

KIC 012407395

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})
012407395-01	OBS	No	0.535679	131.734431	33.4	2.310	13.0	14.8	1.43	6777	0.96	21385.56
012407395-02	OBS	No	214.092421	173.181963	296.8	3.159	10.6	5.1	1.43	6777	2.86	7.26
012407395-03	OBS	No	0.535679	131.922575	30.0	1.461	10.2	13.8	1.43	6777	0.91	21385.58
012407395-04	OBS	No	4.400160	135.380280	88.4	6.725	8.1	9.0	1.43	6777	1.56	1290.34
012407395-05	OBS	No	29.220757	141.854914	281.1	3.354	8.1	7.7	1.43	6777	4.24	103.37
012407395-06	OBS	No	57.629864	139.865790	394.8	1.667	8.0	7.1	1.43	6777	3.06	41.80

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
012407395-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
012407395-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS
012407395-03	OBS	FP	0.00	1	0	0	0	LPP_DV—SAME_NTL_PERIOD
012407395-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
012407395-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
012407395-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT

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

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

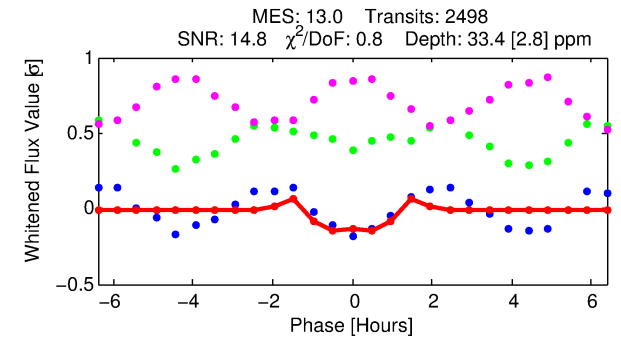
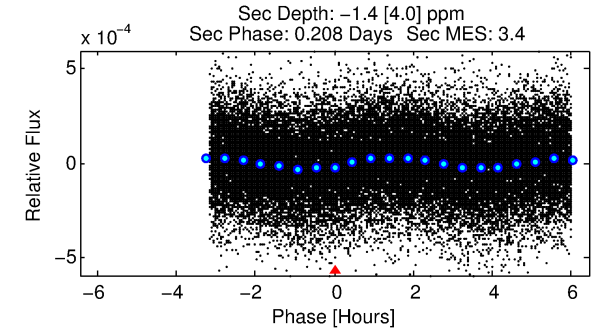
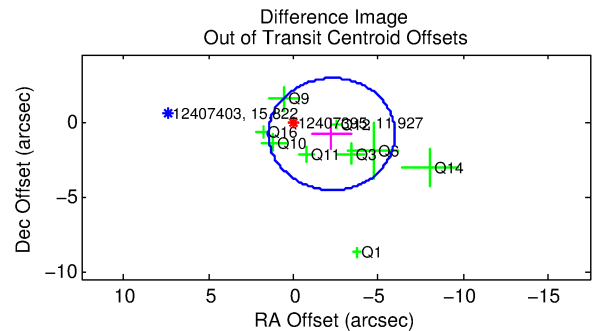
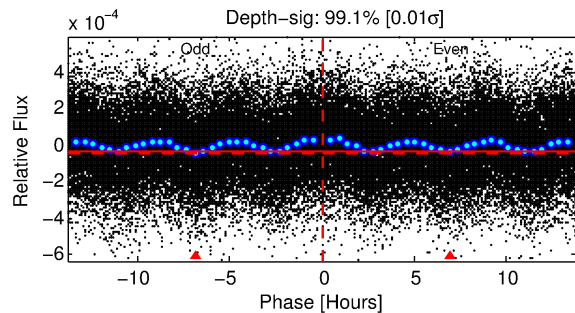
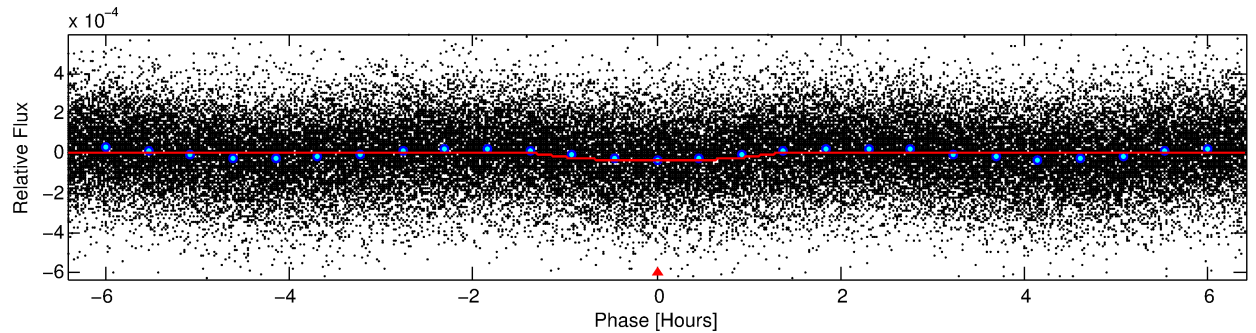
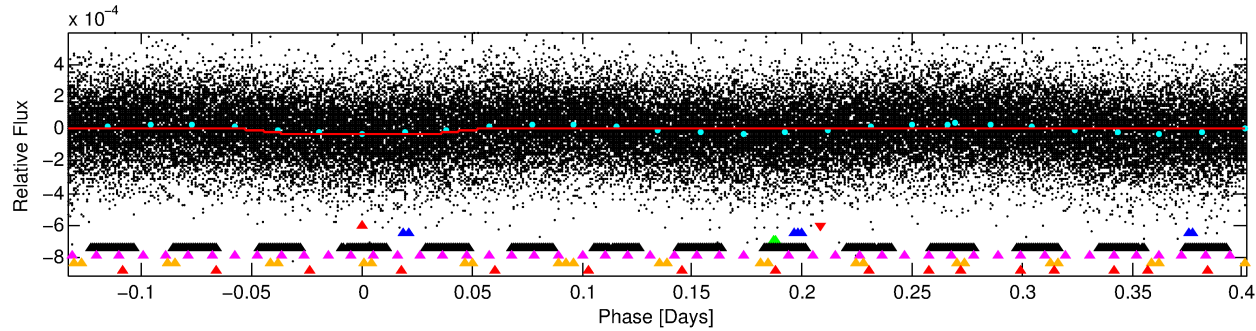
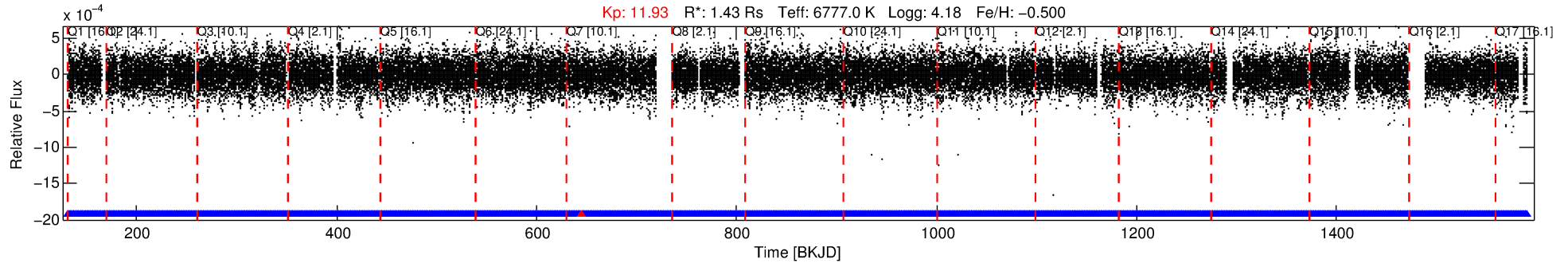
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 012407395-01

No Significant Match Found

DV One-Page Summary

KIC: 12407395 Candidate: 1 of 7 Period: 0.536 d



DV Fit Results:

Period = 0.53568 [0.00001] d
Epoch = 131.7344 [0.0012] BKJD
Rp/R* = 0.0062 [0.0011]
a/R* = 1.23 [0.45]
b = 0.90 [0.23]
Seff = 21385.56 [8607.09]
Teq = 3084 [310] K
Rp = 0.96 [0.32] Re
a = 0.0134 [0.0033] AU
Ag = N/A
Teffp = N/A

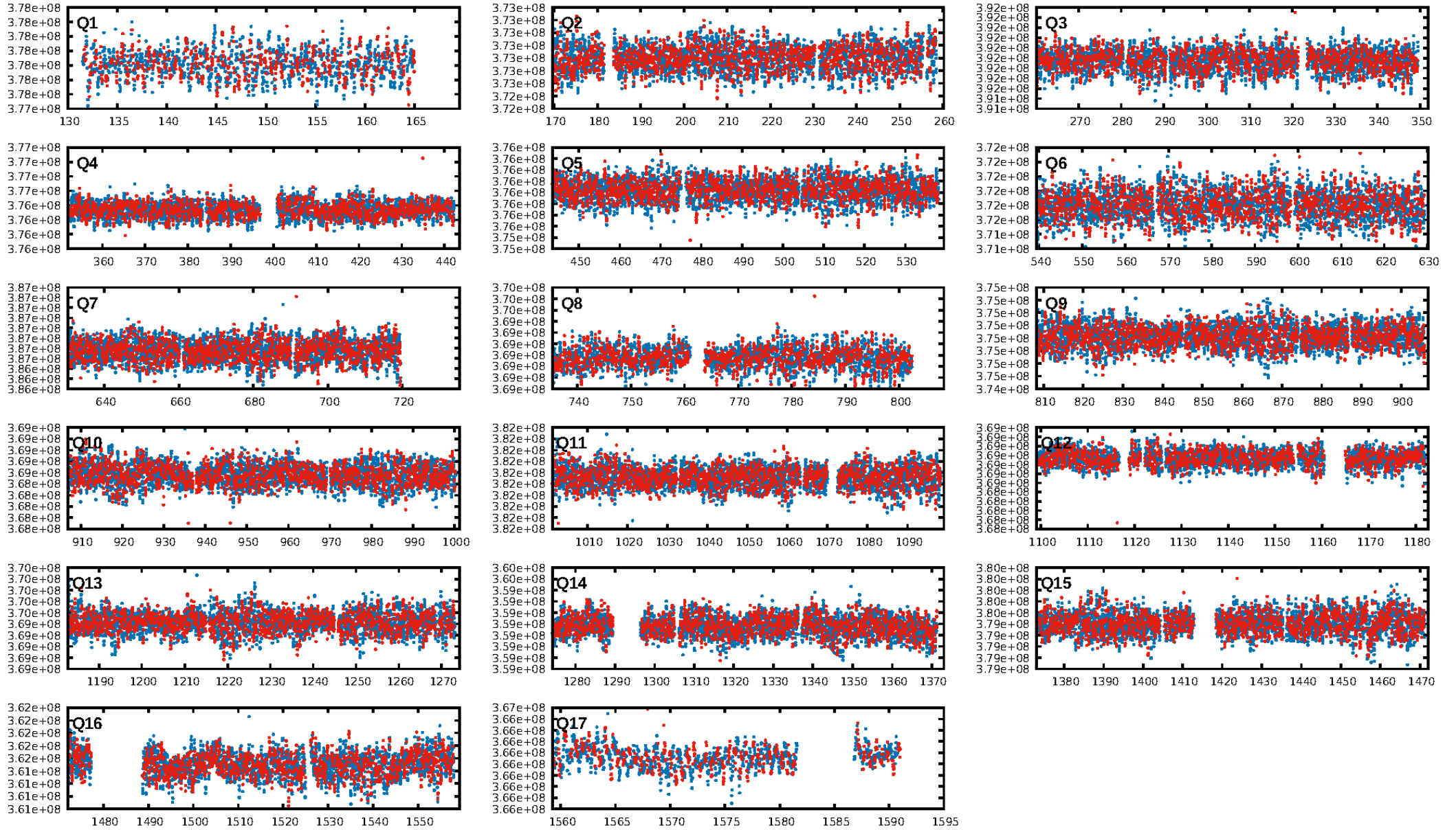
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00 σ]
LongPeriod-sig: 100.0% [13.04 σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [2384/2385]
GhostDiagnostic-chr: 12.59
Centroid-sig: 48.4%
Centroid-so: 0.529 arcsec [1.36 σ]
OotOffset-rm: 2.414 arcsec [1.94 σ]
KicOffset-rm: 2.424 arcsec [2.49 σ]
OotOffset-st: 3/2/2/2 [9]
KicOffset-st: 3/2/2/2 [9]
DiffImageQuality-fgm: 0.56 [5/9]
DiffImageOverlap-fno: 0.00 [0/17]

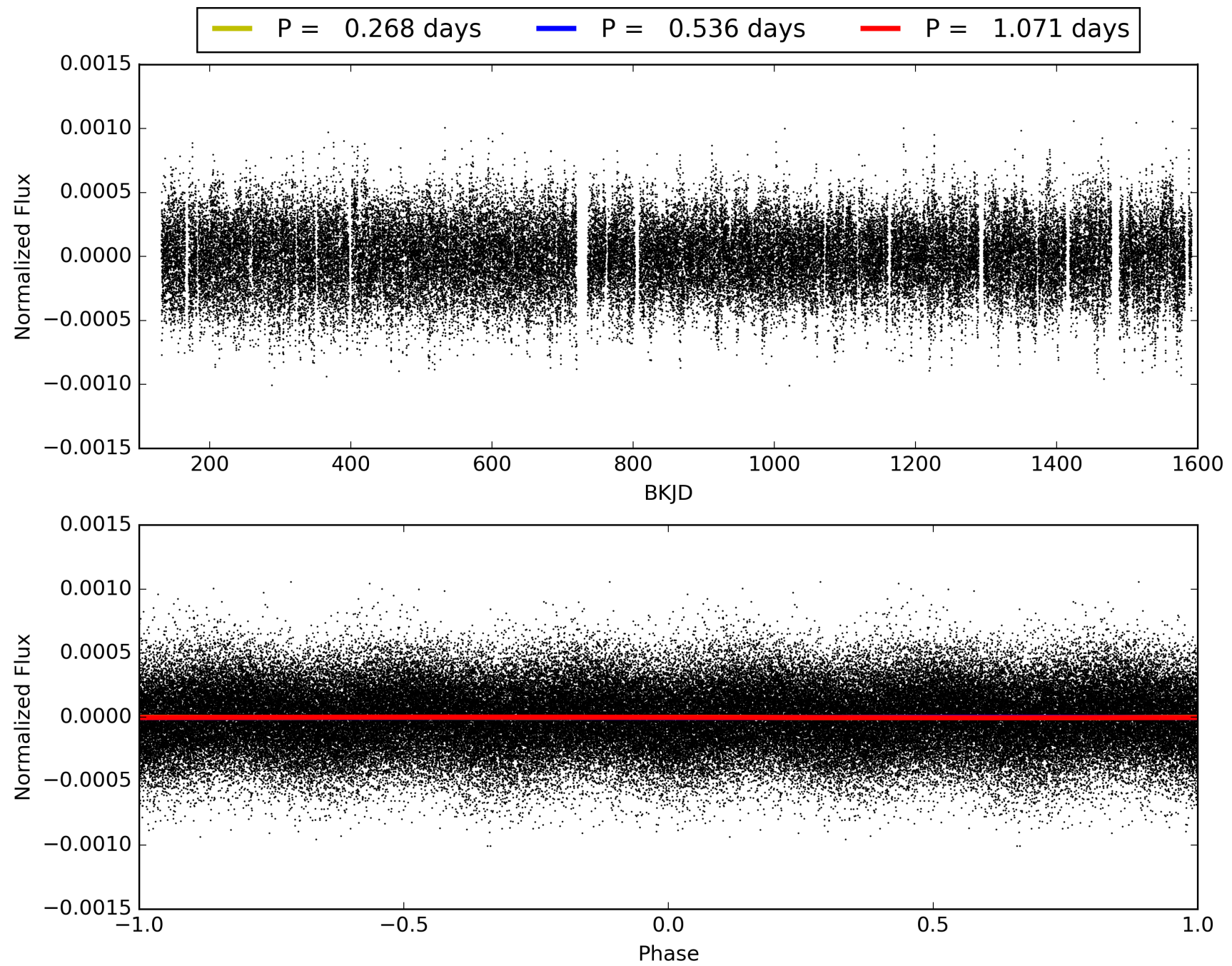
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 012407395-01, PDC Light Curves

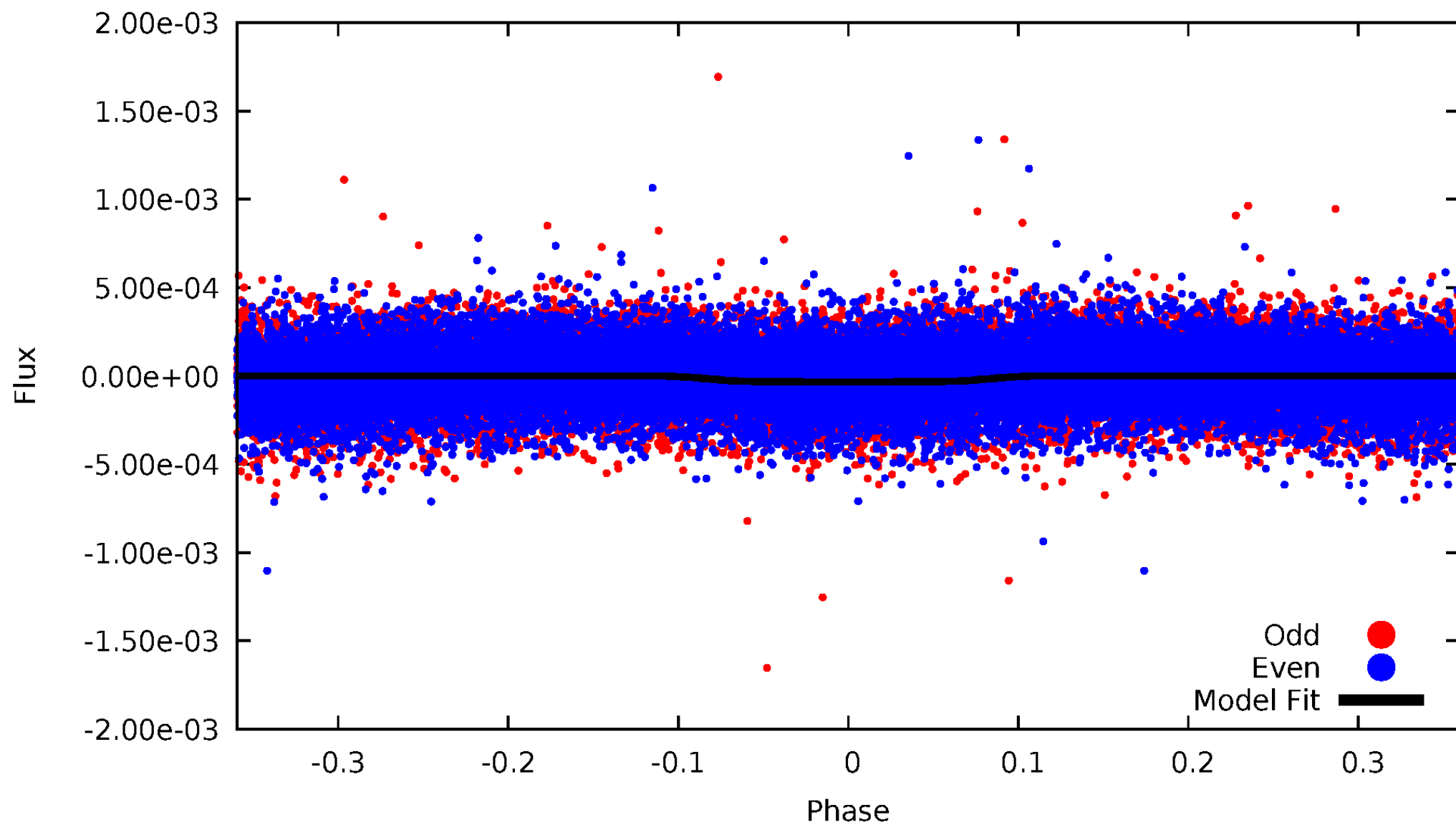


TCE 012407395-01



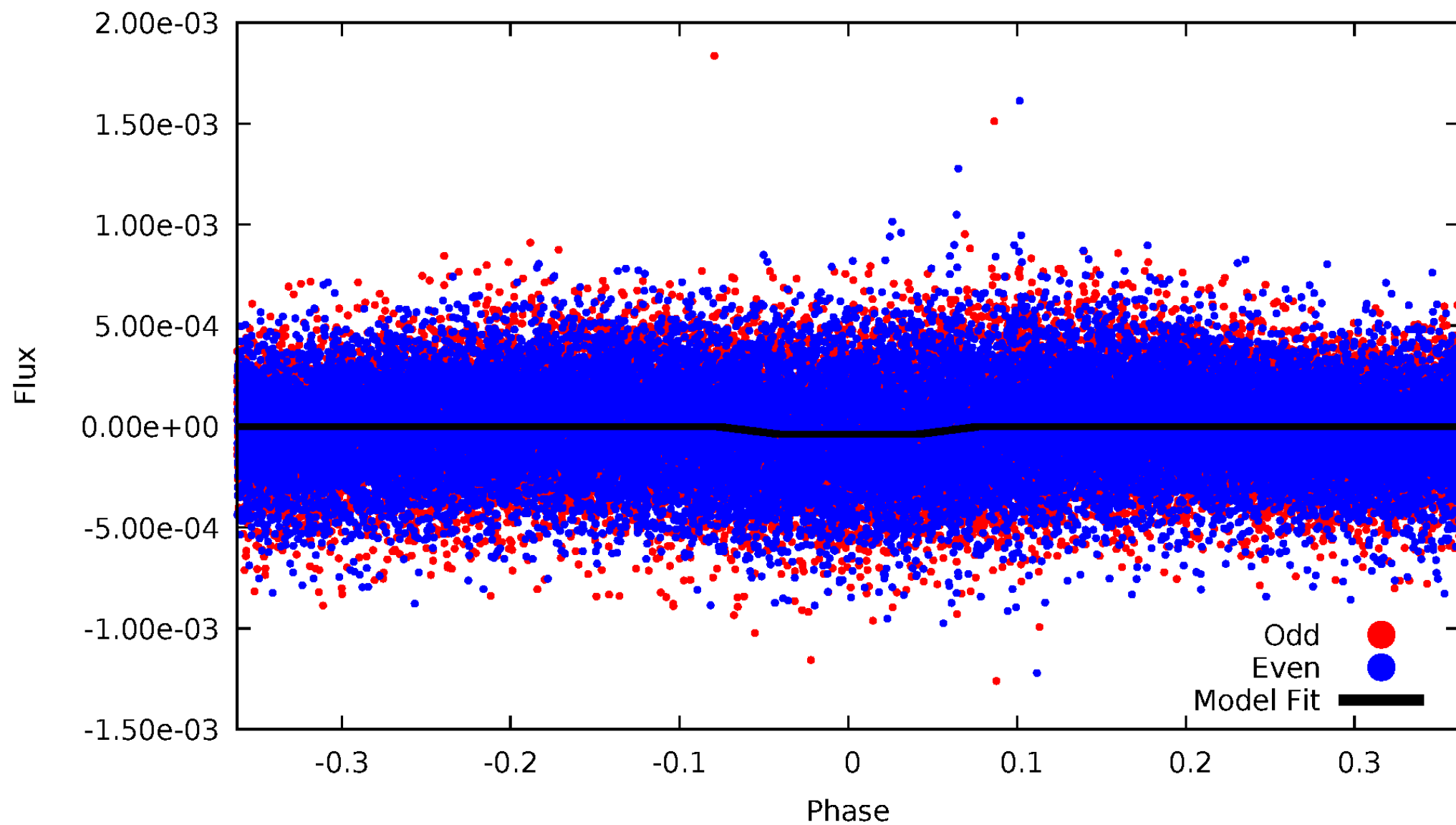
DV Odd/Even

TCE 012407395-01

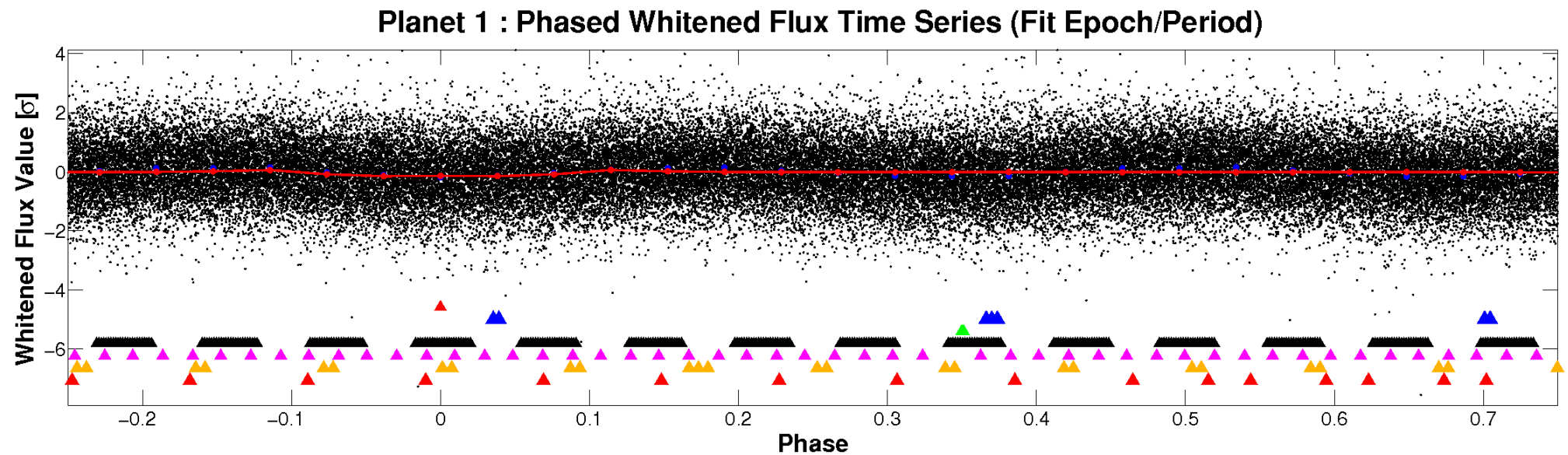
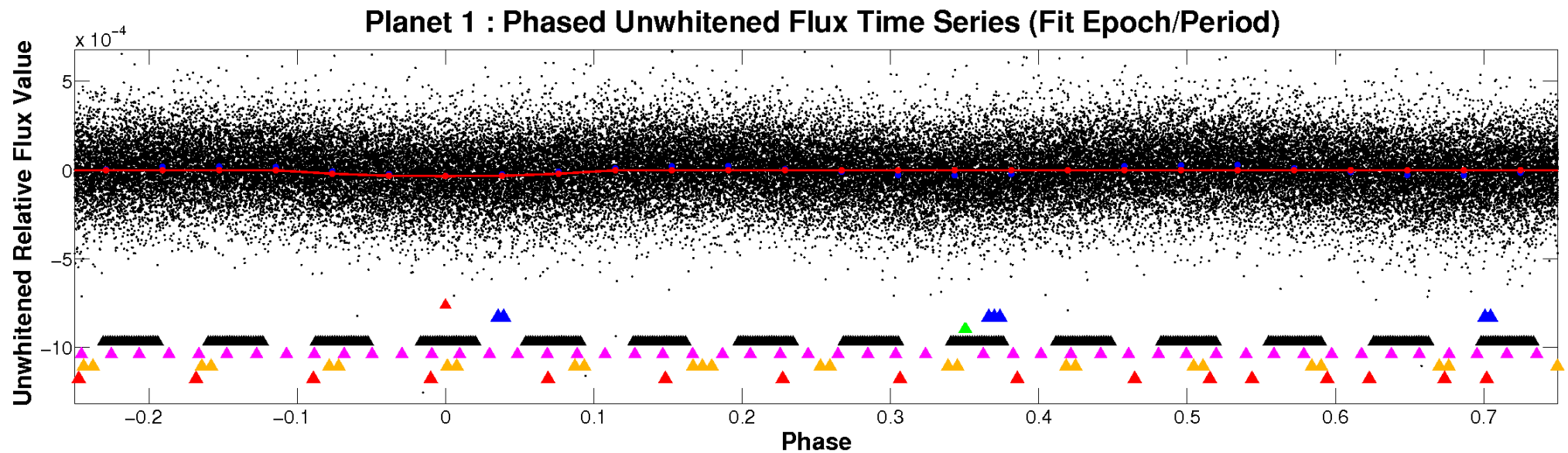


ALT Odd/Even

TCE 012407395-01

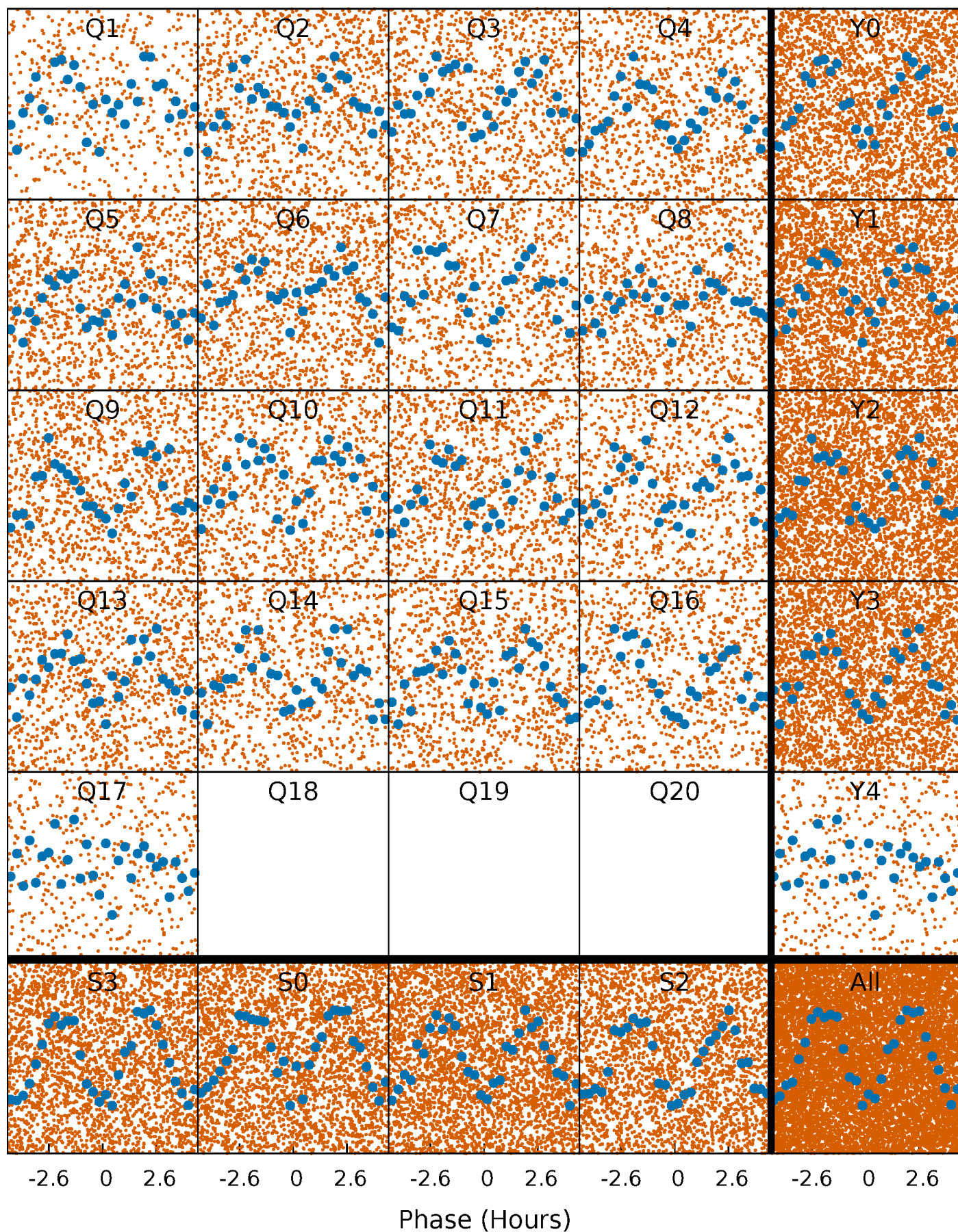


Non-Whitened Vs. Whitened Light Curve



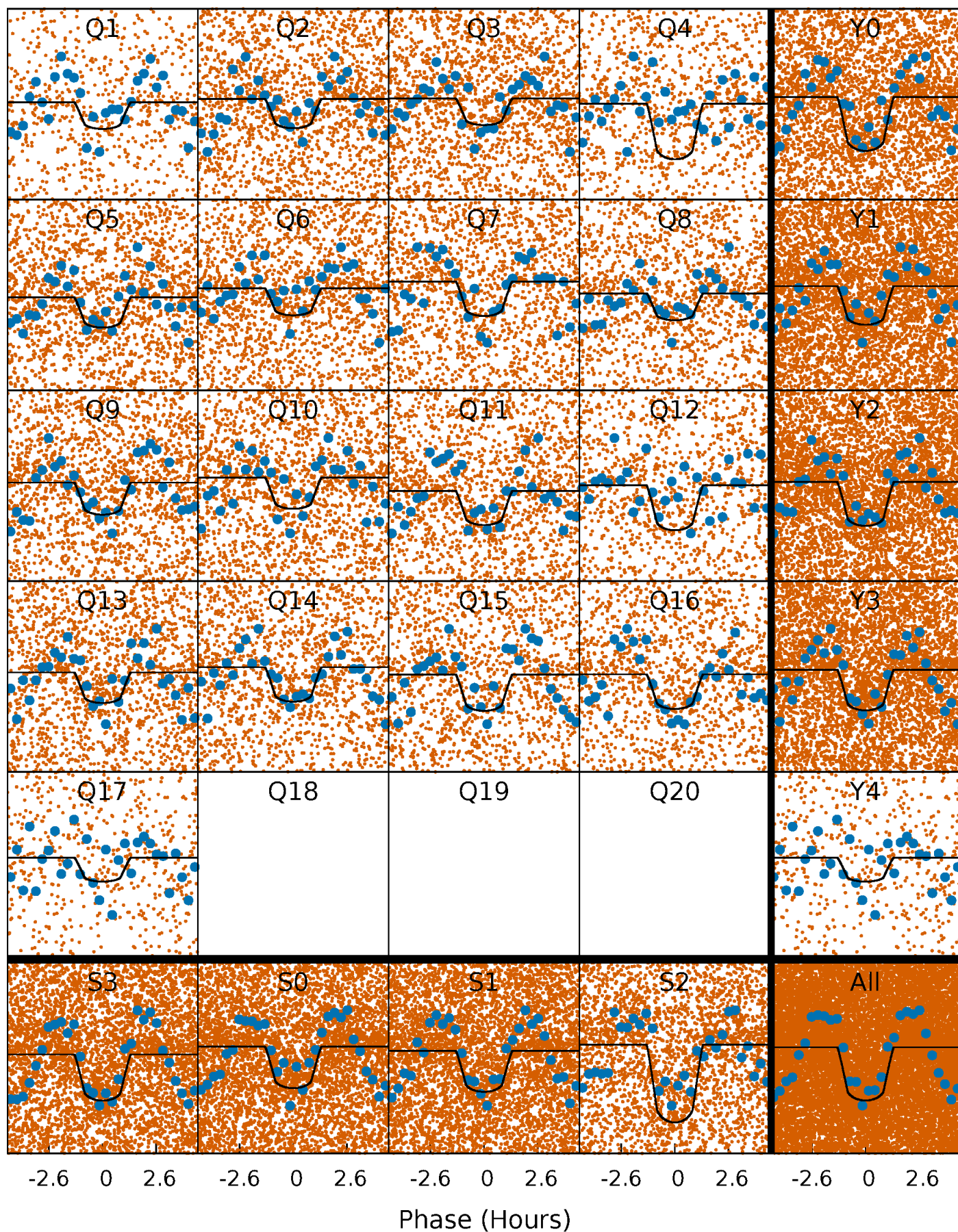
PDC Quarter-Phased Transit Curves

TCE 012407395-01 P= 0.535679 Days $T_0=131.734431$ (BKJD)



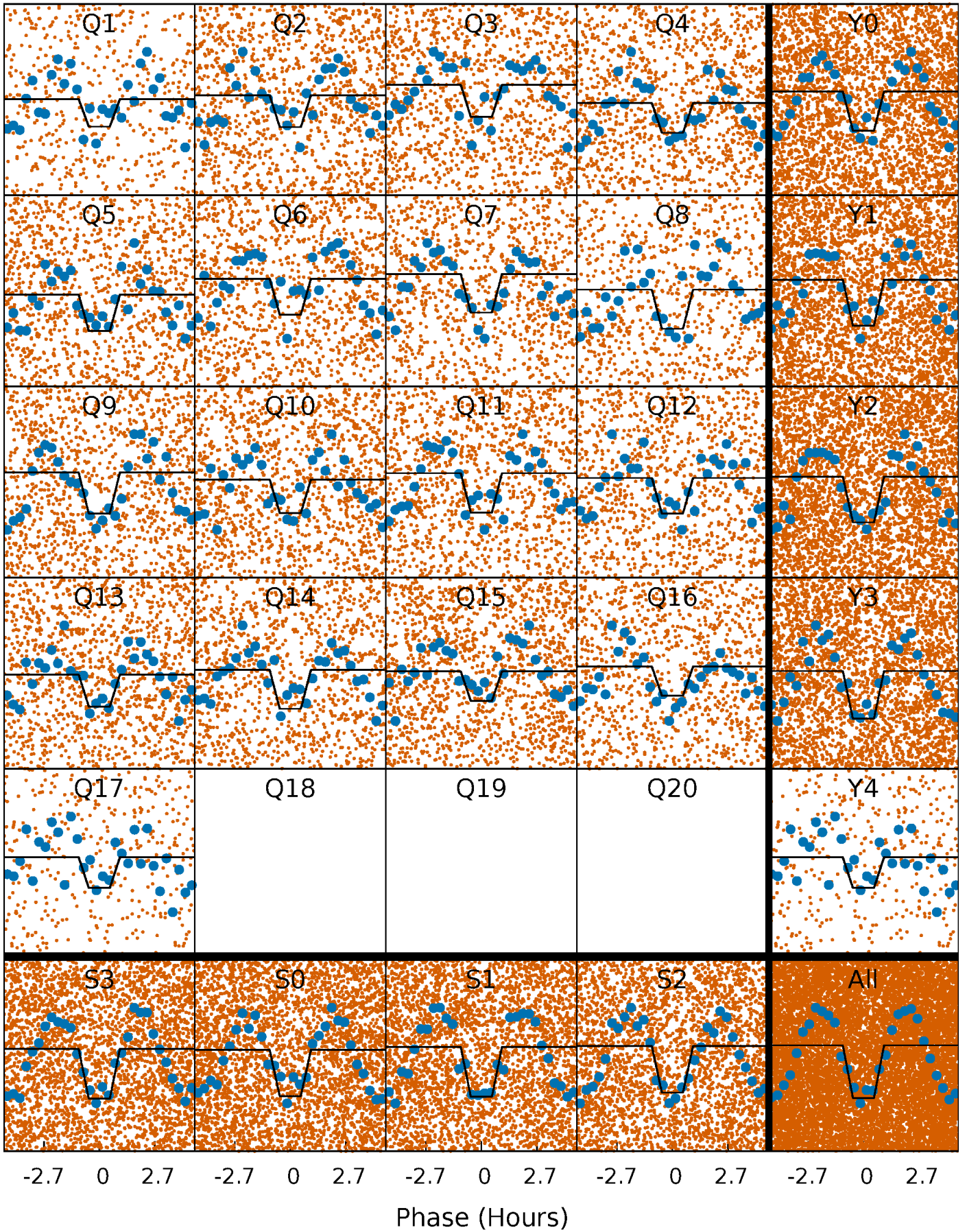
DV Quarter-Phased Transit Curves

TCE 012407395-01 P= 0.535679 Days $T_0=131.734431$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

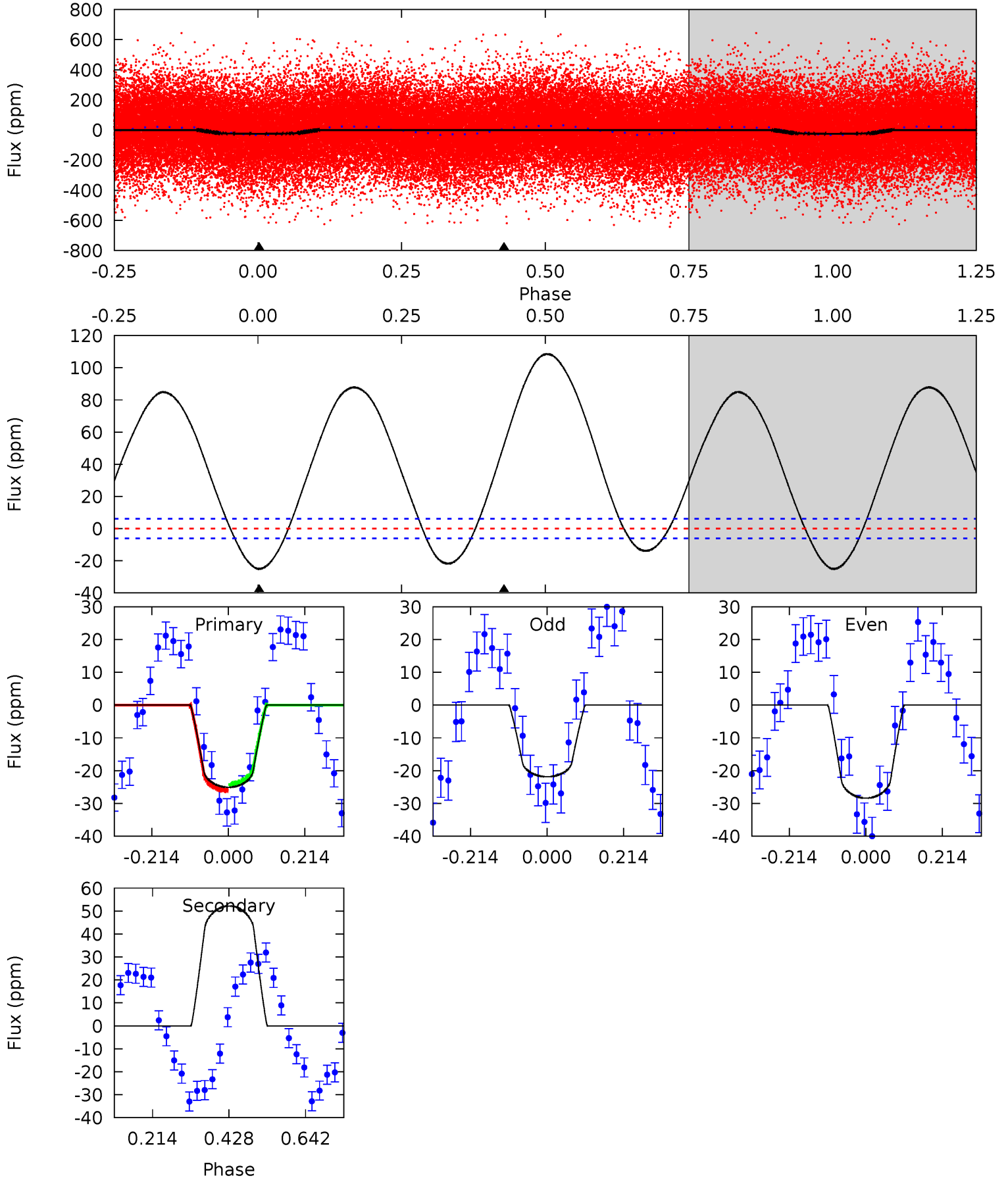
TCE 012407395-01 P= 0.535681 Days $T_0=131.734701$ (BKJD)



DV Model-Shift Uniqueness Test

012407395-01, P = 0.535679 Days, E = 131.198752 Days

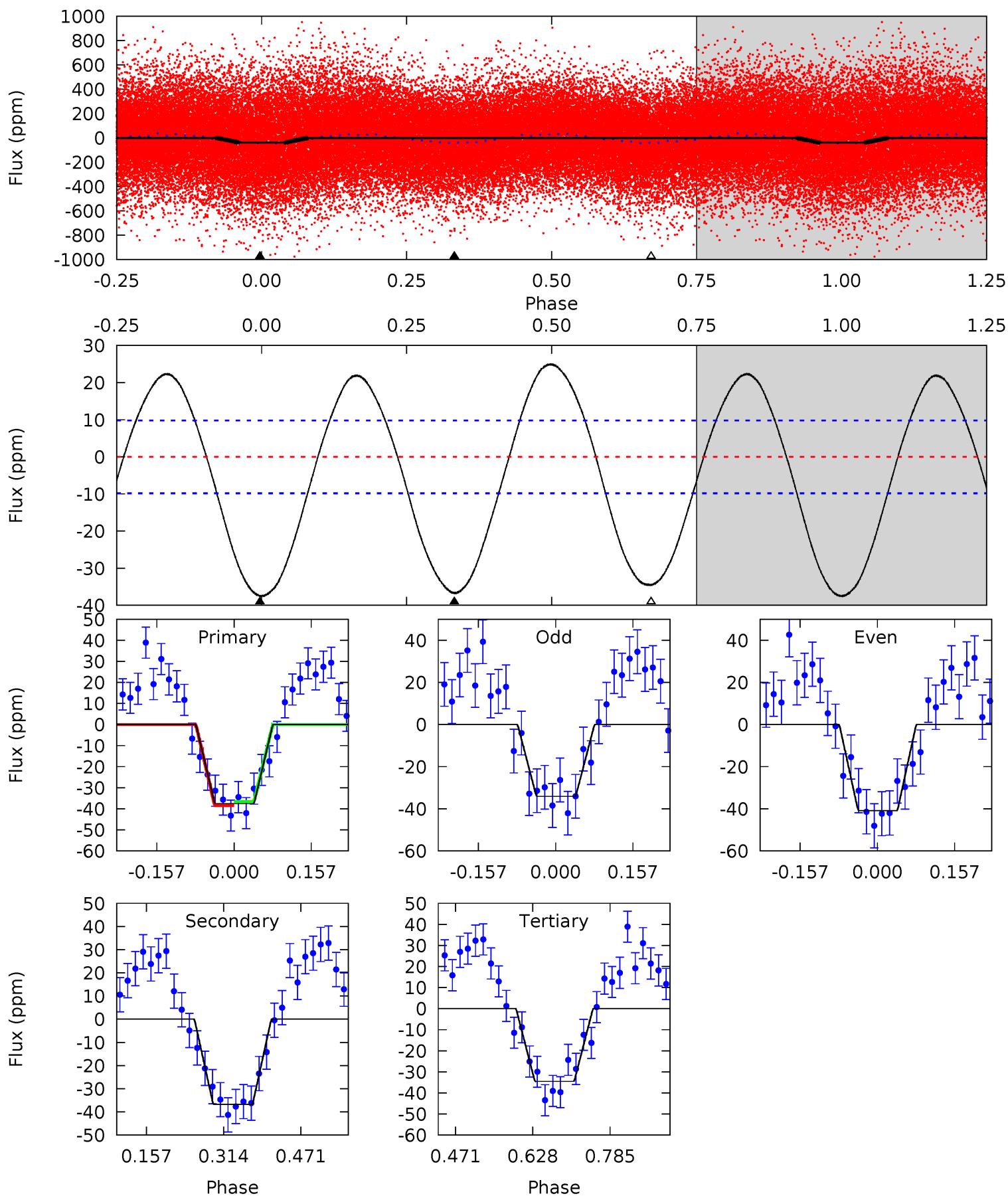
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
18.2	-37.9	0	0	4.40	1.24	17.9	18.2	18.2	-37.9	-37.9	2.37	0.96	0.81	0.62



Alt Model-Shift Uniqueness Test

012407395-01, P = 0.535681 Days, E = 131.199020 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
17.1	16.7	15.8	0	4.47	1.42	9.71	1.36	17.1	1.00	16.7	1.48	1.02	0.40	0.39



Stellar Parameters For KIC 012407395

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6777^{+214}_{-285}	$4.179^{+0.204}_{-0.167}$	$-0.500^{+0.250}_{-0.300}$	$1.427^{+0.404}_{-0.330}$	$1.121^{+0.178}_{-0.146}$	$0.543^{+0.603}_{-0.248}$
	+3%/-4%	+5%/-4%	+50%/-60%	+28%/-23%	+16%/-13%	+111%/-46%
Source	PHO54	PHO54	PHO54	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

Secondary Eclipse Parameters for KIC 012407395-01 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	52 ± 1	$0.95^{+0.24}_{-0.19}$	4273^{+337}_{-317}	-7458^{+702}_{-988}	$-5.673^{+1.920}_{-3.399}$
Alt.	-37 ± 2	$0.98^{+0.24}_{-0.22}$	4276^{+335}_{-305}	6454^{+807}_{-591}	$3.761^{+2.589}_{-1.255}$

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 $A_{obs} \gg 1.0$

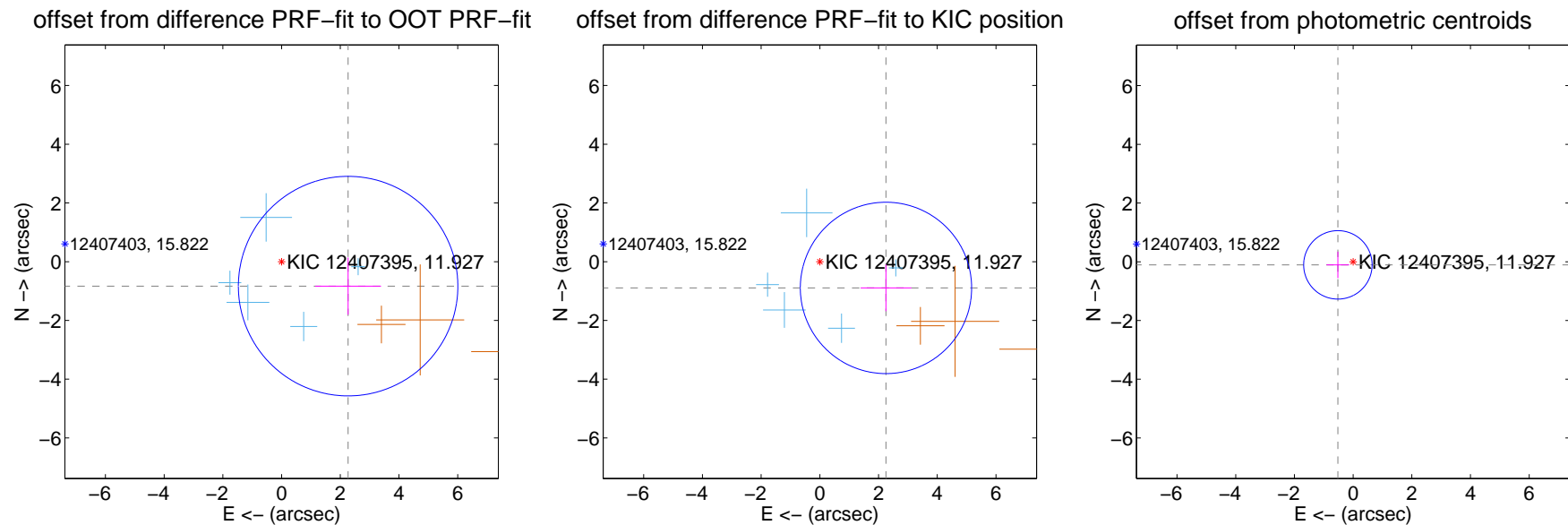
DV Centroid Data

Supplemental centroid analysis for 012407395-01. **Kepler magnitude: 11.93.** Transit SNR 14.78

There are 5 quarters with good PRF difference image offsets

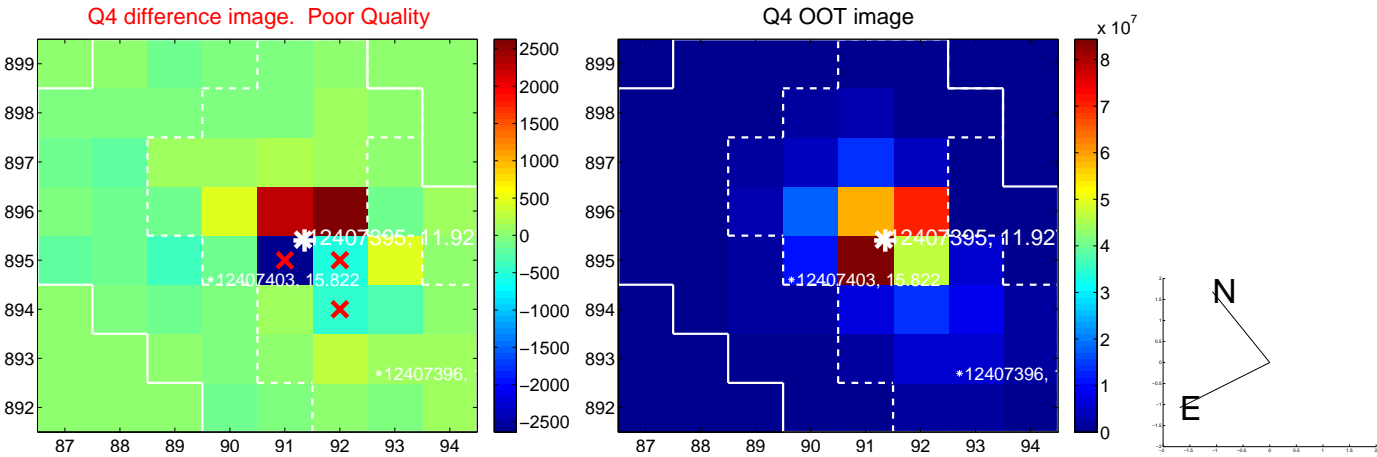
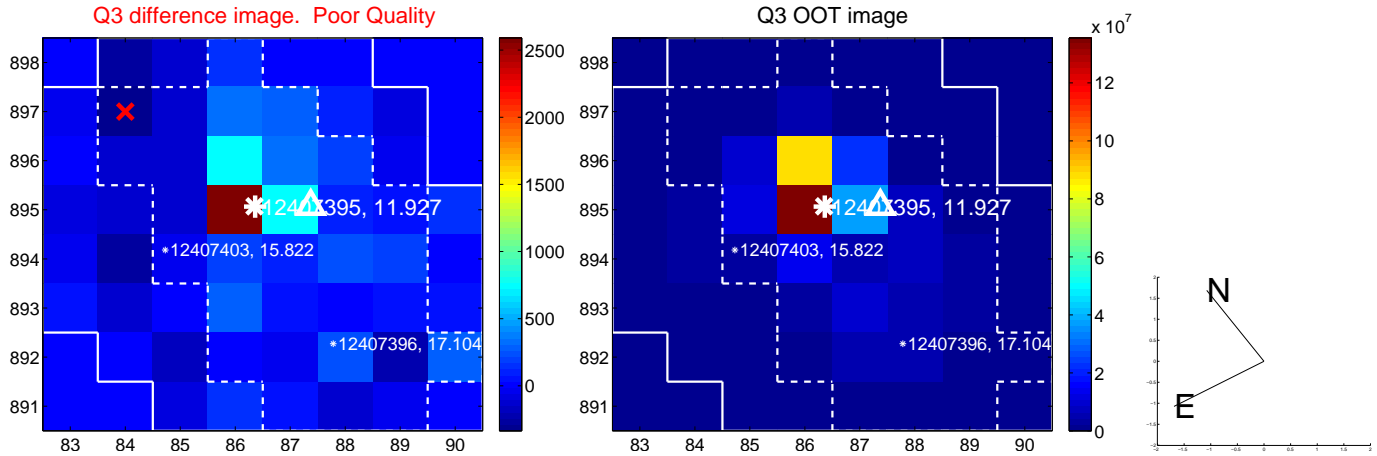
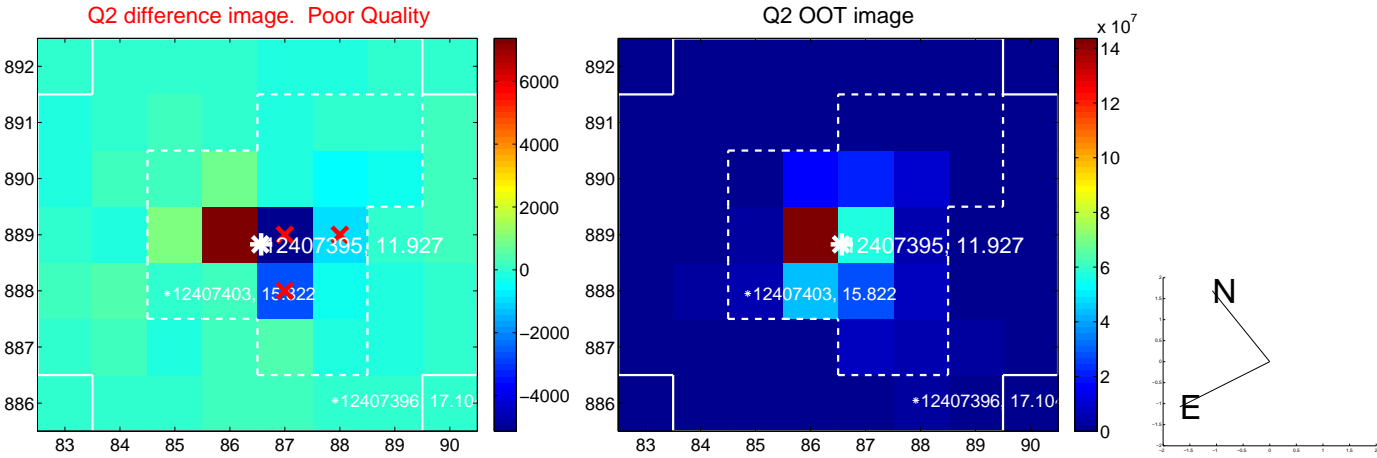
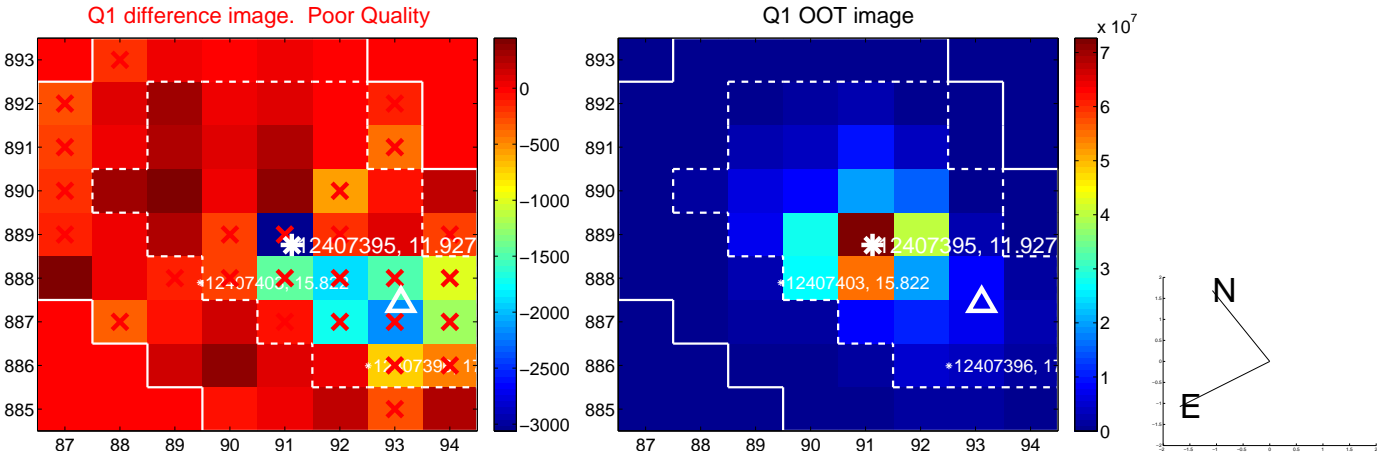
The direct PRF centroid is offset from the target star catalog position by about 0.07 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	2.414 ± 1.246	1.94	-2.266 ± 1.120	-0.832 ± 0.974
PRF-fit source offset from KIC position	2.424 ± 0.973	2.49	-2.253 ± 0.866	-0.893 ± 0.794
photometric centroid source offset	0.53 ± 0.39	1.36	0.52 ± 0.39	-0.11 ± 0.45

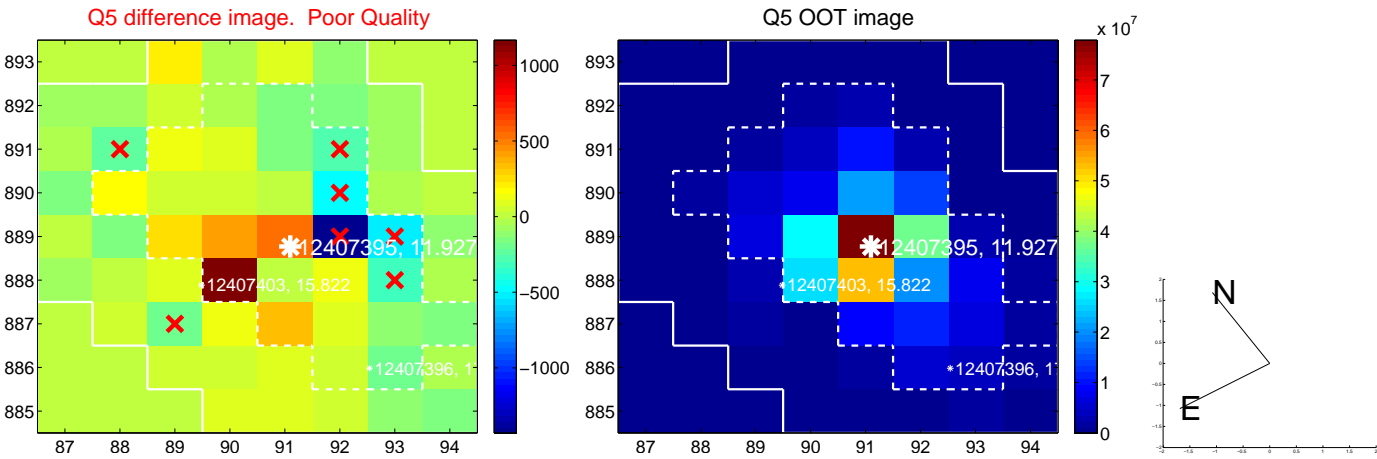


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

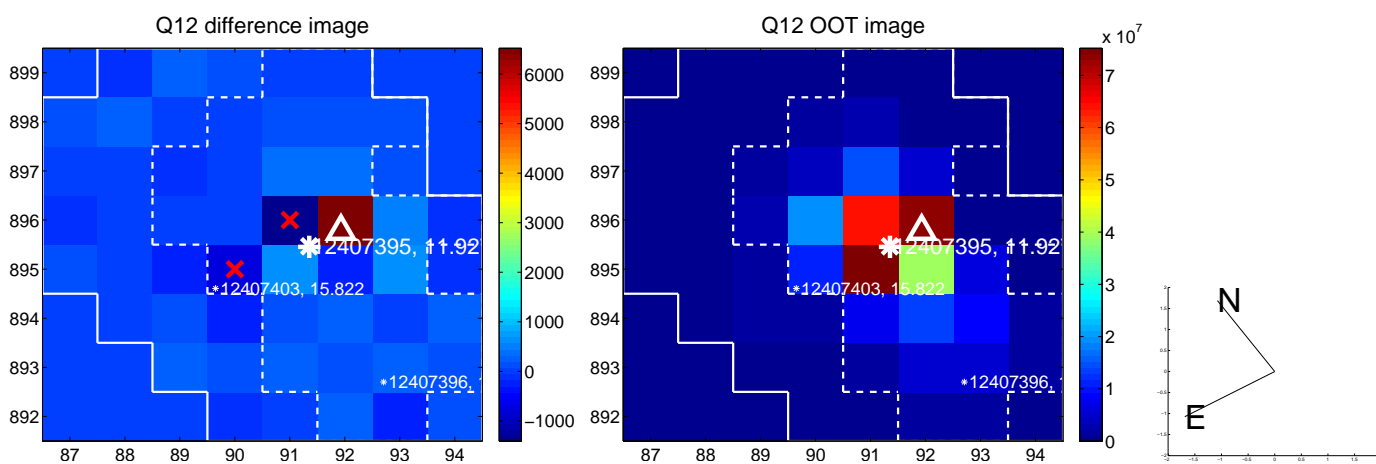
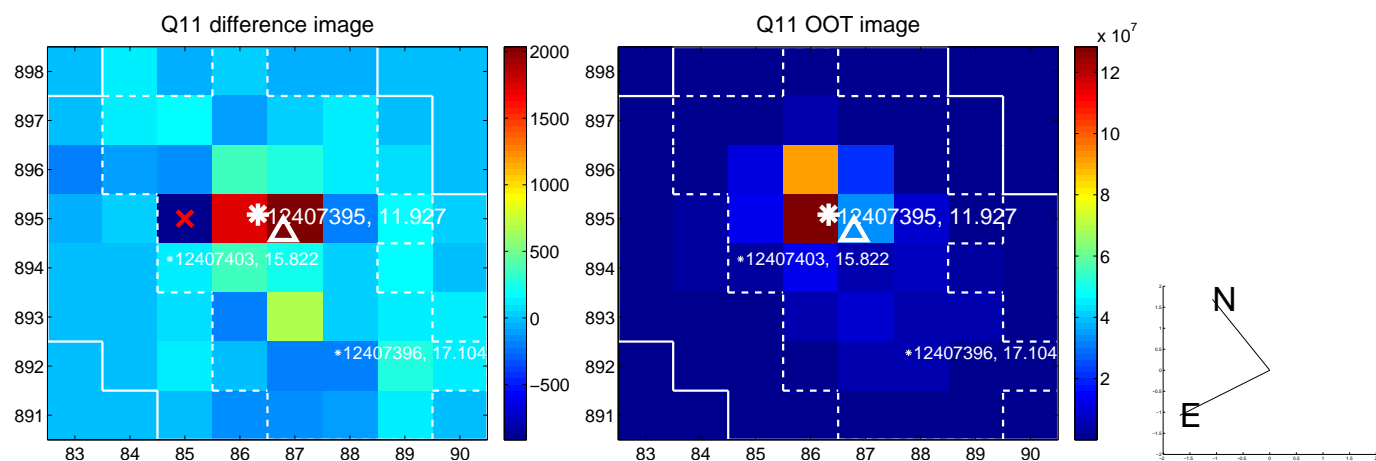
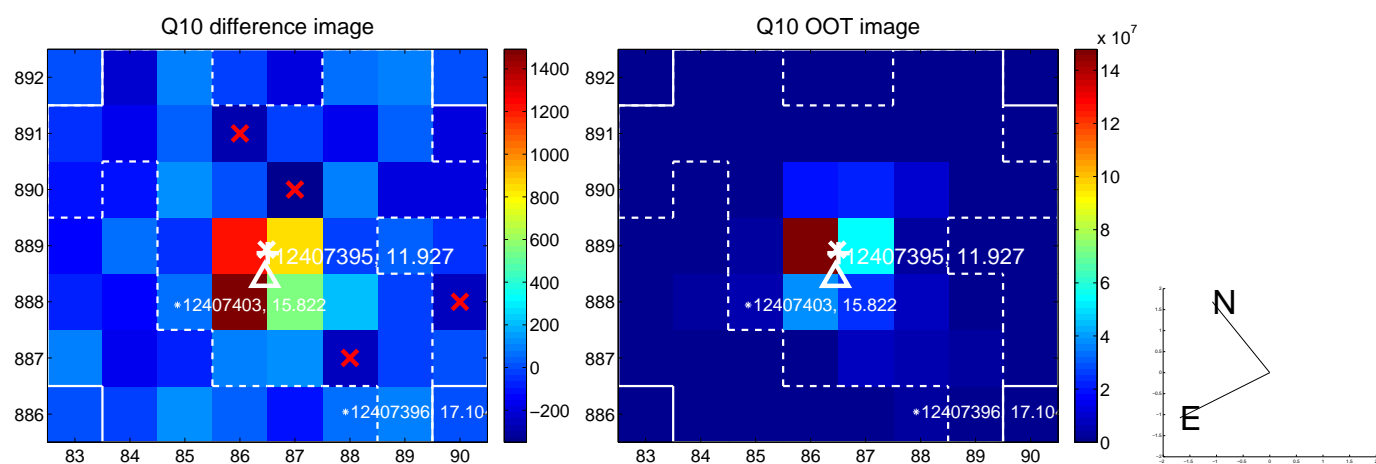
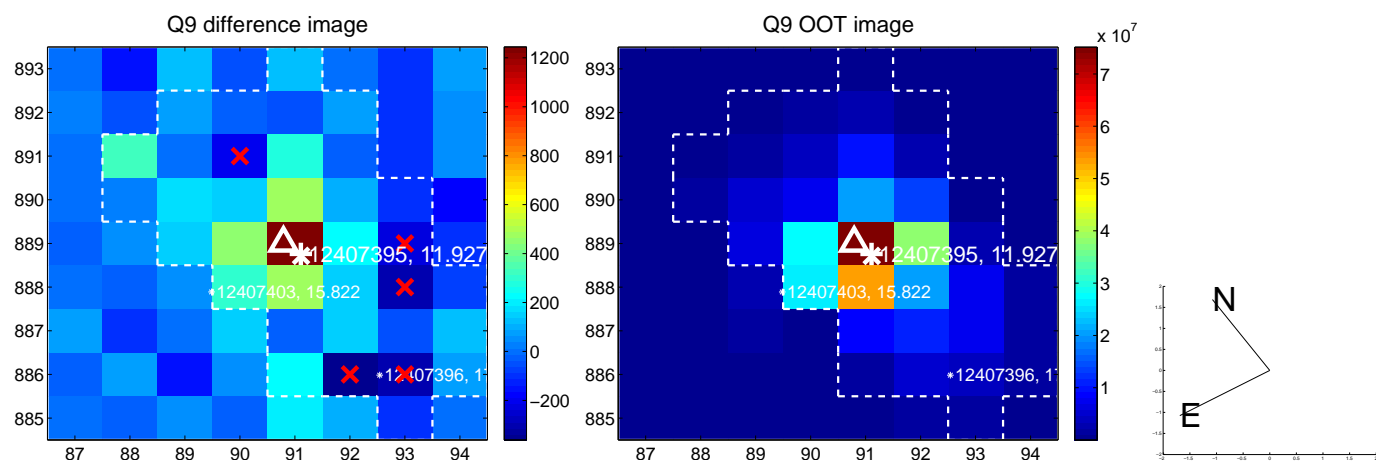
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



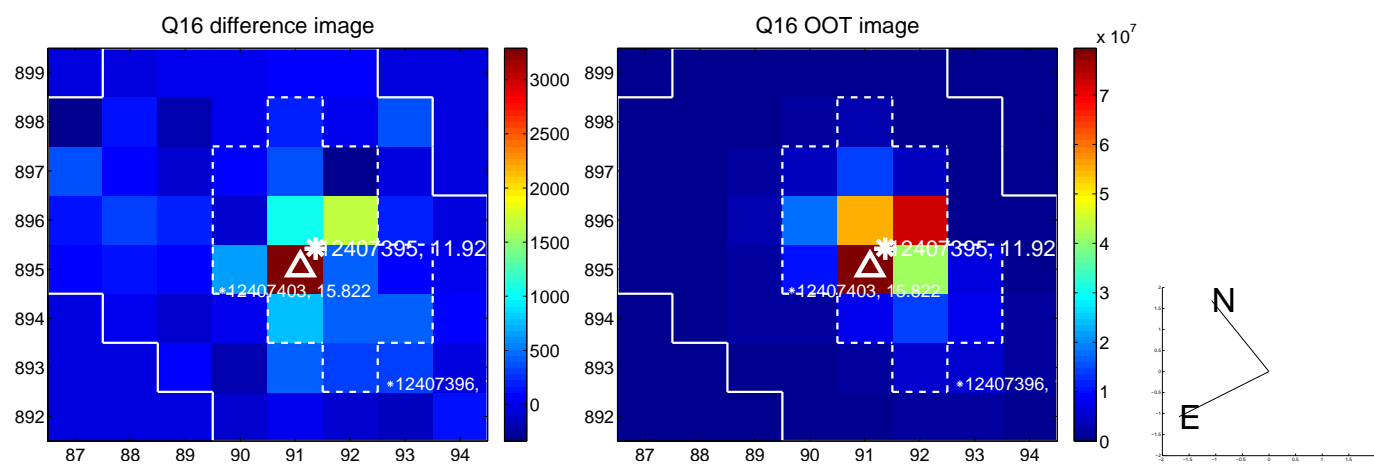
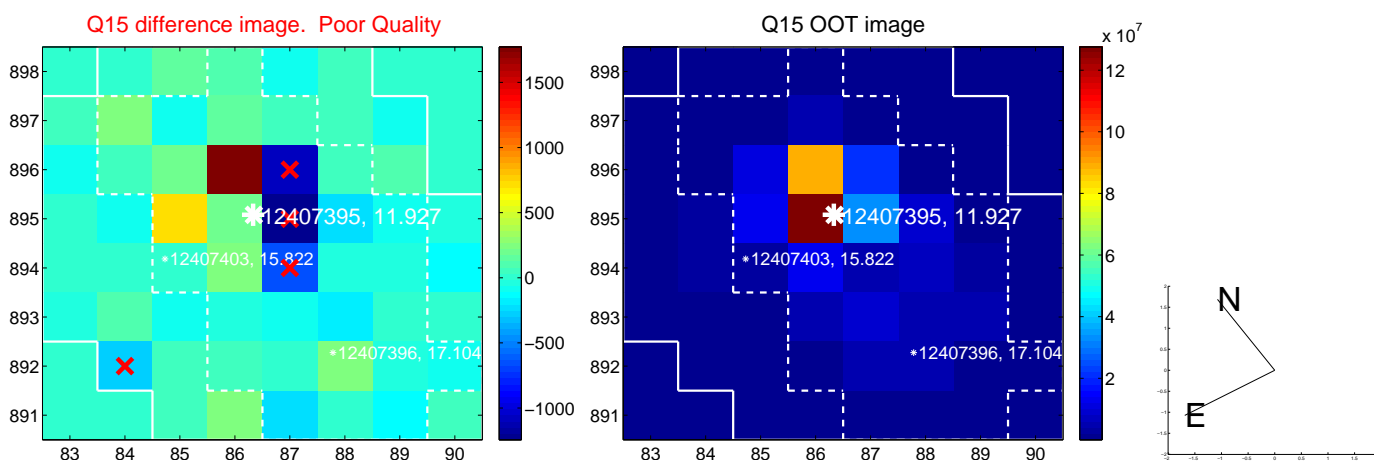
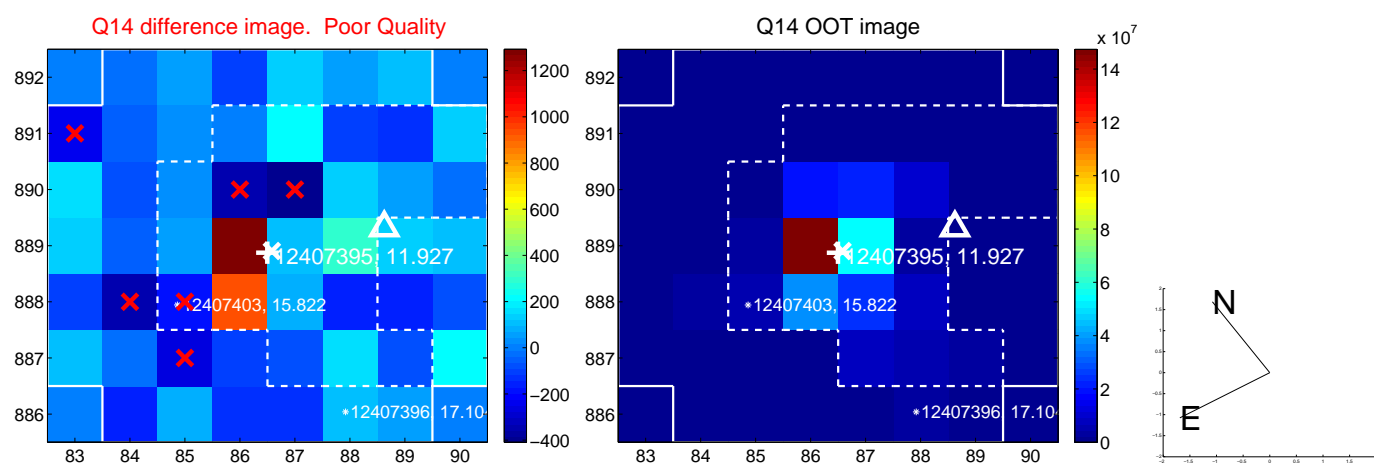
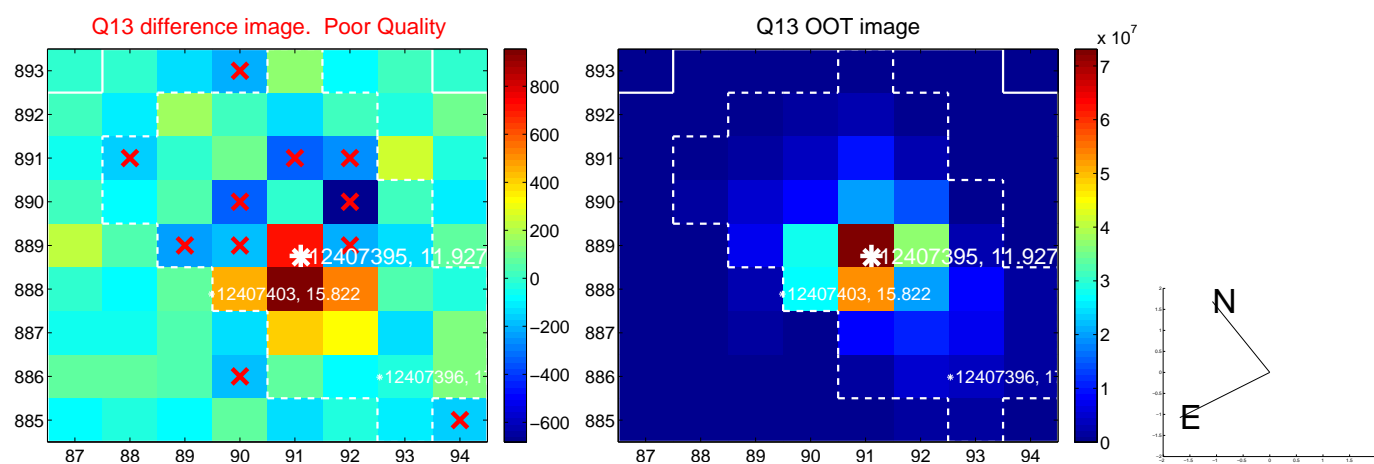
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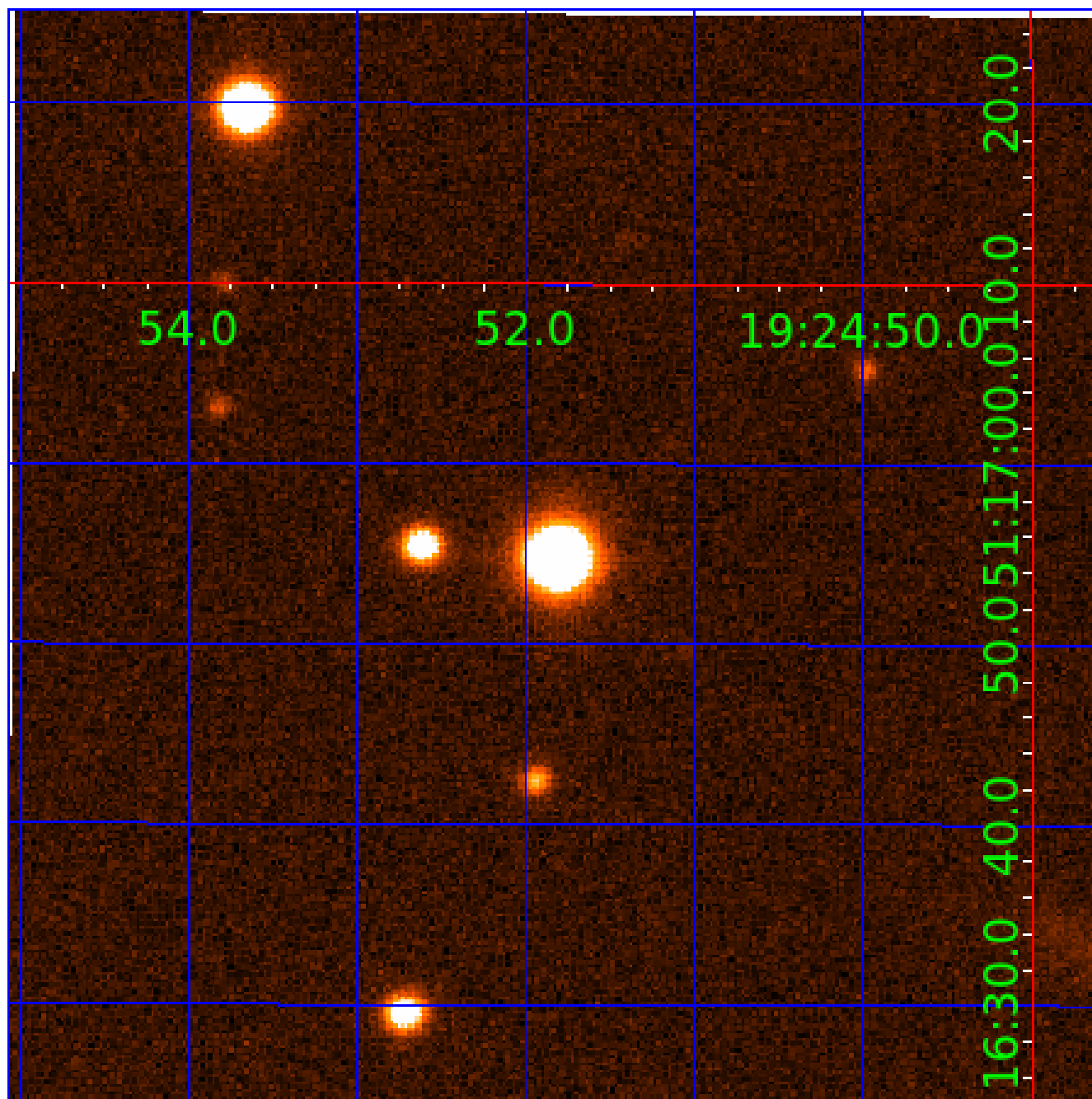


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 012407395

Q1-17 DR25 TCE Parameters

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Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
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012407395-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS
012407395-03	OBS	FP	0.00	1	0	0	0	LPP_DV—SAME_NTL_PERIOD
012407395-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
012407395-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
012407395-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT

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

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

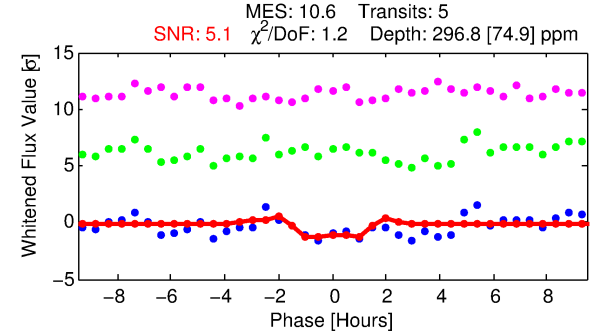
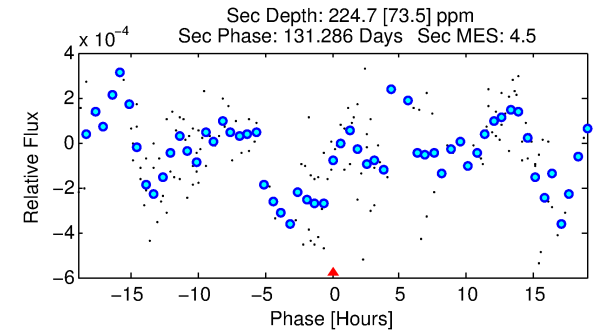
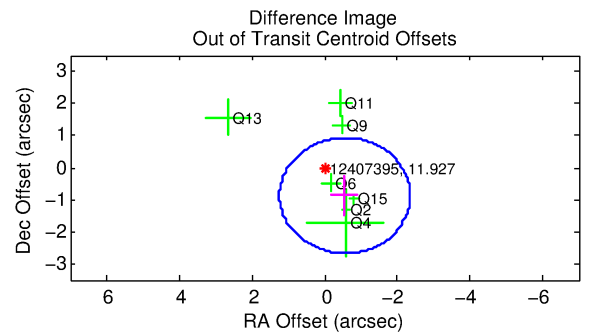
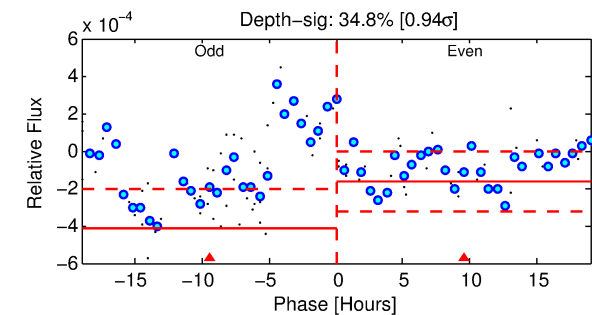
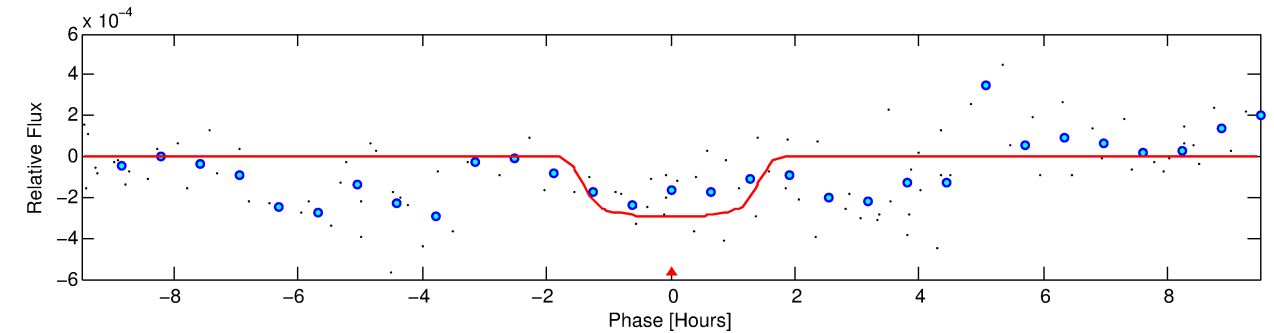
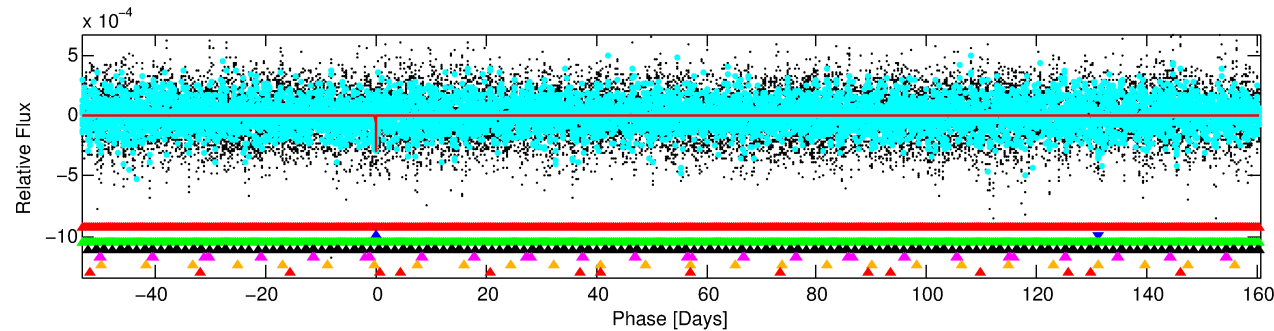
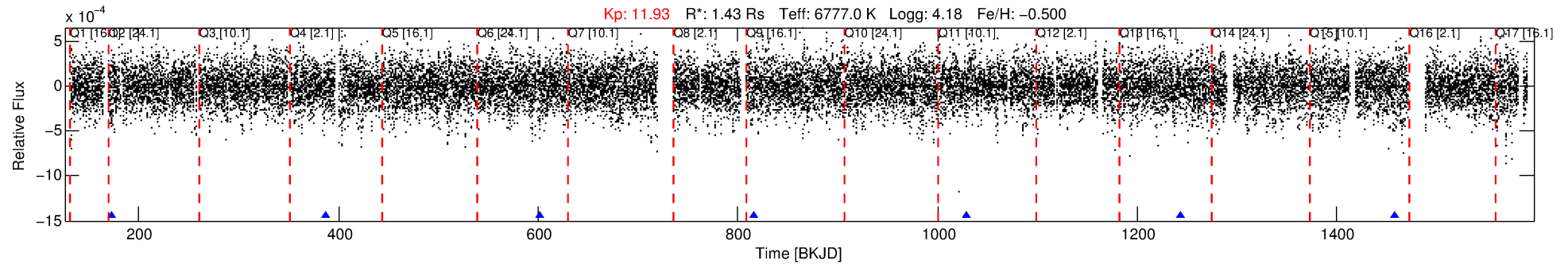
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 012407395-02

No Significant Match Found

DV One-Page Summary

KIC: 12407395 Candidate: 2 of 7 Period: 214.092 d



DV Fit Results:

Period = 214.09242 [0.00250] d
Epoch = 173.1820 [0.0110] BKJD
Rp/R* = 0.0184 [0.0205]
a/R* = 246.56 [1623.89]
b = 0.90 [1.40]
Seff = 7.26 [2.92]
Teq = 419 [42] K
Rp = 2.86 [3.29] Re
a = 0.7279 [0.1785] AU
Ag = 7985.43 [18186.31] [0.44σ]
Teffp = 6118 [3448] K [1.65σ]

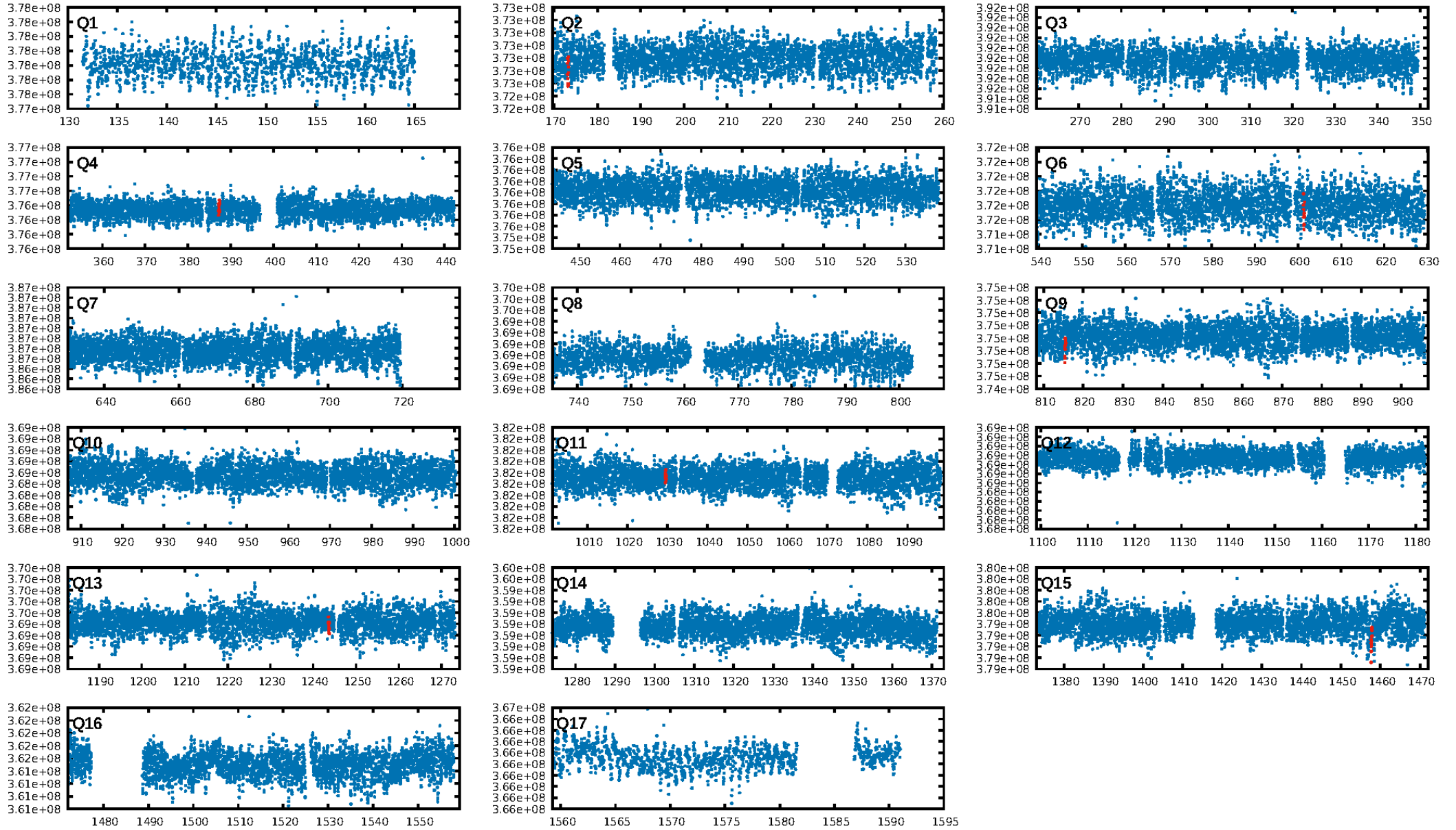
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [369.26σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 16.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [5/5]
GhostDiagnostic-chr: 0.7638
Centroid-sig: 55.9%
Centroid-so: 0.879 arcsec [1.06σ]
OotOffset-rm: 1.034 arcsec [1.72σ]
OotOffset-st: 2/2/1/2 [7]
KicOffset-rm: 1.076 arcsec [1.78σ]
KicOffset-st: 2/2/1/2 [7]
DiffImageQuality-fgm: 0.57 [4/7]
DiffImageOverlap-fno: 0.00 [0/7]

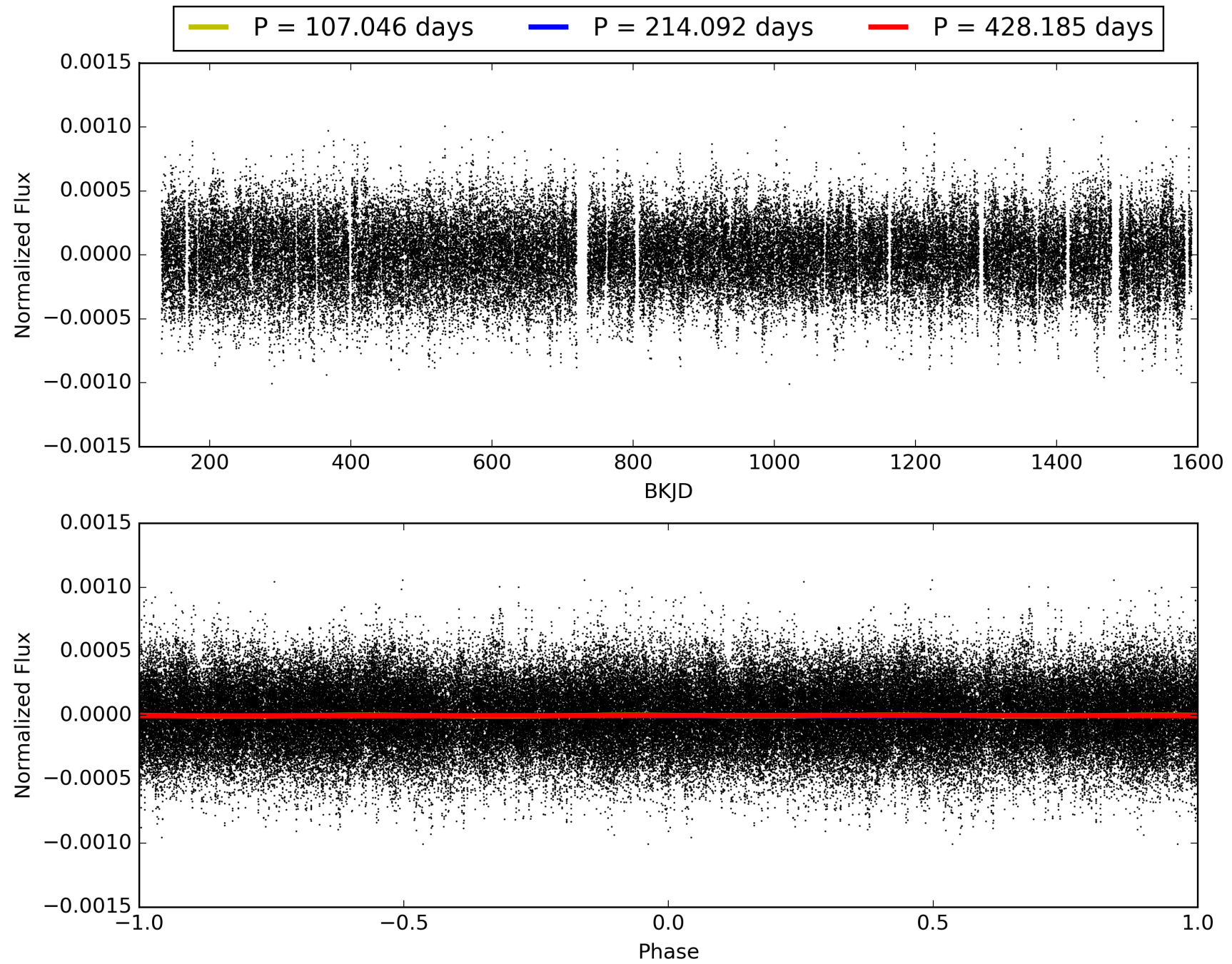
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 012407395-02, PDC Light Curves

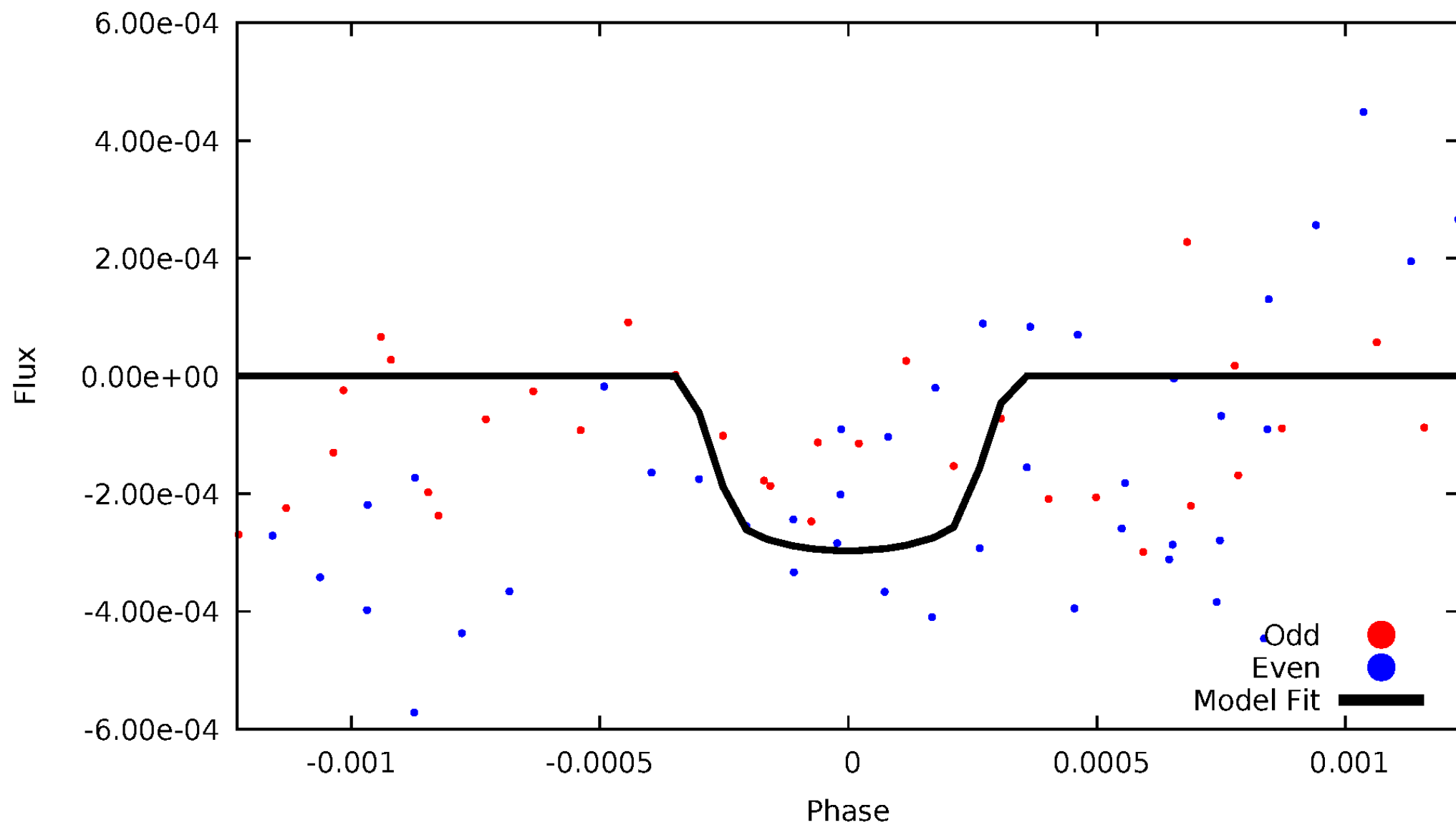


TCE 012407395-02



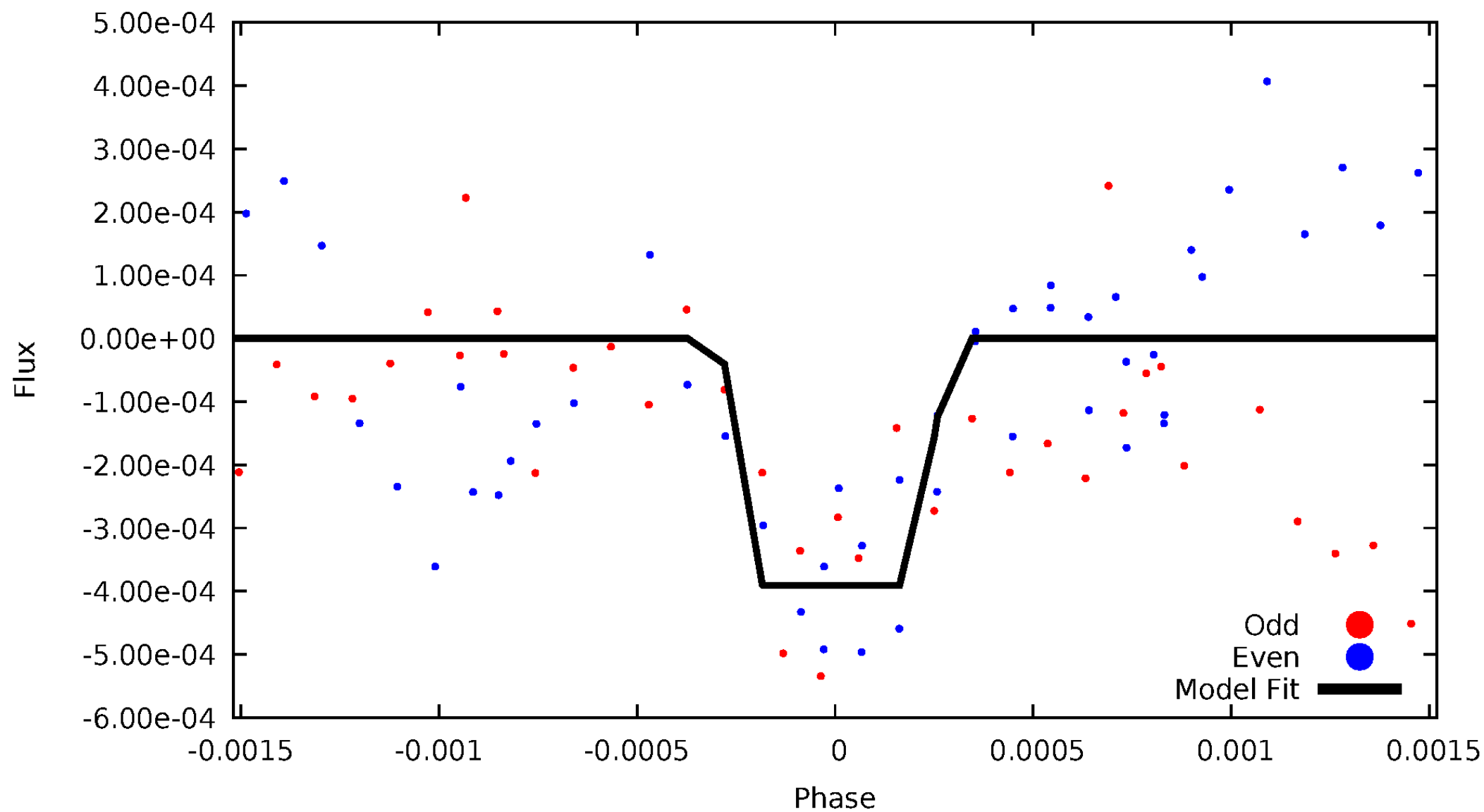
DV Odd/Even

TCE 012407395-02



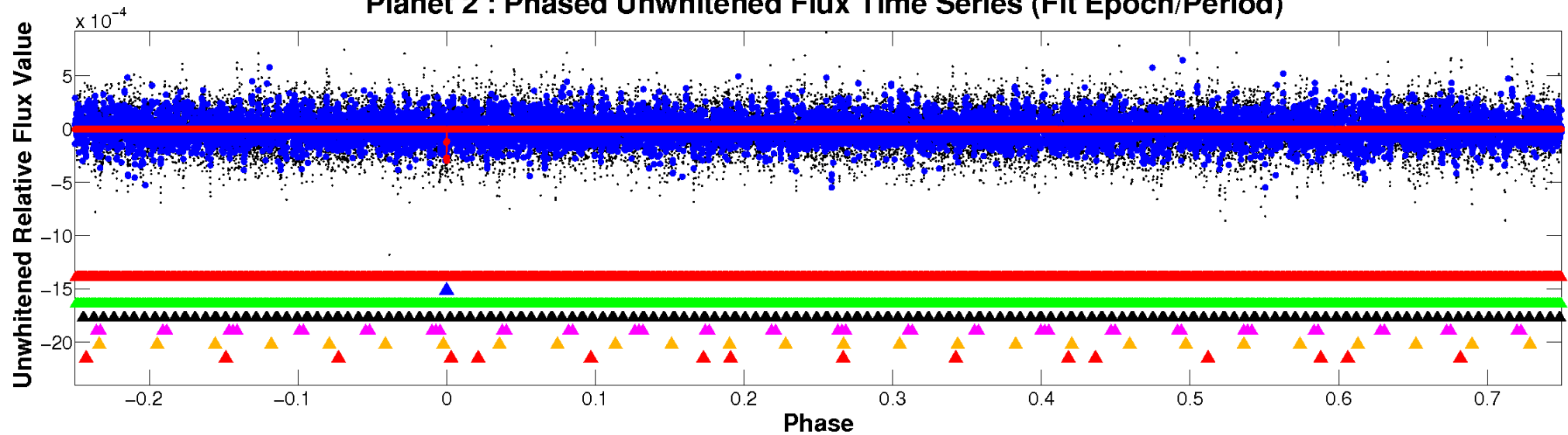
ALT Odd/Even

TCE 012407395-02

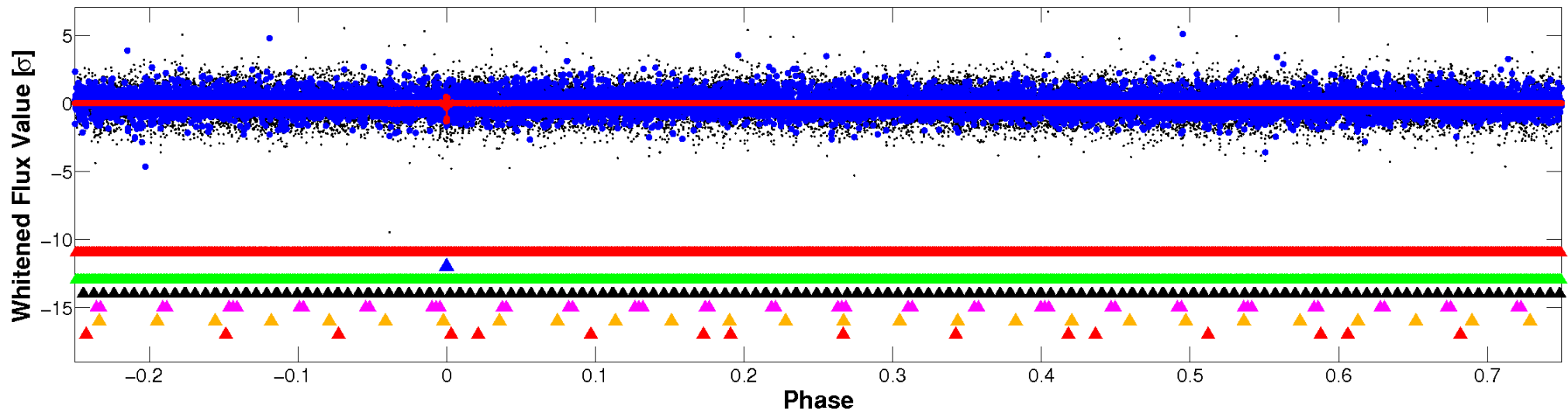


Non-Whitened Vs. Whitened Light Curve

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

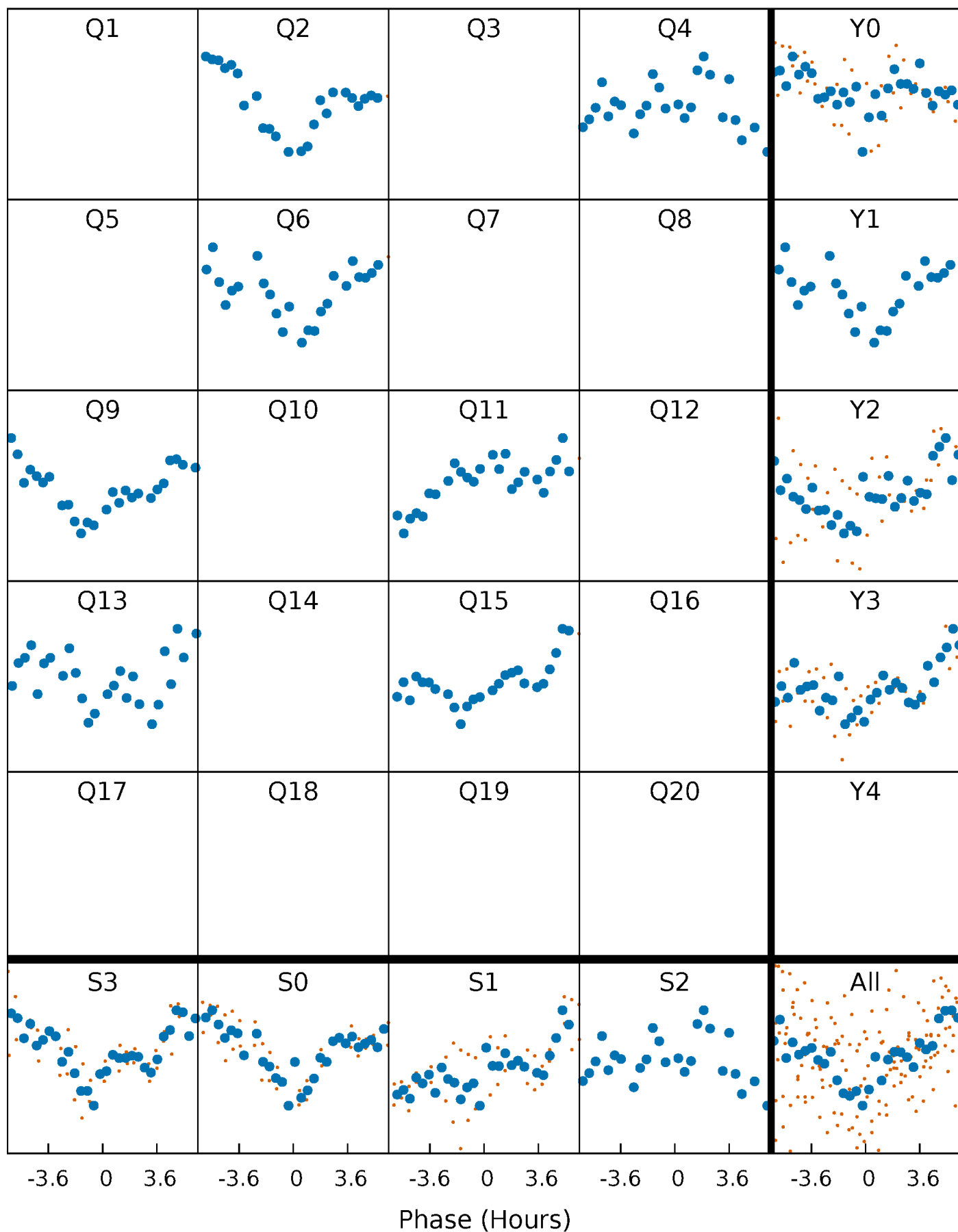


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



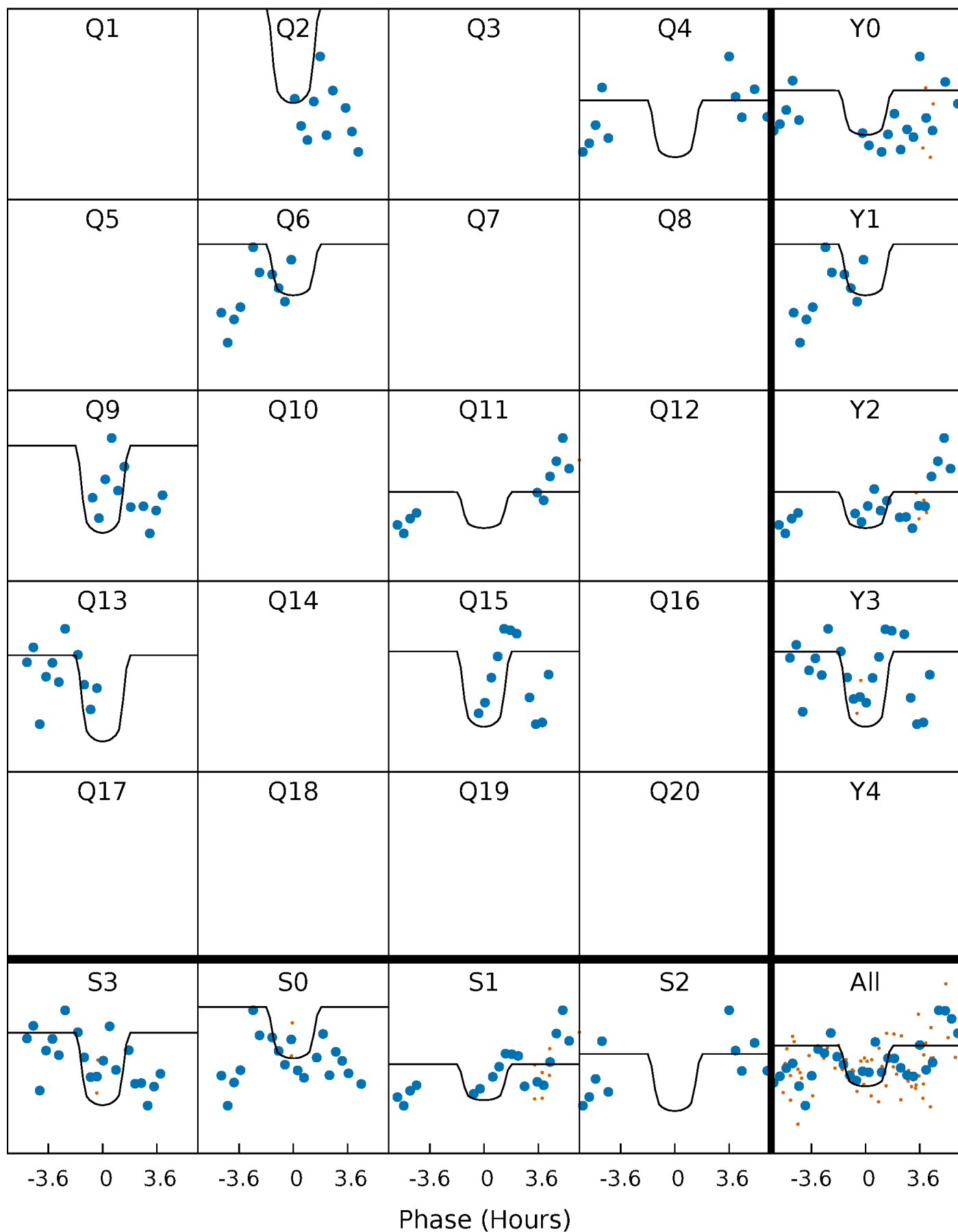
PDC Quarter-Phased Transit Curves

TCE 012407395-02 P=214.092421 Days $T_0=173.181963$ (BKJD)



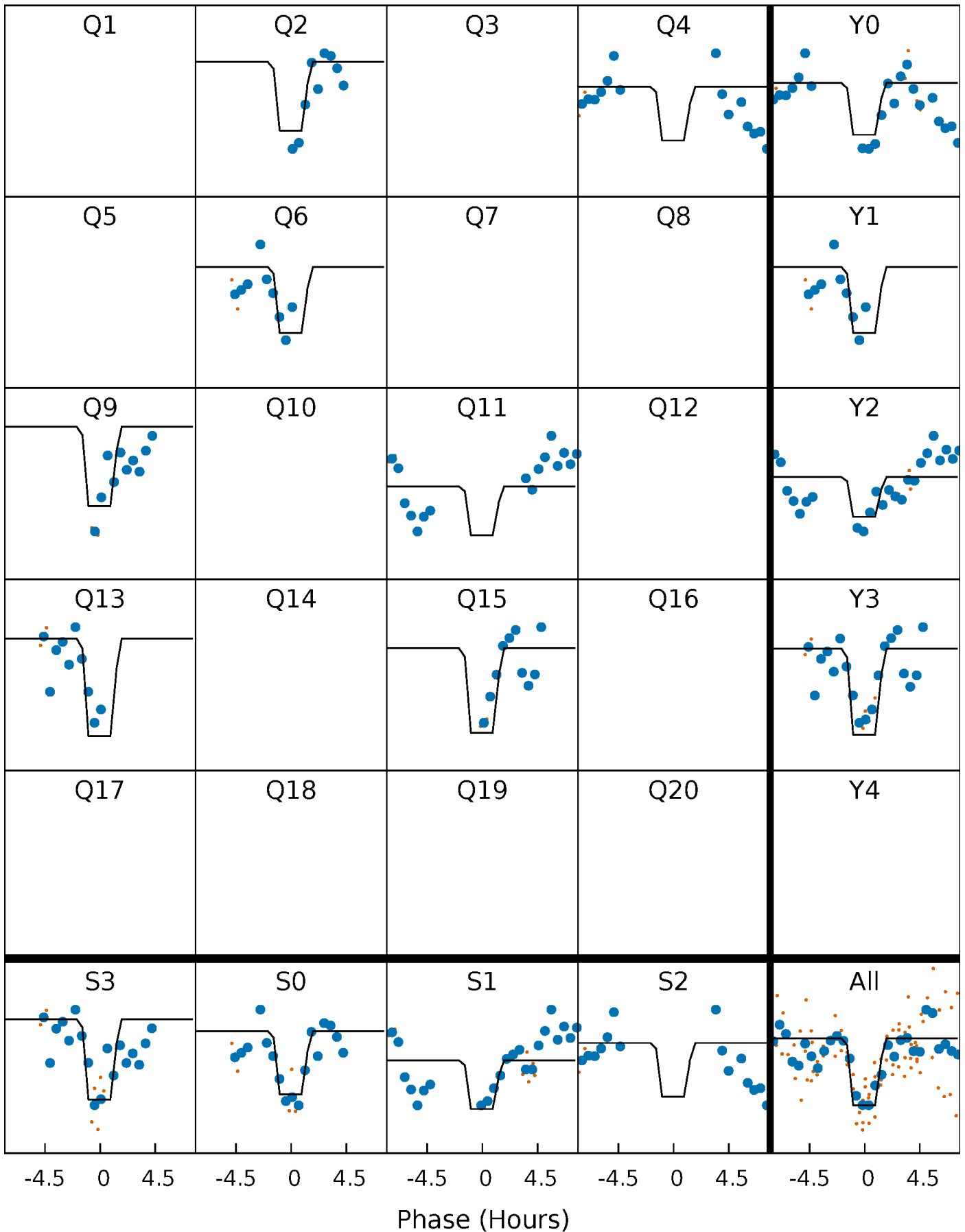
DV Quarter-Phased Transit Curves

TCE 012407395-02 P=214.092421 Days $T_0=173.181963$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

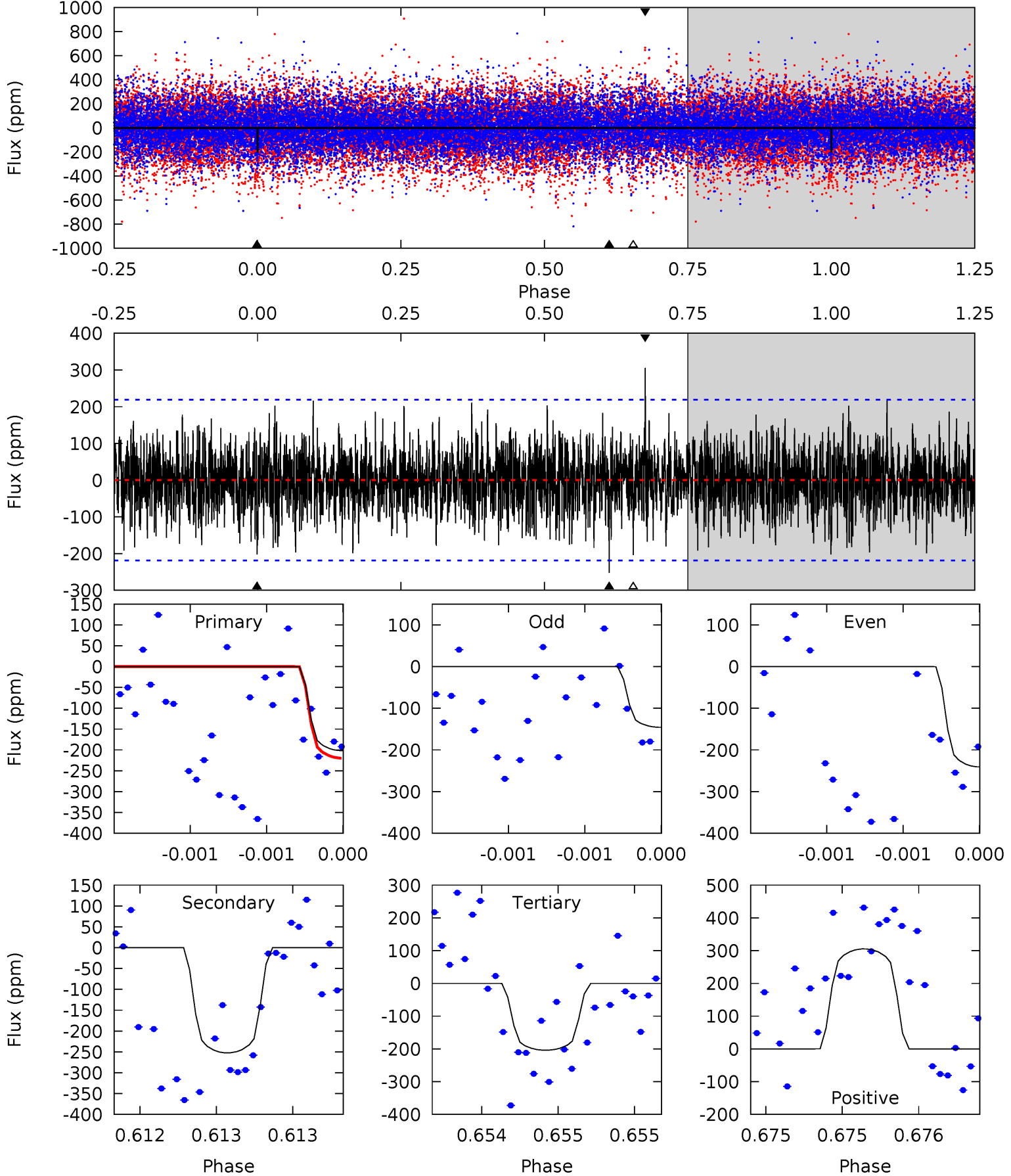
TCE 012407395-02 P=214.089219 Days $T_0=173.183312$ (BKJD)



DV Model-Shift Uniqueness Test

012407395-02, P = 214.092421 Days, E = 173.181963 Days

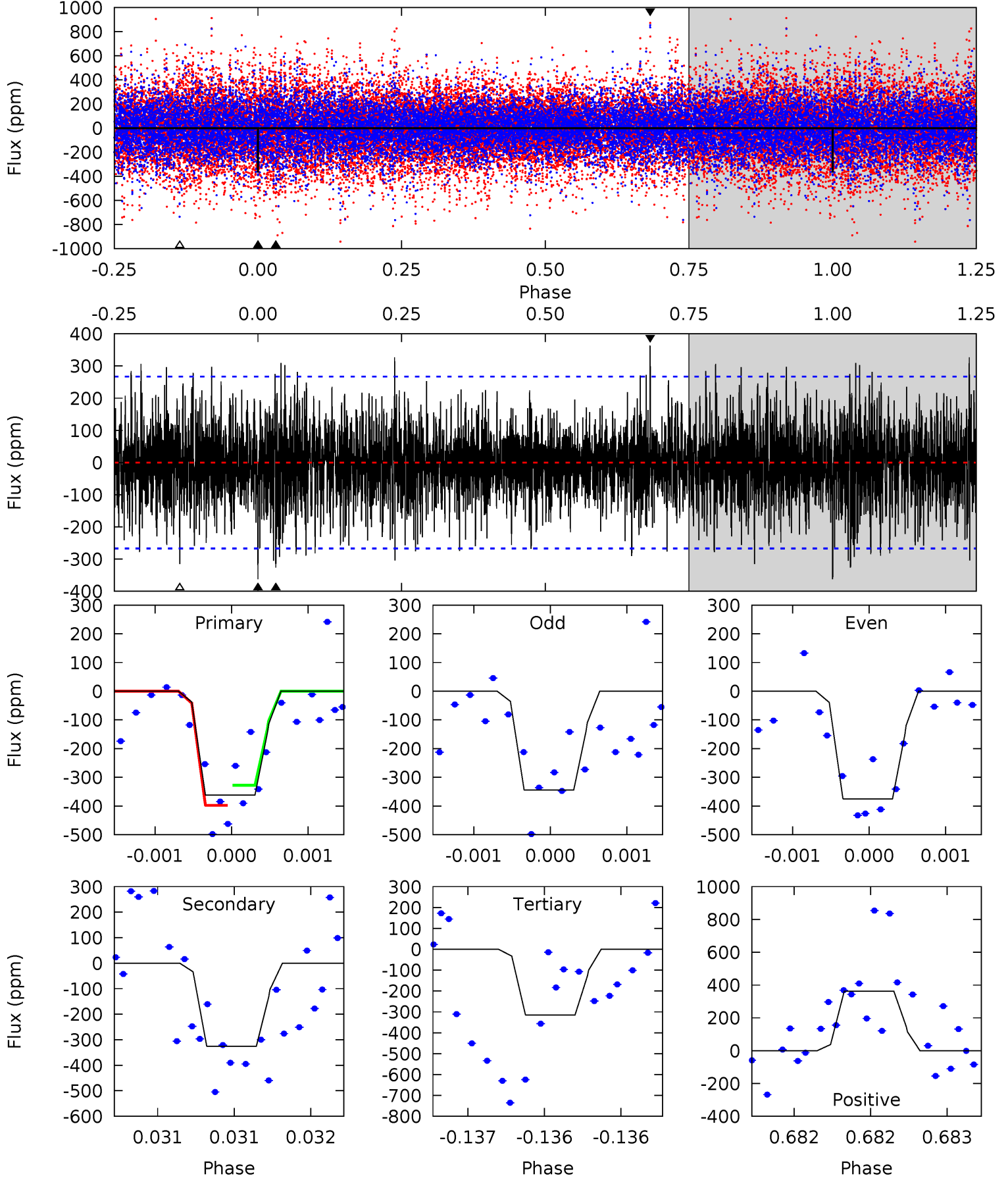
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.11	6.39	5.16	7.72	5.54	3.43	1.59	-0.05	-2.61	1.23	-1.33	1.19	1.35	0.55	0.55



Alt Model-Shift Uniqueness Test

012407395-02, P = 214.089219 Days, E = 173.183312 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.53	6.79	6.55	7.56	5.56	3.46	1.86	0.98	-0.03	0.23	-0.77	0.32	1.10	0.50	0.72



Stellar Parameters For KIC 012407395

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6777^{+214}_{-285}	$4.179^{+0.204}_{-0.167}$	$-0.500^{+0.250}_{-0.300}$	$1.427^{+0.404}_{-0.330}$	$1.121^{+0.178}_{-0.146}$	$0.543^{+0.603}_{-0.248}$
	+3%/-4%	+5%/-4%	+50%/-60%	+28%/-23%	+16%/-13%	+111%/-46%
Source	PHO54	PHO54	PHO54	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

Secondary Eclipse Parameters for KIC 012407395-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-252 ± 40	$3.59^{+3.03}_{-2.29}$	581^{+44}_{-41}	5611^{+3968}_{-1308}	5909^{+36840}_{-4309}
Alt.	-326 ± 48	$3.73^{+2.75}_{-2.25}$	583^{+43}_{-42}	5812^{+4285}_{-1216}	6767^{+35475}_{-4475}

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 $A_{obs} \gg 1.0$

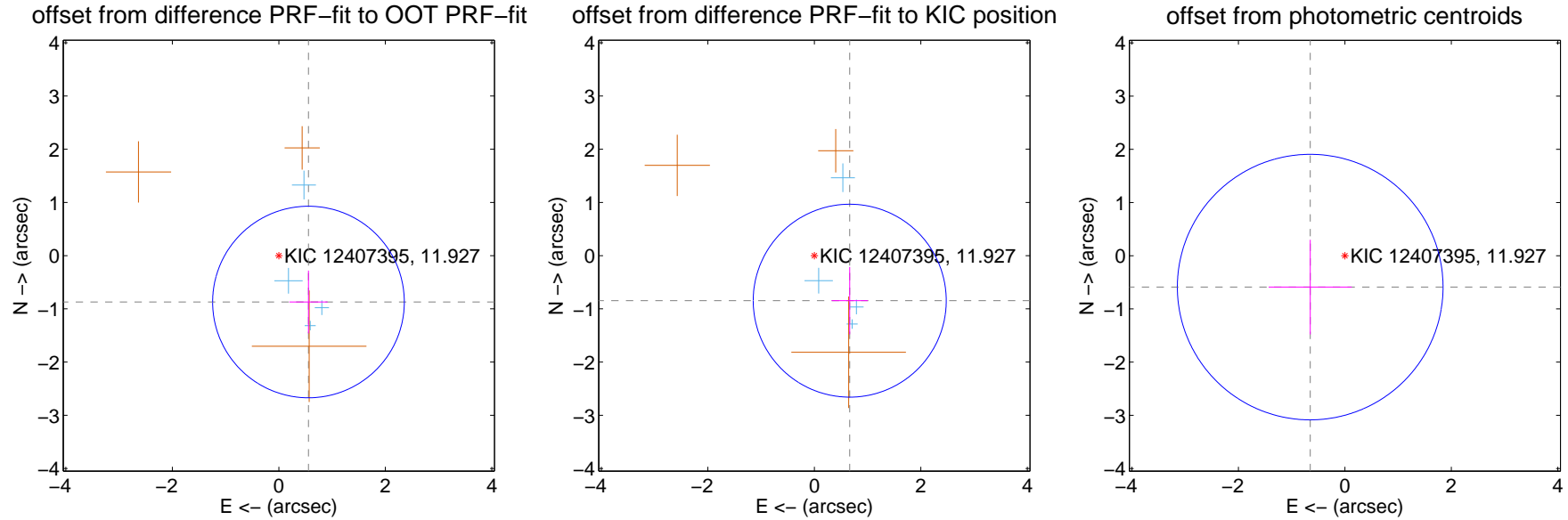
DV Centroid Data

Supplemental centroid analysis for 012407395-02. **Kepler magnitude: 11.93.** Transit SNR 5.10

There are 4 quarters with good PRF difference image offsets

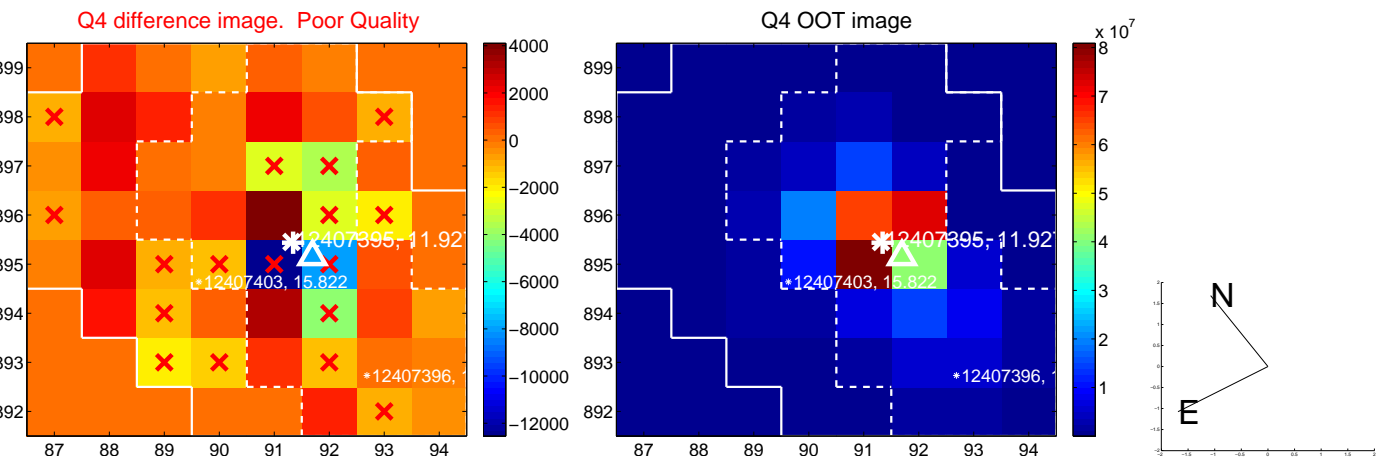
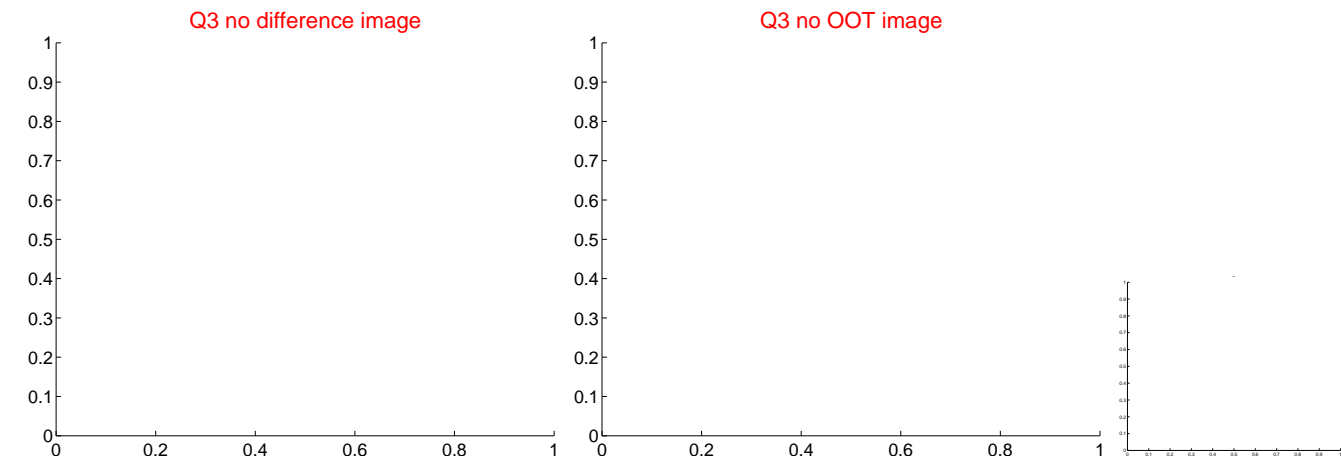
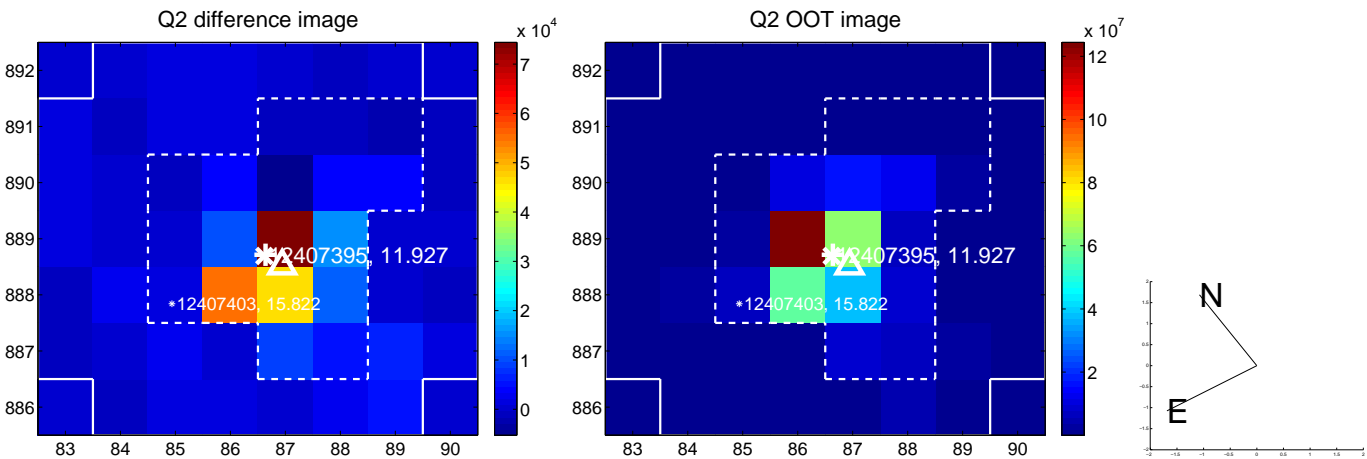
The direct PRF centroid is offset from the target star catalog position by about 0.02 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.034 ± 0.600	1.72	-0.557 ± 0.359	-0.871 ± 0.590
PRF-fit source offset from KIC position	1.076 ± 0.604	1.78	-0.665 ± 0.340	-0.846 ± 0.632
photometric centroid source offset	0.88 ± 0.83	1.06	0.65 ± 0.78	-0.59 ± 0.89

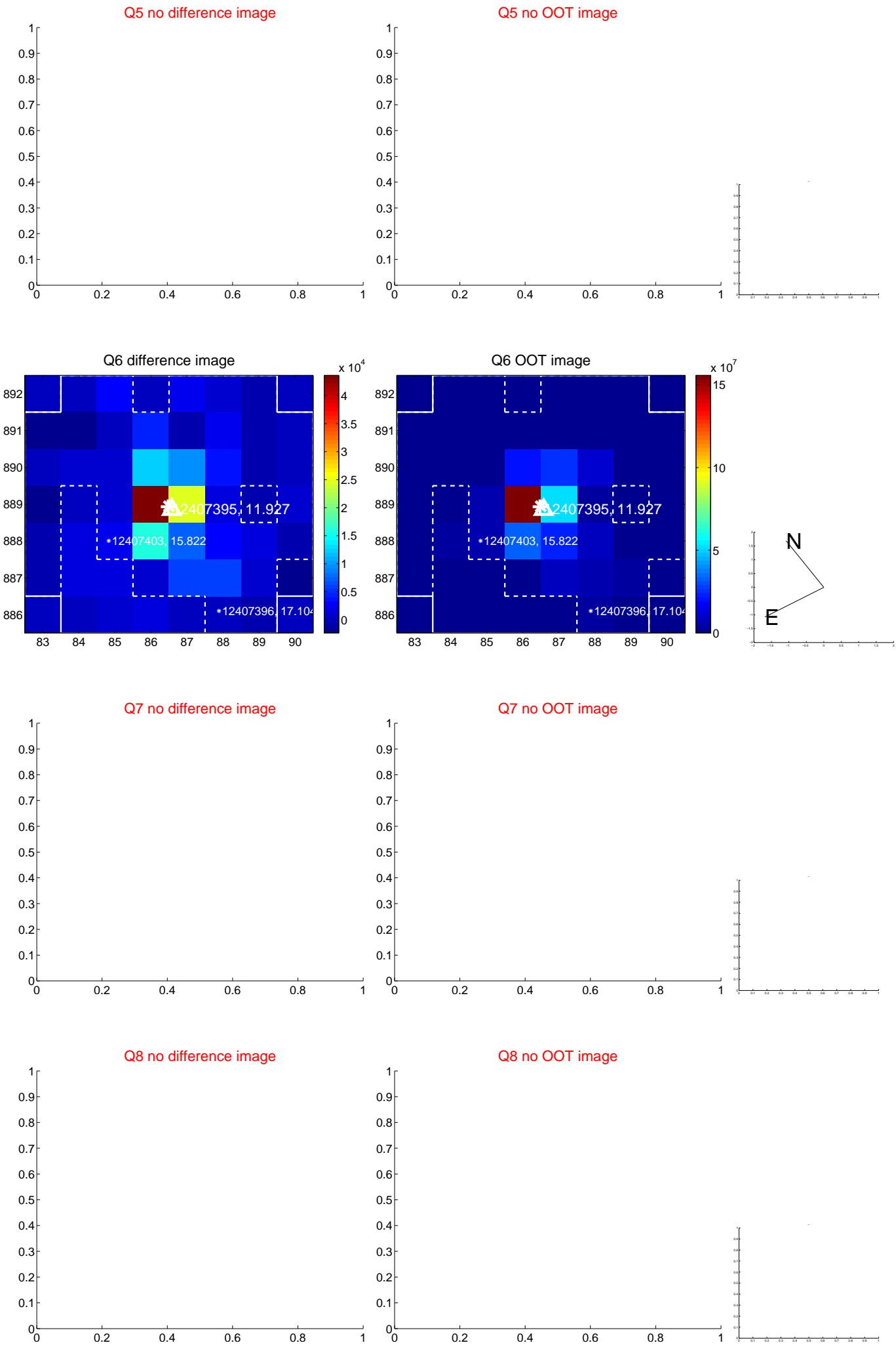


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

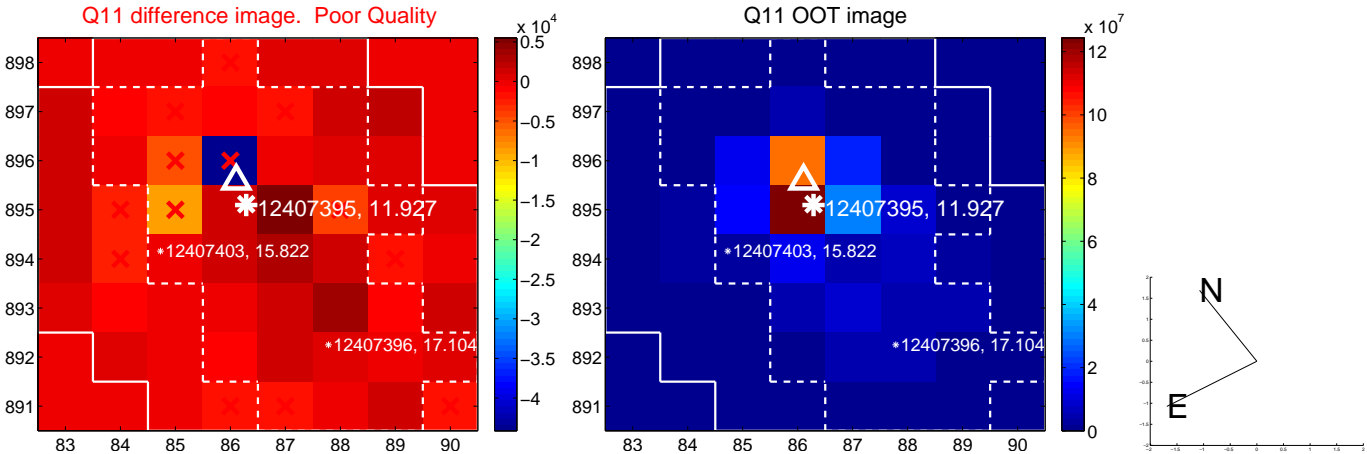
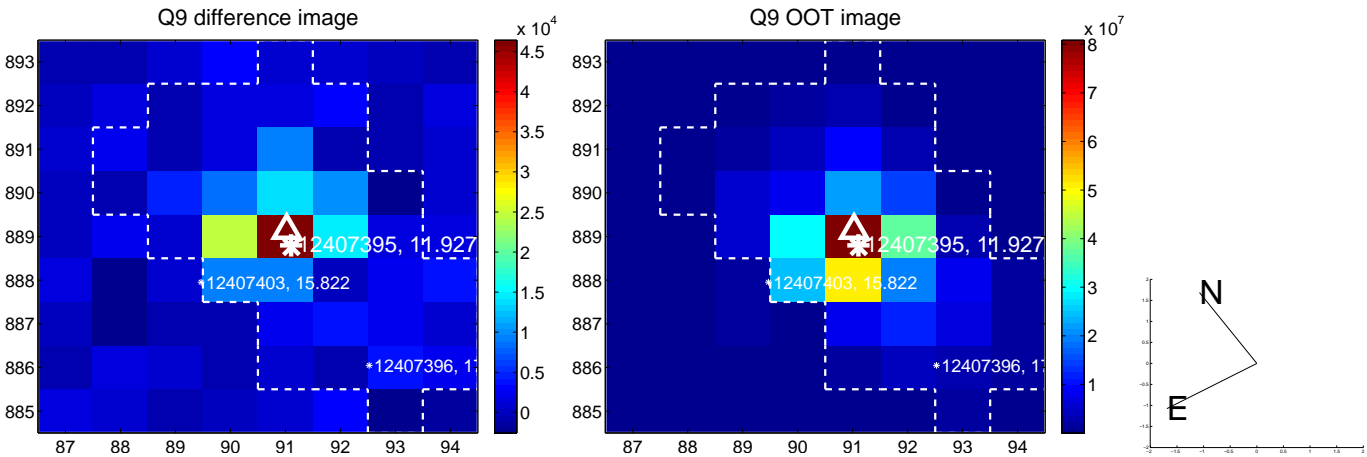
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



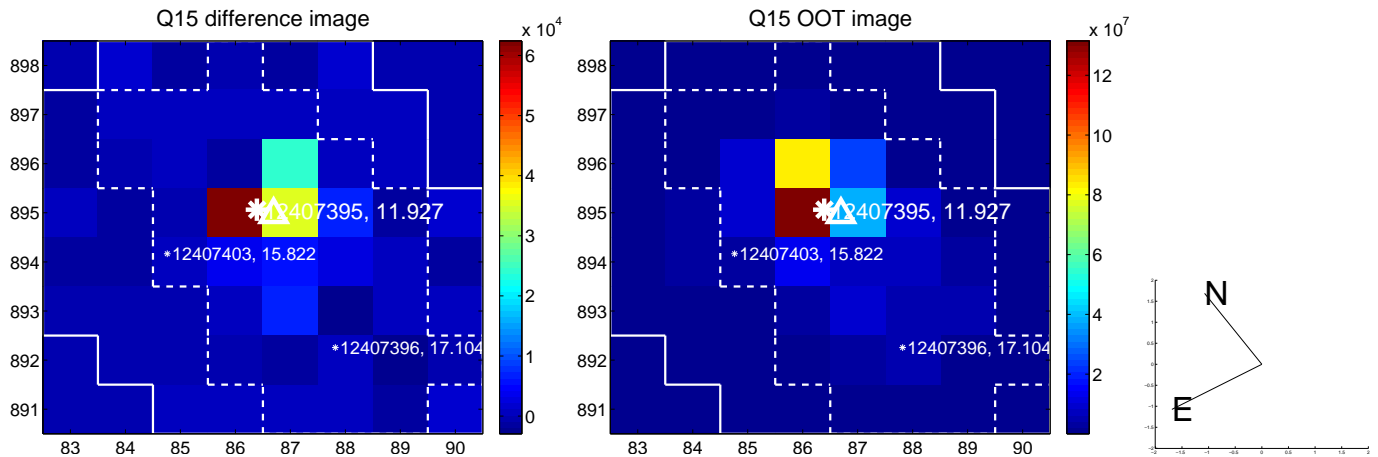
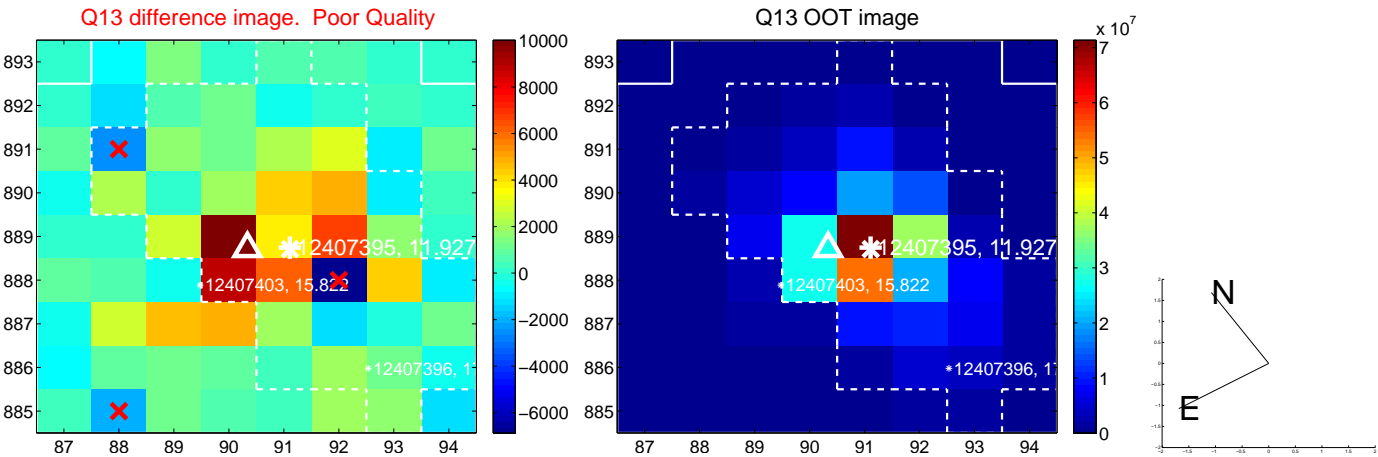
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



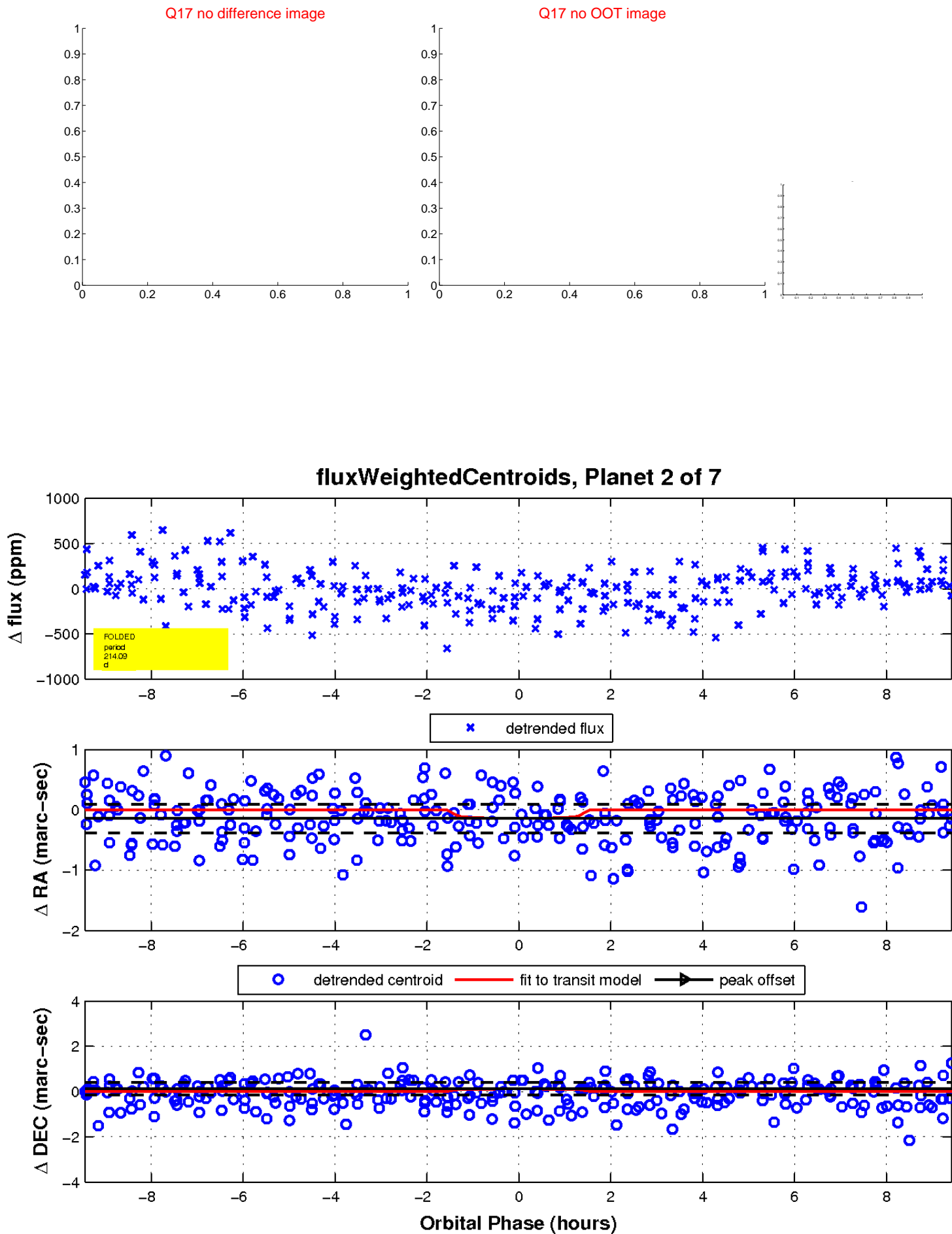
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

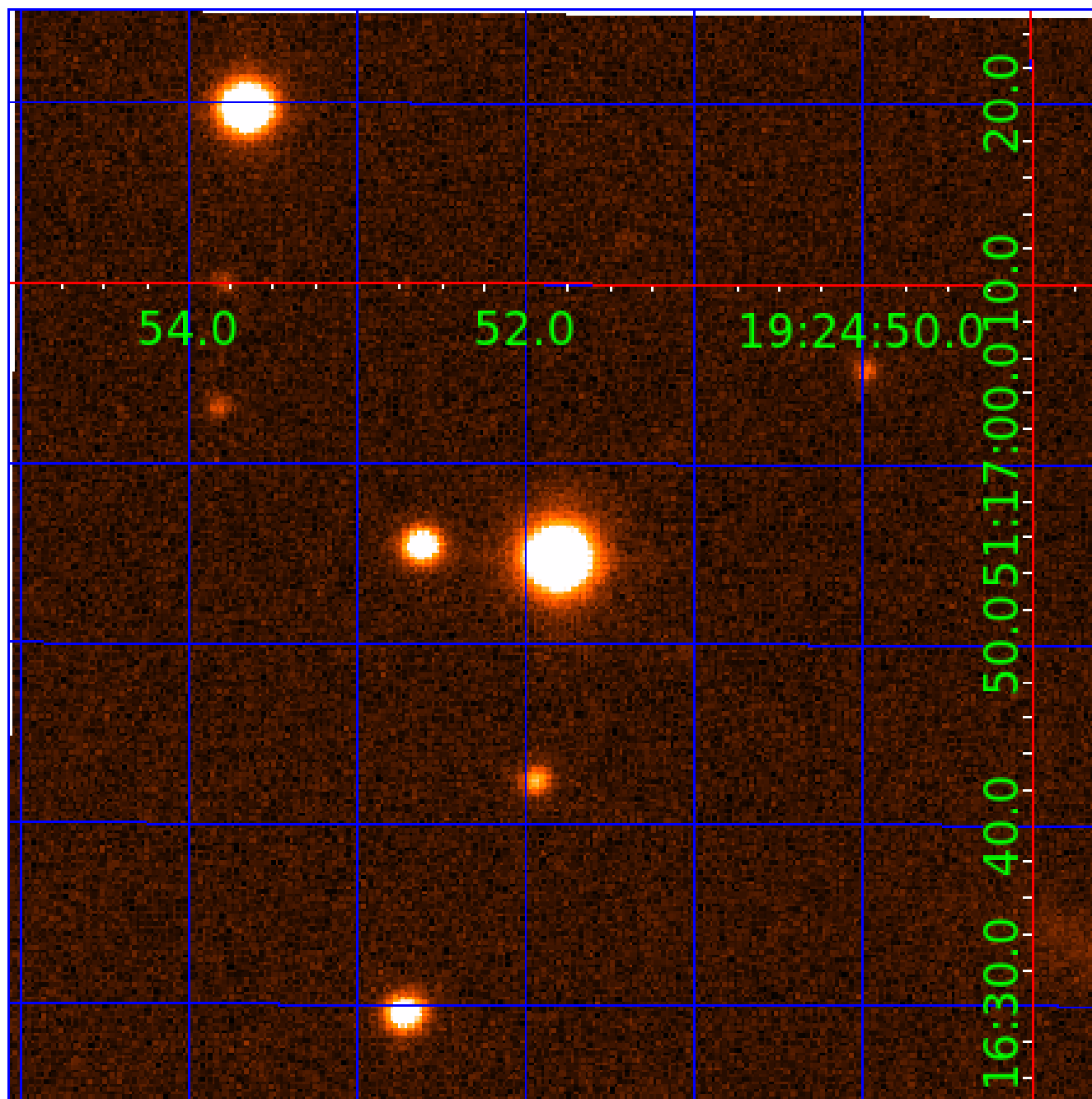


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 012407395

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})
012407395-01	OBS	No	0.535679	131.734431	33.4	2.310	13.0	14.8	1.43	6777	0.96	21385.56
012407395-02	OBS	No	214.092421	173.181963	296.8	3.159	10.6	5.1	1.43	6777	2.86	7.26
012407395-03	OBS	No	0.535679	131.922575	30.0	1.461	10.2	13.8	1.43	6777	0.91	21385.58
012407395-04	OBS	No	4.400160	135.380280	88.4	6.725	8.1	9.0	1.43	6777	1.56	1290.34
012407395-05	OBS	No	29.220757	141.854914	281.1	3.354	8.1	7.7	1.43	6777	4.24	103.37
012407395-06	OBS	No	57.629864	139.865790	394.8	1.667	8.0	7.1	1.43	6777	3.06	41.80

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
012407395-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
012407395-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS
012407395-03	OBS	FP	0.00	1	0	0	0	LPP_DV—SAME_NTL_PERIOD
012407395-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
012407395-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
012407395-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT

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

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

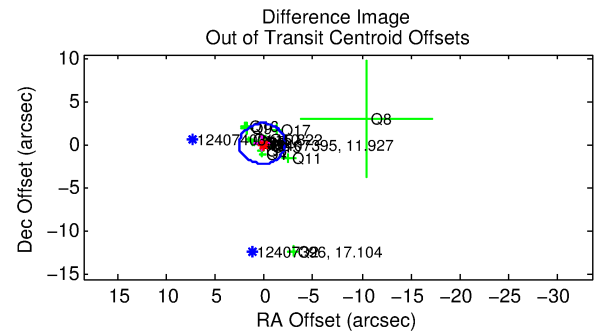
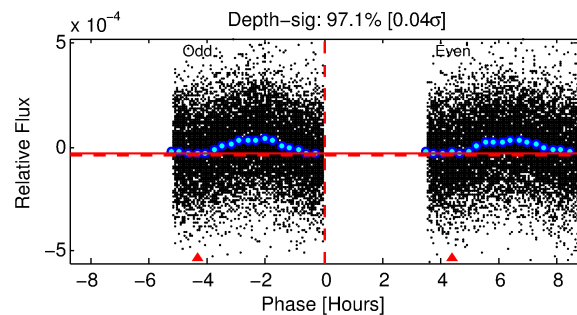
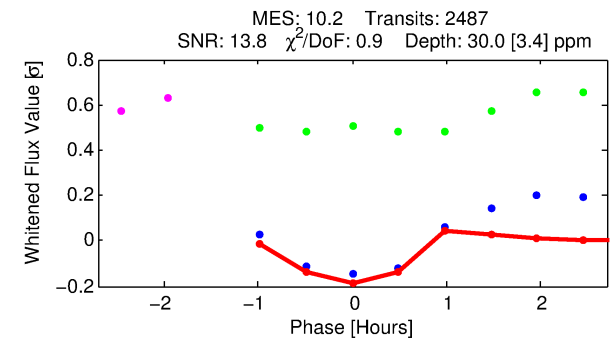
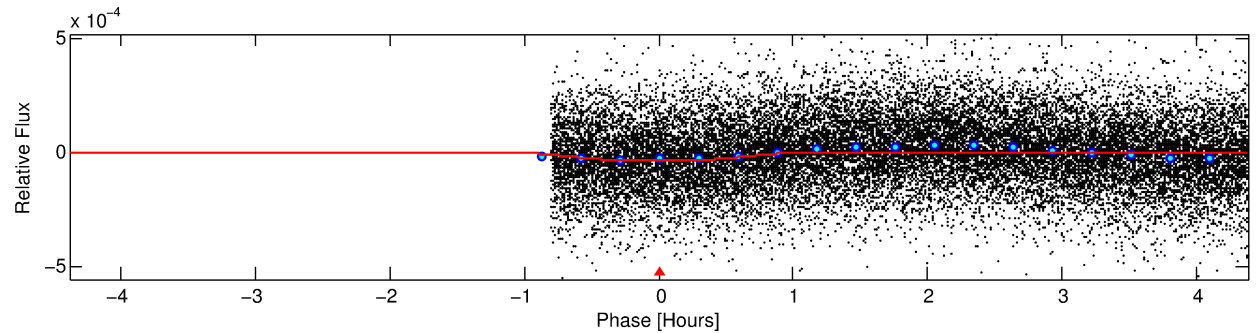
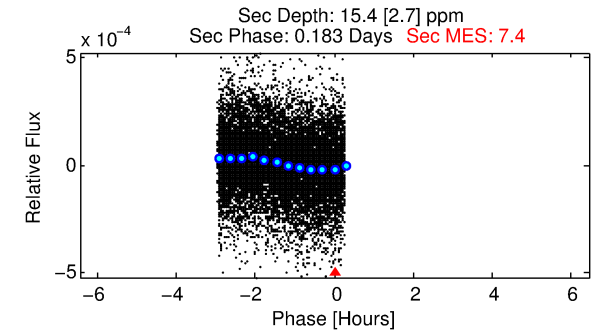
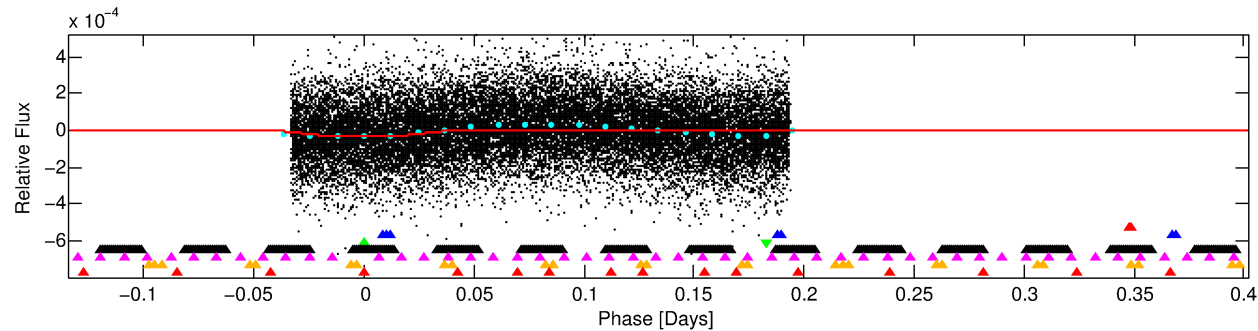
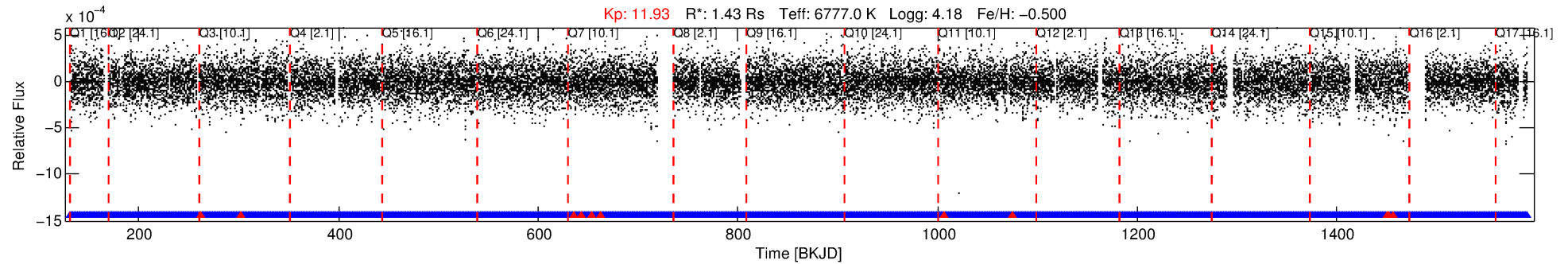
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 012407395-03

No Significant Match Found

DV One-Page Summary

KIC: 12407395 Candidate: 3 of 7 Period: 0.536 d



DV Fit Results:

Period = 0.53568 [0.00001] d
Epoch = 131.9226 [0.0013] BKJD
Rp/R* = 0.0059 [0.0011]
a/R* = 1.56 [1.01]
b = 0.90 [0.23]
Seff = 21385.58 [8607.09]
Teq = 3084 [310] K
Rp = 0.91 [0.31] Re
a = 0.0134 [0.0033] AU
Ag = 1.83 [1.01] [0.82σ]
Teffp = 5543 [619] K [3.55σ]

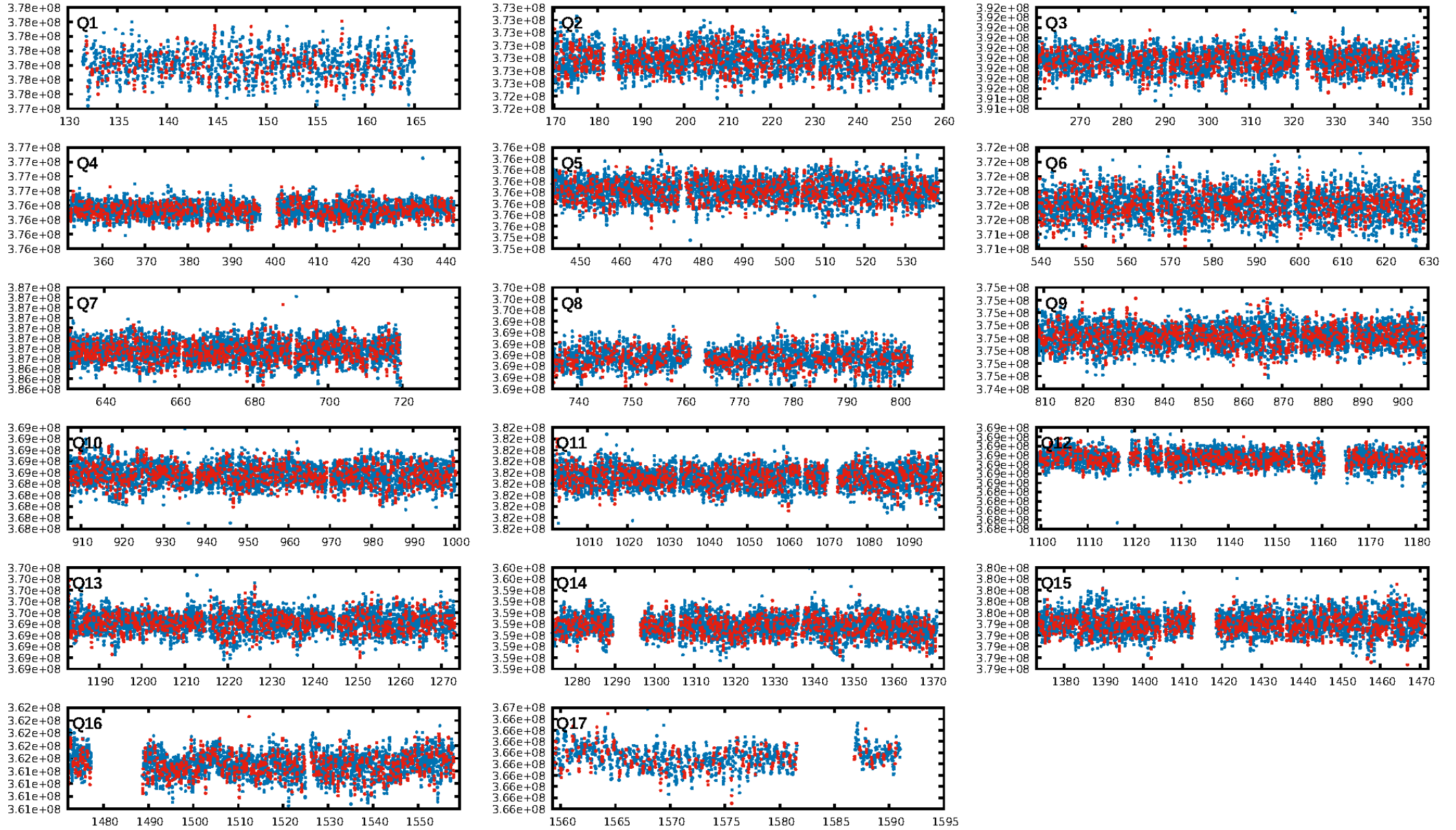
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.0% [0.00σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [2364/2375]
GhostDiagnostic-chr: 1.132
Centroid-sig: 89.8%
Centroid-so: 0.310 arcsec [0.49σ]
OotOffset-rm: 0.279 arcsec [0.36σ]
KicOffset-rm: 0.314 arcsec [0.40σ]
OotOffset-st: 4/4/3/5 [16]
KicOffset-st: 4/4/3/5 [16]
DiffImageQuality-fgm: 0.75 [12/16]
DiffImageOverlap-fno: 0.00 [0/17]

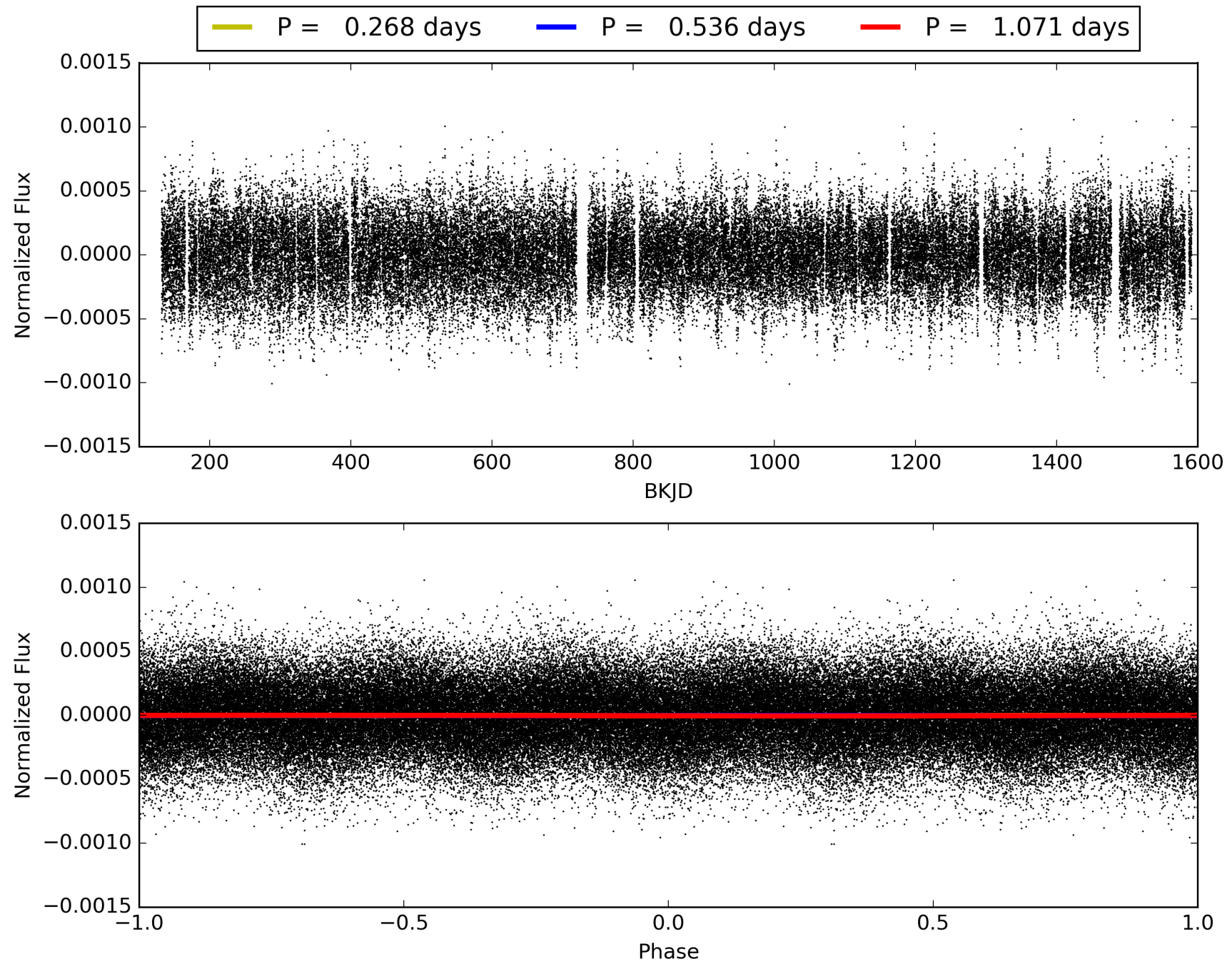
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 06:31:21 Z

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

TCE 012407395-03, PDC Light Curves

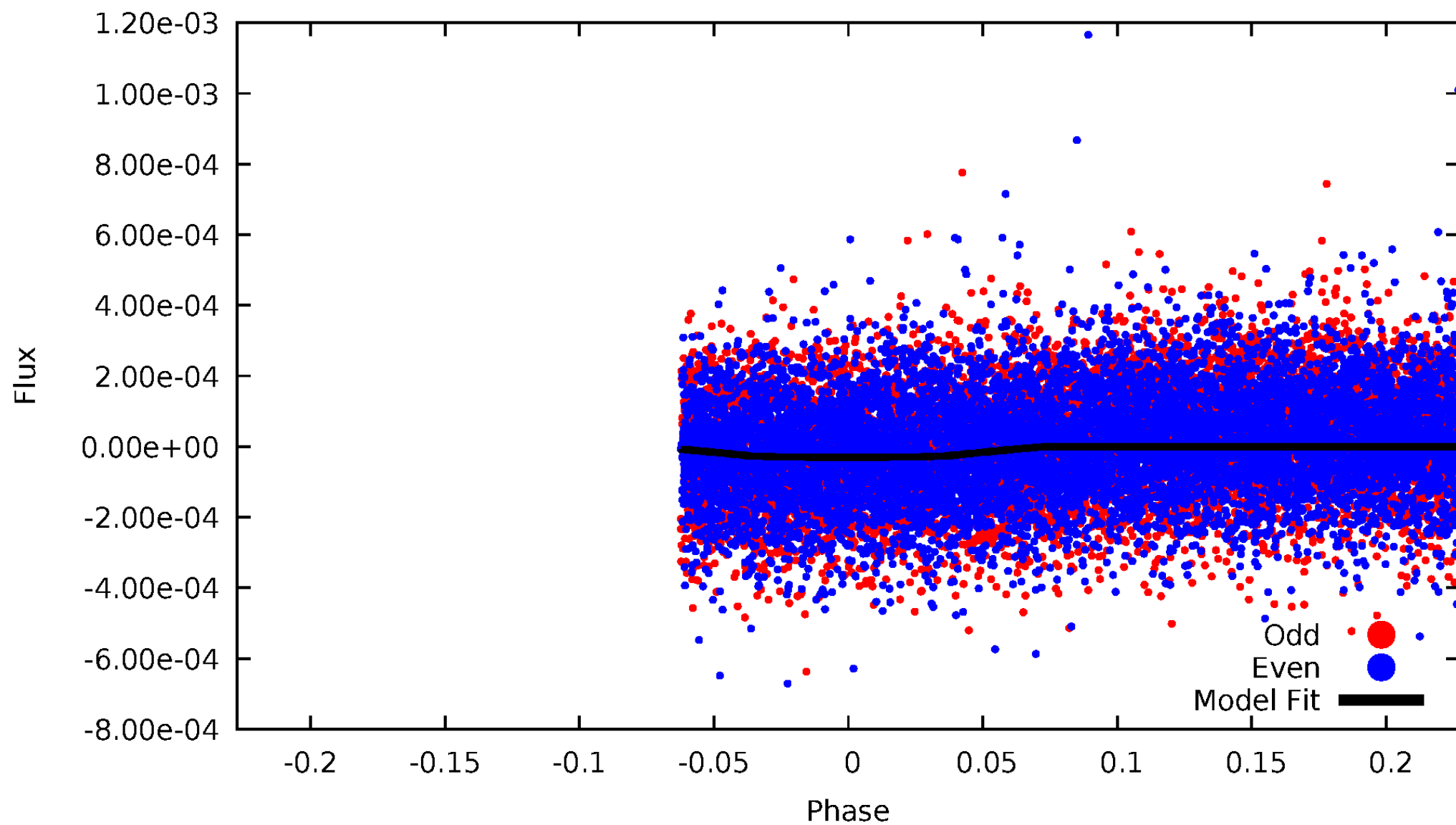


TCE 012407395-03



DV Odd/Even

TCE 012407395-03

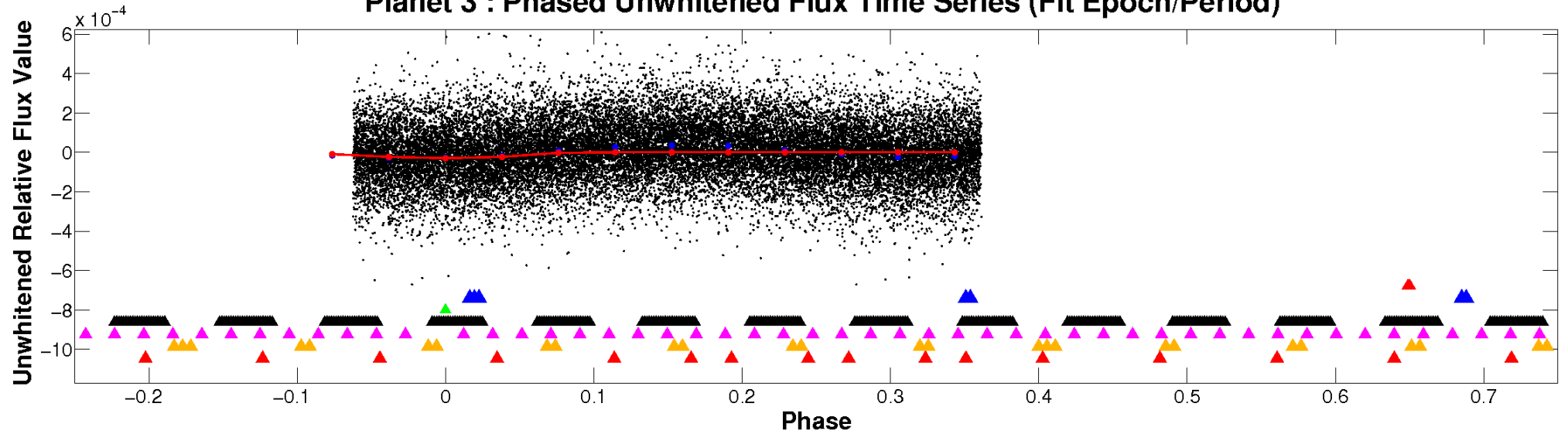


ALT Odd/Even

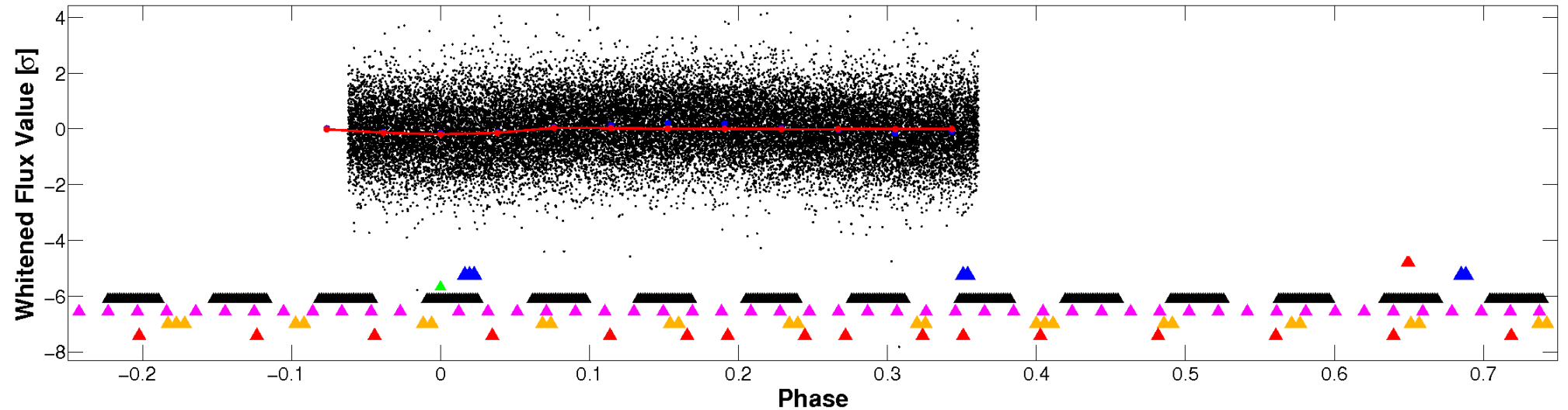
This plot does not exist for this TCE.

Non-Whitened Vs. Whitened Light Curve

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

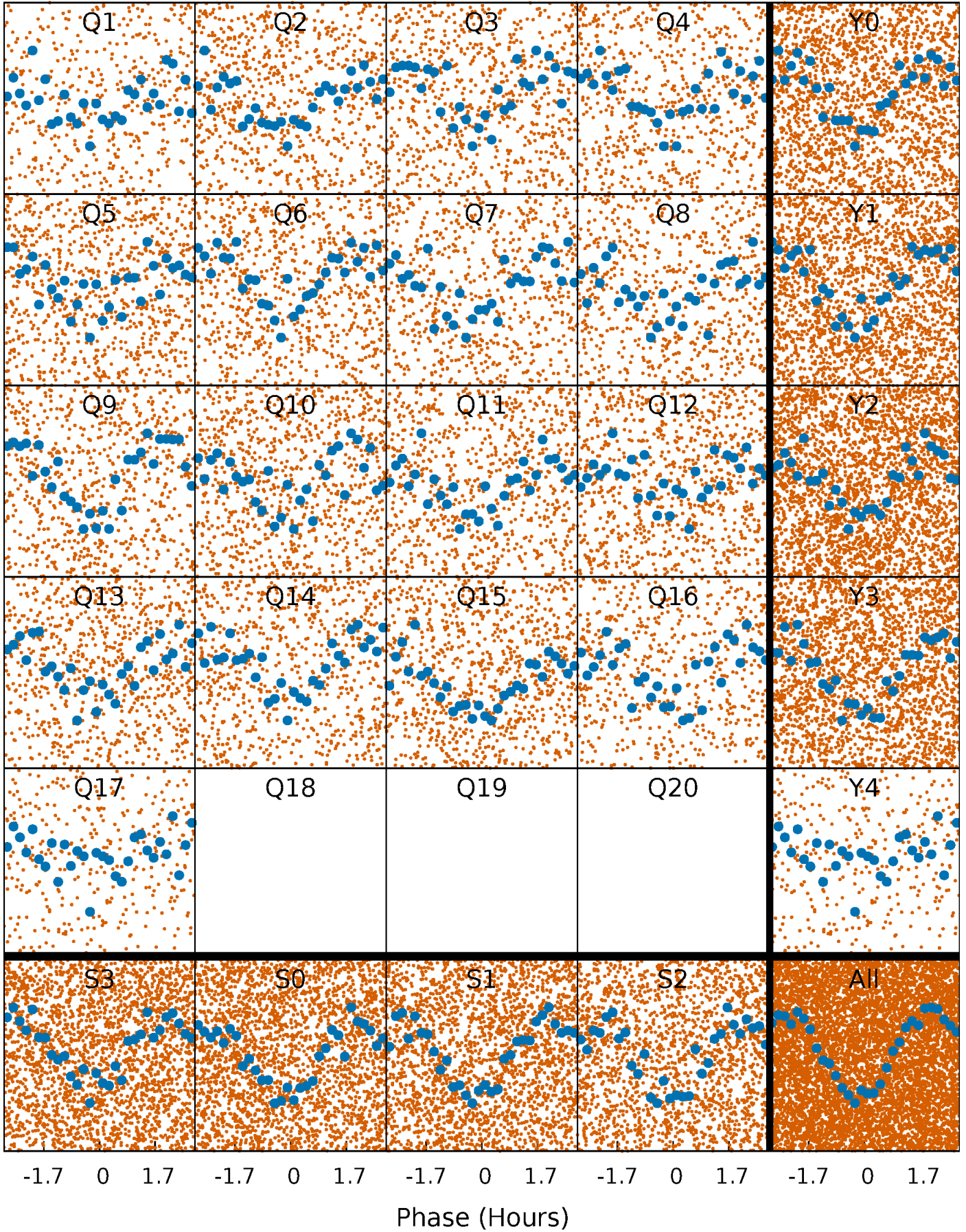


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



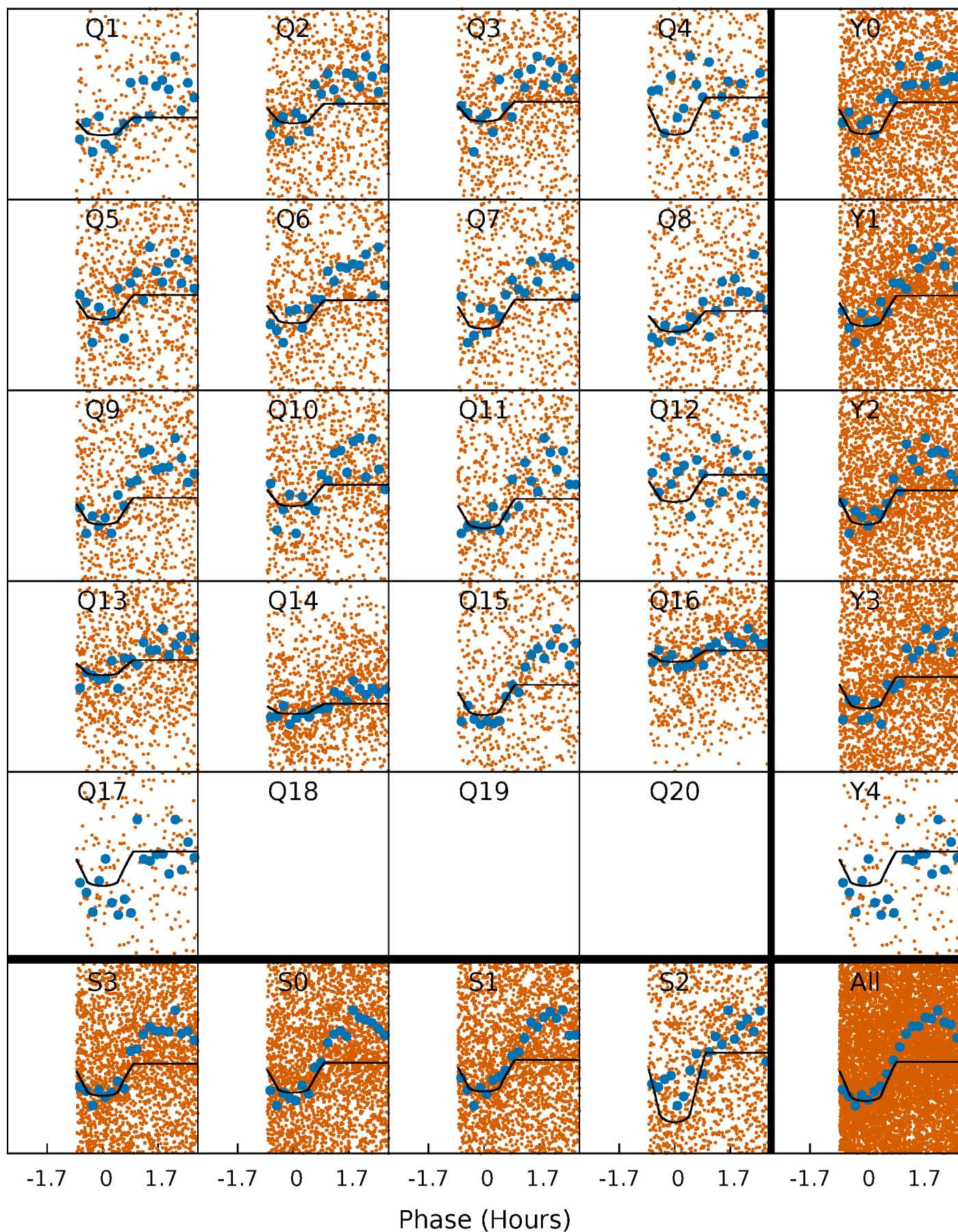
PDC Quarter-Phased Transit Curves

TCE 012407395-03 P= 0.535679 Days $T_0=131.922575$ (BKJD)



DV Quarter-Phased Transit Curves

TCE 012407395-03 P= 0.535679 Days $T_0=131.922575$ (BKJD)

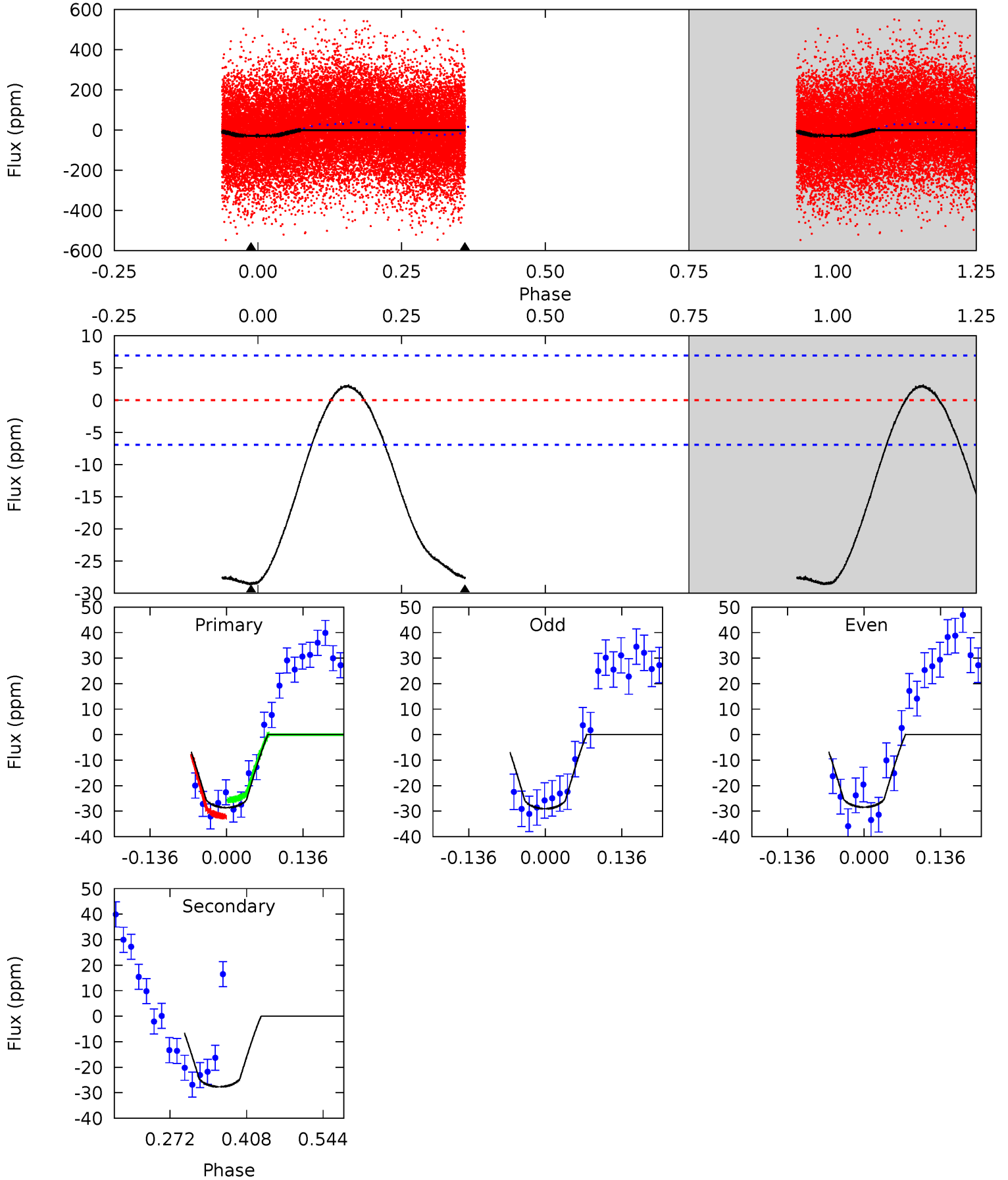


This plot does not exist for this TCE.

DV Model-Shift Uniqueness Test

012407395-03, P = 0.535679 Days, E = 131.386896 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
18.6	18.0	0	0	4.50	1.49	2.50	18.6	18.6	18.0	18.0	0.20	1.05	0.08	2.12



Alt Model-Shift Uniqueness Test

This plot does not exist for this TCE.

Stellar Parameters For KIC 012407395

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6777^{+214}_{-285}	$4.179^{+0.204}_{-0.167}$	$-0.500^{+0.250}_{-0.300}$	$1.427^{+0.404}_{-0.330}$	$1.121^{+0.178}_{-0.146}$	$0.543^{+0.603}_{-0.248}$
	+3%/-4%	+5%/-4%	+50%/-60%	+28%/-23%	+16%/-13%	+111%/-46%
Source	PHO54	PHO54	PHO54	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

Secondary Eclipse Parameters for KIC 012407395-03 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-28 ± 2	$0.90^{+0.22}_{-0.22}$	4254^{+346}_{-303}	6255^{+873}_{-649}	$3.425^{+2.451}_{-1.207}$
Alt.	N/A	N/A	N/A	N/A	N/A

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

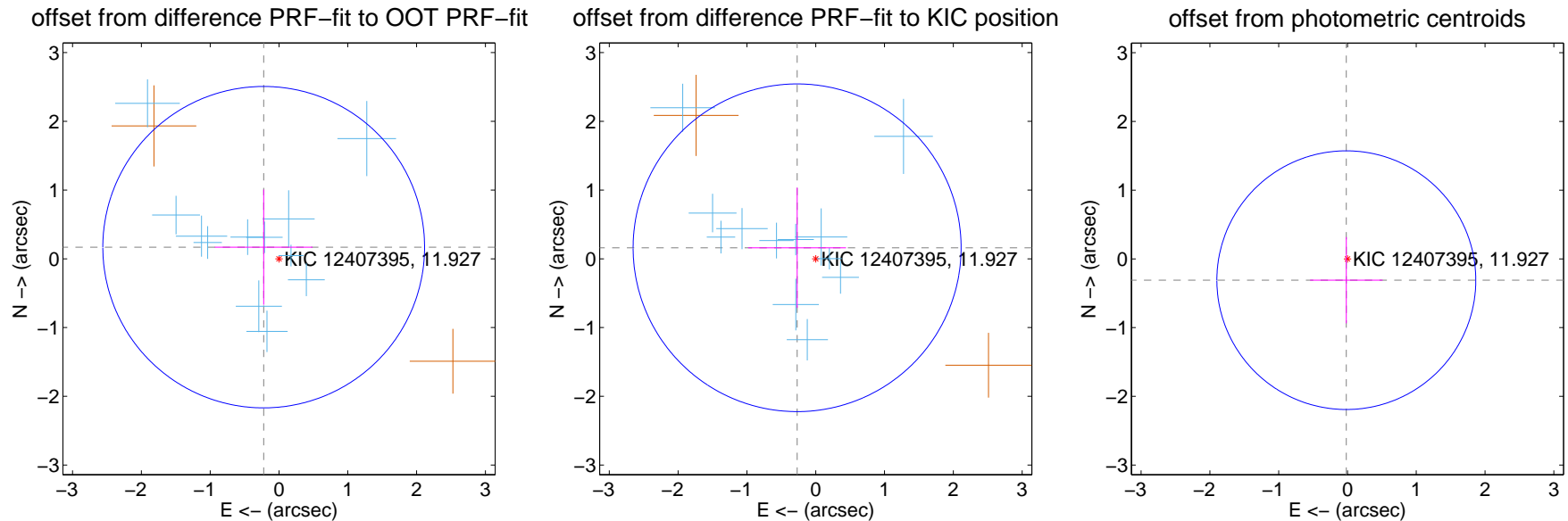
DV Centroid Data

Supplemental centroid analysis for 012407395-03. **Kepler magnitude: 11.93.** Transit SNR 13.84

There are 12 quarters with good PRF difference image offsets

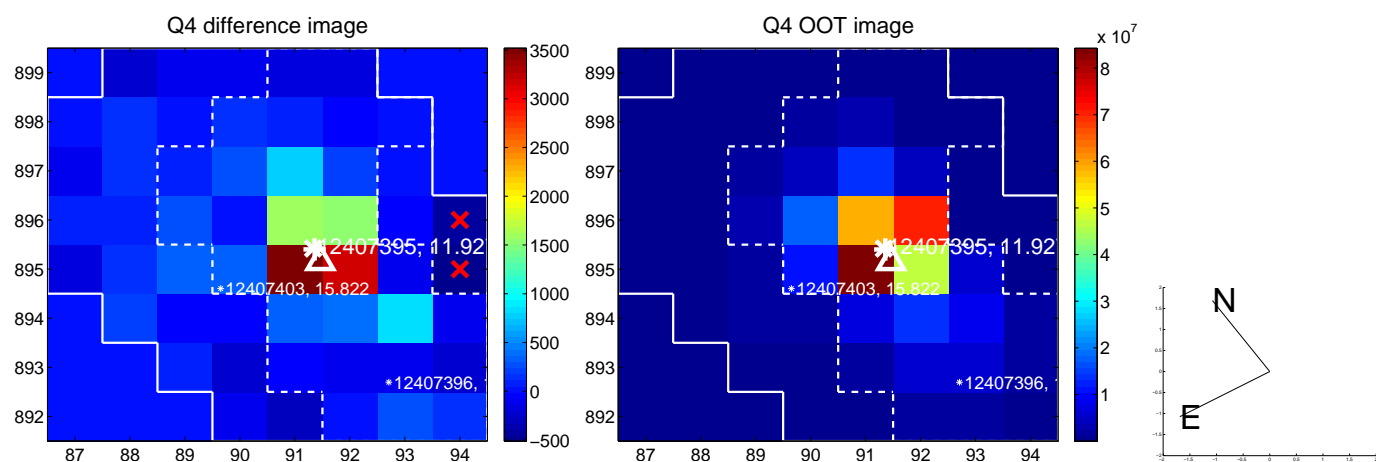
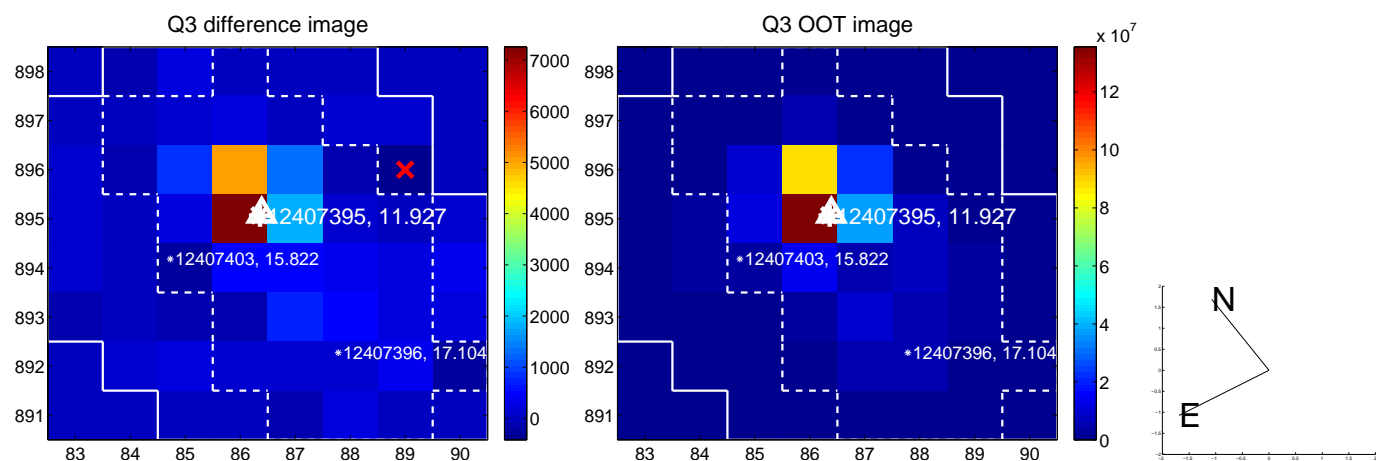
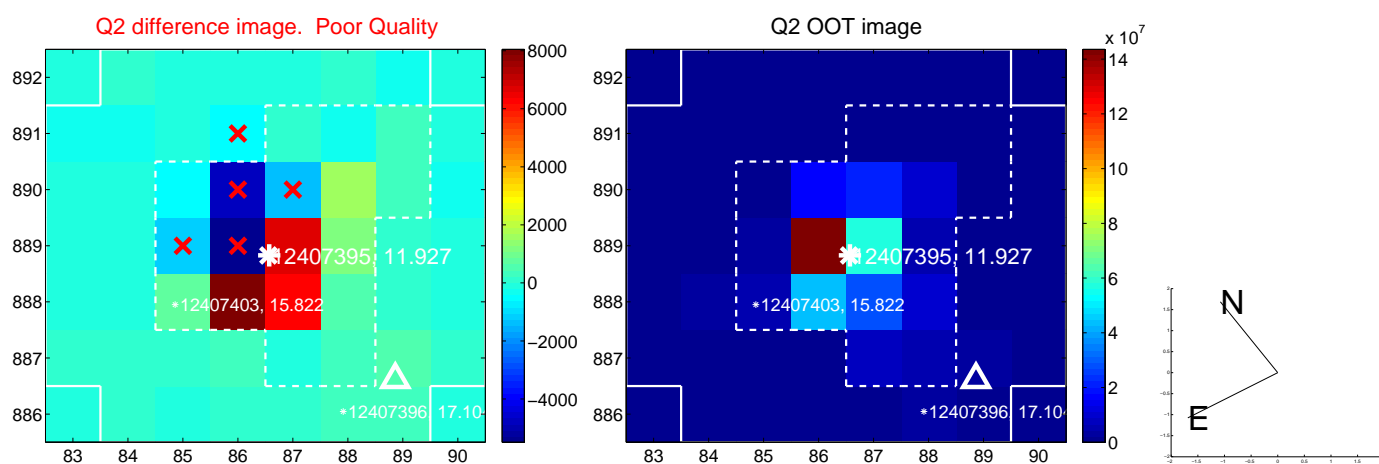
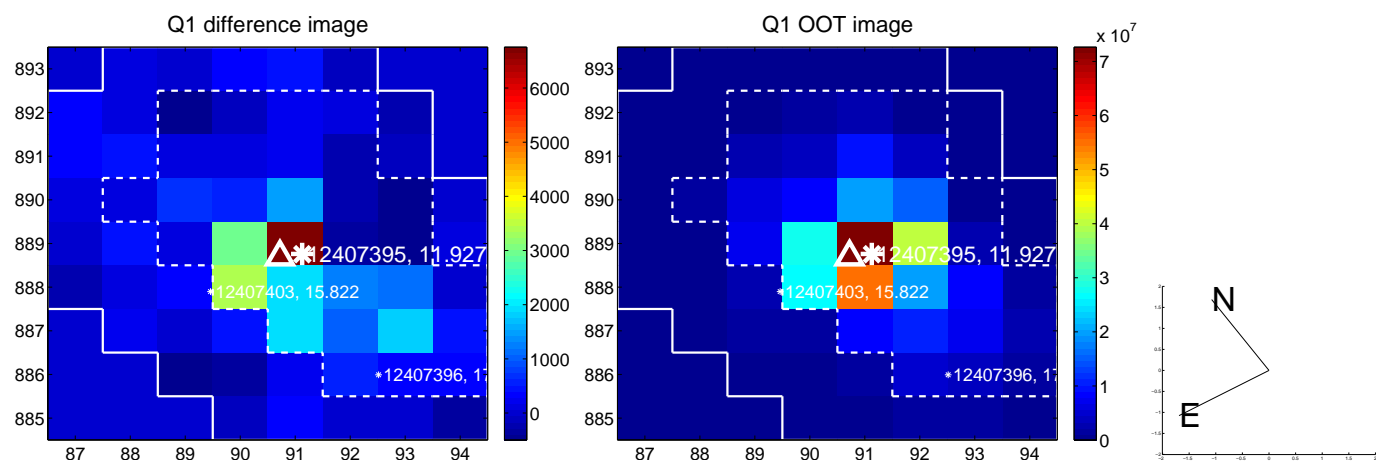
The direct PRF centroid is offset from the target star catalog position by about 0.03 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.279 ± 0.779	0.36	0.222 ± 0.711	0.169 ± 0.838
PRF-fit source offset from KIC position	0.314 ± 0.794	0.40	0.270 ± 0.711	0.160 ± 0.875
photometric centroid source offset	0.31 ± 0.63	0.49	0.02 ± 0.53	-0.31 ± 0.63

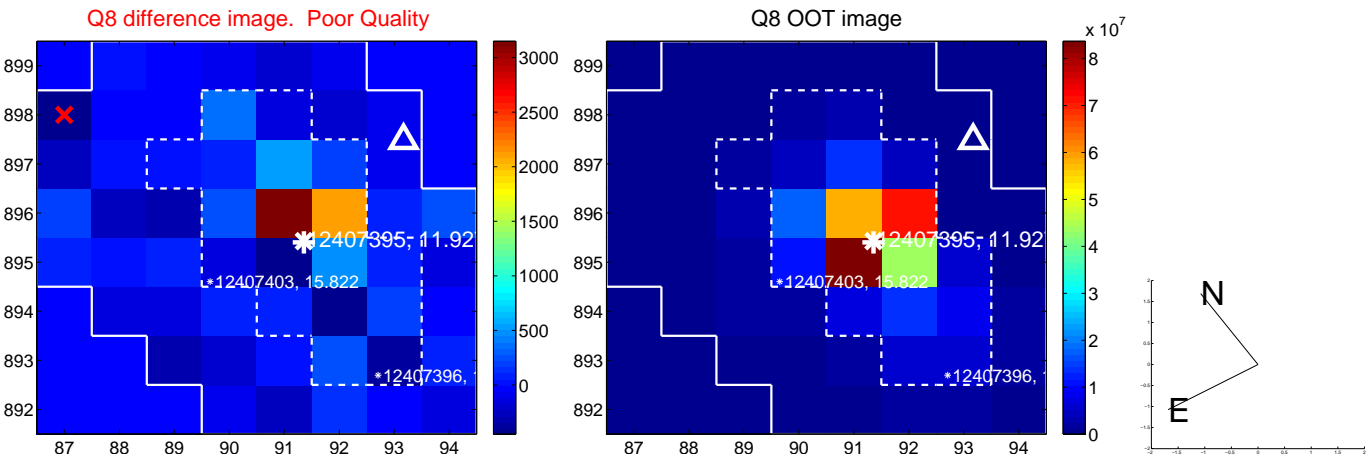
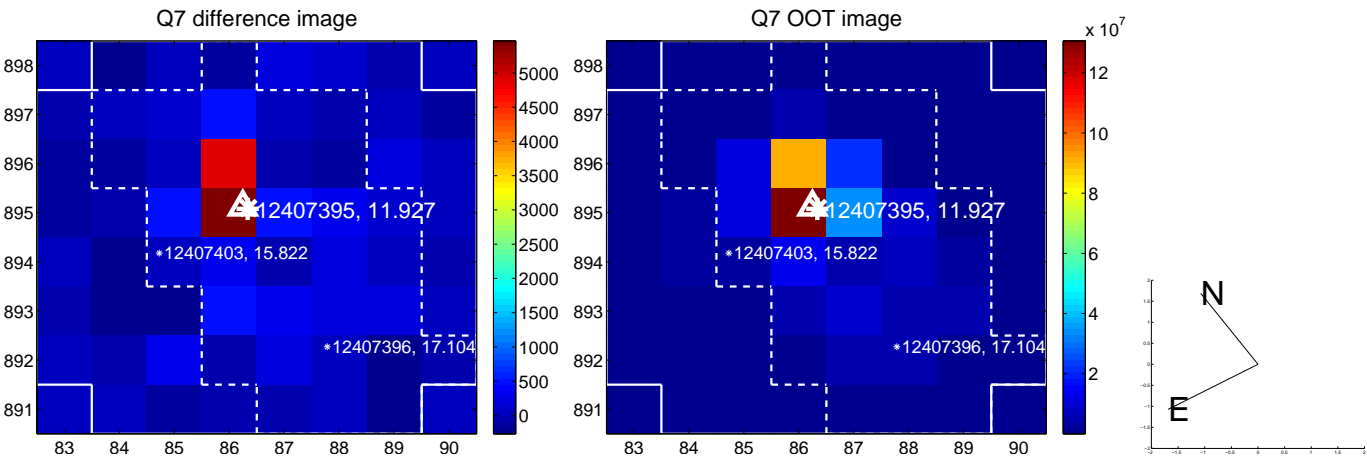
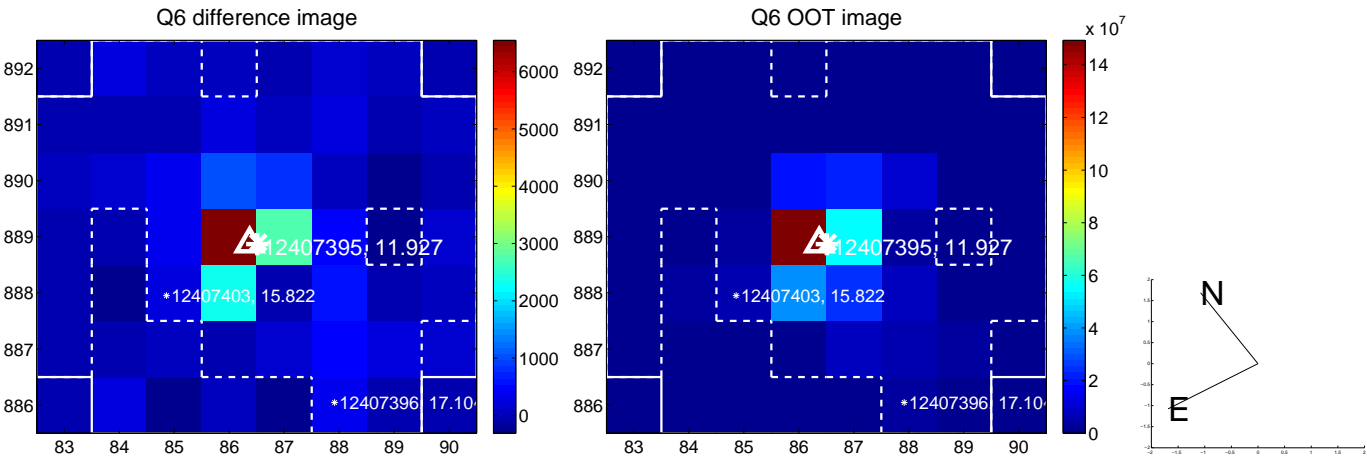
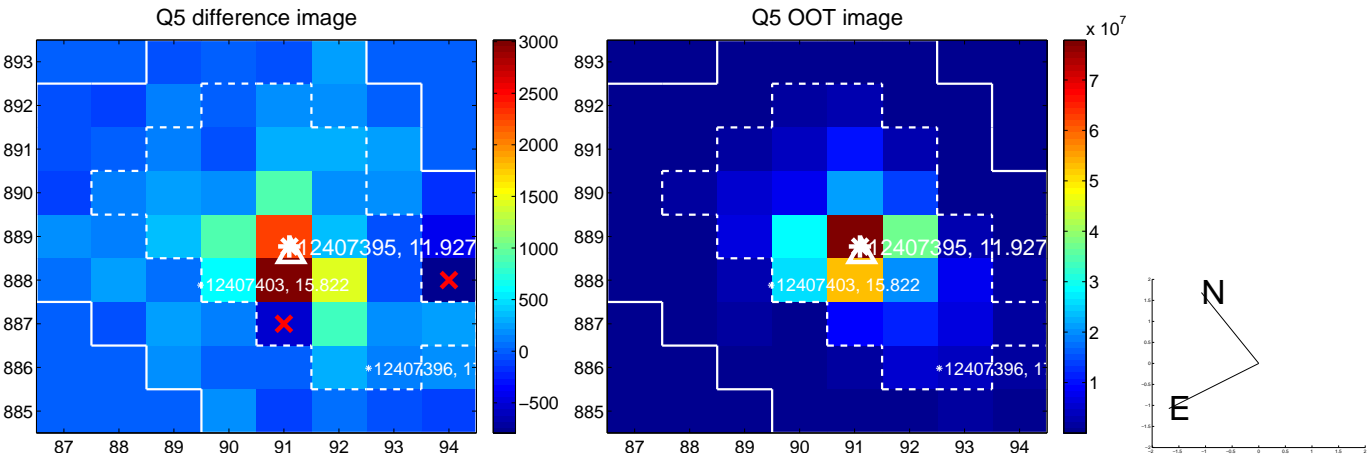


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

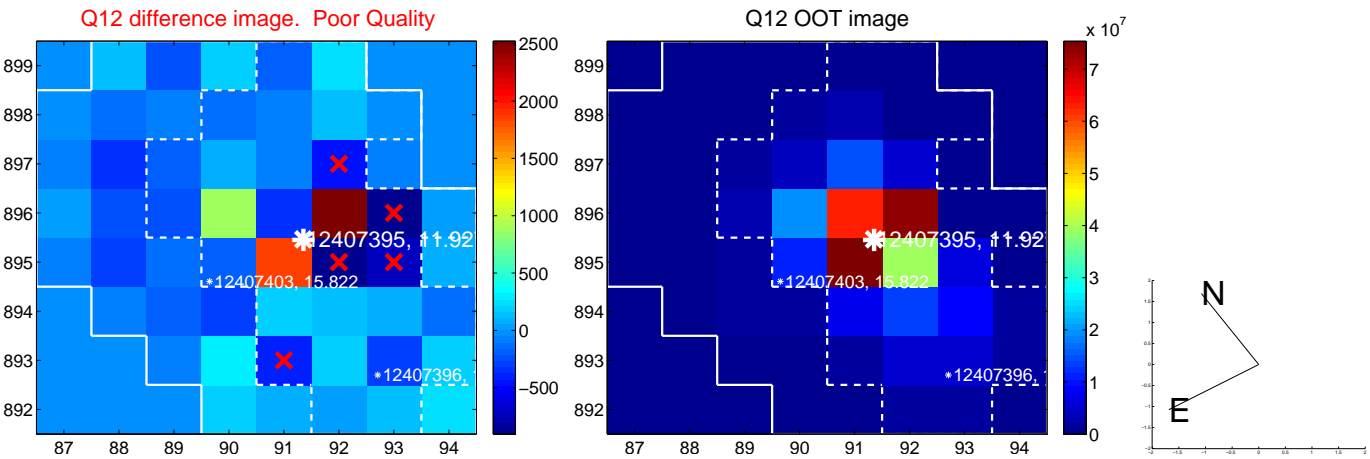
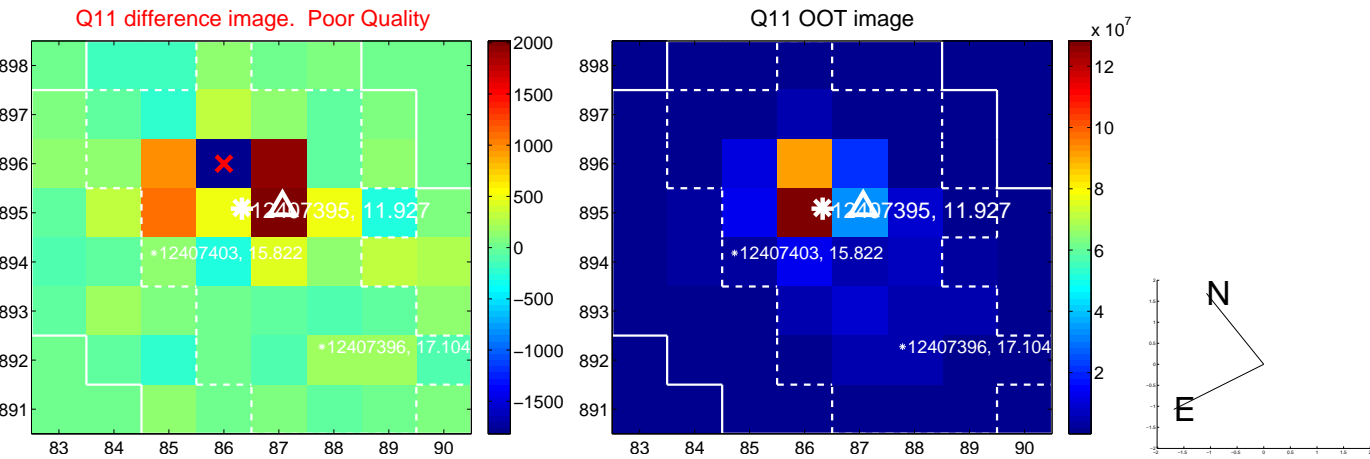
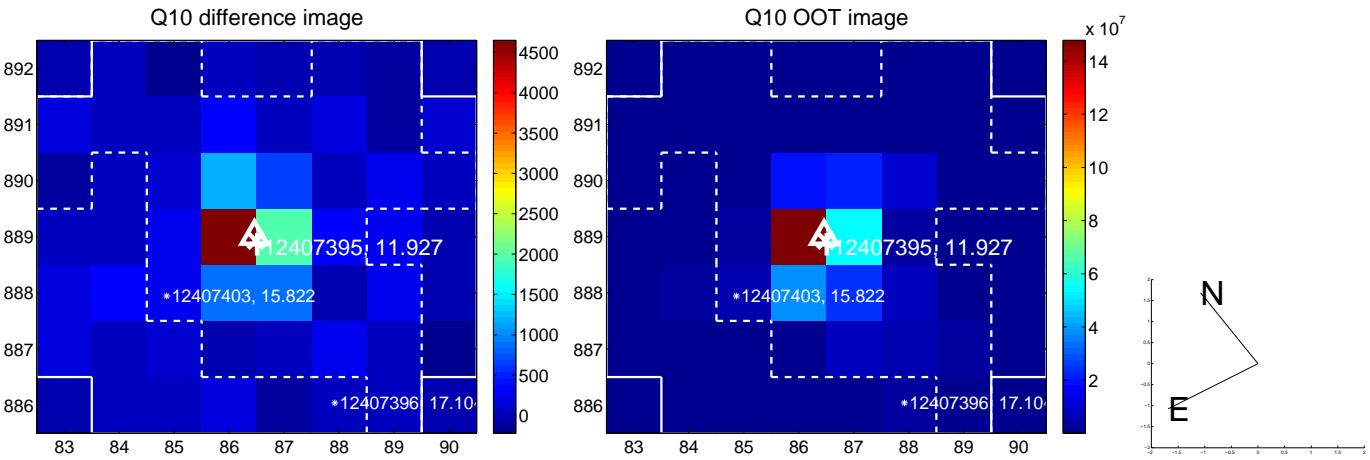
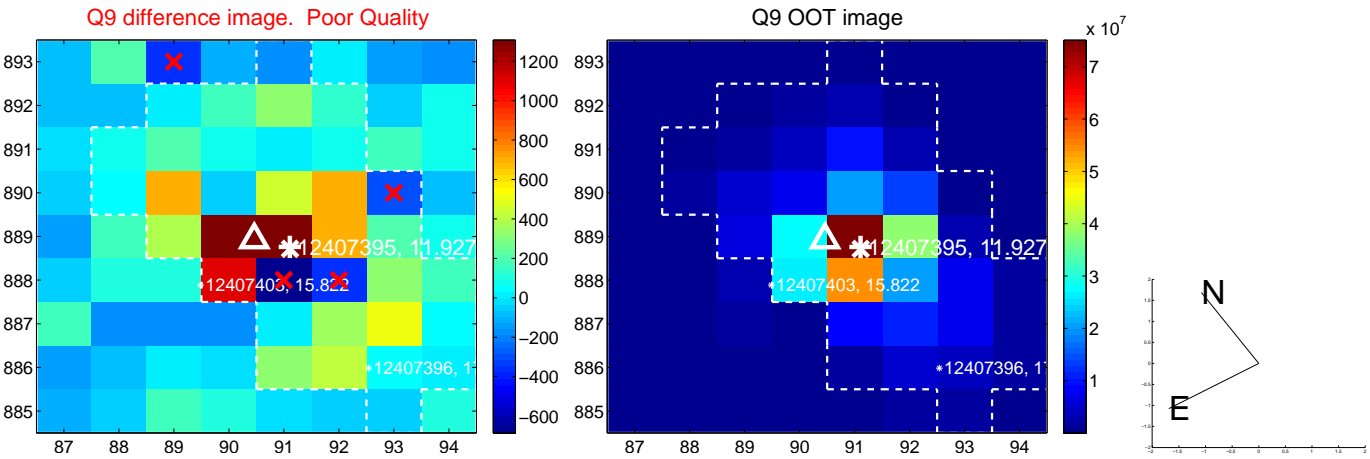
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



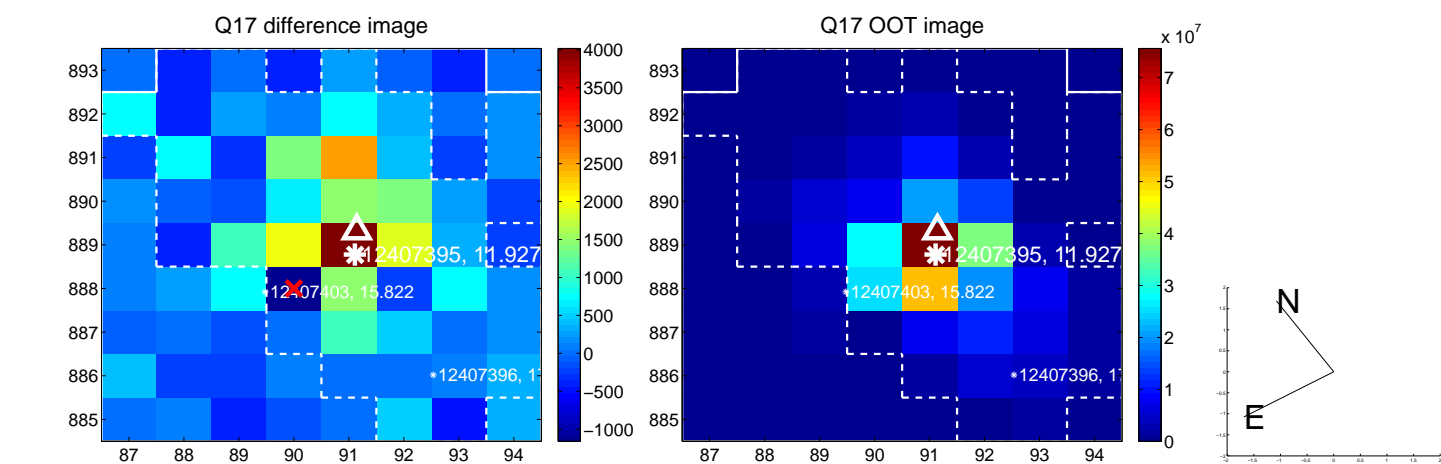
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



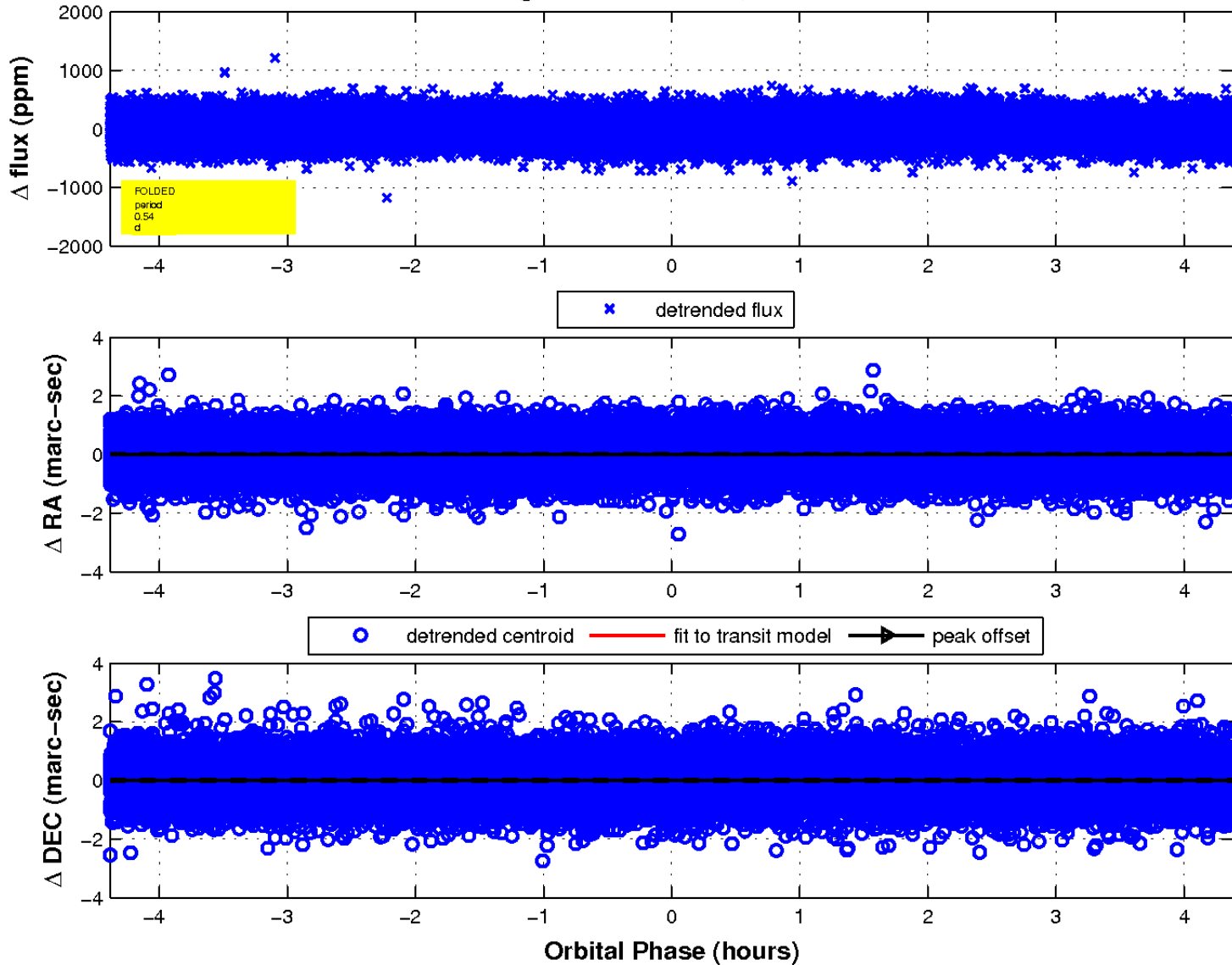
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

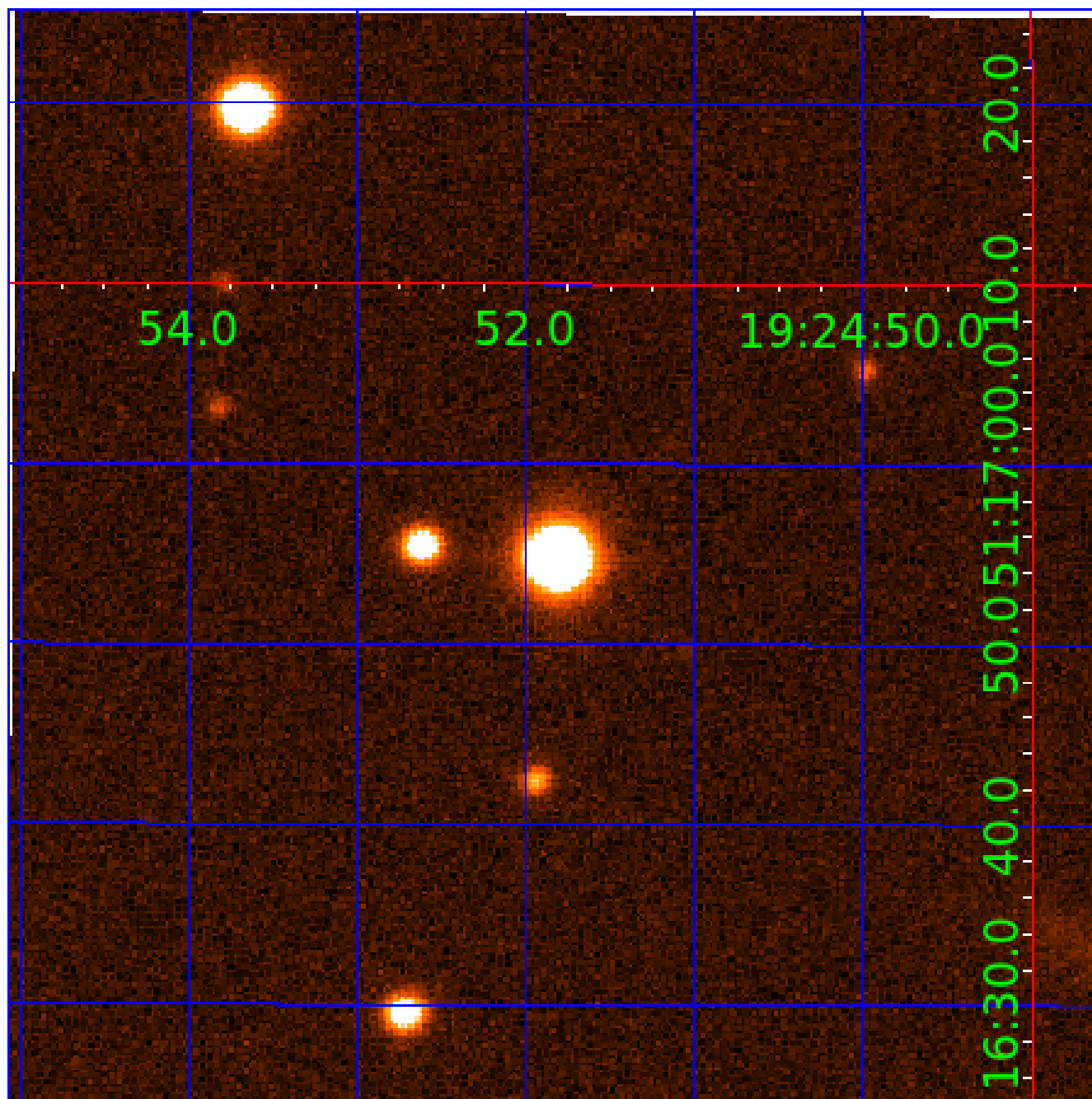


fluxWeightedCentroids, Planet 3 of 7



UKIRT Image

Declination



KIC 012407395

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})
012407395-01	OBS	No	0.535679	131.734431	33.4	2.310	13.0	14.8	1.43	6777	0.96	21385.56
012407395-02	OBS	No	214.092421	173.181963	296.8	3.159	10.6	5.1	1.43	6777	2.86	7.26
012407395-03	OBS	No	0.535679	131.922575	30.0	1.461	10.2	13.8	1.43	6777	0.91	21385.58
012407395-04	OBS	No	4.400160	135.380280	88.4	6.725	8.1	9.0	1.43	6777	1.56	1290.34
012407395-05	OBS	No	29.220757	141.854914	281.1	3.354	8.1	7.7	1.43	6777	4.24	103.37
012407395-06	OBS	No	57.629864	139.865790	394.8	1.667	8.0	7.1	1.43	6777	3.06	41.80

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
012407395-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
012407395-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS
012407395-03	OBS	FP	0.00	1	0	0	0	LPP_DV—SAME_NTL_PERIOD
012407395-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
012407395-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
012407395-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT

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

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

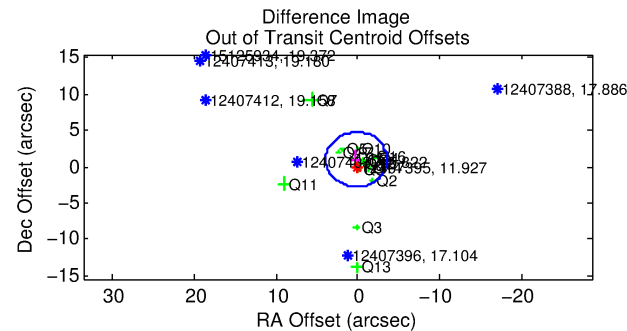
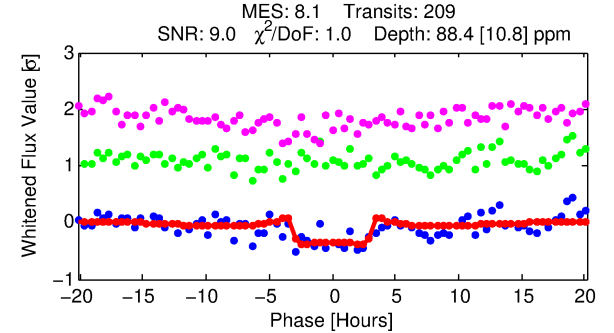
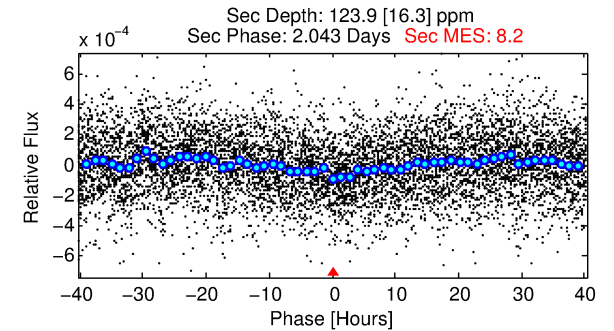
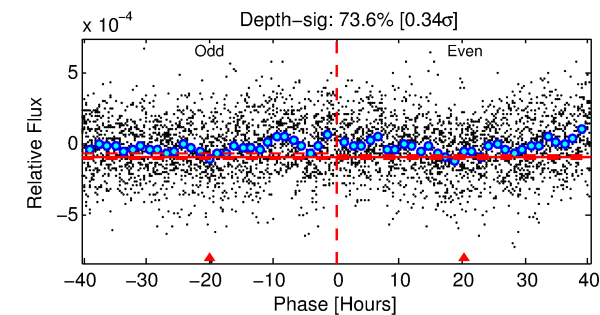
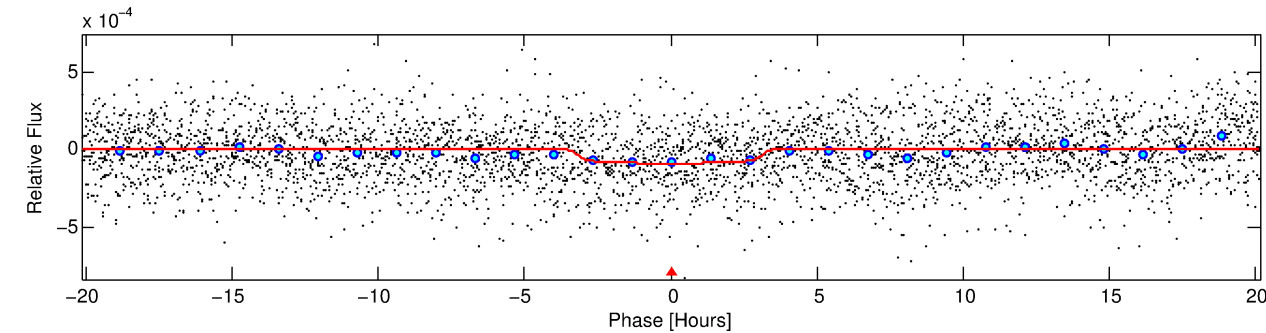
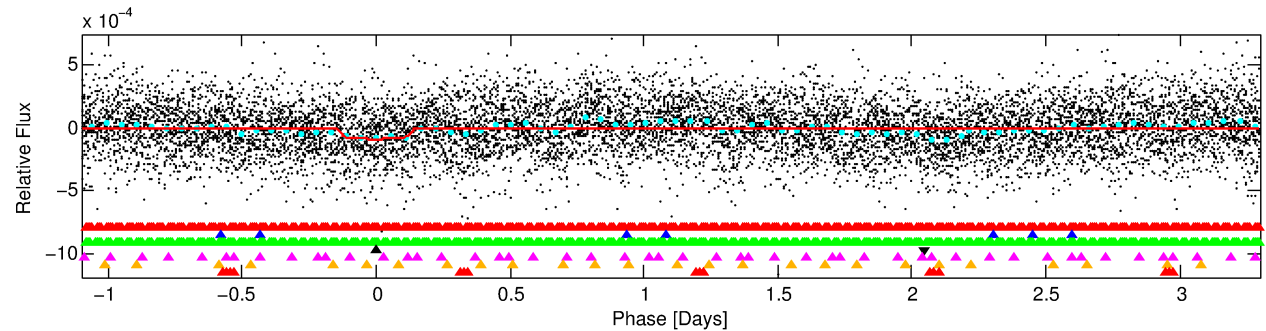
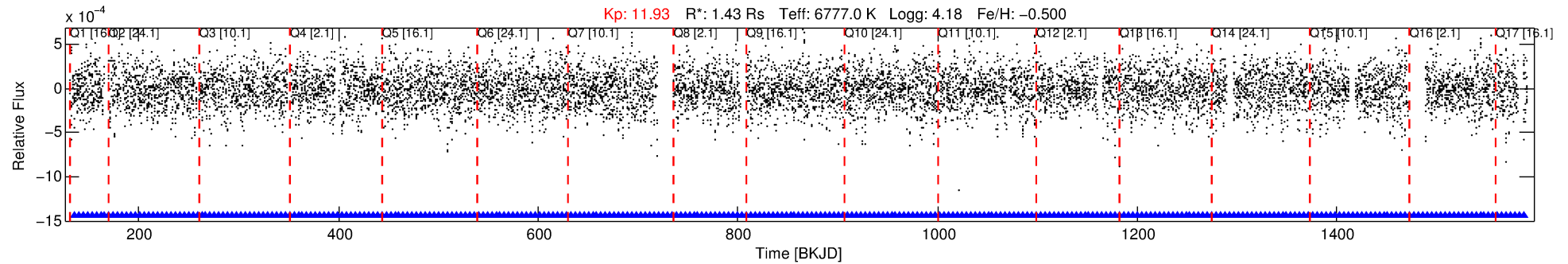
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 012407395-04

No Significant Match Found

DV One-Page Summary

KIC: 12407395 Candidate: 4 of 7 Period: 4.400 d



DV Fit Results:

Period = 4.40016 [0.00004] d
Epoch = 135.3803 [0.0060] BKJD
Rp/R* = 0.0100 [0.0021]
a/R* = 2.48 [2.51]
b = 0.90 [0.26]
Seff = 1290.33 [519.32]
Teq = 1528 [154] K
Rp = 1.56 [0.55] Re
a = 0.0546 [0.0134] AU
Ag = 83.43 [47.70] [1.73 σ]
Teffp = 7141 [840] K [6.57 σ]

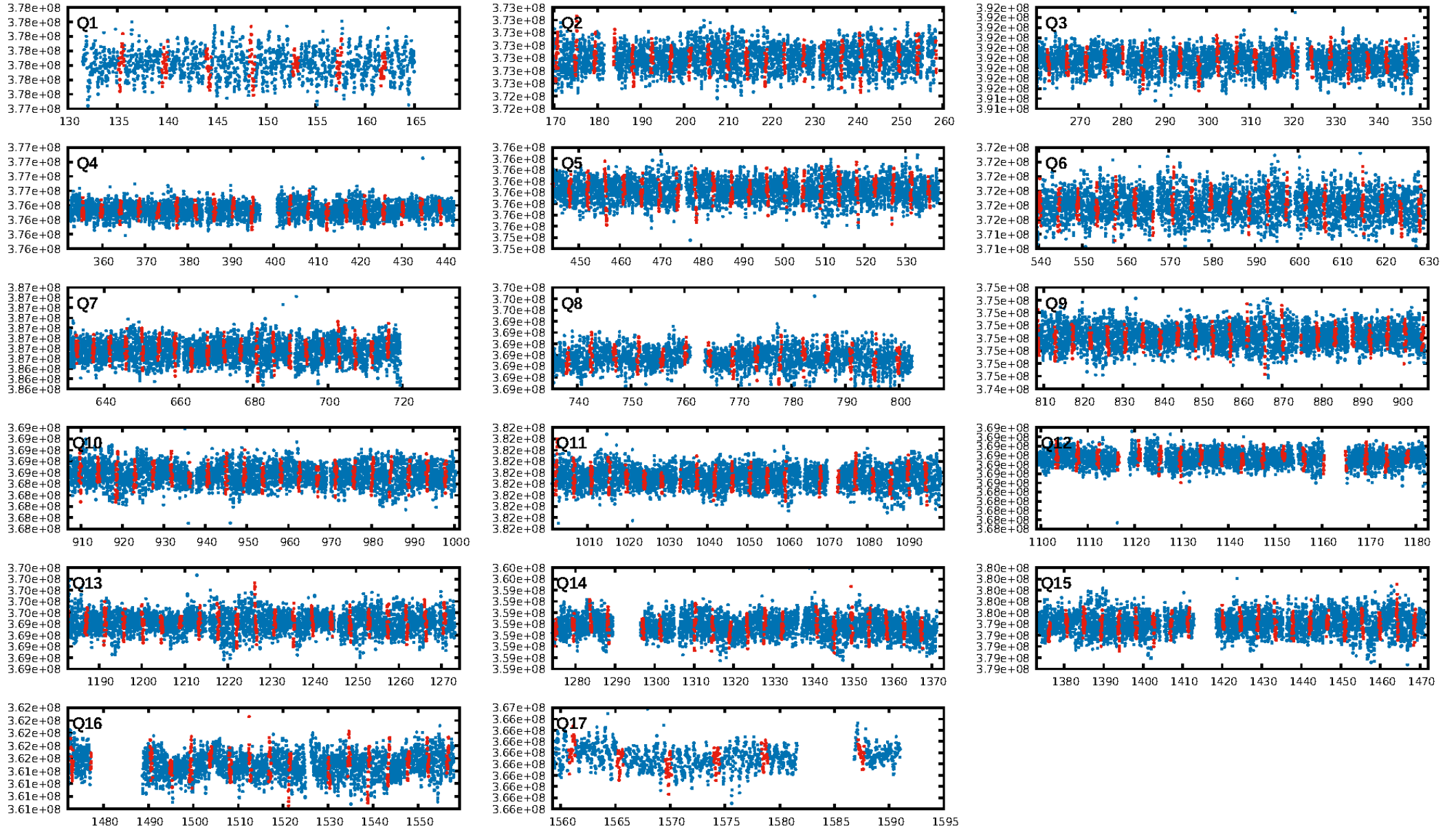
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [13.04 σ]
LongPeriod-sig: 100.0% [79.27 σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [201/201]
GhostDiagnostic-chr: -0.9075
Centroid-sig: 5.1%
Centroid-so: 0.578 arcsec [1.78 σ]
OotOffset-rm: 1.017 arcsec [0.81 σ]
OotOffset-st: 4/4/4/4 [16]
KicOffset-rm: 1.012 arcsec [0.85 σ]
KicOffset-st: 4/4/4/4 [16]
DiffImageQuality-fgm: 0.31 [5/16]
DiffImageOverlap-fno: 0.00 [0/17]

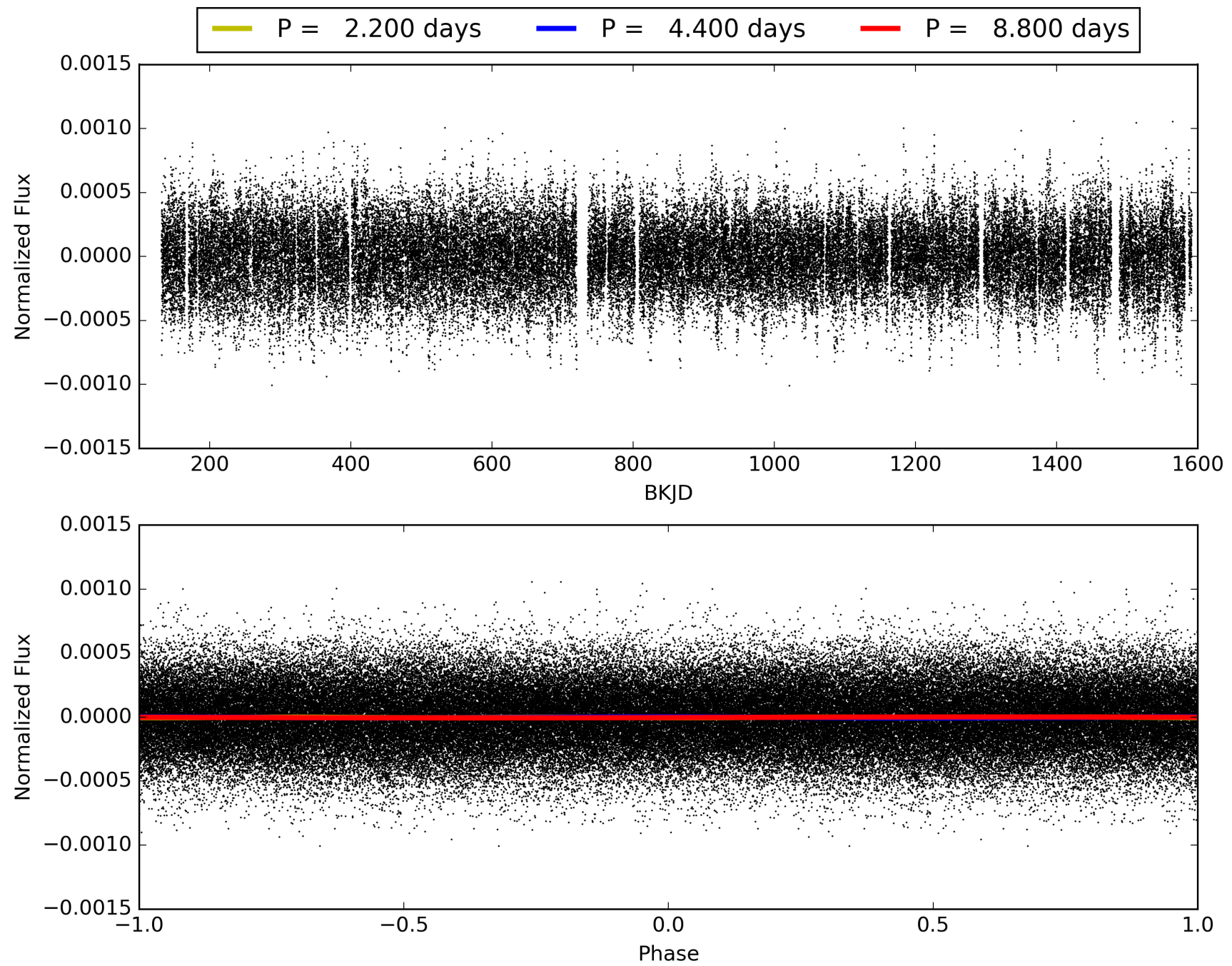
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 06:31:27 Z

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

TCE 012407395-04, PDC Light Curves

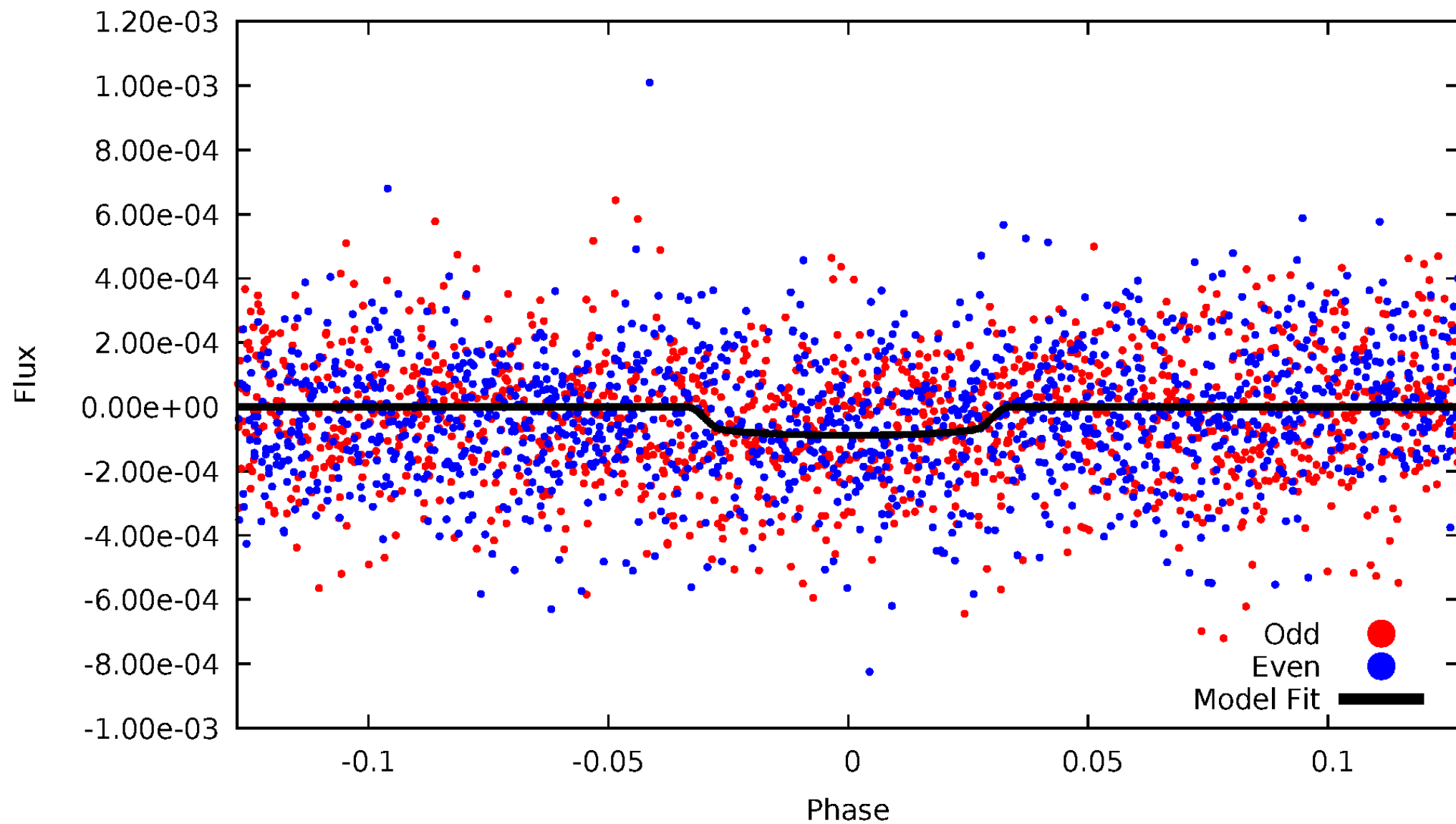


TCE 012407395-04



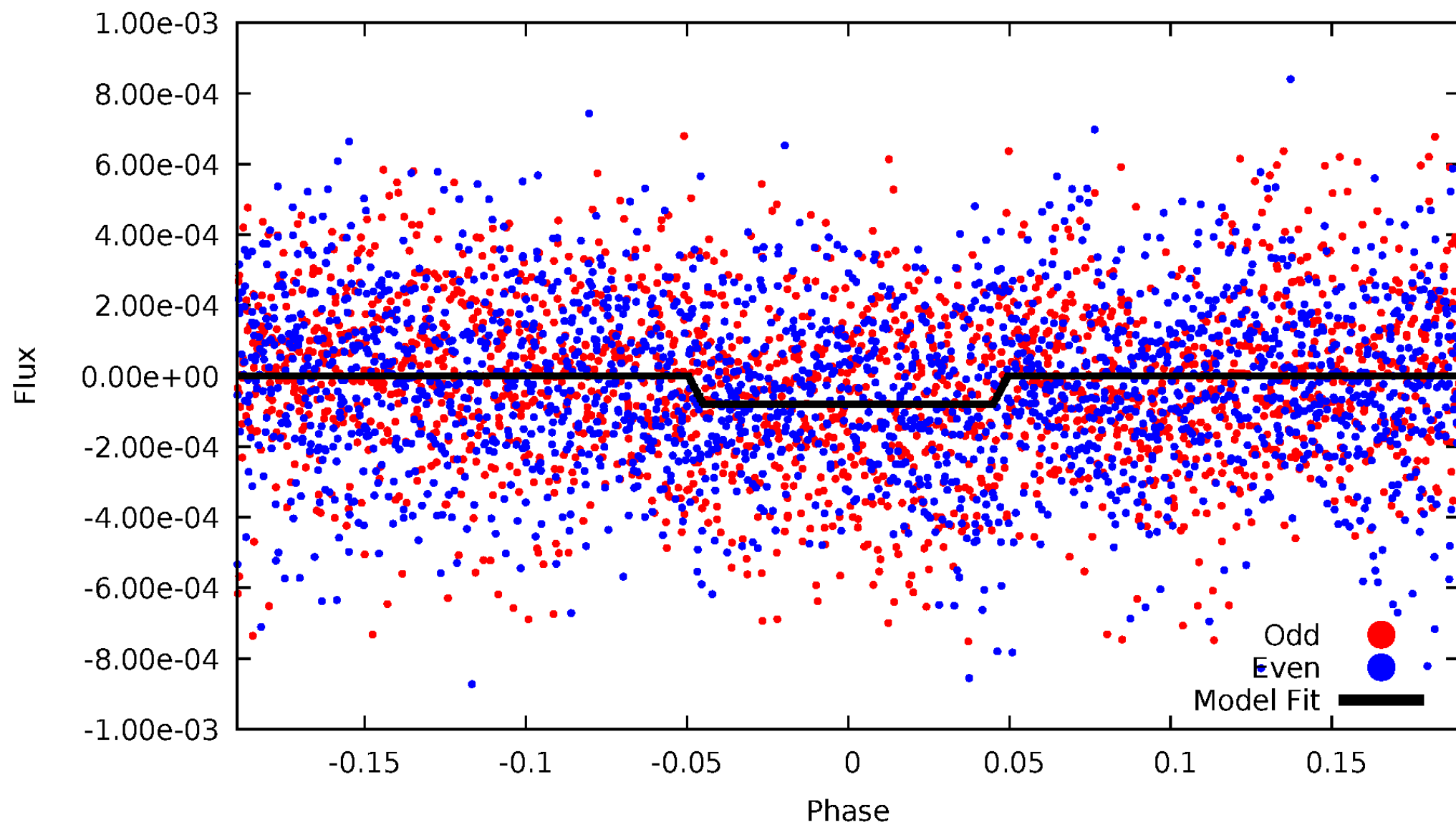
DV Odd/Even

TCE 012407395-04



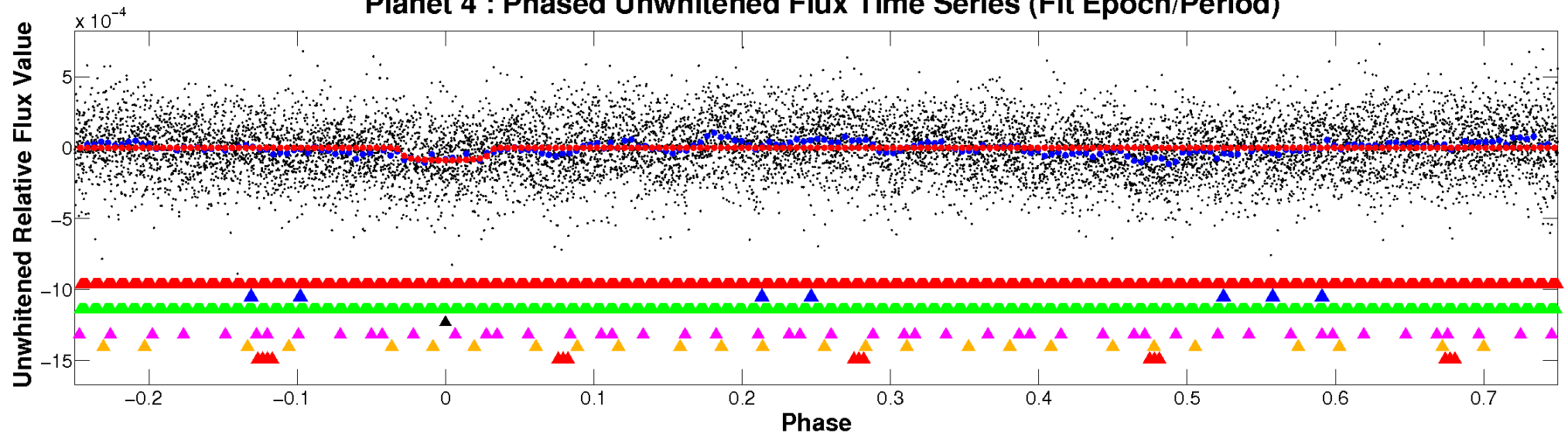
ALT Odd/Even

TCE 012407395-04

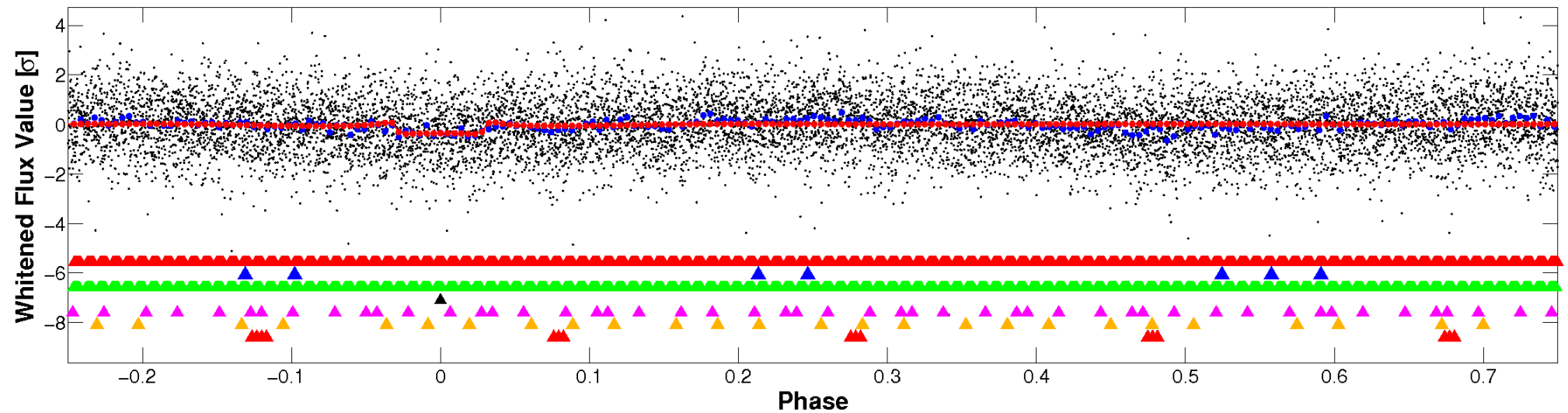


Non-Whitened Vs. Whitened Light Curve

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

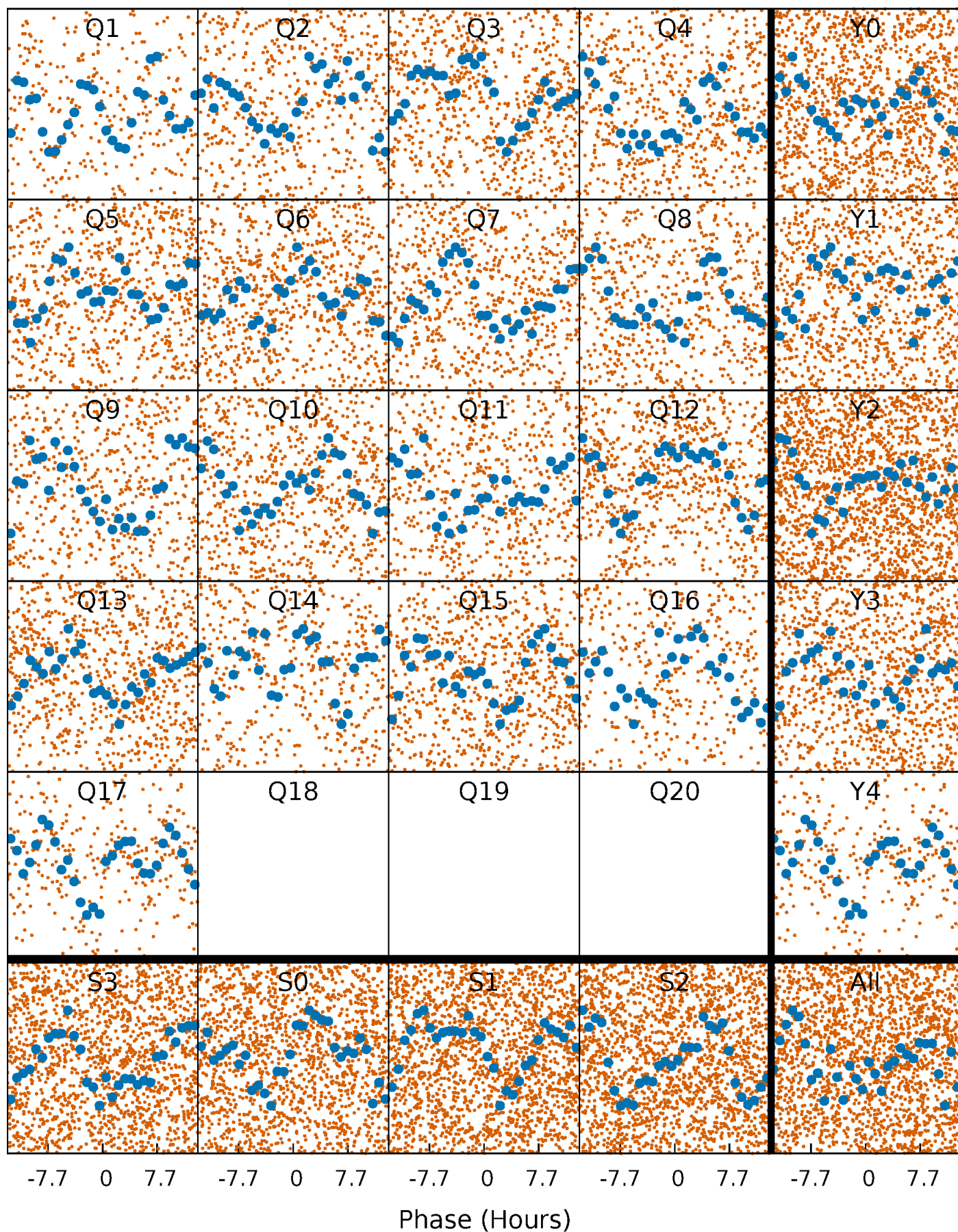


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



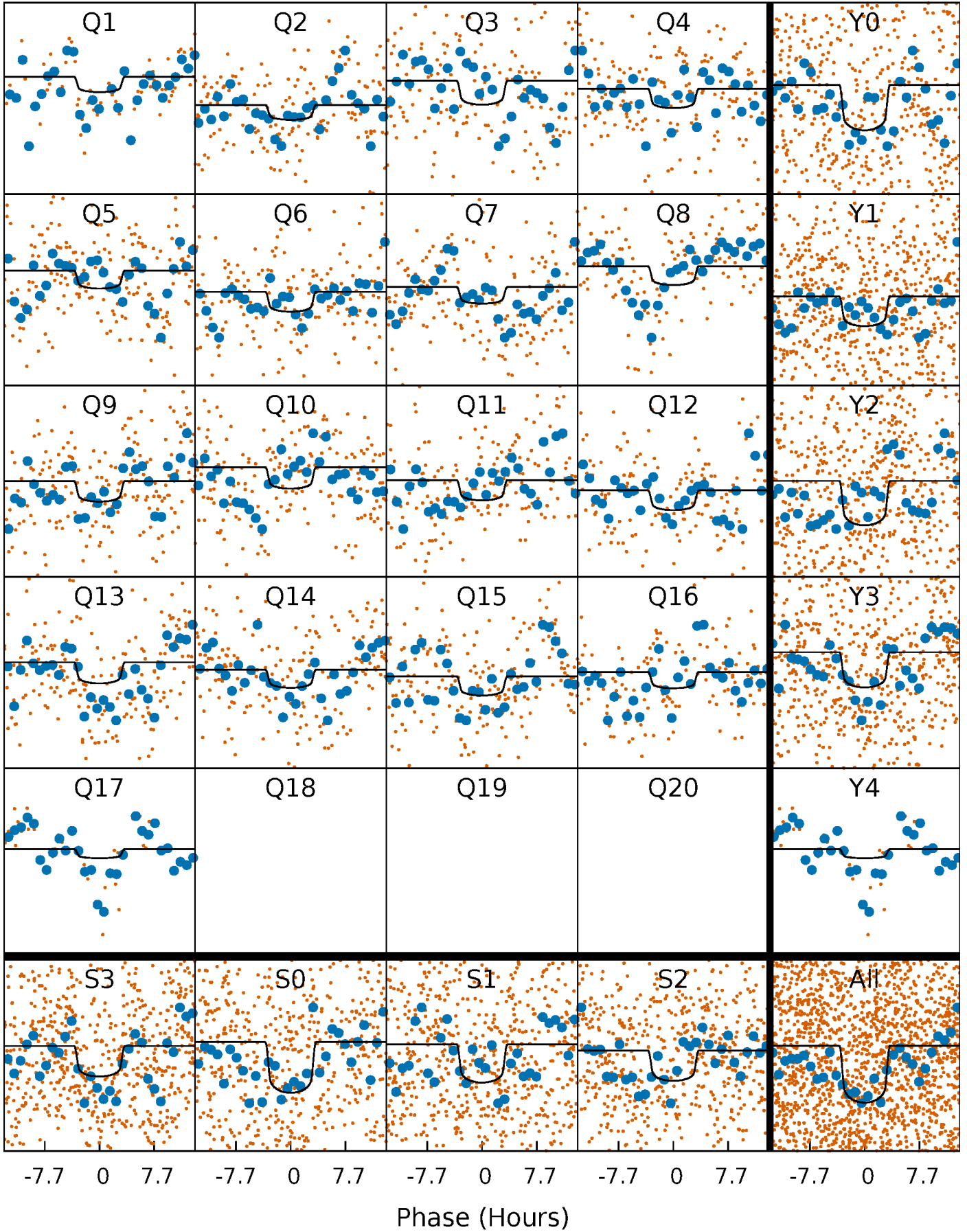
PDC Quarter-Phased Transit Curves

TCE 012407395-04 P= 4.400160 Days $T_0=135.380280$ (BKJD)



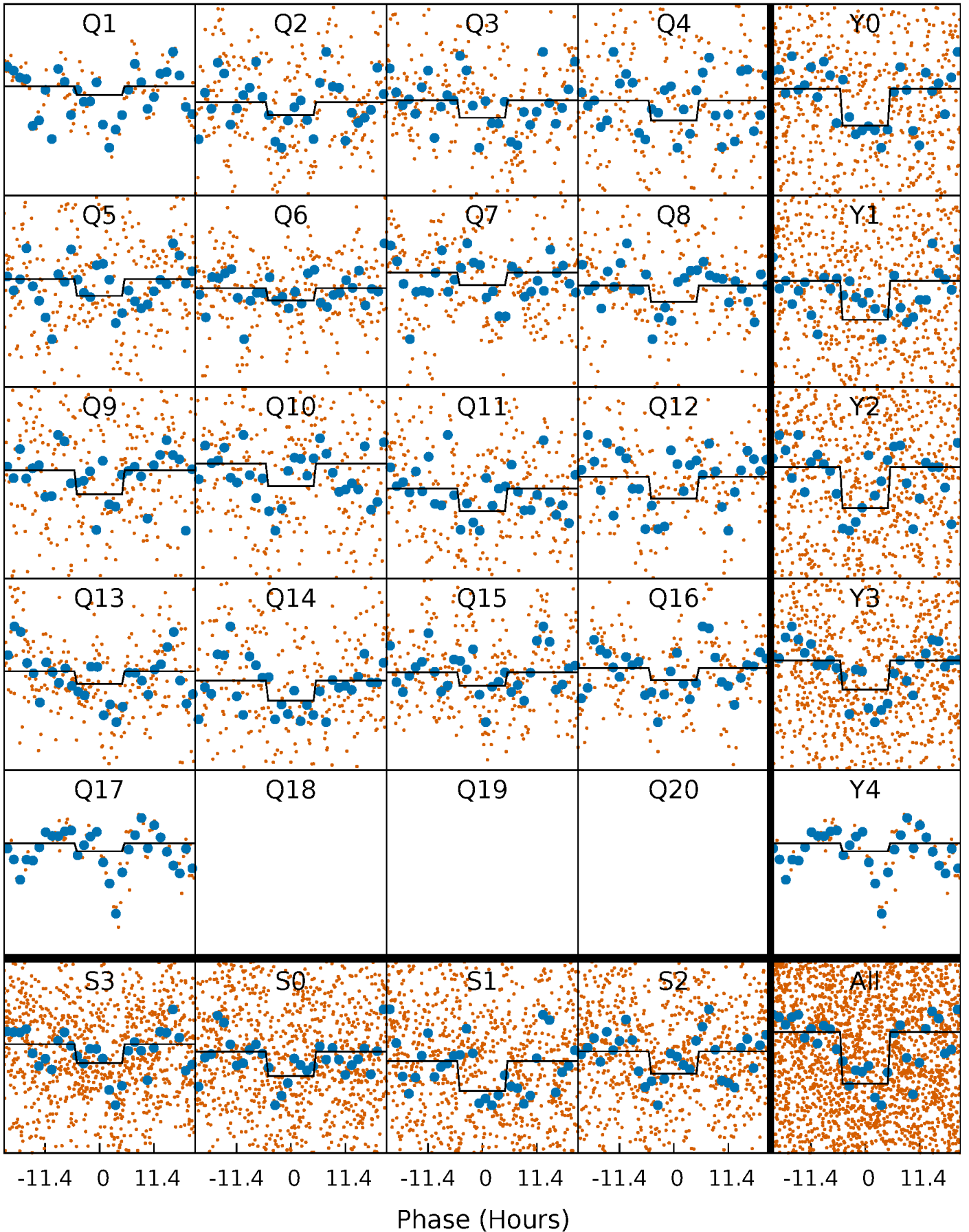
DV Quarter-Phased Transit Curves

TCE 012407395-04 $P = 4.400160$ Days $T_0 = 135.380280$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

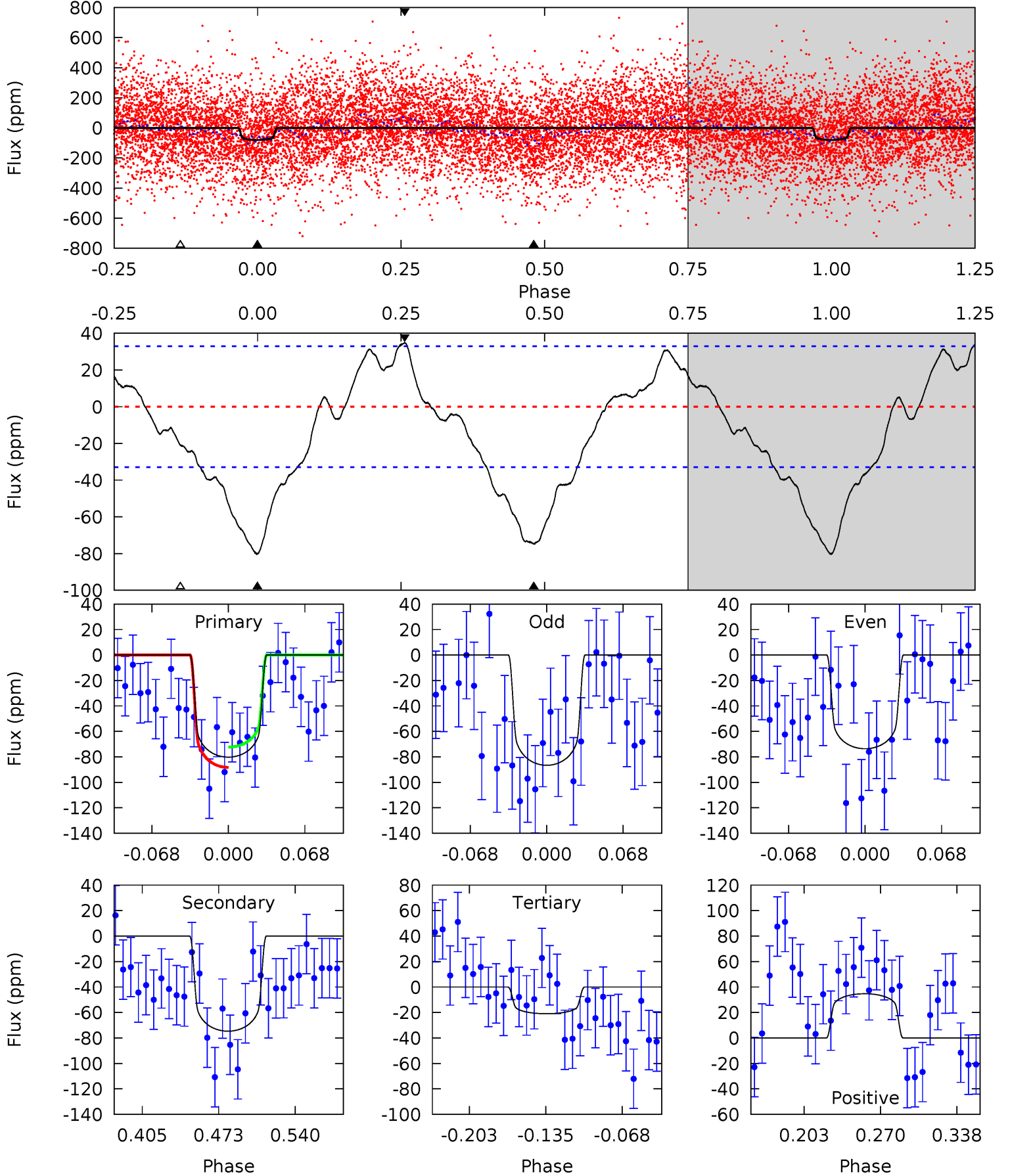
TCE 012407395-04 P= 4.399679 Days $T_0=135.391651$ (BKJD)



DV Model-Shift Uniqueness Test

012407395-04, P = 4.400160 Days, E = 130.980120 Days

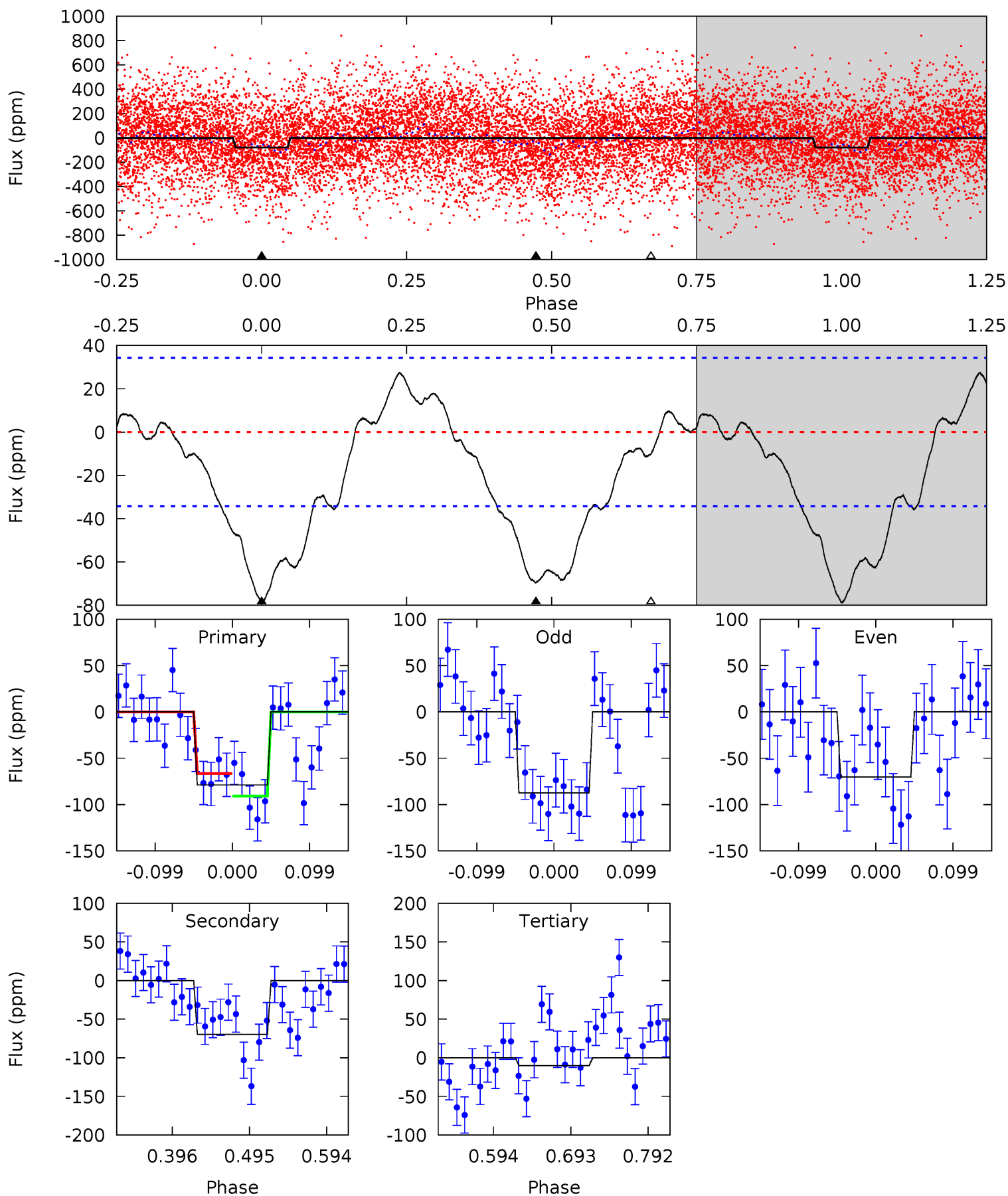
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.3	10.5	2.96	4.90	4.65	1.83	2.84	8.36	6.42	7.58	5.63	0.92	1.07	0.30	1.13



Alt Model-Shift Uniqueness Test

012407395-04, P = 4.399679 Days, E = 130.991972 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.5	9.29	1.35	0	4.57	1.65	2.04	9.15	10.5	7.94	9.29	1.14	1.03	0.26	1.62



Stellar Parameters For KIC 012407395

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6777^{+214}_{-285}	$4.179^{+0.204}_{-0.167}$	$-0.500^{+0.250}_{-0.300}$	$1.427^{+0.404}_{-0.330}$	$1.121^{+0.178}_{-0.146}$	$0.543^{+0.603}_{-0.248}$
	+3%/-4%	+5%/-4%	+50%/-60%	+28%/-23%	+16%/-13%	+111%/-46%
Source	PHO54	PHO54	PHO54	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

Secondary Eclipse Parameters for KIC 012407395-04 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-75 ± 7	$1.54^{+0.44}_{-0.38}$	2124^{+161}_{-160}	6244^{+901}_{-629}	52^{+38}_{-20}
Alt.	-70 ± 8	$1.38^{+0.39}_{-0.36}$	2115^{+161}_{-149}	6511^{+1002}_{-741}	59^{+49}_{-22}

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 $A_{obs} \gg 1.0$

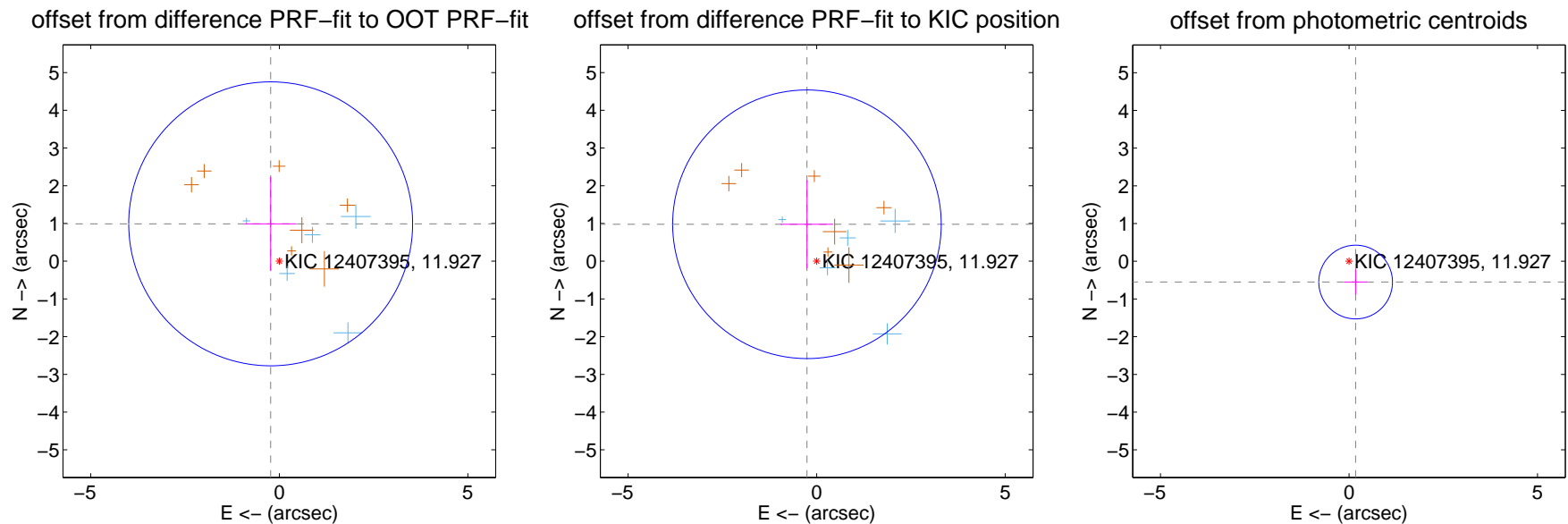
DV Centroid Data

Supplemental centroid analysis for 012407395-04. **Kepler magnitude: 11.93.** Transit SNR 9.03

There are 5 quarters with good PRF difference image offsets

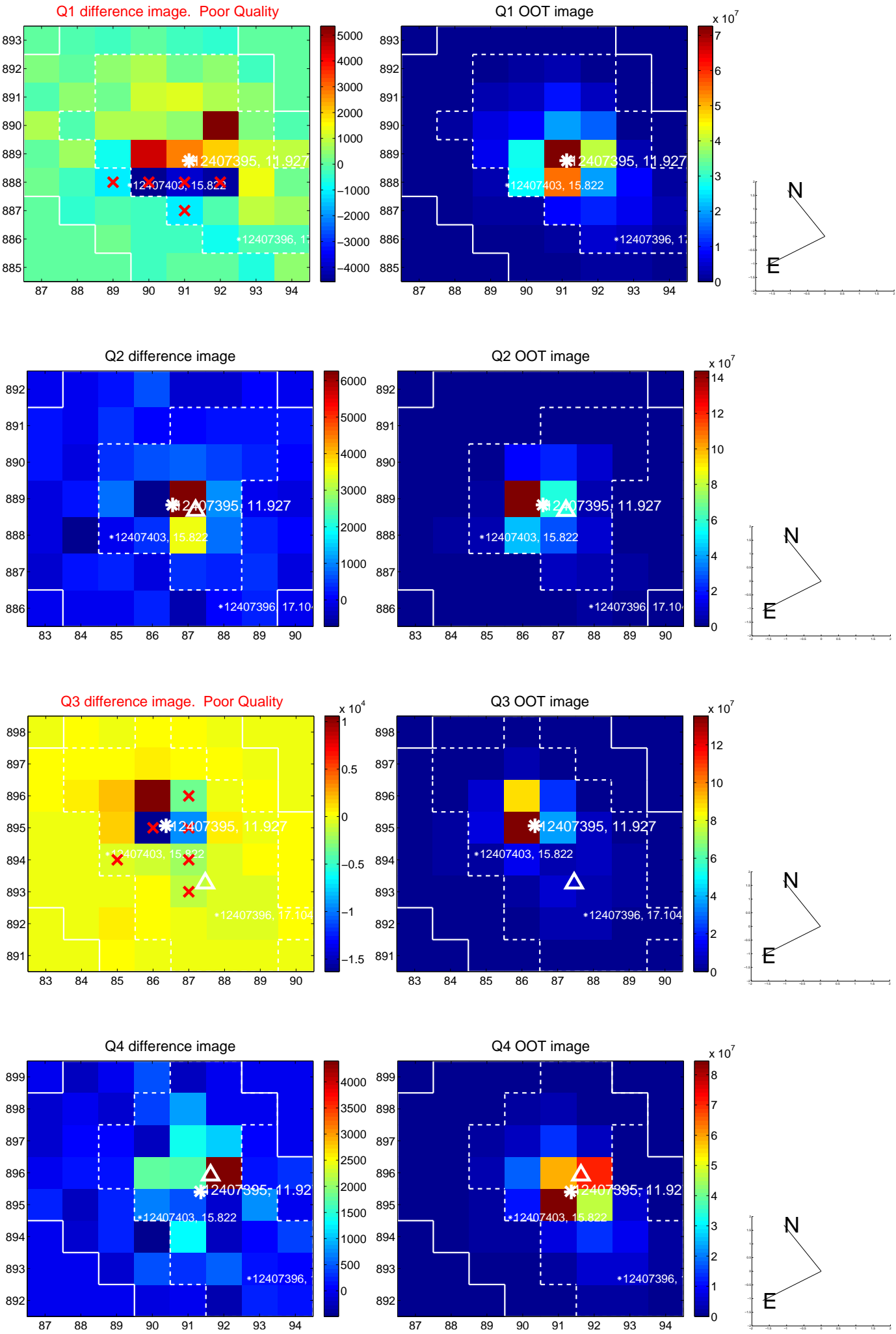
The direct PRF centroid is offset from the target star catalog position by about 0.03 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.017 ± 1.255	0.81	0.229 ± 0.682	0.991 ± 1.243
PRF-fit source offset from KIC position	1.012 ± 1.187	0.85	0.258 ± 0.697	0.979 ± 1.172
photometric centroid source offset	0.58 ± 0.33	1.78	-0.18 ± 0.30	-0.55 ± 0.33

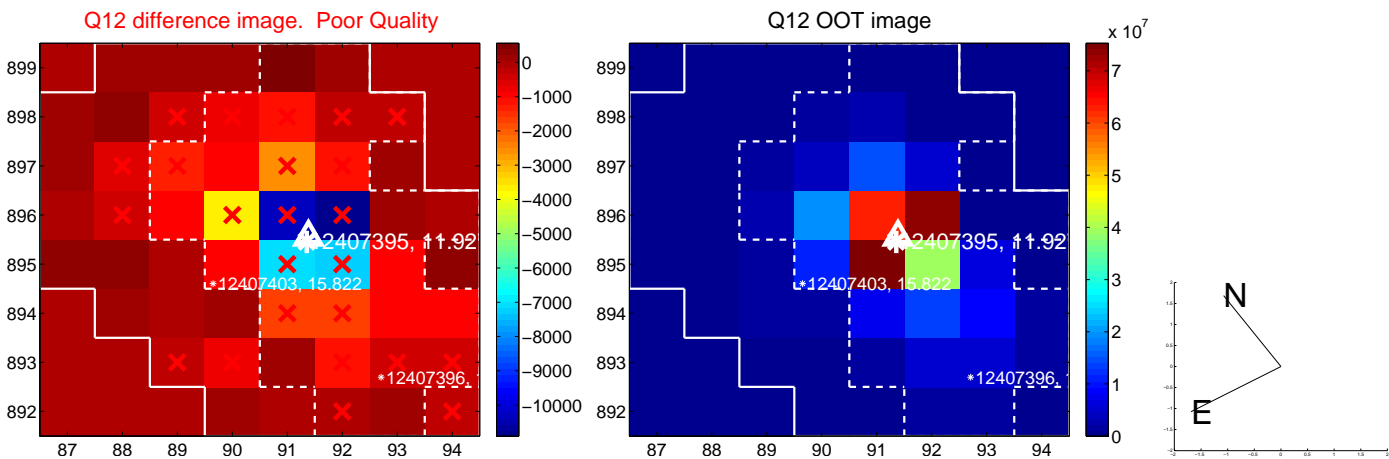
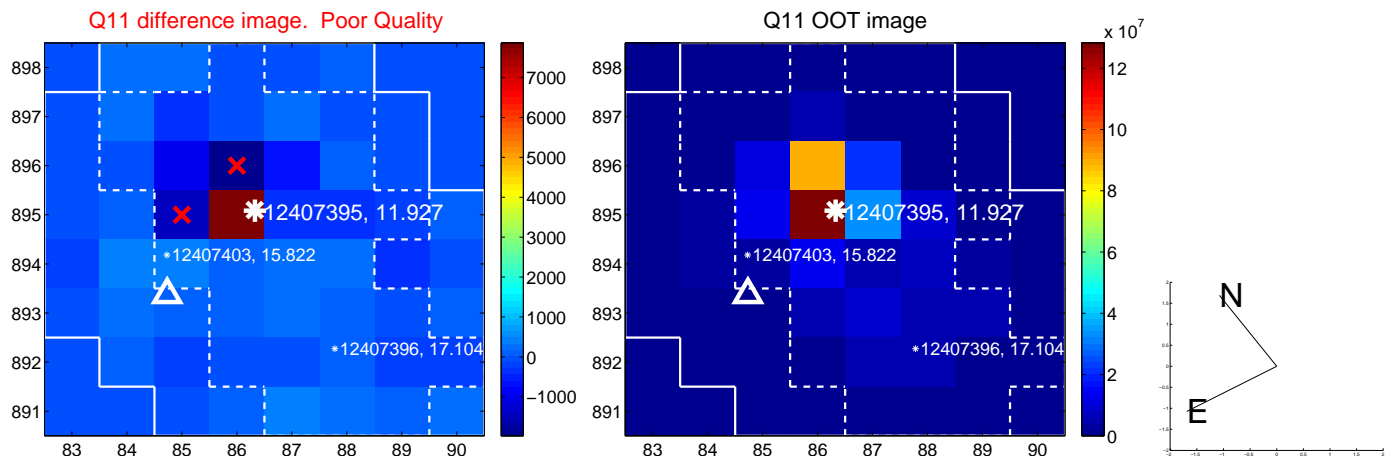
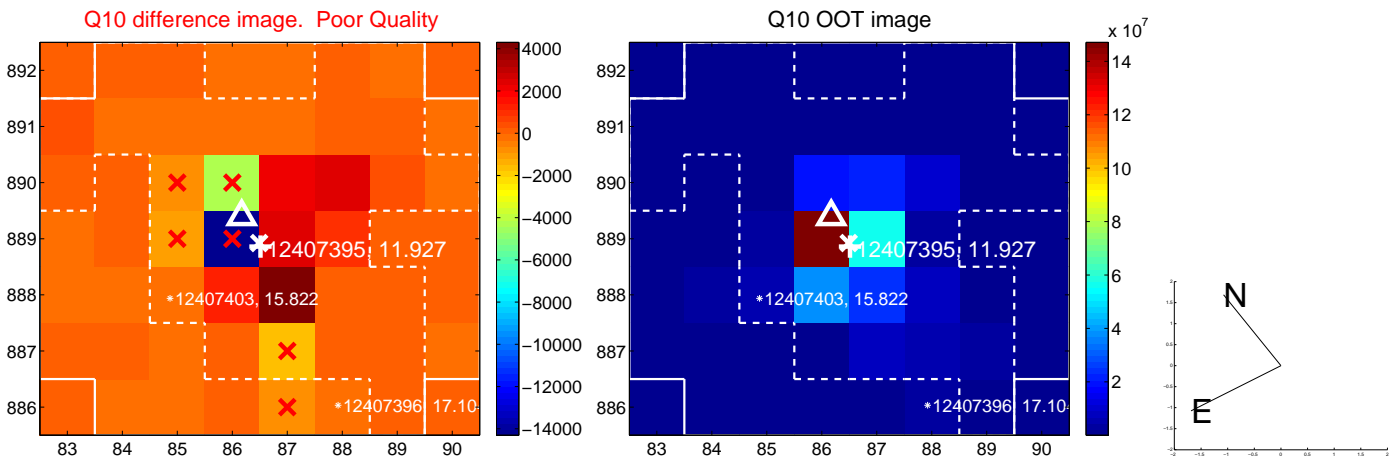
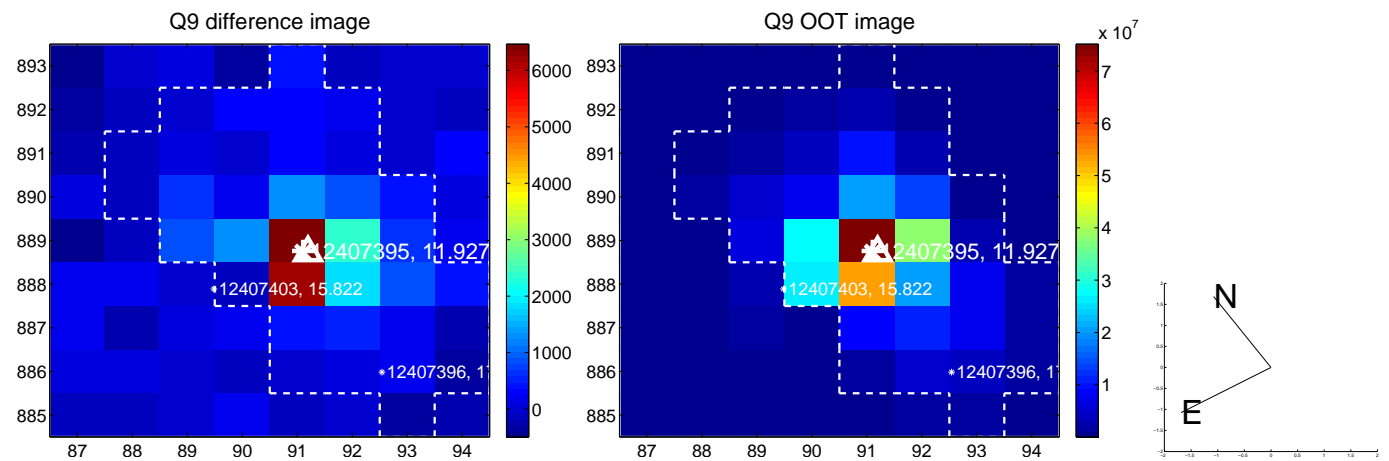


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

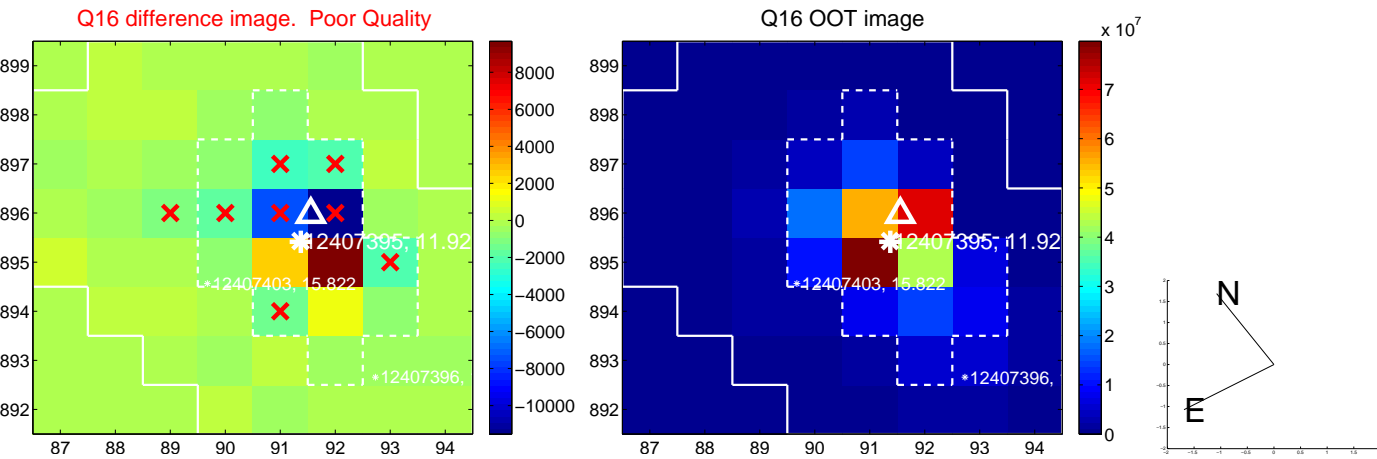
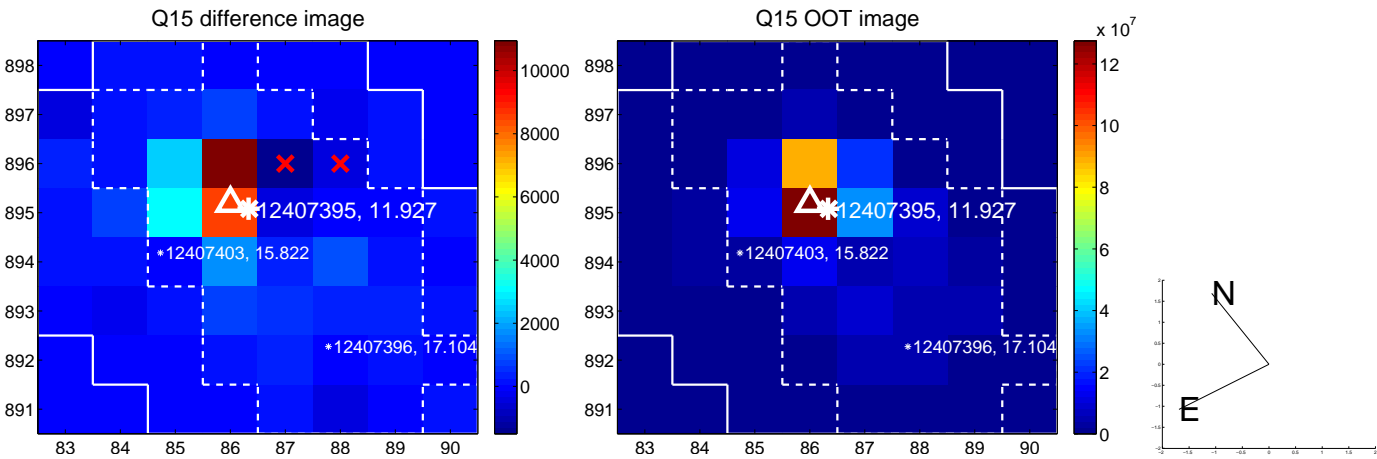
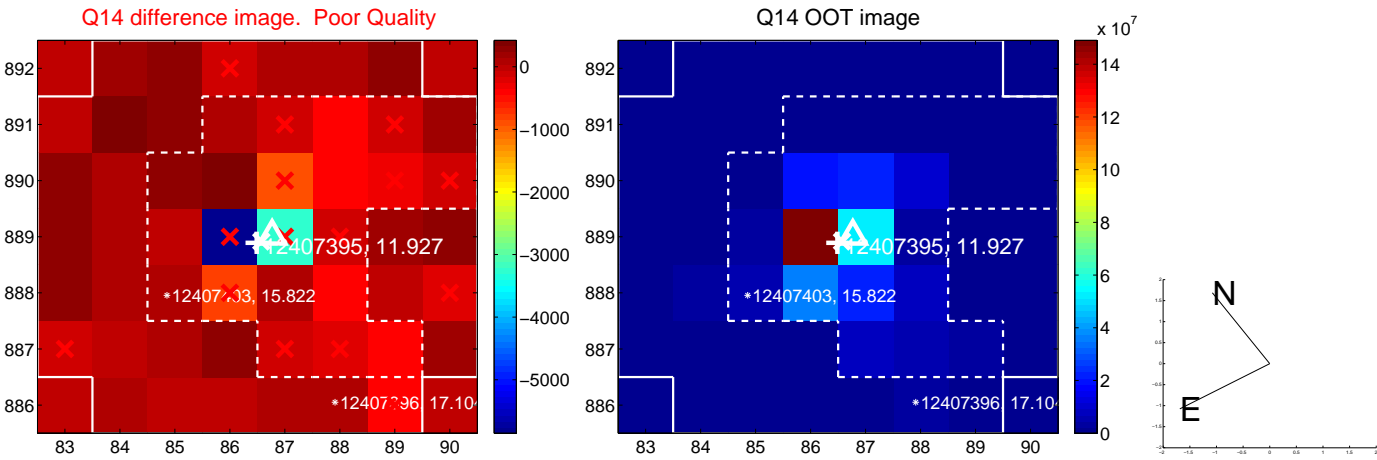
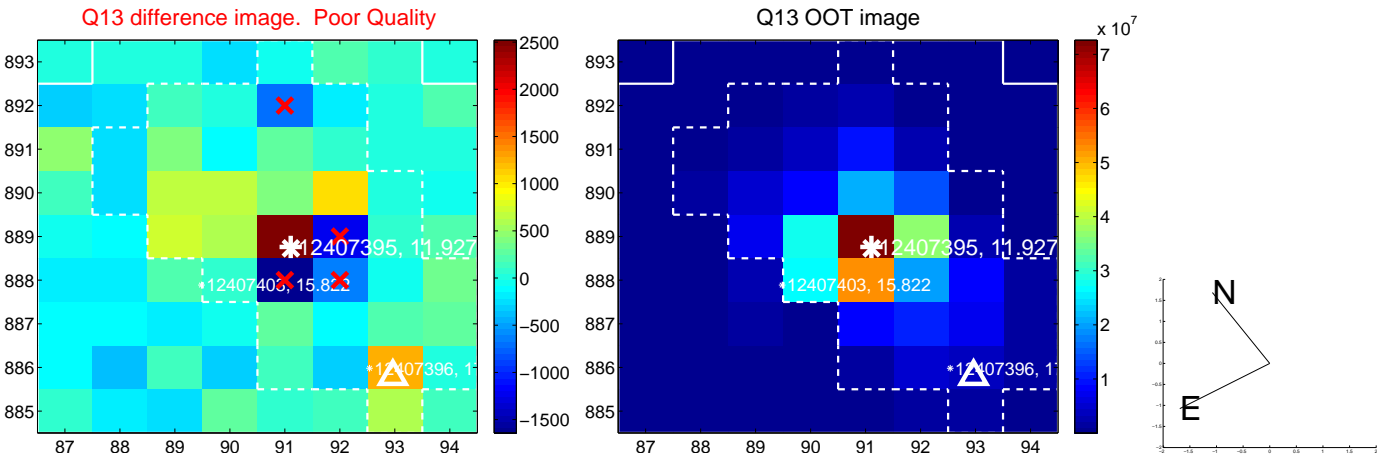
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



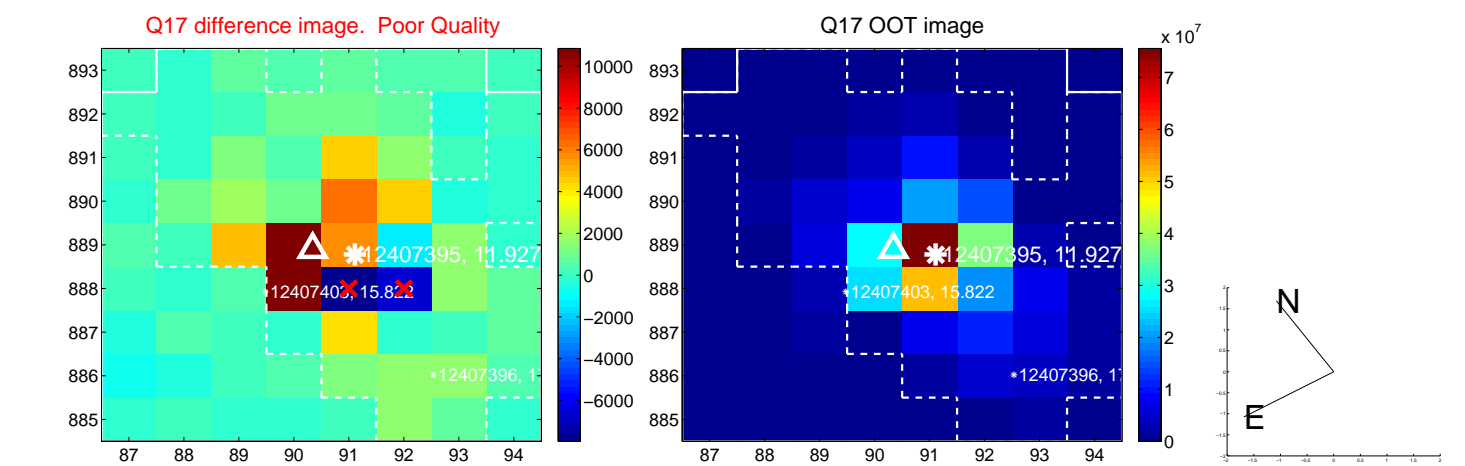
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



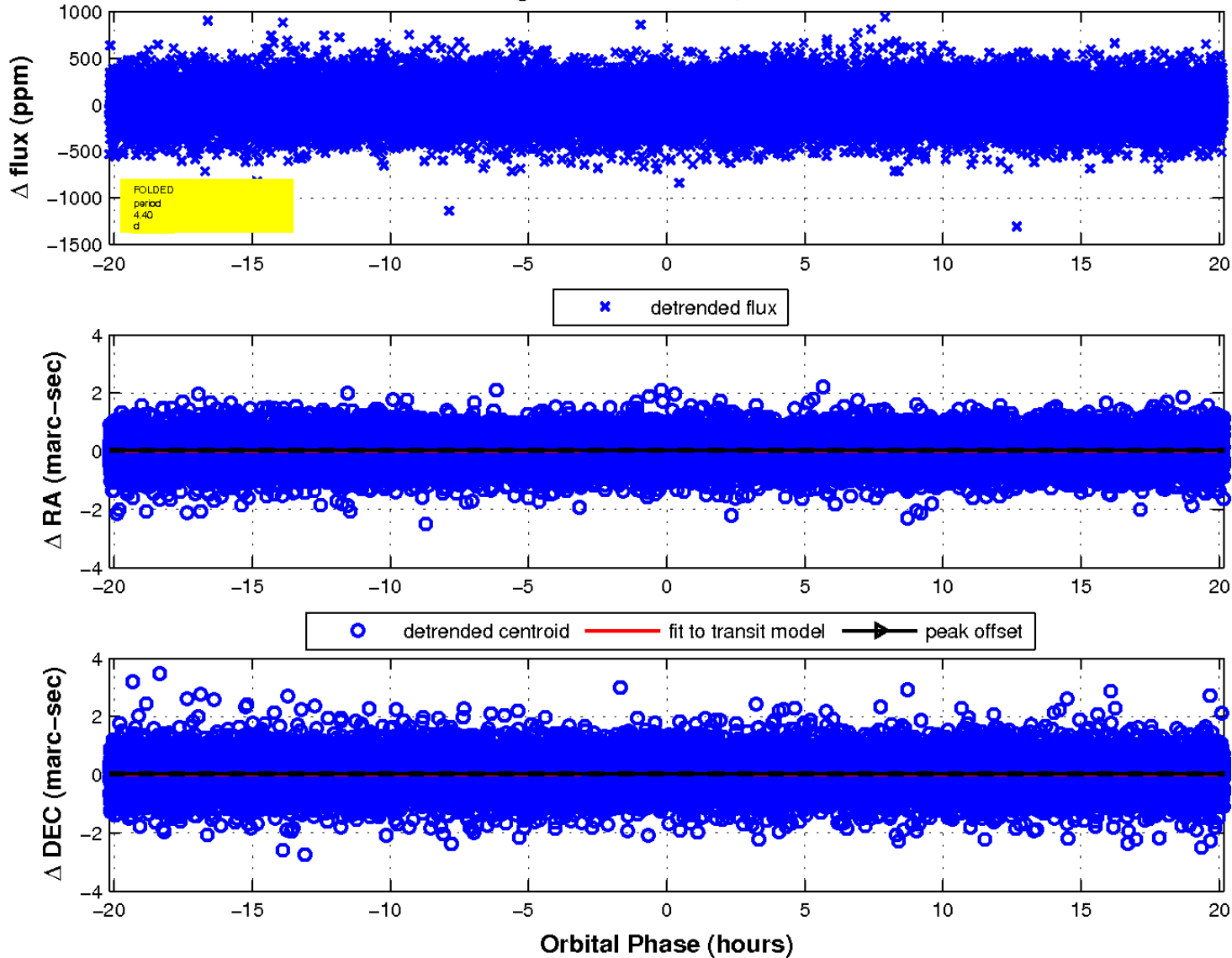
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

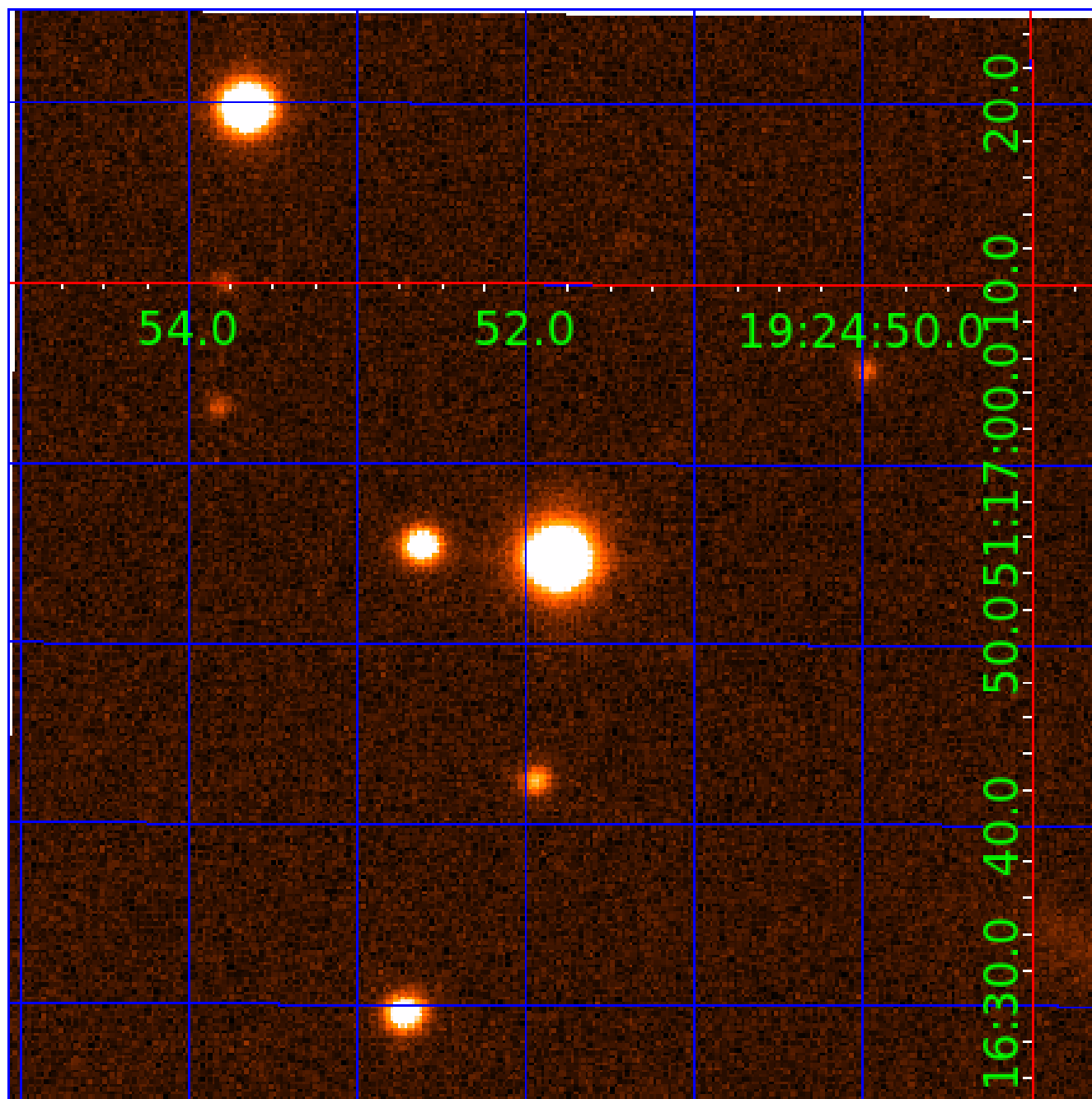


fluxWeightedCentroids, Planet 4 of 7



UKIRT Image

Declination



KIC 012407395

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})
012407395-01	OBS	No	0.535679	131.734431	33.4	2.310	13.0	14.8	1.43	6777	0.96	21385.56
012407395-02	OBS	No	214.092421	173.181963	296.8	3.159	10.6	5.1	1.43	6777	2.86	7.26
012407395-03	OBS	No	0.535679	131.922575	30.0	1.461	10.2	13.8	1.43	6777	0.91	21385.58
012407395-04	OBS	No	4.400160	135.380280	88.4	6.725	8.1	9.0	1.43	6777	1.56	1290.34
012407395-05	OBS	No	29.220757	141.854914	281.1	3.354	8.1	7.7	1.43	6777	4.24	103.37
012407395-06	OBS	No	57.629864	139.865790	394.8	1.667	8.0	7.1	1.43	6777	3.06	41.80

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
012407395-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
012407395-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS
012407395-03	OBS	FP	0.00	1	0	0	0	LPP_DV—SAME_NTL_PERIOD
012407395-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
012407395-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
012407395-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT

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

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

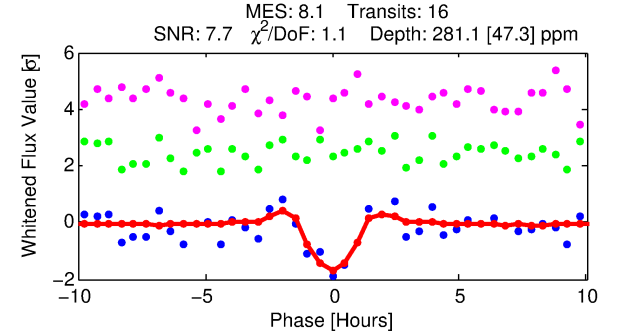
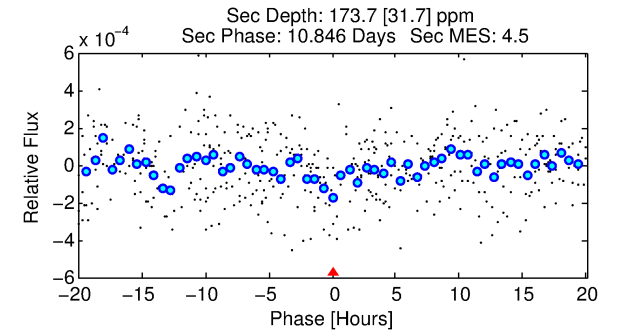
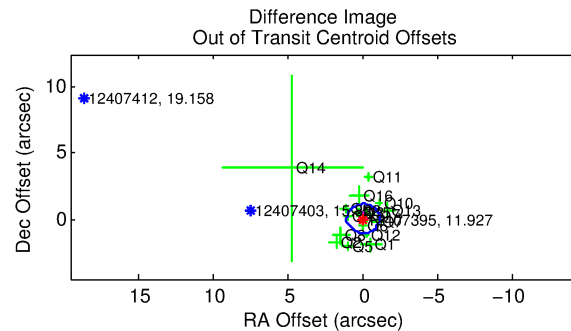
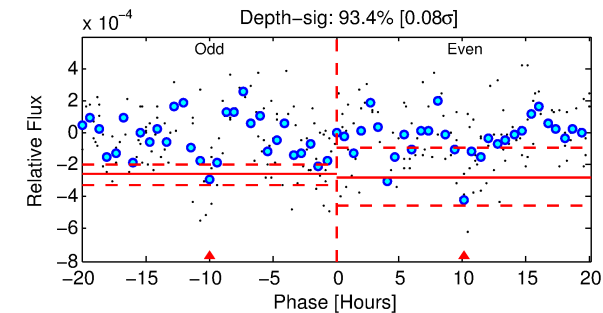
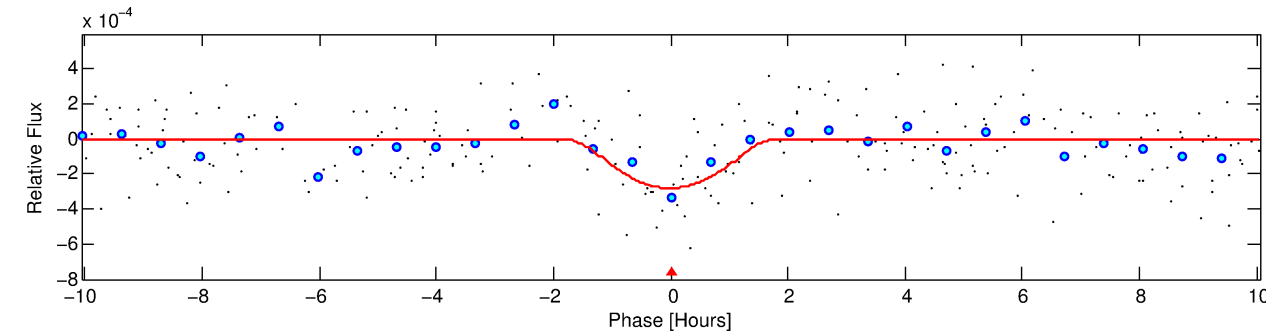
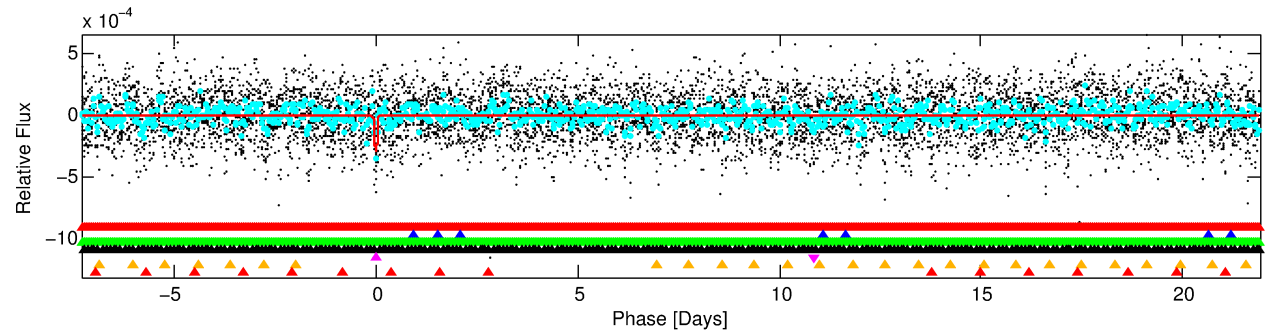
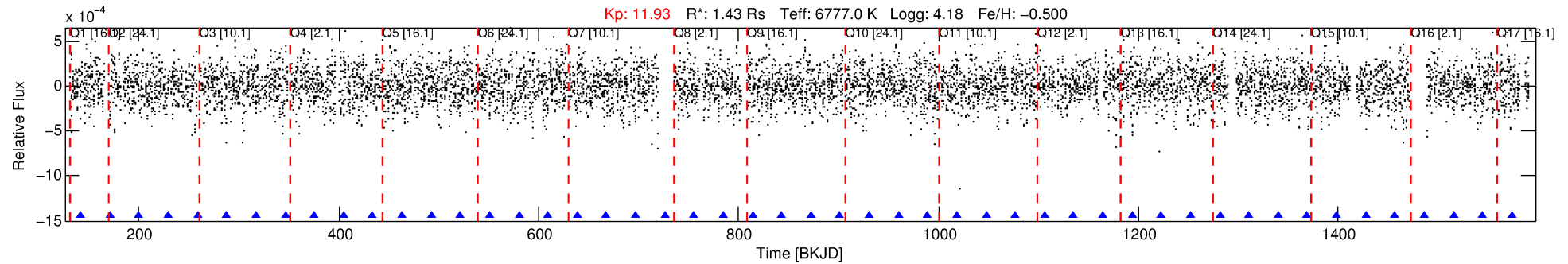
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 012407395-05

No Significant Match Found

DV One-Page Summary

KIC: 12407395 Candidate: 5 of 7 Period: 29.221 d



DV Fit Results:

Period = 29.22076 [0.00038] d
Epoch = 141.8549 [0.0110] BKJD
 $R_p/R^* = 0.0272$ [0.0789]
 $a/R^* = 16.81$ [15.19]
 $b = 1.00$ [0.13]
 $S_{\text{eff}} = 103.37$ [41.60]
 $T_{\text{eq}} = 813$ [82] K
 $R_p = 4.24$ [12.35] R_e
 $a = 0.1929$ [0.0473] AU
 $A_g = 198.10$ [1152.01] [0.17 σ]
 $T_{\text{eff}} = 4716$ [6846] K [0.57 σ]

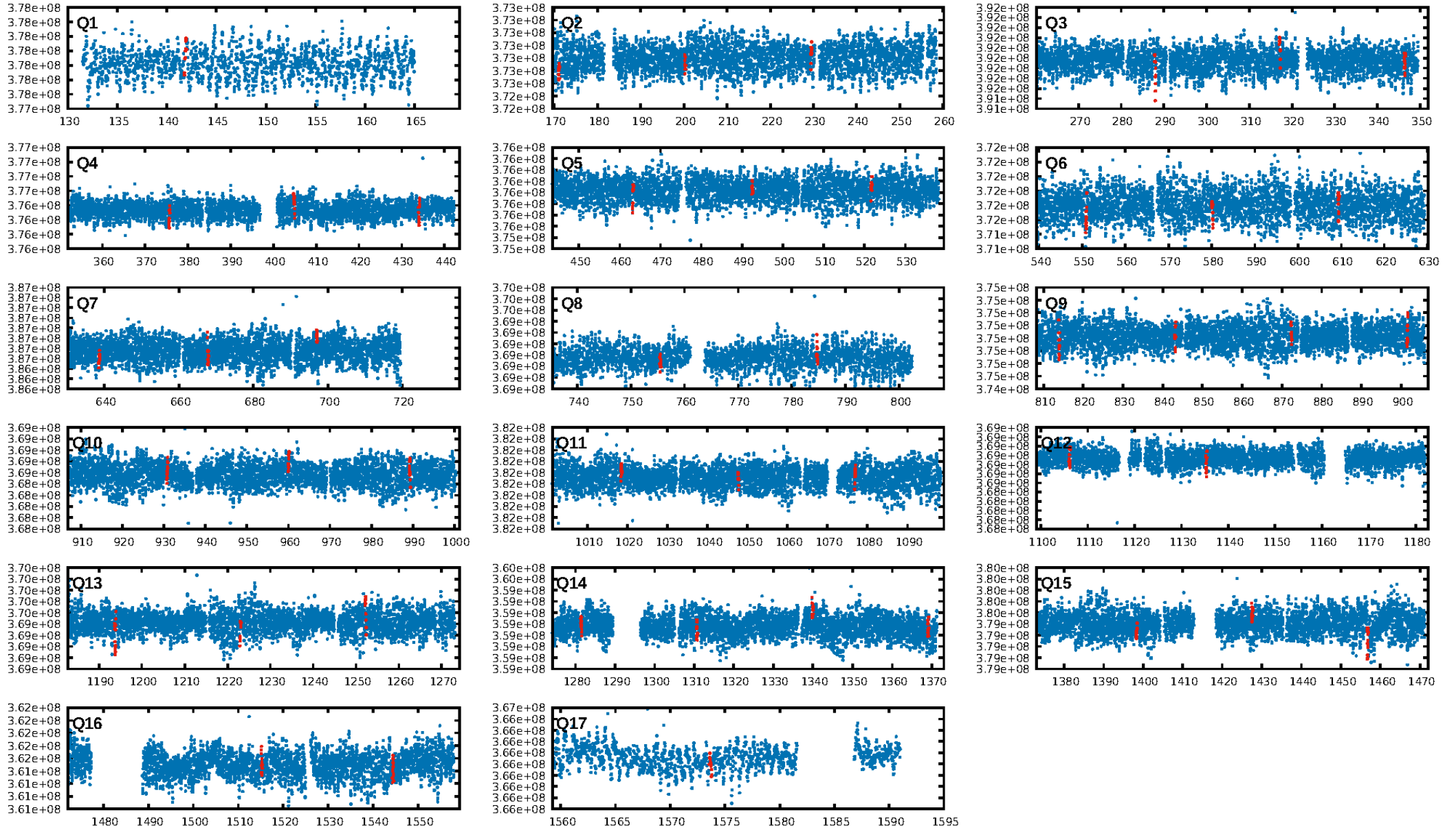
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [79.27 σ]
LongPeriod-sig: 100.0% [182.07 σ]
ModelChiSquare2-sig: 7.8%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [15/15]
GhostDiagnostic-chr: -17.5
Centroid-sig: 5.6%
Centroid-so: 0.819 arcsec [1.92 σ]
OotOffset-rm: 0.105 arcsec [0.29 σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-rm: 0.078 arcsec [0.24 σ]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 0.35 [6/17]
DiffImageOverlap-fno: 0.00 [0/17]

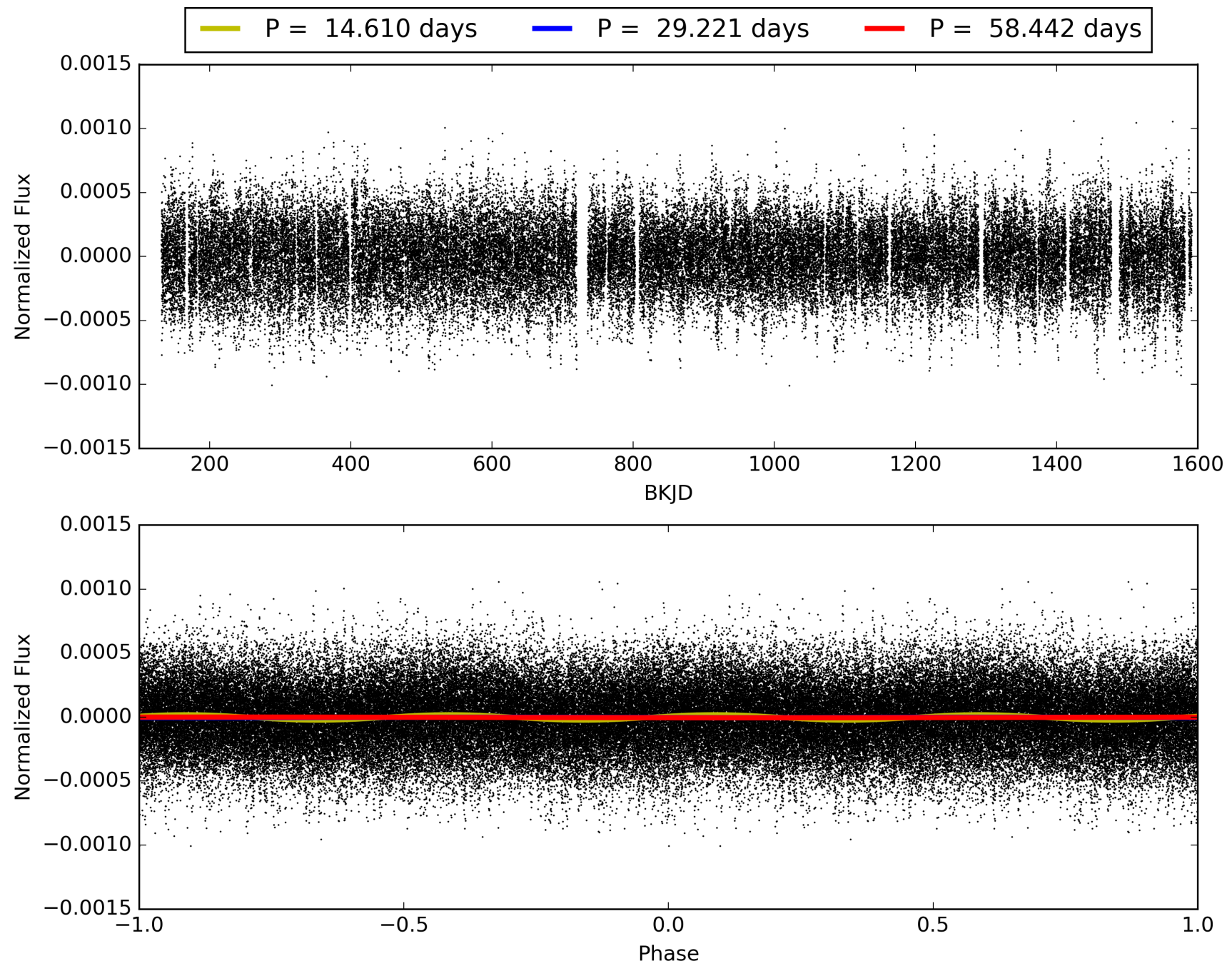
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 06:31:31 Z

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

TCE 012407395-05, PDC Light Curves

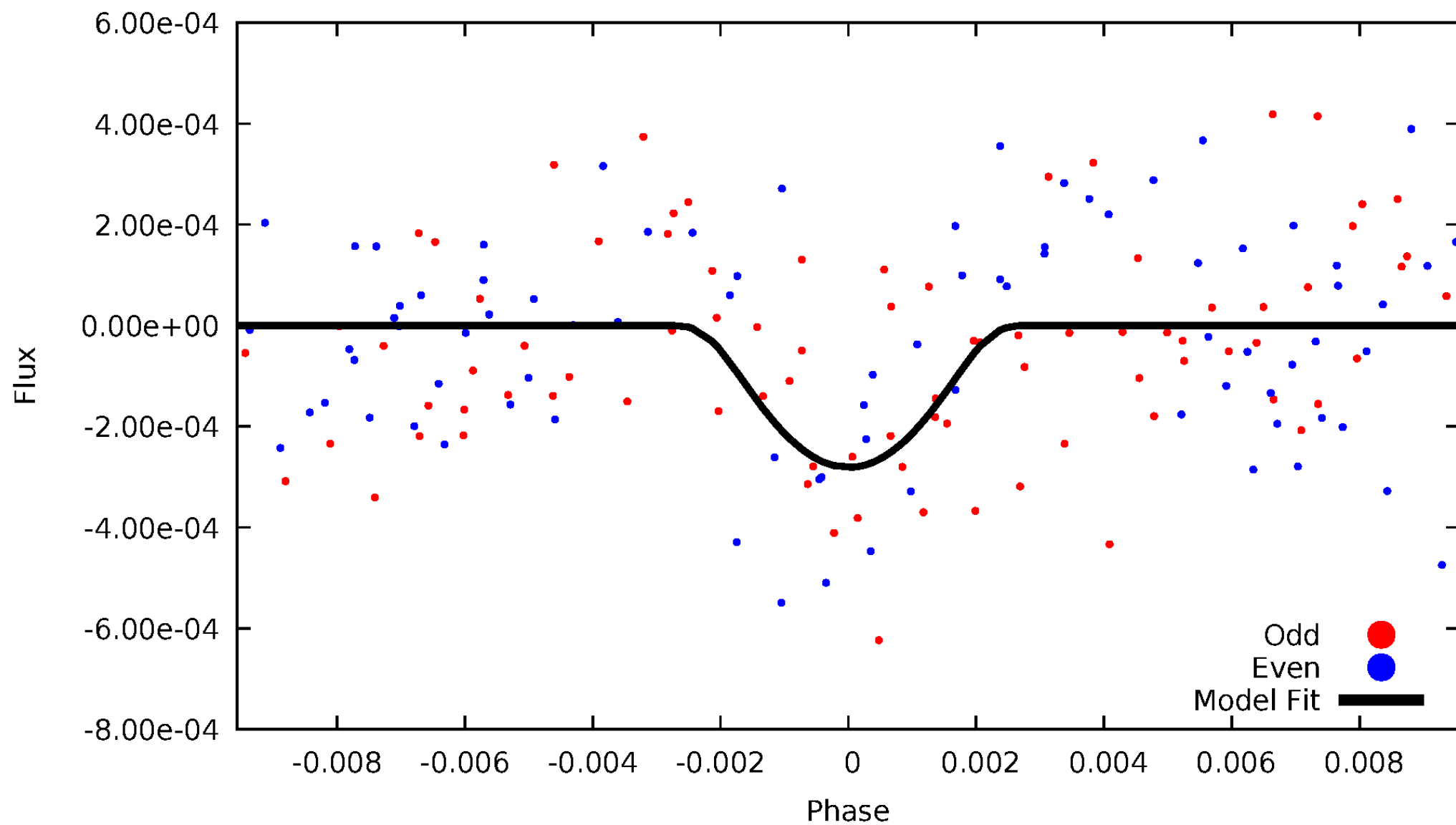


TCE 012407395-05



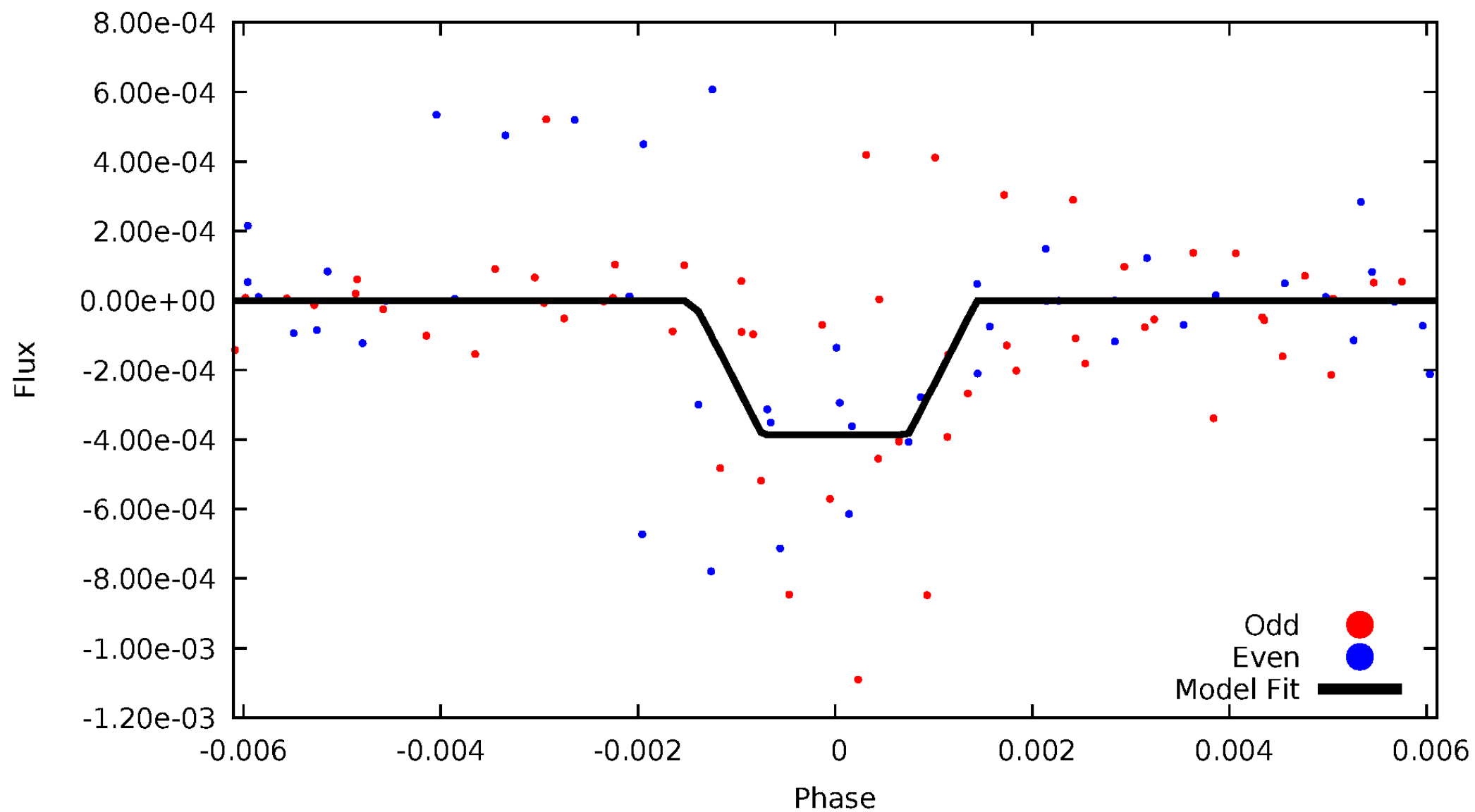
DV Odd/Even

TCE 012407395-05



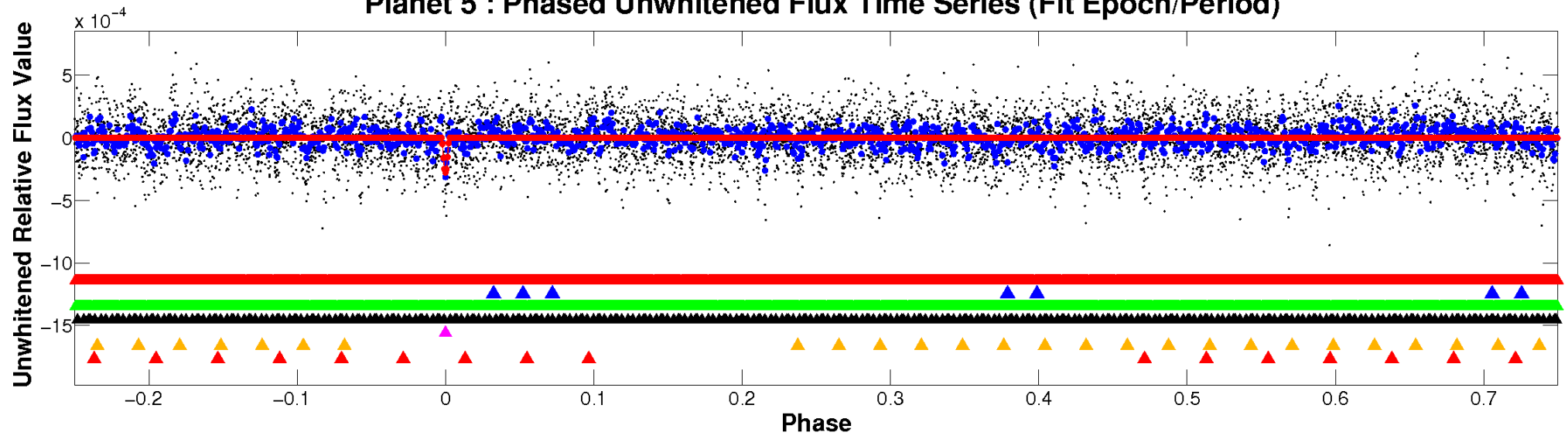
ALT Odd/Even

TCE 012407395-05

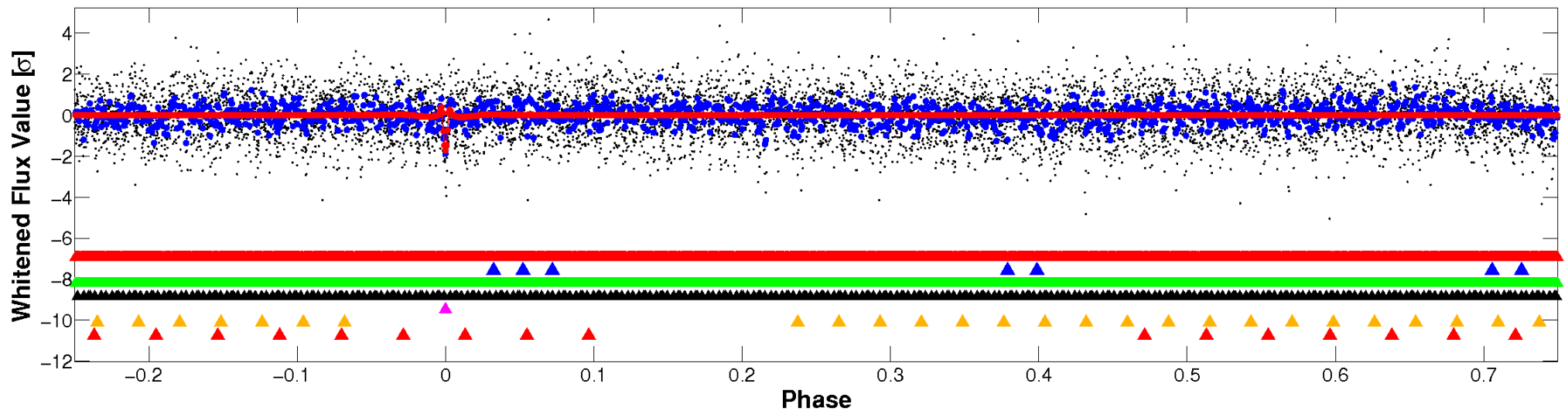


Non-Whitened Vs. Whitened Light Curve

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

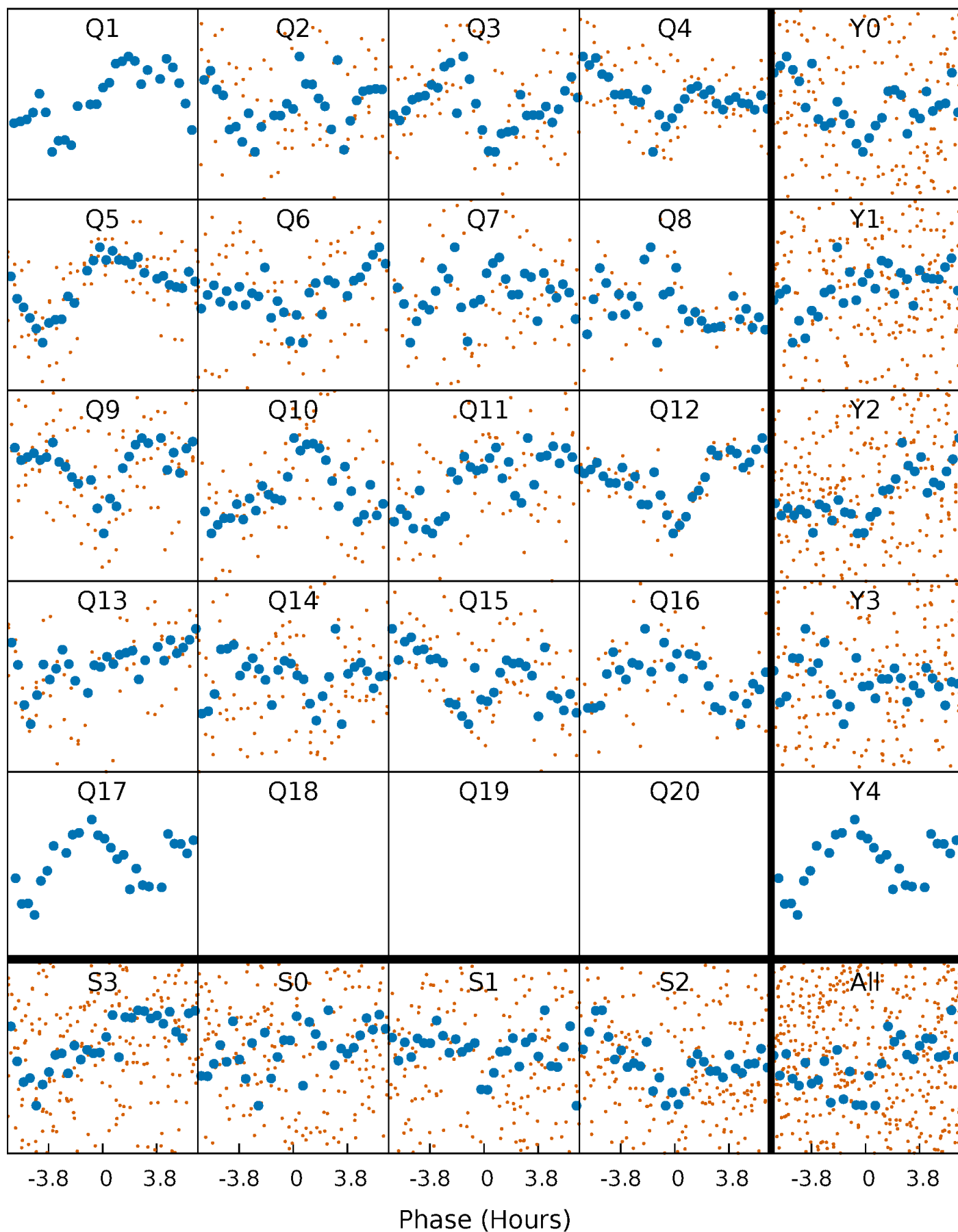


Planet 5 : Phased Whitened Flux Time Series (Fit Epoch/Period)



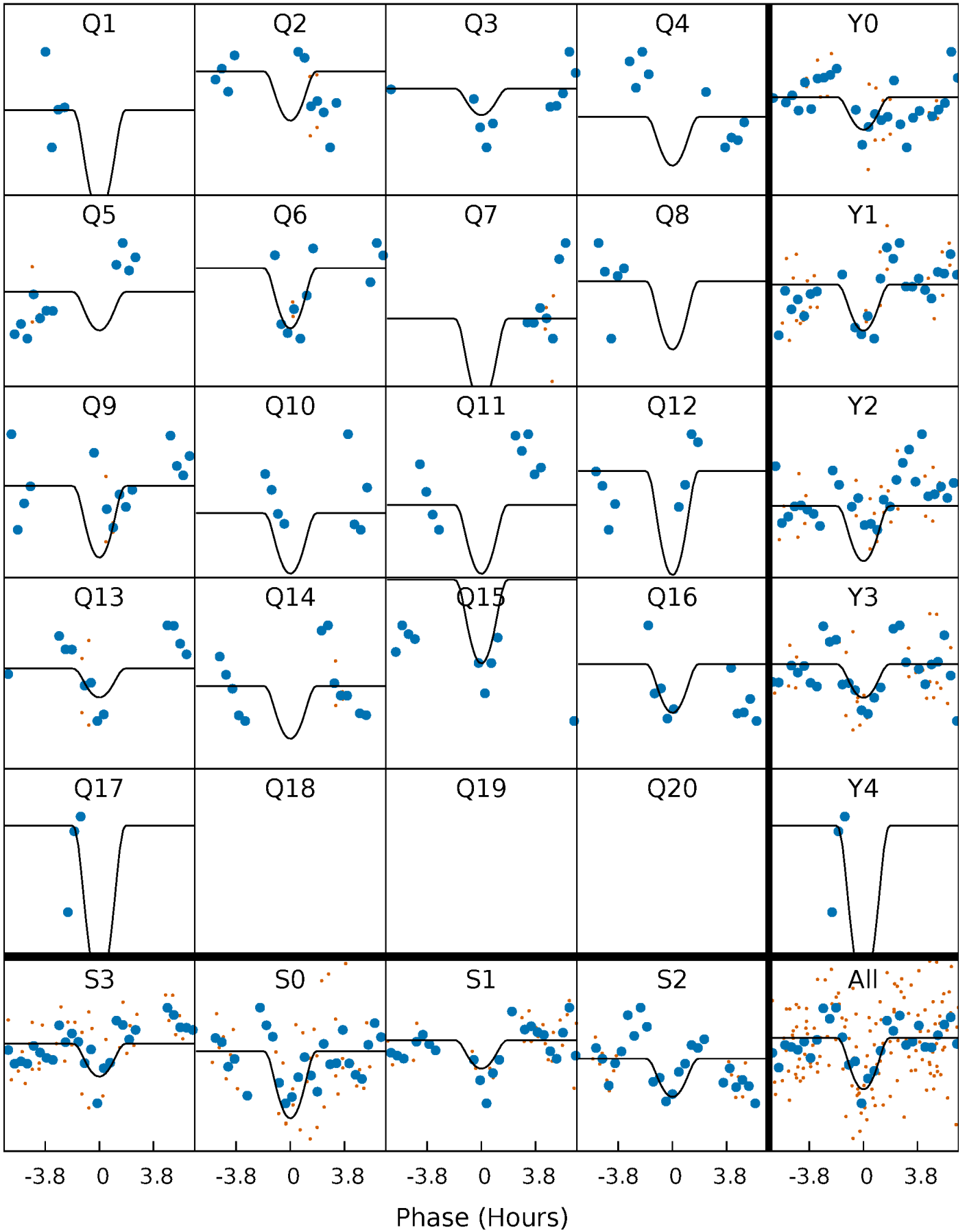
PDC Quarter-Phased Transit Curves

TCE 012407395-05 $P = 29.220757$ Days $T_0 = 141.854914$ (BKJD)



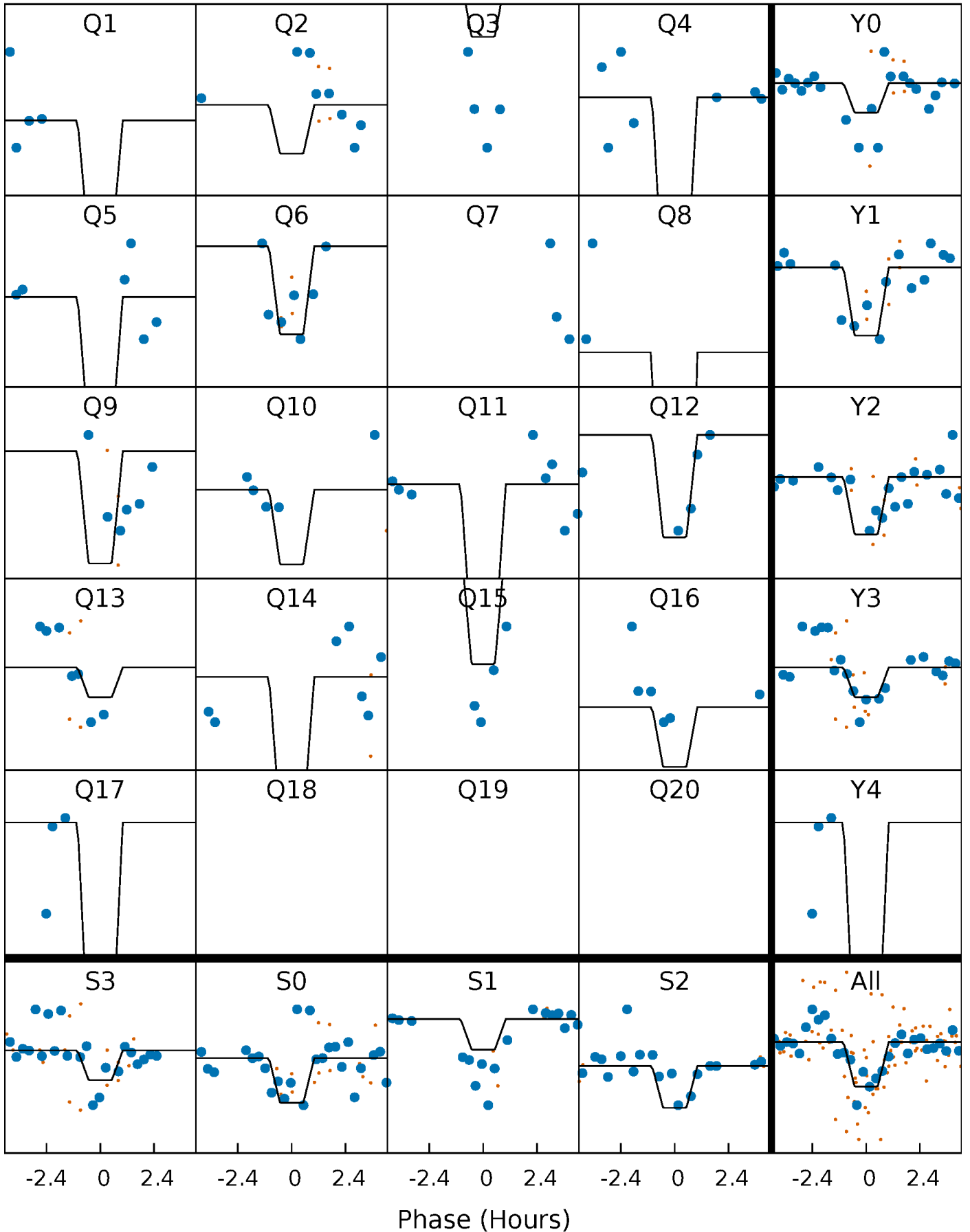
DV Quarter-Phased Transit Curves

TCE 012407395-05 $P = 29.220757$ Days $T_0 = 141.854914$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

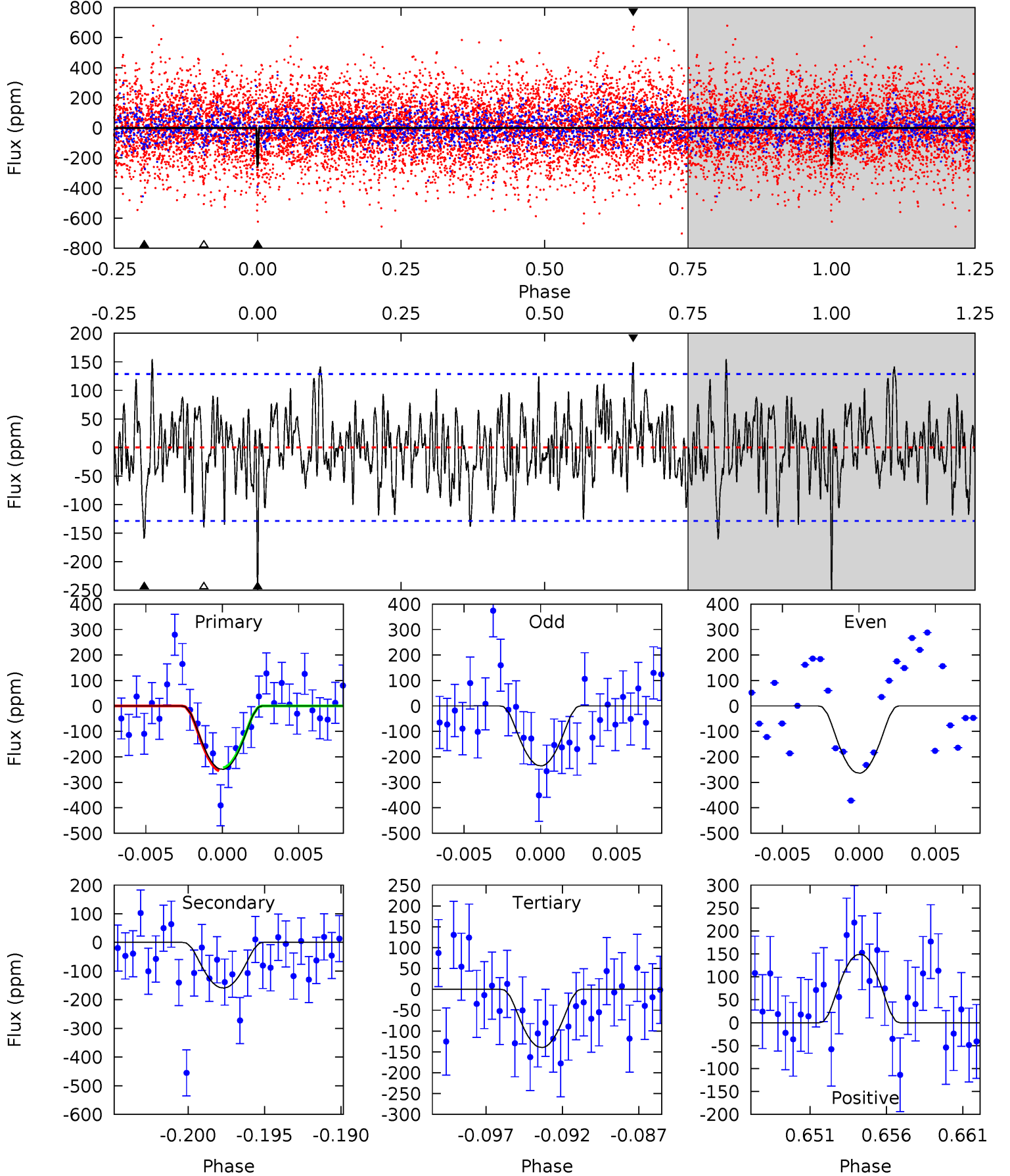
TCE 012407395-05 $P = 29.220723$ Days $T_0 = 141.862204$ (BKJD)



DV Model-Shift Uniqueness Test

012407395-05, P = 29.220757 Days, E = 112.634157 Days

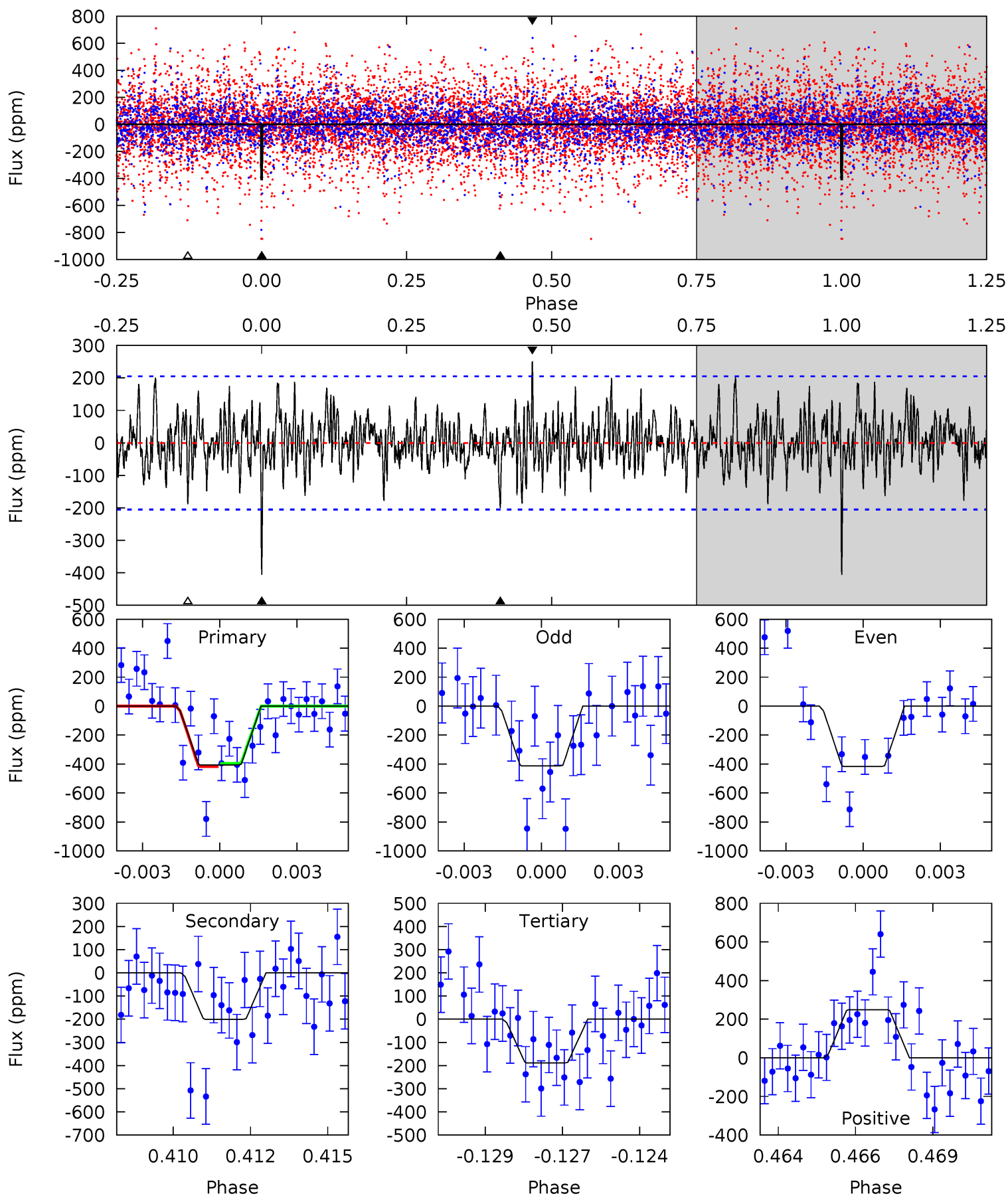
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.99	6.37	5.60	5.99	5.15	2.80	2.00	4.39	4.00	0.78	0.38	0.57	0.96	0.38	0.24



Alt Model-Shift Uniqueness Test

012407395-05, P = 29.220723 Days, E = 112.641481 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	5.14	4.84	6.40	5.27	3.00	1.60	5.57	4.02	0.30	-1.26	0.05	0.95	0.38	0.28



Stellar Parameters For KIC 012407395

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	ρ_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6777^{+214}_{-285}	$4.179^{+0.204}_{-0.167}$	$-0.500^{+0.250}_{-0.300}$	$1.427^{+0.404}_{-0.330}$	$1.121^{+0.178}_{-0.146}$	$0.543^{+0.603}_{-0.248}$
	+3%/-4%	+5%/-4%	+50%/-60%	+28%/-23%	+16%/-13%	+111%/-46%
Source	PHO54	PHO54	PHO54	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

Secondary Eclipse Parameters for KIC 012407395-05 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-159 ± 25	$9.90^{+10.29}_{-6.81}$	1127^{+86}_{-84}	3422^{+1927}_{-617}	33^{+313}_{-25}
Alt.	-200 ± 39	$9.73^{+9.98}_{-6.48}$	1125^{+87}_{-81}	3615^{+1941}_{-704}	43^{+357}_{-33}

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

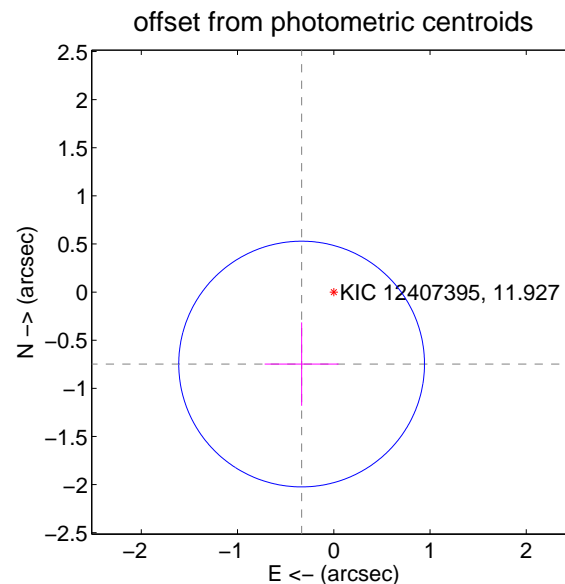
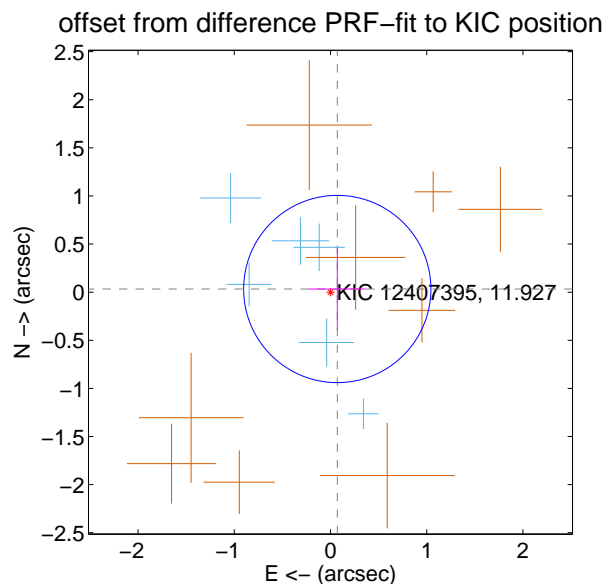
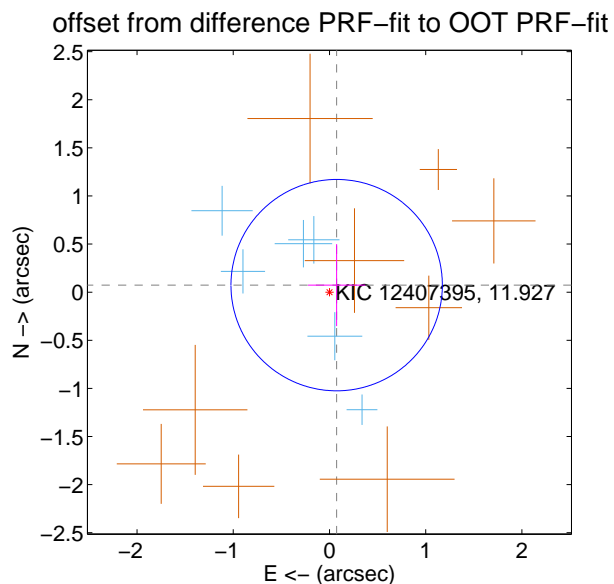
DV Centroid Data

Supplemental centroid analysis for 012407395-05. **Kepler magnitude: 11.93.** Transit SNR 7.69

There are 6 quarters with good PRF difference image offsets

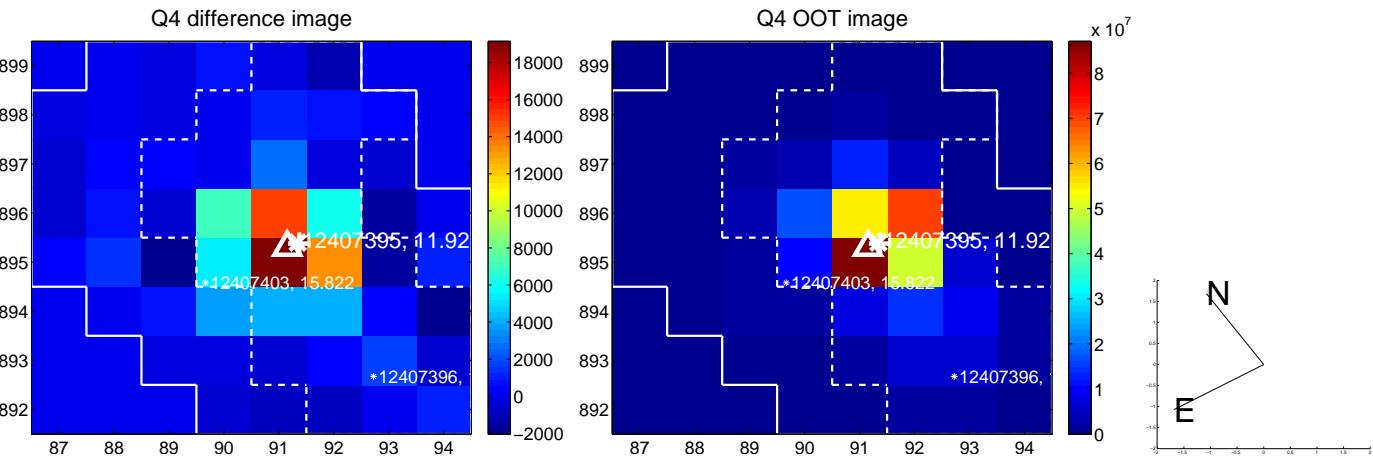
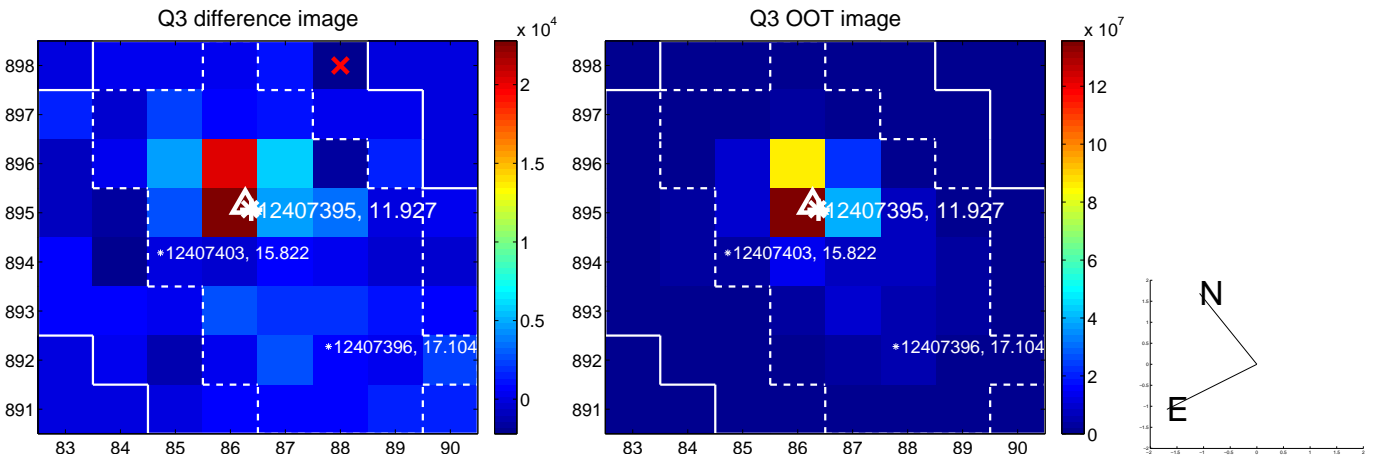
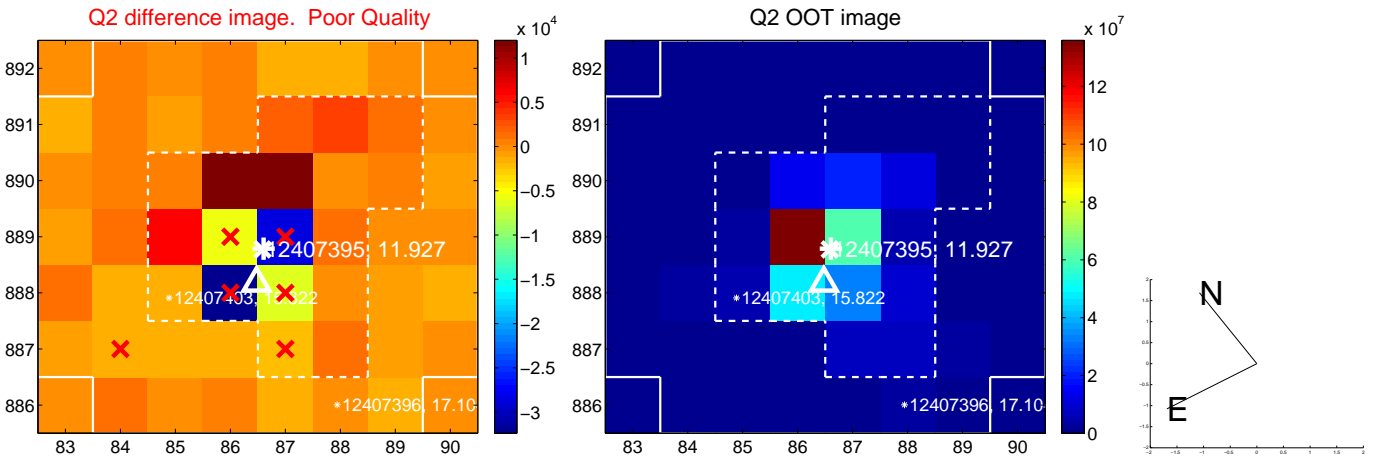
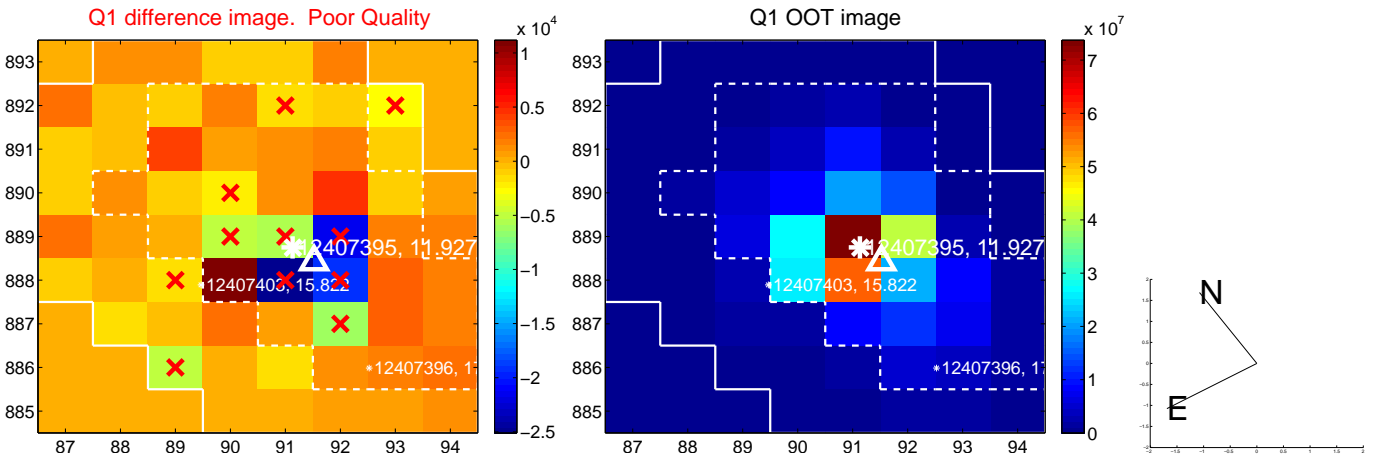
The direct PRF centroid is offset from the target star catalog position by about 0.03 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.105 ± 0.366	0.29	-0.075 ± 0.297	0.073 ± 0.426
PRF-fit source offset from KIC position	0.078 ± 0.324	0.24	-0.070 ± 0.297	0.033 ± 0.426
photometric centroid source offset	0.82 ± 0.43	1.92	0.33 ± 0.38	-0.75 ± 0.43

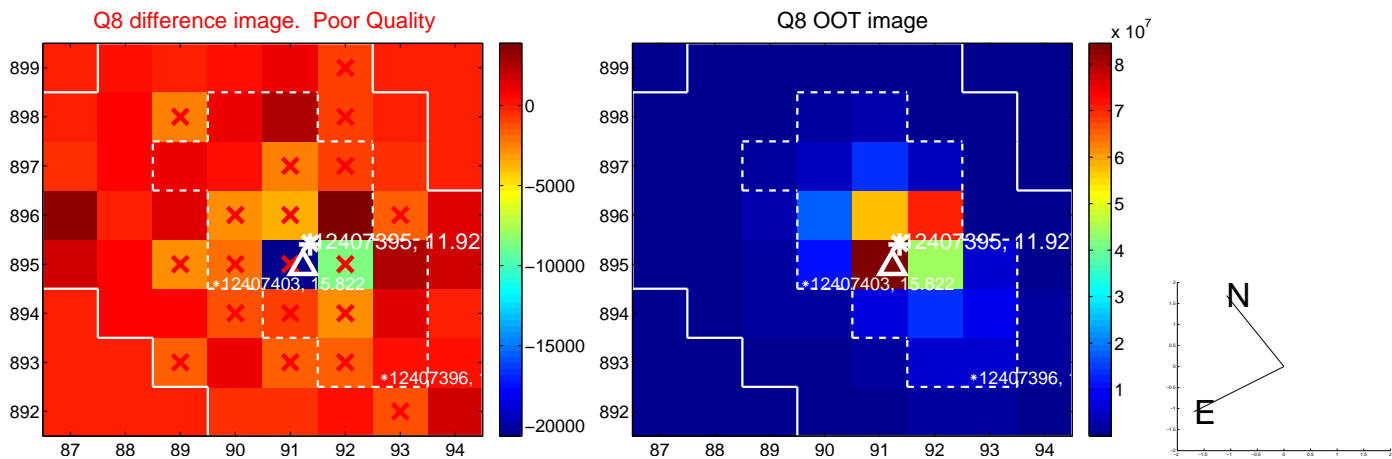
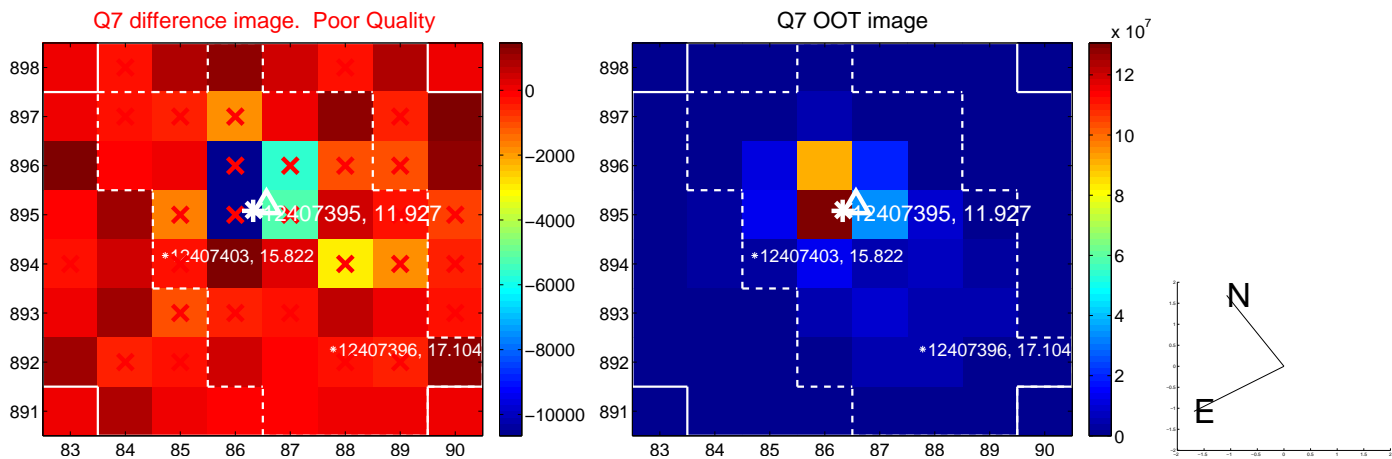
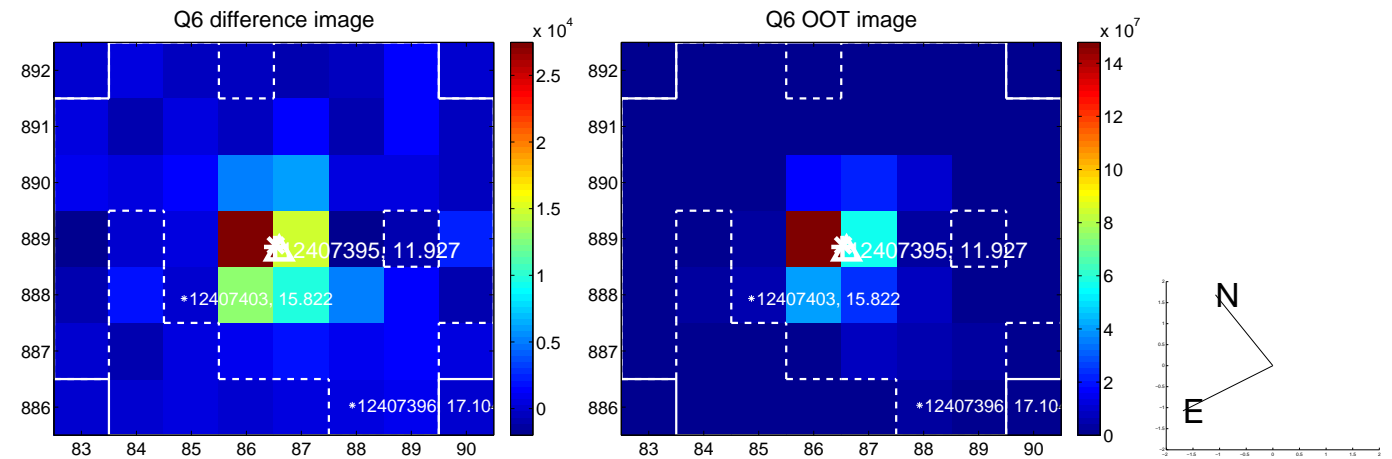
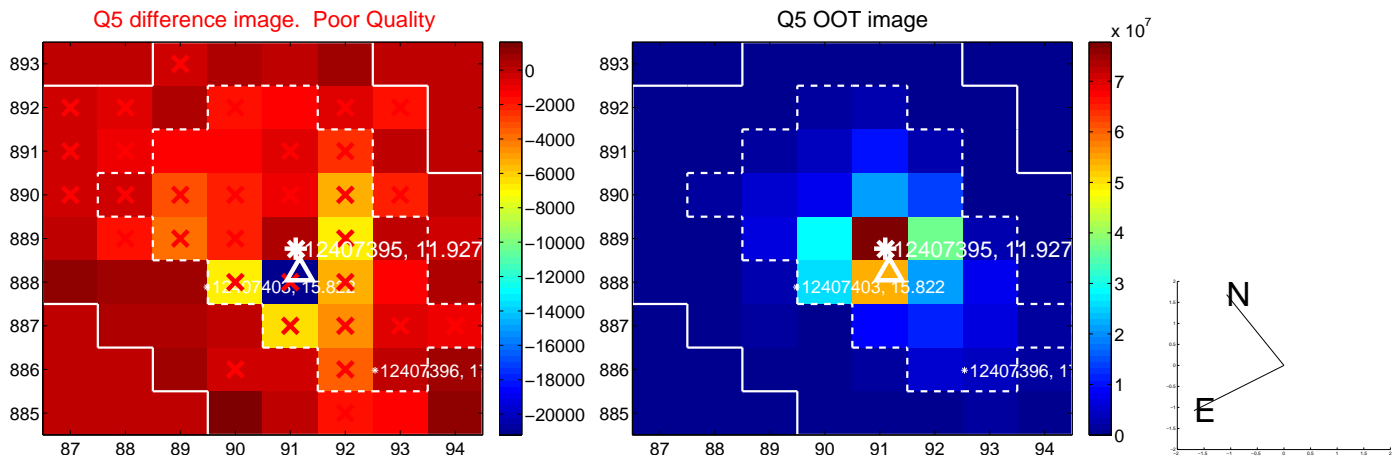


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

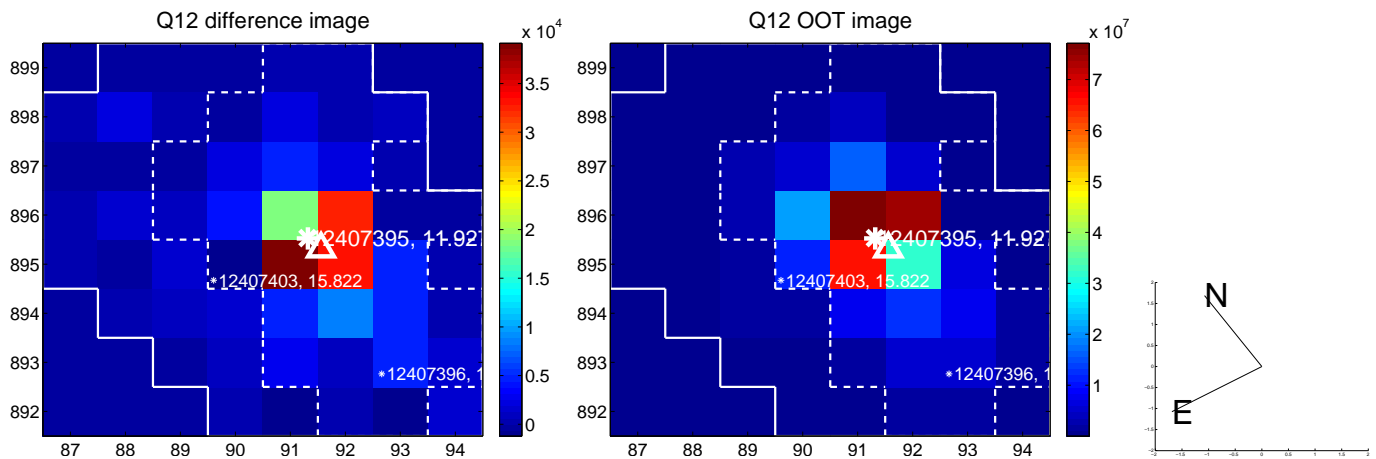
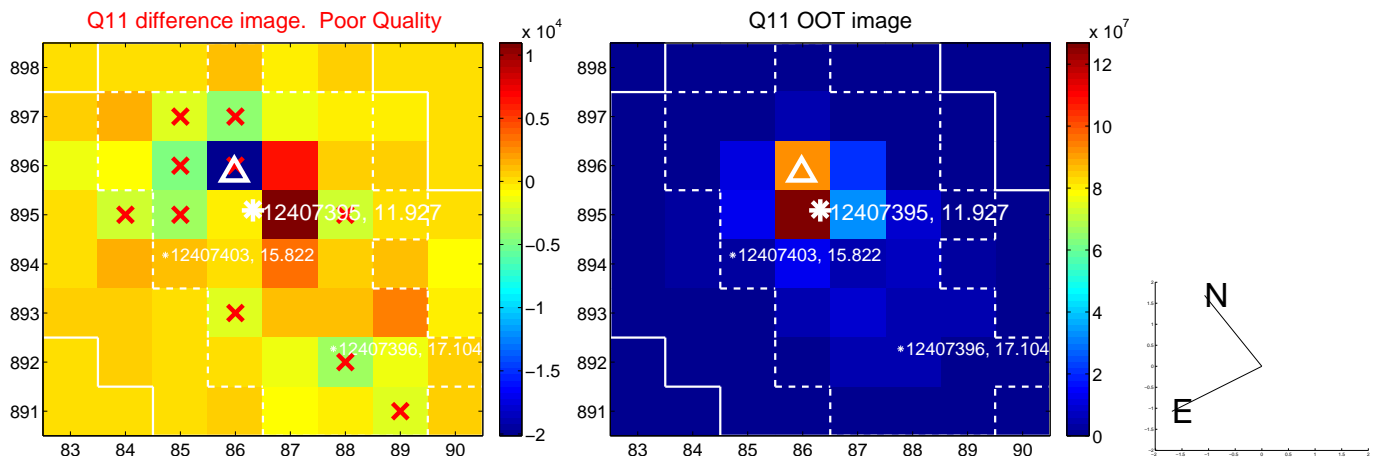
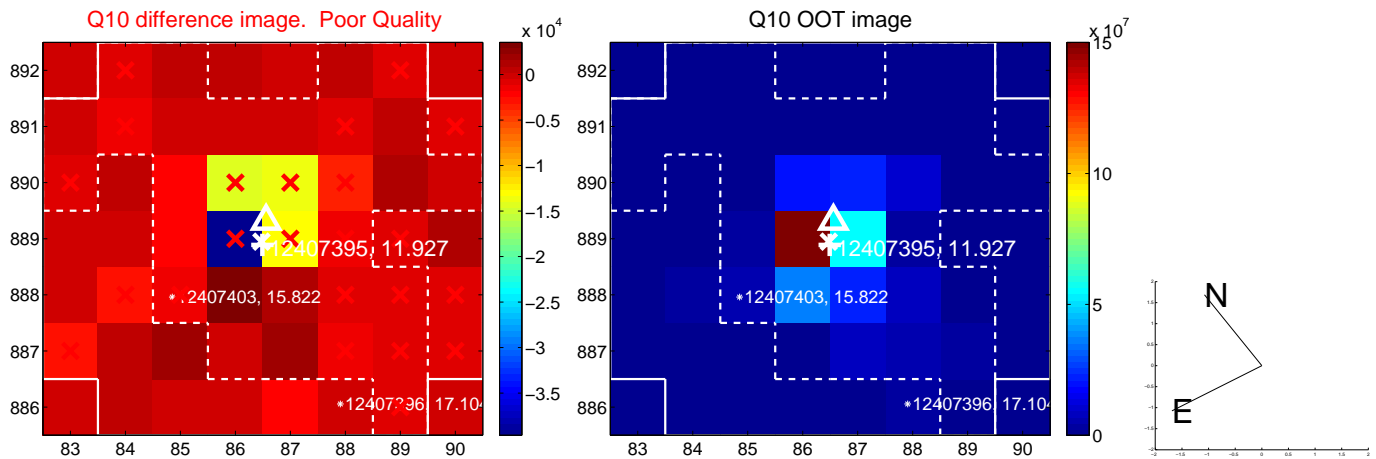
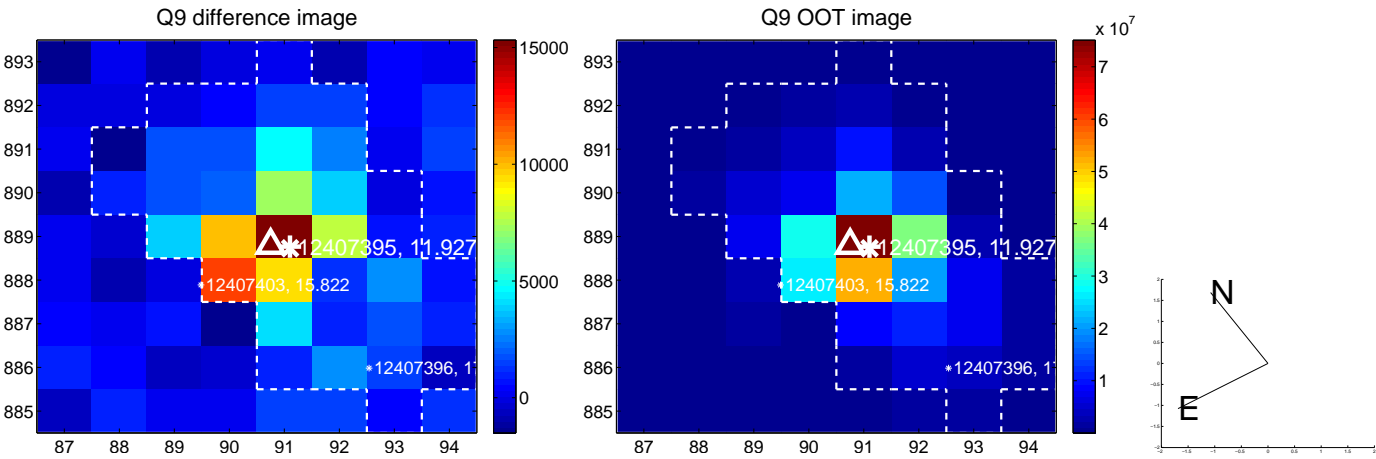
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



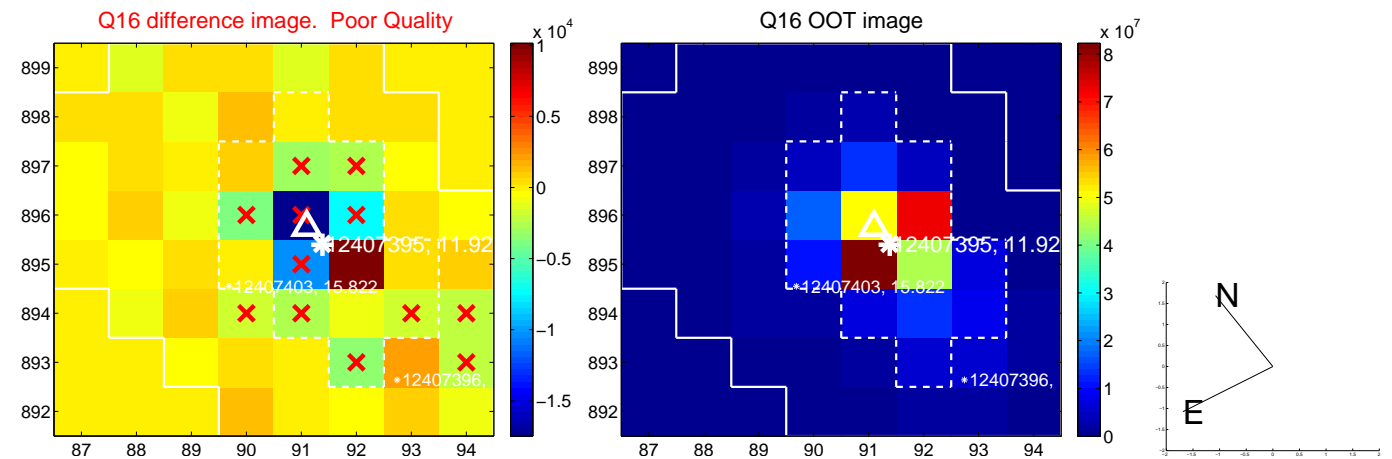
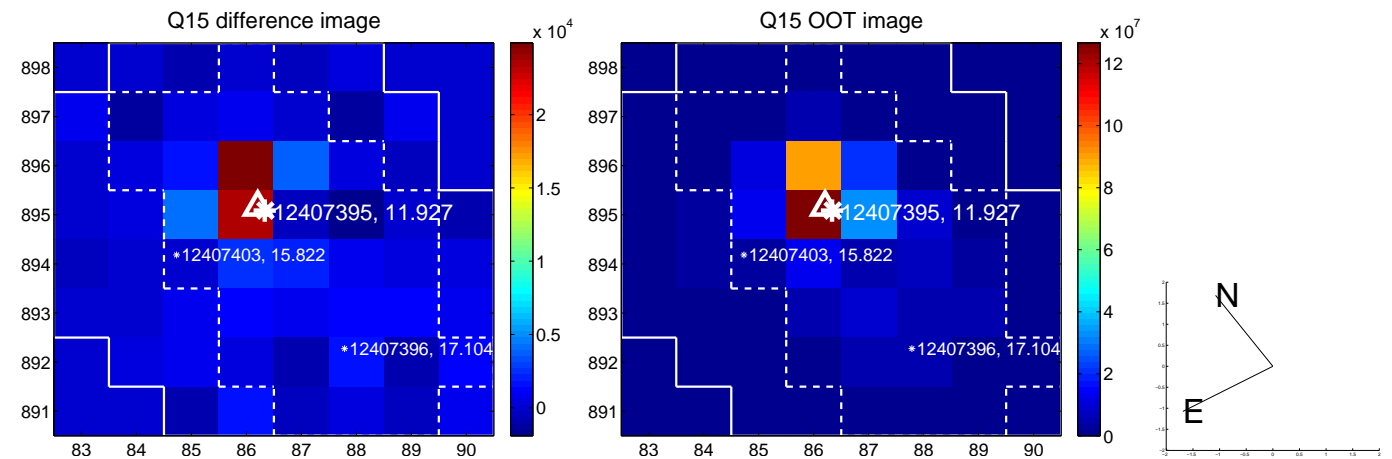
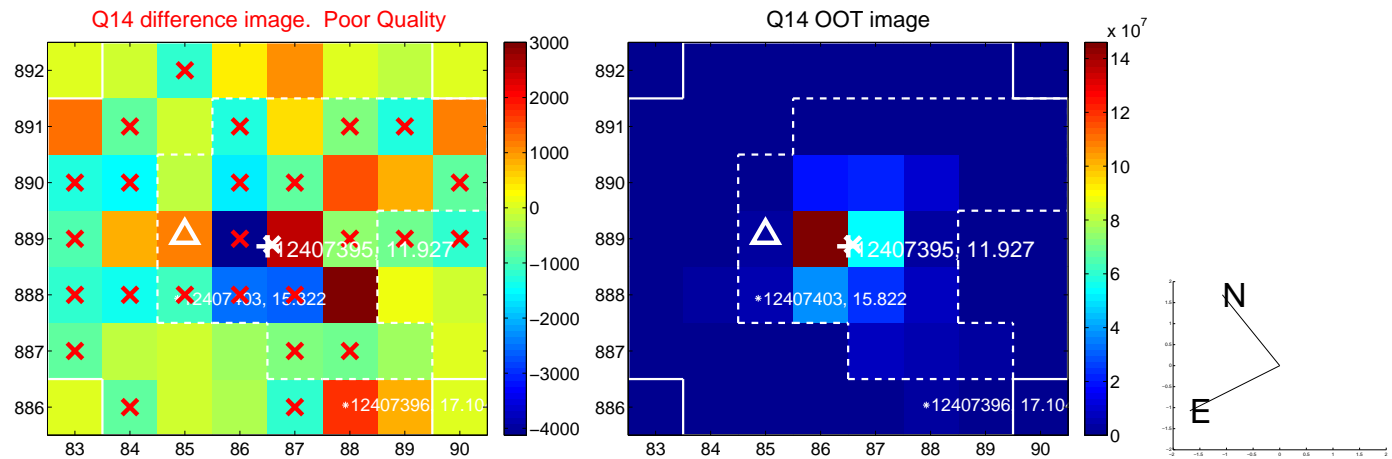
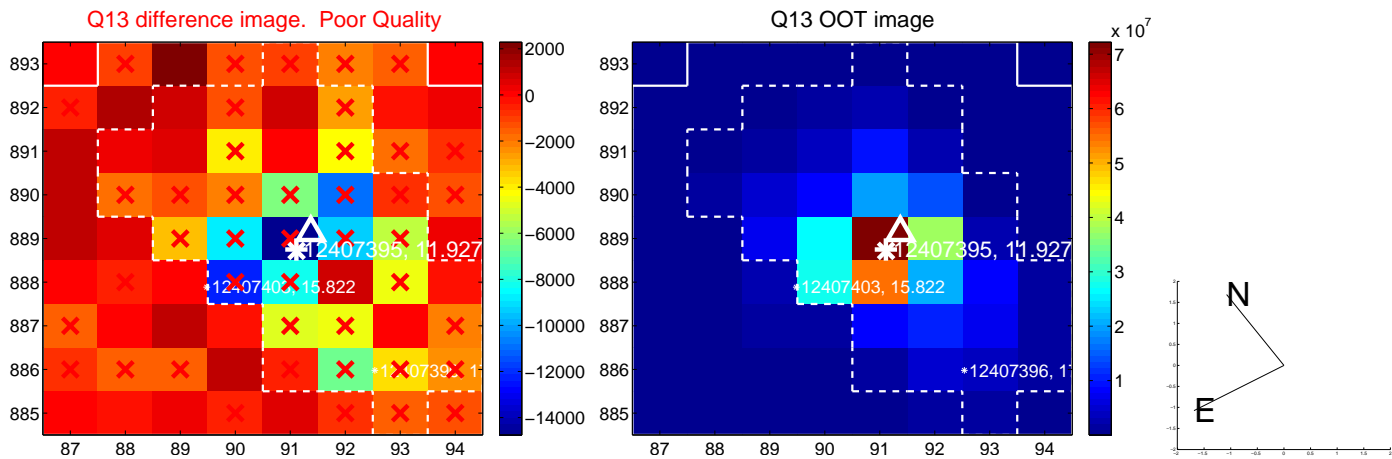
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



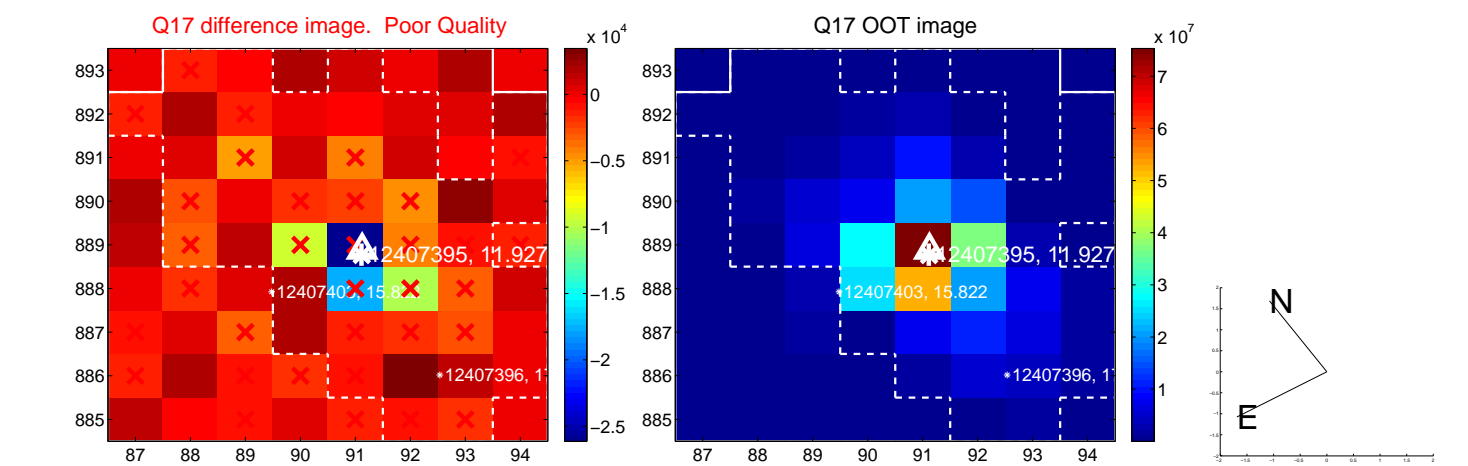
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



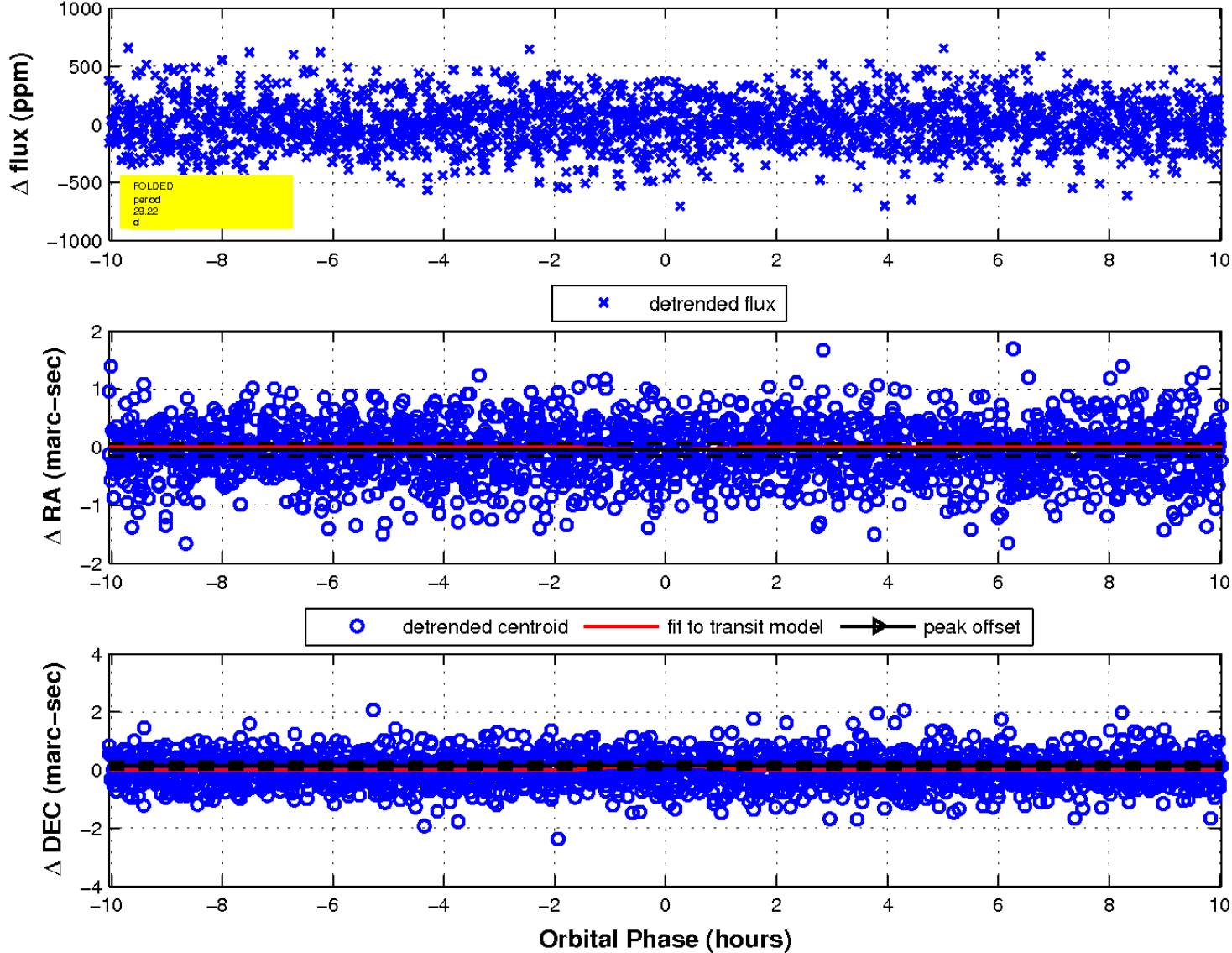
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

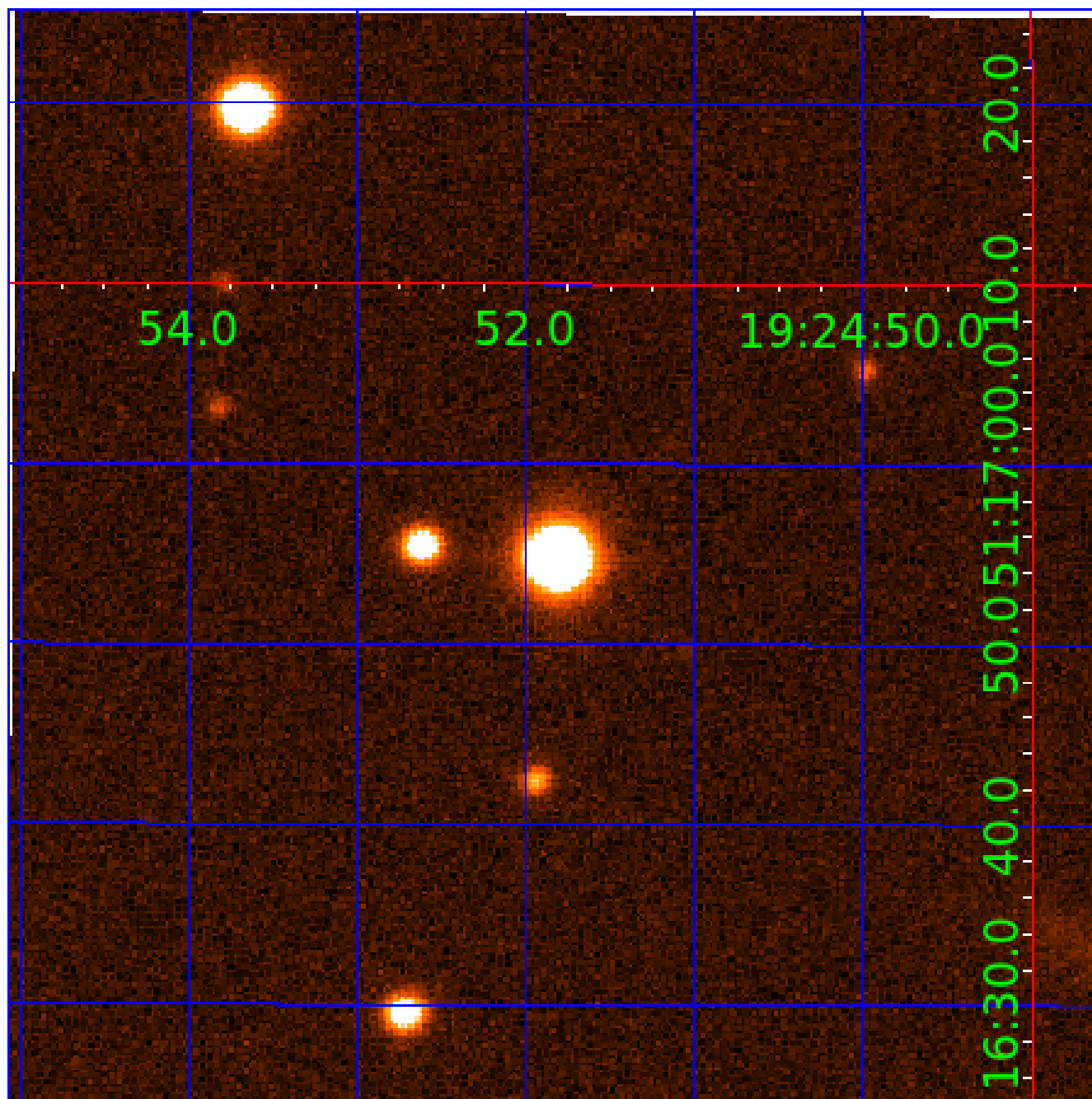


fluxWeightedCentroids, Planet 5 of 7



UKIRT Image

Declination



KIC 012407395

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})
012407395-01	OBS	No	0.535679	131.734431	33.4	2.310	13.0	14.8	1.43	6777	0.96	21385.56
012407395-02	OBS	No	214.092421	173.181963	296.8	3.159	10.6	5.1	1.43	6777	2.86	7.26
012407395-03	OBS	No	0.535679	131.922575	30.0	1.461	10.2	13.8	1.43	6777	0.91	21385.58
012407395-04	OBS	No	4.400160	135.380280	88.4	6.725	8.1	9.0	1.43	6777	1.56	1290.34
012407395-05	OBS	No	29.220757	141.854914	281.1	3.354	8.1	7.7	1.43	6777	4.24	103.37
012407395-06	OBS	No	57.629864	139.865790	394.8	1.667	8.0	7.1	1.43	6777	3.06	41.80

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
012407395-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
012407395-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS
012407395-03	OBS	FP	0.00	1	0	0	0	LPP_DV—SAME_NTL_PERIOD
012407395-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
012407395-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
012407395-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT

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

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

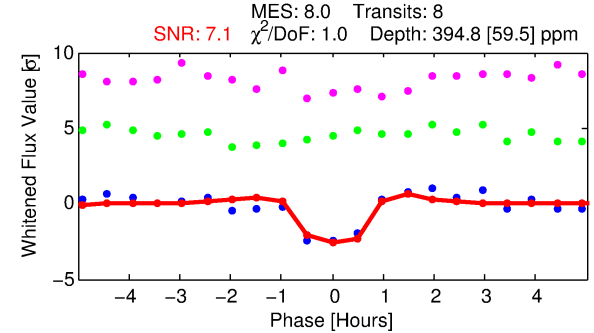
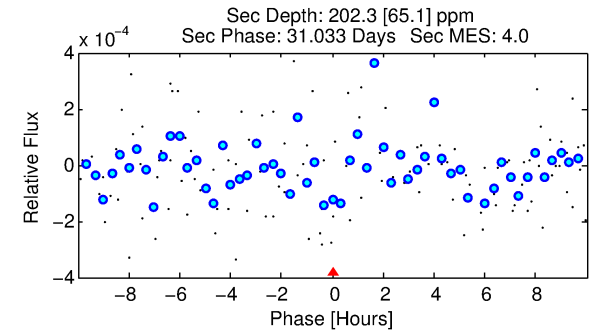
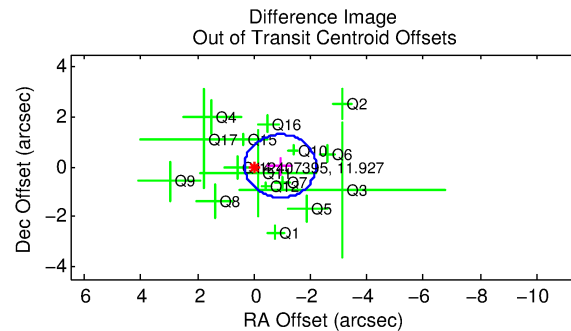
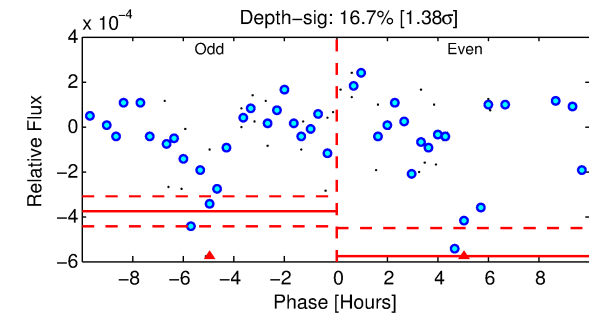
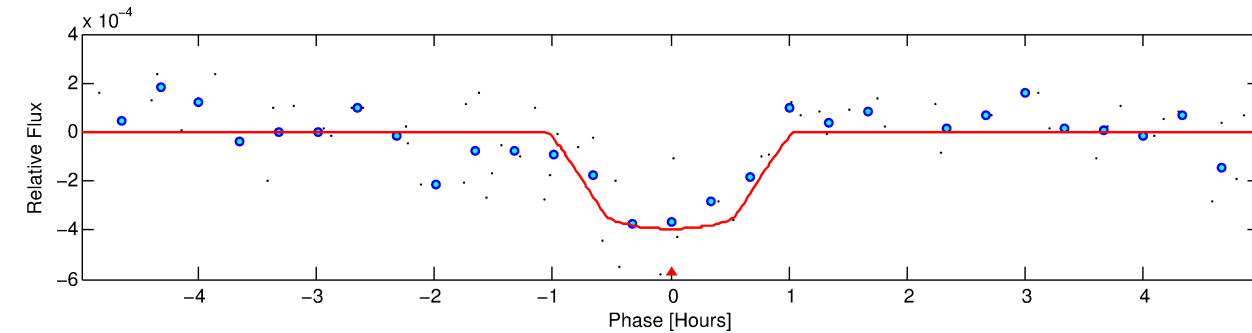
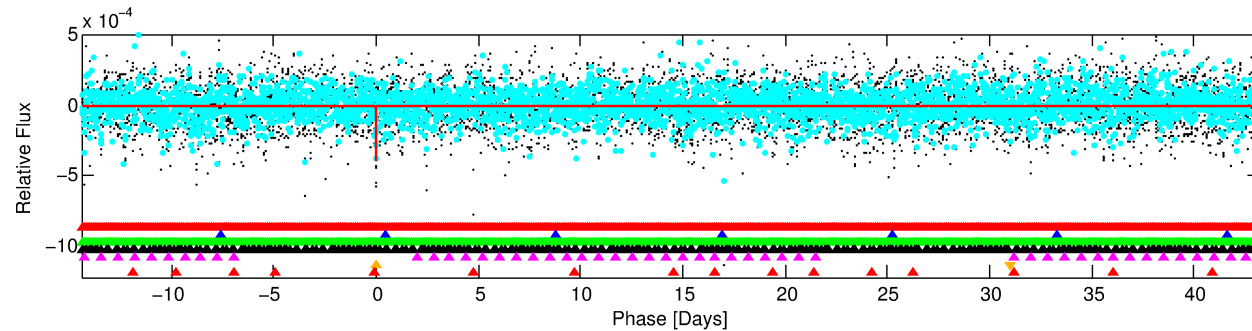
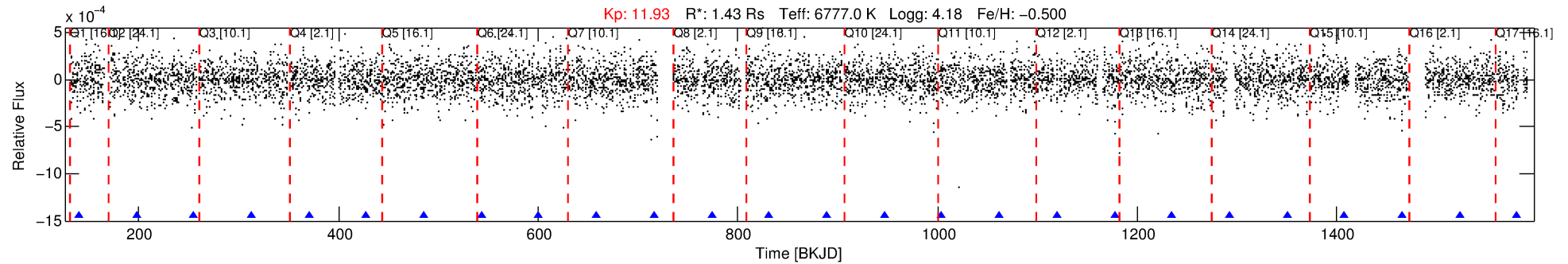
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 012407395-06

No Significant Match Found

DV One-Page Summary

KIC: 12407395 Candidate: 6 of 7 Period: 57.630 d



DV Fit Results:

Period = 57.62986 [0.00044] d
Epoch = 139.8658 [0.0070] BKJD
Rp/R* = 0.0196 [0.0351]
a/R* = 191.74 [1977.99]
b = 0.72 [7.10]
Seff = 41.80 [16.82]
Teq = 648 [65] K
Rp = 3.06 [5.53] Re
a = 0.3034 [0.0744] AU
Ag = 1096.46 [3954.55] [0.28 σ]
Teffp = 5768 [5180] K [0.99 σ]

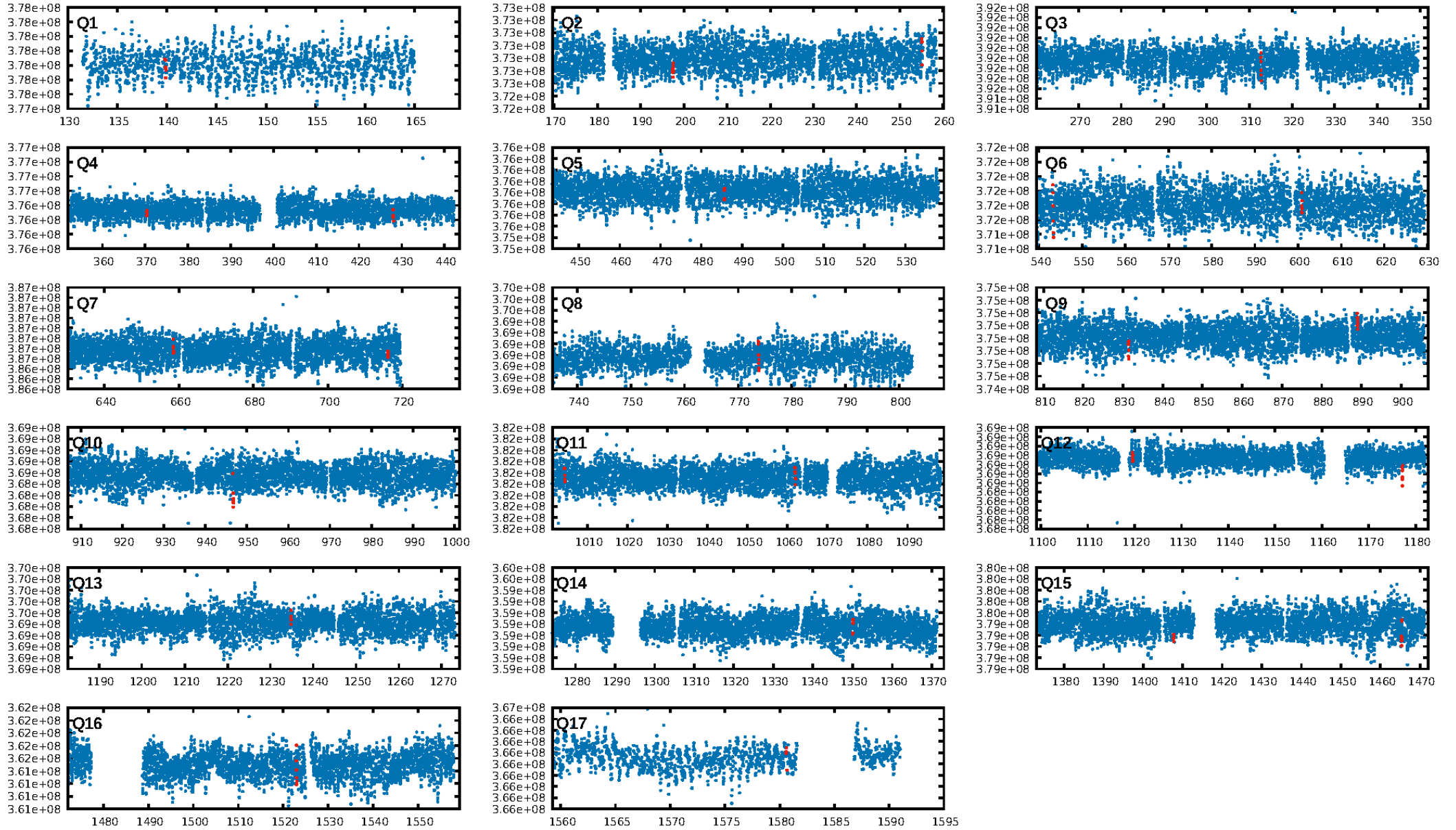
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [182.07 σ]
LongPeriod-sig: 100.0% [97.62 σ]
ModelChiSquare2-sig: 39.2%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [7/7]
GhostDiagnostic-chr: -2.92
Centroid-sig: 7.5%
Centroid-so: 0.319 arcsec [0.69 σ]
OotOffset-rm: 0.929 arcsec [2.21 σ]
KicOffset-rm: 0.889 arcsec [2.22 σ]
OotOffset-st: 4/4/4/4 [16]
KicOffset-st: 4/4/4/4 [16]
DiffImageQuality-fgm: 0.56 [9/16]
DiffImageOverlap-fno: 0.00 [0/17]

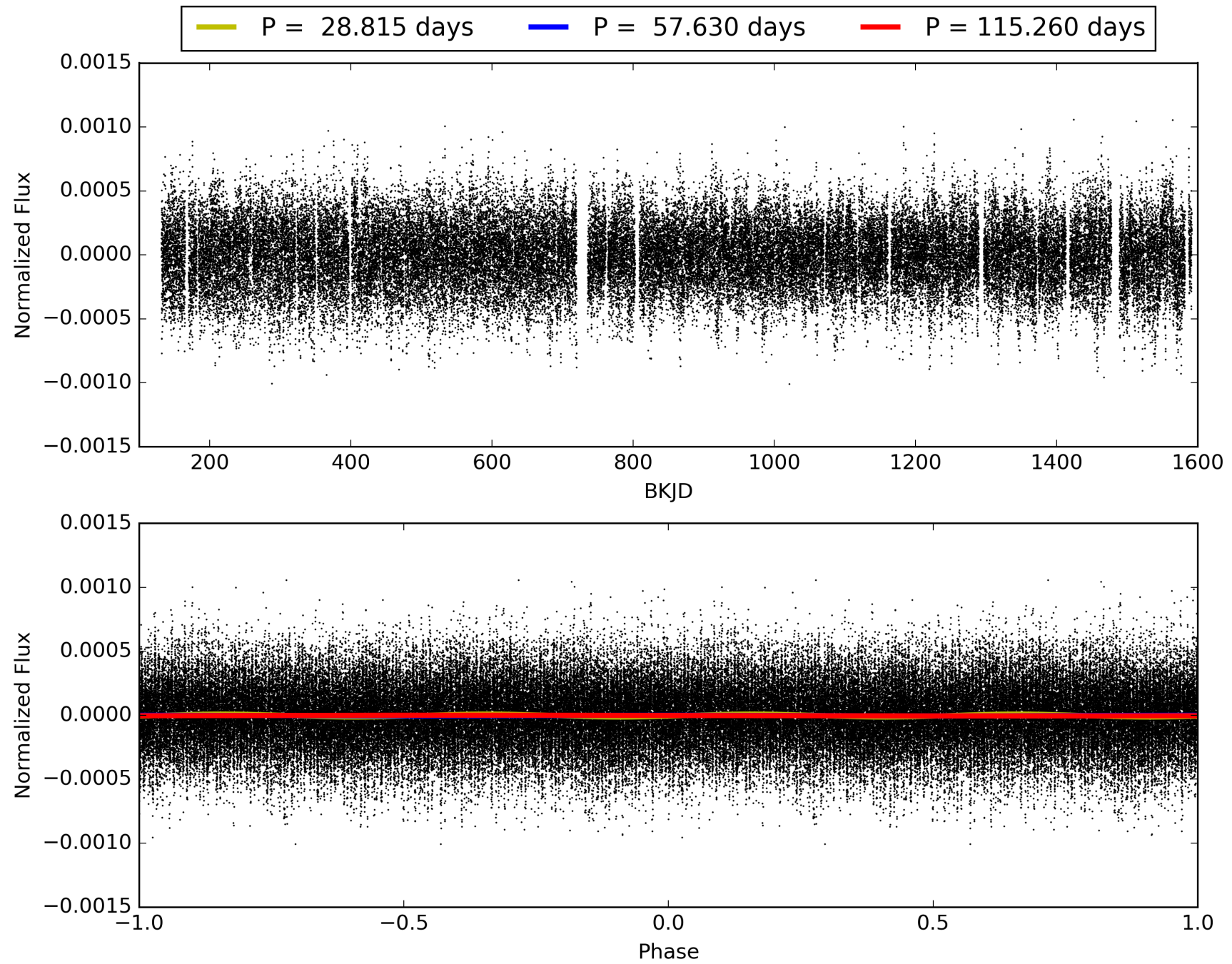
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 06:31:35 Z

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

TCE 012407395-06, PDC Light Curves

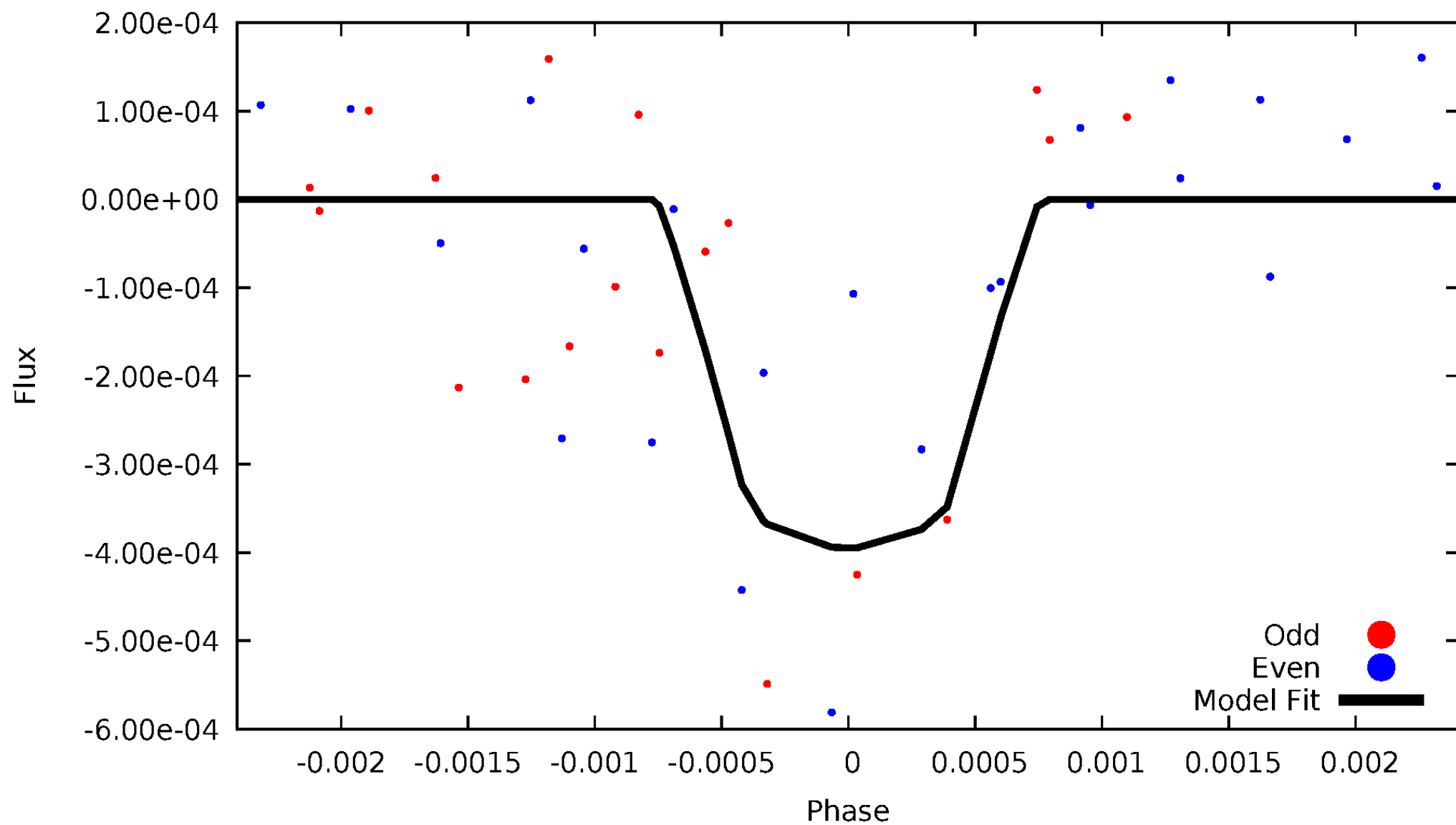


TCE 012407395-06



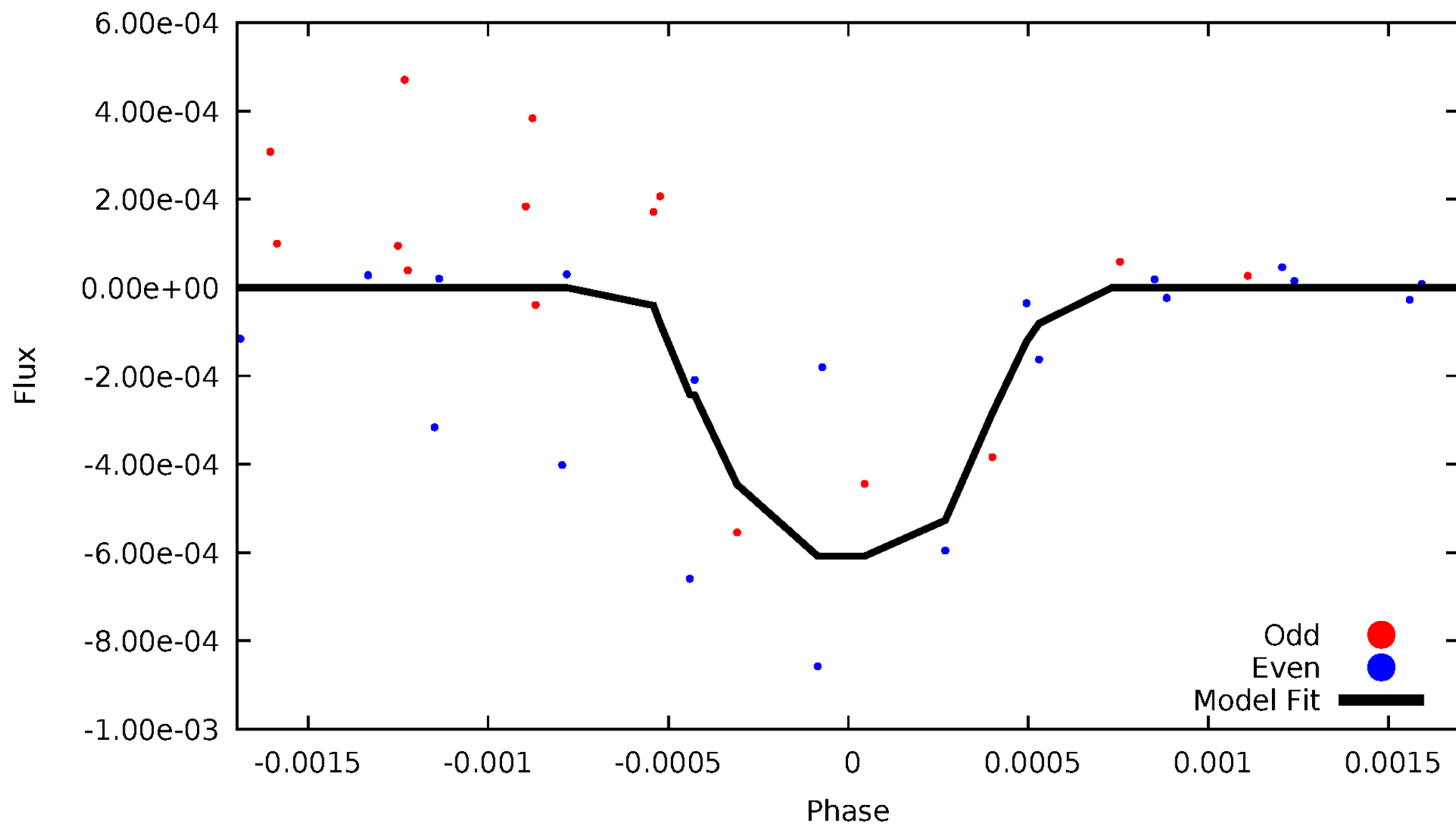
DV Odd/Even

TCE 012407395-06



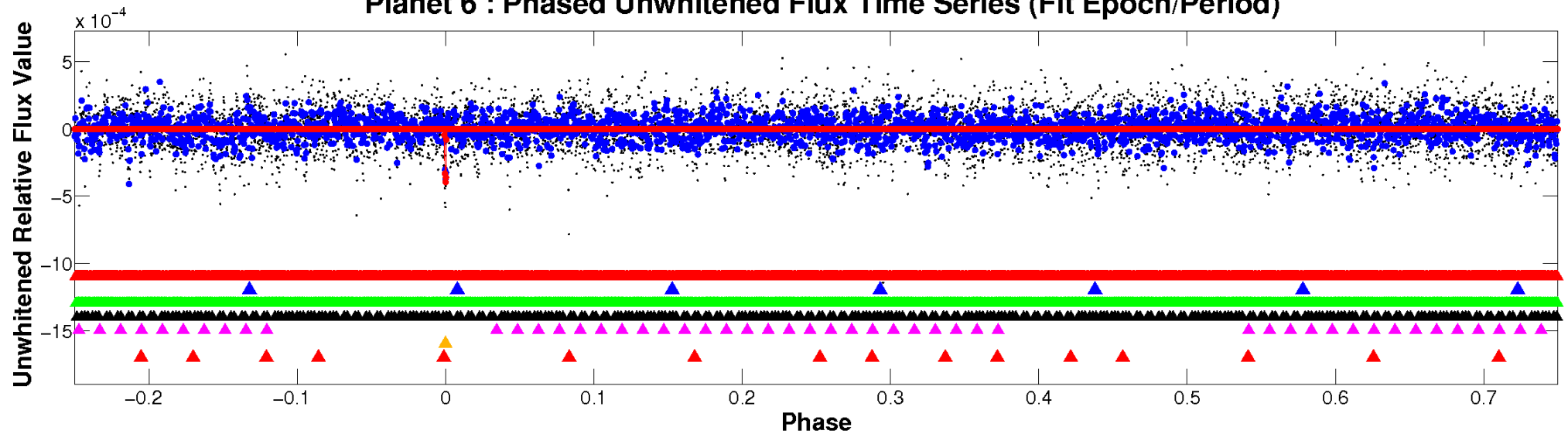
ALT Odd/Even

TCE 012407395-06

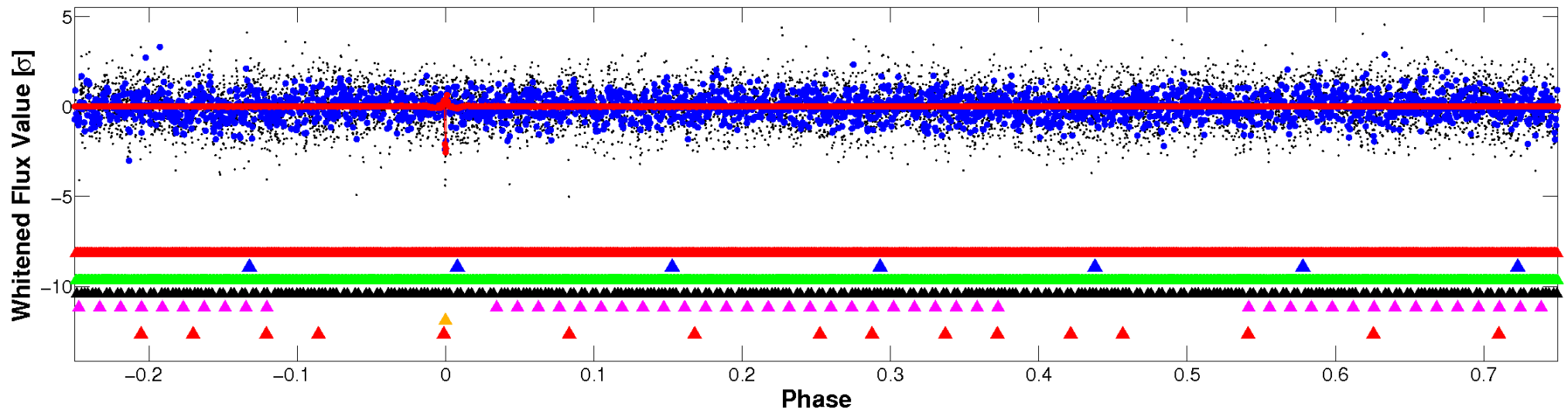


Non-Whitened Vs. Whitened Light Curve

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

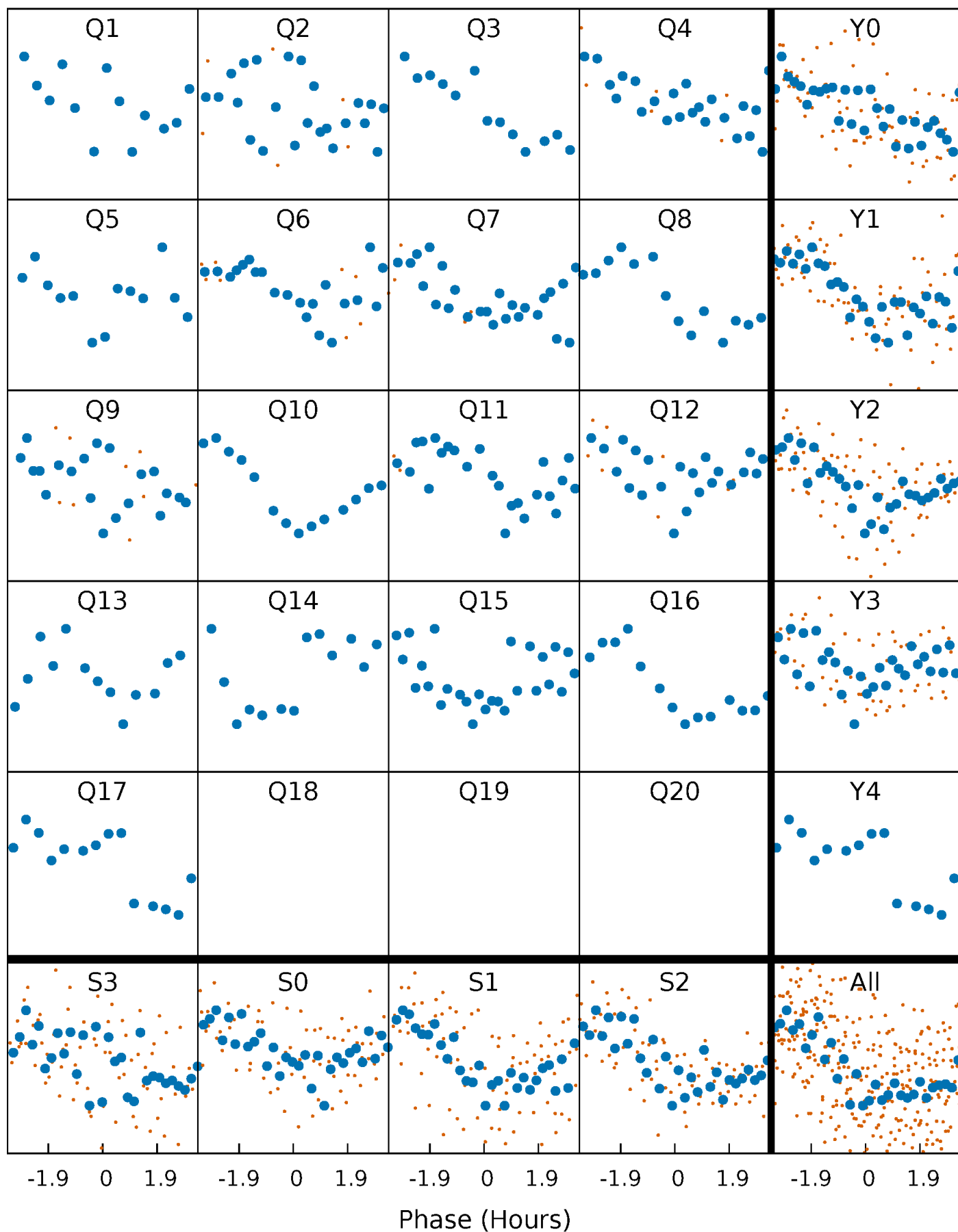


Planet 6 : Phased Whitened Flux Time Series (Fit Epoch/Period)



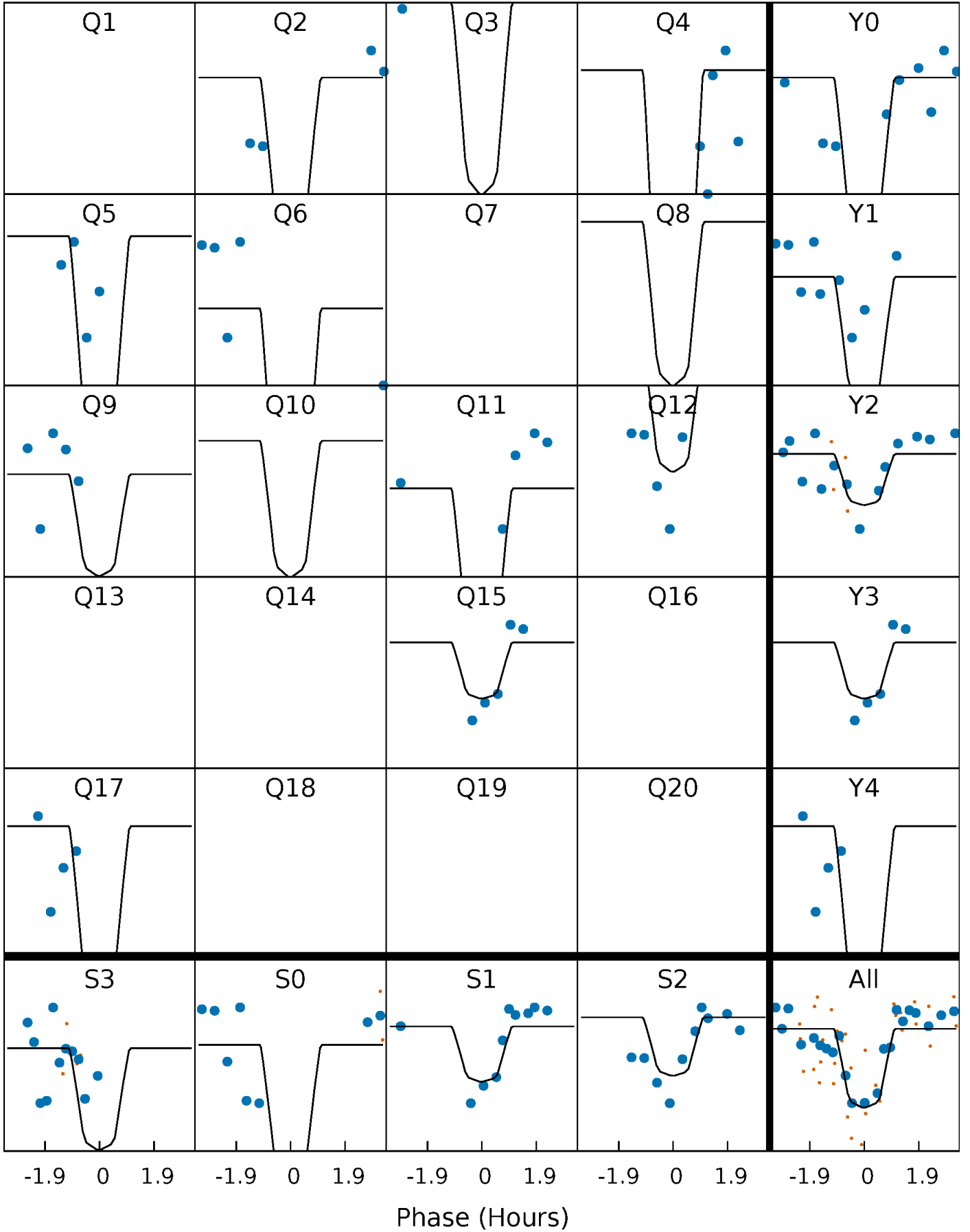
PDC Quarter-Phased Transit Curves

TCE 012407395-06 P= 57.629864 Days $T_0=139.865790$ (BKJD)



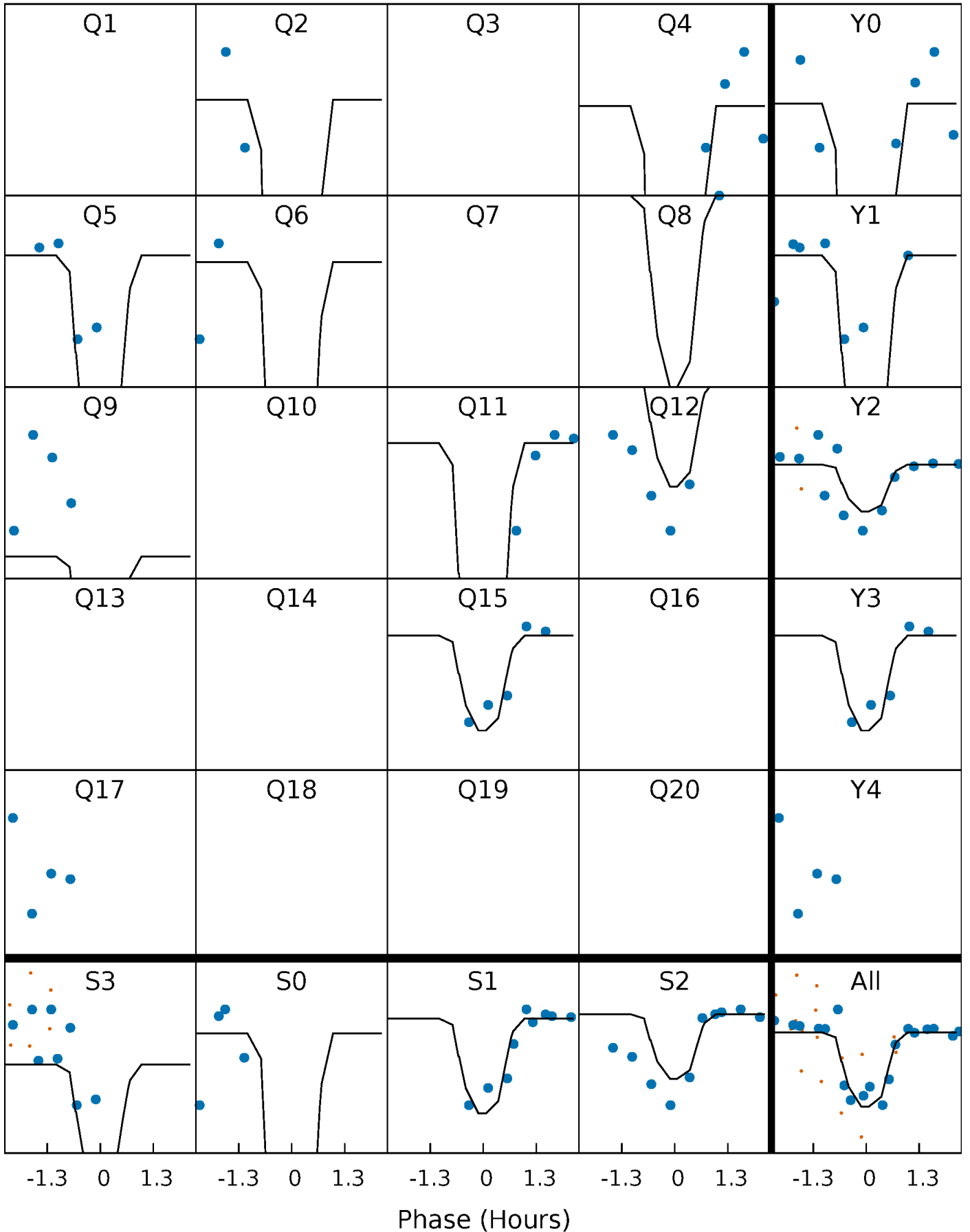
DV Quarter-Phased Transit Curves

TCE 012407395-06 P= 57.629864 Days $T_0=139.865790$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

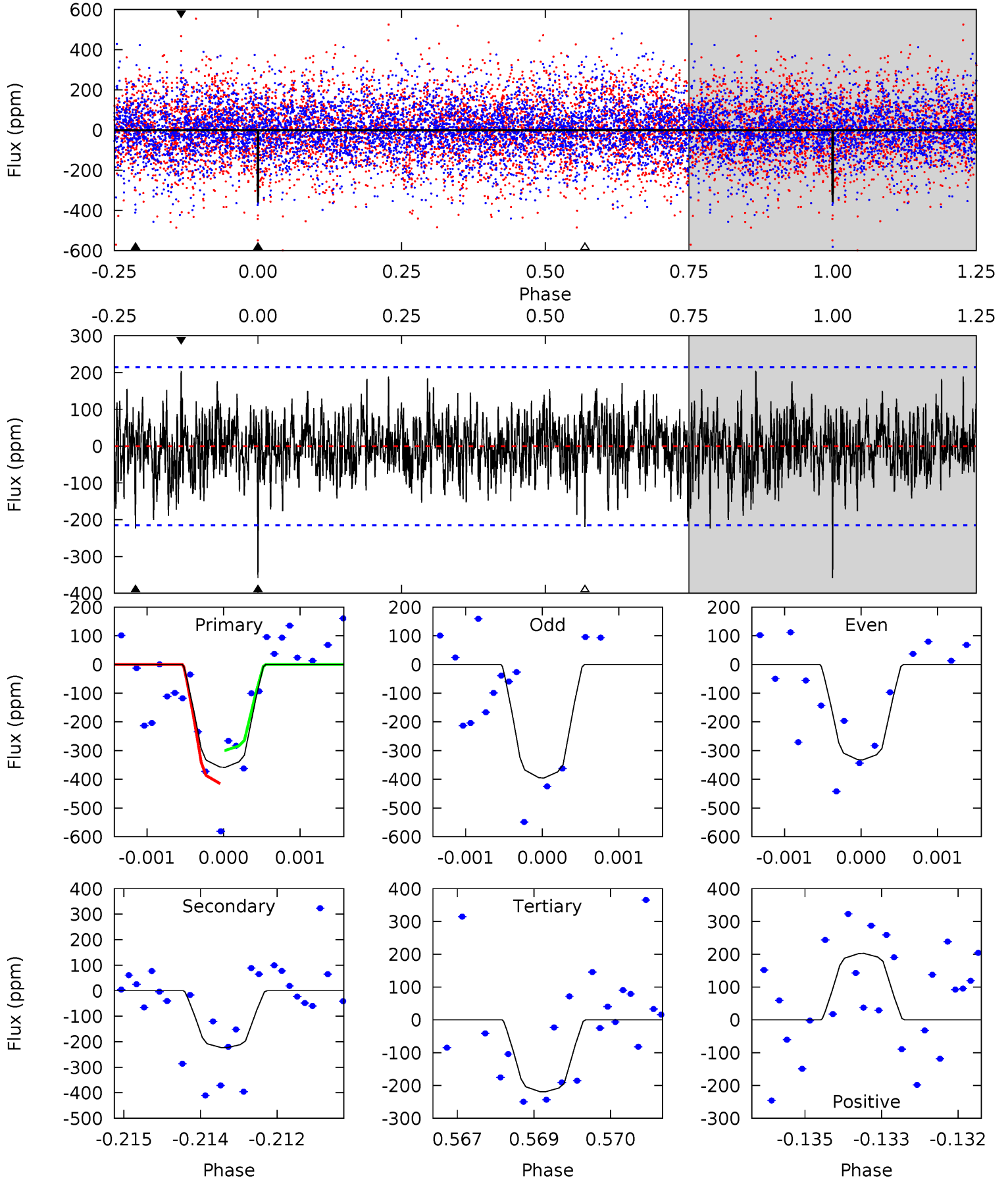
TCE 012407395-06 P= 57.629514 Days $T_0=139.873232$ (BKJD)



DV Model-Shift Uniqueness Test

012407395-06, P = 57.629864 Days, E = 82.235926 Days

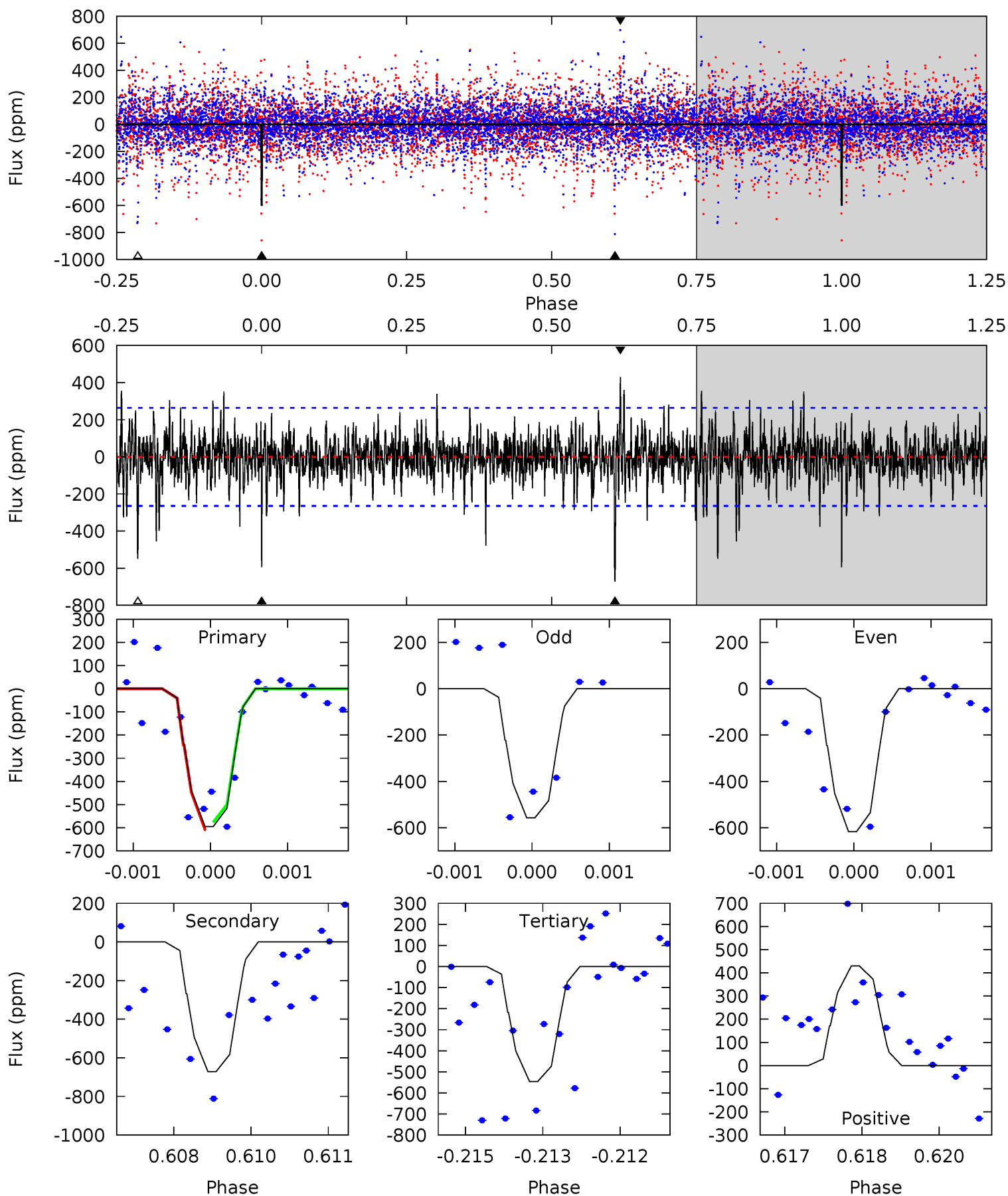
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.97	5.60	5.50	5.07	5.39	3.19	1.53	3.47	3.90	0.10	0.53	0.78	0.78	0.36	1.45



Alt Model-Shift Uniqueness Test

012407395-06, P = 57.629514 Days, E = 82.243718 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.2	13.8	11.2	8.79	5.41	3.23	1.96	1.00	3.39	2.58	4.97	0.55	0.95	0.39	0.33



Stellar Parameters For KIC 012407395

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6777^{+214}_{-285}	$4.179^{+0.204}_{-0.167}$	$-0.500^{+0.250}_{-0.300}$	$1.427^{+0.404}_{-0.330}$	$1.121^{+0.178}_{-0.146}$	$0.543^{+0.603}_{-0.248}$
	+3%/-4%	+5%/-4%	+50%/-60%	+28%/-23%	+16%/-13%	+111%/-46%
Source	PHO54	PHO54	PHO54	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

Secondary Eclipse Parameters for KIC 012407395-06 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-224 ± 40	$4.75^{+4.88}_{-3.17}$	900^{+71}_{-70}	4748^{+3579}_{-1052}	483^{+3785}_{-362}
Alt.	-672 ± 49	$5.68^{+4.81}_{-3.61}$	897^{+71}_{-67}	5636^{+4208}_{-1218}	1104^{+6527}_{-784}

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

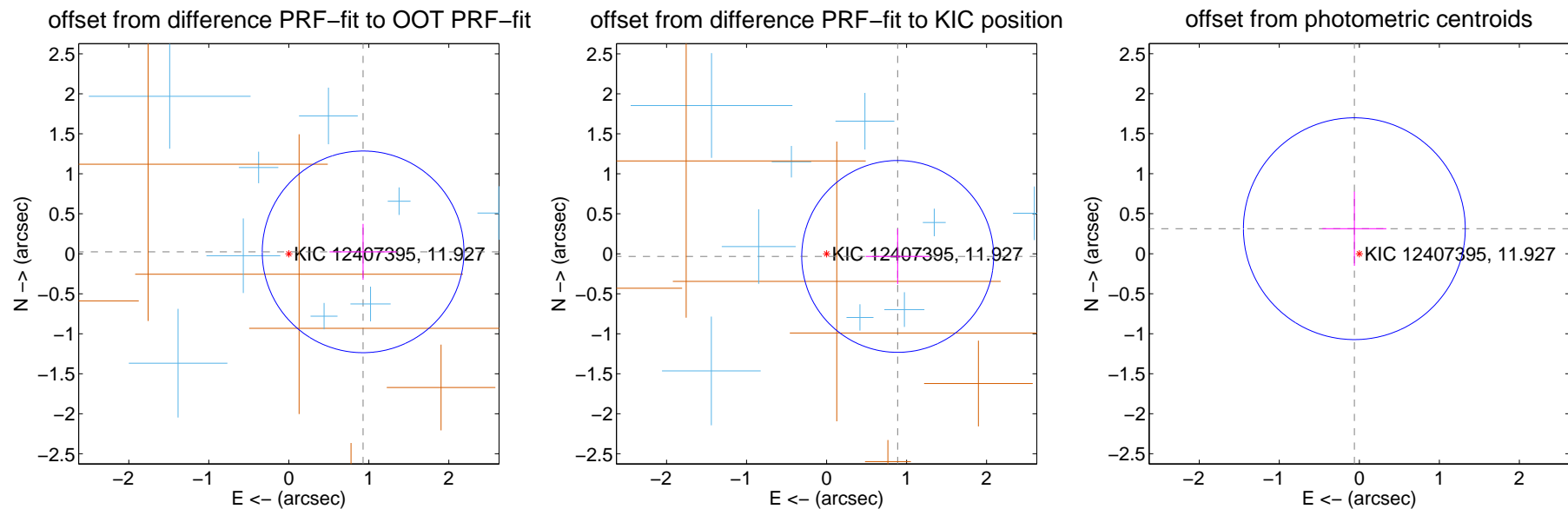
DV Centroid Data

Supplemental centroid analysis for 012407395-06. **Kepler magnitude: 11.93.** Transit SNR 7.09

There are 9 quarters with good PRF difference image offsets

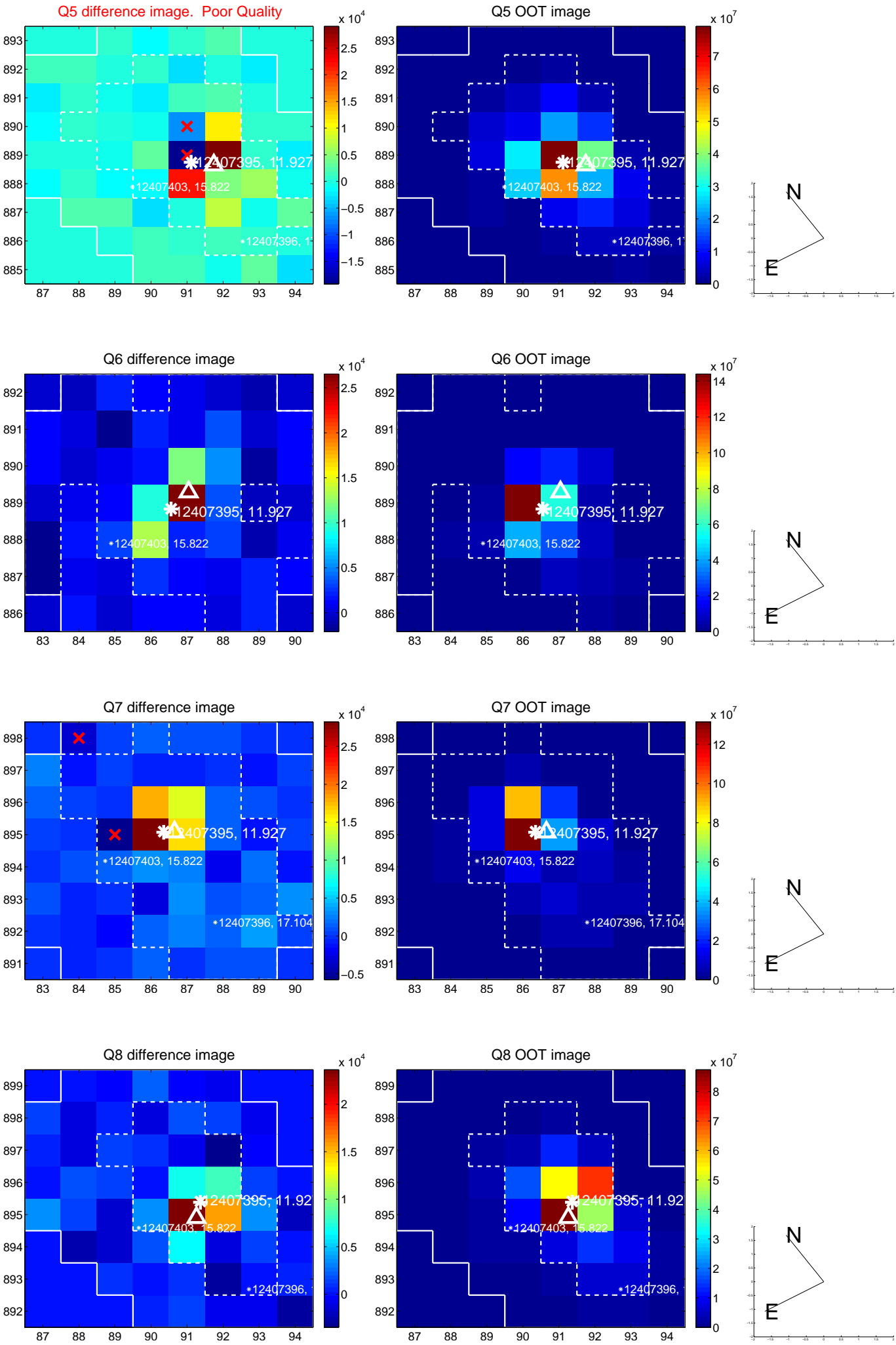
The direct PRF centroid is offset from the target star catalog position by about 0.04 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.929 ± 0.420	2.21	-0.929 ± 0.420	0.024 ± 0.349
PRF-fit source offset from KIC position	0.889 ± 0.400	2.22	-0.889 ± 0.399	-0.033 ± 0.345
photometric centroid source offset	0.32 ± 0.46	0.69	0.06 ± 0.40	0.31 ± 0.46

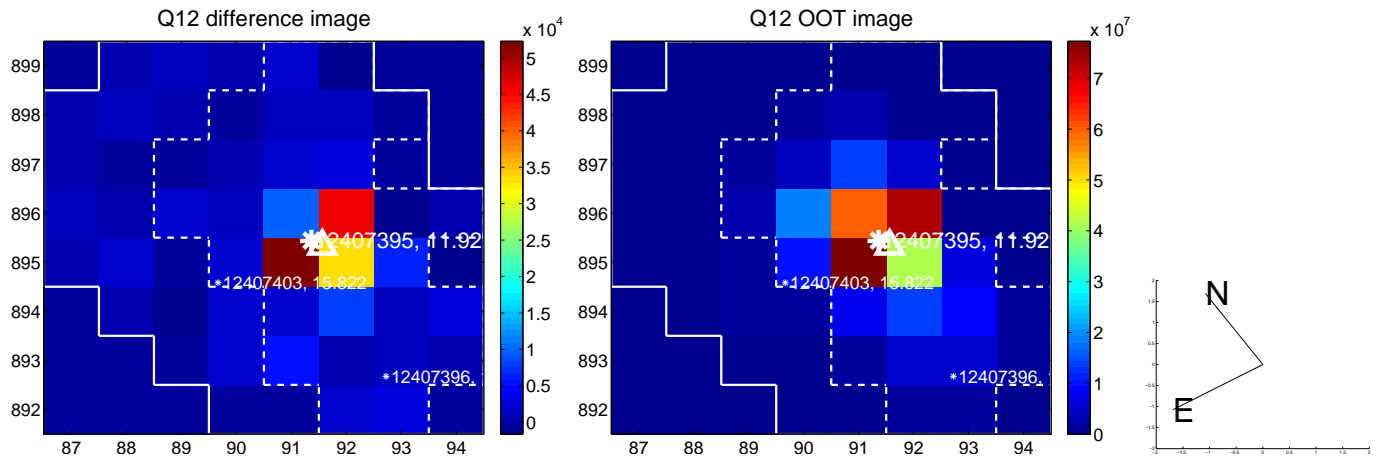
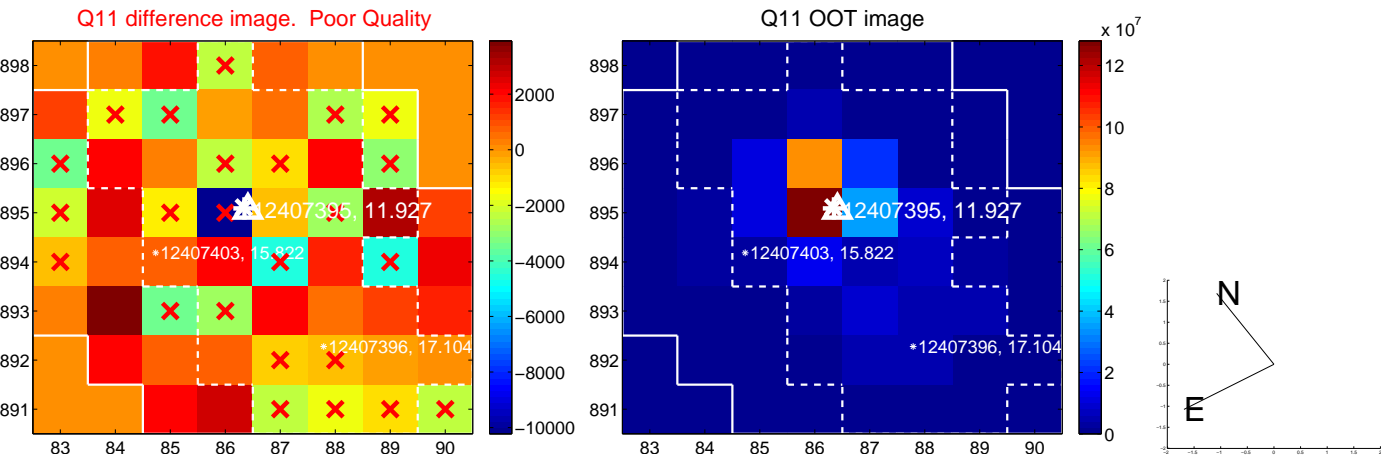
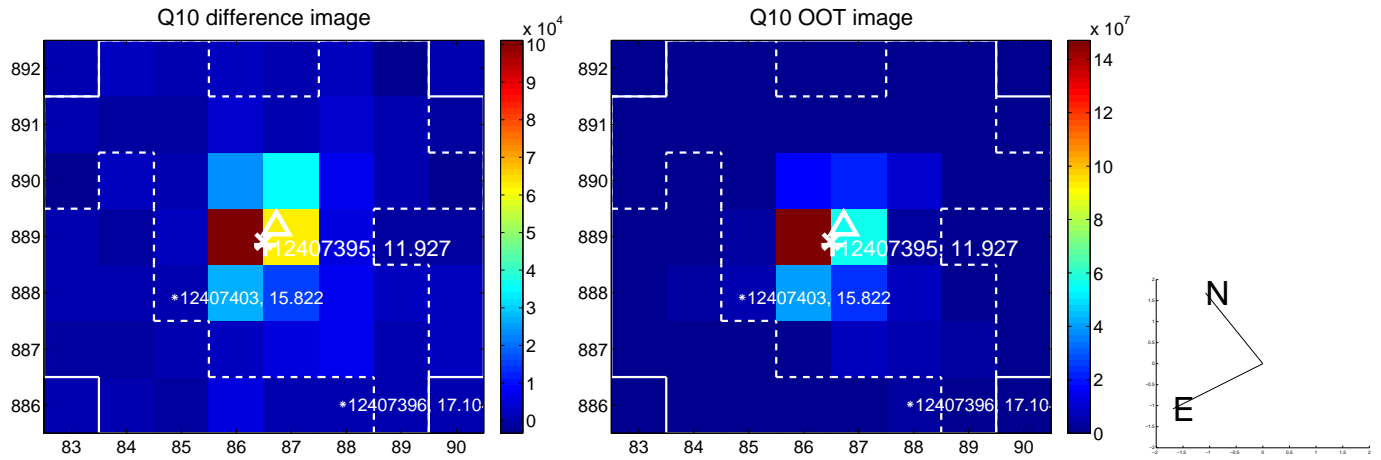
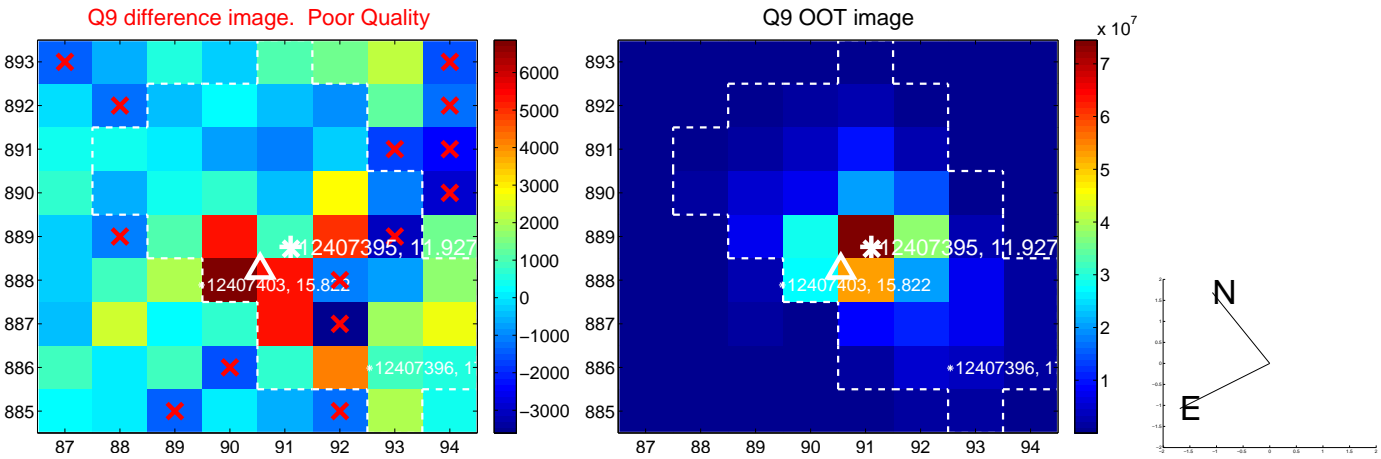


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

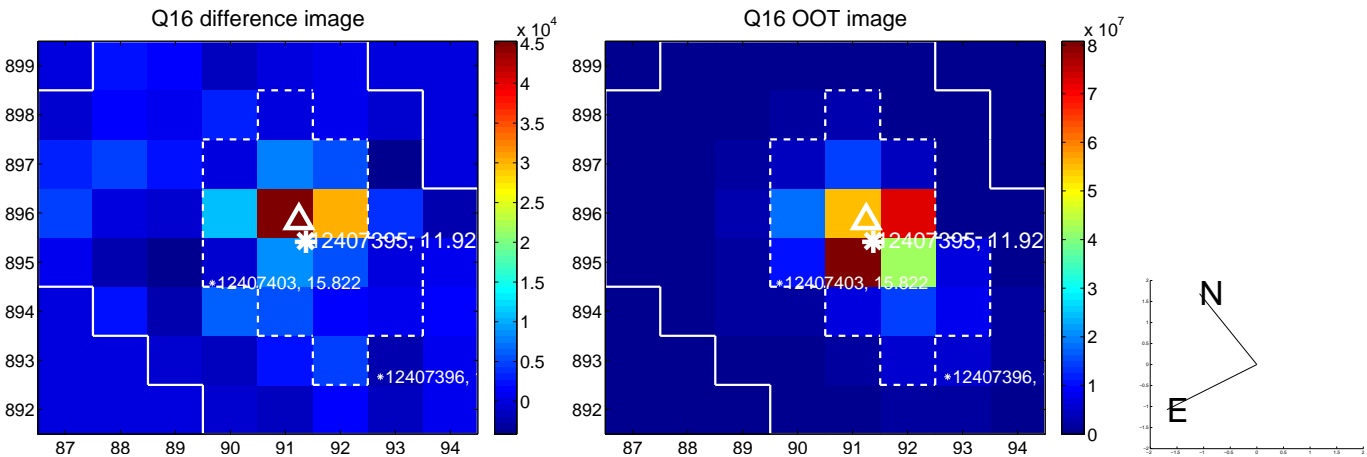
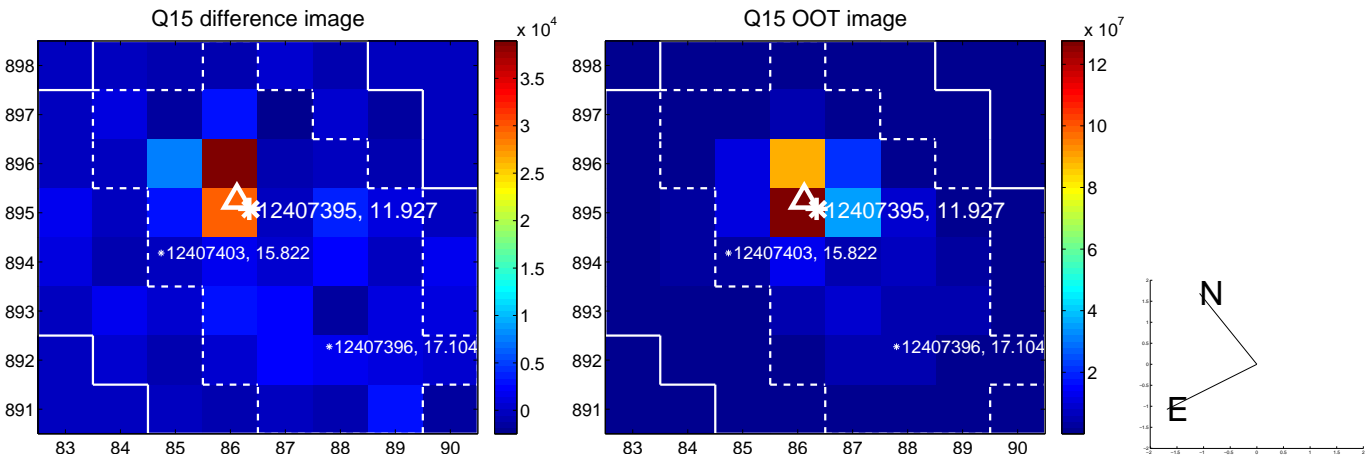
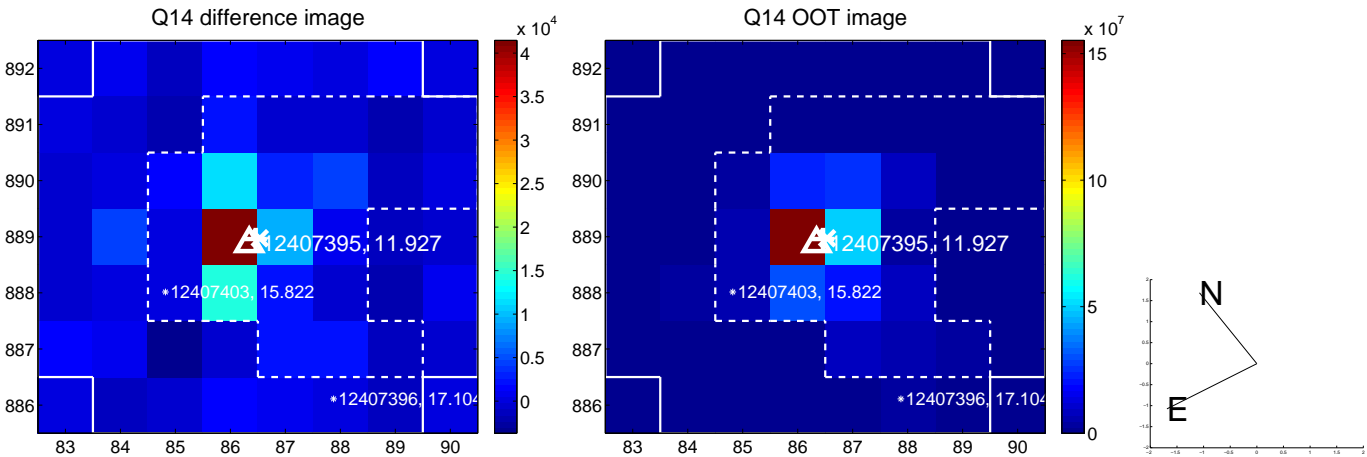
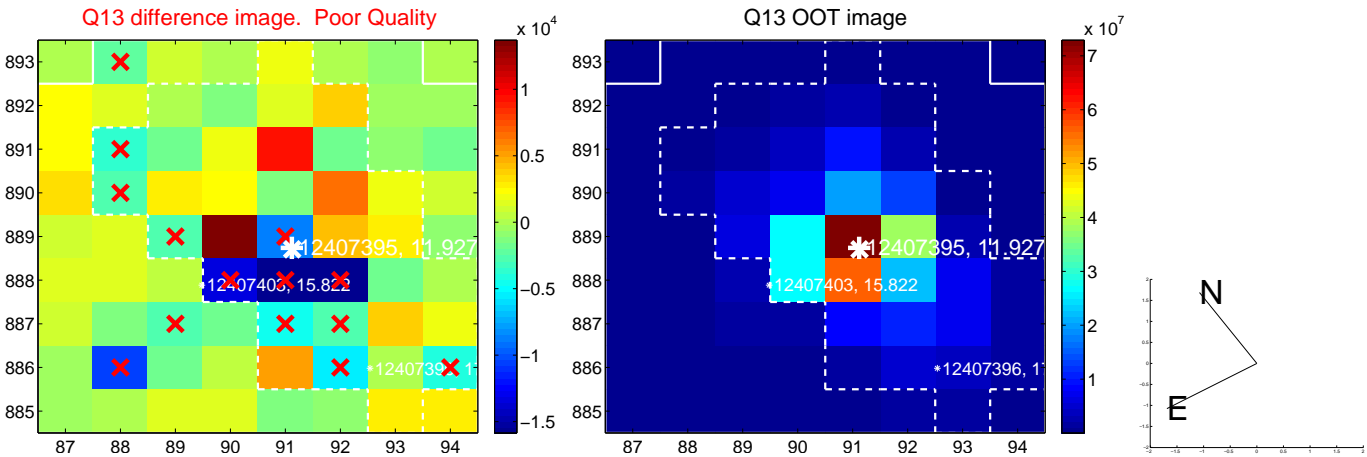
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



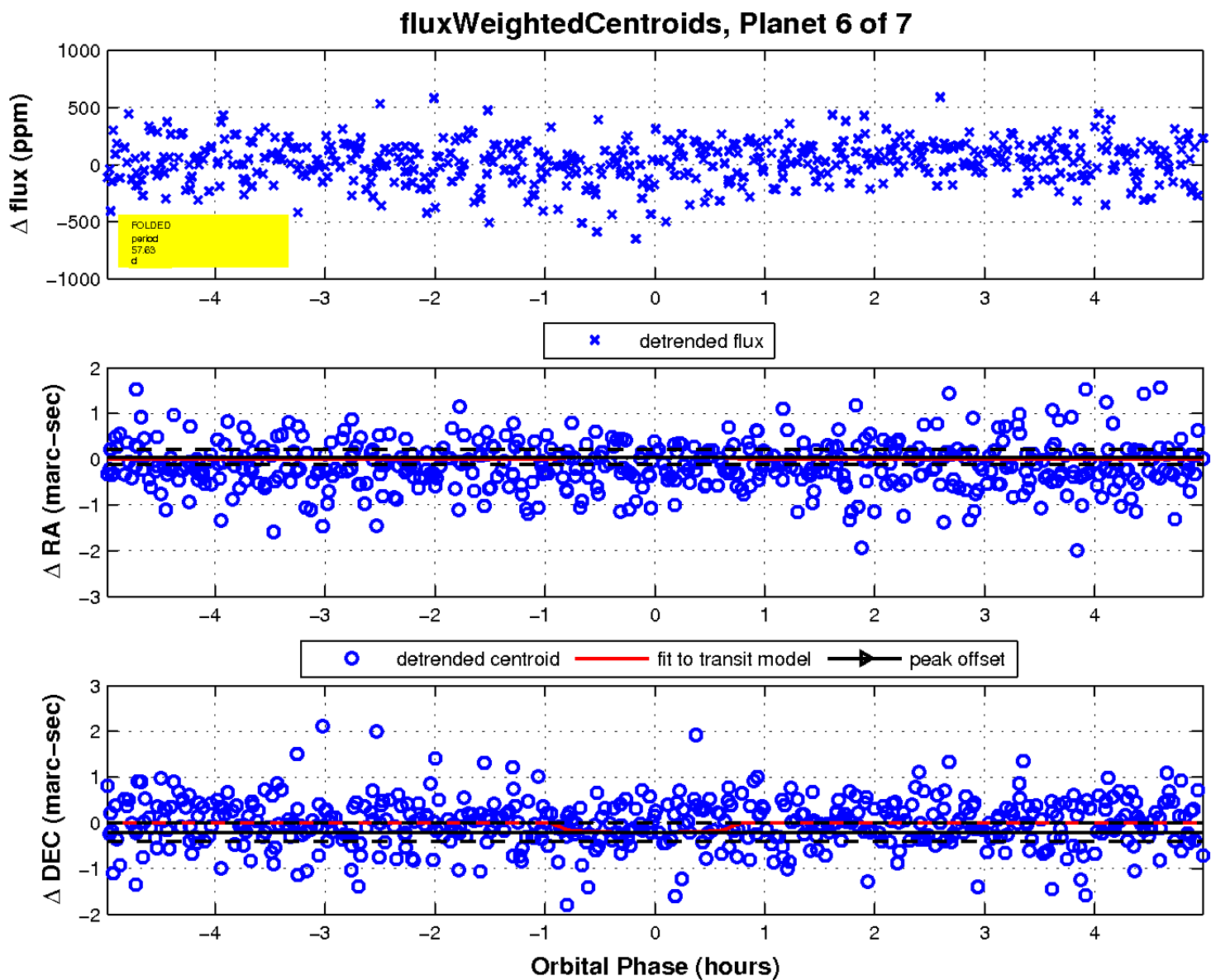
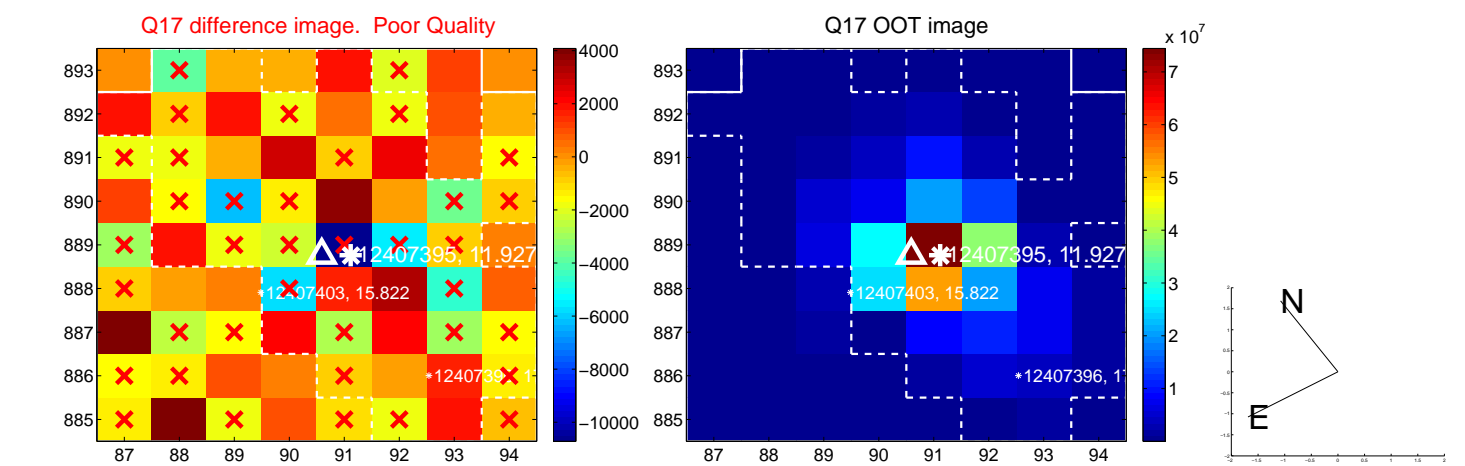
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

