

KIC 006451294

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})
006451294-01	OBS	No	2.272989	132.788587	109.4	7.162	15.4	16.3	1.26	6623	1.49	1995.85
006451294-02	OBS	No	2.272986	131.694047	100.1	8.465	12.0	15.0	1.26	6623	1.71	1995.85

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006451294-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT
006451294-02	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD

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

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

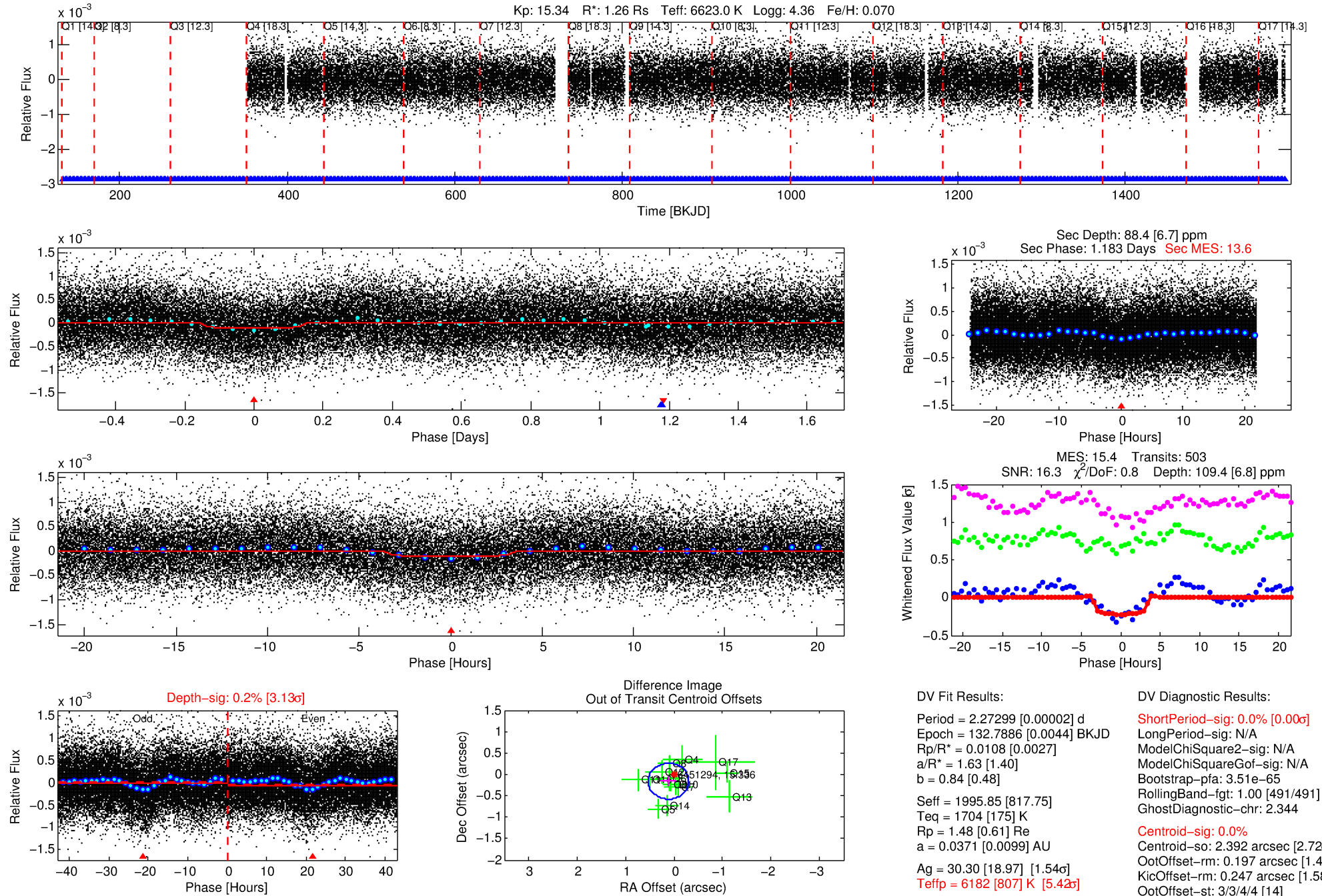
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 006451294-01

No Significant Match Found

DV One-Page Summary

KIC: 6451294 Candidate: 1 of 2 Period: 2.273 d



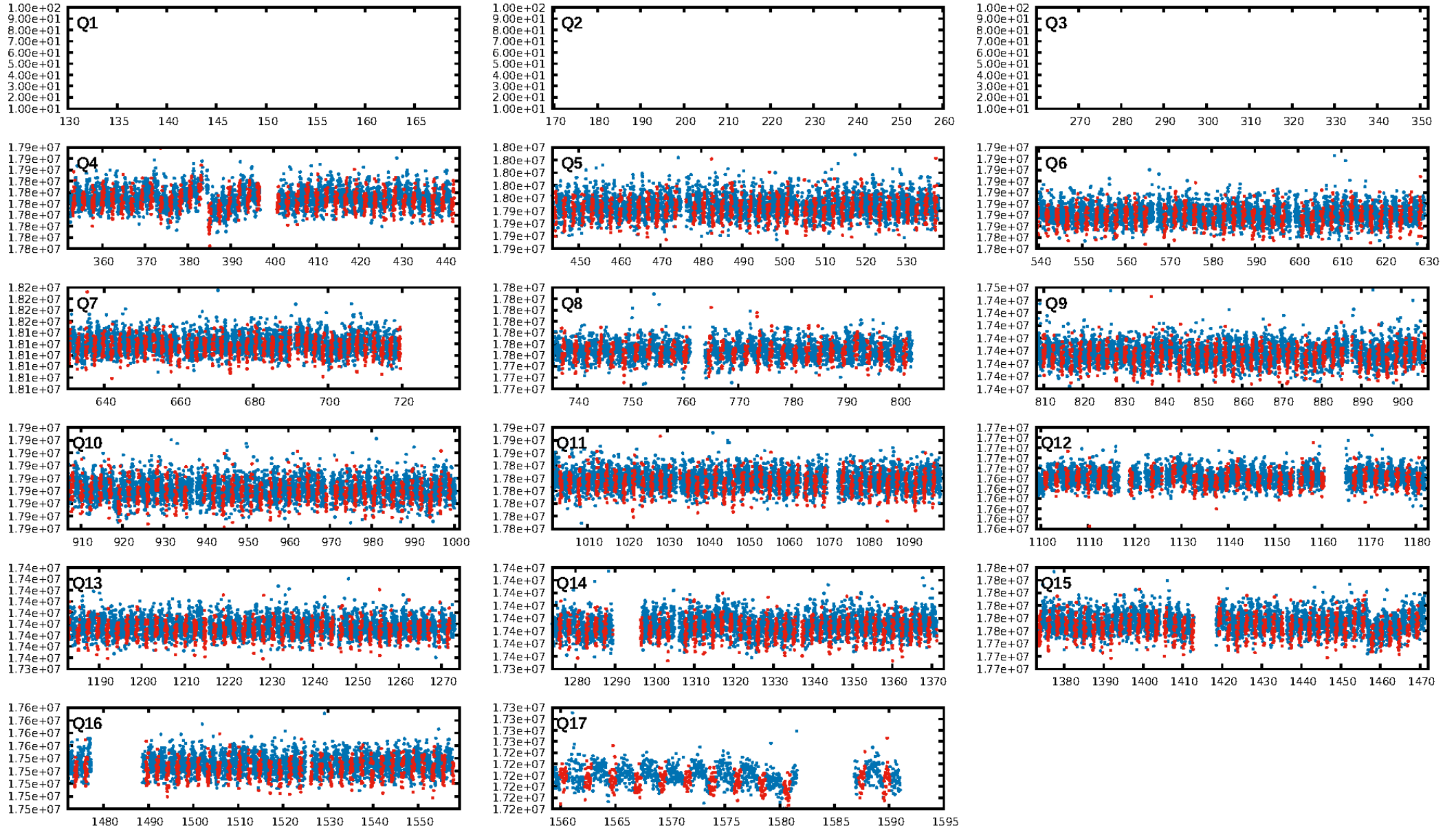
DV Fit Results:

Period = 2.27299 [0.00002] d
Epoch = 132.7886 [0.0044] BKJD
Rp/R* = 0.0108 [0.0027]
a/R* = 1.63 [1.40]
b = 0.84 [0.48]
Seff = 1995.85 [817.75]
Teq = 1704 [175] K
Rp = 1.48 [0.61] Re
a = 0.0371 [0.0099] AU
Ag = 30.30 [18.97] [1.54 σ]
Teffp = 6182 [807] K [5.42 σ]

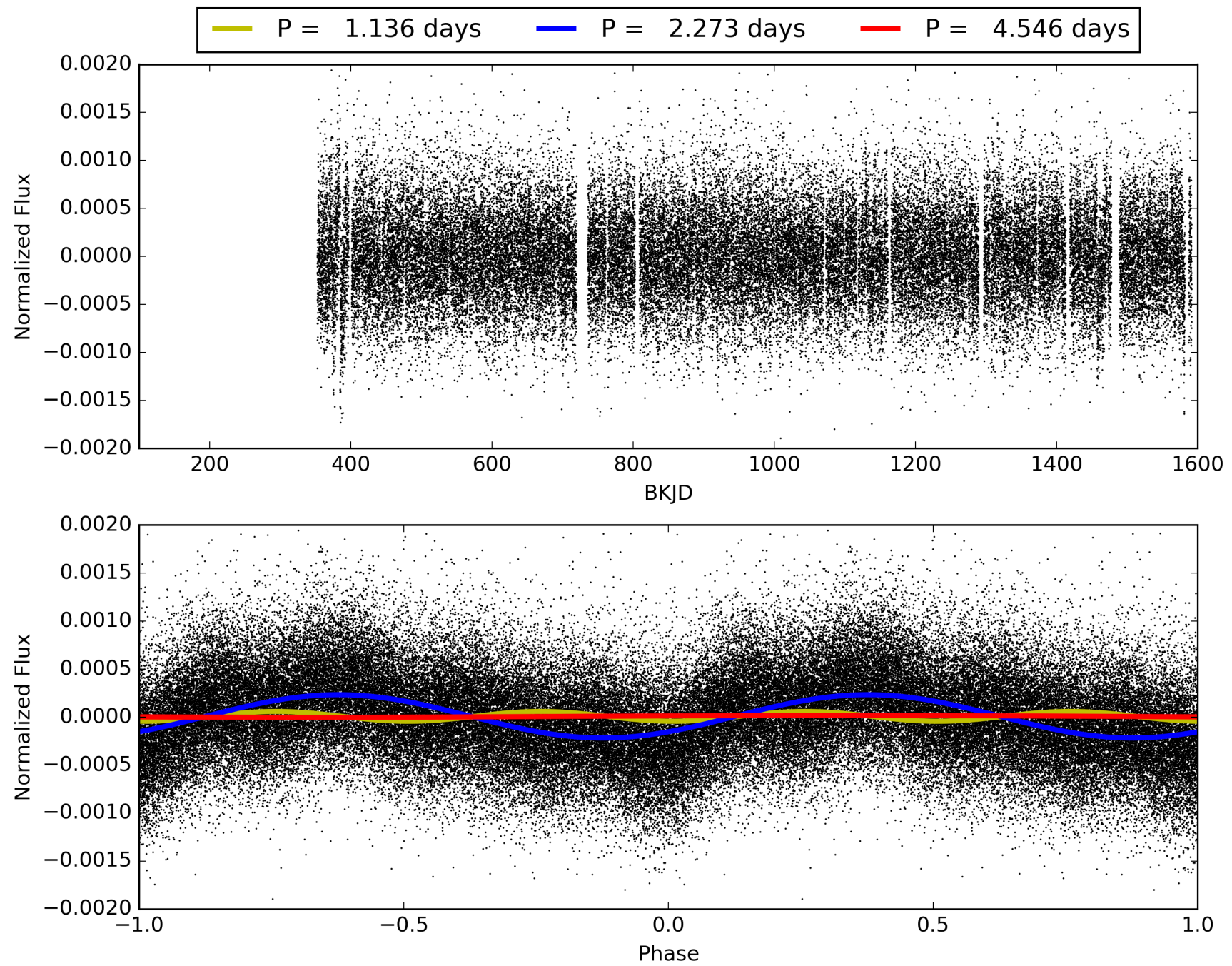
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 3.51e-65
RollingBand-fgt: 1.00 [491/491]
GhostDiagnostic-chr: 2.344
Centroid-sig: 0.0%
Centroid-so: 2.392 arcsec [2.72 σ]
OotOffset-rm: 0.197 arcsec [1.41 σ]
KicOffset-rm: 0.247 arcsec [1.58 σ]
OotOffset-st: 3/3/4/4 [14]
KicOffset-st: 3/3/4/4 [14]
DiffImageQuality-fgm: 1.00 [14/14]
DiffImageOverlap-fno: 1.00 [14/14]

TCE 006451294-01, PDC Light Curves

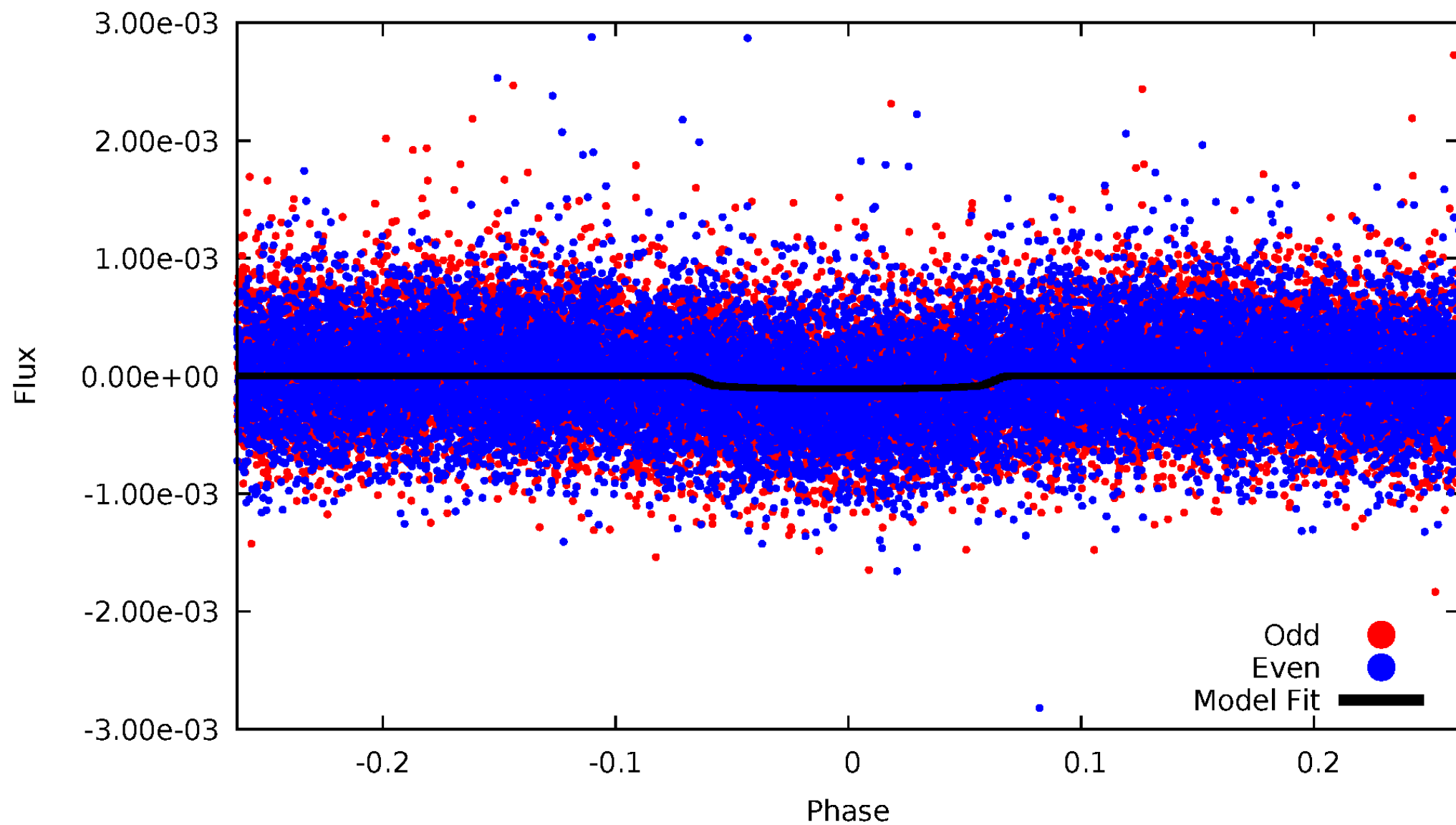


TCE 006451294-01



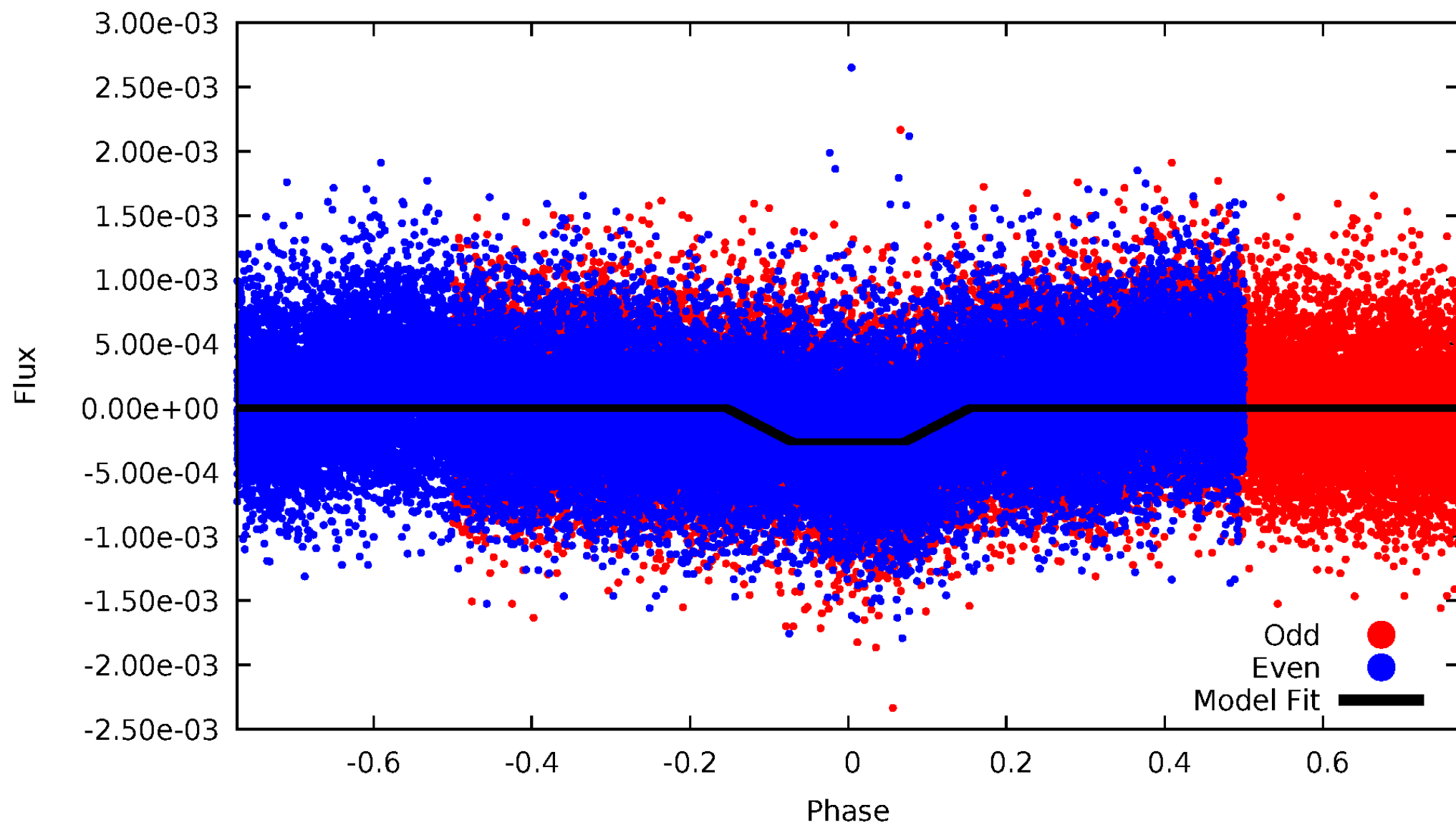
DV Odd/Even

TCE 006451294-01



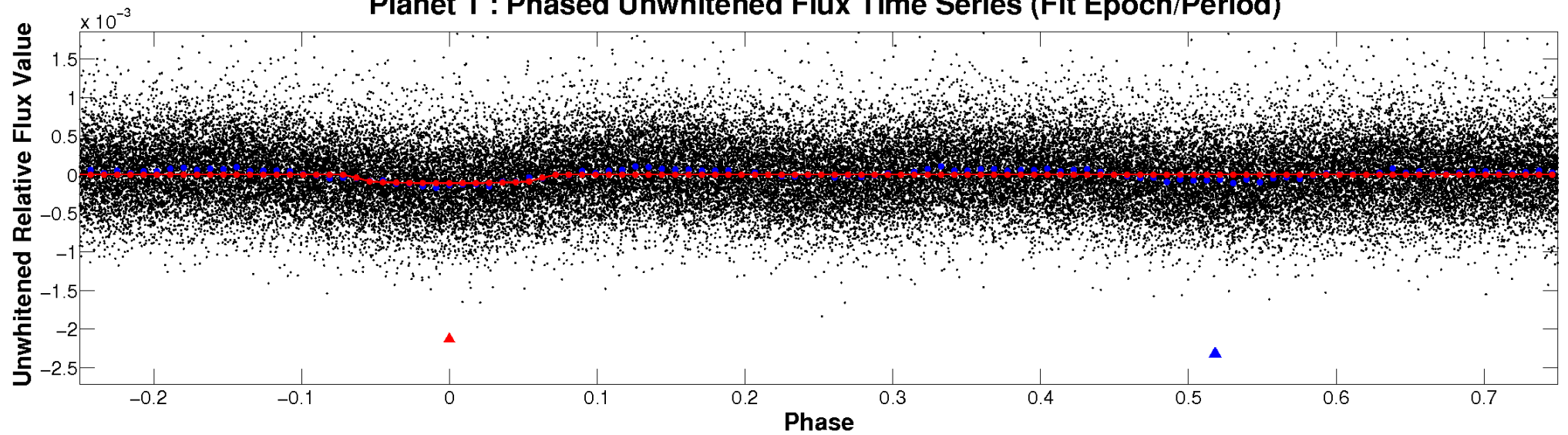
ALT Odd/Even

TCE 006451294-01

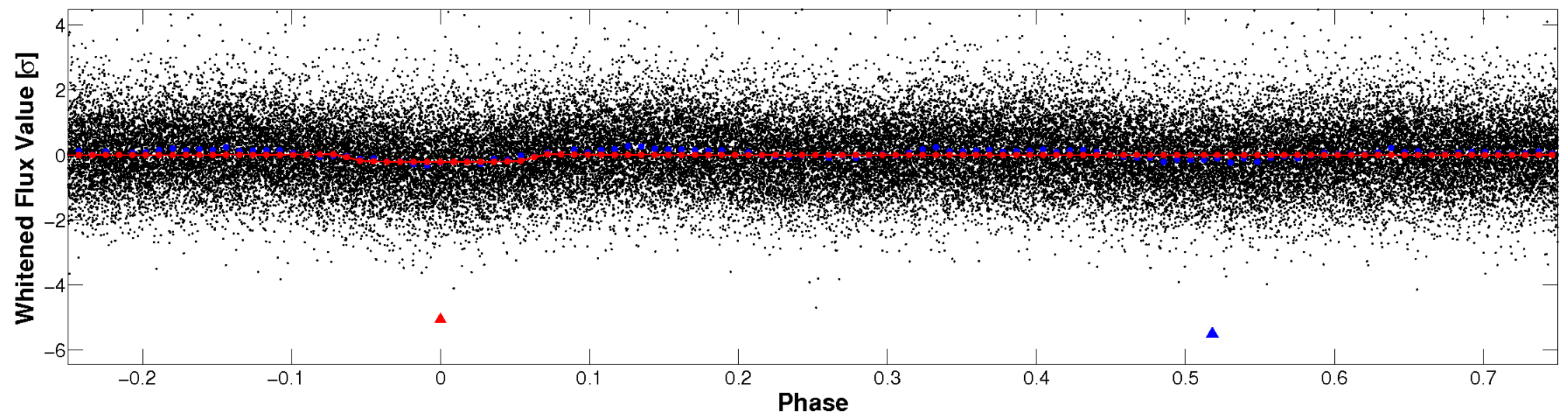


Non-Whitened Vs. Whitened Light Curve

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

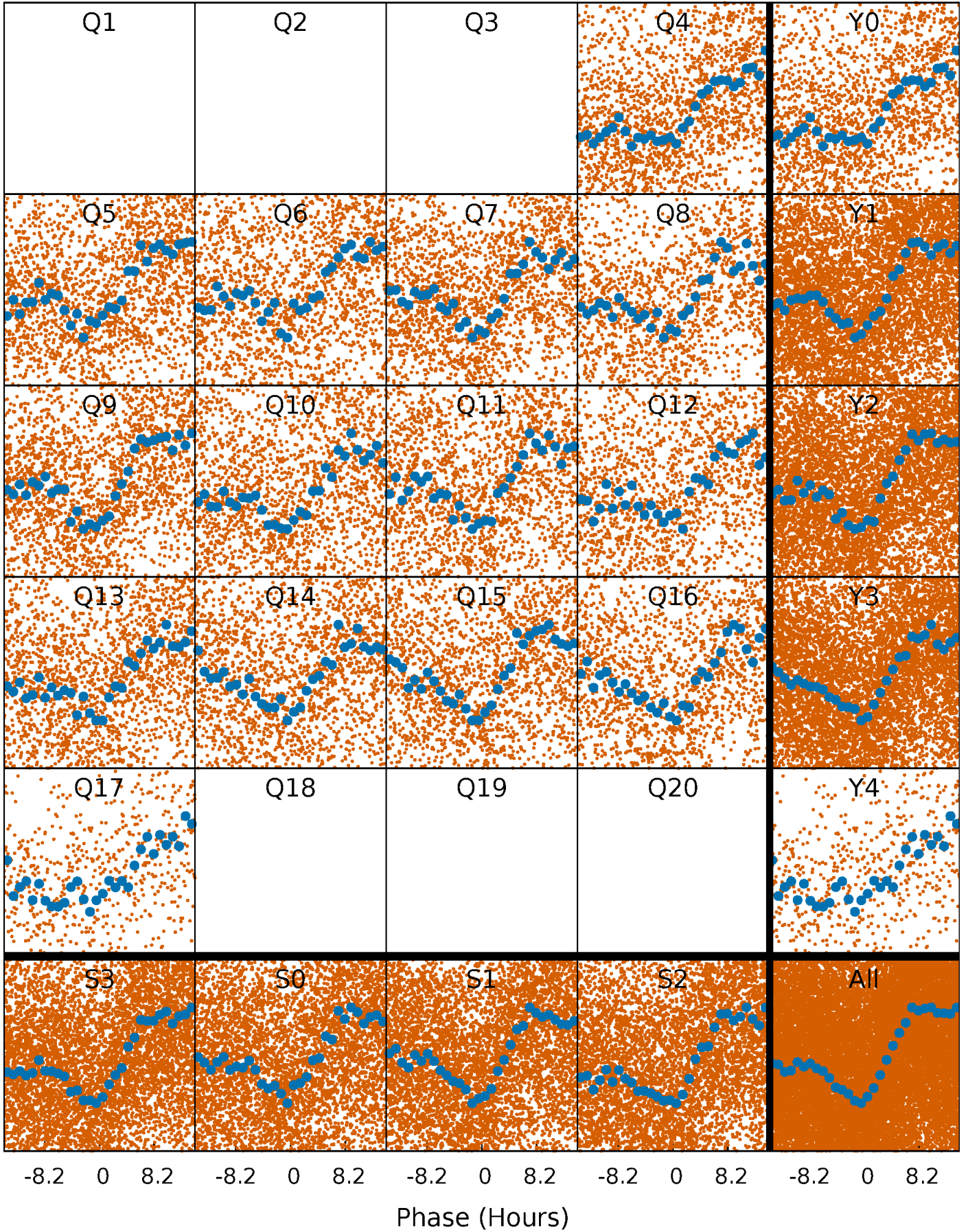


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



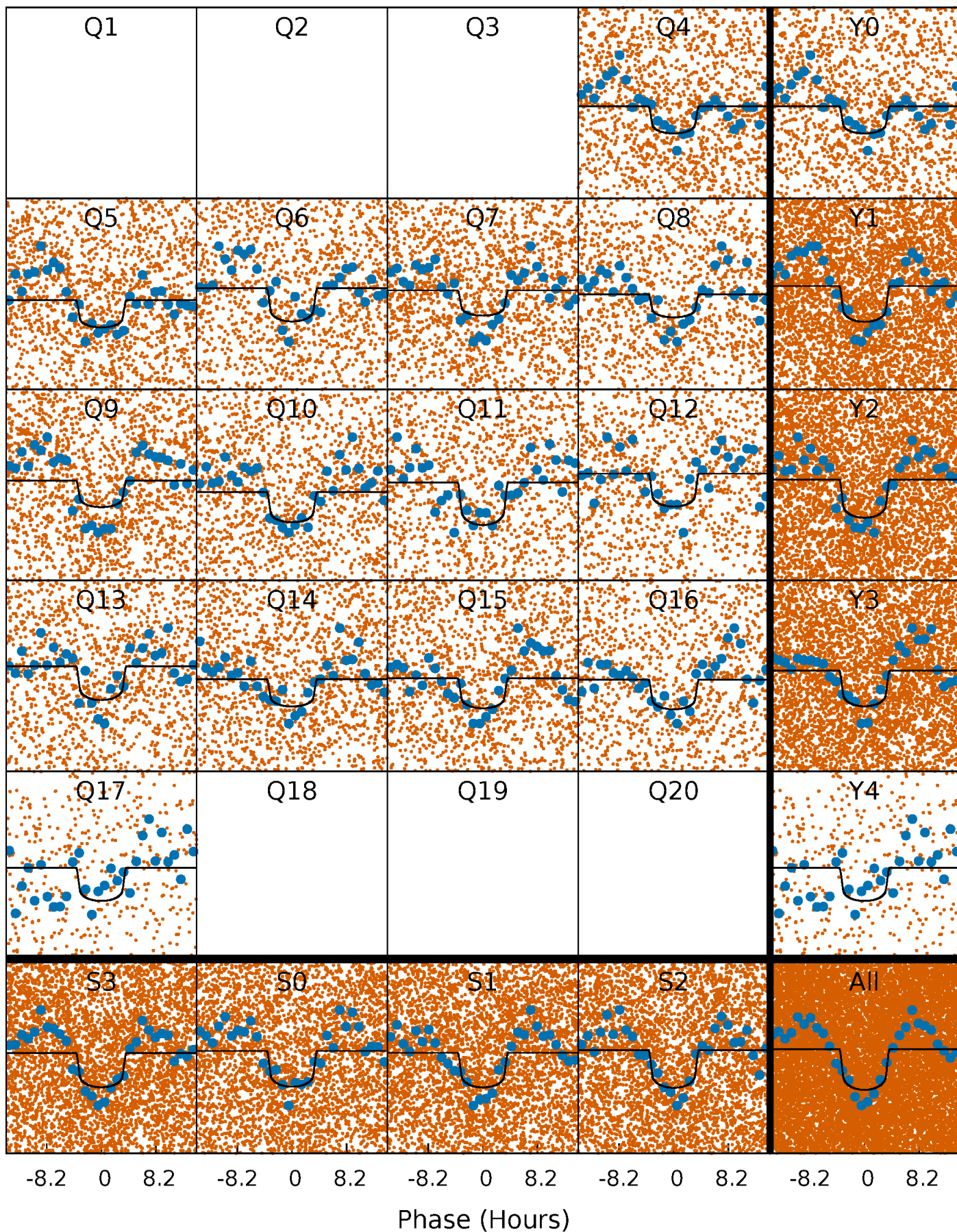
PDC Quarter-Phased Transit Curves

TCE 006451294-01 P= 2.272989 Days $T_0=132.788587$ (BKJD)



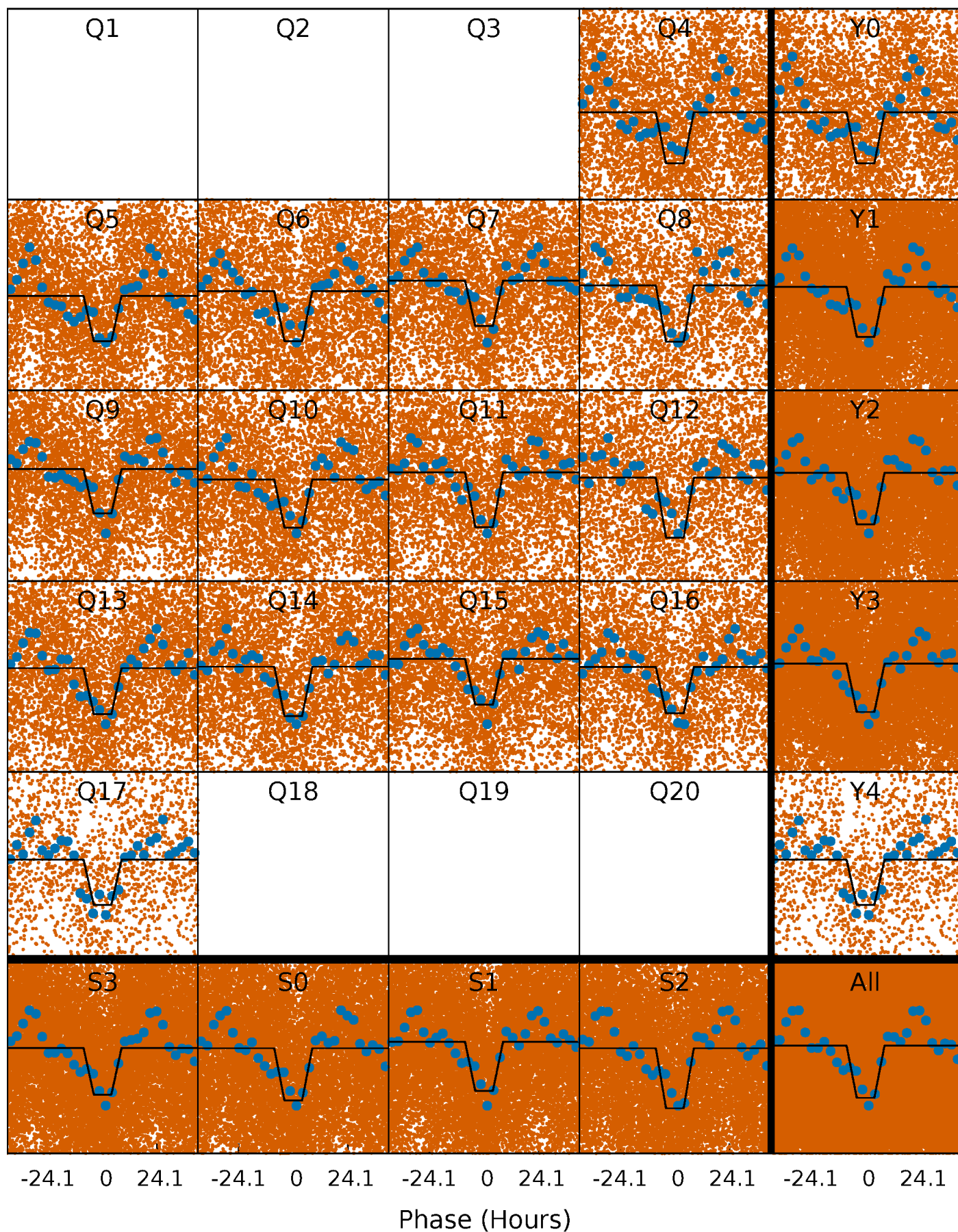
DV Quarter-Phased Transit Curves

TCE 006451294-01 P= 2.272989 Days $T_0=132.788587$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

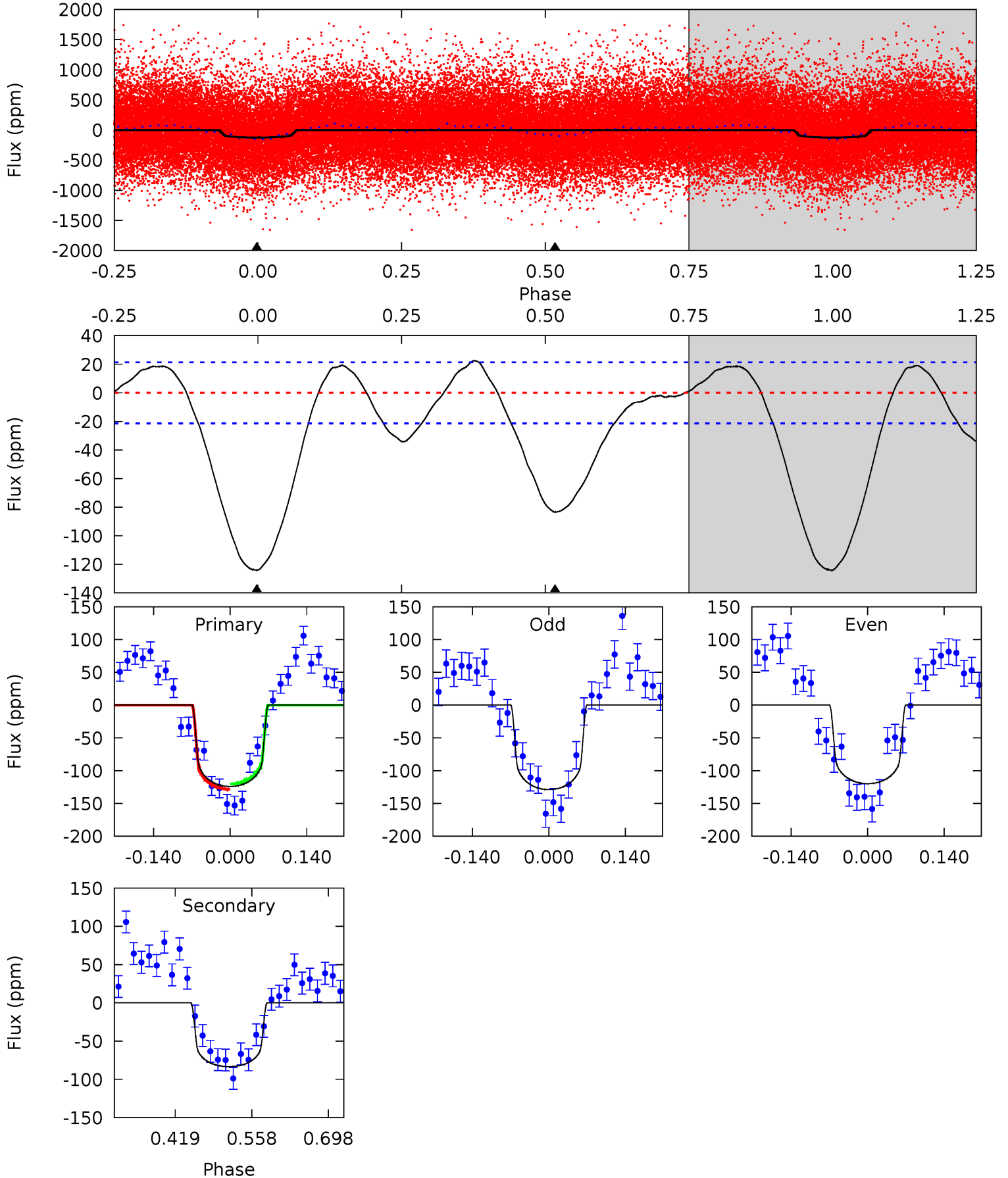
TCE 006451294-01 P= 2.272988 Days $T_0=132.680942$ (BKJD)



DV Model-Shift Uniqueness Test

006451294-01, P = 2.272989 Days, E = 132.788587 Days

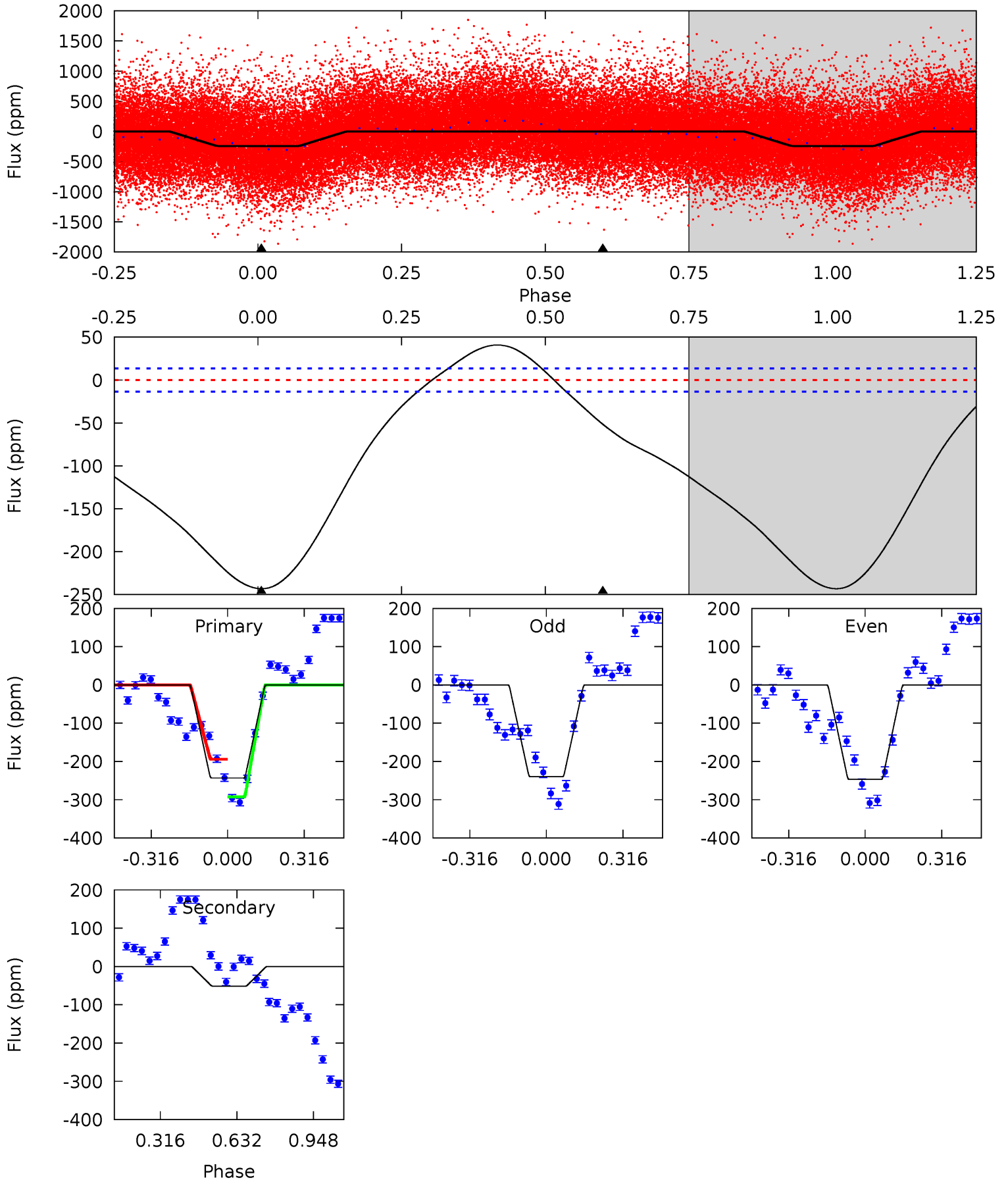
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
26.1	17.5	0	0	4.49	1.48	3.36	26.1	26.1	17.5	17.5	0.95	1.01	0.15	0.86



Alt Model-Shift Uniqueness Test

006451294-01, P = 2.272988 Days, E = 132.680942 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
77.7	16.5	0	0	4.32	1.00	4.83	77.7	77.7	16.5	16.5	1.09	1.02	0.14	15.8



Stellar Parameters For KIC 006451294

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6623^{+187}_{-258}	$4.355^{+0.067}_{-0.202}$	$0.070^{+0.200}_{-0.400}$	$1.261^{+0.412}_{-0.176}$	$1.317^{+0.168}_{-0.206}$	$0.924^{+0.272}_{-0.502}$
	+3%/-4%	+2%/-5%	+286%/-571%	+33%/-14%	+13%/-16%	+29%/-54%
Source	KIC0	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 006451294-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-83 ± 5	$1.54^{+0.47}_{-0.40}$	2432^{+190}_{-152}	6018^{+1039}_{-596}	26^{+20}_{-11}
Alt.	-52 ± 3	$2.32^{+0.50}_{-0.41}$	2421^{+171}_{-136}	4503^{+365}_{-292}	$7.104^{+3.250}_{-2.286}$

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 $A_{obs} \gg 1.0$

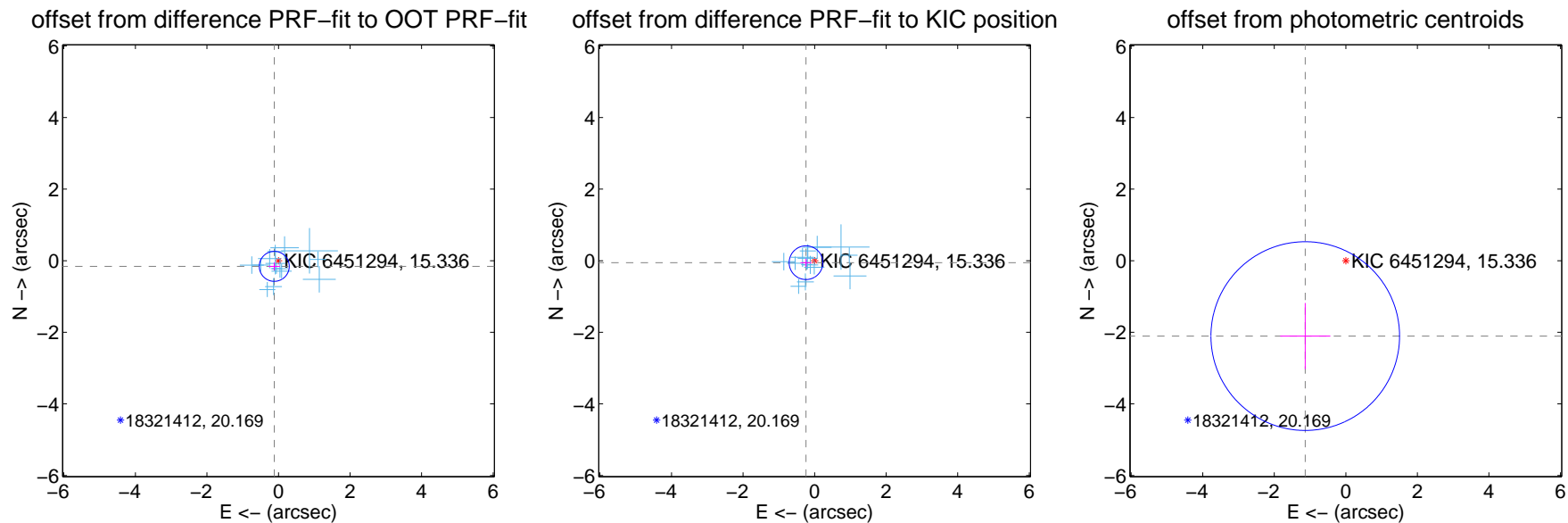
DV Centroid Data

Supplemental centroid analysis for 006451294-01. Kepler magnitude: 15.34. Transit SNR 16.30

There are 14 quarters with good PRF difference image offsets

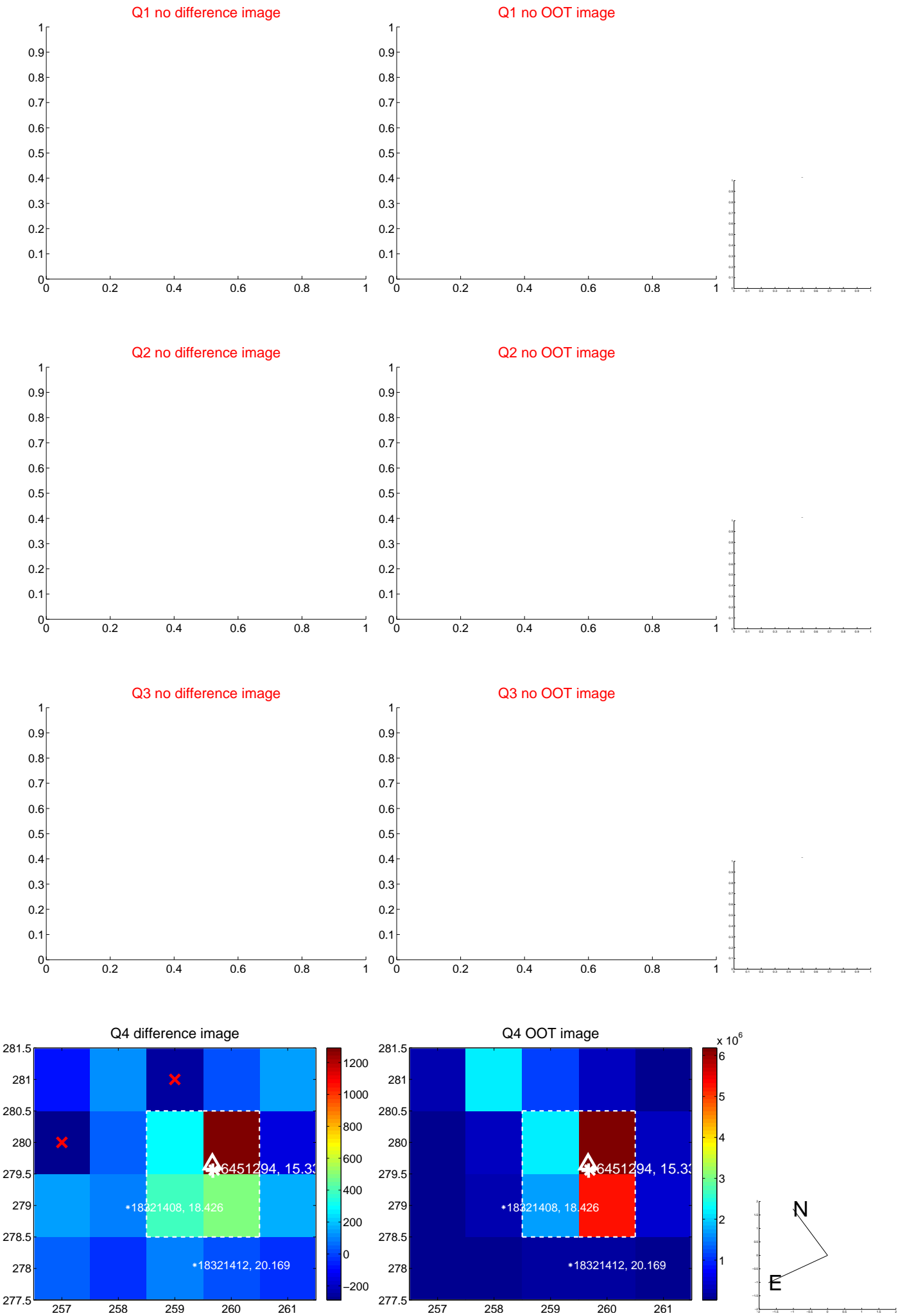
The direct PRF centroid is offset from the target star catalog position by about 0.16 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.197 ± 0.140	1.41	0.118 ± 0.159	-0.158 ± 0.109
PRF-fit source offset from KIC position	0.247 ± 0.157	1.58	0.241 ± 0.153	-0.055 ± 0.111
photometric centroid source offset	2.39 ± 0.88	2.72	1.13 ± 0.70	-2.11 ± 0.92

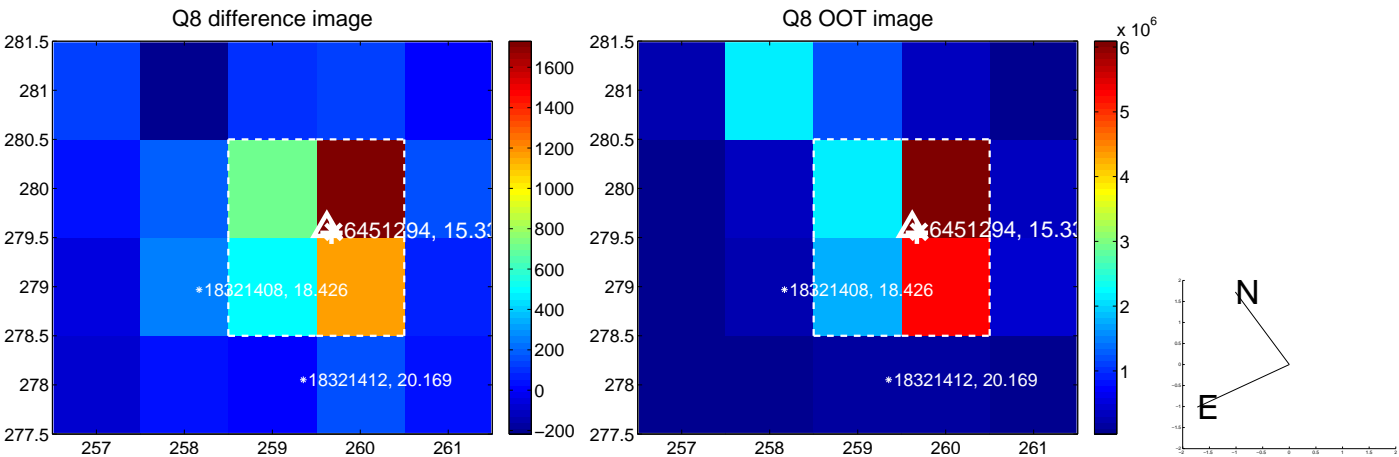
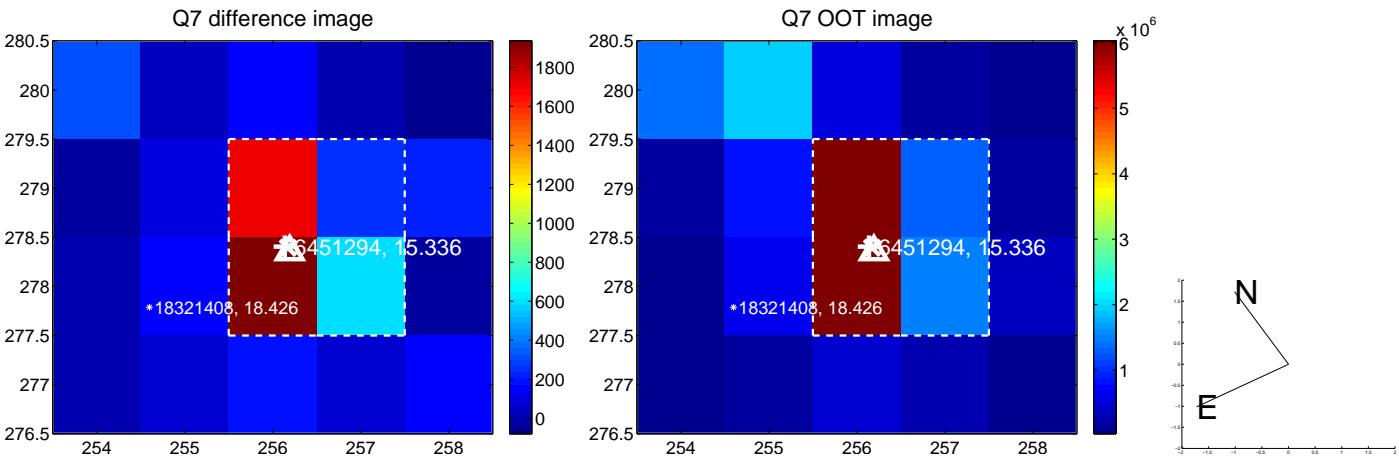
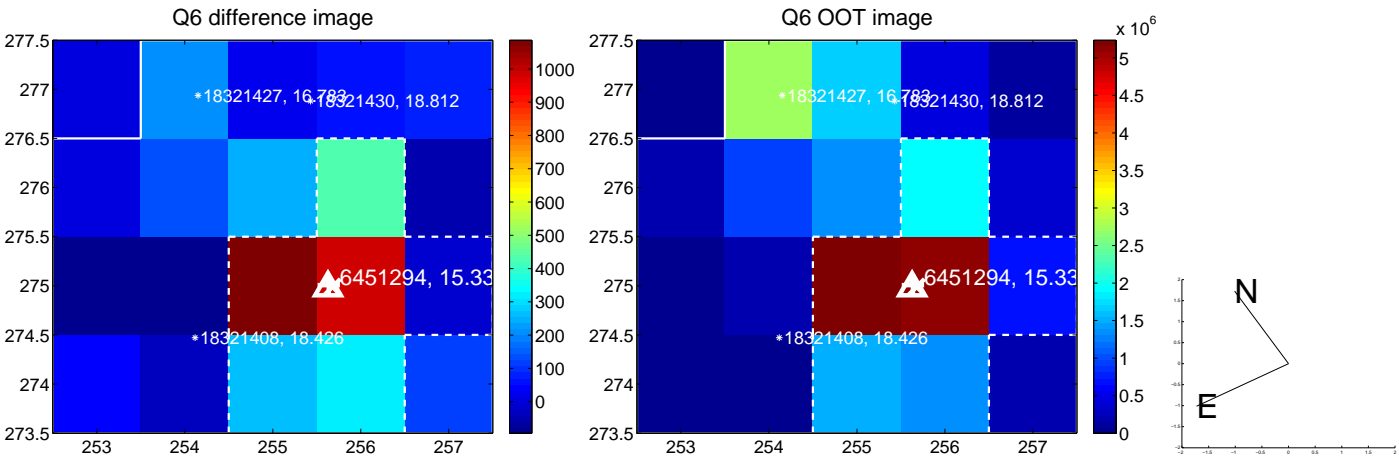
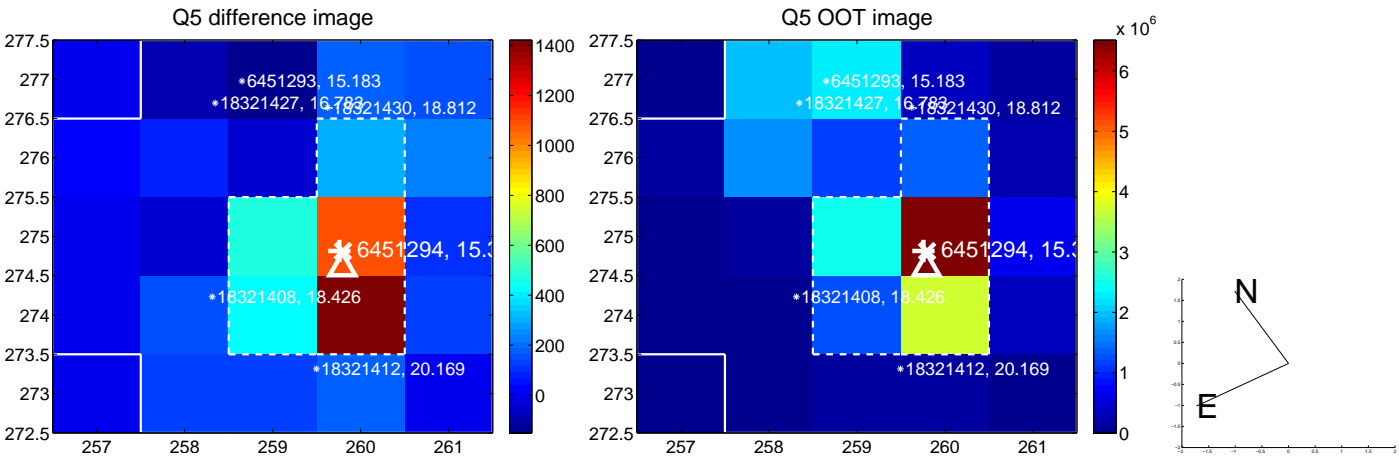


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

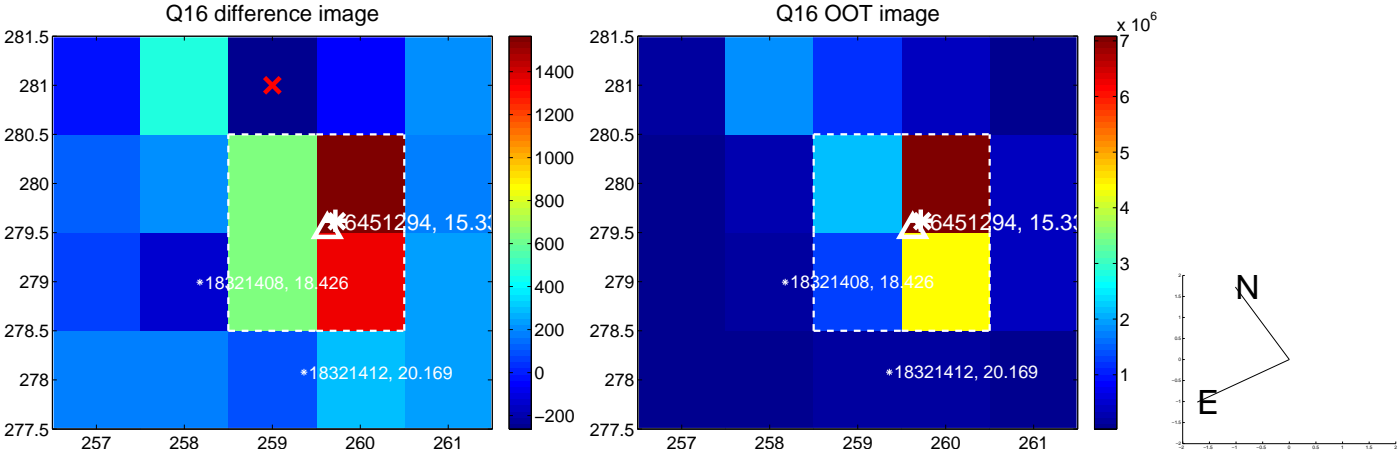
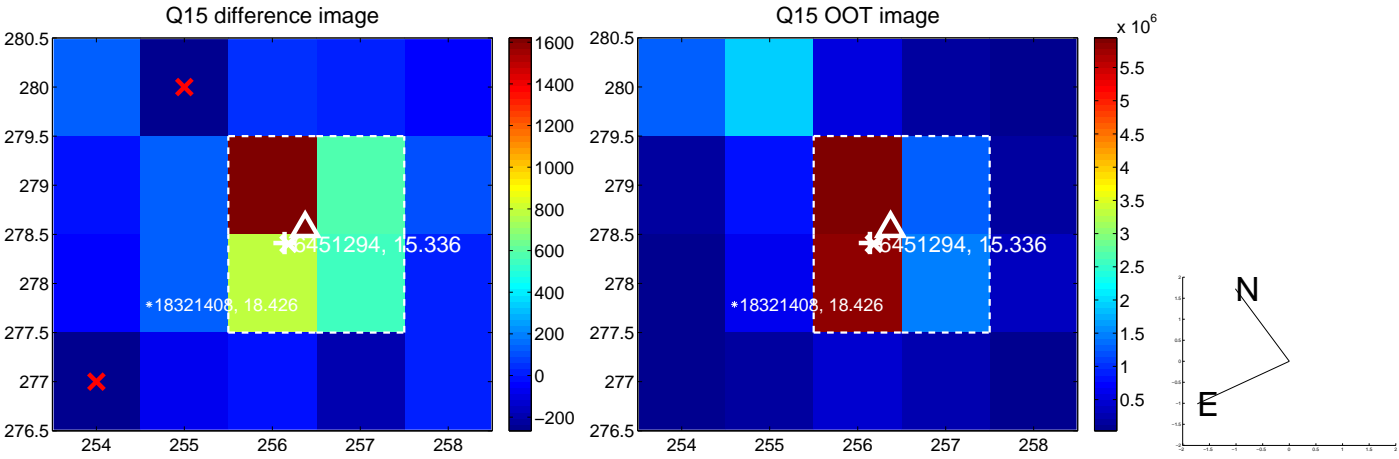
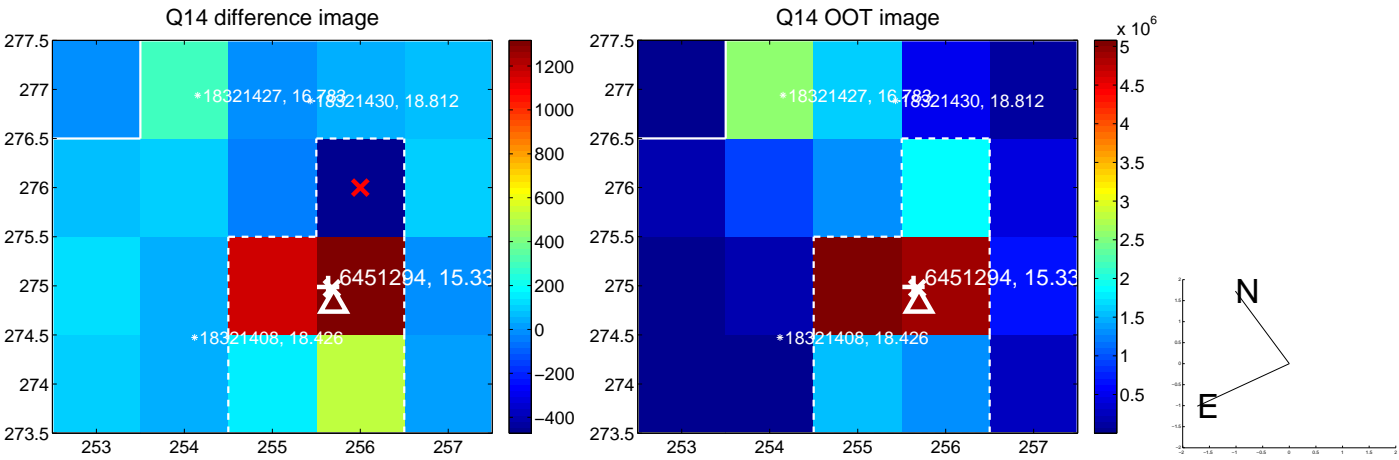
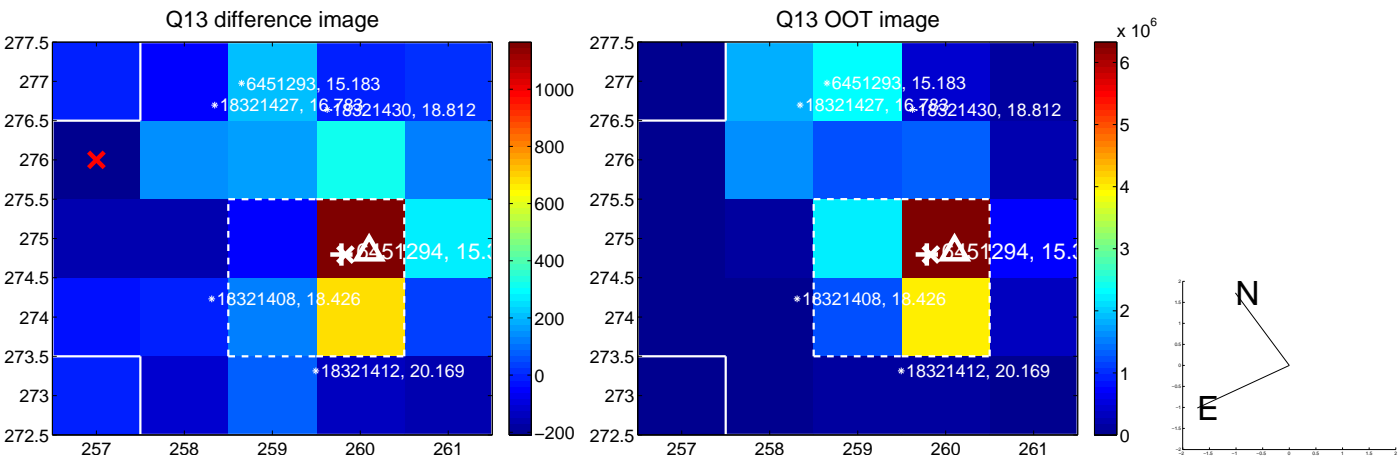
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.



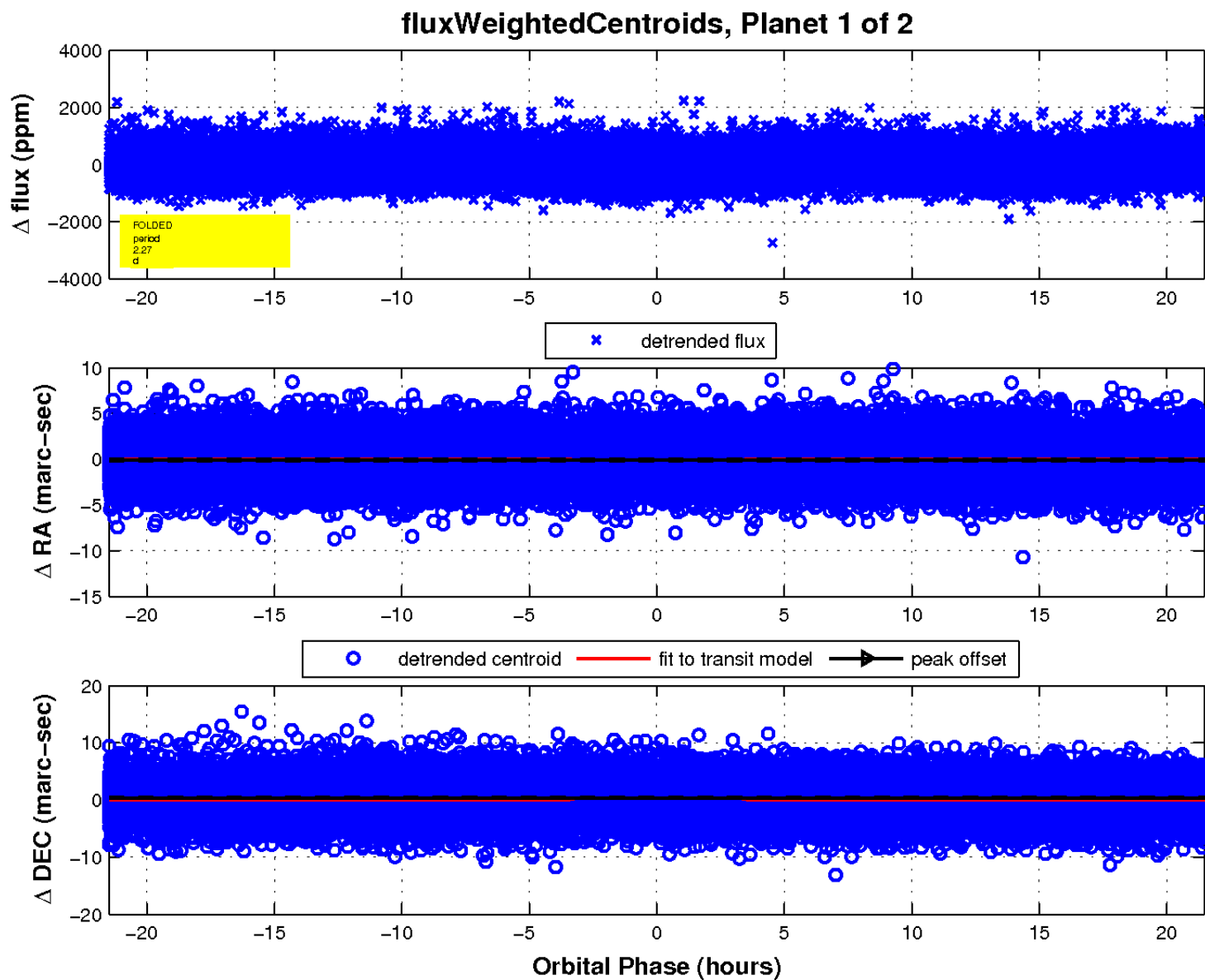
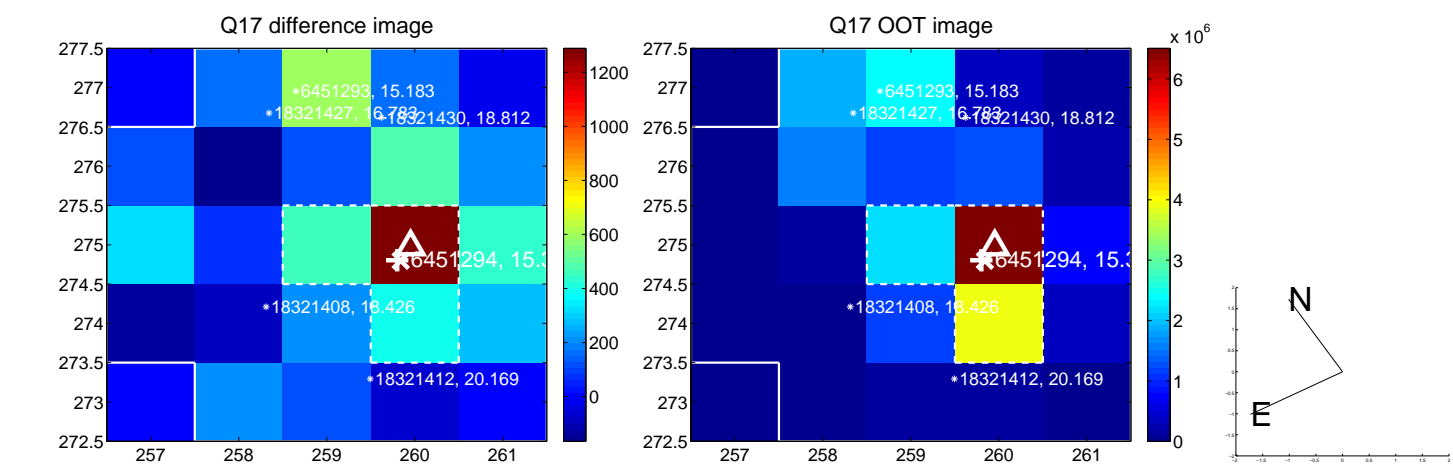
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

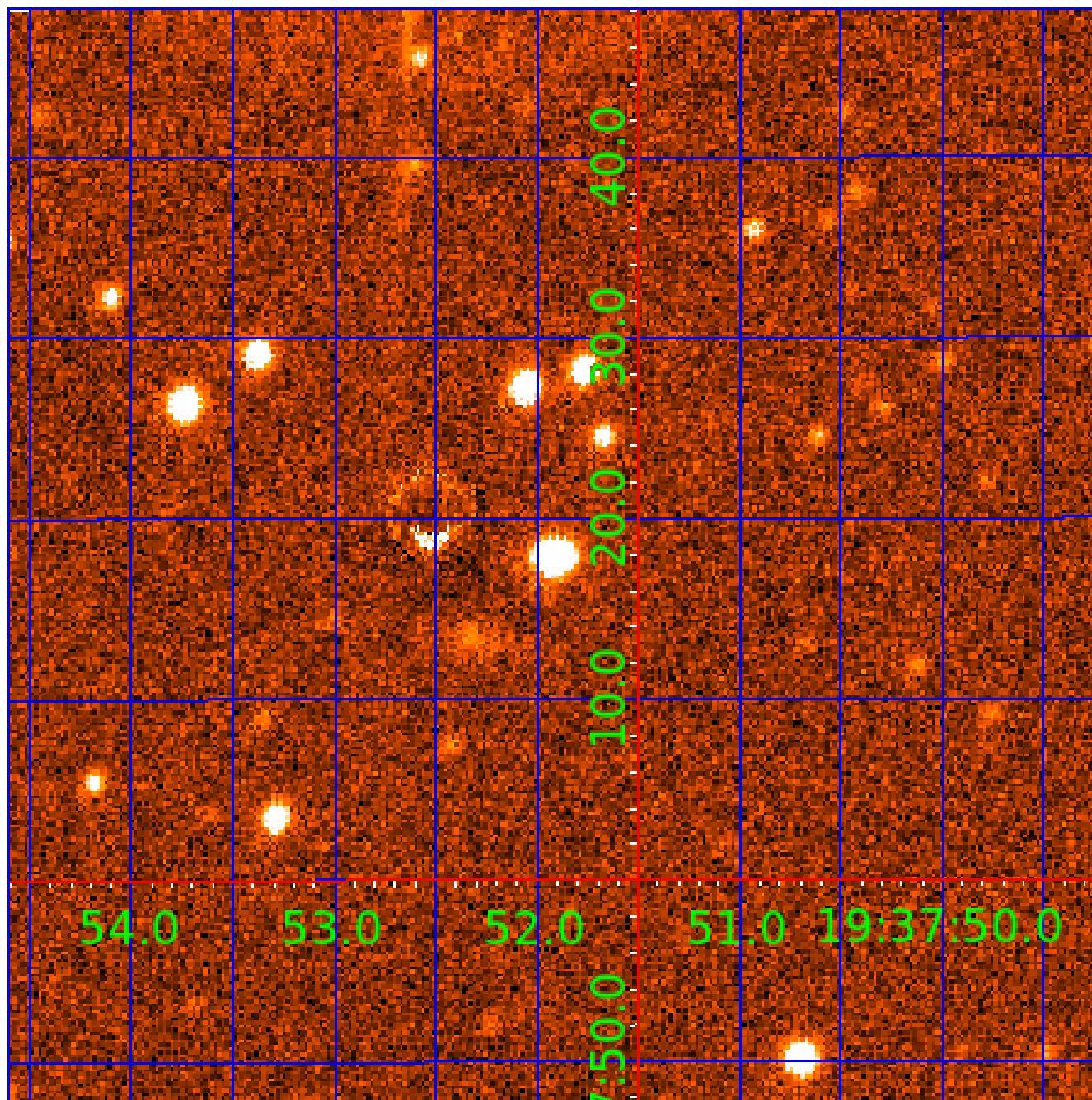


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 006451294

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})
006451294-01	OBS	No	2.272989	132.788587	109.4	7.162	15.4	16.3	1.26	6623	1.49	1995.85
006451294-02	OBS	No	2.272986	131.694047	100.1	8.465	12.0	15.0	1.26	6623	1.71	1995.85

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006451294-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT
006451294-02	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD

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

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

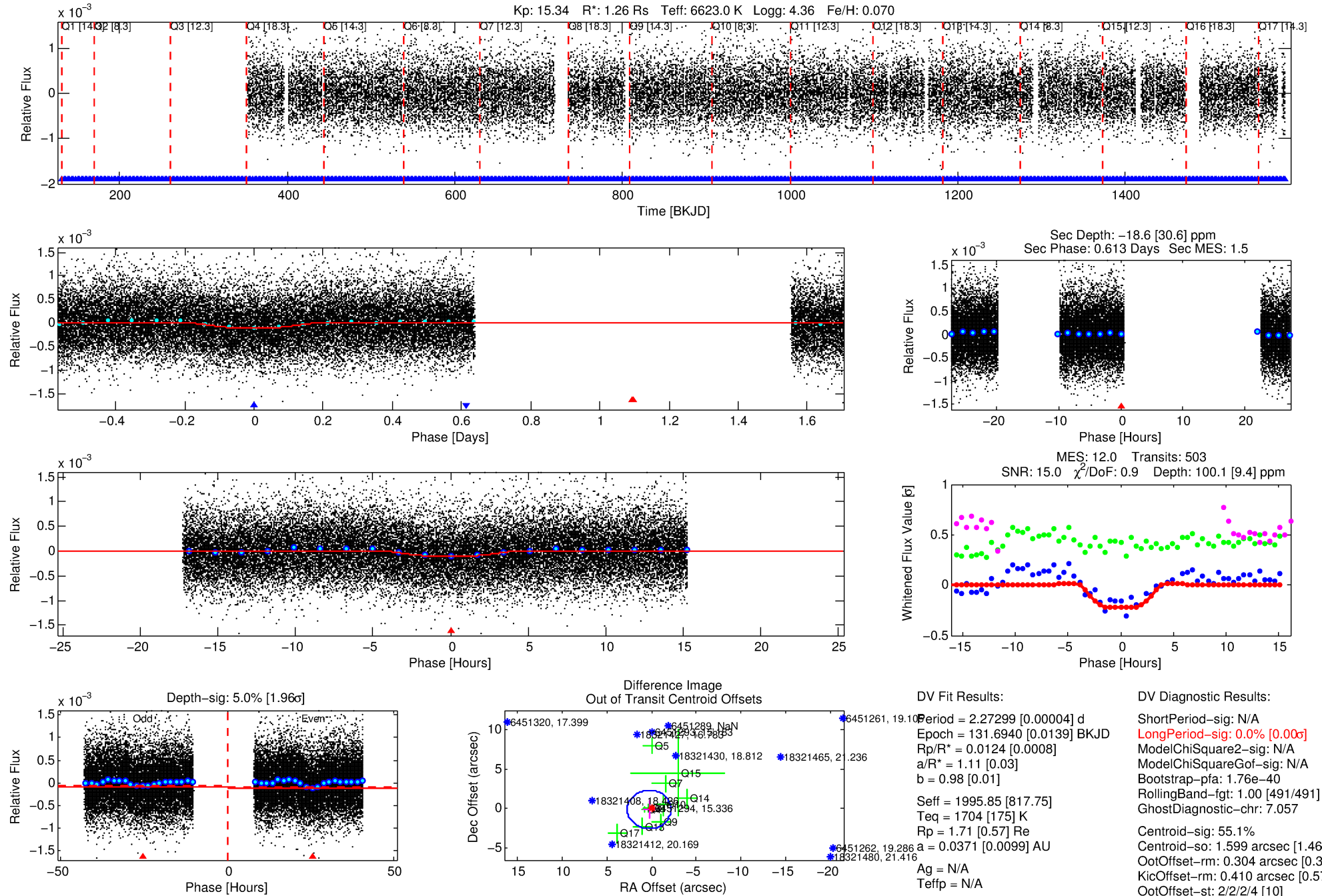
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 006451294-02

No Significant Match Found

DV One-Page Summary

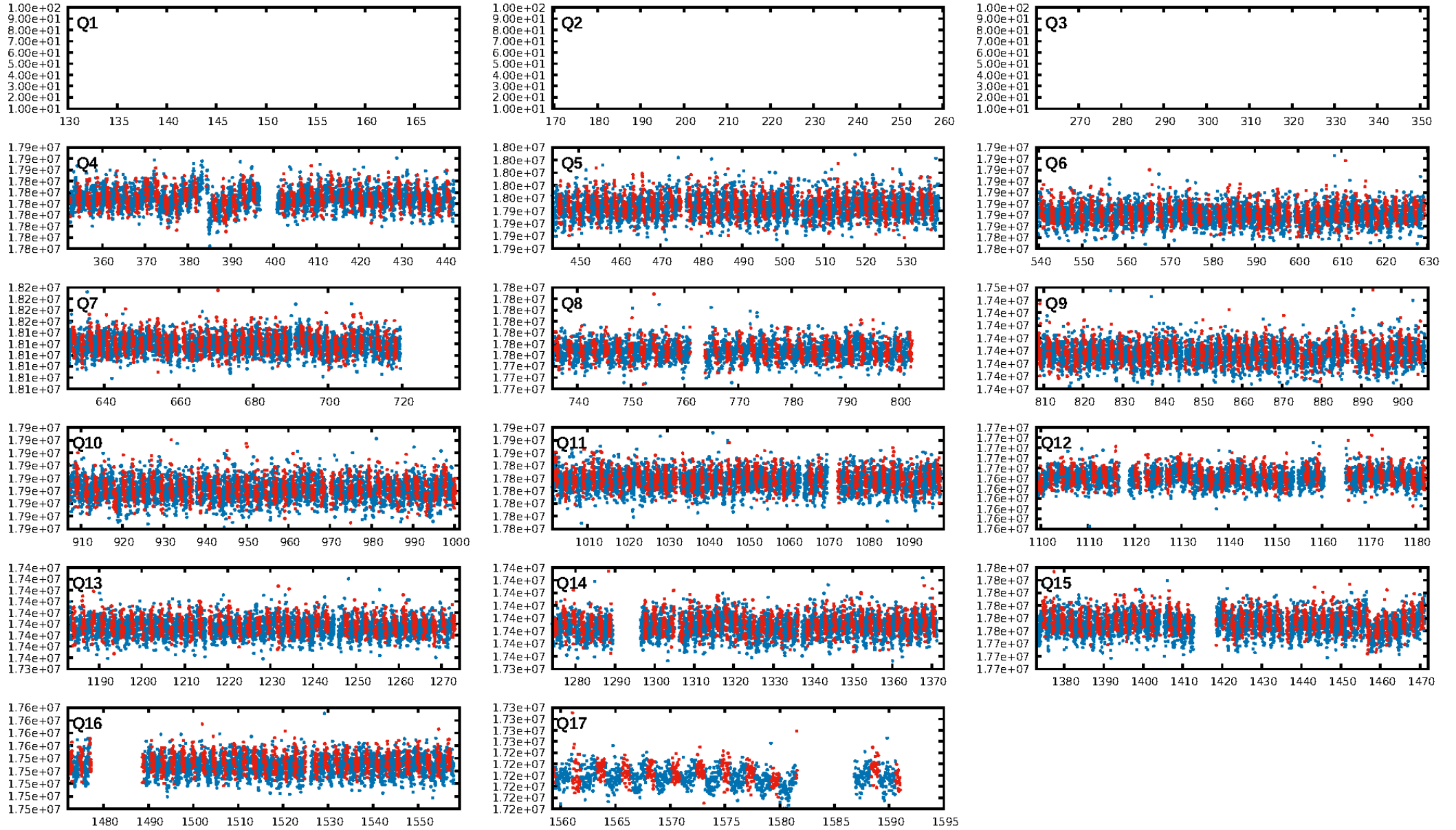
KIC: 6451294 Candidate: 2 of 2 Period: 2.273 d



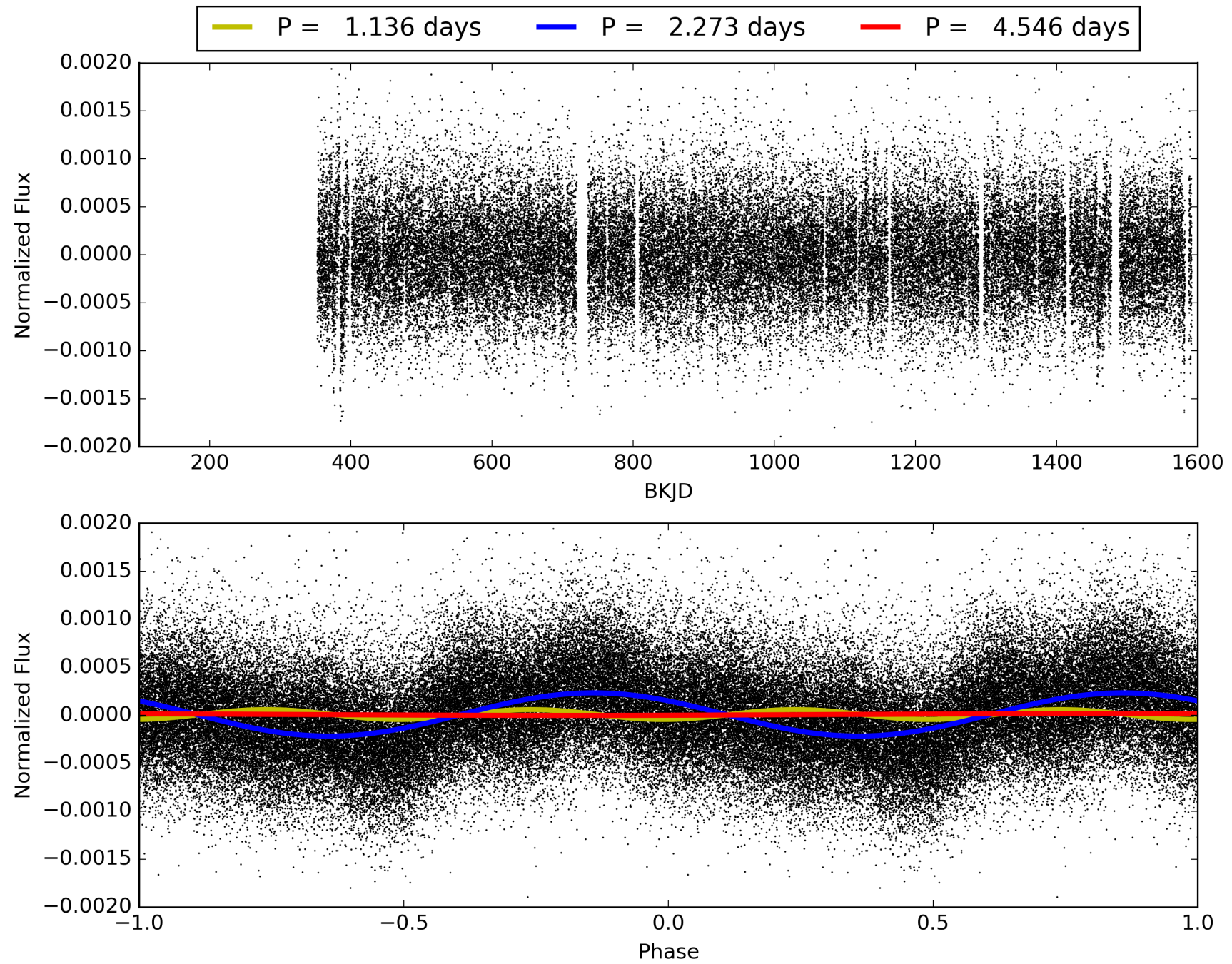
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 01:17:28 Z

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

TCE 006451294-02, PDC Light Curves

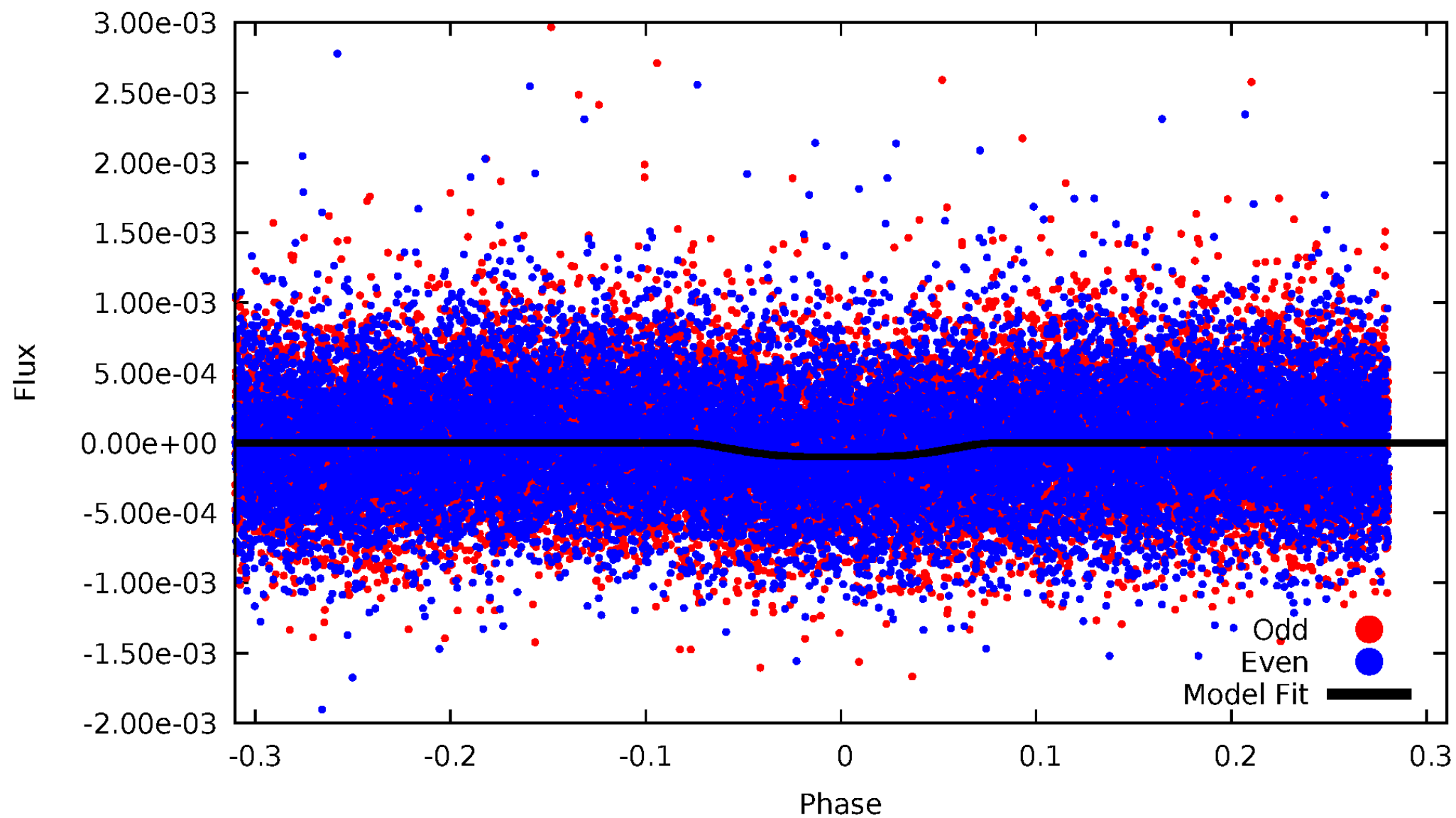


TCE 006451294-02



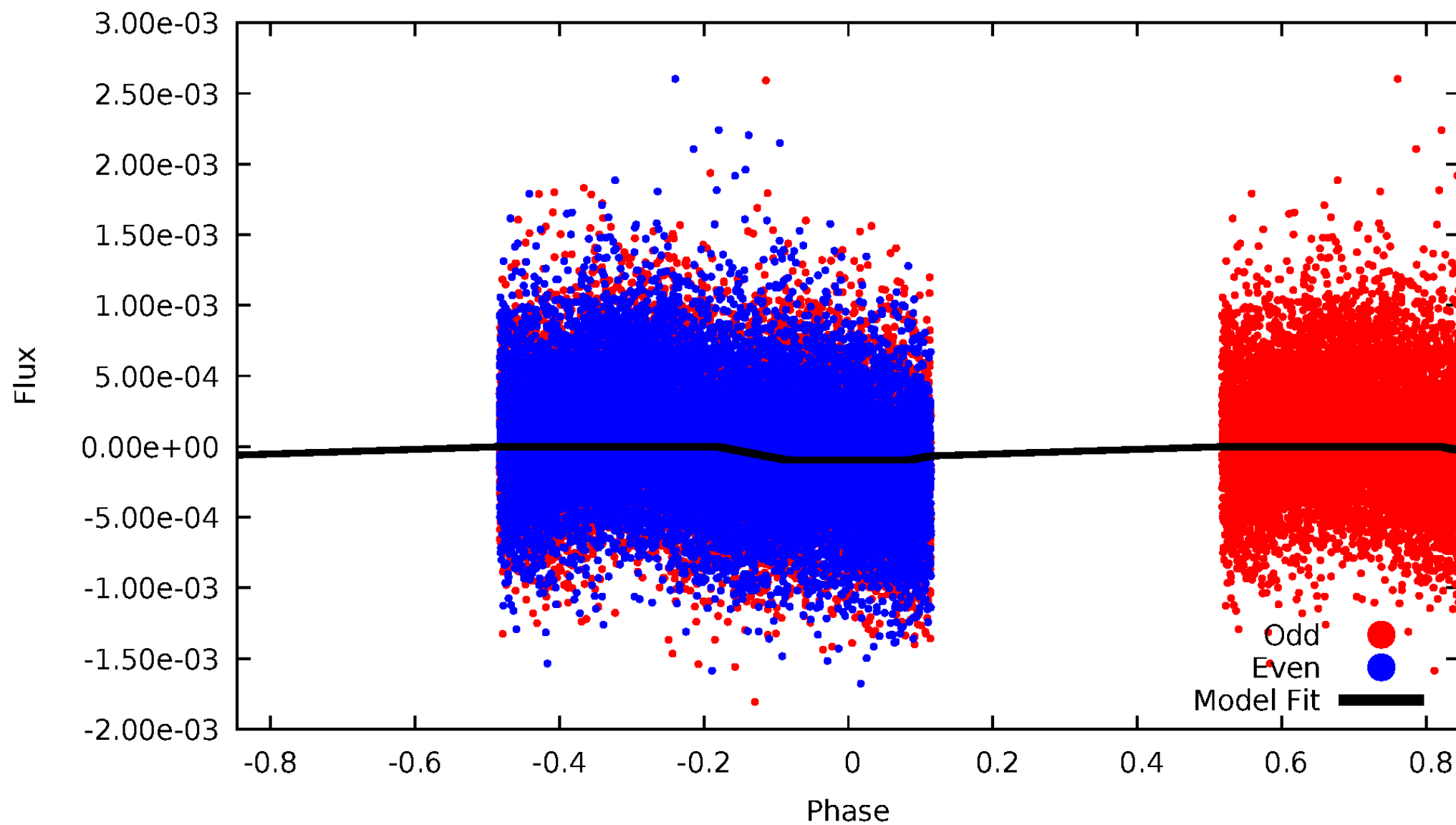
DV Odd/Even

TCE 006451294-02



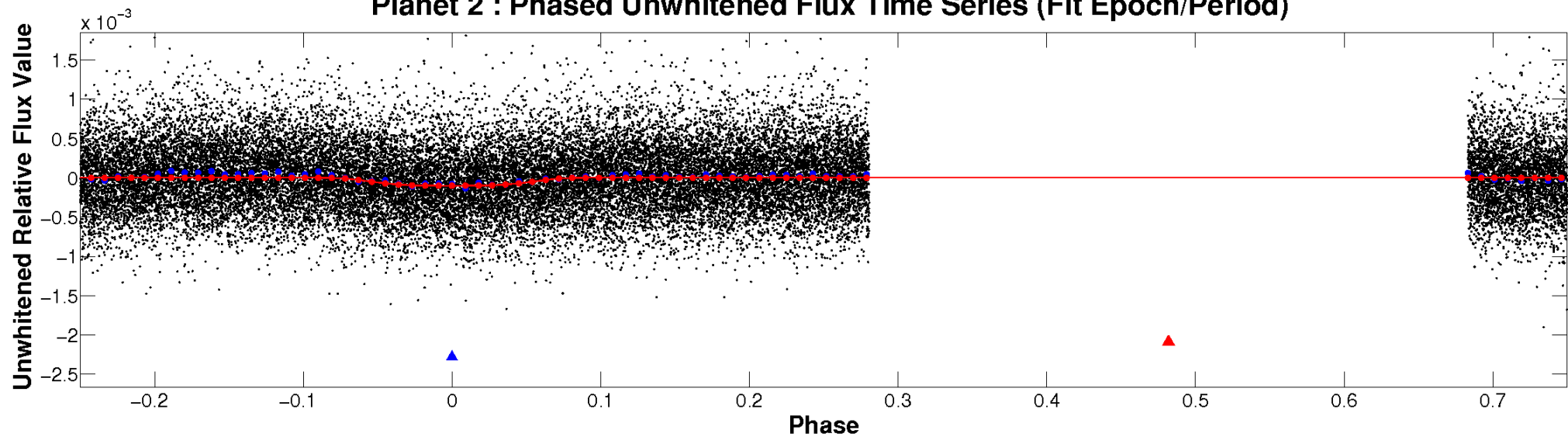
ALT Odd/Even

TCE 006451294-02

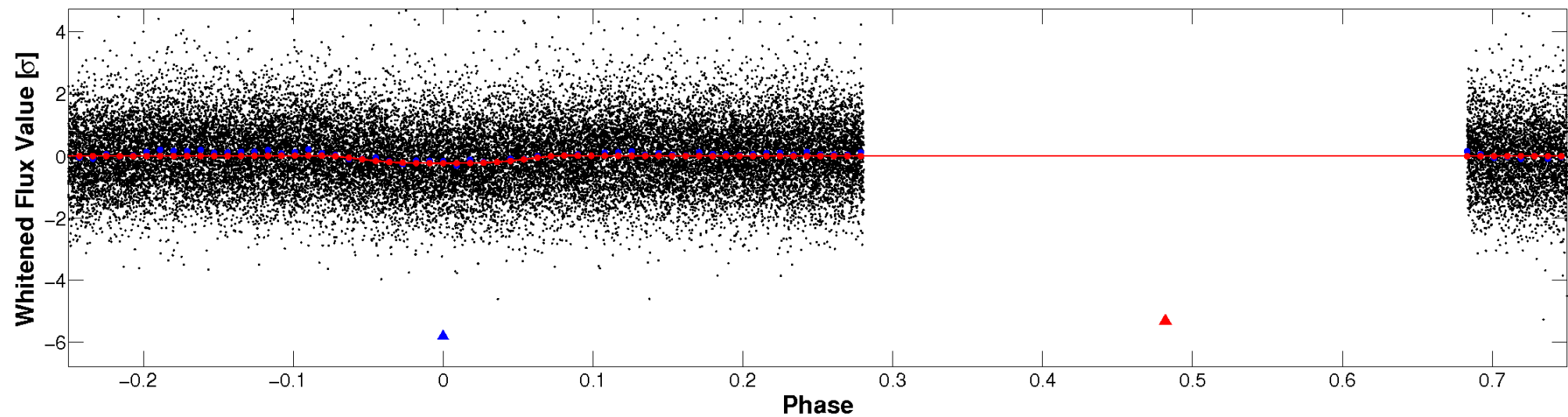


Non-Whitened Vs. Whitened Light Curve

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

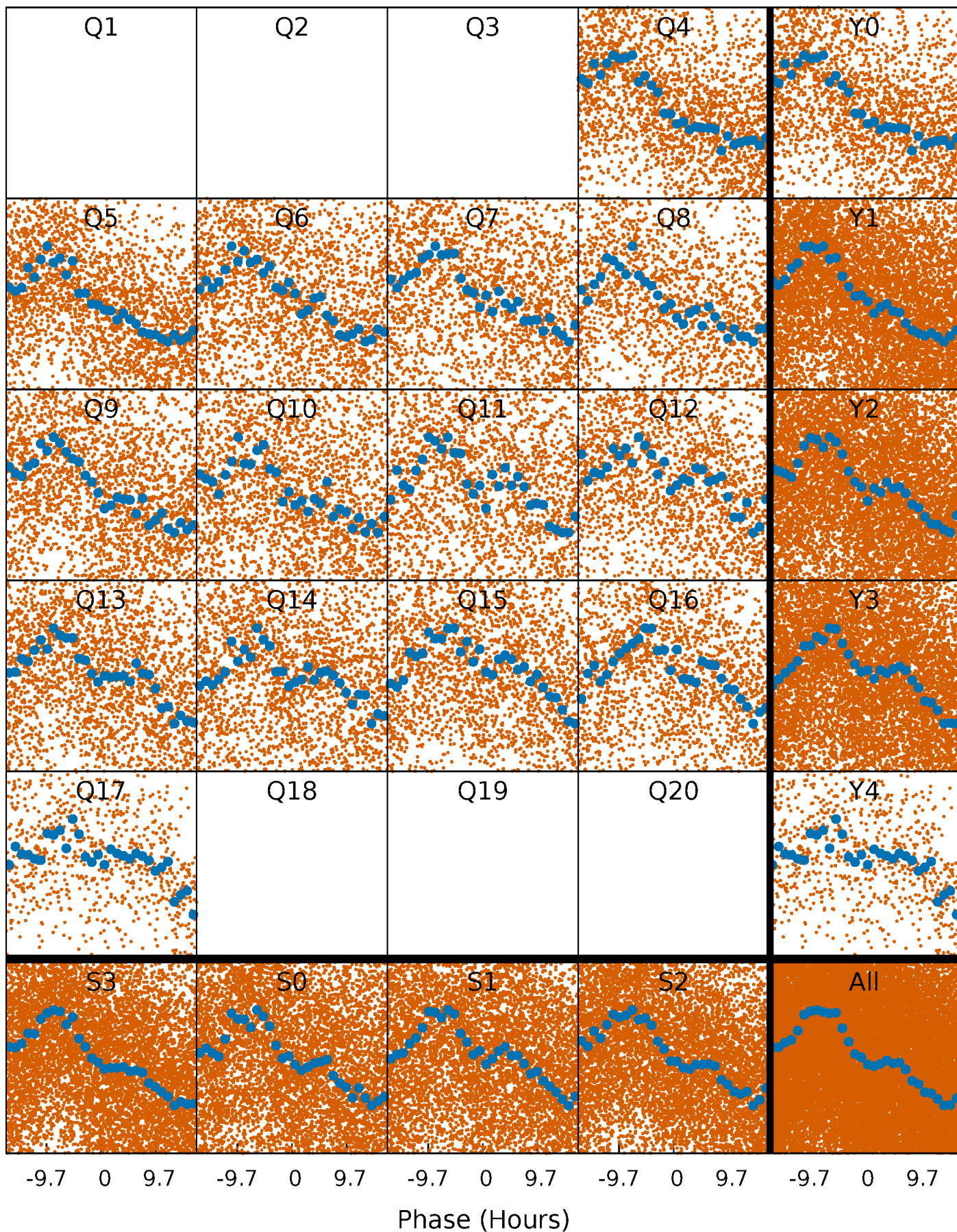


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



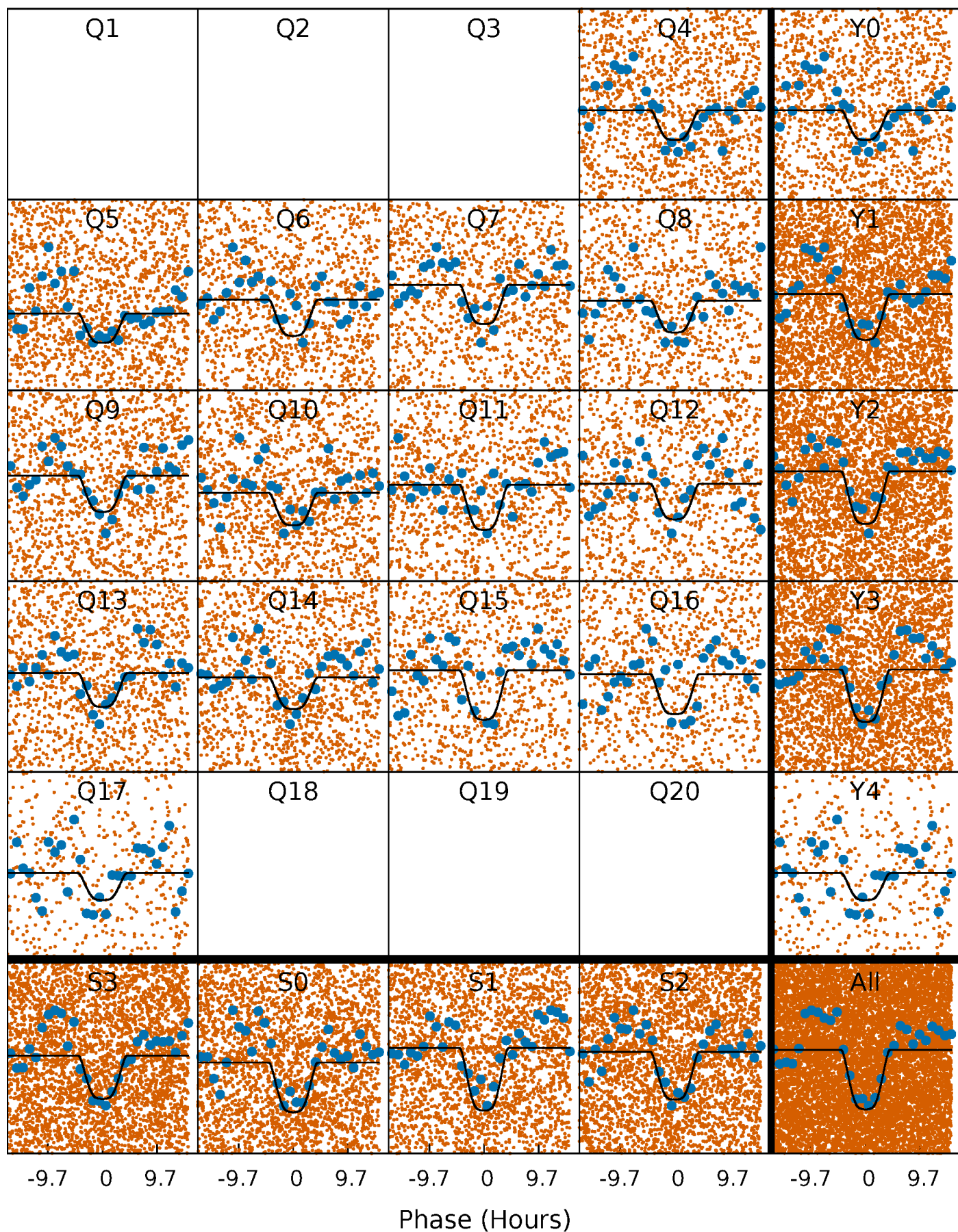
PDC Quarter-Phased Transit Curves

TCE 006451294-02 P= 2.272986 Days $T_0=131.694047$ (BKJD)



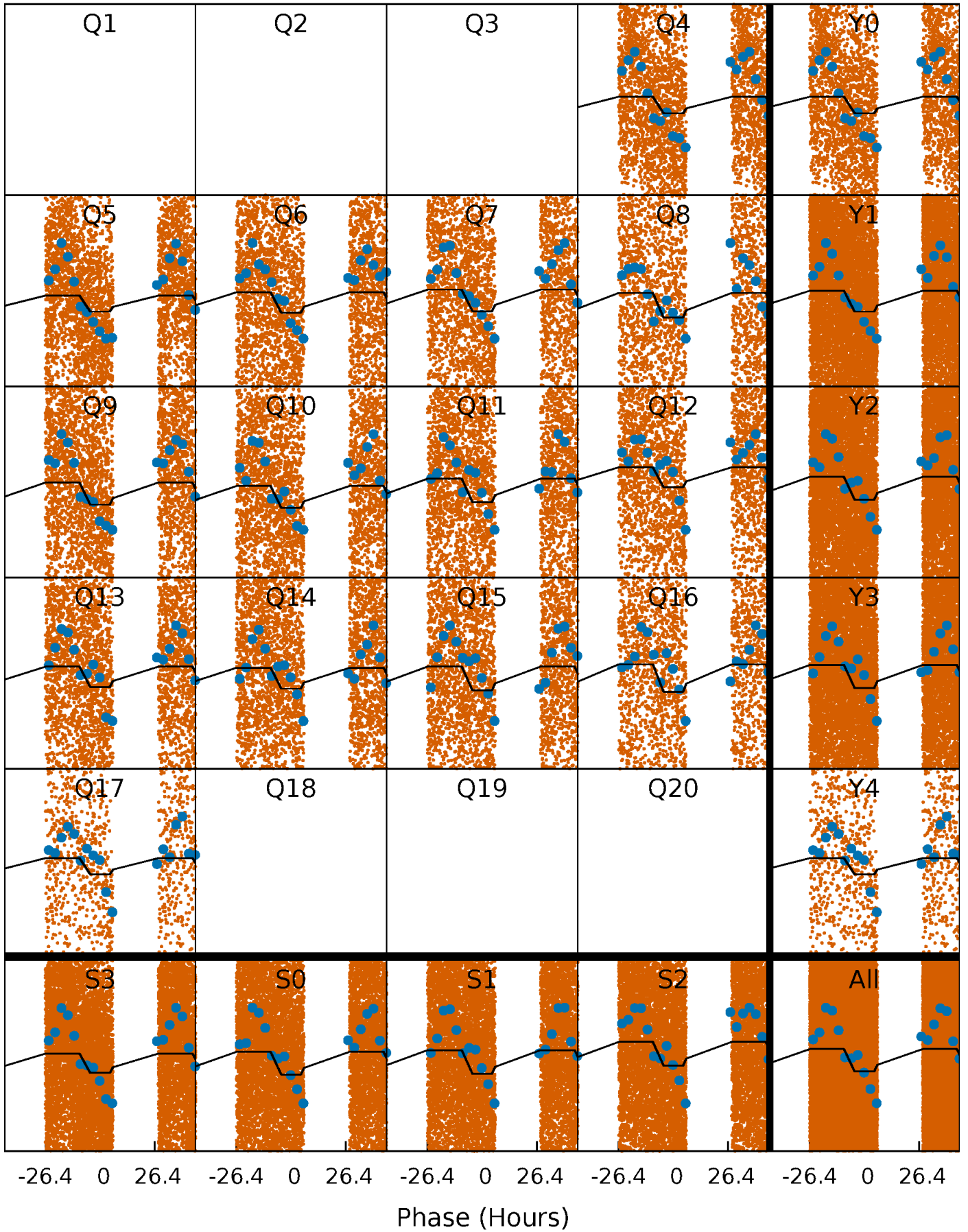
DV Quarter-Phased Transit Curves

TCE 006451294-02 P= 2.272986 Days $T_0=131.694047$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

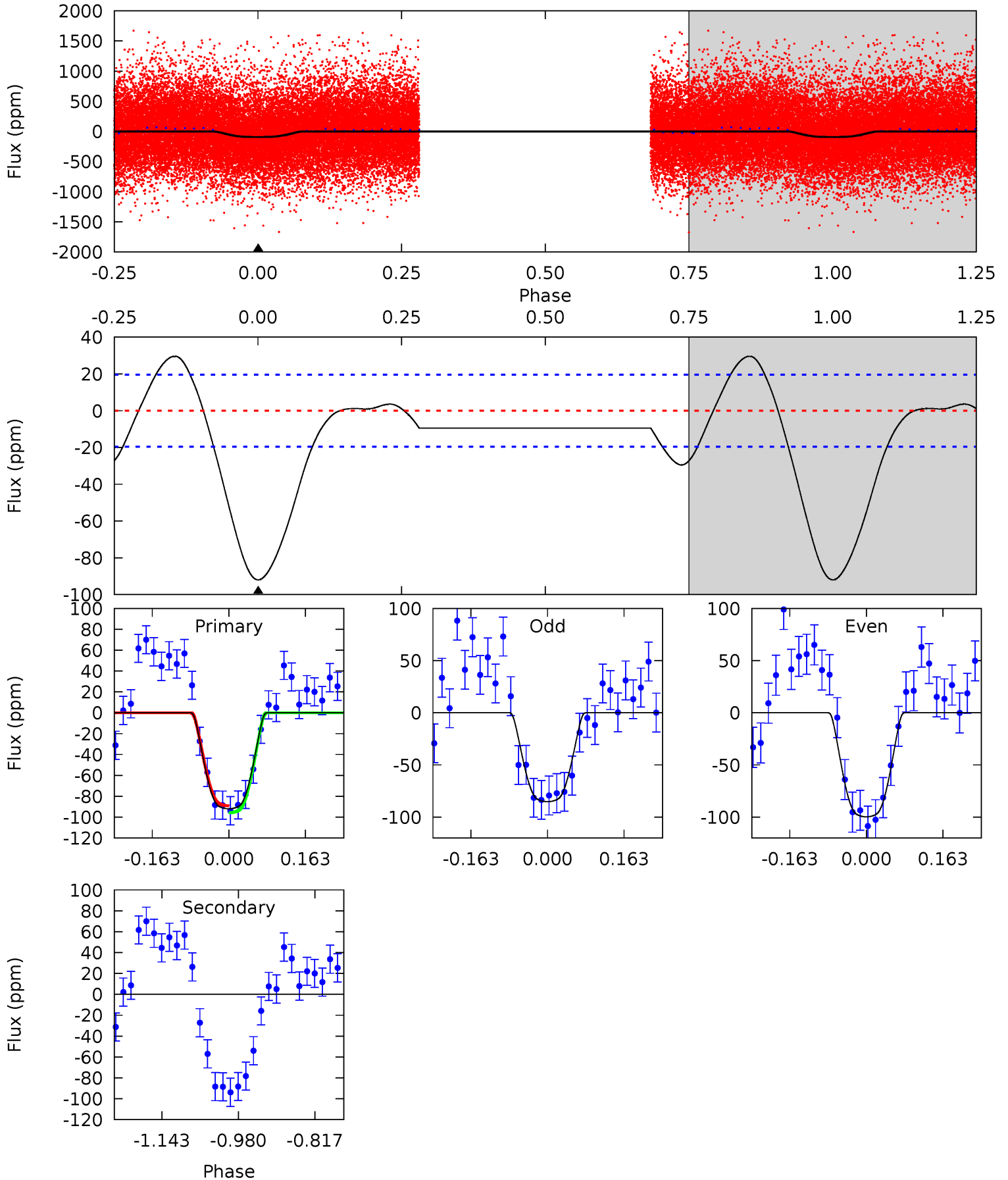
TCE 006451294-02 P= 2.272988 Days $T_0=132.071055$ (BKJD)



DV Model-Shift Uniqueness Test

006451294-02, P = 2.272986 Days, E = 131.694047 Days

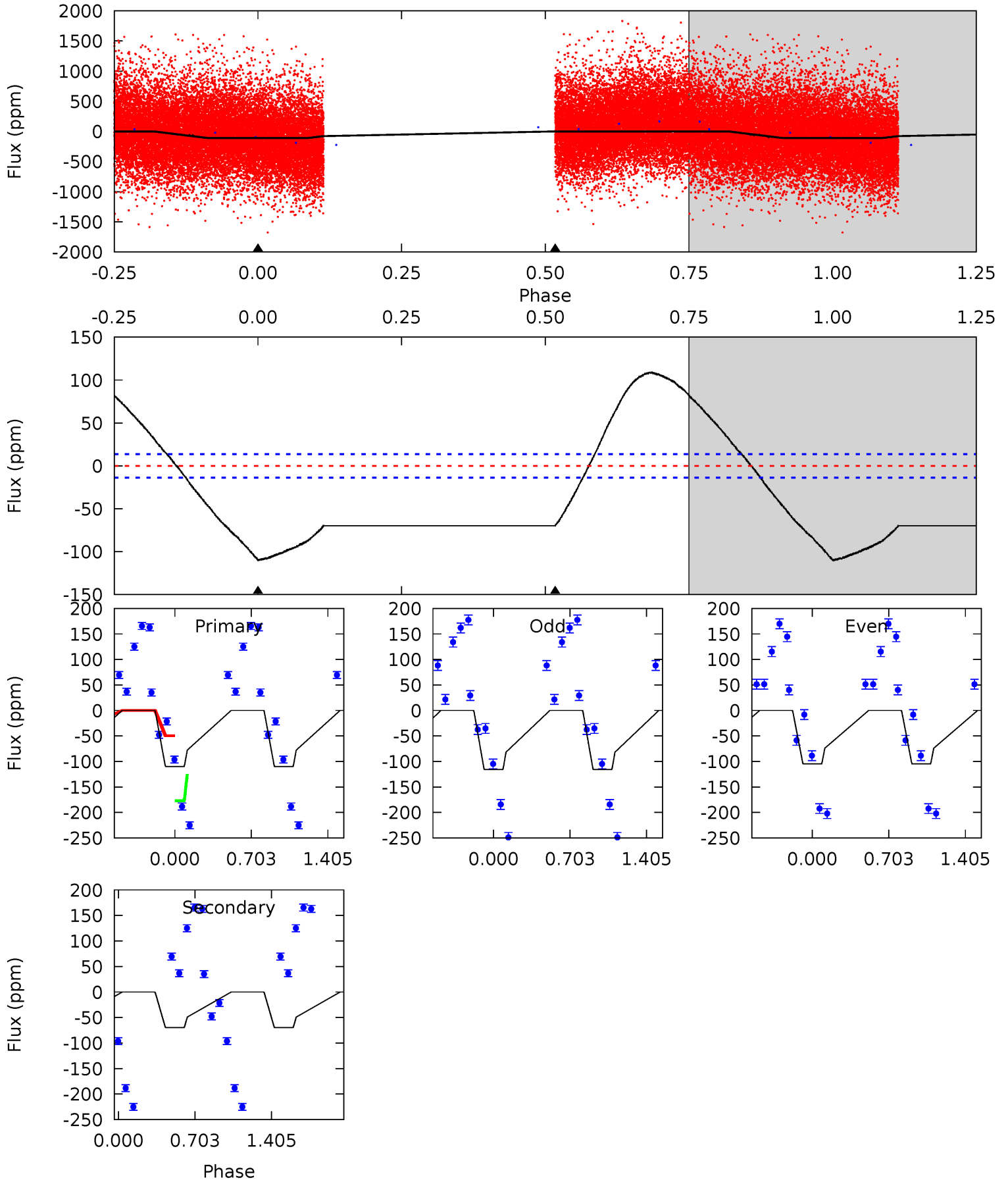
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
20.9	0	0	0	4.46	1.39	3.24	20.9	20.9	0	0	1.66	0.95	0.24	0.76



Alt Model-Shift Uniqueness Test

006451294-02, P = 2.272988 Days, E = 132.071055 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
33.3	21.1	0	0	4.14	0.38	4.50	33.3	33.3	21.1	21.1	1.69	1.07	0.50	19.5



Stellar Parameters For KIC 006451294

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6623^{+187}_{-258}	$4.355^{+0.067}_{-0.202}$	$0.070^{+0.200}_{-0.400}$	$1.261^{+0.412}_{-0.176}$	$1.317^{+0.168}_{-0.206}$	$0.924^{+0.272}_{-0.502}$
	+3%/-4%	+2%/-5%	+286%/-571%	+33%/-14%	+13%/-16%	+29%/-54%
Source	KIC0	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 006451294-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	0 ± 4	$1.77^{+0.29}_{-0.21}$	2426^{+182}_{-125}	-2634^{+5782}_{-776}	$0.085^{+1.025}_{-1.116}$
Alt.	-70 ± 3	$1.37^{+0.23}_{-0.16}$	2416^{+186}_{-121}	6099^{+342}_{-331}	27^{+7}_{-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 $A_{\text{obs}} \gg 1.0$

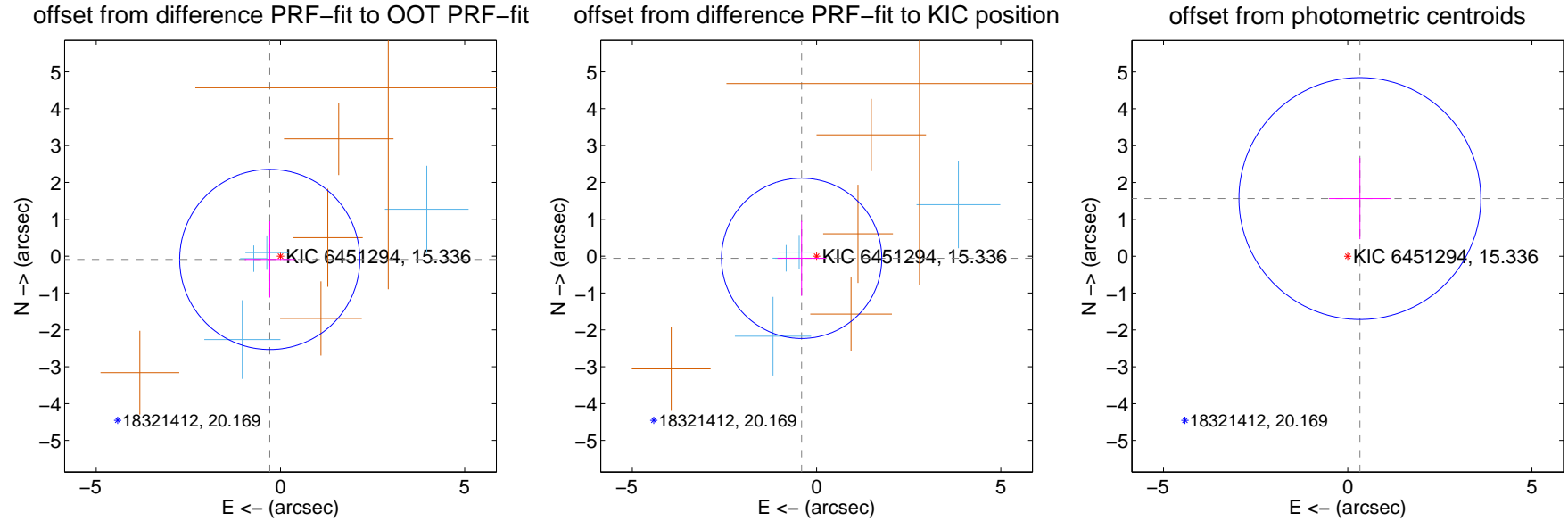
DV Centroid Data

Supplemental centroid analysis for 006451294-02. Kepler magnitude: 15.34. Transit SNR 15.03

There are 4 quarters with good PRF difference image offsets

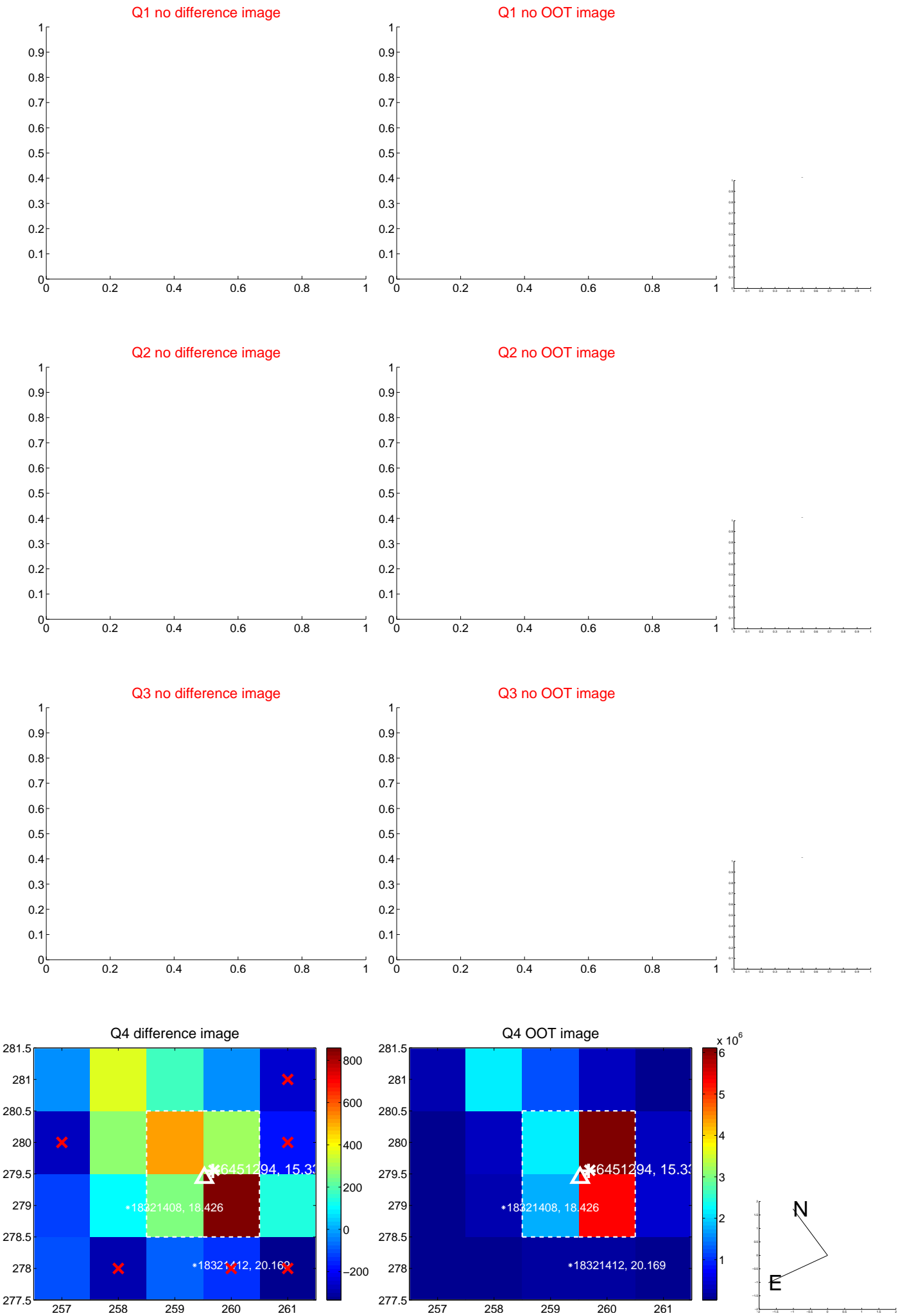
The direct PRF centroid is offset from the target star catalog position by about 0.16 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.304 ± 0.814	0.37	0.291 ± 0.680	-0.090 ± 1.033
PRF-fit source offset from KIC position	0.410 ± 0.725	0.57	0.405 ± 0.656	-0.059 ± 1.017
photometric centroid source offset	1.60 ± 1.09	1.46	-0.33 ± 0.84	1.56 ± 1.10

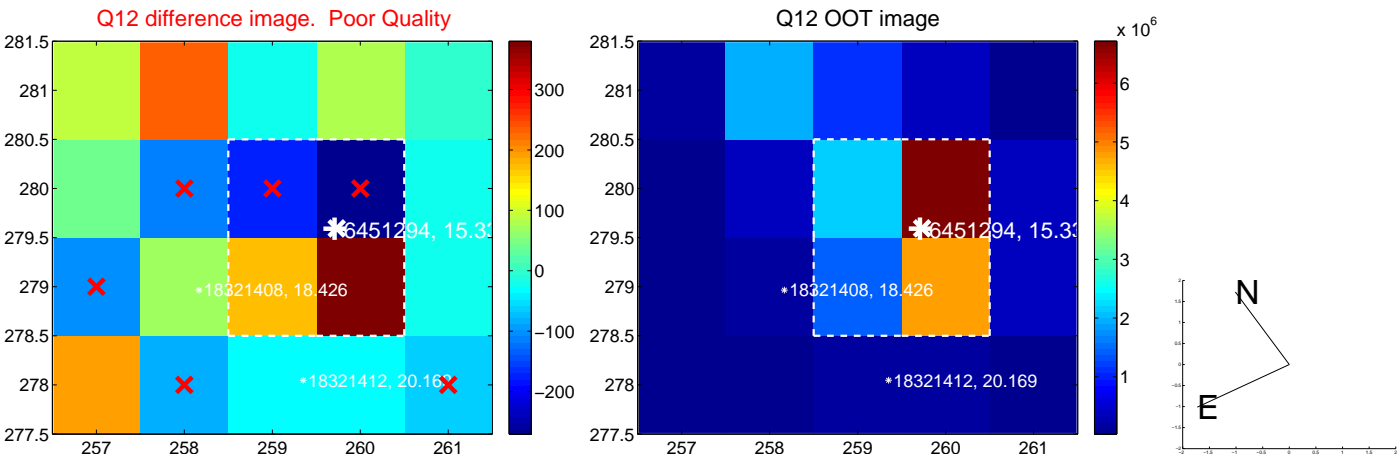
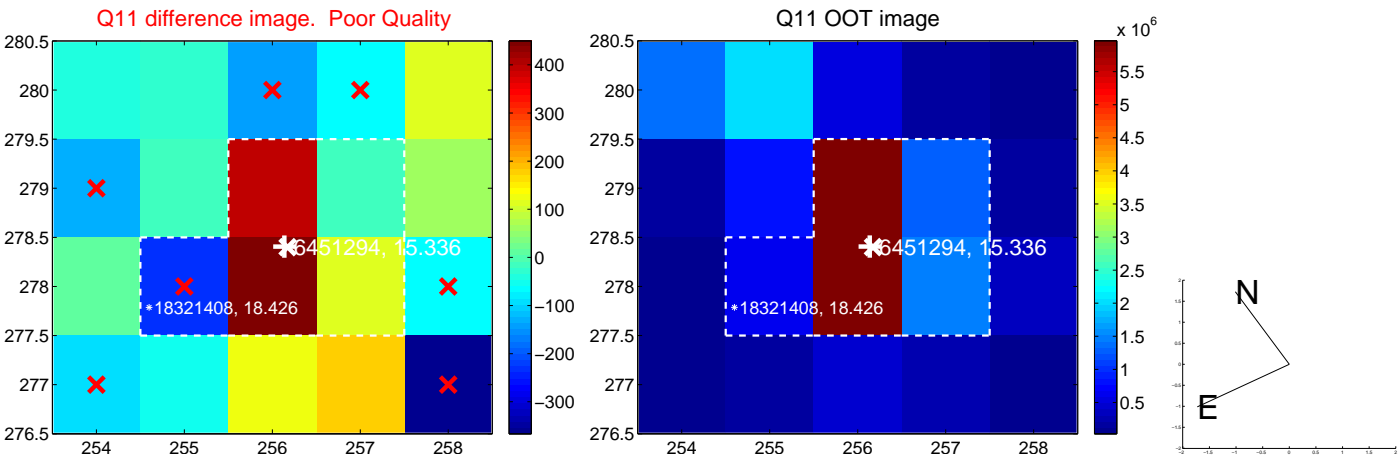
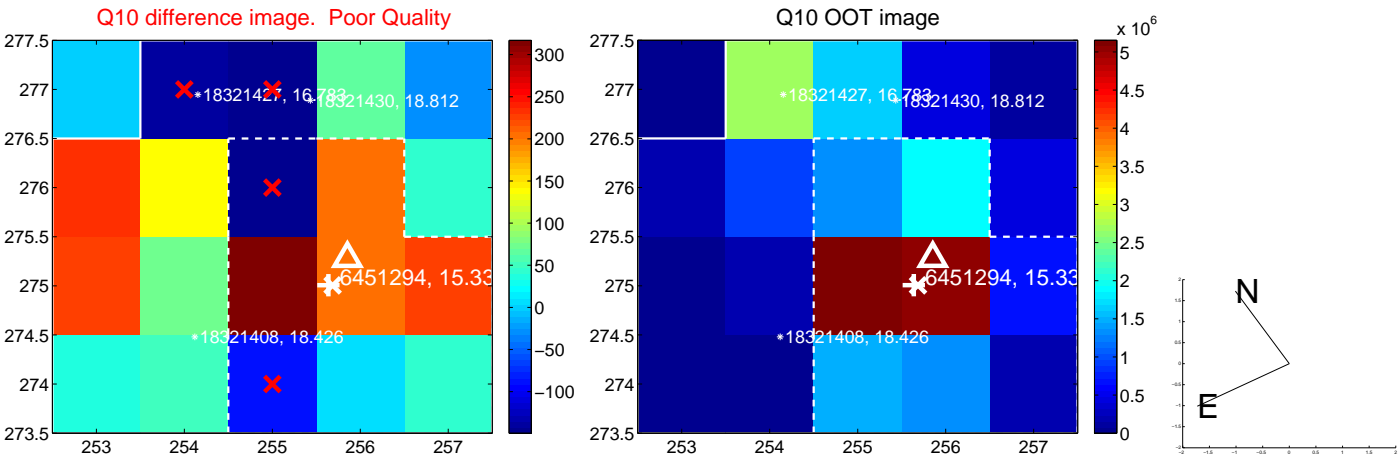
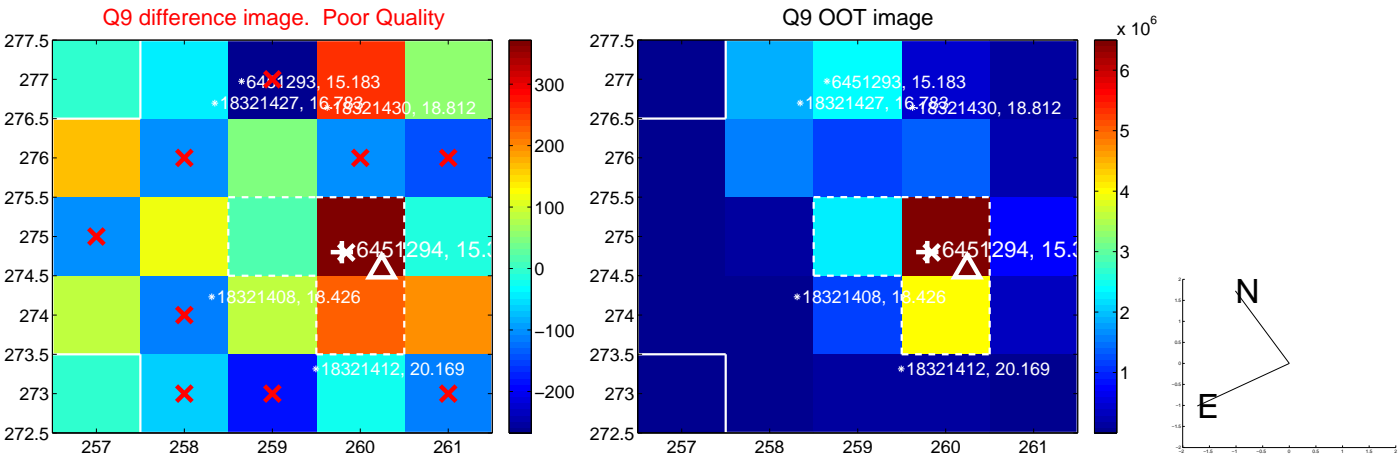


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

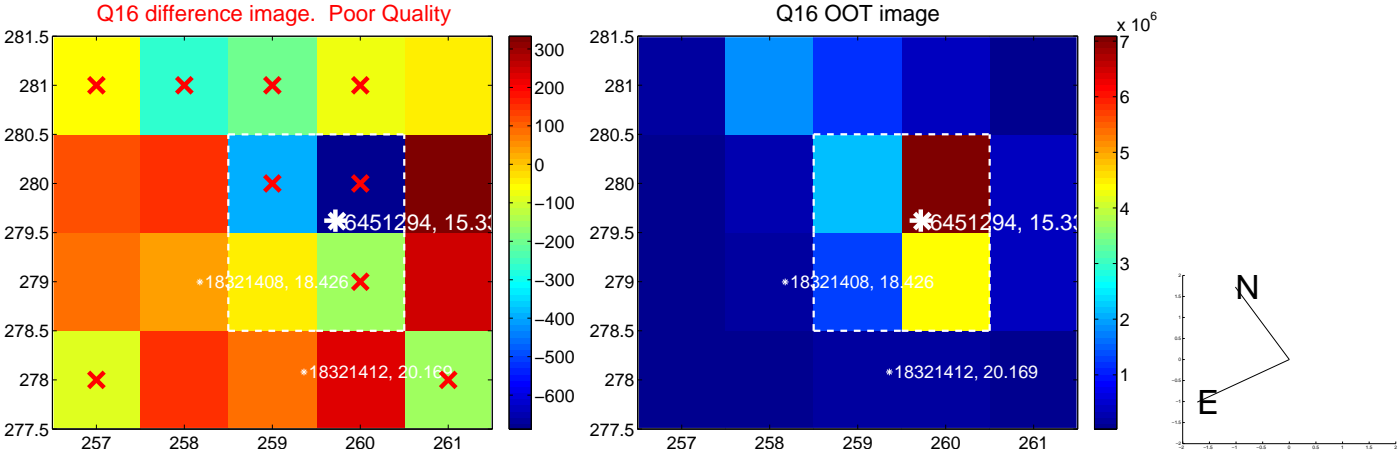
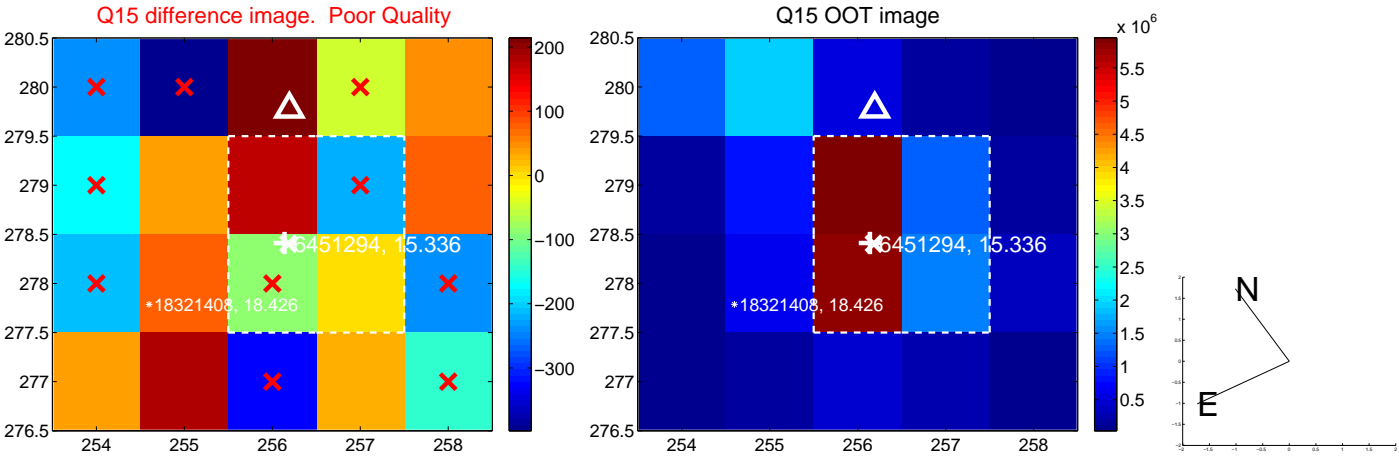
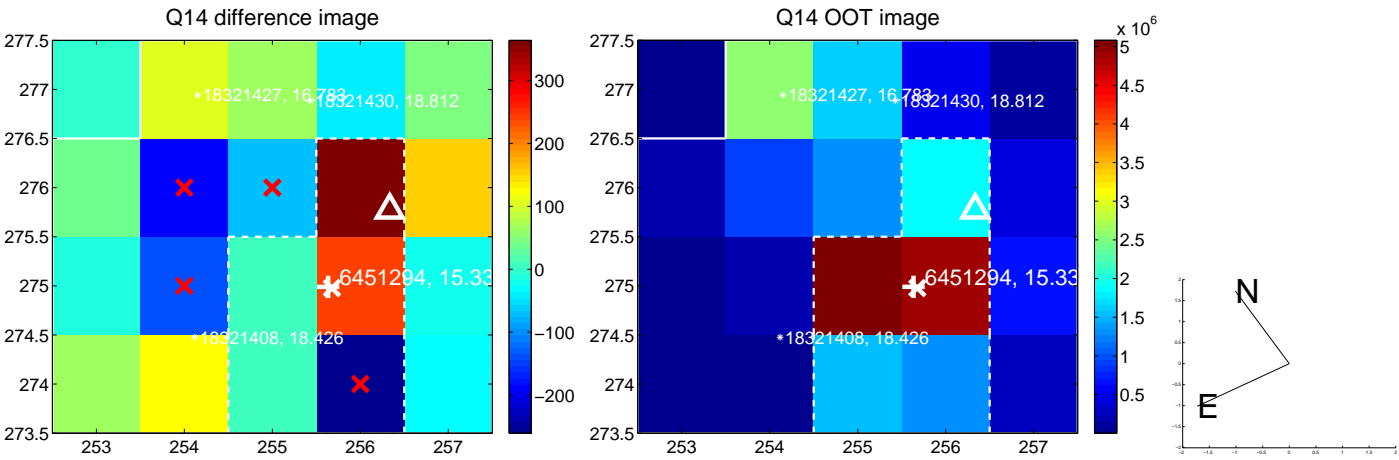
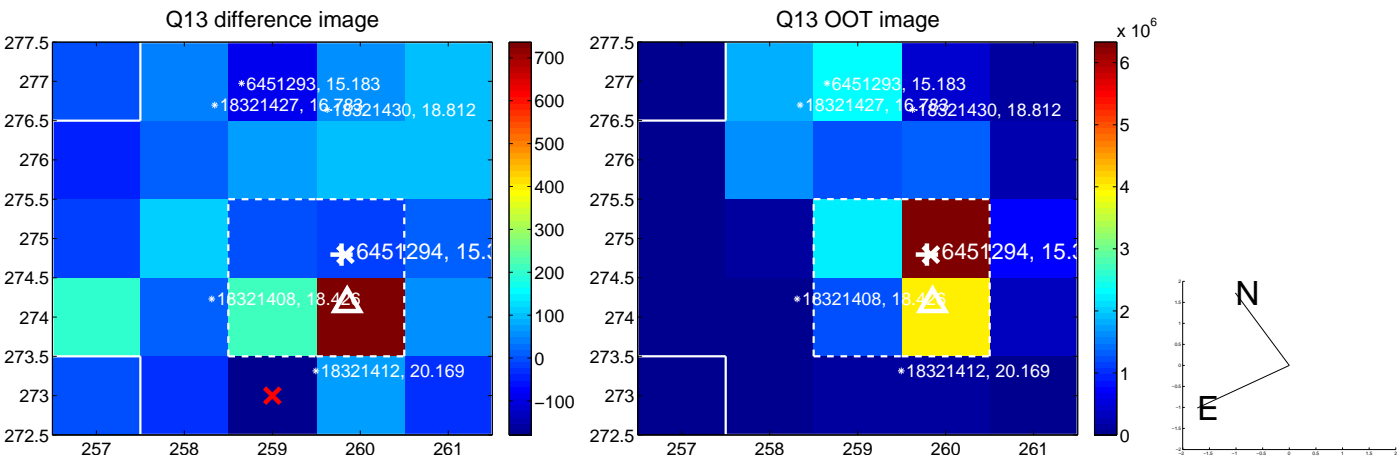
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



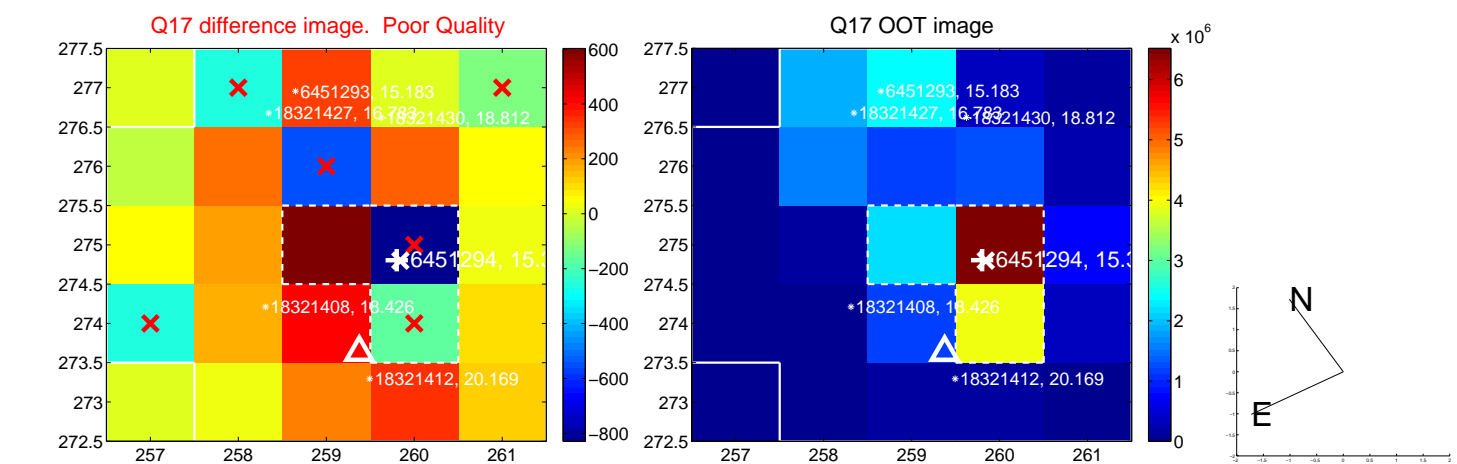
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



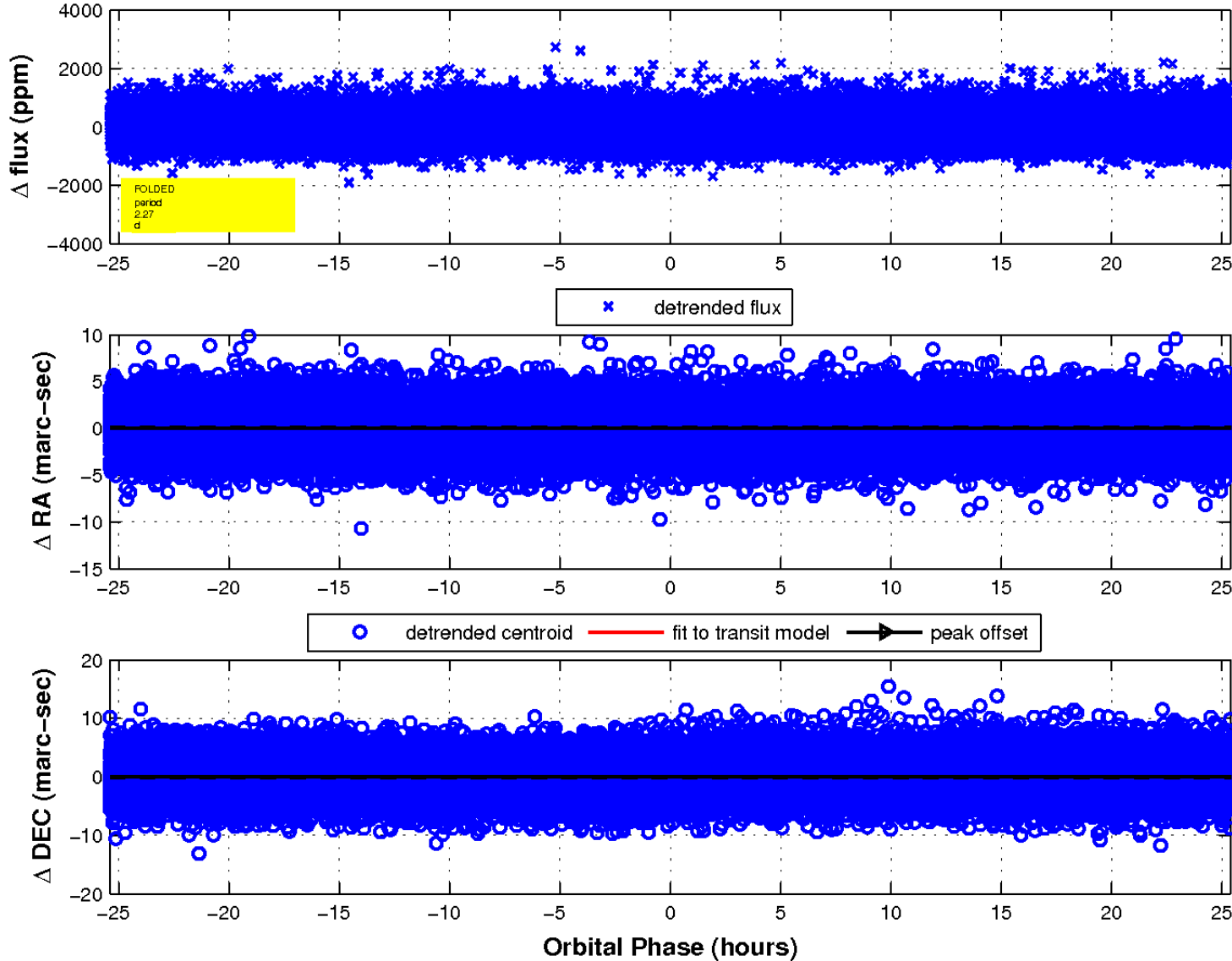
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 2 of 2



UKIRT Image

Declination

