

KIC 010281311

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})
010281311-01	OBS	No	1.867031	133.182120	38.3	6.619	7.8	7.7	1.08	6306	0.76	1720.22
010281311-02	OBS	8203.01	234.662078	166.028019	535.3	8.433	9.3	7.4	1.08	6306	2.69	2.73
010281311-03	OBS	No	502.203208	253.220133	482.3	5.870	8.5	6.3	1.08	6306	2.58	0.99
010281311-04	OBS	No	664.479922	206.687787	509.5	14.678	8.0	6.7	1.08	6306	2.60	0.68

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010281311-01	OBS	FP	0.00	1	0	1	0	LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_RESOLVED_OFFSET
010281311-02	OBS	FP	0.04	1	0	0	0	MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
010281311-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
010281311-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS

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

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

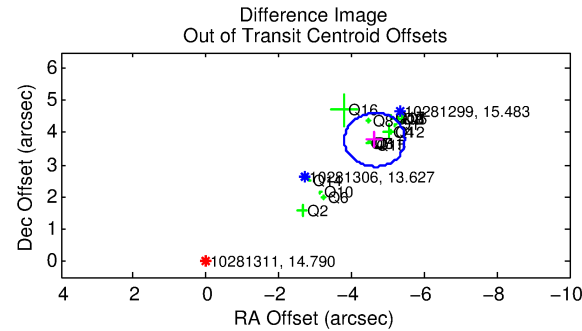
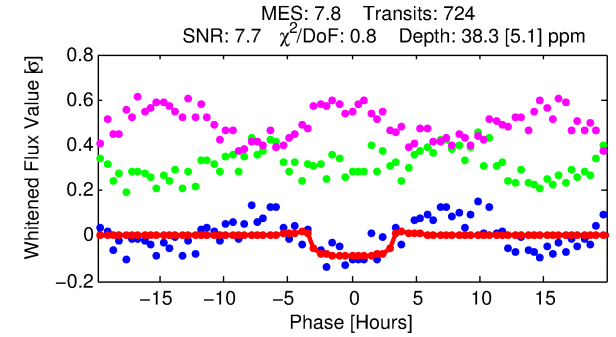
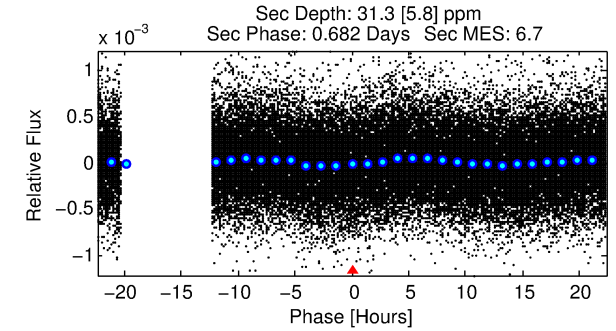
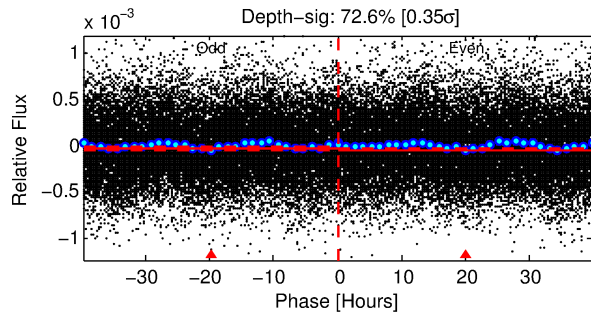
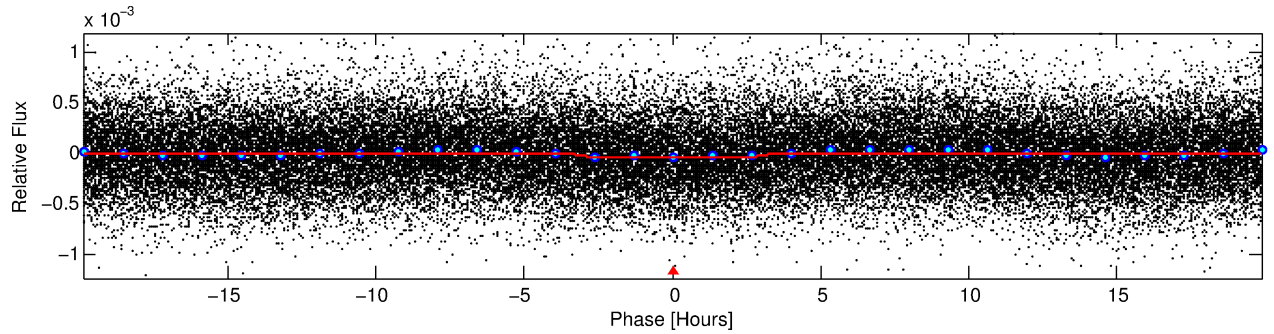
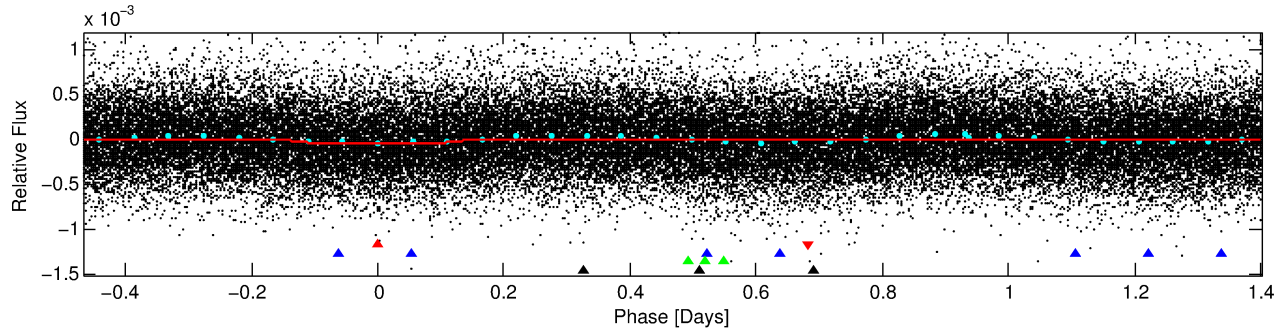
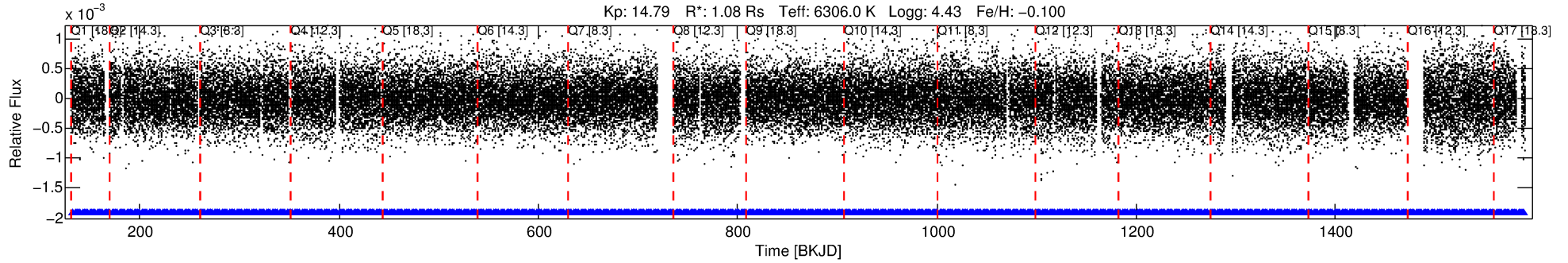
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 010281311-01

No Significant Match Found

DV One-Page Summary

KIC: 10281311 Candidate: 1 of 4 Period: 1.867 d



DV Fit Results:

Period = 1.86703 [0.00003] d
Epoch = 133.1821 [0.0073] BKJD
Rp/R* = 0.0065 [0.0031]
a/R* = 1.43 [1.88]
b = 0.87 [0.73]
Seff = 1720.22 [699.60]
Teq = 1642 [167] K
Rp = 0.76 [0.43] Re
a = 0.0309 [0.0081] AU
Ag = 28.27 [29.21] [0.93 σ]
Teffp = 5855 [1421] K [2.94 σ]

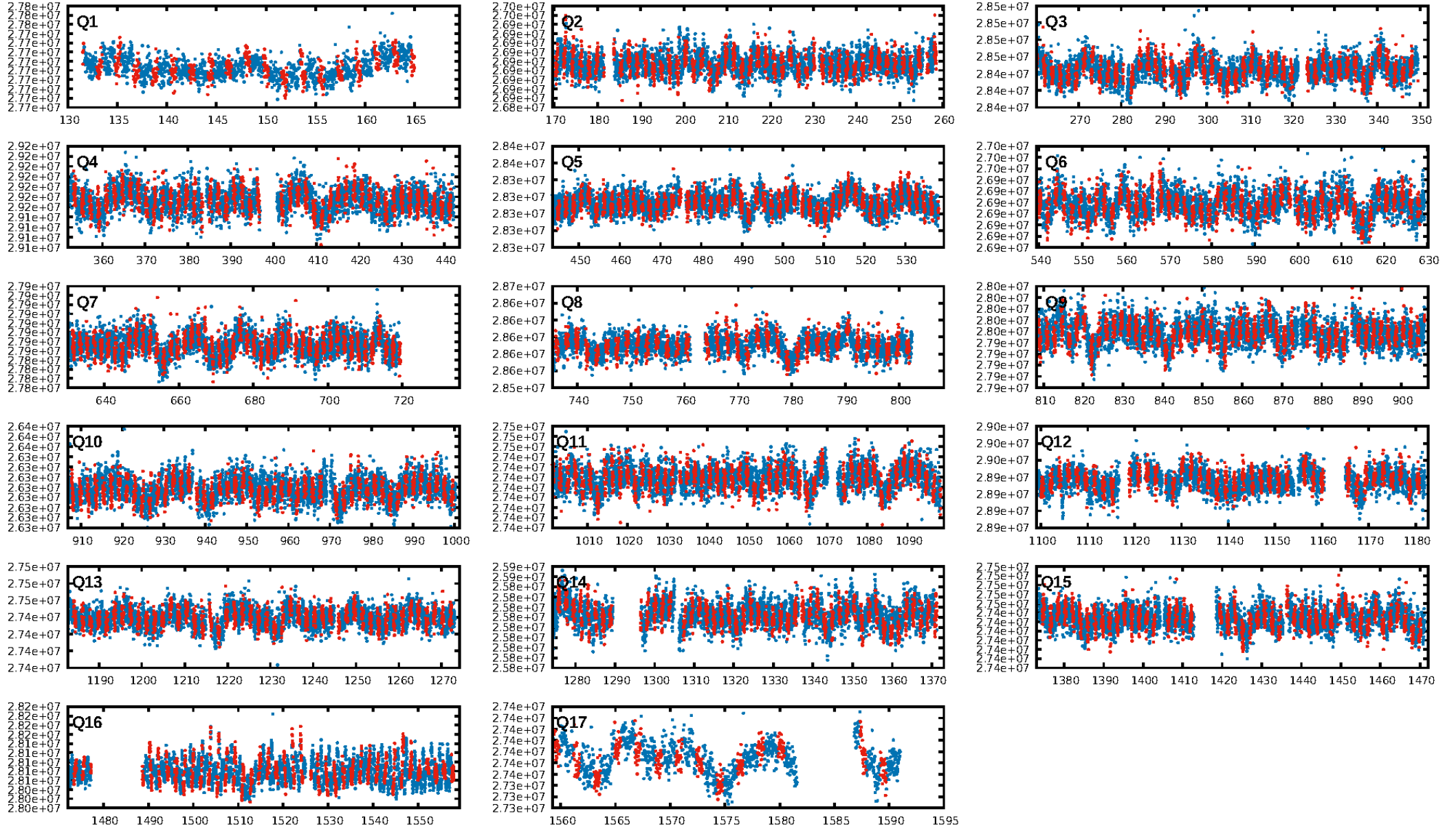
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [521.14 σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 6.05e-13
RollingBand-fgt: 1.00 [692/692]
GhostDiagnostic-chr: -0.3514
Centroid-sig: 0.0%
Centroid-so: 4.799 arcsec [2.20 σ]
OotOffset-rm: 5.977 arcsec [21.45 σ]
KicOffset-rm: 7.067 arcsec [89.40 σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 0.94 [16/17]
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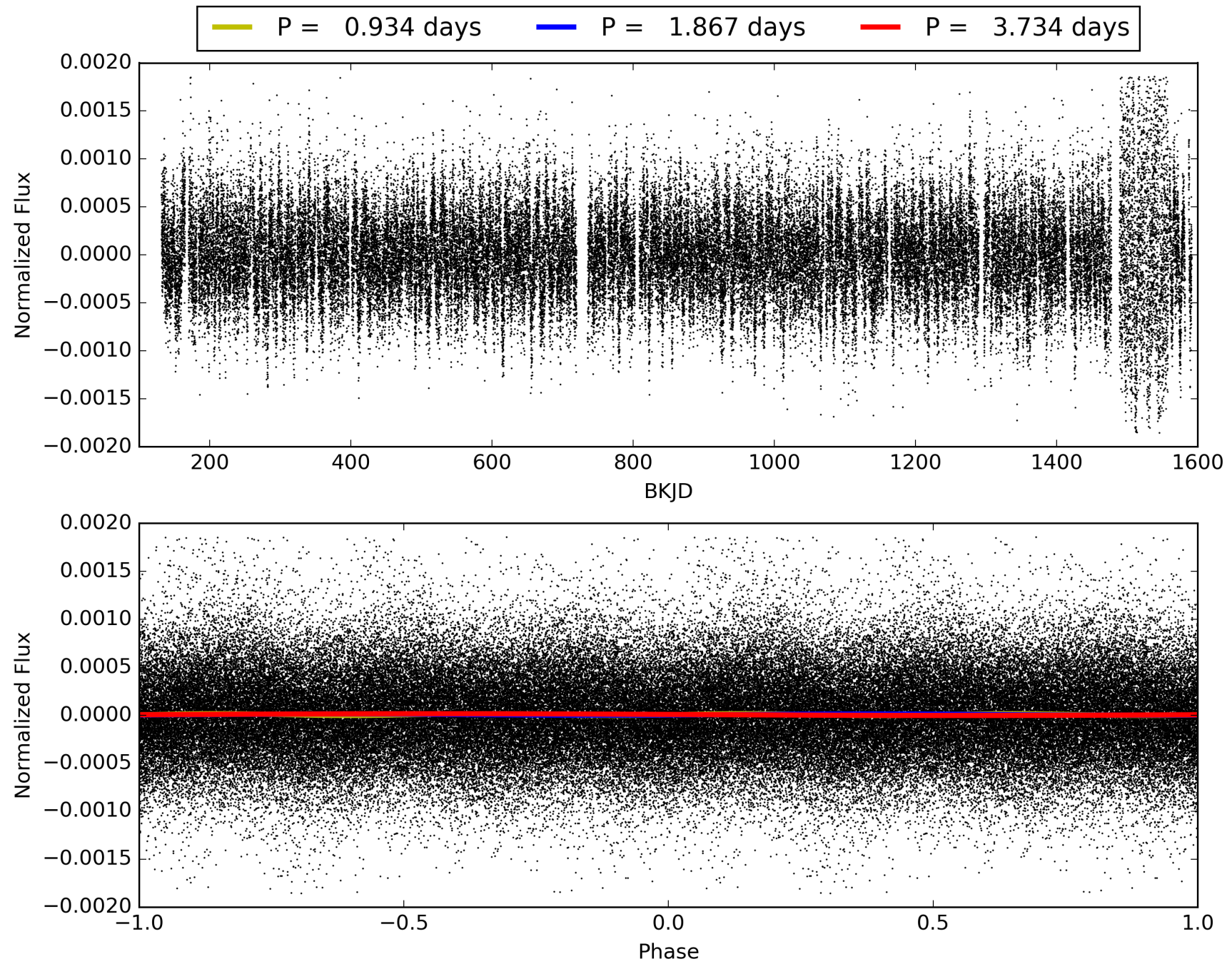
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 010281311-01, PDC Light Curves

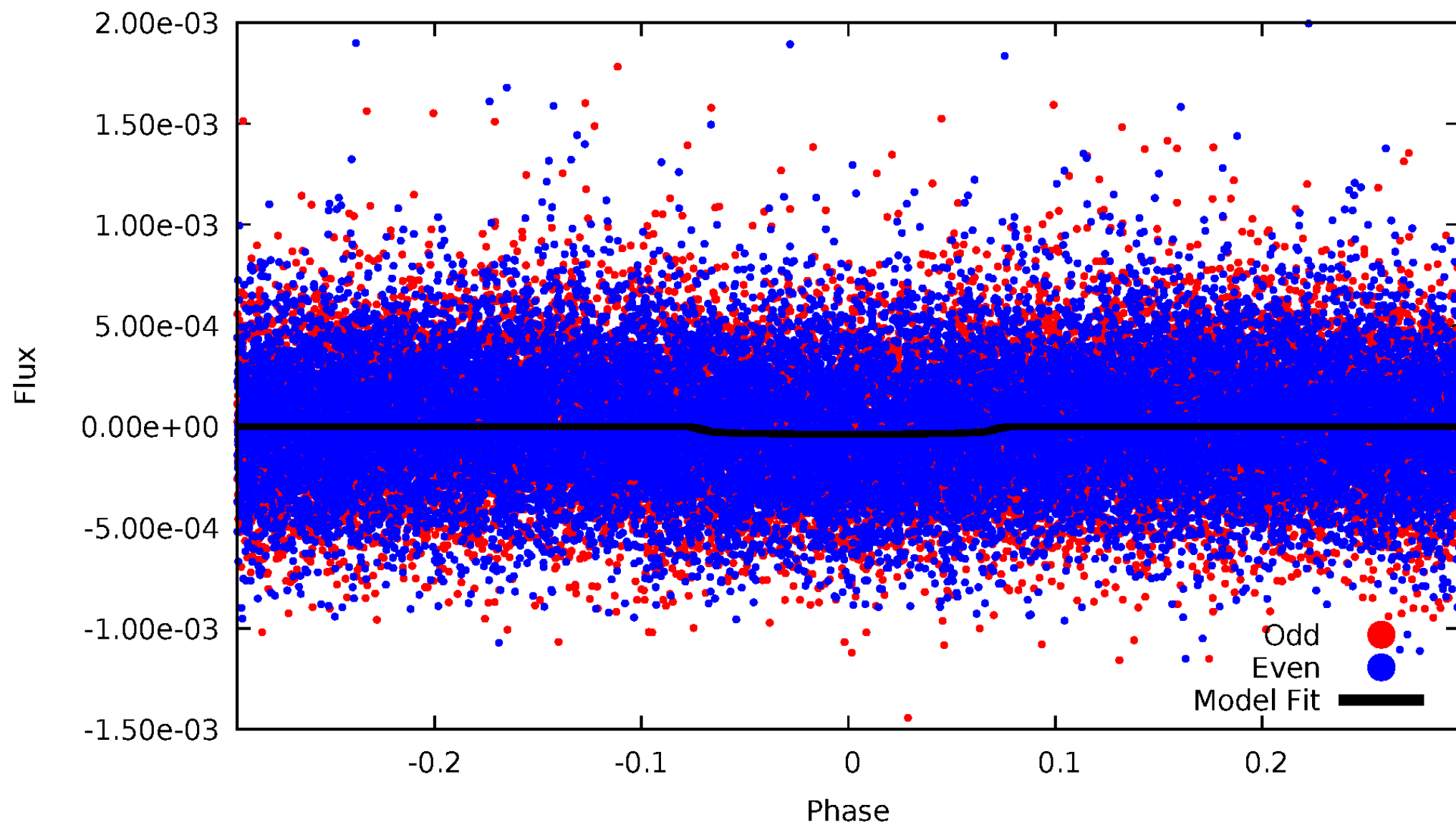


TCE 010281311-01



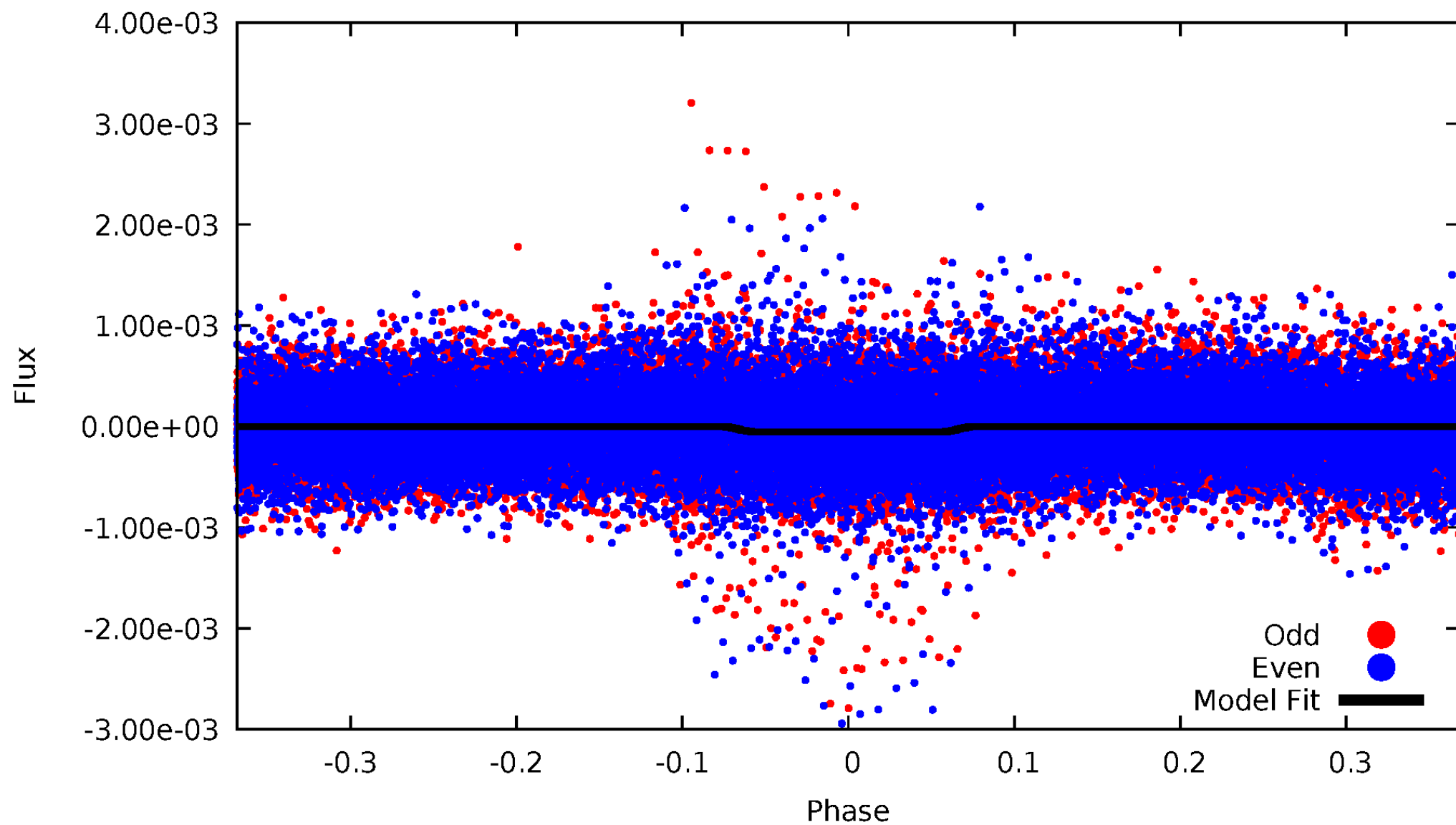
DV Odd/Even

TCE 010281311-01



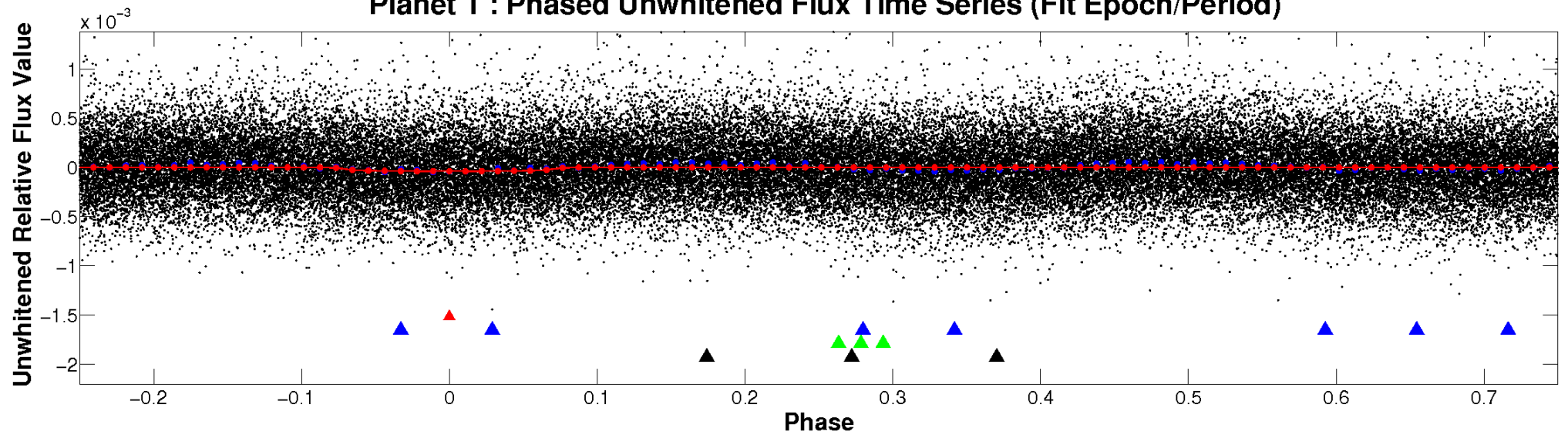
ALT Odd/Even

TCE 010281311-01

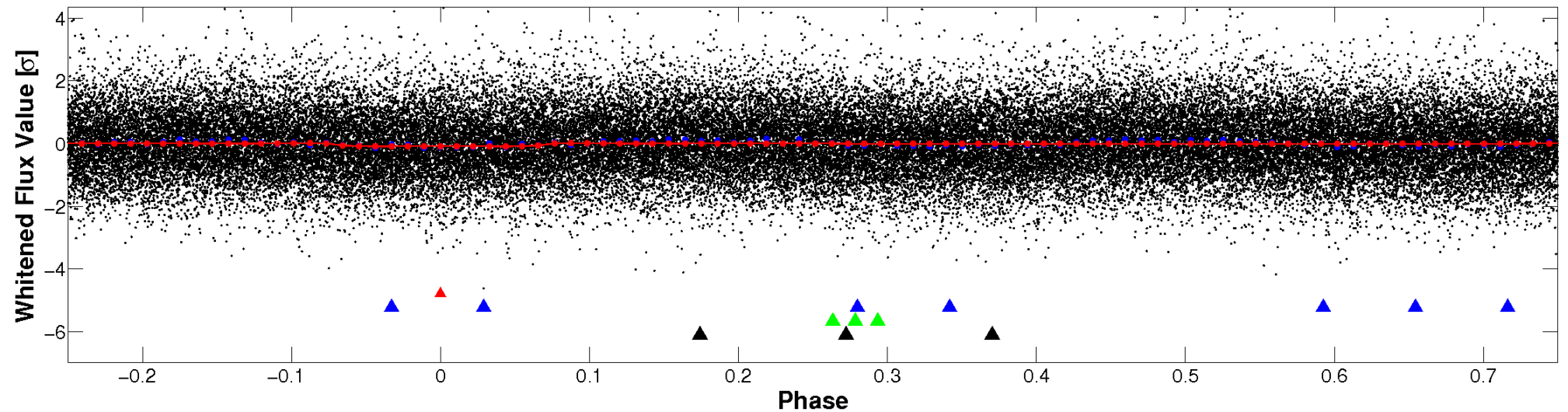


Non-Whitened Vs. Whitened Light Curve

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

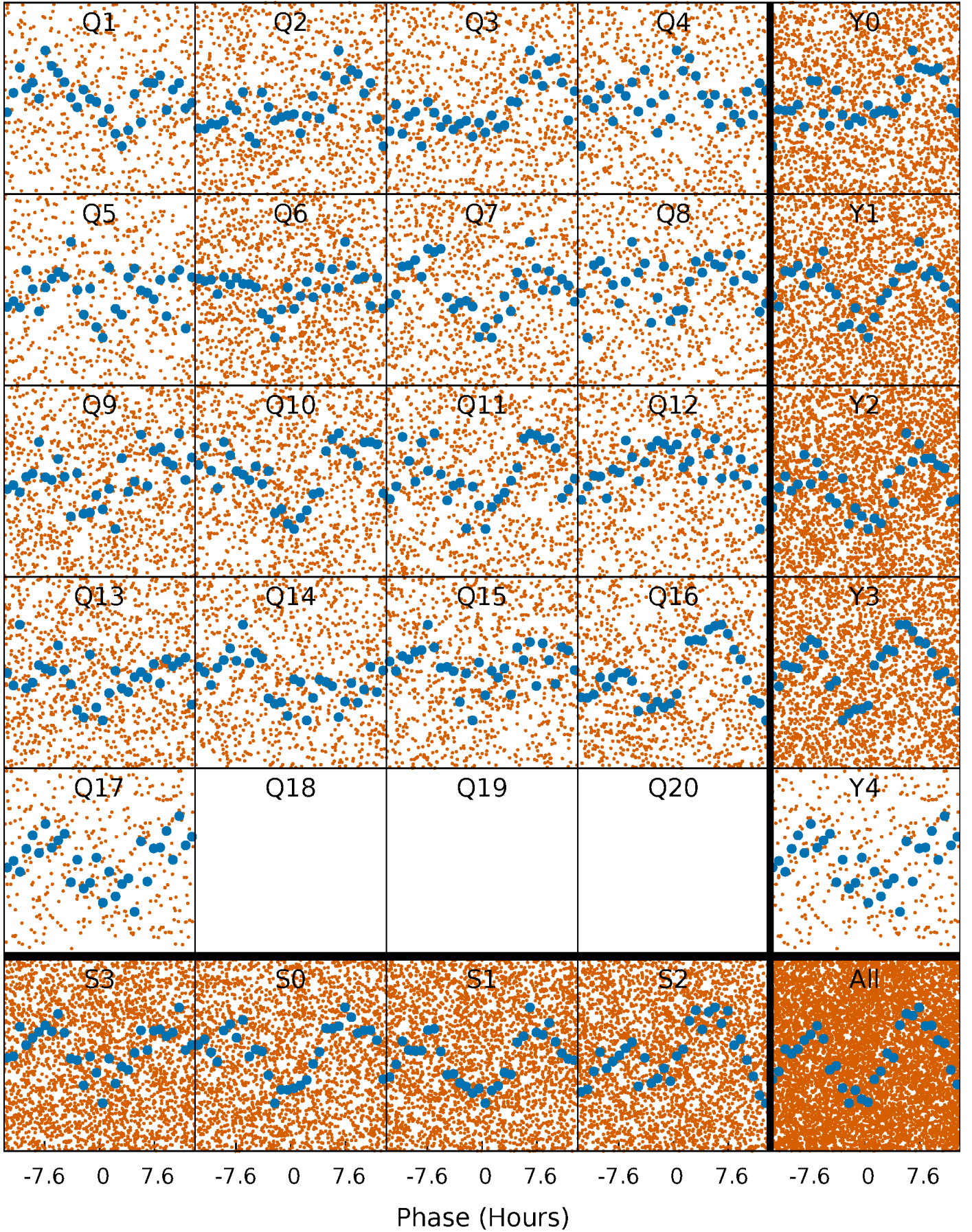


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



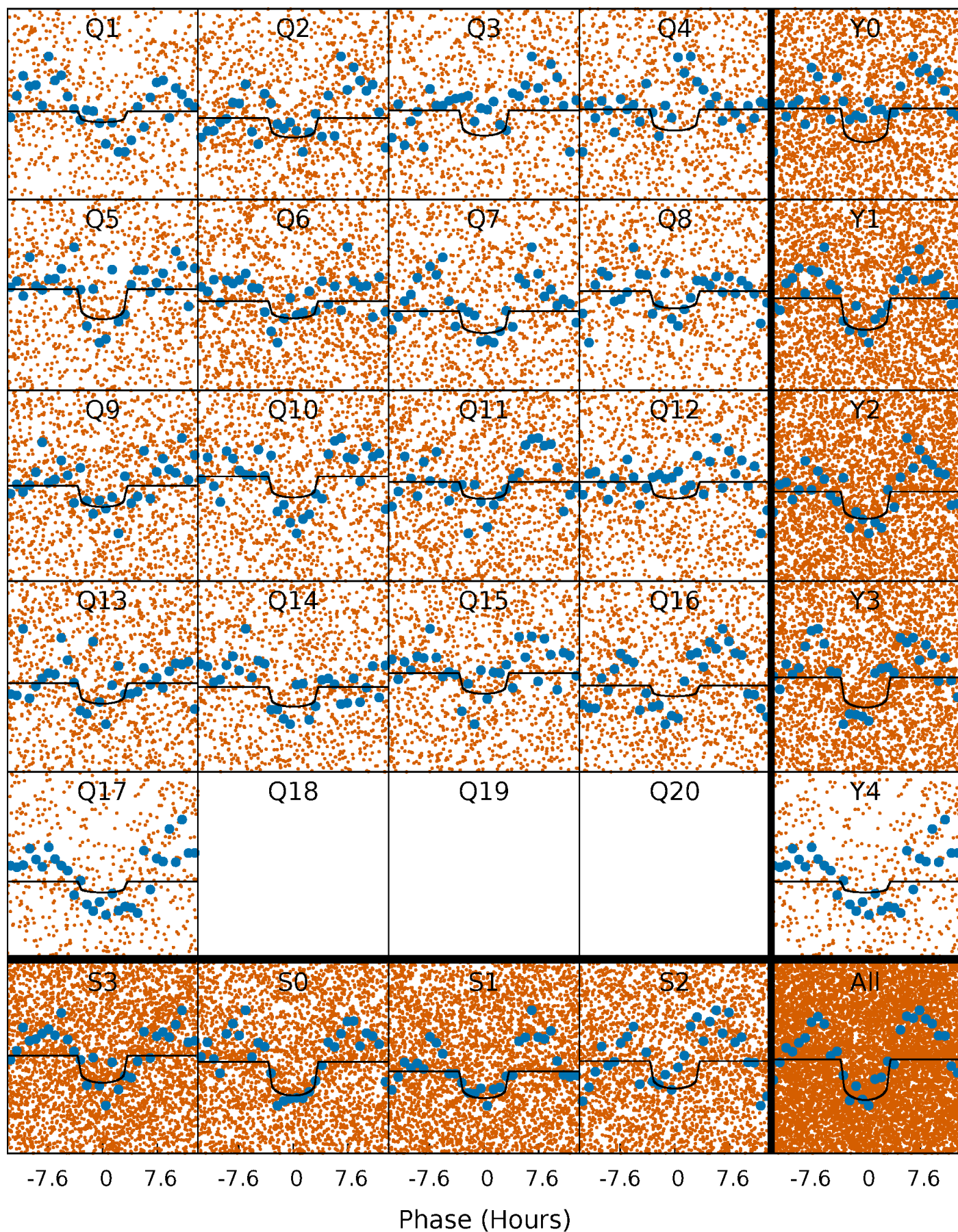
PDC Quarter-Phased Transit Curves

TCE 010281311-01 P= 1.867031 Days $T_0=133.182120$ (BKJD)



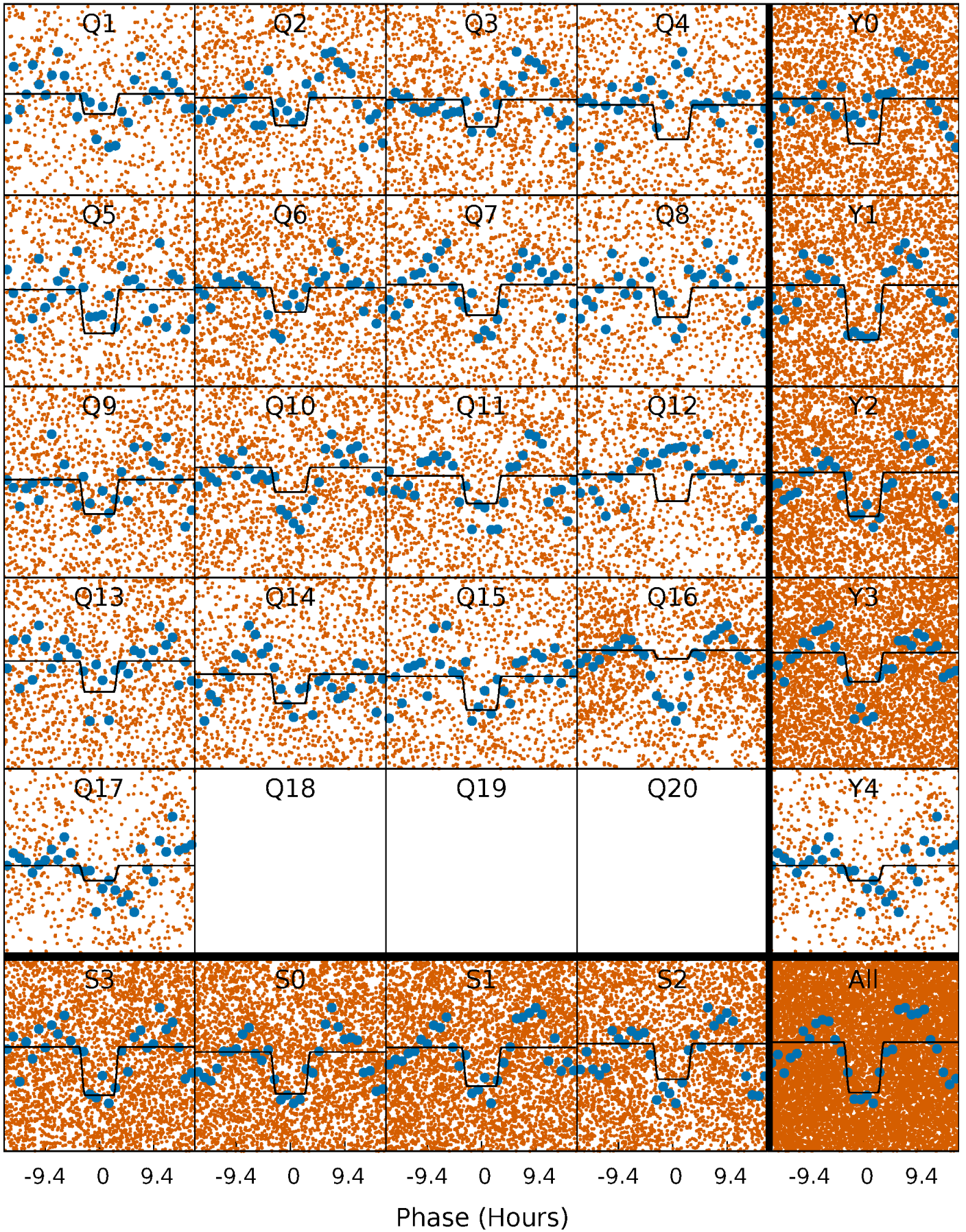
DV Quarter-Phased Transit Curves

TCE 010281311-01 P= 1.867031 Days $T_0=133.182120$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

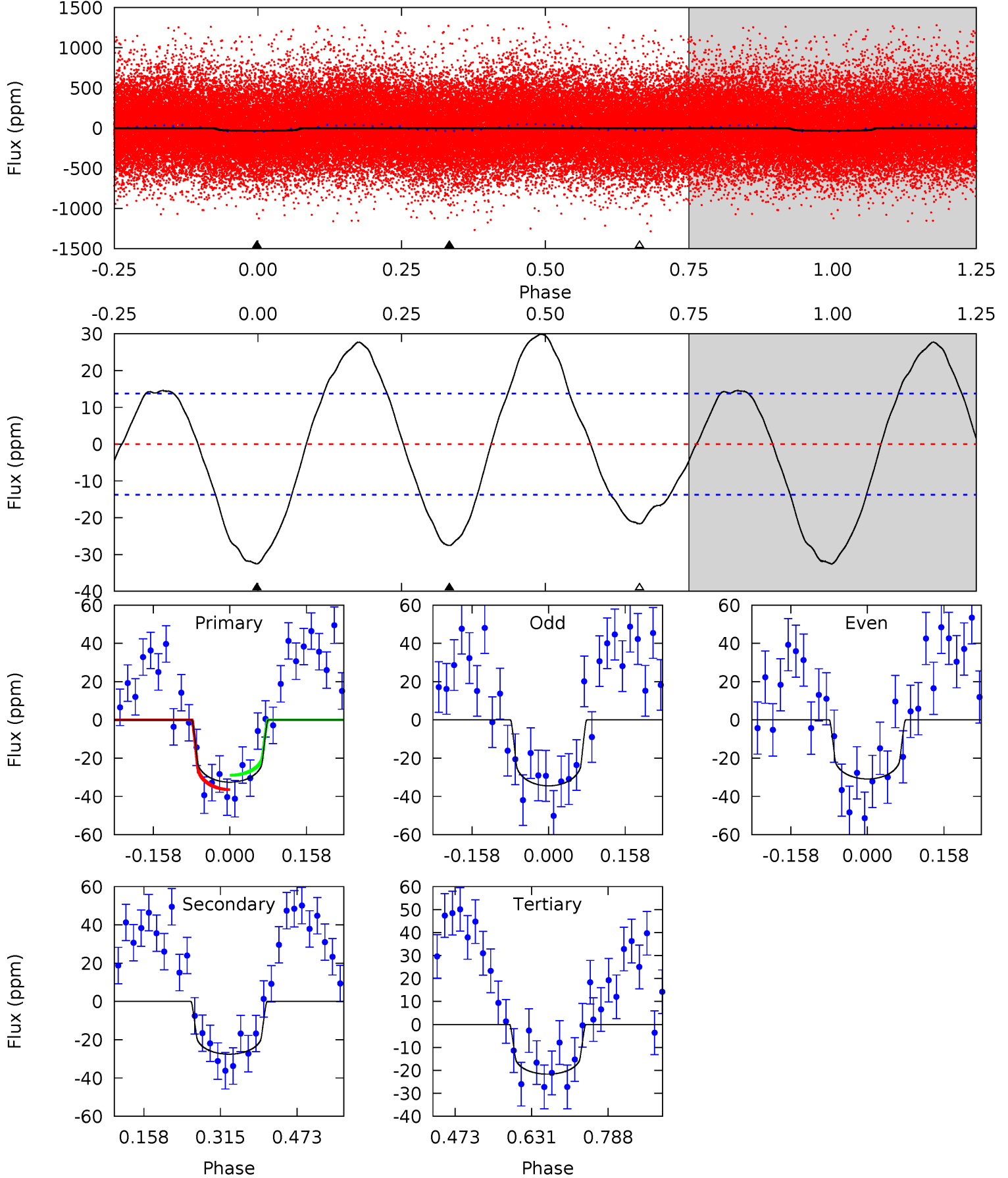
TCE 010281311-01 P= 1.866916 Days $T_0=133.207103$ (BKJD)



DV Model-Shift Uniqueness Test

010281311-01, P = 1.867031 Days, E = 131.315089 Days

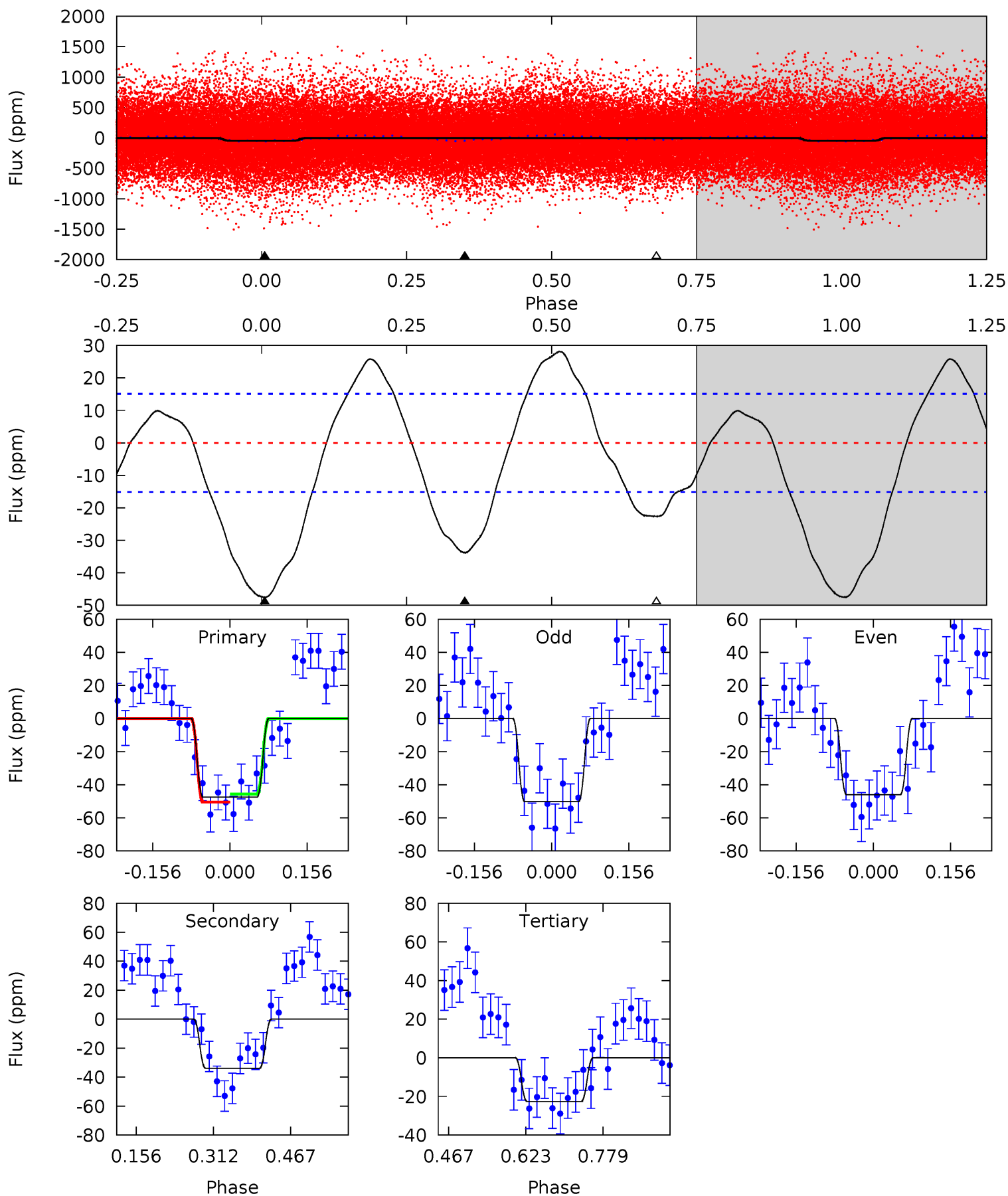
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.6	8.94	7.03	0	4.47	1.41	5.27	3.54	10.6	1.92	8.94	0.58	0.91	0.48	1.21



Alt Model-Shift Uniqueness Test

010281311-01, P = 1.866916 Days, E = 131.340187 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
14.1	10.0	6.70	0	4.47	1.42	4.82	7.38	14.1	3.33	10.0	0.62	1.07	0.37	0.72



Stellar Parameters For KIC 010281311

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6306^{+169}_{-225}	$4.426^{+0.065}_{-0.208}$	$-0.100^{+0.250}_{-0.350}$	$1.076^{+0.335}_{-0.134}$	$1.126^{+0.154}_{-0.154}$	$1.272^{+0.361}_{-0.674}$
	+3%/-4%	+1%/-5%	+250%/-350%	+31%/-12%	+14%/-14%	+28%/-53%
Source	PHO1	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 010281311-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-28 ± 3	$0.79^{+0.42}_{-0.35}$	2339^{+174}_{-124}	5615^{+2059}_{-867}	22^{+47}_{-12}
Alt.	-34 ± 3	$0.92^{+0.39}_{-0.39}$	2337^{+165}_{-120}	5567^{+1829}_{-845}	20^{+42}_{-10}

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 $A_{obs} \gg 1.0$

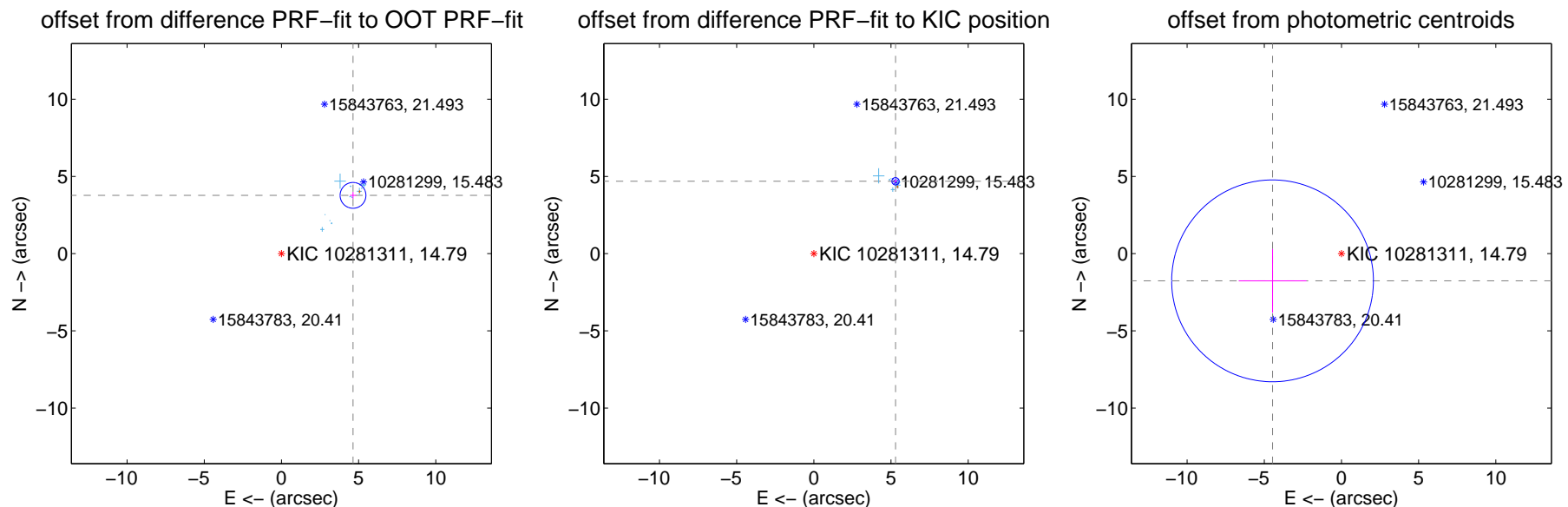
DV Centroid Data

Supplemental centroid analysis for 010281311-01. Kepler magnitude: 14.79. Transit SNR 7.68

There are 16 quarters with good PRF difference image offsets

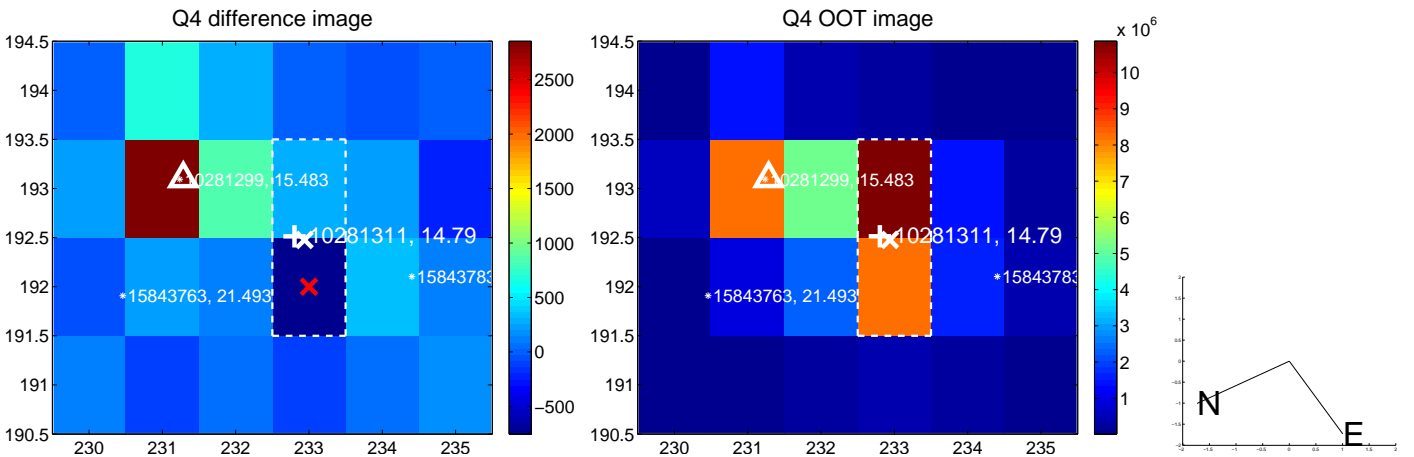
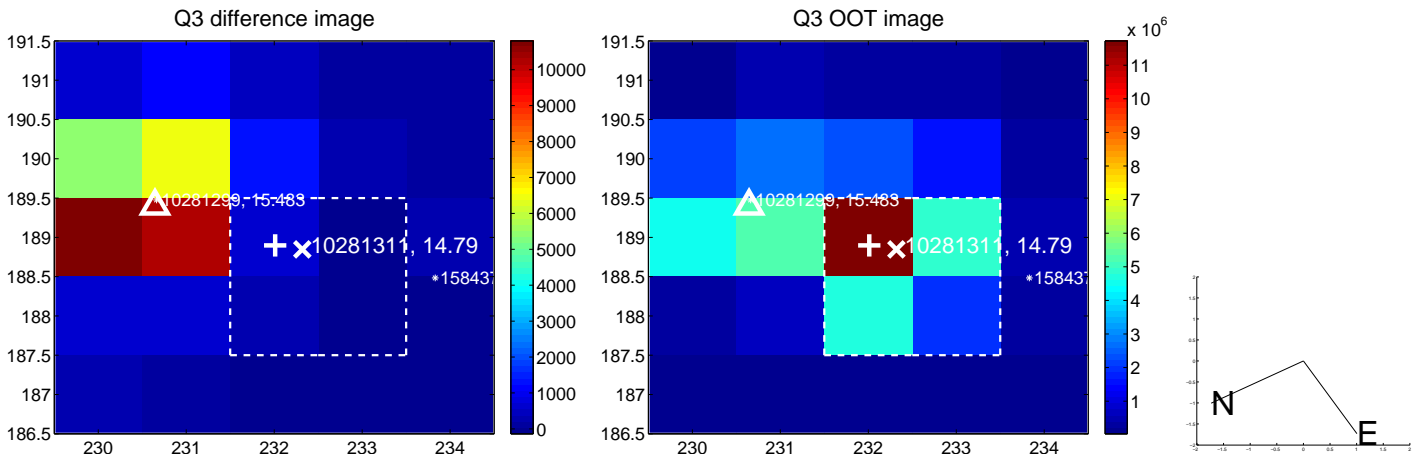
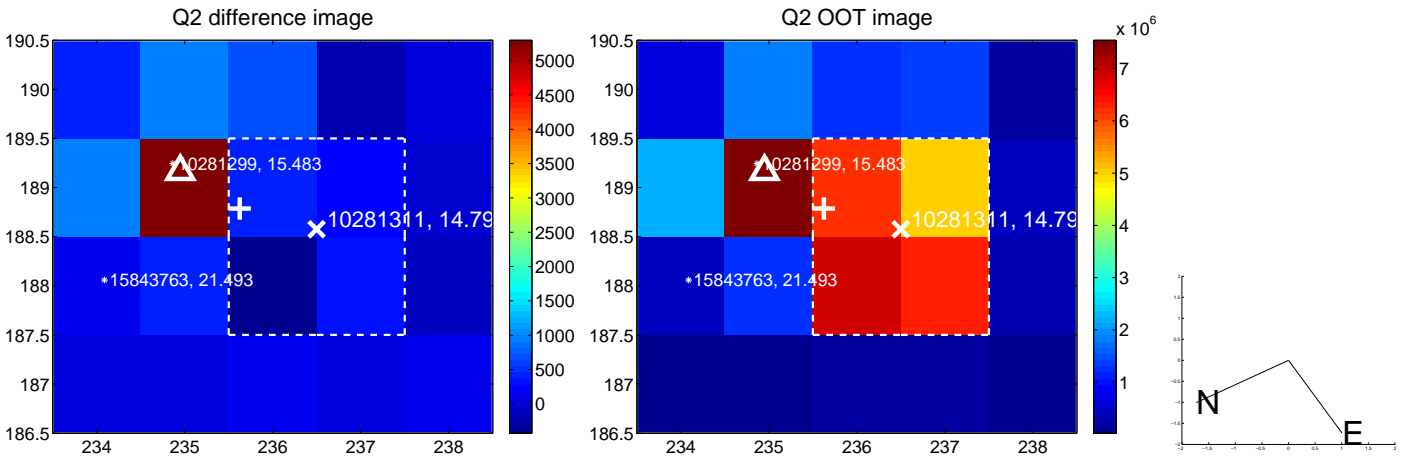
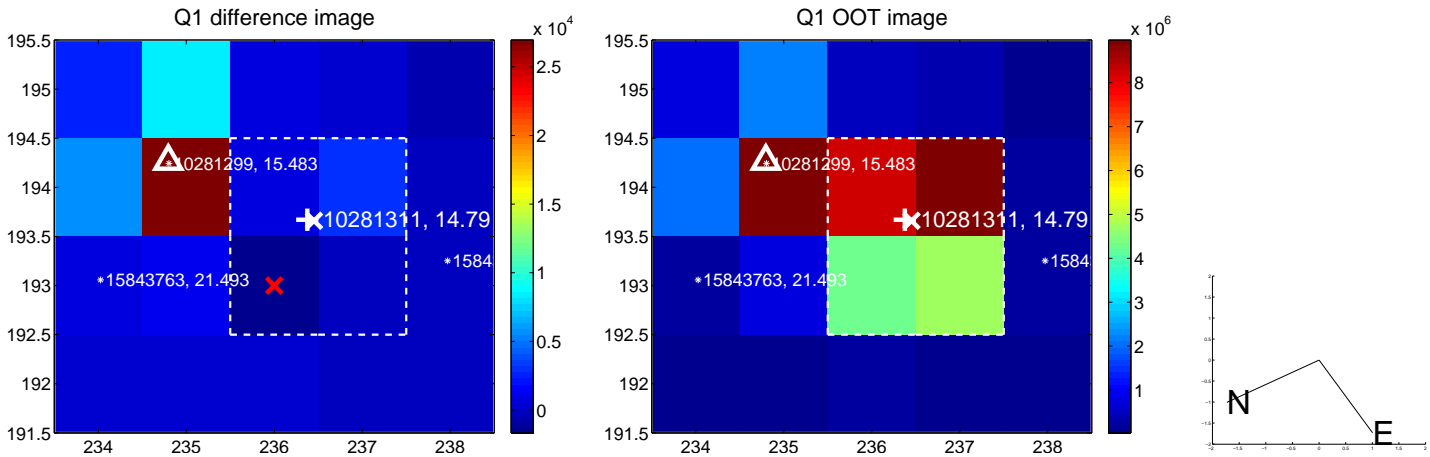
The direct PRF centroid is offset from the target star catalog position by about 0.25 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	5.977 \pm 0.279	21.45	-4.635 \pm 0.200	3.773 \pm 0.226
PRF-fit source offset from KIC position	7.067 \pm 0.079	89.40	-5.291 \pm 0.096	4.686 \pm 0.083
photometric centroid source offset	4.80 \pm 2.18	2.20	4.46 \pm 2.19	-1.76 \pm 2.07

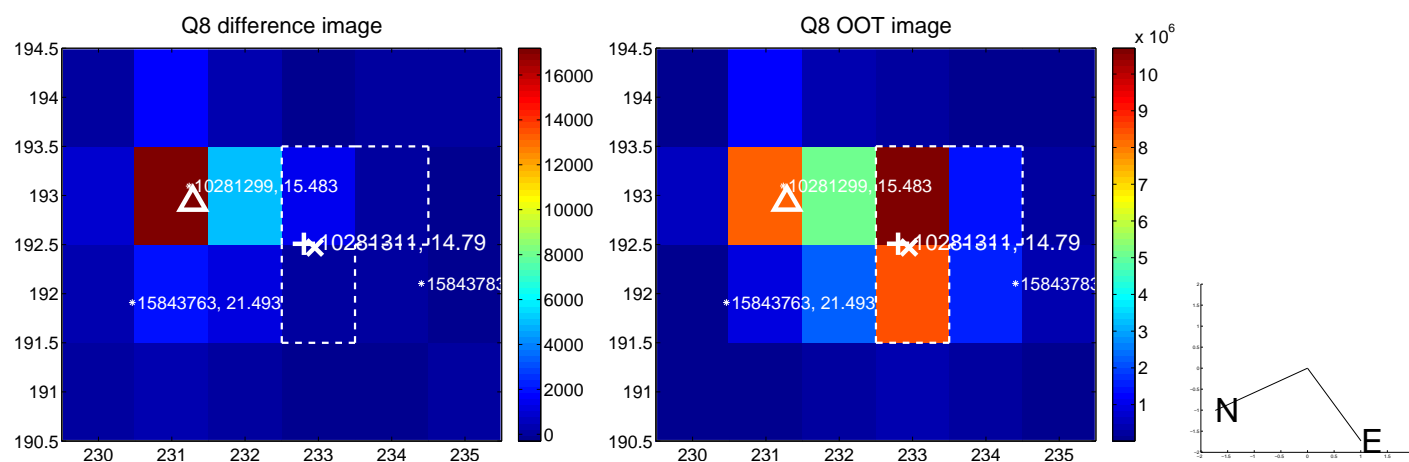
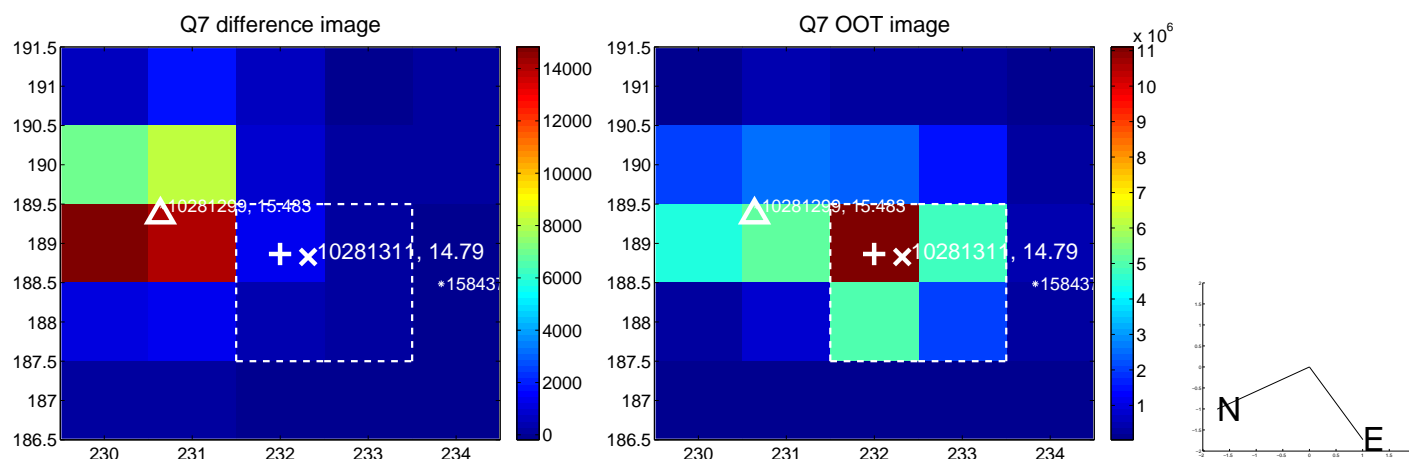
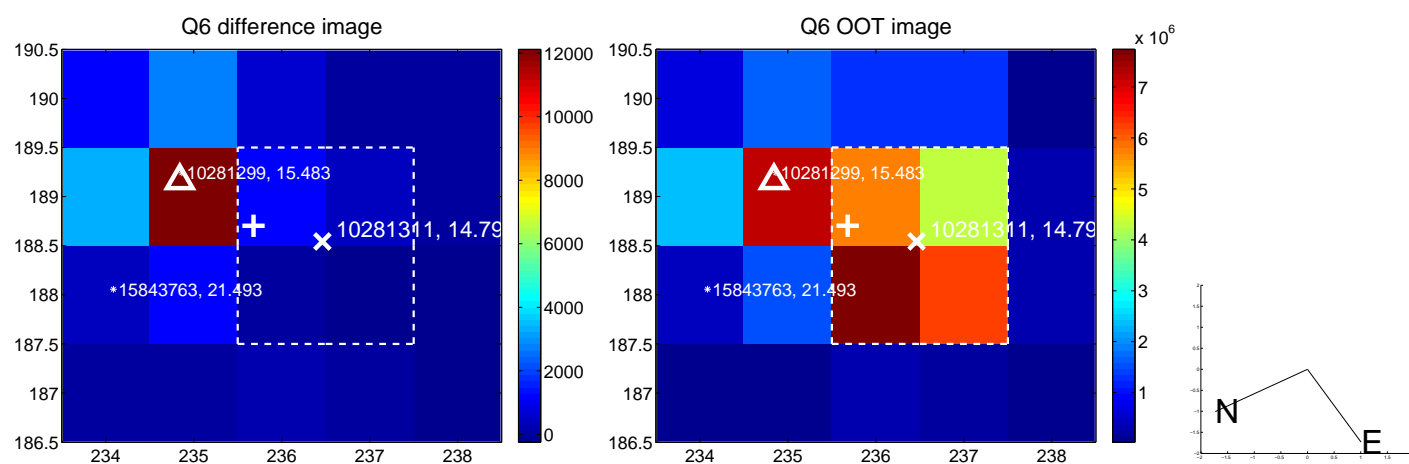
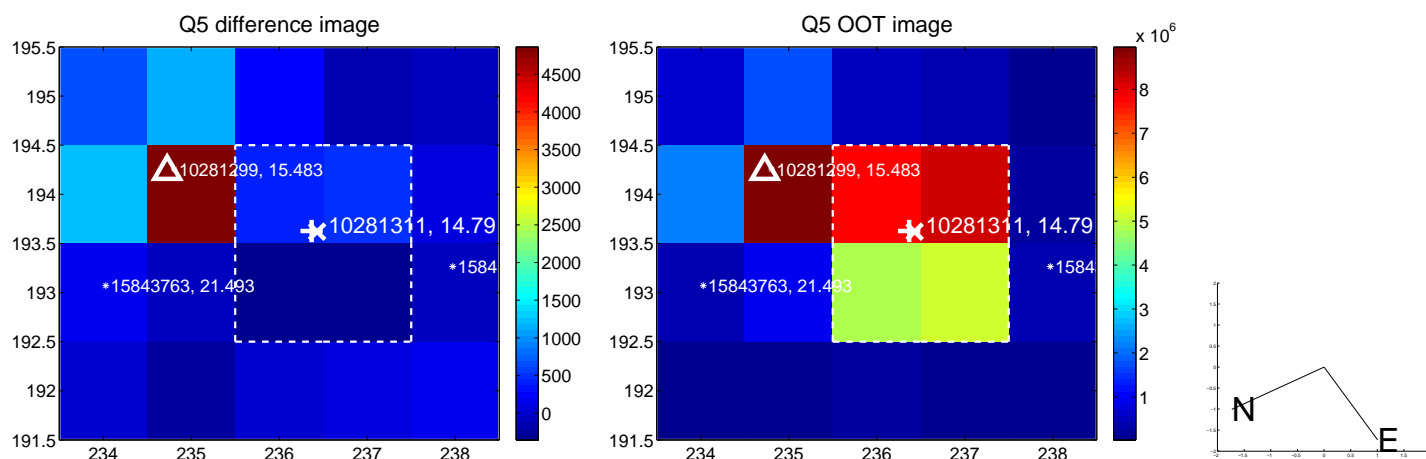


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

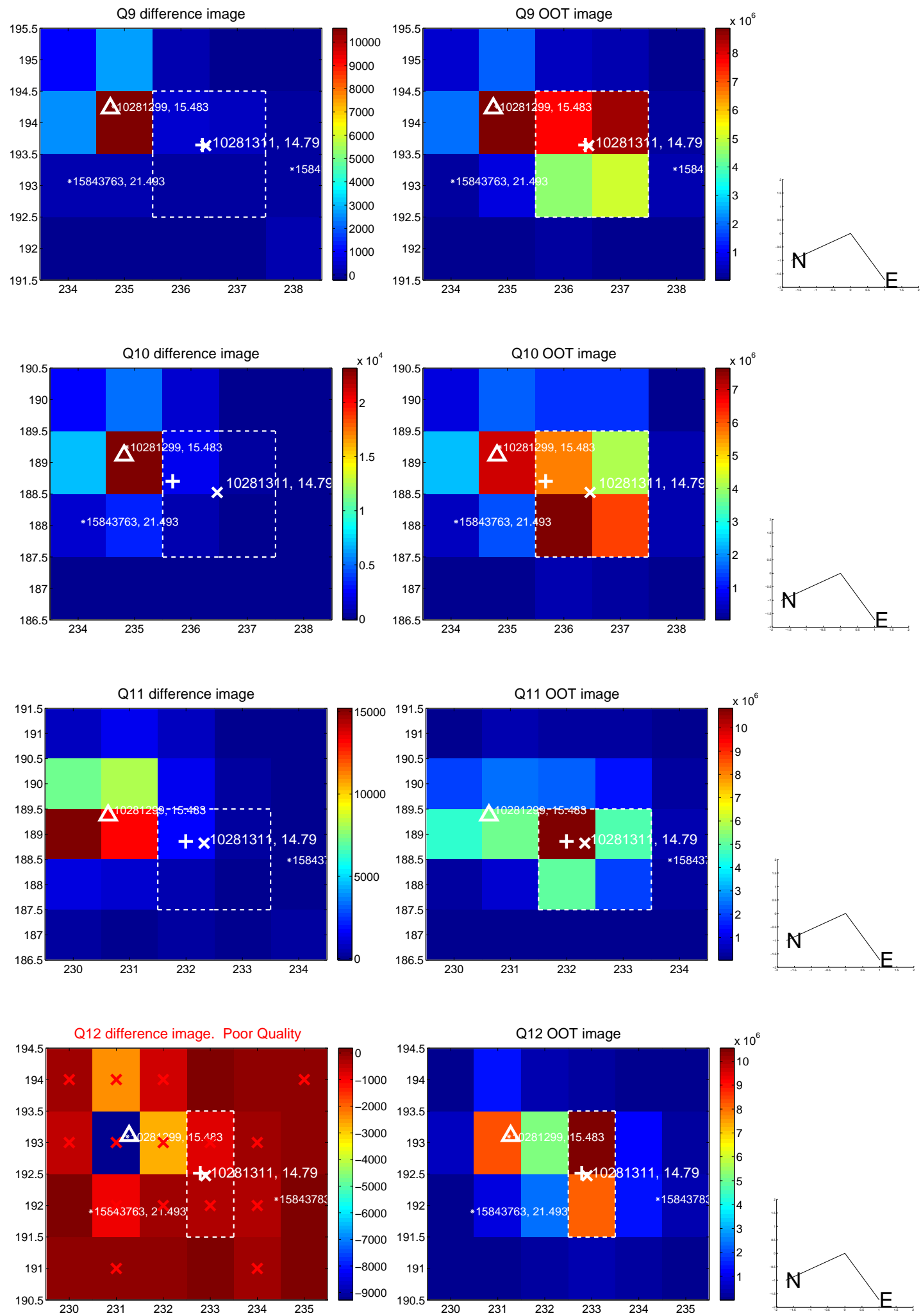
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



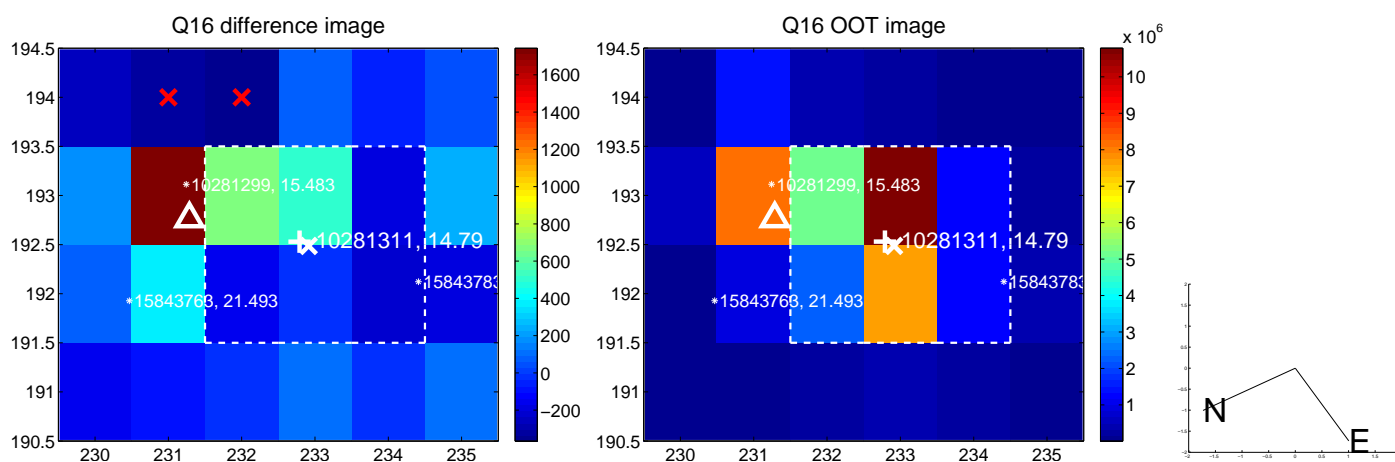
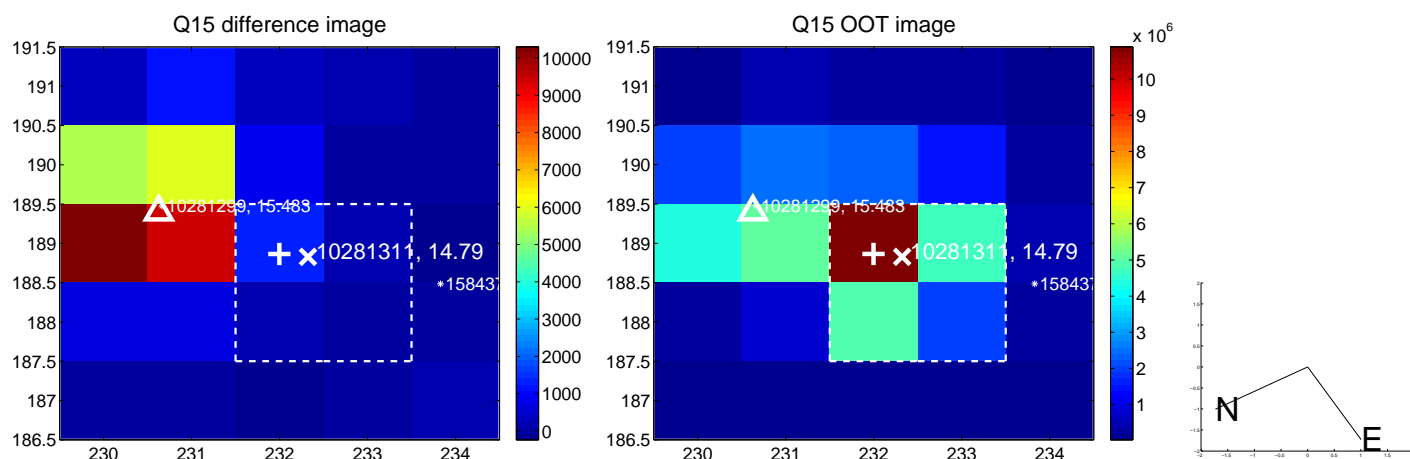
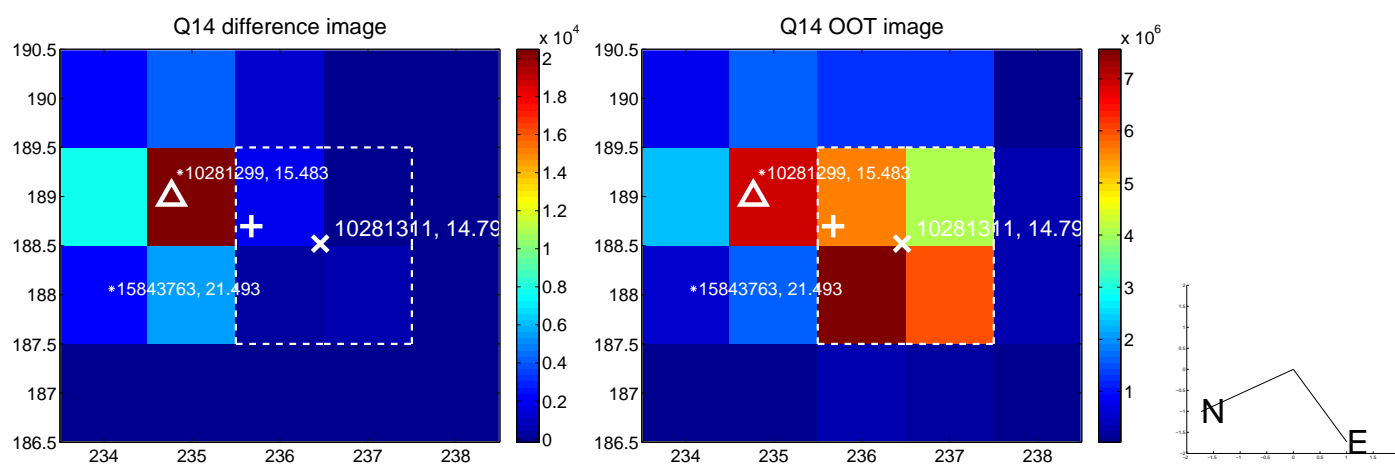
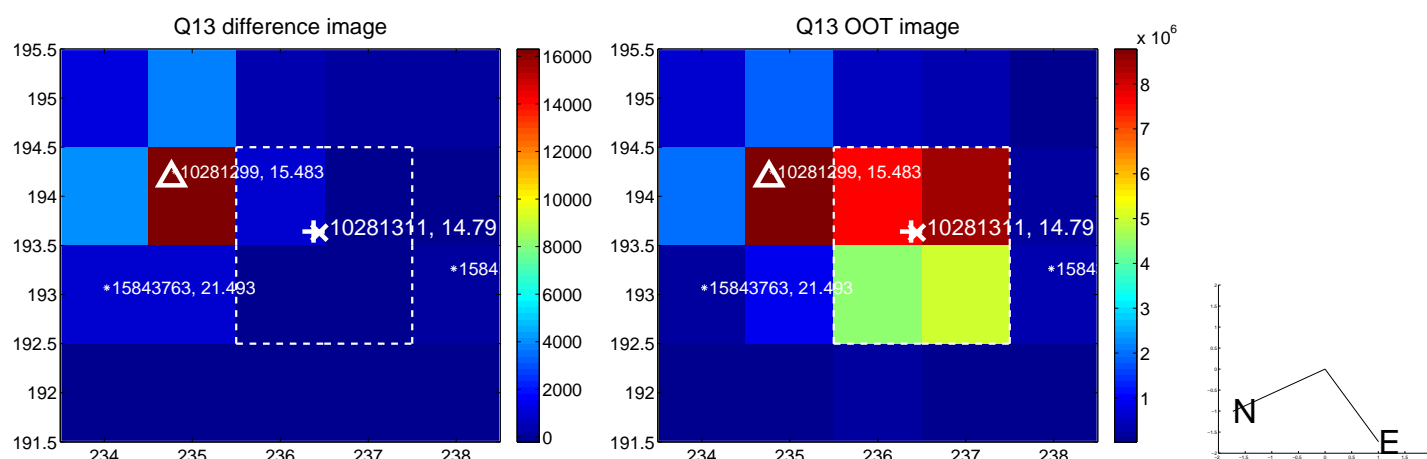
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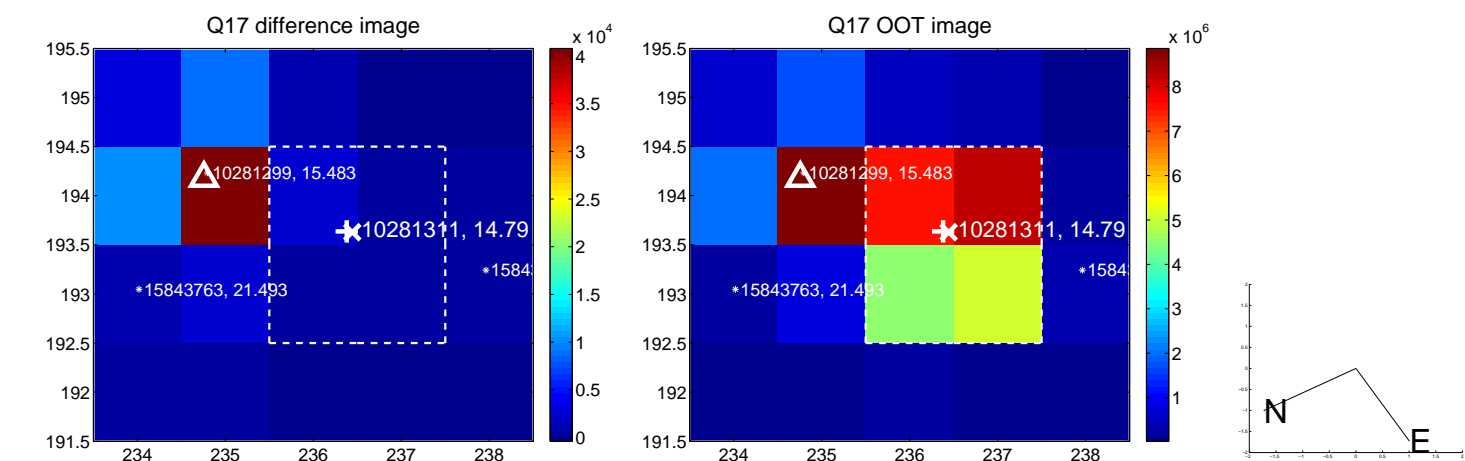
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



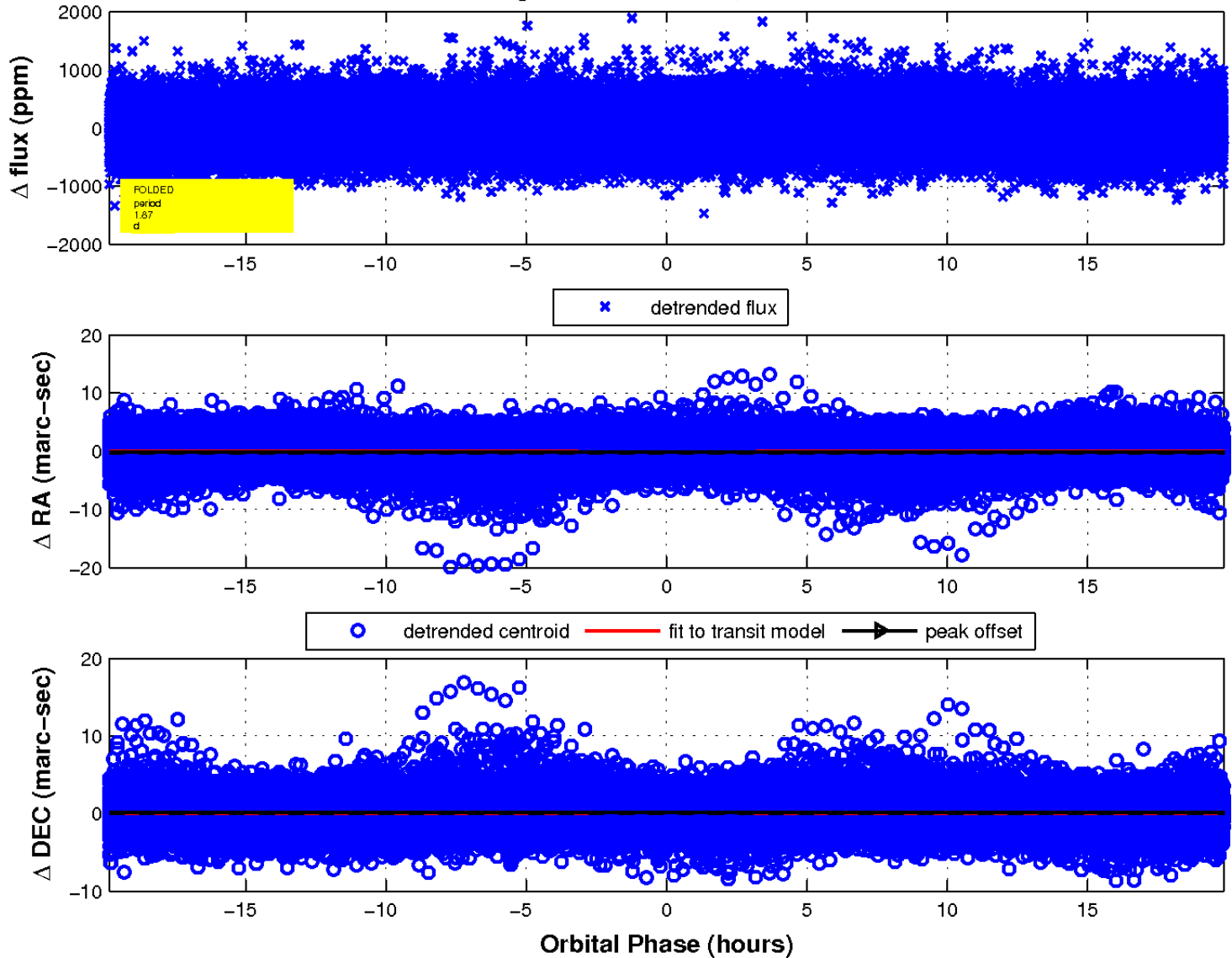
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

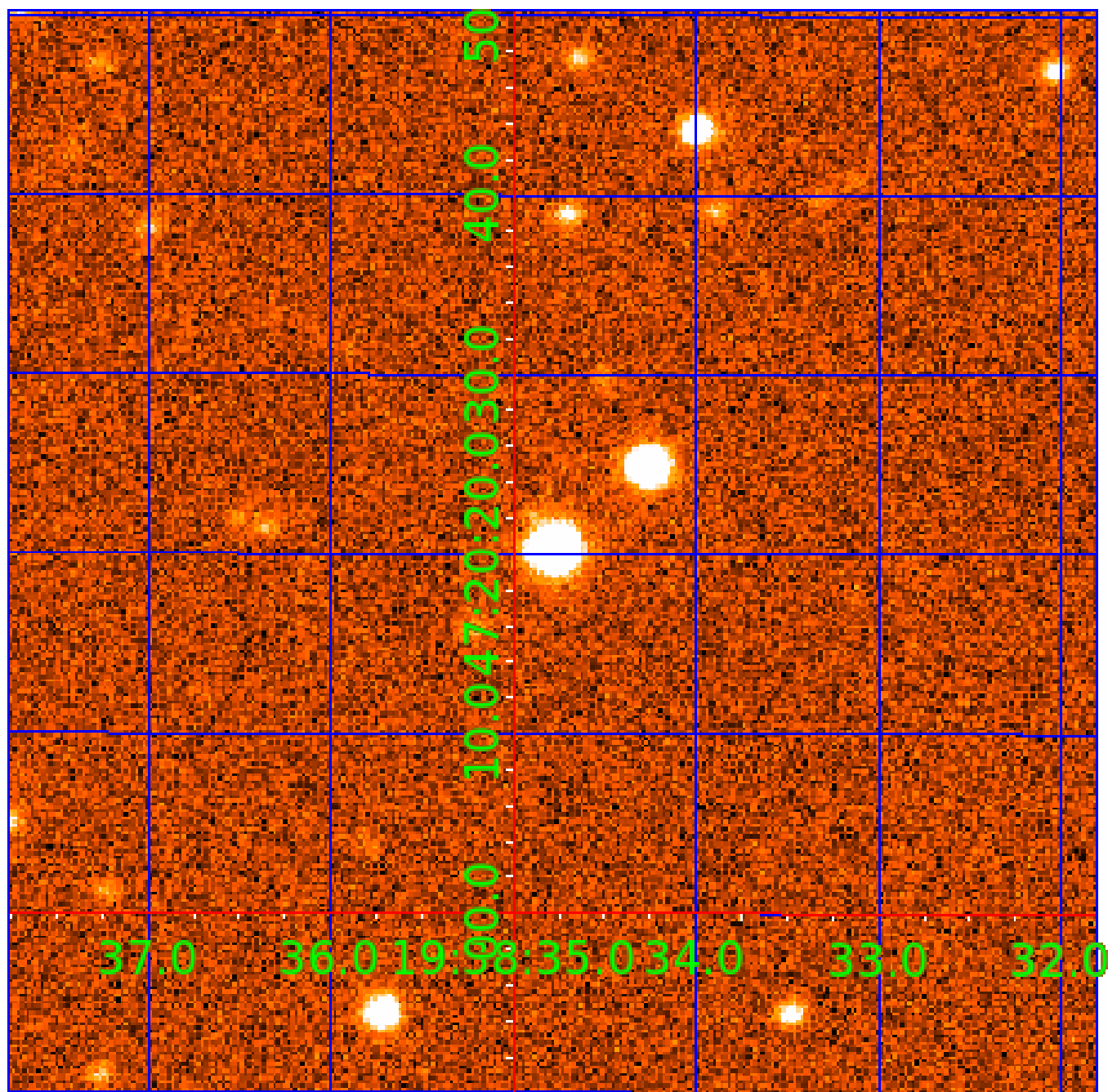


fluxWeightedCentroids, Planet 1 of 4



UKIRT Image

Declination



KIC 010281311

Q1-17 DR25 TCE Parameters

TCE	Run Type	KOI?	Period (Days)	Epoch (BKJD)	Depth (ppm)	Duration (Hours)	MES	SNR	R_{\star} (R_{\odot})	T_{\star} (K)	R_p (R_{\oplus})	S_p (S_{\oplus})
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Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
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010281311-02	OBS	FP	0.04	1	0	0	0	MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
010281311-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
010281311-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS

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

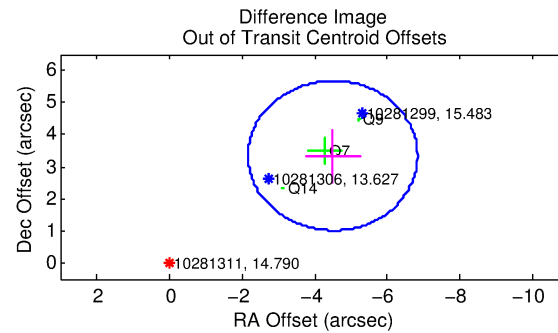
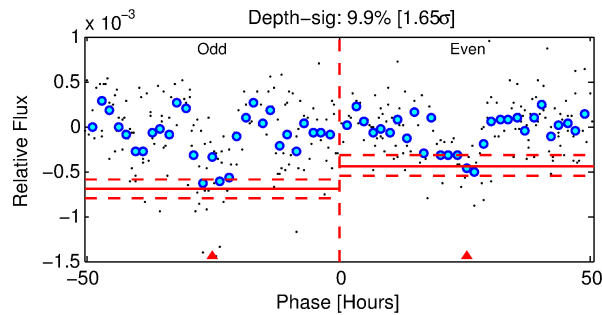
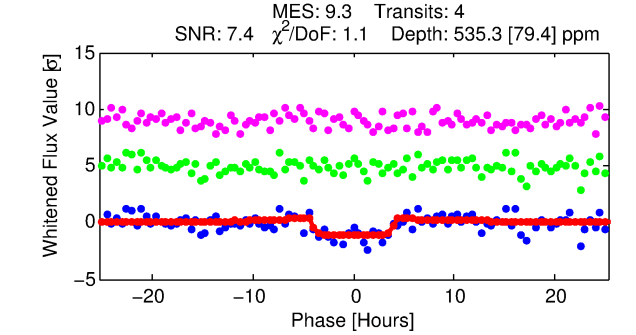
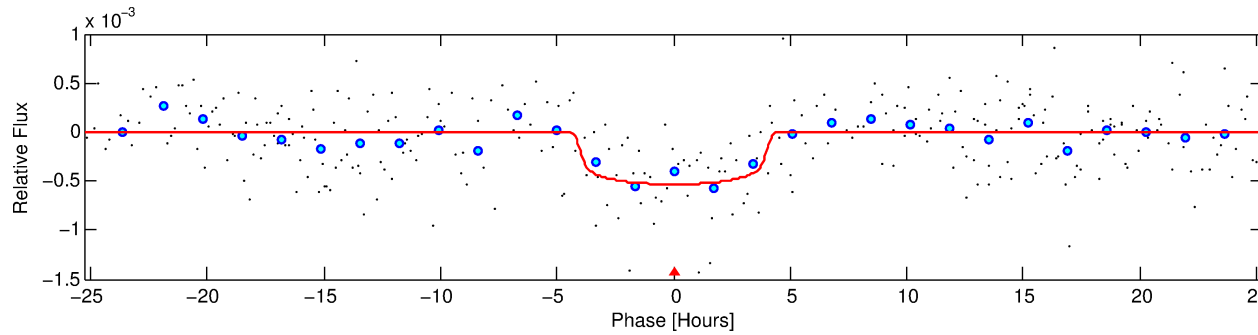
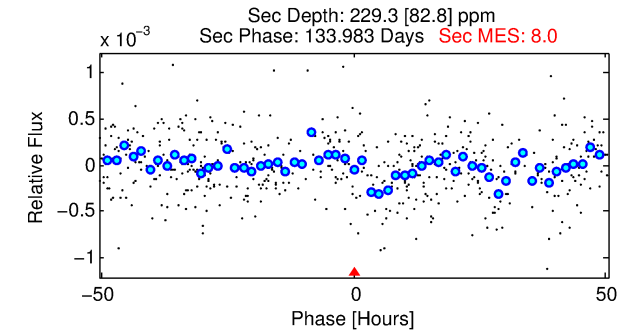
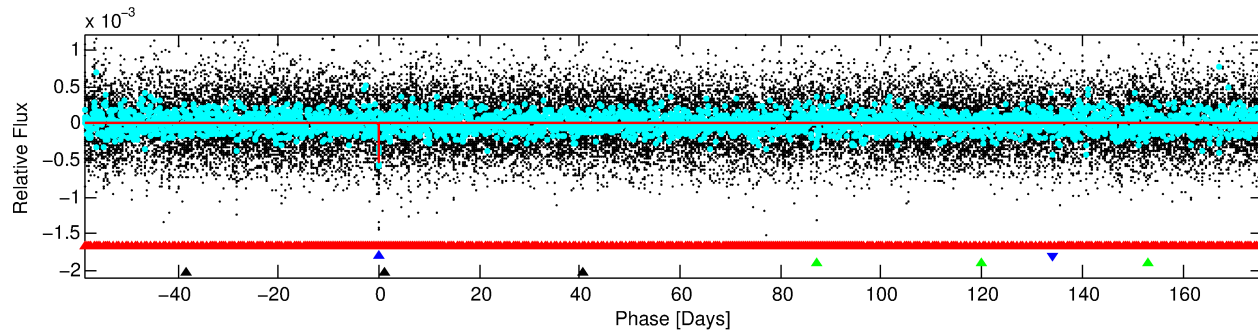
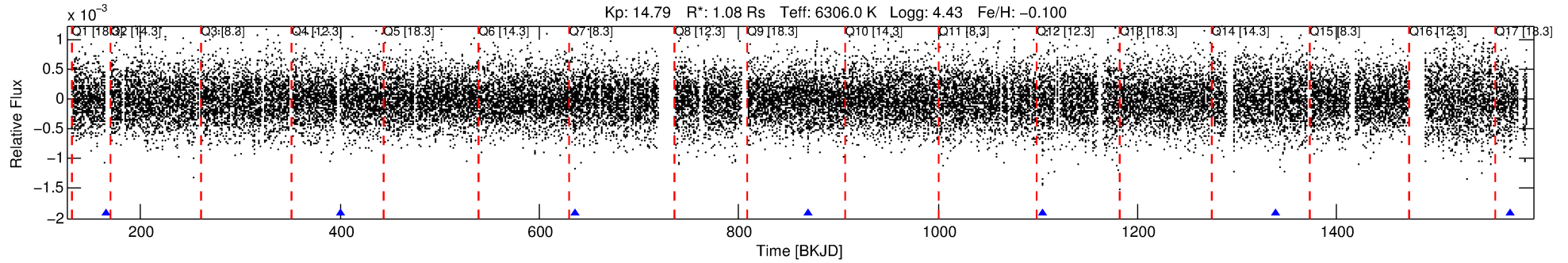
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 010281311-02

No Significant Match Found

DV One-Page Summary

KIC: 10281311 Candidate: 2 of 4 Period: 234.662 d



DV Fit Results:

Period = 234.66208 [0.00655] d
Epoch = 166.0280 [0.0258] BKJD
Rp/R* = 0.0229 [0.0108]
a/R* = 152.30 [365.43]
b = 0.73 [1.54]
Seff = 2.73 [1.11]
Teq = 328 [33] K
Rp = 2.69 [1.52] Re
a = 0.7748 [0.2029] AU
Ag = 10503.90 [11361.08] [0.92σ]
Teffp = 5131 [1312] K [3.66σ]

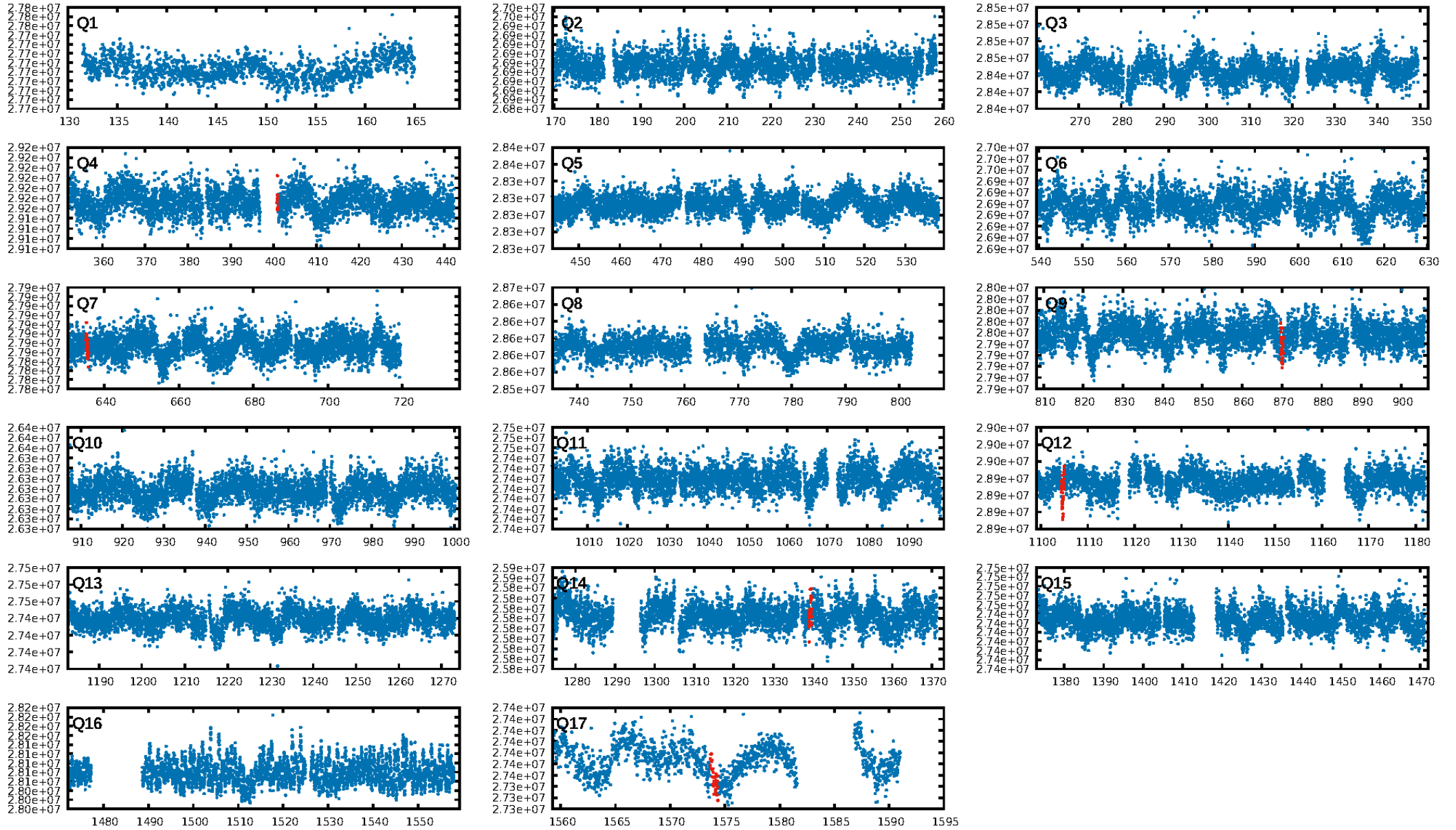
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [521.14σ]
LongPeriod-sig: 100.0% [624.91σ]
ModelChiSquare2-sig: 17.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 1.15e-16
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: -1.132
Centroid-sig: 20.4%
Centroid-so: 1.801 arcsec [0.96σ]
OotOffset-rm: 5.605 arcsec [7.21σ]
KicOffset-rm: 7.054 arcsec [43.95σ]
OotOffset-st: 1/1/0/1 [3]
KicOffset-st: 1/1/0/1 [3]
DiffImageQuality-fgm: 0.33 [1/3]
DiffImageOverlap-fno: 0.00 [0/4]

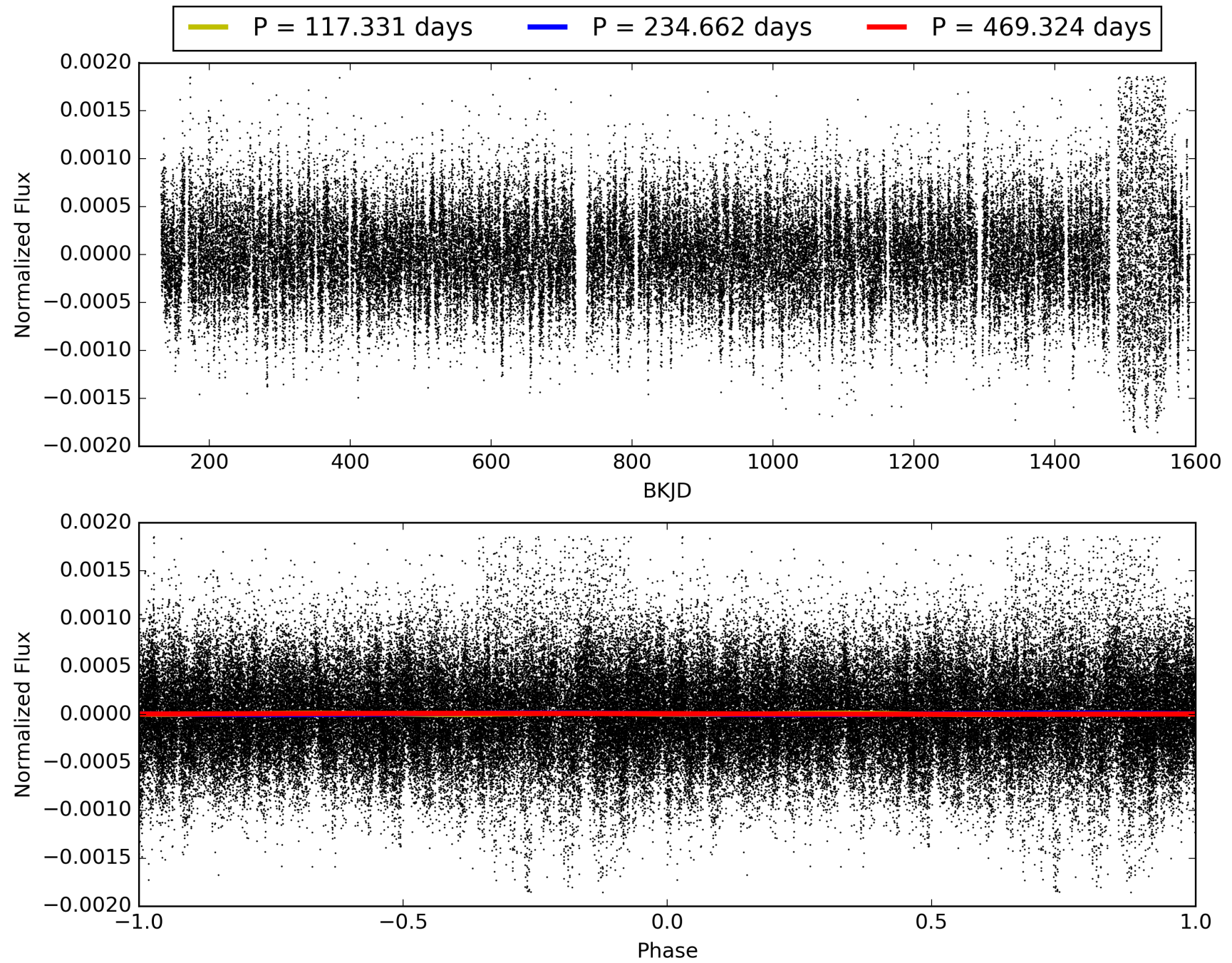
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 010281311-02, PDC Light Curves

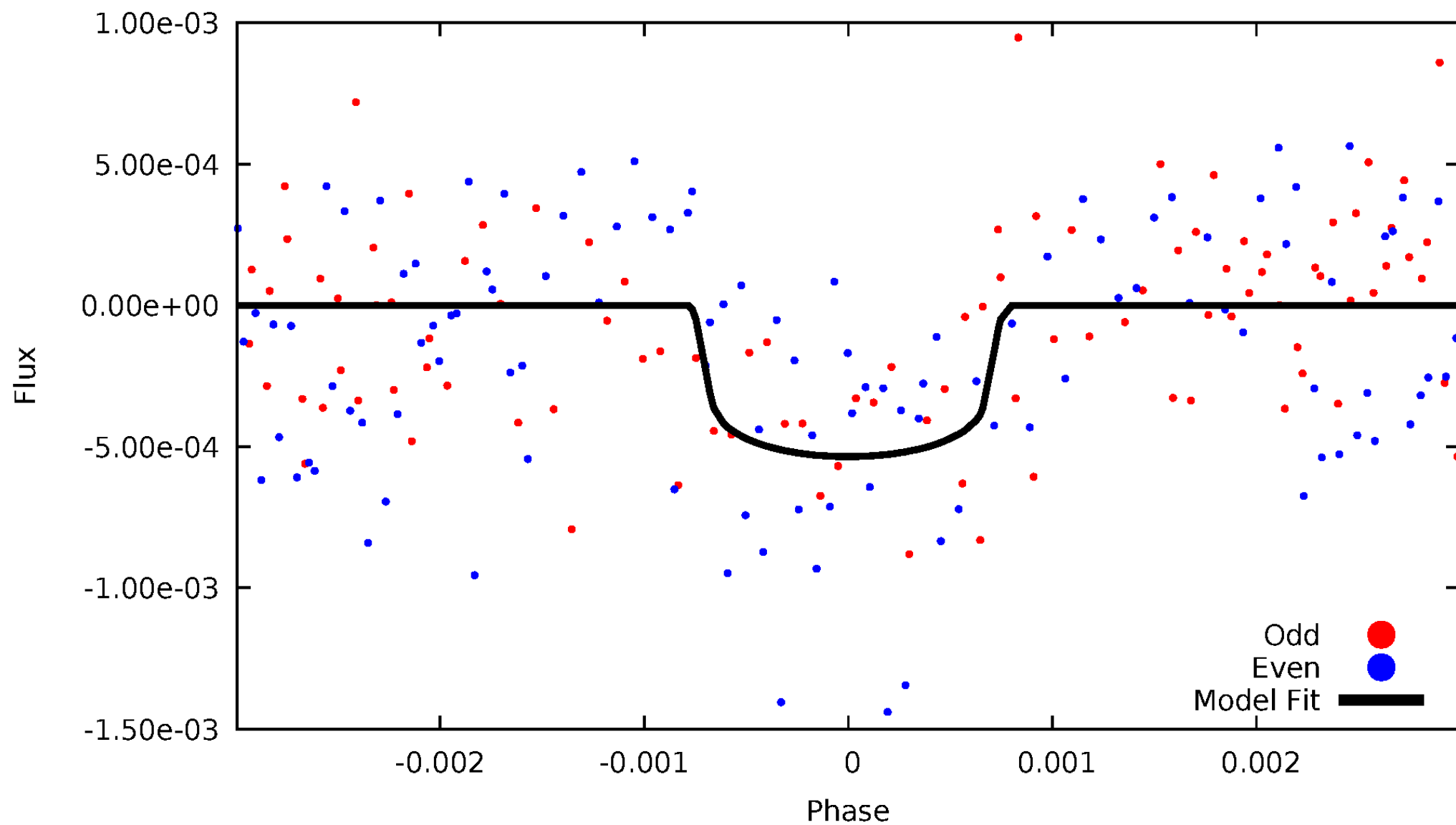


TCE 010281311-02



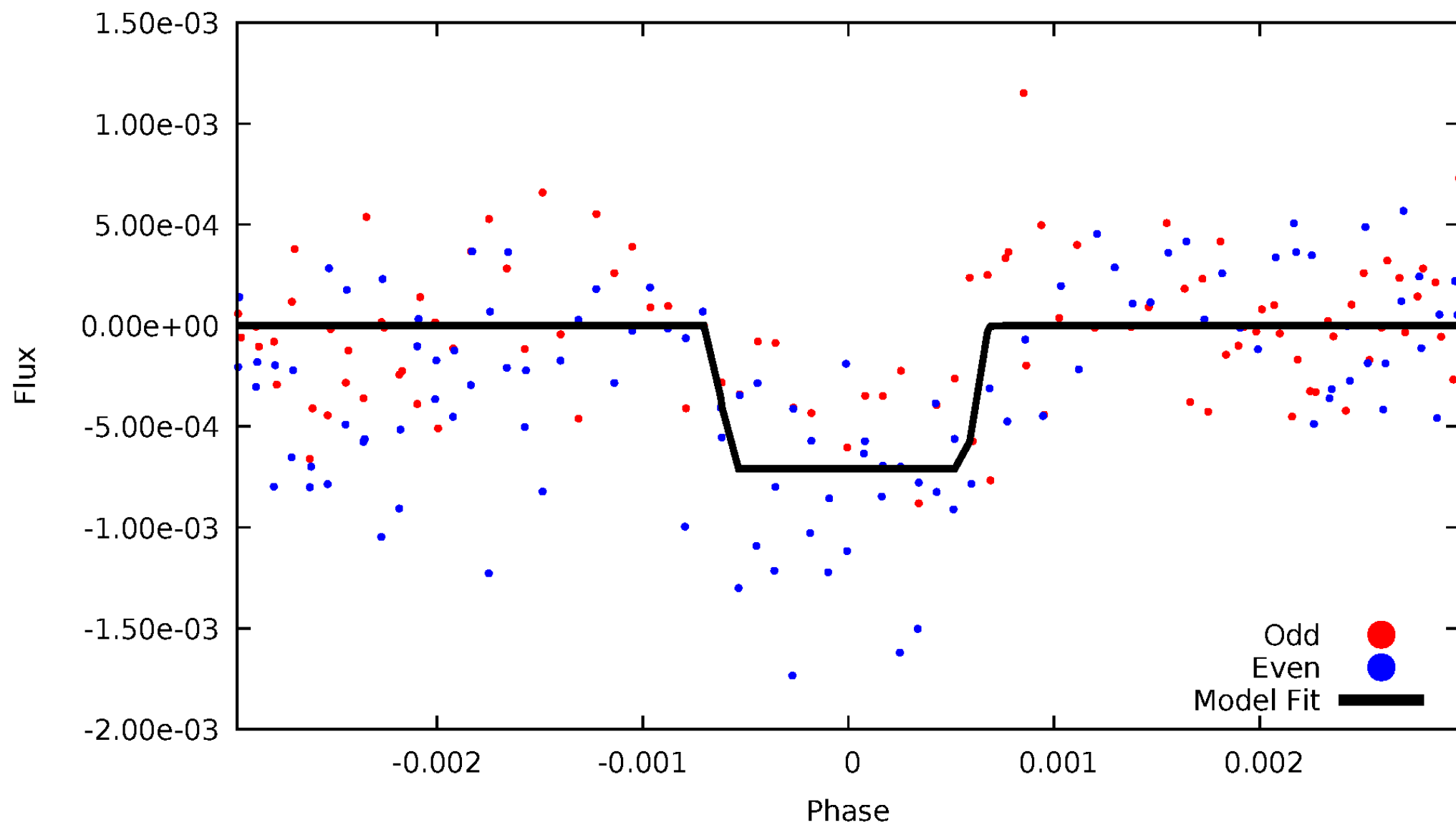
DV Odd/Even

TCE 010281311-02



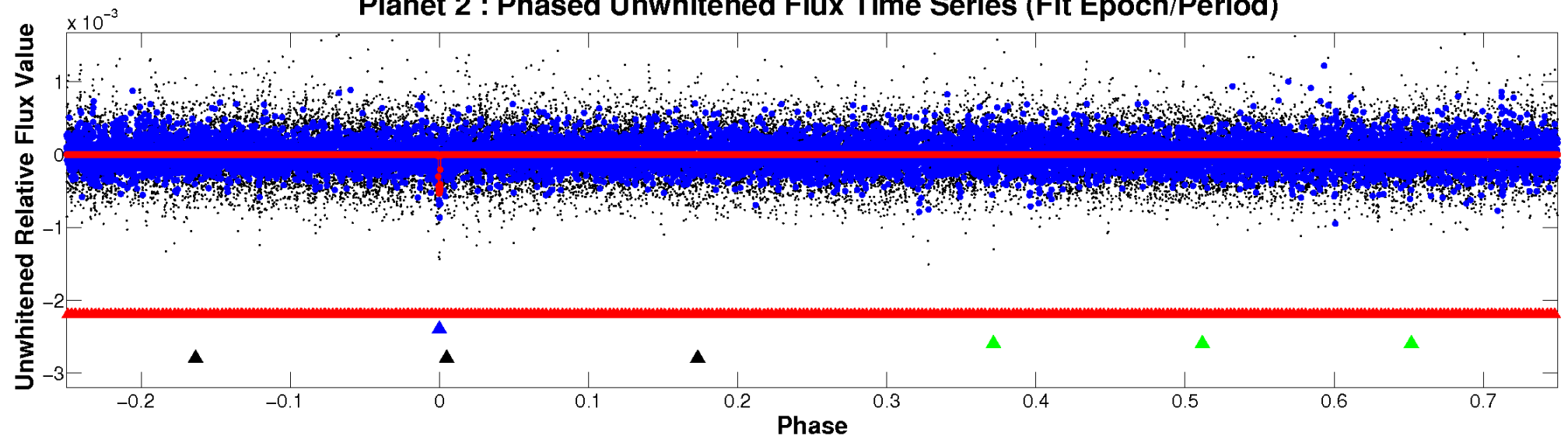
ALT Odd/Even

TCE 010281311-02

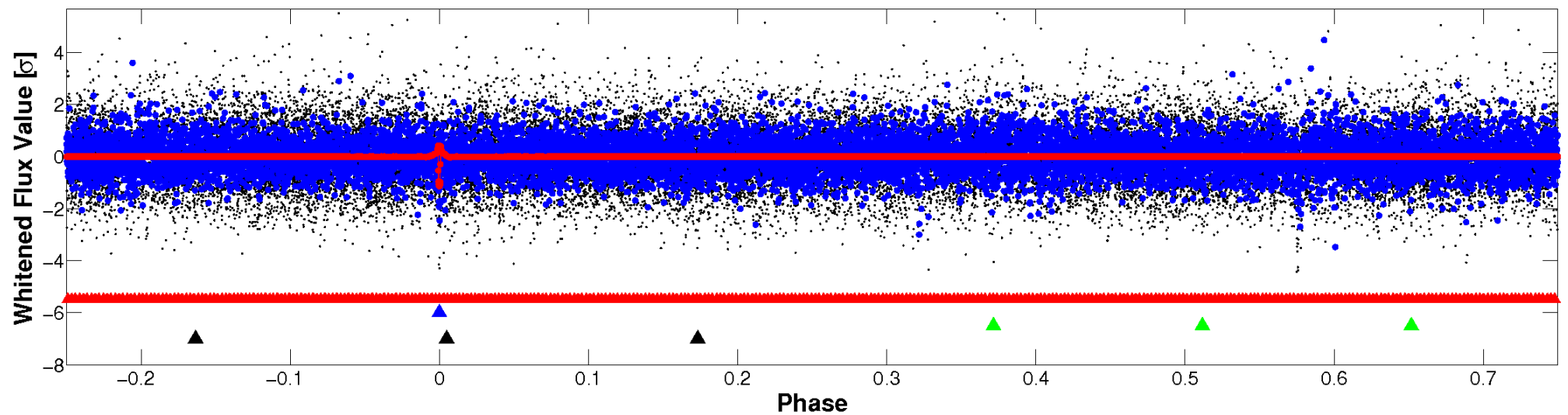


Non-Whitened Vs. Whitened Light Curve

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

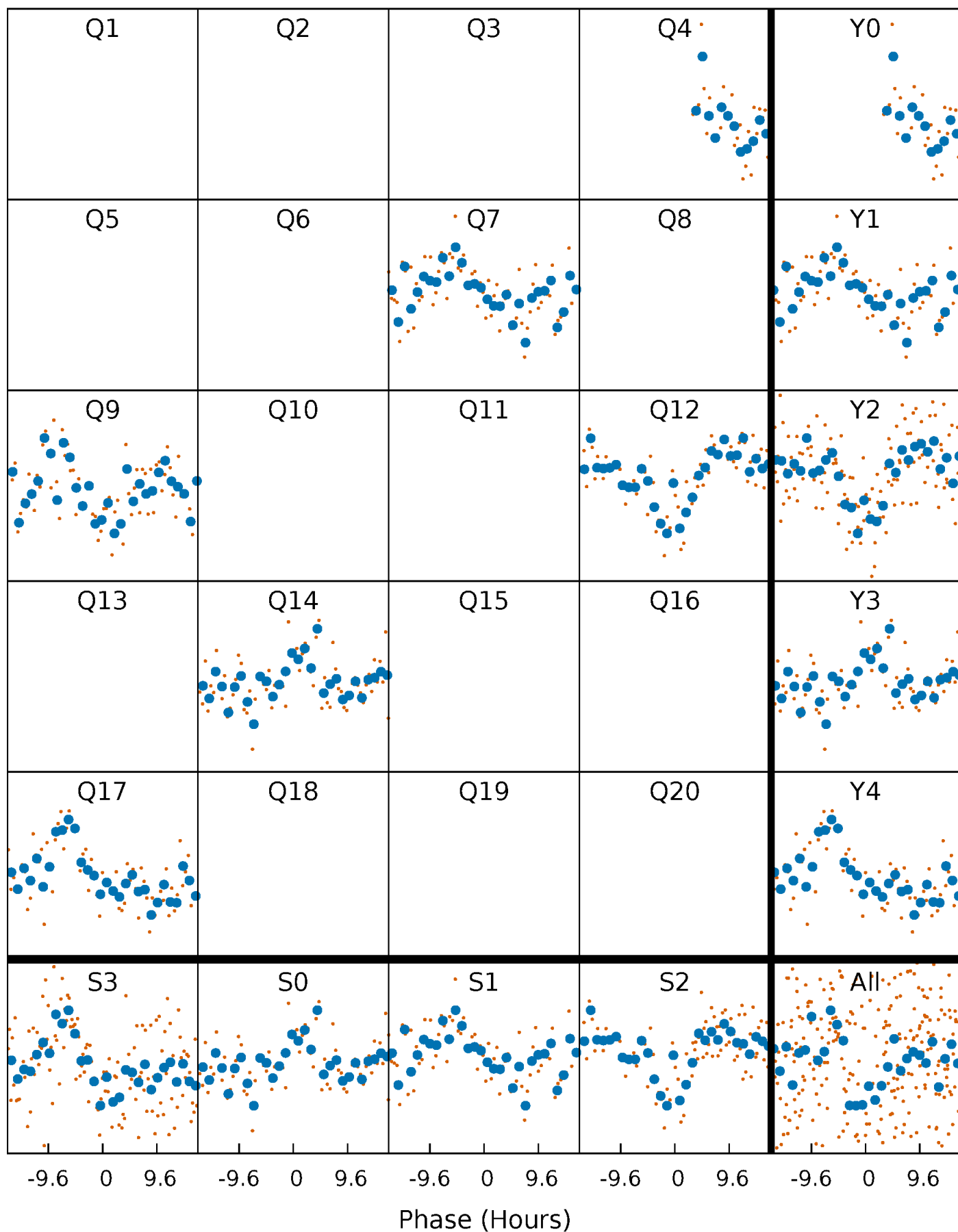


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



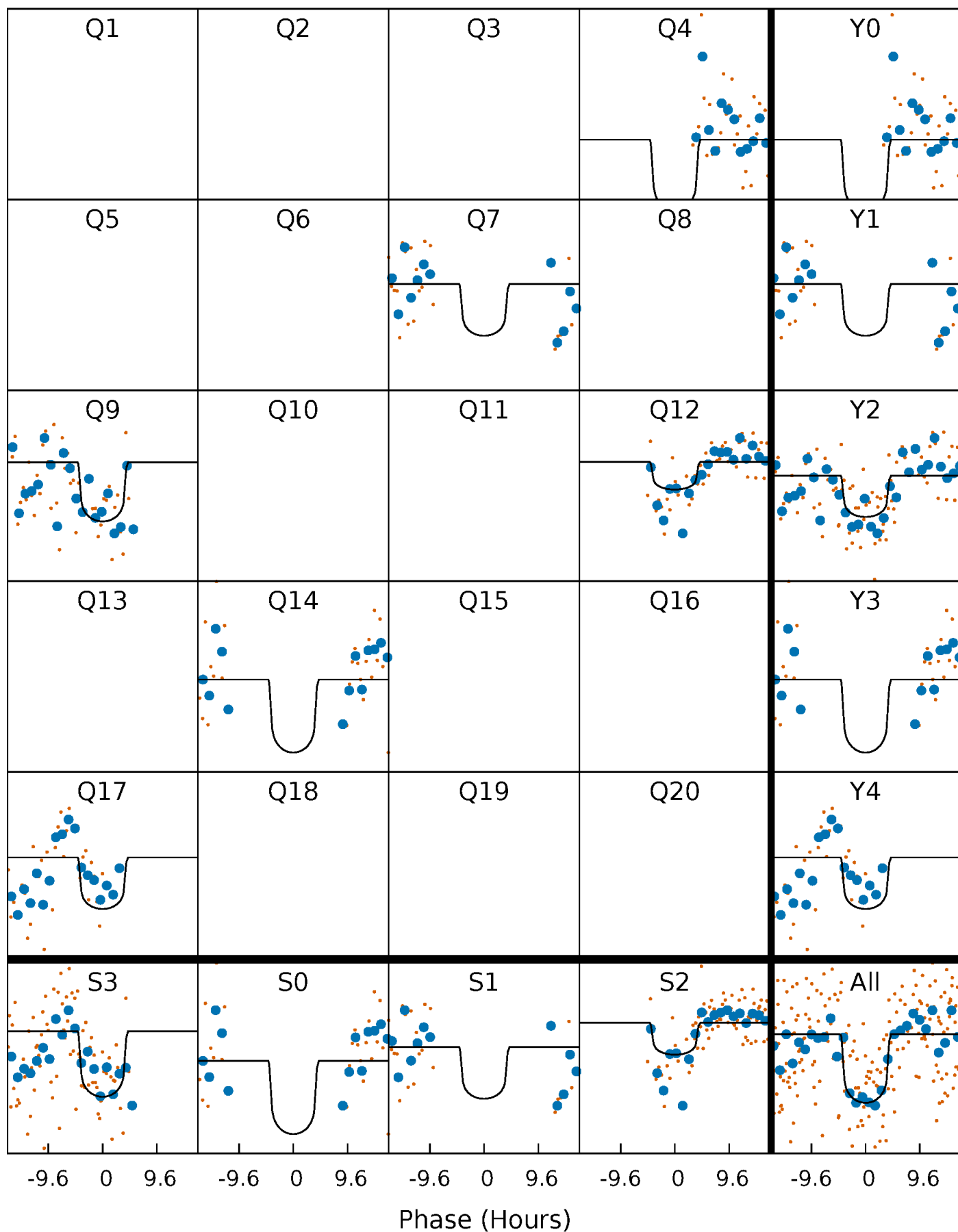
PDC Quarter-Phased Transit Curves

TCE 010281311-02 $P=234.662079$ Days $T_0=166.028019$ (BKJD)



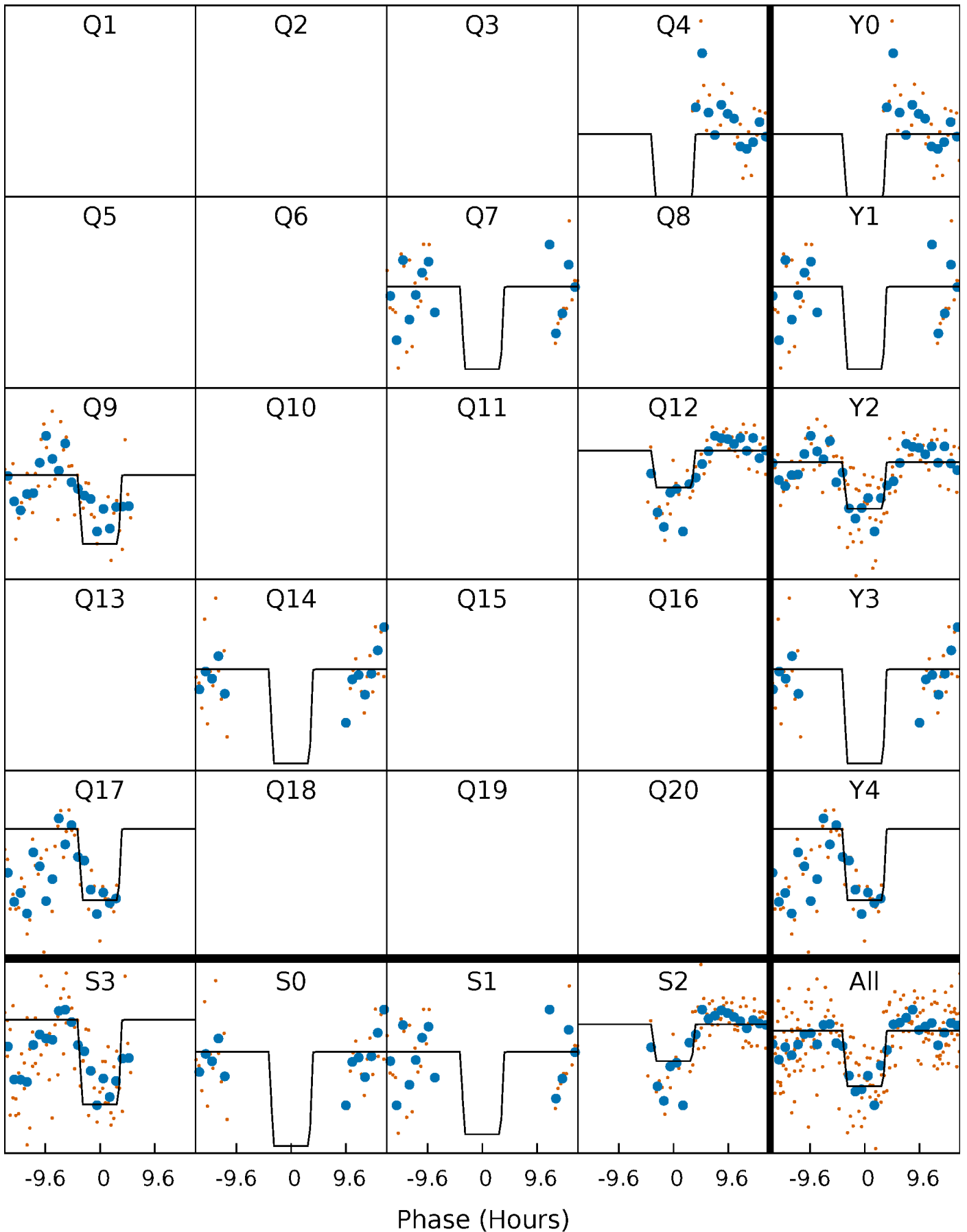
DV Quarter-Phased Transit Curves

TCE 010281311-02 P=234.662079 Days $T_0=166.028019$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

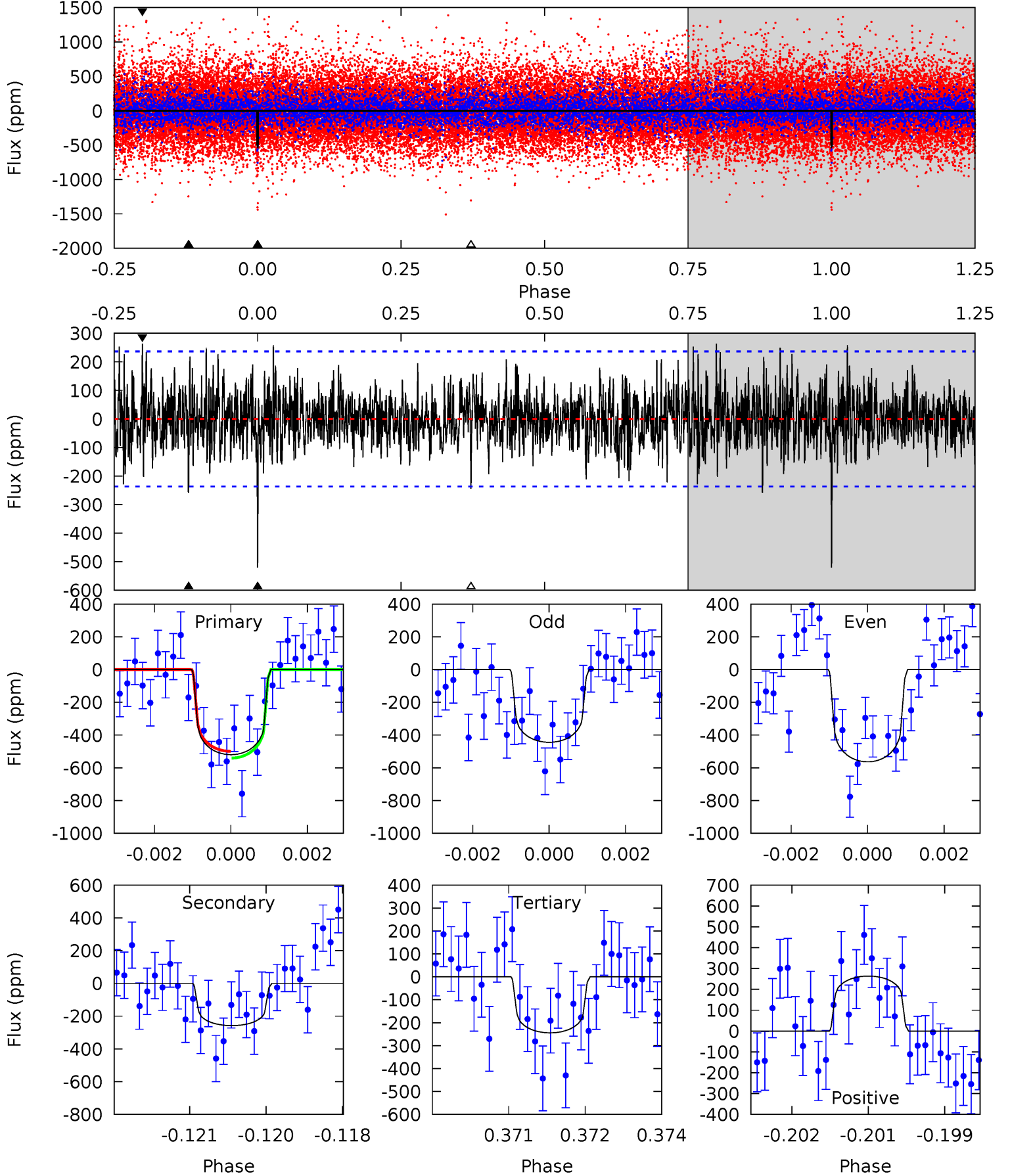
TCE 010281311-02 P=234.659003 Days $T_0=166.026810$ (BKJD)



DV Model-Shift Uniqueness Test

010281311-02, P = 234.662079 Days, E = 166.028019 Days

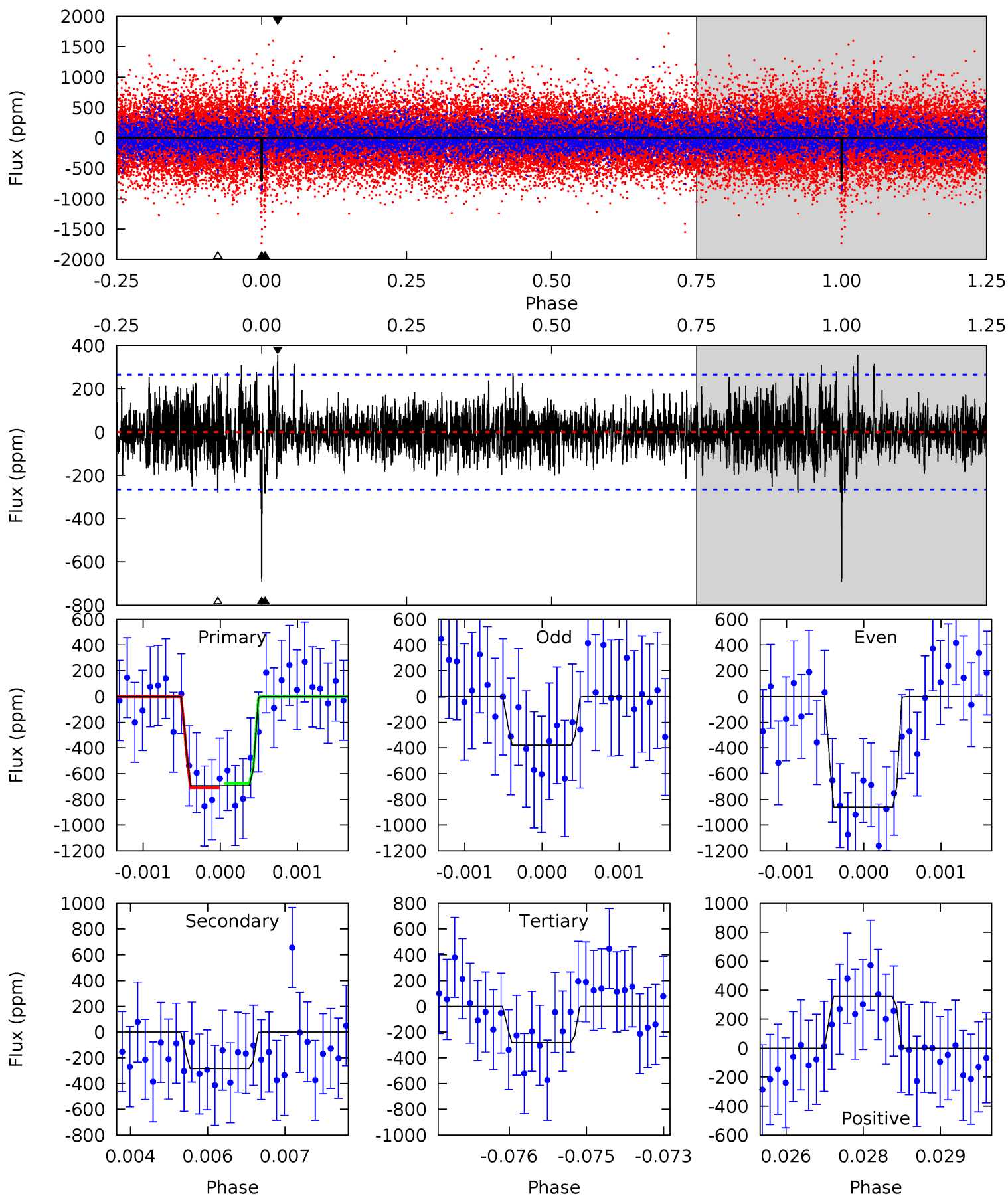
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.8	5.87	5.55	5.99	5.37	3.17	1.63	6.27	5.83	0.31	-0.13	1.33	1.04	0.34	0.47



Alt Model-Shift Uniqueness Test

010281311-02, P = 234.659003 Days, E = 166.026810 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
14.1	5.78	5.70	7.23	5.39	3.20	1.66	8.36	6.83	0.07	-1.45	4.82	0.84	0.34	0.34



Stellar Parameters For KIC 010281311

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6306^{+169}_{-225}	$4.426^{+0.065}_{-0.208}$	$-0.100^{+0.250}_{-0.350}$	$1.076^{+0.335}_{-0.134}$	$1.126^{+0.154}_{-0.154}$	$1.272^{+0.361}_{-0.674}$
	+3%/-4%	+1%/-5%	+250%/-350%	+31%/-12%	+14%/-14%	+28%/-53%
Source	PHO1	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 010281311-02 / KOI 8203.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-258 ± 44	$2.84^{+1.32}_{-1.25}$	467^{+34}_{-24}	5247^{+1822}_{-748}	10014^{+24848}_{-5478}
Alt.	-284 ± 49	$3.37^{+1.44}_{-1.38}$	466^{+36}_{-24}	4981^{+1440}_{-611}	8083^{+14288}_{-4034}

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

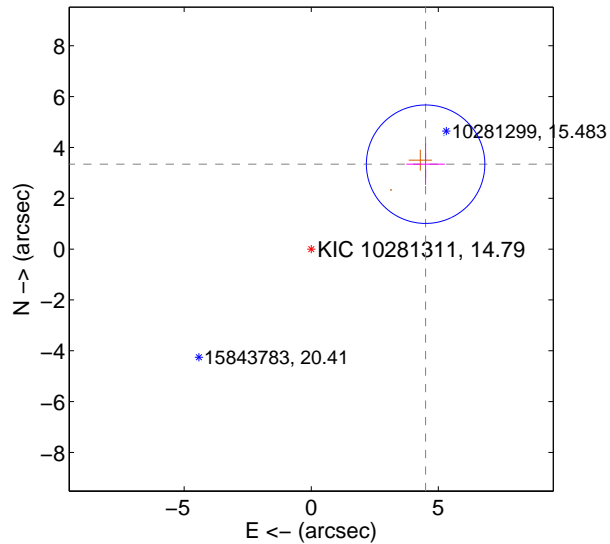
Supplemental centroid analysis for 010281311-02. Kepler magnitude: 14.79. Transit SNR 7.43

There are 1 quarters with good PRF difference image offsets

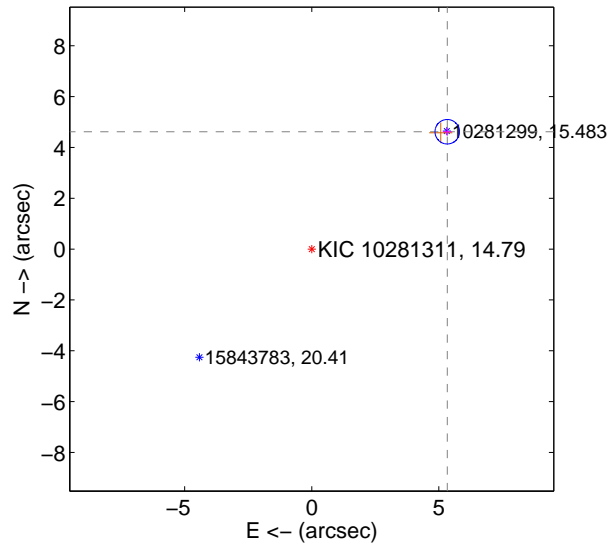
The OOT PRF centroid is offset from the target star catalog position by about 3.09 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	5.605 ± 0.777	7.21	-4.501 ± 0.756	3.341 ± 0.814
PRF-fit source offset from KIC position	7.054 ± 0.161	43.95	-5.332 ± 0.166	4.618 ± 0.153
photometric centroid source offset	1.80 ± 1.87	0.96	1.56 ± 1.92	0.90 ± 1.69

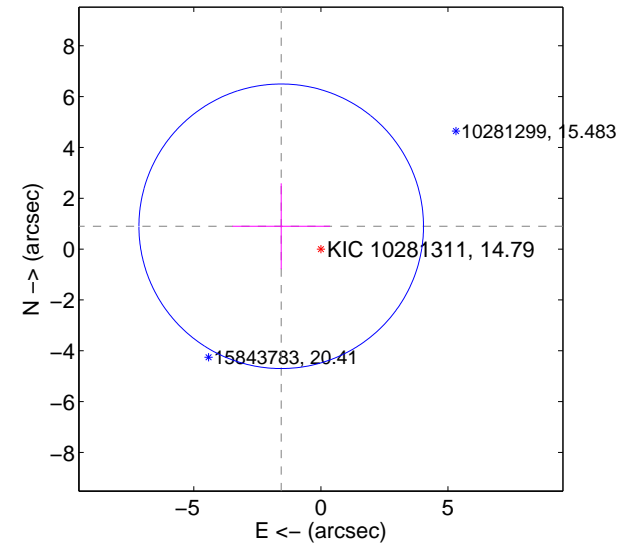
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

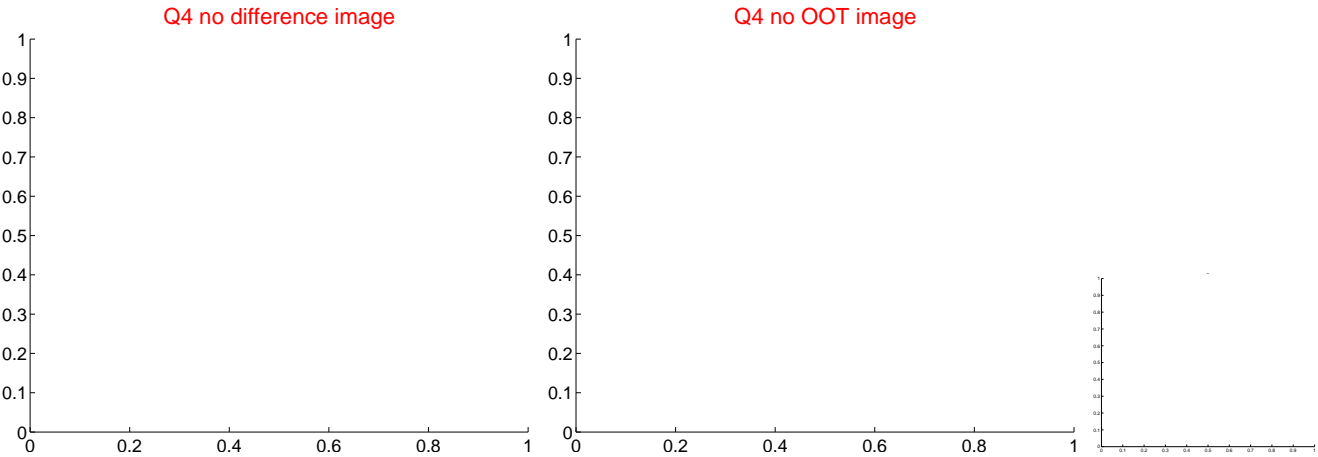
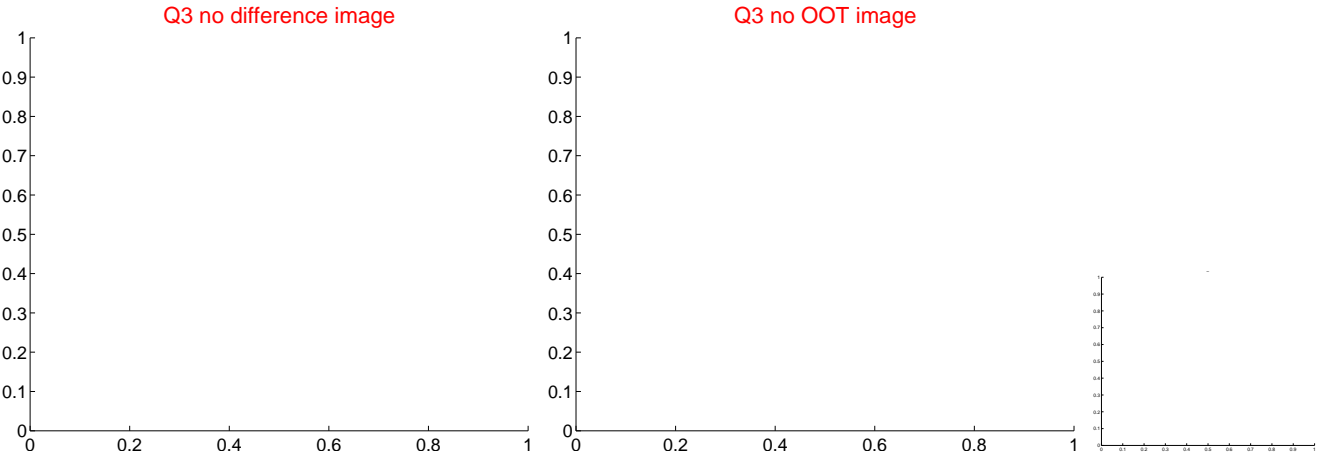
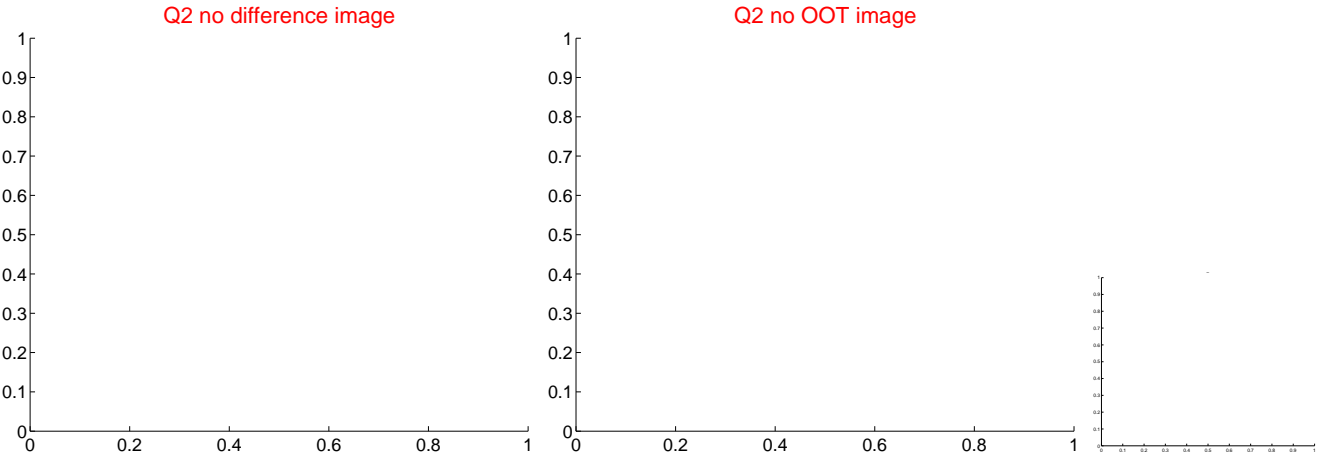
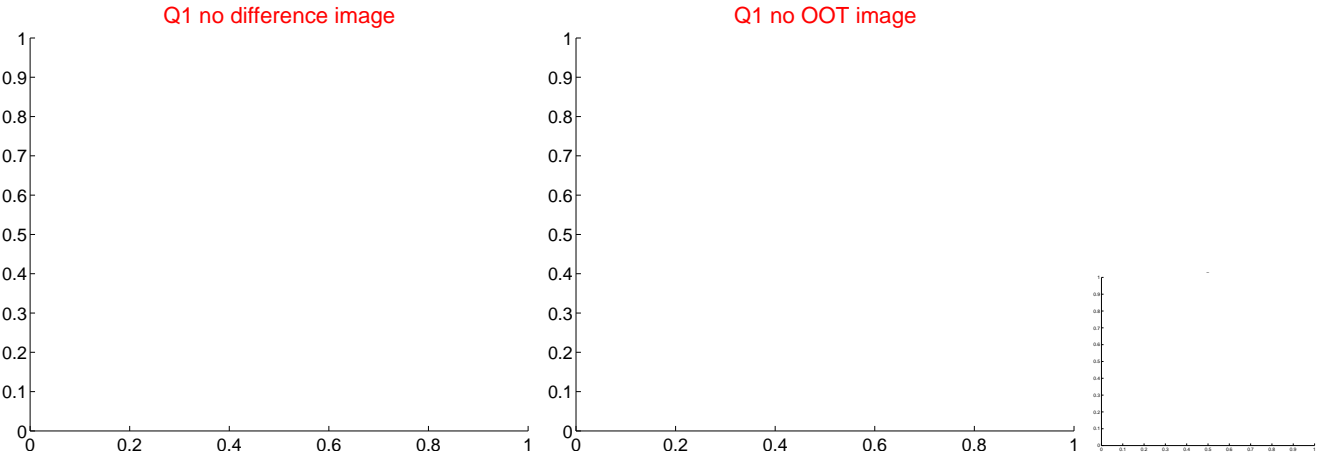


offset from photometric centroids



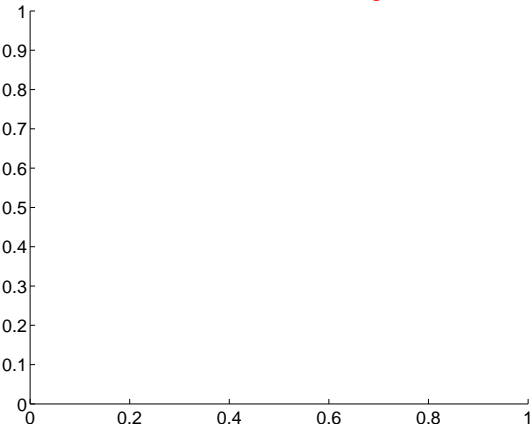
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

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

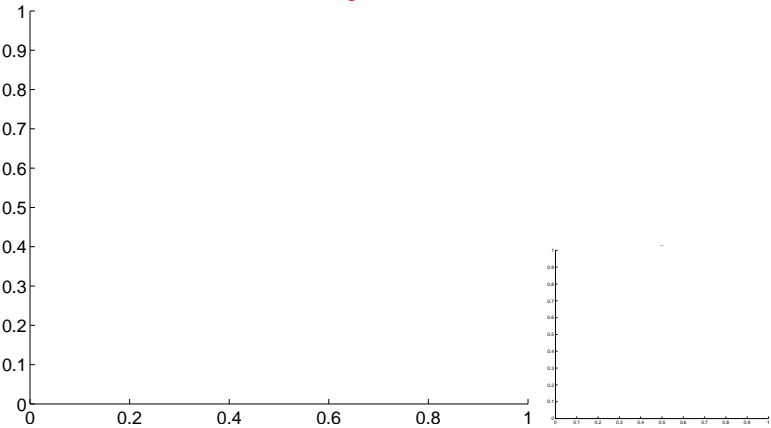


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

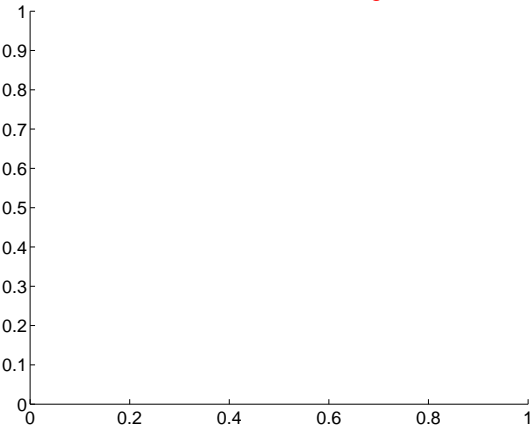
Q5 no difference image



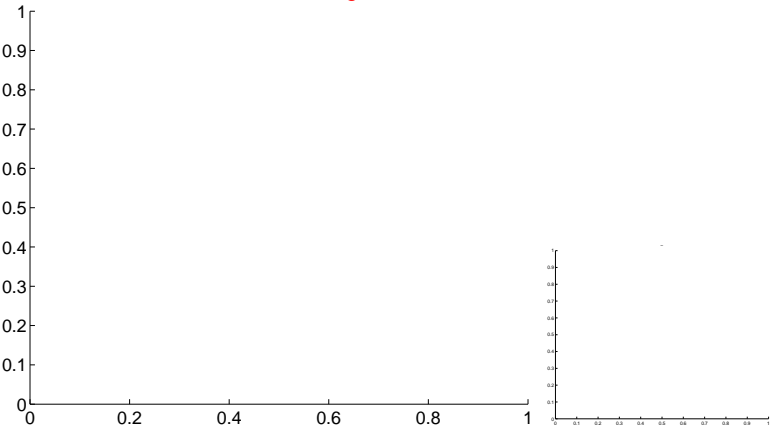
Q5 no OOT image



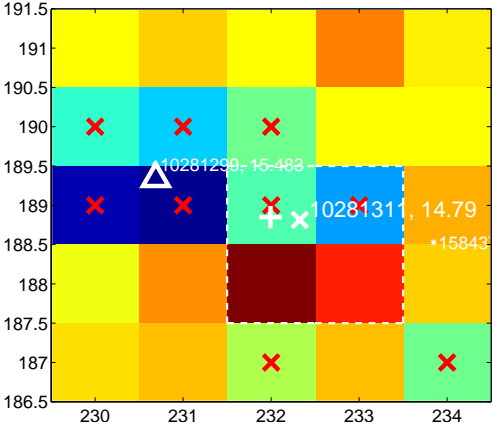
Q6 no difference image



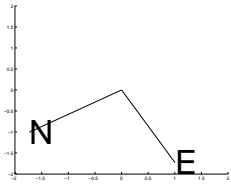
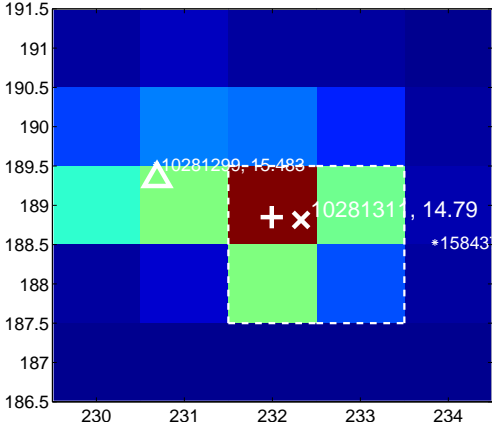
Q6 no OOT image



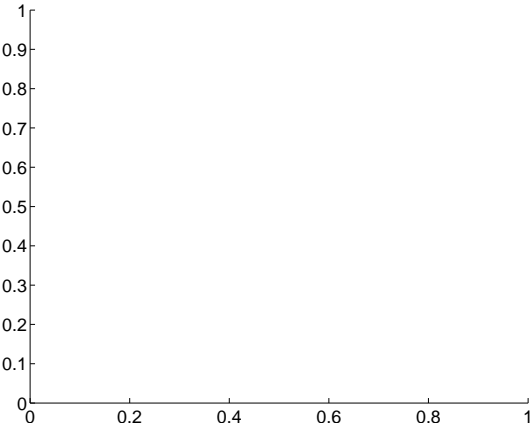
Q7 difference image. Poor Quality



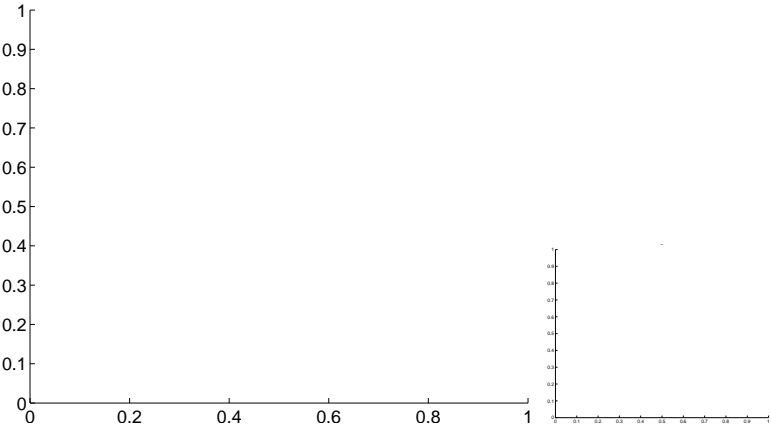
Q7 OOT image



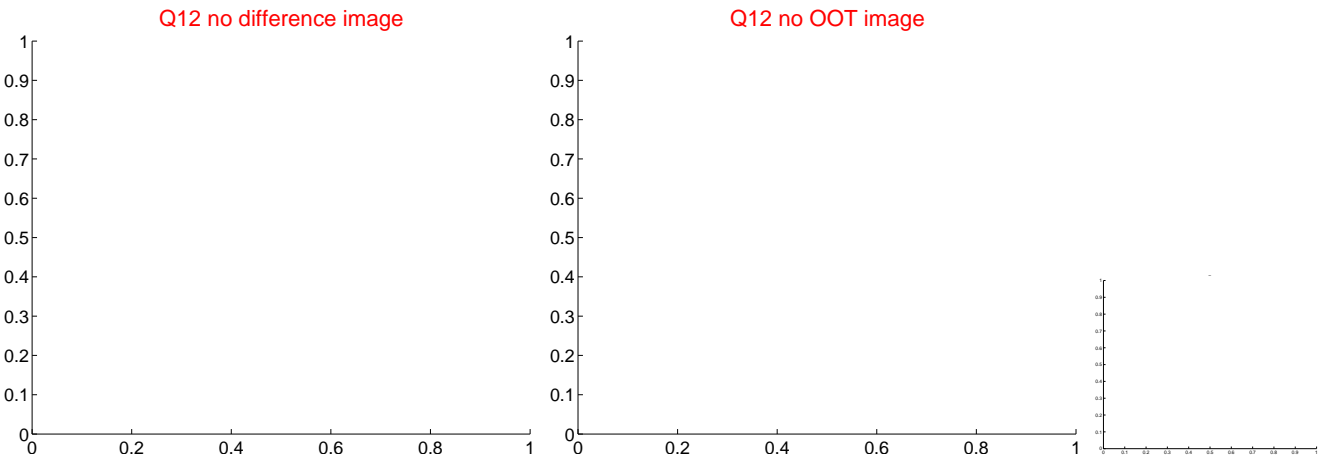
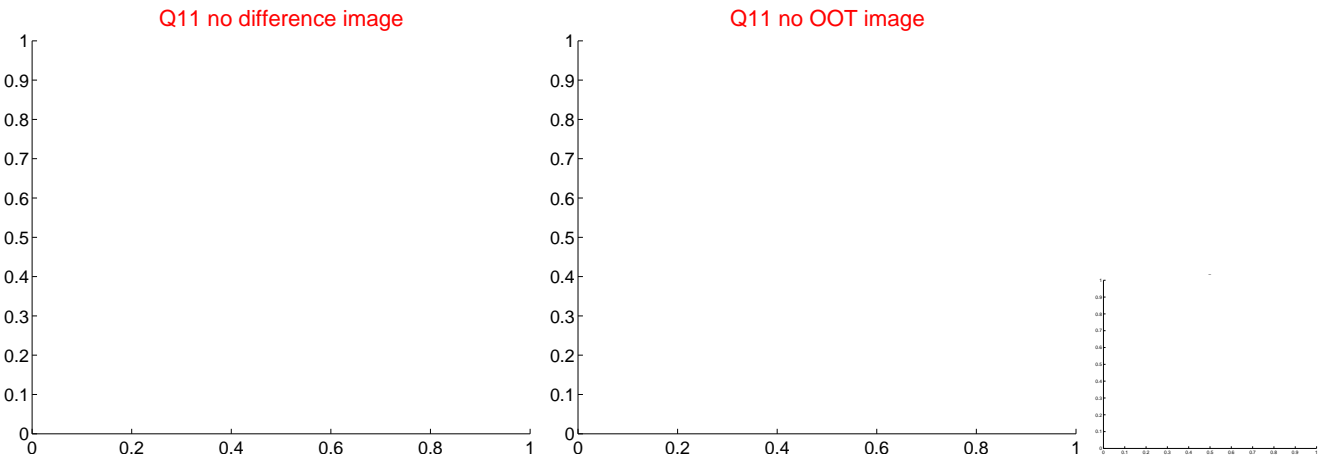
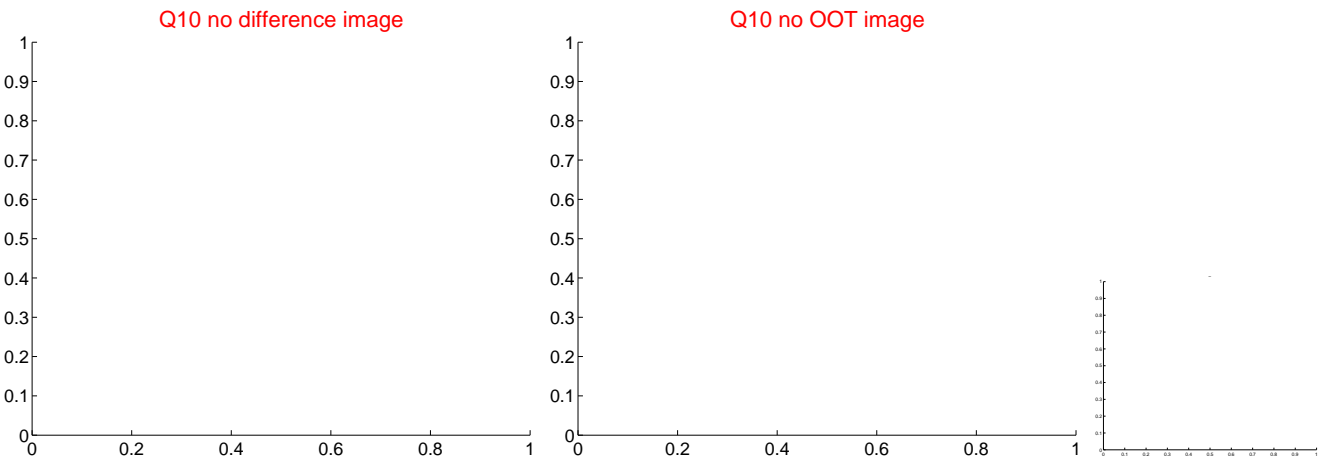
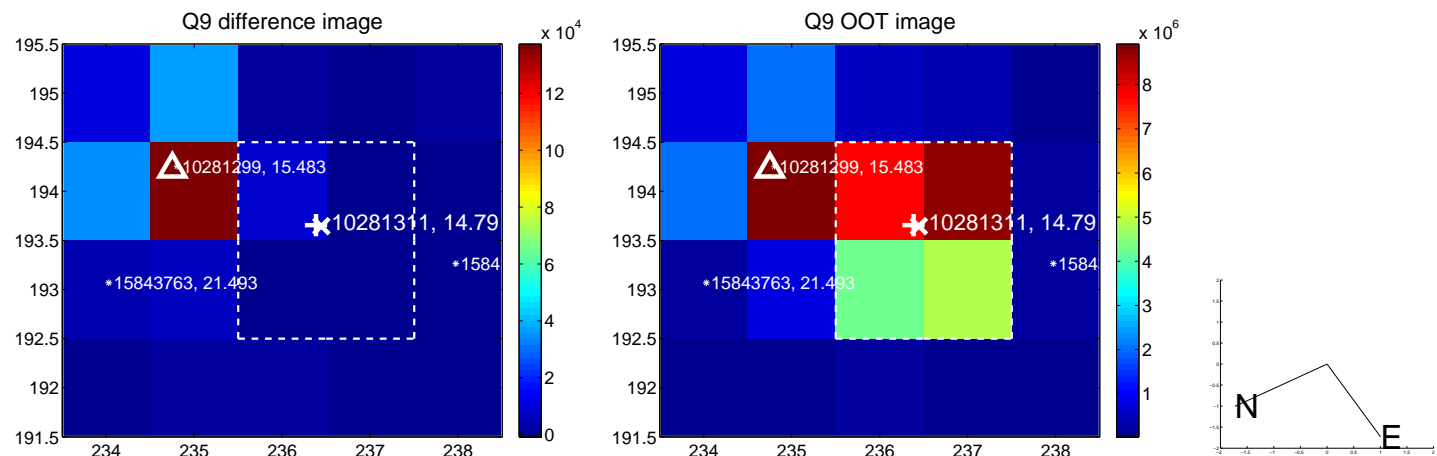
Q8 no difference image



Q8 no OOT image

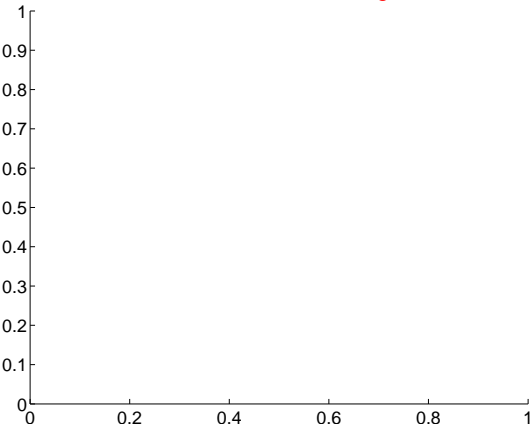


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

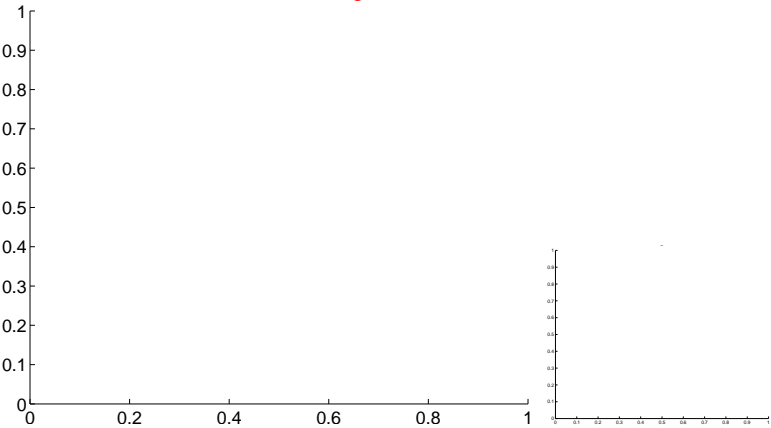


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

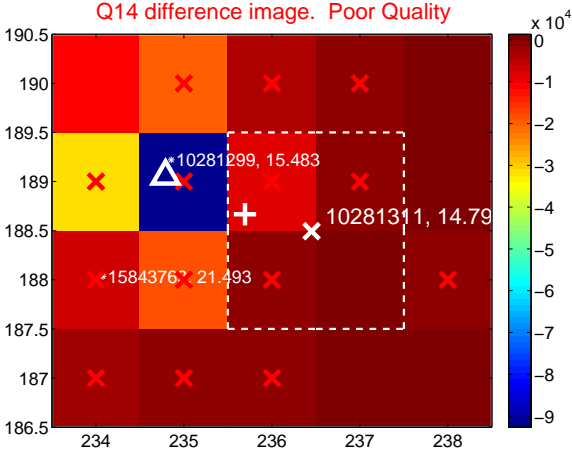
Q13 no difference image



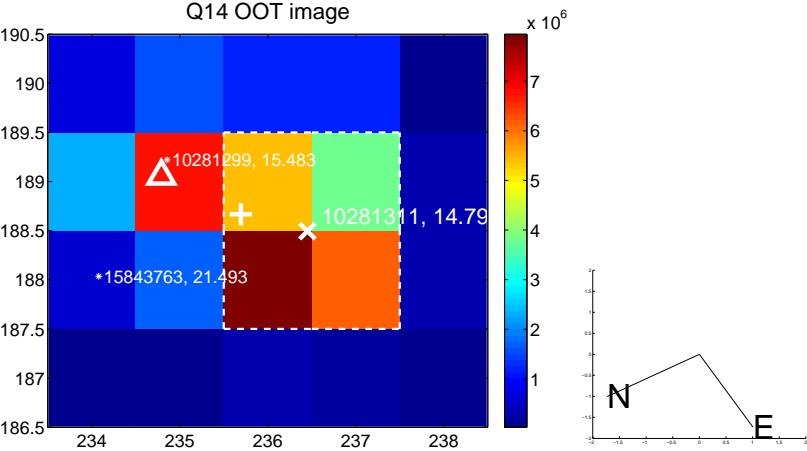
Q13 no OOT image



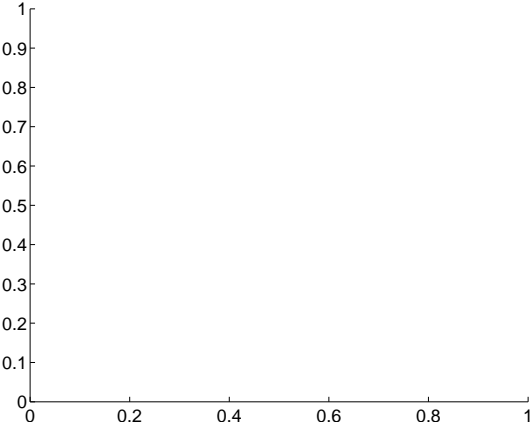
Q14 difference image. Poor Quality



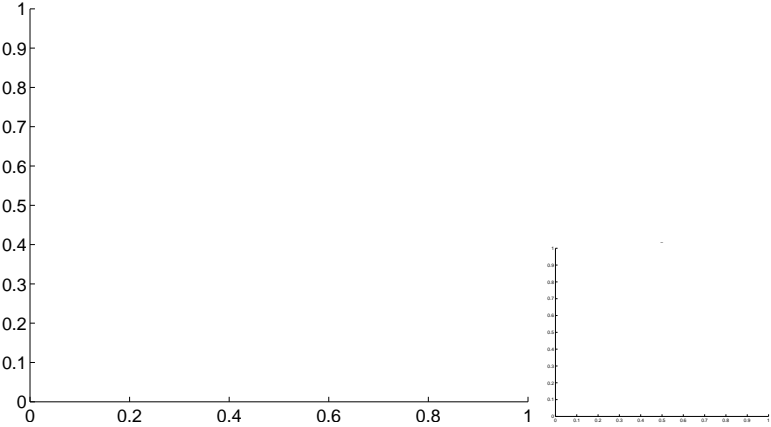
Q14 OOT image



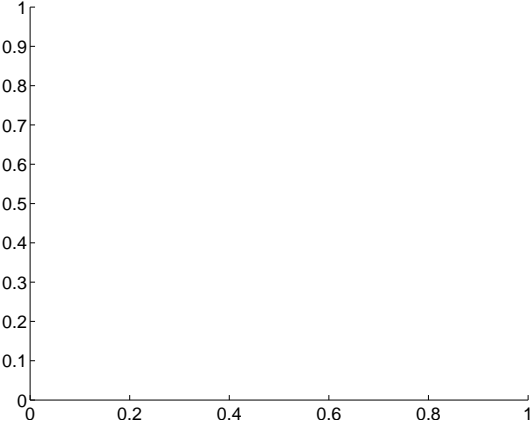
Q15 no difference image



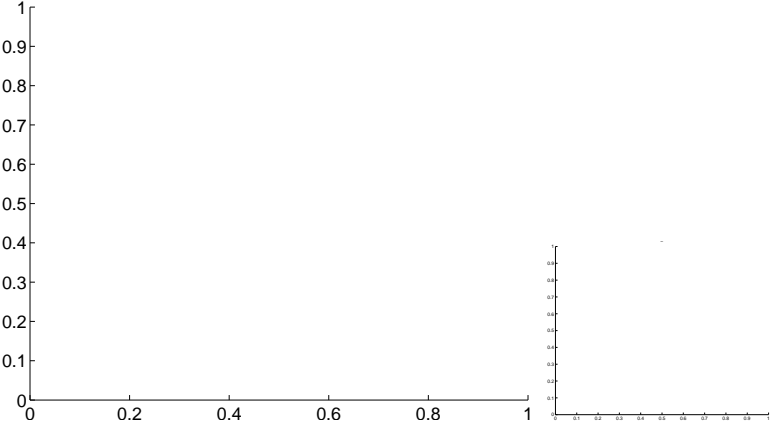
Q15 no OOT image



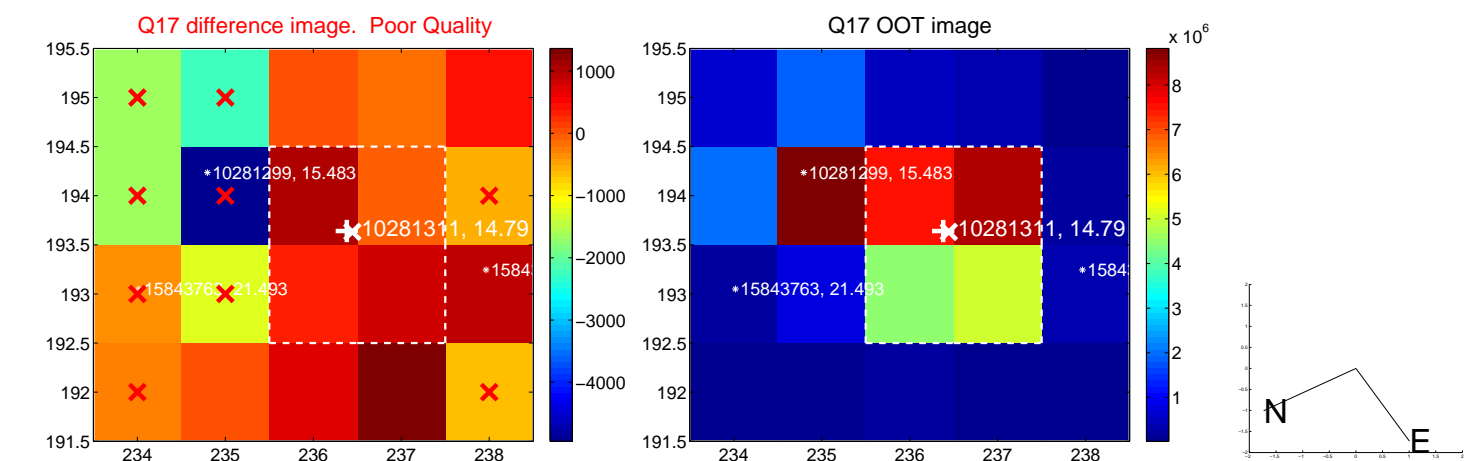
Q16 no difference image



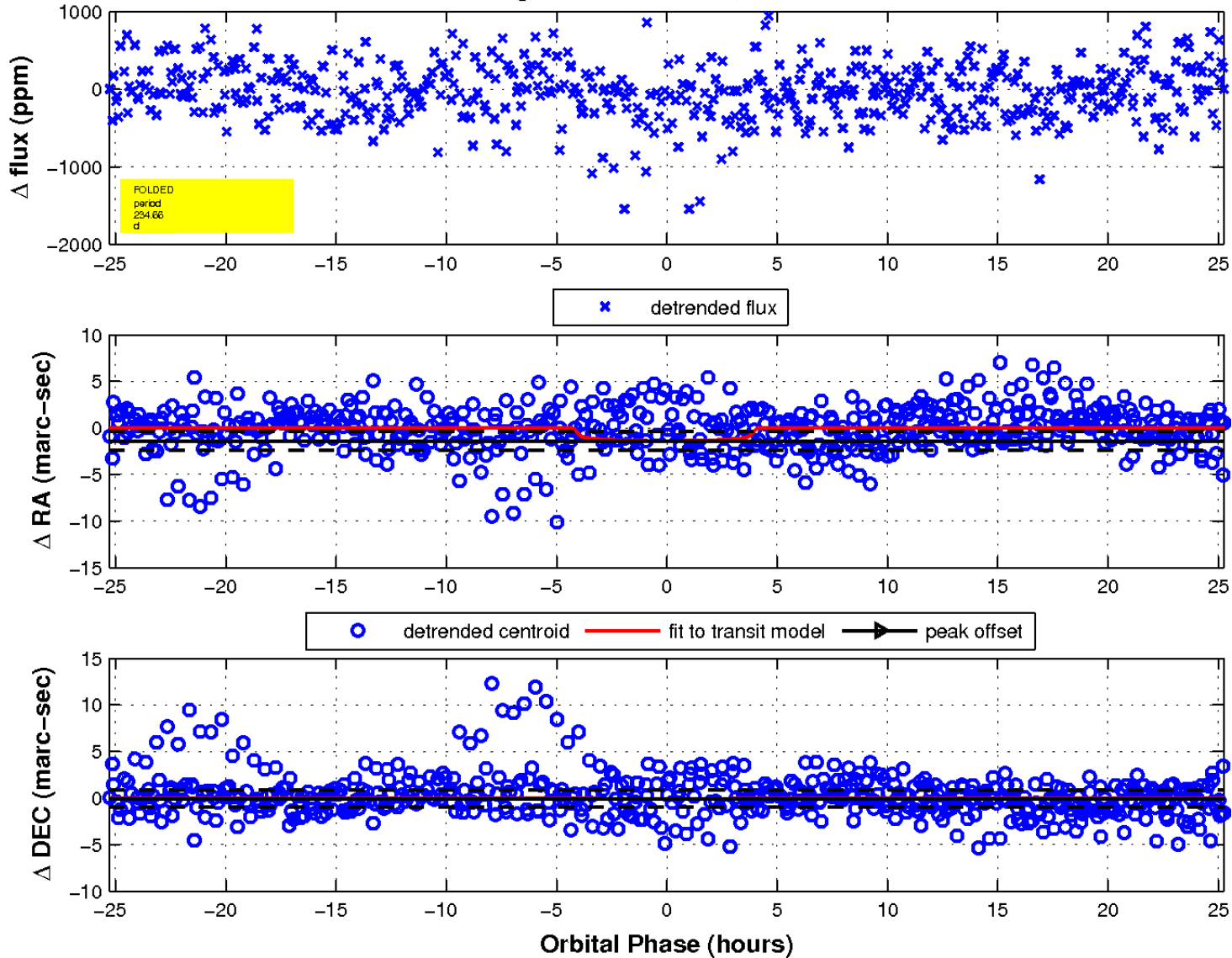
Q16 no OOT image



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

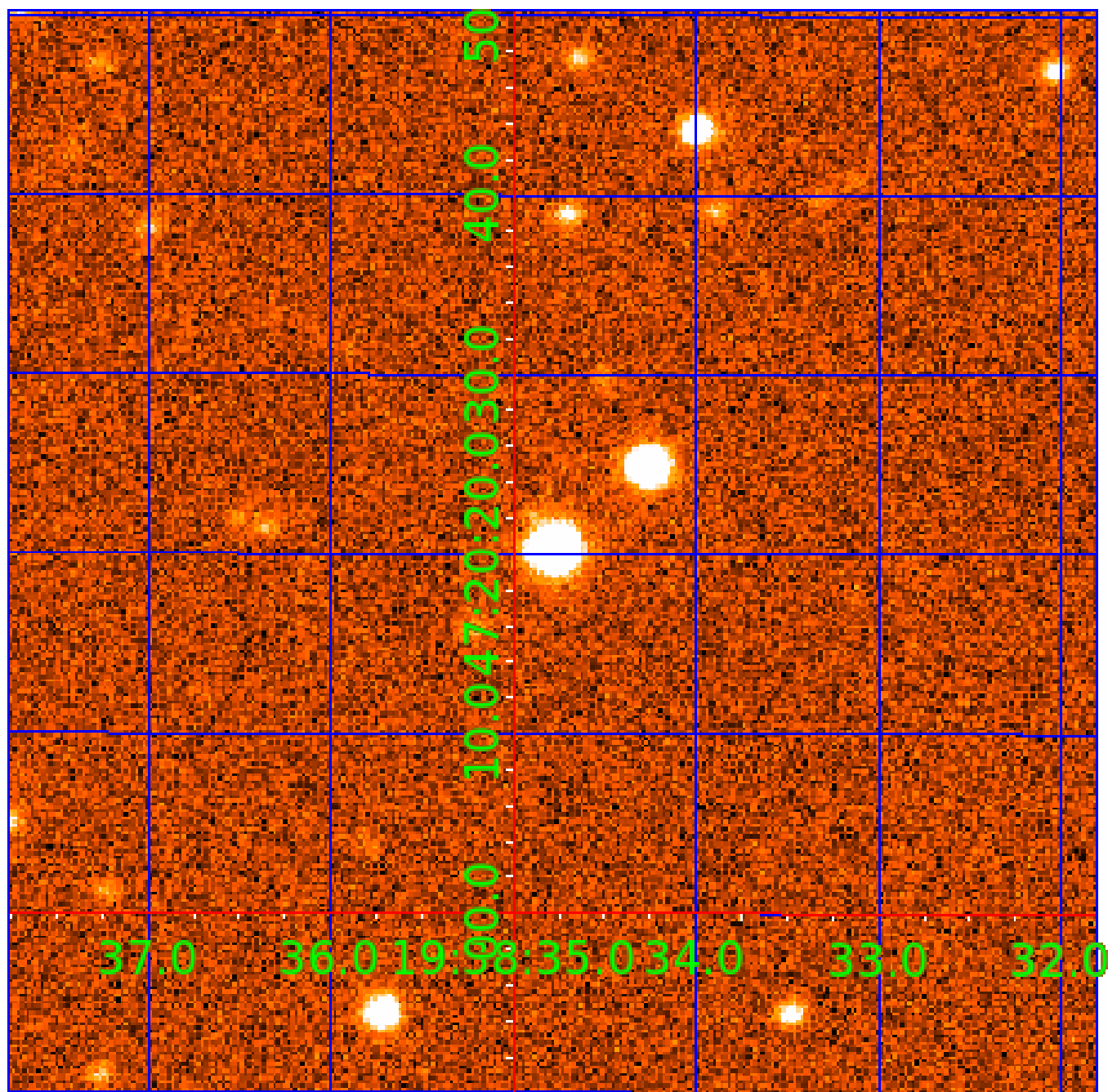


fluxWeightedCentroids, Planet 2 of 4



UKIRT Image

Declination



KIC 010281311

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})
010281311-01	OBS	No	1.867031	133.182120	38.3	6.619	7.8	7.7	1.08	6306	0.76	1720.22
010281311-02	OBS	8203.01	234.662078	166.028019	535.3	8.433	9.3	7.4	1.08	6306	2.69	2.73
010281311-03	OBS	No	502.203208	253.220133	482.3	5.870	8.5	6.3	1.08	6306	2.58	0.99
010281311-04	OBS	No	664.479922	206.687787	509.5	14.678	8.0	6.7	1.08	6306	2.60	0.68

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010281311-01	OBS	FP	0.00	1	0	1	0	LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_RESOLVED_OFFSET
010281311-02	OBS	FP	0.04	1	0	0	0	MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
010281311-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
010281311-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS

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

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

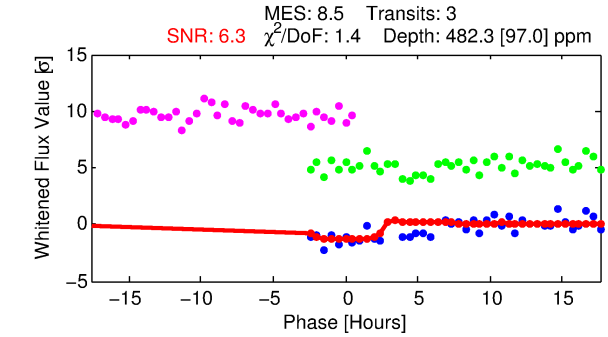
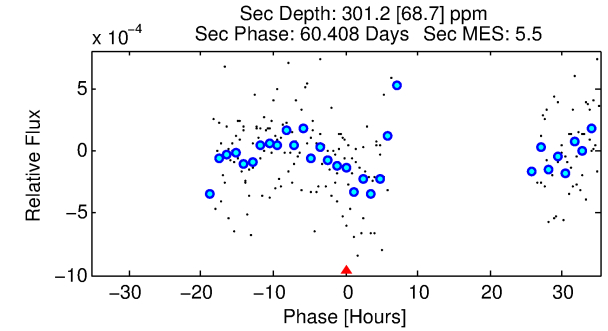
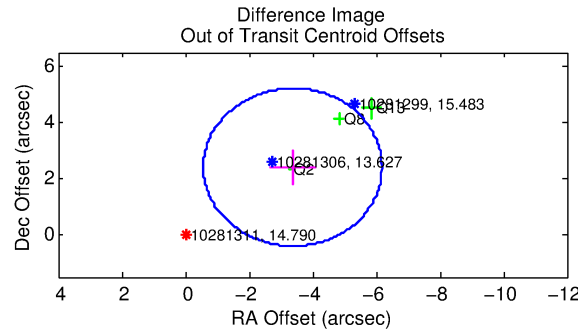
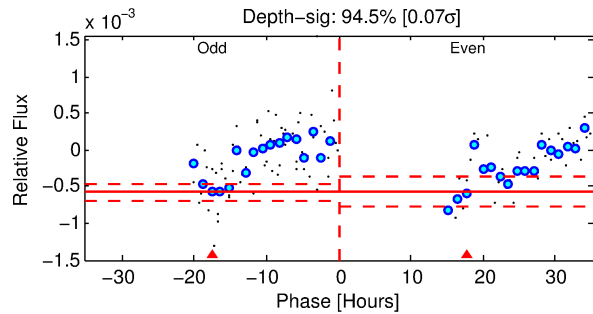
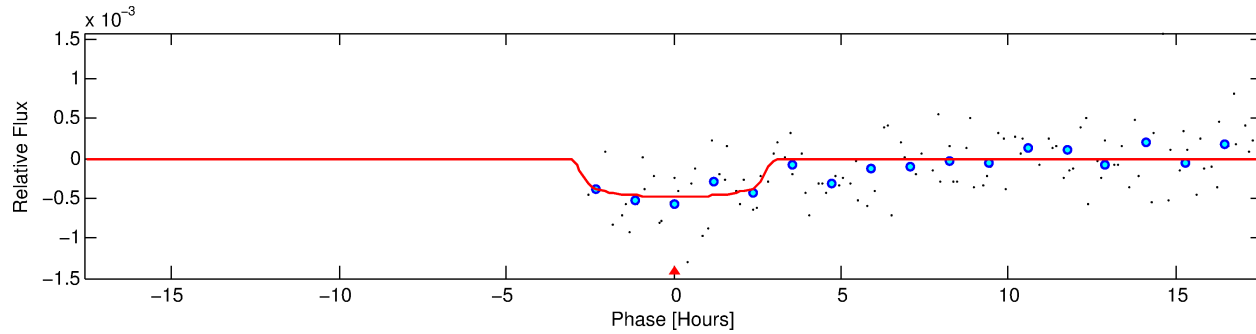
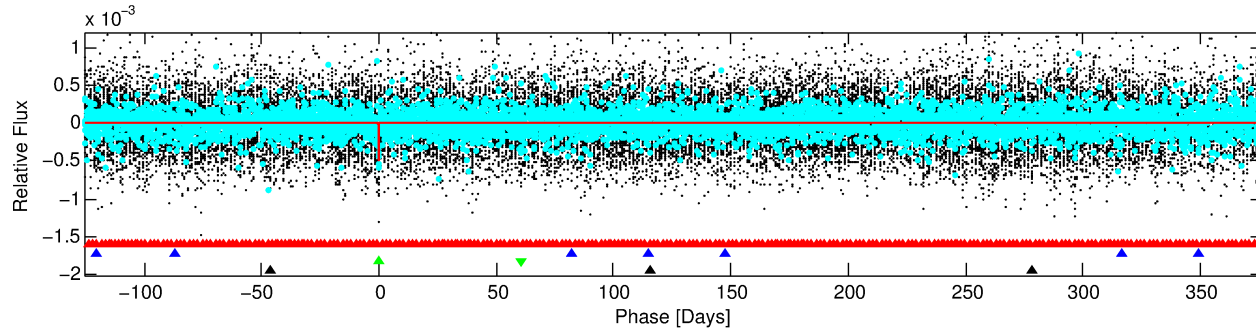
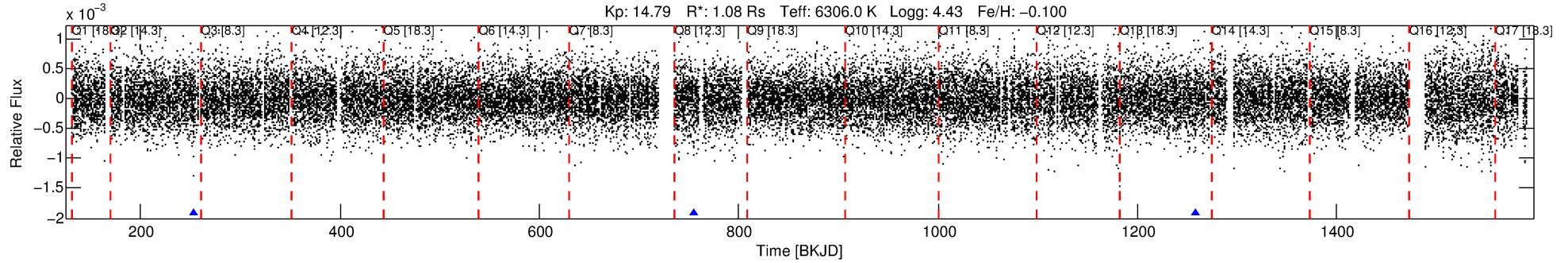
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 010281311-03

No Significant Match Found

DV One-Page Summary

KIC: 10281311 Candidate: 3 of 4 Period: 502.203 d



DV Fit Results:

Period = 502.20321 [0.01796] d
Epoch = 253.2201 [0.0204] BKJD
Rp/R* = 0.0220 [0.0224]
a/R* = 437.51 [2342.39]
b = 0.77 [2.77]
Seff = 0.99 [0.40]
Teq = 254 [26] K
Rp = 2.58 [2.75] Re
a = 1.2867 [0.3369] AU
Ag = 41065.69 [85436.21] [0.48σ]
Teffp = 5599 [2870] K [1.86σ]

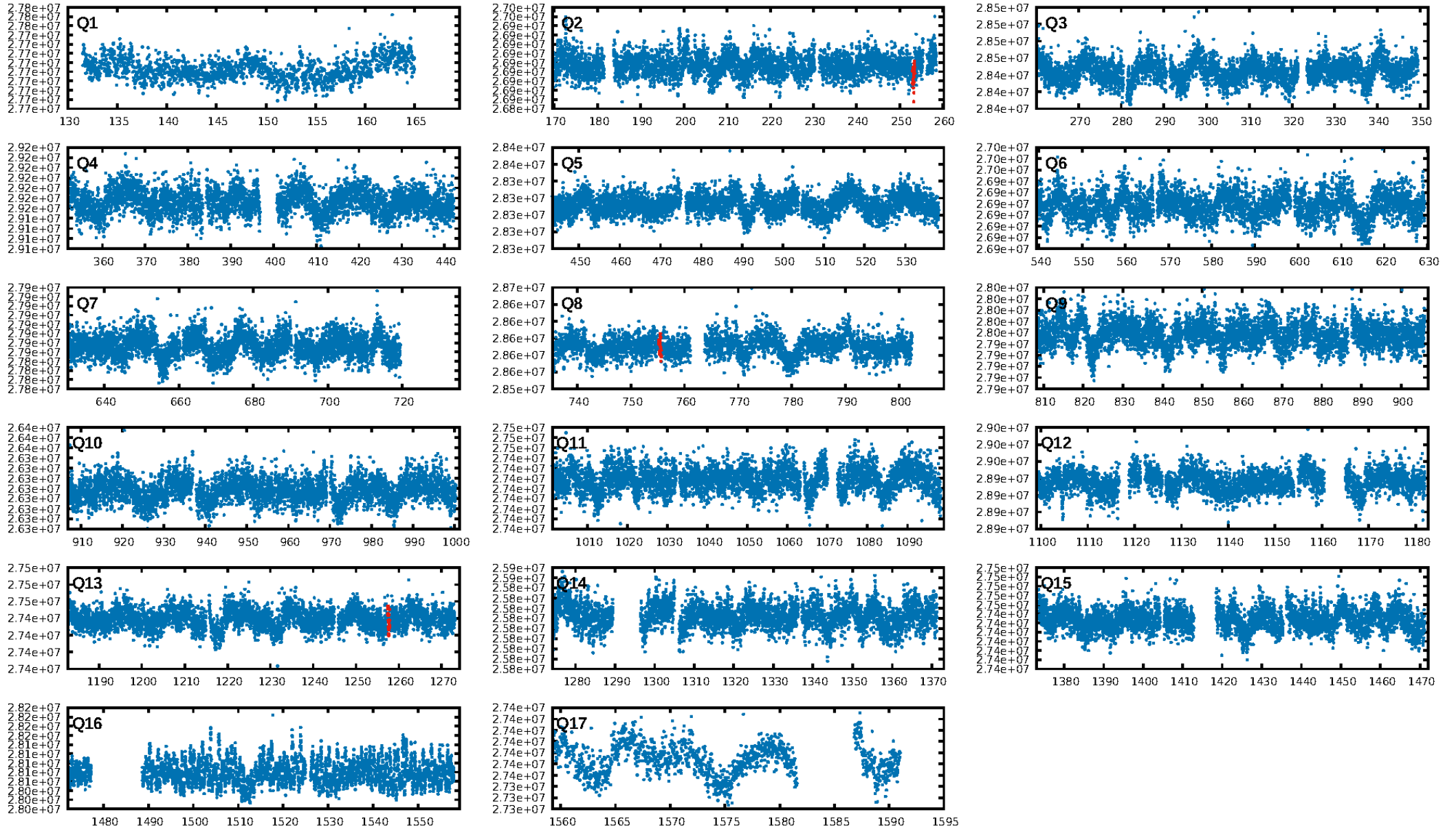
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [624.91σ]
LongPeriod-sig: 100.0% [246.37σ]
ModelChiSquare2-sig: 68.6%
ModelChiSquareGof-sig: 81.1%
Bootstrap-pfa: 4.47e-09
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: -1.87
Centroid-sig: 3.2%
Centroid-so: 4.342 arcsec [1.58σ]
OotOffset-rm: 4.144 arcsec [4.43σ]
KicOffset-rm: 6.982 arcsec [33.57σ]
OotOffset-st: 1/0/1/1 [3]
KicOffset-st: 1/0/1/1 [3]
DiffImageQuality-fgm: 0.33 [1/3]
DiffImageOverlap-fno: 0.00 [0/3]

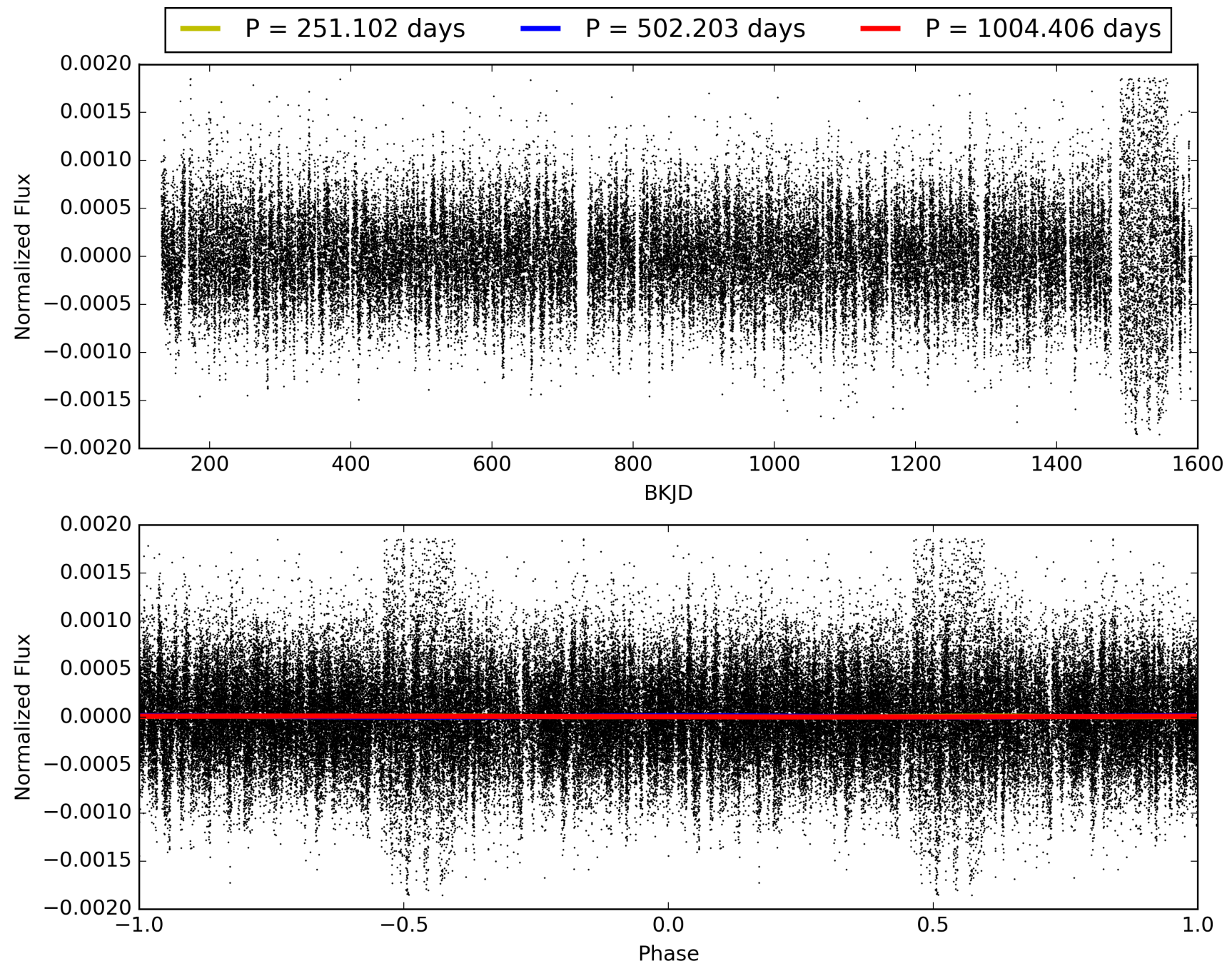
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 06:33:28 Z

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

TCE 010281311-03, PDC Light Curves

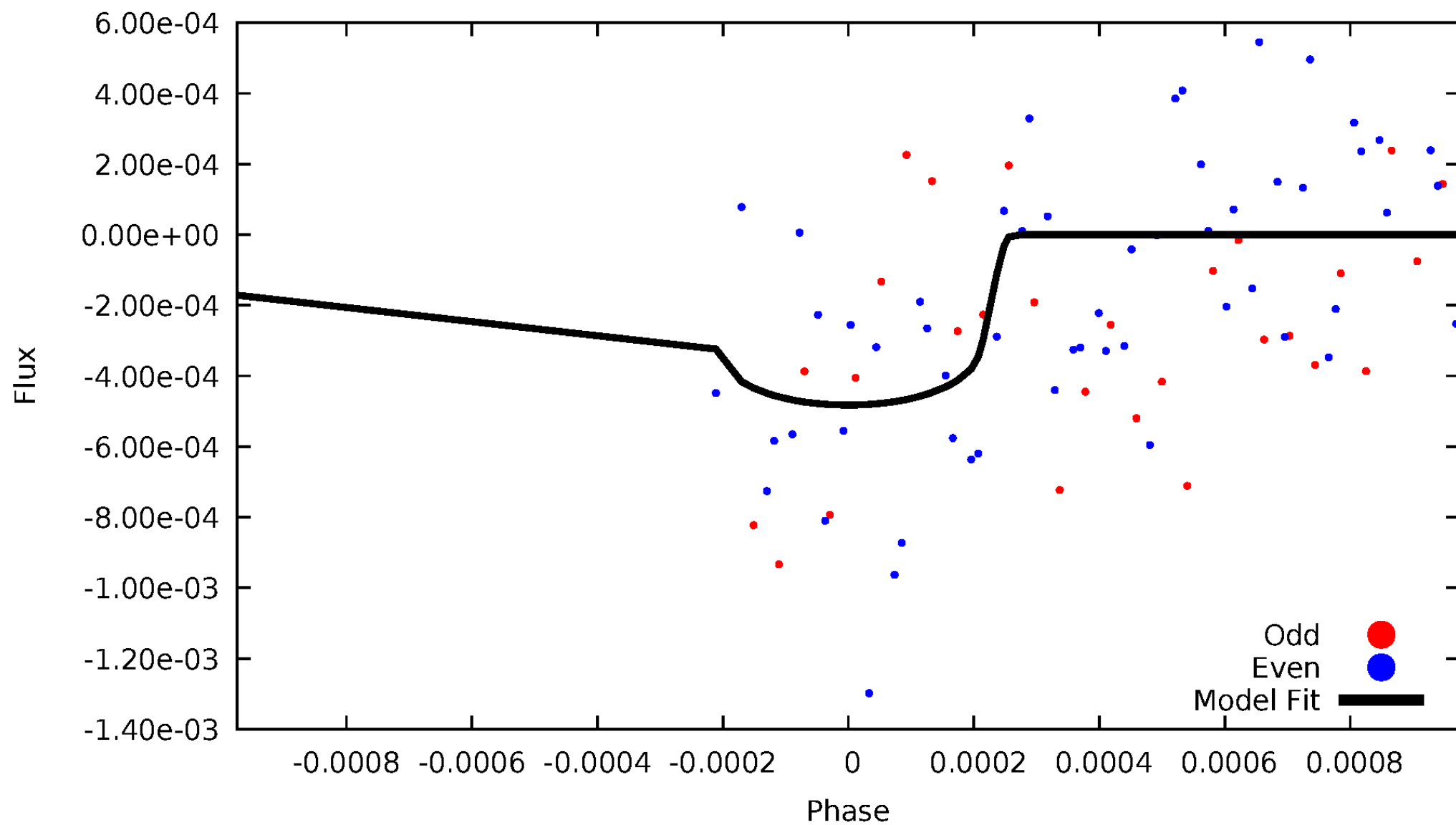


TCE 010281311-03



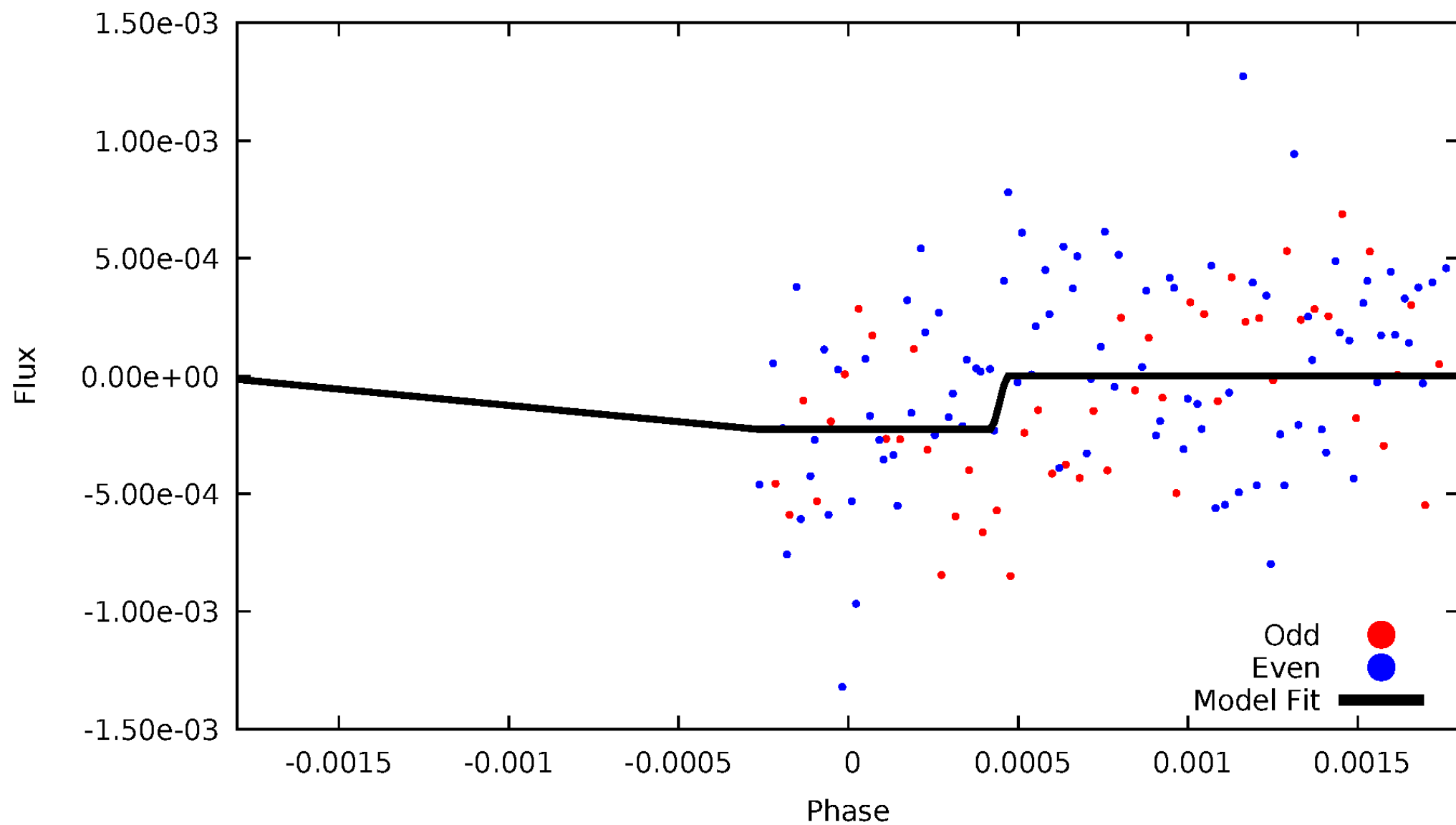
DV Odd/Even

TCE 010281311-03

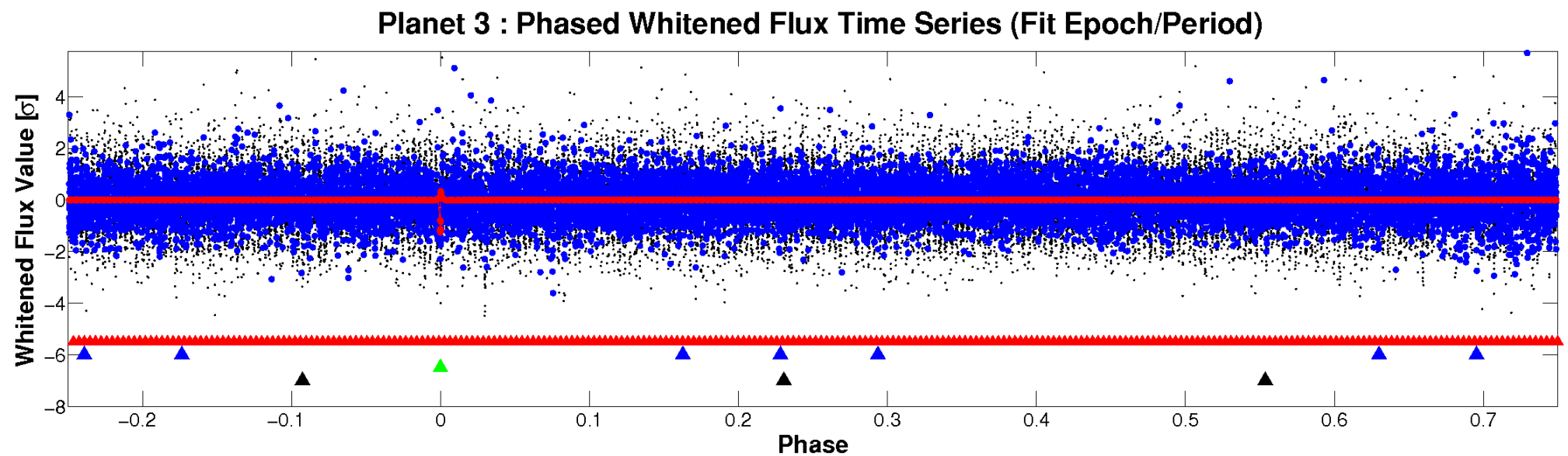
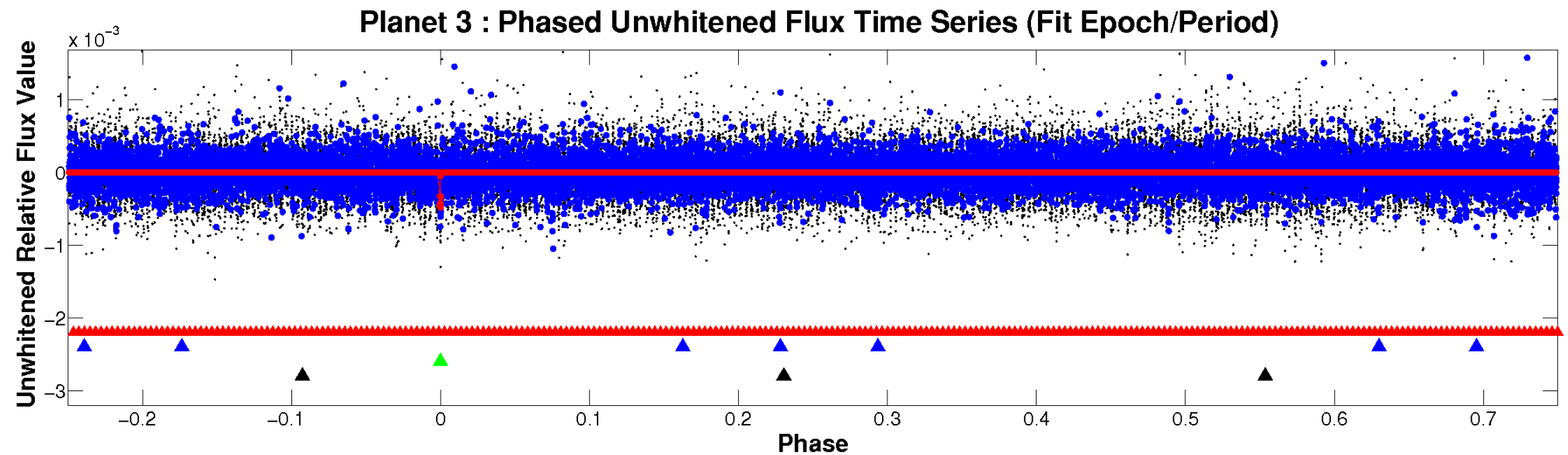


ALT Odd/Even

TCE 010281311-03

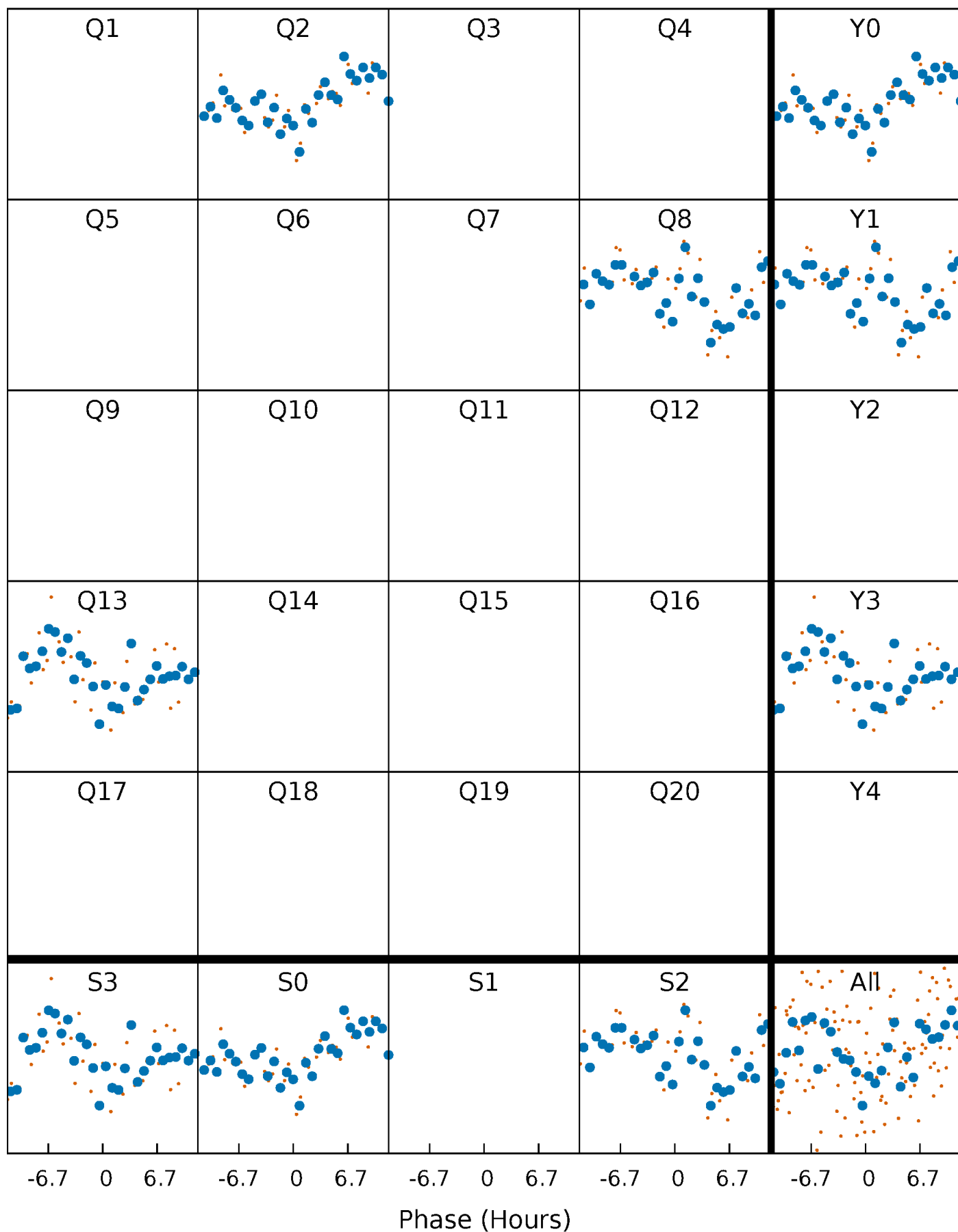


Non-Whitened Vs. Whitened Light Curve



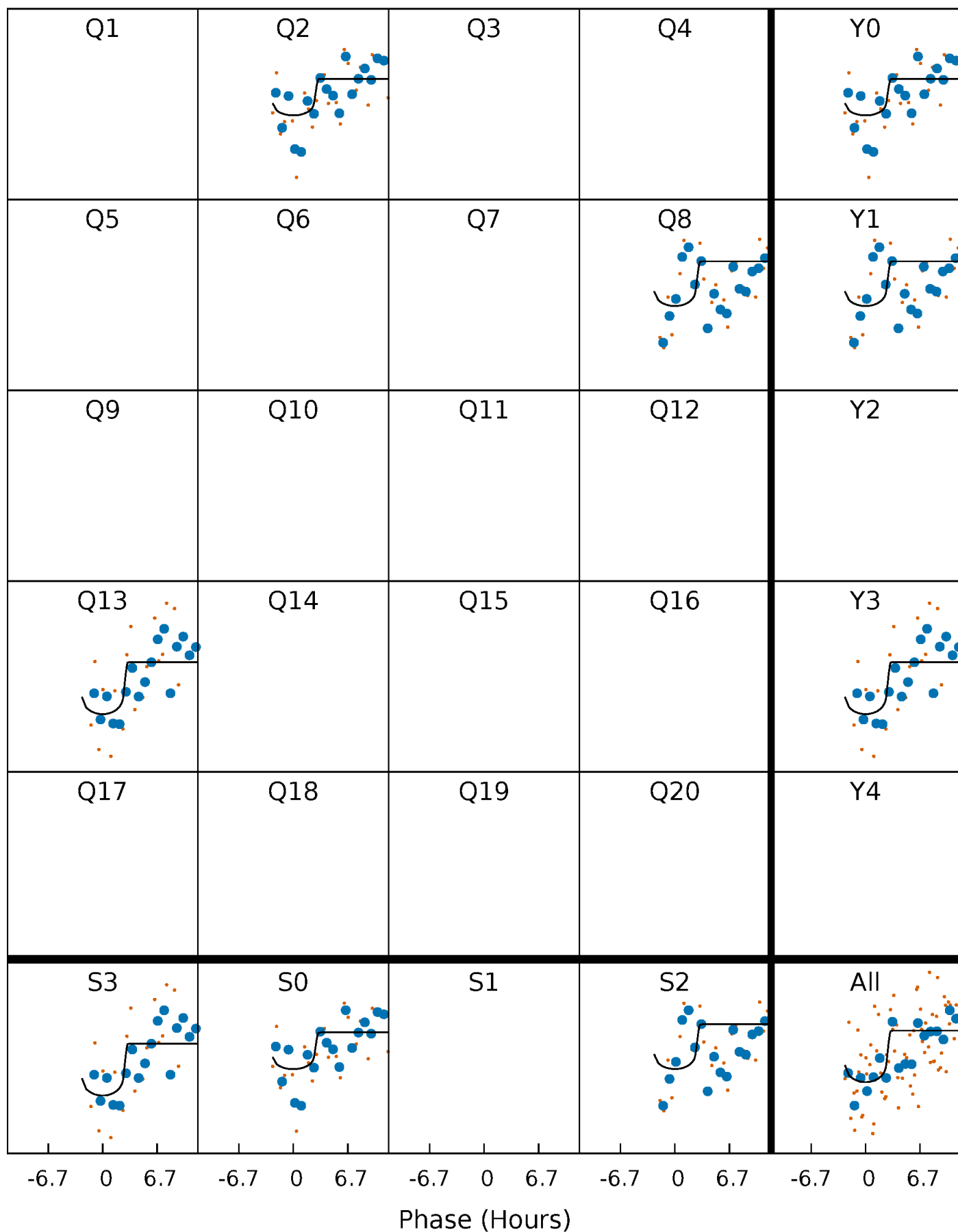
PDC Quarter-Phased Transit Curves

TCE 010281311-03 P=502.203208 Days $T_0=253.220133$ (BKJD)



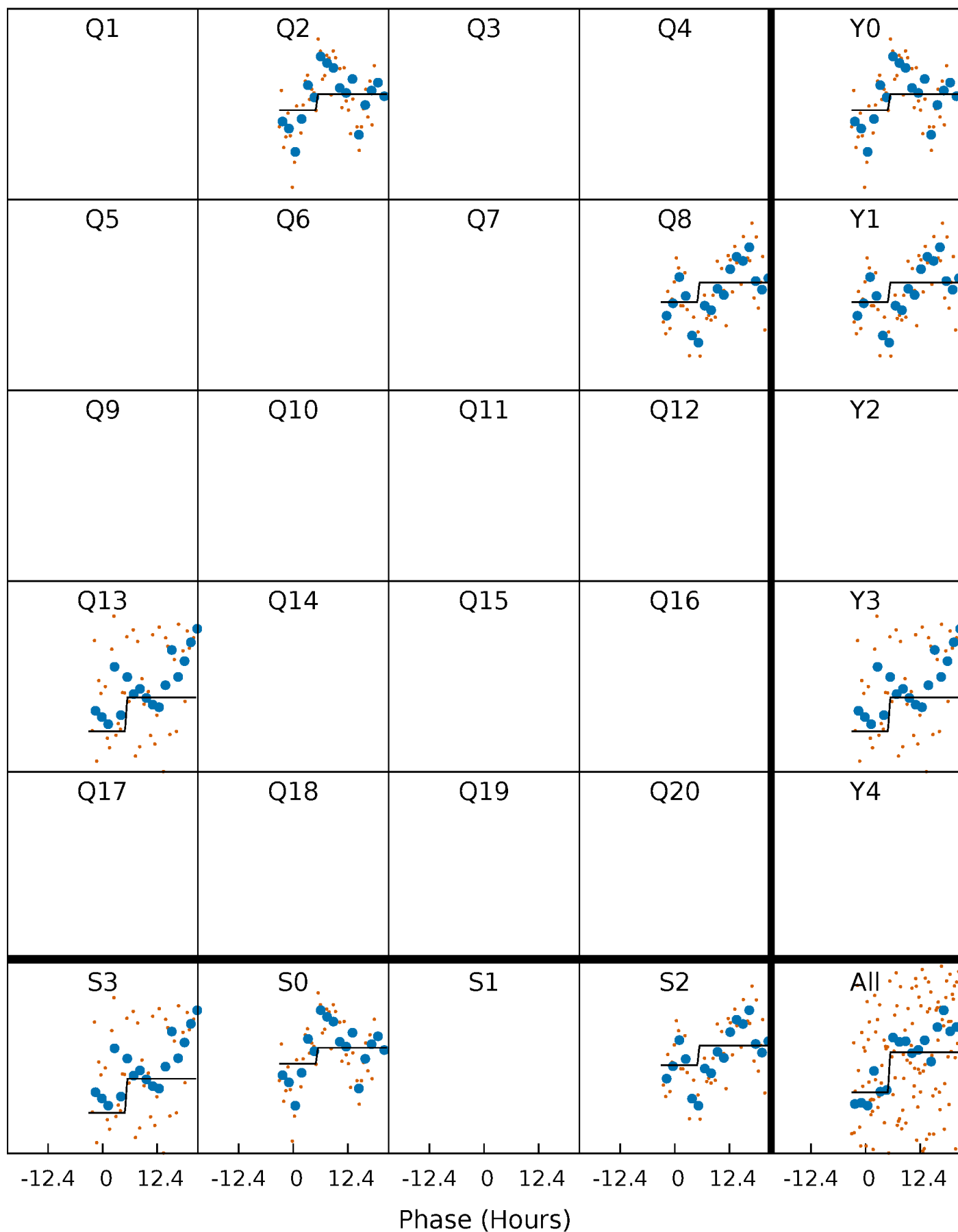
DV Quarter-Phased Transit Curves

TCE 010281311-03 P=502.203208 Days $T_0=253.220133$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

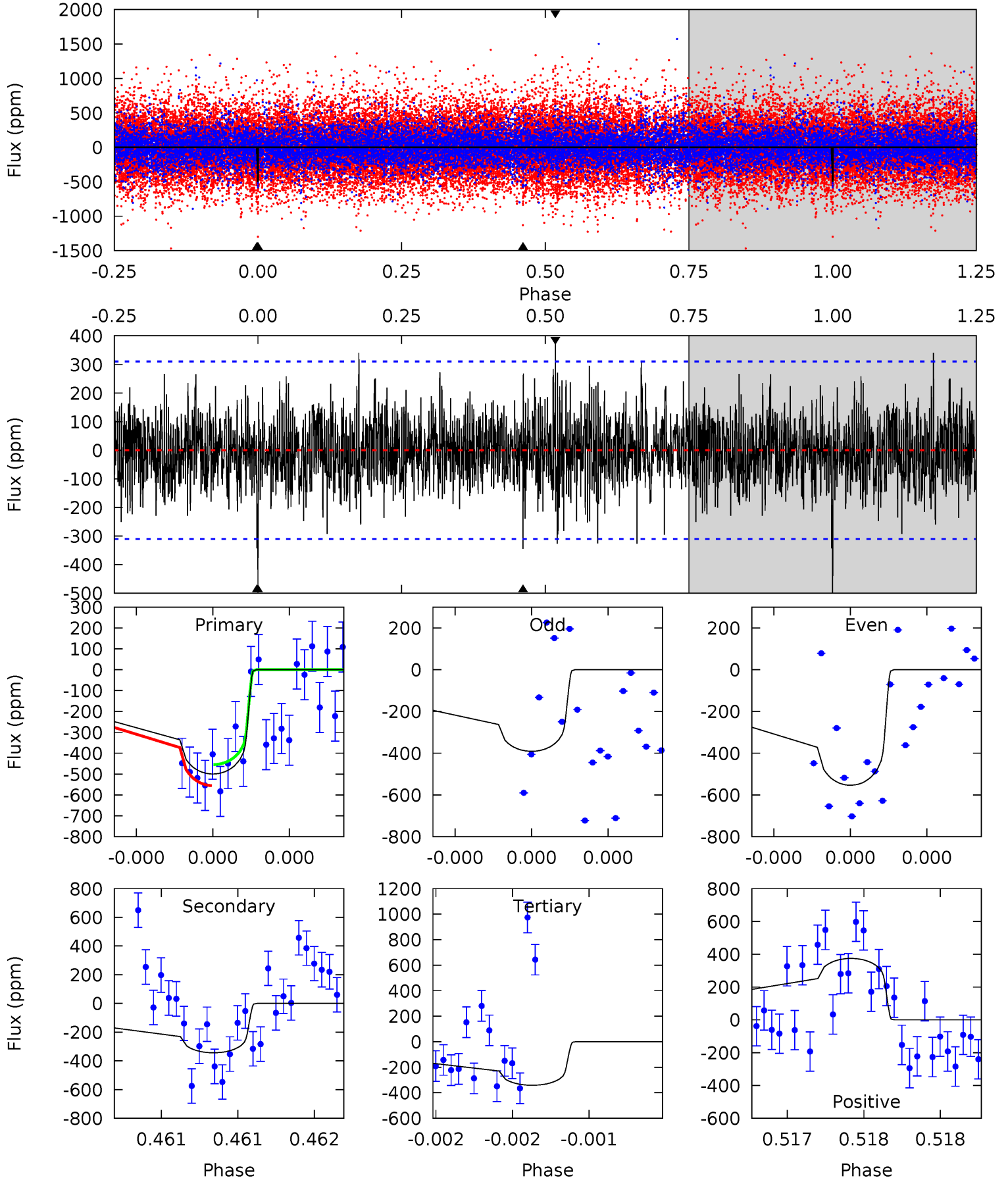
TCE 010281311-03 P=502.209226 Days $T_0=253.245657$ (BKJD)



DV Model-Shift Uniqueness Test

010281311-03, P = 502.203208 Days, E = 253.220133 Days

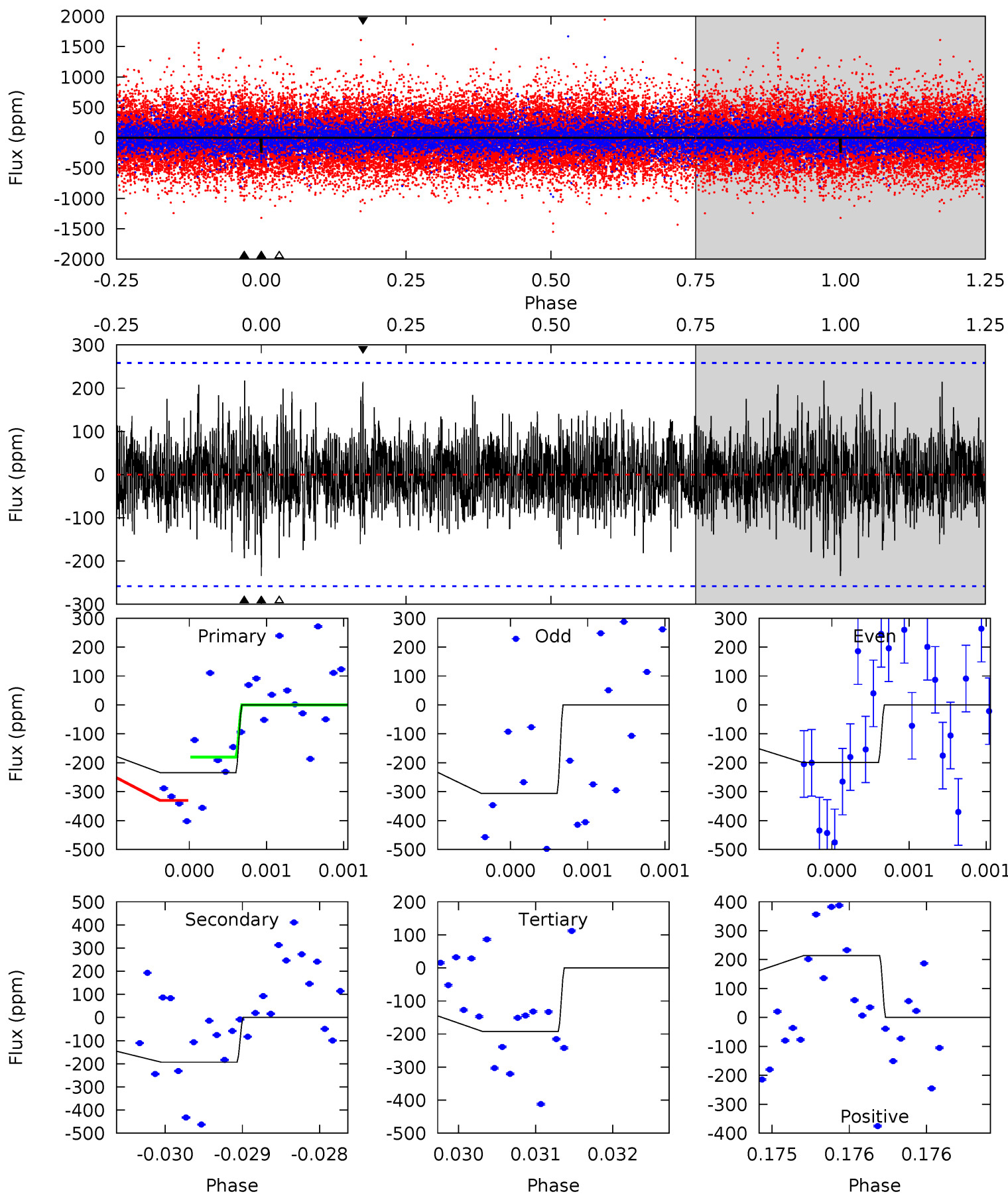
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.99	6.18	6.14	6.74	5.58	3.49	1.52	2.85	2.25	0.05	-0.55	1.41	0.99	0.43	0.88



Alt Model-Shift Uniqueness Test

010281311-03, P = 502.209226 Days, E = 253.245657 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.01	4.13	4.11	4.58	5.52	3.39	1.15	0.90	0.42	0.02	-0.45	1.09	0.75	0.48	1.49



Stellar Parameters For KIC 010281311

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6306^{+169}_{-225}	$4.426^{+0.065}_{-0.208}$	$-0.100^{+0.250}_{-0.350}$	$1.076^{+0.335}_{-0.134}$	$1.126^{+0.154}_{-0.154}$	$1.272^{+0.361}_{-0.674}$
	+3%/-4%	+1%/-5%	+250%/-350%	+31%/-12%	+14%/-14%	+28%/-53%
Source	PHO1	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 010281311-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-344 ± 56	$3.38^{+2.59}_{-2.11}$	362^{+24}_{-18}	5239^{+3604}_{-1111}	$27968^{+182497}_{-19488}$
Alt.	-193 ± 47	$2.79^{+2.15}_{-1.81}$	362^{+26}_{-18}	5016^{+3615}_{-1077}	$21919^{+148032}_{-15375}$

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 $A_{obs} \gg 1.0$

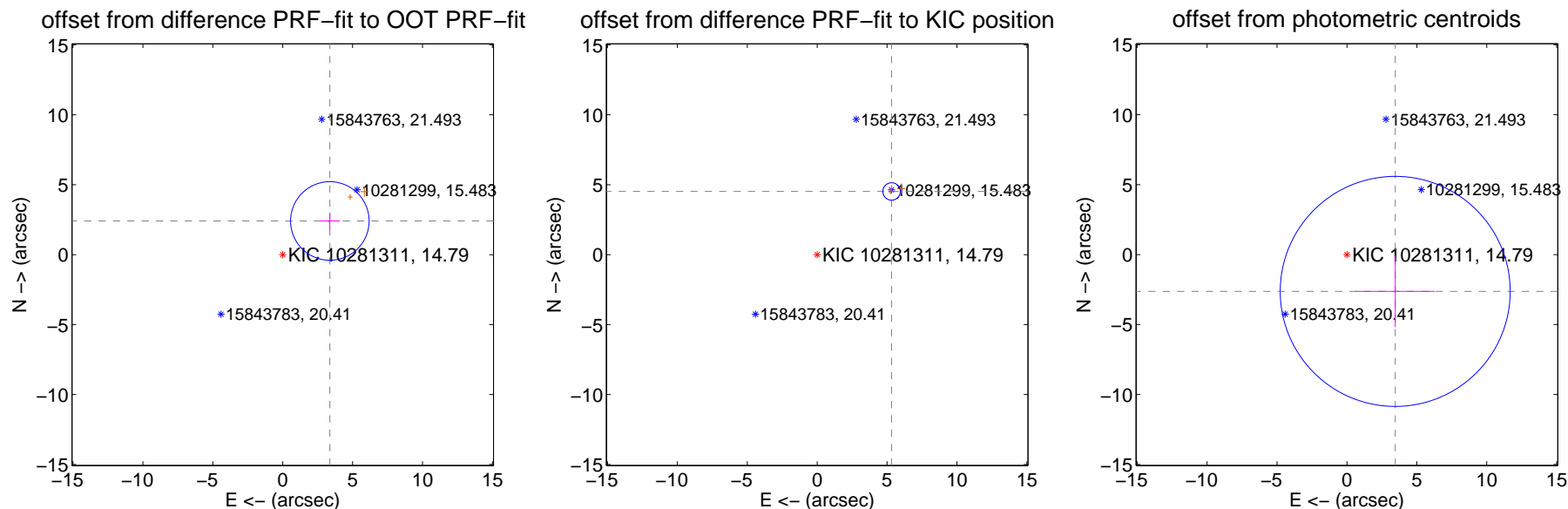
DV Centroid Data

Supplemental centroid analysis for 010281311-03. Kepler magnitude: 14.79. Transit SNR 6.34

There are 1 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.26 arcsec

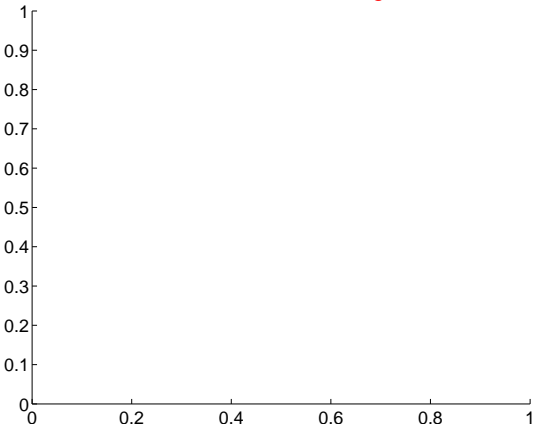
	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	4.144 ± 0.936	4.43	-3.372 ± 0.724	2.408 ± 0.609
PRF-fit source offset from KIC position	6.982 ± 0.208	33.57	-5.323 ± 0.223	4.519 ± 0.086
photometric centroid source offset	4.34 ± 2.74	1.58	-3.45 ± 2.84	-2.63 ± 2.56



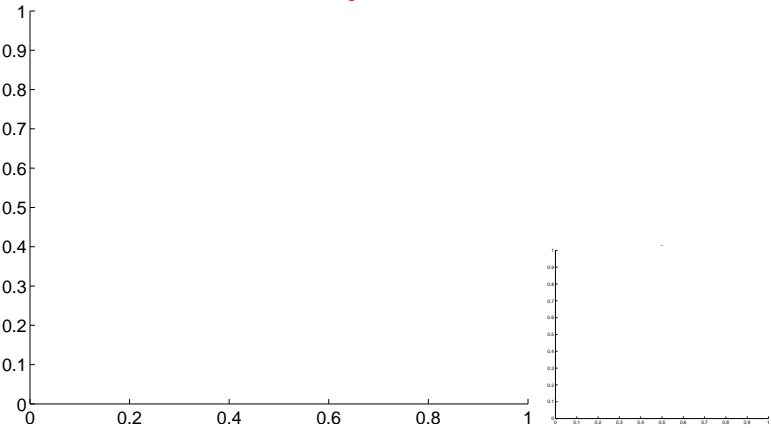
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

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

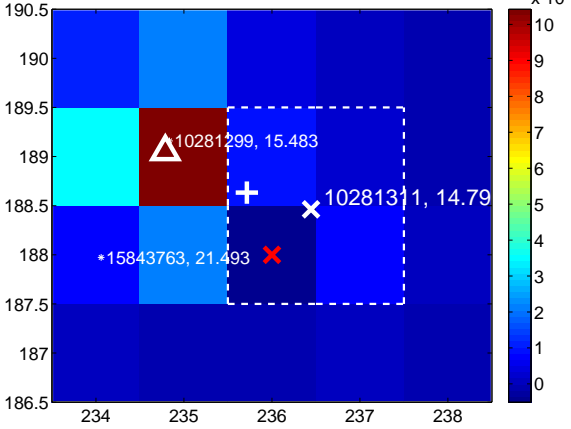
Q1 no difference image



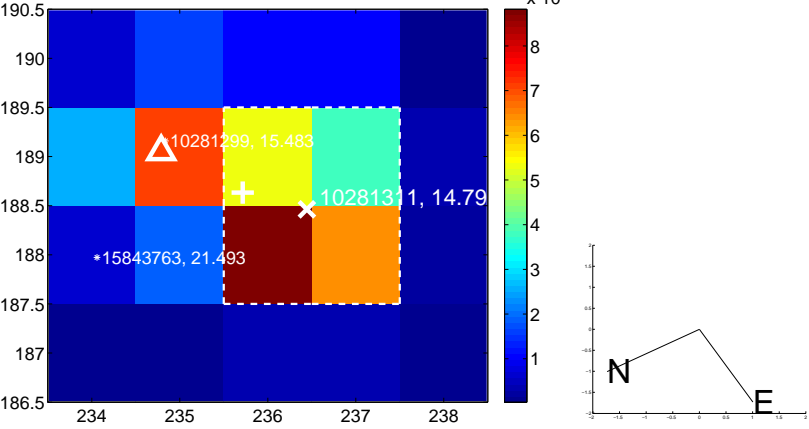
Q1 no OOT image



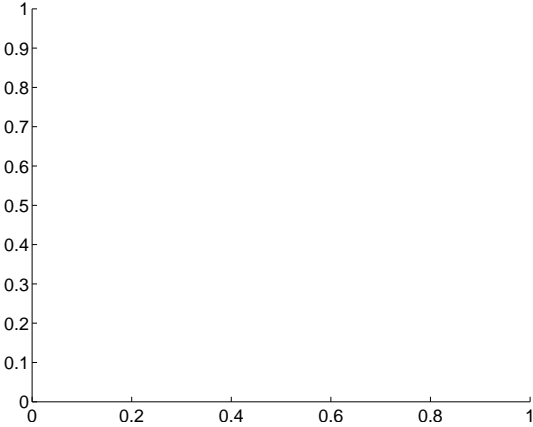
Q2 difference image



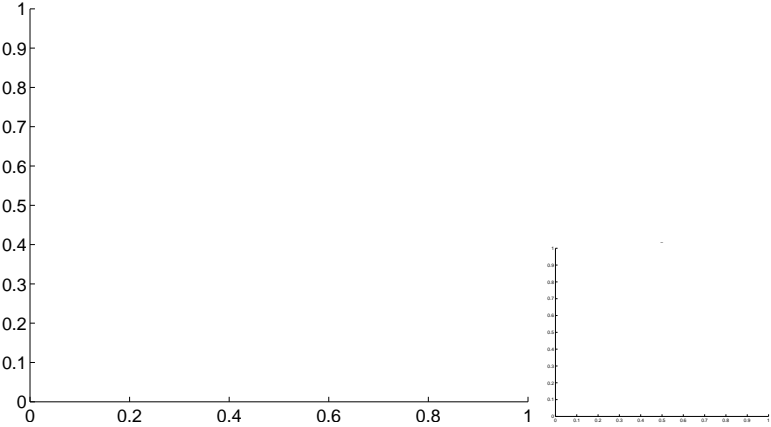
Q2 OOT image



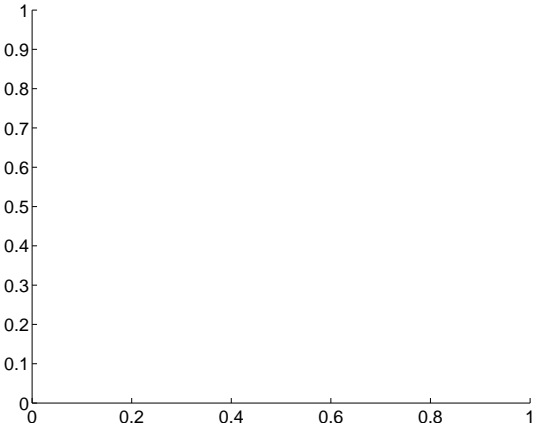
Q3 no difference image



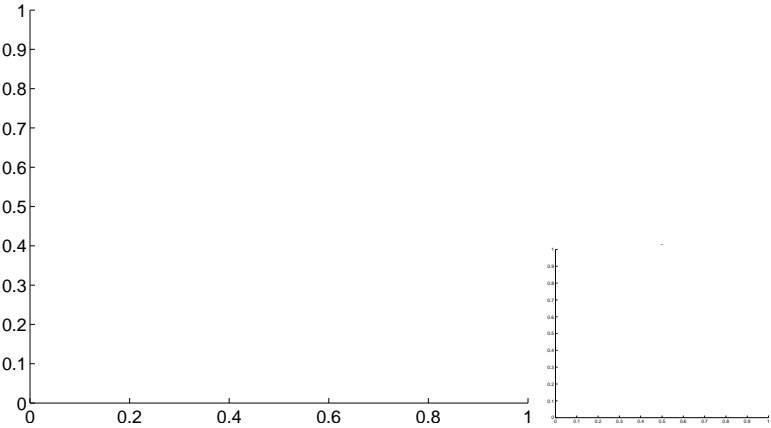
Q3 no OOT image



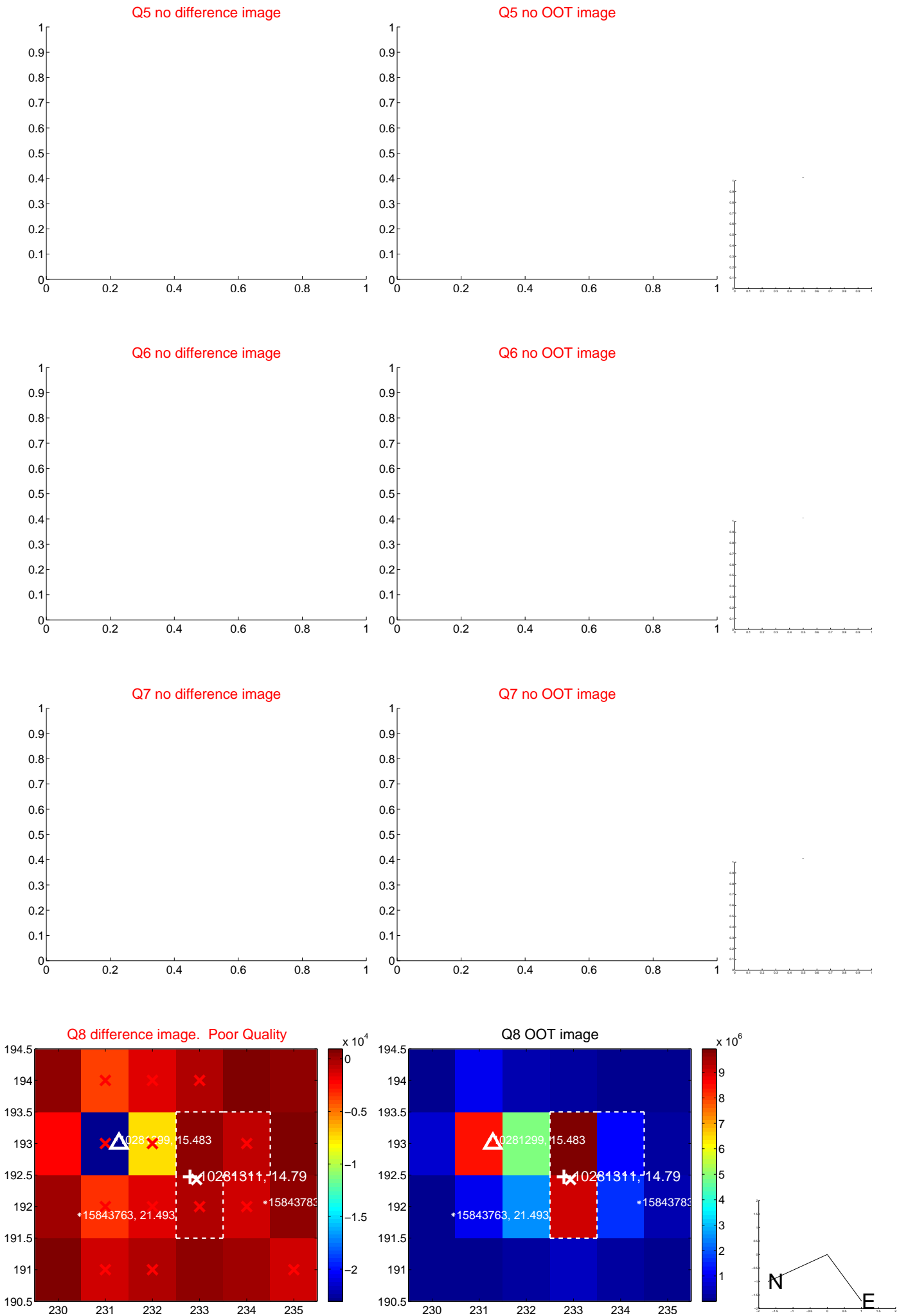
Q4 no difference image



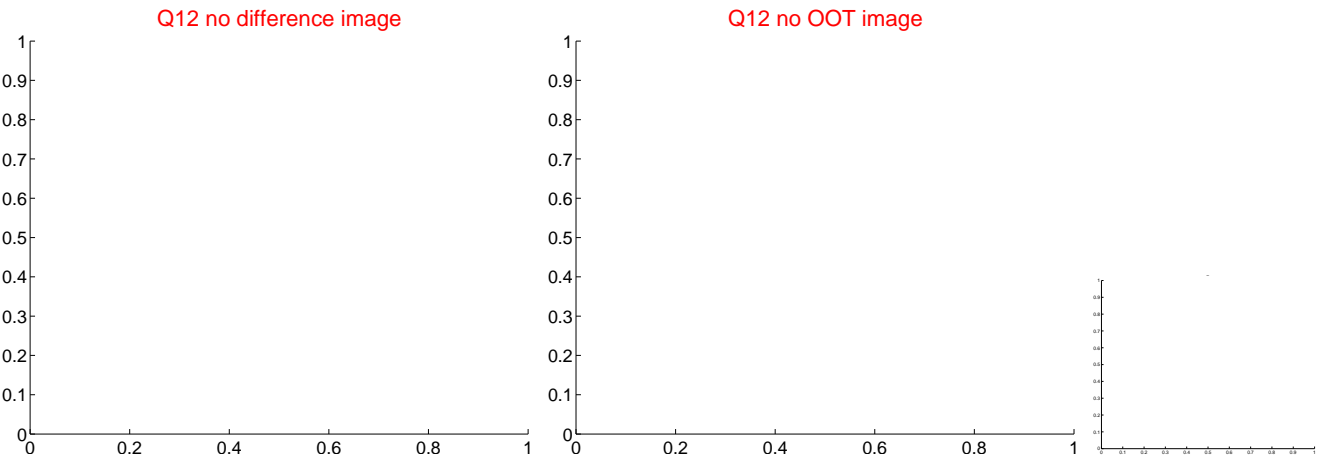
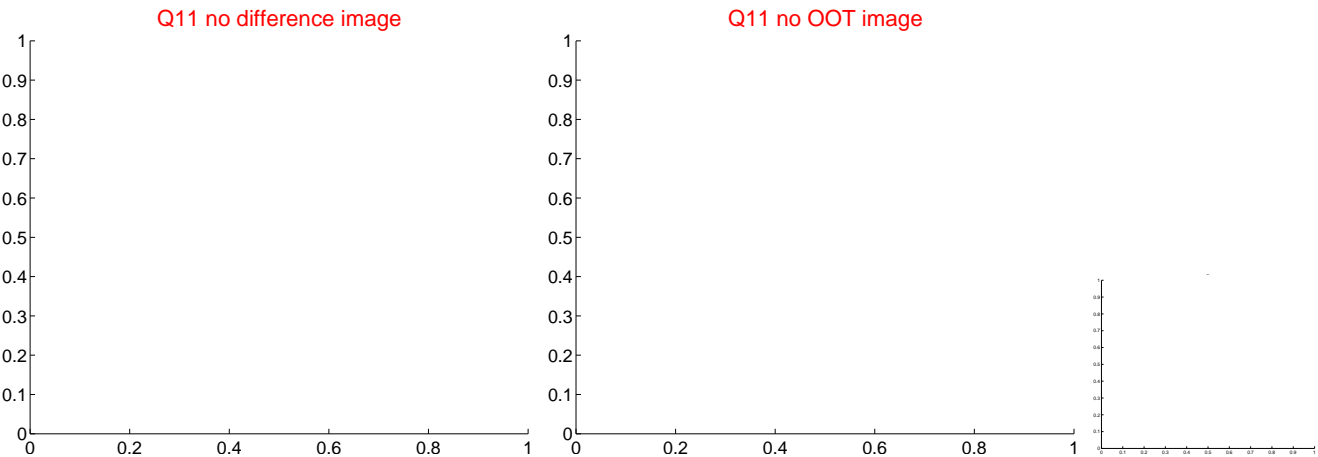
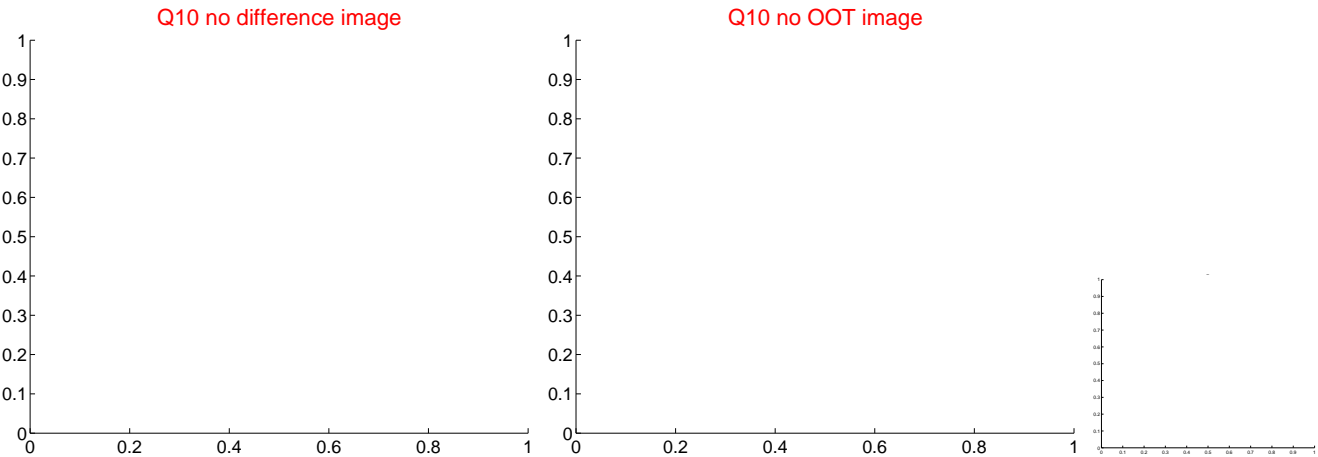
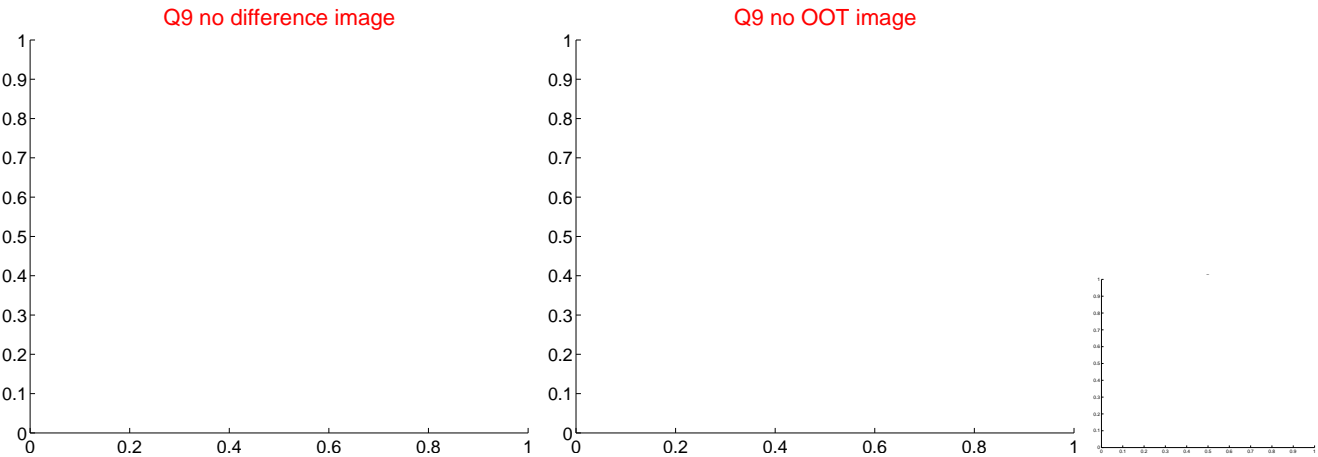
Q4 no OOT image



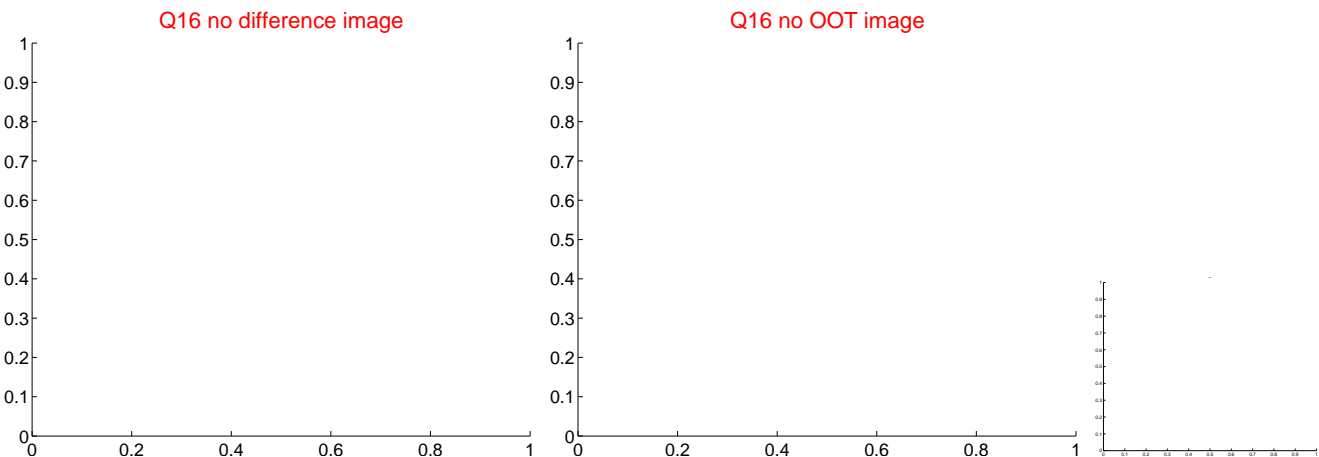
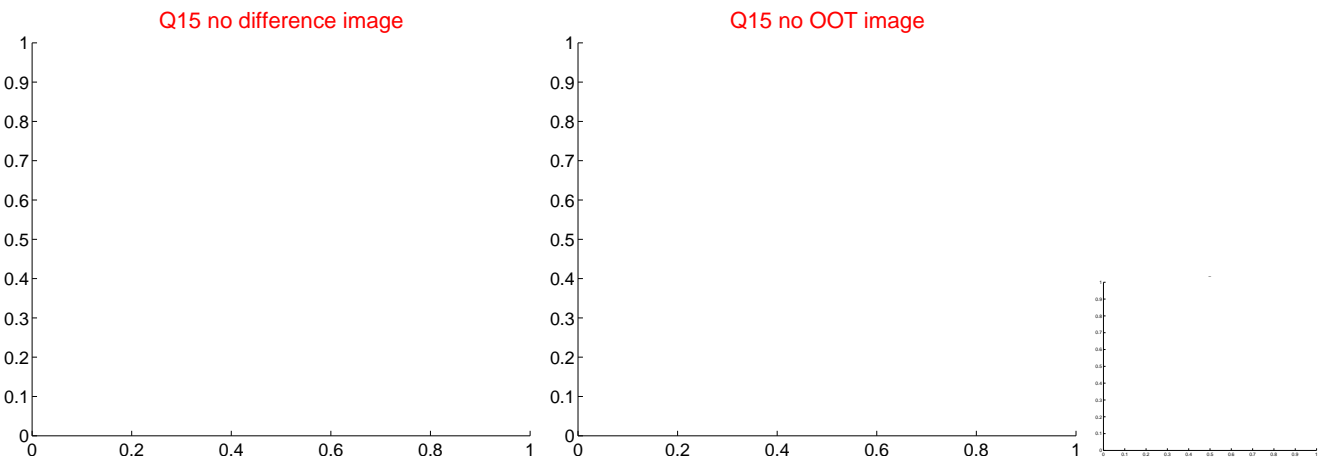
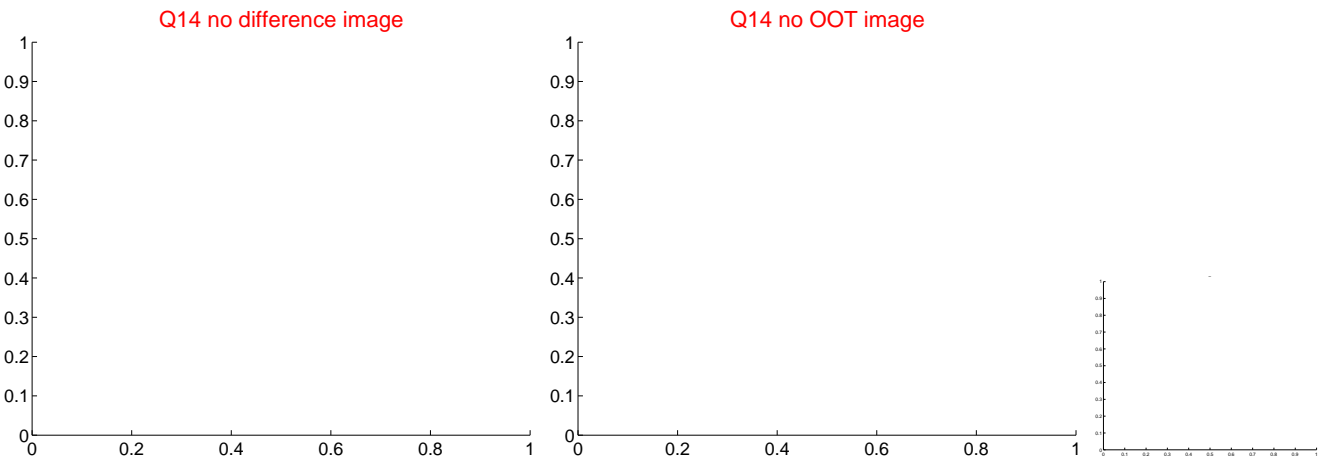
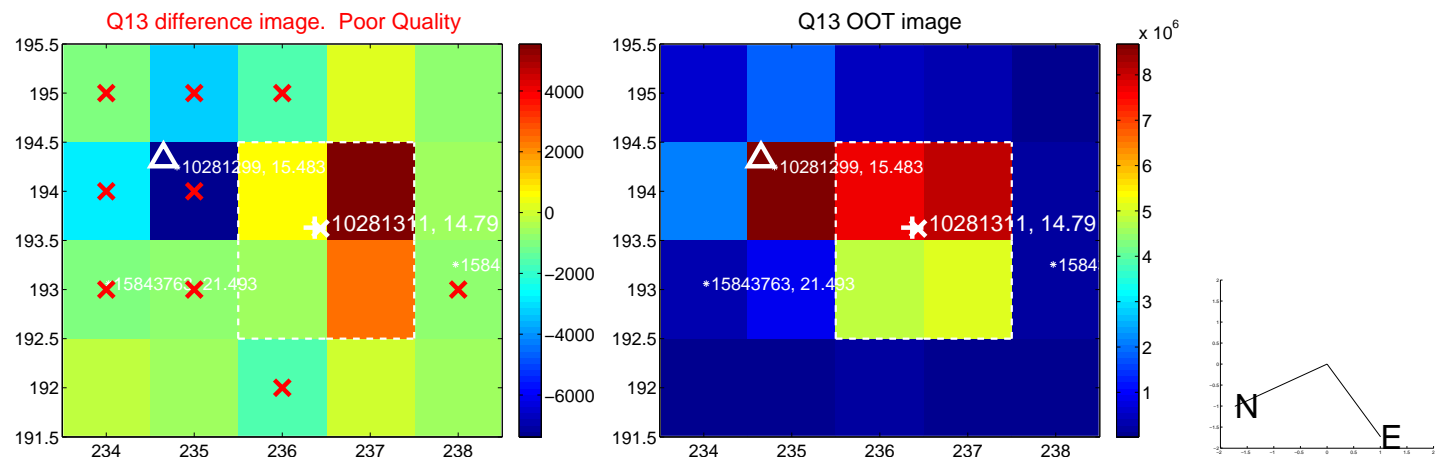
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



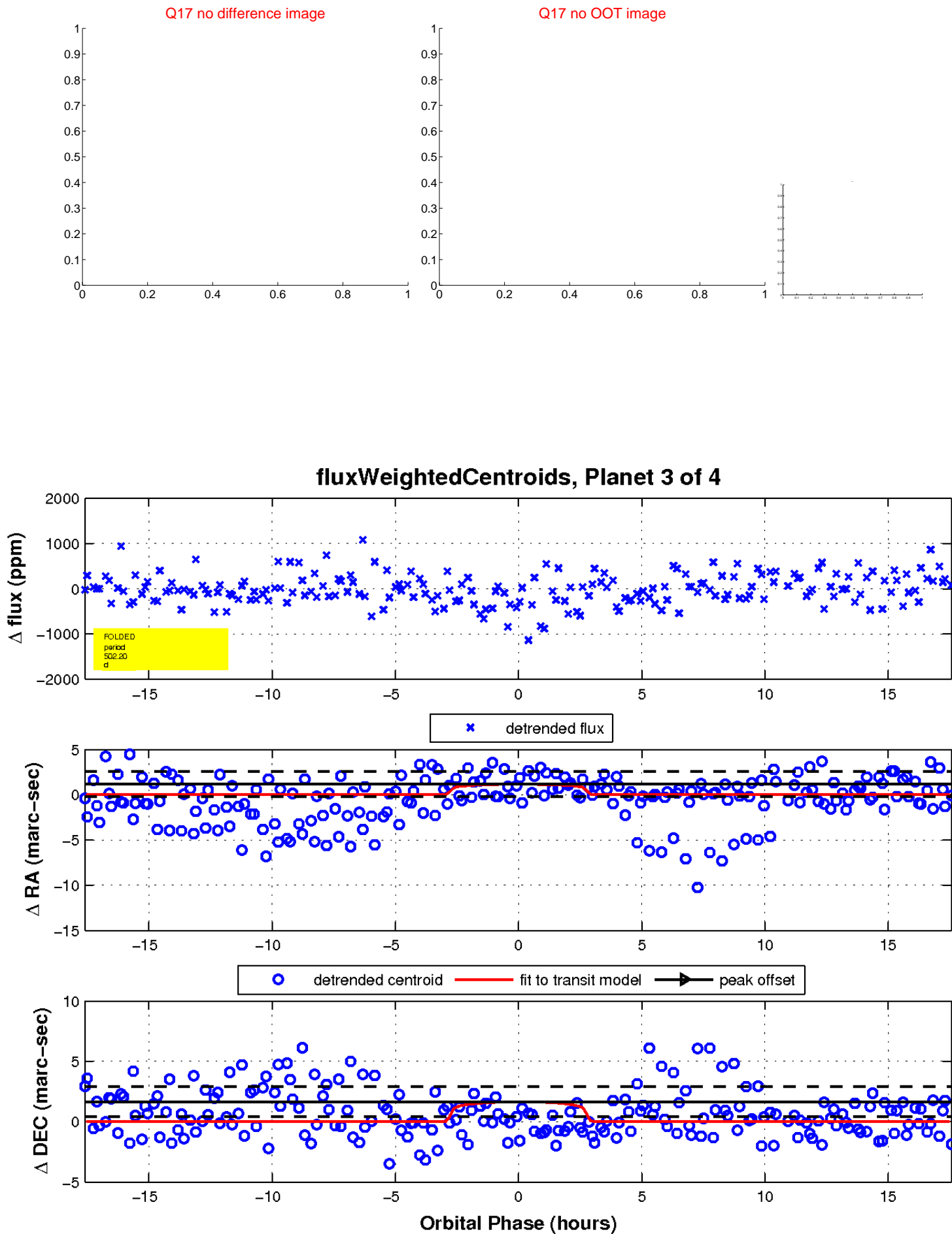
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

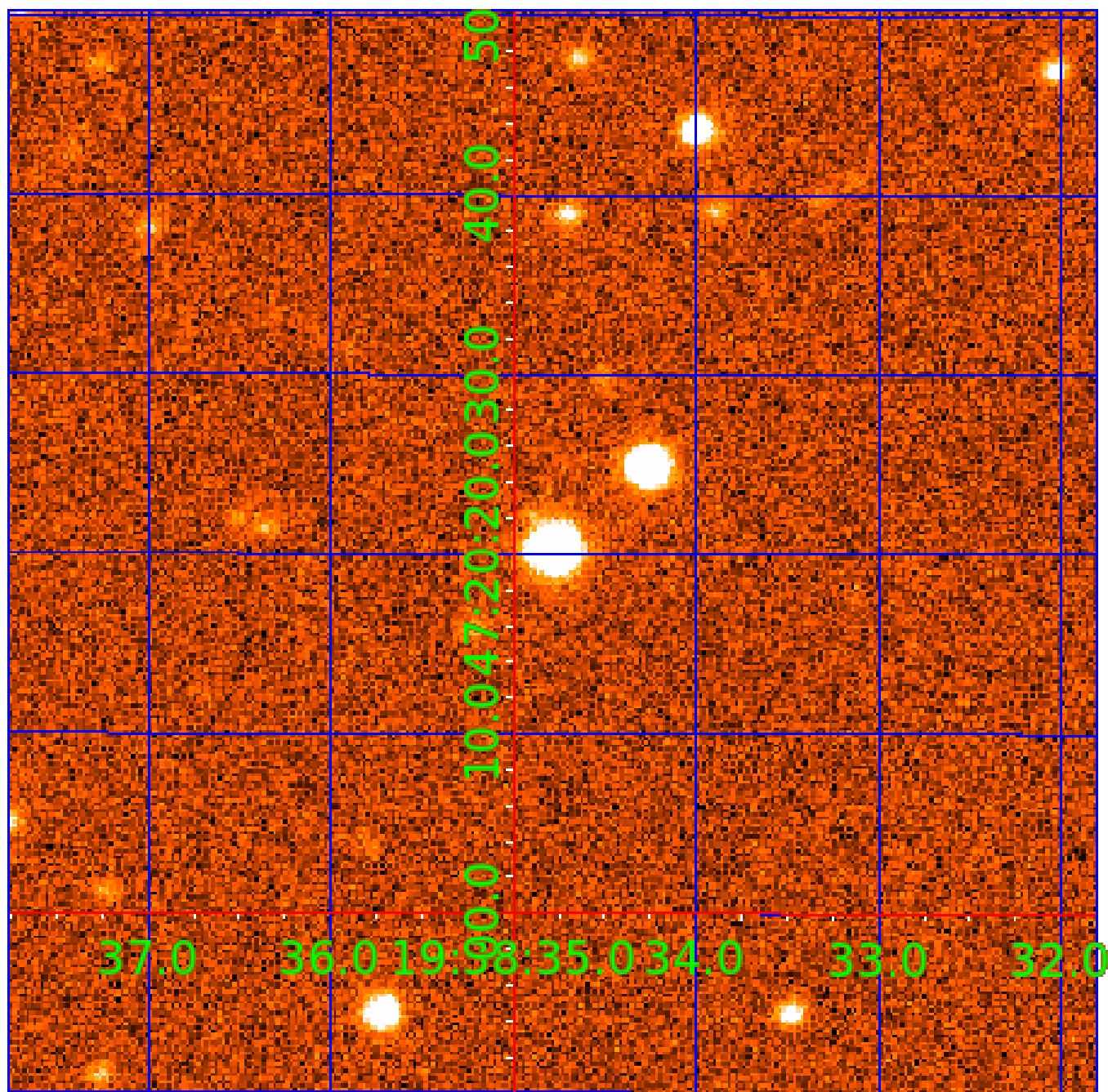


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 010281311

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})
010281311-01	OBS	No	1.867031	133.182120	38.3	6.619	7.8	7.7	1.08	6306	0.76	1720.22
010281311-02	OBS	8203.01	234.662078	166.028019	535.3	8.433	9.3	7.4	1.08	6306	2.69	2.73
010281311-03	OBS	No	502.203208	253.220133	482.3	5.870	8.5	6.3	1.08	6306	2.58	0.99
010281311-04	OBS	No	664.479922	206.687787	509.5	14.678	8.0	6.7	1.08	6306	2.60	0.68

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010281311-01	OBS	FP	0.00	1	0	1	0	LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_RESOLVED_OFFSET
010281311-02	OBS	FP	0.04	1	0	0	0	MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
010281311-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
010281311-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS

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

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

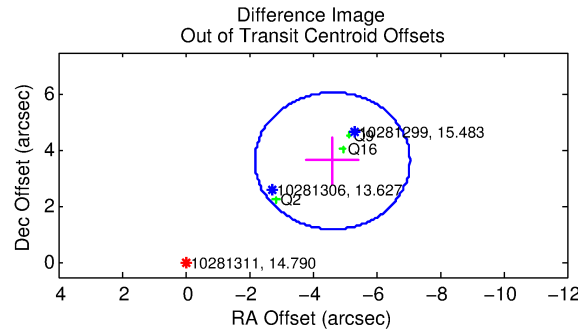
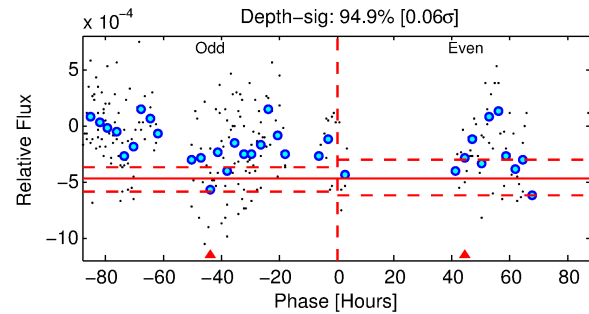
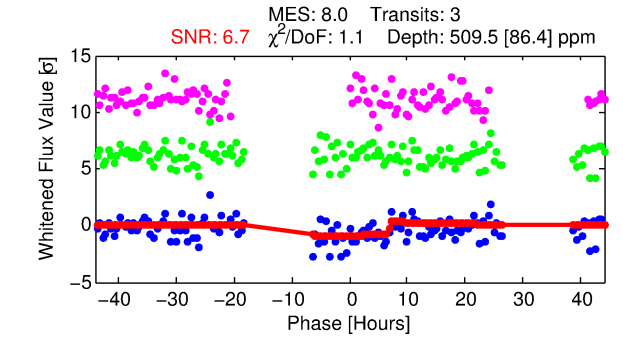
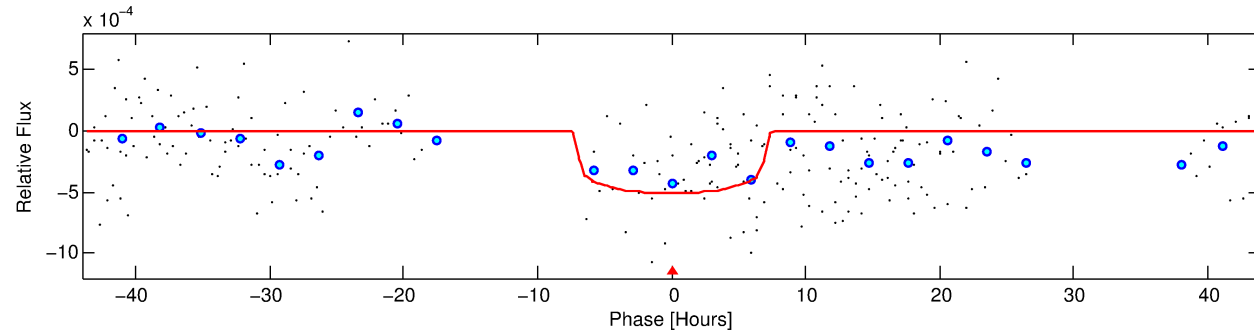
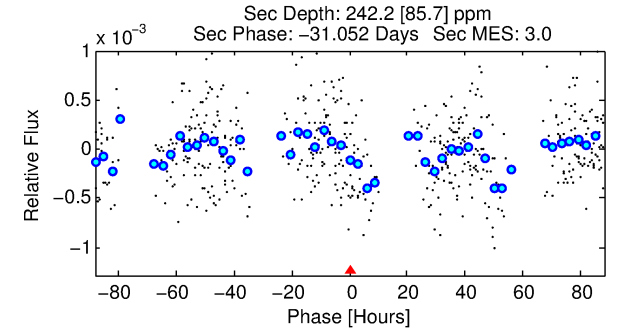
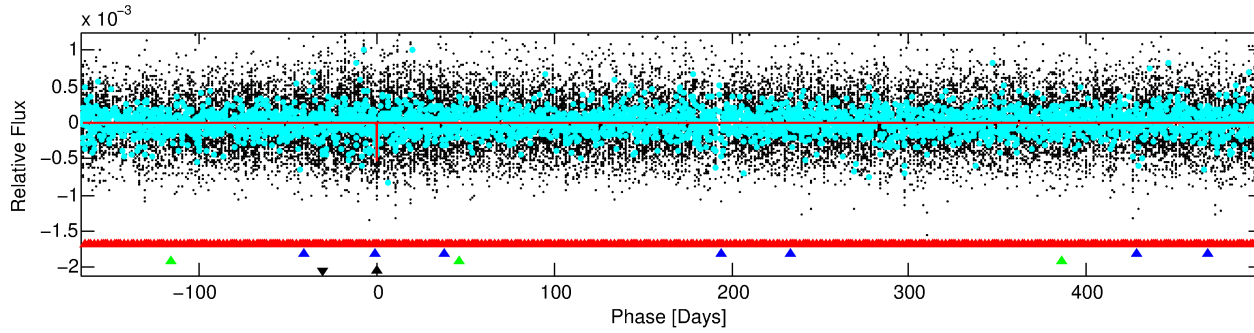
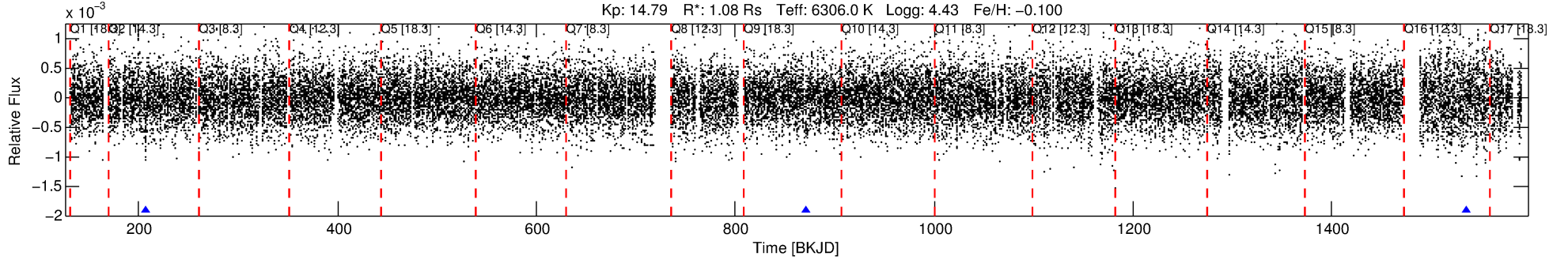
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 010281311-04

No Significant Match Found

DV One-Page Summary

KIC: 10281311 Candidate: 4 of 4 Period: 664.480 d



DV Fit Results:

Period = 664.47992 [0.01957] d
Epoch = 206.6878 [0.0715] BKJD
Rp/R* = 0.0222 [0.0086]
a/R* = 255.86 [523.90]
b = 0.71 [1.36]
Seff = 0.68 [0.28]
Teq = 232 [24] K
Rp = 2.60 [1.29] Re
a = 1.5508 [0.4061] AU
Ag = 47370.47 [44100.54] [1.07σ]
Teffp = 5286 [1138] K [4.44σ]

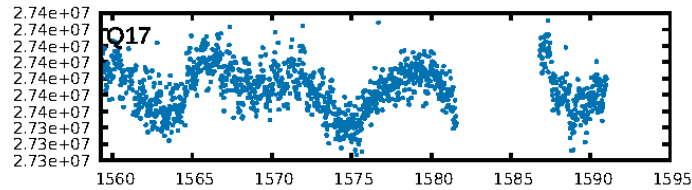
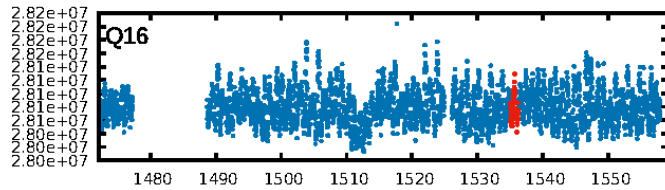
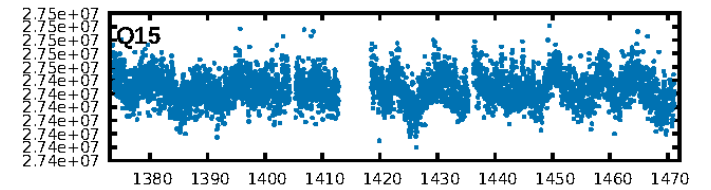
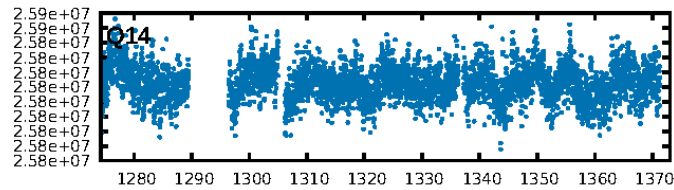
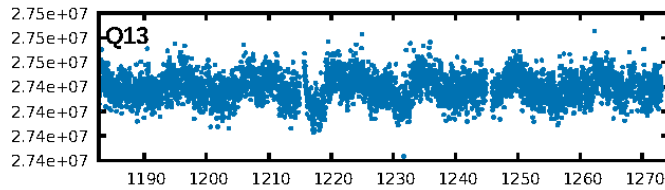
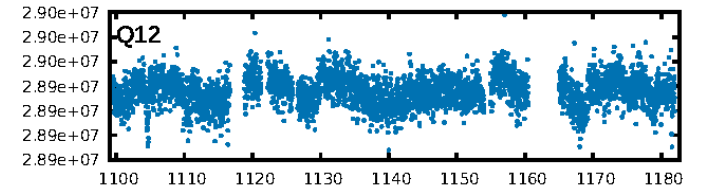
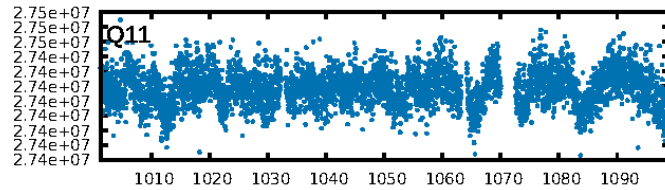
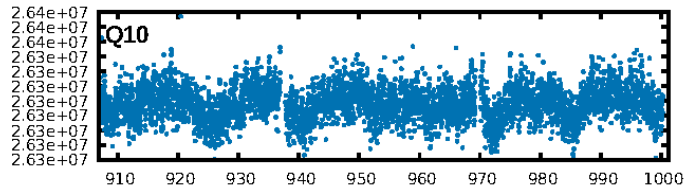
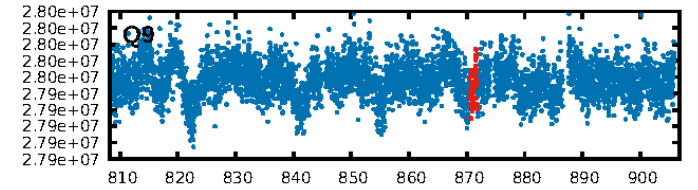
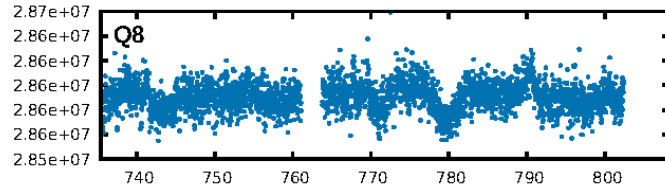
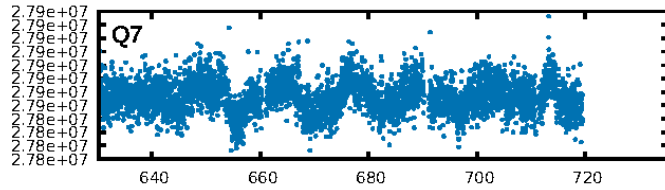
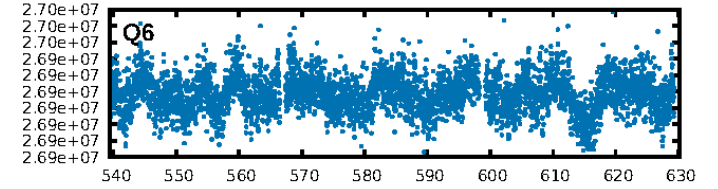
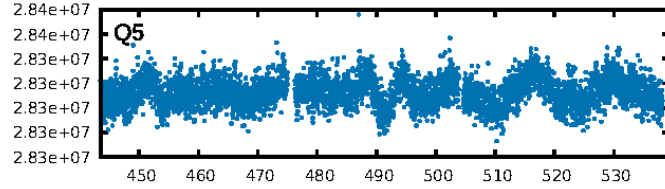
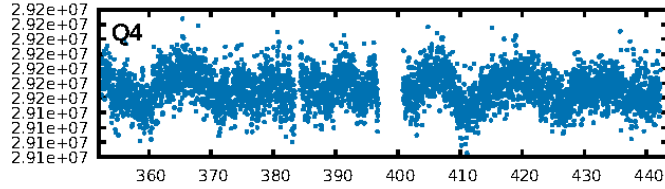
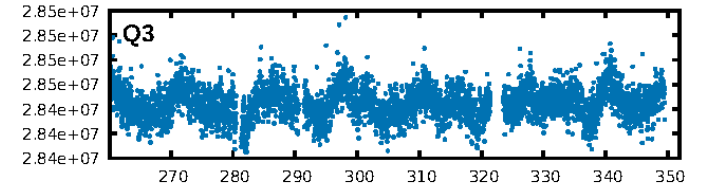
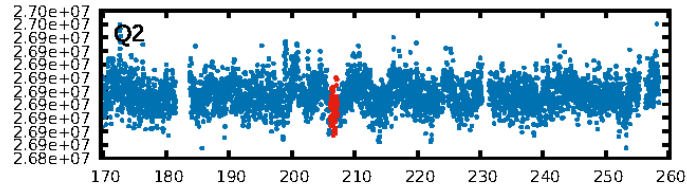
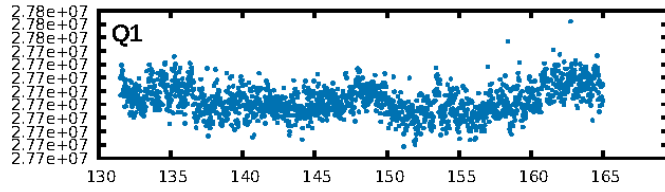
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [246.37σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 25.7%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 1.56e-08
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: -1.774
Centroid-sig: 0.1%
Centroid-so: 4.210 arcsec [1.63σ]
OotOffset-rm: 5.884 arcsec [7.25σ]
KicOffset-rm: 7.078 arcsec [62.84σ]
OotOffset-st: 1/0/1/1 [3]
KicOffset-st: 1/0/1/1 [3]
DiffImageQuality-fgm: 0.67 [2/3]
DiffImageOverlap-fno: 0.00 [0/3]

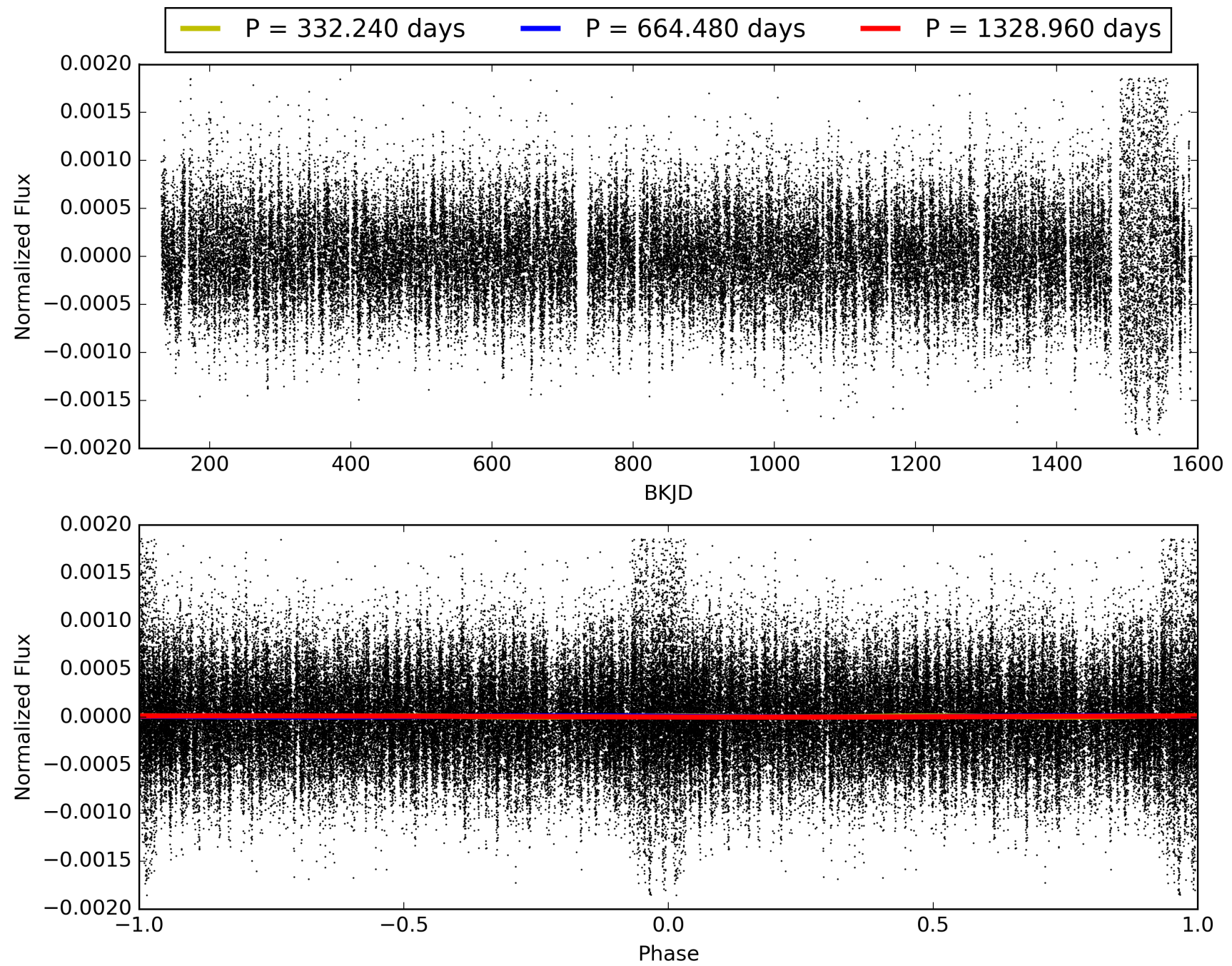
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 06:33:35 Z

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

TCE 010281311-04, PDC Light Curves

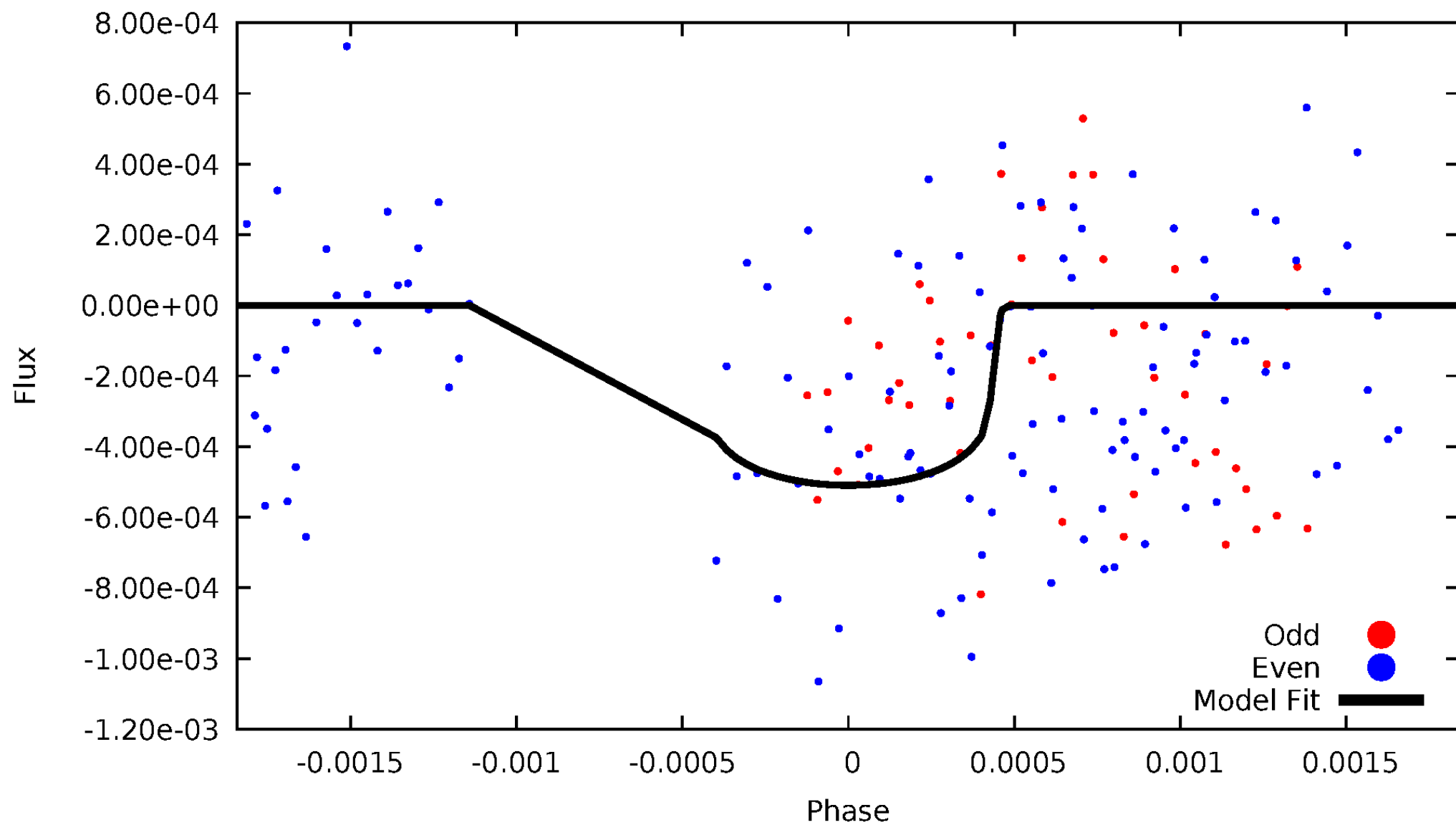


TCE 010281311-04



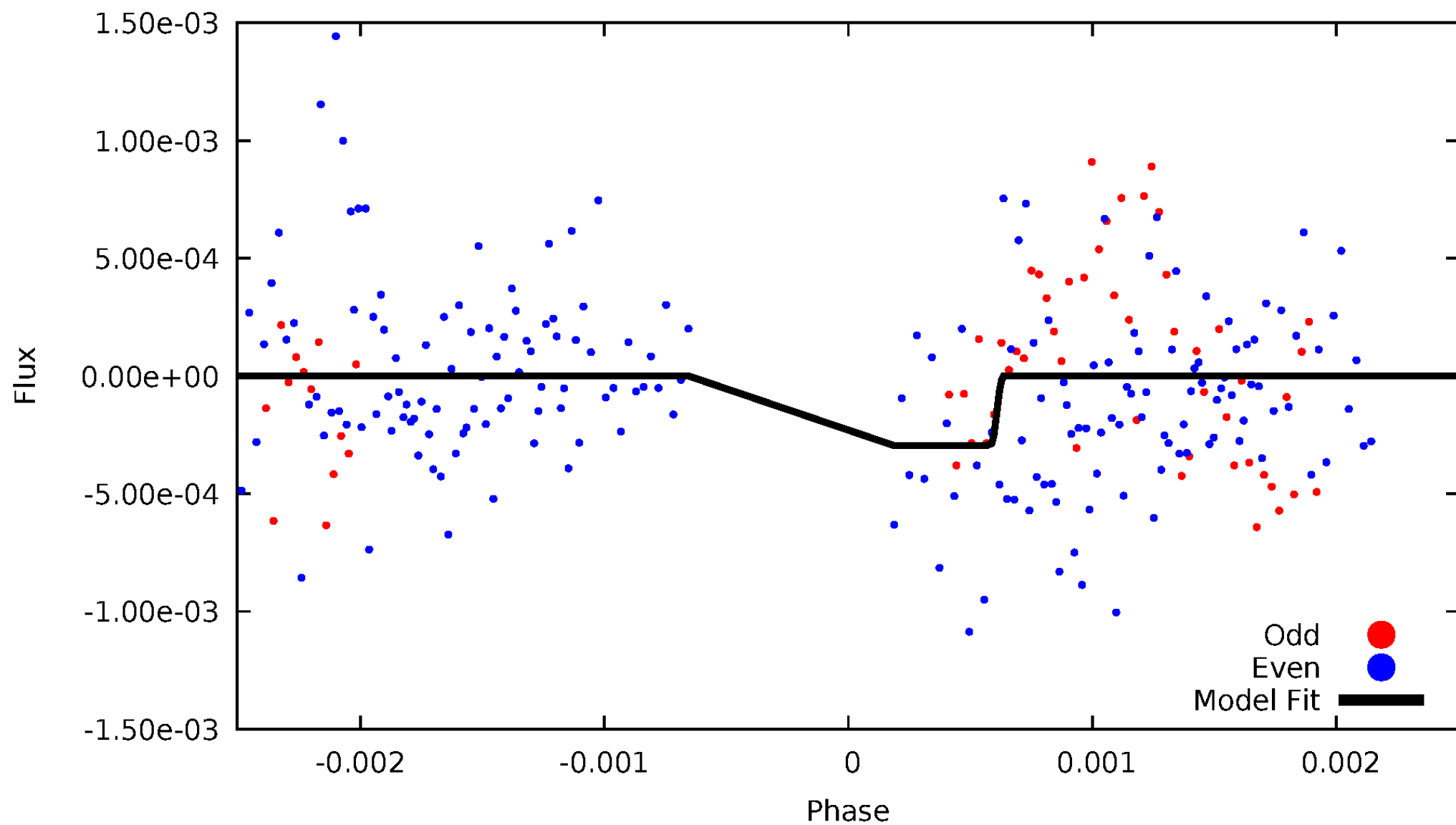
DV Odd/Even

TCE 010281311-04



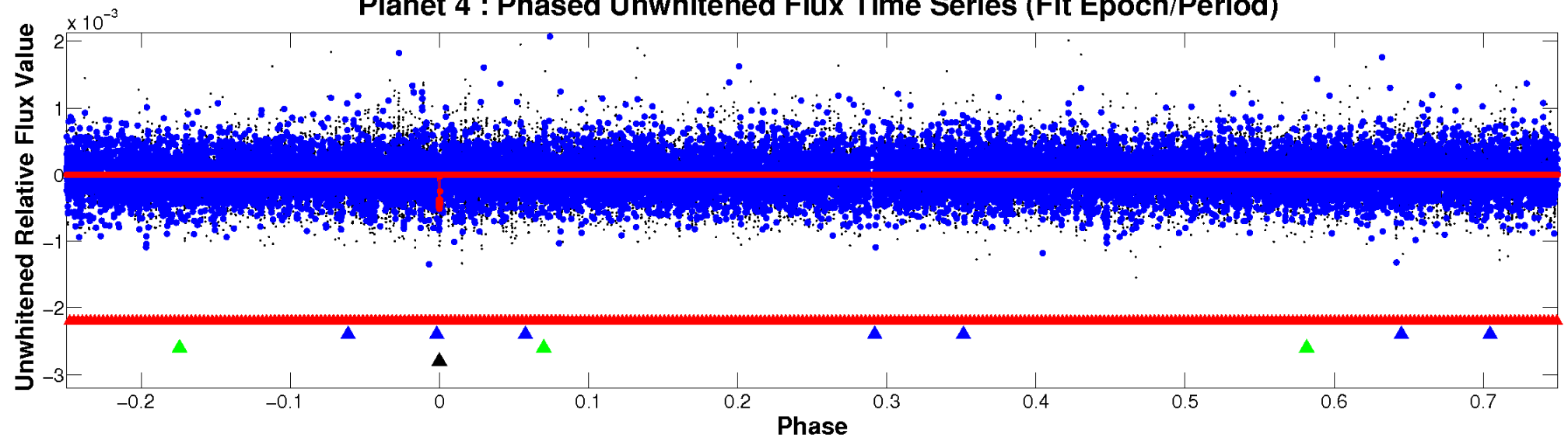
ALT Odd/Even

TCE 010281311-04

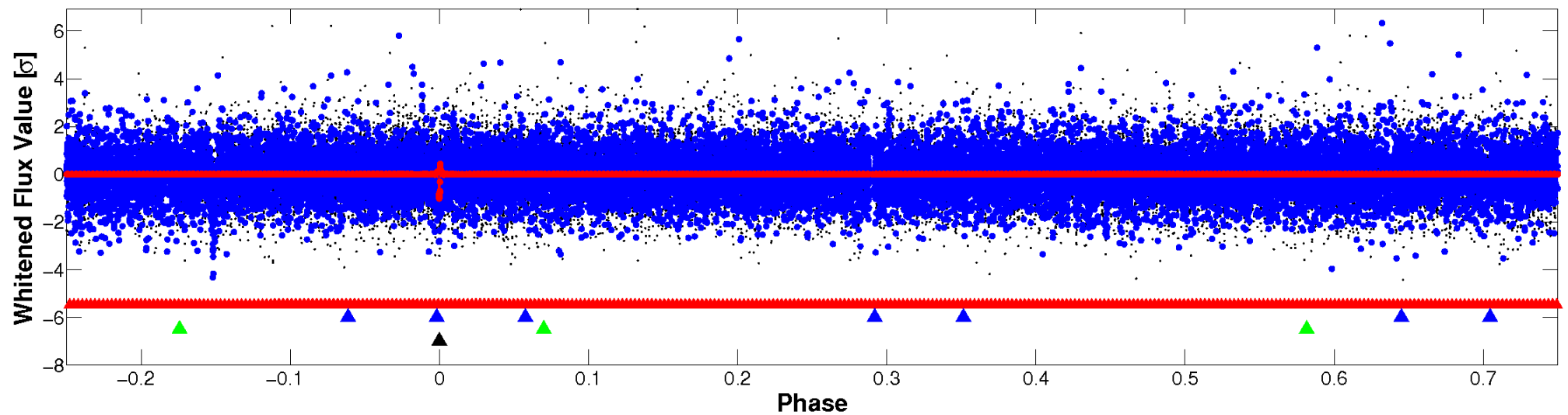


Non-Whitened Vs. Whitened Light Curve

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

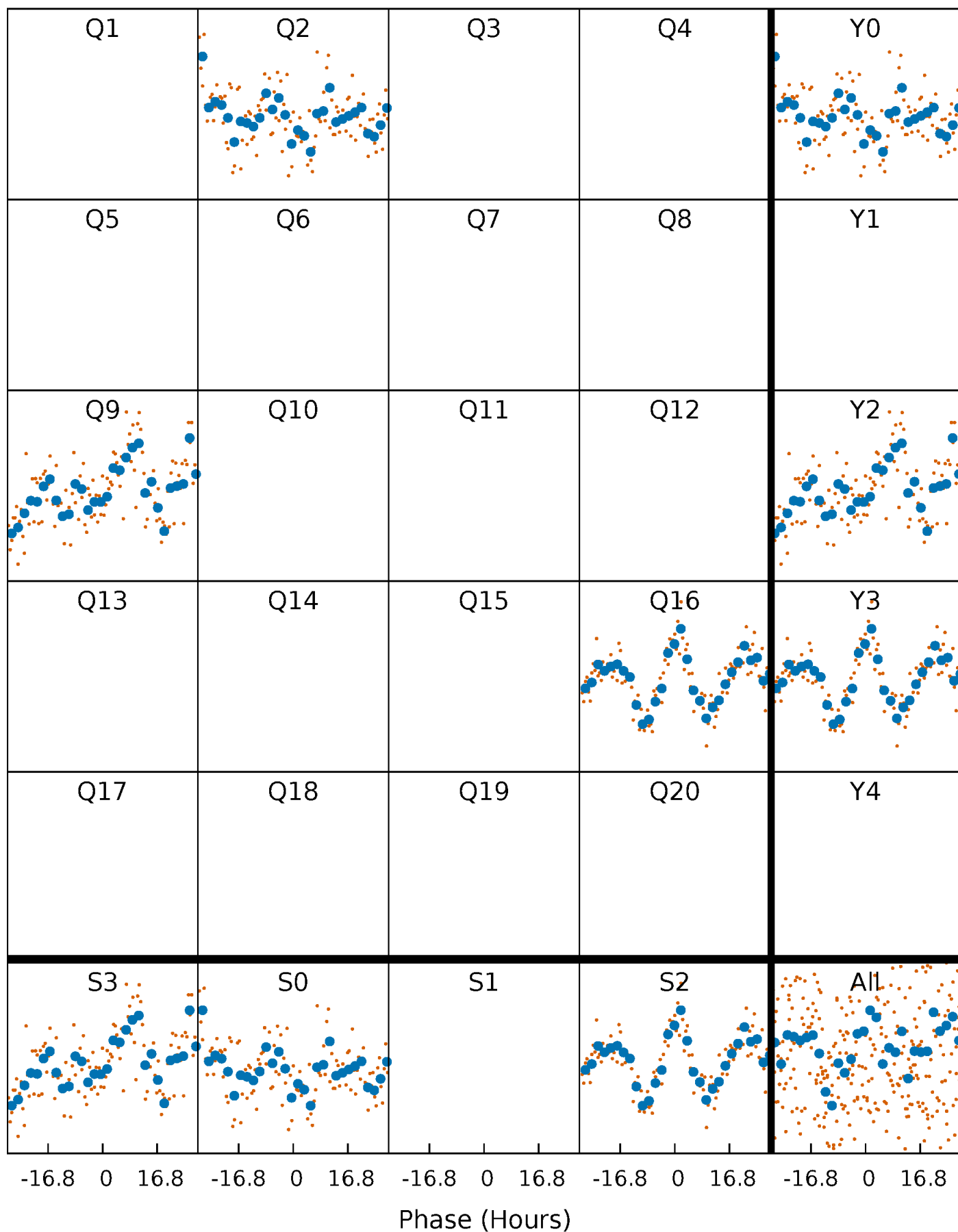


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



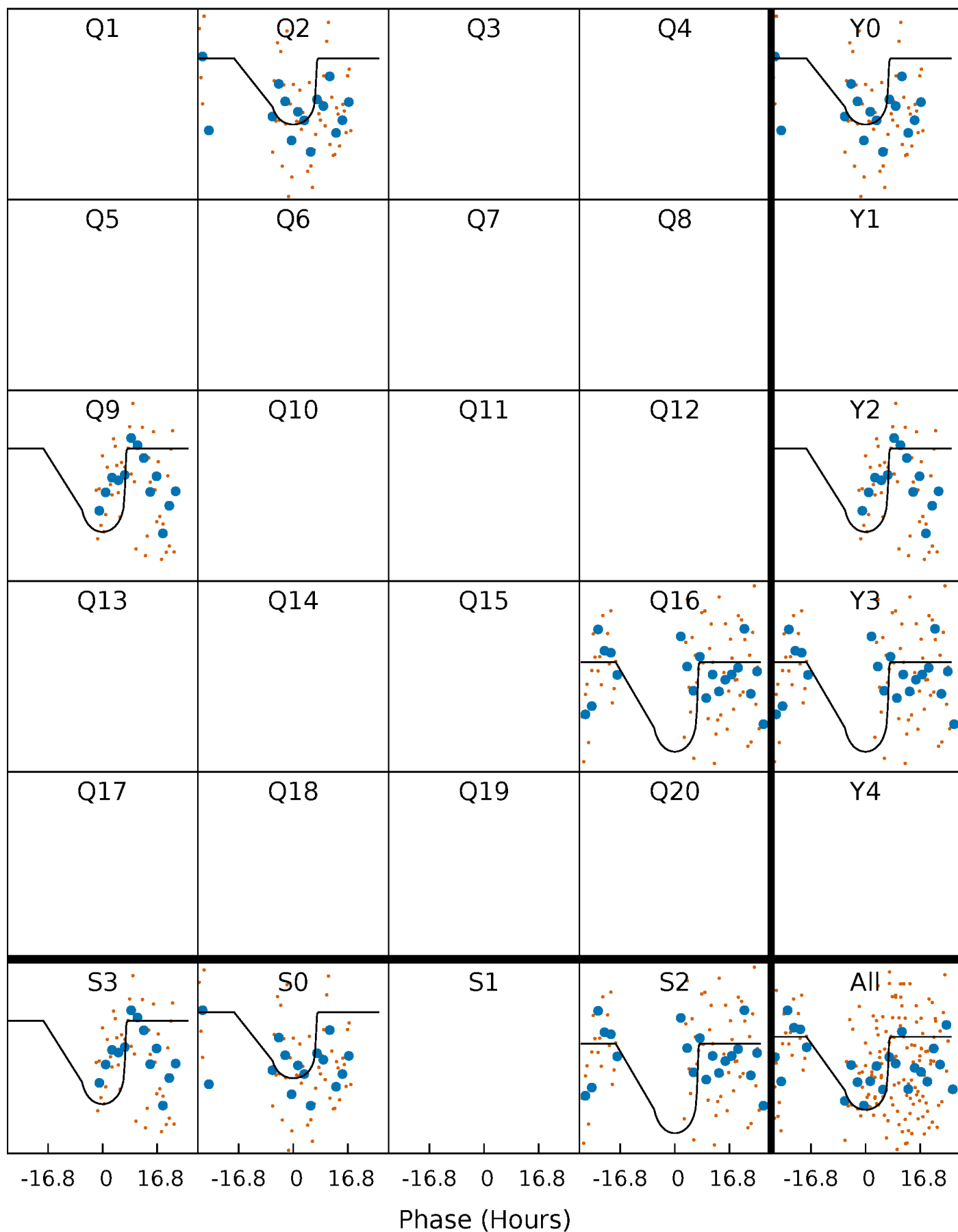
PDC Quarter-Phased Transit Curves

TCE 010281311-04 P=664.479922 Days $T_0=206.687787$ (BKJD)



DV Quarter-Phased Transit Curves

TCE 010281311-04 P=664.479922 Days $T_0=206.687787$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

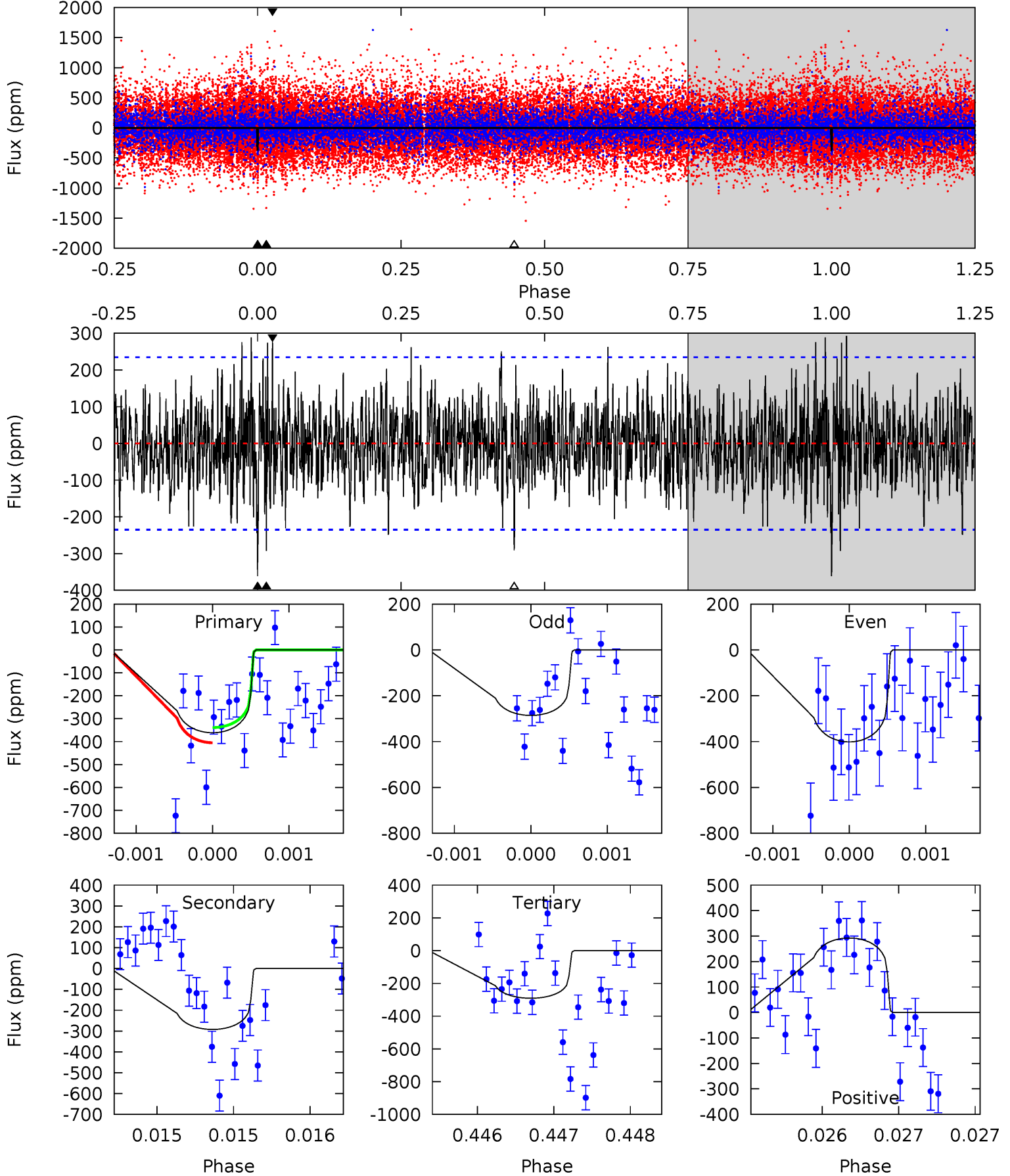
TCE 010281311-04 $P=664.512993$ Days $T_0=206.298473$ (BKJD)



DV Model-Shift Uniqueness Test

010281311-04, P = 664.479922 Days, E = 206.687787 Days

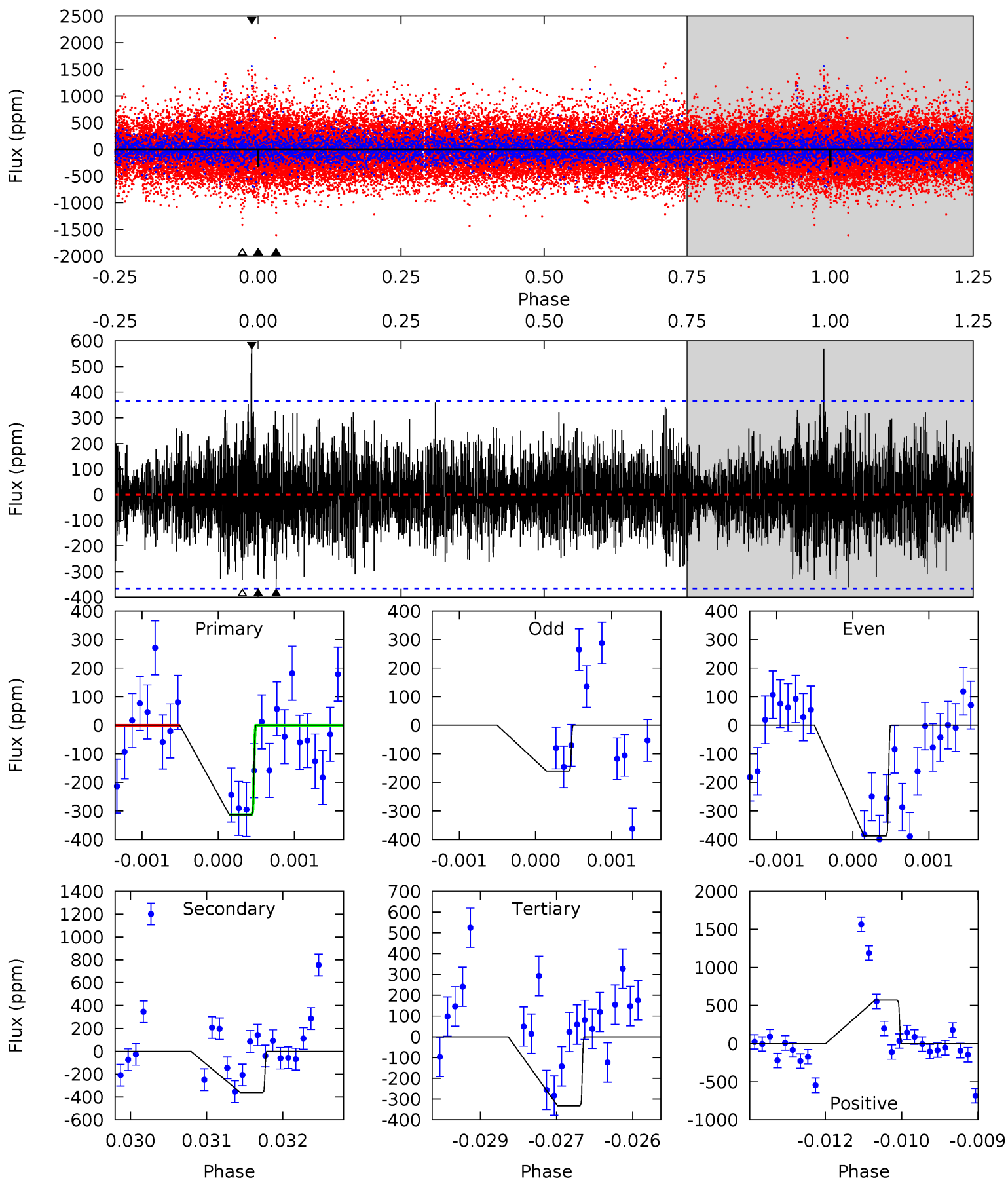
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.43	6.82	6.78	6.82	5.48	3.33	1.89	1.65	1.61	0.04	-0.00	1.30	1.01	0.45	0.69



Alt Model-Shift Uniqueness Test

010281311-04, P = 664.512993 Days, E = 206.298473 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4.63	5.33	4.92	8.41	5.40	3.22	1.43	-0.29	-3.79	0.41	-3.08	1.60	1.00	0.61	0



Stellar Parameters For KIC 010281311

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6306^{+169}_{-225}	$4.426^{+0.065}_{-0.208}$	$-0.100^{+0.250}_{-0.350}$	$1.076^{+0.335}_{-0.134}$	$1.126^{+0.154}_{-0.154}$	$1.272^{+0.361}_{-0.674}$
	+3%/-4%	+1%/-5%	+250%/-350%	+31%/-12%	+14%/-14%	+28%/-53%
Source	PHO1	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 010281311-04 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-292 ± 43	$2.70^{+1.16}_{-1.07}$	330^{+23}_{-18}	5549^{+1681}_{-772}	51374^{+95560}_{-25890}
Alt.	-361 ± 68	$2.11^{+1.09}_{-1.03}$	329^{+23}_{-16}	6604^{+3364}_{-1173}	$105492^{+307785}_{-61105}$

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

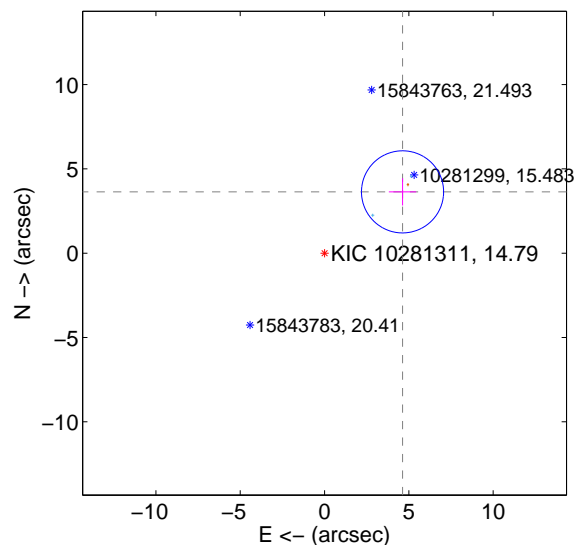
Supplemental centroid analysis for 010281311-04. Kepler magnitude: 14.79. Transit SNR 6.71

There are 2 quarters with good PRF difference image offsets

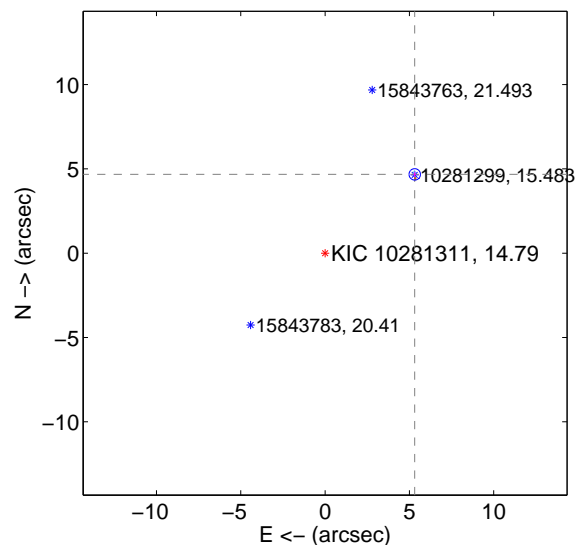
The direct PRF centroid is offset from the target star catalog position by about 0.54 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	5.884 ± 0.812	7.25	-4.626 ± 0.812	3.636 ± 0.811
PRF-fit source offset from KIC position	7.078 ± 0.113	62.84	-5.316 ± 0.071	4.673 ± 0.150
photometric centroid source offset	4.21 ± 2.58	1.63	-0.34 ± 2.85	-4.20 ± 2.58

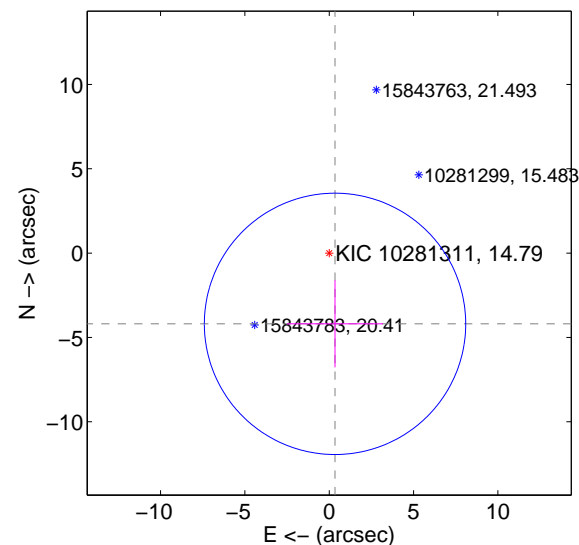
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

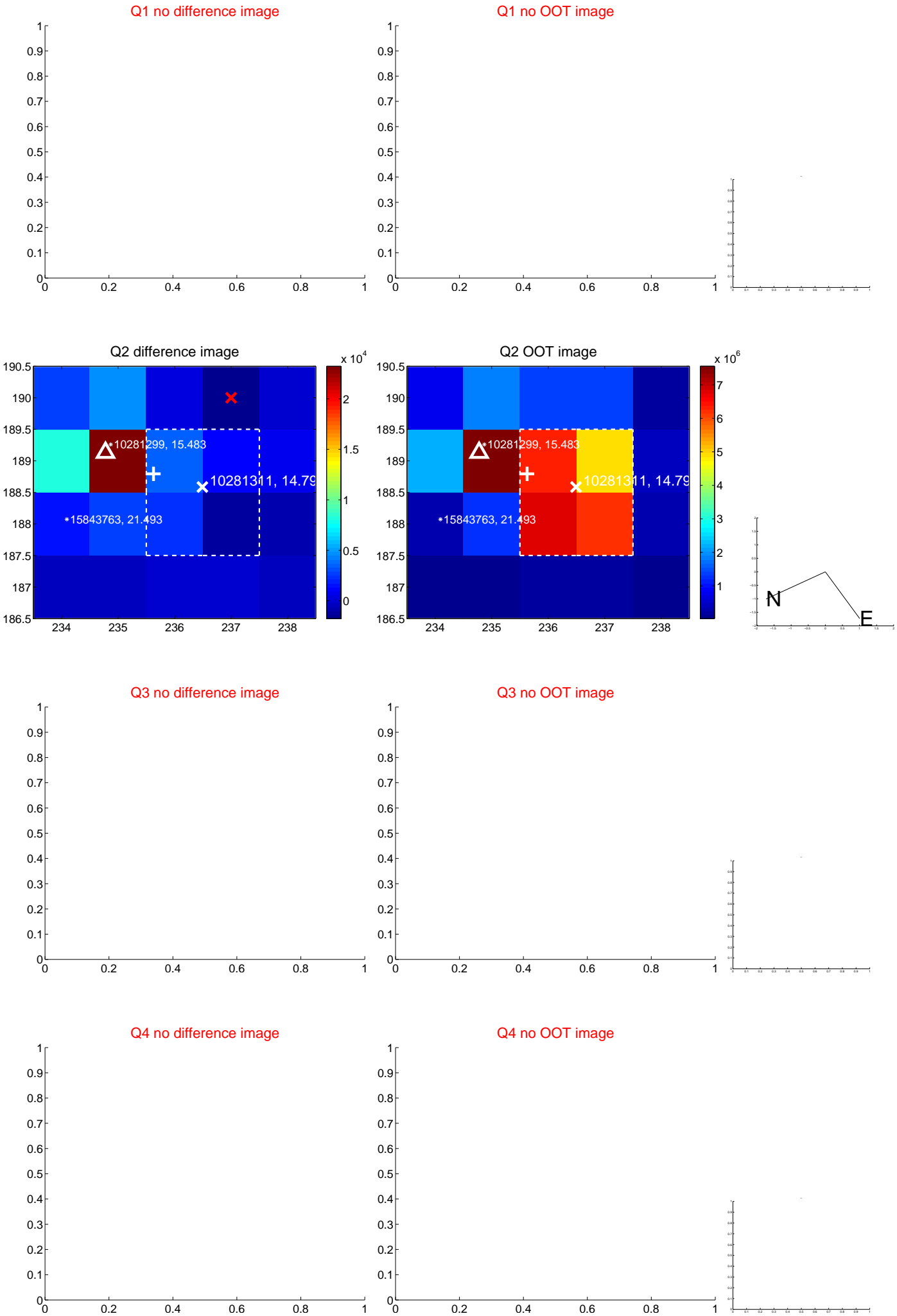


offset from photometric centroids



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

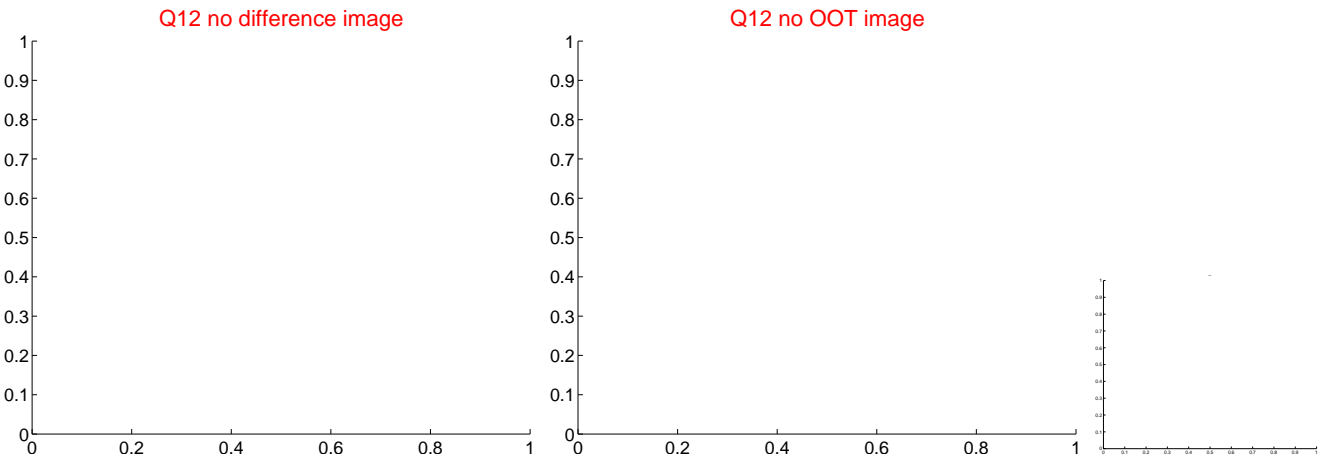
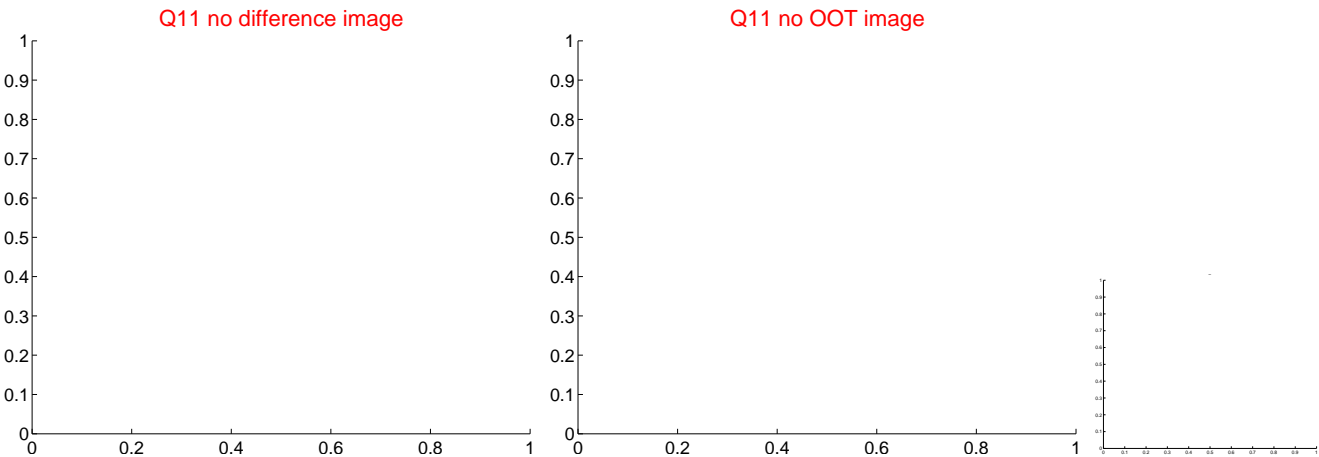
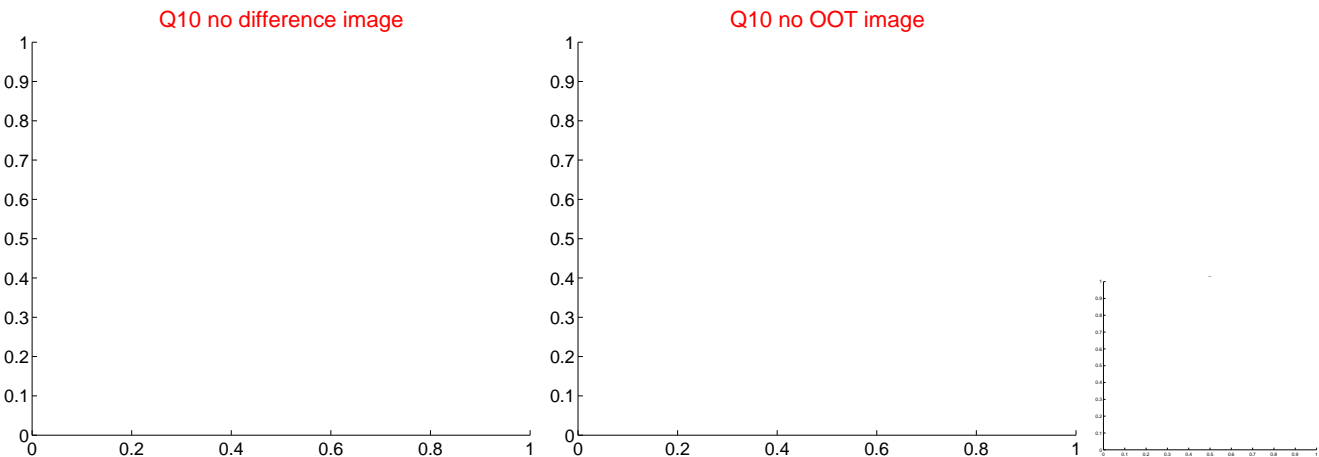
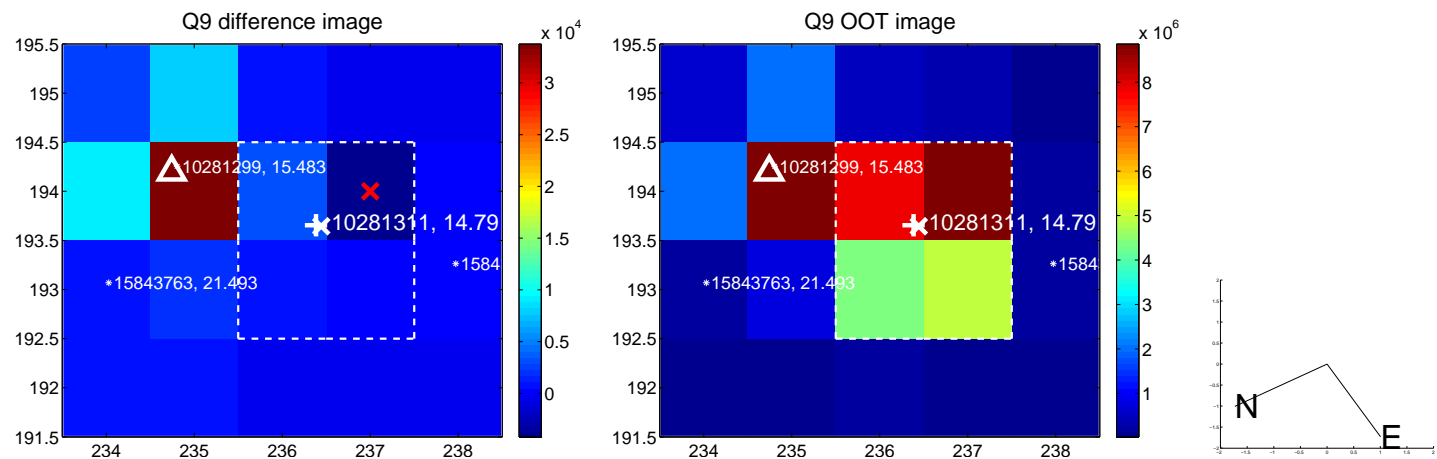
white \times : KIC target position; $+$: OOT centroid; Δ : difference centroid. red \times : large negative pixel value.



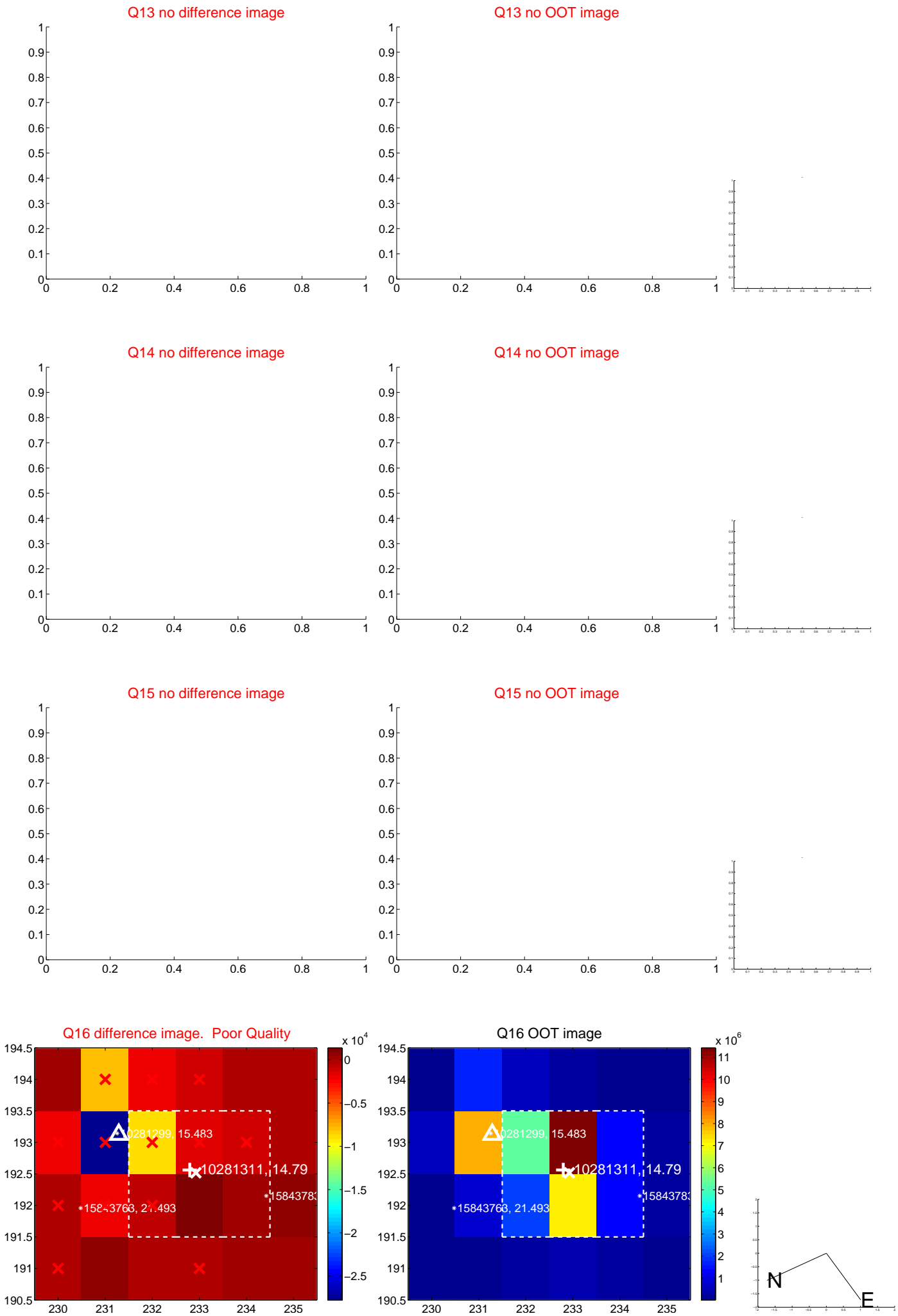
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



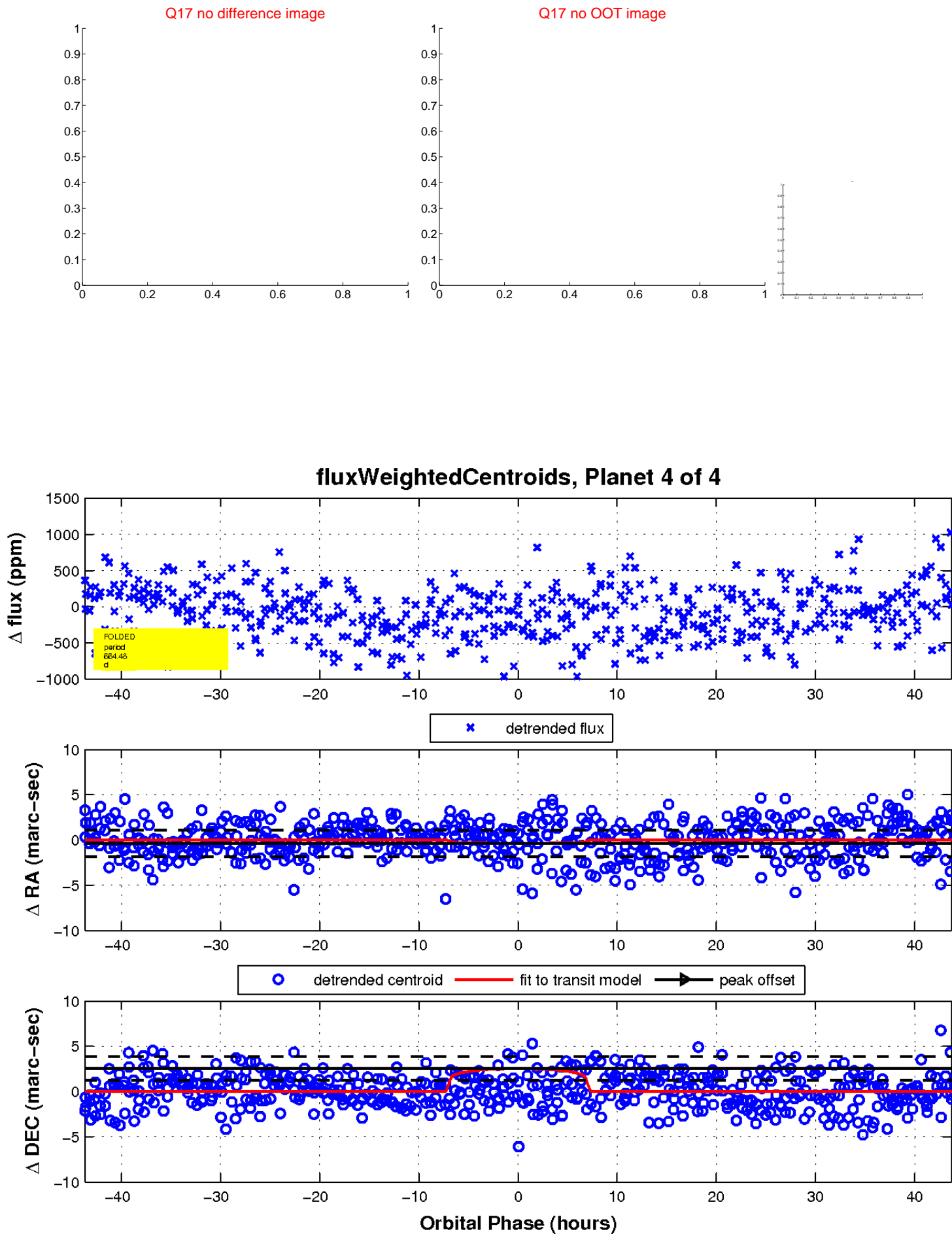
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

