

KIC 012509829

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})
012509829-01	OBS	4264.01	0.888460	131.875122	202.1	1.621	14.6	15.1	0.81	5553	1.37	1821.29
012509829-02	OBS	No	0.888455	132.317059	184.6	1.509	12.8	13.5	0.81	5553	1.31	1821.30

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
012509829-01	OBS	FP	0.00	0	1	1	0	MOD_SEC_DV—MOD_SEC_ALT—HAS_SEC_TCE—CENT_RESOLVED_OFFSET
012509829-02	OBS	FP	0.00	1	1	1	0	IS_SEC_TCE—CENT_RESOLVED_OFFSET

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

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

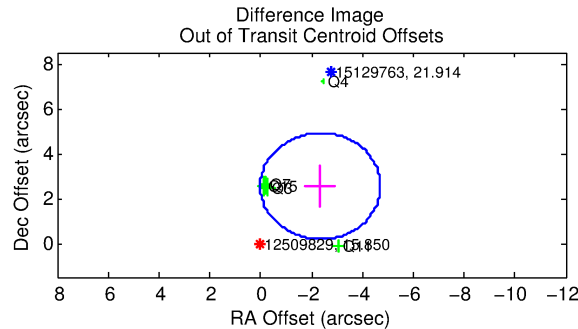
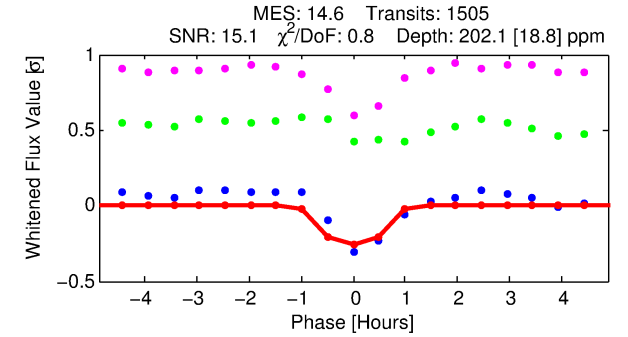
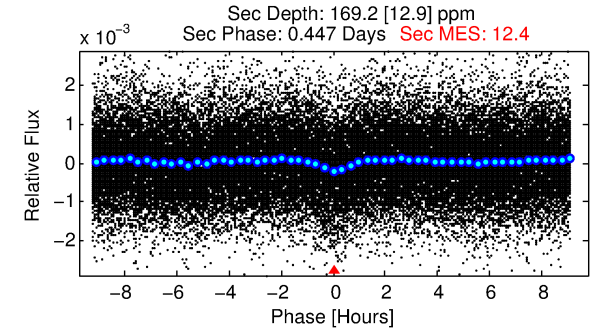
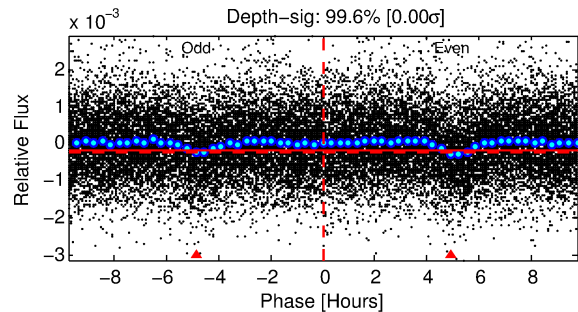
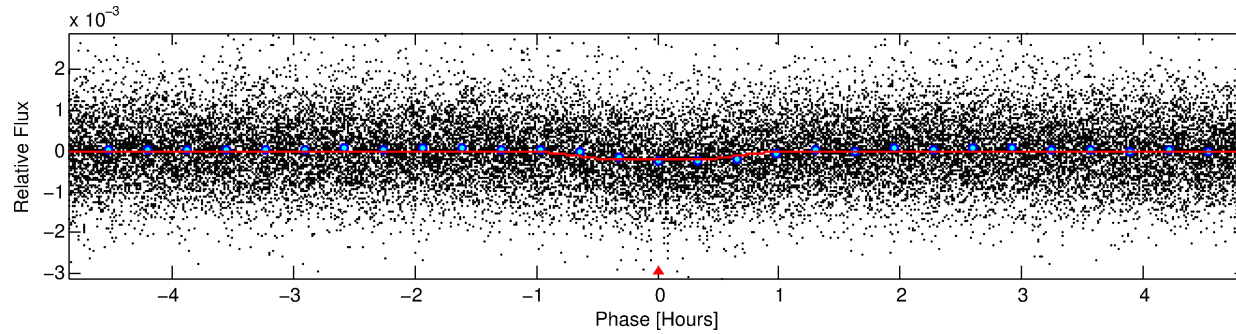
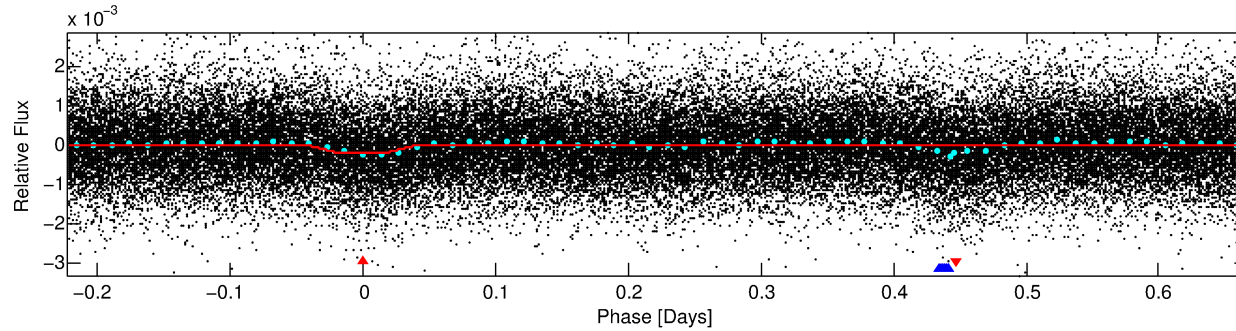
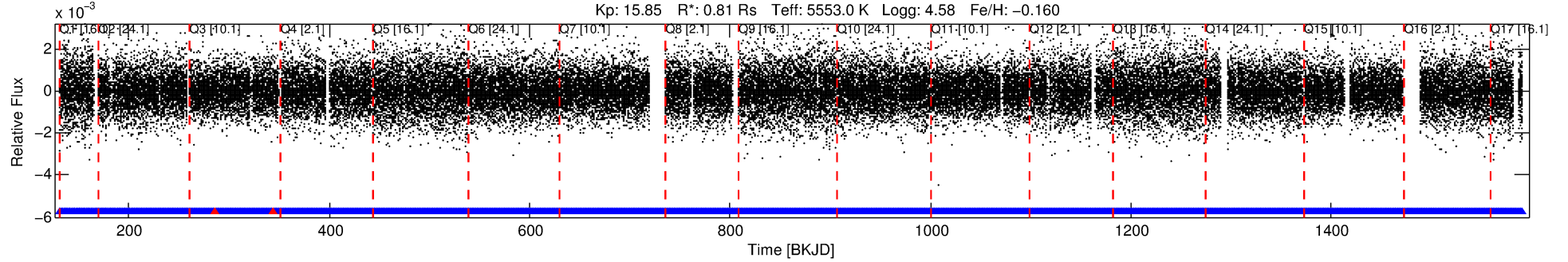
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 012509829-01

No Significant Match Found

DV One-Page Summary

KIC: 12509829 Candidate: 1 of 2 Period: 0.888 d
KOI: K04264.01 Corr: 0.849



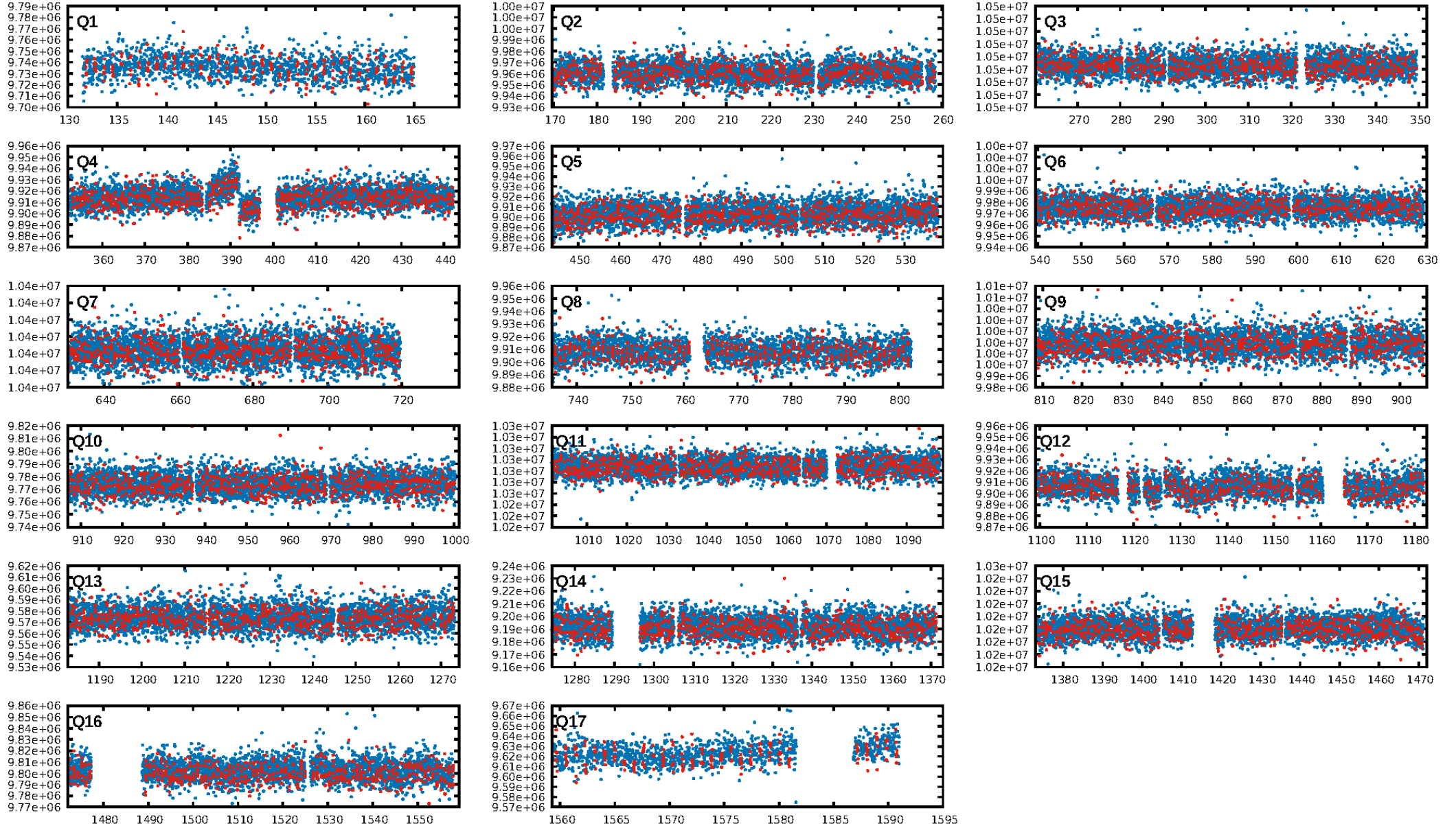
DV Fit Results:

Period = 0.88846 [0.00001] d
Epoch = 131.8751 [0.0016] BKJD
Rp/R* = 0.0156 [0.0093]
a/R* = 2.18 [4.68]
b = 0.90 [0.59]
Seff = 1821.29 [548.36]
Teff = 1666 [125] K
Rp = 1.37 [0.87] Re
a = 0.0174 [0.0033] AU
Ag = 15.00 [18.35] [0.76σ]
Teffp = 5069 [1517] K [2.24σ]

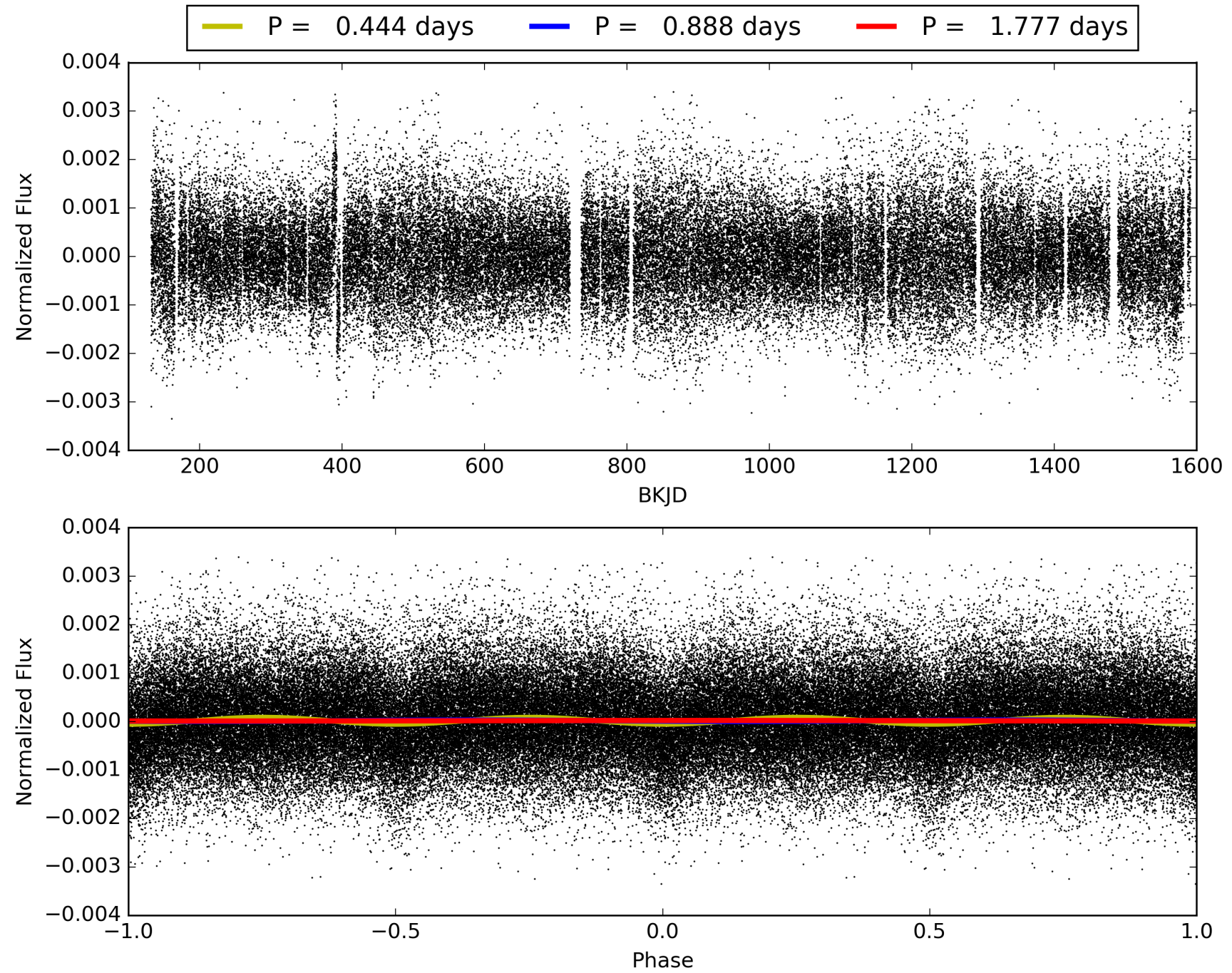
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 1.20e-47
RollingBand-fgt: 1.00 [1435/1437]
GhostDiagnostic-chr: -0.5137
Centroid-sig: 0.0%
Centroid-so: 3.581 arcsec [3.59σ]
OotOffset-rm: 3.461 arcsec [4.39σ]
KicOffset-rm: 3.611 arcsec [3.99σ]
OotOffset-st: 0/4/1/0 [5]
KicOffset-st: 0/4/1/0 [5]
DiffImageQuality-fgm: 0.60 [3/5]
DiffImageOverlap-fno: 1.00 [17/17]

TCE 012509829-01, PDC Light Curves

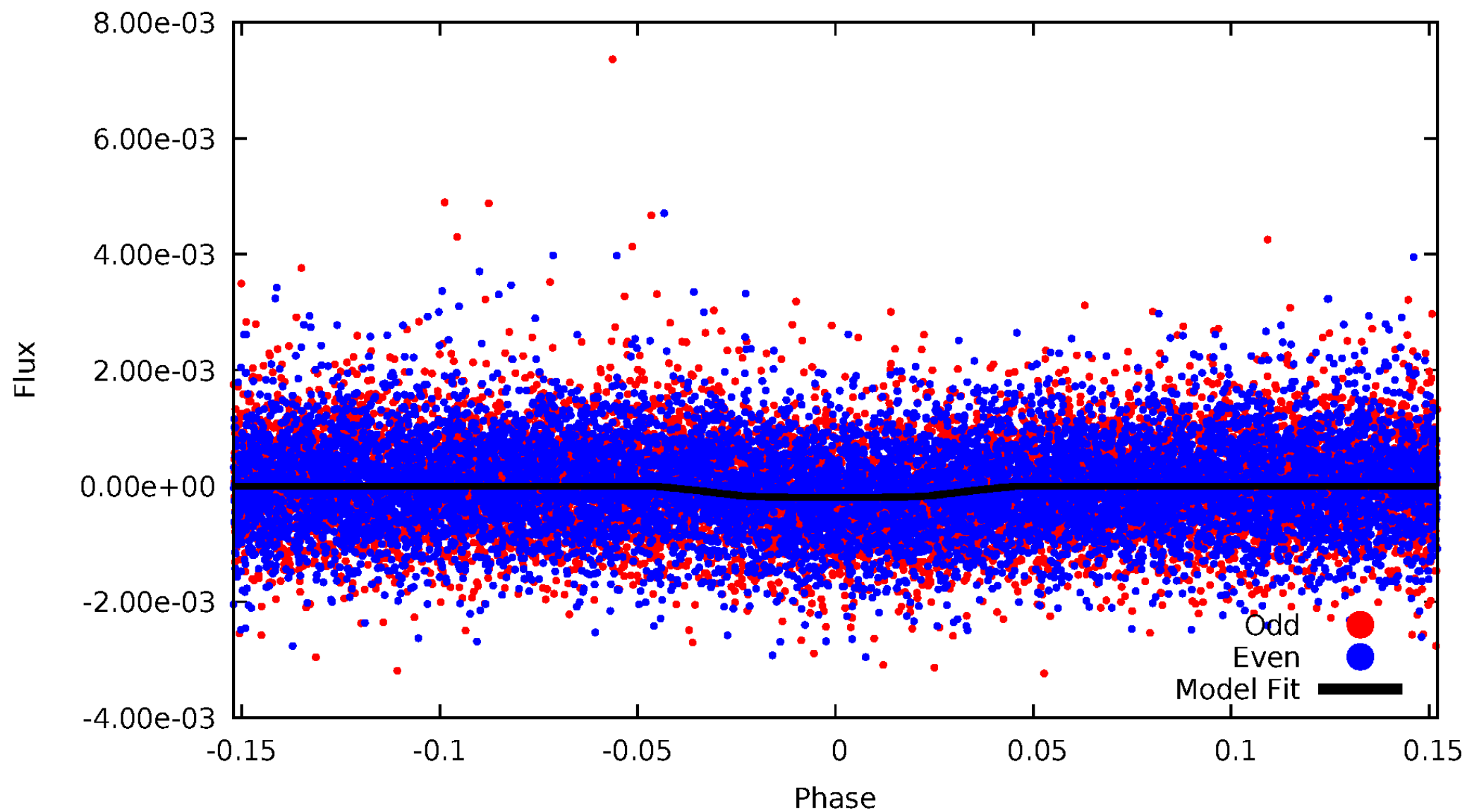


TCE 012509829-01



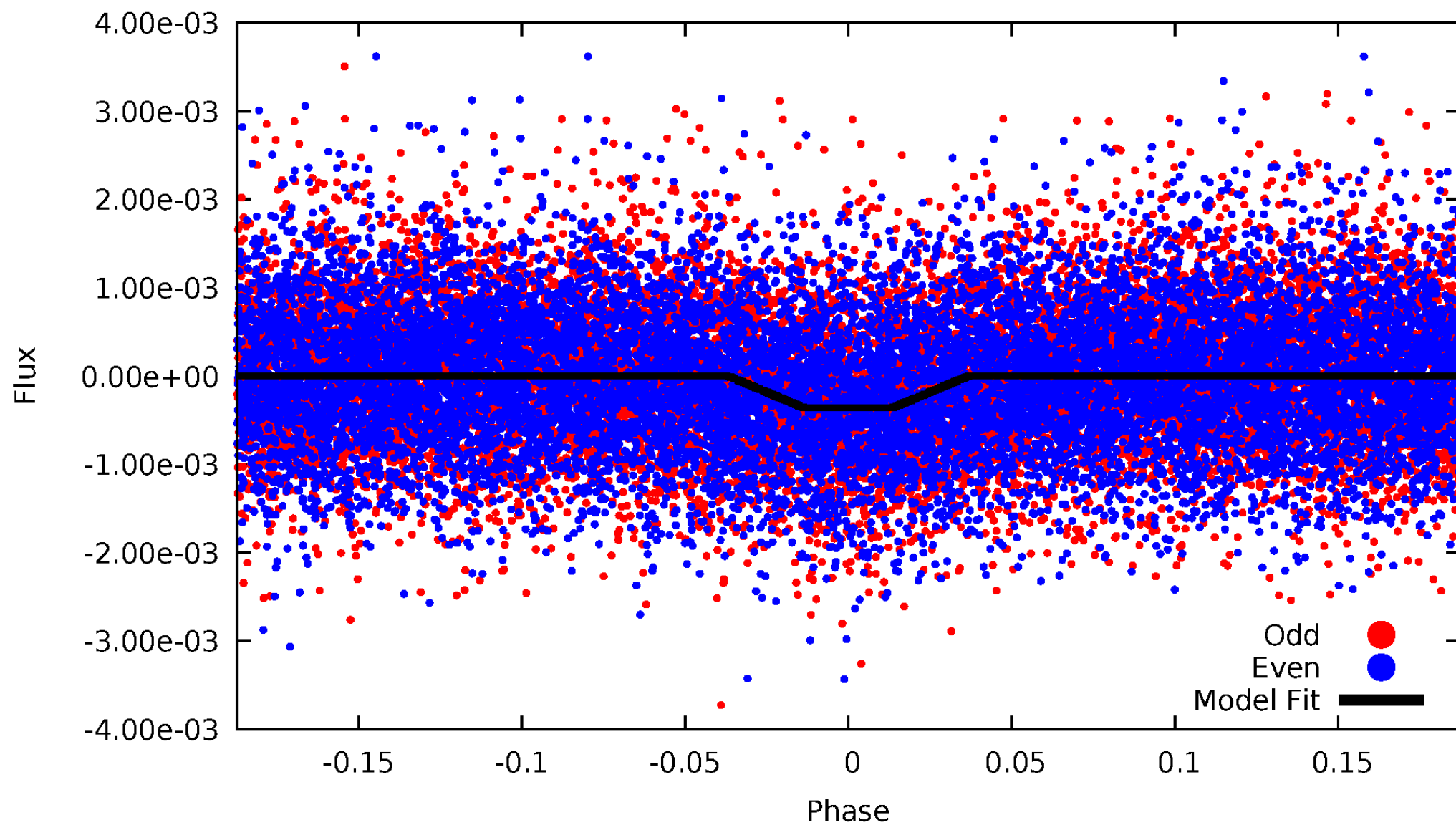
DV Odd/Even

TCE 012509829-01



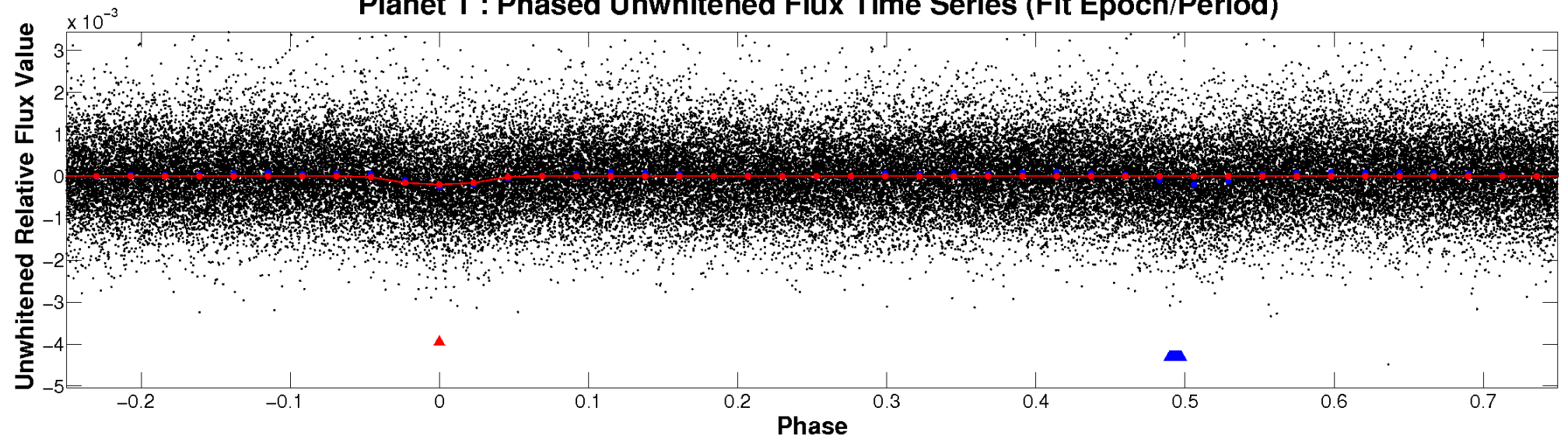
ALT Odd/Even

TCE 012509829-01

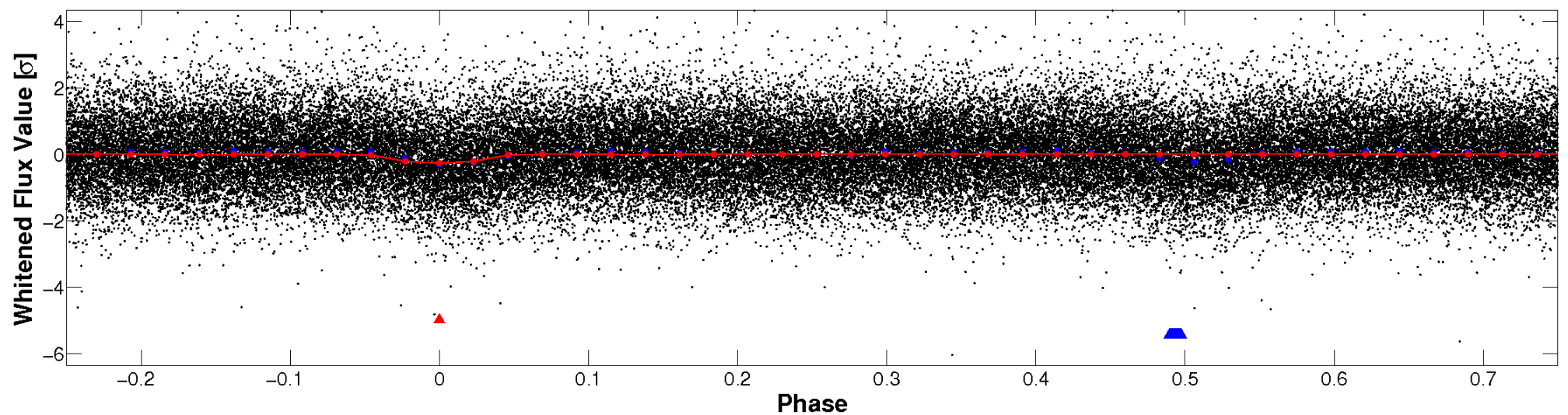


Non-Whitened Vs. Whitened Light Curve

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

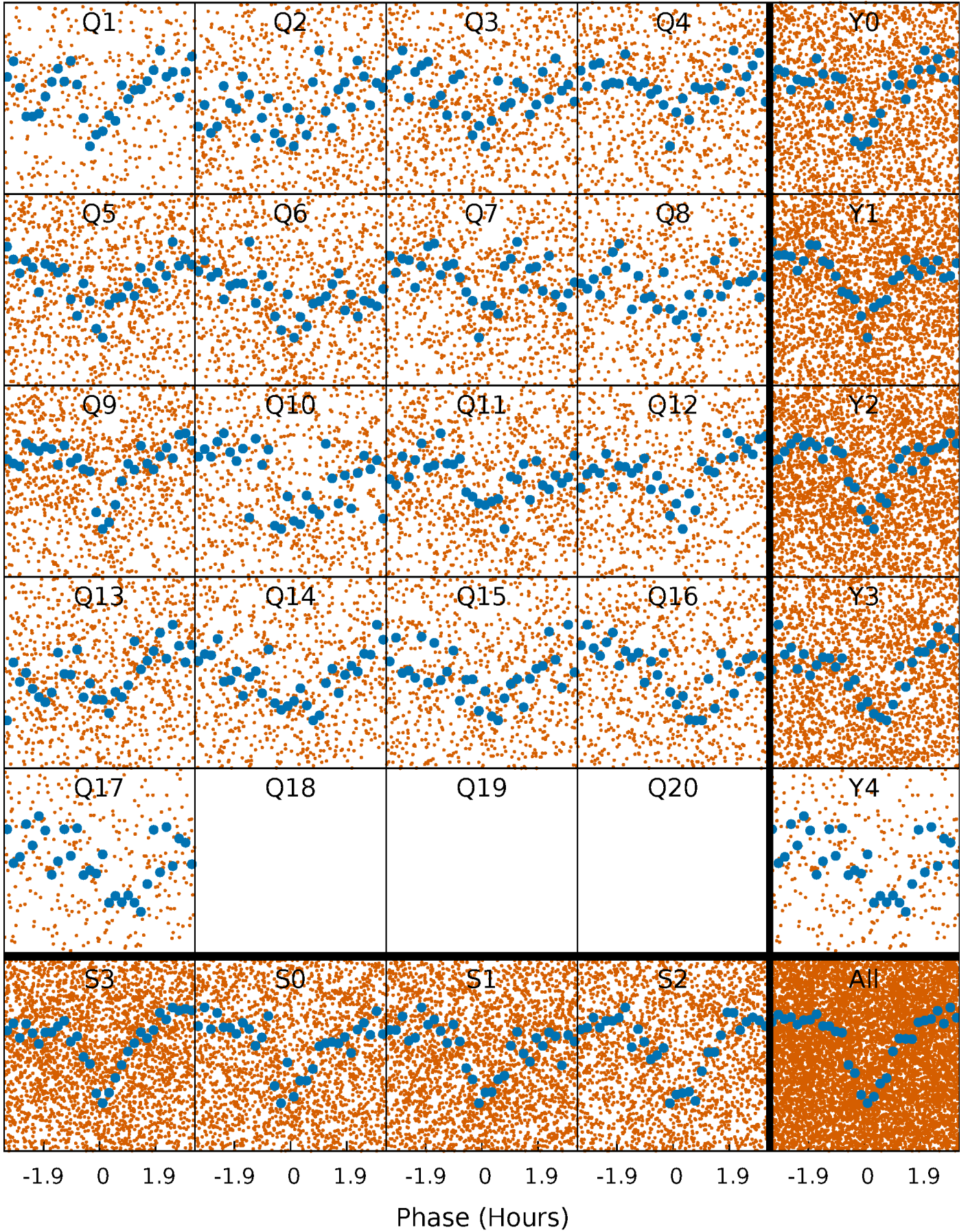


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



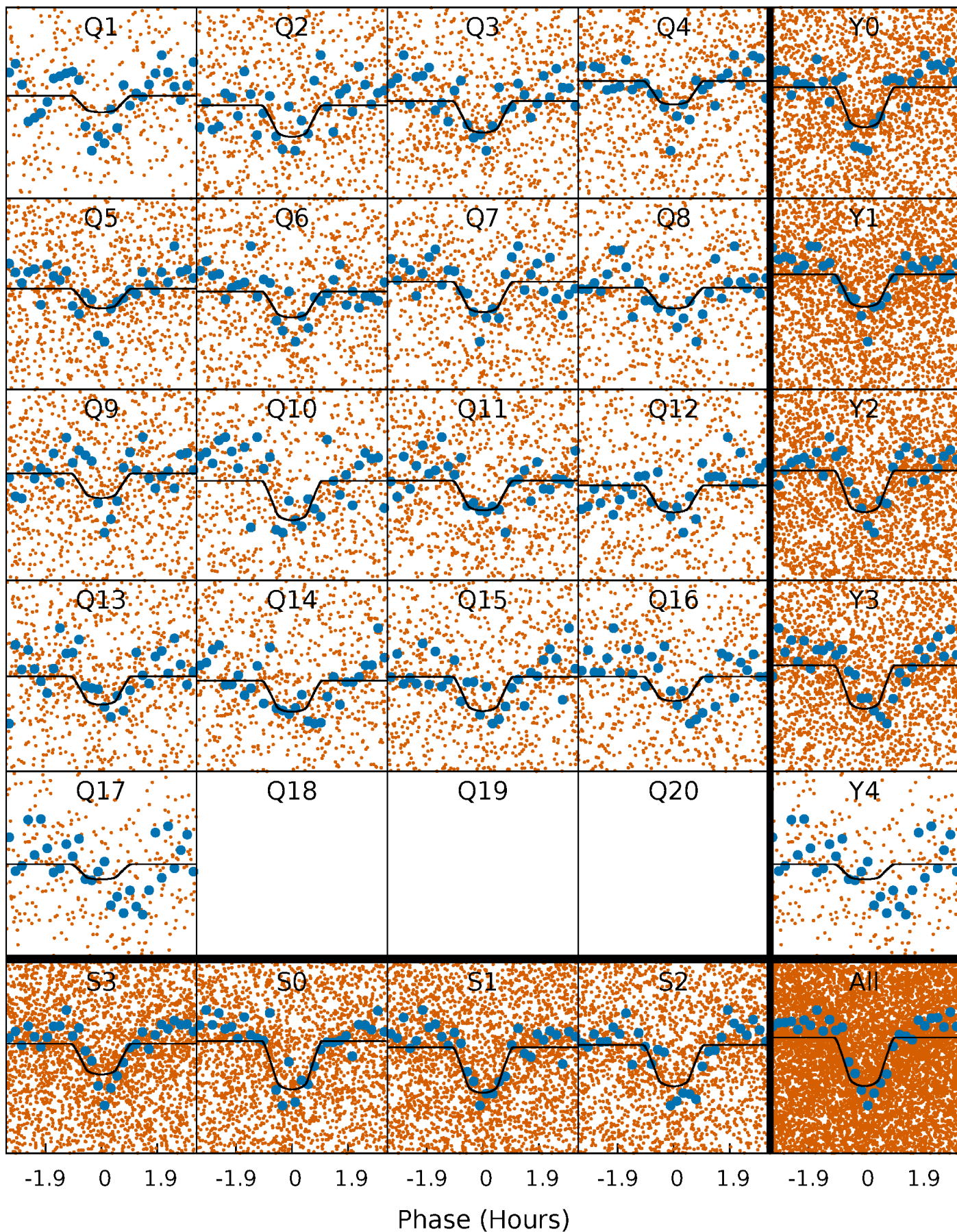
PDC Quarter-Phased Transit Curves

TCE 012509829-01 P= 0.888460 Days $T_0=131.875122$ (BKJD)



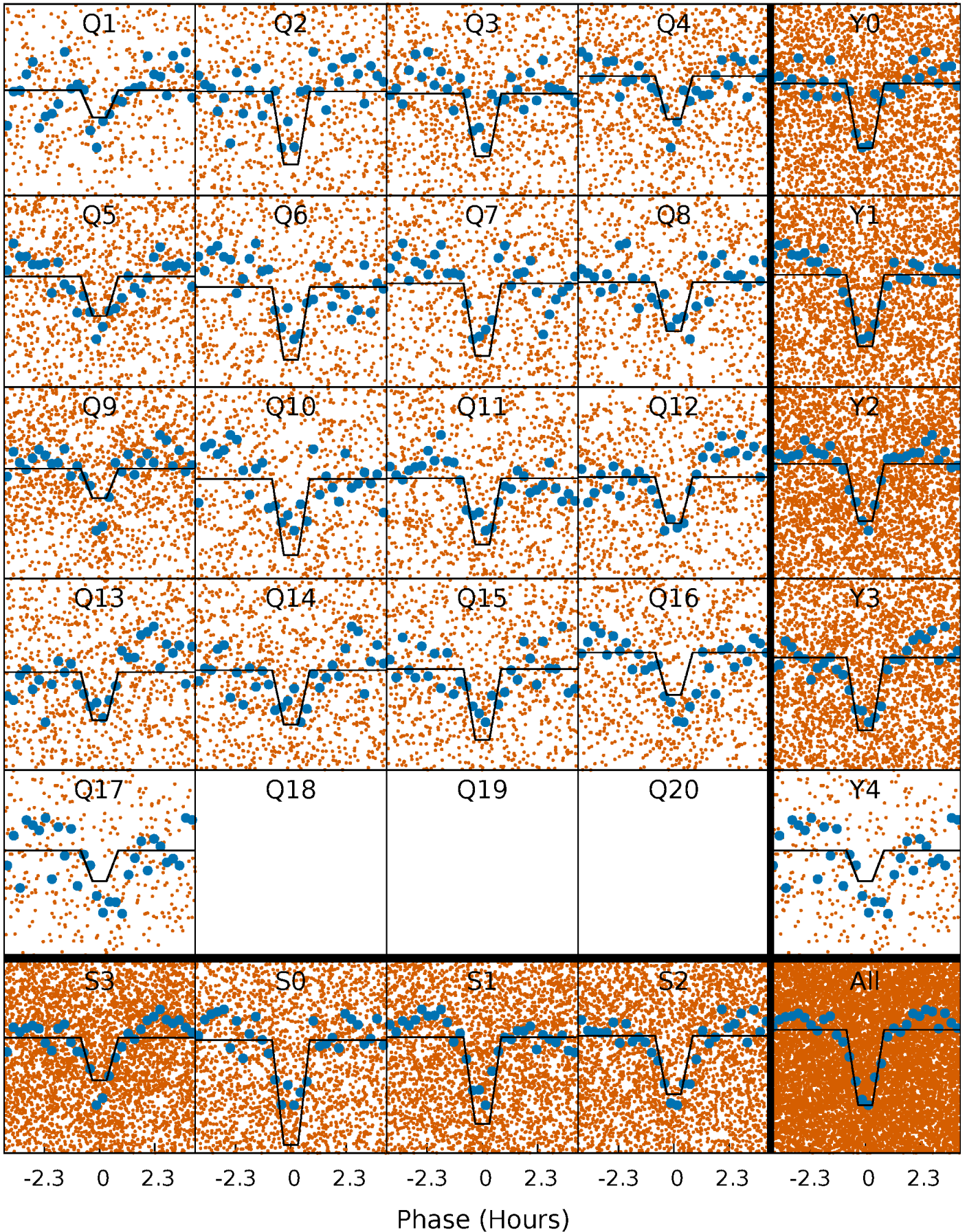
DV Quarter-Phased Transit Curves

TCE 012509829-01 P= 0.888460 Days $T_0=131.875122$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

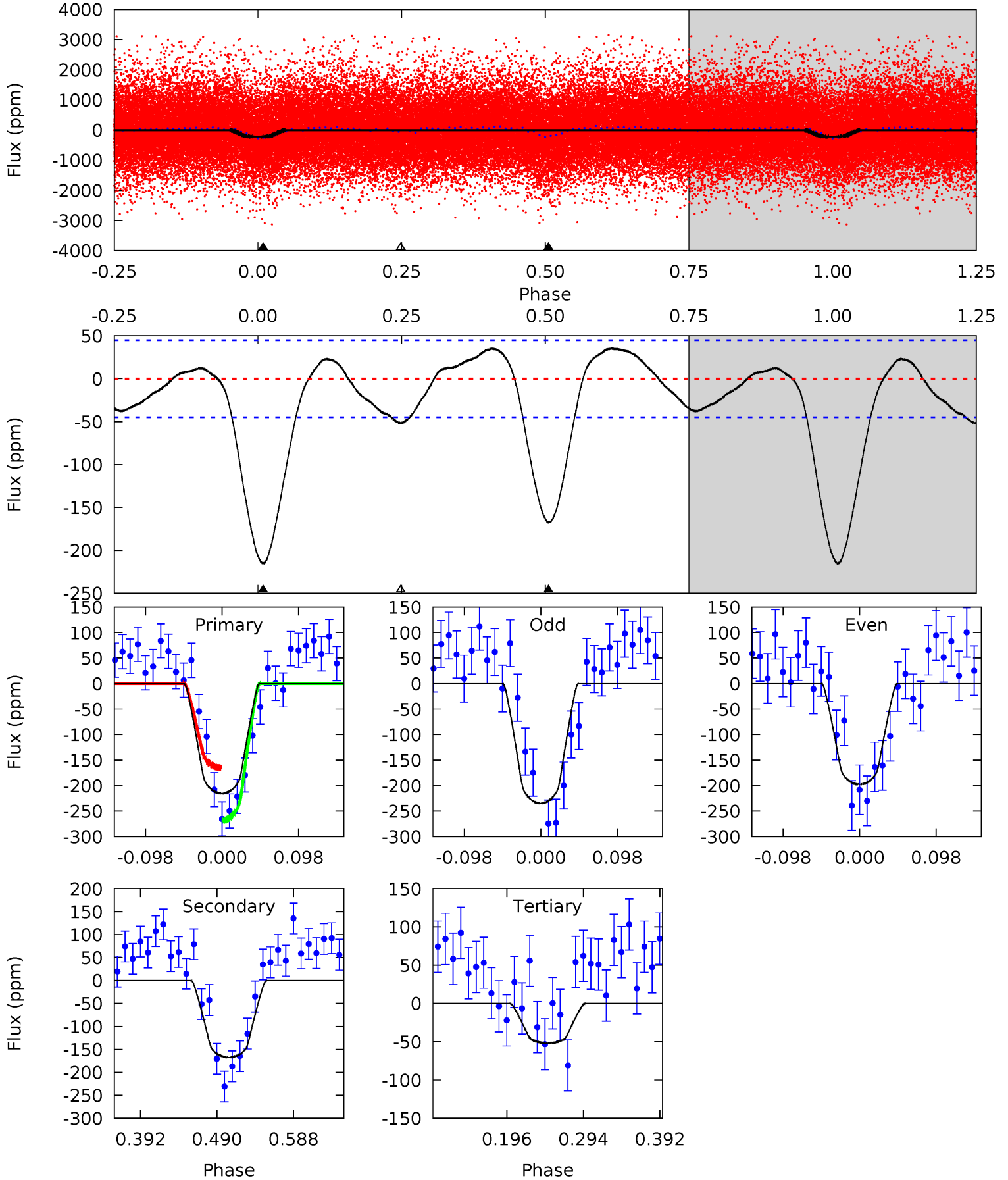
TCE 012509829-01 P= 0.888473 Days $T_0=131.873048$ (BKJD)



DV Model-Shift Uniqueness Test

012509829-01, P = 0.888460 Days, E = 130.986662 Days

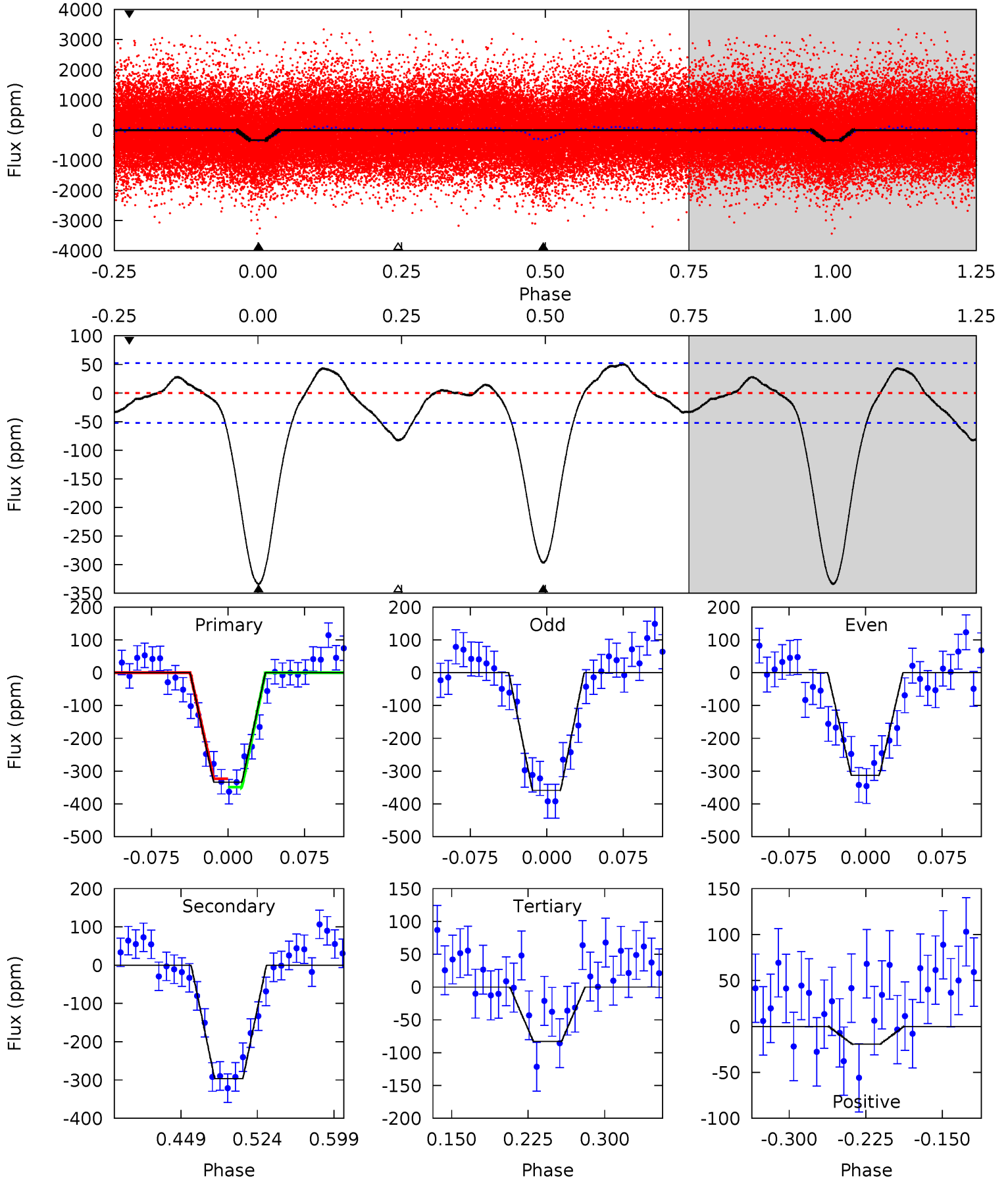
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
21.9	17.0	5.27	0	4.57	1.65	2.57	16.6	21.9	11.7	17.0	1.88	0.93	0.14	5.25



Alt Model-Shift Uniqueness Test

012509829-01, P = 0.888473 Days, E = 130.984575 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
29.5	26.2	7.31	-1.69	4.63	1.78	2.65	22.2	31.2	18.9	27.9	2.05	1.00	0.13	1.12



Stellar Parameters For KIC 012509829

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5553^{+166}_{-149}	$4.577^{+0.036}_{-0.153}$	$-0.160^{+0.300}_{-0.300}$	$0.806^{+0.176}_{-0.063}$	$0.903^{+0.083}_{-0.111}$	$2.425^{+0.468}_{-0.994}$
	+3%/-3%	+1%/-3%	+188%/-188%	+22%/-8%	+9%/-12%	+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 012509829-01 / KOI 4264.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-167 ± 10	$1.46^{+0.89}_{-0.70}$	2381^{+111}_{-97}	5056^{+2005}_{-873}	13^{+35}_{-8}
Alt.	-296 ± 11	$1.73^{+0.87}_{-0.77}$	2374^{+116}_{-93}	5301^{+1836}_{-858}	16^{+36}_{-9}

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

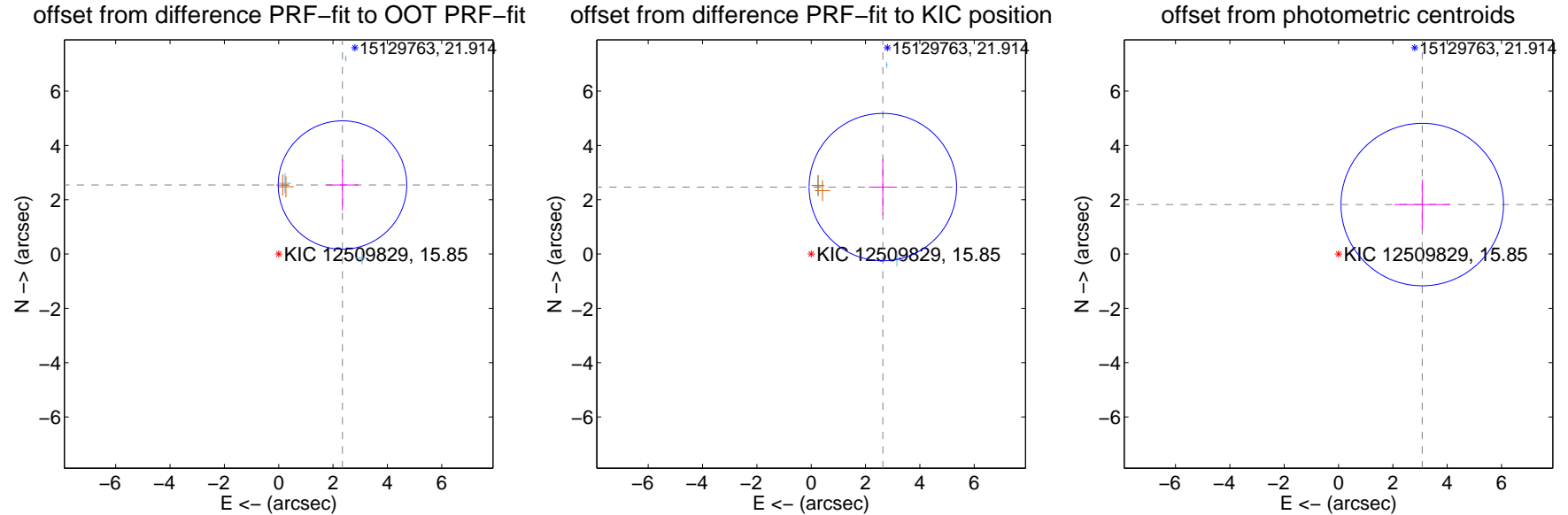
DV Centroid Data

Supplemental centroid analysis for 012509829-01. Kepler magnitude: 15.85. Transit SNR 15.10

There are 3 quarters with good PRF difference image offsets

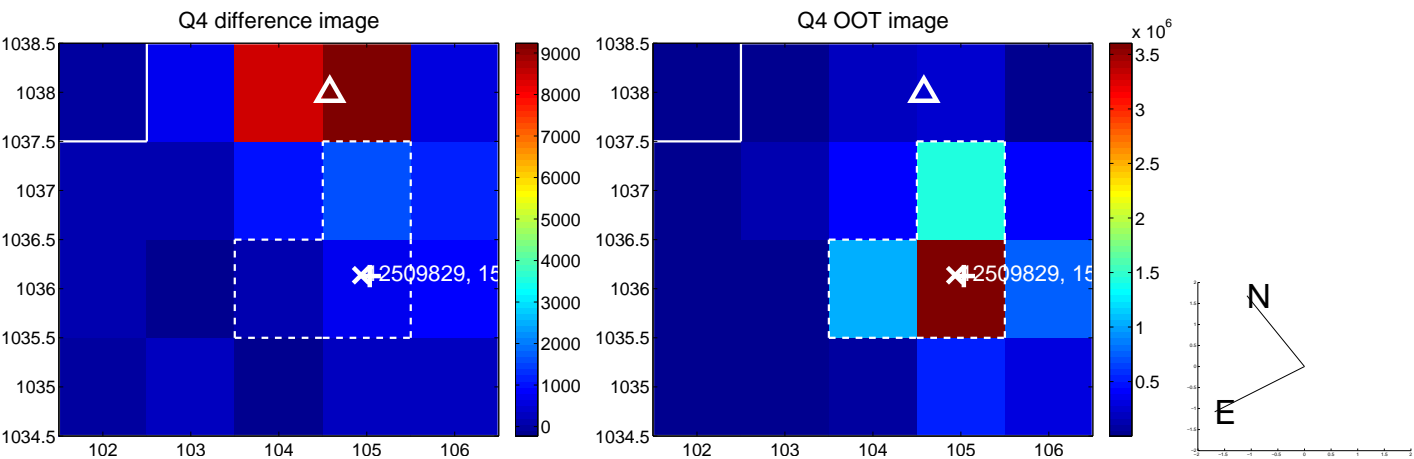
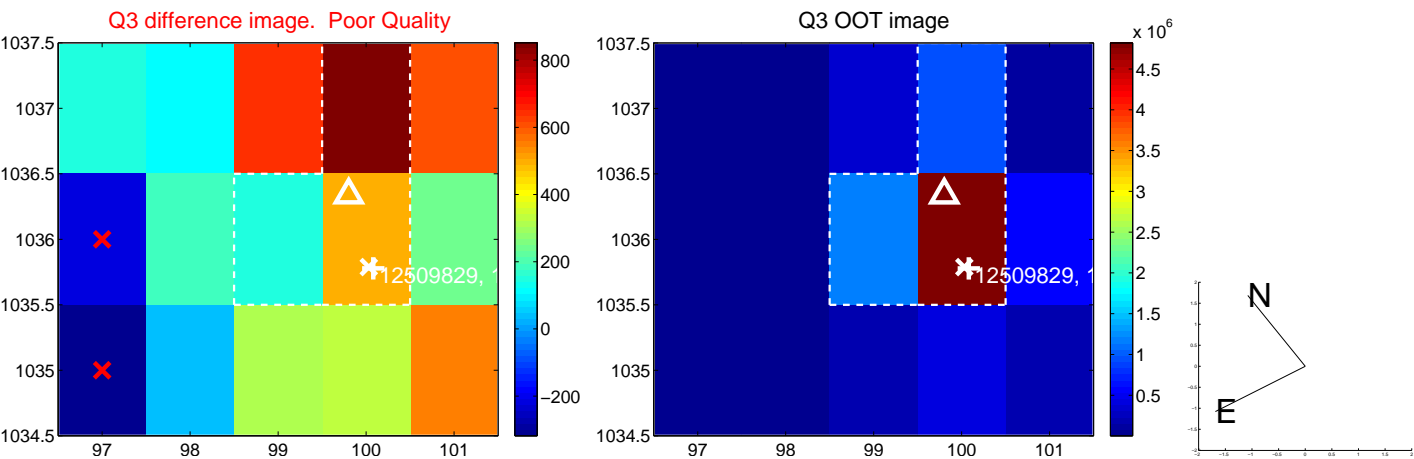
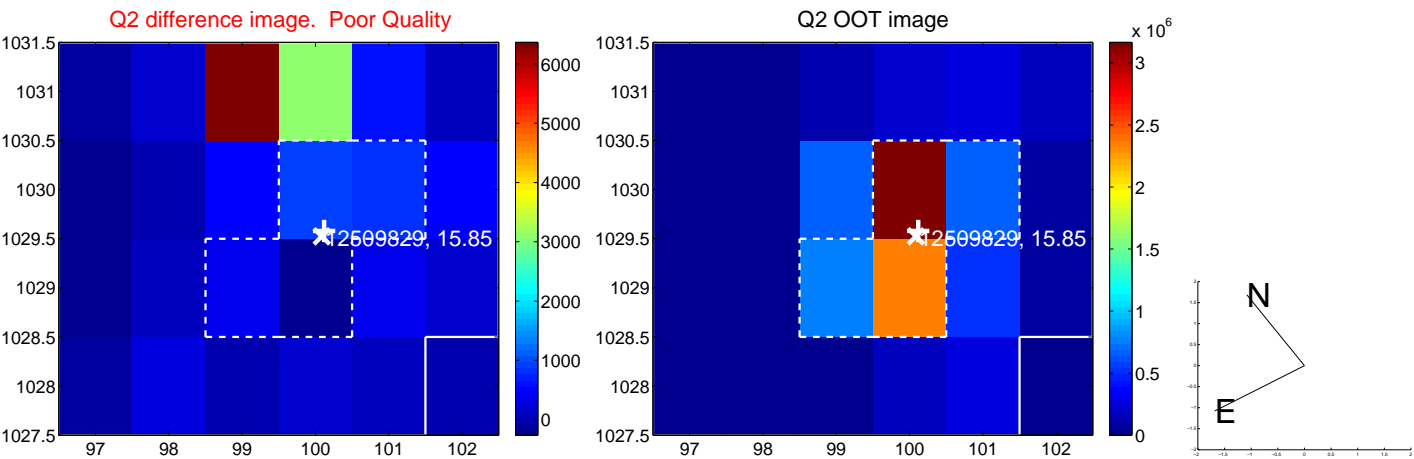
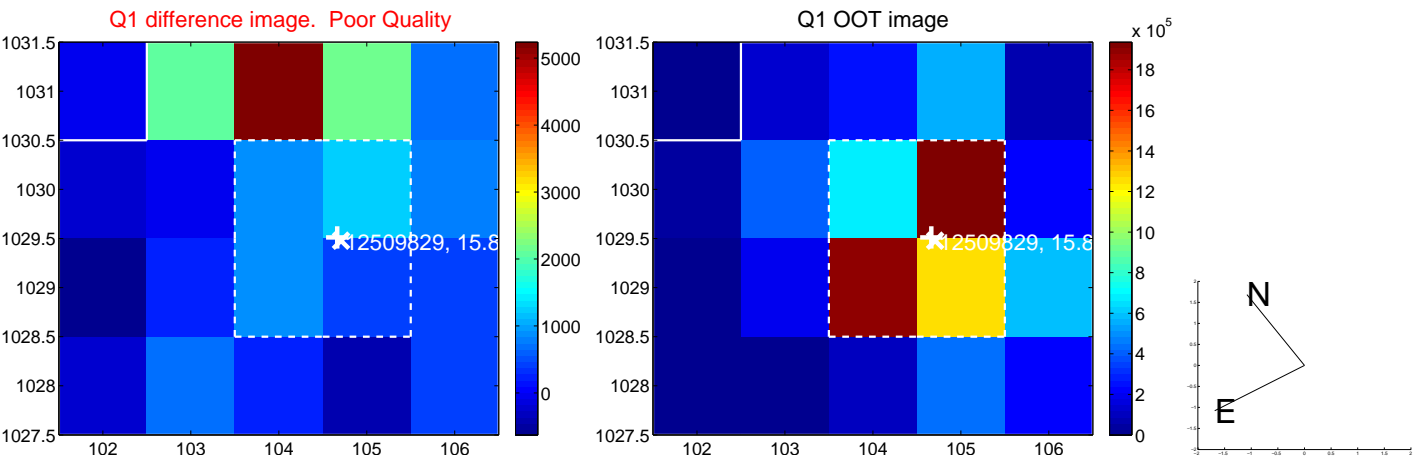
The direct PRF centroid is offset from the target star catalog position by about 0.10 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	3.461 ± 0.788	4.39	-2.348 ± 0.589	2.542 ± 0.944
PRF-fit source offset from KIC position	3.611 ± 0.905	3.99	-2.637 ± 0.514	2.467 ± 1.034
photometric centroid source offset	3.58 ± 1.00	3.59	-3.08 ± 1.02	1.82 ± 0.92

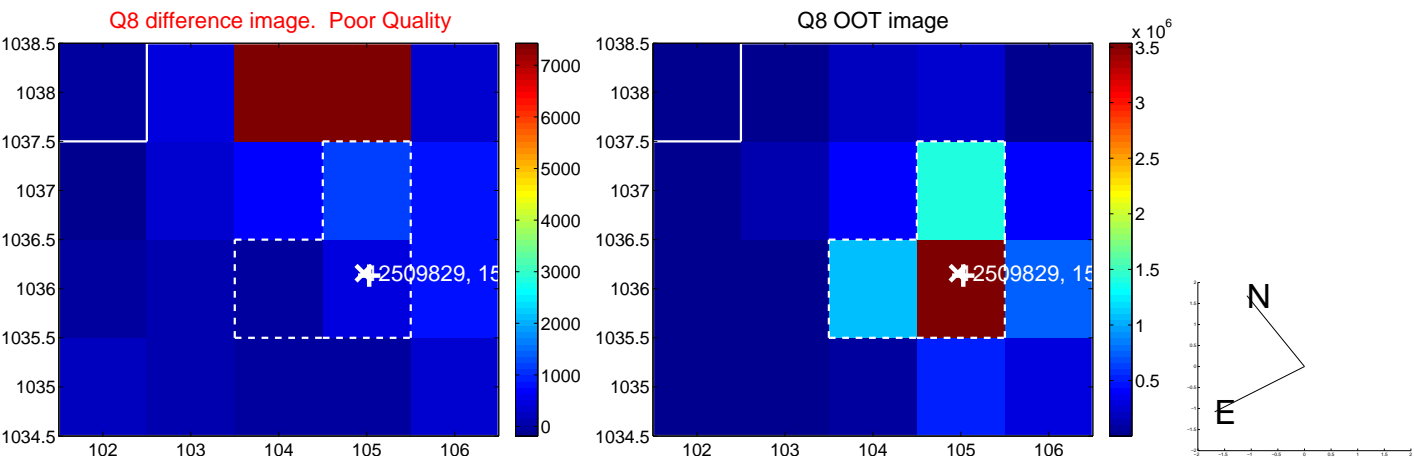
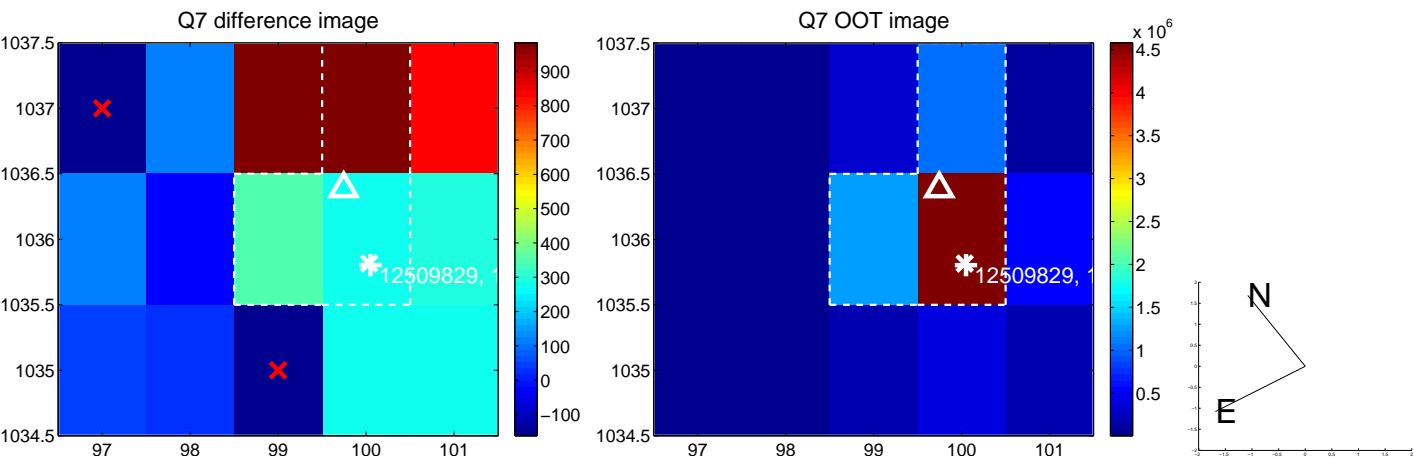
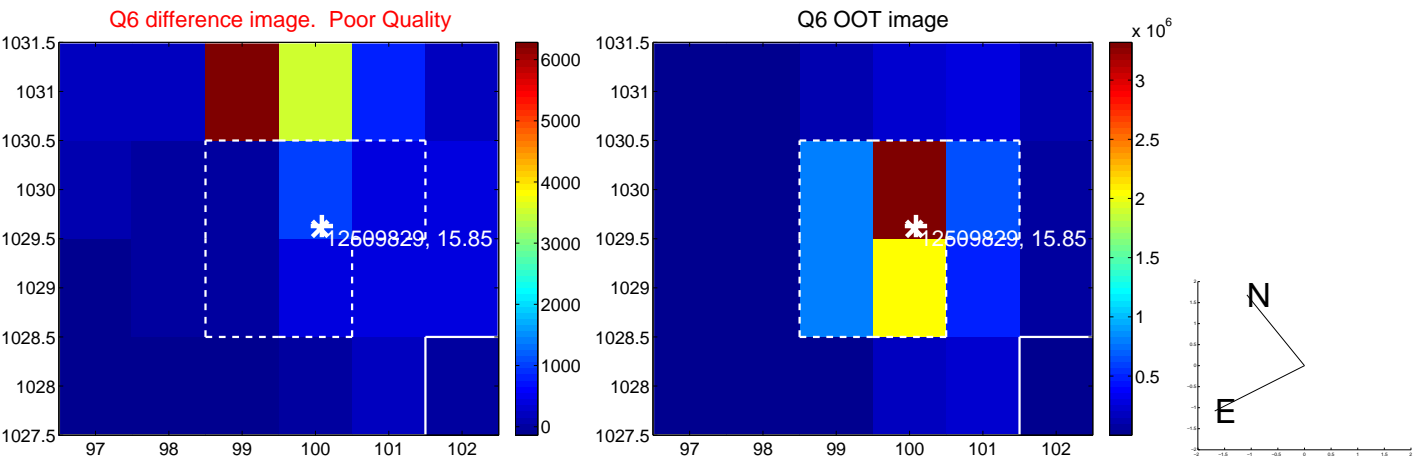
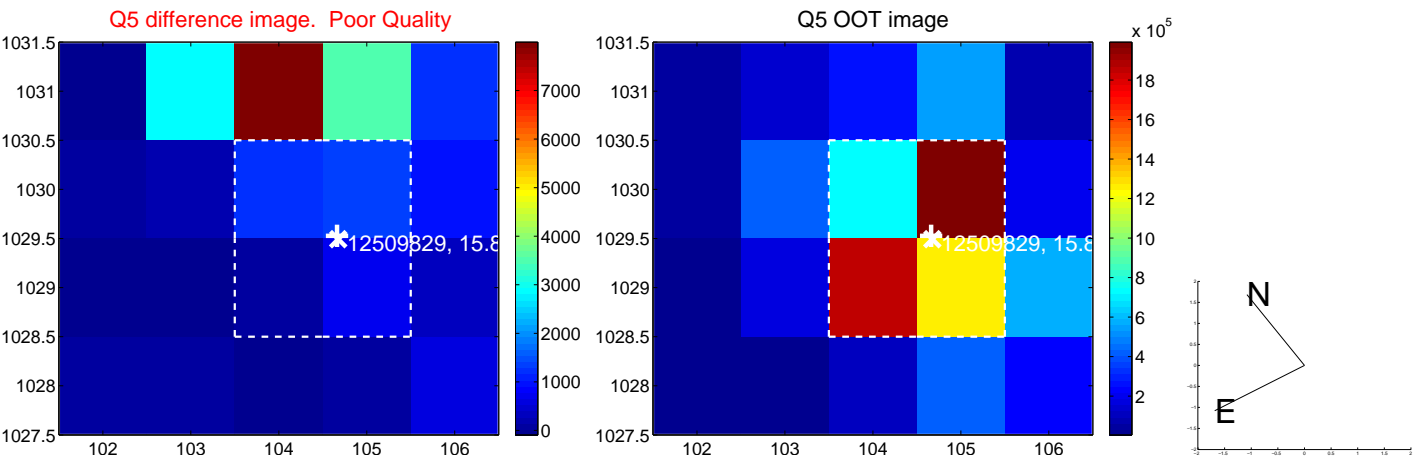


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

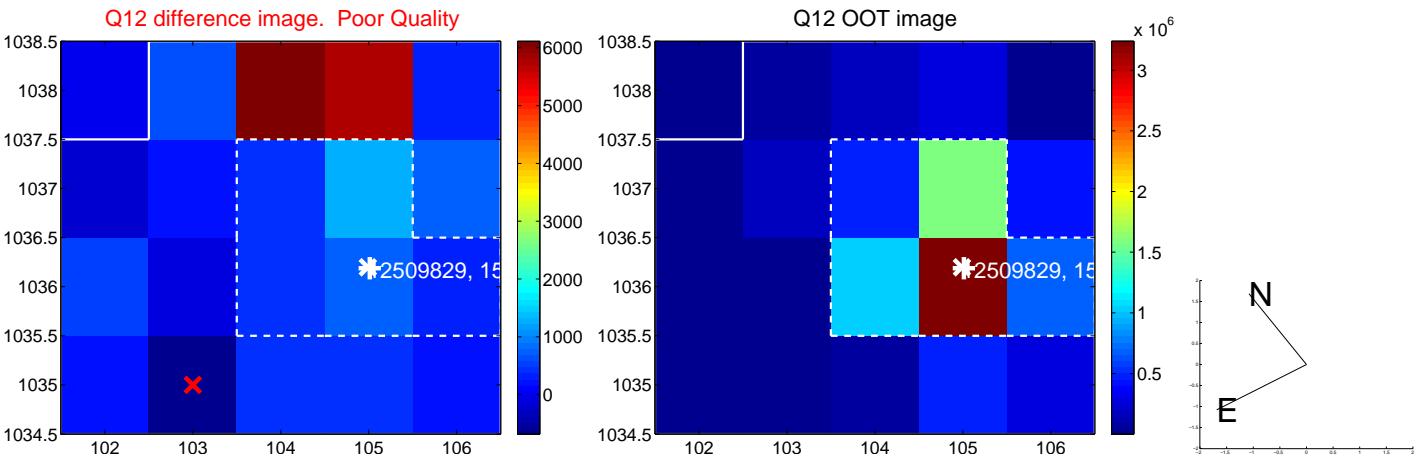
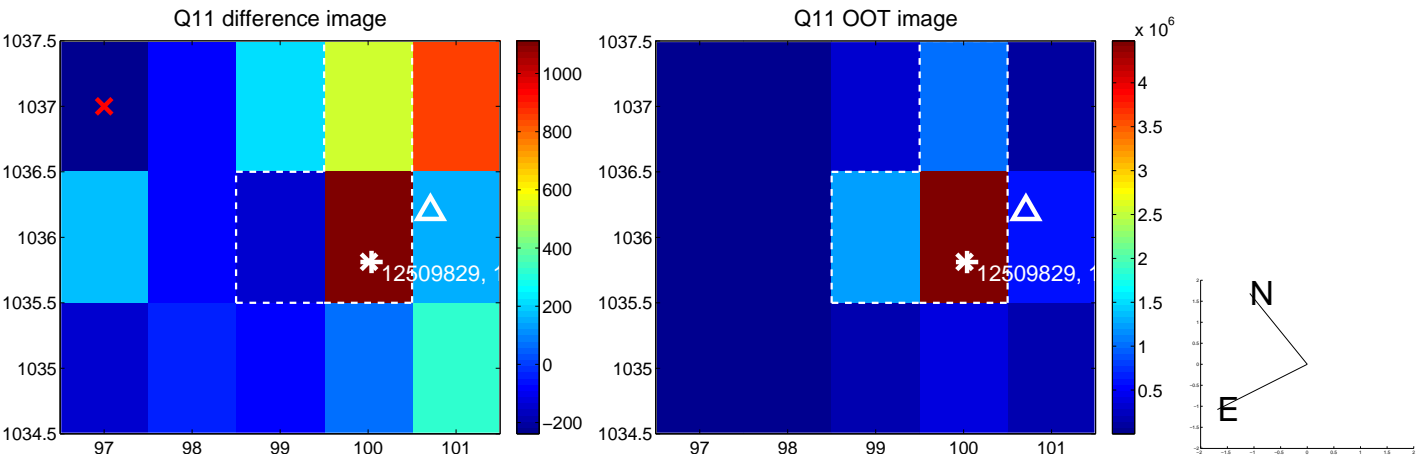
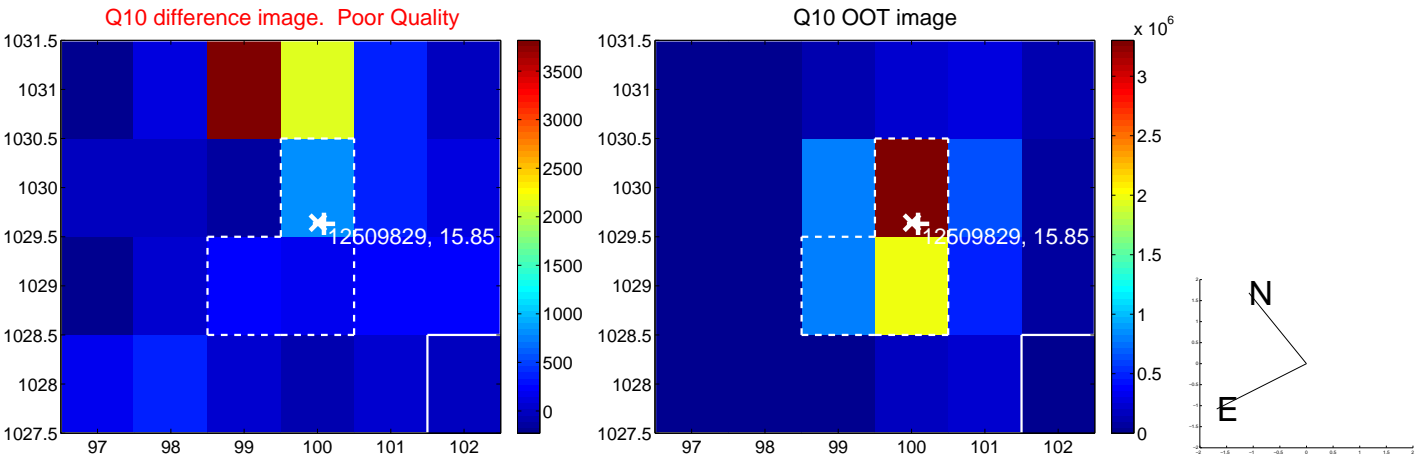
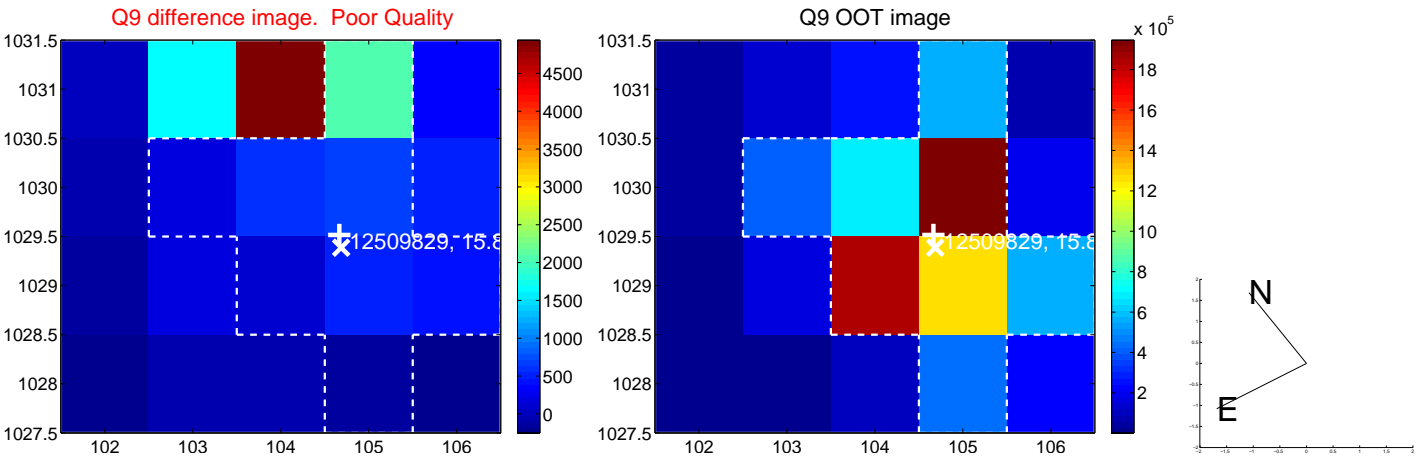
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



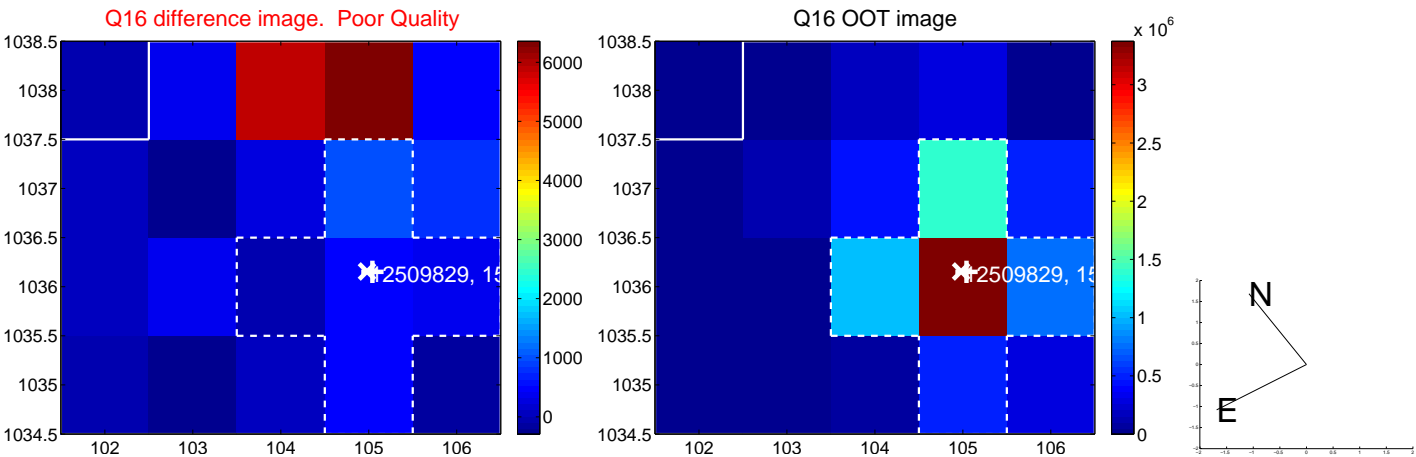
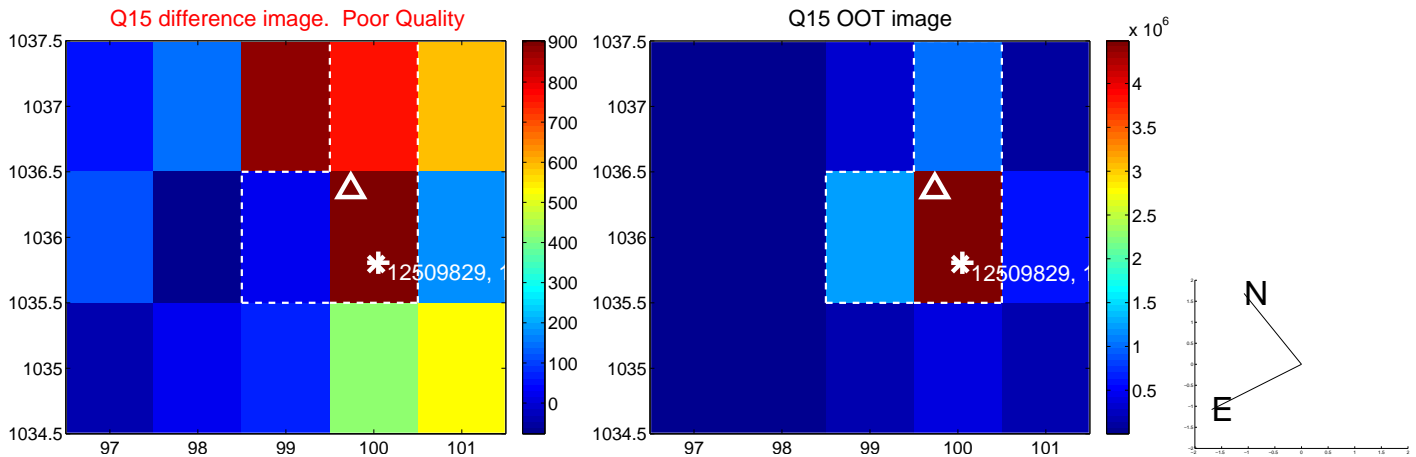
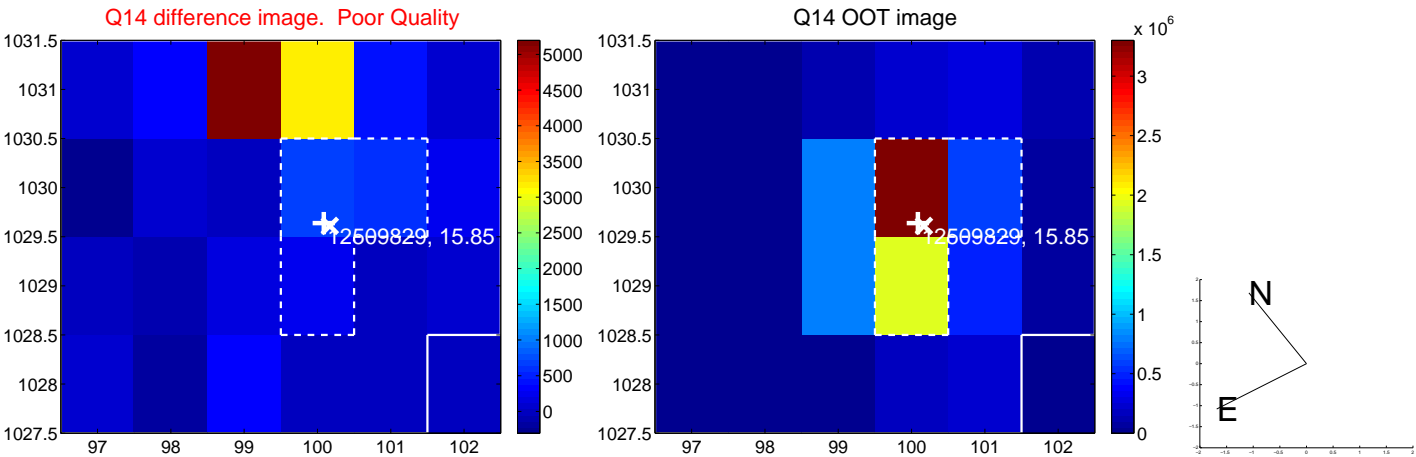
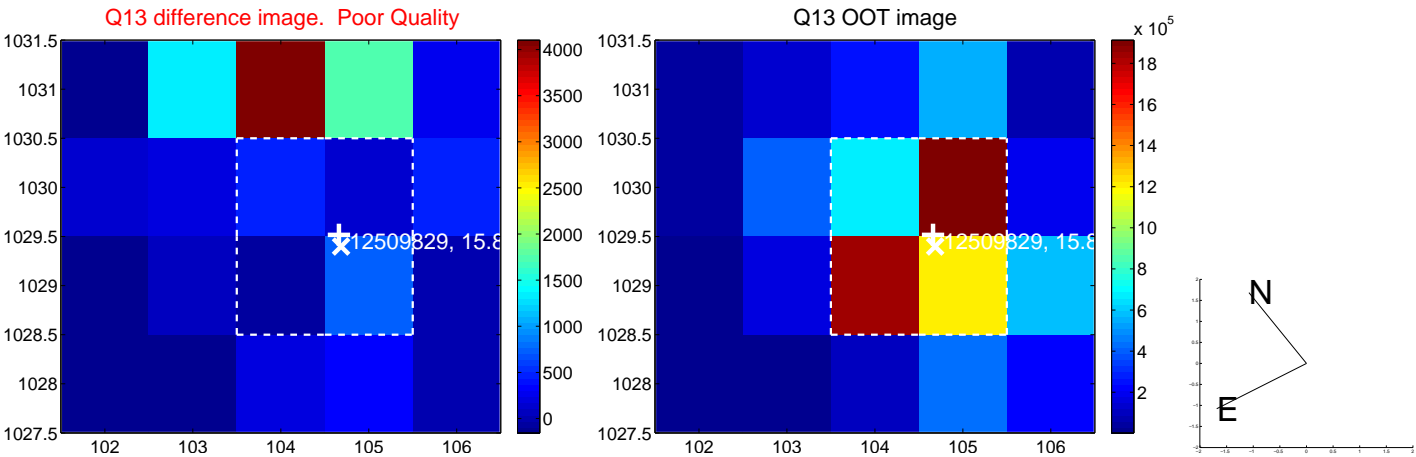
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



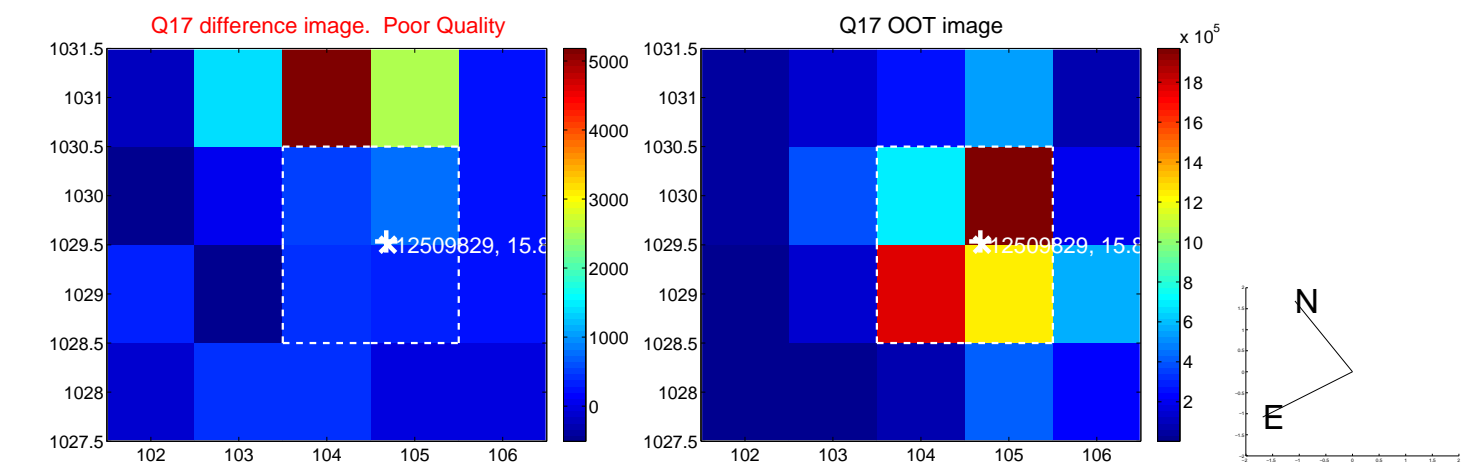
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



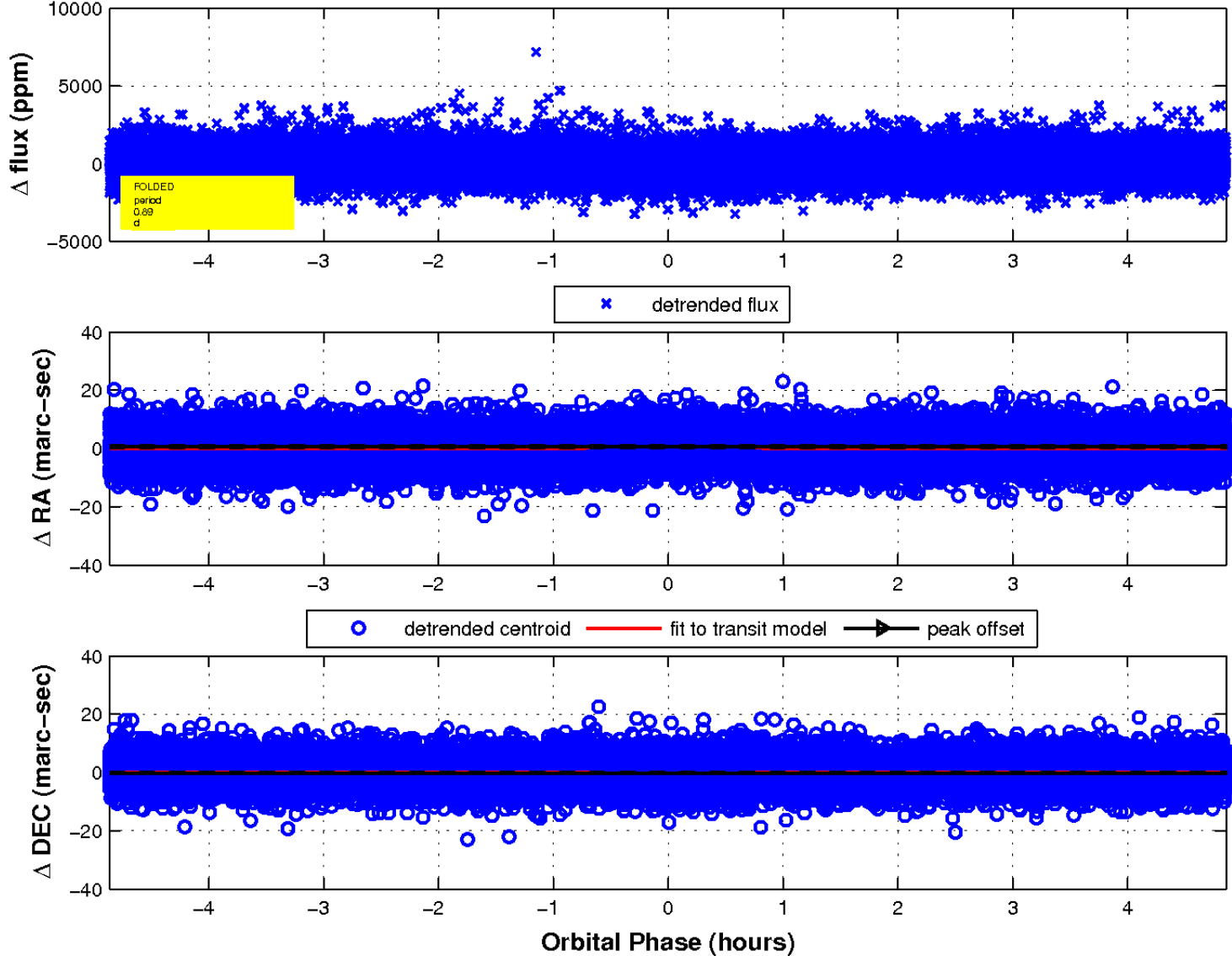
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



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

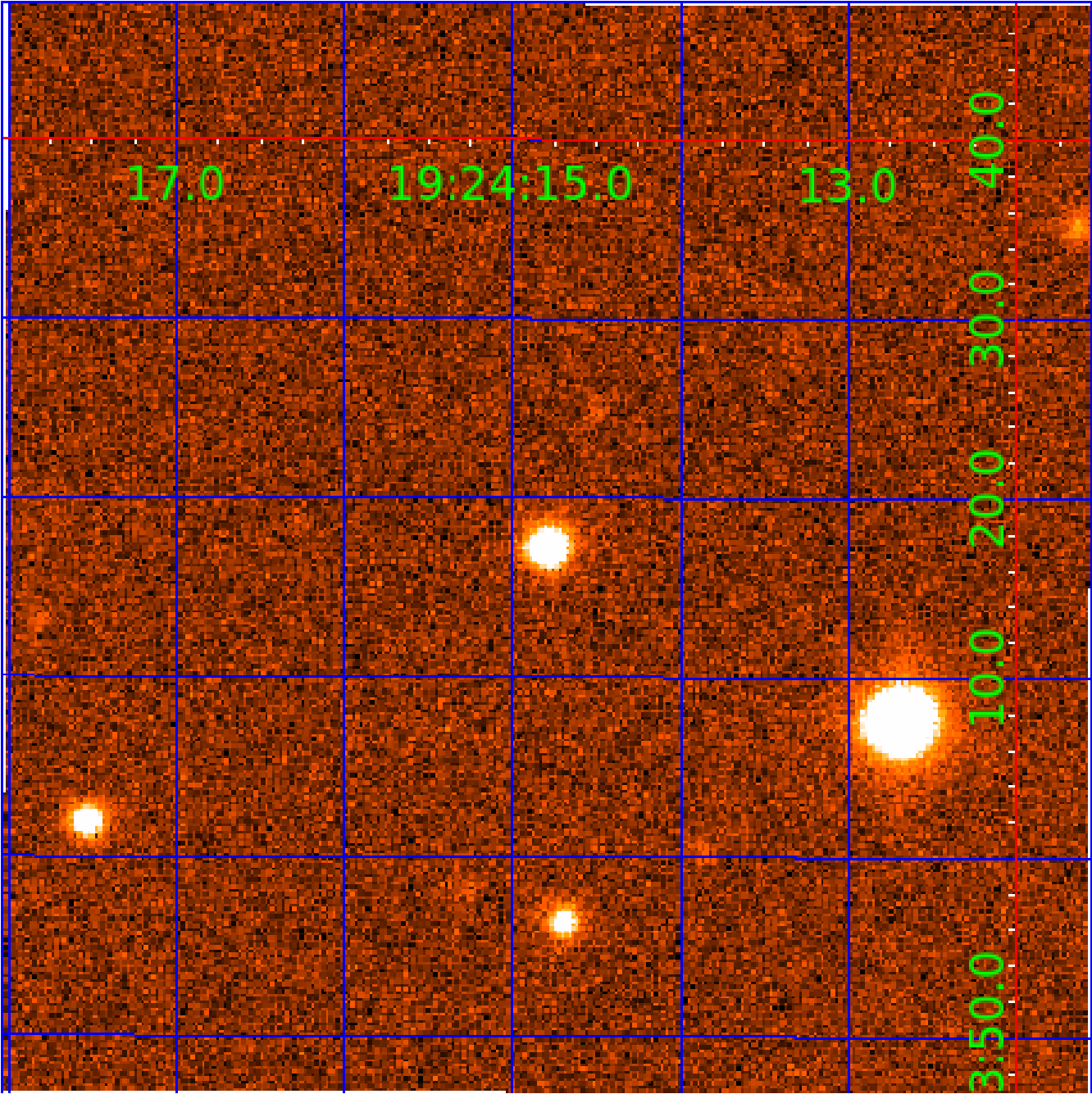


fluxWeightedCentroids, Planet 1 of 2



UKIRT Image

Declination



KIC 012509829

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})
012509829-01	OBS	4264.01	0.888460	131.875122	202.1	1.621	14.6	15.1	0.81	5553	1.37	1821.29
012509829-02	OBS	No	0.888455	132.317059	184.6	1.509	12.8	13.5	0.81	5553	1.31	1821.30

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
012509829-01	OBS	FP	0.00	0	1	1	0	MOD_SEC_DV—MOD_SEC_ALT—HAS_SEC_TCE—CENT_RESOLVED_OFFSET
012509829-02	OBS	FP	0.00	1	1	1	0	IS_SEC_TCE—CENT_RESOLVED_OFFSET

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.

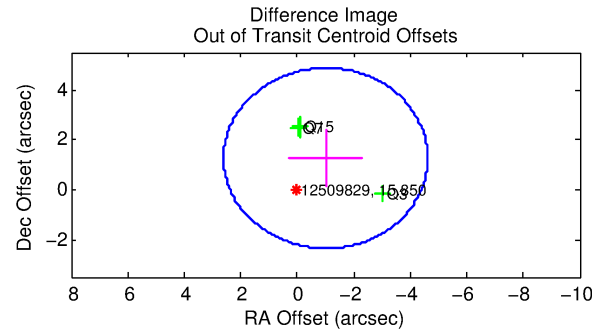
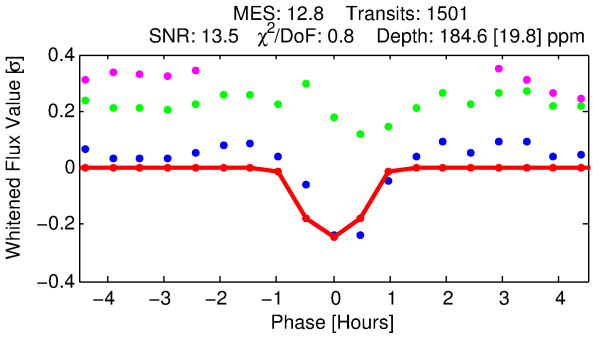
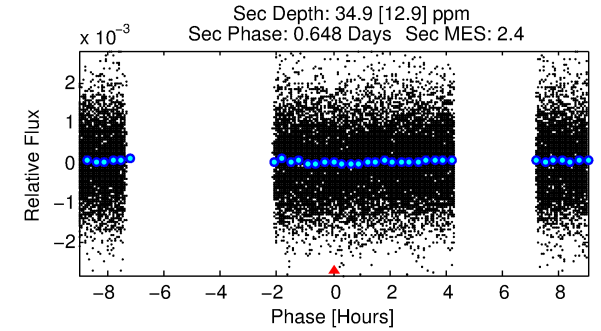
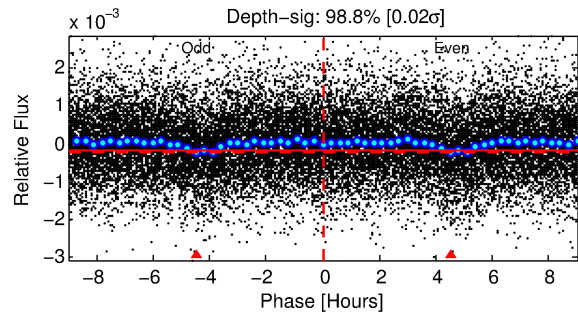
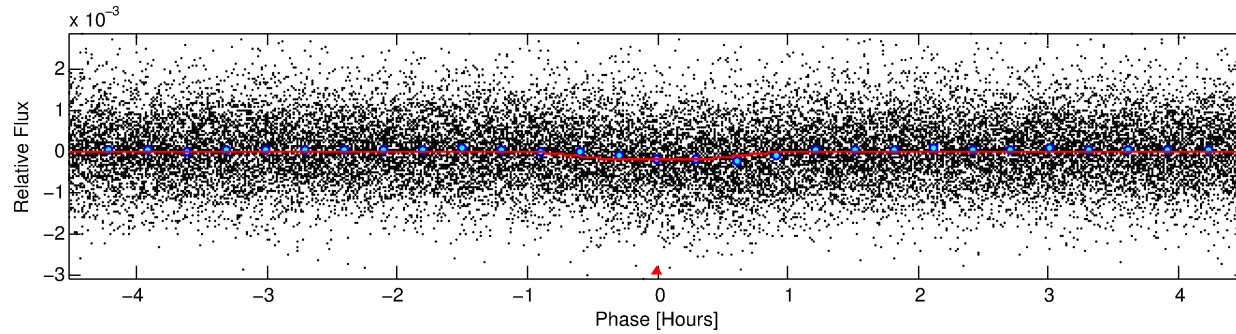
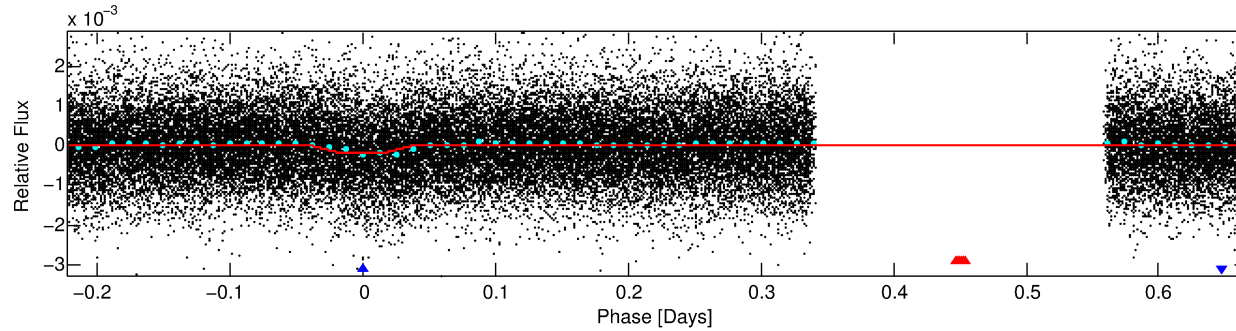
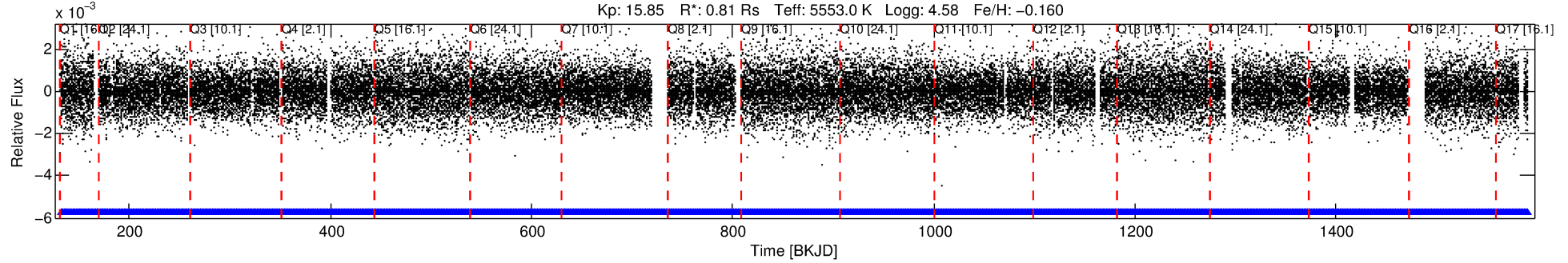
Ephemeris Match Information For 012509829-02

No Significant Match Found

DV One-Page Summary

KIC: 12509829 Candidate: 2 of 2 Period: 0.888 d
KOI: K04264 Corr: No Ephemeris Match

Kp: 15.85 R*: 0.81 Rs Teff: 5553.0 K Logg: 4.58 Fe/H: -0.160



DV Fit Results:

Period = 0.88846 [0.00001] d
Epoch = 132.3171 [0.0017] BKJD
Rp/R* = 0.0149 [0.0111]
a/R* = 2.31 [6.40]
b = 0.90 [0.74]
Seff = 1821.30 [548.36]
Teq = 1666 [125] K
Rp = 1.31 [1.02] Re
a = 0.0174 [0.0033] AU
Ag = 3.39 [5.30] [0.45σ]
Teffp = 3494 [1348] K [1.35σ]

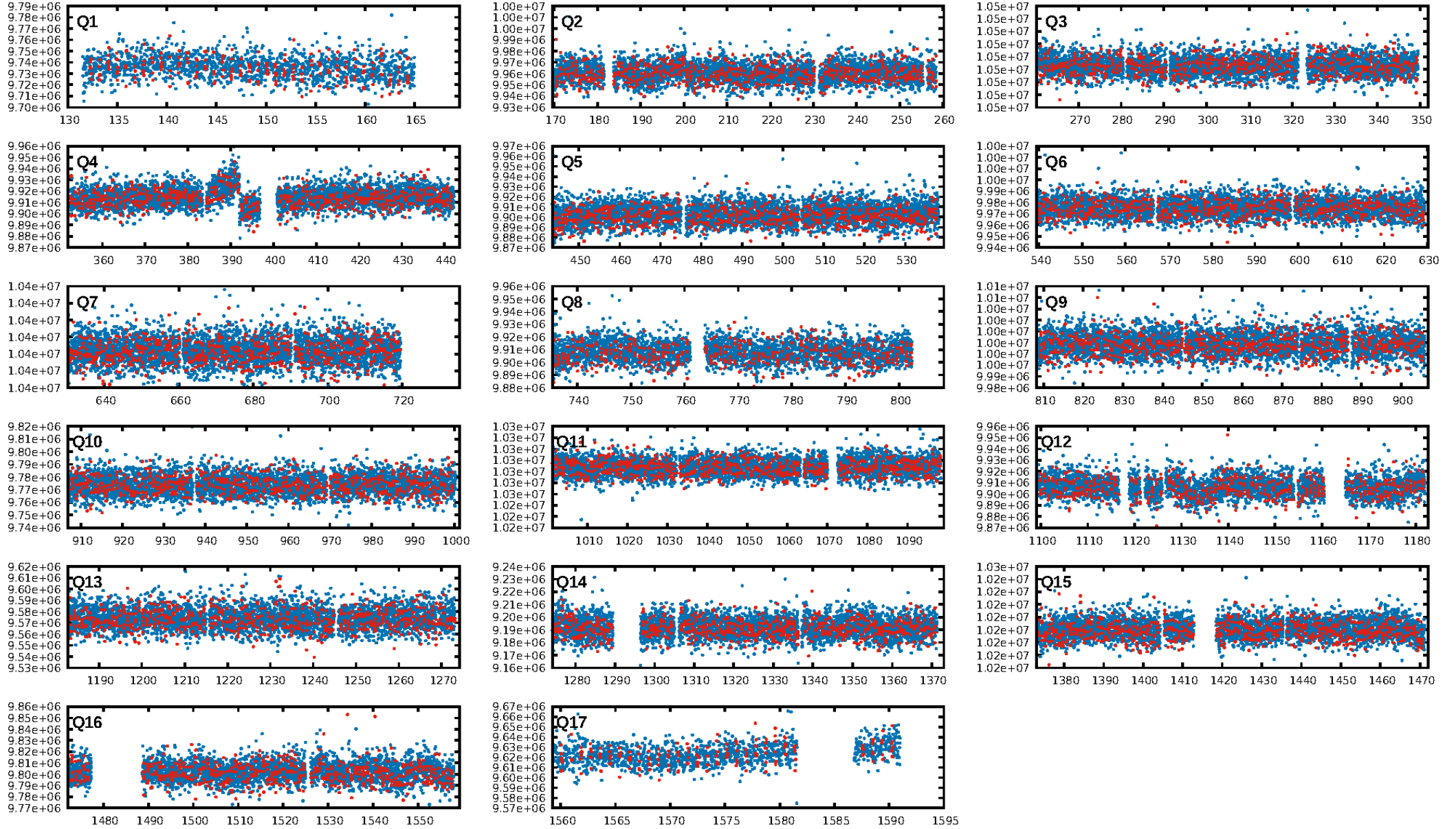
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.0% [0.00σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 1.03e-37
RollingBand-fgt: 1.00 [1435/1435]
GhostDiagnostic-chr: -1.6
Centroid-sig: 0.5%
Centroid-so: 3.293 arcsec [2.87σ]
OotOffset-rm: 1.611 arcsec [1.34σ]
KicOffset-rm: 1.613 arcsec [1.29σ]
OotOffset-st: 0/3/0/0 [3]
KicOffset-st: 0/3/0/0 [3]
DiffImageQuality-fgm: 0.00 [0/3]
DiffImageOverlap-fno: 1.00 [17/17]

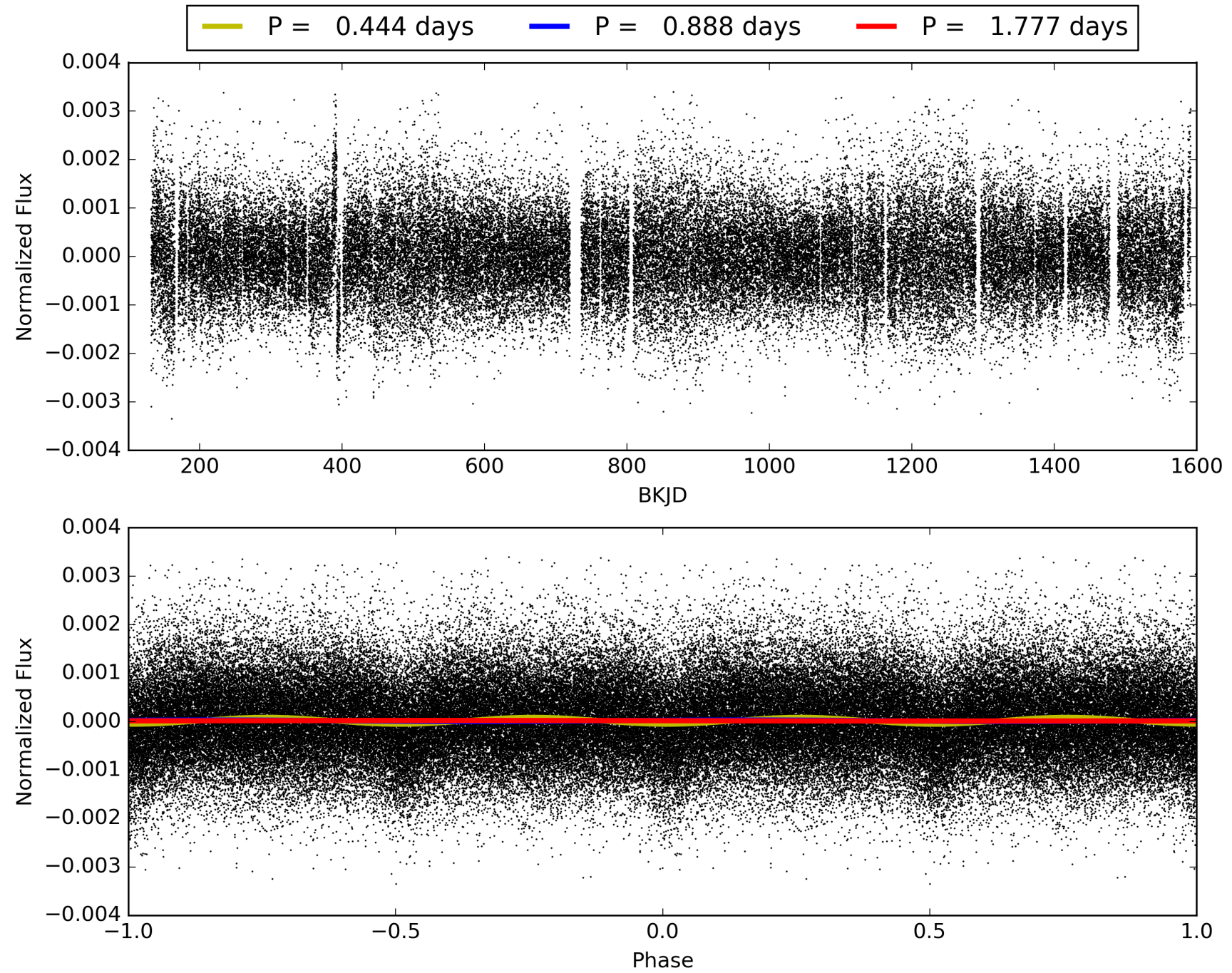
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 10:43:53 Z

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

TCE 012509829-02, PDC Light Curves

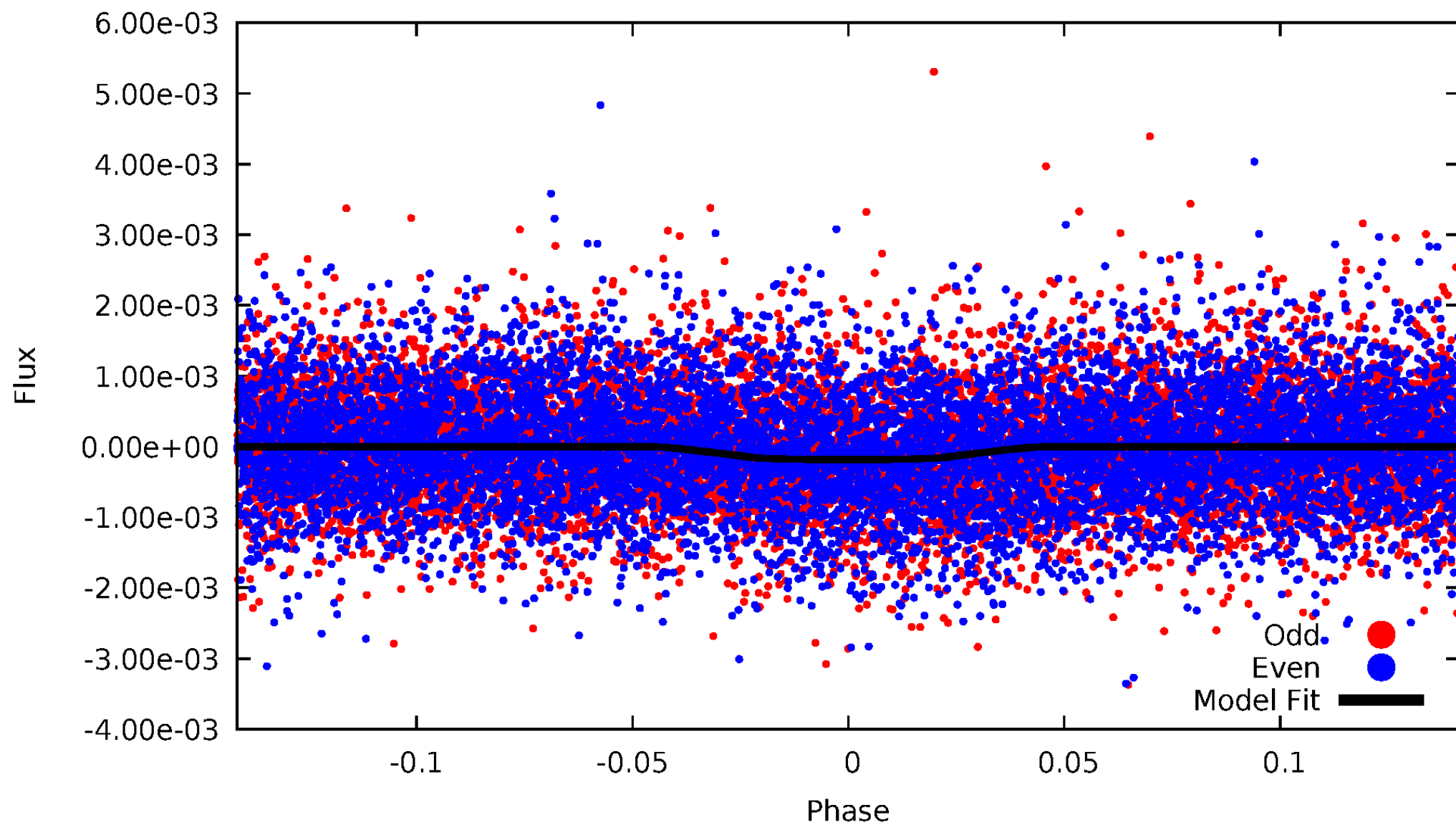


TCE 012509829-02



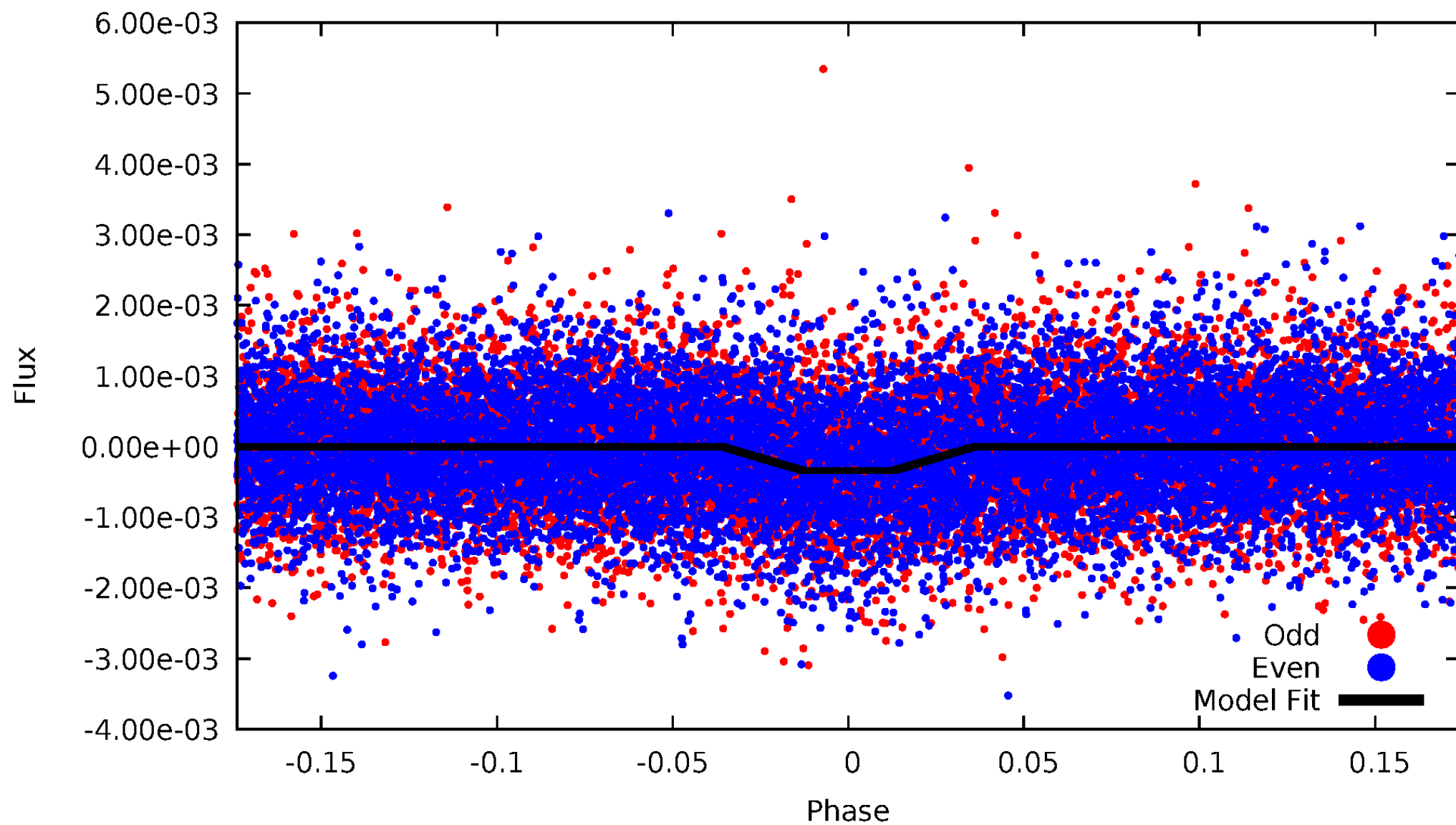
DV Odd/Even

TCE 012509829-02



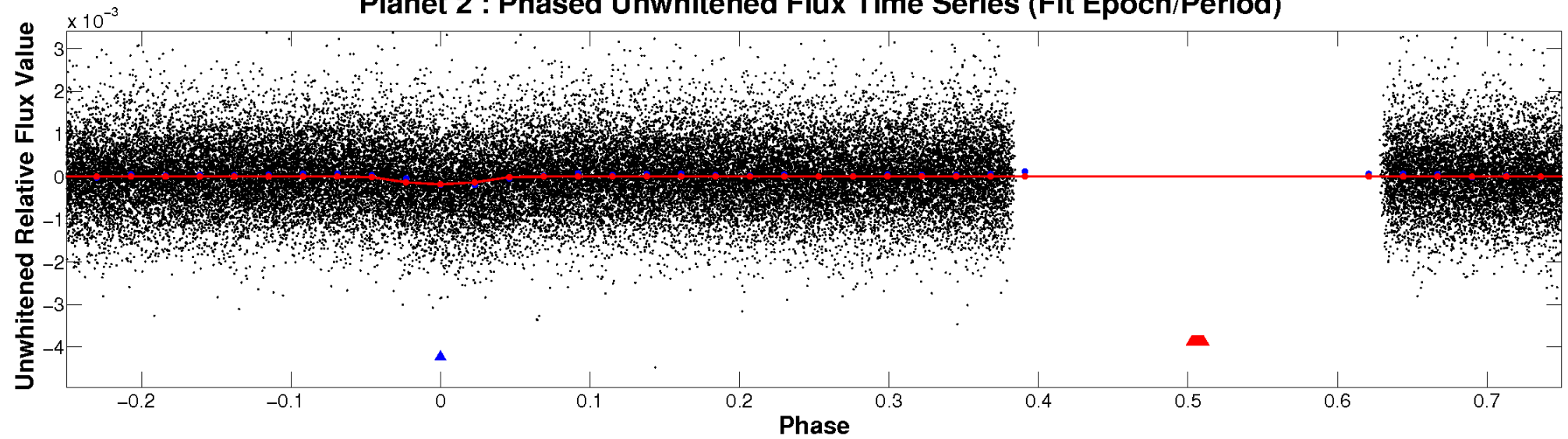
ALT Odd/Even

TCE 012509829-02

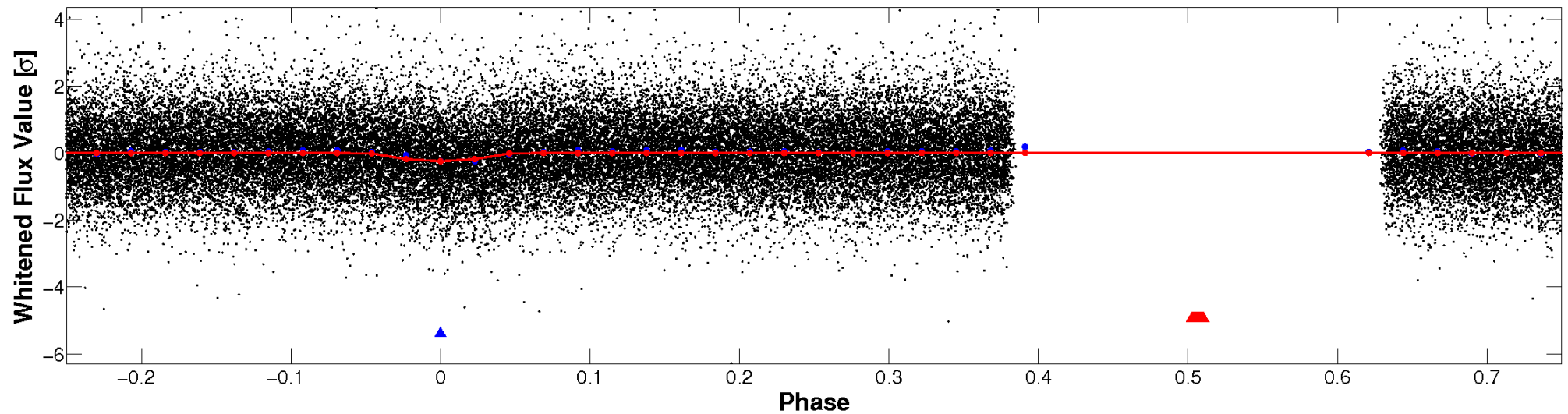


Non-Whitened Vs. Whitened Light Curve

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

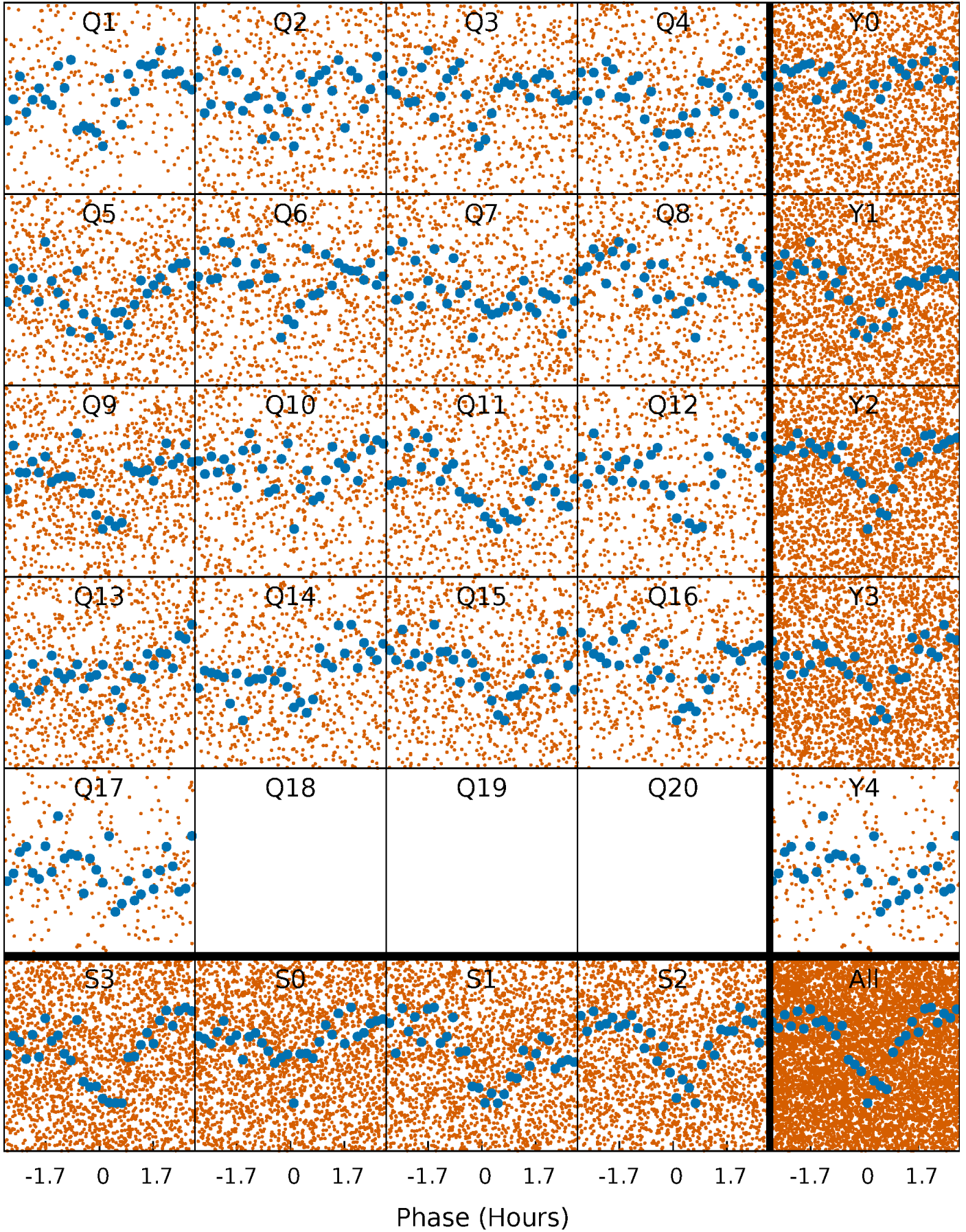


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



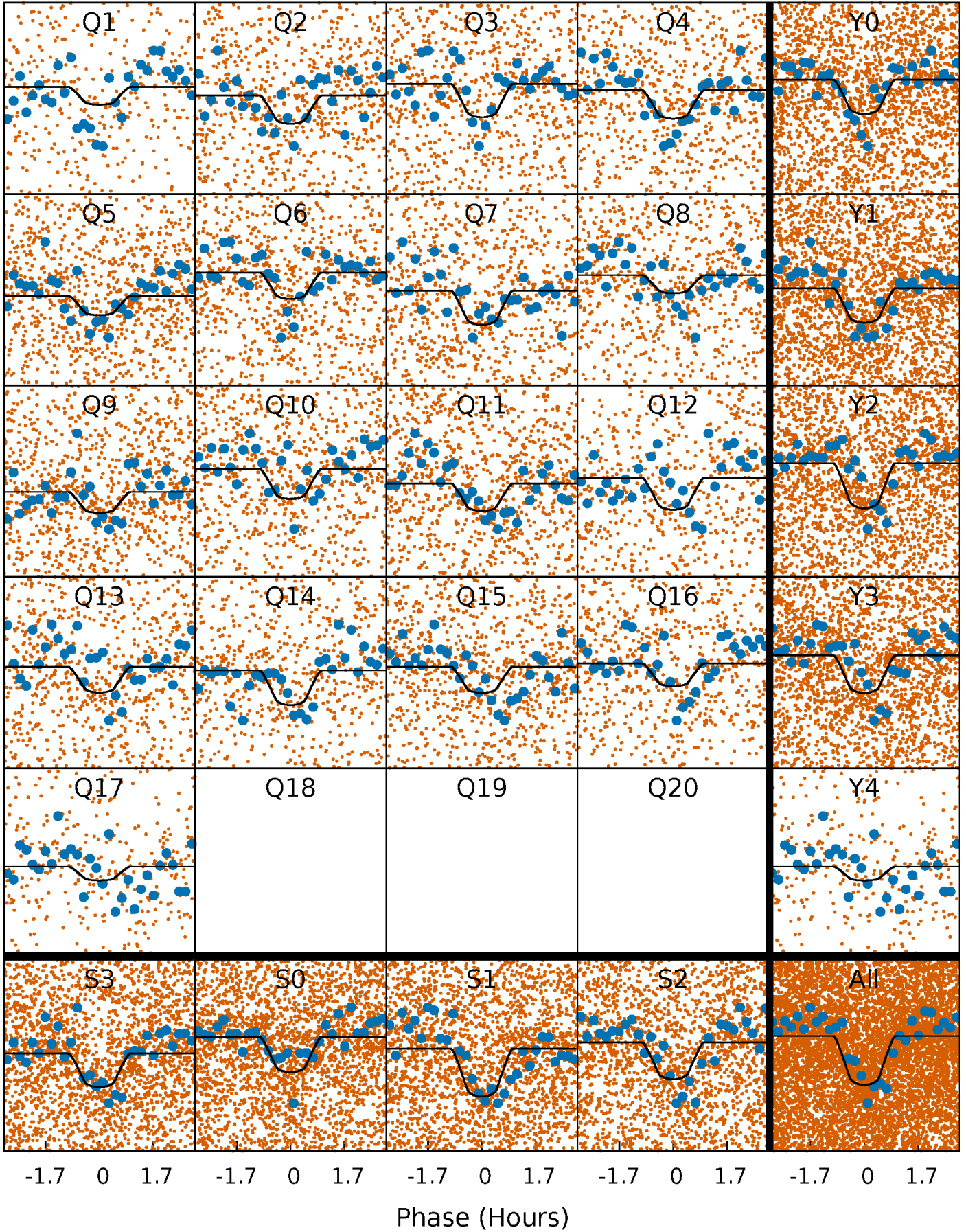
PDC Quarter-Phased Transit Curves

TCE 012509829-02 P= 0.888455 Days $T_0=132.317059$ (BKJD)



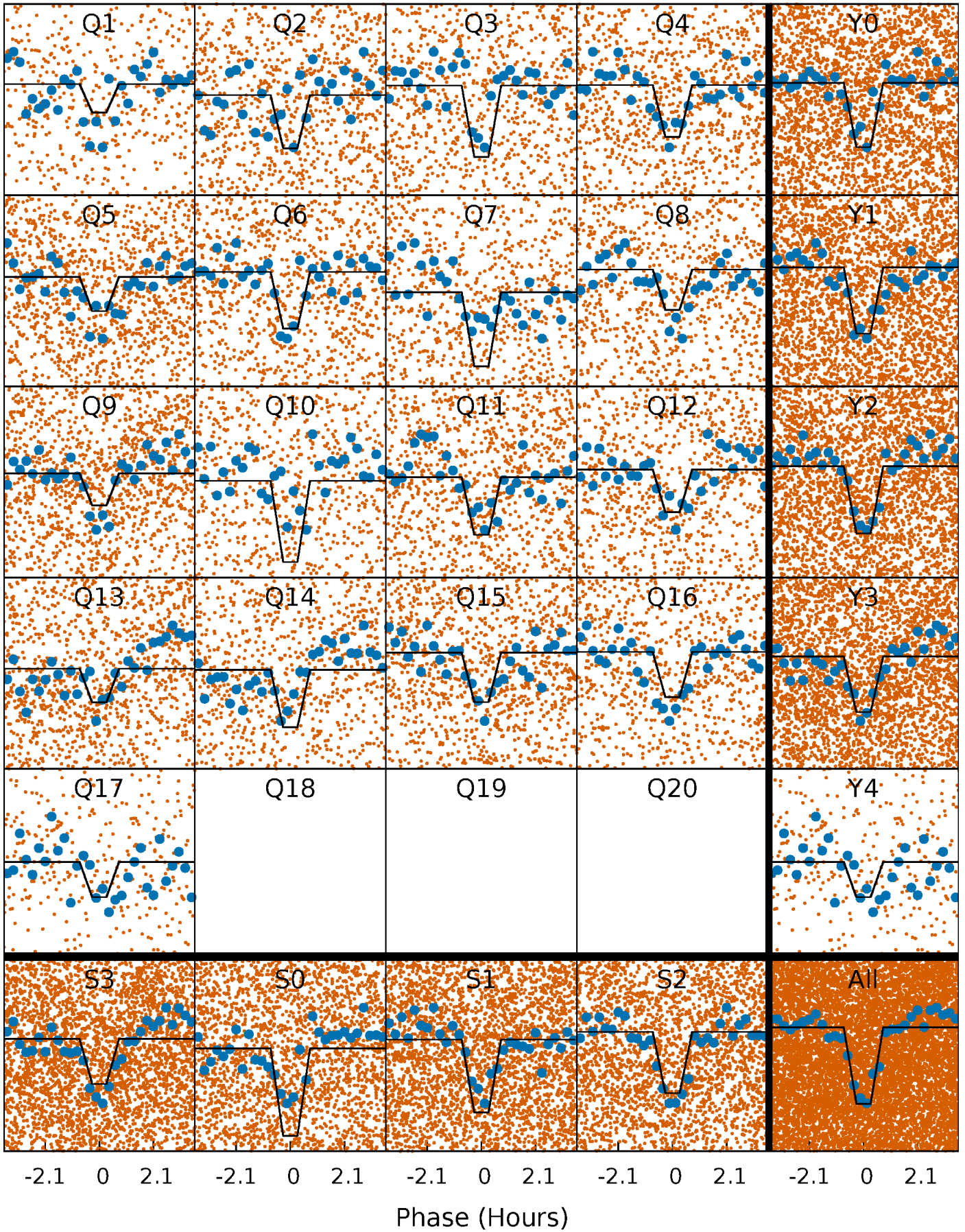
DV Quarter-Phased Transit Curves

TCE 012509829-02 P= 0.888455 Days $T_0=132.317059$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

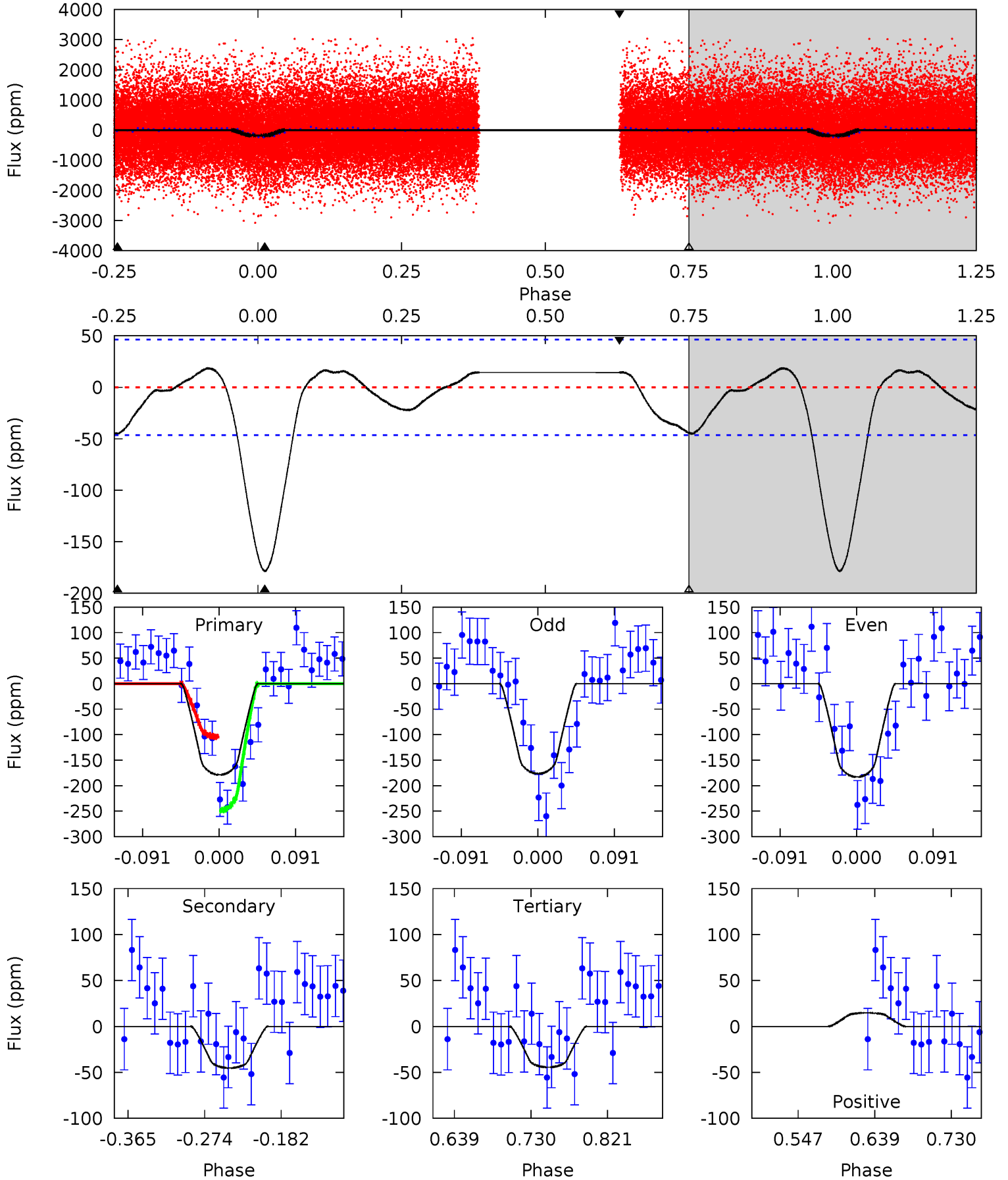
TCE 012509829-02 P= 0.888473 Days $T_0=132.313828$ (BKJD)



DV Model-Shift Uniqueness Test

012509829-02, P = 0.888455 Days, E = 131.428604 Days

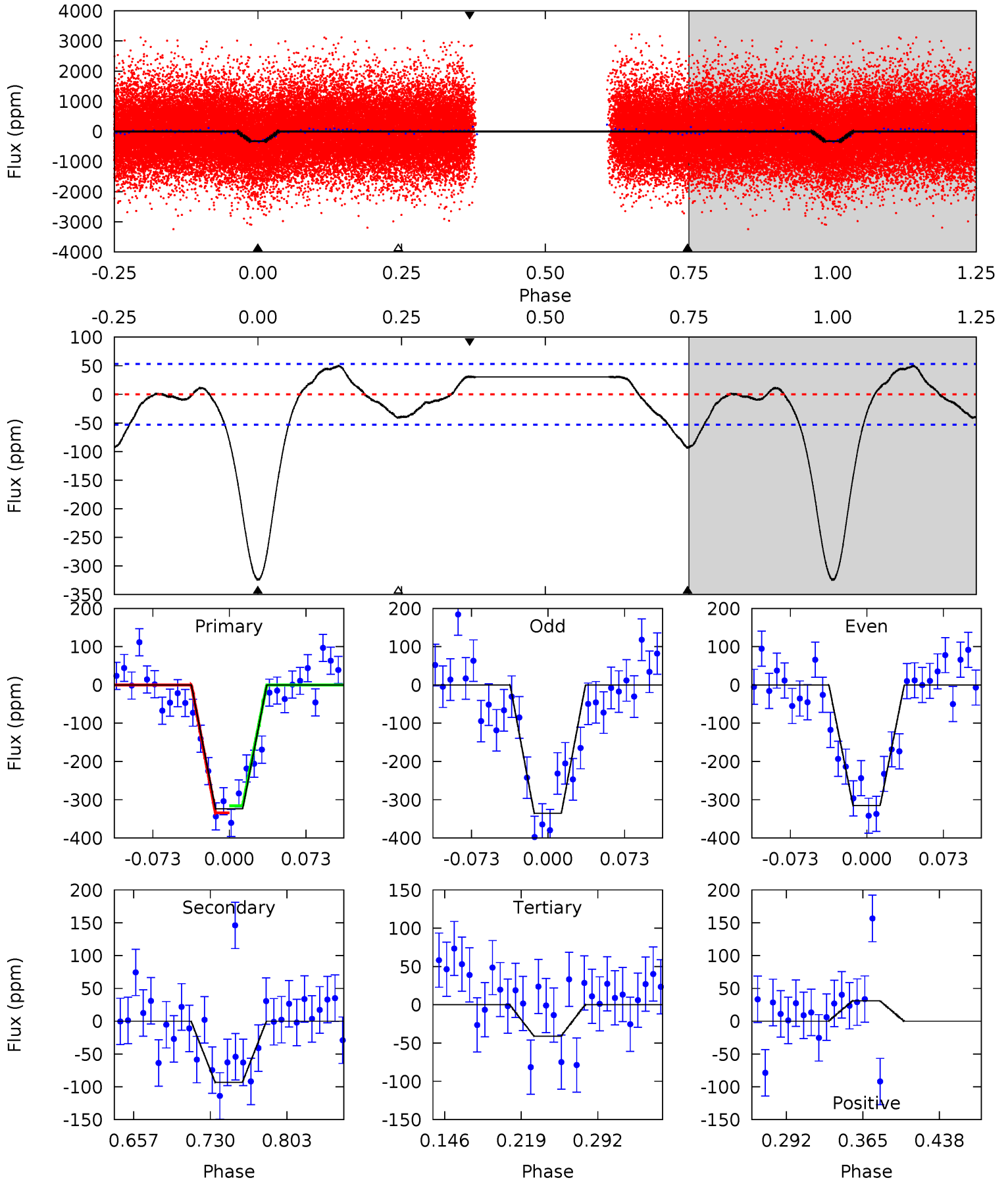
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
17.7	4.47	4.39	1.46	4.58	1.69	1.68	13.3	16.2	0.08	3.01	0.32	0.97	0.09	7.16



Alt Model-Shift Uniqueness Test

012509829-02, P = 0.888473 Days, E = 131.425355 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
28.2	8.12	3.56	2.71	4.63	1.79	2.03	24.7	25.5	4.56	5.41	0.88	1.00	0.13	0.80



Stellar Parameters For KIC 012509829

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5553^{+166}_{-149}	$4.577^{+0.036}_{-0.153}$	$-0.160^{+0.300}_{-0.300}$	$0.806^{+0.176}_{-0.063}$	$0.903^{+0.083}_{-0.111}$	$2.425^{+0.468}_{-0.994}$
	+3%/-3%	+1%/-3%	+188%/-188%	+22%/-8%	+9%/-12%	+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 012509829-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-45 ± 10	$1.43^{+1.00}_{-0.79}$	2382^{+126}_{-104}	3893^{+1522}_{-745}	$3.523^{+13.451}_{-2.337}$
Alt.	-93 ± 11	$1.76^{+1.03}_{-0.93}$	2382^{+128}_{-98}	4119^{+1620}_{-658}	$4.824^{+17.189}_{-2.925}$

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

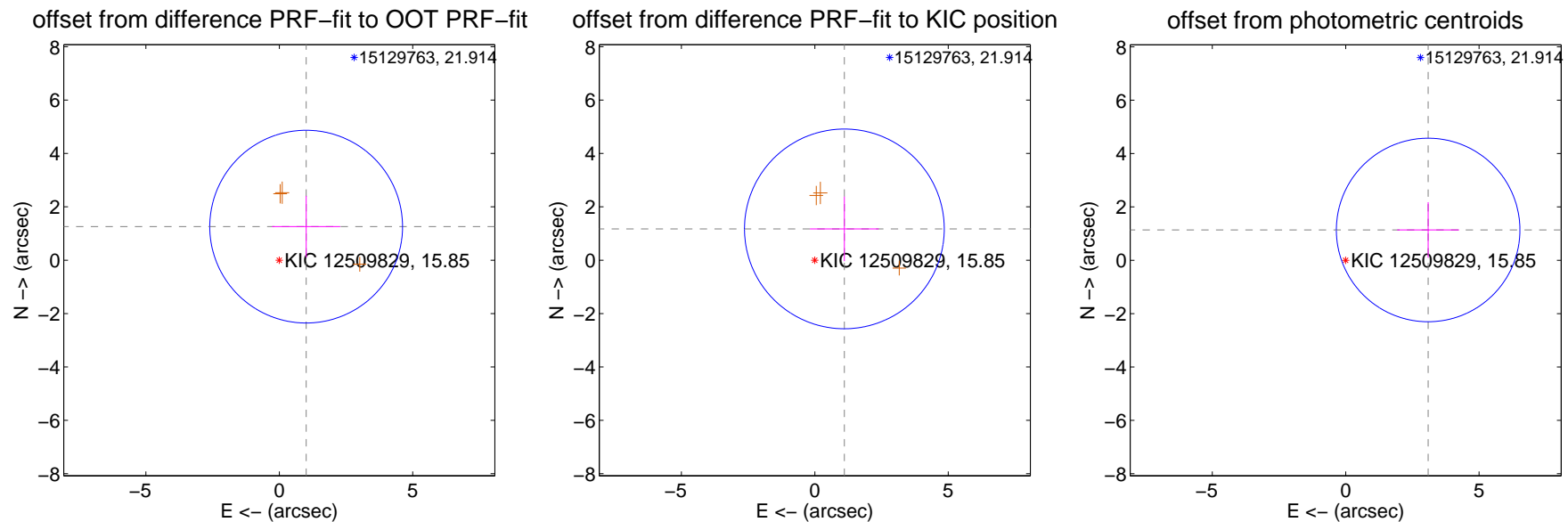
DV Centroid Data

Supplemental centroid analysis for 012509829-02. Kepler magnitude: 15.85. Transit SNR 13.46

There are 0 quarters with good PRF difference image offsets

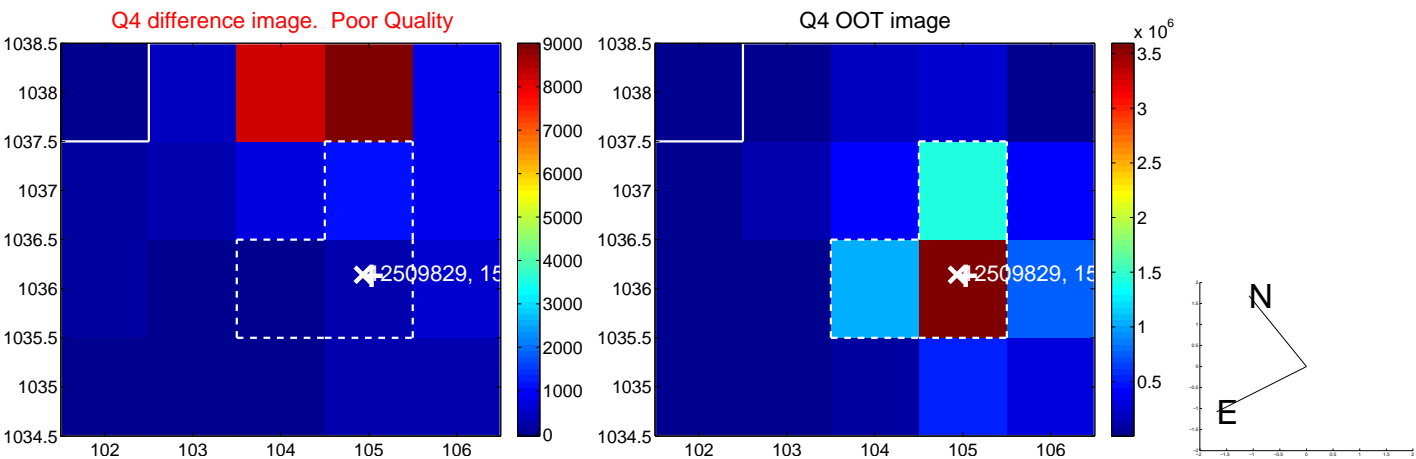
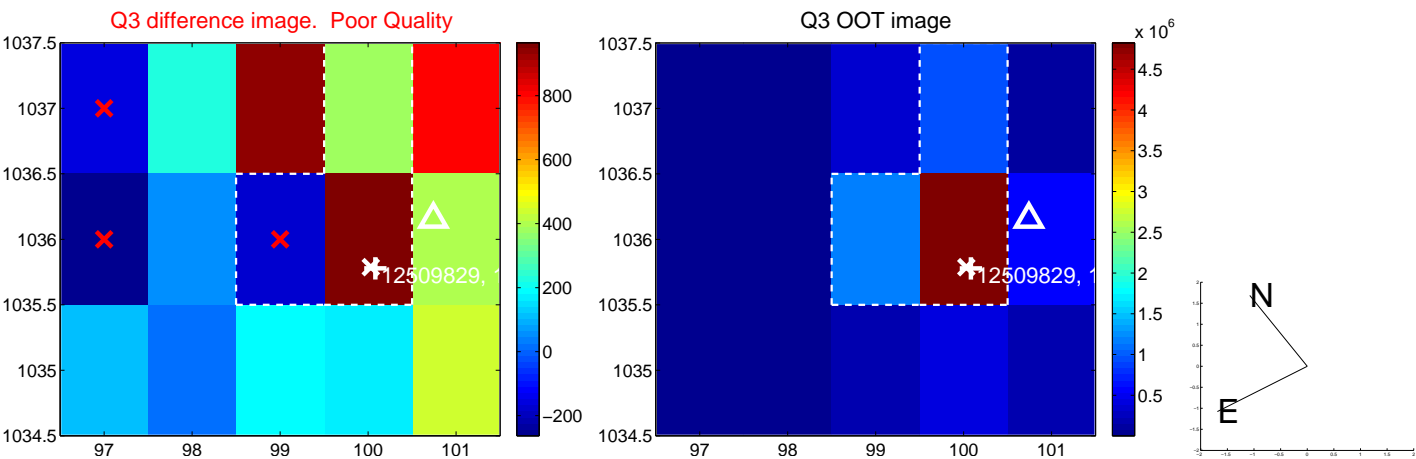
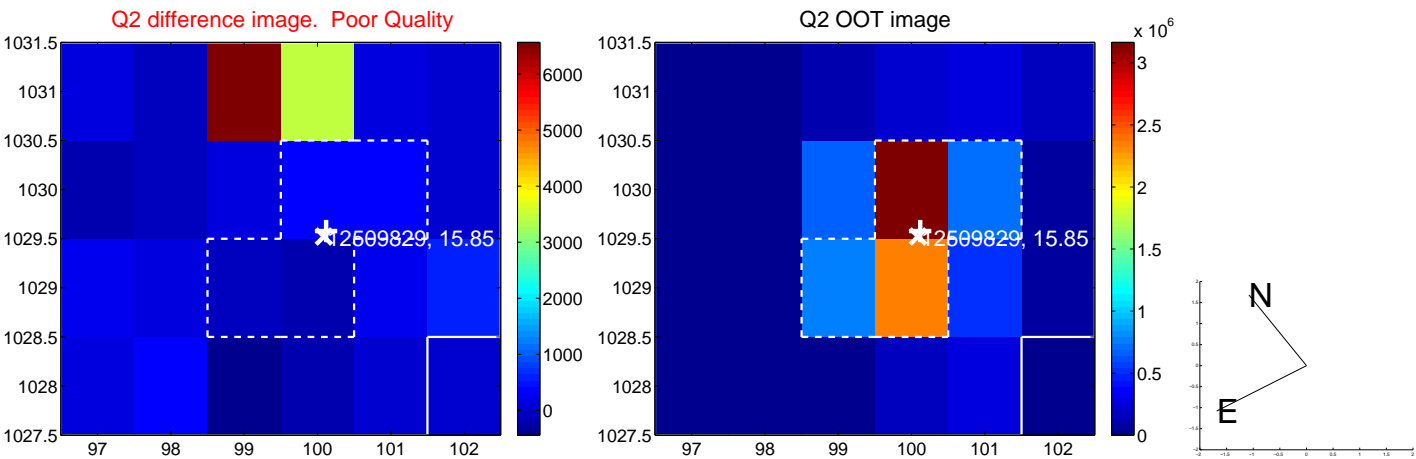
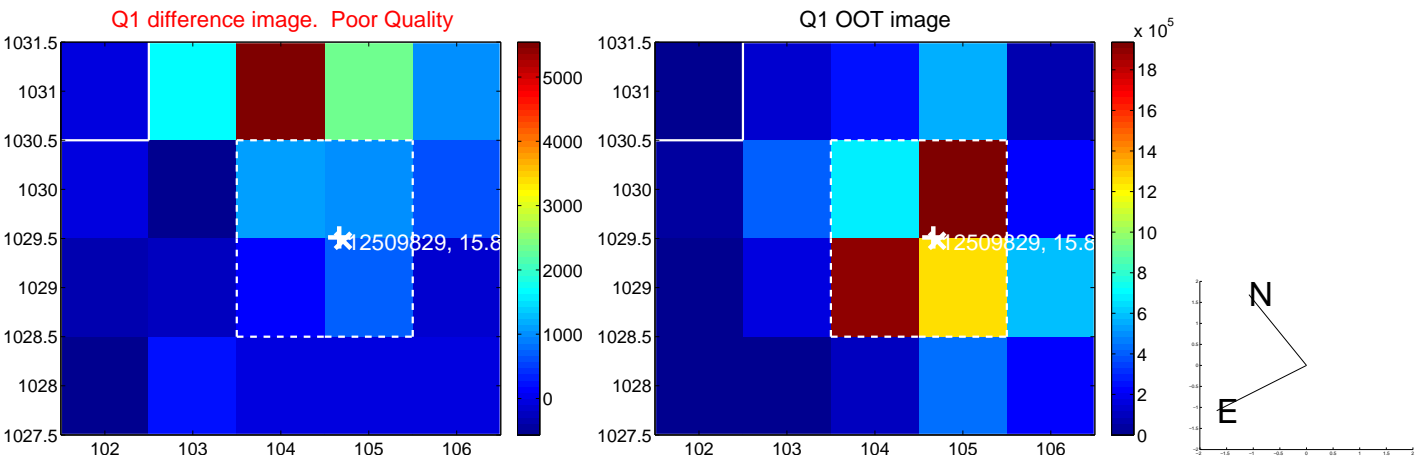
The direct PRF centroid is offset from the target star catalog position by about 0.10 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.611 ± 1.204	1.34	-1.006 ± 1.277	1.258 ± 1.155
PRF-fit source offset from KIC position	1.613 ± 1.248	1.29	-1.108 ± 1.287	1.173 ± 1.211
photometric centroid source offset	3.29 ± 1.15	2.87	-3.09 ± 1.16	1.14 ± 1.04

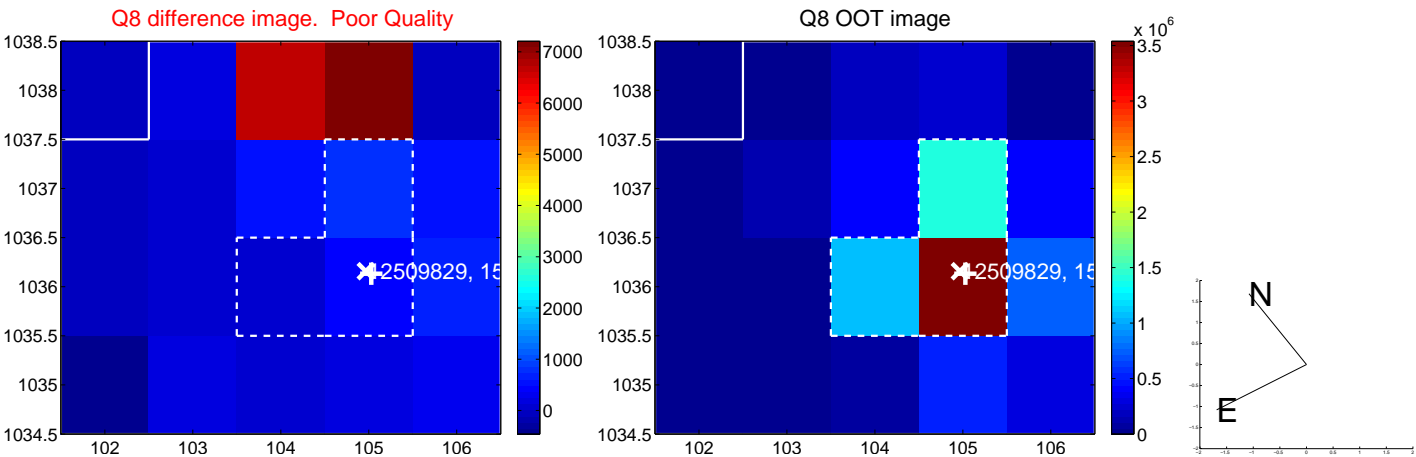
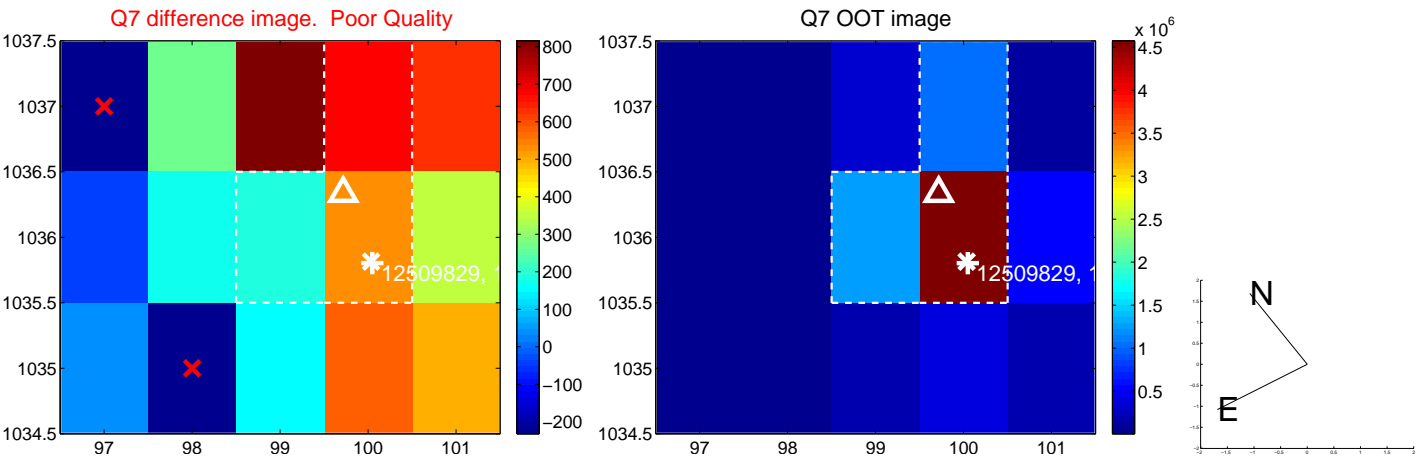
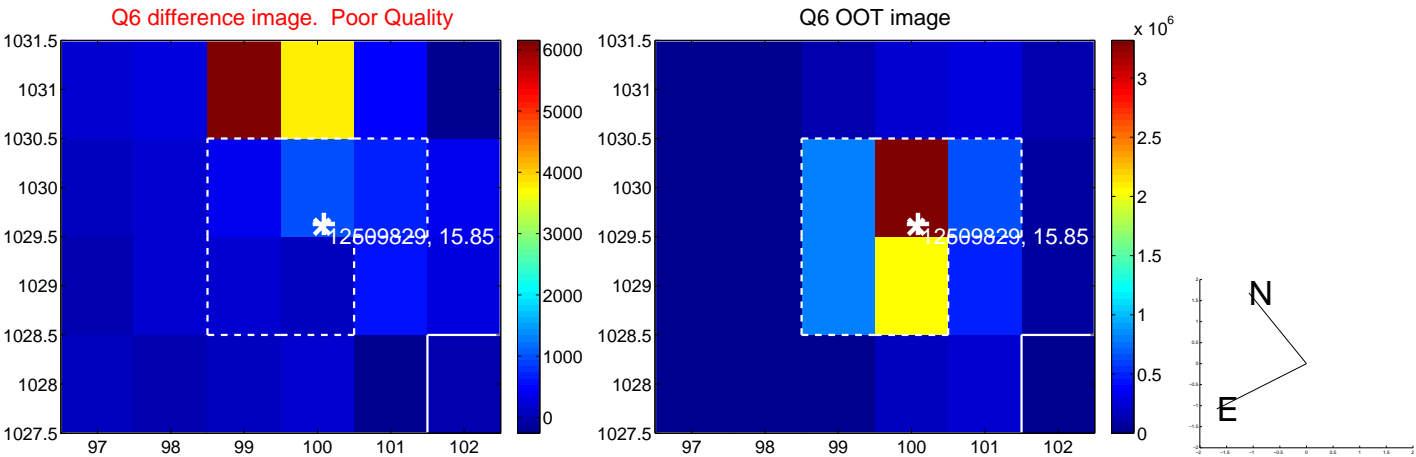
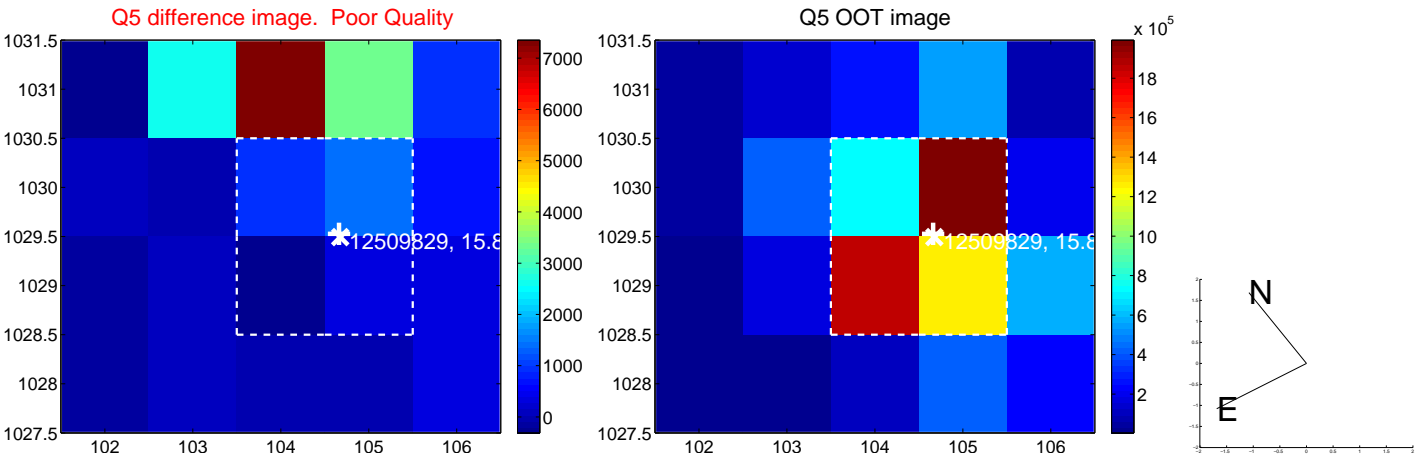


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

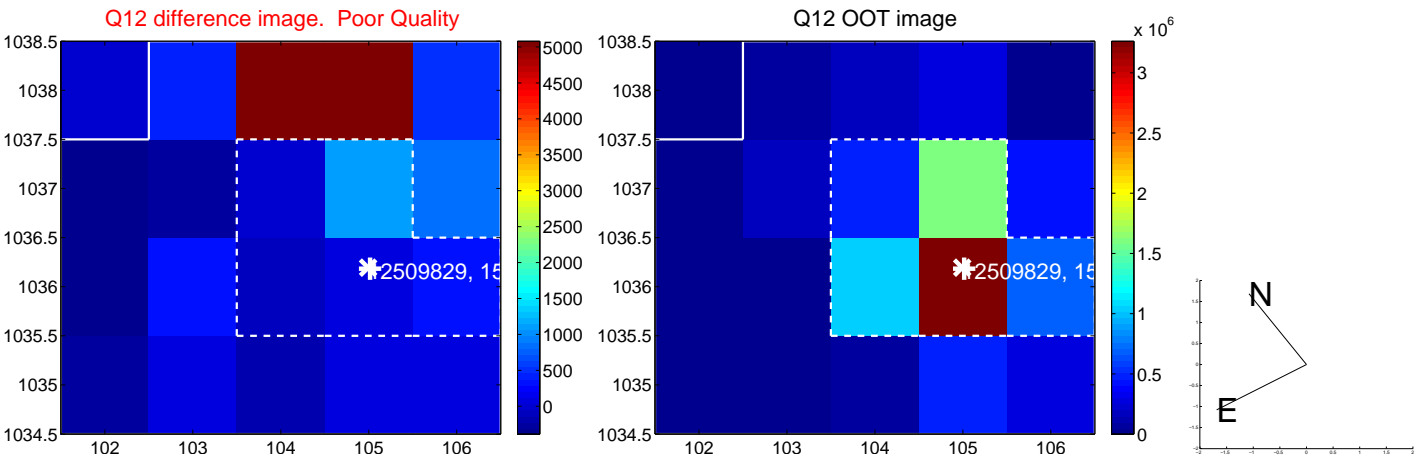
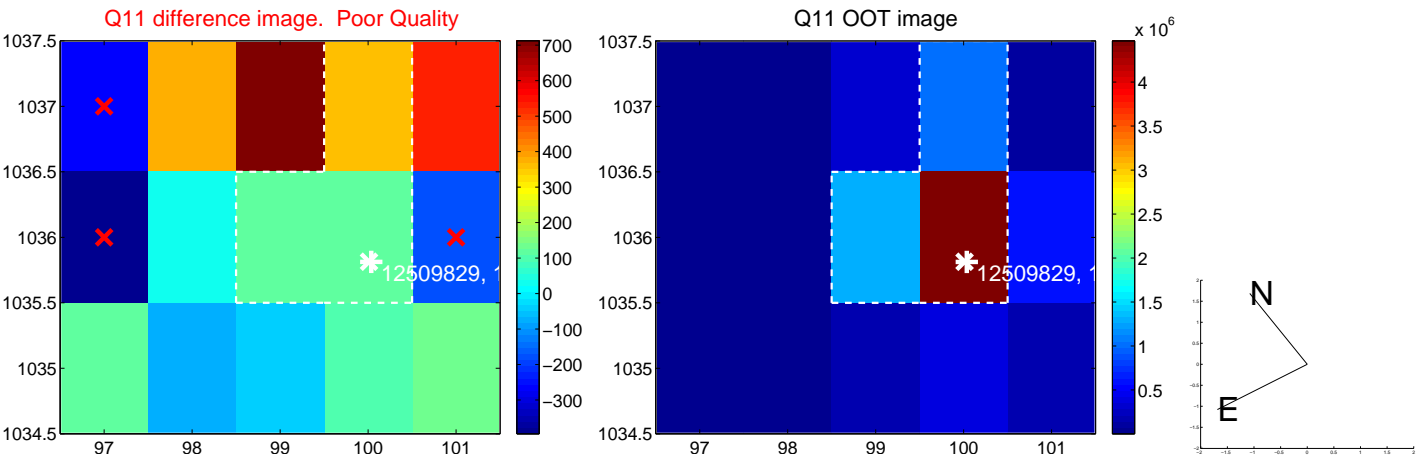
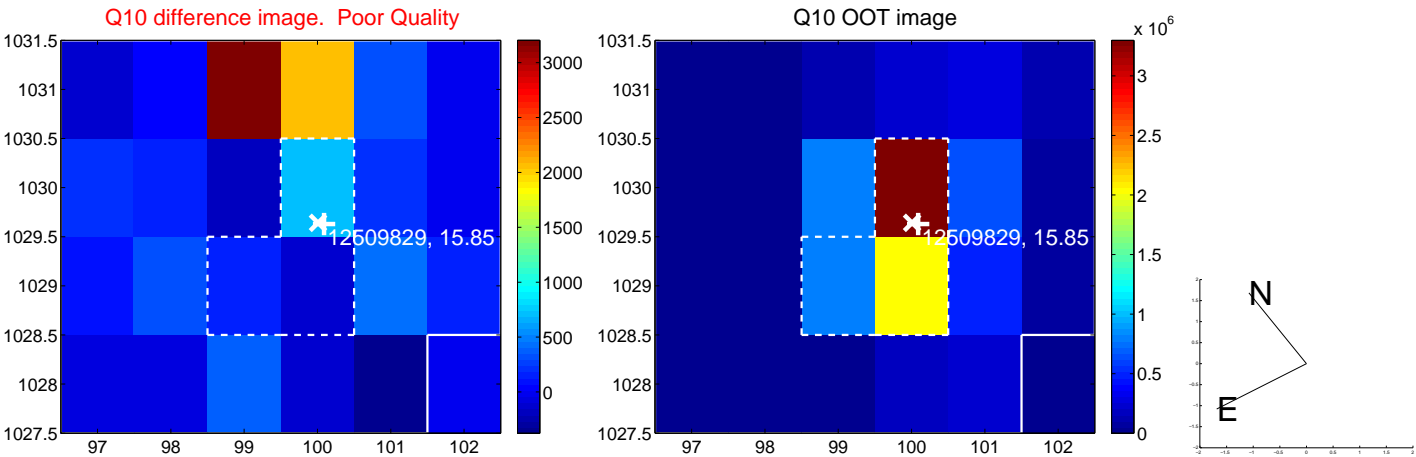
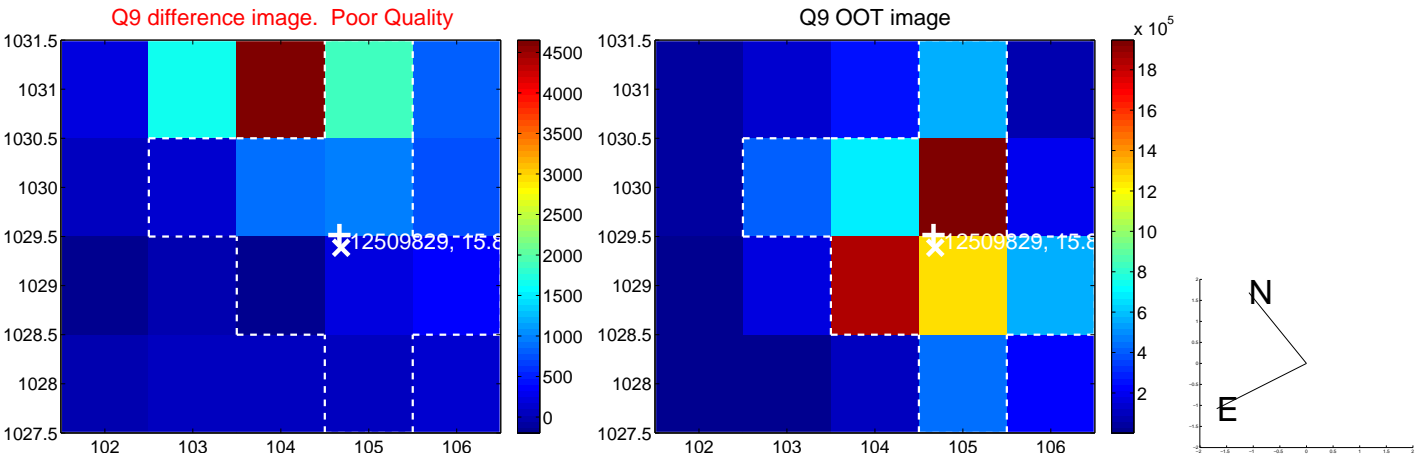
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



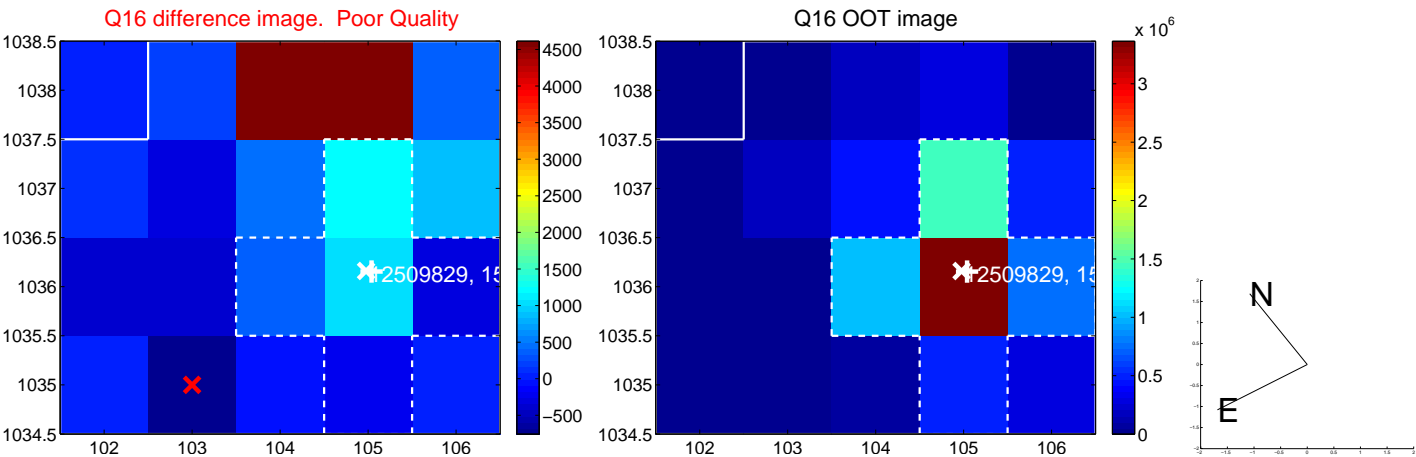
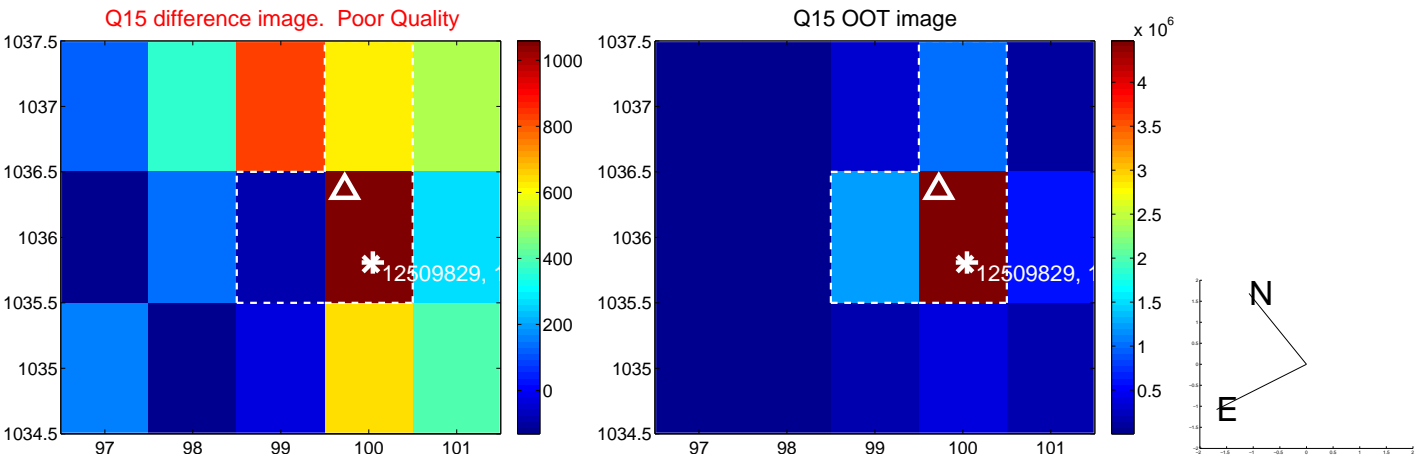
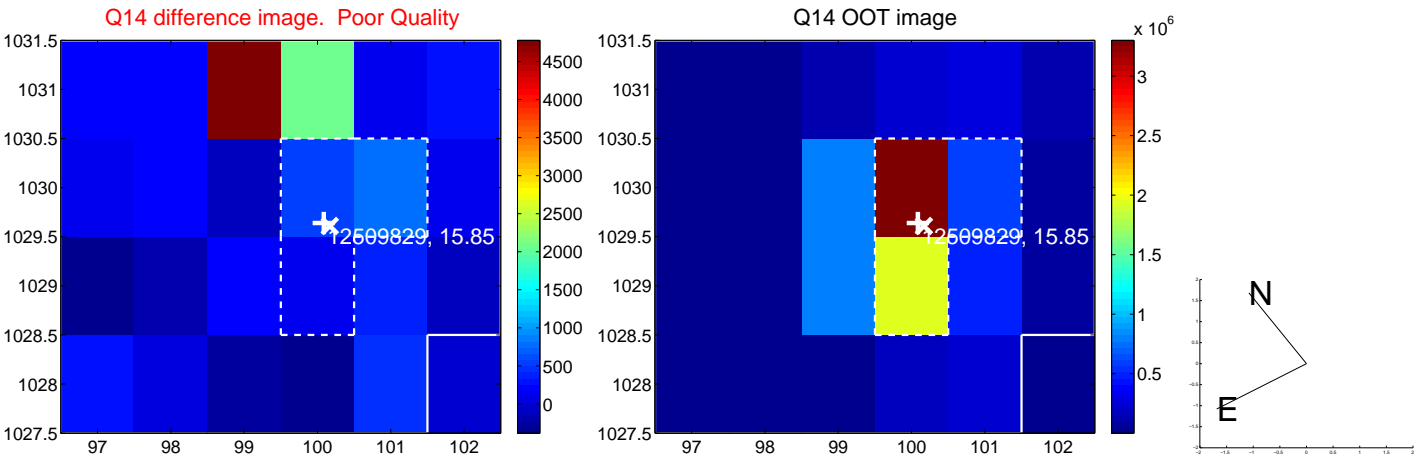
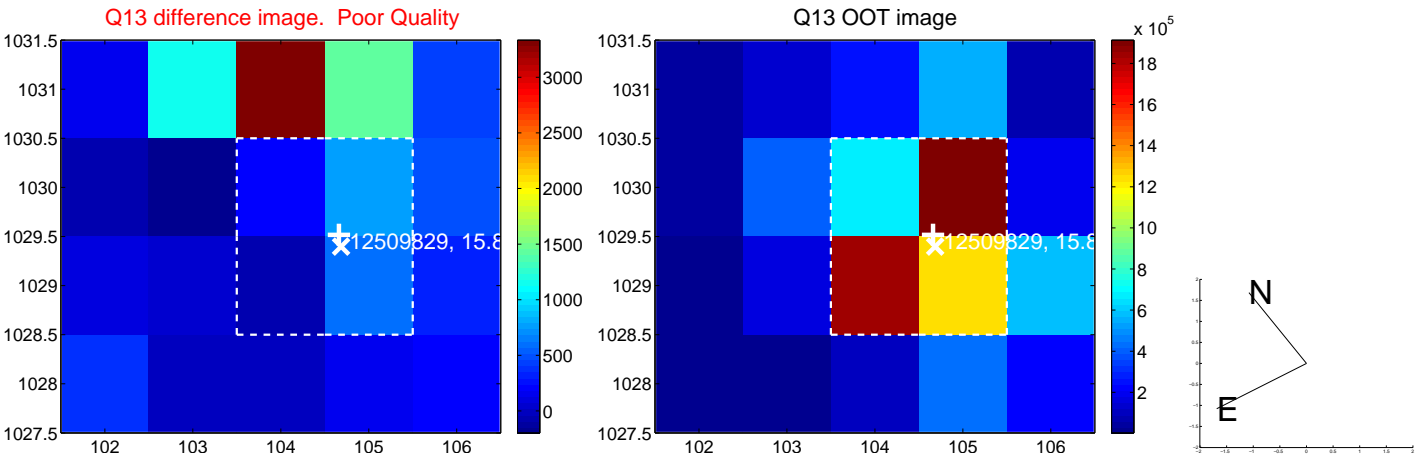
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



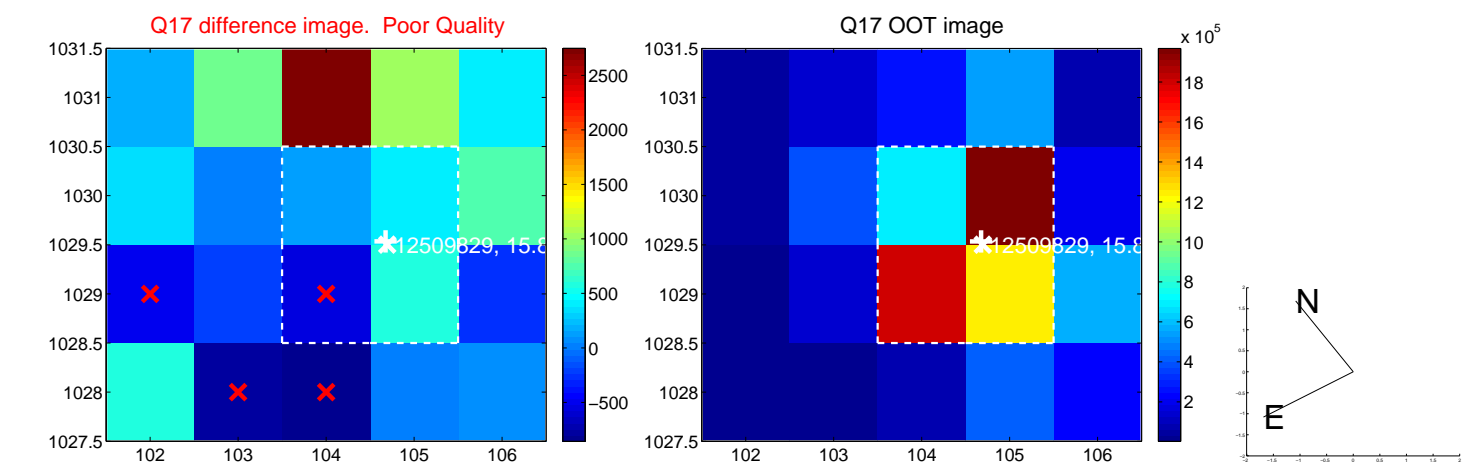
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



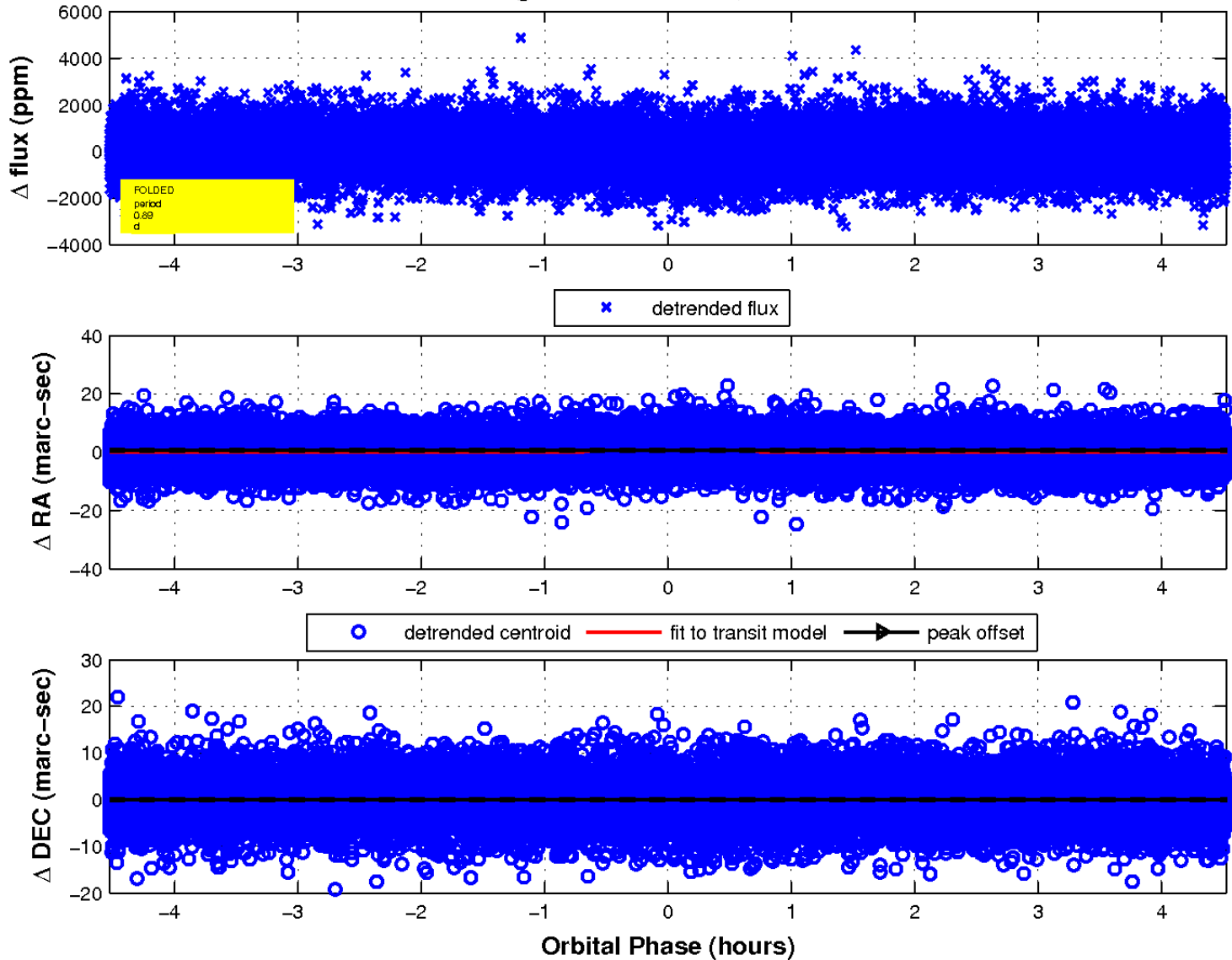
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 2 of 2



UKIRT Image

Declination

