

KIC 004270987

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})
004270987-01	OBS	No	1.950246	132.428348	35.1	5.382	11.1	11.7	1.84	7177	1.33	7011.25
004270987-02	OBS	No	1.950329	132.328981	46.6	23.404	8.9	10.0	1.84	7177	1.51	7010.85

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004270987-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV
004270987-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—SWEET_NTL—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD—CENT_FEW_MEAS

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

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

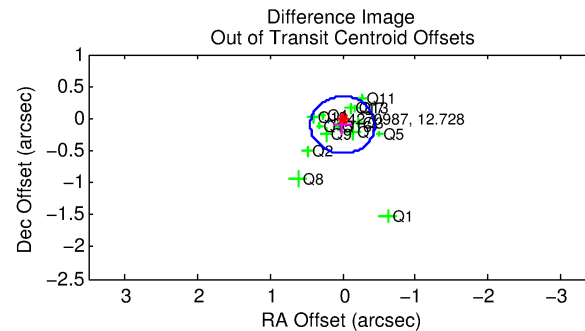
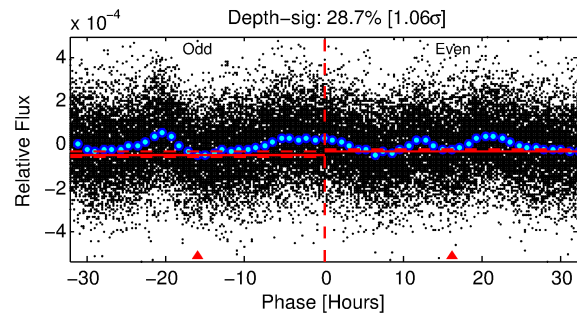
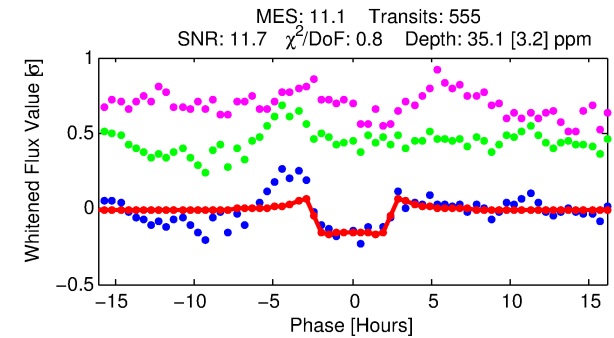
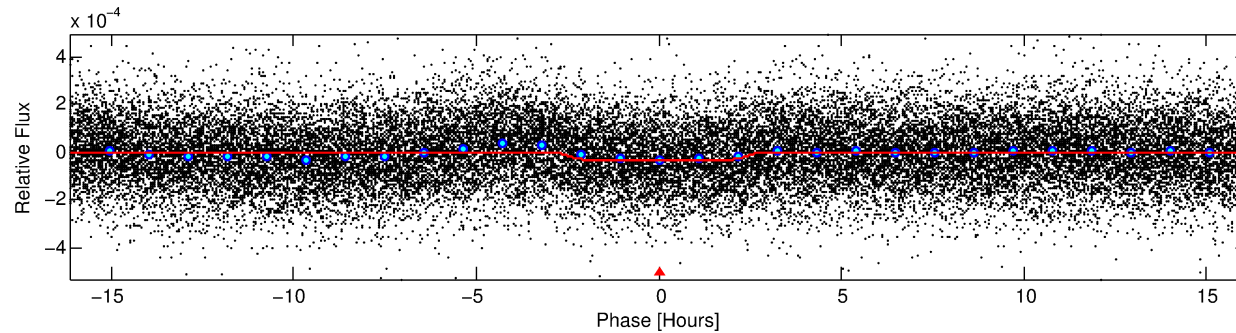
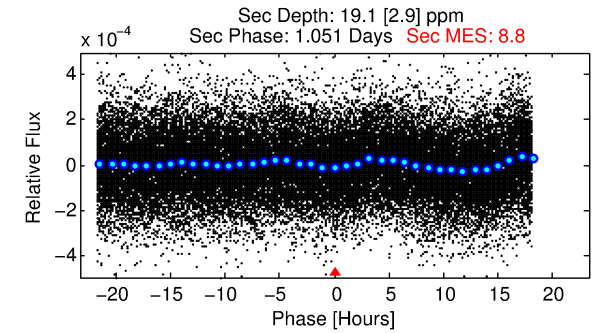
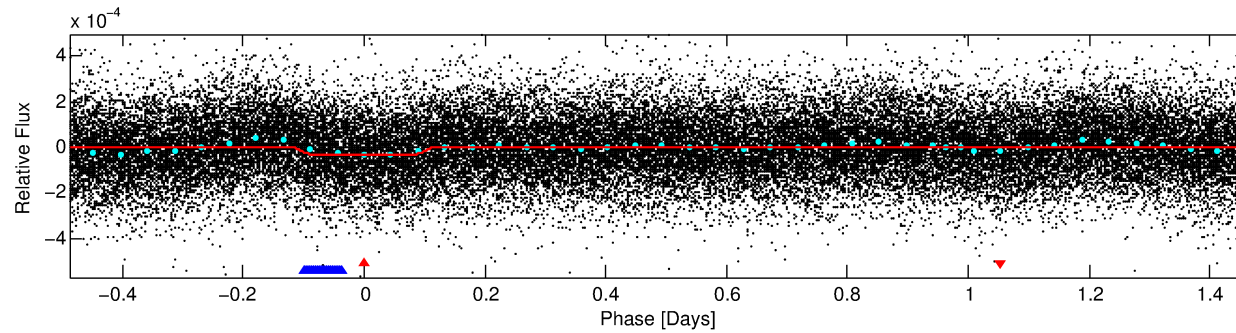
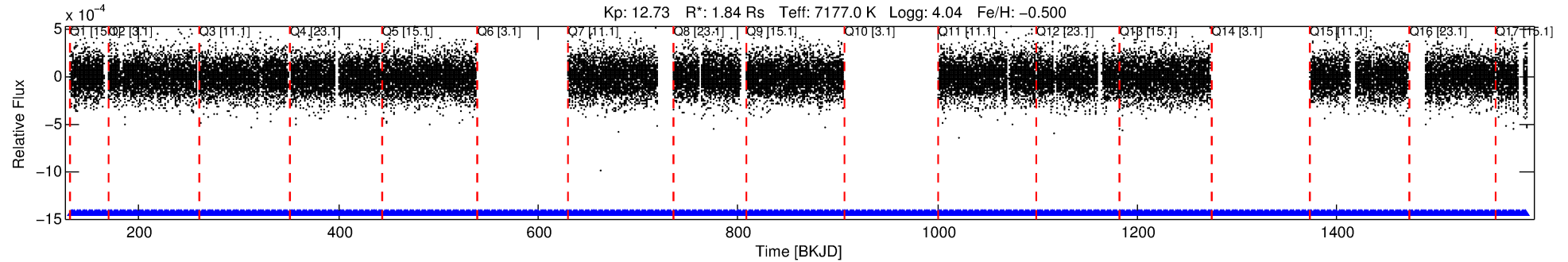
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004270987-01

No Significant Match Found

DV One-Page Summary

KIC: 4270987 Candidate: 1 of 2 Period: 1.950 d



DV Fit Results:

Period = 1.95025 [0.00001] d
Epoch = 132.4283 [0.0032] BKJD
Rp/R* = 0.0067 [0.0007]
a/R* = 1.32 [0.35]
b = 0.95 [0.06]
Seff = 7011.25 [3547.95]
Teq = 2333 [295] K
Rp = 1.34 [0.48] Re
a = 0.0338 [0.0105] AU
Ag = 6.74 [3.68] [1.56σ]
Teffp = 5812 [454] K [6.43σ]

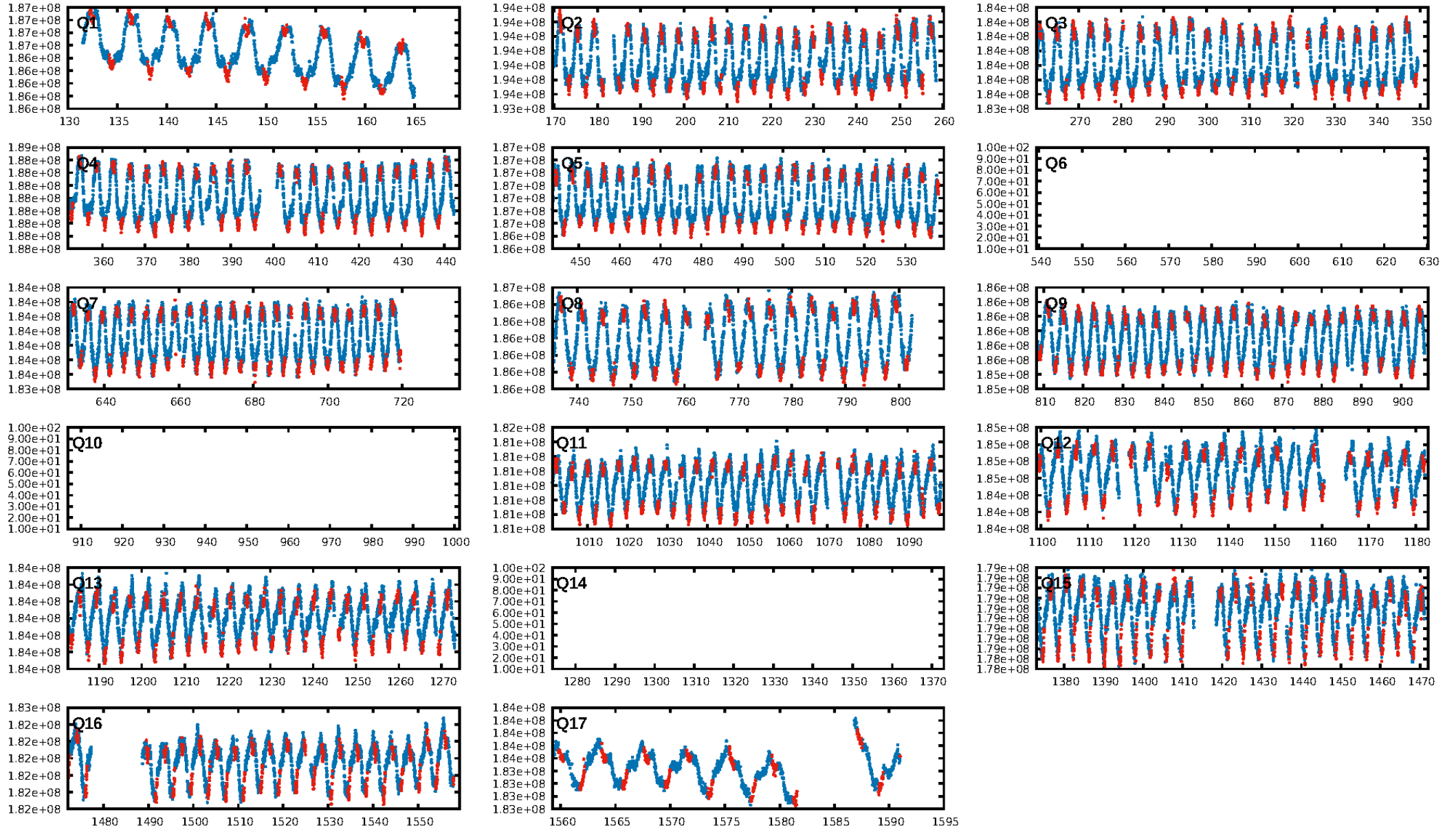
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.0% [0.00σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGoF-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [524/524]
GhostDiagnostic-chr: 2.096
Centroid-sig: 2.9%
Centroid-so: 1.184 arcsec [1.79σ]
OotOffset-rm: 0.101 arcsec [0.68σ]
KicOffset-rm: 0.231 arcsec [1.65σ]
OotOffset-st: 1/4/4/5 [14]
KicOffset-st: 1/4/4/5 [14]
DiffImageQuality-fgm: 1.00 [14/14]
DiffImageOverlap-fno: 0.00 [0/14]

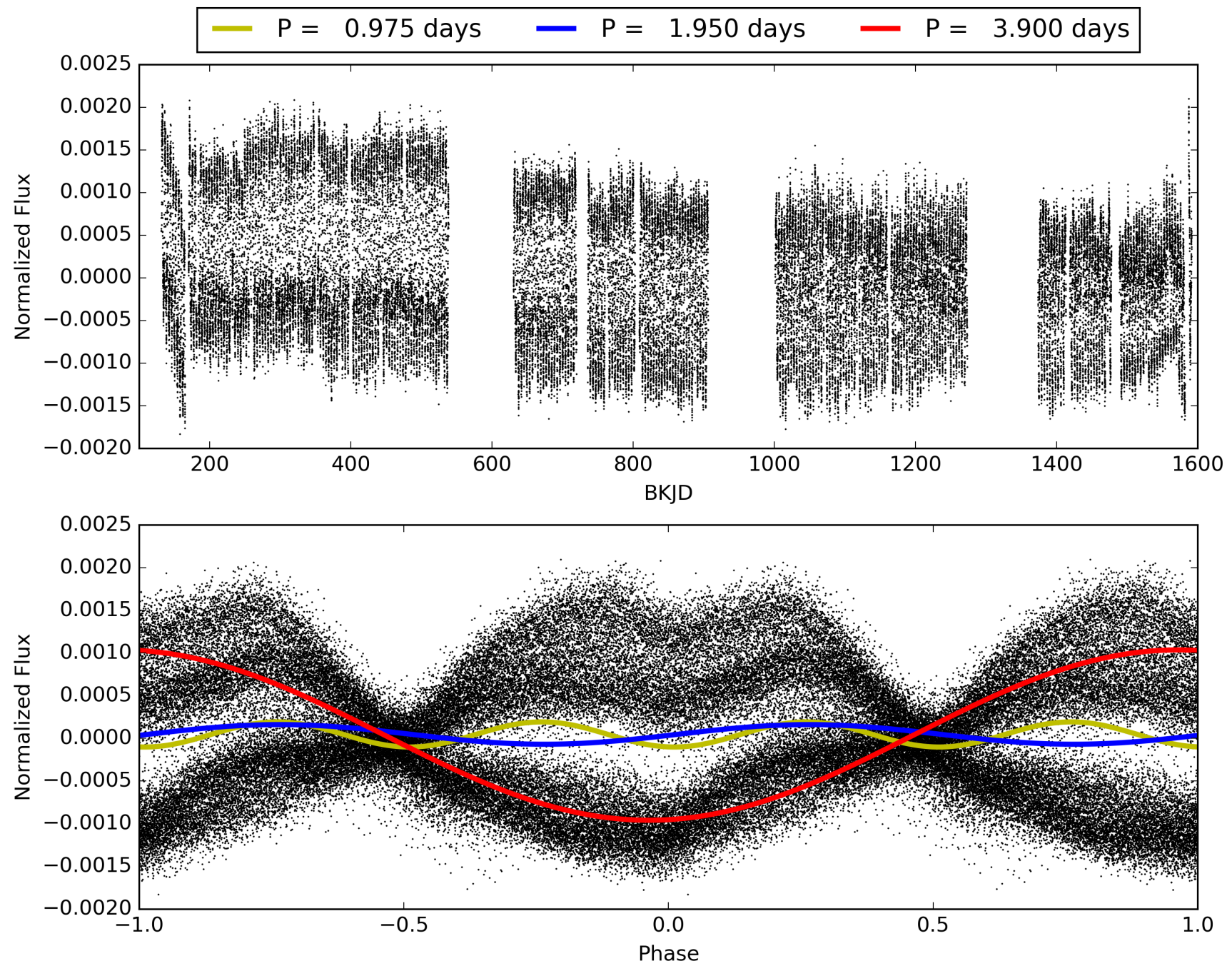
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 13:34:48 Z

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

TCE 004270987-01, PDC Light Curves

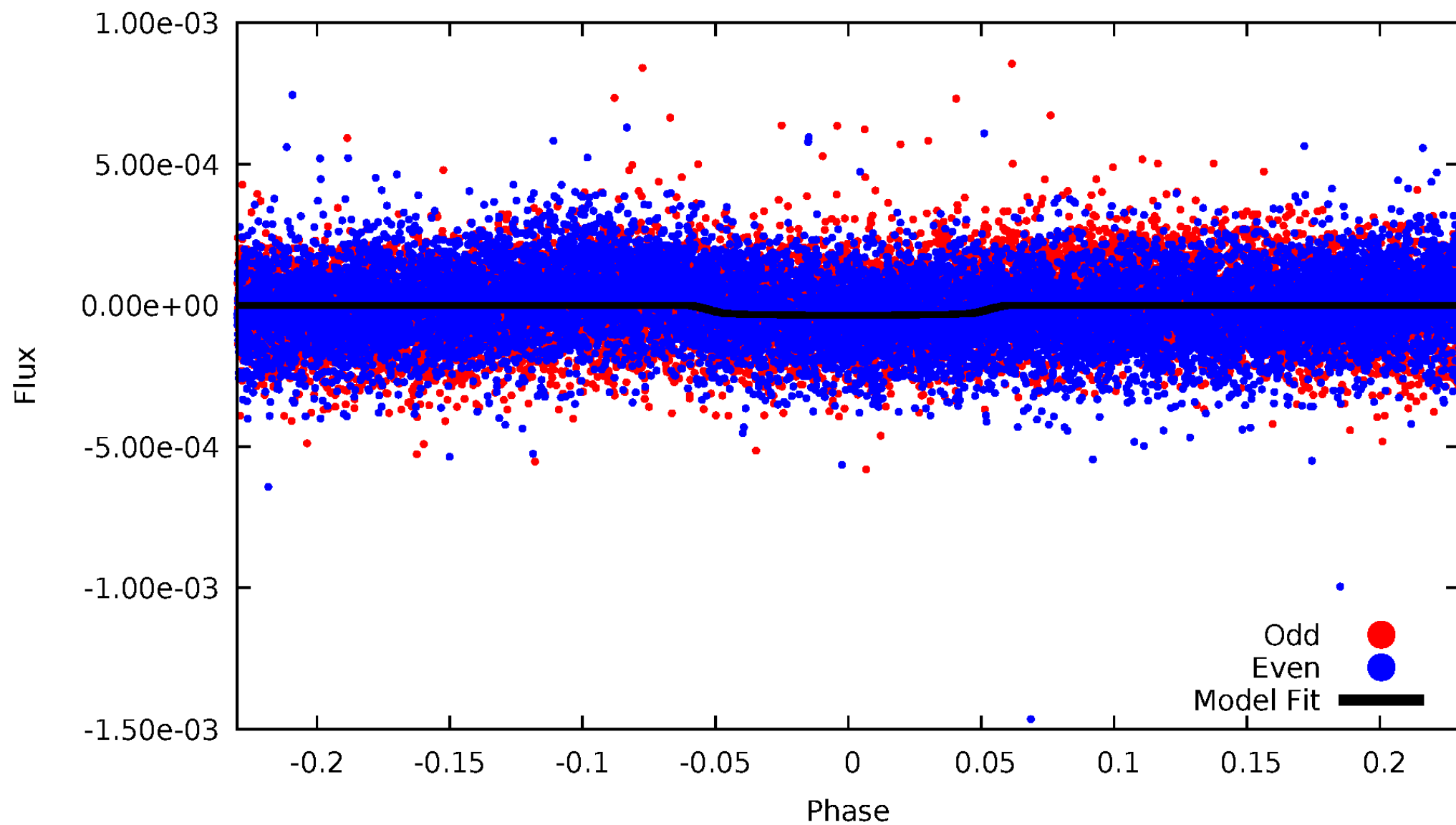


TCE 004270987-01



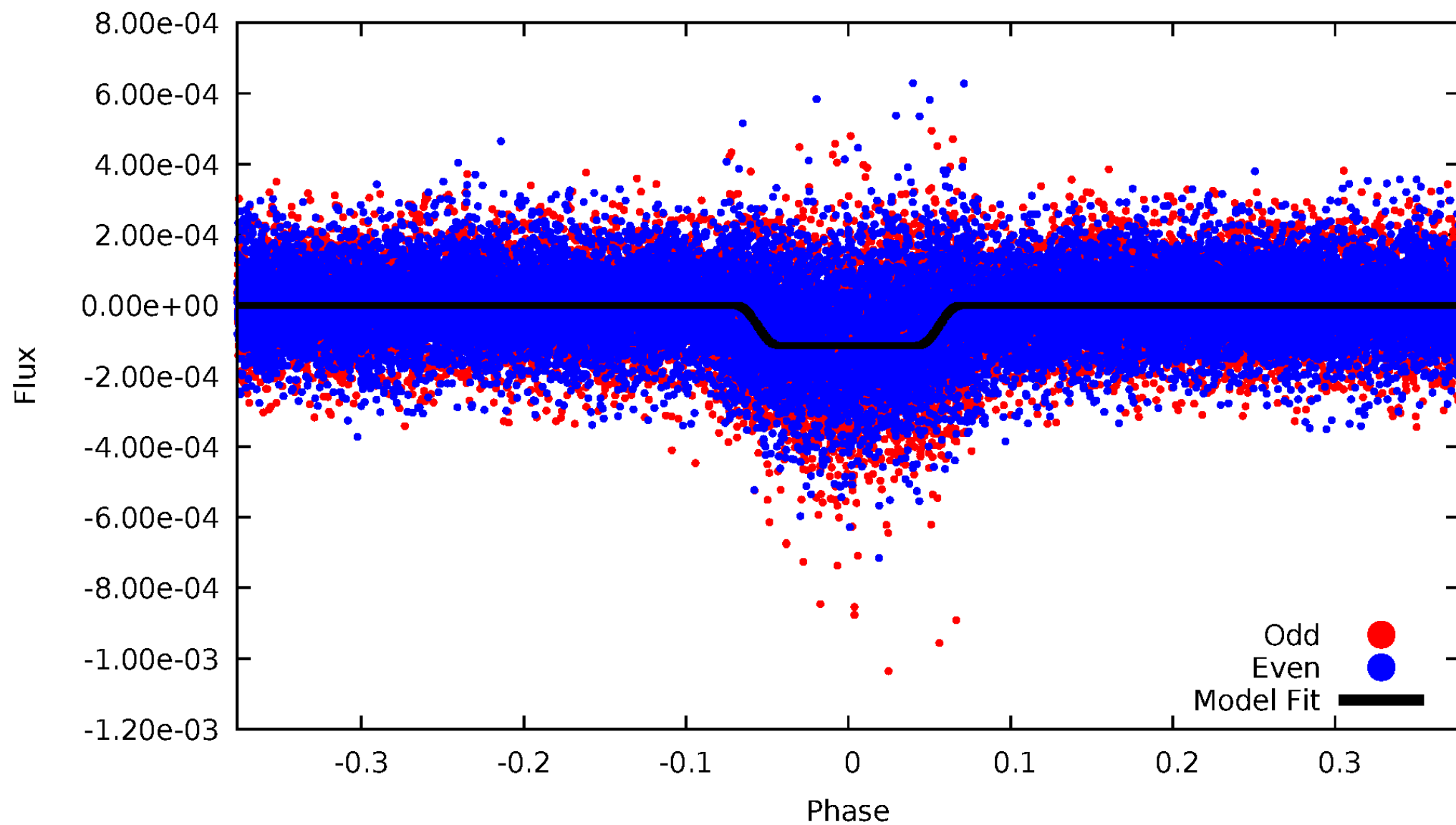
DV Odd/Even

TCE 004270987-01



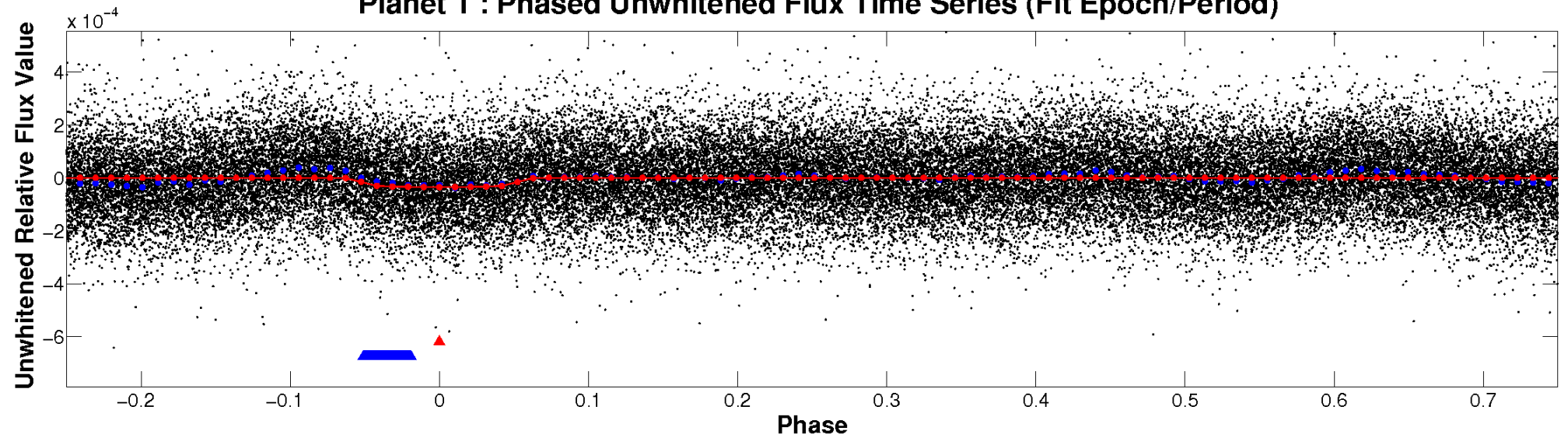
ALT Odd/Even

TCE 004270987-01

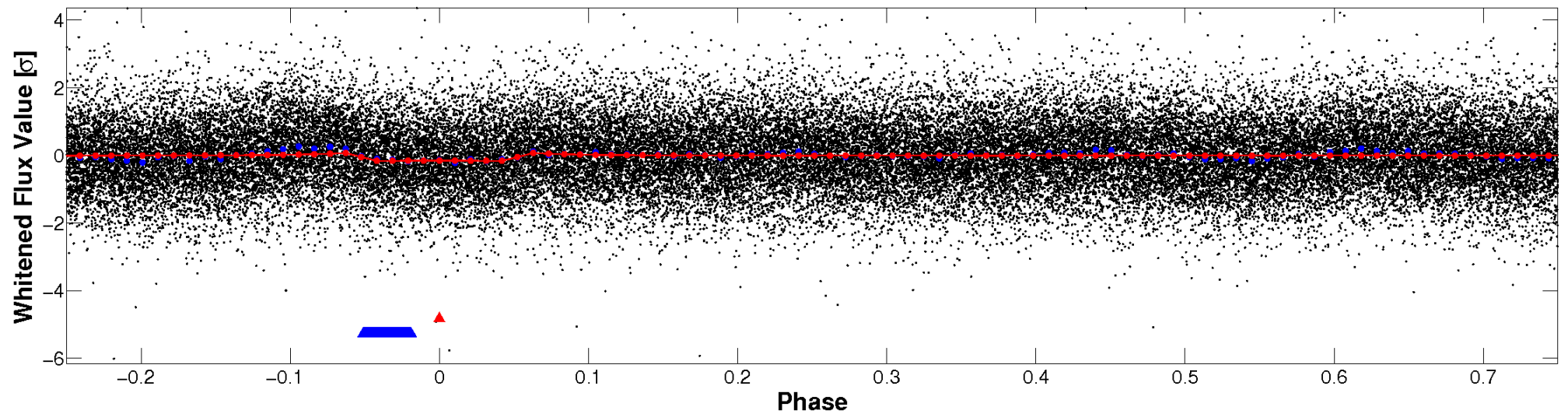


Non-Whitened Vs. Whitened Light Curve

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

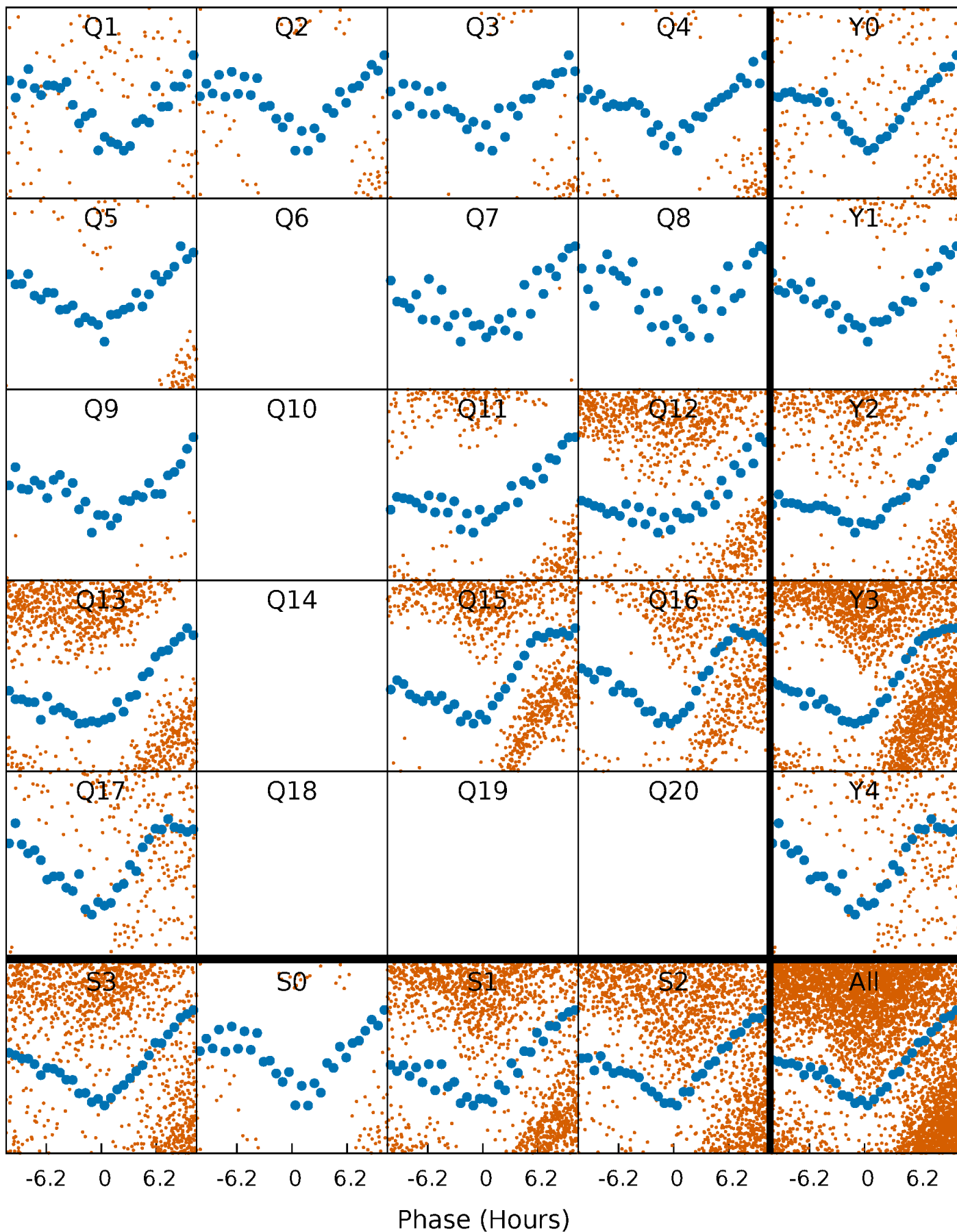


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



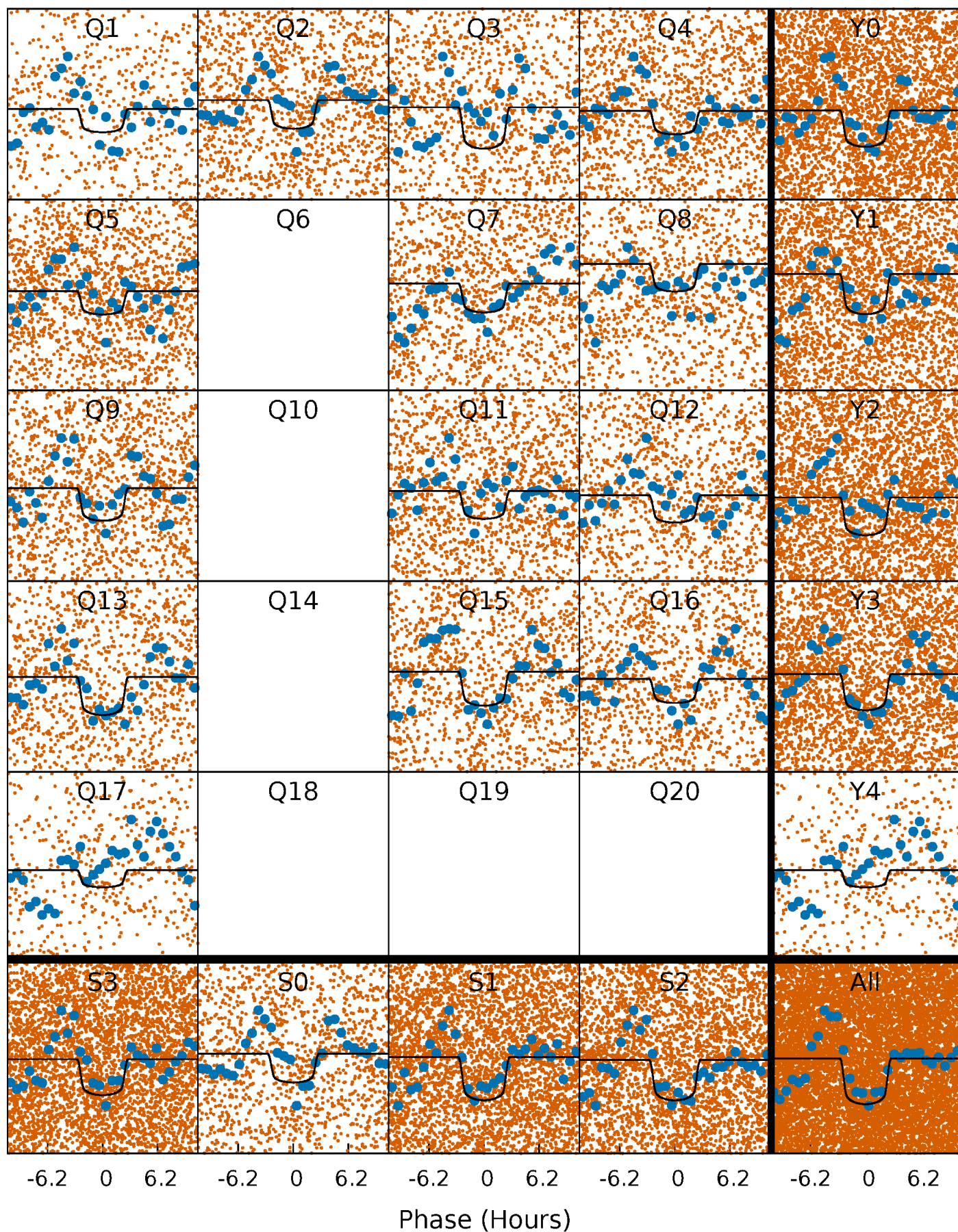
PDC Quarter-Phased Transit Curves

TCE 004270987-01 P= 1.950246 Days $T_0=132.428348$ (BKJD)



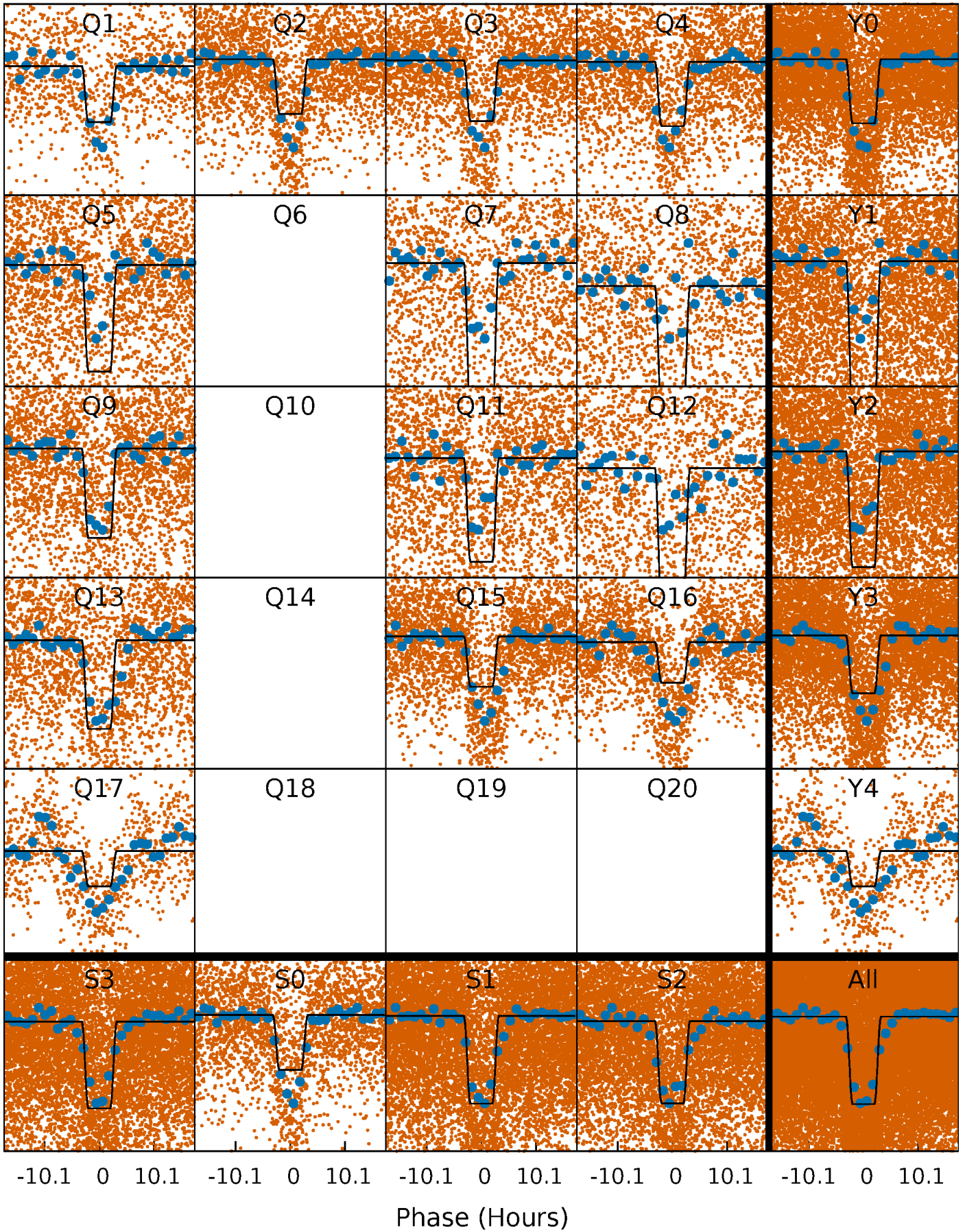
DV Quarter-Phased Transit Curves

TCE 004270987-01 P= 1.950246 Days $T_0=132.428348$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

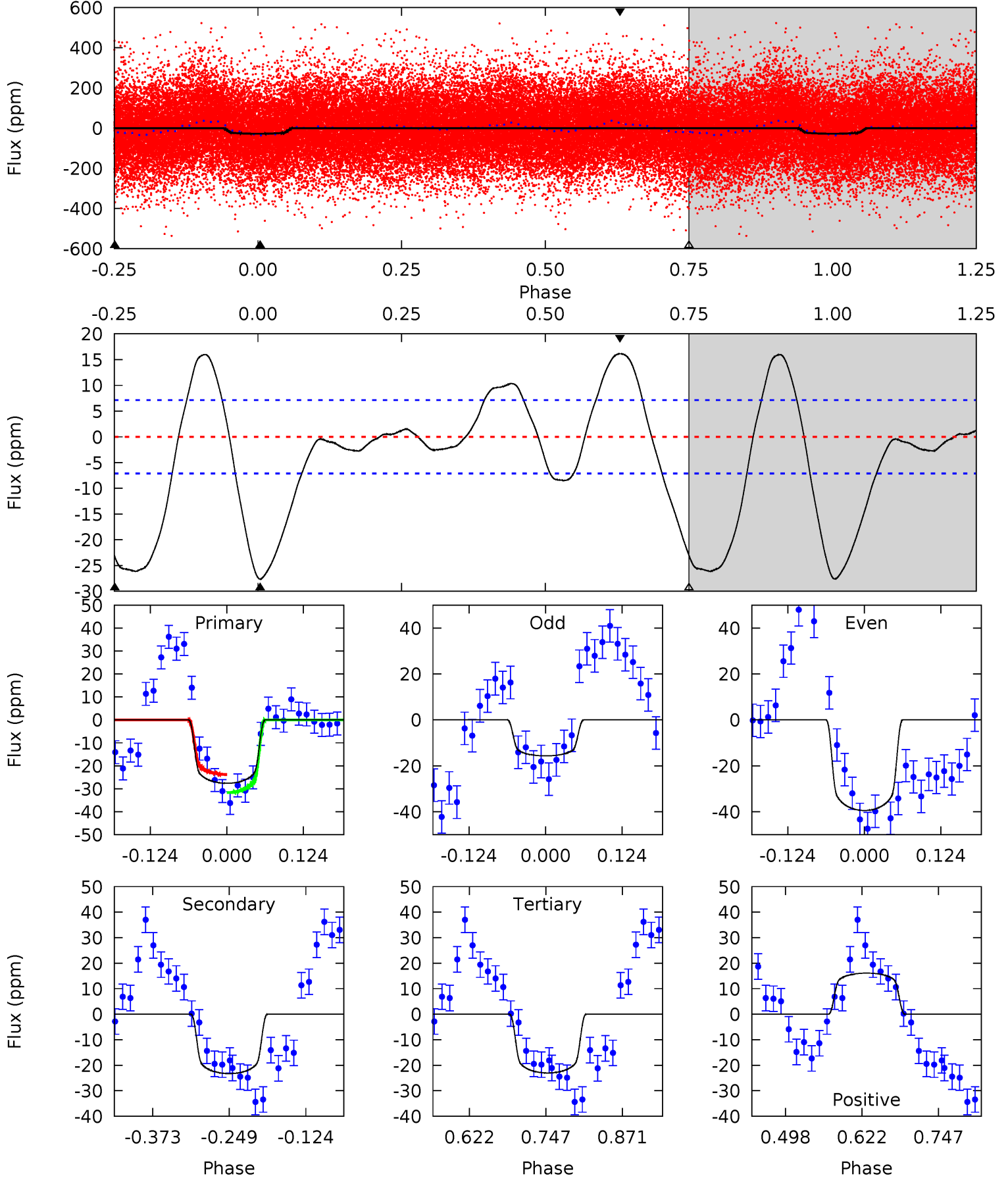
TCE 004270987-01 P= 1.950190 Days $T_0=132.452078$ (BKJD)



DV Model-Shift Uniqueness Test

004270987-01, P = 1.950246 Days, E = 130.478102 Days

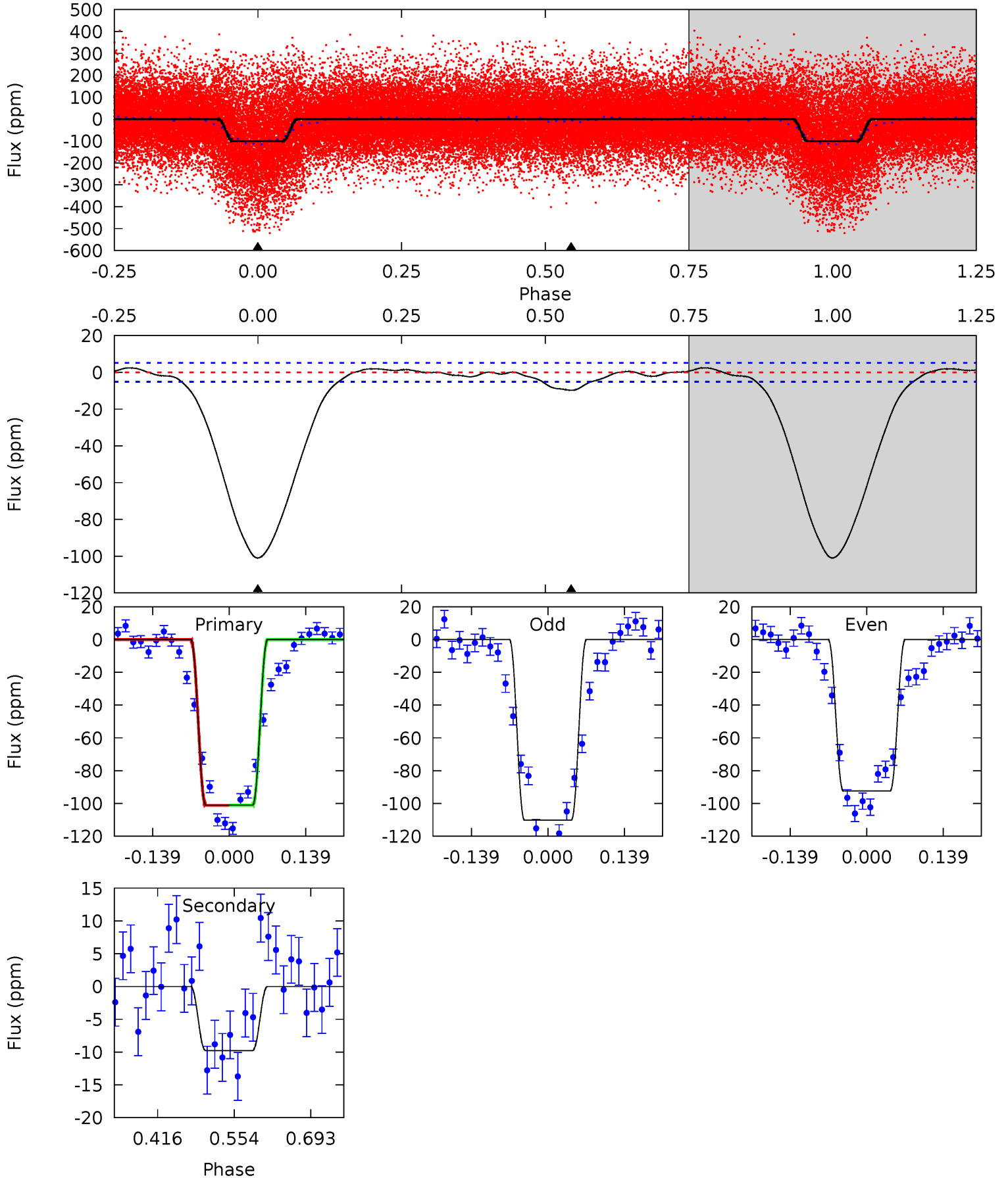
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
17.5	14.8	14.6	10.2	4.52	1.54	4.98	2.91	7.30	0.16	4.55	7.54	0.87	0.37	2.54



Alt Model-Shift Uniqueness Test

004270987-01, P = 1.950190 Days, E = 130.501888 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
88.2	8.52	0	0	4.50	1.48	1.38	88.2	88.2	8.52	8.52	7.76	1.02	0.02	0.07



Stellar Parameters For KIC 004270987

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	7177^{+200}_{-300}	$4.042^{+0.273}_{-0.147}$	$-0.500^{+0.250}_{-0.300}$	$1.836^{+0.473}_{-0.631}$	$1.352^{+0.193}_{-0.257}$	$0.308^{+0.569}_{-0.134}$
	+3%/-4%	+7%/-4%	+50%/-60%	+26%/-34%	+14%/-19%	+185%/-44%
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 004270987-01 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-23 ± 2	$1.28^{+0.26}_{-0.23}$	3209^{+240}_{-277}	5991^{+415}_{-386}	$8.792^{+4.196}_{-2.632}$
Alt.	-10 ± 1	$2.10^{+0.33}_{-0.36}$	3216^{+243}_{-261}	3938^{+186}_{-191}	$1.385^{+0.624}_{-0.384}$

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

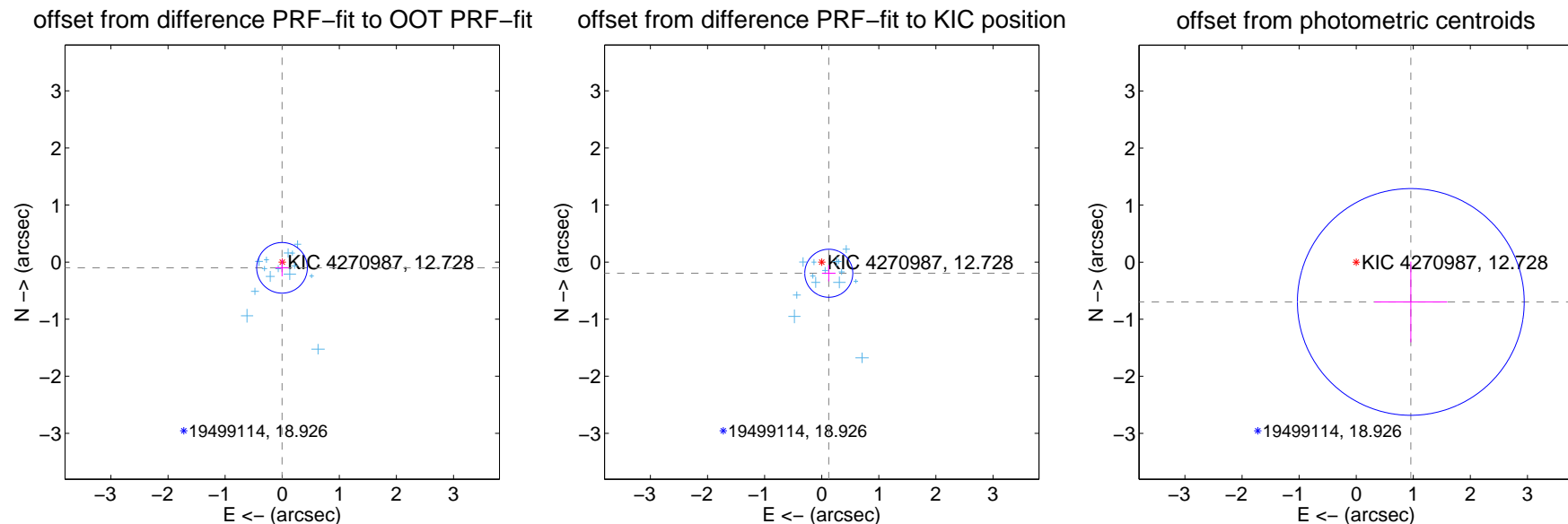
DV Centroid Data

Supplemental centroid analysis for 004270987-01. Kepler magnitude: 12.73. Transit SNR 11.70

There are 14 quarters with good PRF difference image offsets

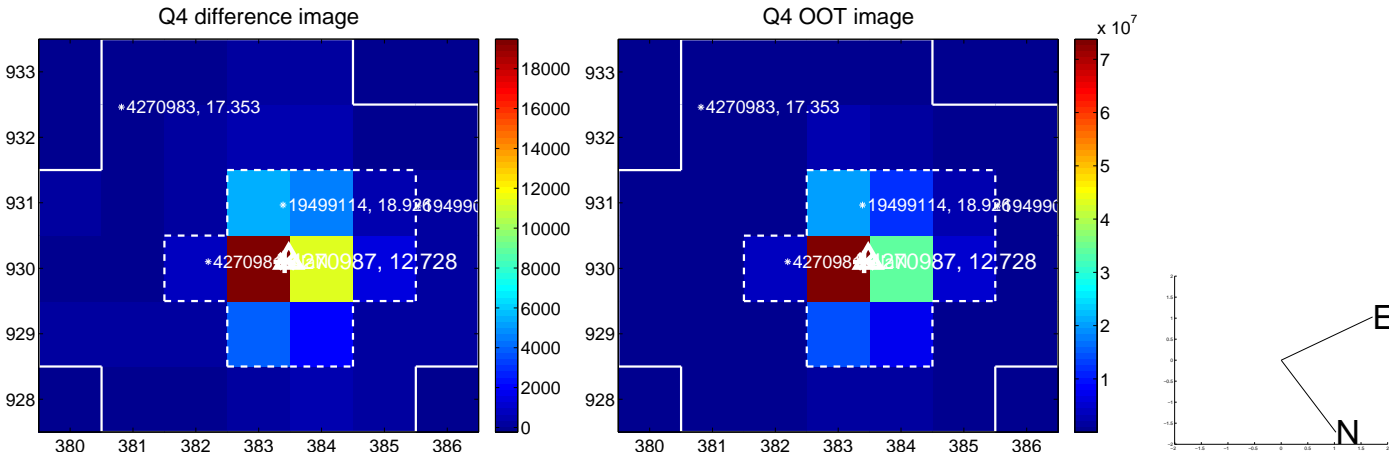
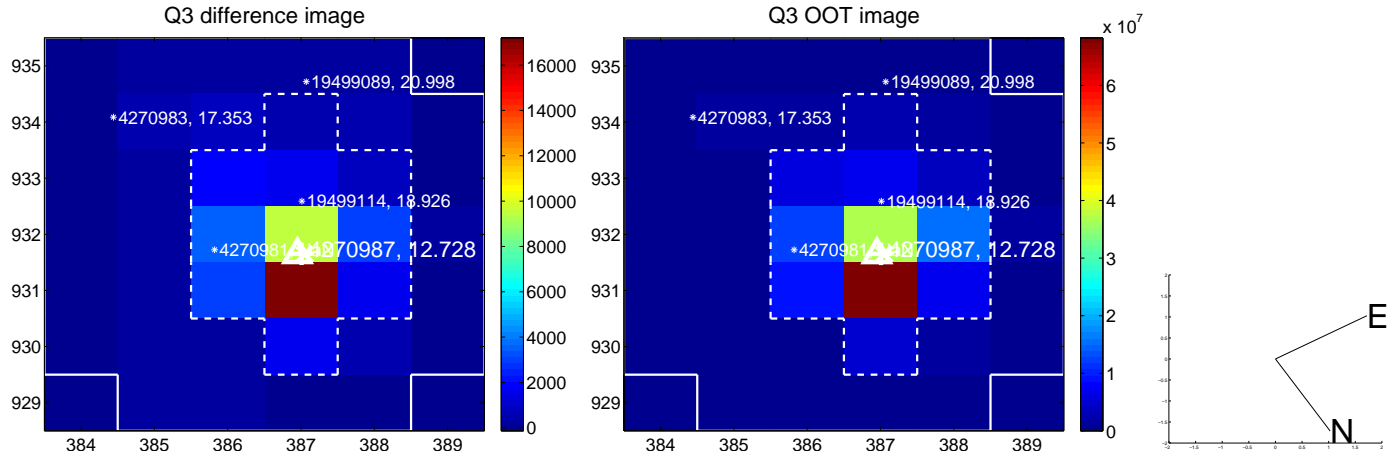
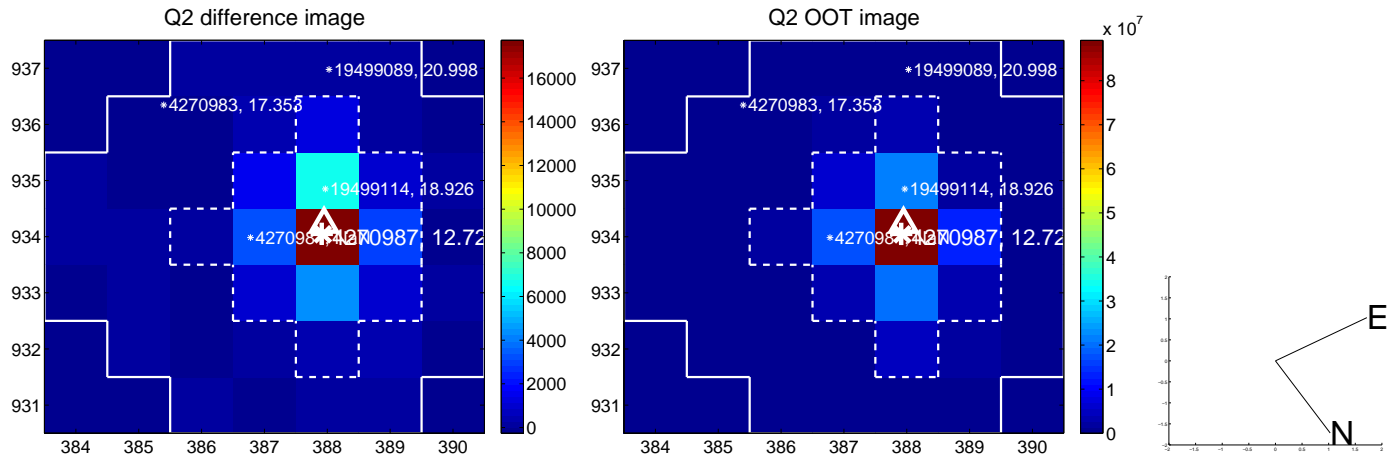
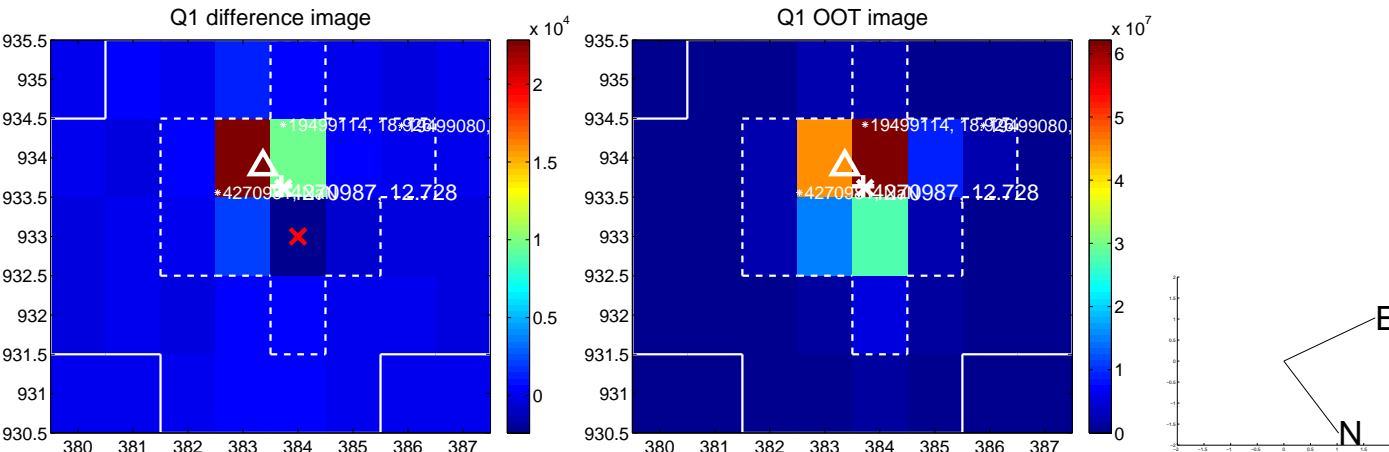
The direct PRF centroid is offset from the target star catalog position by about 0.22 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.101 ± 0.148	0.68	0.003 ± 0.112	-0.101 ± 0.148
PRF-fit source offset from KIC position	0.231 ± 0.140	1.65	-0.124 ± 0.119	-0.195 ± 0.142
photometric centroid source offset	1.18 ± 0.66	1.79	-0.96 ± 0.64	-0.70 ± 0.71

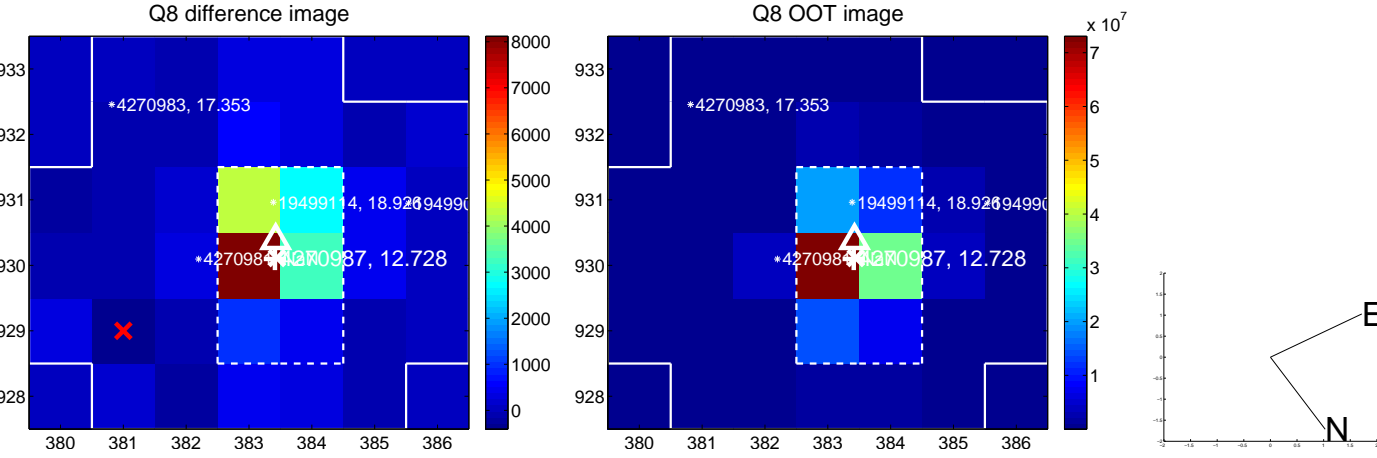
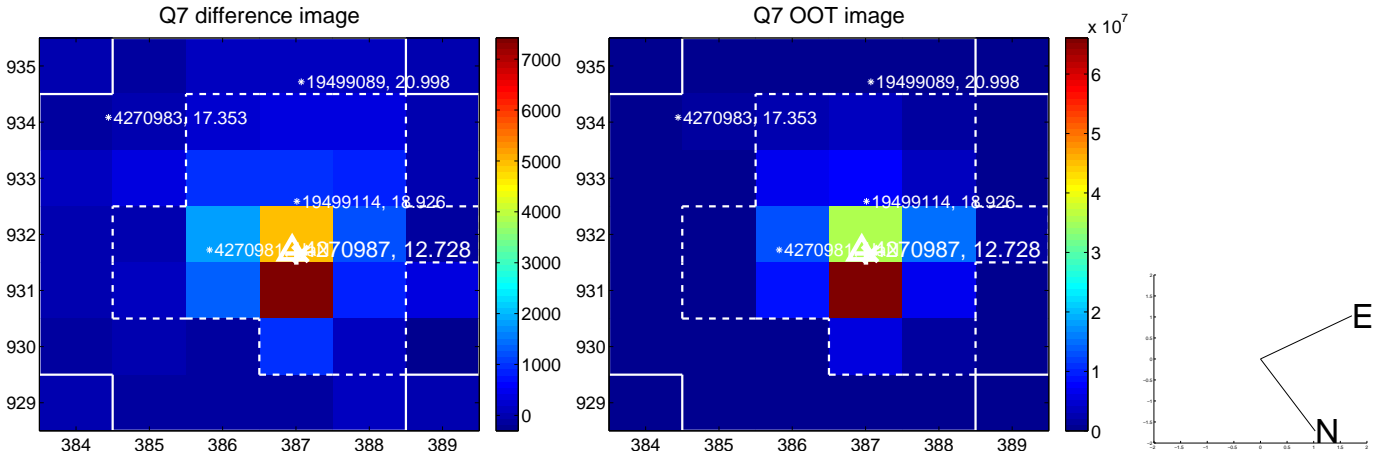
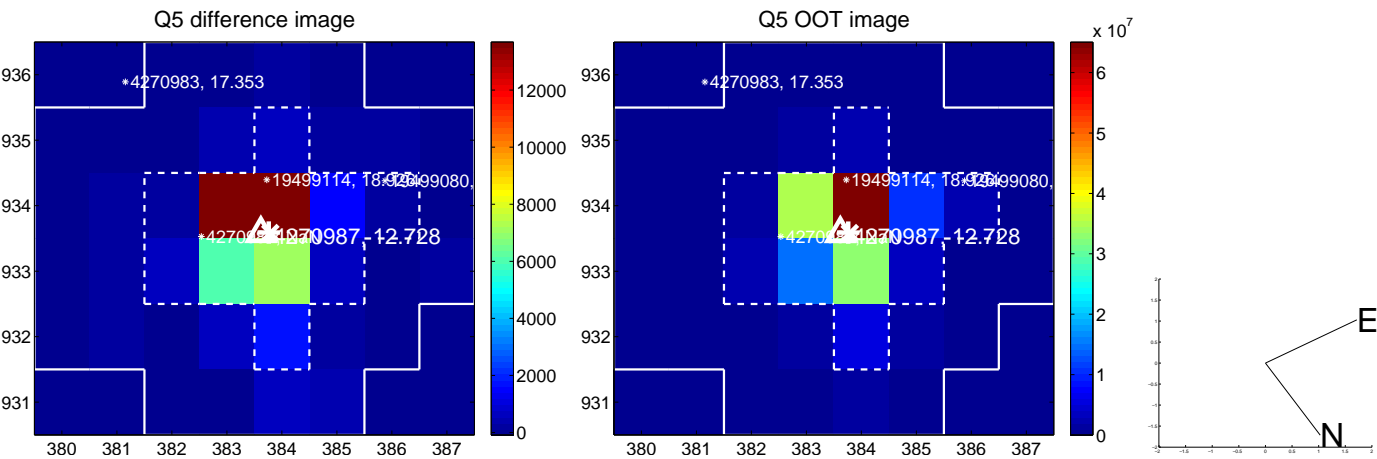


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

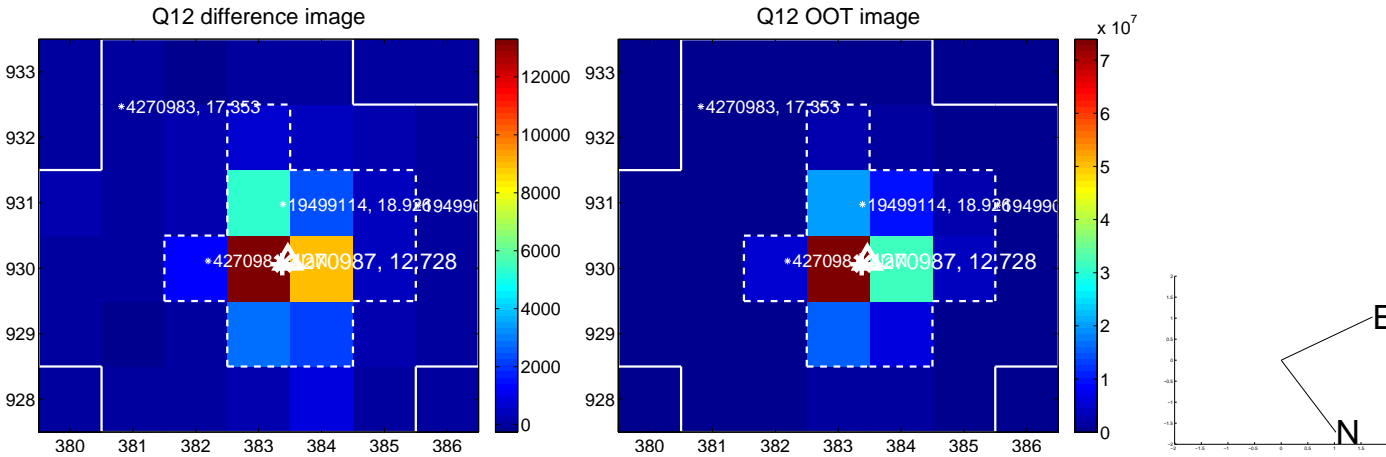
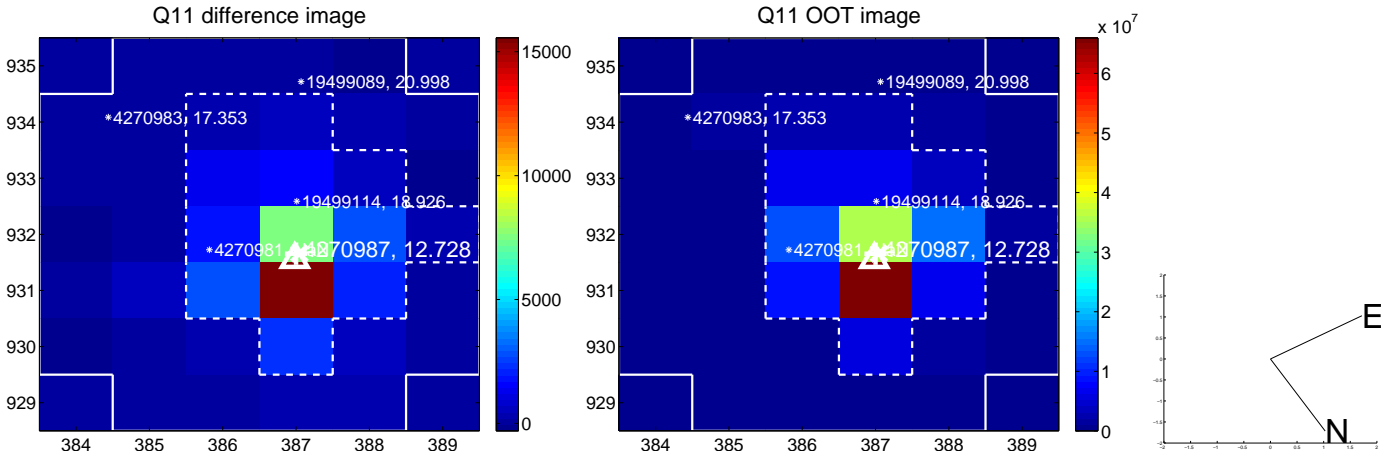
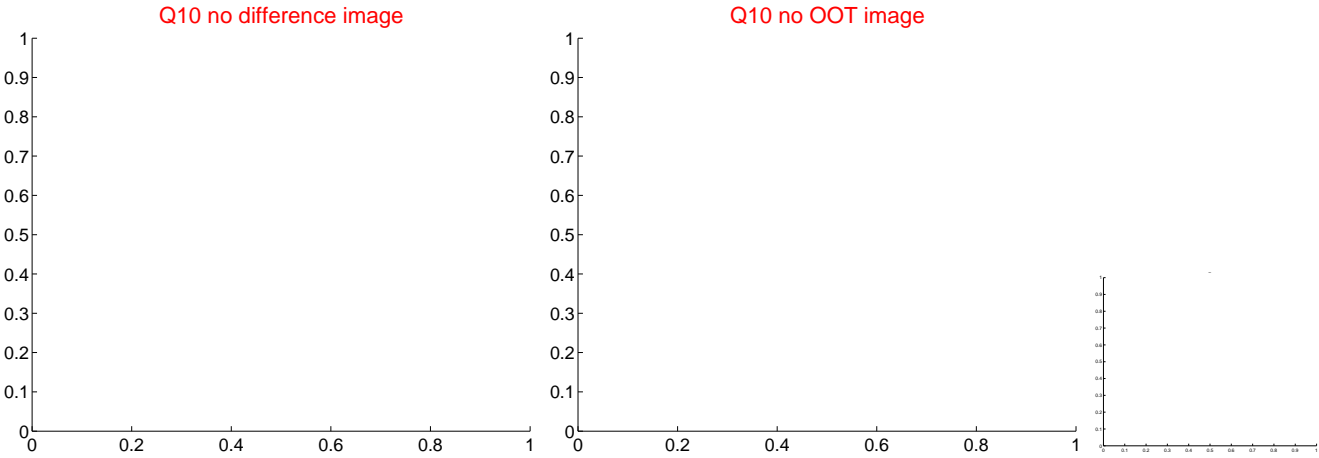
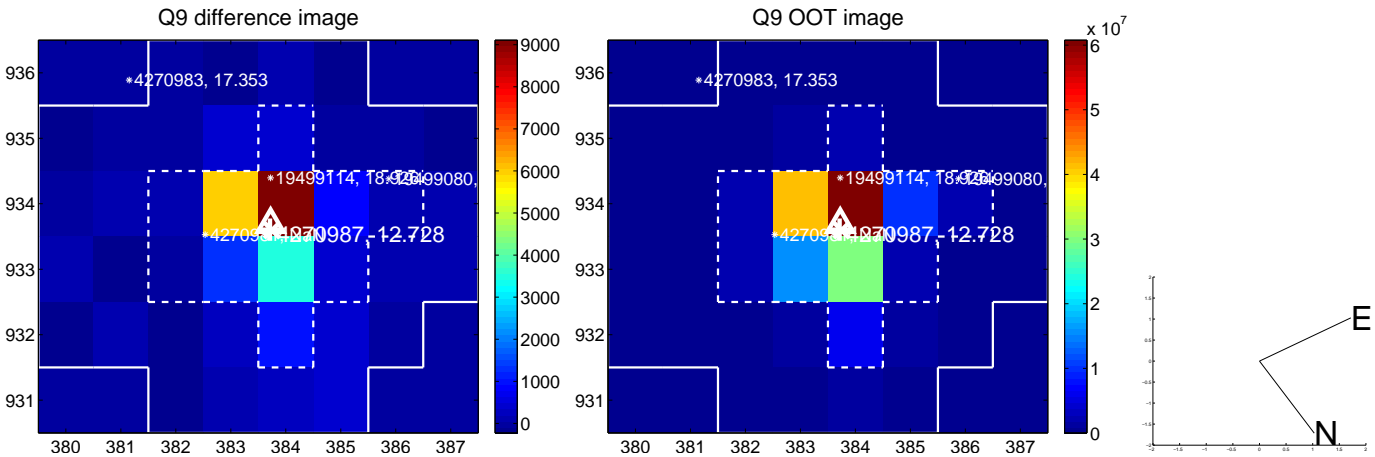
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



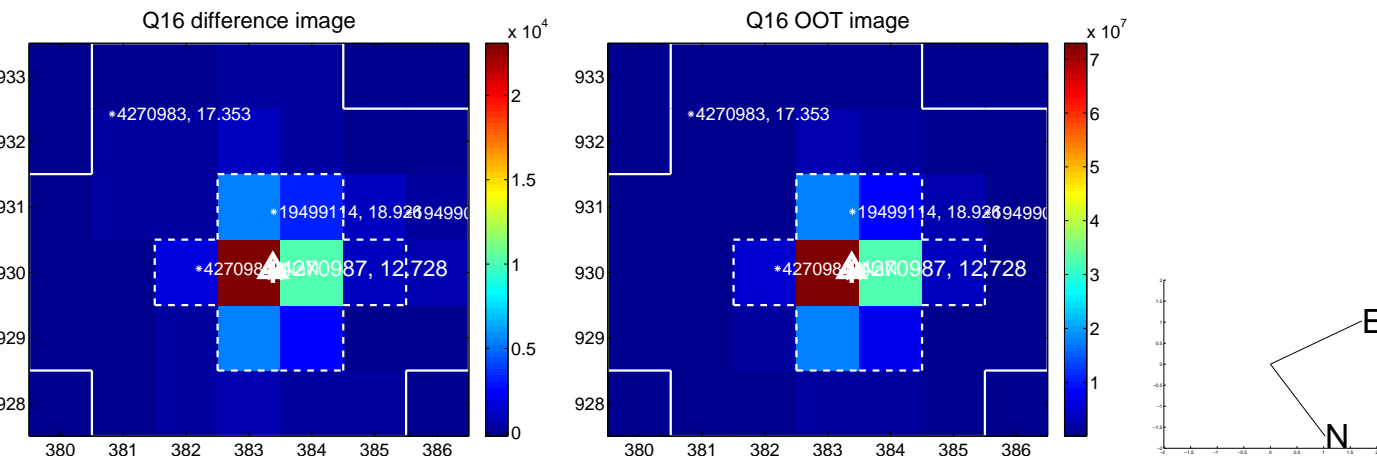
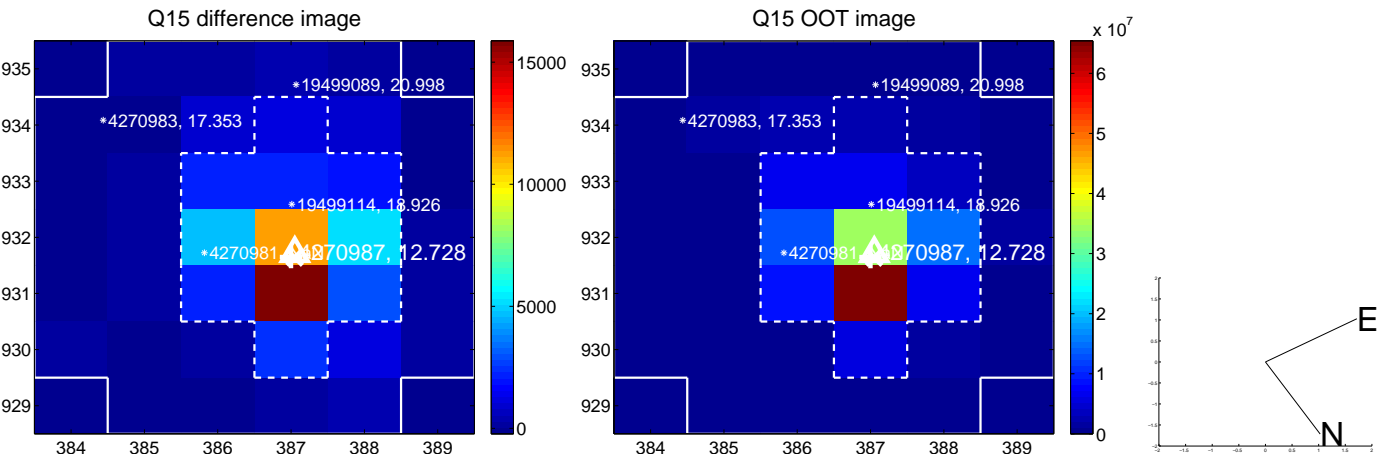
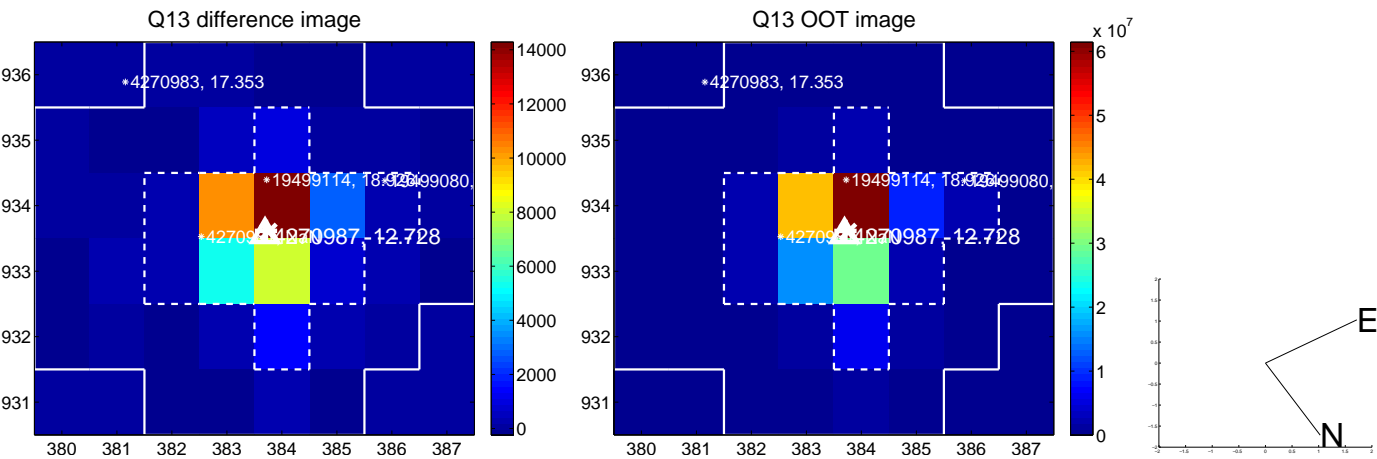
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



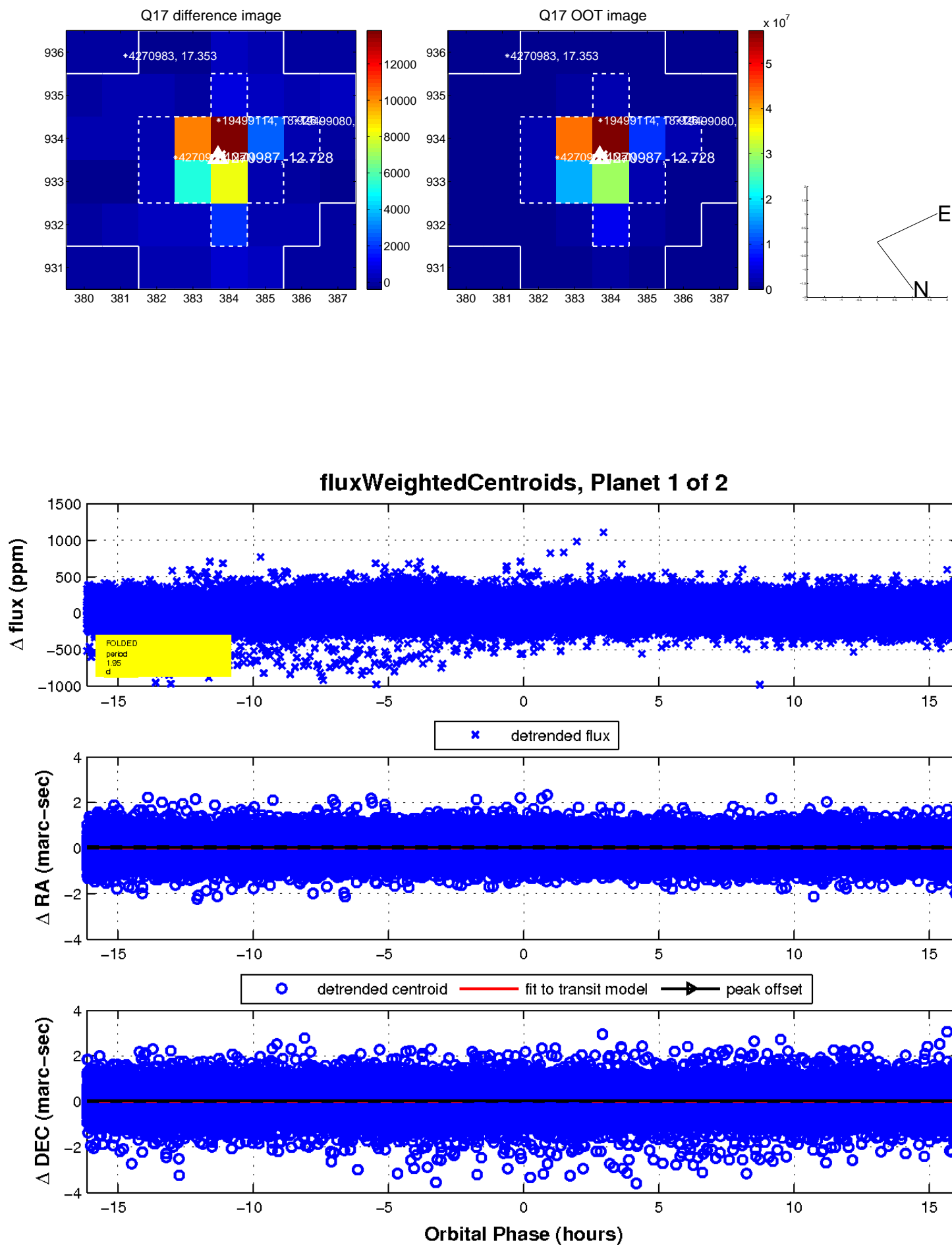
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



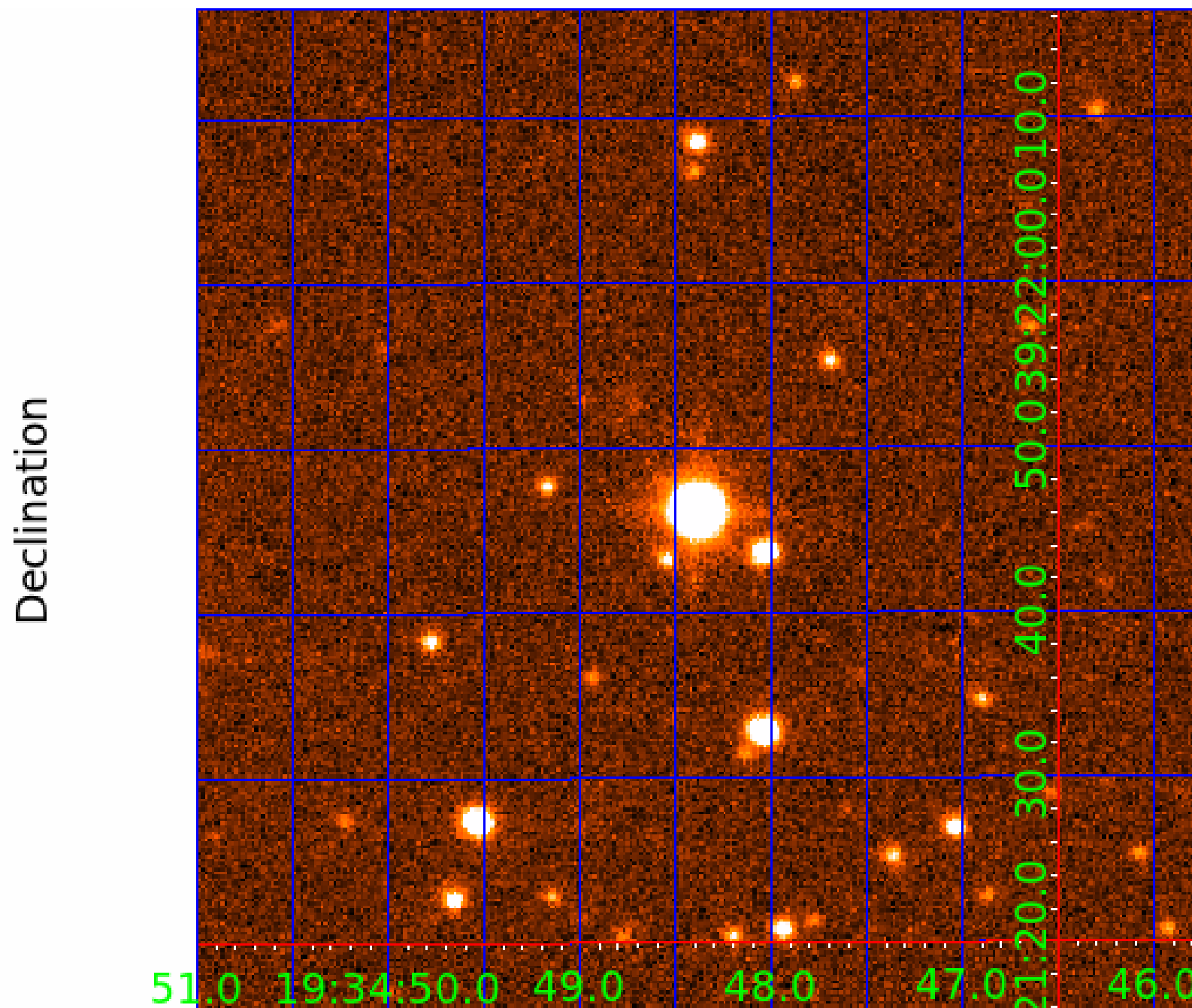
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image



KIC 004270987

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})
004270987-01	OBS	No	1.950246	132.428348	35.1	5.382	11.1	11.7	1.84	7177	1.33	7011.25
004270987-02	OBS	No	1.950329	132.328981	46.6	23.404	8.9	10.0	1.84	7177	1.51	7010.85

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004270987-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV
004270987-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—SWEET_NTL—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD—CENT_FEW_MEAS

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

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

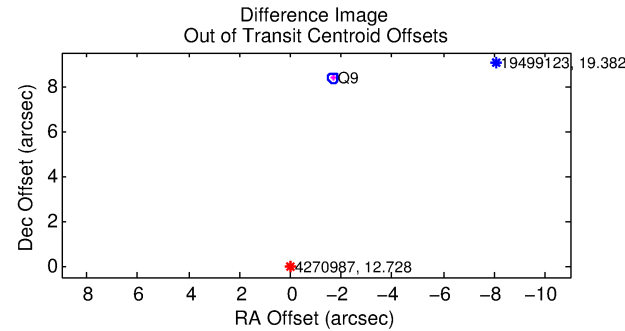
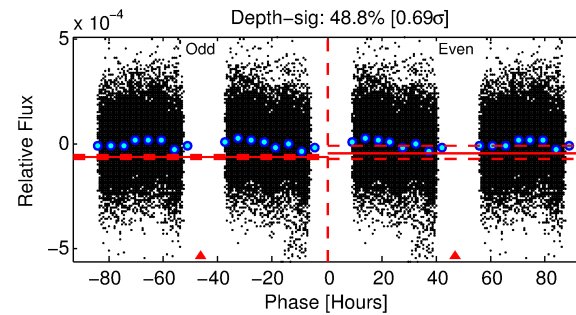
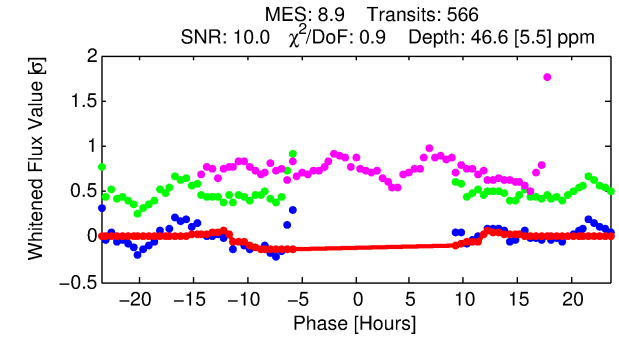
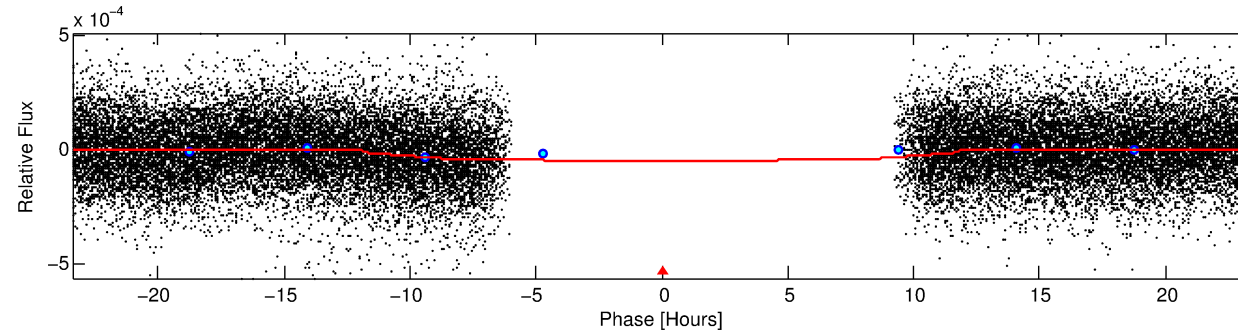
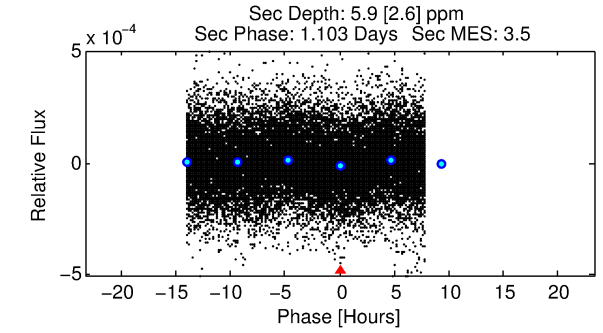
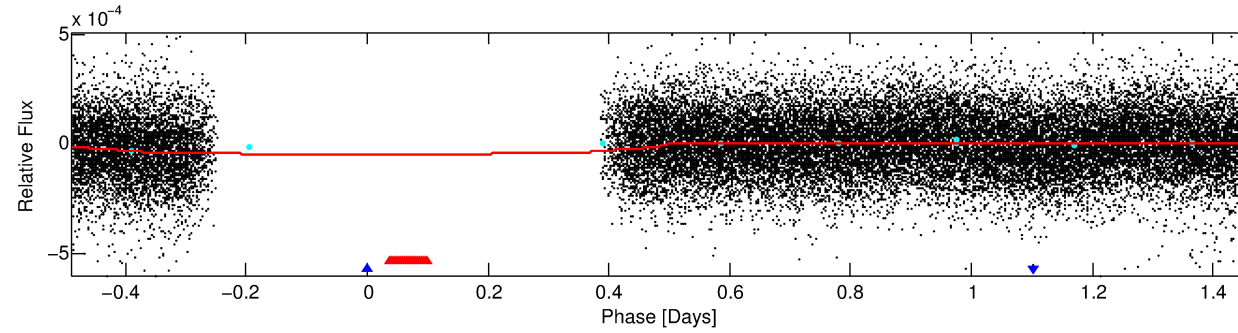
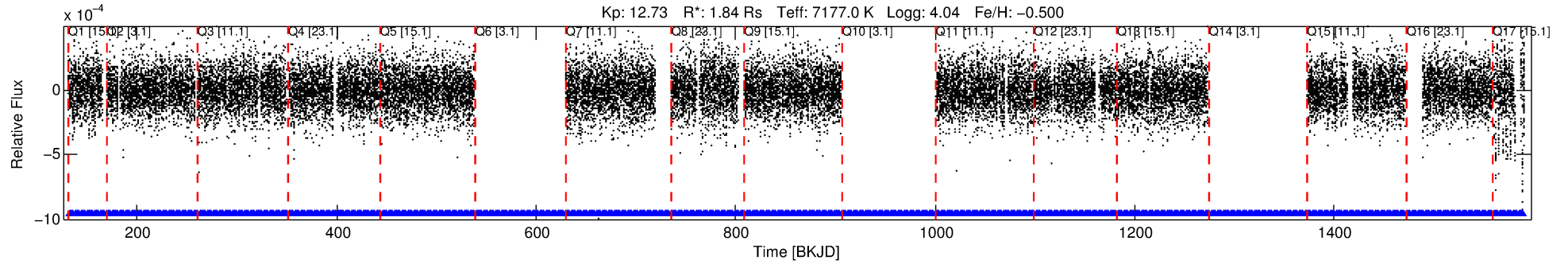
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004270987-02

No Significant Match Found

DV One-Page Summary

KIC: 4270987 Candidate: 2 of 2 Period: 1.950 d



DV Fit Results:

Period = 1.95033 [0.00002] d
Epoch = 132.3290 [0.0050] BKJD
Rp/R* = 0.0075 [0.0005]
a/R* = 1.00 [0.00]
b = 0.94 [0.03]
Seff = 7010.85 [3547.75]
Teq = 2333 [295] K
Rp = 1.51 [0.53] Re
a = 0.0338 [0.0105] AU
Ag = 1.64 [1.09] [0.59σ]
Teff = 4085 [500] K [3.02σ]

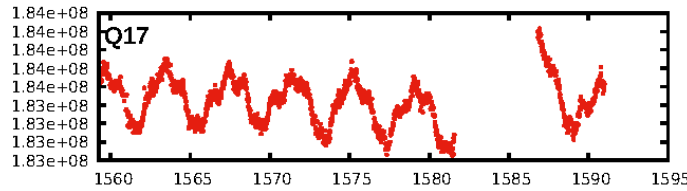
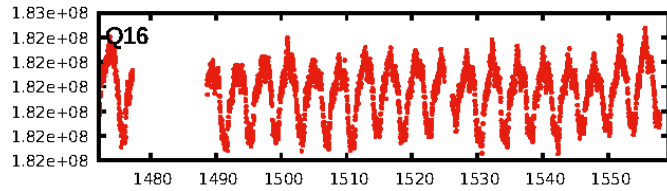
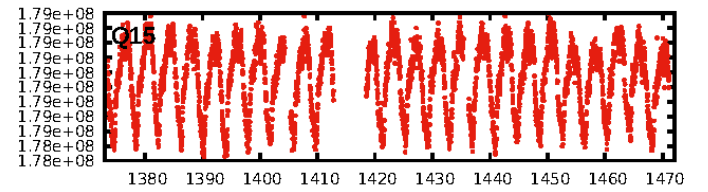
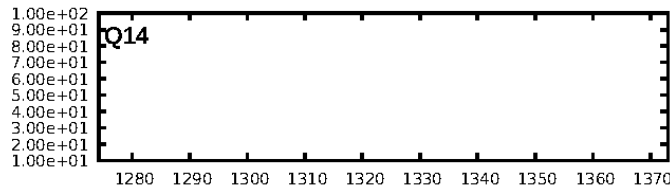
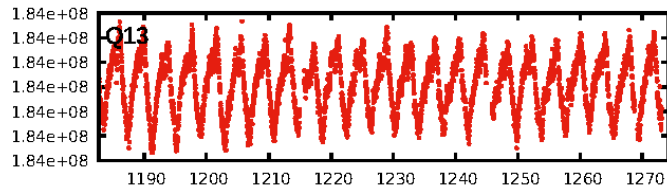
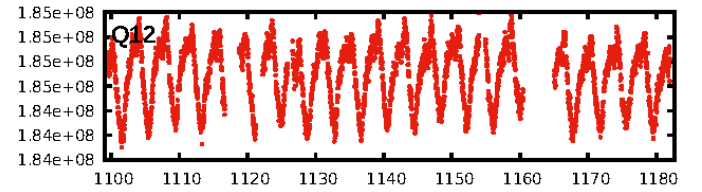
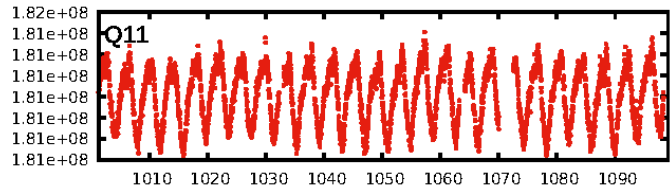
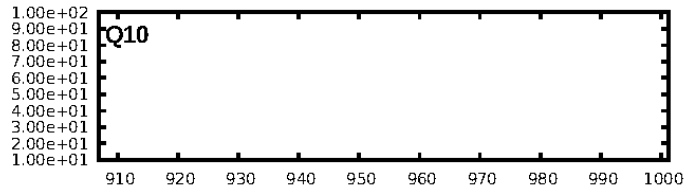
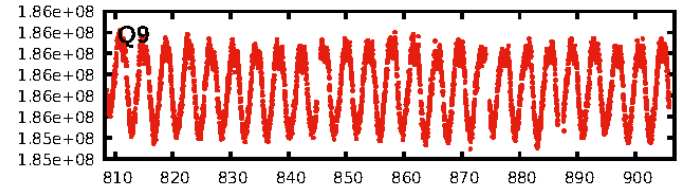
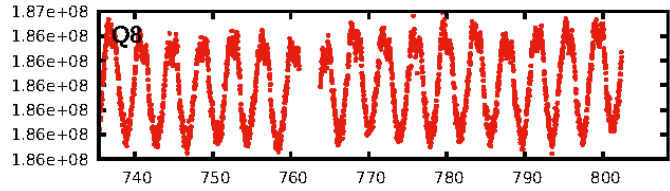
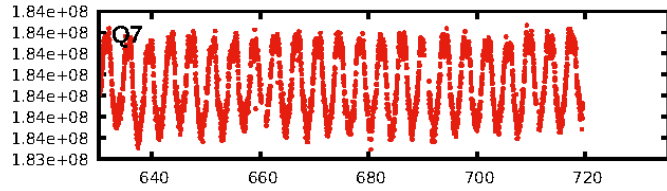
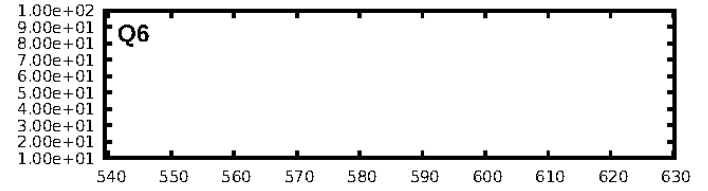
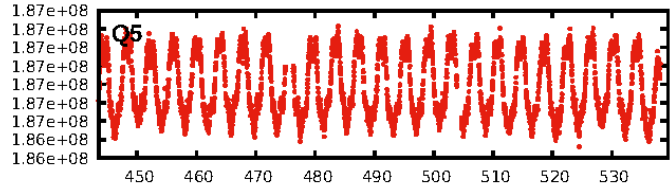
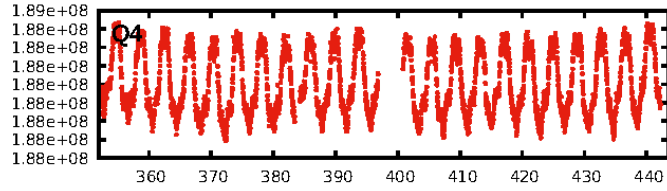
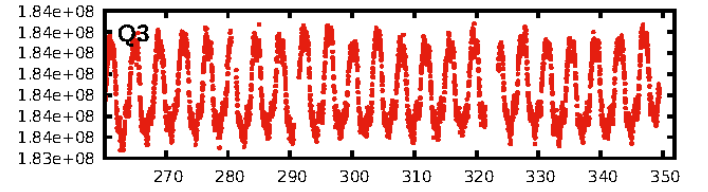
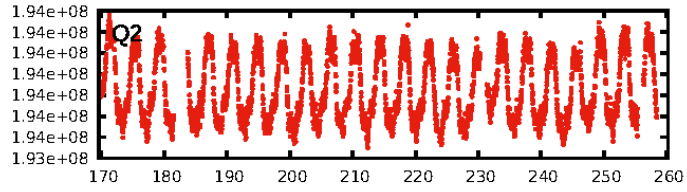
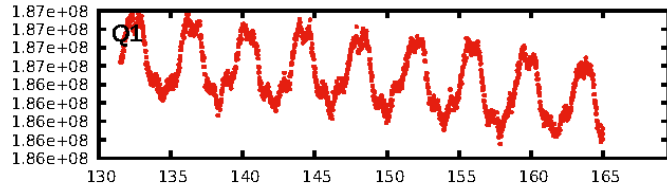
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGoF-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [534/534]
GhostDiagnostic-chr: 0.4984
Centroid-sig: 0.0%
Centroid-so: 0.613 arcsec [2.09σ]
OotOffset-rm: 8.518 arcsec [118.16σ]
KicOffset-rm: 8.441 arcsec [117.07σ]
OotOffset-st: 0/0/0/1 [1]
KicOffset-st: 0/0/0/1 [1]
DiffImageQuality-fgm: 0.00 [0/1]
DiffImageOverlap-fno: 0.00 [0/14]

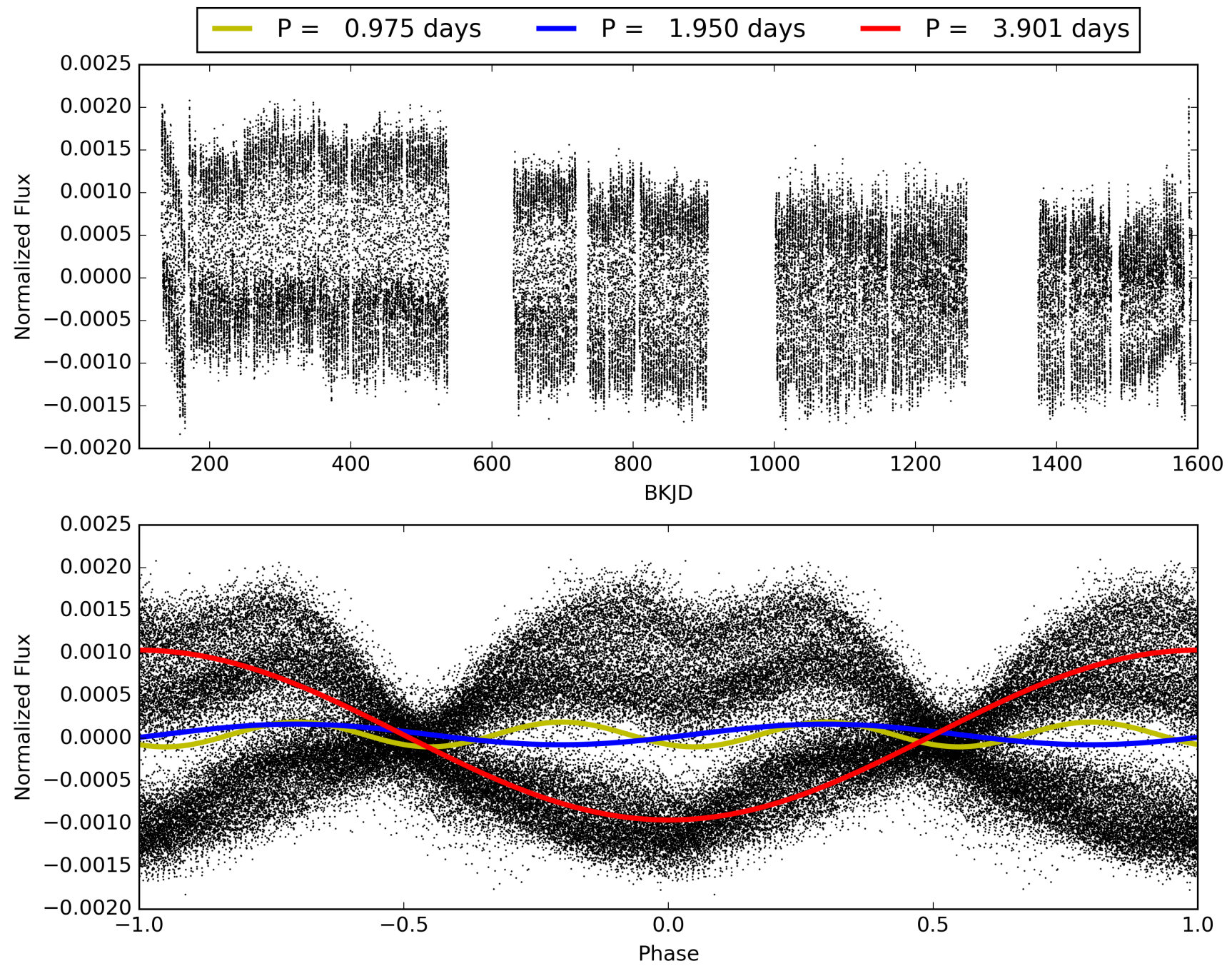
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 13:35:03 Z

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

TCE 004270987-02, PDC Light Curves

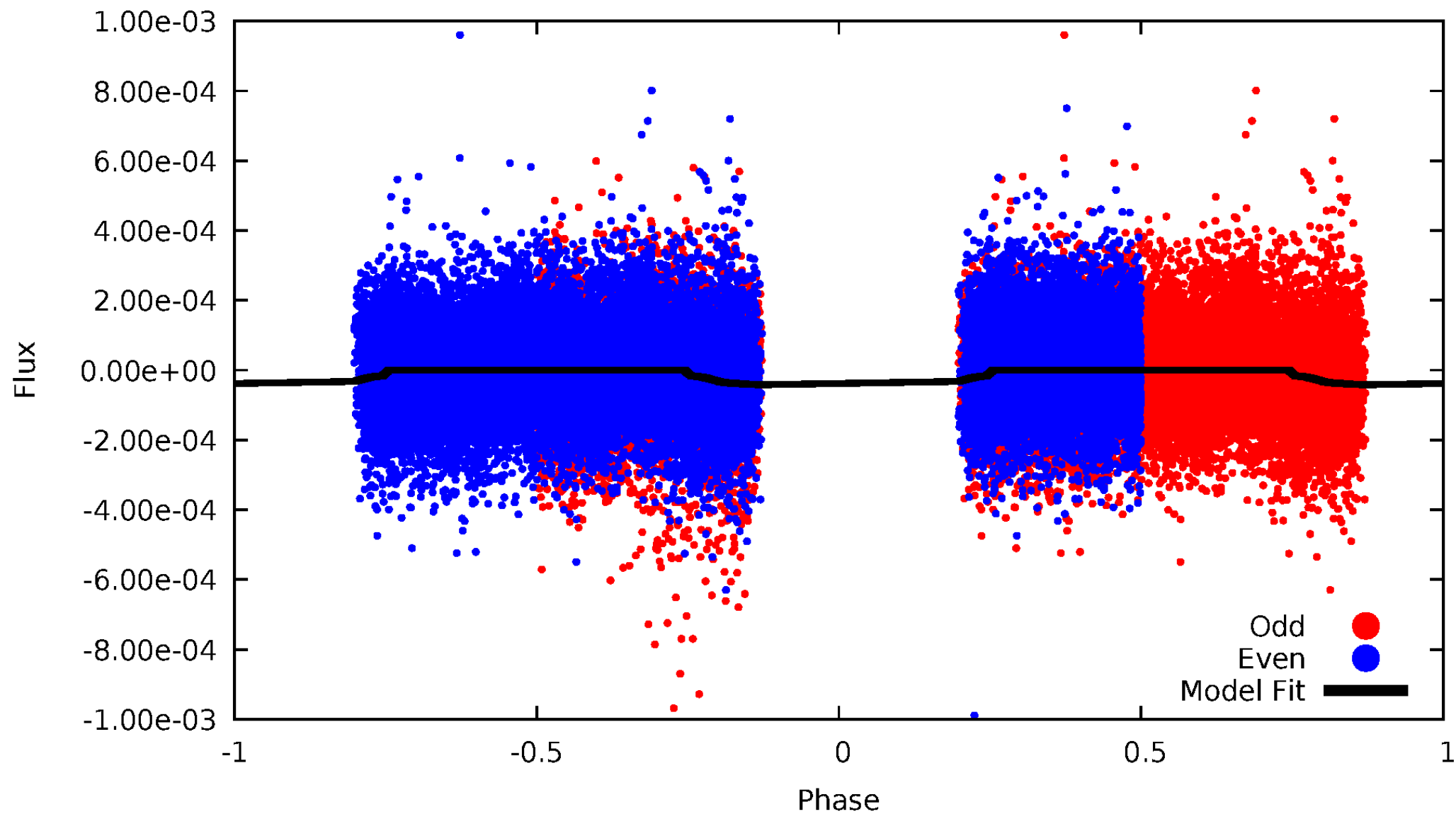


TCE 004270987-02



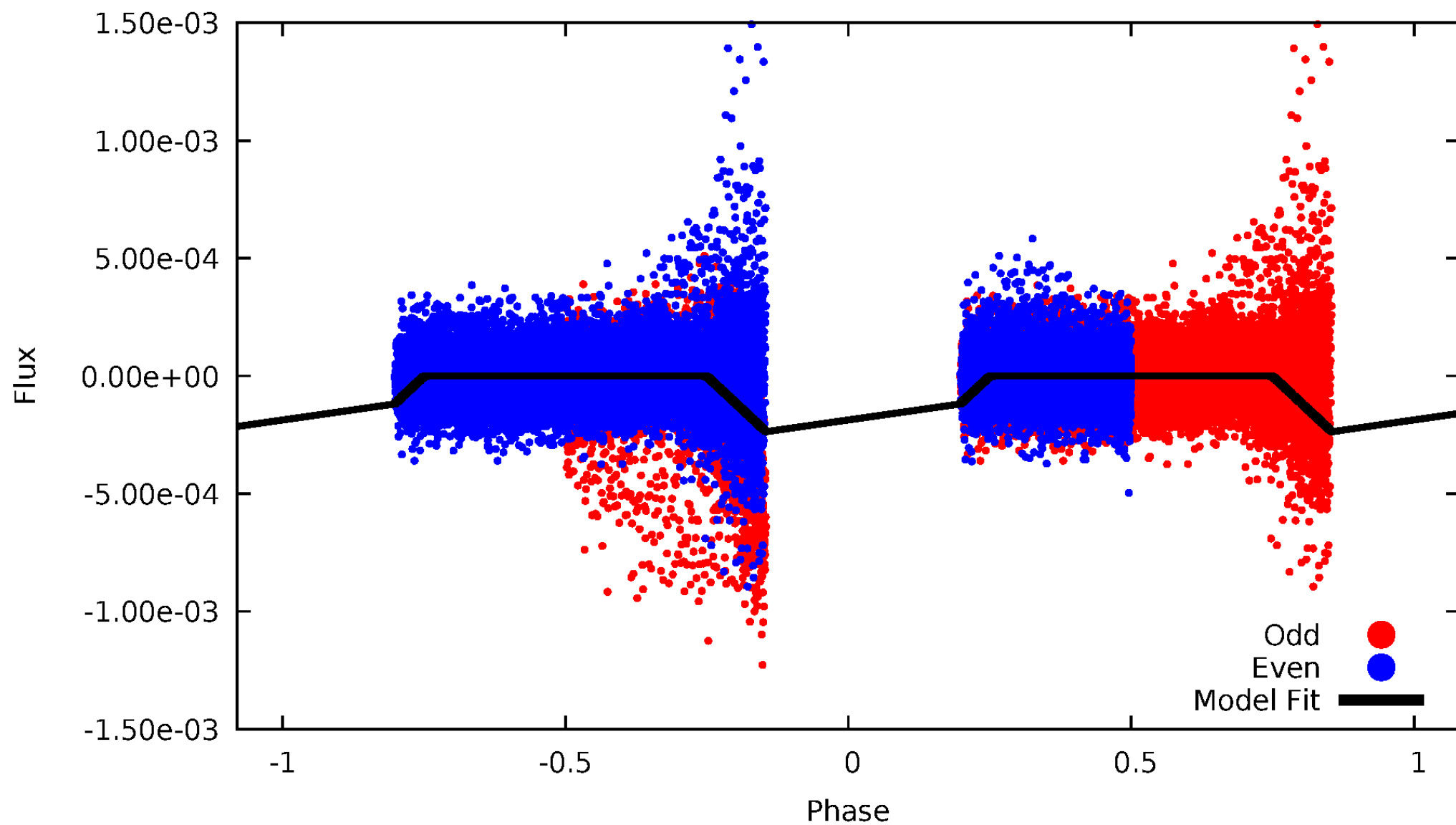
DV Odd/Even

TCE 004270987-02



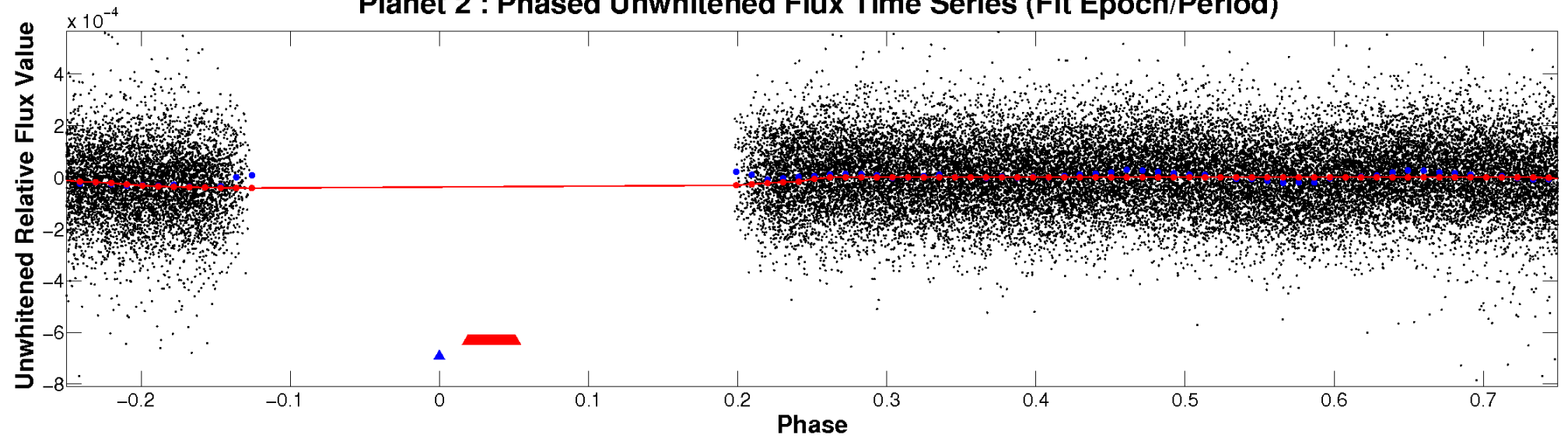
ALT Odd/Even

TCE 004270987-02

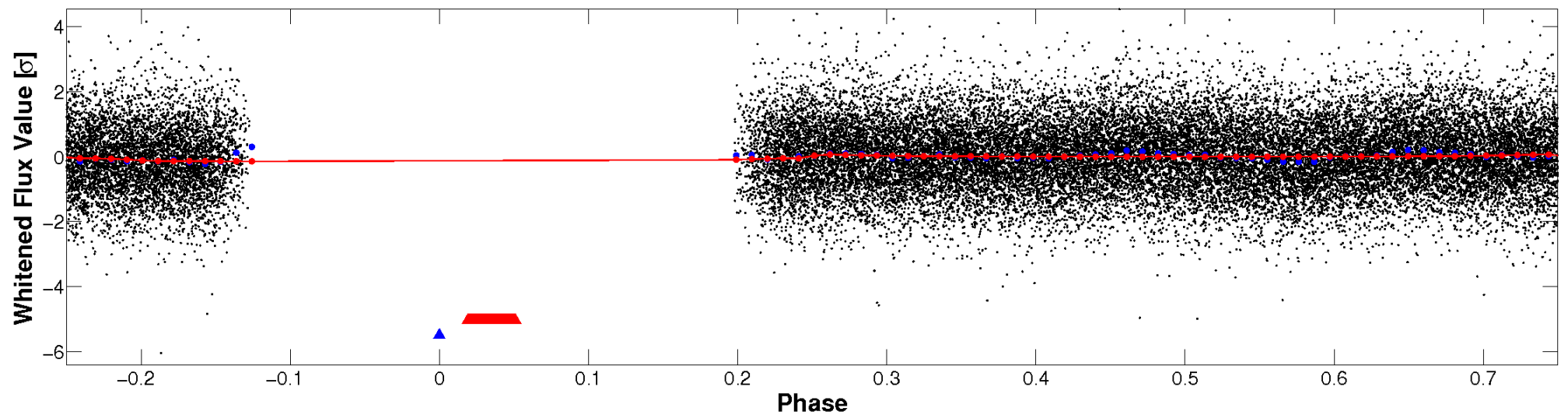


Non-Whitened Vs. Whitened Light Curve

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

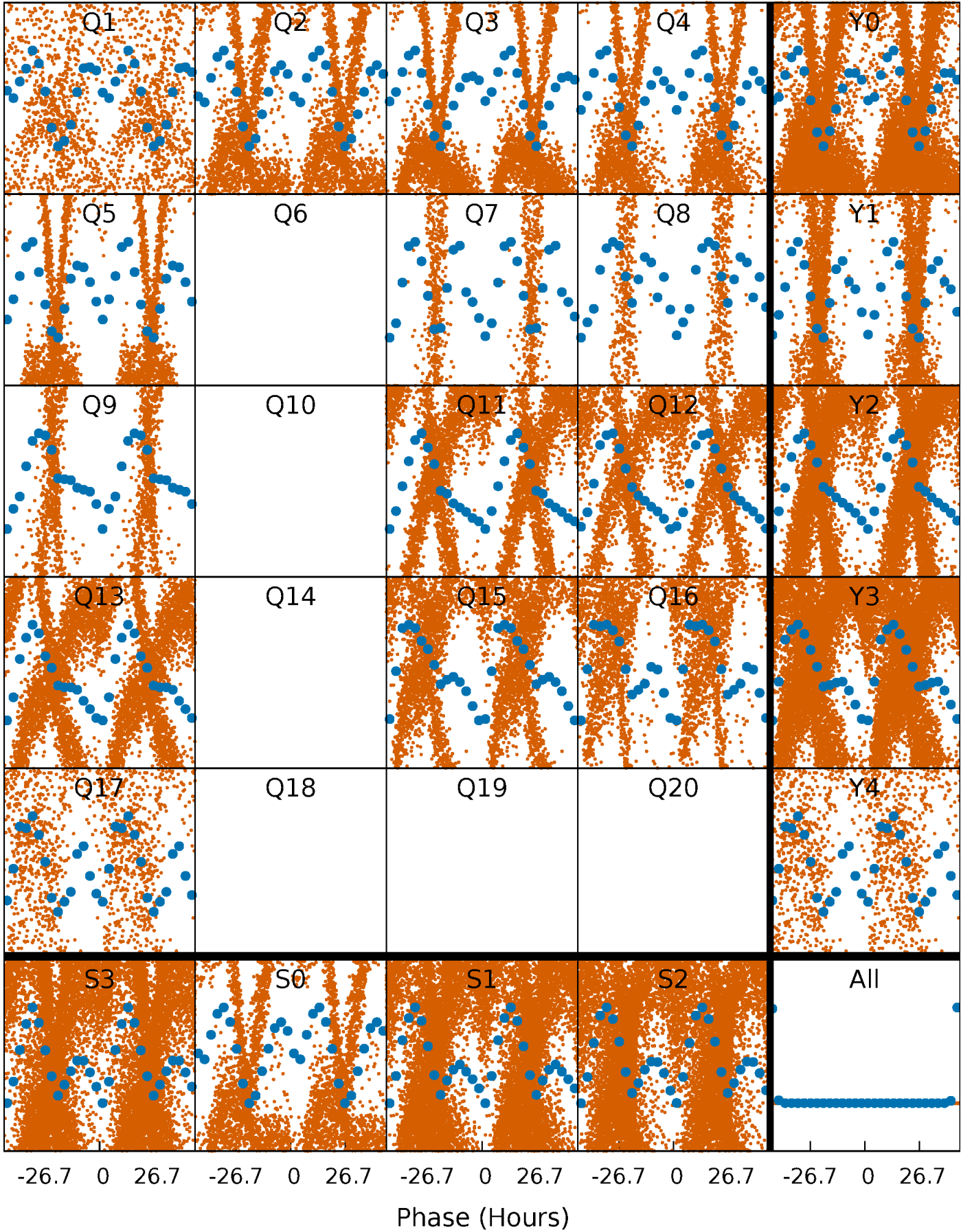


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



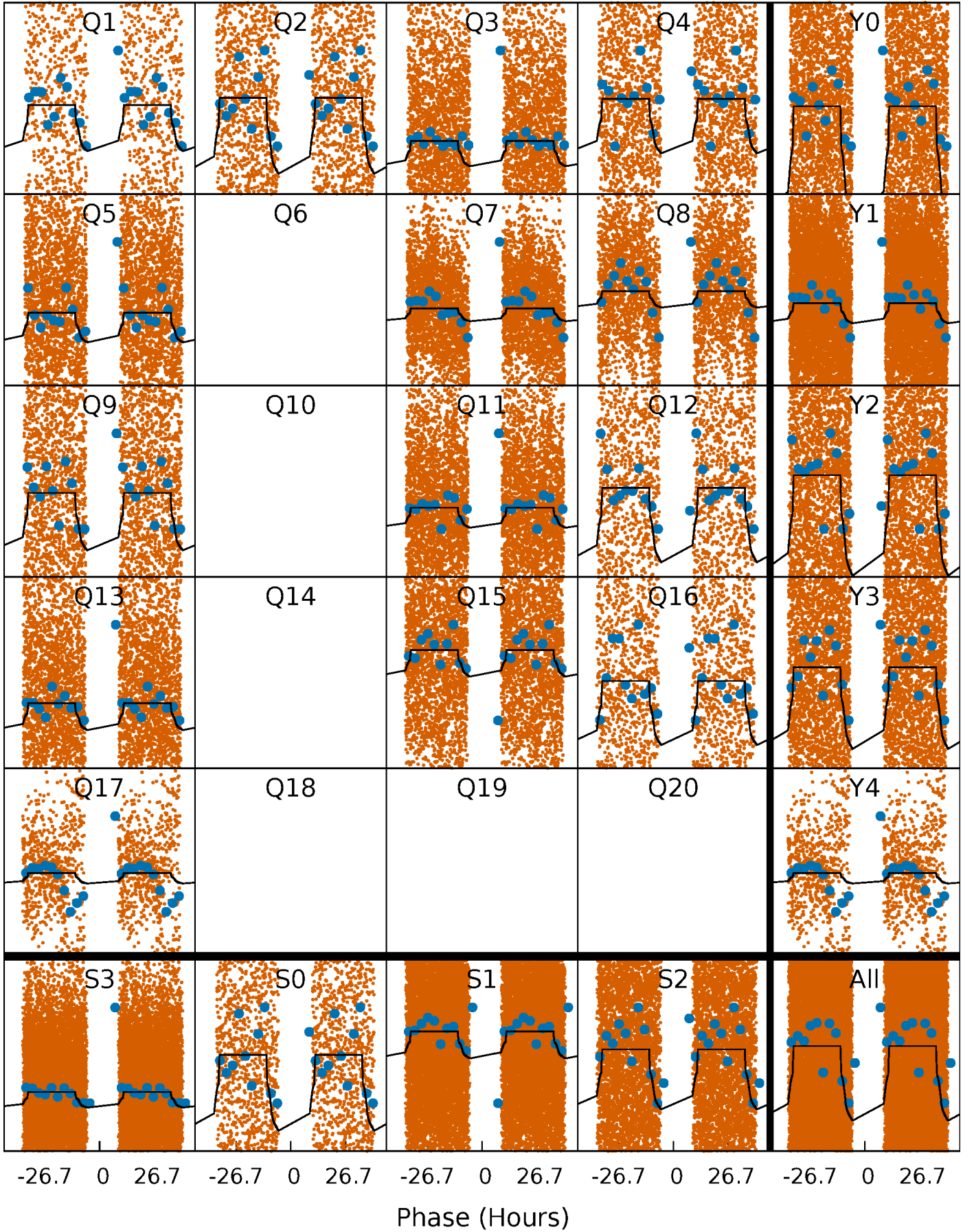
PDC Quarter-Phased Transit Curves

TCE 004270987-02 P= 1.950329 Days $T_0=132.328981$ (BKJD)



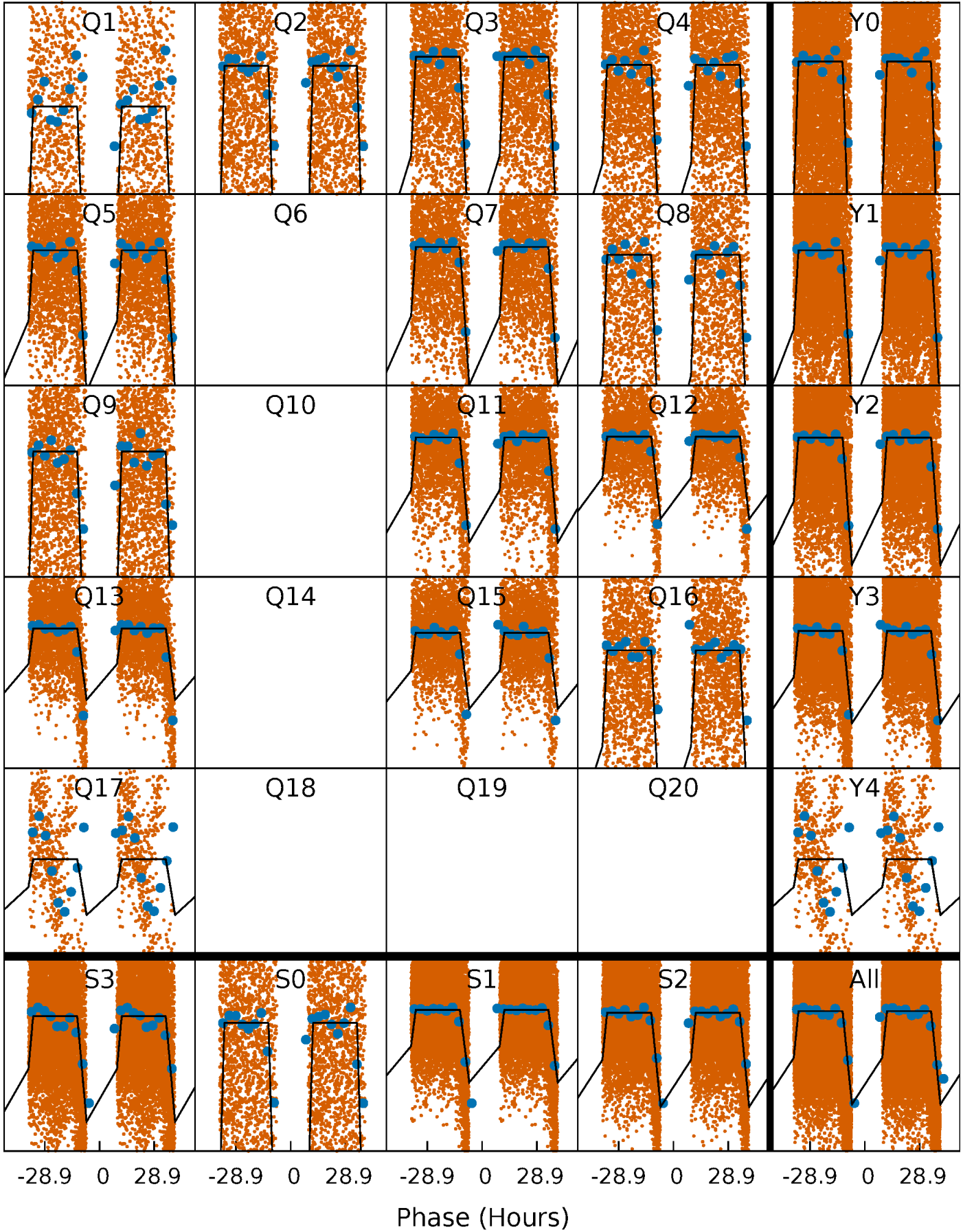
DV Quarter-Phased Transit Curves

TCE 004270987-02 P= 1.950329 Days $T_0=132.328981$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

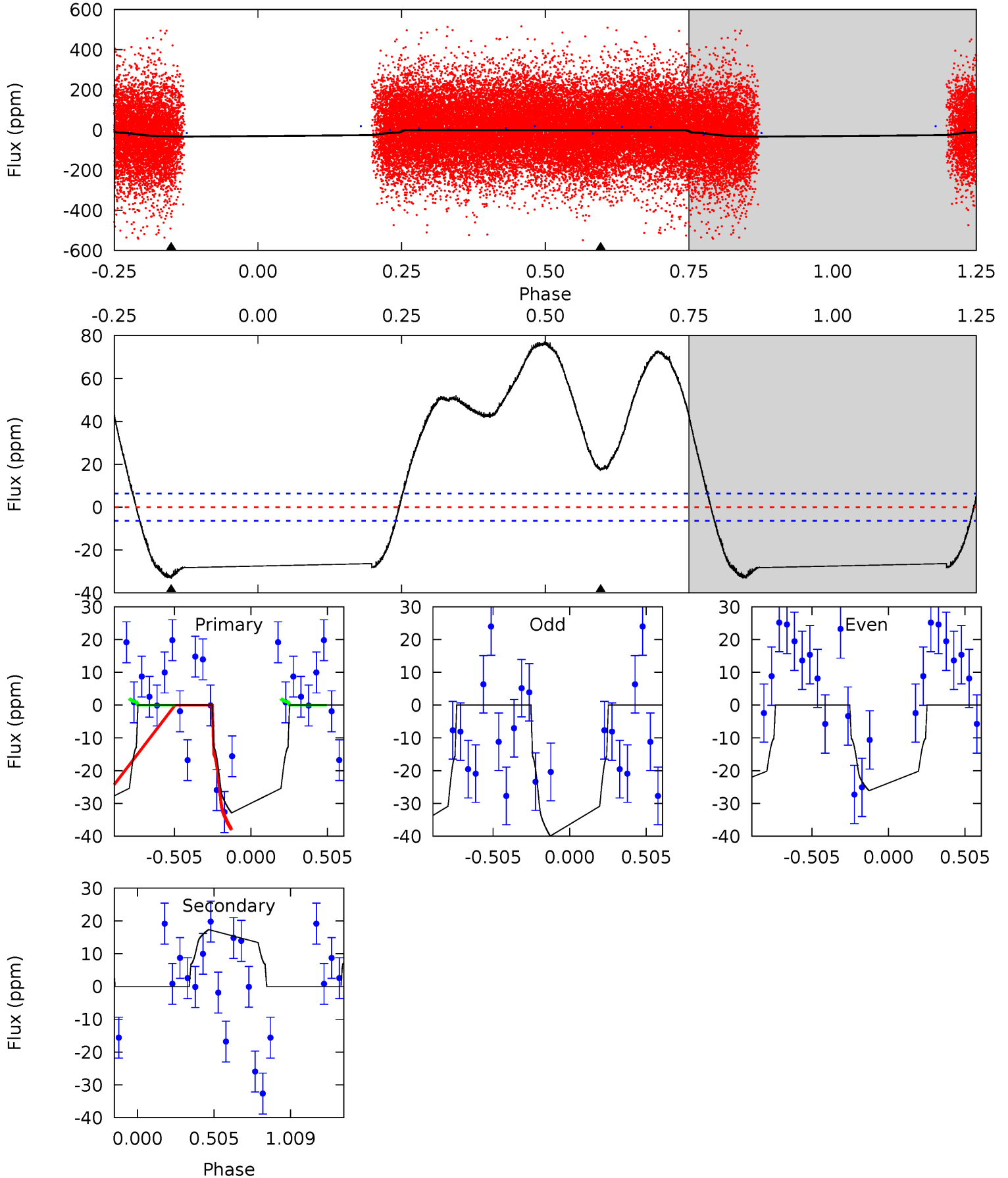
TCE 004270987-02 $P = 1.950211$ Days $T_0 = 132.389940$ (BKJD)



DV Model-Shift Uniqueness Test

004270987-02, P = 1.950329 Days, E = 130.378652 Days

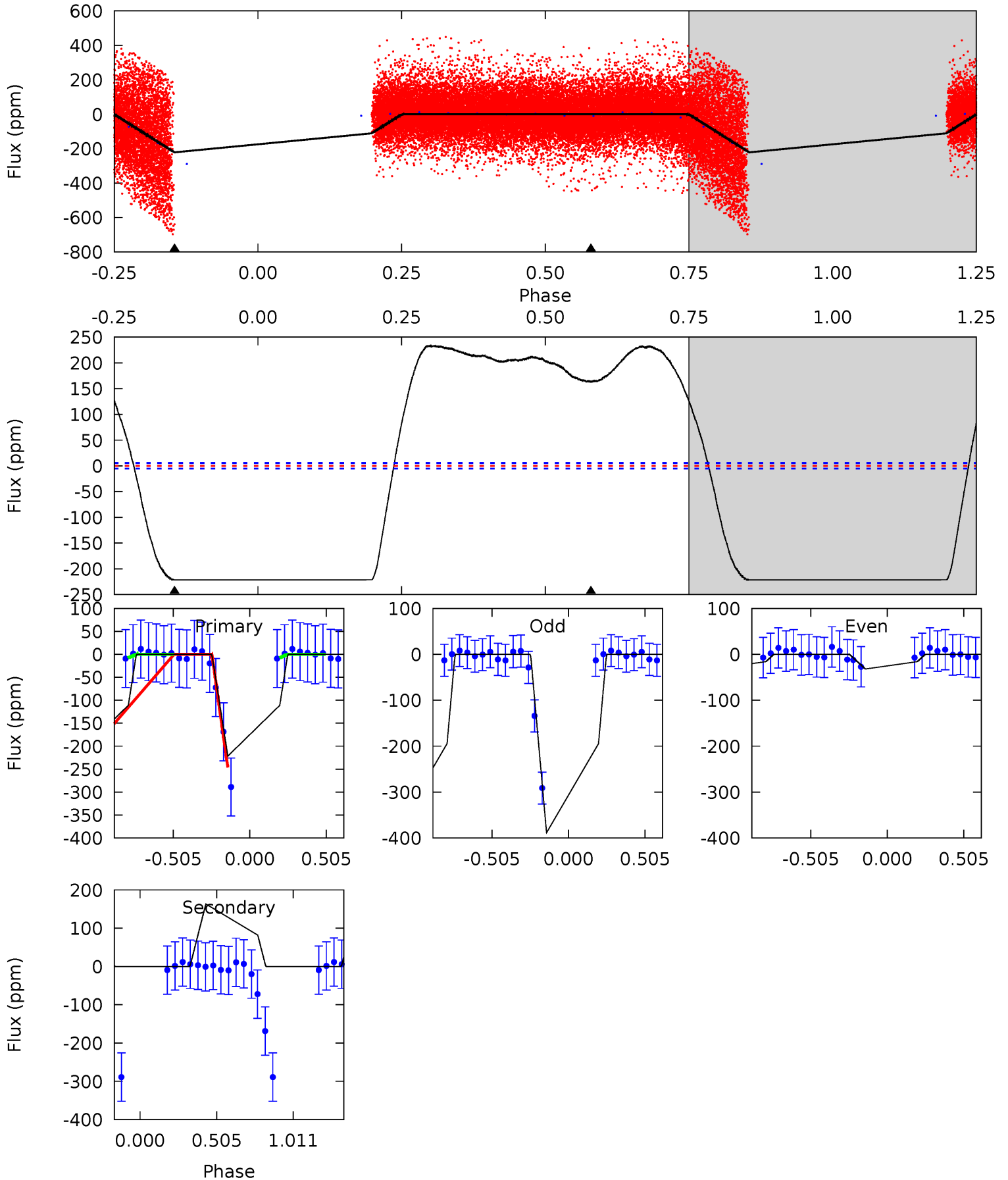
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
21.7	-11.5	0	0	4.21	0.67	11.7	21.7	21.7	-11.5	-11.5	4.57	0.99	0.70	10.7



Alt Model-Shift Uniqueness Test

004270987-02, P = 1.950211 Days, E = 130.439729 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
174.6	-128.7	0	0	4.21	0.67	92.0	174.6	174.6	-128.7	-128.7	135.2	0.95	0.51	99.3



Stellar Parameters For KIC 004270987

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	7177^{+200}_{-300}	$4.042^{+0.273}_{-0.147}$	$-0.500^{+0.250}_{-0.300}$	$1.836^{+0.473}_{-0.631}$	$1.352^{+0.193}_{-0.257}$	$0.308^{+0.569}_{-0.134}$
	+3%/-4%	+7%/-4%	+50%/-60%	+26%/-34%	+14%/-19%	+185%/-44%
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 004270987-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	17 ± 2	$1.45^{+0.25}_{-0.26}$	3185^{+265}_{-266}	-5398^{+246}_{-247}	$-5.135^{+1.361}_{-2.372}$
Alt.	163 ± 1	$3.18^{+0.47}_{-0.57}$	3213^{+260}_{-276}	-6359^{+258}_{-209}	$-10.029^{+2.337}_{-4.144}$

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 $A_{obs} \gg 1.0$

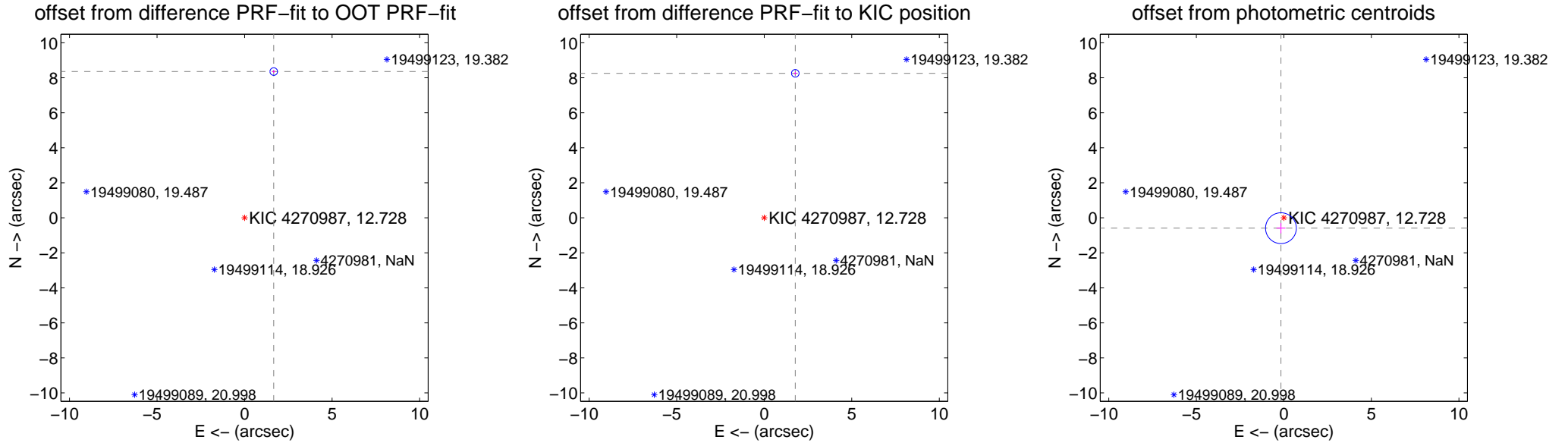
DV Centroid Data

Supplemental centroid analysis for 004270987-02. Kepler magnitude: 12.73. Transit SNR 9.98

There are 0 quarters with good PRF difference image offsets

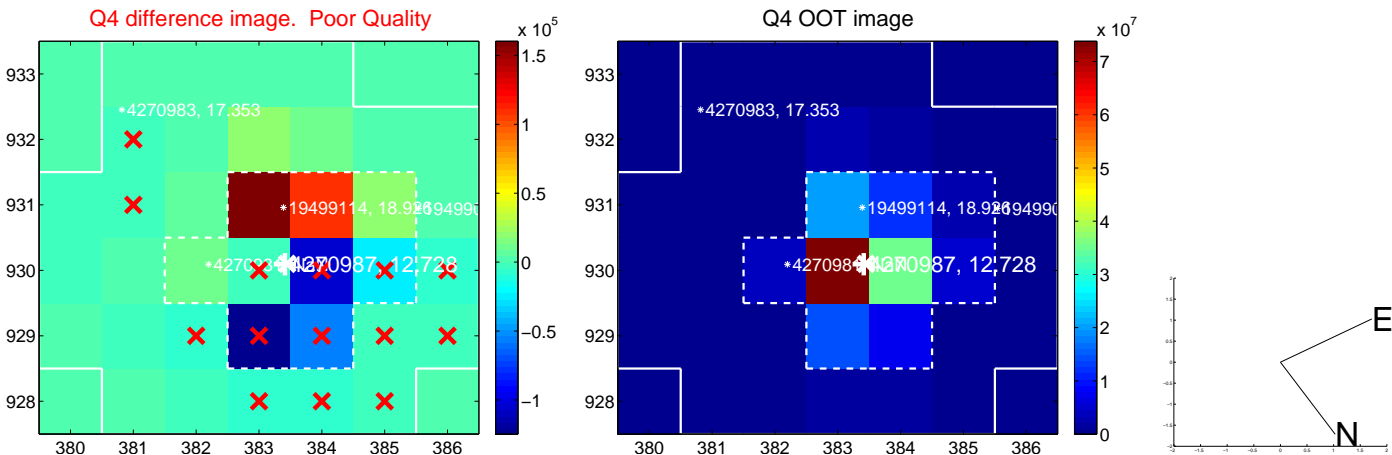
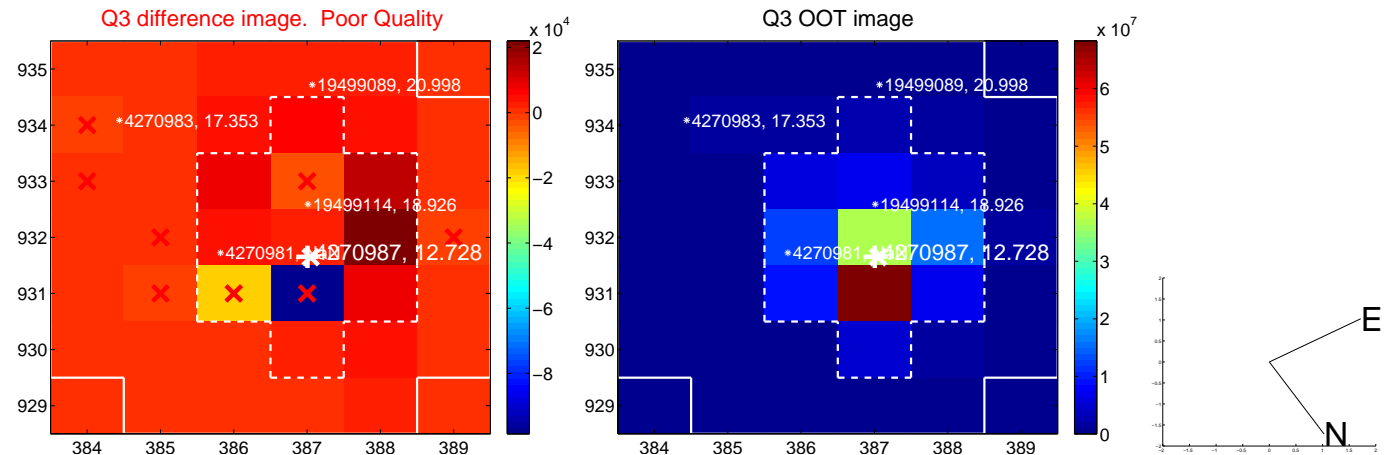
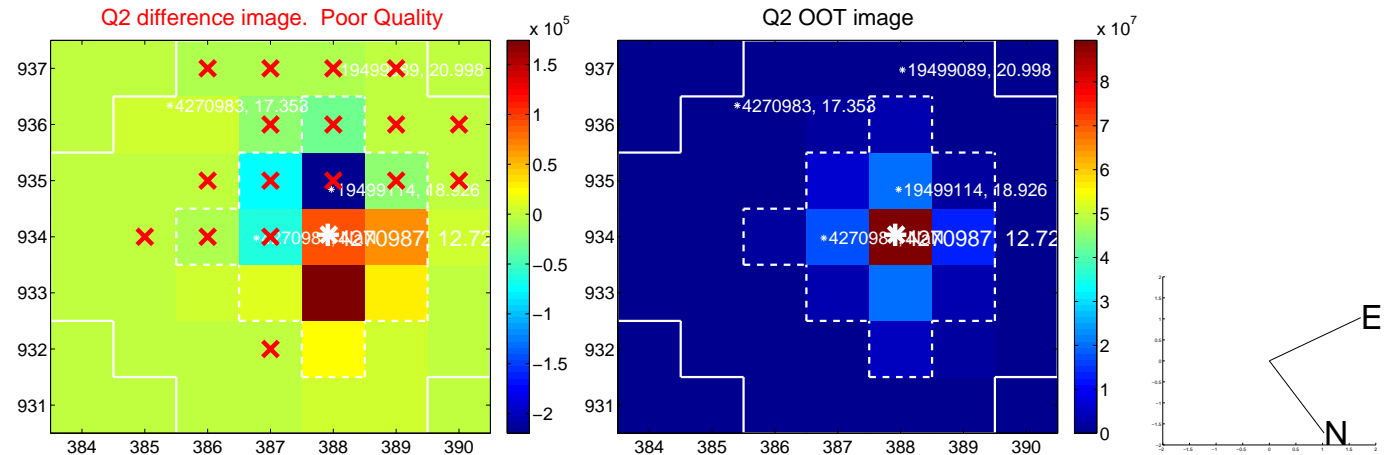
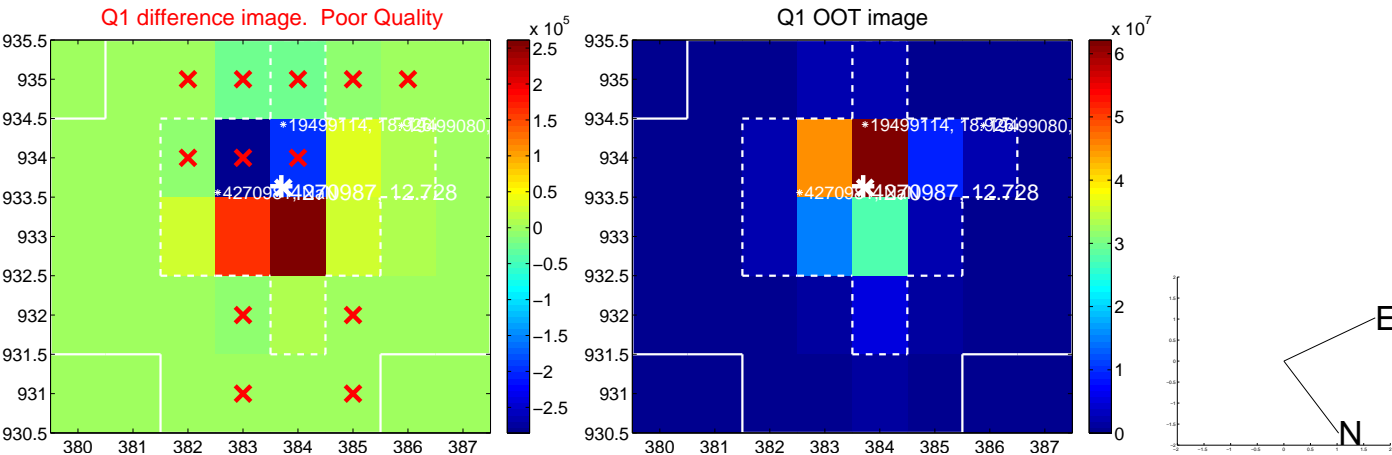
The direct PRF centroid is offset from the target star catalog position by about 0.15 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	8.518 ± 0.072	118.16	-1.665 ± 0.074	8.354 ± 0.072
PRF-fit source offset from KIC position	8.441 ± 0.072	117.07	-1.774 ± 0.074	8.253 ± 0.072
photometric centroid source offset	0.61 ± 0.29	2.09	0.17 ± 0.26	-0.59 ± 0.30

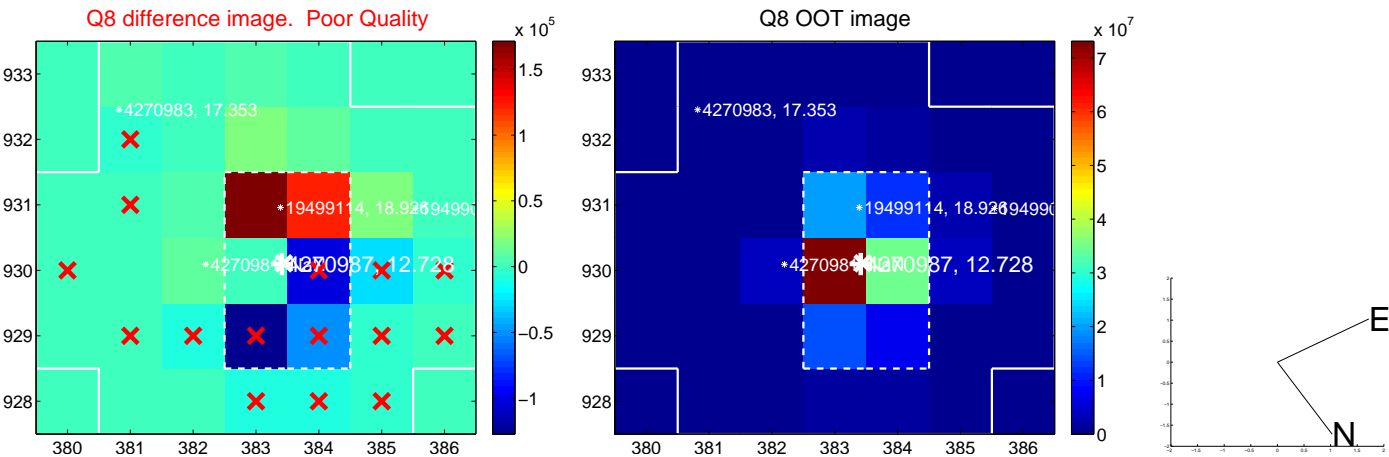
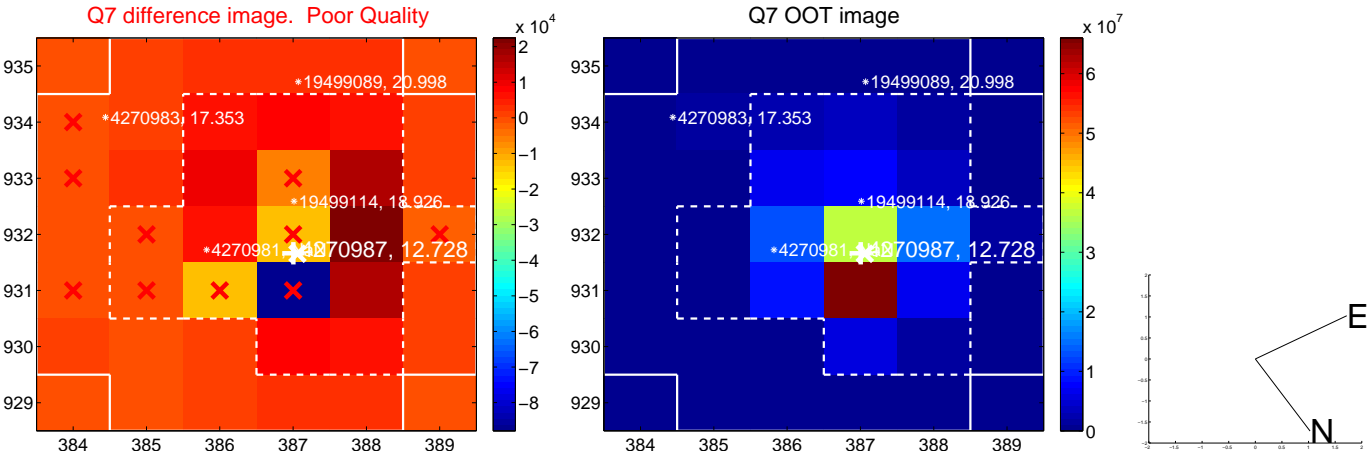
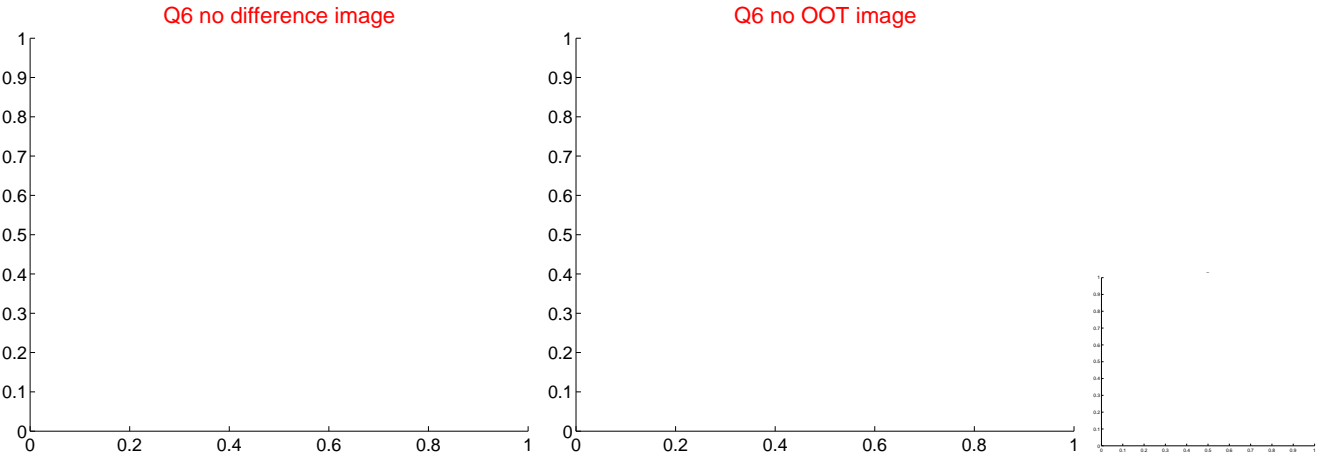
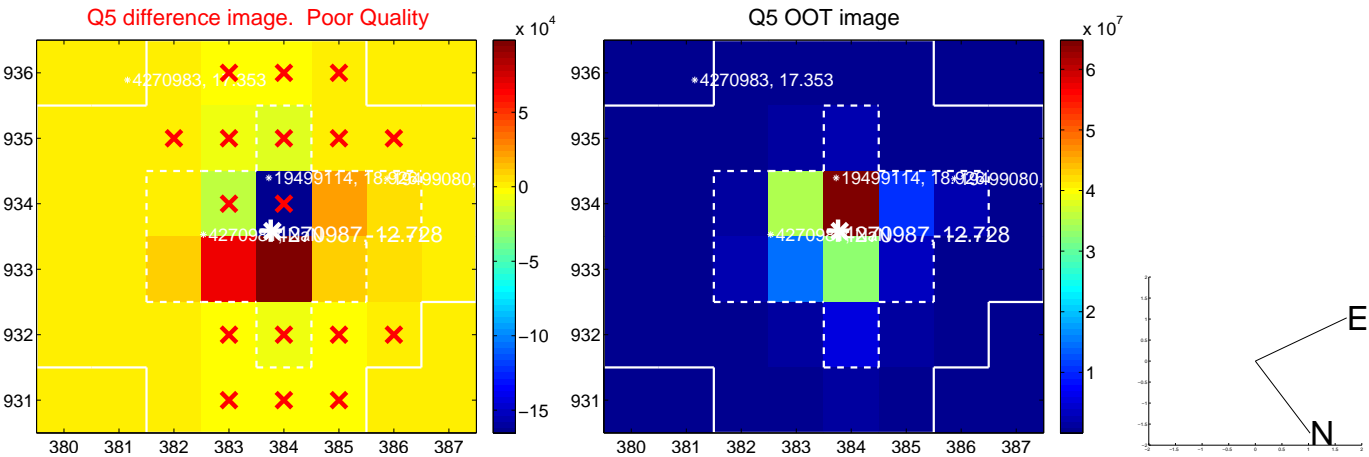


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

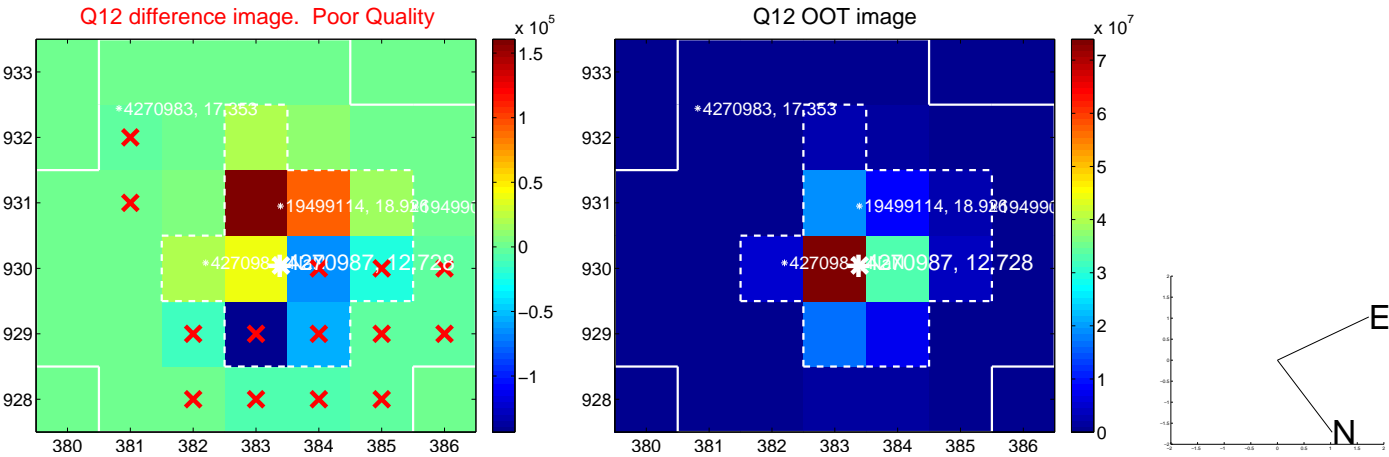
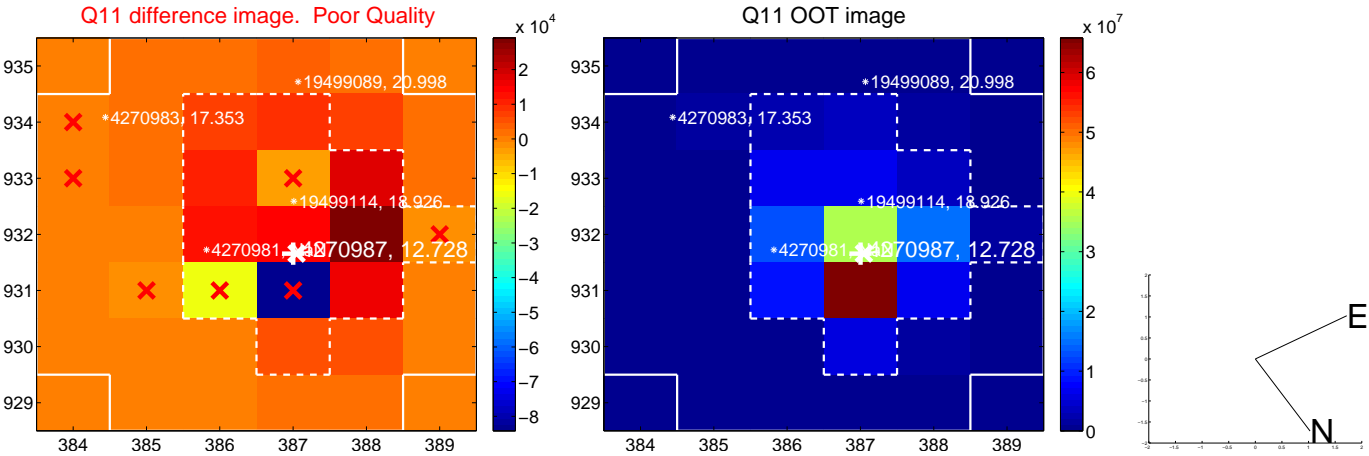
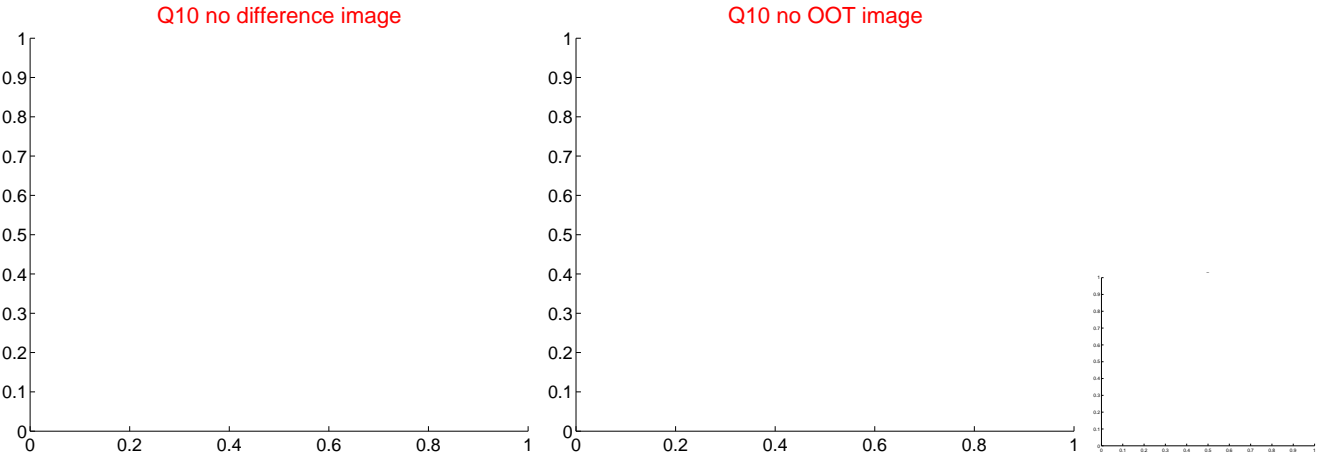
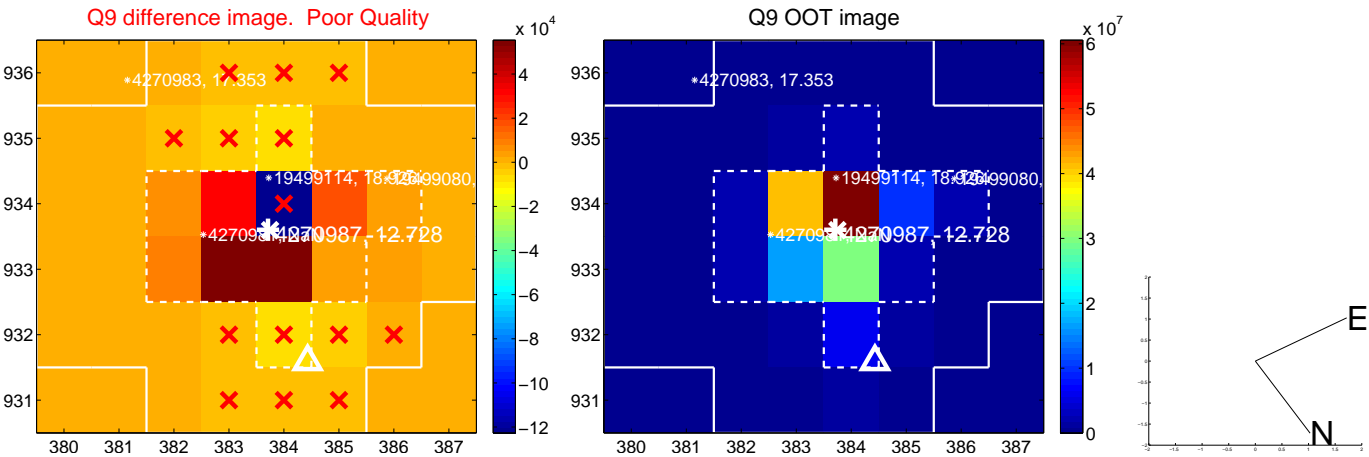
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



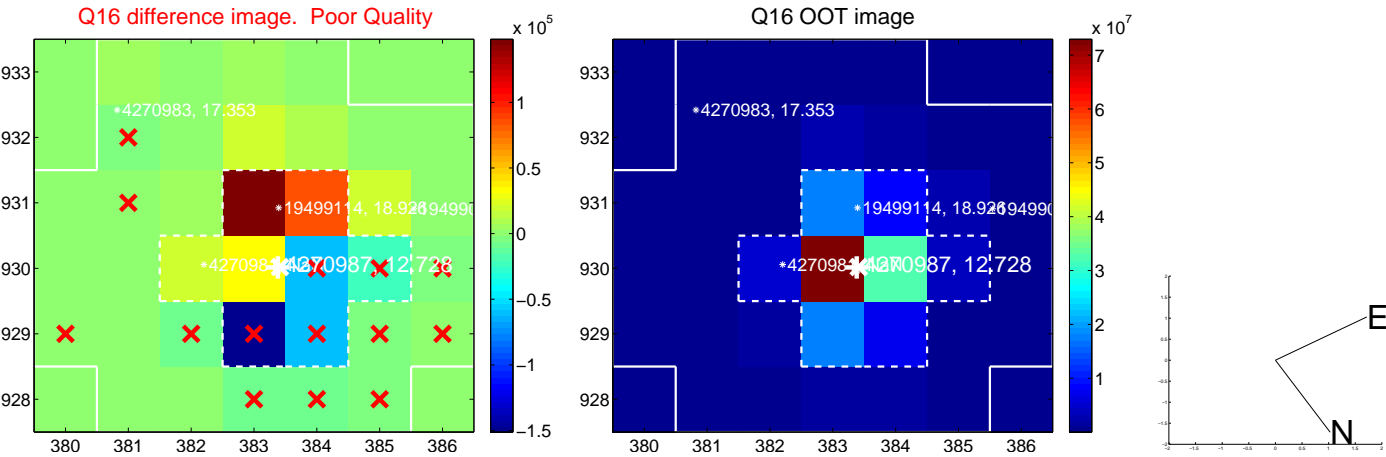
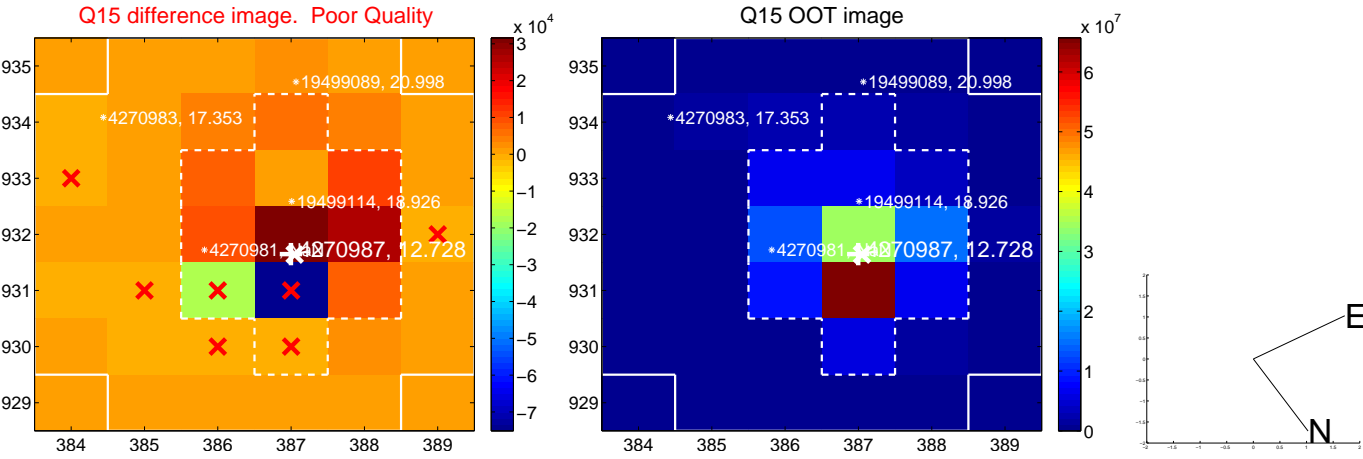
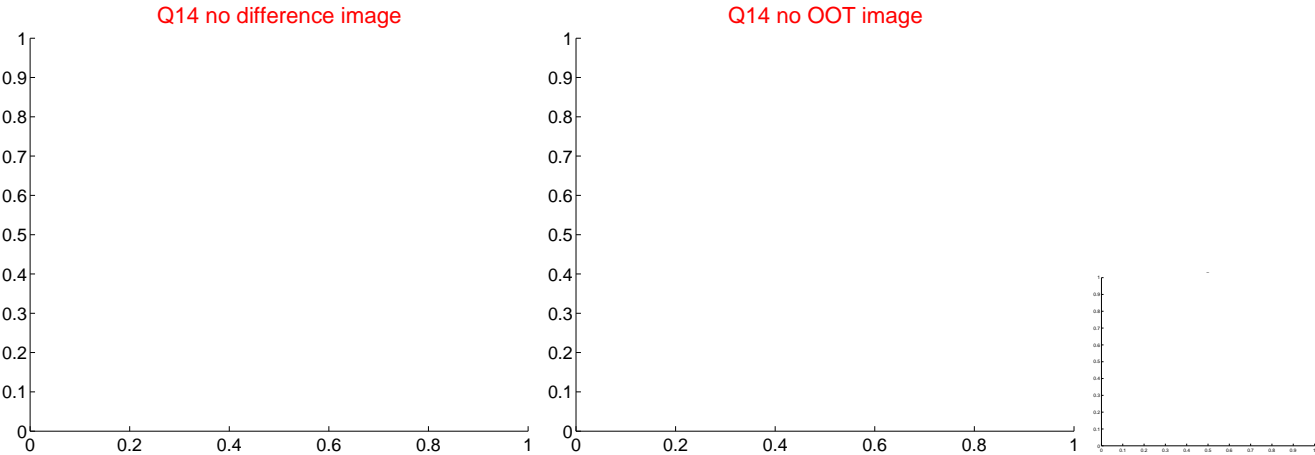
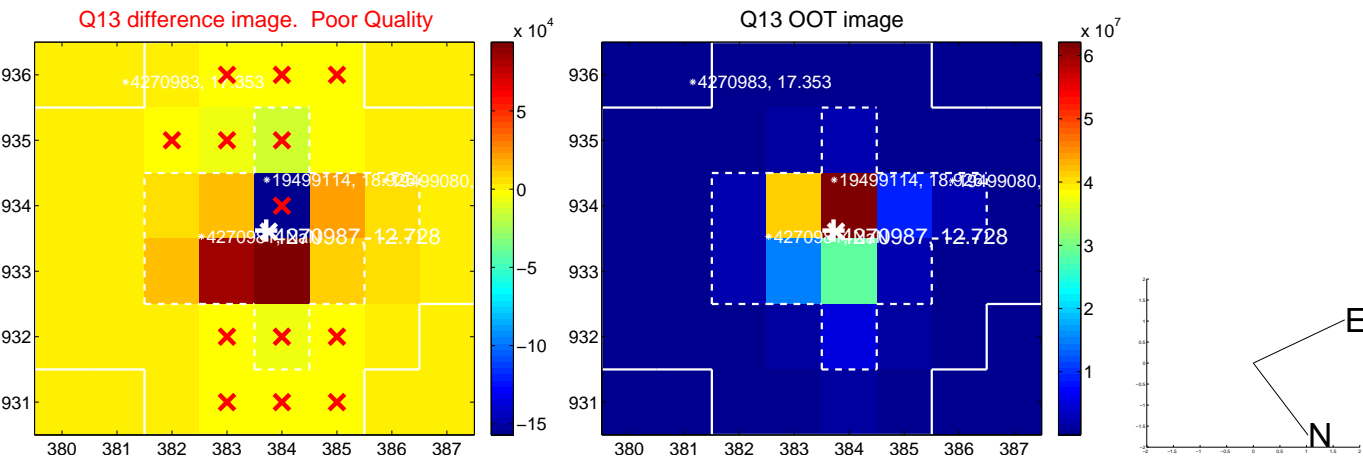
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



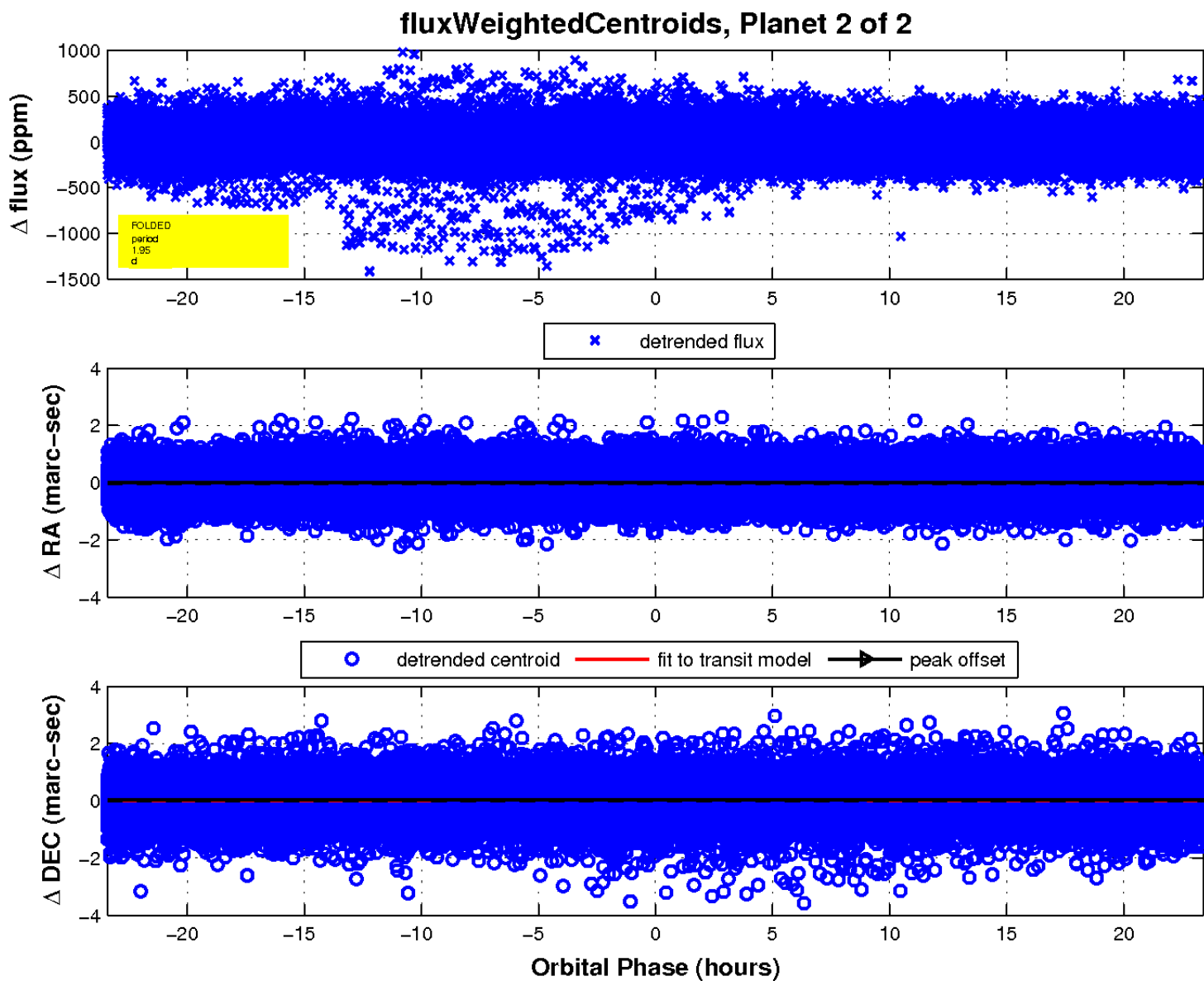
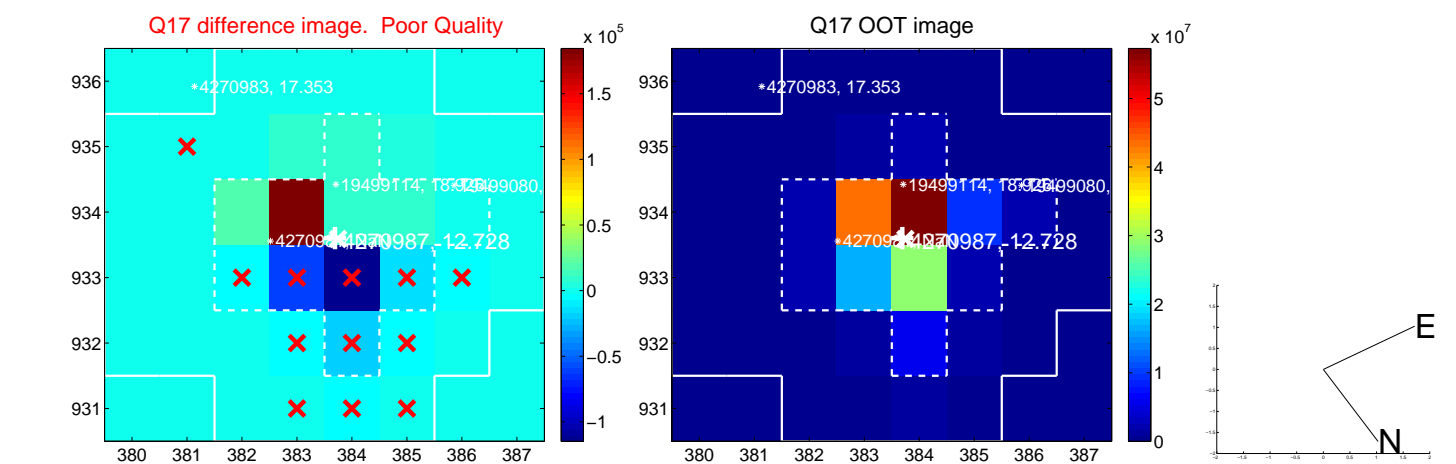
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

