

KIC 005176531

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})
005176531-01	OBS	No	1.050217	132.371739	58.5	3.322	7.9	6.6	2.88	7861	2.56	42480.75
005176531-02	OBS	No	0.644401	132.096816	135.2	1.414	8.2	9.5	2.88	7861	3.88	81474.64

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005176531-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
005176531-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT

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

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

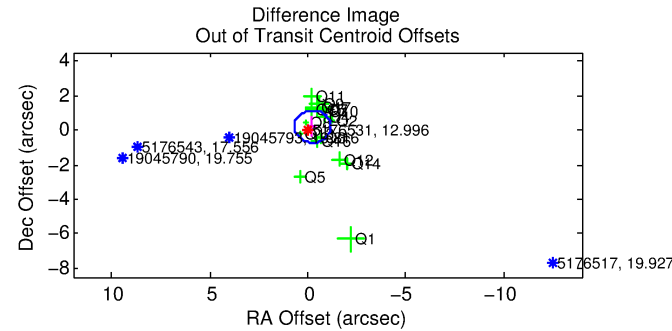
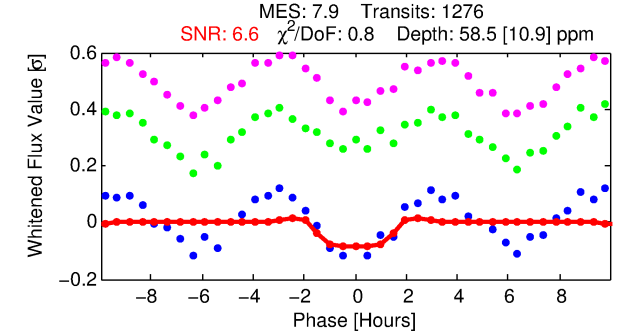
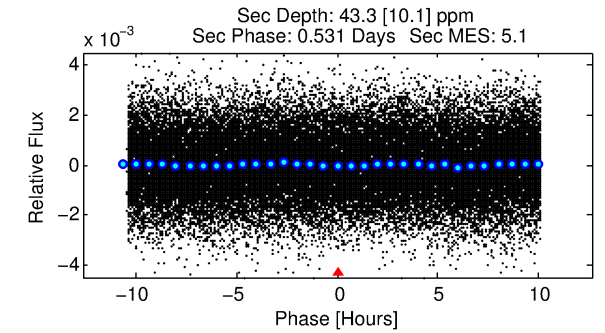
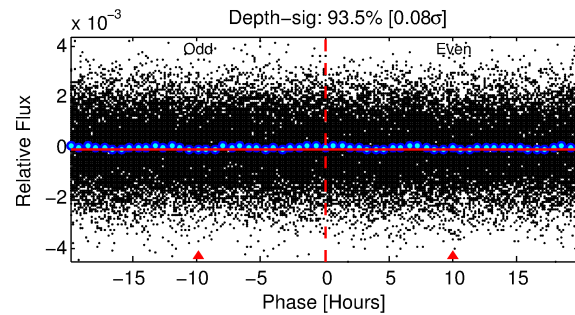
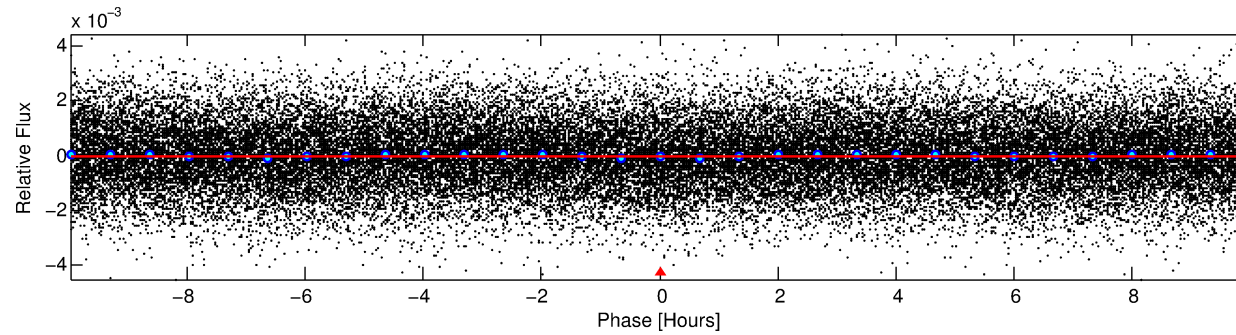
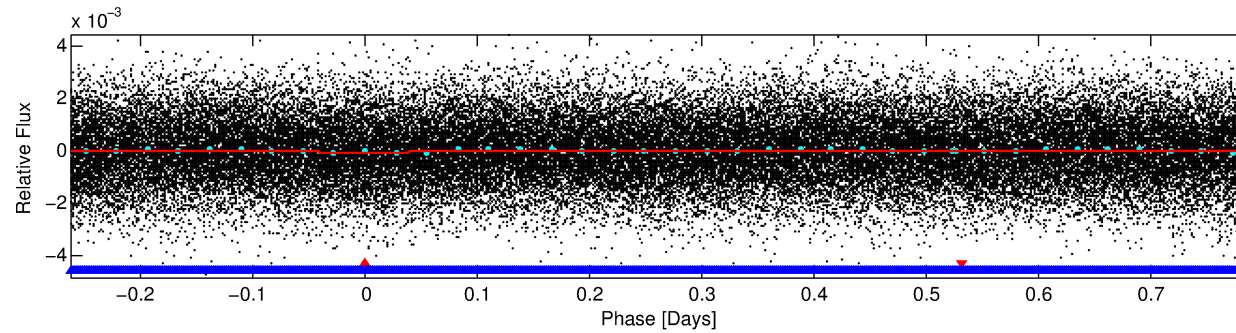
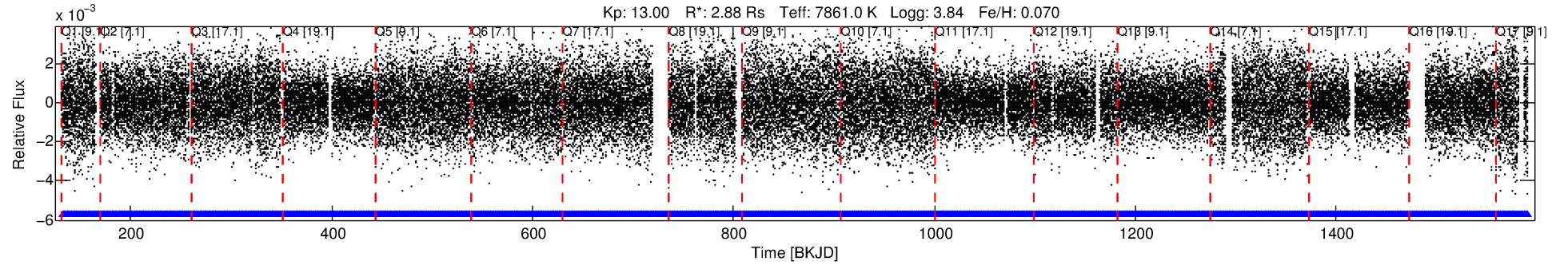
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 005176531-01

No Significant Match Found

DV One-Page Summary

KIC: 5176531 Candidate: 1 of 2 Period: 1.050 d



DV Fit Results:

Period = 1.05022 [0.00002] d
Epoch = 132.3717 [0.0067] BKJD
Rp/R* = 0.0081 [0.0084]
a/R* = 1.44 [4.79]
b = 0.90 [1.37]
Seff = 42480.75 [23944.70]
Teq = 3661 [516] K
Rp = 2.56 [2.80] Re
a = 0.0258 [0.0090] AU
Ag = 2.42 [5.17] [0.28 σ]
Teffp = 7063 [3655] K [0.92 σ]

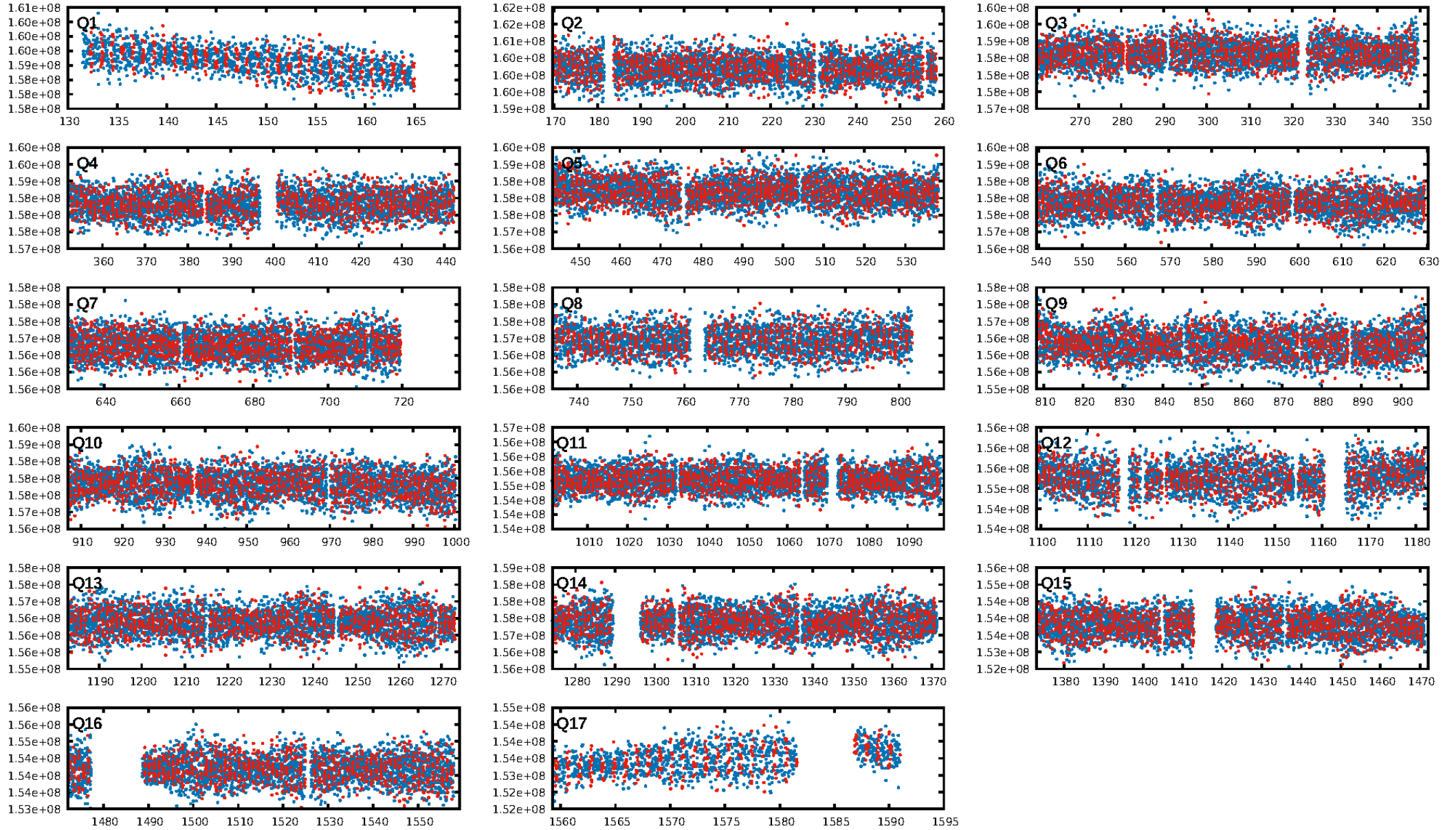
DV Diagnostic Results:

ShortPeriod-sig: 99.3% [2.70 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 7.64e-17
RollingBand-fgt: 1.00 [1219/1219]
GhostDiagnostic-chr: 3.522
Centroid-sig: 32.4%
Centroid-so: 0.284 arcsec [1.07 σ]
OotOffset-rm: 0.297 arcsec [0.96 σ]
KicOffset-rm: 0.290 arcsec [0.87 σ]
OotOffset-st: 3/4/4/5 [16]
KicOffset-st: 3/4/4/5 [16]
DiffImageQuality-fgm: 0.69 [11/16]
DiffImageOverlap-fno: 0.00 [0/17]

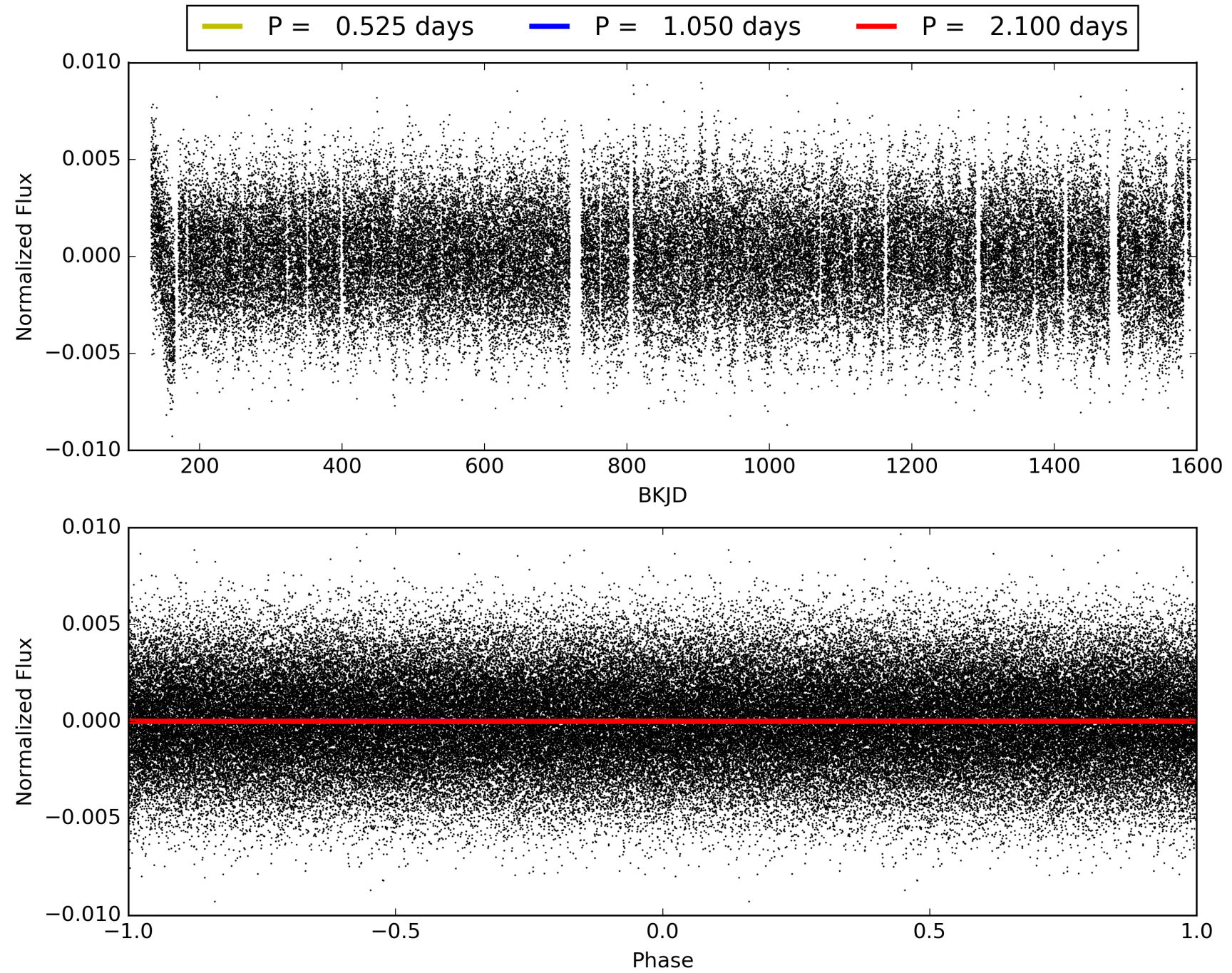
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 07:23:46 Z

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

TCE 005176531-01, PDC Light Curves

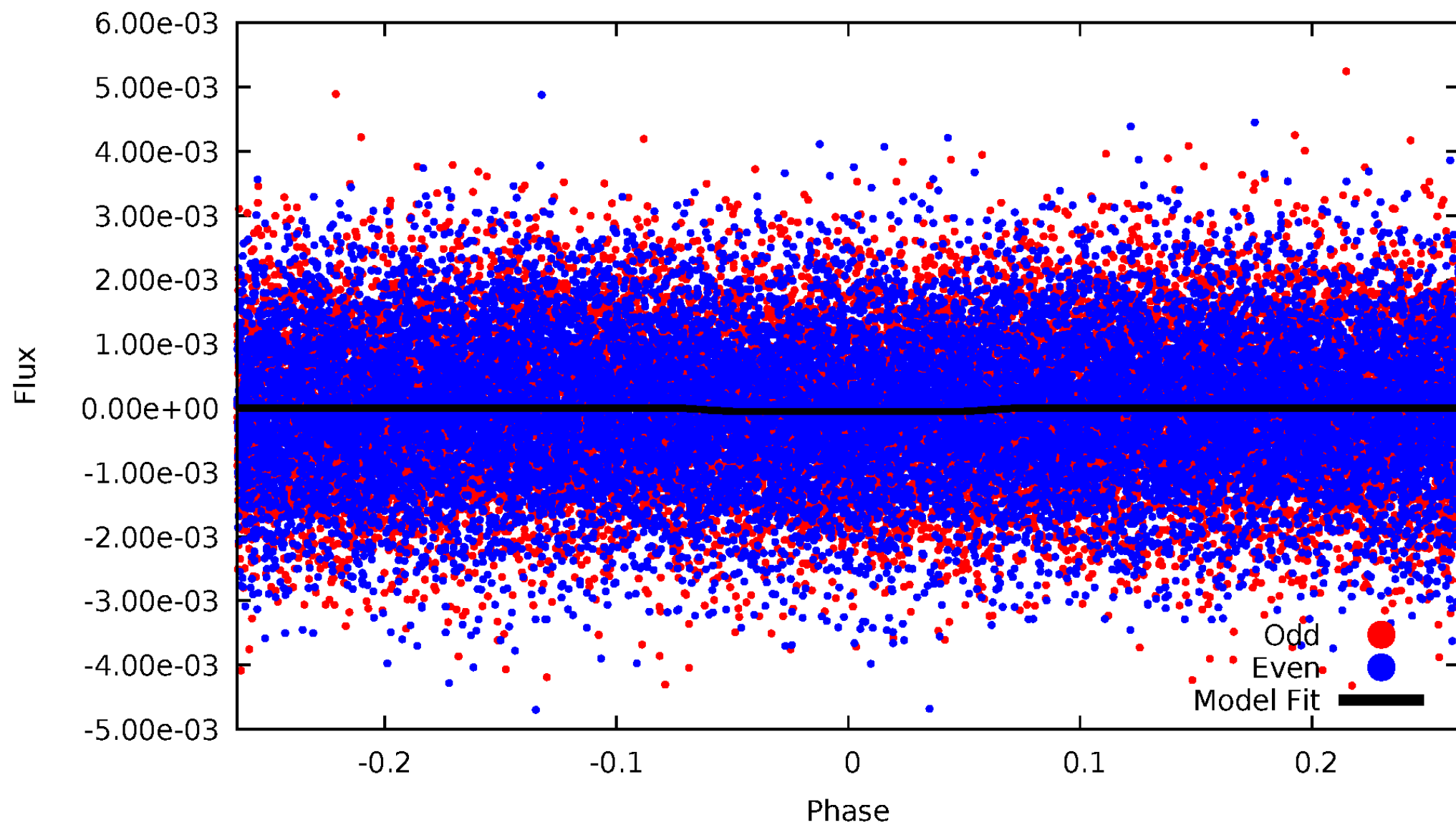


TCE 005176531-01



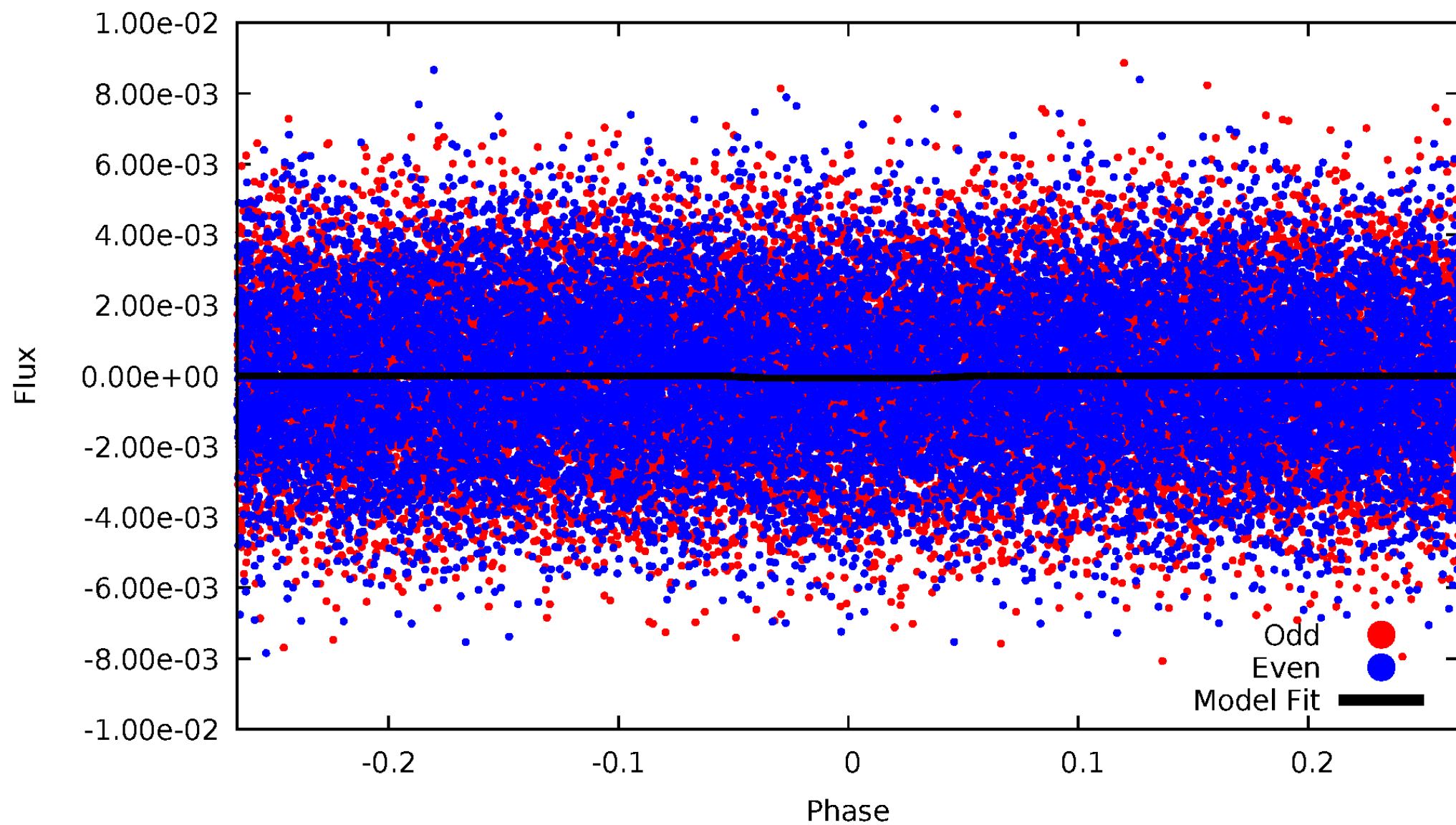
DV Odd/Even

TCE 005176531-01

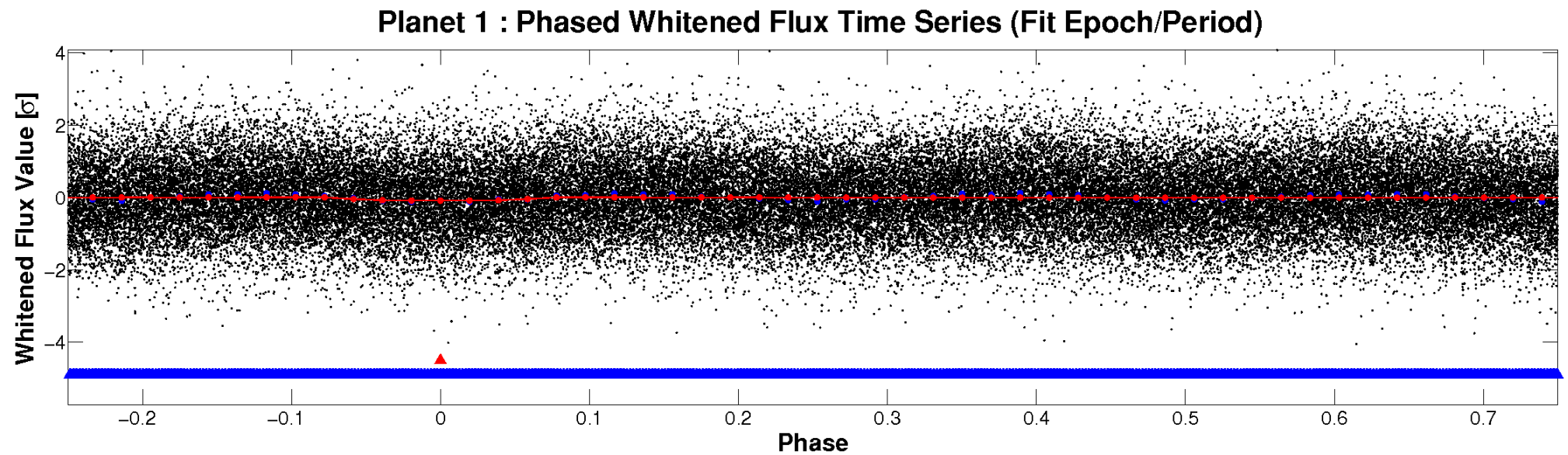
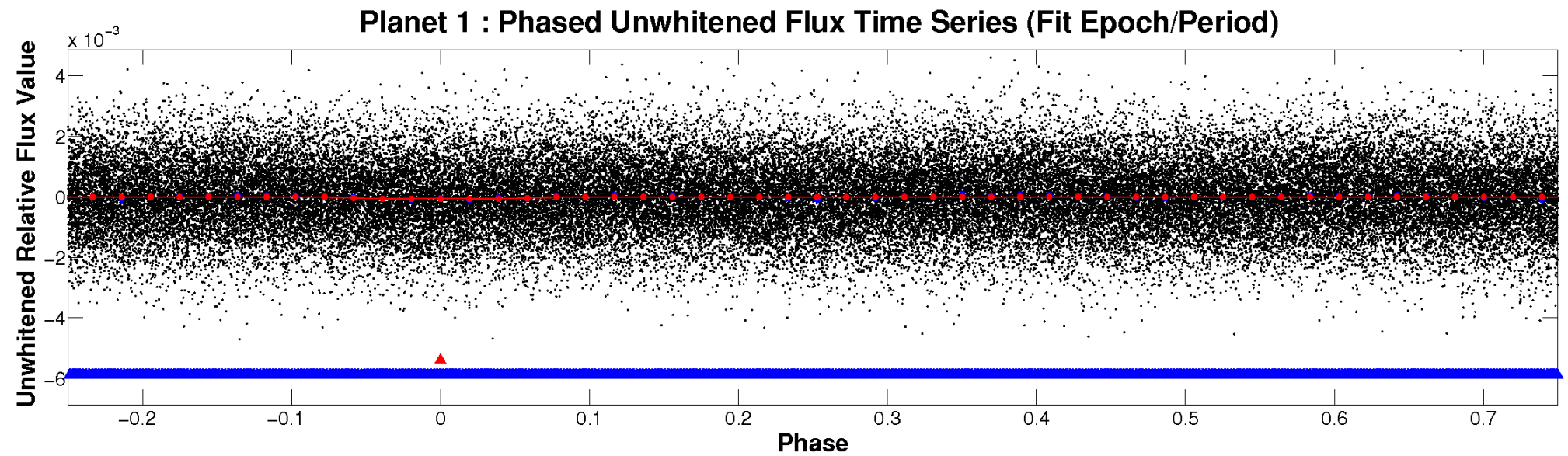


ALT Odd/Even

TCE 005176531-01

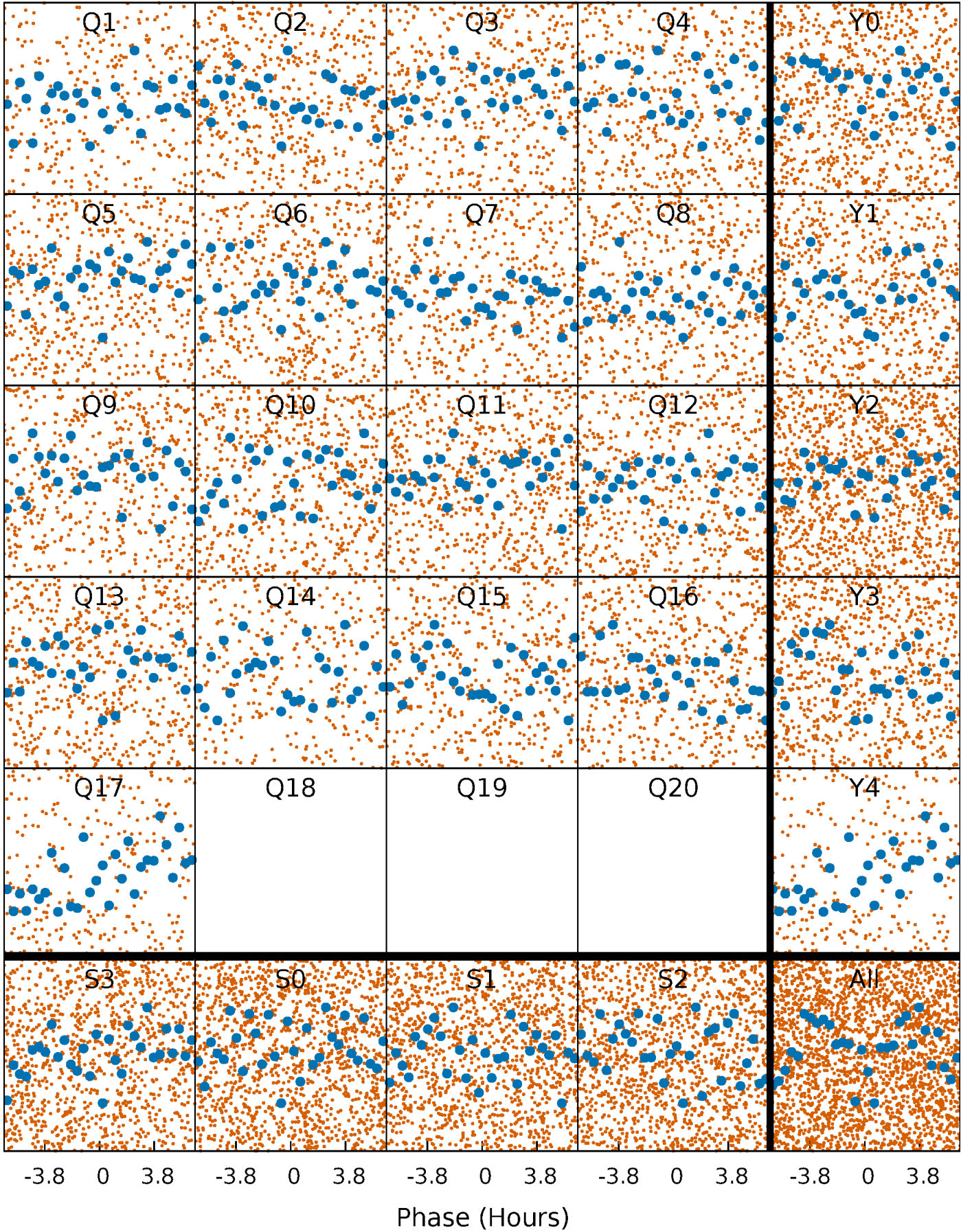


Non-Whitened Vs. Whitened Light Curve



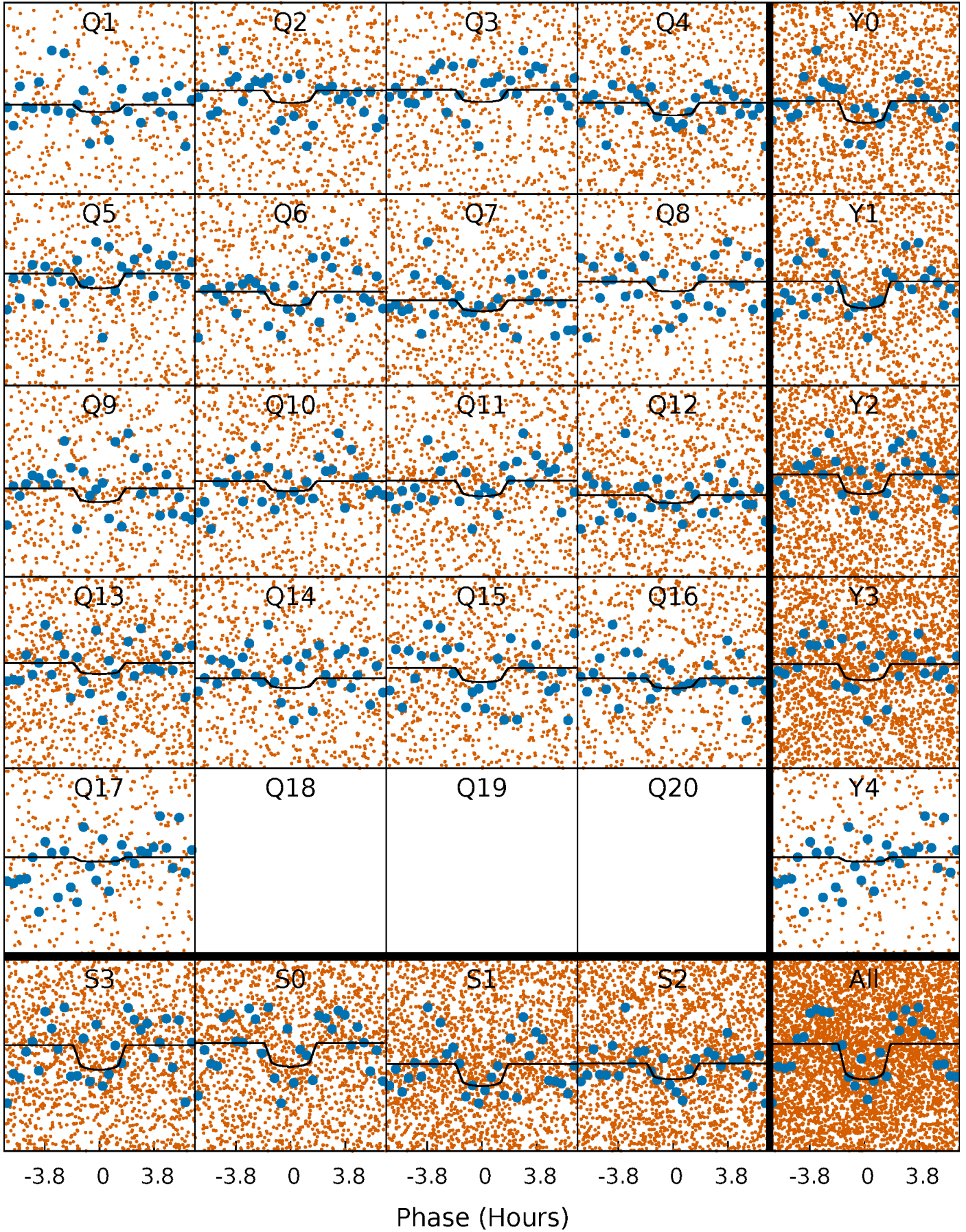
PDC Quarter-Phased Transit Curves

TCE 005176531-01 P= 1.050217 Days $T_0=132.371739$ (BKJD)



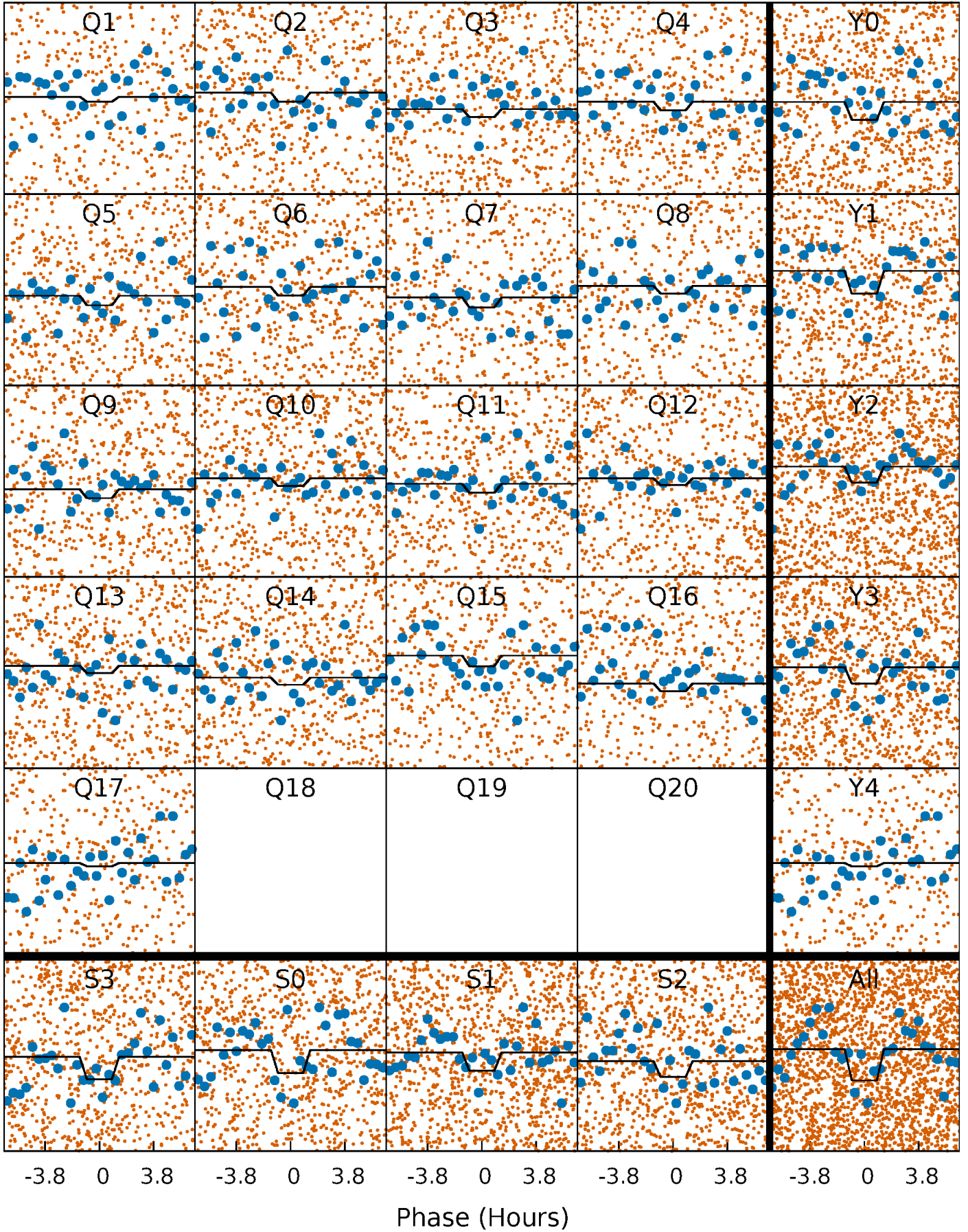
DV Quarter-Phased Transit Curves

TCE 005176531-01 P= 1.050217 Days $T_0=132.371739$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

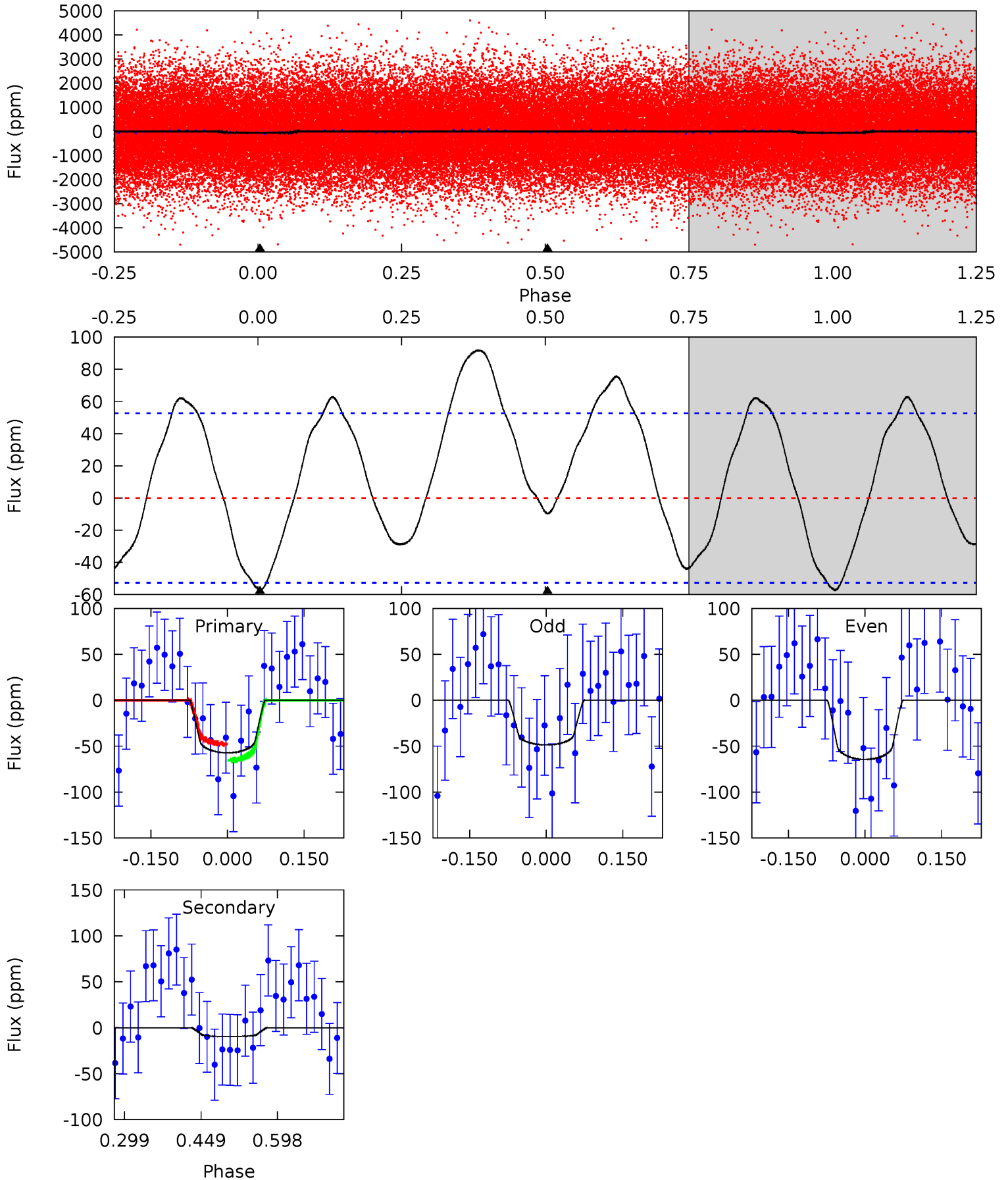
TCE 005176531-01 P= 1.050222 Days $T_0=132.371939$ (BKJD)



DV Model-Shift Uniqueness Test

005176531-01, P = 1.050217 Days, E = 131.321522 Days

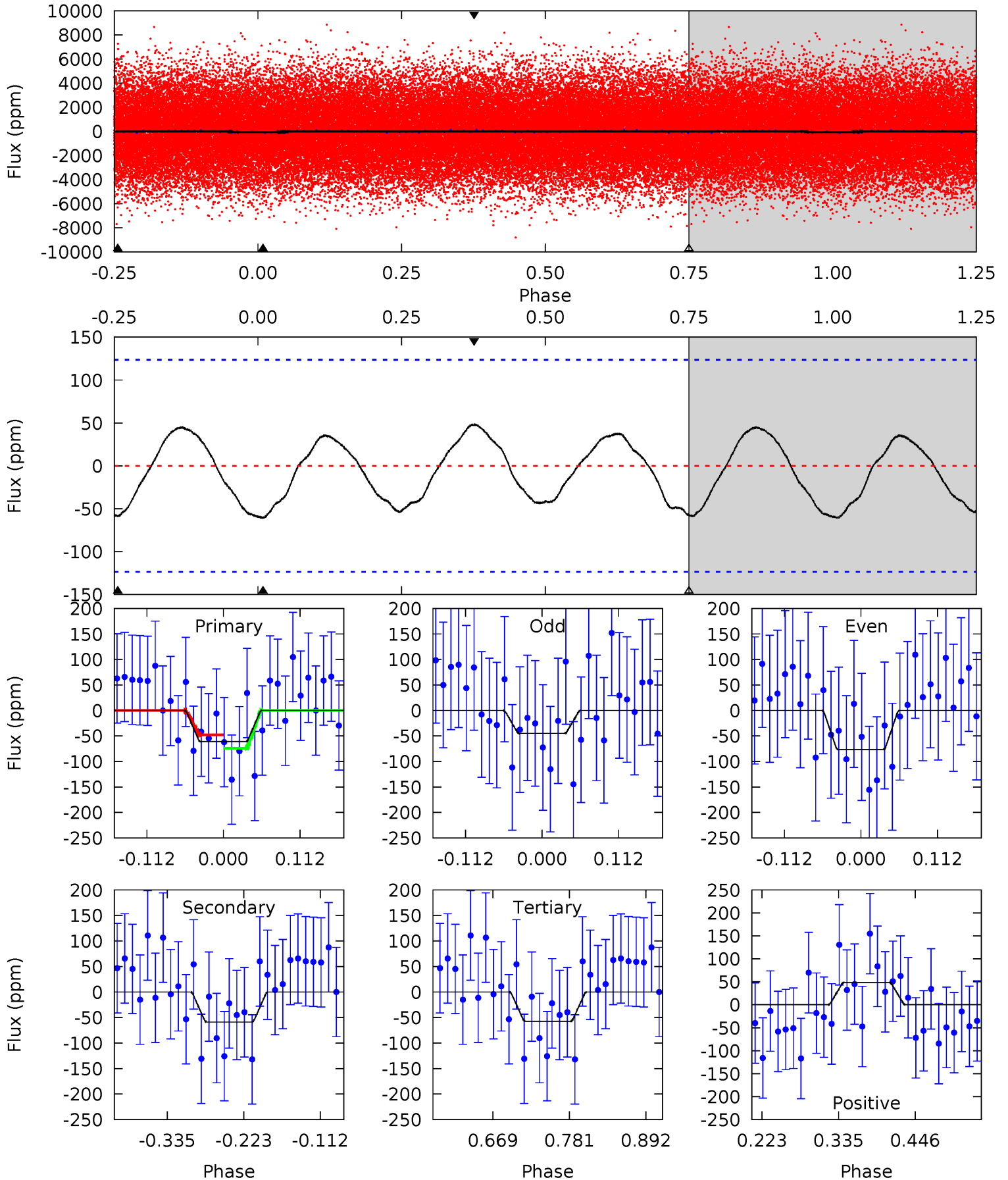
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4.87	0.82	0	0	4.48	1.44	2.76	4.87	4.87	0.82	0.82	0.68	1.03	0.62	0.77



Alt Model-Shift Uniqueness Test

005176531-01, P = 1.050222 Days, E = 131.321717 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2.23	2.16	2.11	1.78	4.54	1.59	1.18	0.13	0.46	0.05	0.38	0.58	0.75	0.44	0.48



Stellar Parameters For KIC 005176531

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	7861^{+218}_{-327}	$3.838^{+0.308}_{-0.123}$	$0.070^{+0.250}_{-0.400}$	$2.875^{+0.556}_{-1.112}$	$2.075^{+0.284}_{-0.527}$	$0.123^{+0.289}_{-0.041}$
	+3%/-4%	+8%/-3%	+357%/-571%	+19%/-39%	+14%/-25%	+235%/-34%
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 005176531-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-10 ± 12	$2.89^{+2.44}_{-1.84}$	4999^{+398}_{-472}	-2343^{+8936}_{-2165}	$0.288^{+2.297}_{-0.344}$
Alt.	-59 ± 27	$2.91^{+2.50}_{-1.91}$	5002^{+381}_{-457}	6286^{+7599}_{-2067}	$2.269^{+17.634}_{-1.669}$

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

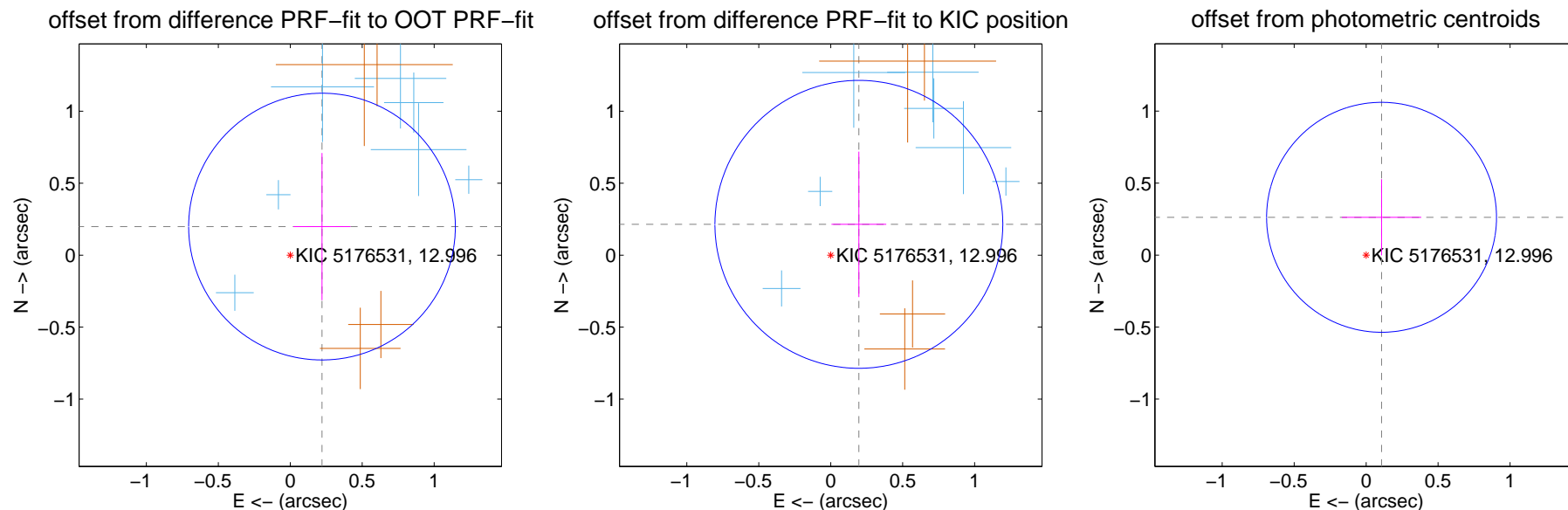
DV Centroid Data

Supplemental centroid analysis for 005176531-01. Kepler magnitude: 13.00. Transit SNR 6.62

There are 11 quarters with good PRF difference image offsets

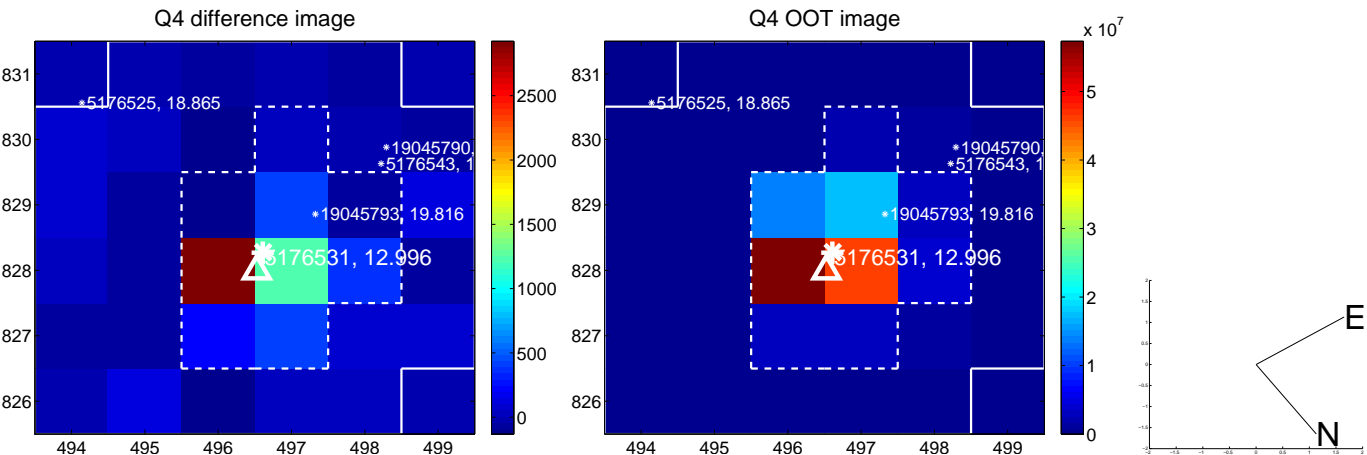
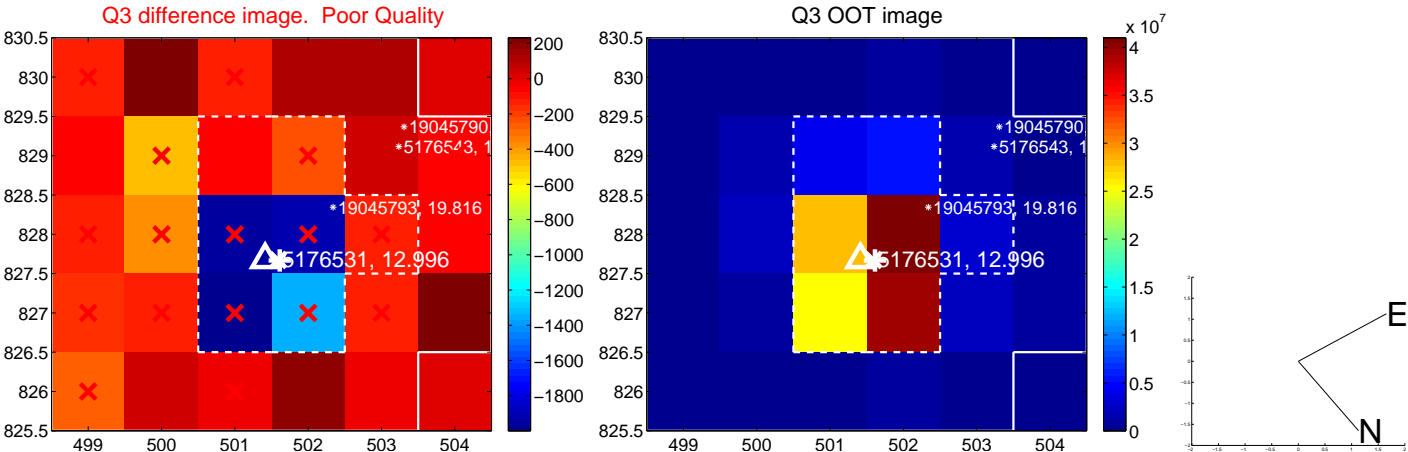
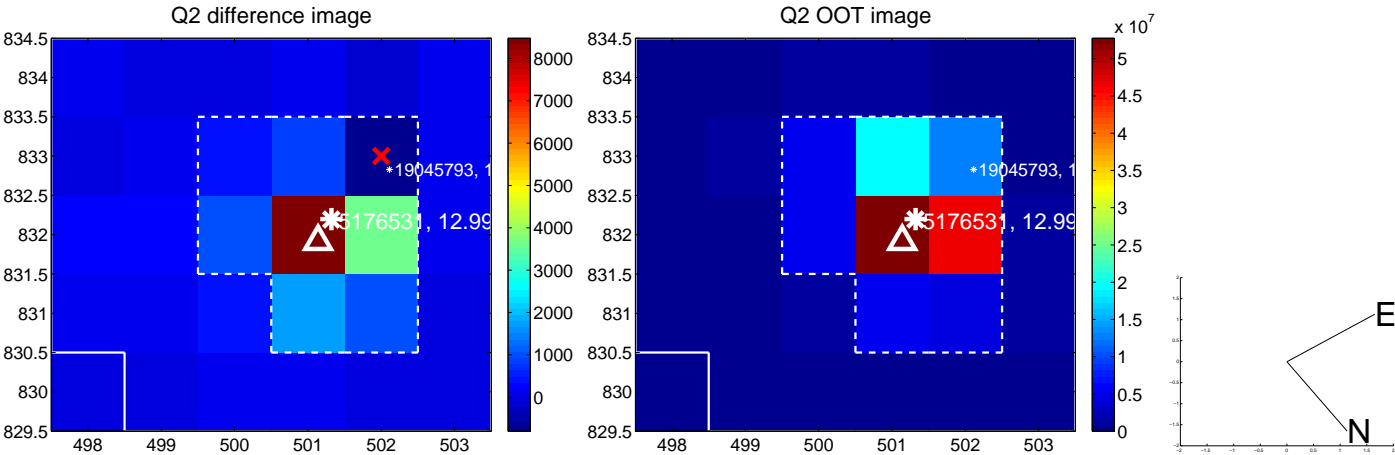
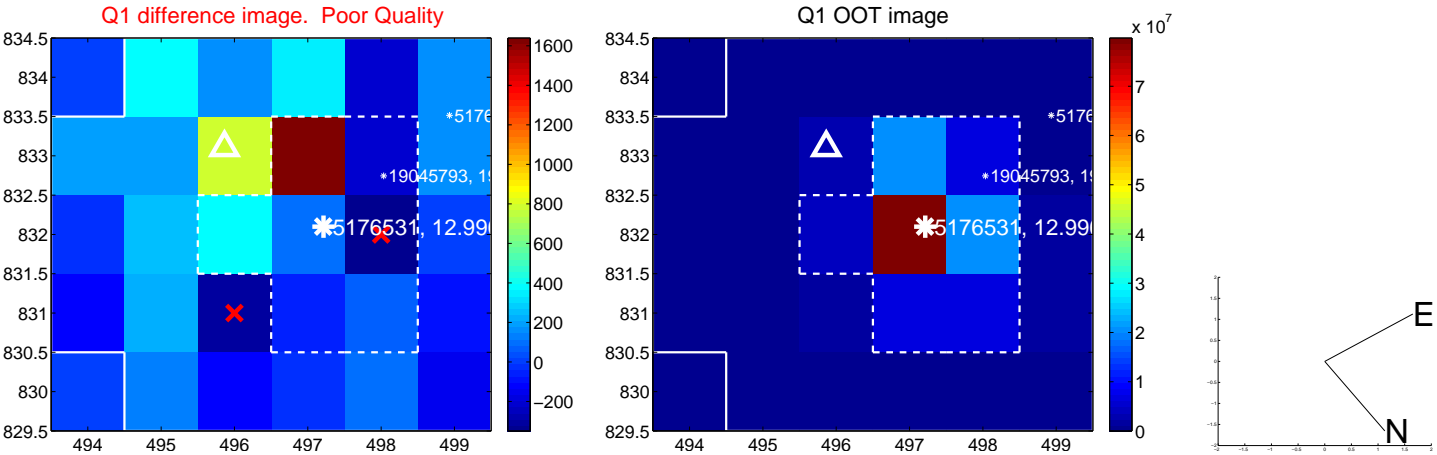
The direct PRF centroid is offset from the target star catalog position by about 0.03 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.297 ± 0.309	0.96	-0.221 ± 0.198	0.198 ± 0.511
PRF-fit source offset from KIC position	0.290 ± 0.333	0.87	-0.196 ± 0.190	0.214 ± 0.505
photometric centroid source offset	0.28 ± 0.27	1.07	-0.11 ± 0.28	0.26 ± 0.26

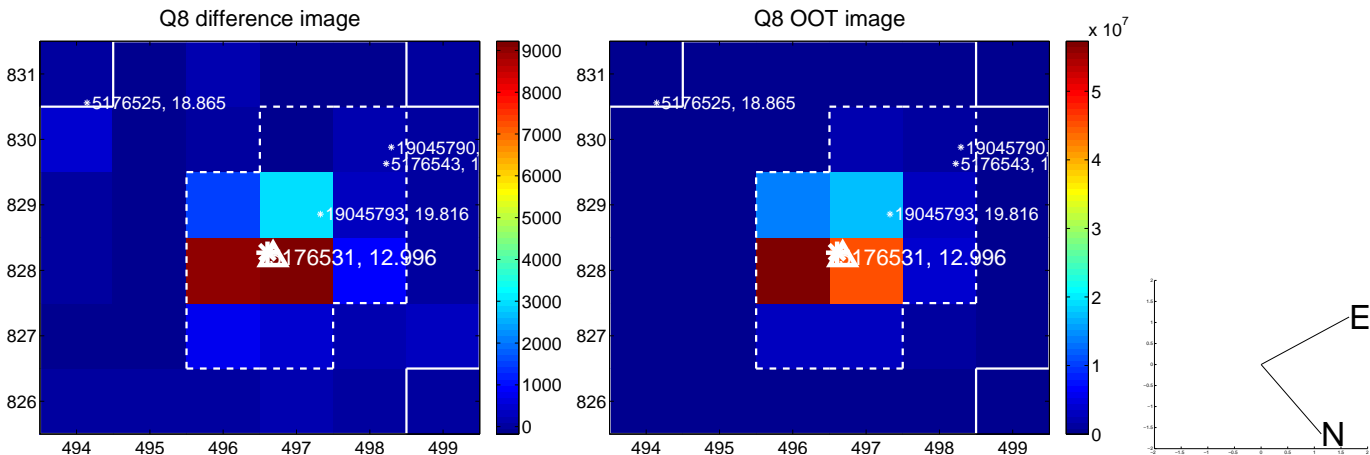
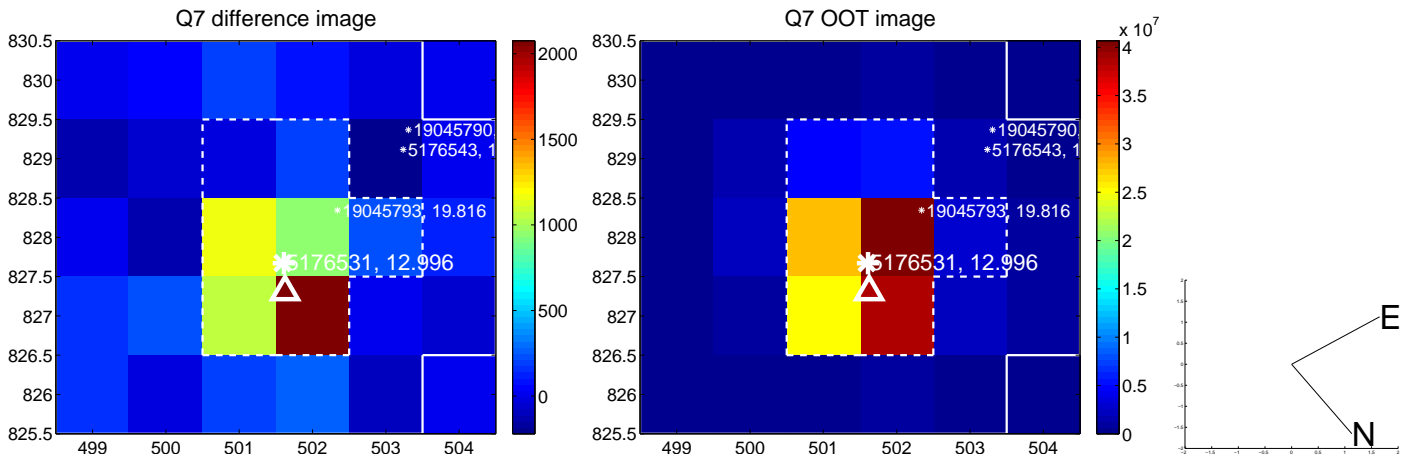
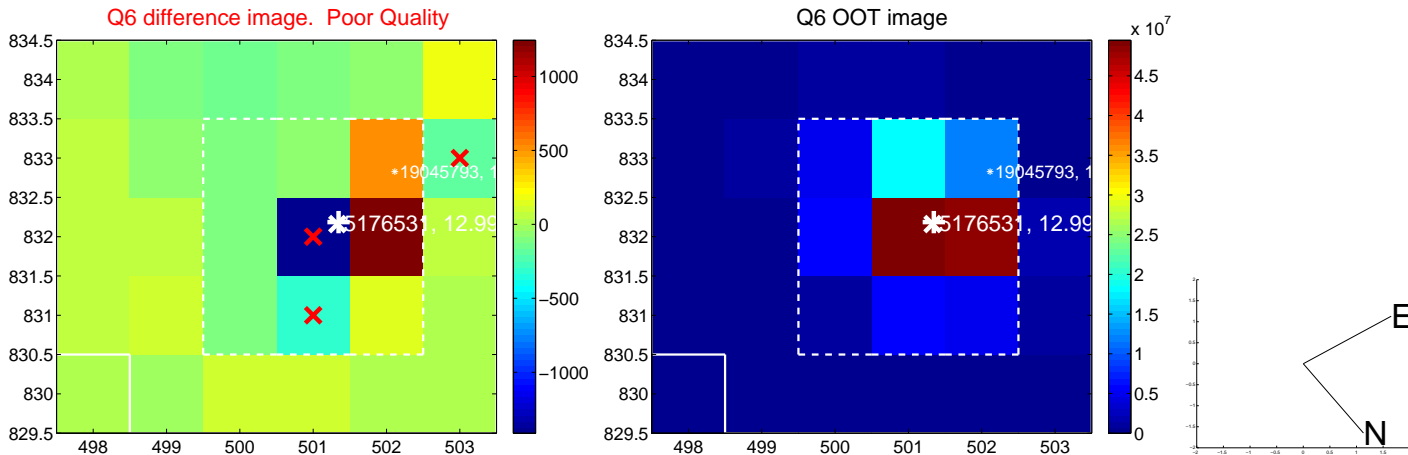
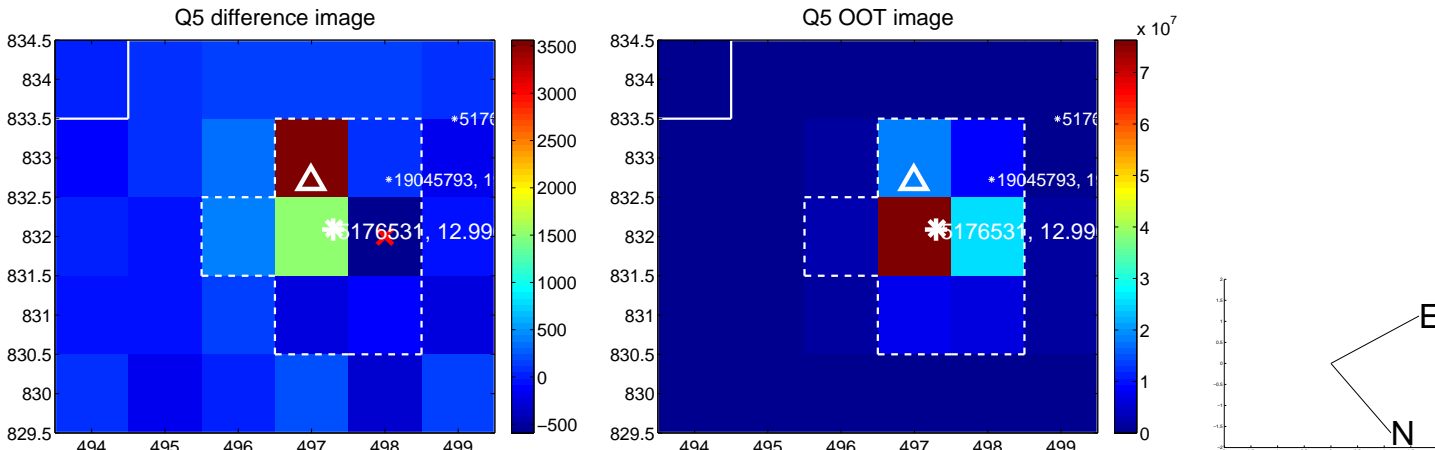


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

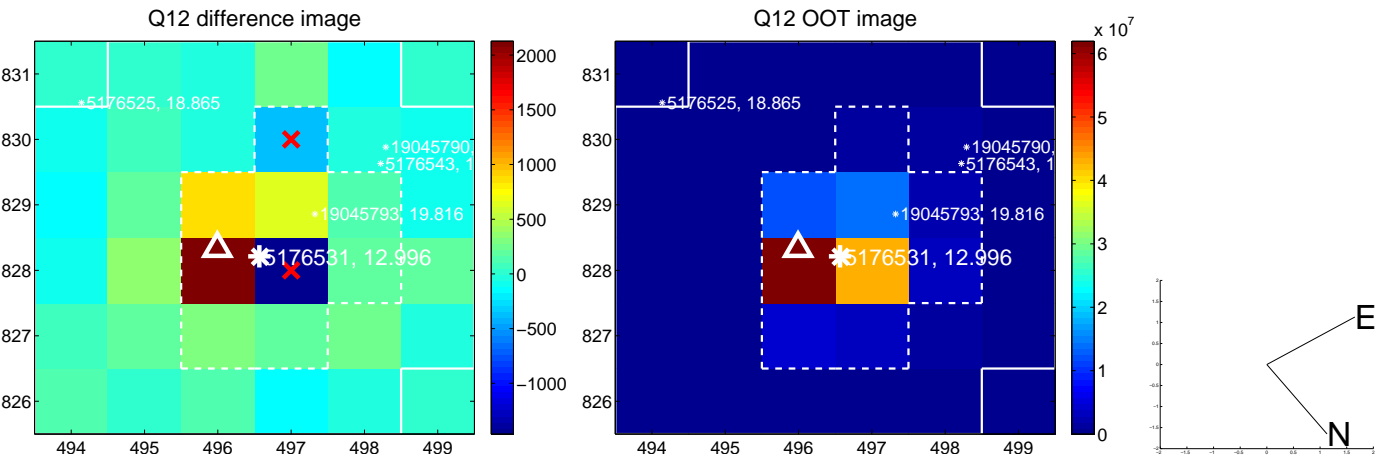
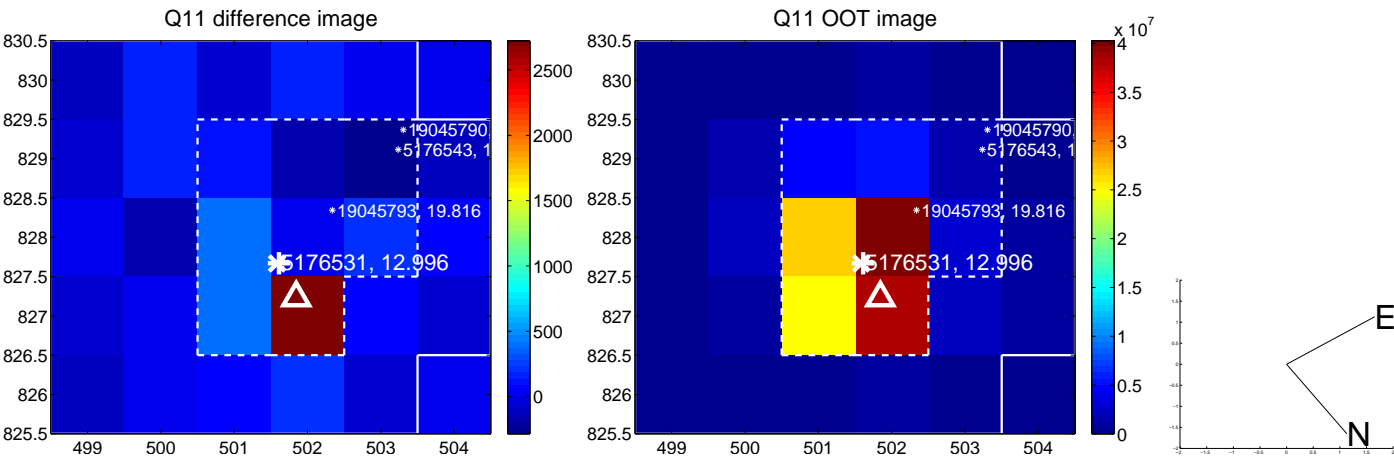
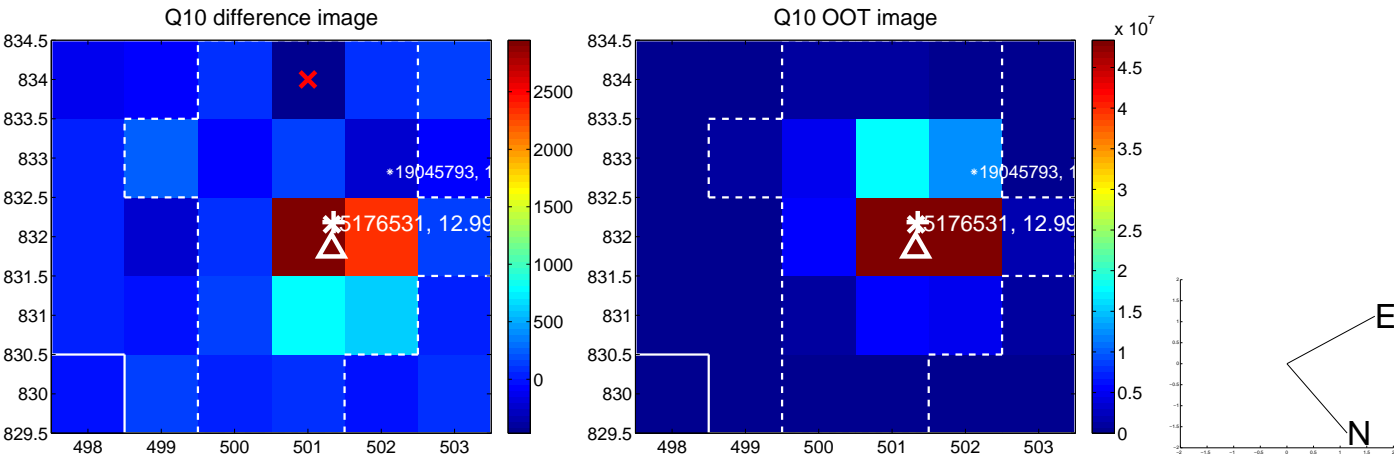
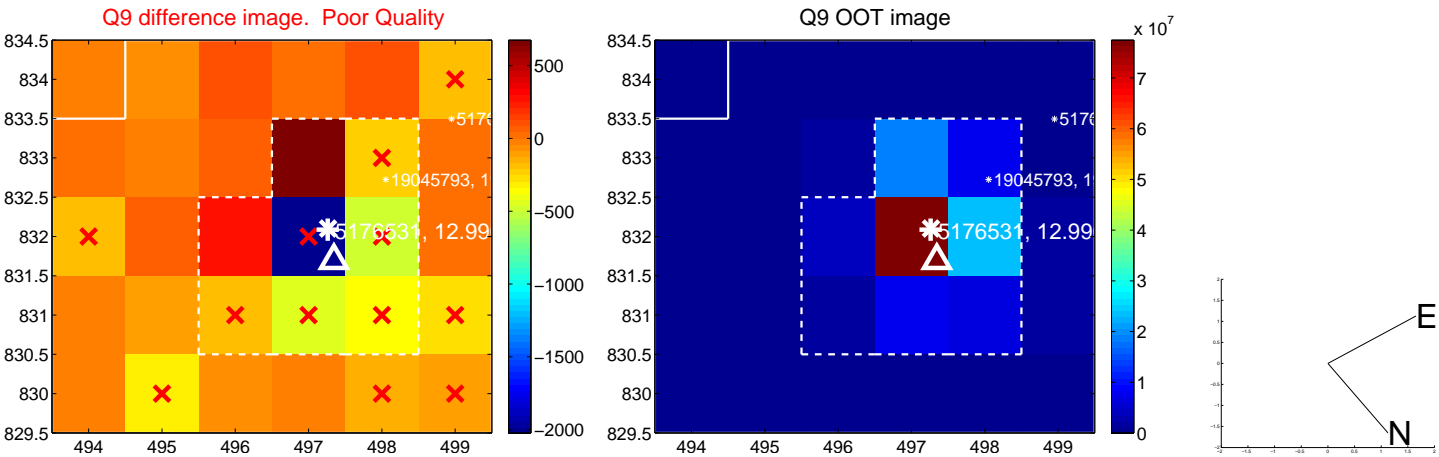
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



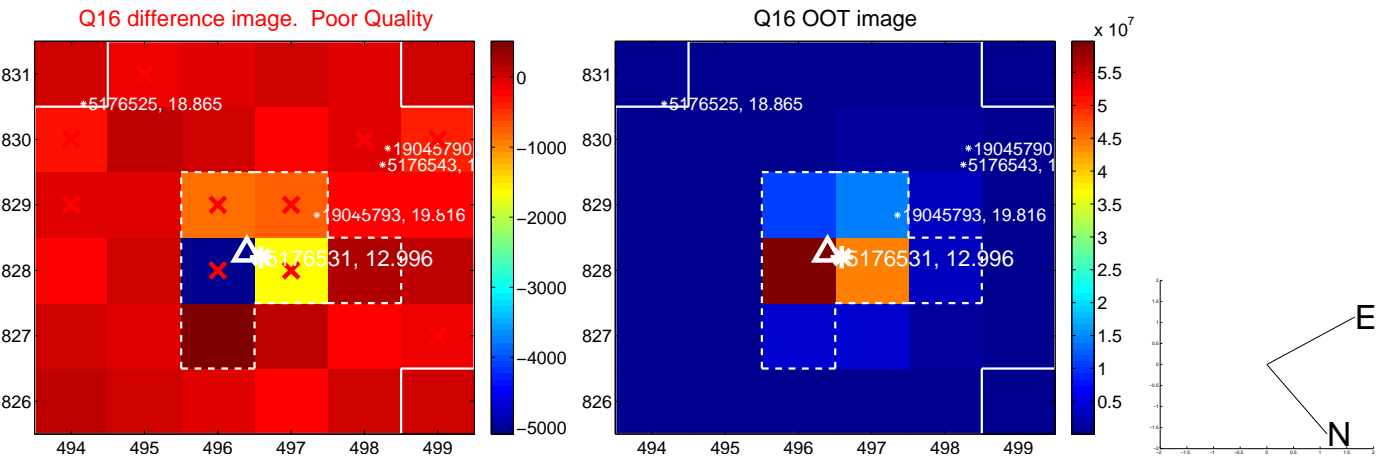
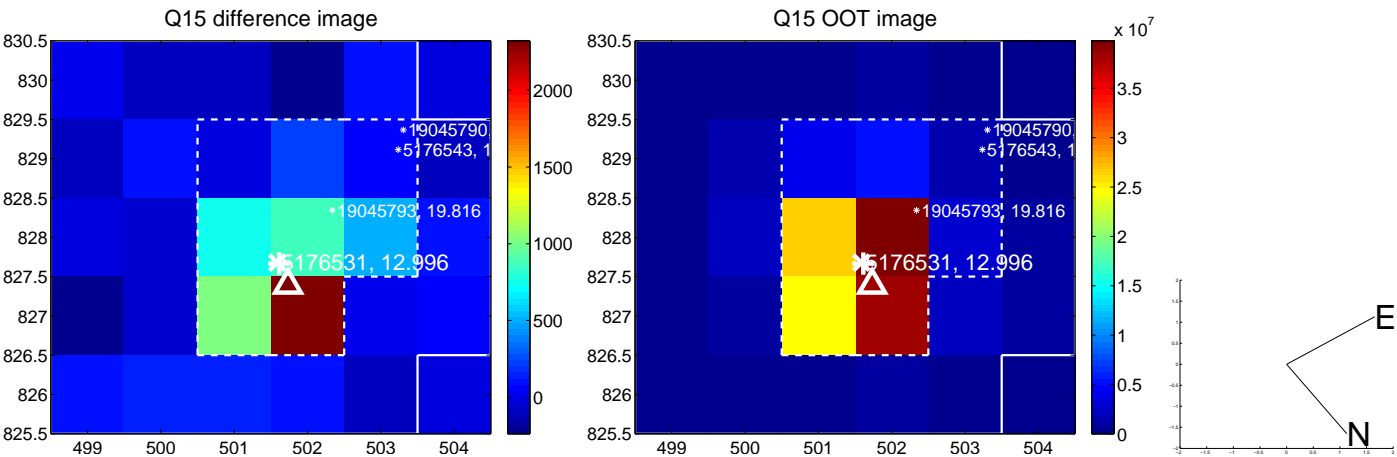
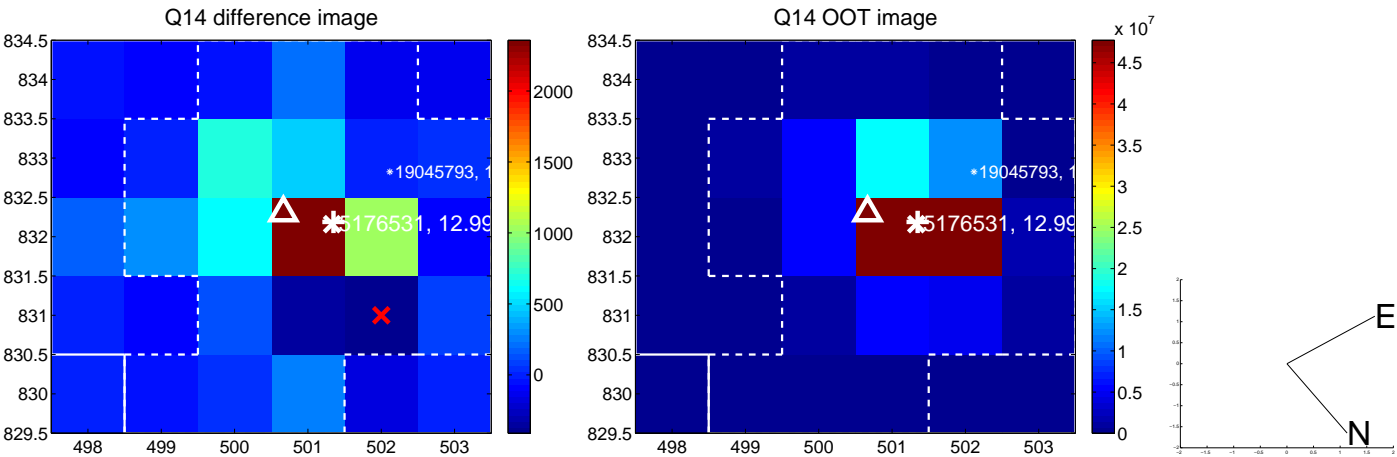
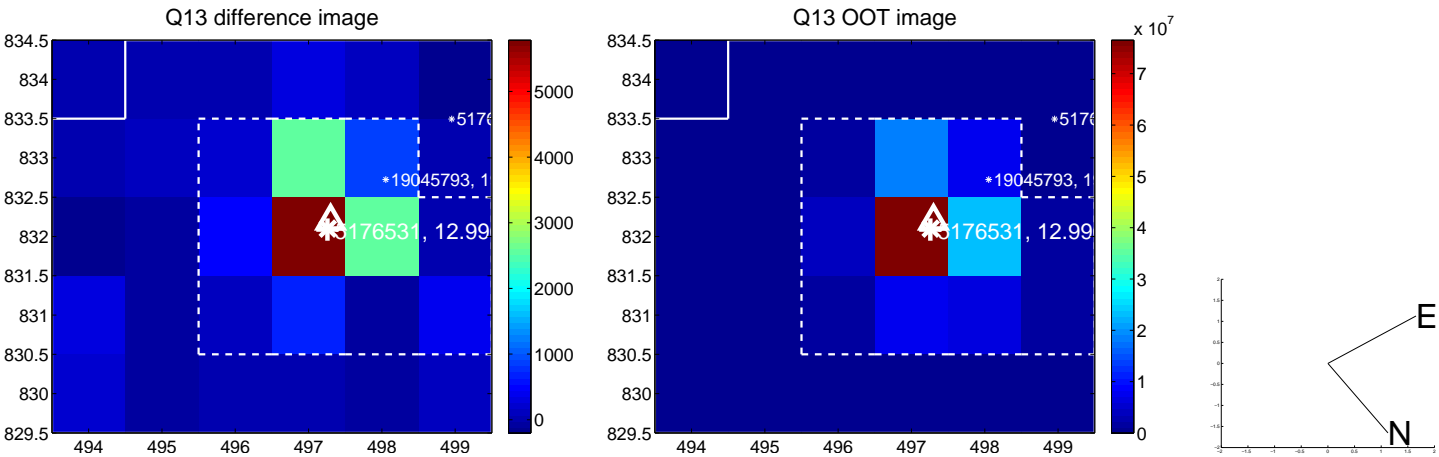
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



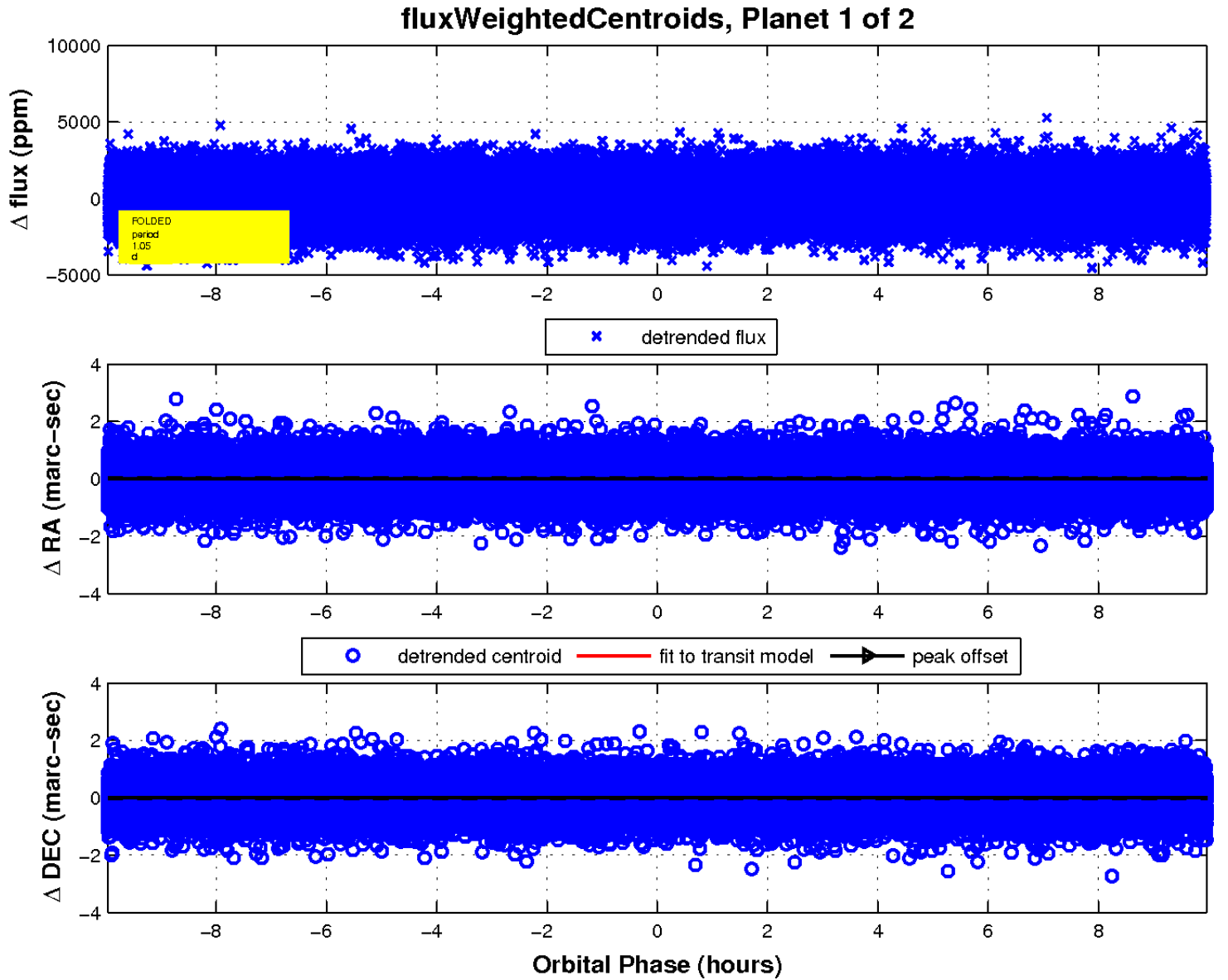
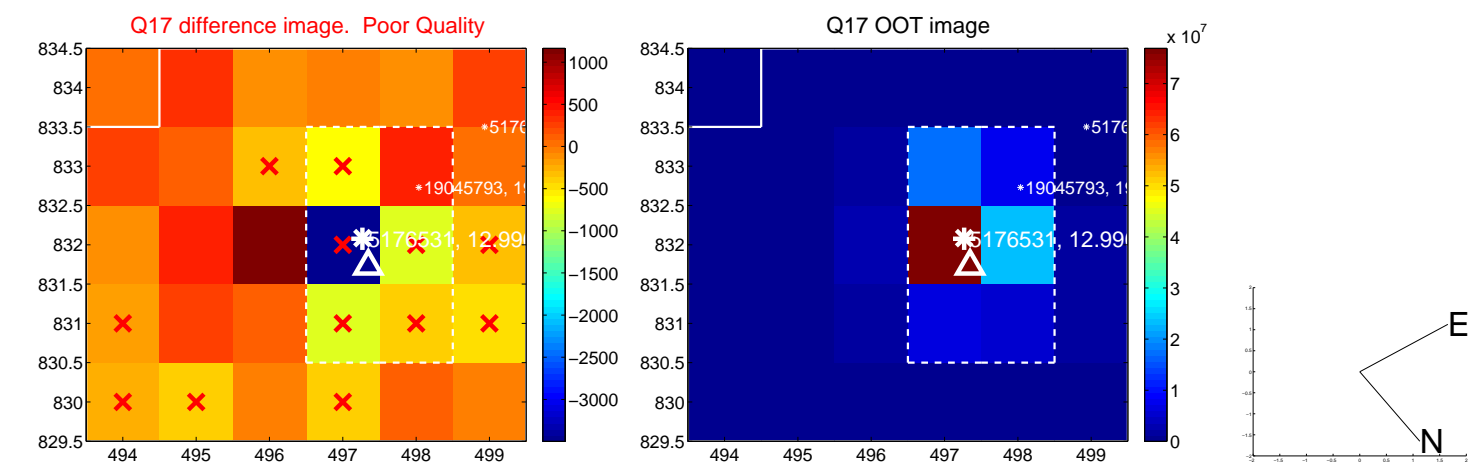
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

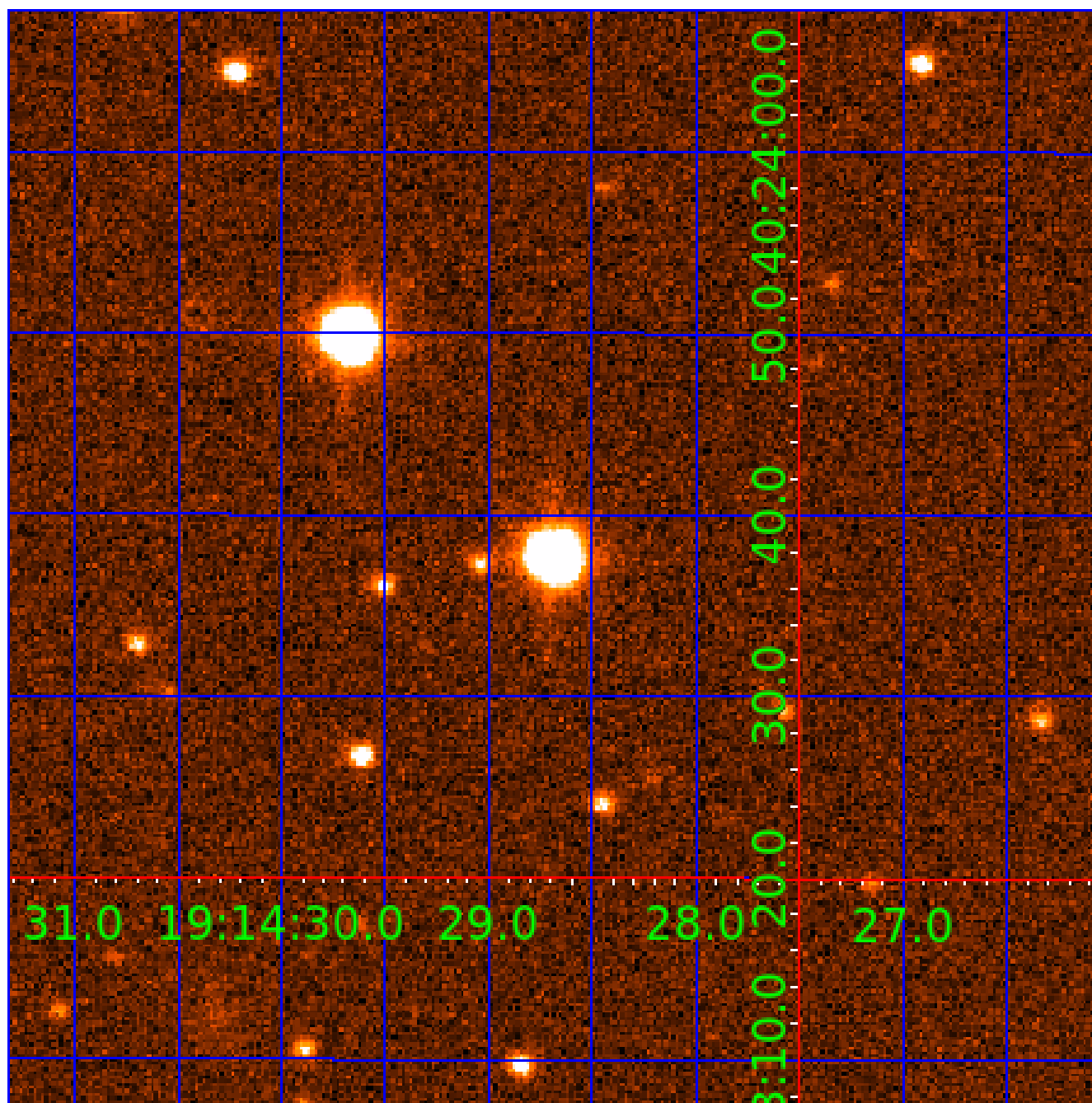


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 005176531

Q1-17 DR25 TCE Parameters

TCE	Run Type	KOI?	Period (Days)	Epoch (BKJD)	Depth (ppm)	Duration (Hours)	MES	SNR	R _★ (R _☉)	T _★ (K)	R _p (R _⊕)	S _p (S _⊕)
005176531-01	OBS	No	1.050217	132.371739	58.5	3.322	7.9	6.6	2.88	7861	2.56	42480.75
005176531-02	OBS	No	0.644401	132.096816	135.2	1.414	8.2	9.5	2.88	7861	3.88	81474.64

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005176531-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
005176531-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT

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

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

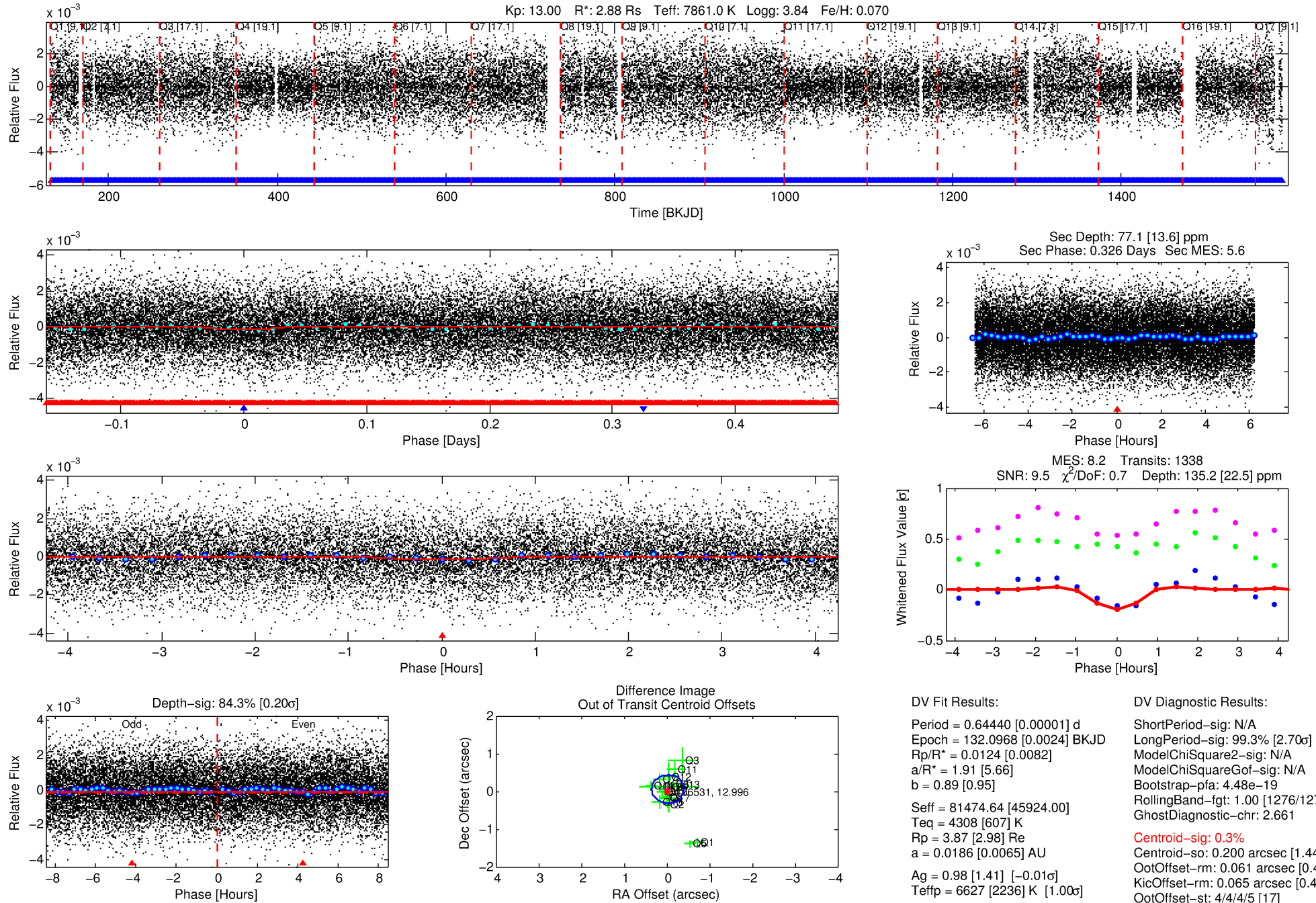
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 005176531-02

No Significant Match Found

DV One-Page Summary

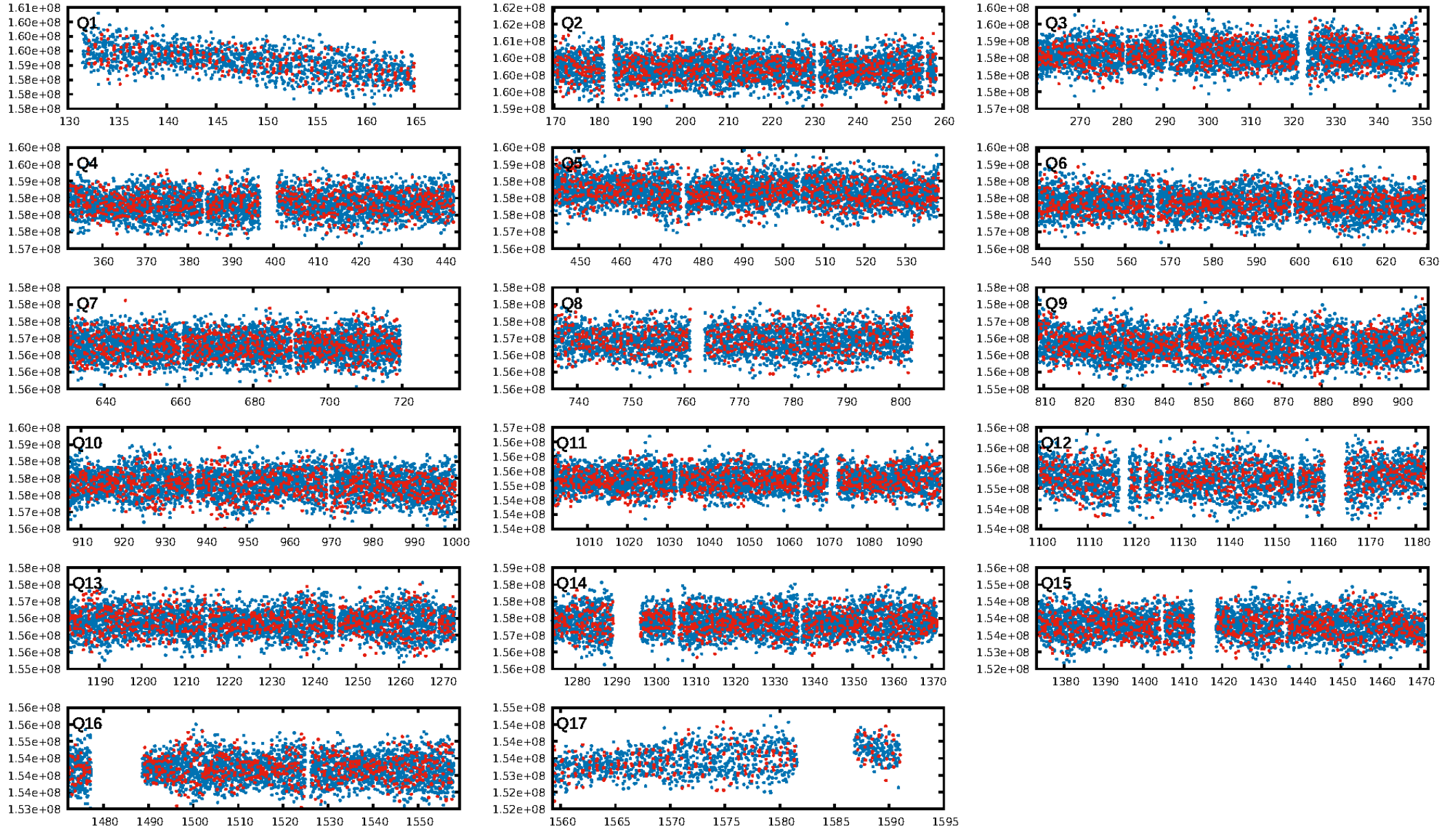
KIC: 5176531 Candidate: 2 of 2 Period: 0.644 d



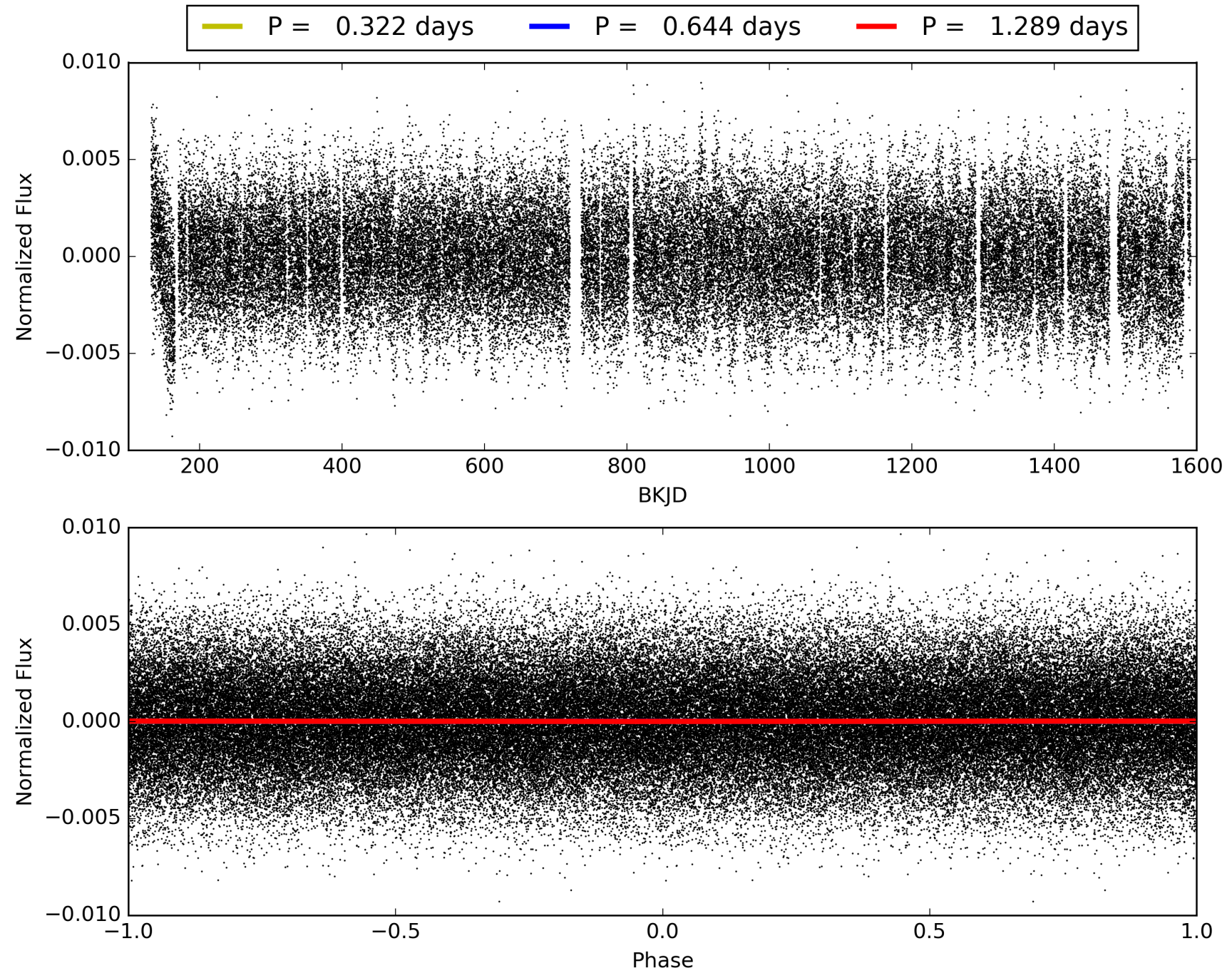
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 07:23:58 Z

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

TCE 005176531-02, PDC Light Curves

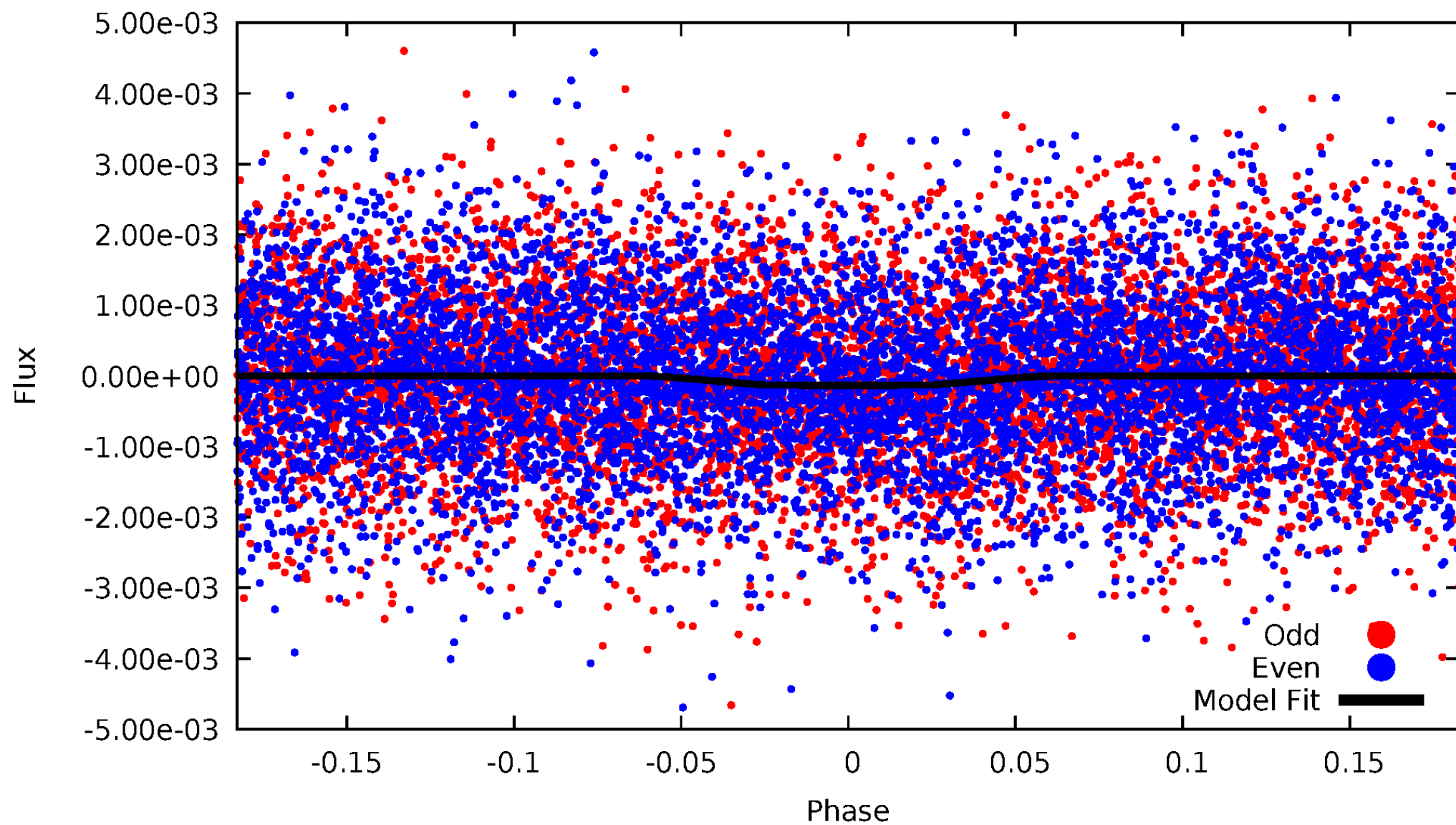


TCE 005176531-02



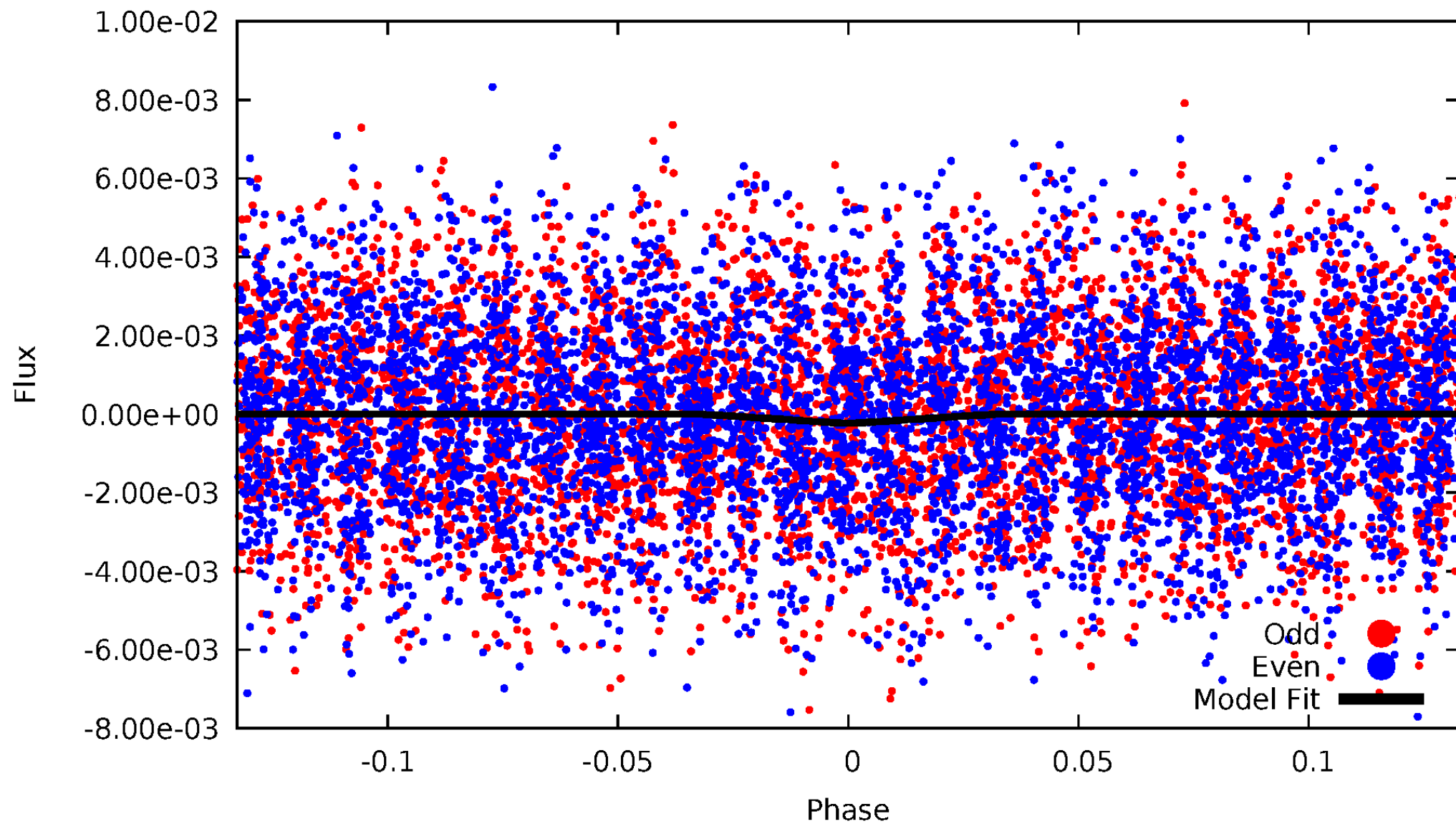
DV Odd/Even

TCE 005176531-02



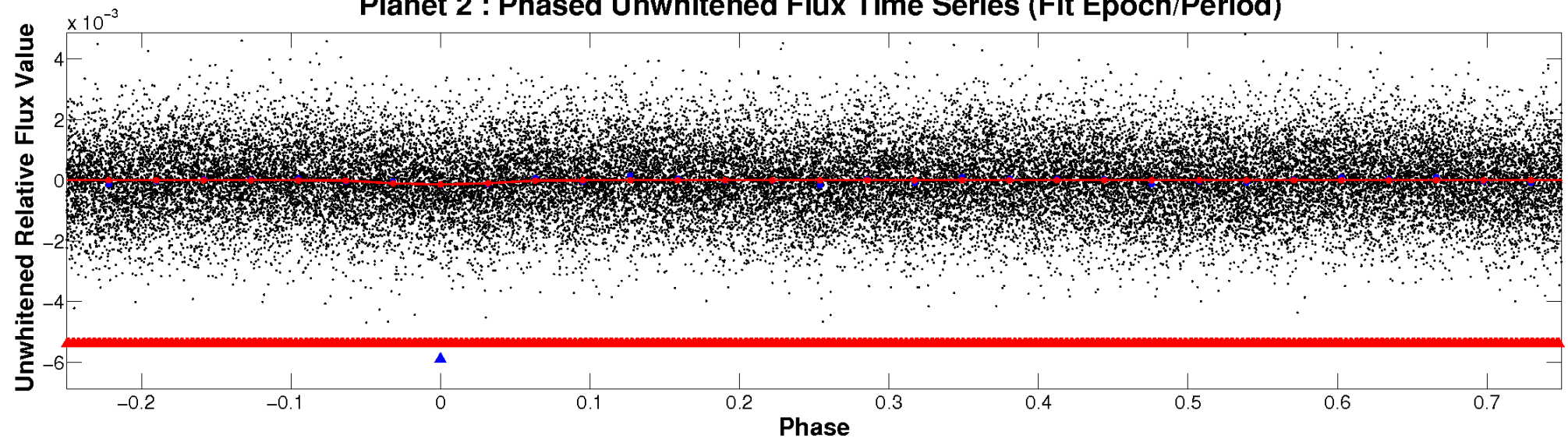
ALT Odd/Even

TCE 005176531-02

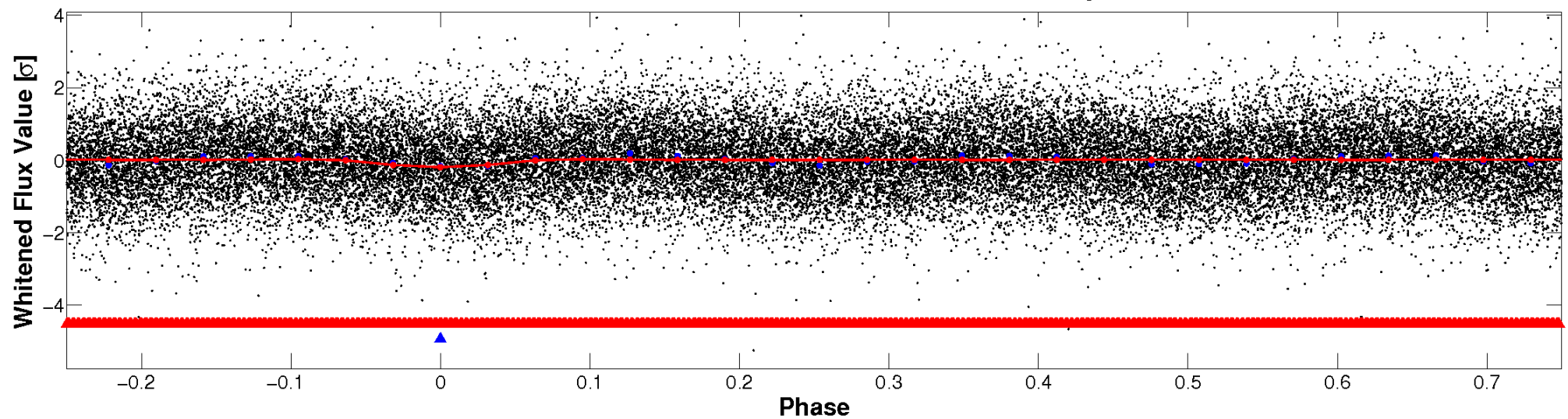


Non-Whitened Vs. Whitened Light Curve

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

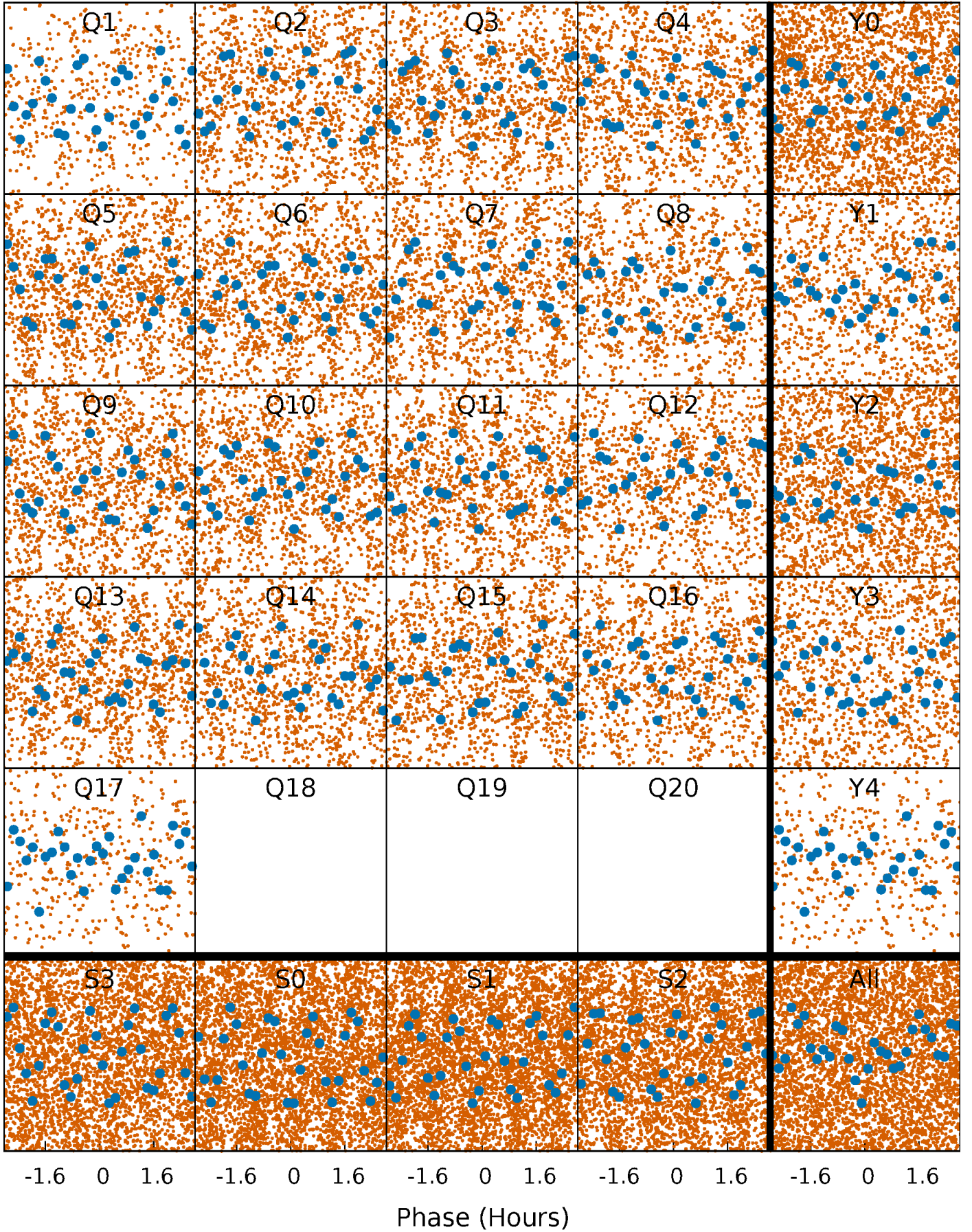


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



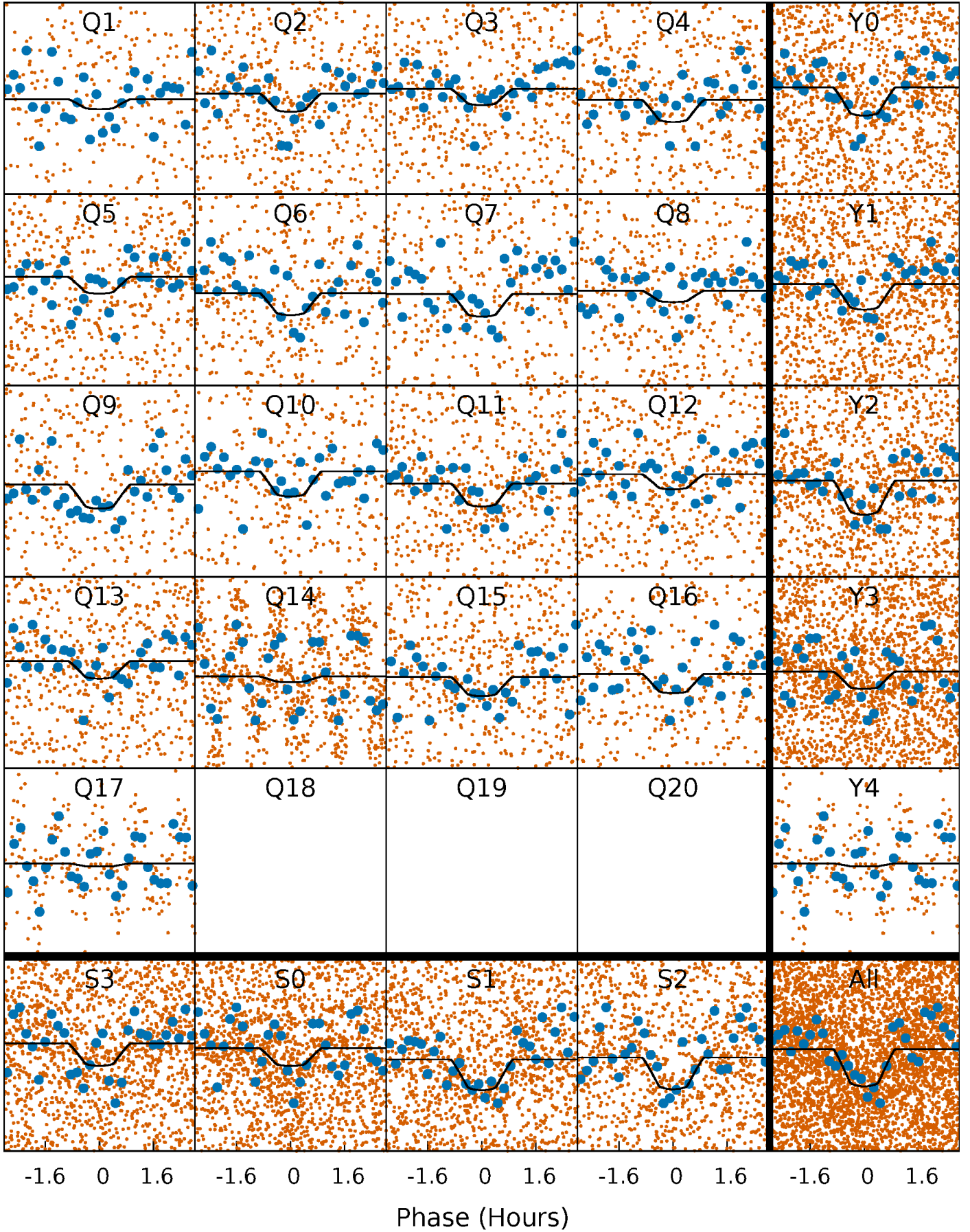
PDC Quarter-Phased Transit Curves

TCE 005176531-02 P= 0.644401 Days $T_0=132.096816$ (BKJD)



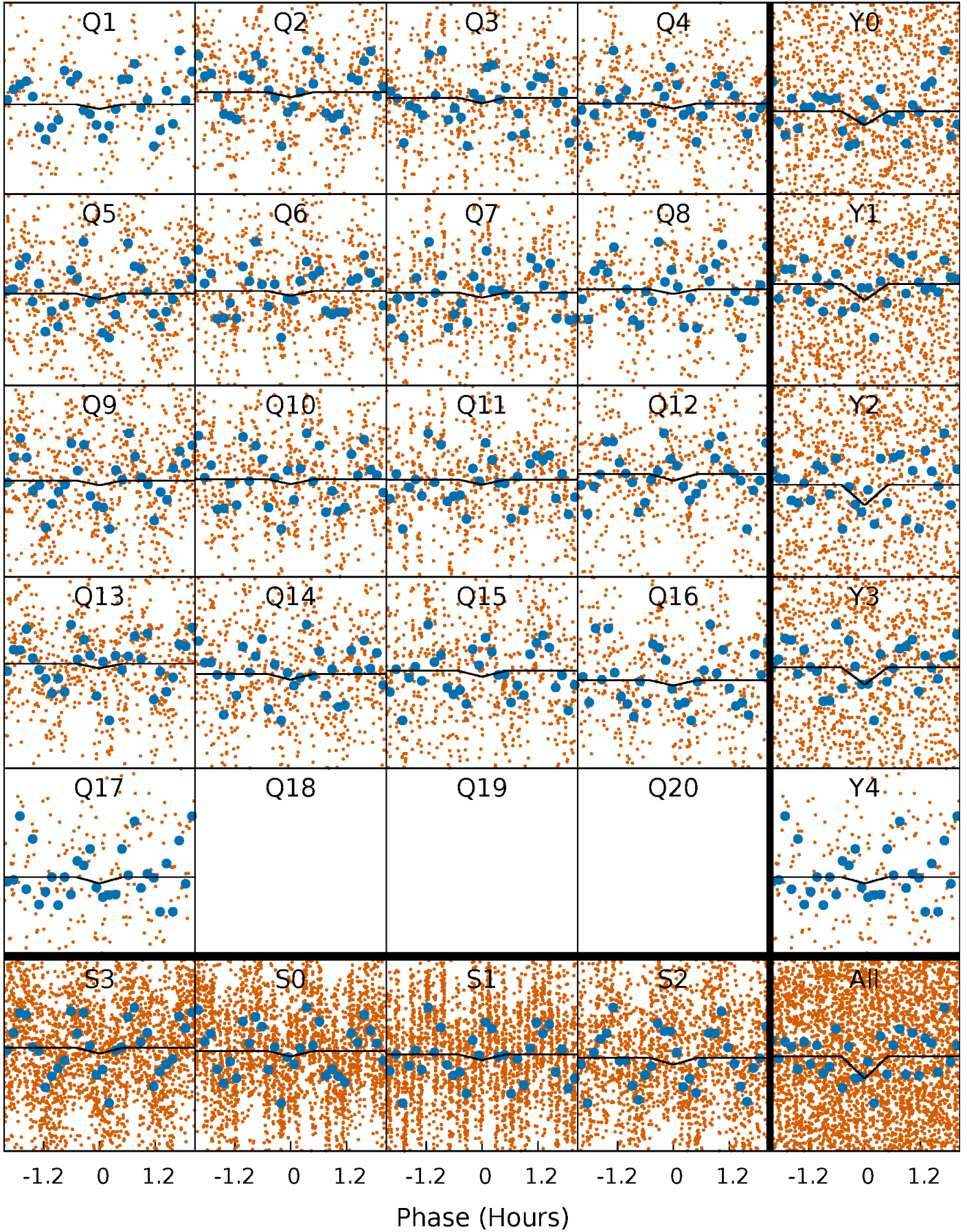
DV Quarter-Phased Transit Curves

TCE 005176531-02 P= 0.644401 Days $T_0=132.096816$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

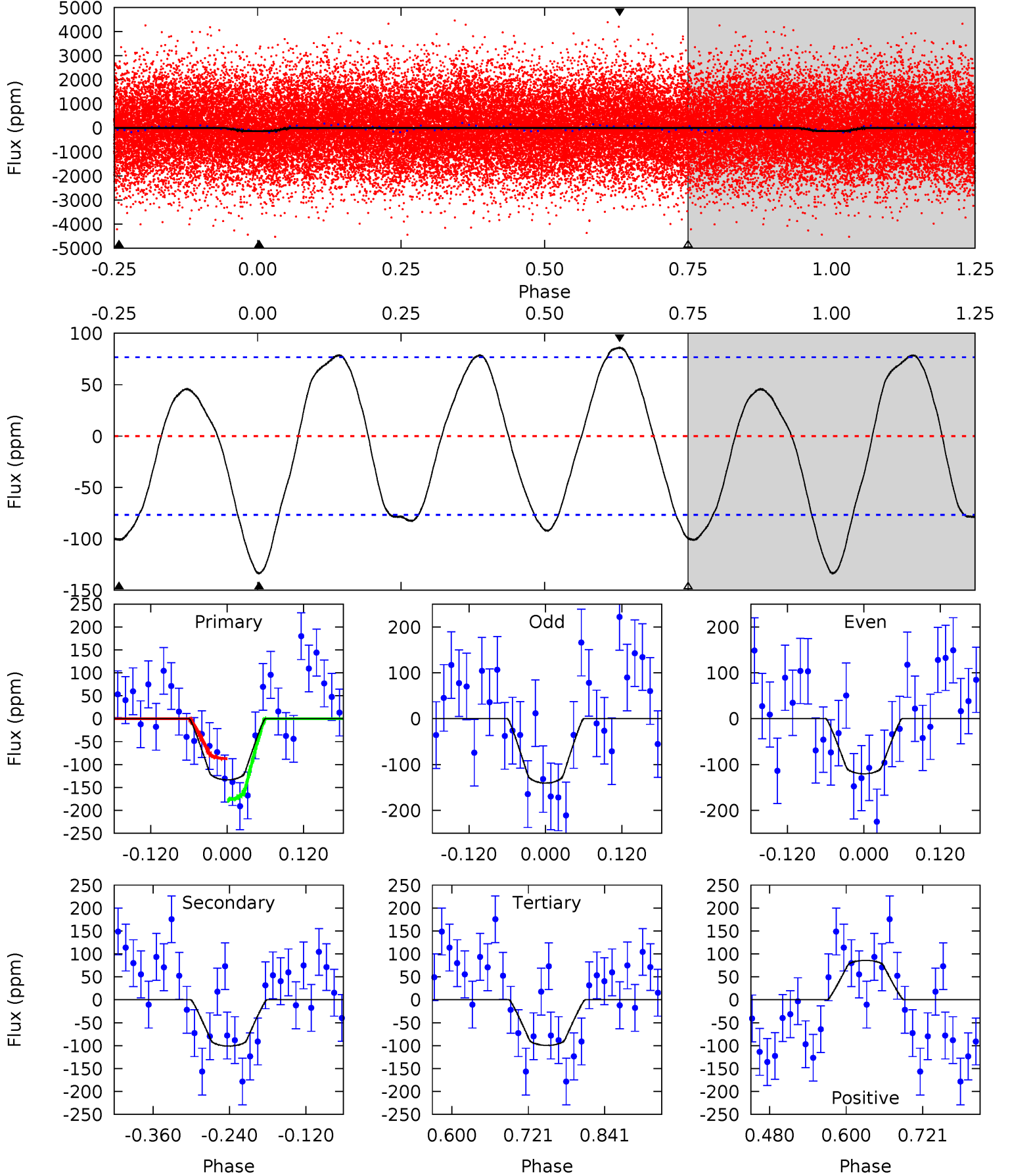
TCE 005176531-02 P= 0.644409 Days $T_0=132.098755$ (BKJD)



DV Model-Shift Uniqueness Test

005176531-02, P = 0.644401 Days, E = 131.452415 Days

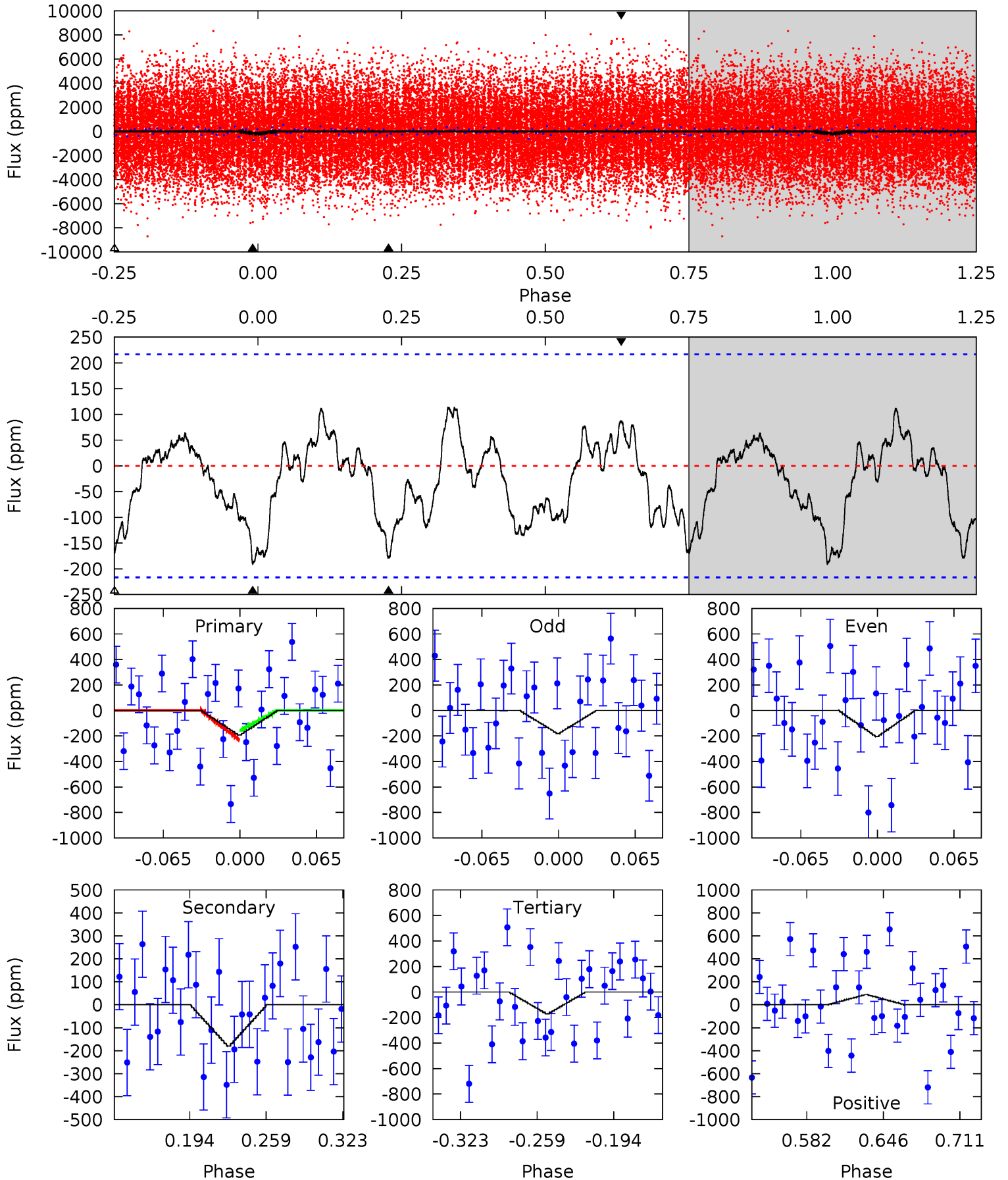
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.89	5.97	5.88	5.08	4.53	1.55	3.59	2.01	2.81	0.08	0.89	0.60	1.01	0.39	2.67



Alt Model-Shift Uniqueness Test

005176531-02, P = 0.644409 Days, E = 131.454346 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4.14	3.86	3.67	1.89	4.66	1.85	1.42	0.46	2.25	0.19	1.98	0.26	1.00	0.37	0.75



Stellar Parameters For KIC 005176531

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	7861^{+218}_{-327}	$3.838^{+0.308}_{-0.123}$	$0.070^{+0.250}_{-0.400}$	$2.875^{+0.556}_{-1.112}$	$2.075^{+0.284}_{-0.527}$	$0.123^{+0.289}_{-0.041}$
	+3%/-4%	+8%/-3%	+357%/-571%	+19%/-39%	+14%/-25%	+235%/-34%
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 005176531-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-101±17	$3.77^{+2.55}_{-2.15}$	5900^{+425}_{-561}	6268^{+4963}_{-1965}	$1.333^{+5.955}_{-0.871}$
Alt.	-180±47	$4.62^{+2.81}_{-2.27}$	5911^{+401}_{-578}	6703^{+4314}_{-1897}	$1.557^{+5.087}_{-0.978}$

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

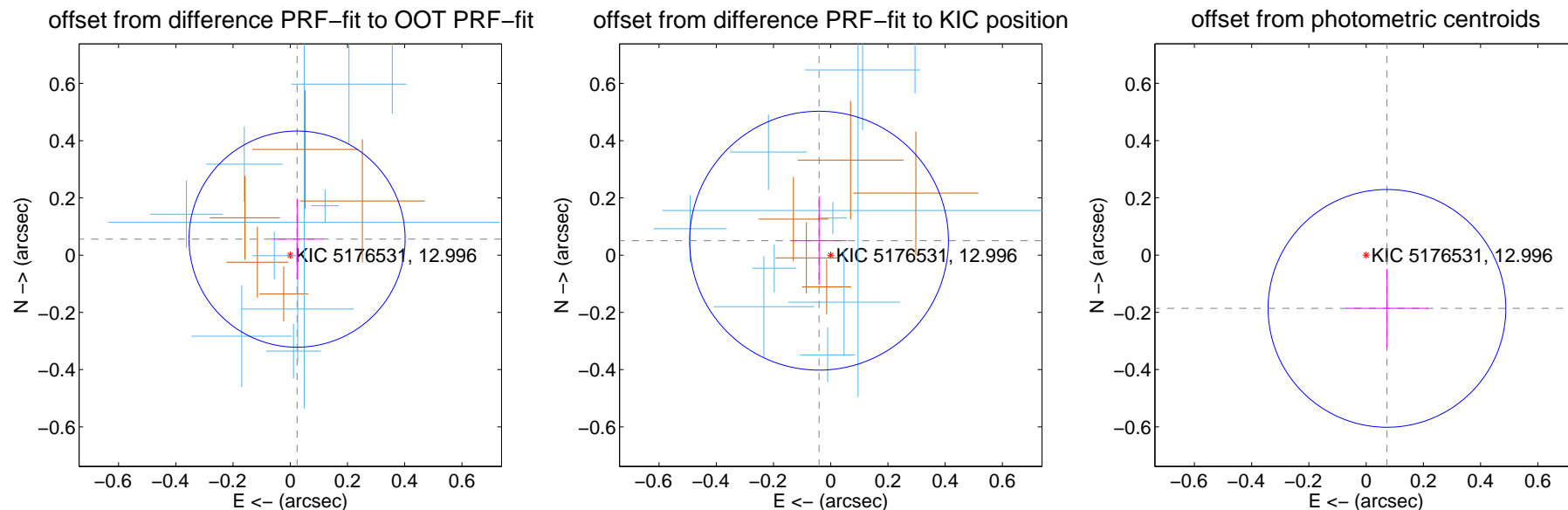
DV Centroid Data

Supplemental centroid analysis for 005176531-02. Kepler magnitude: 13.00. Transit SNR 9.50

There are 12 quarters with good PRF difference image offsets

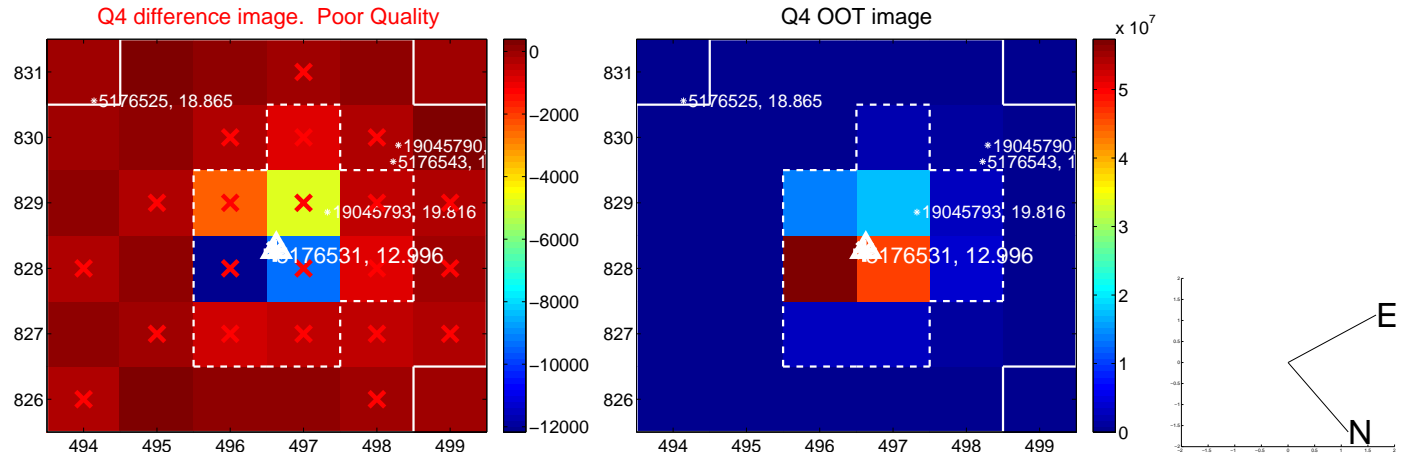
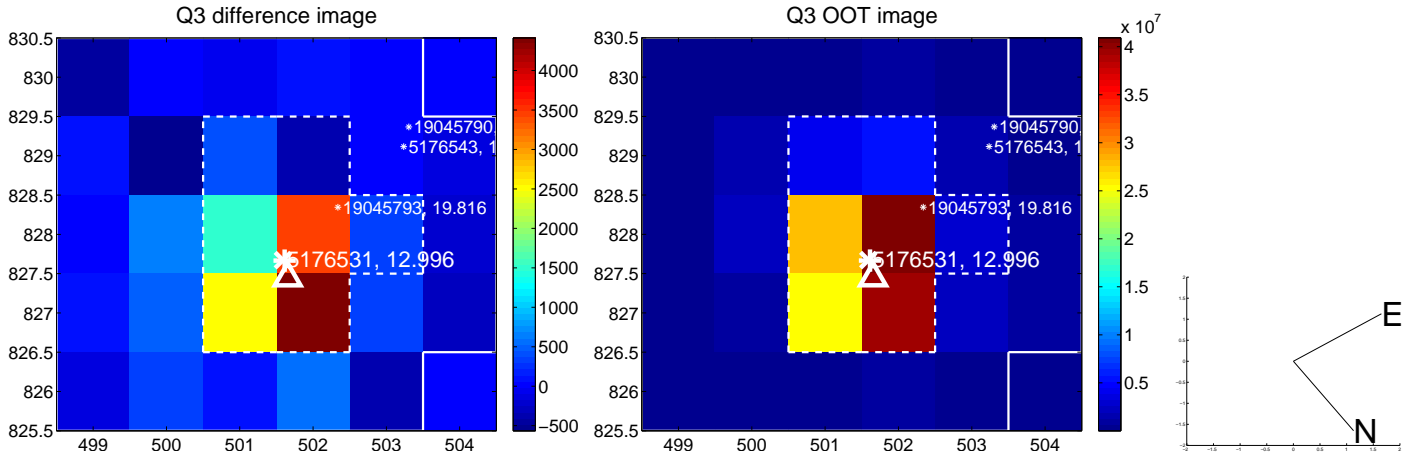
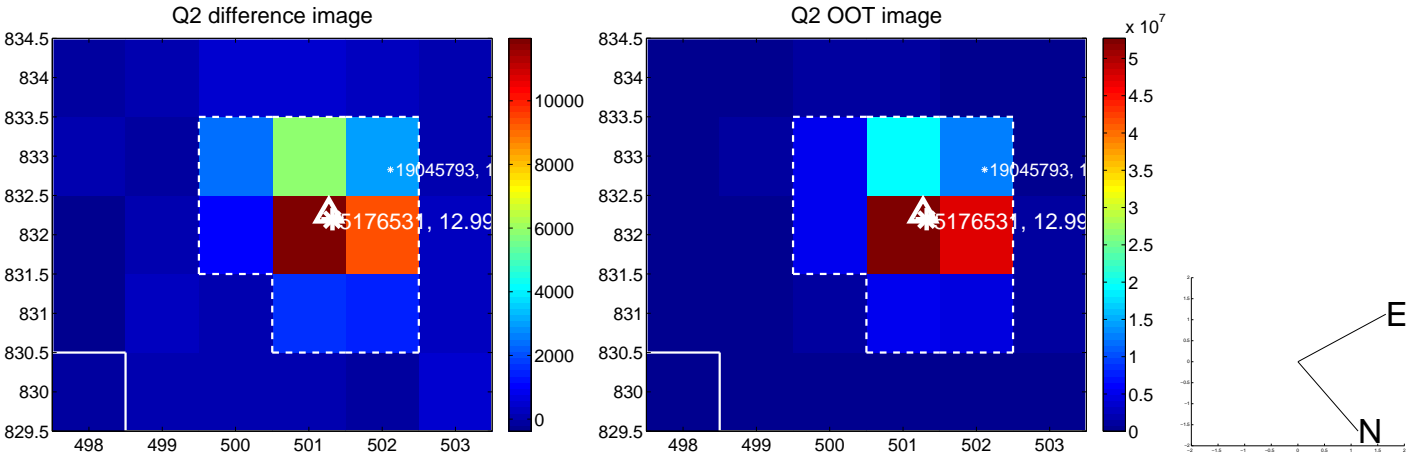
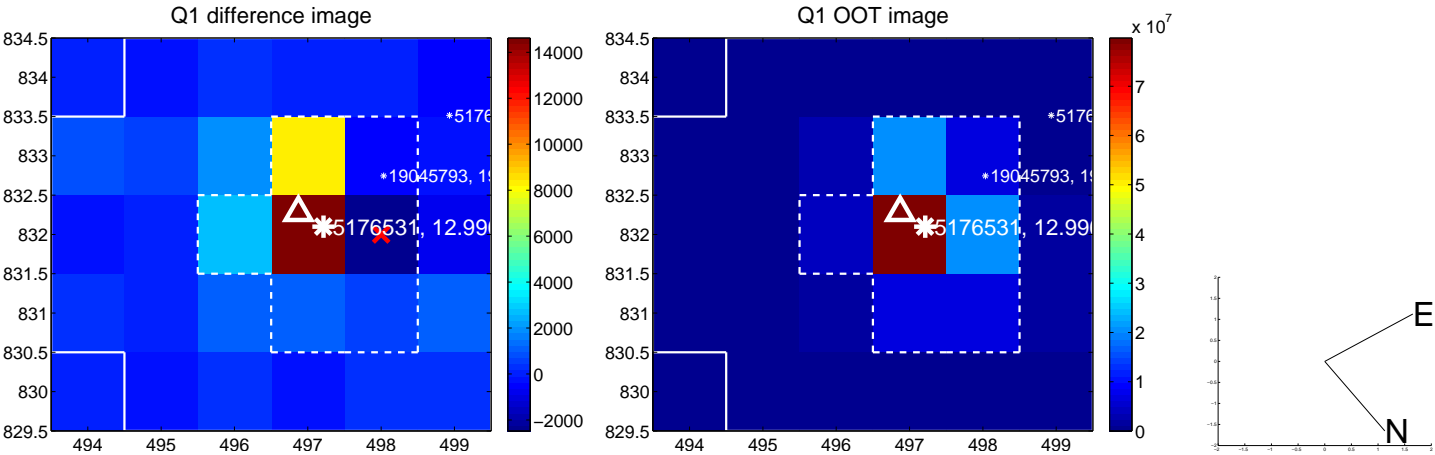
The direct PRF centroid is offset from the target star catalog position by about 0.03 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.061 ± 0.126	0.48	-0.024 ± 0.090	0.056 ± 0.142
PRF-fit source offset from KIC position	0.065 ± 0.151	0.43	0.041 ± 0.096	0.051 ± 0.154
photometric centroid source offset	0.20 ± 0.14	1.44	-0.07 ± 0.14	-0.19 ± 0.14

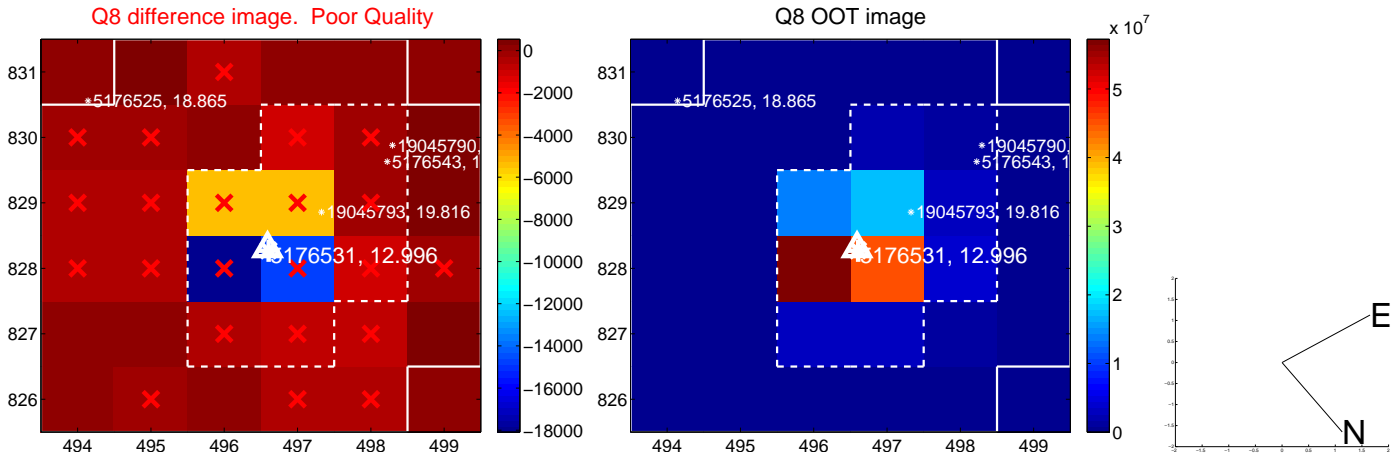
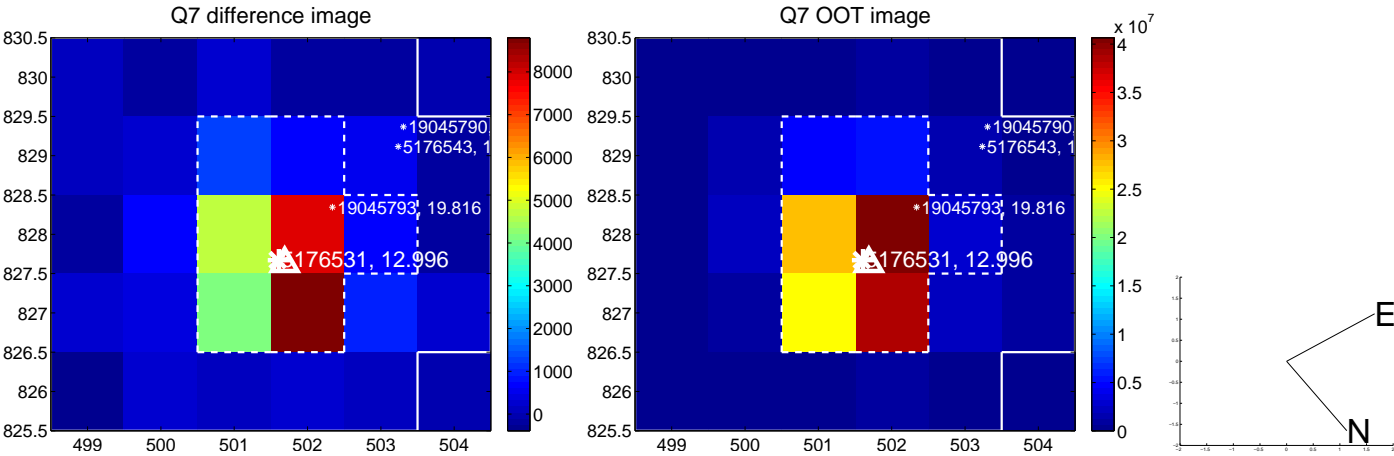
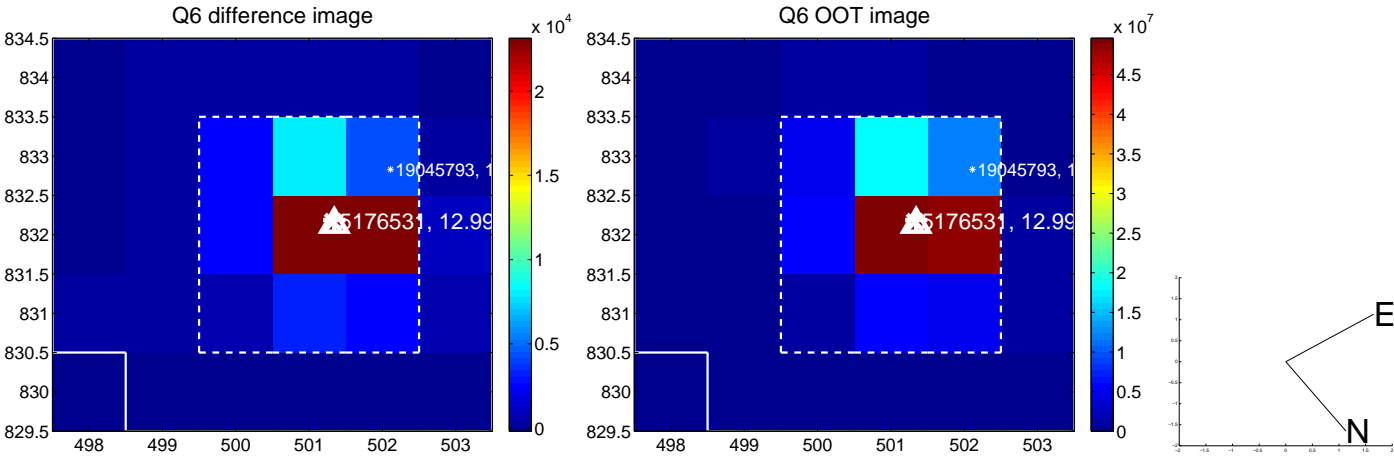
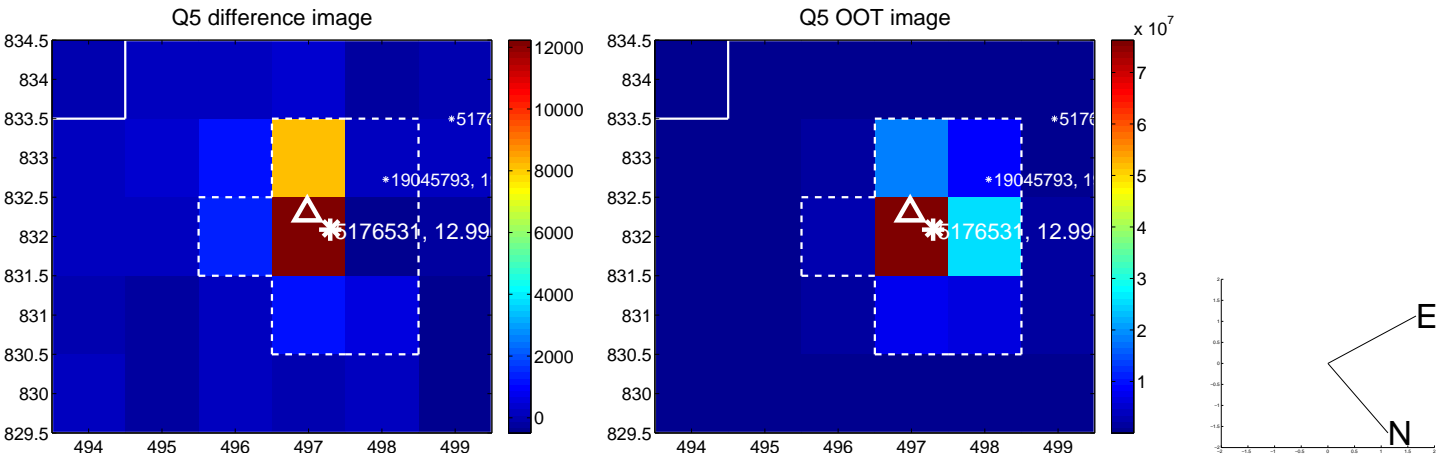


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

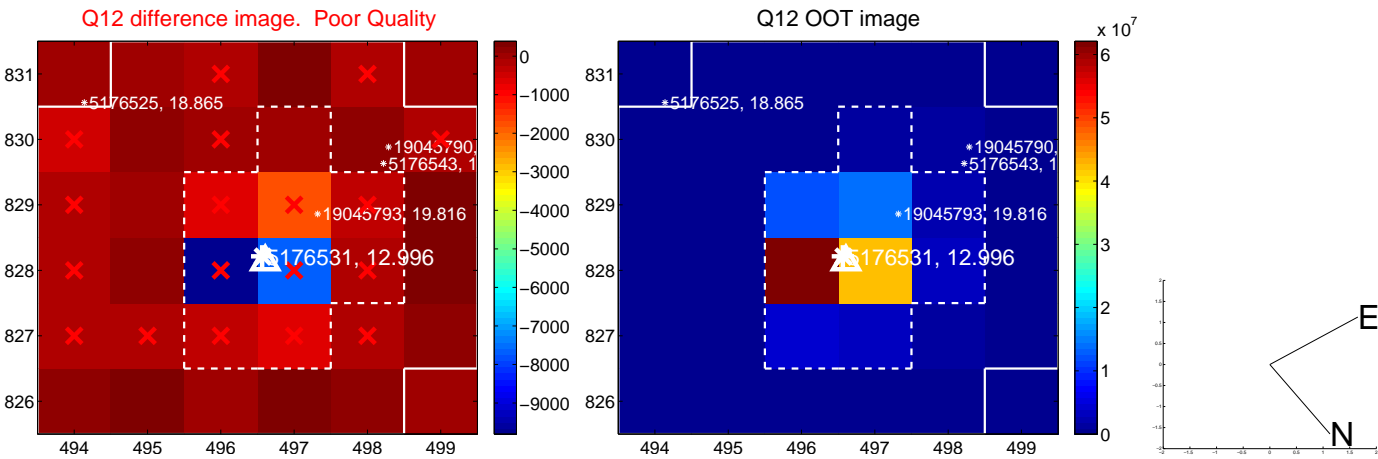
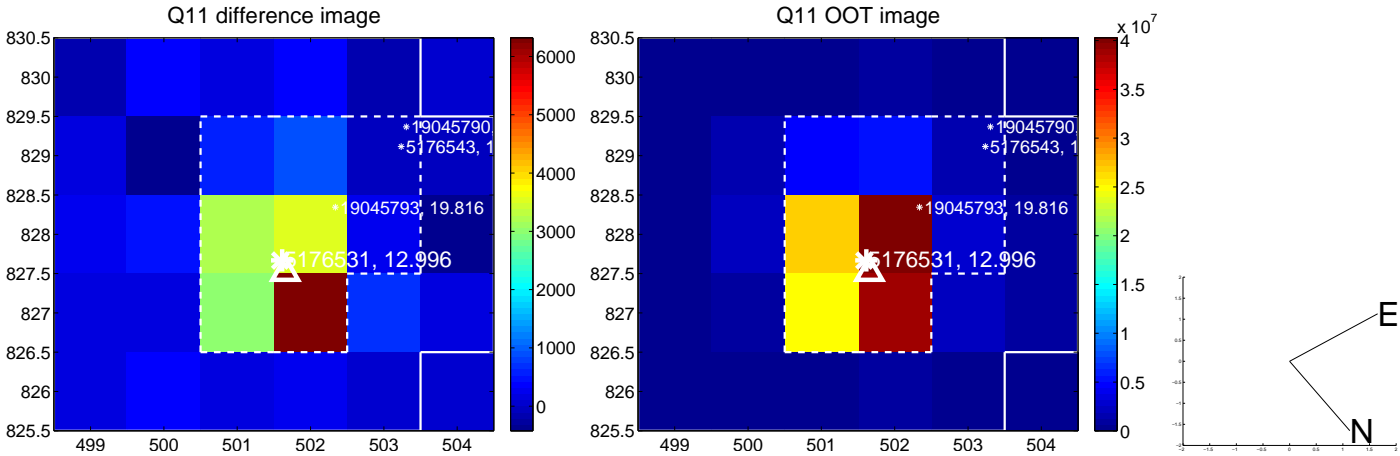
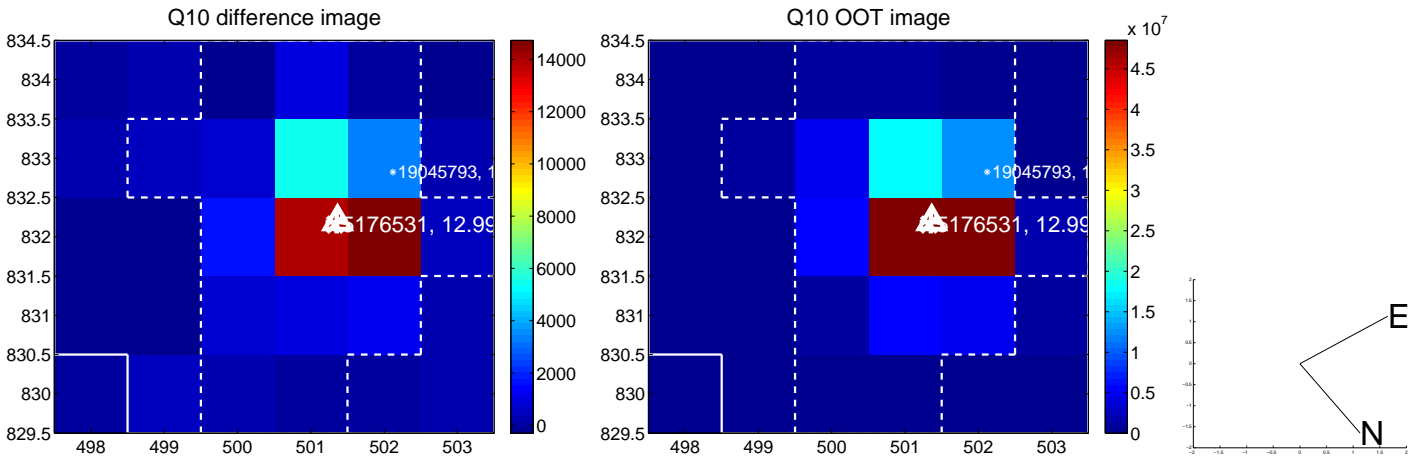
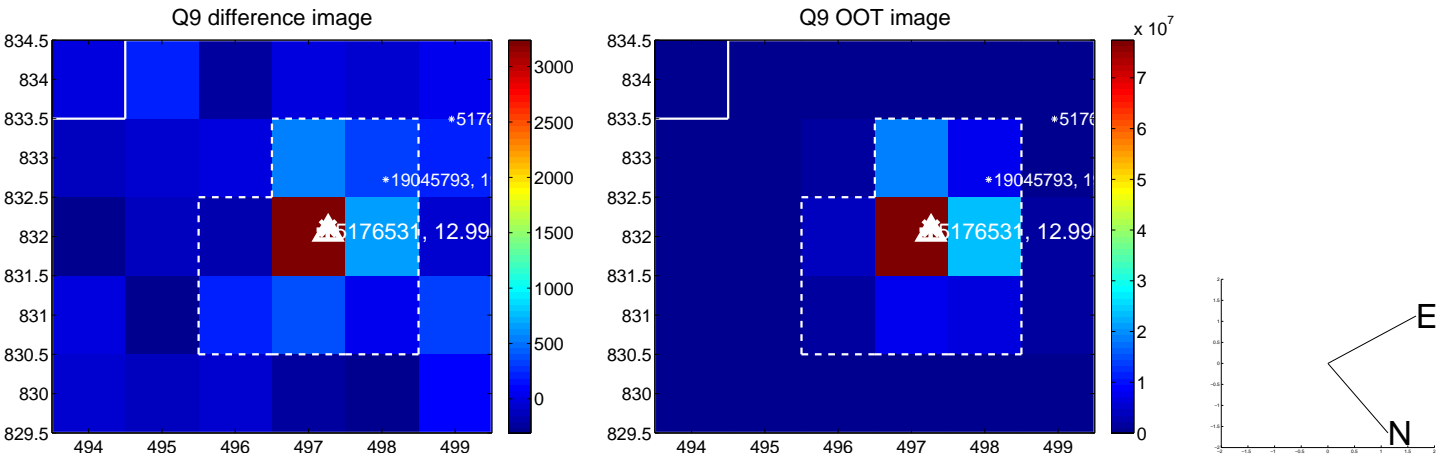
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



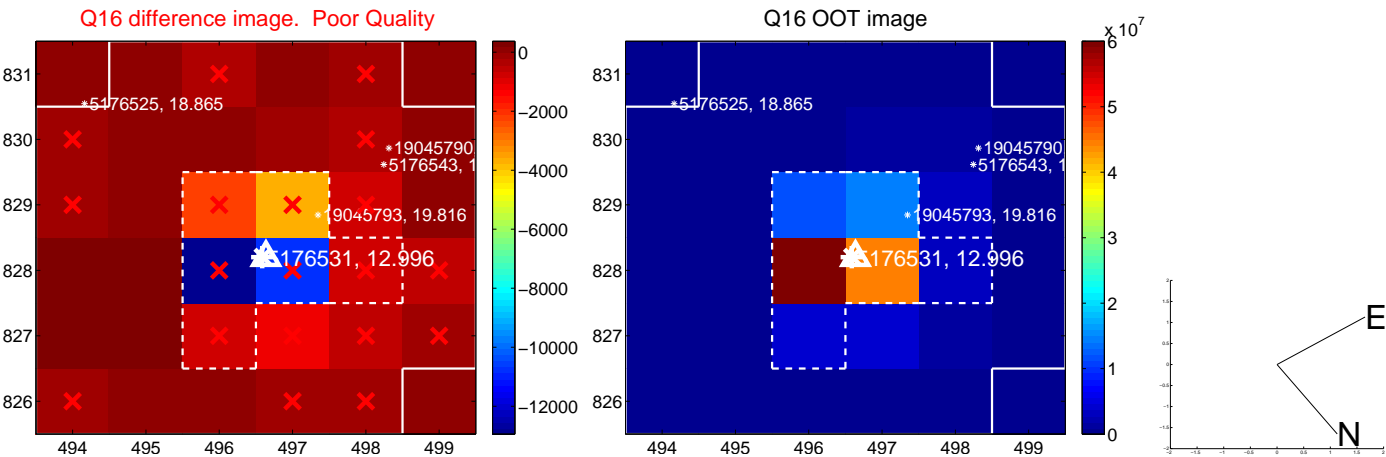
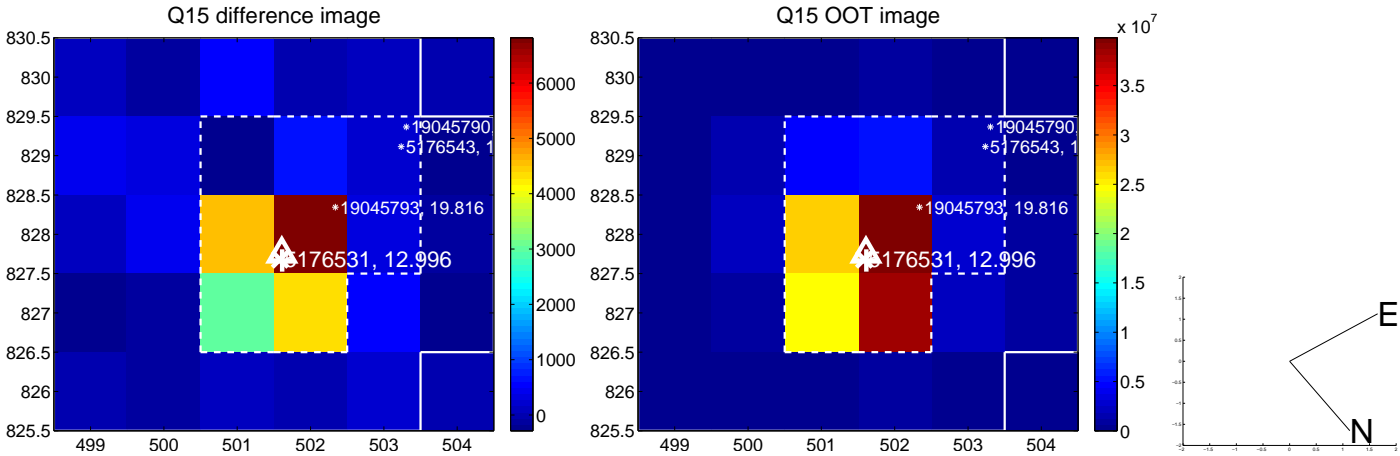
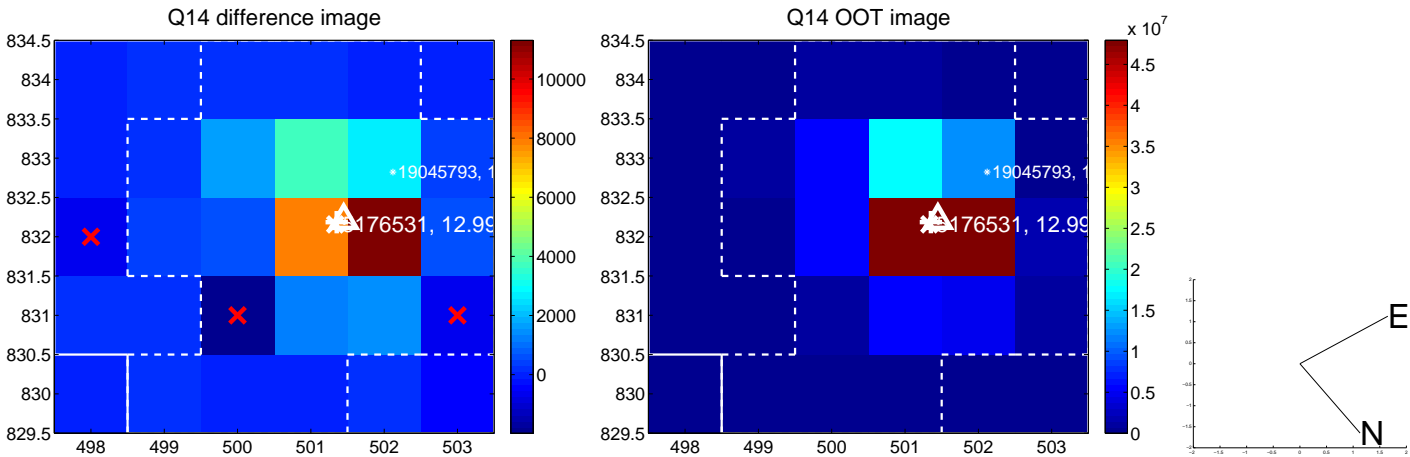
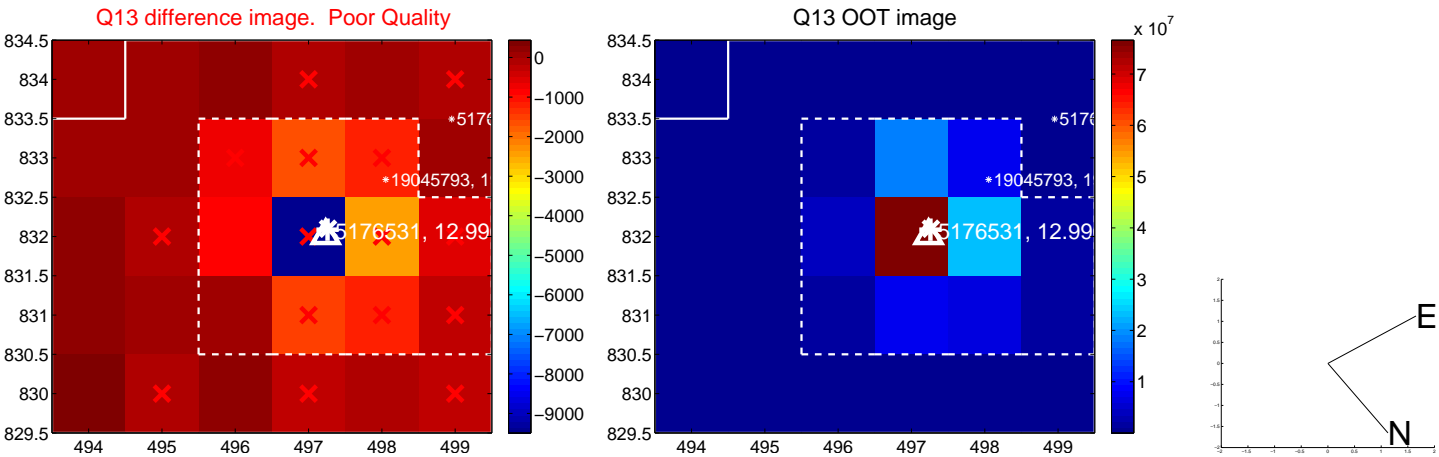
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



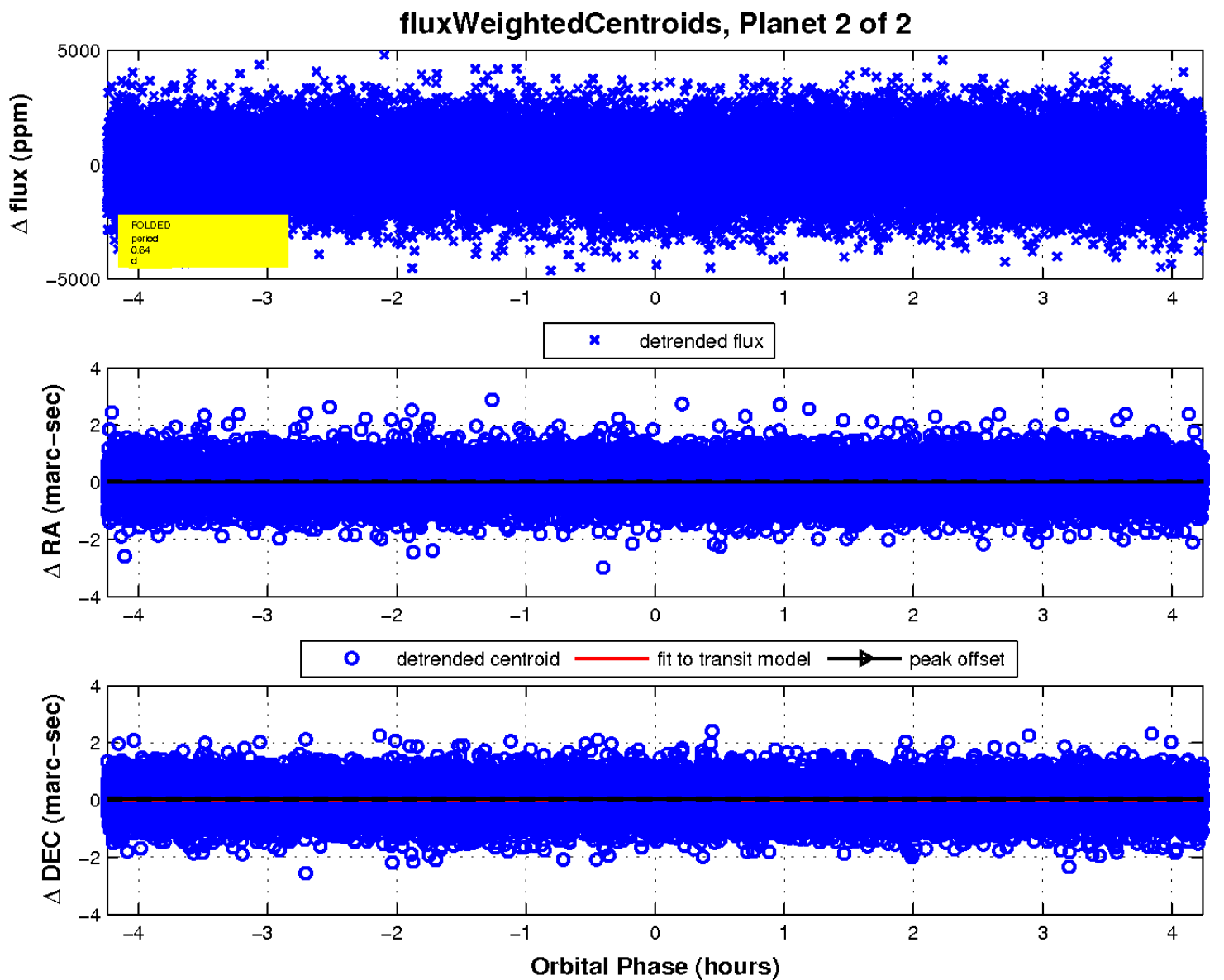
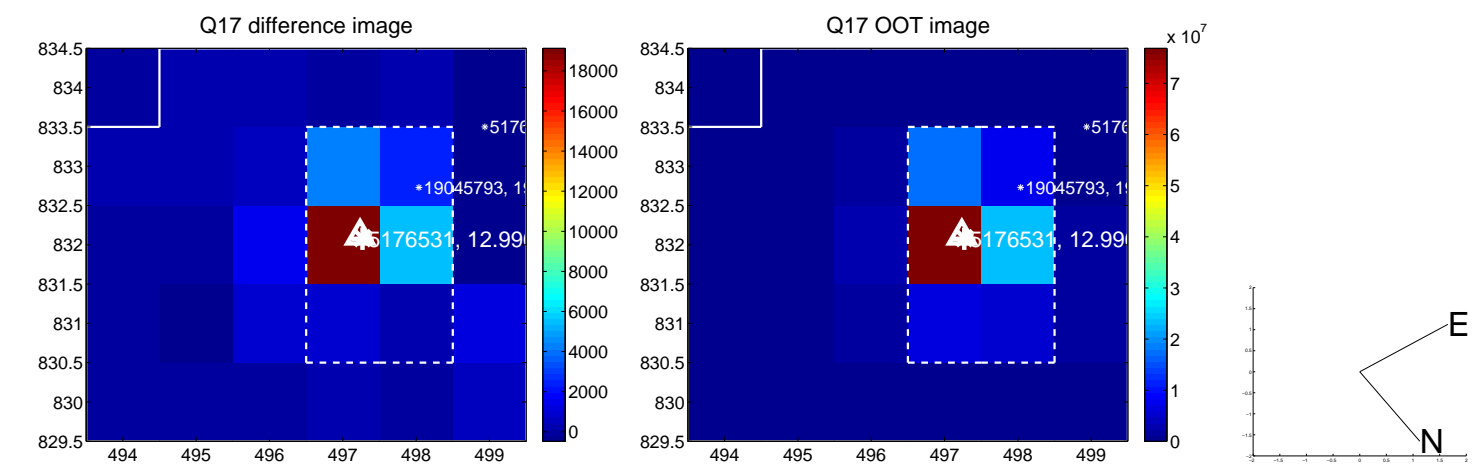
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

