

KIC 008161825

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})
008161825-01	OBS	No	2.203134	132.544119	7.3	12.833	8.0	9.2	0.99	5902	0.27	980.92
008161825-03	OBS	No	405.821746	448.262203	251.2	41.981	12.6	11.1	0.99	5902	1.85	0.94
008161825-04	OBS	No	222.310055	204.850421	76.9	25.412	11.6	7.1	0.99	5902	1.04	2.09

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008161825-01	OBS	FP	0.00	1	0	0	1	LPP_DV—MOD_NONUNIQ_DV—CENT_FEW_DIFFS—EPHEM_MATCH
008161825-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_DIFFS
008161825-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_MEAS

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.

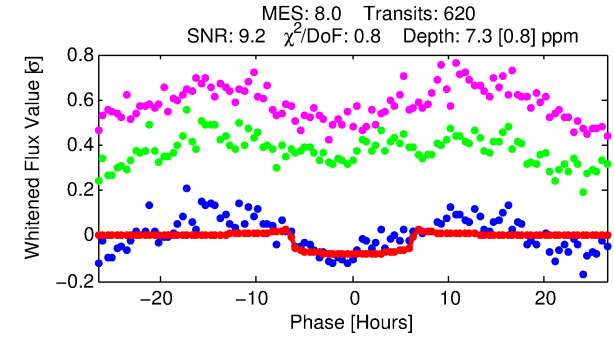
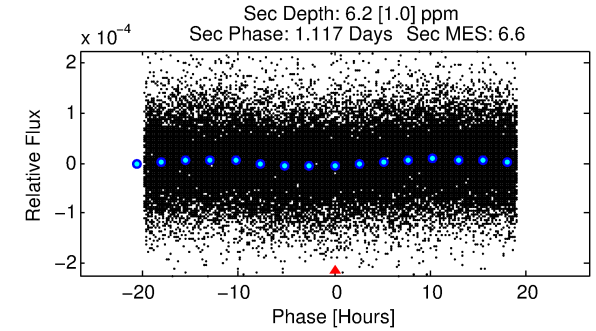
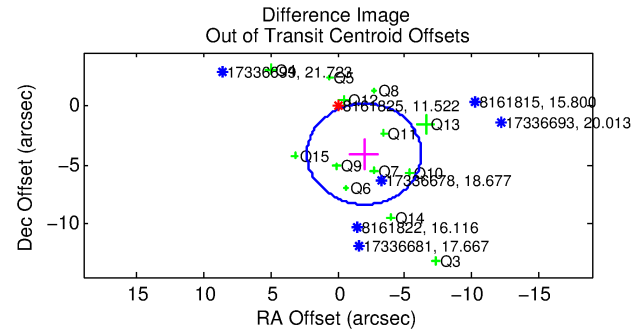
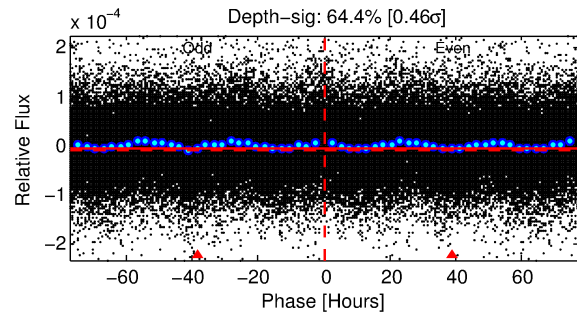
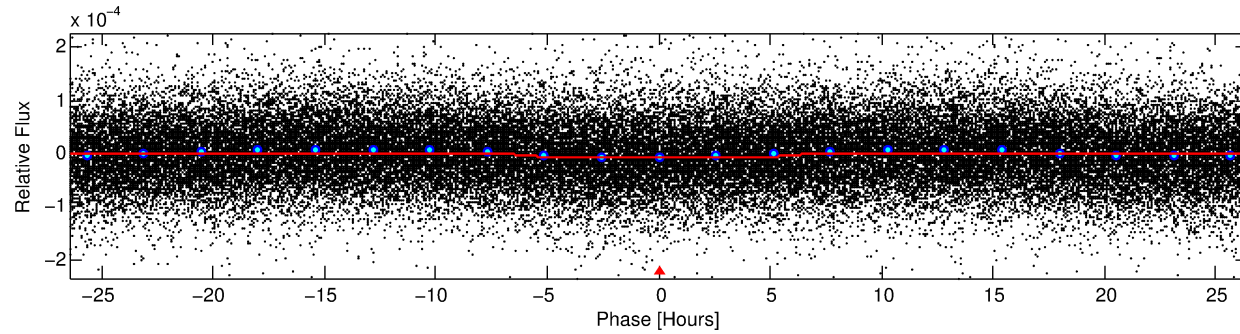
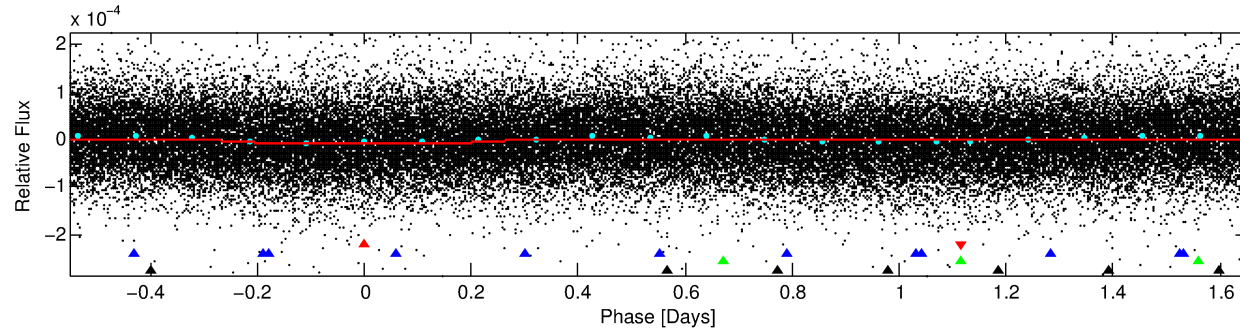
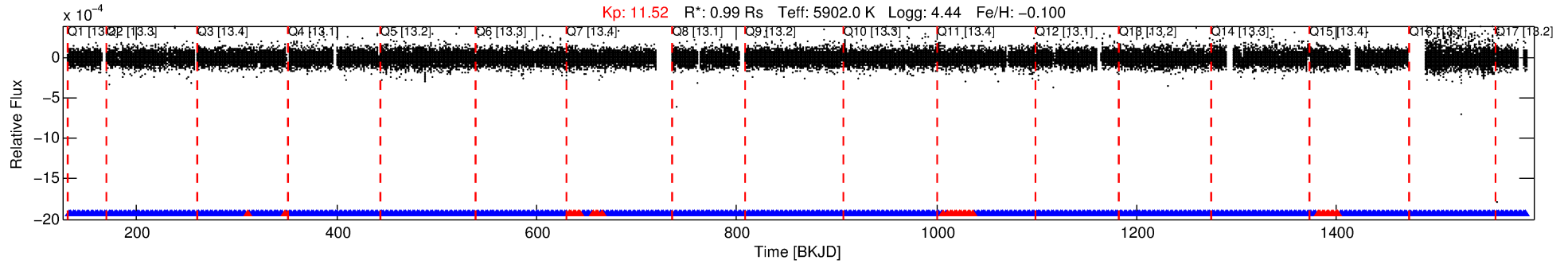
Ephemeris Match Information For 008161825-01

TCE (1)	KIC	Parent (2)	Parent KIC	P ₁ :P ₂	Dist (″)	Δ Row	Δ Col	m ₂	m ₁	D ₂ /D ₁	Mechanism	Flag	σ_P	σ_T
008161825-01	8161825	008161798-03	8161798	1:1	95.1	18	15	10.47	11.52	1.43	Direct-PRF	1	4.02	2.61

Notes: P₁:P₂ is the period ratio. Dist is the distance in arcseconds. Δ Row and Δ Col are the number of pixels apart in row and column. m₂ and m₁ are the magnitudes of the parent and child. D₂/D₁ is the parent's transit depth divided by the child's. σ_P and σ_T are the significance of the match in period and epoch. For a match to be considered significant $\sigma_P < 5.0$ and $\sigma_T < 5.0$. Matches which have σ_P and σ_T very close to this cutoff should receive extra scrutiny, especially if the period ratio is very large.

DV One-Page Summary

KIC: 8161825 Candidate: 1 of 4 Period: 2.203 d



DV Fit Results:

Period = 2.20313 [0.00004] d
Epoch = 132.5441 [0.0094] BKJD
Rp/R* = 0.0025 [0.0022]
a/R* = 1.43 [3.01]
b = 0.22 [18.22]
Seff = 980.92 [208.33]
Teq = 1427 [76] K
Rp = 0.27 [0.24] Re
a = 0.0329 [0.0043] AU
Ag = 52.06 [92.71] [0.55 σ]
Teffp = 5926 [2623] K [1.71 σ]

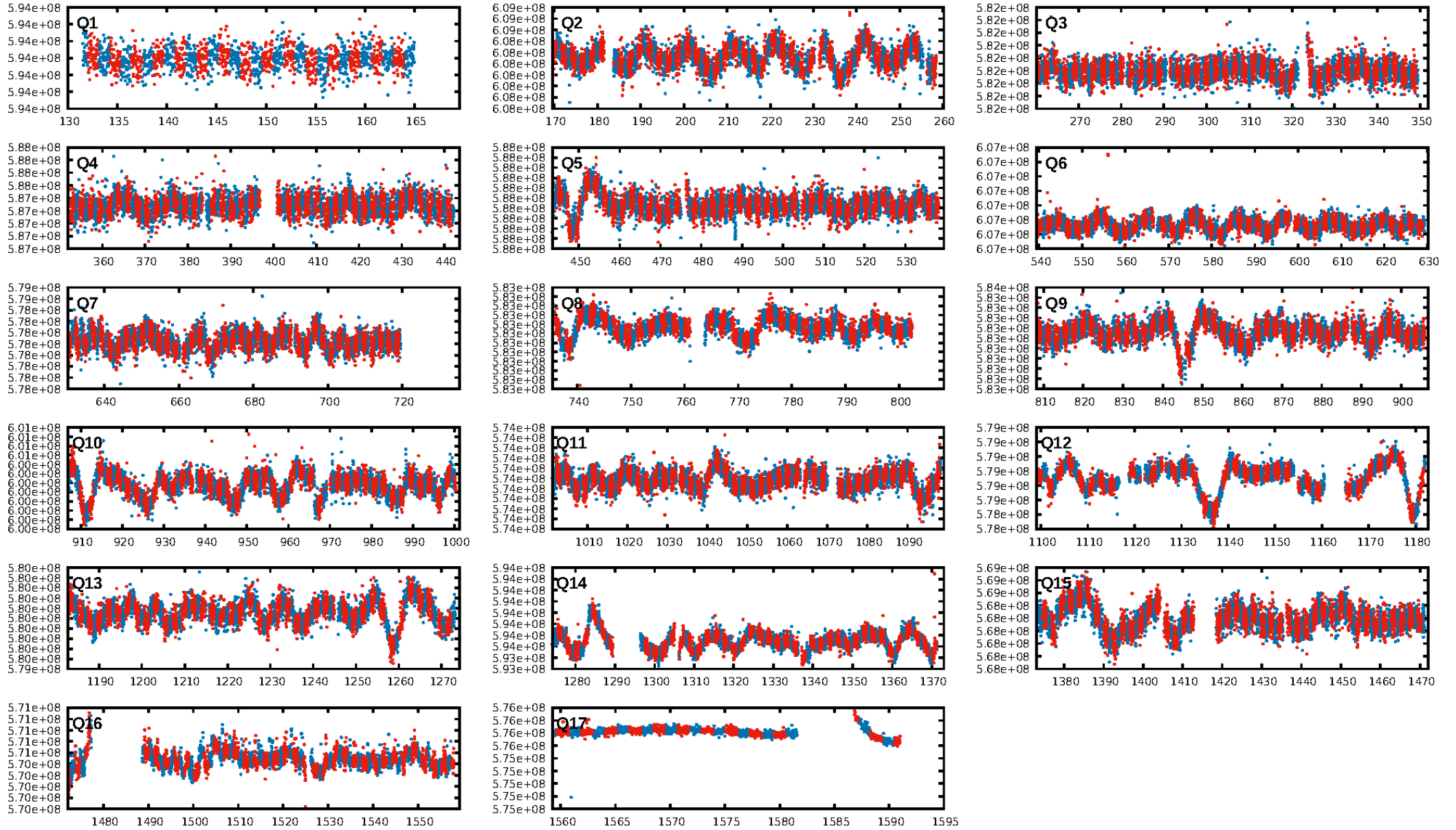
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [180.85 σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGoF-sig: N/A
Bootstrap-pfa: 8.60e-08
RollingBand-fgt: 0.94 [557/592]
GhostDiagnostic-chr: 0.6793
Centroid-sig: 0.0%
Centroid-so: 5.250 arcsec [2.79 σ]
OotOffset-rm: 4.553 arcsec [3.20 σ]
KicOffset-rm: 4.233 arcsec [3.17 σ]
OotOffset-st: 3/4/3/3 [13]
KicOffset-st: 3/4/3/3 [13]
DiffImageQuality-fgm: 0.15 [2/13]
DiffImageOverlap-fno: 1.00 [17/17]

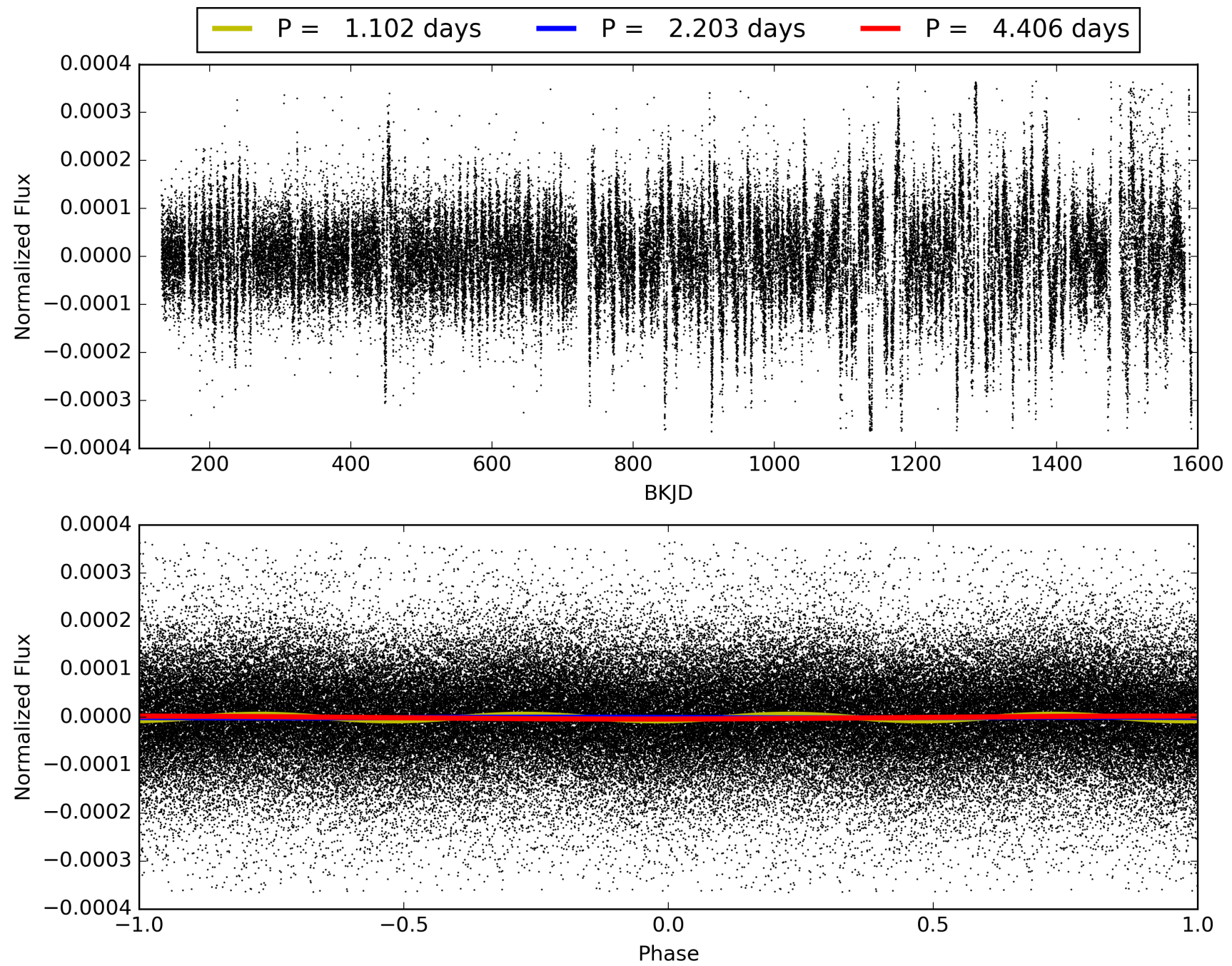
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 03:17:07 Z

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

TCE 008161825-01, PDC Light Curves

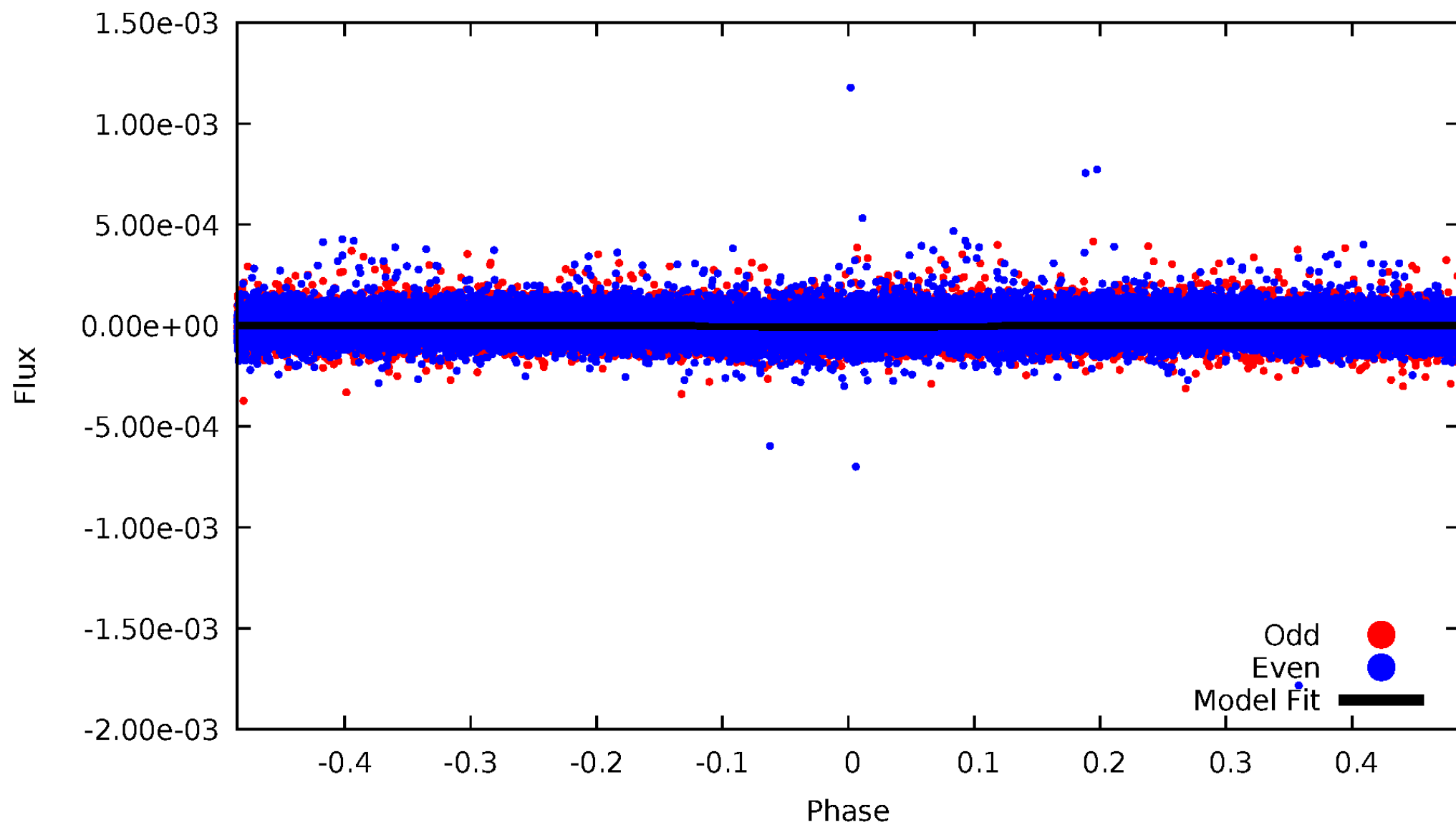


TCE 008161825-01



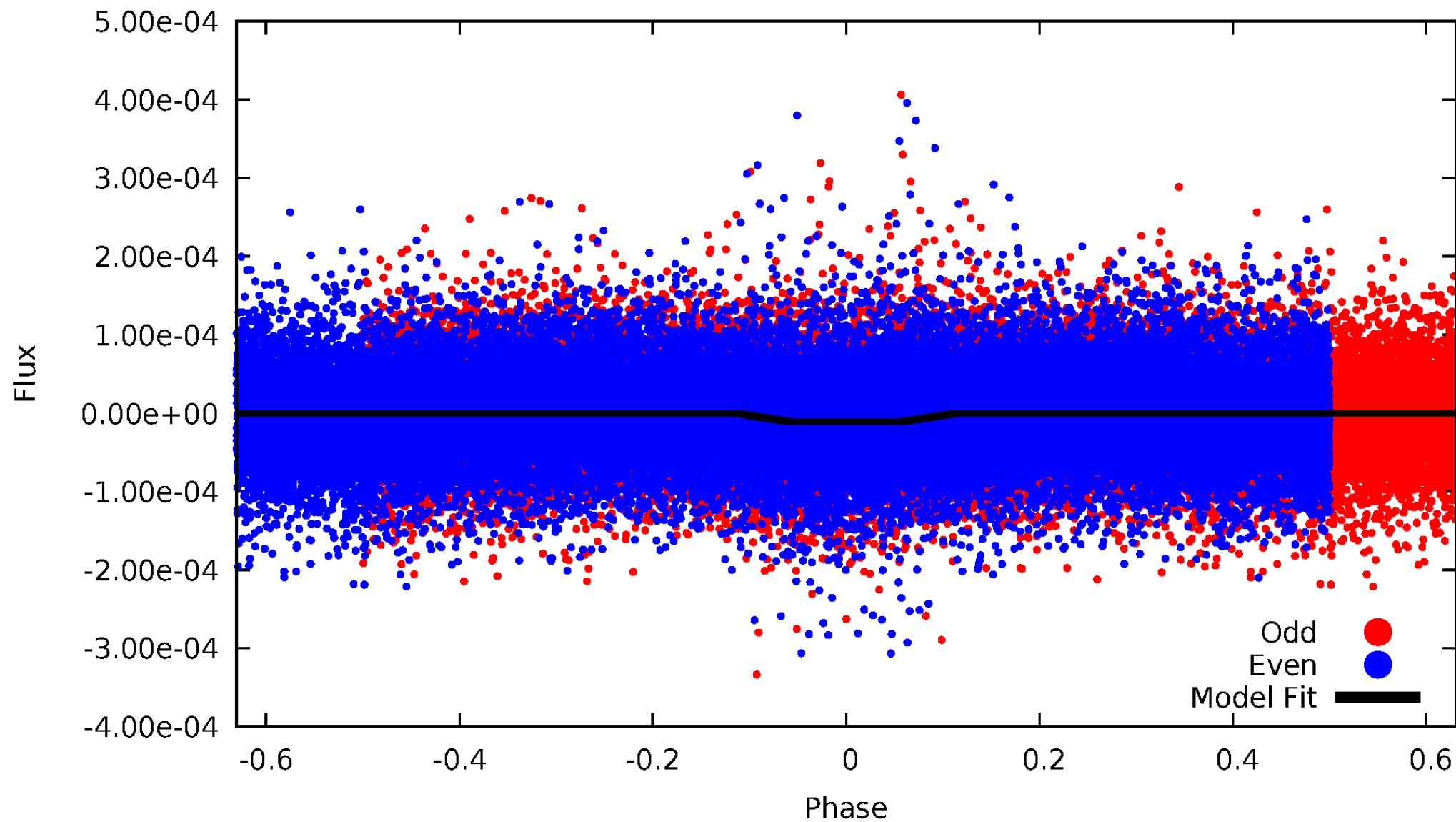
DV Odd/Even

TCE 008161825-01

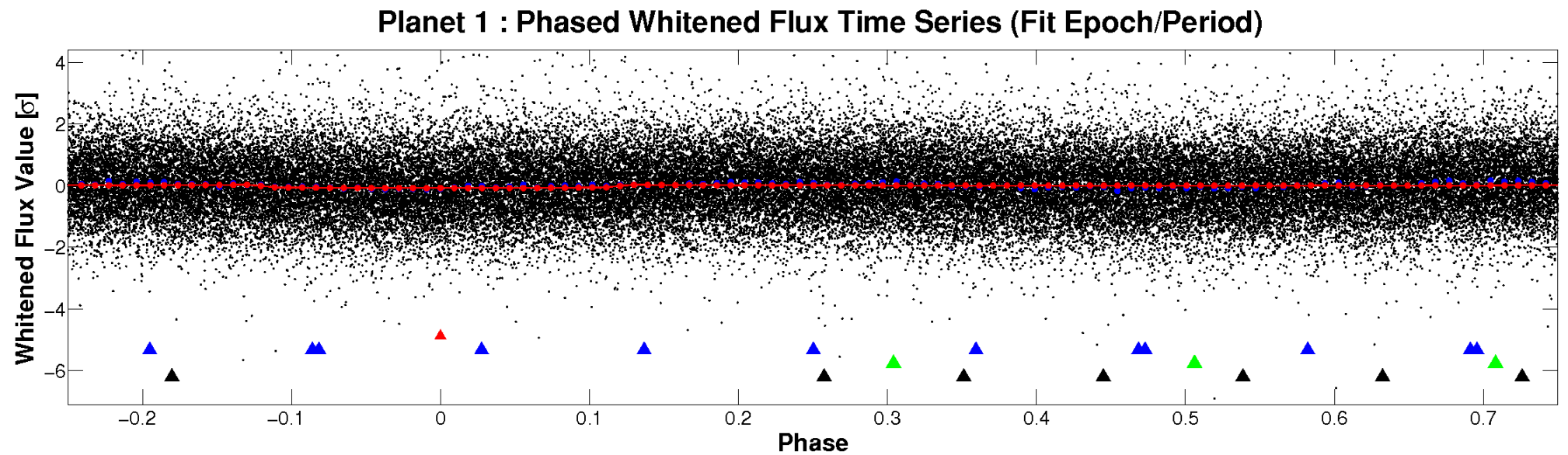
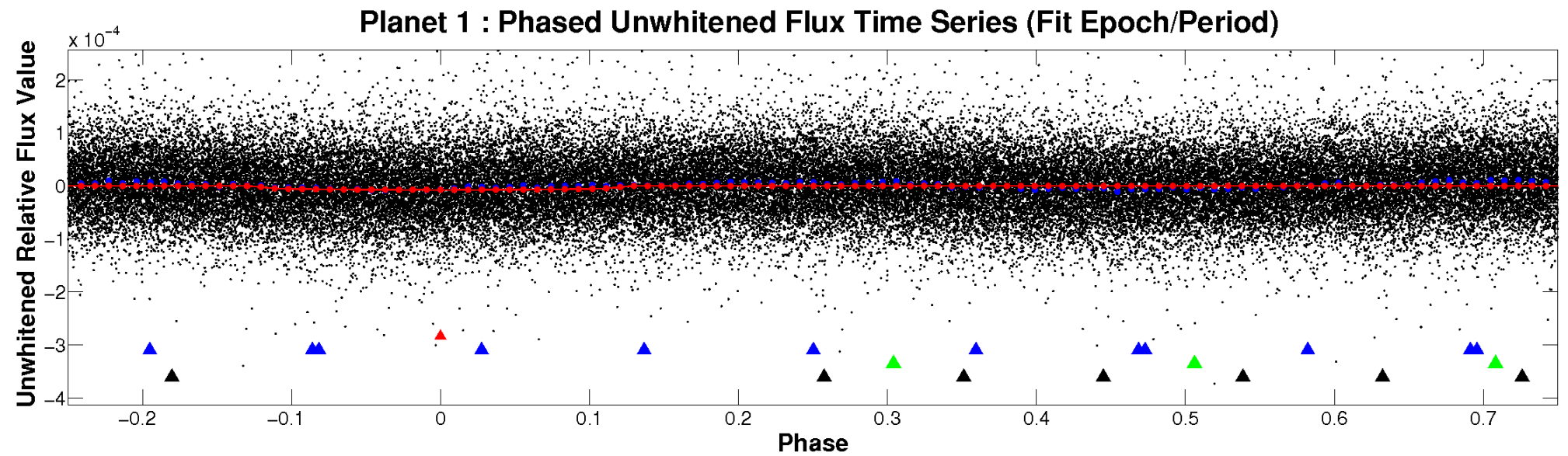


ALT Odd/Even

TCE 008161825-01

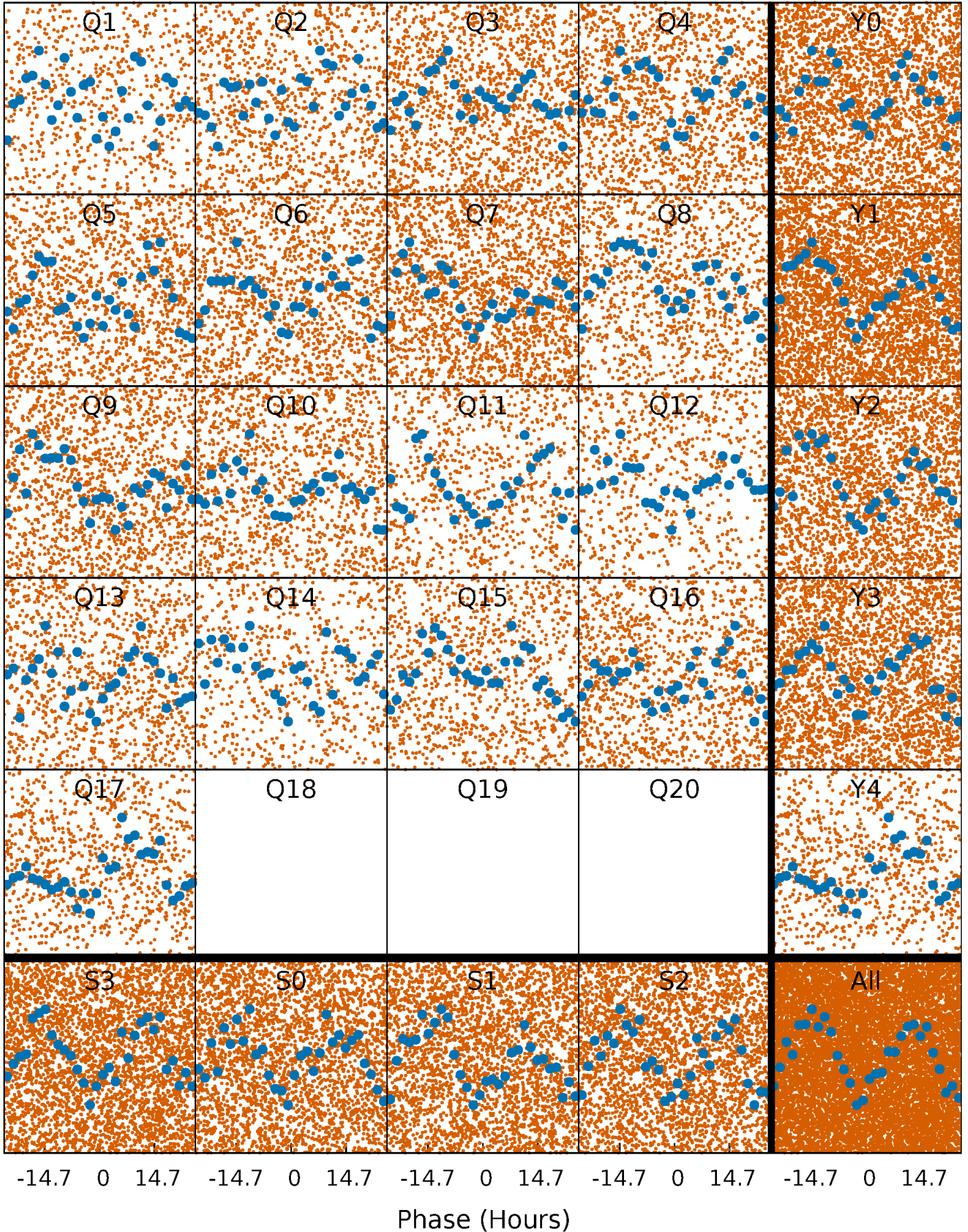


Non-Whitened Vs. Whitened Light Curve



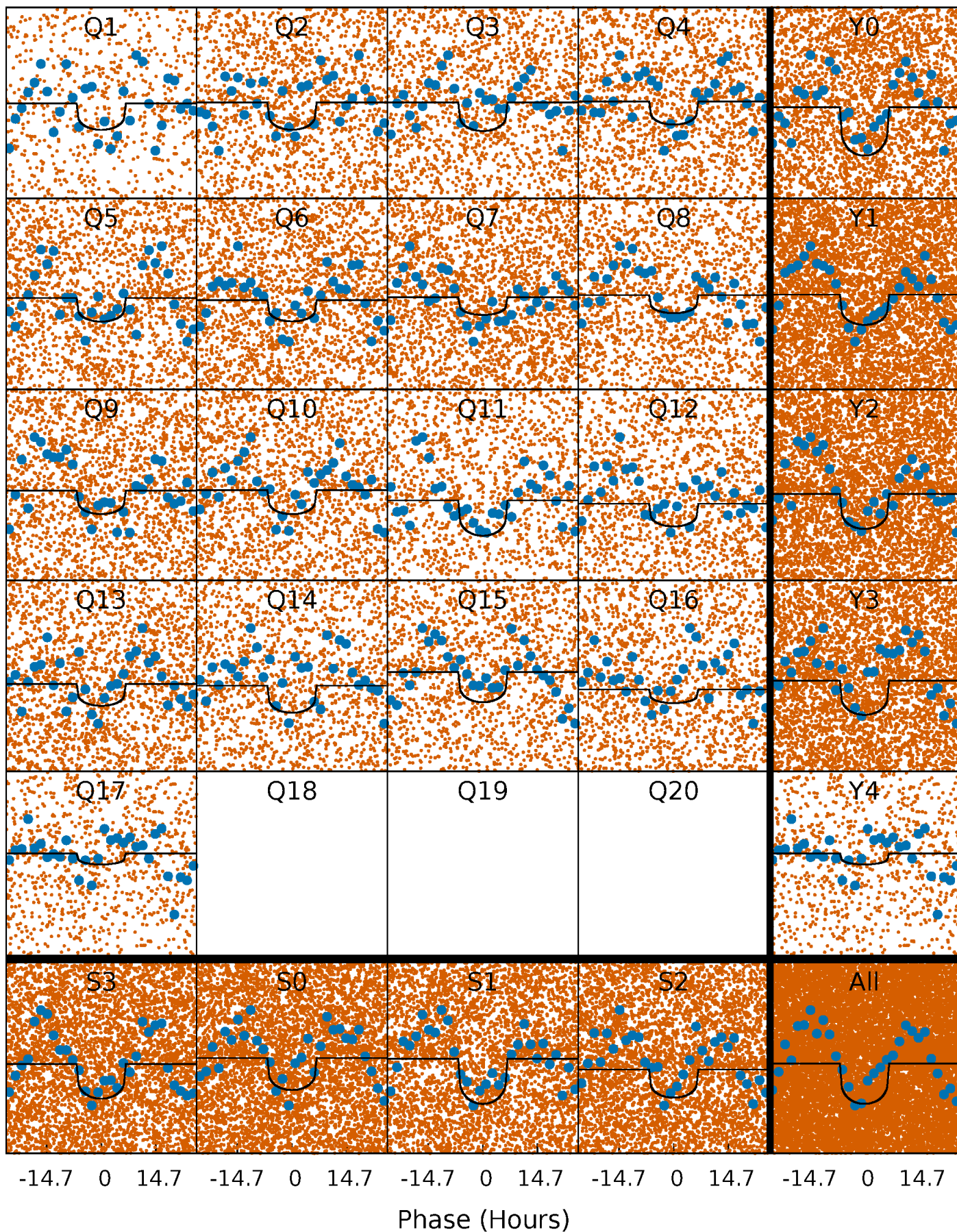
PDC Quarter-Phased Transit Curves

TCE 008161825-01 P= 2.203134 Days $T_0=132.544119$ (BKJD)



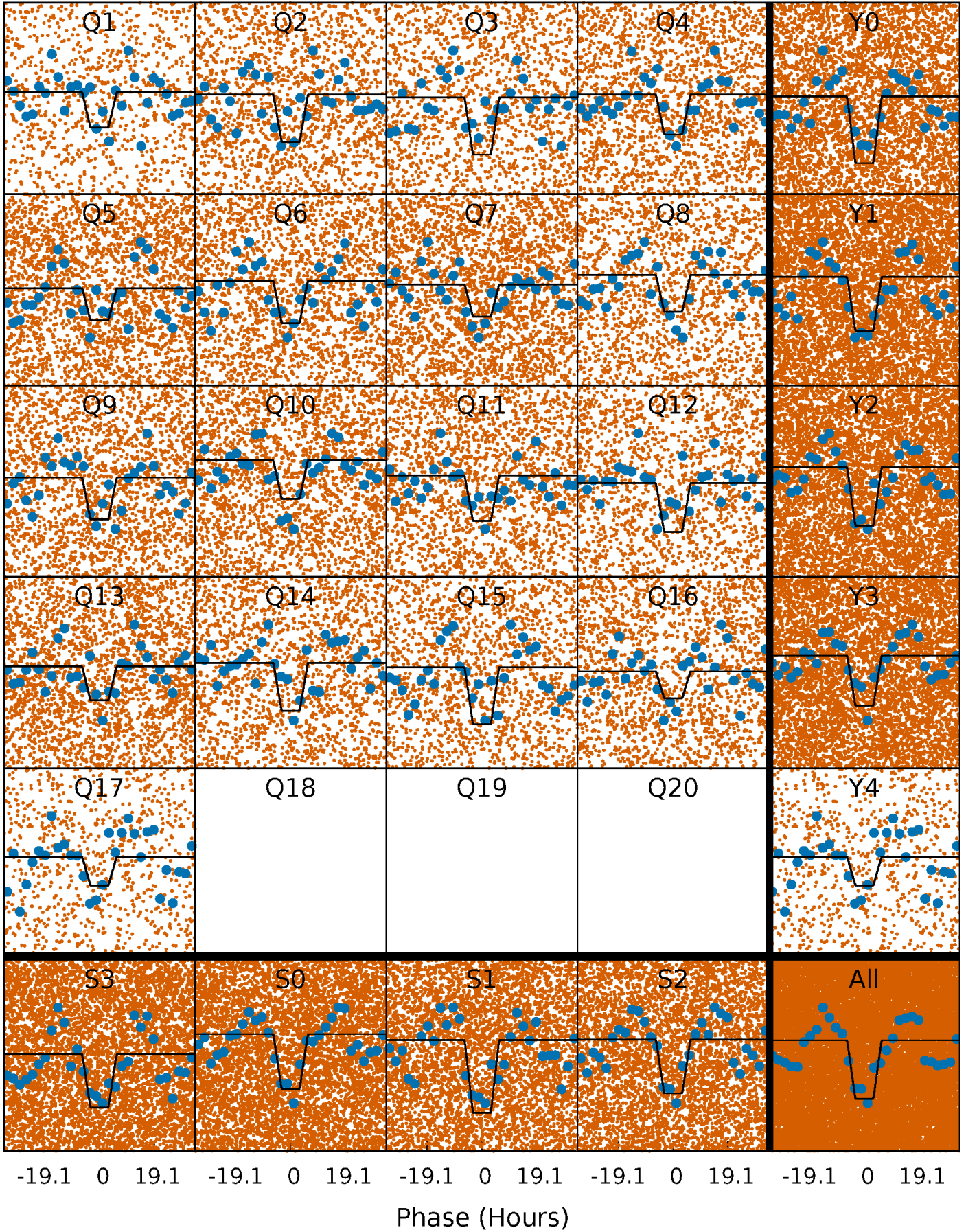
DV Quarter-Phased Transit Curves

TCE 008161825-01 P= 2.203134 Days $T_0=132.544119$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

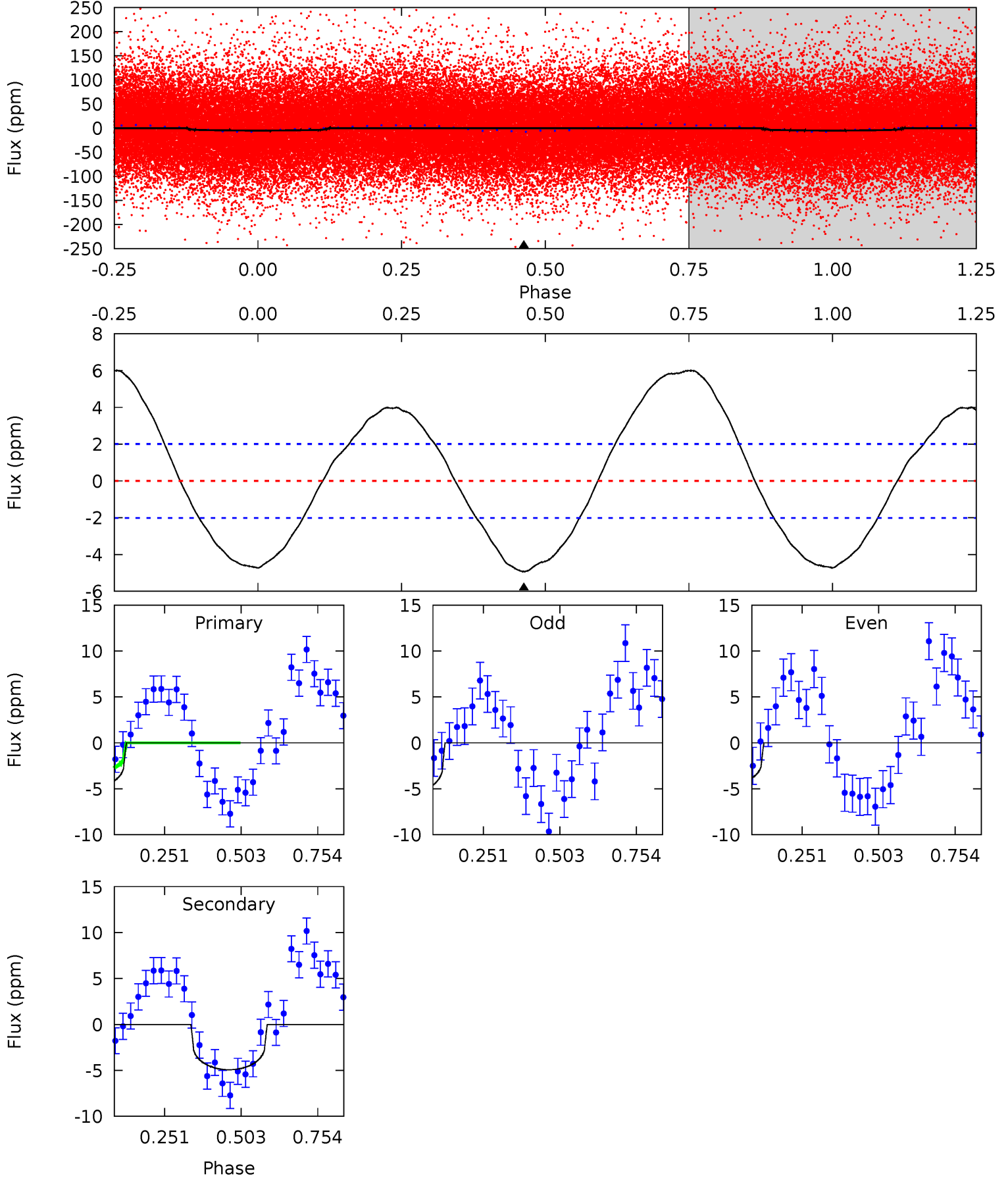
TCE 008161825-01 P= 2.202962 Days $T_0=132.541940$ (BKJD)



DV Model-Shift Uniqueness Test

008161825-01, P = 2.203134 Days, E = 130.340985 Days

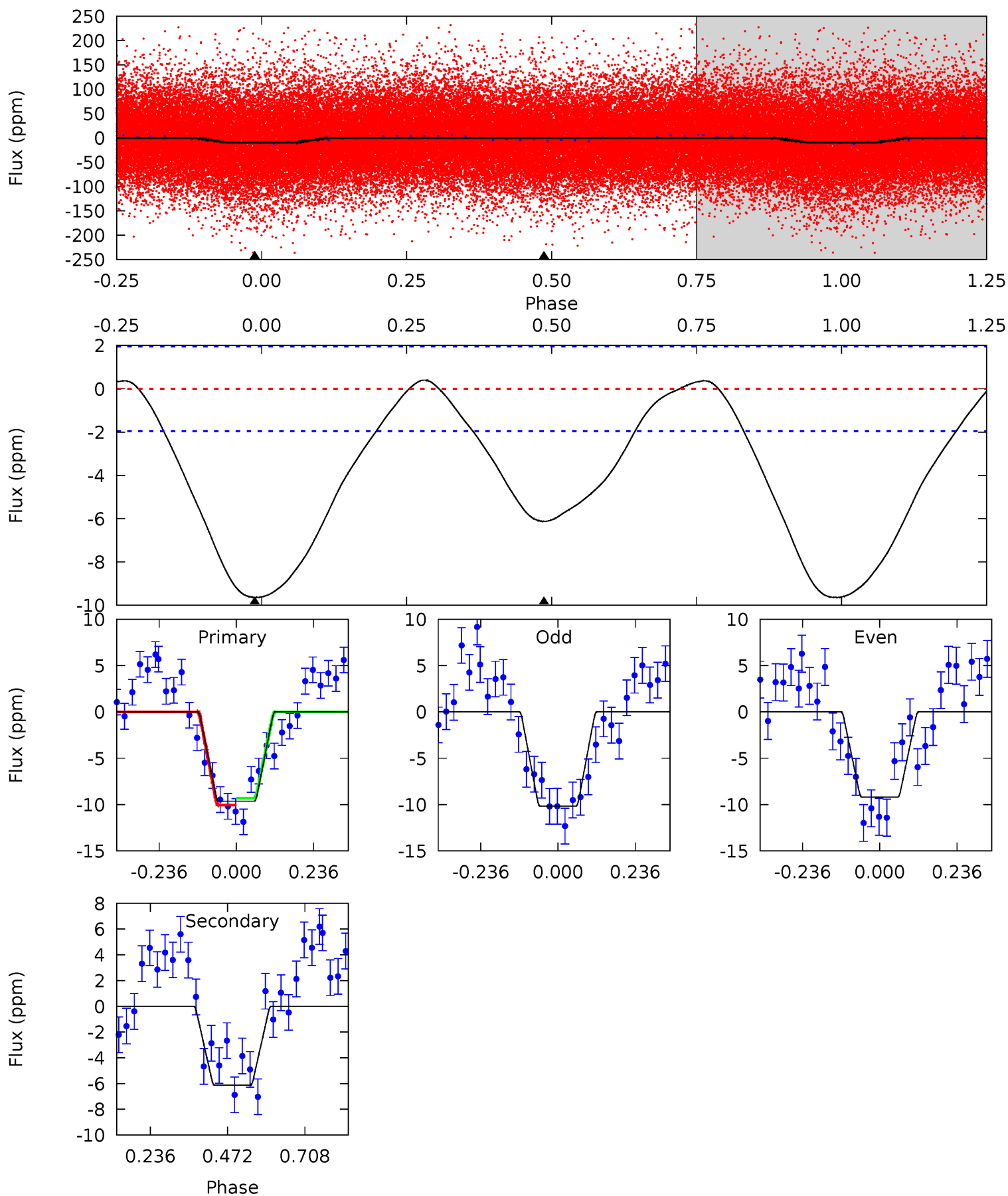
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.7	10.7	0	0	4.37	1.15	7.87	10.7	10.7	10.7	10.7	0.98	1.19	0.55	3.84



Alt Model-Shift Uniqueness Test

008161825-01, P = 2.202962 Days, E = 130.338978 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
21.6	13.7	0	0	4.38	1.19	1.11	21.6	21.6	13.7	13.7	1.09	1.09	0.04	0.82



Stellar Parameters For KIC 008161825

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (g \cdot \text{cm}^{-3})$
	5902^{+70}_{-88}	$4.439^{+0.063}_{-0.117}$	$-0.100^{+0.150}_{-0.150}$	$0.989^{+0.143}_{-0.077}$	$0.981^{+0.056}_{-0.063}$	$1.426^{+0.347}_{-0.475}$
	+1%/-1%	+1%/-3%	+150%/-150%	+14%/-8%	+6%/-6%	+24%/-33%
Source	SPE68	SPE68	SPE68	DSEP		

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

Secondary Eclipse Parameters for KIC 008161825-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-5 ± 0	$0.31^{+0.22}_{-0.18}$	2001^{+74}_{-55}	5282^{+2871}_{-1068}	30^{+128}_{-20}
Alt.	-6 ± 0	$0.37^{+0.24}_{-0.21}$	2000^{+80}_{-59}	5064^{+2686}_{-886}	26^{+110}_{-16}

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

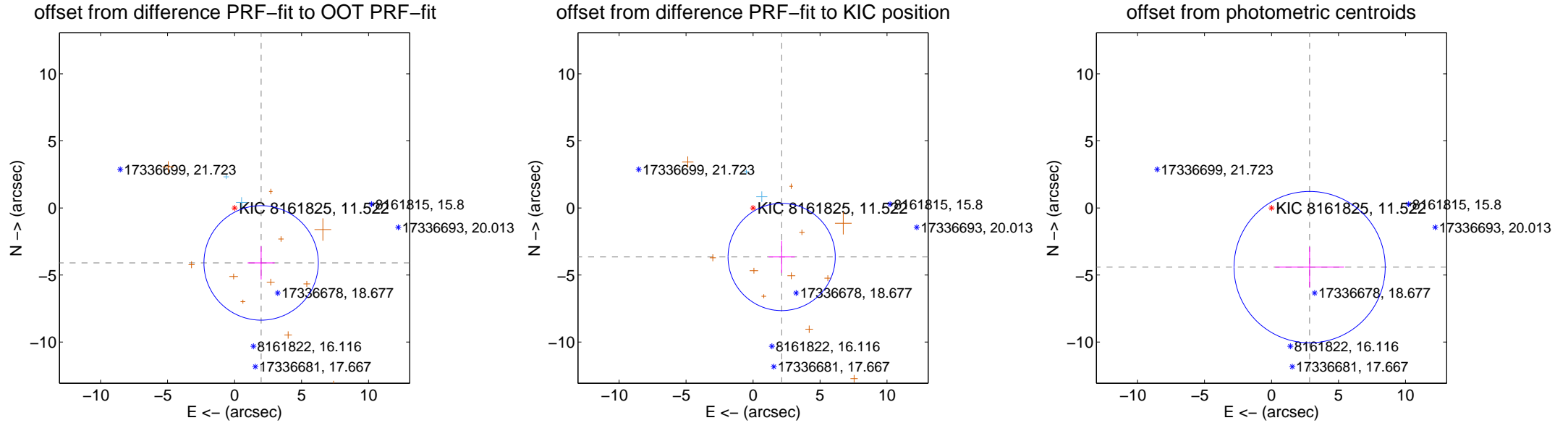
DV Centroid Data

Supplemental centroid analysis for 008161825-01. **Kepler magnitude: 11.52.** Transit SNR 9.23

There are 2 quarters with good PRF difference image offsets

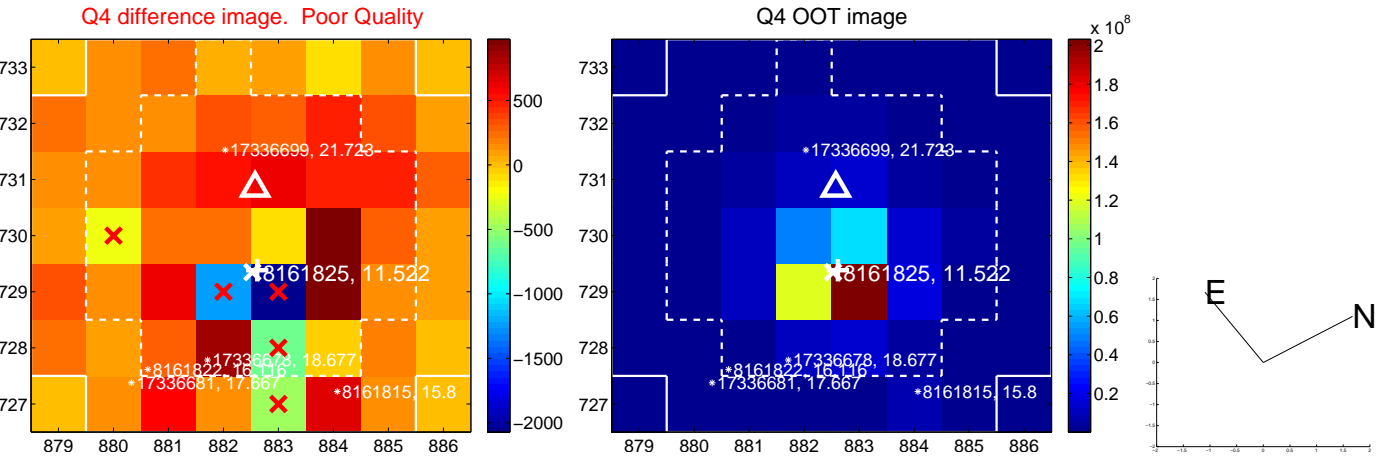
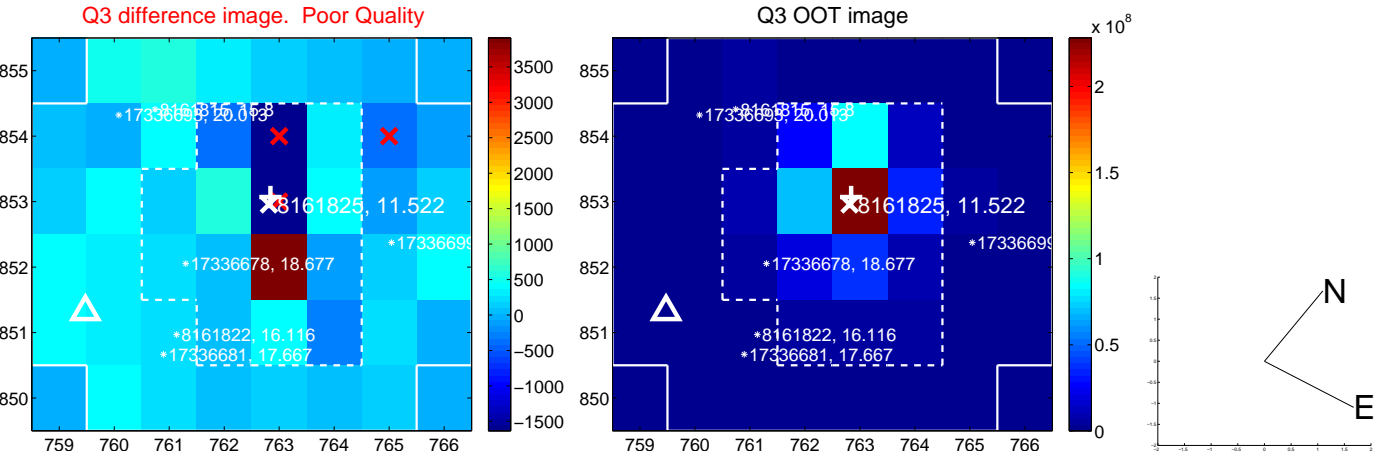
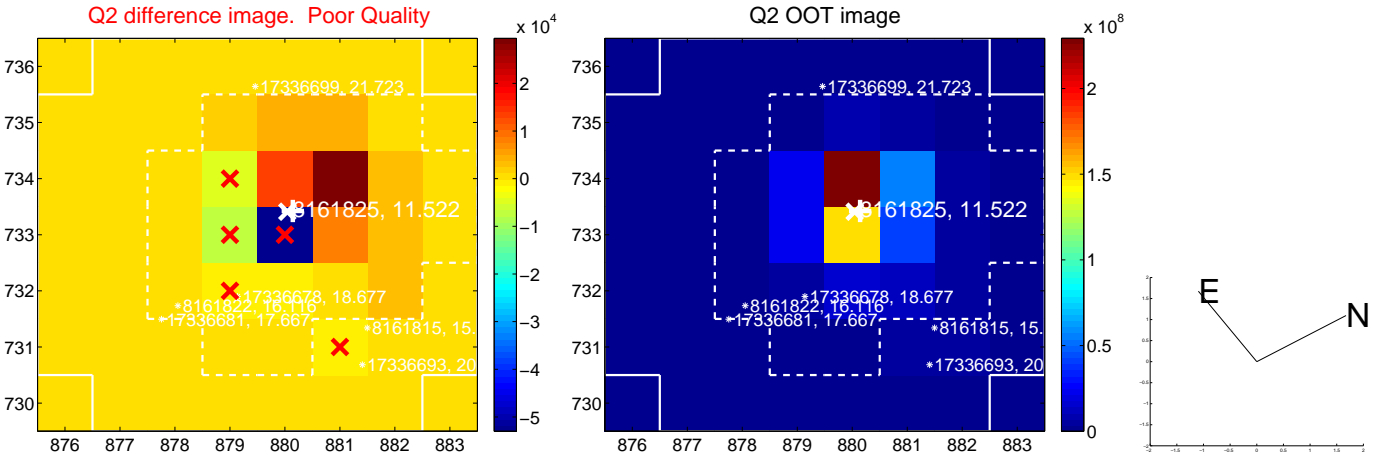
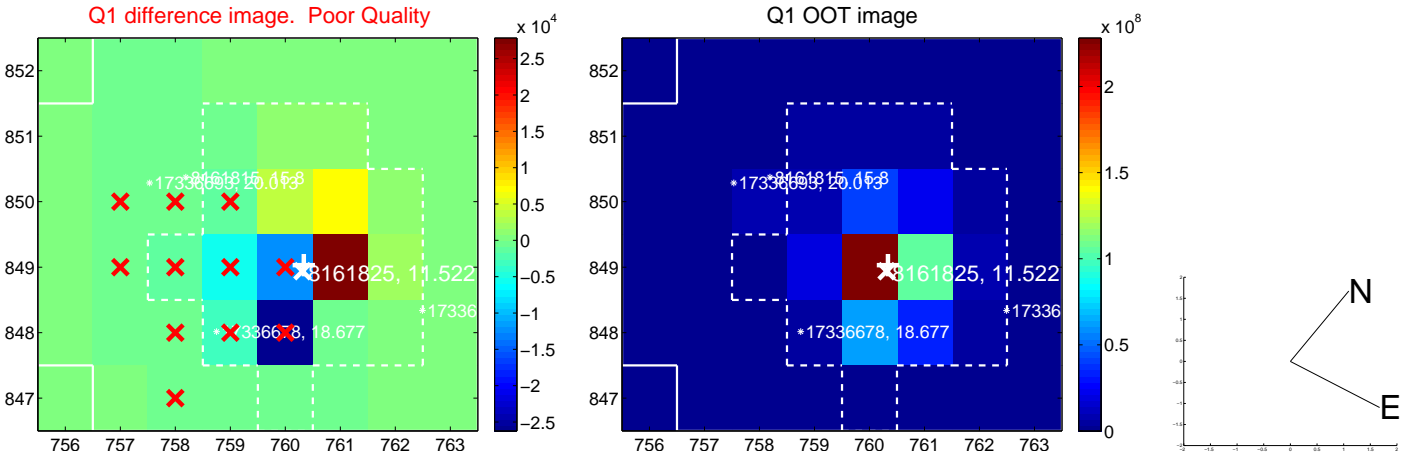
The direct PRF centroid is offset from the target star catalog position by about 0.56 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	4.553 ± 1.423	3.20	-1.982 ± 1.009	-4.099 ± 1.236
PRF-fit source offset from KIC position	4.233 ± 1.334	3.17	-2.136 ± 0.983	-3.655 ± 1.194
photometric centroid source offset	5.25 ± 1.88	2.79	-2.84 ± 2.57	-4.41 ± 1.50

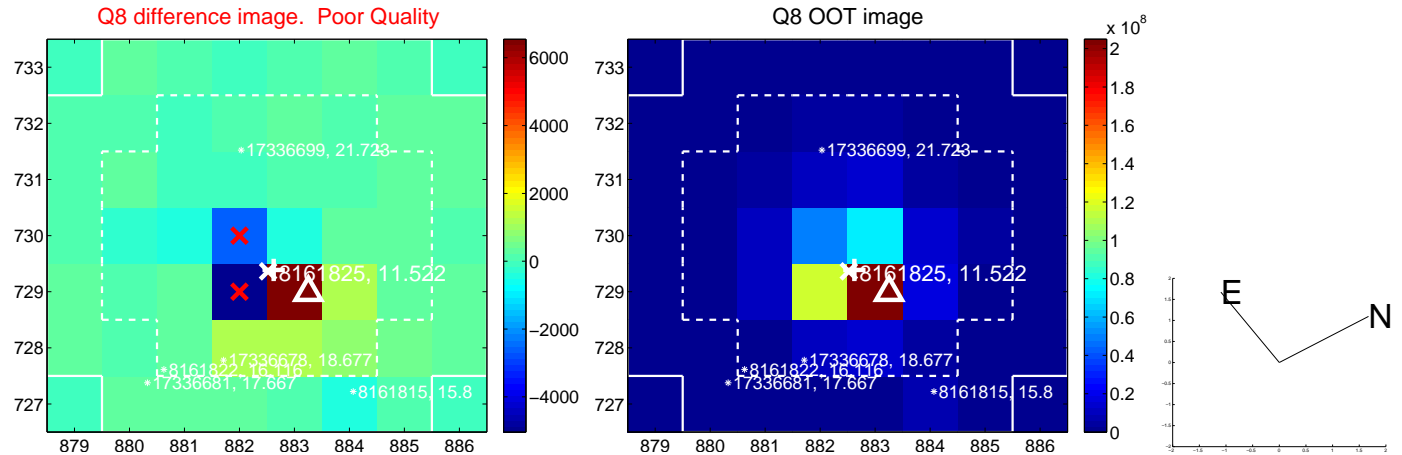
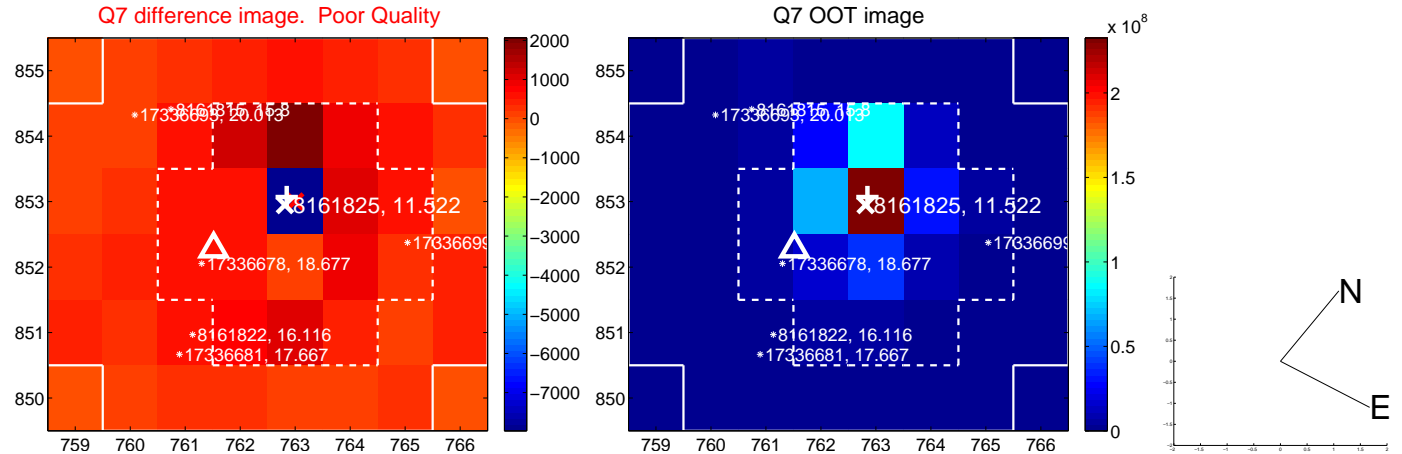
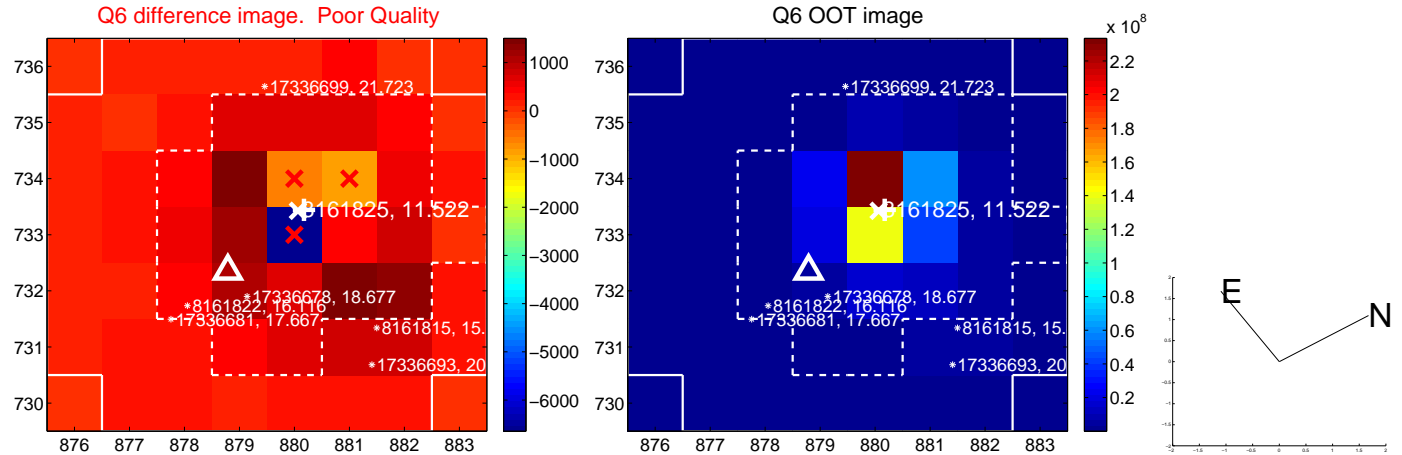
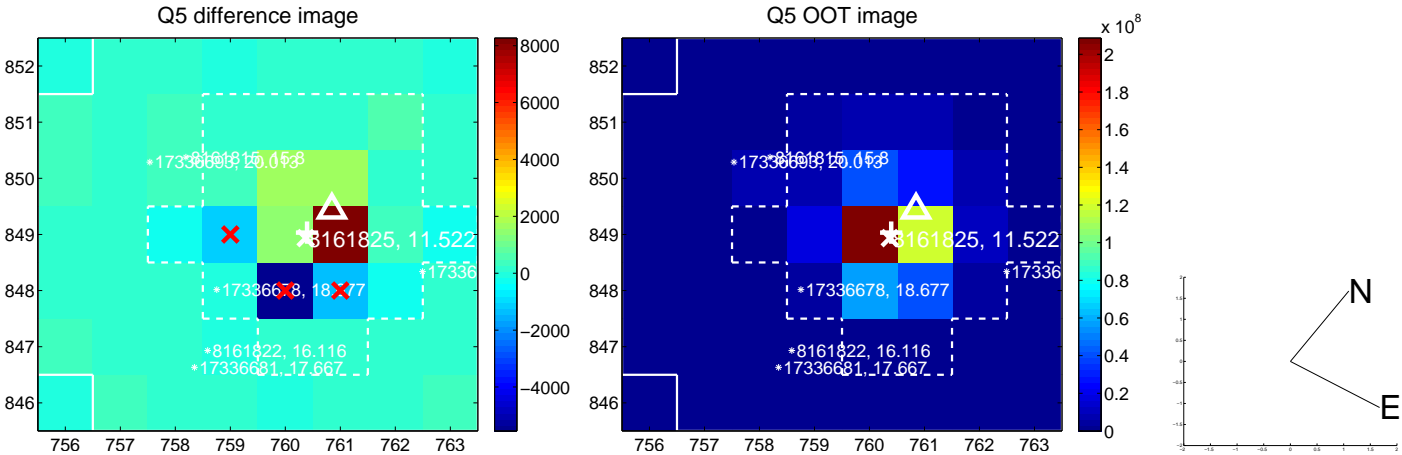


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

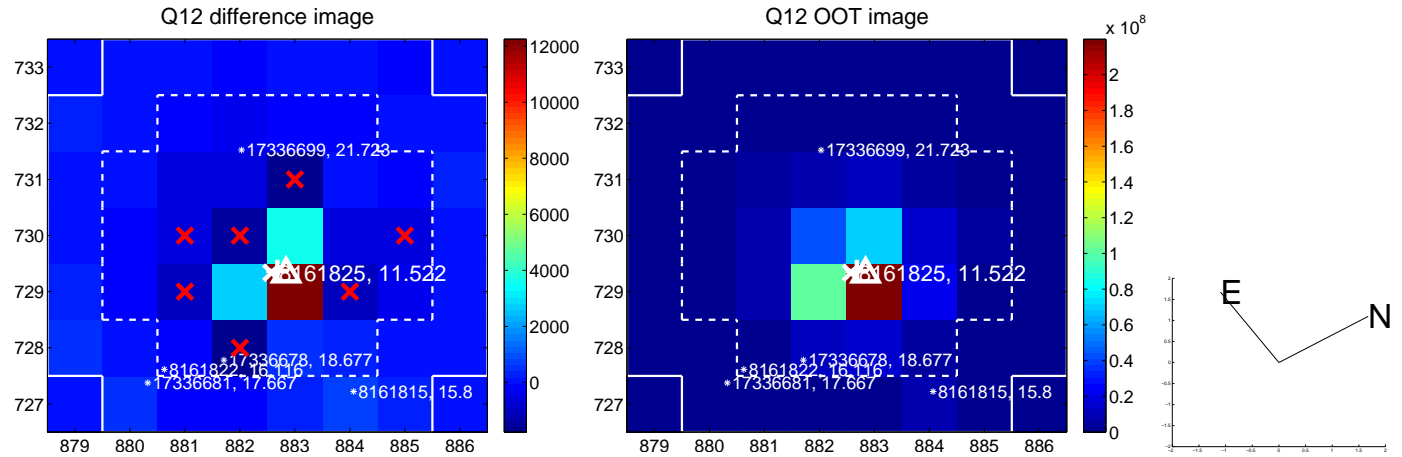
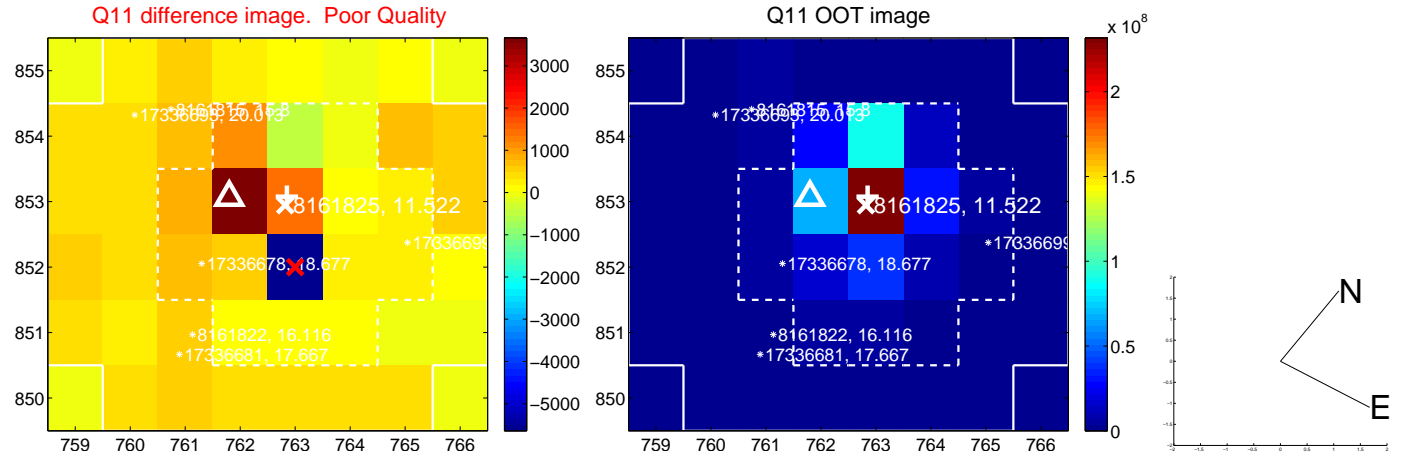
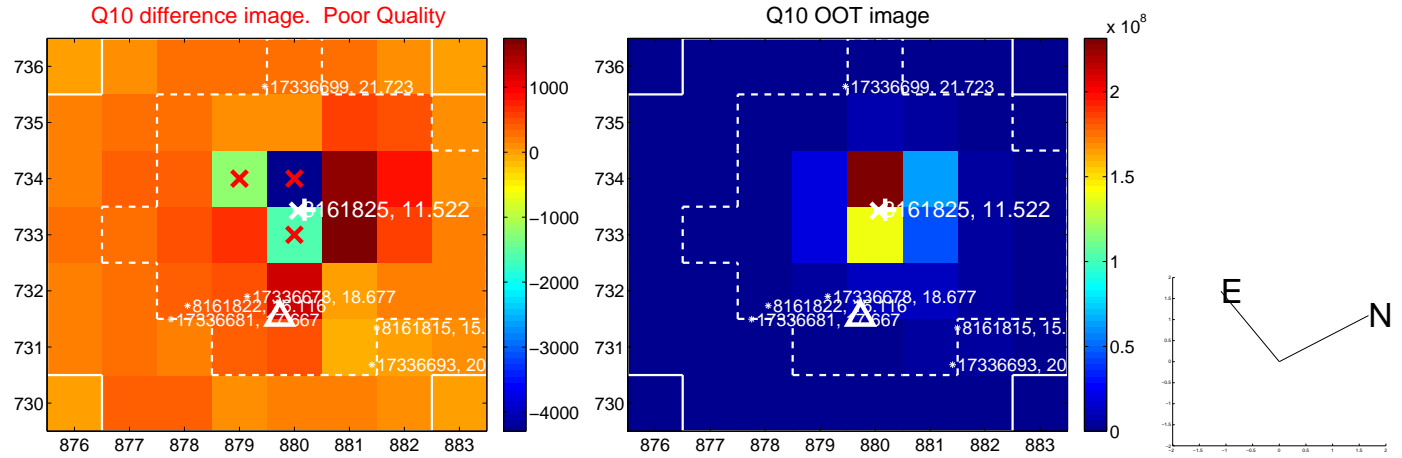
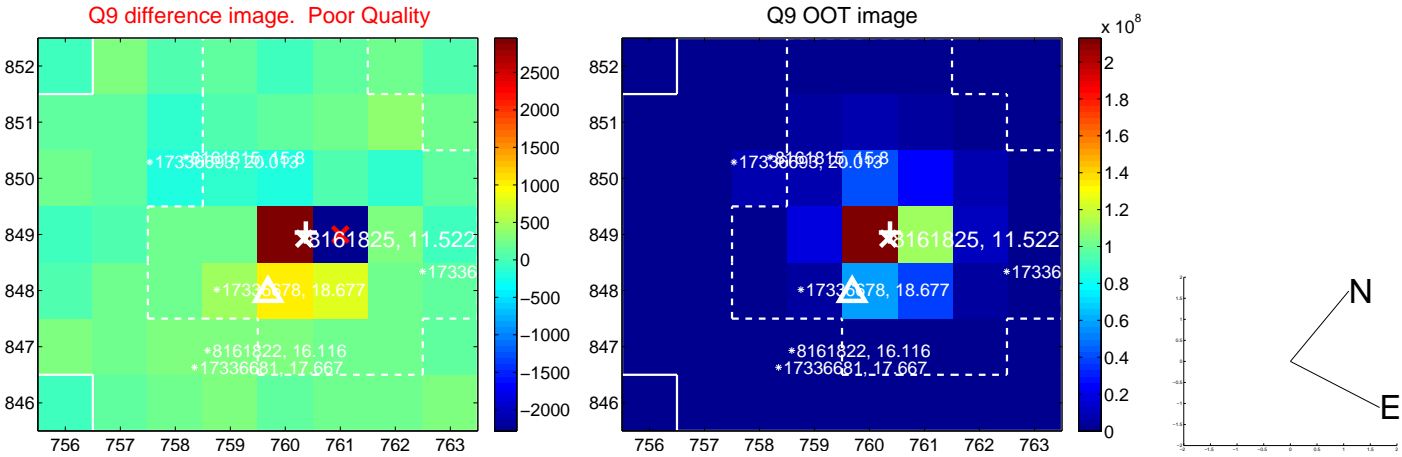
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



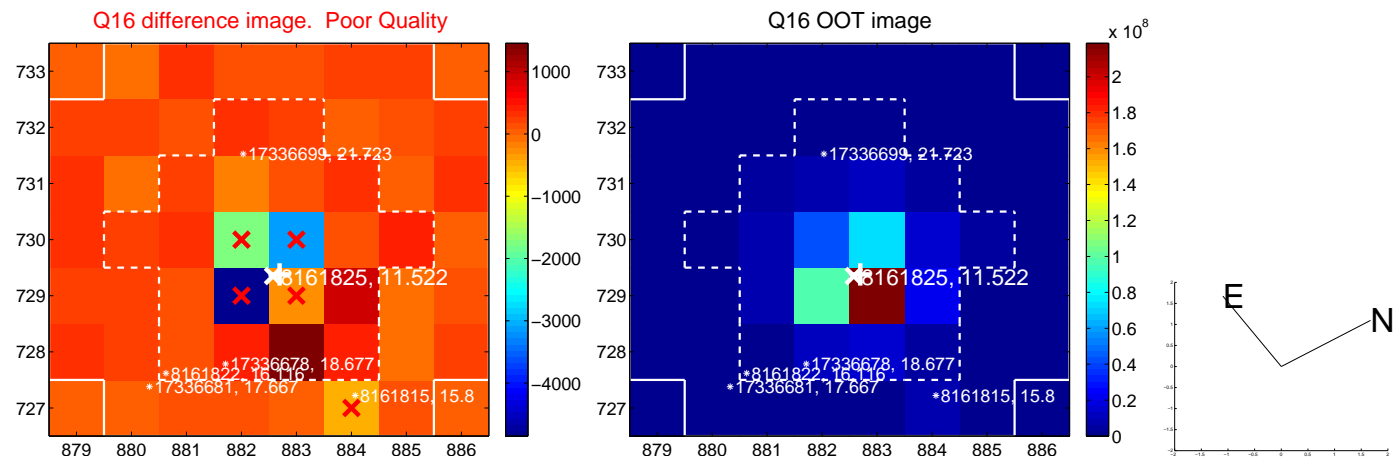
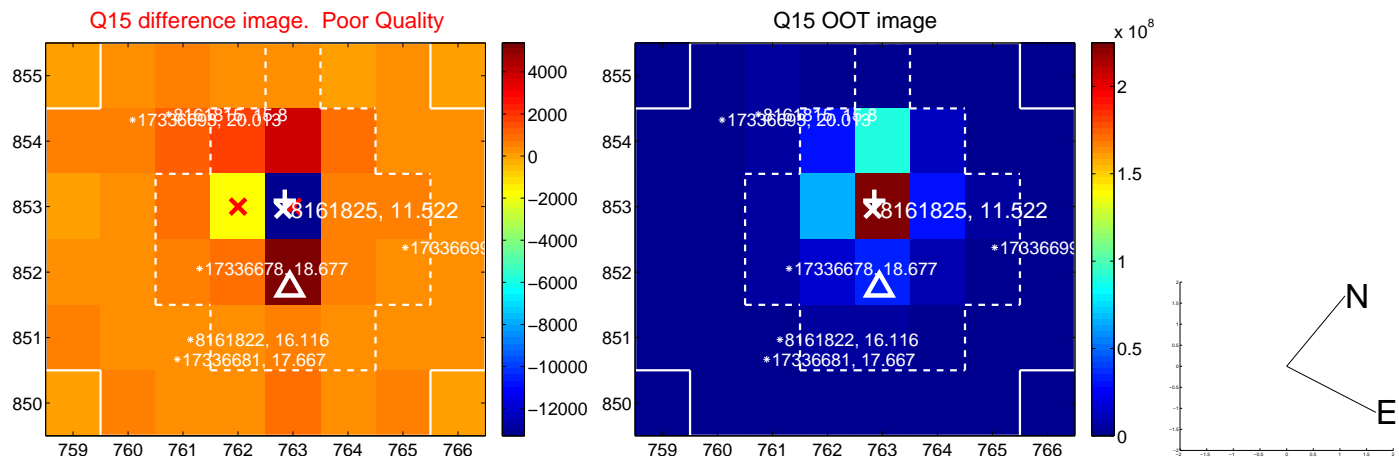
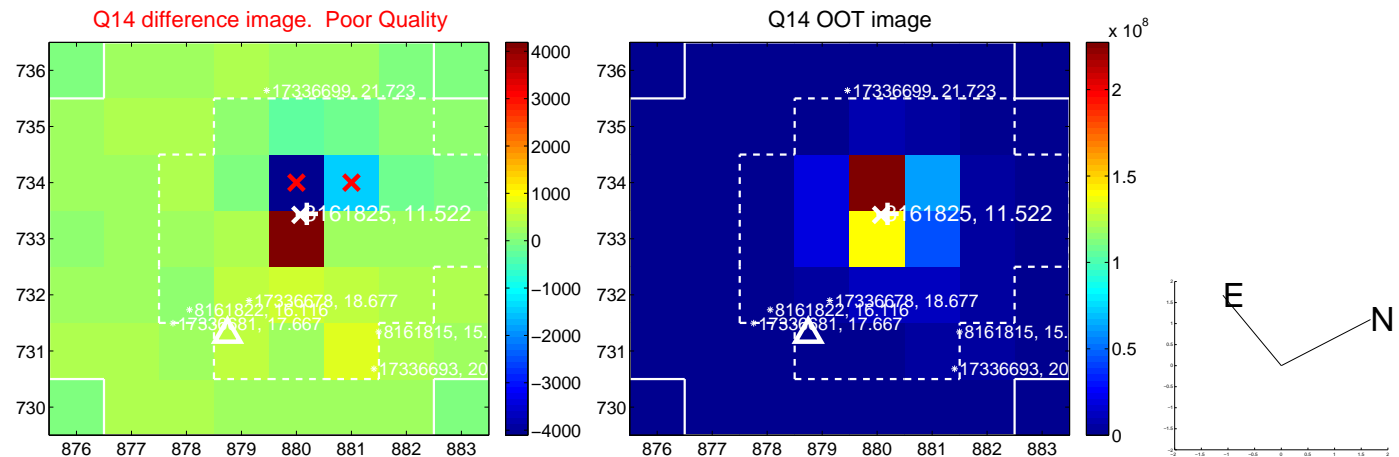
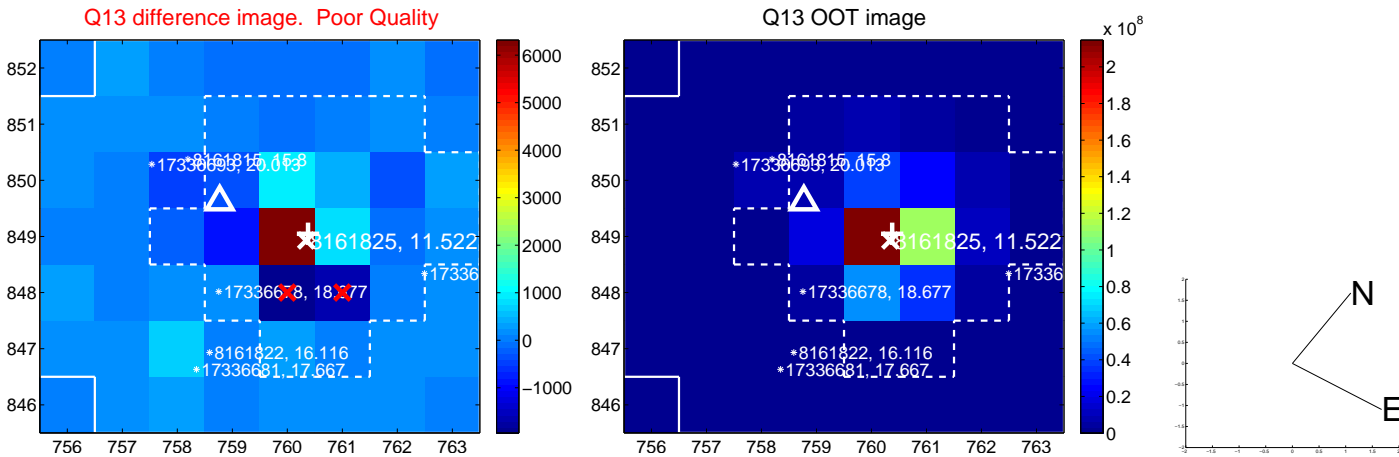
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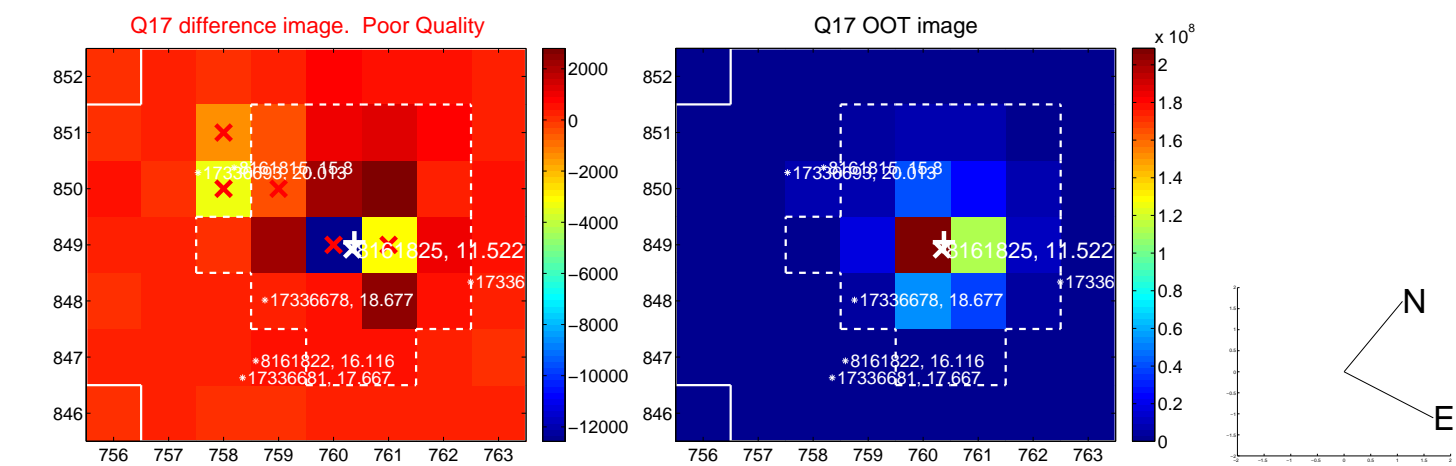
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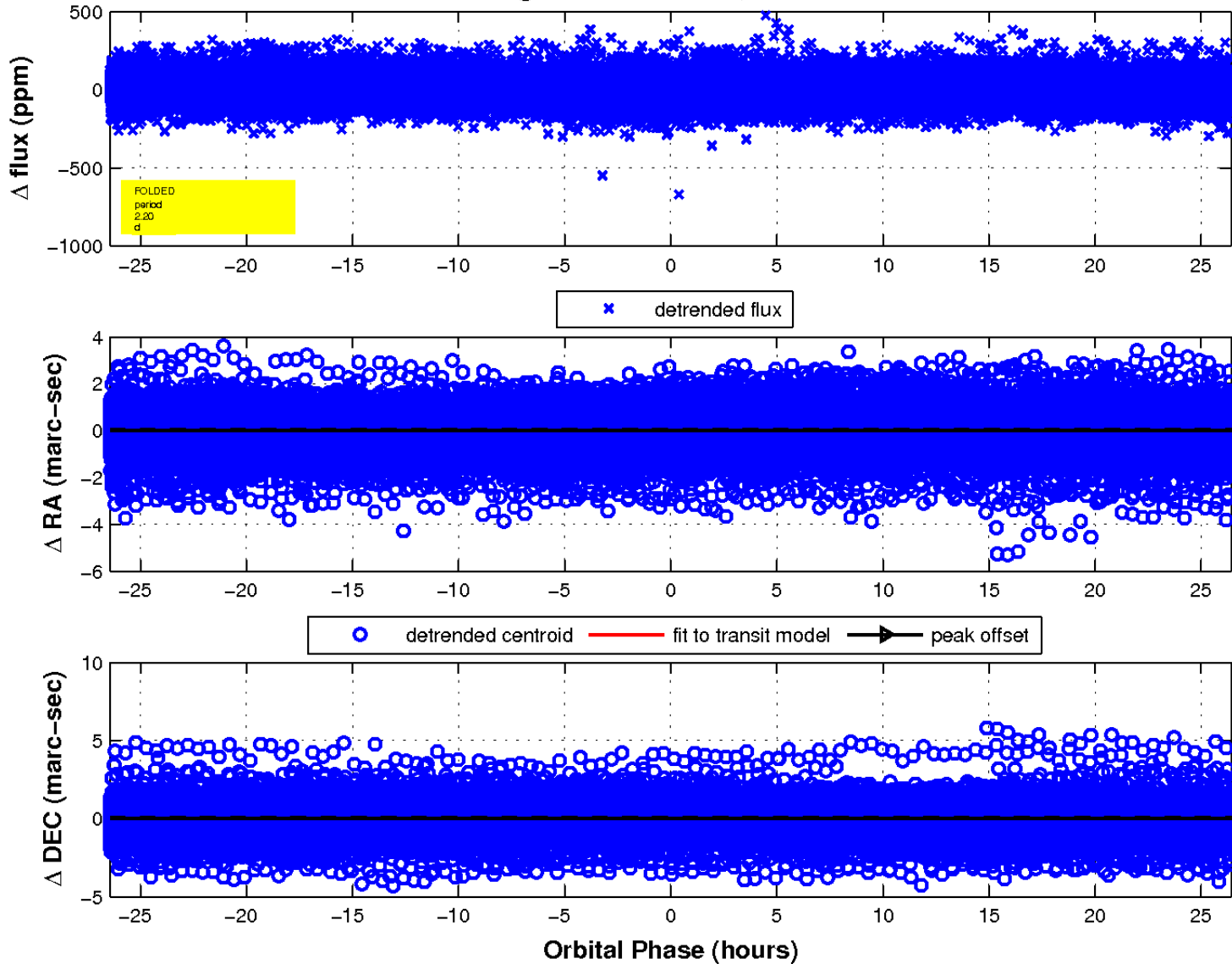
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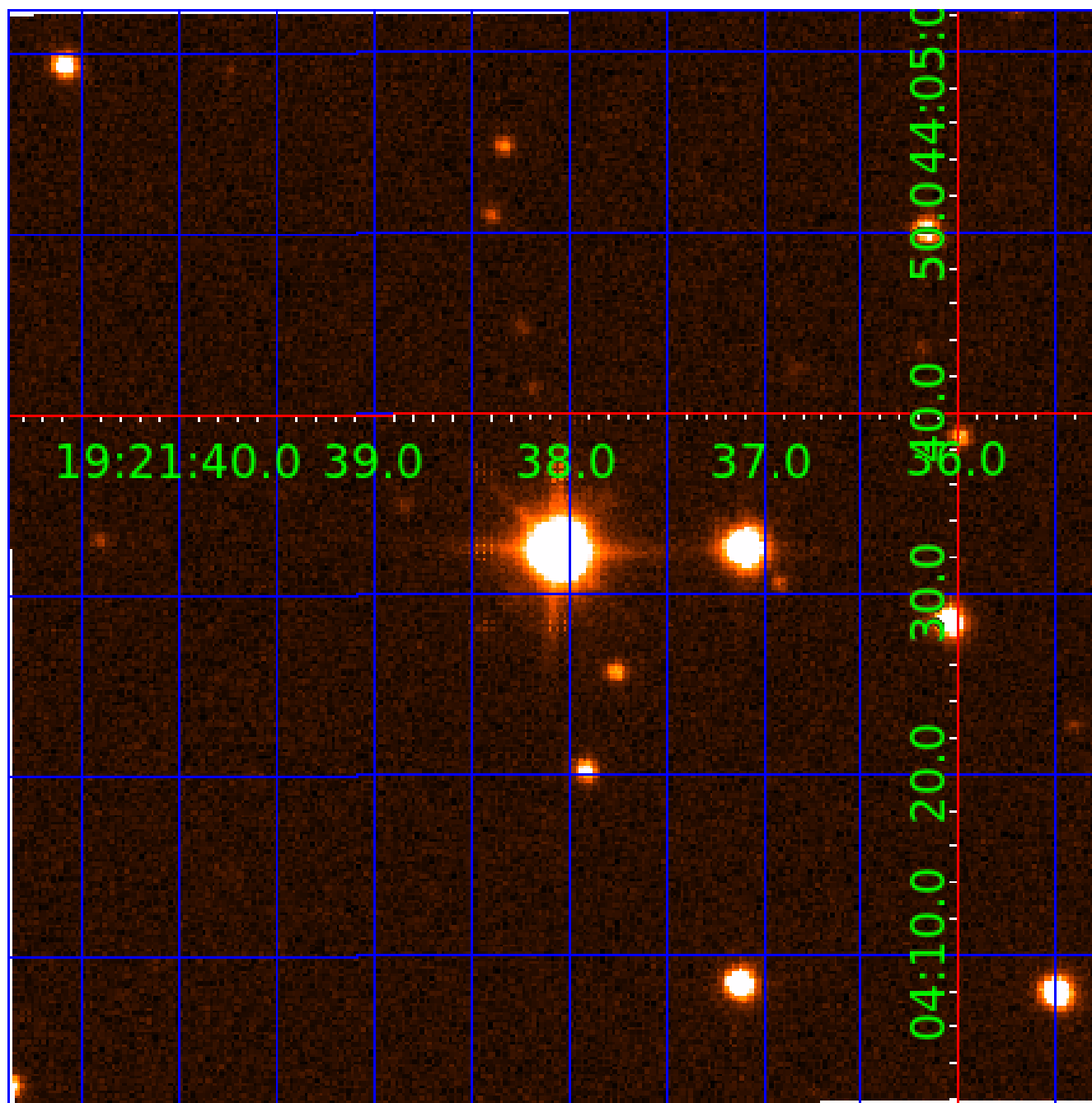


fluxWeightedCentroids, Planet 1 of 4



UKIRT Image

Declination



KIC 008161825

Q1-17 DR25 TCE Parameters

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Robovetter Results

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008161825-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_MEAS

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

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

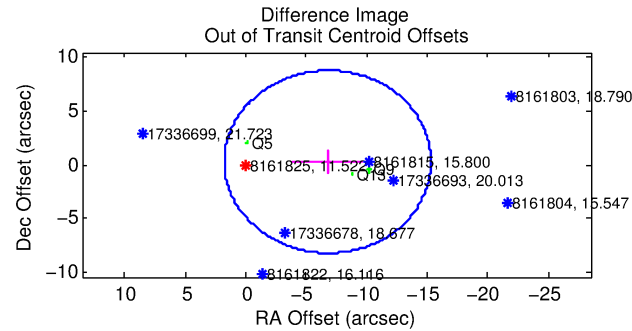
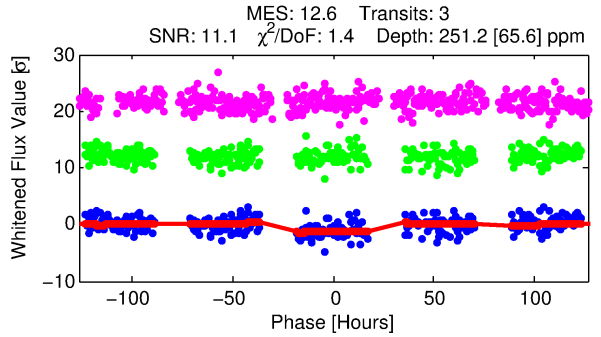
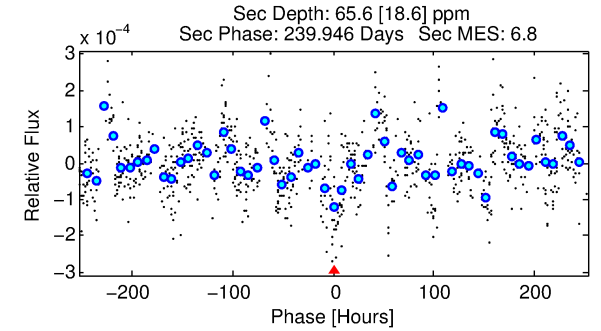
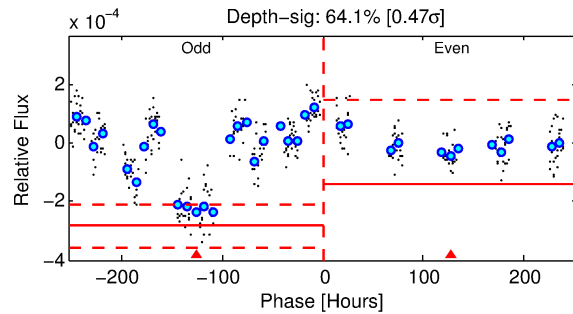
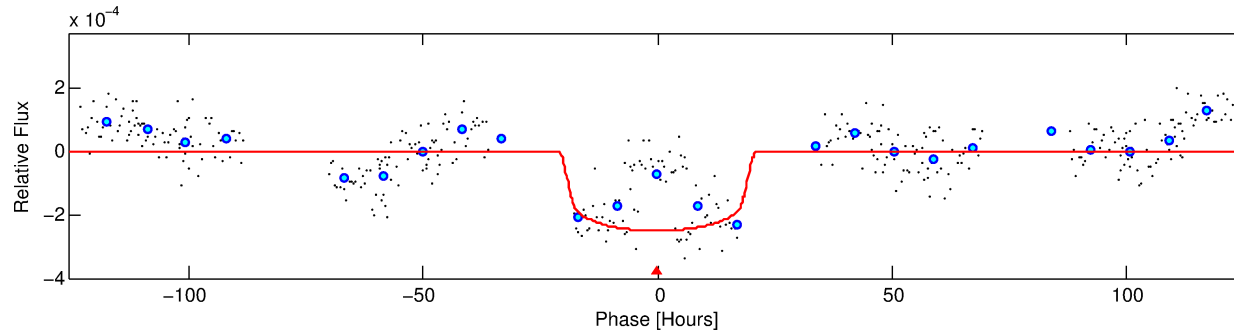
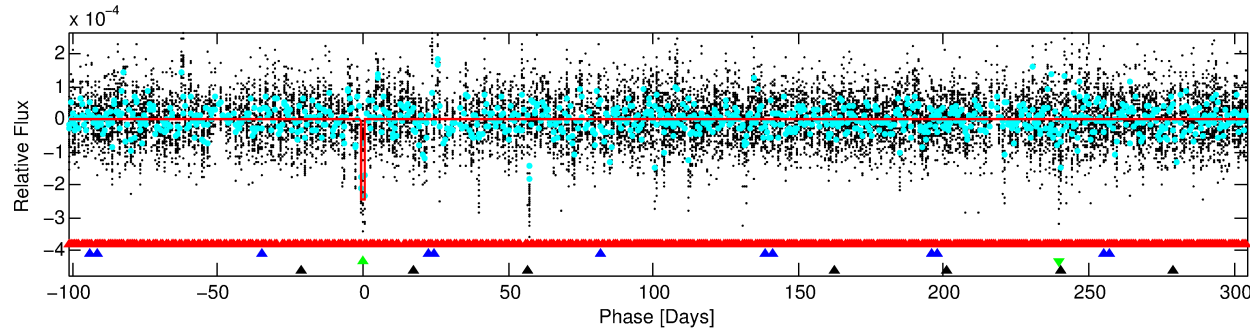
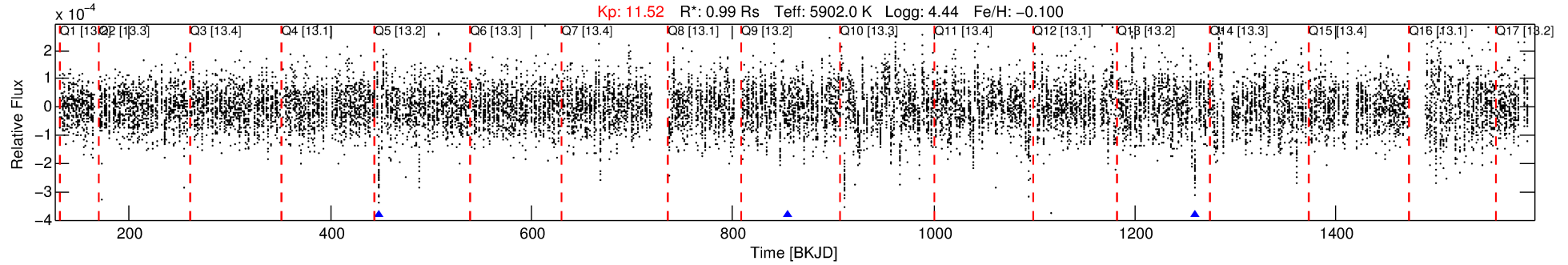
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008161825-03

No Significant Match Found

DV One-Page Summary

KIC: 8161825 Candidate: 3 of 4 Period: 405.822 d



DV Fit Results:

Period = 405.82175 [0.32620] d
Epoch = 448.2622 [0.4544] BKJD
Rp/R* = 0.0171 [0.0095]
a/R* = 35.63 [89.26]
b = 0.90 [0.52]
Seff = 0.94 [0.20]
Teq = 251 [13] K
Rp = 1.85 [1.05] Re
a = 1.0659 [0.1404] AU
Ag = 12034.67 [13964.94] [0.86 σ]
Teff = 4061 [1161] K [3.28 σ]

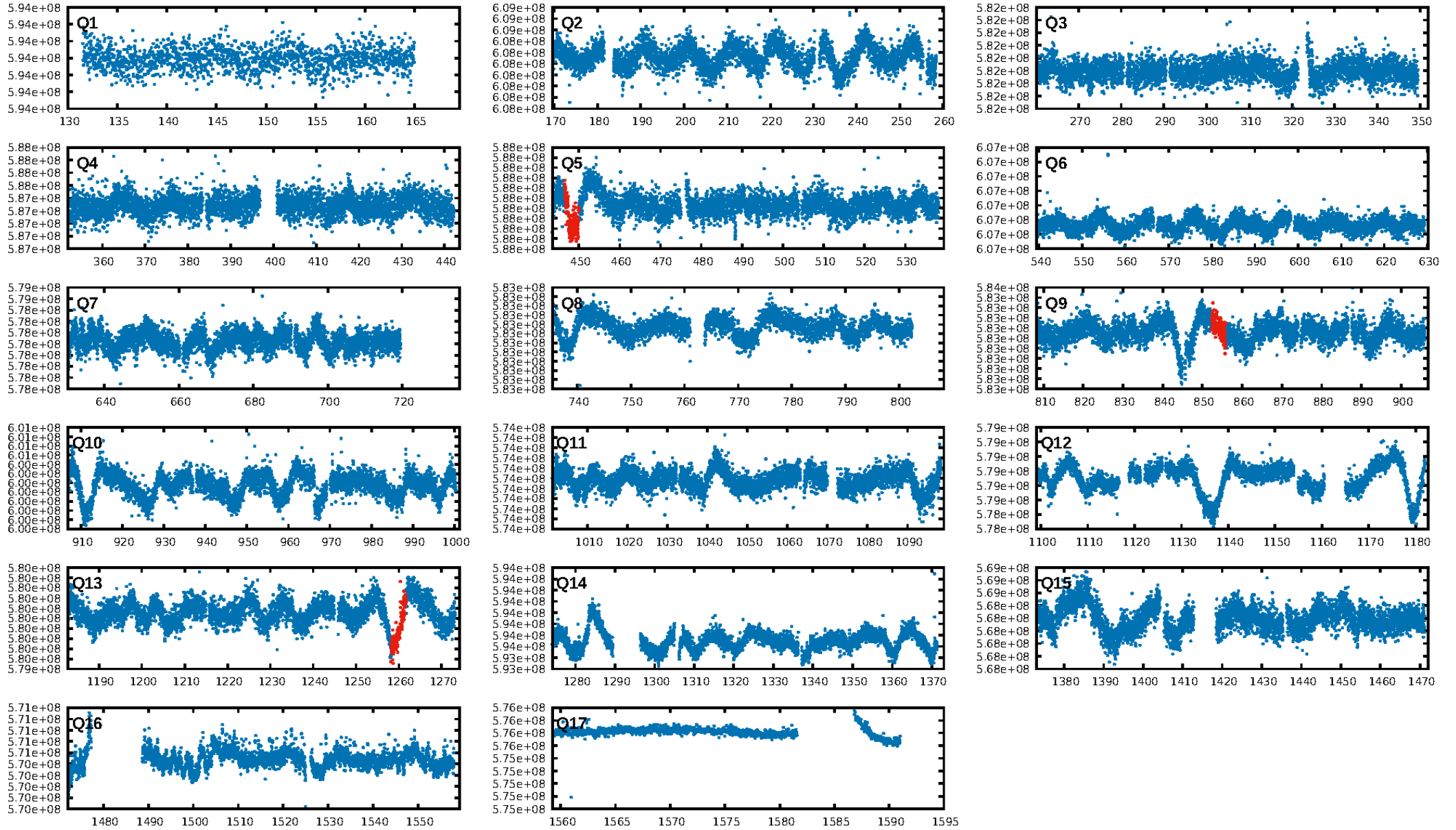
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [89.75 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 0.6%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 2.91e-15
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 0.2826
Centroid-sig: 1.8%
Centroid-so: 0.488 arcsec [0.58 σ]
OotOffset-rm: 6.779 arcsec [2.38 σ]
KicOffset-rm: 6.953 arcsec [1.98 σ]
OotOffset-st: 0/0/0/3 [3]
KicOffset-st: 0/0/0/3 [3]
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DiffImageOverlap-fno: 0.00 [0/3]

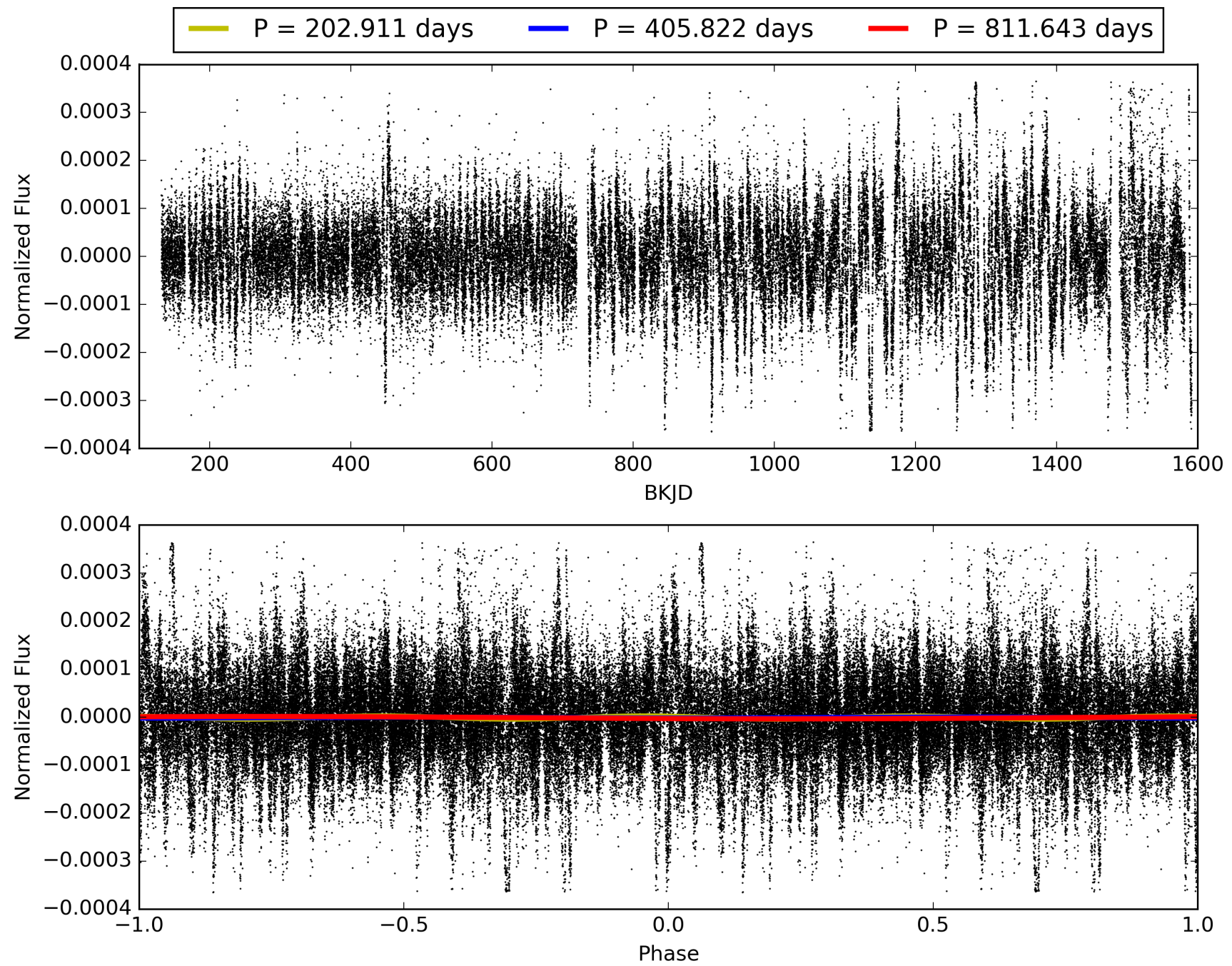
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 008161825-03, PDC Light Curves

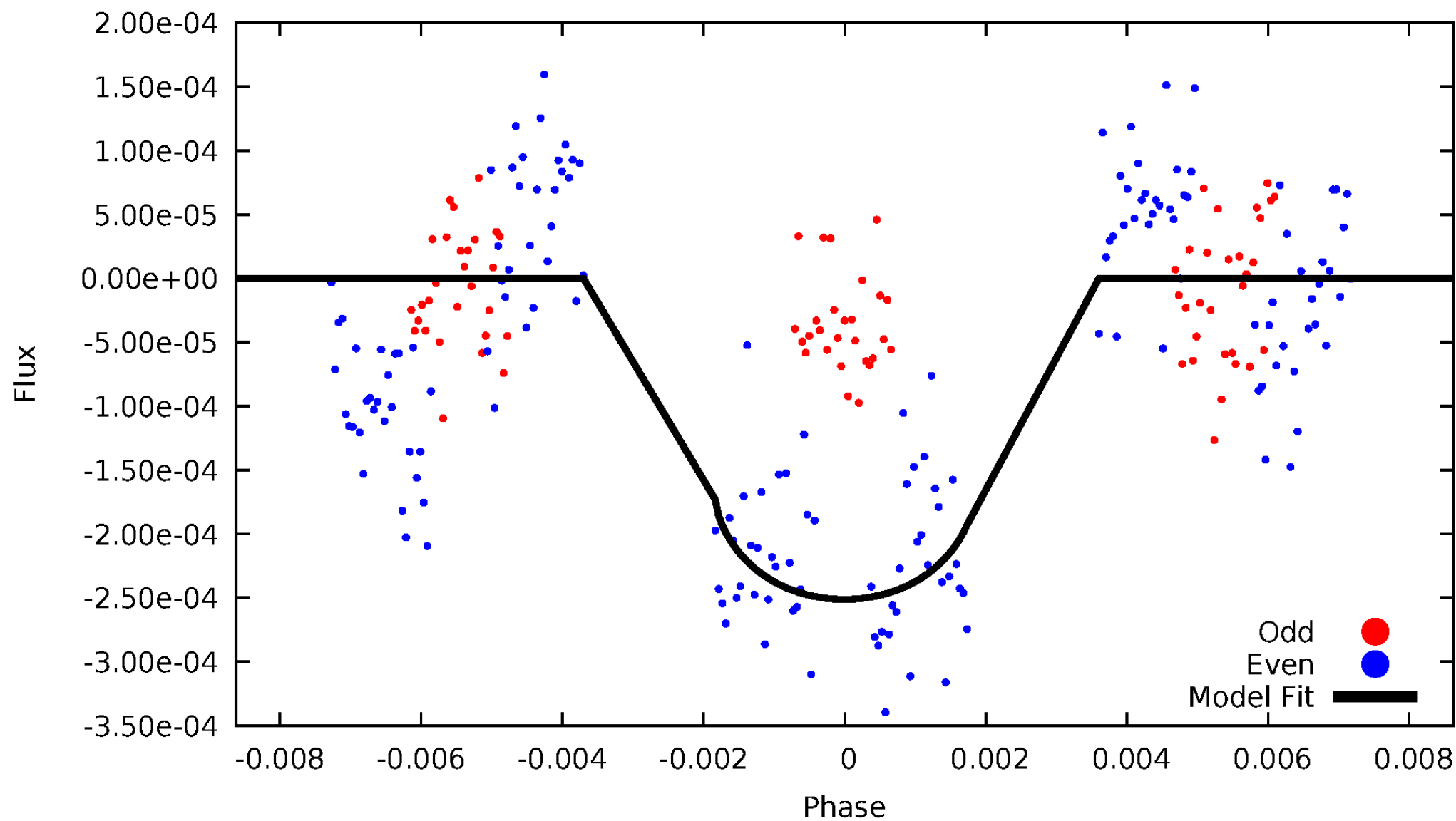


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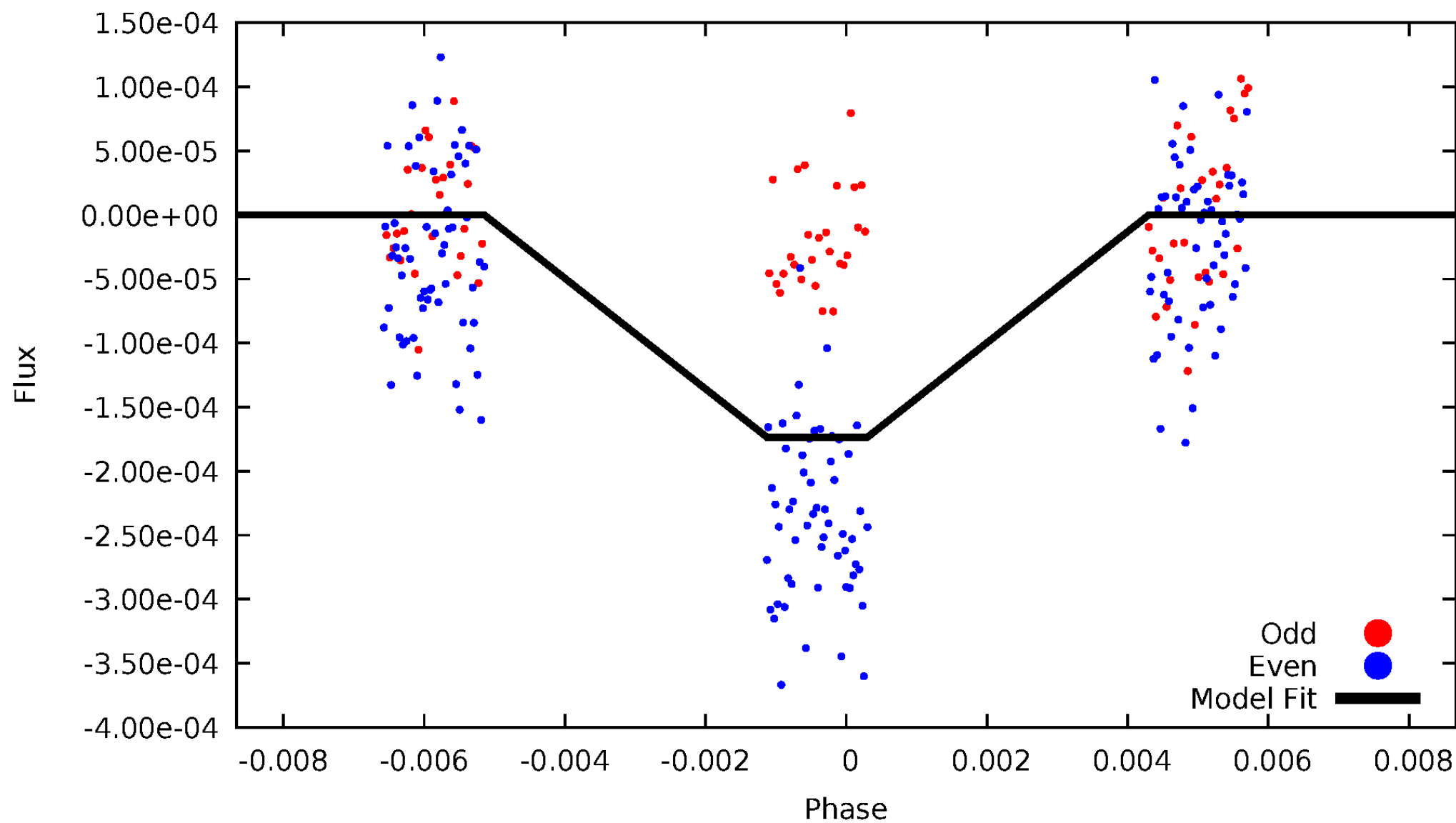
DV Odd/Even

TCE 008161825-03



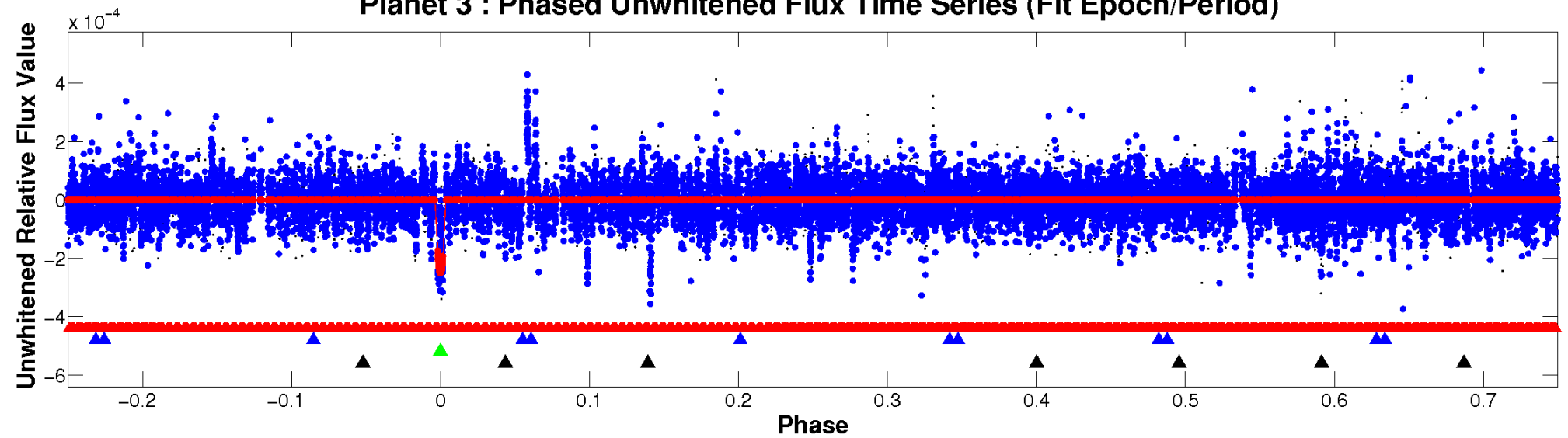
ALT Odd/Even

TCE 008161825-03

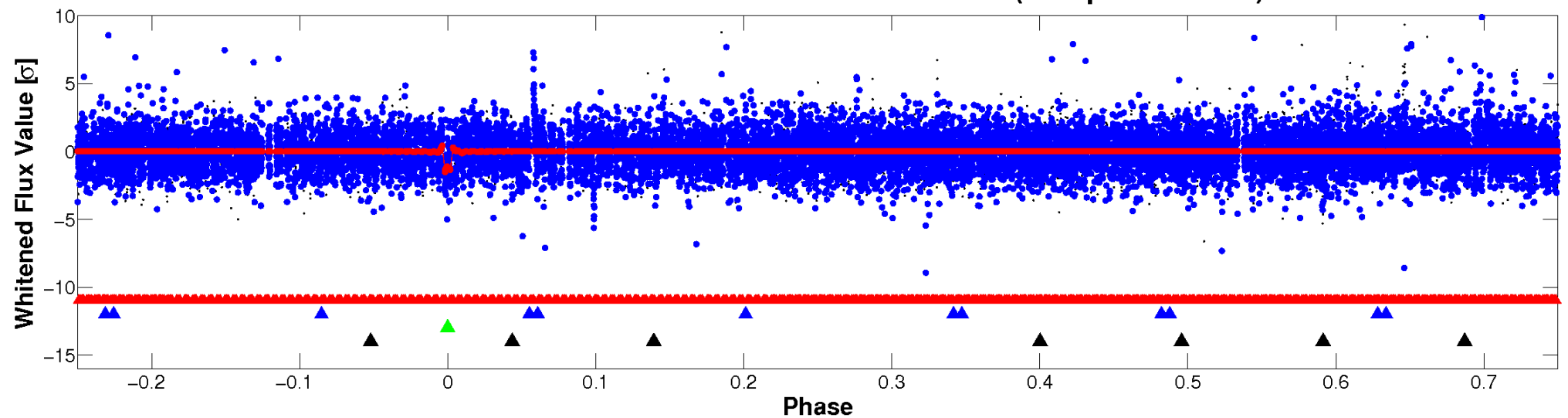


Non-Whitened Vs. Whitened Light Curve

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

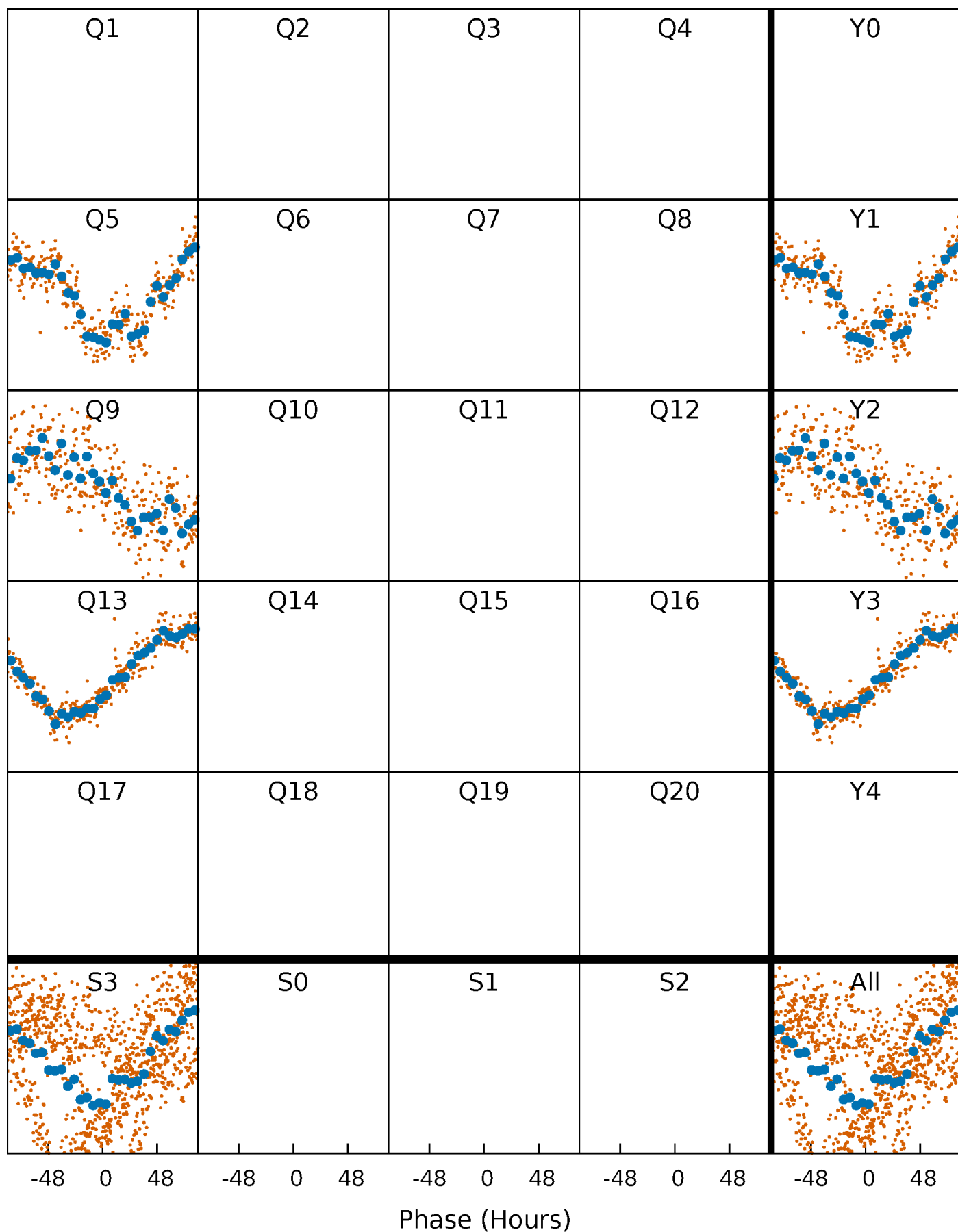


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



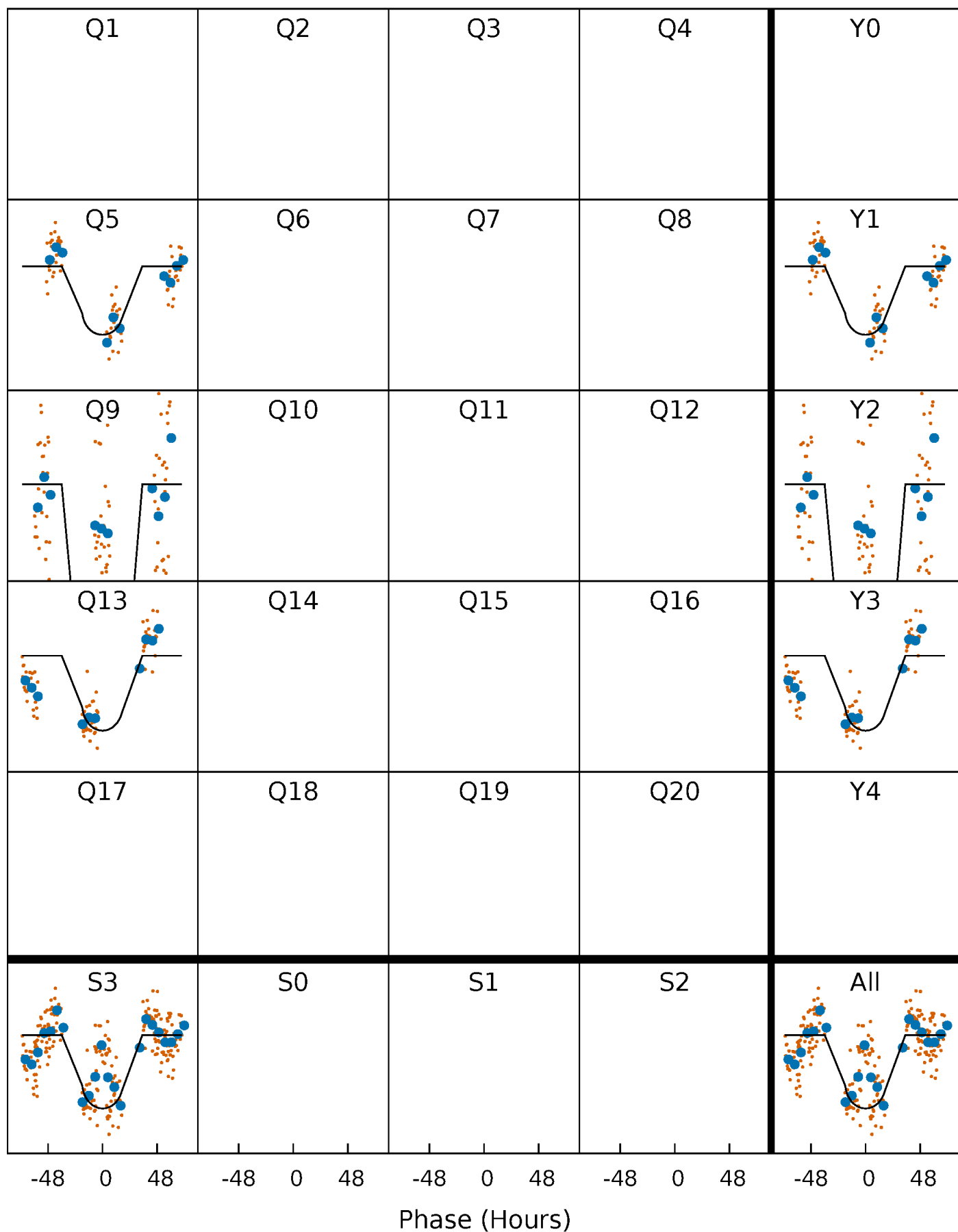
PDC Quarter-Phased Transit Curves

TCE 008161825-03 $P=405.821746$ Days $T_0=448.262203$ (BKJD)



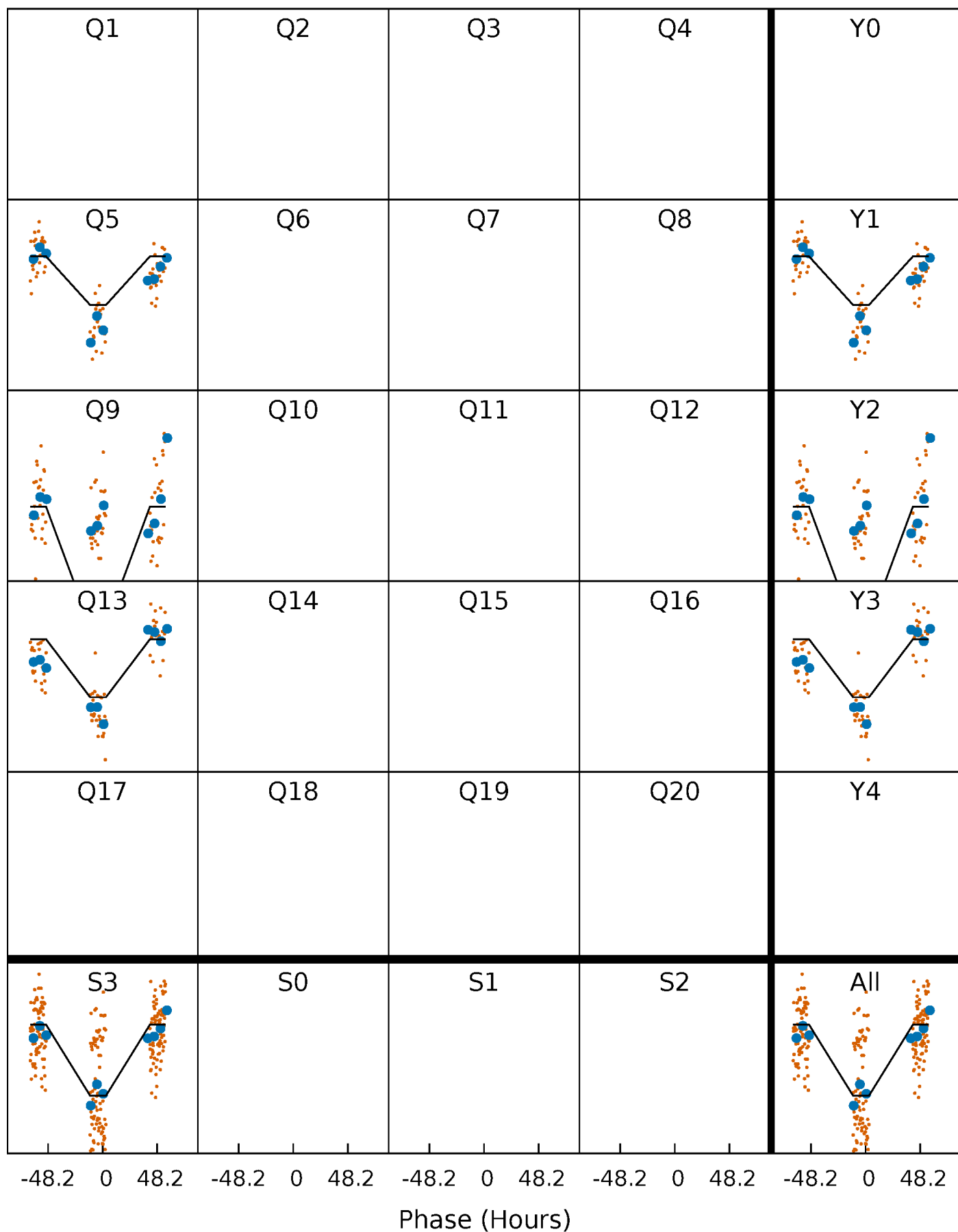
DV Quarter-Phased Transit Curves

TCE 008161825-03 $P=405.821746$ Days $T_0=448.262203$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

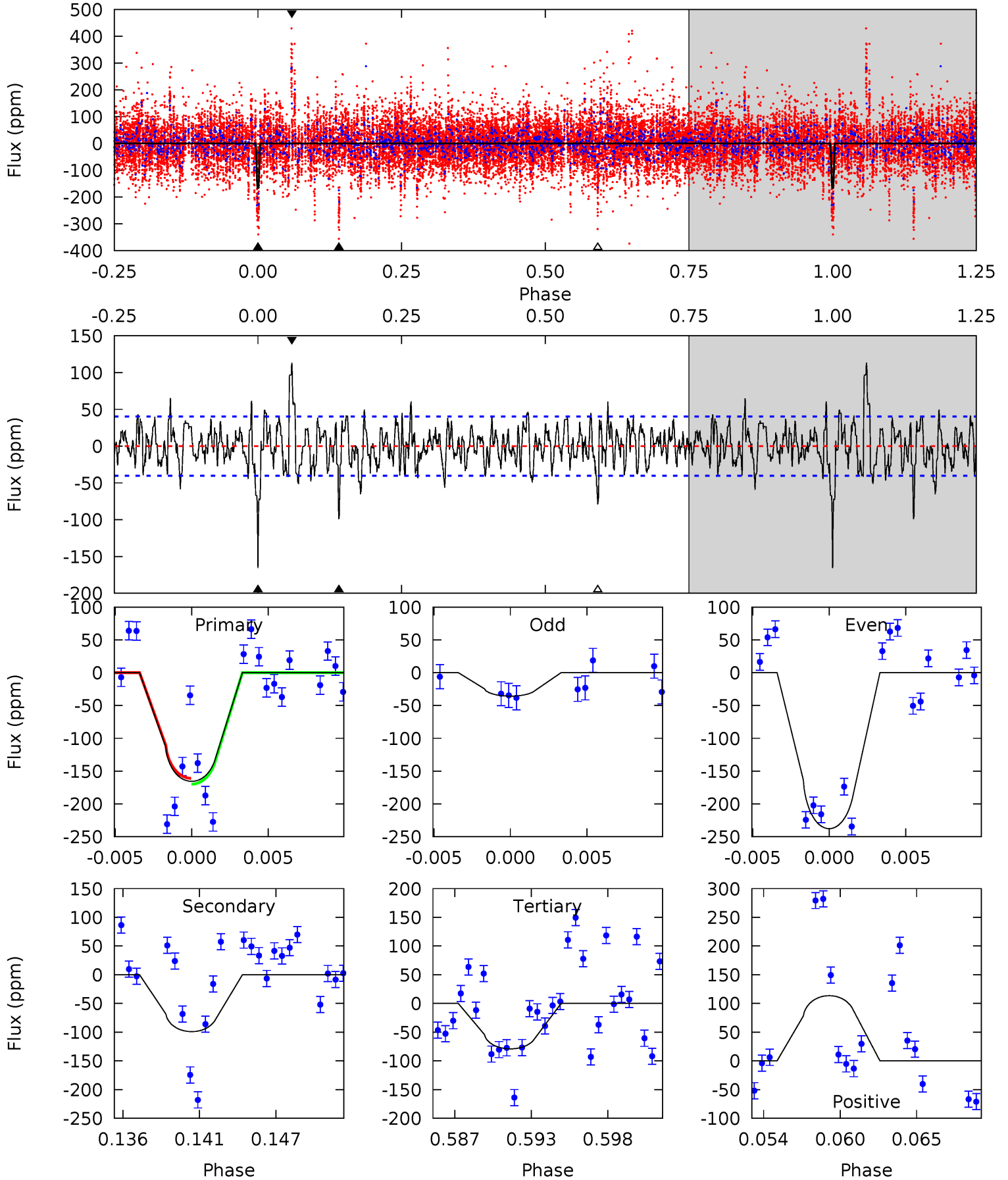
TCE 008161825-03 P=405.369656 Days $T_0=448.871902$ (BKJD)



DV Model-Shift Uniqueness Test

008161825-03, P = 405.821746 Days, E = 42.440457 Days

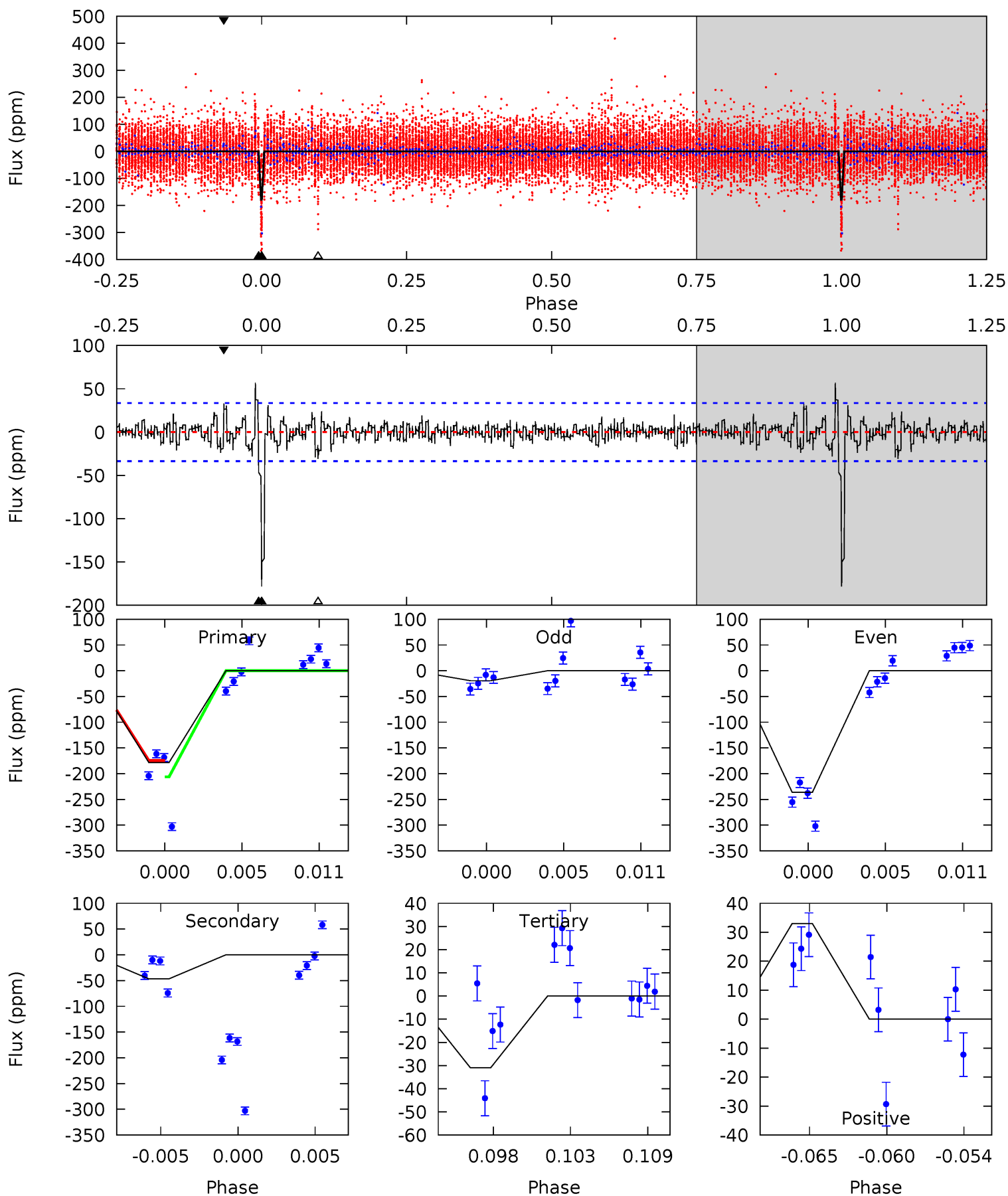
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
21.1	12.6	10.1	14.5	5.14	2.78	2.92	11.0	6.64	2.55	-1.84	12.0	0.73	0.41	0.56



Alt Model-Shift Uniqueness Test

008161825-03, P = 405.369656 Days, E = 43.502246 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
27.3	7.14	4.75	5.06	5.14	2.78	1.20	22.6	22.3	2.40	2.09	16.0	0.75	0.24	1.90



Stellar Parameters For KIC 008161825

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (g \cdot \text{cm}^{-3})$
	5902^{+70}_{-88}	$4.439^{+0.063}_{-0.117}$	$-0.100^{+0.150}_{-0.150}$	$0.989^{+0.143}_{-0.077}$	$0.981^{+0.056}_{-0.063}$	$1.426^{+0.347}_{-0.475}$
	+1%/-1%	+1%/-3%	+150%/-150%	+14%/-8%	+6%/-6%	+24%/-33%
Source	SPE68	SPE68	SPE68	DSEP		

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

Secondary Eclipse Parameters for KIC 008161825-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-99 ± 8	$1.85^{+1.08}_{-0.89}$	352^{+15}_{-10}	4663^{+1659}_{-706}	17771^{+51045}_{-10365}
Alt.	-47 ± 7	$1.53^{+1.01}_{-0.84}$	352^{+14}_{-10}	4325^{+1812}_{-701}	11821^{+48840}_{-7457}

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

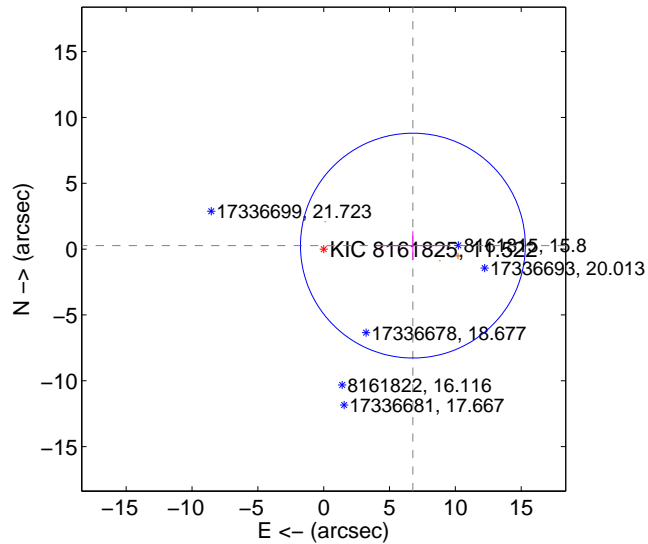
Supplemental centroid analysis for 008161825-03. **Kepler magnitude: 11.52.** Transit SNR 11.09

There are 1 quarters with good PRF difference image offsets

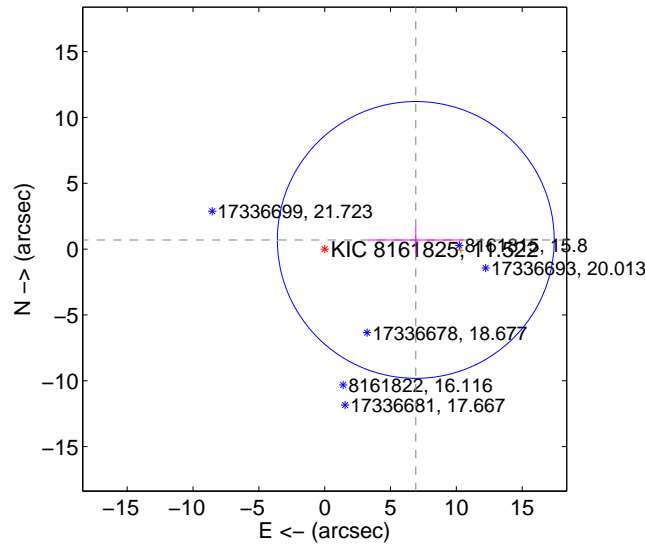
The direct PRF centroid is offset from the target star catalog position by about 0.48 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	6.779 ± 2.845	2.38	-6.773 ± 2.847	0.265 ± 1.097
PRF-fit source offset from KIC position	6.953 ± 3.503	1.98	-6.918 ± 3.619	0.694 ± 0.994
photometric centroid source offset	0.49 ± 0.84	0.58	-0.31 ± 1.12	-0.37 ± 0.57

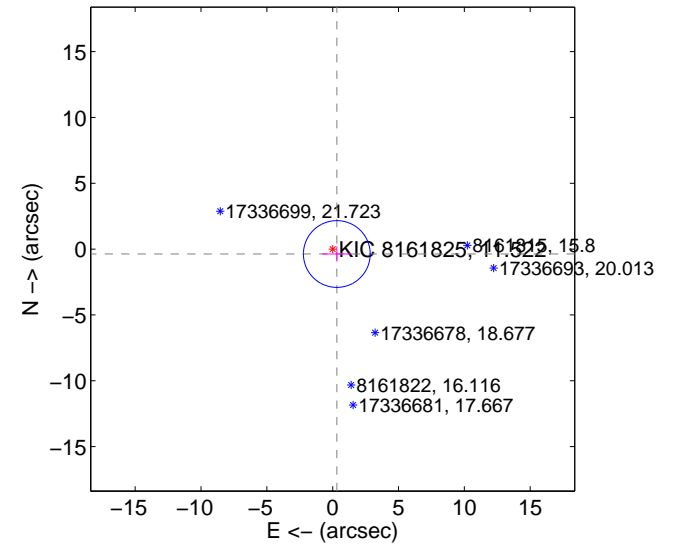
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



offset from photometric centroids

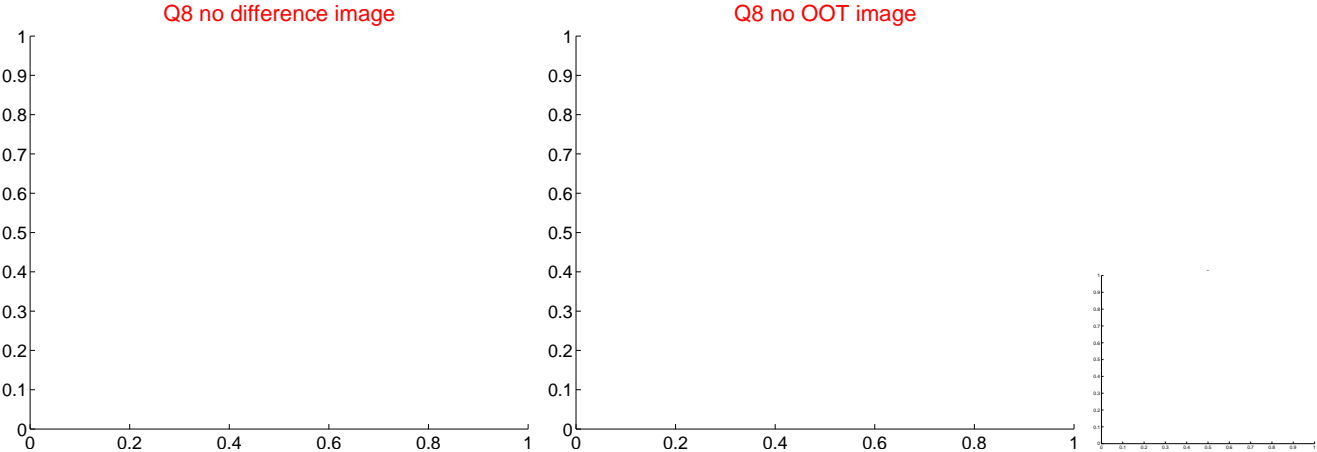
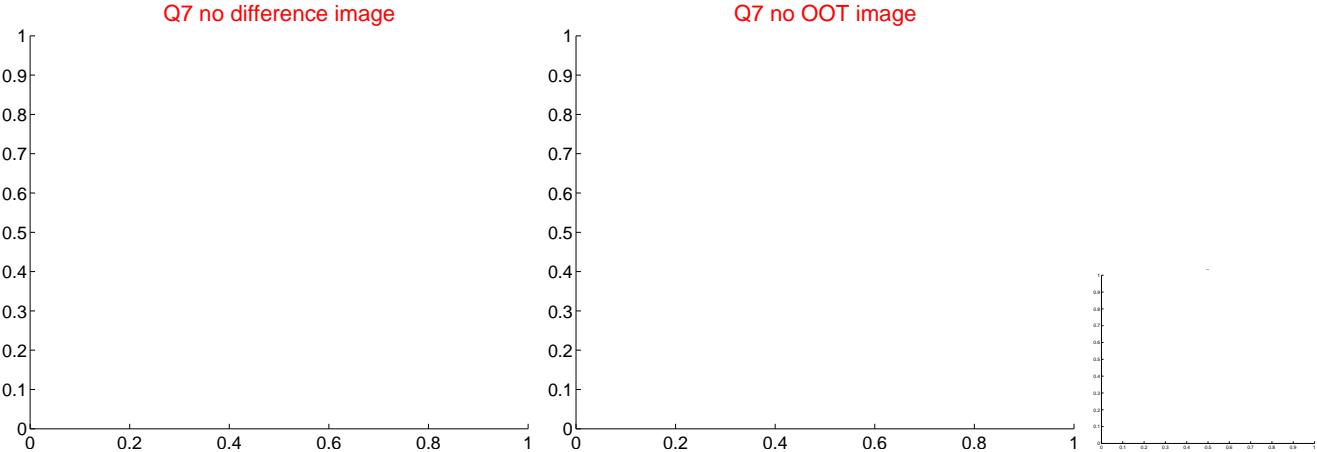
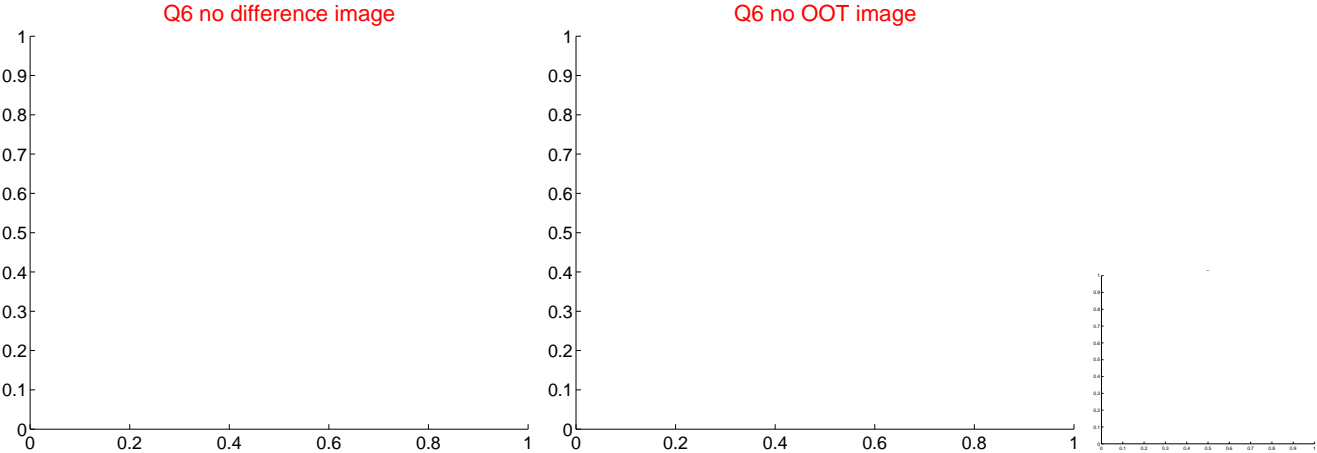
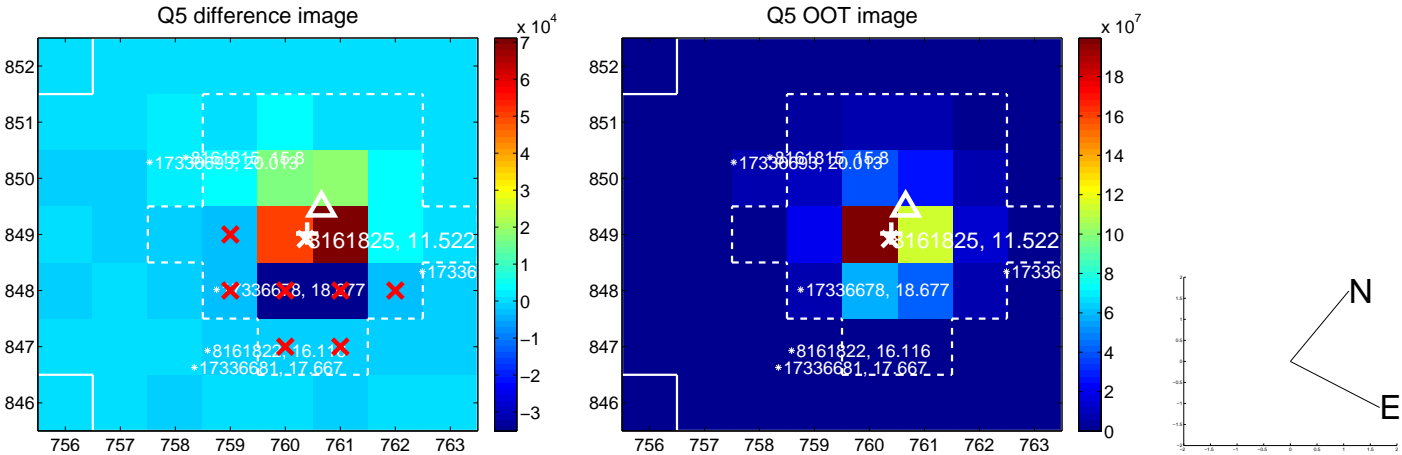


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

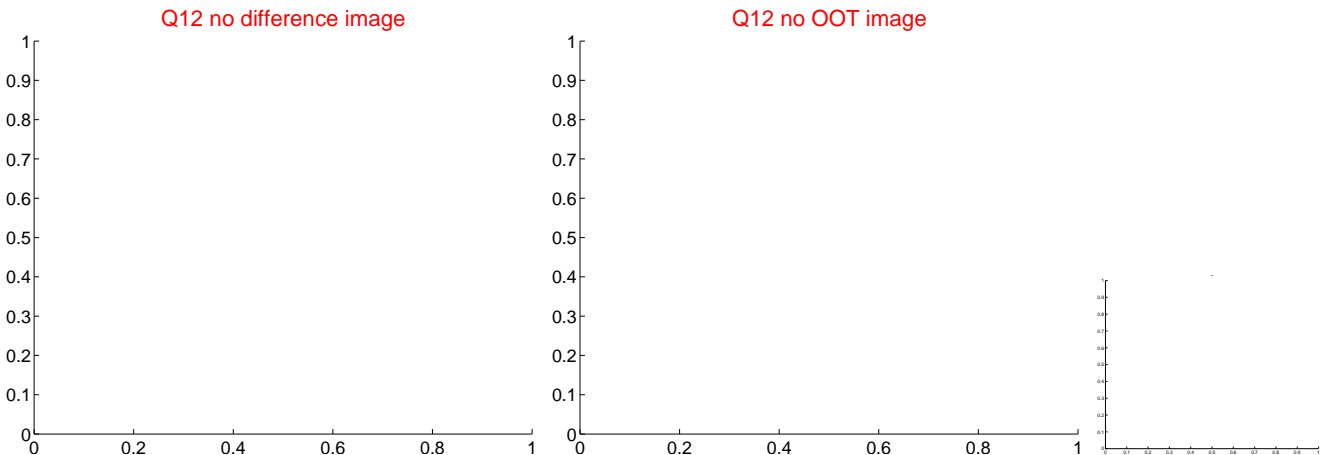
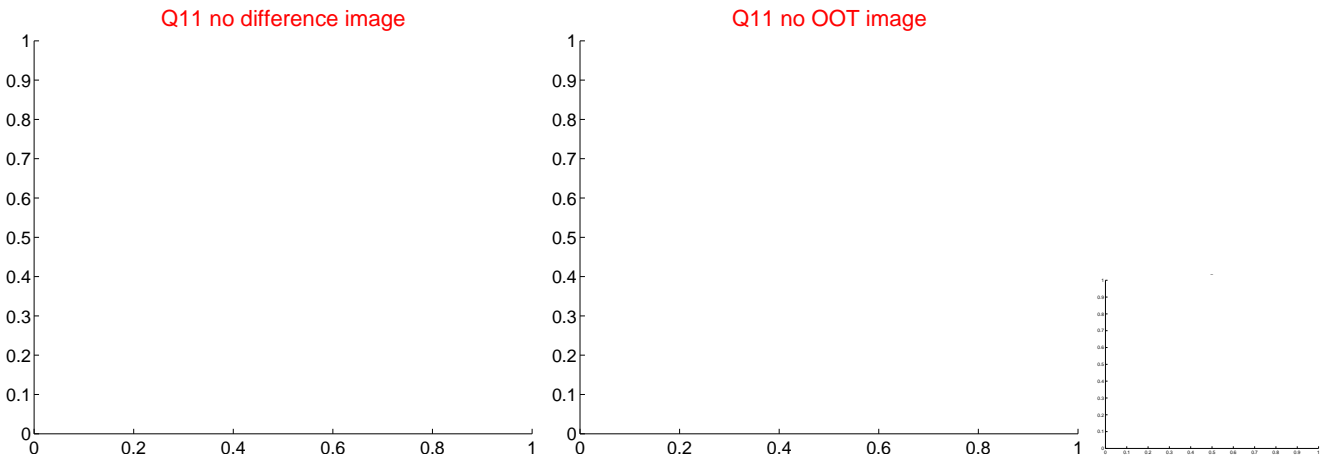
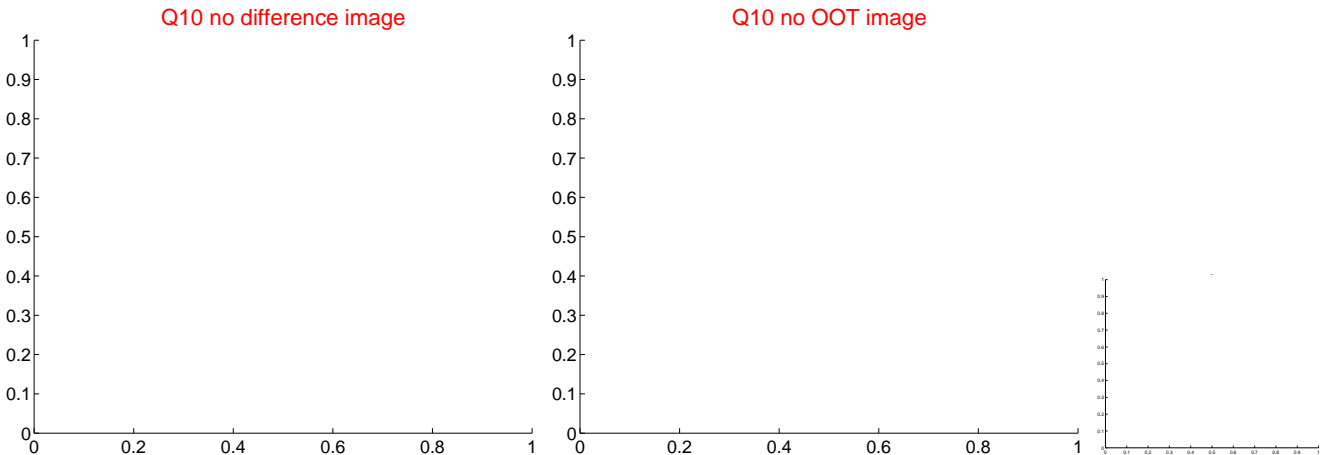
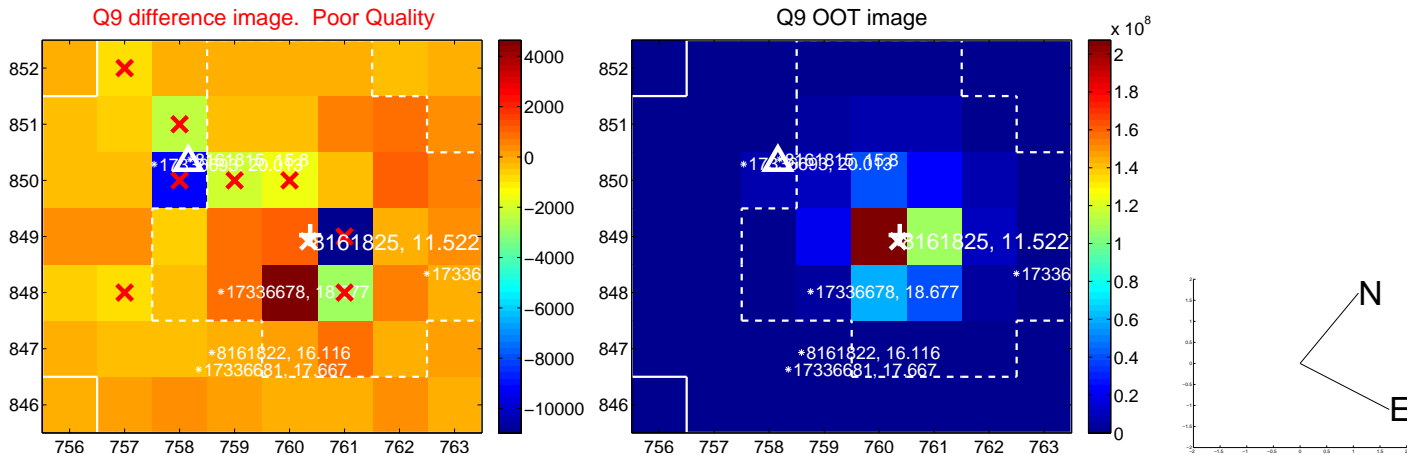
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



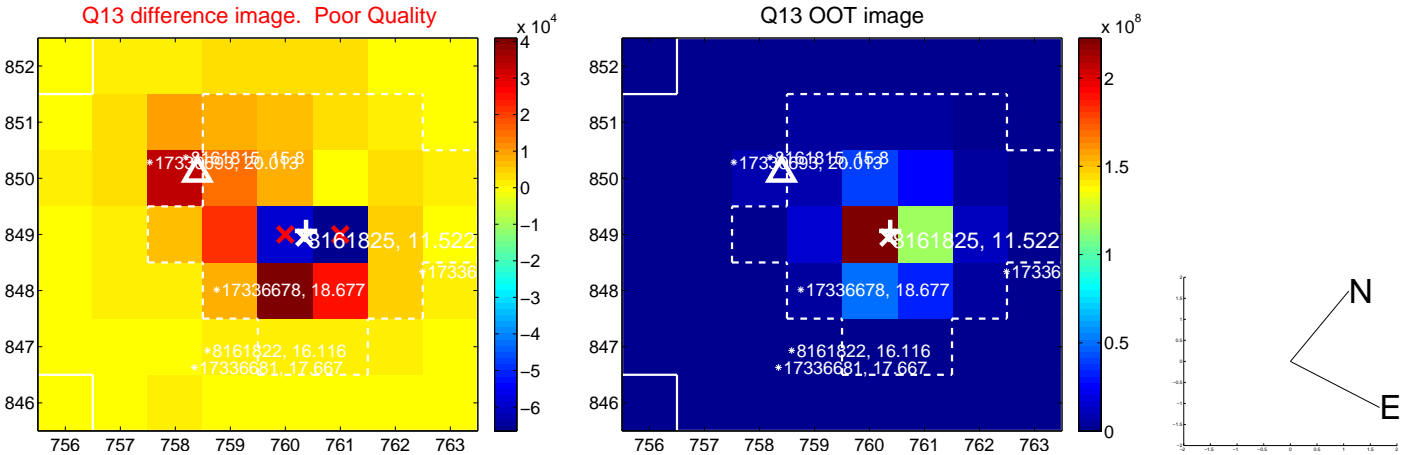
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



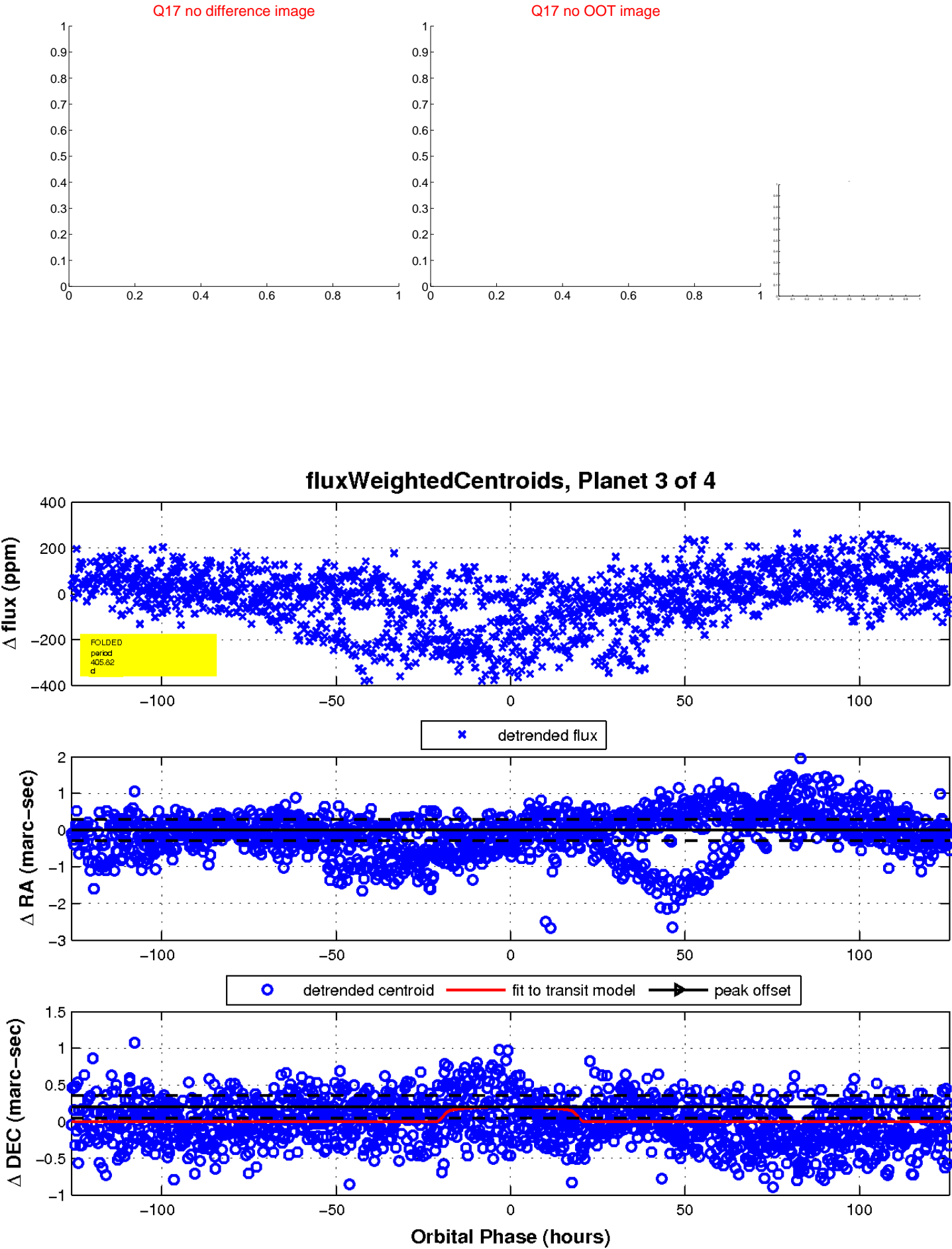
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value



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

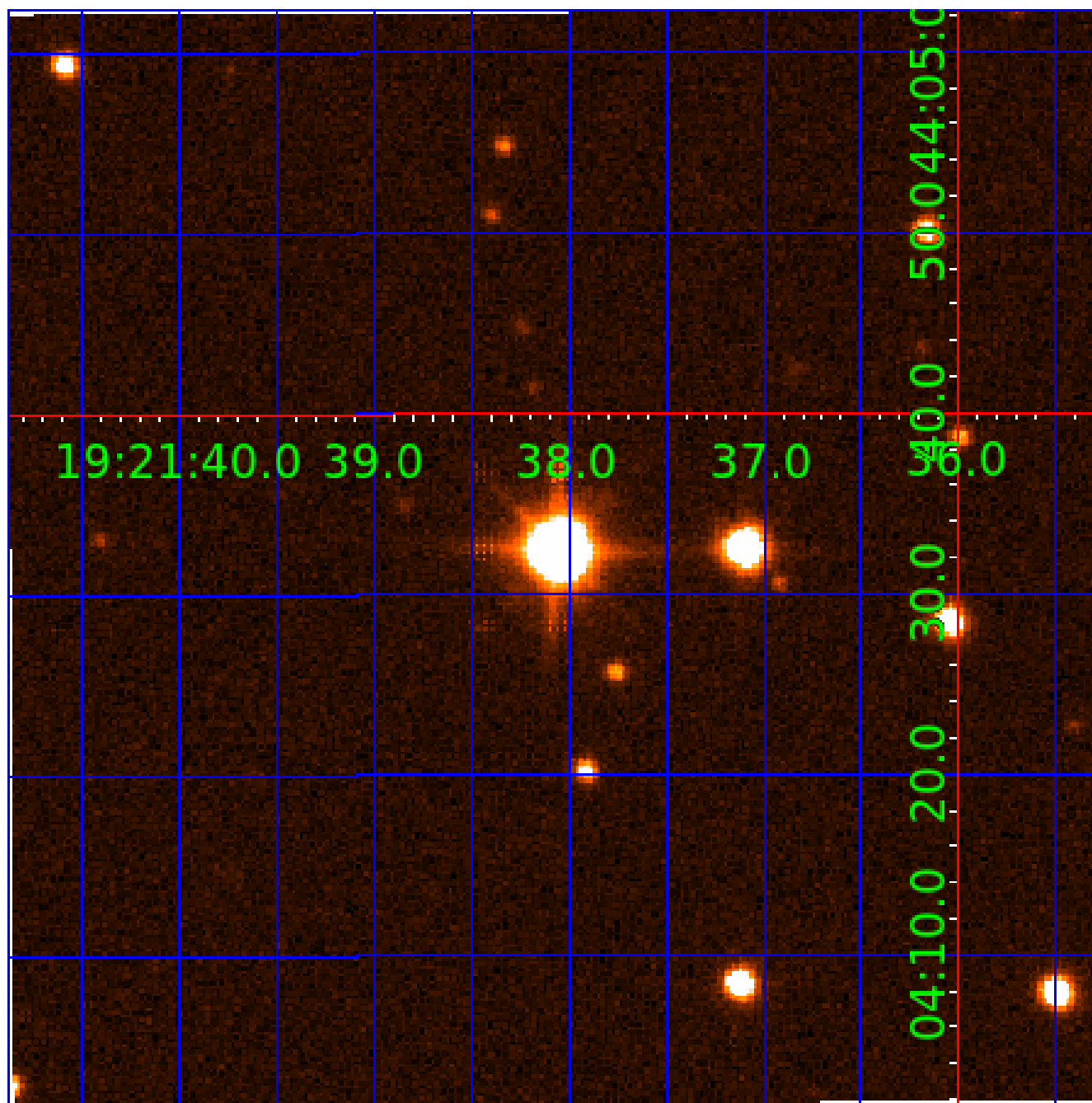


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 008161825

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})
008161825-01	OBS	No	2.203134	132.544119	7.3	12.833	8.0	9.2	0.99	5902	0.27	980.92
008161825-03	OBS	No	405.821746	448.262203	251.2	41.981	12.6	11.1	0.99	5902	1.85	0.94
008161825-04	OBS	No	222.310055	204.850421	76.9	25.412	11.6	7.1	0.99	5902	1.04	2.09

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008161825-01	OBS	FP	0.00	1	0	0	1	LPP_DV—MOD_NONUNIQ_DV—CENT_FEW_DIFFS—EPHEM_MATCH
008161825-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_DIFFS
008161825-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_MEAS

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

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

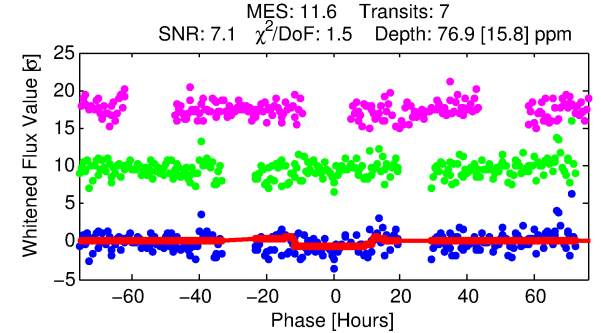
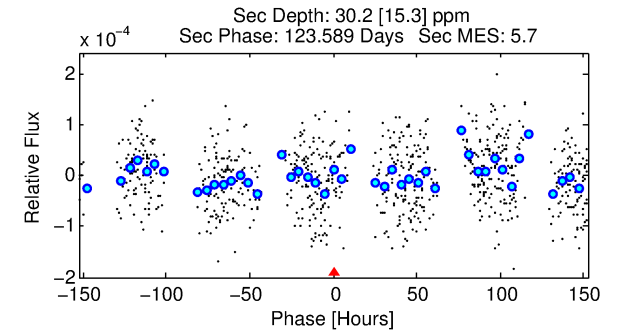
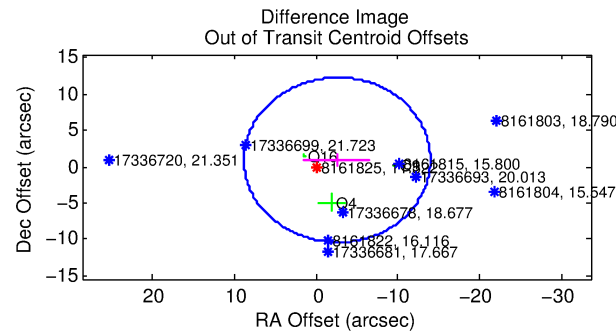
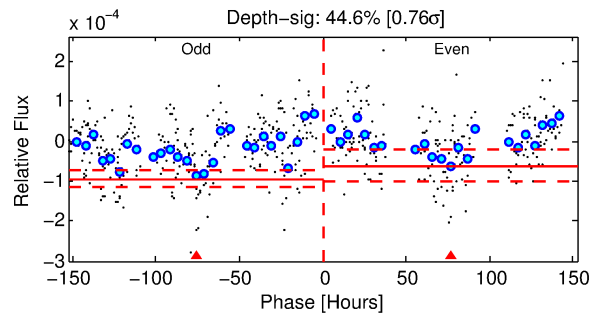
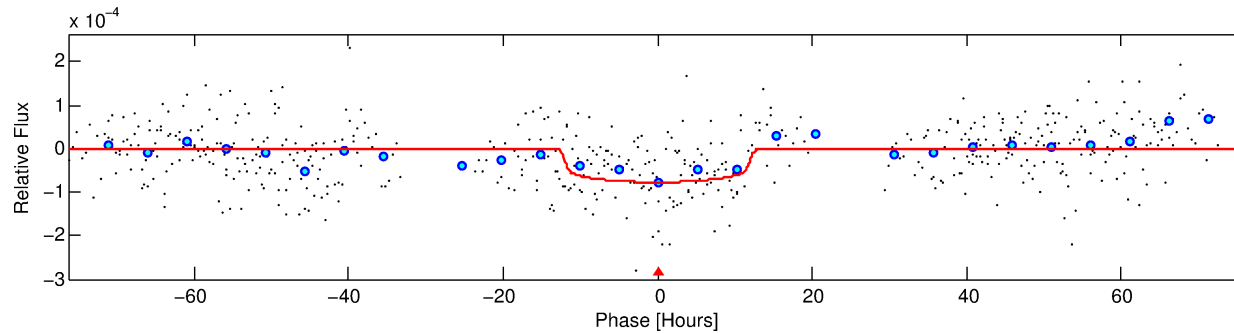
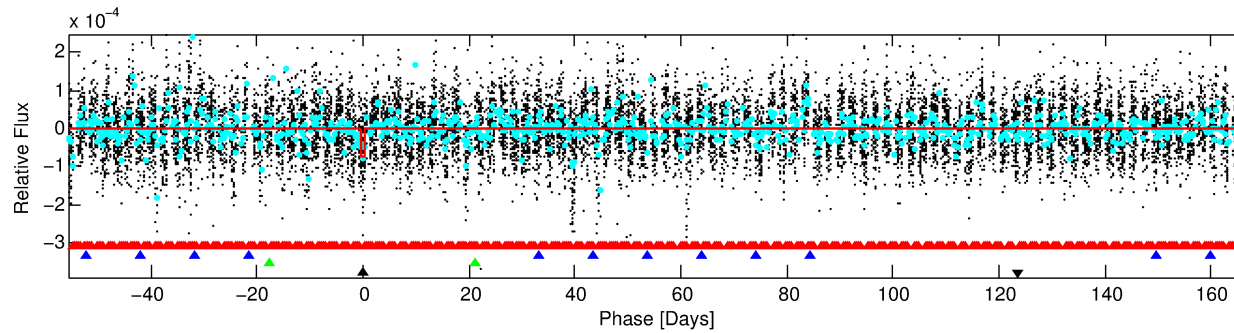
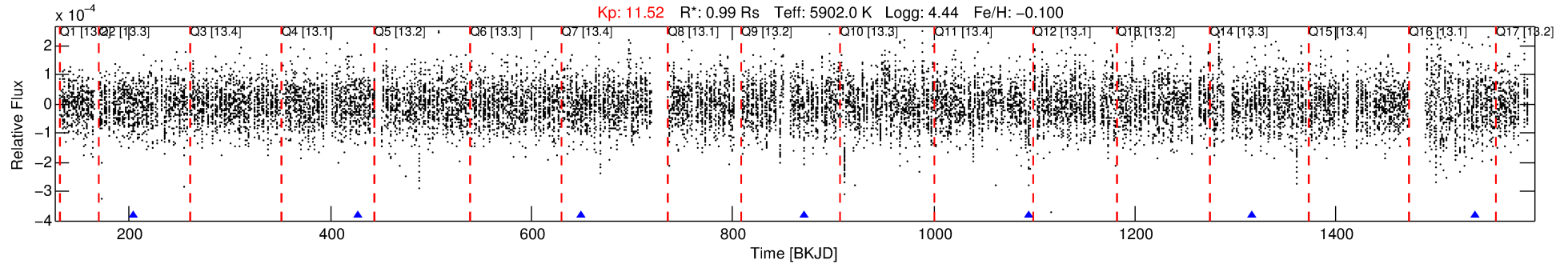
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008161825-04

No Significant Match Found

DV One-Page Summary

KIC: 8161825 Candidate: 4 of 4 Period: 222.310 d



DV Fit Results:

Period = 222.31005 [0.02459] d
Epoch = 204.8504 [0.0802] BKJD
Rp/R* = 0.0096 [0.0015]
a/R* = 28.91 [16.91]
b = 0.91 [0.11]
Seff = 2.09 [0.44]
Teq = 307 [16] K
Rp = 1.04 [0.22] Re
a = 0.7136 [0.0940] AU
Ag = 7856.93 [4959.94] [1.58 σ]
Teffp = 4462 [670] K [6.20 σ]

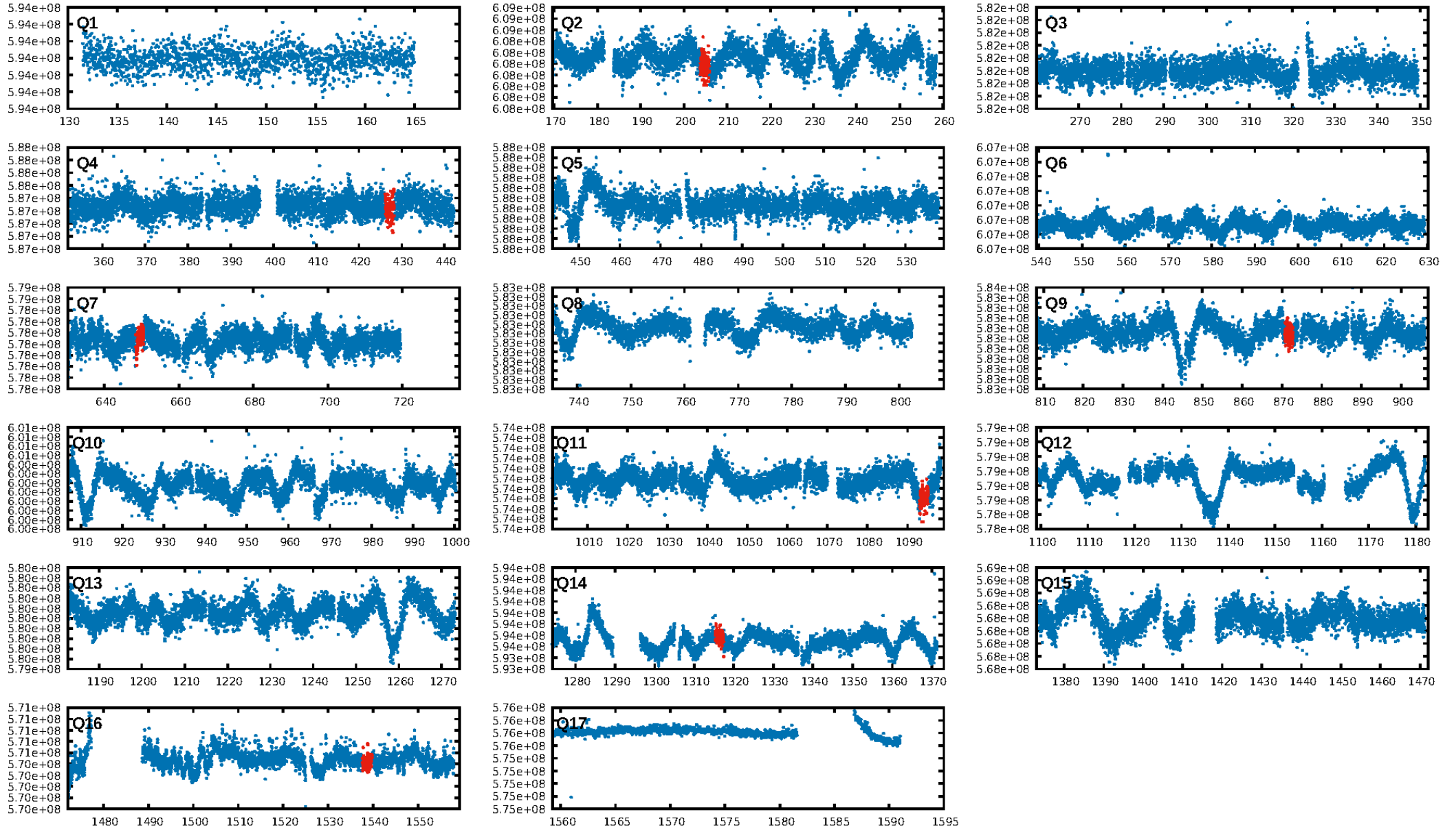
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [95.49 σ]
LongPeriod-sig: 100.0% [89.75 σ]
ModelChiSquare2-sig: 21.8%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 4.37e-16
RollingBand-fgt: 1.00 [7/7]
GhostDiagnostic-chr: -1.562
Centroid-sig: 52.9%
Centroid-so: 0.414 arcsec [0.21 σ]
OotOffset-rm: 2.743 arcsec [0.72 σ]
KicOffset-rm: 3.059 arcsec [0.85 σ]
OotOffset-st: 0/0/2/1 [3]
KicOffset-st: 0/0/2/1 [3]
DiffImageQuality-fgm: 0.33 [1/3]
DiffImageOverlap-fno: 0.00 [0/6]

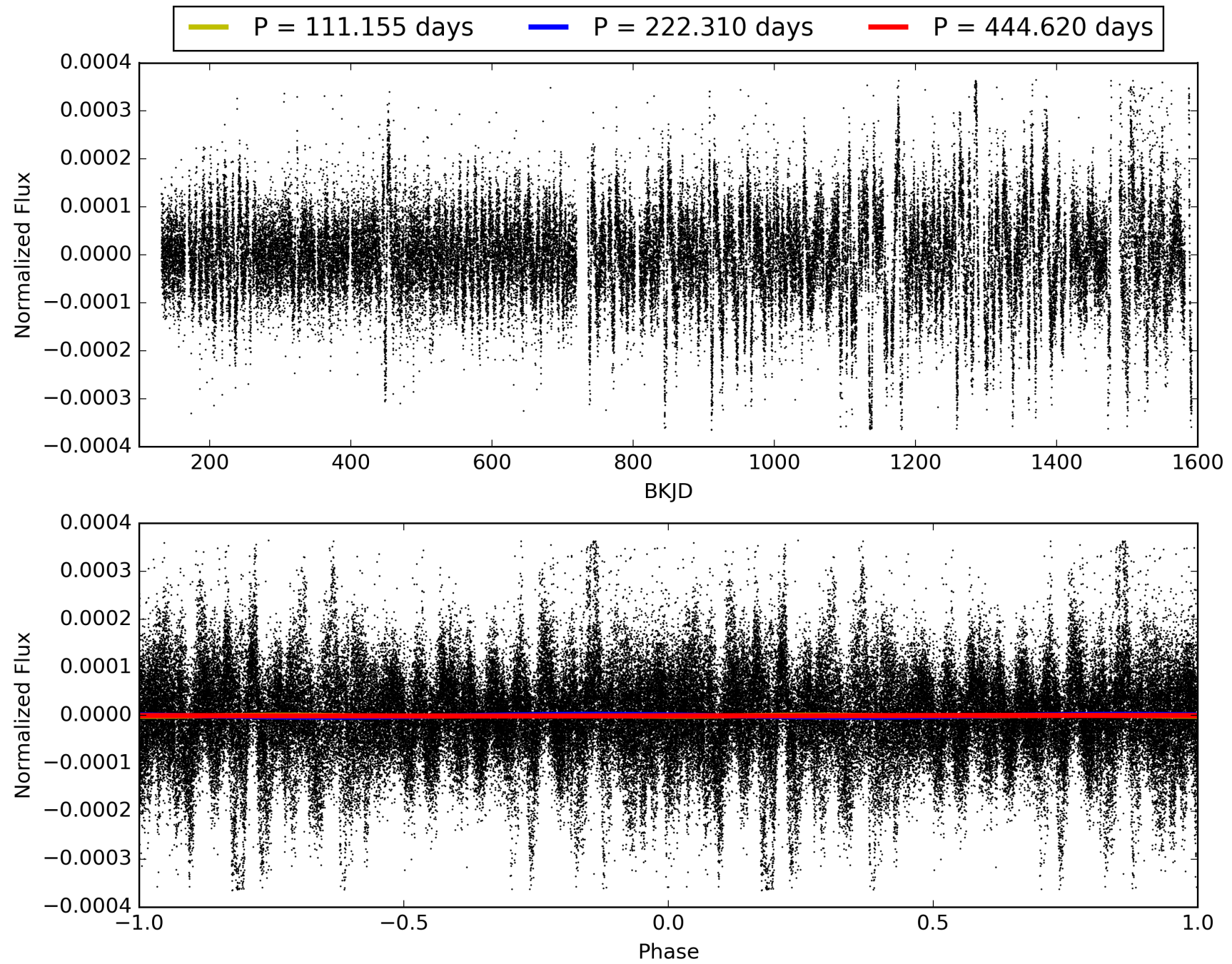
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 03:17:28 Z

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

TCE 008161825-04, PDC Light Curves

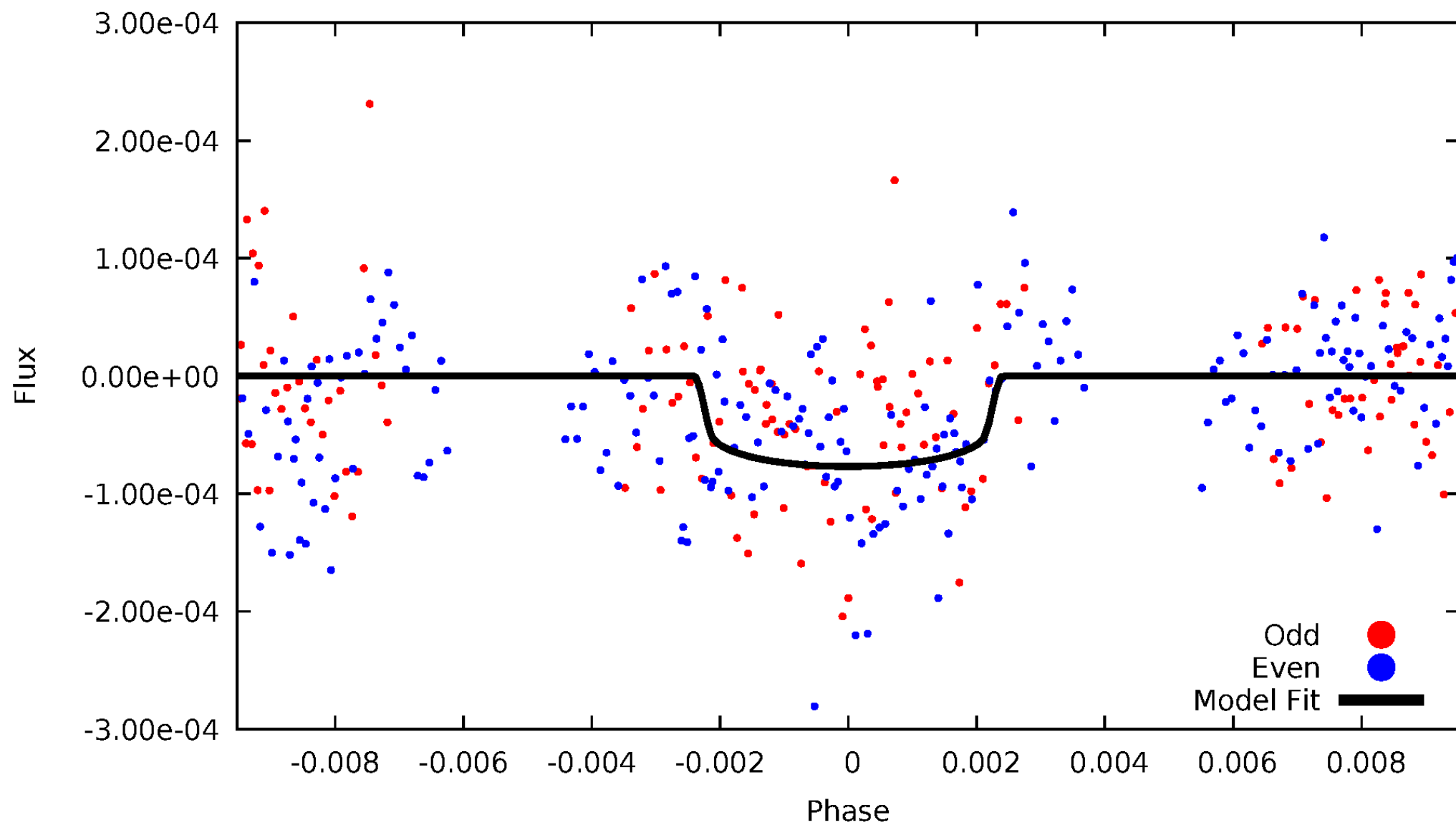


TCE 008161825-04



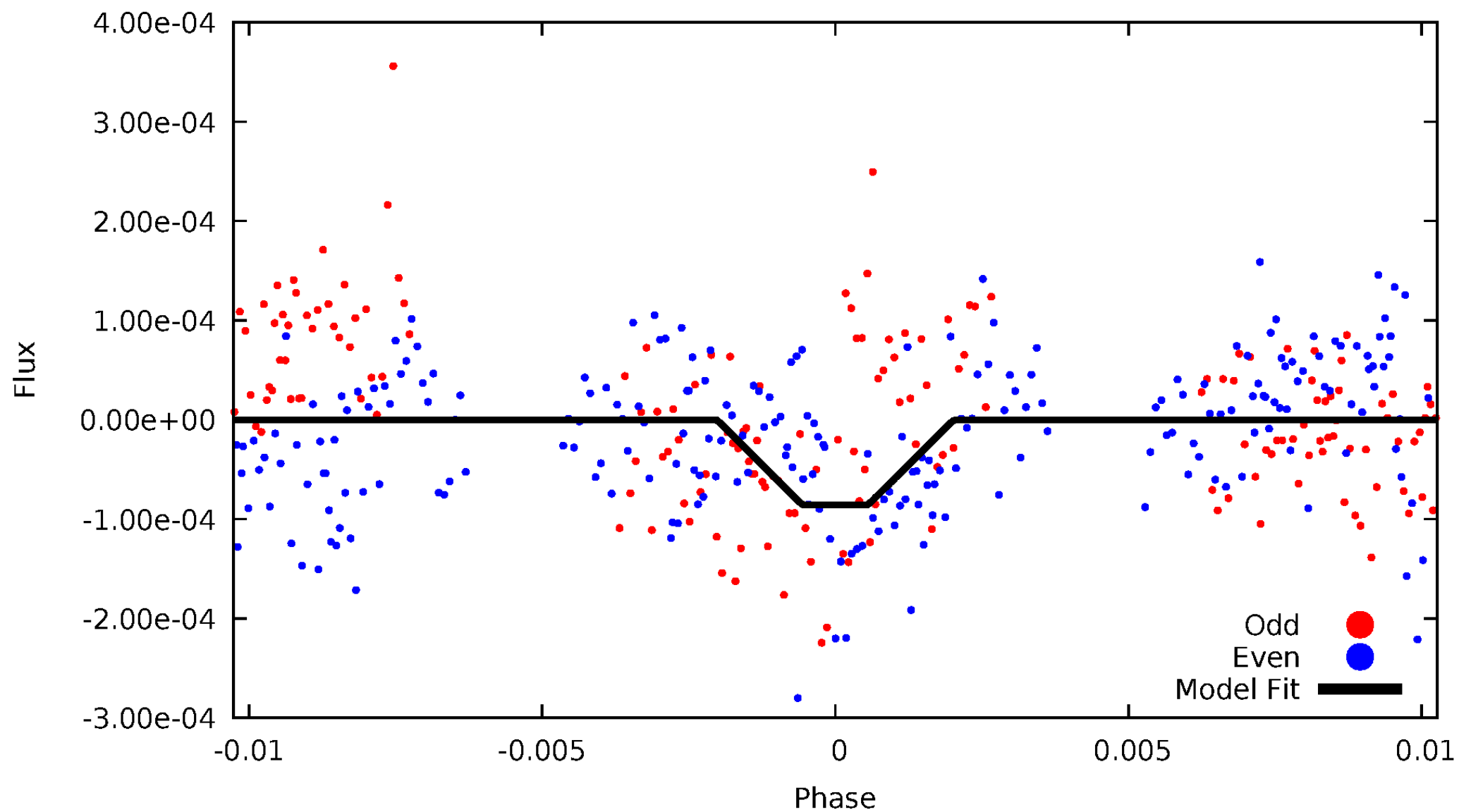
DV Odd/Even

TCE 008161825-04



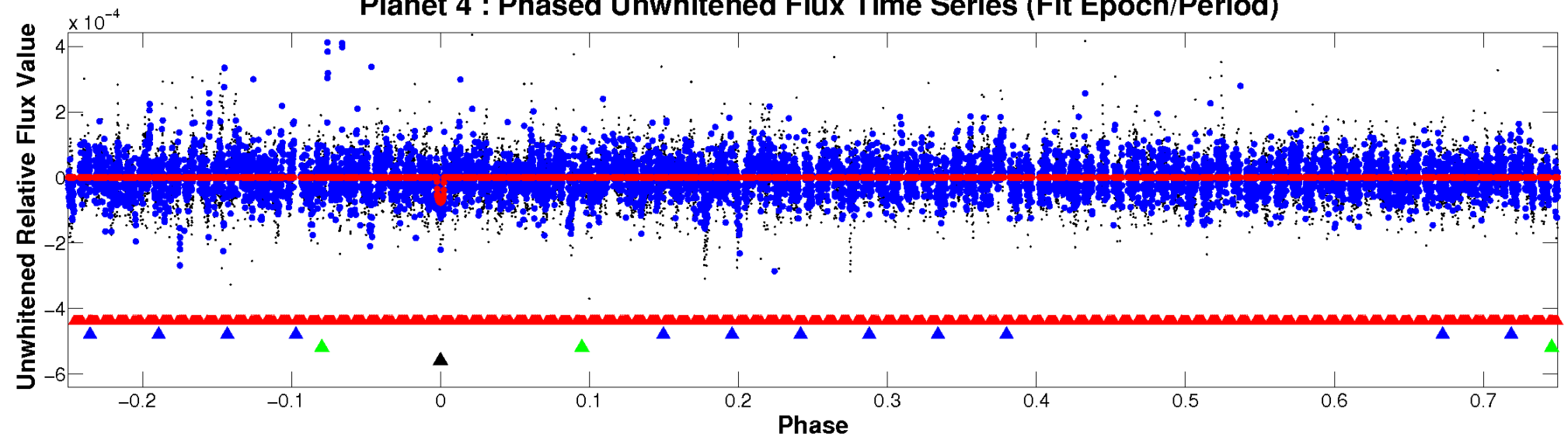
ALT Odd/Even

TCE 008161825-04

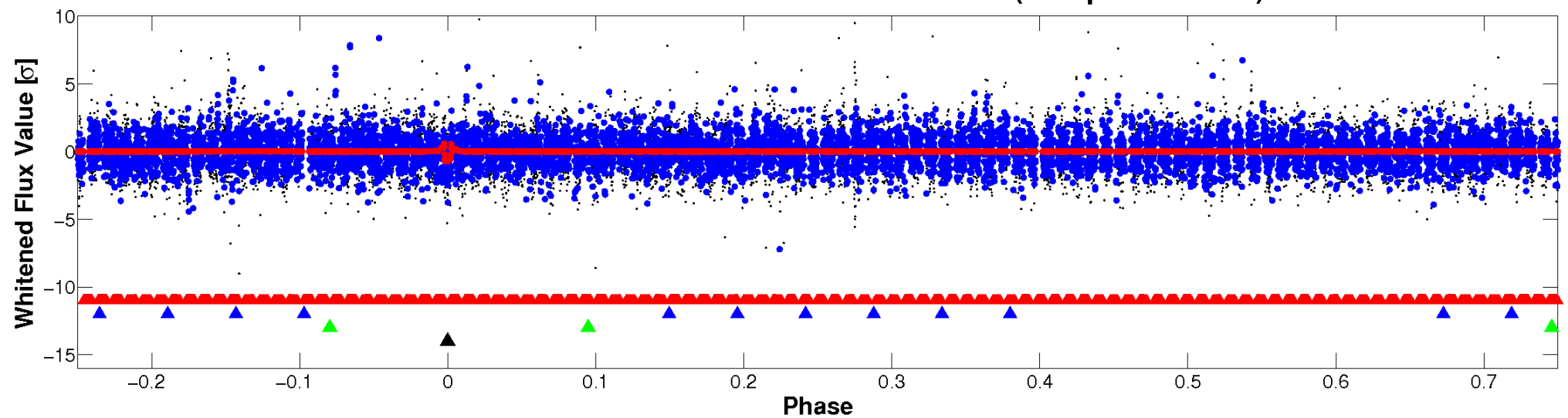


Non-Whitened Vs. Whitened Light Curve

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

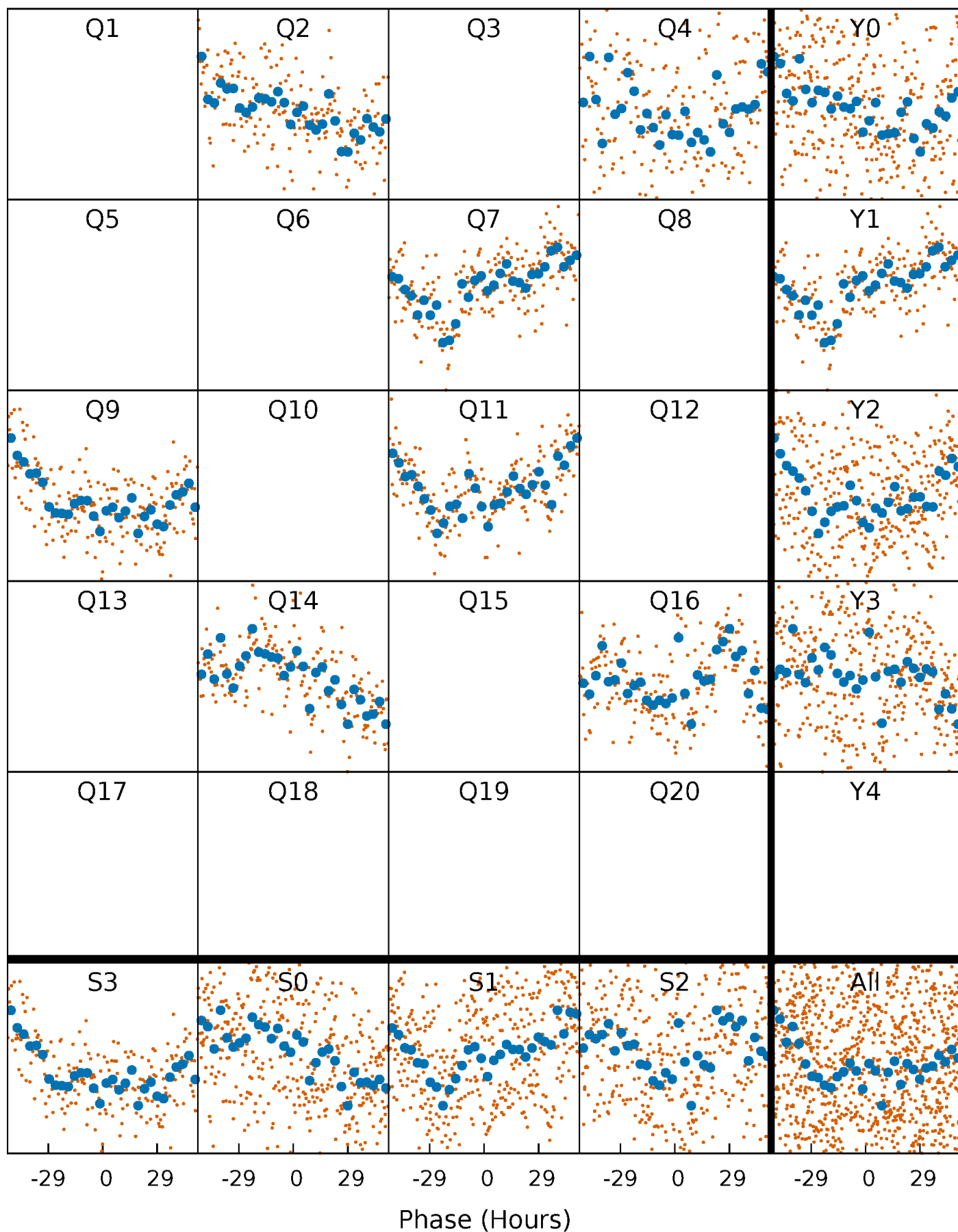


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



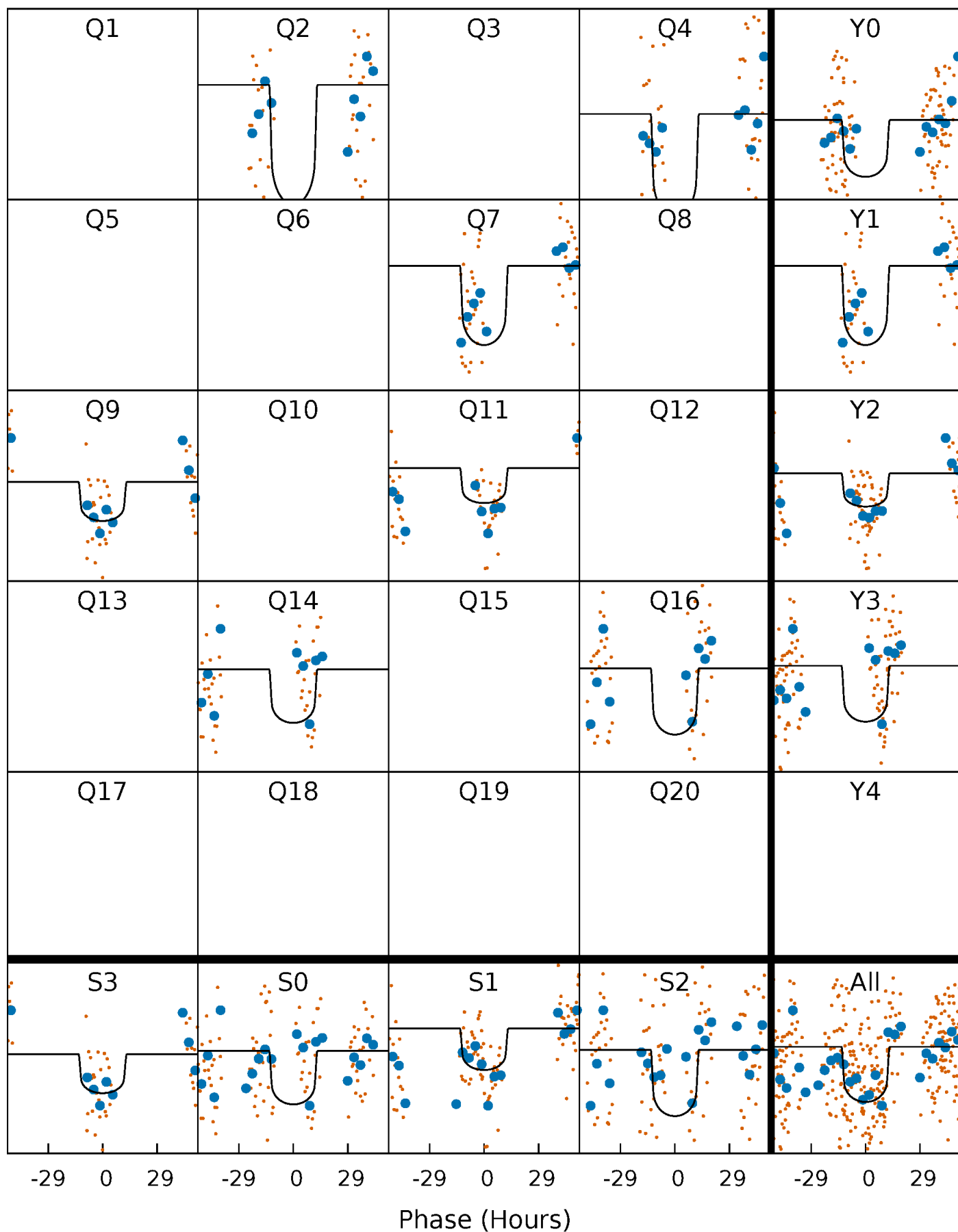
PDC Quarter-Phased Transit Curves

TCE 008161825-04 P=222.310055 Days $T_0=204.850421$ (BKJD)



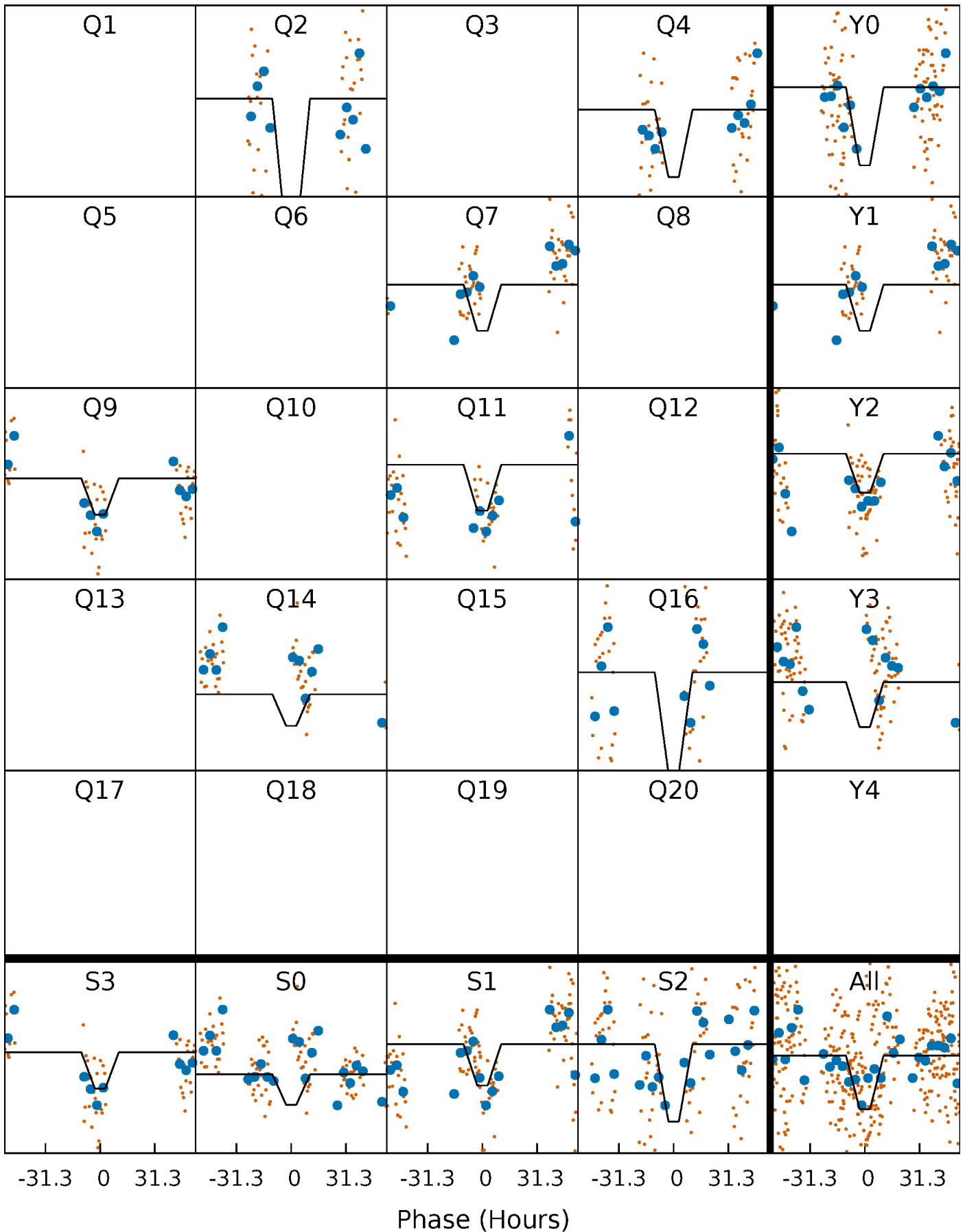
DV Quarter-Phased Transit Curves

TCE 008161825-04 P=222.310055 Days $T_0=204.850421$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

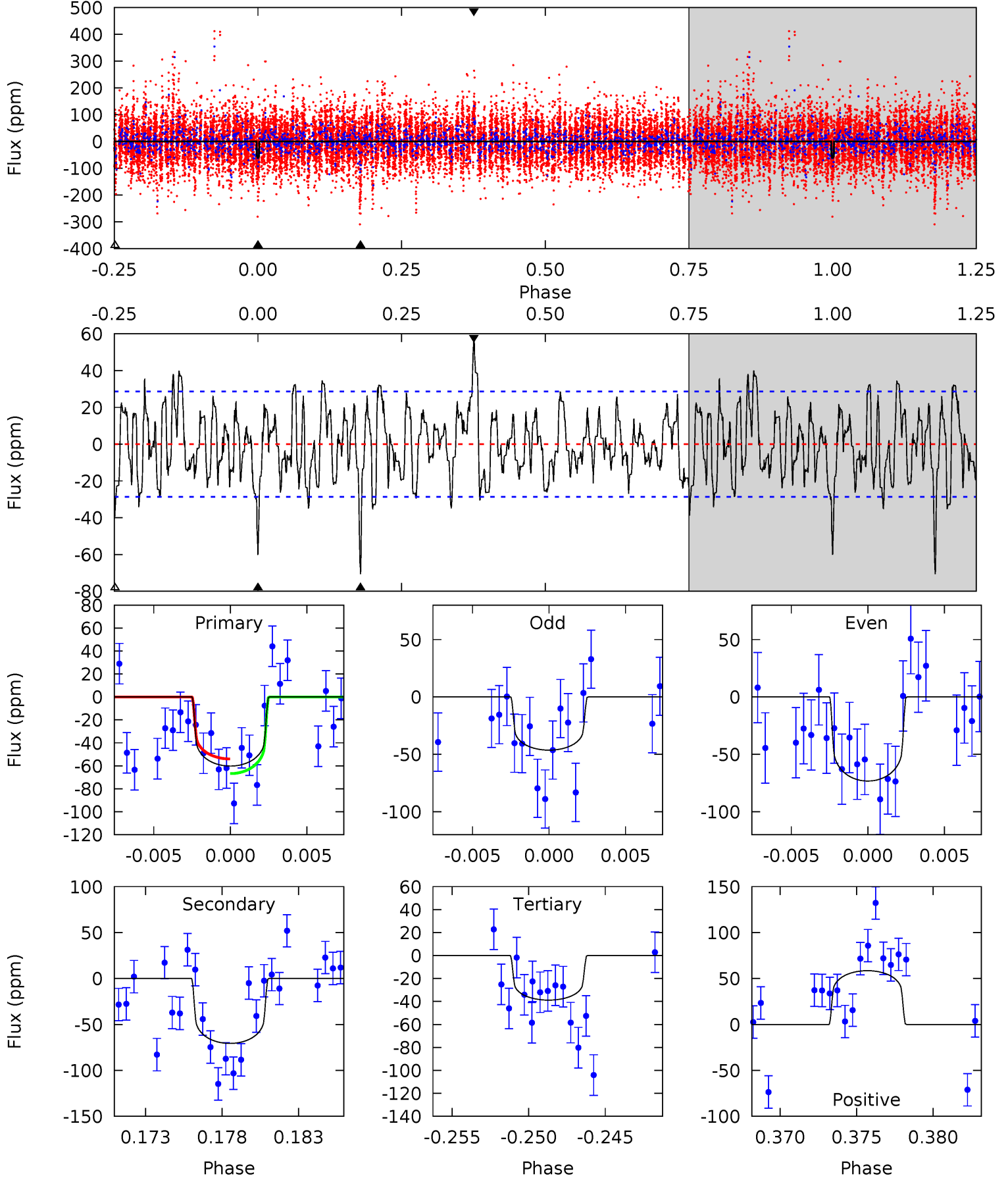
TCE 008161825-04 P=222.303510 Days $T_0=204.901436$ (BKJD)



DV Model-Shift Uniqueness Test

008161825-04, P = 222.310055 Days, E = 204.850421 Days

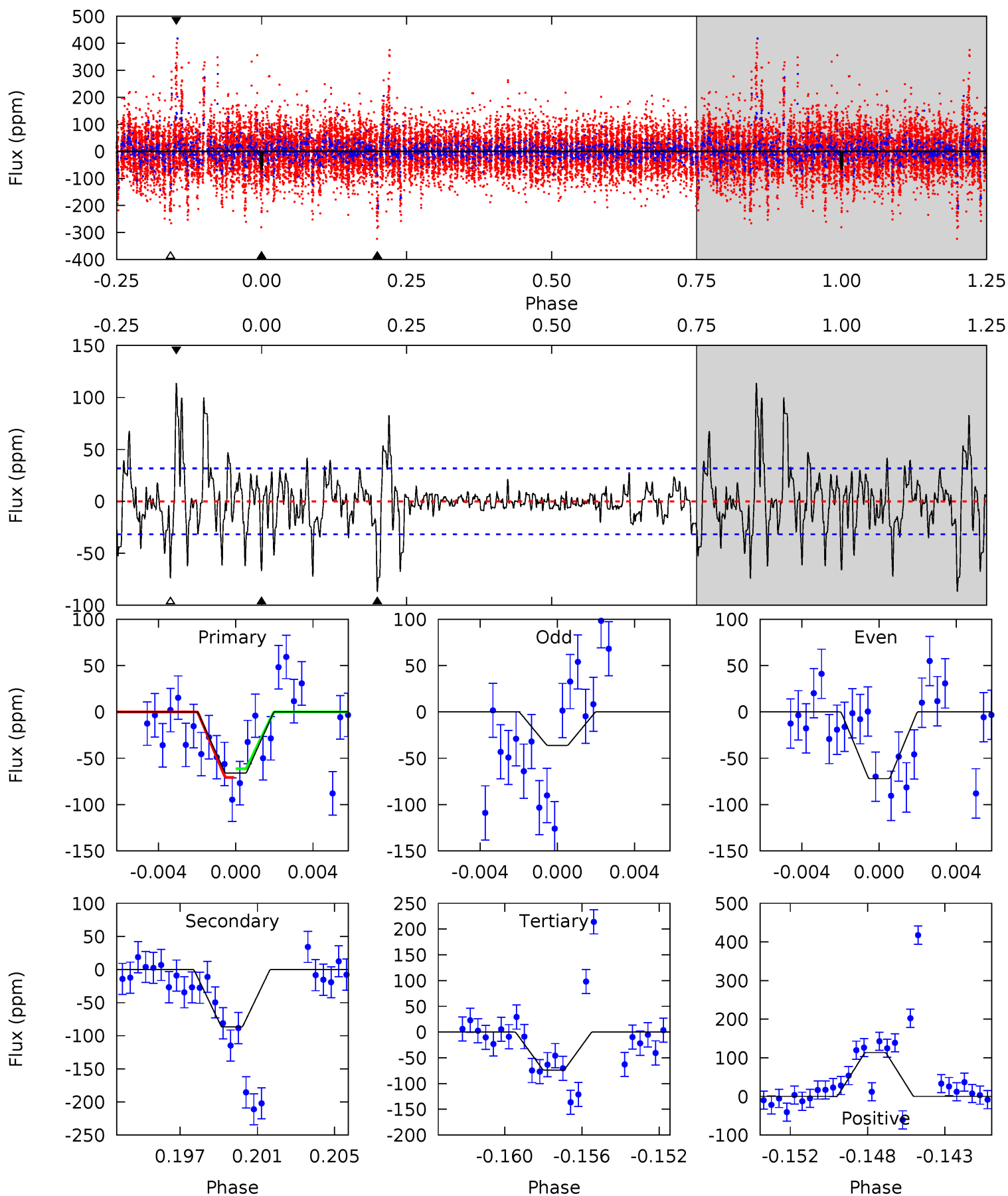
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.9	12.7	7.00	10.5	5.17	2.82	2.82	3.85	0.30	5.74	2.19	2.42	1.00	0.45	1.15



Alt Model-Shift Uniqueness Test

008161825-04, P = 222.303510 Days, E = 204.901436 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.8	14.2	12.1	18.6	5.19	2.87	3.59	-1.27	-7.80	2.12	-4.41	2.94	0.57	0.57	0.79



Stellar Parameters For KIC 008161825

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (g \cdot \text{cm}^{-3})$
	5902^{+70}_{-88}	$4.439^{+0.063}_{-0.117}$	$-0.100^{+0.150}_{-0.150}$	$0.989^{+0.143}_{-0.077}$	$0.981^{+0.056}_{-0.063}$	$1.426^{+0.347}_{-0.475}$
	+1%/-1%	+1%/-3%	+150%/-150%	+14%/-8%	+6%/-6%	+24%/-33%
Source	SPE68	SPE68	SPE68	DSEP		

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

Secondary Eclipse Parameters for KIC 008161825-04 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-71 ± 6	$1.06^{+0.19}_{-0.18}$	431^{+16}_{-13}	5530^{+485}_{-371}	17835^{+8330}_{-5137}
Alt.	-87 ± 6	$1.01^{+0.18}_{-0.17}$	430^{+15}_{-13}	5909^{+551}_{-421}	23732^{+11133}_{-6676}

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

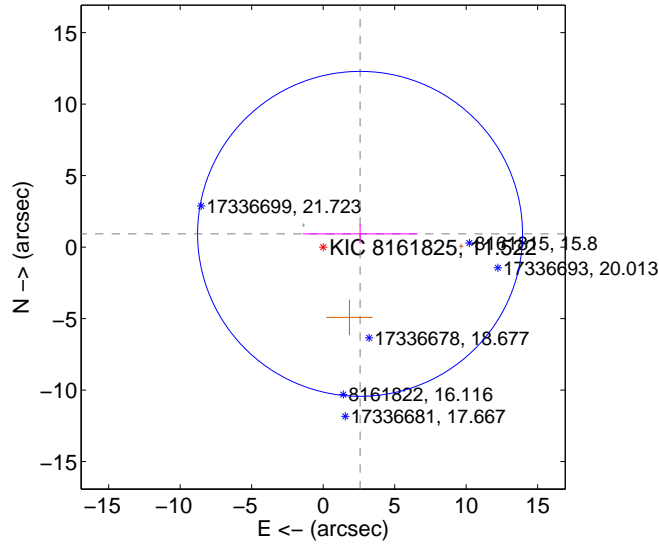
Supplemental centroid analysis for 008161825-04. **Kepler magnitude: 11.52.** Transit SNR 7.14

There are 1 quarters with good PRF difference image offsets

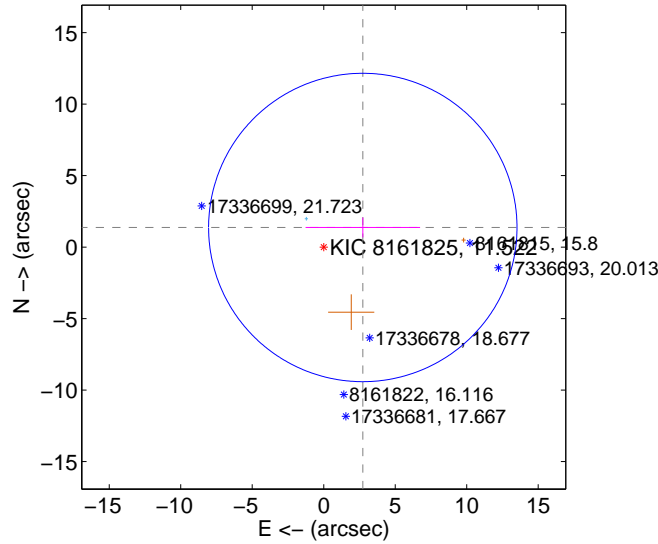
The direct PRF centroid is offset from the target star catalog position by about 0.49 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	2.743 ± 3.788	0.72	-2.582 ± 4.017	0.927 ± 0.685
PRF-fit source offset from KIC position	3.059 ± 3.596	0.85	-2.734 ± 4.008	1.372 ± 0.698
photometric centroid source offset	0.41 ± 2.00	0.21	-0.24 ± 2.85	-0.34 ± 1.37

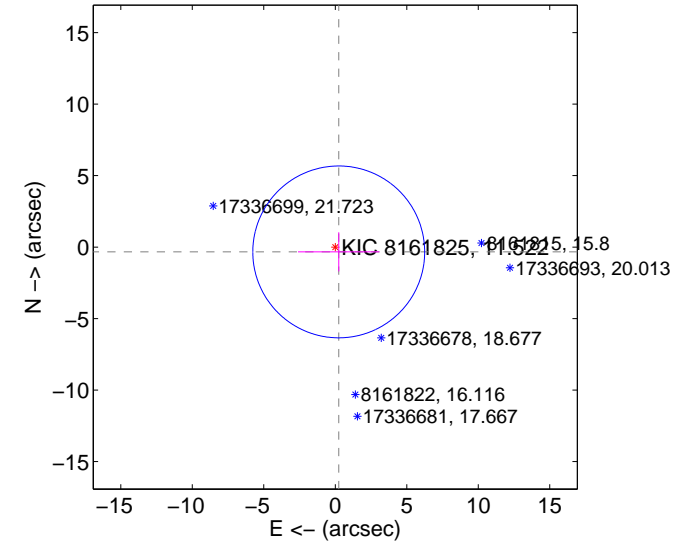
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

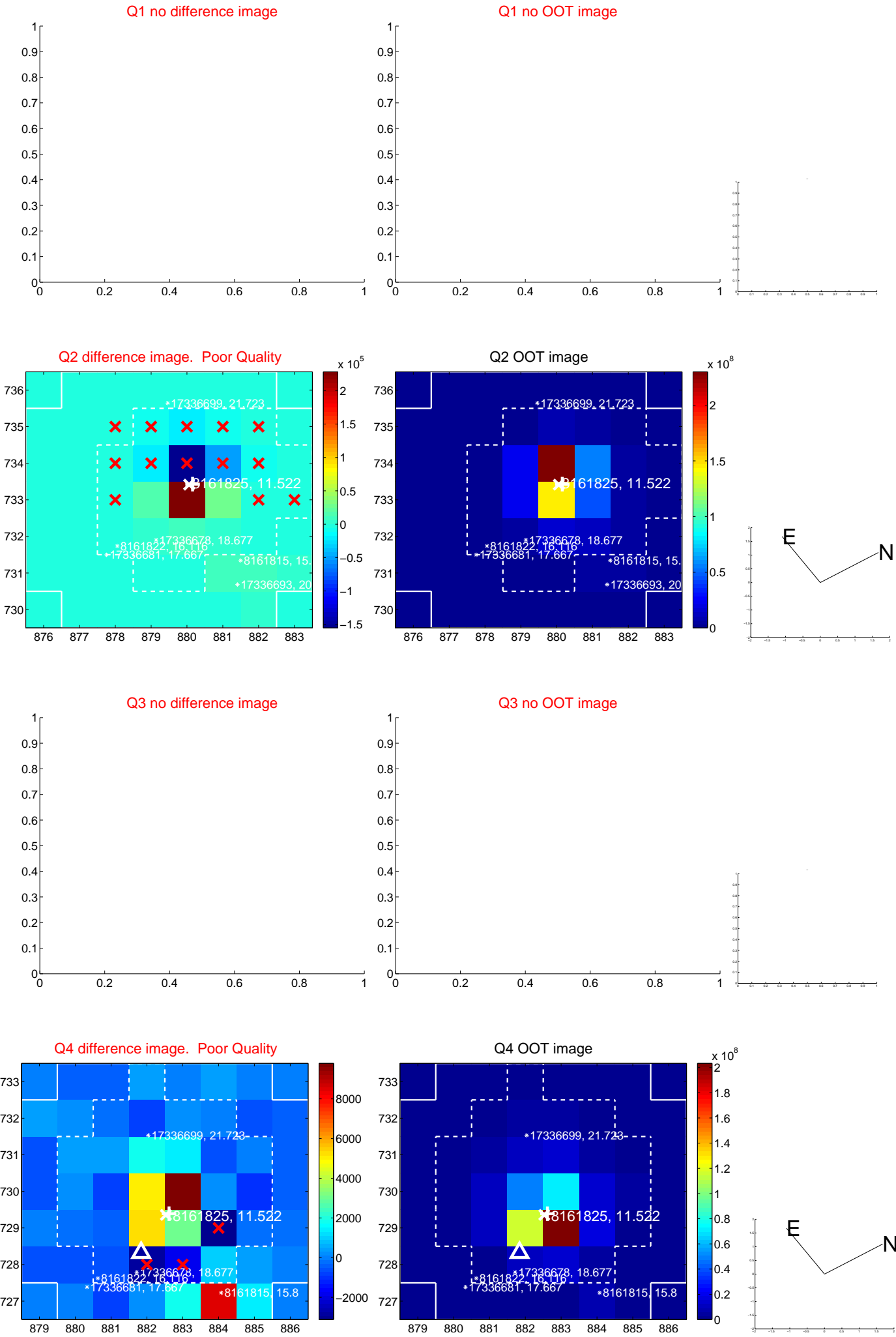


offset from photometric centroids

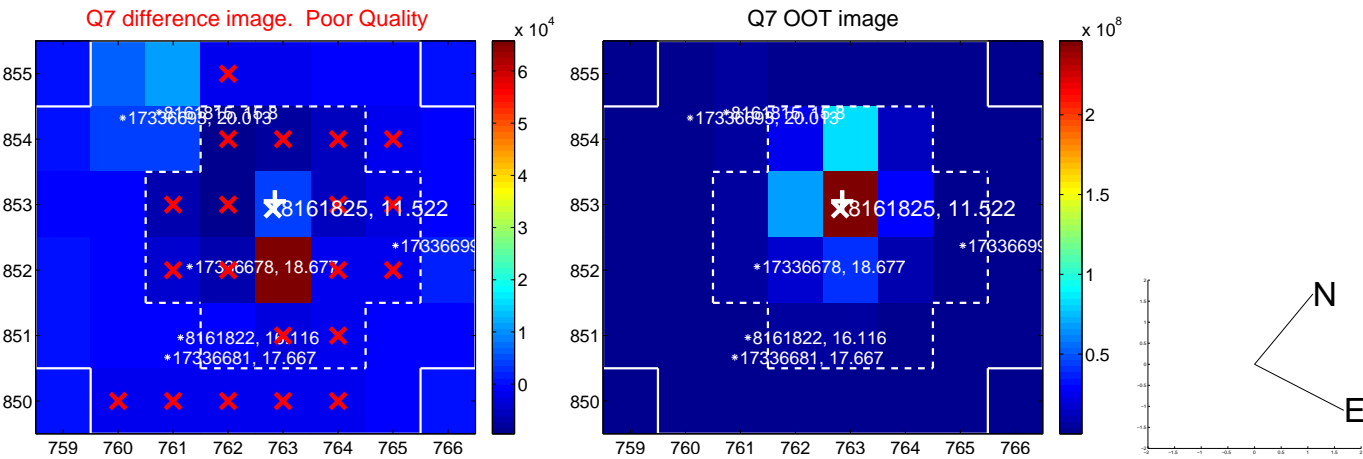


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

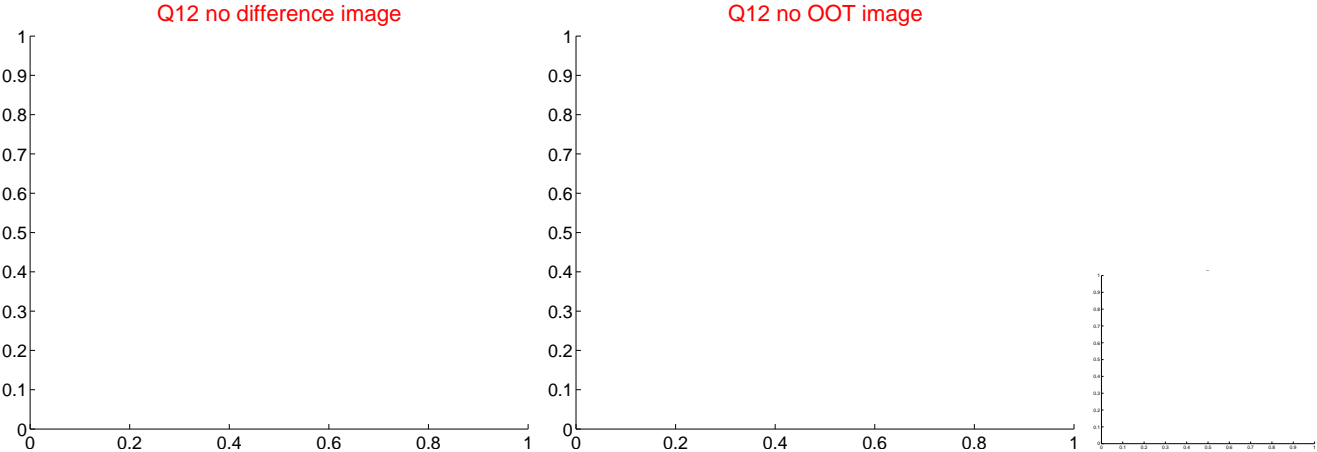
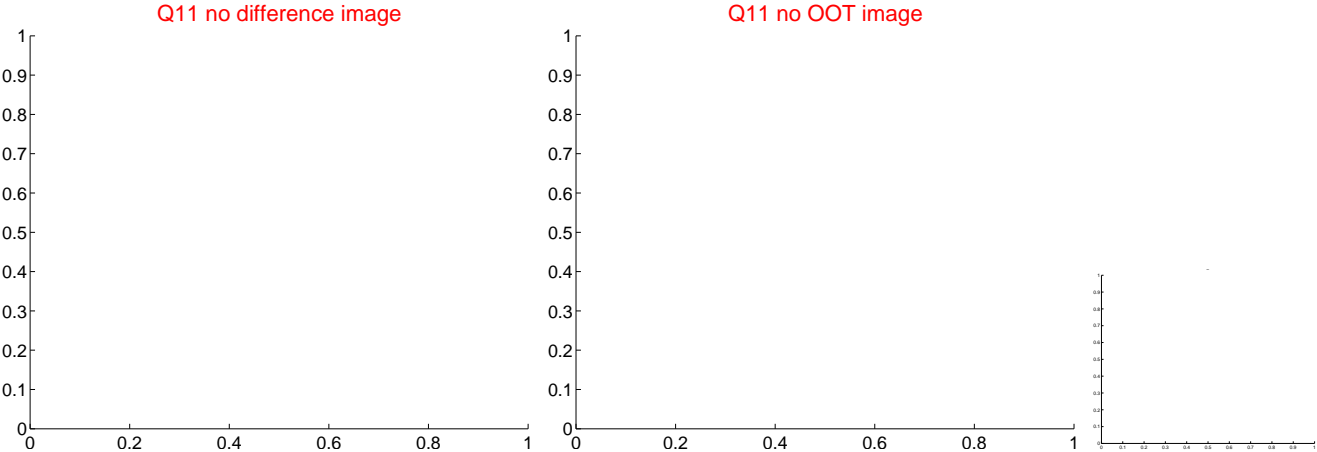
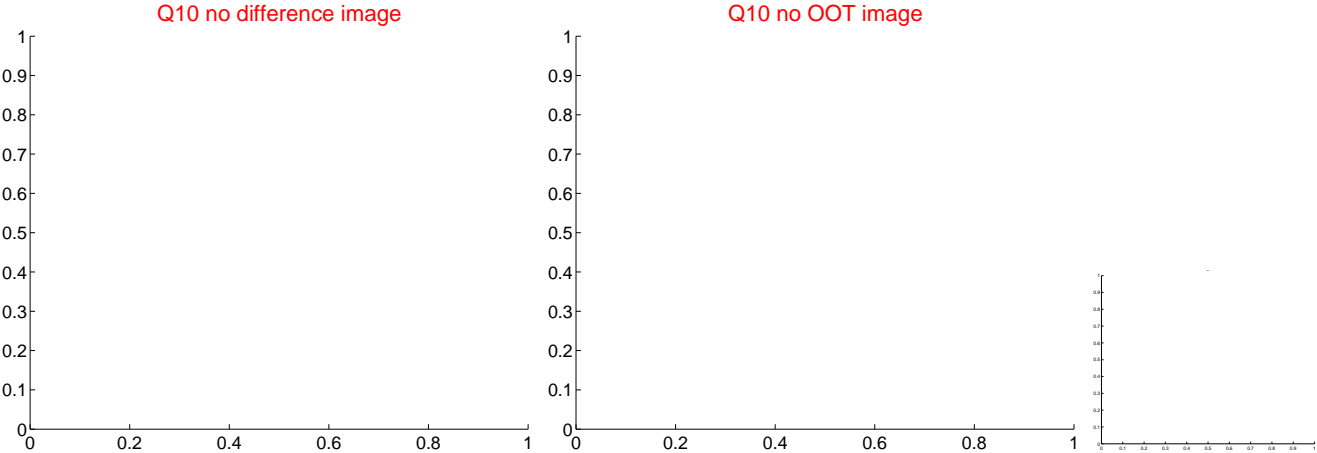
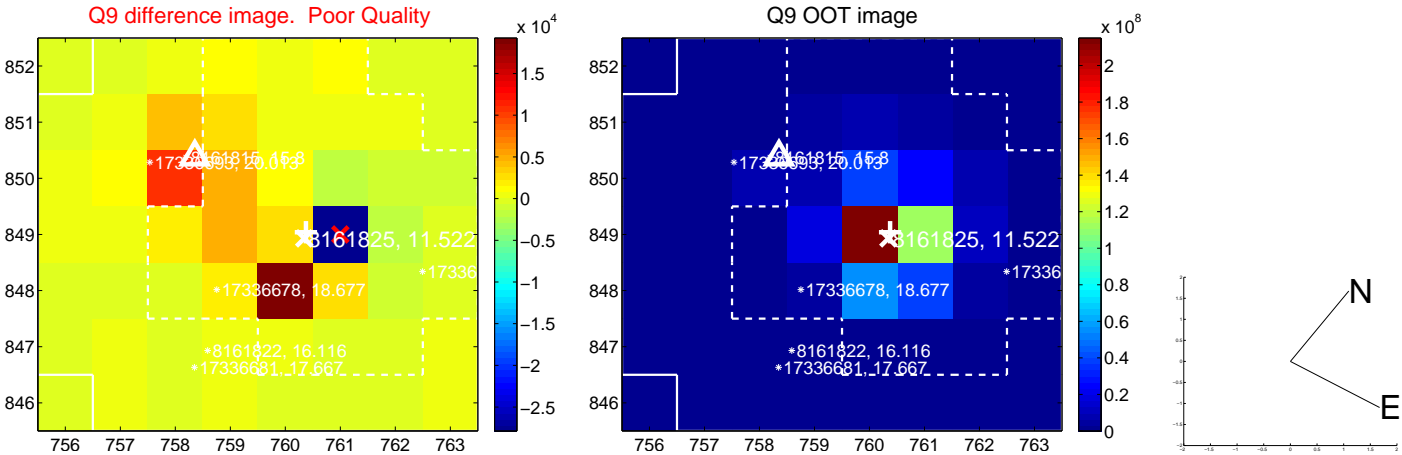
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



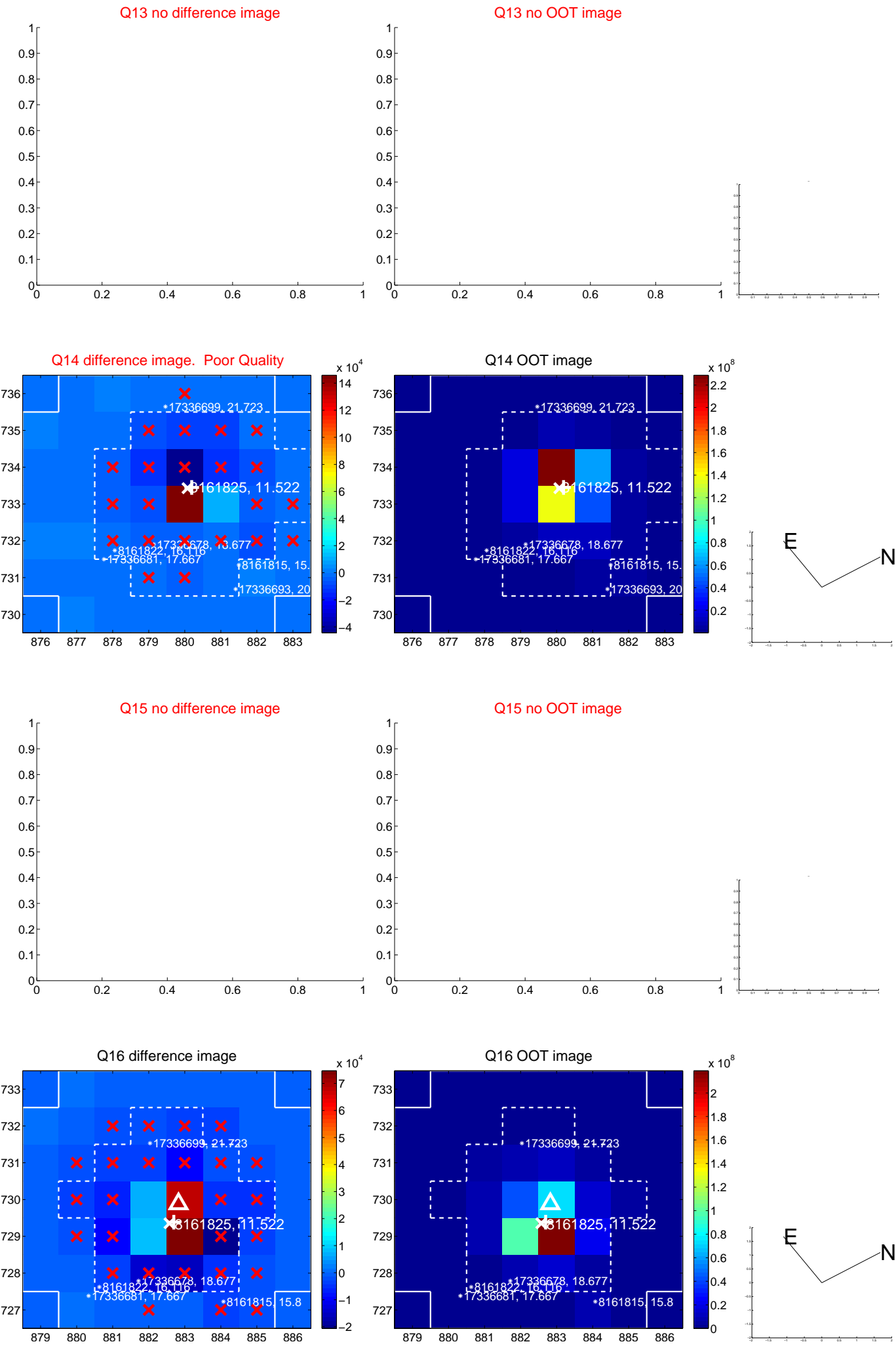
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.



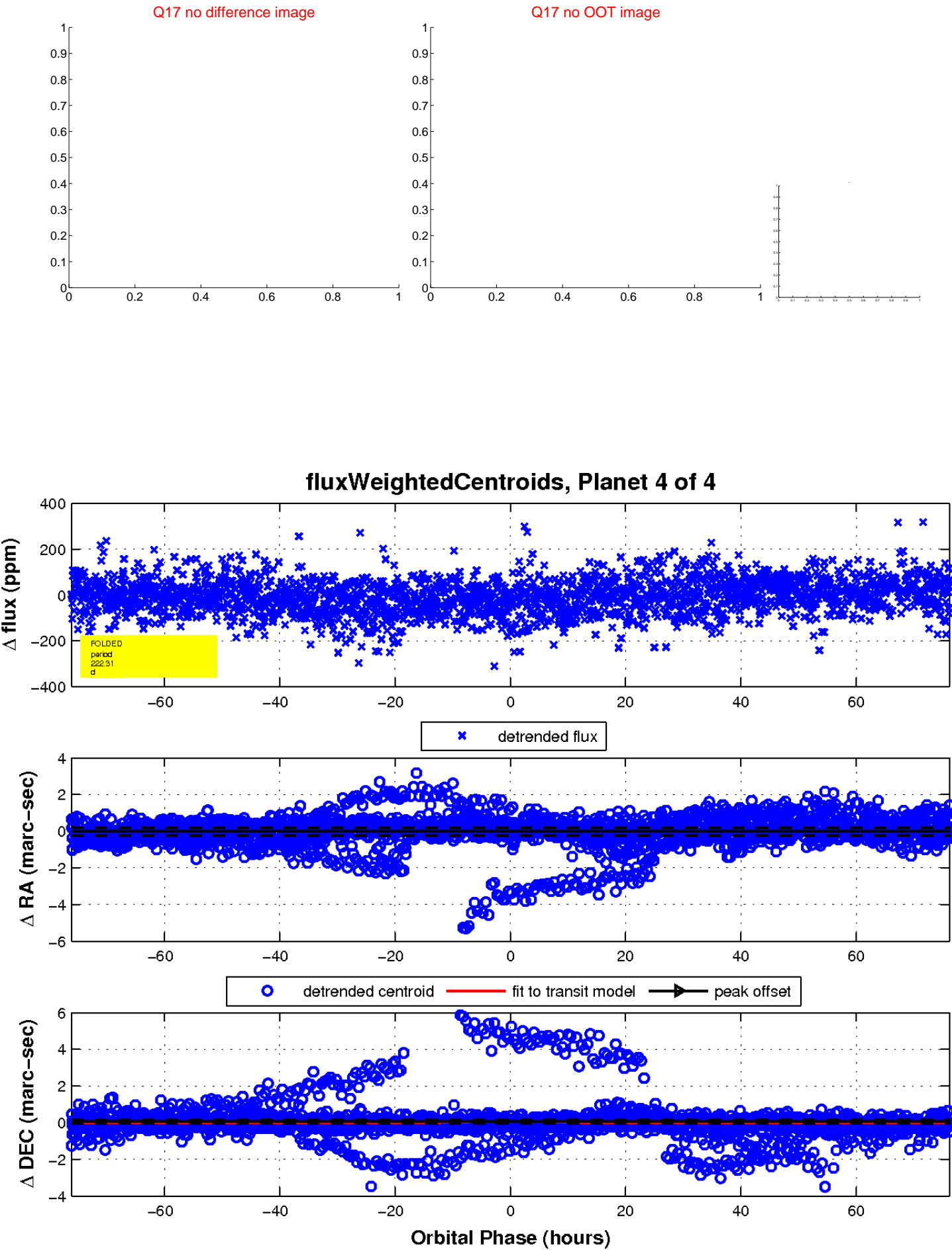
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



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



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



UKIRT Image

Declination

