

KIC 005791986

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})
005791986-01	OBS	0413.01	15.228953	146.102420	1140.9	2.668	57.0	60.6	0.81	5456	3.13	39.49
005791986-02	OBS	0413.02	24.674688	146.768869	650.6	3.575	25.8	28.2	0.81	5456	2.58	20.75

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005791986-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT
005791986-02	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.

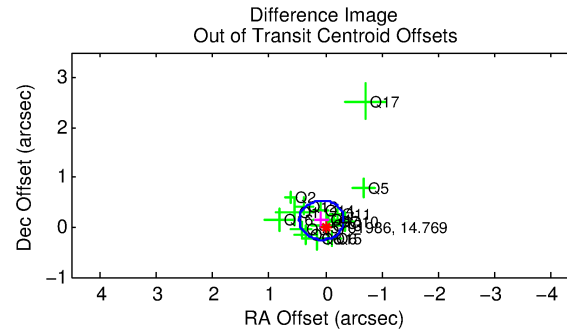
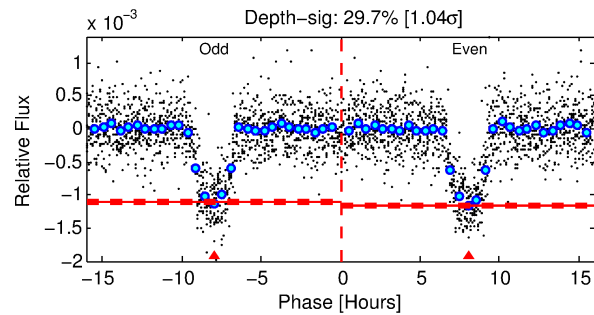
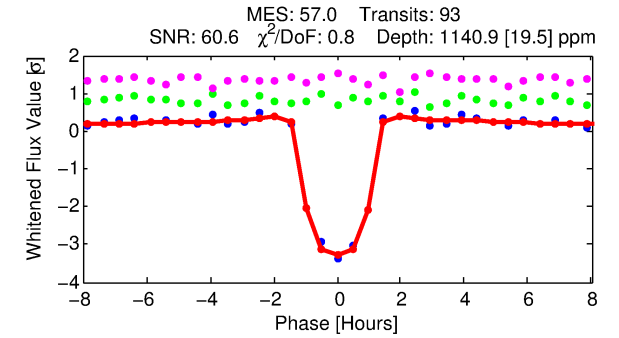
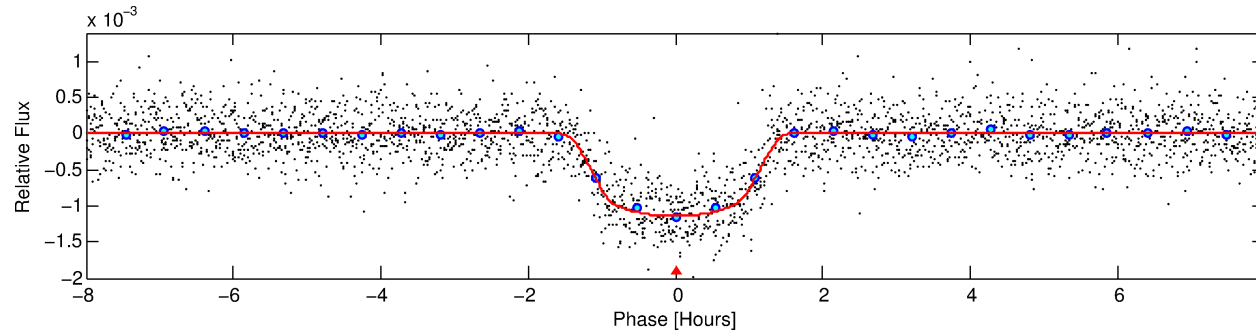
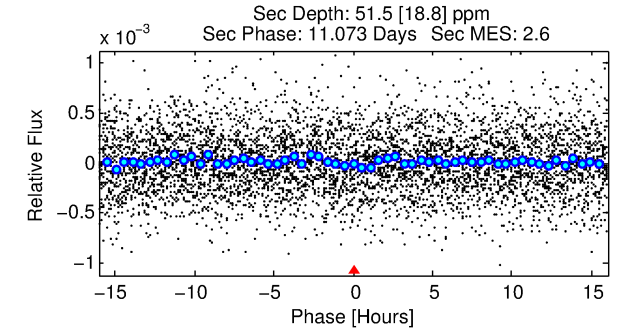
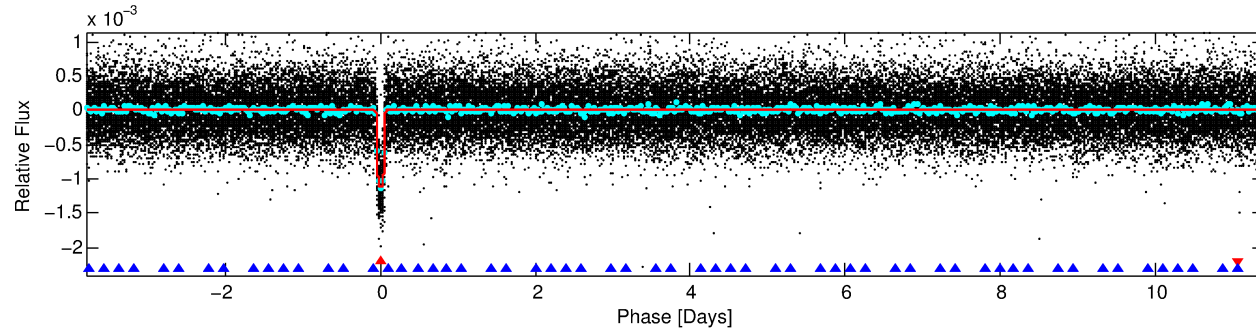
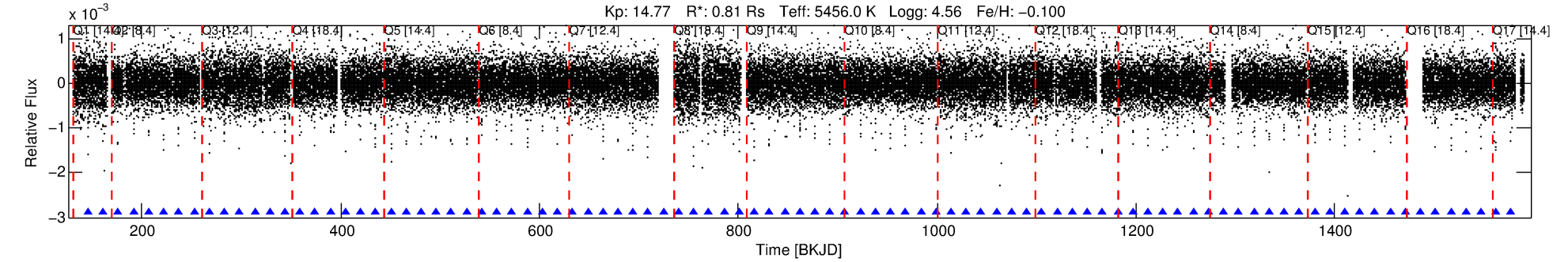
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 005791986-01

No Significant Match Found

DV One-Page Summary

KIC: 5791986 Candidate: 1 of 2 Period: 15.229 d
KOI: K00413.01 Name: Kepler-151b Corr: 0.979



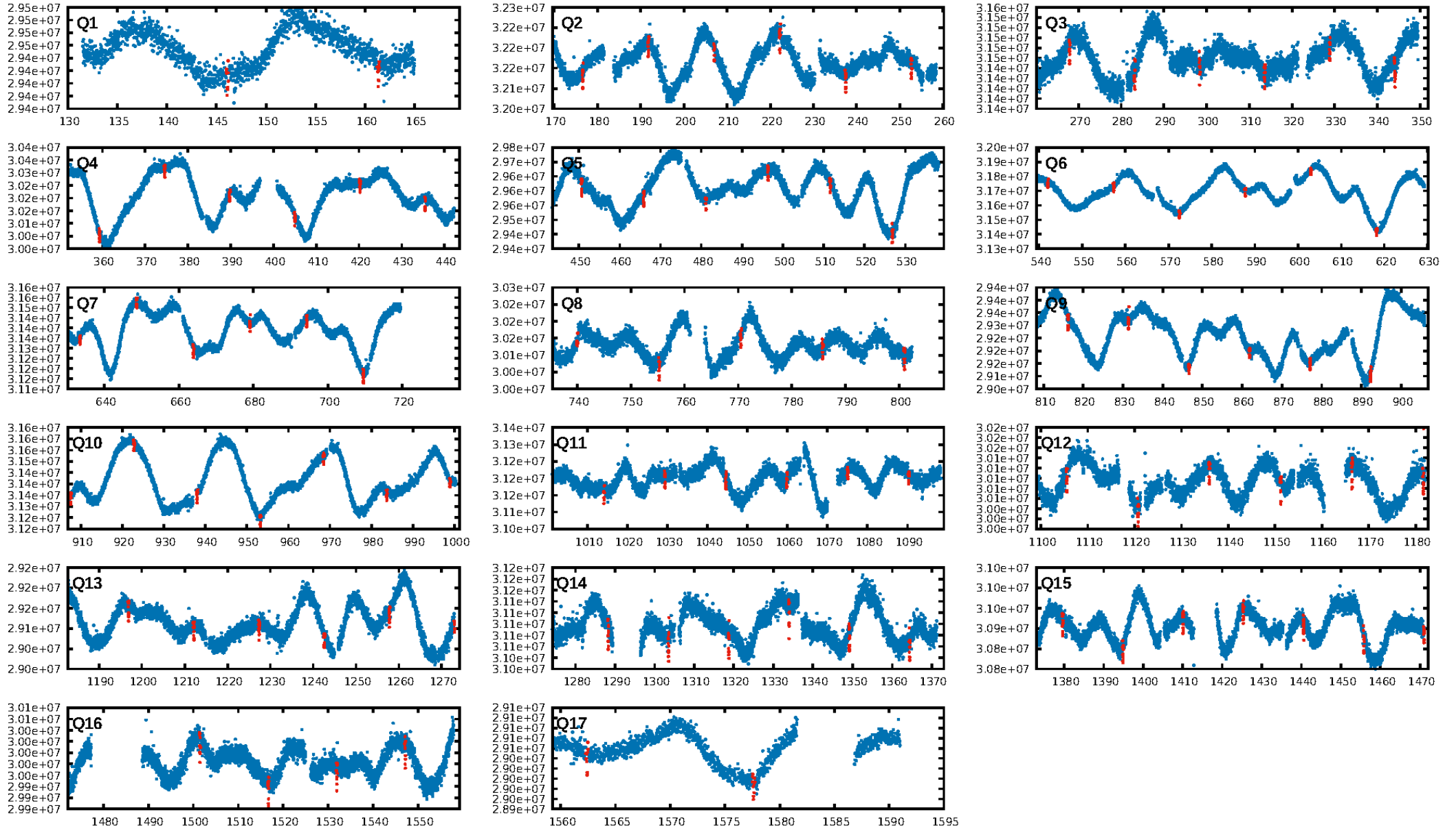
DV Fit Results:

Period = 15.22895 [0.00002] d
Epoch = 146.1024 [0.0010] BKJD
Rp/R* = 0.0353 [0.0027]
a/R* = 26.50 [8.19]
b = 0.84 [0.11]
Seff = 39.49 [11.03]
Teff = 639 [45] K
Rp = 3.13 [0.72] Re
a = 0.1151 [0.0204] AU
Ag = 38.41 [18.04] [2.07 σ]
Teffp = 2460 [255] K [7.04 σ]

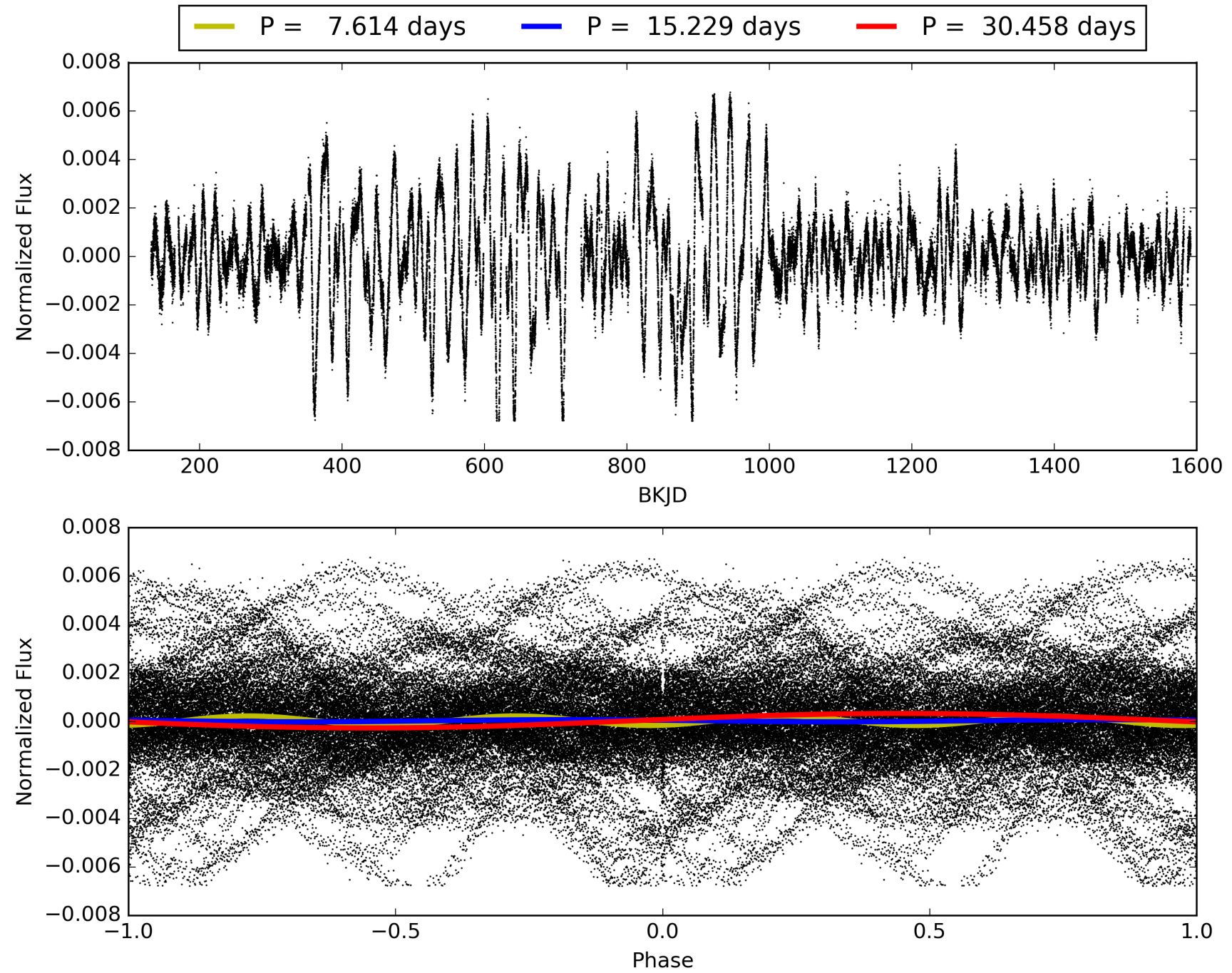
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [50.82 σ]
ModelChiSquare2-sig: 86.5%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 1.00 [89/89]
GhostDiagnostic-chr: 3.893
Centroid-sig: 67.2%
Centroid-so: 0.186 arcsec [0.89 σ]
OotOffset-rm: 0.155 arcsec [1.18 σ]
KicOffset-rm: 0.089 arcsec [0.77 σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 1.00 [17/17]
DiffImageOverlap-fno: 1.00 [17/17]

TCE 005791986-01, PDC Light Curves

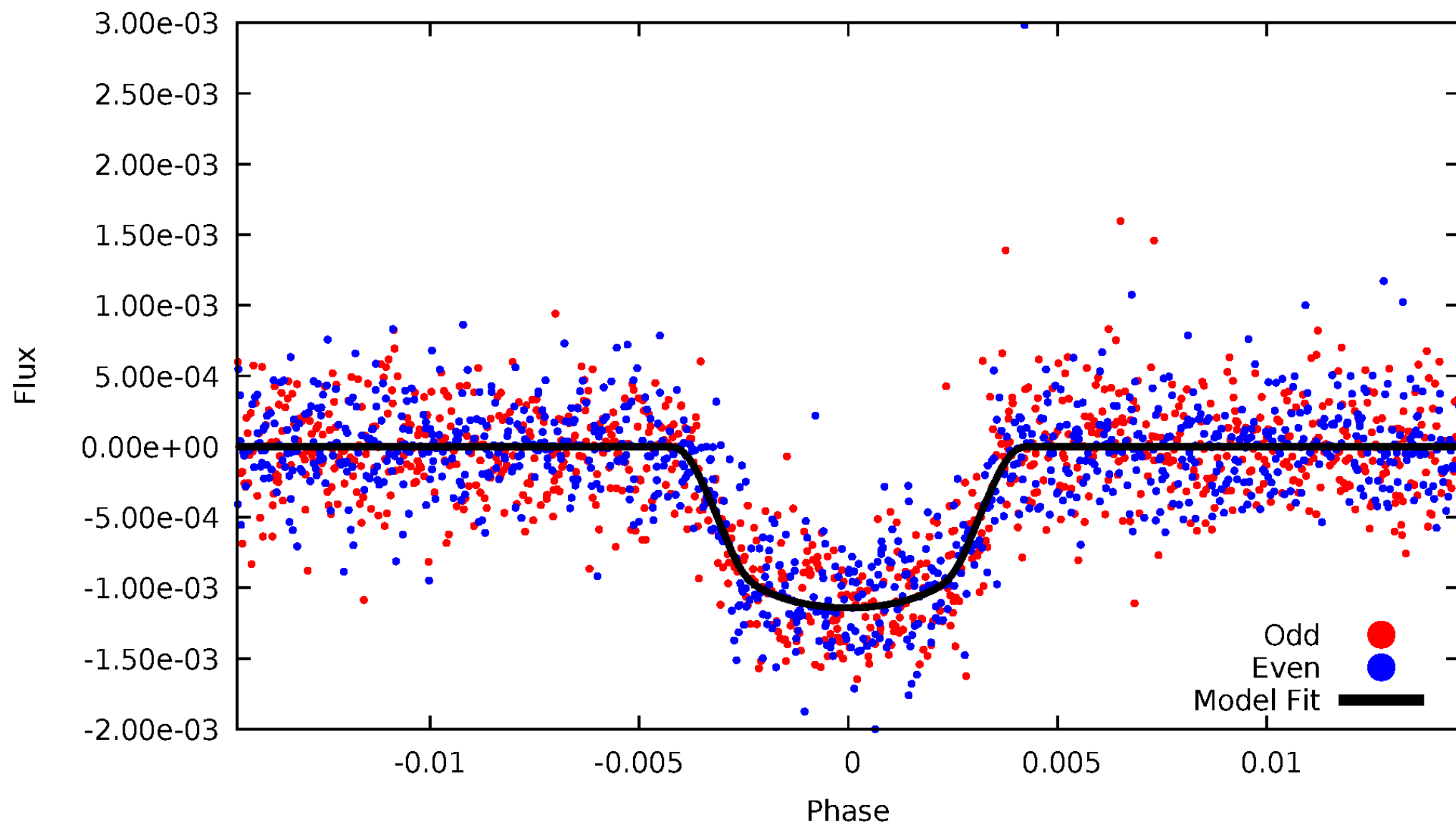


TCE 005791986-01



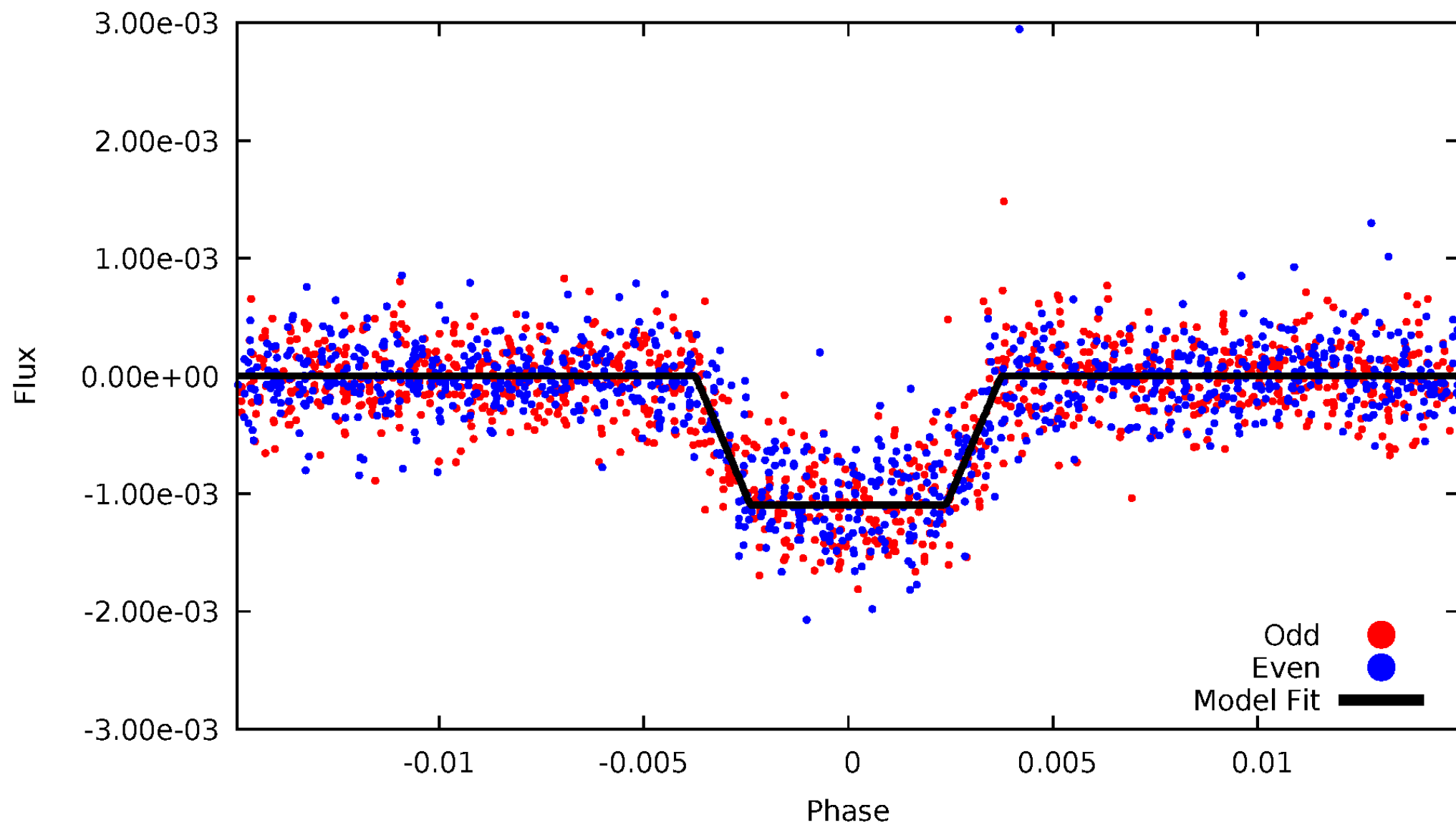
DV Odd/Even

TCE 005791986-01



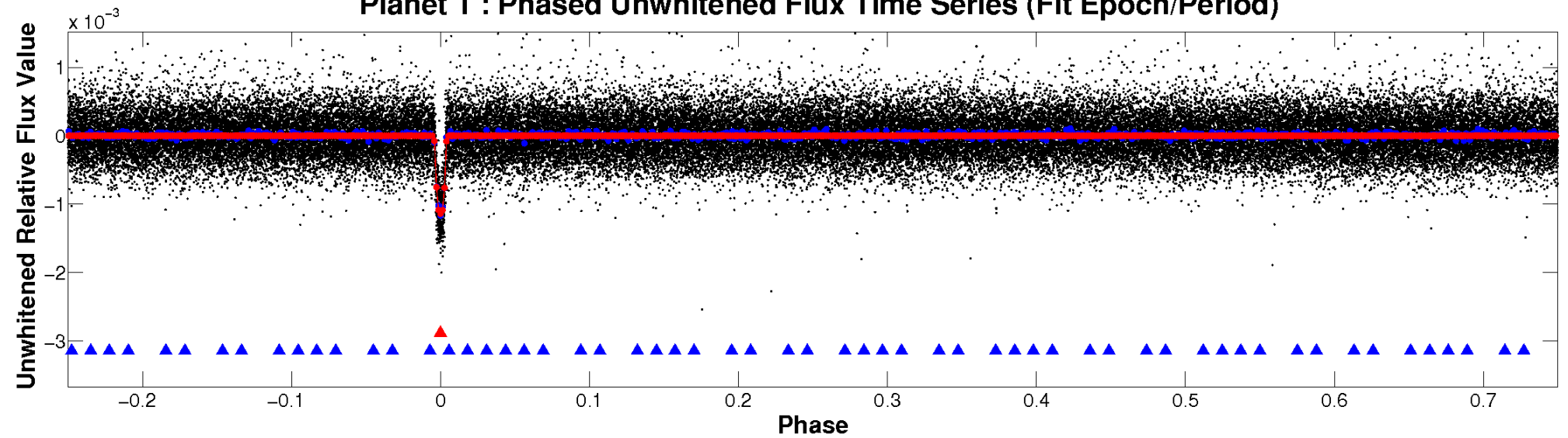
ALT Odd/Even

TCE 005791986-01

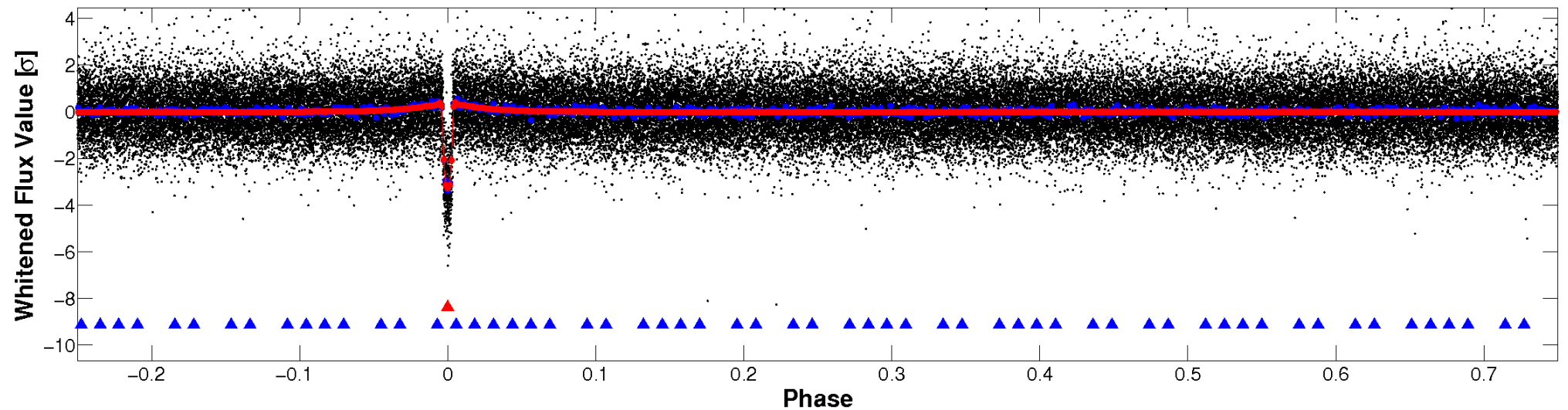


Non-Whitened Vs. Whitened Light Curve

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

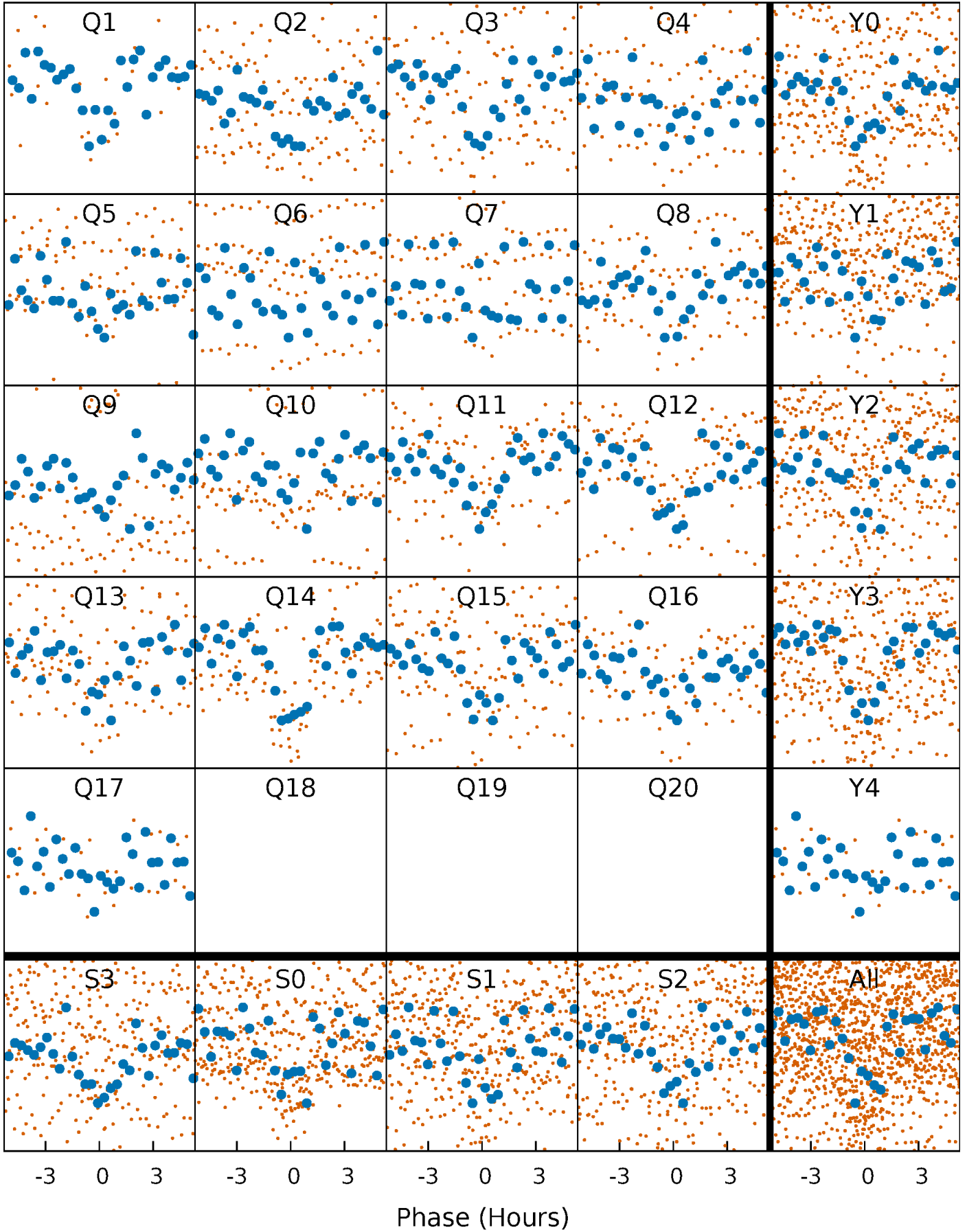


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



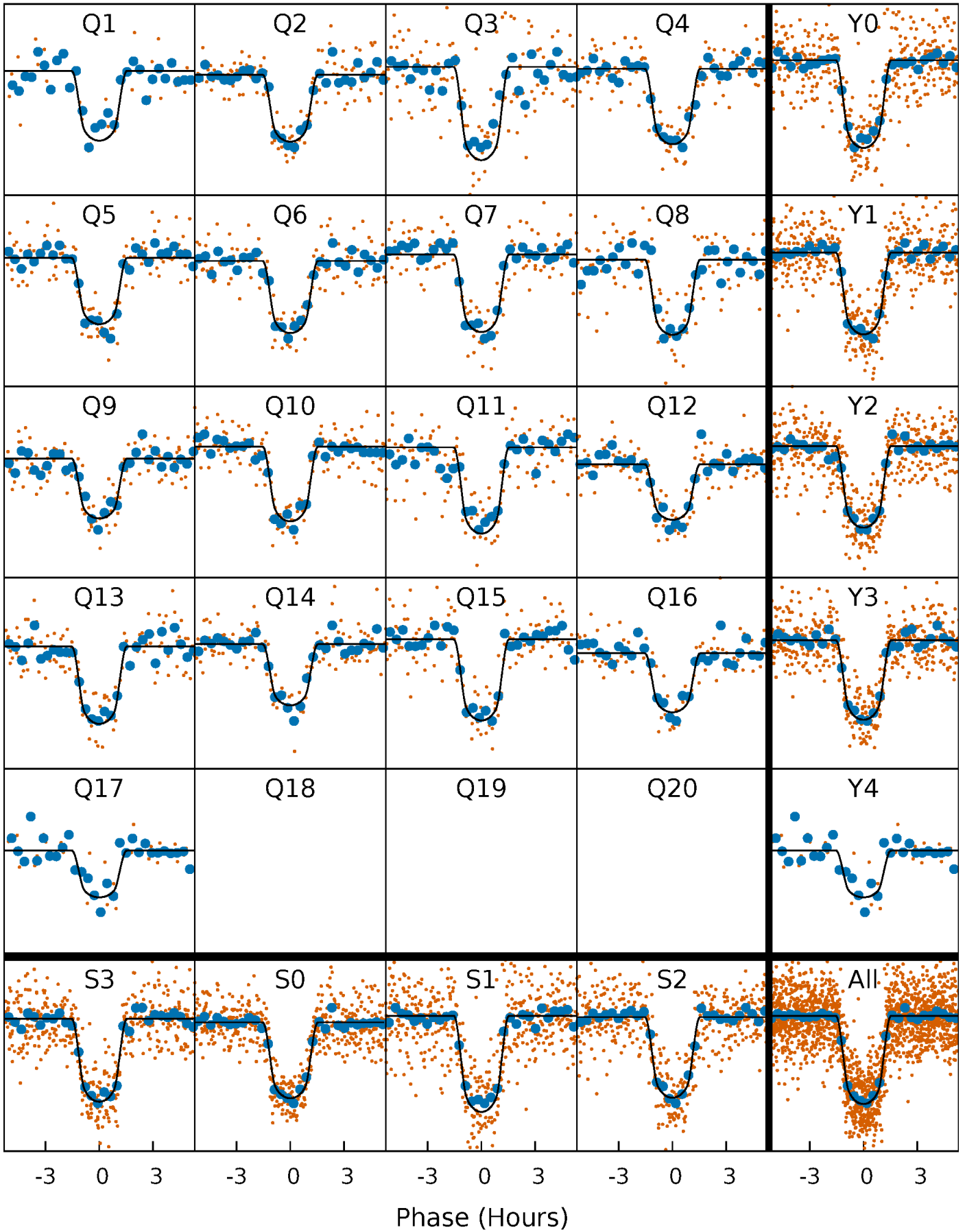
PDC Quarter-Phased Transit Curves

TCE 005791986-01 P= 15.228953 Days $T_0=146.102420$ (BKJD)



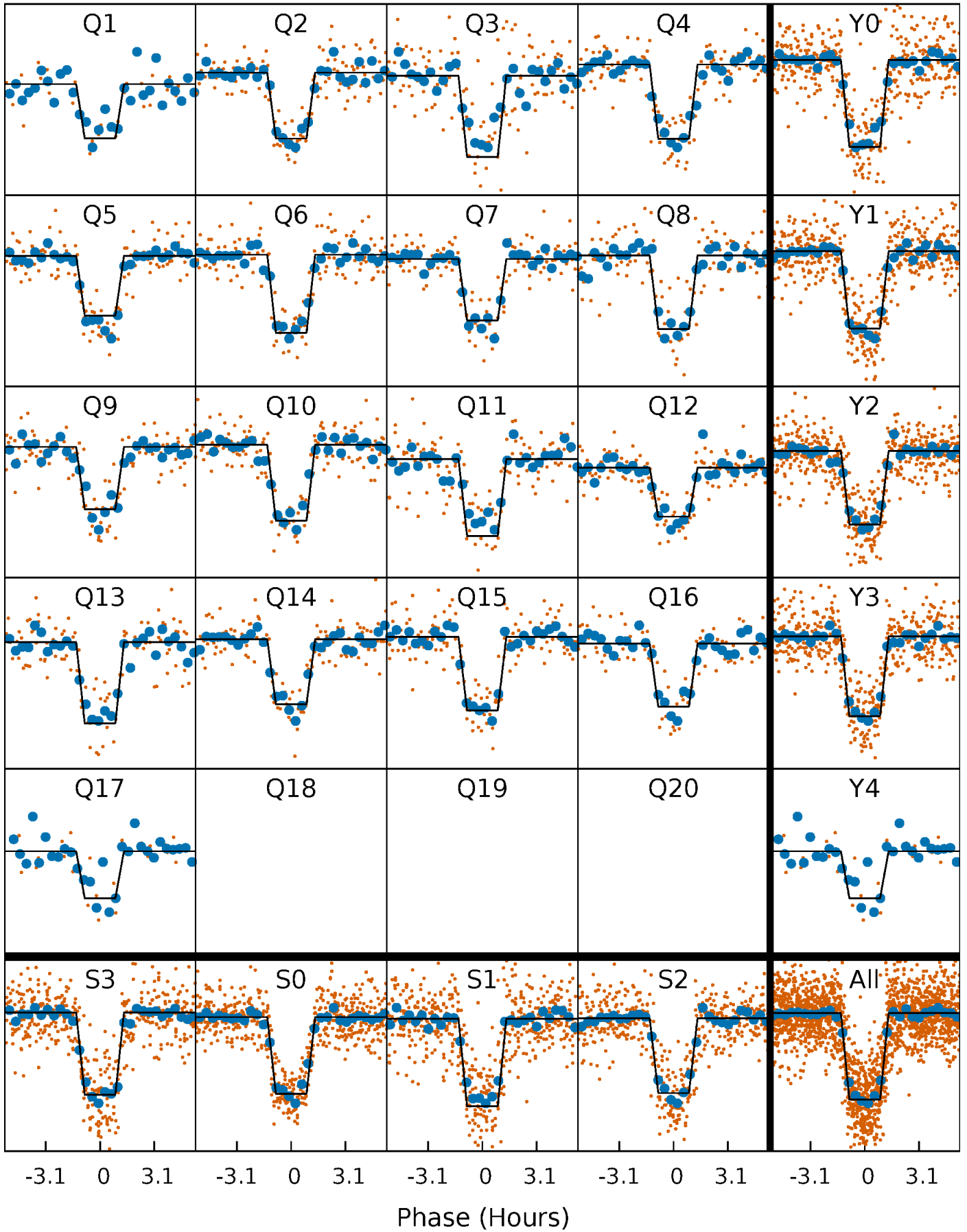
DV Quarter-Phased Transit Curves

TCE 005791986-01 P= 15.228953 Days $T_0=146.102420$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

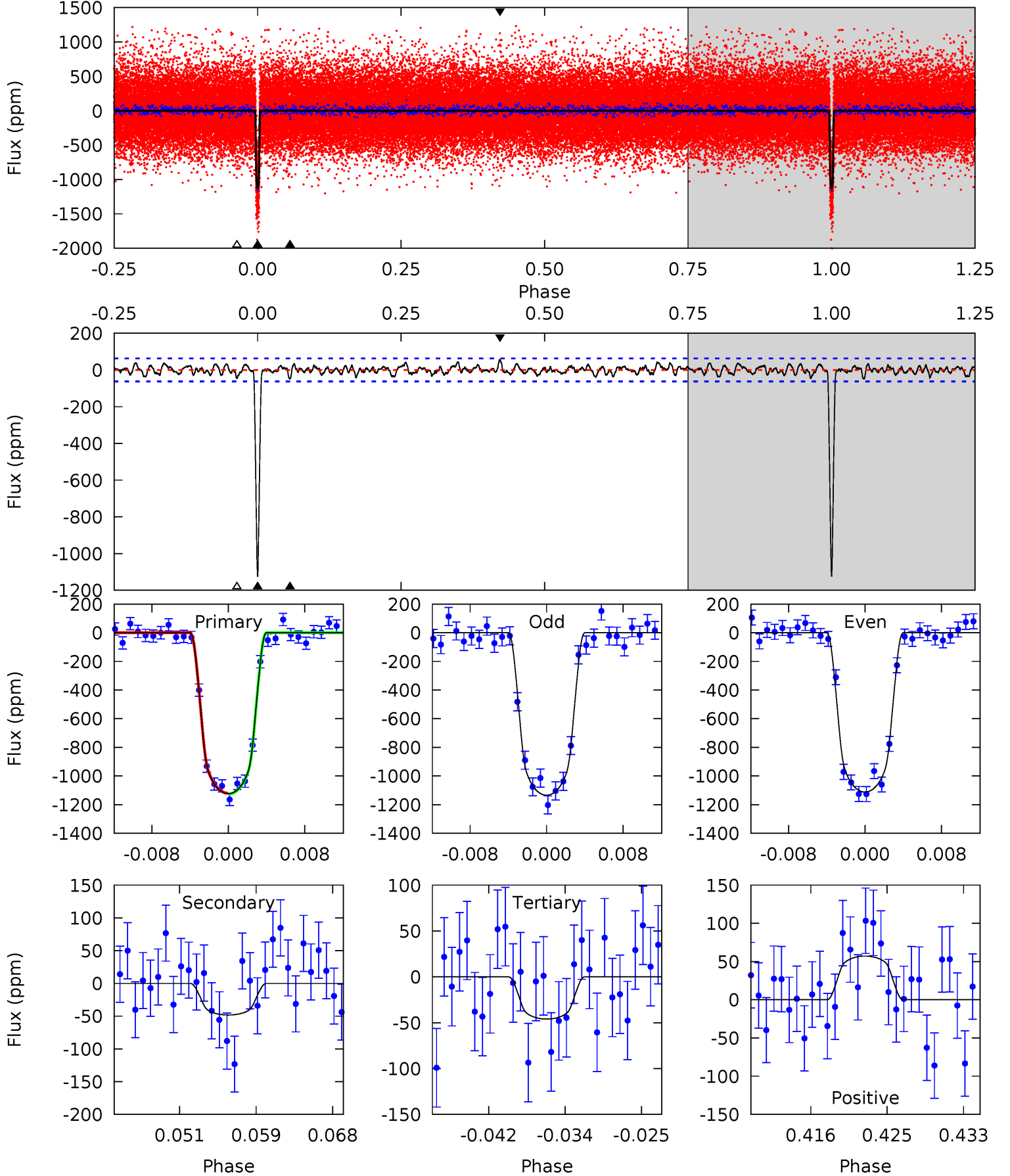
TCE 005791986-01 P= 15.228987 Days $T_0=146.100671$ (BKJD)



DV Model-Shift Uniqueness Test

005791986-01, $P = 15.228953$ Days, $E = 130.873467$ Days

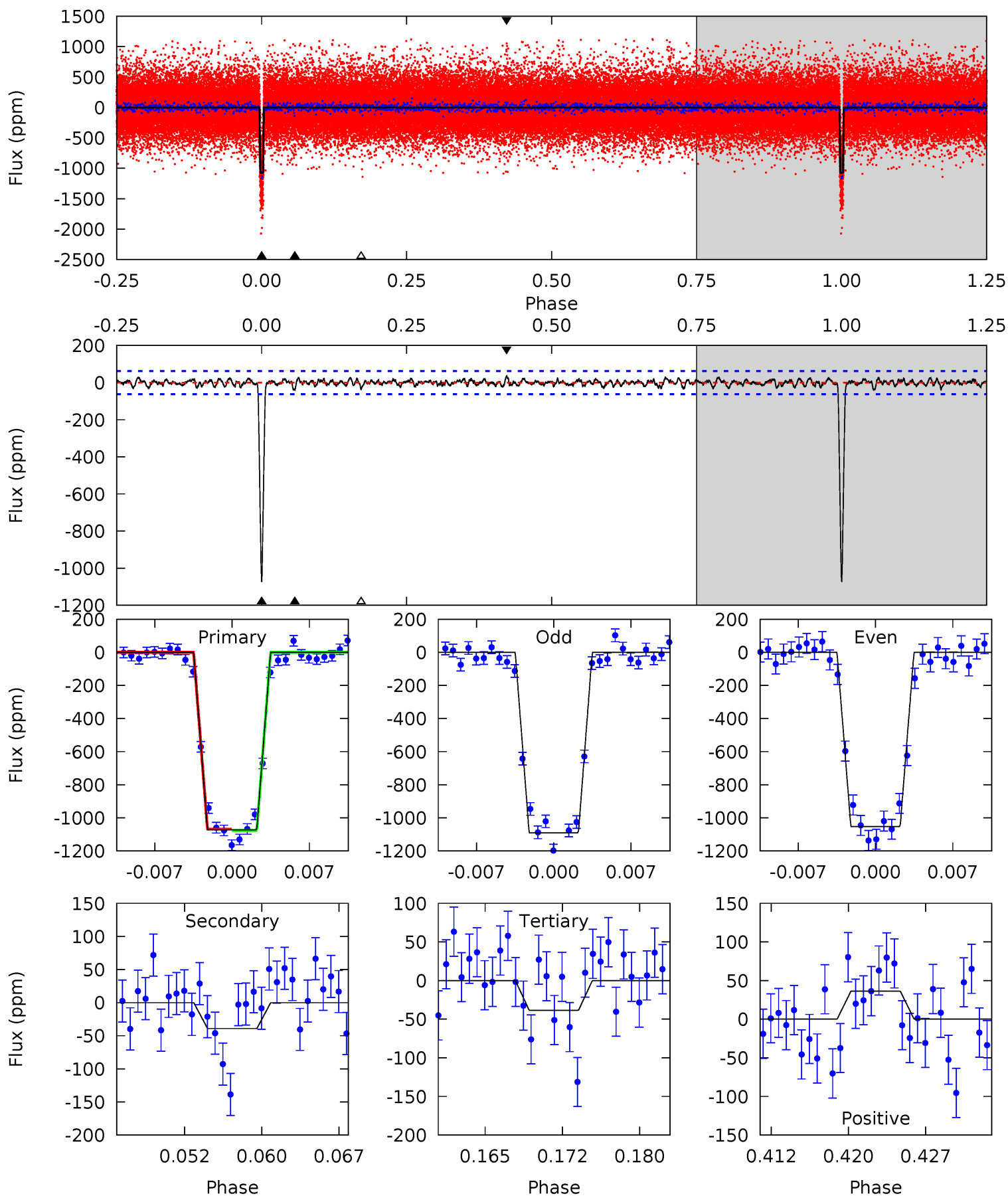
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
90.6	3.89	3.72	4.61	5.06	2.63	1.34	86.9	86.0	0.17	-0.72	0.90	1.00	0.05	0.21



Alt Model-Shift Uniqueness Test

005791986-01, $P = 15.228987$ Days, $E = 130.871684$ Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
87.8	3.20	3.16	2.98	5.08	2.67	0.94	84.7	84.8	0.05	0.22	1.52	1.00	0.03	0.36



Stellar Parameters For KIC 005791986

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5456^{+164}_{-164}	$4.562^{+0.045}_{-0.135}$	$-0.100^{+0.300}_{-0.300}$	$0.812^{+0.175}_{-0.075}$	$0.878^{+0.082}_{-0.091}$	$2.313^{+0.437}_{-0.938}$
	+3%/-3%	+1%/-3%	+300%/-300%	+22%/-9%	+9%/-10%	+19%/-41%
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 005791986-01 / KOI 0413.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-48 ± 12	$3.21^{+0.41}_{-0.32}$	906^{+46}_{-38}	3038^{+154}_{-146}	33^{+13}_{-10}
Alt.	-39 ± 12	$3.00^{+0.38}_{-0.30}$	907^{+45}_{-40}	3013^{+157}_{-174}	31^{+13}_{-11}

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

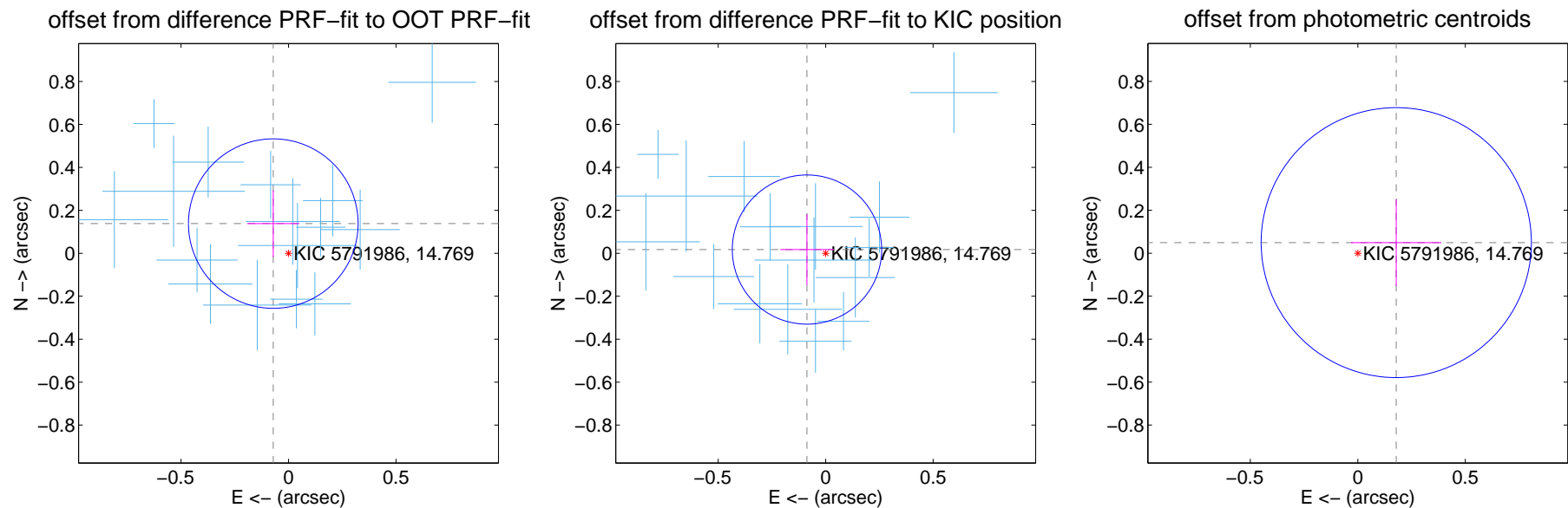
DV Centroid Data

Supplemental centroid analysis for 005791986-01. Kepler magnitude: 14.77. Transit SNR 60.59

There are 17 quarters with good PRF difference image offsets

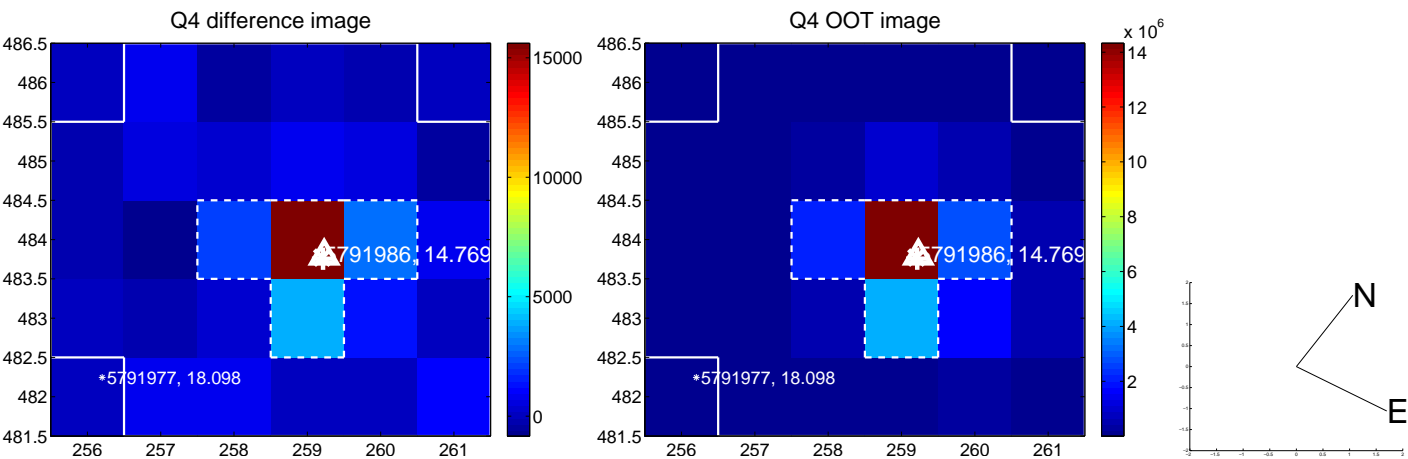
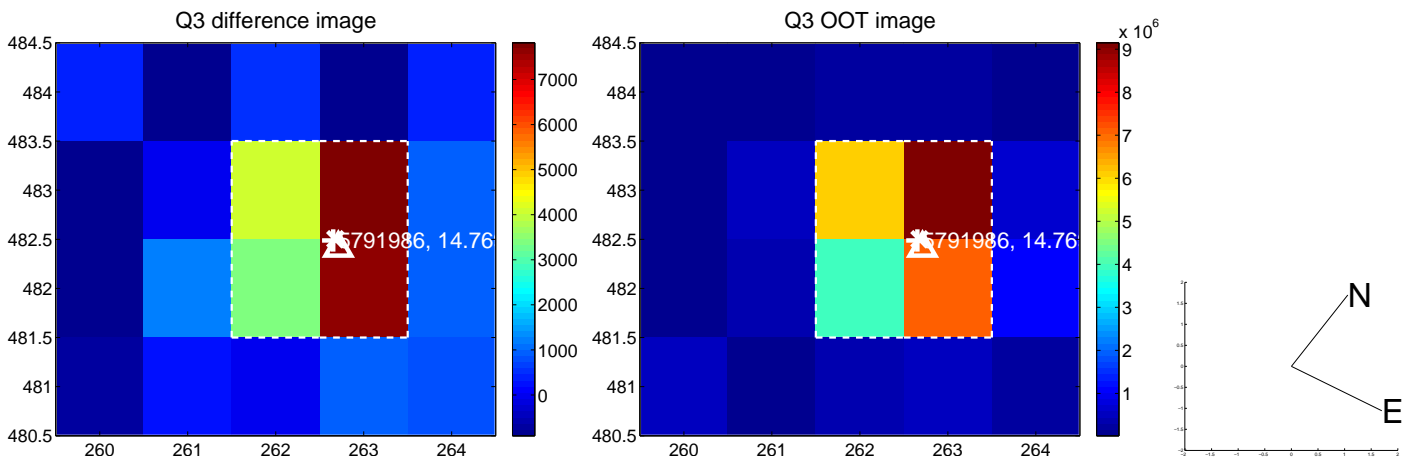
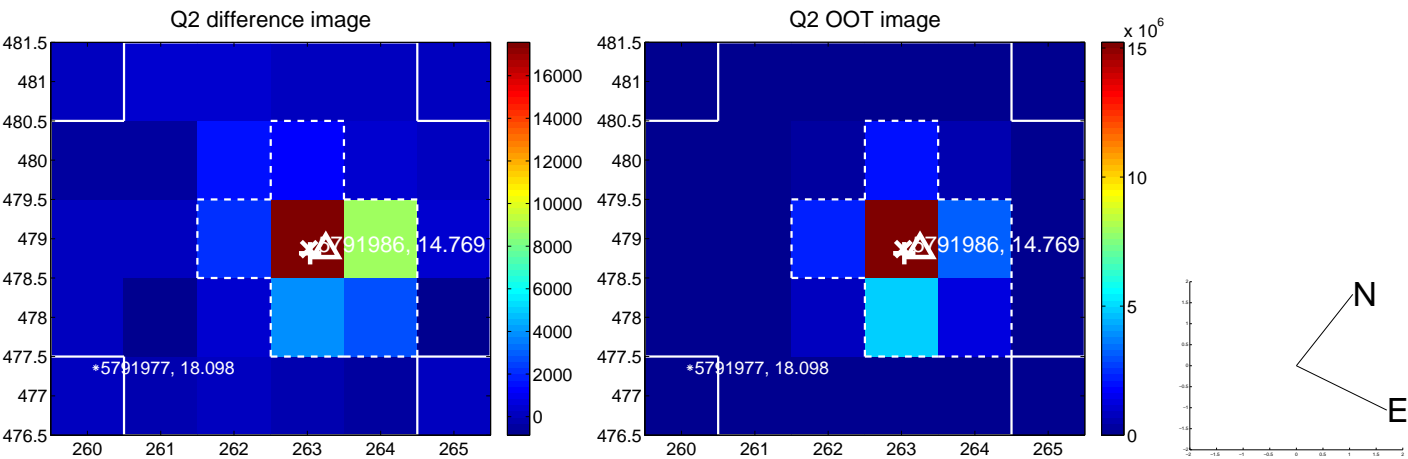
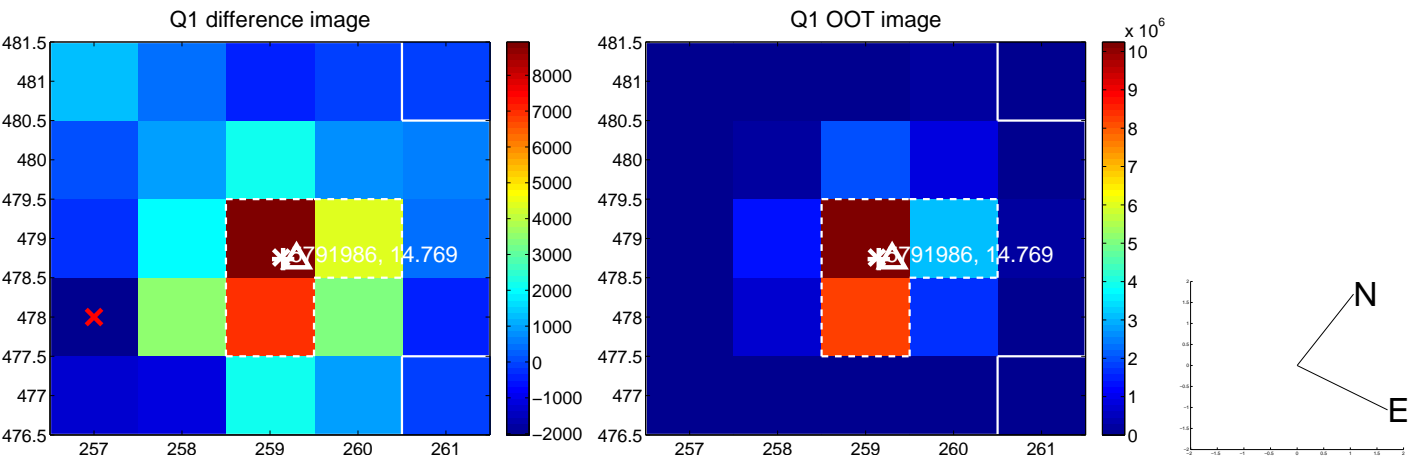
The direct PRF centroid is offset from the target star catalog position by about 0.12 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.155 ± 0.132	1.18	0.071 ± 0.122	0.138 ± 0.155
PRF-fit source offset from KIC position	0.089 ± 0.116	0.77	0.087 ± 0.124	0.017 ± 0.164
photometric centroid source offset	0.19 ± 0.21	0.89	-0.18 ± 0.21	0.05 ± 0.20

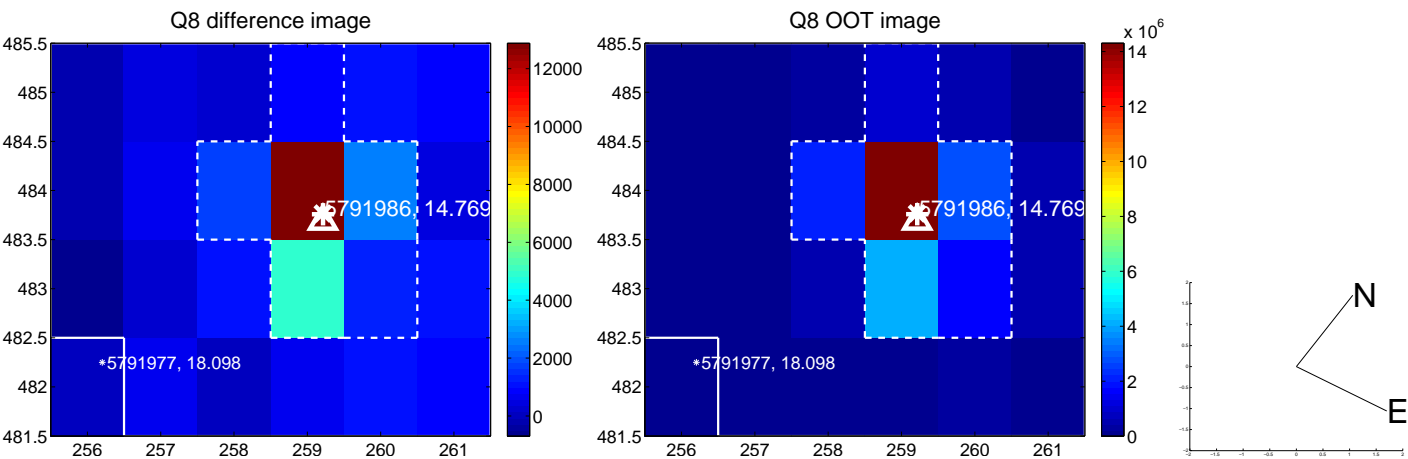
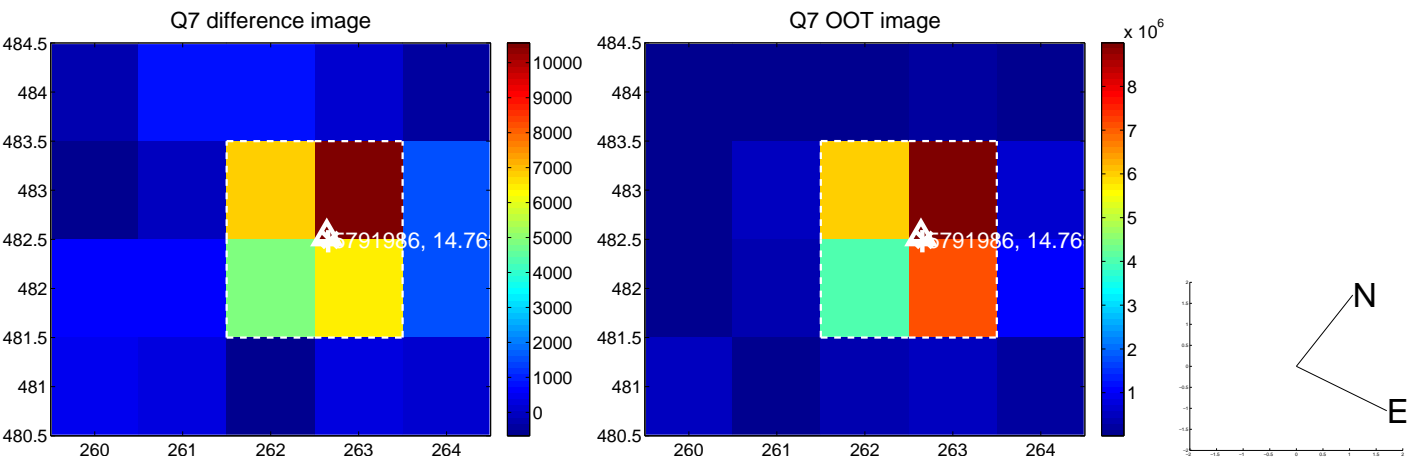
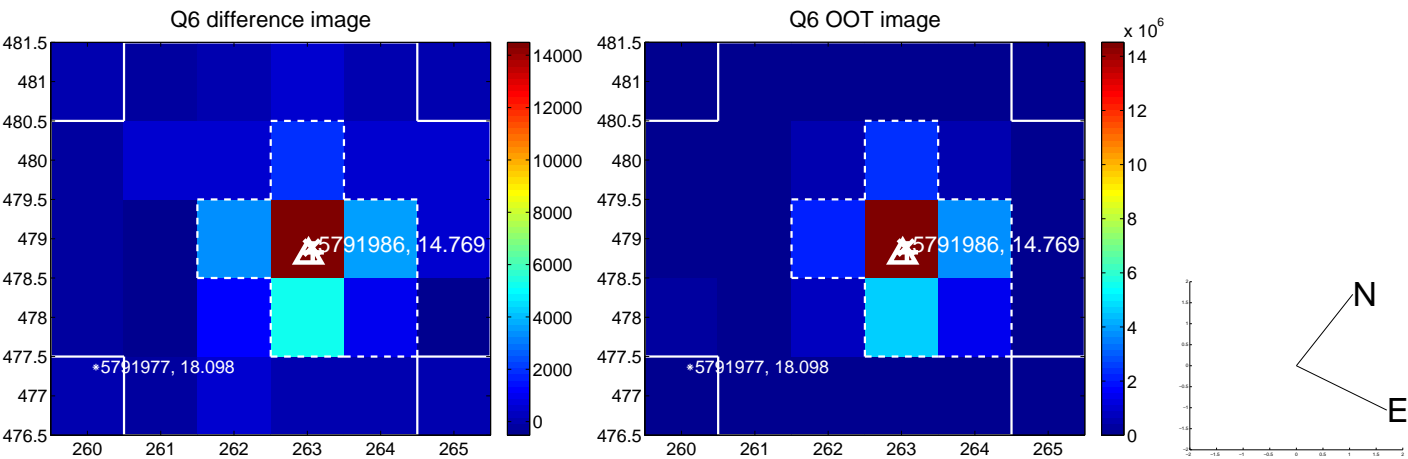
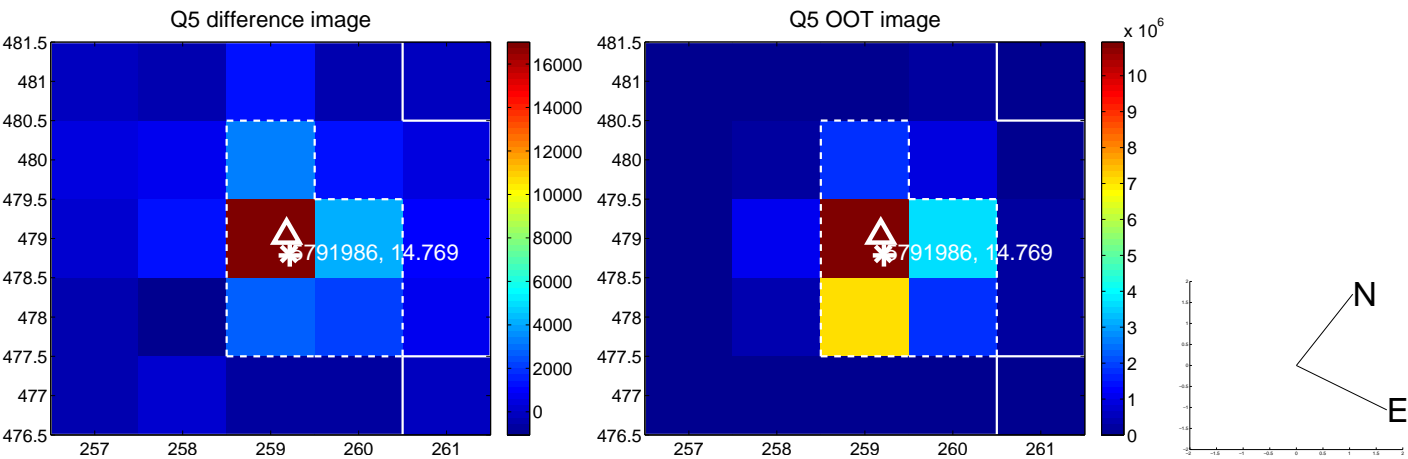


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

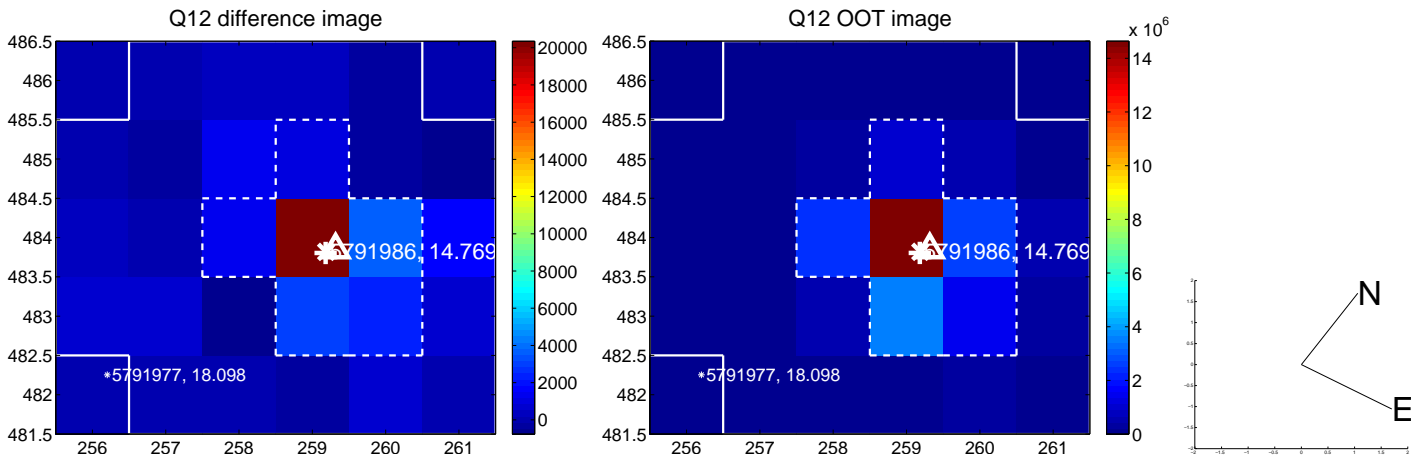
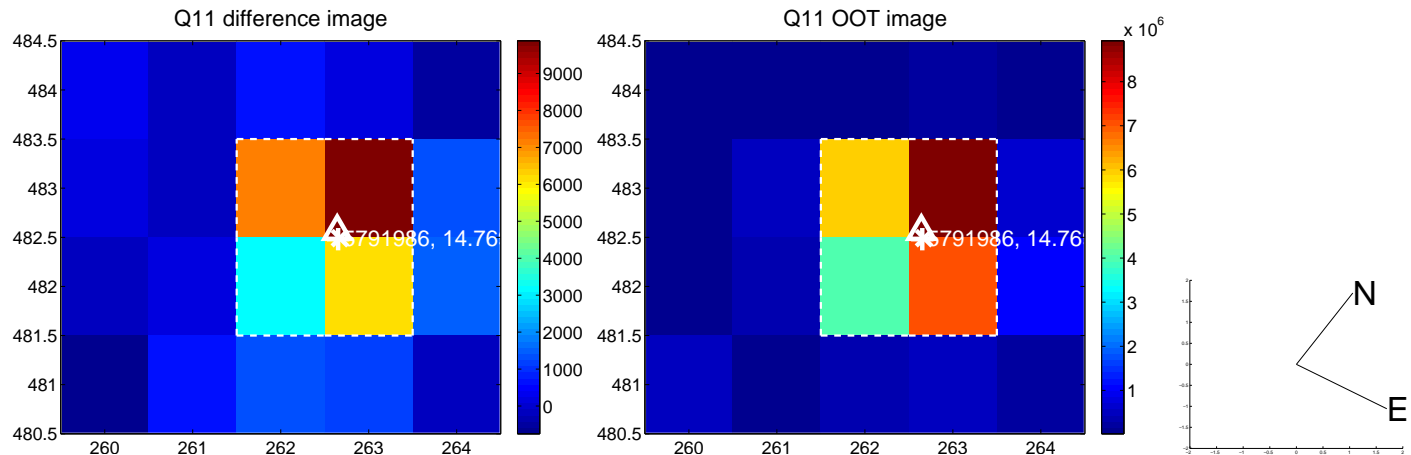
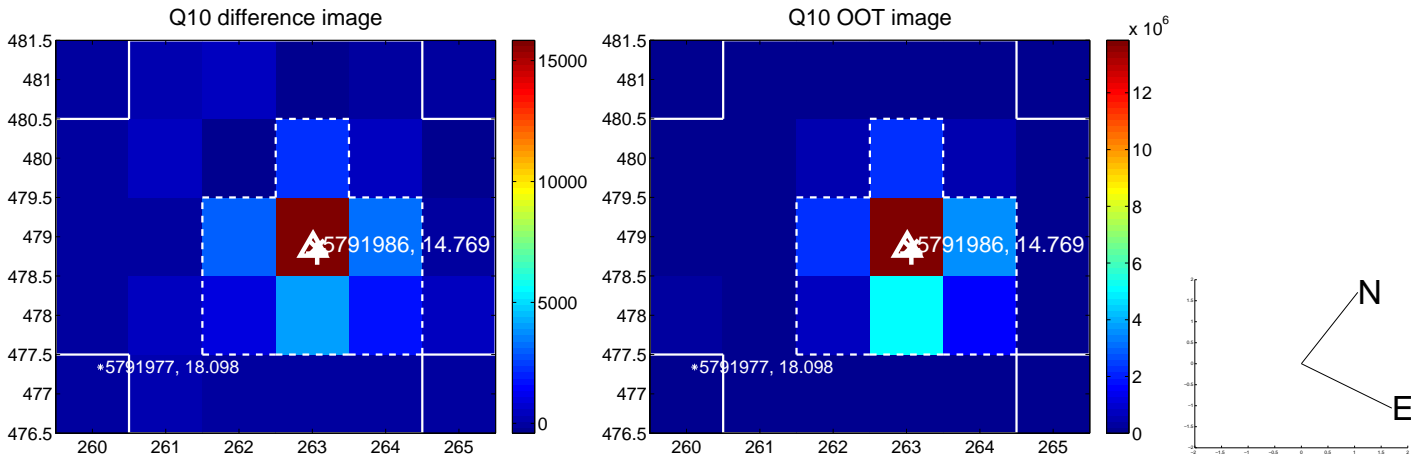
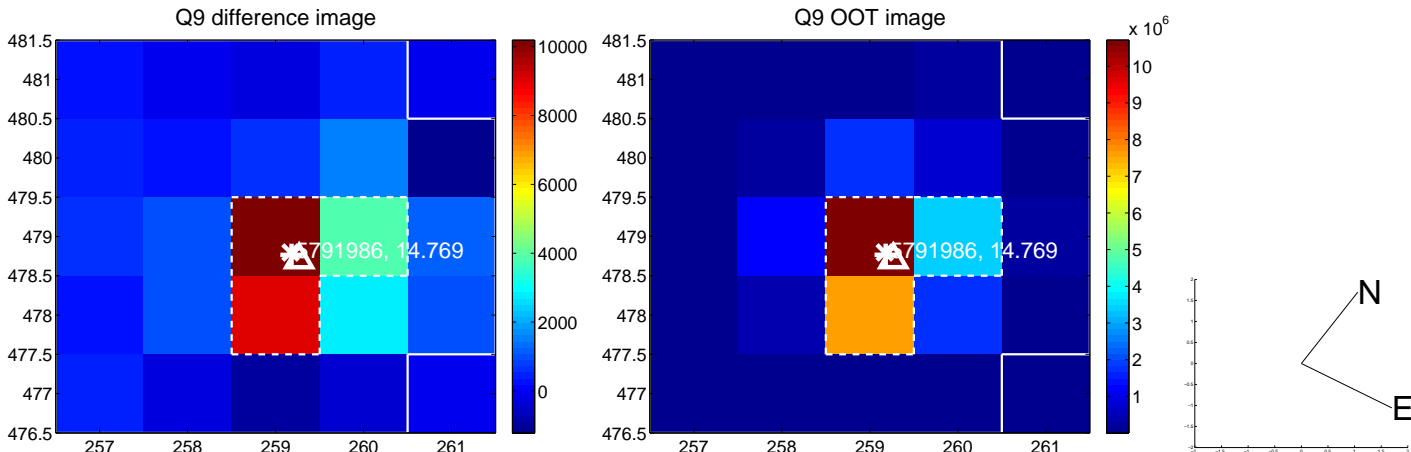
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



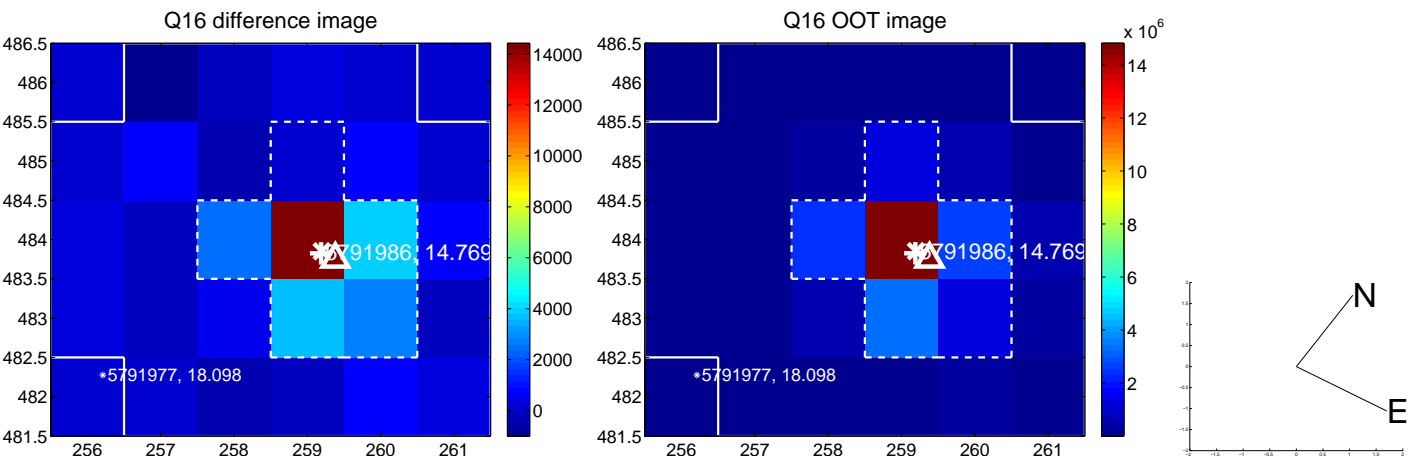
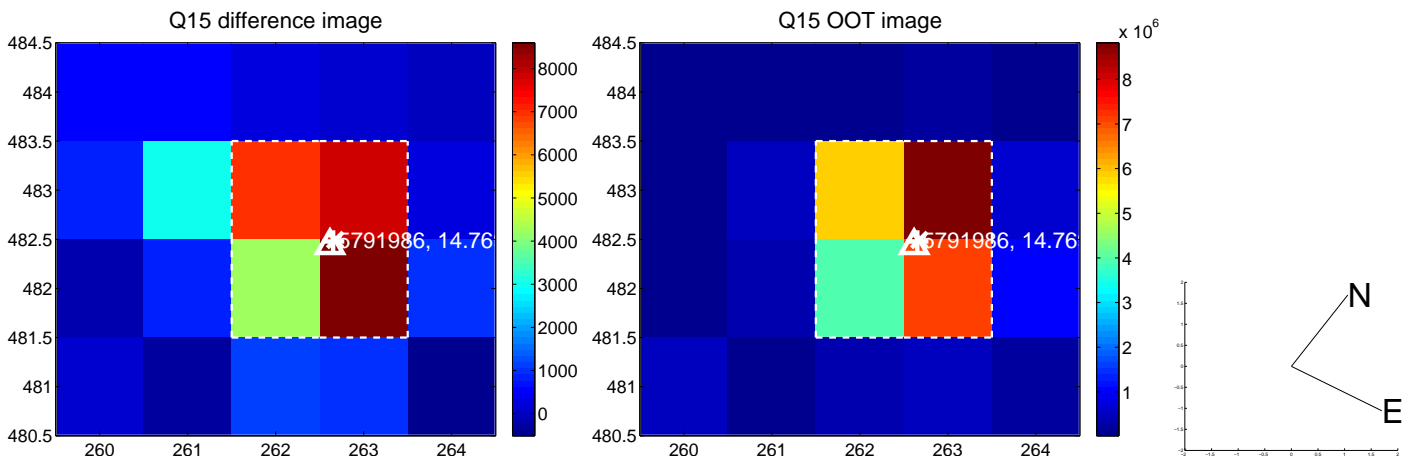
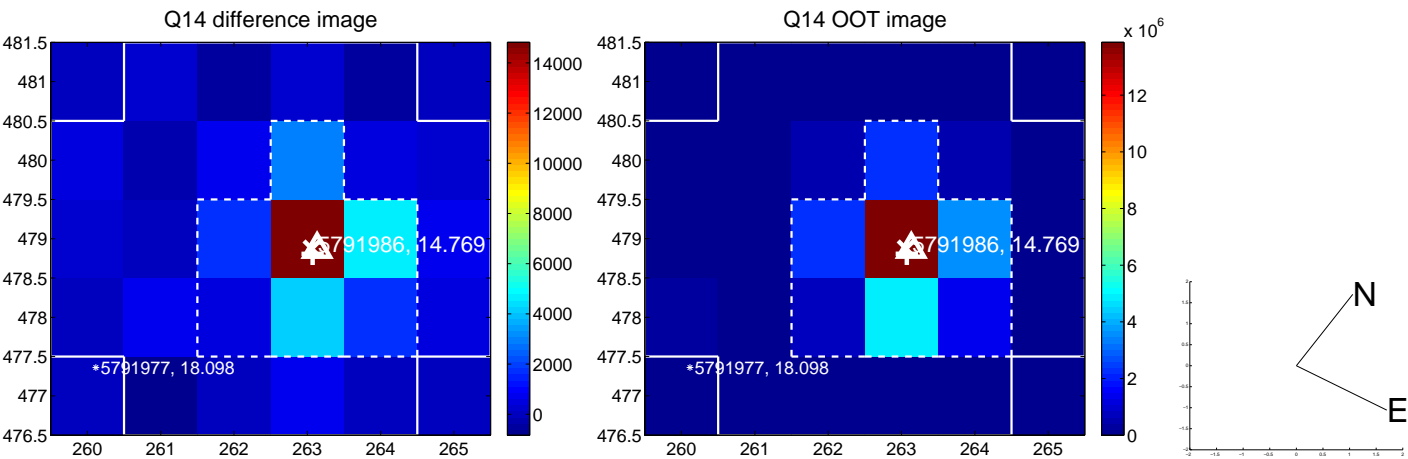
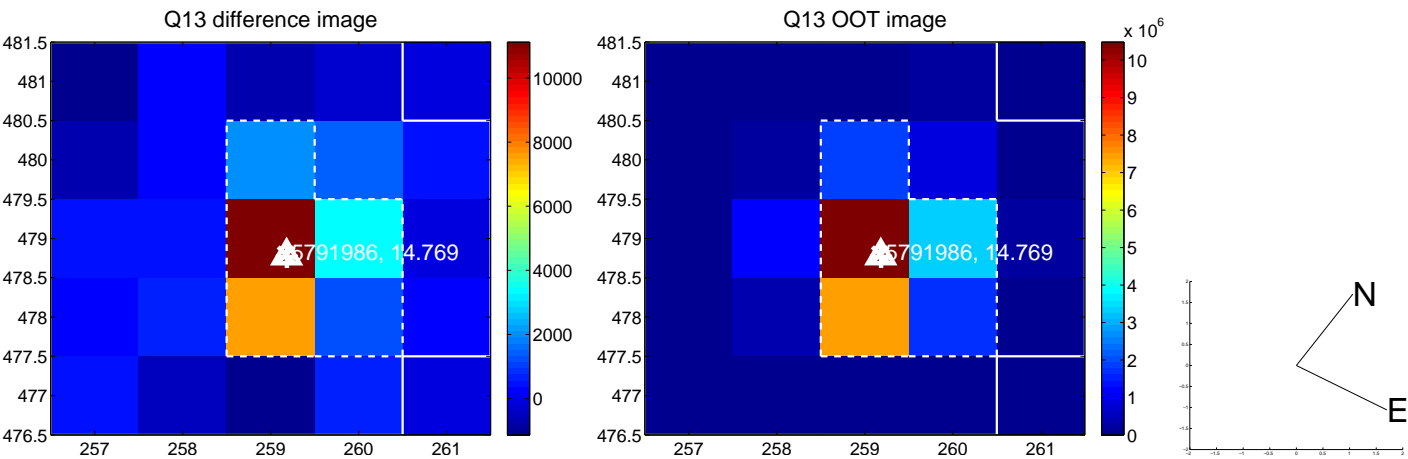
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



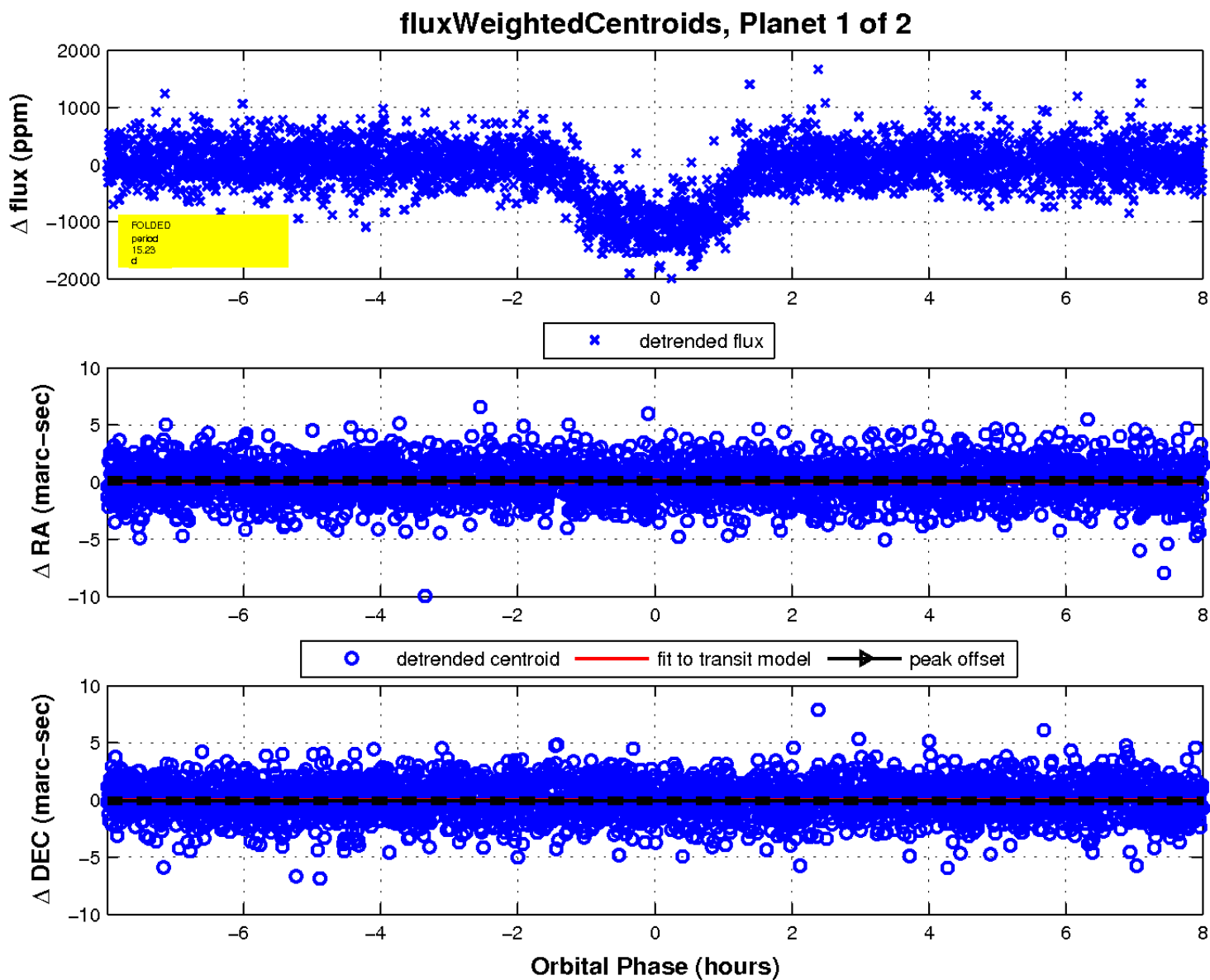
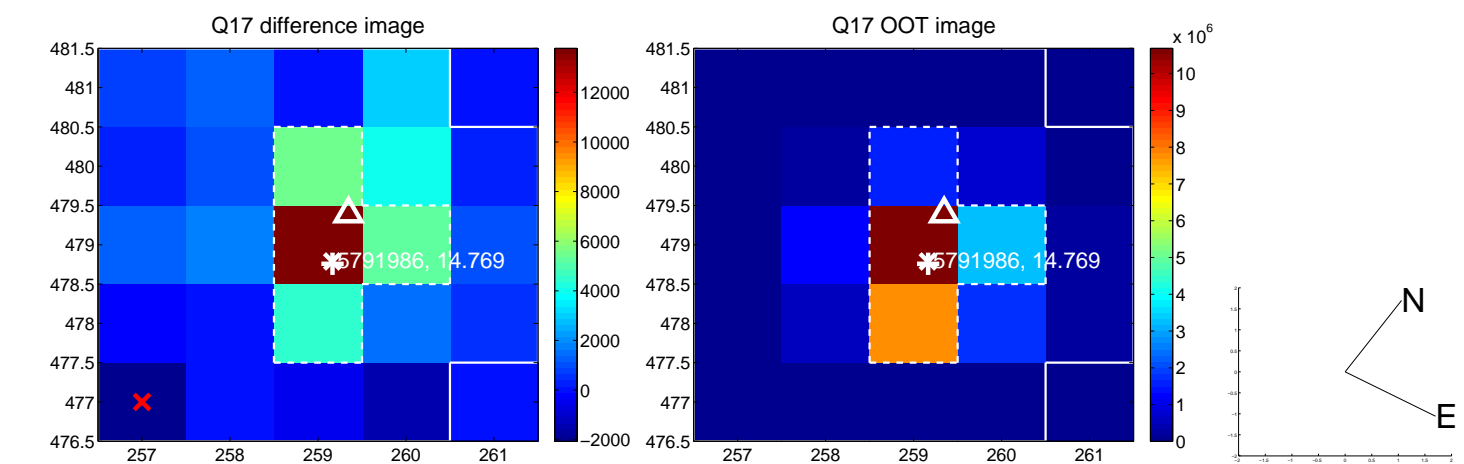
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

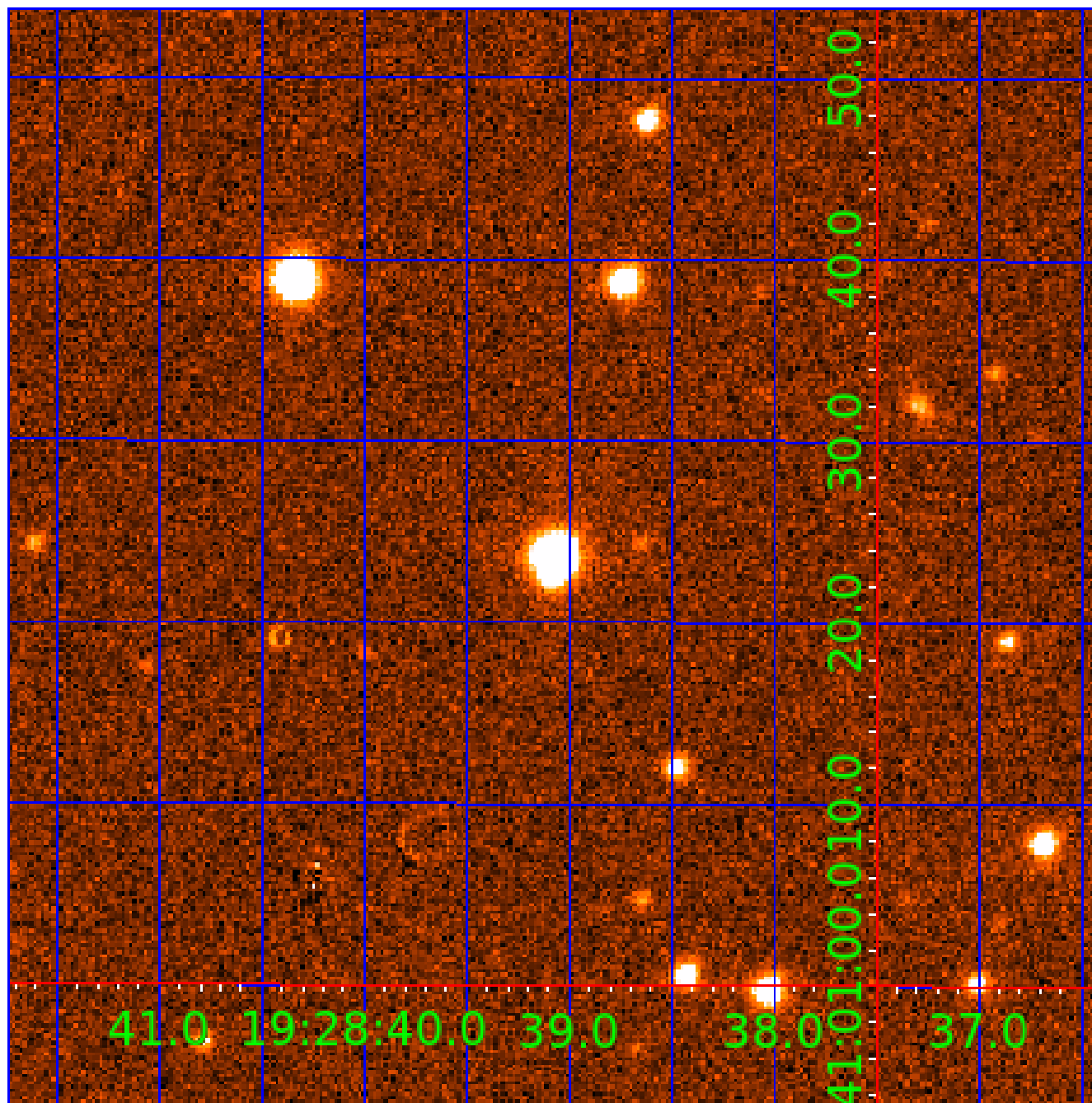


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 005791986

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})
005791986-01	OBS	0413.01	15.228953	146.102420	1140.9	2.668	57.0	60.6	0.81	5456	3.13	39.49
005791986-02	OBS	0413.02	24.674688	146.768869	650.6	3.575	25.8	28.2	0.81	5456	2.58	20.75

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005791986-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT
005791986-02	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.

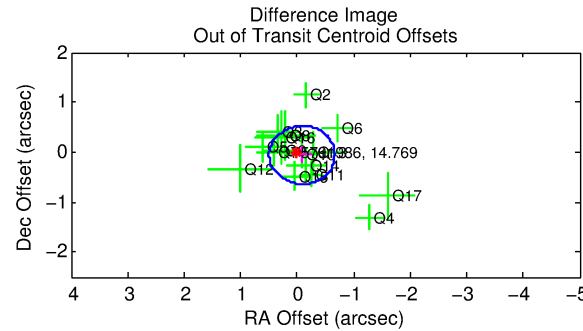
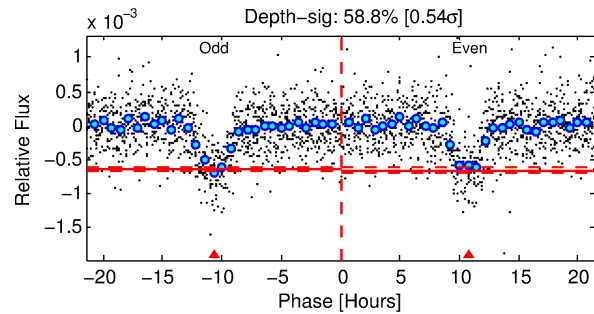
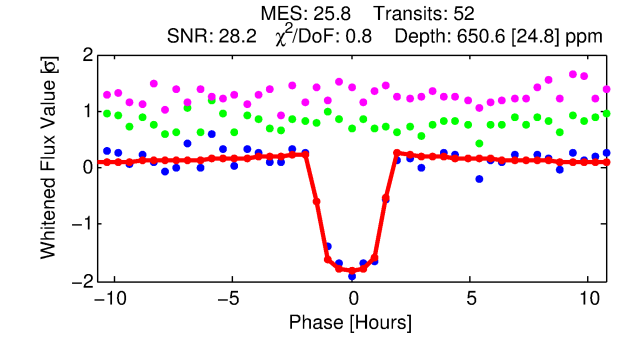
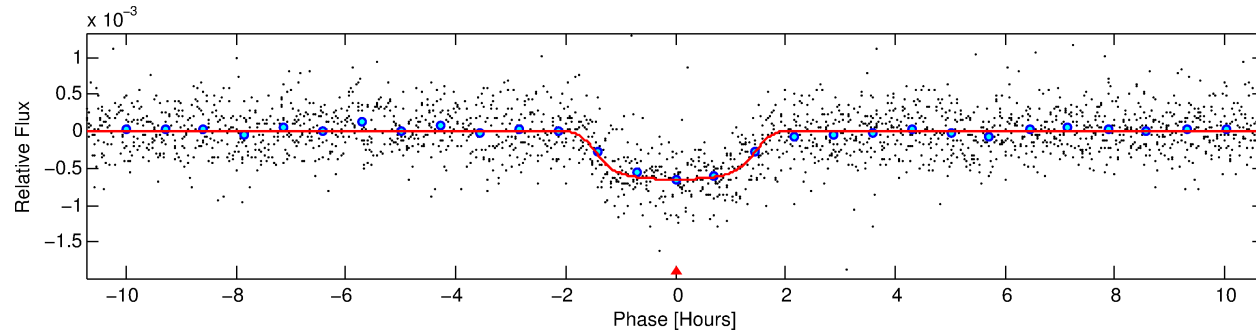
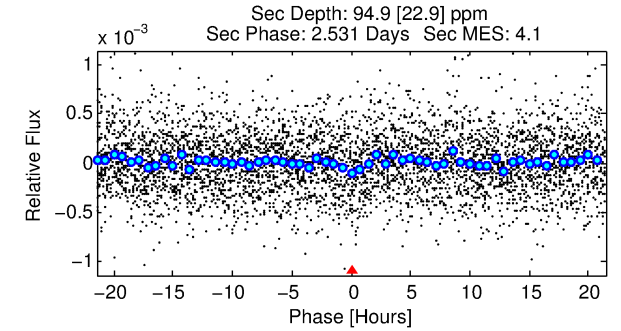
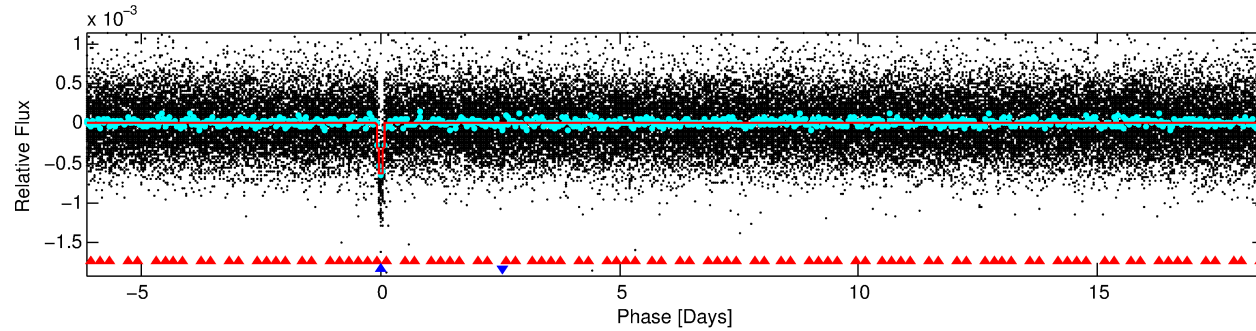
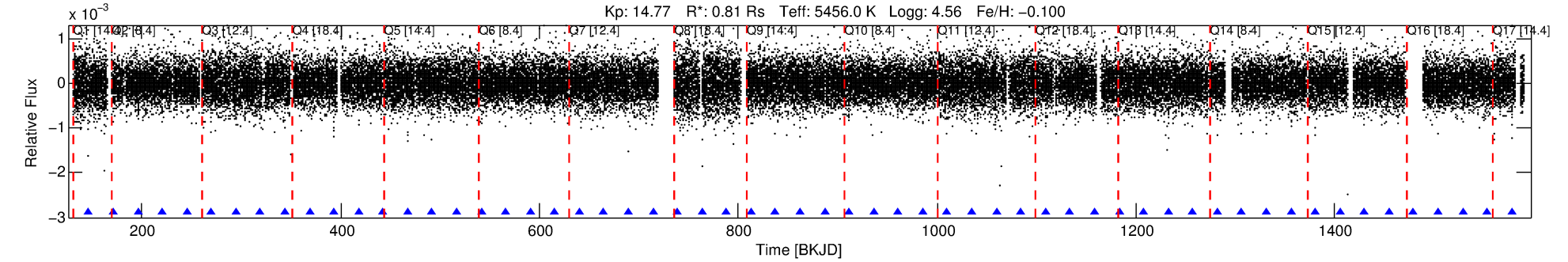
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 005791986-02

No Significant Match Found

DV One-Page Summary

KIC: 5791986 Candidate: 2 of 2 Period: 24.675 d
KOI: K00413.02 Name: Kepler-151c Corr: 0.930



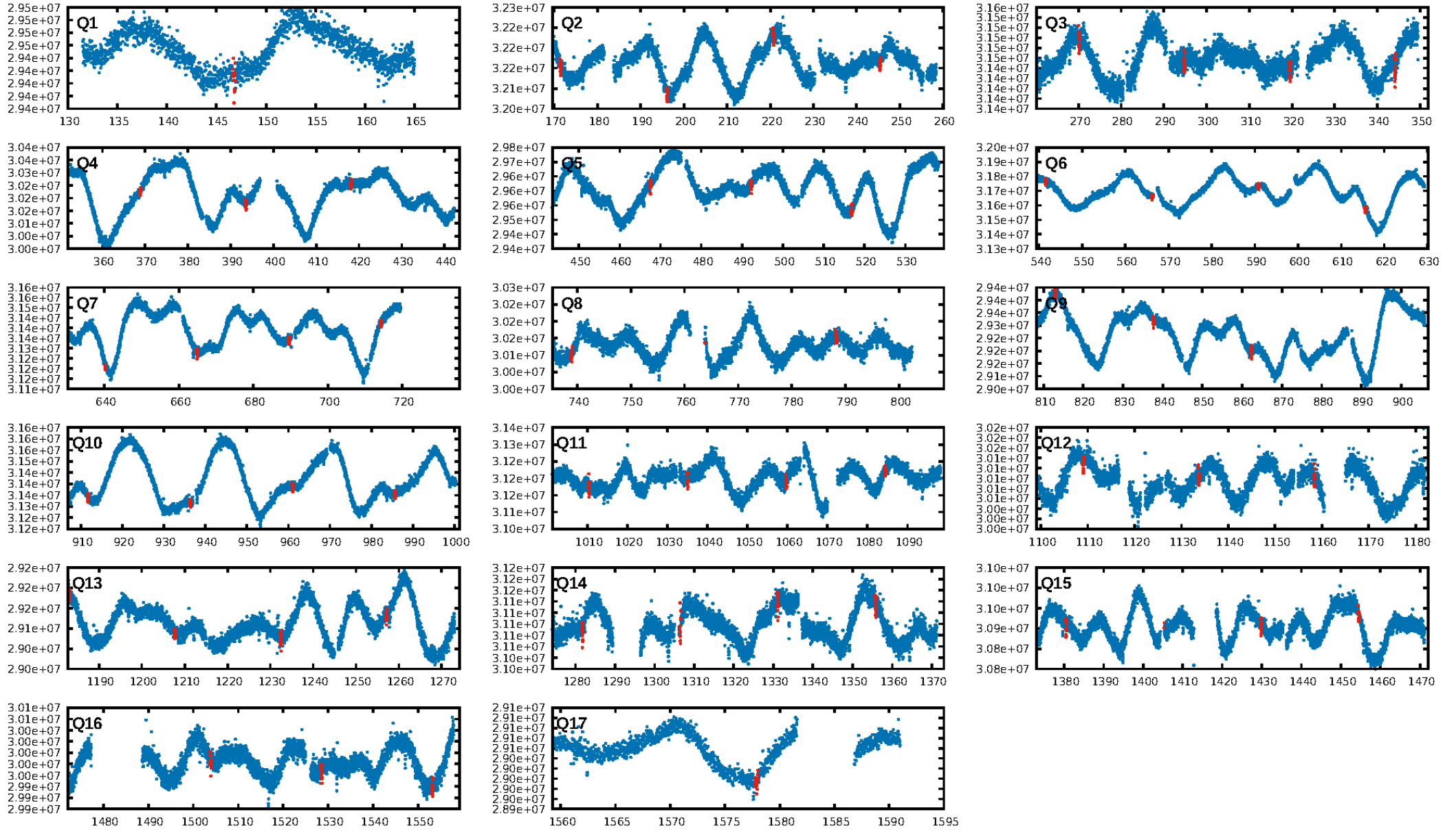
DV Fit Results:

Period = 24.67469 [0.00008] d
Epoch = 146.7689 [0.0026] BKJD
Rp/R* = 0.0291 [0.0014]
a/R* = 23.35 [4.05]
b = 0.93 [0.03]
Seff = 20.75 [5.80]
Teff = 544 [38] K
Rp = 2.58 [0.57] Re
a = 0.1588 [0.0281] AU
Ag = 198.57 [71.72] [2.75σ]
Teffp = 3159 [225] K [11.45σ]

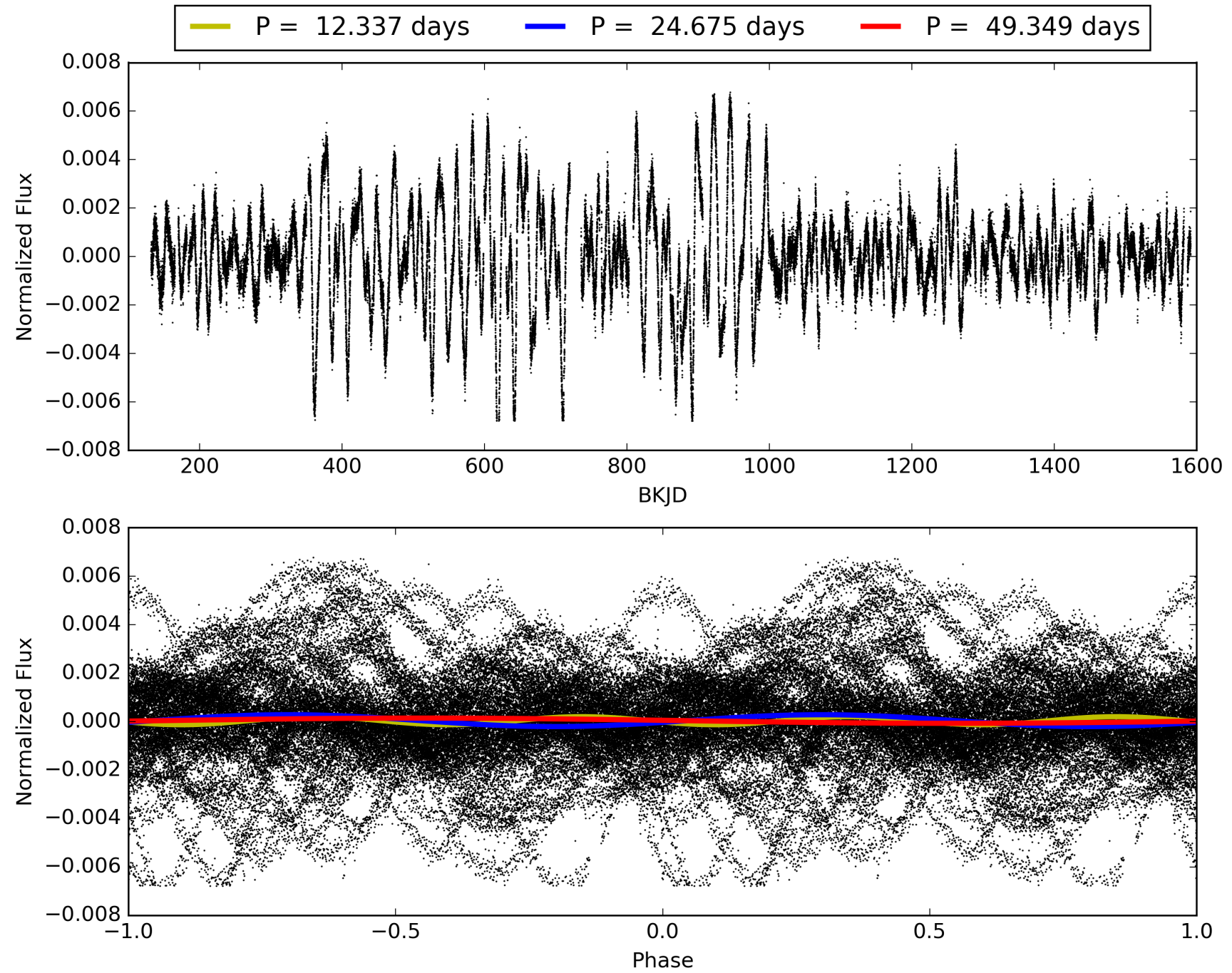
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [50.82σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 76.8%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 3.71e-140
RollingBand-fgt: 1.00 [50/50]
GhostDiagnostic-chr: 11.66
Centroid-sig: 5.2%
Centroid-so: 0.560 arcsec [1.37σ]
OotOffset-rm: 0.101 arcsec [0.52σ]
KicOffset-rm: 0.172 arcsec [0.95σ]
OotOffset-st: 4/4/4/4 [16]
KicOffset-st: 4/4/4/4 [16]
DiffImageQuality-fgm: 0.94 [15/16]
DiffImageOverlap-fno: 0.94 [16/17]

TCE 005791986-02, PDC Light Curves

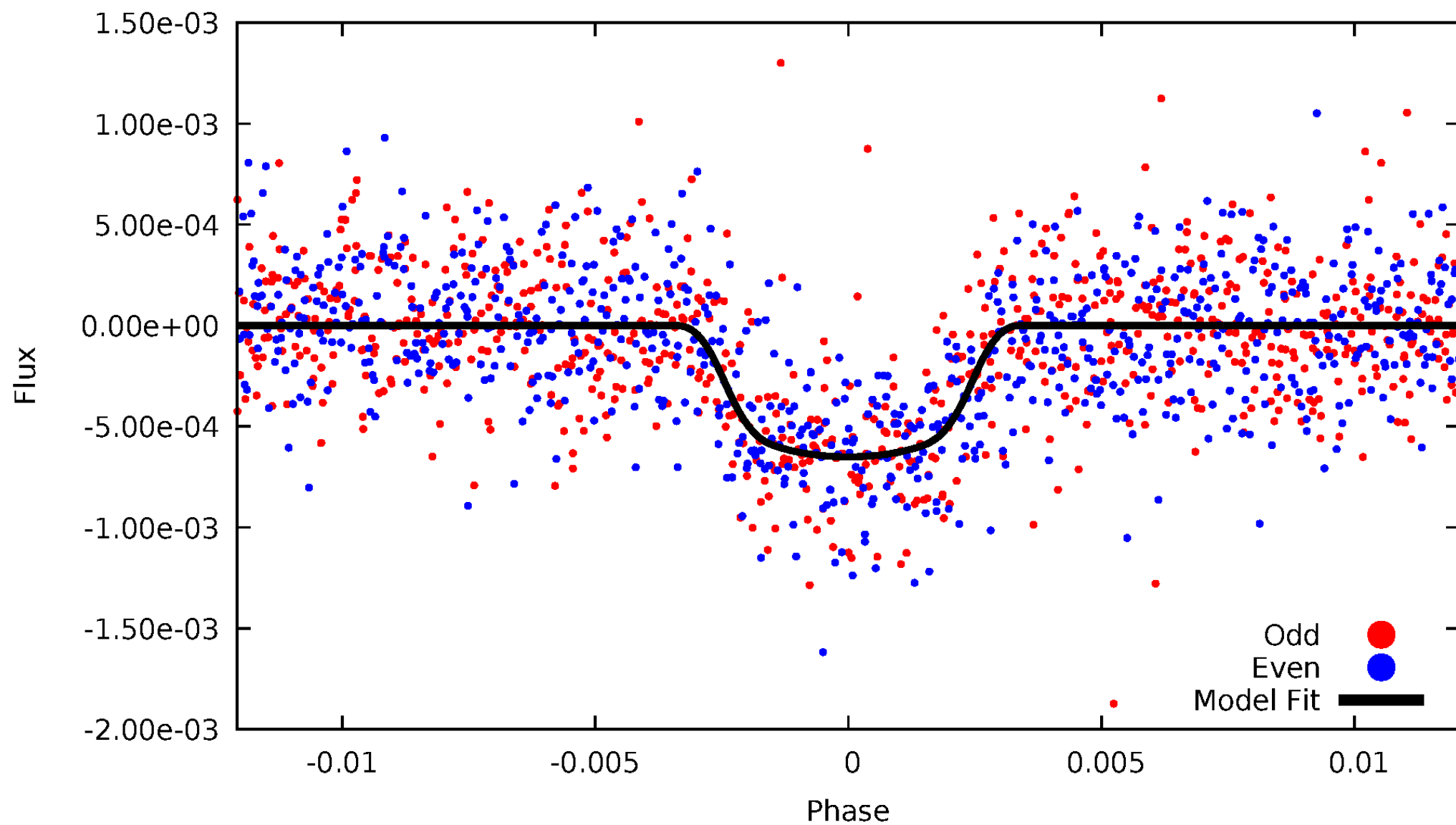


TCE 005791986-02



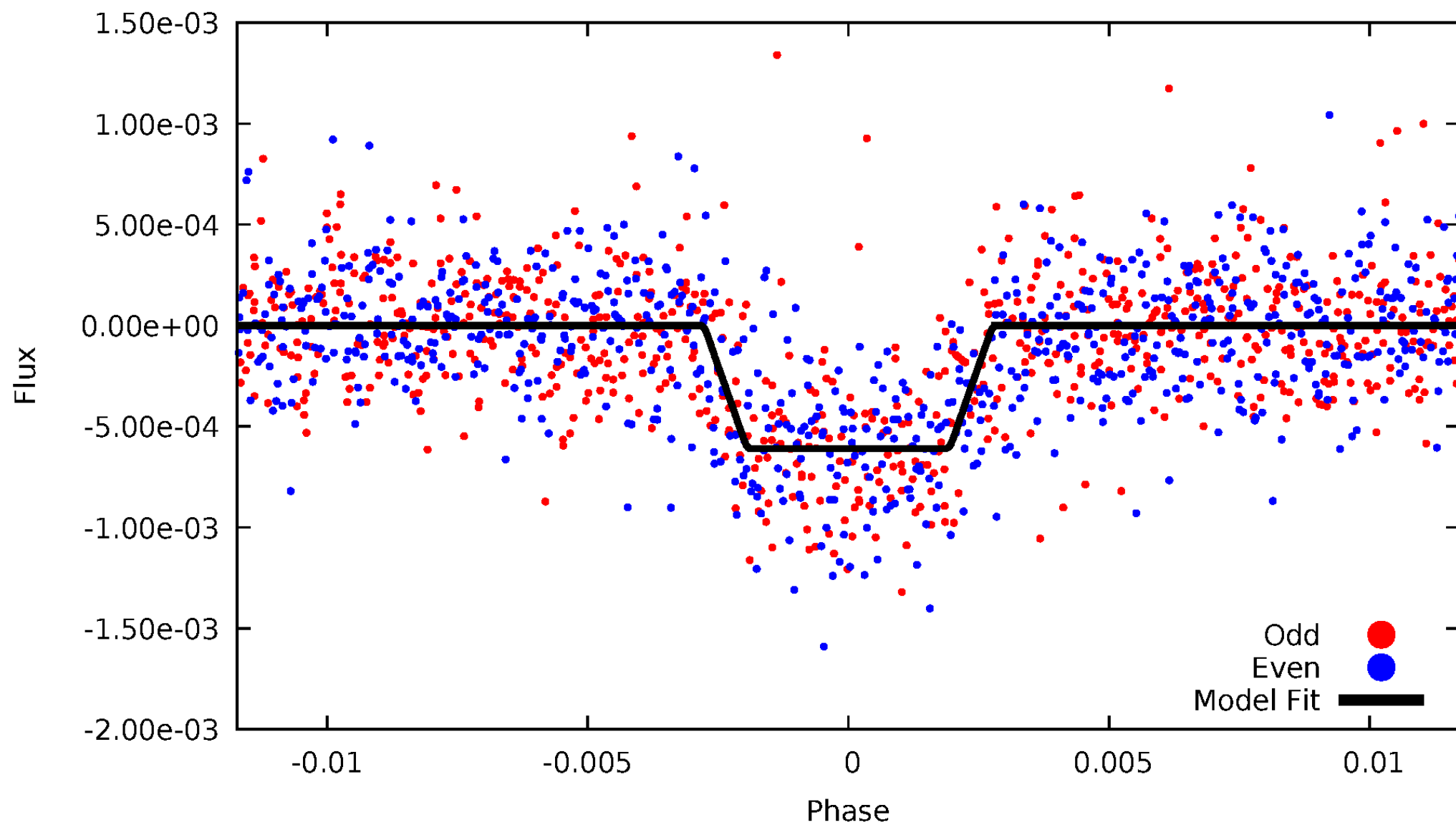
DV Odd/Even

TCE 005791986-02



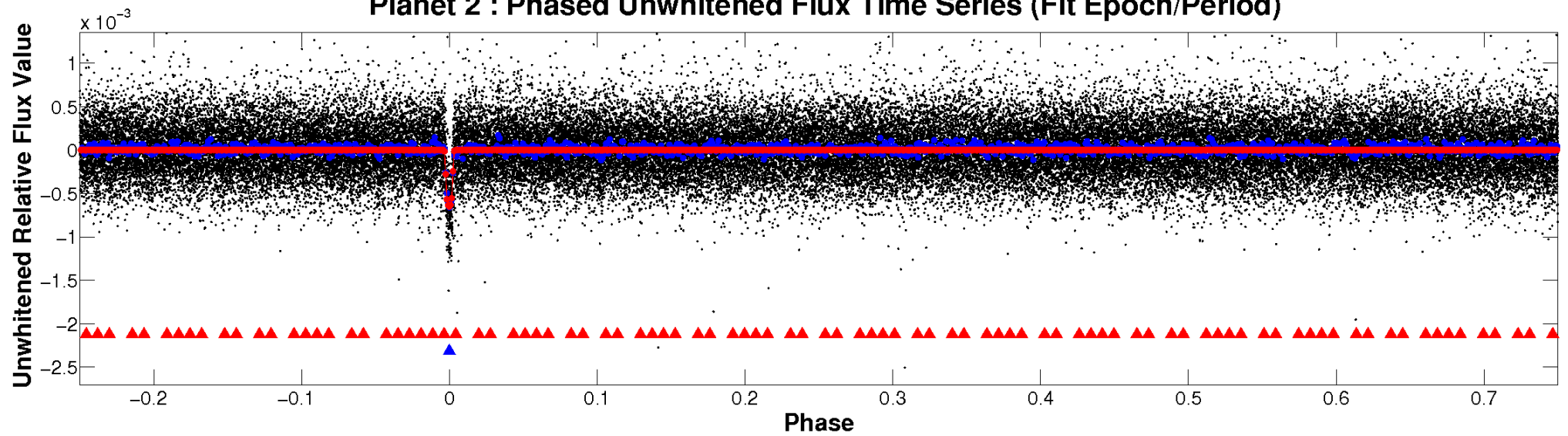
ALT Odd/Even

TCE 005791986-02

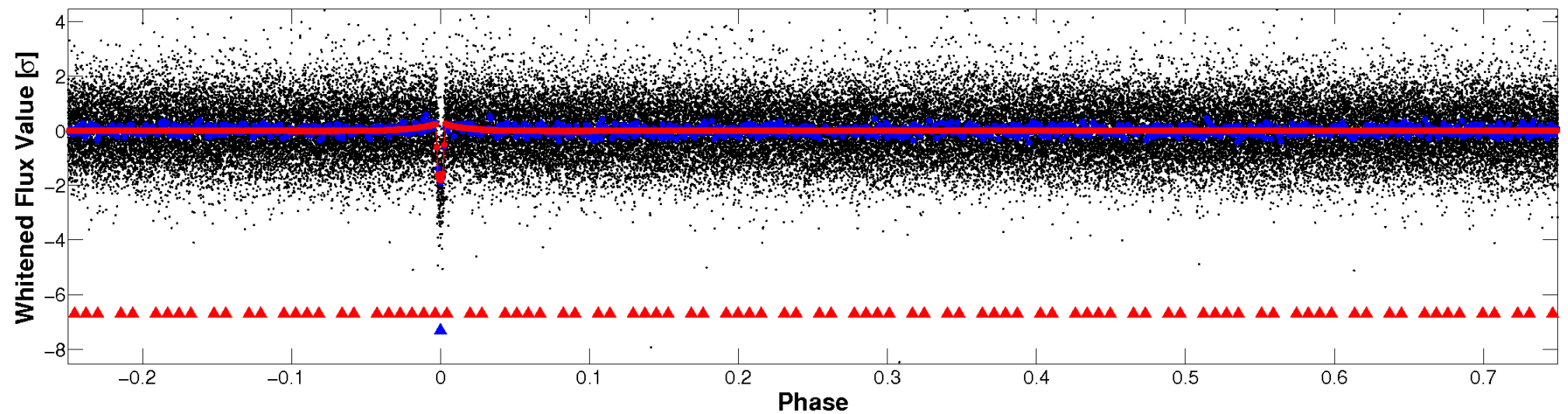


Non-Whitened Vs. Whitened Light Curve

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

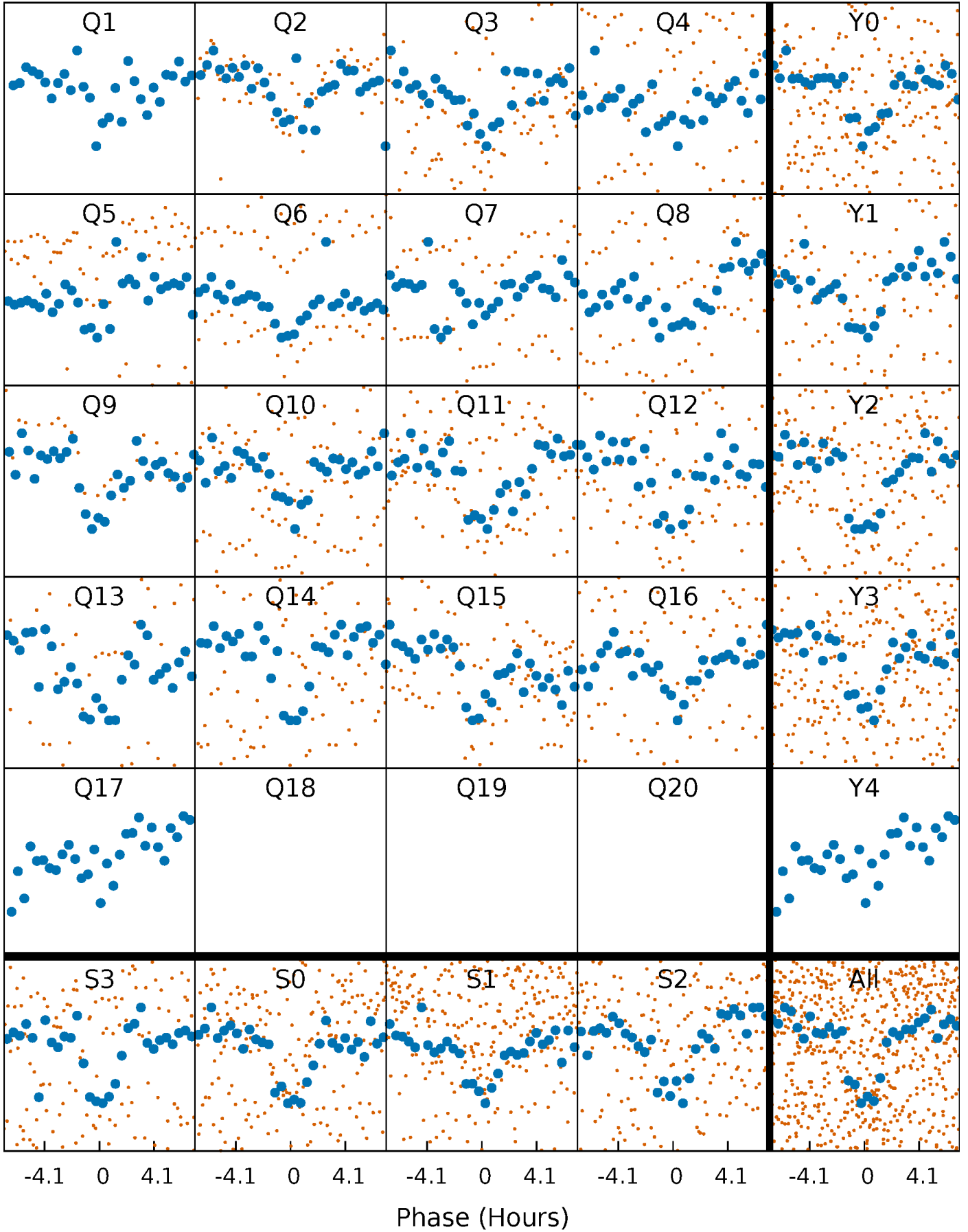


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



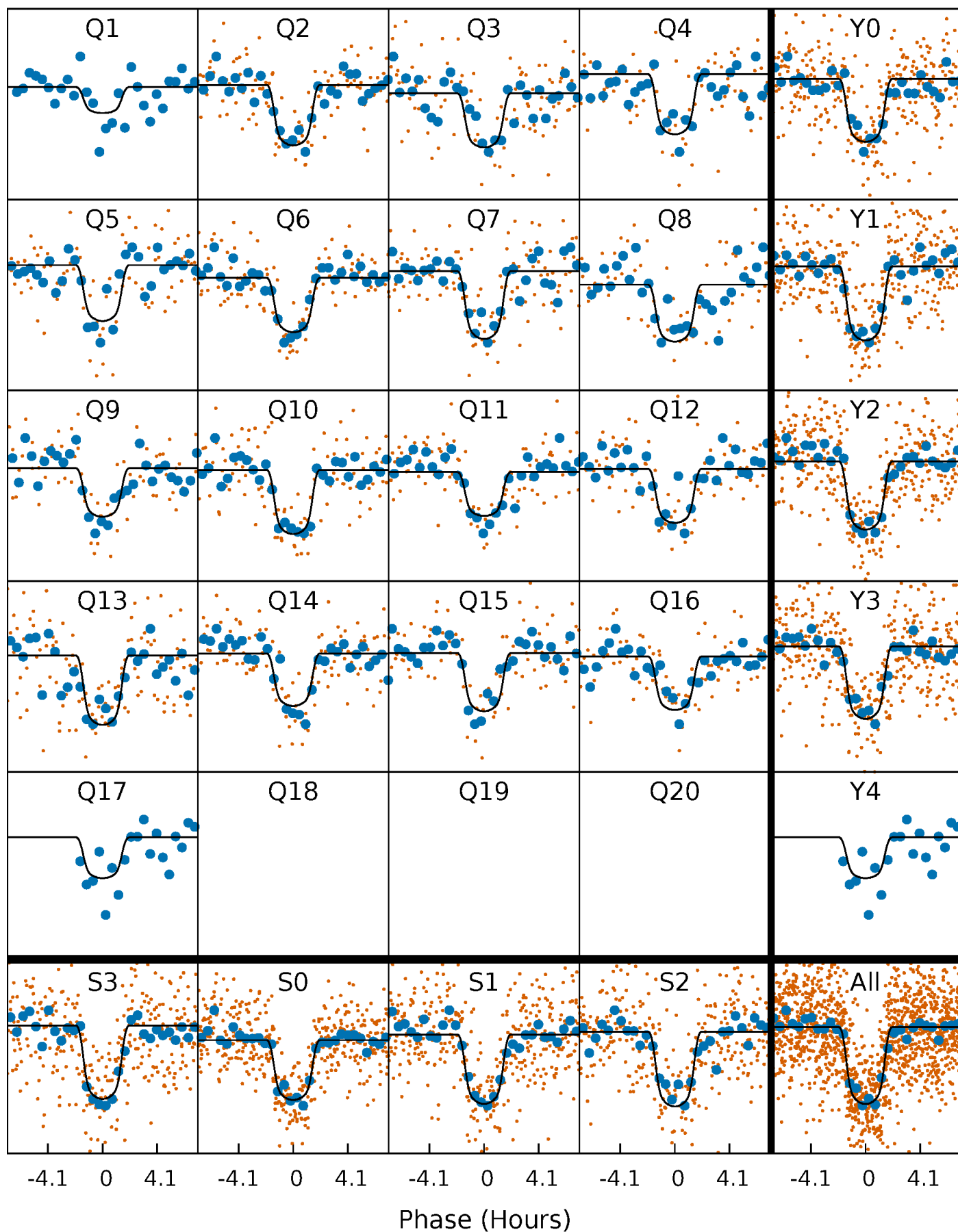
PDC Quarter-Phased Transit Curves

TCE 005791986-02 P= 24.674688 Days $T_0=146.768869$ (BKJD)



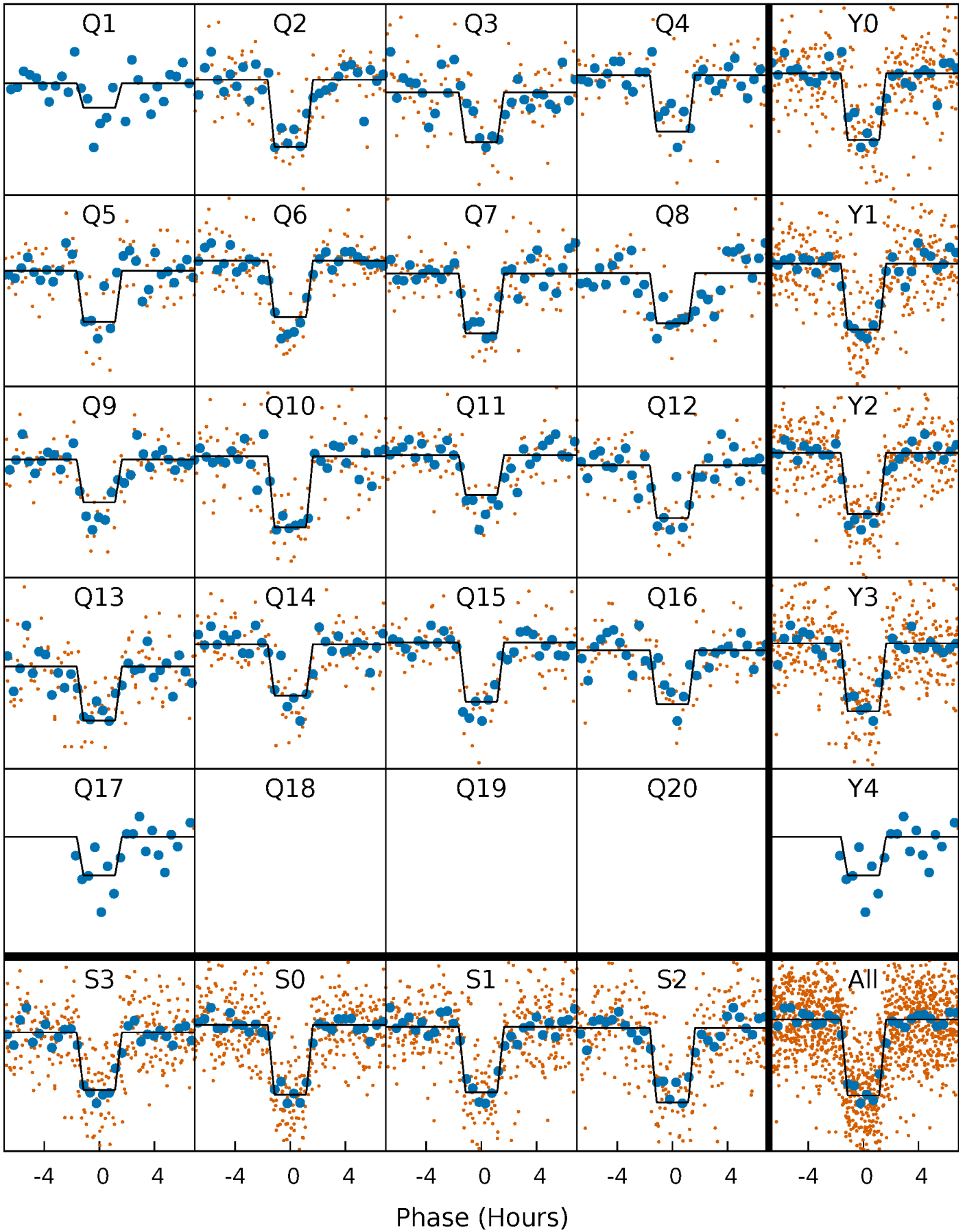
DV Quarter-Phased Transit Curves

TCE 005791986-02 P= 24.674688 Days $T_0=146.768869$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

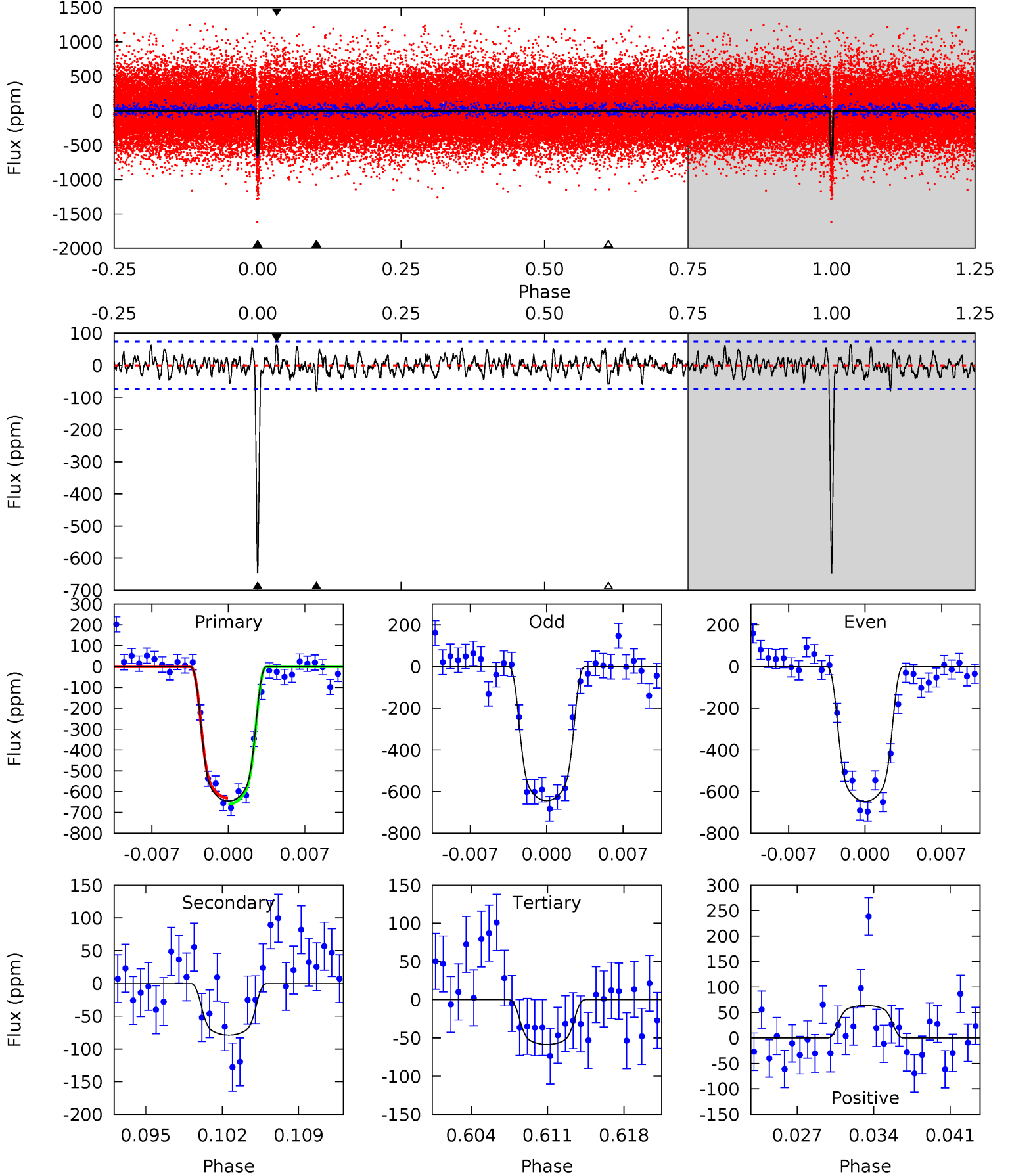
TCE 005791986-02 P= 24.674723 Days $T_0=146.768088$ (BKJD)



DV Model-Shift Uniqueness Test

005791986-02, $P = 24.674688$ Days, $E = 122.094181$ Days

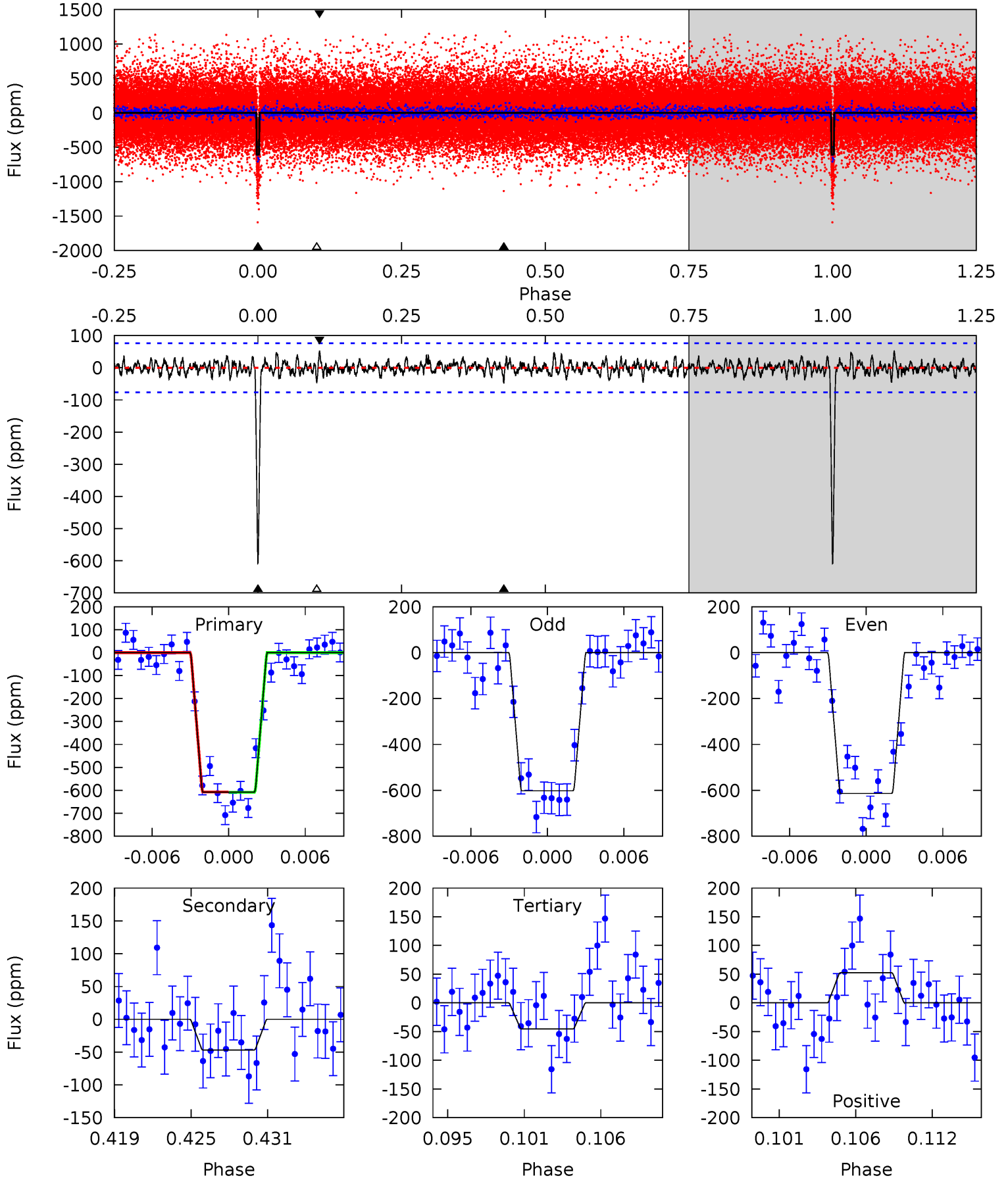
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
44.4	5.44	4.03	4.39	5.10	2.71	1.45	40.4	40.0	1.41	1.05	0.12	1.00	0.09	0.99



Alt Model-Shift Uniqueness Test

005791986-02, $P = 24.674723$ Days, $E = 122.093365$ Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
41.0	3.16	3.07	3.54	5.14	2.77	1.01	38.0	37.5	0.08	-0.38	0.38	0.97	0.08	0.04



Stellar Parameters For KIC 005791986

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5456^{+164}_{-164}	$4.562^{+0.045}_{-0.135}$	$-0.100^{+0.300}_{-0.300}$	$0.812^{+0.175}_{-0.075}$	$0.878^{+0.082}_{-0.091}$	$2.313^{+0.437}_{-0.938}$
	+3%/-3%	+1%/-3%	+300%/-300%	+22%/-9%	+9%/-10%	+19%/-41%
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 005791986-02 / KOI 0413.02

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-79 ± 15	$2.61^{+0.32}_{-0.21}$	770^{+42}_{-34}	3477^{+127}_{-131}	152^{+42}_{-37}
Alt.	-47 ± 15	$2.23^{+0.26}_{-0.19}$	771^{+42}_{-33}	3377^{+198}_{-207}	128^{+53}_{-45}

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

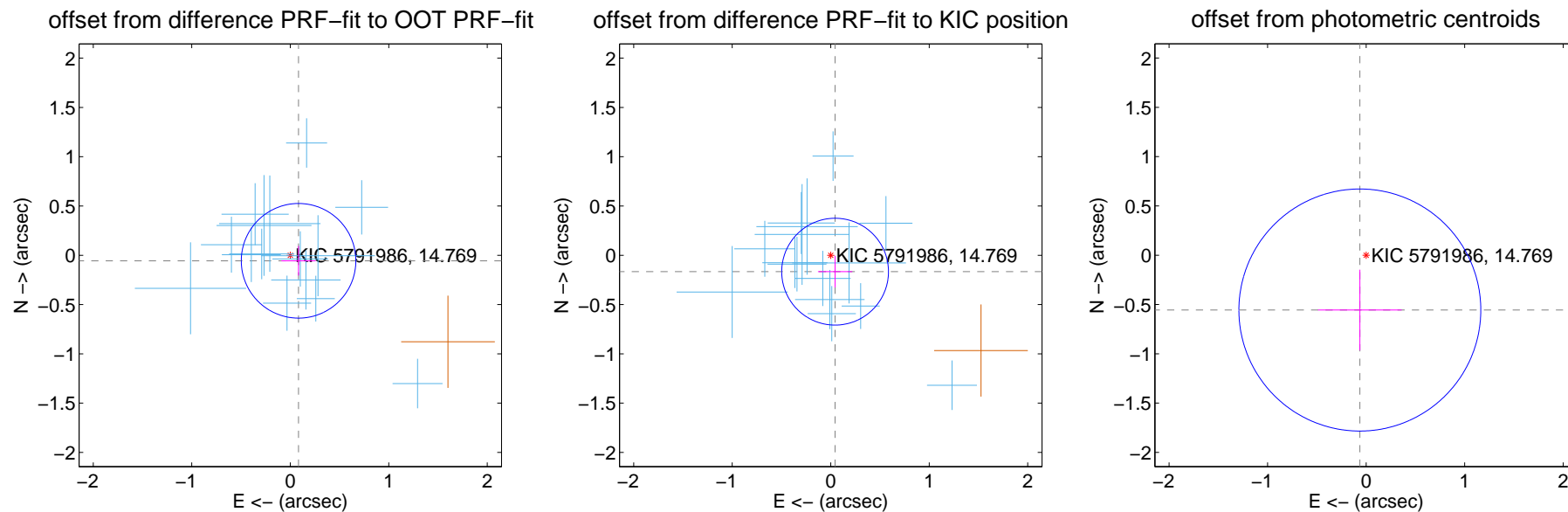
DV Centroid Data

Supplemental centroid analysis for 005791986-02. Kepler magnitude: 14.77. Transit SNR 28.16

There are 15 quarters with good PRF difference image offsets

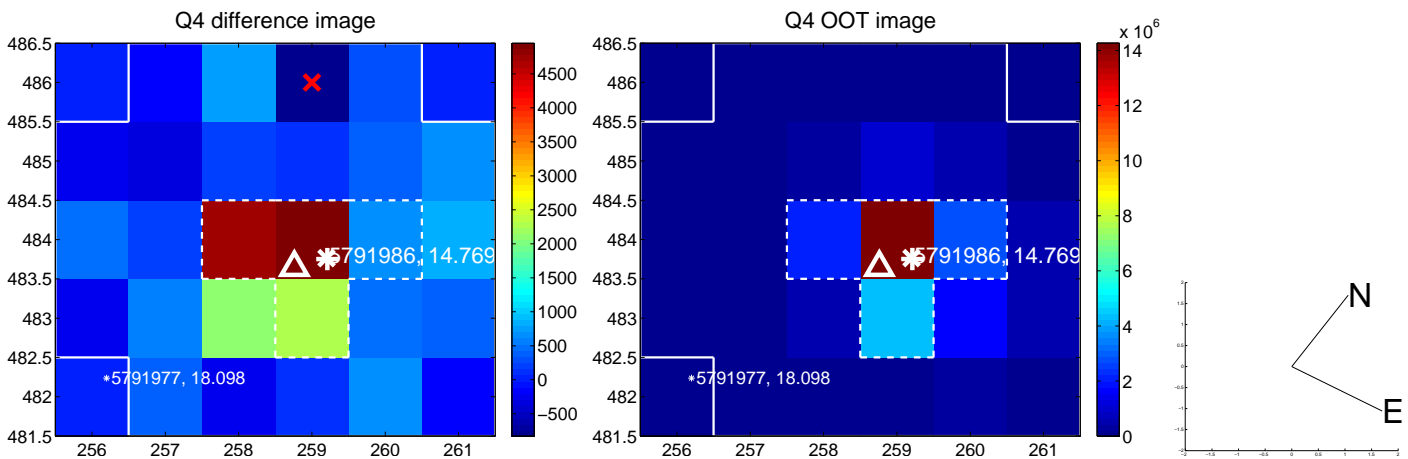
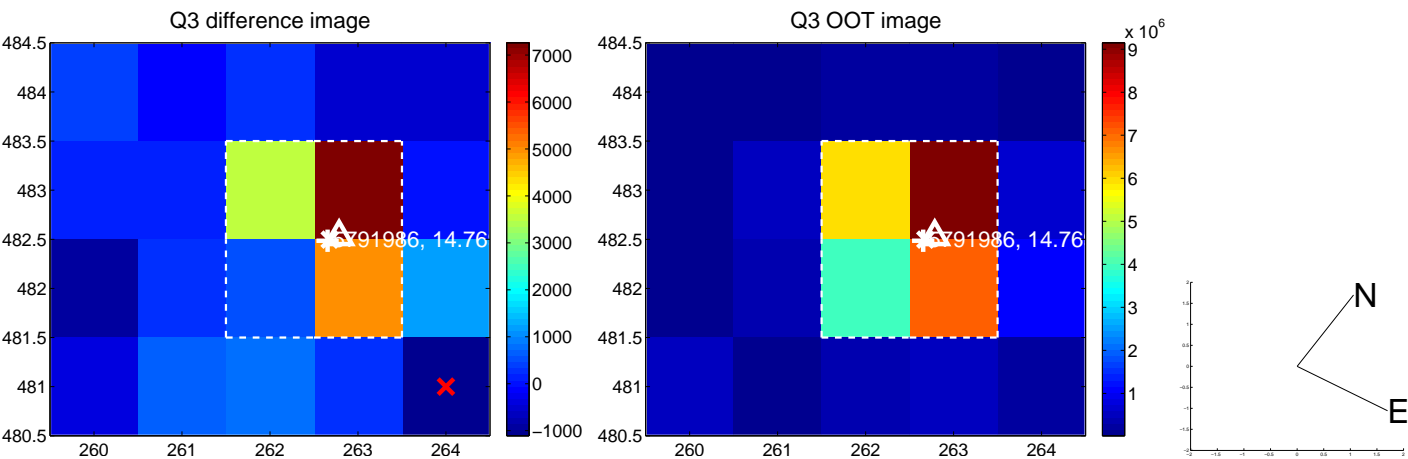
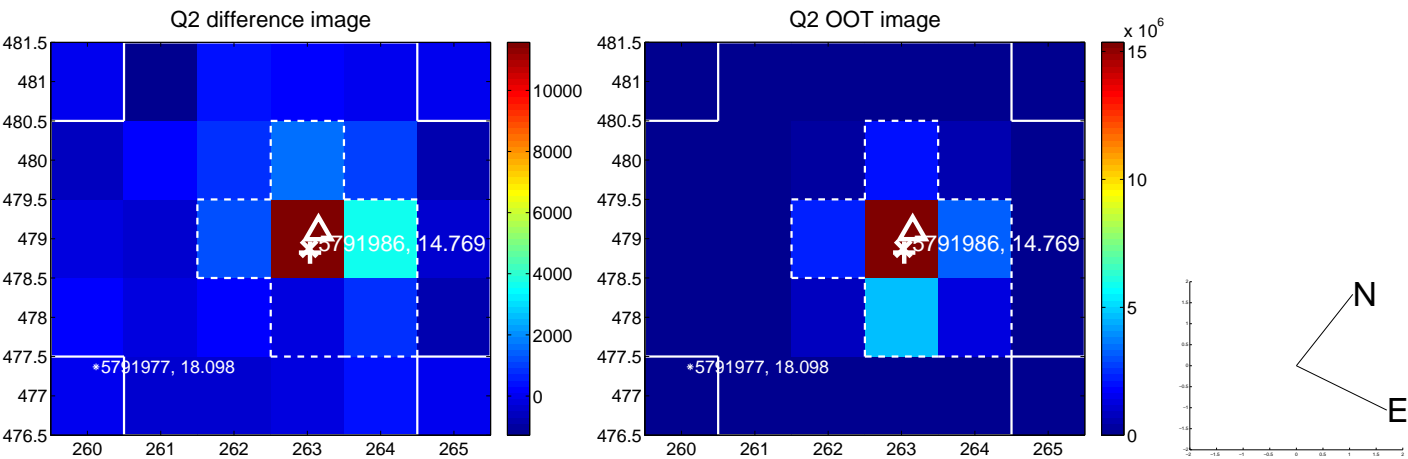
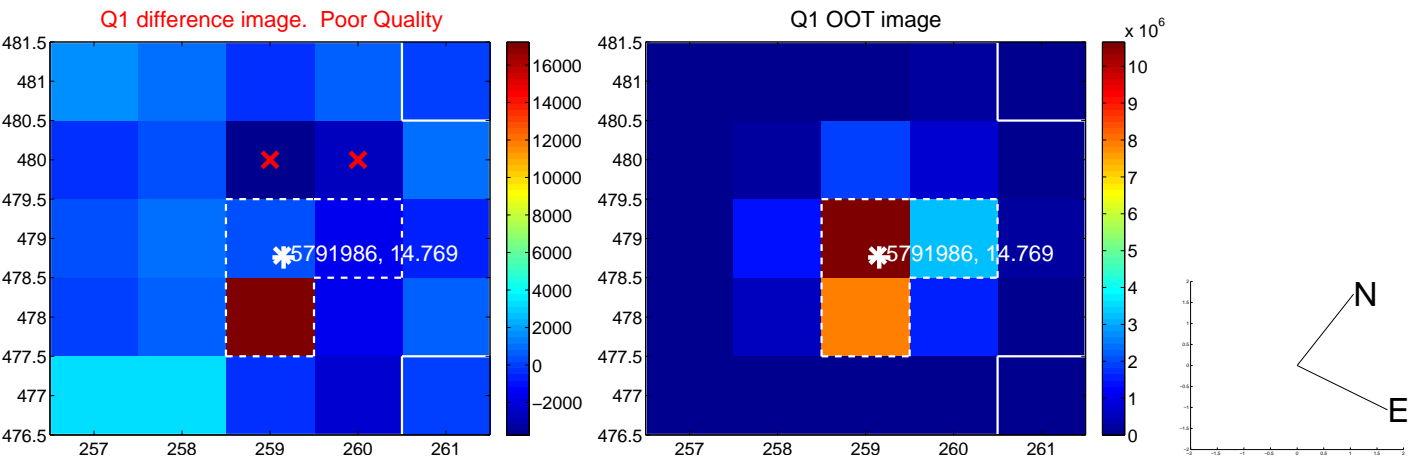
The direct PRF centroid is offset from the target star catalog position by about 0.12 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.101 ± 0.194	0.52	-0.084 ± 0.174	-0.056 ± 0.150
PRF-fit source offset from KIC position	0.172 ± 0.181	0.95	-0.044 ± 0.174	-0.166 ± 0.160
photometric centroid source offset	0.56 ± 0.41	1.37	0.06 ± 0.42	-0.56 ± 0.41

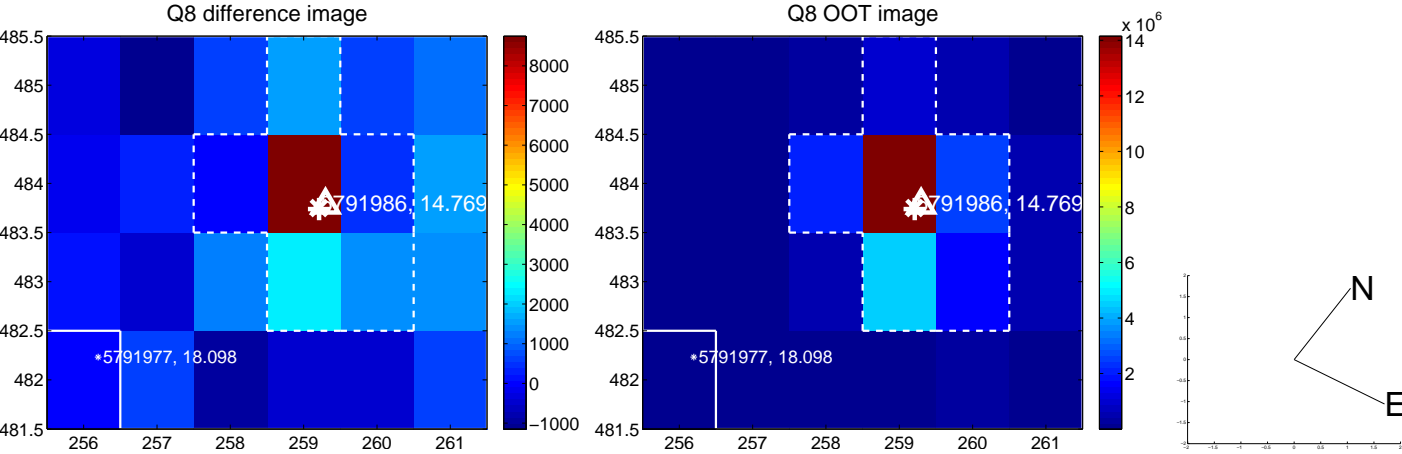
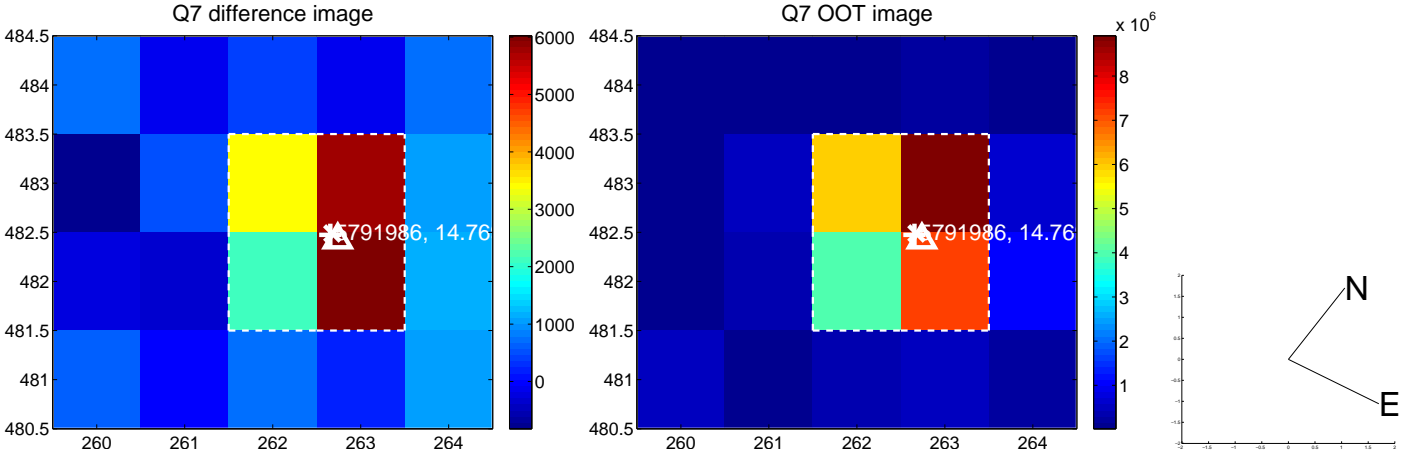
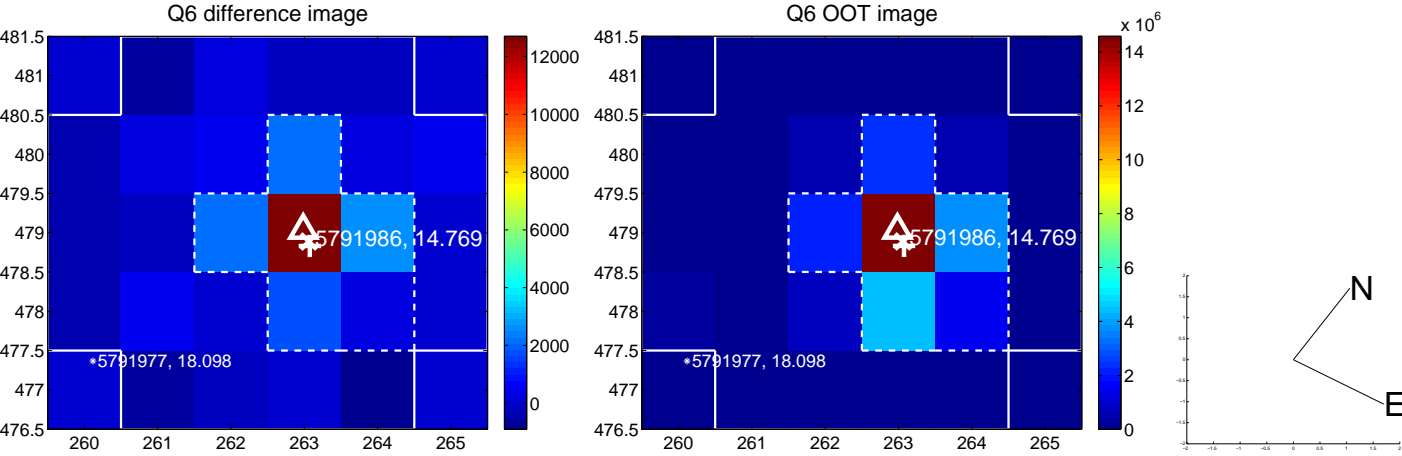
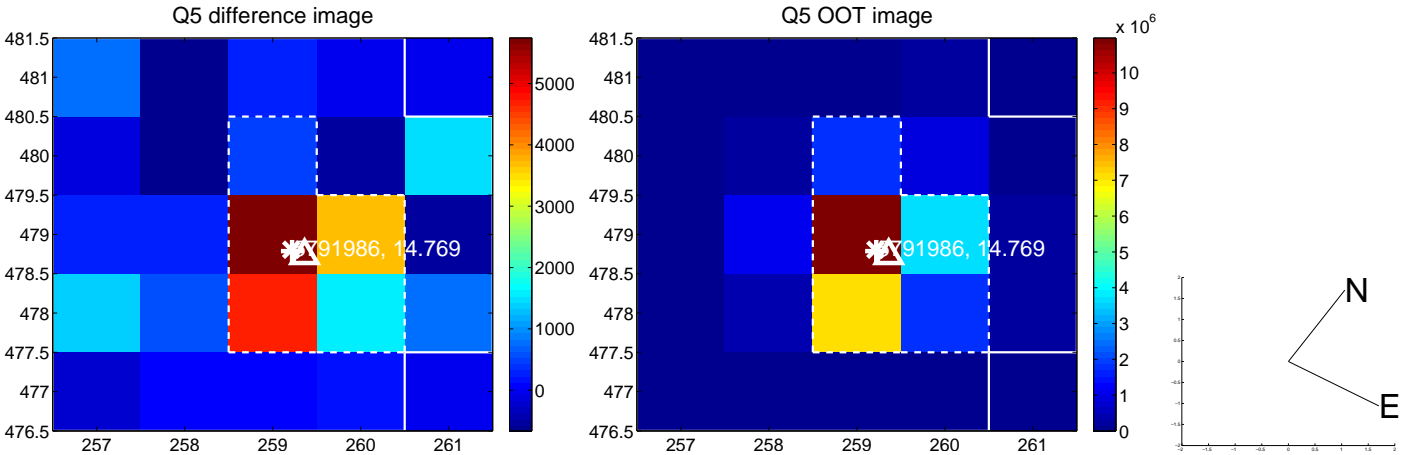


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

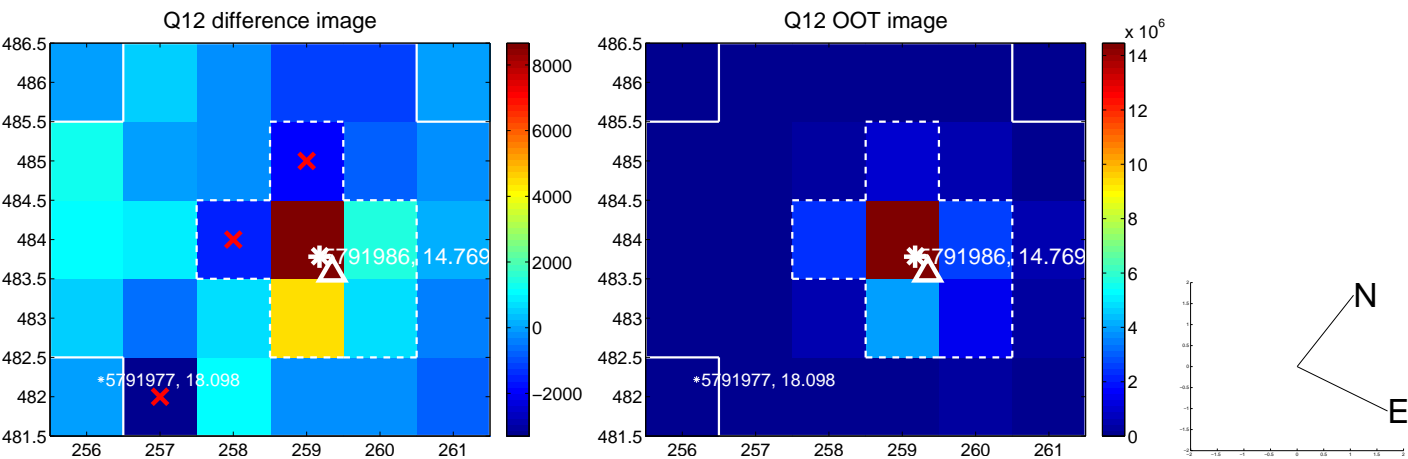
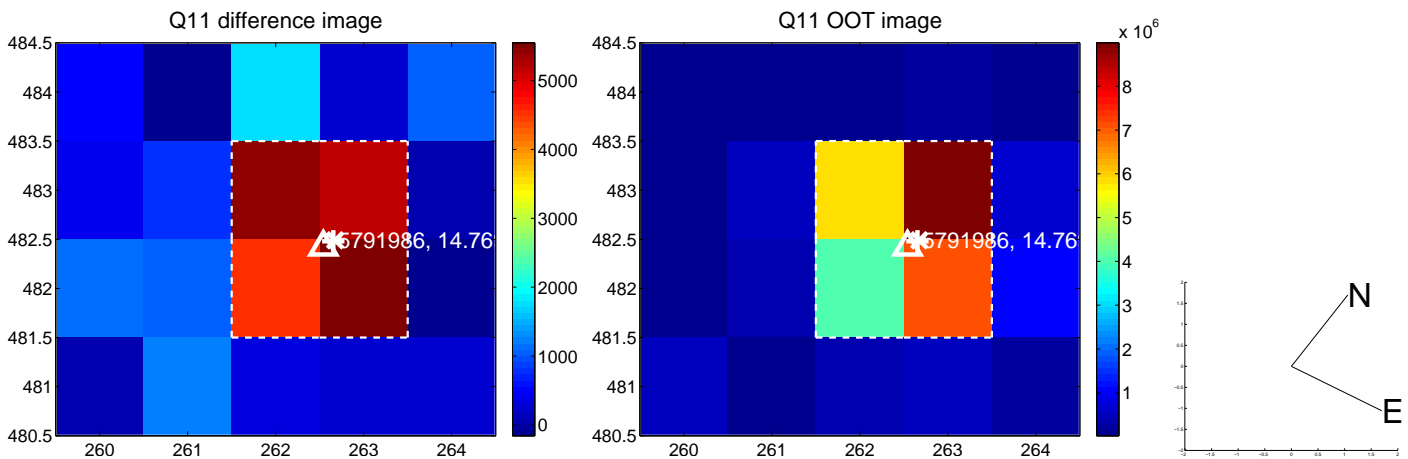
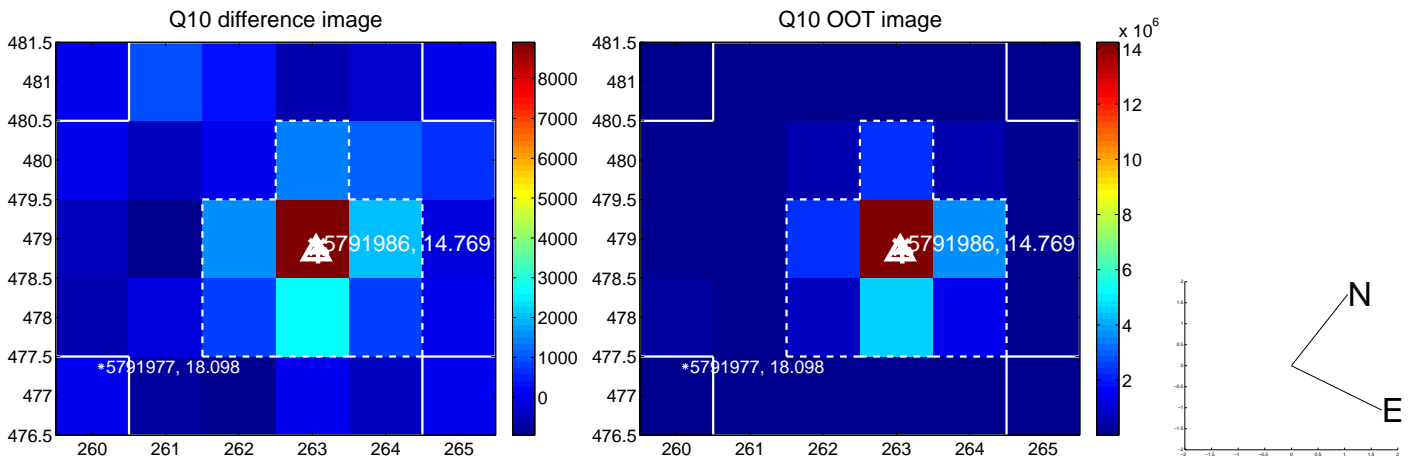
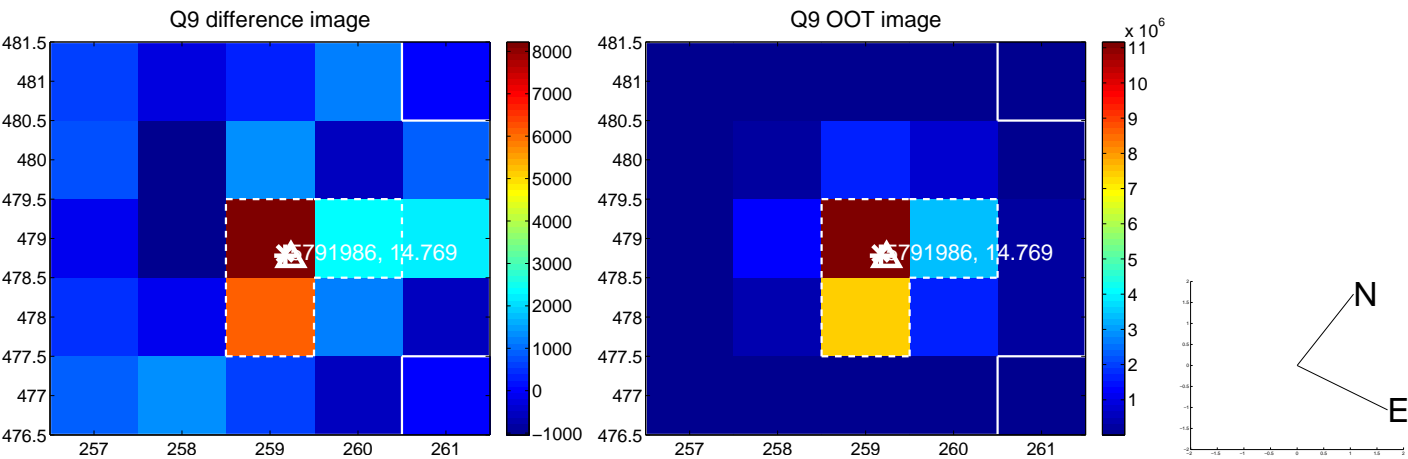
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



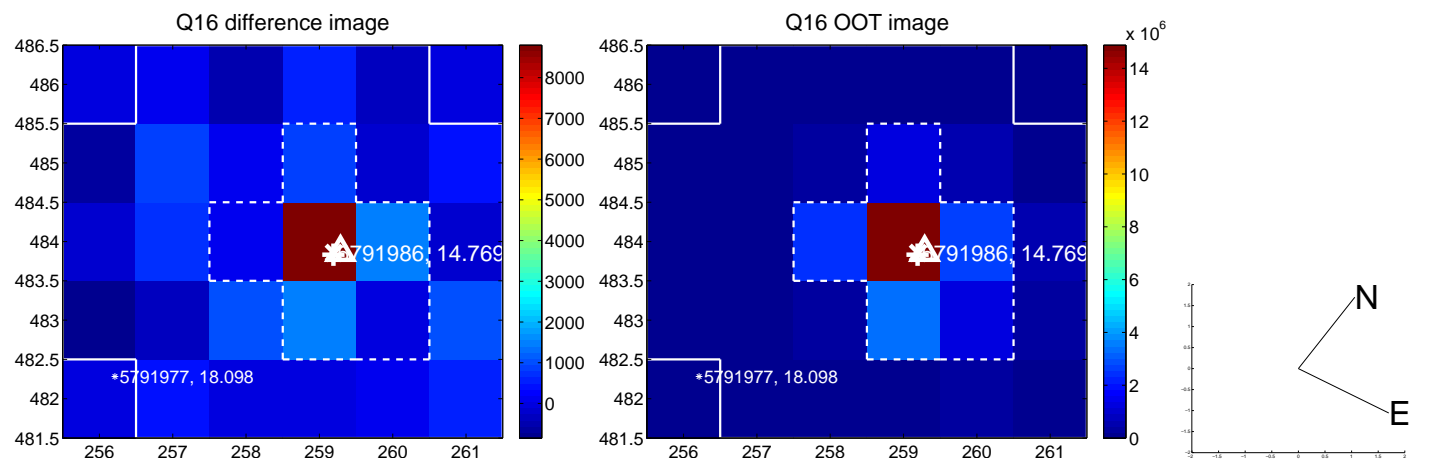
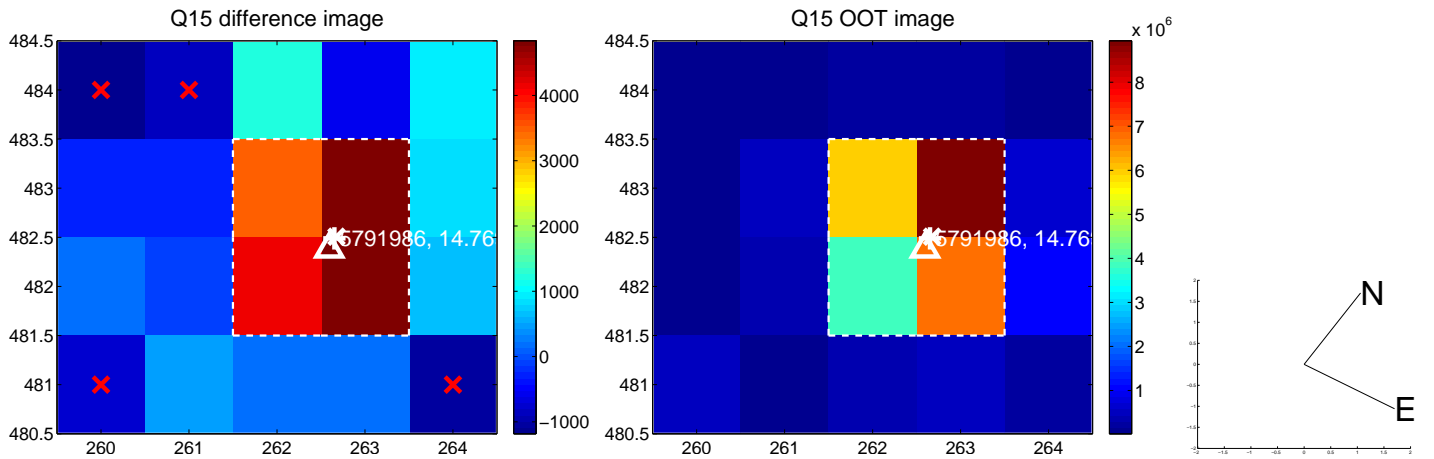
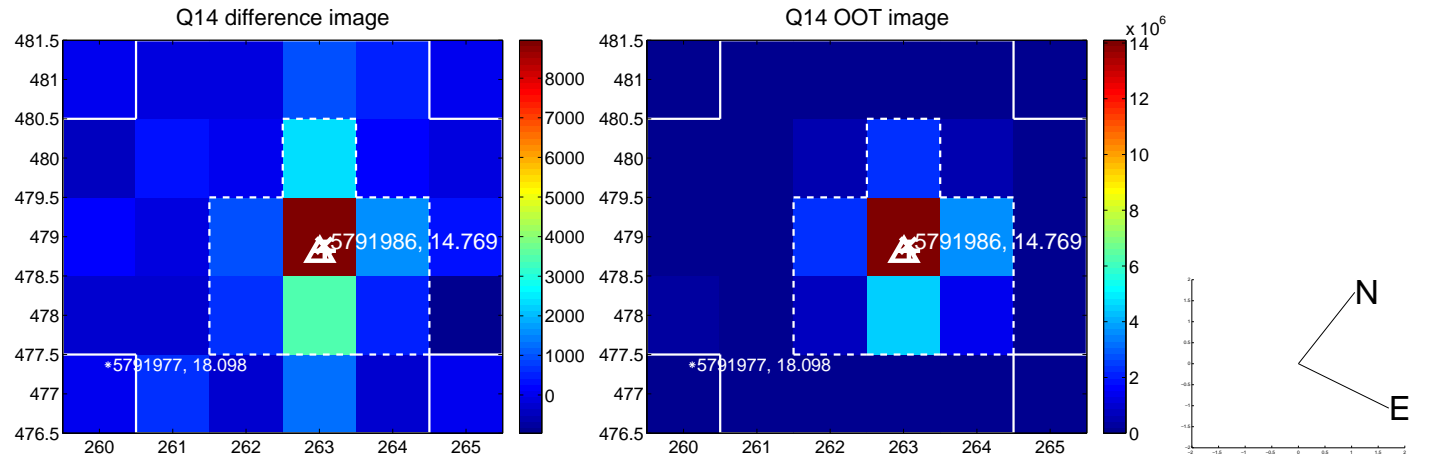
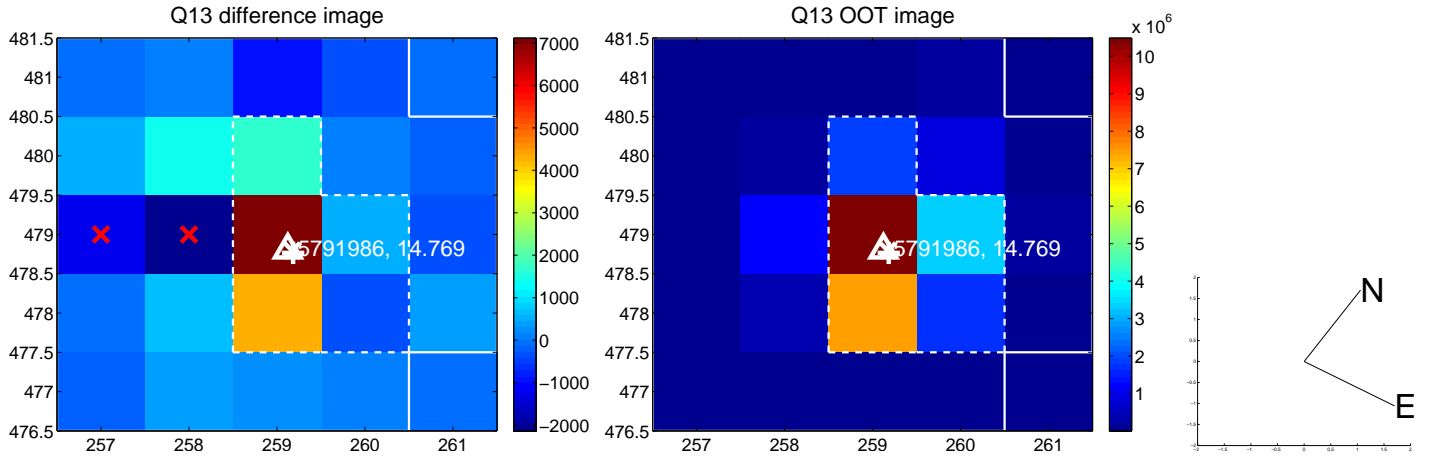
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



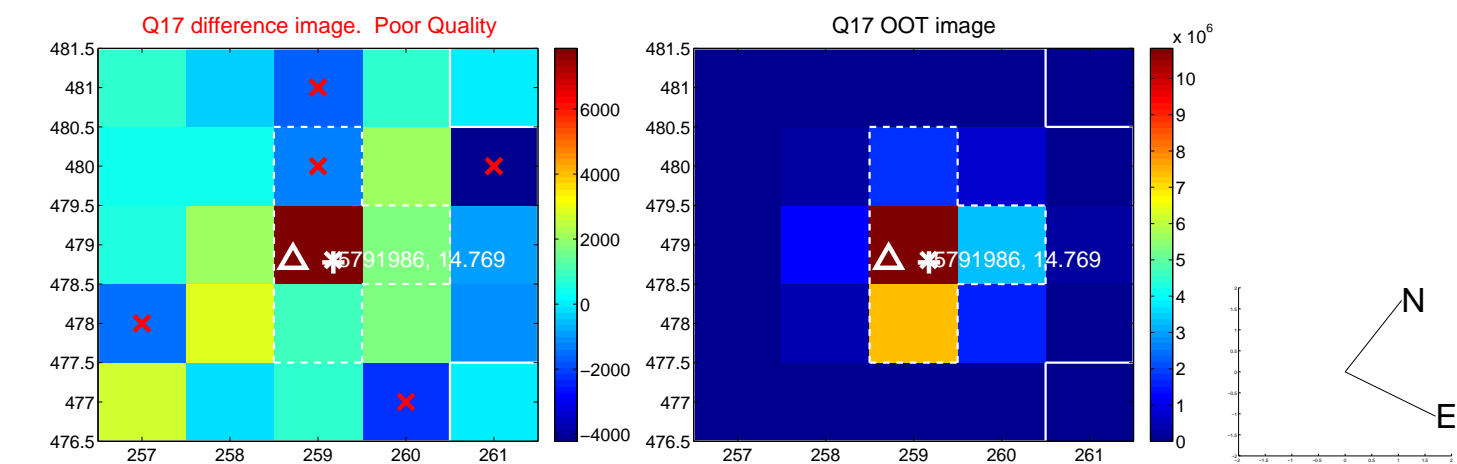
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



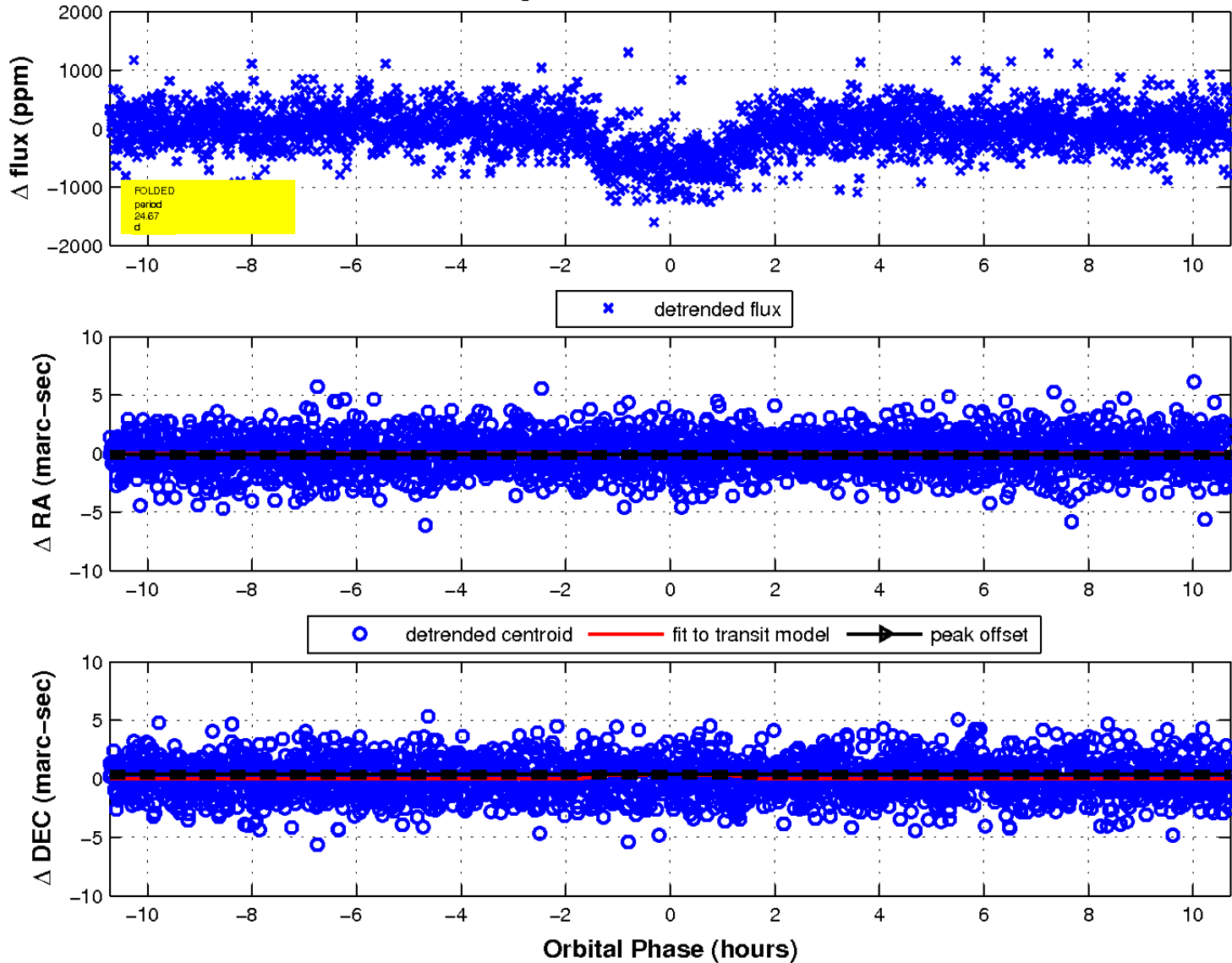
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 2 of 2



UKIRT Image

Declination

