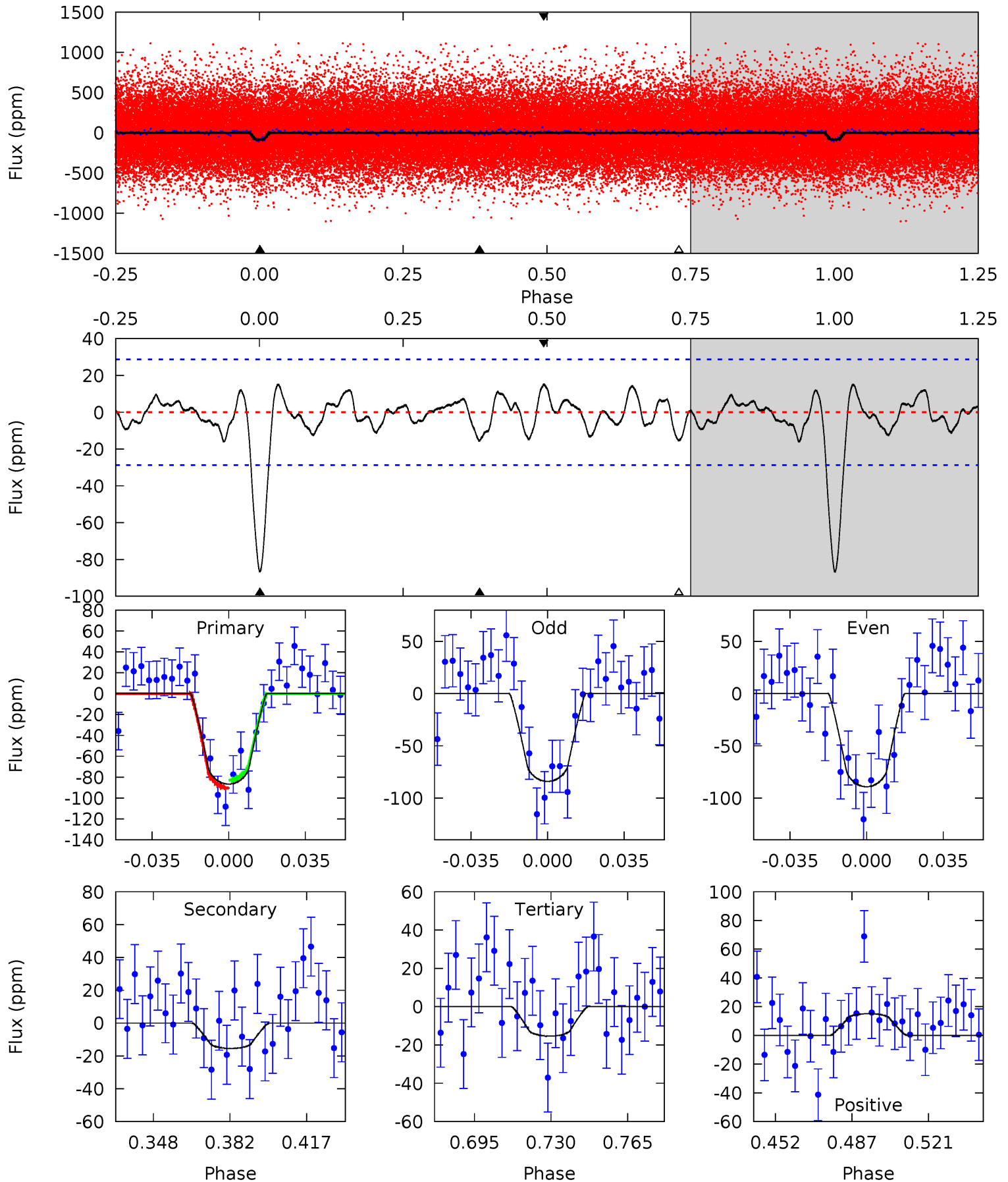
TCE 006209677-02 P= 2.537420 Days $T_0=132.347482$ (BKJD)



DV Model-Shift Uniqueness Test

006209677-02, P = 2.537398 Days, E = 129.813341 Days

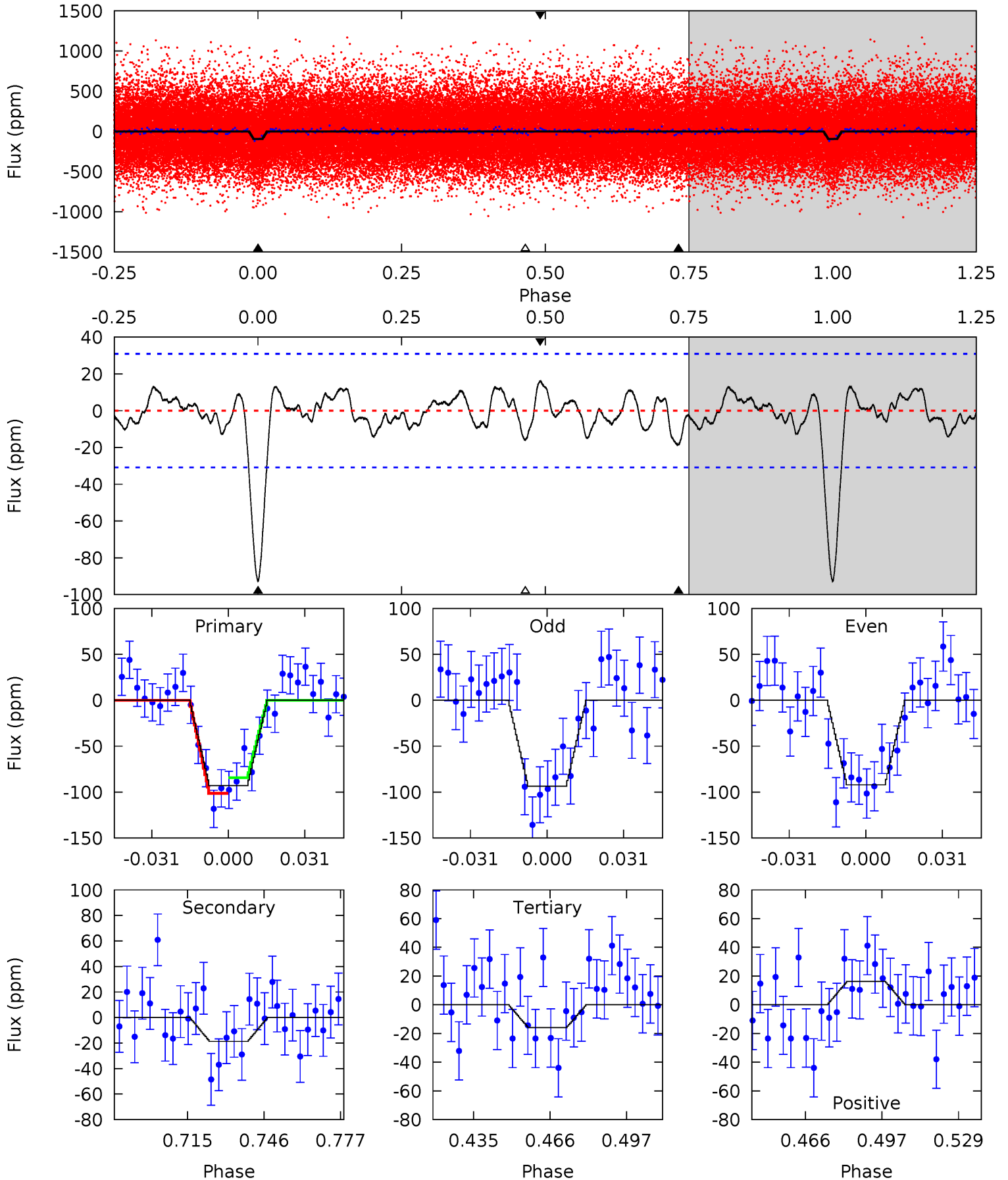
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
14.4	2.58	2.56	2.51	4.78	2.11	1.09	11.9	11.9	0.01	0.06	0.42	0.92	0.15	0.64



Alt Model-Shift Uniqueness Test

006209677-02, P = 2.537420 Days, E = 129.810062 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	2.91	2.49	2.53	4.80	2.16	1.10	12.0	11.9	0.43	0.38	0.12	0.98	0.15	1.32



Stellar Parameters For KIC 006209677

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5447^{+81}_{-81}	$4.481^{+0.053}_{-0.098}$	$0.160^{+0.150}_{-0.150}$	$0.917^{+0.102}_{-0.063}$	$0.928^{+0.048}_{-0.053}$	$1.694^{+0.330}_{-0.477}$
	+1%/-1%	+1%/-2%	+94%/-94%	+11%/-7%	+5%/-6%	+19%/-28%
Source	SPE90	SPE90	SPE90	DSEP		

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

Secondary Eclipse Parameters for KIC 006209677-02 / KOI 1750.02

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-15 ± 6	$1.07^{+0.74}_{-0.57}$	1714^{+57}_{-43}	3644^{+1273}_{-600}	$8.402^{+36.679}_{-5.564}$
Alt.	-19 ± 6	$1.05^{+0.70}_{-0.60}$	1716^{+63}_{-44}	3785^{+1728}_{-612}	11^{+61}_{-7}

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

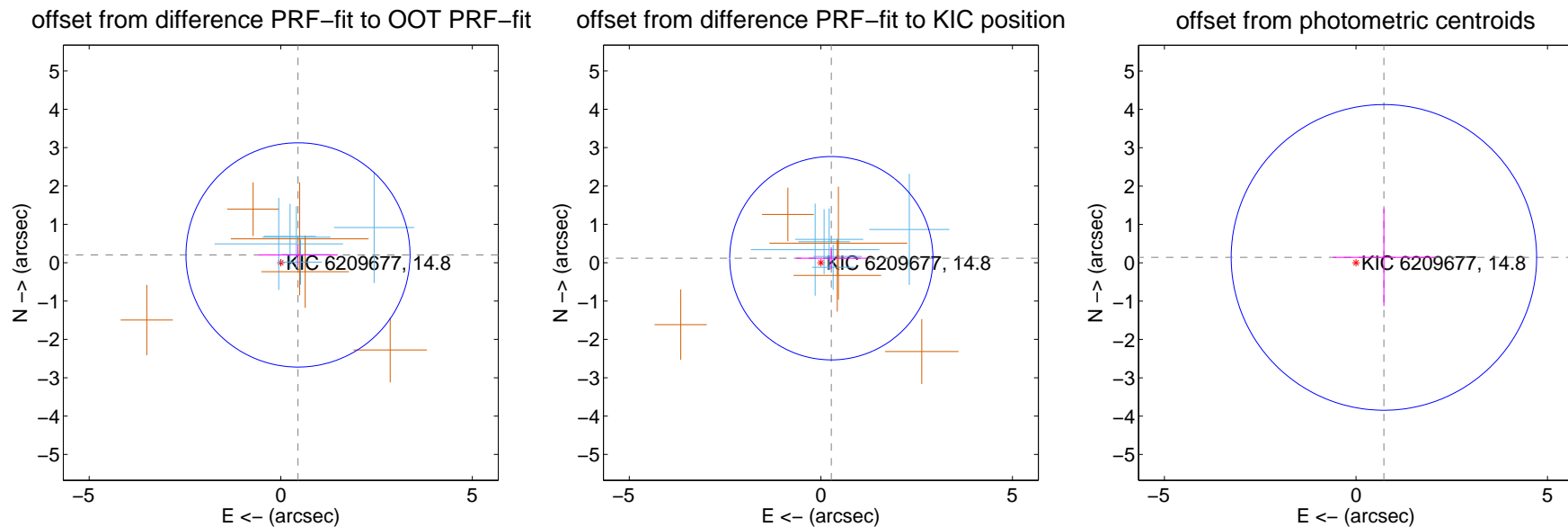
DV Centroid Data

Supplemental centroid analysis for 006209677-02. Kepler magnitude: 14.80. Transit SNR 10.49

There are 6 quarters with good PRF difference image offsets

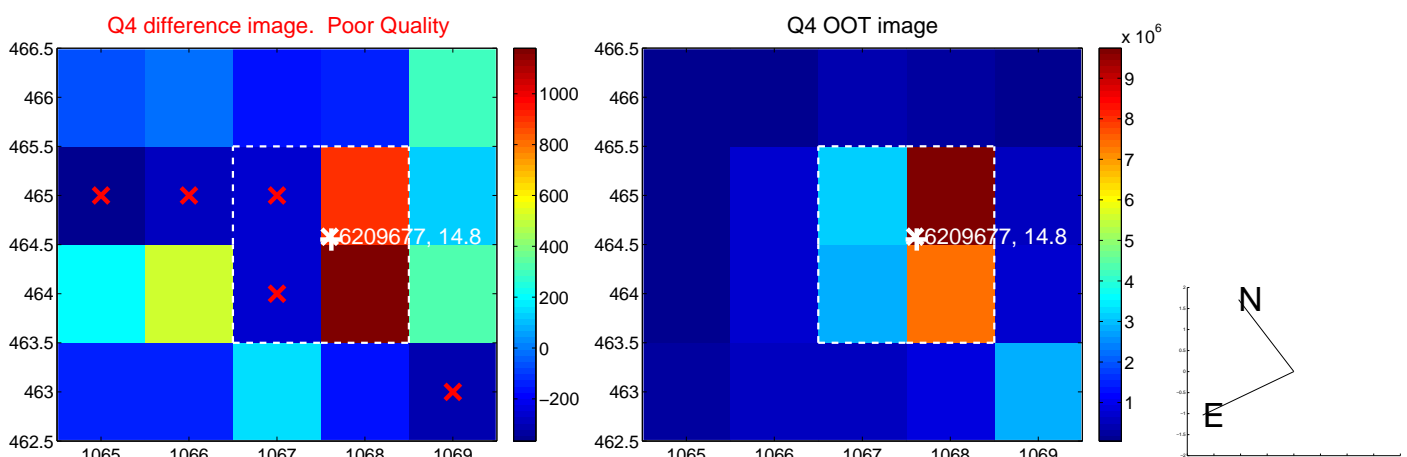
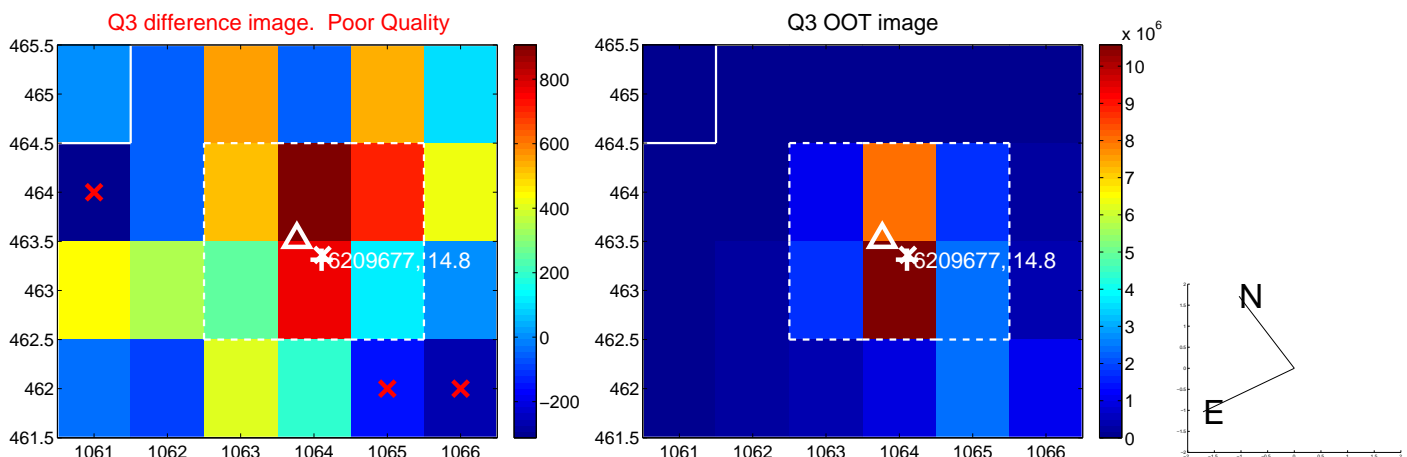
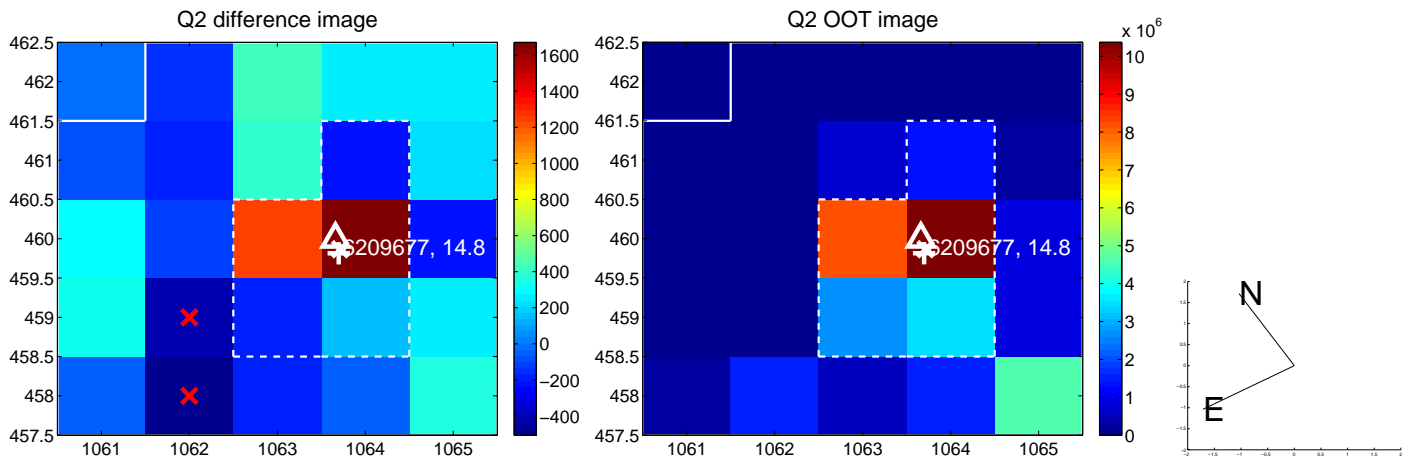
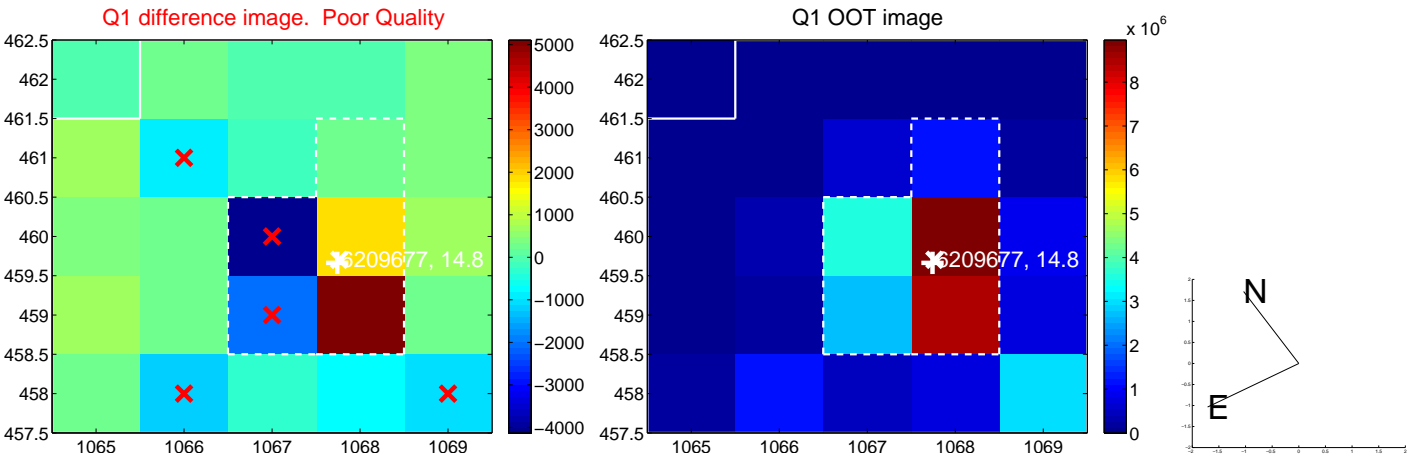
The direct PRF centroid is offset from the target star catalog position by about 0.20 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.494 ± 0.974	0.51	-0.450 ± 1.037	0.202 ± 0.276
PRF-fit source offset from KIC position	0.297 ± 0.884	0.34	-0.273 ± 0.916	0.117 ± 0.286
photometric centroid source offset	0.74 ± 1.33	0.56	-0.73 ± 1.33	0.14 ± 1.27

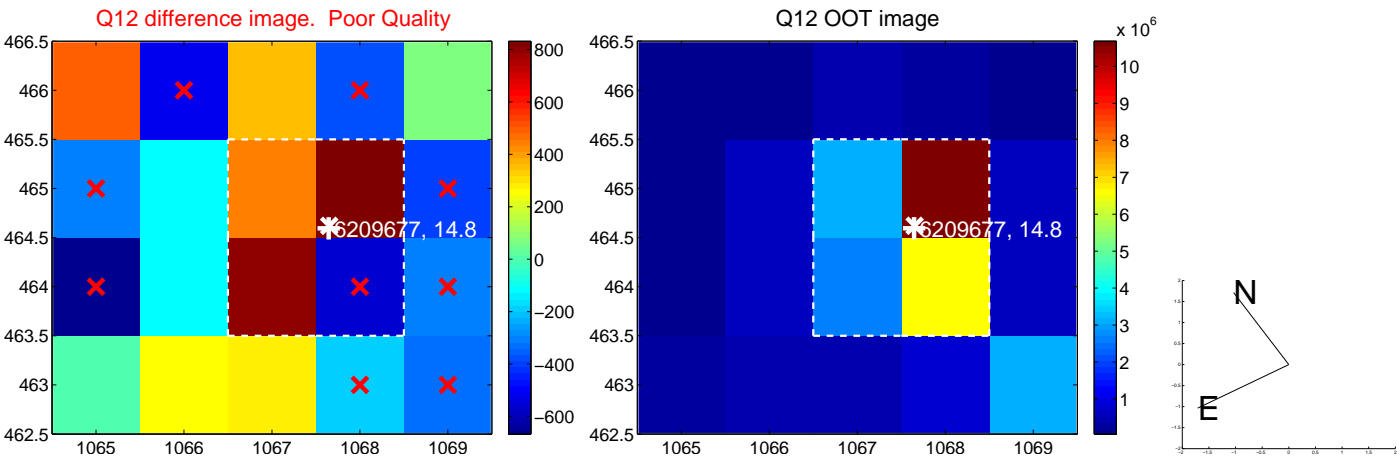
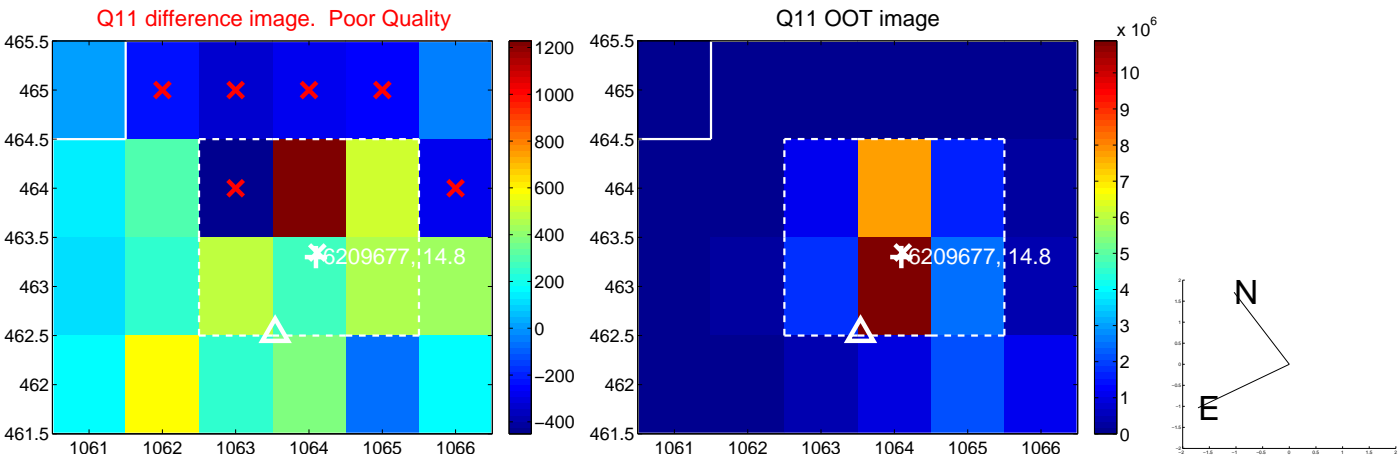
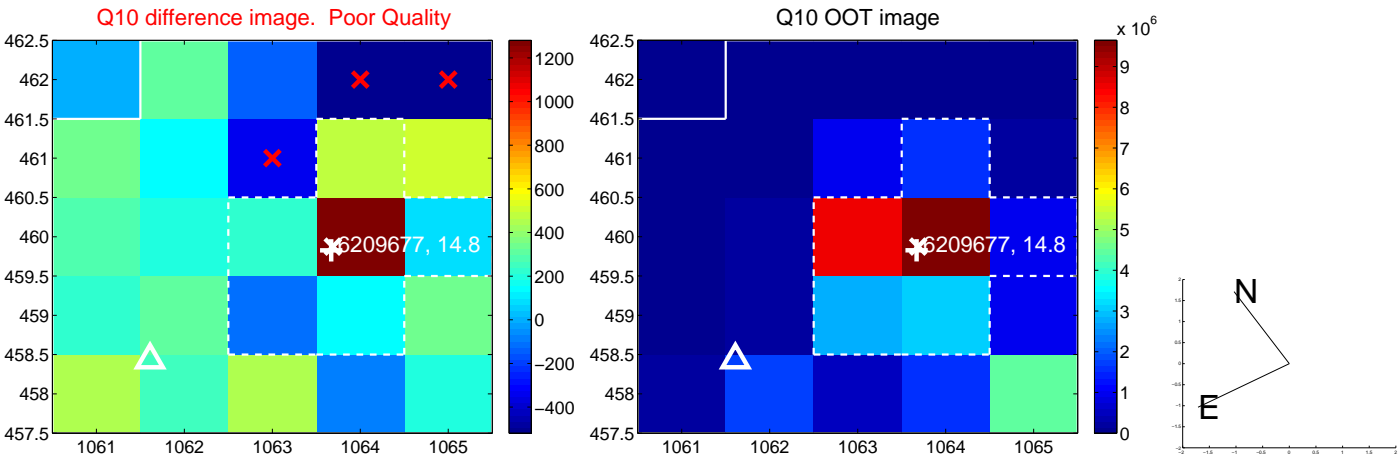
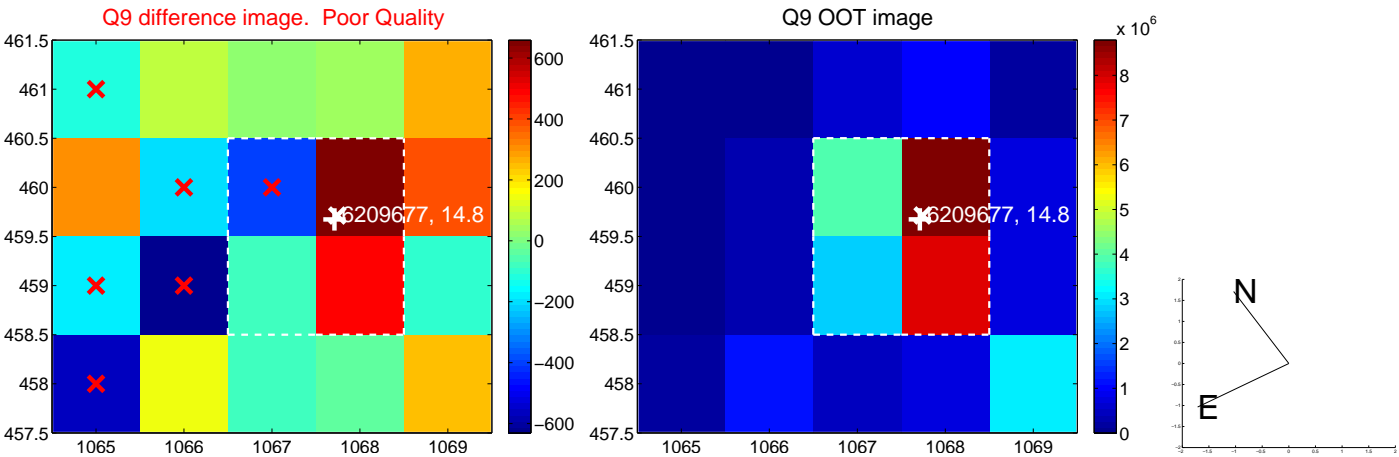


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

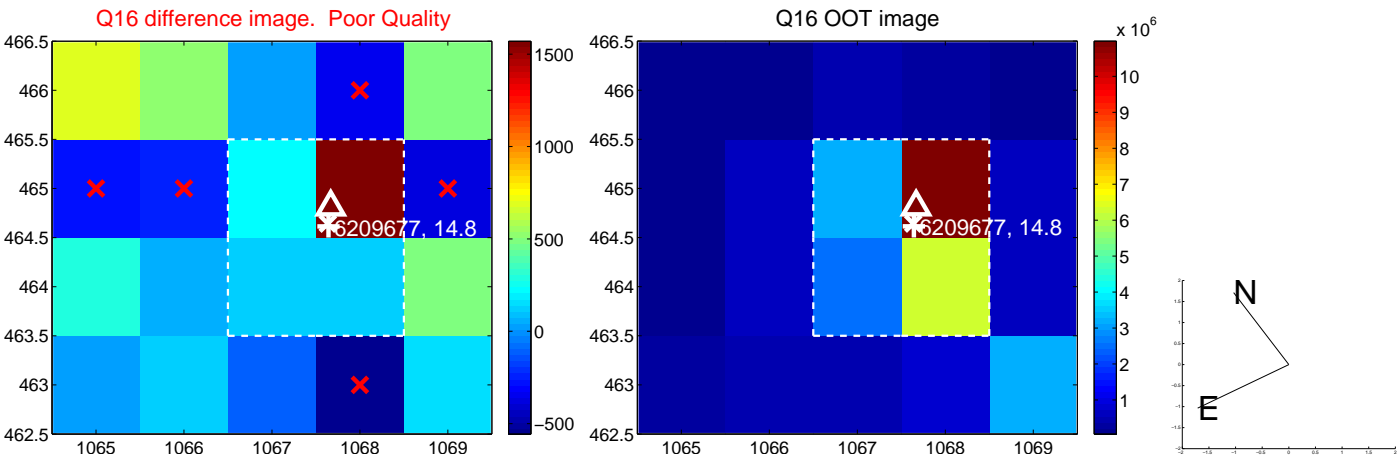
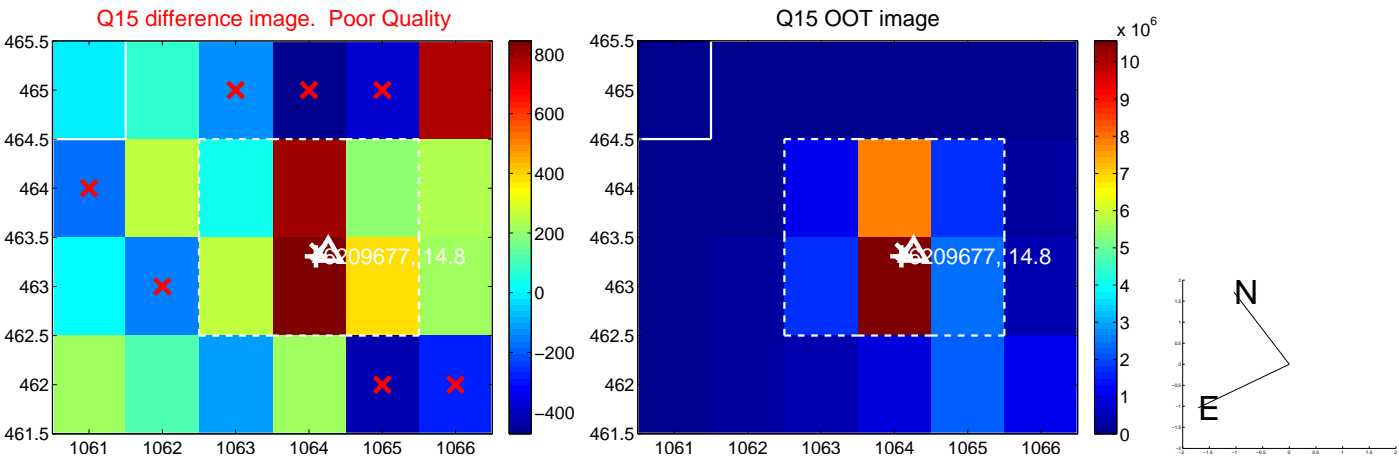
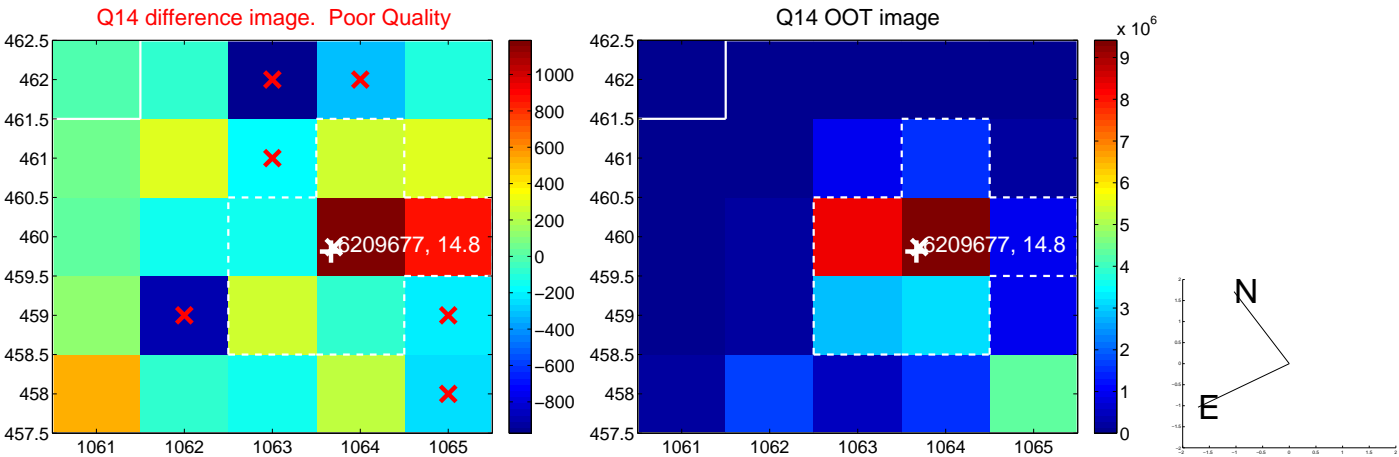
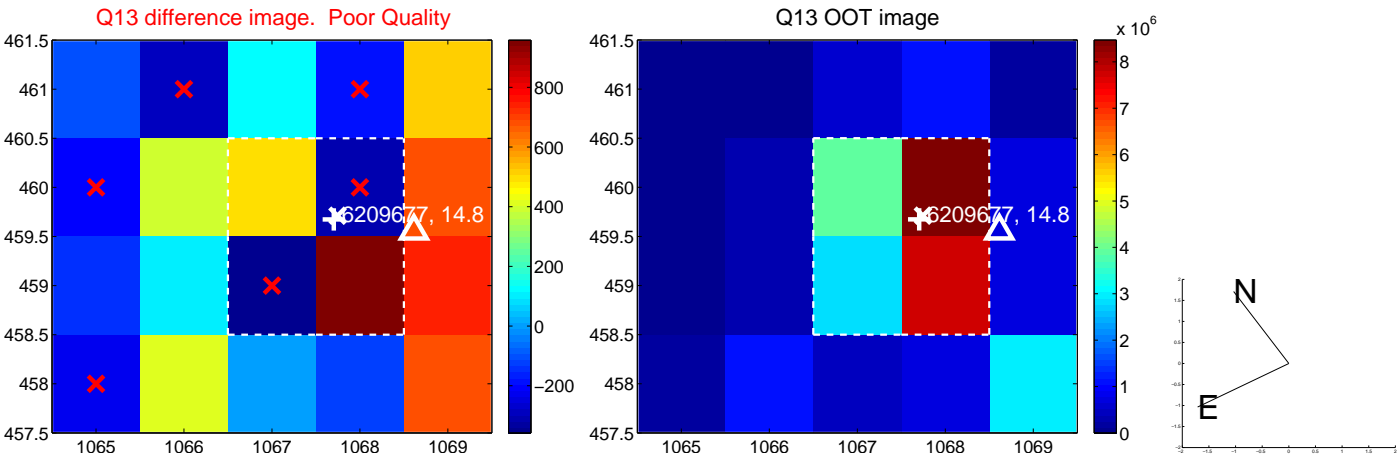
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



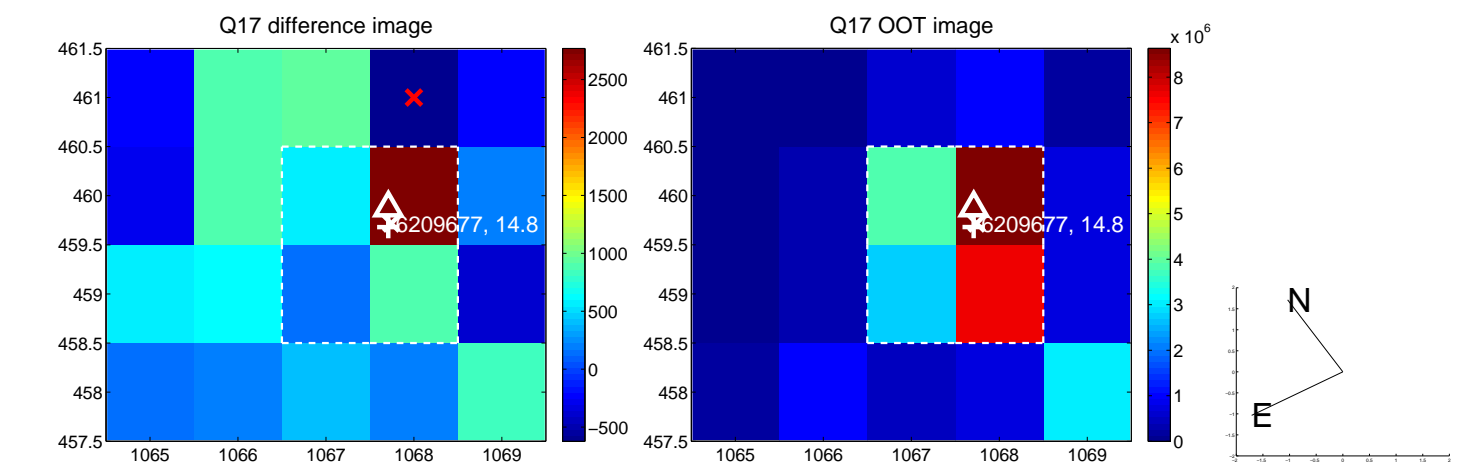
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



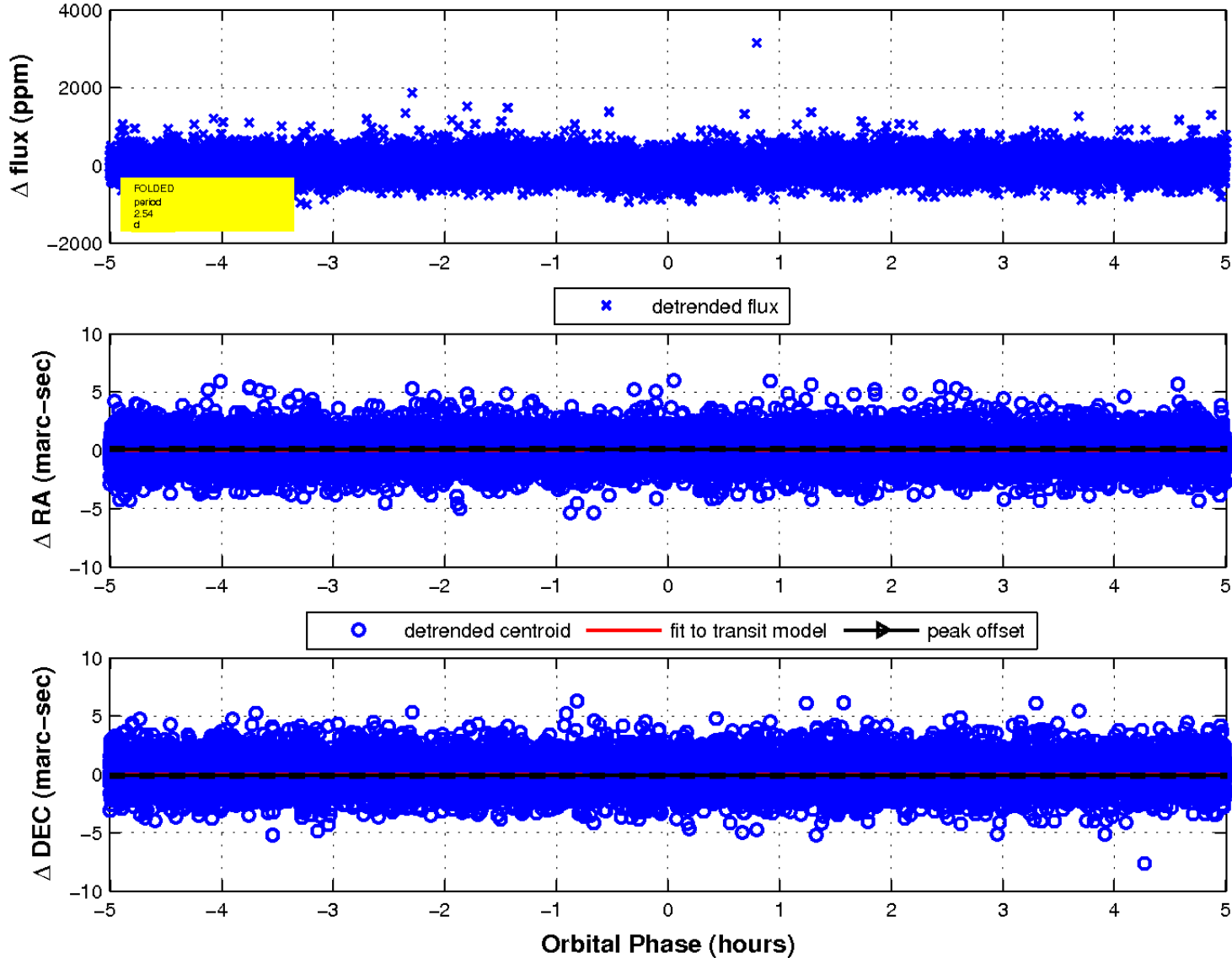
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 2 of 2



UKIRT Image

Declination

