

KIC 002857722

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})
002857722-01	OBS	No	0.630097	132.124582	115.3	0.564	9.7	10.1	1.09	6338	1.29	7633.26
002857722-02	OBS	No	0.630099	131.910010	140.1	0.576	8.0	12.9	1.09	6338	1.37	7633.23

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
002857722-01	OBS	FP	0.00	1	0	1	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—CENT_UNRESOLVED_OFFSET
002857722-02	OBS	FP	0.00	1	0	1	0	SAME_NTL_PERIOD—CENT_UNRESOLVED_OFFSET

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

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

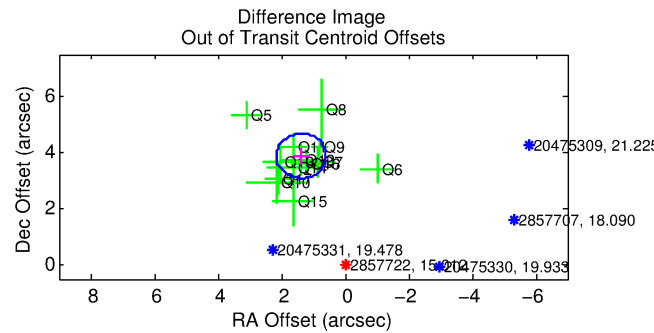
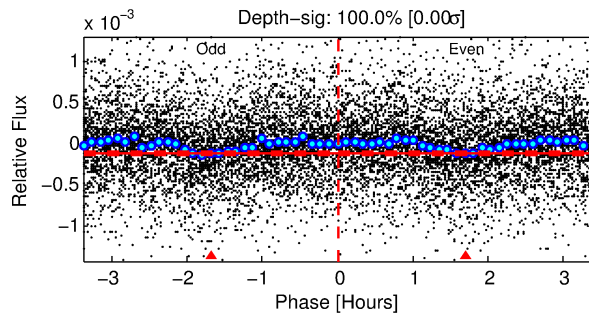
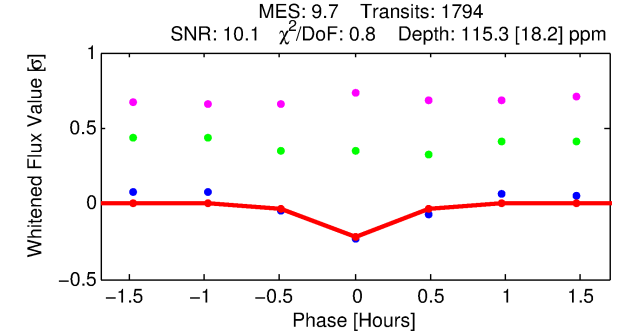
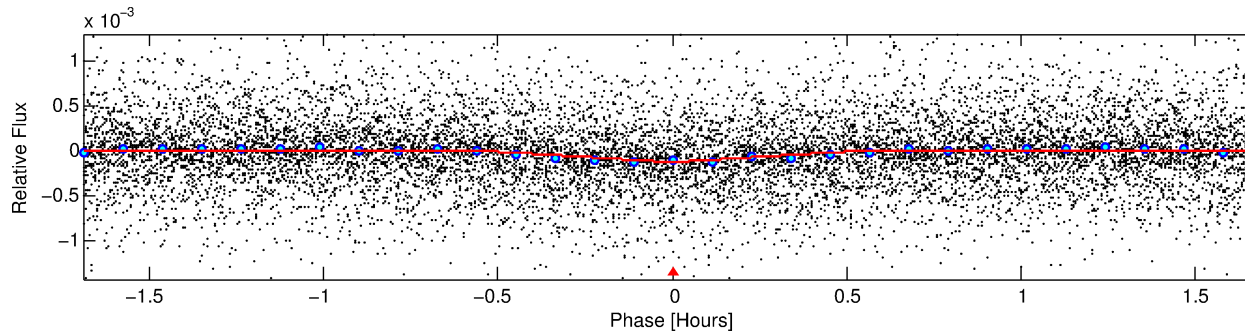
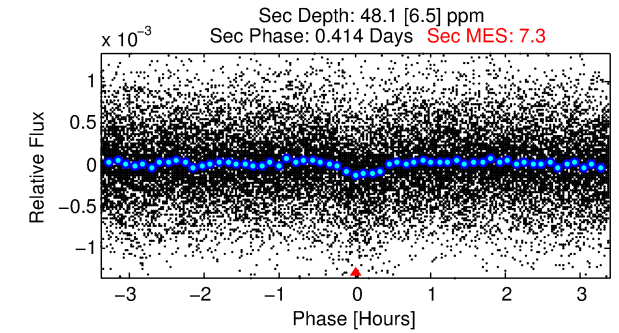
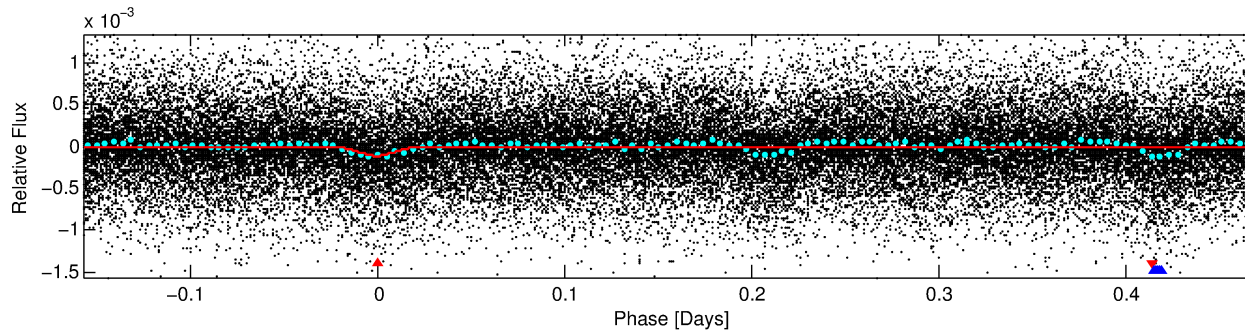
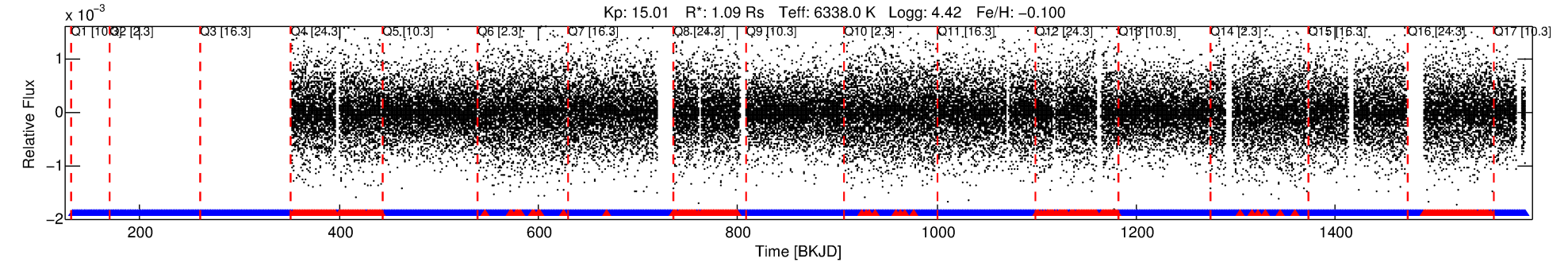
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 002857722-01

No Significant Match Found

DV One-Page Summary

KIC: 2857722 Candidate: 1 of 2 Period: 0.630 d



DV Fit Results:

Period = 0.63010 [0.00001] d
Epoch = 132.1246 [0.0012] BKJD
Rp/R* = 0.0109 [0.0042]
a/R* = 6.28 [12.46]
b = 0.70 [1.49]
Seff = 7633.26 [3302.72]
Teq = 2383 [258] K
Rp = 1.29 [0.67] Re
a = 0.0150 [0.0042] AU
Ag = 3.57 [3.16] [0.81σ]
Teffp = 5064 [1018] K [2.55σ]

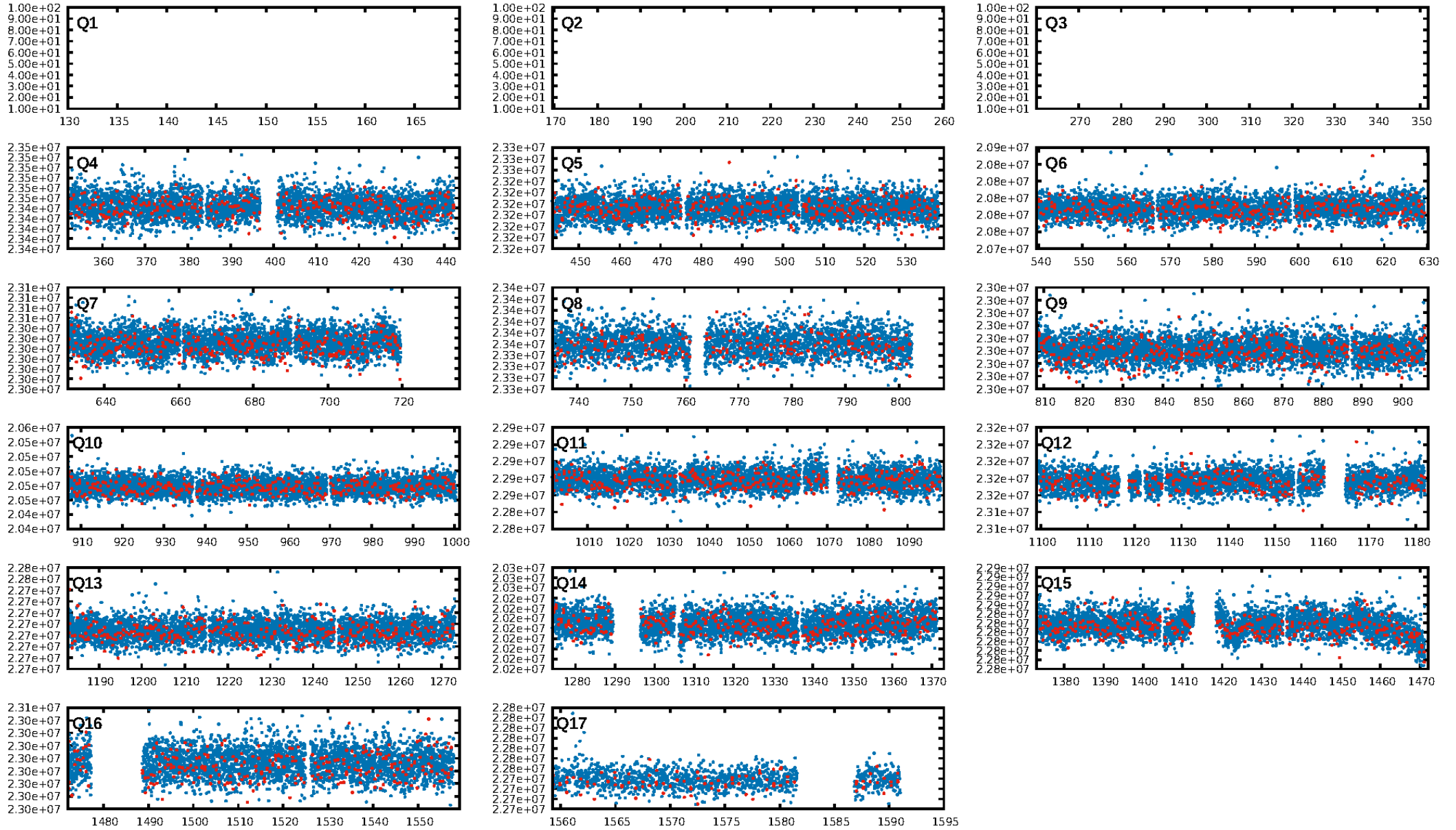
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.0% [0.00σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 1.34e-19
RollingBand-figt: 0.79 [1387/1751]
GhostDiagnostic-chr: 0.7242
Centroid-sig: 0.0%
Centroid-so: 5.600 arcsec [4.21σ]
OotOffset-rm: 4.115 arcsec [15.62σ]
KicOffset-rm: 4.064 arcsec [14.79σ]
OotOffset-st: 3/3/3/4 [13]
KicOffset-st: 3/3/3/4 [13]
DiffImageQuality-fgm: 0.85 [11/13]
DiffImageOverlap-fno: 0.00 [0/14]

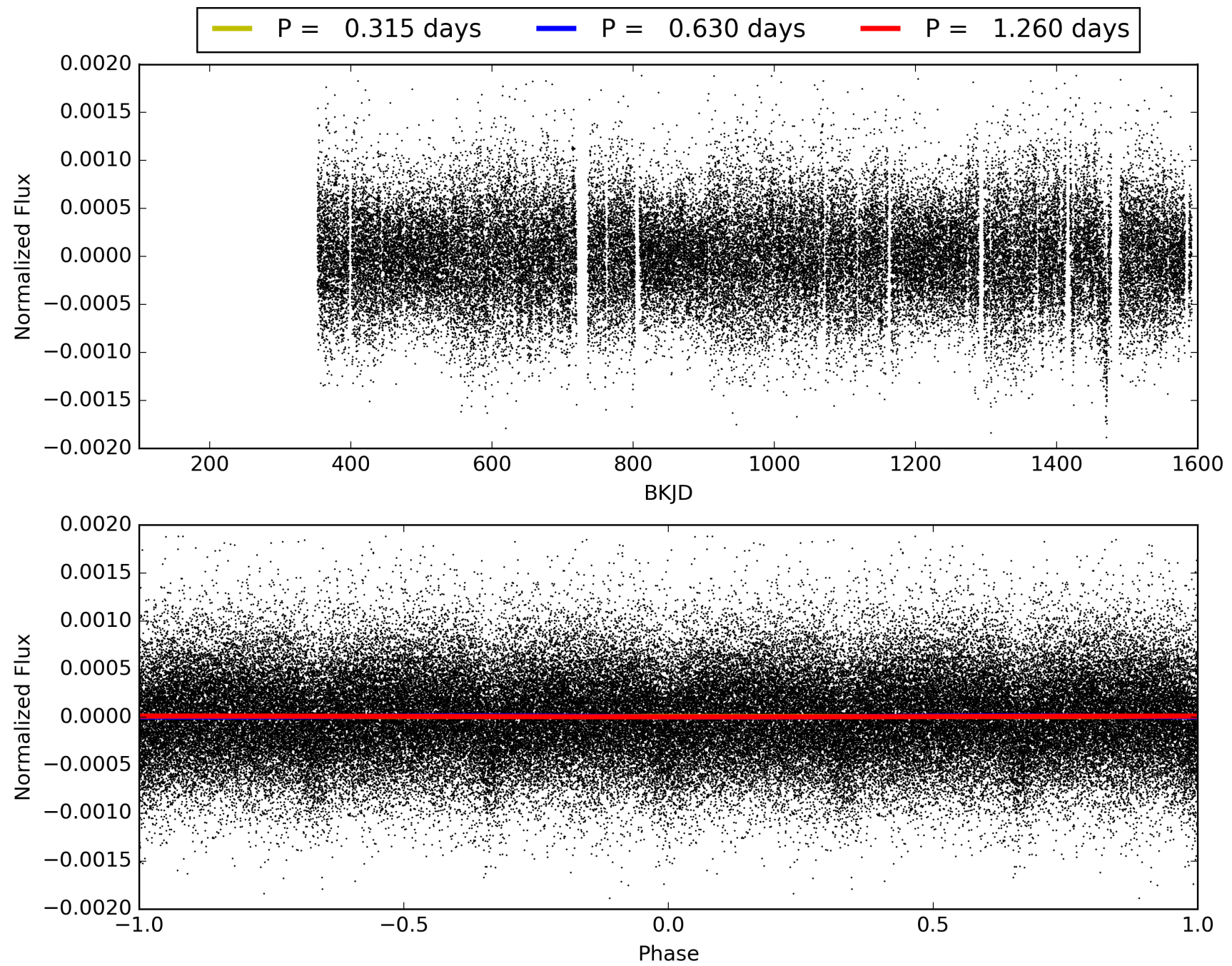
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 10:21:50 Z

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

TCE 002857722-01, PDC Light Curves

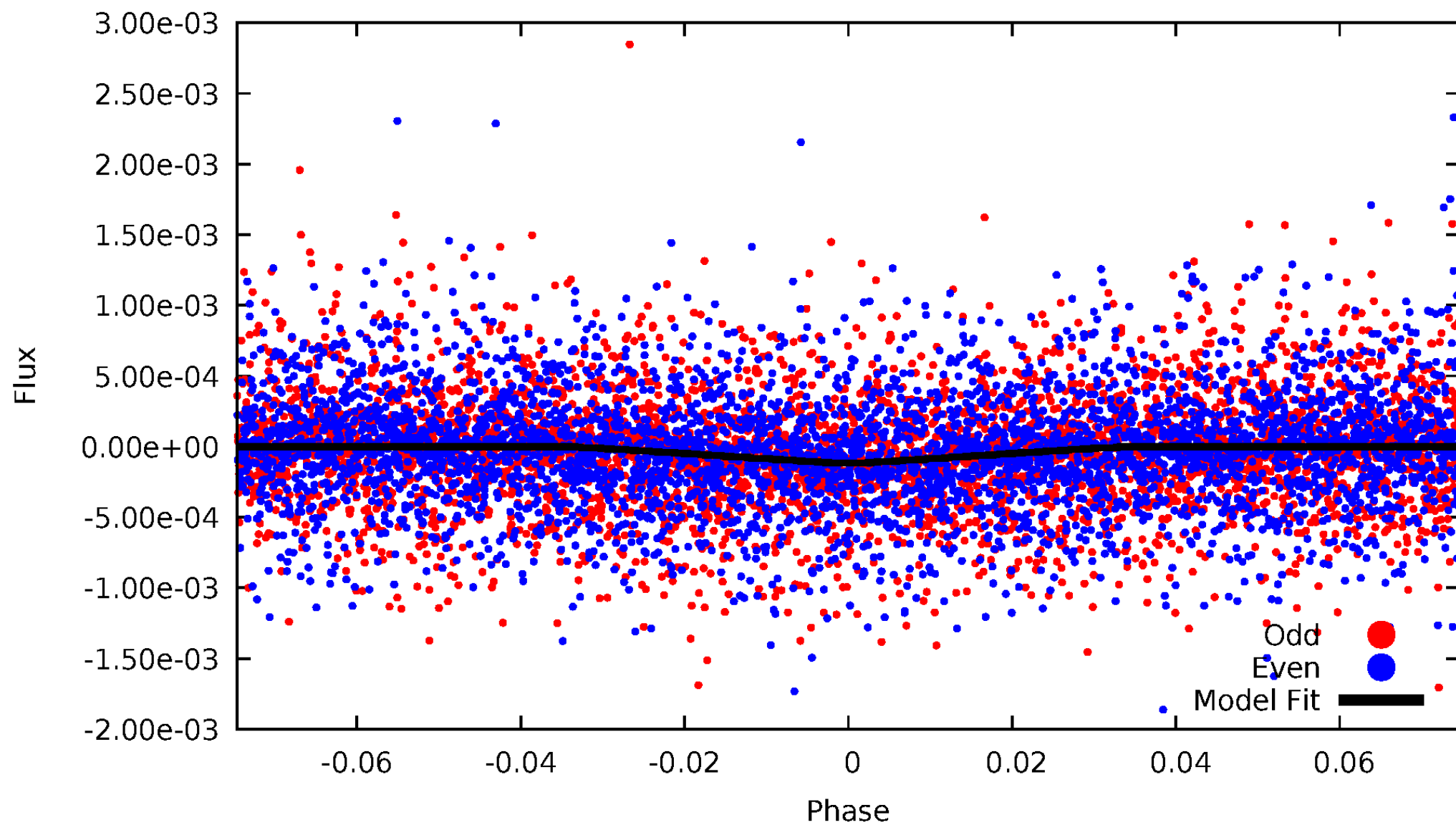


TCE 002857722-01



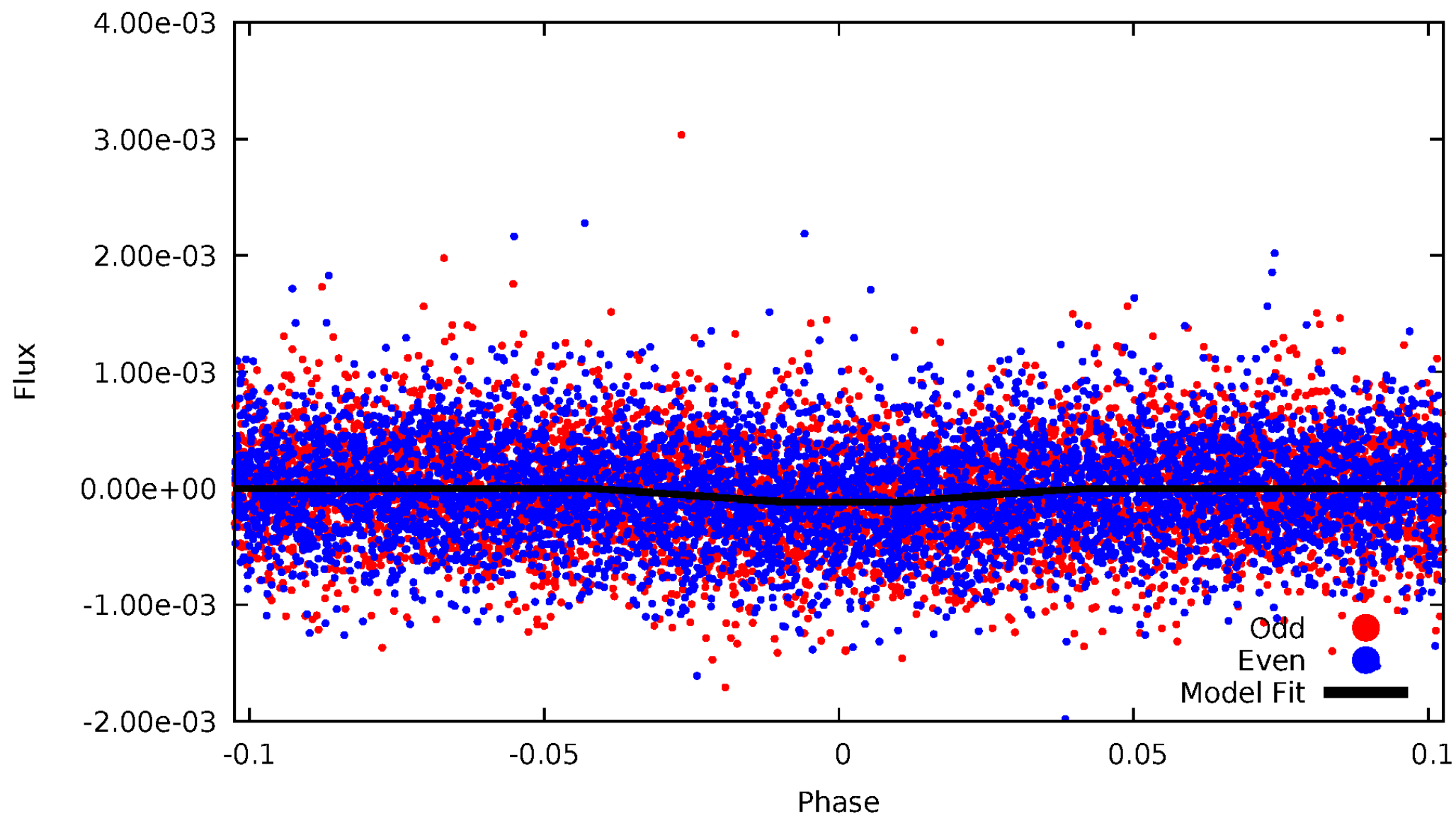
DV Odd/Even

TCE 002857722-01

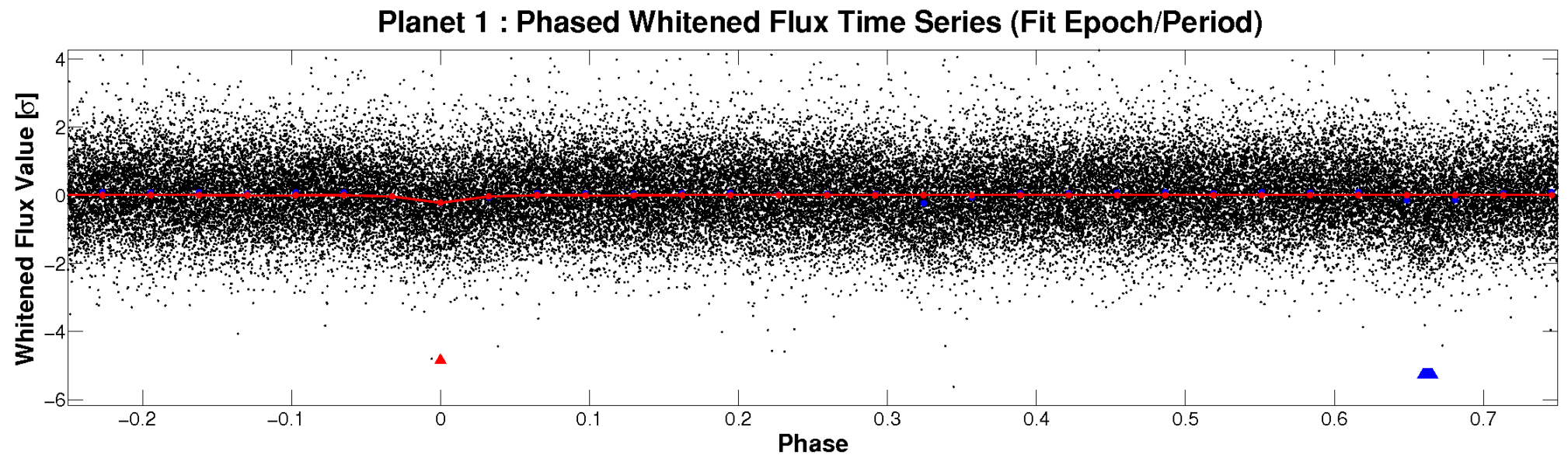
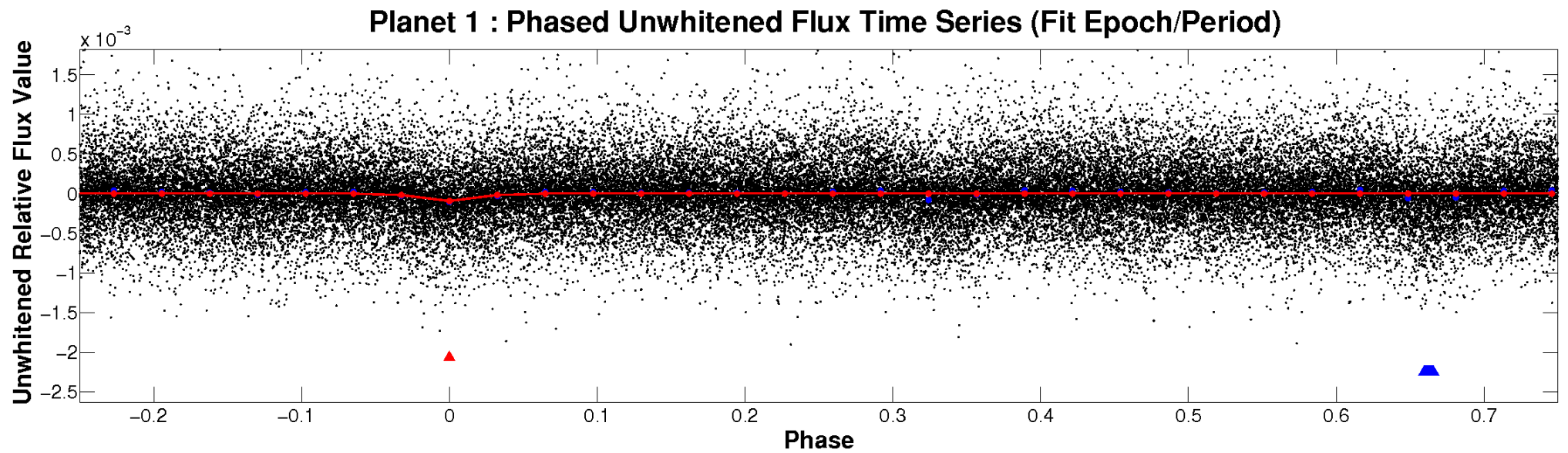


ALT Odd/Even

TCE 002857722-01

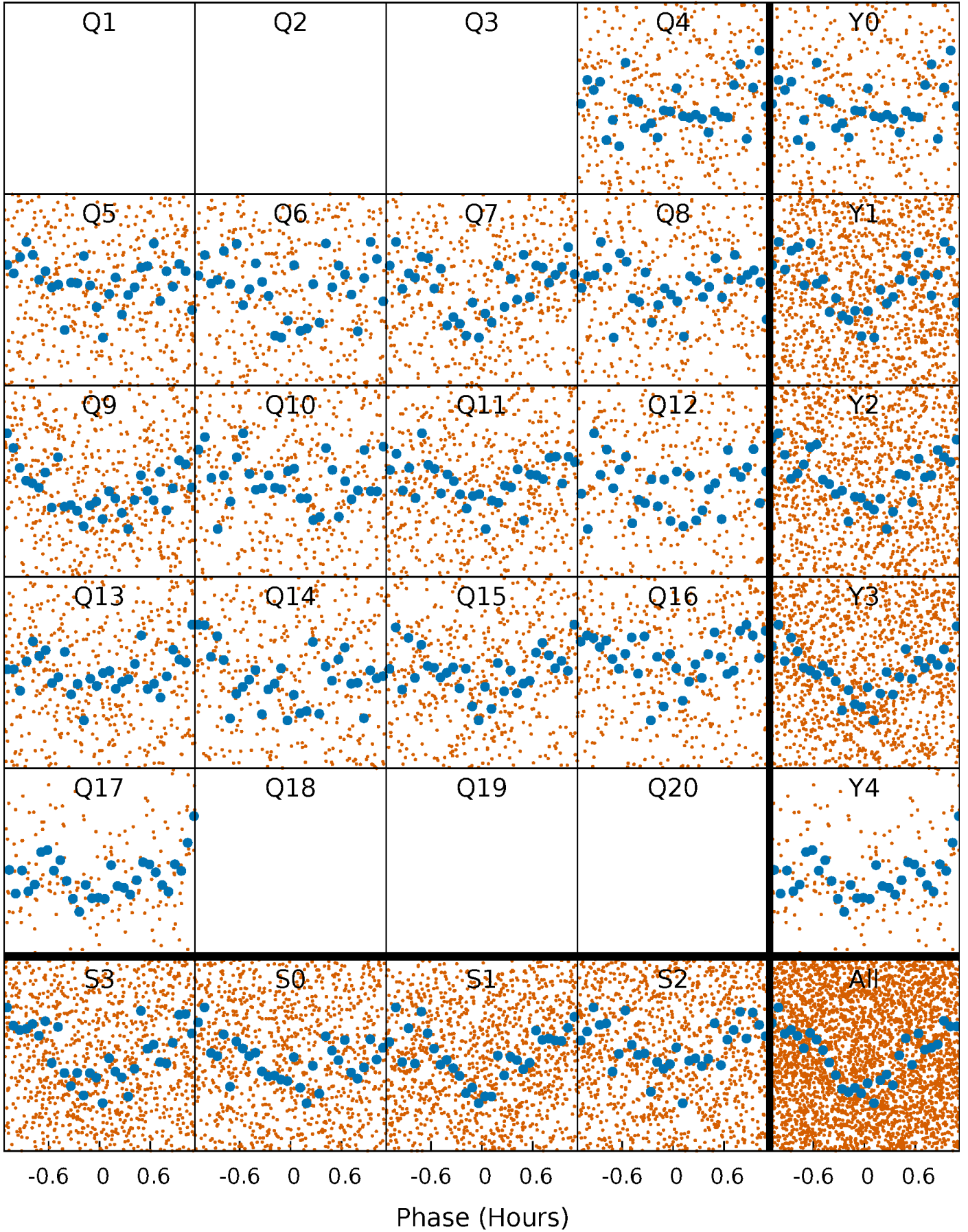


Non-Whitened Vs. Whitened Light Curve



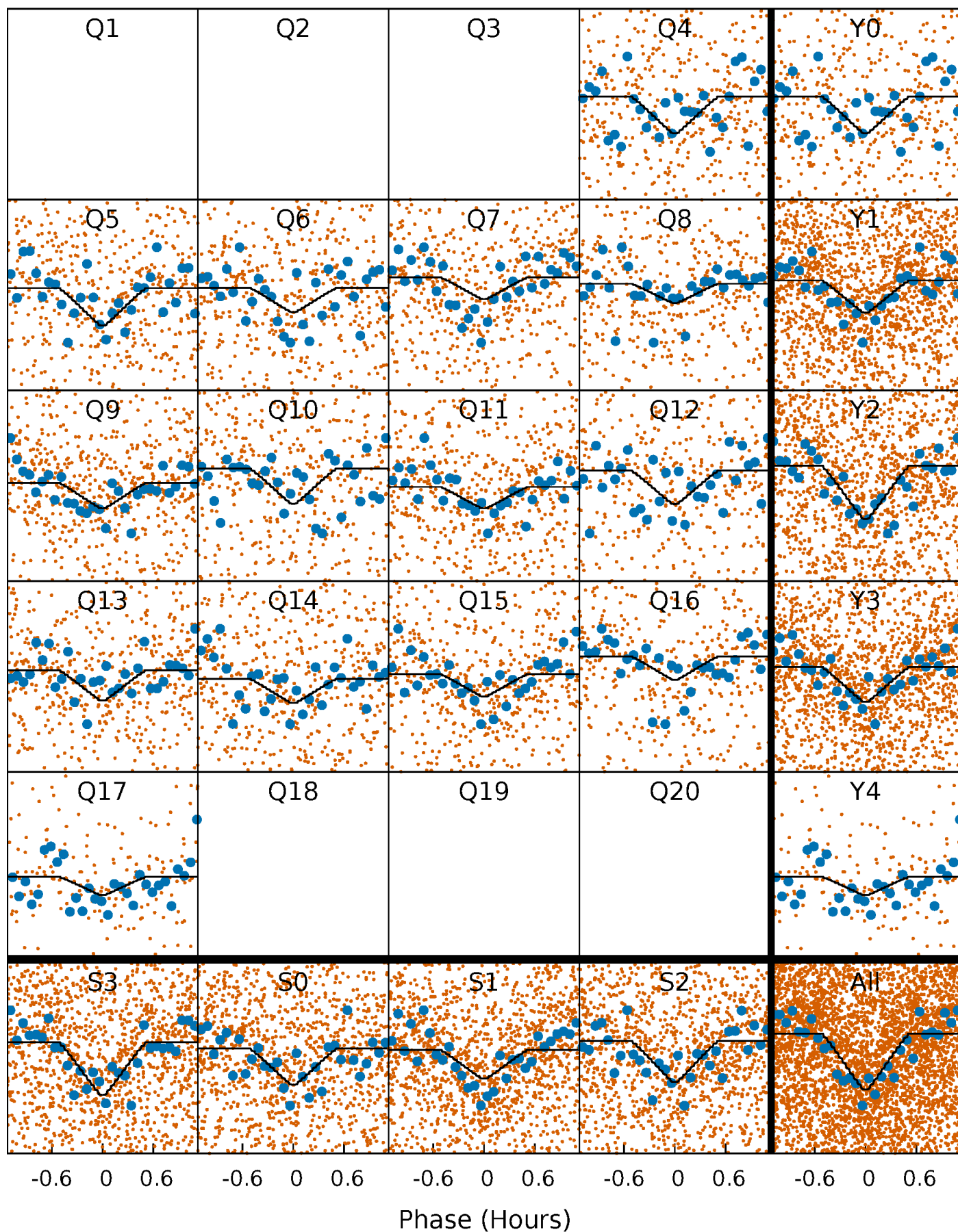
PDC Quarter-Phased Transit Curves

TCE 002857722-01 P= 0.630097 Days $T_0=132.124582$ (BKJD)



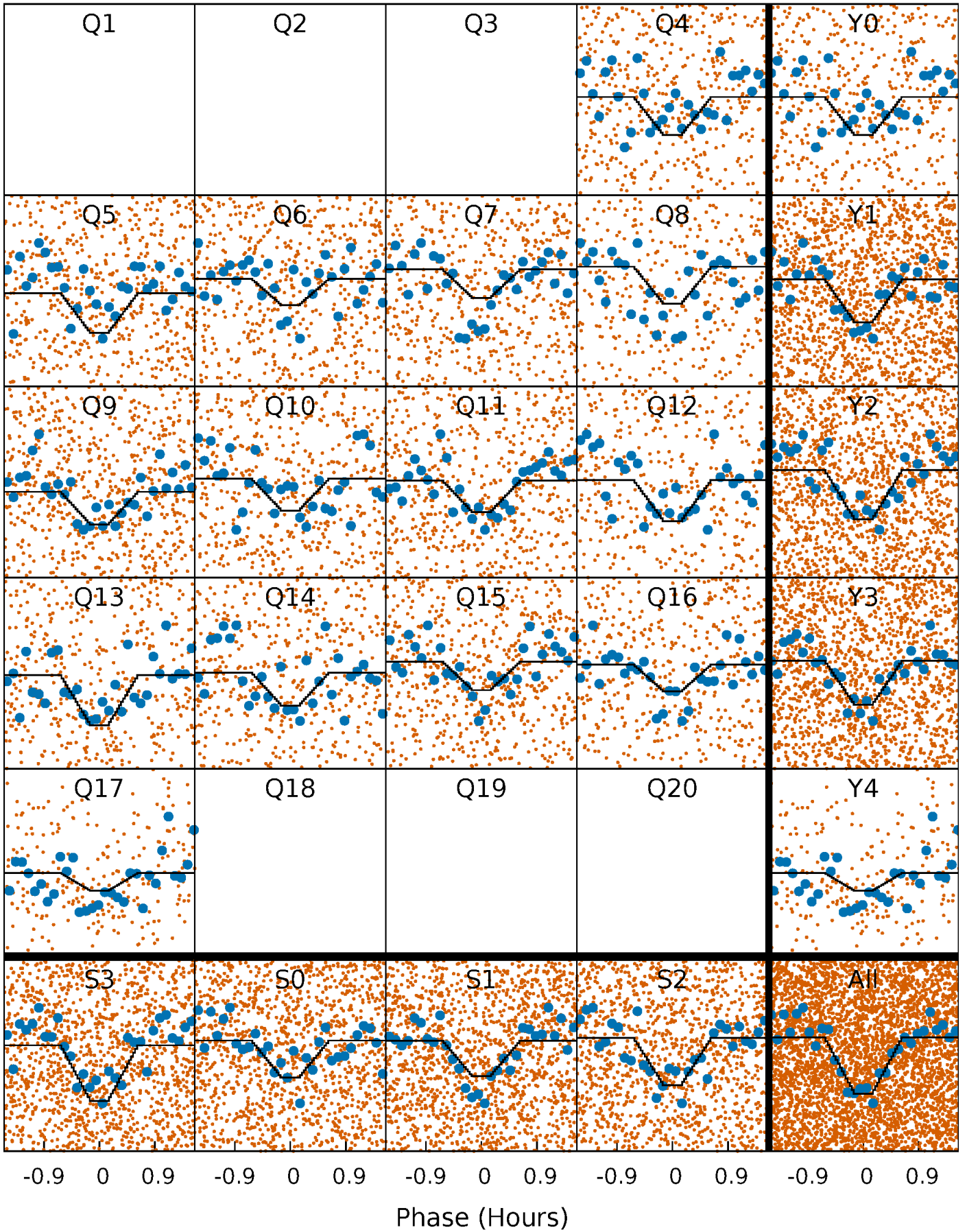
DV Quarter-Phased Transit Curves

TCE 002857722-01 P= 0.630097 Days $T_0=132.124582$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

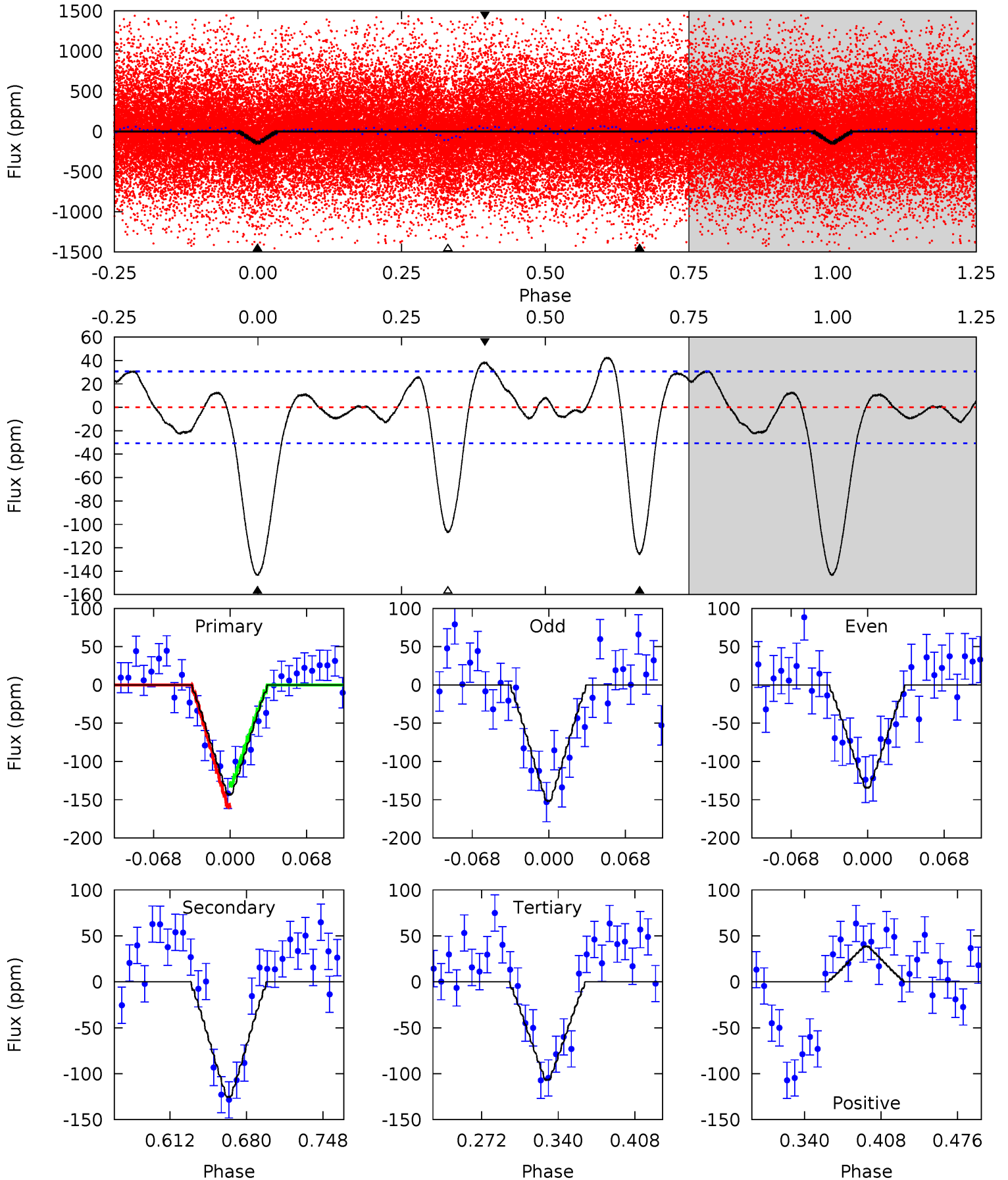
TCE 002857722-01 P= 0.630097 Days $T_0=132.124582$ (BKJD)



DV Model-Shift Uniqueness Test

002857722-01, P = 0.630097 Days, E = 132.124582 Days

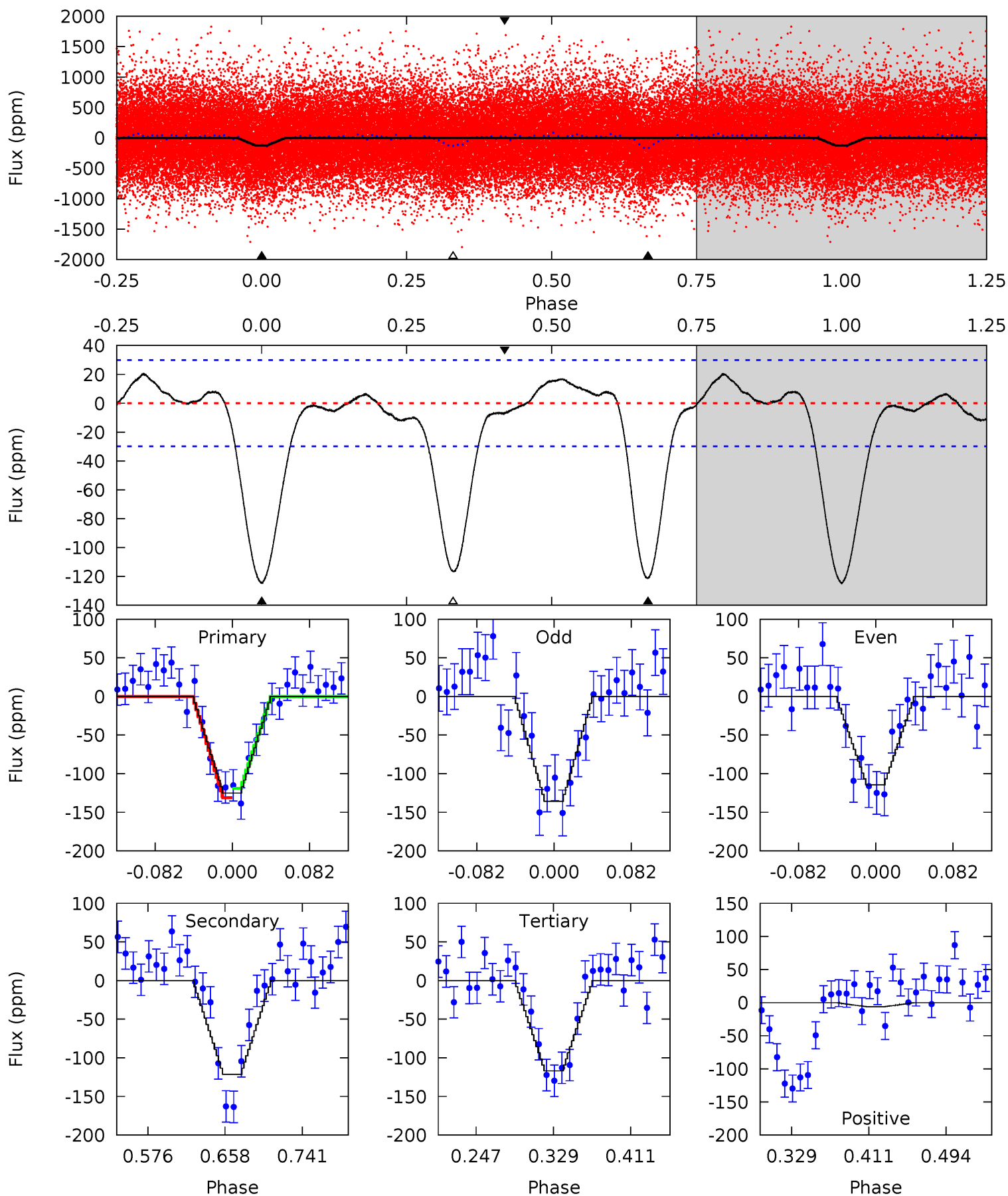
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
21.6	19.0	16.1	5.81	4.65	1.83	4.09	5.51	15.8	2.82	13.1	1.31	1.04	0.23	2.11



Alt Model-Shift Uniqueness Test

002857722-01, P = 0.630097 Days, E = 132.124582 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
19.3	18.8	18.1	-0.97	4.61	1.74	4.70	1.26	20.3	0.70	19.7	1.65	0.95	0.14	0.94



Stellar Parameters For KIC 002857722

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6338^{+179}_{-246}	$4.418^{+0.073}_{-0.218}$	$-0.100^{+0.250}_{-0.300}$	$1.091^{+0.370}_{-0.123}$	$1.137^{+0.169}_{-0.152}$	$1.233^{+0.368}_{-0.666}$
	+3%/-4%	+2%/-5%	+250%/-300%	+34%/-11%	+15%/-13%	+30%/-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 002857722-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-125 ± 7	$1.35^{+0.60}_{-0.54}$	3369^{+254}_{-188}	6196^{+2298}_{-911}	$8.096^{+15.314}_{-4.083}$
Alt.	-121 ± 6	$1.35^{+0.54}_{-0.52}$	3378^{+257}_{-178}	6289^{+1937}_{-936}	$8.350^{+12.392}_{-4.068}$

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

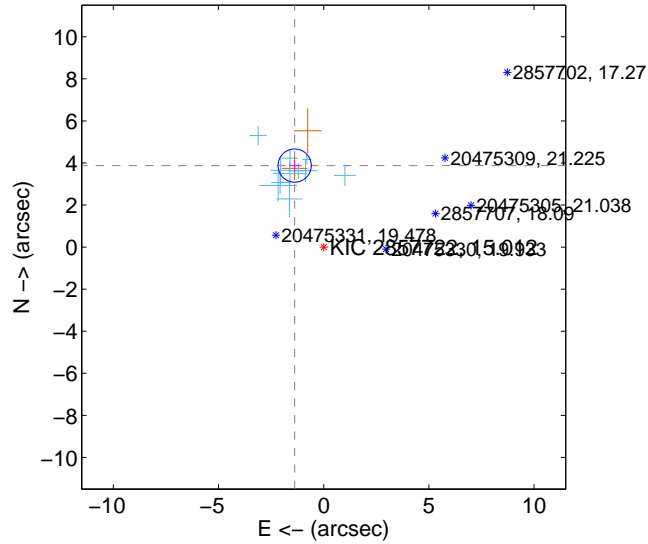
Supplemental centroid analysis for 002857722-01. Kepler magnitude: 15.01. Transit SNR 10.12

There are 11 quarters with good PRF difference image offsets

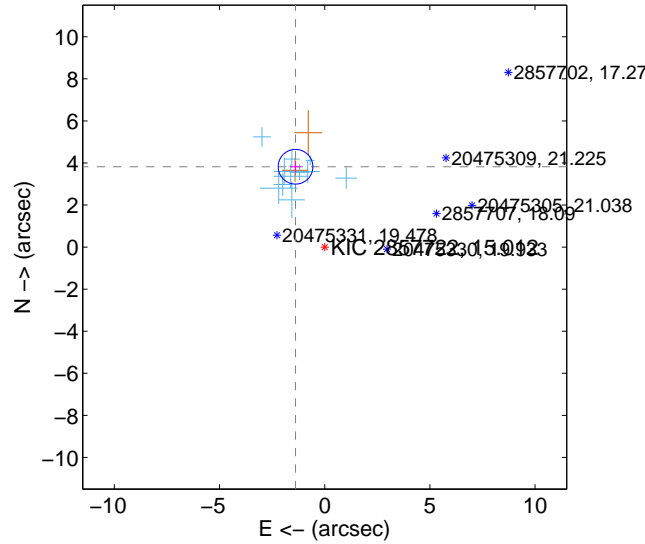
The direct PRF centroid is offset from the target star catalog position by about 0.12 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	4.115 ± 0.263	15.62	1.380 ± 0.252	3.876 ± 0.257
PRF-fit source offset from KIC position	4.064 ± 0.275	14.79	1.387 ± 0.275	3.820 ± 0.258
photometric centroid source offset	5.60 ± 1.33	4.21	1.46 ± 1.35	5.41 ± 1.33

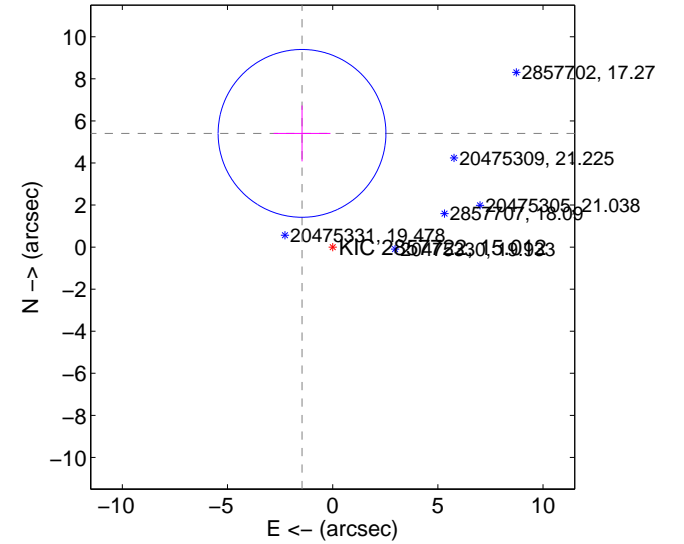
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

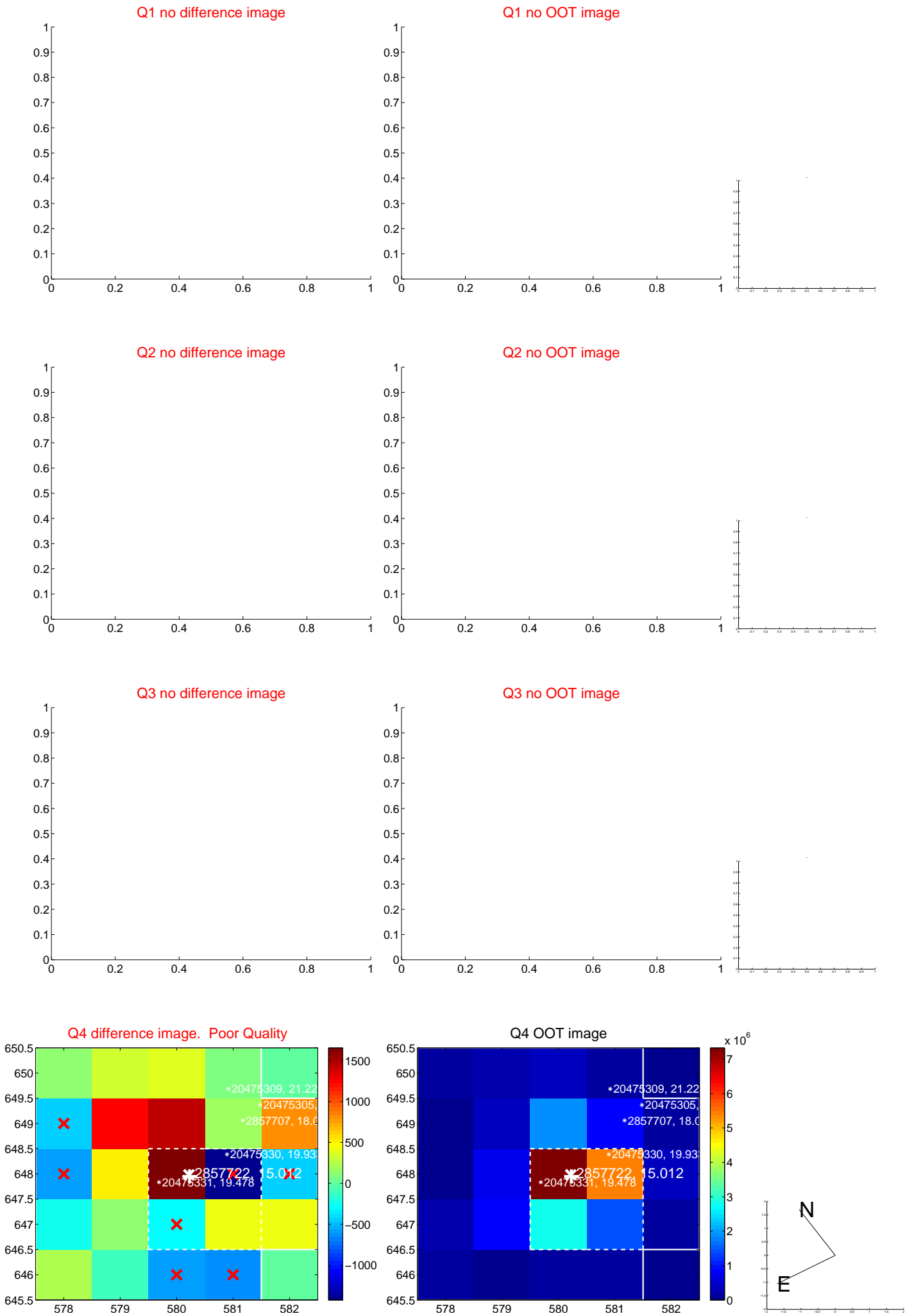


offset from photometric centroids

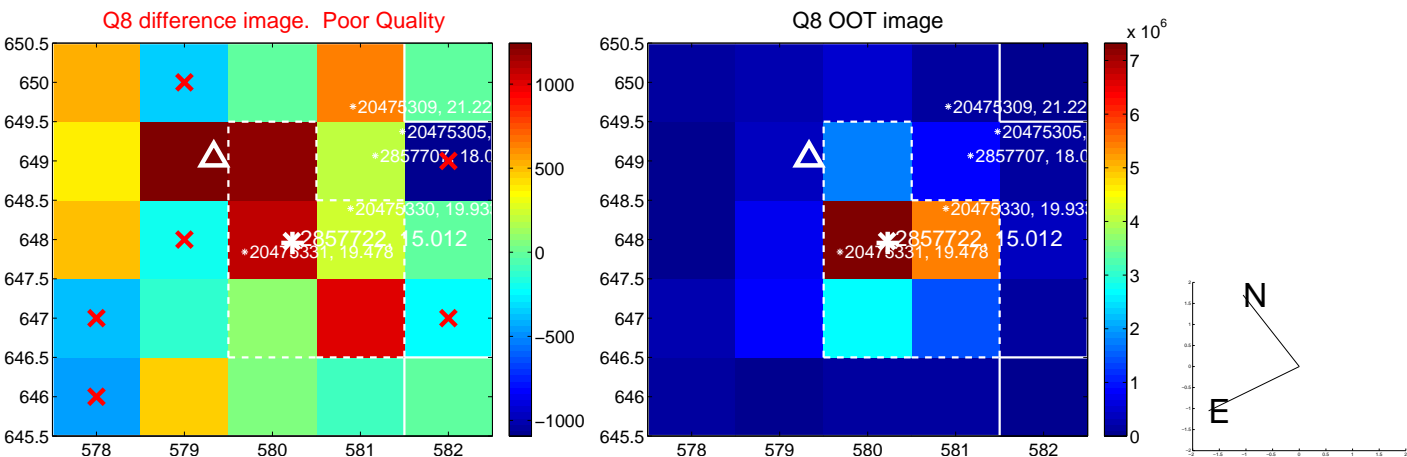
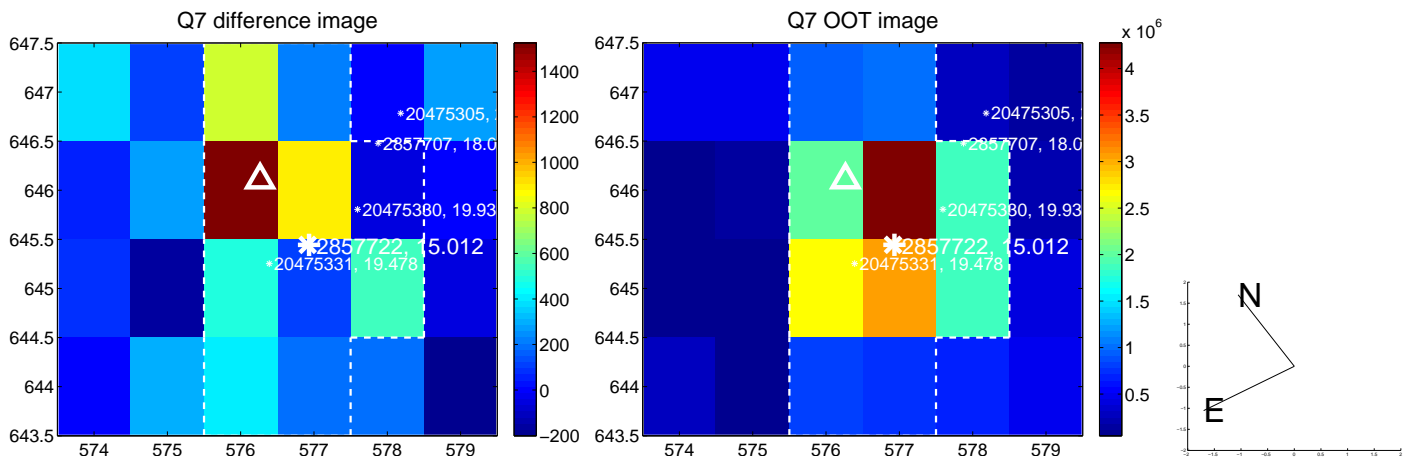
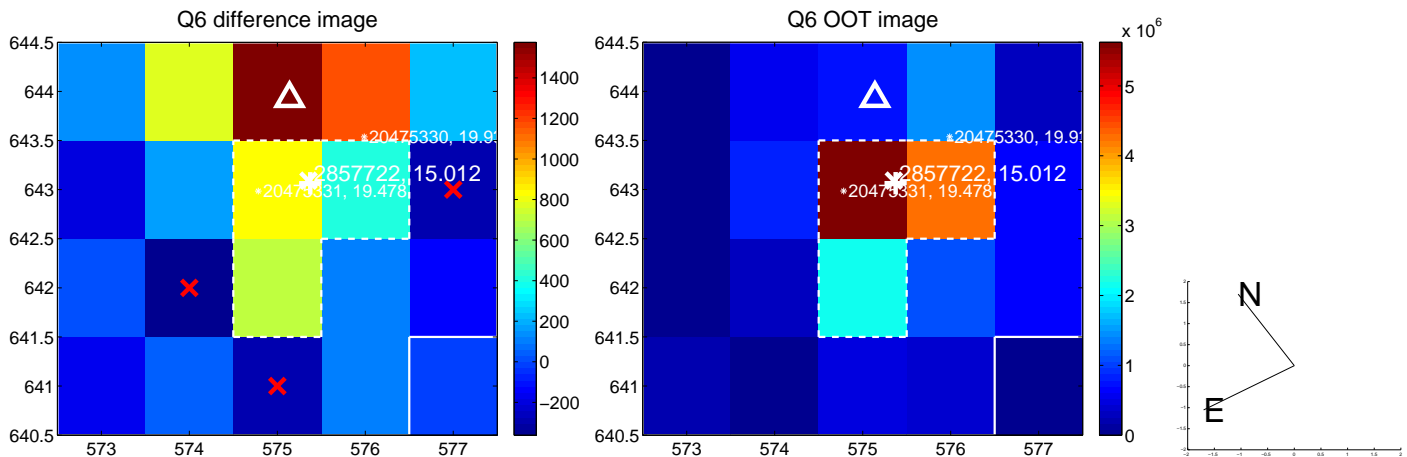
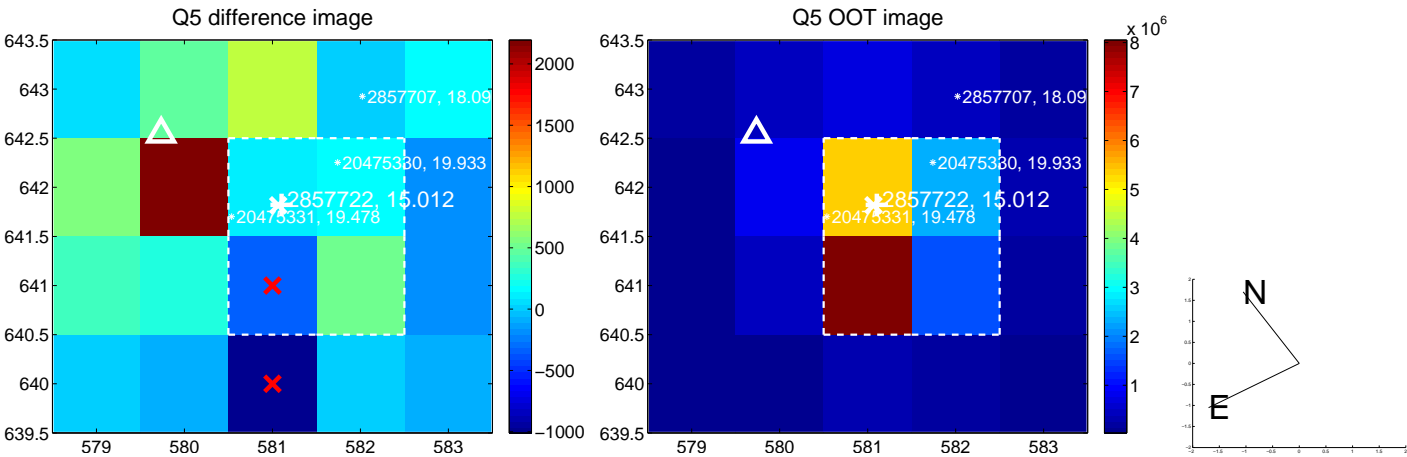


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

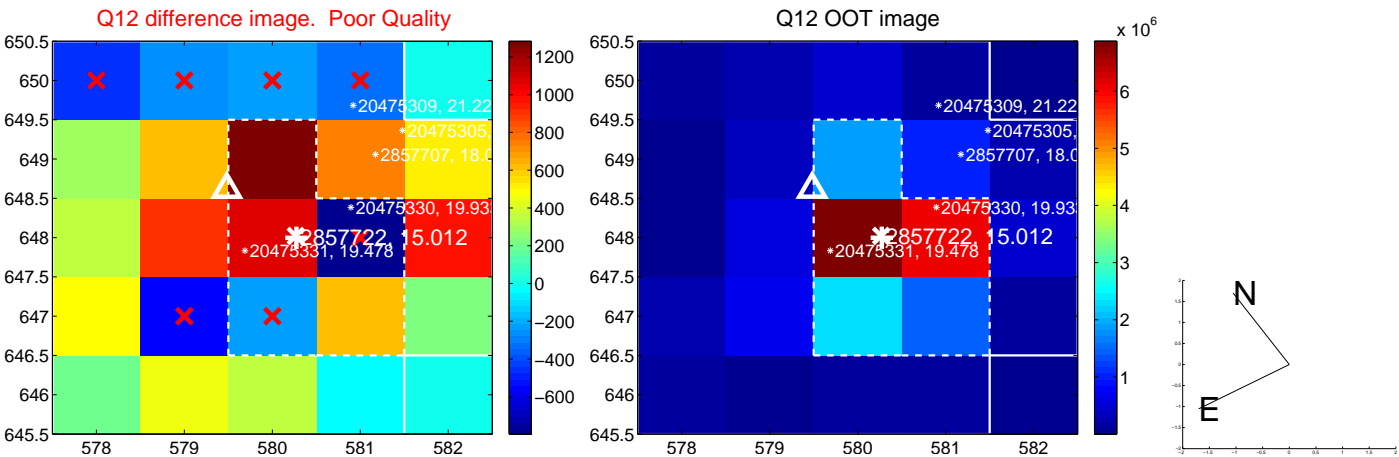
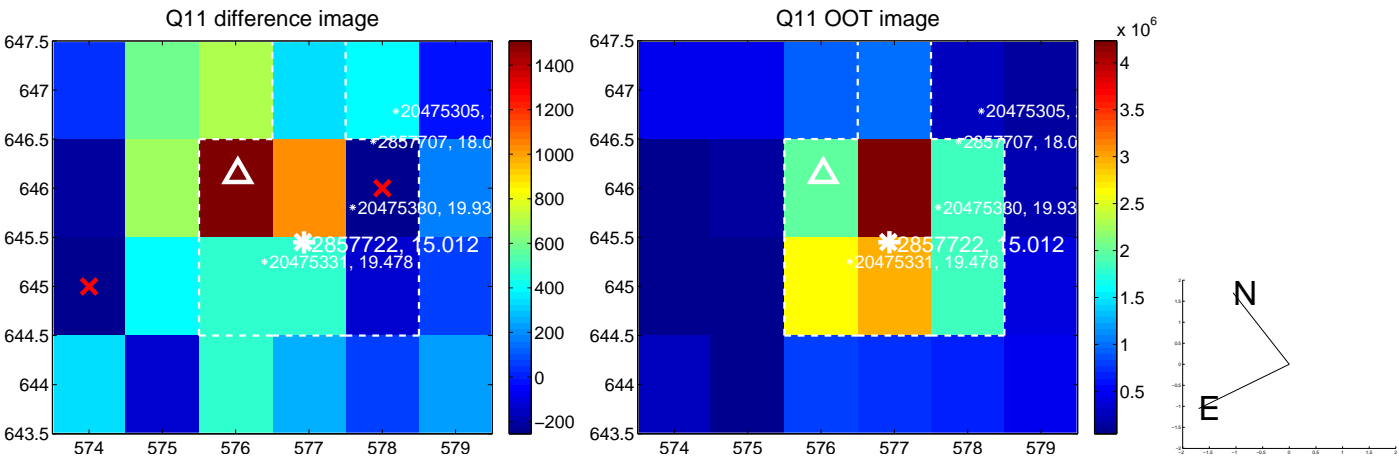
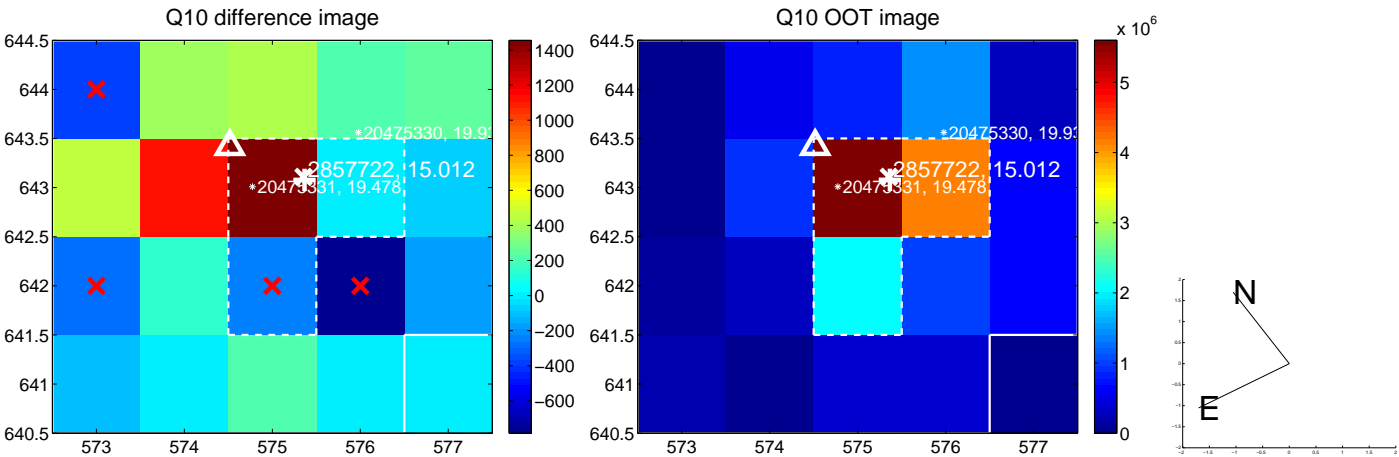
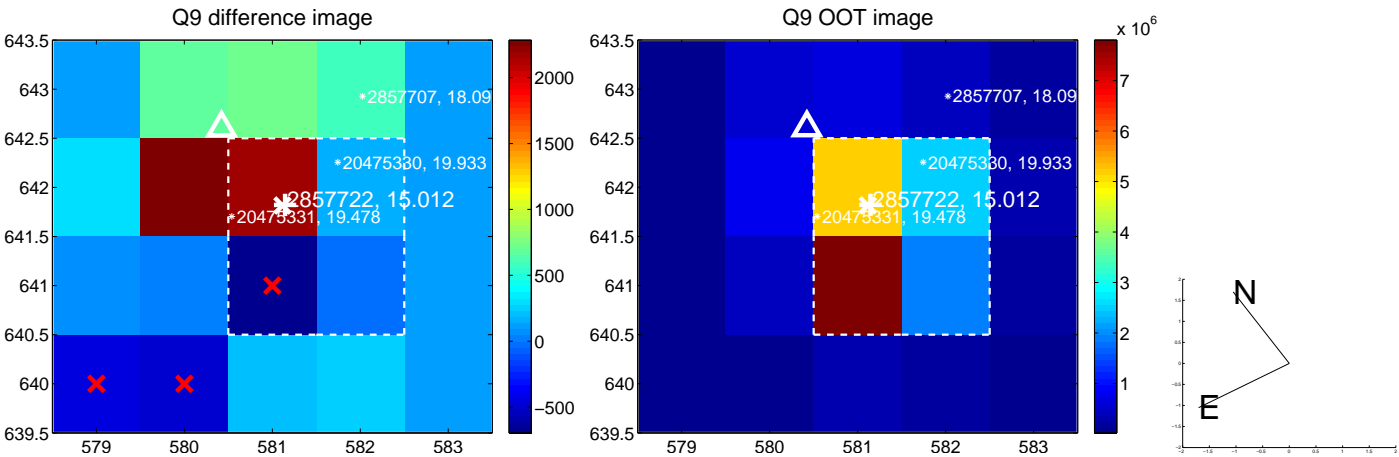
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



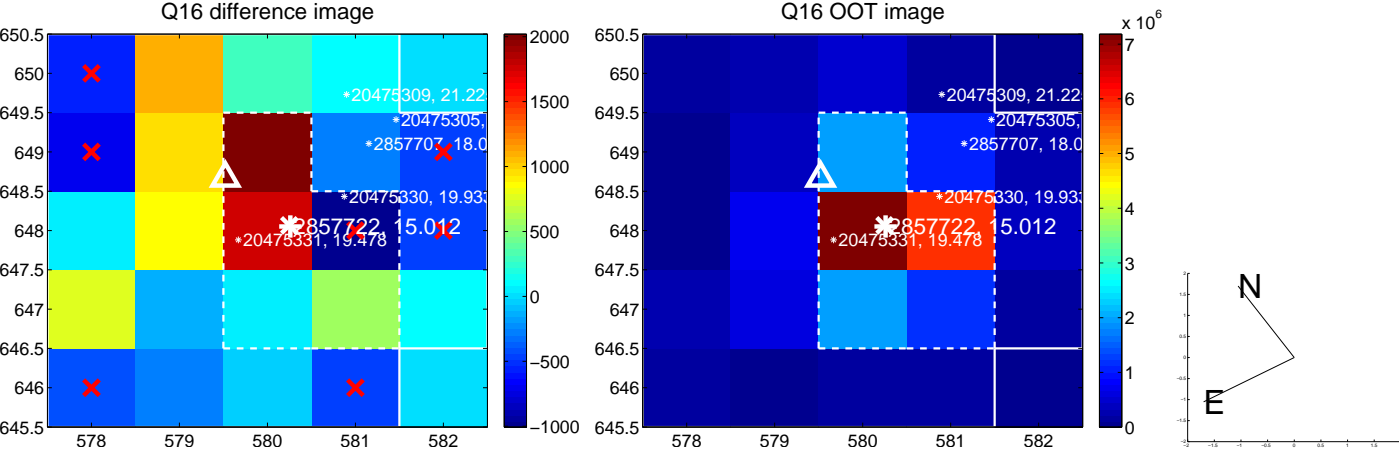
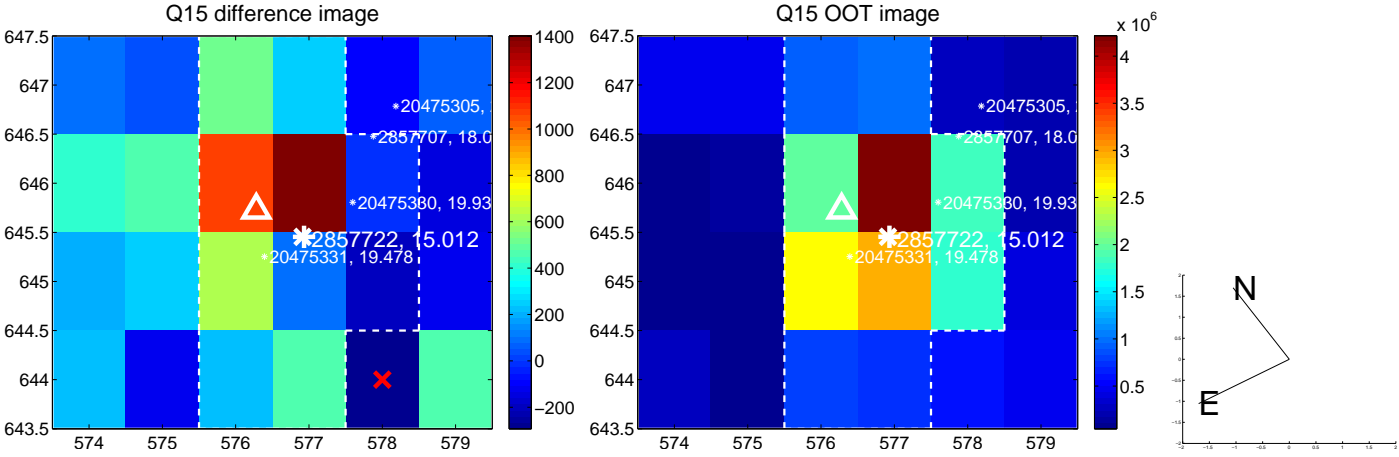
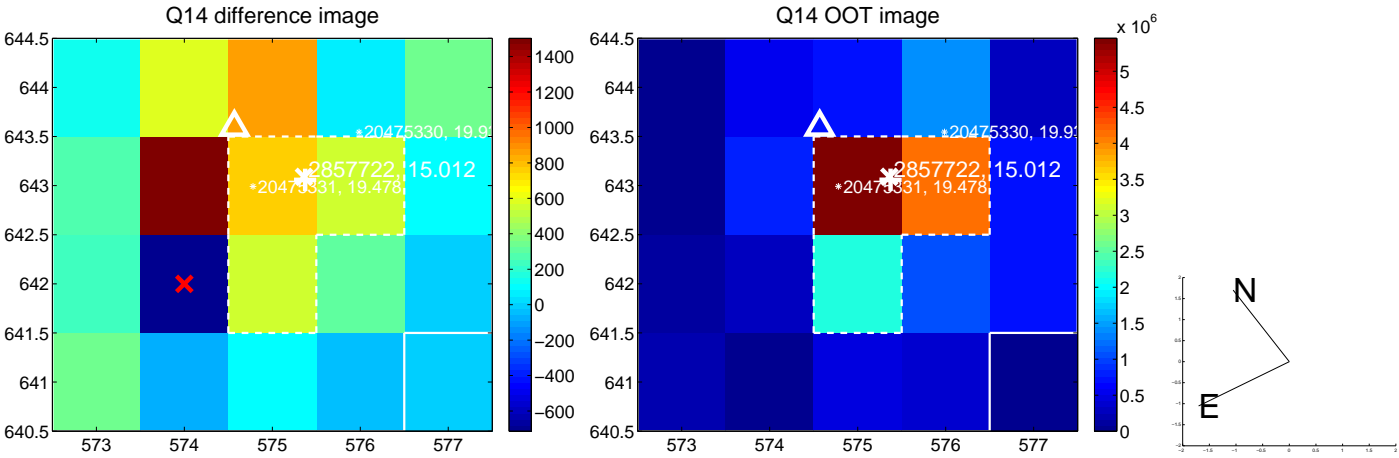
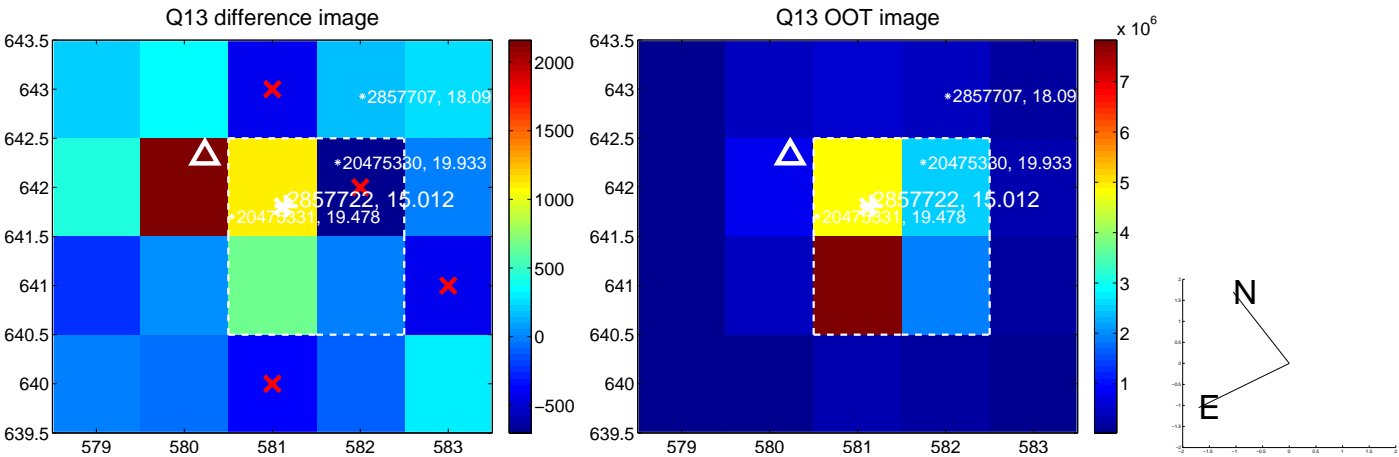
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



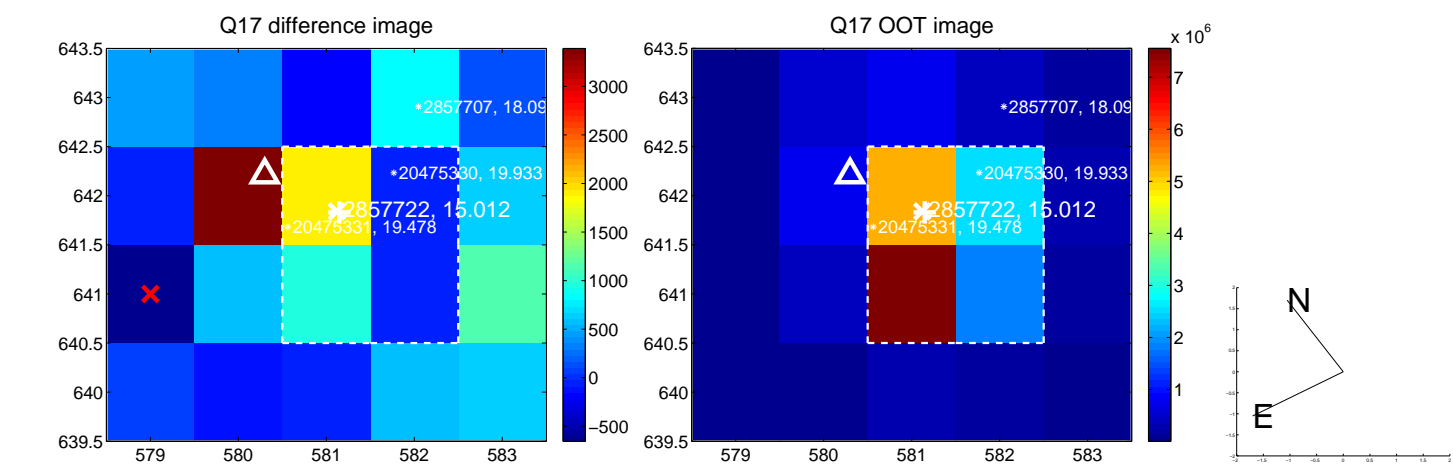
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



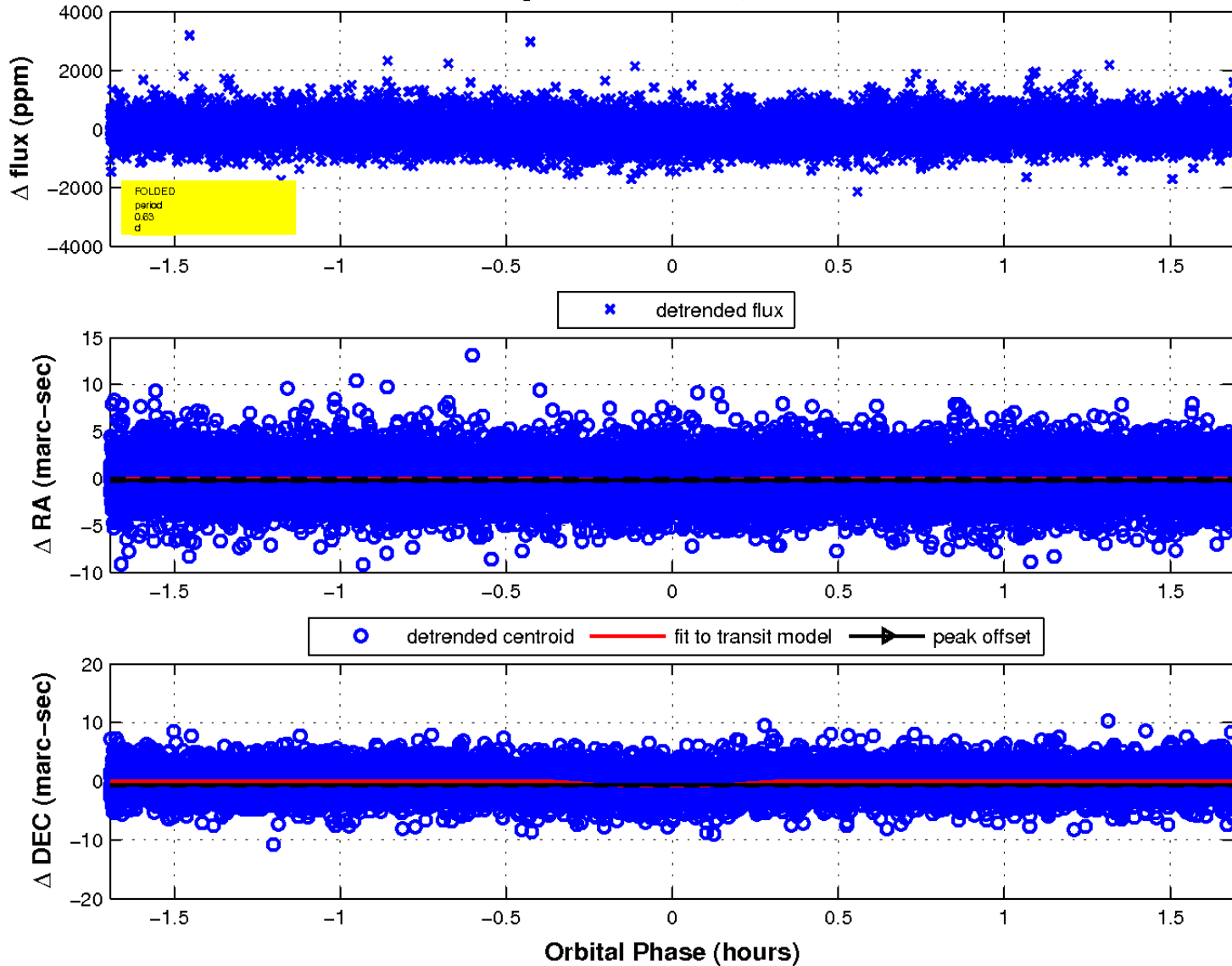
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

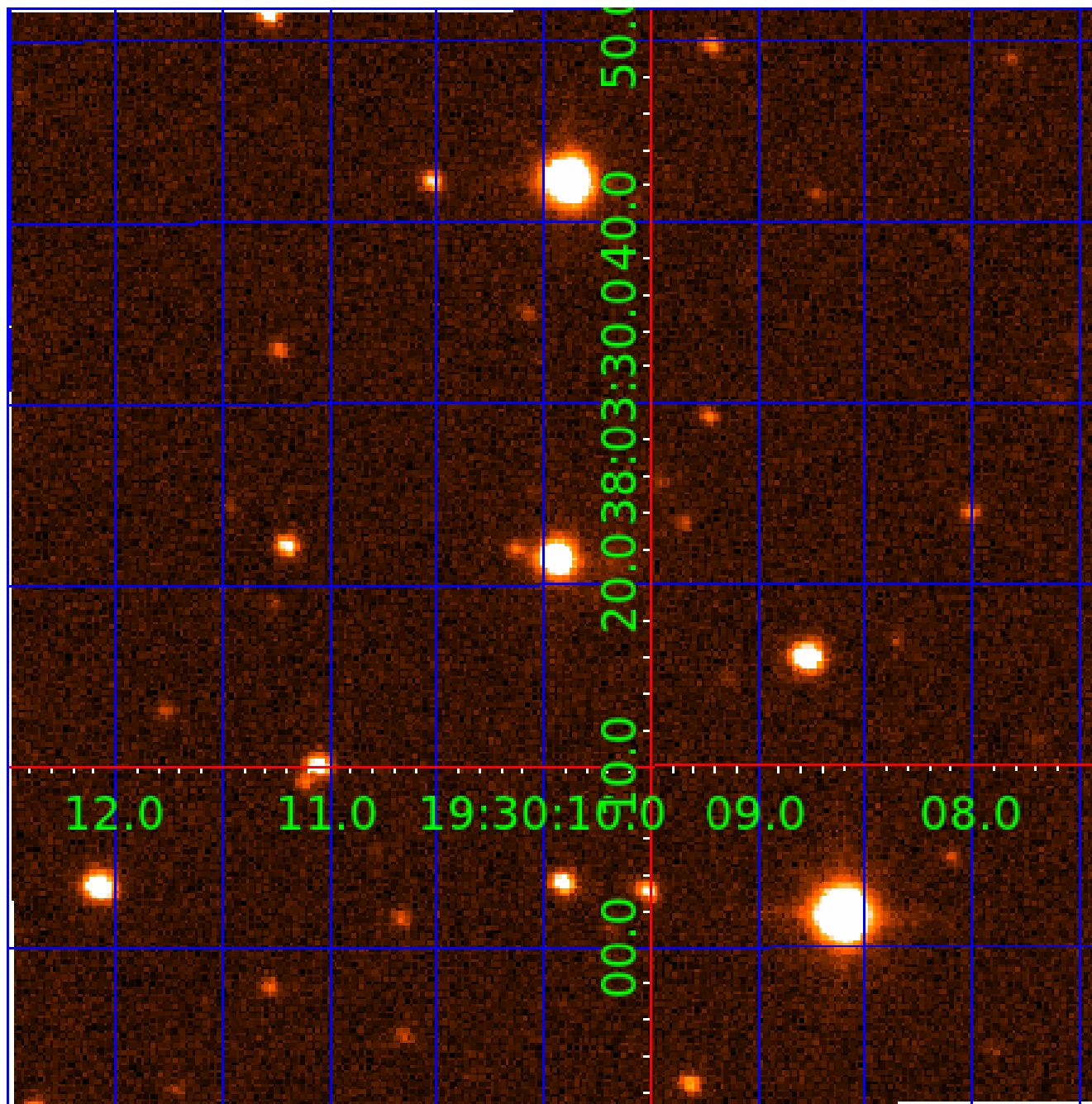


fluxWeightedCentroids, Planet 1 of 2



UKIRT Image

Declination



KIC 002857722

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})
002857722-01	OBS	No	0.630097	132.124582	115.3	0.564	9.7	10.1	1.09	6338	1.29	7633.26
002857722-02	OBS	No	0.630099	131.910010	140.1	0.576	8.0	12.9	1.09	6338	1.37	7633.23

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
002857722-01	OBS	FP	0.00	1	0	1	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—CENT_UNRESOLVED_OFFSET
002857722-02	OBS	FP	0.00	1	0	1	0	SAME_NTL_PERIOD—CENT_UNRESOLVED_OFFSET

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

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

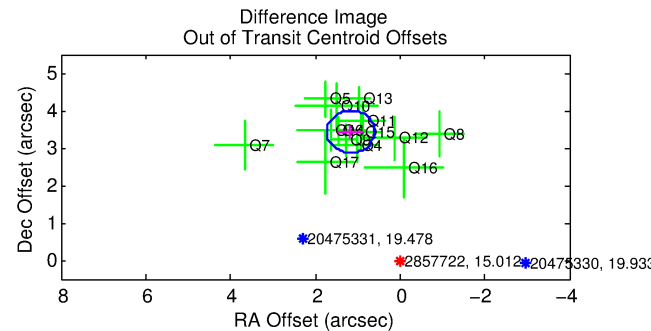
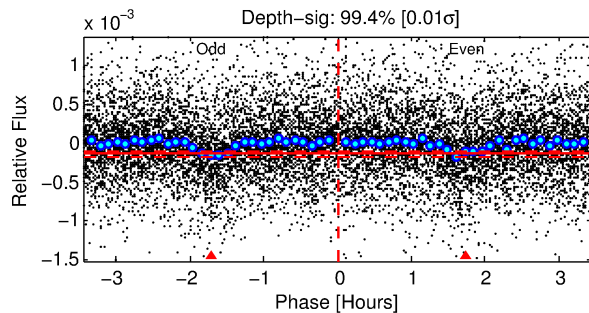
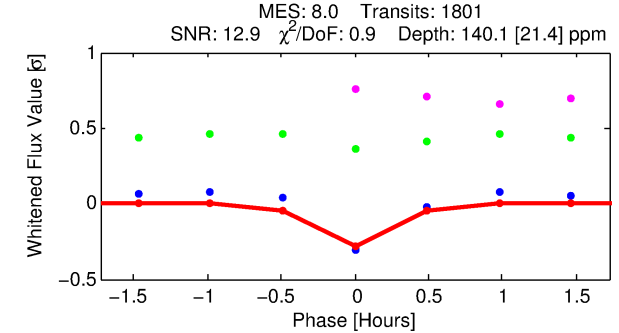
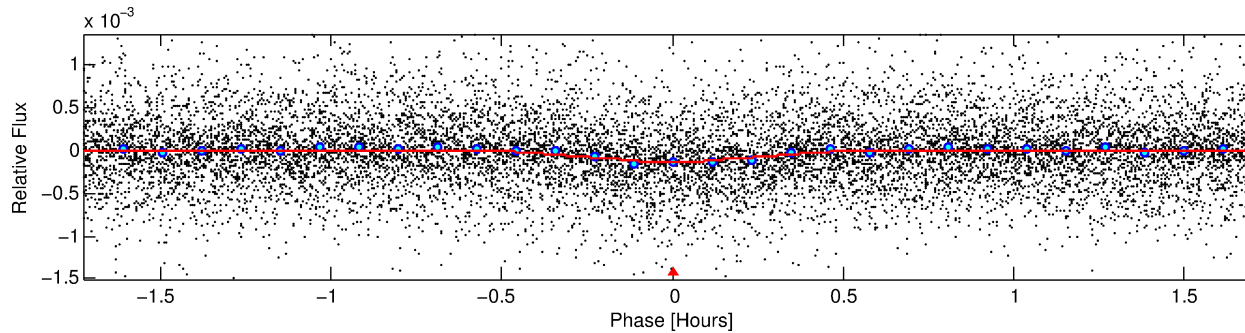
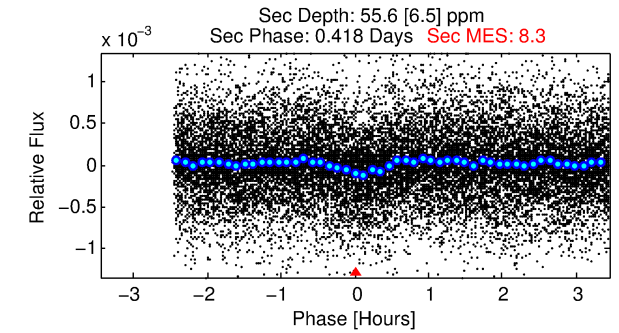
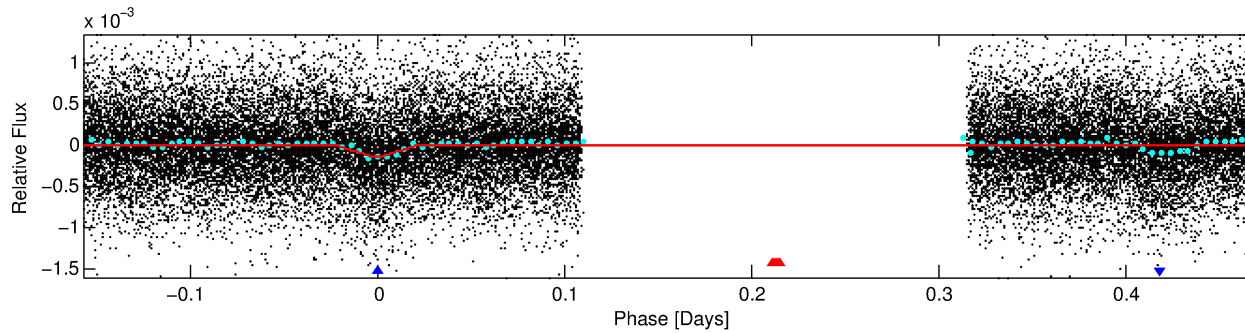
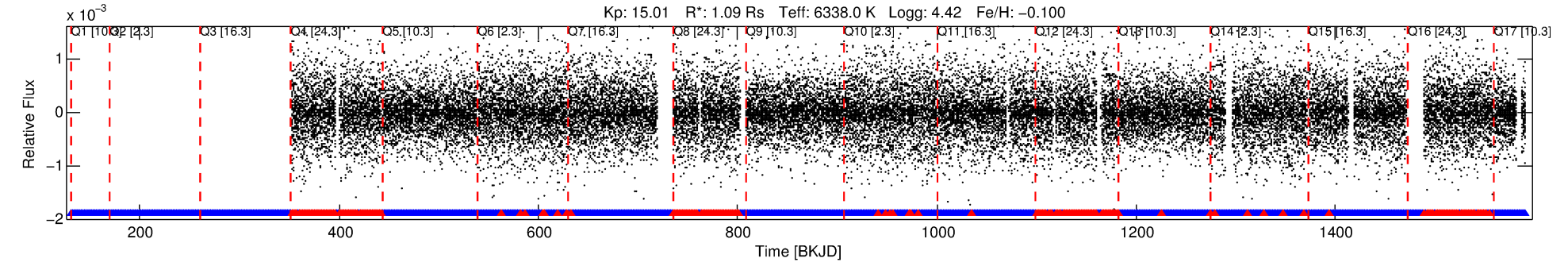
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 002857722-02

No Significant Match Found

DV One-Page Summary

KIC: 2857722 Candidate: 2 of 2 Period: 0.630 d



DV Fit Results:

Period = 0.63010 [0.00001] d
Epoch = 131.9100 [0.0010] BKJD
Rp/R* = 0.0115 [0.0054]
a/R* = 7.37 [17.43]
b = 0.50 [3.59]
Seff = 7633.23 [3302.70]
Teq = 2383 [258] K
Rp = 1.37 [0.79] Re
a = 0.0150 [0.0042] AU
Ag = 3.66 [3.75] [0.71σ]
Teffp = 5096 [1216] K [2.18σ]

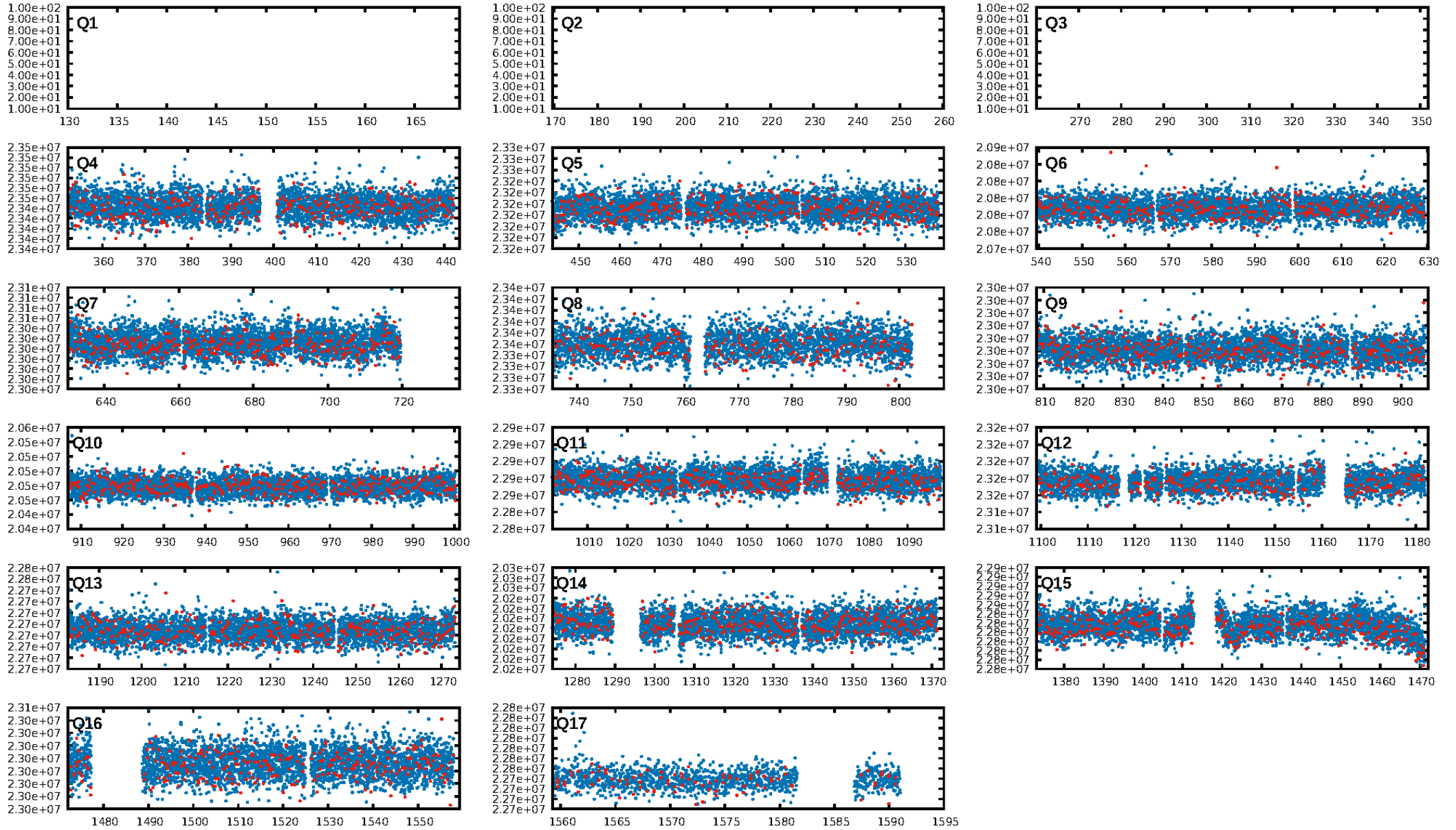
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 6.57e-14
RollingBand-fgt: 0.80 [1401/1759]
GhostDiagnostic-chr: 0.6544
Centroid-sig: 0.0%
Centroid-so: 7.728 arcsec [7.24σ]
OotOffset-rm: 3.626 arcsec [19.31σ]
KicOffset-rm: 3.506 arcsec [20.21σ]
OotOffset-st: 3/3/4/4 [14]
KicOffset-st: 3/3/4/4 [14]
DiffImageQuality-fgm: 0.79 [11/14]
DiffImageOverlap-fno: 0.00 [0/14]

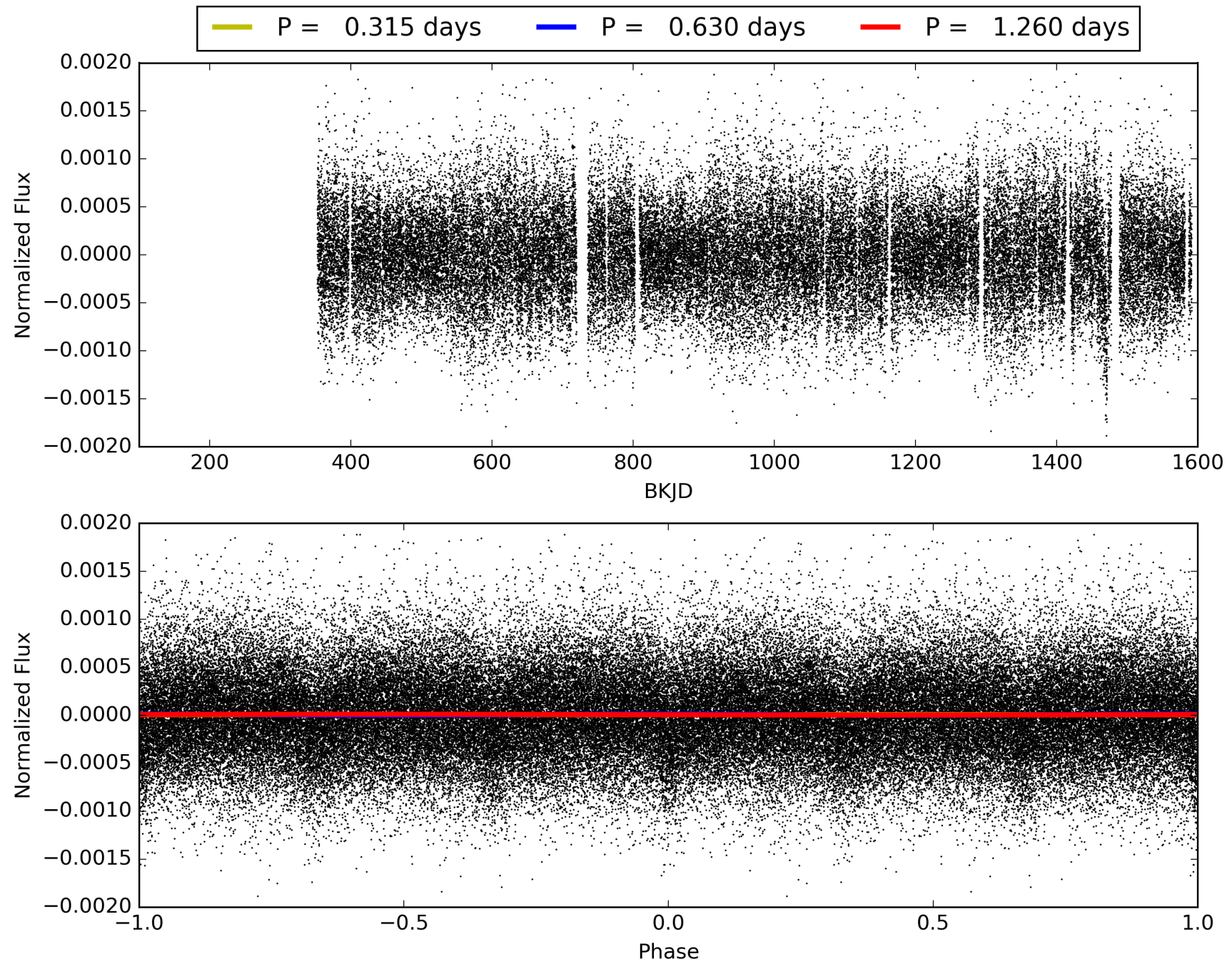
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 10:21:58 Z

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

TCE 002857722-02, PDC Light Curves

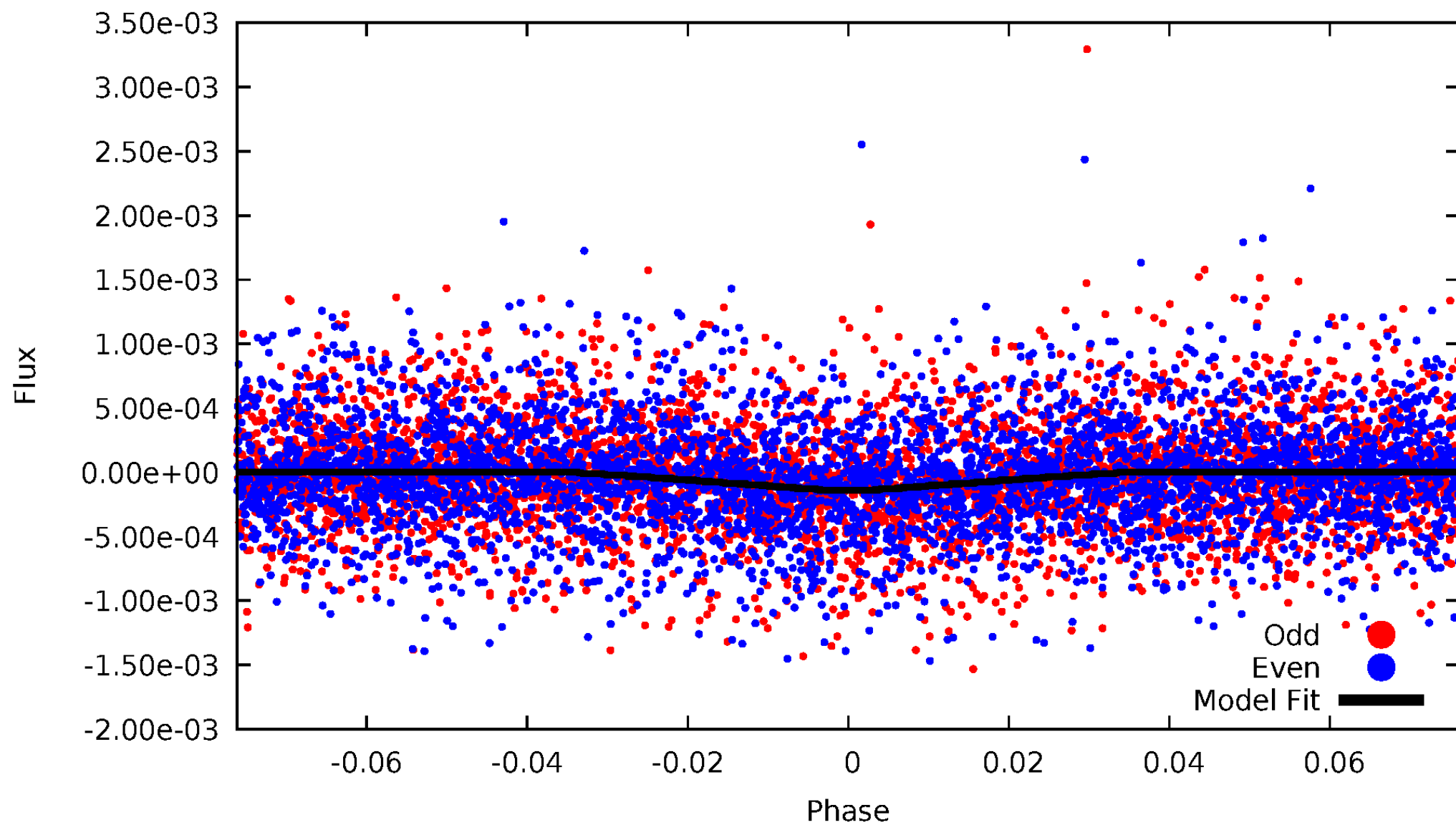


TCE 002857722-02



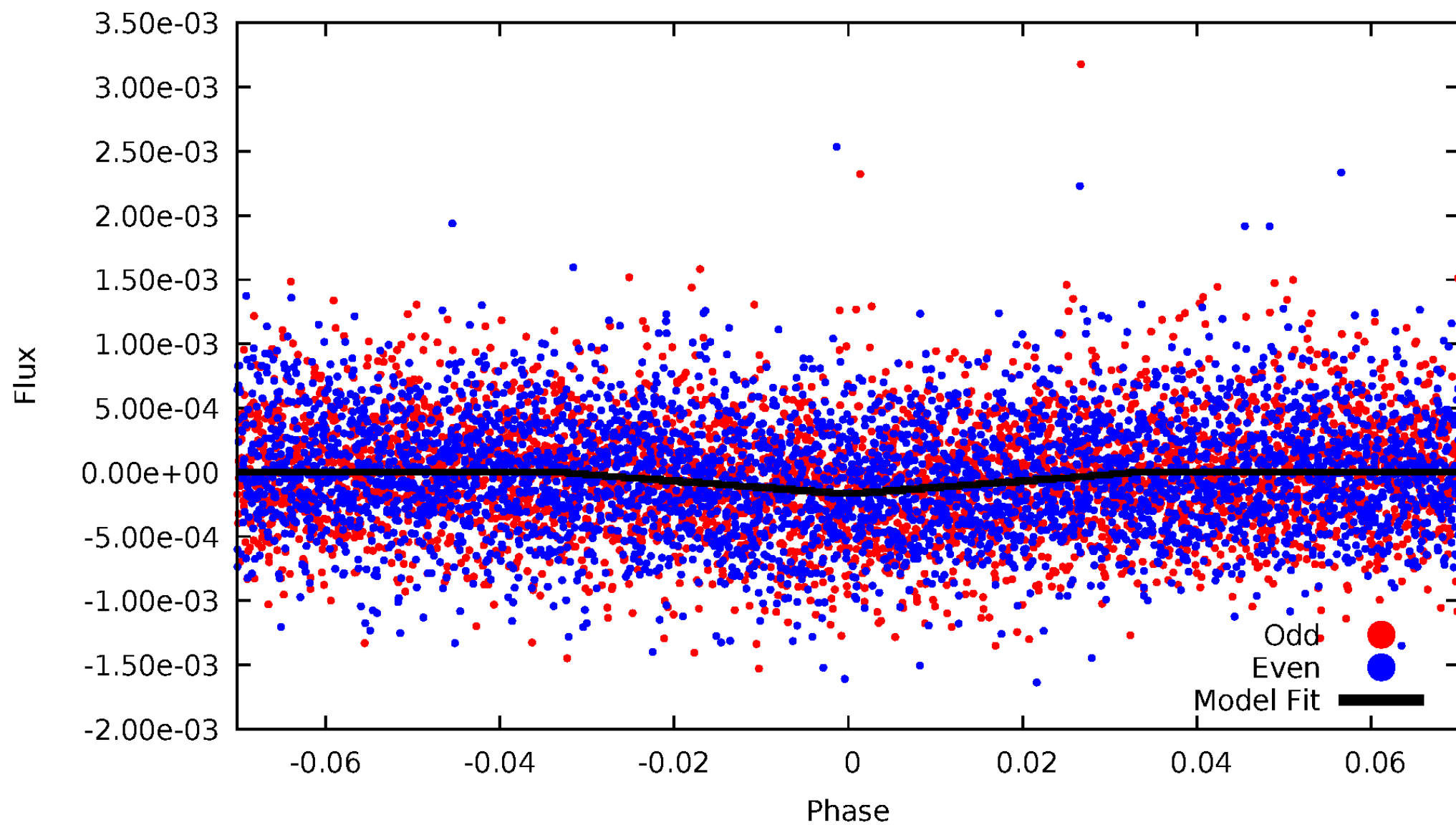
DV Odd/Even

TCE 002857722-02



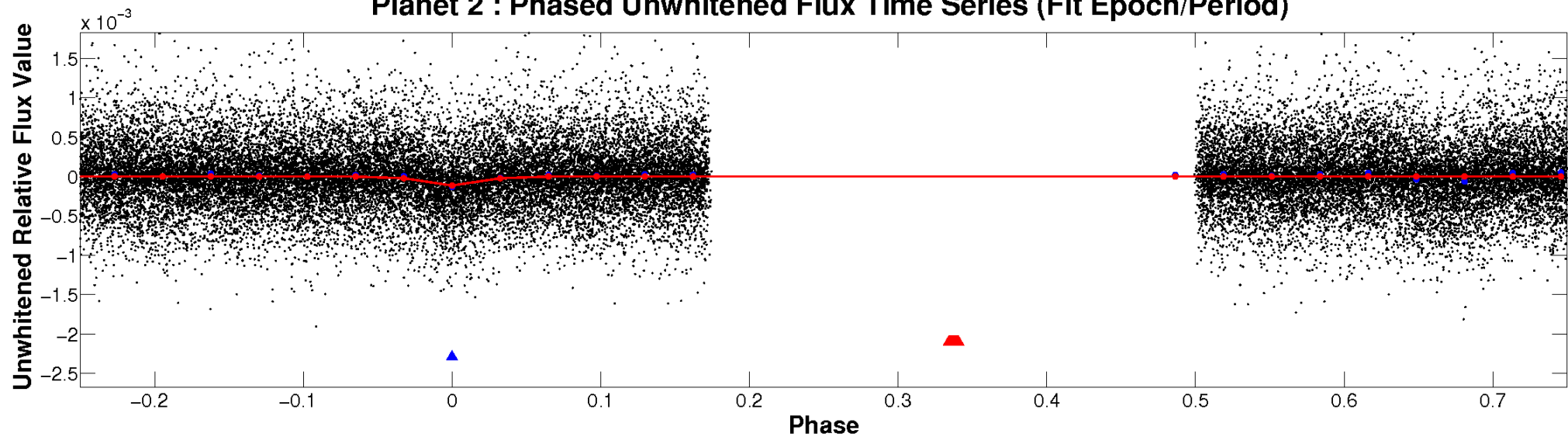
ALT Odd/Even

TCE 002857722-02

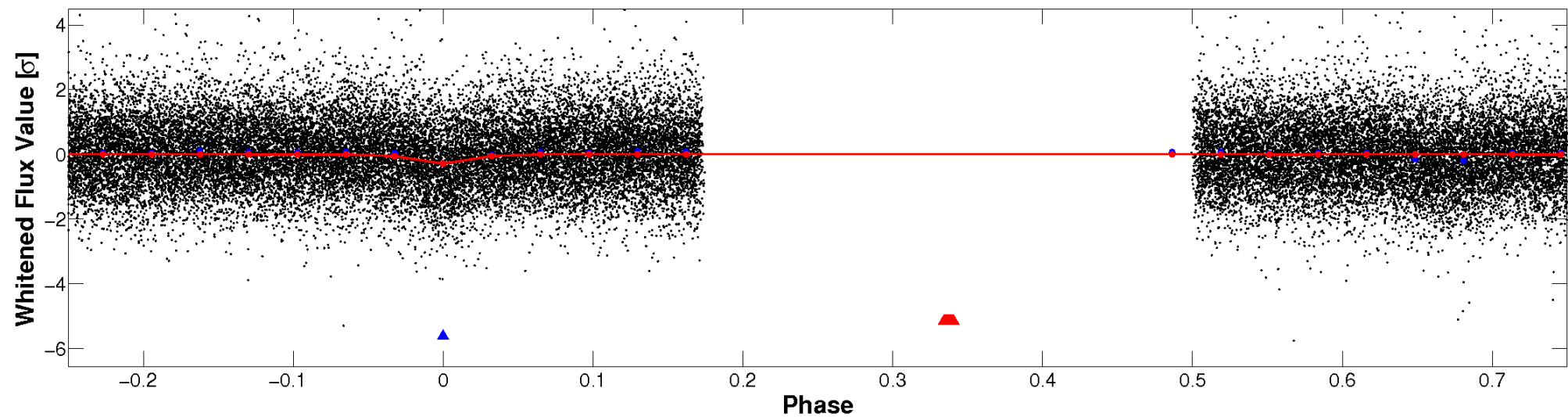


Non-Whitened Vs. Whitened Light Curve

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

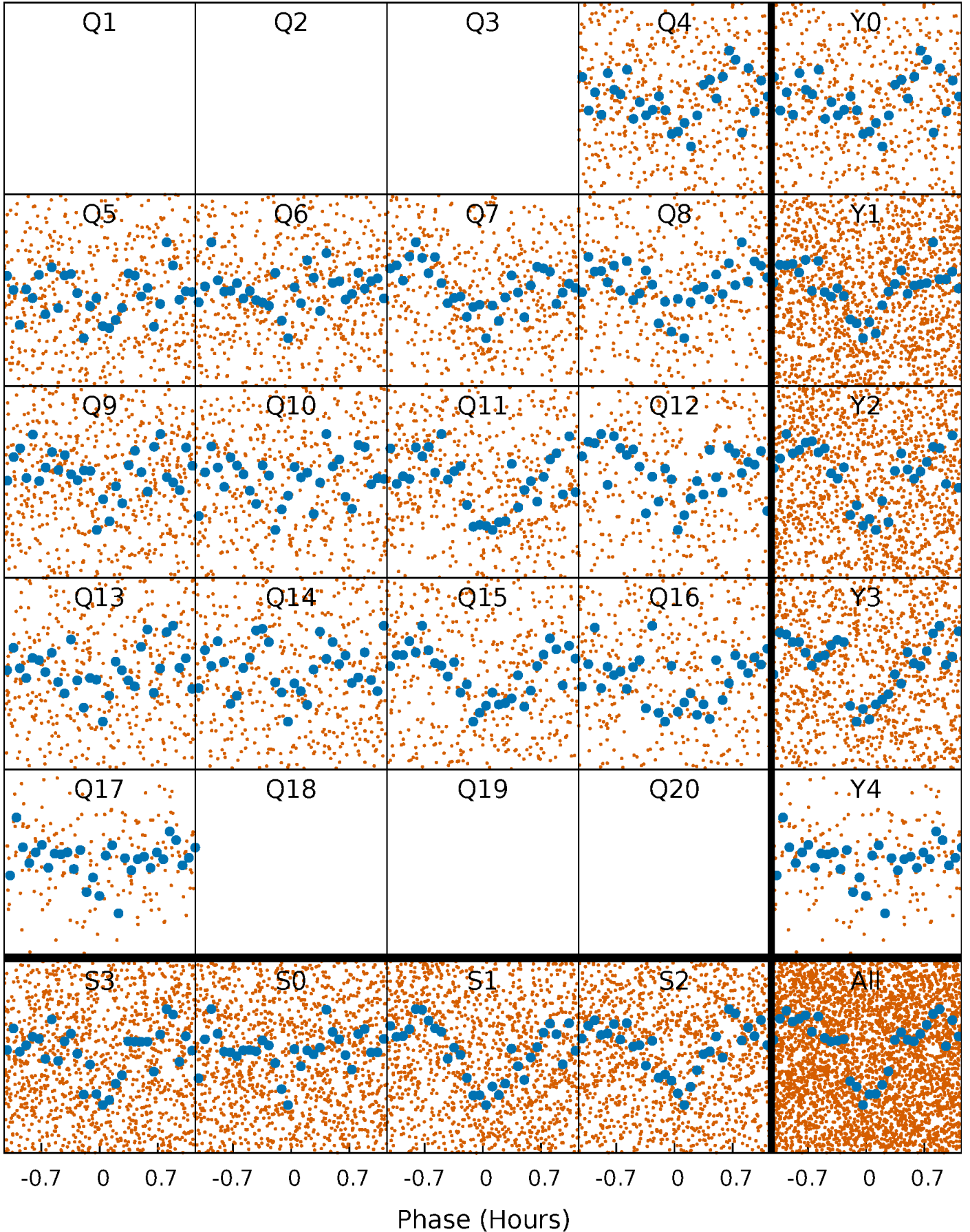


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



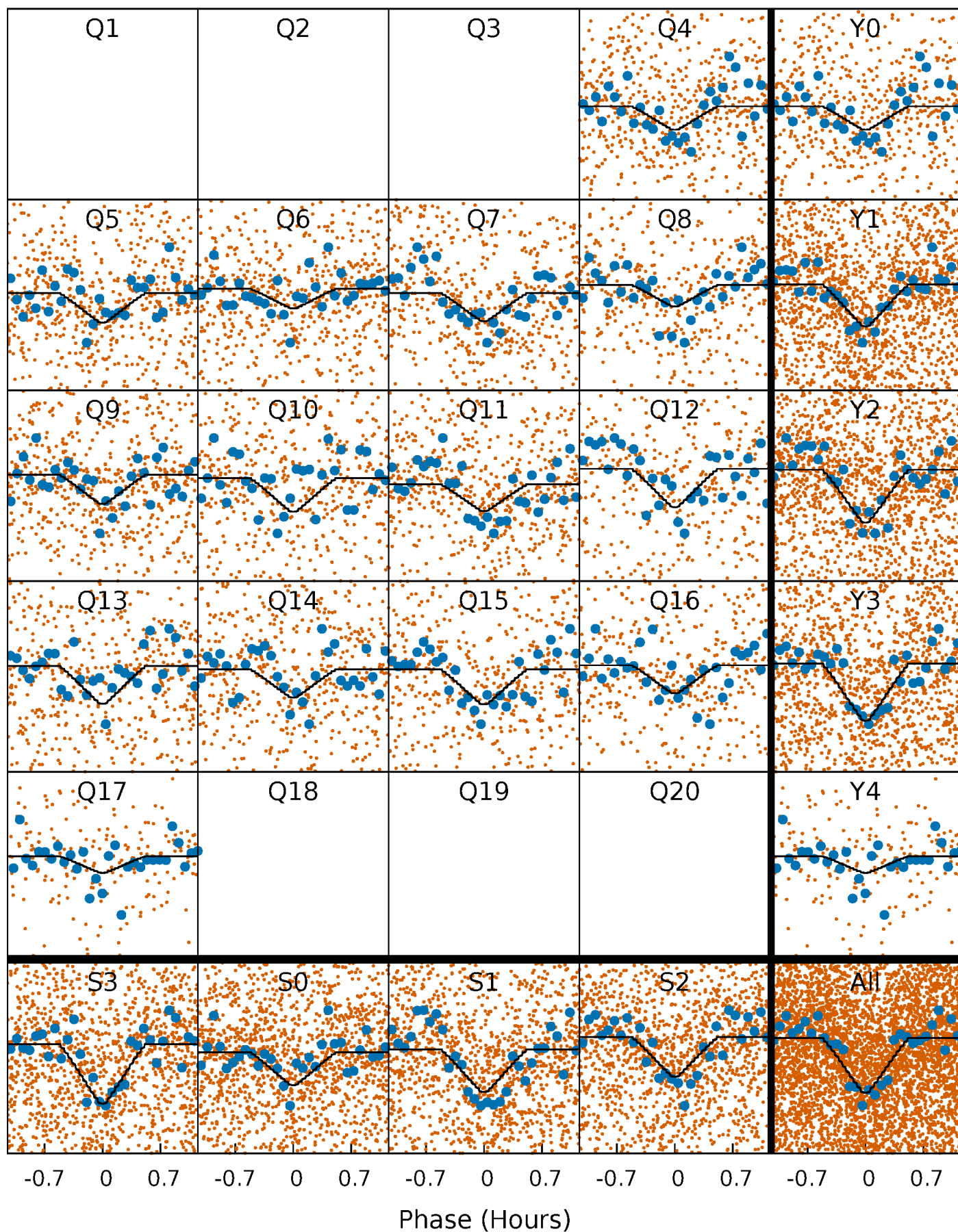
PDC Quarter-Phased Transit Curves

TCE 002857722-02 P= 0.630099 Days $T_0=131.910010$ (BKJD)



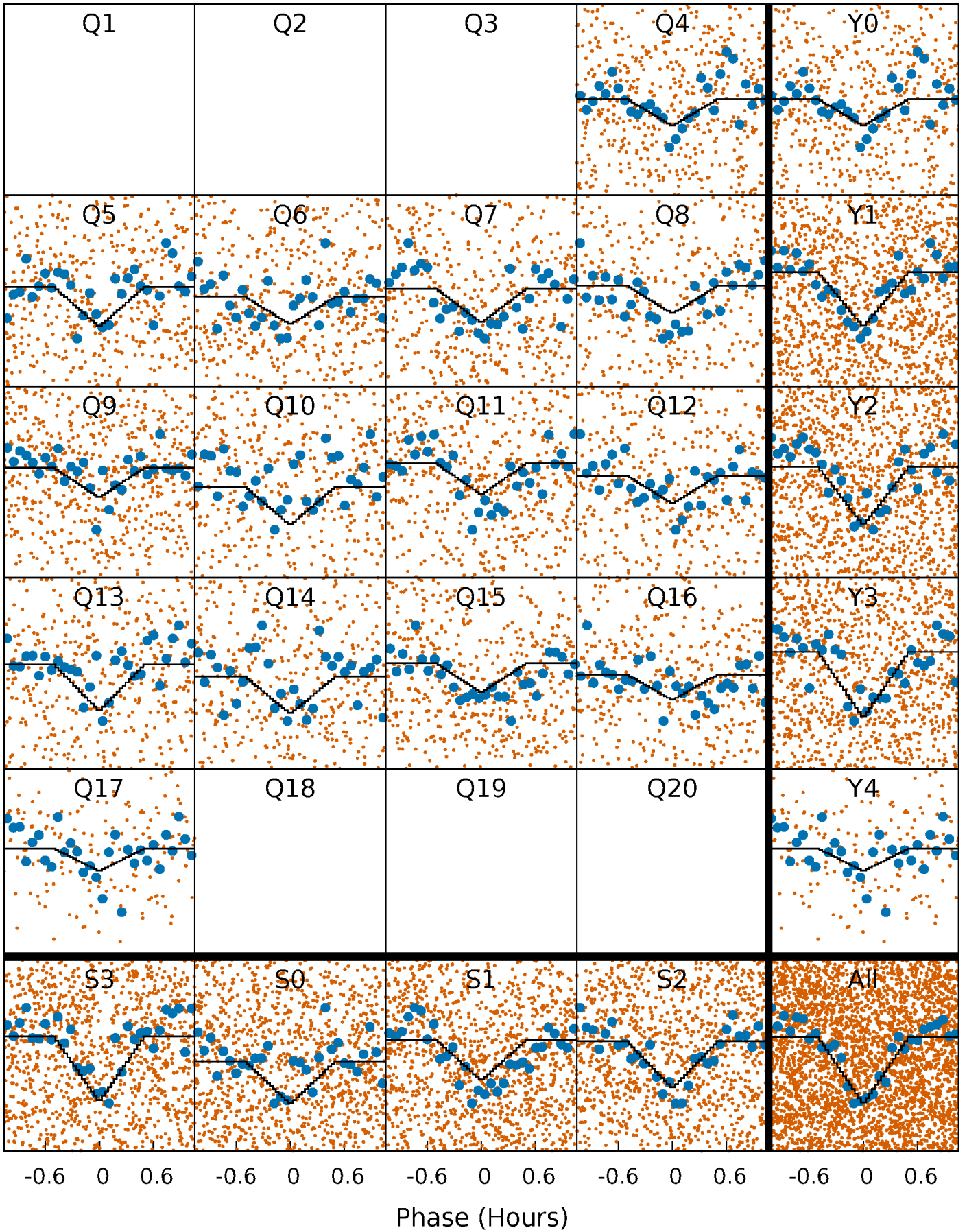
DV Quarter-Phased Transit Curves

TCE 002857722-02 P= 0.630099 Days $T_0=131.910010$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

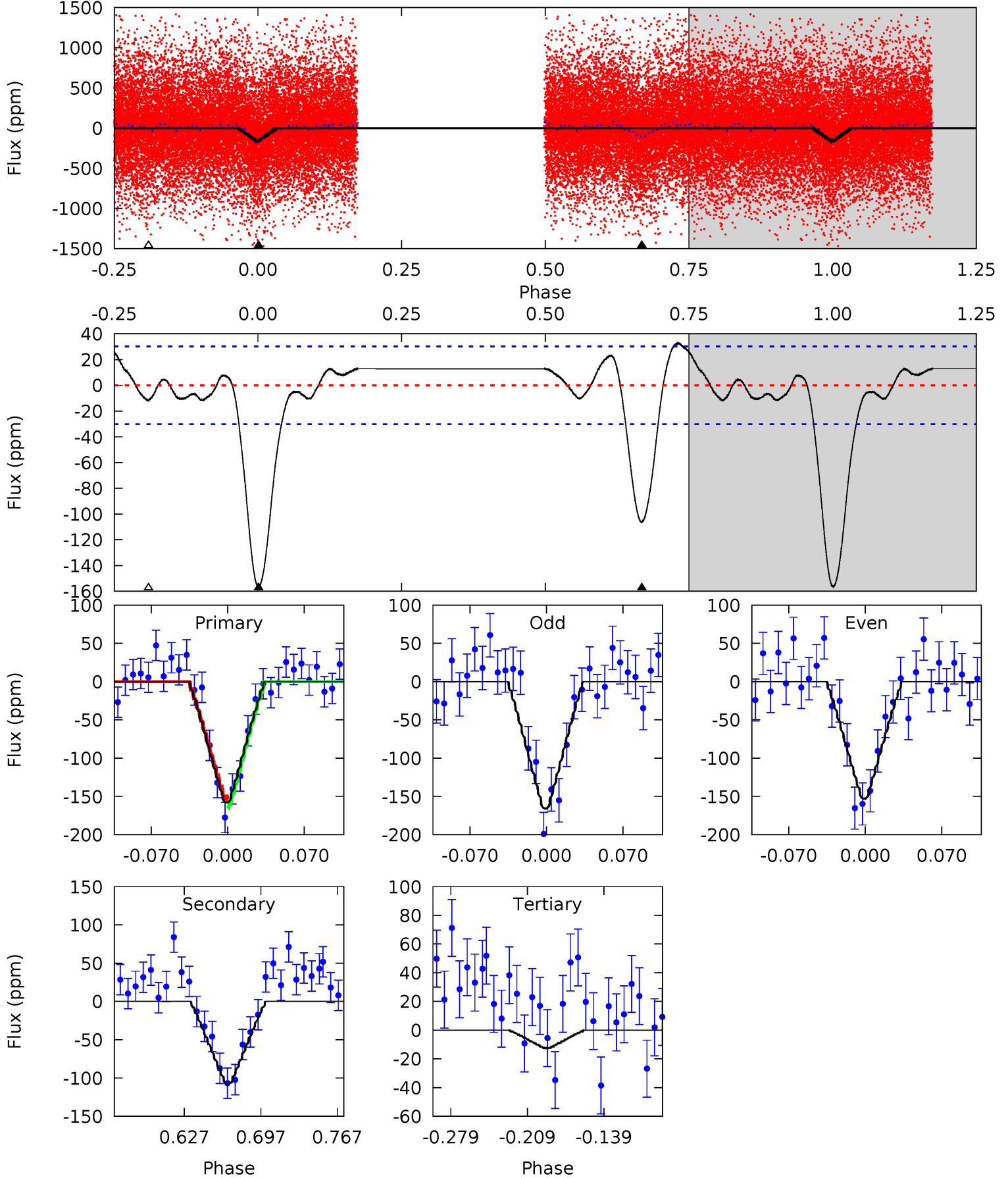
TCE 002857722-02 P= 0.630097 Days $T_0=131.913091$ (BKJD)



DV Model-Shift Uniqueness Test

002857722-02, P = 0.630099 Days, E = 131.910010 Days

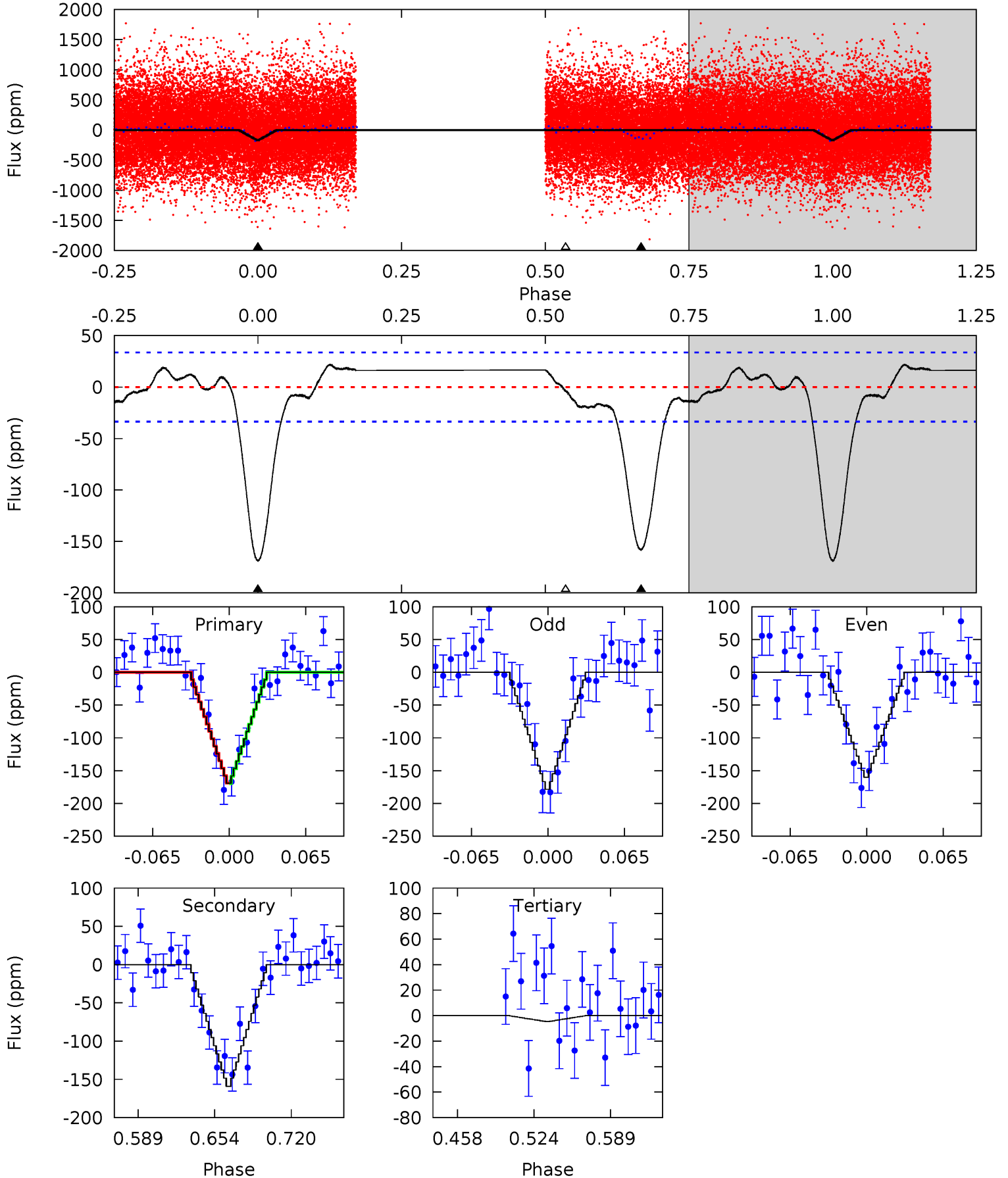
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
24.1	16.4	1.91	0	4.64	1.81	1.57	22.2	24.1	14.5	16.4	0.98	1.03	0.18	0.93



Alt Model-Shift Uniqueness Test

002857722-02, P = 0.630097 Days, E = 131.913091 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
23.5	22.0	0.64	0	4.65	1.84	1.71	22.8	23.5	21.4	22.0	1.28	0.96	0.12	0.07



Stellar Parameters For KIC 002857722

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6338^{+179}_{-246}	$4.418^{+0.073}_{-0.218}$	$-0.100^{+0.250}_{-0.300}$	$1.091^{+0.370}_{-0.123}$	$1.137^{+0.169}_{-0.152}$	$1.233^{+0.368}_{-0.666}$
	+3%/-4%	+2%/-5%	+250%/-300%	+34%/-11%	+15%/-13%	+30%/-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 002857722-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-107 ± 7	$1.44^{+0.70}_{-0.67}$	3374^{+253}_{-172}	5890^{+2525}_{-995}	$6.362^{+15.687}_{-3.508}$
Alt.	-159 ± 7	$1.61^{+0.73}_{-0.68}$	3376^{+249}_{-188}	6172^{+2216}_{-1010}	$7.533^{+14.445}_{-3.984}$

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 $A_{obs} \gg 1.0$

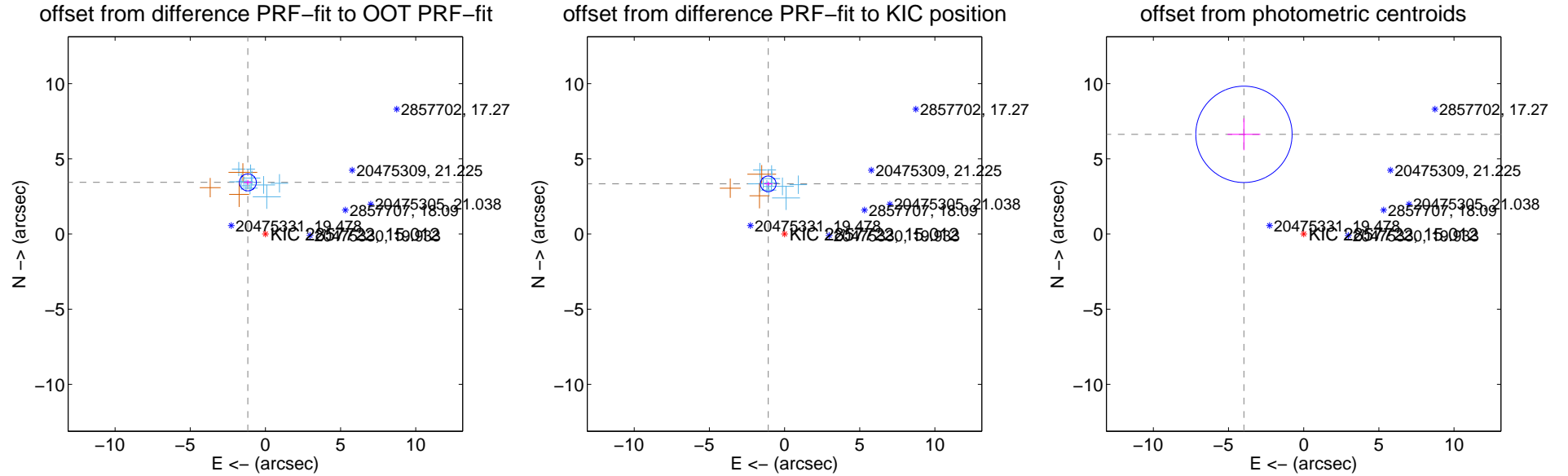
DV Centroid Data

Supplemental centroid analysis for 002857722-02. Kepler magnitude: 15.01. Transit SNR 12.86

There are 11 quarters with good PRF difference image offsets

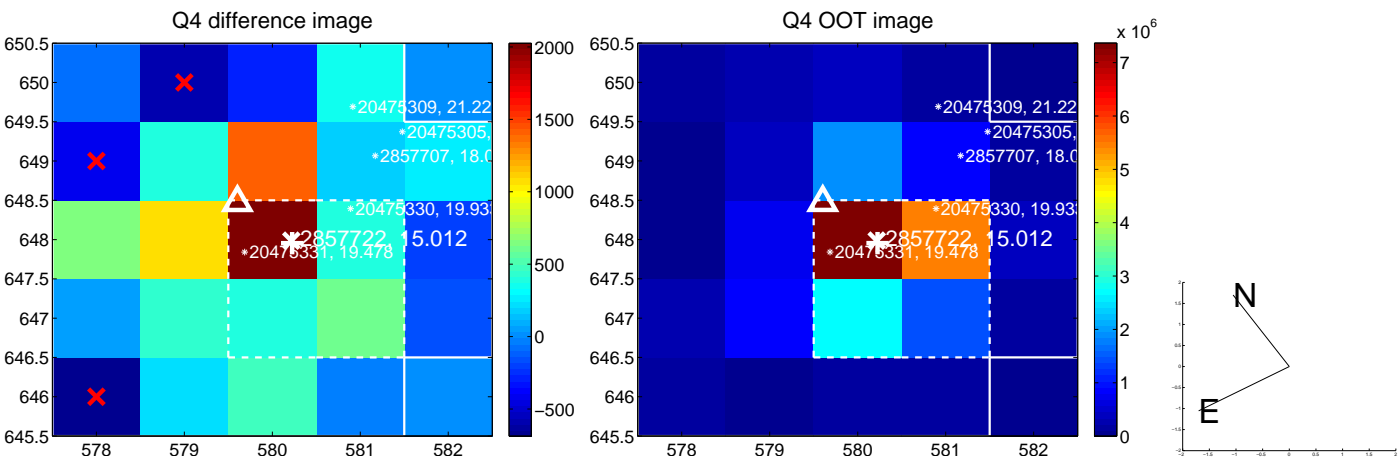
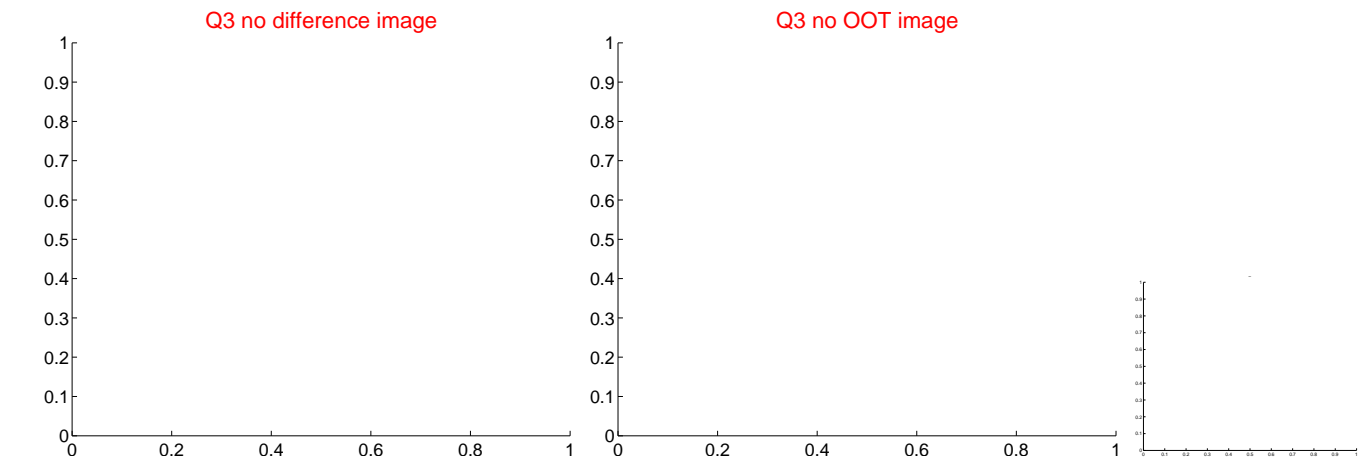
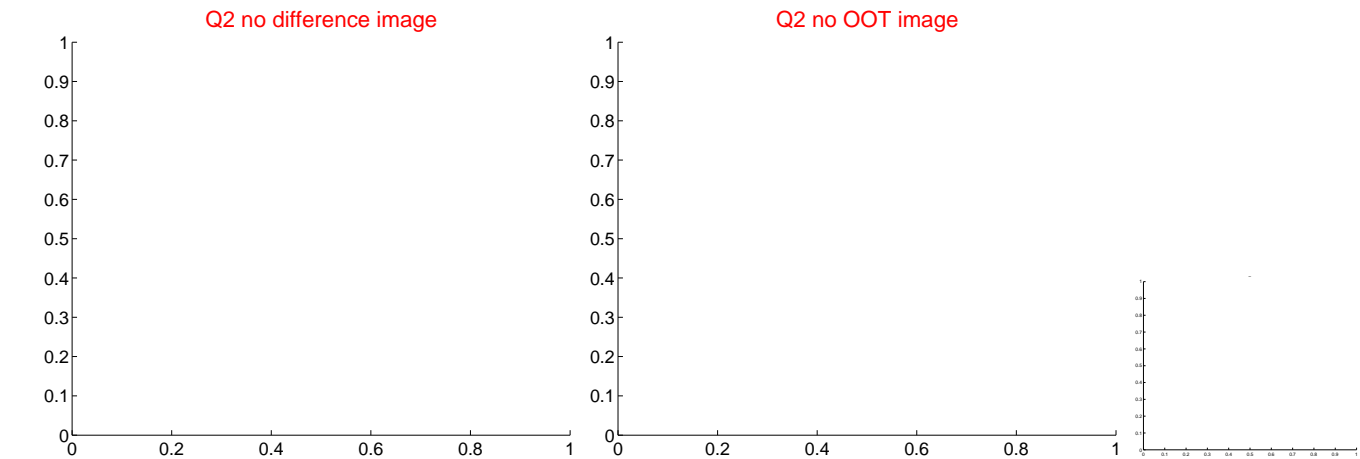
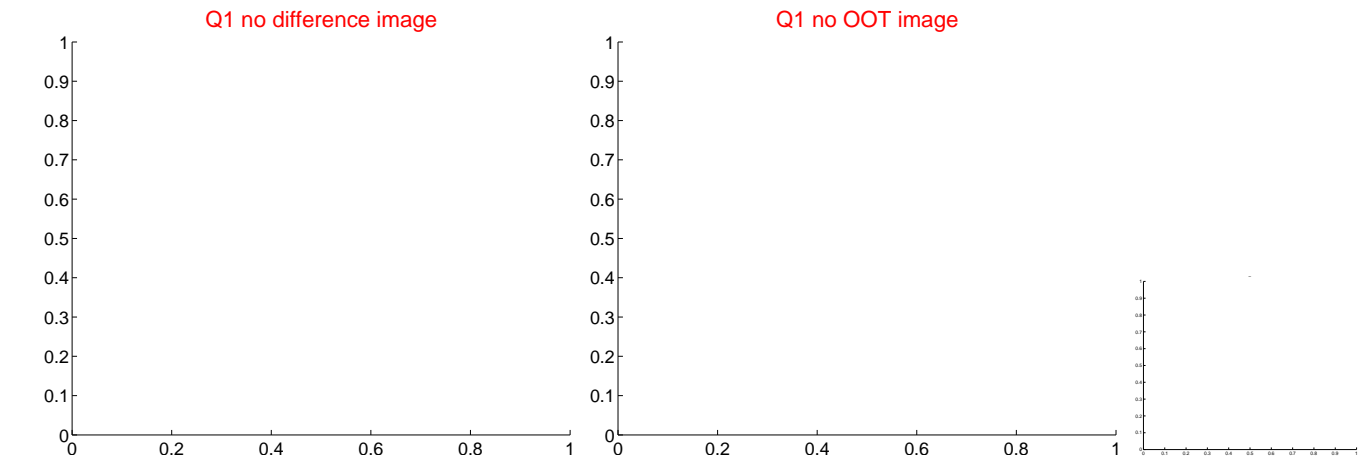
The direct PRF centroid is offset from the target star catalog position by about 0.12 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	3.626 ± 0.188	19.31	1.167 ± 0.278	3.434 ± 0.165
PRF-fit source offset from KIC position	3.506 ± 0.173	20.21	1.083 ± 0.285	3.334 ± 0.149
photometric centroid source offset	7.73 ± 1.07	7.24	3.97 ± 1.09	6.63 ± 1.06

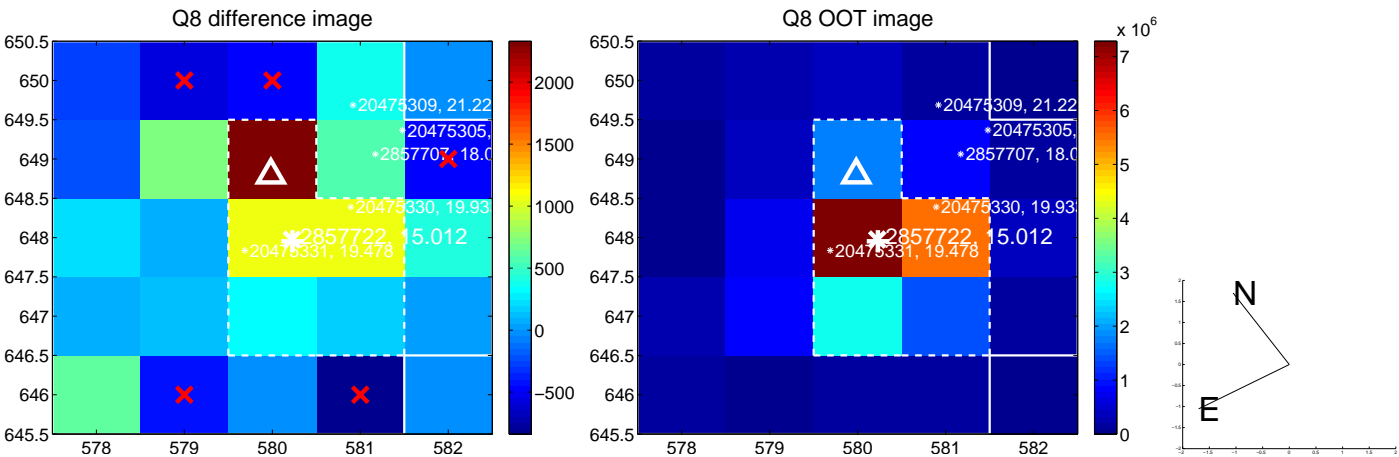
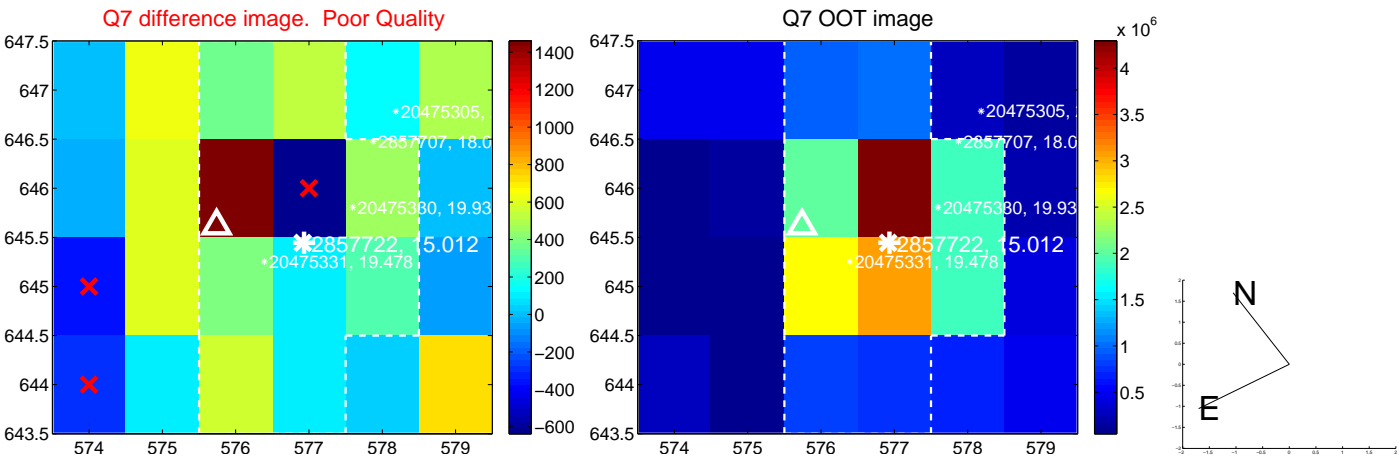
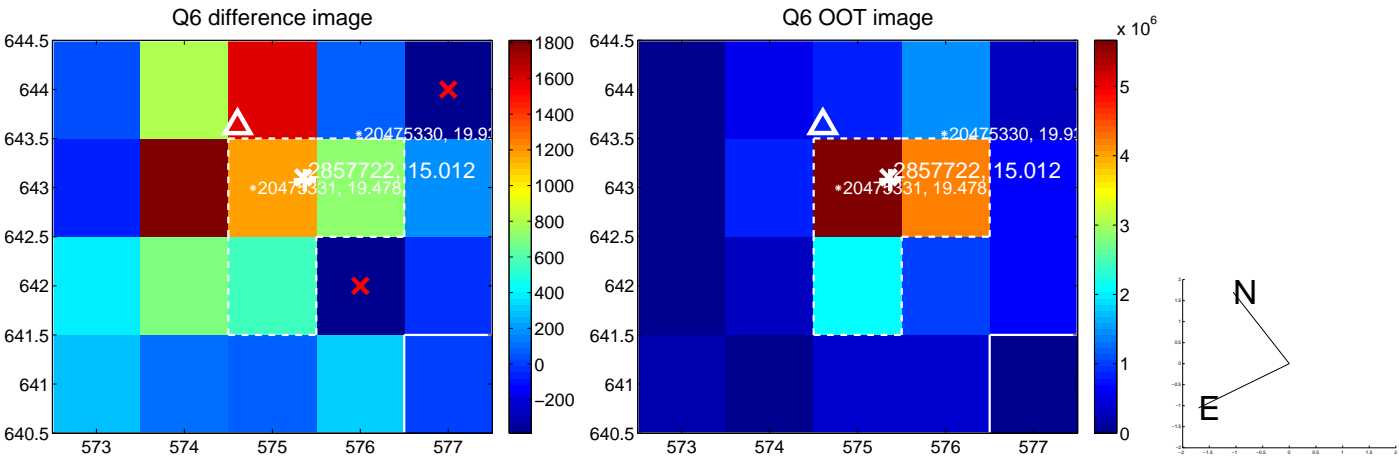
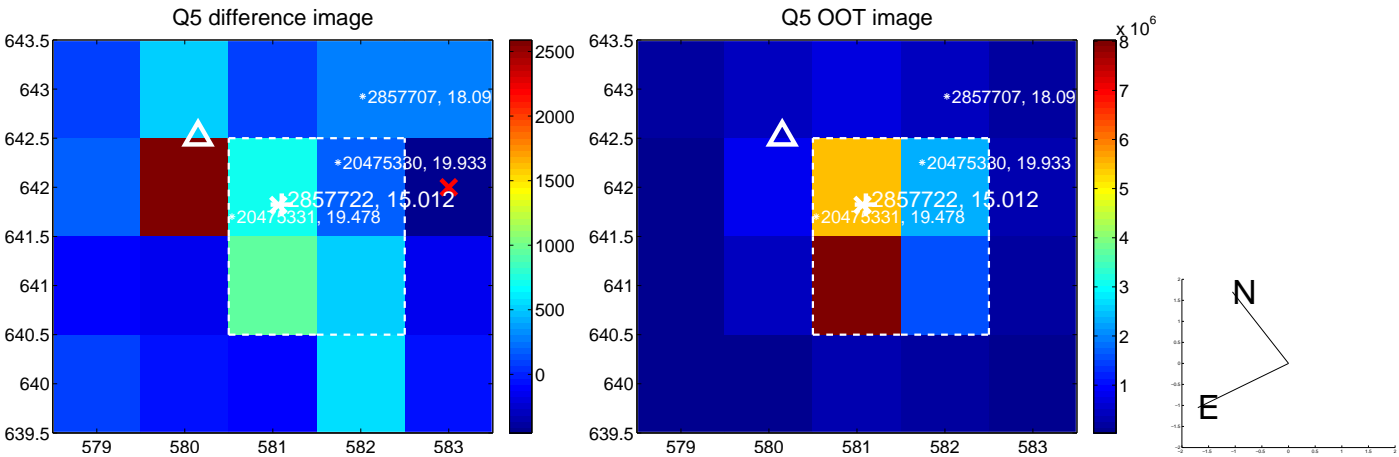


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

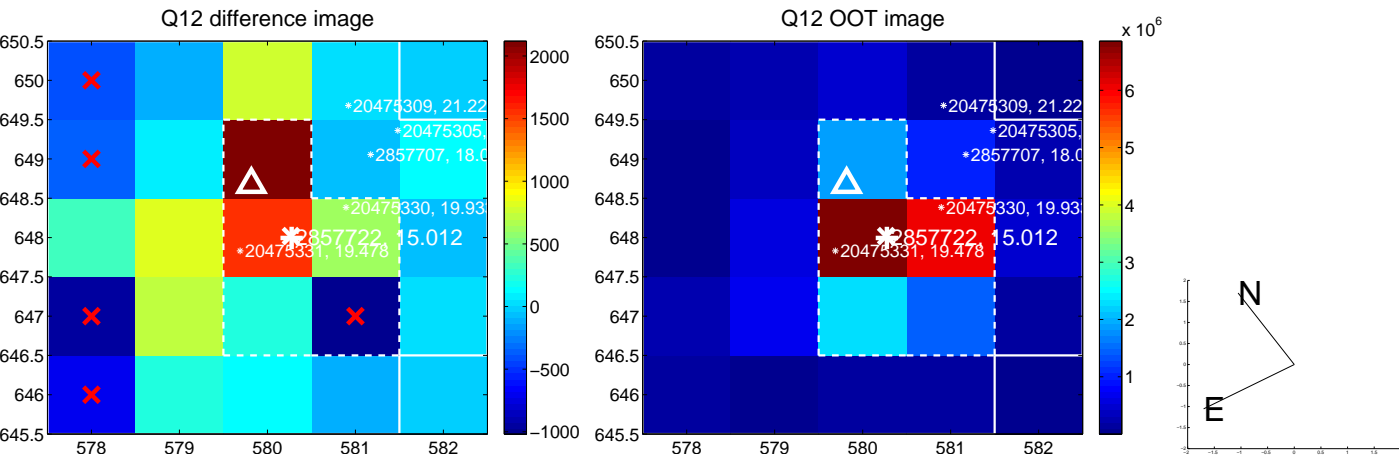
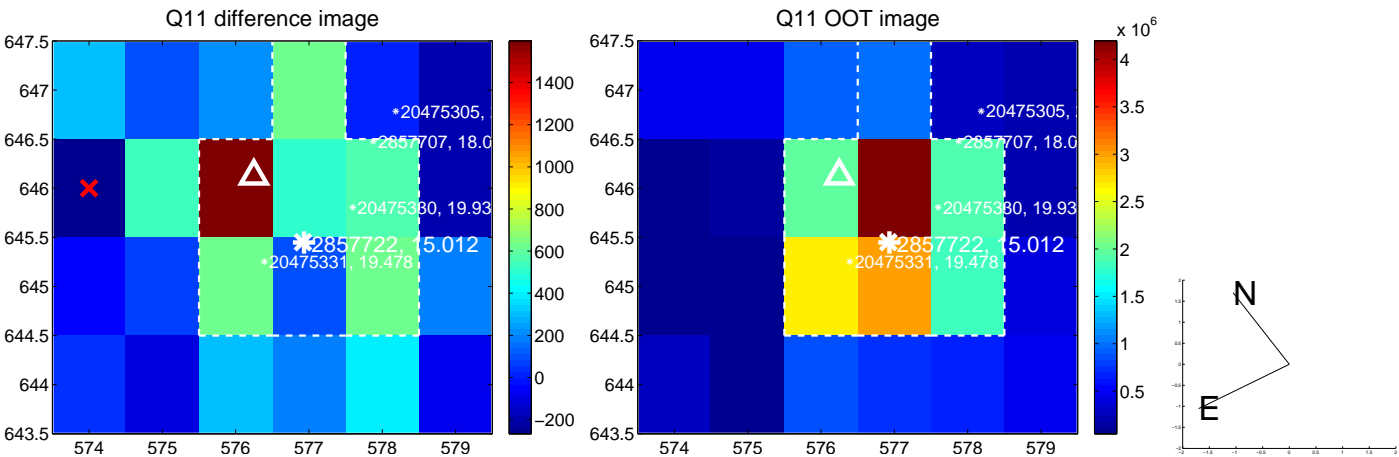
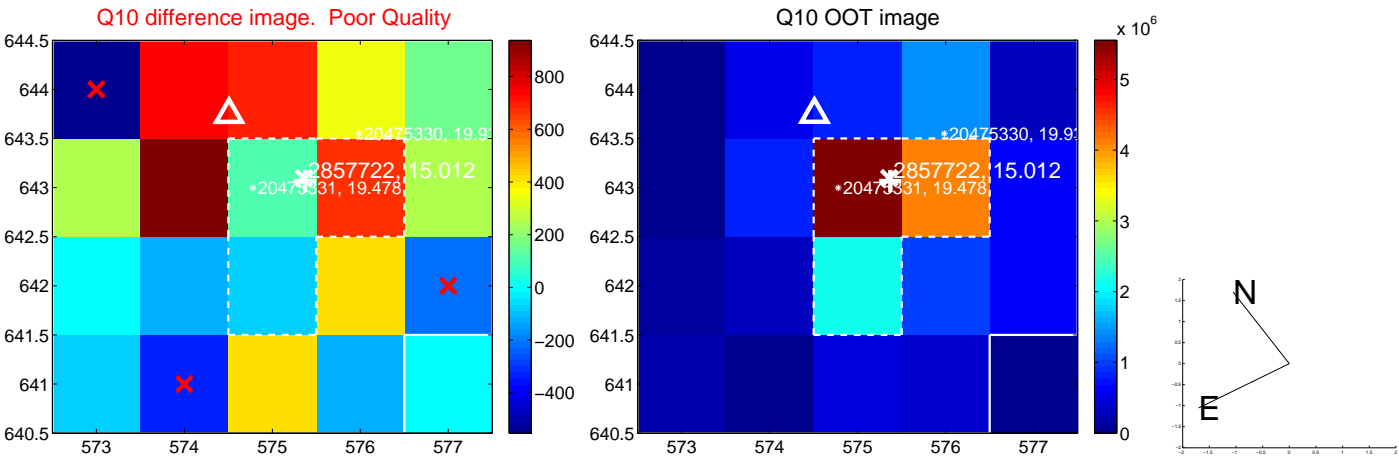
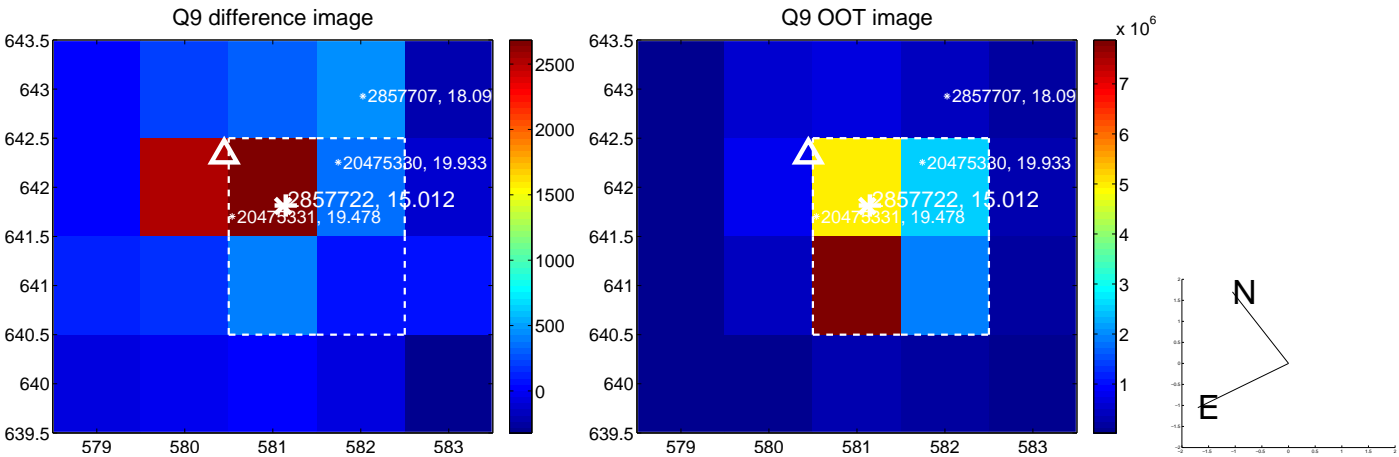
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



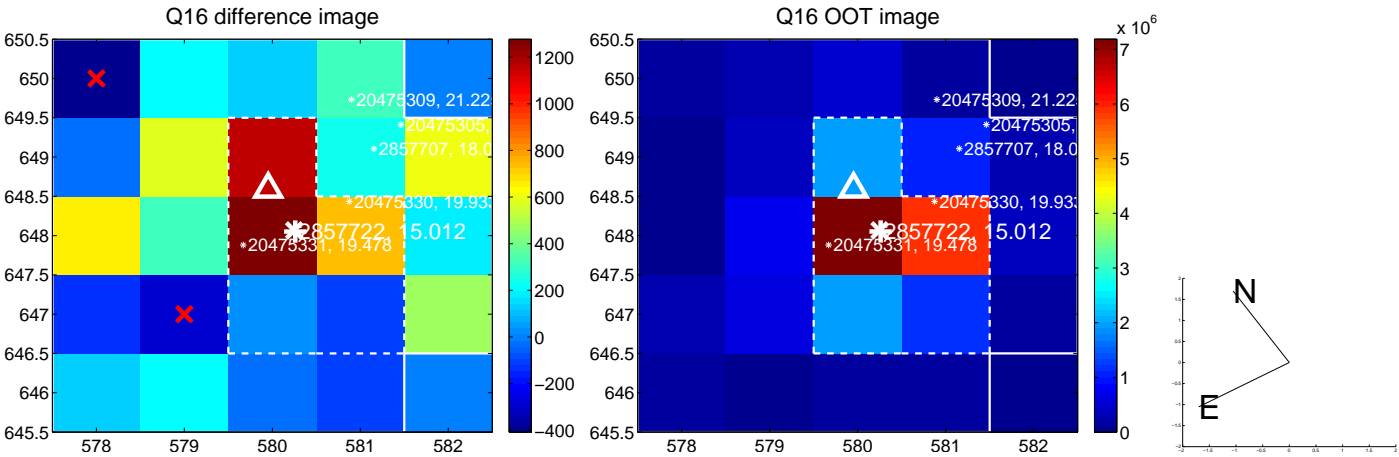
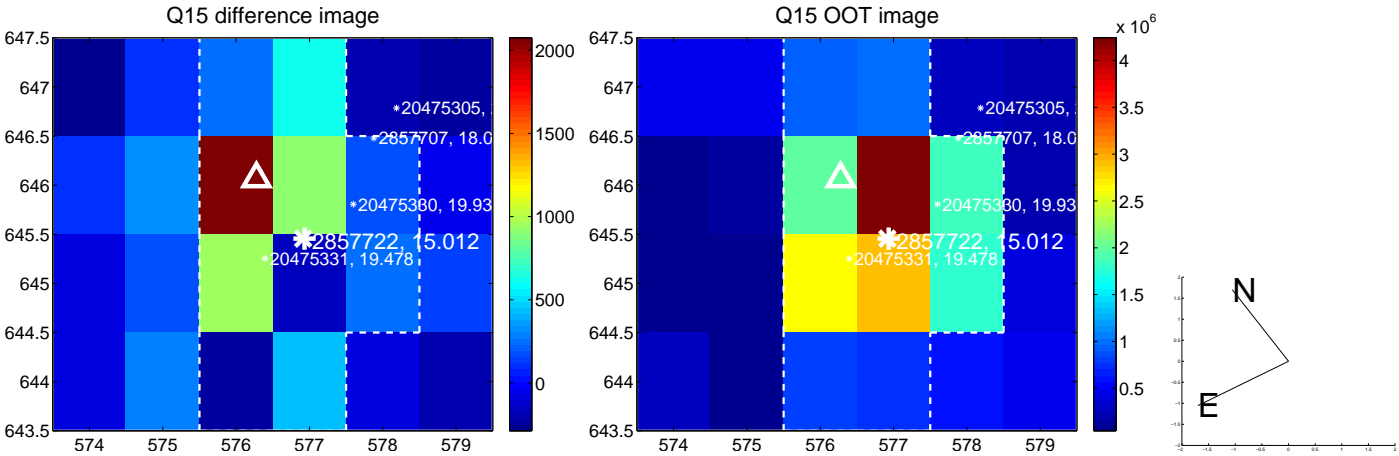
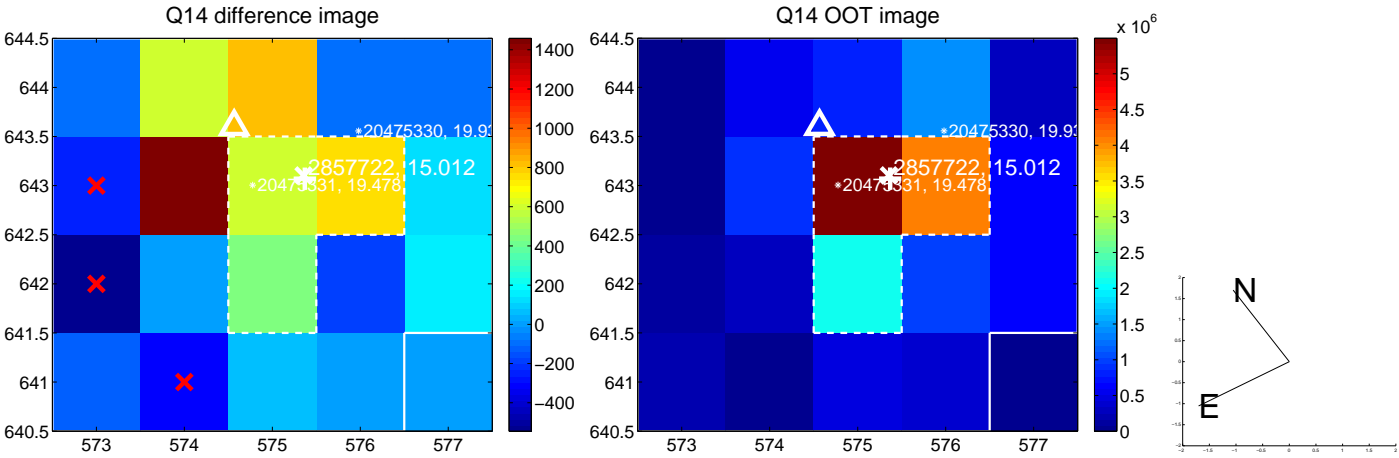
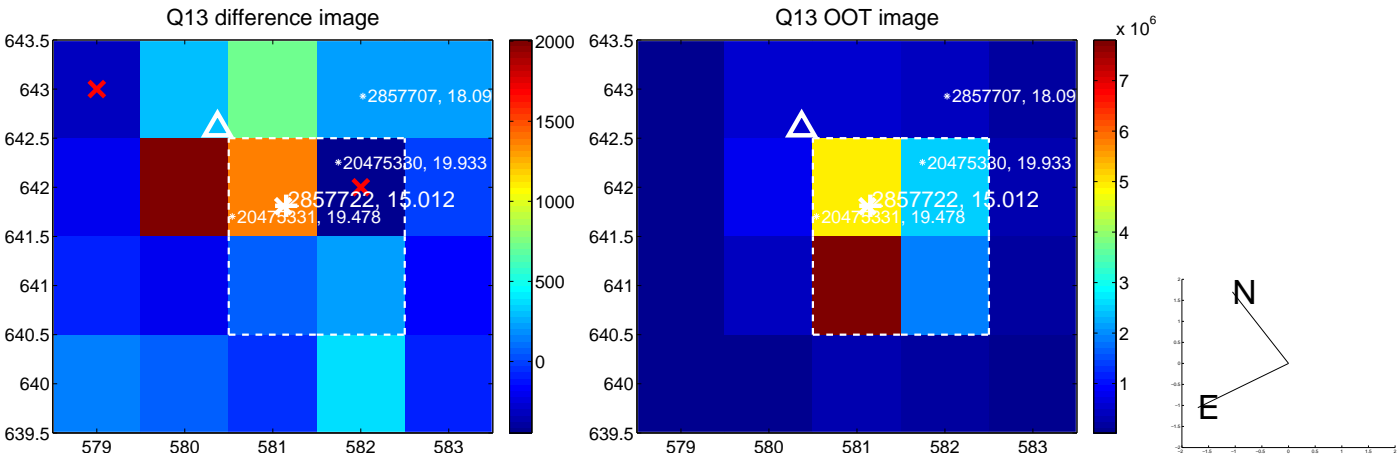
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



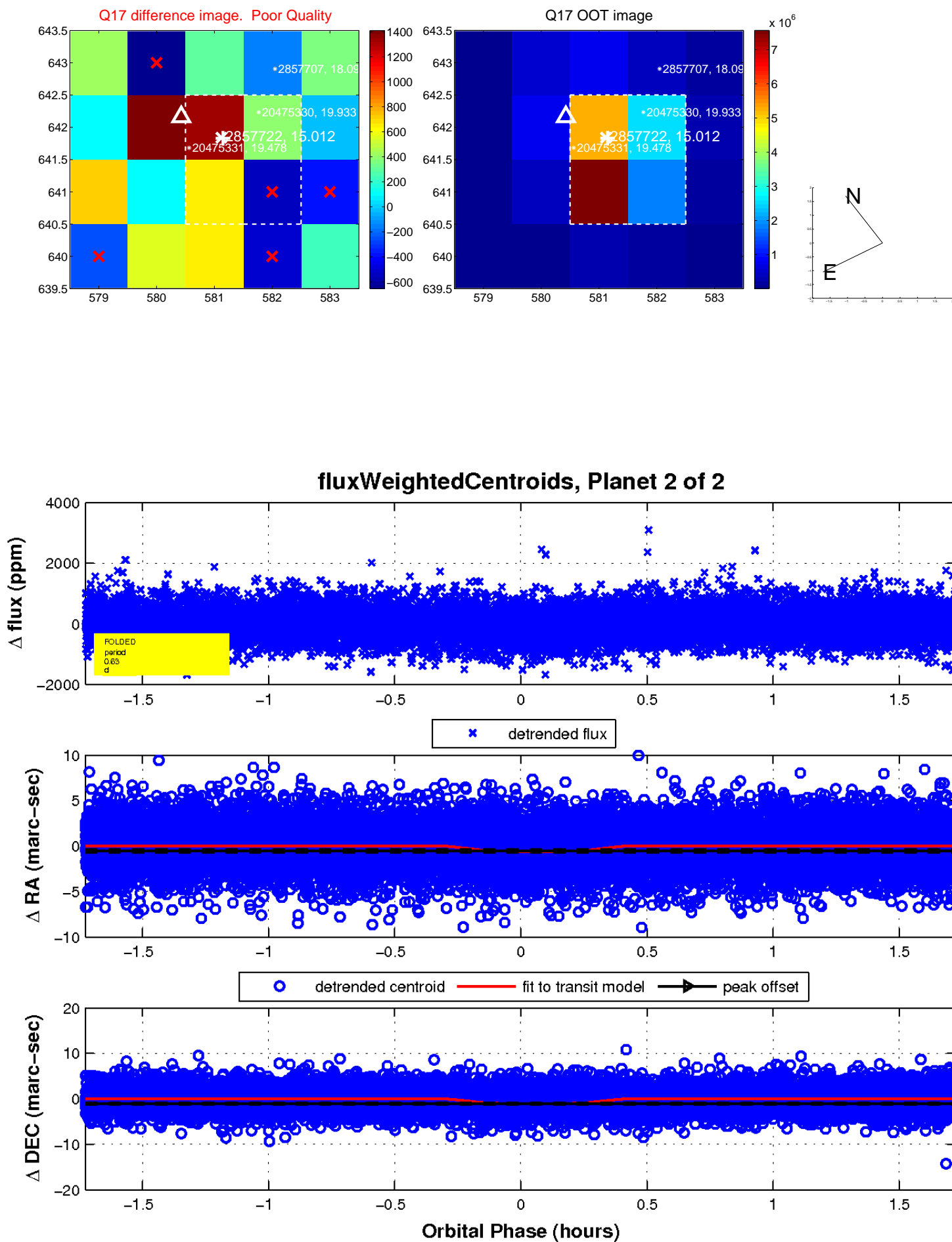
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

