

KIC 010920281

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})
010920281-01	OBS	No	445.984780	148.160656	2375.5	3.871	12.4	7.3	0.45	3704	2.18	0.04
010920281-02	OBS	No	386.902851	371.459924	2082.0	4.187	11.1	8.3	0.45	3704	2.08	0.05
010920281-03	OBS	No	339.779569	446.564709	2313.1	3.522	10.5	7.0	0.45	3704	2.15	0.06
010920281-04	OBS	8037.01	3.650383	133.632443	213.6	1.267	7.4	7.0	0.45	3704	0.79	26.50

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010920281-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
010920281-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
010920281-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—CENT_FEW_DIFFS
010920281-04	OBS	PC	1.00	0	0	0	0	NO_COMMENT

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

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

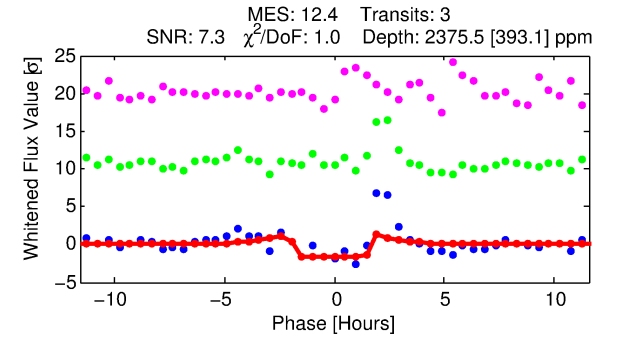
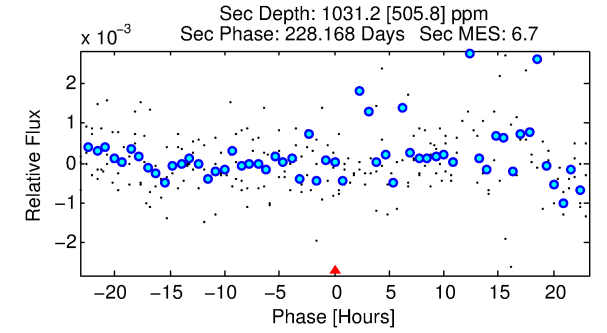
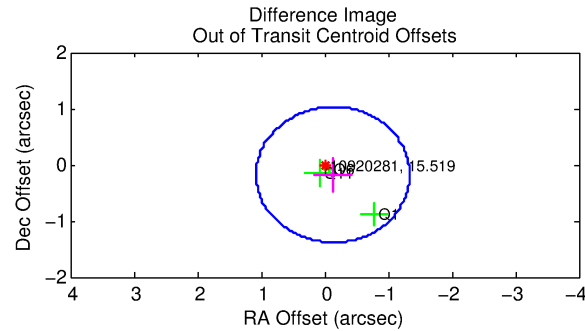
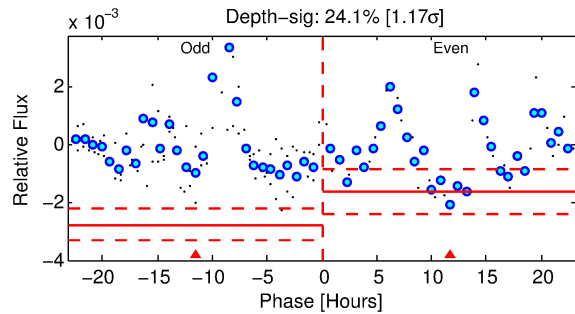
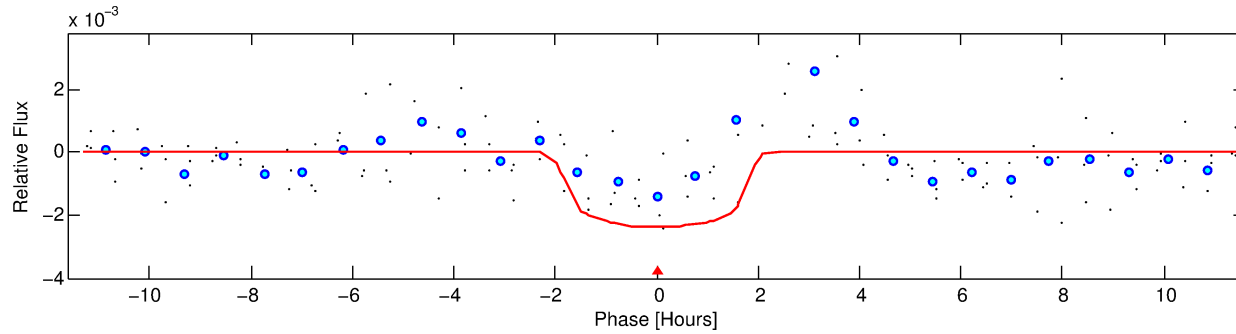
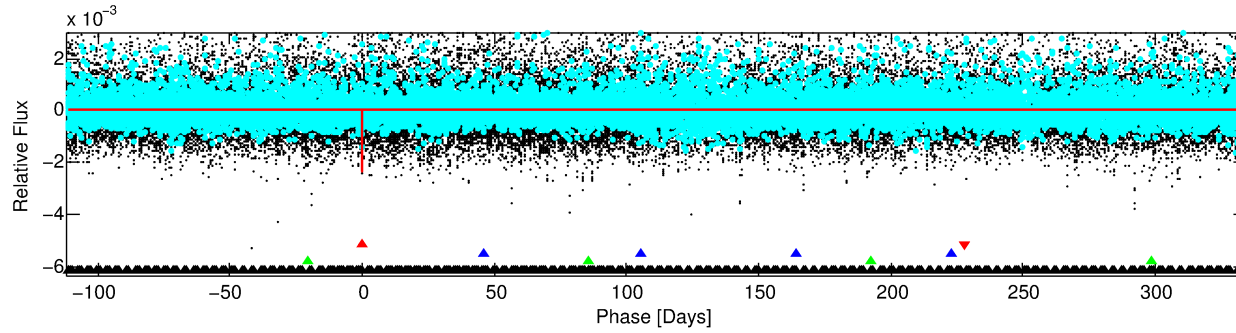
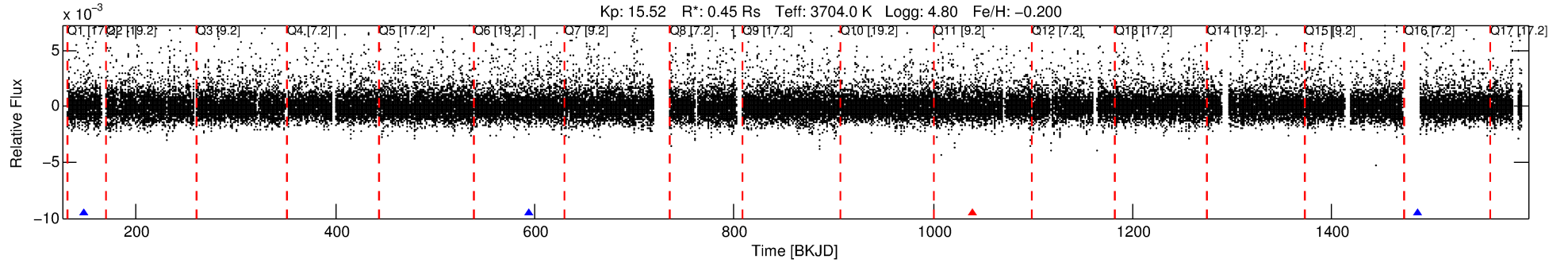
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 010920281-01

No Significant Match Found

DV One-Page Summary

KIC: 10920281 Candidate: 1 of 4 Period: 445.985 d



DV Fit Results:

Period = 445.98478 [0.00551] d
Epoch = 148.1607 [0.0063] BKJD
Rp/R* = 0.0444 [0.0312]
a/R* = 915.93 [2921.47]
b = 0.09 [35.81]
Seff = 0.04 [0.01]
Teq = 117 [4] K
Rp = 2.18 [1.55] Re
a = 0.8839 [0.0676] AU
Ag = 93182.95 [138977.57] [0.67 σ]
Teffp = 3150 [1174] K [2.58 σ]

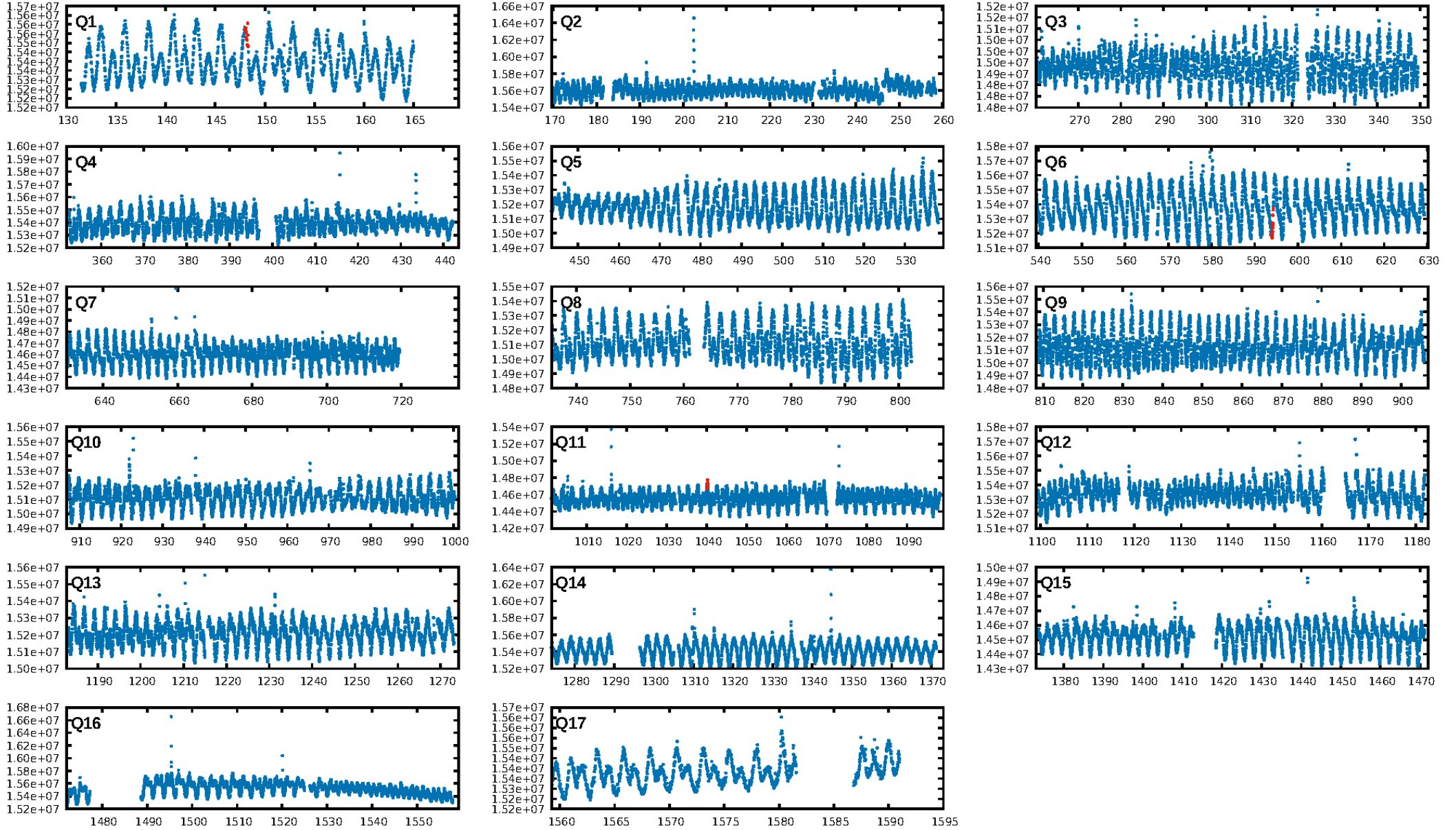
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [248.67 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 34.2%
ModelChiSquareGof-sig: 98.7%
Bootstrap-pfa: N/A
RollingBand-fgt: 0.50 [1/2]
GhostDiagnostic-chr: 2.573
Centroid-sig: 21.7%
Centroid-so: 0.774 arcsec [0.93 σ]
OotOffset-rm: 0.221 arcsec [0.55 σ]
OotOffset-st: 1/1/0/1 [3]
KicOffset-rm: 0.268 arcsec [1.64 σ]
KicOffset-st: 1/1/0/1 [3]
DiffImageQuality-fgm: 0.33 [1/3]
DiffImageOverlap-fno: 0.67 [2/3]

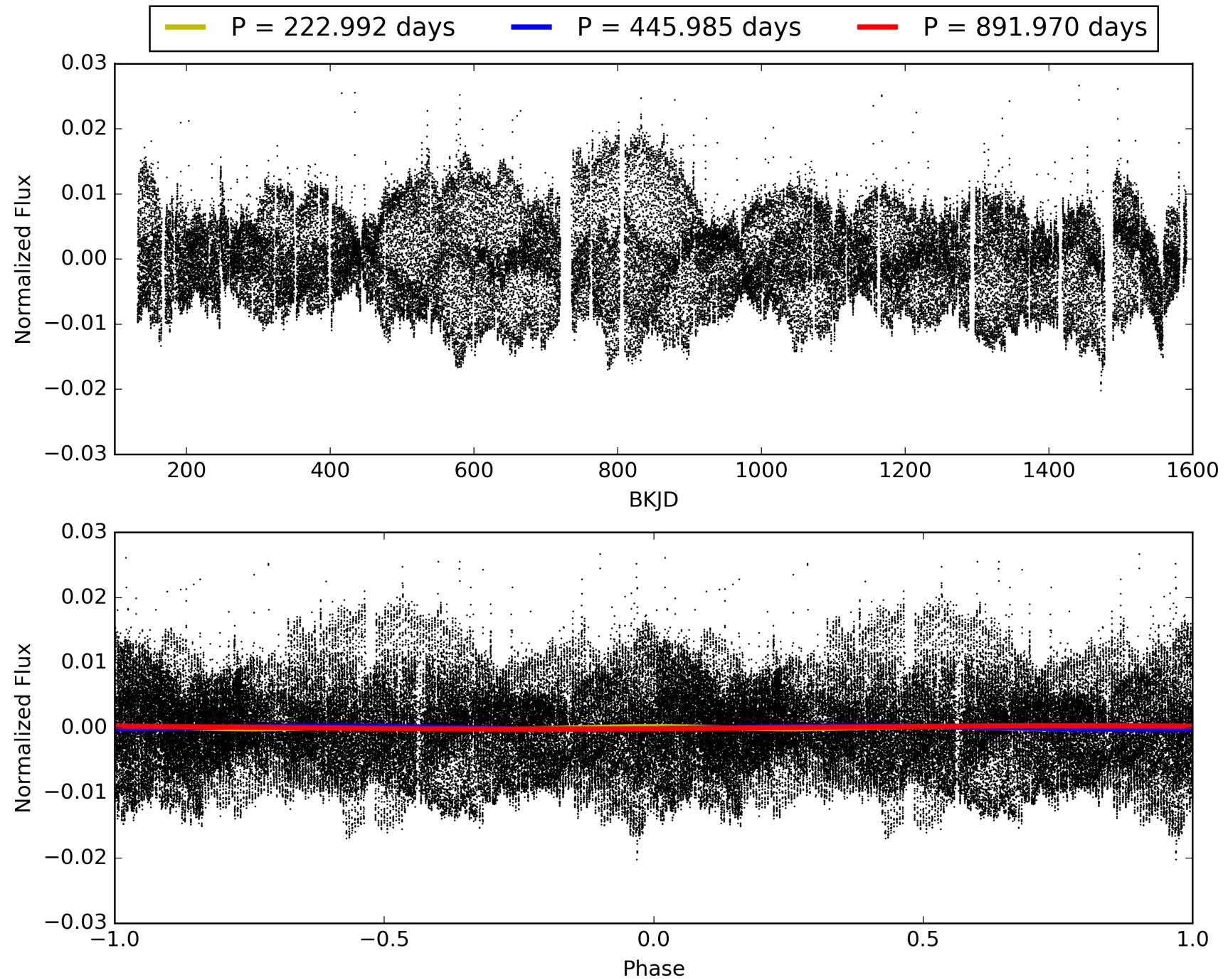
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 06:24:17 Z

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

TCE 010920281-01, PDC Light Curves

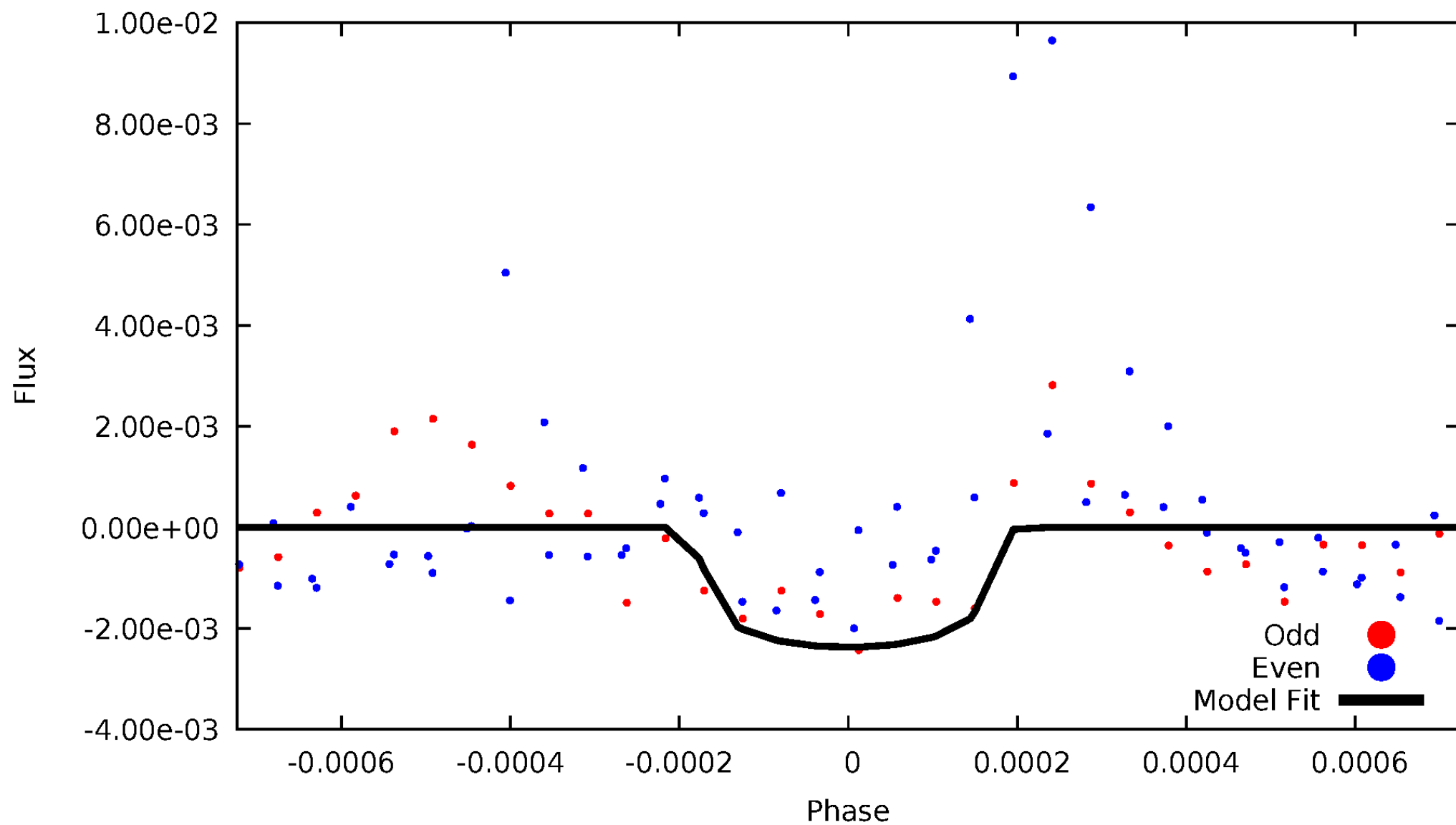


TCE 010920281-01



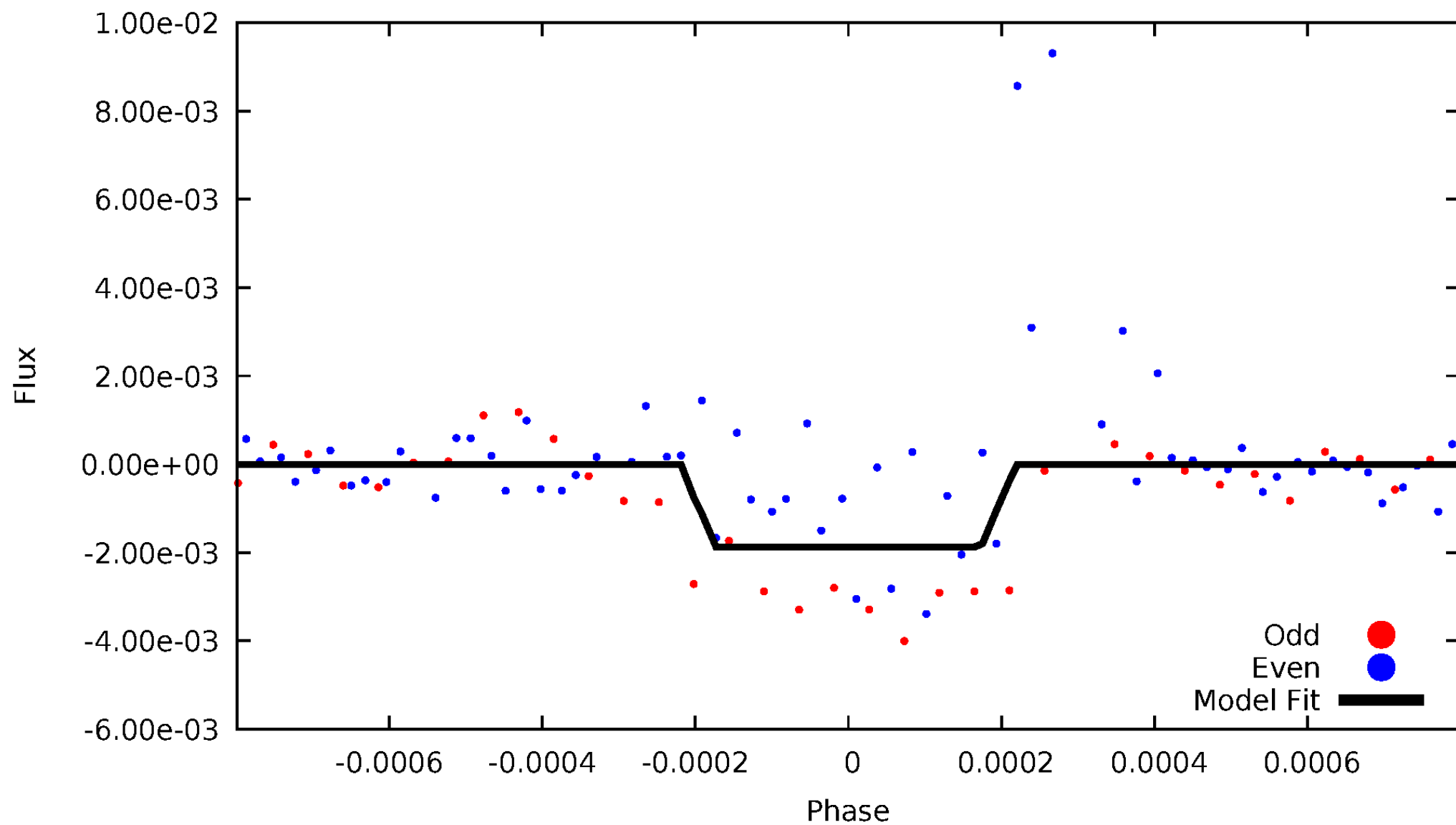
DV Odd/Even

TCE 010920281-01

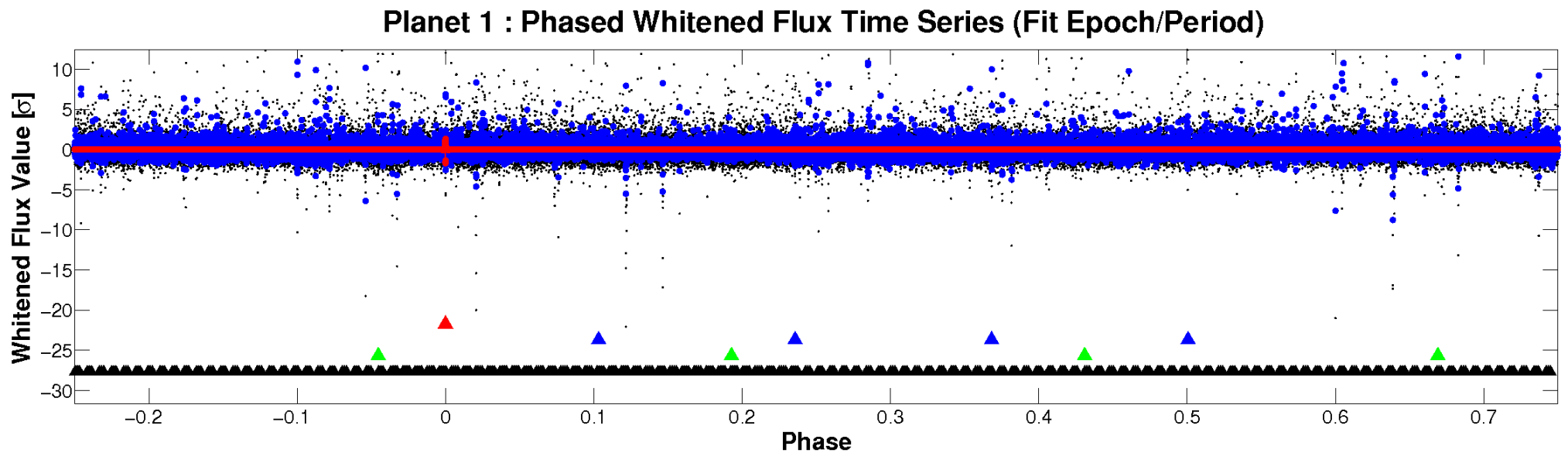
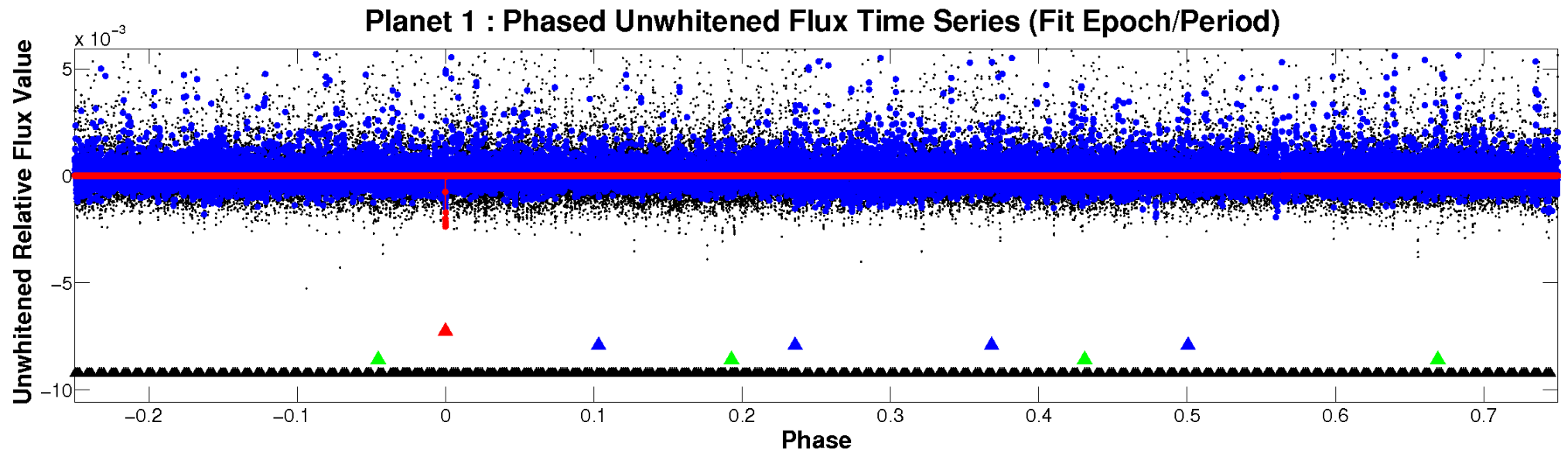


ALT Odd/Even

TCE 010920281-01

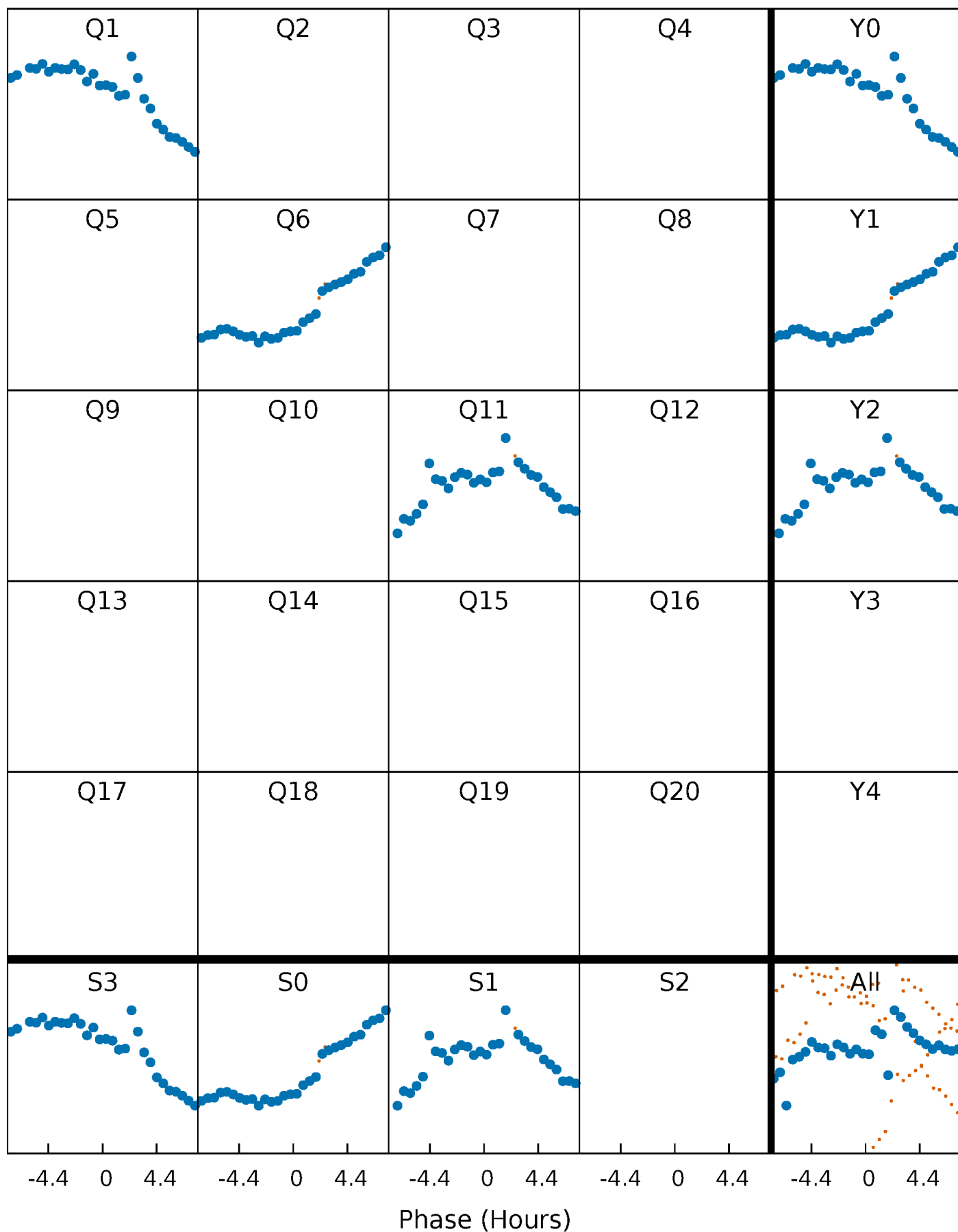


Non-Whitened Vs. Whitened Light Curve



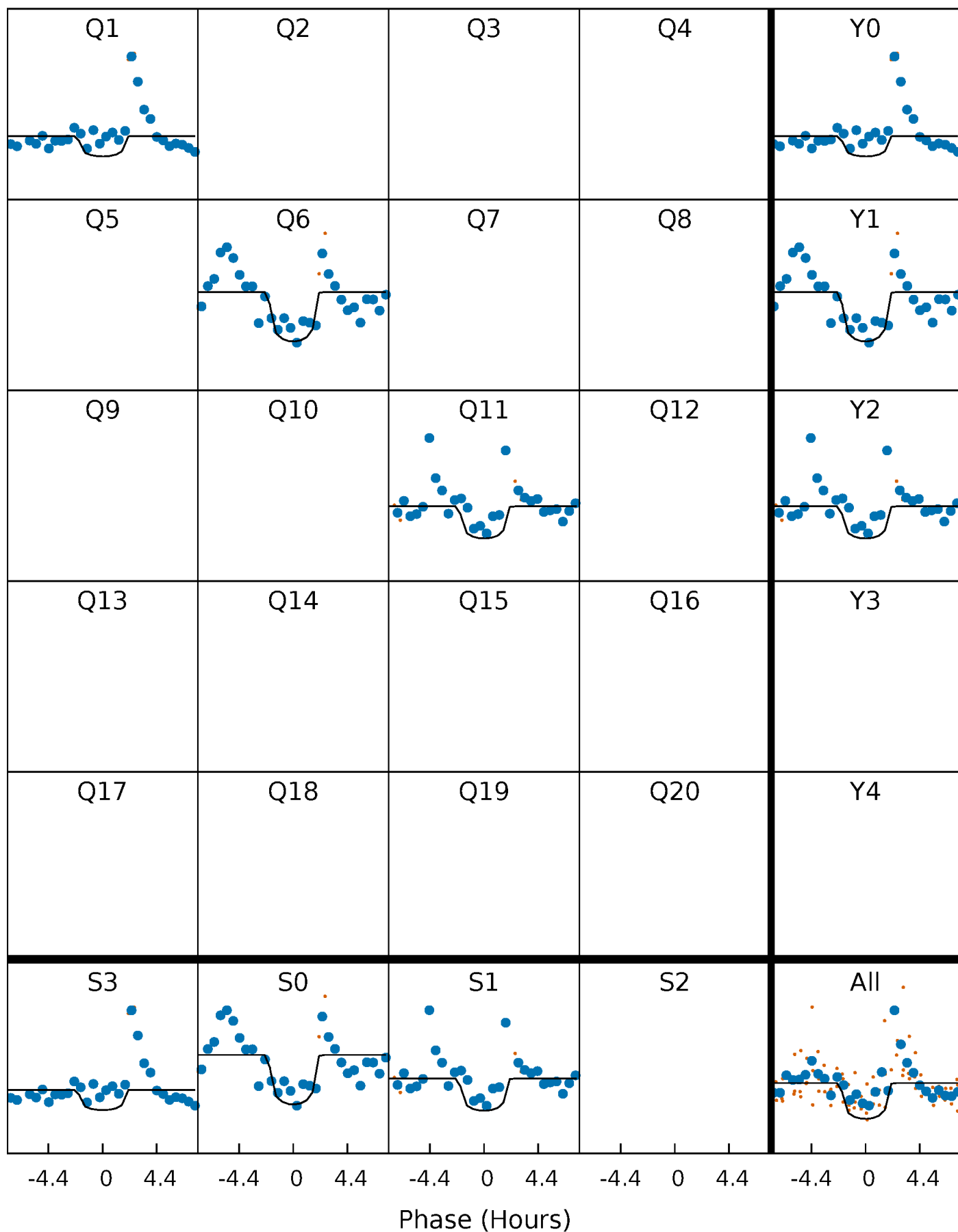
PDC Quarter-Phased Transit Curves

TCE 010920281-01 P=445.984780 Days $T_0=148.160656$ (BKJD)



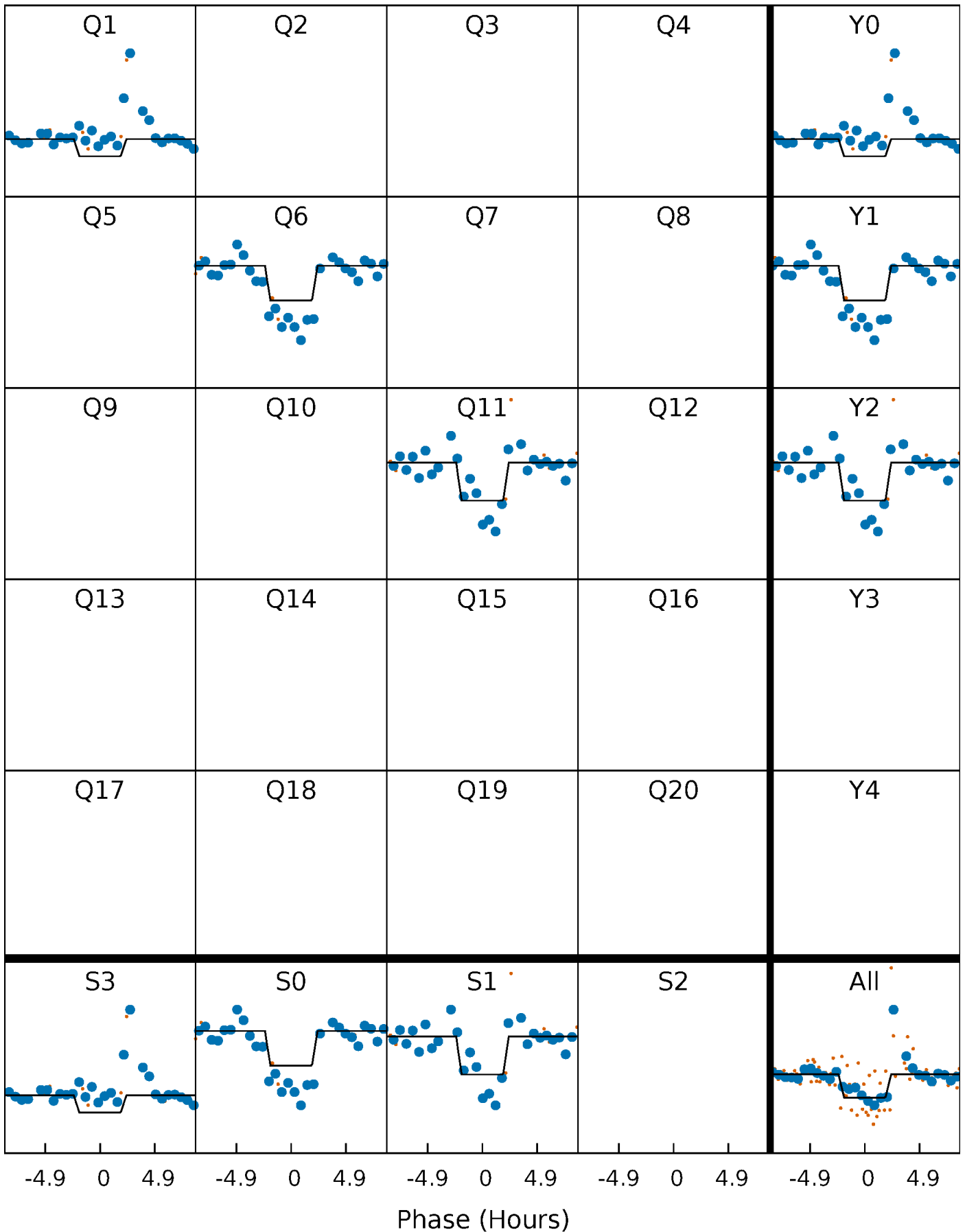
DV Quarter-Phased Transit Curves

TCE 010920281-01 P=445.984780 Days $T_0=148.160656$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

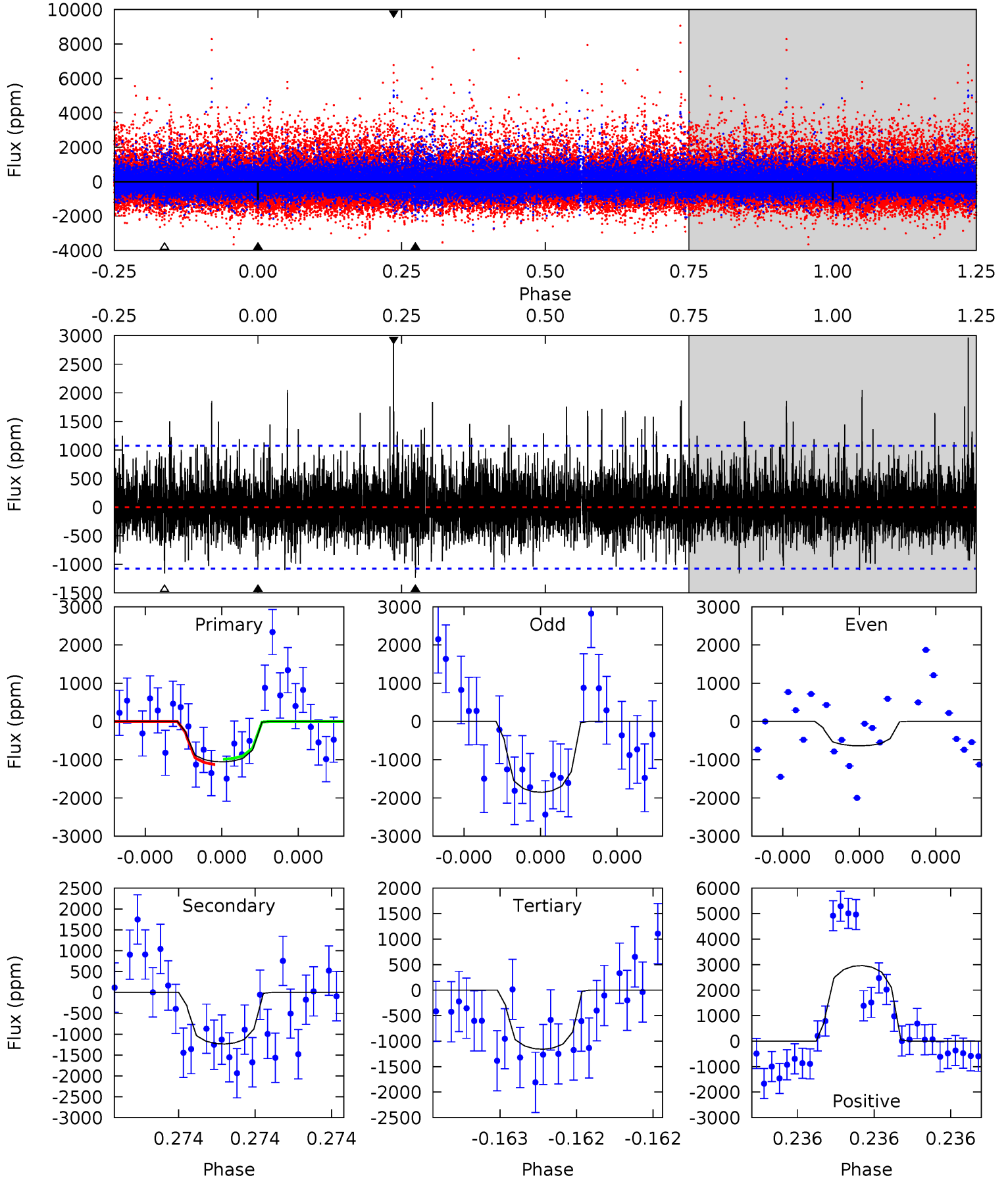
TCE 010920281-01 P=445.969258 Days $T_0=148.149168$ (BKJD)



DV Model-Shift Uniqueness Test

010920281-01, P = 445.984780 Days, E = 148.160656 Days

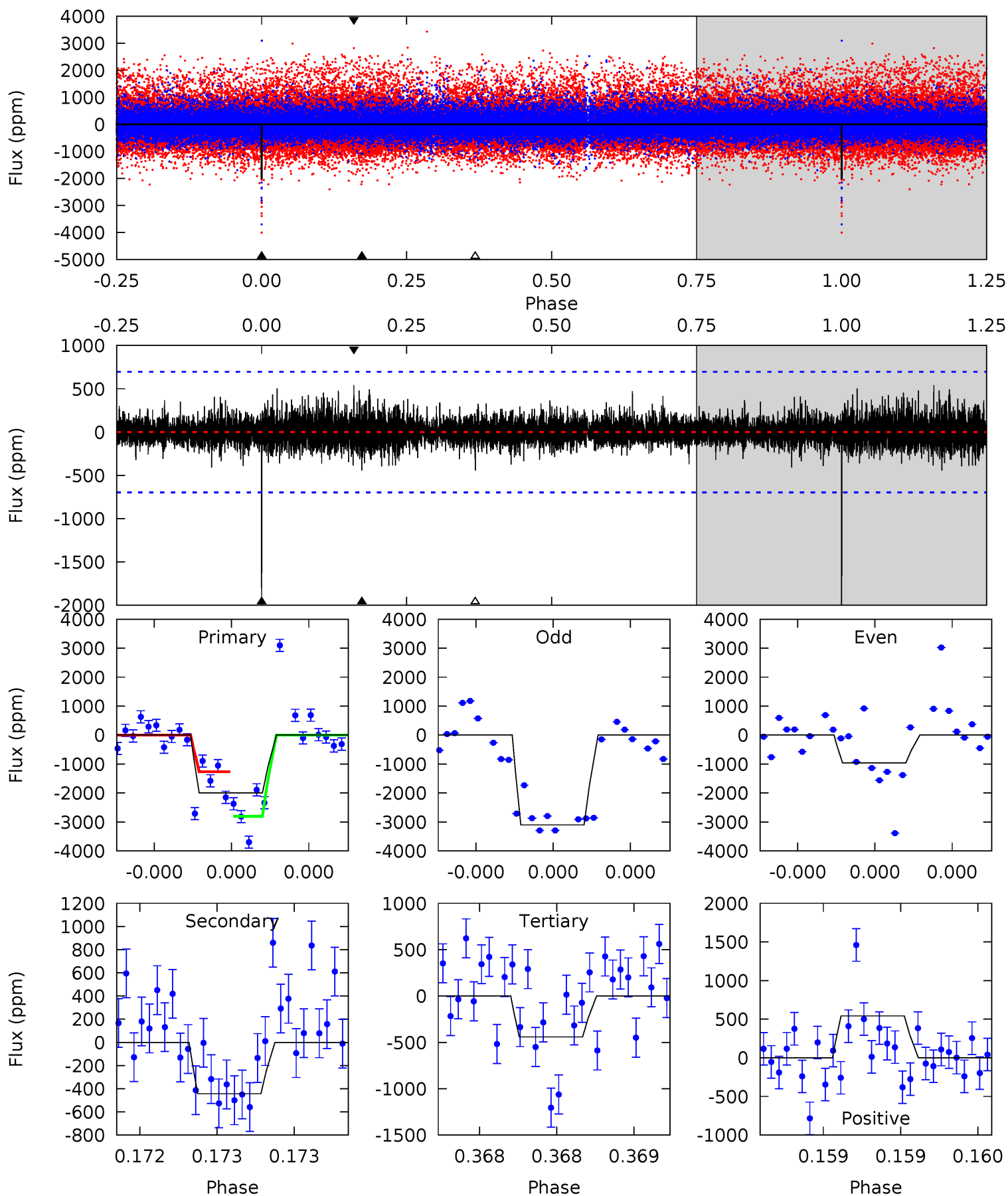
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.52	6.46	6.05	15.5	5.62	3.56	1.86	-0.54	-9.97	0.40	-9.03	2.67	1.64	0.71	0.37



Alt Model-Shift Uniqueness Test

010920281-01, P = 445.969258 Days, E = 148.149168 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
16.1	3.57	3.56	4.36	5.61	3.53	0.82	12.5	11.7	0.01	-0.79	8.44	0.83	0.21	6.28



Stellar Parameters For KIC 010920281

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	3704^{+66}_{-81}	$4.797^{+0.052}_{-0.032}$	$-0.200^{+0.100}_{-0.100}$	$0.450^{+0.032}_{-0.044}$	$0.463^{+0.034}_{-0.042}$	$7.166^{+1.779}_{-0.985}$
	+2%/-2%	+1%/-1%	+50%/-50%	+7%/-10%	+7%/-9%	+25%/-14%
Source	PHO2	PHO2	PHO2	DSEP		

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

Secondary Eclipse Parameters for KIC 010920281-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-1235 ± 191	$2.36^{+1.41}_{-1.37}$	162^{+4}_{-5}	3353^{+1082}_{-457}	$98915^{+395787}_{-63570}$
Alt.	-443 ± 124	$2.32^{+1.35}_{-1.38}$	162^{+4}_{-5}	2896^{+885}_{-363}	$35150^{+184779}_{-22651}$

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

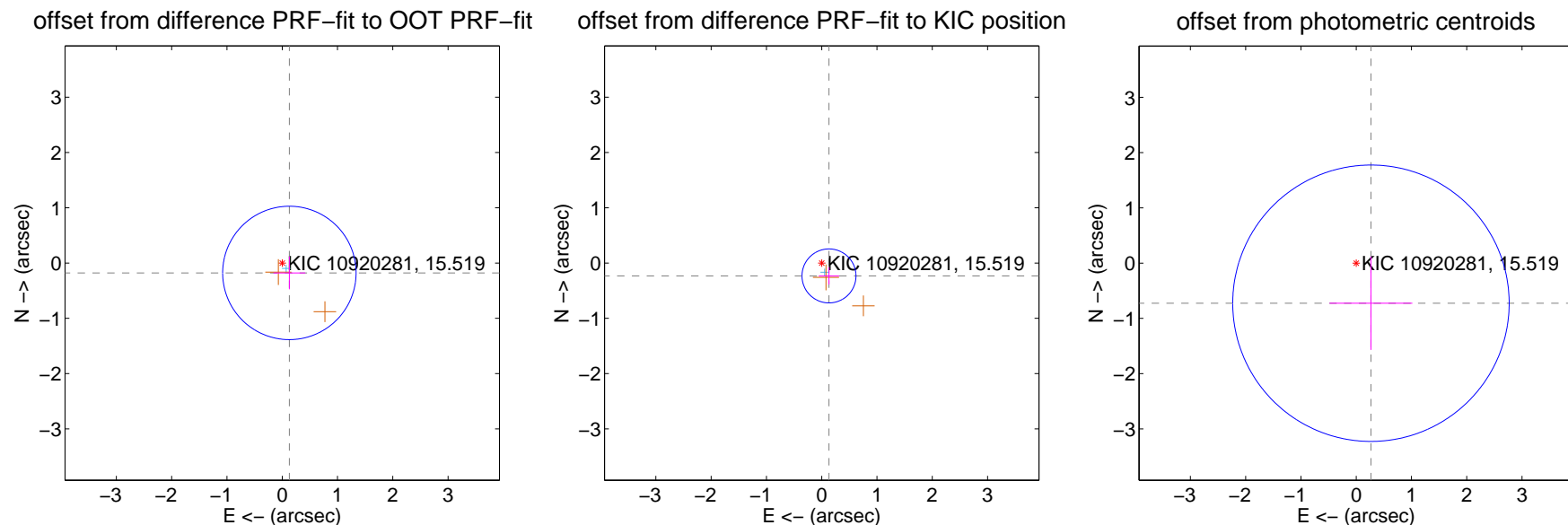
DV Centroid Data

Supplemental centroid analysis for 010920281-01. Kepler magnitude: 15.52. Transit SNR 7.35

There are 1 quarters with good PRF difference image offsets

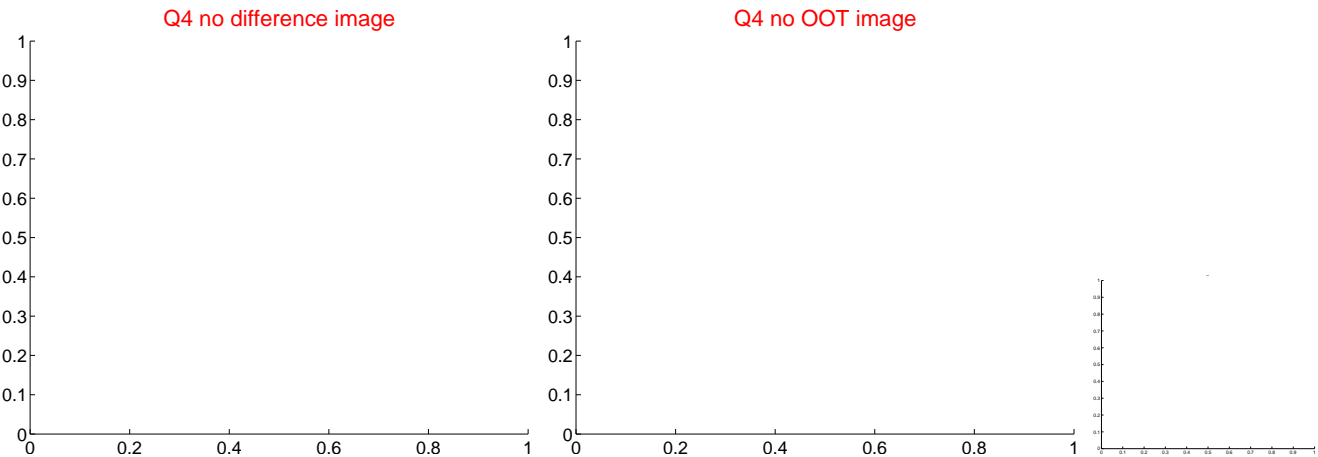
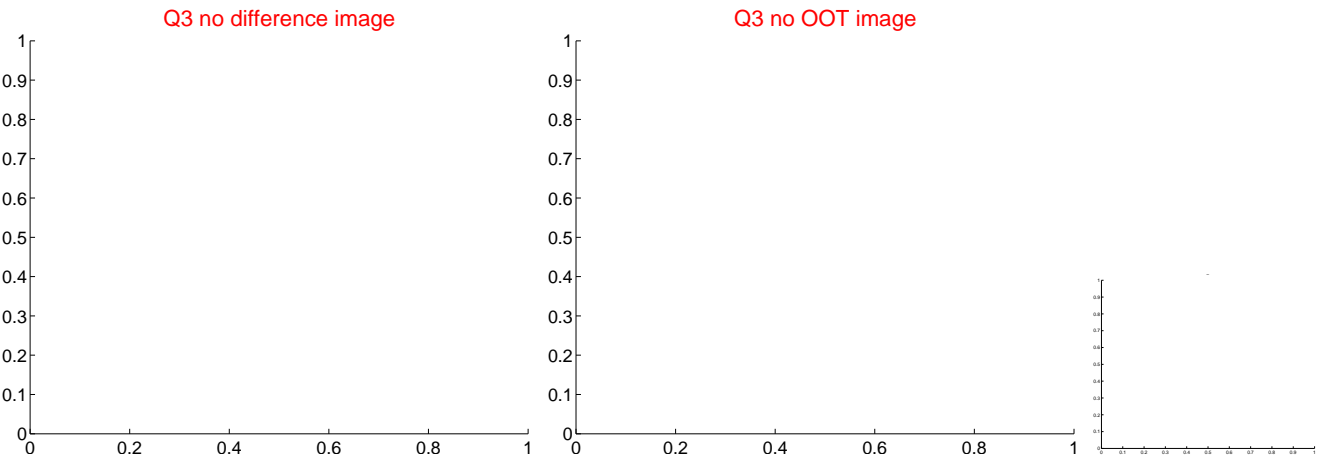
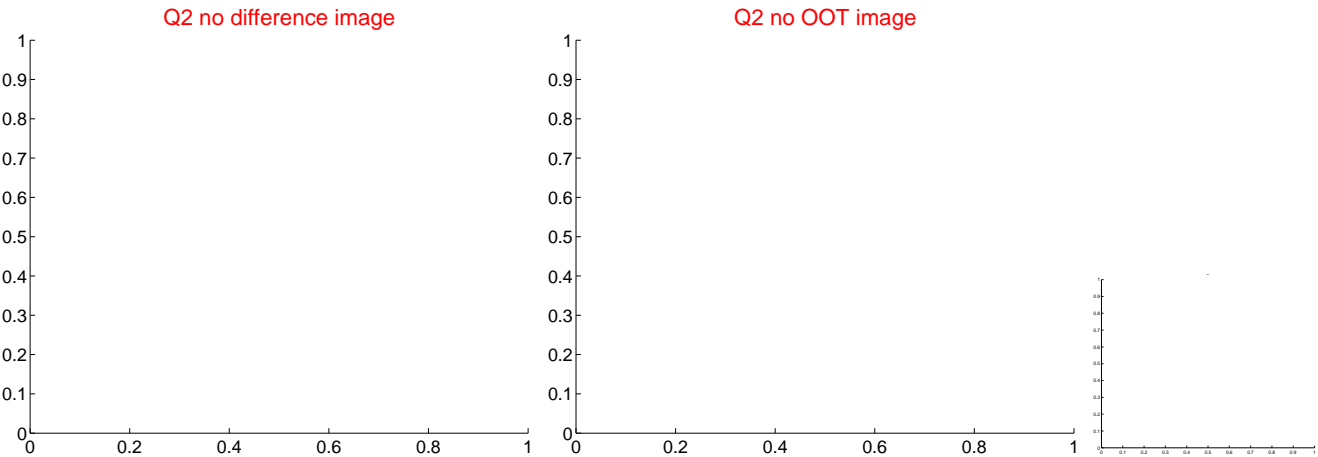
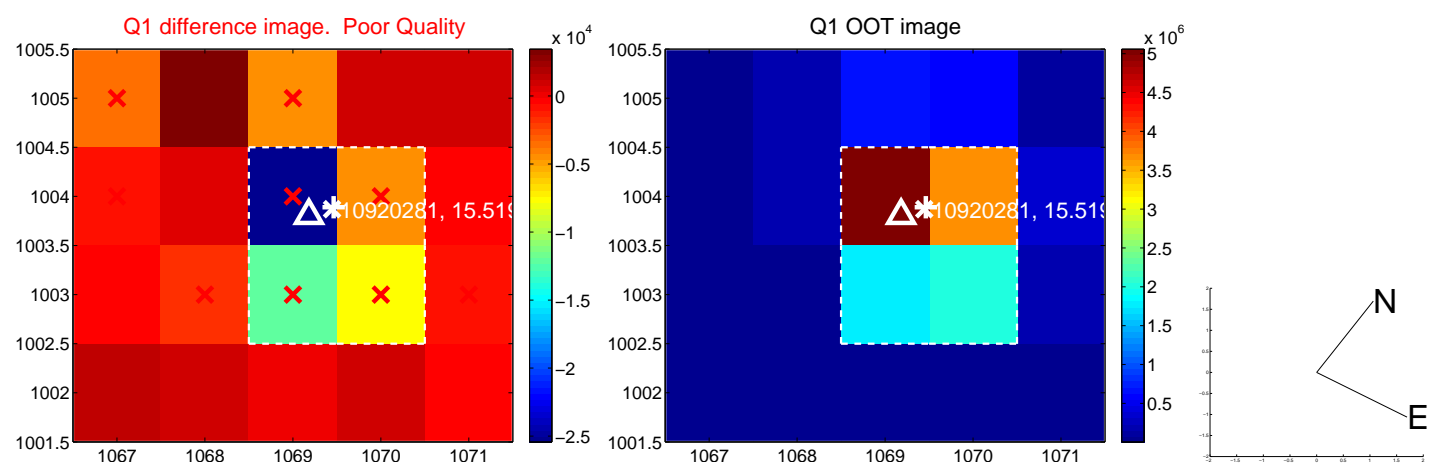
The direct PRF centroid is offset from the target star catalog position by about 0.18 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.221 ± 0.402	0.55	-0.129 ± 0.288	-0.179 ± 0.296
PRF-fit source offset from KIC position	0.268 ± 0.163	1.64	-0.131 ± 0.184	-0.233 ± 0.155
photometric centroid source offset	0.77 ± 0.83	0.93	-0.27 ± 0.75	-0.73 ± 0.84



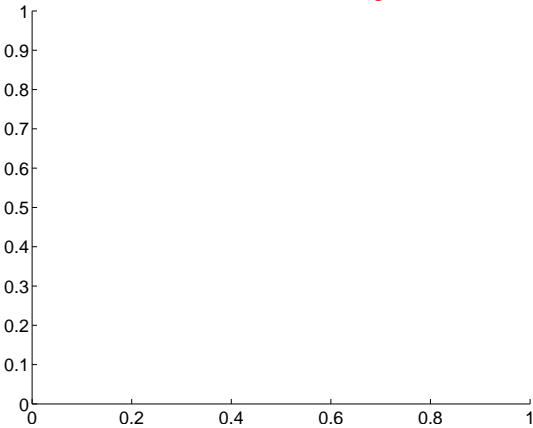
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

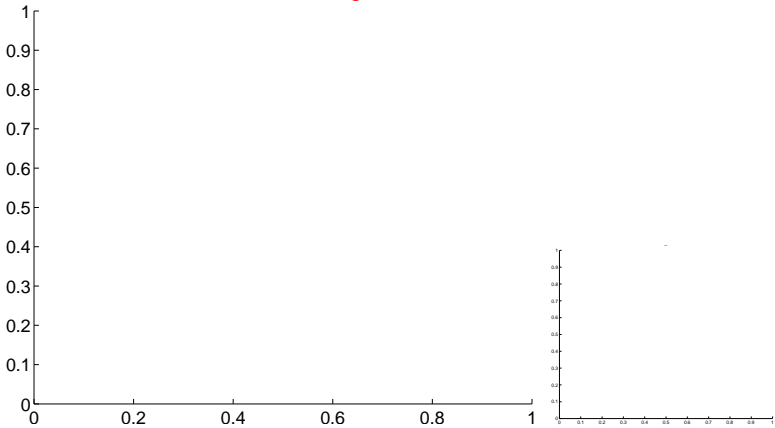


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

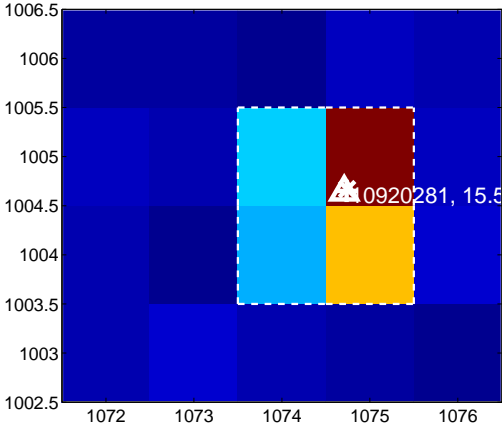
Q5 no difference image



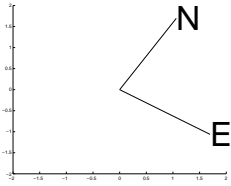
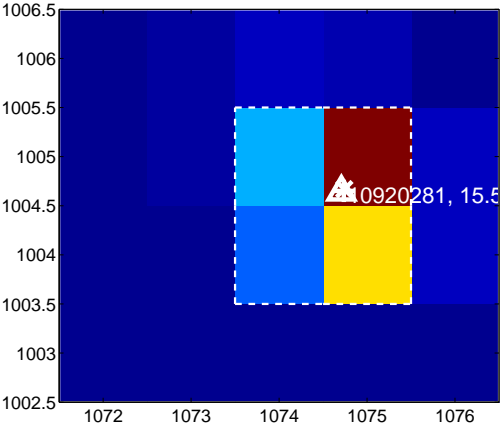
Q5 no OOT image



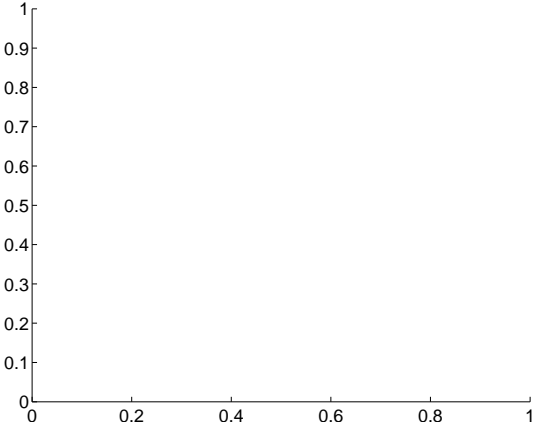
Q6 difference image



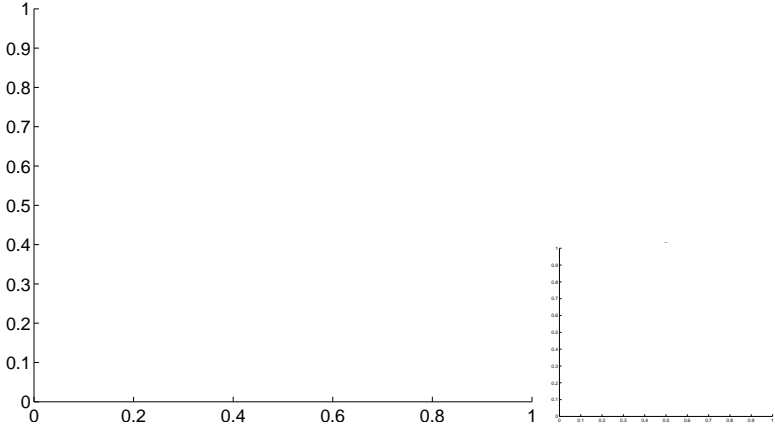
Q6 OOT image



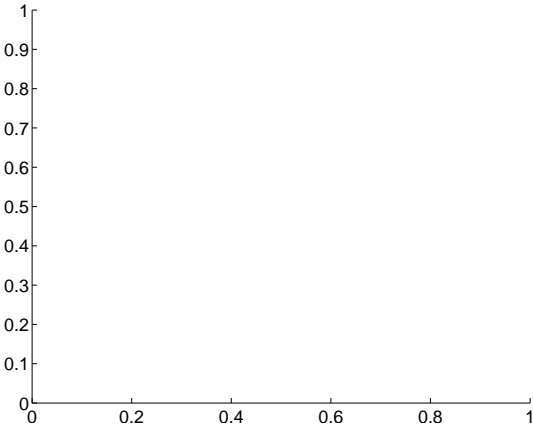
Q7 no difference image



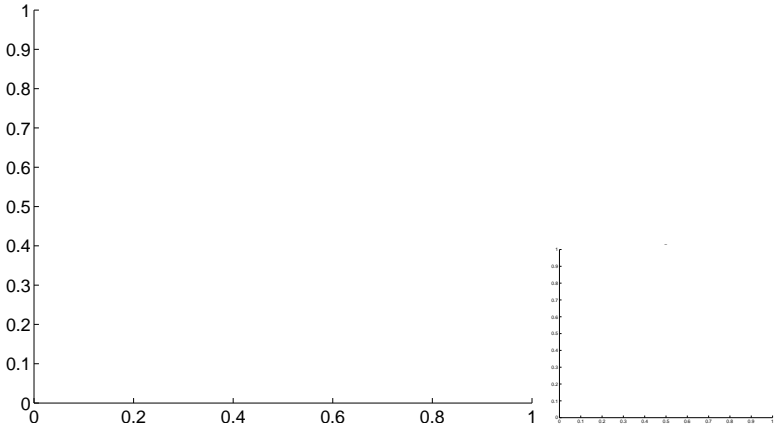
Q7 no OOT image



Q8 no difference image

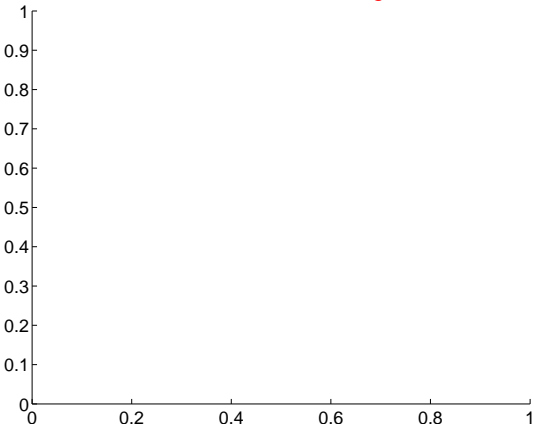


Q8 no OOT image

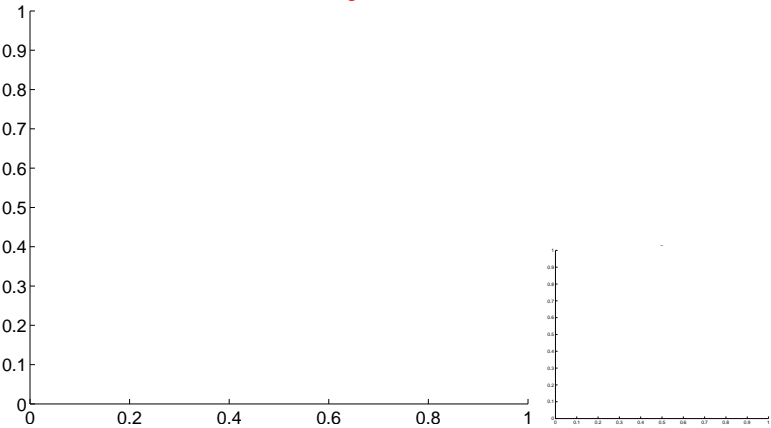


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

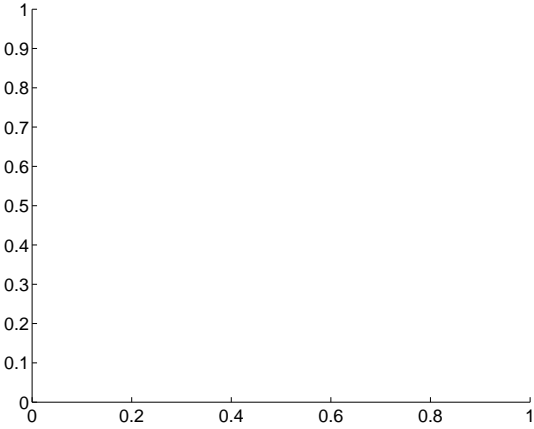
Q9 no difference image



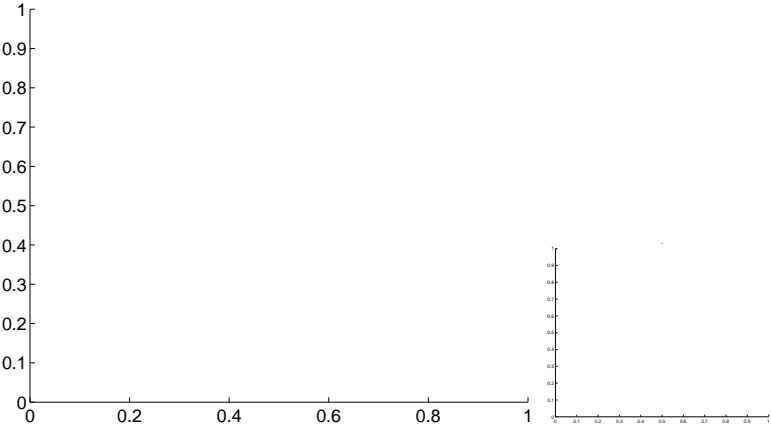
Q9 no OOT image



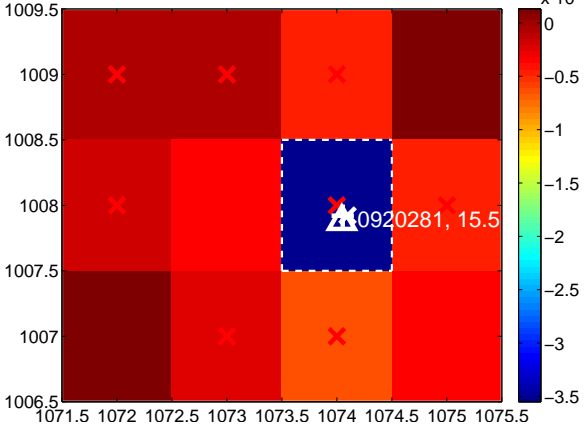
Q10 no difference image



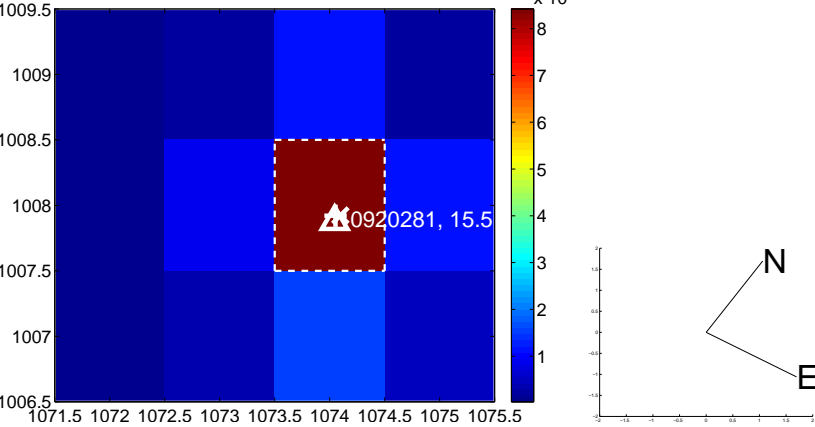
Q10 no OOT image



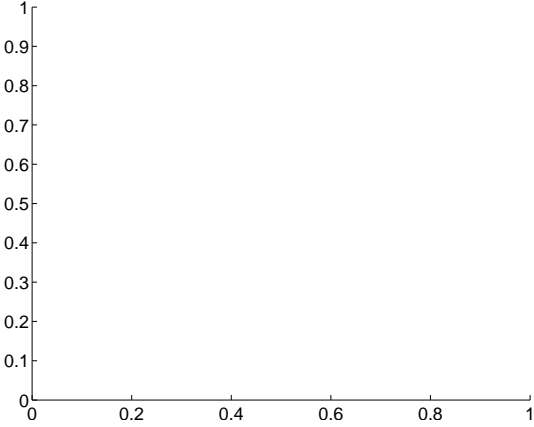
Q11 difference image. Poor Quality



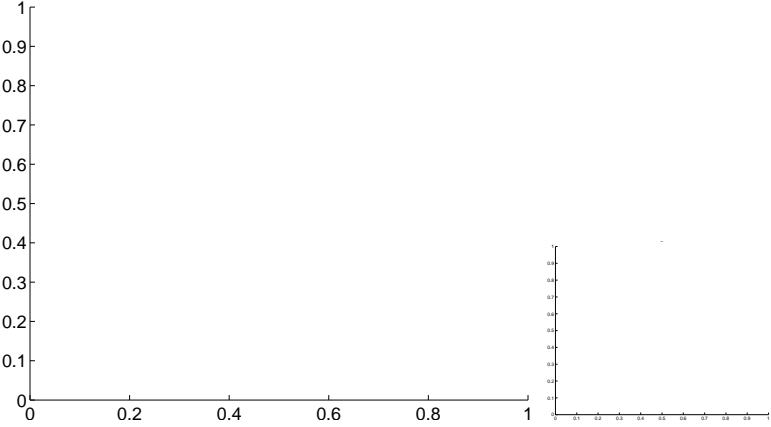
Q11 OOT image



Q12 no difference image



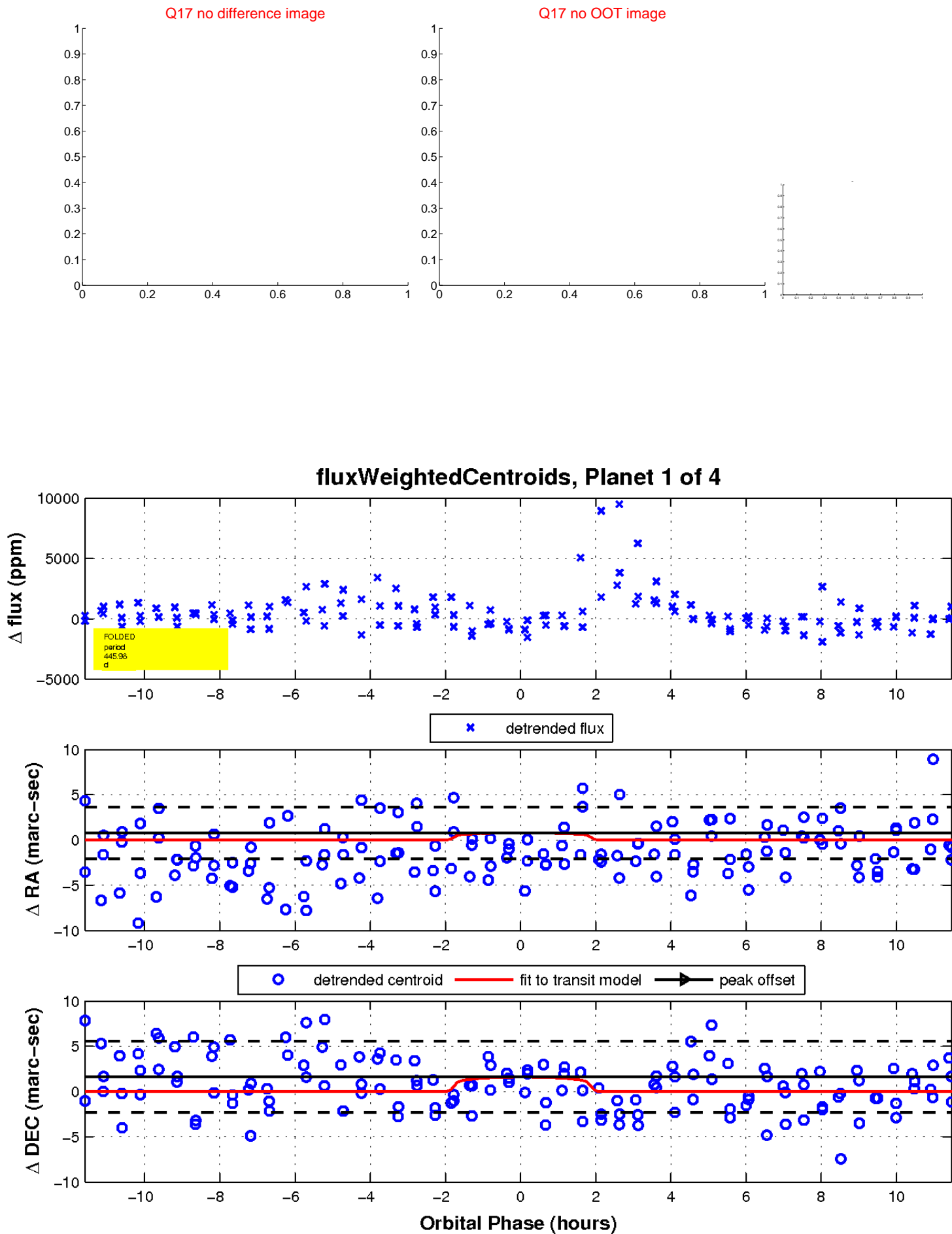
Q12 no OOT image



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

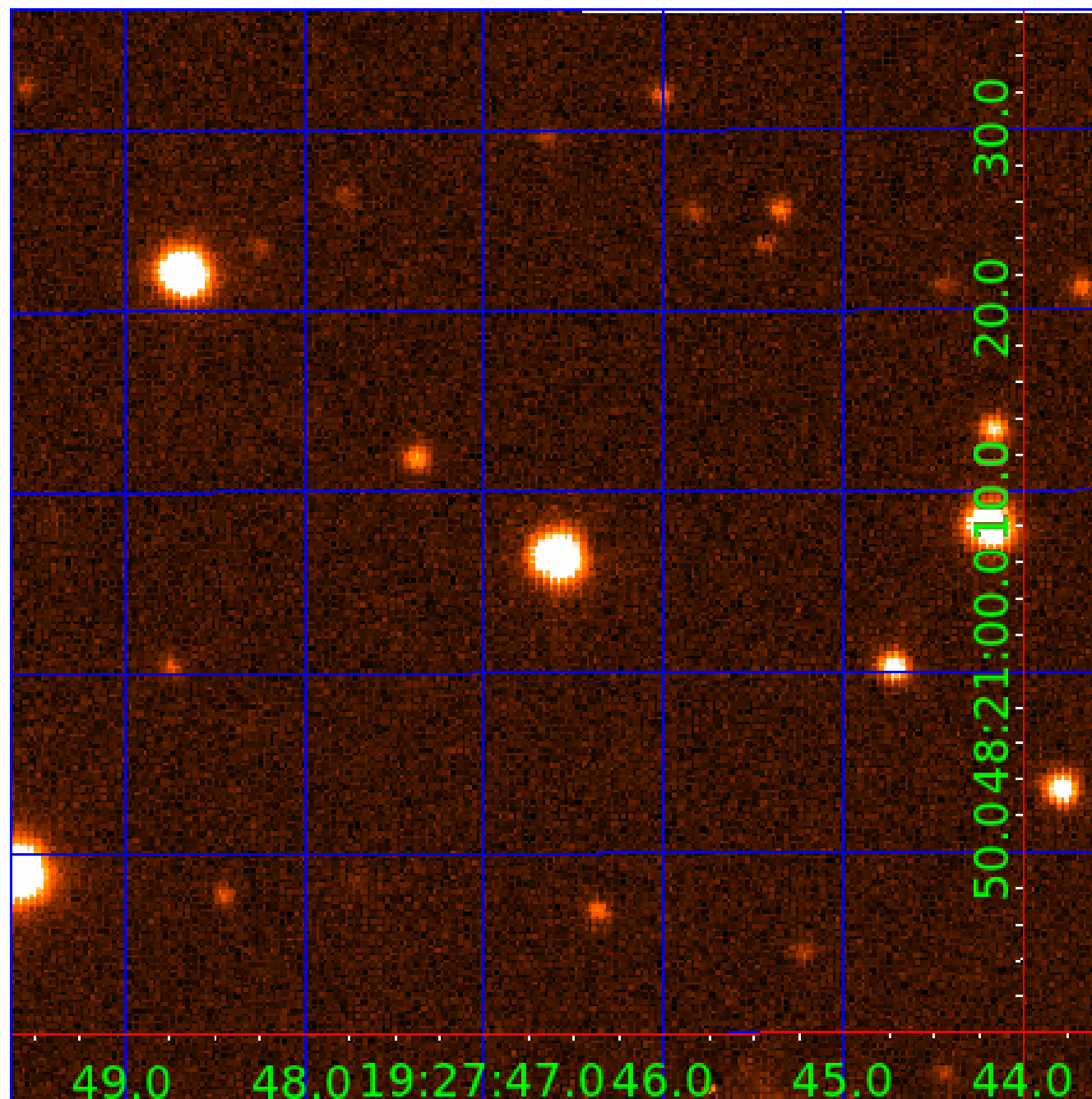


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 010920281

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})
010920281-01	OBS	No	445.984780	148.160656	2375.5	3.871	12.4	7.3	0.45	3704	2.18	0.04
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010920281-03	OBS	No	339.779569	446.564709	2313.1	3.522	10.5	7.0	0.45	3704	2.15	0.06
010920281-04	OBS	8037.01	3.650383	133.632443	213.6	1.267	7.4	7.0	0.45	3704	0.79	26.50

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010920281-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
010920281-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
010920281-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—CENT_FEW_DIFFS
010920281-04	OBS	PC	1.00	0	0	0	0	NO_COMMENT

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

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

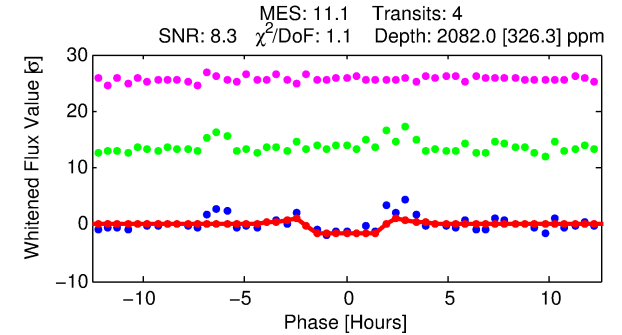
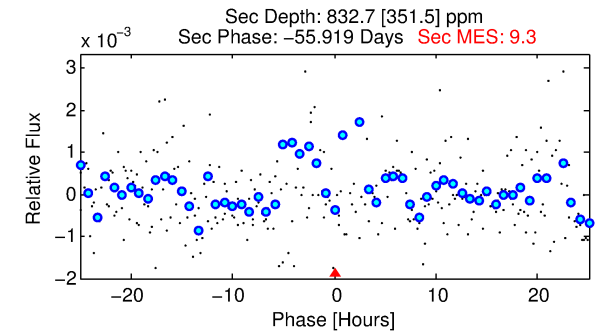
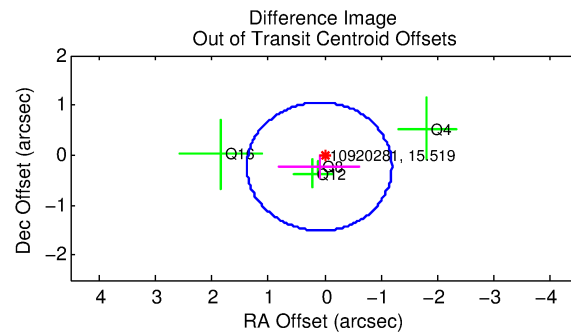
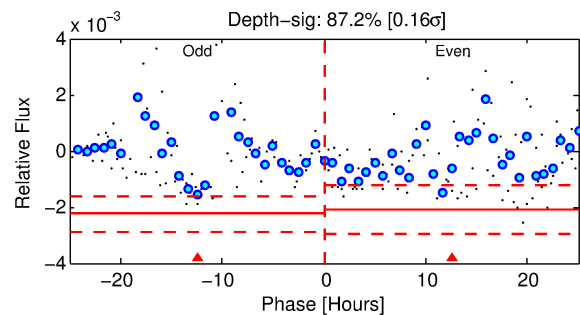
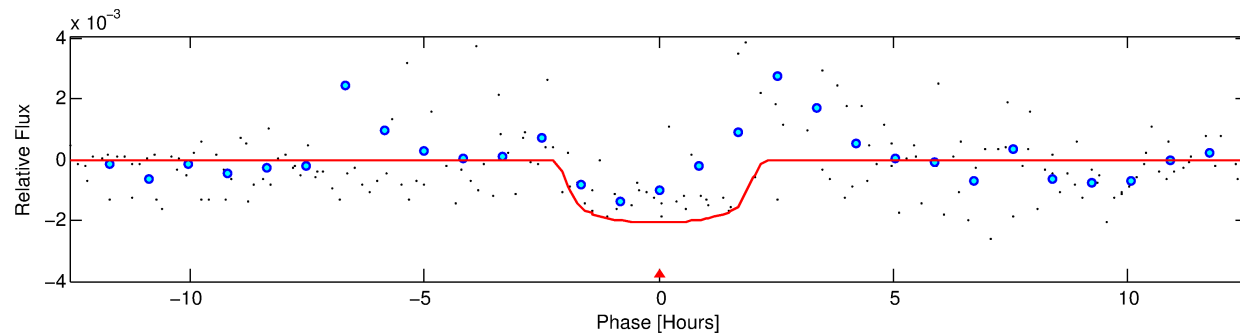
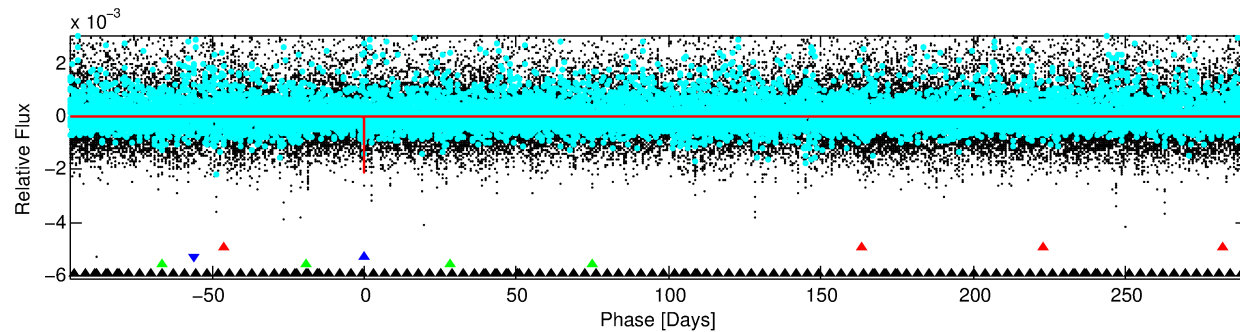
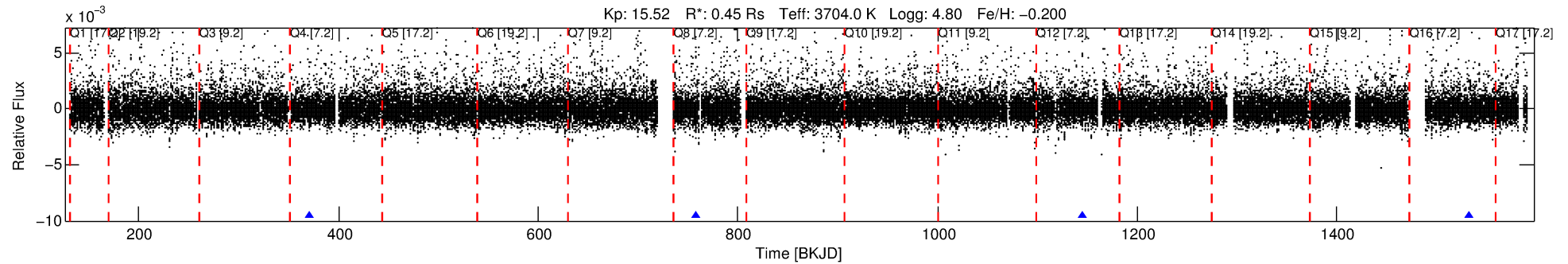
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 010920281-02

No Significant Match Found

DV One-Page Summary

KIC: 10920281 Candidate: 2 of 4 Period: 386.903 d



DV Fit Results:

Period = 386.90285 [0.00371] d
Epoch = 371.4599 [0.0080] BKJD
Rp/R* = 0.0424 [0.0436]
a/R* = 672.22 [3189.73]
b = 0.42 [9.21]
Seff = 0.05 [0.01]
Teq = 122 [4] K
Rp = 2.08 [2.15] Re
a = 0.8040 [0.0615] AU
Ag = 68231.36 [143395.49] [0.48 σ]
Teffp = 3055 [1604] K [1.83 σ]

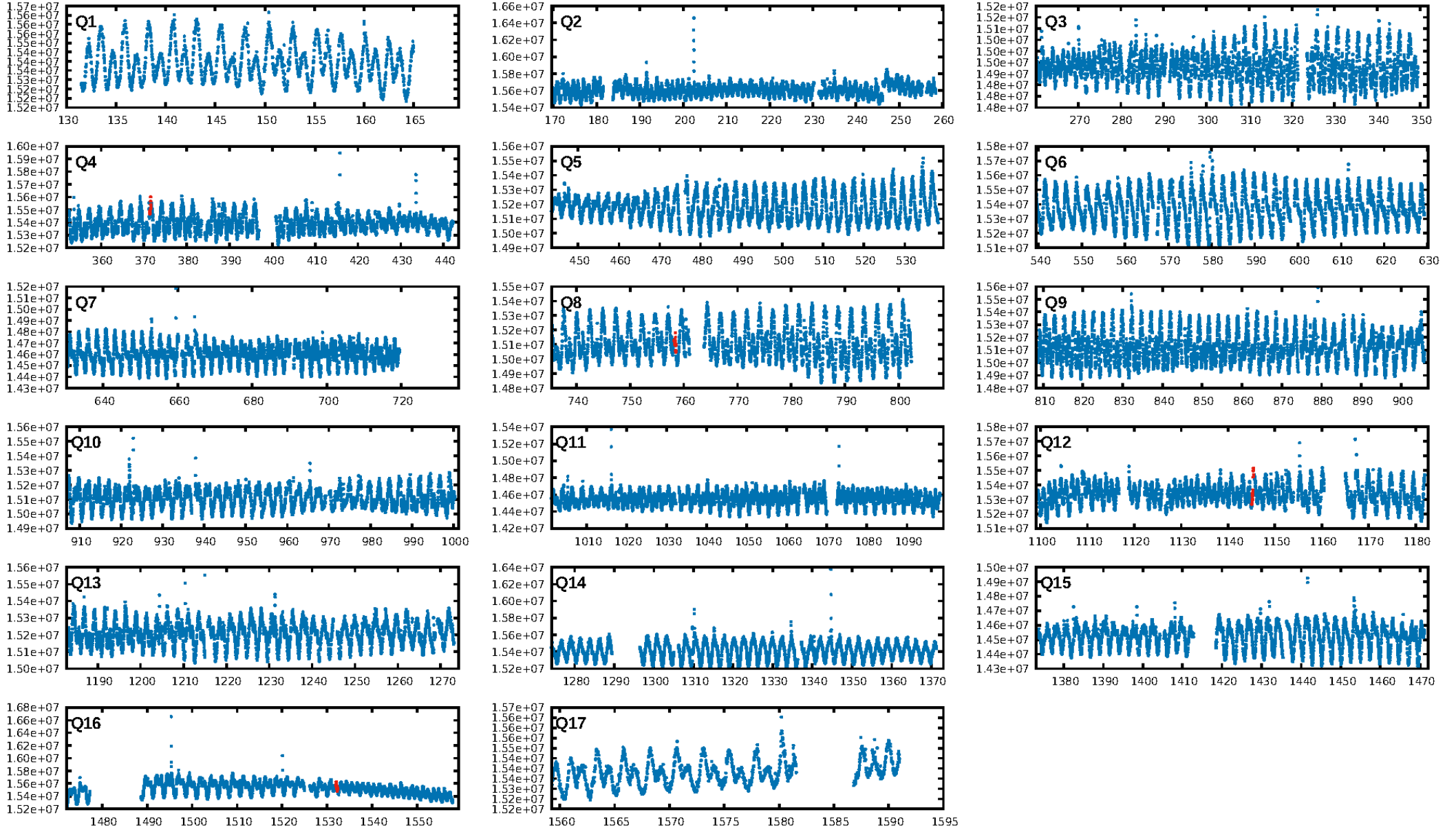
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [206.70 σ]
LongPeriod-sig: 100.0% [248.67 σ]
ModelChiSquare2-sig: 42.2%
ModelChiSquareGo-sig: 99.8%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: 5.929
Centroid-sig: 37.3%
Centroid-so: 0.599 arcsec [0.76 σ]
OotOffset-rm: 0.246 arcsec [0.57 σ]
OotOffset-st: 0/0/4/0 [4]
KicOffset-rm: 0.264 arcsec [0.51 σ]
KicOffset-st: 0/0/4/0 [4]
DiffImageQuality-fgm: 0.50 [2/4]
DiffImageOverlap-fno: 1.00 [4/4]

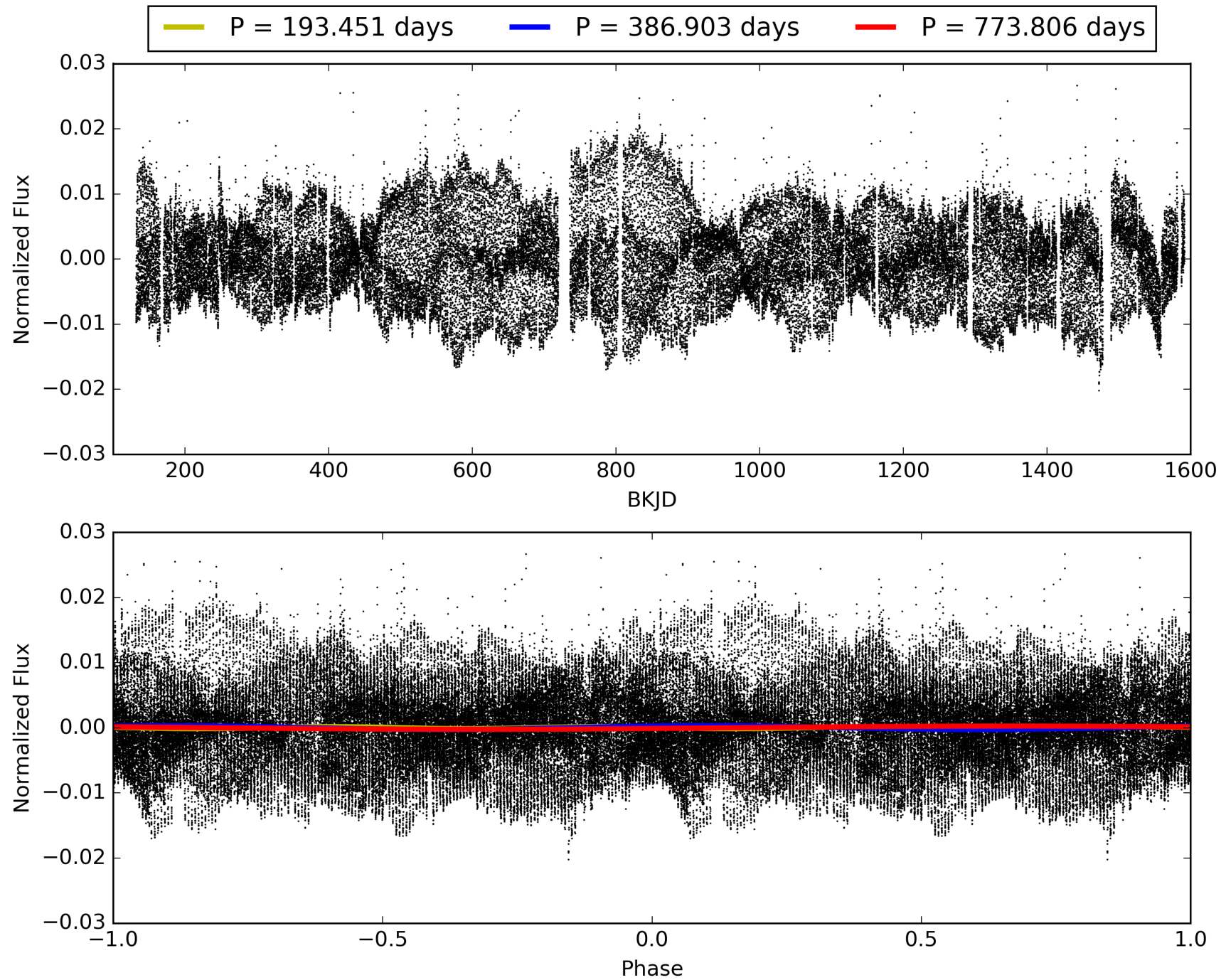
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 06:24:32 Z

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

TCE 010920281-02, PDC Light Curves

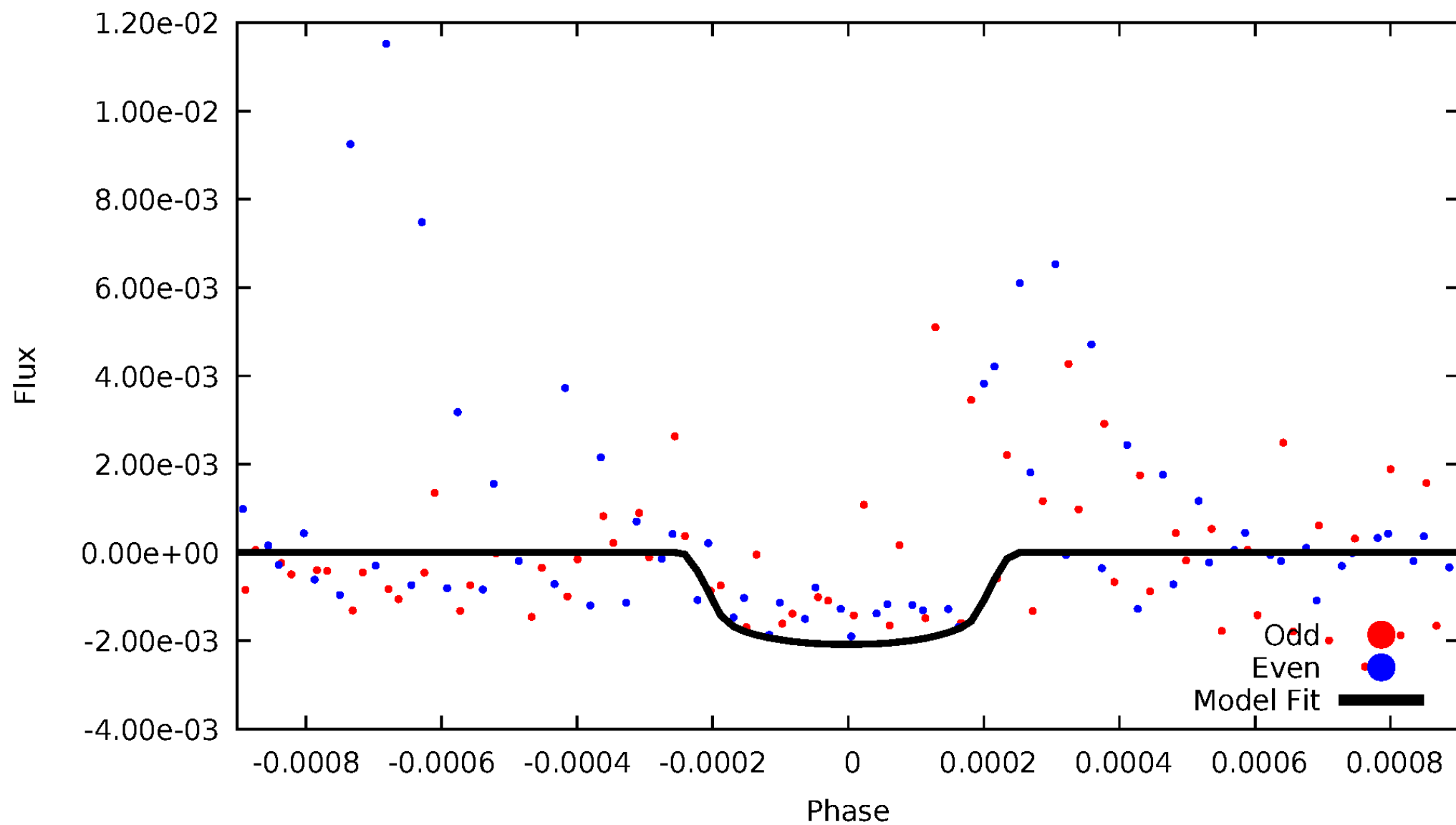


TCE 010920281-02



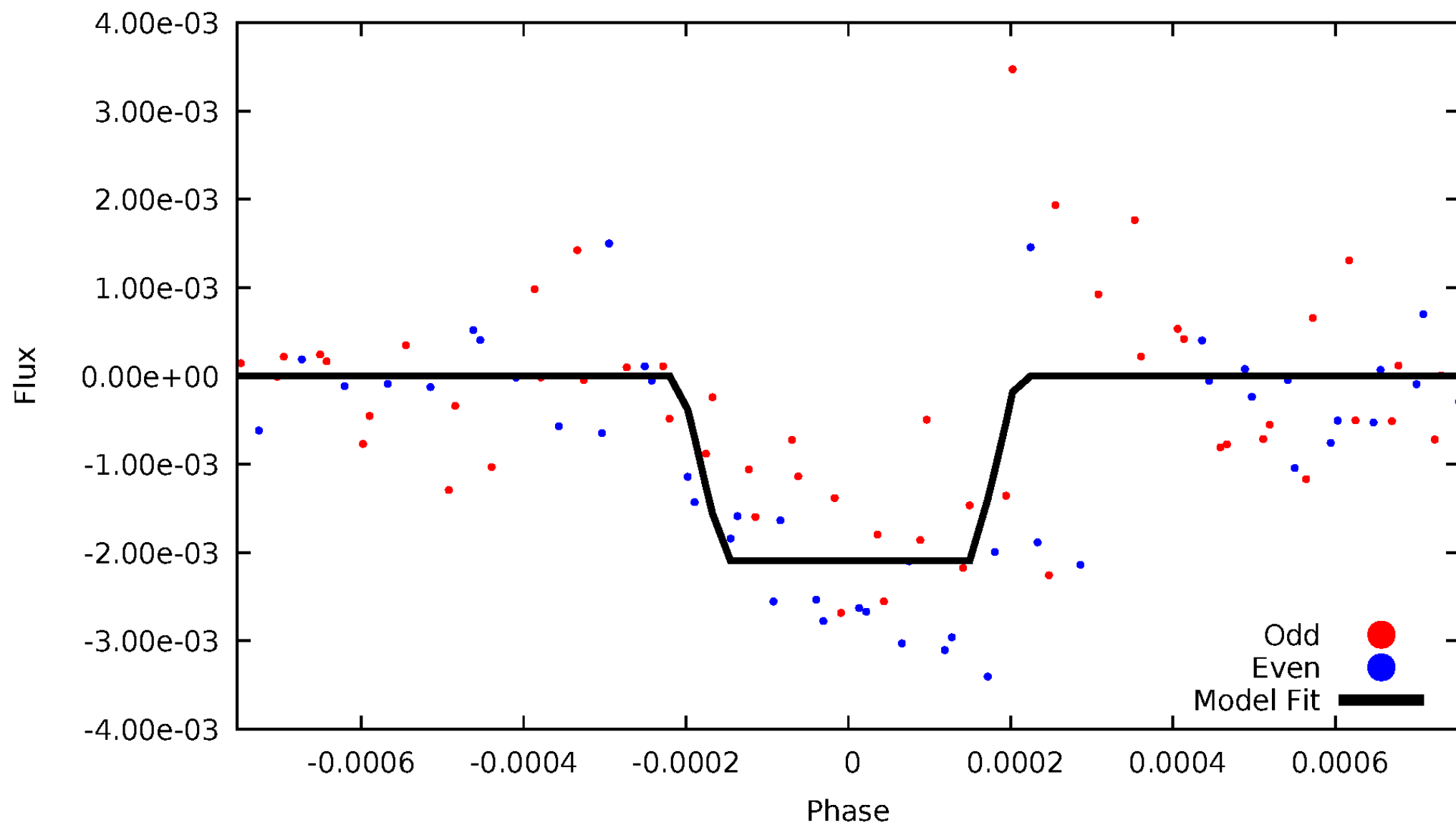
DV Odd/Even

TCE 010920281-02



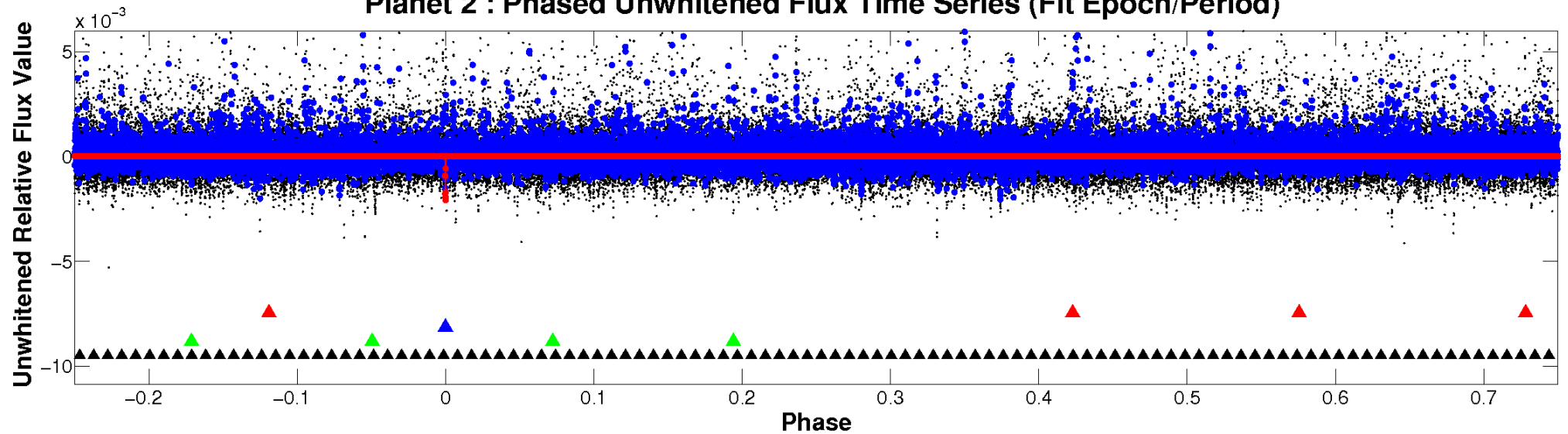
ALT Odd/Even

TCE 010920281-02

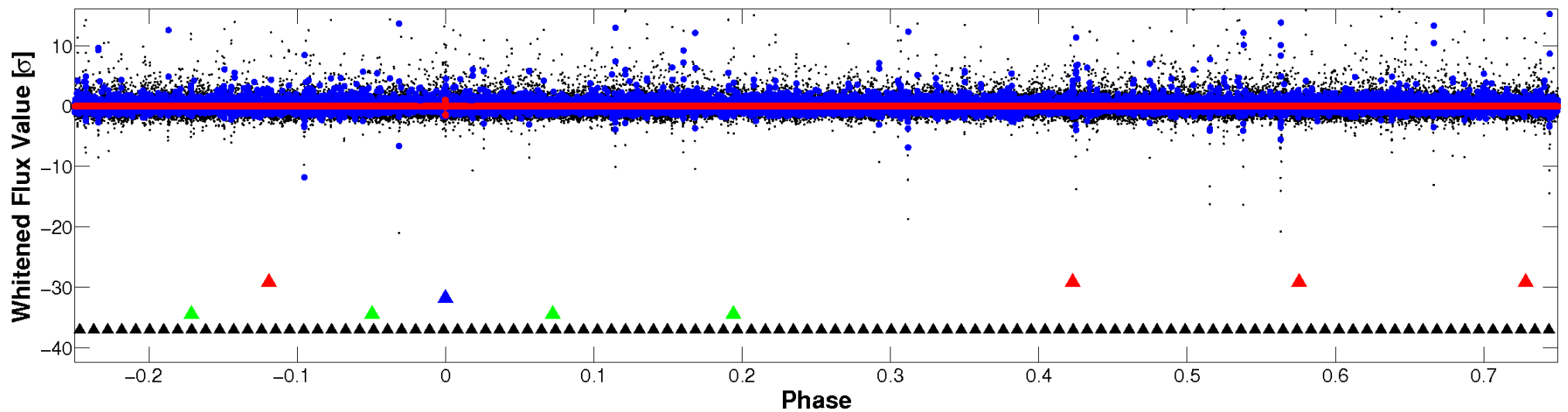


Non-Whitened Vs. Whitened Light Curve

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

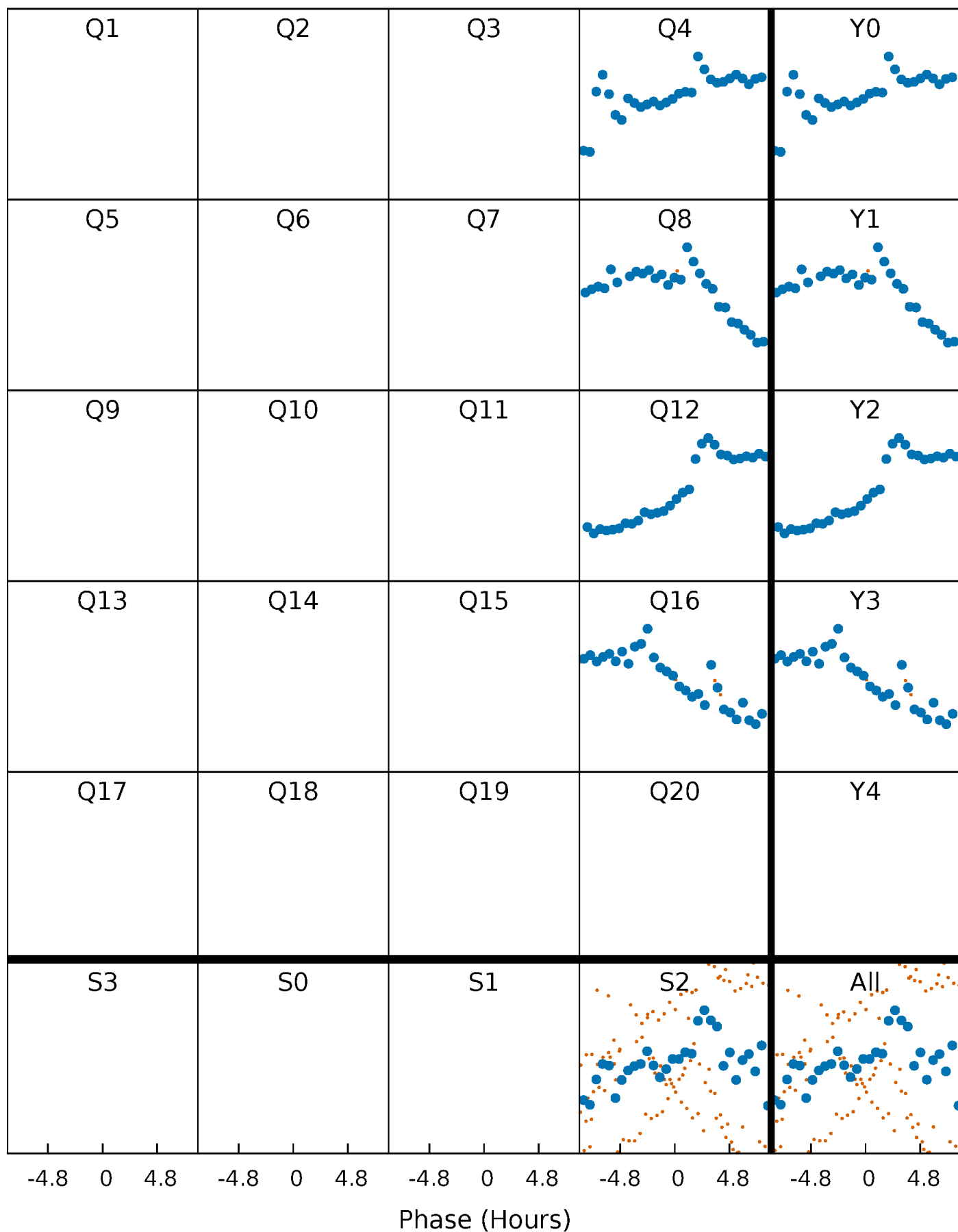


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



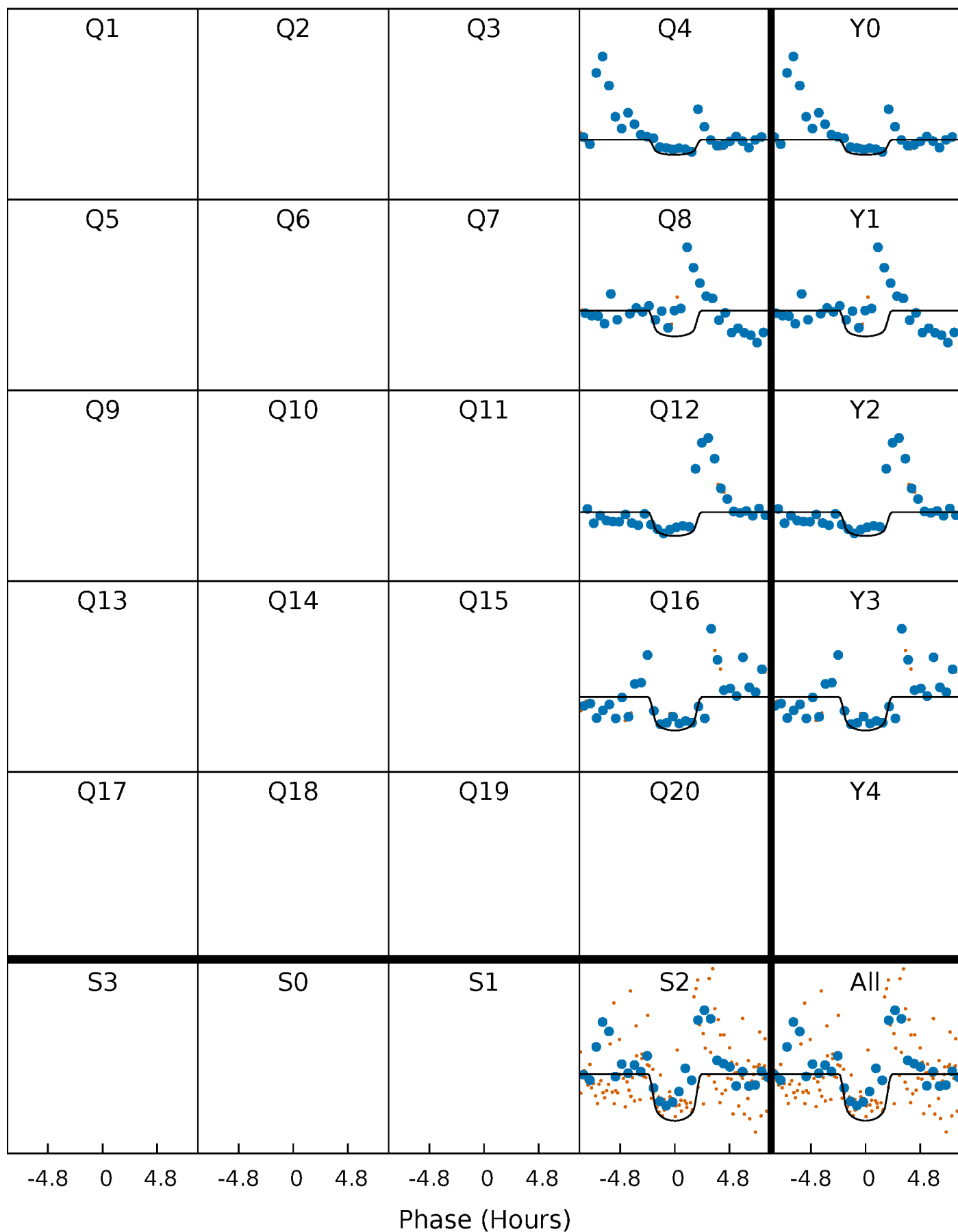
PDC Quarter-Phased Transit Curves

TCE 010920281-02 $P=386.902850$ Days $T_0=371.459924$ (BKJD)



DV Quarter-Phased Transit Curves

TCE 010920281-02 $P=386.902850$ Days $T_0=371.459924$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

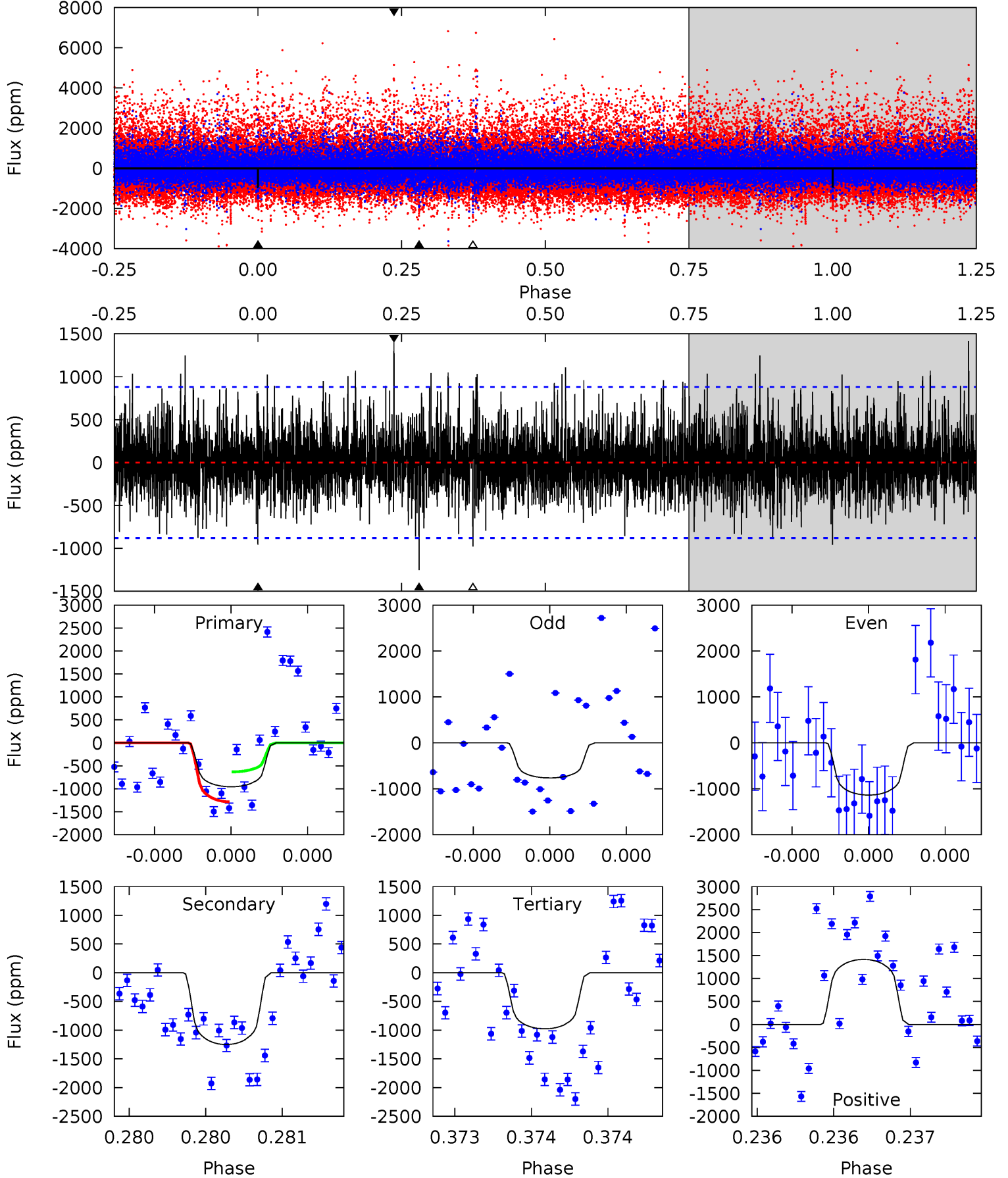
TCE 010920281-02 $P=386.921942$ Days $T_0=371.412308$ (BKJD)



DV Model-Shift Uniqueness Test

010920281-02, P = 386.902850 Days, E = 371.459924 Days

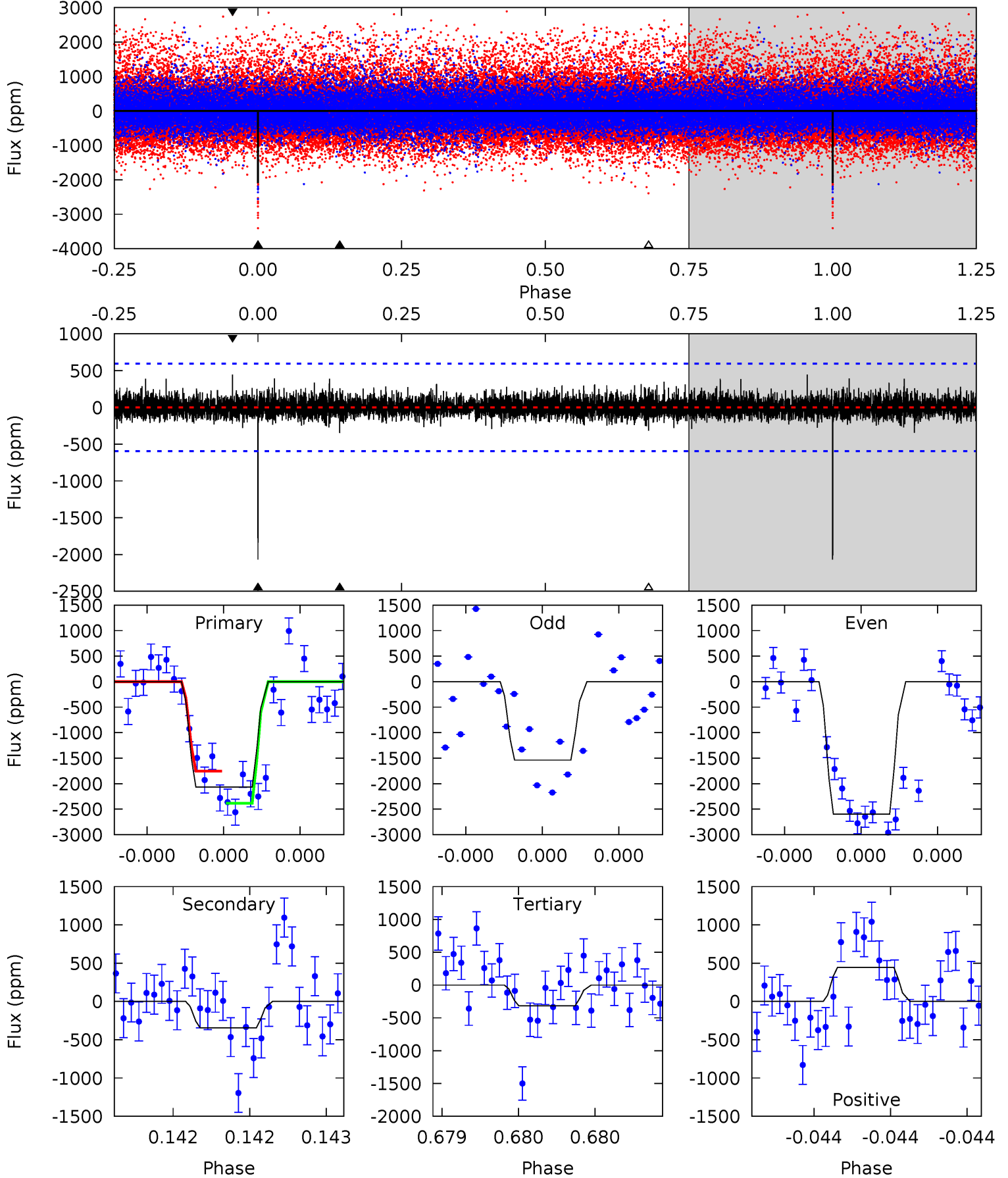
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.08	7.95	6.21	9.00	5.59	3.51	1.78	-0.13	-2.92	1.74	-1.04	1.05	0.66	0.53	2.09



Alt Model-Shift Uniqueness Test

010920281-02, P = 386.921942 Days, E = 371.412308 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
19.5	3.26	3.00	4.21	5.61	3.54	0.79	16.5	15.3	0.26	-0.95	4.91	1.05	0.18	3.00



Stellar Parameters For KIC 010920281

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	3704^{+66}_{-81}	$4.797^{+0.052}_{-0.032}$	$-0.200^{+0.100}_{-0.100}$	$0.450^{+0.032}_{-0.044}$	$0.463^{+0.034}_{-0.042}$	$7.166^{+1.779}_{-0.985}$
	+2%/-2%	+1%/-1%	+50%/-50%	+7%/-10%	+7%/-9%	+25%/-14%
Source	PHO2	PHO2	PHO2	DSEP		

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

Secondary Eclipse Parameters for KIC 010920281-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-1251 ± 157	$2.52^{+1.98}_{-1.64}$	170^{+4}_{-5}	3291^{+1483}_{-498}	$70599^{+528583}_{-48016}$
Alt.	-345 ± 106	$2.67^{+1.91}_{-1.64}$	170^{+5}_{-5}	2702^{+837}_{-373}	17095^{+93284}_{-11943}

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

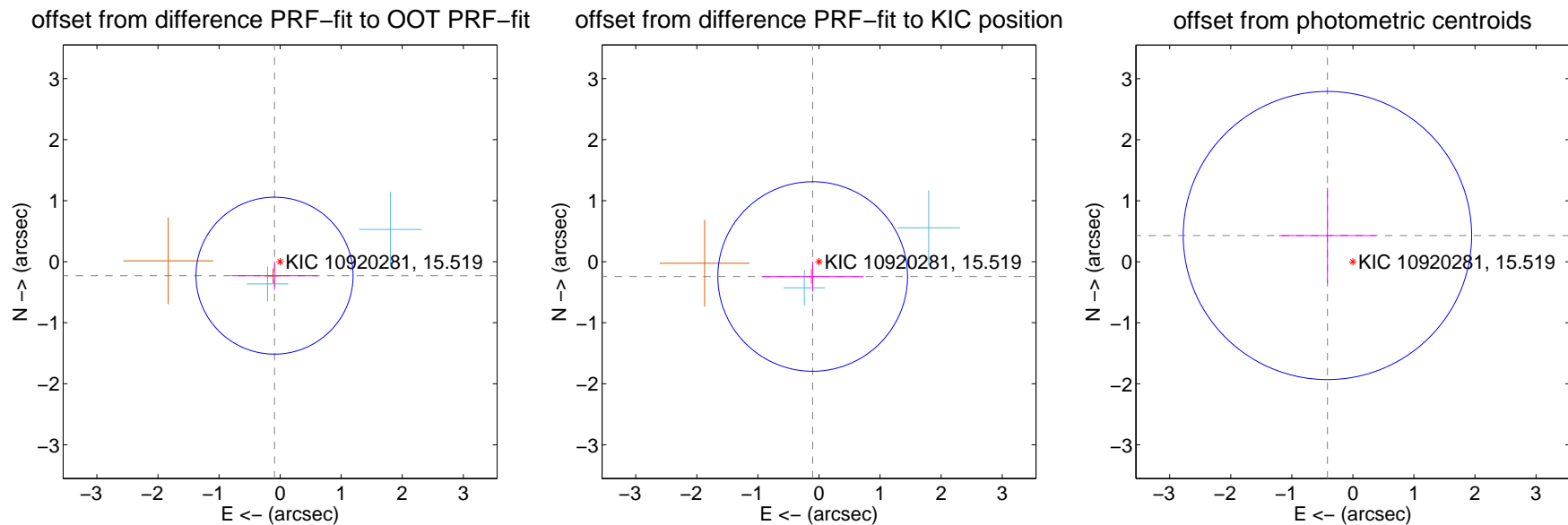
DV Centroid Data

Supplemental centroid analysis for 010920281-02. Kepler magnitude: 15.52. Transit SNR 8.28

There are 2 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.06 arcsec

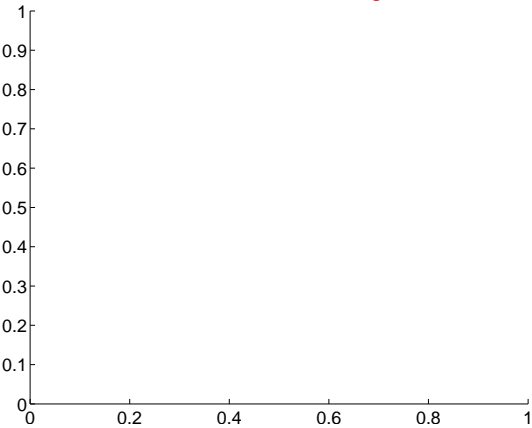
	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.246 ± 0.429	0.57	0.091 ± 0.703	-0.229 ± 0.232
PRF-fit source offset from KIC position	0.264 ± 0.518	0.51	0.103 ± 0.833	-0.242 ± 0.244
photometric centroid source offset	0.60 ± 0.79	0.76	0.42 ± 0.79	0.43 ± 0.78



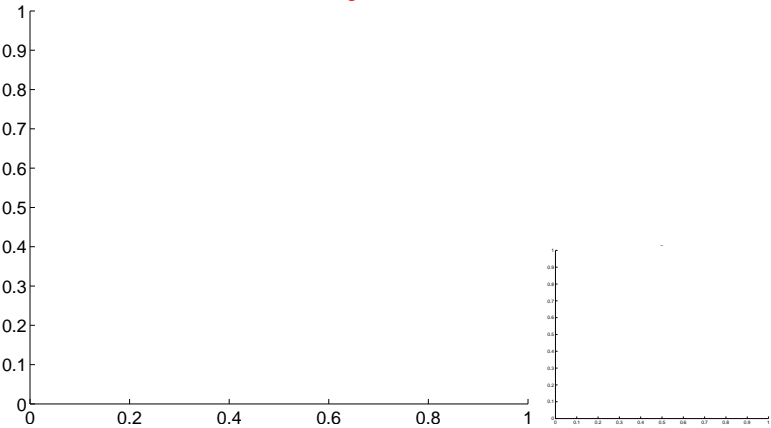
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

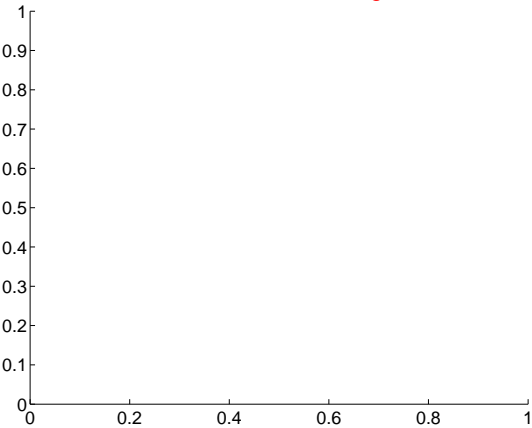
Q1 no difference image



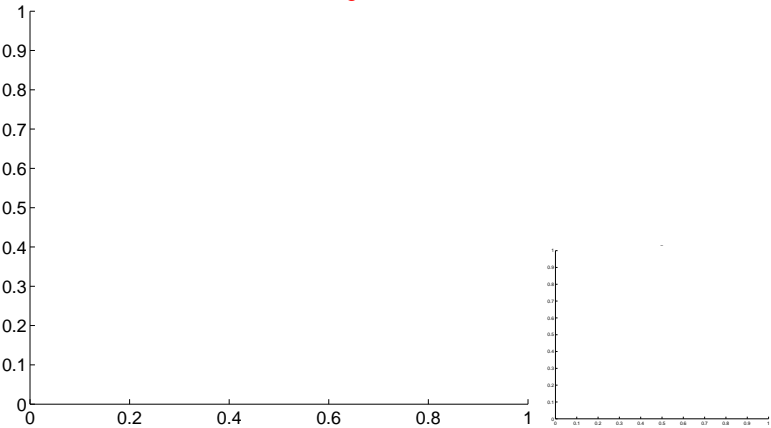
Q1 no OOT image



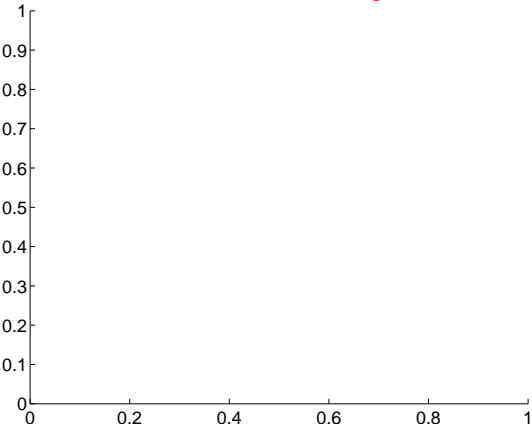
Q2 no difference image



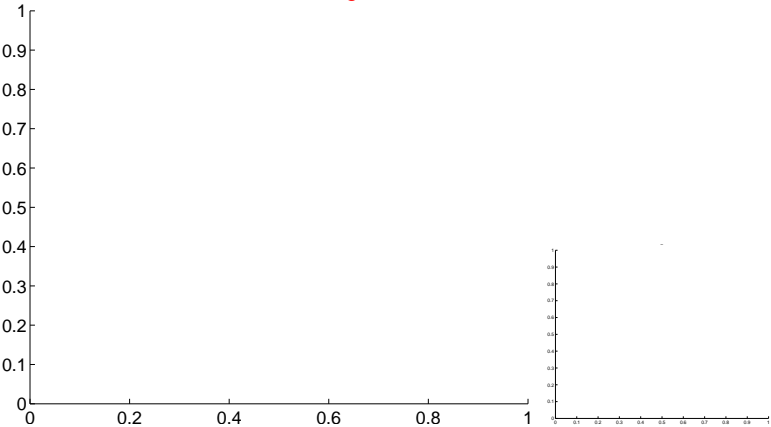
Q2 no OOT image



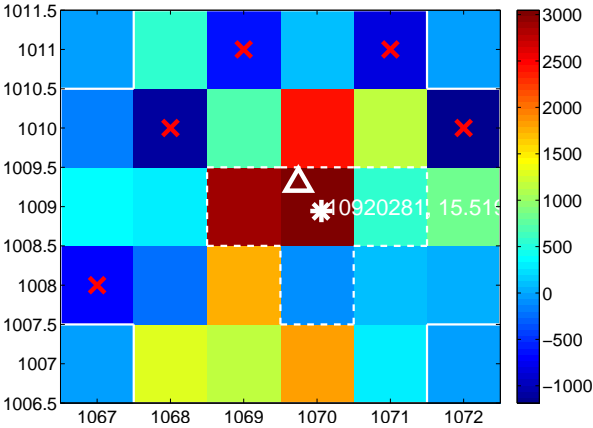
Q3 no difference image



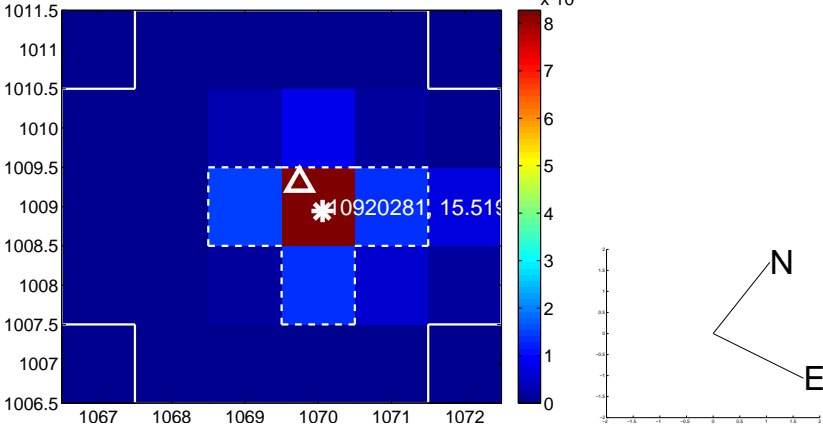
Q3 no OOT image



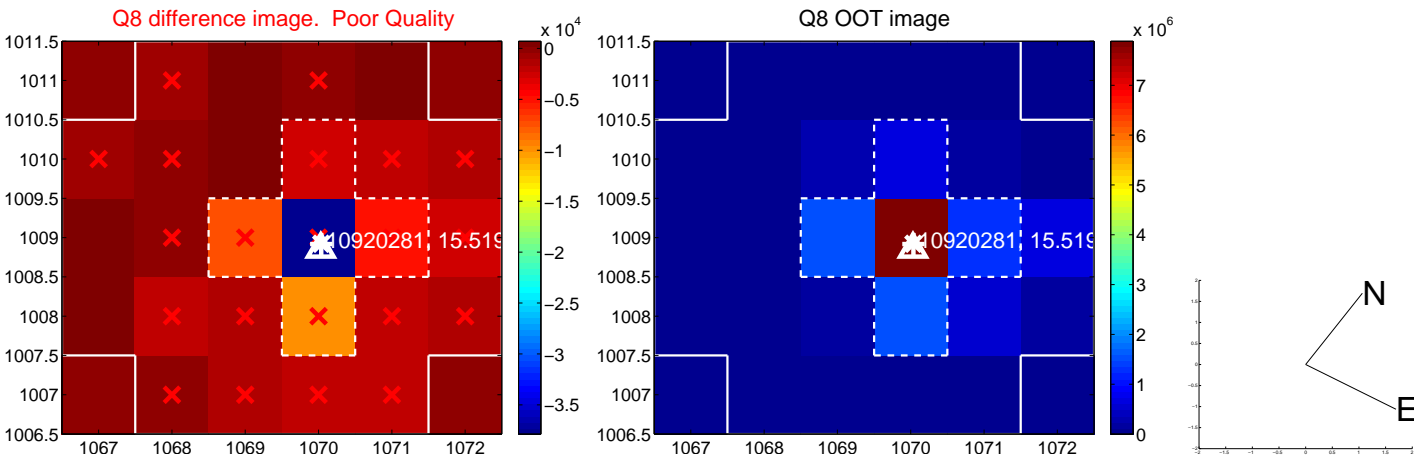
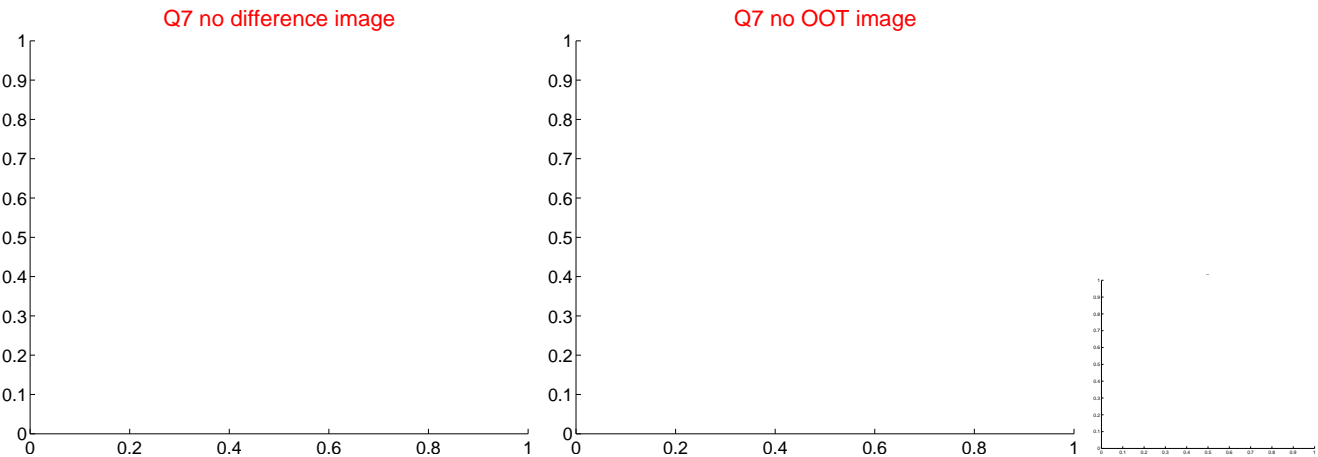
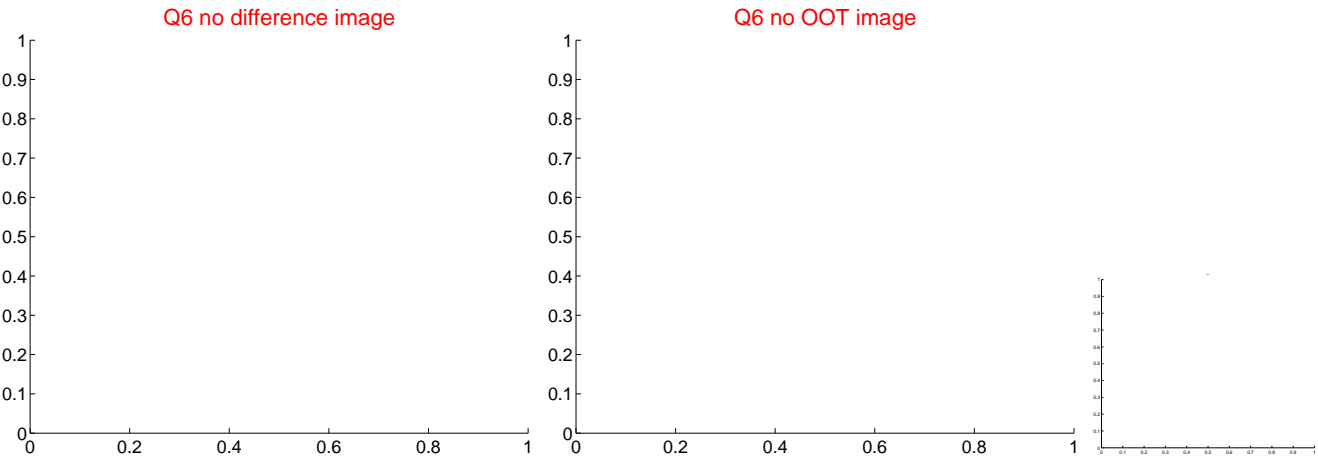
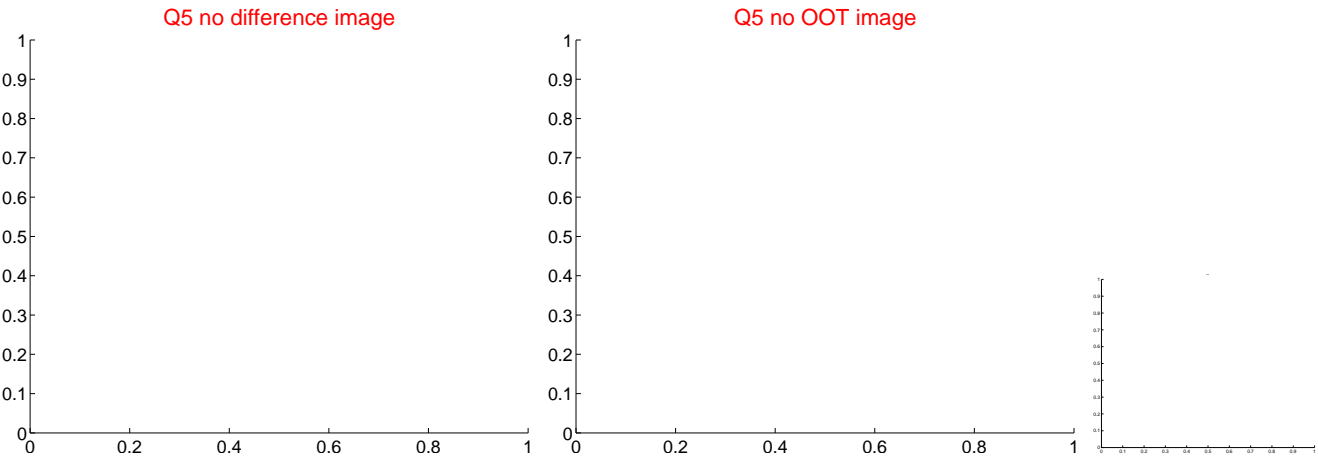
Q4 difference image



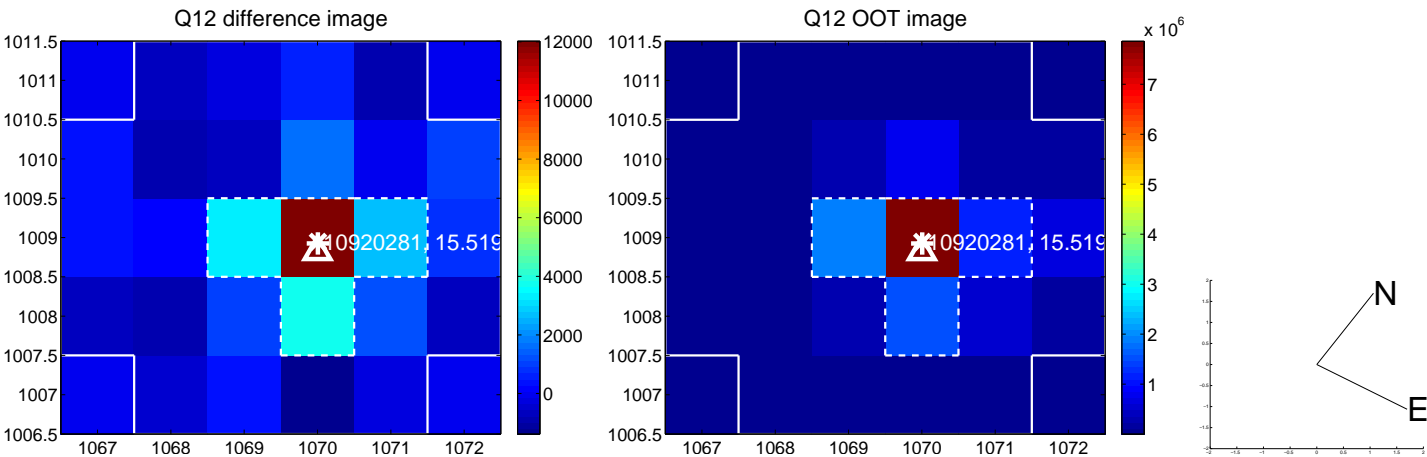
Q4 OOT image



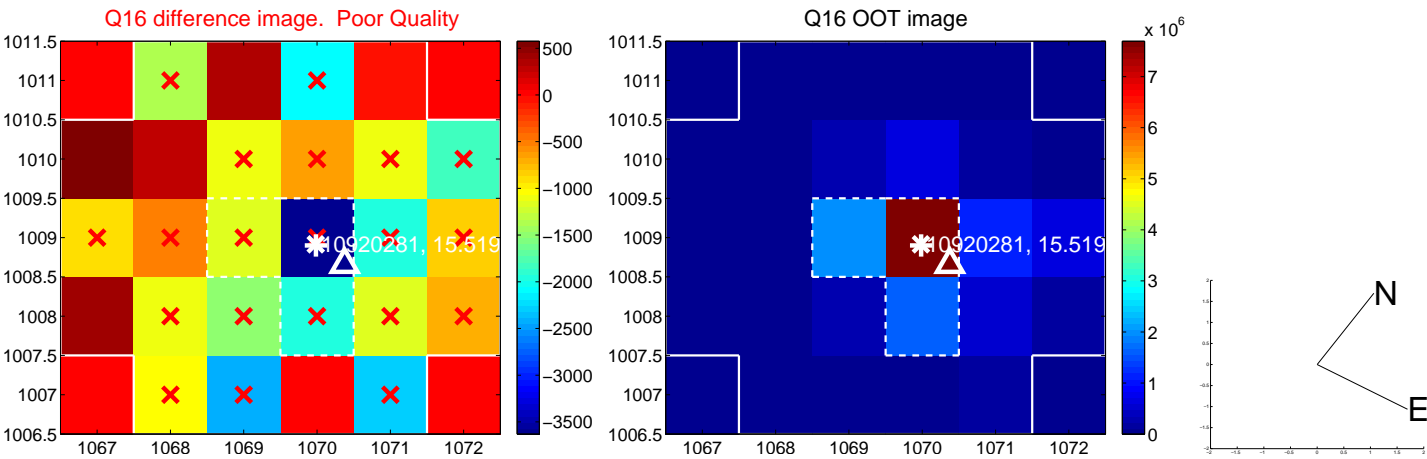
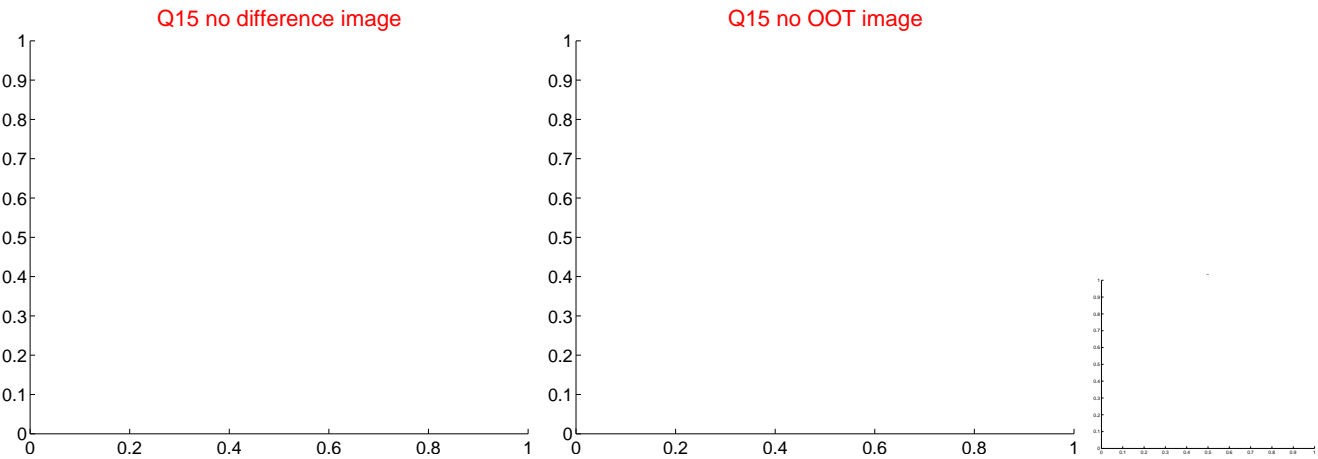
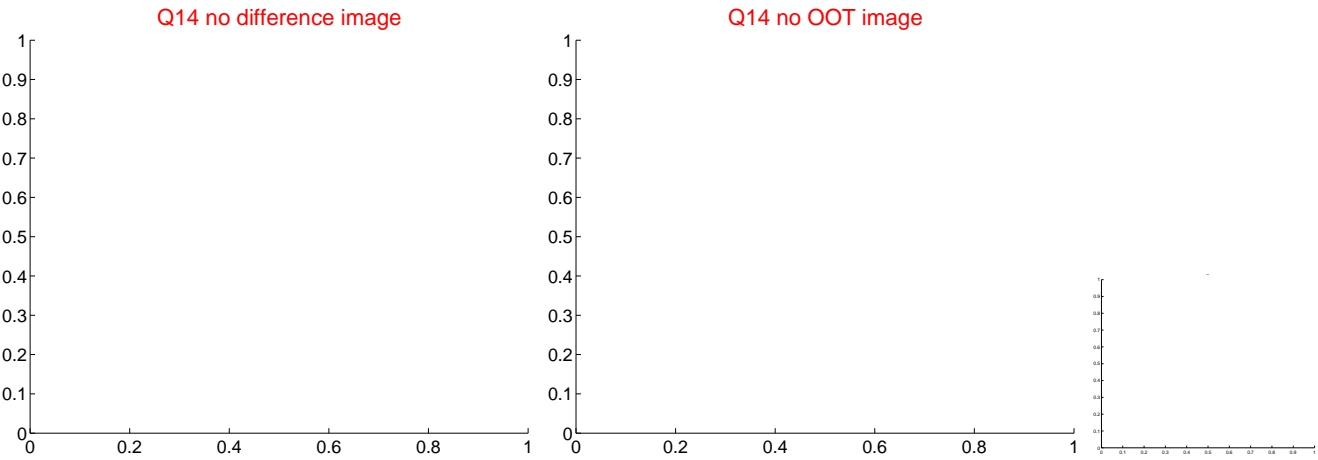
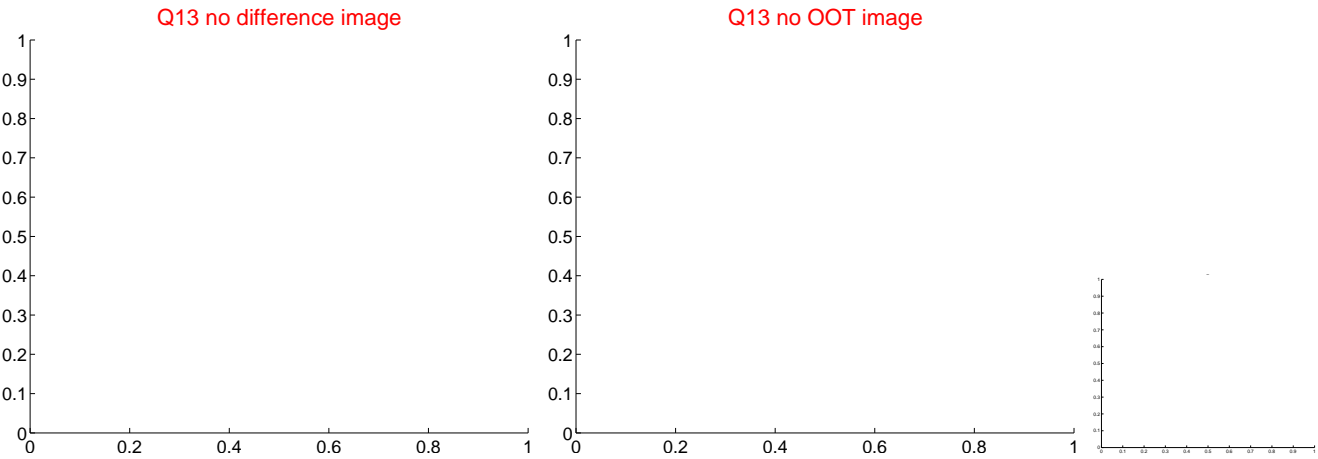
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



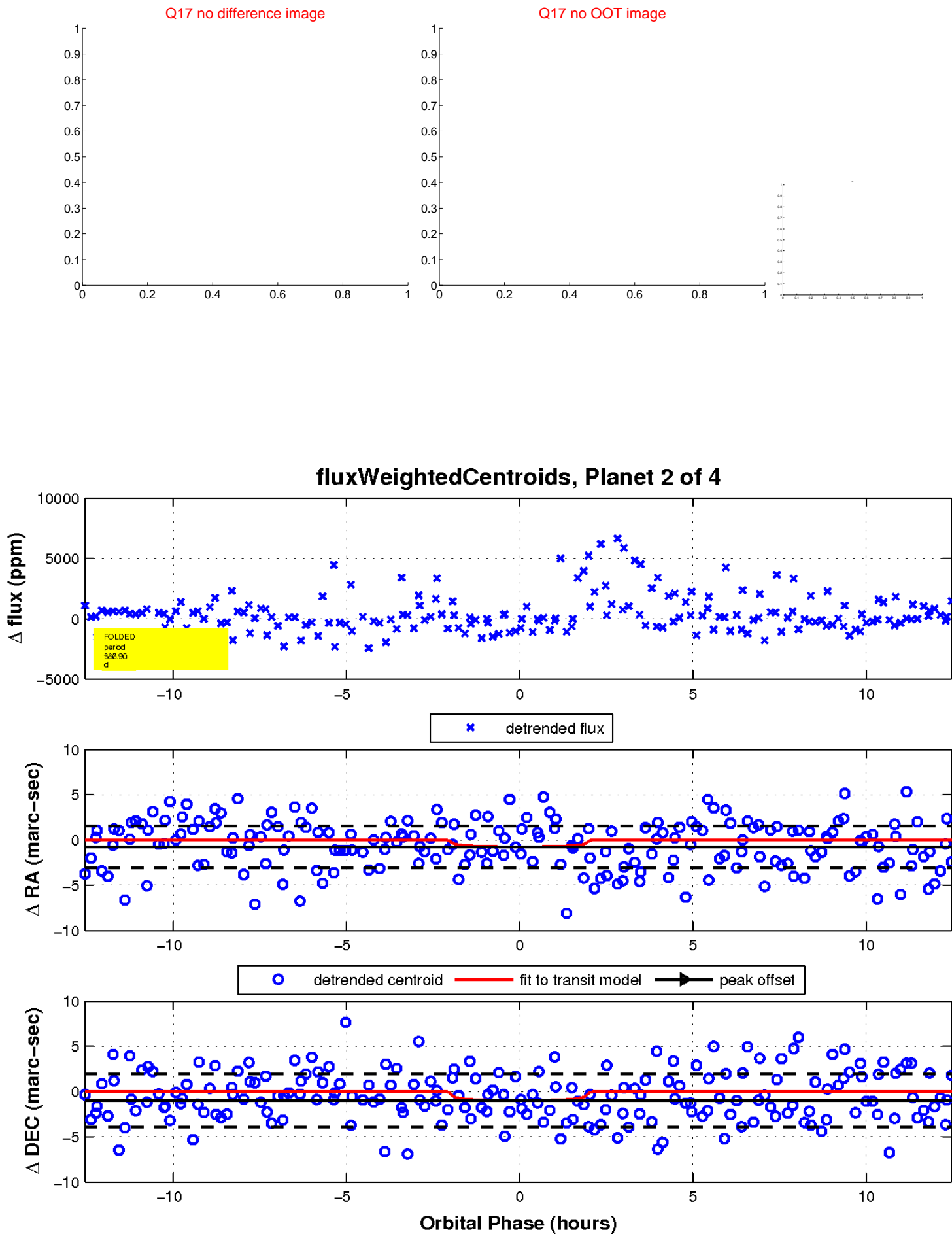
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



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

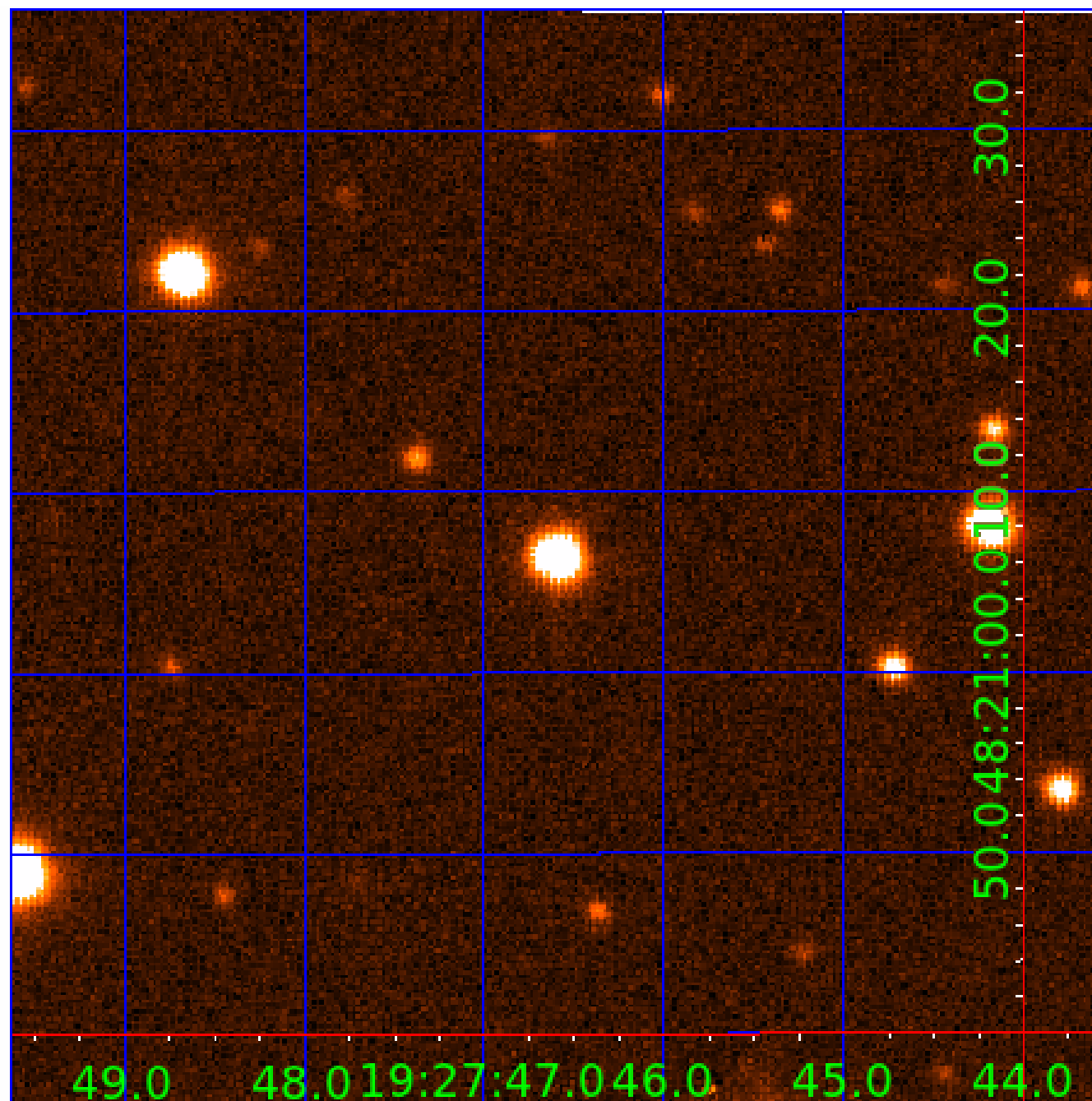


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 010920281

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})
010920281-01	OBS	No	445.984780	148.160656	2375.5	3.871	12.4	7.3	0.45	3704	2.18	0.04
010920281-02	OBS	No	386.902851	371.459924	2082.0	4.187	11.1	8.3	0.45	3704	2.08	0.05
010920281-03	OBS	No	339.779569	446.564709	2313.1	3.522	10.5	7.0	0.45	3704	2.15	0.06
010920281-04	OBS	8037.01	3.650383	133.632443	213.6	1.267	7.4	7.0	0.45	3704	0.79	26.50

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010920281-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
010920281-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
010920281-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—CENT_FEW_DIFFS
010920281-04	OBS	PC	1.00	0	0	0	0	NO_COMMENT

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

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

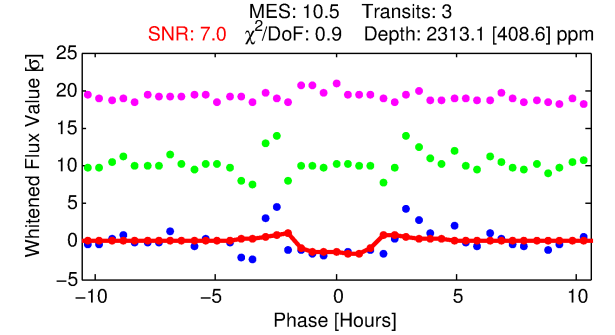
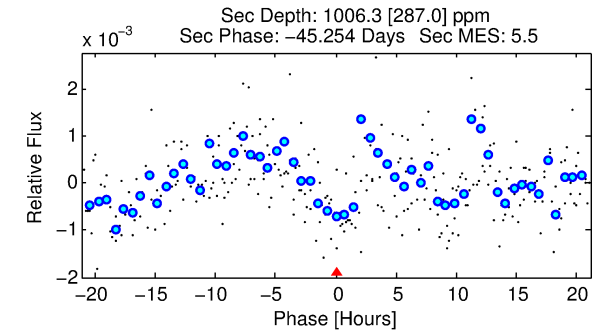
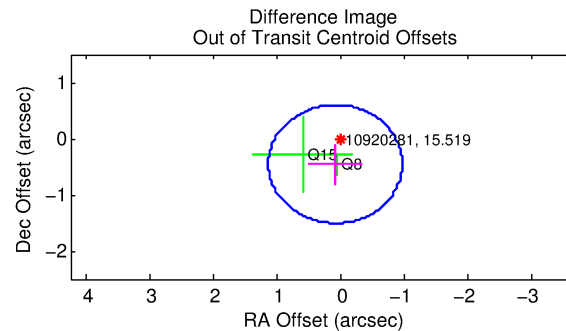
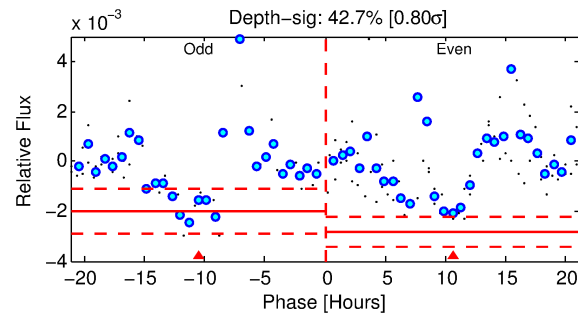
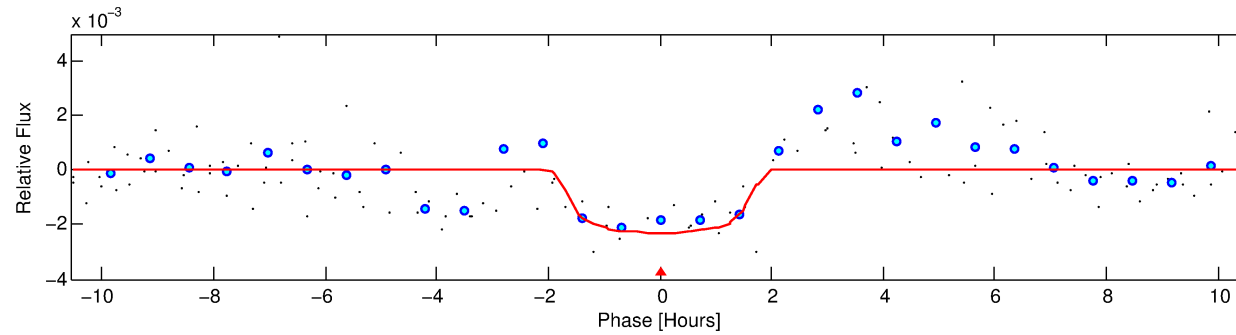
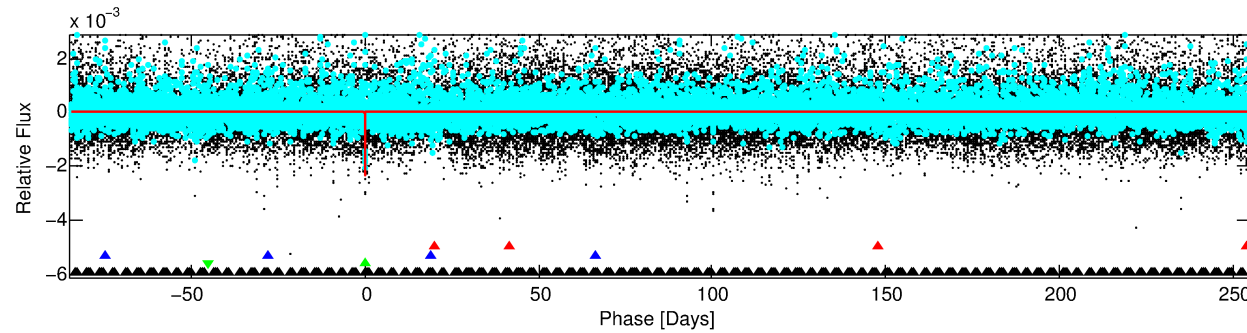
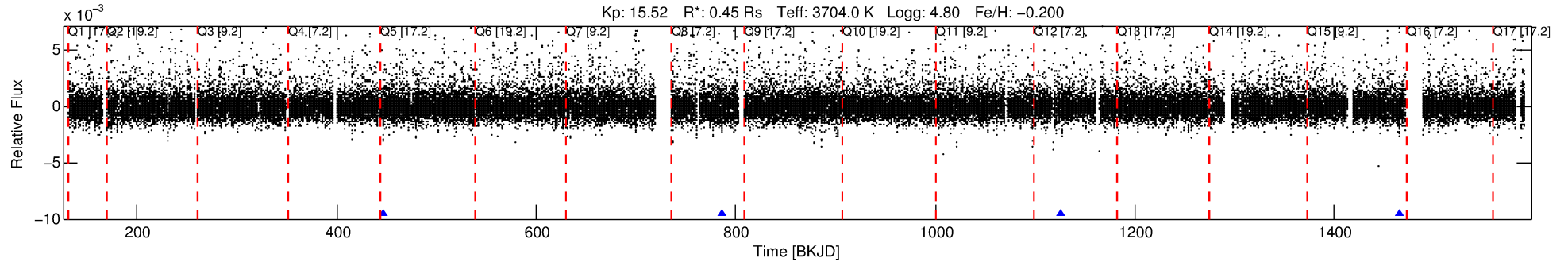
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 010920281-03

No Significant Match Found

DV One-Page Summary

KIC: 10920281 Candidate: 3 of 4 Period: 339.780 d



DV Fit Results:

Period = 339.77957 [0.00307] d
Epoch = 446.5647 [0.0067] BKJD
Rp/R* = 0.0438 [0.0495]
a/R* = 768.93 [4000.19]
b = 0.03 [182.16]
Seff = 0.06 [0.01]
Teq = 128 [4] K
Rp = 2.15 [2.44] Re
a = 0.7373 [0.0564] AU
Ag = 65059.28 [148247.59] [0.44 σ]
Teffp = 3152 [1795] K [1.68 σ]

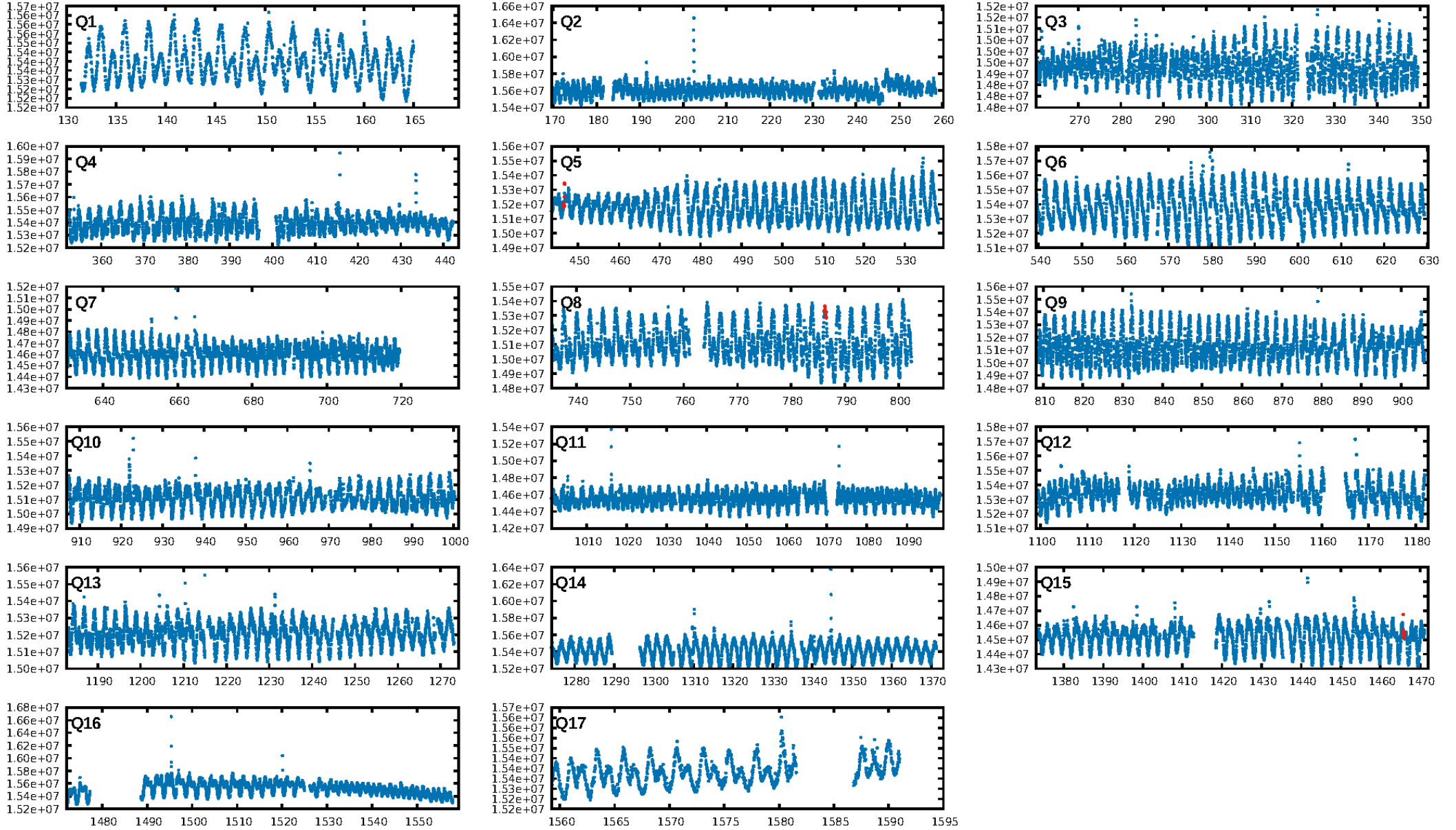
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [2155.17 σ]
LongPeriod-sig: 100.0% [206.70 σ]
ModelChiSquare2-sig: 18.8%
ModelChiSquareGof-sig: 99.9%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 3.71
Centroid-sig: 9.0%
Centroid-so: 0.868 arcsec [0.99 σ]
OotOffset-rm: 0.462 arcsec [1.32 σ]
OotOffset-st: 0/1/1/0 [2]
KicOffset-rm: 0.454 arcsec [1.30 σ]
KicOffset-st: 0/1/1/0 [2]
DiffImageQuality-fgm: 0.50 [1/2]
DiffImageOverlap-fno: 0.67 [2/3]

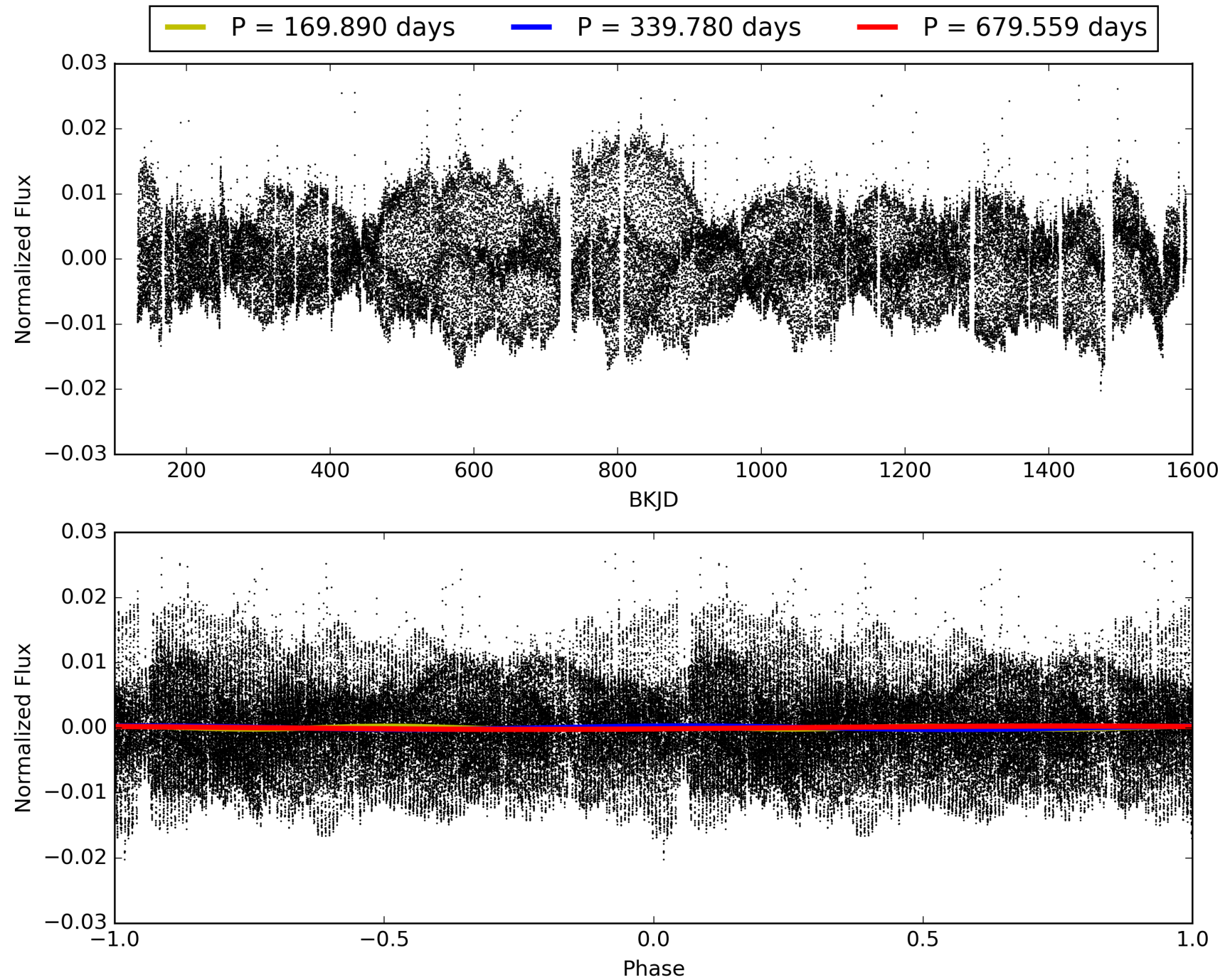
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 06:24:48 Z

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

TCE 010920281-03, PDC Light Curves

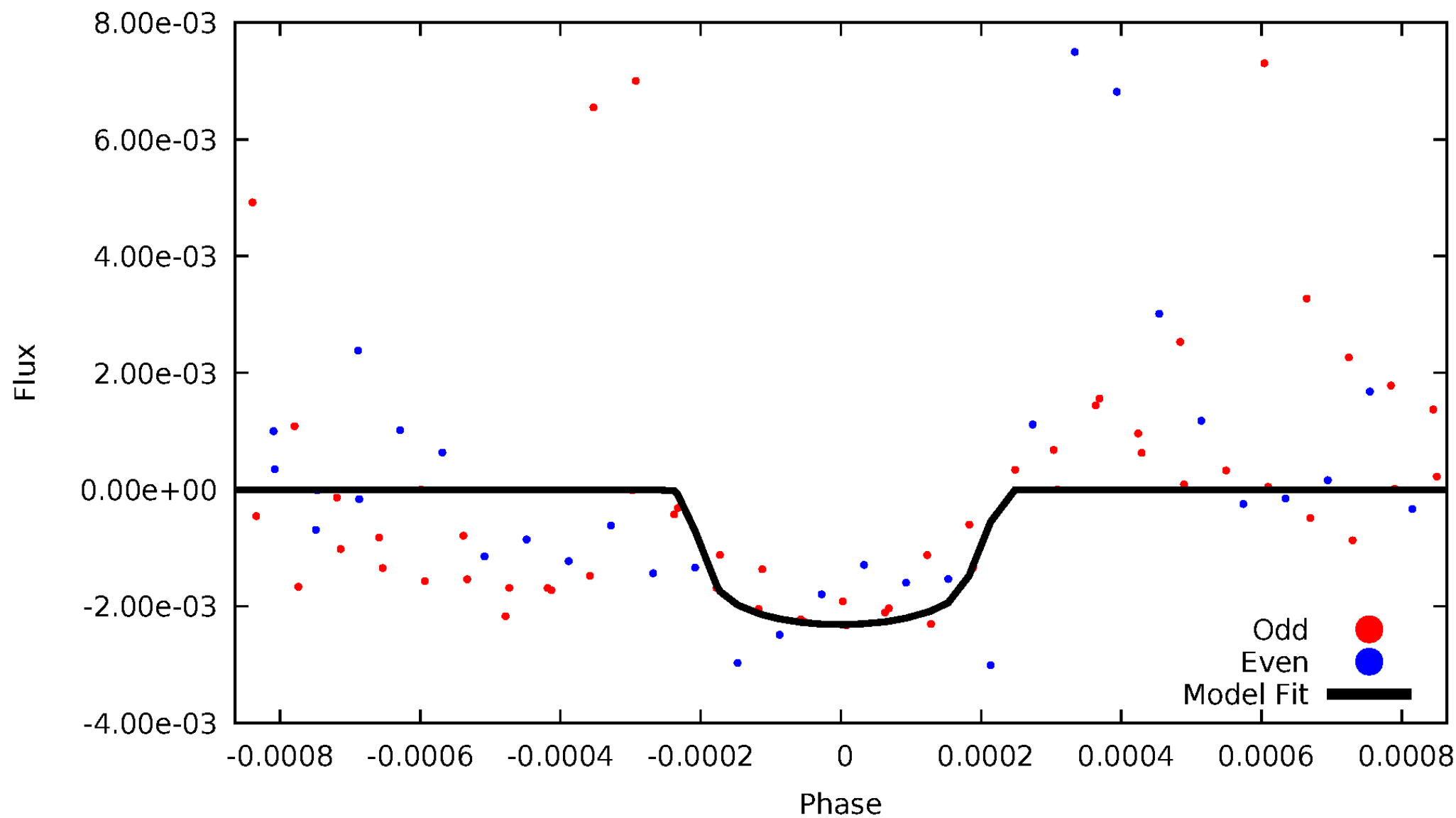


TCE 010920281-03



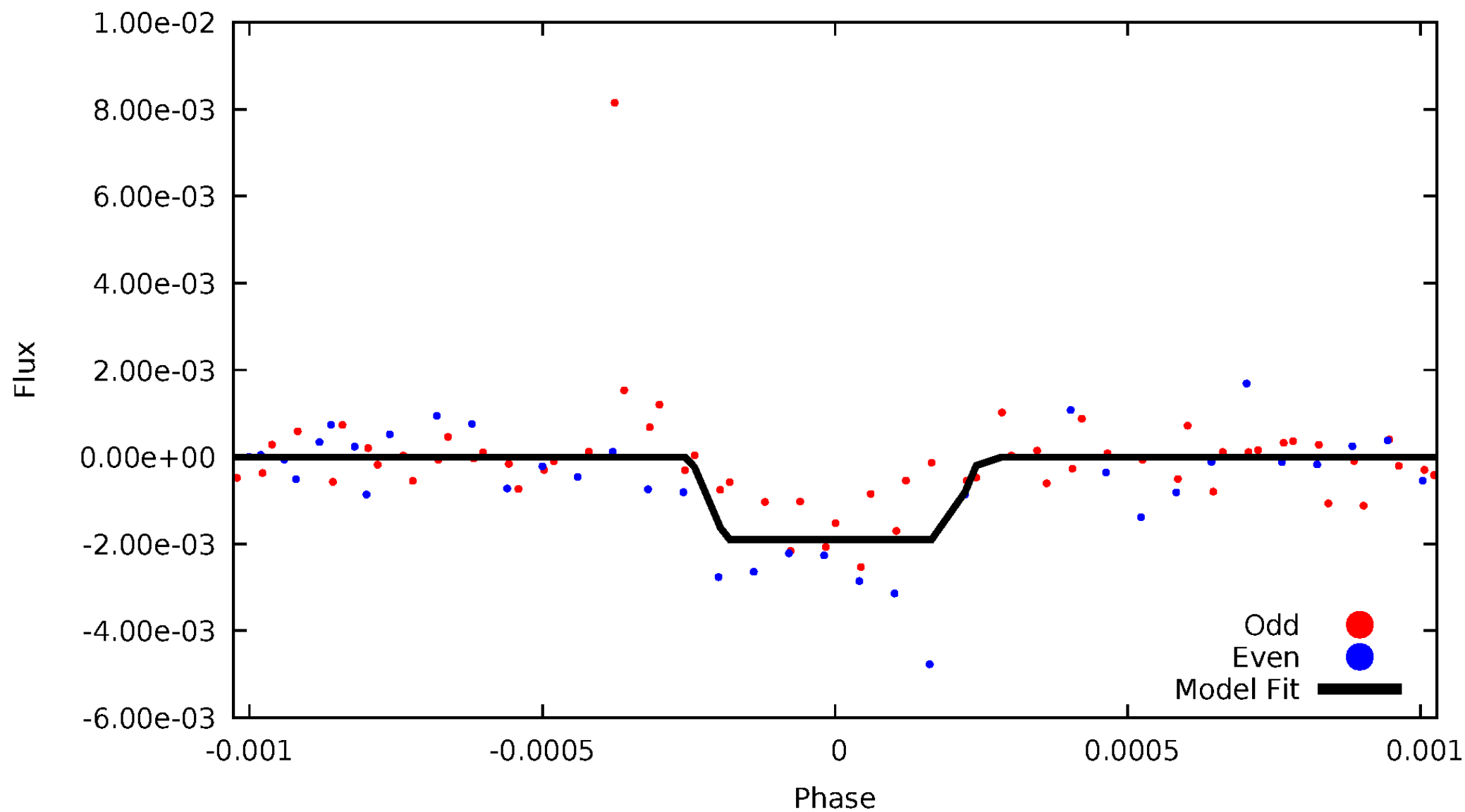
DV Odd/Even

TCE 010920281-03

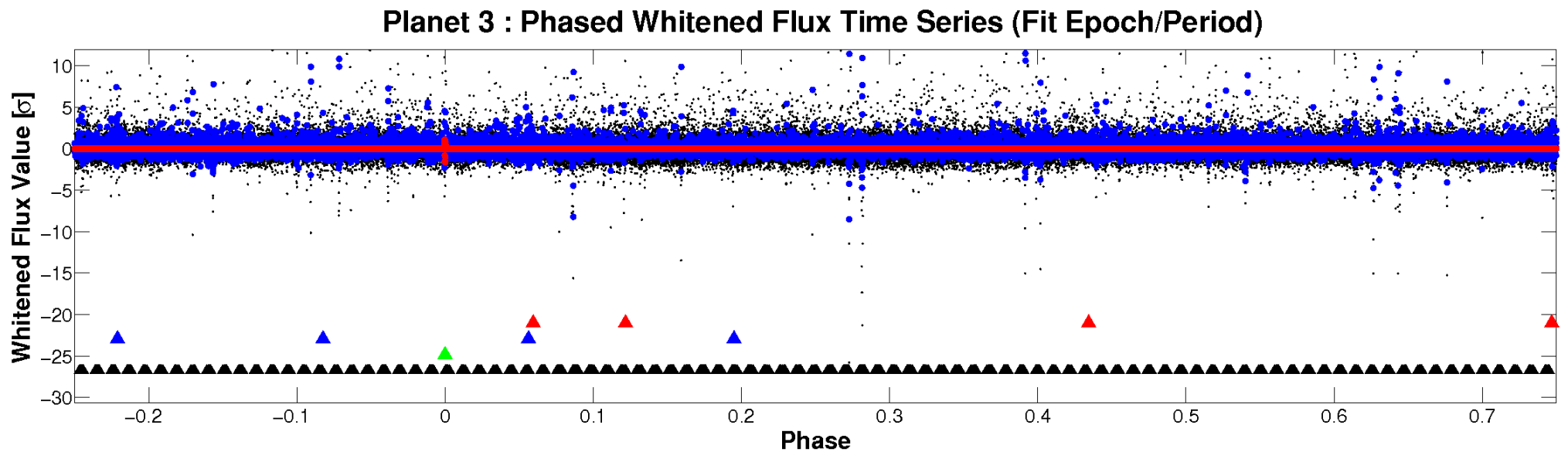
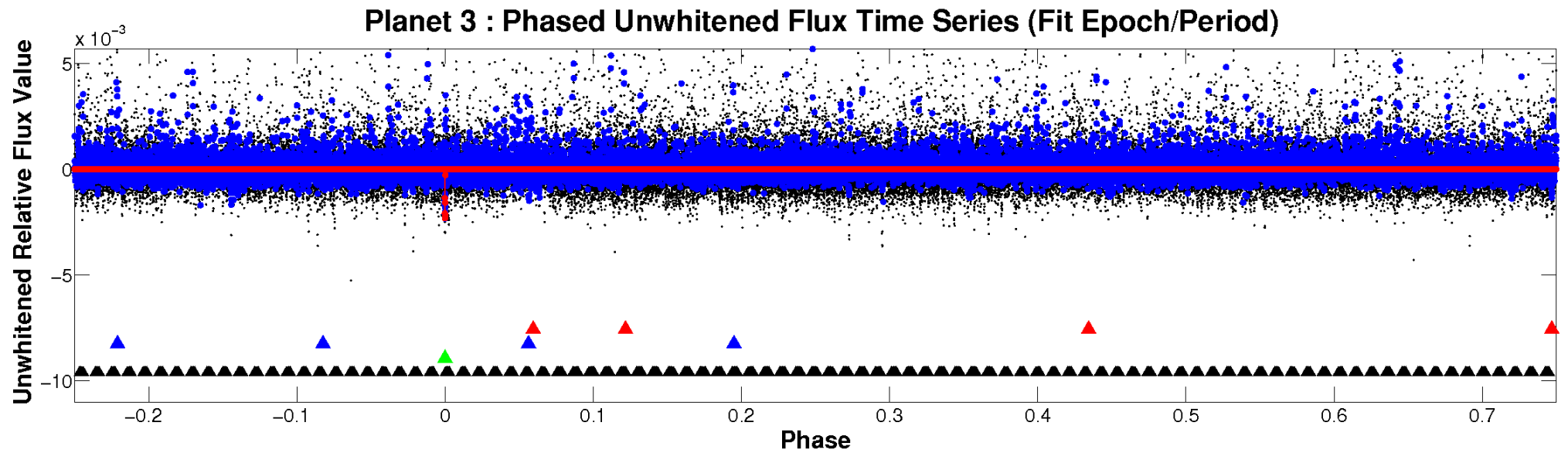


ALT Odd/Even

TCE 010920281-03

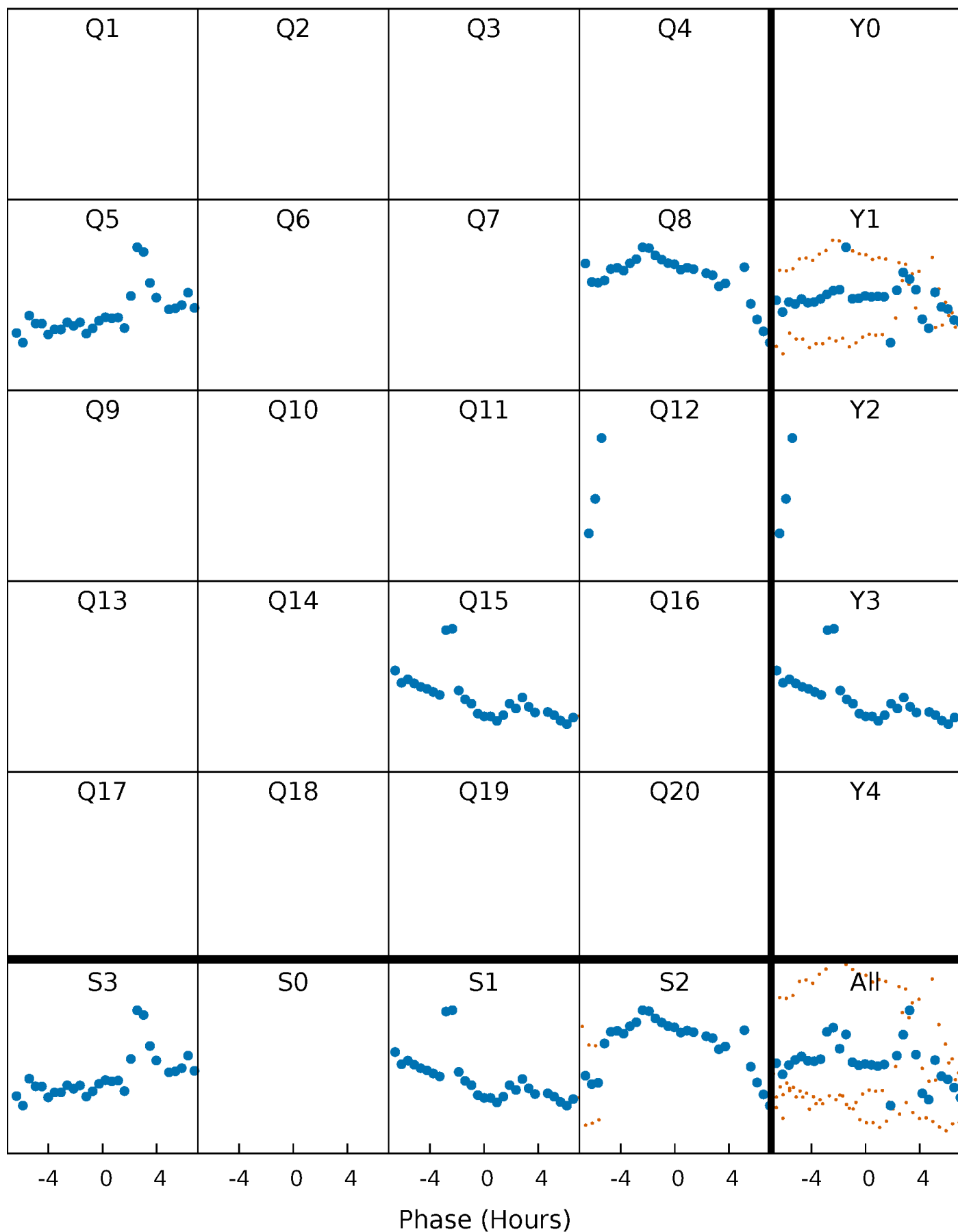


Non-Whitened Vs. Whitened Light Curve



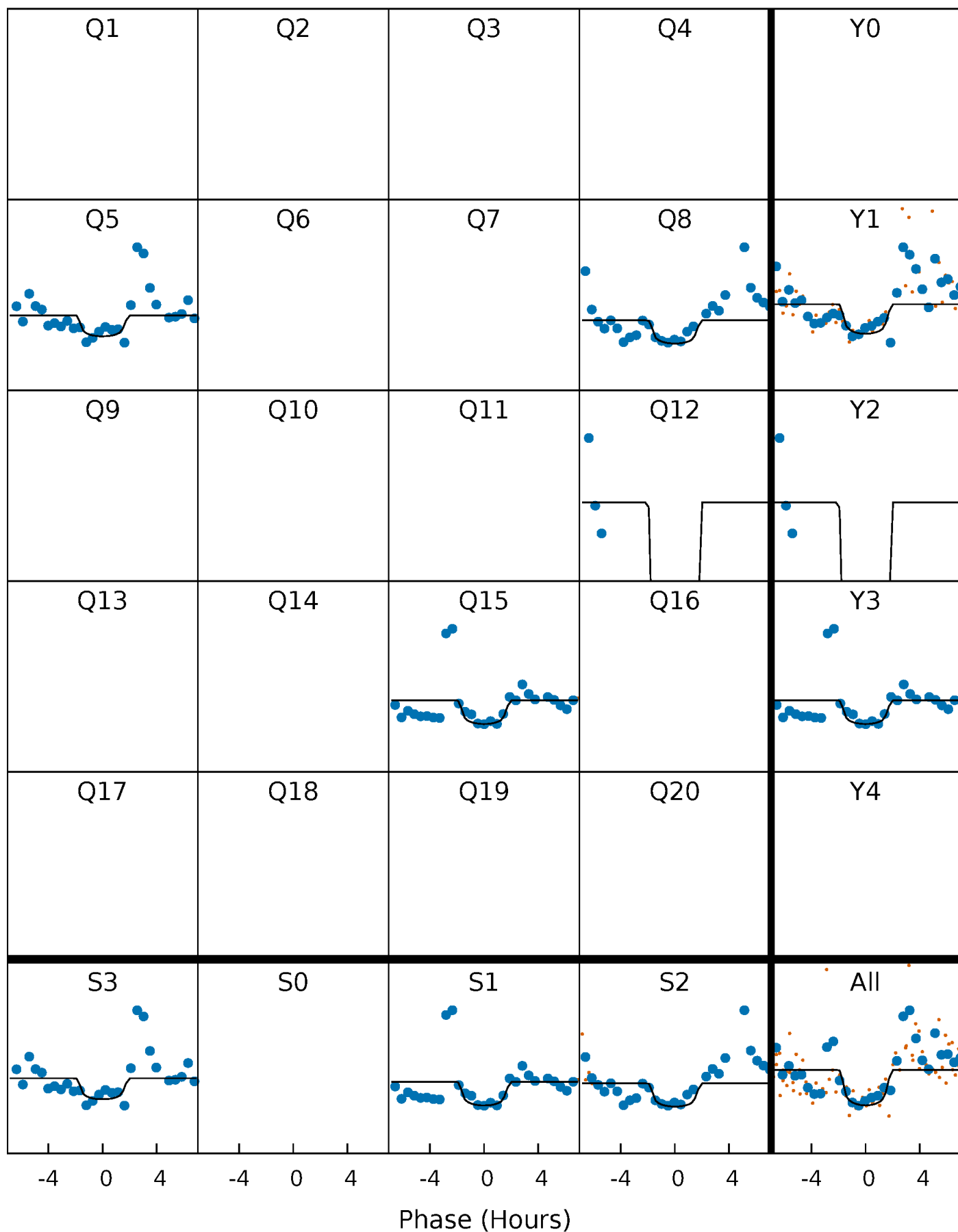
PDC Quarter-Phased Transit Curves

TCE 010920281-03 $P=339.779569$ Days $T_0=446.564709$ (BKJD)



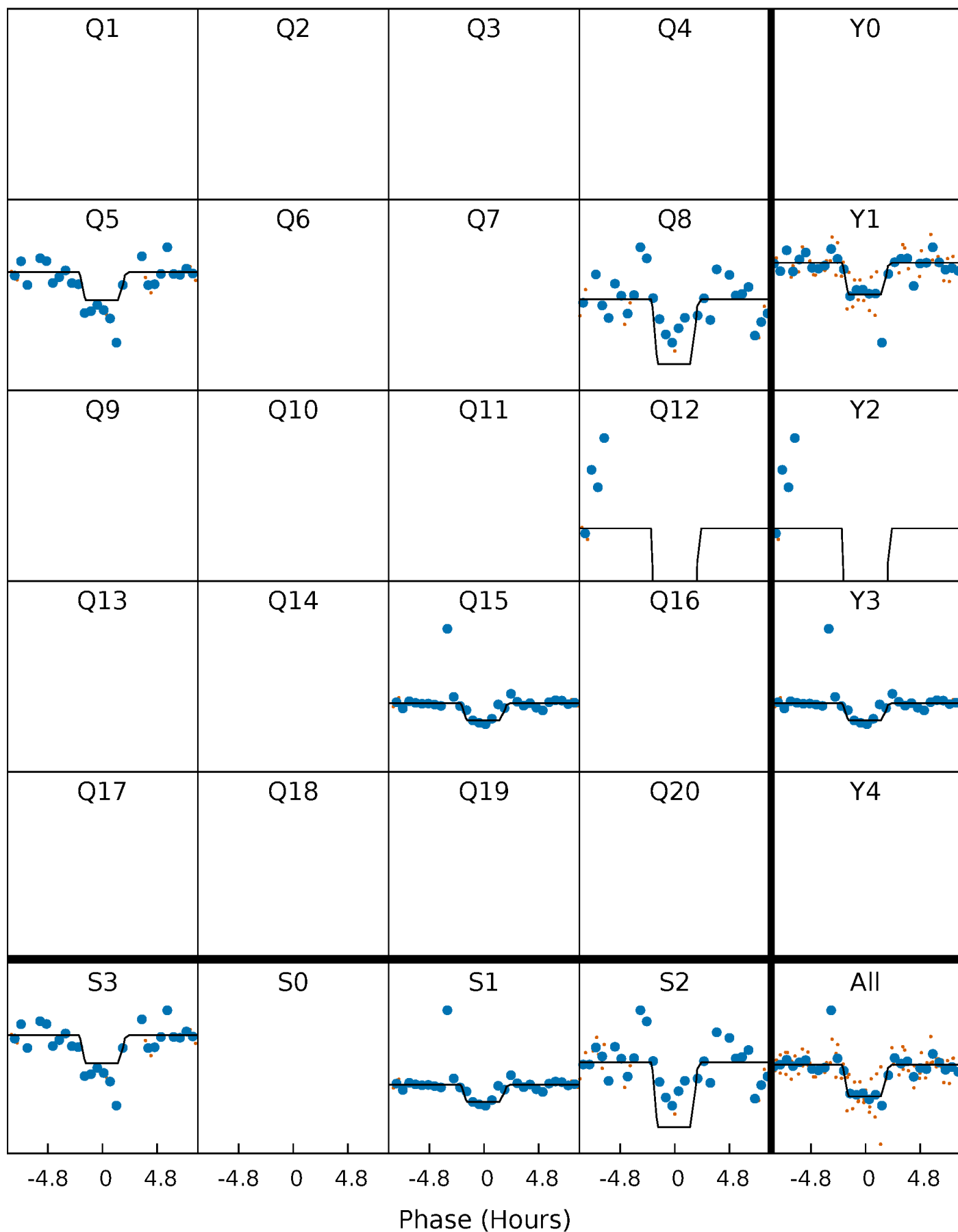
DV Quarter-Phased Transit Curves

TCE 010920281-03 $P=339.779569$ Days $T_0=446.564709$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

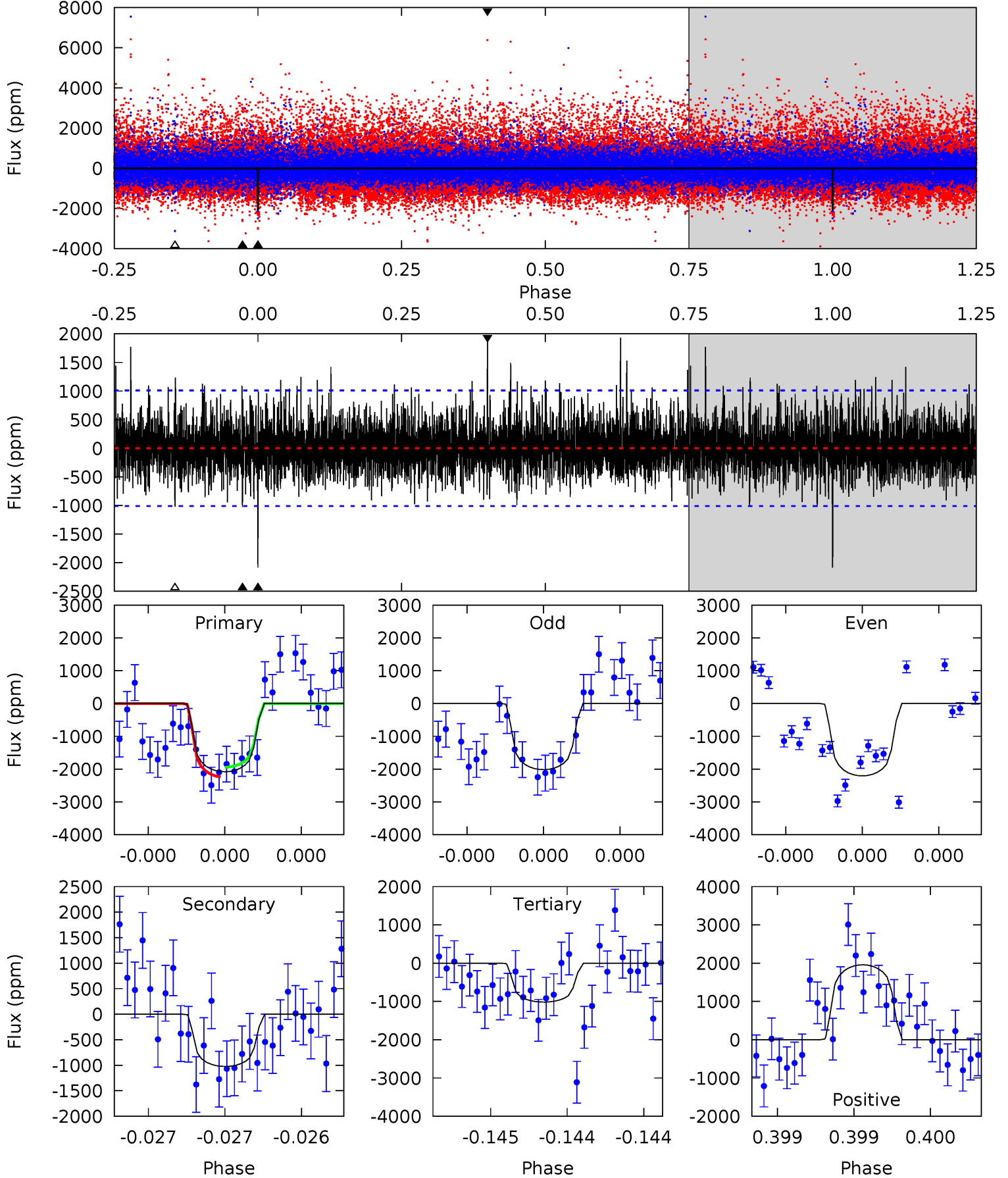
TCE 010920281-03 $P=339.783241$ Days $T_0=446.582241$ (BKJD)



DV Model-Shift Uniqueness Test

010920281-03, P = 339.779569 Days, E = 106.785140 Days

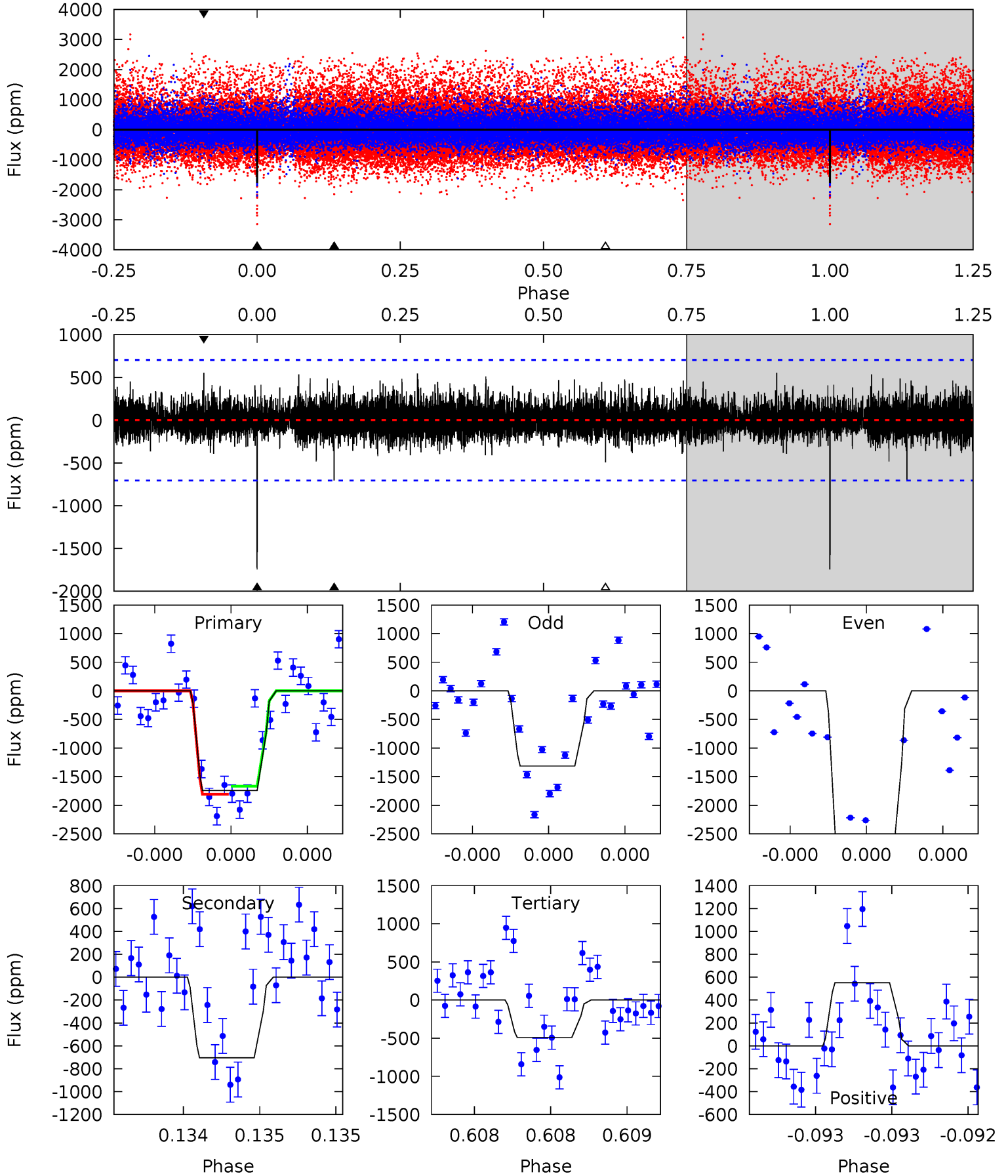
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.5	5.64	5.61	10.8	5.58	3.49	1.77	5.87	0.68	0.04	-5.15	0.46	0.99	0.48	0.83



Alt Model-Shift Uniqueness Test

010920281-03, P = 339.783241 Days, E = 106.799000 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.8	5.58	3.88	4.37	5.58	3.49	0.96	9.92	9.44	1.70	1.21	6.57	1.13	0.24	0.55



Stellar Parameters For KIC 010920281

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	3704^{+66}_{-81}	$4.797^{+0.052}_{-0.032}$	$-0.200^{+0.100}_{-0.100}$	$0.450^{+0.032}_{-0.044}$	$0.463^{+0.034}_{-0.042}$	$7.166^{+1.779}_{-0.985}$
	+2%/-2%	+1%/-1%	+50%/-50%	+7%/-10%	+7%/-9%	+25%/-14%
Source	PHO2	PHO2	PHO2	DSEP		

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

Secondary Eclipse Parameters for KIC 010920281-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-1024 ± 181	$2.64^{+2.13}_{-1.57}$	177^{+5}_{-5}	3108^{+1153}_{-460}	$42588^{+229464}_{-29654}$
Alt.	-705 ± 126	$2.67^{+2.06}_{-1.70}$	178^{+5}_{-5}	2960^{+1150}_{-413}	$29615^{+192163}_{-20641}$

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

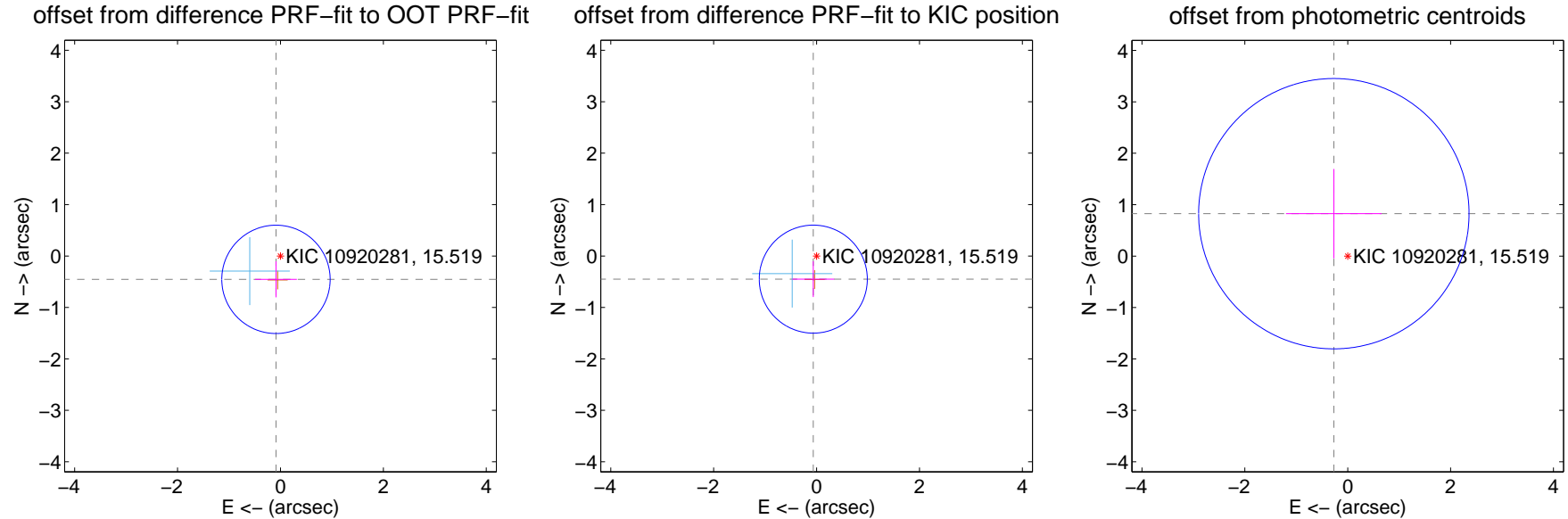
DV Centroid Data

Supplemental centroid analysis for 010920281-03. Kepler magnitude: 15.52. Transit SNR 6.96

There are 1 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.13 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.462 ± 0.351	1.32	0.087 ± 0.407	-0.454 ± 0.349
PRF-fit source offset from KIC position	0.454 ± 0.350	1.30	0.064 ± 0.407	-0.449 ± 0.349
photometric centroid source offset	0.87 ± 0.88	0.99	0.27 ± 0.93	0.82 ± 0.87

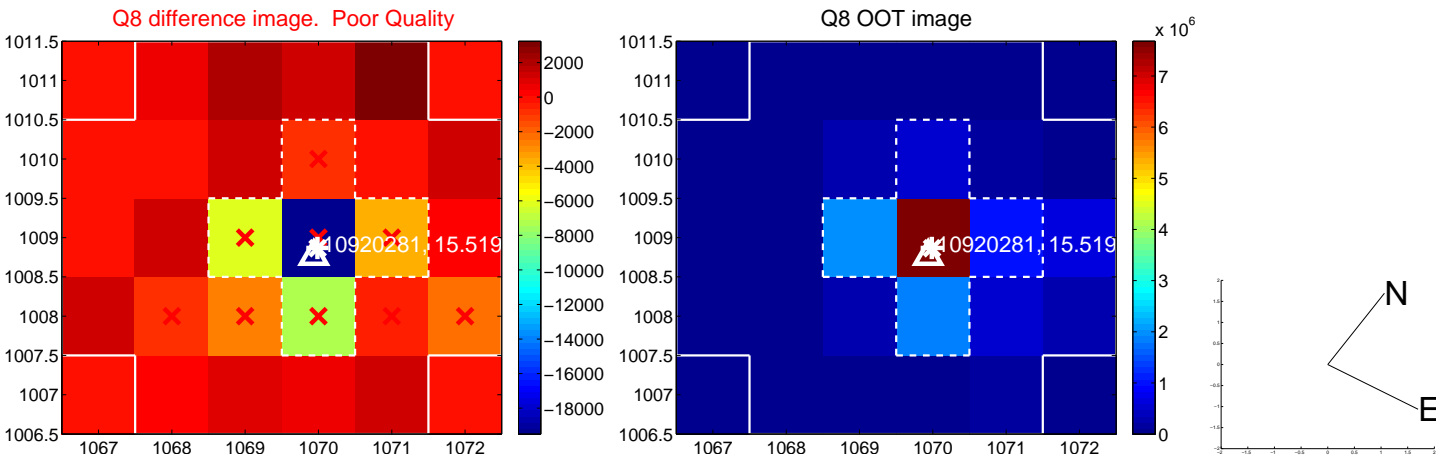
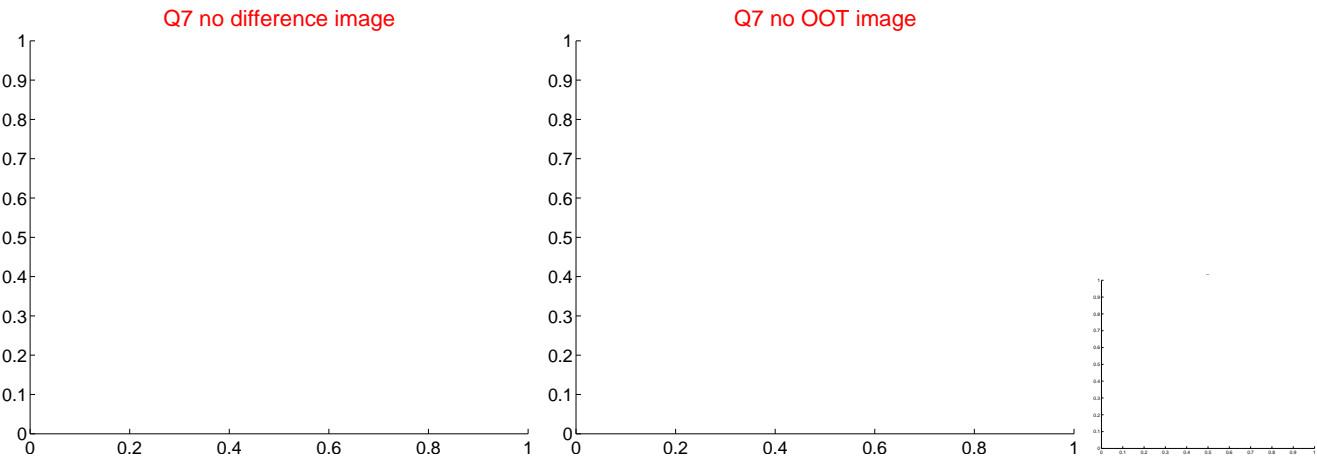
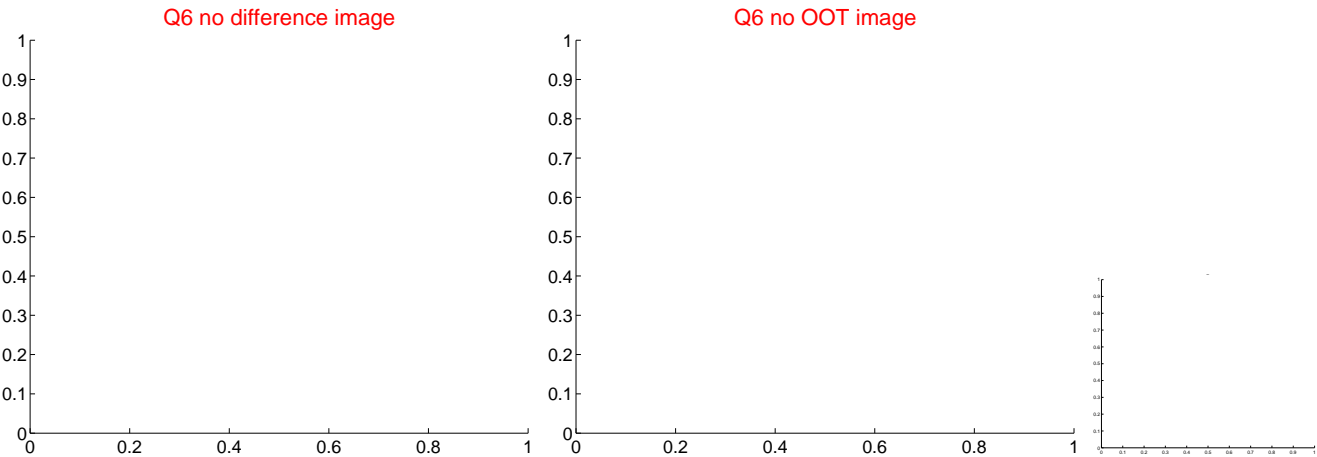
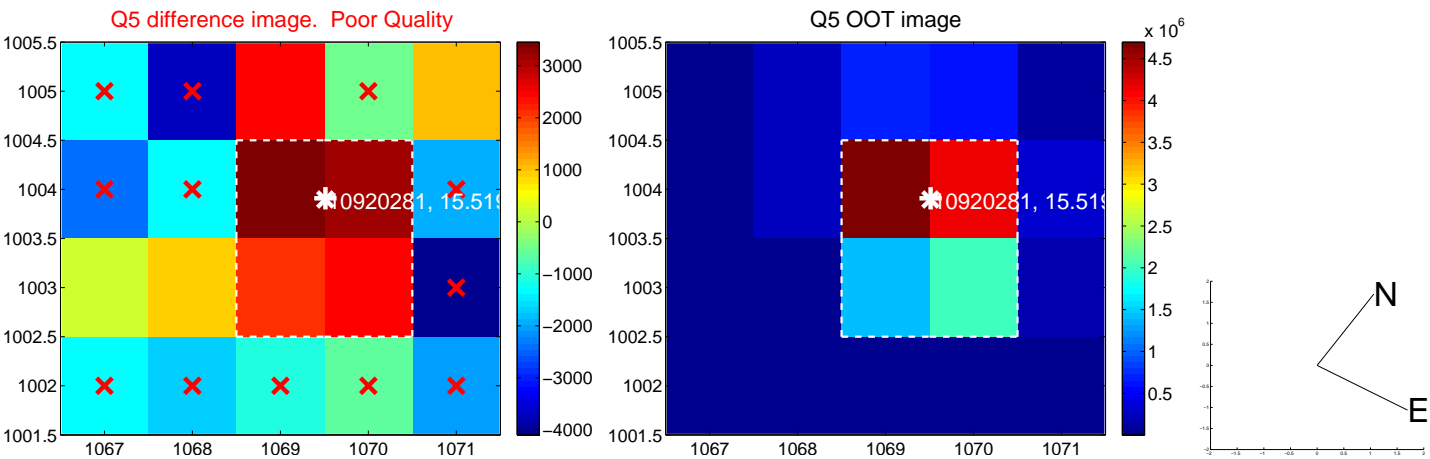


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ . 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 ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.

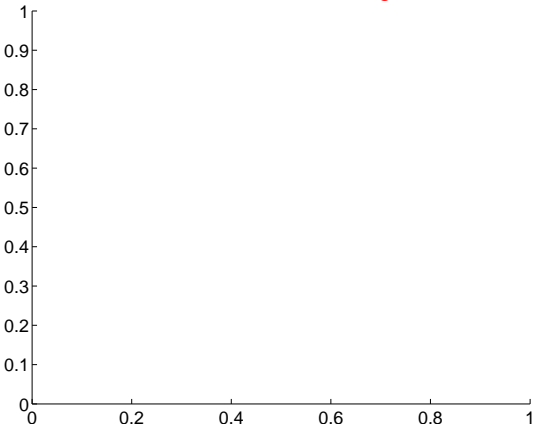


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

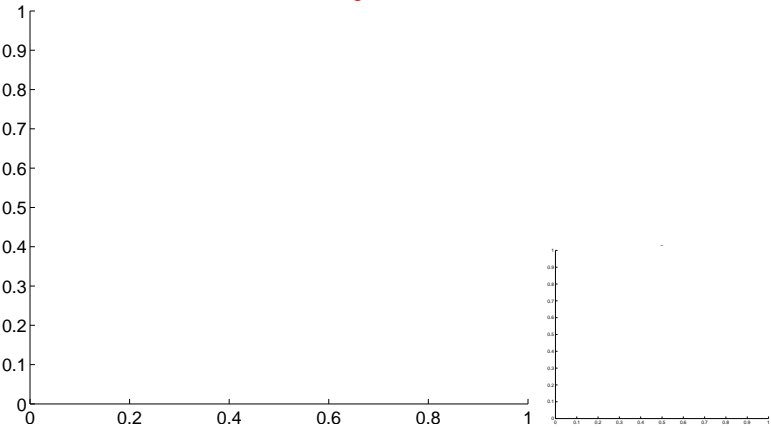


white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.

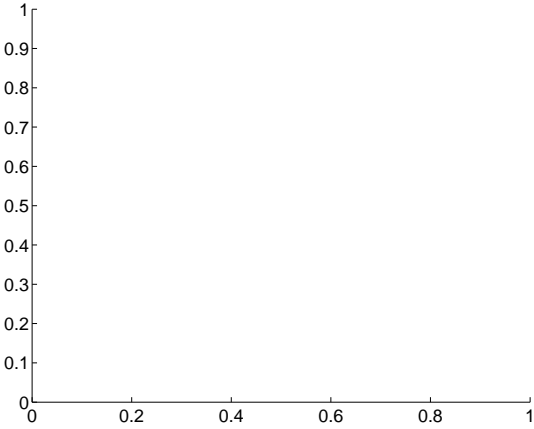
Q13 no difference image



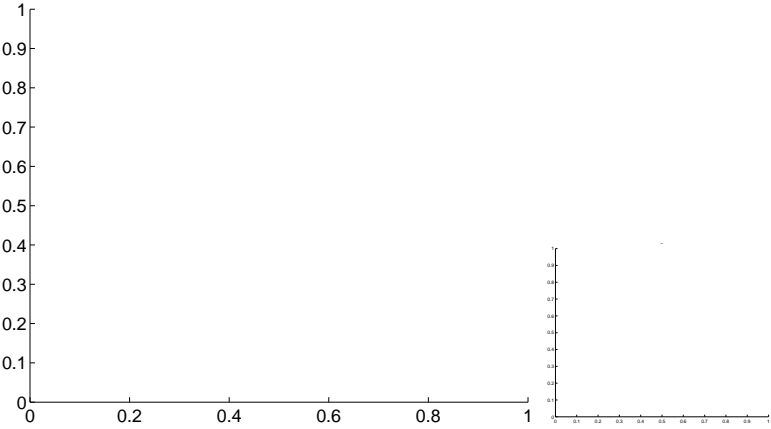
Q13 no OOT image



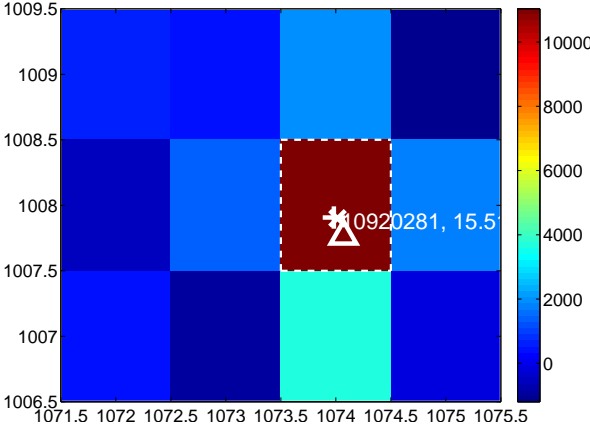
Q14 no difference image



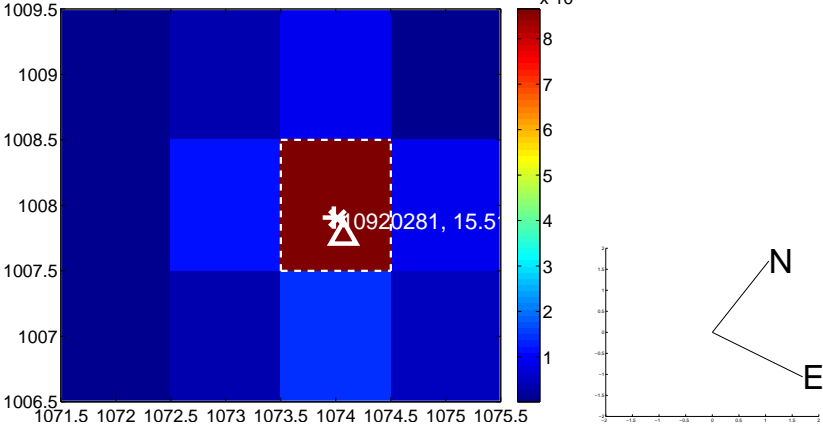
Q14 no OOT image



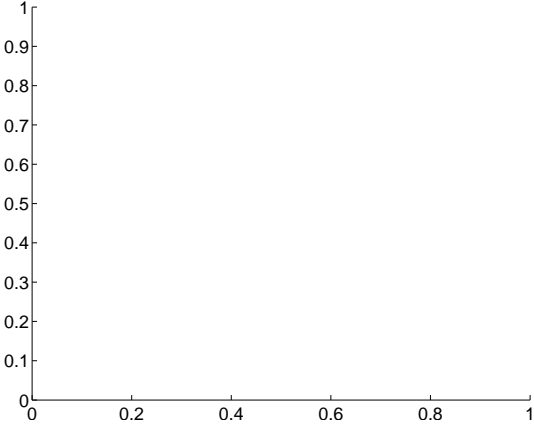
Q15 difference image



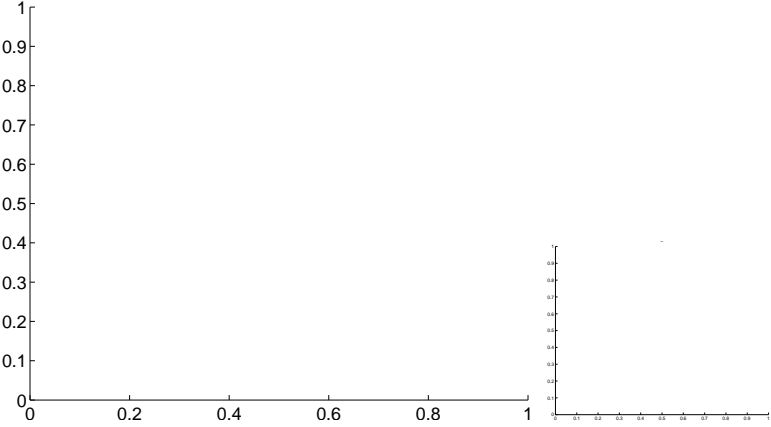
Q15 OOT image



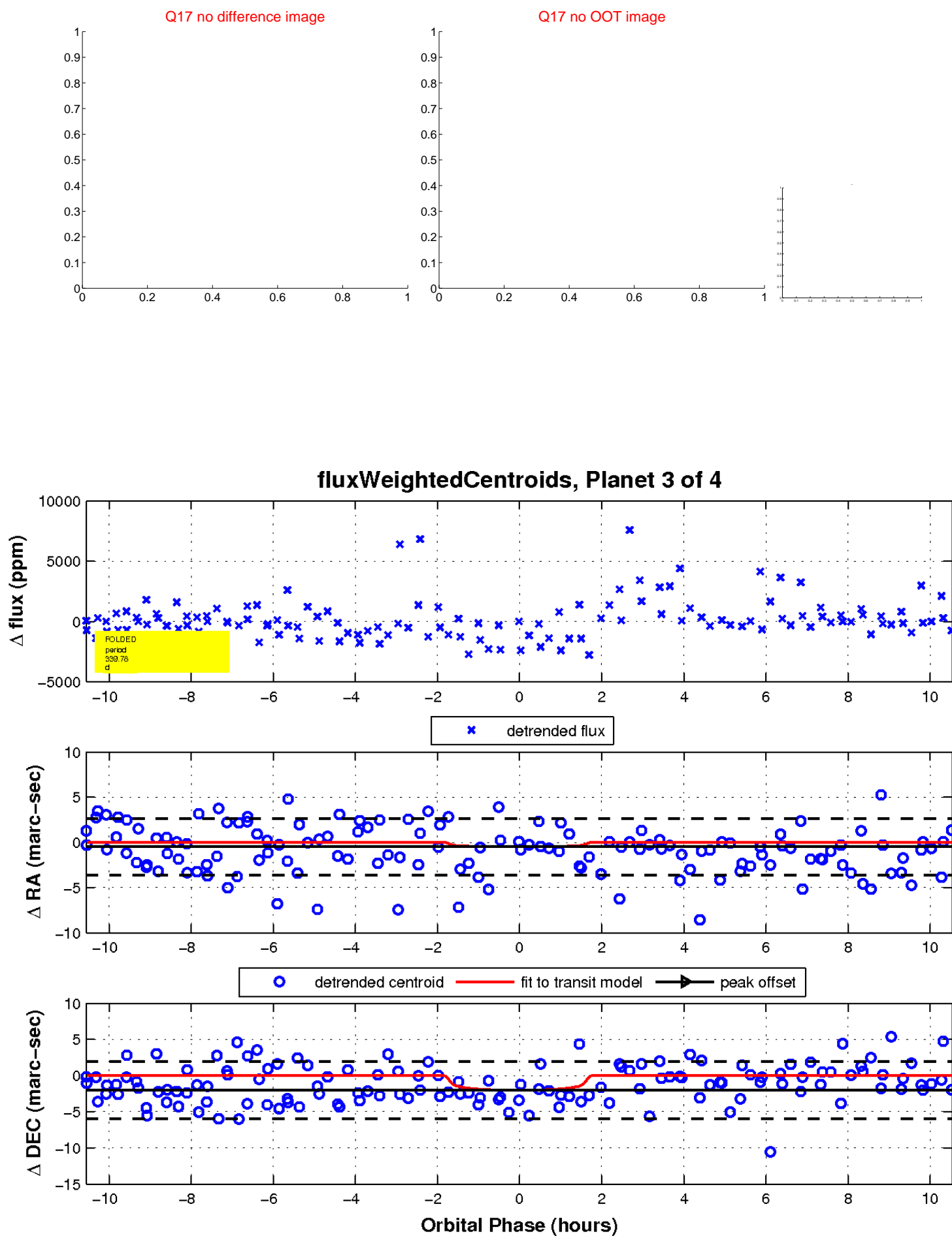
Q16 no difference image



Q16 no OOT image

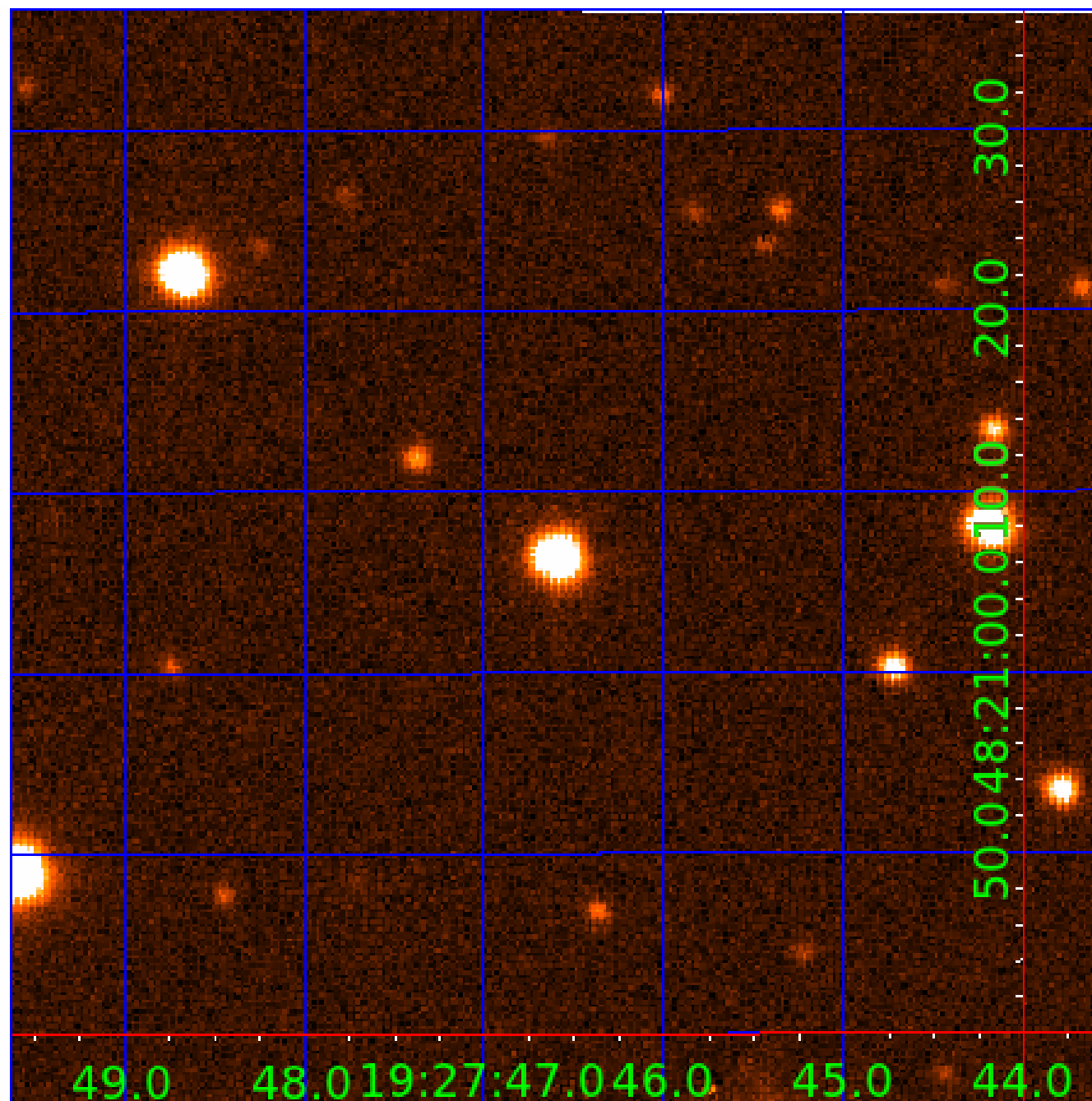


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 010920281

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})
010920281-01	OBS	No	445.984780	148.160656	2375.5	3.871	12.4	7.3	0.45	3704	2.18	0.04
010920281-02	OBS	No	386.902851	371.459924	2082.0	4.187	11.1	8.3	0.45	3704	2.08	0.05
010920281-03	OBS	No	339.779569	446.564709	2313.1	3.522	10.5	7.0	0.45	3704	2.15	0.06
010920281-04	OBS	8037.01	3.650383	133.632443	213.6	1.267	7.4	7.0	0.45	3704	0.79	26.50

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010920281-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
010920281-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
010920281-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—CENT_FEW_DIFFS
010920281-04	OBS	PC	1.00	0	0	0	0	NO_COMMENT

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

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

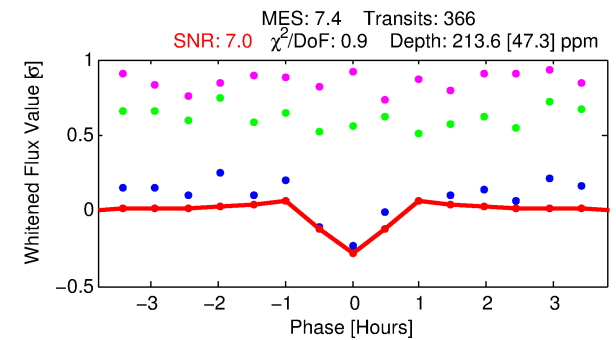
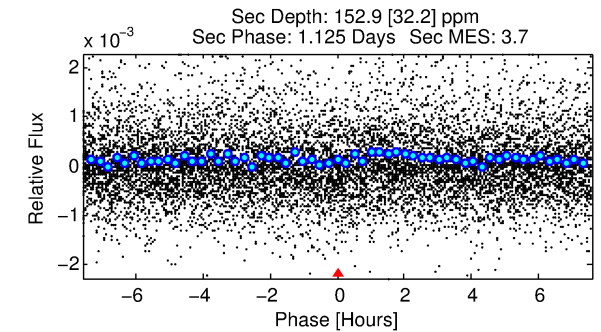
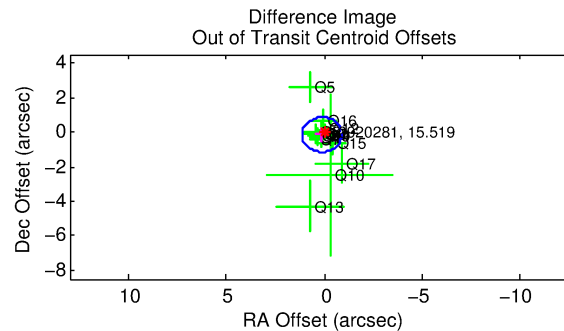
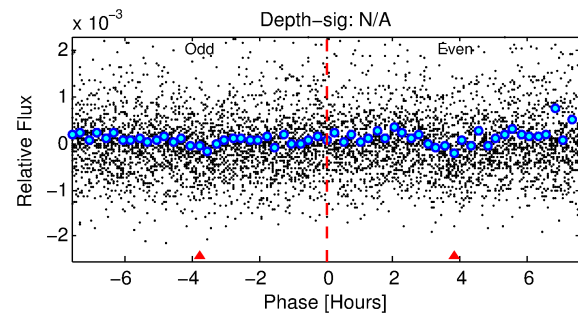
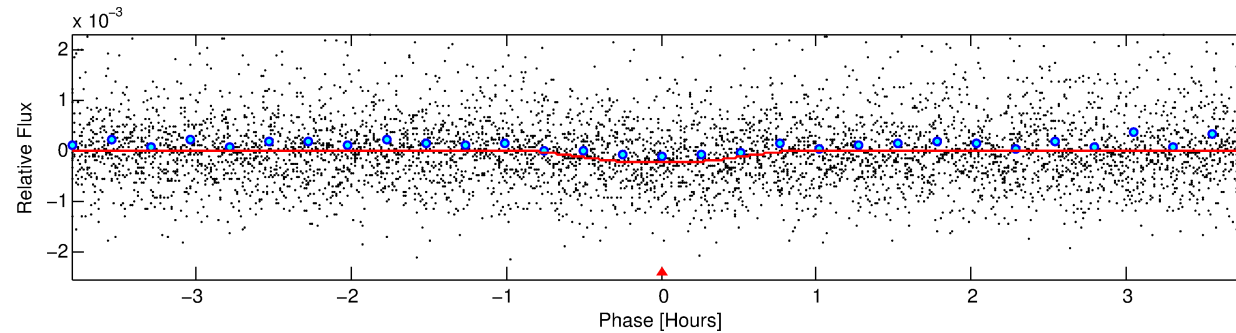
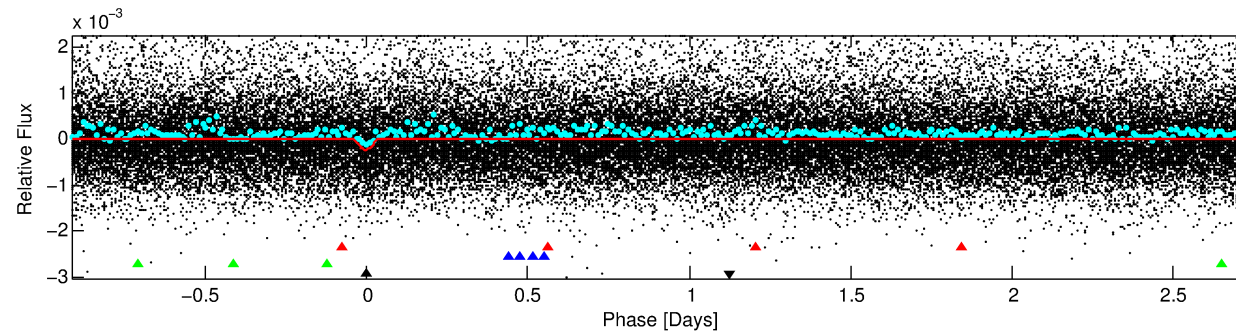
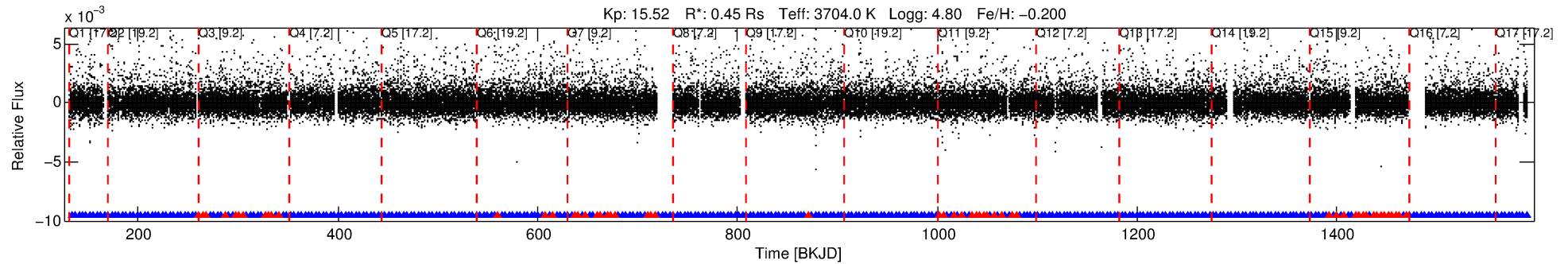
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 010920281-04

No Significant Match Found

DV One-Page Summary

KIC: 10920281 Candidate: 4 of 4 Period: 3.650 d



DV Fit Results:

Period = 3.65038 [0.00002] d
Epoch = 133.6324 [0.0030] BKJD
Rp/R* = 0.0161 [0.0160]
a/R* = 9.97 [45.79]
b = 0.91 [0.88]
Seff = 26.50 [3.58]
Teq = 579 [20] K
Rp = 0.79 [0.79] Re
a = 0.0359 [0.0027] AU
Ag = 173.44 [347.80] [0.50σ]
Teffp = 3246 [1627] K [1.64σ]

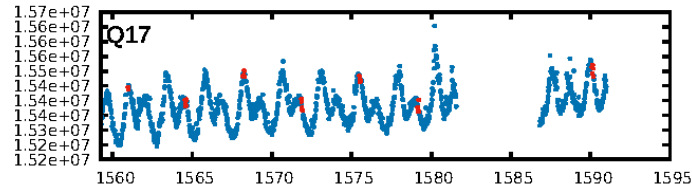
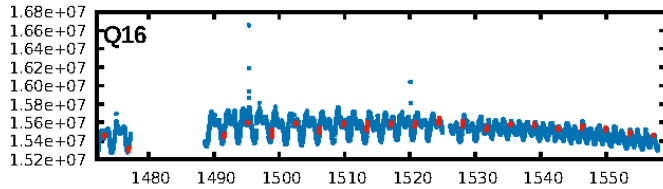
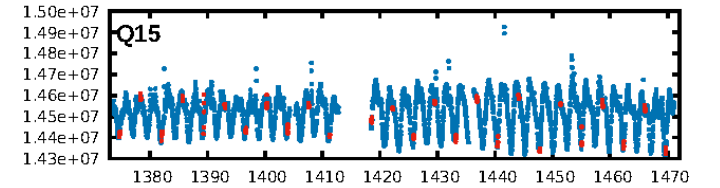
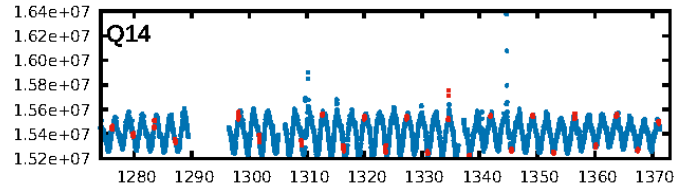
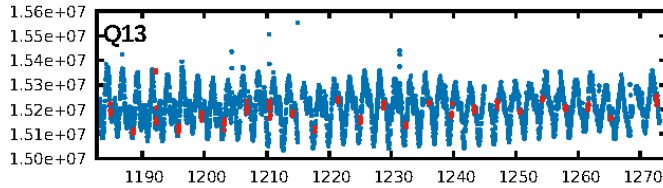
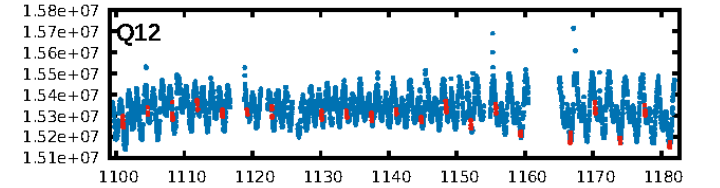
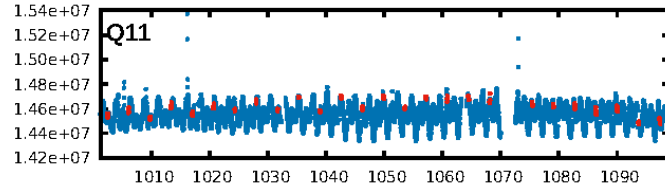
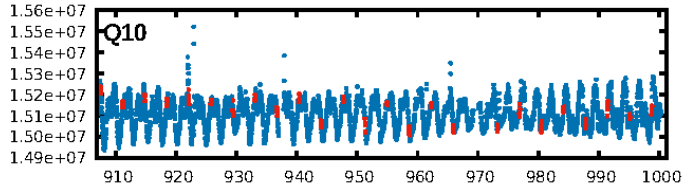
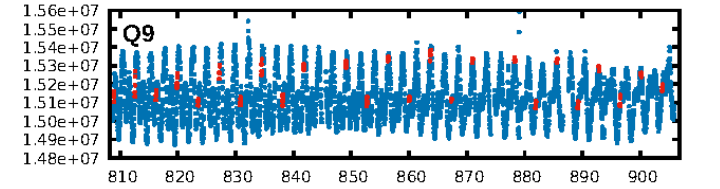
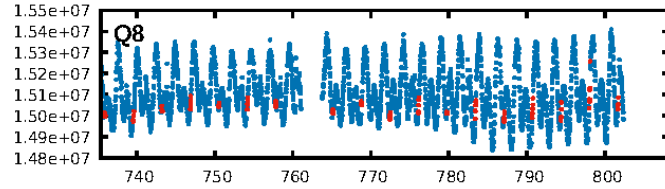
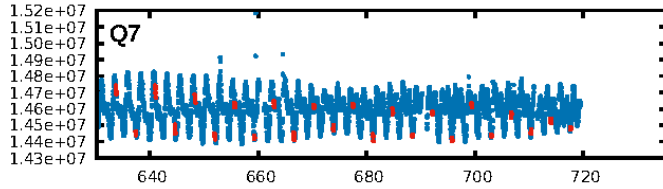
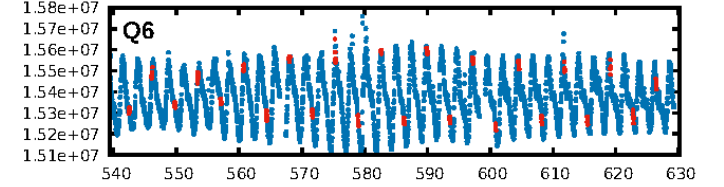
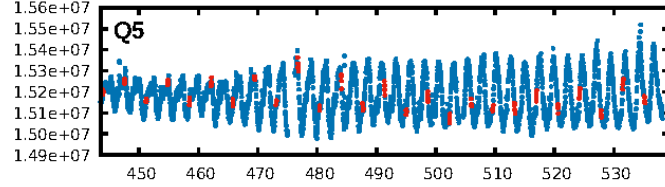
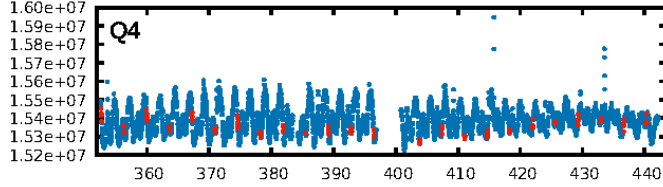
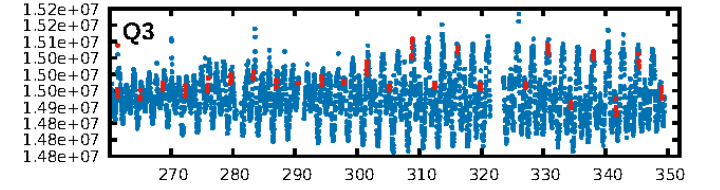
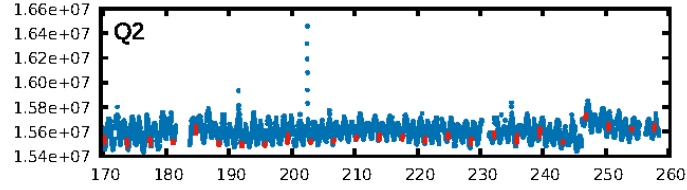
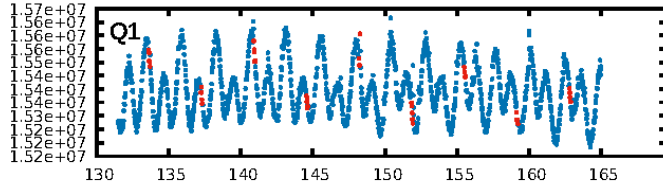
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [2155.17σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 0.84 [296/351]
GhostDiagnostic-chr: 1.722
Centroid-sig: 0.3%
Centroid-so: 3.141 arcsec [2.28σ]
OotOffset-rm: 0.197 arcsec [0.59σ]
OotOffset-st: 3/4/4/4 [15]
KicOffset-rm: 0.222 arcsec [0.59σ]
KicOffset-st: 3/4/4/4 [15]
DiffImageQuality-fgm: 0.53 [8/15]
DiffImageOverlap-fno: 1.00 [17/17]

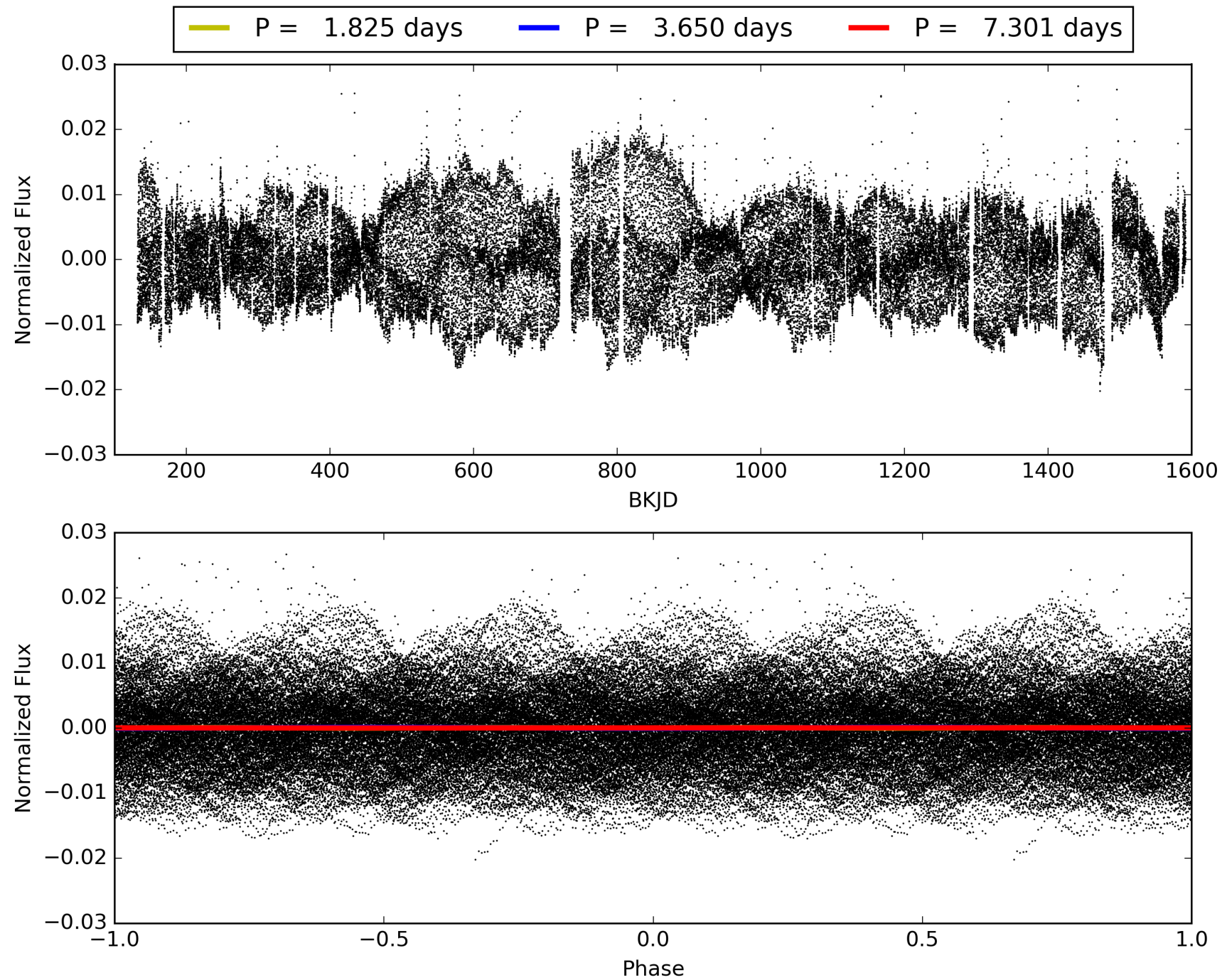
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 06:24:55 Z

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

TCE 010920281-04, PDC Light Curves

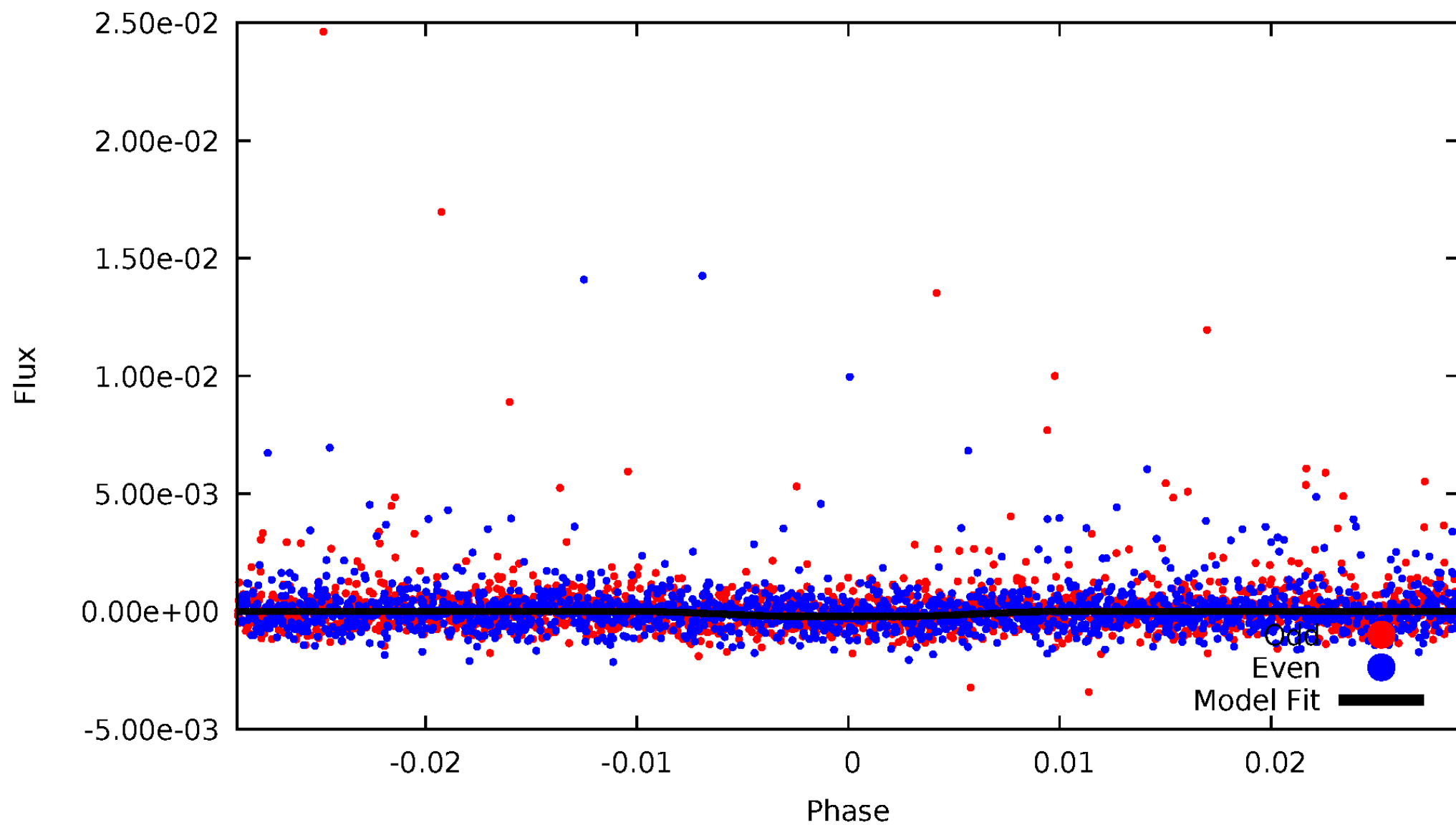


TCE 010920281-04



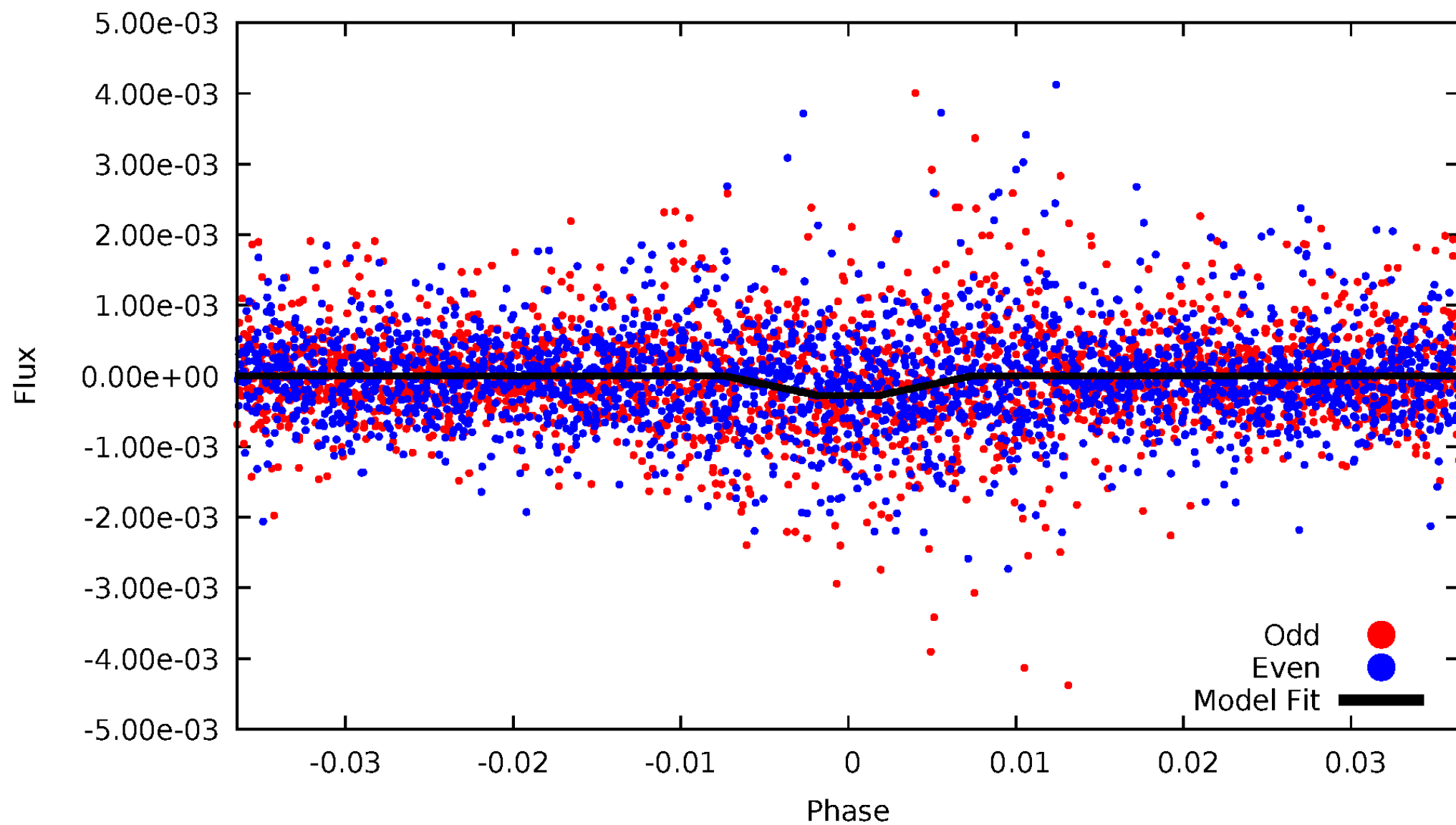
DV Odd/Even

TCE 010920281-04



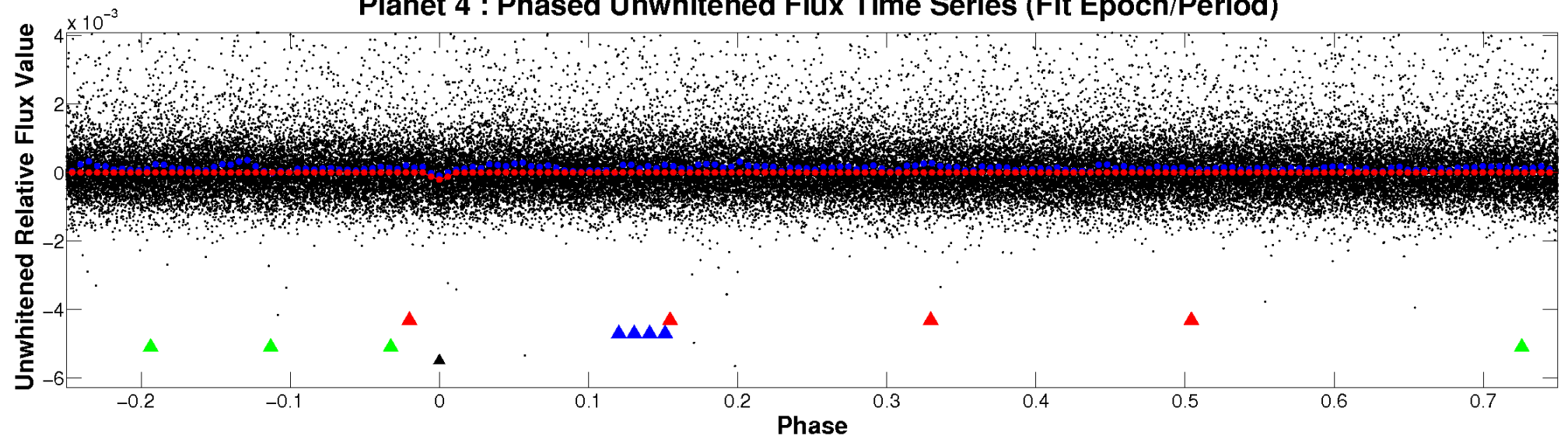
ALT Odd/Even

TCE 010920281-04

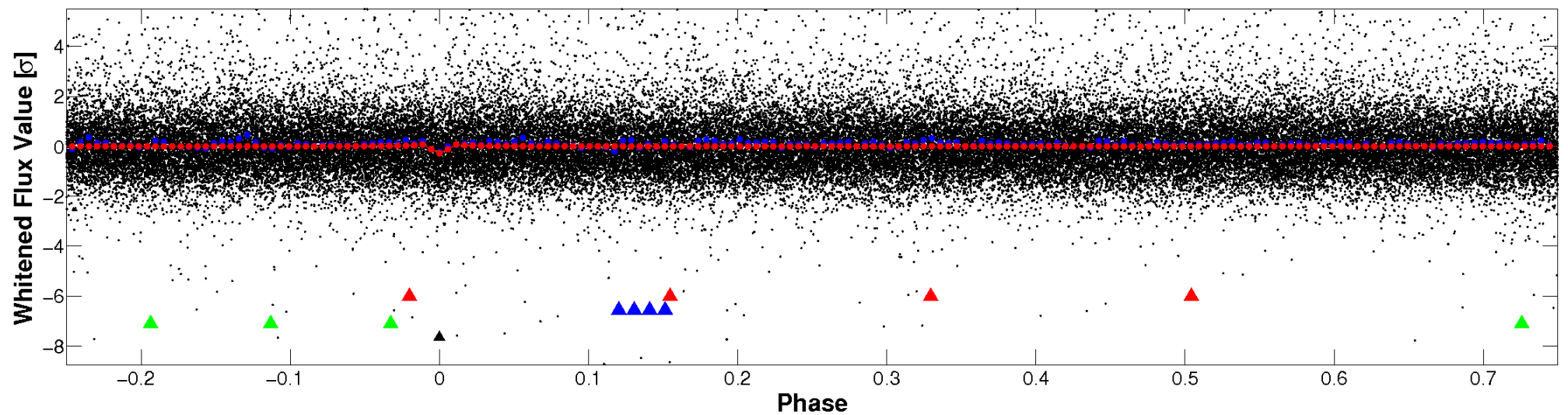


Non-Whitened Vs. Whitened Light Curve

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

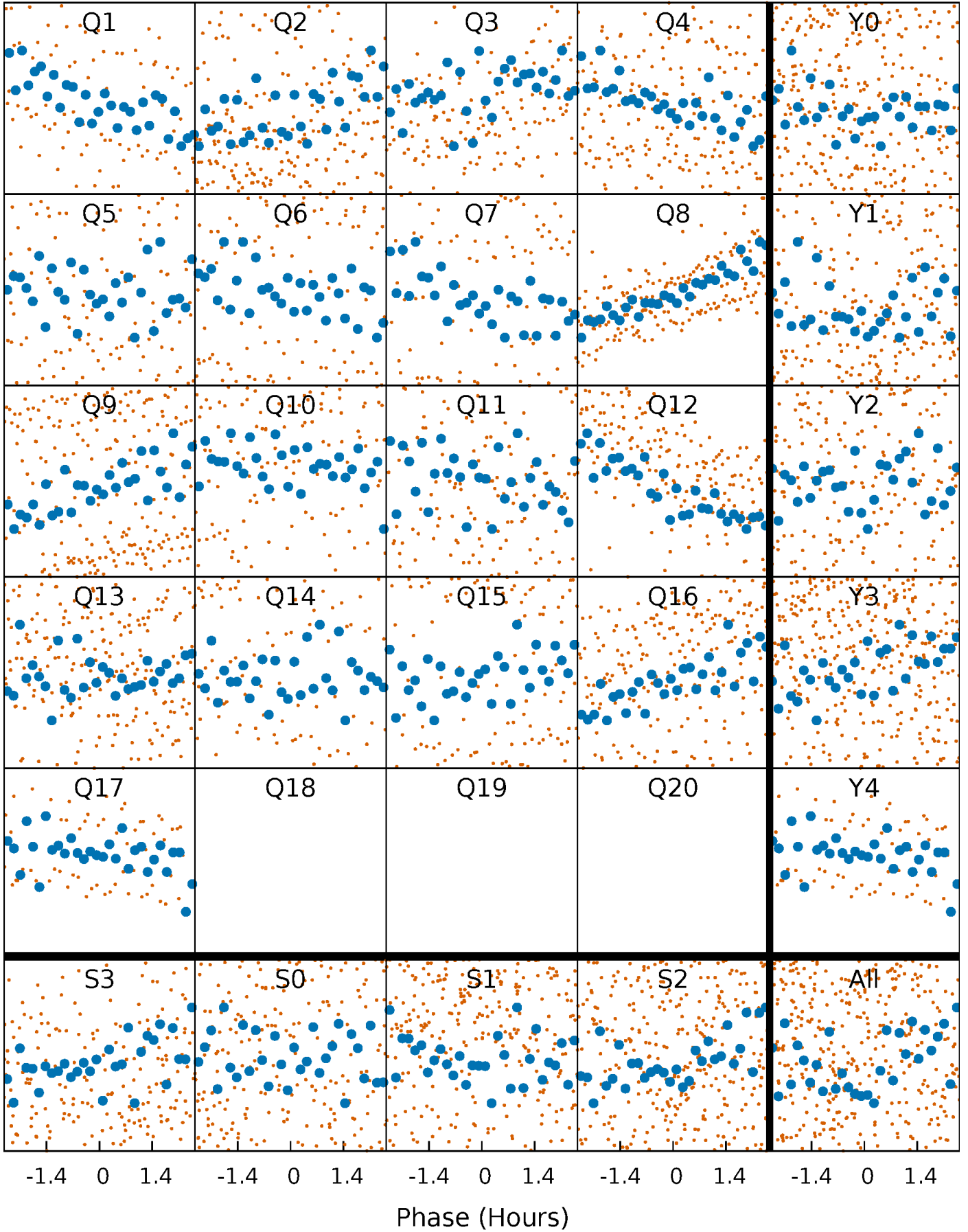


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



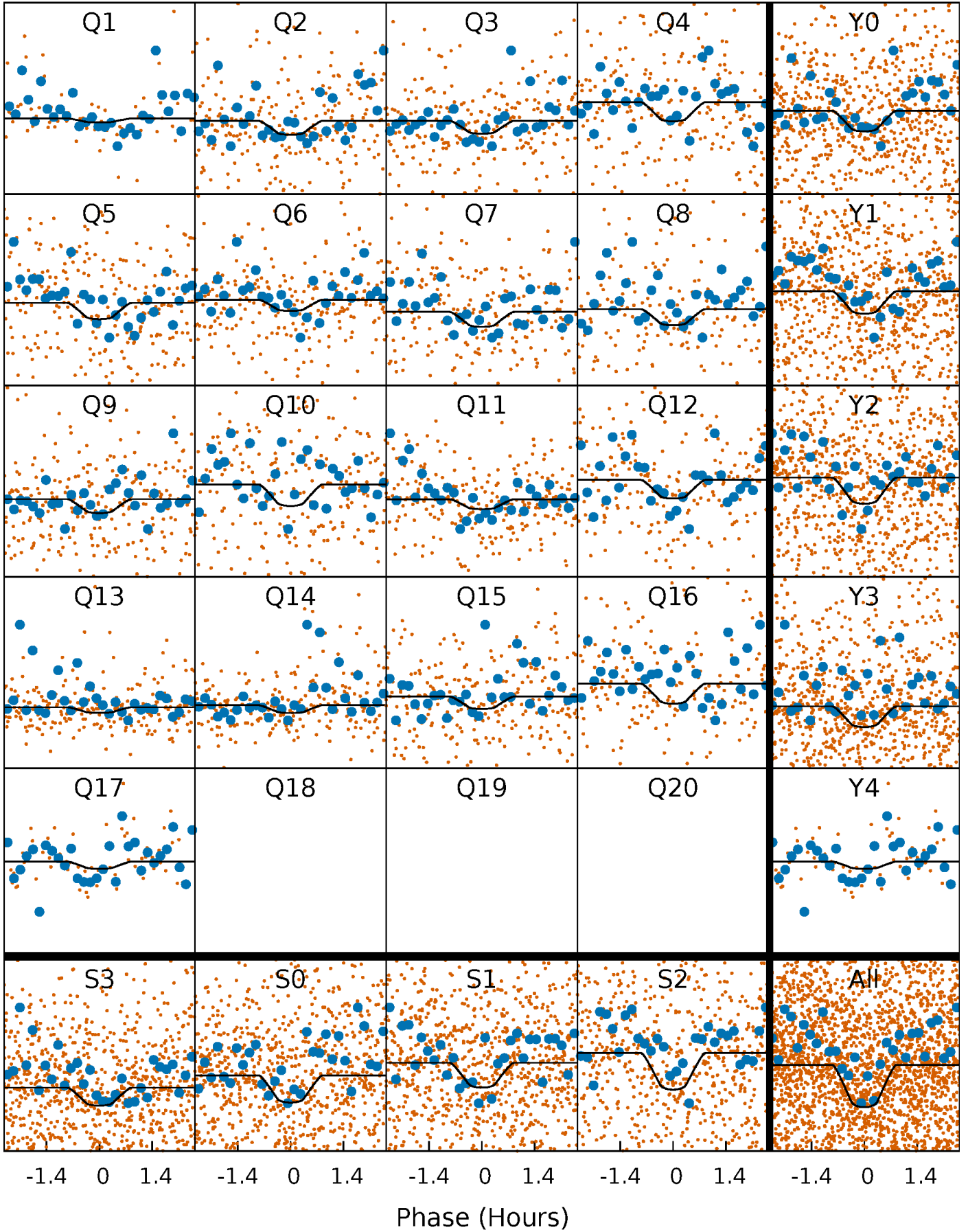
PDC Quarter-Phased Transit Curves

TCE 010920281-04 P= 3.650383 Days $T_0=133.632443$ (BKJD)



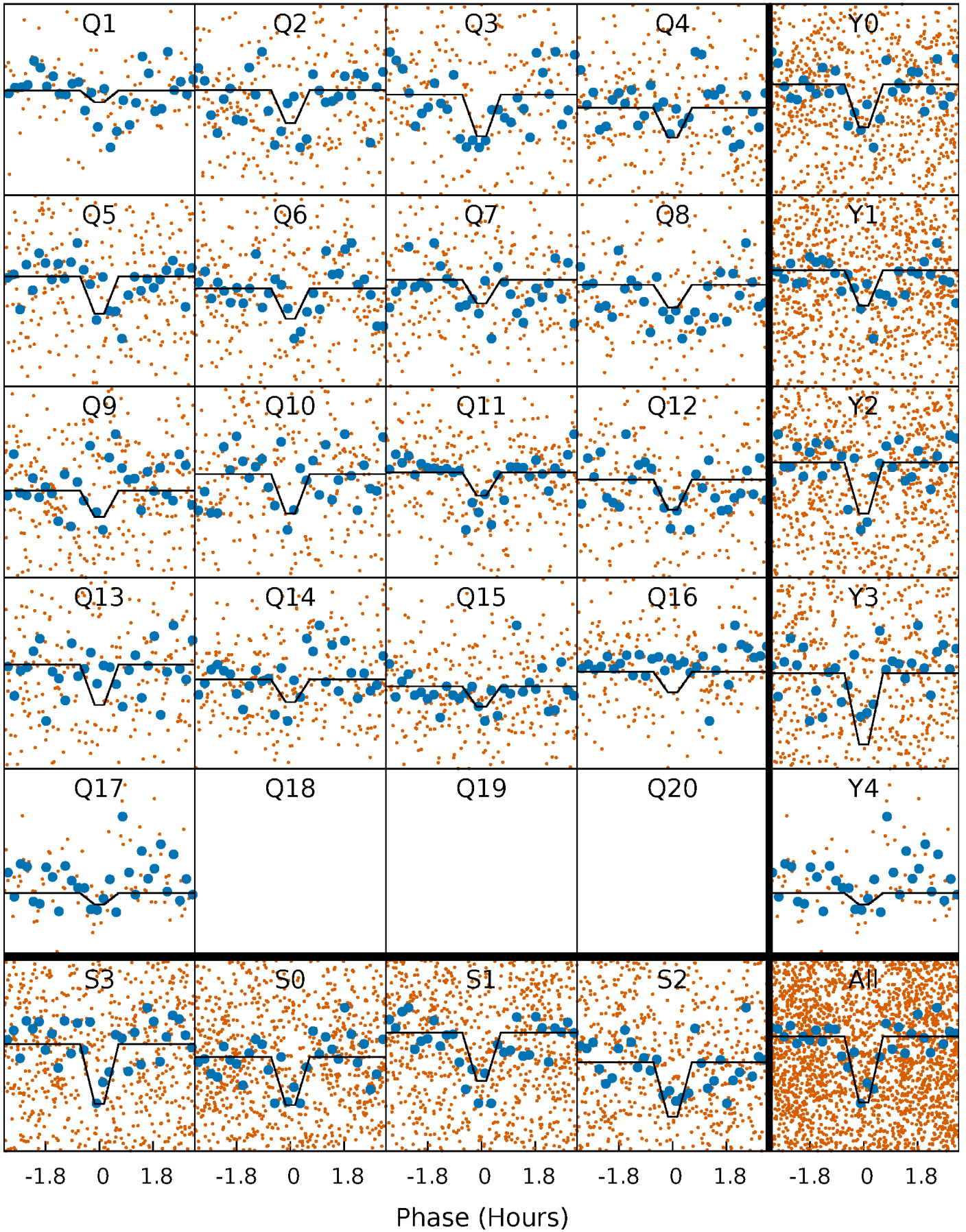
DV Quarter-Phased Transit Curves

TCE 010920281-04 $P = 3.650383$ Days $T_0 = 133.632443$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

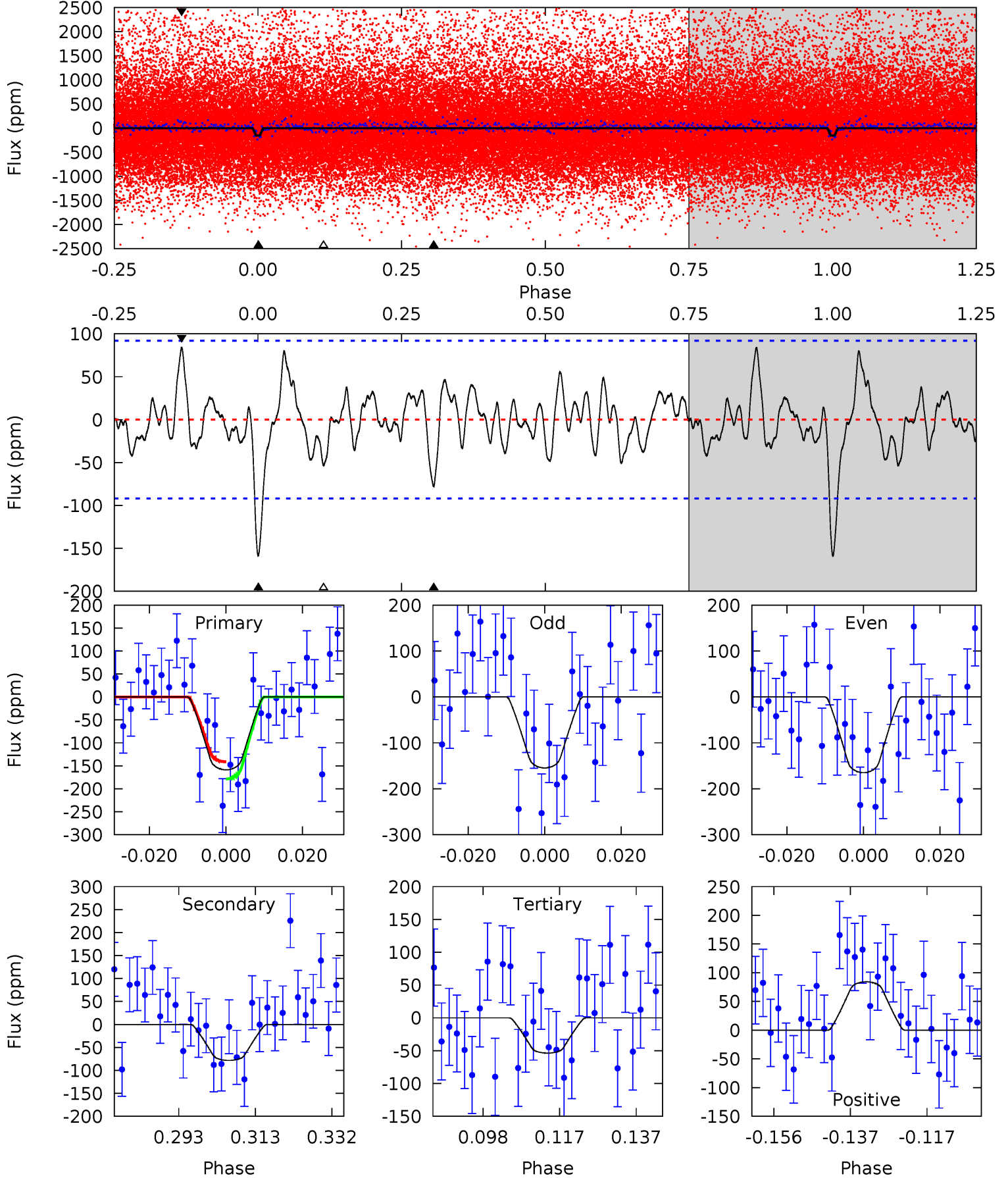
TCE 010920281-04 P= 3.650362 Days $T_0=133.635725$ (BKJD)



DV Model-Shift Uniqueness Test

010920281-04, P = 3.650383 Days, E = 129.982060 Days

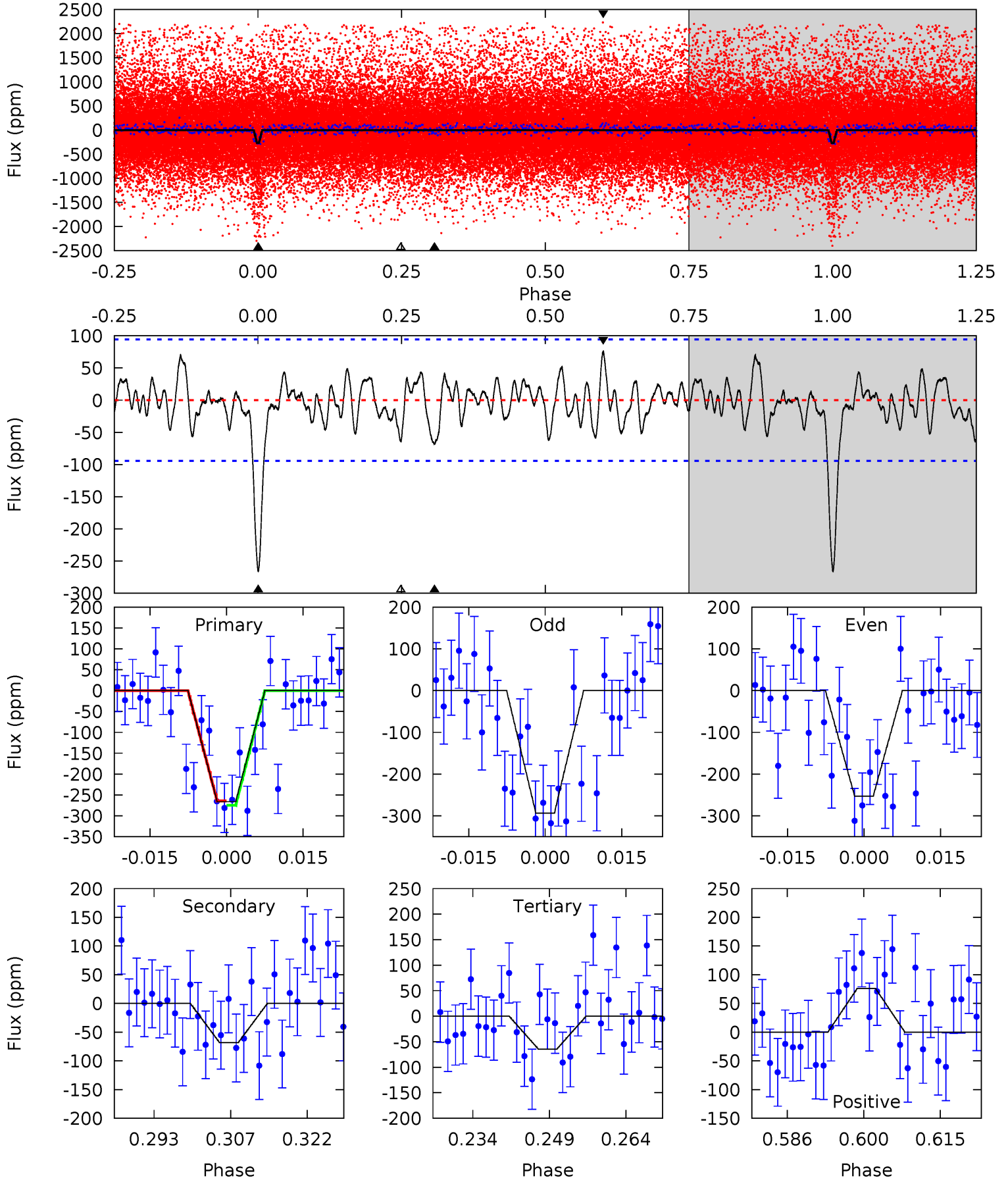
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.46	4.18	2.86	4.49	4.90	2.34	1.35	5.60	3.97	1.32	-0.31	0.27	0.42	0.35	1.00



Alt Model-Shift Uniqueness Test

010920281-04, P = 3.650362 Days, E = 129.985363 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
14.0	3.59	3.38	3.98	4.95	2.44	1.32	10.6	9.99	0.21	-0.39	1.07	1.15	0.22	0.28



Stellar Parameters For KIC 010920281

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	3704^{+66}_{-81}	$4.797^{+0.052}_{-0.032}$	$-0.200^{+0.100}_{-0.100}$	$0.450^{+0.032}_{-0.044}$	$0.463^{+0.034}_{-0.042}$	$7.166^{+1.779}_{-0.985}$
	+2%/-2%	+1%/-1%	+50%/-50%	+7%/-10%	+7%/-9%	+25%/-14%
Source	PHO2	PHO2	PHO2	DSEP		

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

Secondary Eclipse Parameters for KIC 010920281-04 / KOI 8037.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-78 ± 19	$0.92^{+0.73}_{-0.59}$	804^{+21}_{-22}	2942^{+1097}_{-431}	67^{+420}_{-47}
Alt.	-68 ± 19	$0.98^{+0.69}_{-0.62}$	805^{+20}_{-21}	2819^{+1036}_{-391}	49^{+331}_{-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 $T_{\text{obs}} \gg T_{\text{max}}$ AND $A_{\text{obs}} \gg 1.0$

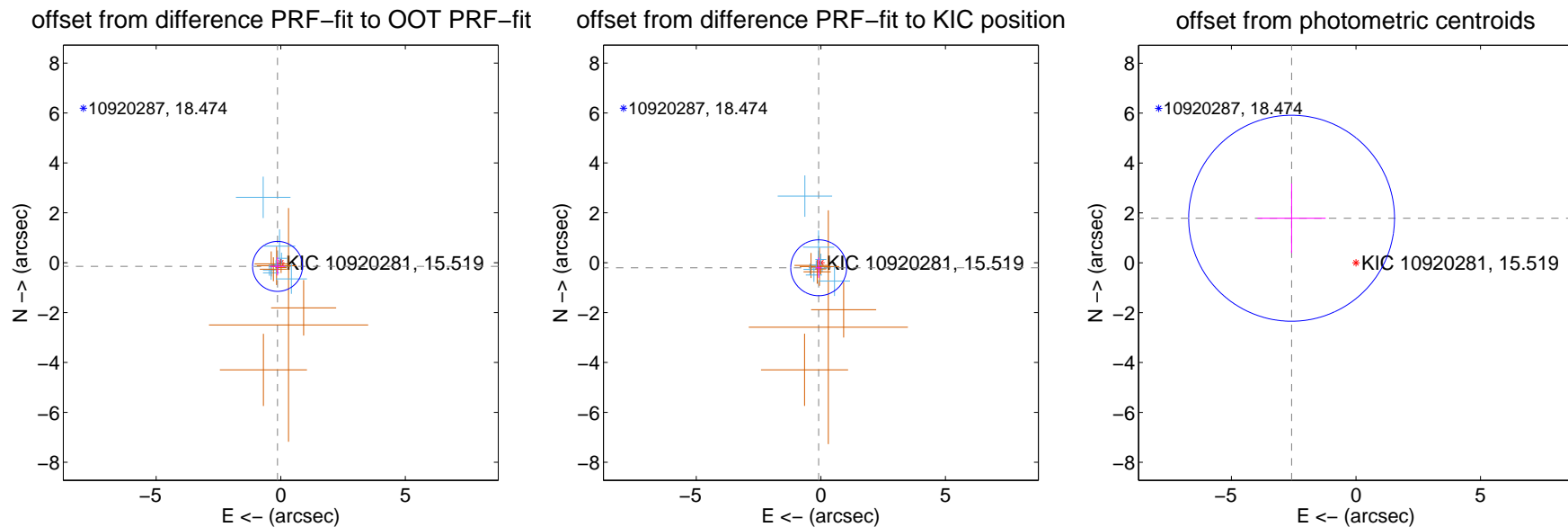
DV Centroid Data

Supplemental centroid analysis for 010920281-04. Kepler magnitude: 15.52. Transit SNR 7.00

There are 8 quarters with good PRF difference image offsets

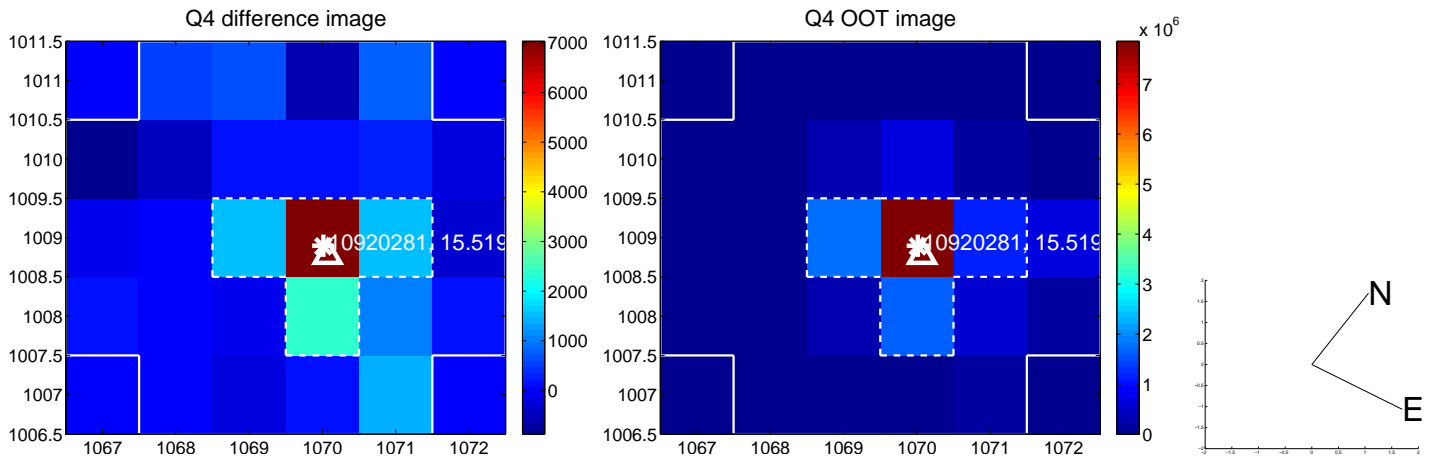
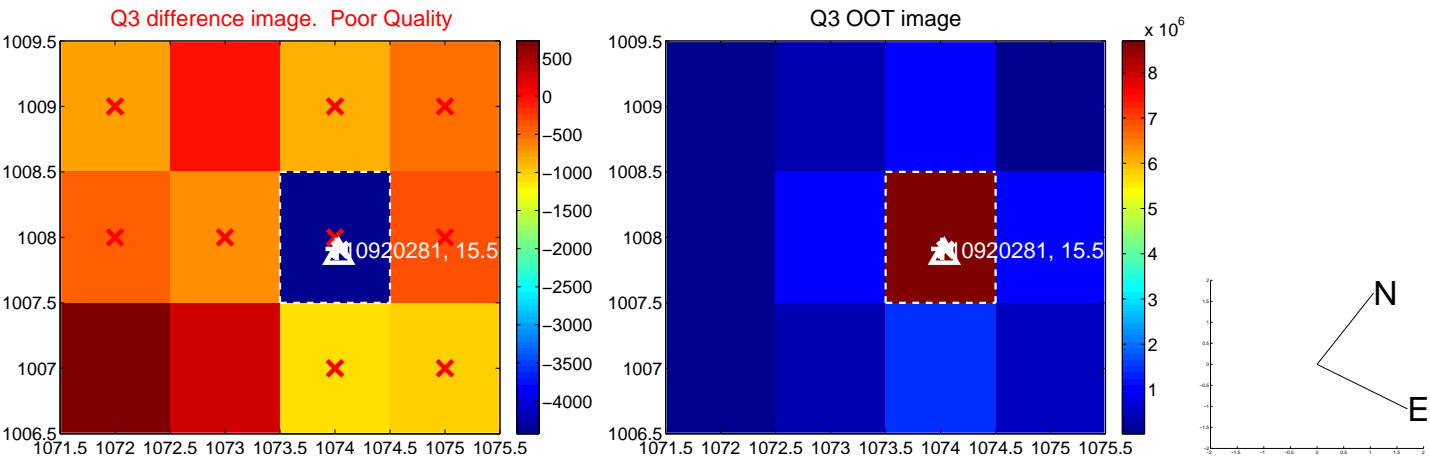
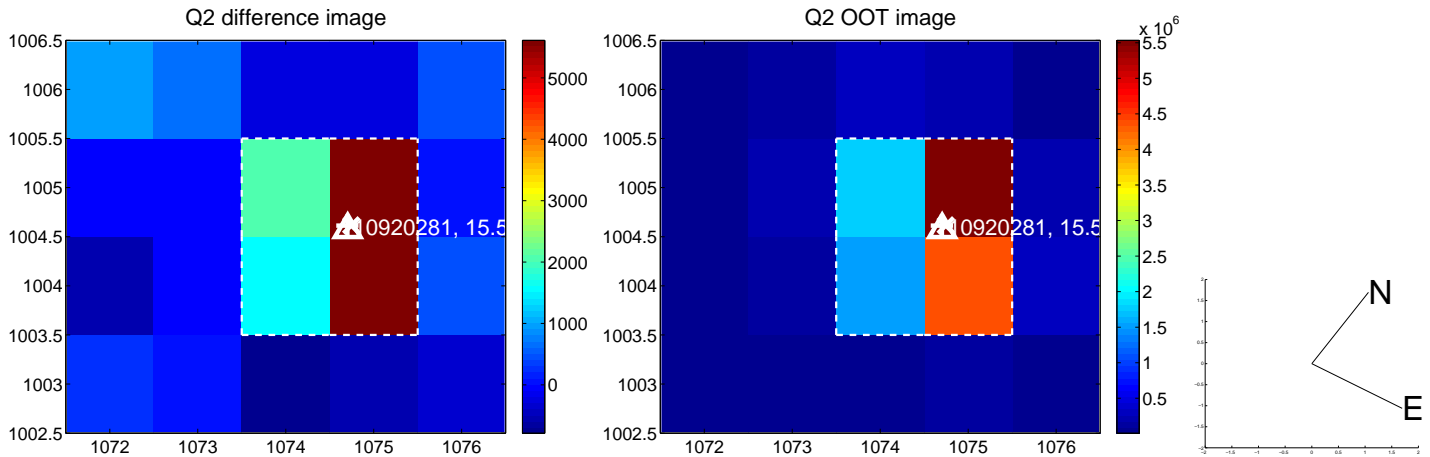
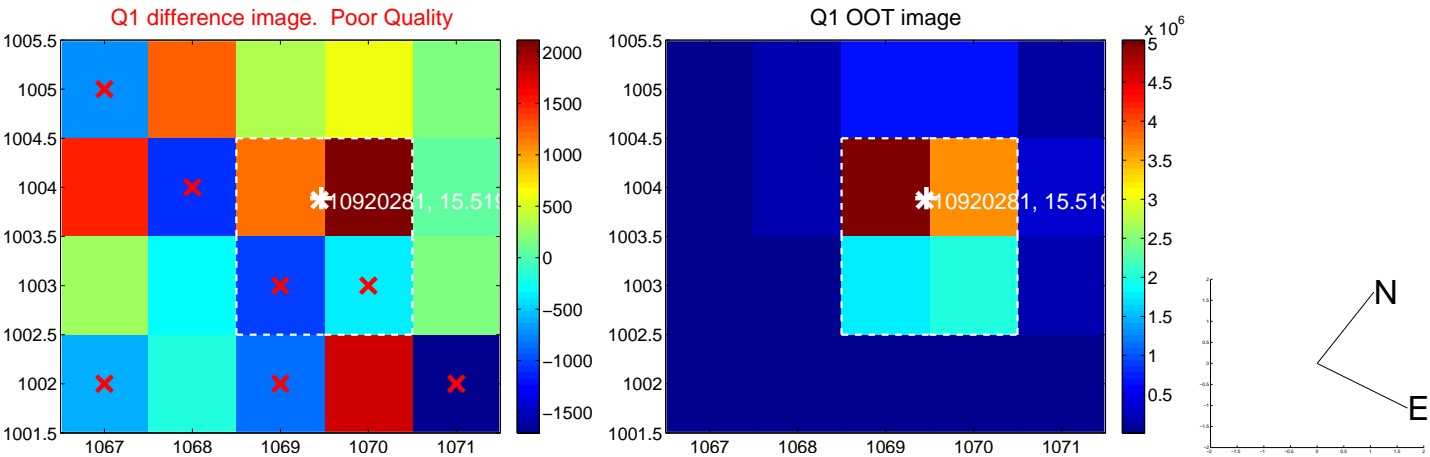
The direct PRF centroid is offset from the target star catalog position by about 0.08 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.197 ± 0.334	0.59	0.129 ± 0.295	-0.149 ± 0.360
PRF-fit source offset from KIC position	0.222 ± 0.374	0.59	0.088 ± 0.120	-0.204 ± 0.407
photometric centroid source offset	3.14 ± 1.38	2.28	2.58 ± 1.37	1.79 ± 1.39

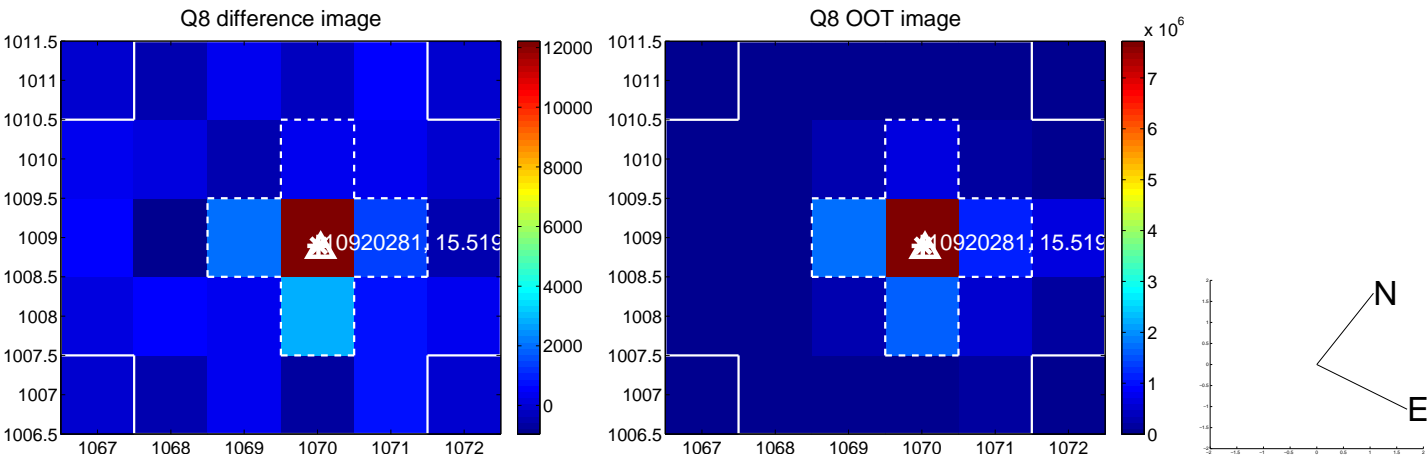
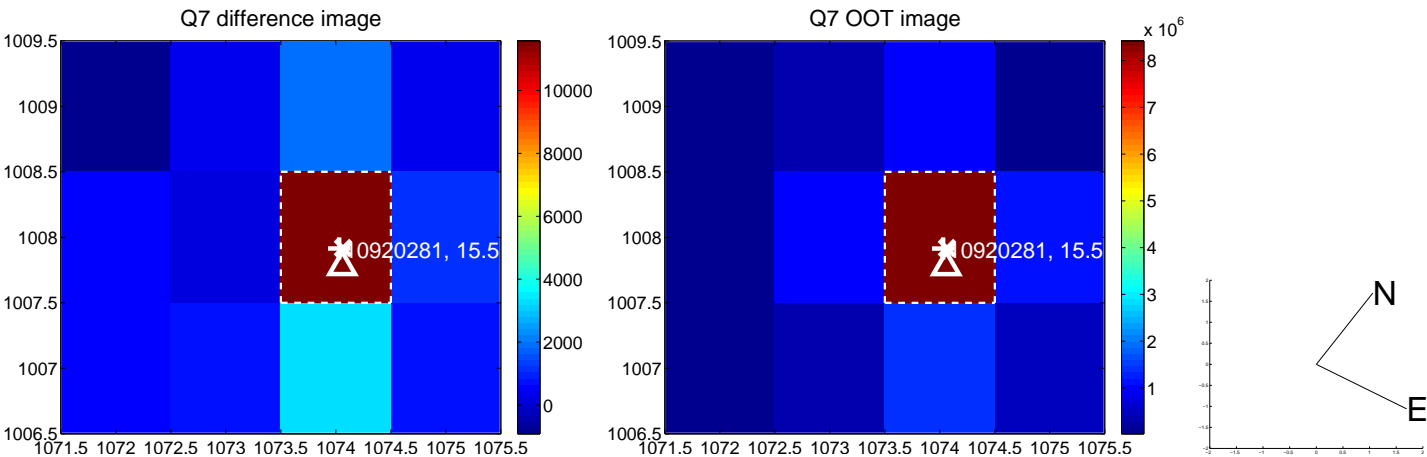
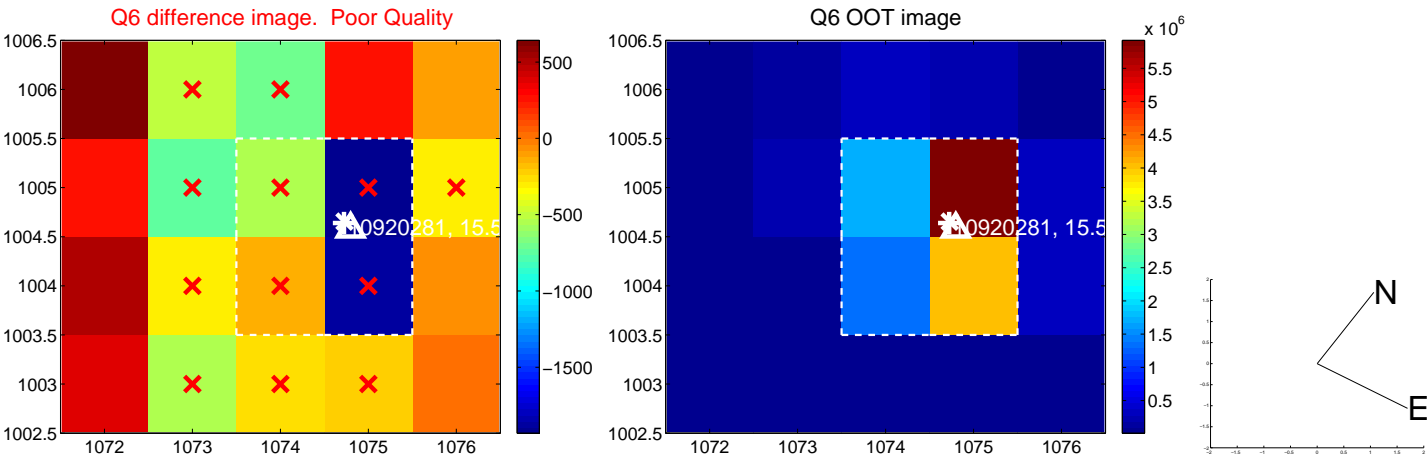
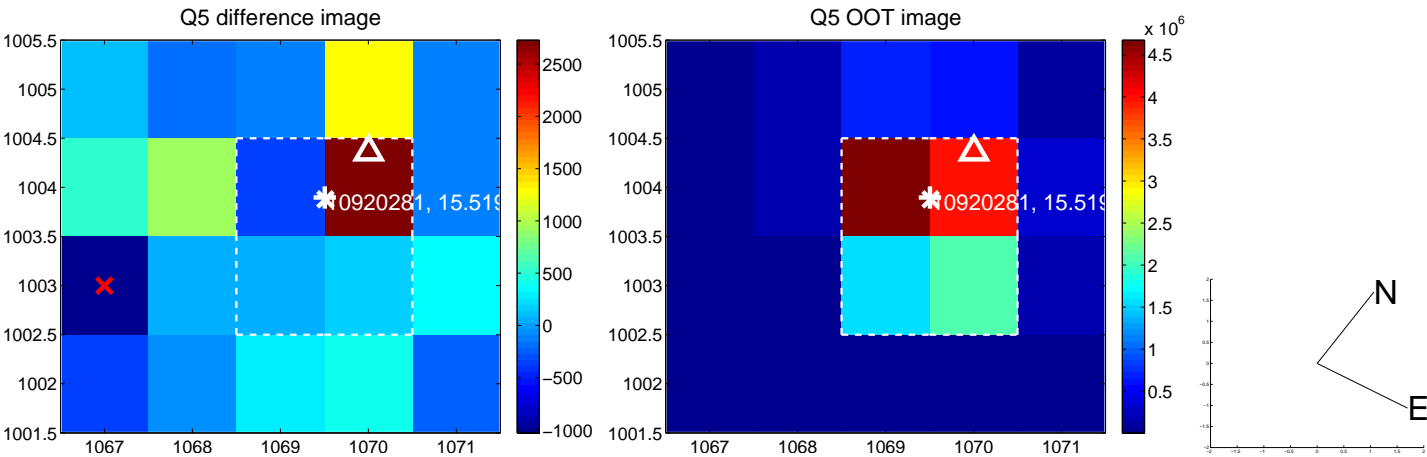


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

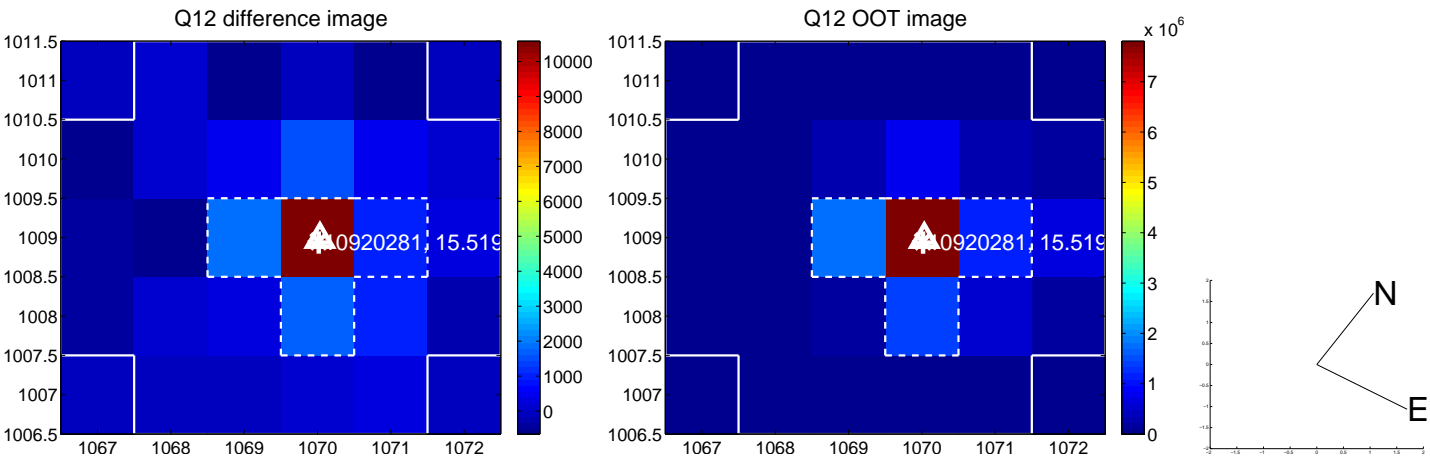
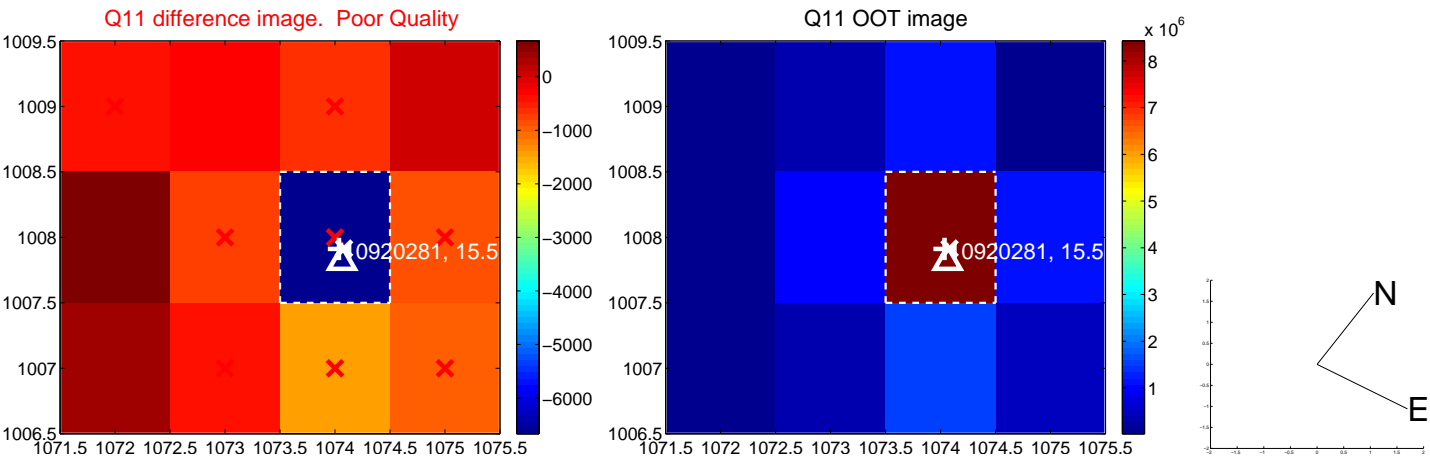
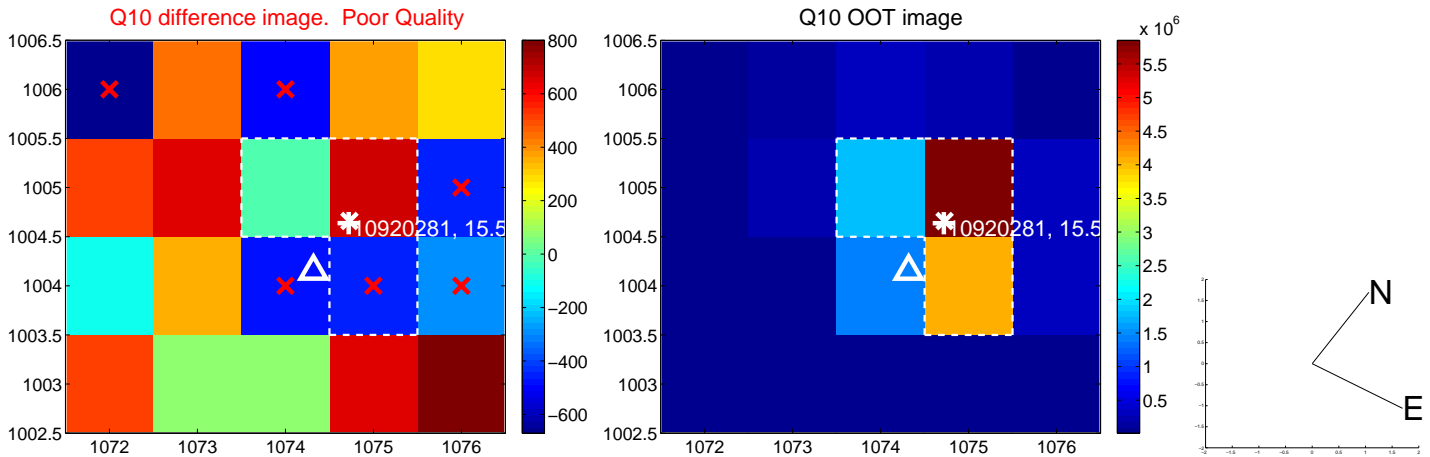
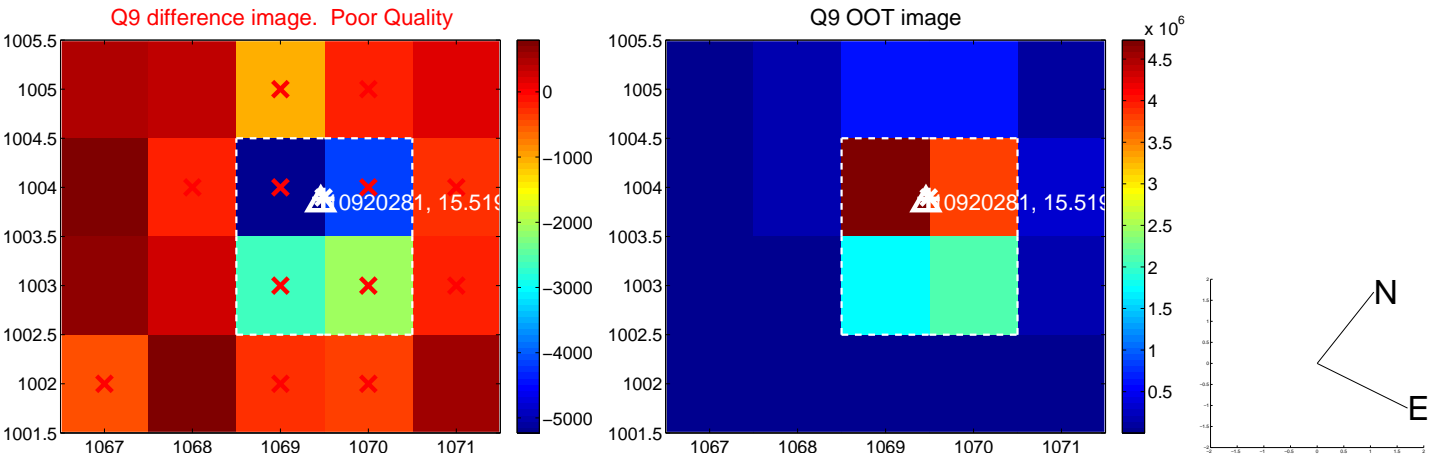
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



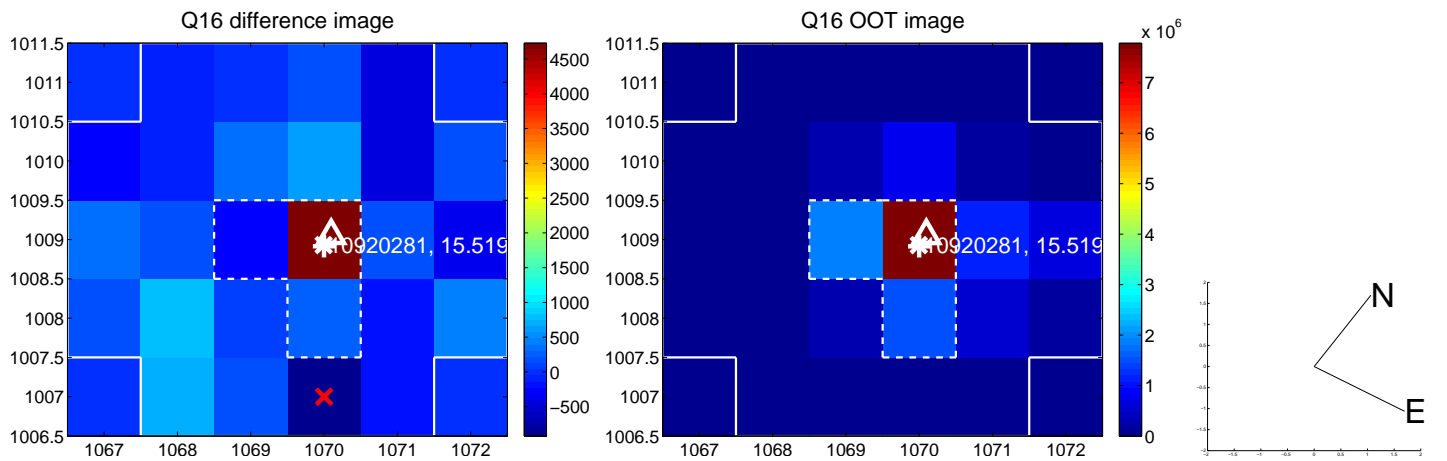
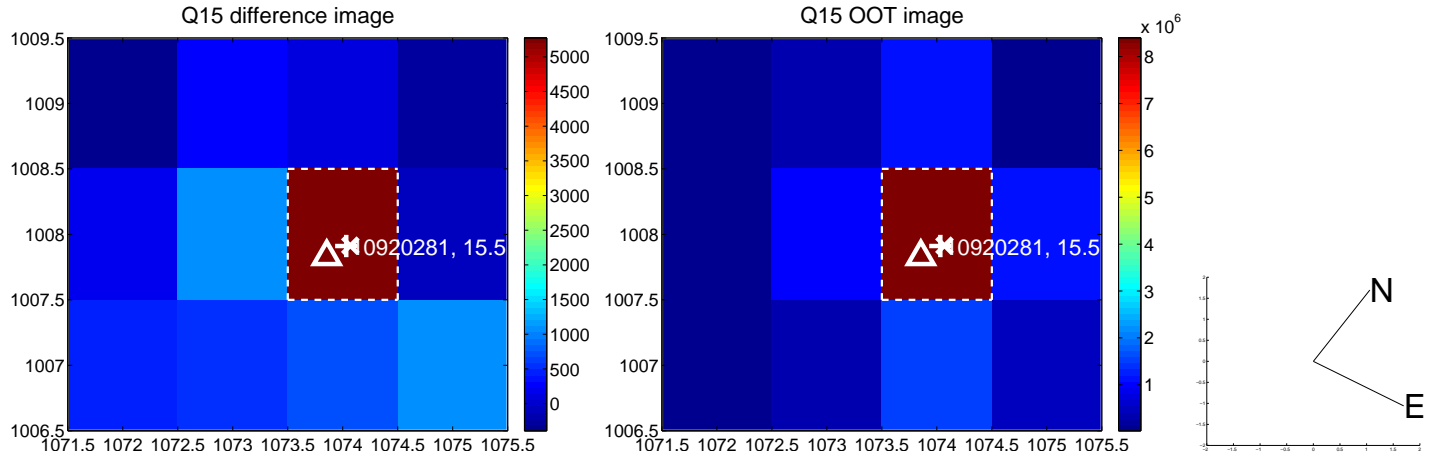
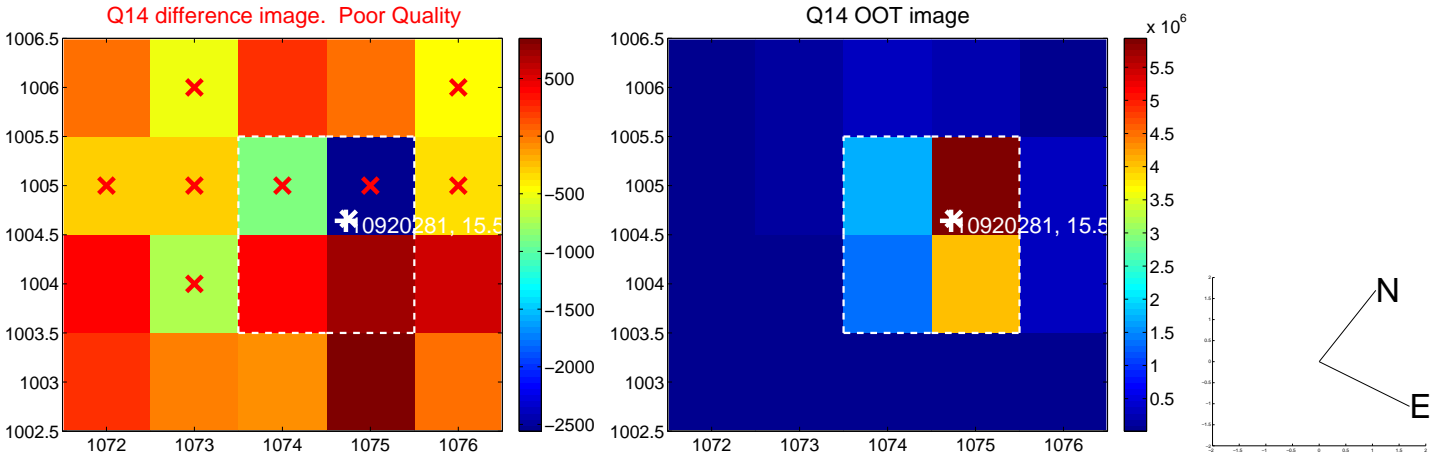
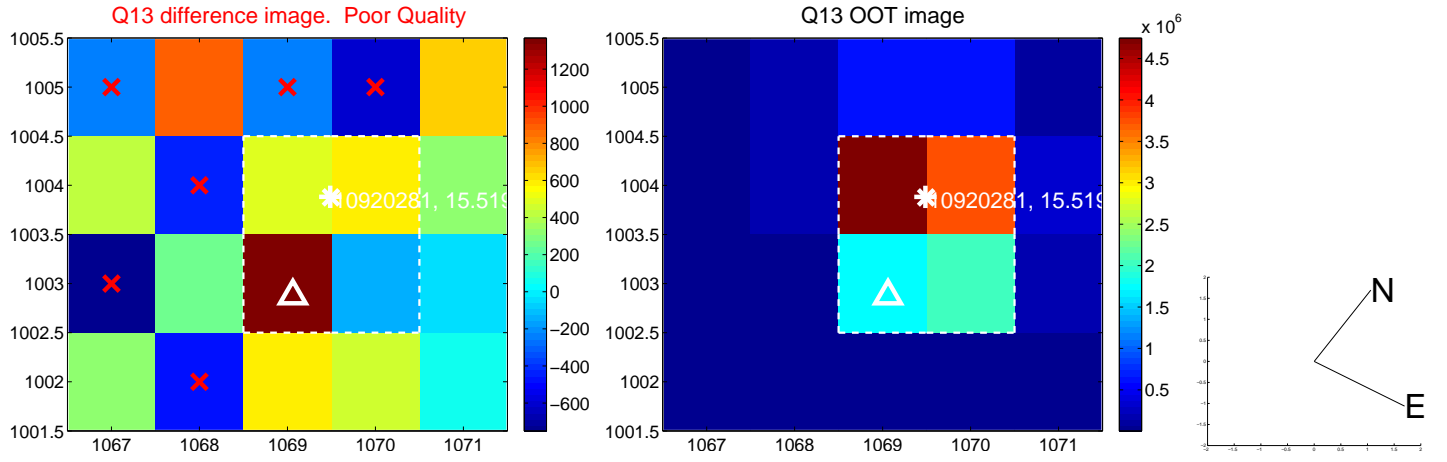
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



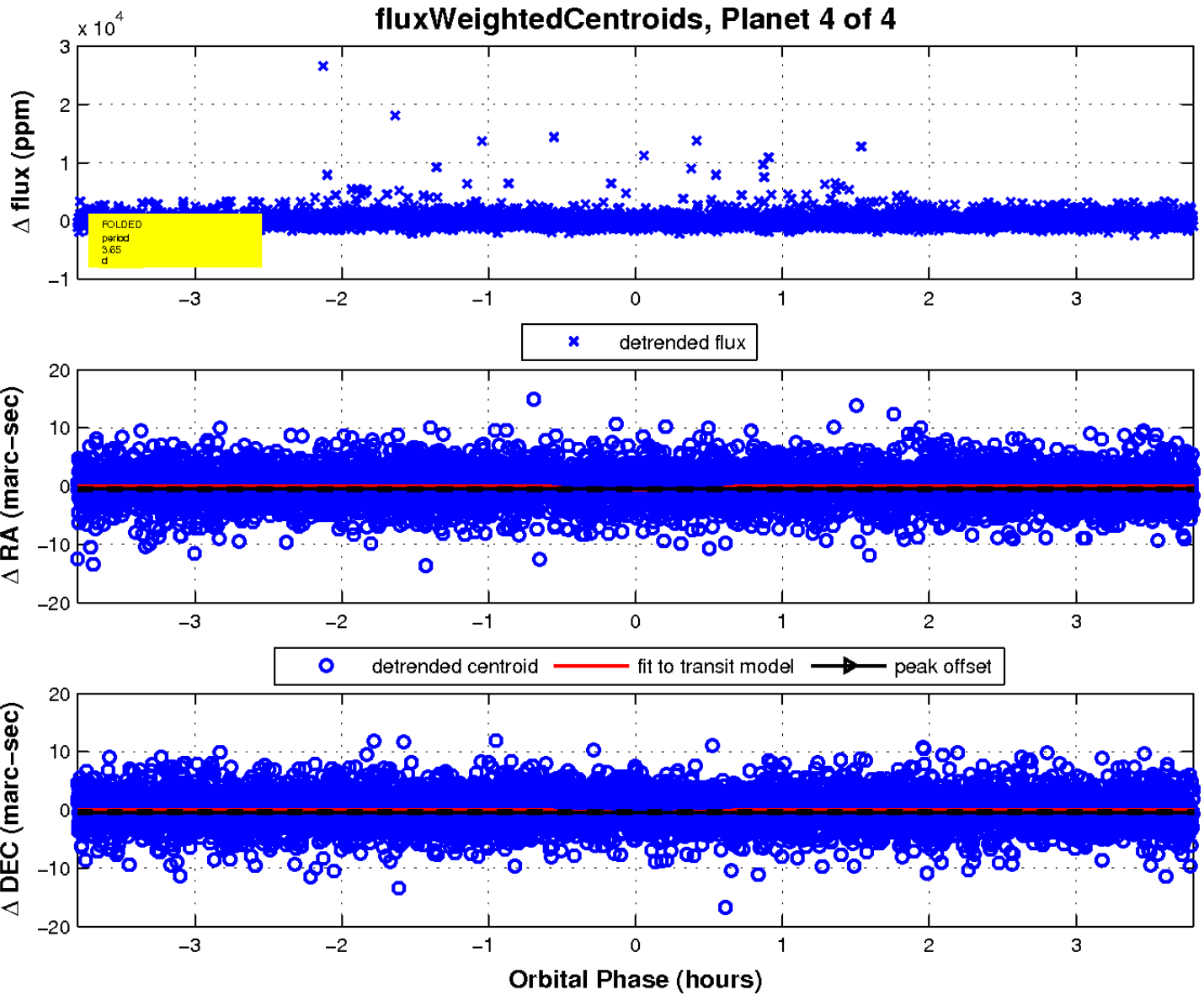
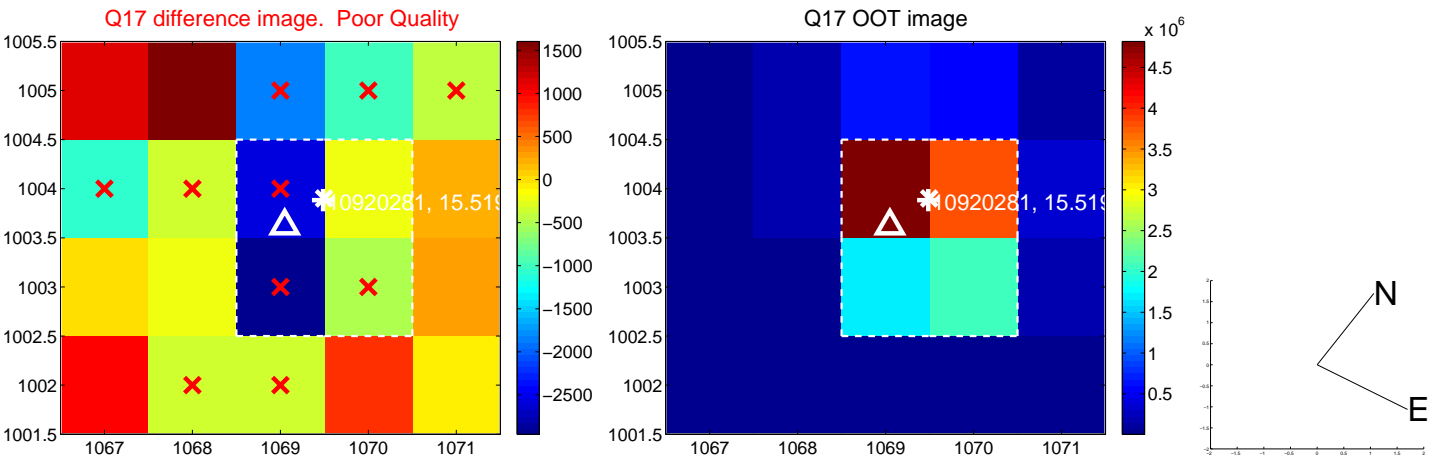
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image

Declination

