

KIC 009040983

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})
009040983-01	OBS	No	5.286762	132.134683	67.3	20.206	10.8	10.3	1.01	6139	0.97	377.95
009040983-02	OBS	No	5.287046	135.444829	58.7	15.317	13.3	11.6	1.01	6139	0.93	377.92

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009040983-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV
009040983-02	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV—SAME_NTL_PERIOD

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

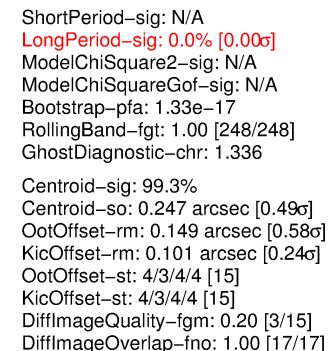
N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

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

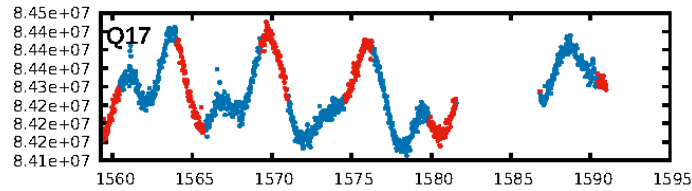
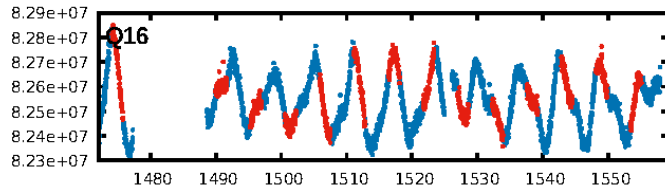
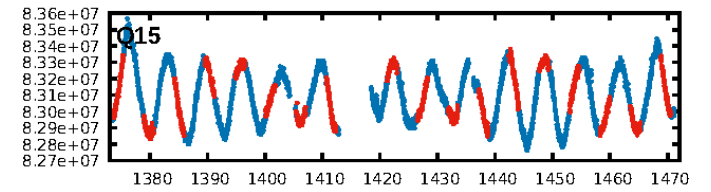
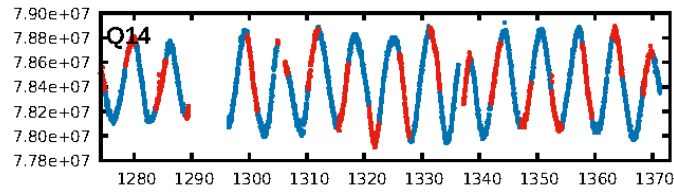
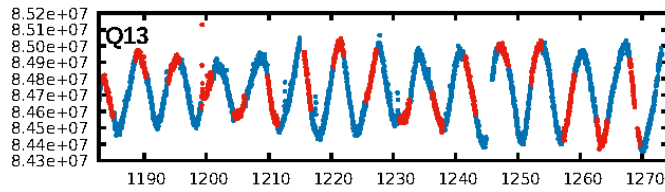
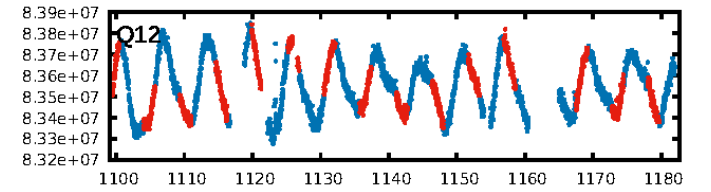
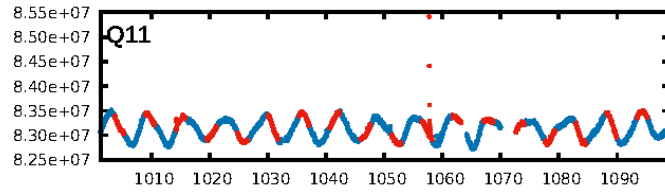
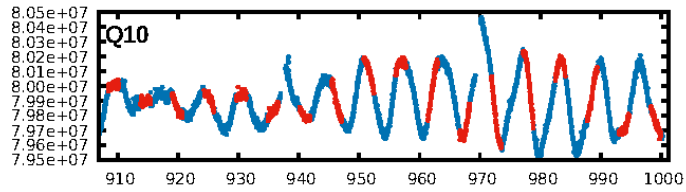
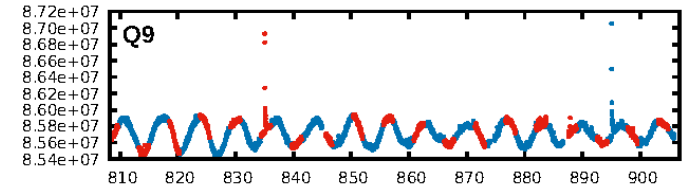
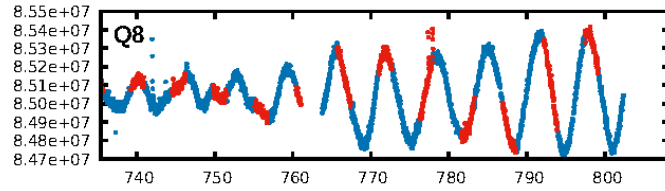
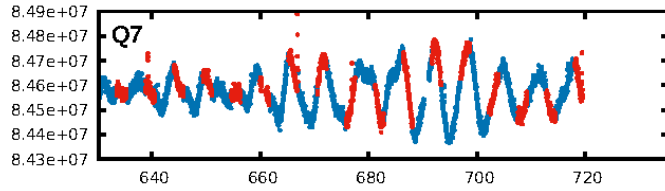
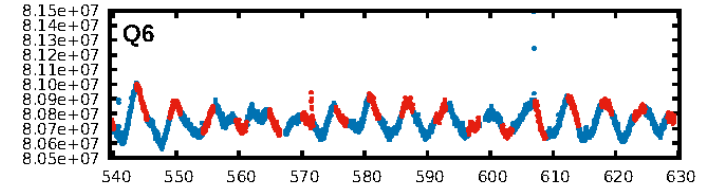
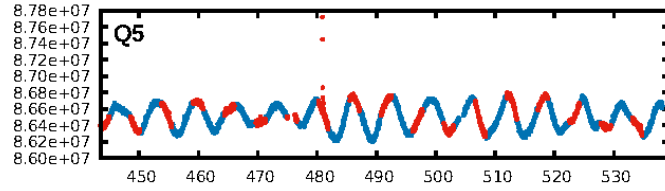
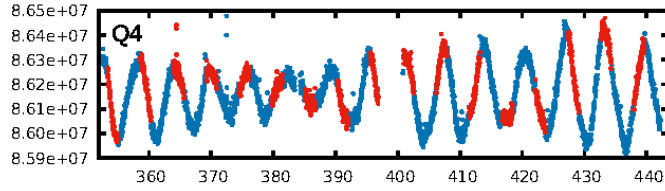
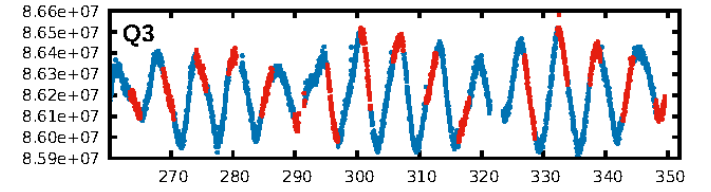
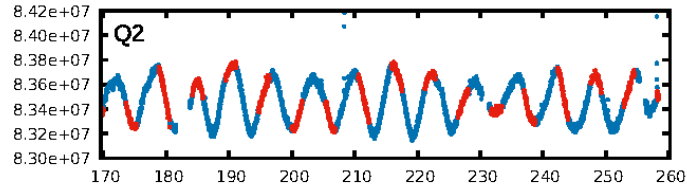
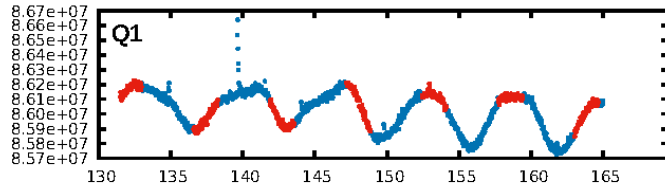
Ephemeris Match Information For 009040983-01

No Significant Match Found

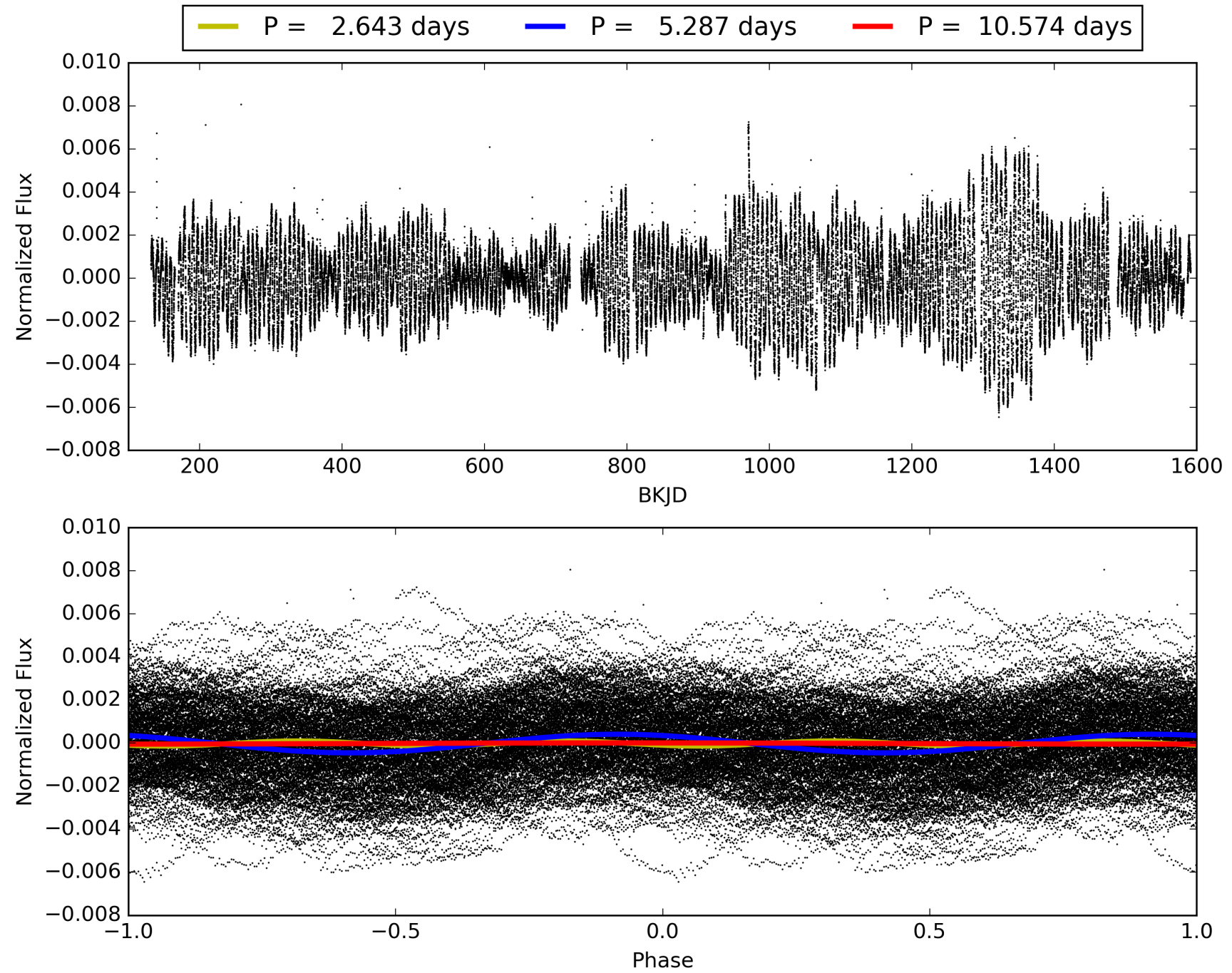
KIC: 9040983 Candidate: 1 of 2 Period: 5.287 d



TCE 009040983-01, PDC Light Curves

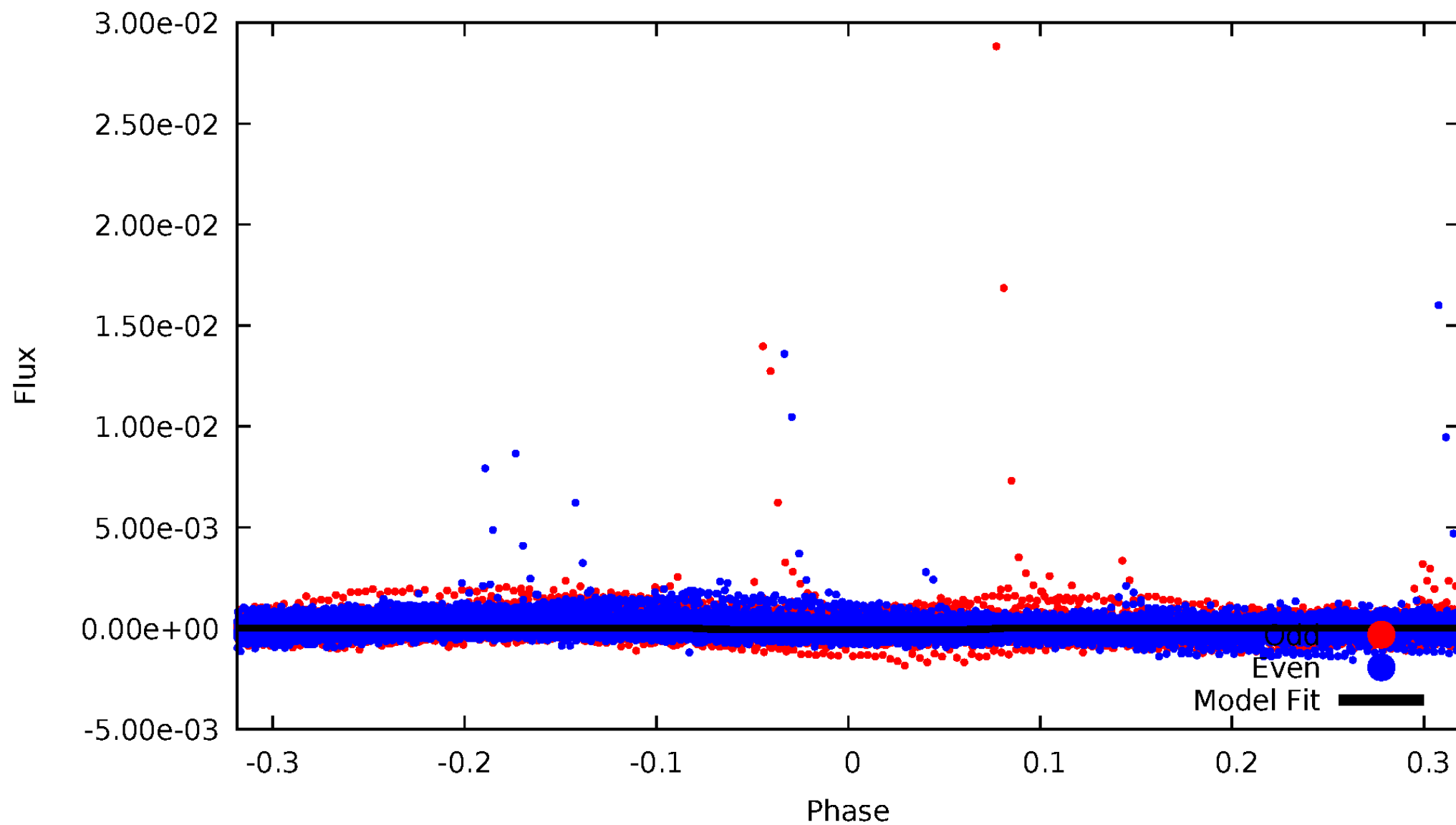


TCE 009040983-01



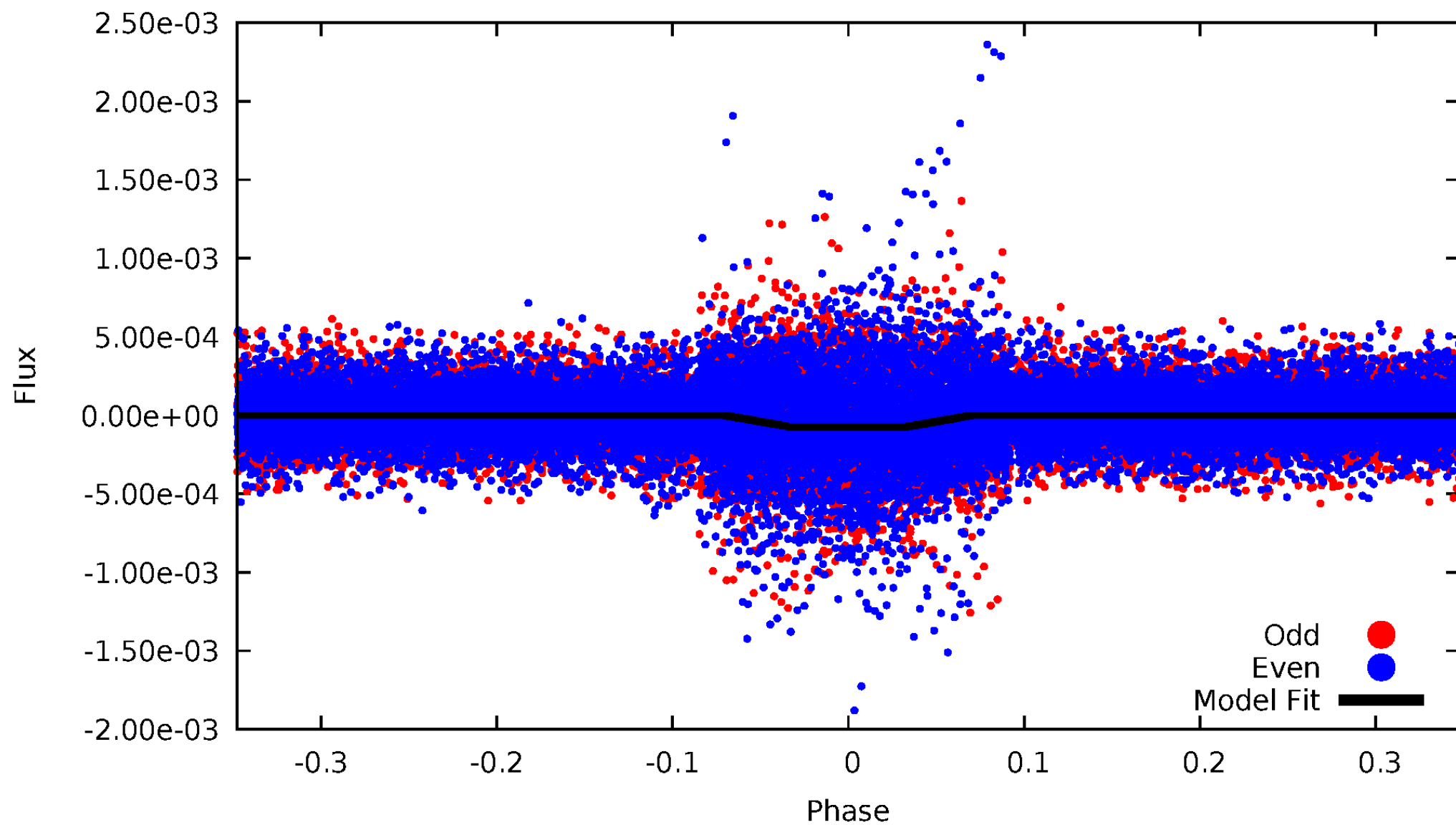
DV Odd/Even

TCE 009040983-01



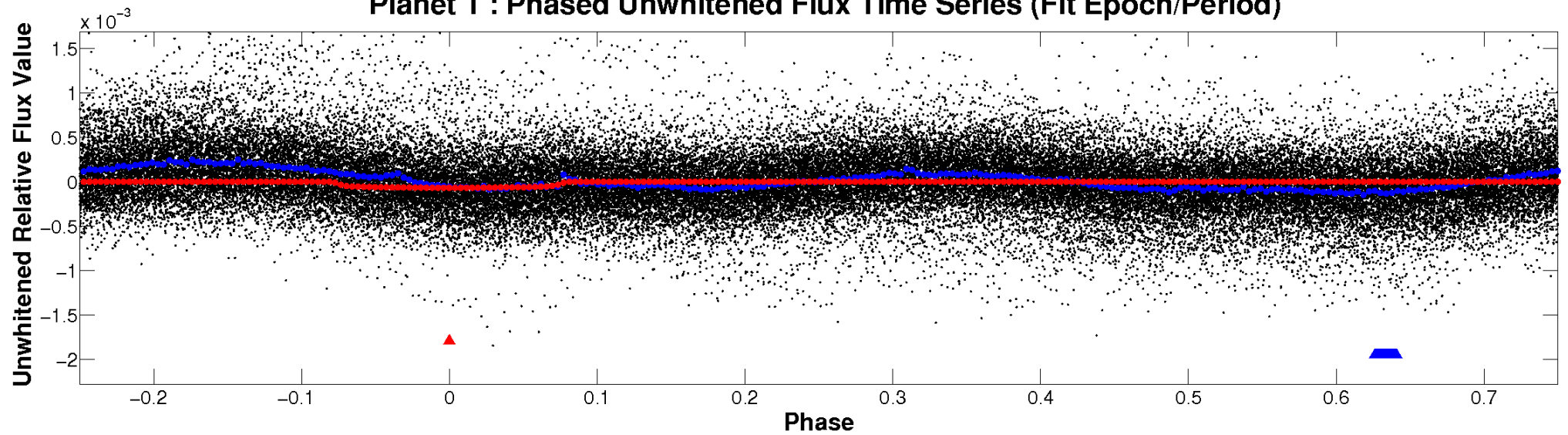
ALT Odd/Even

TCE 009040983-01

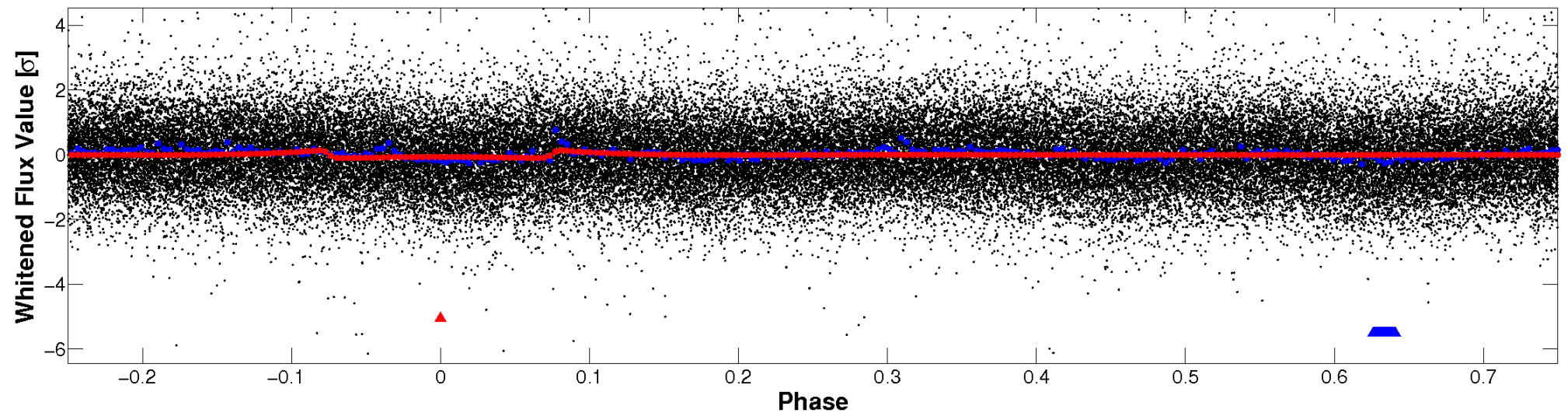


Non-Whitened Vs. Whitened Light Curve

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

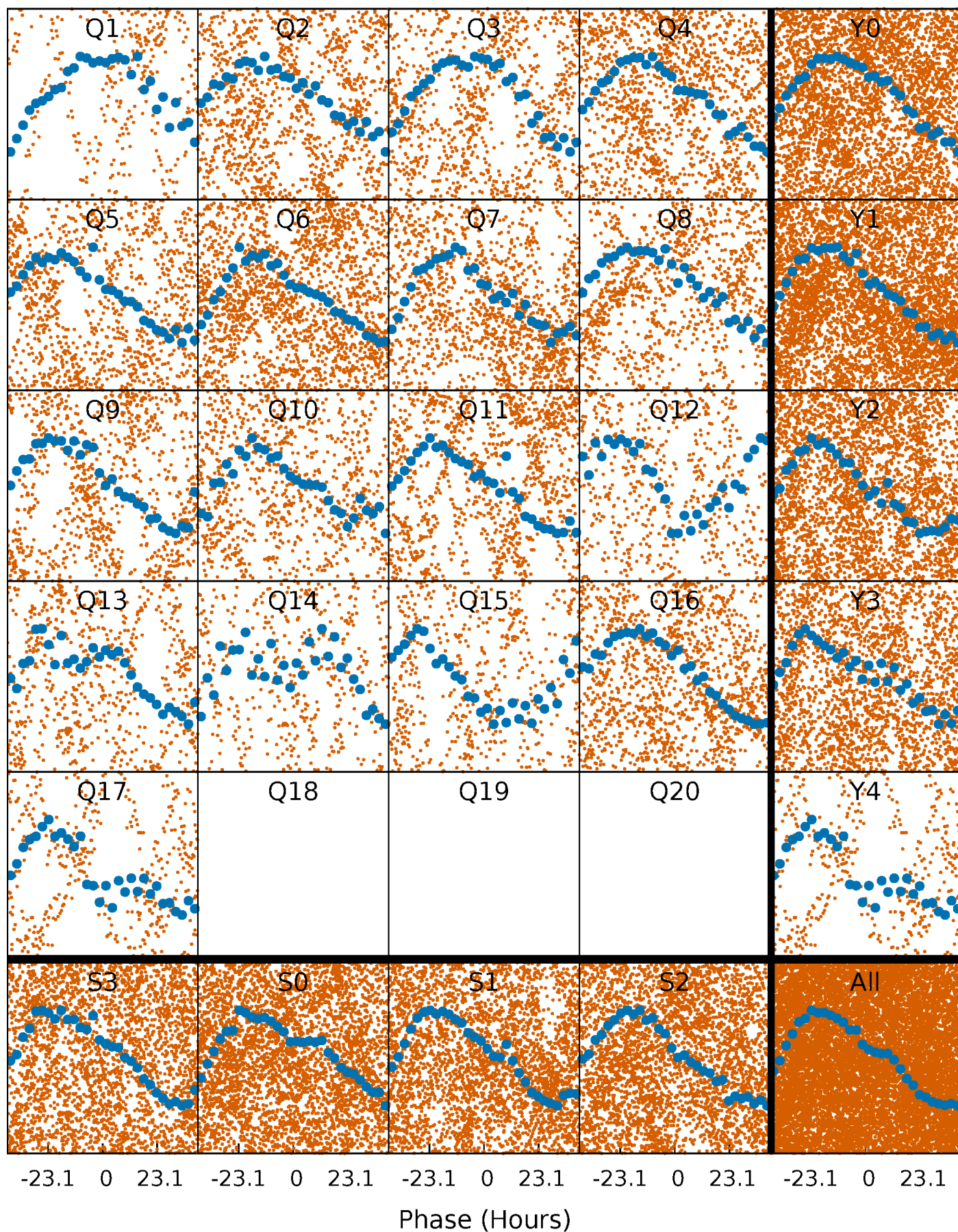


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



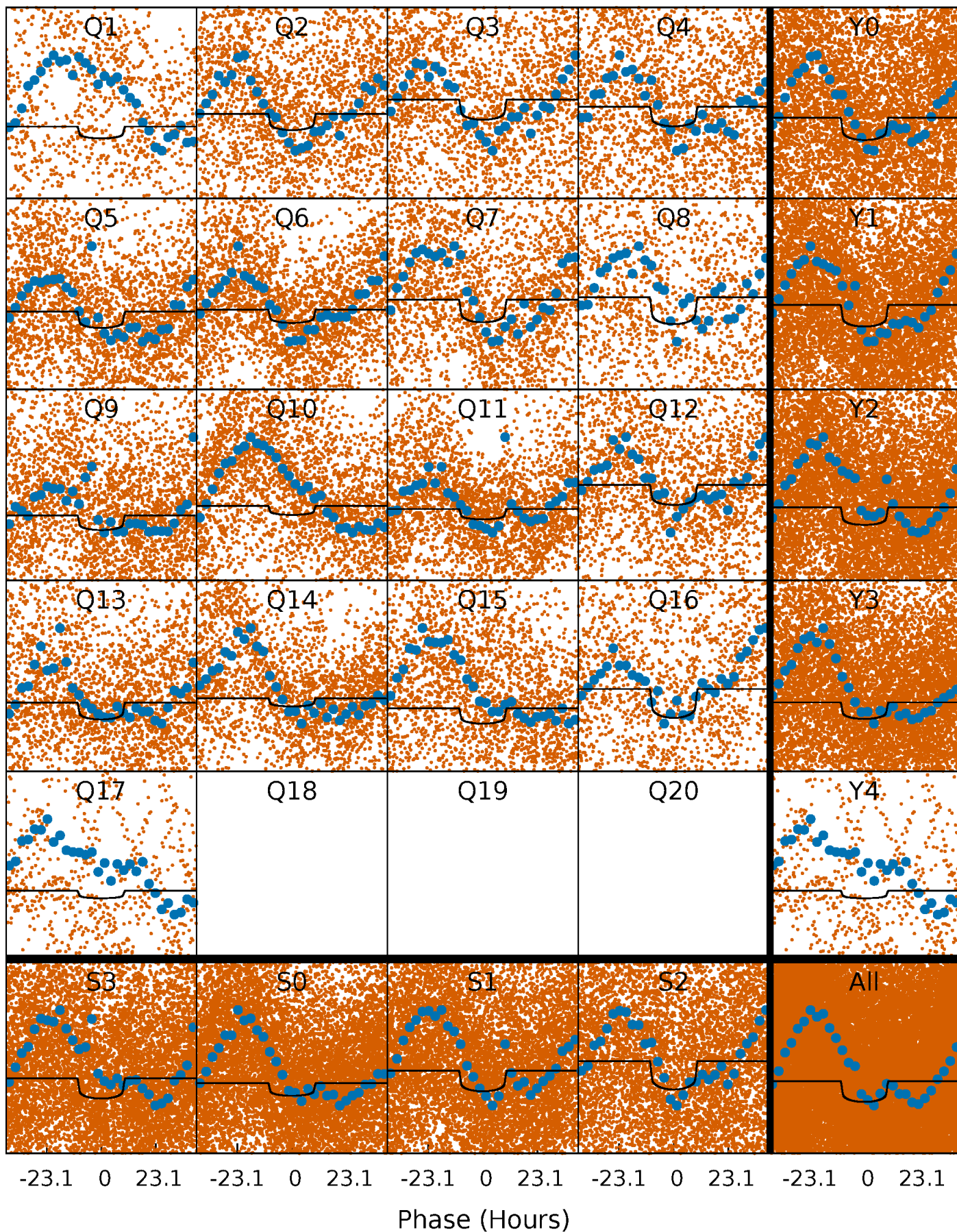
PDC Quarter-Phased Transit Curves

TCE 009040983-01 P= 5.286762 Days $T_0=132.134683$ (BKJD)



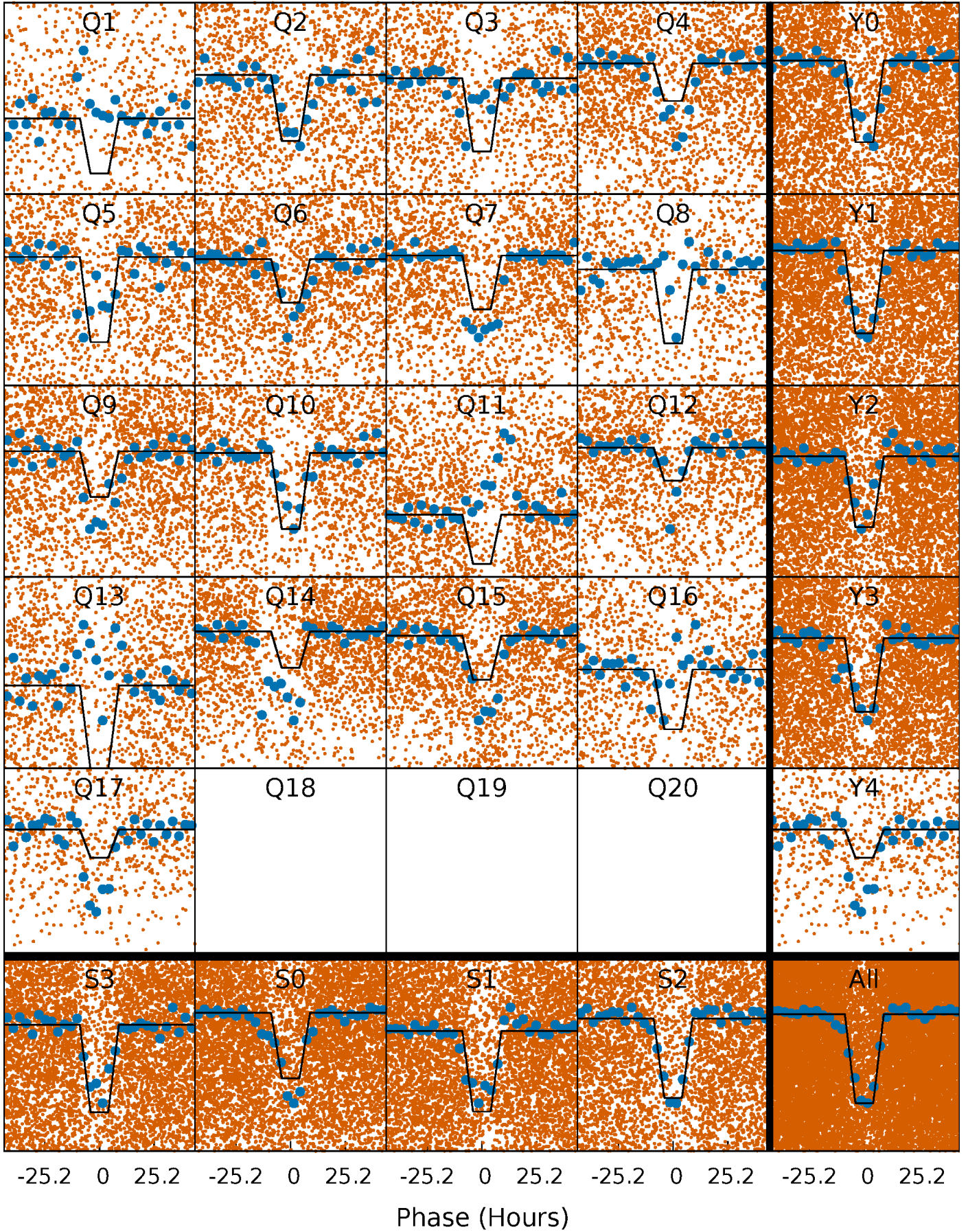
DV Quarter-Phased Transit Curves

TCE 009040983-01 P= 5.286762 Days $T_0=132.134683$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

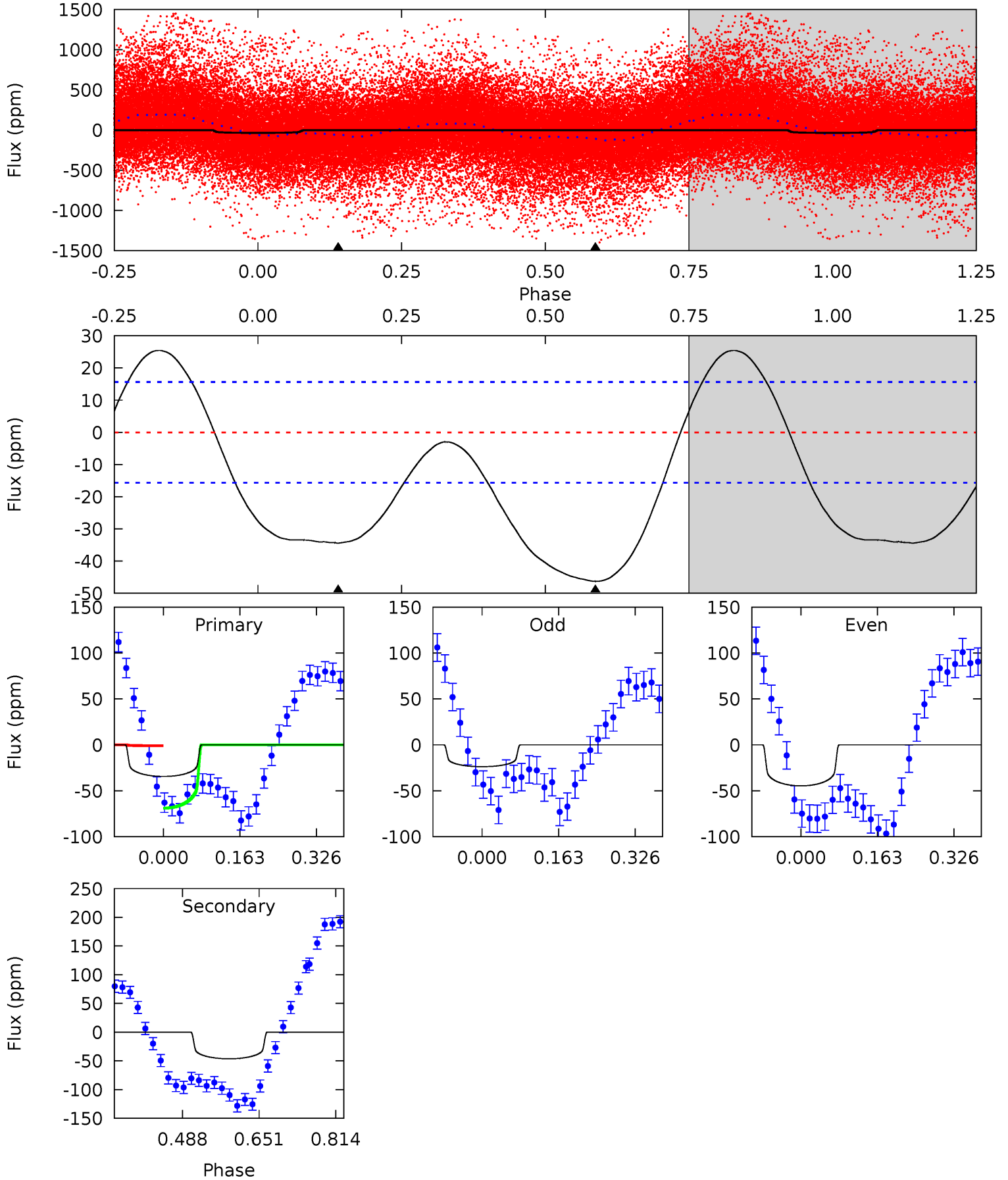
TCE 009040983-01 P= 5.286675 Days $T_0=132.145393$ (BKJD)



DV Model-Shift Uniqueness Test

009040983-01, P = 5.286762 Days, E = 126.847921 Days

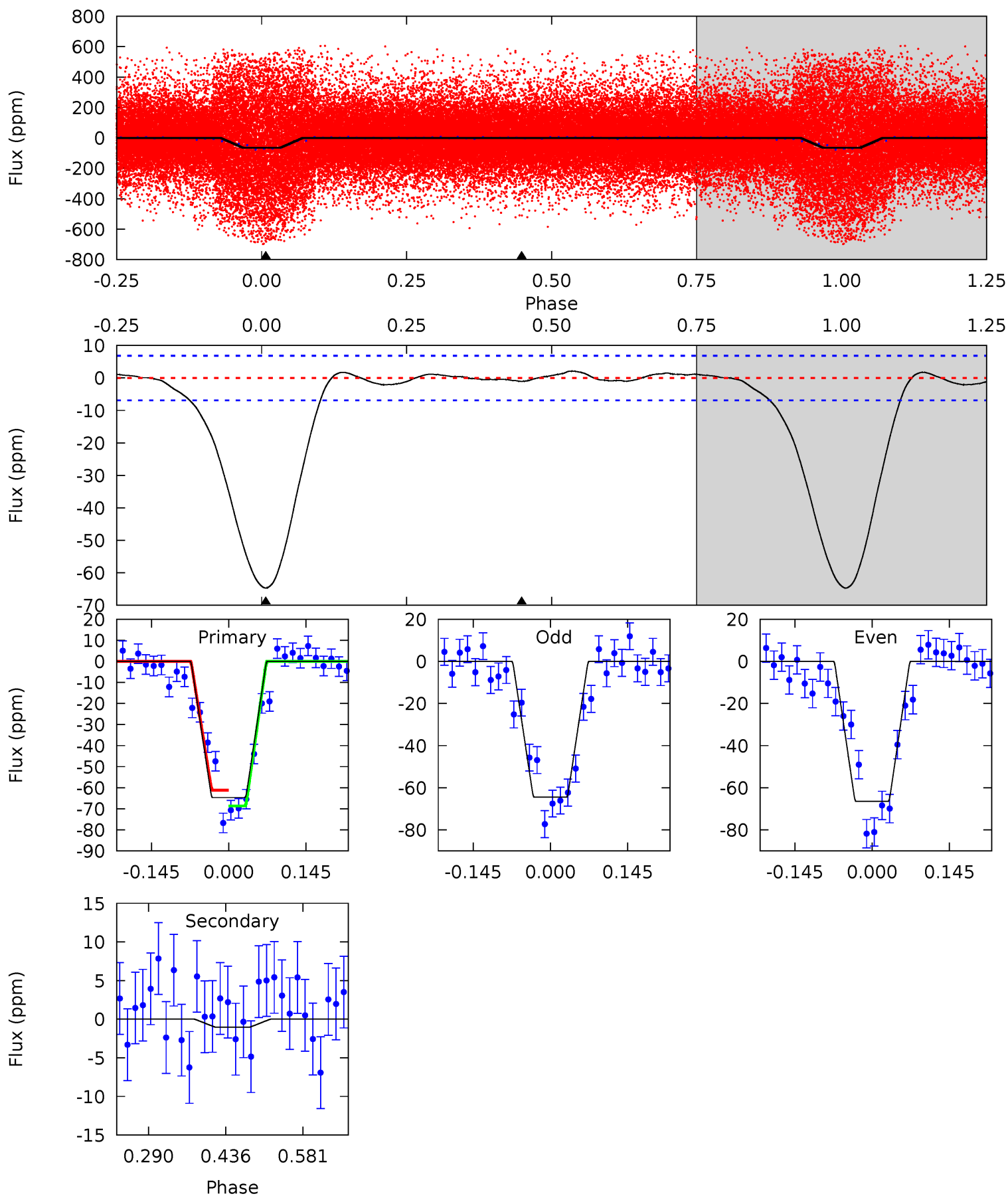
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.80	13.2	0	0	4.46	1.40	4.33	9.80	9.80	13.2	13.2	2.99	0.42	0.35	10.2



Alt Model-Shift Uniqueness Test

009040983-01, P = 5.286675 Days, E = 126.858718 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
42.2	0.69	0	0	4.49	1.46	0.86	42.2	42.2	0.69	0.69	0.64	1.17	0.03	2.45



Stellar Parameters For KIC 009040983

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6139^{+165}_{-184}	$4.410^{+0.101}_{-0.203}$	$-0.380^{+0.300}_{-0.300}$	$1.006^{+0.282}_{-0.152}$	$0.949^{+0.129}_{-0.105}$	$1.311^{+0.598}_{-0.656}$
	+3%/-3%	+2%/-5%	+79%/-79%	+28%/-15%	+14%/-11%	+46%/-50%
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 009040983-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-46 ± 4	$1.00^{+0.16}_{-0.12}$	1592^{+104}_{-91}	5383^{+284}_{-237}	86^{+26}_{-22}
Alt.	-1 ± 2	$0.98^{+0.17}_{-0.12}$	1595^{+118}_{-89}	2775^{+418}_{-5401}	$1.892^{+3.211}_{-2.685}$

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

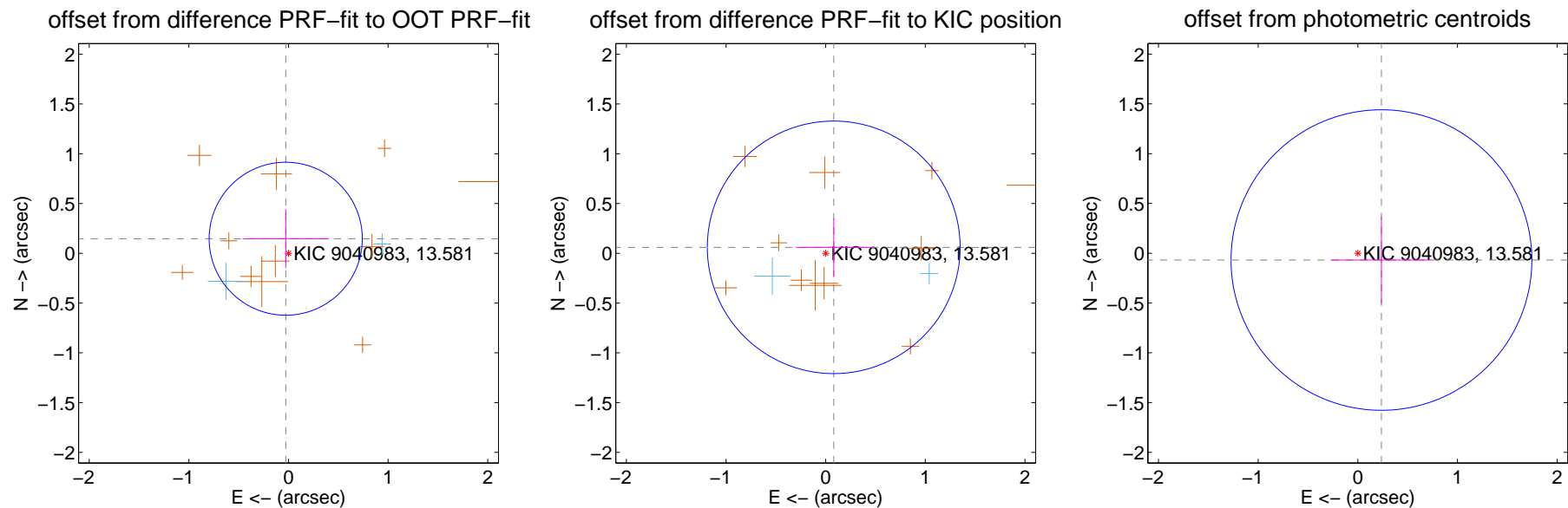
DV Centroid Data

Supplemental centroid analysis for 009040983-01. Kepler magnitude: 13.58. Transit SNR 10.33

There are 3 quarters with good PRF difference image offsets

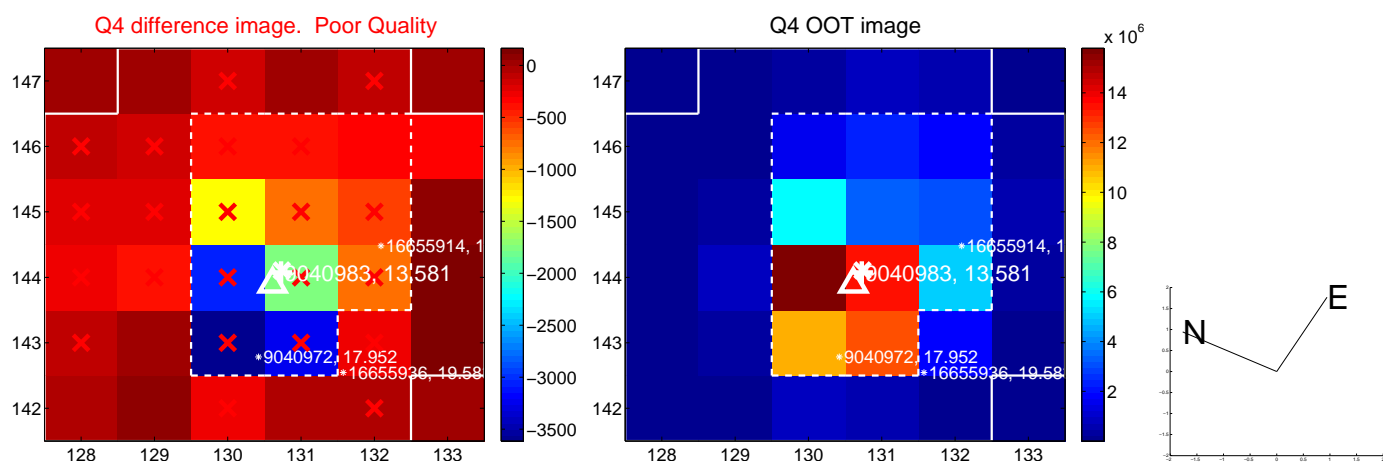
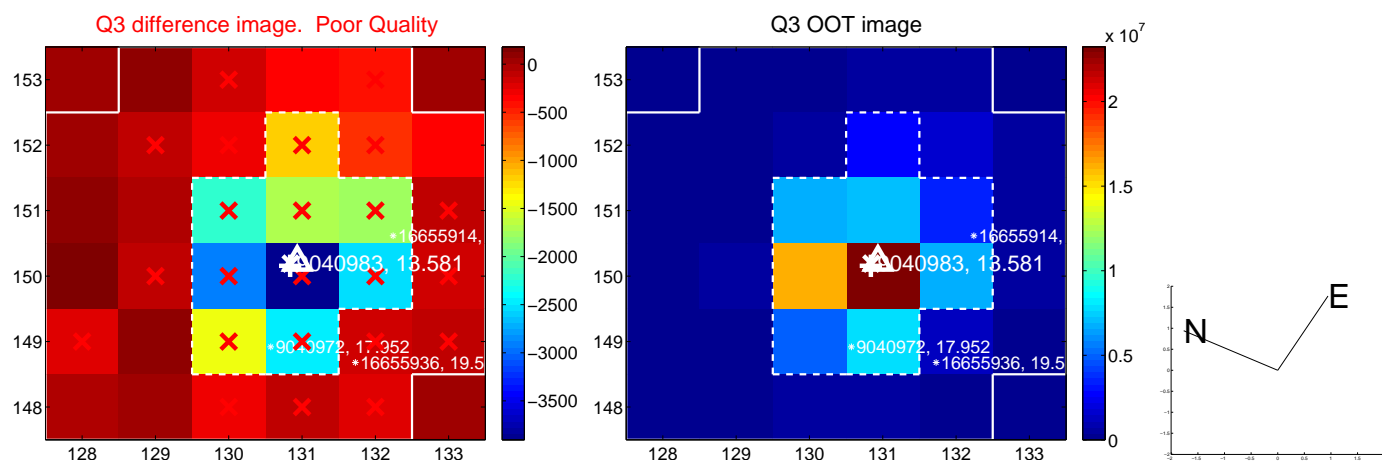
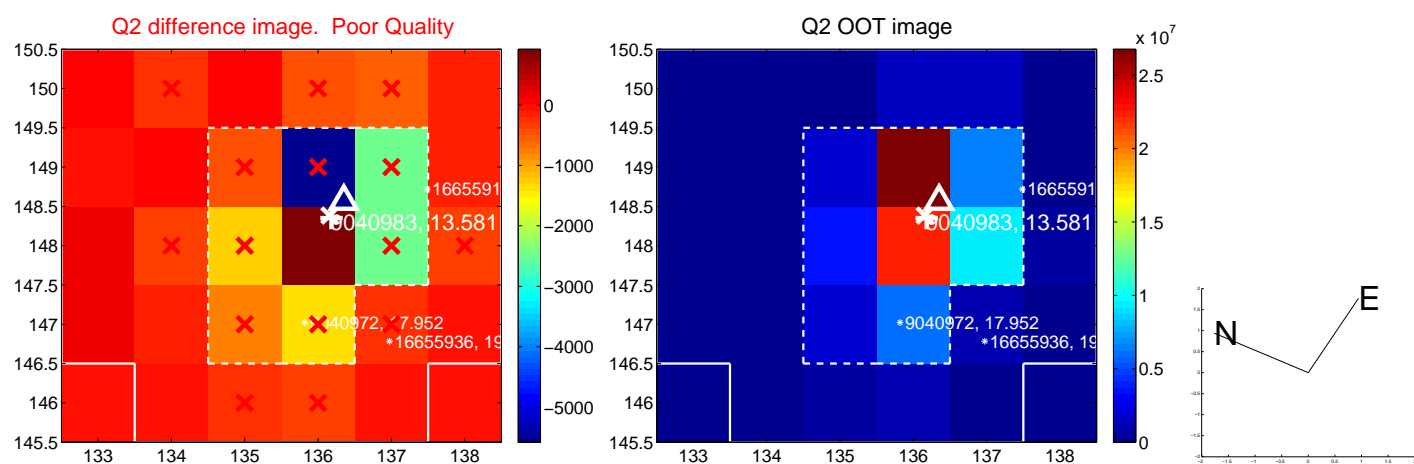
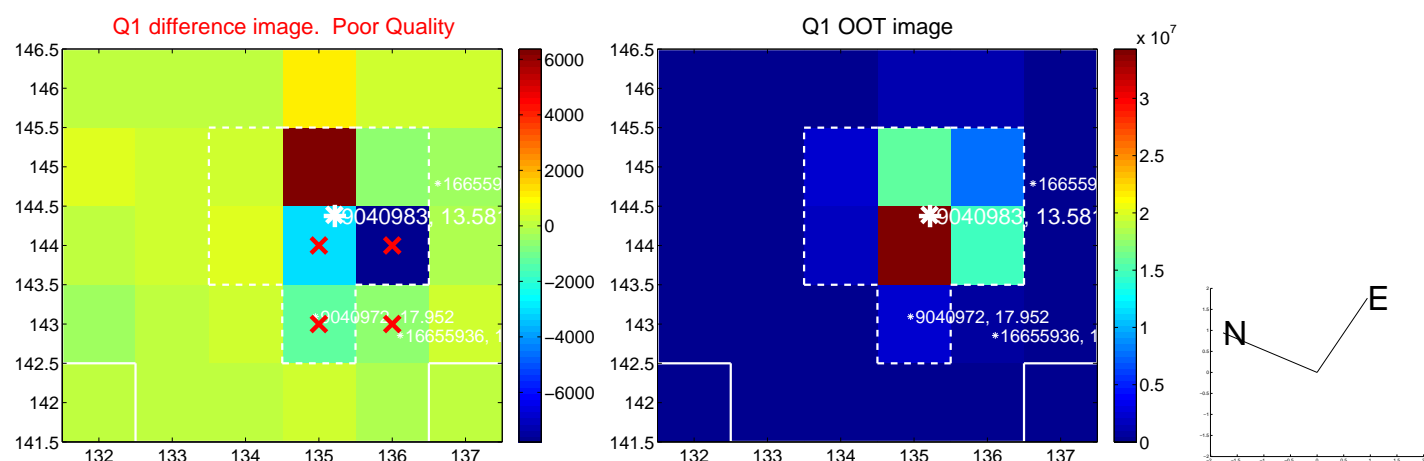
The direct PRF centroid is offset from the target star catalog position by about 0.09 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.149 ± 0.256	0.58	0.028 ± 0.433	0.146 ± 0.294
PRF-fit source offset from KIC position	0.101 ± 0.423	0.24	-0.081 ± 0.381	0.060 ± 0.292
photometric centroid source offset	0.25 ± 0.50	0.49	-0.24 ± 0.51	-0.07 ± 0.44

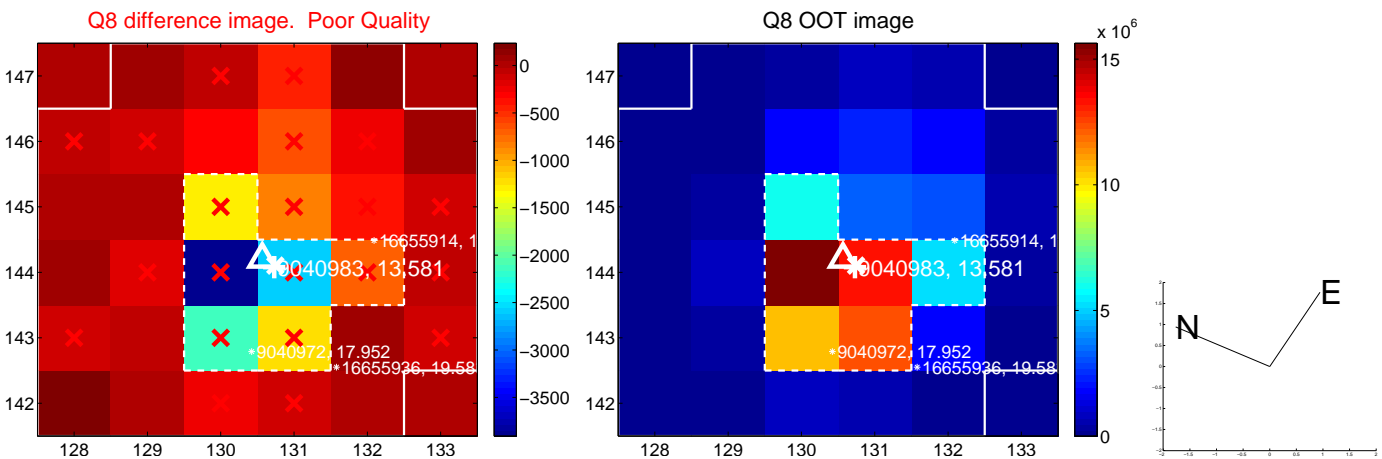
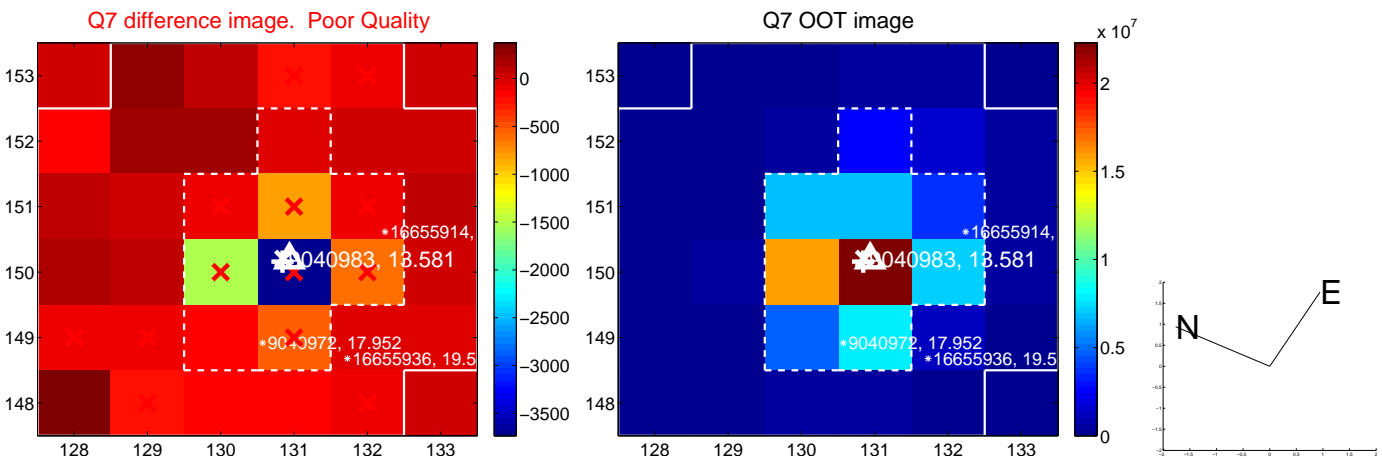
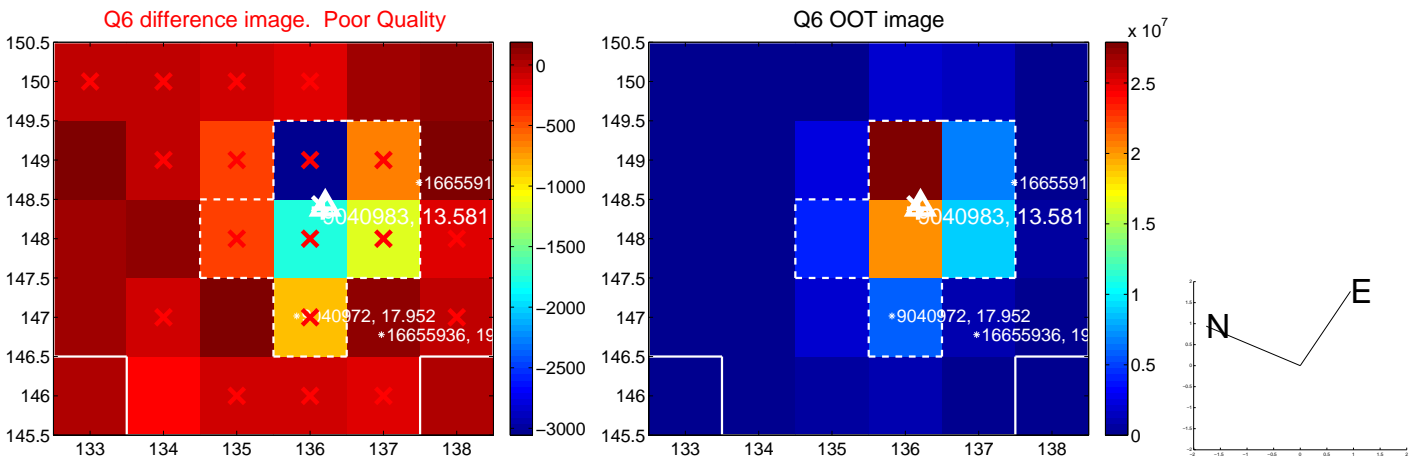
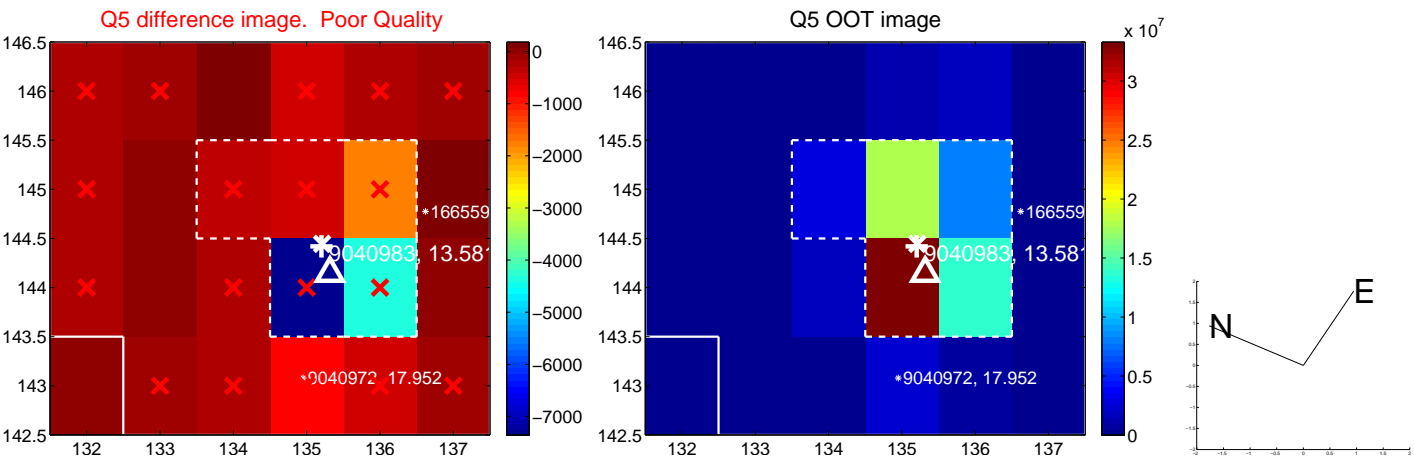


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

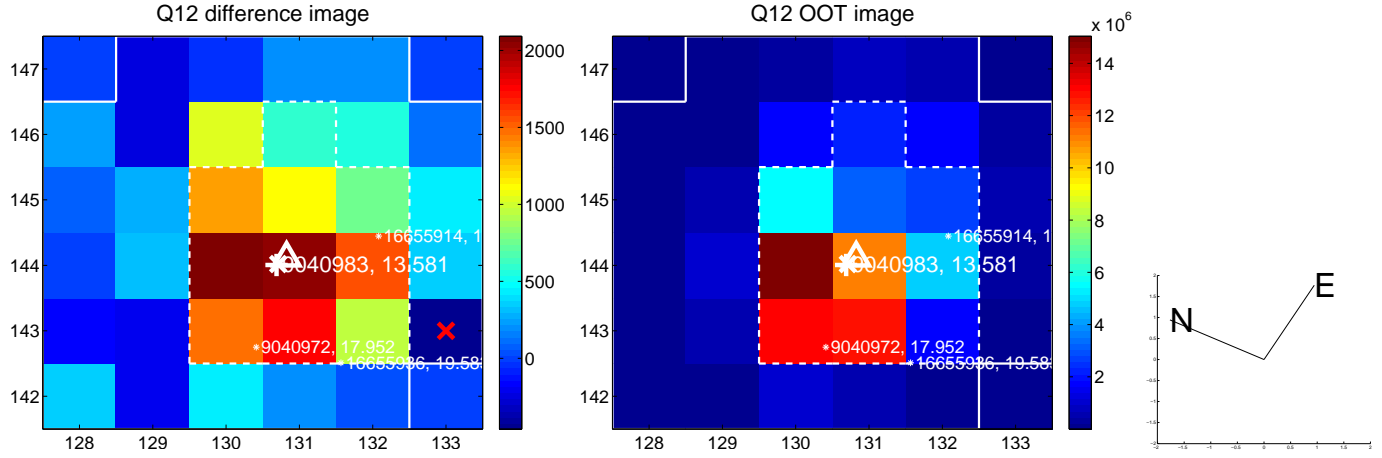
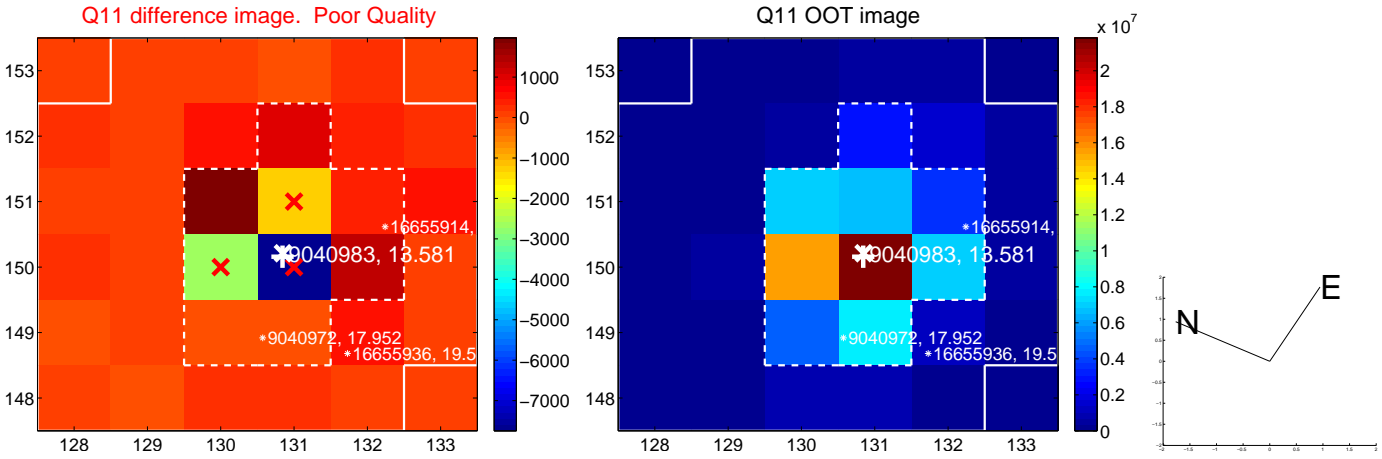
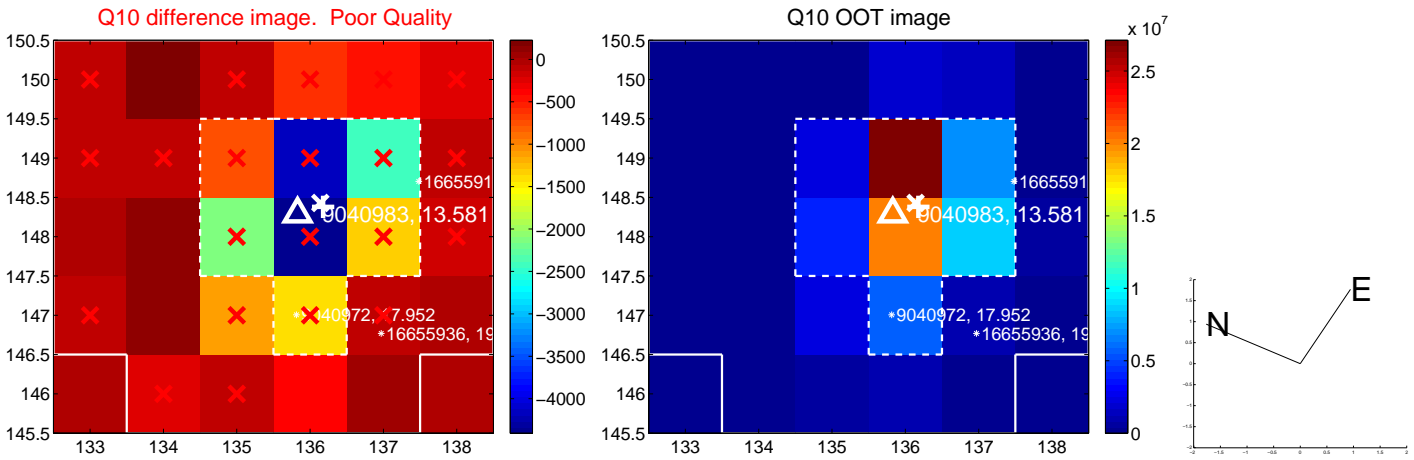
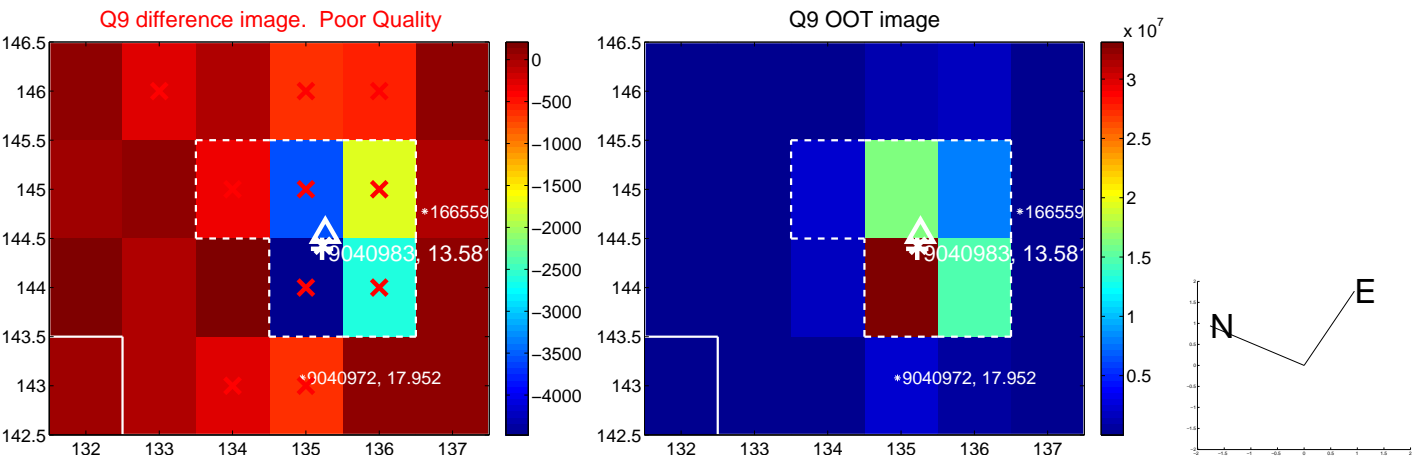
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



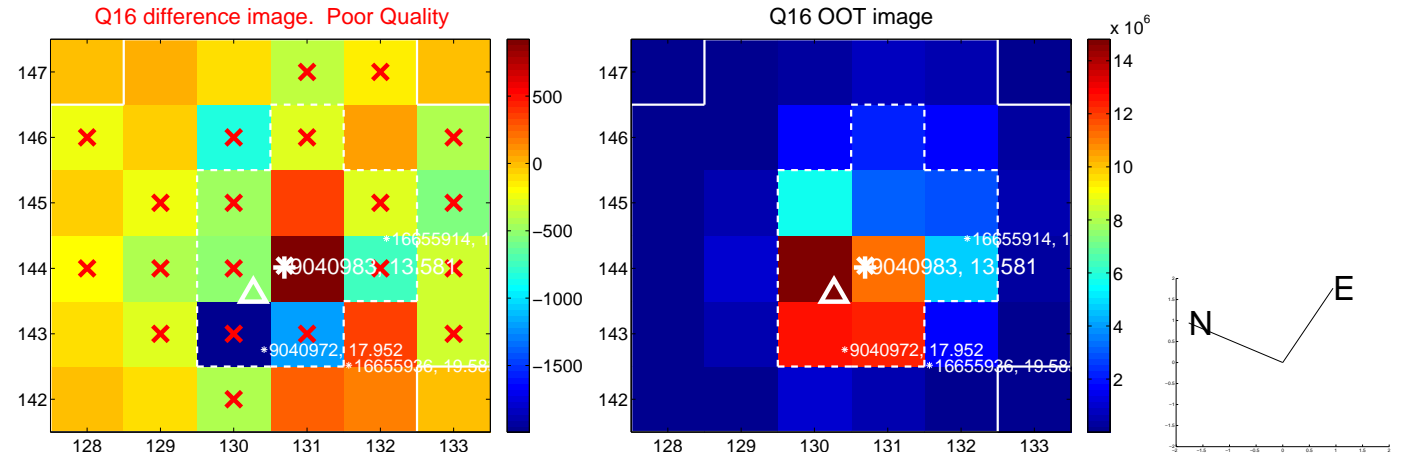
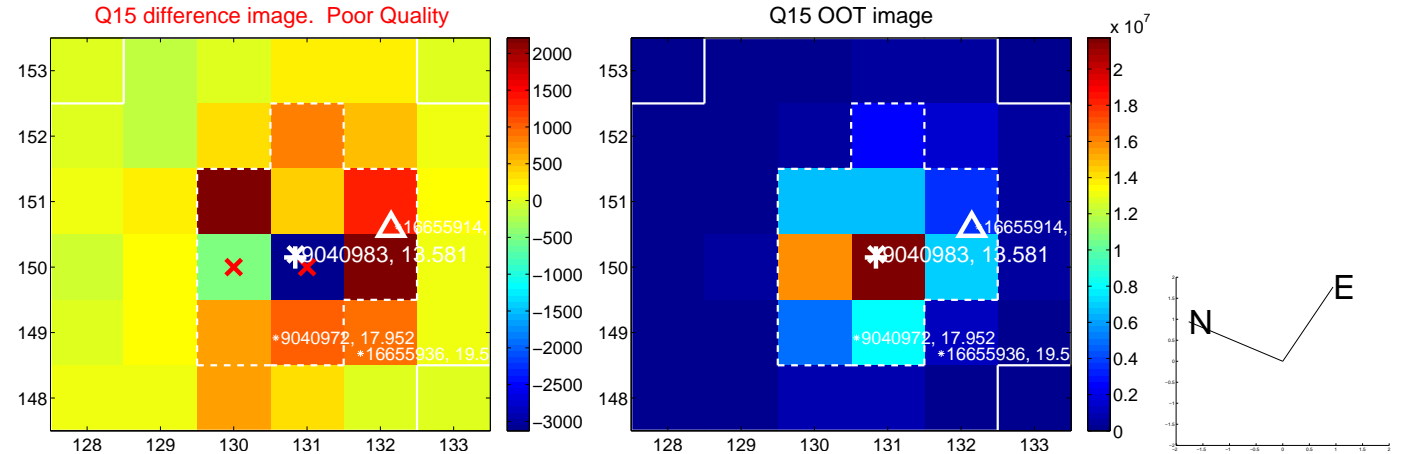
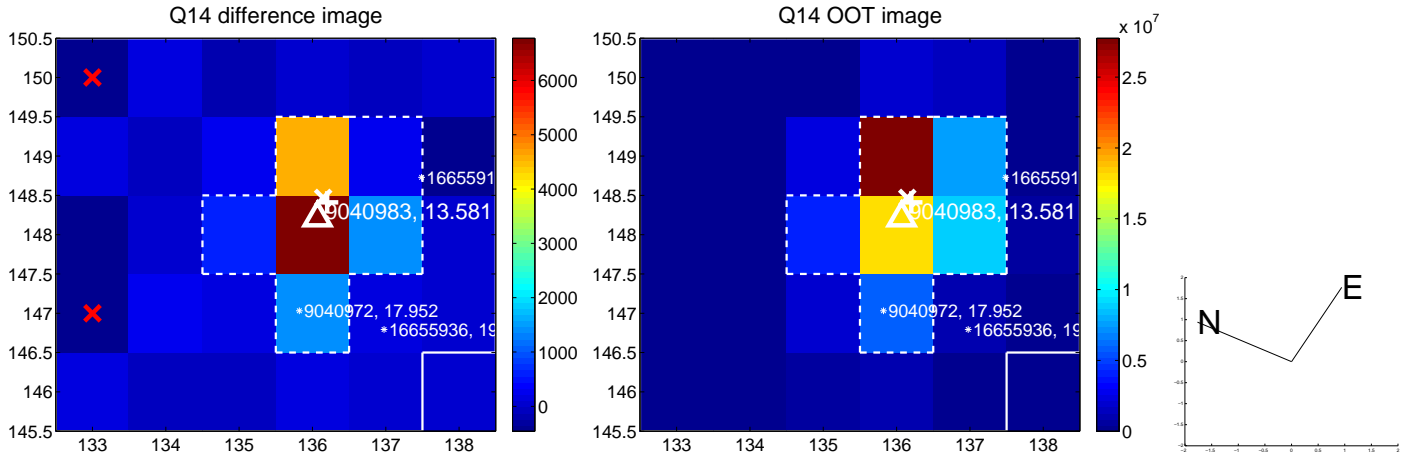
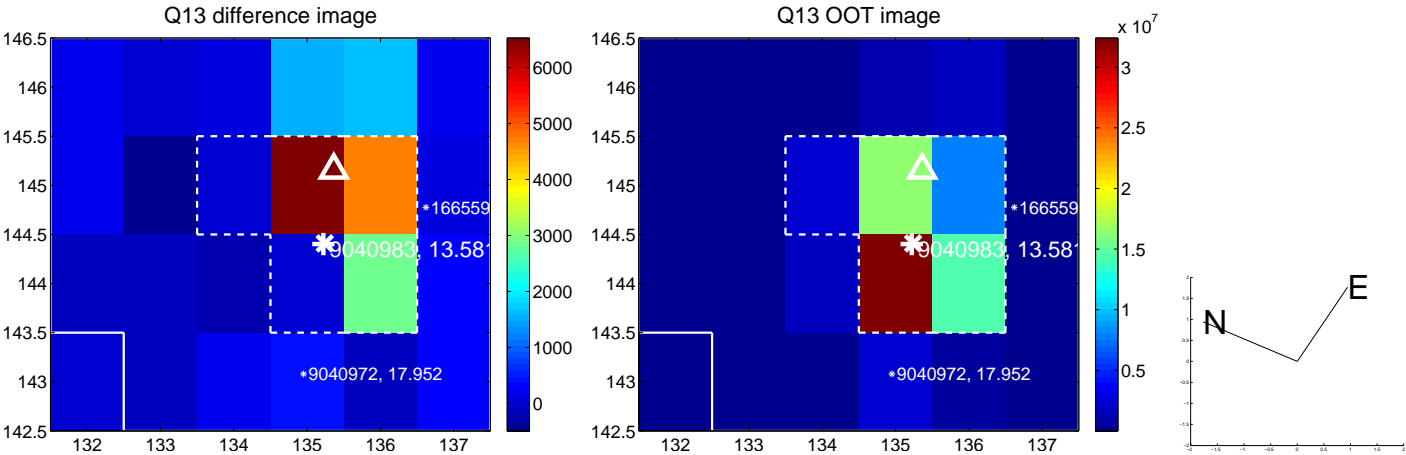
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



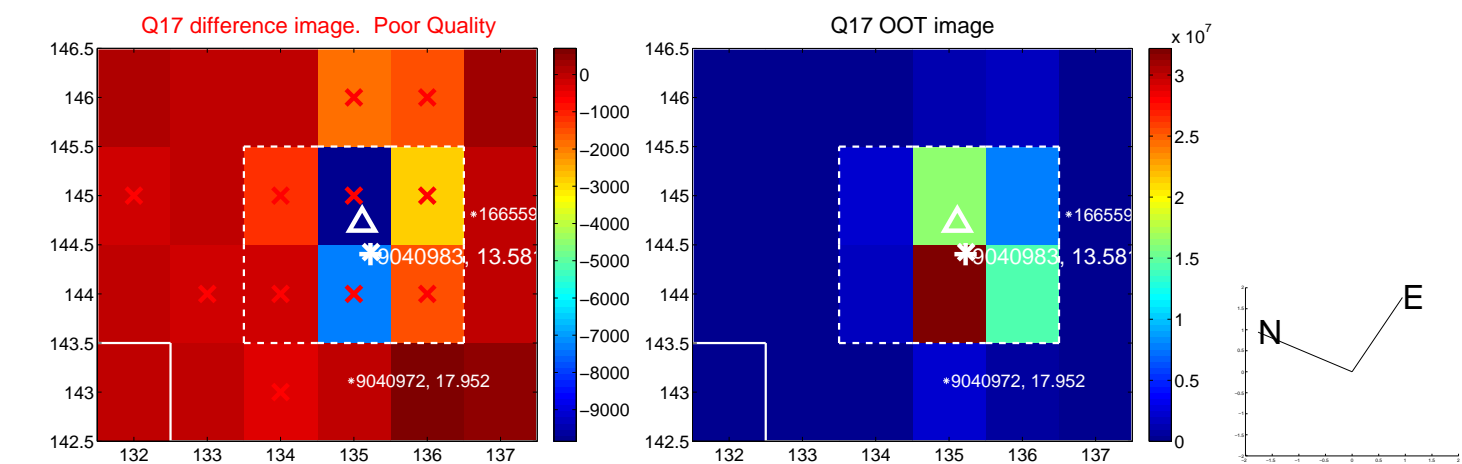
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



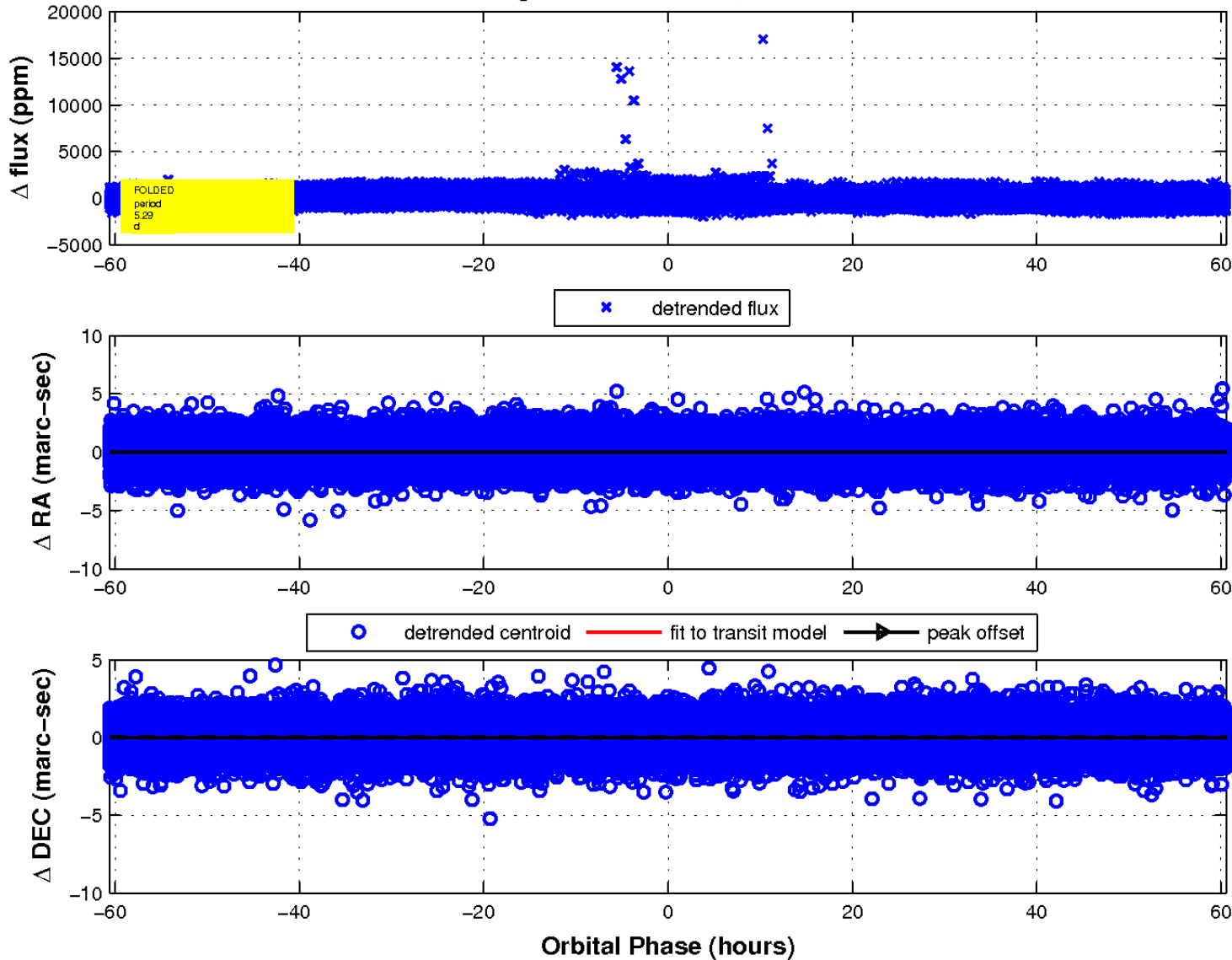
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



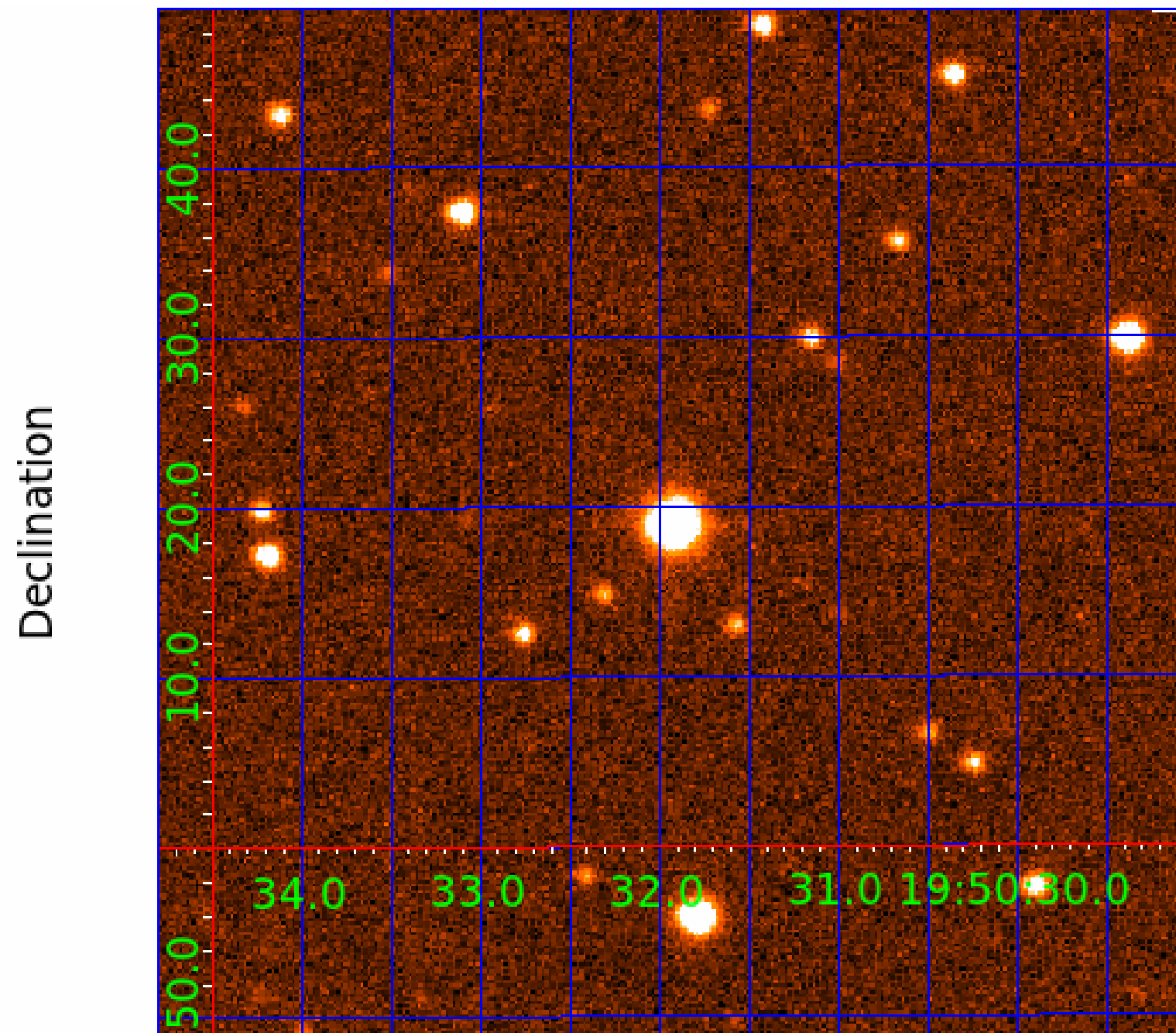
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



fluxWeightedCentroids, Planet 1 of 2



UKIRT Image



KIC 009040983

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})
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Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
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009040983-02	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV—SAME_NTL_PERIOD

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

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

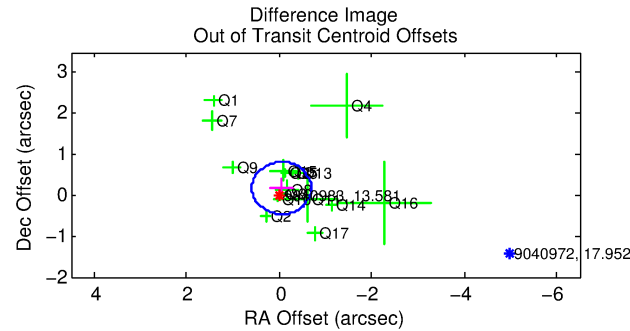
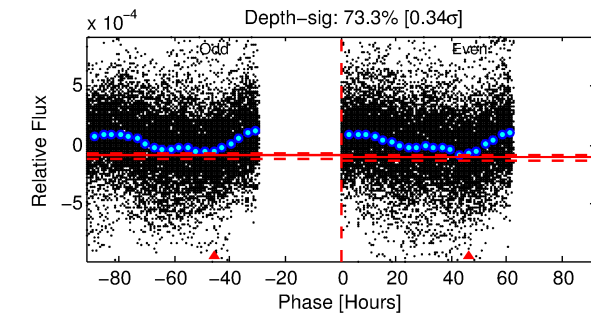
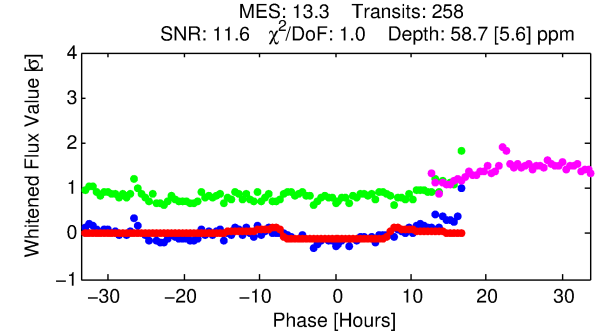
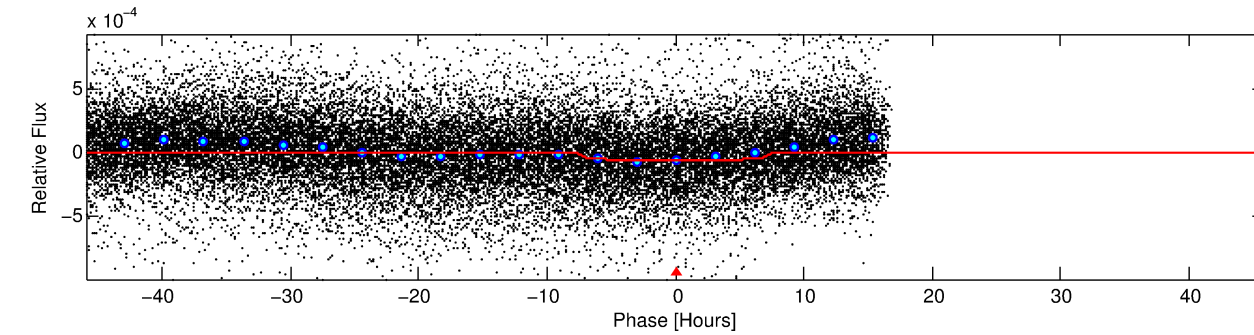
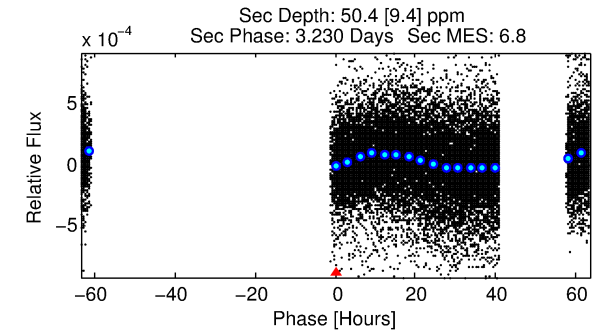
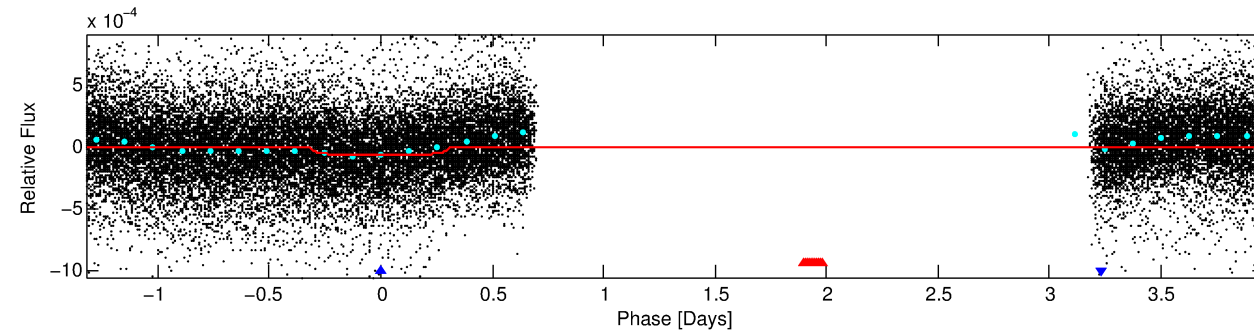
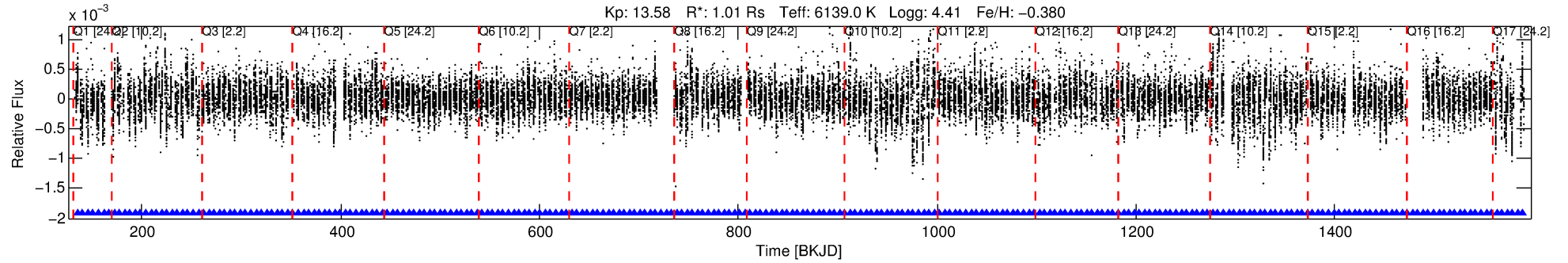
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009040983-02

No Significant Match Found

DV One-Page Summary

KIC: 9040983 Candidate: 2 of 2 Period: 5.287 d



DV Fit Results:

Period = 5.28705 [0.00007] d
Epoch = 135.4448 [0.0098] BKJD
Rp/R* = 0.0084 [0.0007]
a/R* = 1.42 [0.24]
b = 0.93 [0.05]
Seff = 377.92 [144.60]
Teq = 1124 [108] K
Rp = 0.93 [0.27] Re
a = 0.0584 [0.0142] AU
Ag = 109.97 [48.22] [2.26σ]
Teffp = 5629 [384] K [11.28σ]

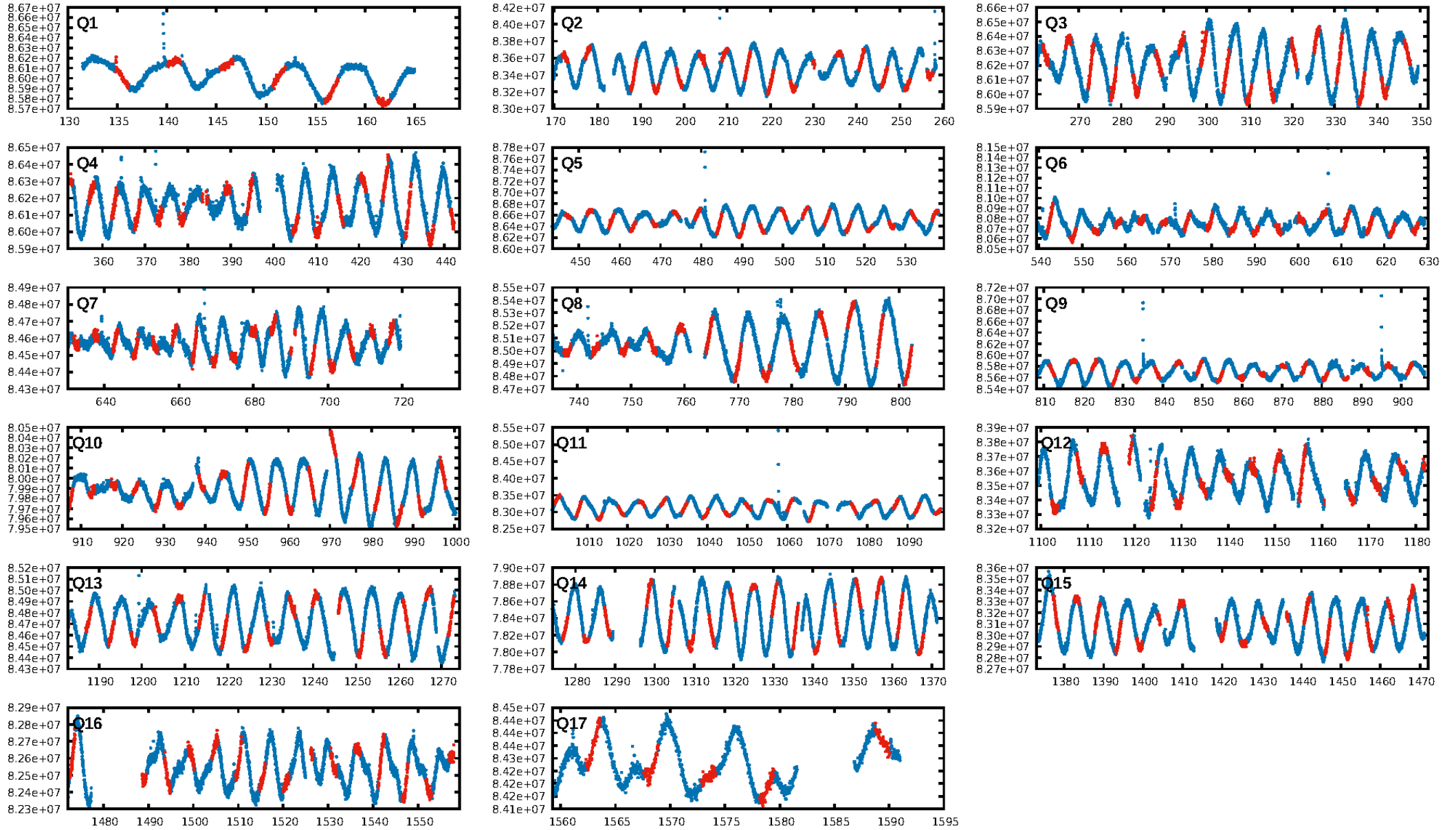
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 1.50e-24
RollingBand-fgt: 1.00 [247/247]
GhostDiagnostic-chr: -0.4021
Centroid-sig: 63.1%
Centroid-so: 0.176 arcsec [0.31σ]
OotOffset-rm: 0.184 arcsec [0.86σ]
KicOffset-rm: 0.182 arcsec [0.82σ]
OotOffset-st: 4/4/3/5 [16]
KicOffset-st: 4/4/3/5 [16]
DiffImageQuality-fgm: 0.81 [13/16]
DiffImageOverlap-fno: 1.00 [17/17]

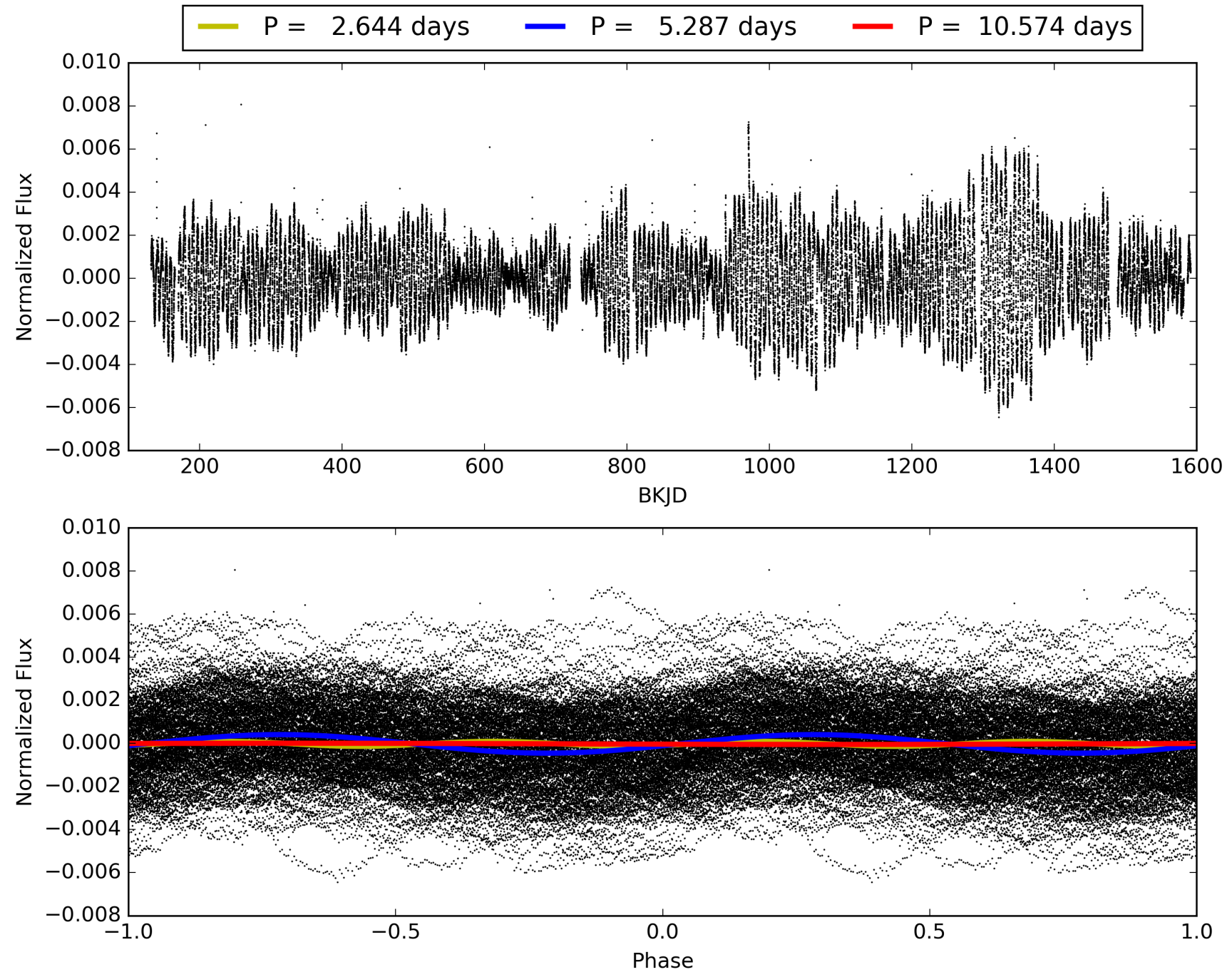
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 02:16:20 Z

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

TCE 009040983-02, PDC Light Curves

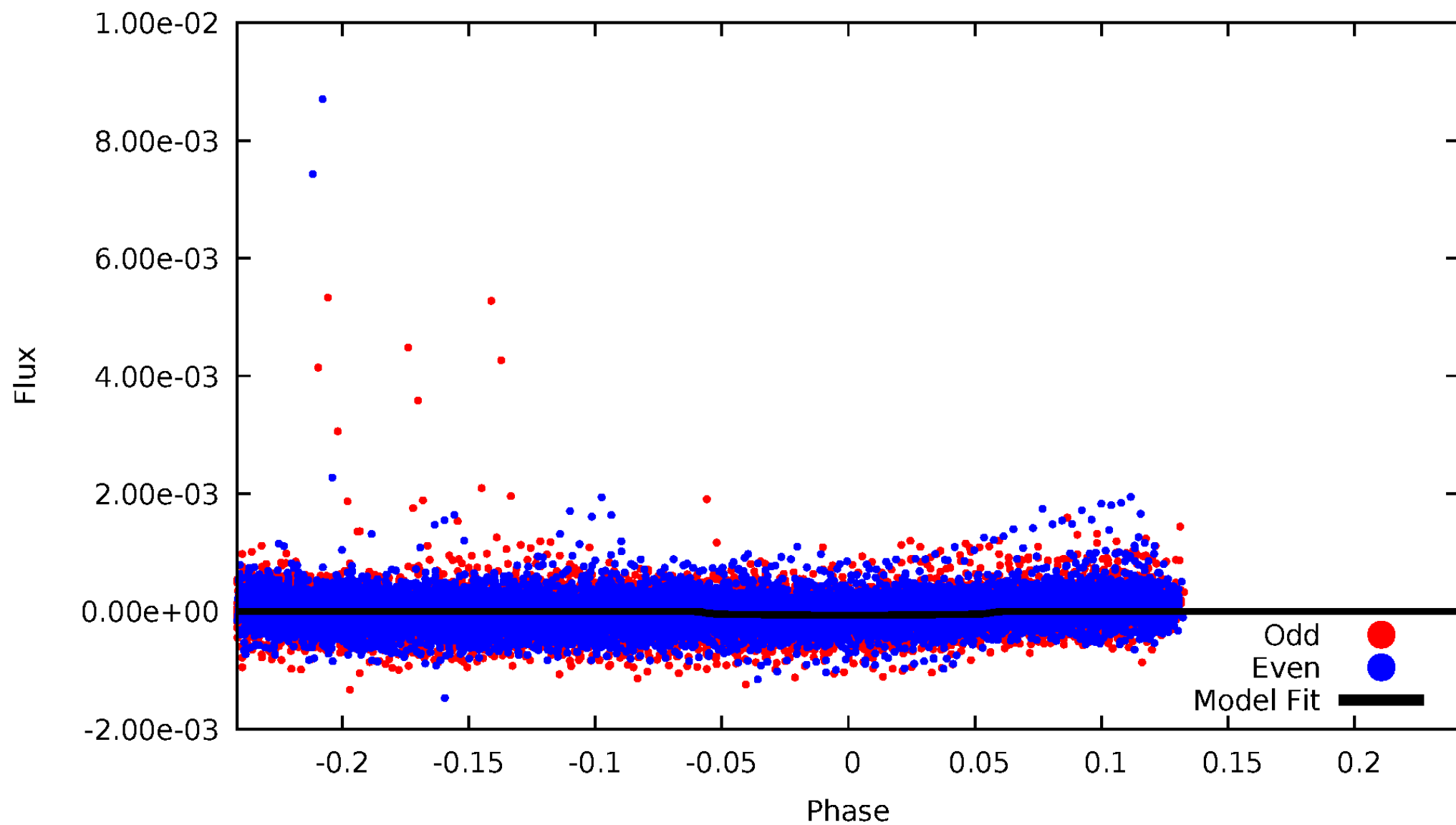


TCE 009040983-02



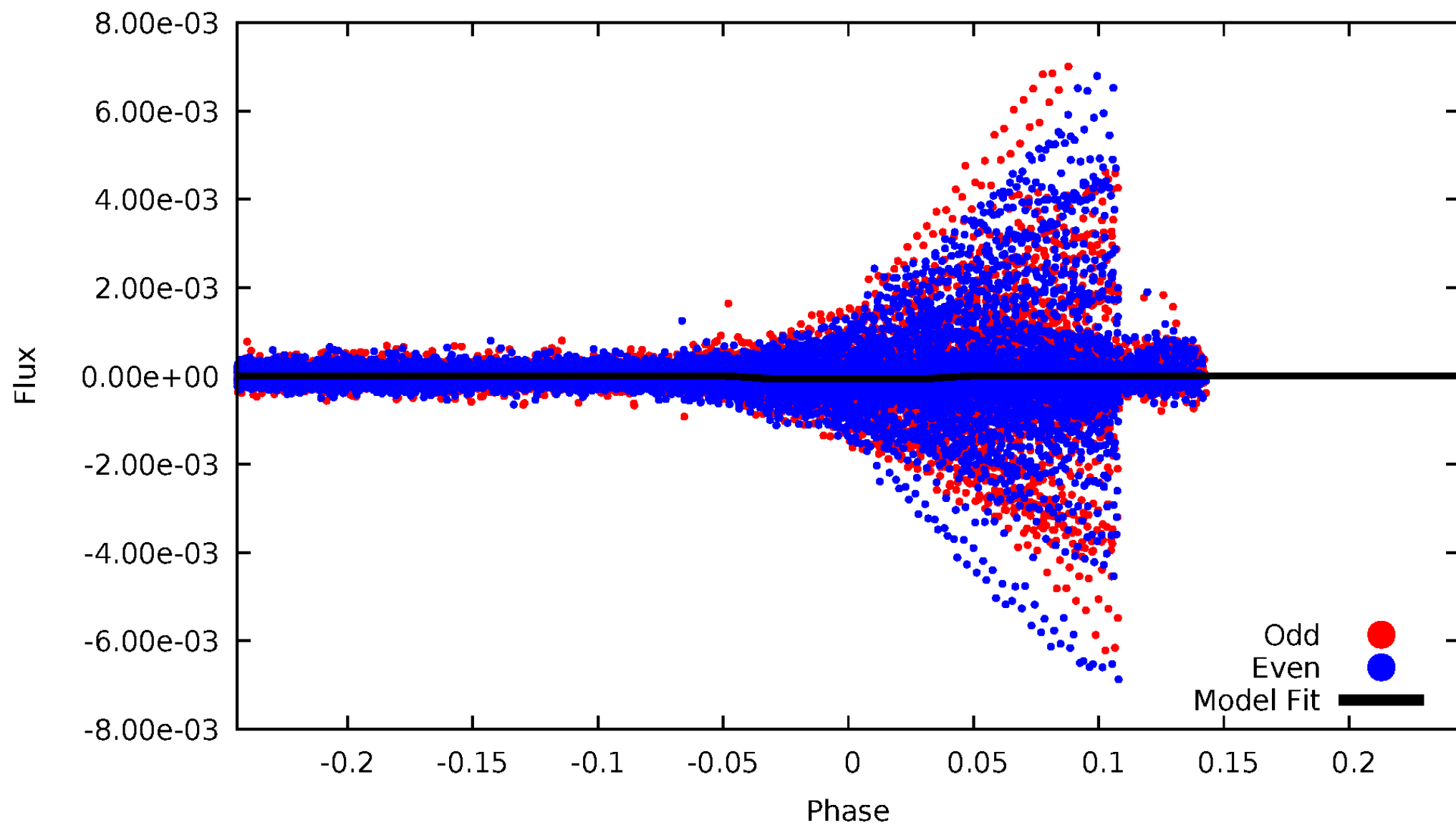
DV Odd/Even

TCE 009040983-02



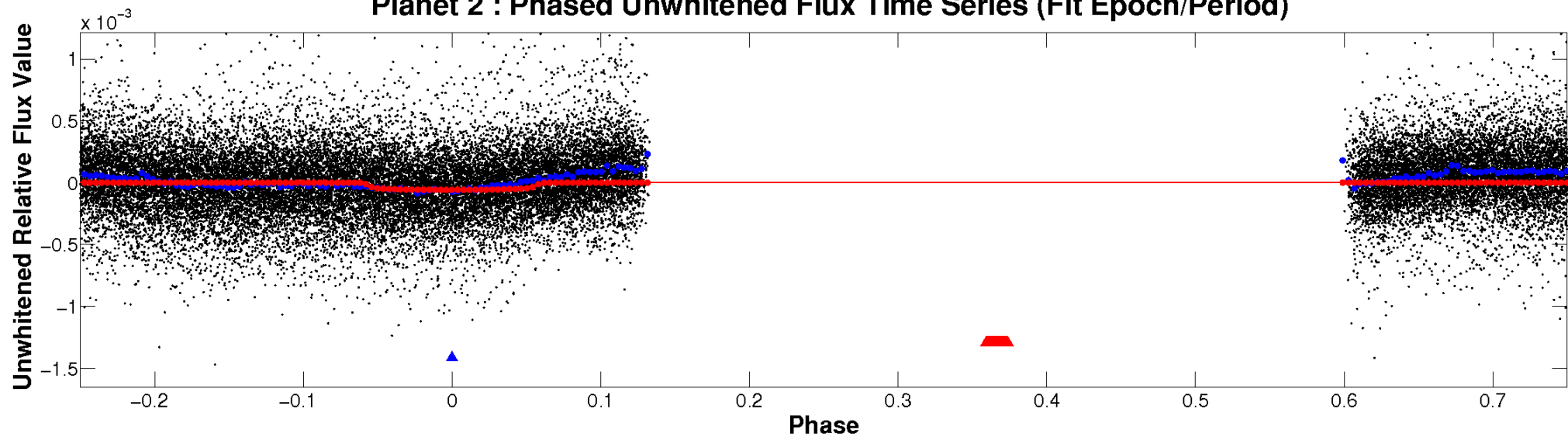
ALT Odd/Even

TCE 009040983-02

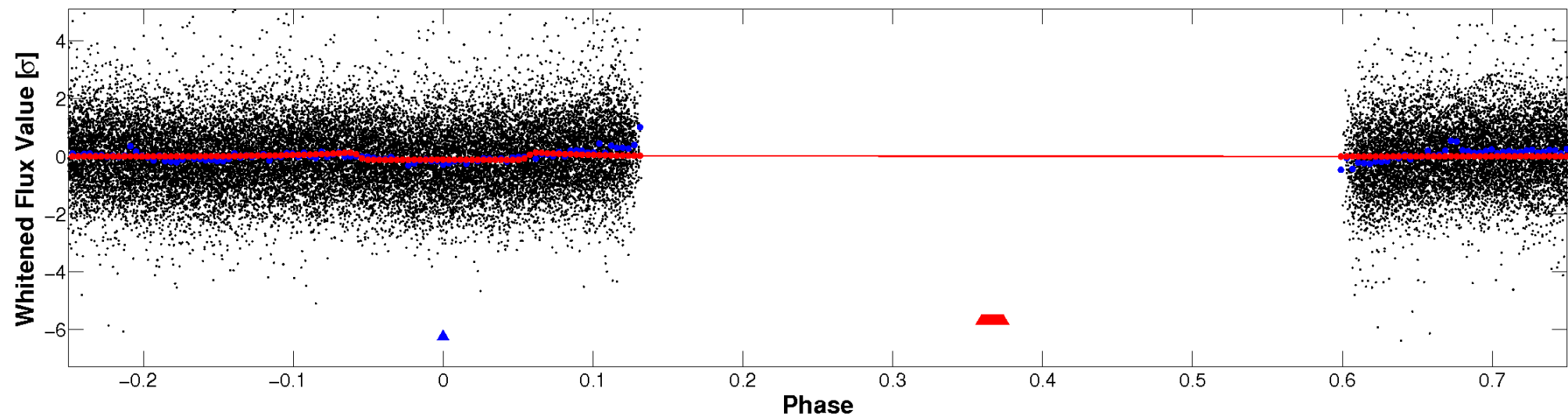


Non-Whitened Vs. Whitened Light Curve

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

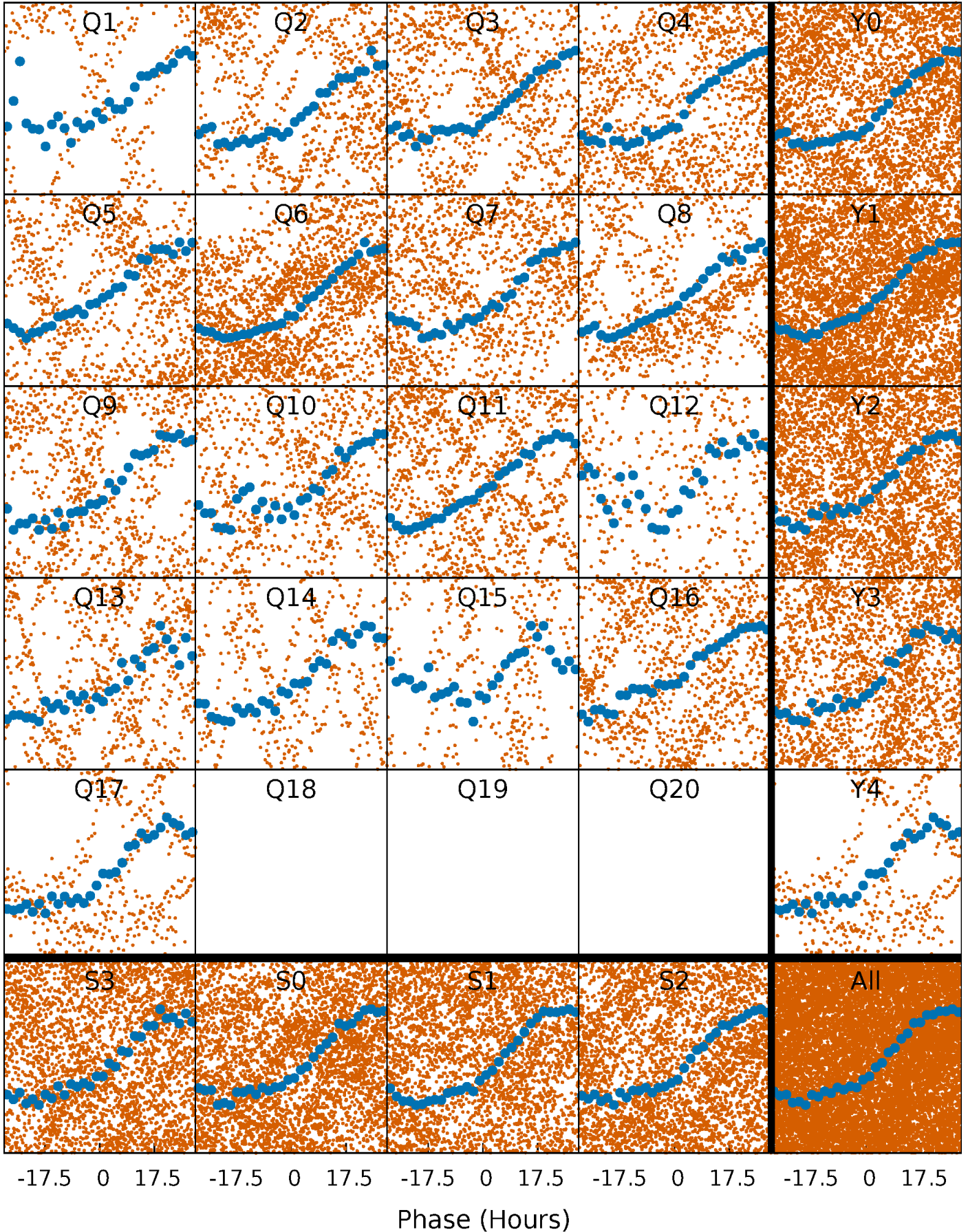


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



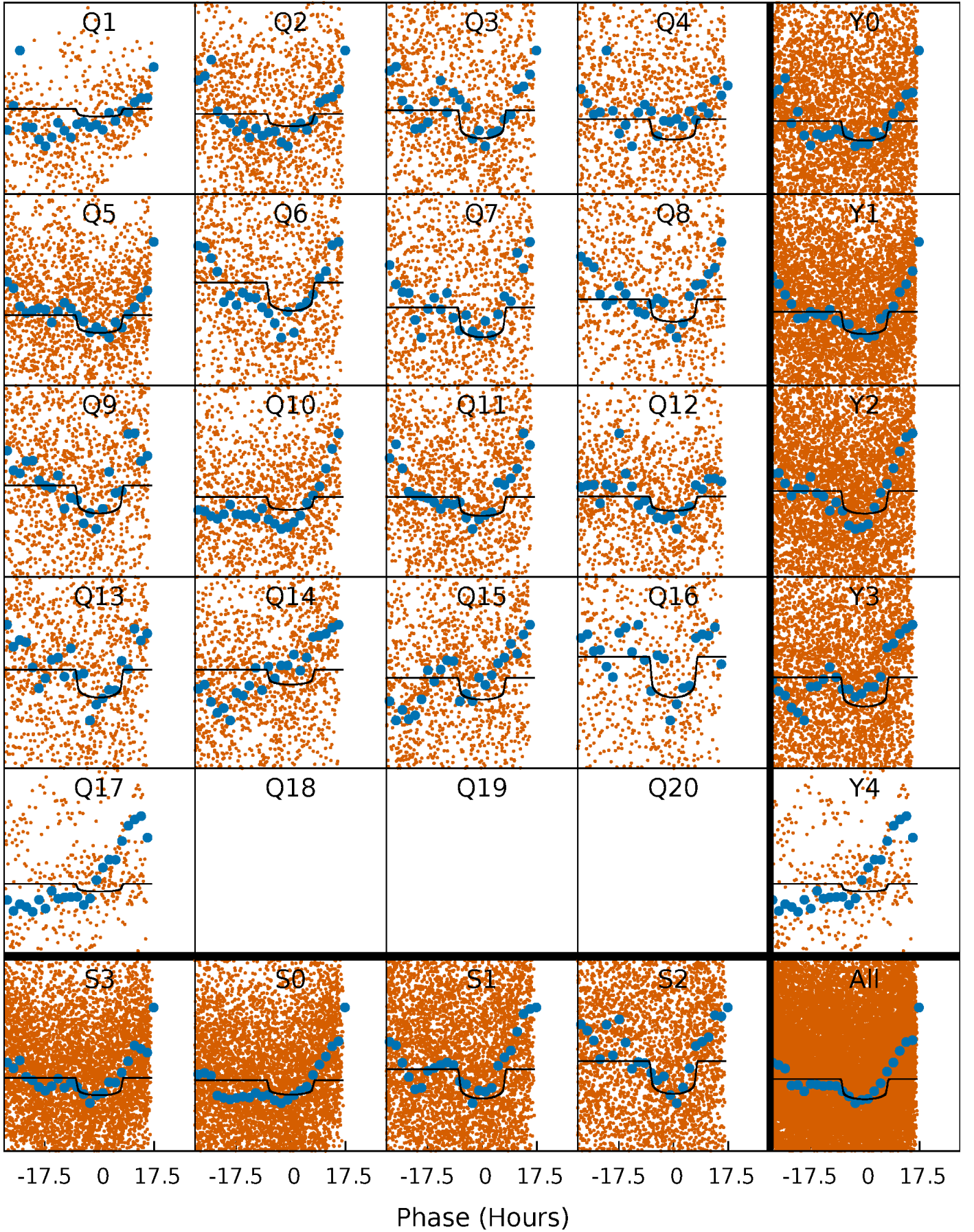
PDC Quarter-Phased Transit Curves

TCE 009040983-02 P= 5.287046 Days $T_0=135.444829$ (BKJD)



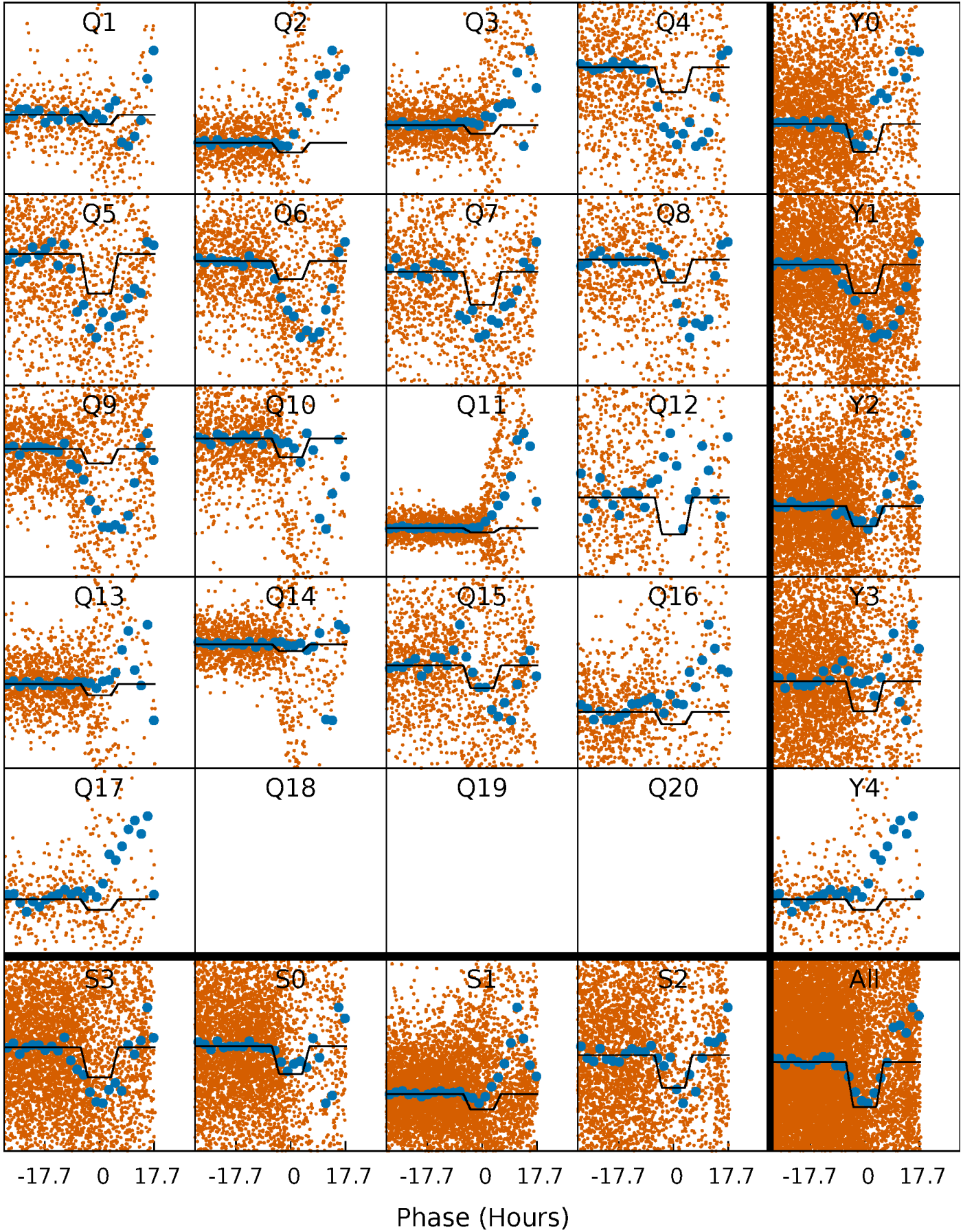
DV Quarter-Phased Transit Curves

TCE 009040983-02 P= 5.287046 Days $T_0=135.444829$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

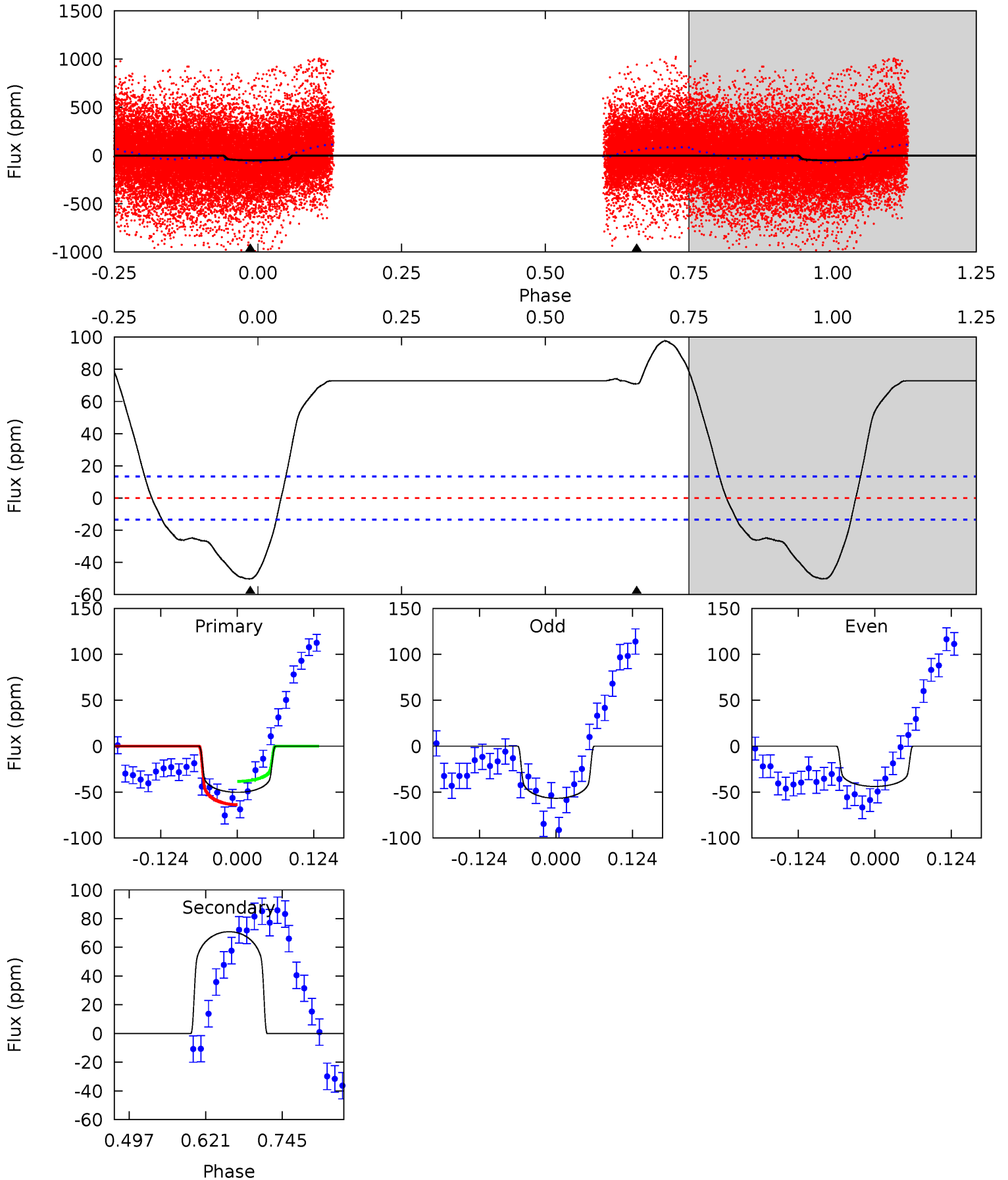
TCE 009040983-02 P= 5.286675 Days $T_0=135.414309$ (BKJD)



DV Model-Shift Uniqueness Test

009040983-02, P = 5.287046 Days, E = 130.157783 Days

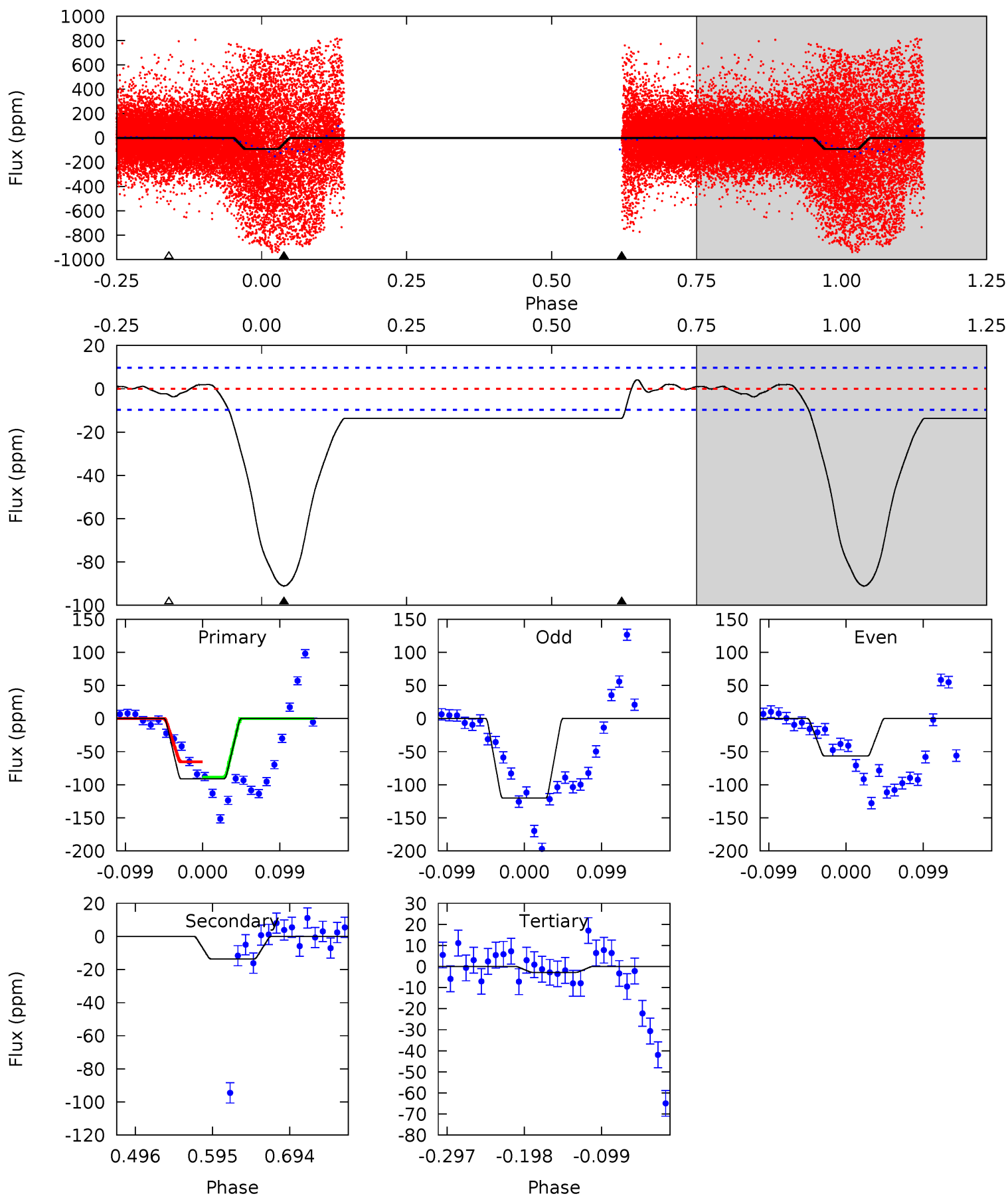
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
16.9	-23.9	0	0	4.52	1.54	10.8	16.9	16.9	-23.9	-23.9	2.24	1.39	0.66	4.36



Alt Model-Shift Uniqueness Test

009040983-02, P = 5.286675 Days, E = 130.127634 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
42.9	6.43	1.32	0	4.57	1.65	1.01	41.6	42.9	5.10	6.43	13.7	0.67	0.04	3.41



Stellar Parameters For KIC 009040983

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6139^{+165}_{-184}	$4.410^{+0.101}_{-0.203}$	$-0.380^{+0.300}_{-0.300}$	$1.006^{+0.282}_{-0.152}$	$0.949^{+0.129}_{-0.105}$	$1.311^{+0.598}_{-0.656}$
	+3%/-3%	+2%/-5%	+79%/-79%	+28%/-15%	+14%/-11%	+46%/-50%
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 009040983-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	71 ± 3	$0.94^{+0.16}_{-0.11}$	1594^{+105}_{-88}	-6149^{+304}_{-333}	$-148.482^{+37.905}_{-41.217}$
Alt.	-14 ± 2	$0.94^{+0.16}_{-0.12}$	1586^{+113}_{-85}	4292^{+221}_{-206}	28^{+10}_{-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 $A_{\text{obs}} \gg 1.0$

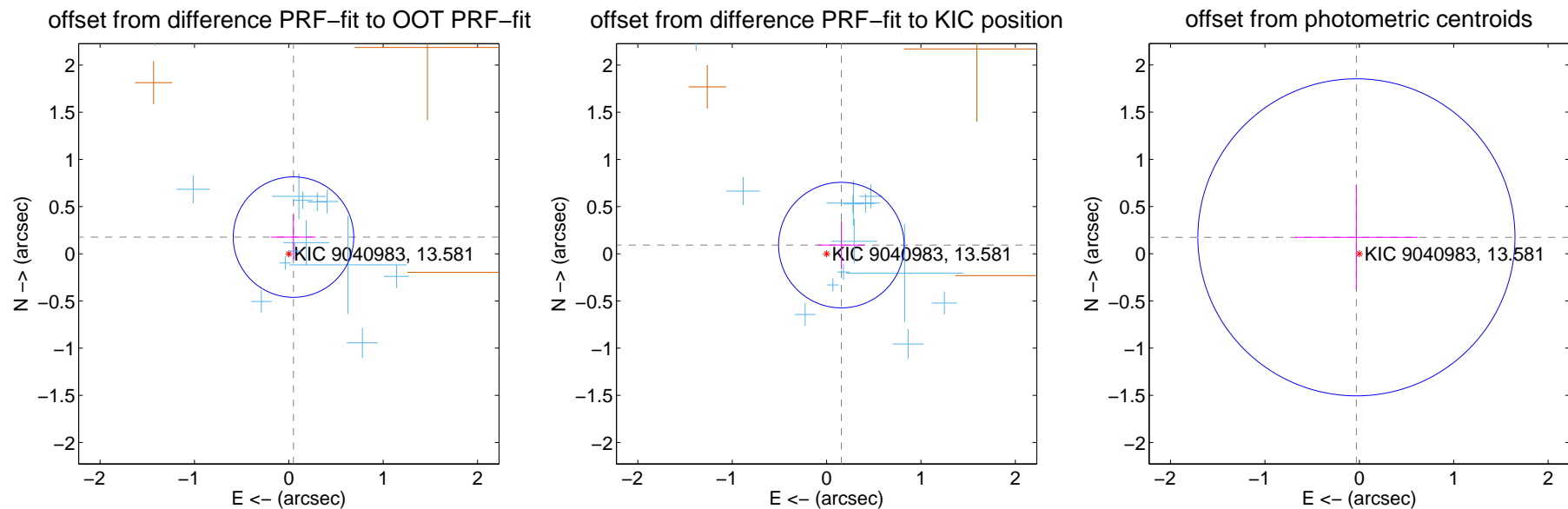
DV Centroid Data

Supplemental centroid analysis for 009040983-02. Kepler magnitude: 13.58. Transit SNR 11.65

There are 13 quarters with good PRF difference image offsets

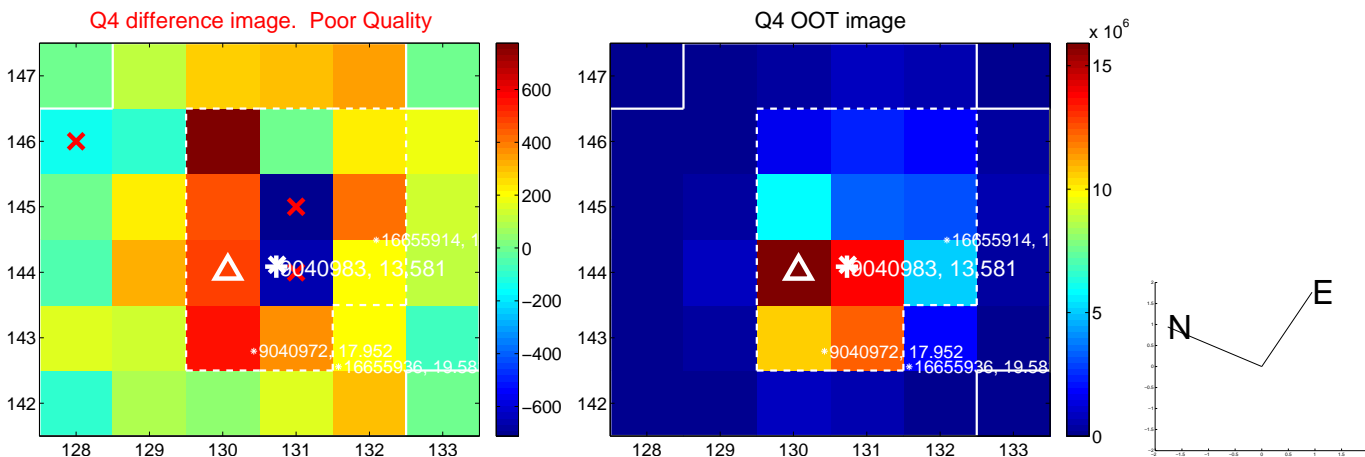
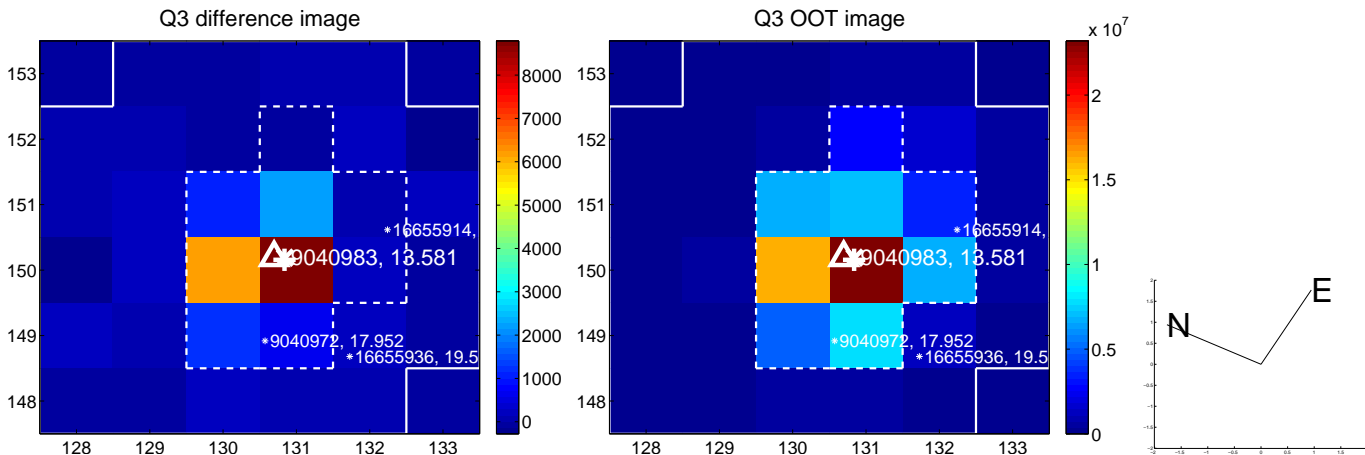
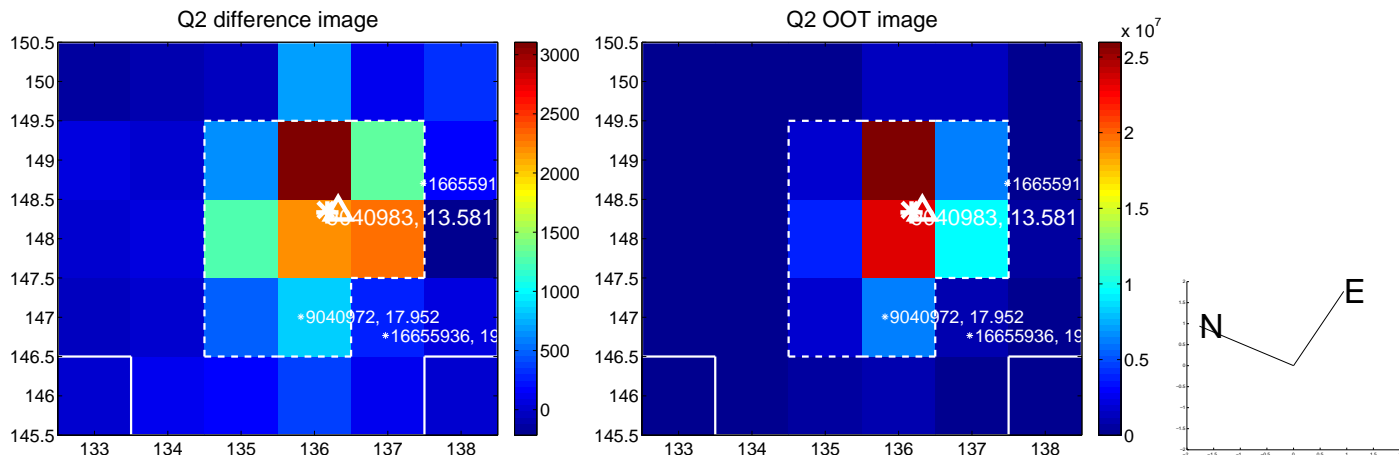
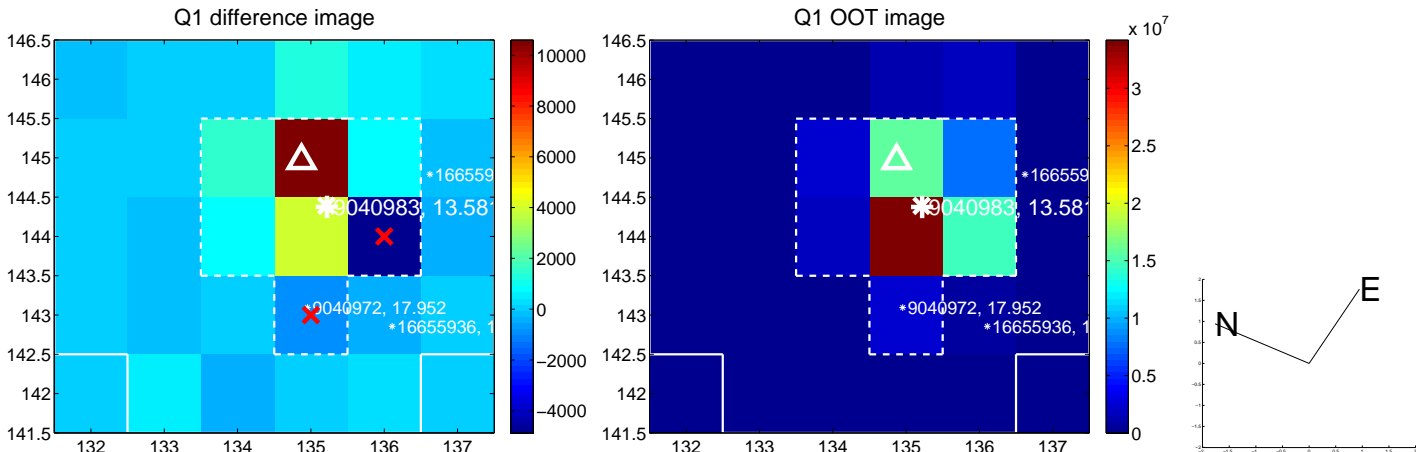
The direct PRF centroid is offset from the target star catalog position by about 0.09 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.184 ± 0.213	0.86	-0.050 ± 0.236	0.177 ± 0.239
PRF-fit source offset from KIC position	0.182 ± 0.222	0.82	-0.157 ± 0.248	0.092 ± 0.255
photometric centroid source offset	0.18 ± 0.56	0.31	0.03 ± 0.65	0.17 ± 0.56

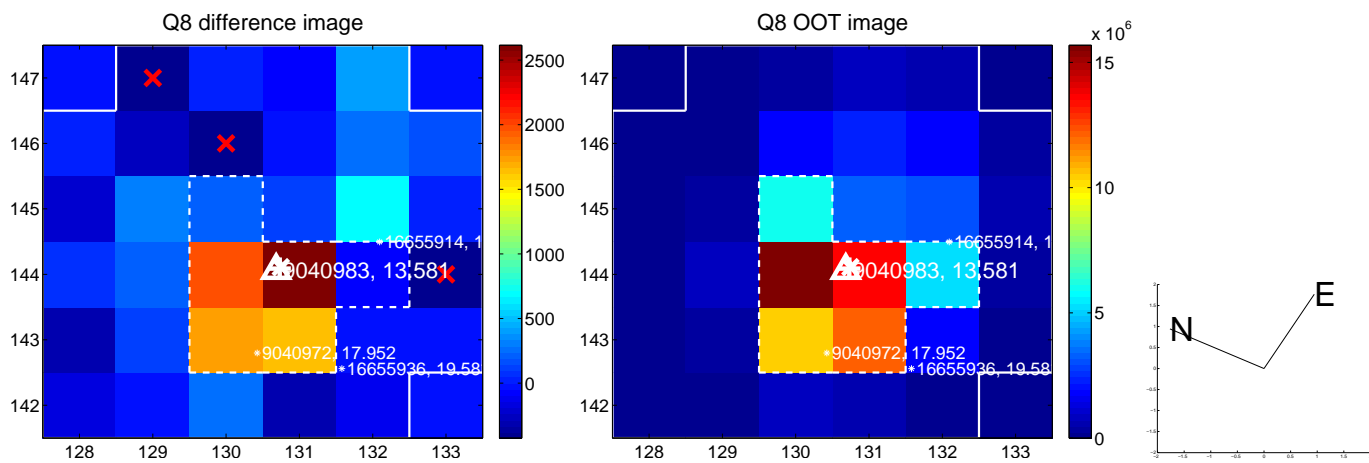
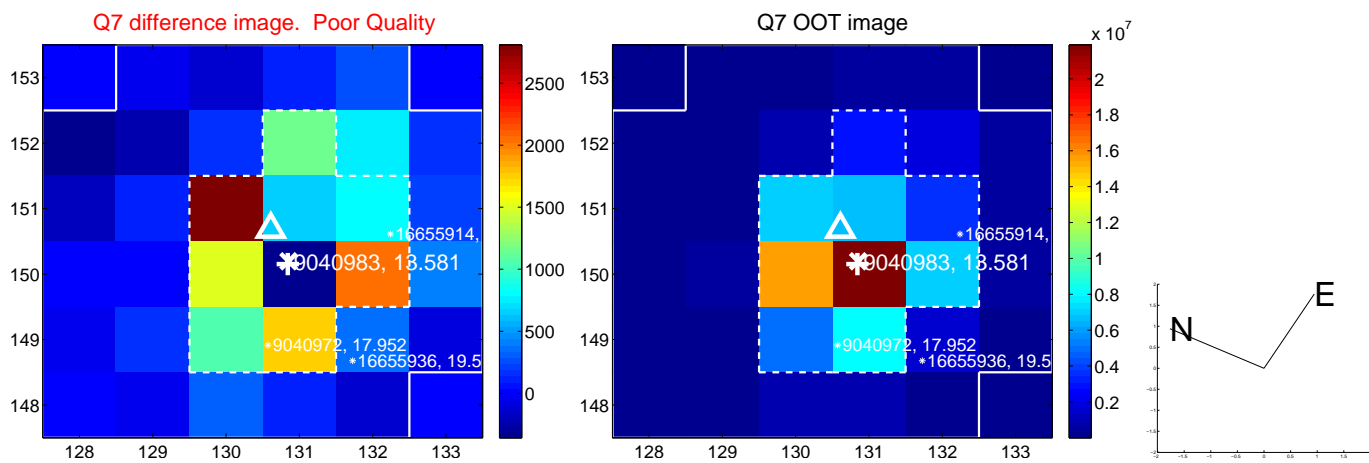
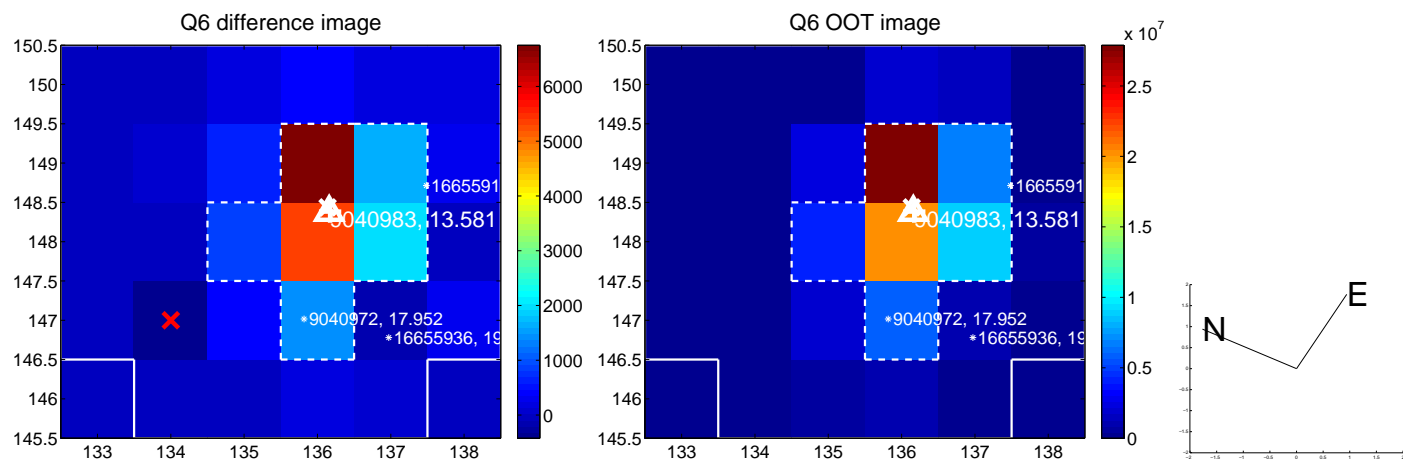
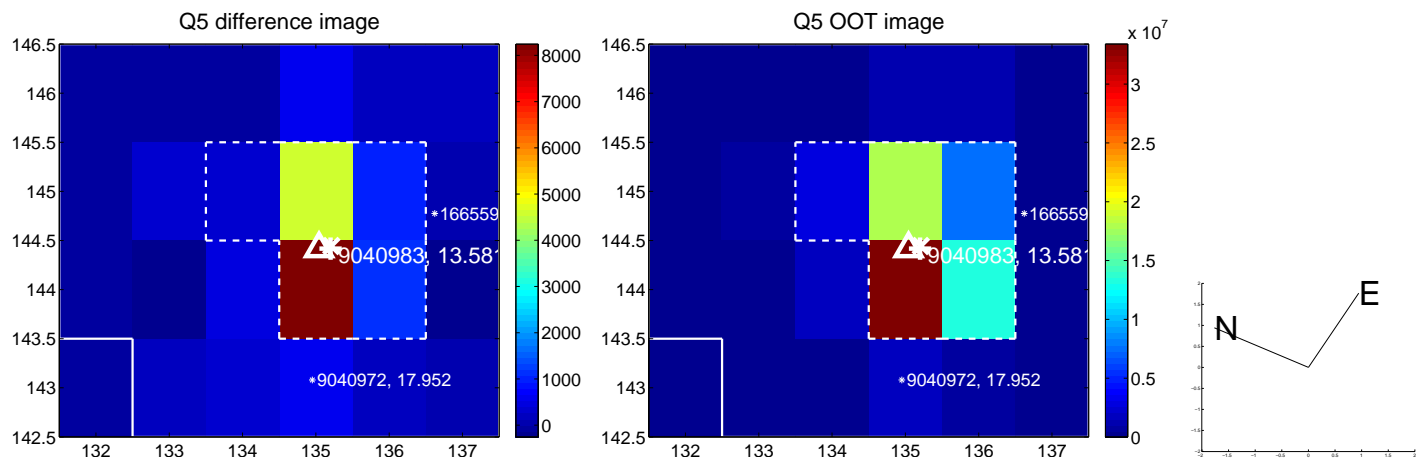


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

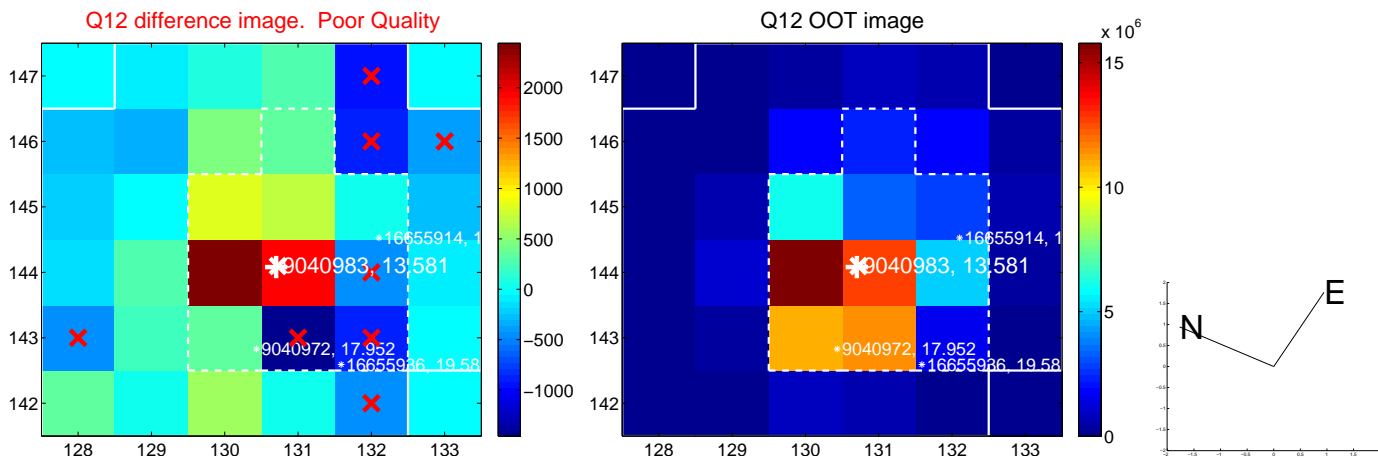
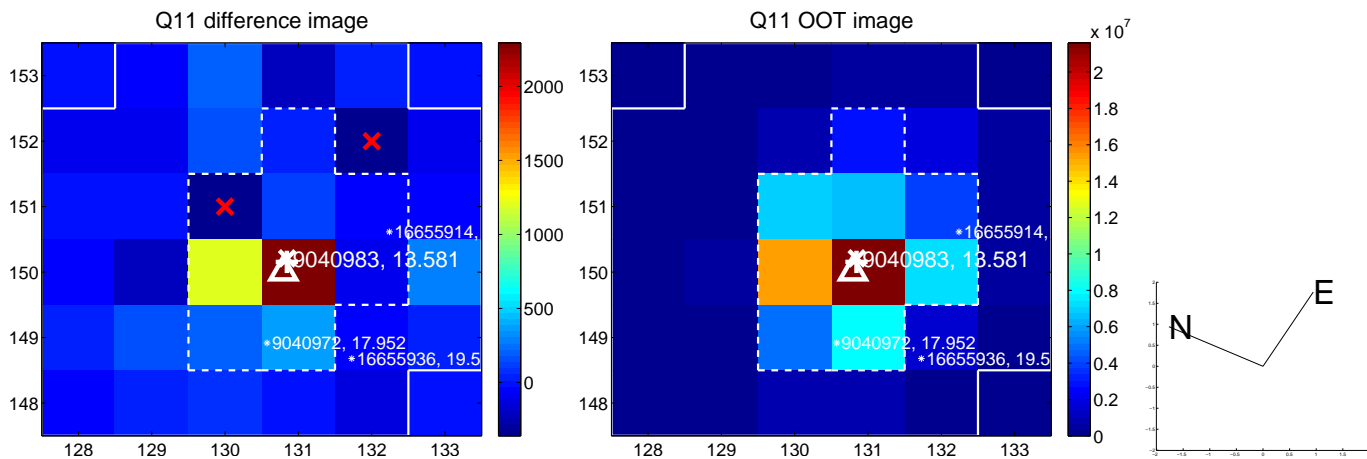
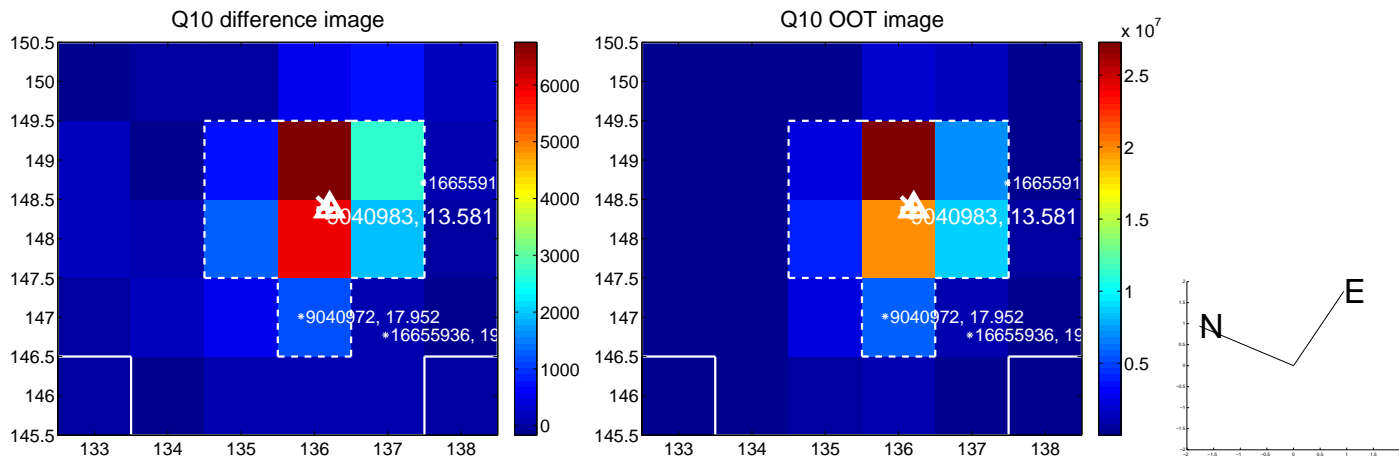
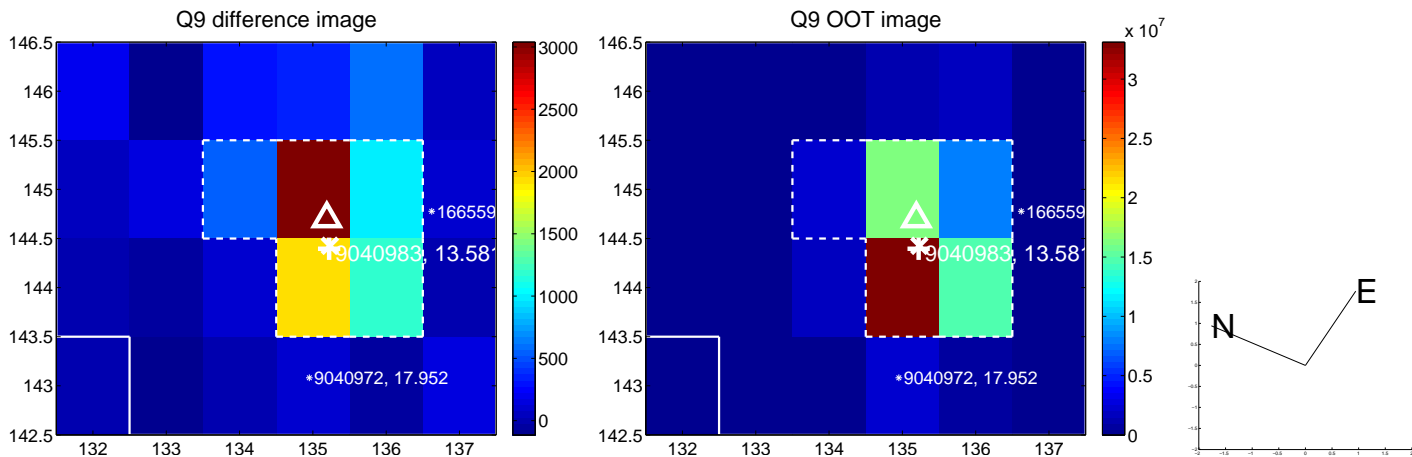
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



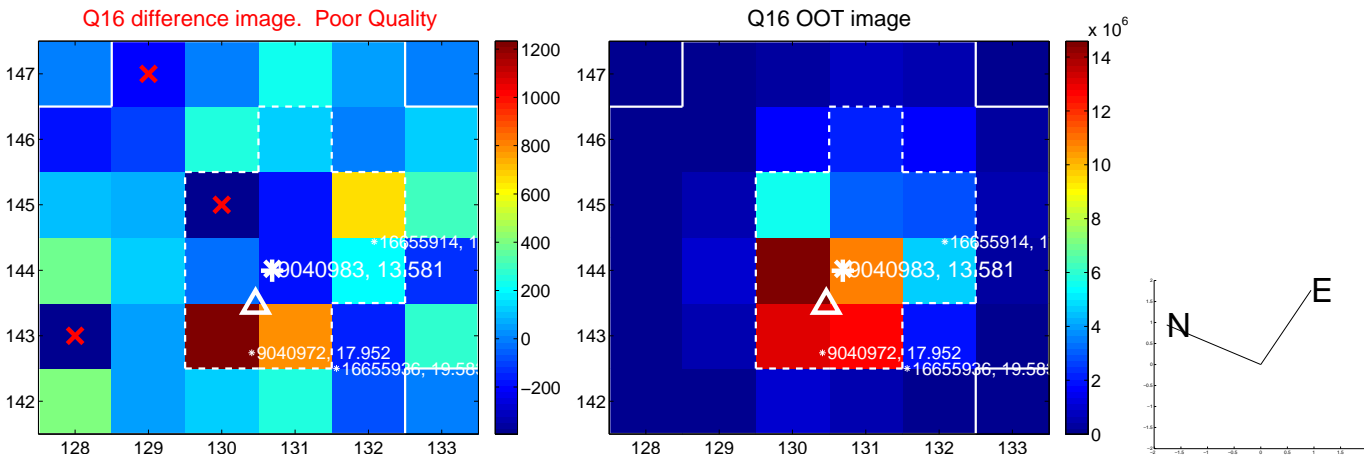
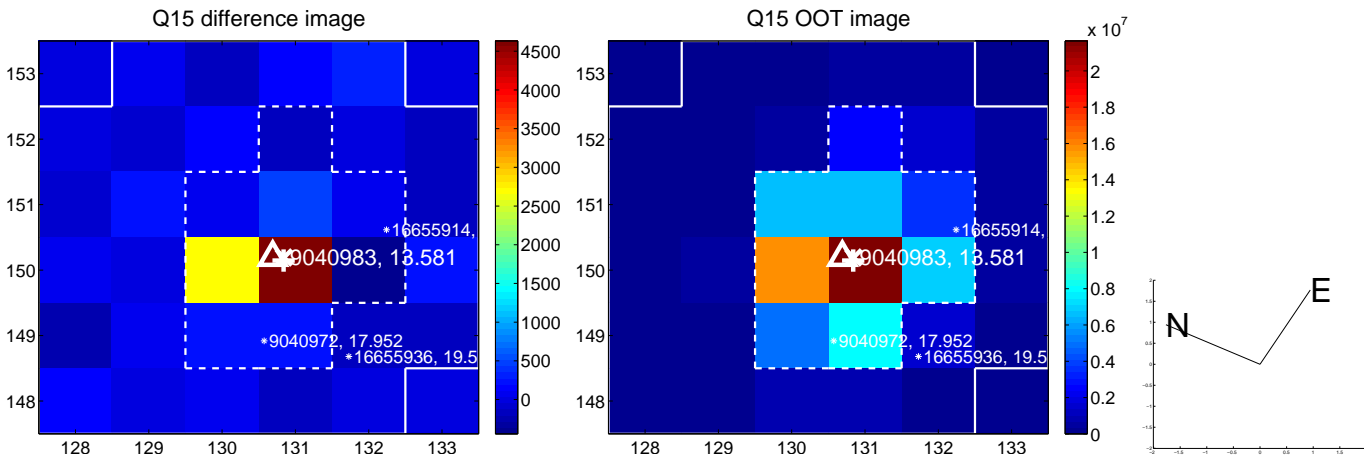
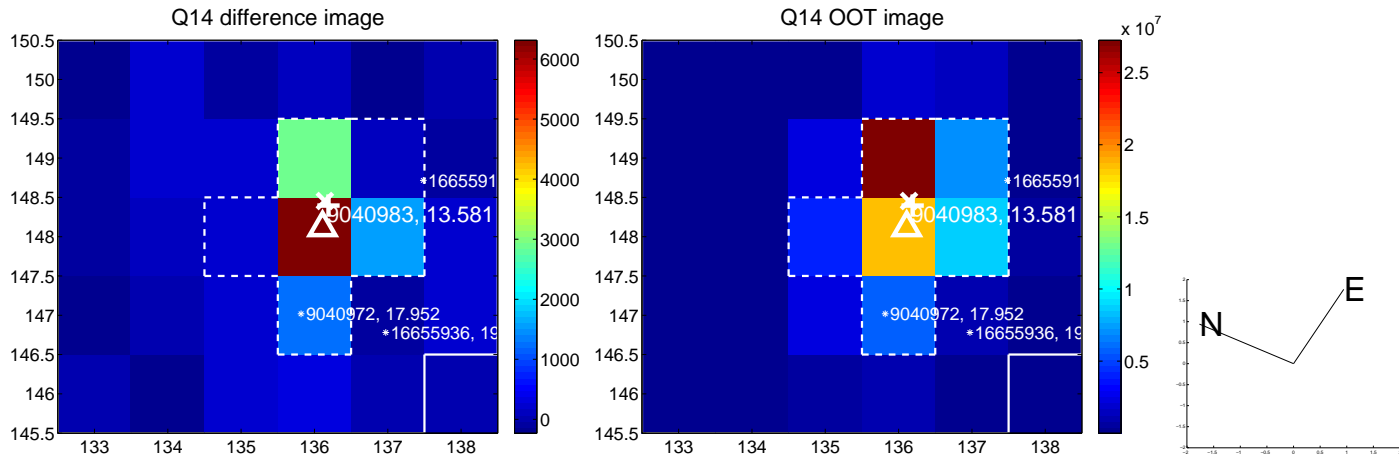
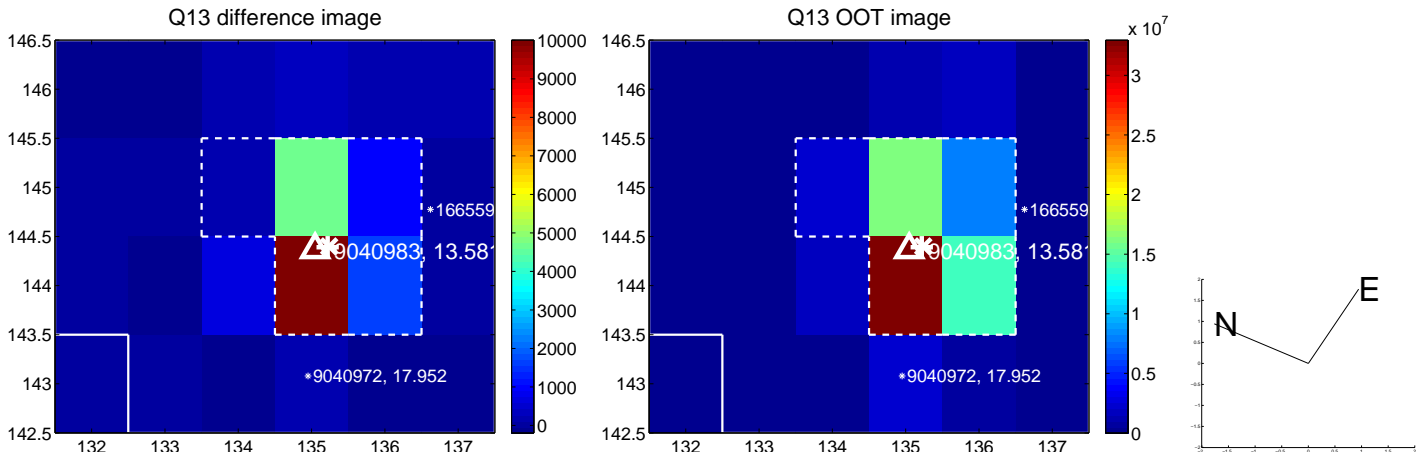
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



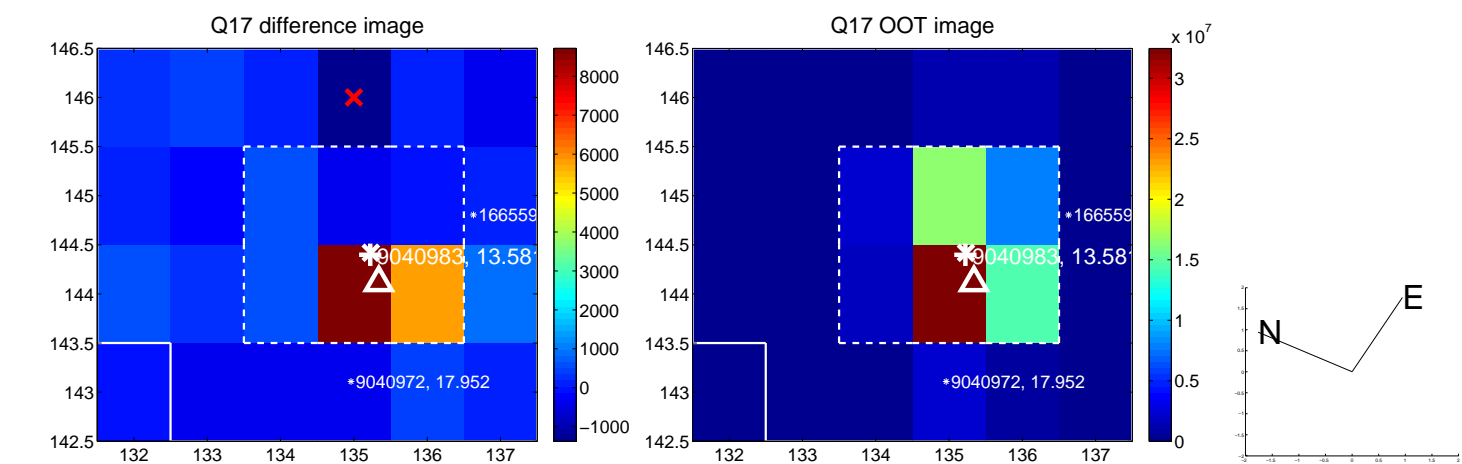
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



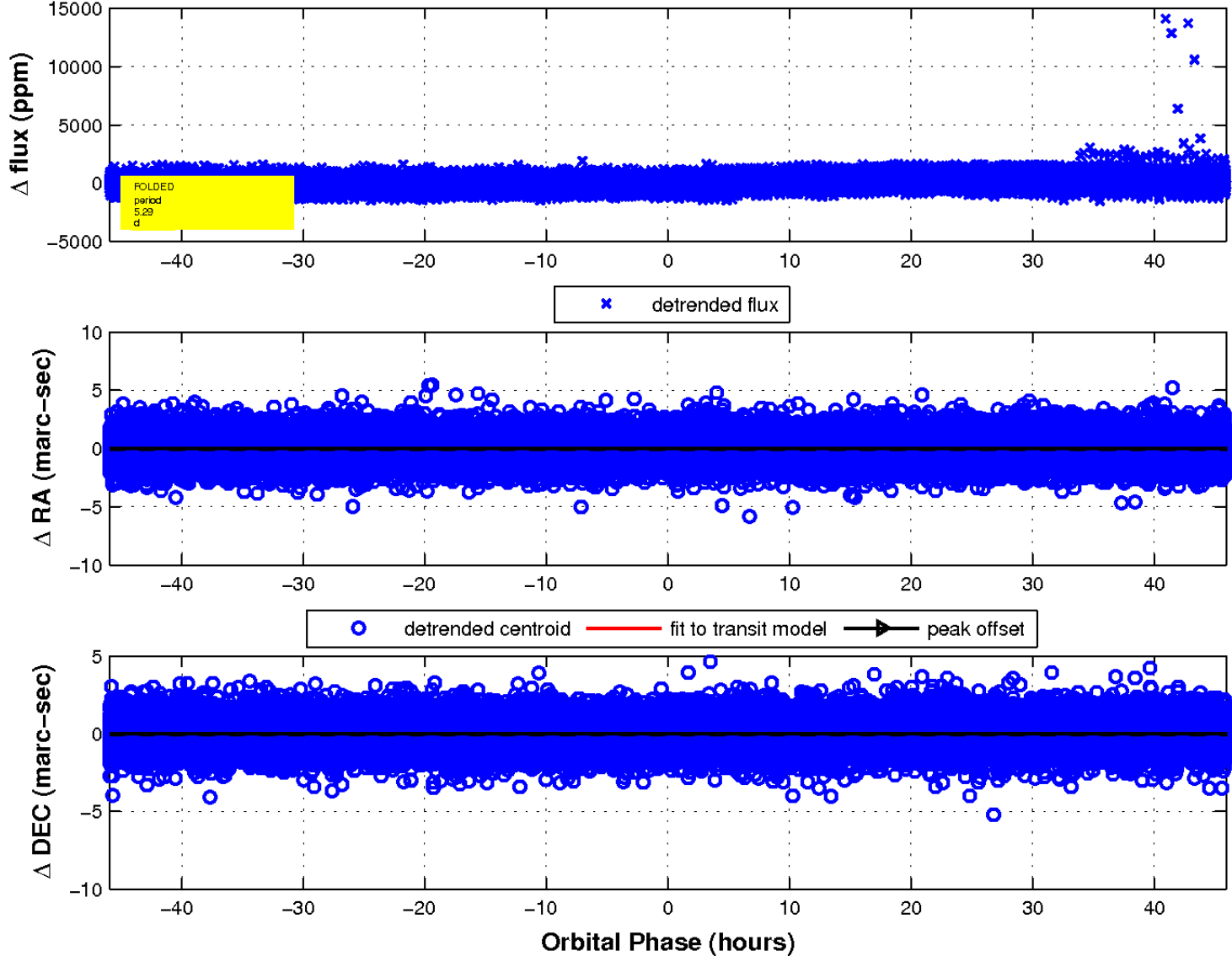
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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fluxWeightedCentroids, Planet 2 of 2



UKIRT Image

