

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})
009972385-01	OBS	No	58.420909	188.641311	888.3	14.666	43.0	47.5	1.82	6313	10.28	53.92
009972385-02	OBS	No	3.377783	134.244452	52.7	11.222	10.9	12.8	1.82	6313	2.58	2411.99
009972385-03	OBS	No	3.377690	132.286709	27.7	5.907	9.8	10.9	1.82	6313	1.13	2412.08
009972385-04	OBS	No	3.377988	133.026671	25.5	4.744	9.8	10.9	1.82	6313	1.03	2411.80
009972385-05	OBS	No	33.321012	149.739066	24.5	11.846	11.2	1.5	1.82	6313	1.05	114.01
009972385-06	OBS	No	123.877607	192.039254	388.5	27.425	9.2	9.0	1.82	6313	5.06	19.80
009972385-07	OBS	No	84.863803	175.775621	164.1	2.141	7.7	7.8	1.82	6313	2.67	32.78
009972385-08	OBS	No	44.313913	141.982351	121.6	4.609	7.6	7.2	1.82	6313	2.32	77.95
009972385-09	OBS	No	45.629158	166.537092	131.9	7.990	7.5	7.3	1.82	6313	2.40	74.97
009972385-10	OBS	No	23.229243	149.885894	73.0	5.734	7.7	5.9	1.82	6313	1.72	184.43

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009972385-01	OBS	FP	0.00	1	0	0	0	LPP_DV
009972385-02	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—MOD_NONUNIQ_DV
009972385-03	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD
009972385-04	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—SAME_NTL_PERIOD
009972385-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
009972385-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
009972385-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_MEAS
009972385-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_UNCERTAIN
009972385-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
009972385-10	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—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.

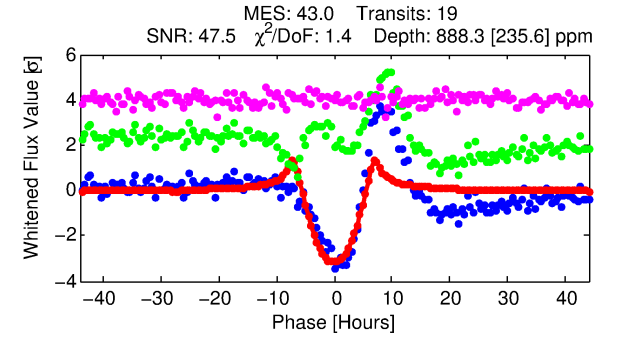
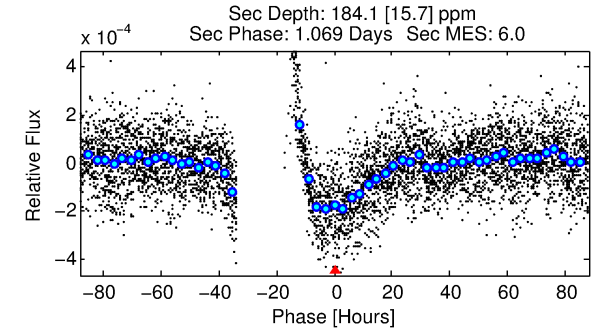
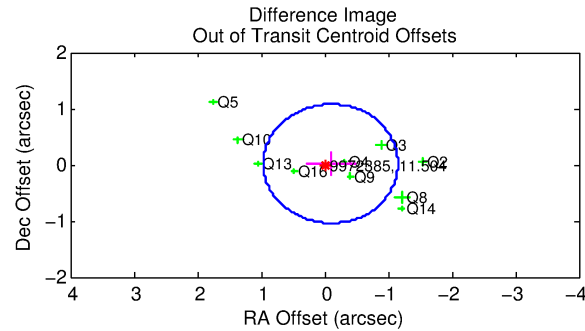
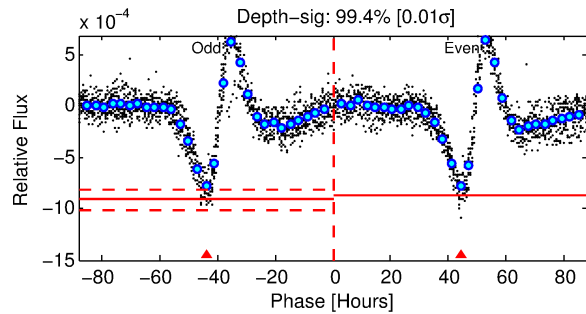
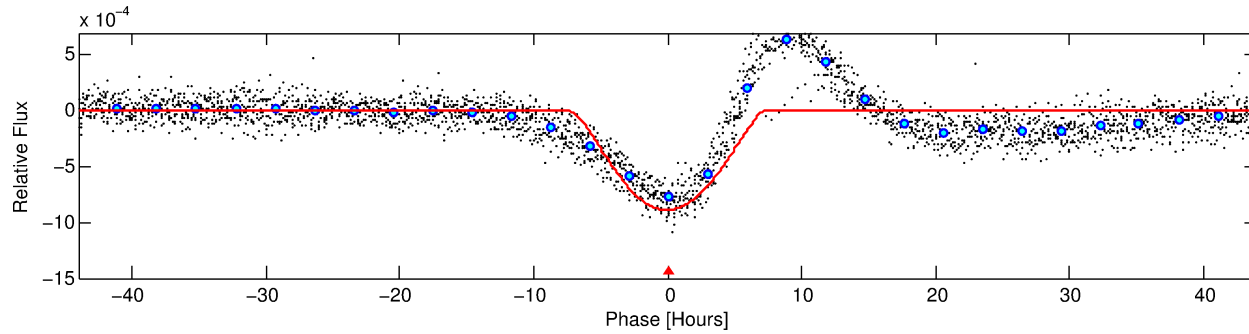
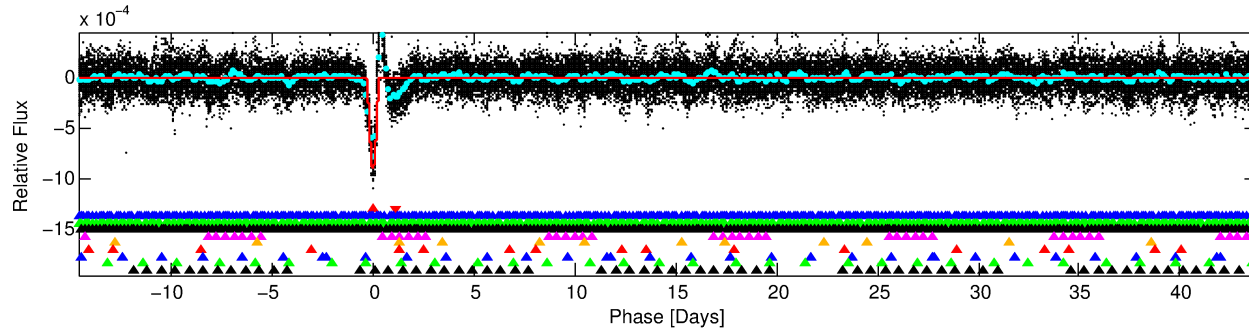
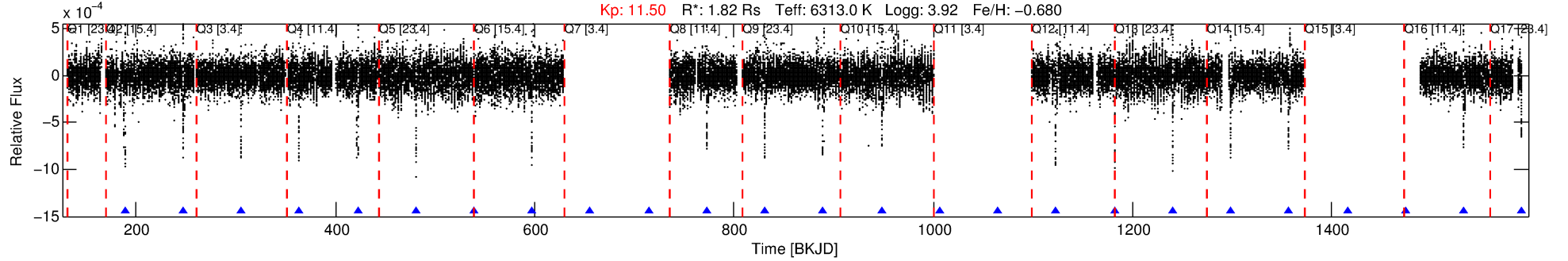
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009972385-01

No Significant Match Found

DV One-Page Summary

KIC: 9972385 Candidate: 1 of 10 Period: 58.421 d



DV Fit Results:

Period = 58.42091 [0.00043] d
Epoch = 188.6413 [0.0058] BKJD
Rp/R* = 0.0517 [0.0210]
a/R* = 9.97 [0.95]
b = 1.00 [0.02]
Seff = 53.93 [29.72]
Teq = 691 [95] K
Rp = 10.28 [5.33] Re
a = 0.2957 [0.0970] AU
Ag = 83.87 [82.14] [1.01σ]
Teffp = 3233 [666] K [3.78σ]

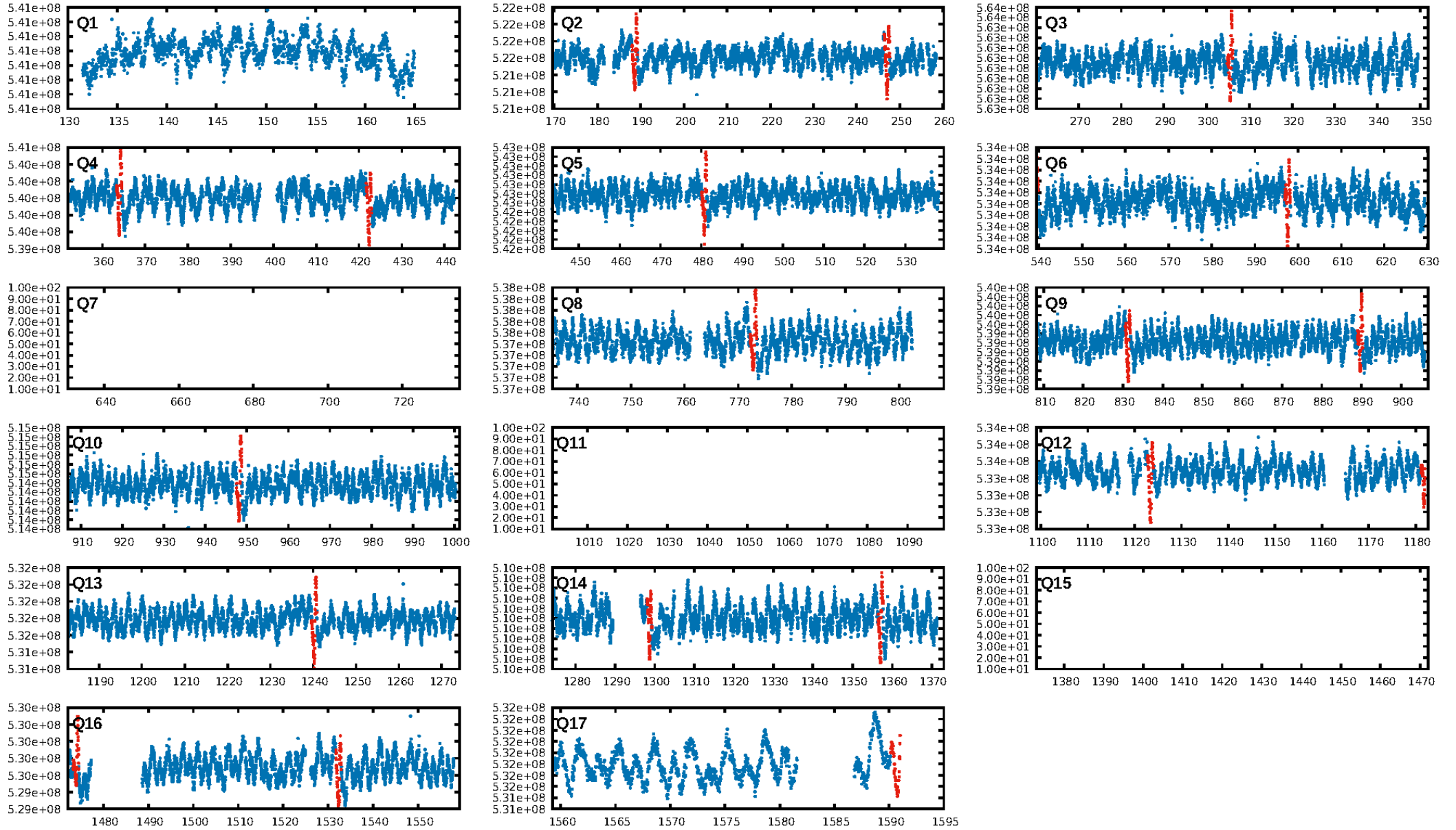
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [18.38σ]
LongPeriod-sig: 100.0% [42.82σ]
ModelChiSquare2-sig: 40.0%
ModelChiSquareGof-sig: 85.7%
Bootstrap-pfa: 1.38e-229
RollingBand-fgt: 1.00 [18/18]
GhostDiagnostic-chr: 2.672
Centroid-sig: 0.0%
Centroid-so: 0.415 arcsec [4.47σ]
OotOffset-rm: 0.097 arcsec [0.27σ]
KicOffset-rm: 0.046 arcsec [0.29σ]
OotOffset-st: 3/1/3/3 [10]
KicOffset-st: 3/1/3/3 [10]
DiffImageQuality-fgm: 1.00 [10/10]
DiffImageOverlap-fno: 0.00 [0/10]

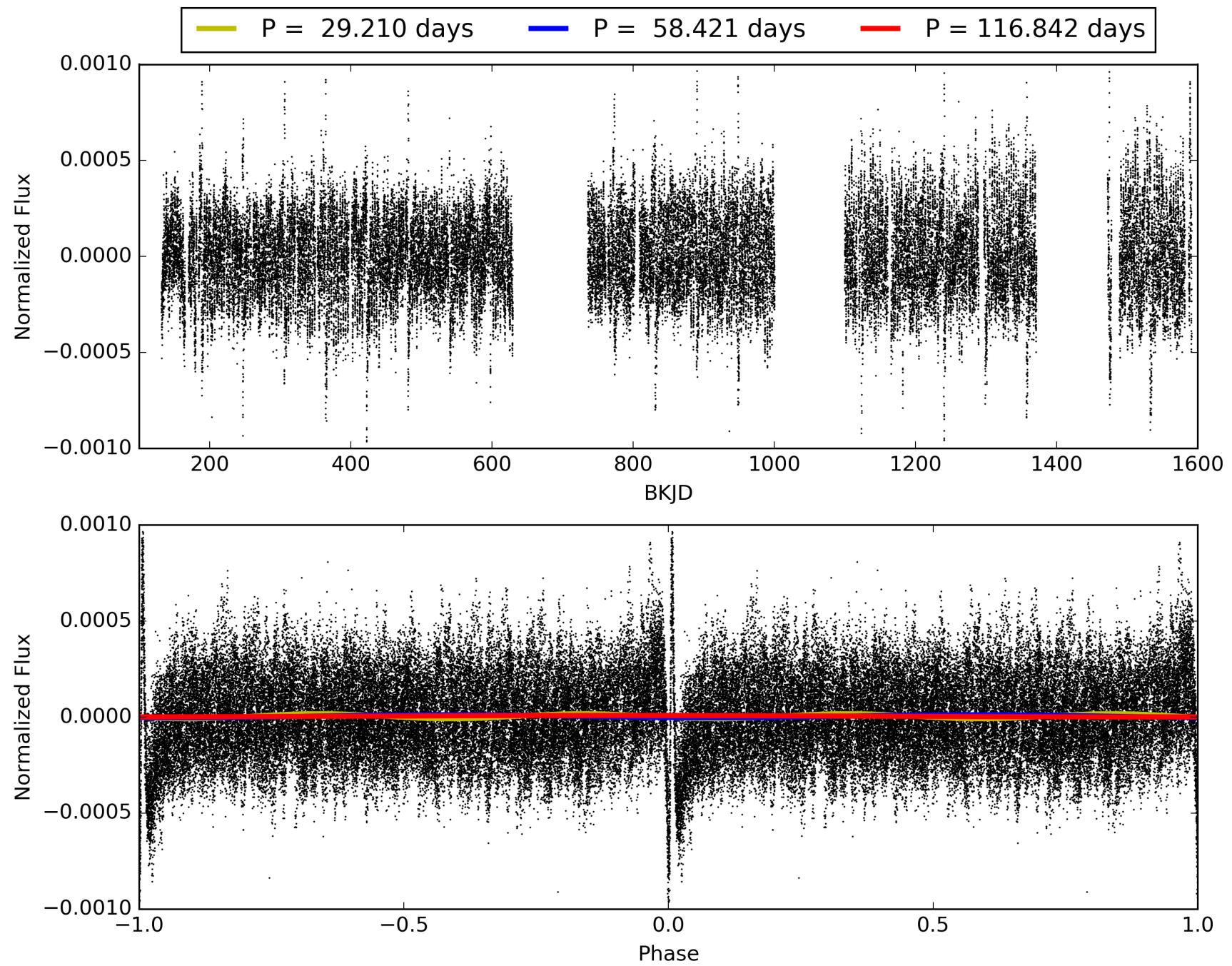
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 17:08:38 Z

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

TCE 009972385-01, PDC Light Curves

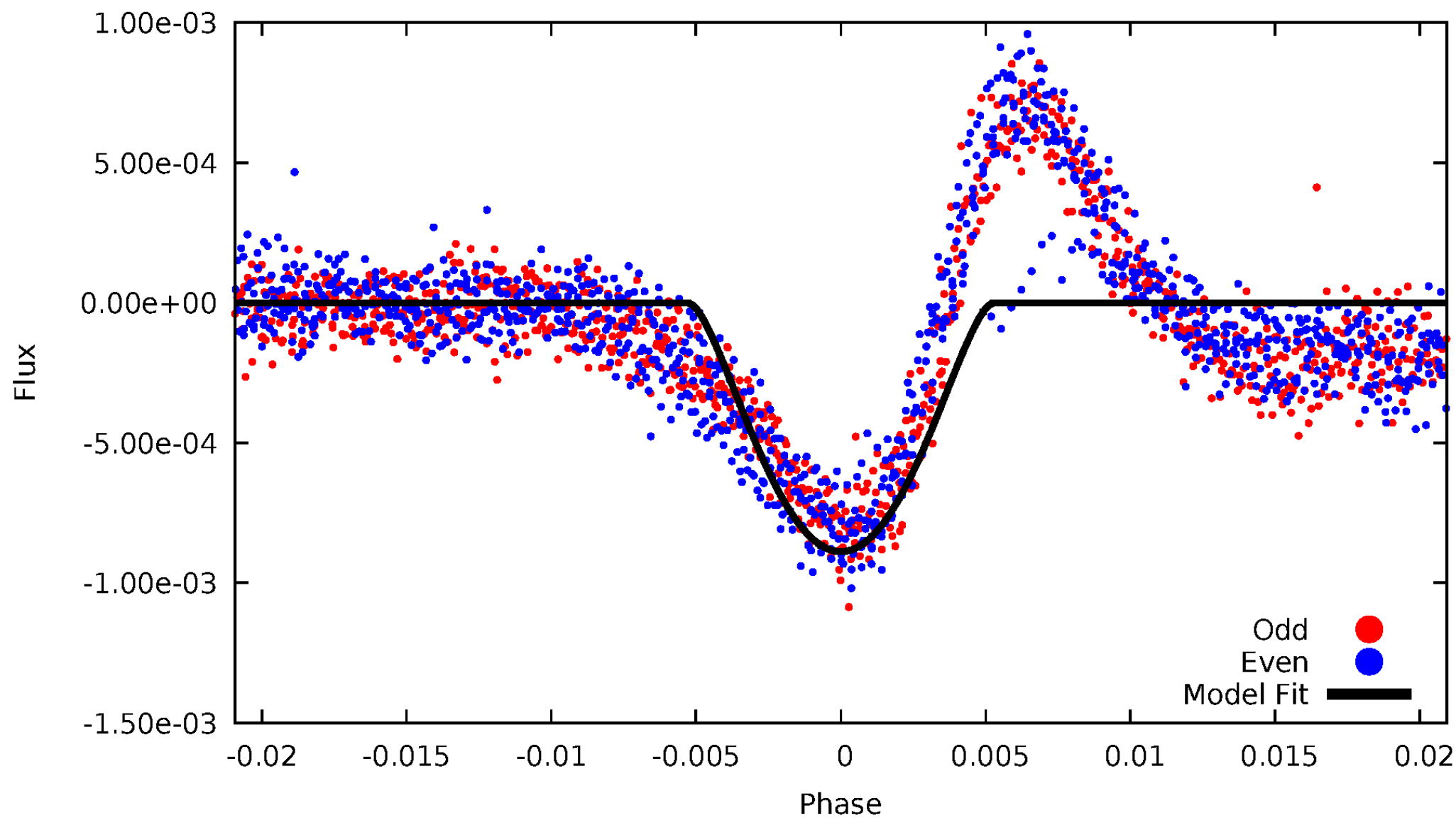


TCE 009972385-01



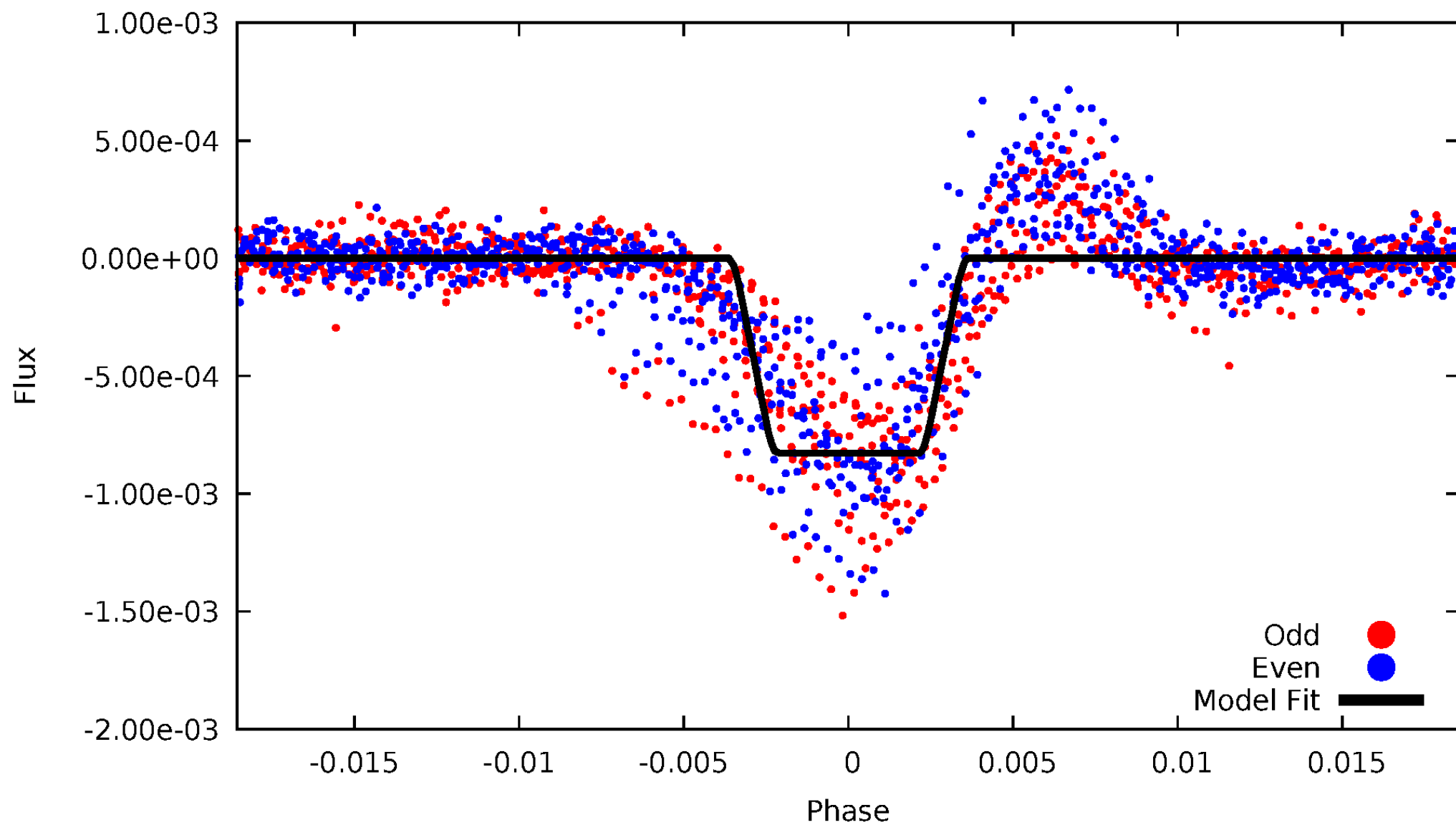
DV Odd/Even

TCE 009972385-01



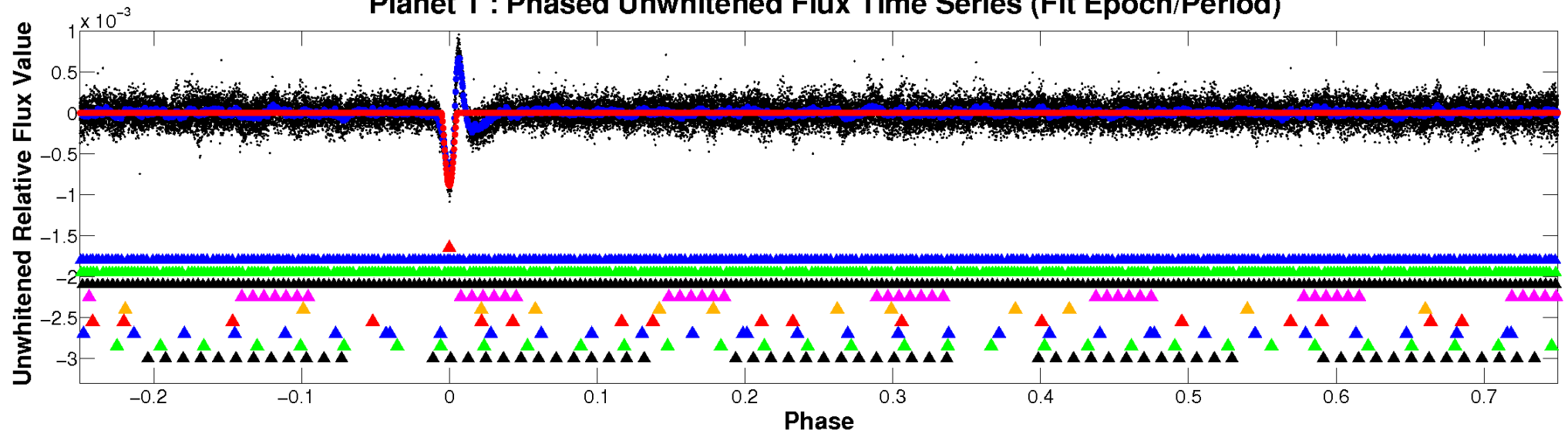
ALT Odd/Even

TCE 009972385-01

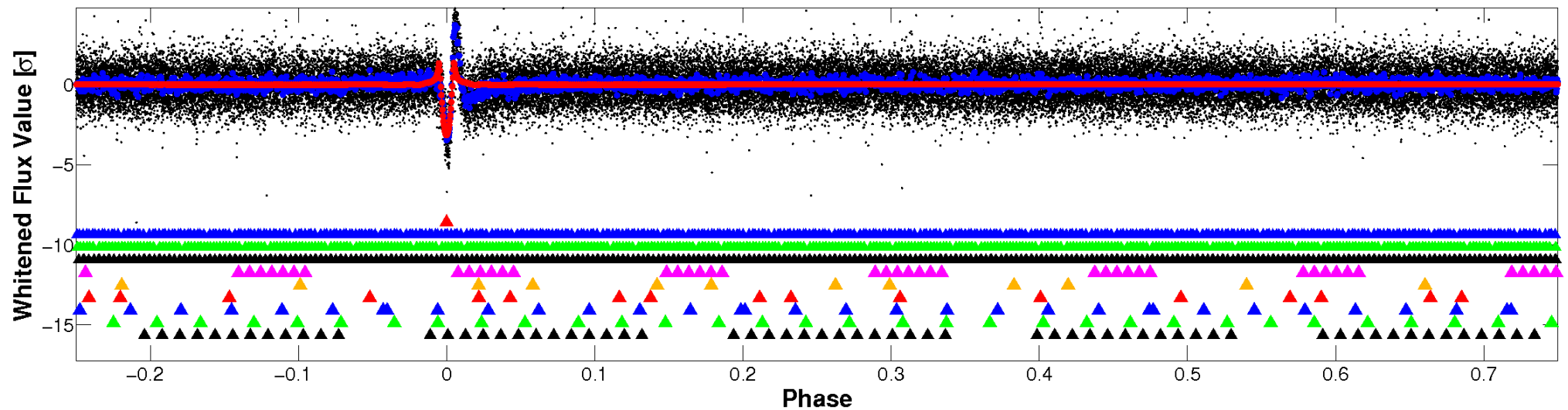


Non-Whitened Vs. Whitened Light Curve

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

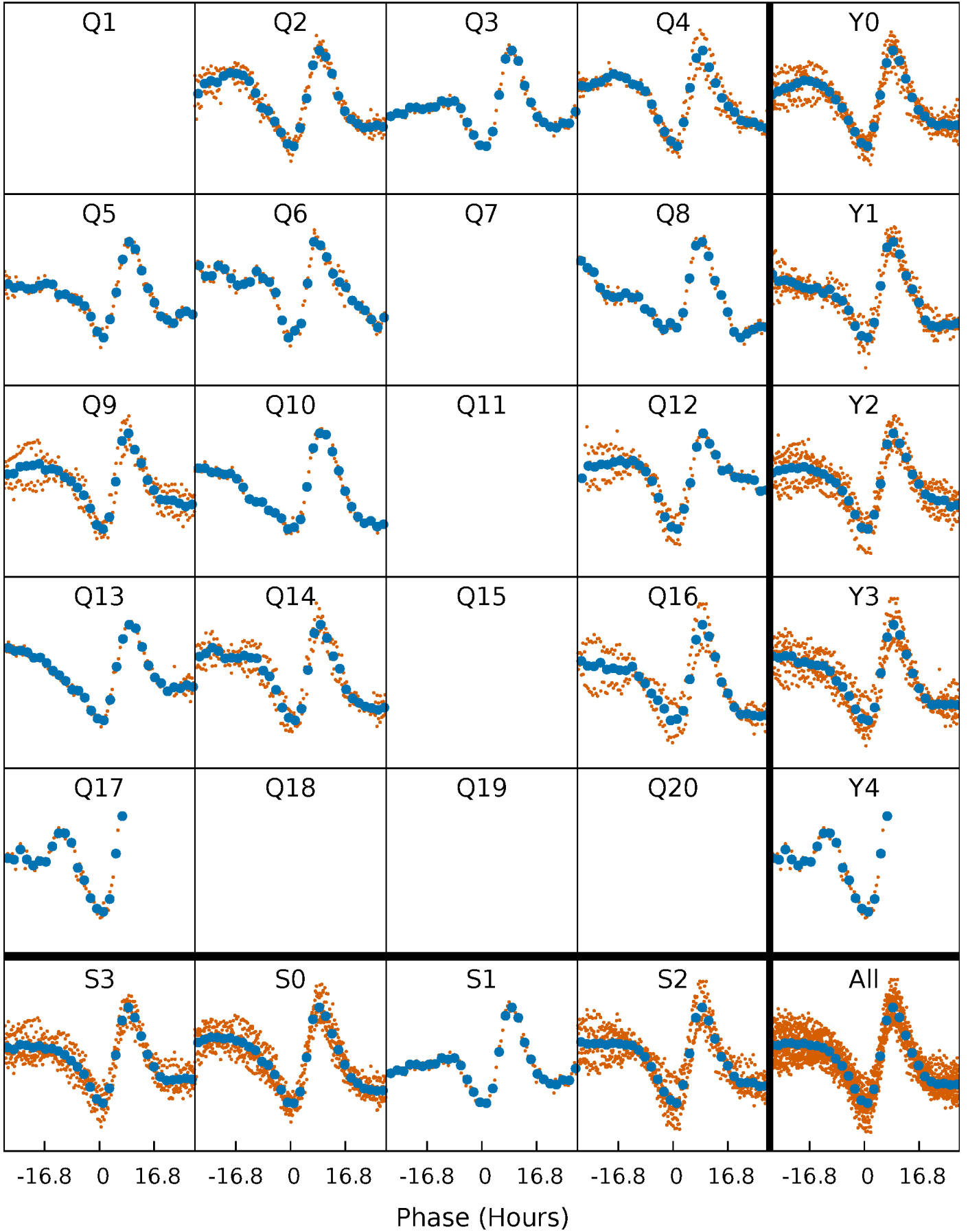


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



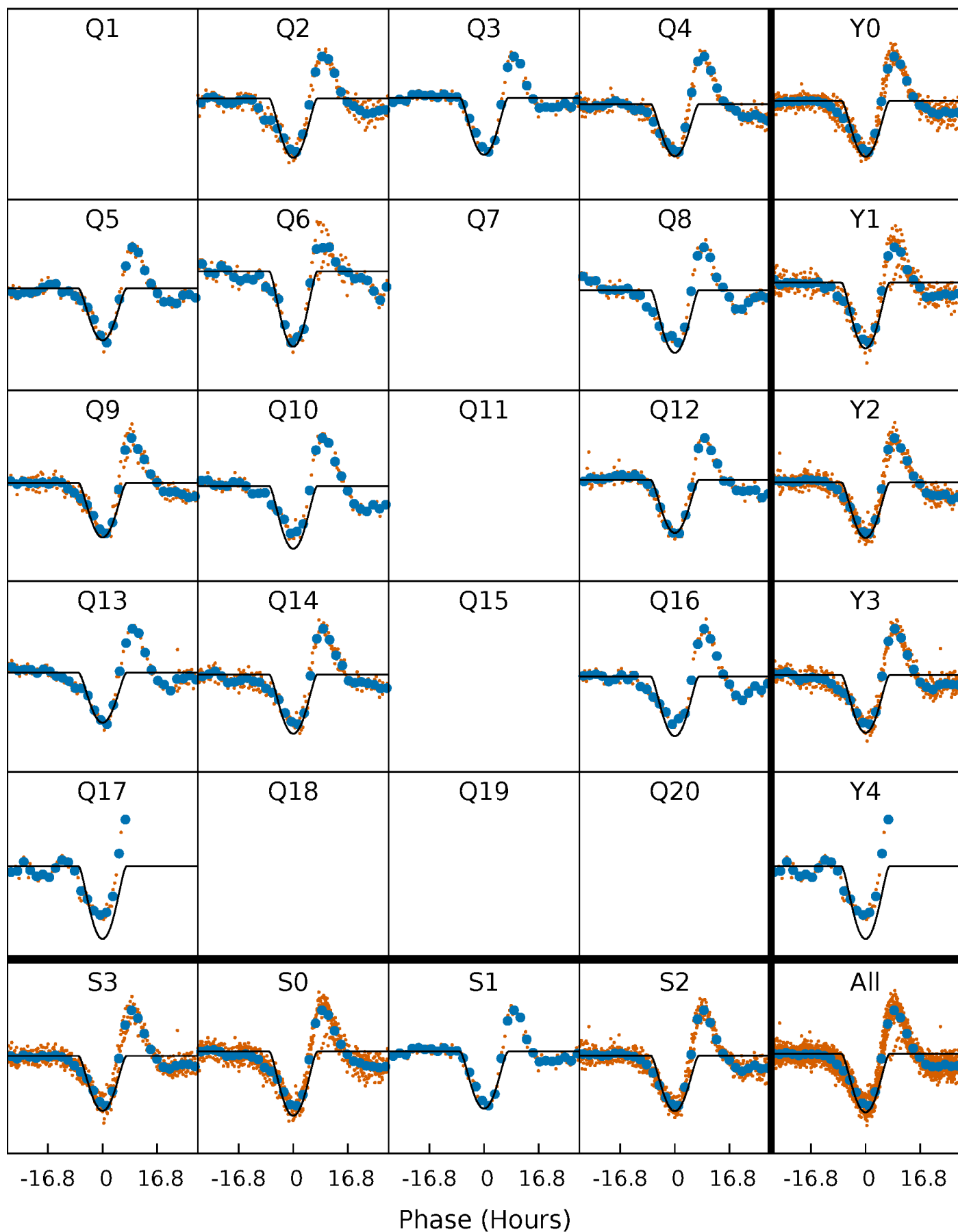
PDC Quarter-Phased Transit Curves

TCE 009972385-01 P= 58.420909 Days $T_0=188.641311$ (BKJD)



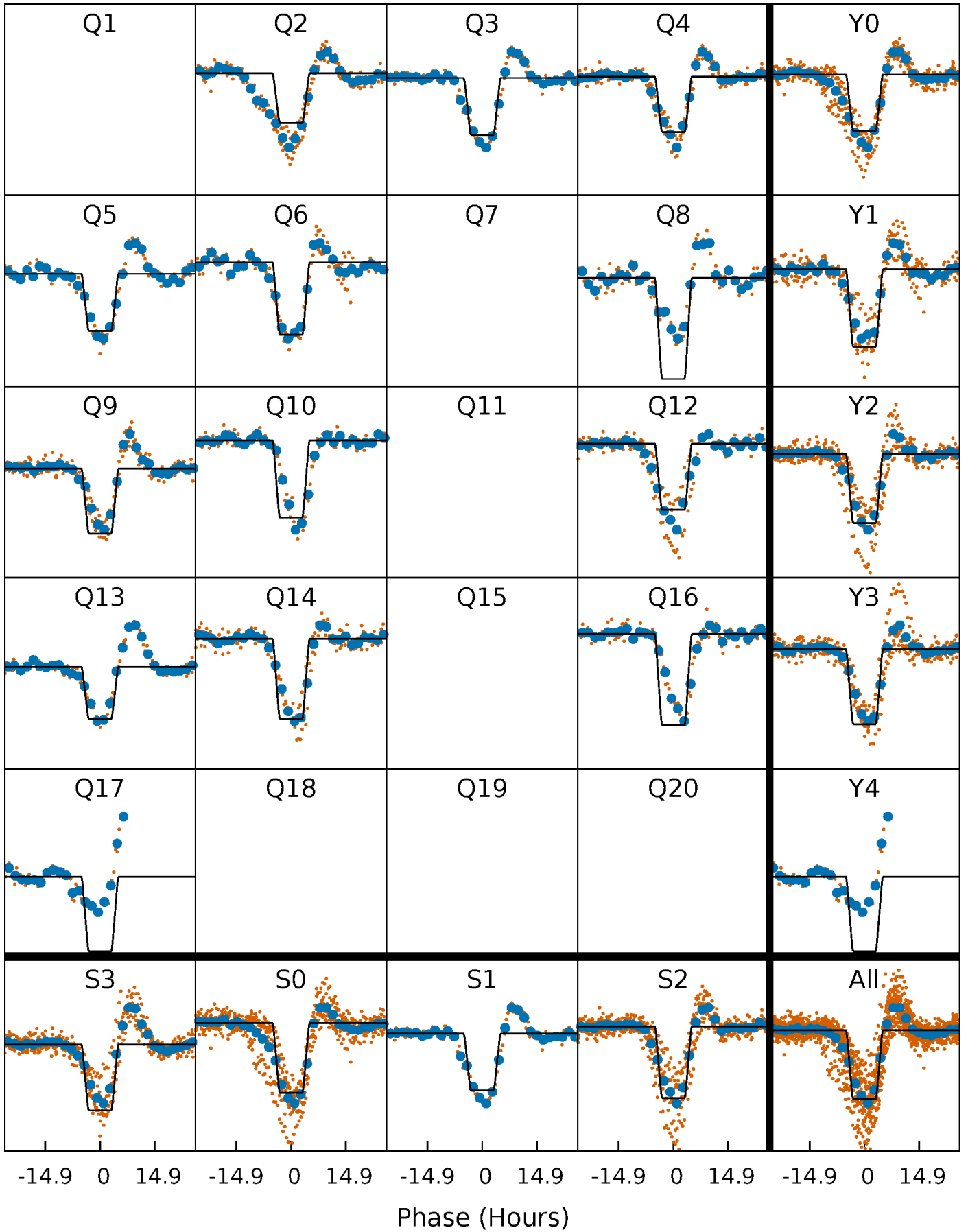
DV Quarter-Phased Transit Curves

TCE 009972385-01 P= 58.420909 Days $T_0=188.641311$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

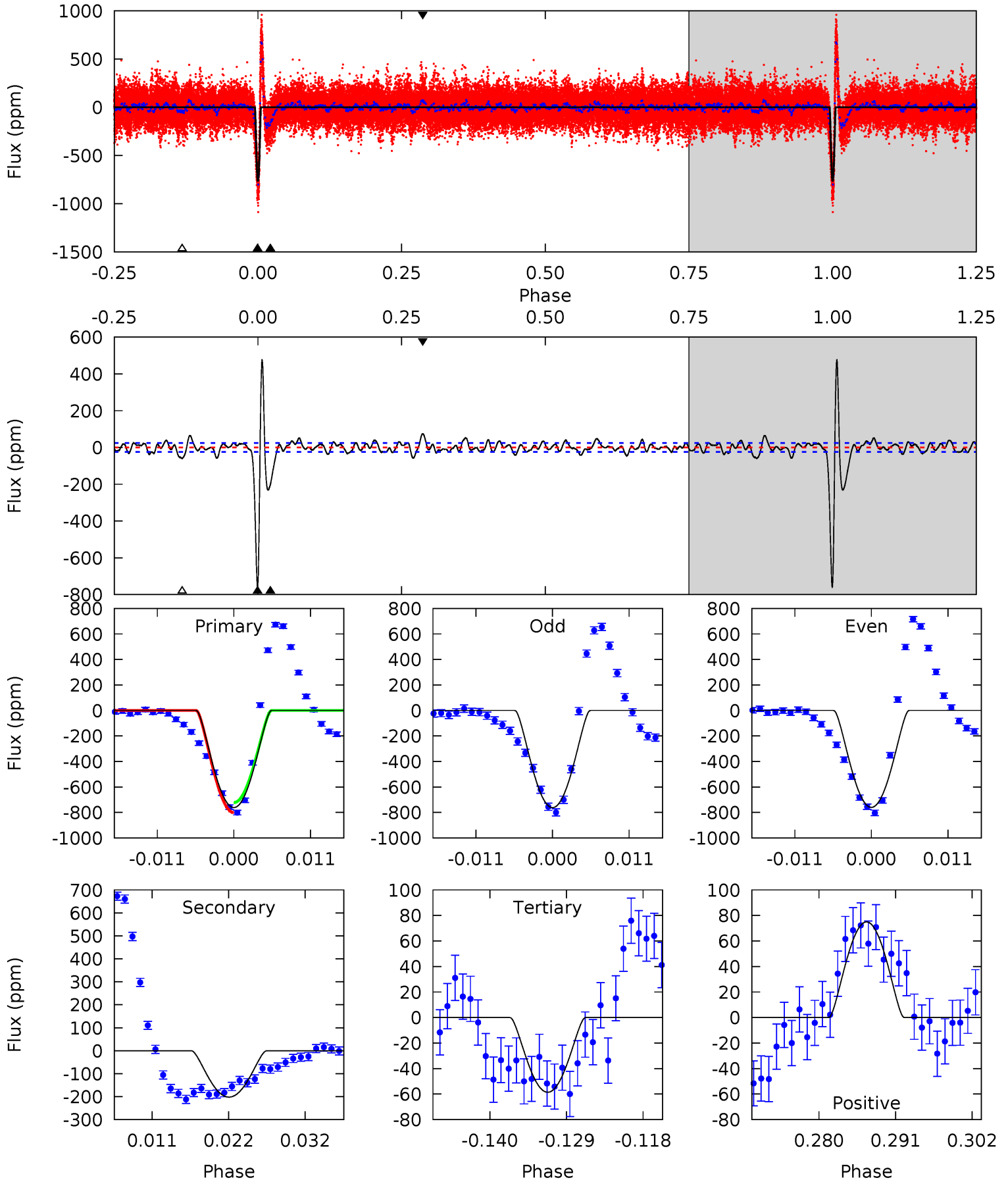
TCE 009972385-01 P= 58.421161 Days $T_0=188.655063$ (BKJD)



DV Model-Shift Uniqueness Test

009972385-01, P = 58.420909 Days, E = 130.220402 Days

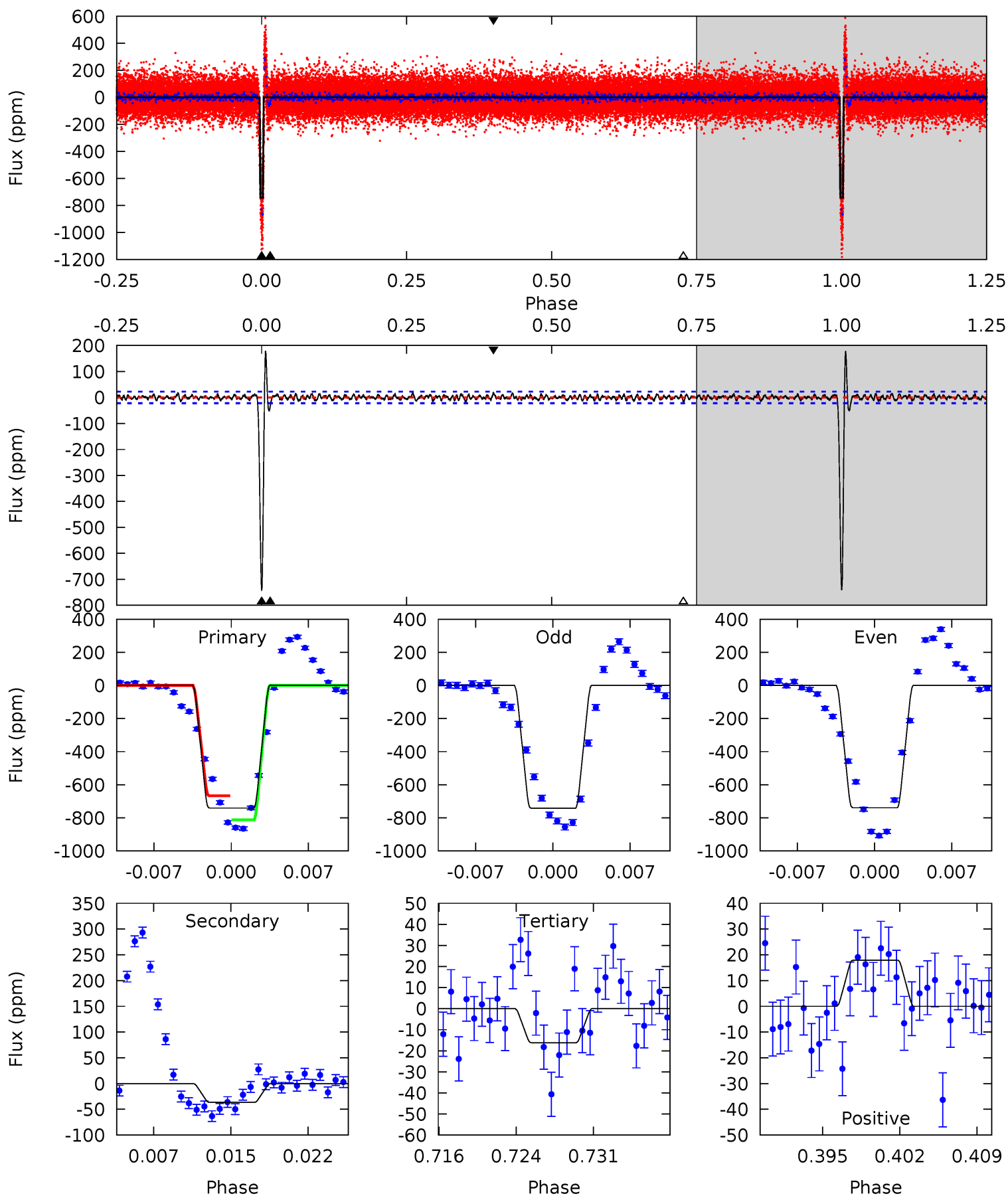
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
157.2	41.7	12.1	15.5	5.01	2.55	4.54	145.1	141.7	29.6	26.3	0.19	0.98	0.38	7.94



Alt Model-Shift Uniqueness Test

009972385-01, P = 58.421161 Days, E = 130.233902 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
171.2	8.43	3.73	4.13	5.09	2.68	1.40	167.4	167.0	4.70	4.30	0.29	1.03	0.19	16.6



Stellar Parameters For KIC 009972385

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6313^{+170}_{-170}	$3.922^{+0.323}_{-0.108}$	$-0.680^{+0.350}_{-0.250}$	$1.820^{+0.391}_{-0.587}$	$1.009^{+0.161}_{-0.145}$	$0.236^{+0.462}_{-0.087}$
	+3%/-3%	+8%/-3%	+51%/-37%	+21%/-32%	+16%/-14%	+196%/-37%
Source	PHO1	FLK73	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 009972385-01 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-202 ± 5	$9.82^{+4.40}_{-4.12}$	945^{+63}_{-82}	3706^{+733}_{-392}	102^{+197}_{-52}
Alt.	-37 ± 4	$5.94^{+3.98}_{-3.44}$	947^{+64}_{-85}	3298^{+1053}_{-421}	52^{+223}_{-34}

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 $A_{obs} \gg 1.0$

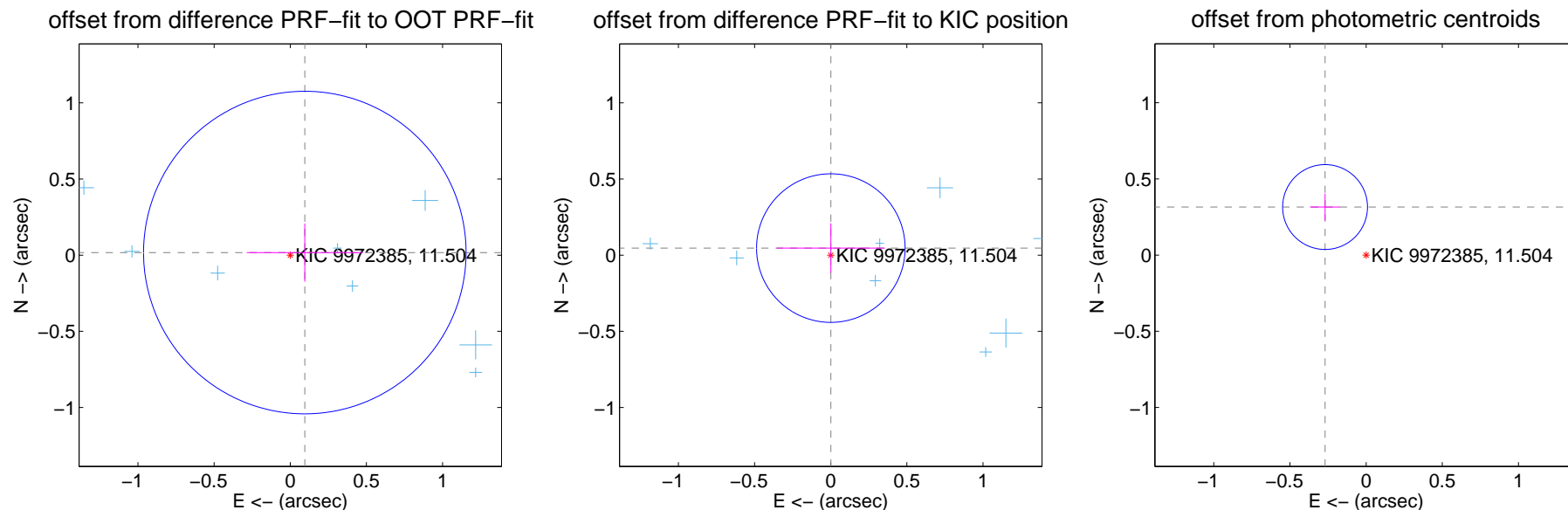
DV Centroid Data

Supplemental centroid analysis for 009972385-01. **Kepler magnitude: 11.50**. Transit SNR 47.53

There are 10 quarters with good PRF difference image offsets

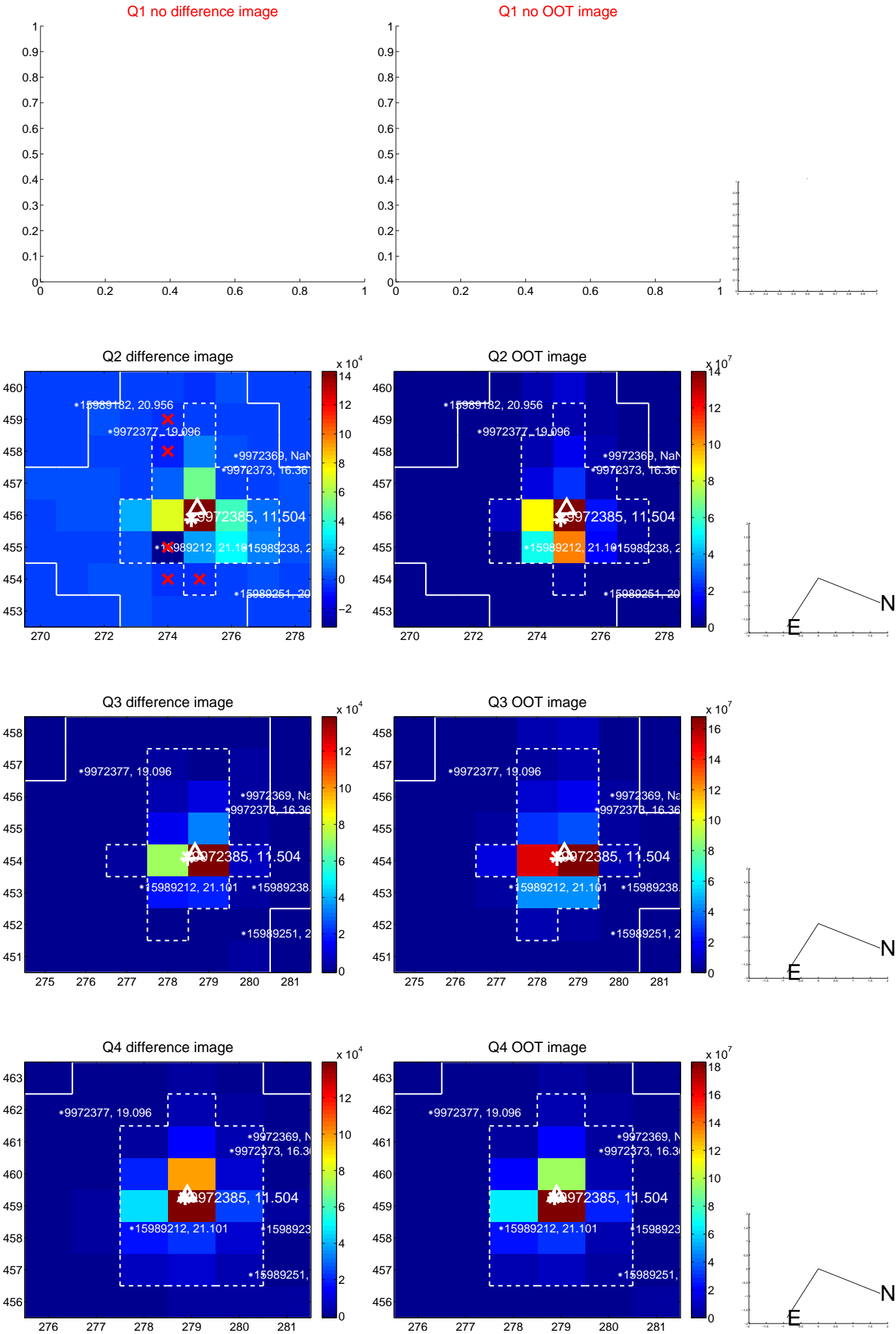
The direct PRF centroid is offset from the target star catalog position by about 0.17 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.097 ± 0.353	0.27	-0.096 ± 0.381	0.017 ± 0.191
PRF-fit source offset from KIC position	0.046 ± 0.163	0.29	-0.001 ± 0.356	0.046 ± 0.163
photometric centroid source offset	0.42 ± 0.09	4.47	0.27 ± 0.10	0.32 ± 0.09

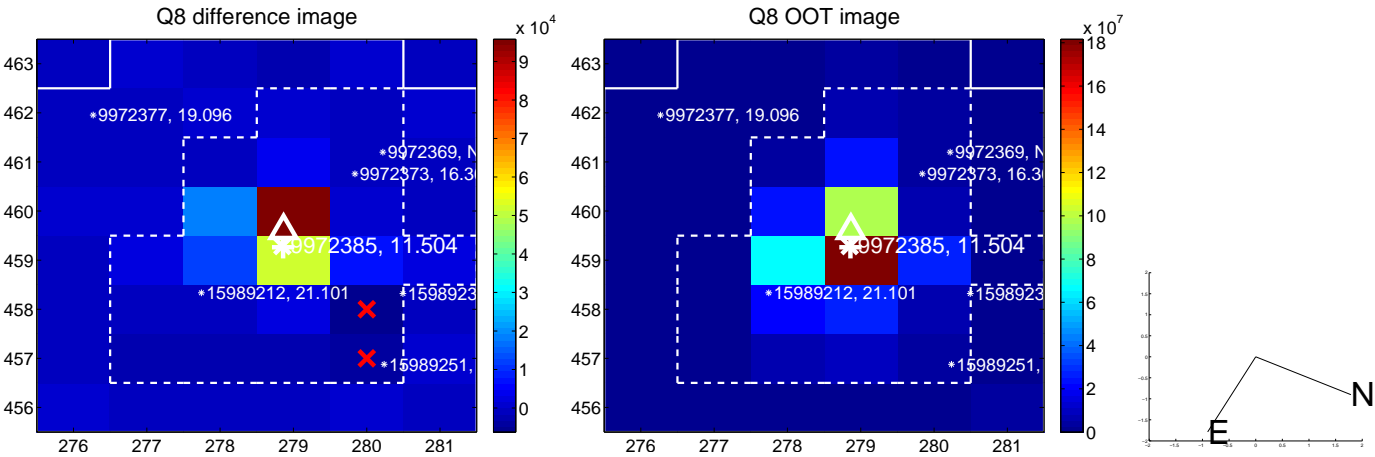
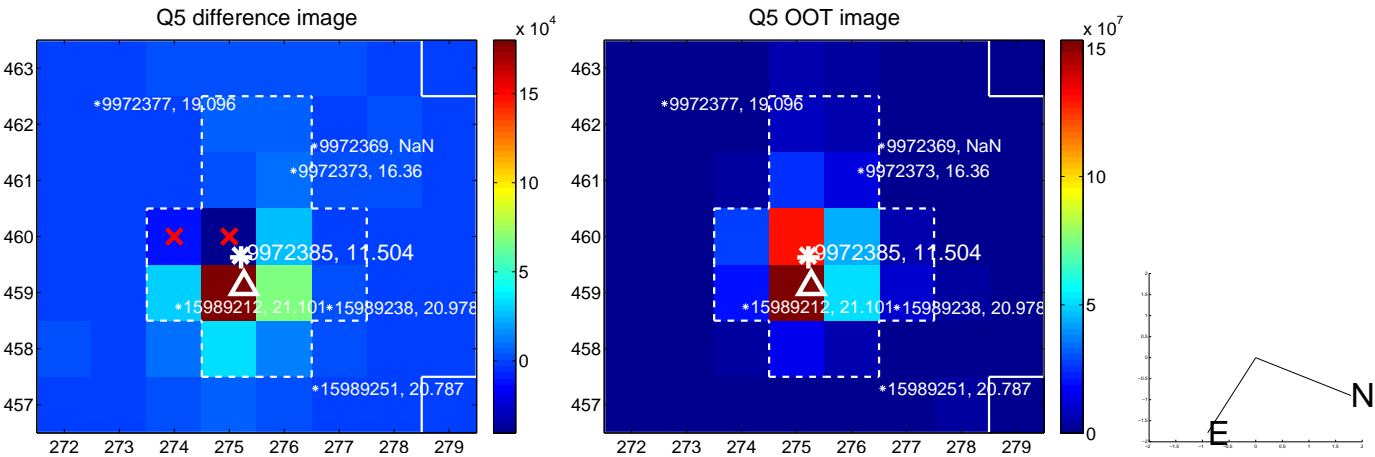


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

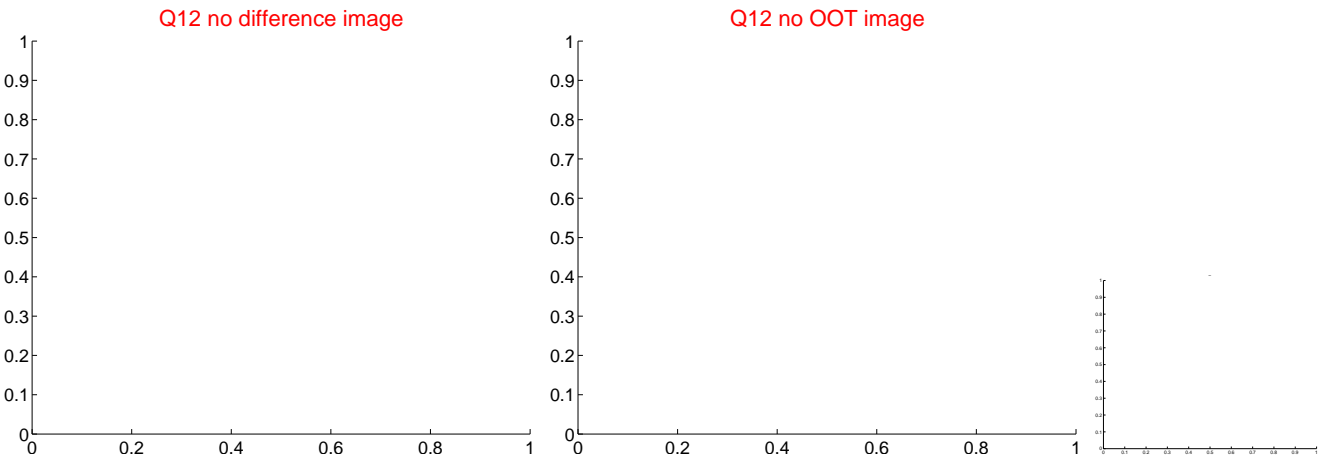
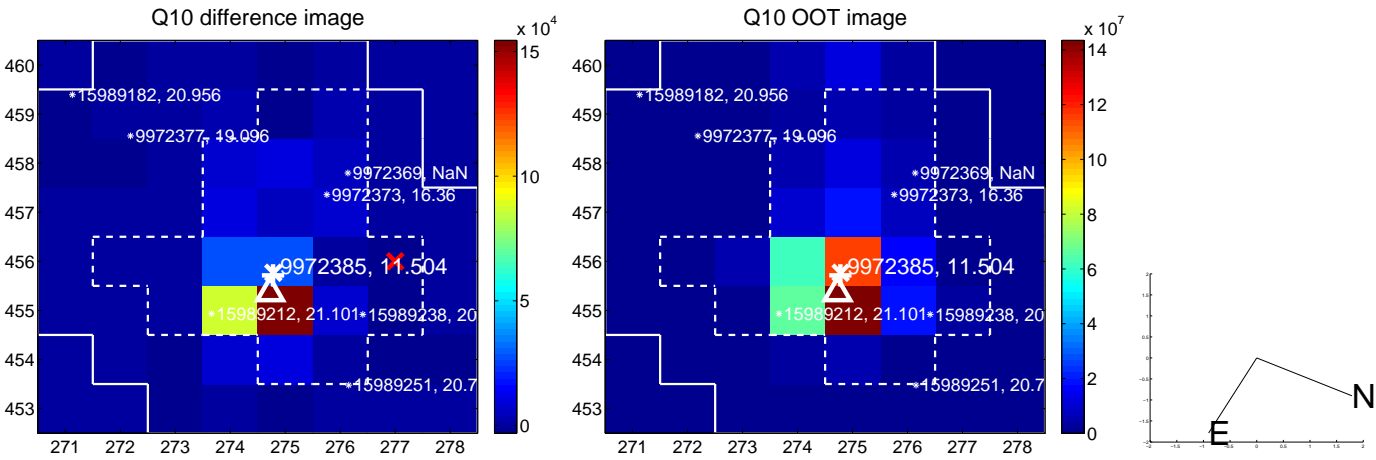
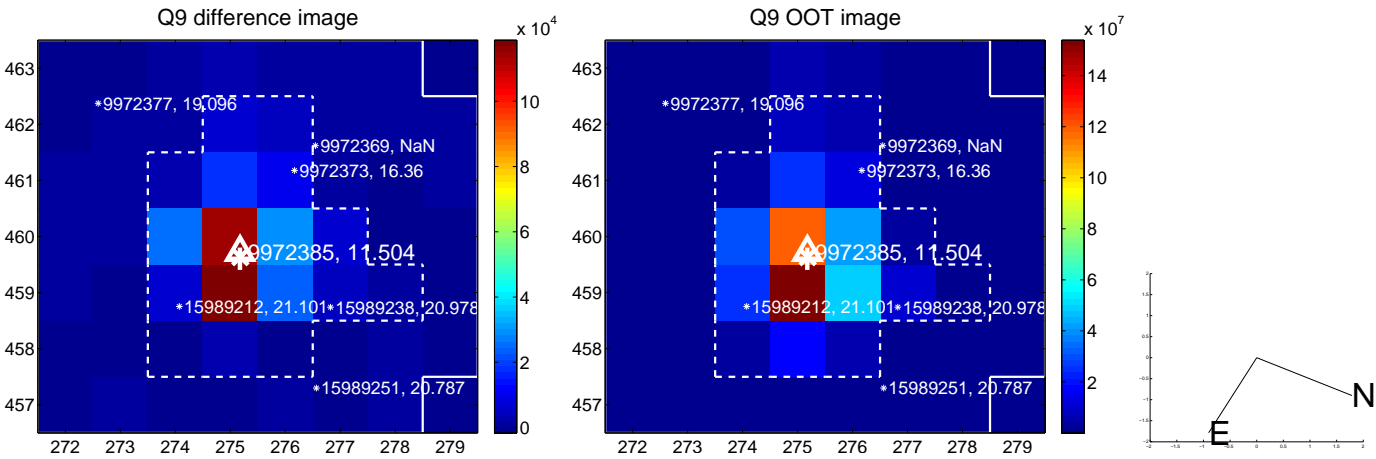
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



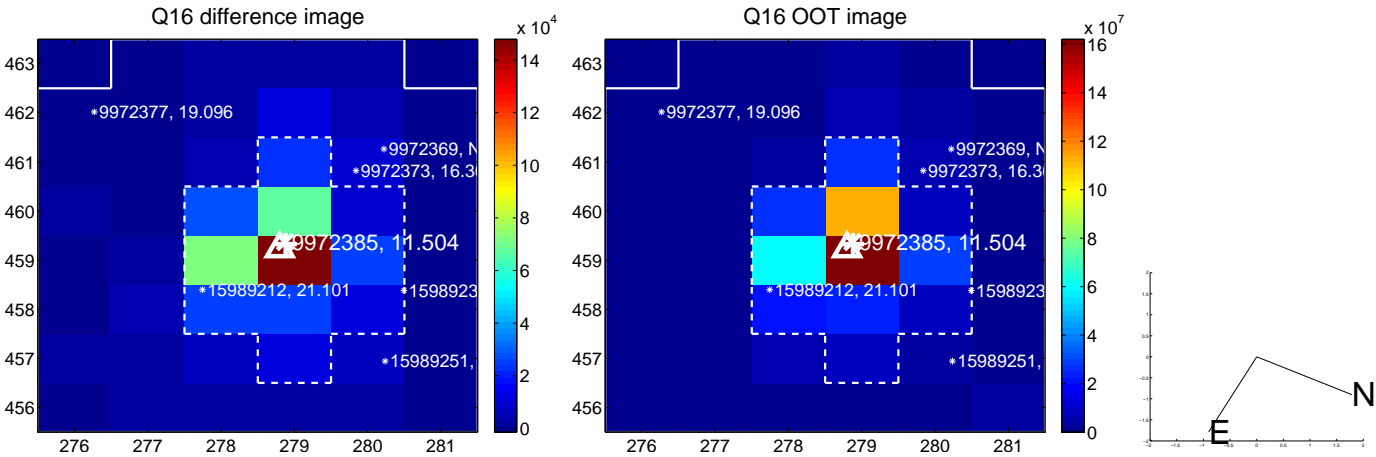
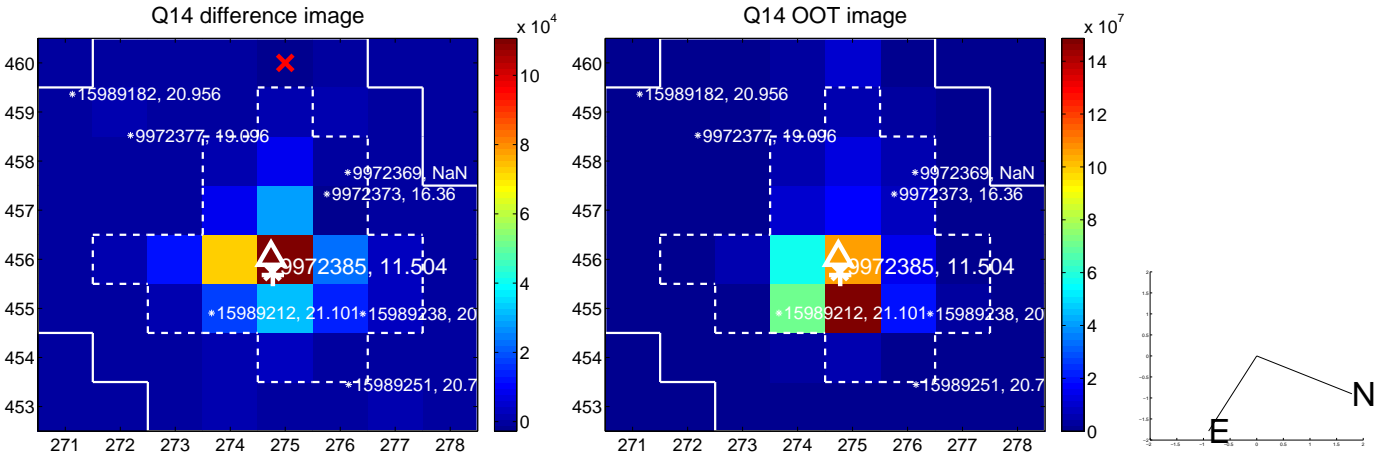
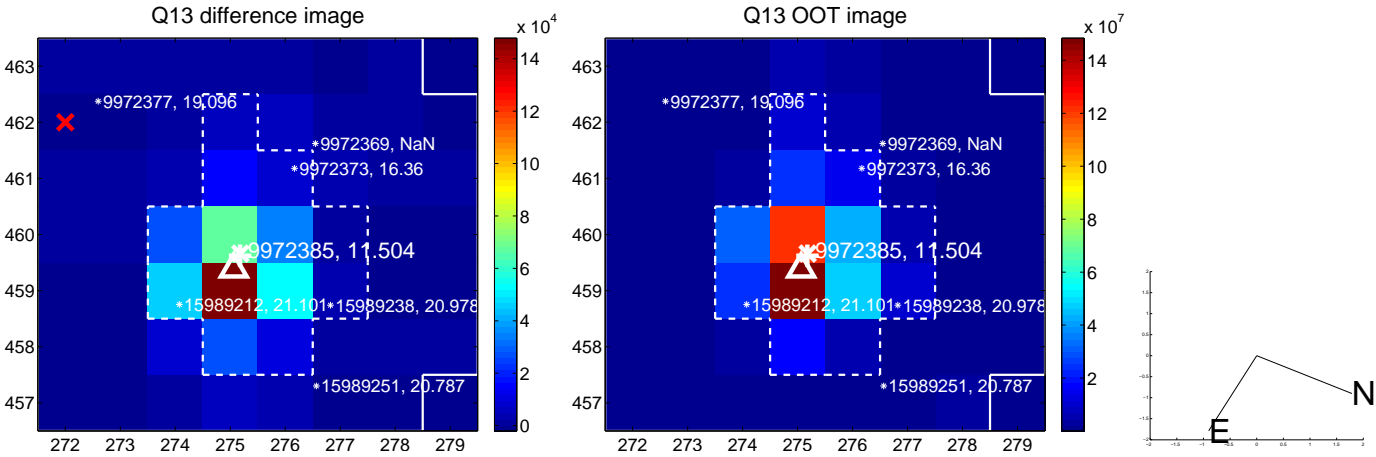
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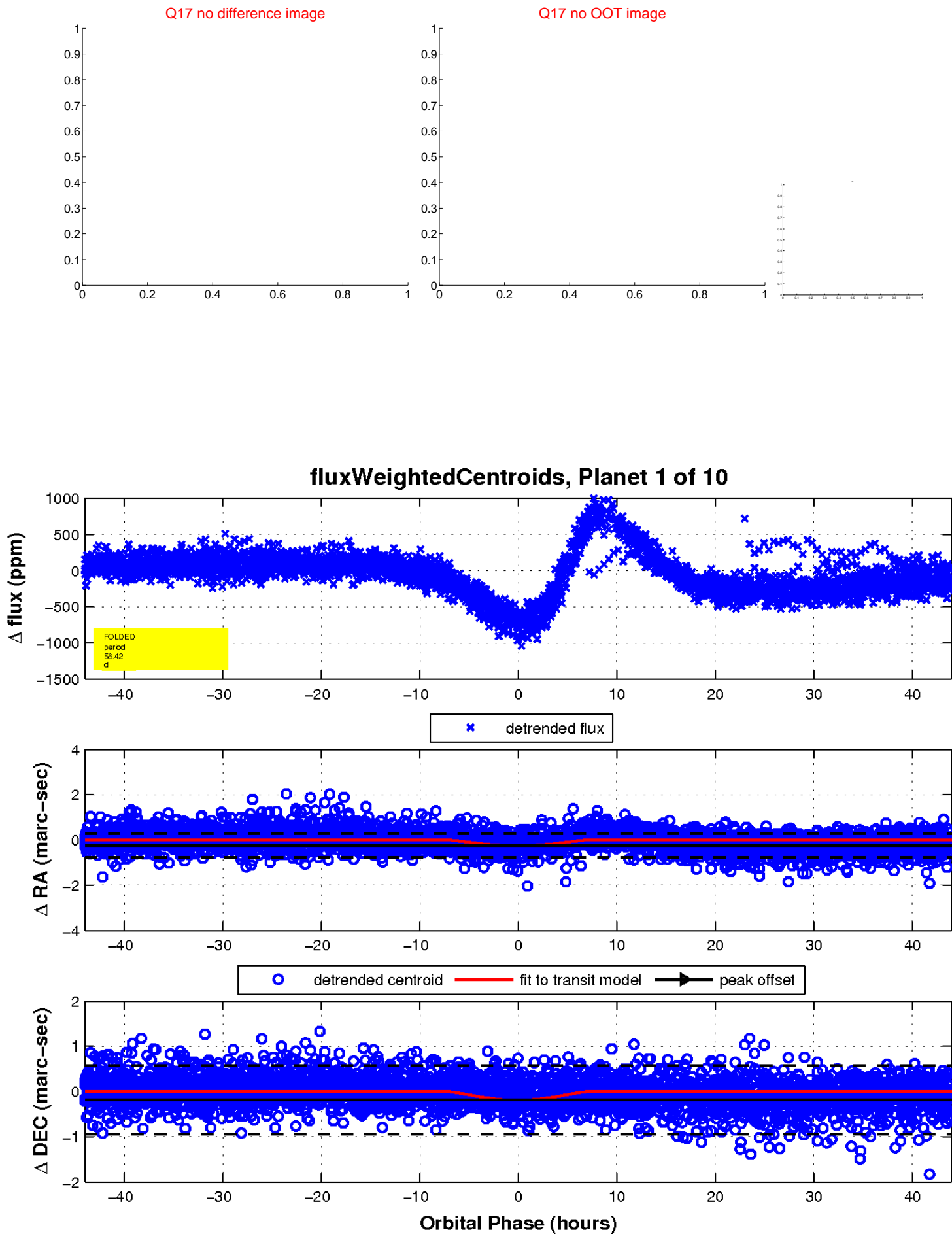
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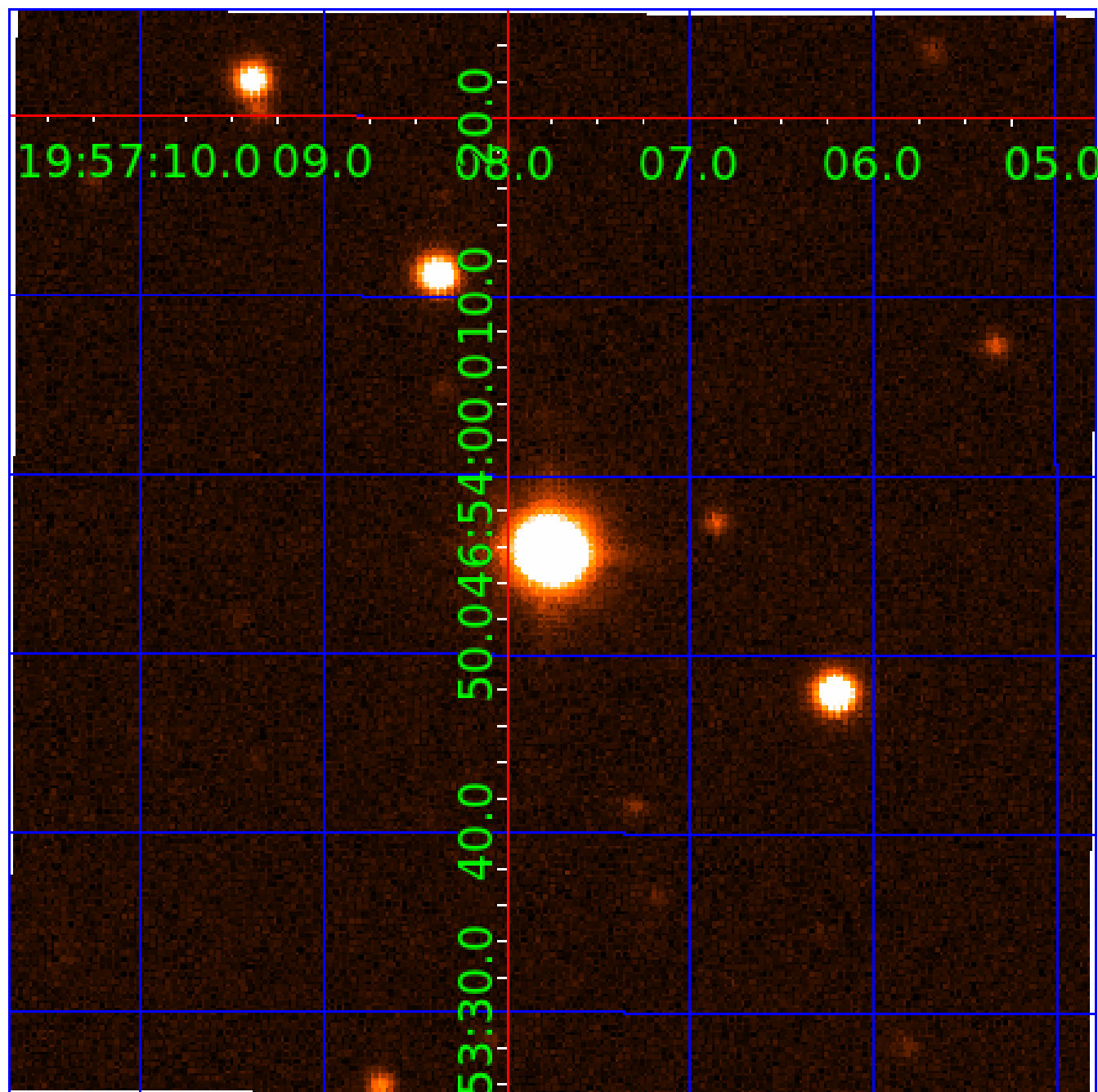


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UKIRT Image

Declination



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Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
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009972385-03	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD
009972385-04	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—SAME_NTL_PERIOD
009972385-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
009972385-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
009972385-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_MEAS
009972385-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_UNCERTAIN
009972385-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
009972385-10	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—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.

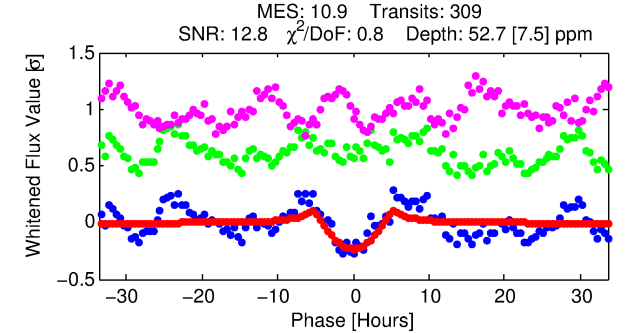
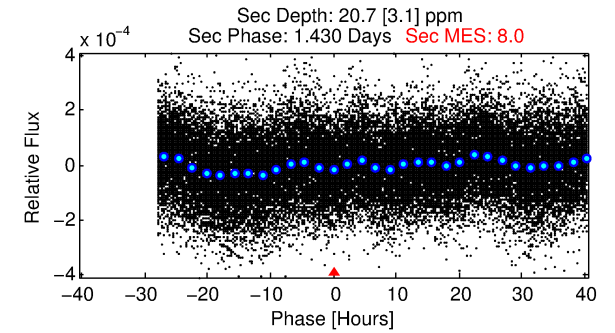
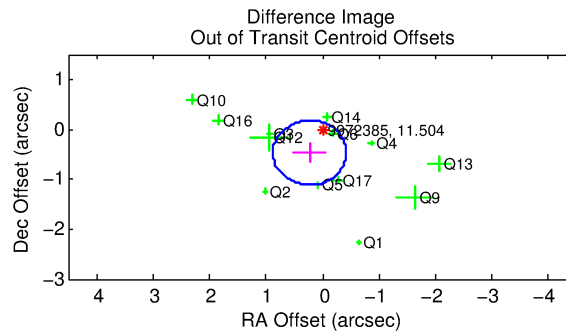
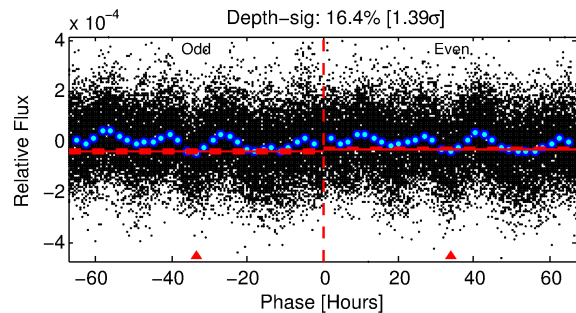
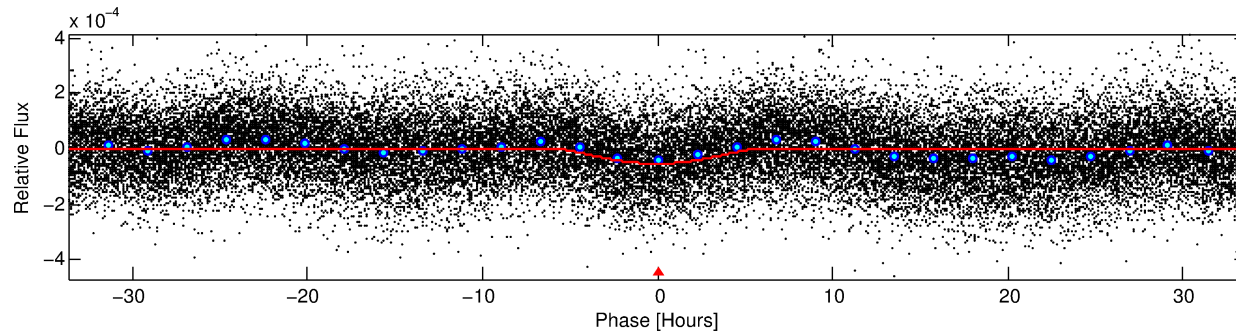
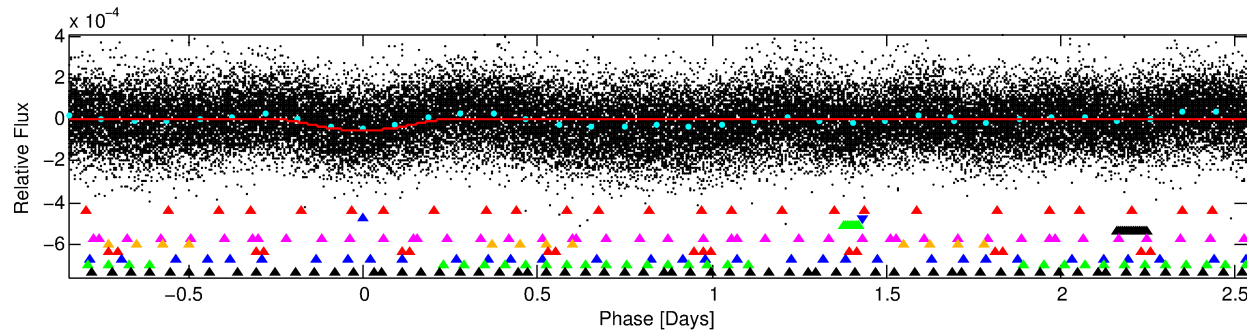
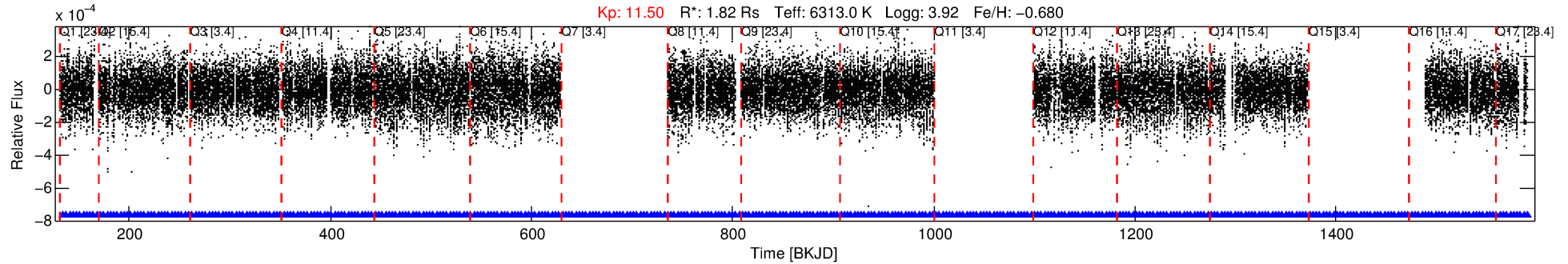
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009972385-02

No Significant Match Found

DV One-Page Summary

KIC: 9972385 Candidate: 2 of 10 Period: 3.378 d



DV Fit Results:

Period = 3.37778 [0.00006] d
Epoch = 134.2445 [0.0126] BKJD
Rp/R* = 0.0130 [0.0116]
a/R* = 1.08 [0.02]
b = 1.00 [0.02]
Seff = 2411.99 [1329.17]
Teq = 1787 [246] K
Rp = 2.58 [2.45] Re
a = 0.0442 [0.0145] AU
Ag = 3.35 [6.29] [0.37σ]
Teffp = 3738 [1683] K [1.15σ]

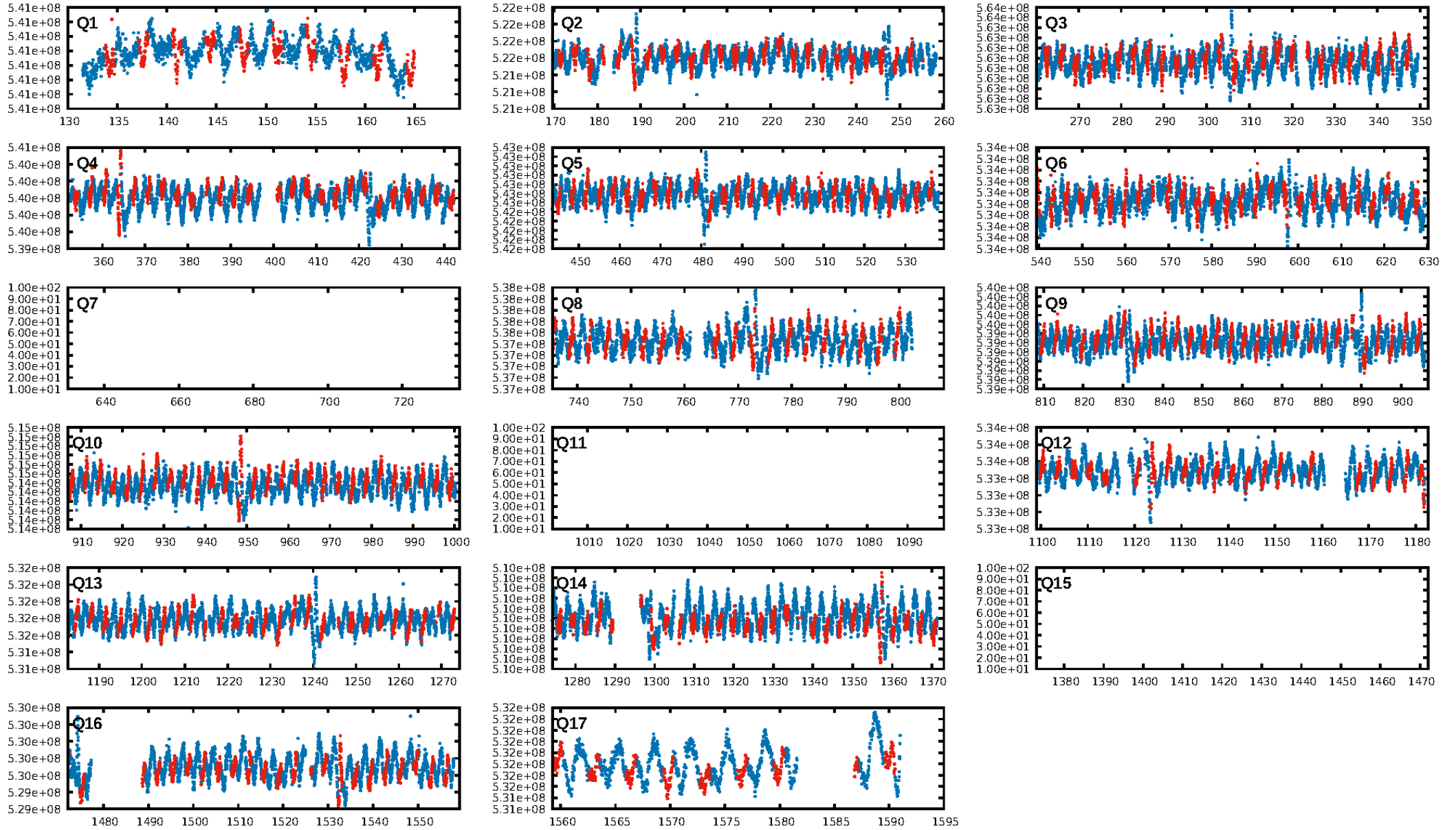
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]
LongPeriod-sig: 0.0% [0.00σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 2.15e-12
RollingBand-fgt: 1.00 [291/291]
GhostDiagnostic-chr: 2.426
Centroid-sig: 12.1%
Centroid-so: 0.612 arcsec [1.62σ]
OotOffset-rm: 0.525 arcsec [2.43σ]
KicOffset-rm: 0.542 arcsec [2.18σ]
OotOffset-st: 4/1/3/5 [13]
KicOffset-st: 4/1/3/5 [13]
DiffImageQuality-fgm: 0.69 [9/13]
DiffImageOverlap-fno: 1.00 [14/14]

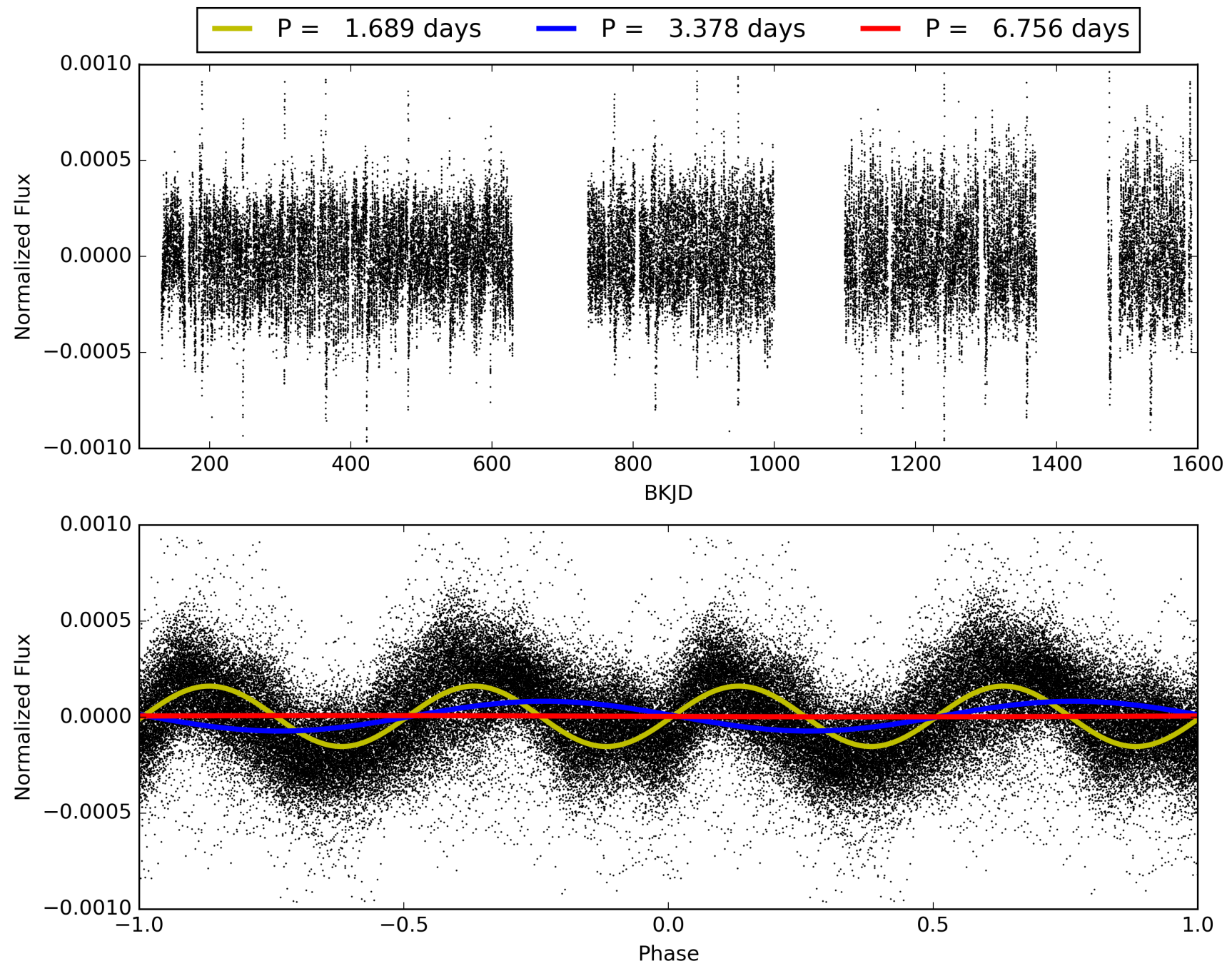
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 17:08:46 Z

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

TCE 009972385-02, PDC Light Curves

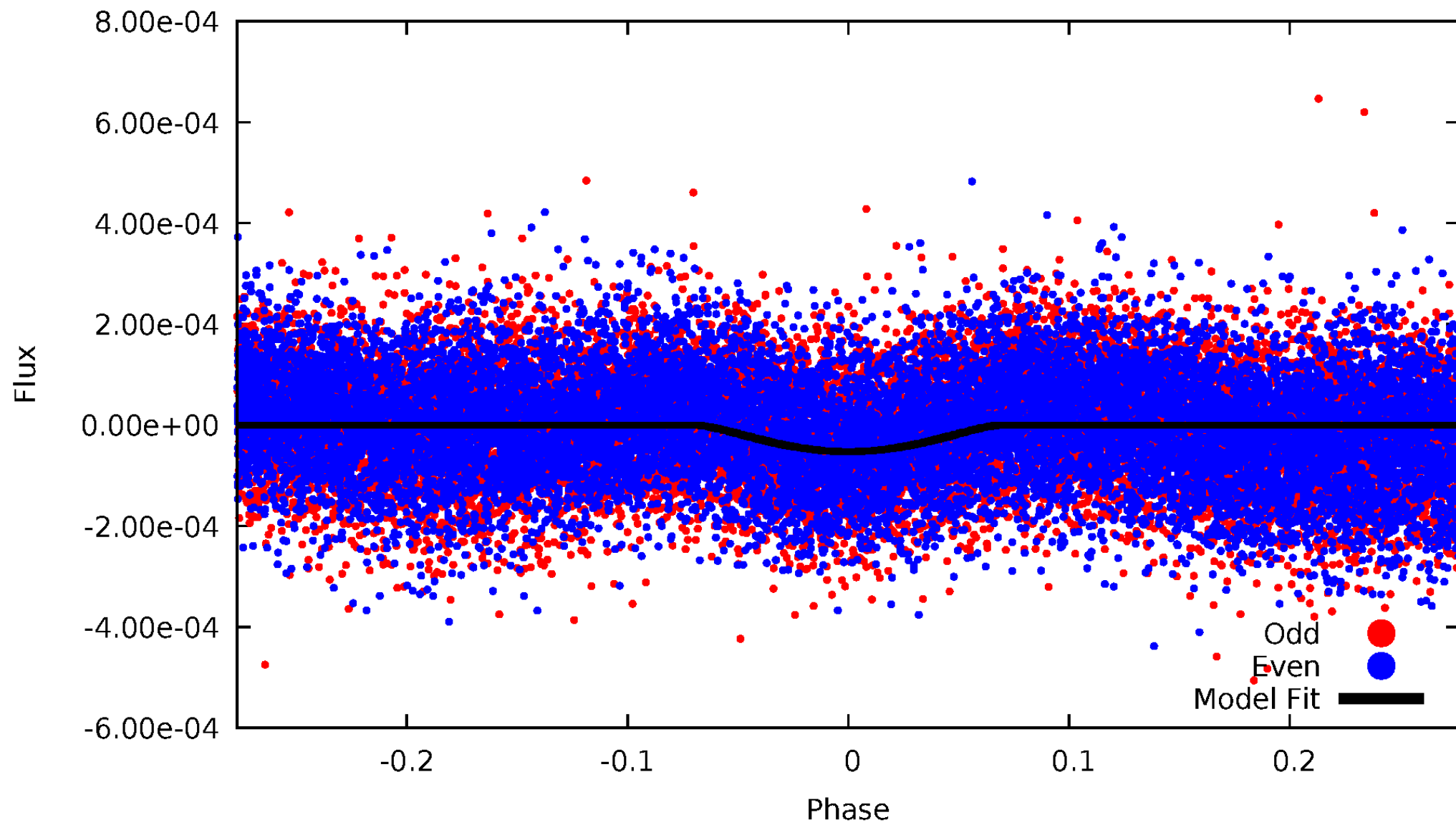


TCE 009972385-02



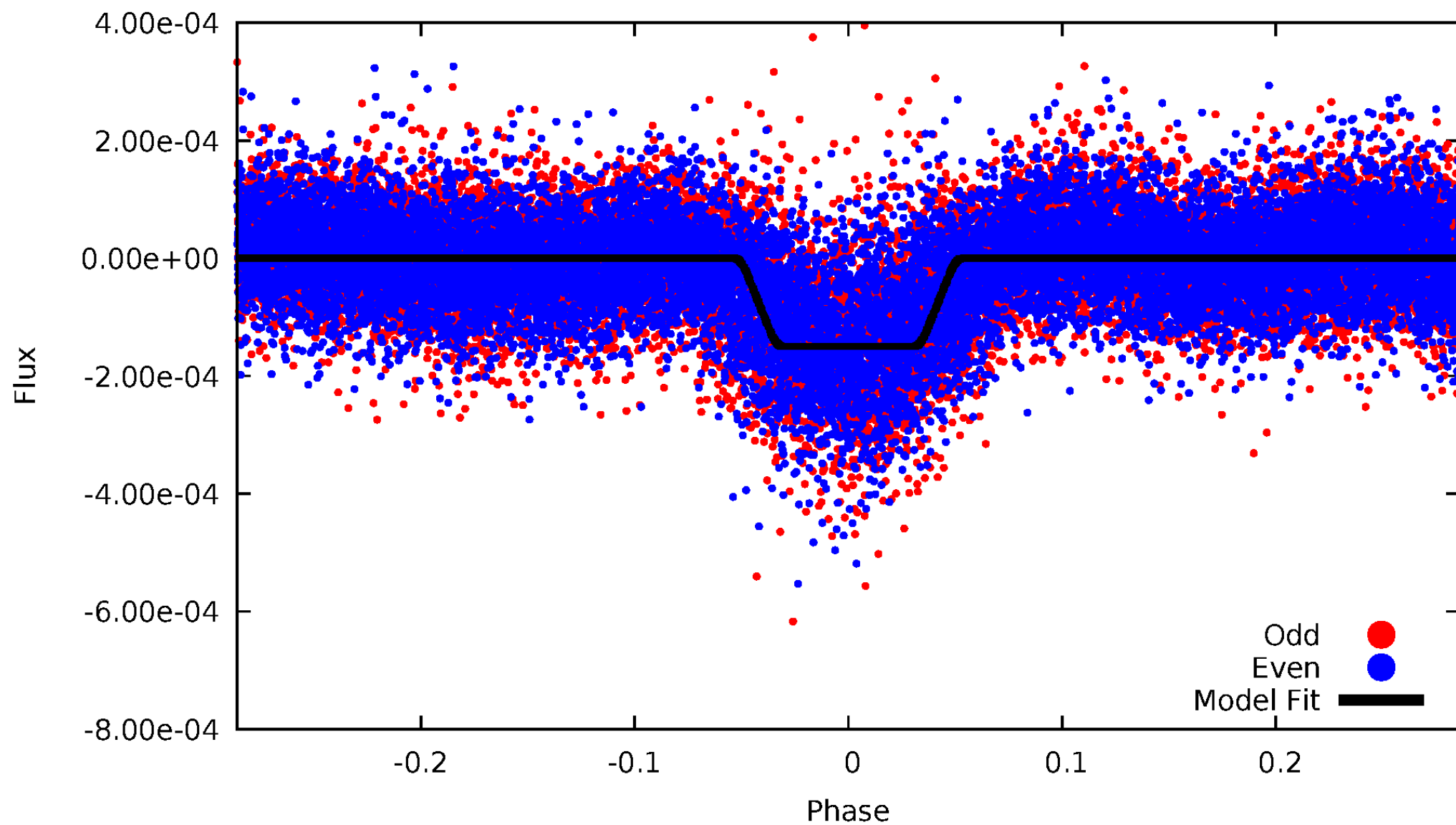
DV Odd/Even

TCE 009972385-02



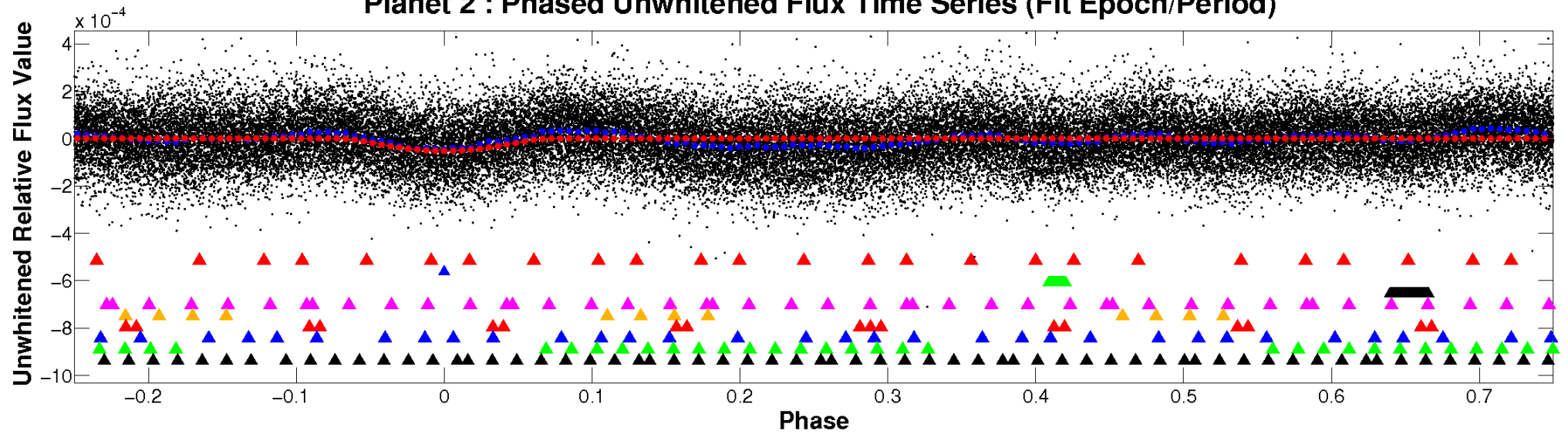
ALT Odd/Even

TCE 009972385-02

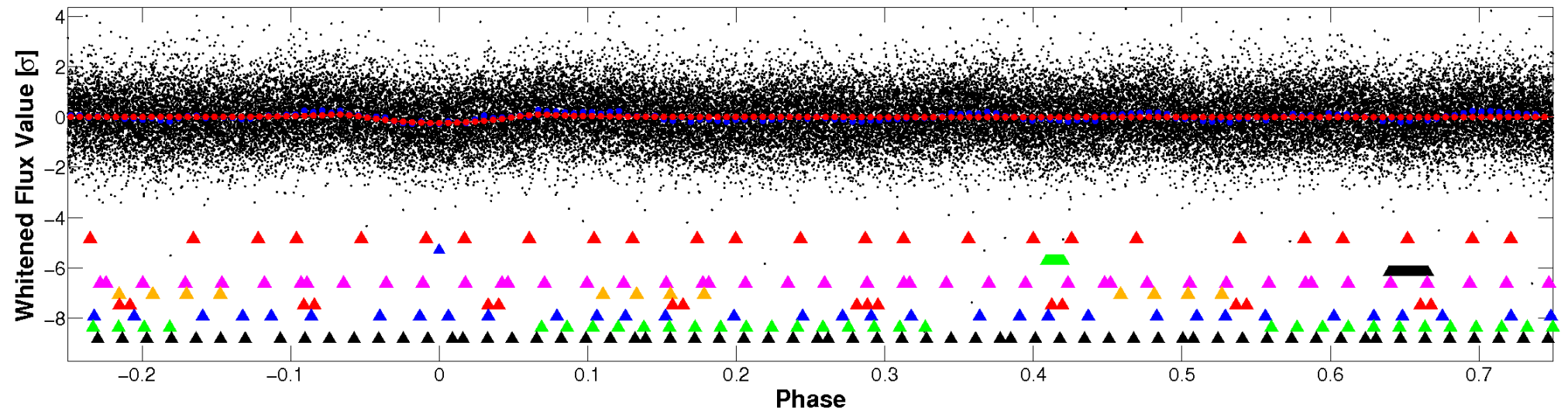


Non-Whitened Vs. Whitened Light Curve

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

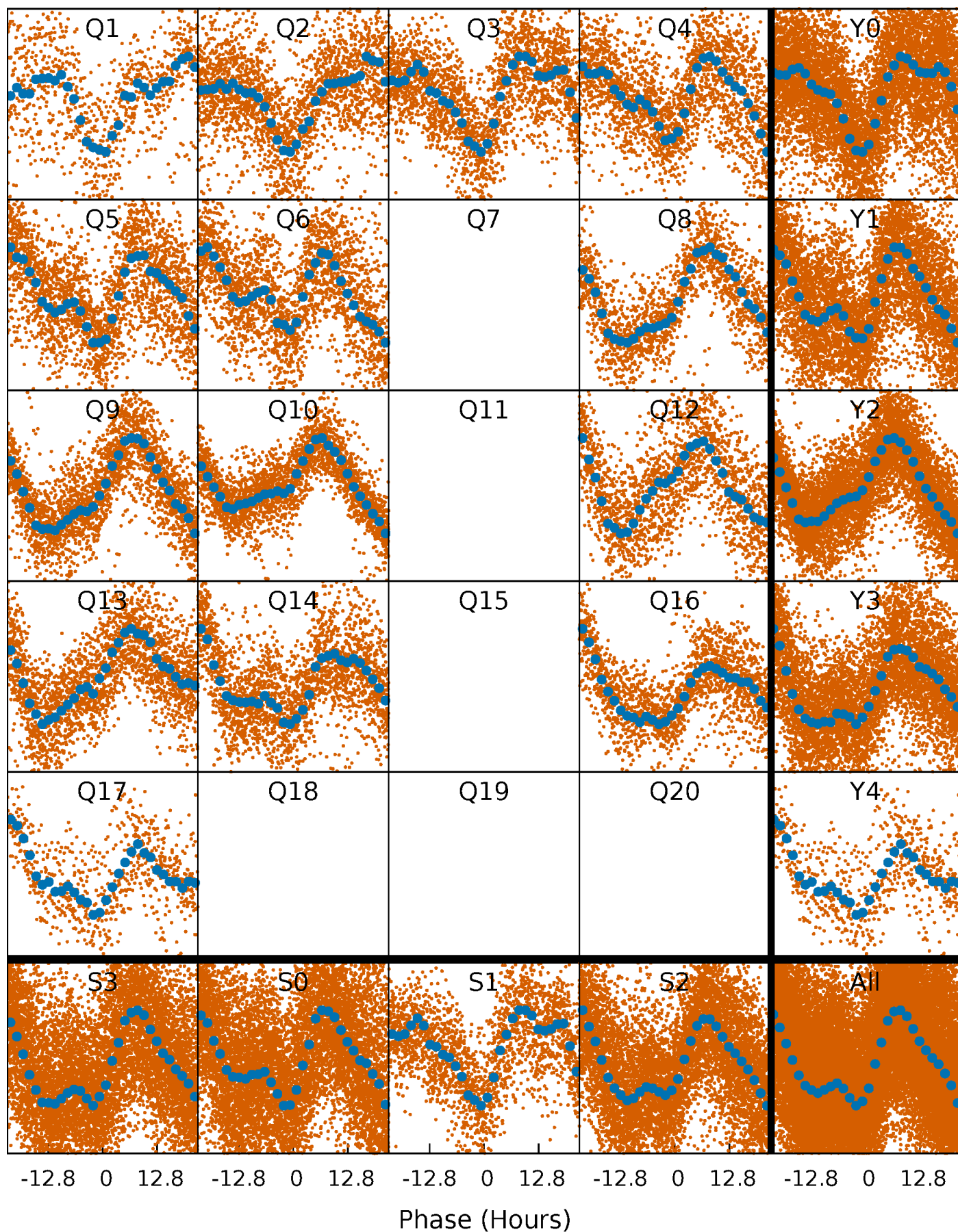


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



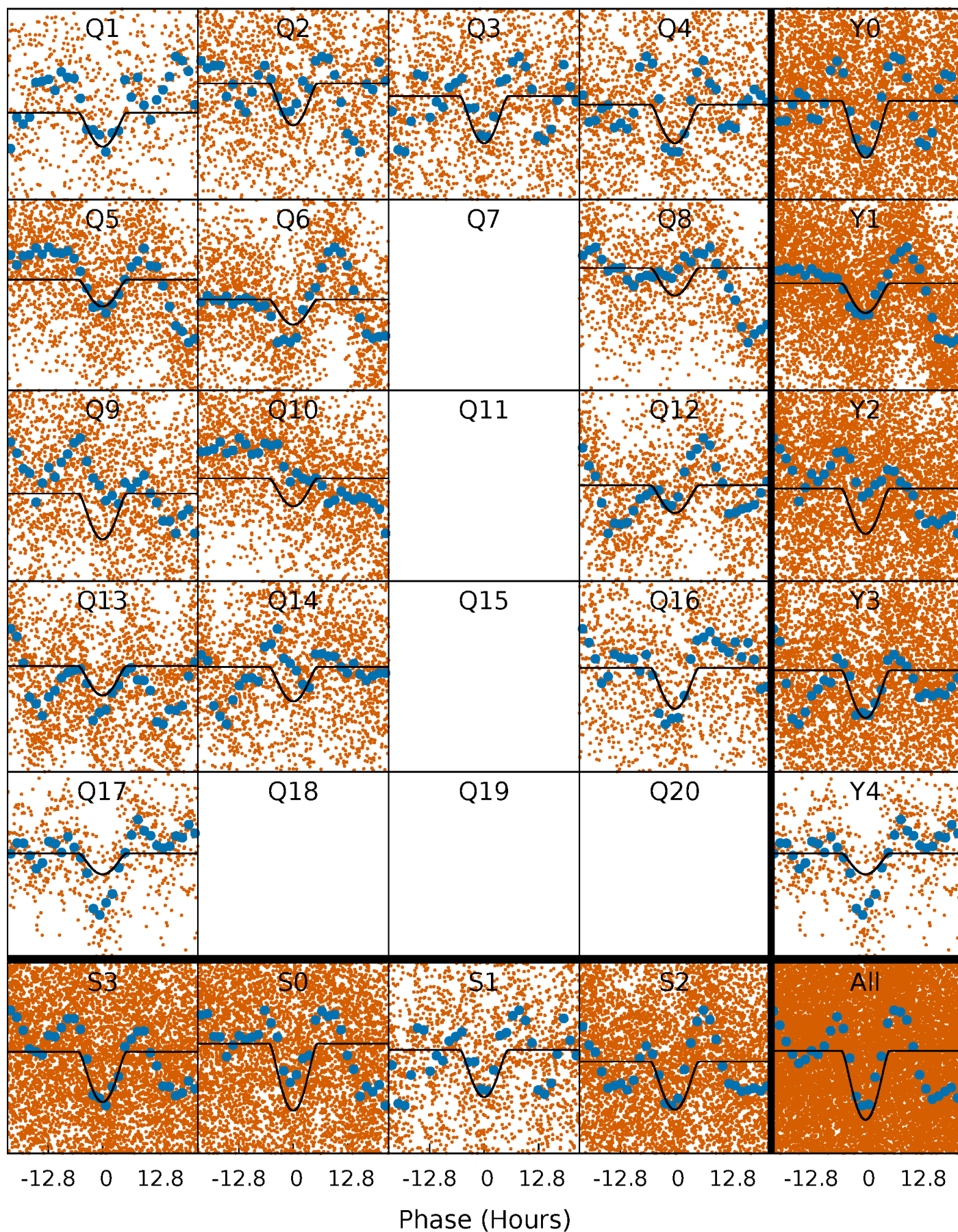
PDC Quarter-Phased Transit Curves

TCE 009972385-02 P= 3.377783 Days $T_0=134.244451$ (BKJD)



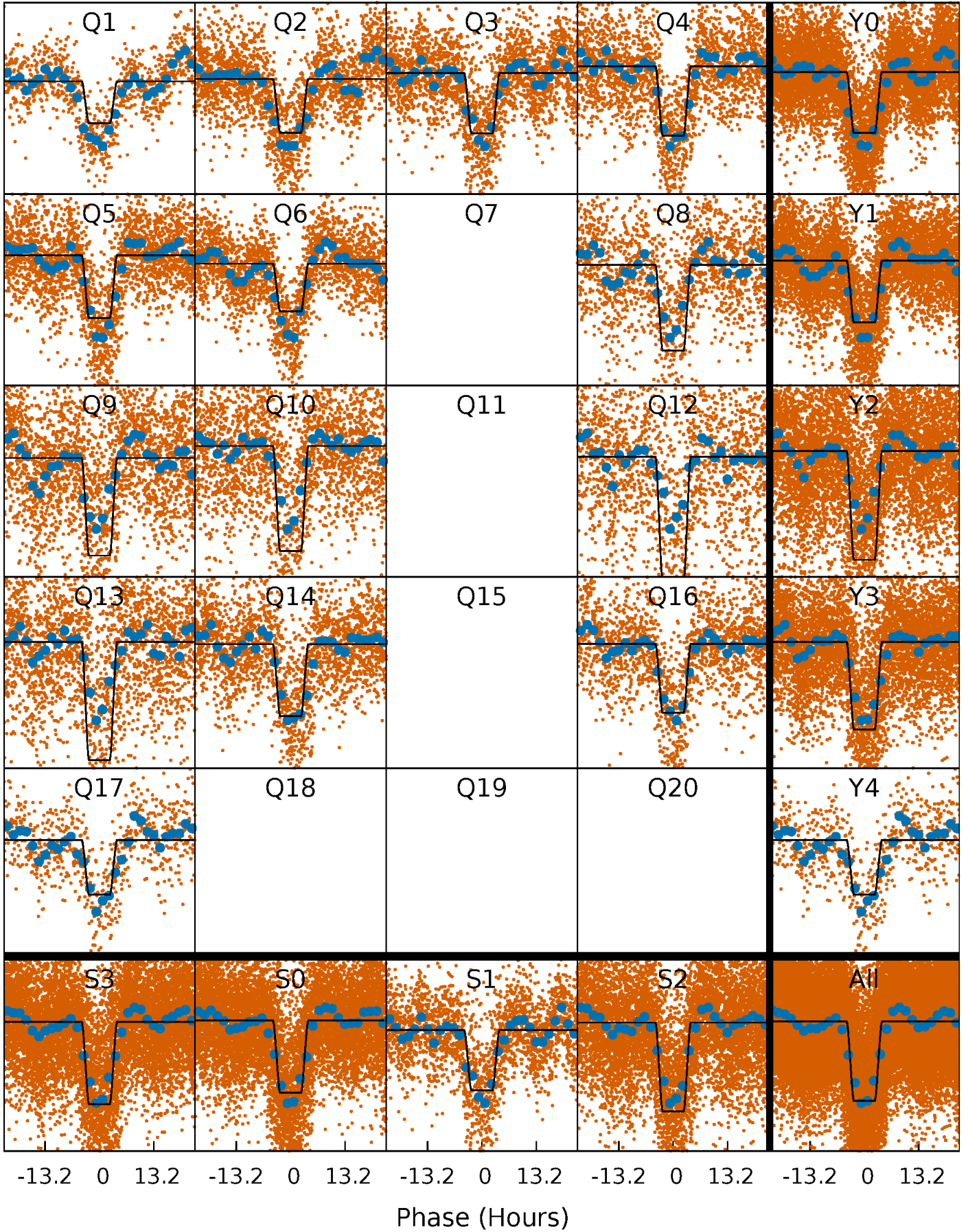
DV Quarter-Phased Transit Curves

TCE 009972385-02 P= 3.377783 Days $T_0=134.244451$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

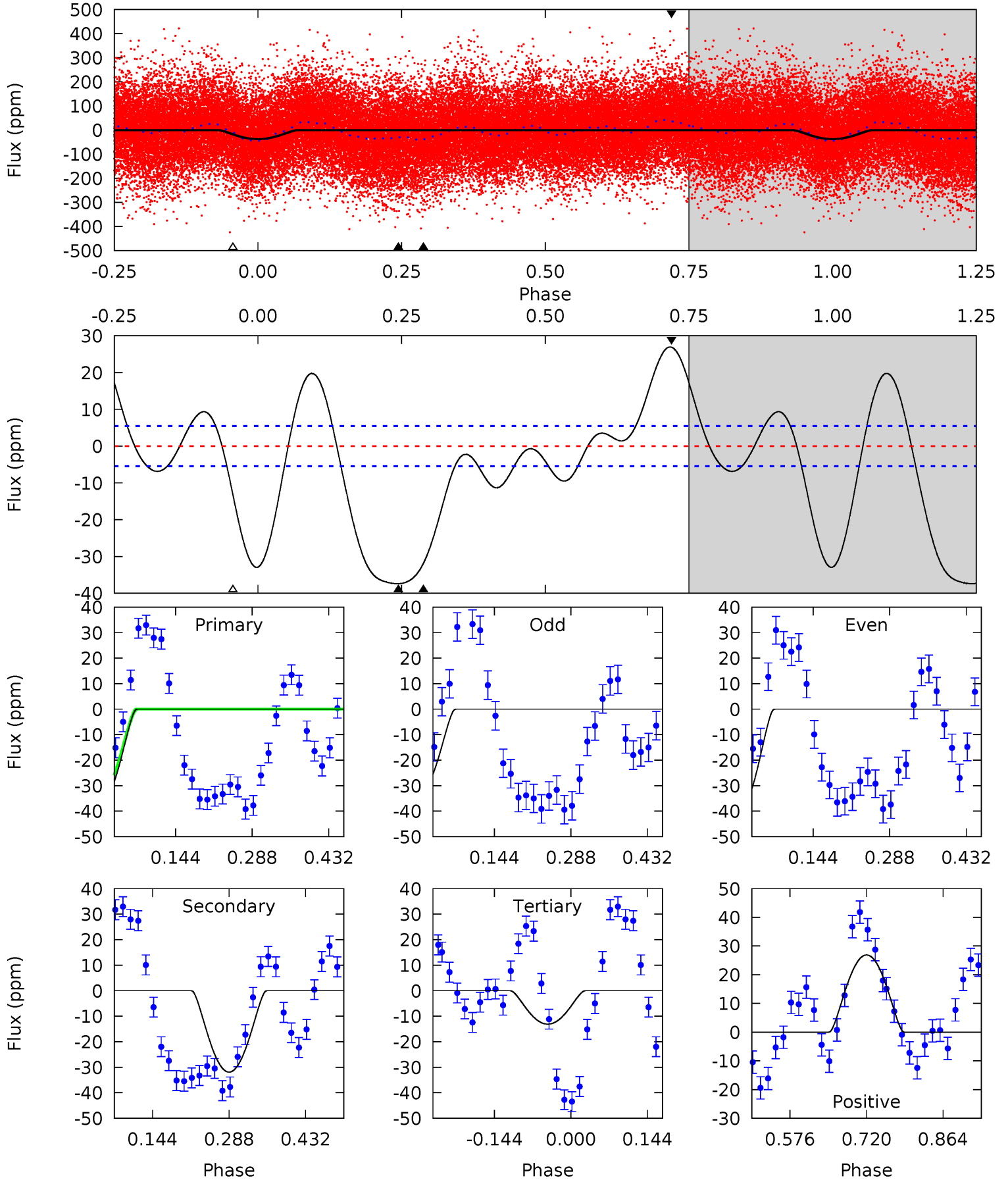
TCE 009972385-02 P= 3.377762 Days $T_0=134.224682$ (BKJD)



DV Model-Shift Uniqueness Test

009972385-02, P = 3.377783 Days, E = 130.866668 Days

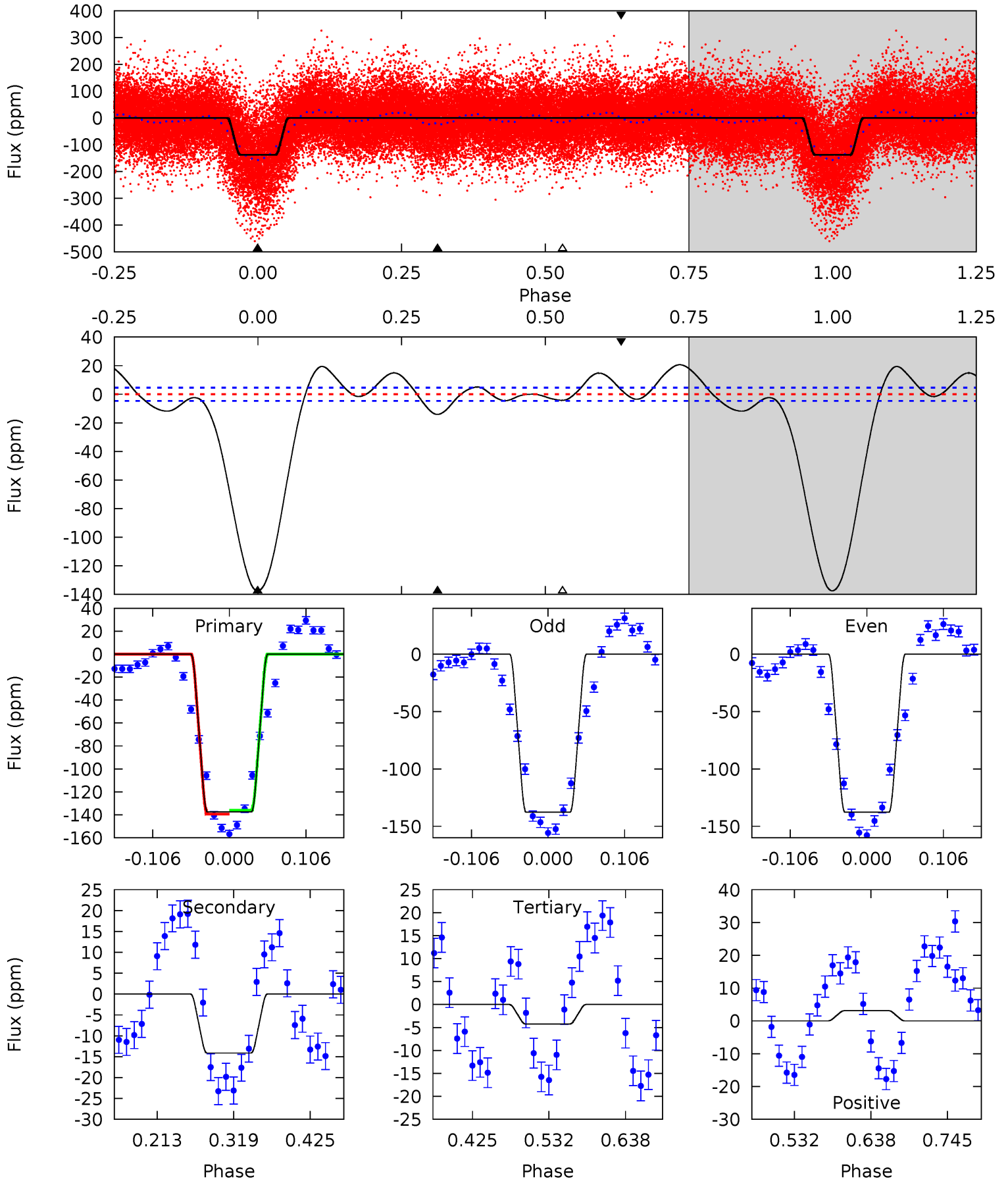
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
30.6	26.1	10.7	22.0	4.49	1.46	11.1	19.9	8.60	15.4	4.10	3.23	0.96	0.42	2.70



Alt Model-Shift Uniqueness Test

009972385-02, P = 3.377762 Days, E = 130.846920 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
135.9	14.0	4.21	3.08	4.55	1.61	8.58	131.7	132.9	9.77	10.9	0.03	1.01	0.13	1.58



Stellar Parameters For KIC 009972385

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6313^{+170}_{-170}	$3.922^{+0.323}_{-0.108}$	$-0.680^{+0.350}_{-0.250}$	$1.820^{+0.391}_{-0.587}$	$1.009^{+0.161}_{-0.145}$	$0.236^{+0.462}_{-0.087}$
	+3%/-3%	+8%/-3%	+51%/-37%	+21%/-32%	+16%/-14%	+196%/-37%
Source	PHO1	FLK73	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 009972385-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-32 ± 1	$2.72^{+1.98}_{-1.55}$	2442^{+157}_{-220}	4120^{+1816}_{-727}	$4.581^{+21.439}_{-2.995}$
Alt.	-14 ± 1	$2.64^{+2.14}_{-1.66}$	2449^{+164}_{-260}	3570^{+1682}_{-756}	$2.201^{+14.235}_{-1.564}$

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 $A_{obs} \gg 1.0$

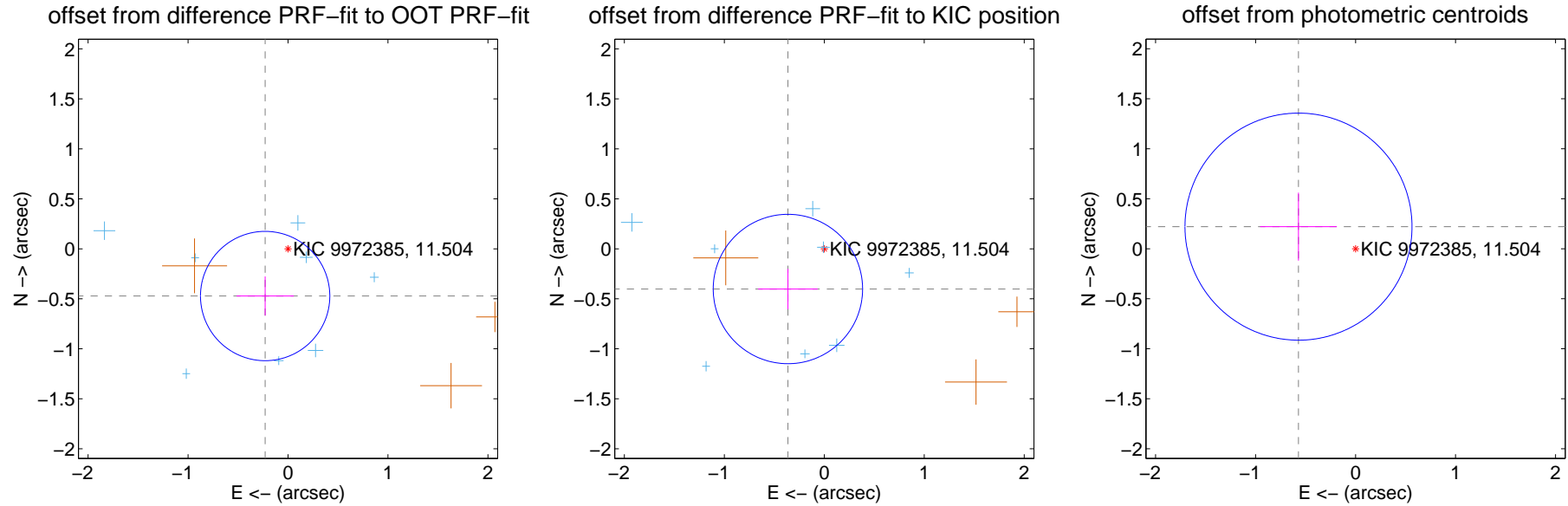
DV Centroid Data

Supplemental centroid analysis for 009972385-02. **Kepler magnitude: 11.50.** Transit SNR 12.78

There are 9 quarters with good PRF difference image offsets

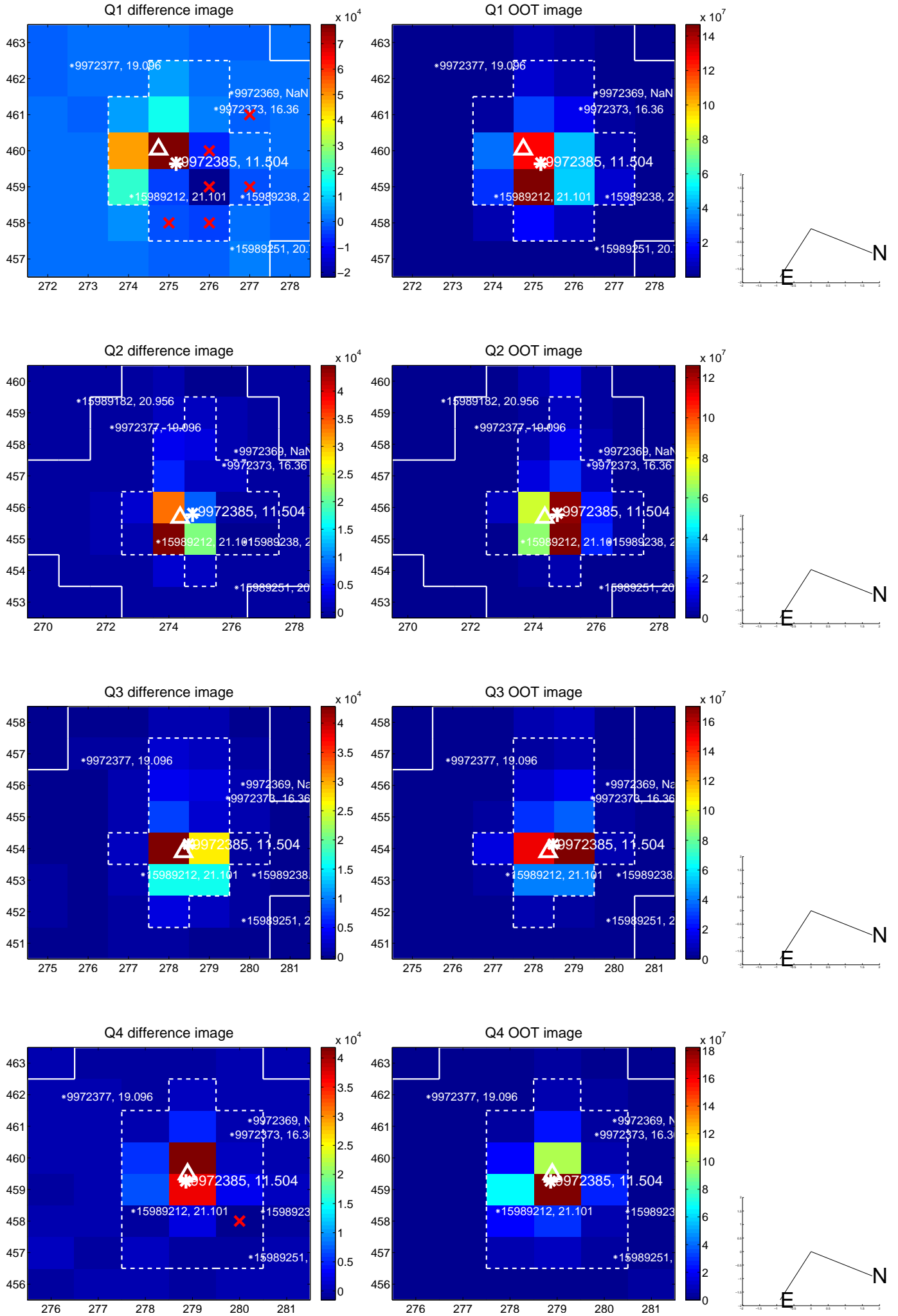
The direct PRF centroid is offset from the target star catalog position by about 0.16 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.525 ± 0.216	2.43	0.229 ± 0.285	-0.472 ± 0.196
PRF-fit source offset from KIC position	0.542 ± 0.249	2.18	0.364 ± 0.297	-0.402 ± 0.201
photometric centroid source offset	0.61 ± 0.38	1.62	0.57 ± 0.38	0.22 ± 0.34

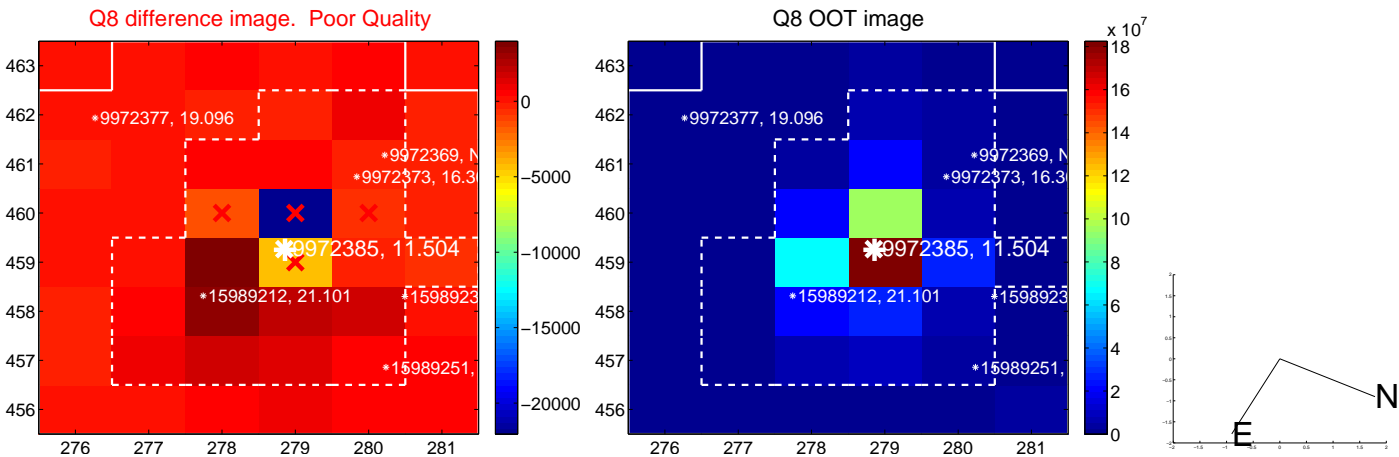
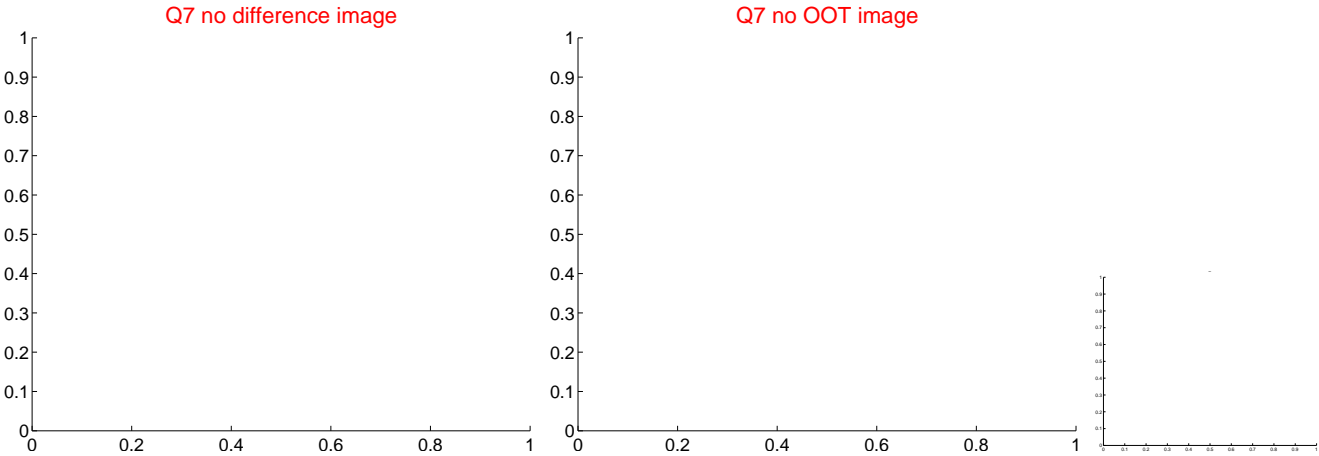
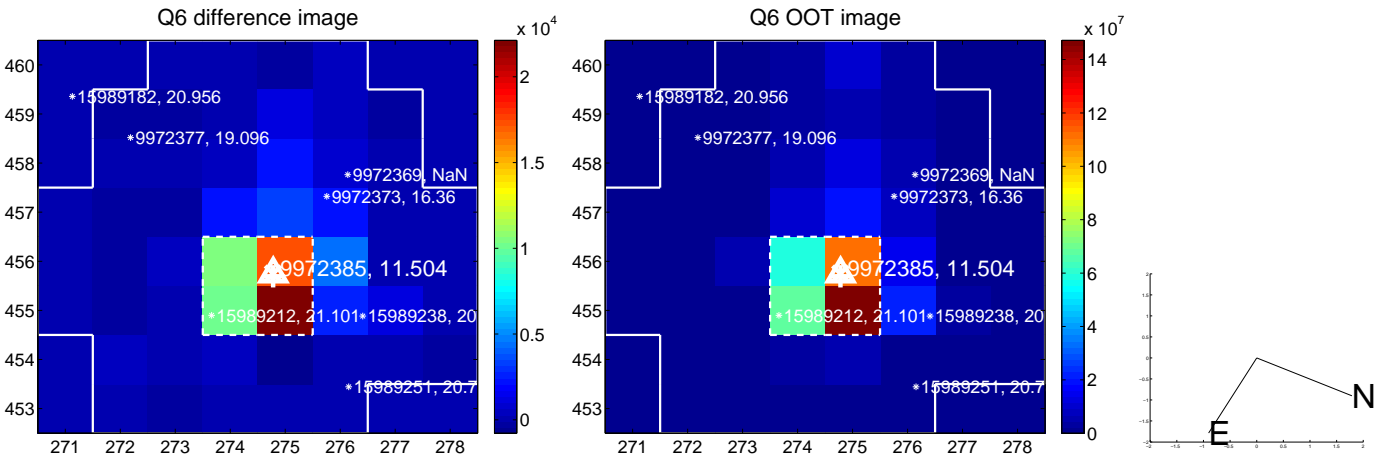
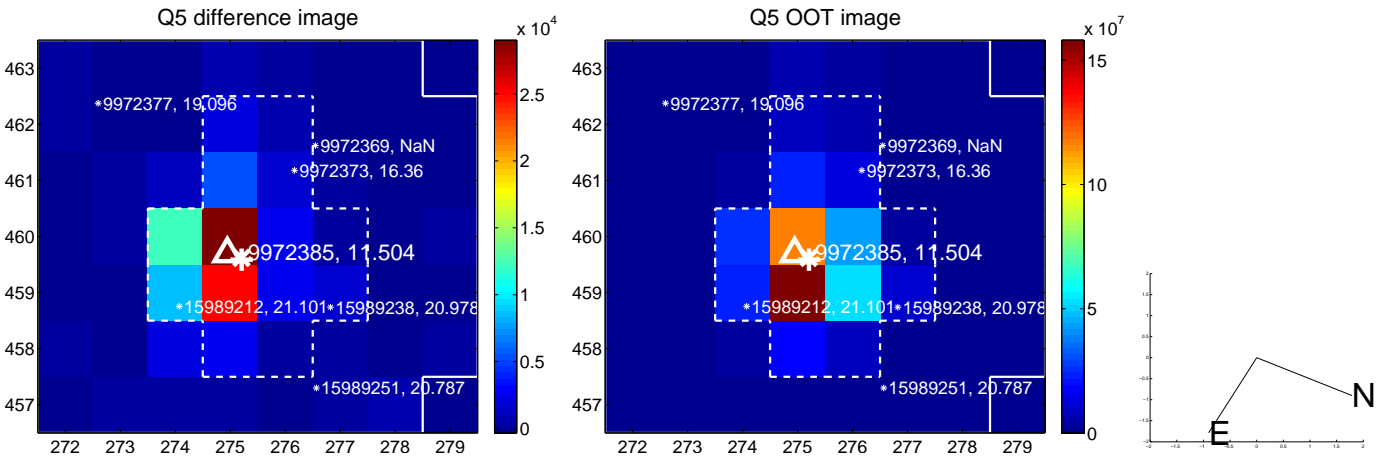


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

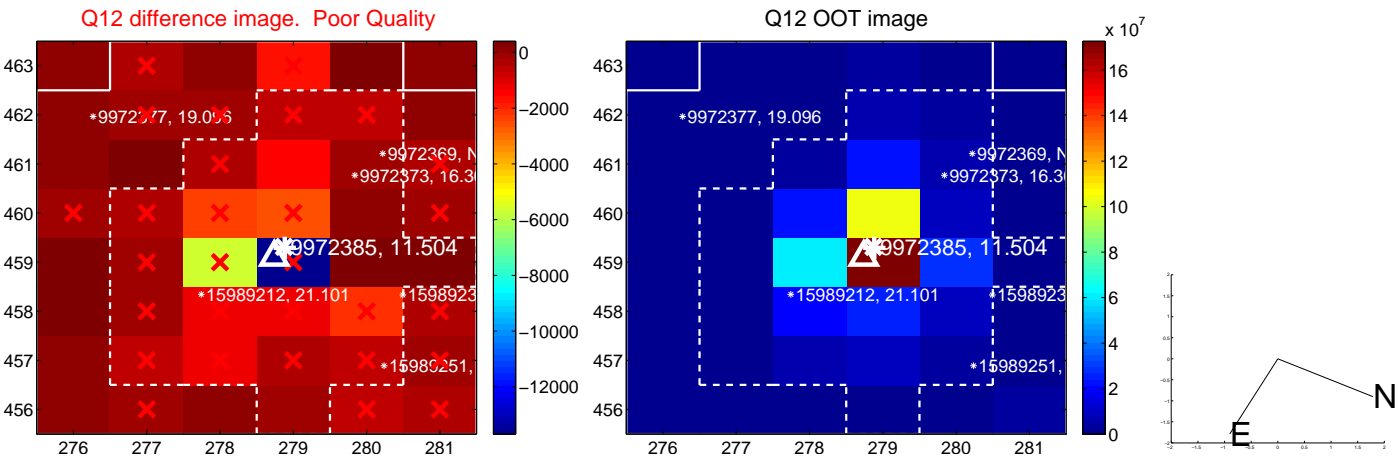
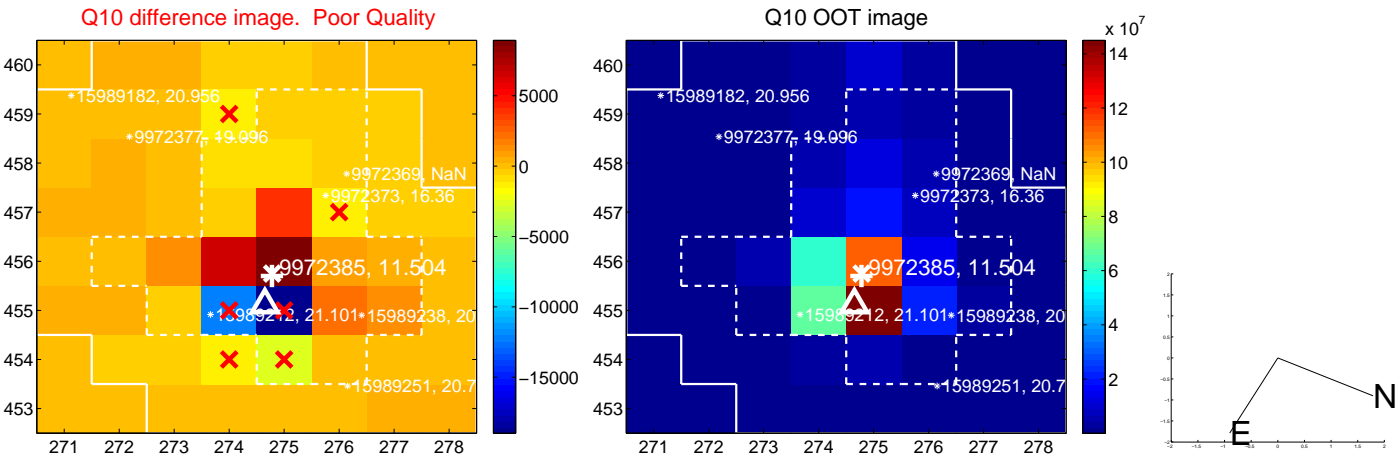
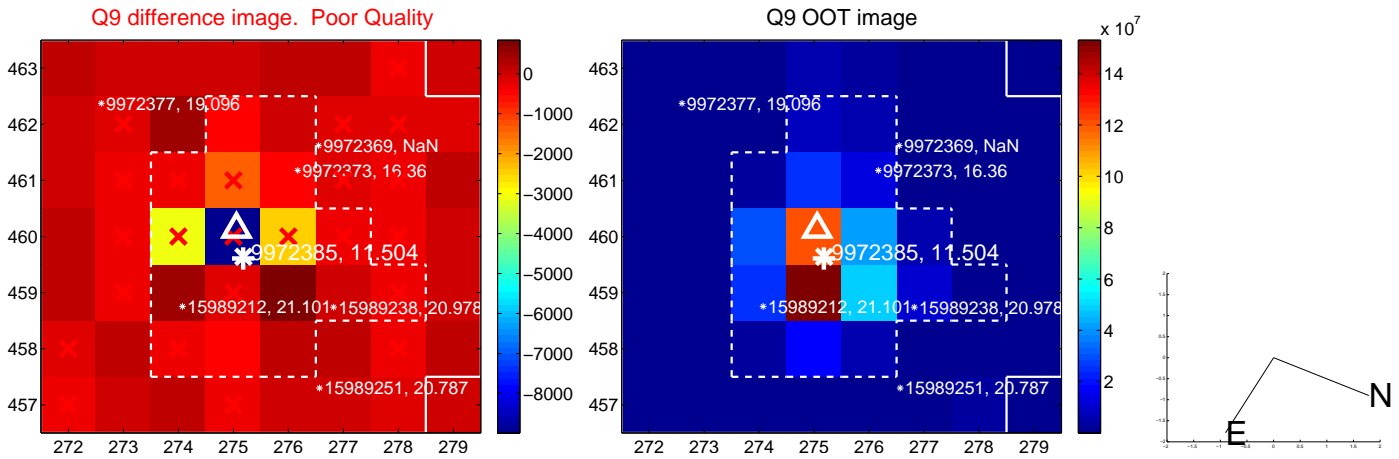
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



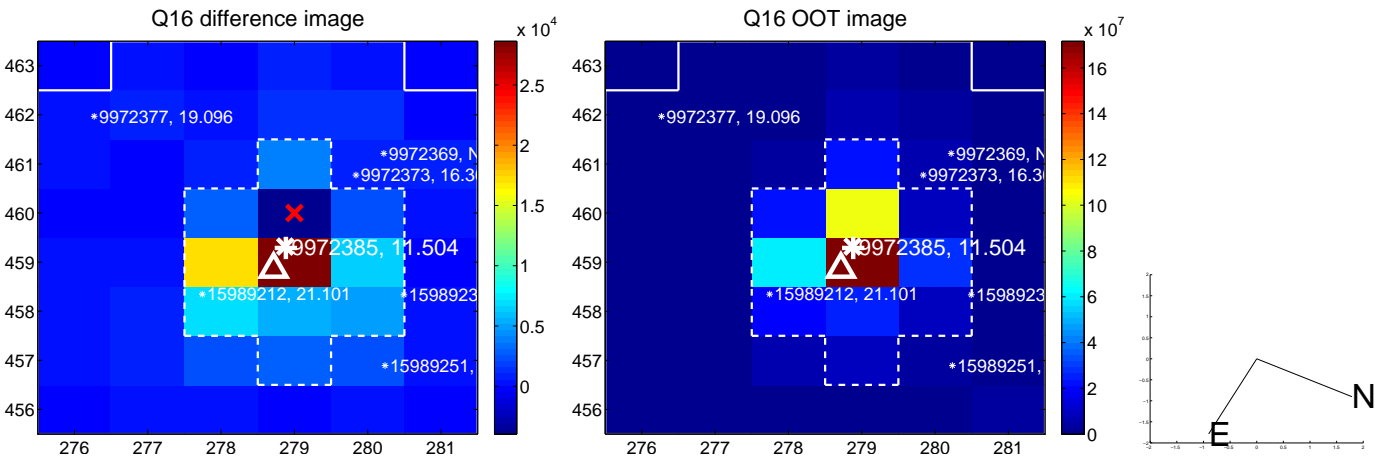
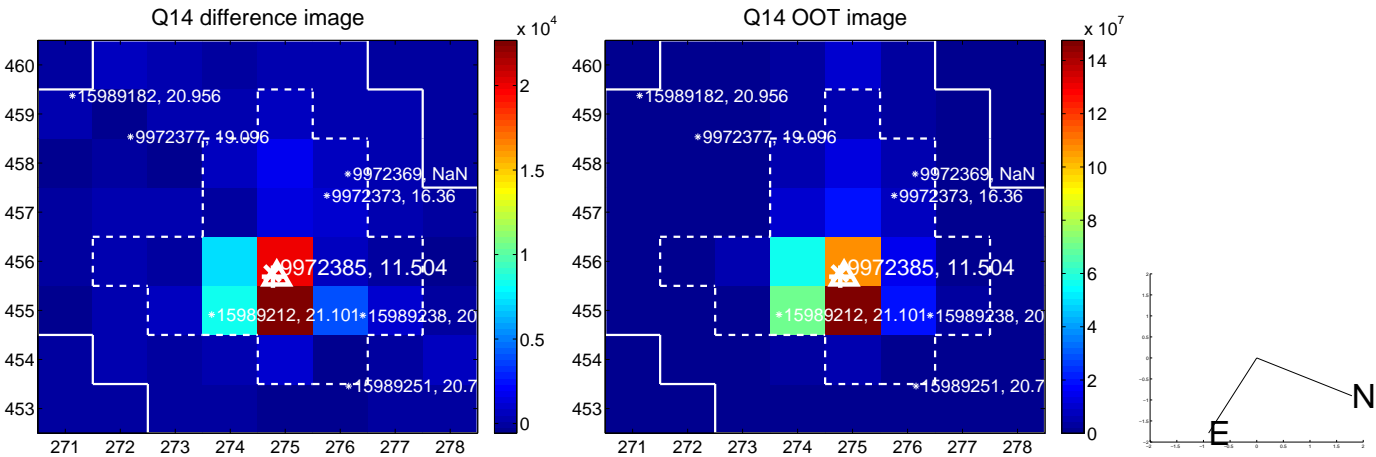
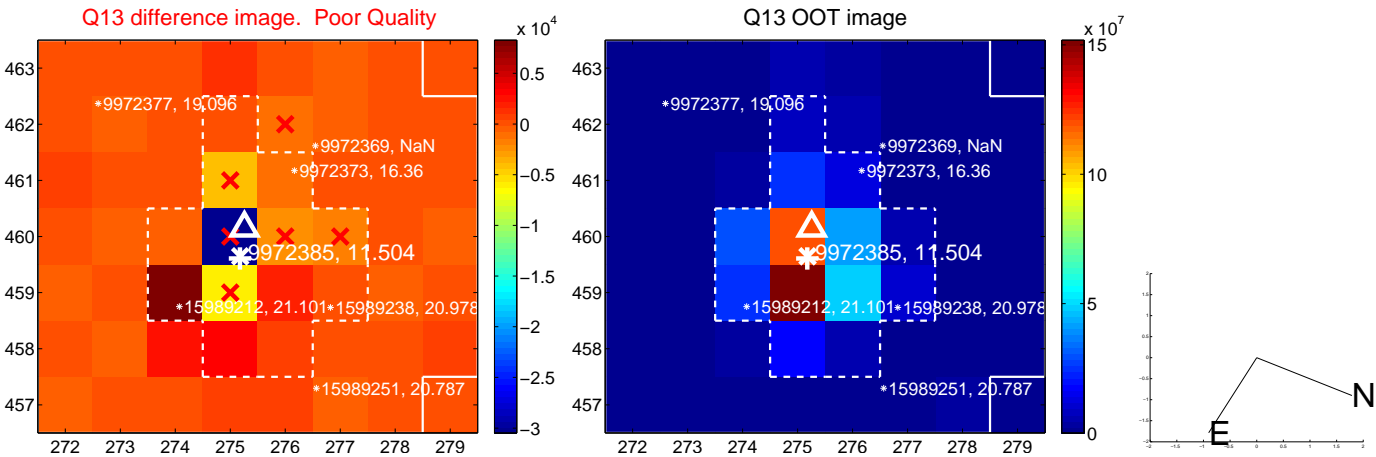
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



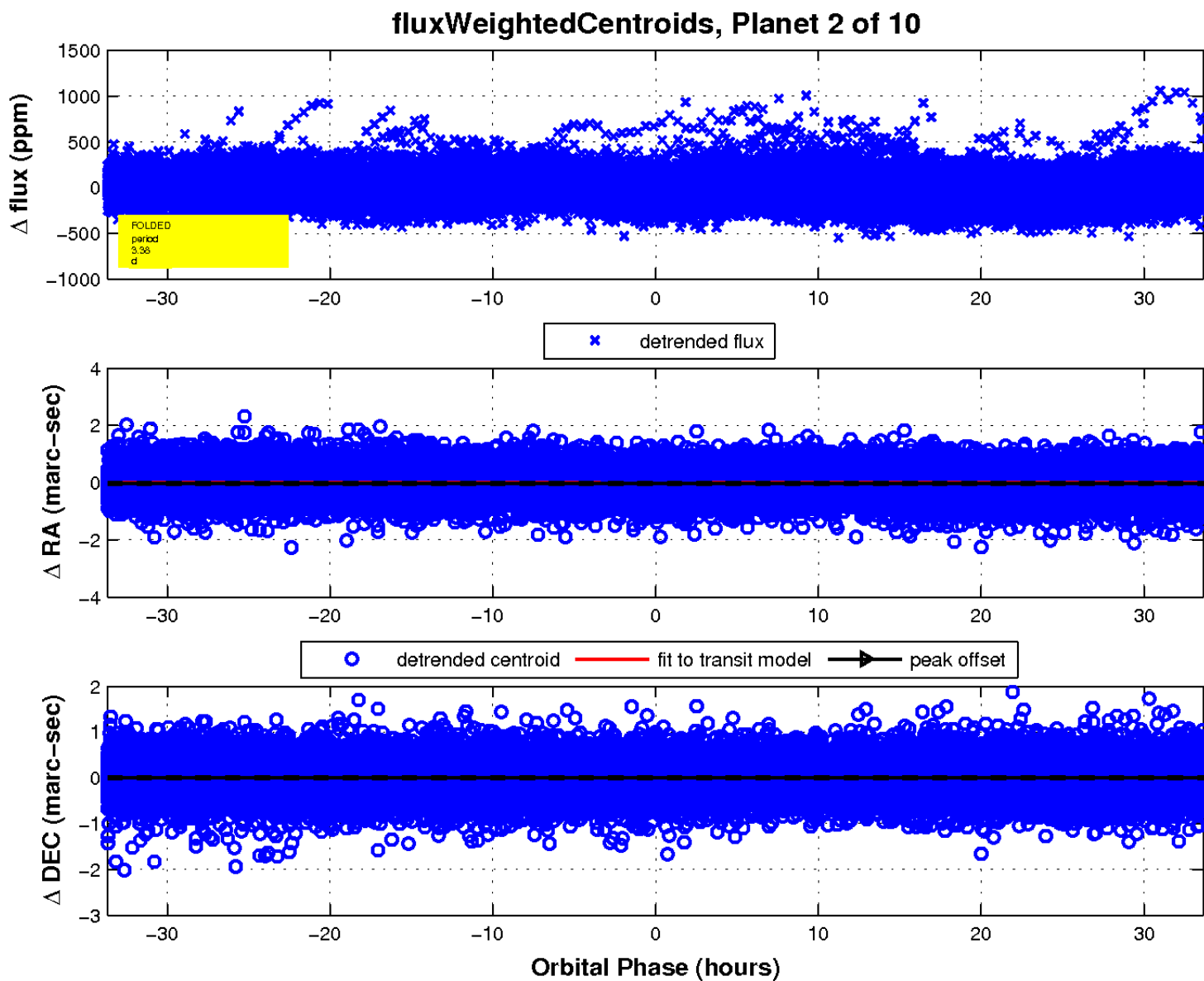
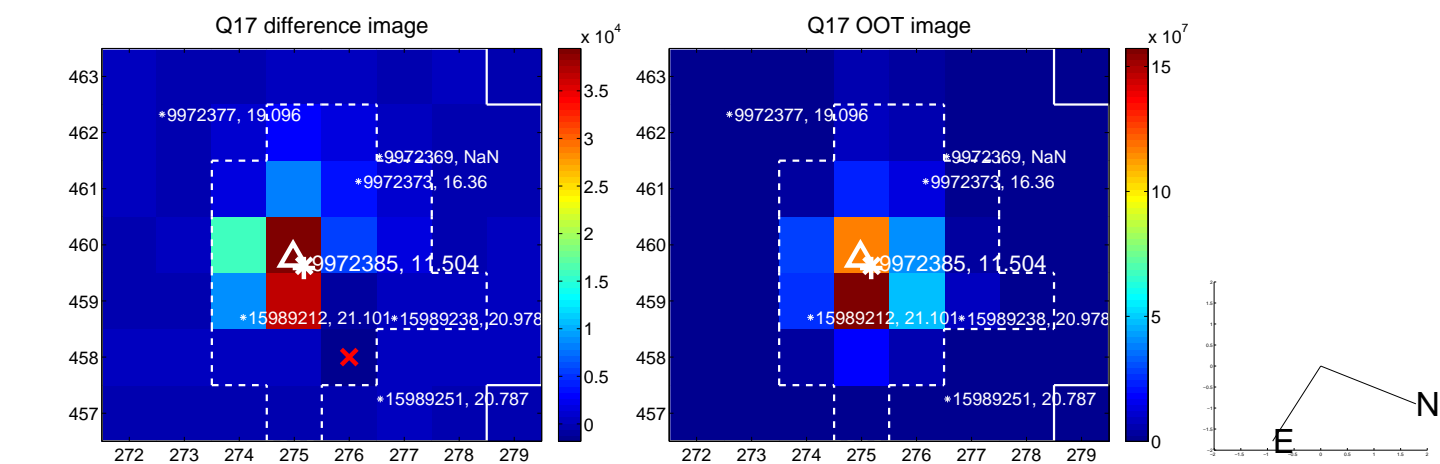
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

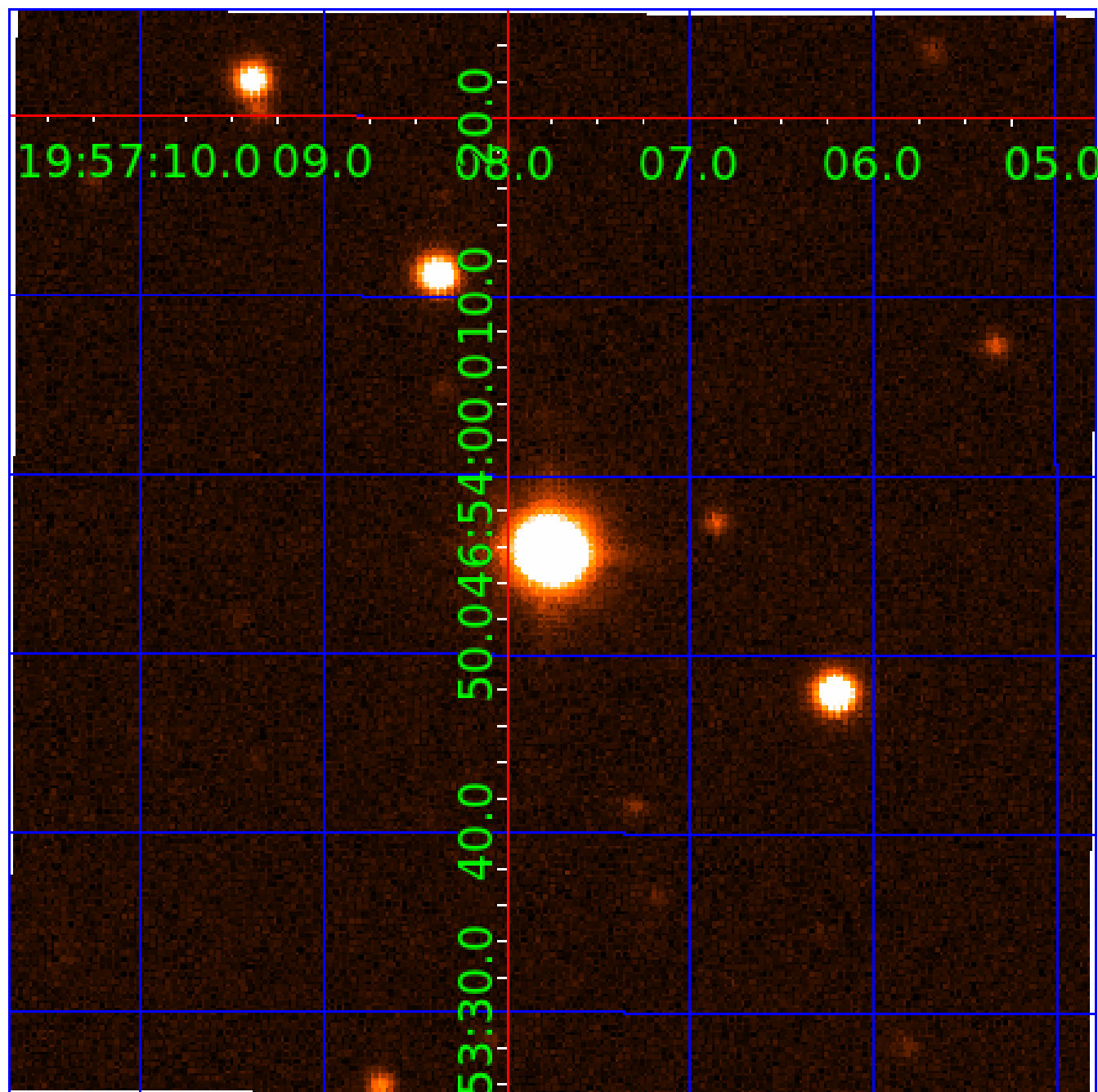


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



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})
009972385-01	OBS	No	58.420909	188.641311	888.3	14.666	43.0	47.5	1.82	6313	10.28	53.92
009972385-02	OBS	No	3.377783	134.244452	52.7	11.222	10.9	12.8	1.82	6313	2.58	2411.99
009972385-03	OBS	No	3.377690	132.286709	27.7	5.907	9.8	10.9	1.82	6313	1.13	2412.08
009972385-04	OBS	No	3.377988	133.026671	25.5	4.744	9.8	10.9	1.82	6313	1.03	2411.80
009972385-05	OBS	No	33.321012	149.739066	24.5	11.846	11.2	1.5	1.82	6313	1.05	114.01
009972385-06	OBS	No	123.877607	192.039254	388.5	27.425	9.2	9.0	1.82	6313	5.06	19.80
009972385-07	OBS	No	84.863803	175.775621	164.1	2.141	7.7	7.8	1.82	6313	2.67	32.78
009972385-08	OBS	No	44.313913	141.982351	121.6	4.609	7.6	7.2	1.82	6313	2.32	77.95
009972385-09	OBS	No	45.629158	166.537092	131.9	7.990	7.5	7.3	1.82	6313	2.40	74.97
009972385-10	OBS	No	23.229243	149.885894	73.0	5.734	7.7	5.9	1.82	6313	1.72	184.43

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009972385-01	OBS	FP	0.00	1	0	0	0	LPP_DV
009972385-02	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—MOD_NONUNIQ_DV
009972385-03	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD
009972385-04	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—SAME_NTL_PERIOD
009972385-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
009972385-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
009972385-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_MEAS
009972385-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_UNCERTAIN
009972385-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
009972385-10	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—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.

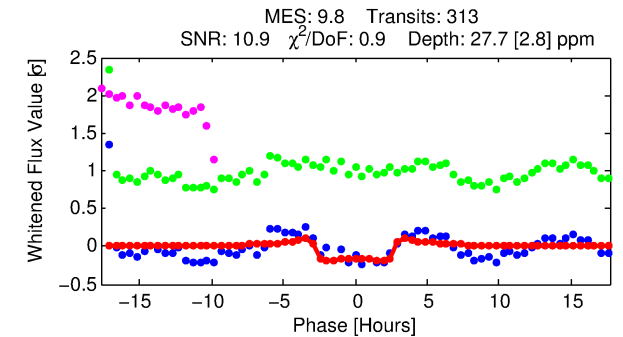
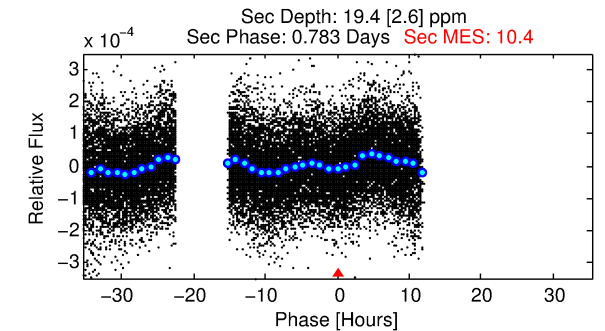
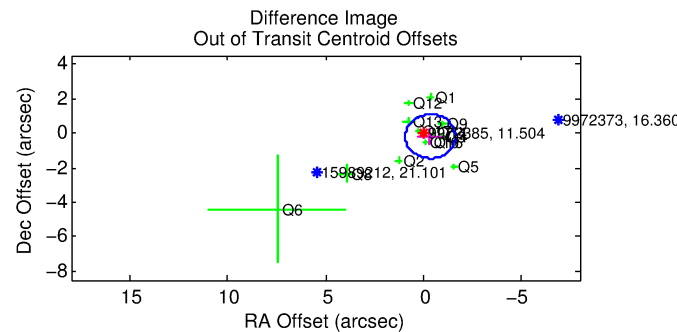
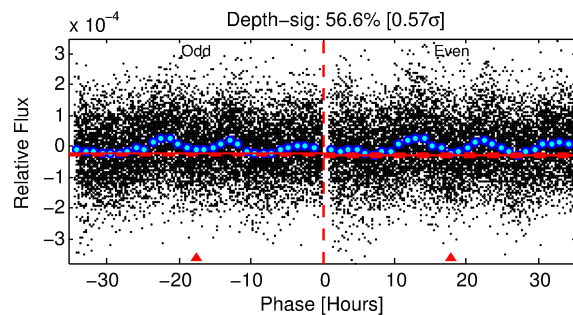
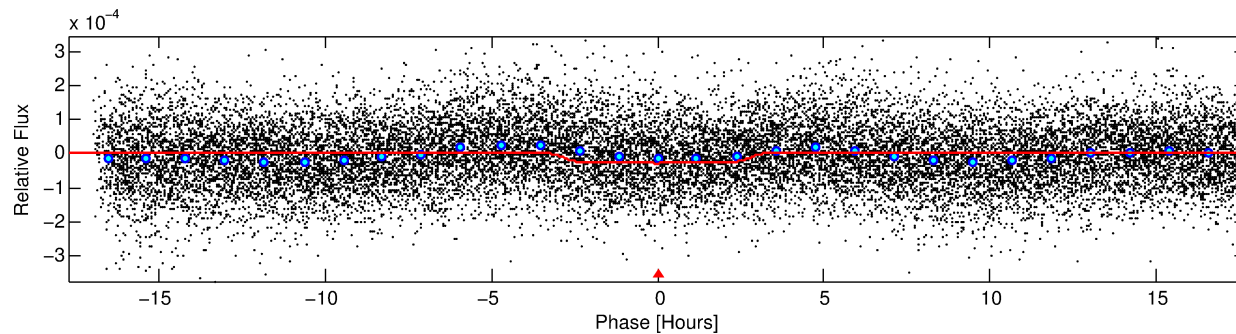
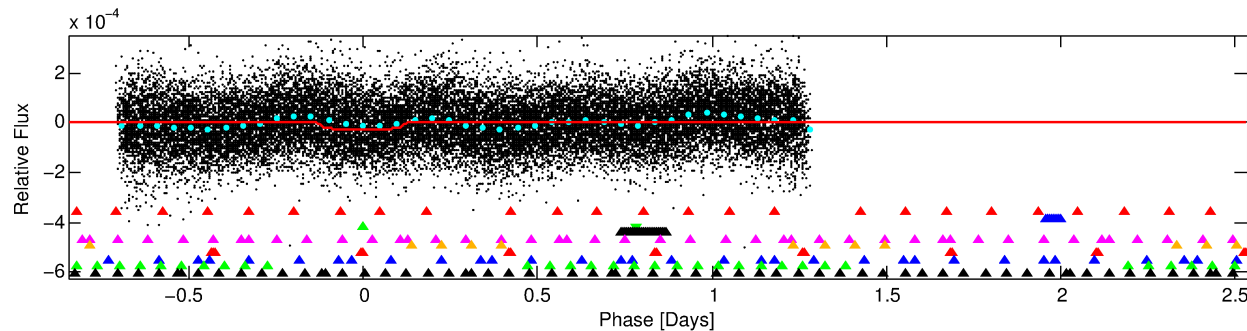
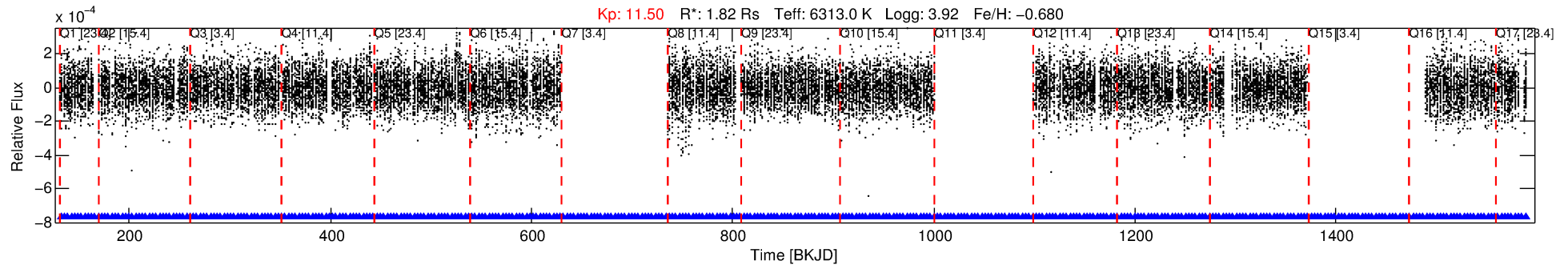
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009972385-03

No Significant Match Found

DV One-Page Summary

KIC: 9972385 Candidate: 3 of 10 Period: 3.378 d



DV Fit Results:

Period = 3.37769 [0.00002] d
Epoch = 132.2867 [0.0039] BKJD
Rp/R* = 0.0057 [0.0011]
a/R* = 2.05 [1.62]
b = 0.92 [0.19]
Seff = 2412.08 [1329.22]
Teq = 1787 [246] K
Rp = 1.13 [0.42] Re
a = 0.0442 [0.0145] AU
Ag = 16.21 [10.85] [1.40 σ]
Teffp = 5544 [567] K [6.07 σ]

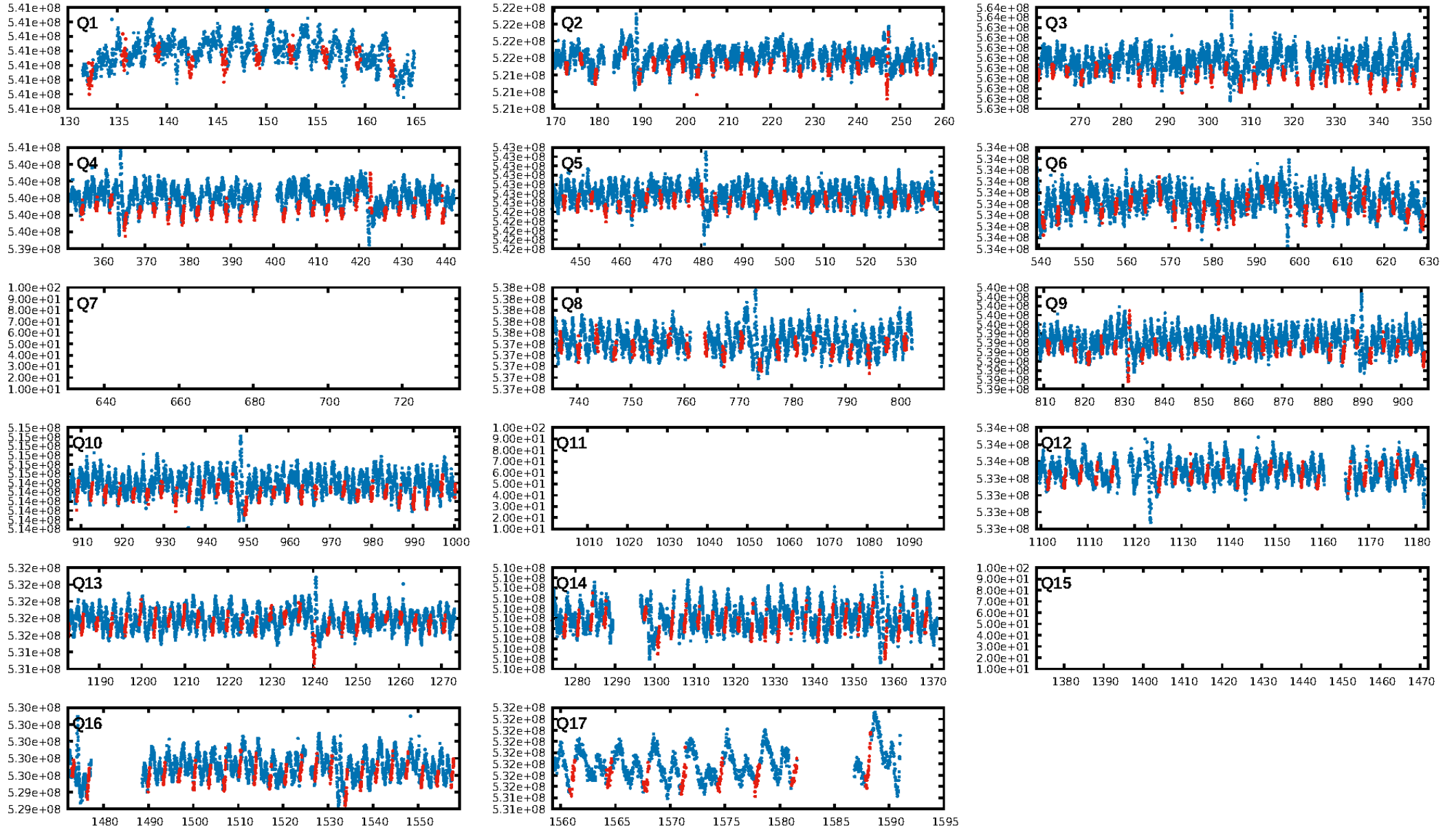
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.0% [0.00 σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 8.87e-10
RollingBand-fgt: 1.00 [295/295]
GhostDiagnostic-chr: 2.763
Centroid-sig: 2.9%
Centroid-so: 1.099 arcsec [1.71 σ]
OotOffset-rm: 0.390 arcsec [0.92 σ]
KicOffset-rm: 0.238 arcsec [0.49 σ]
OotOffset-st: 4/1/4/5 [14]
KicOffset-st: 4/1/4/5 [14]
DiffImageQuality-fgm: 0.86 [12/14]
DiffImageOverlap-fno: 1.00 [14/14]

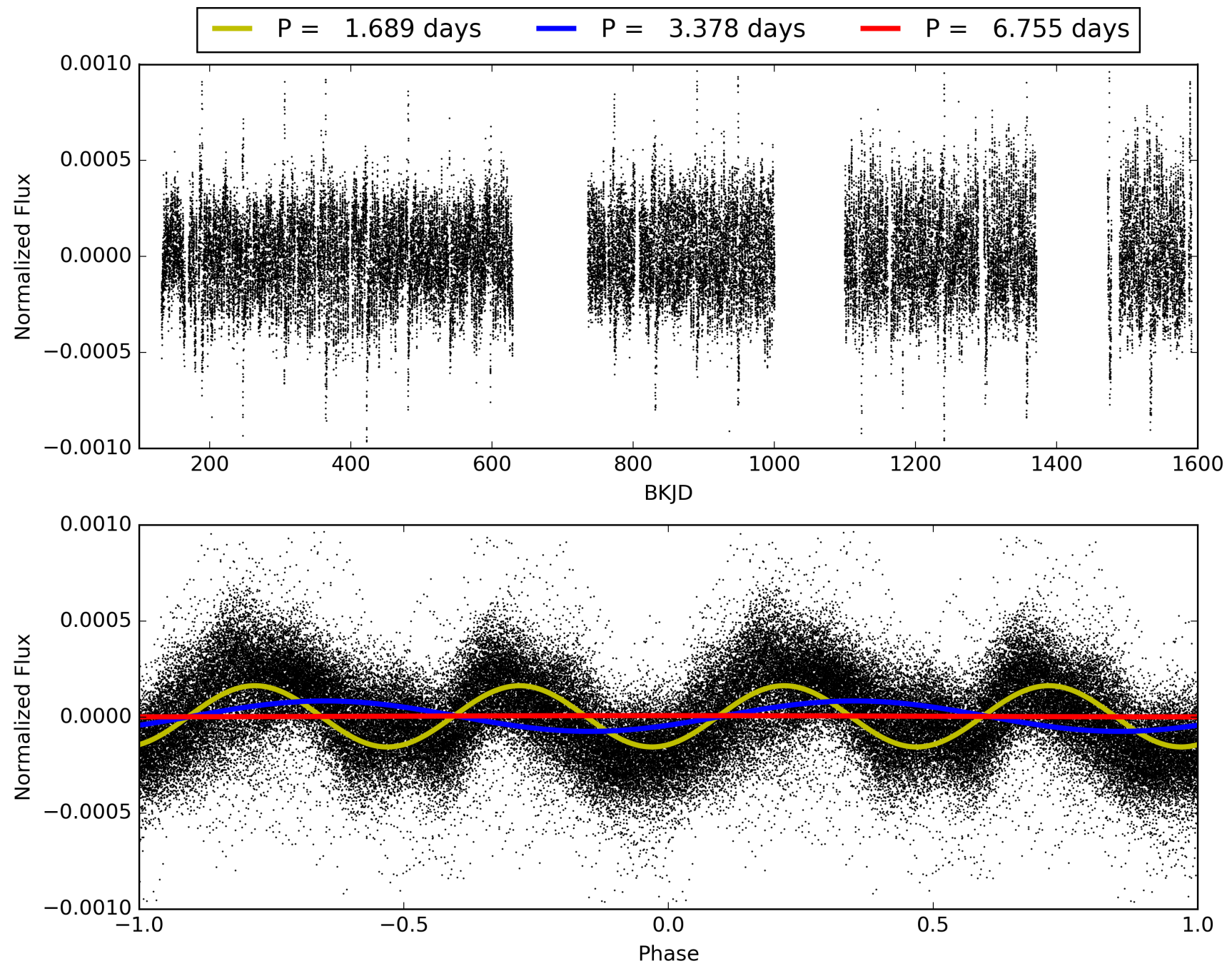
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 17:08:56 Z

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

TCE 009972385-03, PDC Light Curves

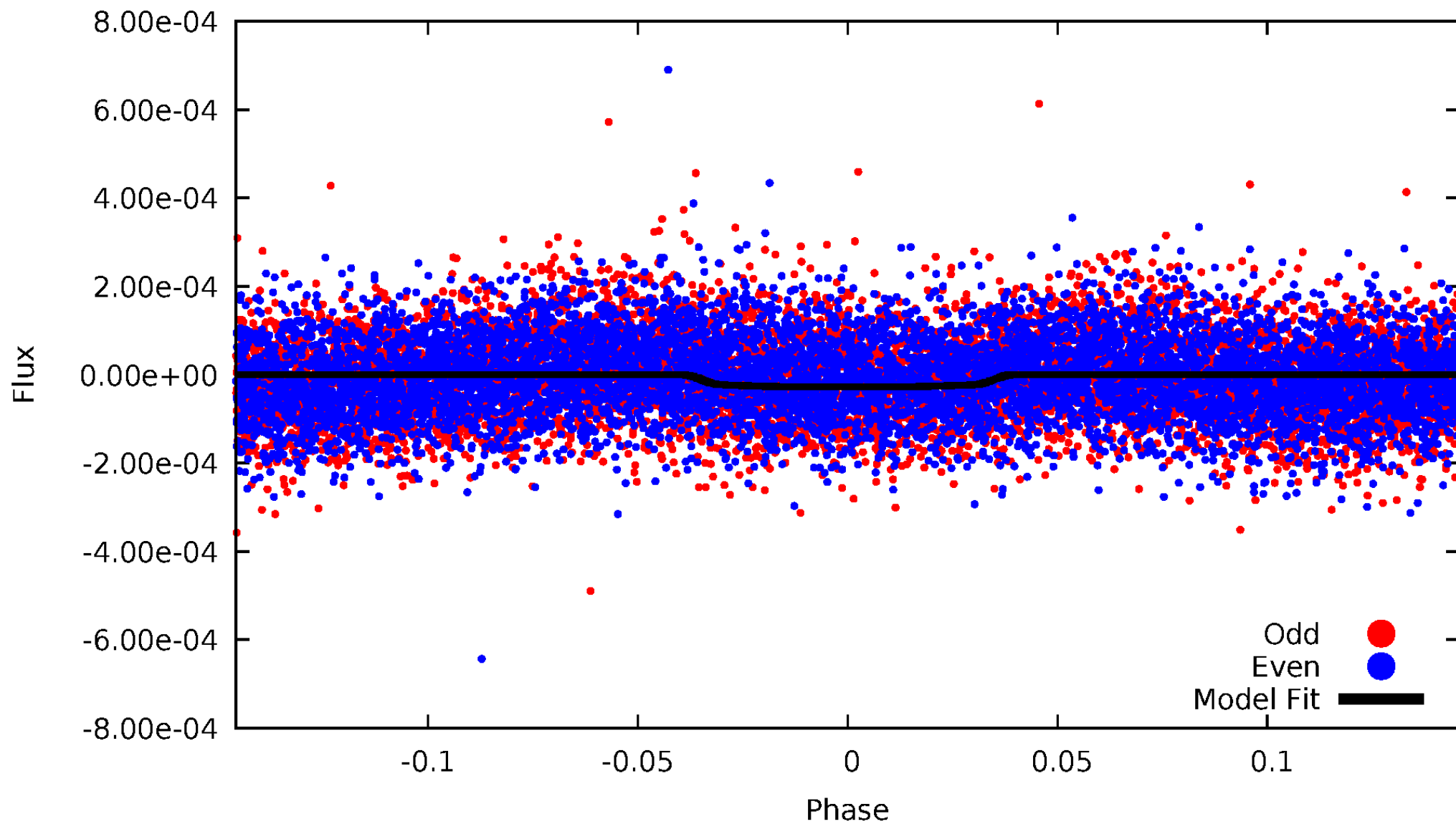


TCE 009972385-03



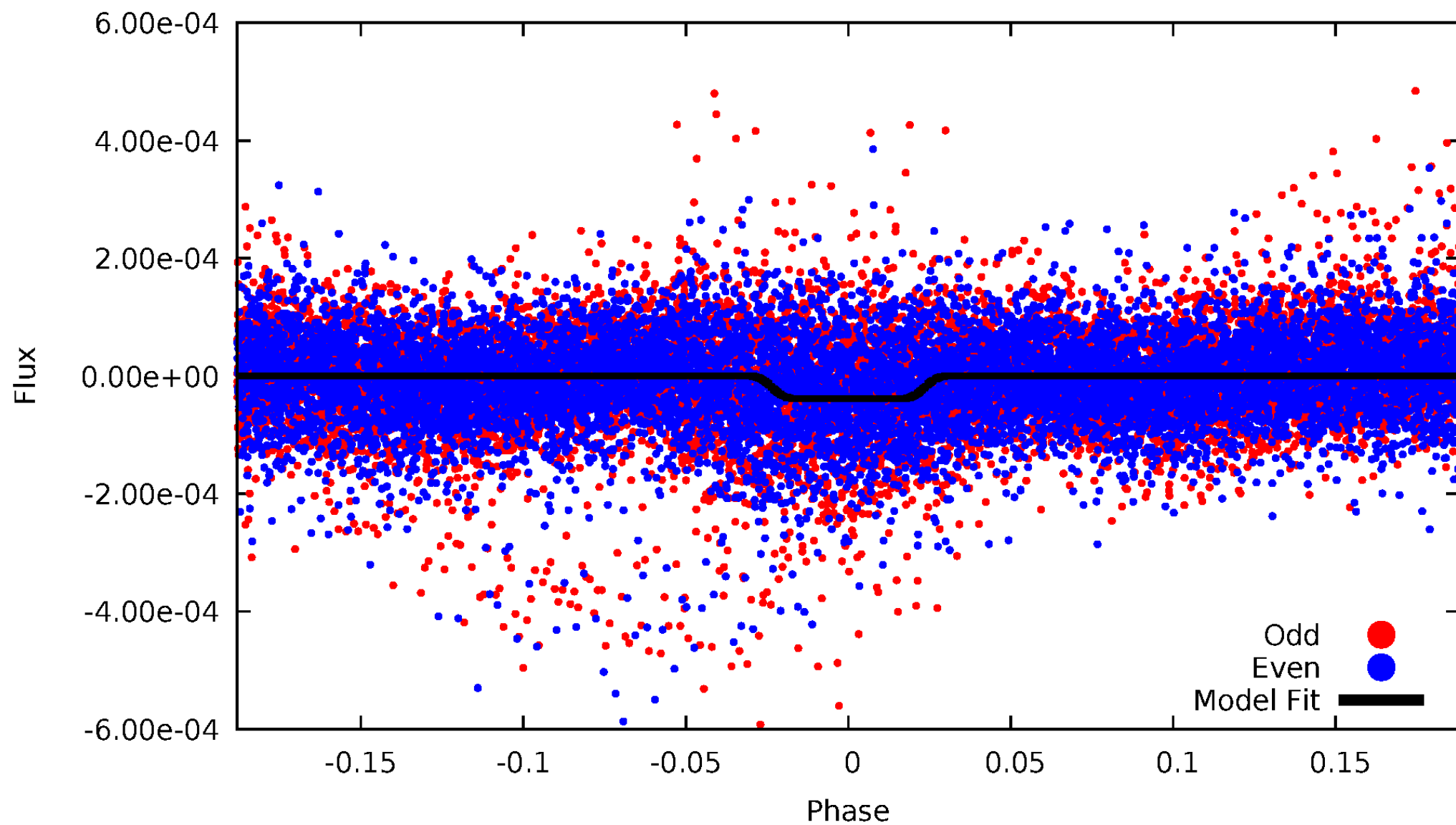
DV Odd/Even

TCE 009972385-03



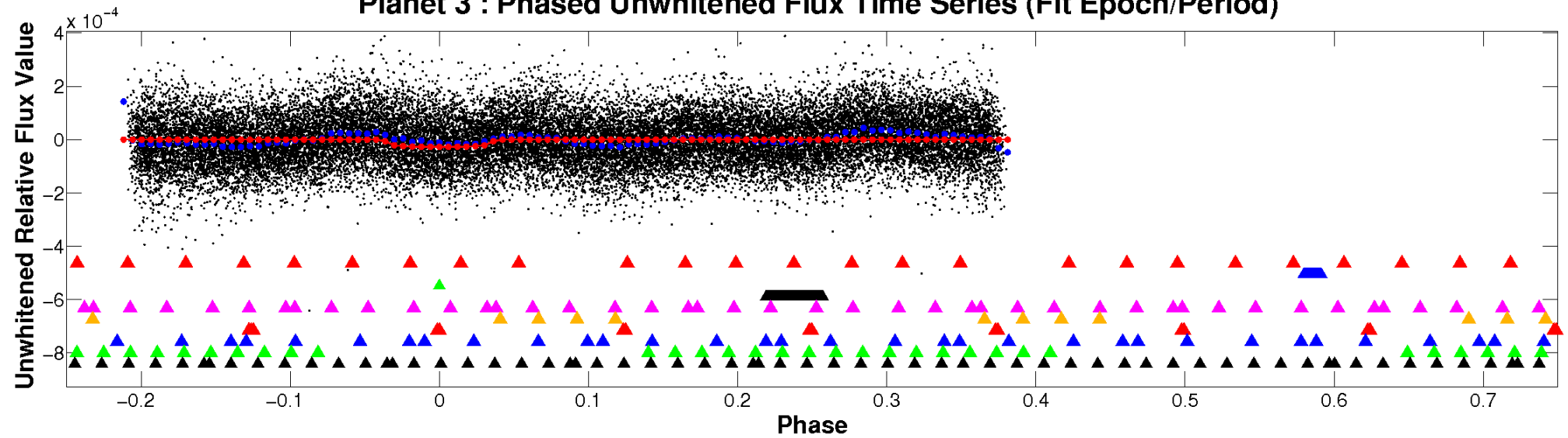
ALT Odd/Even

TCE 009972385-03

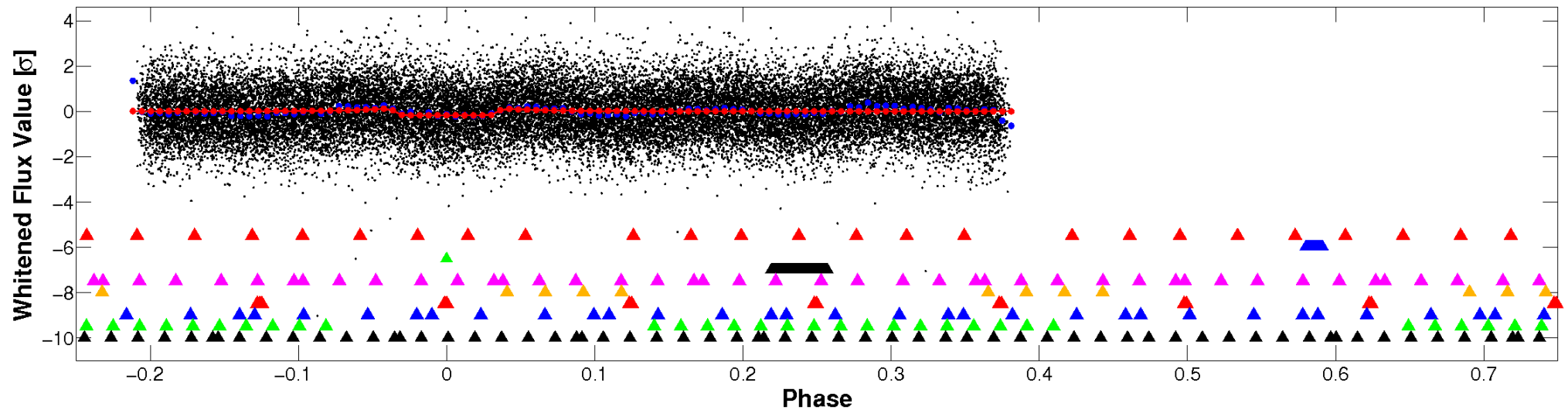


Non-Whitened Vs. Whitened Light Curve

Planet 3 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

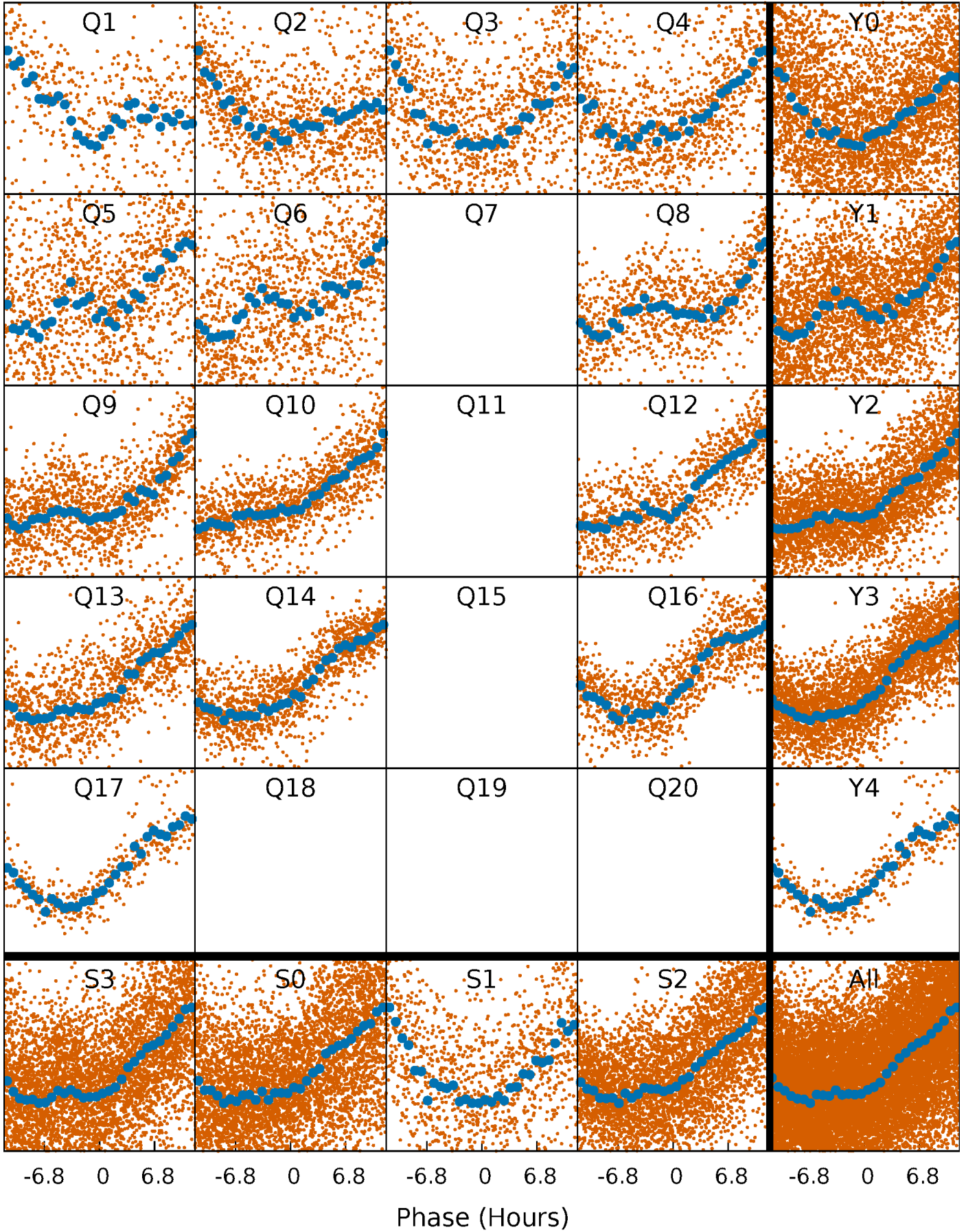


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



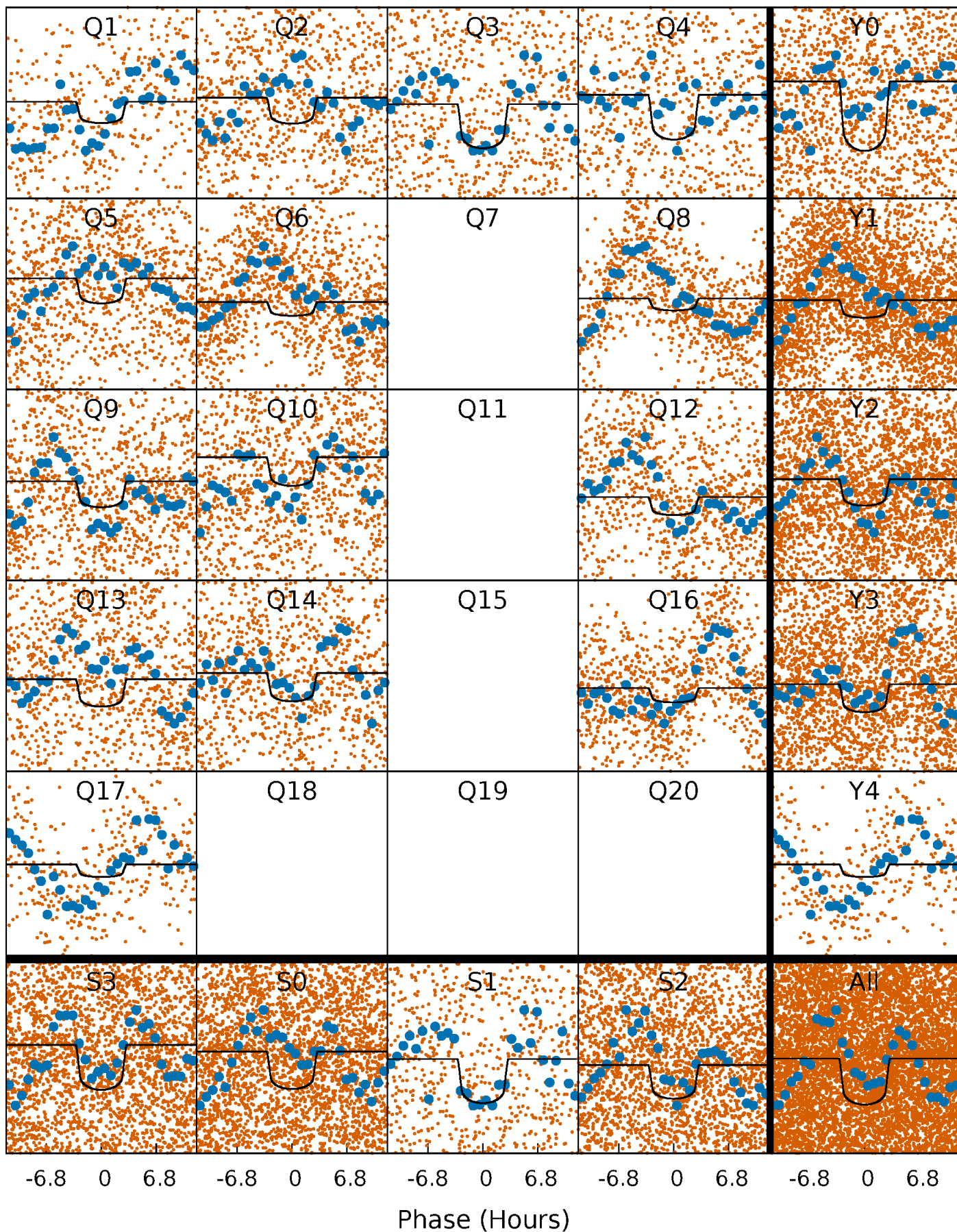
PDC Quarter-Phased Transit Curves

TCE 009972385-03 P= 3.377690 Days $T_0=132.286709$ (BKJD)



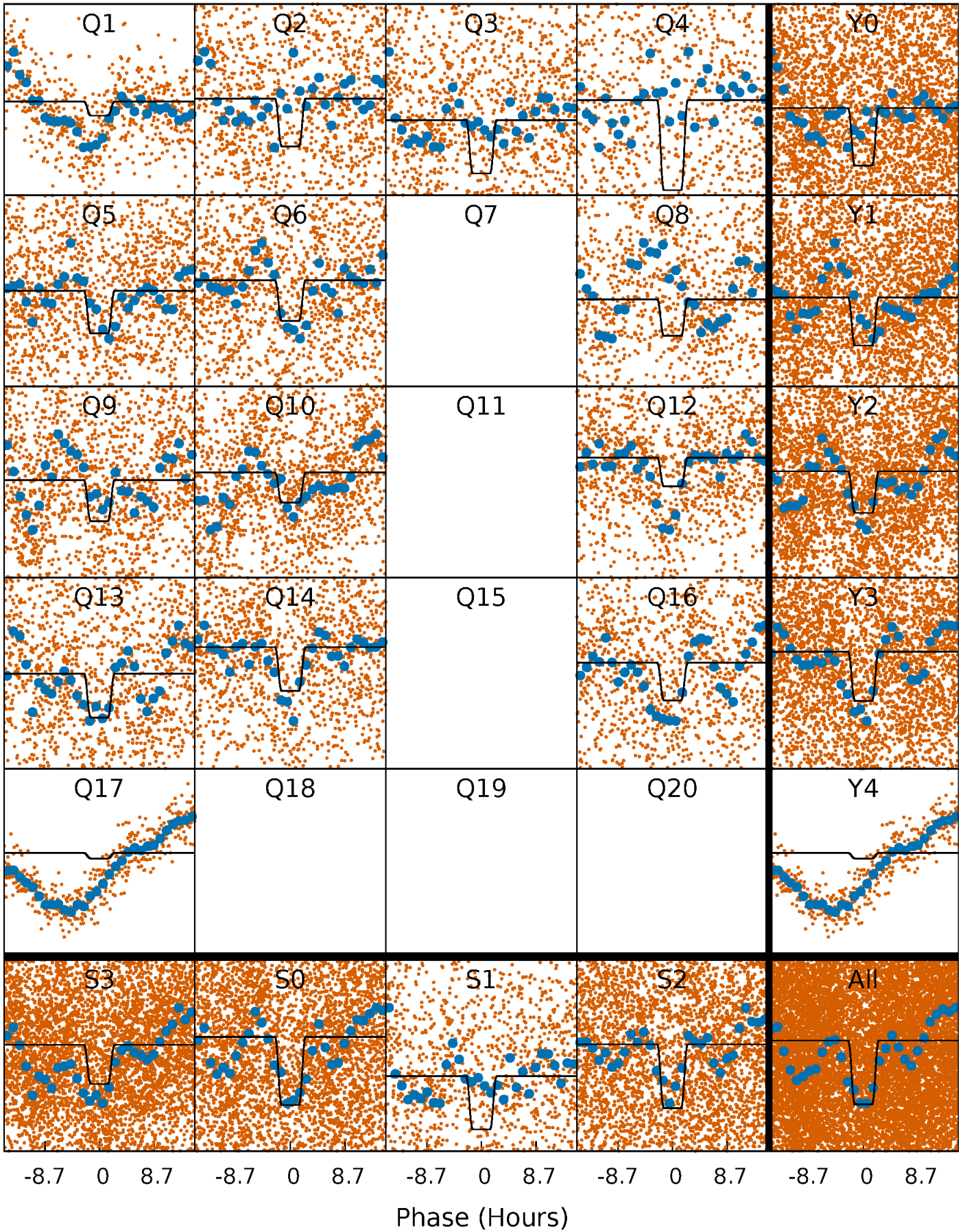
DV Quarter-Phased Transit Curves

TCE 009972385-03 P= 3.377690 Days $T_0=132.286709$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

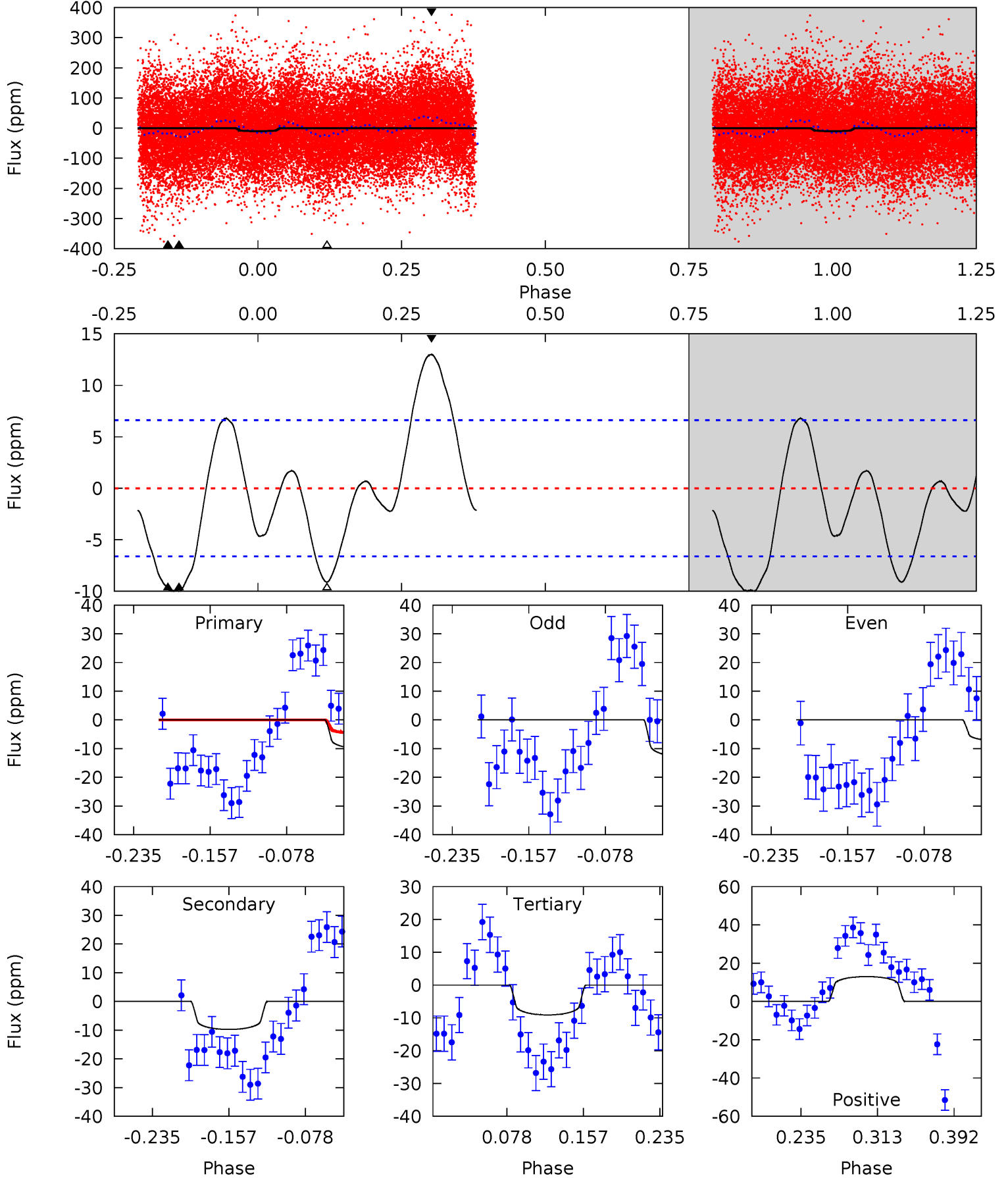
TCE 009972385-03 P= 3.377798 Days $T_0=132.295659$ (BKJD)



DV Model-Shift Uniqueness Test

009972385-03, P = 3.377690 Days, E = 128.909019 Days

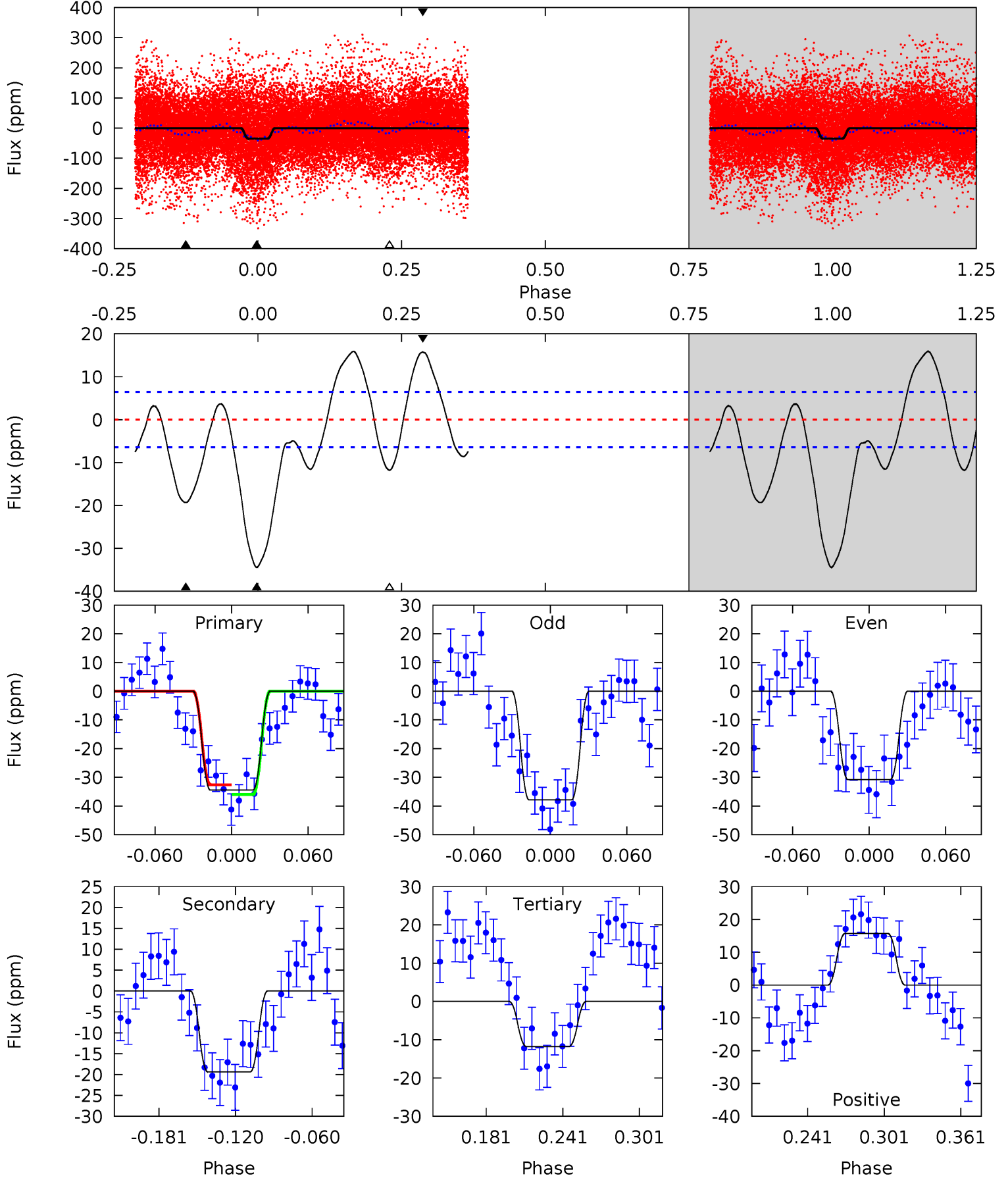
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.98	6.81	6.36	9.08	4.62	1.76	4.02	0.62	-2.10	0.44	-2.28	1.89	0.67	0.57	3.67



Alt Model-Shift Uniqueness Test

009972385-03, P = 3.377798 Days, E = 128.917861 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
24.9	14.0	8.51	11.4	4.67	1.88	6.62	16.4	13.6	5.49	2.62	2.57	1.11	0.32	1.27



Stellar Parameters For KIC 009972385

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6313^{+170}_{-170}	$3.922^{+0.323}_{-0.108}$	$-0.680^{+0.350}_{-0.250}$	$1.820^{+0.391}_{-0.587}$	$1.009^{+0.161}_{-0.145}$	$0.236^{+0.462}_{-0.087}$
	+3%/-3%	+8%/-3%	+51%/-37%	+21%/-32%	+16%/-14%	+196%/-37%
Source	PHO1	FLK73	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 009972385-03 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-10 ± 1	$1.06^{+0.30}_{-0.27}$	2437^{+176}_{-231}	4771^{+506}_{-384}	$9.282^{+7.943}_{-3.672}$
Alt.	-19 ± 1	$1.19^{+0.27}_{-0.29}$	2464^{+160}_{-218}	5316^{+581}_{-399}	15^{+11}_{-5}

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

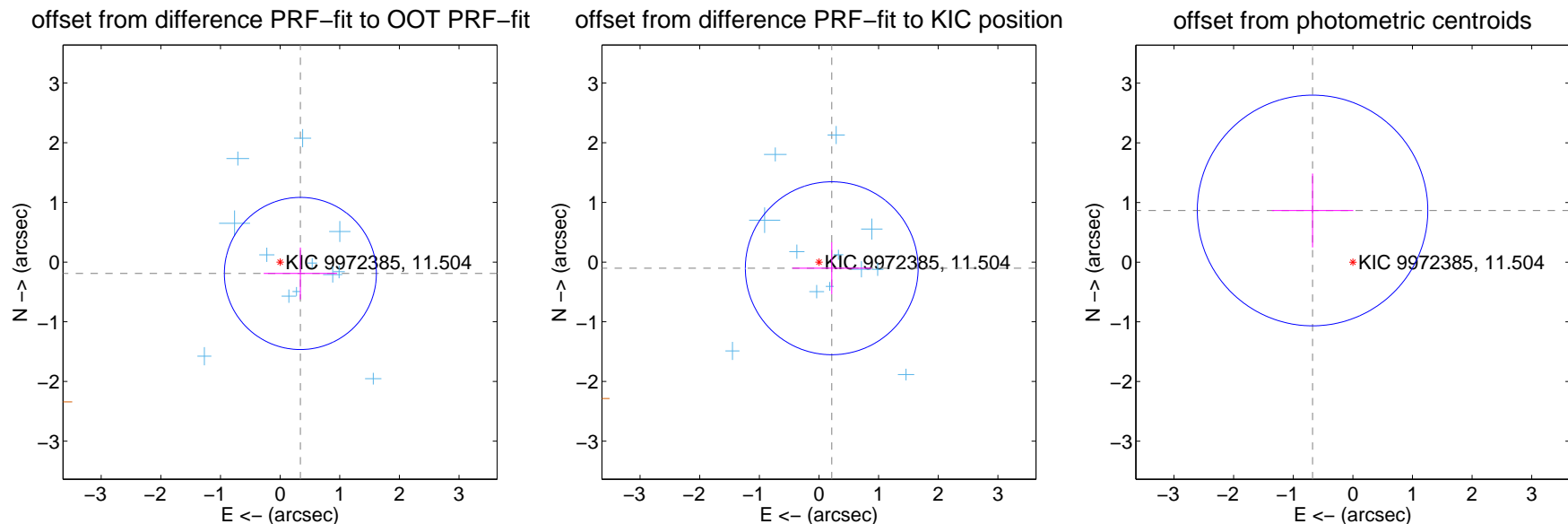
DV Centroid Data

Supplemental centroid analysis for 009972385-03. **Kepler magnitude: 11.50.** Transit SNR 10.88

There are 12 quarters with good PRF difference image offsets

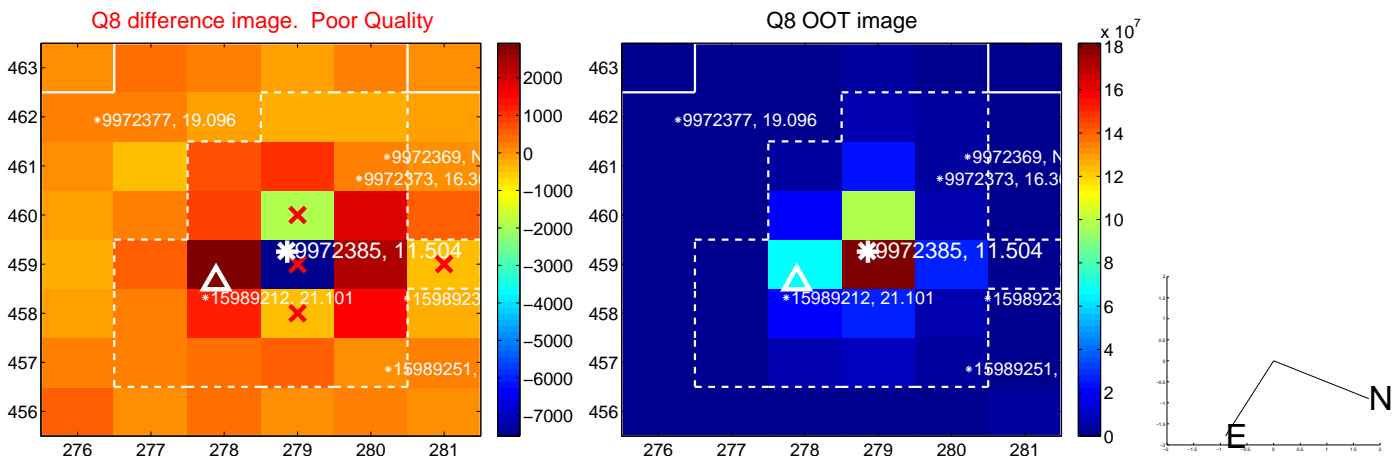
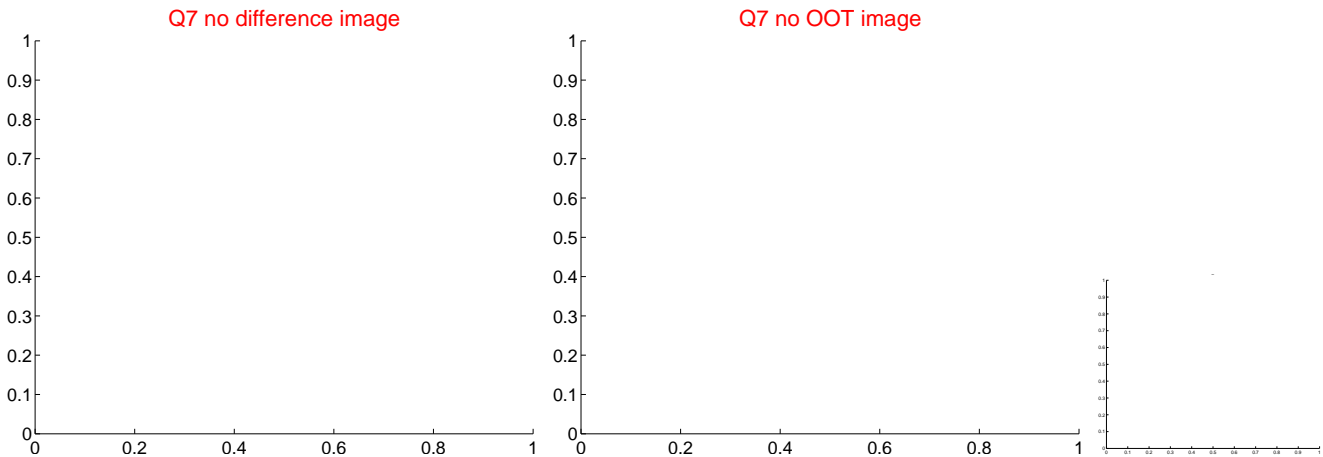
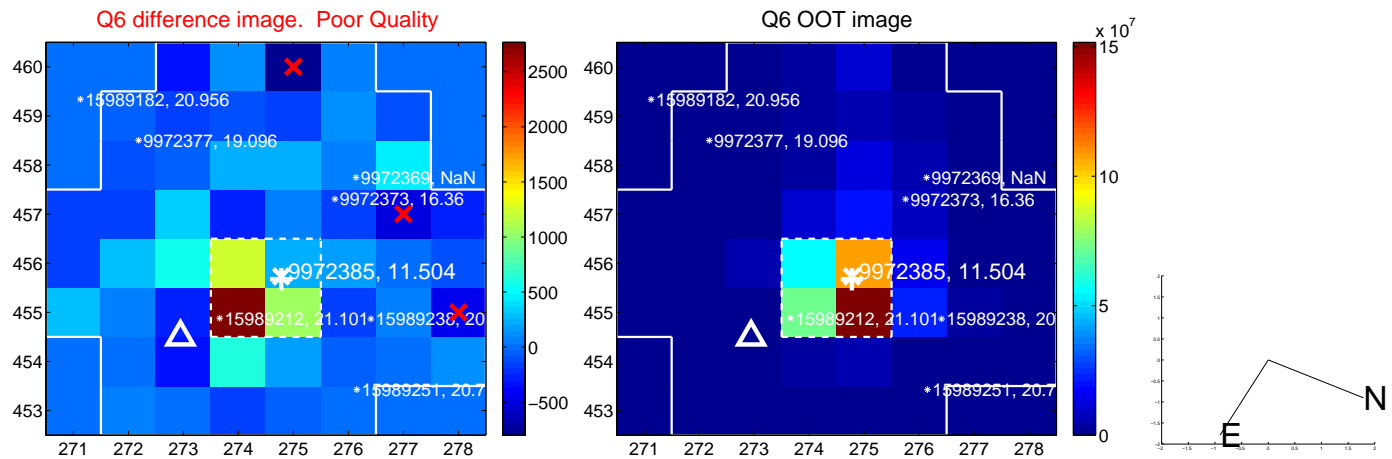
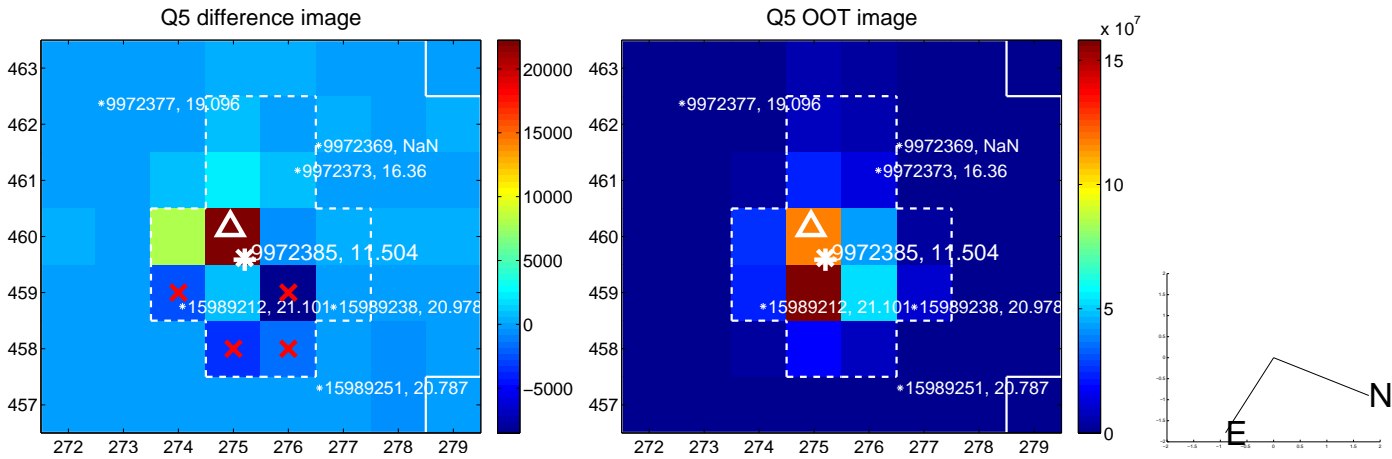
The direct PRF centroid is offset from the target star catalog position by about 0.16 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.390 ± 0.425	0.92	-0.340 ± 0.615	-0.191 ± 0.434
PRF-fit source offset from KIC position	0.238 ± 0.483	0.49	-0.214 ± 0.661	-0.103 ± 0.434
photometric centroid source offset	1.10 ± 0.64	1.71	0.68 ± 0.68	0.87 ± 0.62

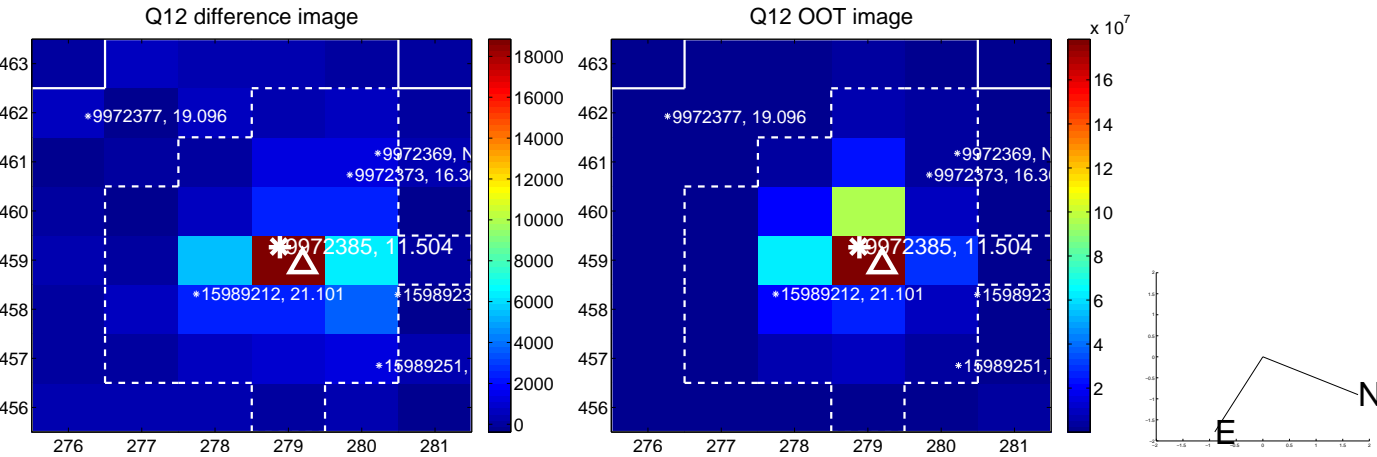
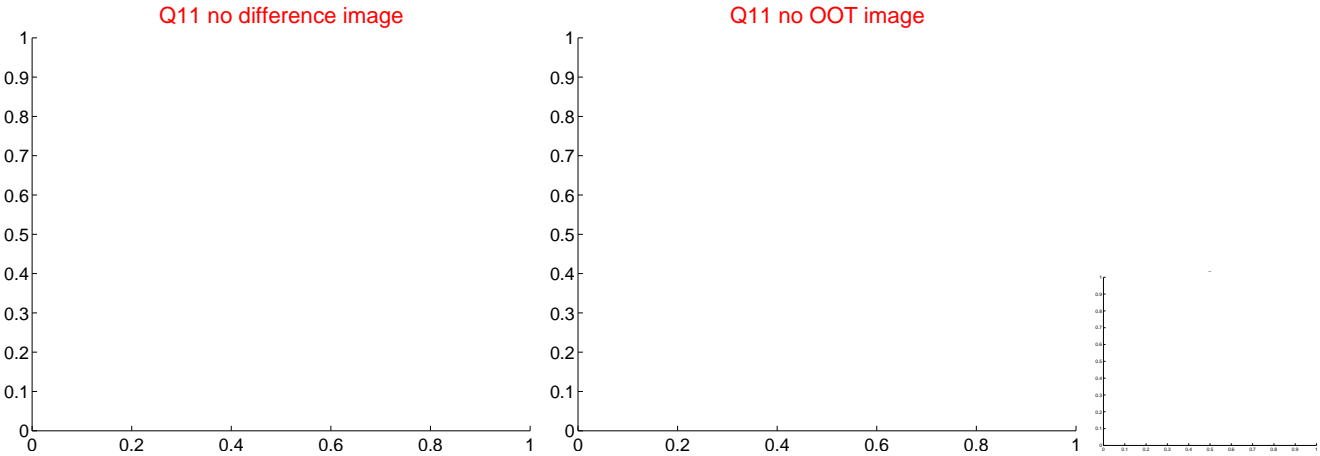
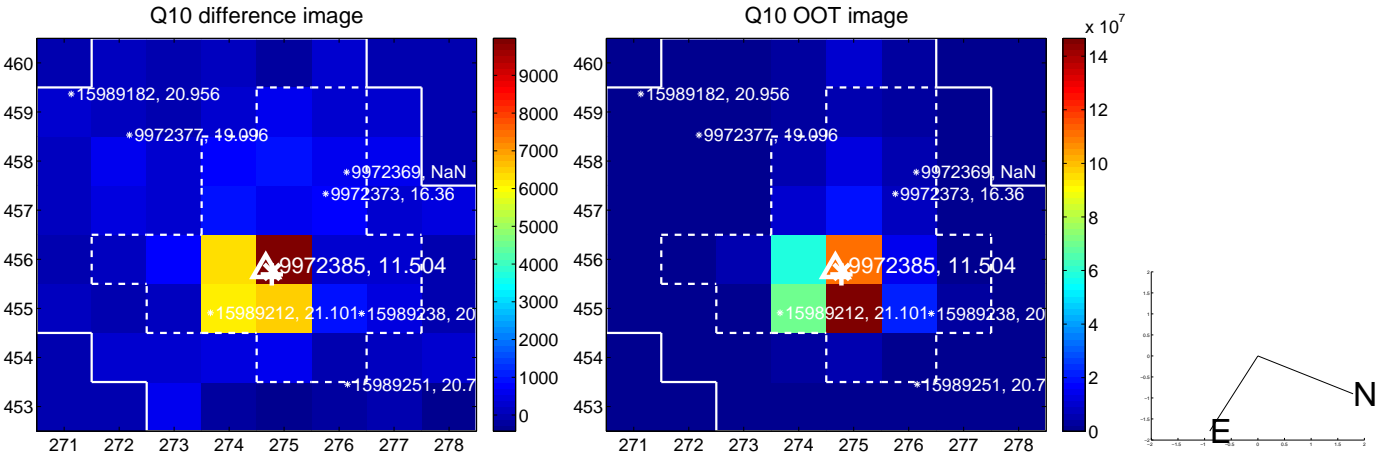
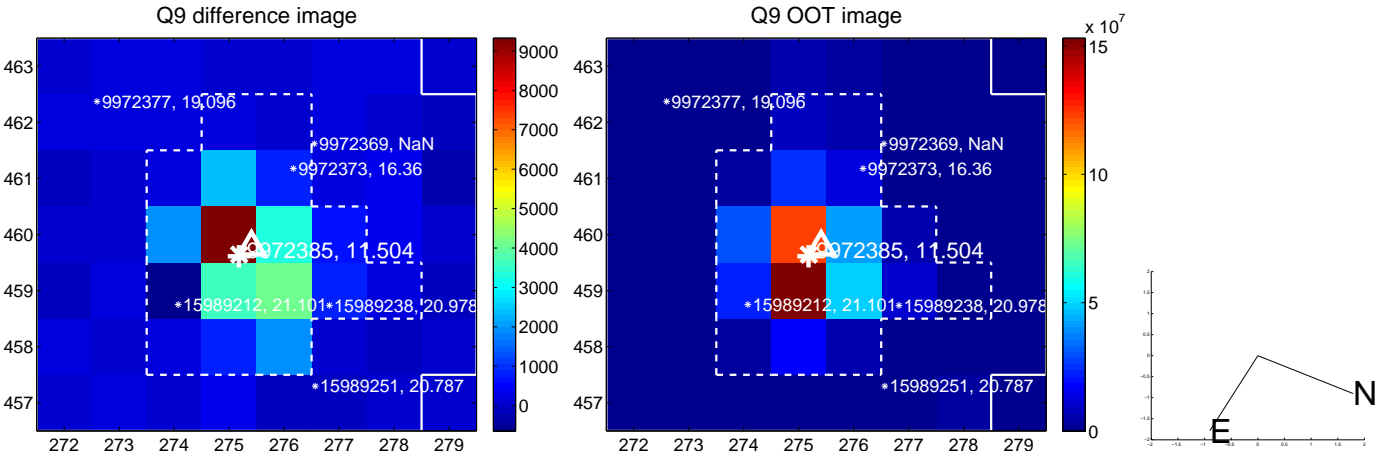


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

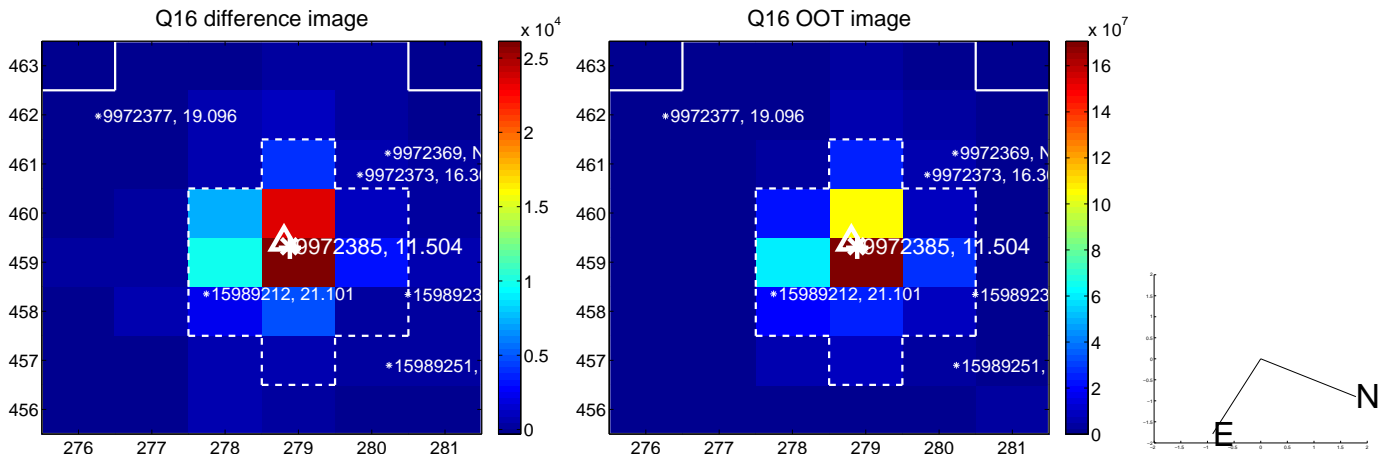
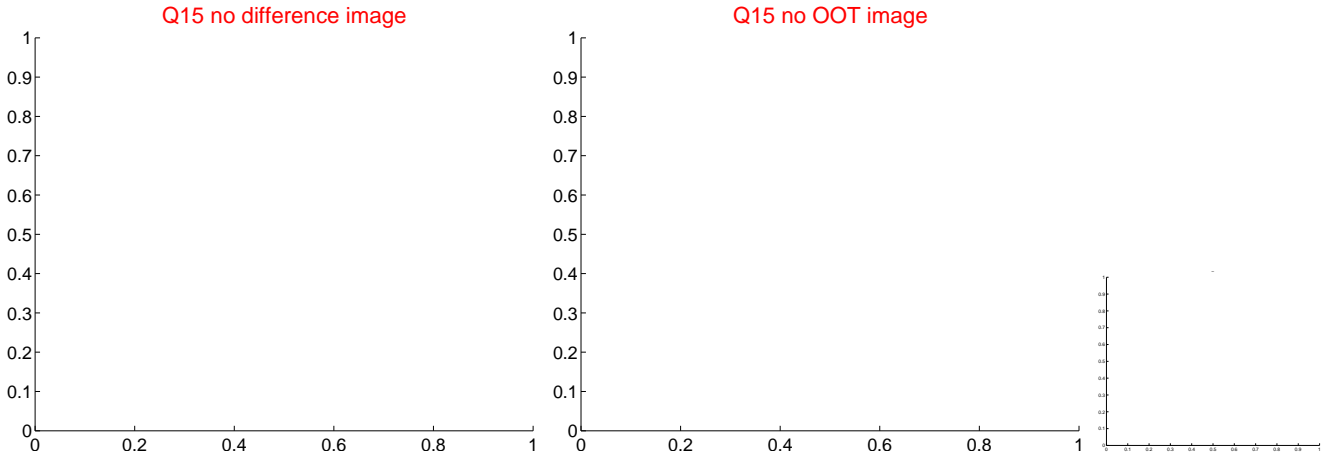
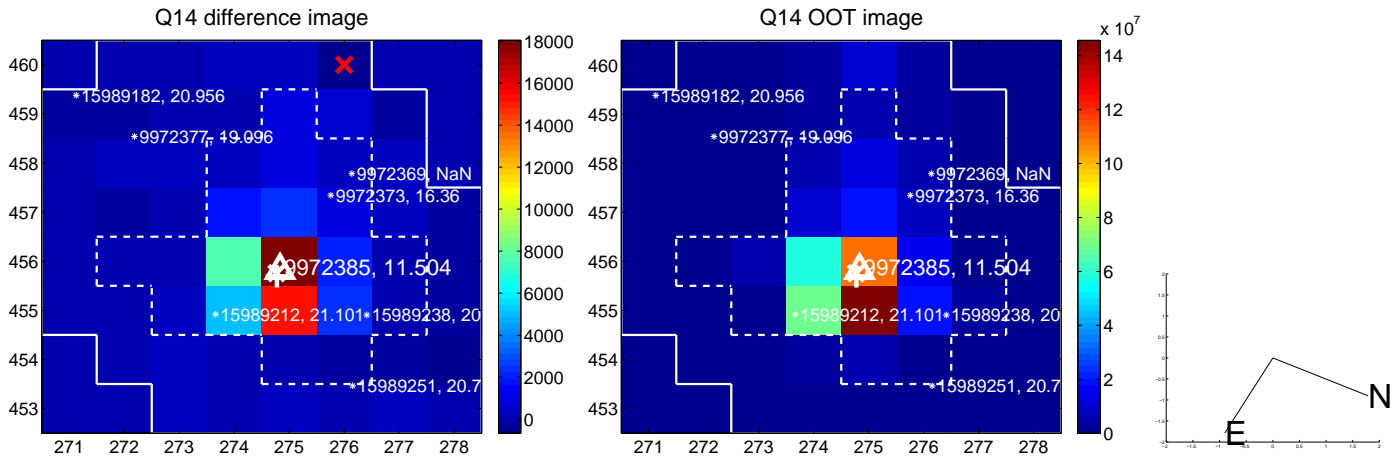
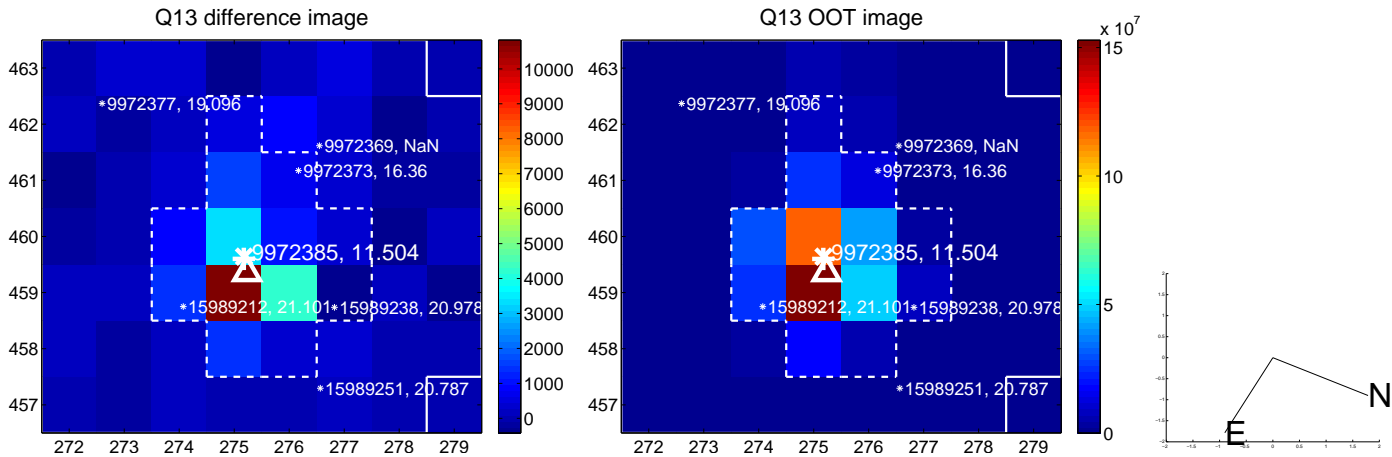
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



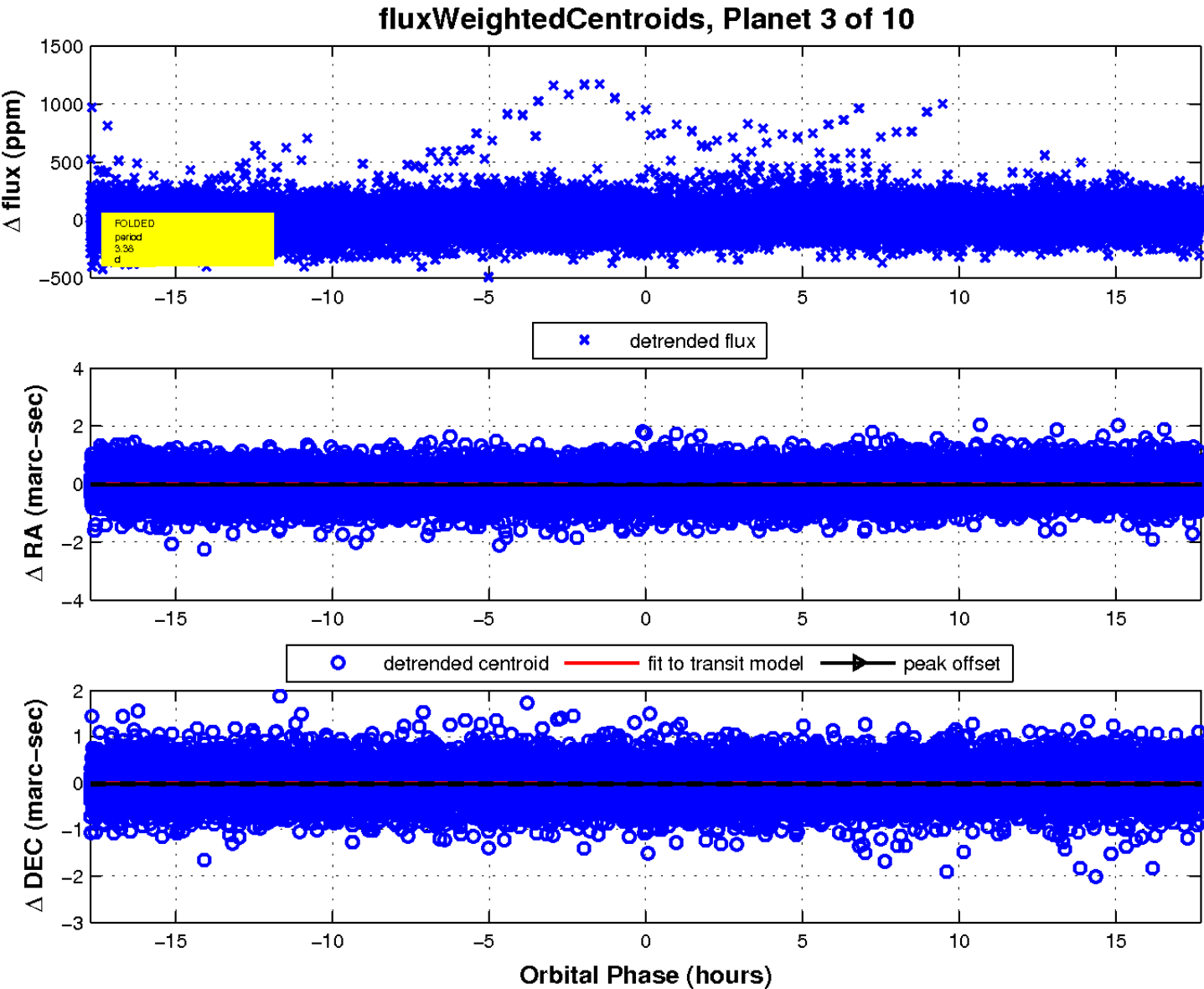
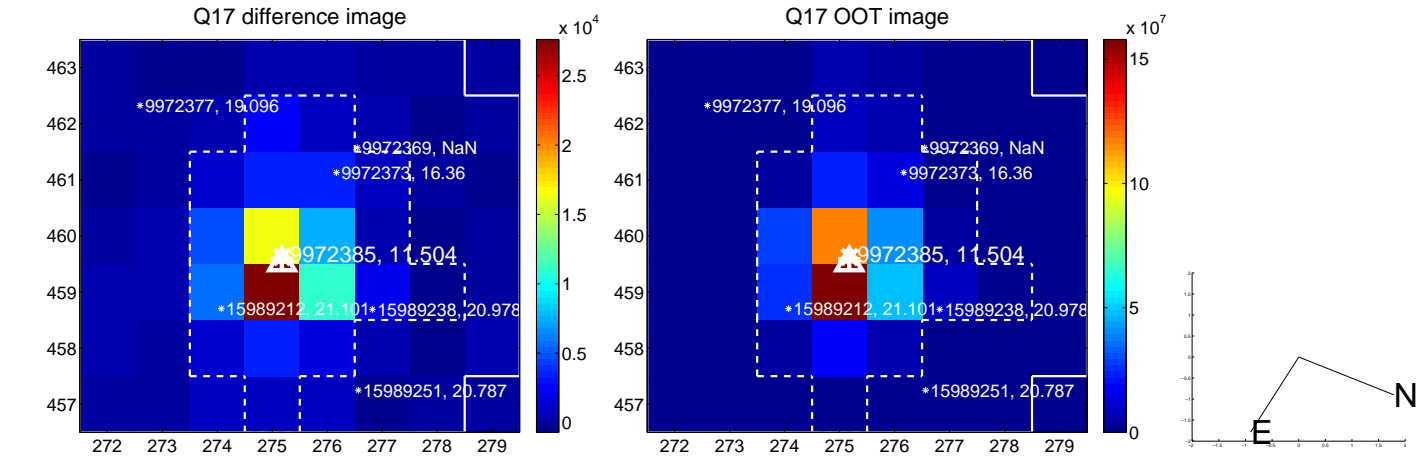
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

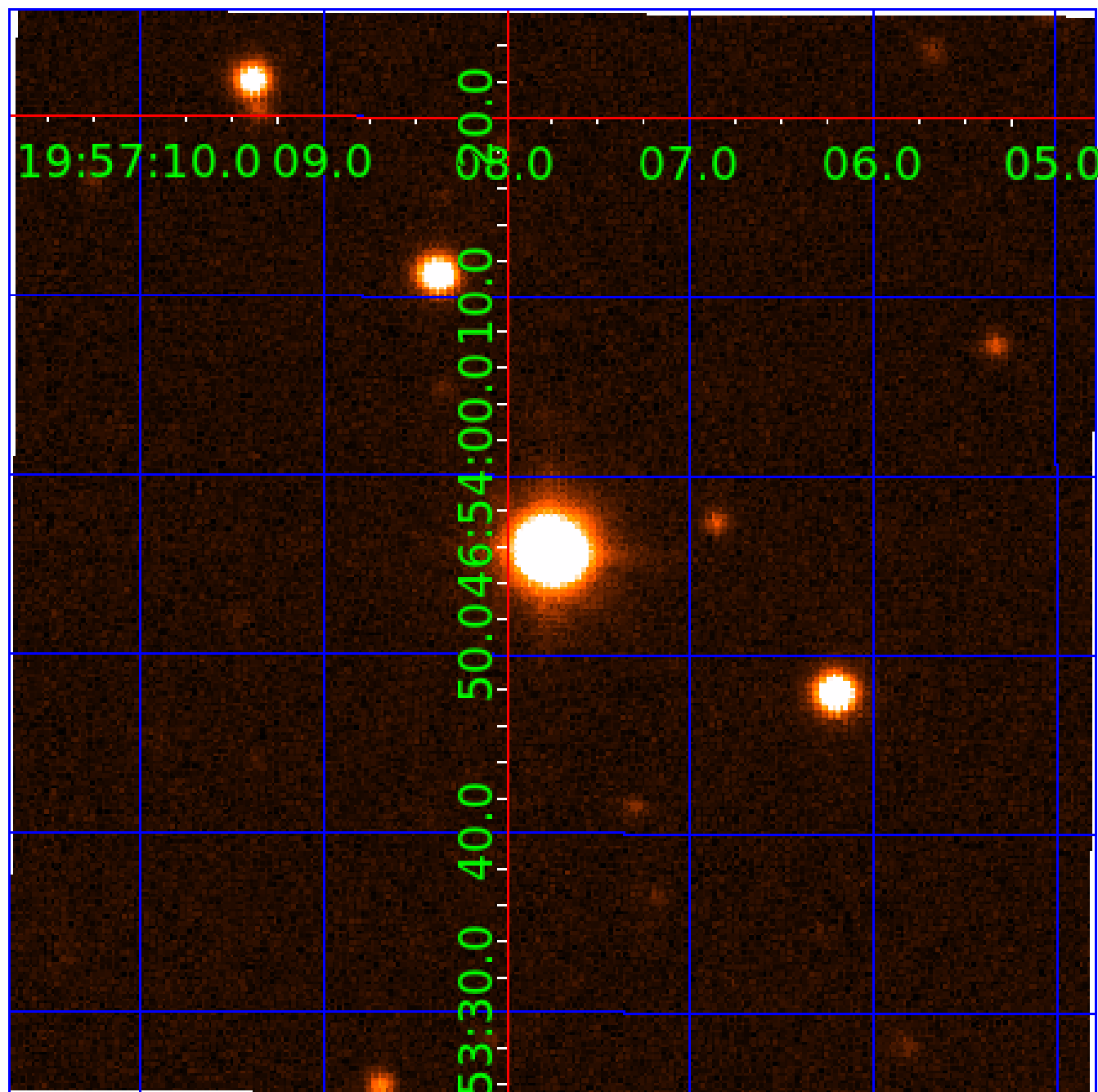


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



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})
009972385-01	OBS	No	58.420909	188.641311	888.3	14.666	43.0	47.5	1.82	6313	10.28	53.92
009972385-02	OBS	No	3.377783	134.244452	52.7	11.222	10.9	12.8	1.82	6313	2.58	2411.99
009972385-03	OBS	No	3.377690	132.286709	27.7	5.907	9.8	10.9	1.82	6313	1.13	2412.08
009972385-04	OBS	No	3.377988	133.026671	25.5	4.744	9.8	10.9	1.82	6313	1.03	2411.80
009972385-05	OBS	No	33.321012	149.739066	24.5	11.846	11.2	1.5	1.82	6313	1.05	114.01
009972385-06	OBS	No	123.877607	192.039254	388.5	27.425	9.2	9.0	1.82	6313	5.06	19.80
009972385-07	OBS	No	84.863803	175.775621	164.1	2.141	7.7	7.8	1.82	6313	2.67	32.78
009972385-08	OBS	No	44.313913	141.982351	121.6	4.609	7.6	7.2	1.82	6313	2.32	77.95
009972385-09	OBS	No	45.629158	166.537092	131.9	7.990	7.5	7.3	1.82	6313	2.40	74.97
009972385-10	OBS	No	23.229243	149.885894	73.0	5.734	7.7	5.9	1.82	6313	1.72	184.43

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009972385-01	OBS	FP	0.00	1	0	0	0	LPP_DV
009972385-02	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—MOD_NONUNIQ_DV
009972385-03	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD
009972385-04	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—SAME_NTL_PERIOD
009972385-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
009972385-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
009972385-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_MEAS
009972385-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_UNCERTAIN
009972385-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
009972385-10	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—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.

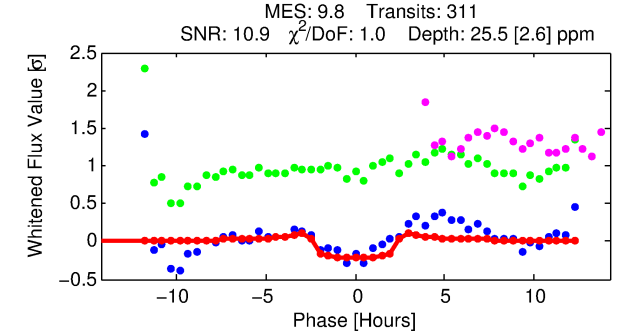
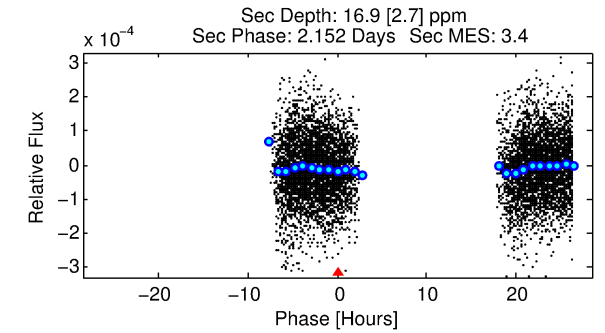
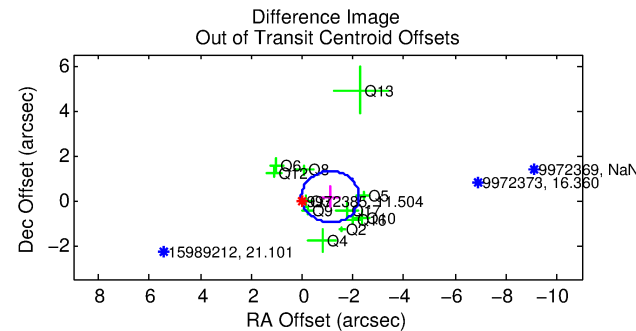
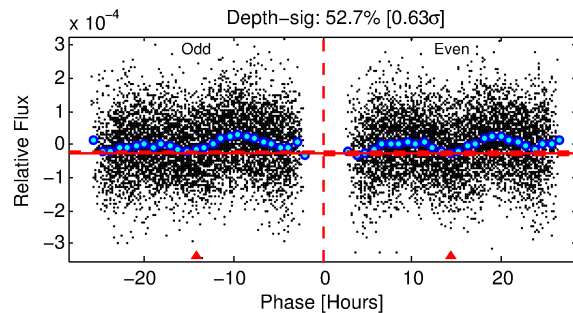
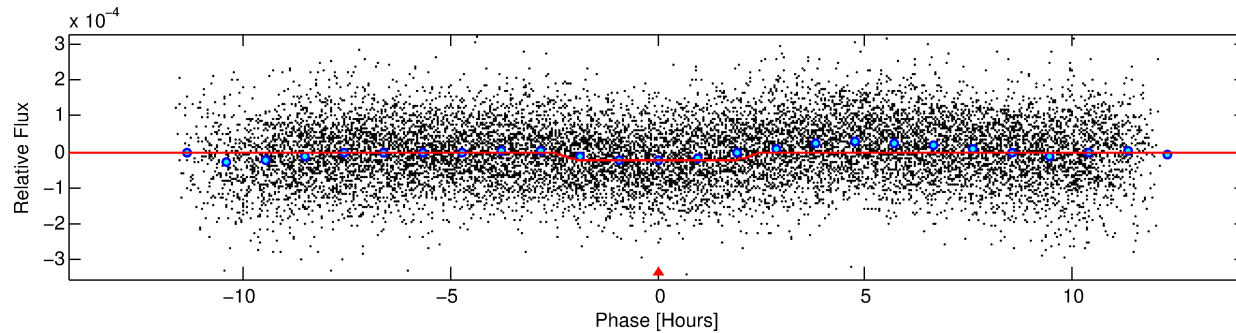
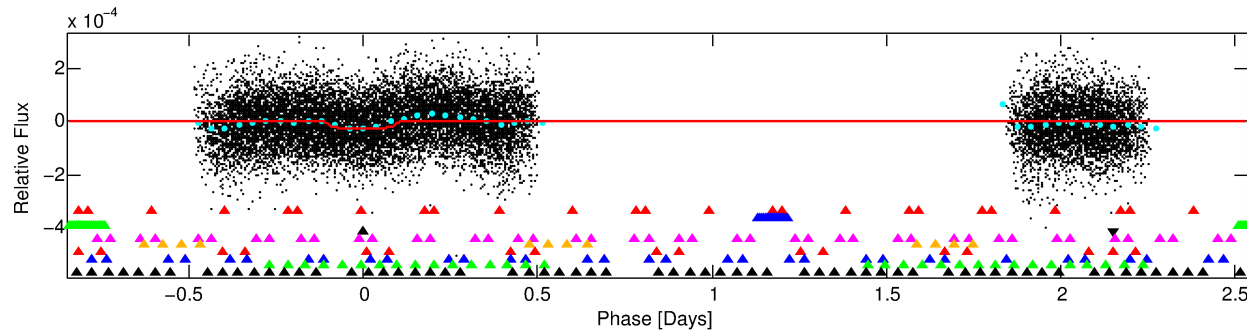
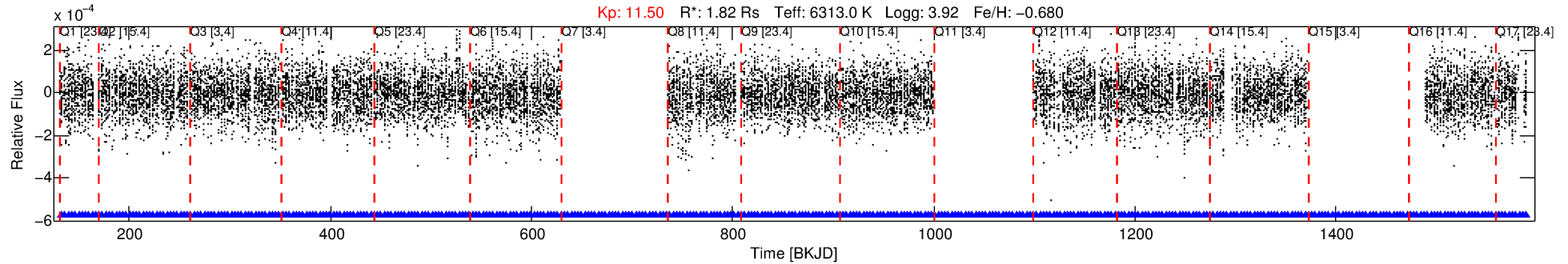
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009972385-04

No Significant Match Found

DV One-Page Summary

KIC: 9972385 Candidate: 4 of 10 Period: 3.378 d



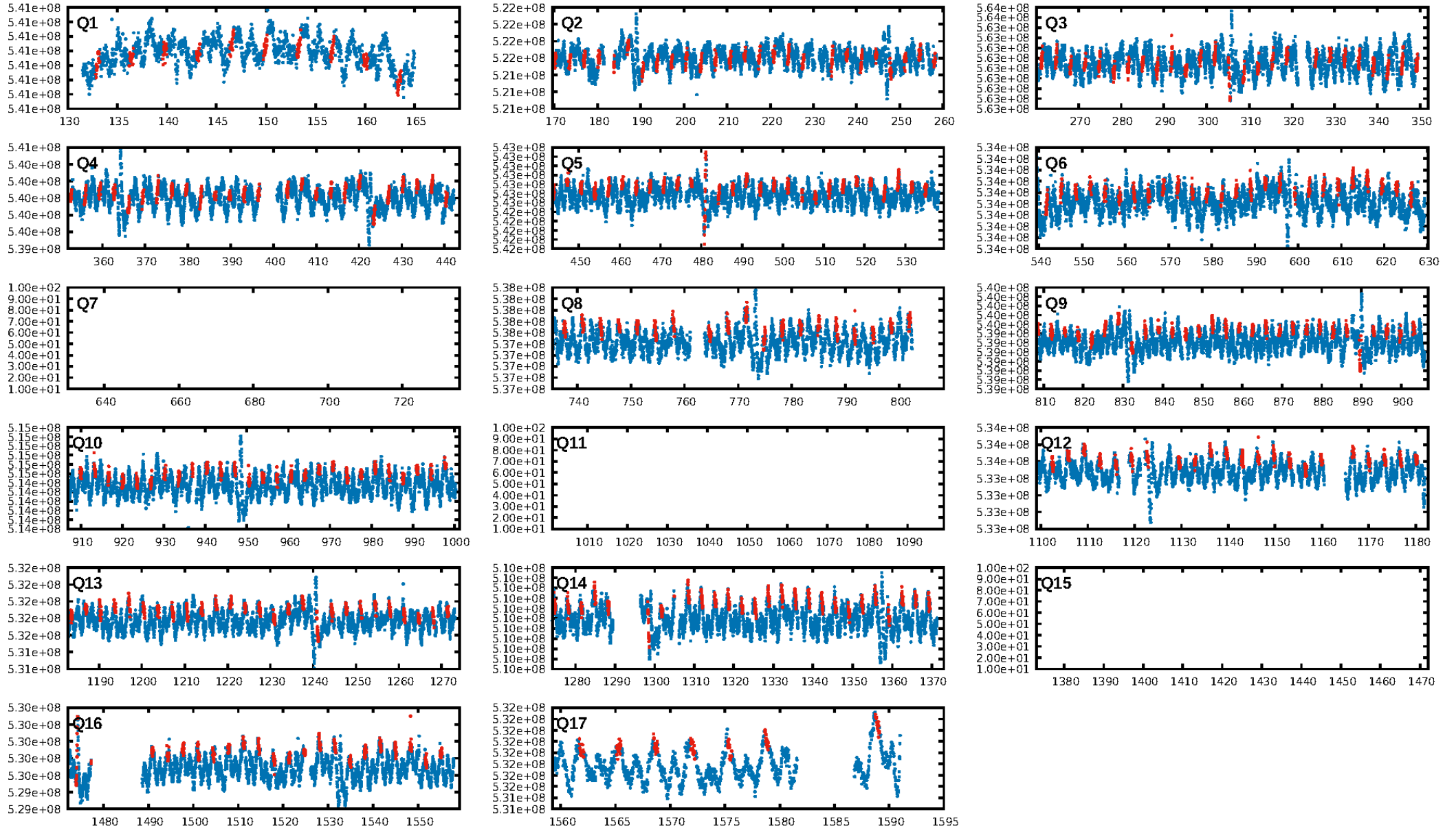
DV Fit Results:

Period = 3.37799 [0.00002] d
Epoch = 133.0267 [0.0041] BKJD
Rp/R* = 0.0052 [0.0009]
a/R* = 3.19 [2.74]
b = 0.83 [0.35]
Seff = 2411.80 [1329.06]
Teff = 1787 [246] K
Rp = 1.03 [0.38] Re
a = 0.0442 [0.0145] AU
Ag = 17.14 [11.40] [1.42σ]
Teffp = 5622 [565] K [6.22σ]

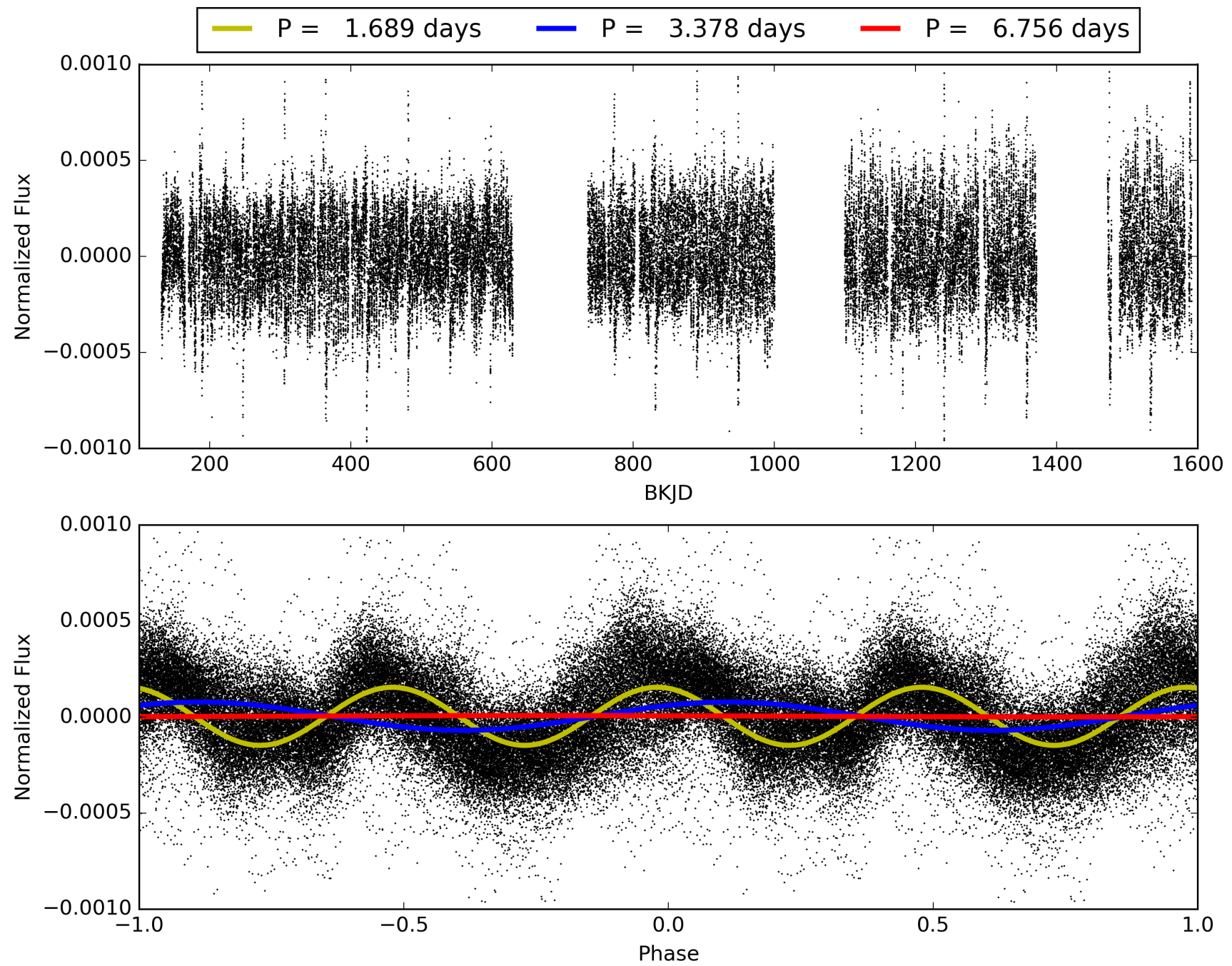
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]
LongPeriod-sig: 100.0% [64.02σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 1.06e-09
RollingBand-fgt: 1.00 [294/294]
GhostDiagnostic-chr: 1.264
Centroid-sig: 0.7%
Centroid-so: 1.689 arcsec [2.19σ]
OotOffset-rm: 1.119 arcsec [2.94σ]
KicOffset-rm: 0.994 arcsec [2.76σ]
OotOffset-st: 3/1/4/4 [12]
KicOffset-st: 3/1/4/4 [12]
DiffImageQuality-fgm: 0.25 [3/12]
DiffImageOverlap-fno: 1.00 [14/14]

TCE 009972385-04, PDC Light Curves

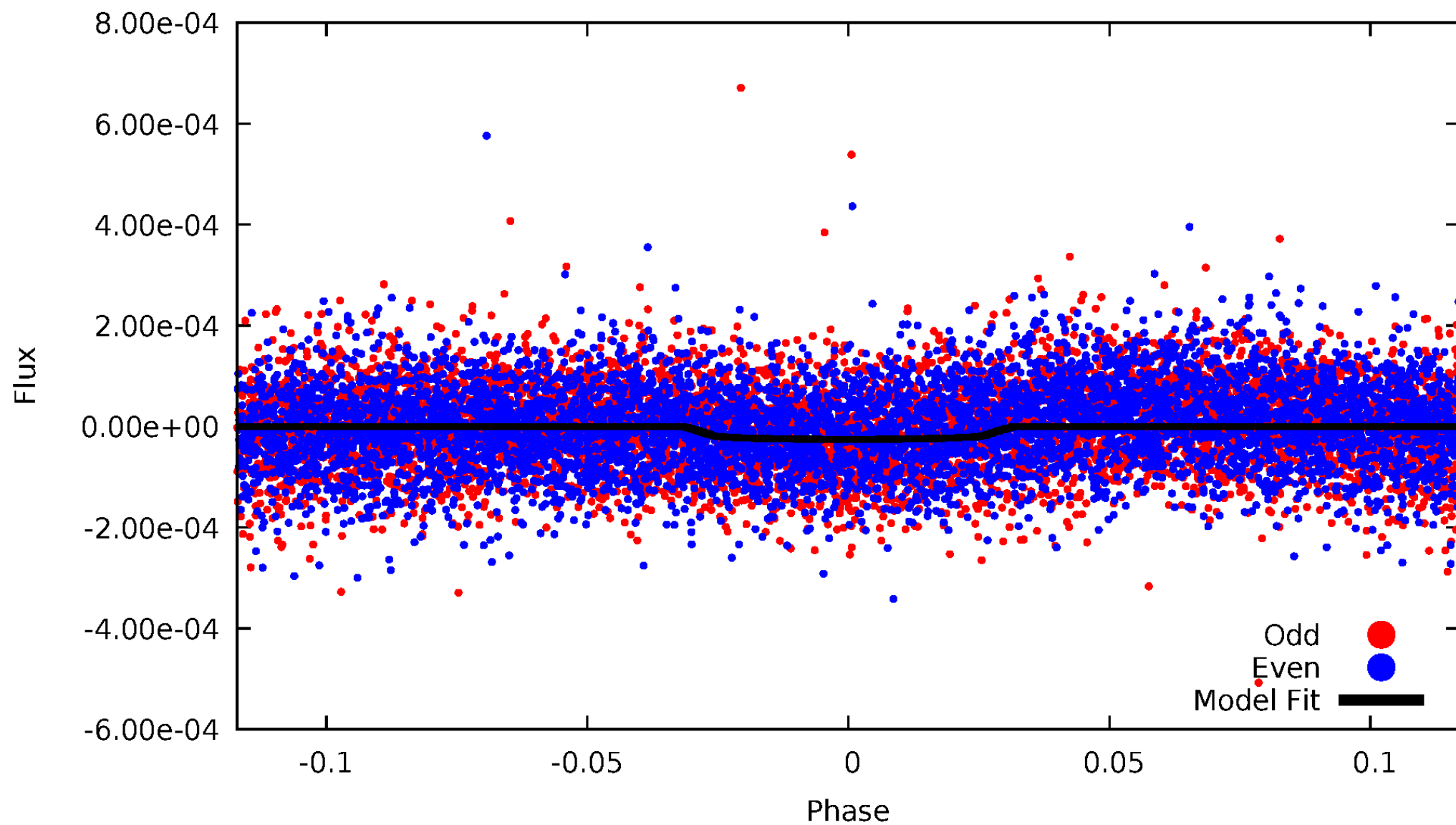


TCE 009972385-04



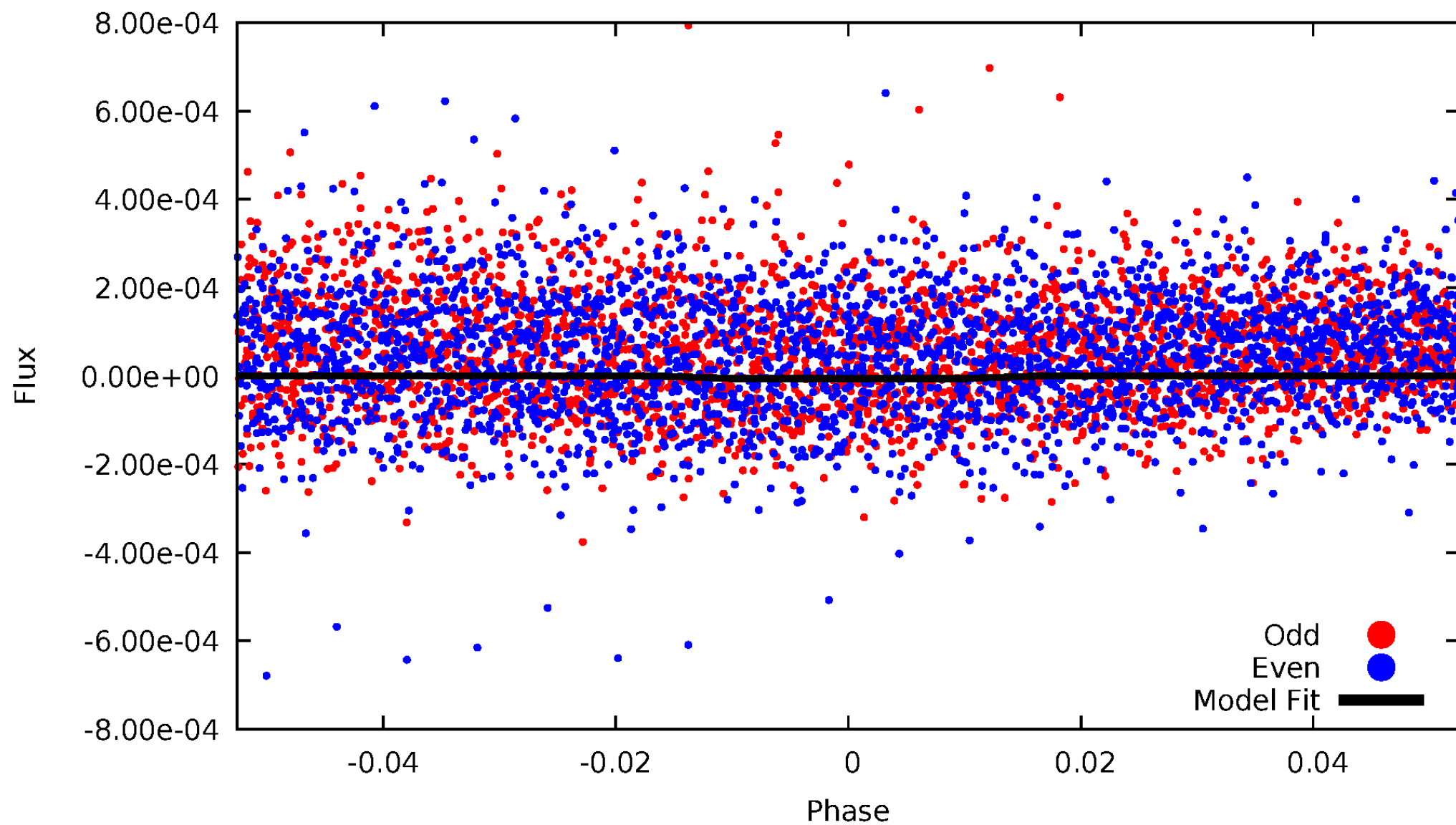
DV Odd/Even

TCE 009972385-04



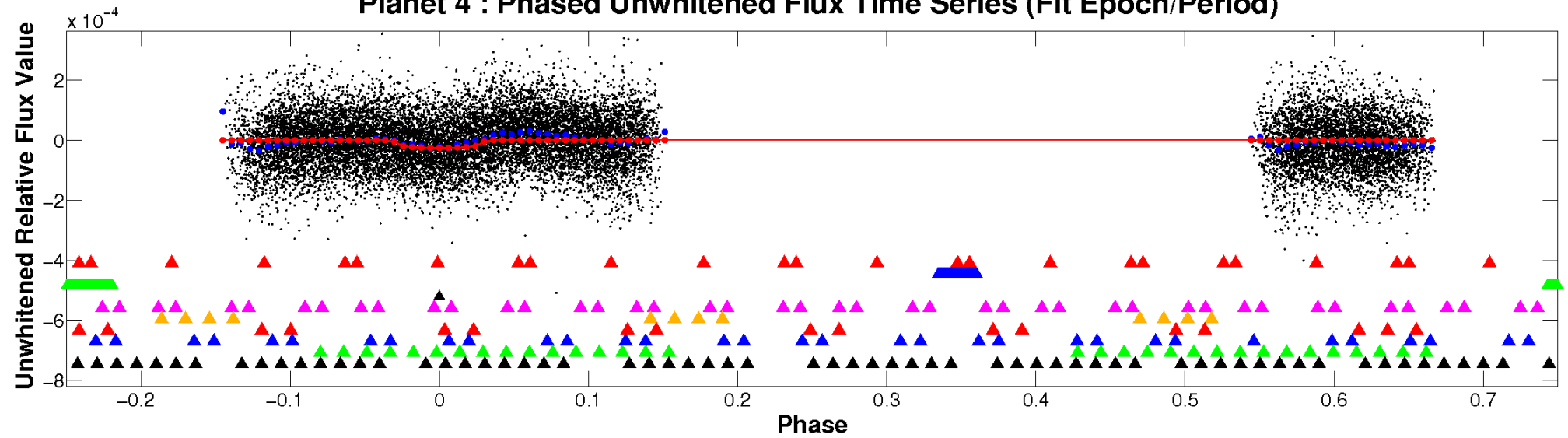
ALT Odd/Even

TCE 009972385-04

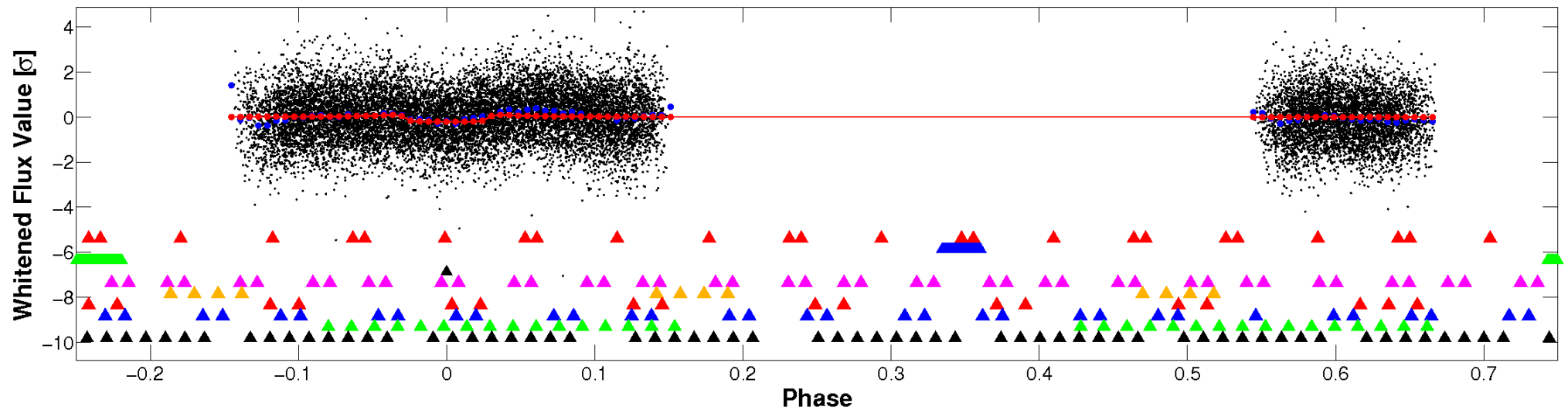


Non-Whitened Vs. Whitened Light Curve

Planet 4 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

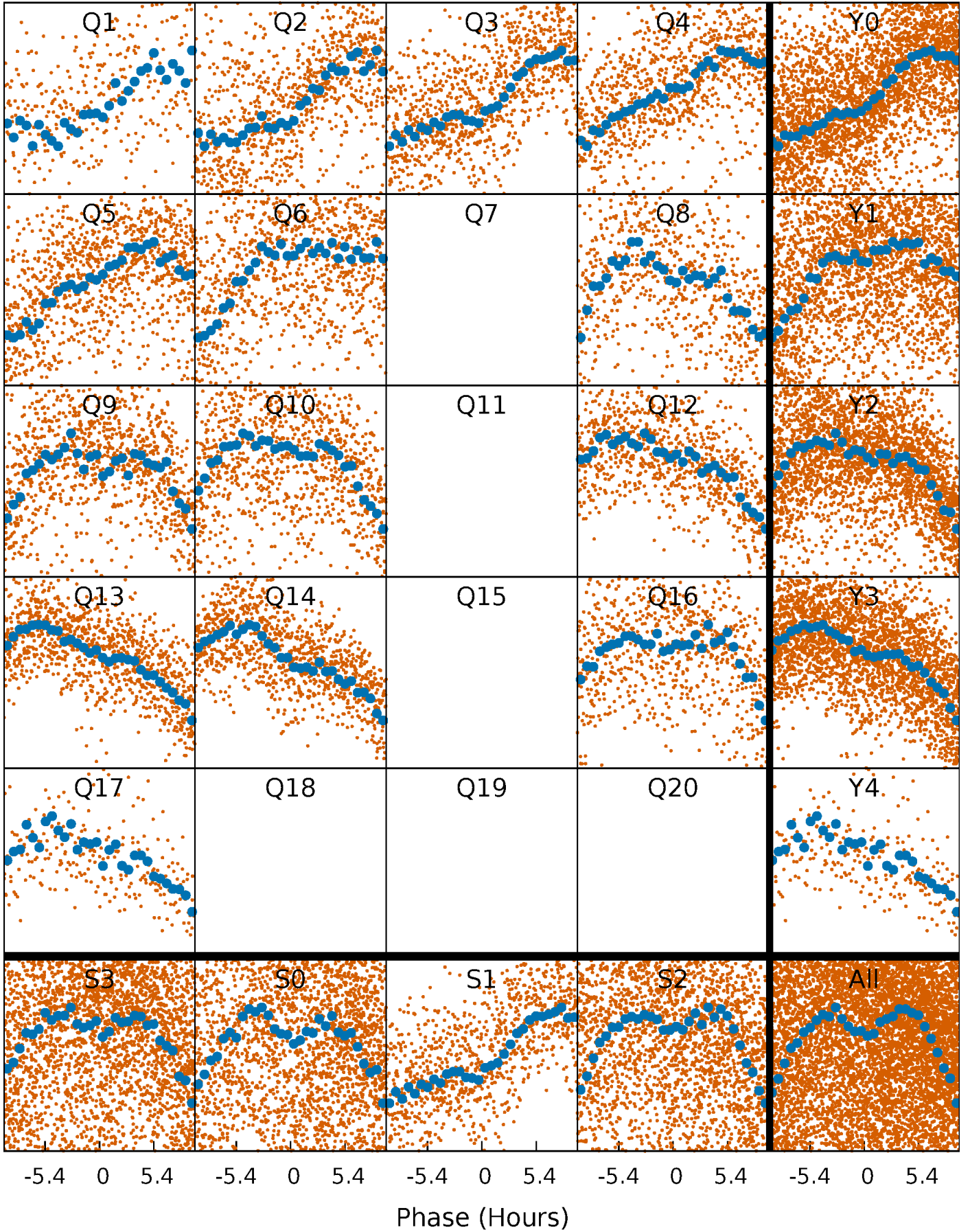


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



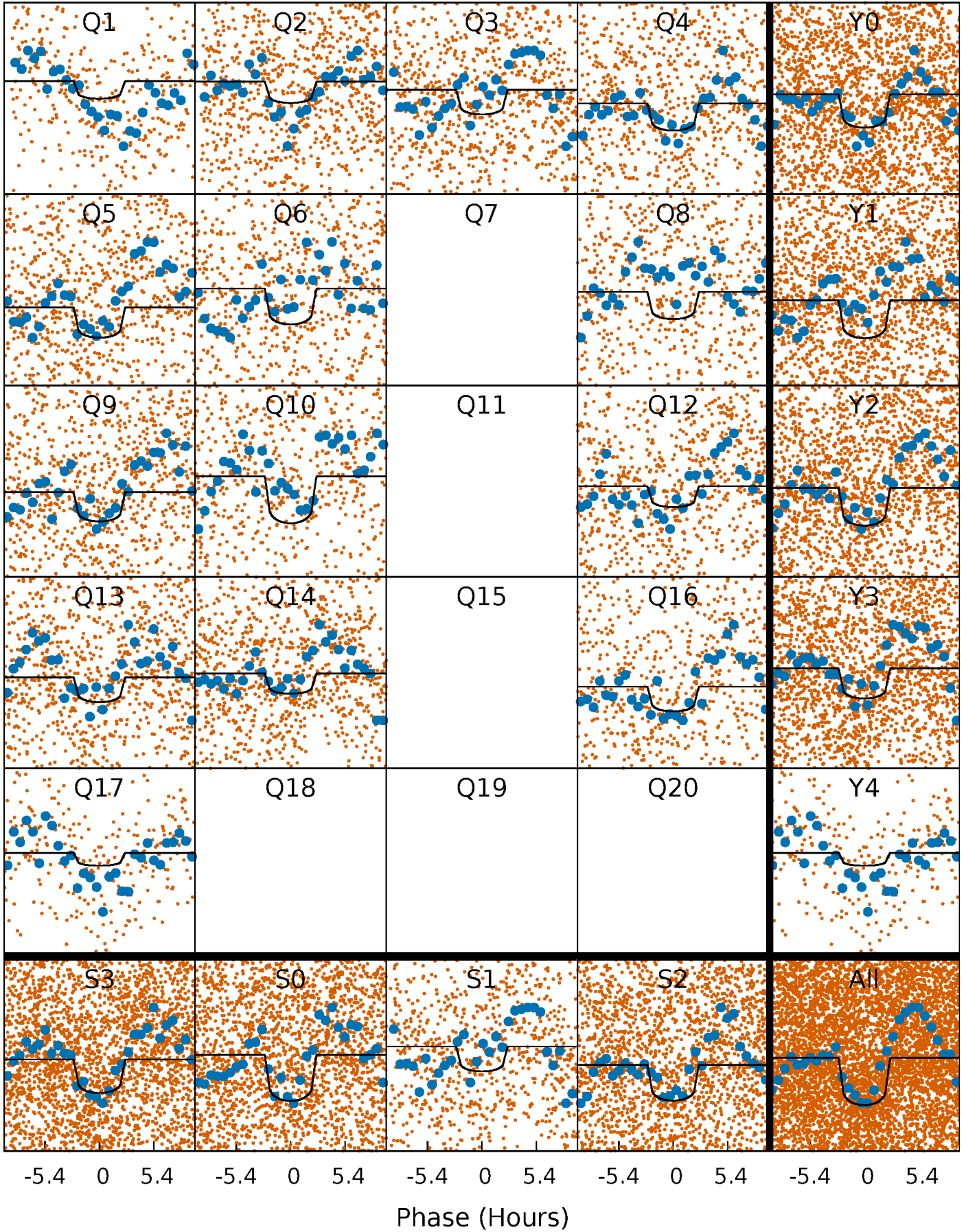
PDC Quarter-Phased Transit Curves

TCE 009972385-04 $P = 3.377988$ Days $T_0 = 133.026671$ (BKJD)



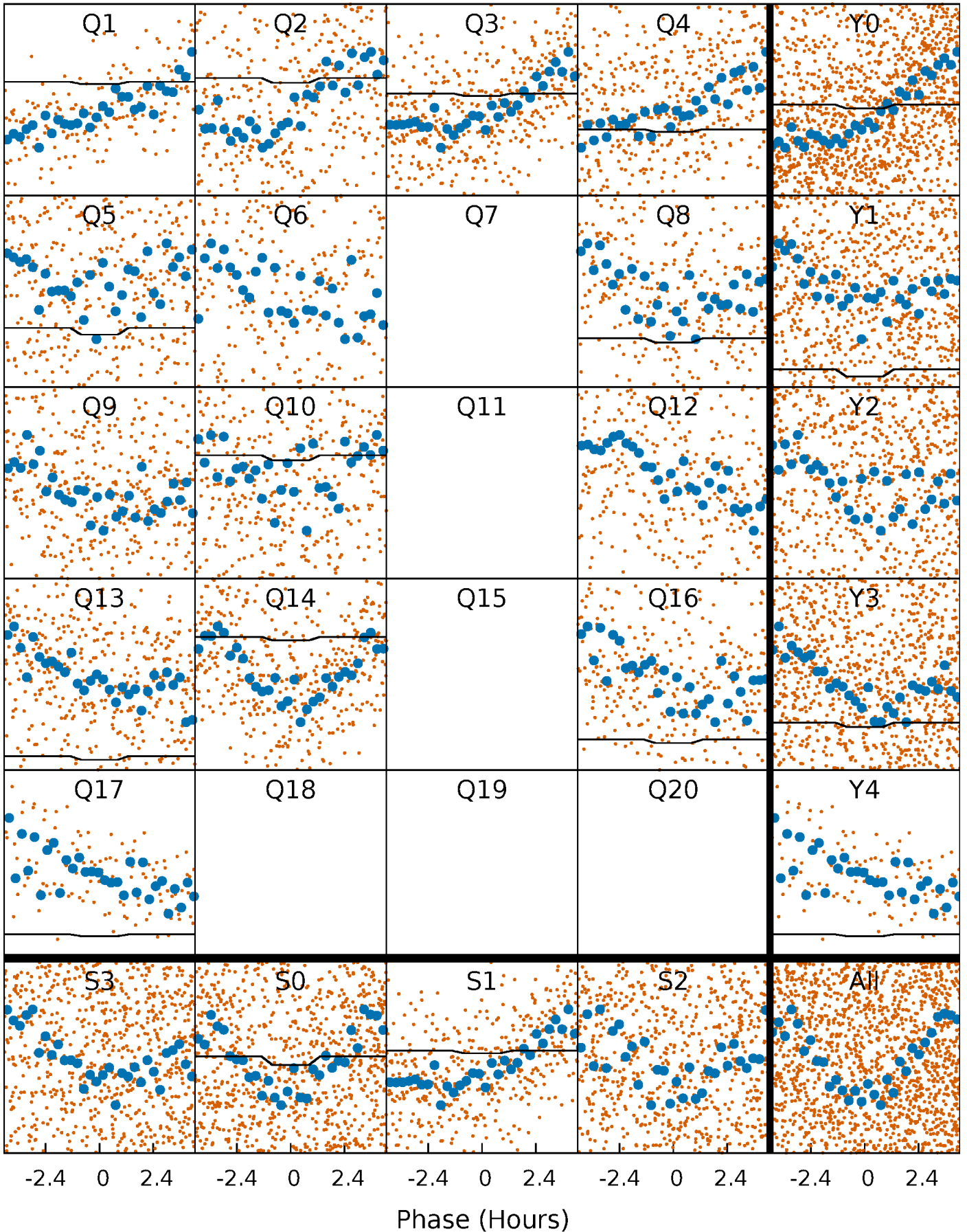
DV Quarter-Phased Transit Curves

TCE 009972385-04 P= 3.377988 Days $T_0=133.026671$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

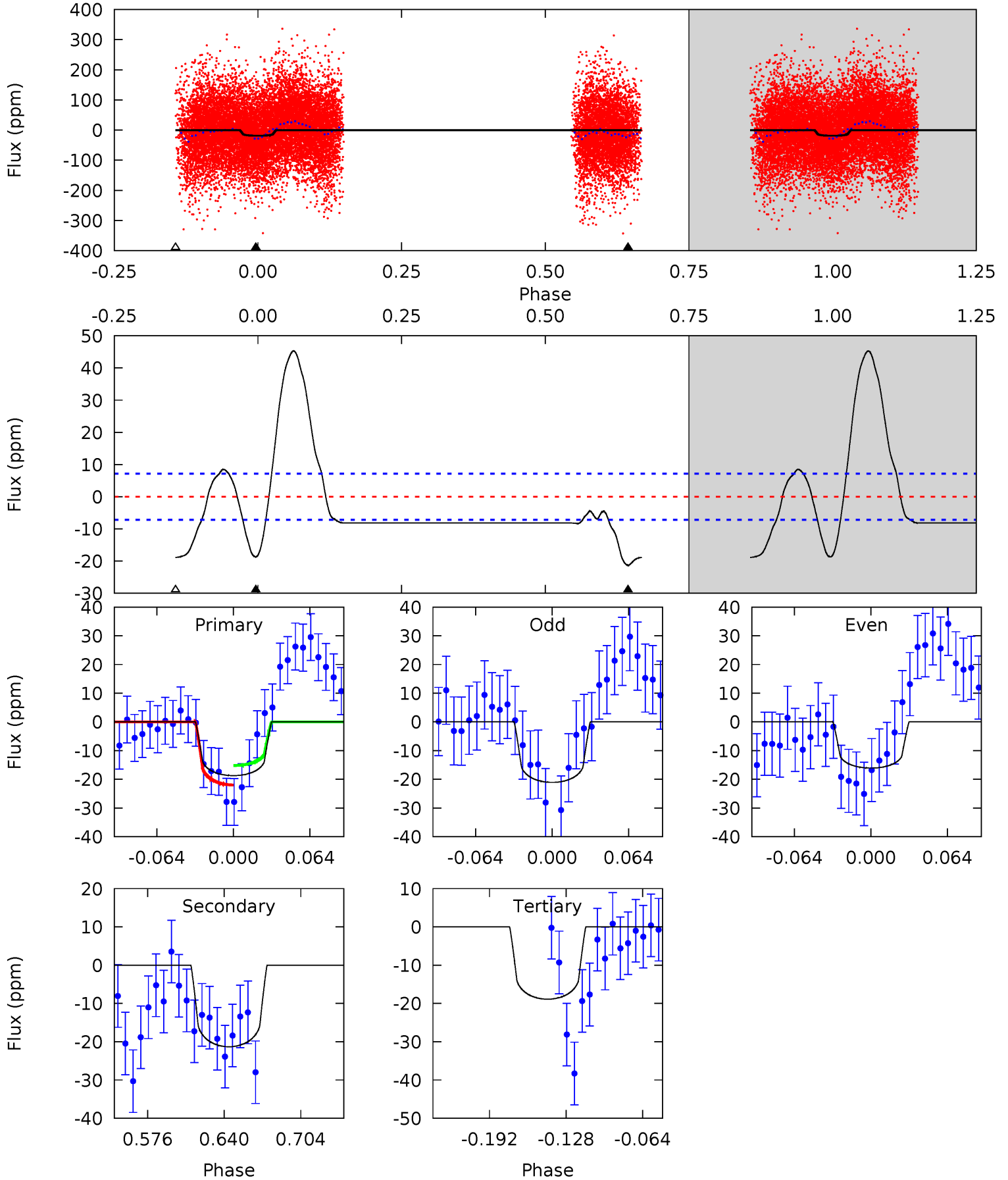
TCE 009972385-04 $P = 3.377864$ Days $T_0 = 133.055634$ (BKJD)



DV Model-Shift Uniqueness Test

009972385-04, P = 3.377988 Days, E = 129.648683 Days

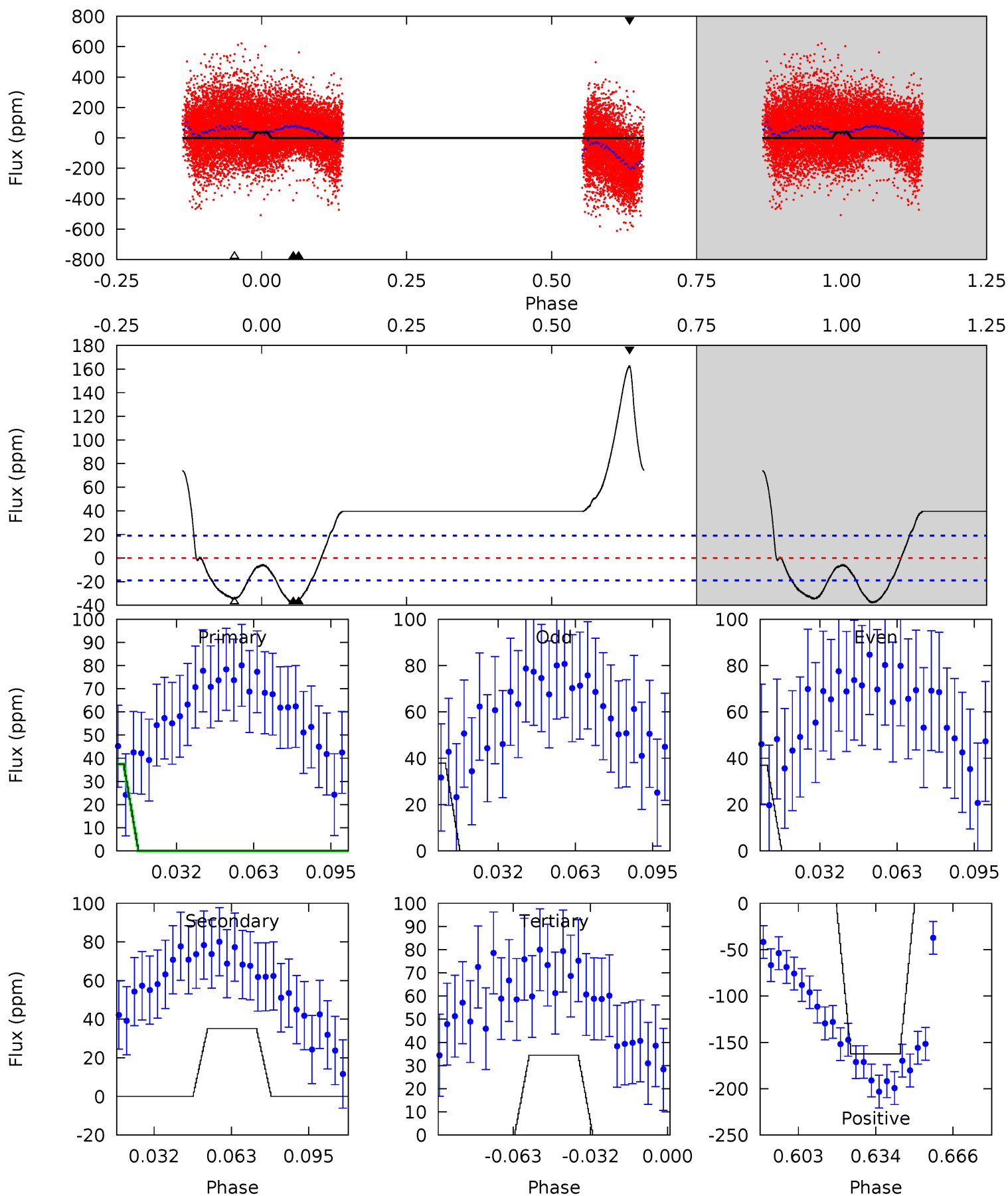
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.1	13.8	12.2	0	4.66	1.85	11.8	-0.10	12.1	1.57	13.8	1.65	1.07	0.68	2.32



Alt Model-Shift Uniqueness Test

009972385-04, P = 3.377864 Days, E = 129.677770 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.48	8.90	8.72	41.1	4.80	2.15	14.1	0.76	-31.6	0.18	-32.2	0.12	0.98	0.81	0.05



Stellar Parameters For KIC 009972385

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6313^{+170}_{-170}	$3.922^{+0.323}_{-0.108}$	$-0.680^{+0.350}_{-0.250}$	$1.820^{+0.391}_{-0.587}$	$1.009^{+0.161}_{-0.145}$	$0.236^{+0.462}_{-0.087}$
	+3%/-3%	+8%/-3%	+51%/-37%	+21%/-32%	+16%/-14%	+196%/-37%
Source	PHO1	FLK73	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 009972385-04 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-21 ± 2	$0.97^{+0.25}_{-0.23}$	2453^{+156}_{-227}	5934^{+669}_{-499}	24^{+16}_{-9}
Alt.	-35 ± 4	$0.46^{+0.20}_{-0.16}$	2460^{+159}_{-207}	11091^{+5303}_{-2333}	180^{+266}_{-91}

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 $A_{obs} \gg 1.0$

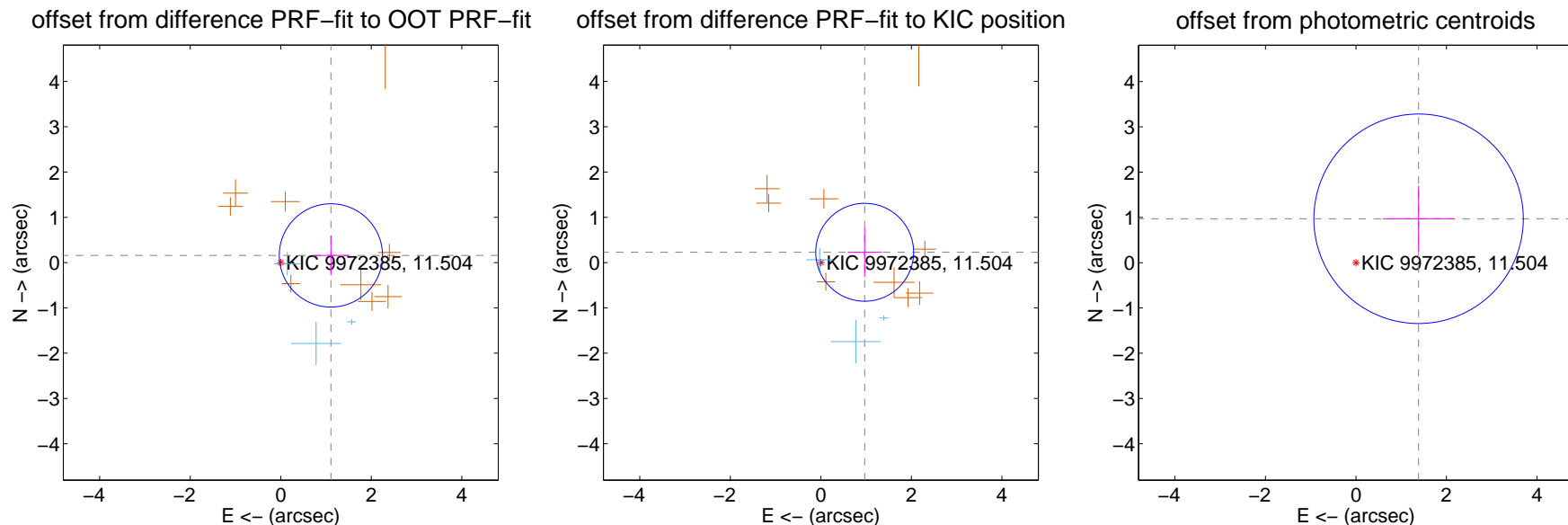
DV Centroid Data

Supplemental centroid analysis for 009972385-04. **Kepler magnitude: 11.50.** Transit SNR 10.93

There are 3 quarters with good PRF difference image offsets

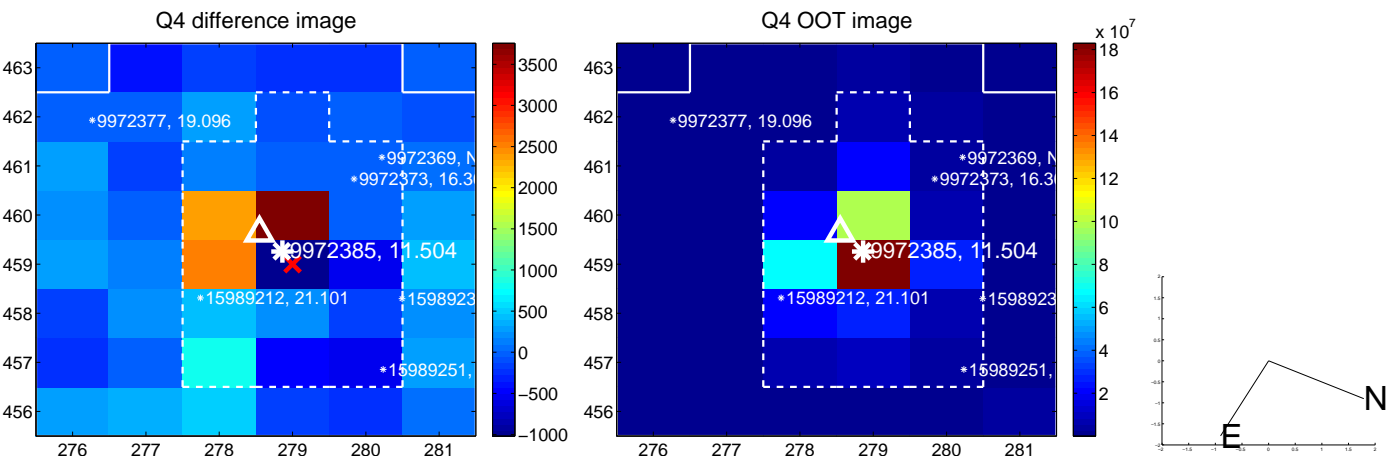
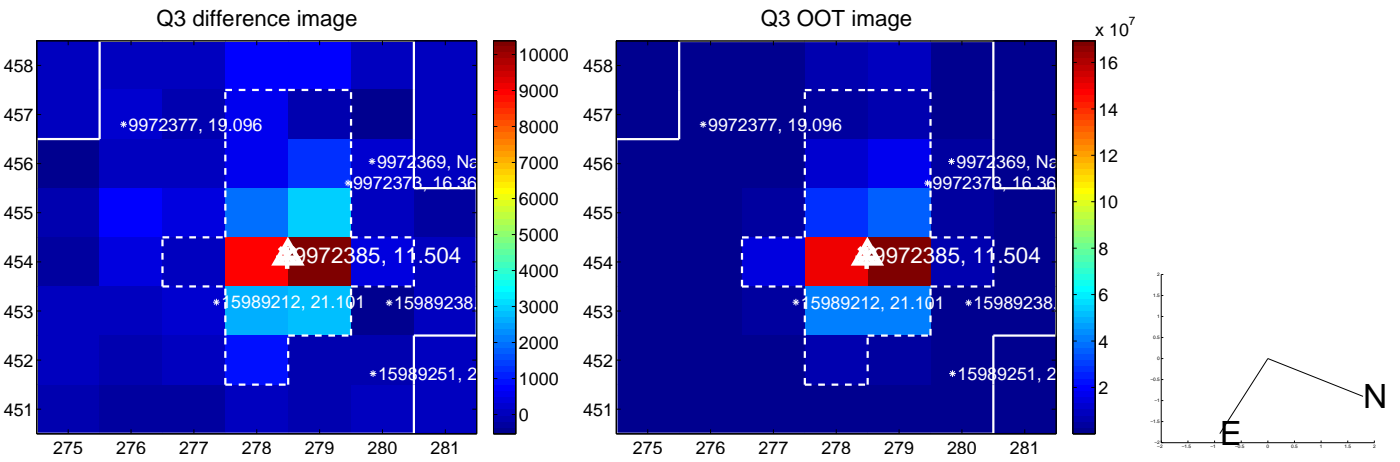
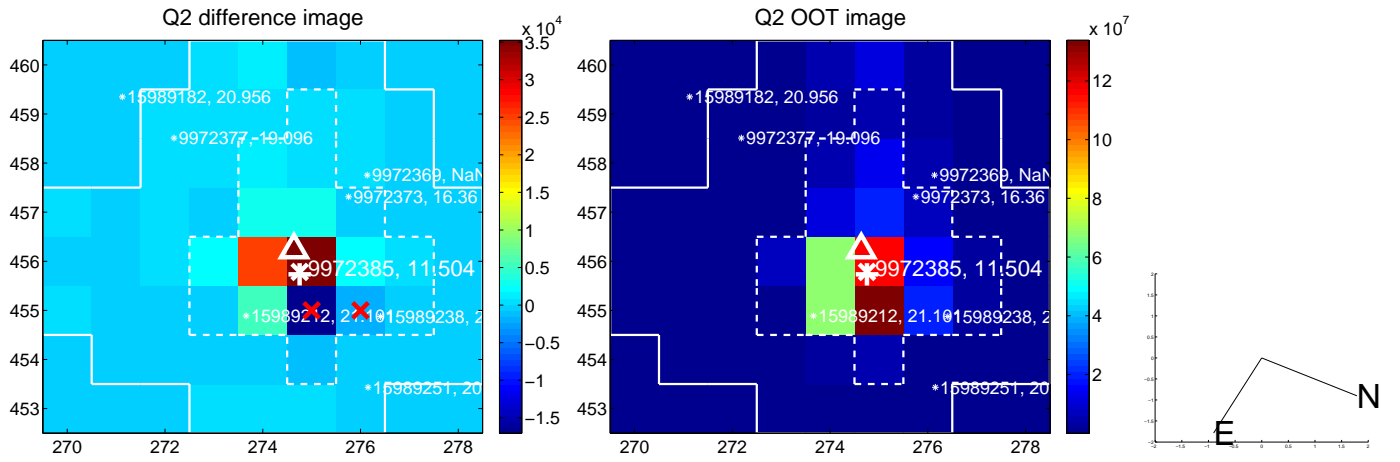
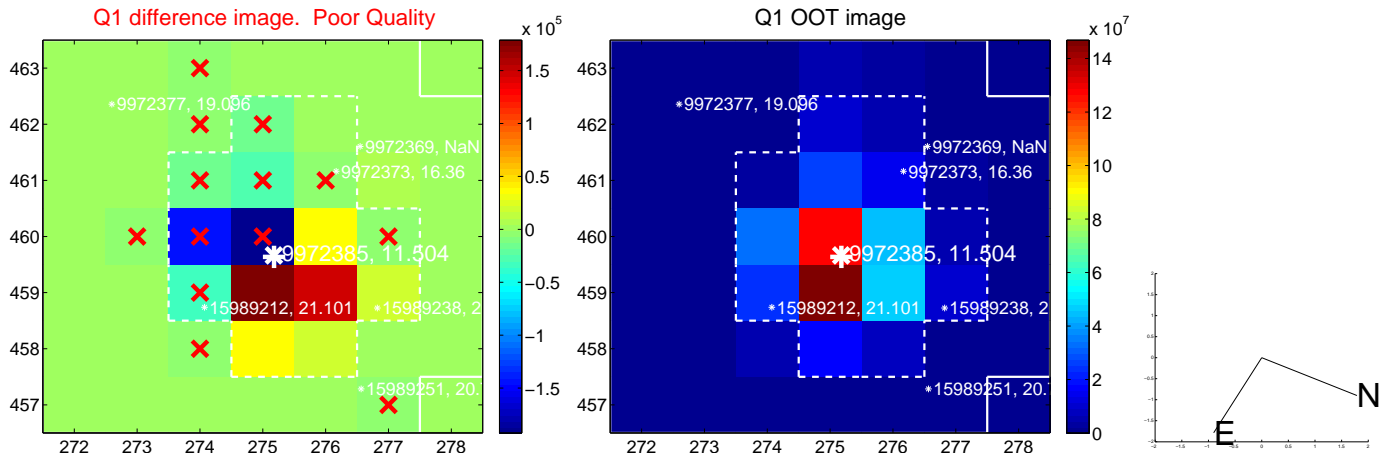
The direct PRF centroid is offset from the target star catalog position by about 0.16 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.119 ± 0.380	2.94	-1.108 ± 0.384	0.158 ± 0.436
PRF-fit source offset from KIC position	0.994 ± 0.360	2.76	-0.968 ± 0.373	0.228 ± 0.541
photometric centroid source offset	1.69 ± 0.77	2.19	-1.38 ± 0.79	0.97 ± 0.72

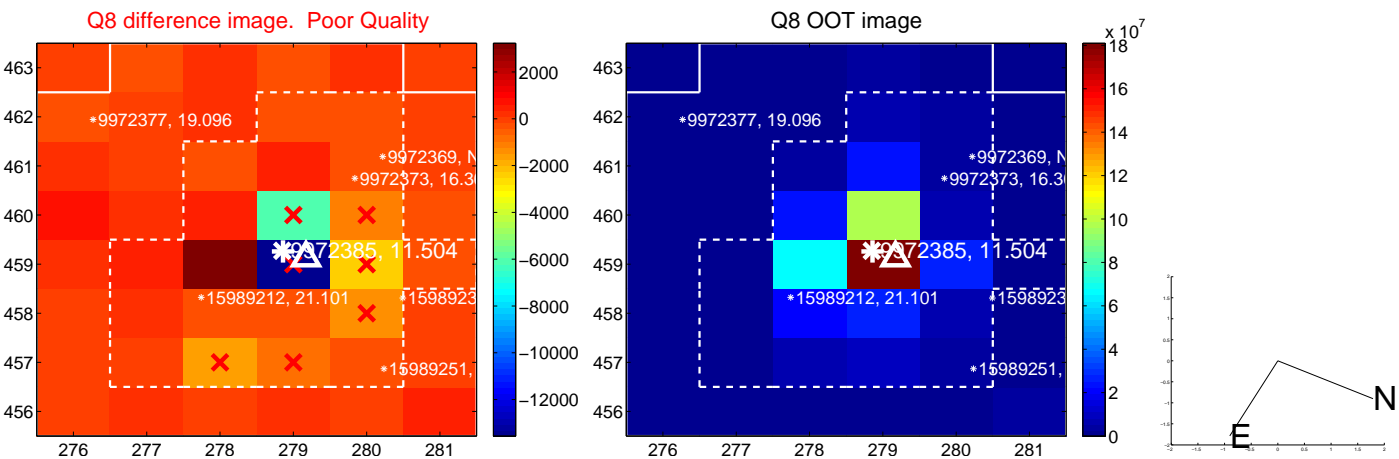
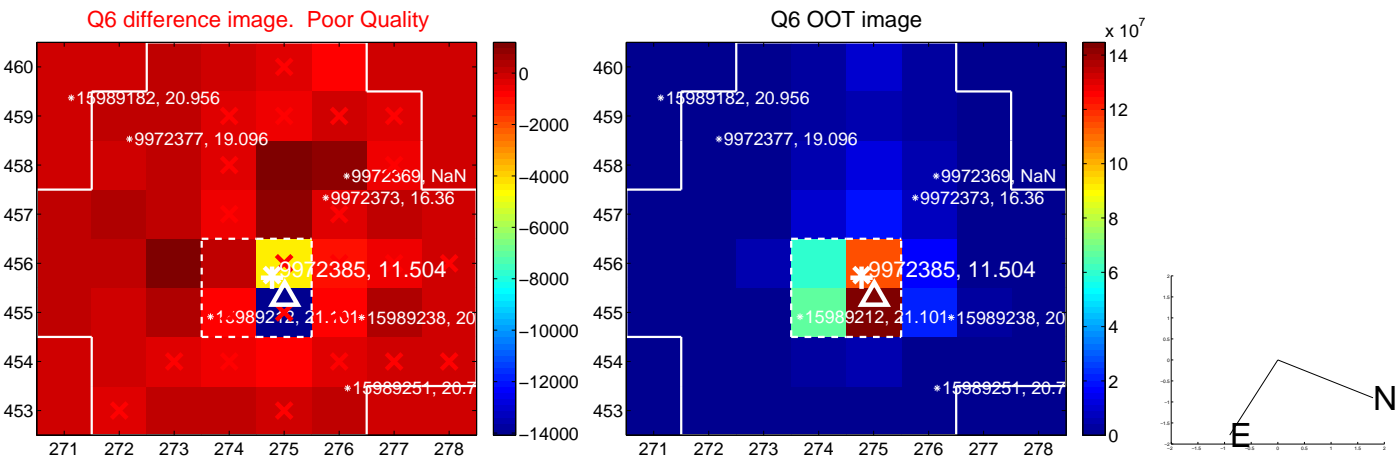
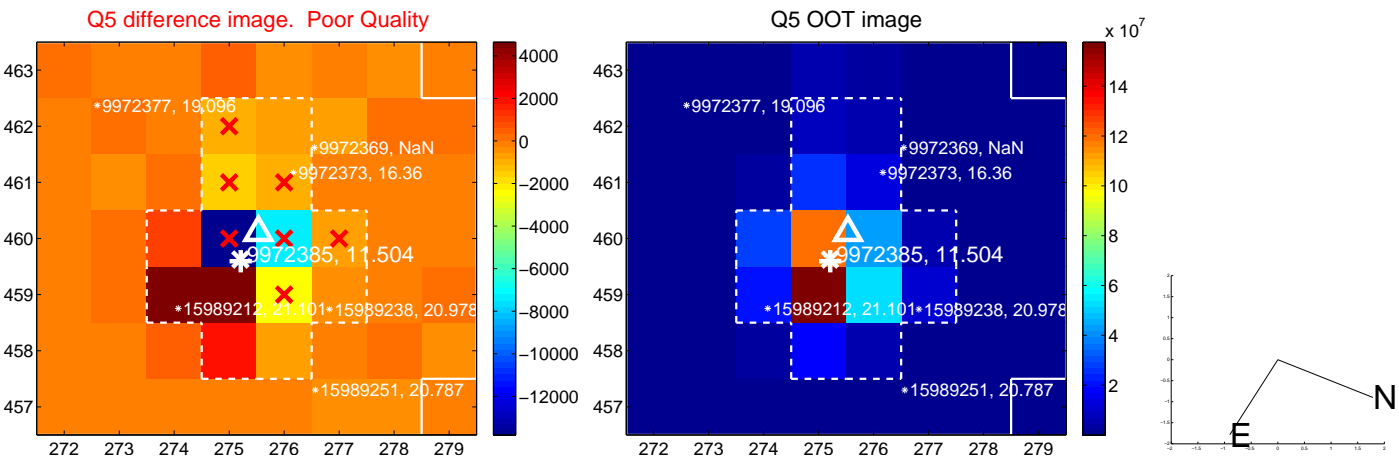


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ . Red *: target star. Blue *: Other stars. Text next to a star gives its KIC ID and kepmag. KIC IDs > 15,000,000 are from the UKIRT catalog.

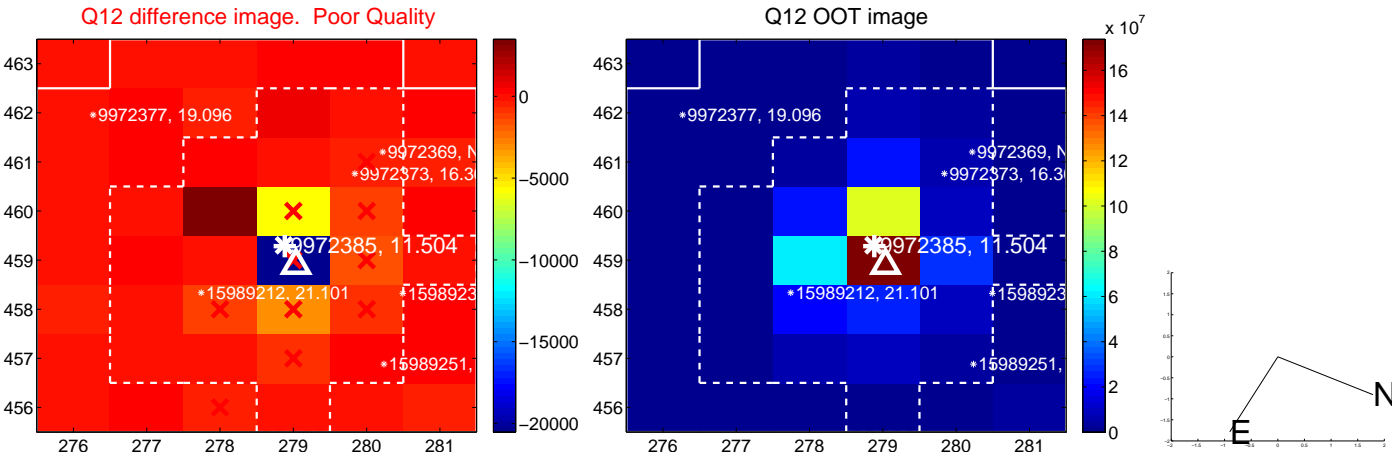
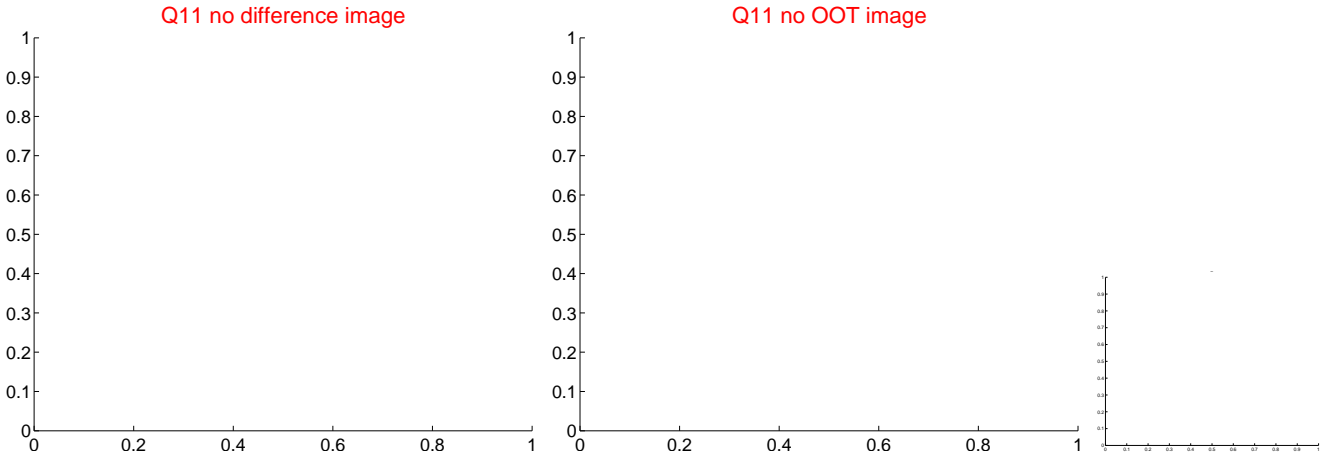
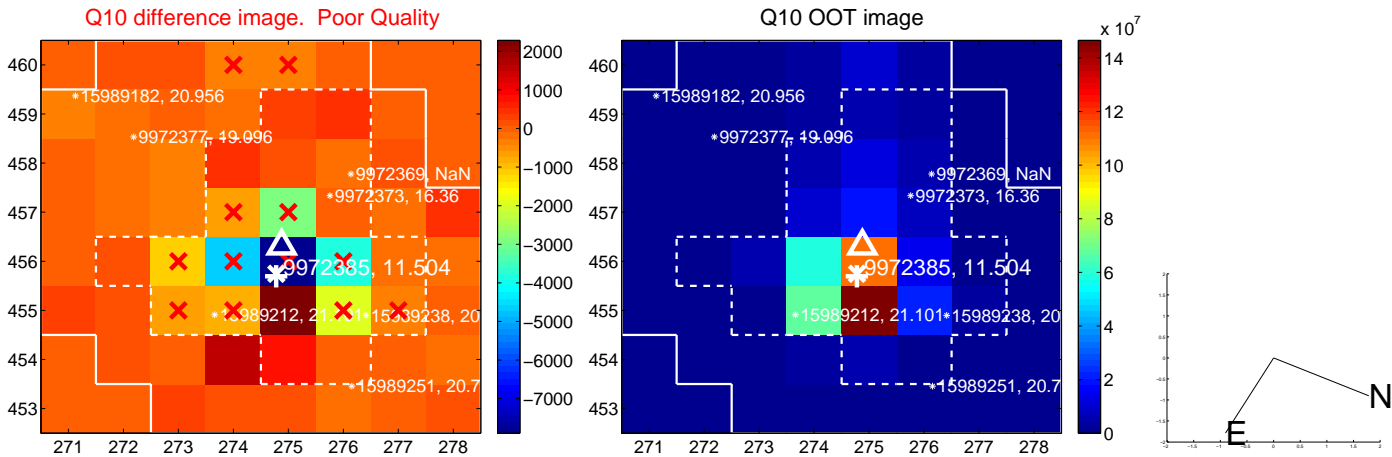
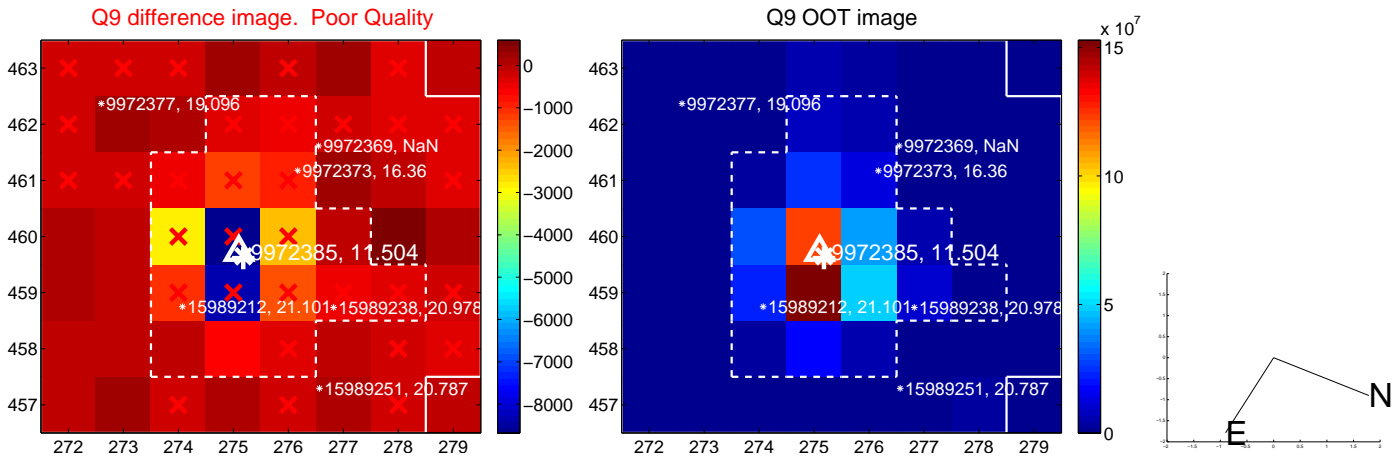
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



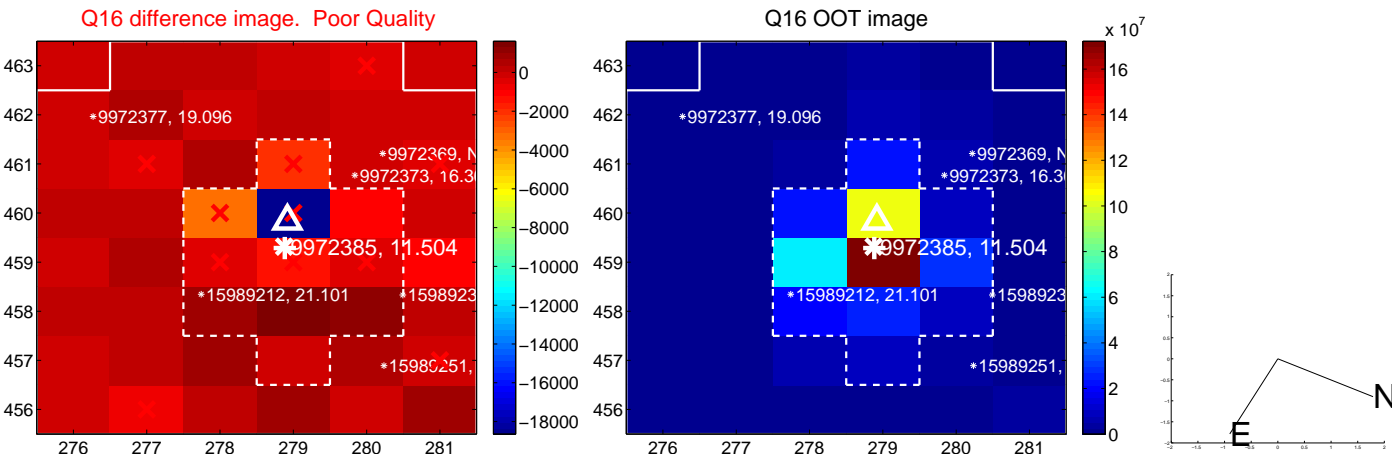
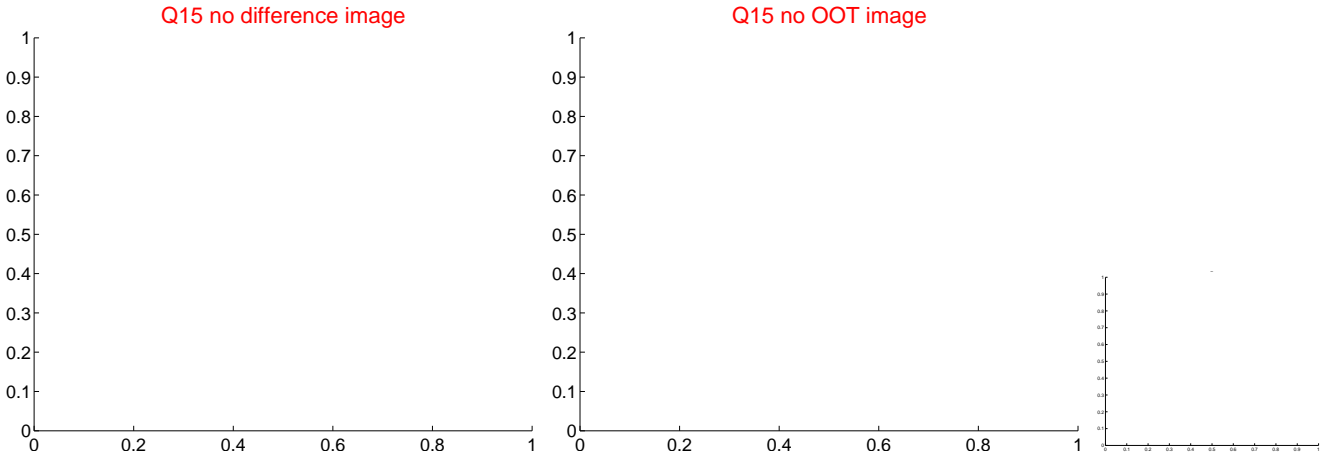
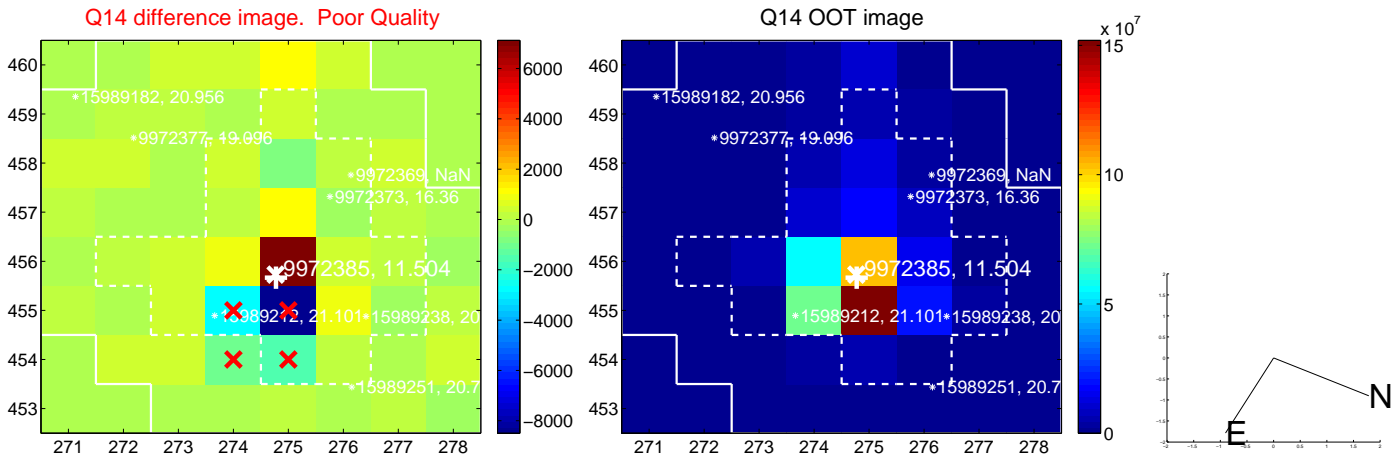
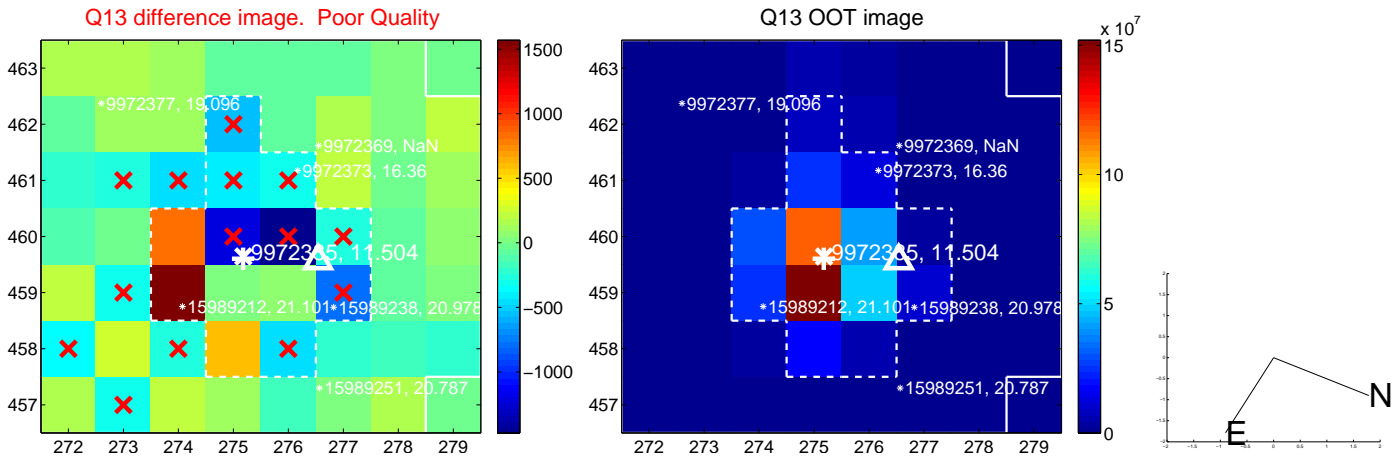
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



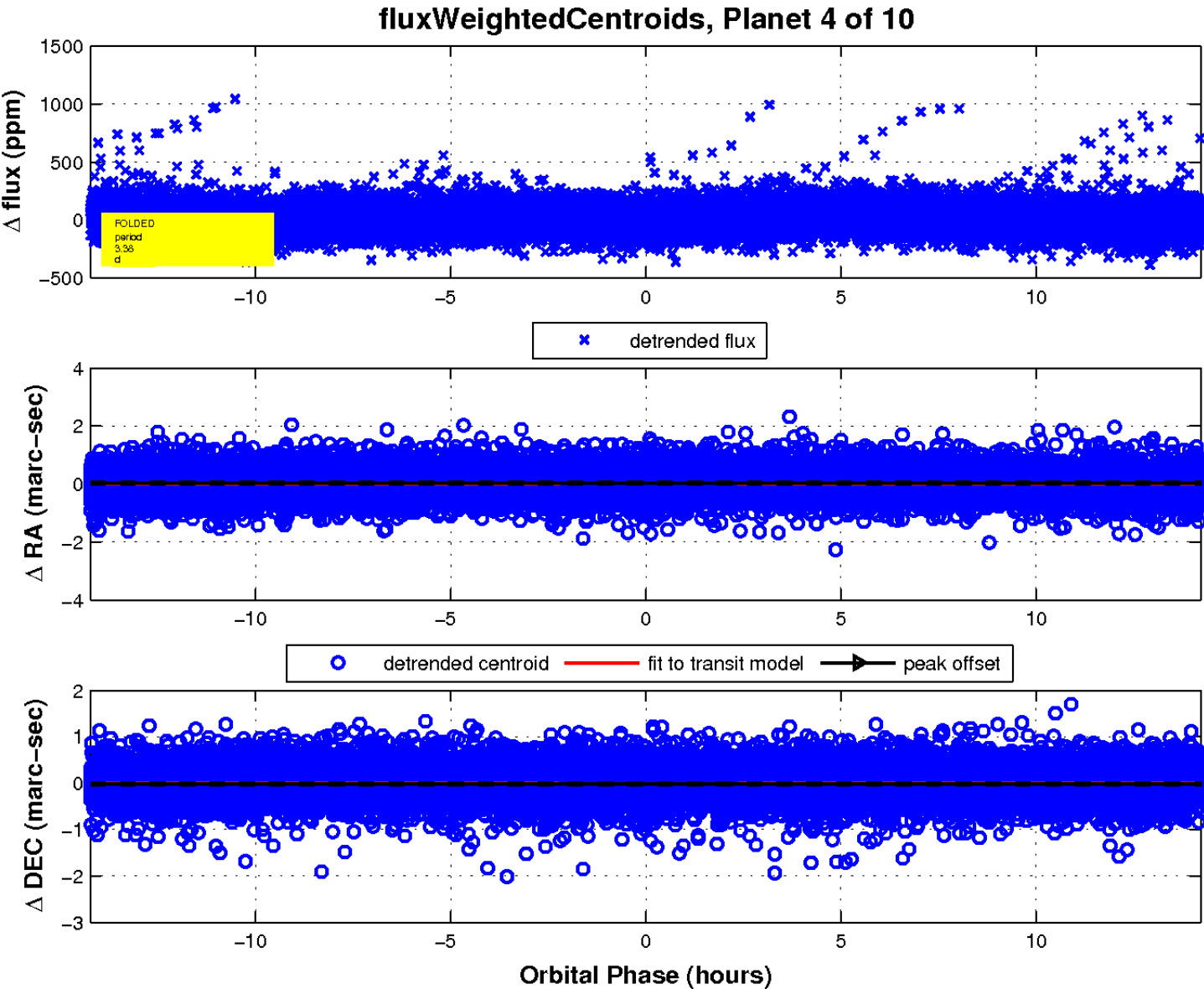
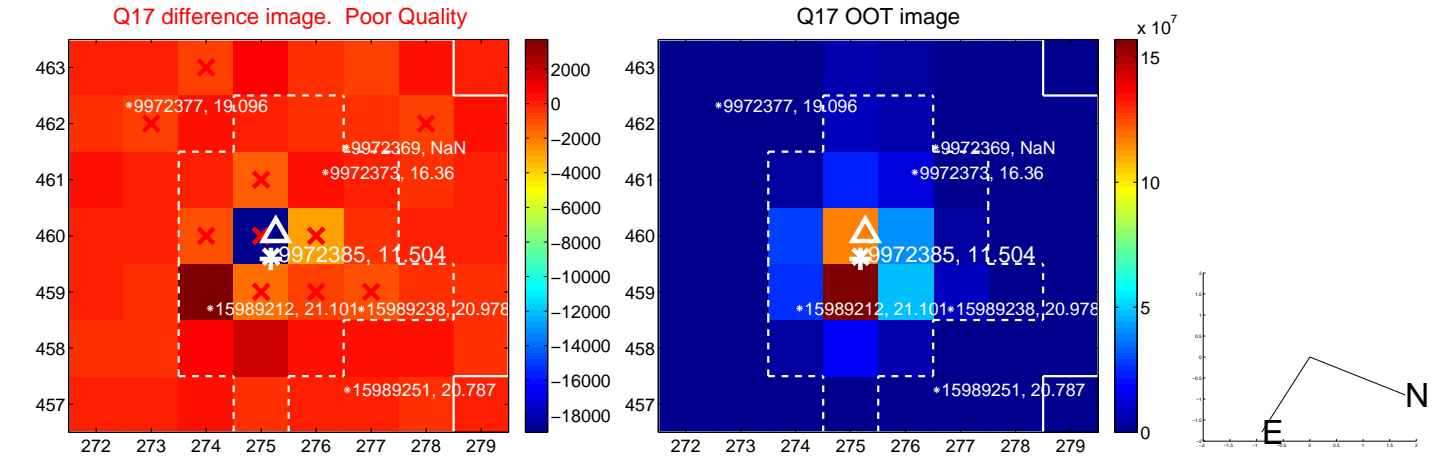
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

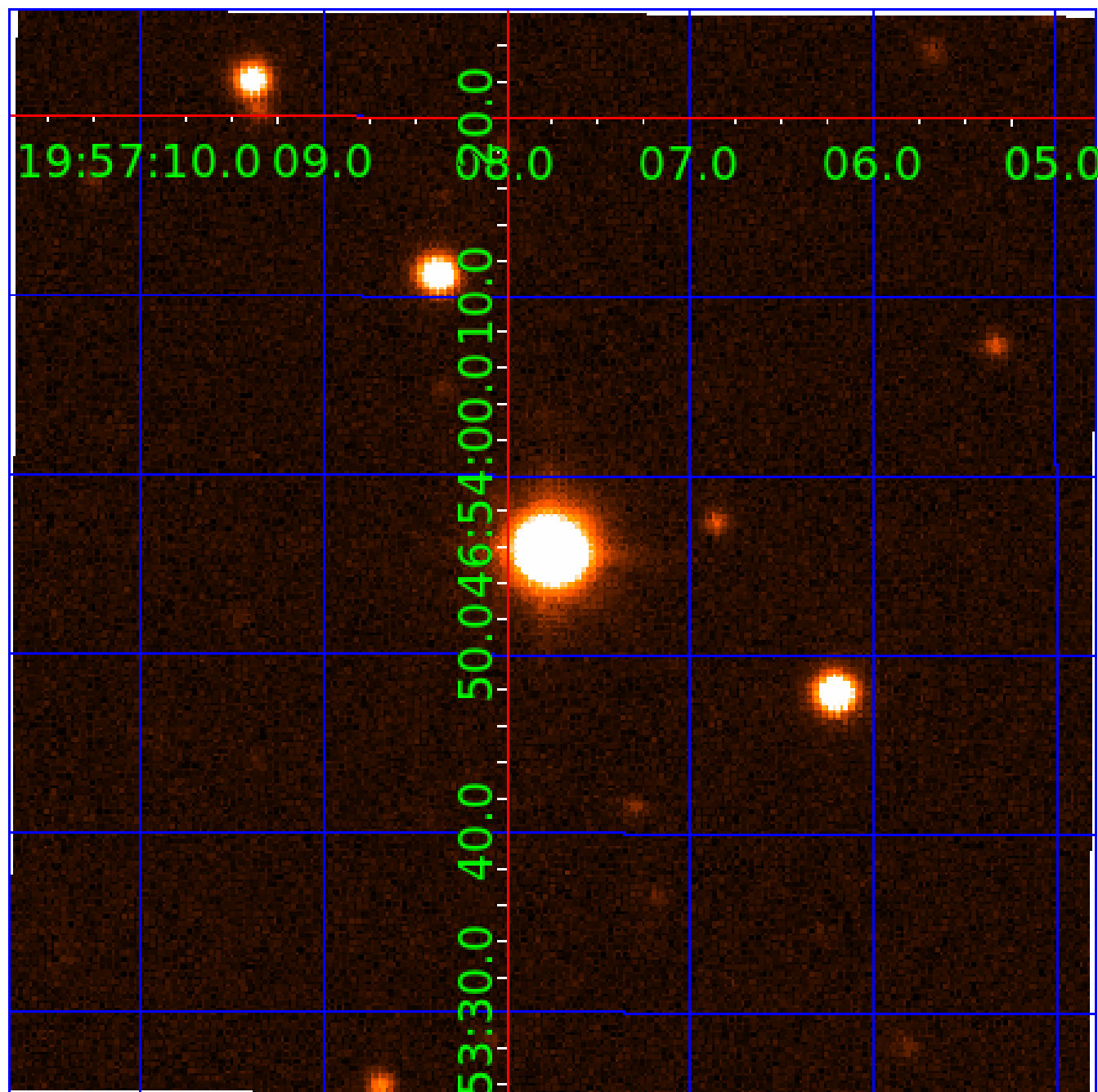


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009972385

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})
009972385-01	OBS	No	58.420909	188.641311	888.3	14.666	43.0	47.5	1.82	6313	10.28	53.92
009972385-02	OBS	No	3.377783	134.244452	52.7	11.222	10.9	12.8	1.82	6313	2.58	2411.99
009972385-03	OBS	No	3.377690	132.286709	27.7	5.907	9.8	10.9	1.82	6313	1.13	2412.08
009972385-04	OBS	No	3.377988	133.026671	25.5	4.744	9.8	10.9	1.82	6313	1.03	2411.80
009972385-05	OBS	No	33.321012	149.739066	24.5	11.846	11.2	1.5	1.82	6313	1.05	114.01
009972385-06	OBS	No	123.877607	192.039254	388.5	27.425	9.2	9.0	1.82	6313	5.06	19.80
009972385-07	OBS	No	84.863803	175.775621	164.1	2.141	7.7	7.8	1.82	6313	2.67	32.78
009972385-08	OBS	No	44.313913	141.982351	121.6	4.609	7.6	7.2	1.82	6313	2.32	77.95
009972385-09	OBS	No	45.629158	166.537092	131.9	7.990	7.5	7.3	1.82	6313	2.40	74.97
009972385-10	OBS	No	23.229243	149.885894	73.0	5.734	7.7	5.9	1.82	6313	1.72	184.43

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009972385-01	OBS	FP	0.00	1	0	0	0	LPP_DV
009972385-02	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—MOD_NONUNIQ_DV
009972385-03	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD
009972385-04	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—SAME_NTL_PERIOD
009972385-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
009972385-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
009972385-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_MEAS
009972385-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_UNCERTAIN
009972385-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
009972385-10	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—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.

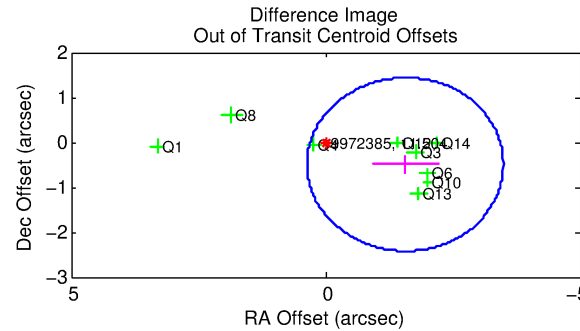
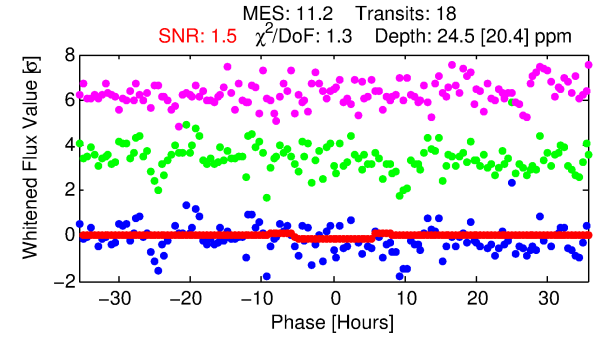
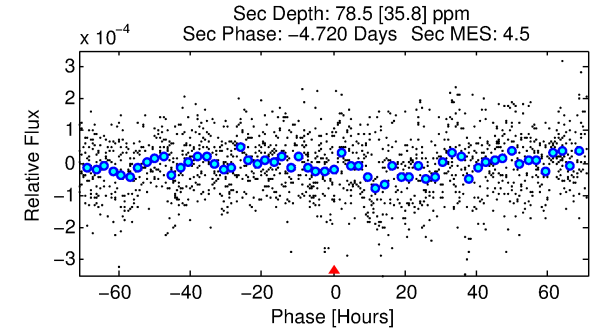
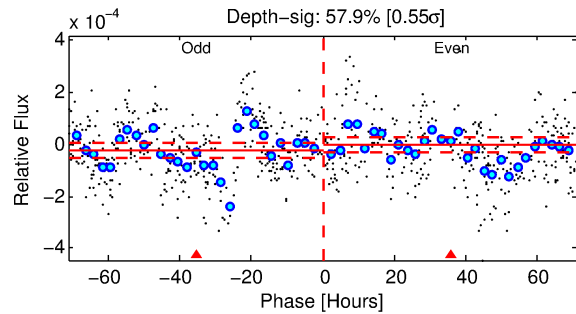
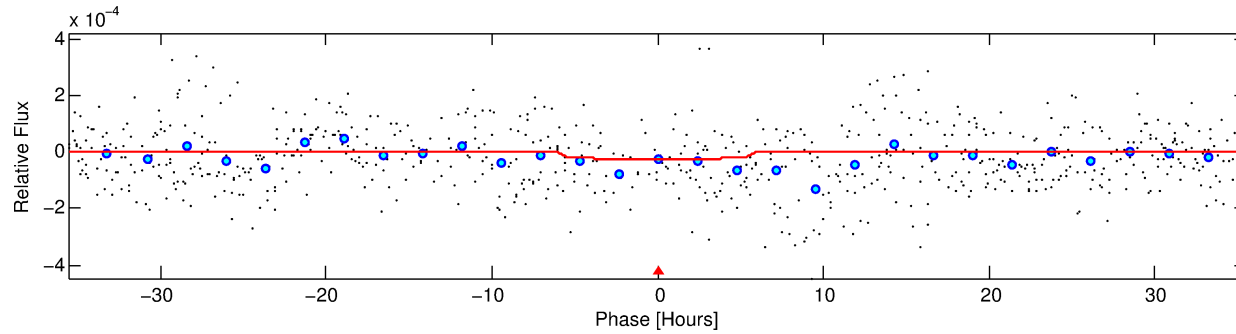
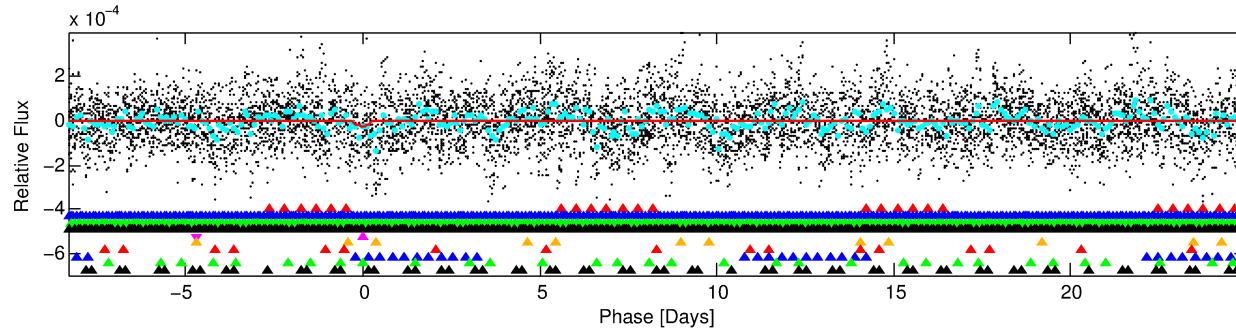
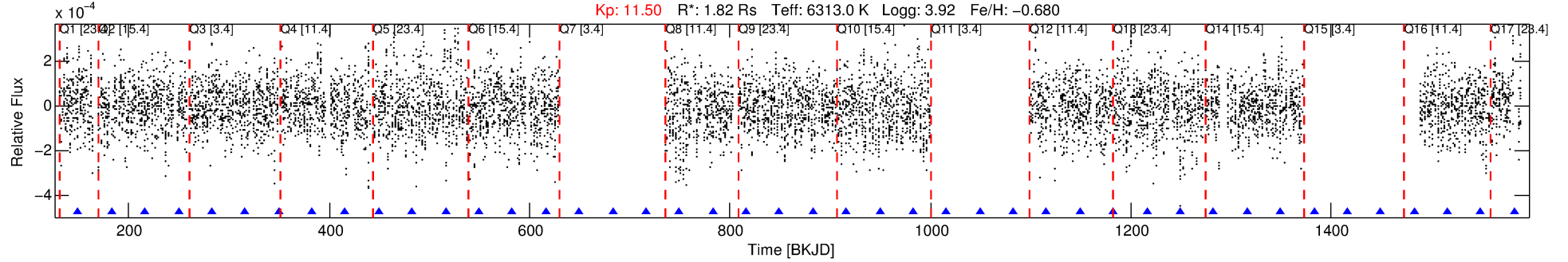
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009972385-05

No Significant Match Found

DV One-Page Summary

KIC: 9972385 Candidate: 5 of 10 Period: 33.321 d



DV Fit Results:

Period = 33.32101 [0.00362] d
Epoch = 149.7391 [0.0755] BKJD
Rp/R* = 0.0053 [0.0045]
a/R* = 9.70 [37.57]
b = 0.90 [0.84]
Seff = 114.01 [62.83]
Teq = 833 [115] K
Rp = 1.05 [0.95] Re
a = 0.2033 [0.0667] AU
Ag = 1617.57 [2972.35] [0.54 σ]
Teffp = 8170 [3594] K [2.04 σ]

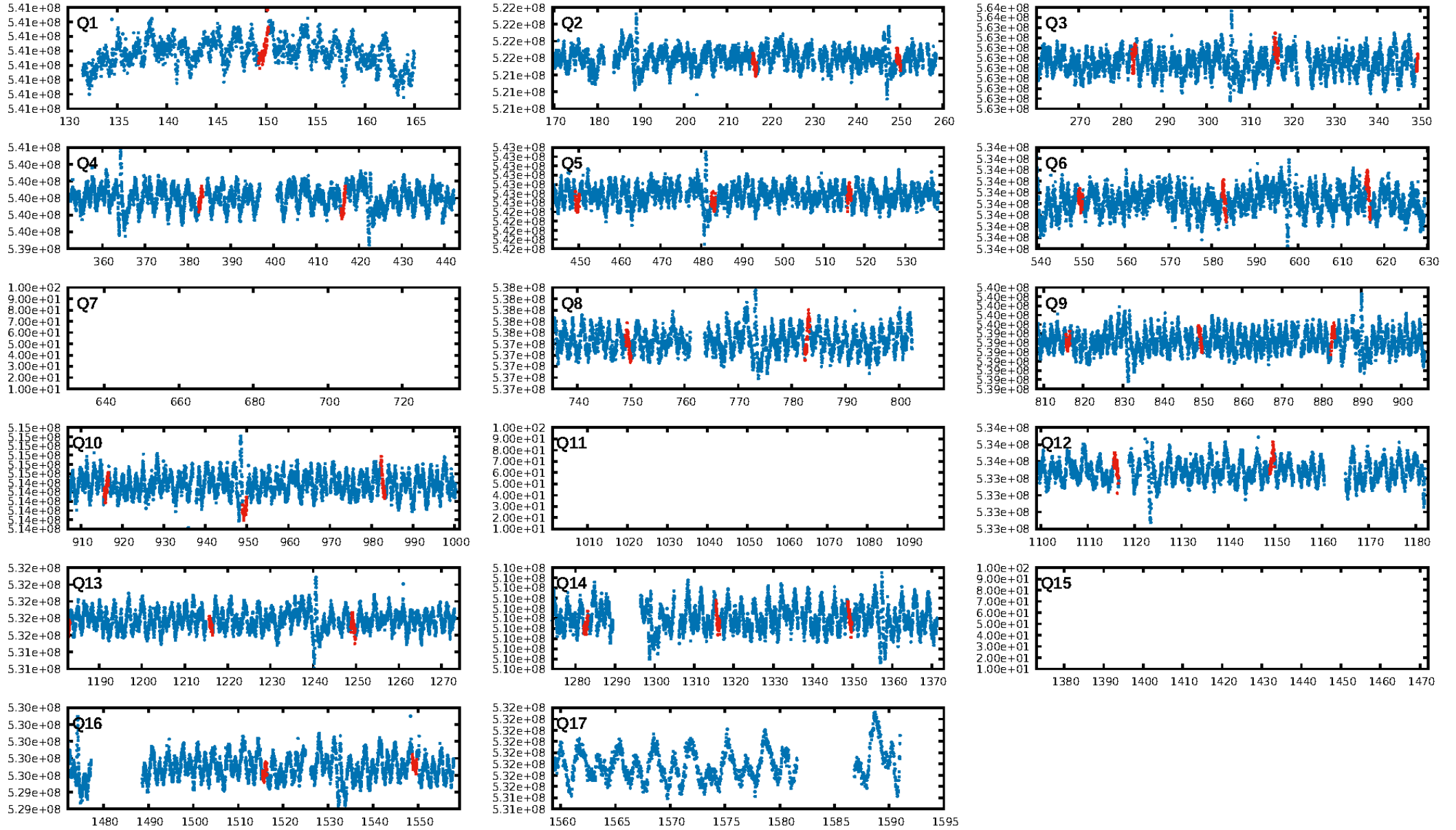
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [18.40 σ]
LongPeriod-sig: 100.0% [20.76 σ]
ModelChiSquare2-sig: 73.8%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 3.21e-22
RollingBand-fgt: 1.00 [17/17]
GhostDiagnostic-chr: 2.602
Centroid-sig: 64.3%
Centroid-so: 1.234 arcsec [0.61 σ]
OotOffset-rm: 1.643 arcsec [2.55 σ]
KicOffset-rm: 1.778 arcsec [2.84 σ]
OotOffset-st: 3/1/3/2 [9]
KicOffset-st: 3/1/3/2 [9]
DiffImageQuality-fgm: 0.56 [5/9]
DiffImageOverlap-fno: 0.00 [0/12]

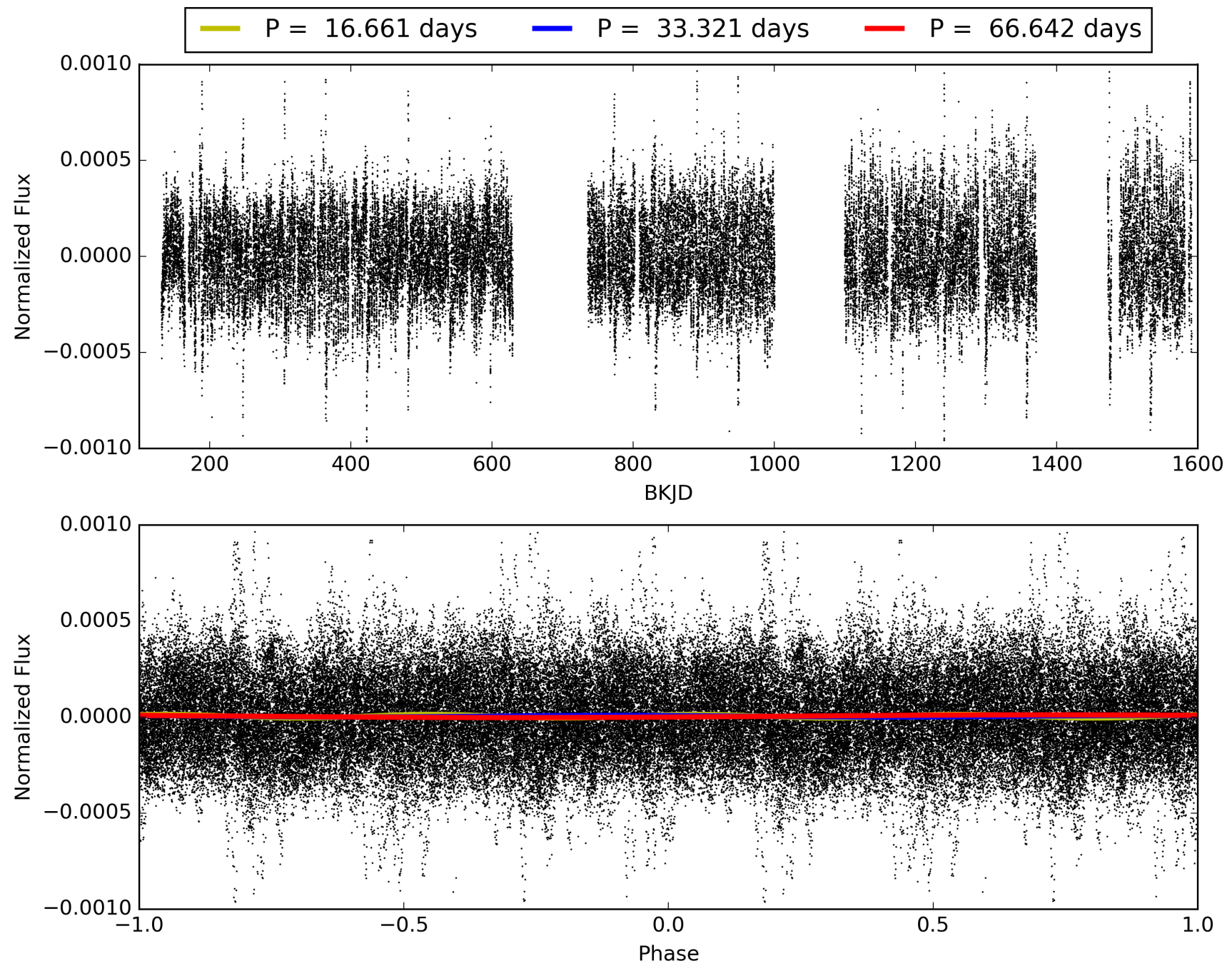
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 17:09:08 Z

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

TCE 009972385-05, PDC Light Curves

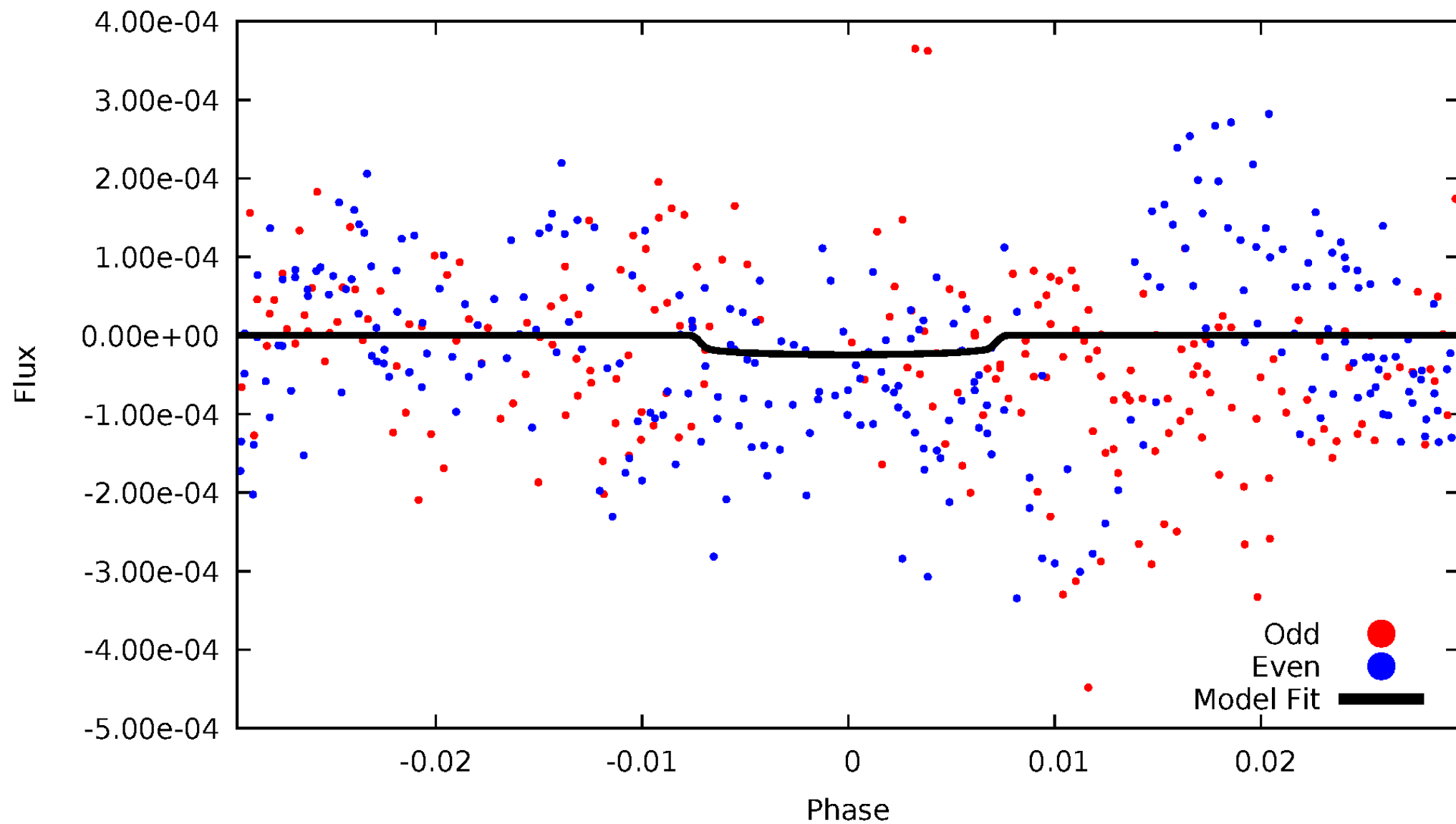


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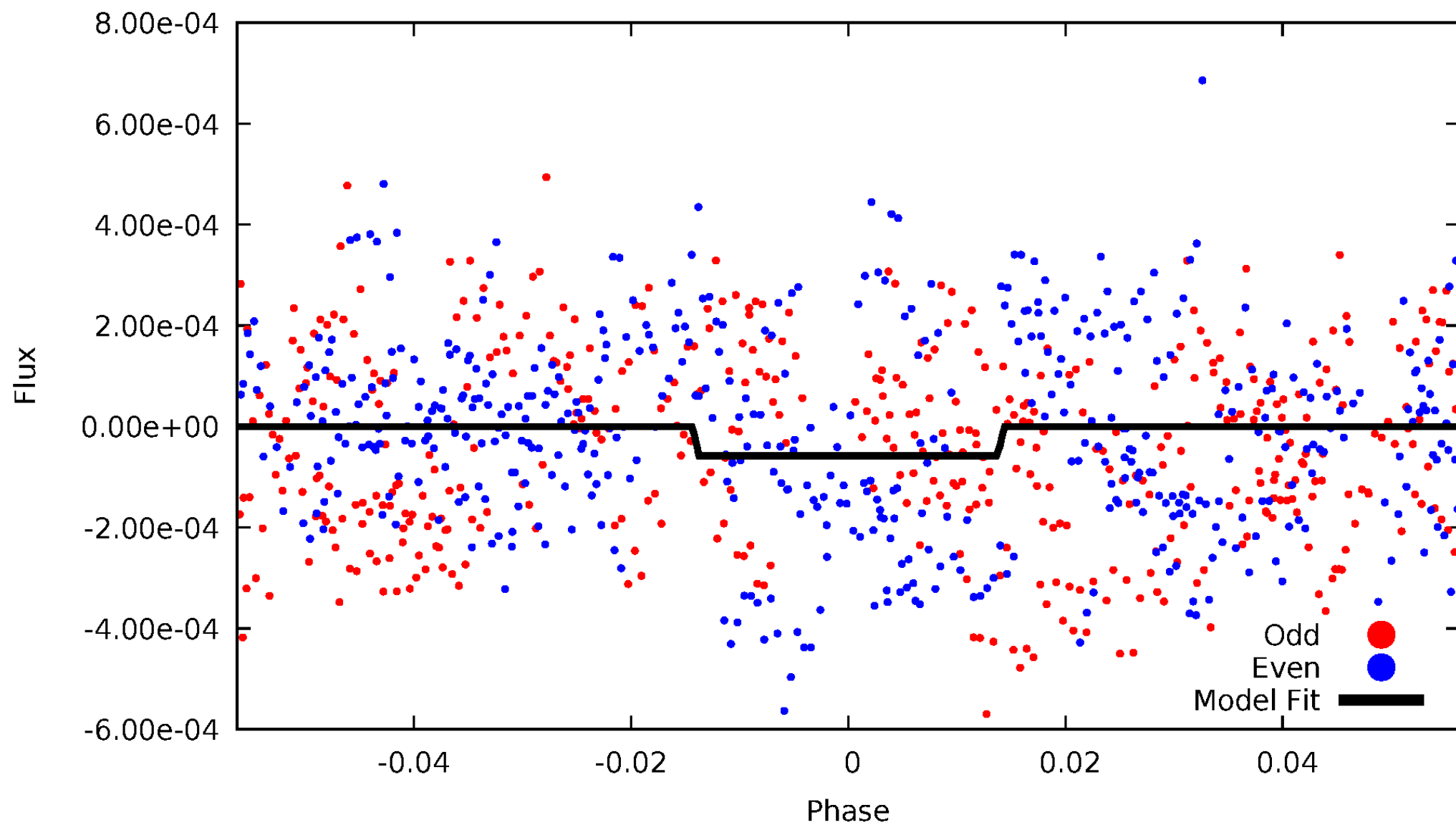
DV Odd/Even

TCE 009972385-05



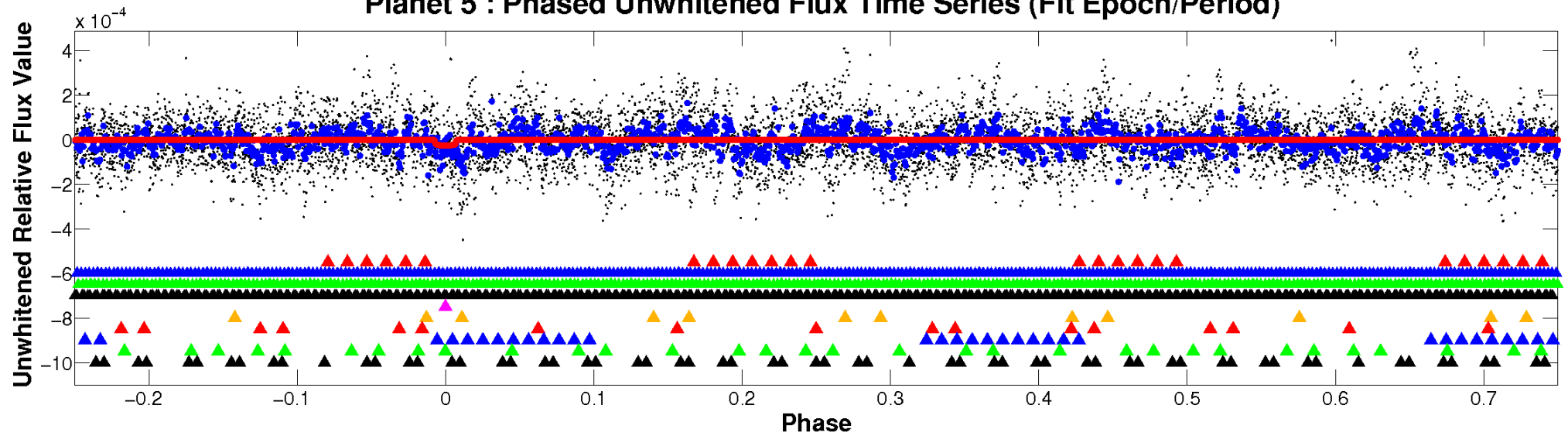
ALT Odd/Even

TCE 009972385-05

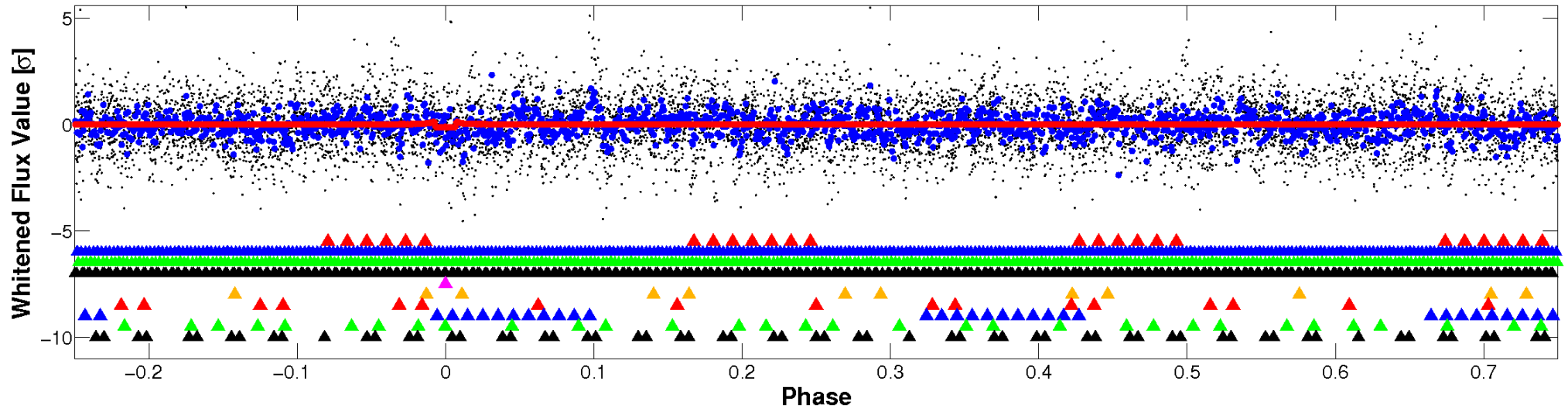


Non-Whitened Vs. Whitened Light Curve

Planet 5 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

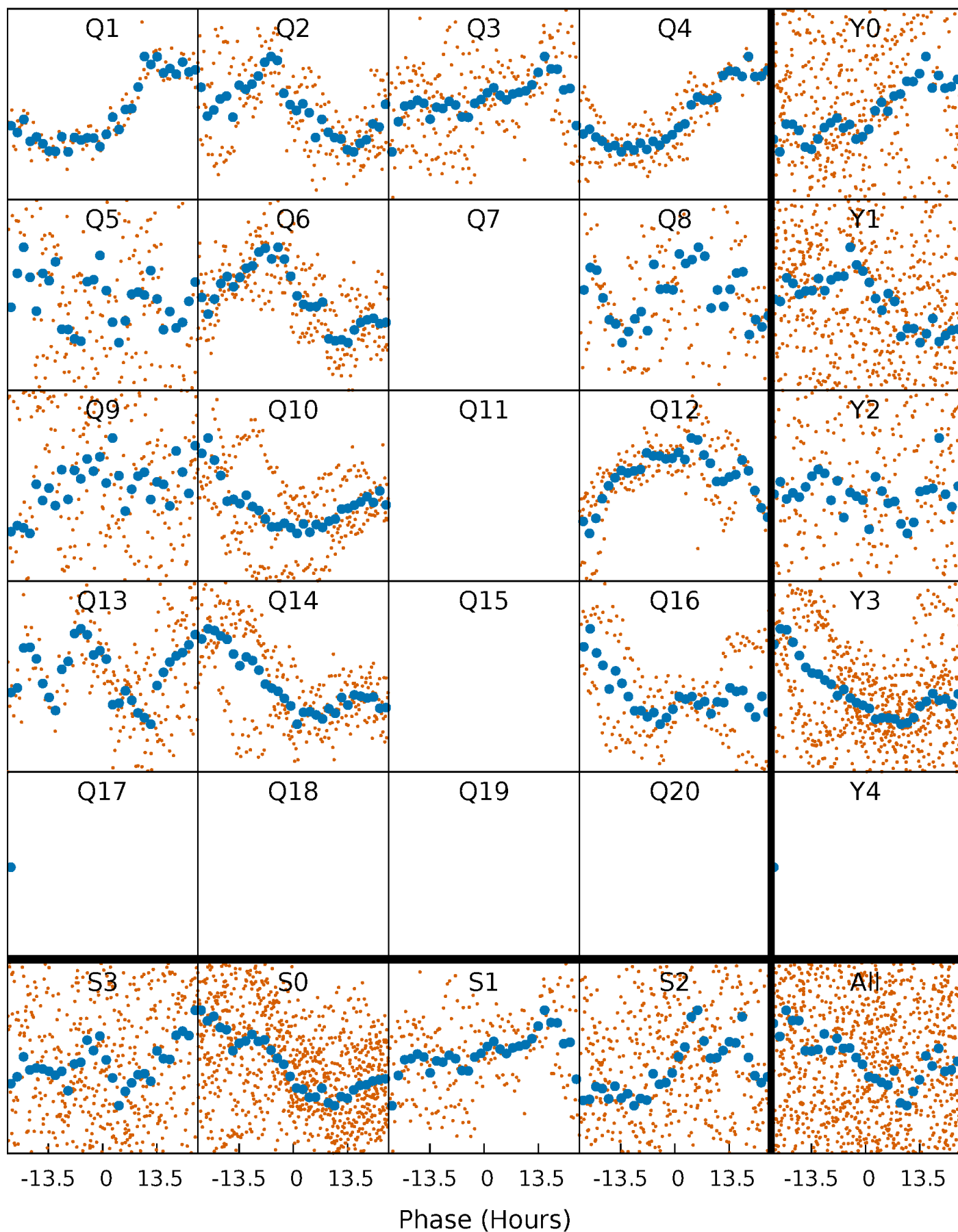


Planet 5 : Phased Whitened Flux Time Series (Fit Epoch/Period)



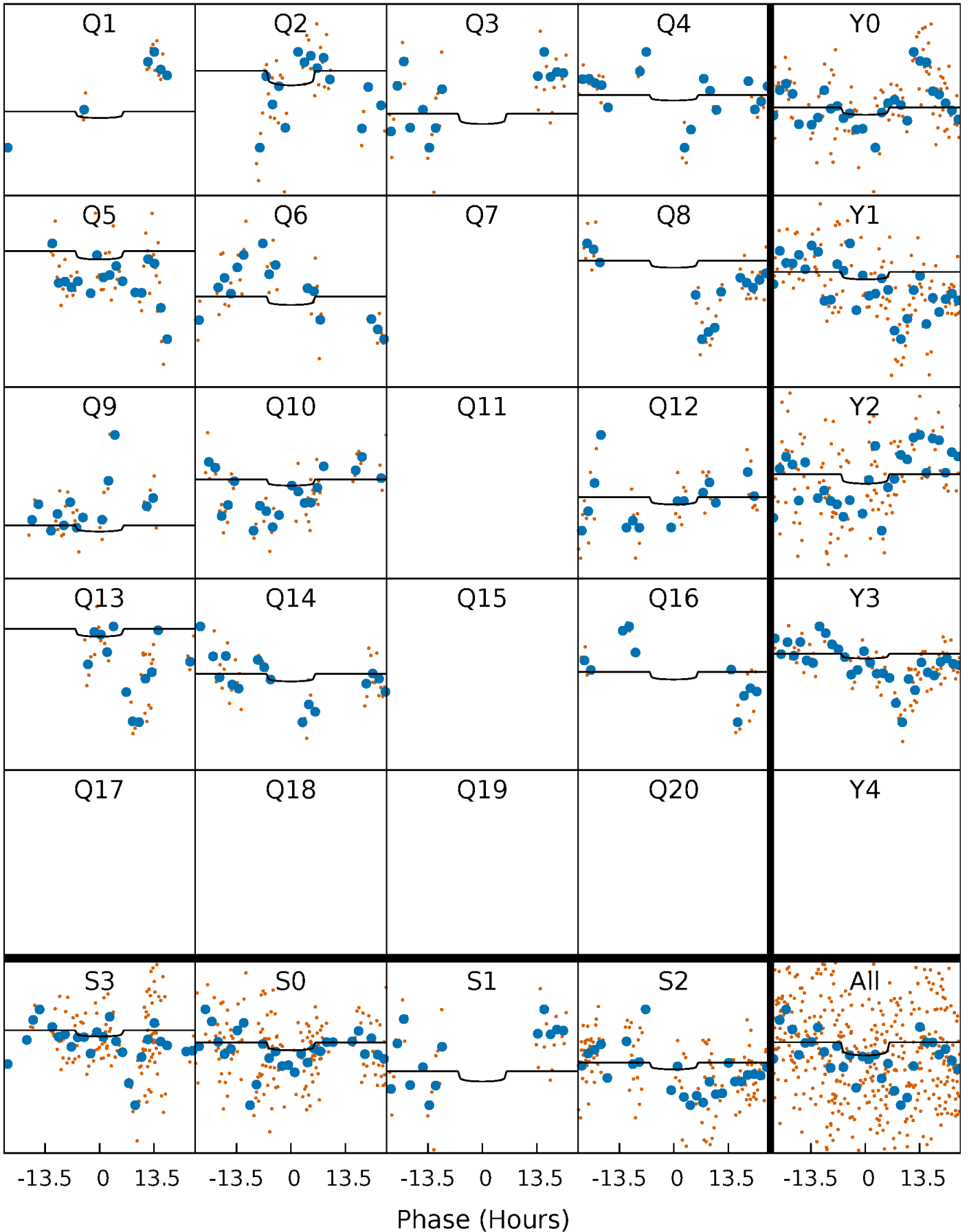
PDC Quarter-Phased Transit Curves

TCE 009972385-05 $P = 33.321012$ Days $T_0 = 149.739066$ (BKJD)



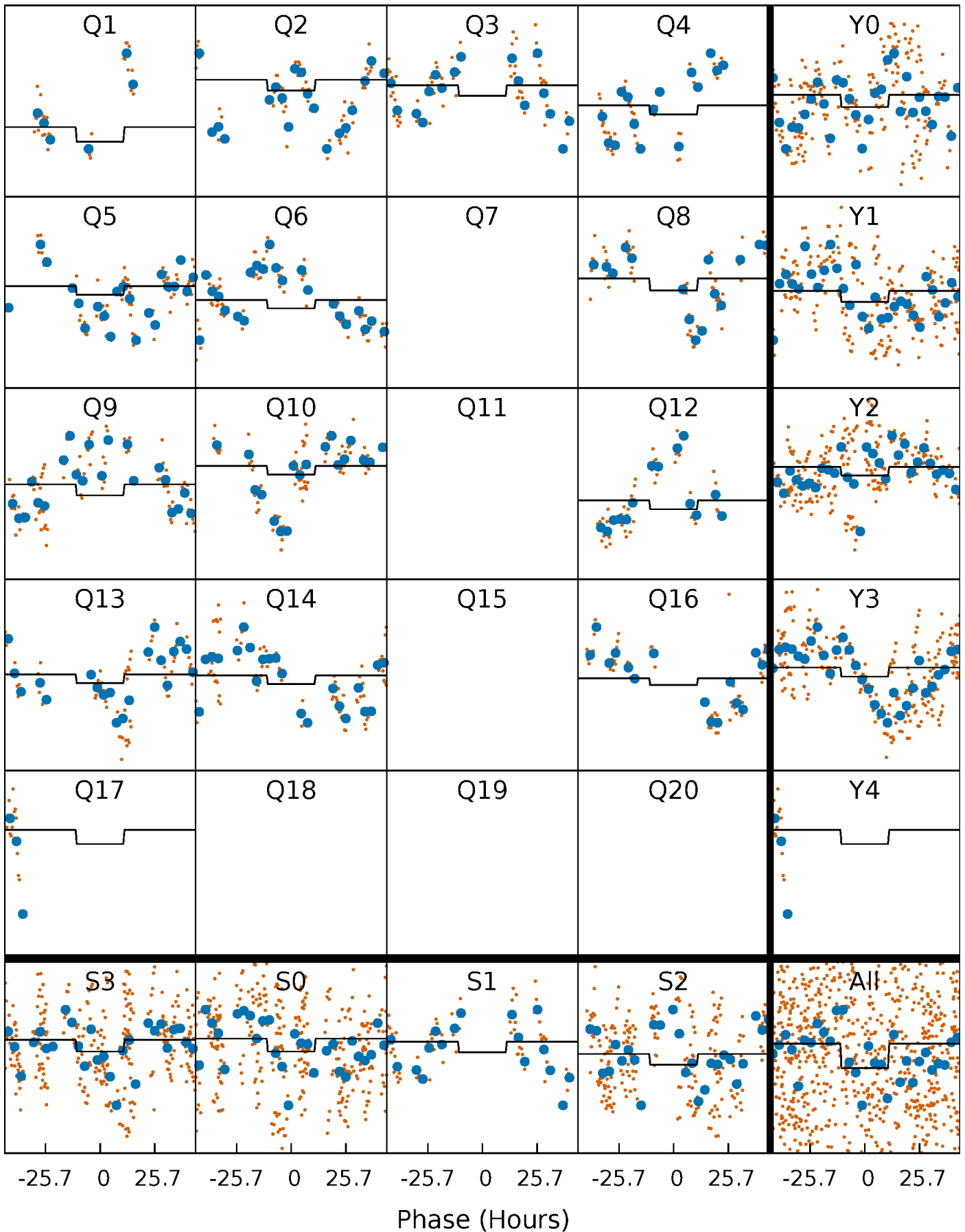
DV Quarter-Phased Transit Curves

TCE 009972385-05 $P = 33.321012$ Days $T_0 = 149.739066$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

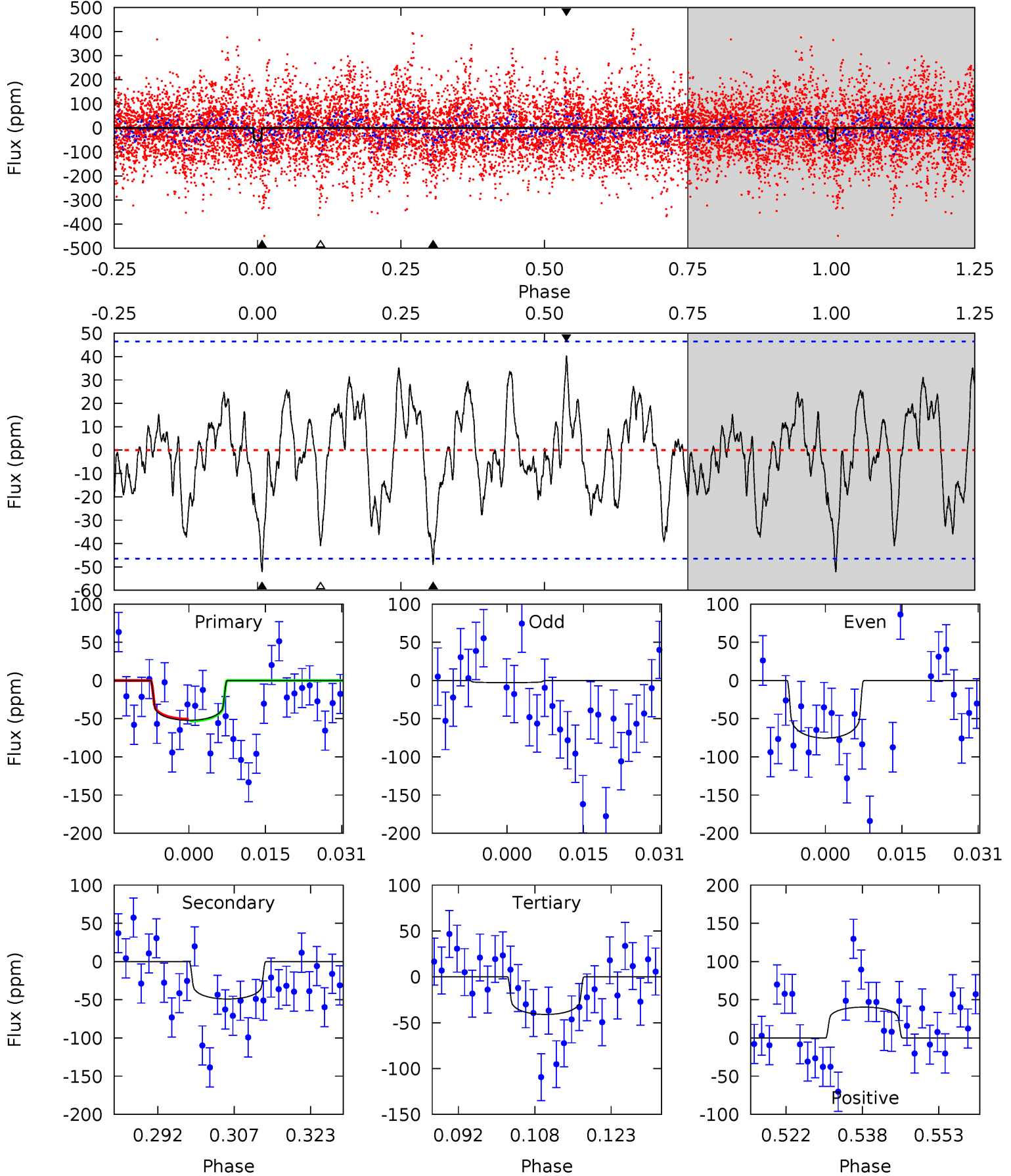
TCE 009972385-05 $P = 33.319233$ Days $T_0 = 149.760897$ (BKJD)



DV Model-Shift Uniqueness Test

009972385-05, P = 33.321012 Days, E = 116.418054 Days

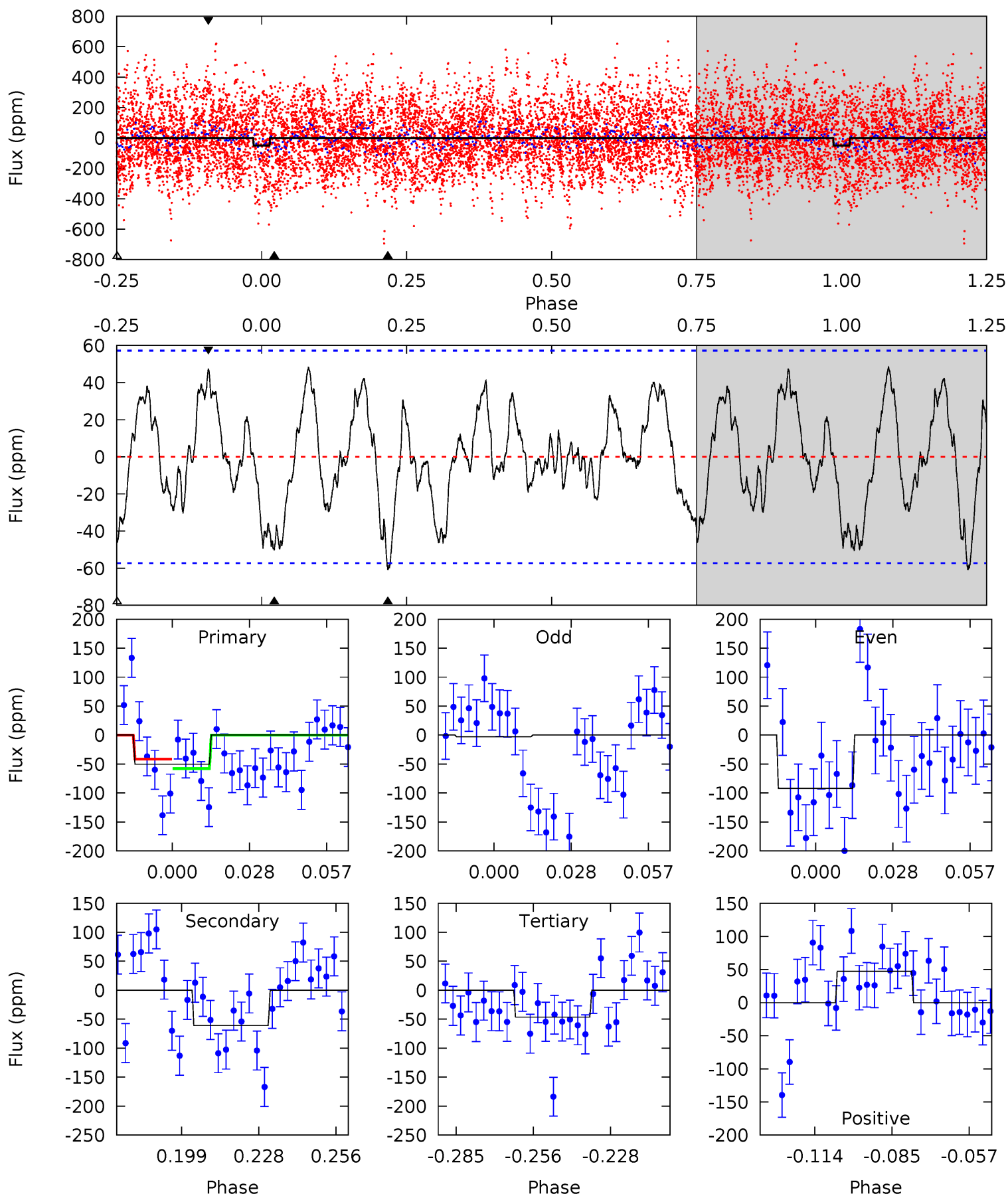
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.55	5.22	4.37	4.30	4.94	2.42	1.68	1.18	1.25	0.85	0.92	3.59	1.00	0.44	0.13



Alt Model-Shift Uniqueness Test

009972385-05, P = 33.319233 Days, E = 116.441664 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4.24	5.13	3.91	3.97	4.82	2.19	1.76	0.33	0.27	1.22	1.16	3.77	1.56	0.44	0.68



Stellar Parameters For KIC 009972385

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6313^{+170}_{-170}	$3.922^{+0.323}_{-0.108}$	$-0.680^{+0.350}_{-0.250}$	$1.820^{+0.391}_{-0.587}$	$1.009^{+0.161}_{-0.145}$	$0.236^{+0.462}_{-0.087}$
	+3%/-3%	+8%/-3%	+51%/-37%	+21%/-32%	+16%/-14%	+196%/-37%
Source	PHO1	FLK73	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 009972385-05 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-49 ± 9	$1.06^{+0.80}_{-0.64}$	1144^{+68}_{-104}	7071^{+6305}_{-1761}	986^{+5446}_{-691}
Alt.	-61 ± 12	$1.40^{+0.95}_{-0.71}$	1142^{+75}_{-104}	6357^{+3390}_{-1311}	715^{+2331}_{-473}

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

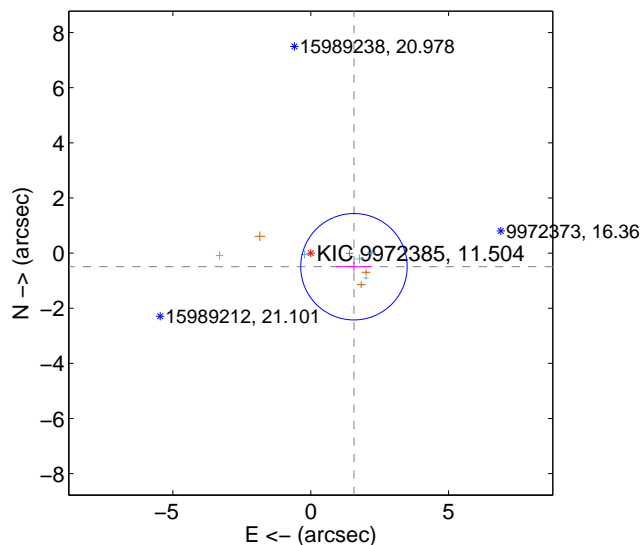
Supplemental centroid analysis for 009972385-05. **Kepler magnitude: 11.50.** Transit SNR 1.51

There are 5 quarters with good PRF difference image offsets

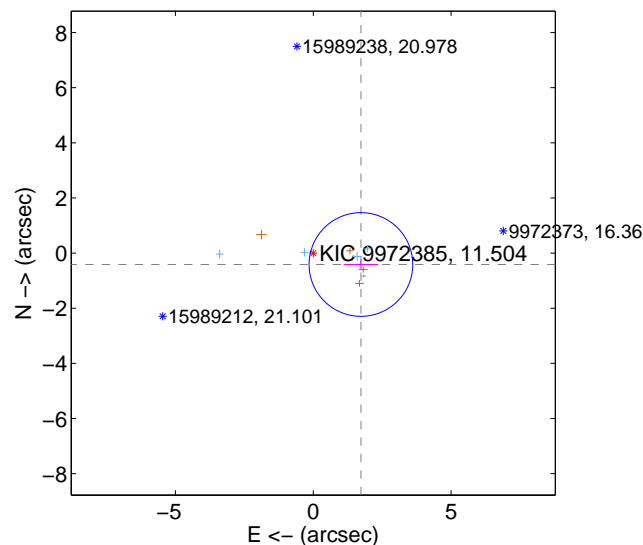
The direct PRF centroid is offset from the target star catalog position by about 0.28 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.643 ± 0.643	2.55	-1.567 ± 0.647	-0.494 ± 0.175
PRF-fit source offset from KIC position	1.778 ± 0.627	2.84	-1.729 ± 0.623	-0.413 ± 0.176
photometric centroid source offset	1.23 ± 2.03	0.61	-0.84 ± 2.15	0.91 ± 1.92

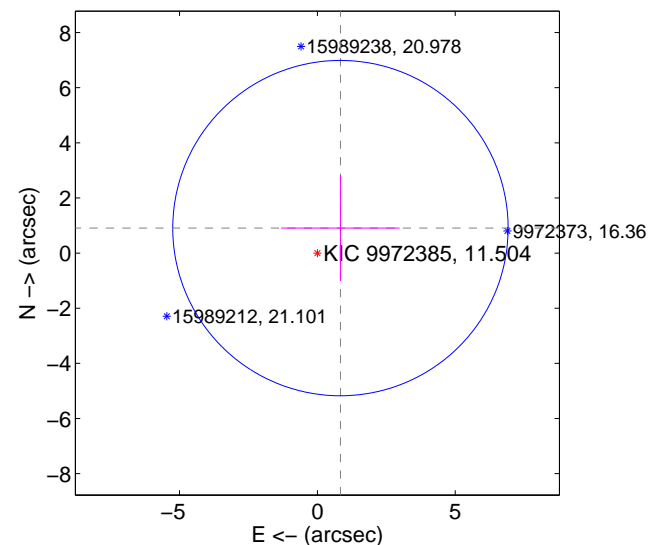
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

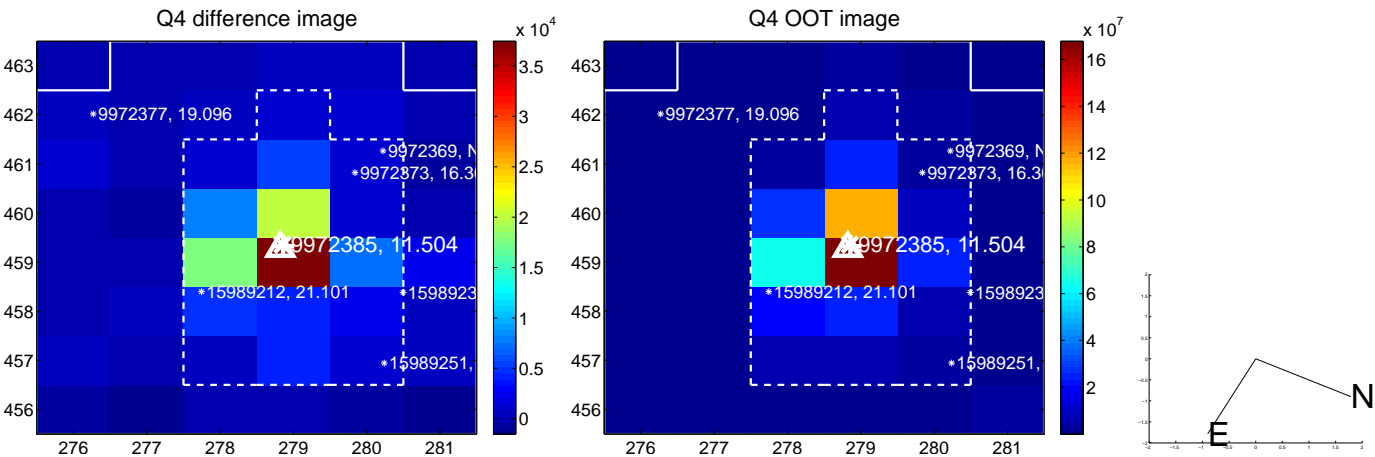
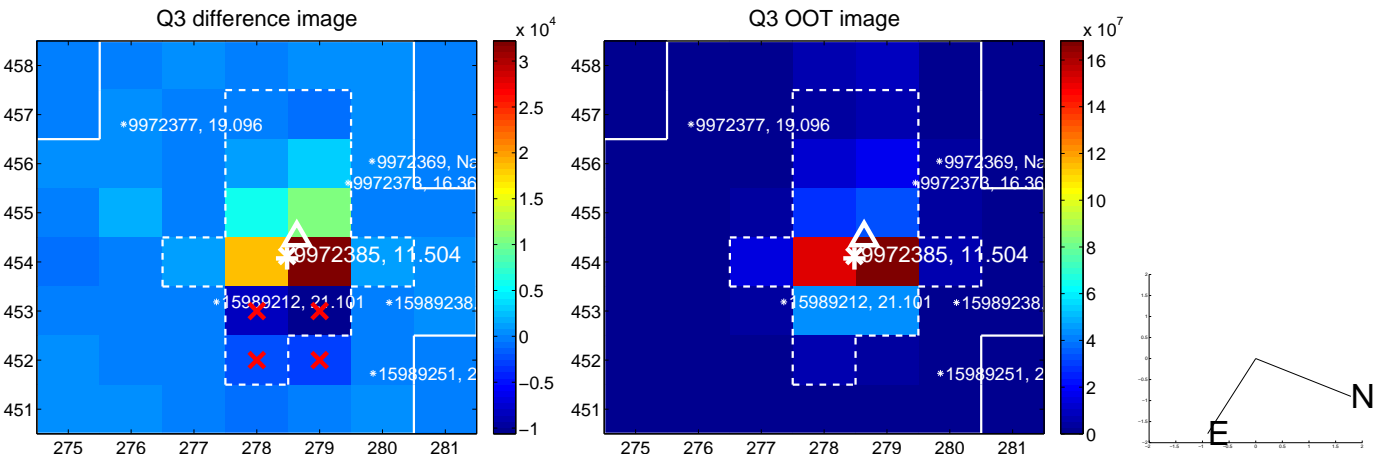
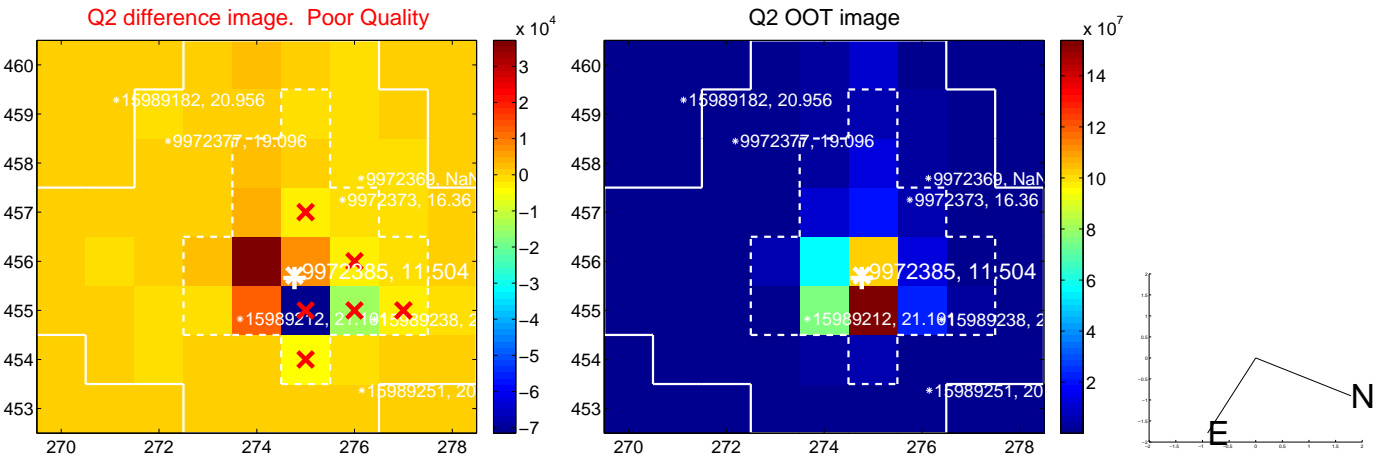
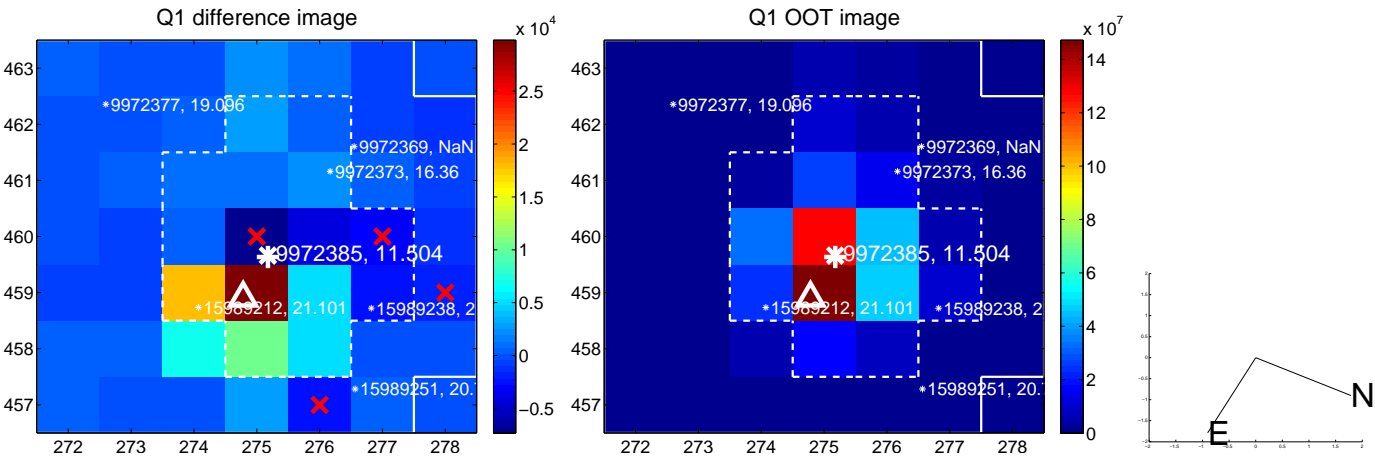


offset from photometric centroids

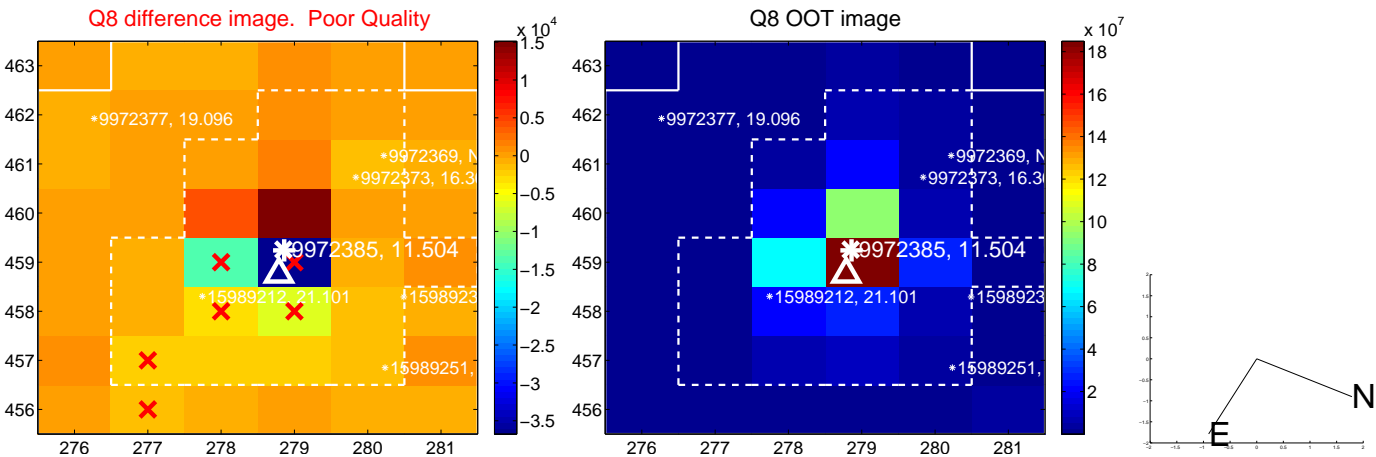
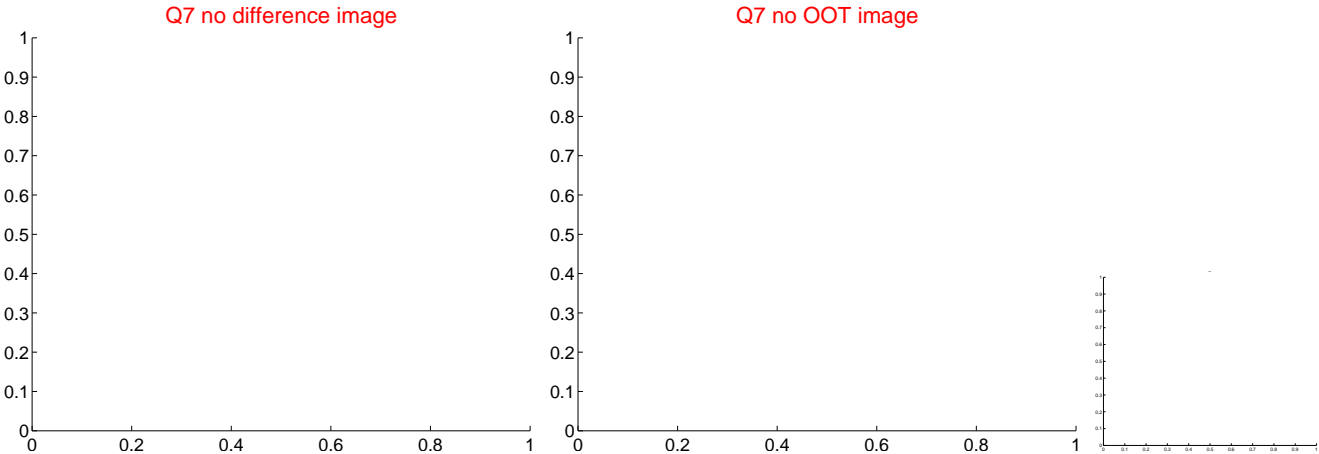
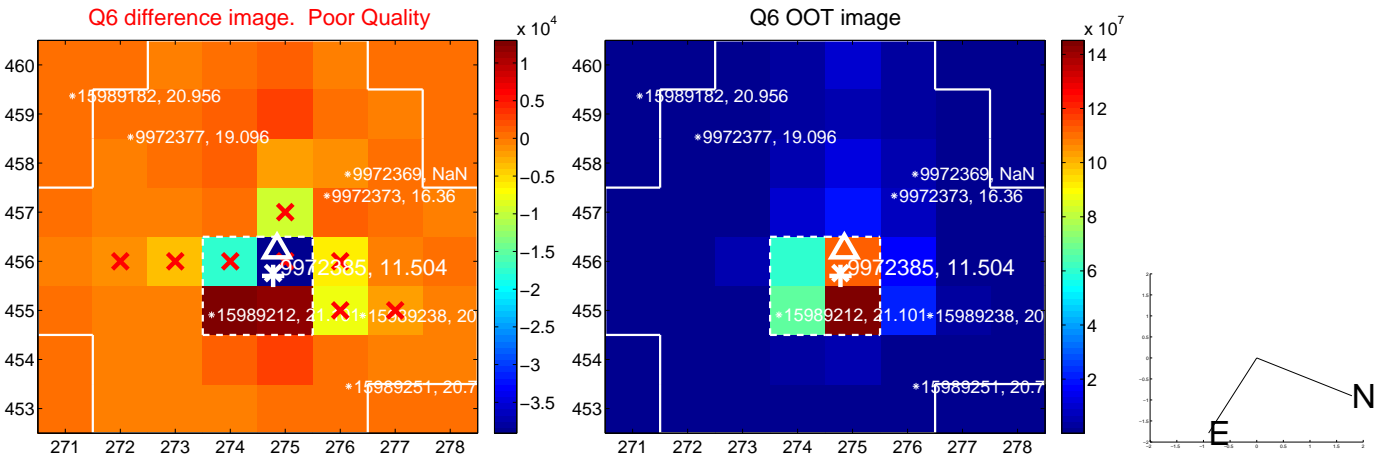
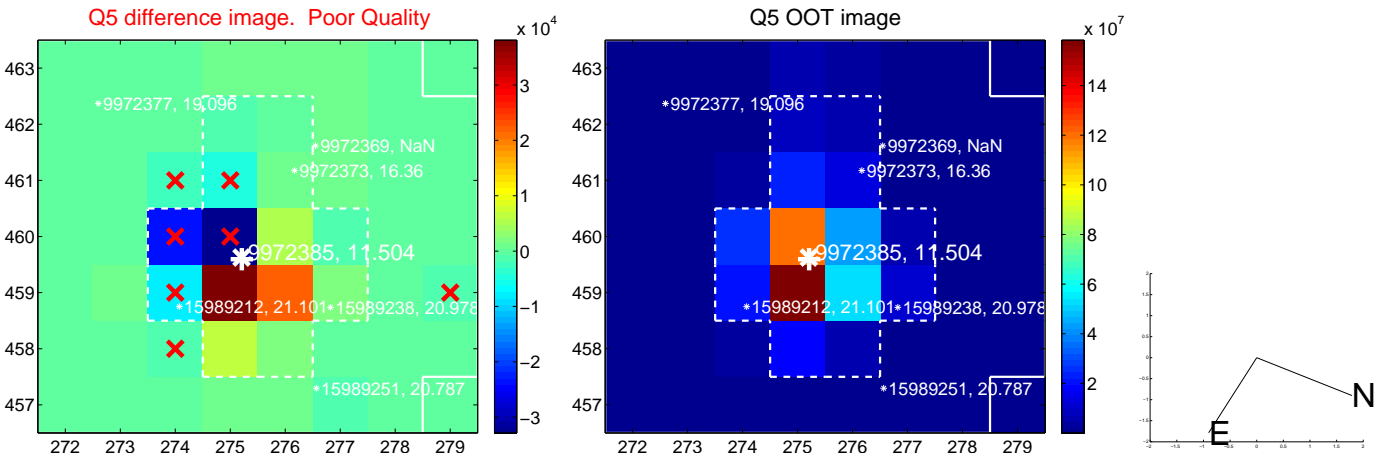


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

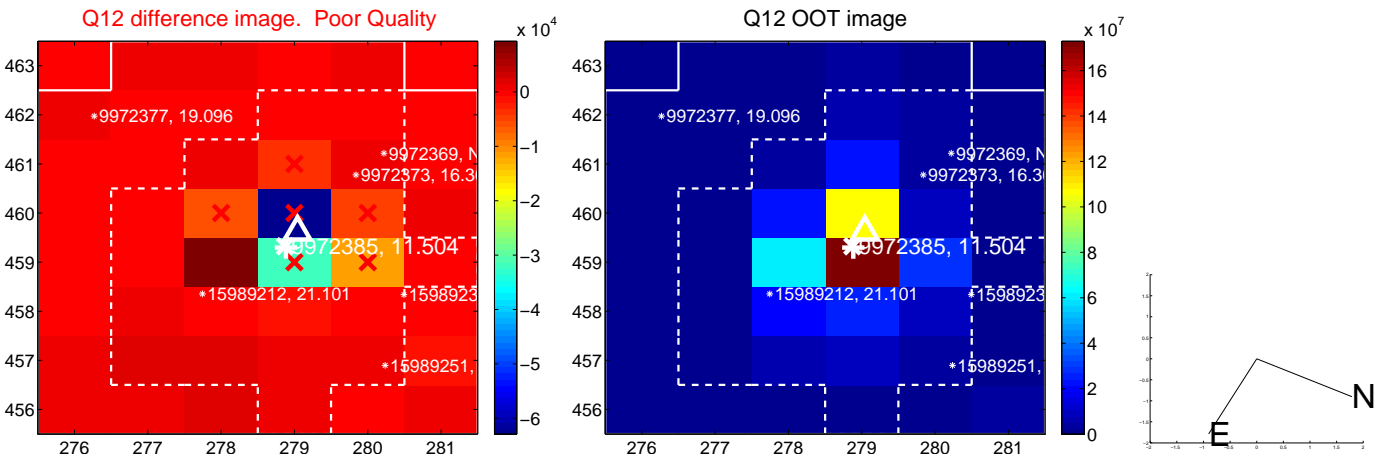
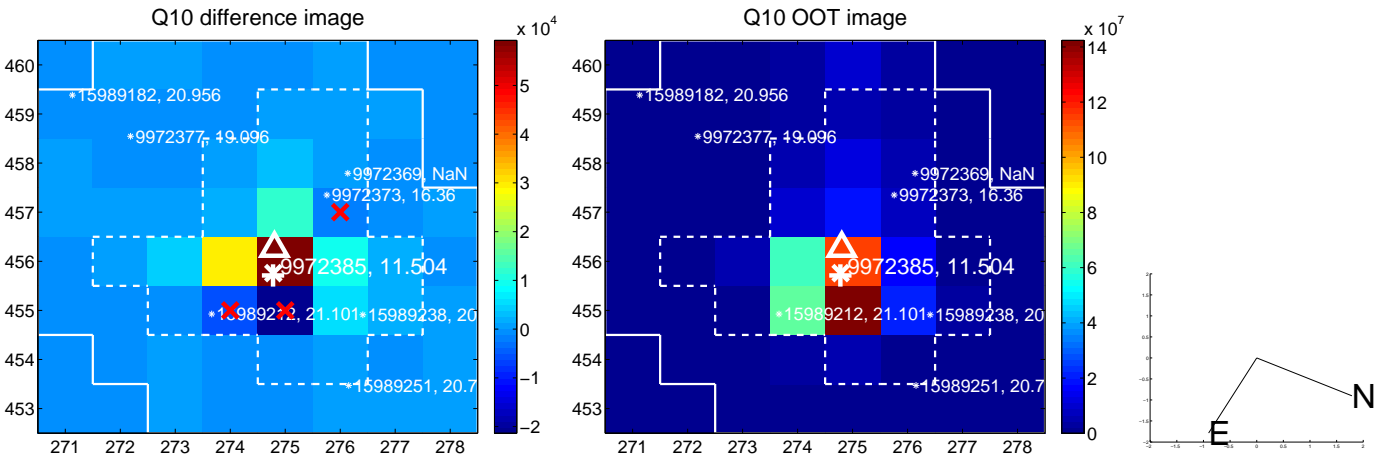
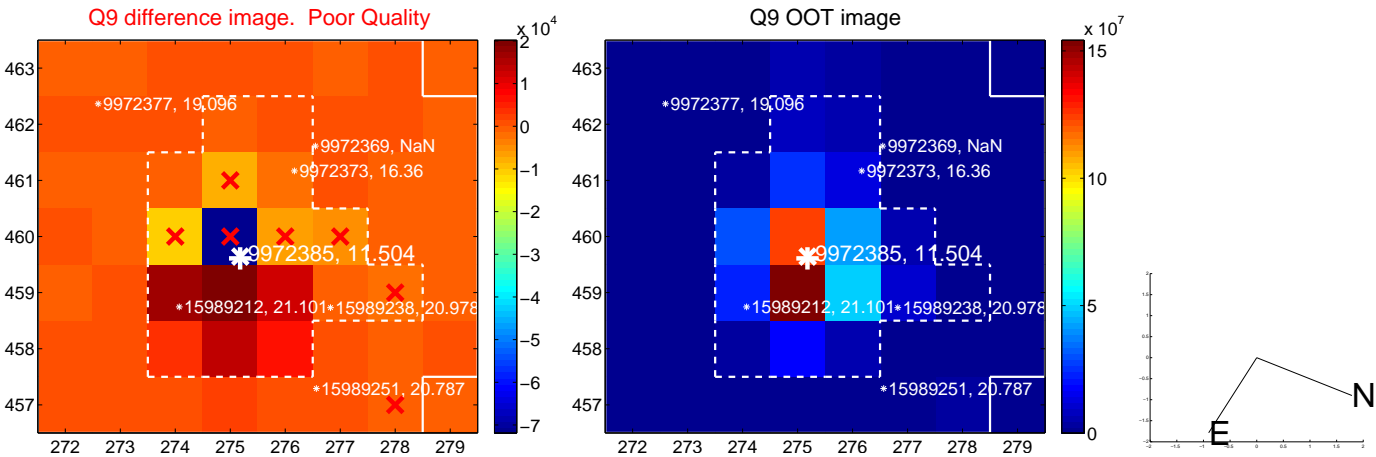
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



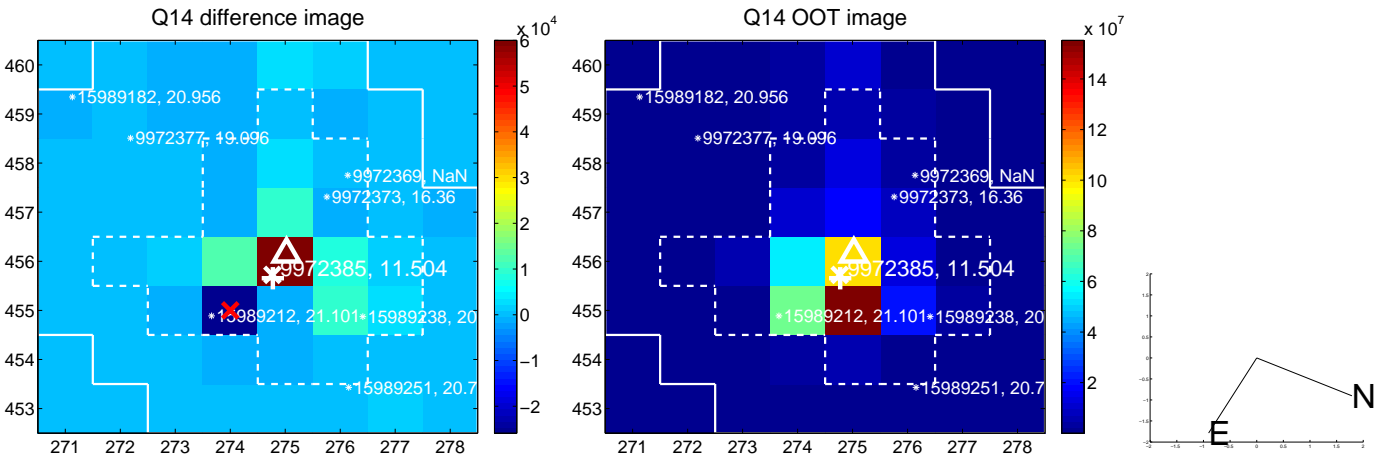
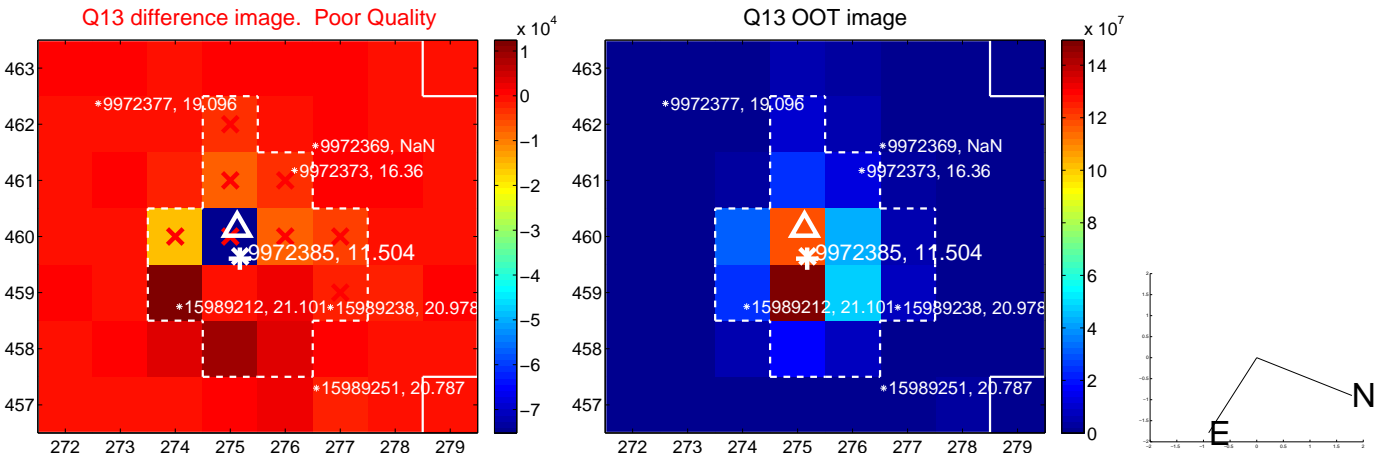
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



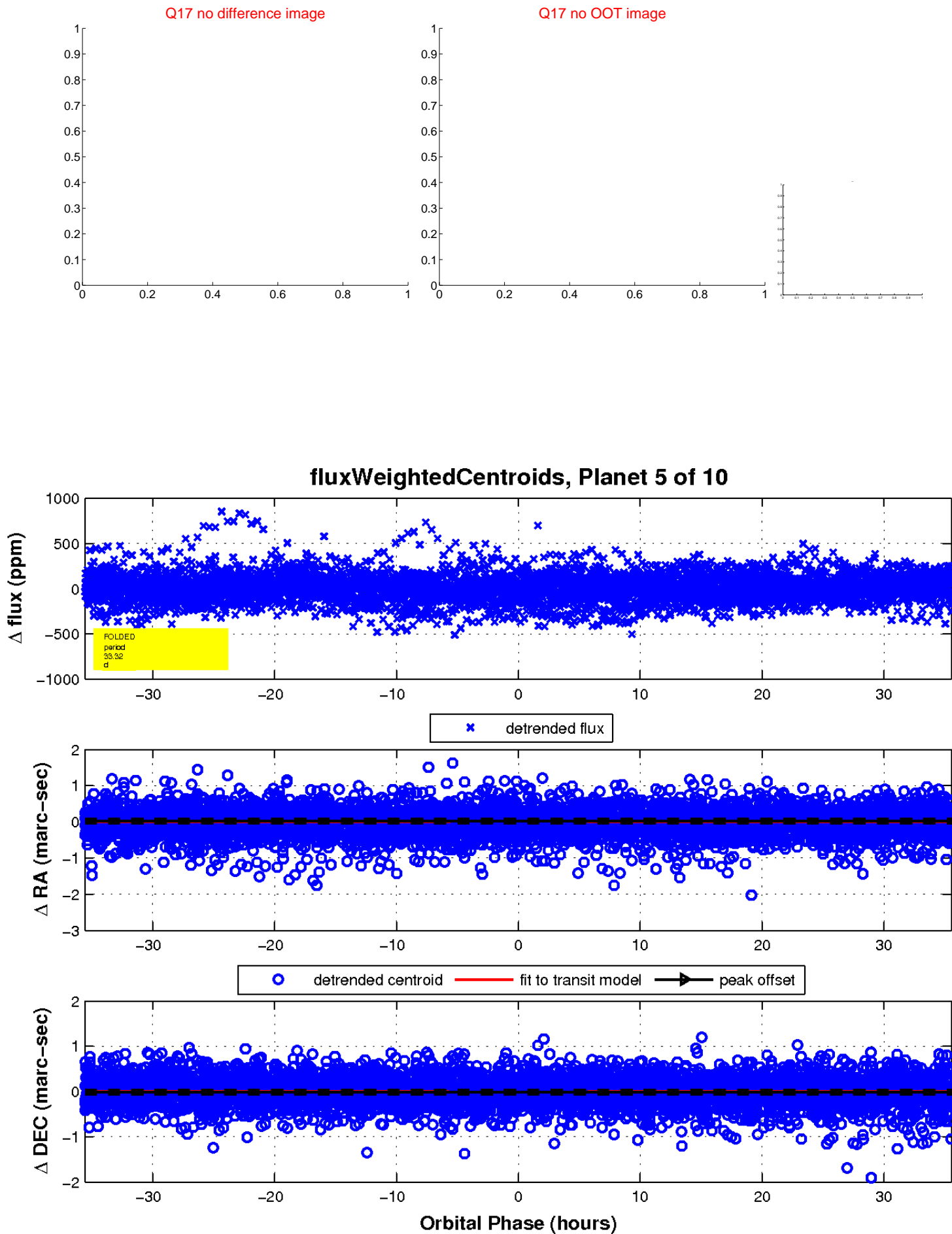
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

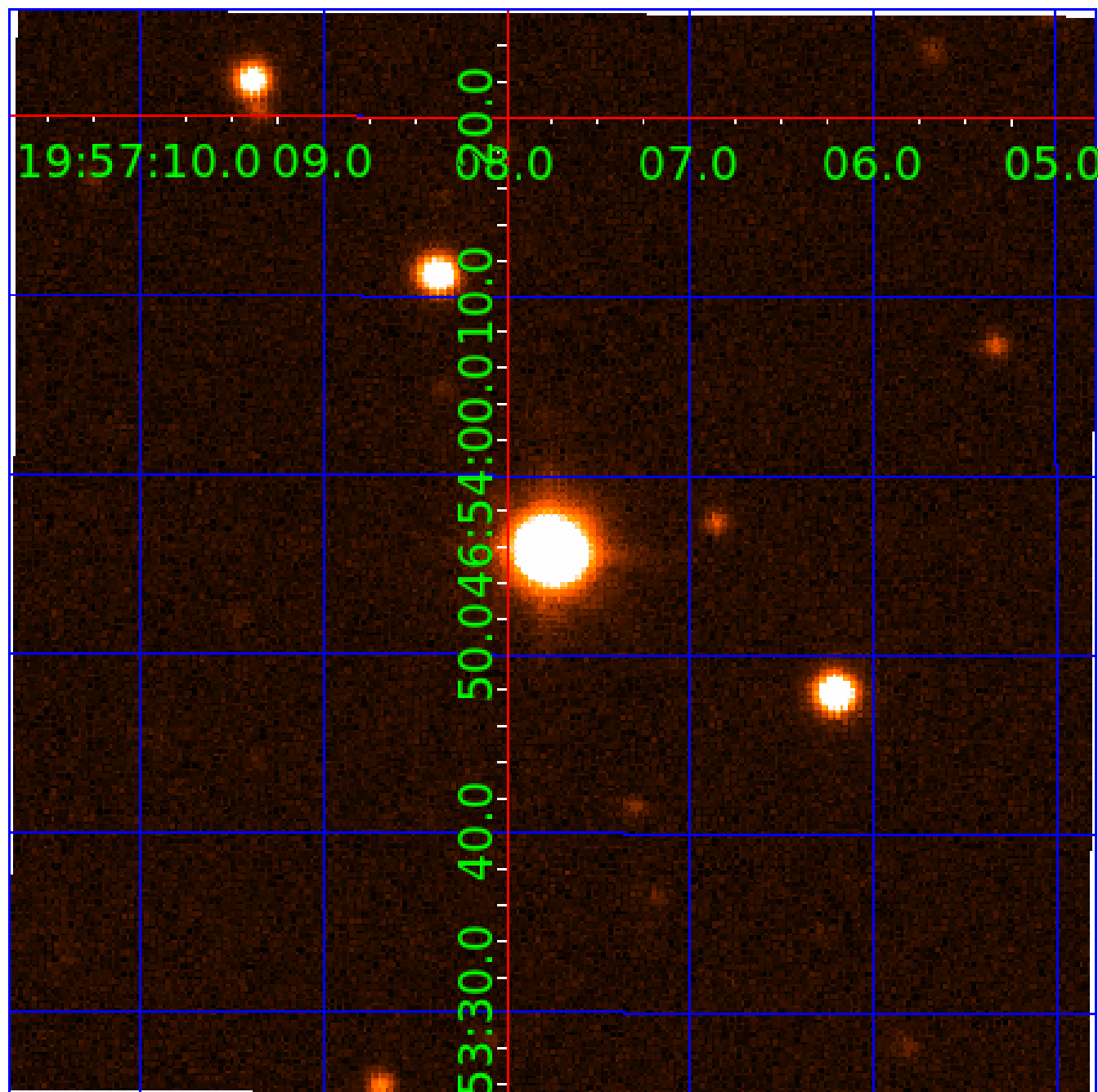


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009972385

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})
009972385-01	OBS	No	58.420909	188.641311	888.3	14.666	43.0	47.5	1.82	6313	10.28	53.92
009972385-02	OBS	No	3.377783	134.244452	52.7	11.222	10.9	12.8	1.82	6313	2.58	2411.99
009972385-03	OBS	No	3.377690	132.286709	27.7	5.907	9.8	10.9	1.82	6313	1.13	2412.08
009972385-04	OBS	No	3.377988	133.026671	25.5	4.744	9.8	10.9	1.82	6313	1.03	2411.80
009972385-05	OBS	No	33.321012	149.739066	24.5	11.846	11.2	1.5	1.82	6313	1.05	114.01
009972385-06	OBS	No	123.877607	192.039254	388.5	27.425	9.2	9.0	1.82	6313	5.06	19.80
009972385-07	OBS	No	84.863803	175.775621	164.1	2.141	7.7	7.8	1.82	6313	2.67	32.78
009972385-08	OBS	No	44.313913	141.982351	121.6	4.609	7.6	7.2	1.82	6313	2.32	77.95
009972385-09	OBS	No	45.629158	166.537092	131.9	7.990	7.5	7.3	1.82	6313	2.40	74.97
009972385-10	OBS	No	23.229243	149.885894	73.0	5.734	7.7	5.9	1.82	6313	1.72	184.43

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009972385-01	OBS	FP	0.00	1	0	0	0	LPP_DV
009972385-02	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—MOD_NONUNIQ_DV
009972385-03	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD
009972385-04	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—SAME_NTL_PERIOD
009972385-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
009972385-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
009972385-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_MEAS
009972385-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_UNCERTAIN
009972385-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
009972385-10	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—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.

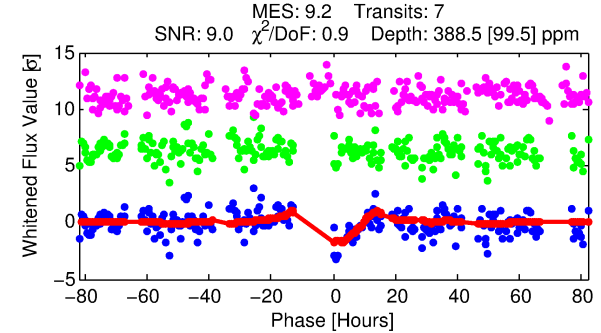
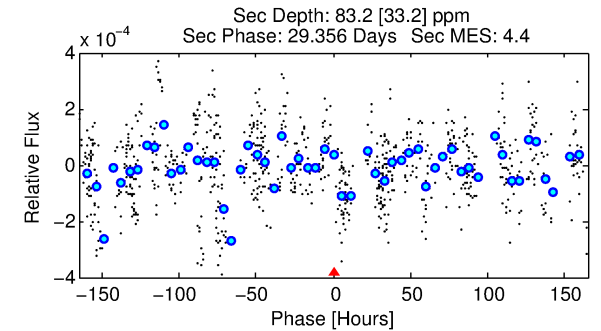
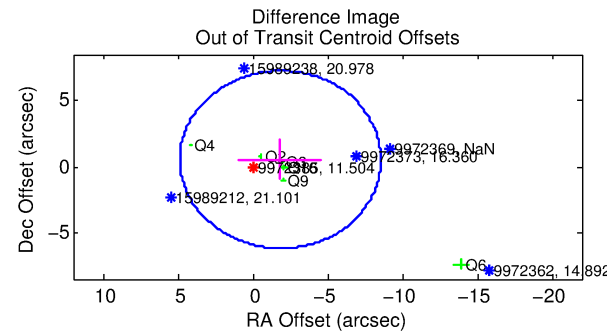
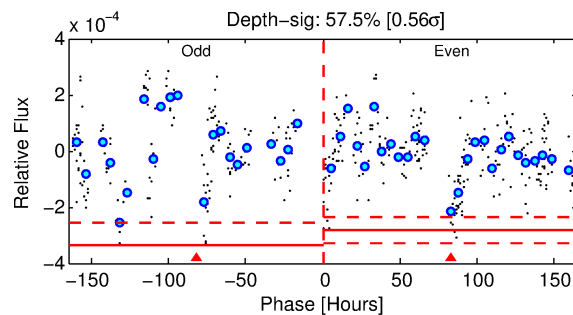
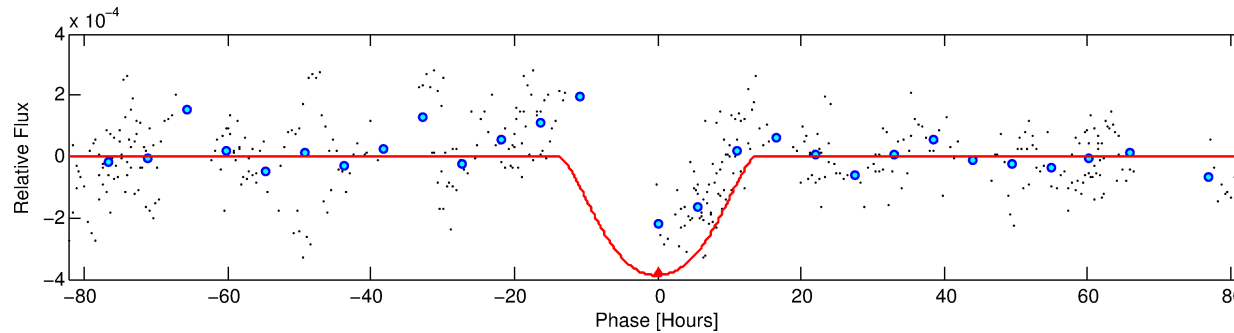
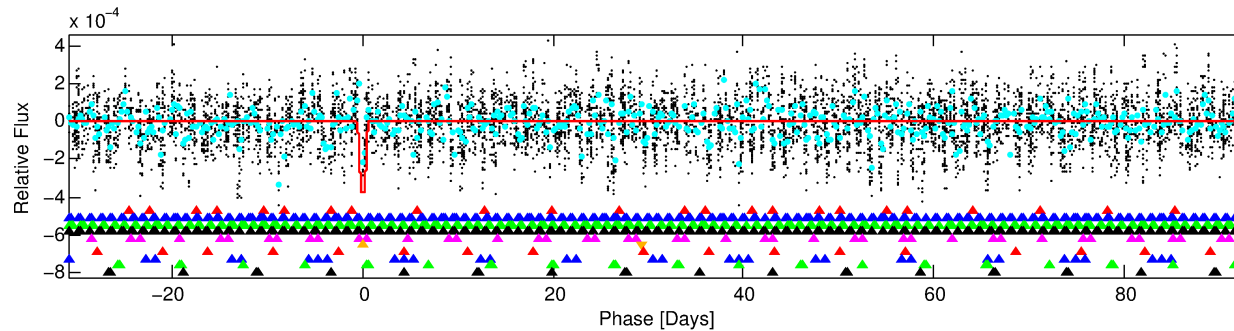
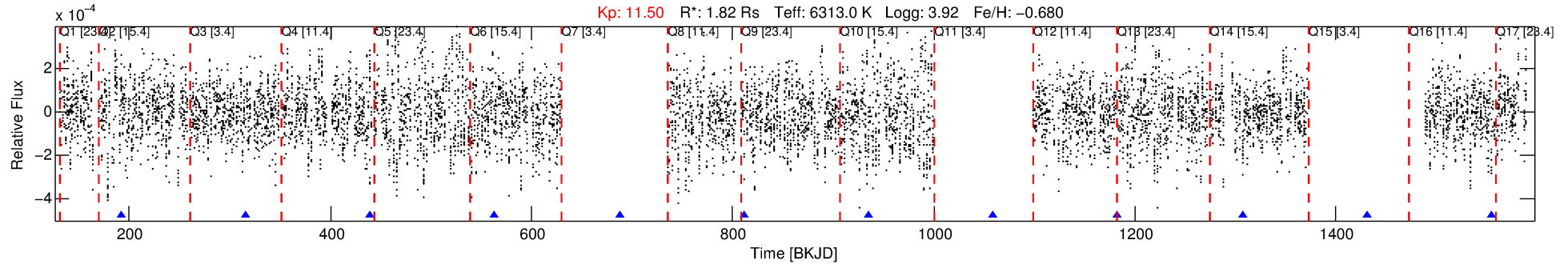
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009972385-06

No Significant Match Found

DV One-Page Summary

KIC: 9972385 Candidate: 6 of 10 Period: 123.878 d



DV Fit Results:

Period = 123.87761 [0.00675] d
Epoch = 192.0393 [0.0434] BKJD
Rp/R* = 0.0255 [0.0092]
a/R* = 10.19 [1.84]
b = 0.98 [0.02]
Seff = 19.80 [10.91]
Teq = 538 [74] K
Rp = 5.06 [2.45] Re
a = 0.4880 [0.1601] AU
Ag = 425.75 [419.17] [1.01 σ]
Teffp = 3777 [784] K [4.11 σ]

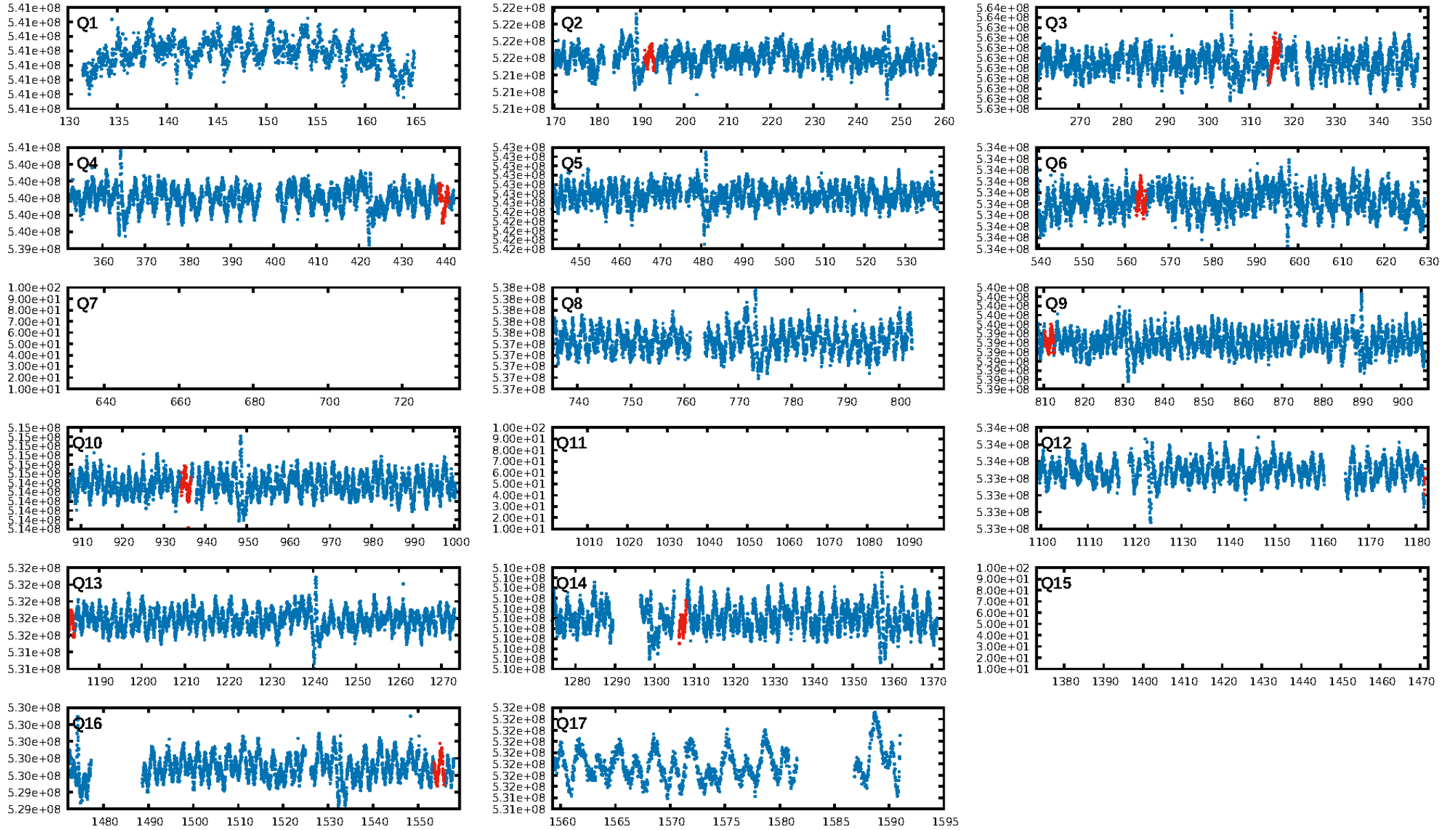
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [34.04 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 19.2%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 2.05e-12
RollingBand-fgt: 1.00 [7/7]
GhostDiagnostic-chr: -3.144
Centroid-sig: 0.0%
Centroid-so: 0.886 arcsec [3.01 σ]
OotOffset-rm: 1.929 arcsec [0.86 σ]
KicOffset-rm: 1.819 arcsec [1.07 σ]
OotOffset-st: 2/1/2/1 [6]
KicOffset-st: 2/1/2/1 [6]
DiffImageQuality-fgm: 0.33 [2/6]
DiffImageOverlap-fno: 0.00 [0/6]

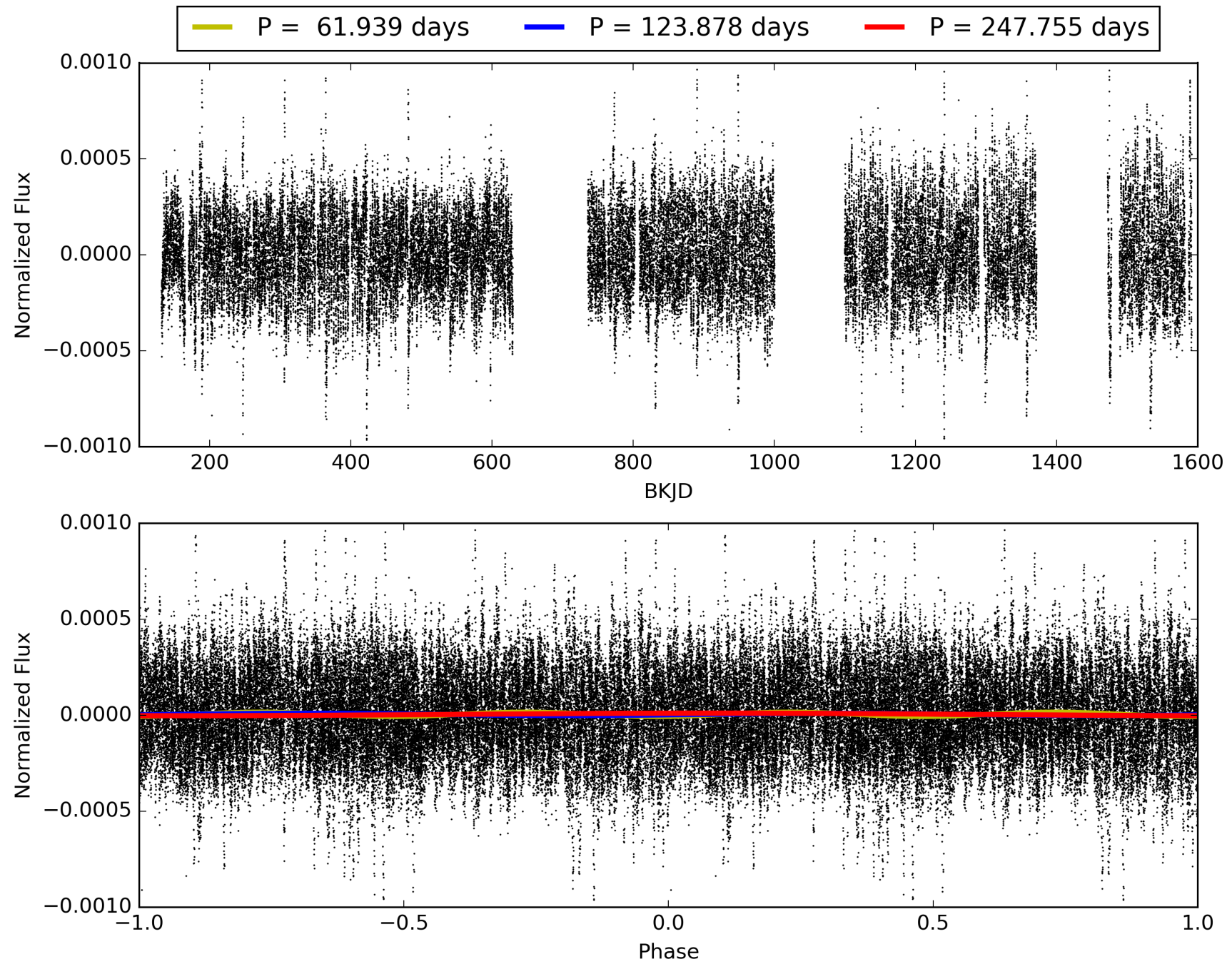
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 17:09:12 Z

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

TCE 009972385-06, PDC Light Curves

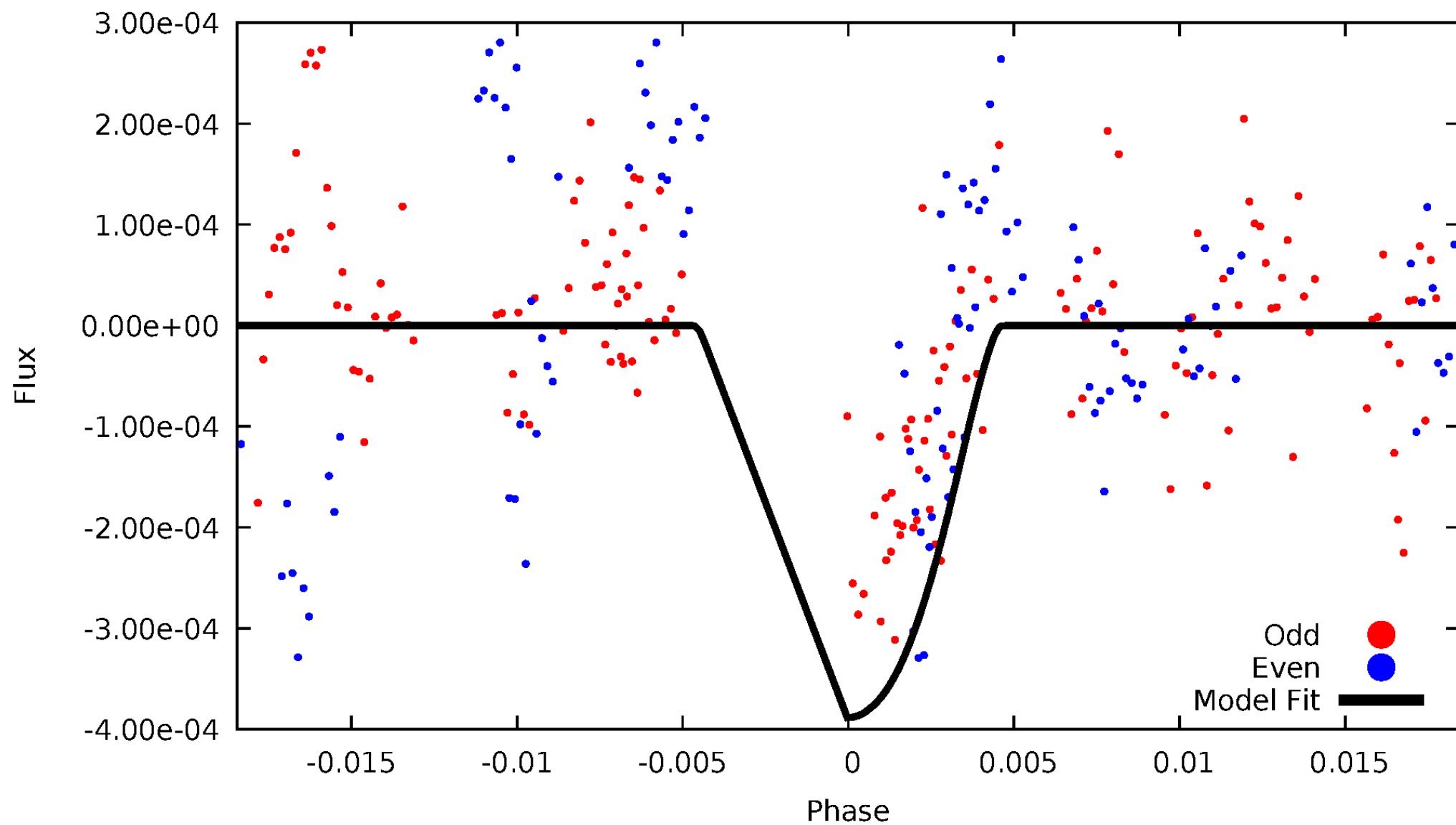


TCE 009972385-06



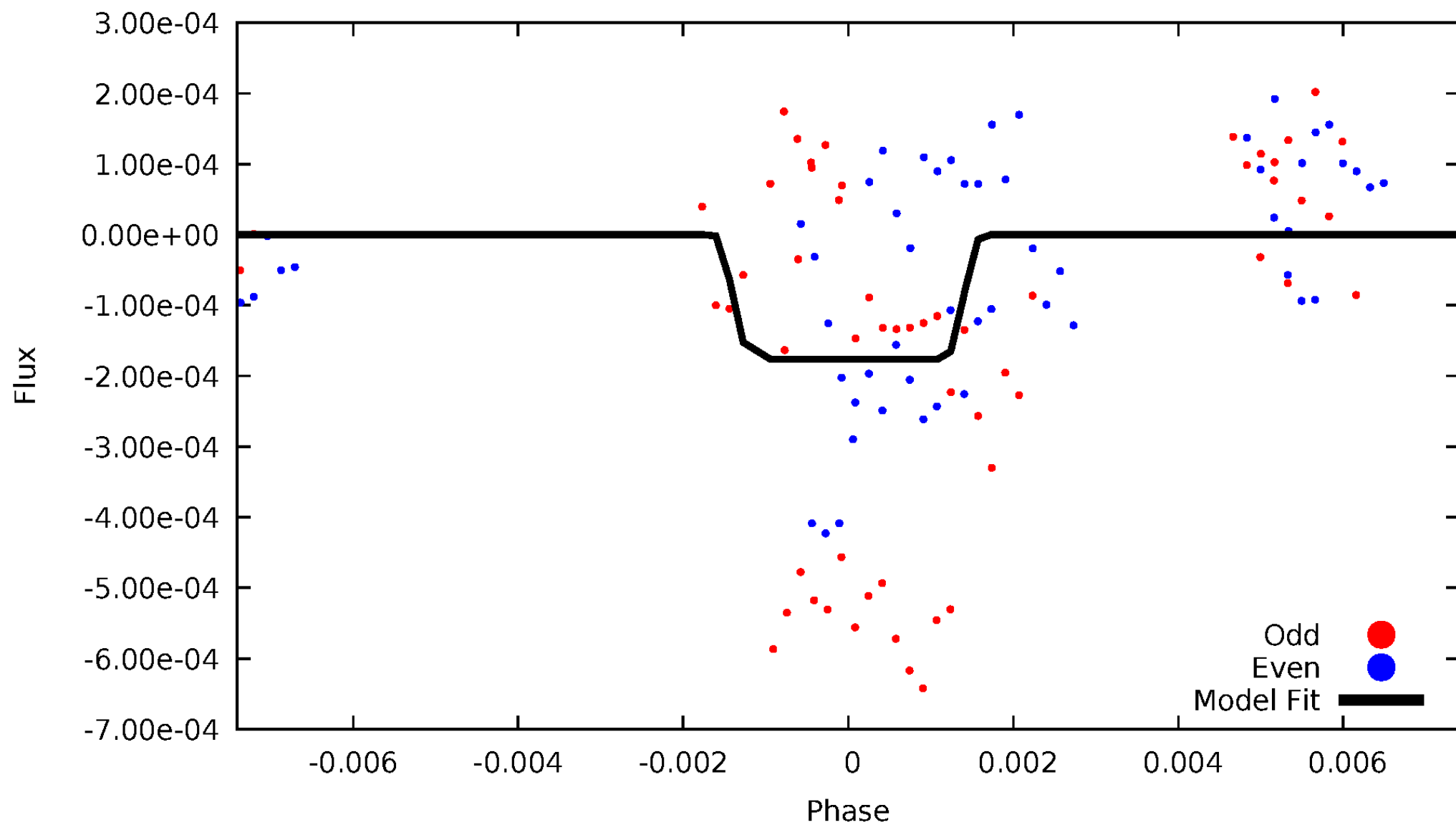
DV Odd/Even

TCE 009972385-06



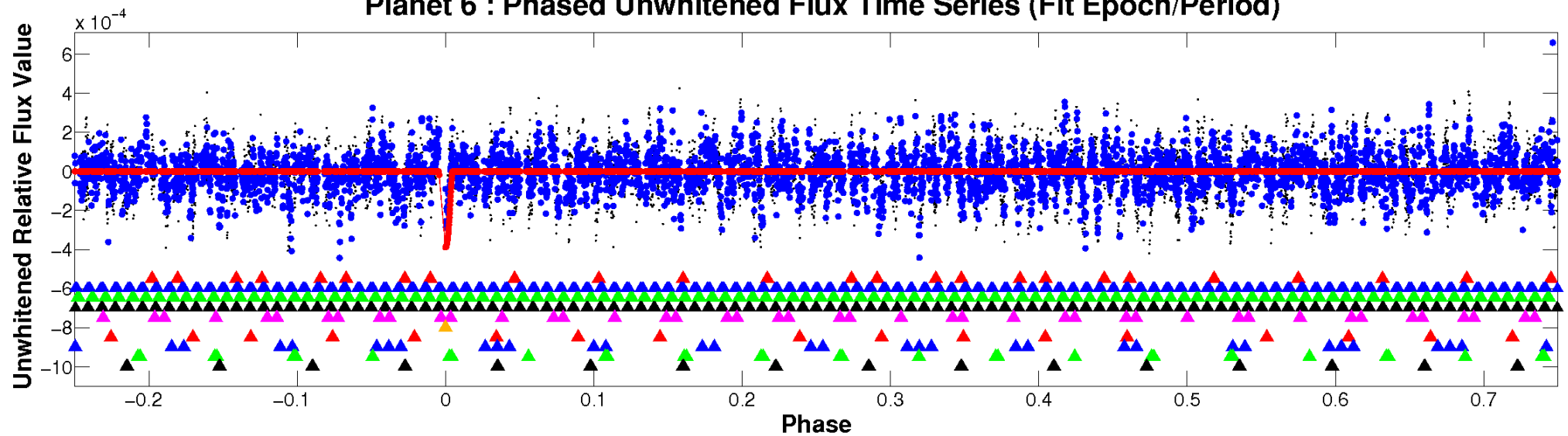
ALT Odd/Even

TCE 009972385-06

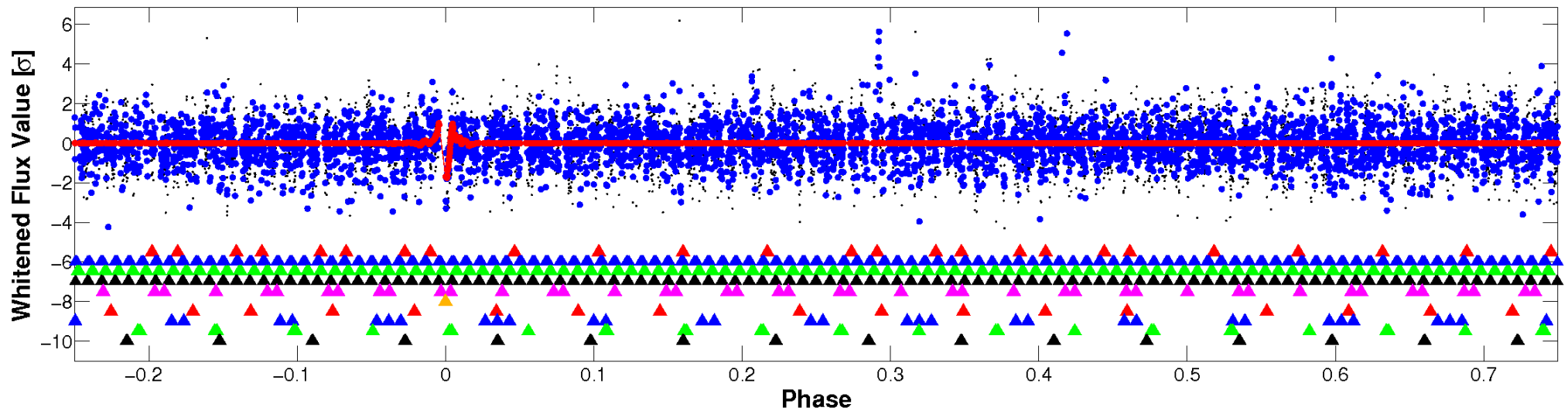


Non-Whitened Vs. Whitened Light Curve

Planet 6 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

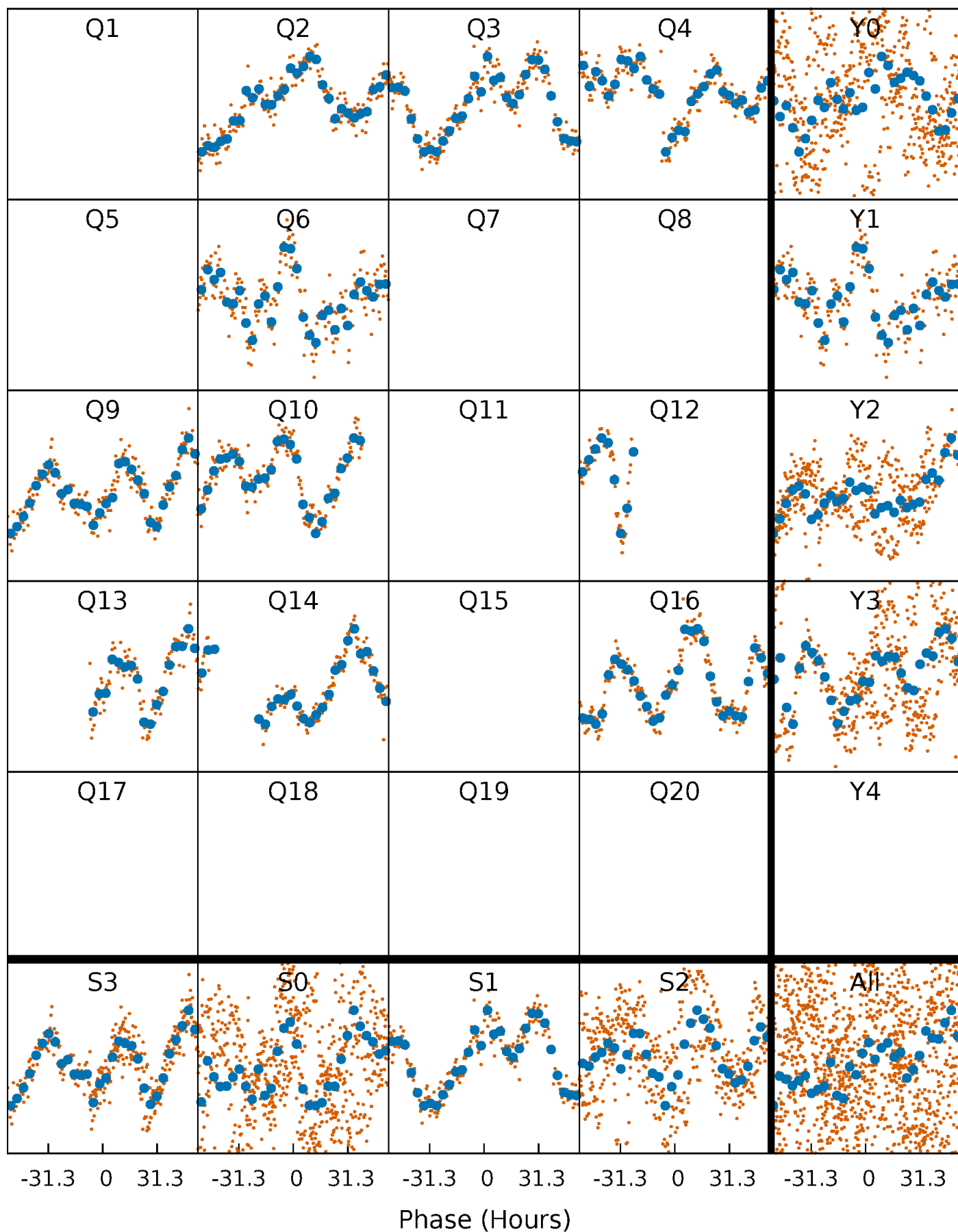


Planet 6 : Phased Whitened Flux Time Series (Fit Epoch/Period)



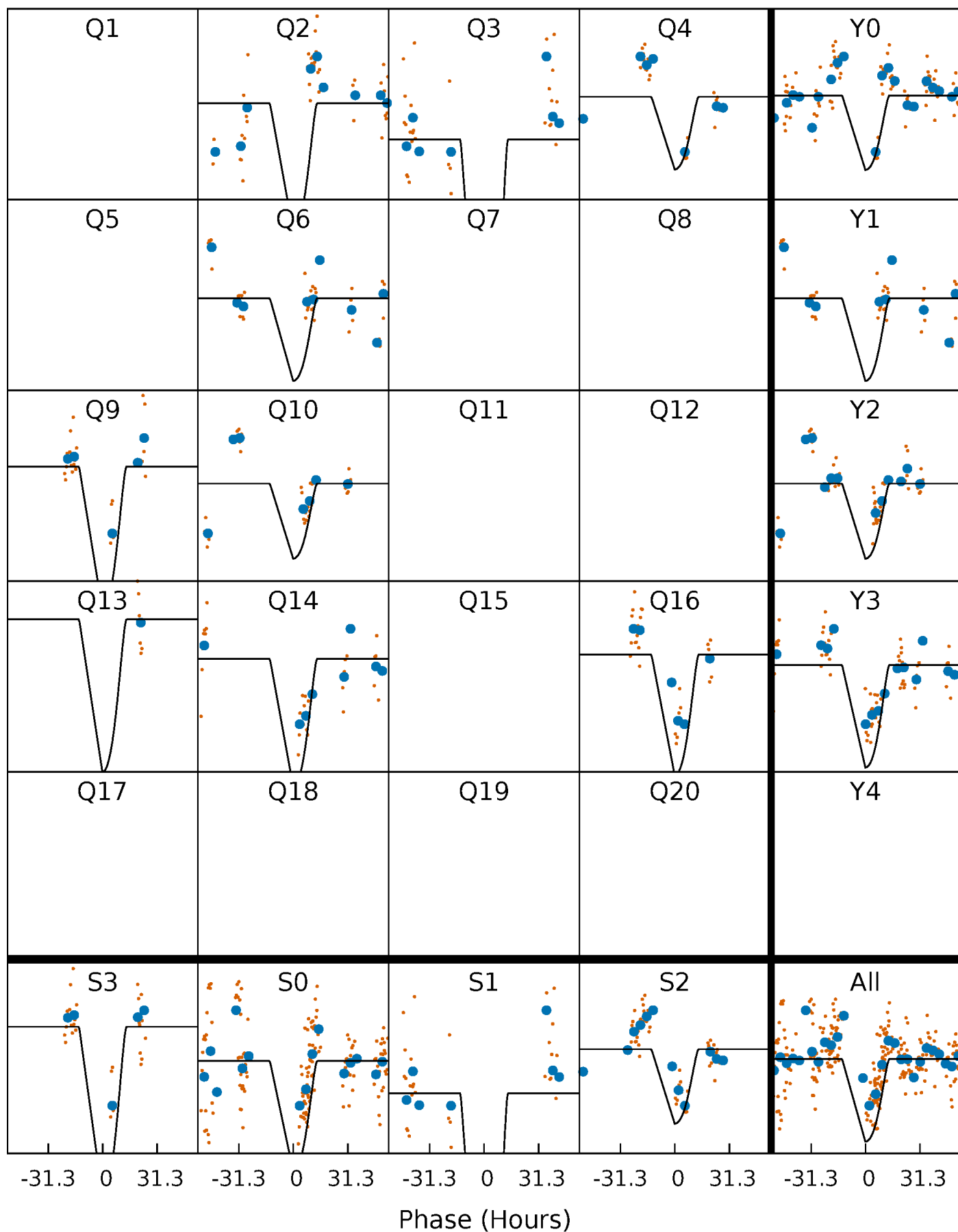
PDC Quarter-Phased Transit Curves

TCE 009972385-06 P=123.877606 Days $T_0=192.039254$ (BKJD)



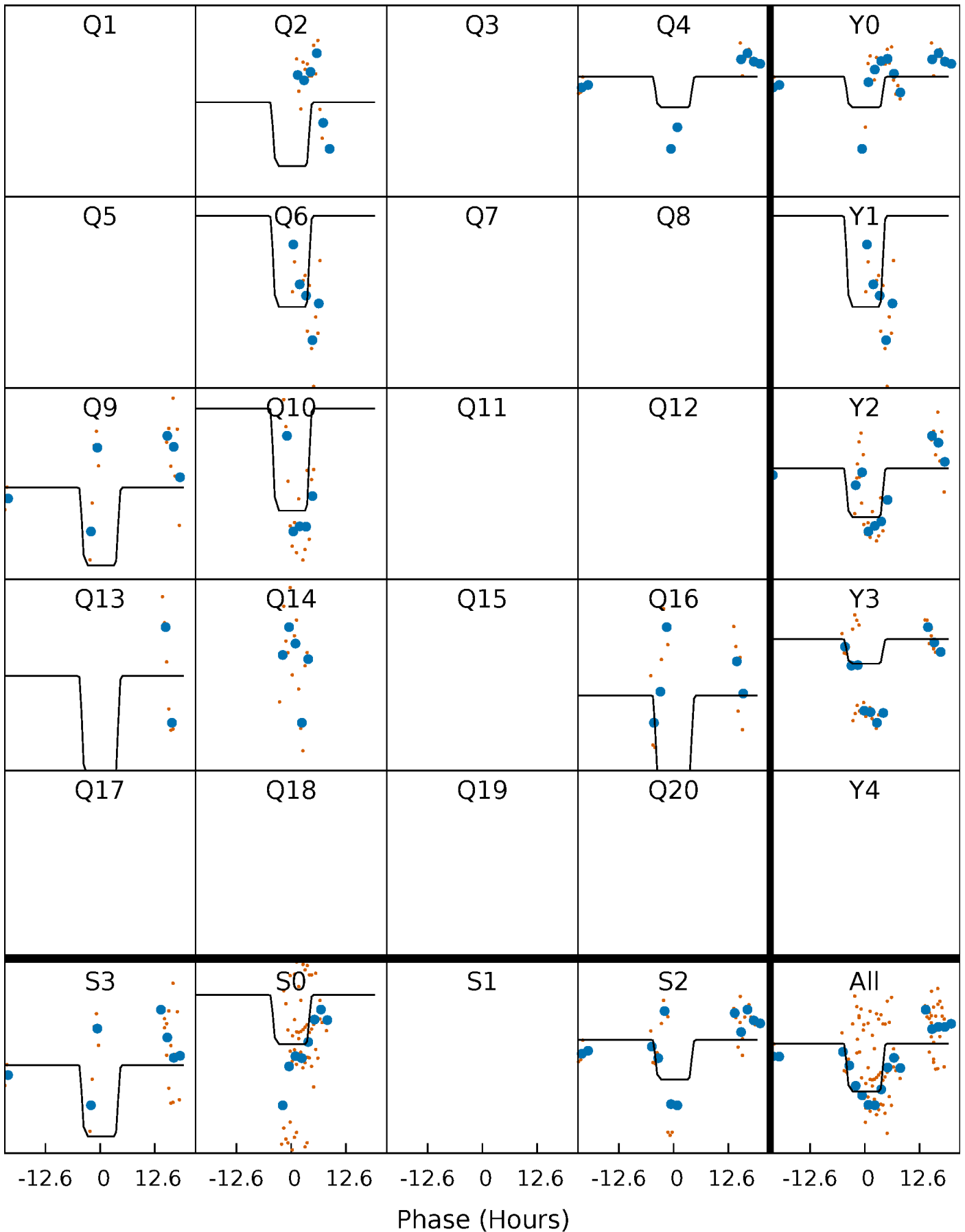
DV Quarter-Phased Transit Curves

TCE 009972385-06 P=123.877606 Days $T_0=192.039254$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

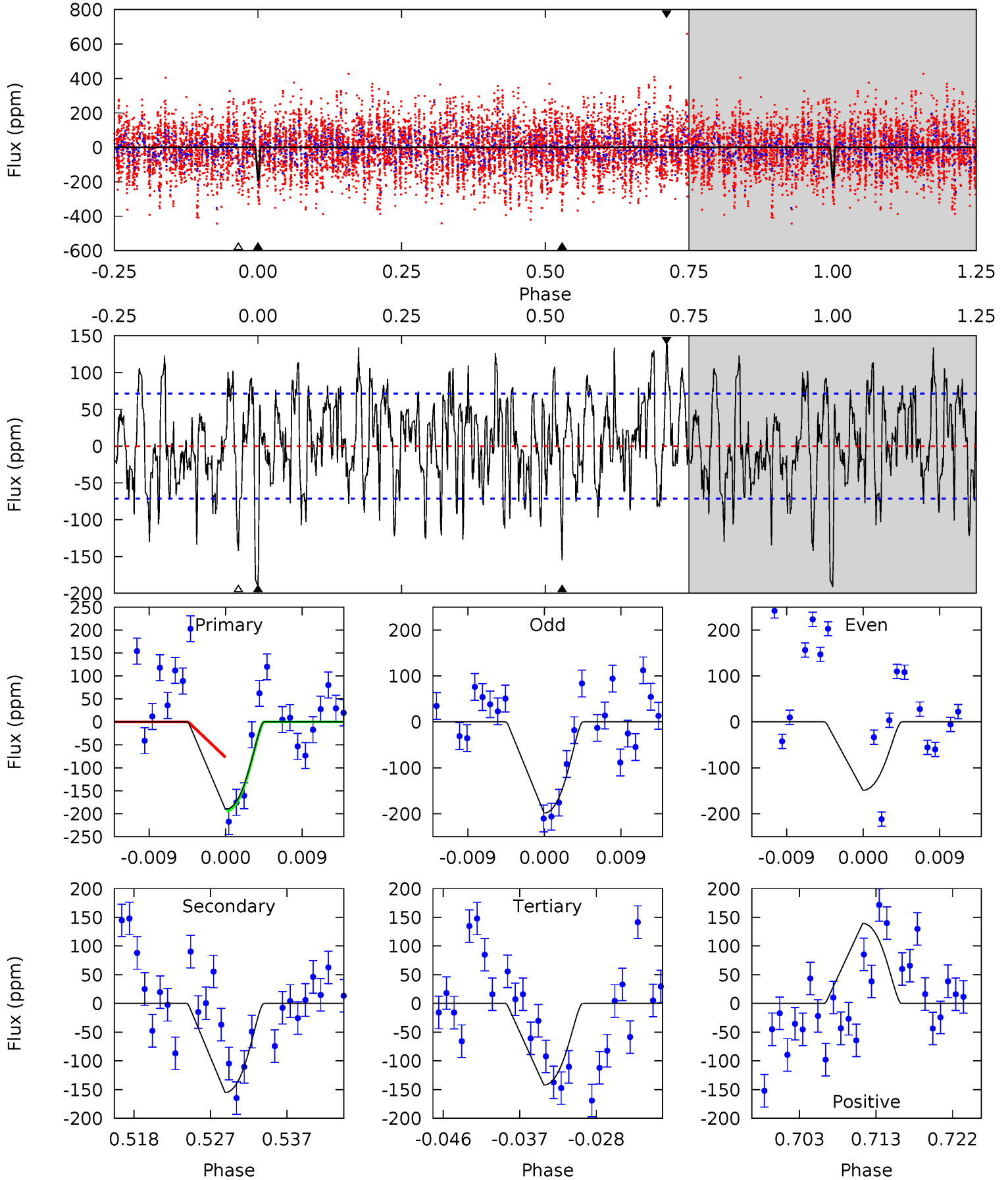
TCE 009972385-06 P=123.868617 Days $T_0=192.353779$ (BKJD)



DV Model-Shift Uniqueness Test

009972385-06, $P = 123.877606$ Days, $E = 68.161648$ Days

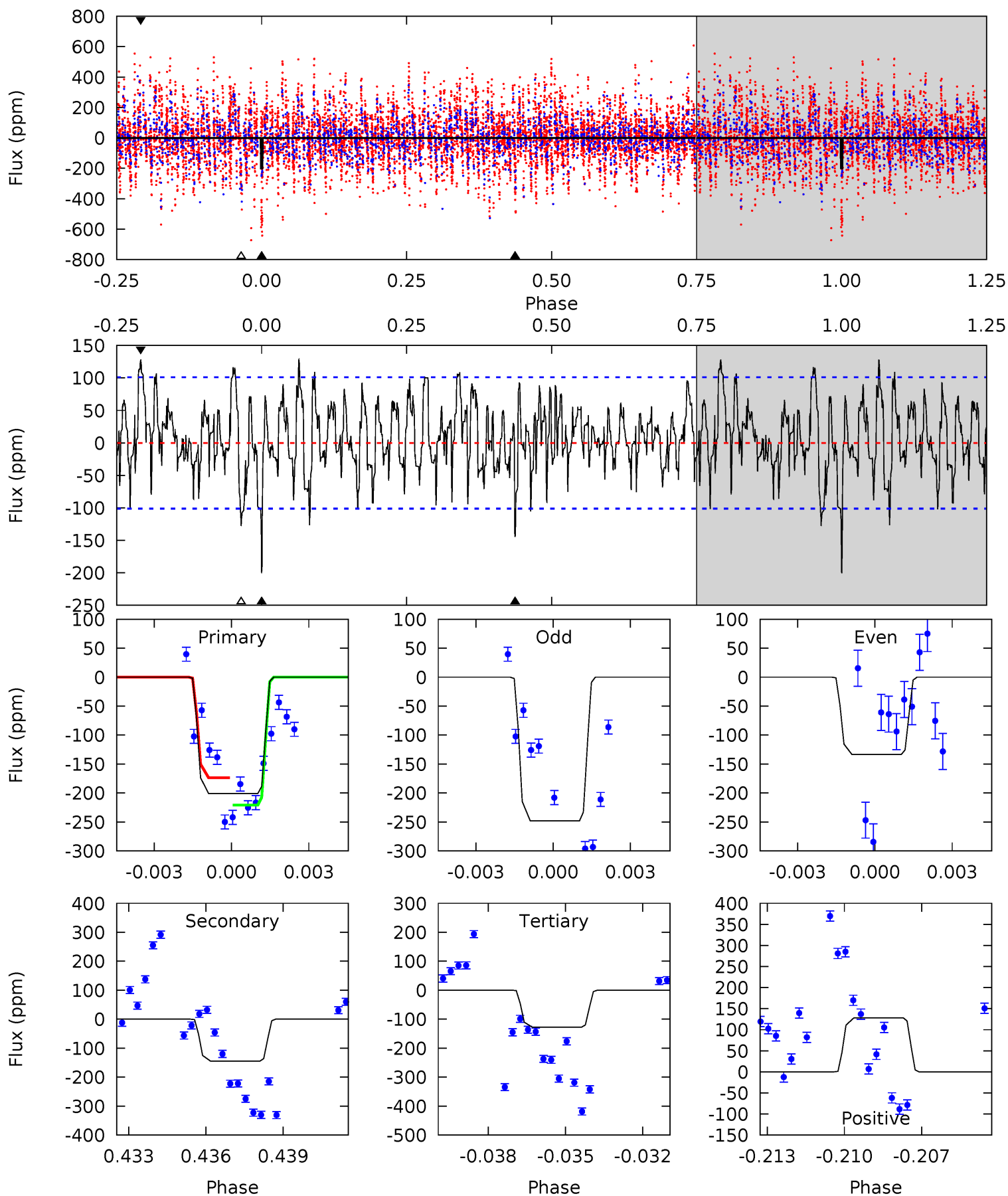
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.5	11.0	10.0	9.85	5.04	2.60	3.73	3.42	3.60	0.92	1.10	1.73	0.69	0.42	1.37



Alt Model-Shift Uniqueness Test

009972385-06, P = 123.868617 Days, E = 68.485162 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.4	7.51	6.62	6.66	5.24	2.95	2.40	3.80	3.76	0.89	0.85	2.94	1.25	0.39	1.22



Stellar Parameters For KIC 009972385

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6313^{+170}_{-170}	$3.922^{+0.323}_{-0.108}$	$-0.680^{+0.350}_{-0.250}$	$1.820^{+0.391}_{-0.587}$	$1.009^{+0.161}_{-0.145}$	$0.236^{+0.462}_{-0.087}$
	+3%/-3%	+8%/-3%	+51%/-37%	+21%/-32%	+16%/-14%	+196%/-37%
Source	PHO1	FLK73	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 009972385-06 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-155 ± 14	$4.76^{+1.90}_{-1.81}$	738^{+47}_{-67}	4576^{+1018}_{-484}	928^{+1456}_{-468}
Alt.	-145 ± 19	$2.66^{+1.65}_{-1.50}$	734^{+49}_{-65}	5810^{+3093}_{-1087}	2687^{+10547}_{-1646}

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 $A_{obs} \gg 1.0$

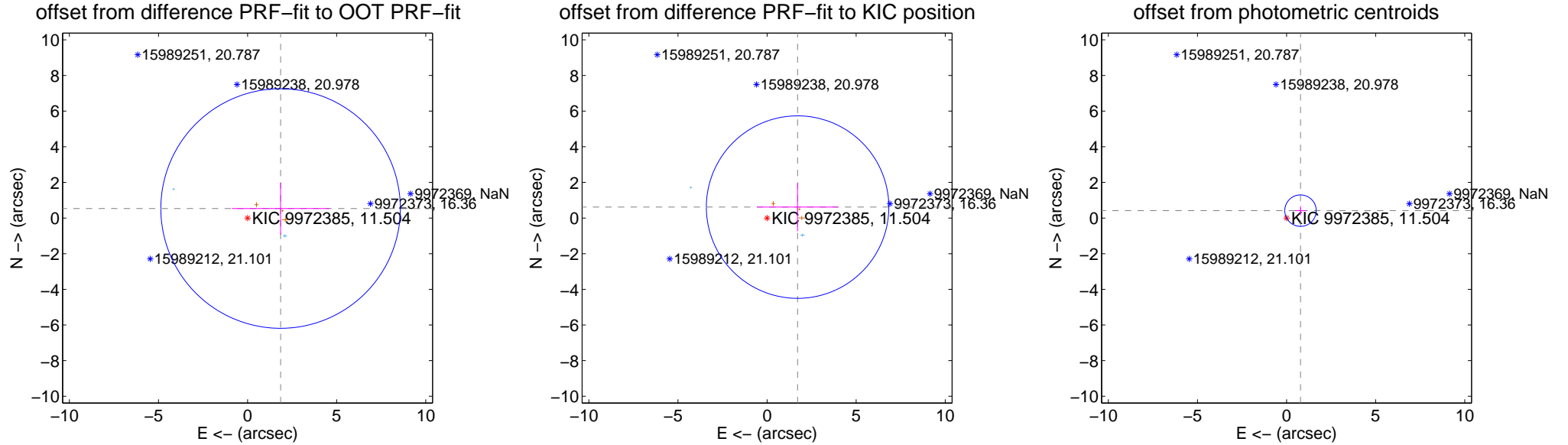
DV Centroid Data

Supplemental centroid analysis for 009972385-06. **Kepler magnitude: 11.50.** Transit SNR 9.04

There are 2 quarters with good PRF difference image offsets

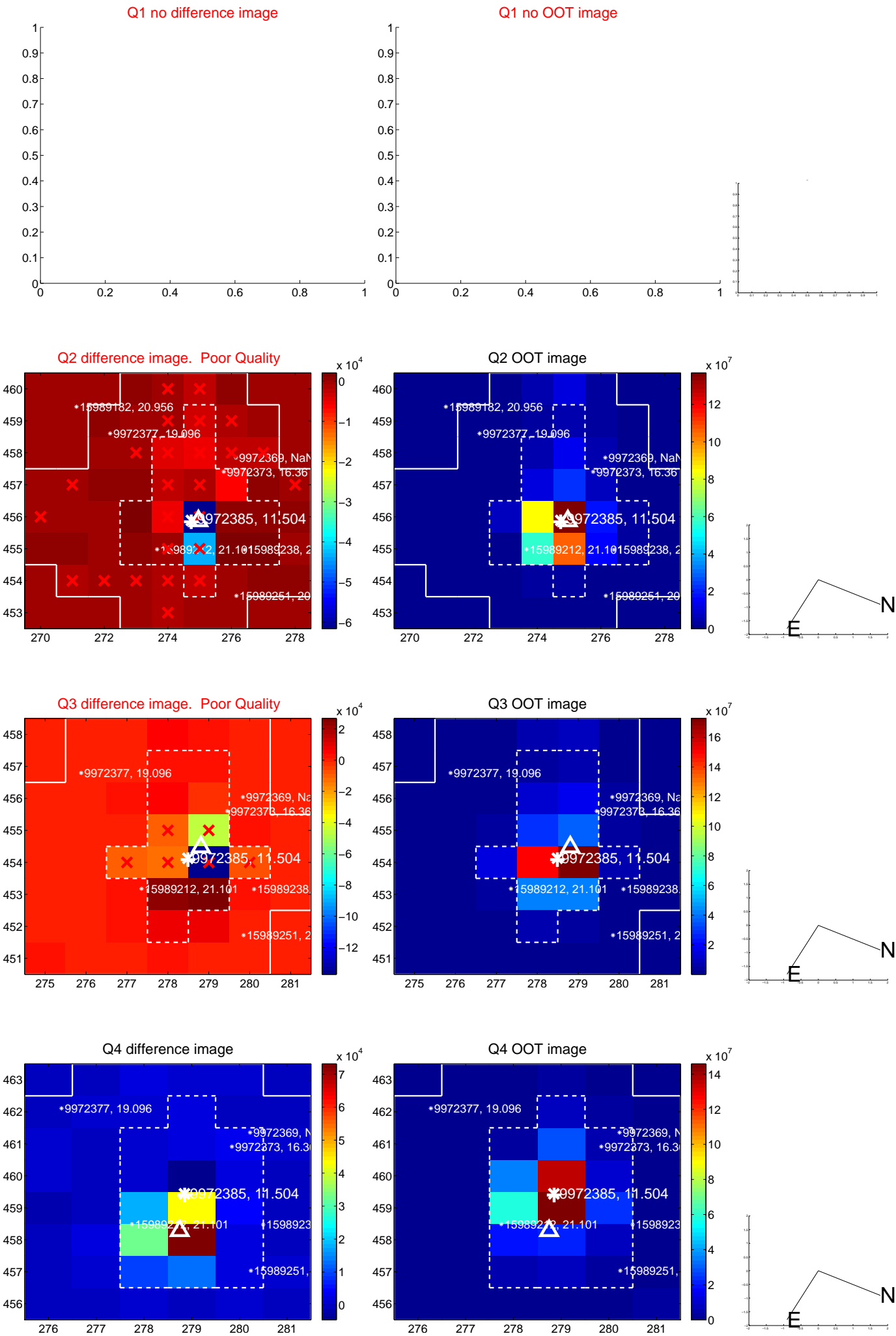
The direct PRF centroid is offset from the target star catalog position by about 0.20 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.929 ± 2.240	0.86	-1.854 ± 2.743	0.535 ± 1.460
PRF-fit source offset from KIC position	1.819 ± 1.706	1.07	-1.712 ± 2.281	0.614 ± 1.351
photometric centroid source offset	0.89 ± 0.29	3.01	-0.78 ± 0.30	0.42 ± 0.25

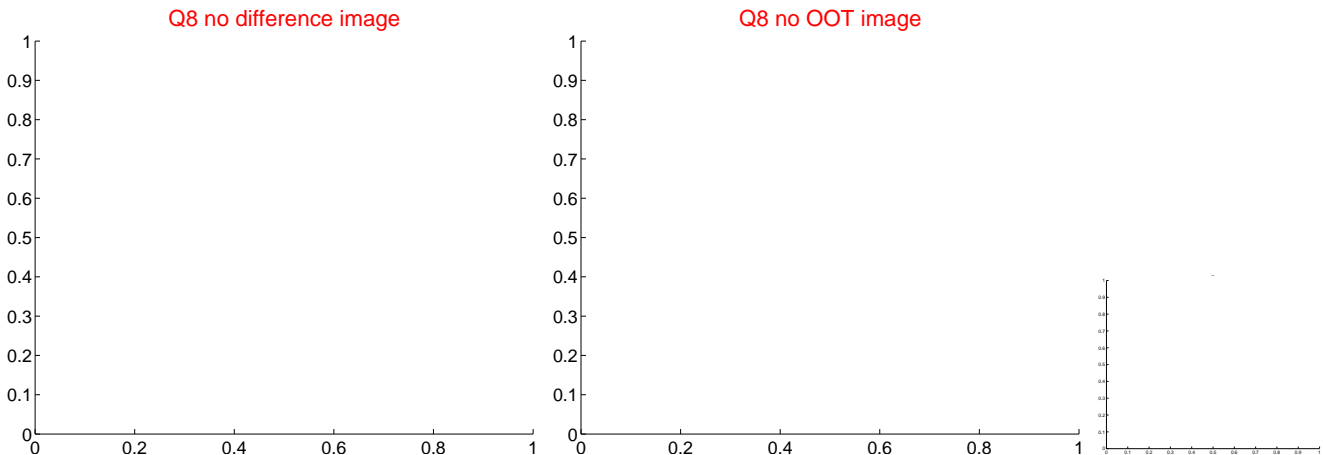
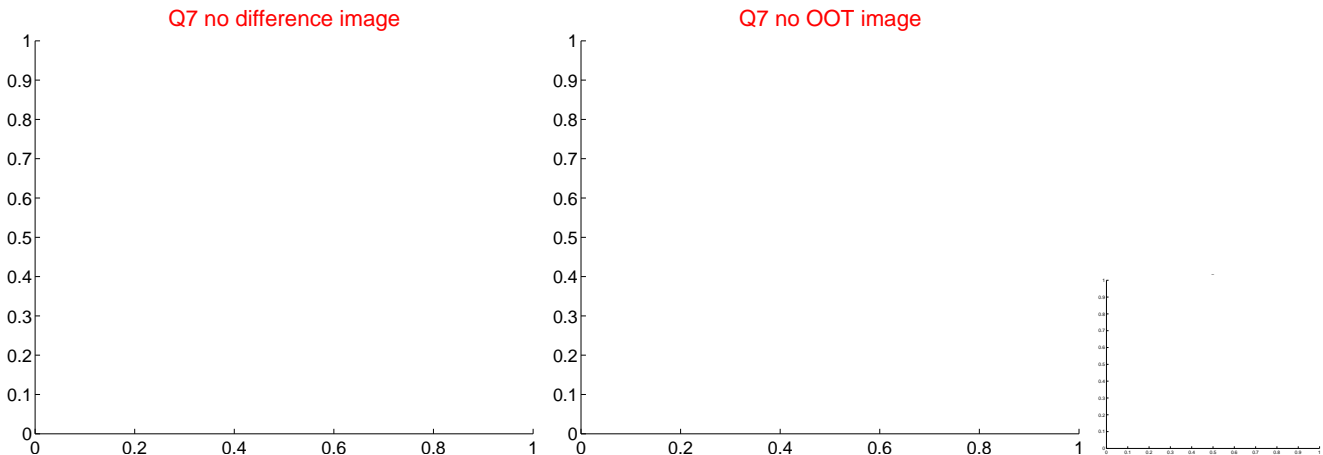
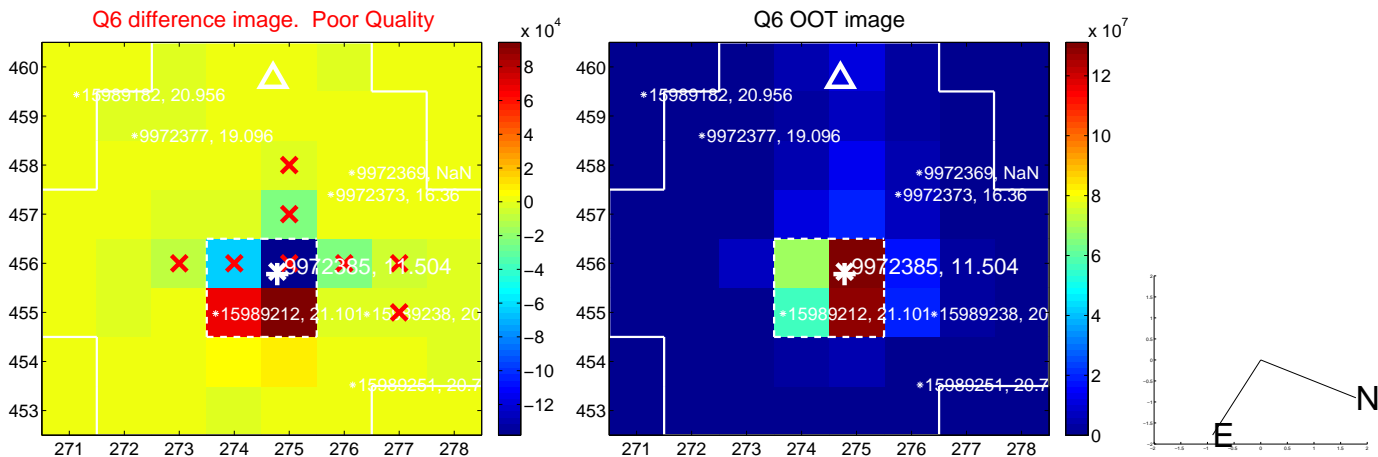
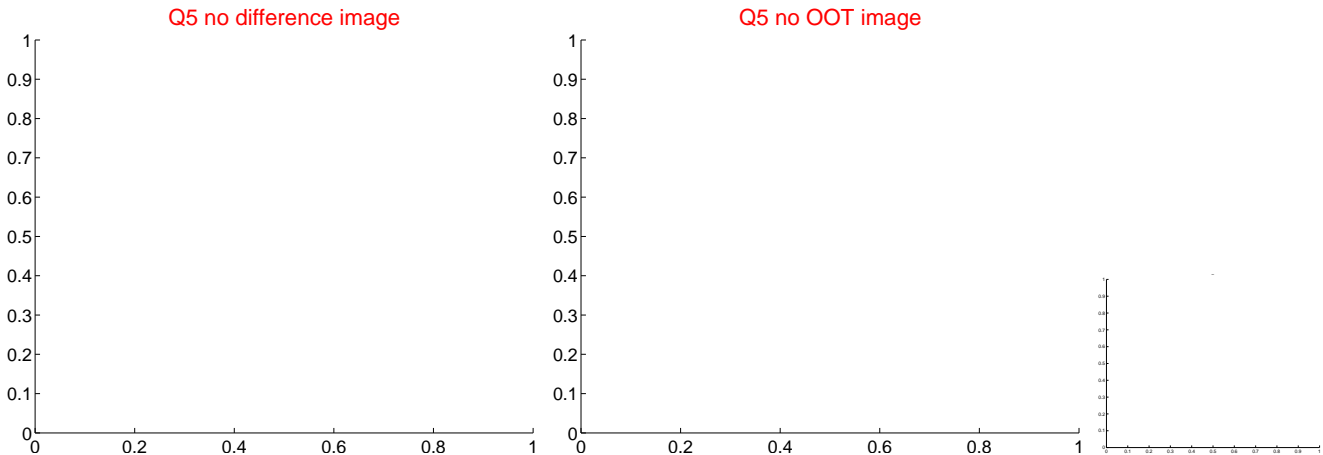


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ . Red *: target star. Blue *: Other stars. Text next to a star gives its KIC ID and kepmag. KIC IDs > 15,000,000 are from the UKIRT catalog.

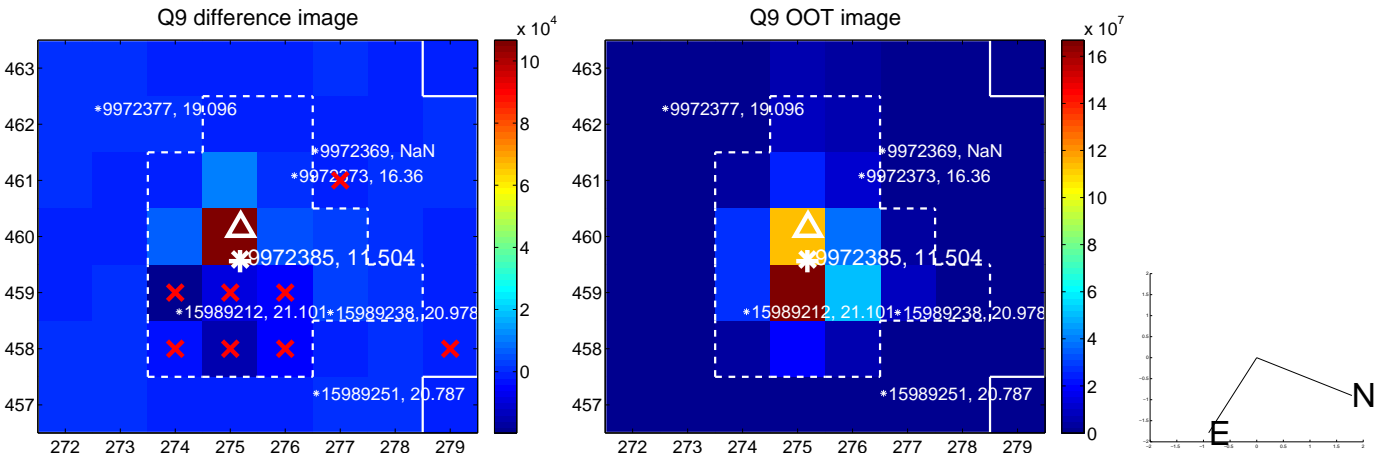
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



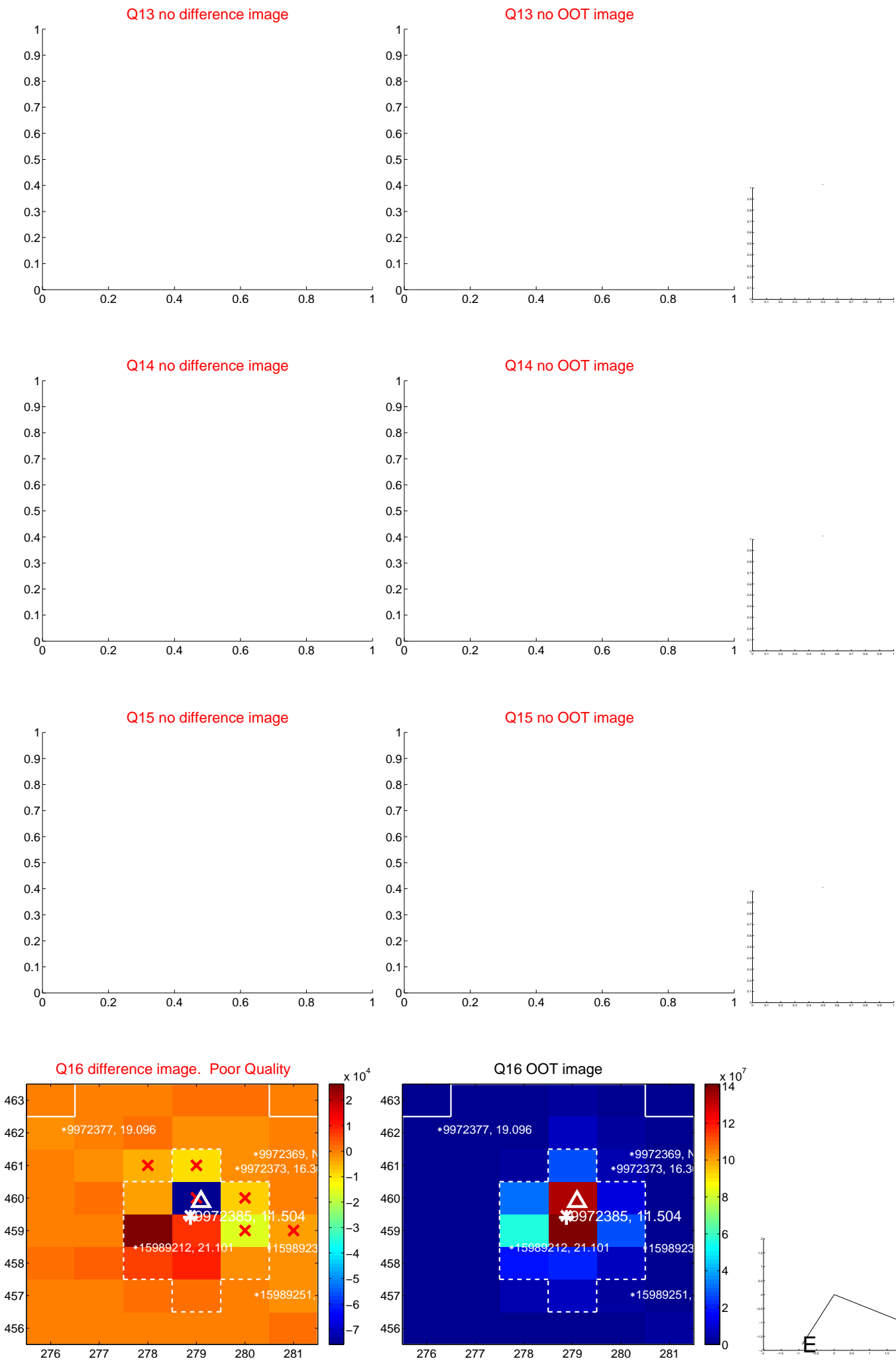
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value



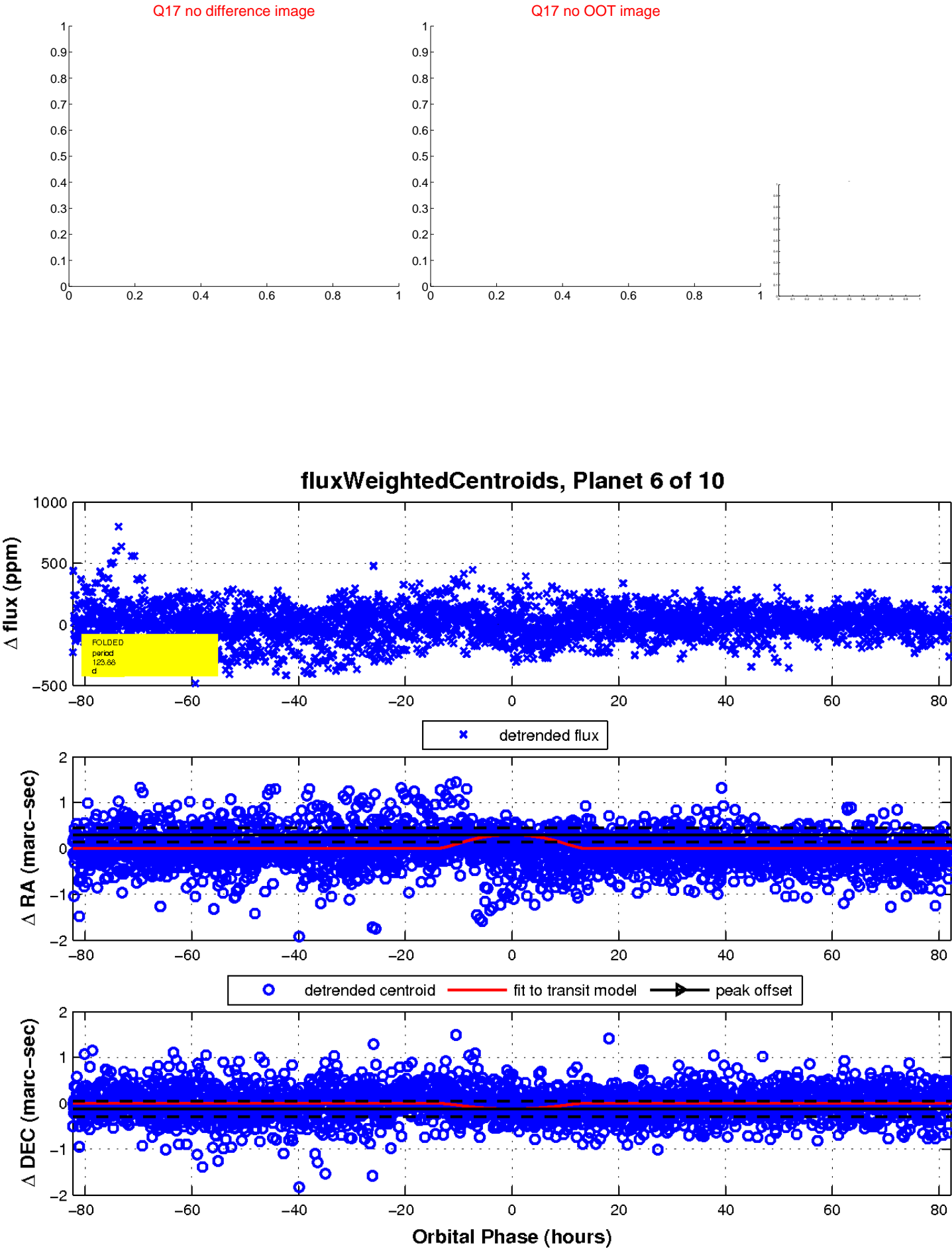
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

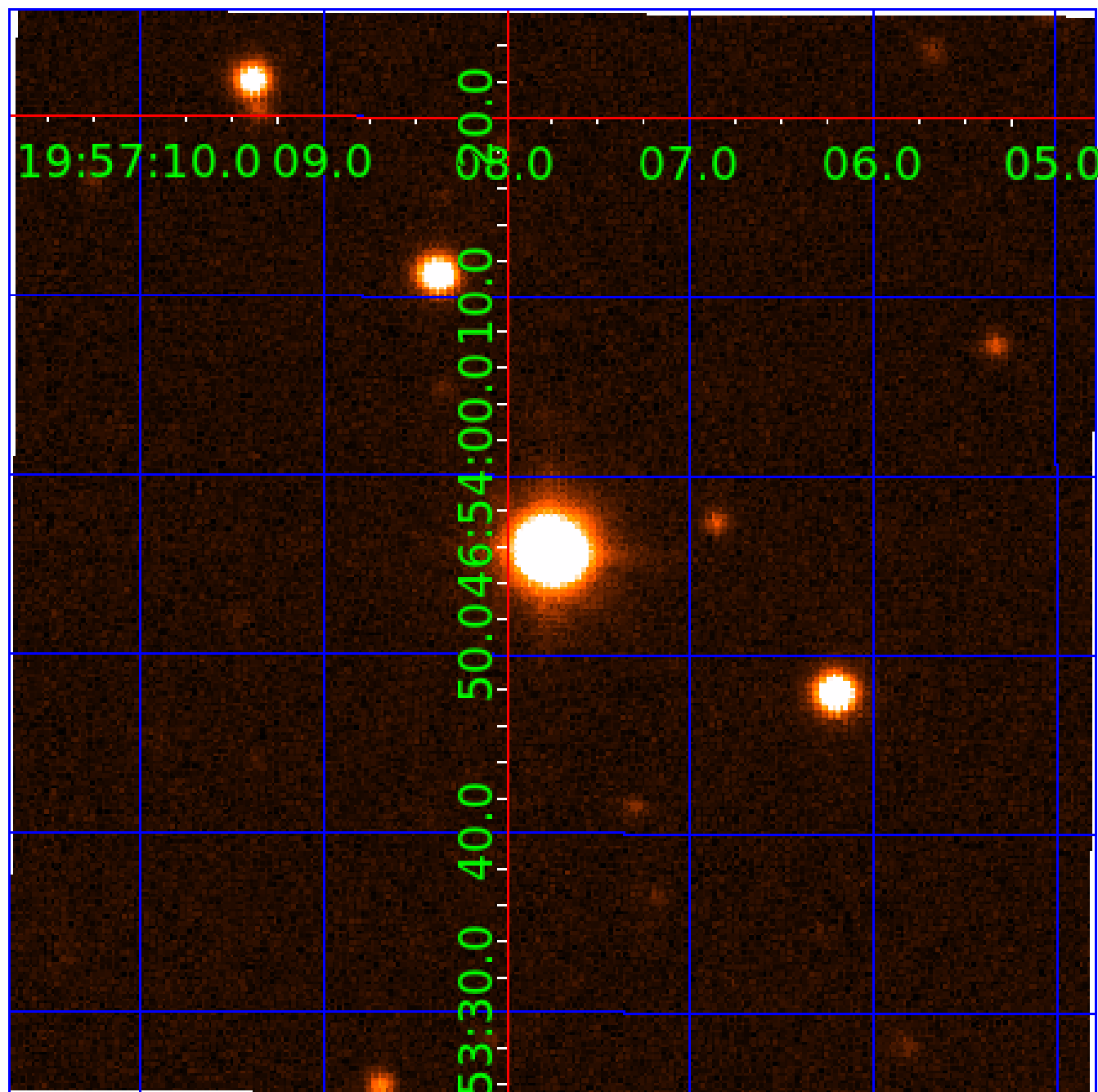


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009972385

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})
009972385-01	OBS	No	58.420909	188.641311	888.3	14.666	43.0	47.5	1.82	6313	10.28	53.92
009972385-02	OBS	No	3.377783	134.244452	52.7	11.222	10.9	12.8	1.82	6313	2.58	2411.99
009972385-03	OBS	No	3.377690	132.286709	27.7	5.907	9.8	10.9	1.82	6313	1.13	2412.08
009972385-04	OBS	No	3.377988	133.026671	25.5	4.744	9.8	10.9	1.82	6313	1.03	2411.80
009972385-05	OBS	No	33.321012	149.739066	24.5	11.846	11.2	1.5	1.82	6313	1.05	114.01
009972385-06	OBS	No	123.877607	192.039254	388.5	27.425	9.2	9.0	1.82	6313	5.06	19.80
009972385-07	OBS	No	84.863803	175.775621	164.1	2.141	7.7	7.8	1.82	6313	2.67	32.78
009972385-08	OBS	No	44.313913	141.982351	121.6	4.609	7.6	7.2	1.82	6313	2.32	77.95
009972385-09	OBS	No	45.629158	166.537092	131.9	7.990	7.5	7.3	1.82	6313	2.40	74.97
009972385-10	OBS	No	23.229243	149.885894	73.0	5.734	7.7	5.9	1.82	6313	1.72	184.43

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009972385-01	OBS	FP	0.00	1	0	0	0	LPP_DV
009972385-02	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—MOD_NONUNIQ_DV
009972385-03	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD
009972385-04	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—SAME_NTL_PERIOD
009972385-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
009972385-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
009972385-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_MEAS
009972385-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_UNCERTAIN
009972385-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
009972385-10	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—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.

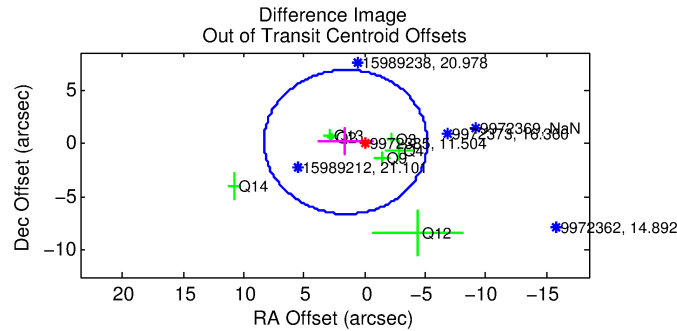
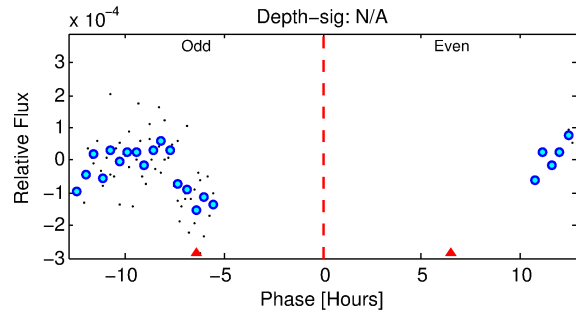
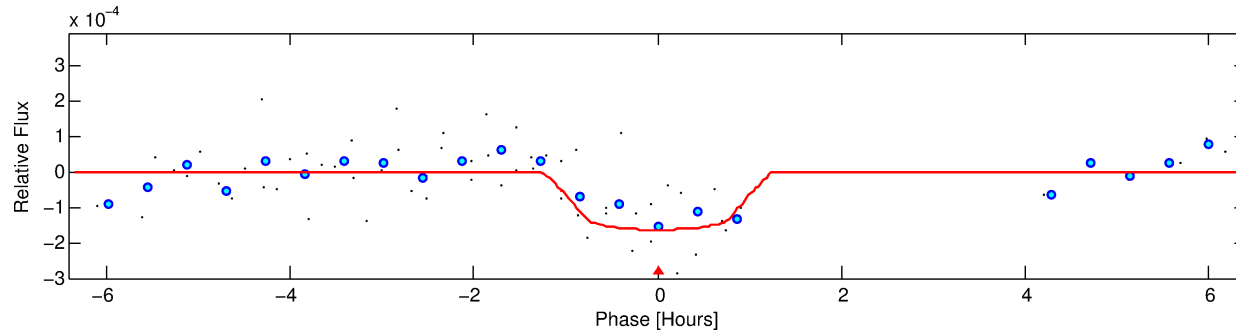
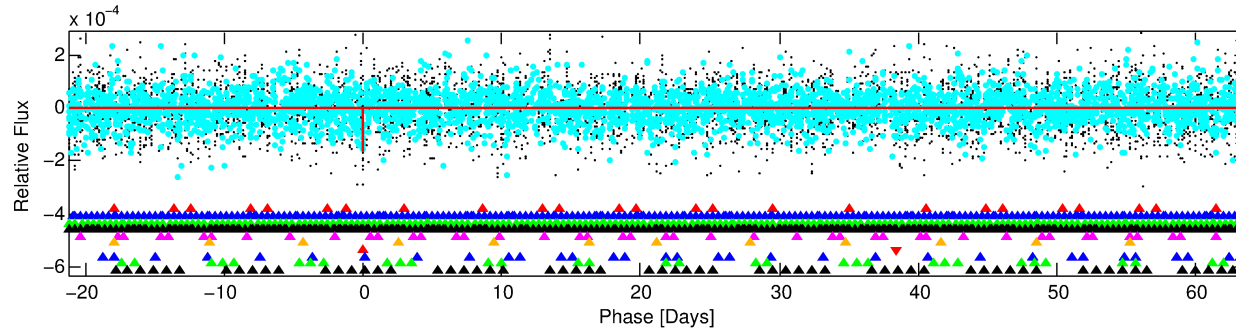
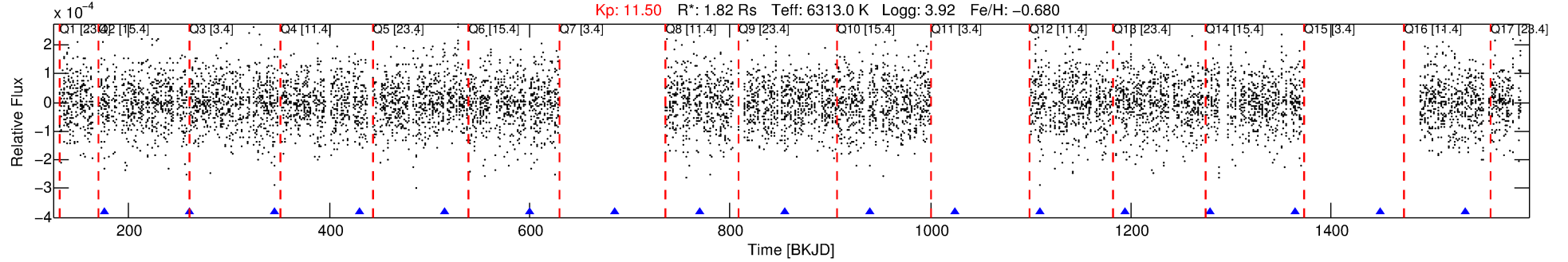
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009972385-07

No Significant Match Found

DV One-Page Summary

KIC: 9972385 Candidate: 7 of 10 Period: 84.864 d



DV Fit Results:

Period = 84.86380 [0.00086] d
Epoch = 175.7756 [0.0060] BKJD
 $R_p/R^* = 0.0135$ [0.0255]
 $a/R^* = 156.07$ [1671.51]
 $b = 0.87$ [2.97]
 $\text{Seff} = 32.78$ [18.06]
 $T_{\text{eq}} = 610$ [84] K
 $R_p = 2.67$ [5.14] R_e
 $a = 0.3792$ [0.1244] AU
 $A_g = 1075.00$ [4119.92] [0.26 σ]
 $T_{\text{eff}} = 5402$ [5126] K [0.93 σ]

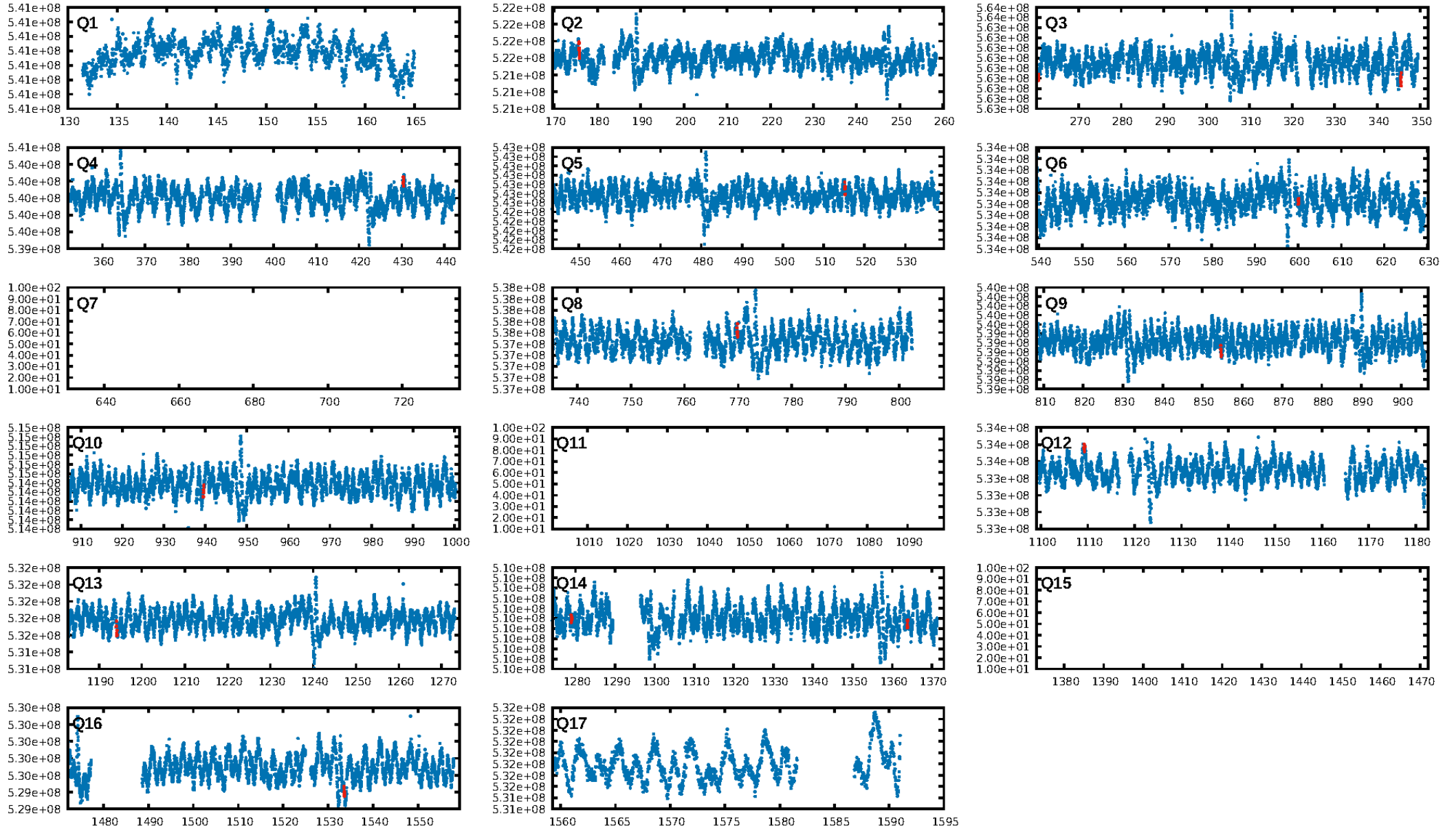
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [42.82 σ]
LongPeriod-sig: 100.0% [34.04 σ]
ModelChiSquare2-sig: 3.4%
ModelChiSquareGof-sig: 99.0%
Bootstrap-pfa: 4.28e-09
RollingBand-fgt: 1.00 [6/6]
GhostDiagnostic-chr: 1.116
Centroid-sig: 15.8%
Centroid-so: 0.851 arcsec [1.12 σ]
OotOffset-rm: 1.579 arcsec [0.70 σ]
KicOffset-rm: 1.703 arcsec [0.87 σ]
OotOffset-st: 2/1/2/2 [7]
KicOffset-st: 2/1/2/2 [7]
DiffImageQuality-fgm: 0.29 [2/7]
DiffImageOverlap-fno: 0.50 [5/10]

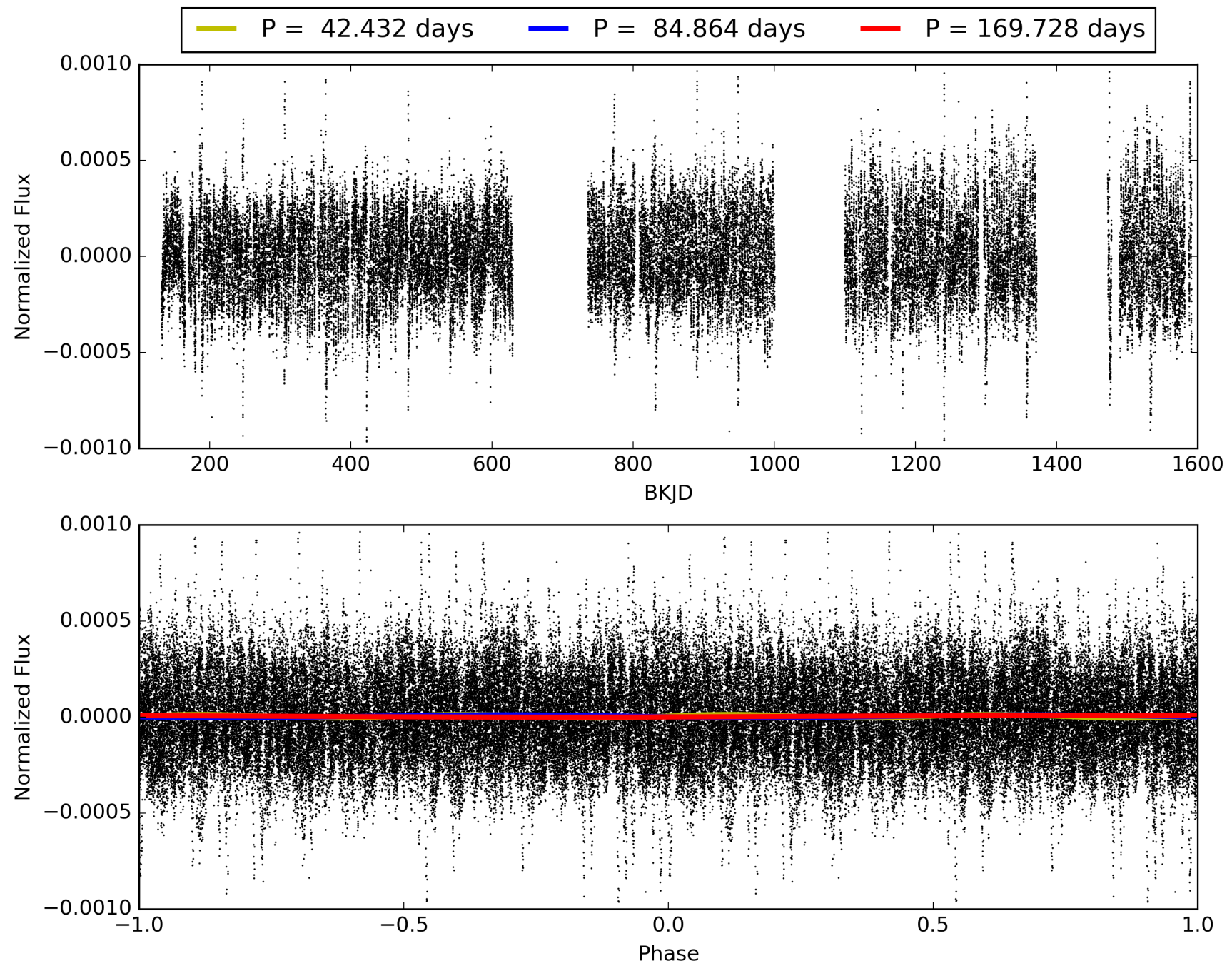
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 17:09:16 Z

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

TCE 009972385-07, PDC Light Curves

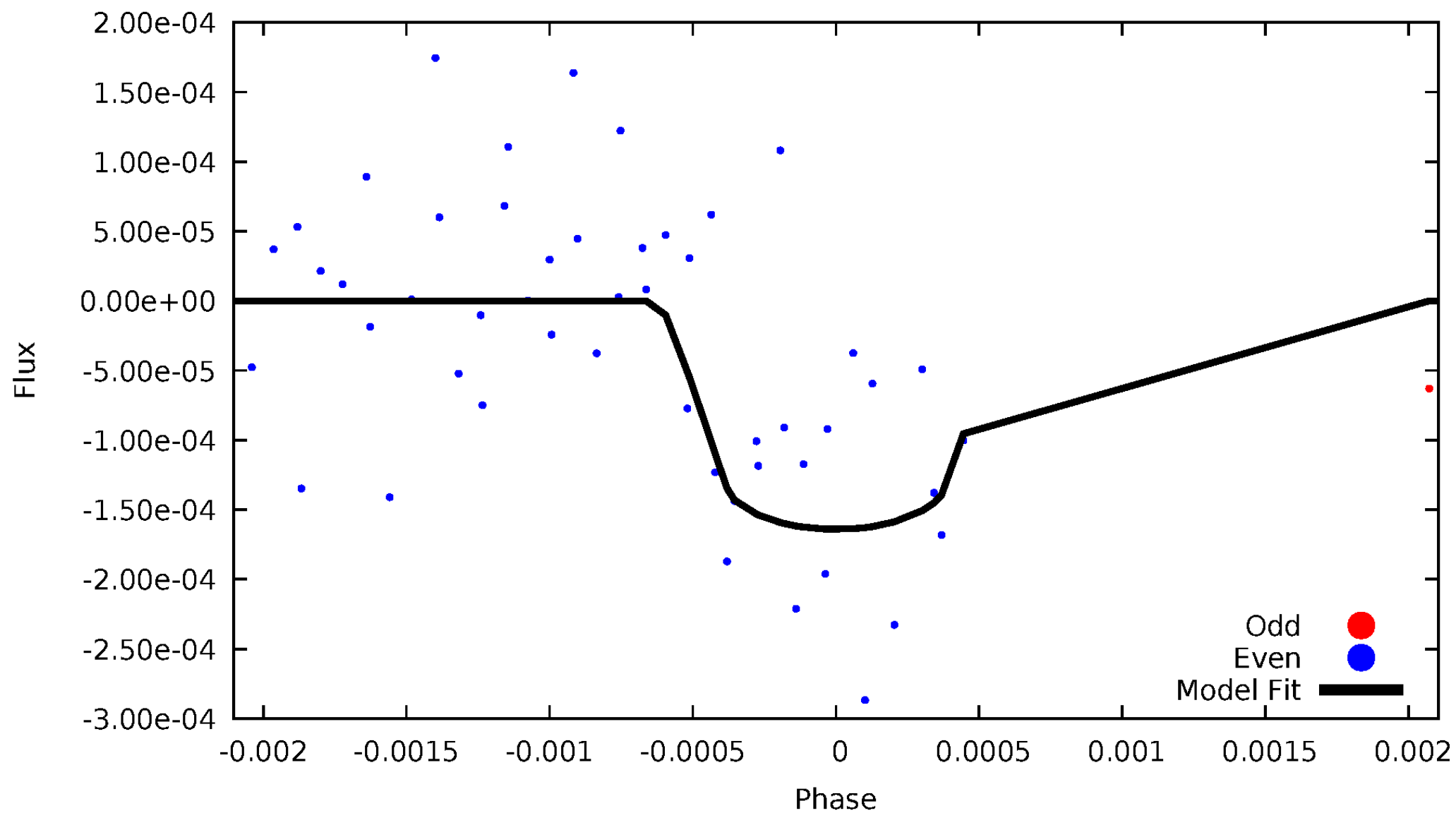


TCE 009972385-07



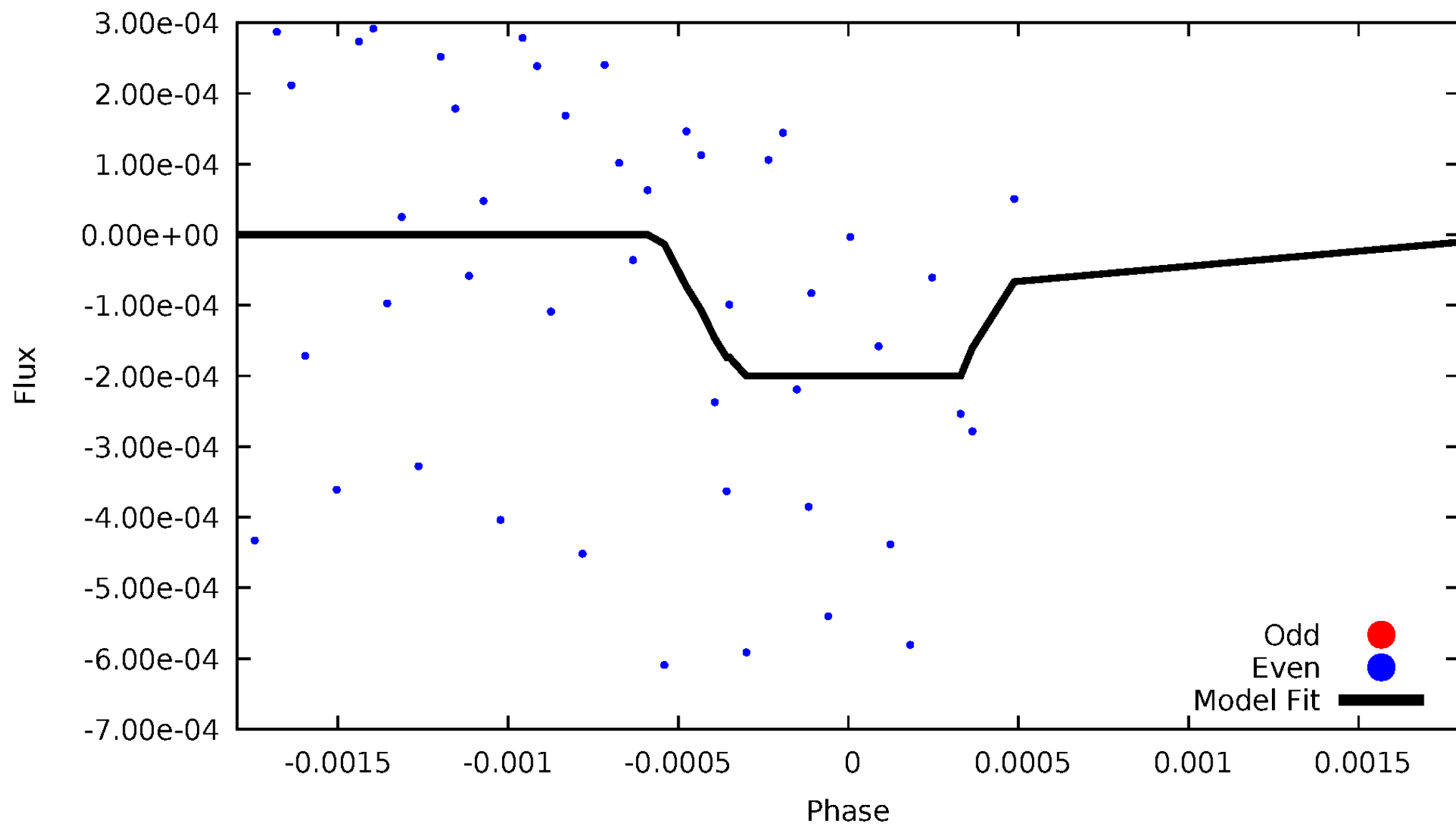
DV Odd/Even

TCE 009972385-07



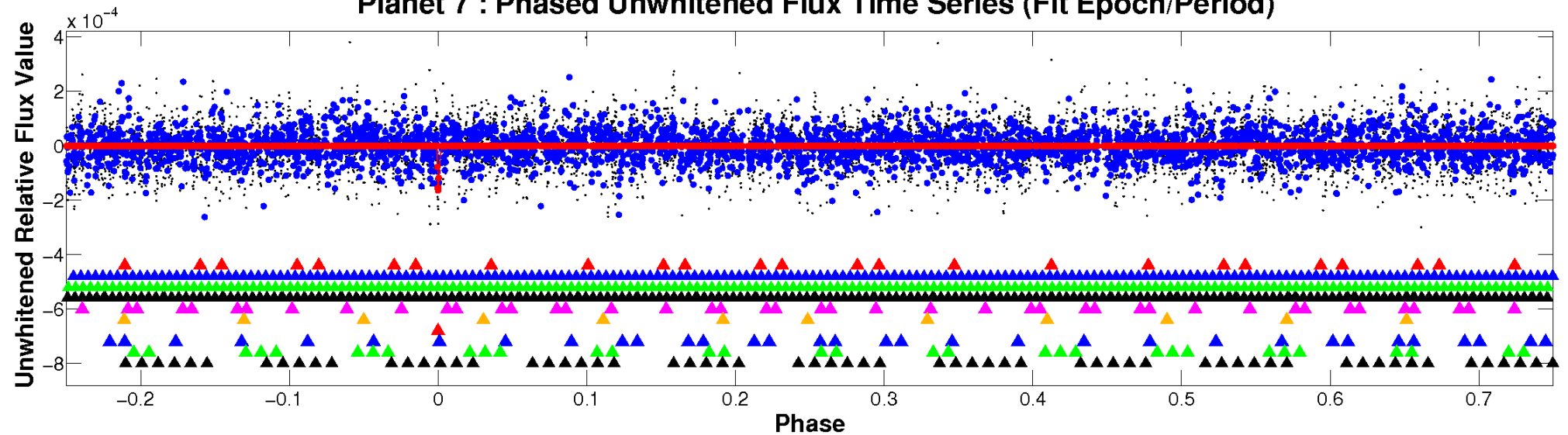
ALT Odd/Even

TCE 009972385-07

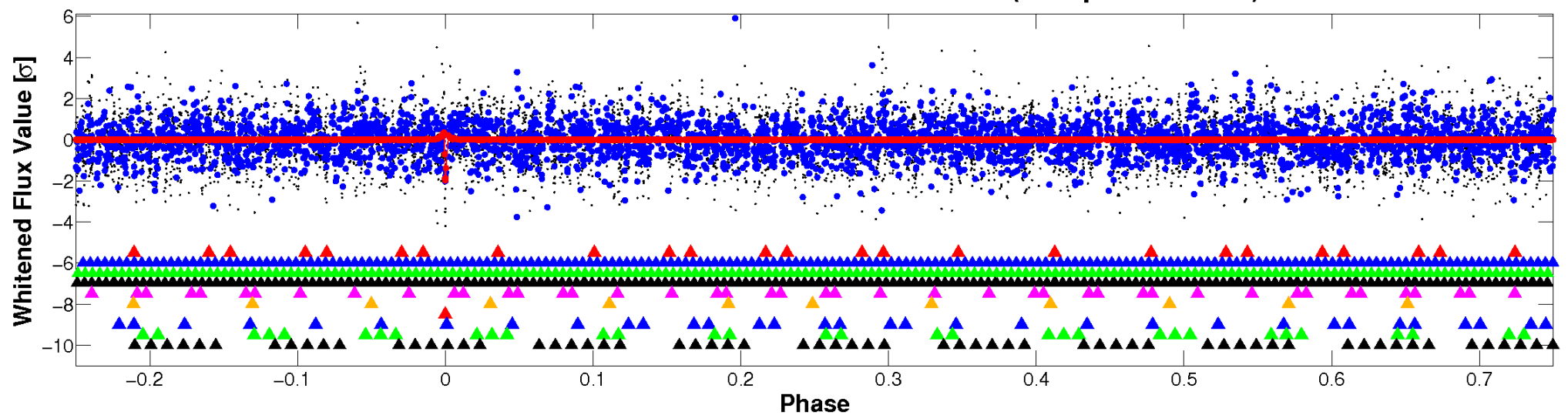


Non-Whitened Vs. Whitened Light Curve

Planet 7 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

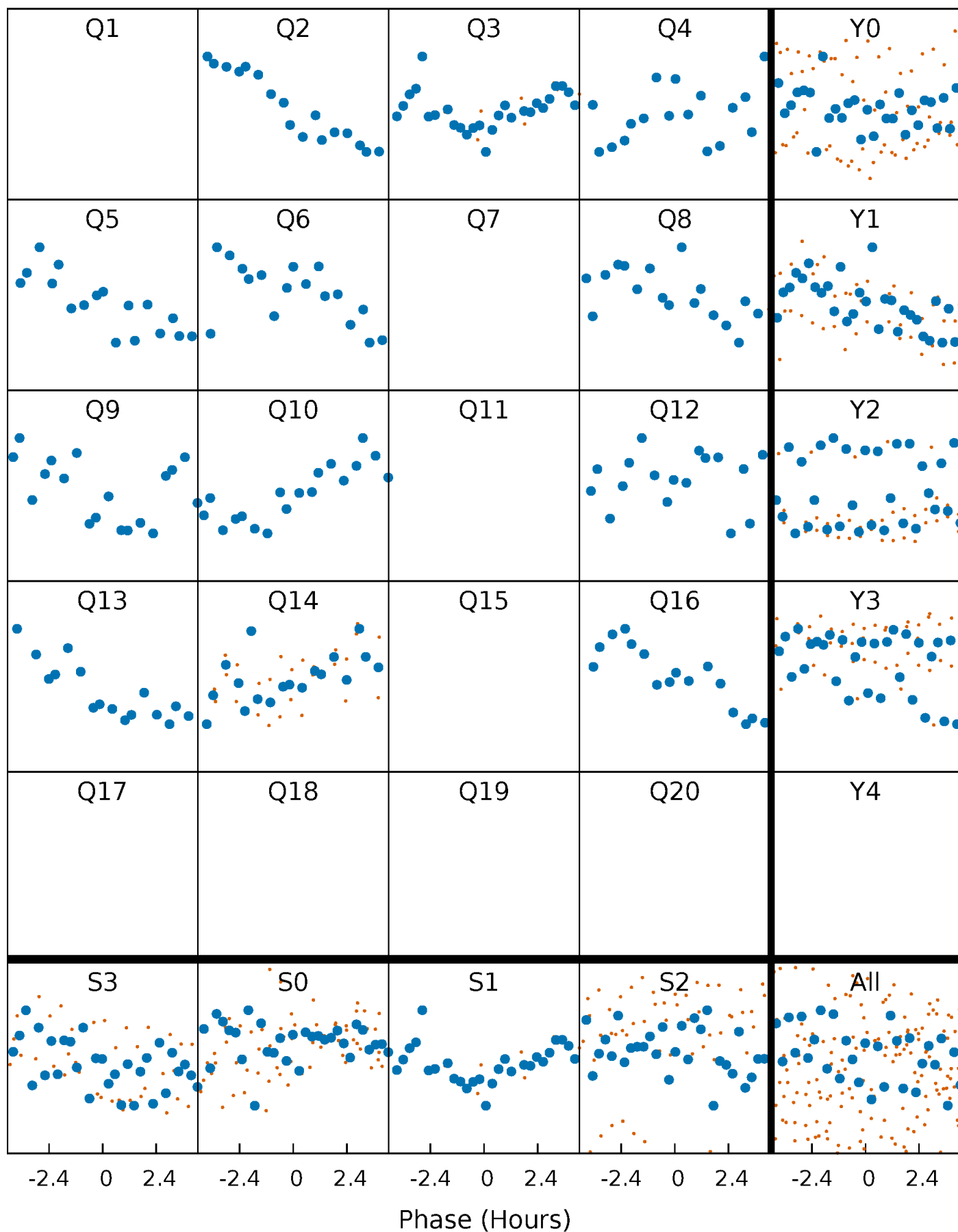


Planet 7 : Phased Whitened Flux Time Series (Fit Epoch/Period)



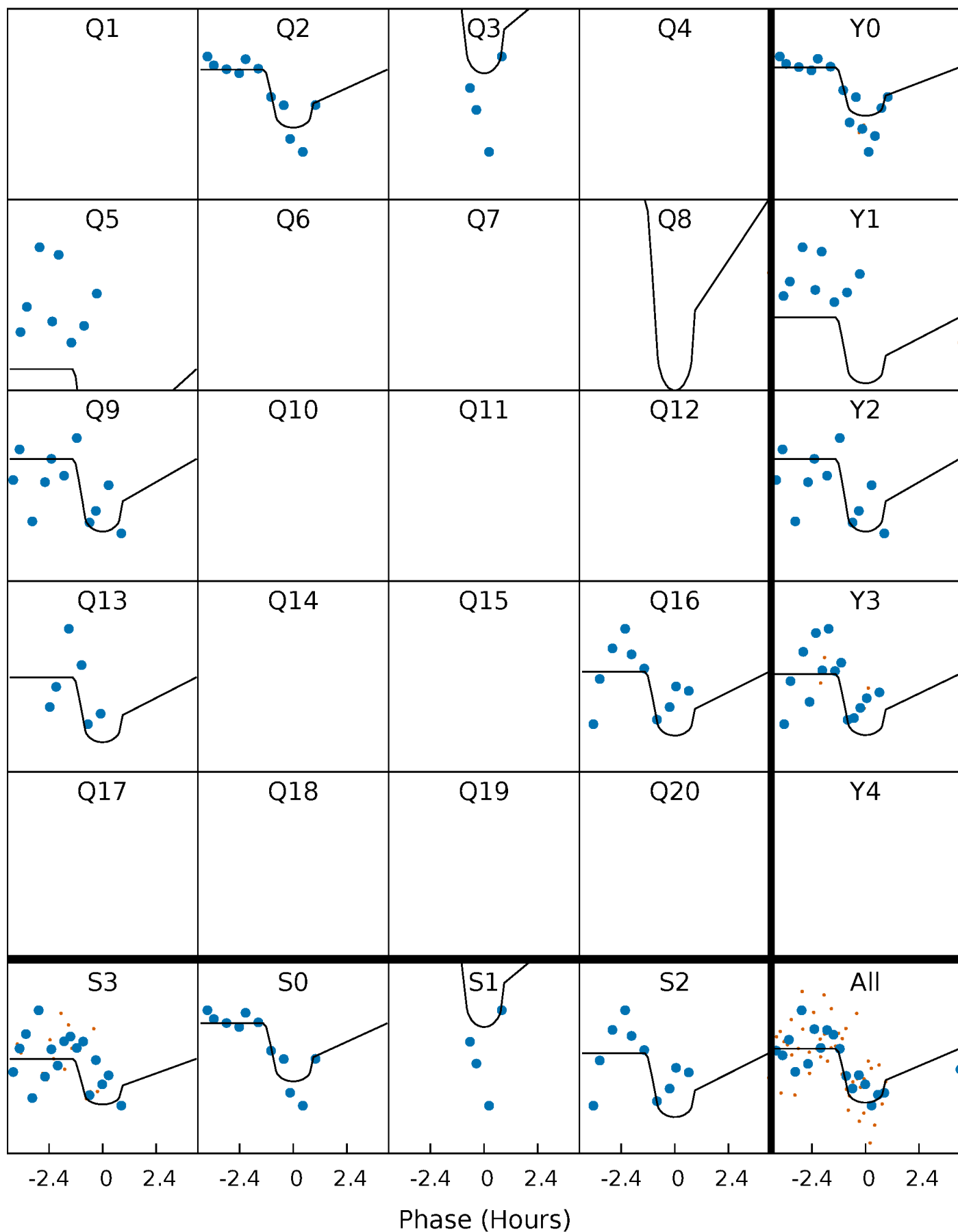
PDC Quarter-Phased Transit Curves

TCE 009972385-07 $P = 84.863803$ Days $T_0 = 175.775621$ (BKJD)



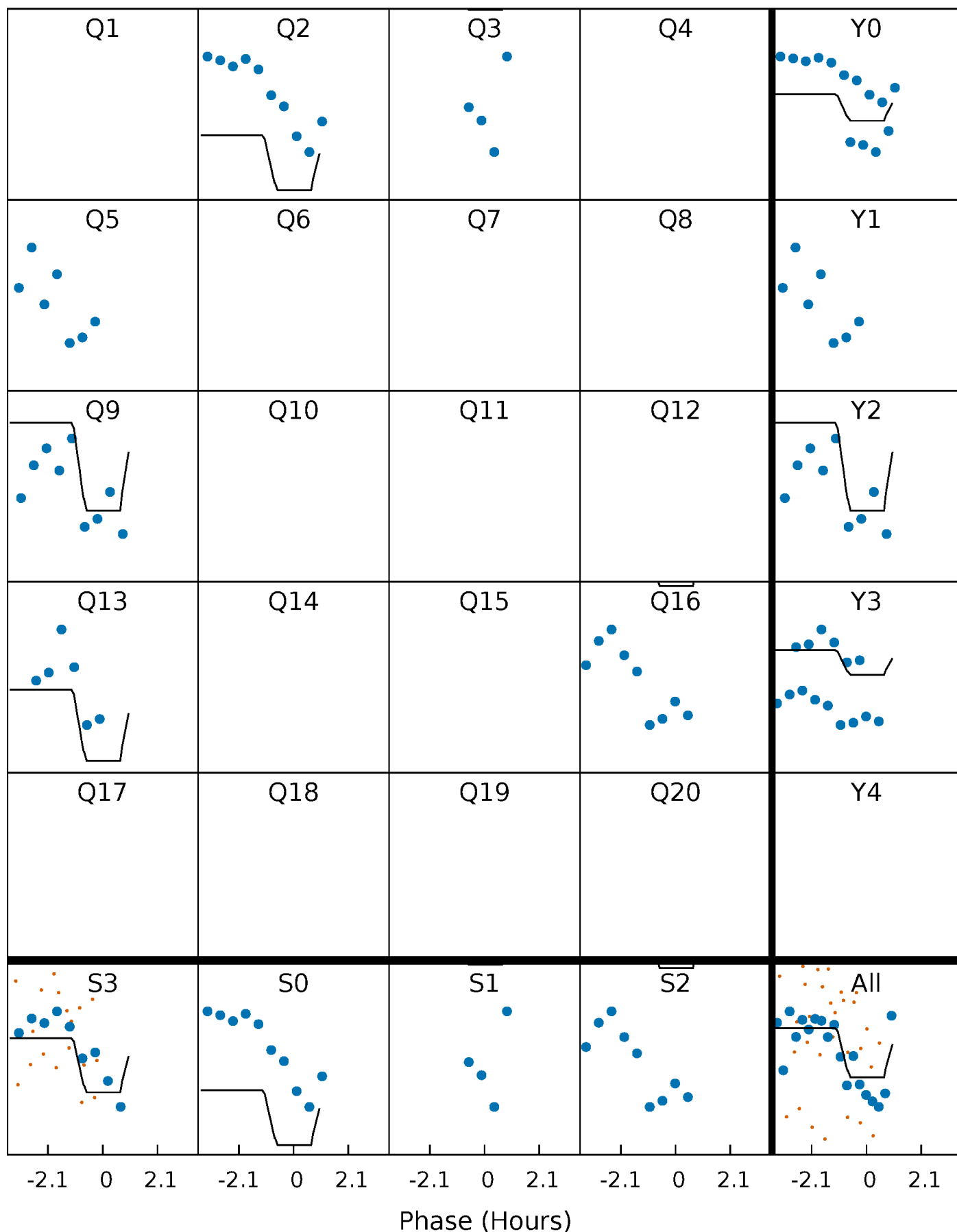
DV Quarter-Phased Transit Curves

TCE 009972385-07 $P = 84.863803$ Days $T_0 = 175.775621$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

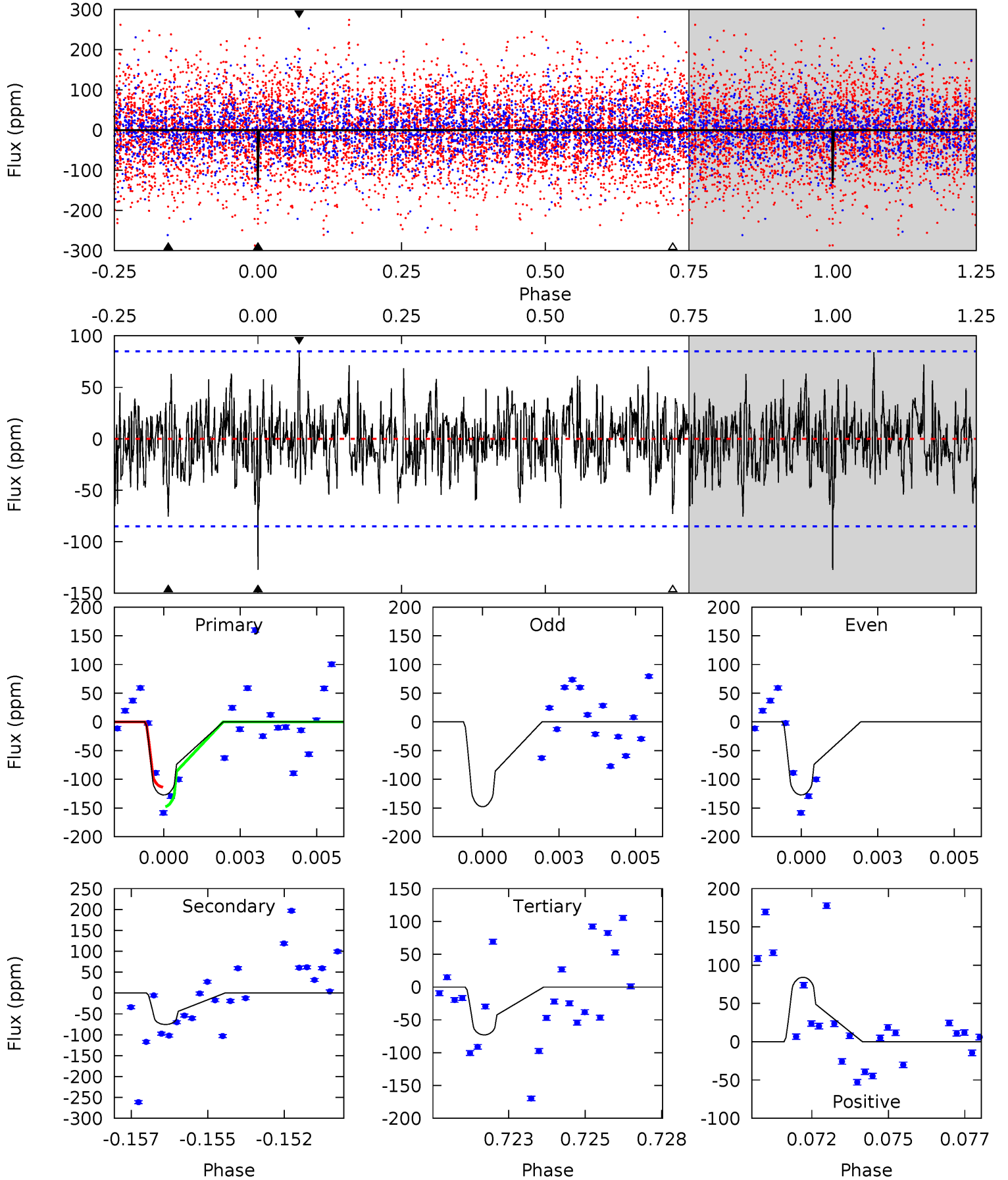
TCE 009972385-07 P= 84.864661 Days $T_0=175.771982$ (BKJD)



DV Model-Shift Uniqueness Test

009972385-07, P = 84.863803 Days, E = 90.911818 Days

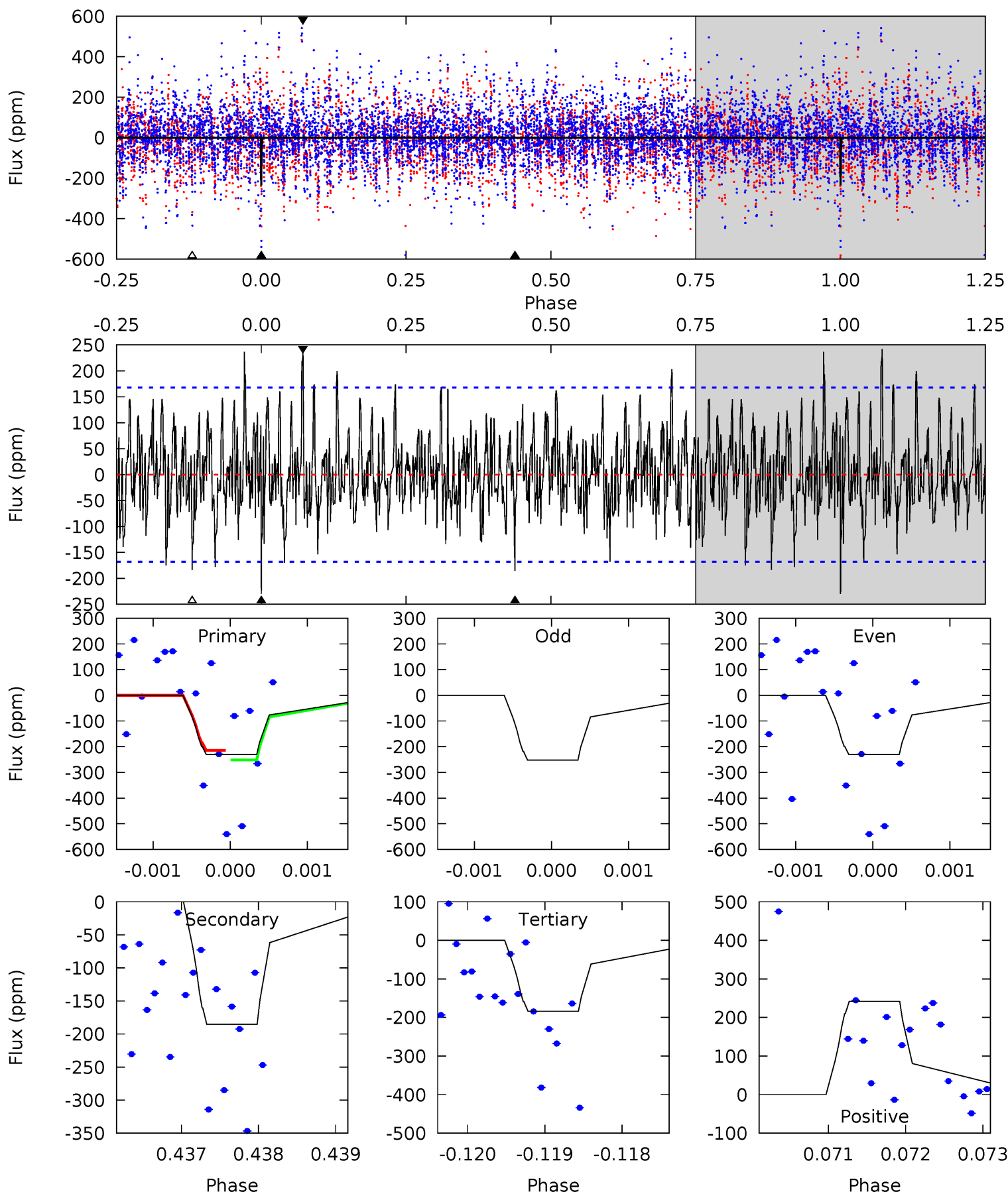
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.90	4.68	4.53	5.22	5.27	3.00	1.40	3.37	2.68	0.15	-0.55	0.67	0.90	0.40	1.02



Alt Model-Shift Uniqueness Test

009972385-07, P = 84.864661 Days, E = 90.907321 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.48	6.02	5.98	7.86	5.46	3.30	1.98	1.50	-0.38	0.04	-1.84	0.36	1.15	0.51	0.59



Stellar Parameters For KIC 009972385

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6313^{+170}_{-170}	$3.922^{+0.323}_{-0.108}$	$-0.680^{+0.350}_{-0.250}$	$1.820^{+0.391}_{-0.587}$	$1.009^{+0.161}_{-0.145}$	$0.236^{+0.462}_{-0.087}$
	+3%/-3%	+8%/-3%	+51%/-37%	+21%/-32%	+16%/-14%	+196%/-37%
Source	PHO1	FLK73	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 009972385-07 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-75 ± 16	$4.25^{+3.95}_{-2.78}$	839^{+52}_{-83}	4175^{+2290}_{-849}	329^{+2289}_{-244}
Alt.	-185 ± 31	$4.55^{+4.58}_{-3.12}$	838^{+53}_{-75}	4818^{+3788}_{-1057}	716^{+6072}_{-536}

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 $A_{obs} \gg 1.0$

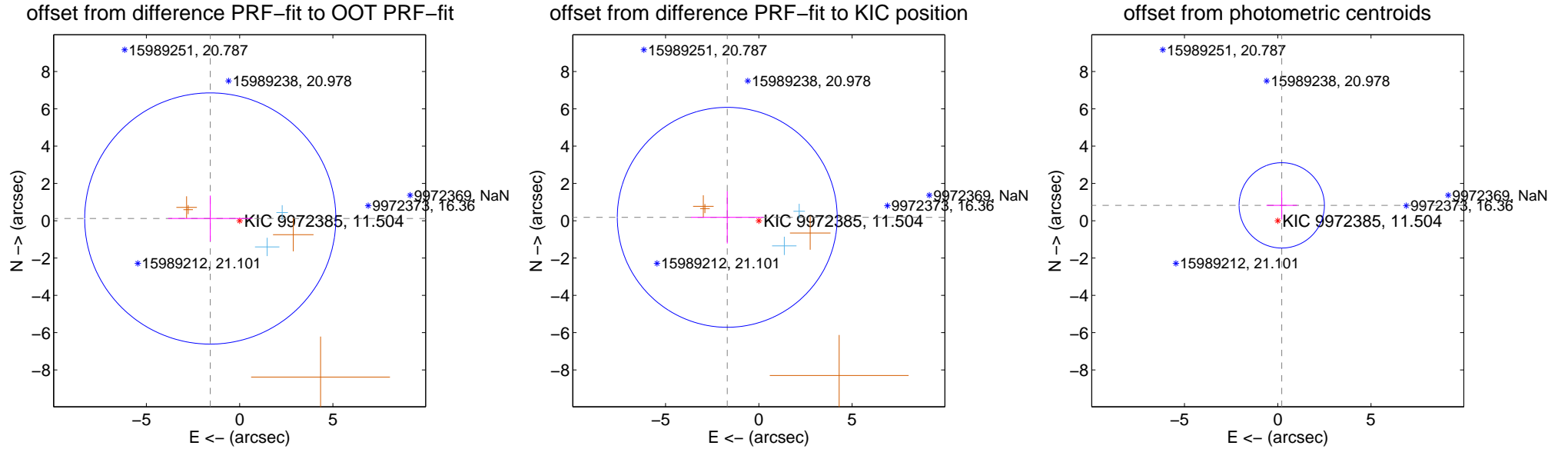
DV Centroid Data

Supplemental centroid analysis for 009972385-07. **Kepler magnitude: 11.50.** Transit SNR 7.77

There are 2 quarters with good PRF difference image offsets

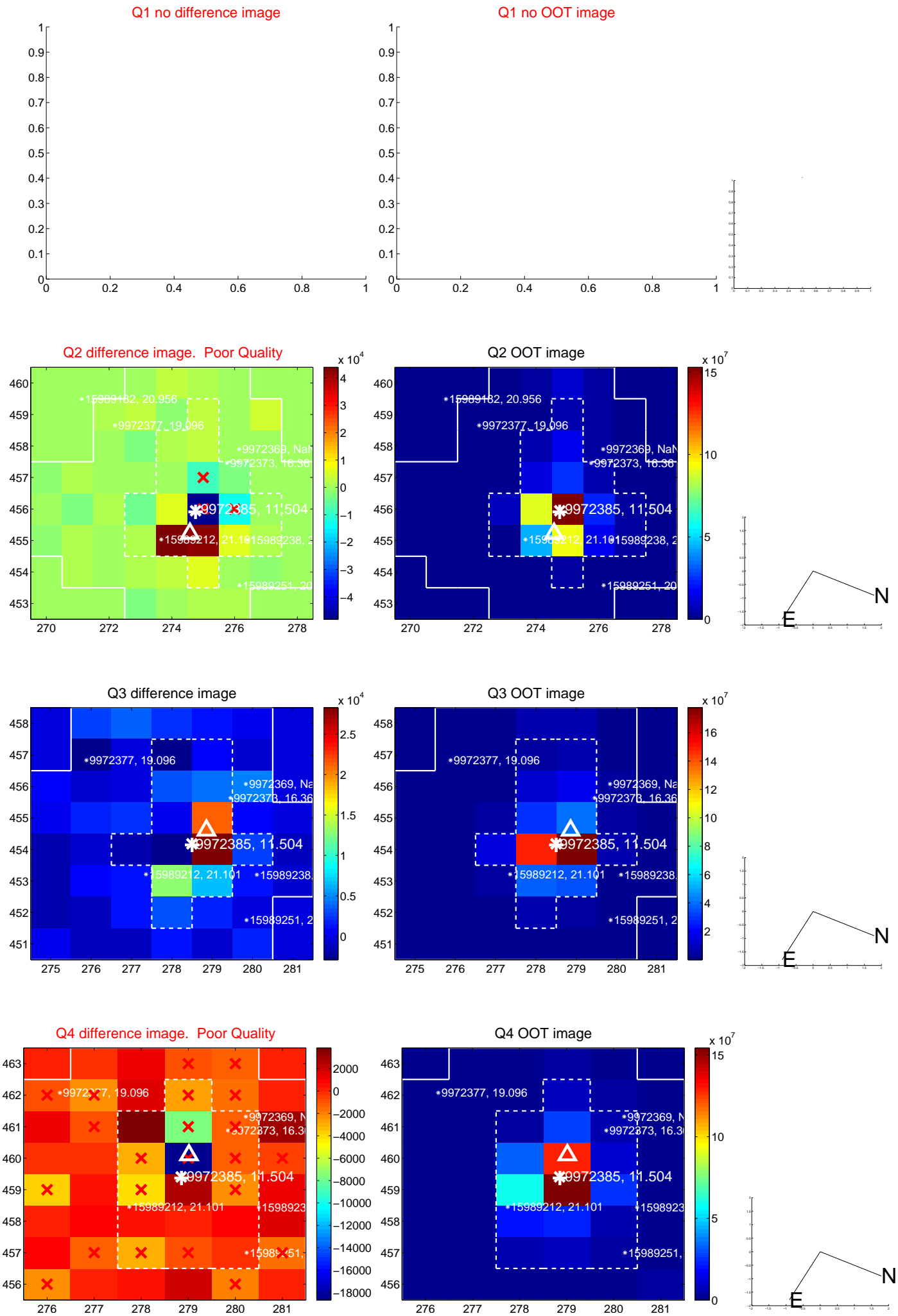
The direct PRF centroid is offset from the target star catalog position by about 0.25 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.579 ± 2.245	0.70	1.574 ± 2.257	0.120 ± 1.226
PRF-fit source offset from KIC position	1.703 ± 1.965	0.87	1.693 ± 1.942	0.183 ± 1.403
photometric centroid source offset	0.85 ± 0.76	1.12	-0.21 ± 0.82	0.82 ± 0.76

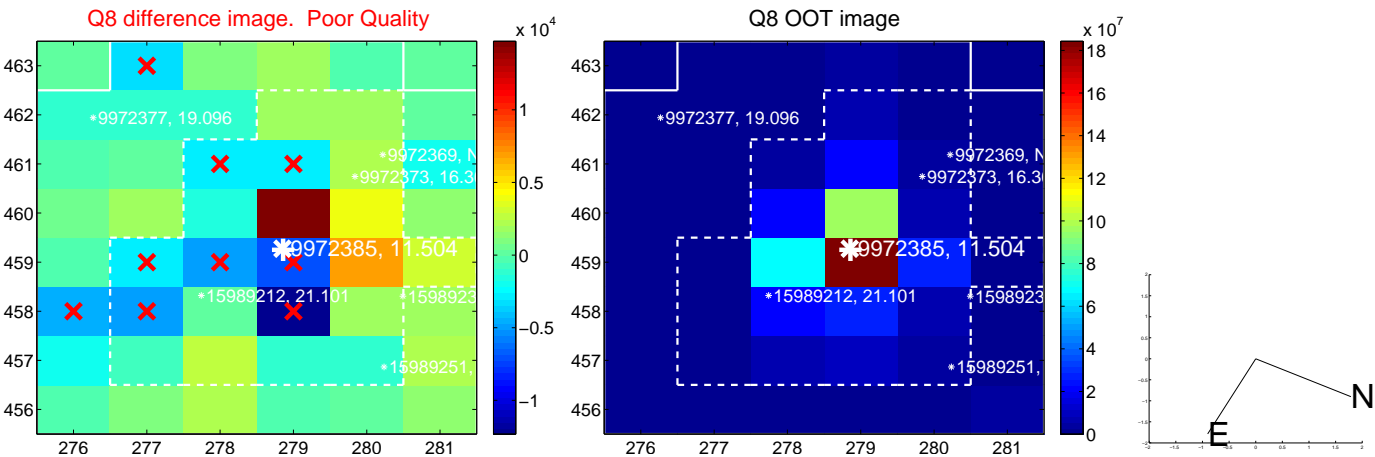
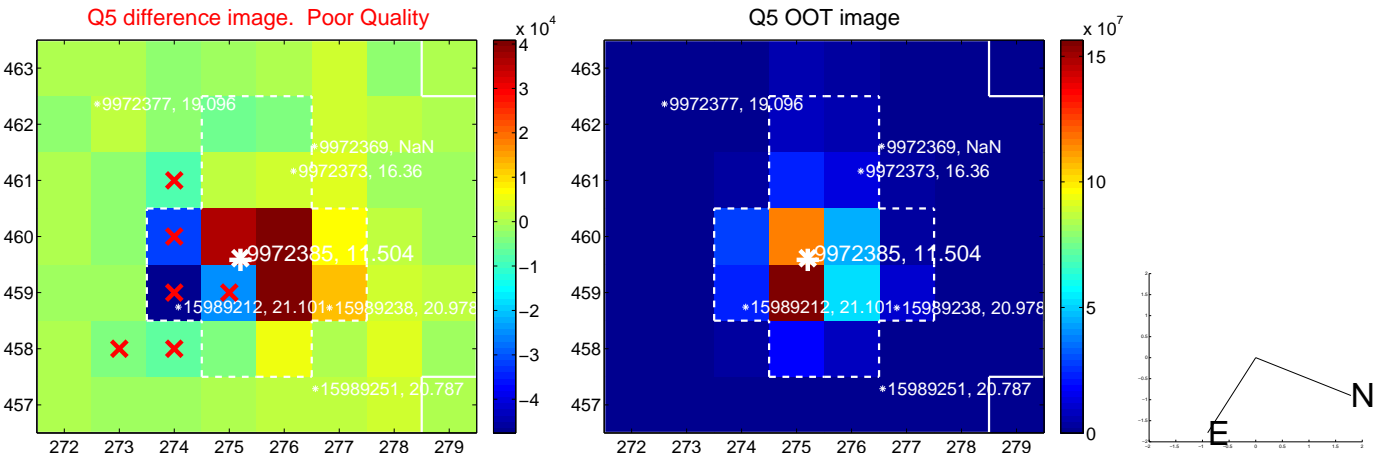


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ . Red *: target star. Blue *: Other stars. Text next to a star gives its KIC ID and kepmag. KIC IDs > 15,000,000 are from the UKIRT catalog.

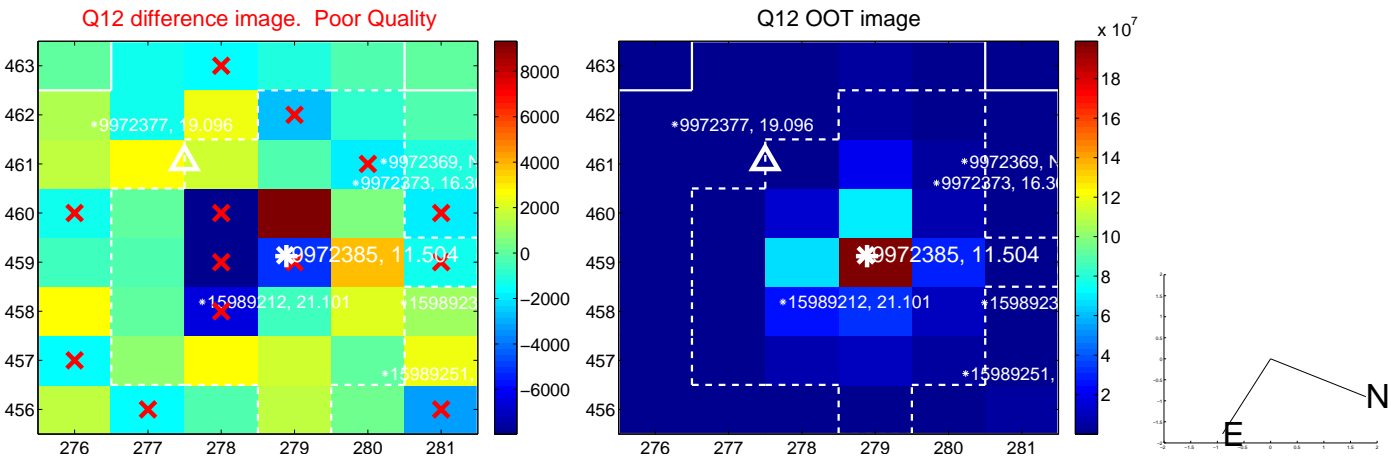
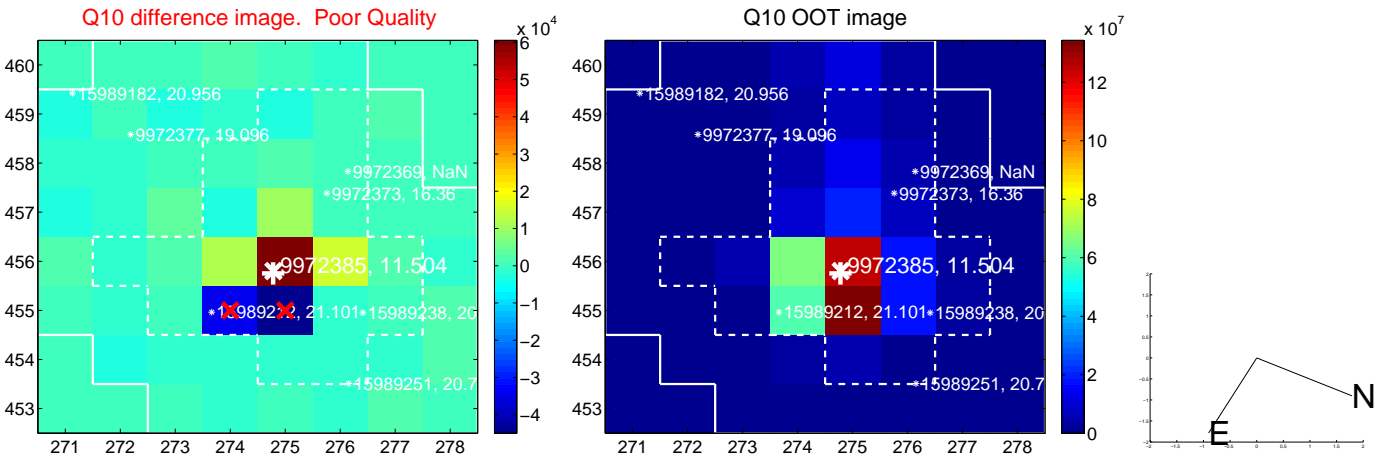
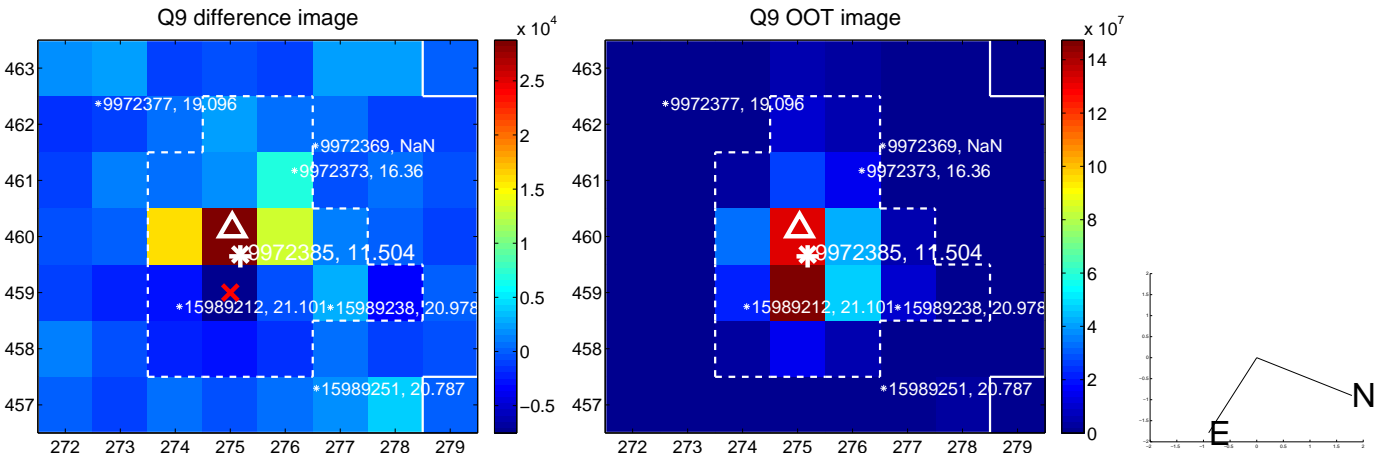
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



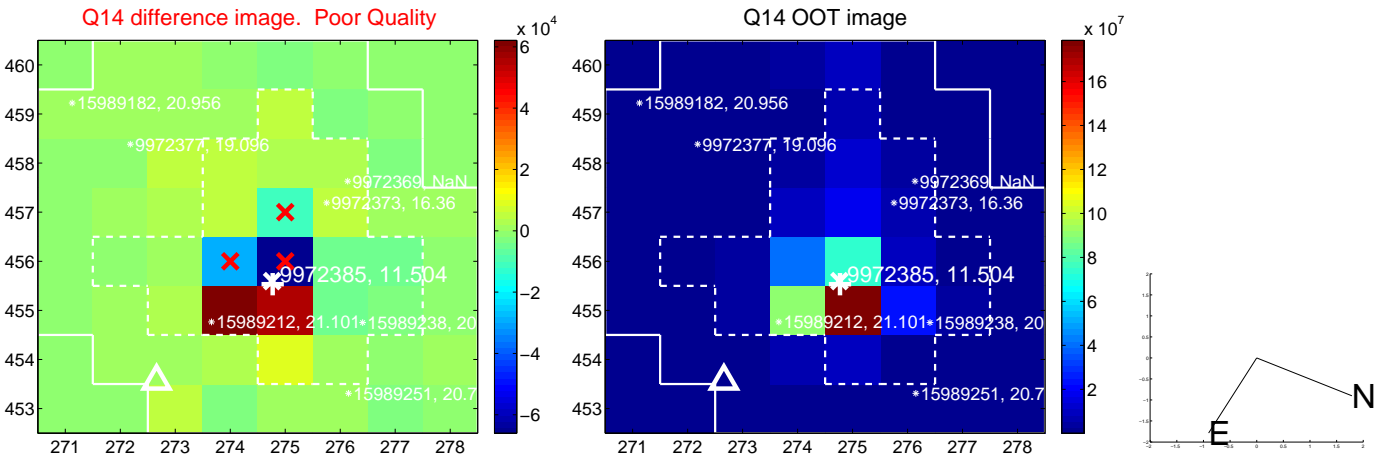
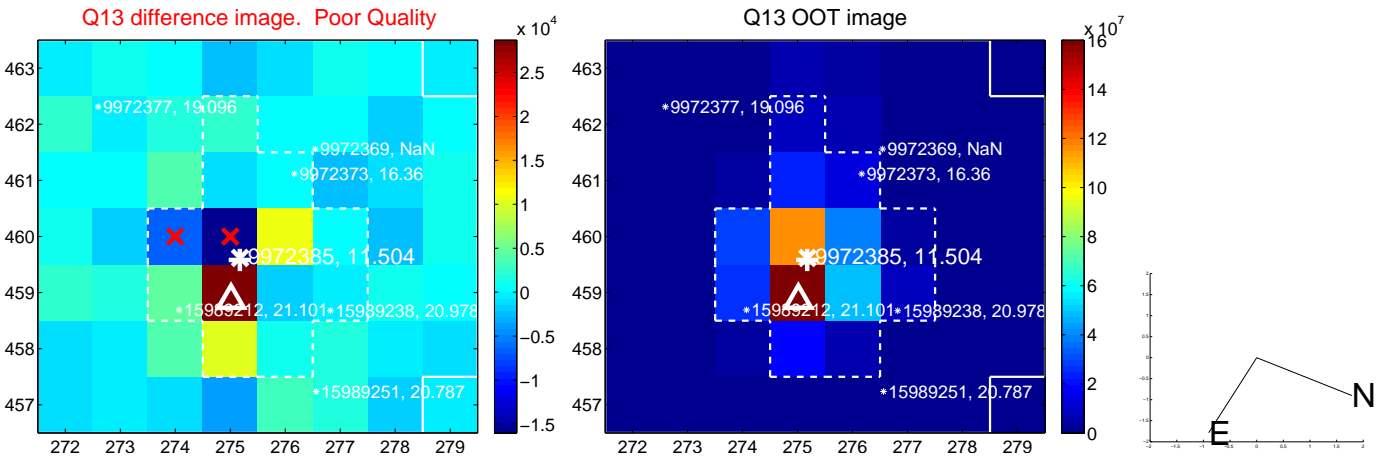
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



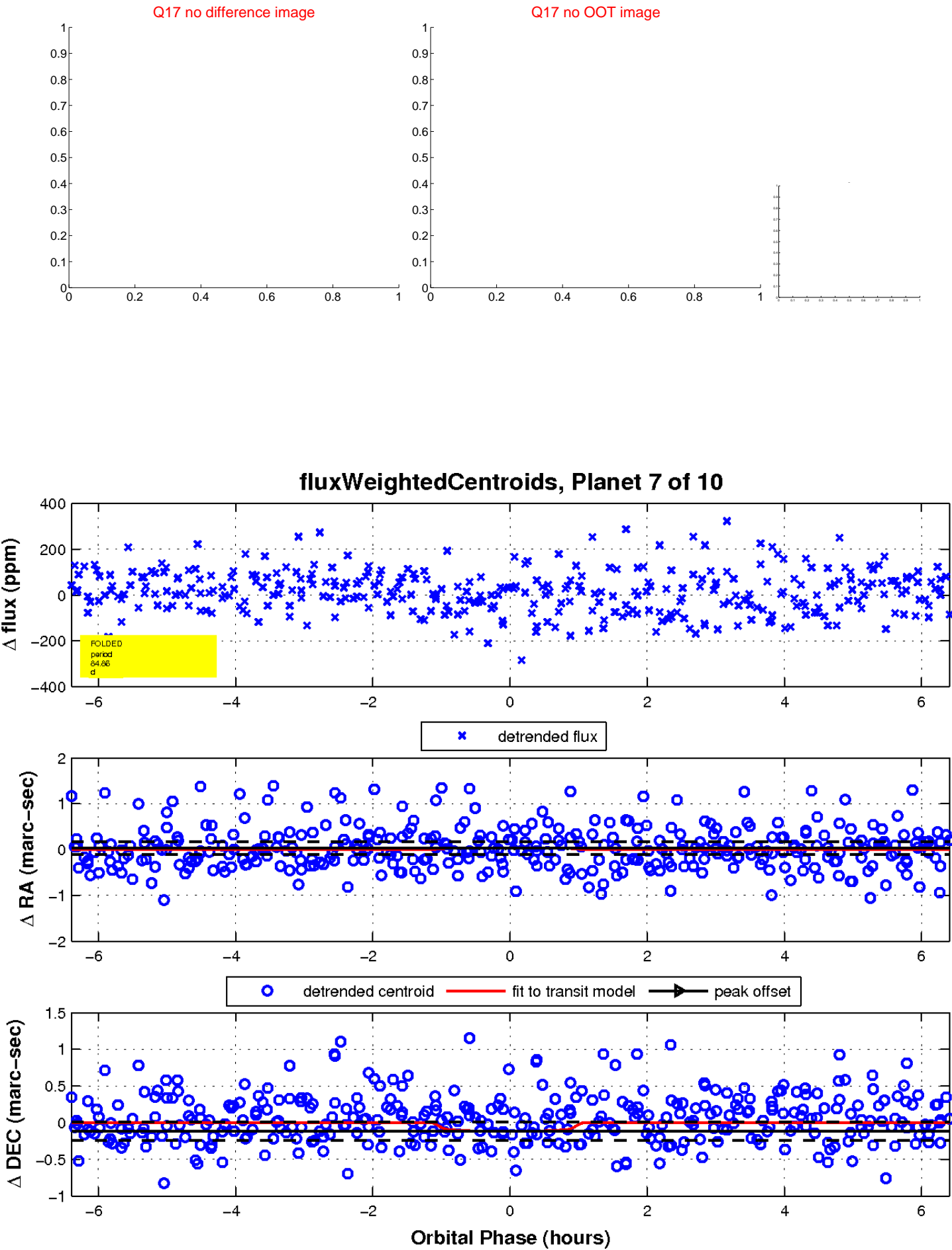
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

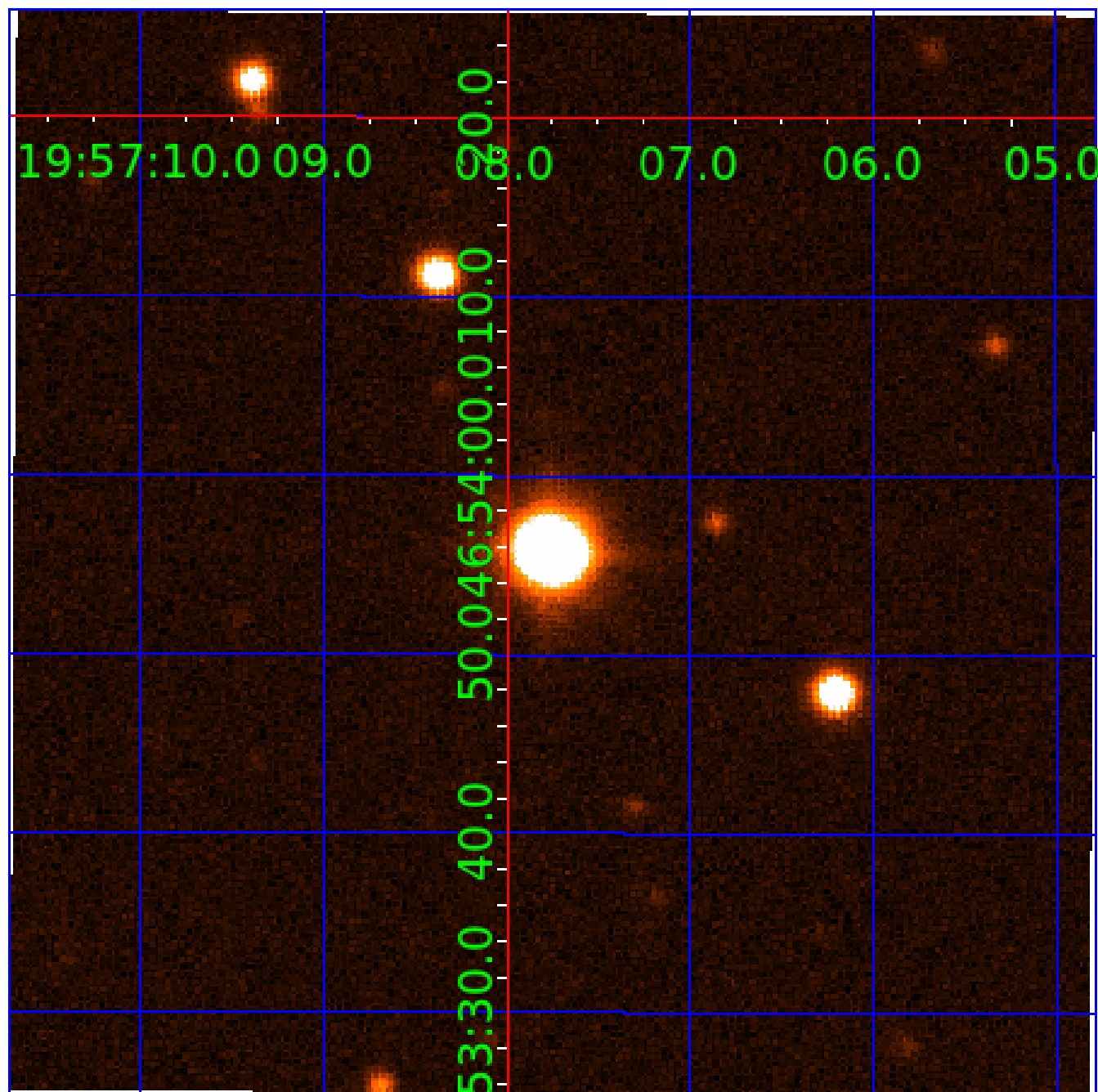


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009972385

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})
009972385-01	OBS	No	58.420909	188.641311	888.3	14.666	43.0	47.5	1.82	6313	10.28	53.92
009972385-02	OBS	No	3.377783	134.244452	52.7	11.222	10.9	12.8	1.82	6313	2.58	2411.99
009972385-03	OBS	No	3.377690	132.286709	27.7	5.907	9.8	10.9	1.82	6313	1.13	2412.08
009972385-04	OBS	No	3.377988	133.026671	25.5	4.744	9.8	10.9	1.82	6313	1.03	2411.80
009972385-05	OBS	No	33.321012	149.739066	24.5	11.846	11.2	1.5	1.82	6313	1.05	114.01
009972385-06	OBS	No	123.877607	192.039254	388.5	27.425	9.2	9.0	1.82	6313	5.06	19.80
009972385-07	OBS	No	84.863803	175.775621	164.1	2.141	7.7	7.8	1.82	6313	2.67	32.78
009972385-08	OBS	No	44.313913	141.982351	121.6	4.609	7.6	7.2	1.82	6313	2.32	77.95
009972385-09	OBS	No	45.629158	166.537092	131.9	7.990	7.5	7.3	1.82	6313	2.40	74.97
009972385-10	OBS	No	23.229243	149.885894	73.0	5.734	7.7	5.9	1.82	6313	1.72	184.43

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009972385-01	OBS	FP	0.00	1	0	0	0	LPP_DV
009972385-02	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—MOD_NONUNIQ_DV
009972385-03	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD
009972385-04	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—SAME_NTL_PERIOD
009972385-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
009972385-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
009972385-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_MEAS
009972385-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_UNCERTAIN
009972385-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
009972385-10	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—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.

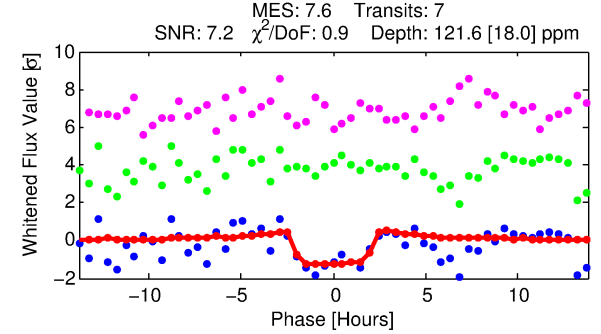
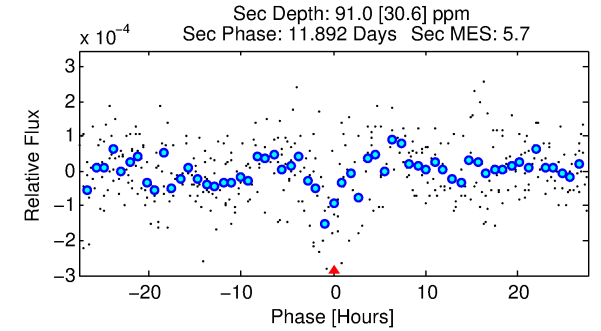
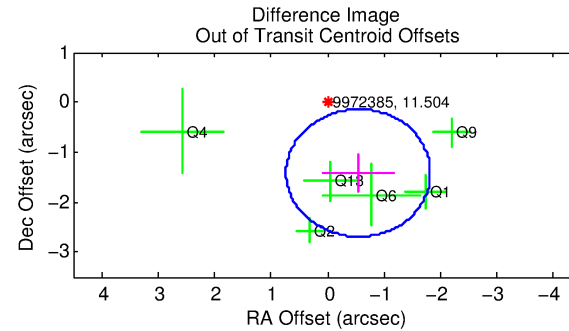
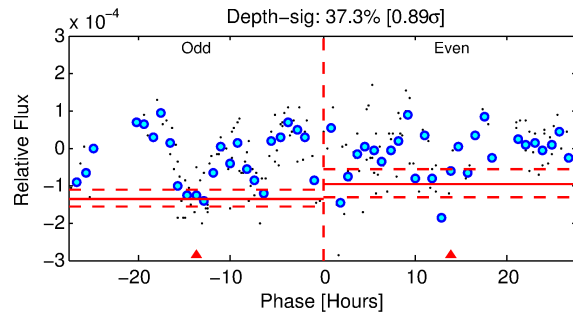
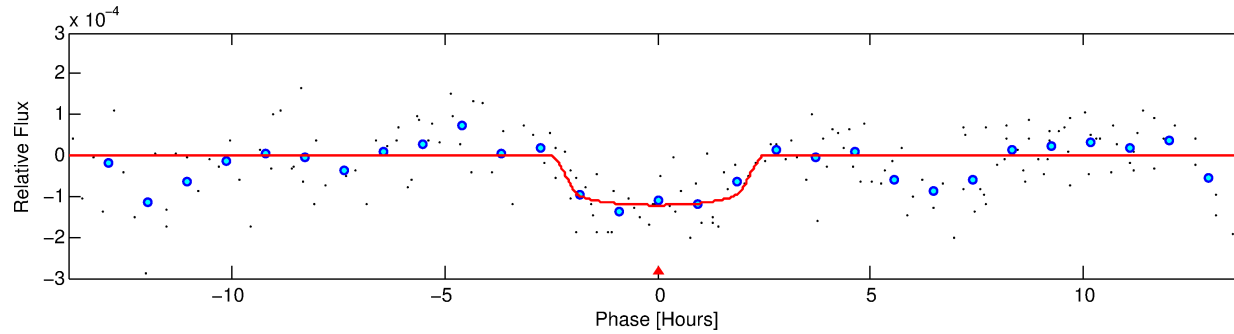
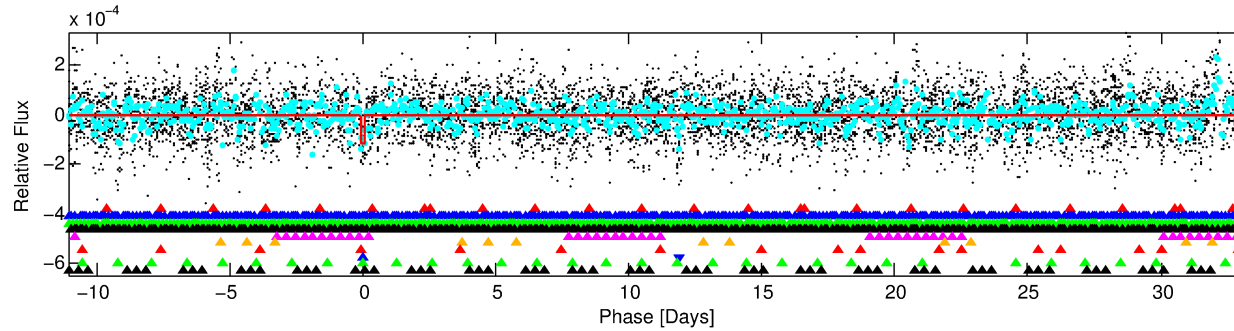
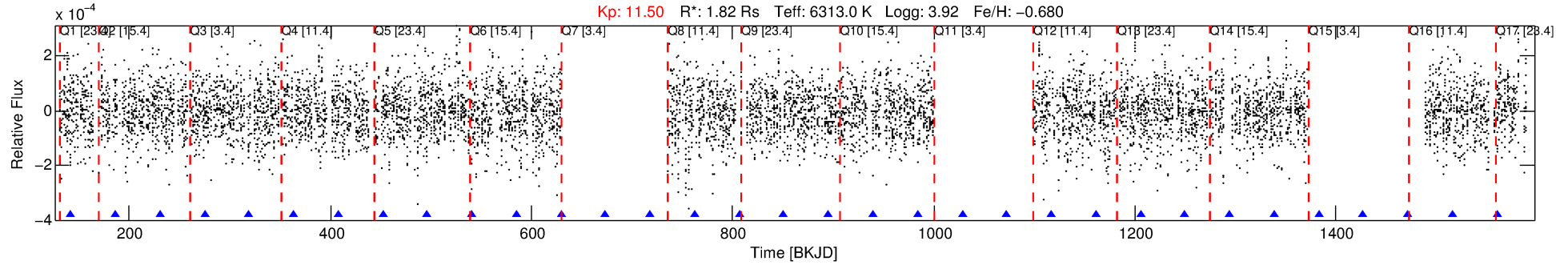
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009972385-08

No Significant Match Found

DV One-Page Summary

KIC: 9972385 Candidate: 8 of 10 Period: 44.314 d



DV Fit Results:

Period = 44.31391 [0.00066] d
Epoch = 141.9824 [0.0105] BKJD
Rp/R* = 0.0117 [0.0050]
a/R* = 35.97 [85.76]
b = 0.89 [0.59]
Seff = 77.95 [42.96]
Teq = 758 [104] K
Rp = 2.32 [1.25] Re
a = 0.2459 [0.0807] AU
Ag = 562.90 [603.39] [0.93 σ]
Teffp = 5706 [1329] K [3.71 σ]

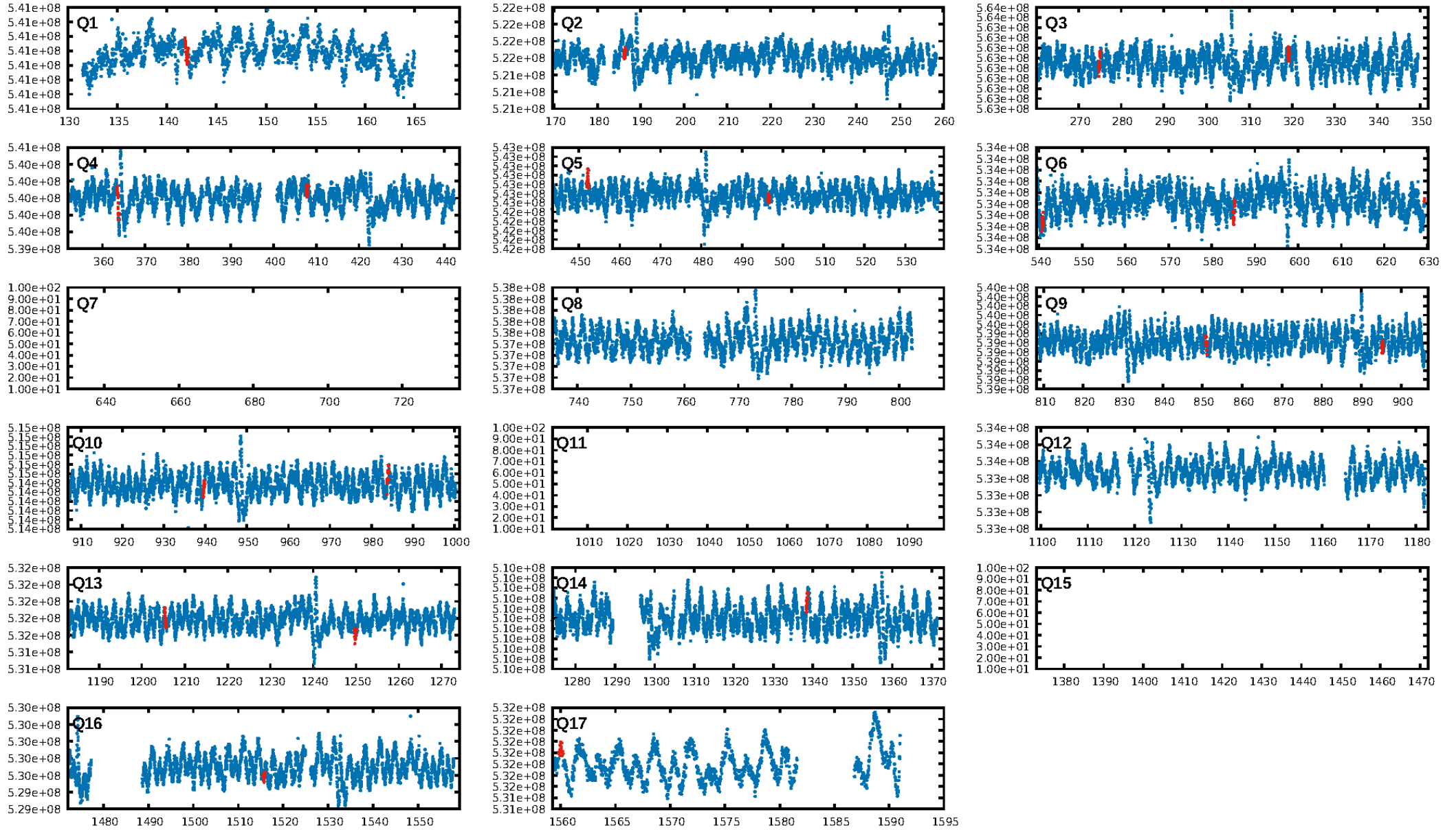
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [20.76 σ]
LongPeriod-sig: 99.9% [3.42 σ]
ModelChiSquare2-sig: 91.5%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 1.04e-07
RollingBand-fgt: 1.00 [6/6]
GhostDiagnostic-chr: 0.2593
Centroid-sig: 71.4%
Centroid-so: 0.439 arcsec [0.67 σ]
OotOffset-rm: 1.517 arcsec [3.57 σ]
KicOffset-rm: 1.407 arcsec [3.52 σ]
OotOffset-st: 2/0/1/3 [6]
KicOffset-st: 2/0/1/3 [6]
DiffImageQuality-fgm: 0.83 [5/6]
DiffImageOverlap-fno: 0.11 [1/9]

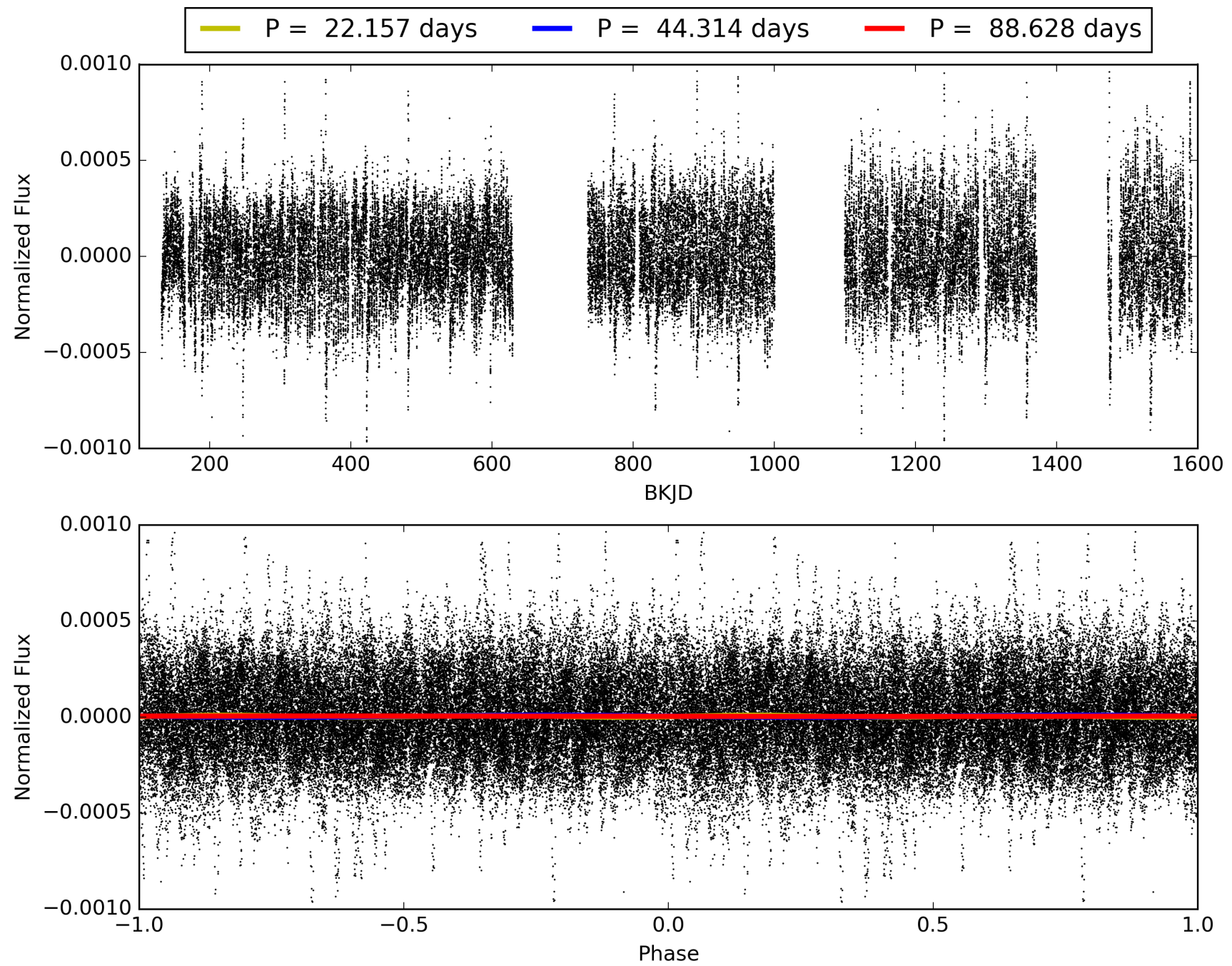
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 17:09:19 Z

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

TCE 009972385-08, PDC Light Curves

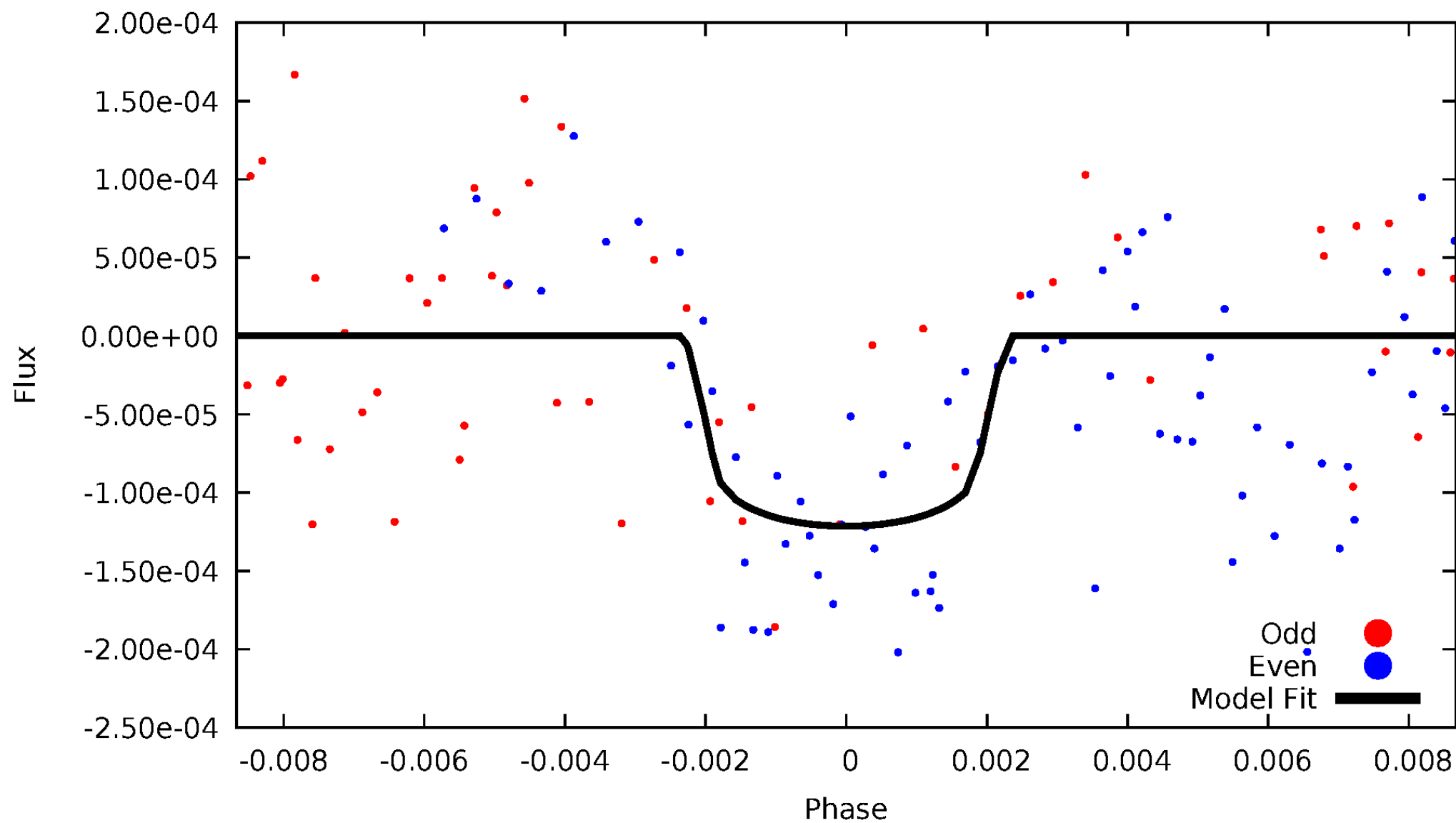


TCE 009972385-08



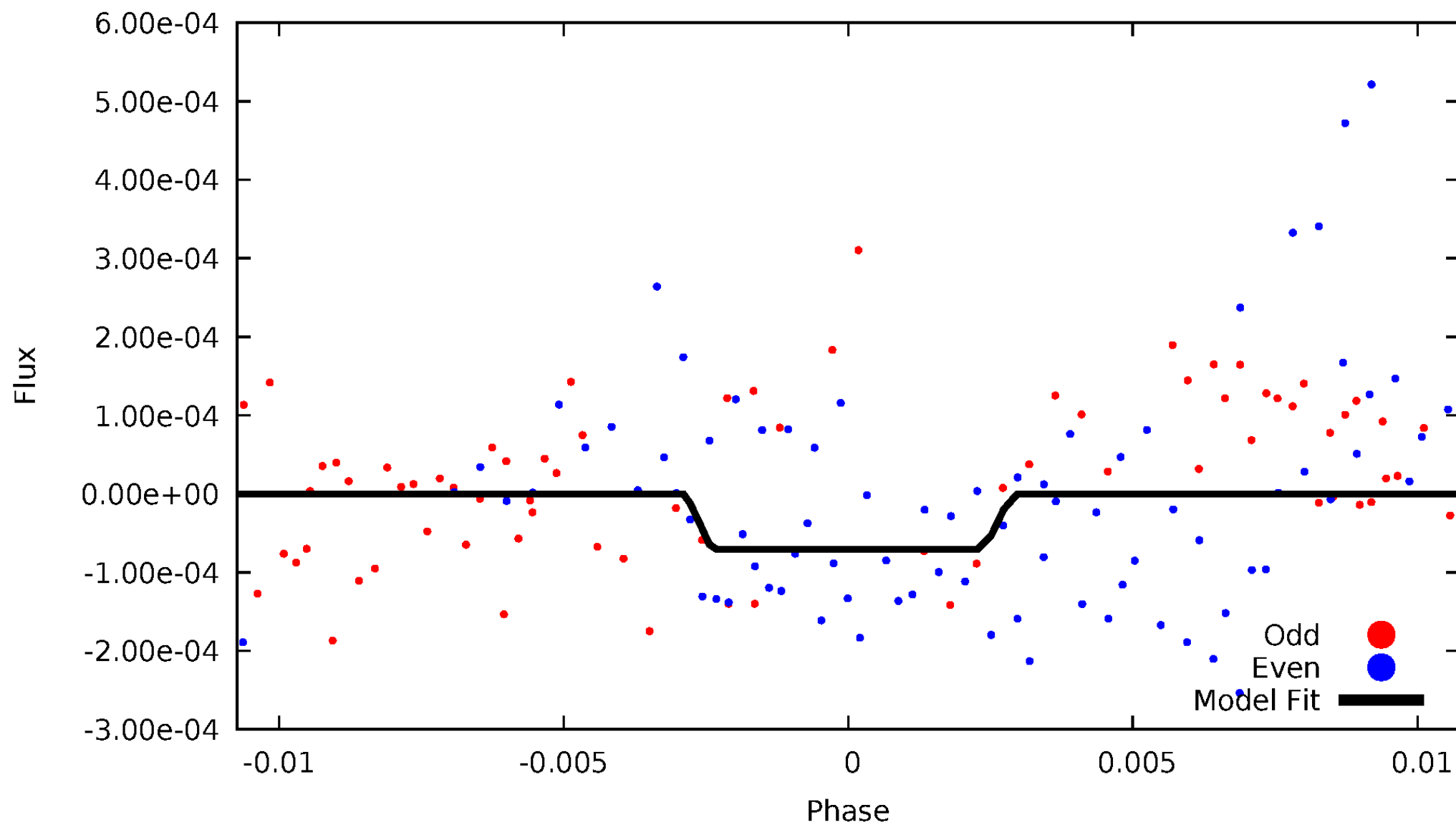
DV Odd/Even

TCE 009972385-08



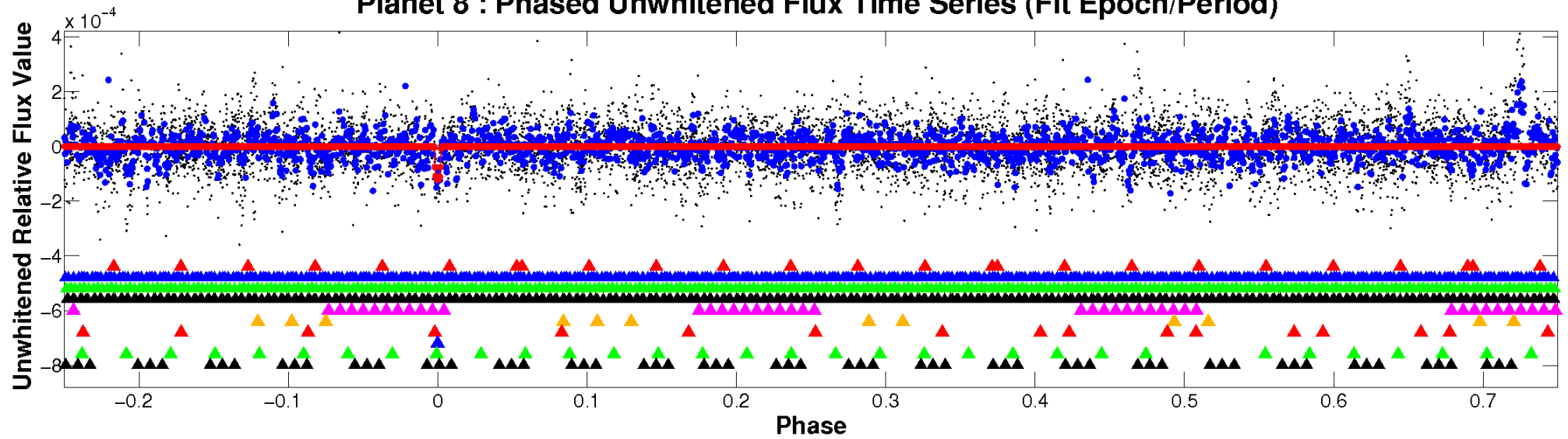
ALT Odd/Even

TCE 009972385-08

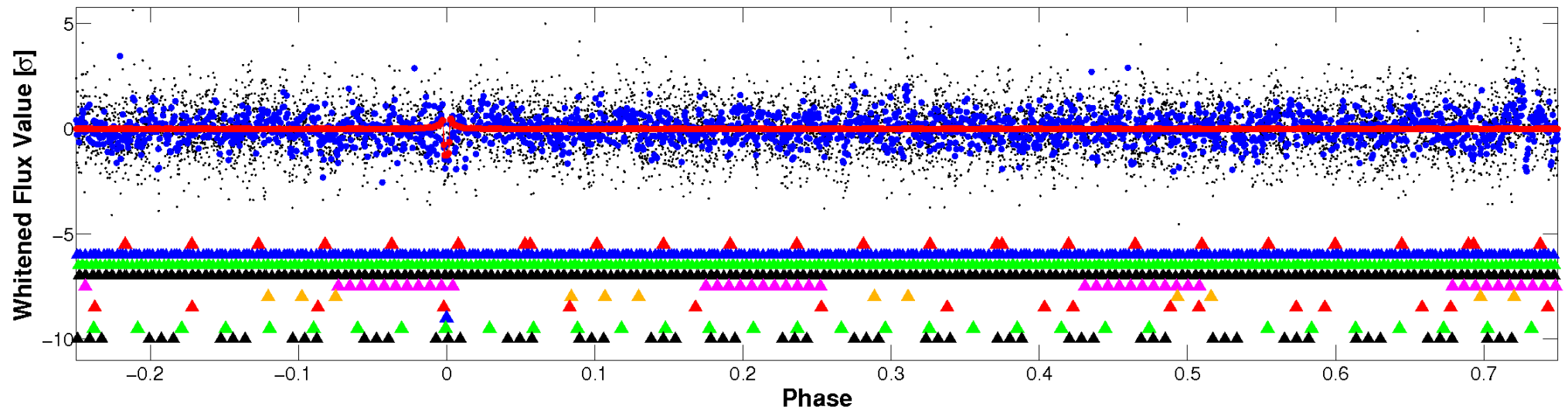


Non-Whitened Vs. Whitened Light Curve

Planet 8 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

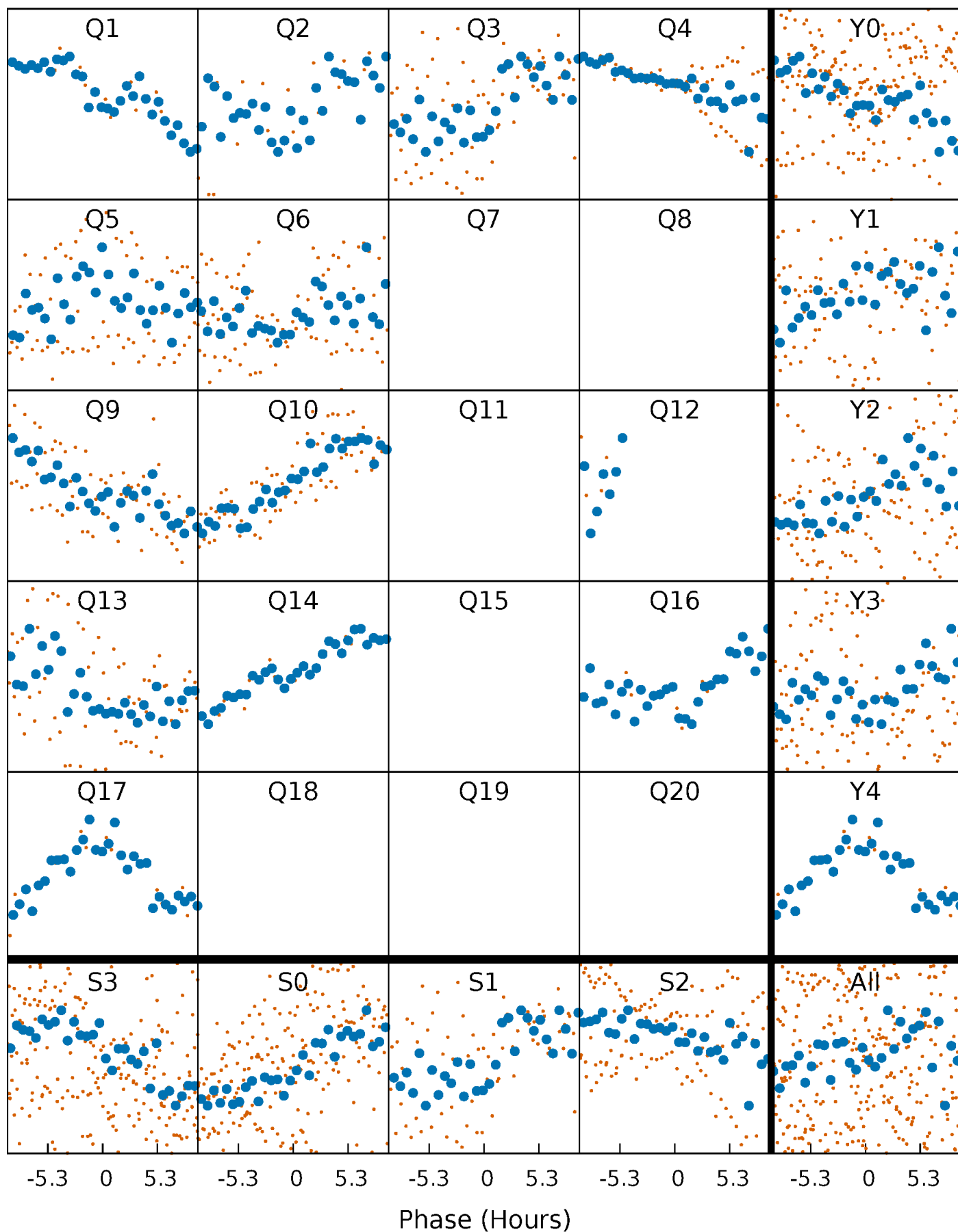


Planet 8 : Phased Whitened Flux Time Series (Fit Epoch/Period)



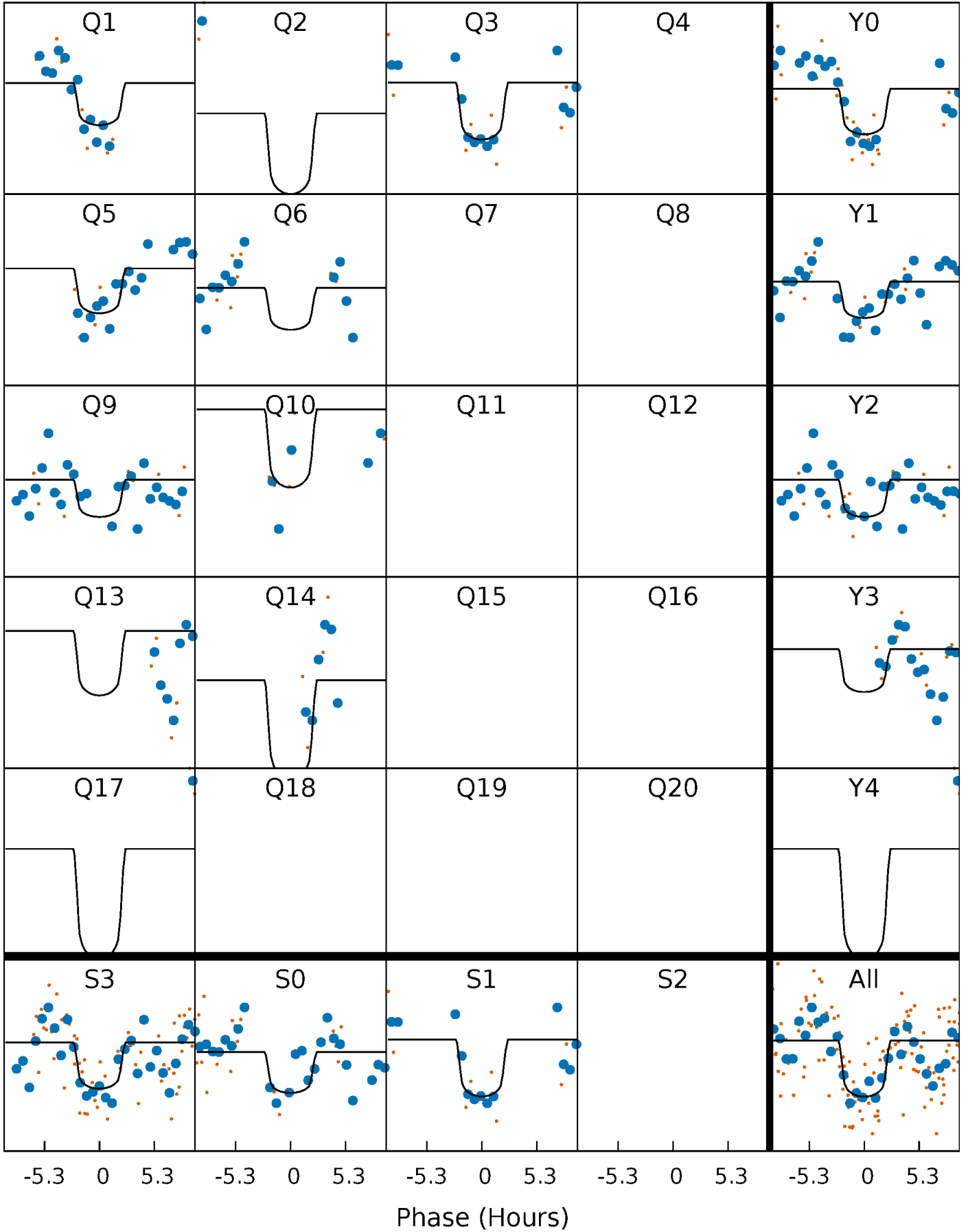
PDC Quarter-Phased Transit Curves

TCE 009972385-08 P= 44.313913 Days $T_0=141.982351$ (BKJD)



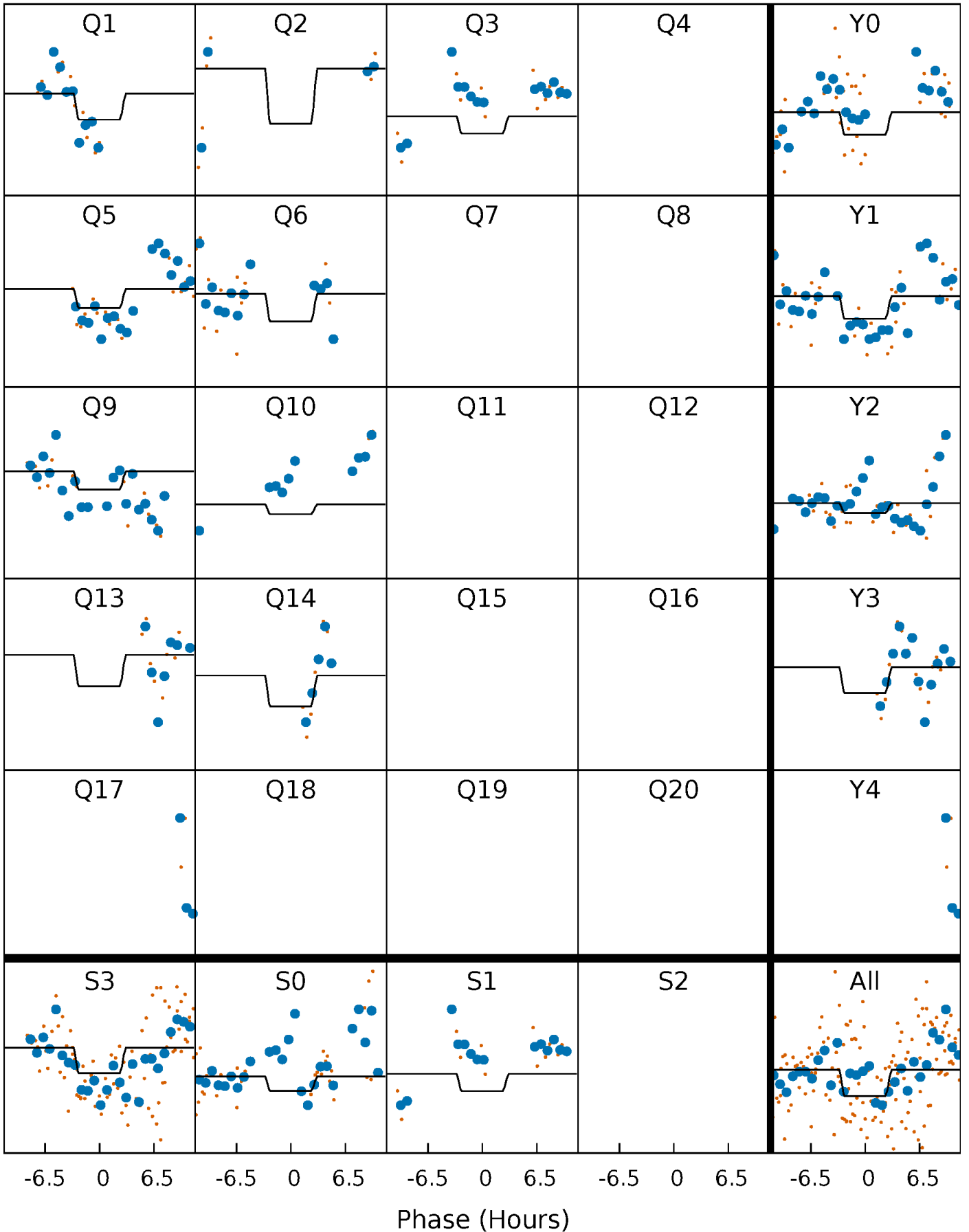
DV Quarter-Phased Transit Curves

TCE 009972385-08 P= 44.313913 Days $T_0=141.982351$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

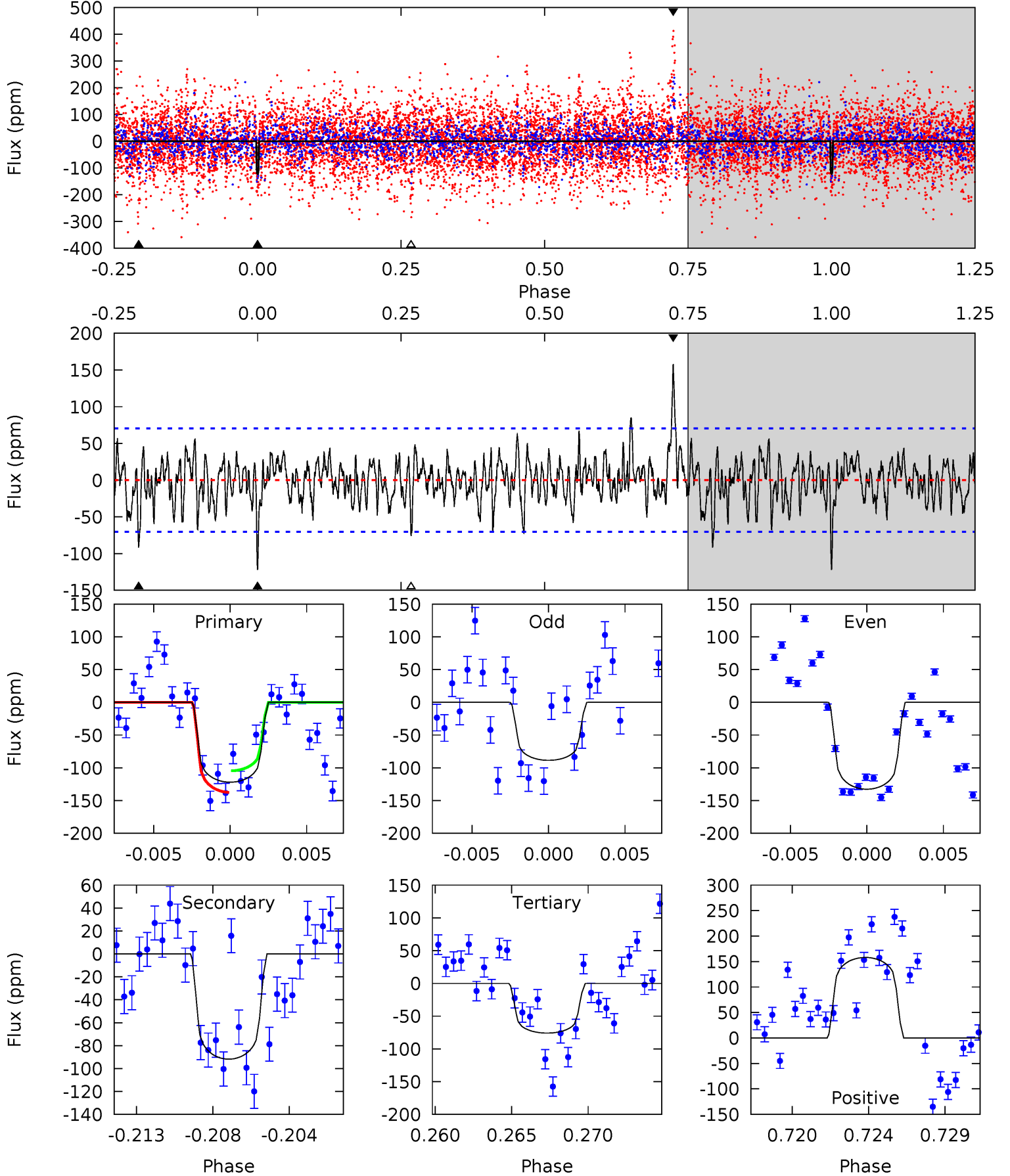
TCE 009972385-08 P= 44.311540 Days $T_0=142.035894$ (BKJD)



DV Model-Shift Uniqueness Test

009972385-08, P = 44.313913 Days, E = 97.668438 Days

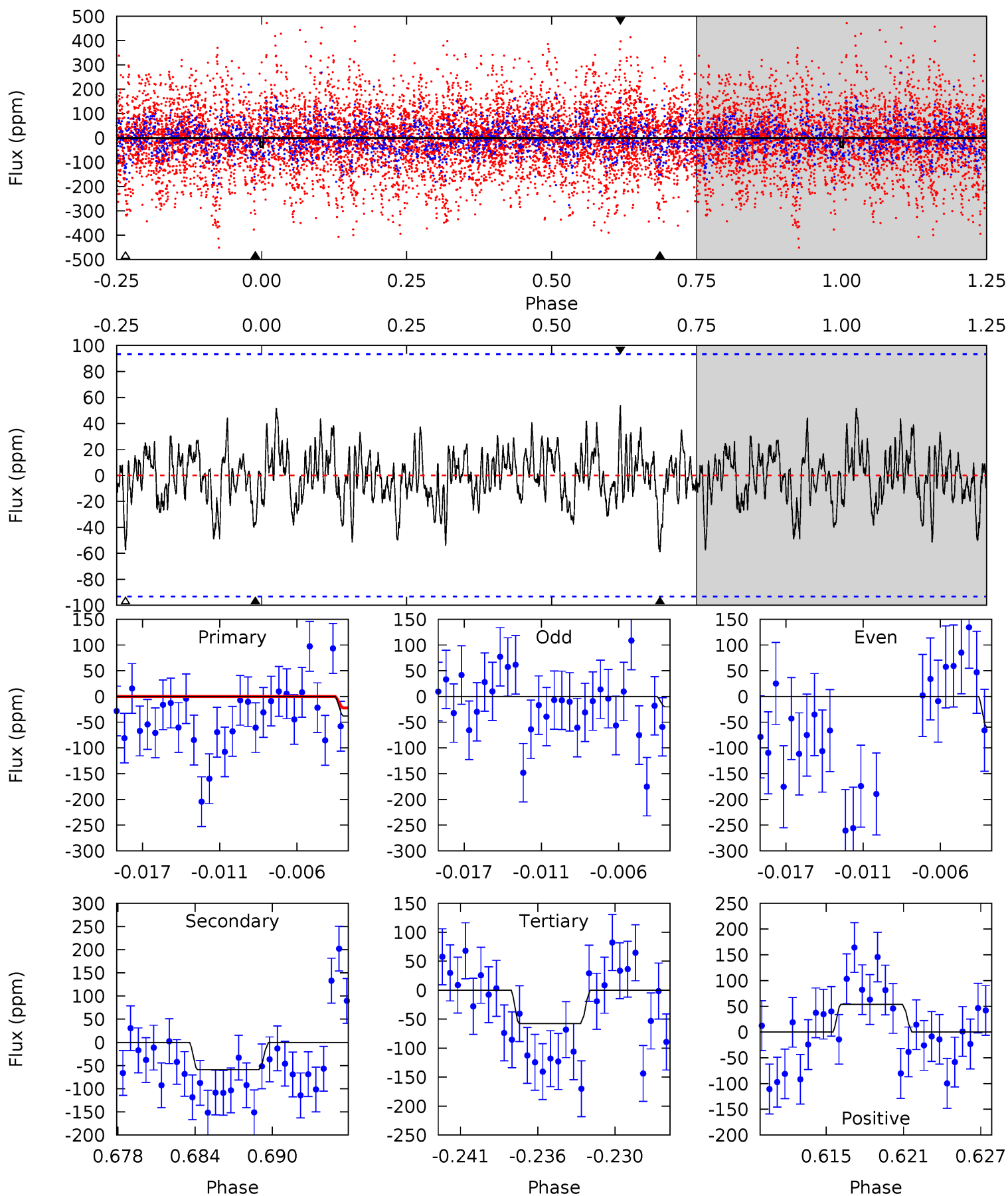
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.96	6.74	5.57	11.6	5.17	2.82	1.89	3.38	-2.65	1.17	-4.86	1.47	0.90	0.56	1.21



Alt Model-Shift Uniqueness Test

009972385-08, P = 44.311540 Days, E = 97.724354 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2.09	3.24	3.16	2.96	5.13	2.76	0.96	-1.07	-0.88	0.08	0.28	0.96	0.39	0.48	1.12



Stellar Parameters For KIC 009972385

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6313^{+170}_{-170}	$3.922^{+0.323}_{-0.108}$	$-0.680^{+0.350}_{-0.250}$	$1.820^{+0.391}_{-0.587}$	$1.009^{+0.161}_{-0.145}$	$0.236^{+0.462}_{-0.087}$
	+3%/-3%	+8%/-3%	+51%/-37%	+21%/-32%	+16%/-14%	+196%/-37%
Source	PHO1	FLK73	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 009972385-08 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-92 ± 14	$2.17^{+1.04}_{-0.94}$	1038^{+67}_{-94}	5724^{+1836}_{-866}	663^{+1402}_{-366}
Alt.	-59 ± 18	$1.56^{+1.08}_{-0.79}$	1040^{+64}_{-92}	5990^{+3143}_{-1216}	791^{+2699}_{-517}

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 $A_{obs} \gg 1.0$

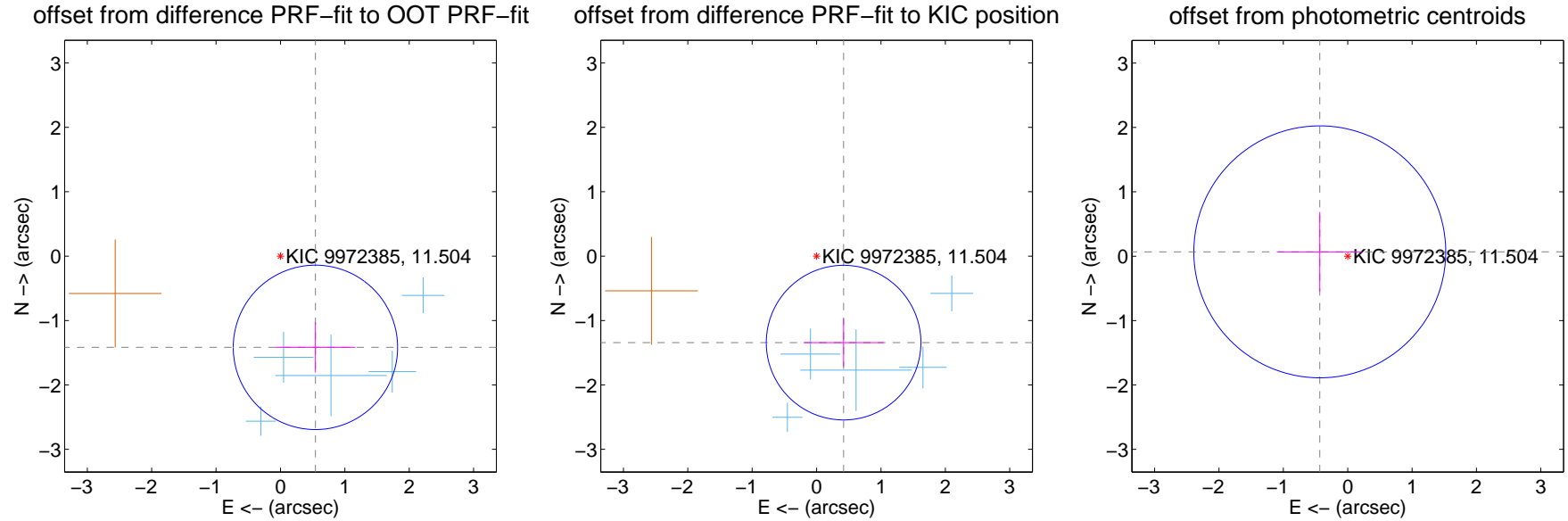
DV Centroid Data

Supplemental centroid analysis for 009972385-08. **Kepler magnitude: 11.50**. Transit SNR 7.23

There are 5 quarters with good PRF difference image offsets

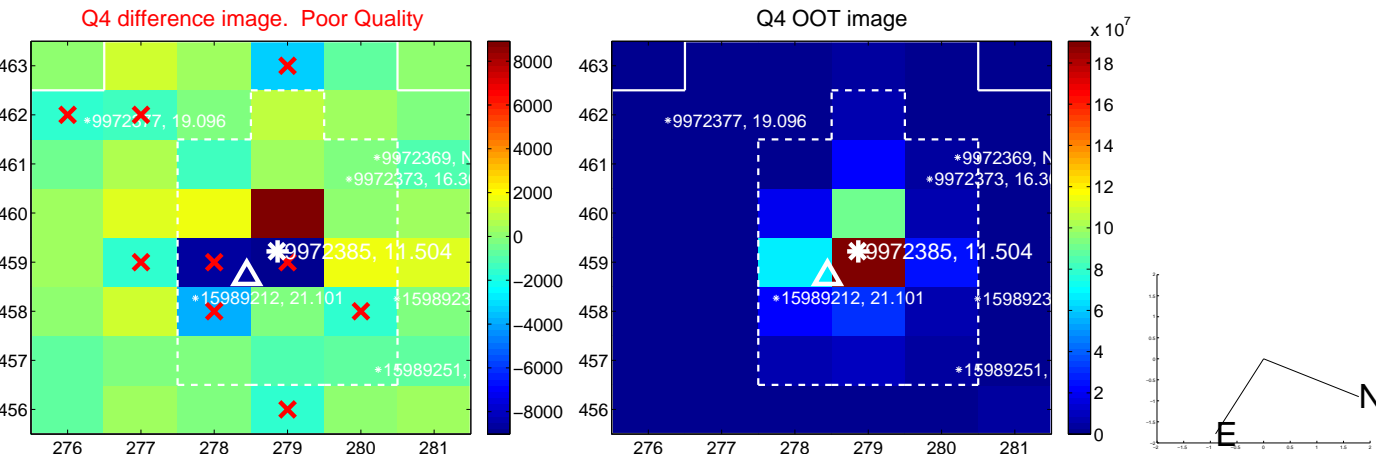
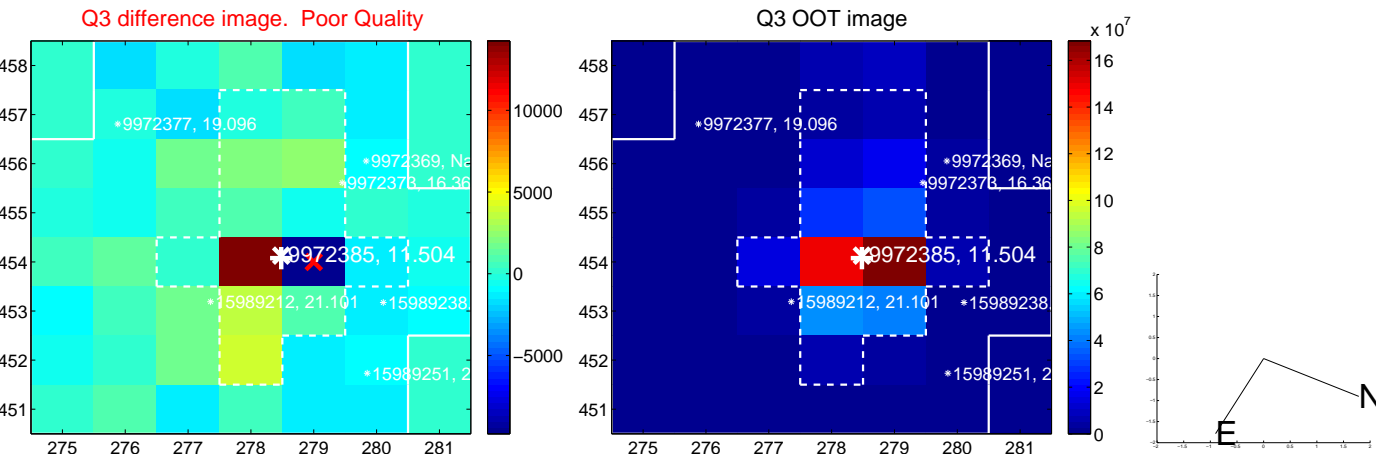
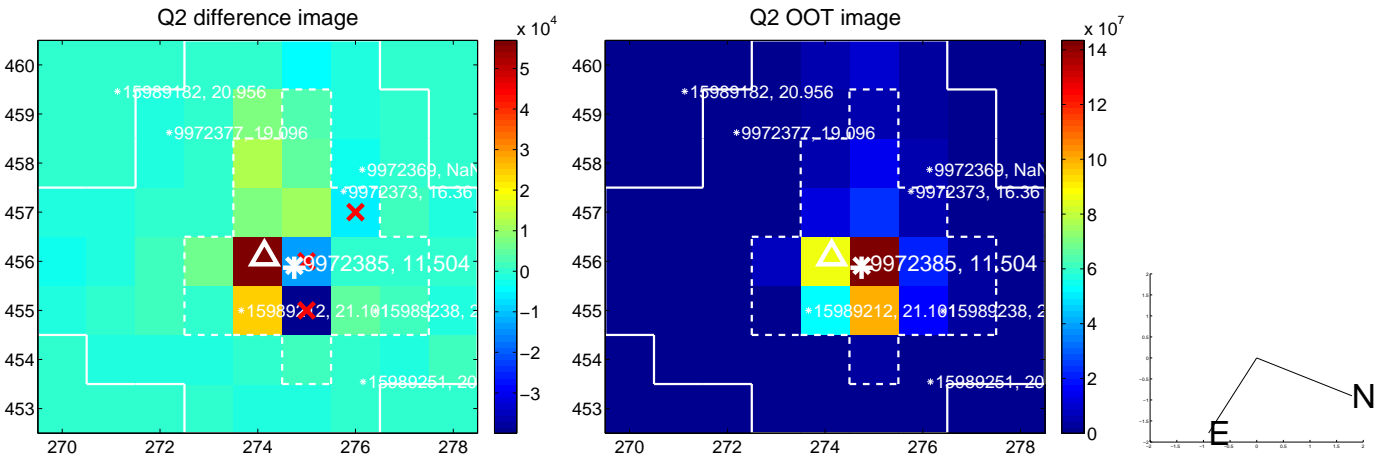
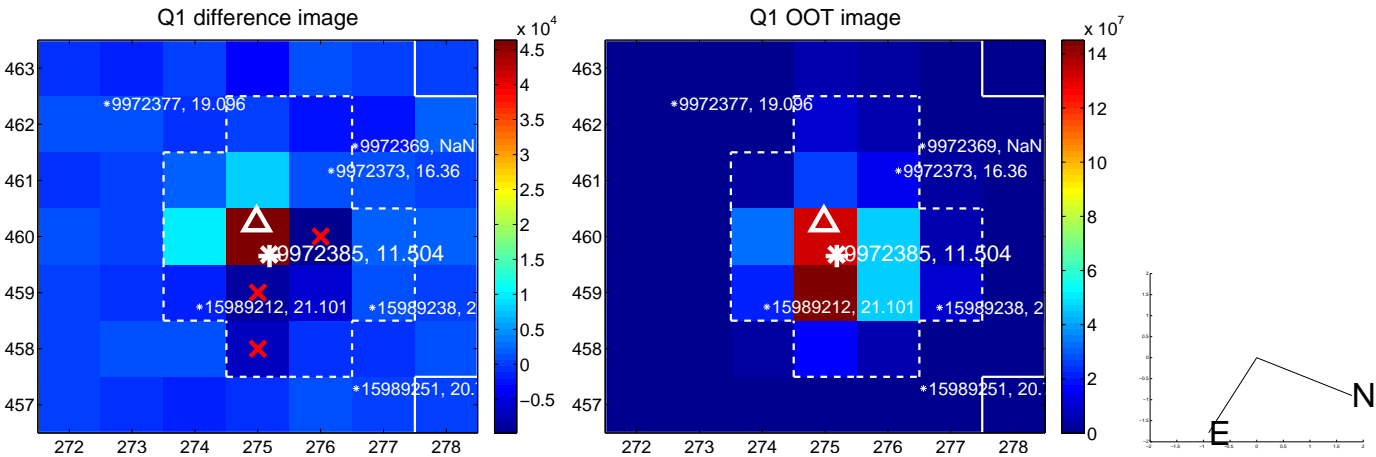
The direct PRF centroid is offset from the target star catalog position by about 0.15 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.517 ± 0.425	3.57	-0.543 ± 0.618	-1.417 ± 0.389
PRF-fit source offset from KIC position	1.407 ± 0.400	3.52	-0.420 ± 0.621	-1.343 ± 0.372
photometric centroid source offset	0.44 ± 0.65	0.67	0.43 ± 0.65	0.07 ± 0.62

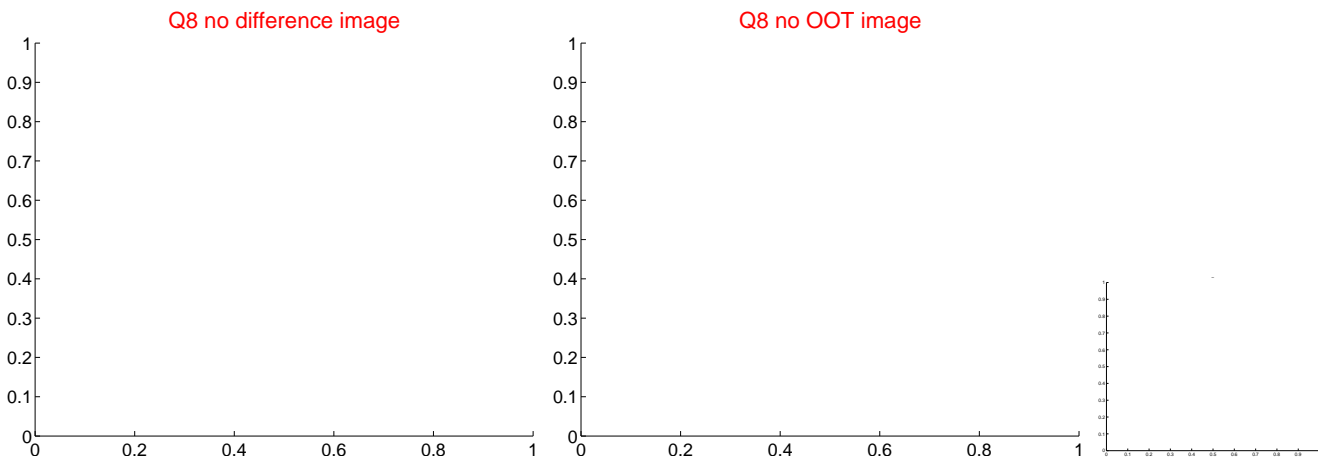
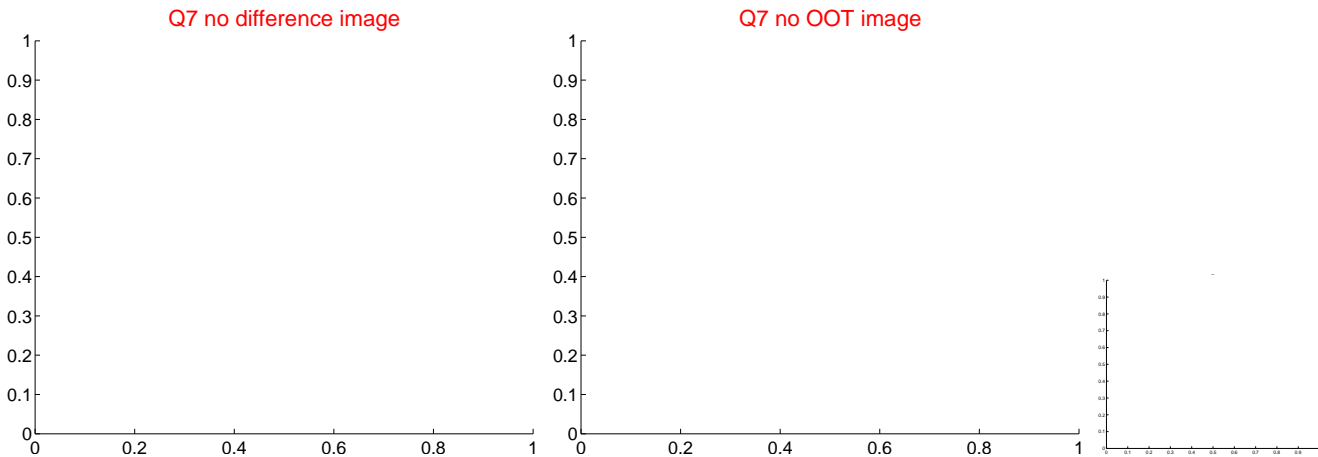
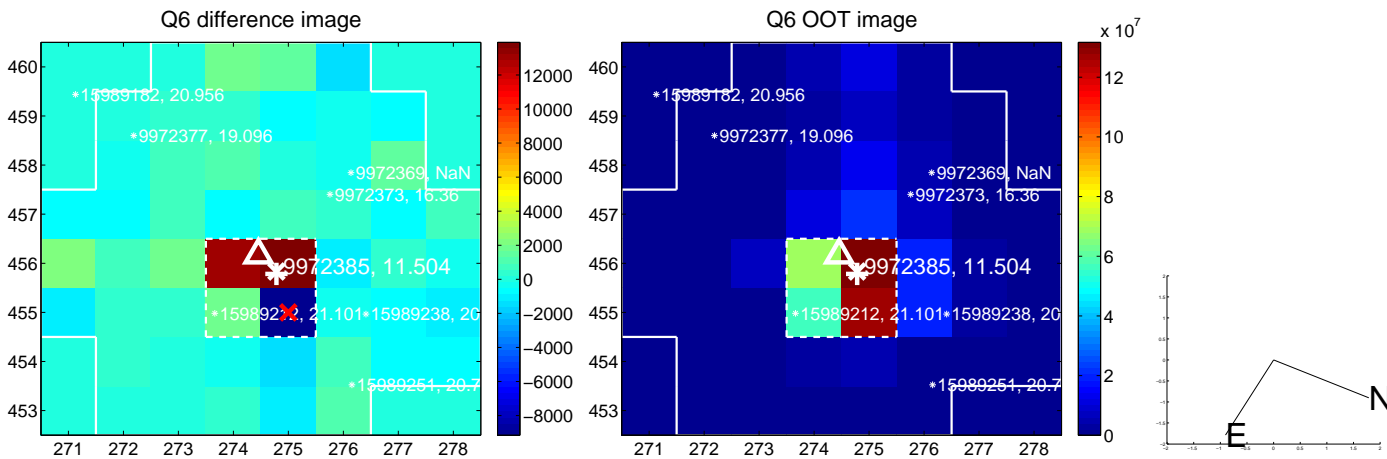
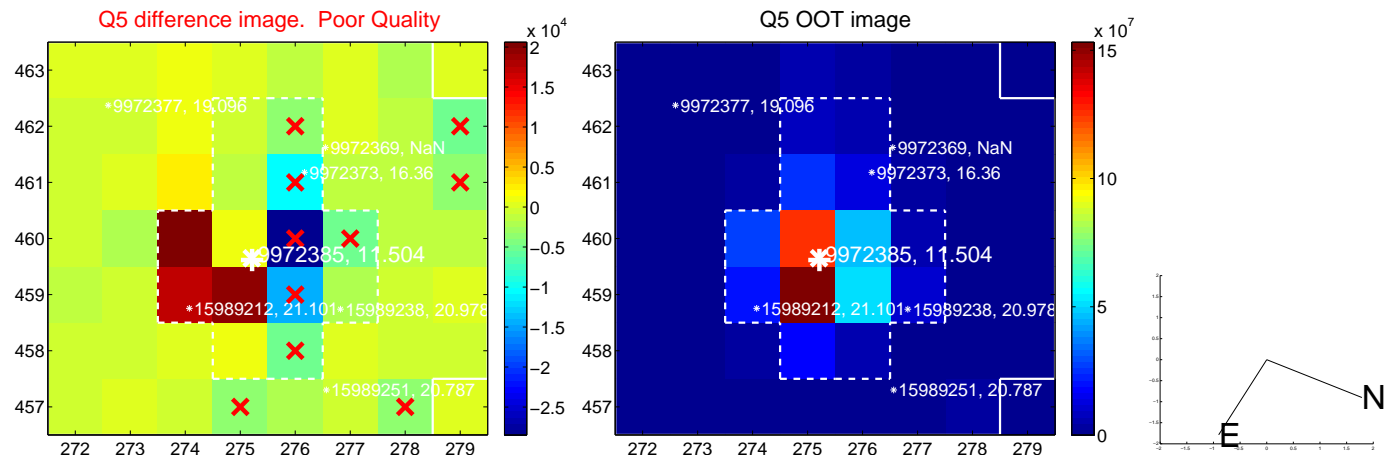


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ . Red *: target star. Blue *: Other stars. Text next to a star gives its KIC ID and kepmag. KIC IDs > 15,000,000 are from the UKIRT catalog.

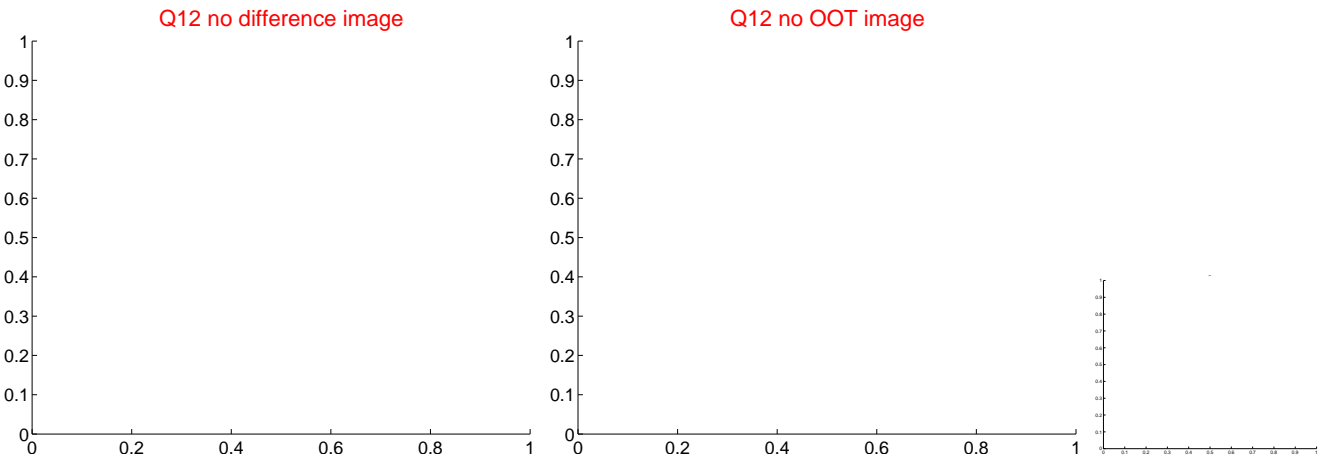
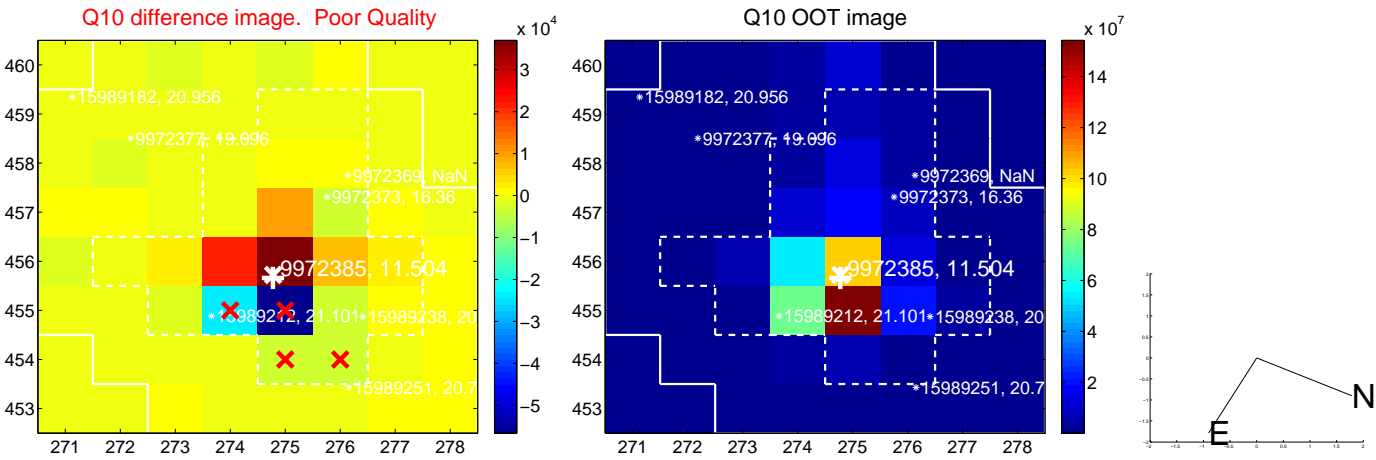
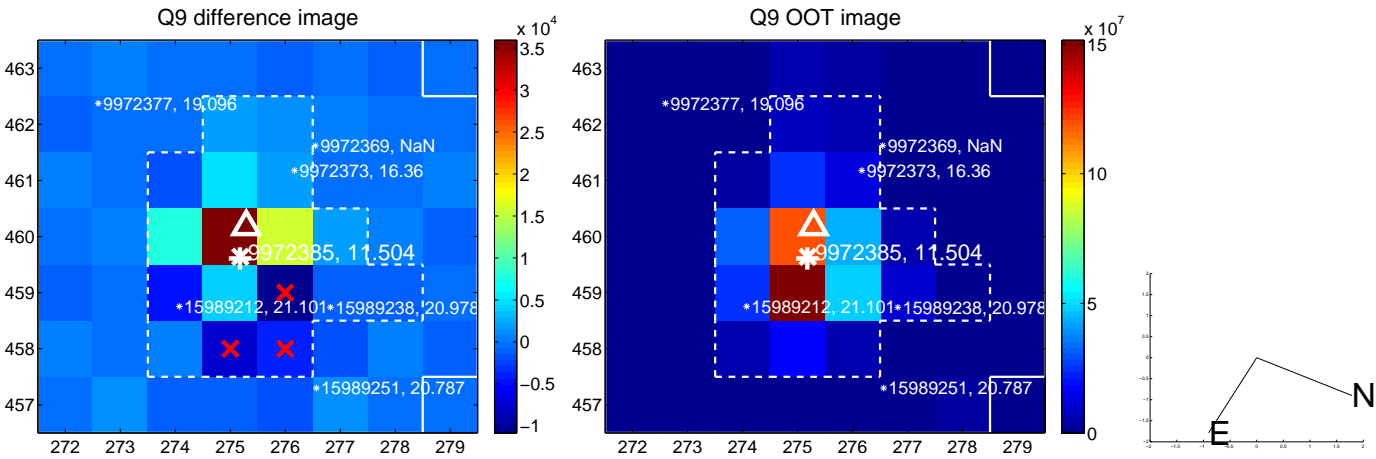
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



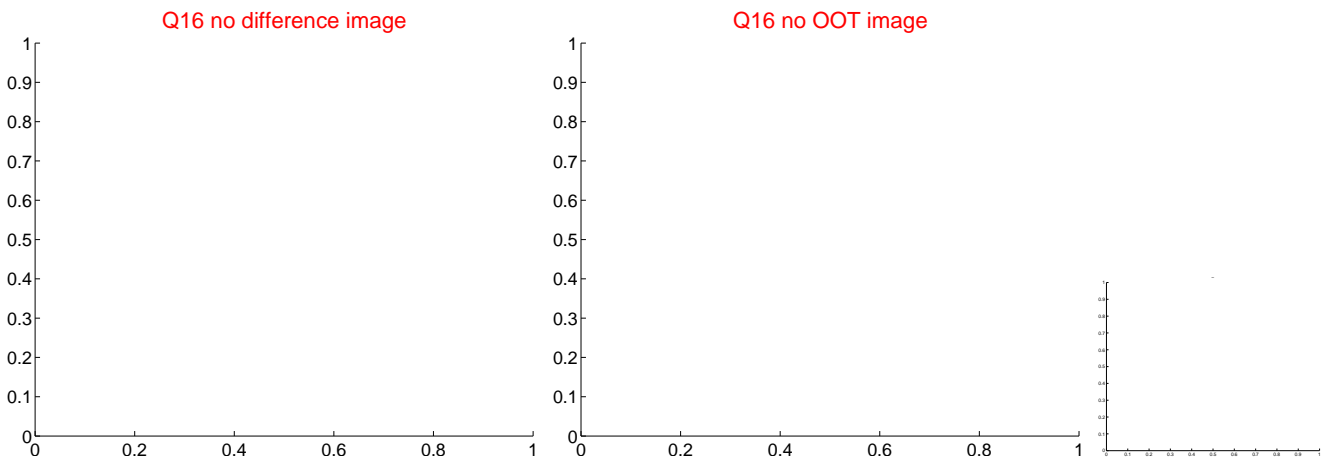
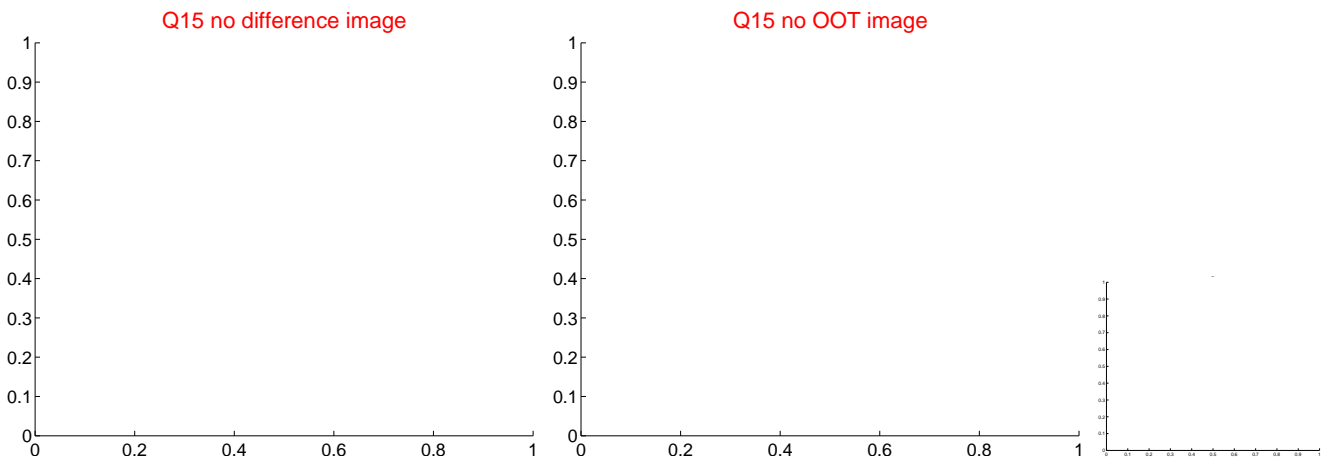
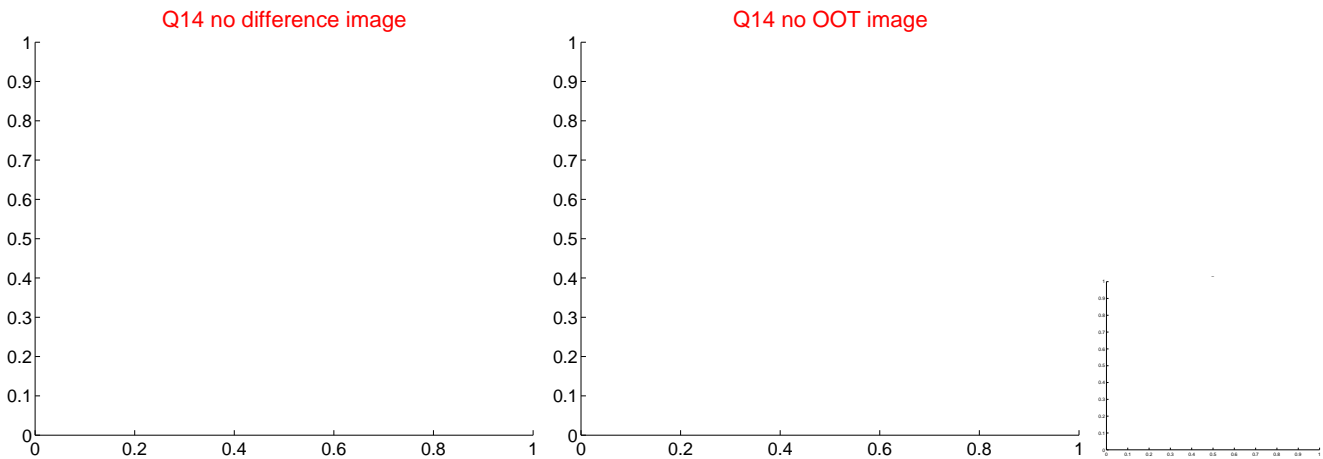
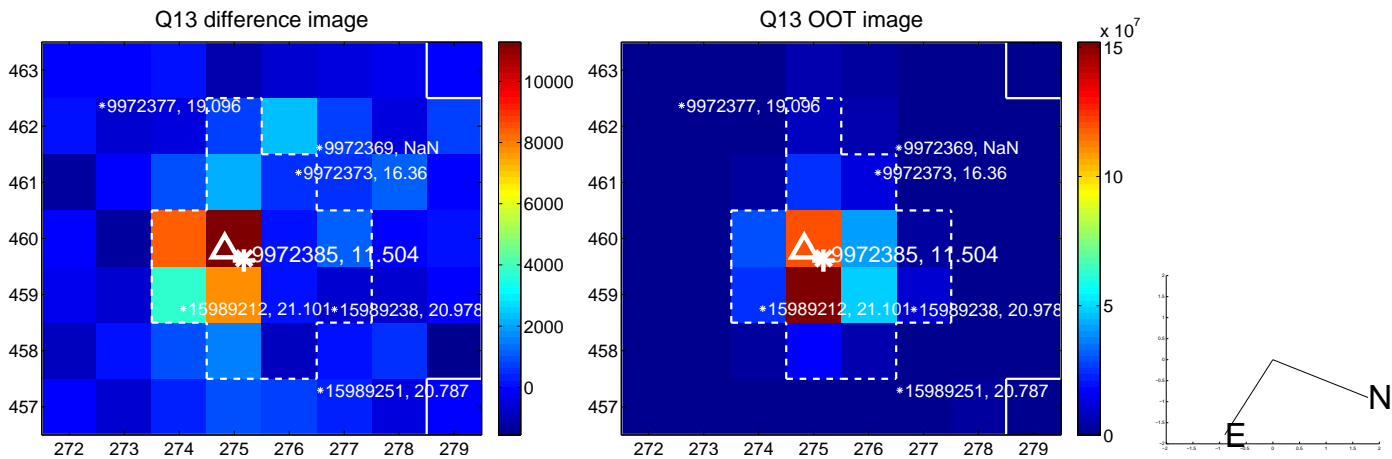
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



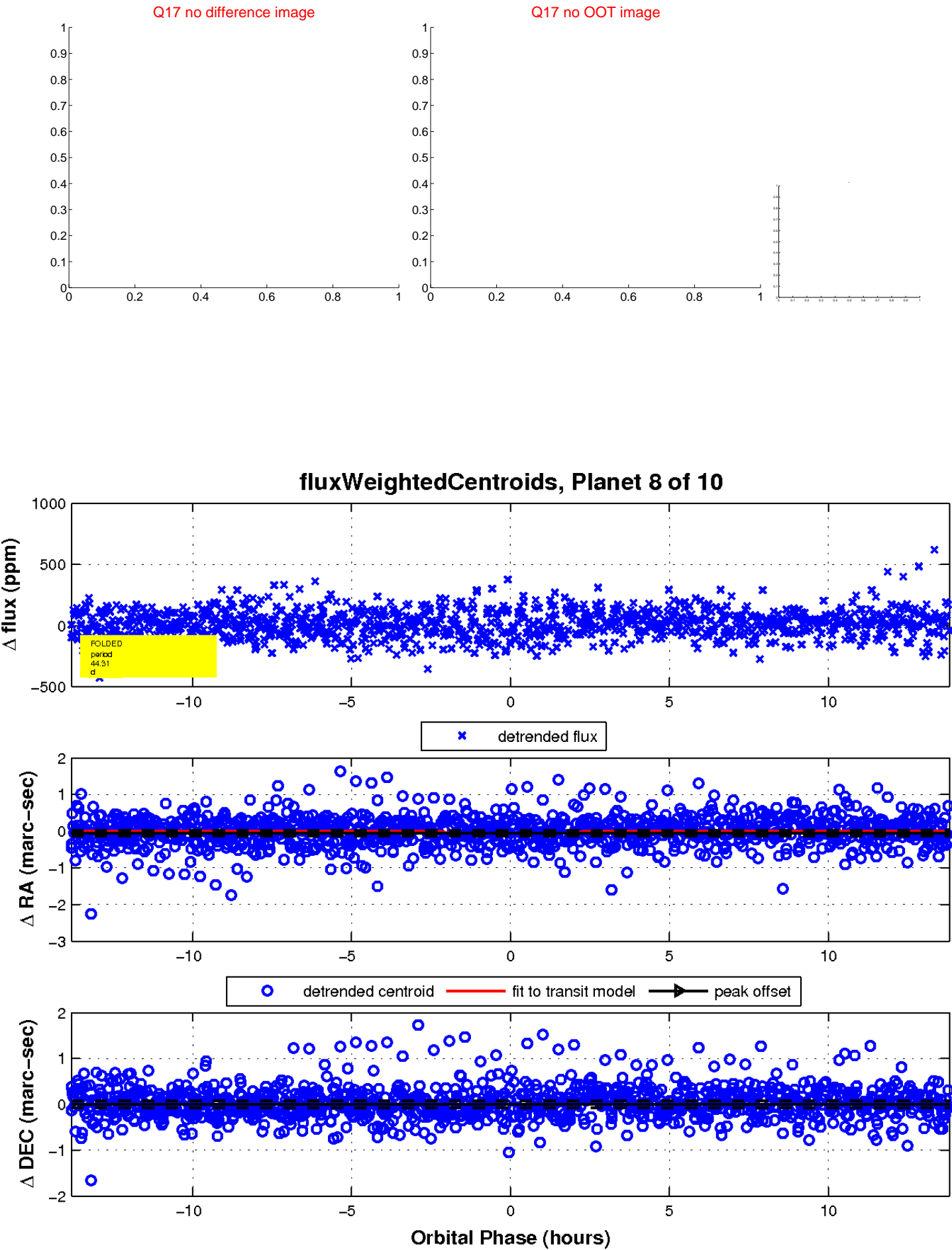
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

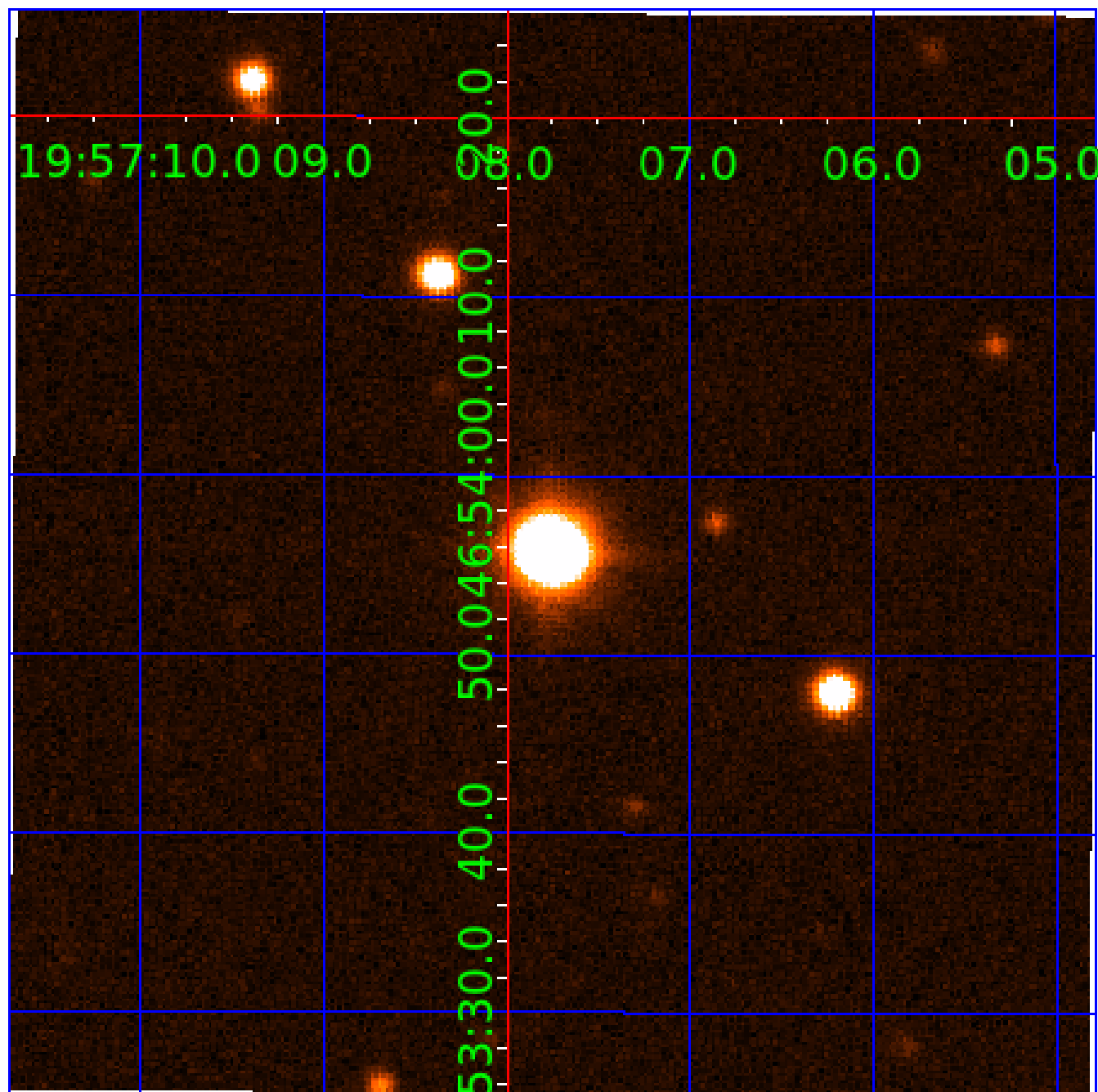


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009972385

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})
009972385-01	OBS	No	58.420909	188.641311	888.3	14.666	43.0	47.5	1.82	6313	10.28	53.92
009972385-02	OBS	No	3.377783	134.244452	52.7	11.222	10.9	12.8	1.82	6313	2.58	2411.99
009972385-03	OBS	No	3.377690	132.286709	27.7	5.907	9.8	10.9	1.82	6313	1.13	2412.08
009972385-04	OBS	No	3.377988	133.026671	25.5	4.744	9.8	10.9	1.82	6313	1.03	2411.80
009972385-05	OBS	No	33.321012	149.739066	24.5	11.846	11.2	1.5	1.82	6313	1.05	114.01
009972385-06	OBS	No	123.877607	192.039254	388.5	27.425	9.2	9.0	1.82	6313	5.06	19.80
009972385-07	OBS	No	84.863803	175.775621	164.1	2.141	7.7	7.8	1.82	6313	2.67	32.78
009972385-08	OBS	No	44.313913	141.982351	121.6	4.609	7.6	7.2	1.82	6313	2.32	77.95
009972385-09	OBS	No	45.629158	166.537092	131.9	7.990	7.5	7.3	1.82	6313	2.40	74.97
009972385-10	OBS	No	23.229243	149.885894	73.0	5.734	7.7	5.9	1.82	6313	1.72	184.43

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009972385-01	OBS	FP	0.00	1	0	0	0	LPP_DV
009972385-02	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—MOD_NONUNIQ_DV
009972385-03	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD
009972385-04	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—SAME_NTL_PERIOD
009972385-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
009972385-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
009972385-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_MEAS
009972385-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_UNCERTAIN
009972385-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
009972385-10	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—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.

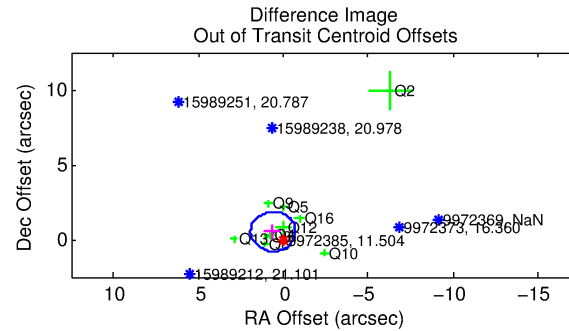
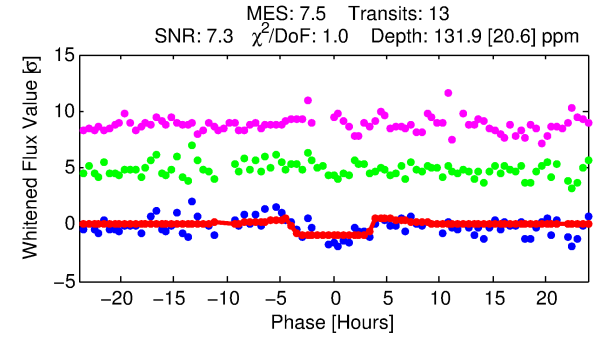
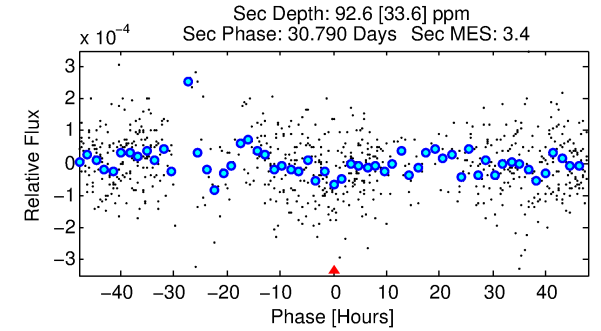
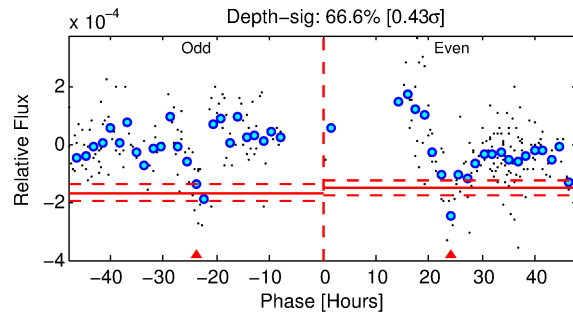
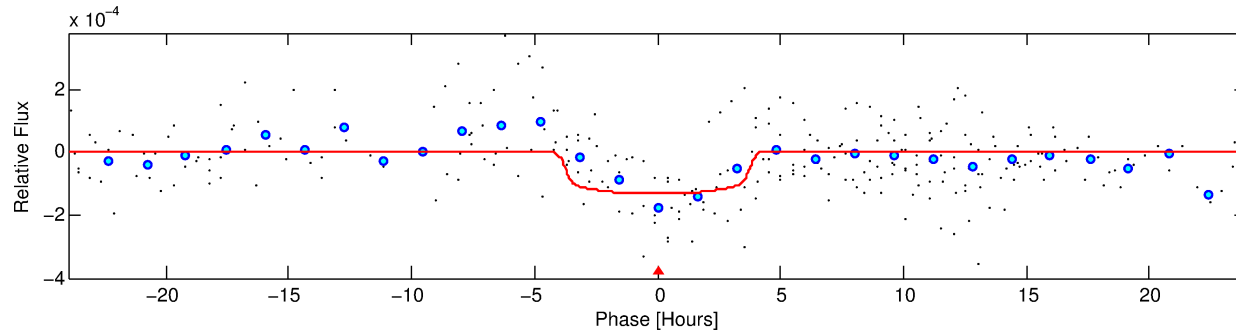
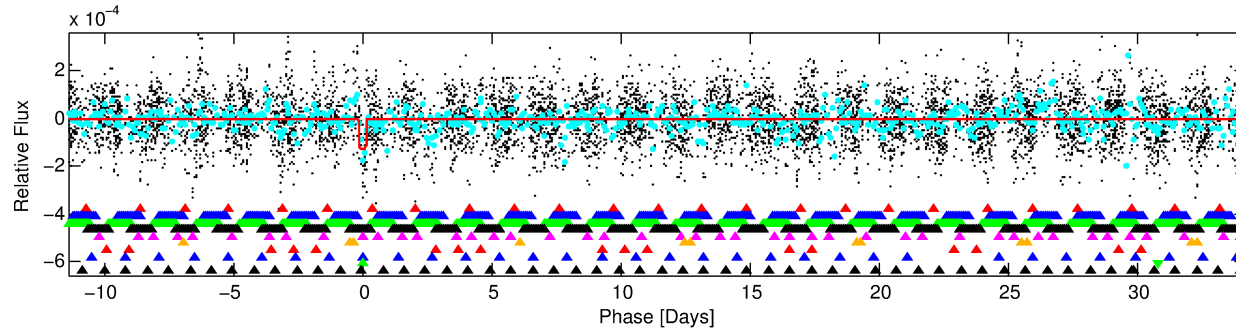
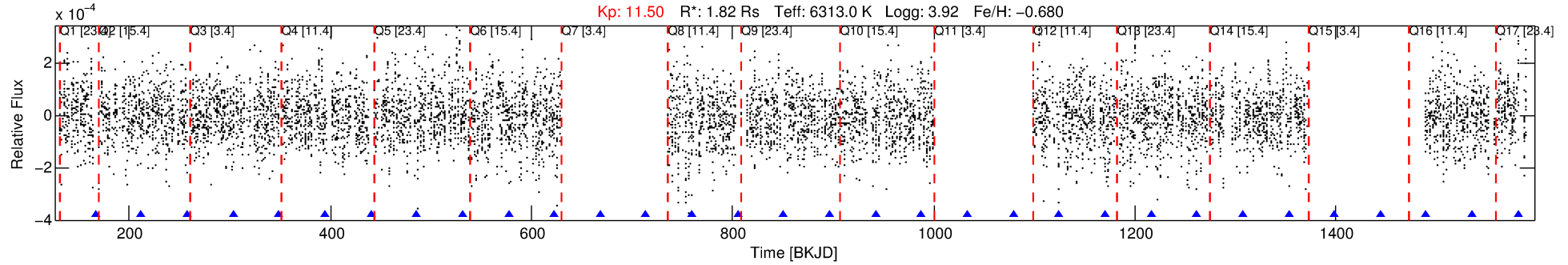
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009972385-09

No Significant Match Found

DV One-Page Summary

KIC: 9972385 Candidate: 9 of 10 Period: 45.629 d



DV Fit Results:

Period = 45.62916 [0.00075] d
Epoch = 166.5371 [0.0174] BKJD
Rp/R* = 0.0121 [0.0029]
a/R* = 21.87 [26.49]
b = 0.88 [0.31]
Seff = 74.97 [41.31]
Teq = 750 [103] K
Rp = 2.40 [0.96] Re
a = 0.2507 [0.0823] AU
Ag = 553.71 [444.95] [1.24 σ]
Teffp = 5627 [850] K [5.69 σ]

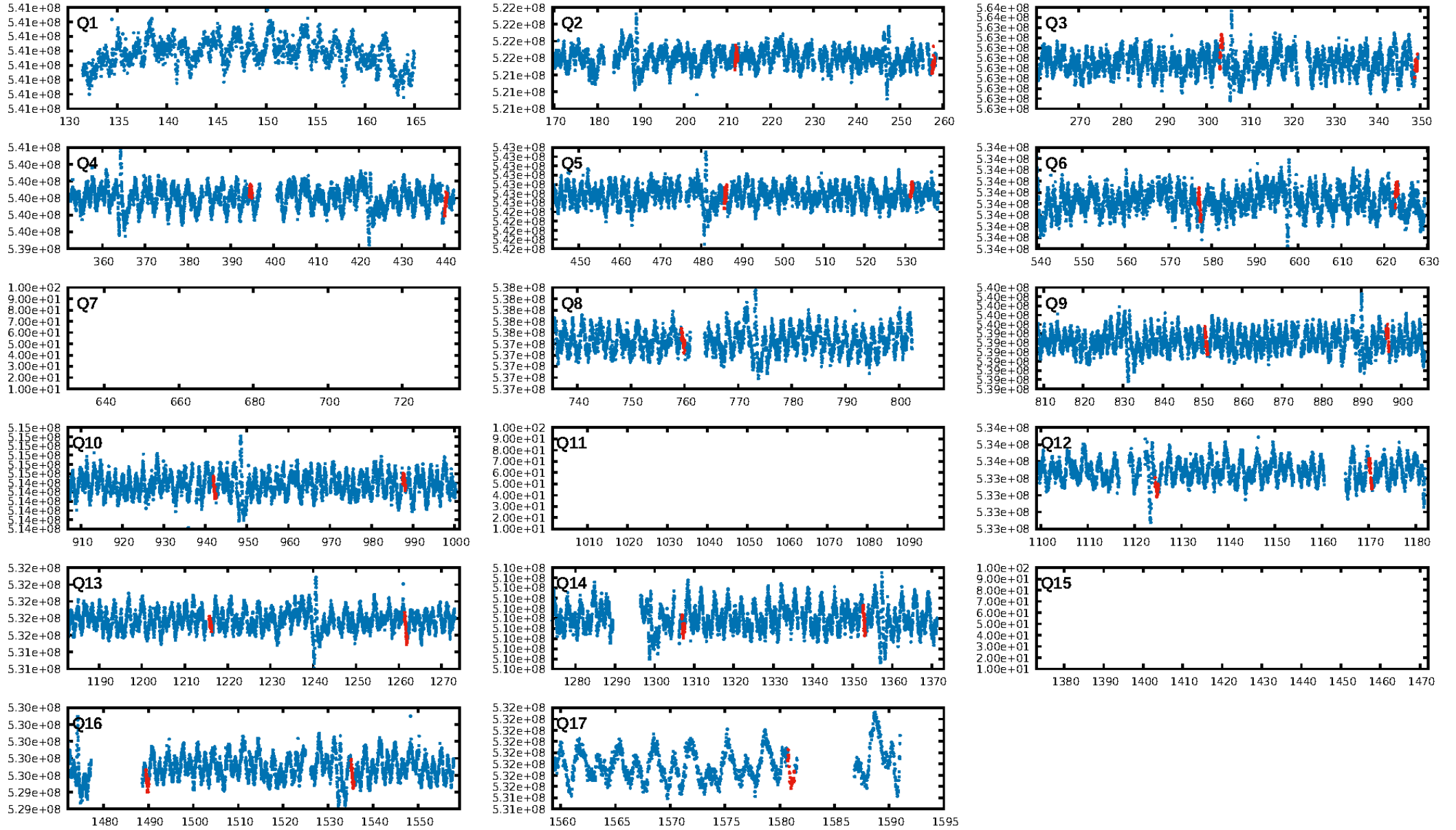
DV Diagnostic Results:

ShortPeriod-sig: 99.9% [3.42 σ]
LongPeriod-sig: 100.0% [18.38 σ]
ModelChiSquare2-sig: 7.7%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 1.09e-07
RollingBand-fgt: 1.00 [12/12]
GhostDiagnostic-chr: 0.4868
Centroid-sig: 0.0%
Centroid-so: 1.275 arcsec [2.59 σ]
OotOffset-rm: 0.804 arcsec [1.83 σ]
KicOffset-rm: 0.970 arcsec [2.20 σ]
OotOffset-st: 3/1/3/3 [10]
KicOffset-st: 3/1/3/3 [10]
DiffImageQuality-fgm: 0.30 [3/10]
DiffImageOverlap-fno: 0.00 [0/12]

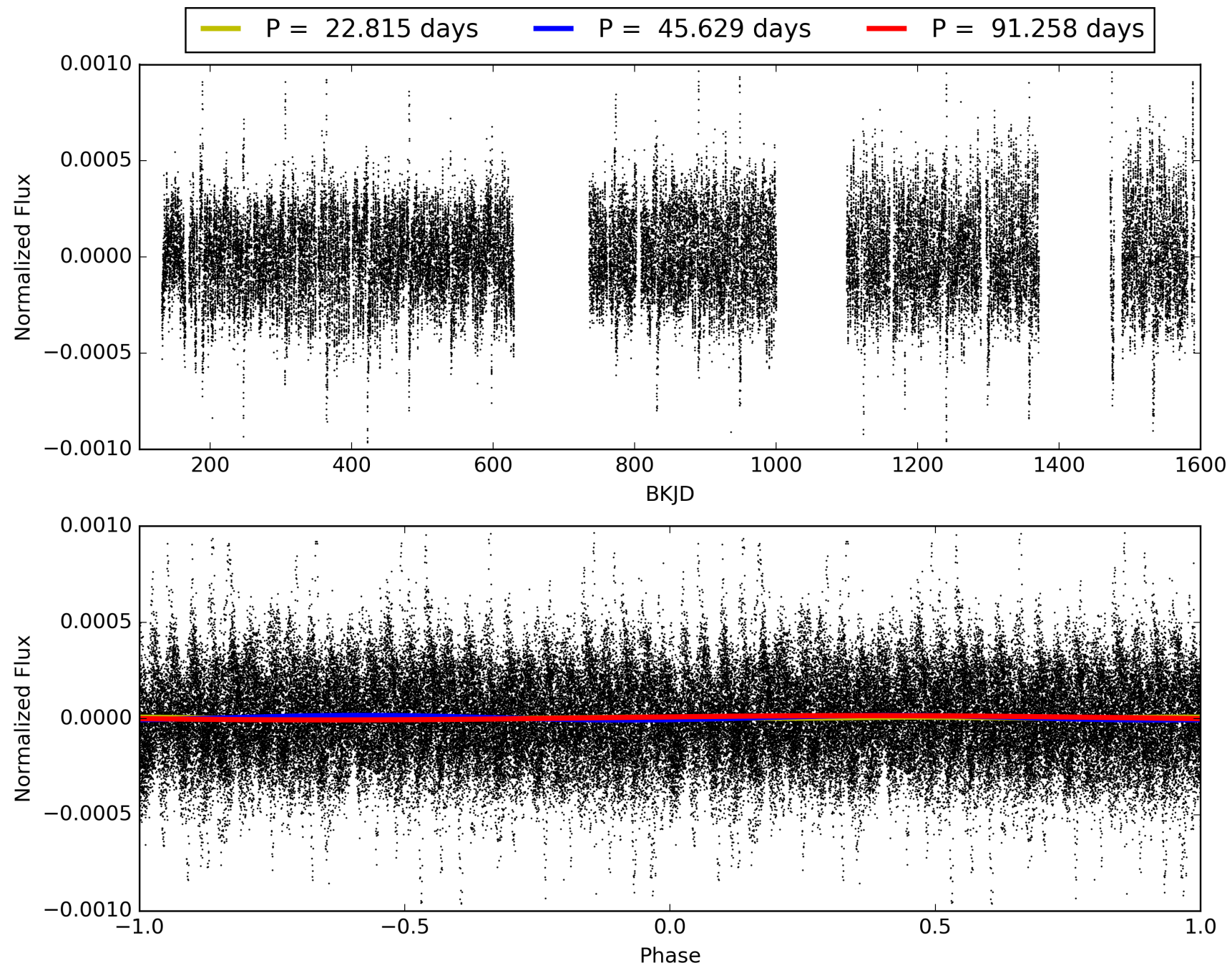
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 17:09:23 Z

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

TCE 009972385-09, PDC Light Curves

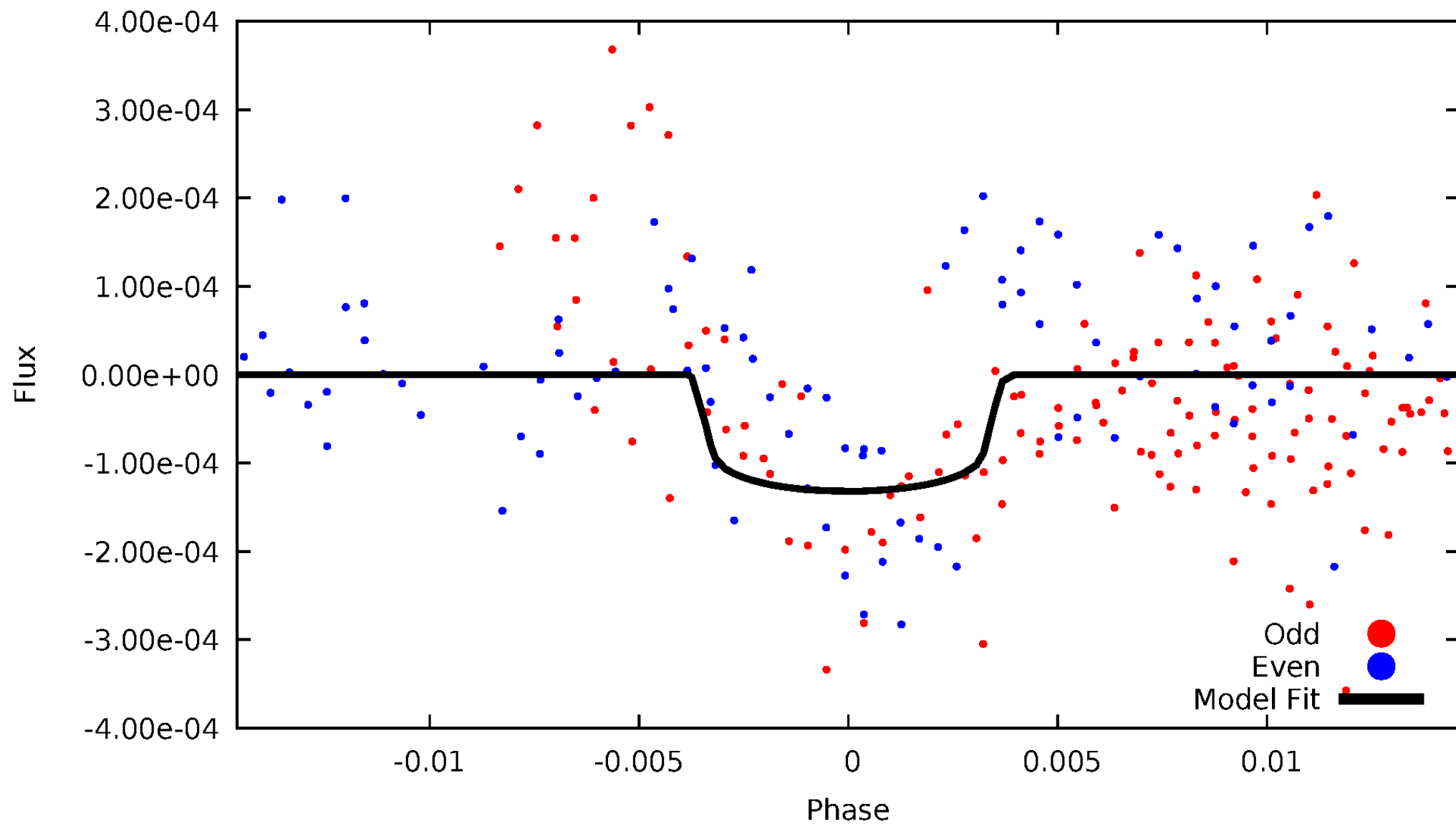


TCE 009972385-09



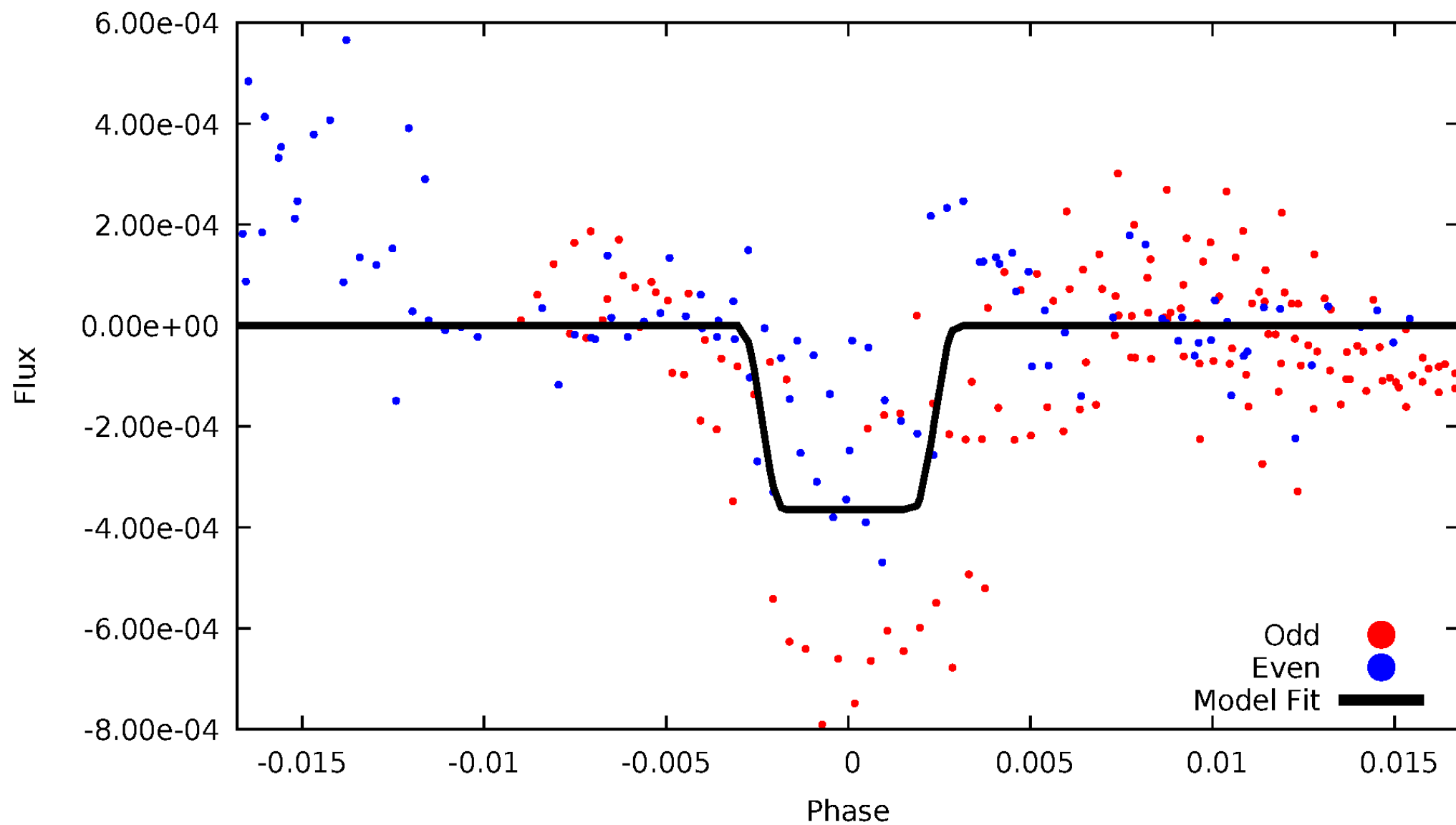
DV Odd/Even

TCE 009972385-09



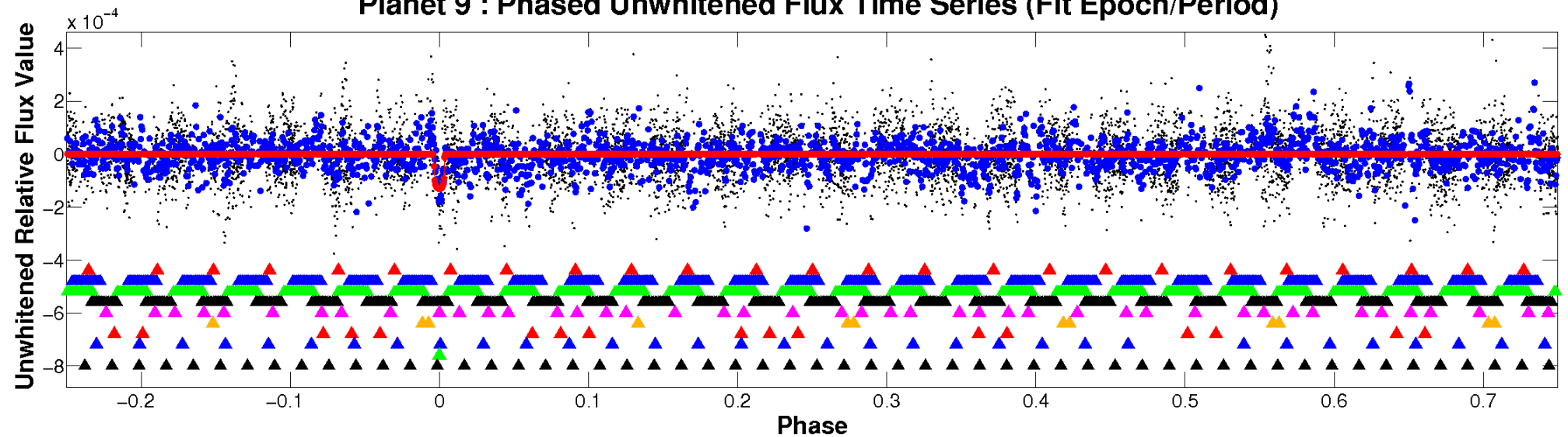
ALT Odd/Even

TCE 009972385-09

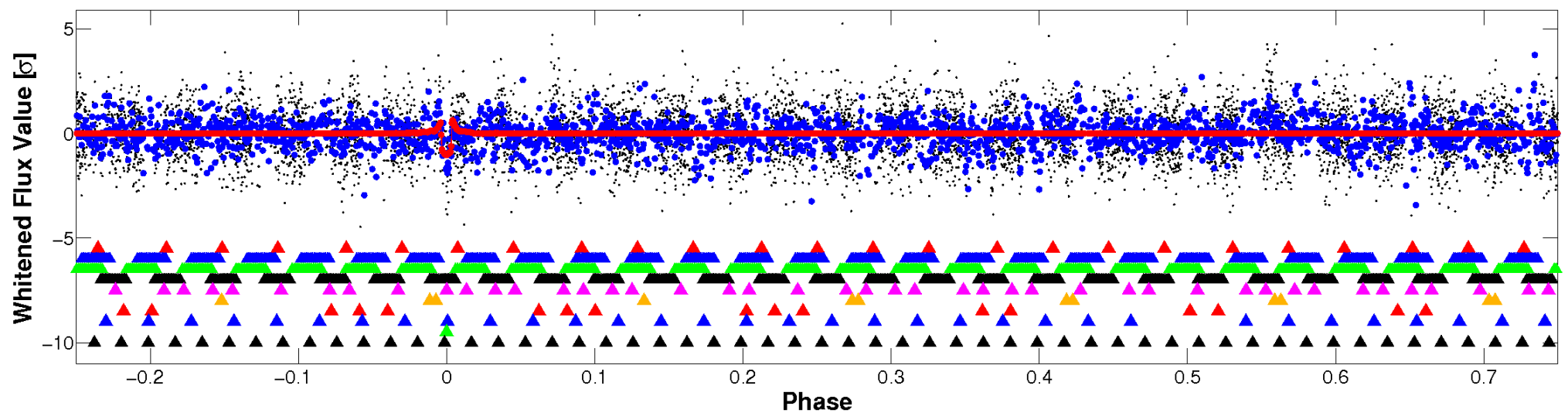


Non-Whitened Vs. Whitened Light Curve

Planet 9 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

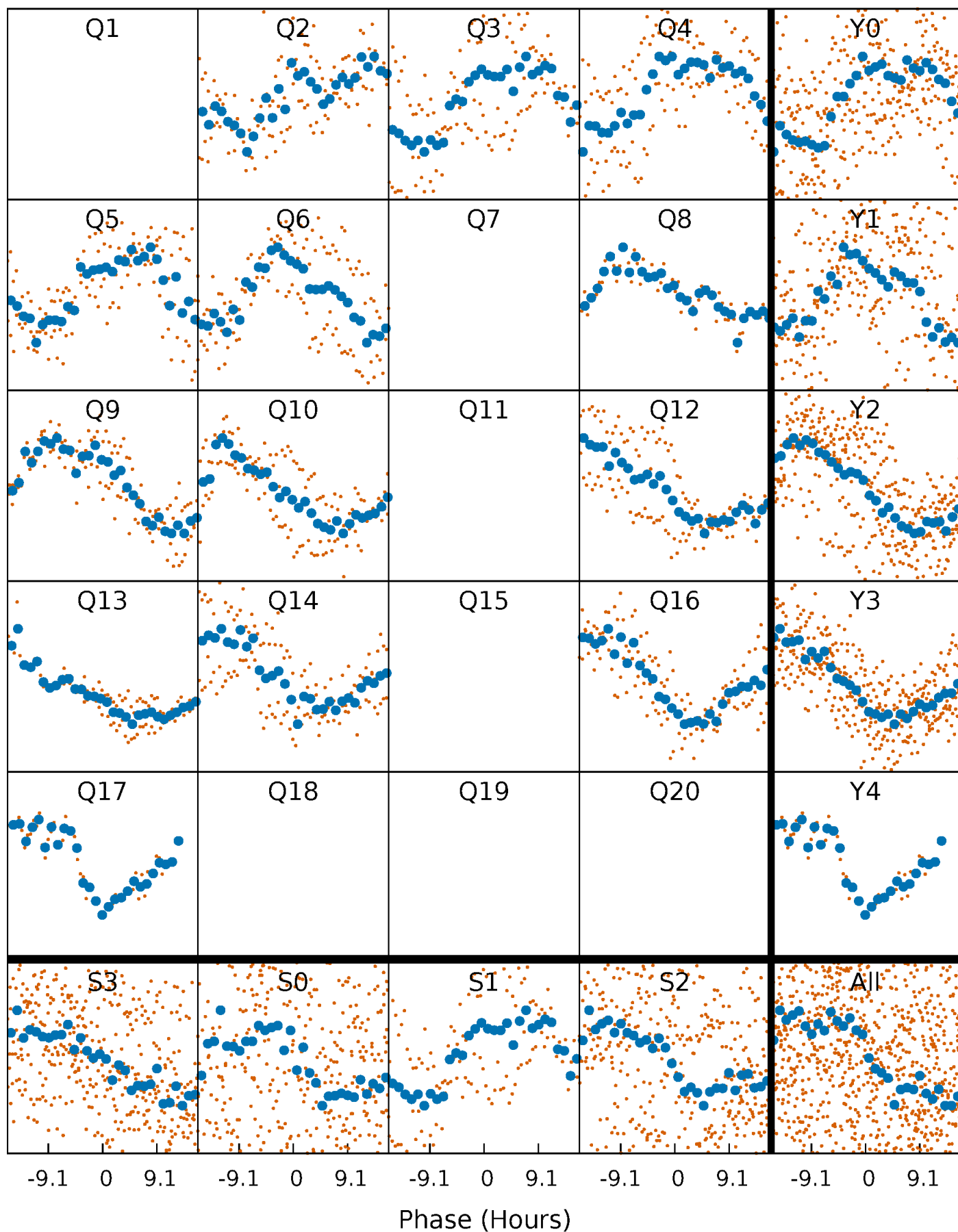


Planet 9 : Phased Whitened Flux Time Series (Fit Epoch/Period)



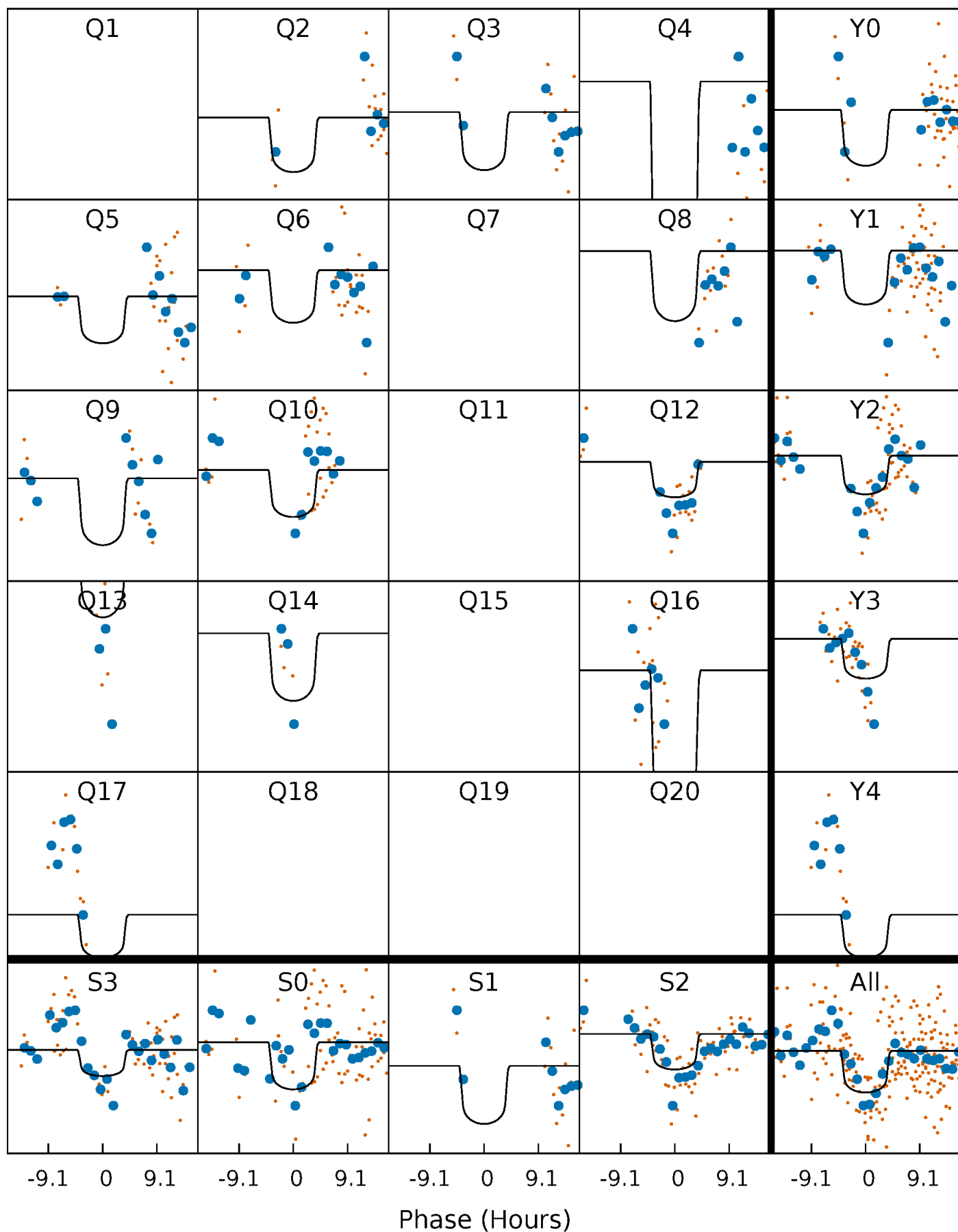
PDC Quarter-Phased Transit Curves

TCE 009972385-09 $P = 45.629158$ Days $T_0 = 166.537092$ (BKJD)



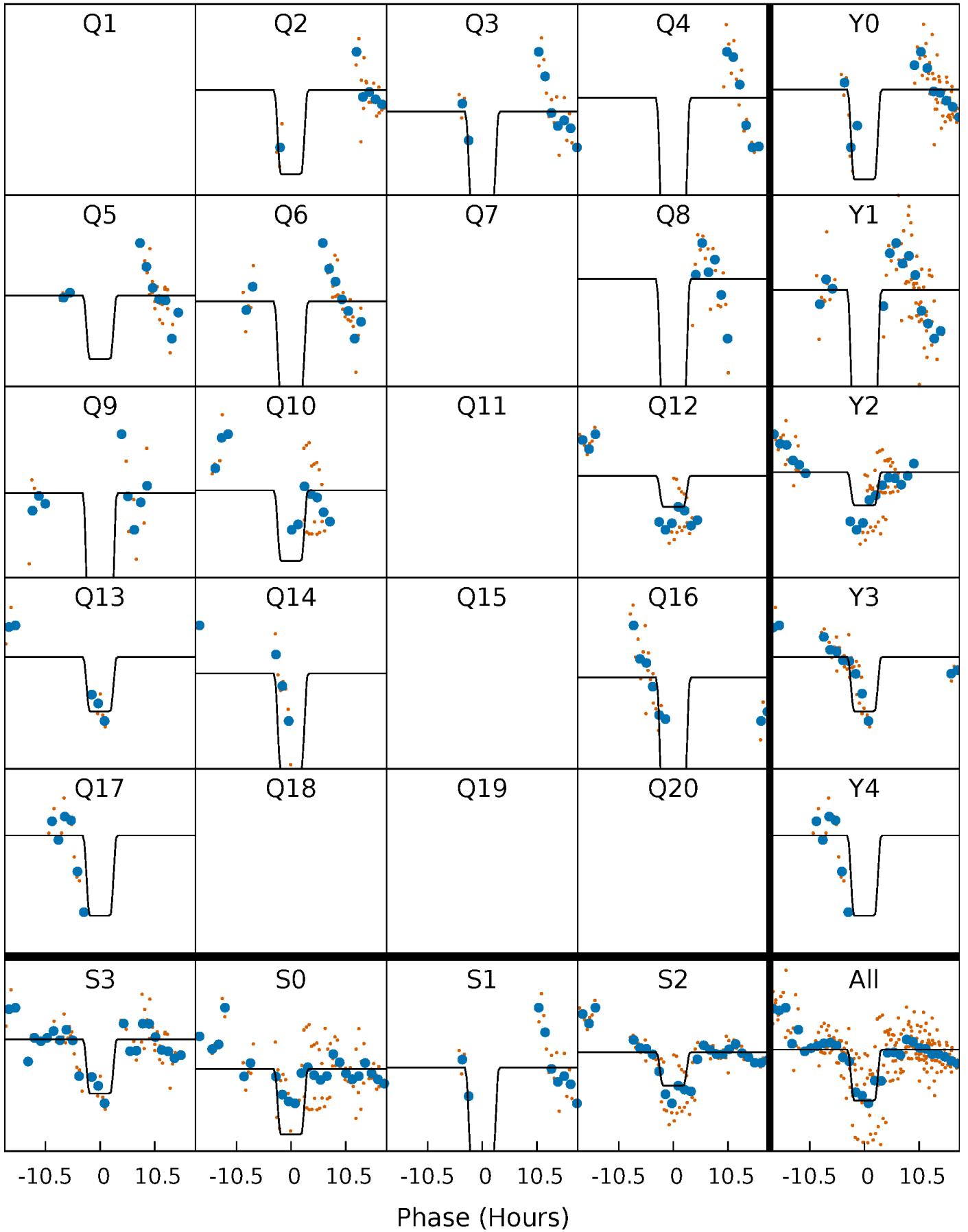
DV Quarter-Phased Transit Curves

TCE 009972385-09 P= 45.629158 Days $T_0=166.537092$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

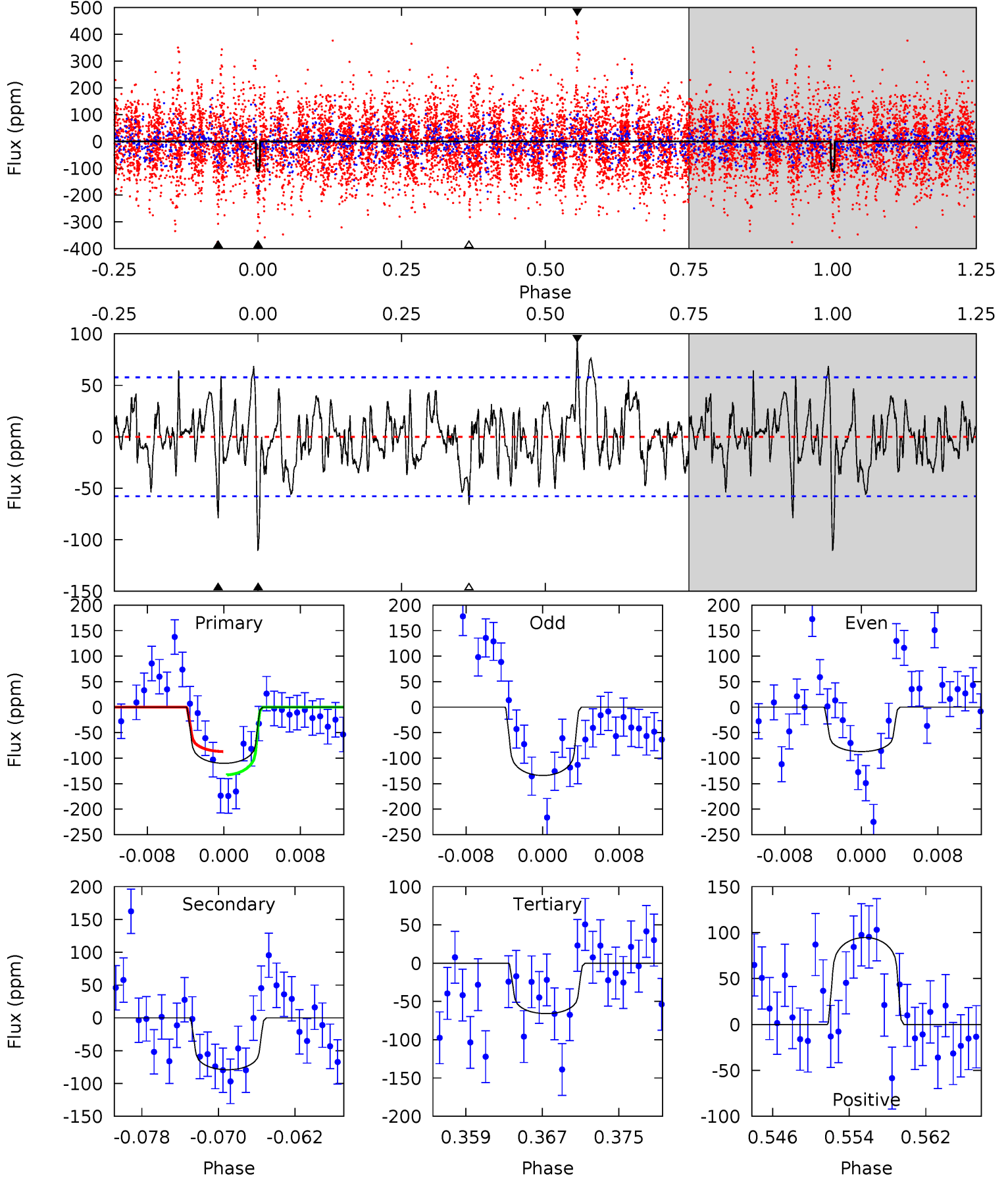
TCE 009972385-09 P= 45.631256 Days $T_0=166.502164$ (BKJD)



DV Model-Shift Uniqueness Test

009972385-09, P = 45.629158 Days, E = 120.907934 Days

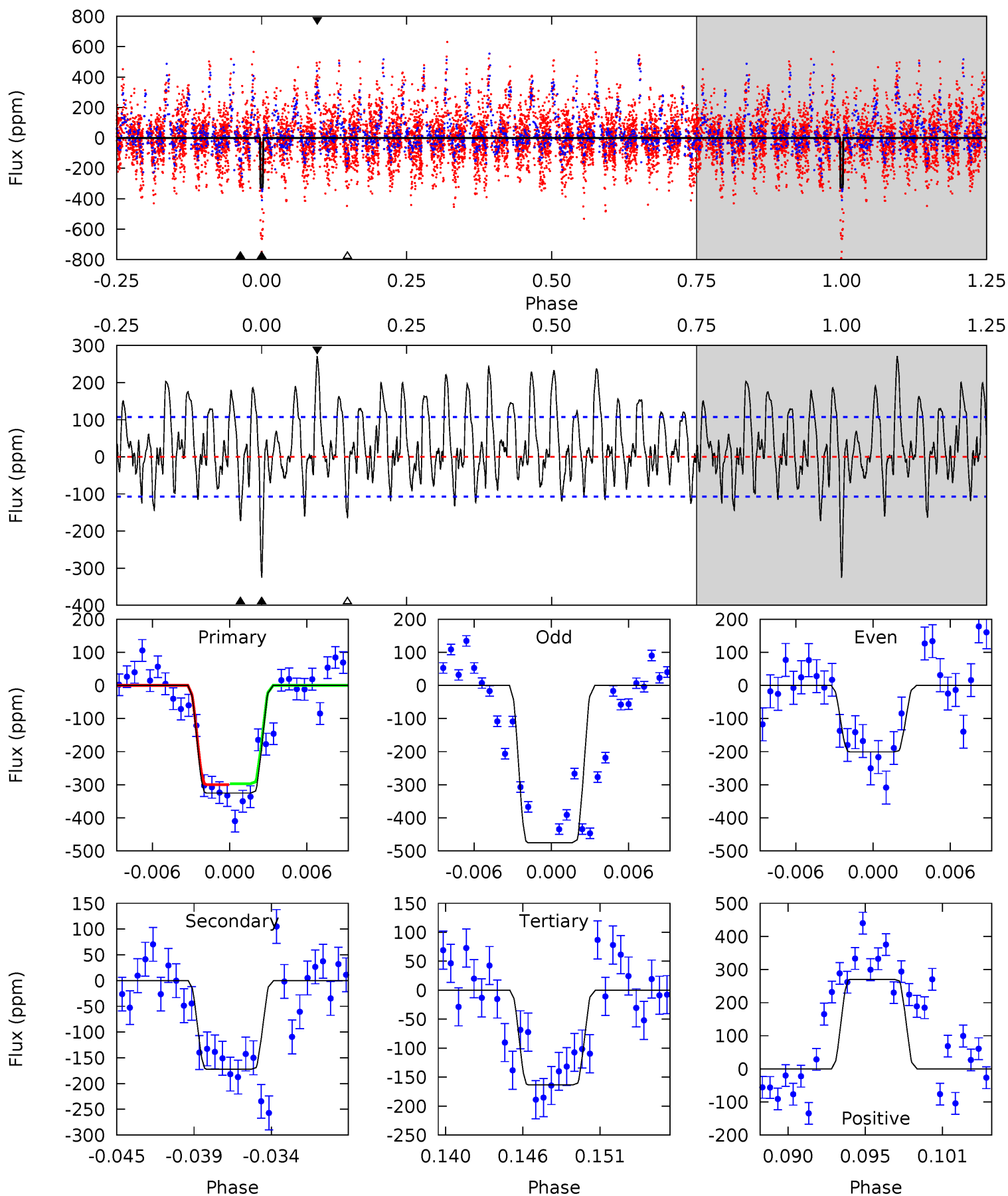
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.69	6.95	5.79	8.32	5.07	2.66	2.03	3.89	1.37	1.16	-1.37	2.06	1.22	0.46	2.02



Alt Model-Shift Uniqueness Test

009972385-09, P = 45.631256 Days, E = 120.870908 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
15.6	8.25	7.82	12.9	5.14	2.77	3.31	7.74	2.63	0.42	-4.69	6.54	1.22	0.45	0.07



Stellar Parameters For KIC 009972385

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6313^{+170}_{-170}	$3.922^{+0.323}_{-0.108}$	$-0.680^{+0.350}_{-0.250}$	$1.820^{+0.391}_{-0.587}$	$1.009^{+0.161}_{-0.145}$	$0.236^{+0.462}_{-0.087}$
	+3%/-3%	+8%/-3%	+51%/-37%	+21%/-32%	+16%/-14%	+196%/-37%
Source	PHO1	FLK73	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 009972385-09 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-79 ± 11	$2.23^{+0.73}_{-0.60}$	1028^{+70}_{-89}	5445^{+872}_{-520}	562^{+477}_{-252}
Alt.	-172 ± 21	$3.55^{+0.88}_{-0.73}$	1031^{+63}_{-96}	5287^{+464}_{-381}	475^{+294}_{-178}

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 $A_{obs} \gg 1.0$

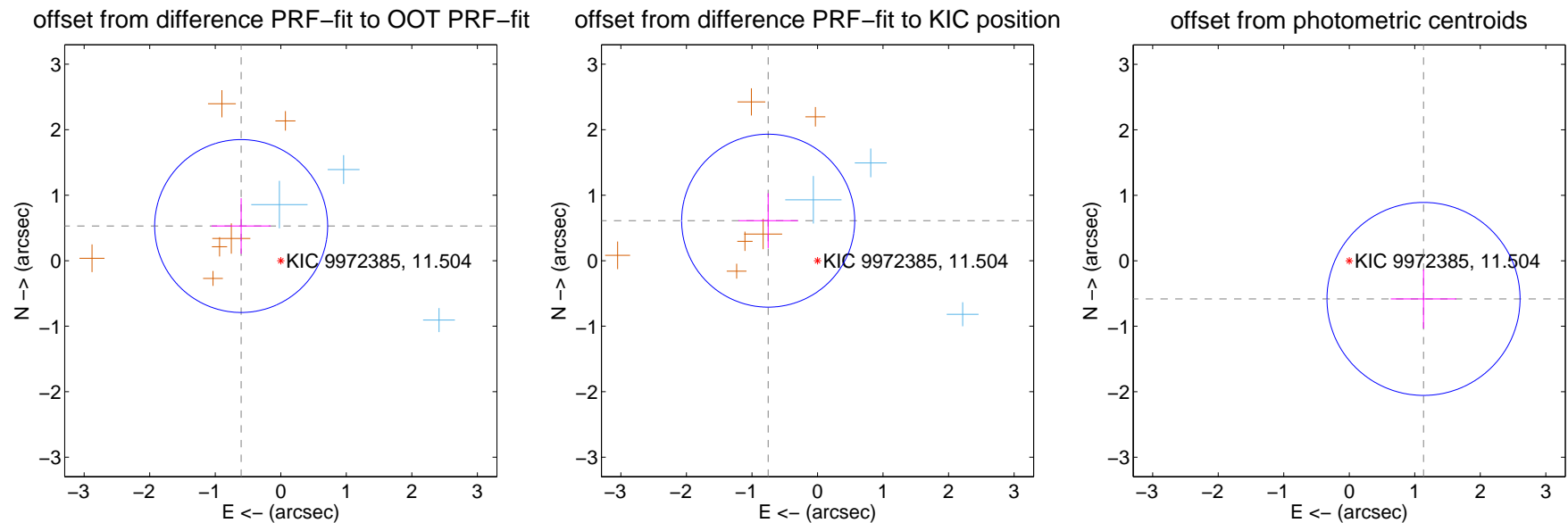
DV Centroid Data

Supplemental centroid analysis for 009972385-09. **Kepler magnitude: 11.50.** Transit SNR 7.27

There are 3 quarters with good PRF difference image offsets

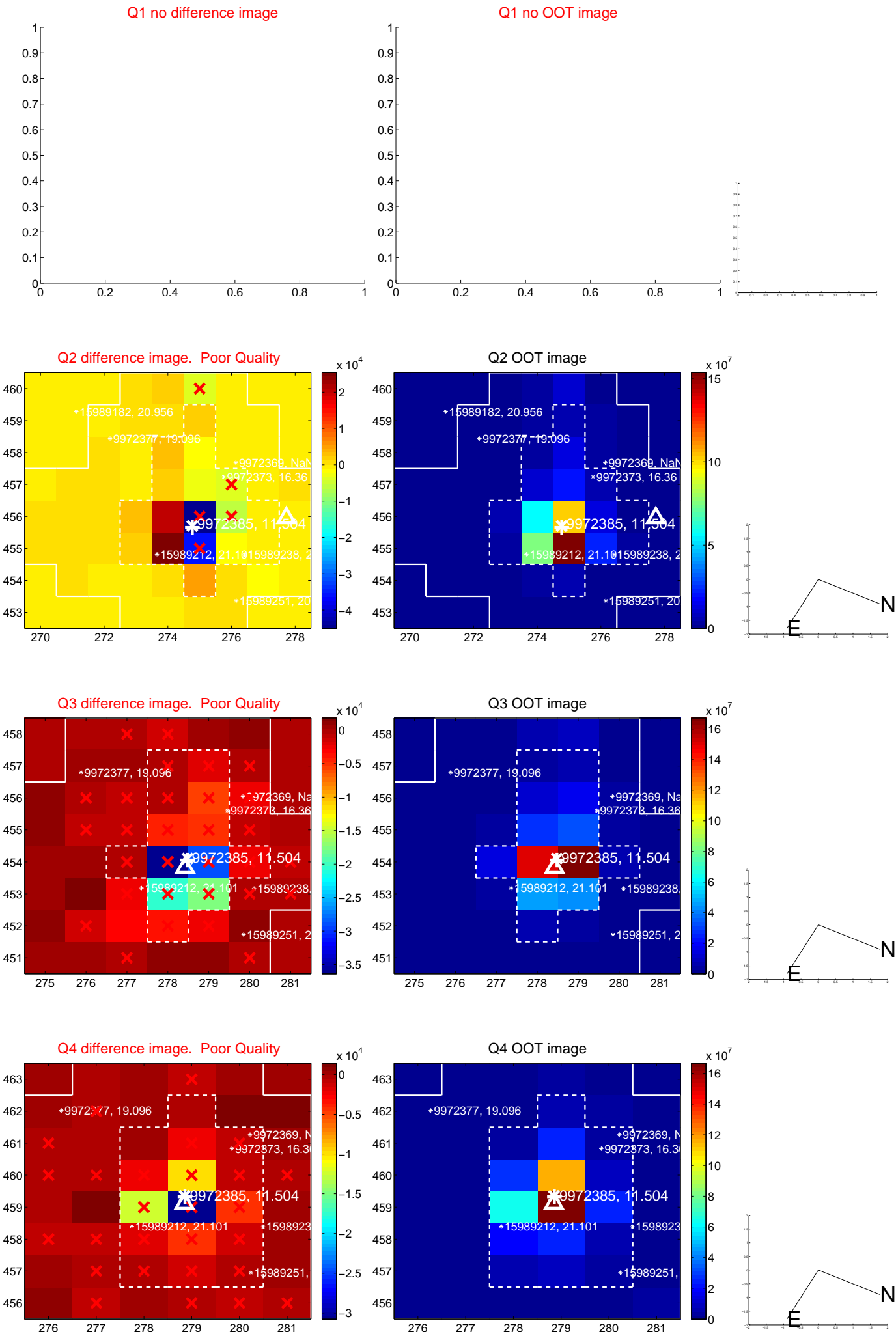
The direct PRF centroid is offset from the target star catalog position by about 0.18 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.804 ± 0.440	1.83	0.605 ± 0.451	0.529 ± 0.425
PRF-fit source offset from KIC position	0.970 ± 0.440	2.20	0.753 ± 0.454	0.611 ± 0.418
photometric centroid source offset	1.27 ± 0.49	2.59	-1.13 ± 0.50	-0.58 ± 0.45

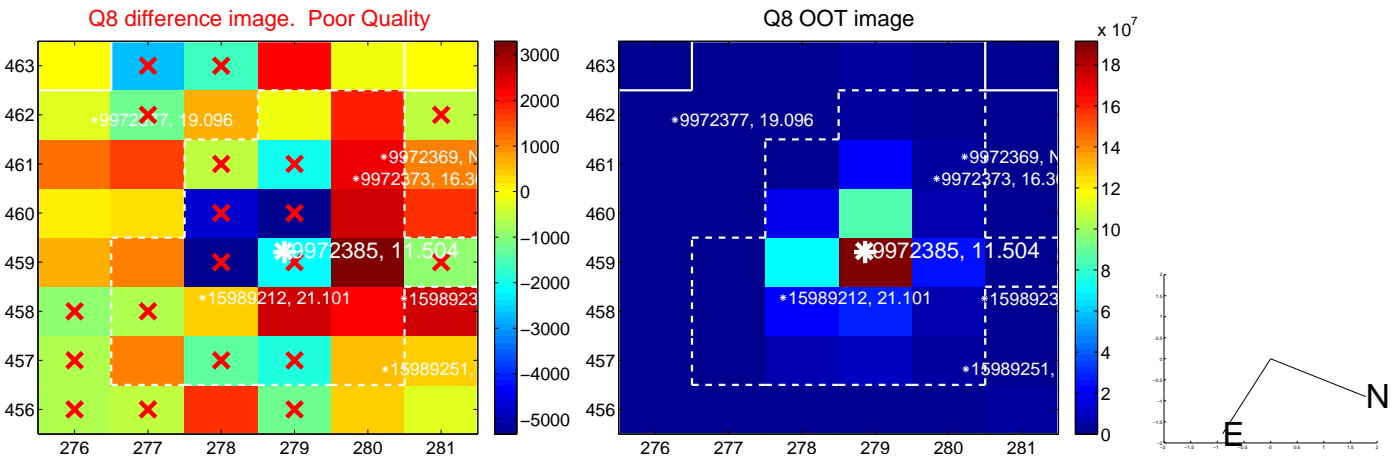
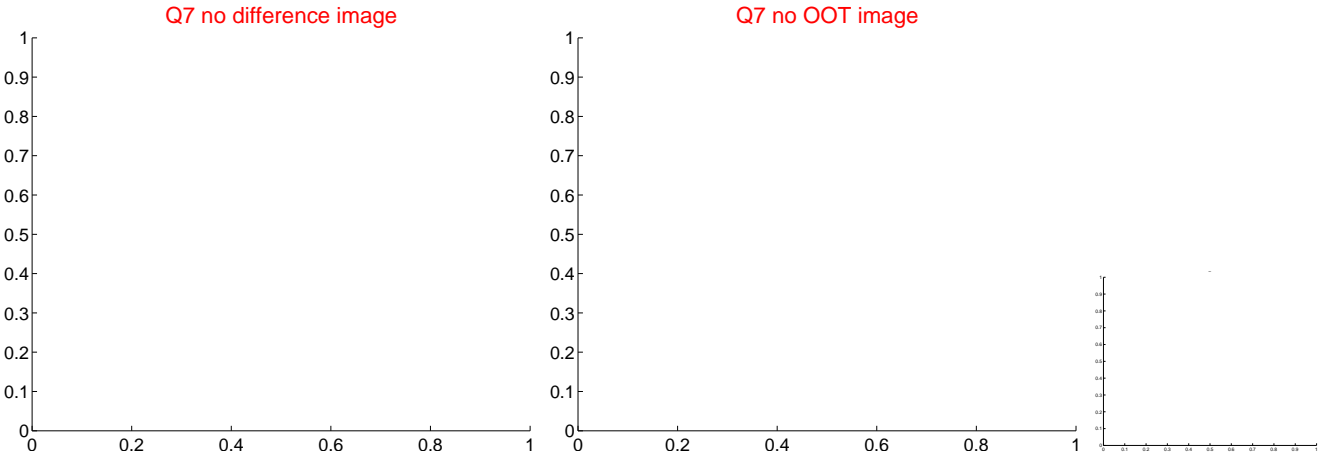
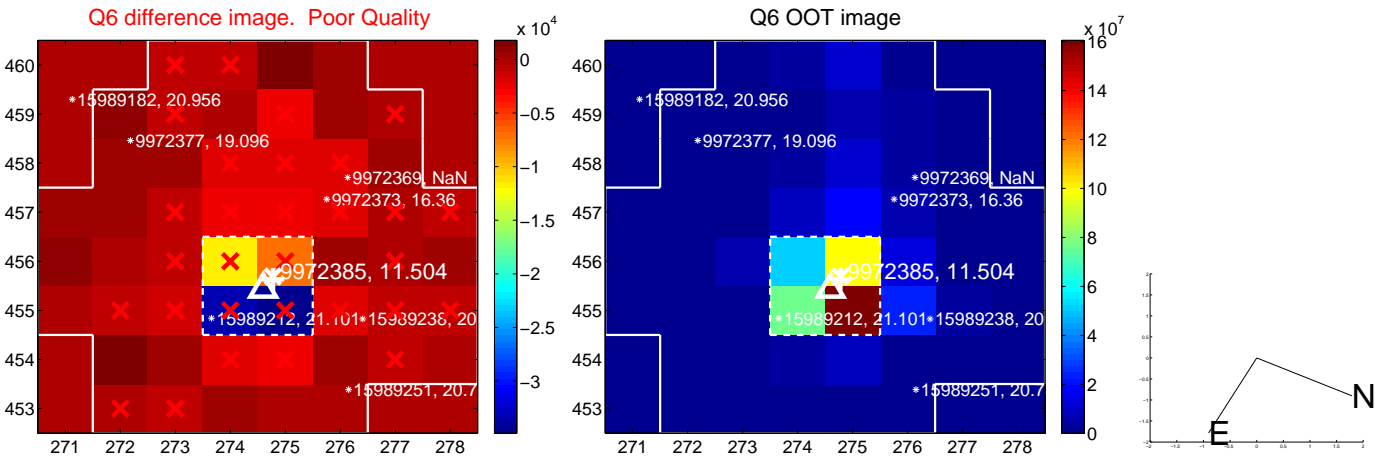
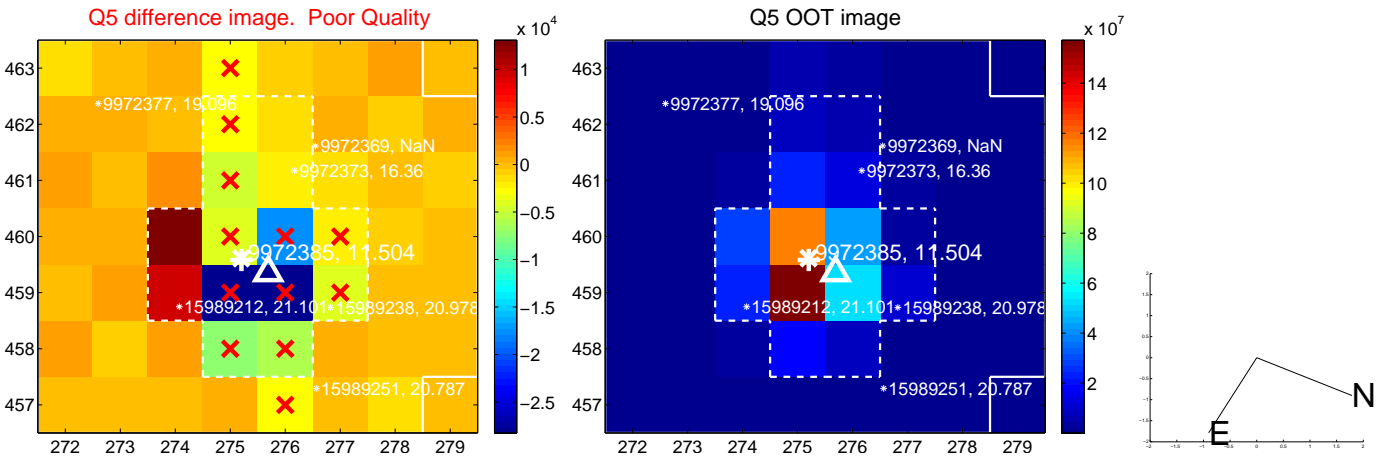


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ . Red *: target star. Blue *: Other stars. Text next to a star gives its KIC ID and kepmag. KIC IDs > 15,000,000 are from the UKIRT catalog.

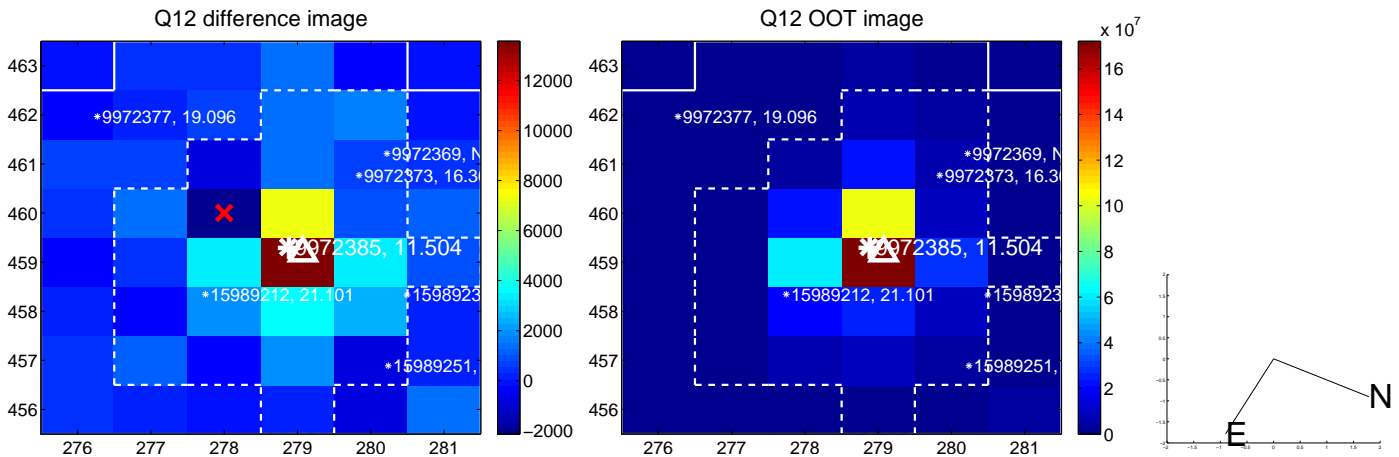
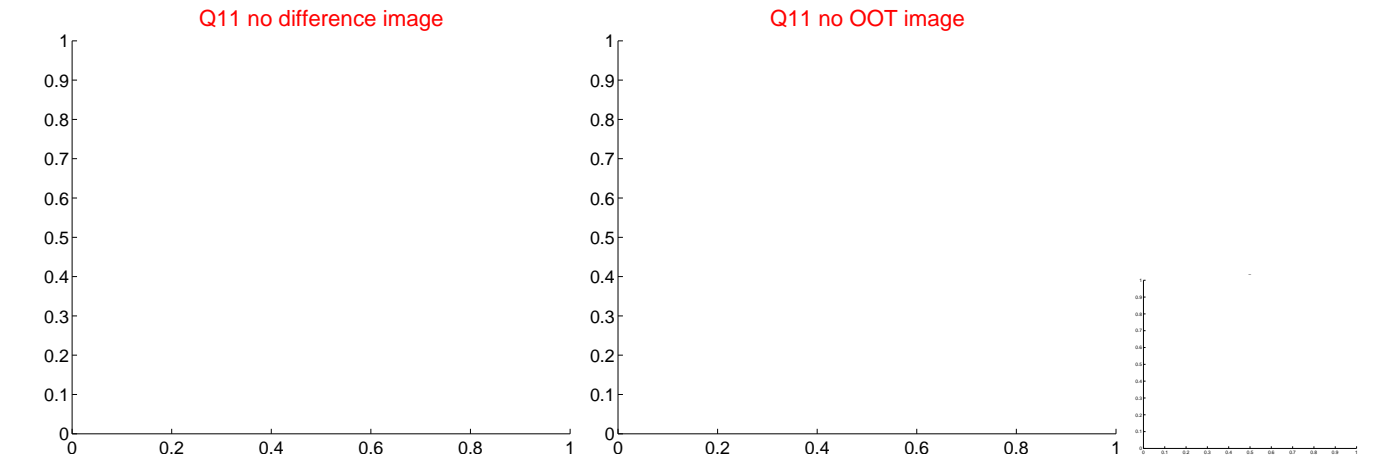
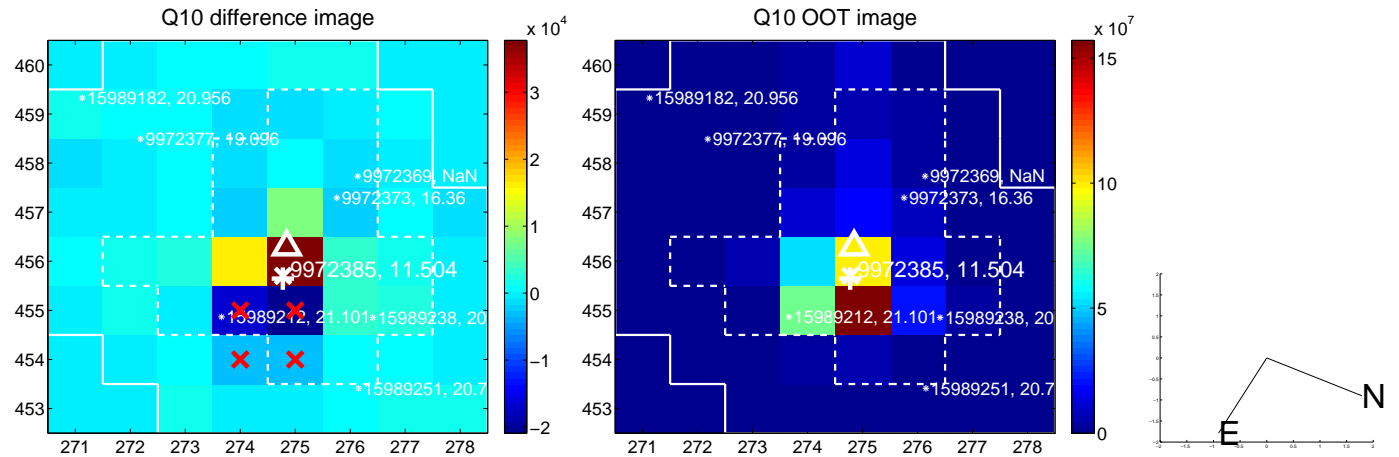
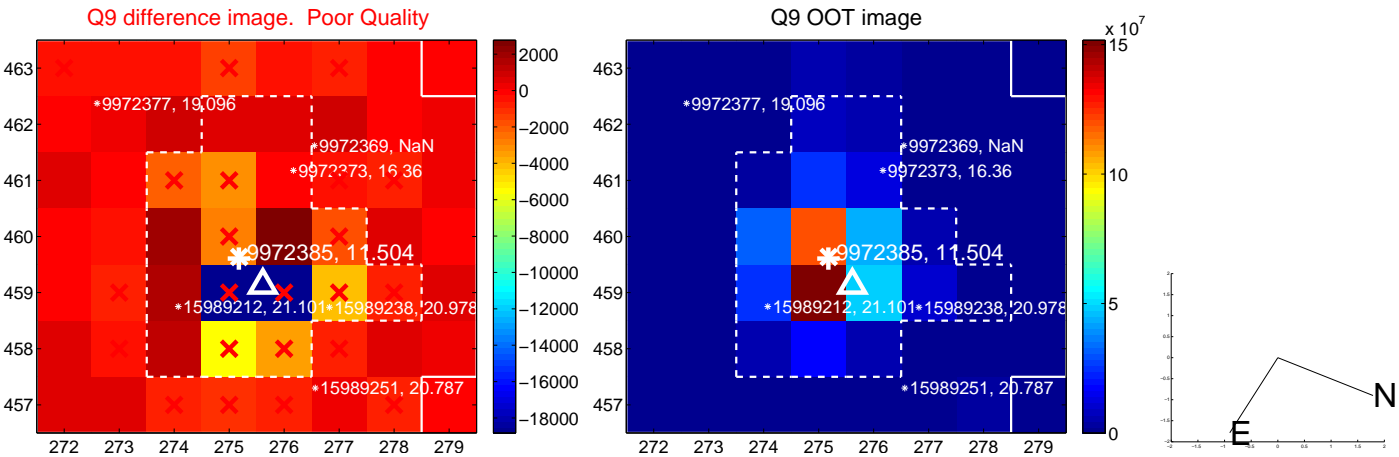
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



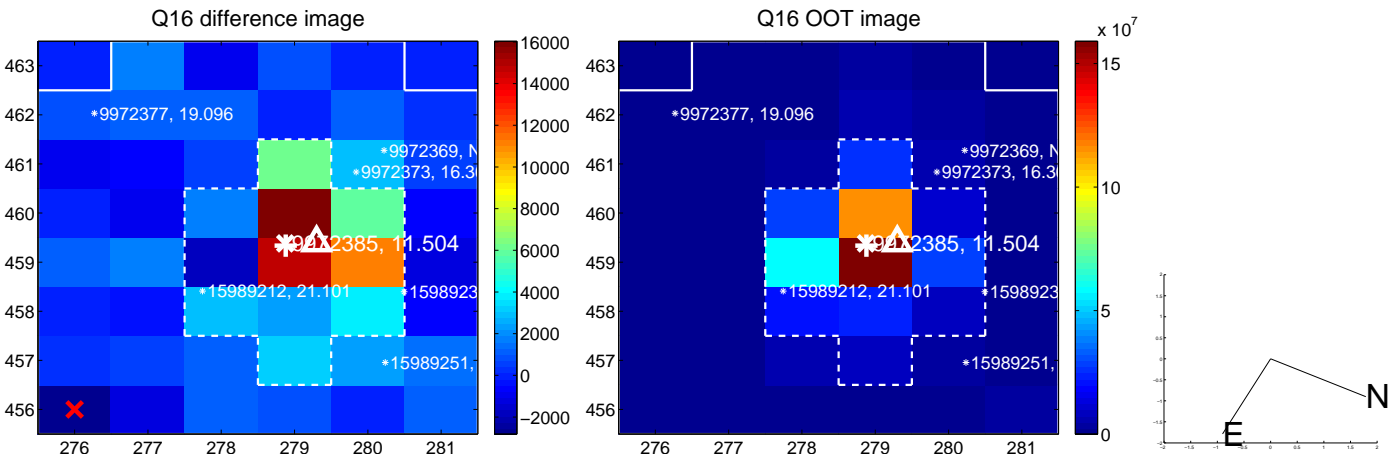
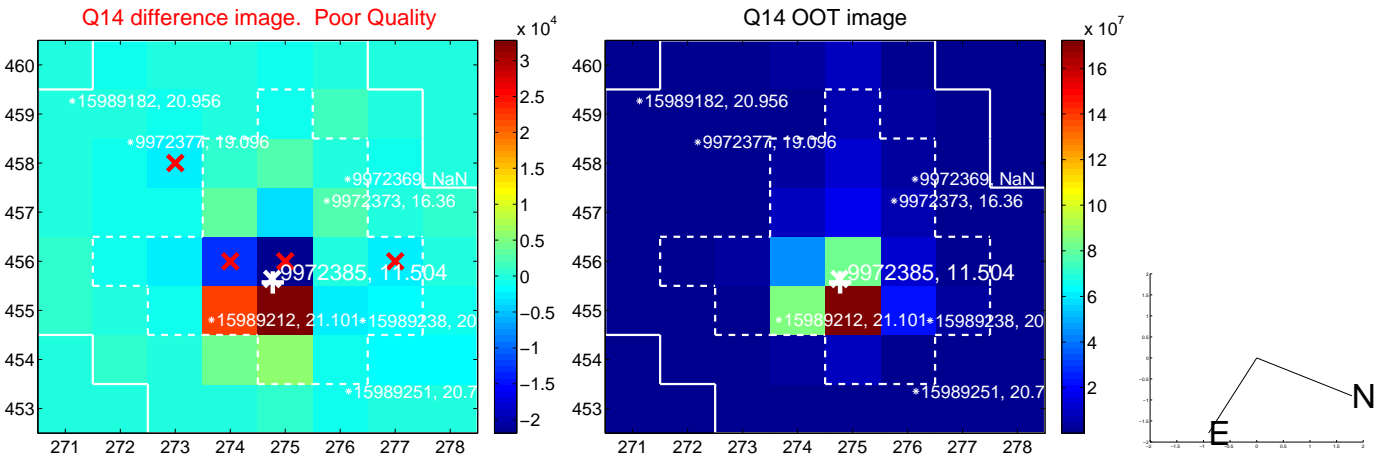
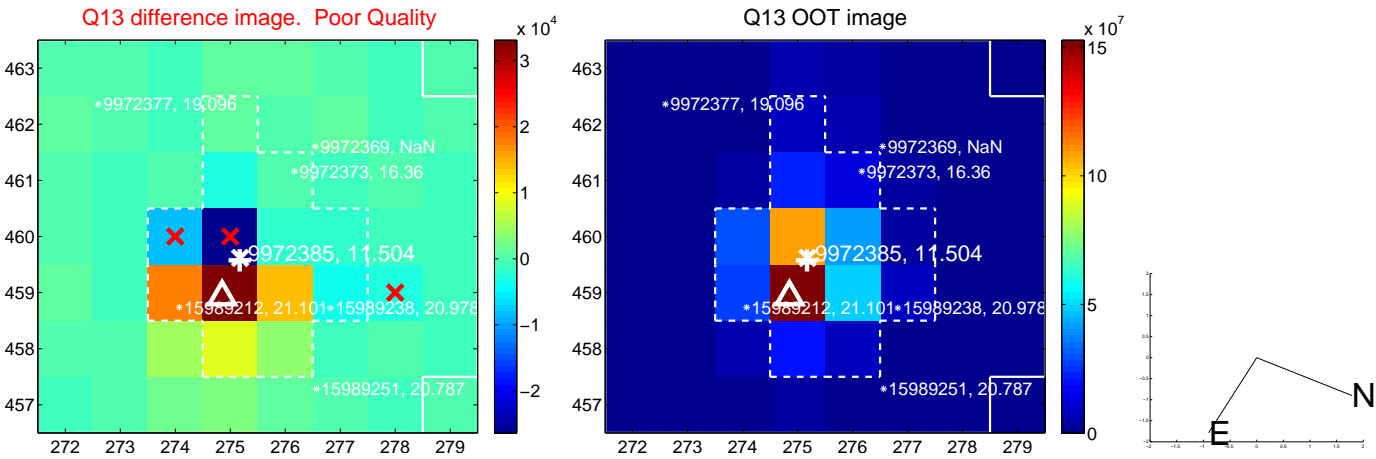
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



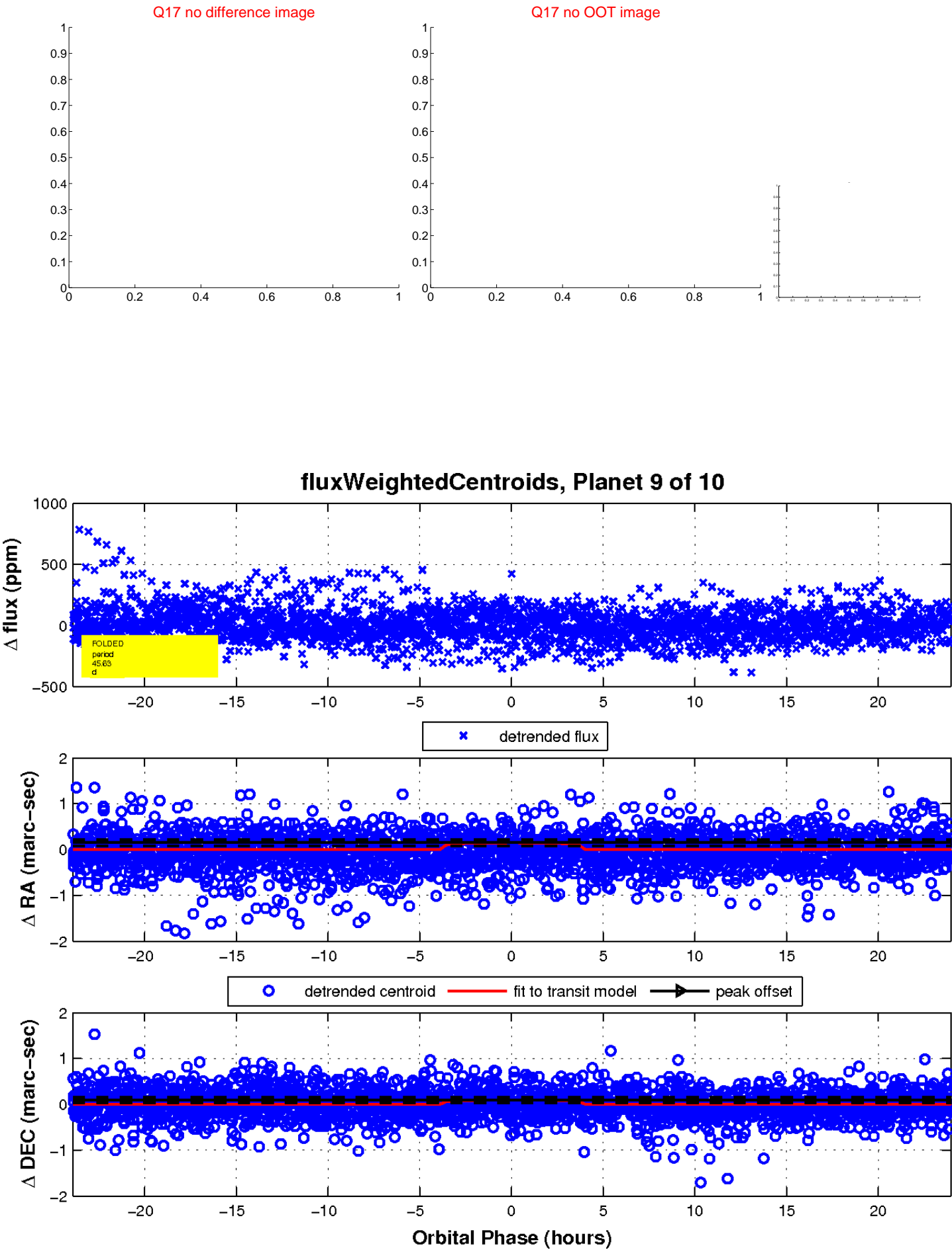
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

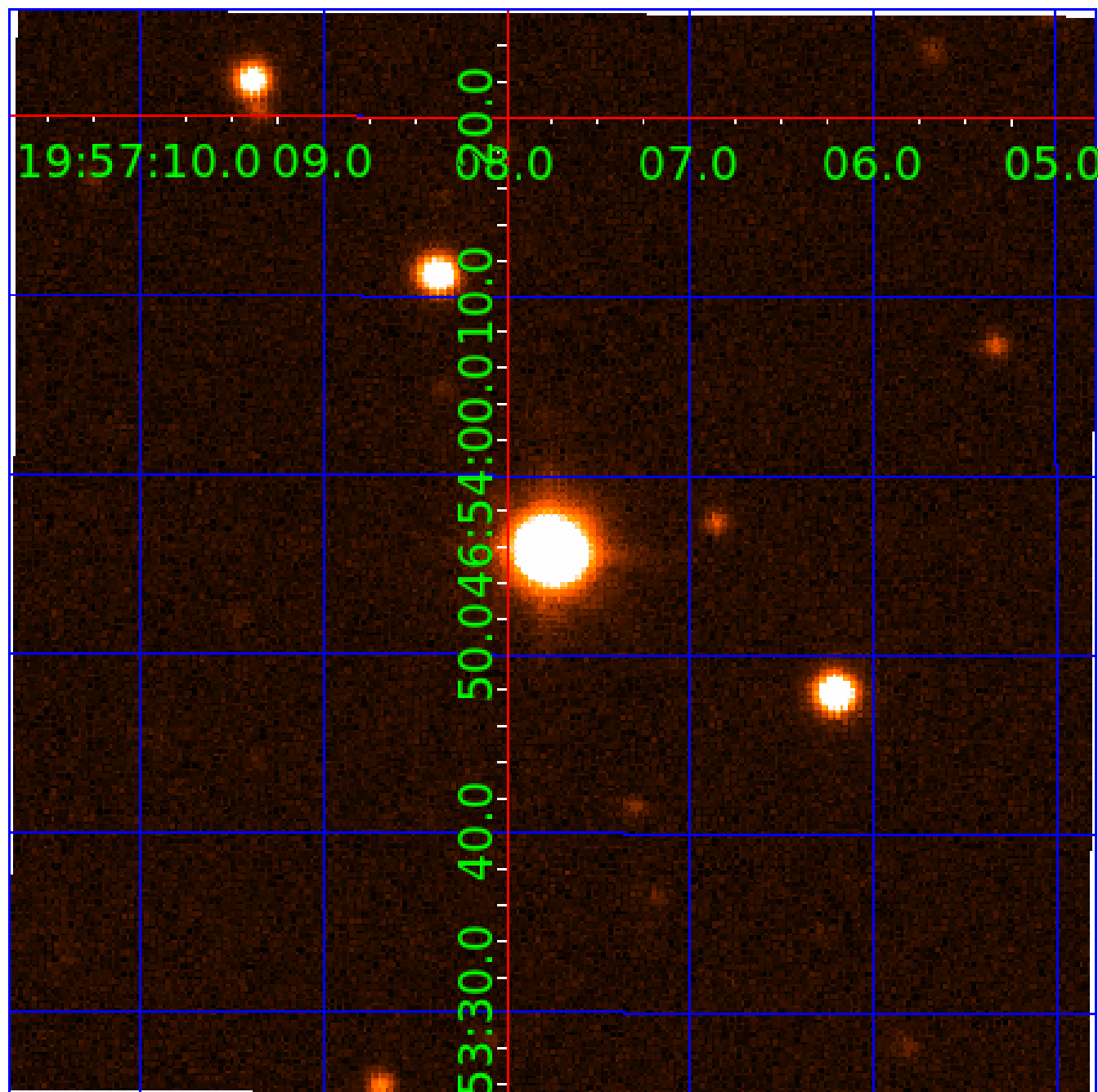


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009972385

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})
009972385-01	OBS	No	58.420909	188.641311	888.3	14.666	43.0	47.5	1.82	6313	10.28	53.92
009972385-02	OBS	No	3.377783	134.244452	52.7	11.222	10.9	12.8	1.82	6313	2.58	2411.99
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009972385-04	OBS	No	3.377988	133.026671	25.5	4.744	9.8	10.9	1.82	6313	1.03	2411.80
009972385-05	OBS	No	33.321012	149.739066	24.5	11.846	11.2	1.5	1.82	6313	1.05	114.01
009972385-06	OBS	No	123.877607	192.039254	388.5	27.425	9.2	9.0	1.82	6313	5.06	19.80
009972385-07	OBS	No	84.863803	175.775621	164.1	2.141	7.7	7.8	1.82	6313	2.67	32.78
009972385-08	OBS	No	44.313913	141.982351	121.6	4.609	7.6	7.2	1.82	6313	2.32	77.95
009972385-09	OBS	No	45.629158	166.537092	131.9	7.990	7.5	7.3	1.82	6313	2.40	74.97
009972385-10	OBS	No	23.229243	149.885894	73.0	5.734	7.7	5.9	1.82	6313	1.72	184.43

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009972385-01	OBS	FP	0.00	1	0	0	0	LPP_DV
009972385-02	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—MOD_NONUNIQ_DV
009972385-03	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD
009972385-04	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—SAME_NTL_PERIOD
009972385-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
009972385-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
009972385-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_MEAS
009972385-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_UNCERTAIN
009972385-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
009972385-10	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—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.

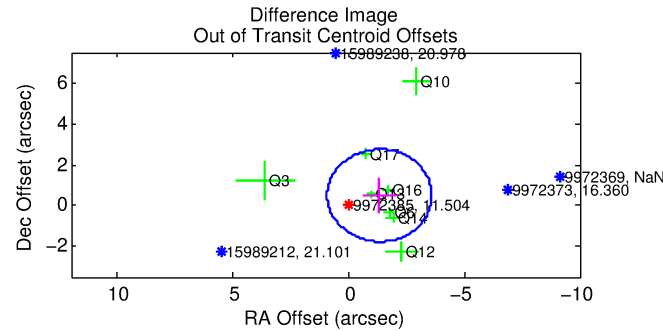
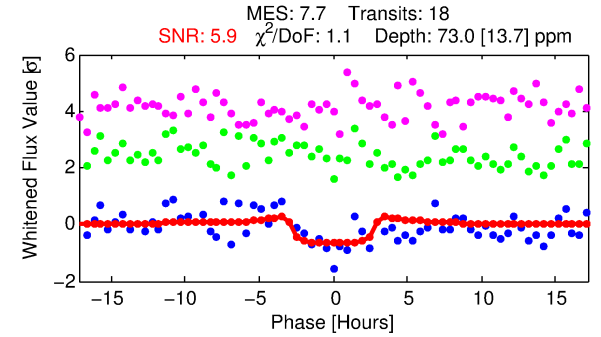
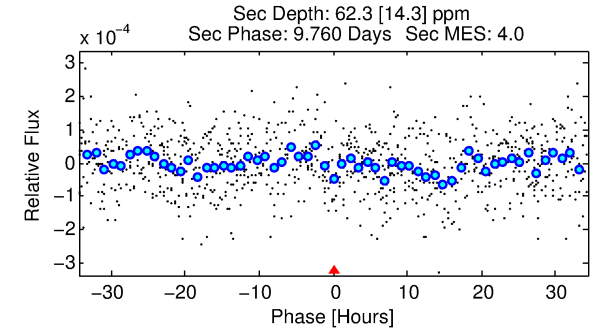
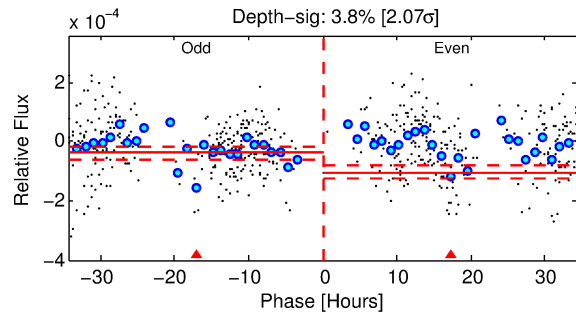
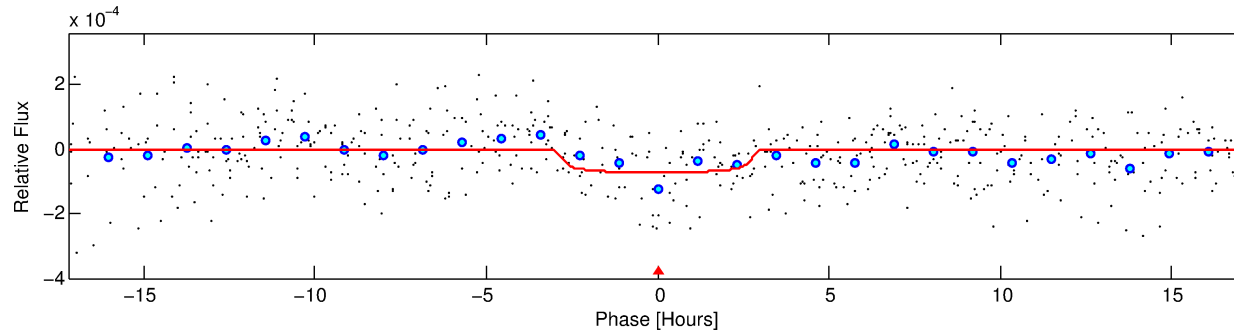
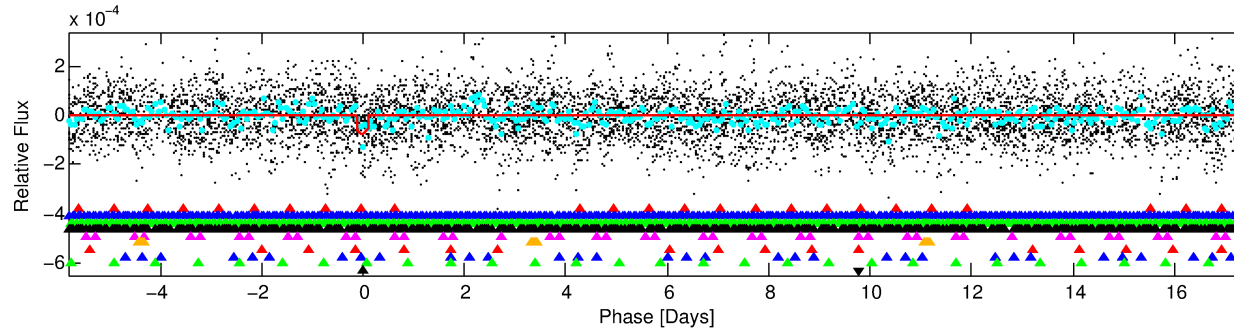
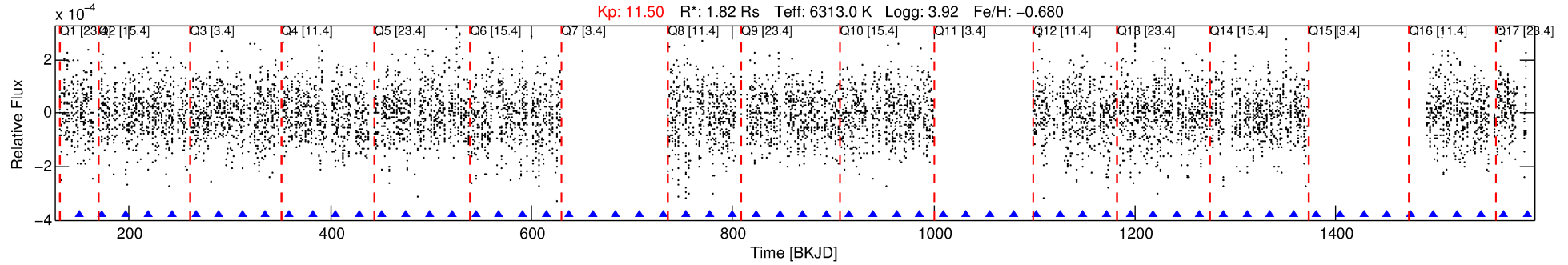
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009972385-10

No Significant Match Found

DV One-Page Summary

KIC: 9972385 Candidate: 10 of 10 Period: 23.229 d



DV Fit Results:

Period = 23.22924 [0.00041] d
Epoch = 149.8859 [0.0149] BKJD
Rp/R* = 0.0087 [0.0065]
a/R* = 18.66 [78.33]
b = 0.81 [1.81]
Seff = 184.43 [101.64]
Teq = 940 [129] K
Rp = 1.72 [1.41] Re
a = 0.1599 [0.0525] AU
Ag = 294.70 [476.58] [0.62 σ]
Teff = 6020 [2299] K [2.21 σ]

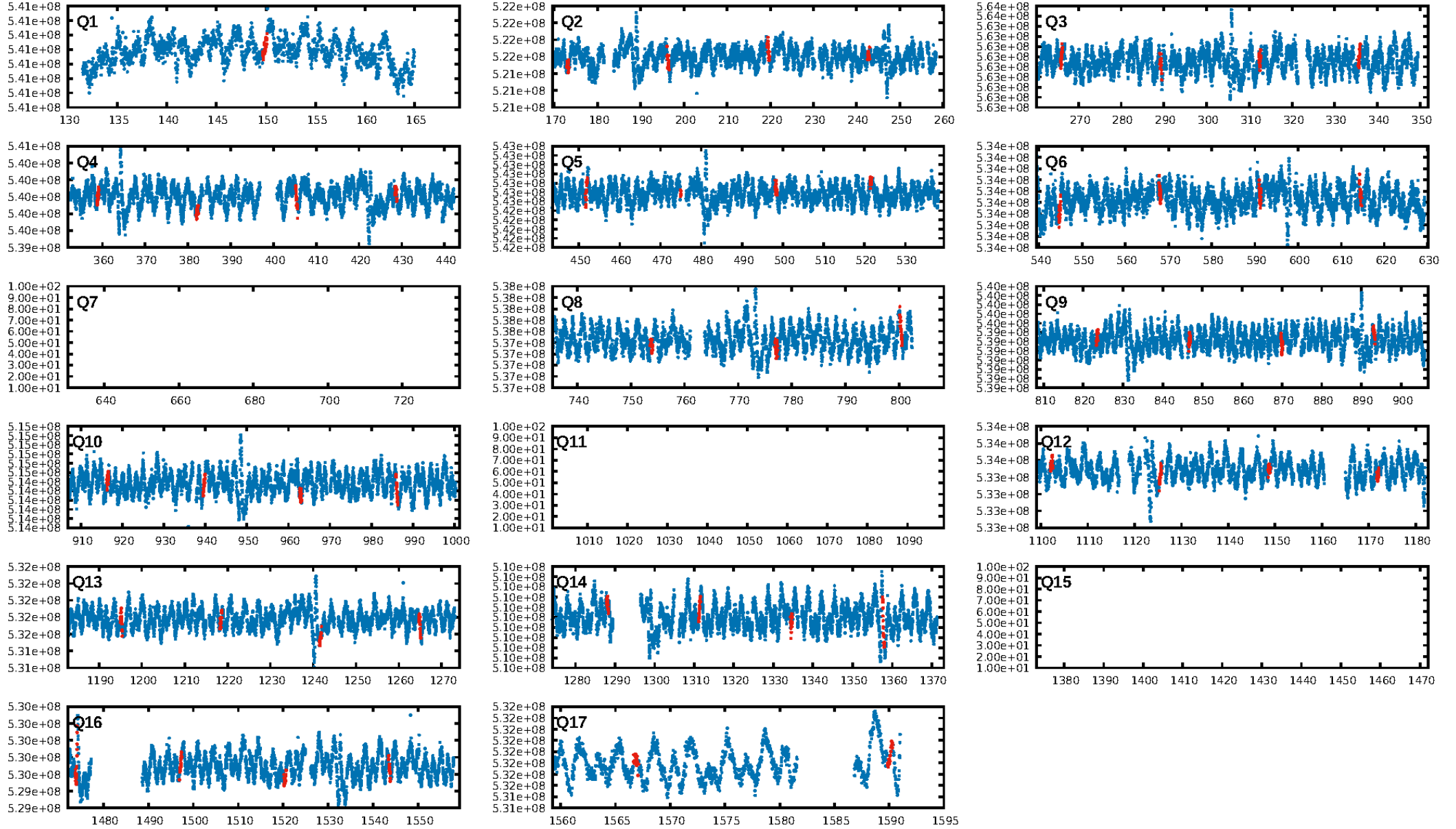
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [64.02 σ]
LongPeriod-sig: 100.0% [18.40 σ]
ModelChiSquare2-sig: 19.5%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 1.94e-08
RollingBand-fgt: 1.00 [18/18]
GhostDiagnostic-chr: -1.763
Centroid-sig: 0.0%
Centroid-so: 1.720 arcsec [2.73 σ]
OotOffset-rm: 1.416 arcsec [1.88 σ]
KicOffset-rm: 1.303 arcsec [2.28 σ]
OotOffset-st: 3/1/2/2 [8]
KicOffset-st: 3/1/2/2 [8]
DiffImageQuality-fgm: 0.38 [3/8]
DiffImageOverlap-fno: 0.00 [0/14]

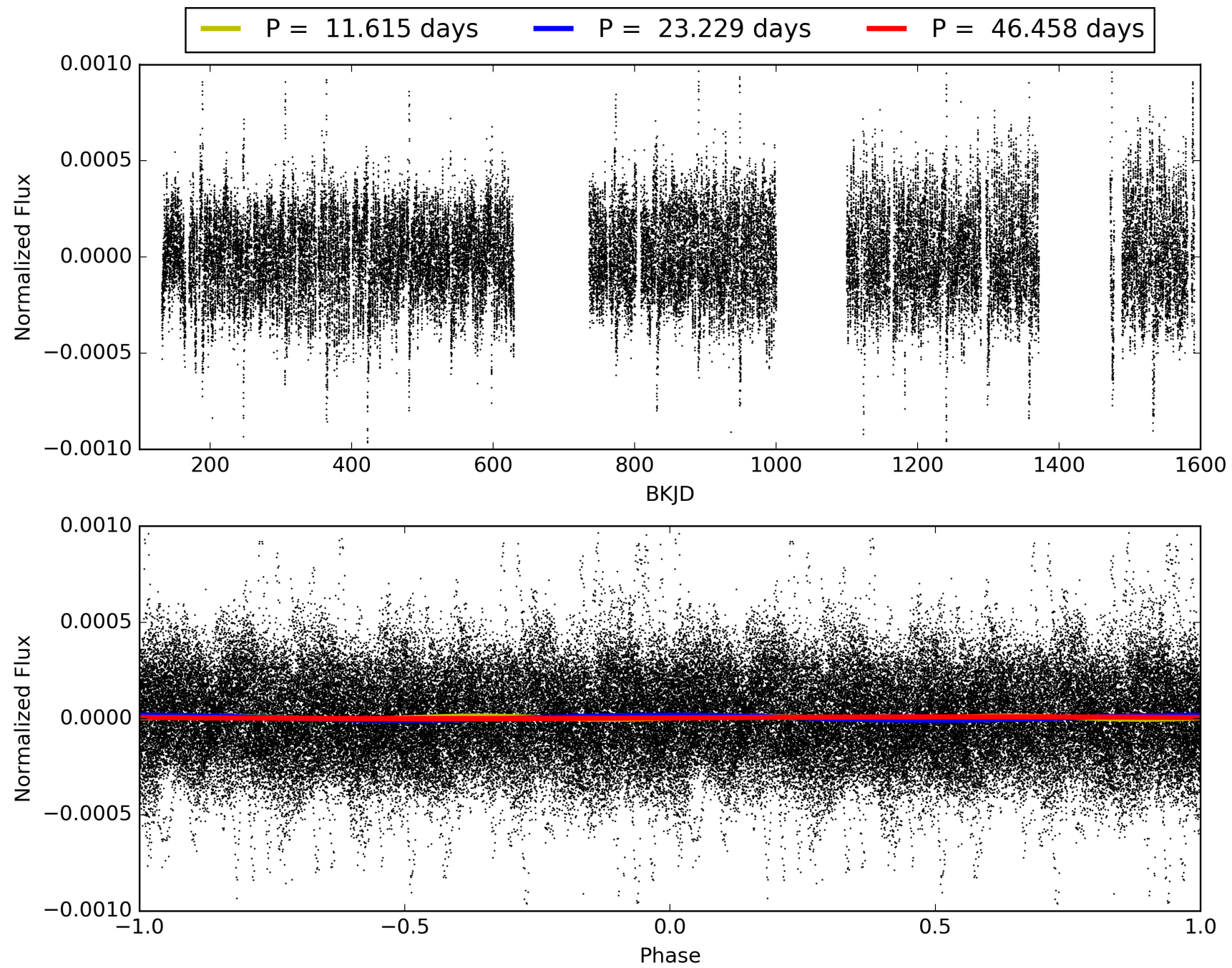
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 17:09:26 Z

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

TCE 009972385-10, PDC Light Curves

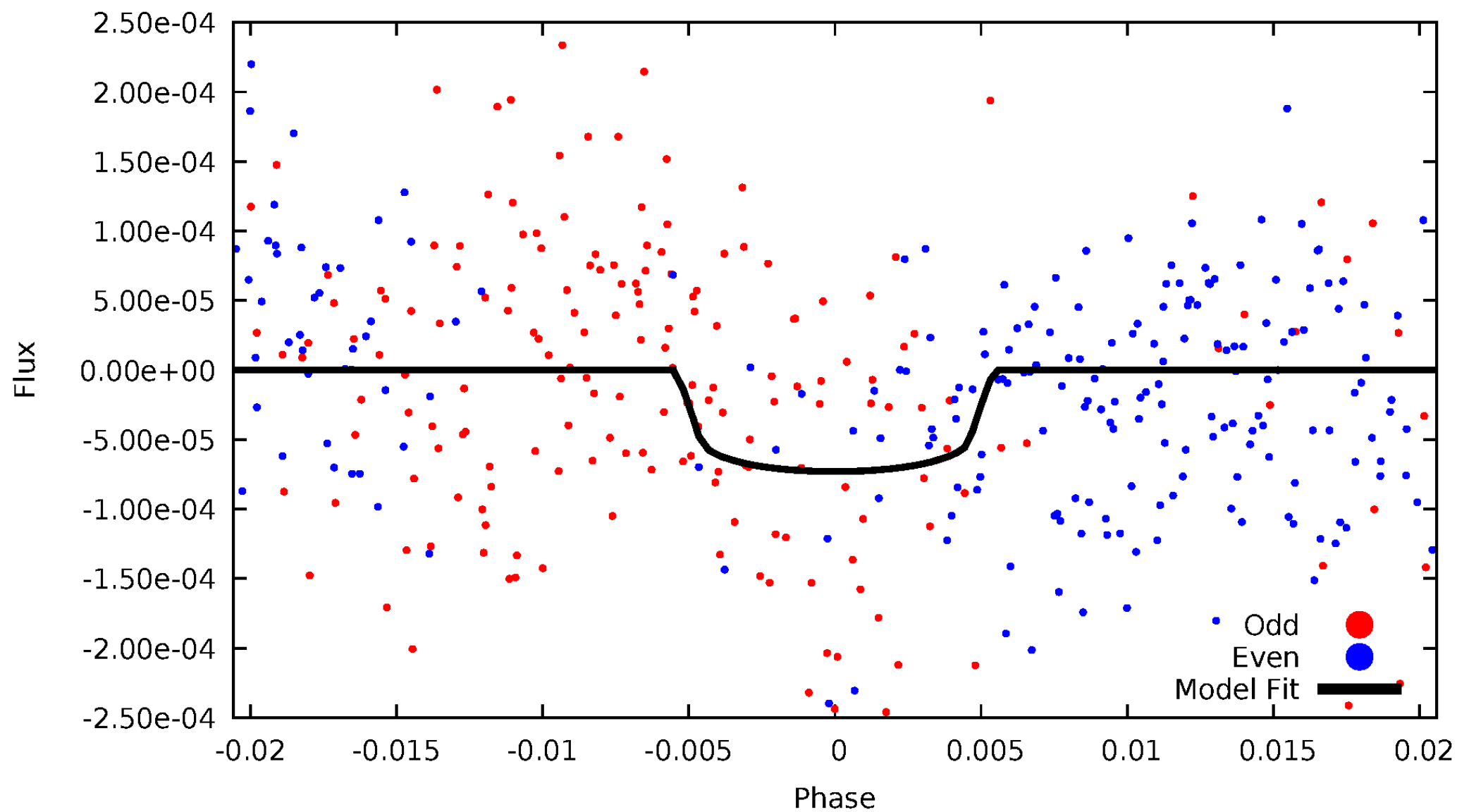


TCE 009972385-10



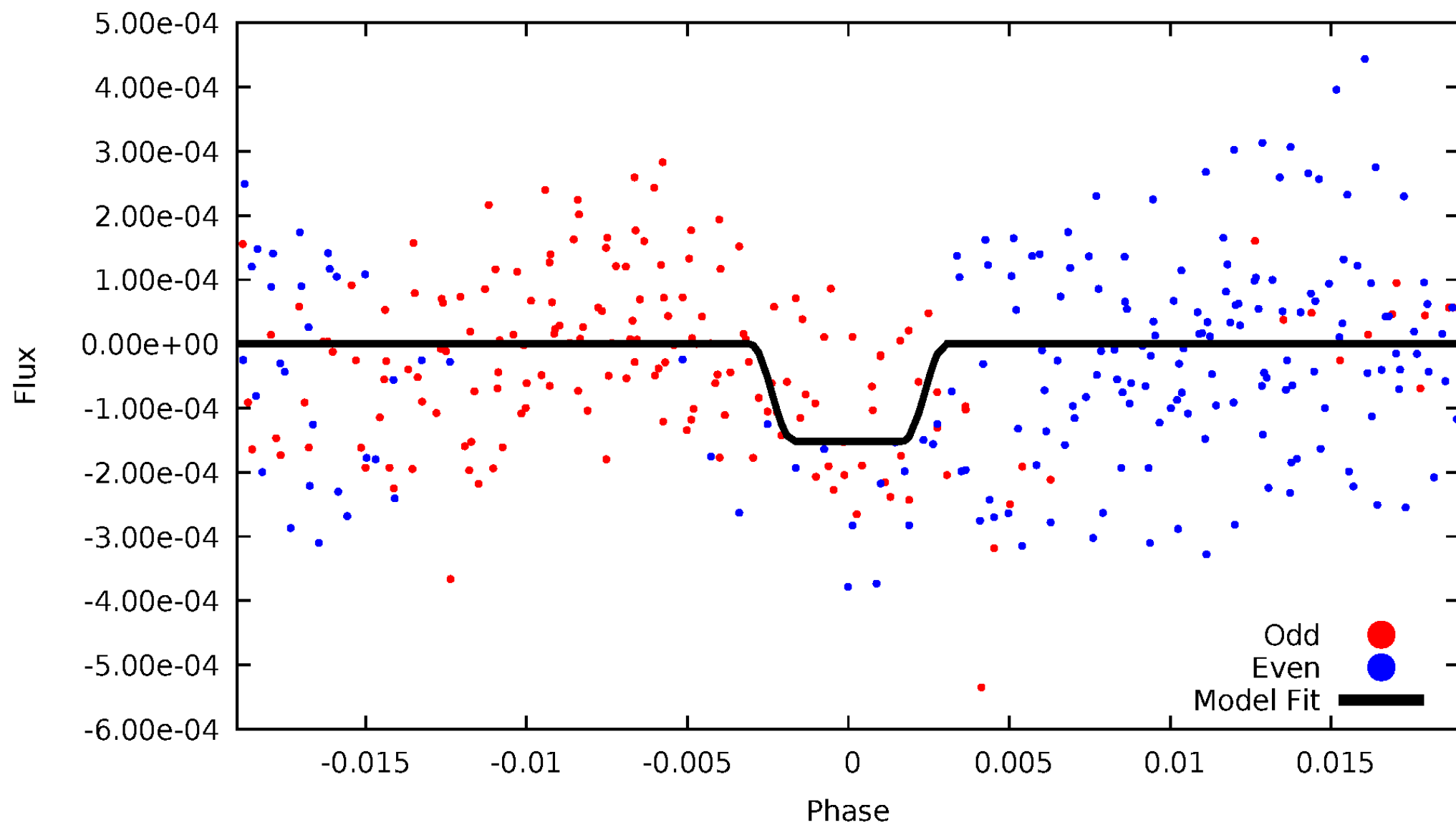
DV Odd/Even

TCE 009972385-10



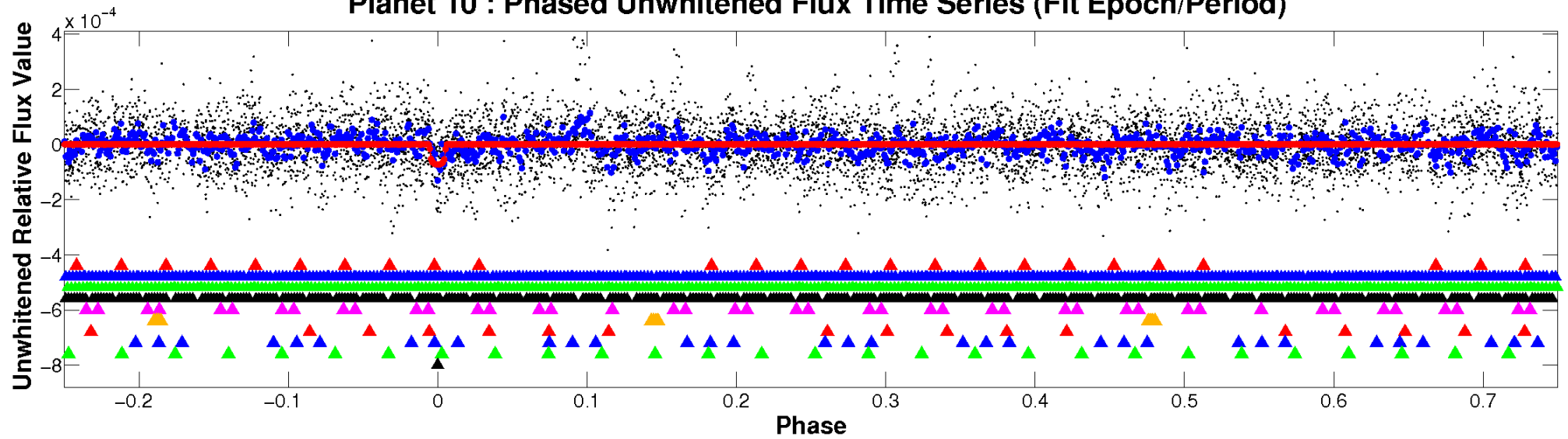
ALT Odd/Even

TCE 009972385-10

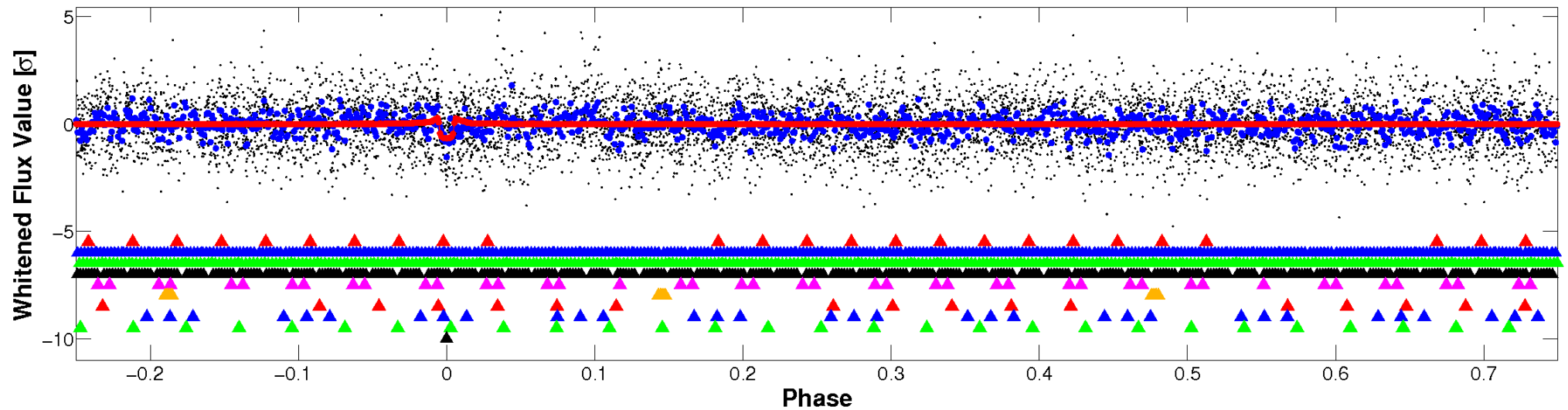


Non-Whitened Vs. Whitened Light Curve

Planet 10 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

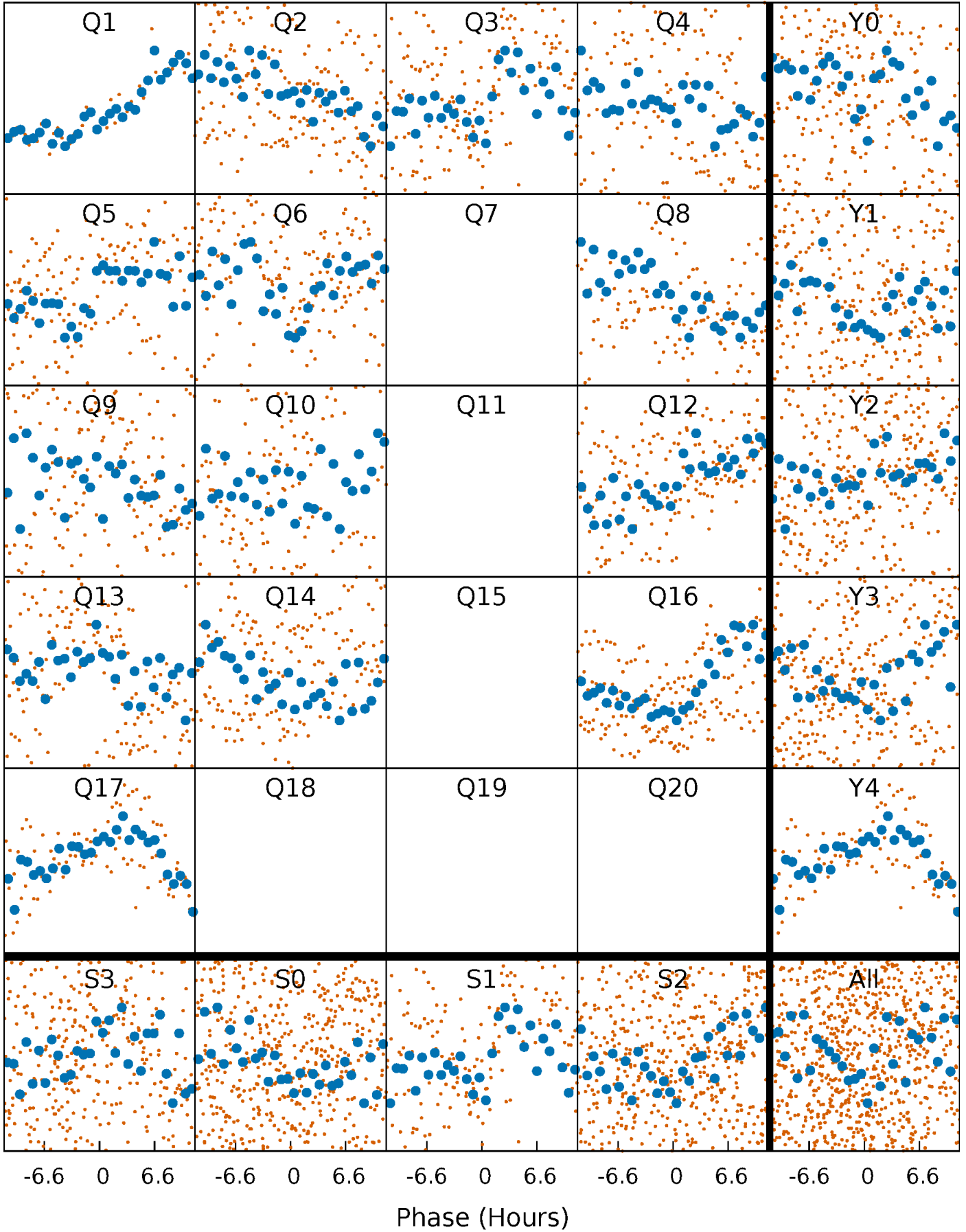


Planet 10 : Phased Whitened Flux Time Series (Fit Epoch/Period)



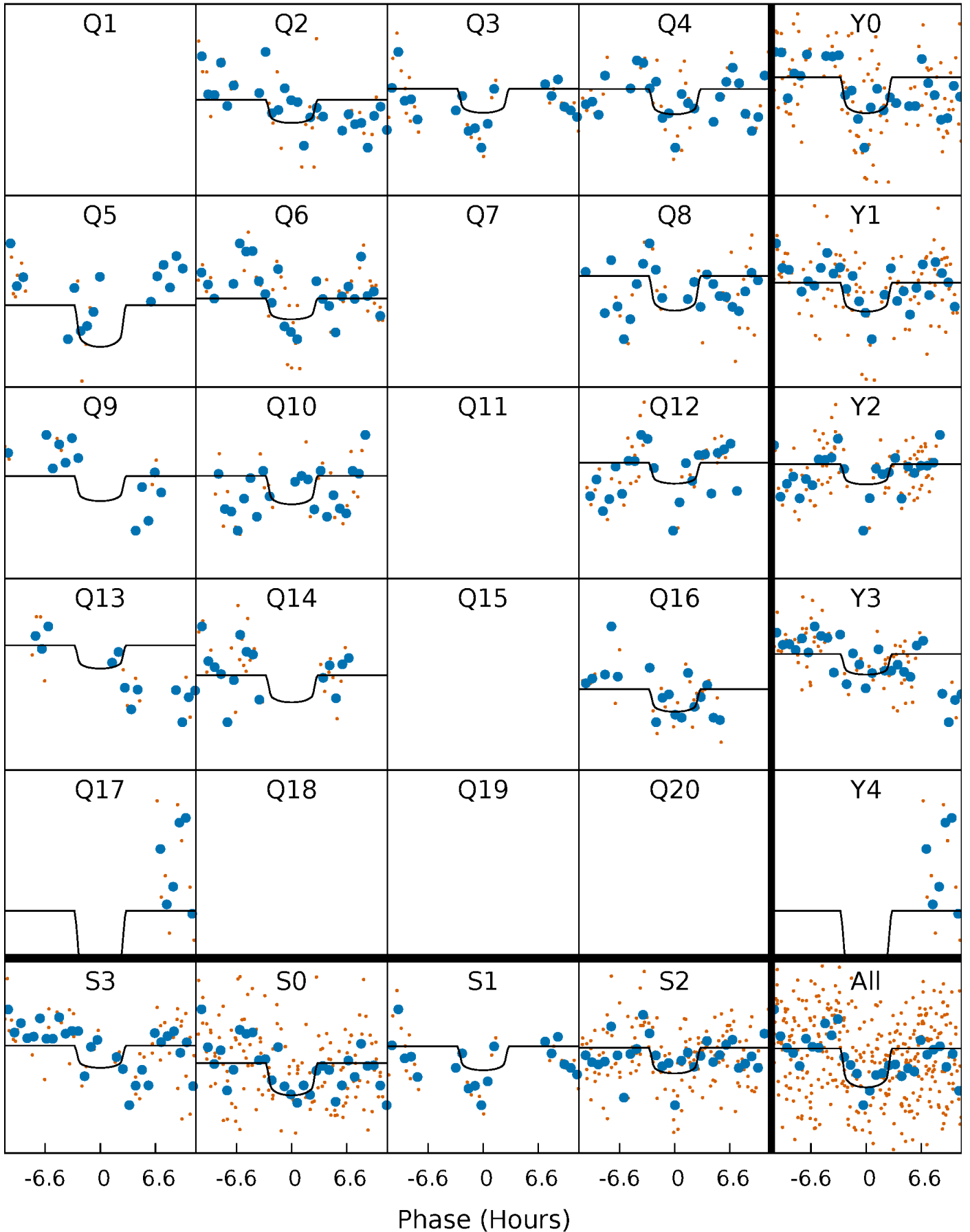
PDC Quarter-Phased Transit Curves

TCE 009972385-10 P= 23.229243 Days $T_0=149.885894$ (BKJD)



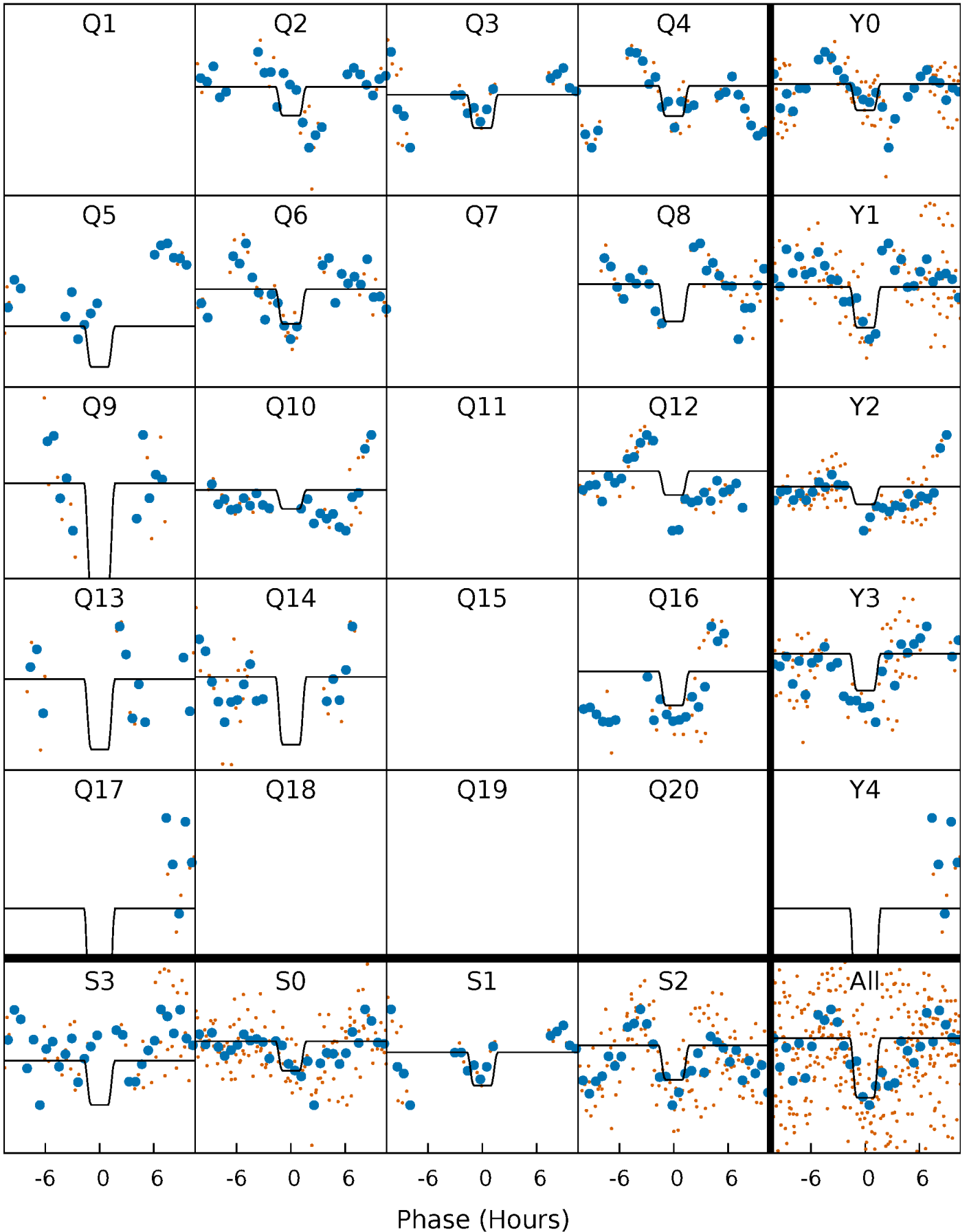
DV Quarter-Phased Transit Curves

TCE 009972385-10 P= 23.229243 Days $T_0=149.885894$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

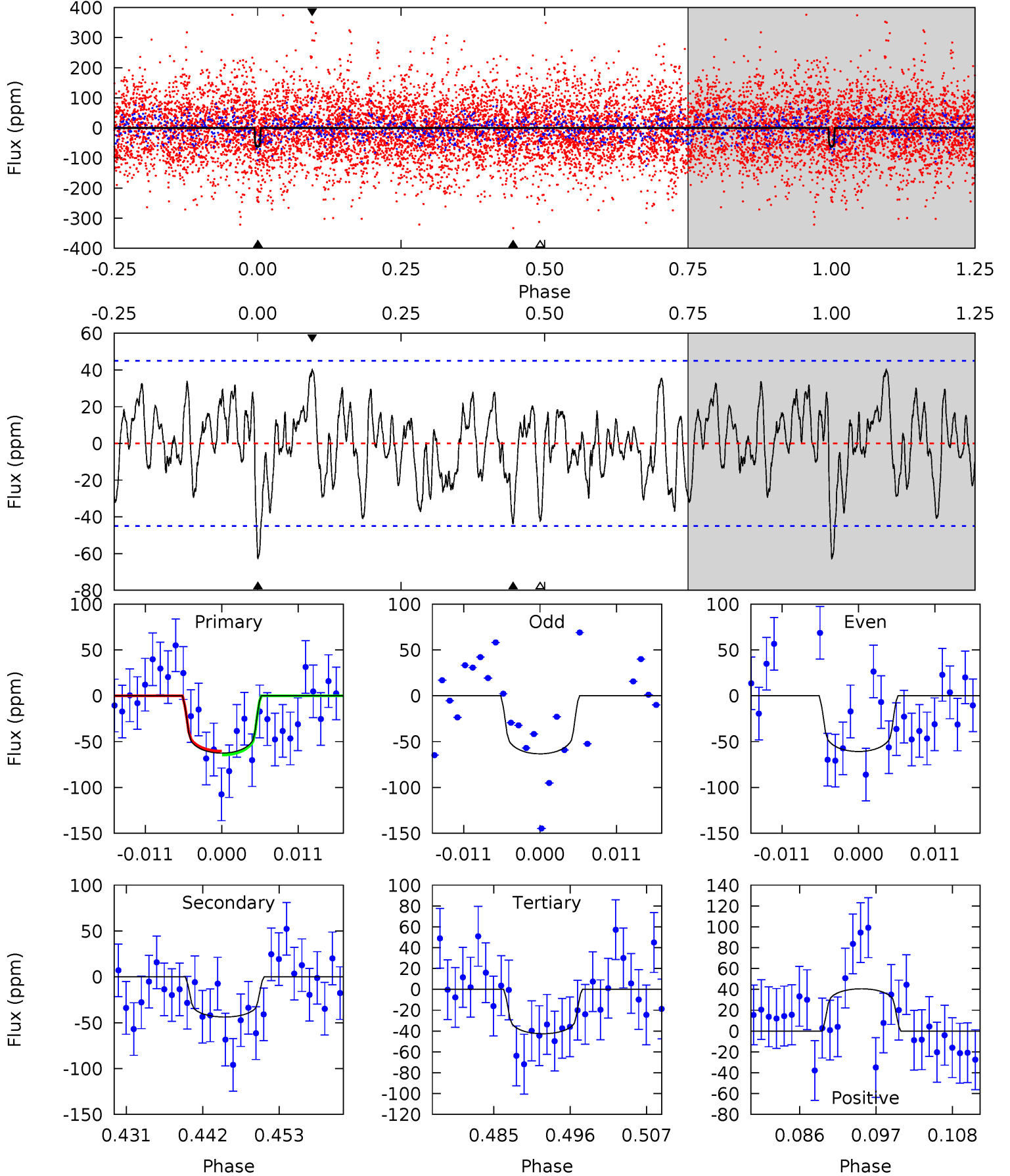
TCE 009972385-10 P= 23.228974 Days $T_0=149.893118$ (BKJD)



DV Model-Shift Uniqueness Test

009972385-10, P = 23.229243 Days, E = 126.656651 Days

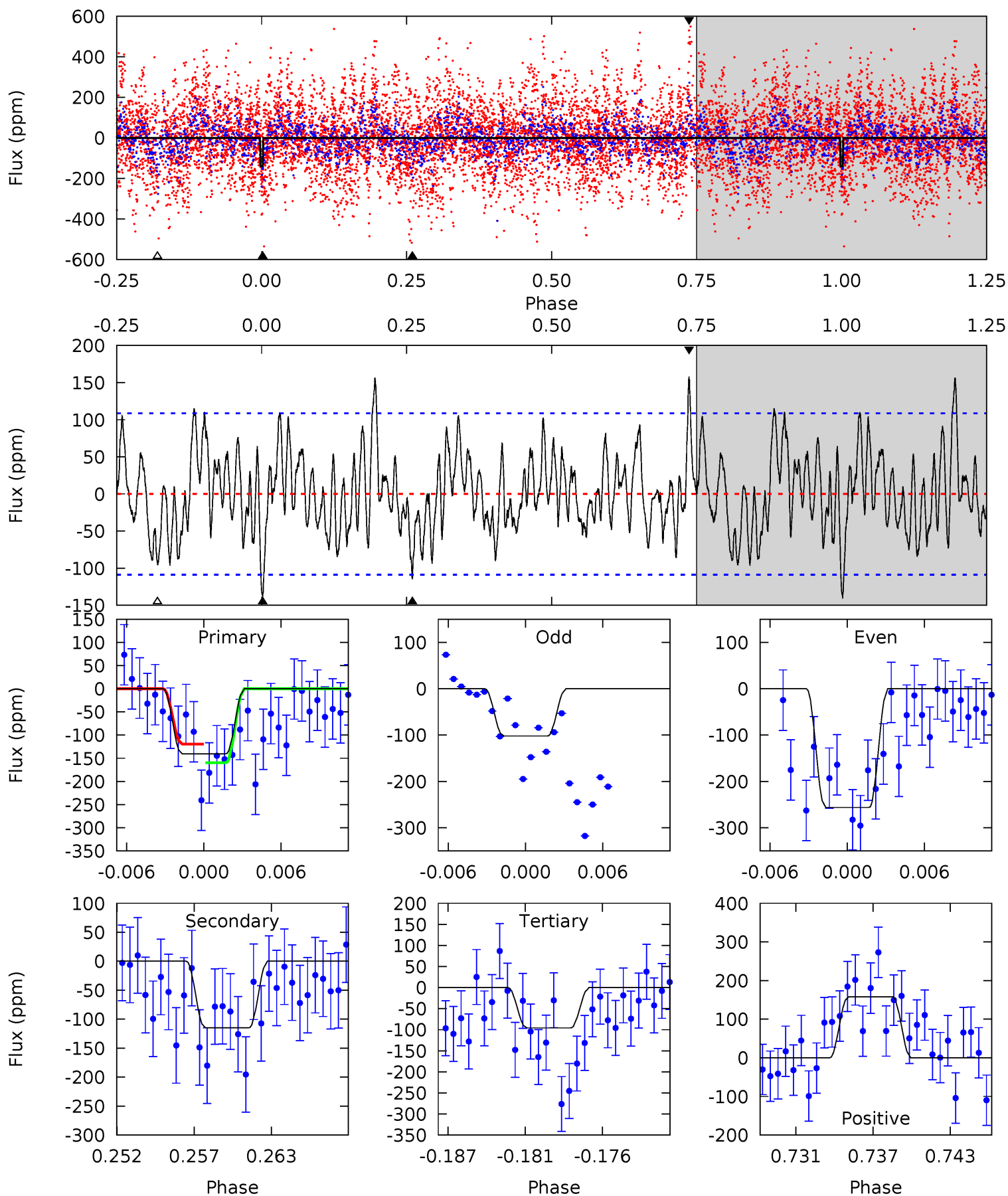
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.97	4.88	4.75	4.51	5.01	2.55	1.82	2.22	2.46	0.13	0.37	0.13	1.15	0.39	0.23



Alt Model-Shift Uniqueness Test

009972385-10, P = 23.228974 Days, E = 126.664144 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.63	5.42	4.52	7.46	5.13	2.76	2.20	2.11	-0.83	0.90	-2.04	3.18	0.79	0.53	0.95



Stellar Parameters For KIC 009972385

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6313^{+170}_{-170}	$3.922^{+0.323}_{-0.108}$	$-0.680^{+0.350}_{-0.250}$	$1.820^{+0.391}_{-0.587}$	$1.009^{+0.161}_{-0.145}$	$0.236^{+0.462}_{-0.087}$
	+3%/-3%	+8%/-3%	+51%/-37%	+21%/-32%	+16%/-14%	+196%/-37%
Source	PHO1	FLK73	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 009972385-10 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-44 ± 9	$1.73^{+1.27}_{-1.03}$	1287^{+82}_{-114}	5344^{+3203}_{-1059}	210^{+1063}_{-145}
Alt.	-115 ± 21	$2.34^{+1.35}_{-1.18}$	1289^{+84}_{-110}	5830^{+2673}_{-1027}	308^{+910}_{-193}

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 $A_{obs} \gg 1.0$

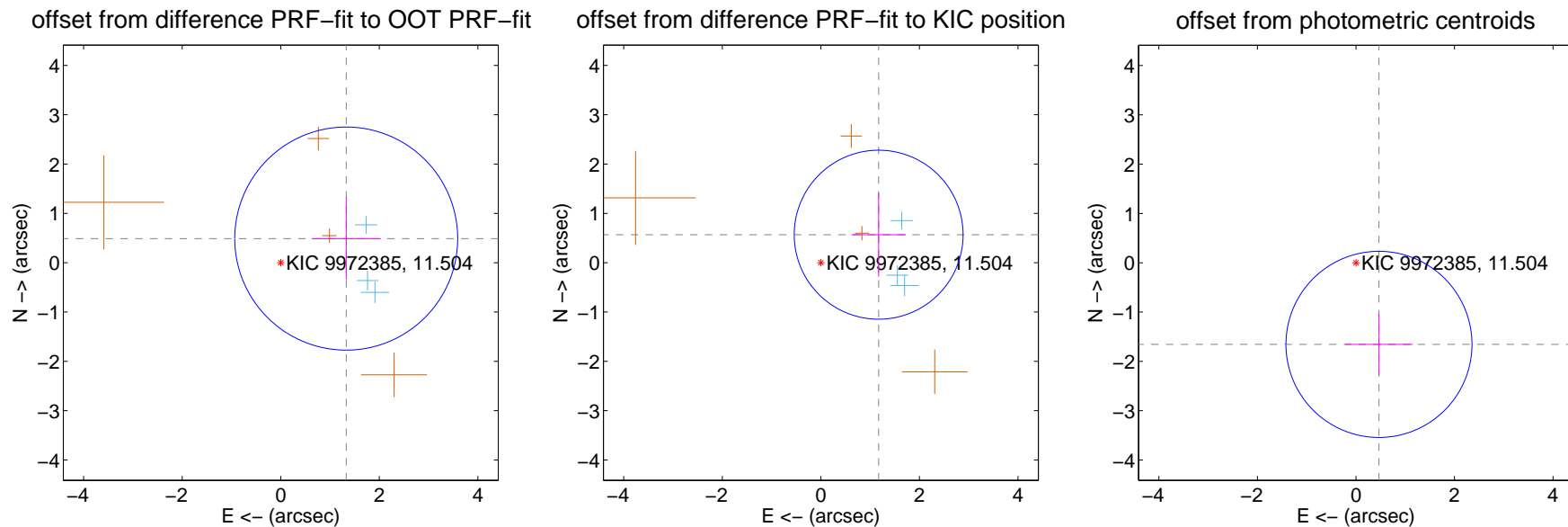
DV Centroid Data

Supplemental centroid analysis for 009972385-10. **Kepler magnitude: 11.50.** Transit SNR 5.94

There are 3 quarters with good PRF difference image offsets

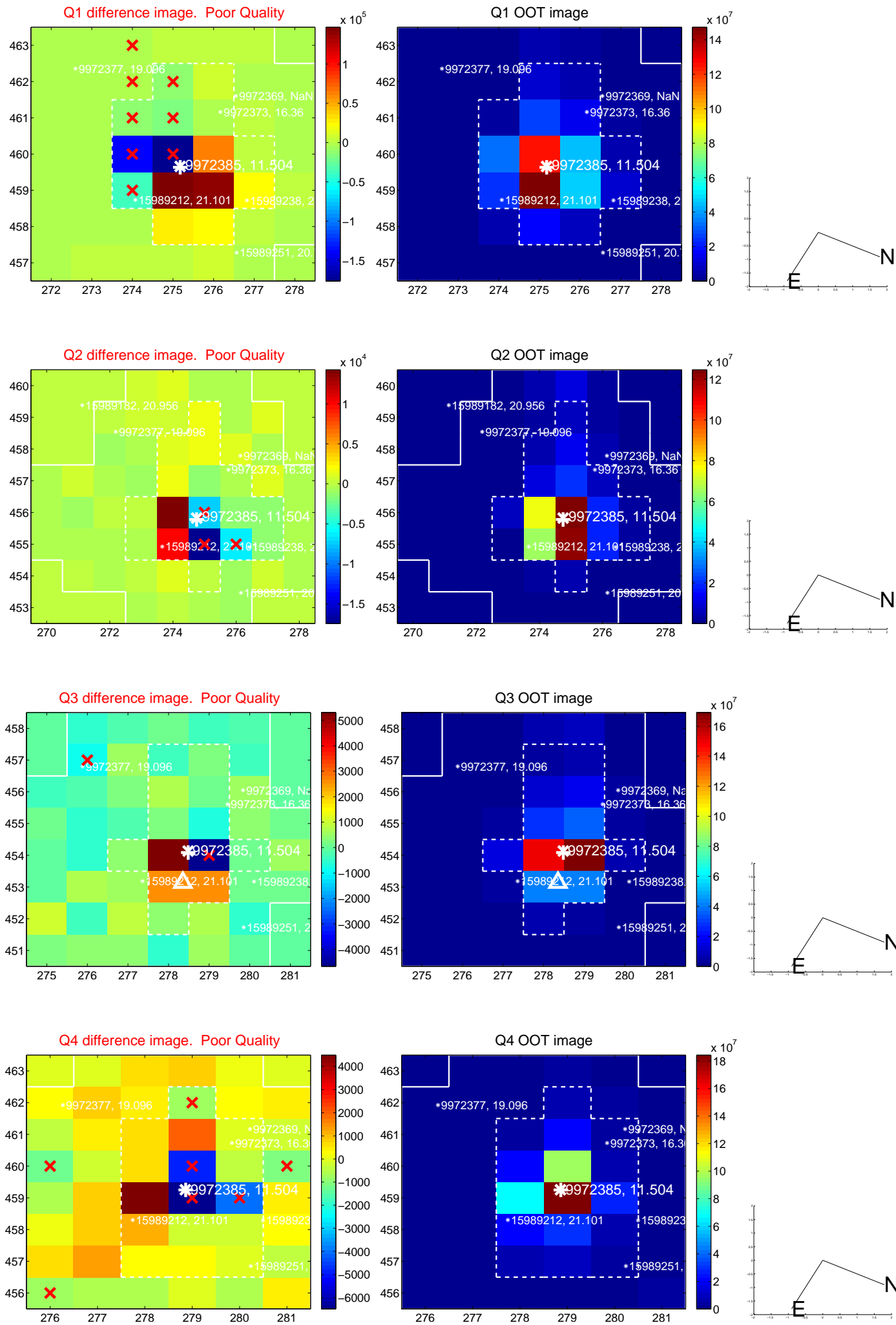
The direct PRF centroid is offset from the target star catalog position by about 0.15 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.416 ± 0.754	1.88	-1.329 ± 0.701	0.489 ± 0.834
PRF-fit source offset from KIC position	1.303 ± 0.571	2.28	-1.173 ± 0.550	0.567 ± 0.853
photometric centroid source offset	1.72 ± 0.63	2.73	-0.47 ± 0.69	-1.66 ± 0.62

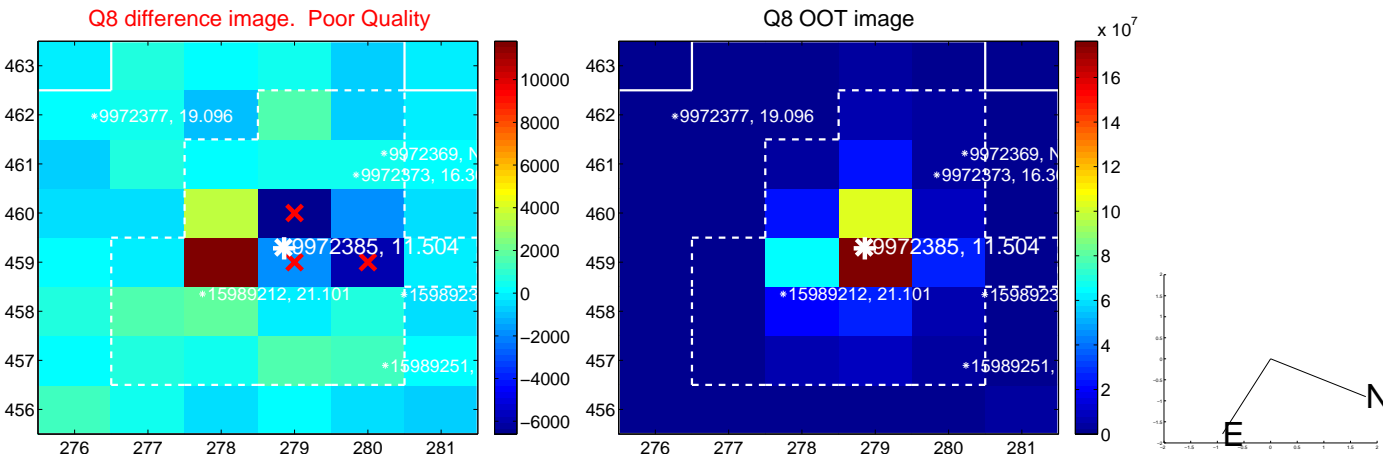
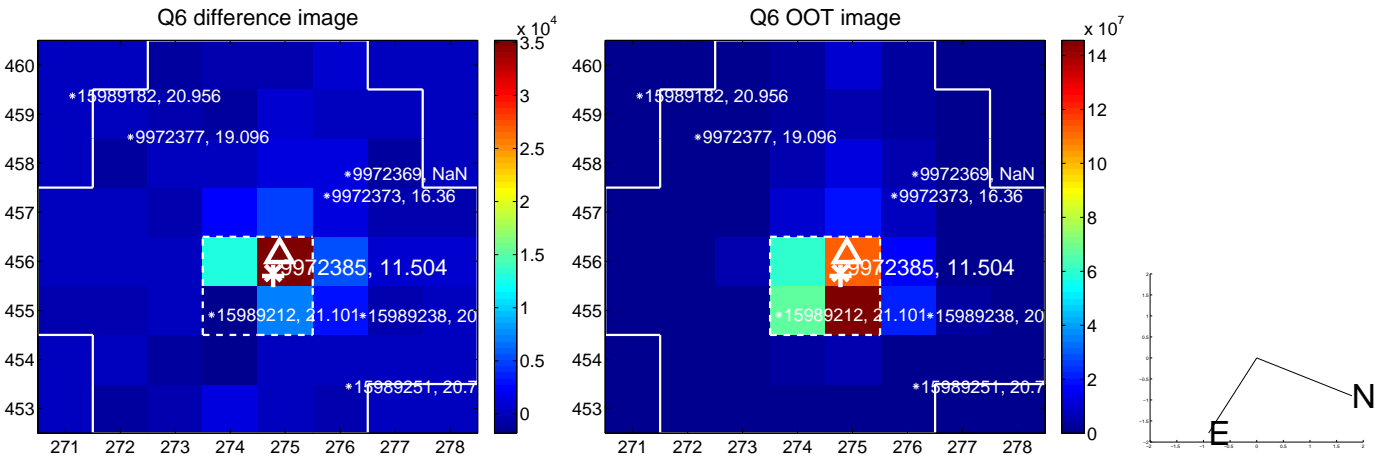
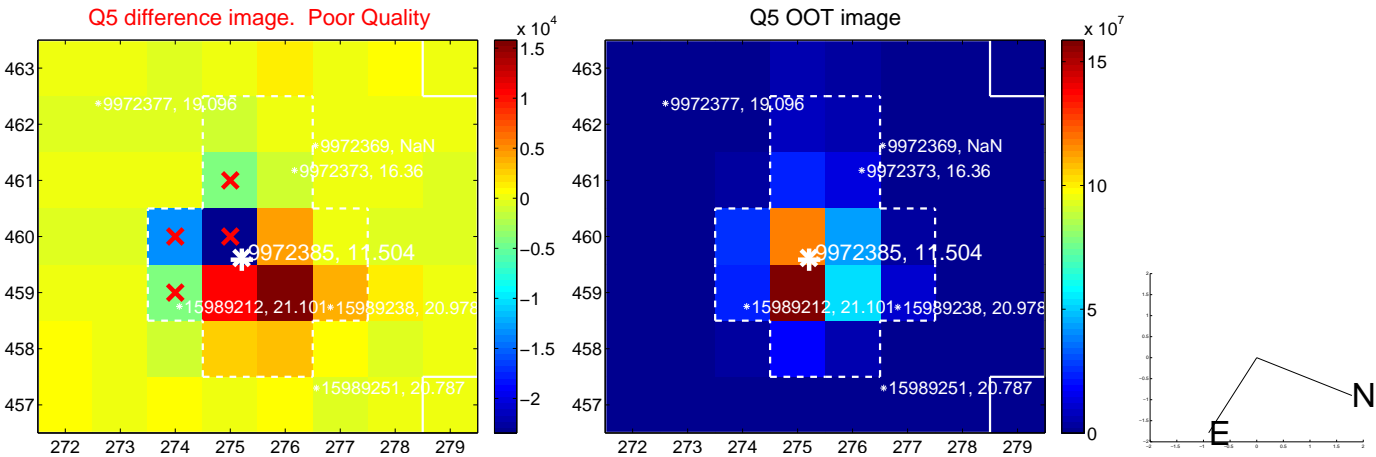


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

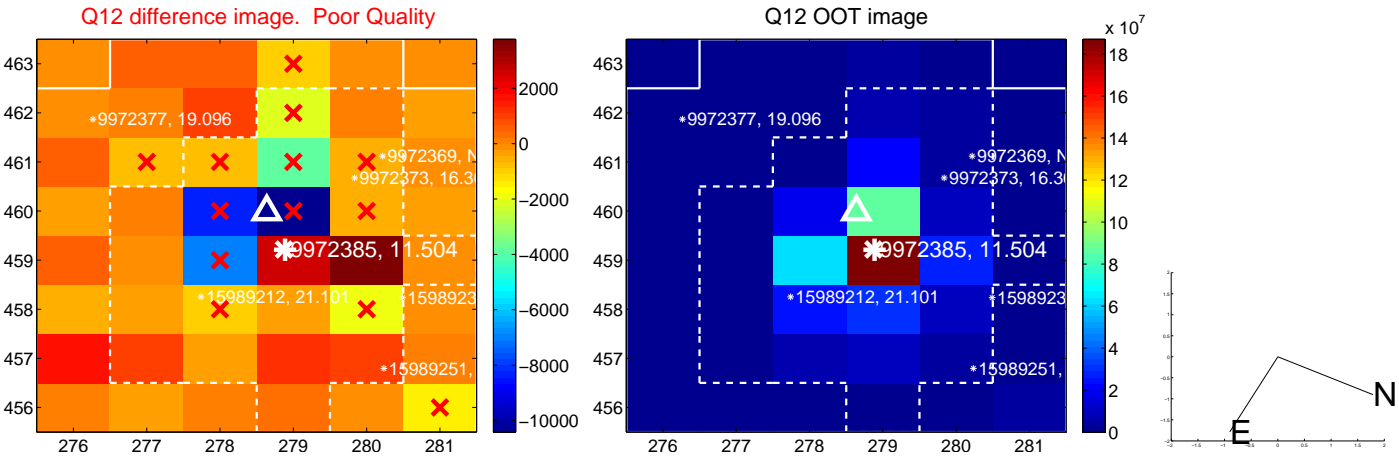
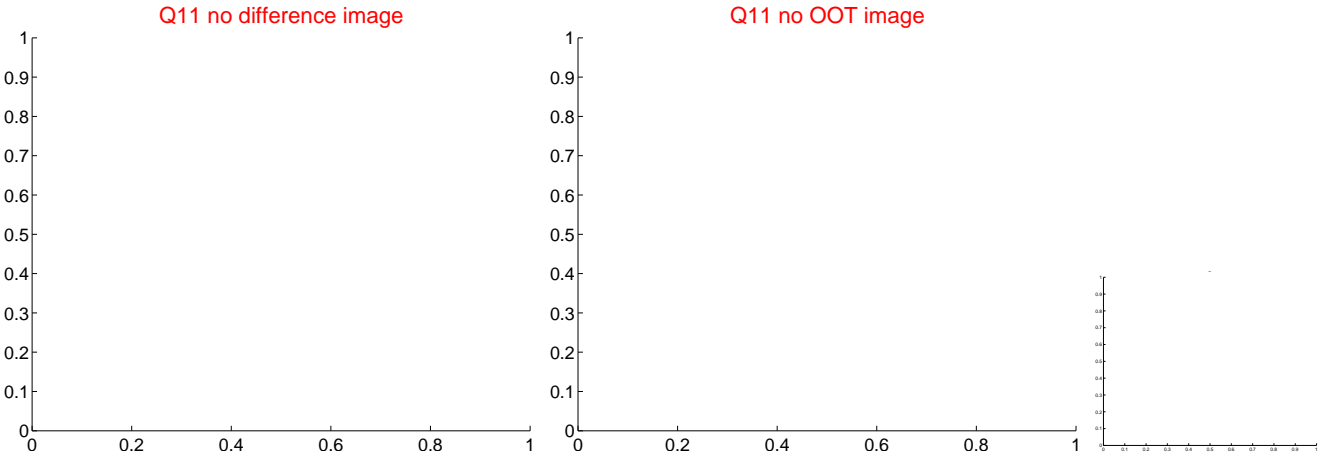
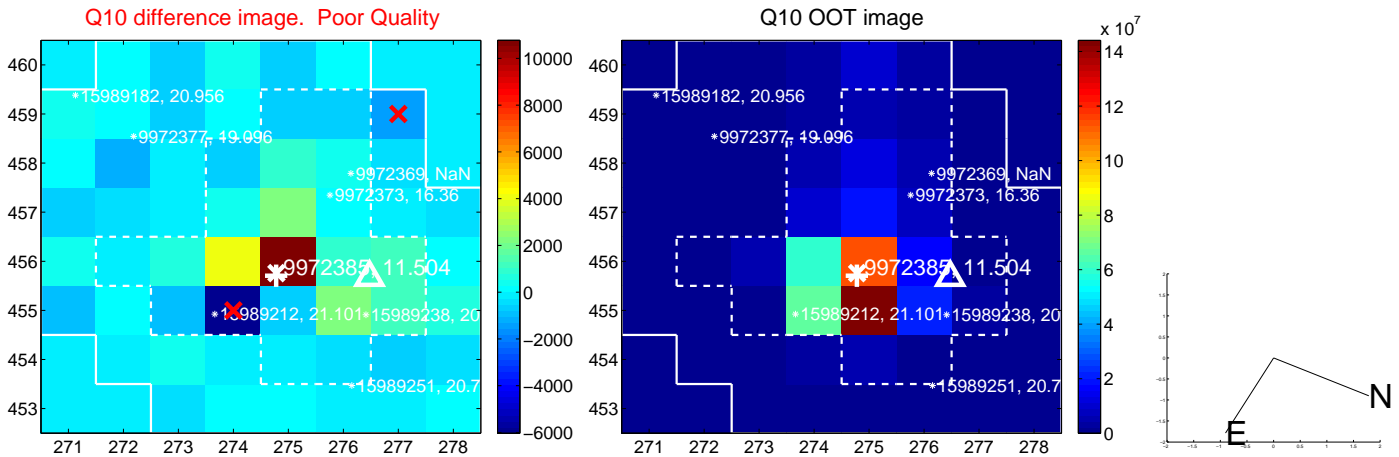
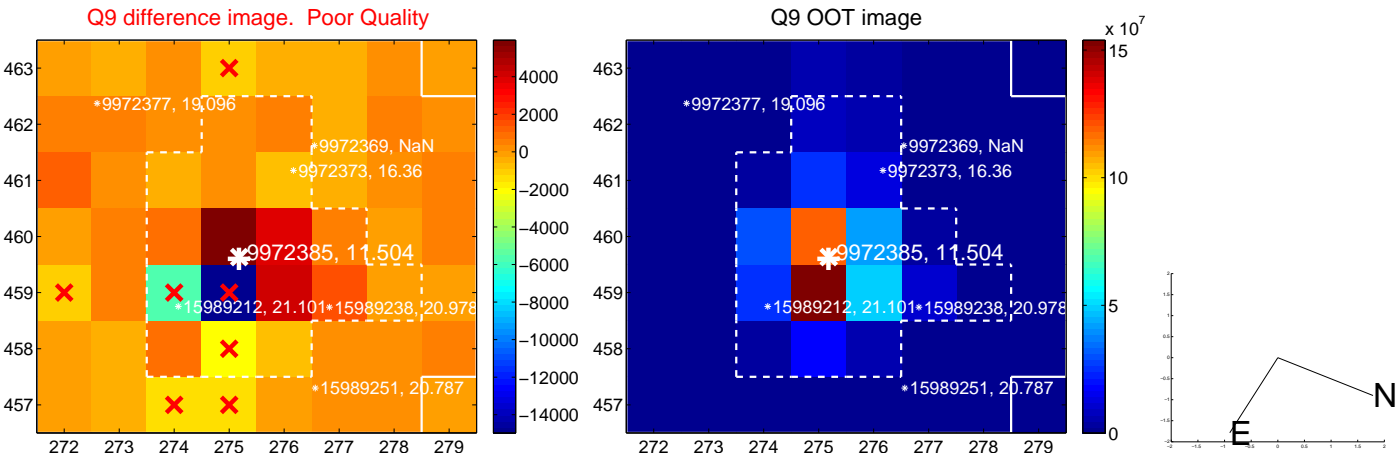
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



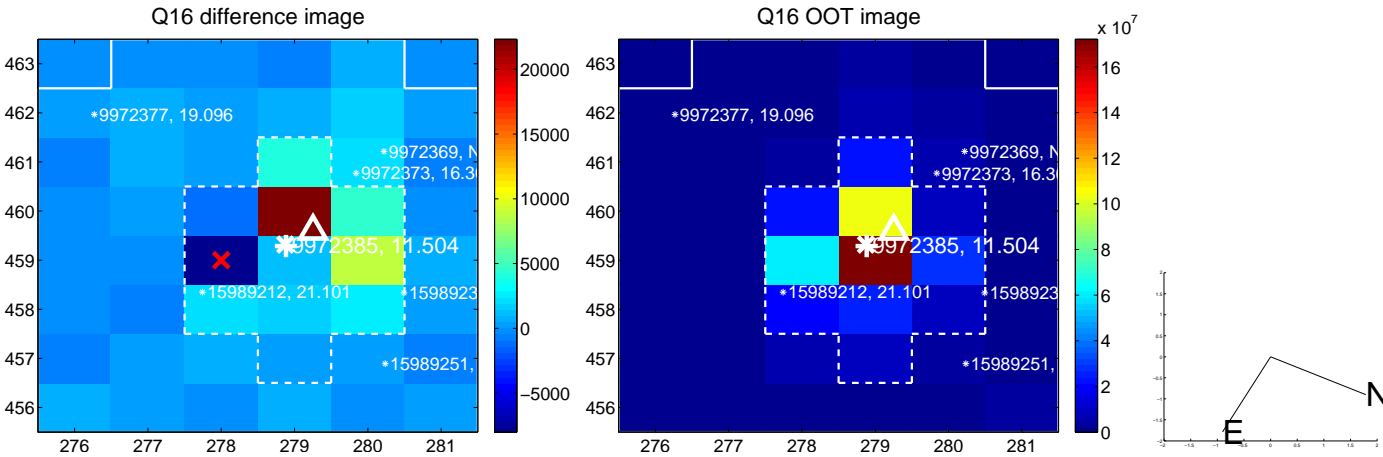
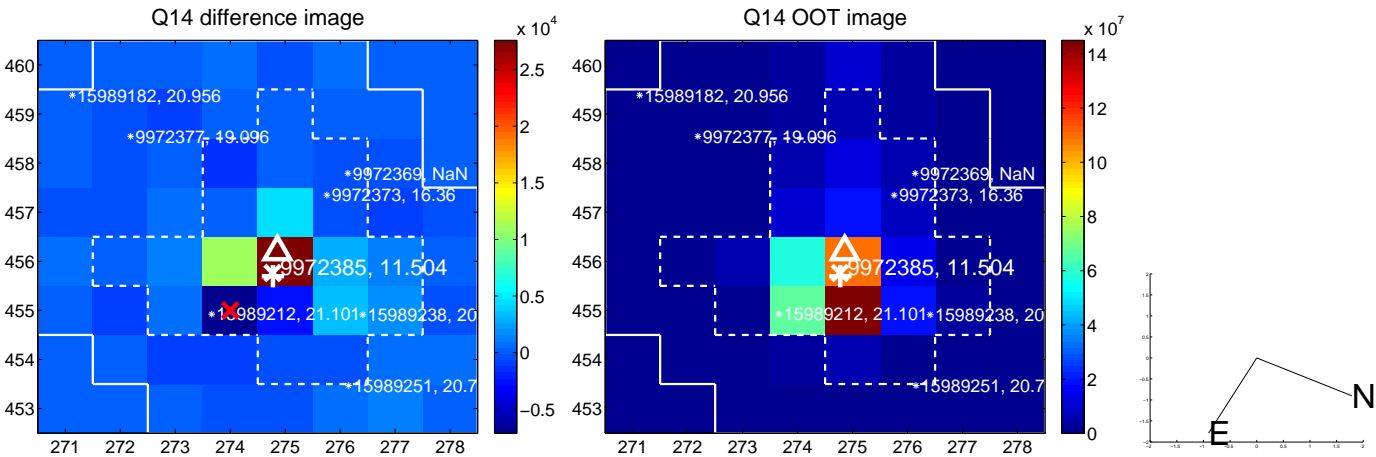
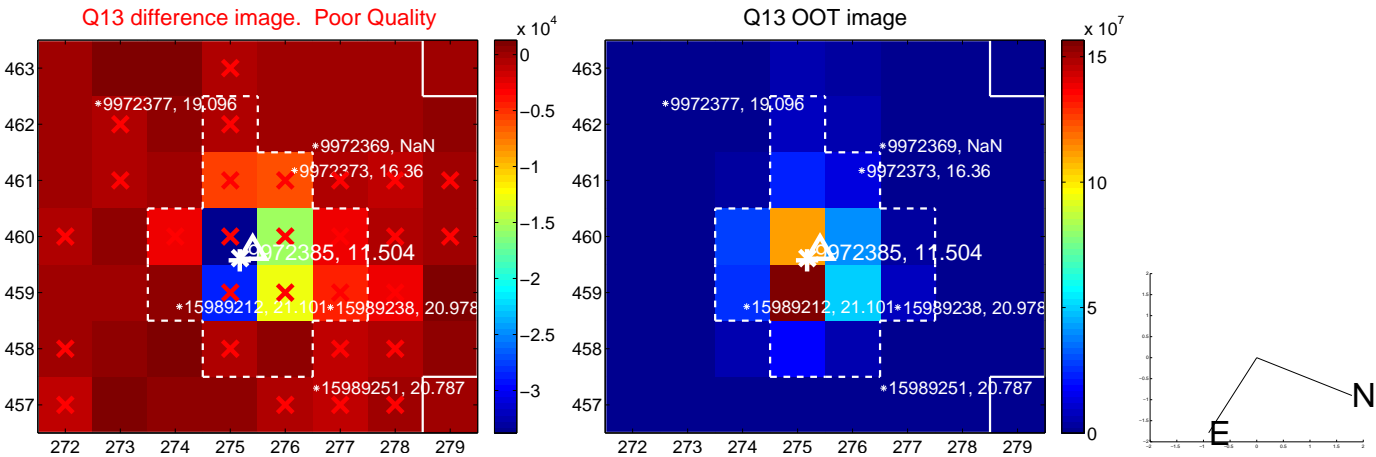
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



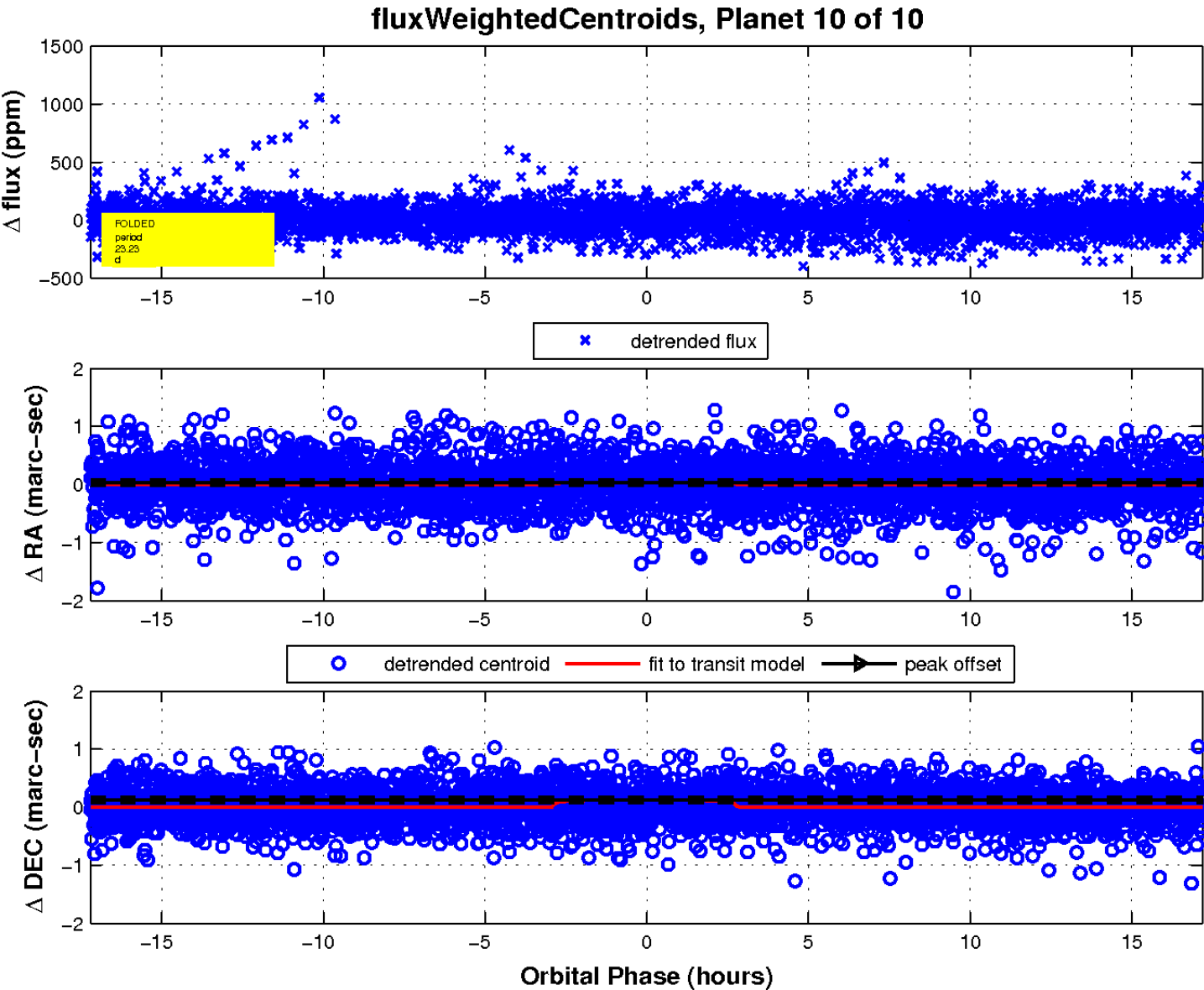
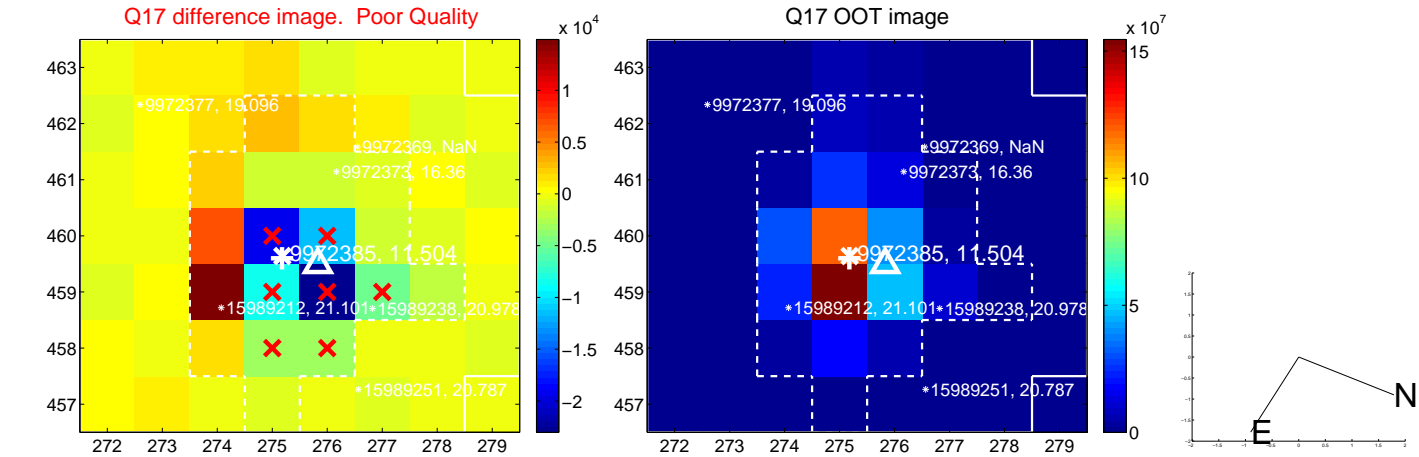
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

