

KIC 004661660

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})
004661660-01	OBS	No	0.534565	131.752627	82.7	1.815	9.7	7.6	3.52	8211	3.70	178273.18
004661660-02	OBS	No	0.630863	132.048359	527.8	0.742	10.2	14.8	3.52	8211	9.57	142946.57
004661660-03	OBS	No	0.630863	131.600023	583.3	0.755	9.6	16.1	3.52	8211	10.06	142946.41
004661660-04	OBS	No	0.630865	131.775095	267.6	1.282	10.8	11.0	3.52	8211	5.89	142945.92

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004661660-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT
004661660-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
004661660-03	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—SAME_NTL_PERIOD
004661660-04	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—SAME_NTL_PERIOD

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

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

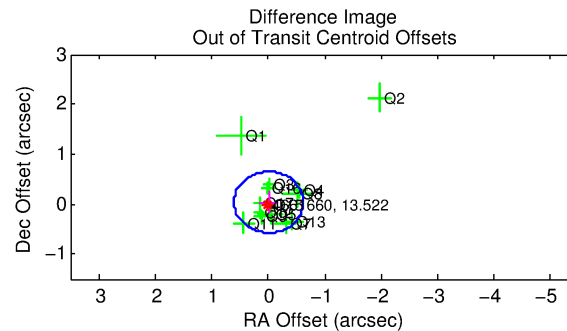
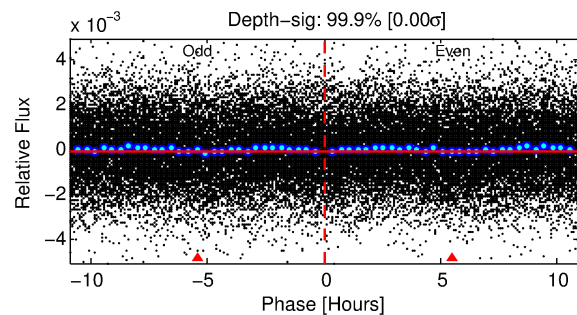
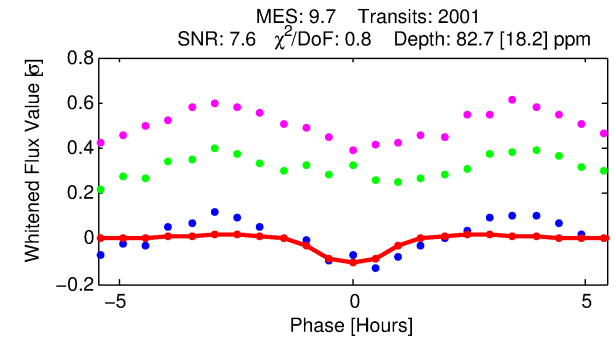
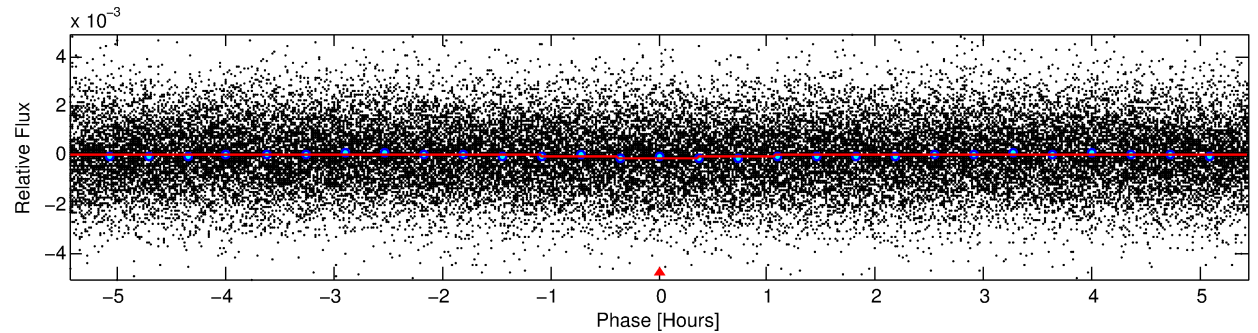
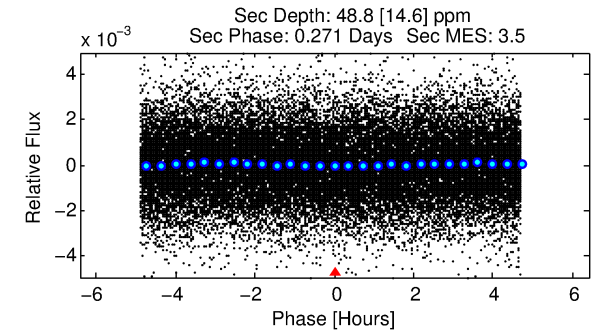
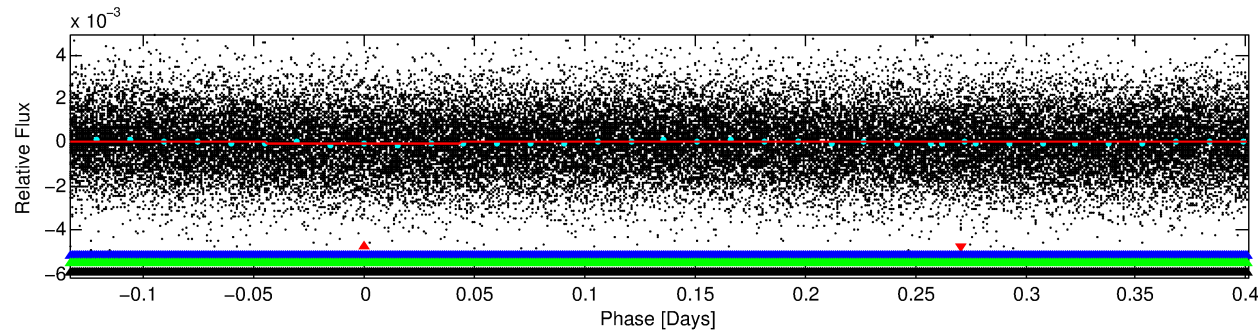
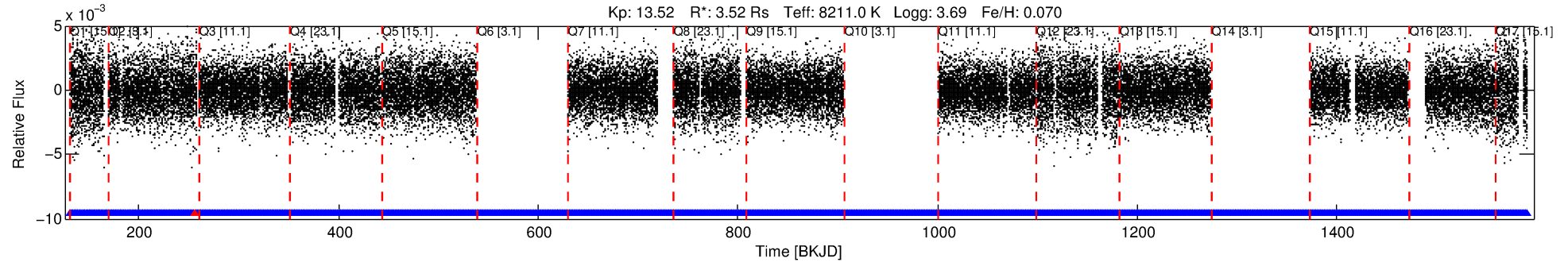
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004661660-01

No Significant Match Found

DV One-Page Summary

KIC: 4661660 Candidate: 1 of 4 Period: 0.535 d



DV Fit Results:

Period = 0.53457 [0.00001] d
Epoch = 131.7526 [0.0043] BKJD
Rp/R* = 0.0096 [0.0094]
a/R* = 1.42 [4.41]
b = 0.89 [1.46]
Seff = 178273.19 [135775.85]
Teq = 5240 [998] K
Rp = 3.70 [4.04] Re
a = 0.0168 [0.0078] AU
Ag = 0.56 [1.18] [-0.38σ]
Teffp = 6993 [3483] K [0.48σ]

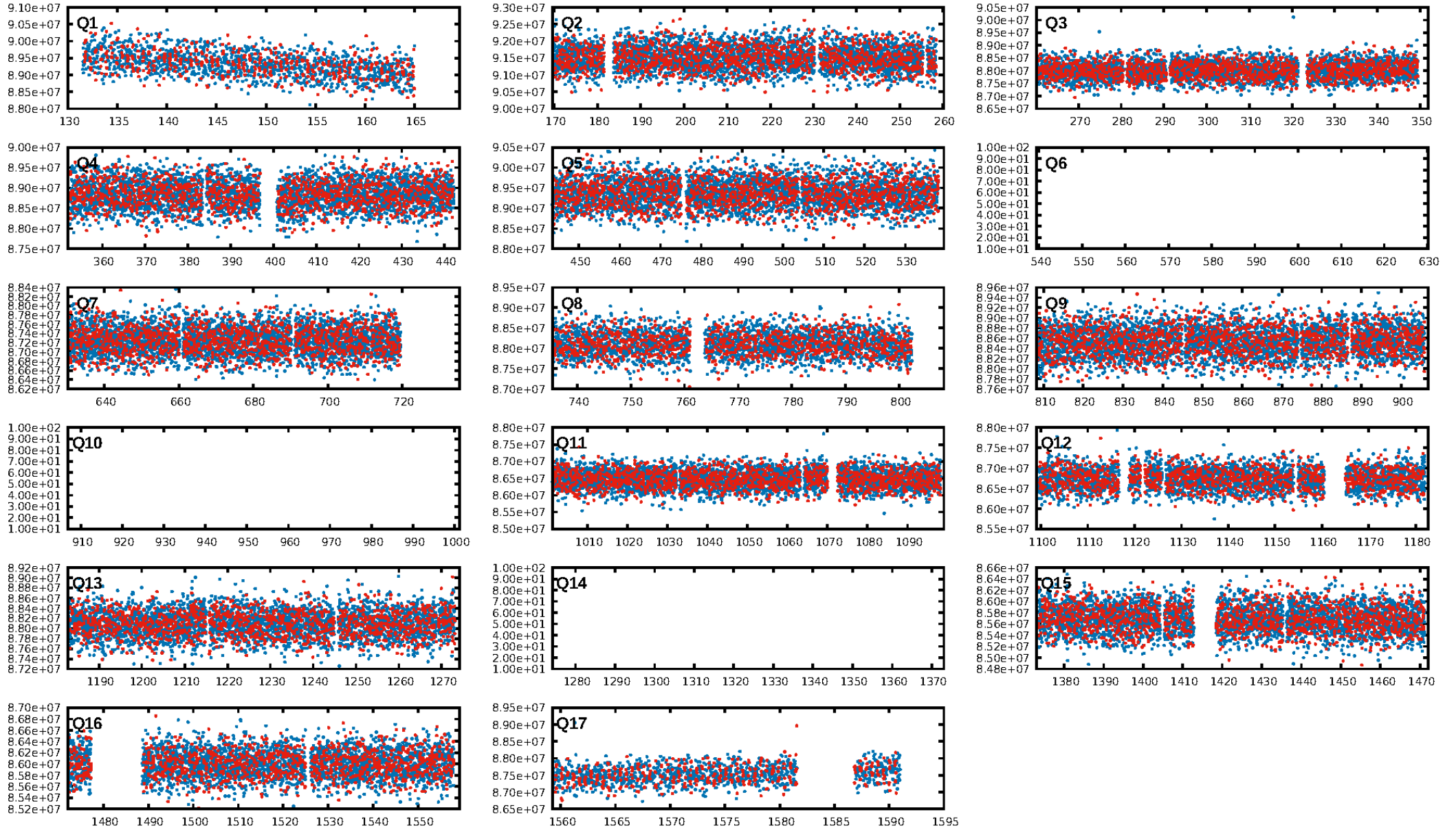
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 76.1% [1.18σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGoF-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [1887/1888]
GhostDiagnostic-chr: 3.772
Centroid-sig: 12.9%
Centroid-so: 0.545 arcsec [1.58σ]
OotOffset-rm: 0.037 arcsec [0.18σ]
KicOffset-rm: 0.166 arcsec [0.75σ]
OotOffset-st: 1/4/4/5 [14]
KicOffset-st: 1/4/4/5 [14]
DiffImageQuality-fgm: 0.86 [12/14]
DiffImageOverlap-fno: 0.00 [0/14]

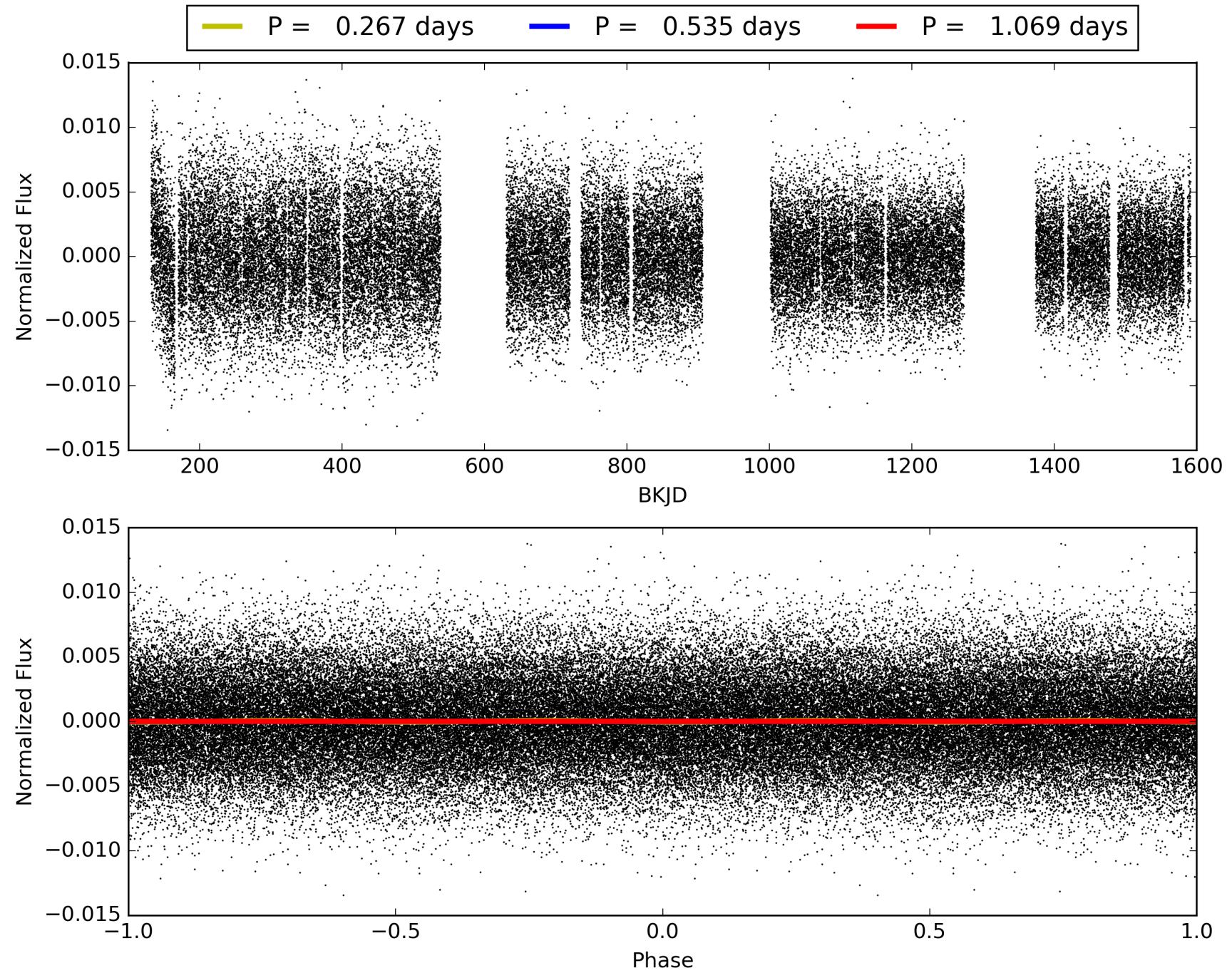
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 004661660-01, PDC Light Curves

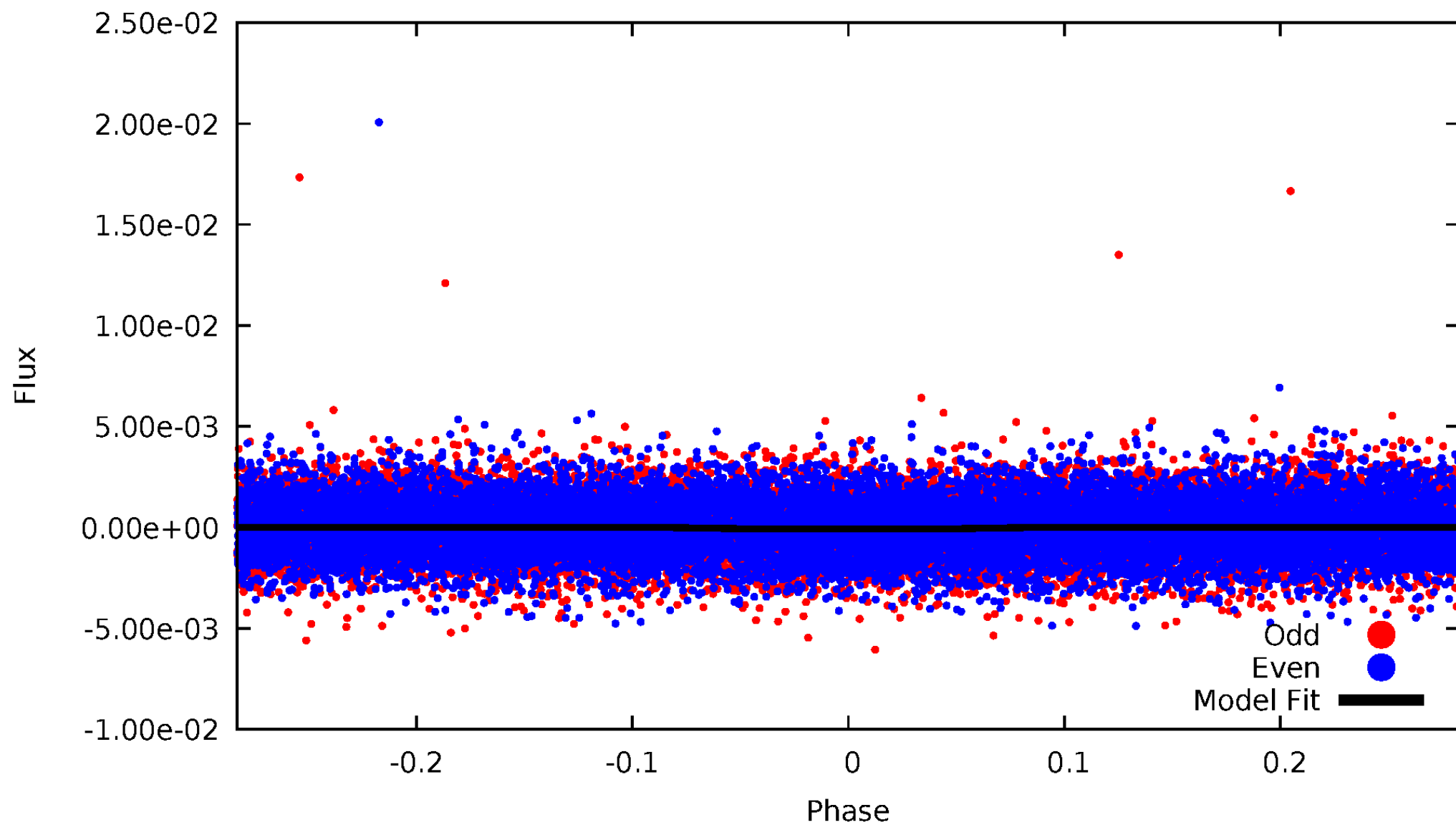


TCE 004661660-01



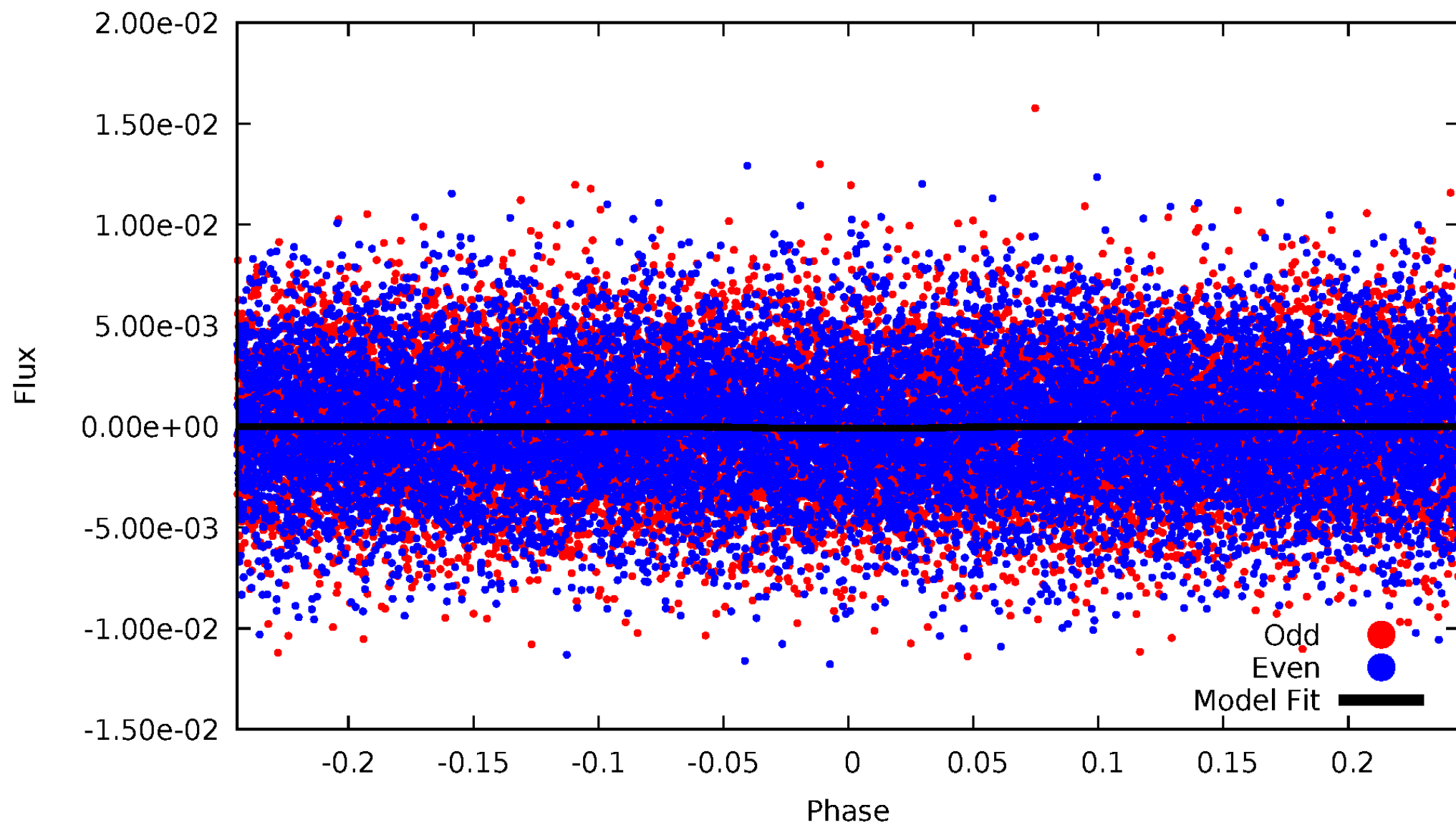
DV Odd/Even

TCE 004661660-01



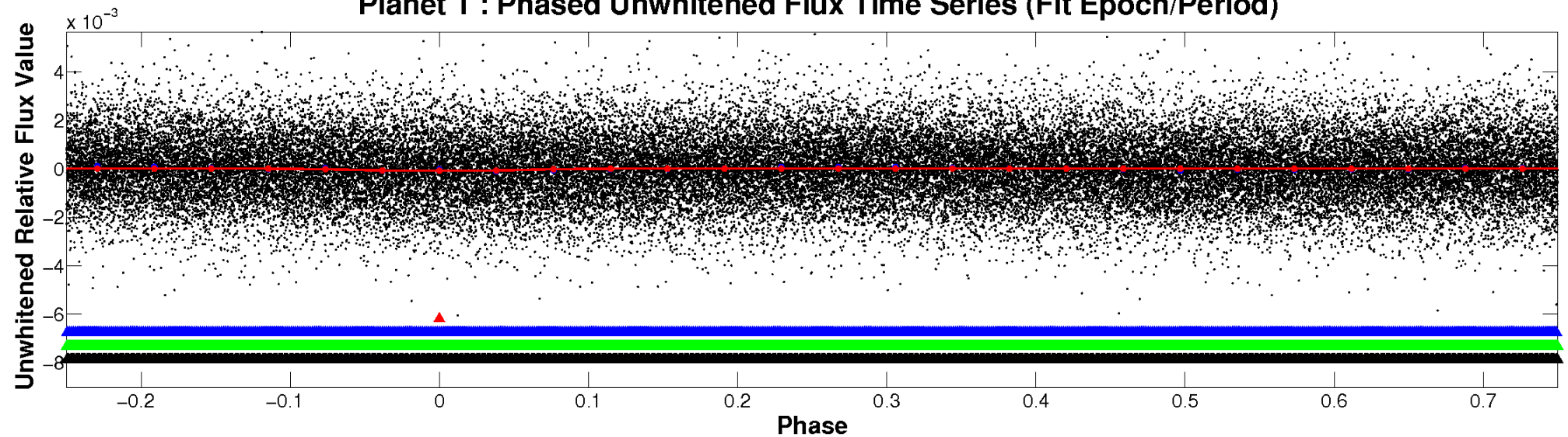
ALT Odd/Even

TCE 004661660-01

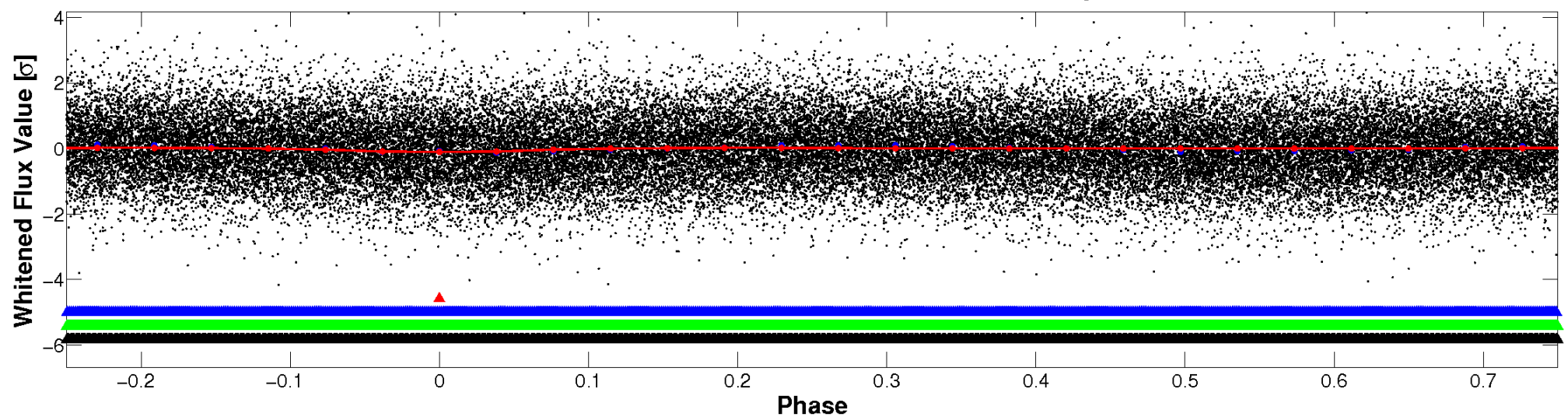


Non-Whitened Vs. Whitened Light Curve

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

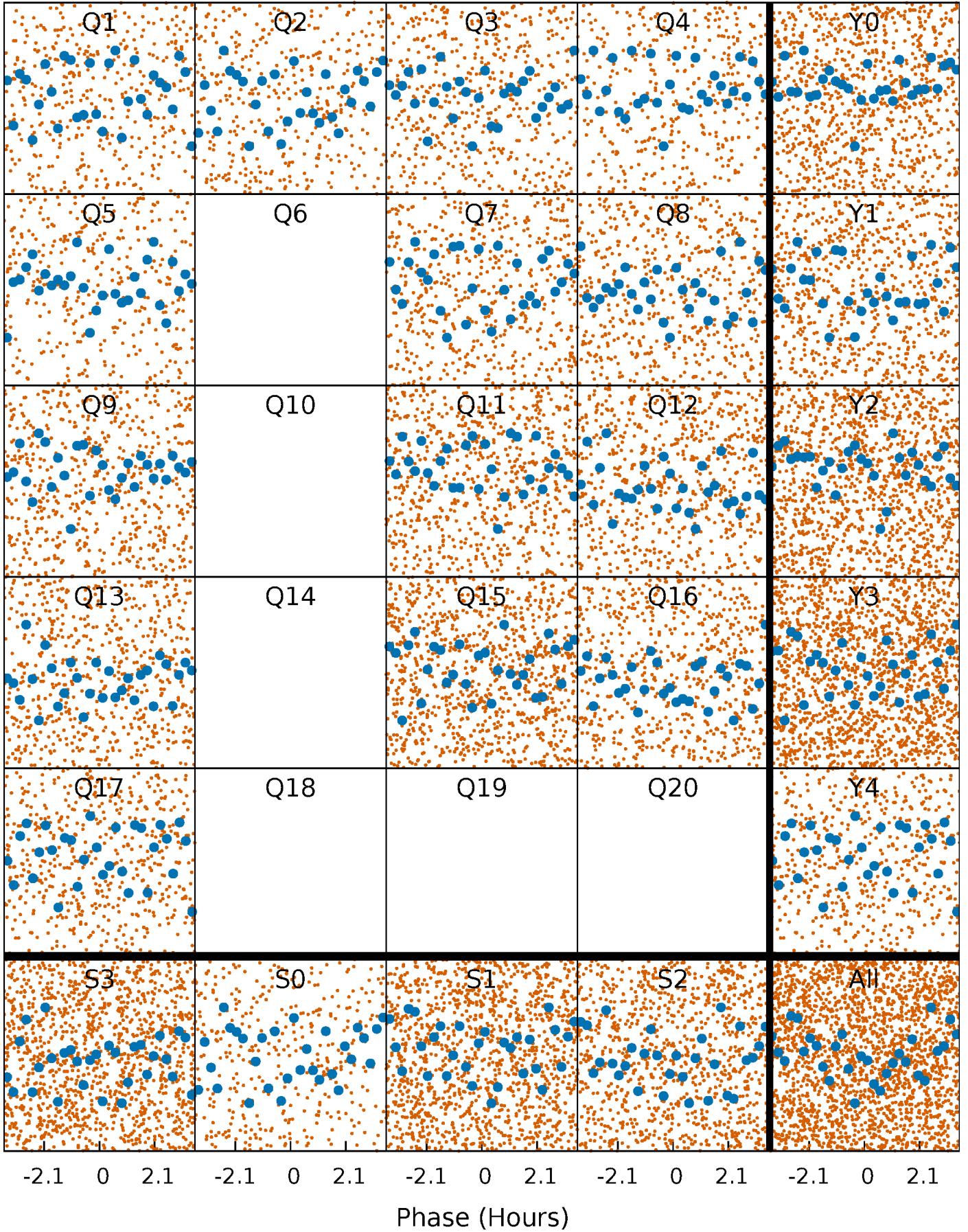


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



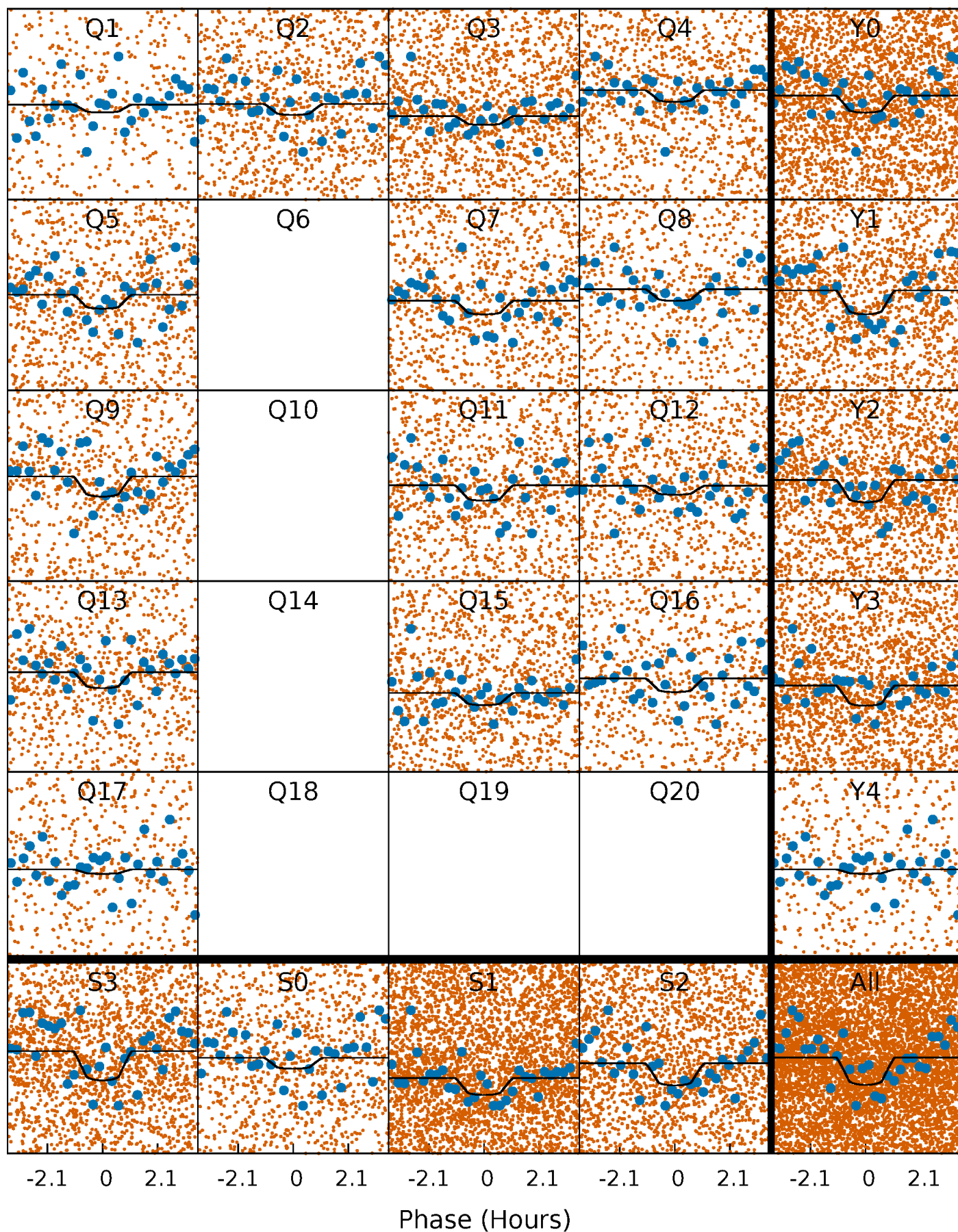
PDC Quarter-Phased Transit Curves

TCE 004661660-01 P= 0.534565 Days $T_0=131.752627$ (BKJD)



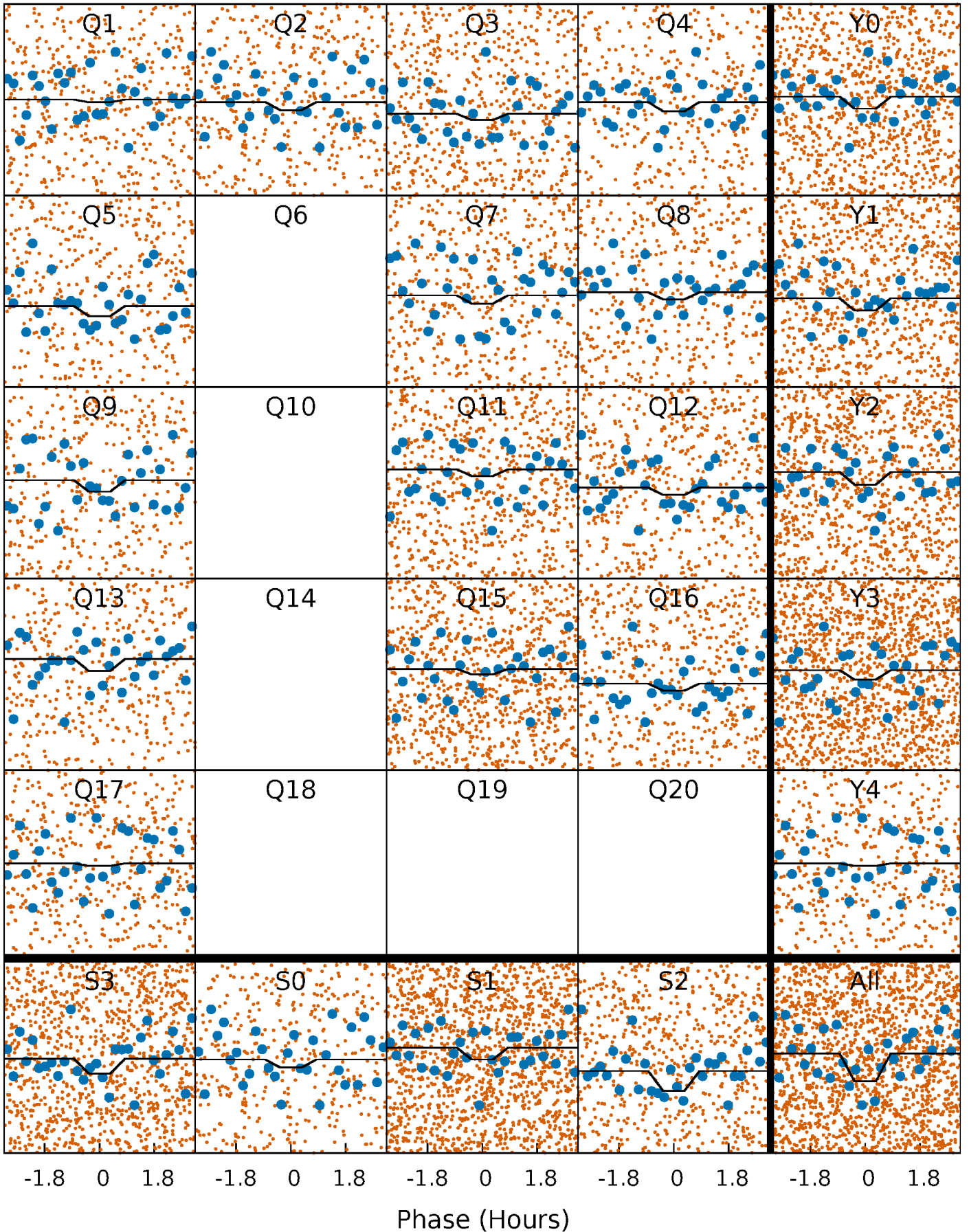
DV Quarter-Phased Transit Curves

TCE 004661660-01 P= 0.534565 Days $T_0=131.752627$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

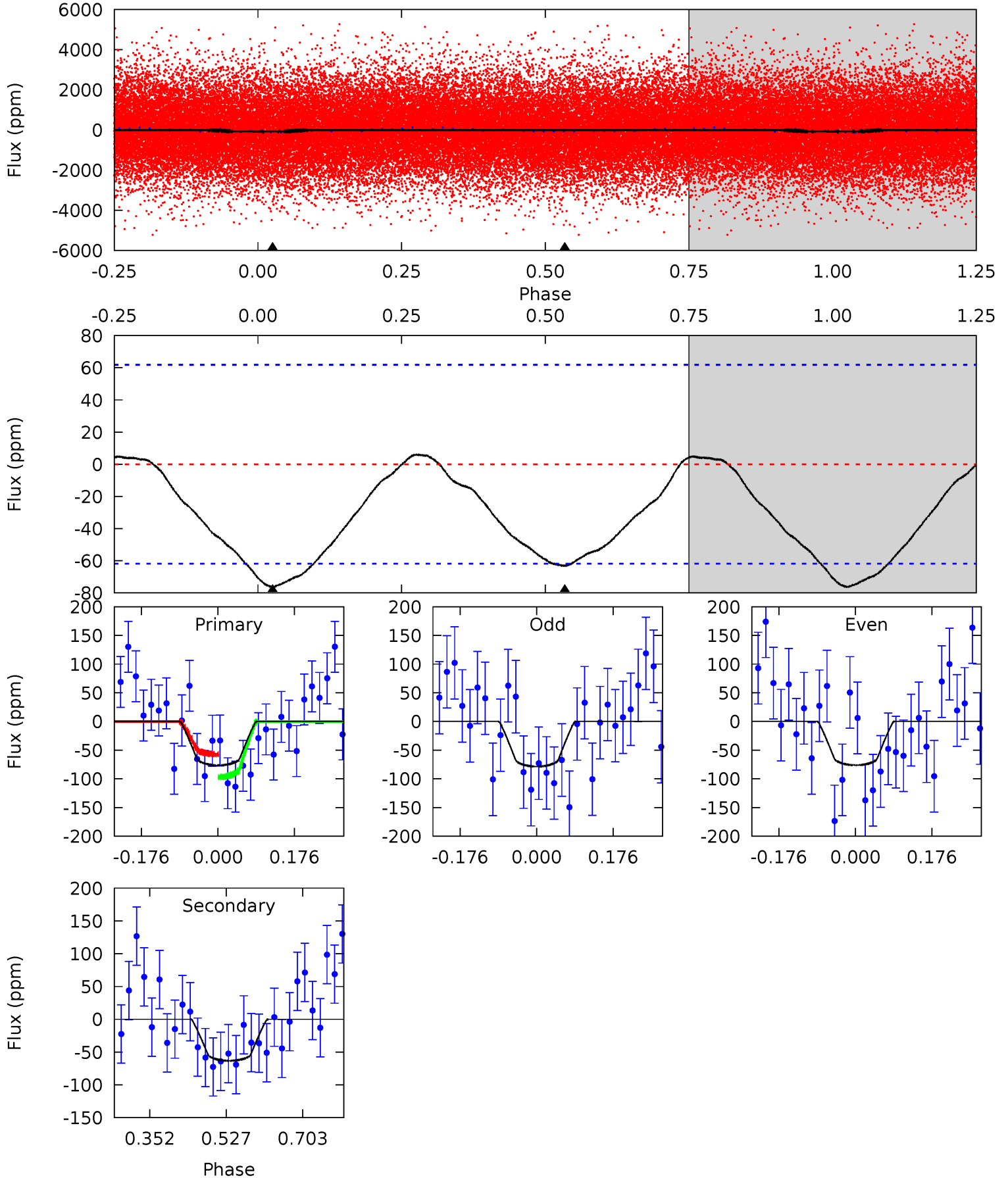
TCE 004661660-01 P= 0.534575 Days $T_0=131.751892$ (BKJD)



DV Model-Shift Uniqueness Test

004661660-01, P = 0.534565 Days, E = 131.218062 Days

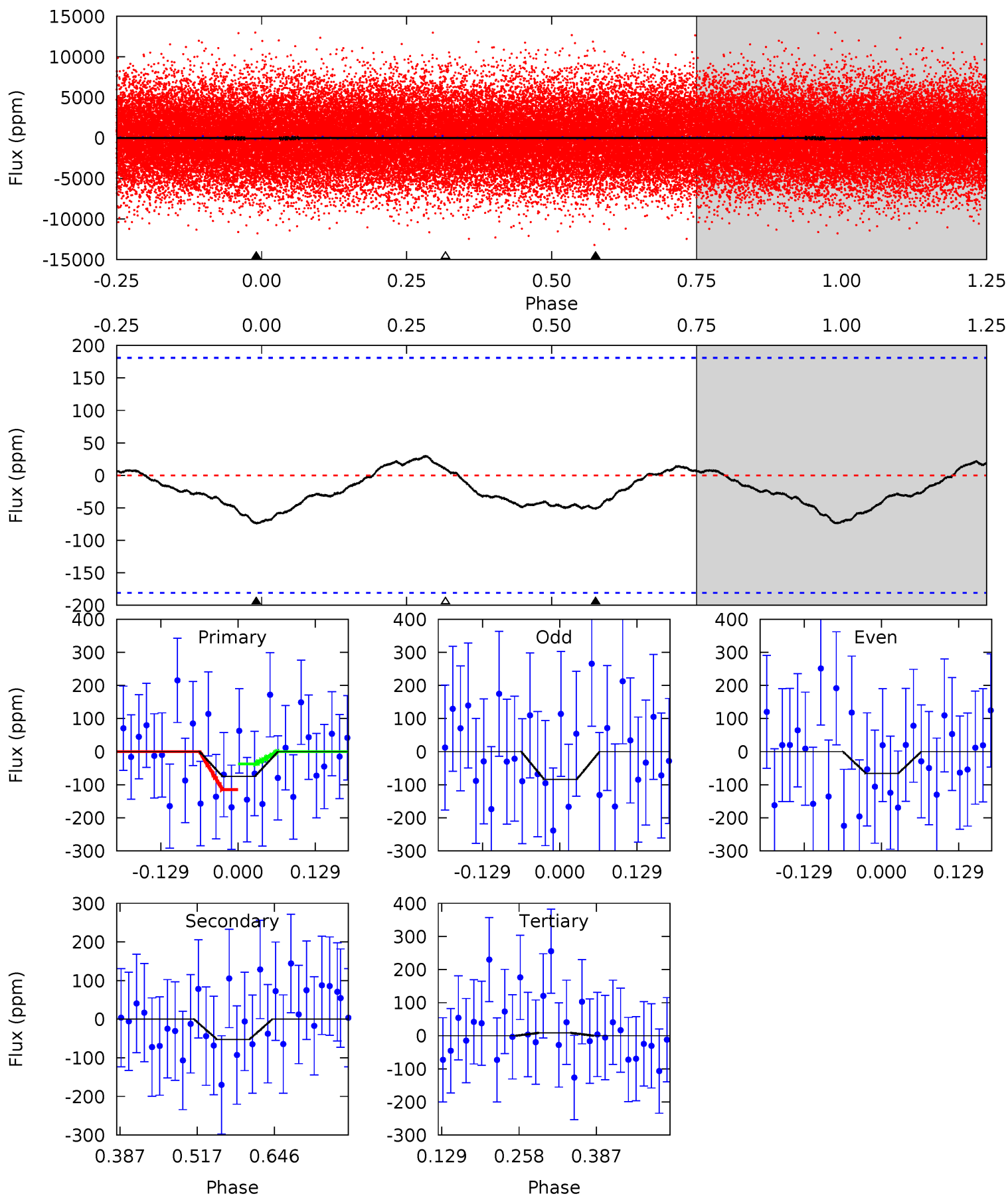
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.49	4.55	0	0	4.44	1.35	0.46	5.49	5.49	4.55	4.55	0.09	0.89	0.07	1.44



Alt Model-Shift Uniqueness Test

004661660-01, P = 0.534575 Days, E = 131.217317 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1.87	1.31	-0.21	0	4.51	1.52	0.50	2.08	1.87	1.52	1.31	0.23	0.70	0.29	0.97



Stellar Parameters For KIC 004661660

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	8211^{+226}_{-368}	$3.692^{+0.435}_{-0.145}$	$0.070^{+0.250}_{-0.450}$	$3.523^{+0.909}_{-1.688}$	$2.225^{+0.329}_{-0.611}$	$0.072^{+0.314}_{-0.031}$
	+3%/-4%	+12%/-4%	+357%/-643%	+26%/-48%	+15%/-27%	+439%/-44%
Source	KIC0	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 004661660-01 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-63 ± 14	$3.84^{+3.65}_{-2.53}$	7133^{+611}_{-853}	5601^{+7417}_{-10428}	$0.621^{+4.744}_{-0.451}$
Alt.	-52 ± 40	$3.87^{+3.20}_{-2.43}$	7103^{+645}_{-882}	4660^{+5544}_{-10080}	$0.446^{+2.438}_{-0.373}$

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

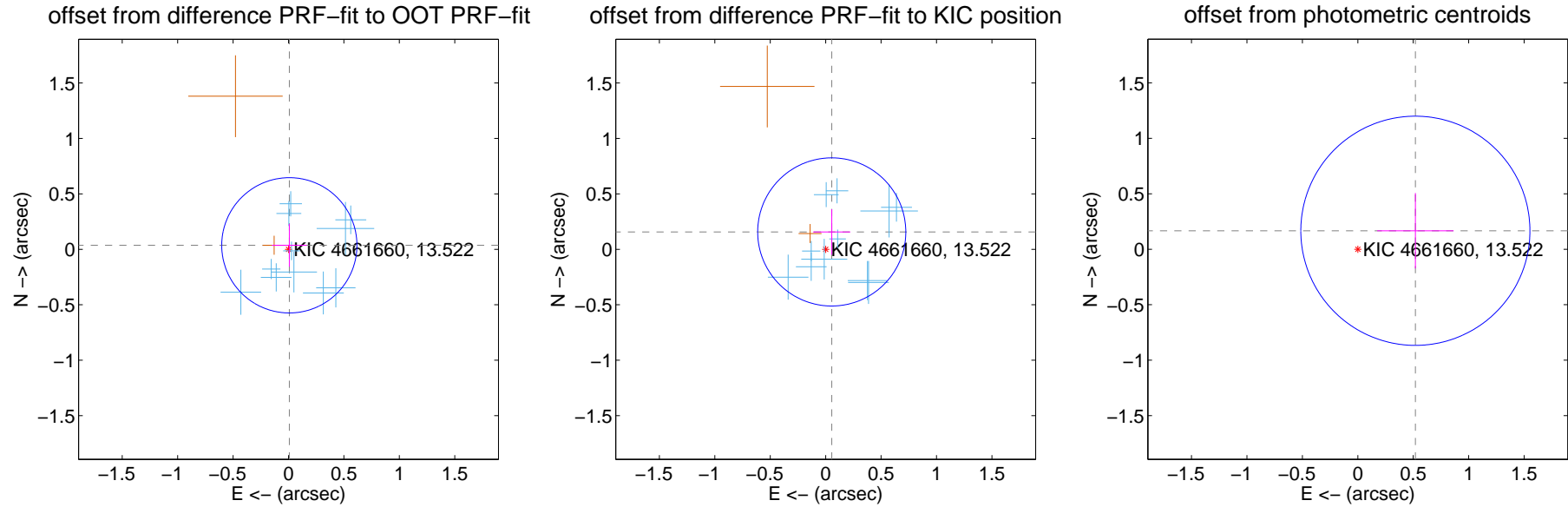
DV Centroid Data

Supplemental centroid analysis for 004661660-01. Kepler magnitude: 13.52. Transit SNR 7.58

There are 12 quarters with good PRF difference image offsets

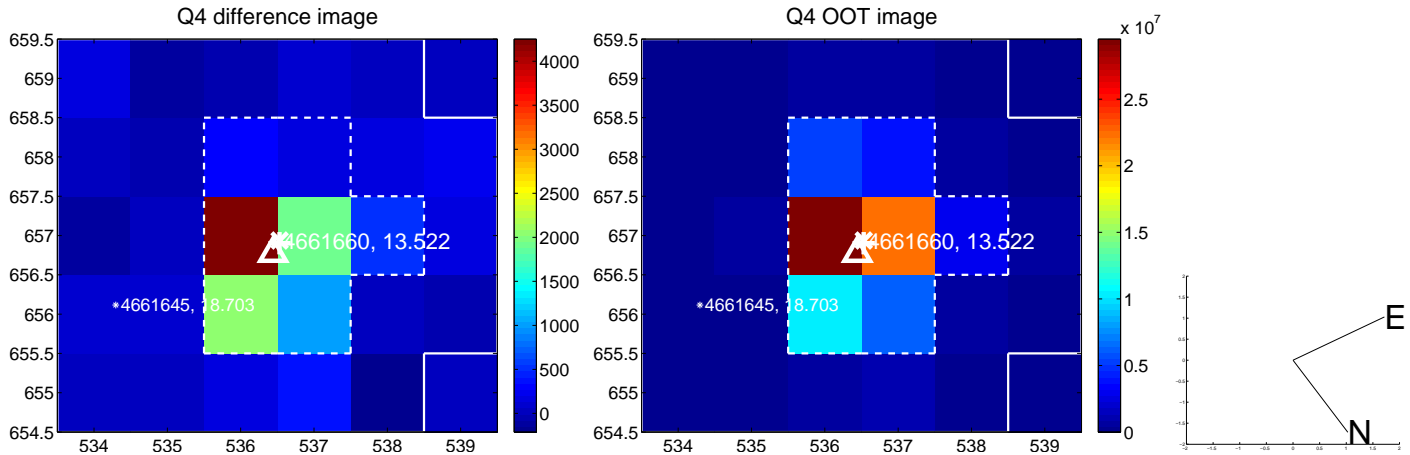
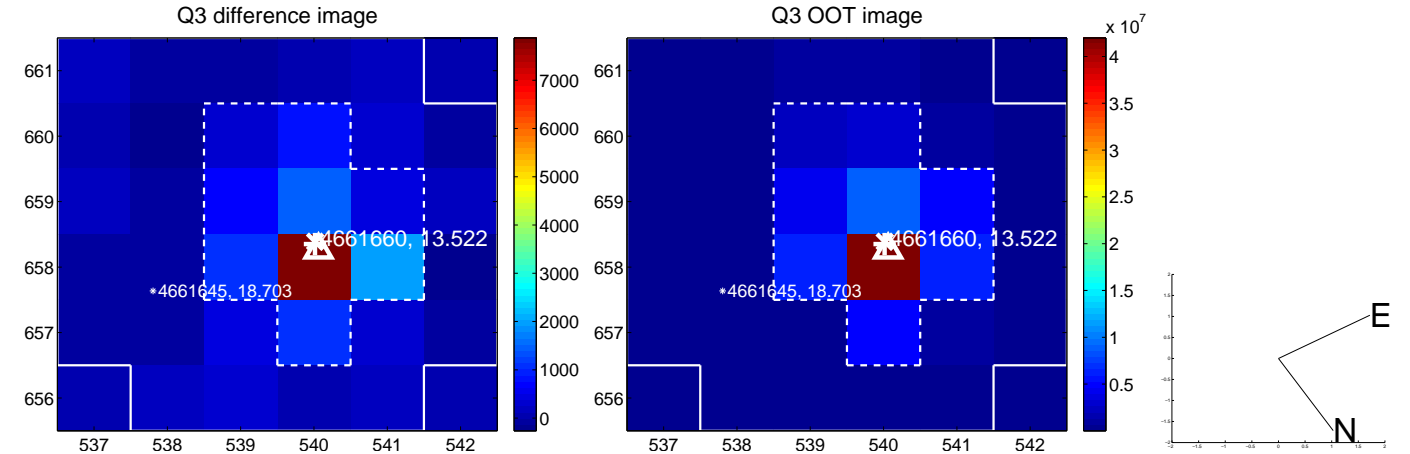
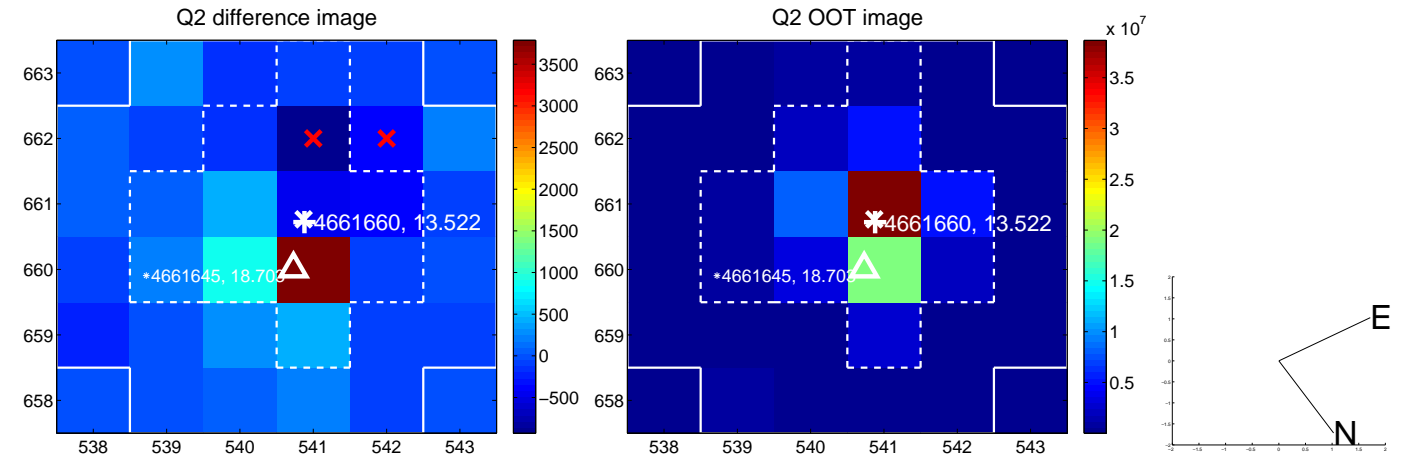
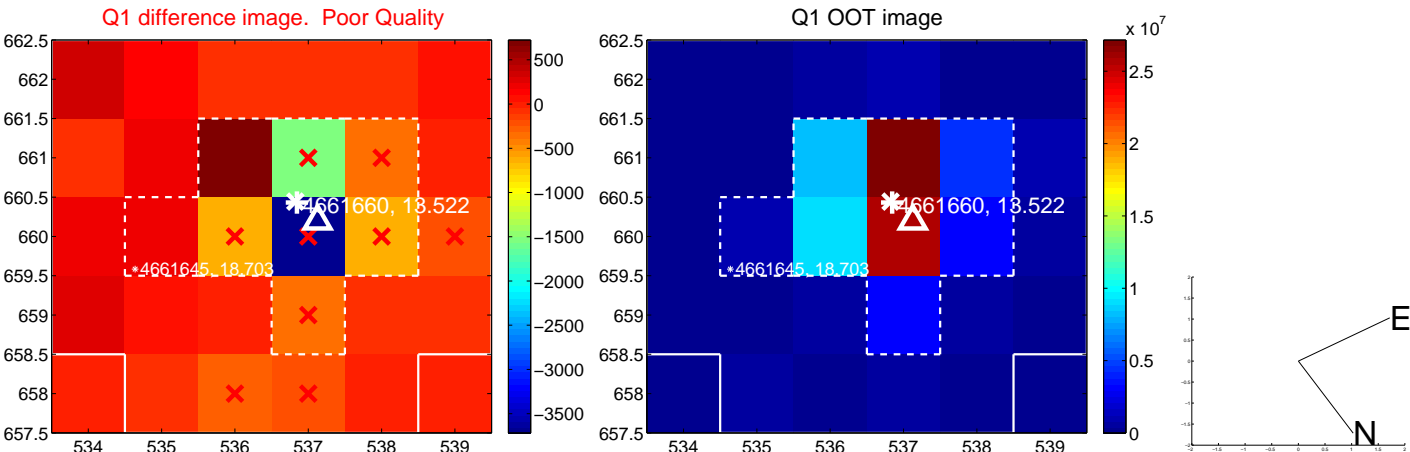
The direct PRF centroid is offset from the target star catalog position by about 0.11 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.037 ± 0.203	0.18	-0.008 ± 0.157	0.036 ± 0.193
PRF-fit source offset from KIC position	0.166 ± 0.223	0.75	-0.055 ± 0.167	0.157 ± 0.205
photometric centroid source offset	0.54 ± 0.34	1.58	-0.52 ± 0.34	0.17 ± 0.34

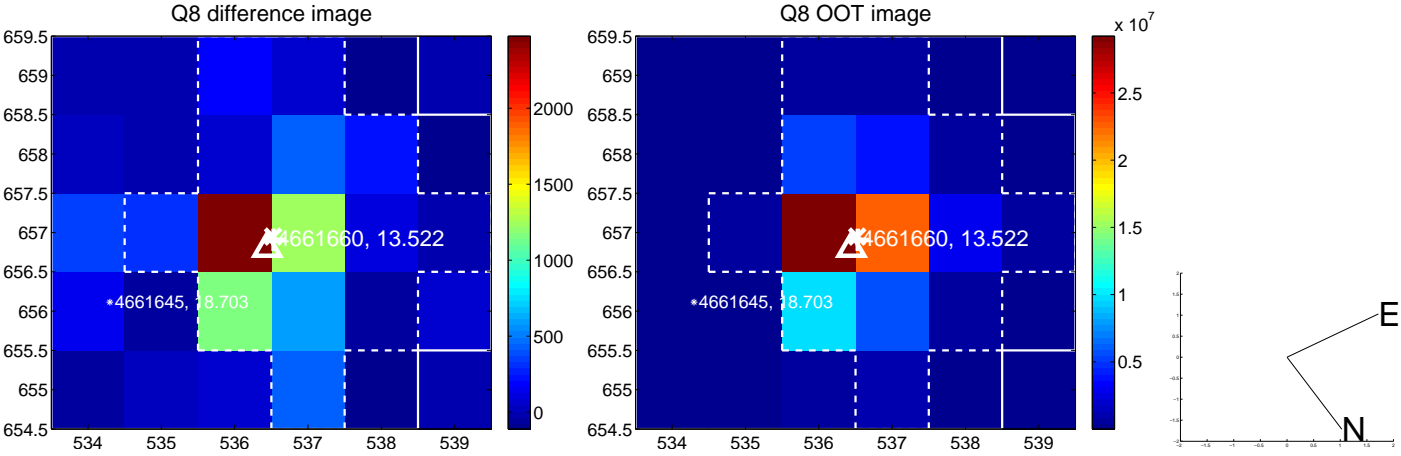
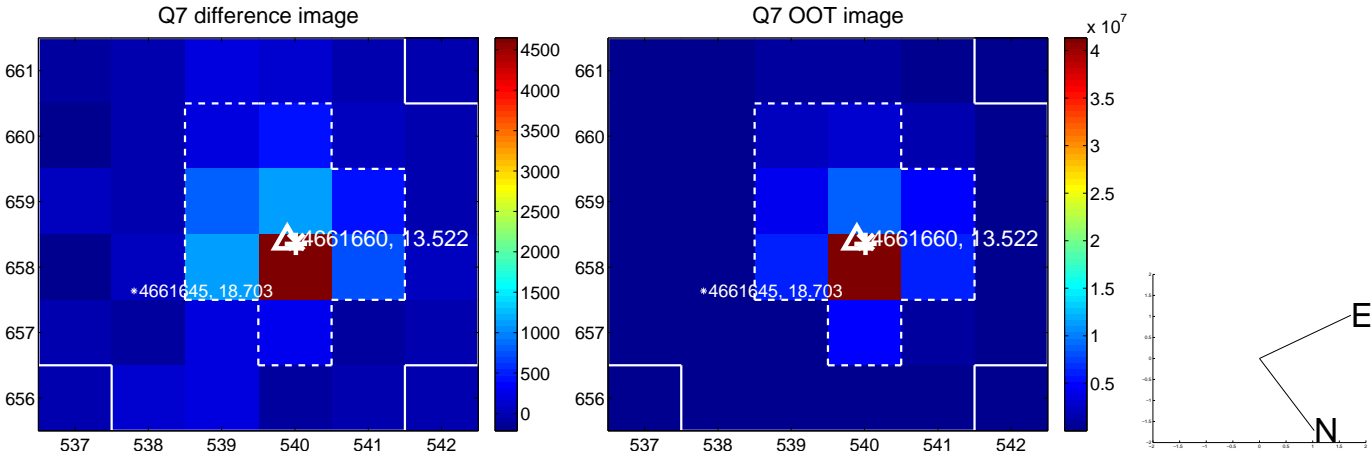
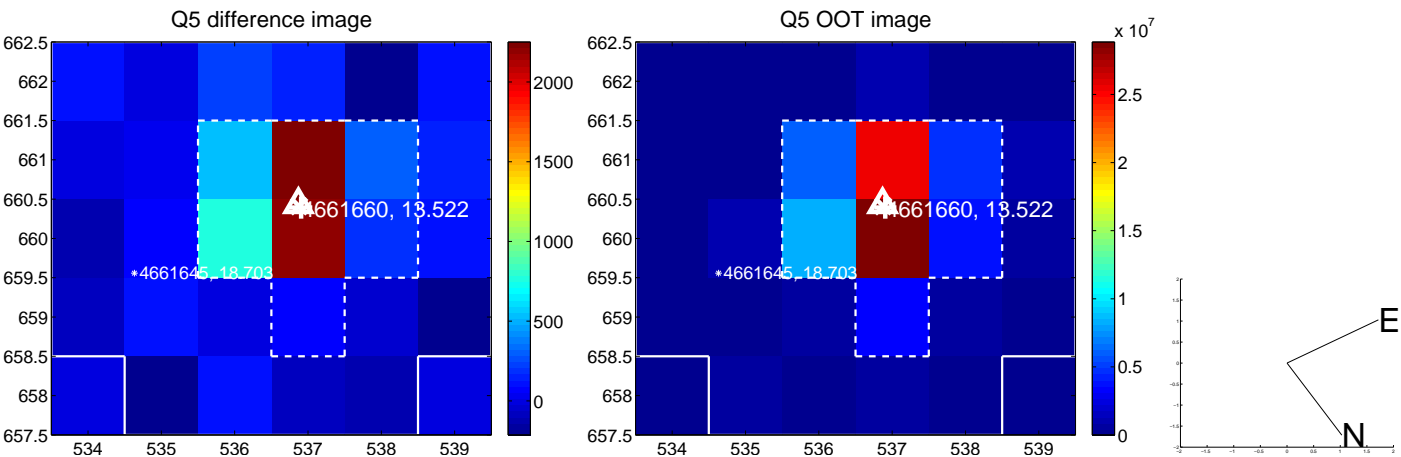


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

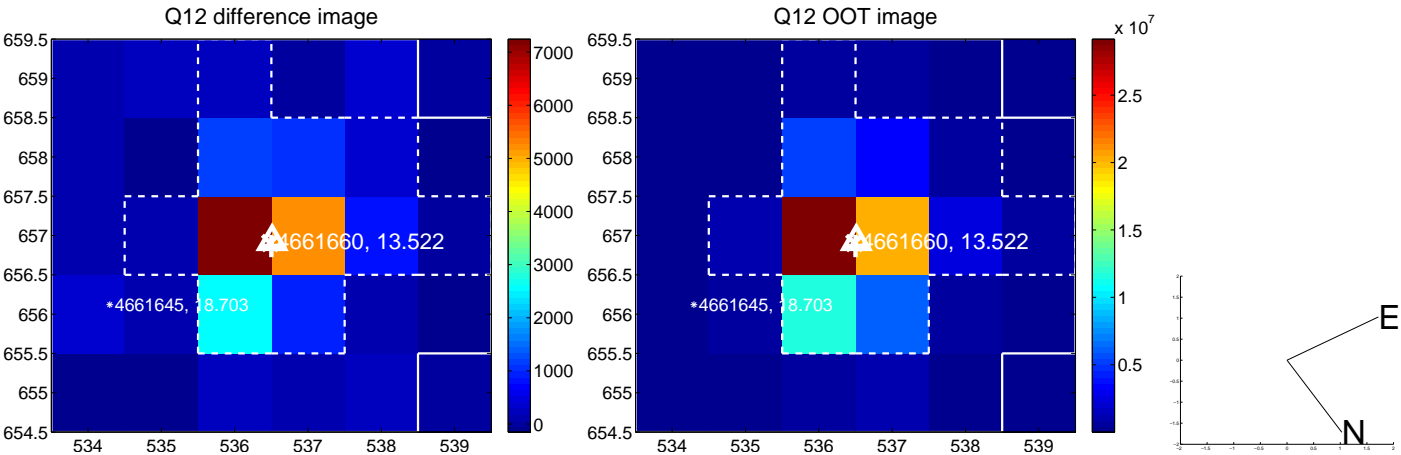
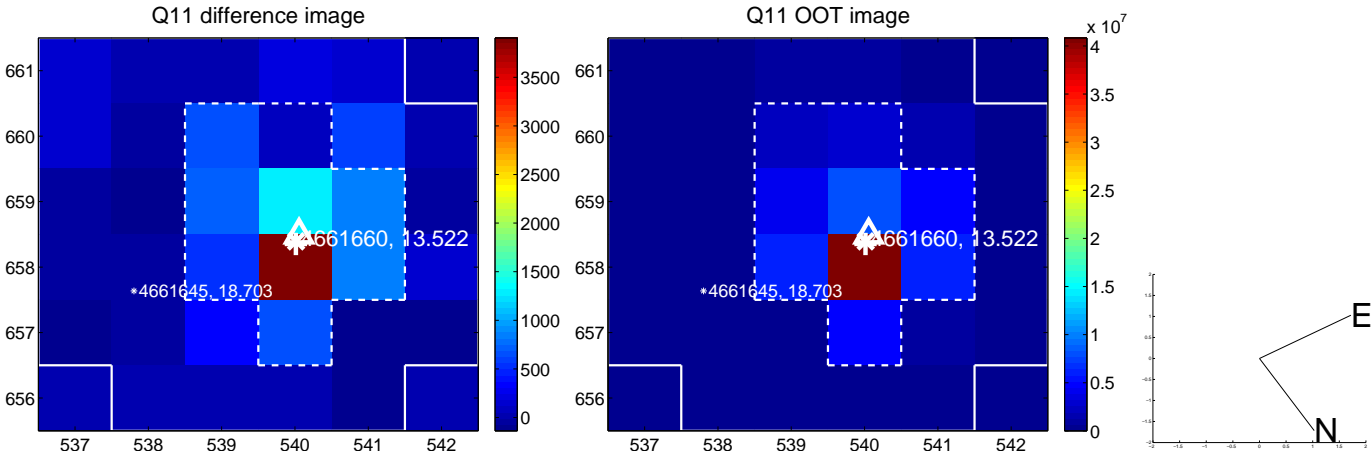
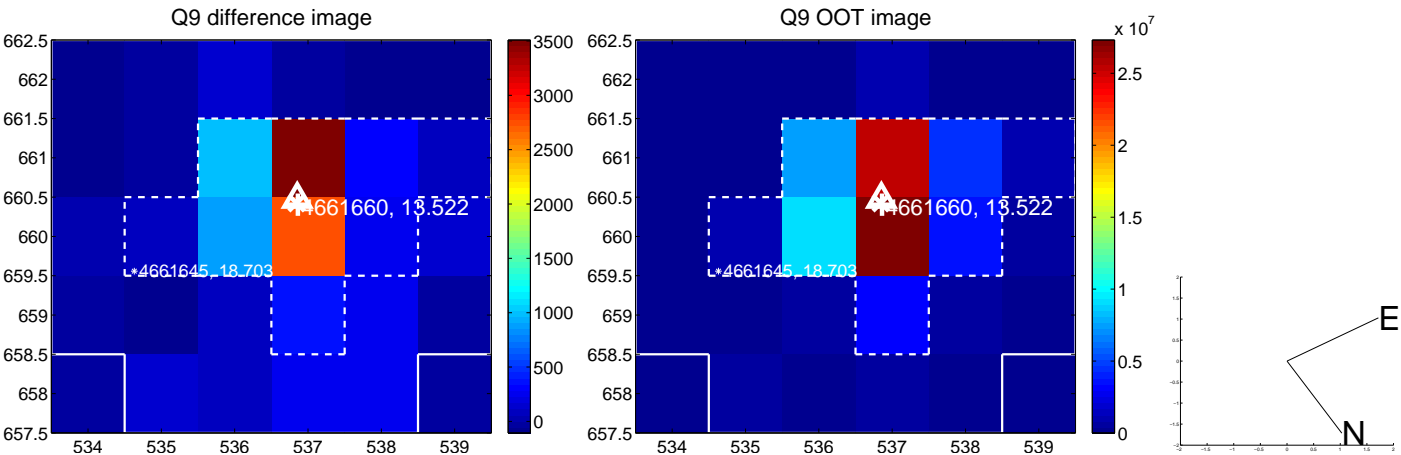
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



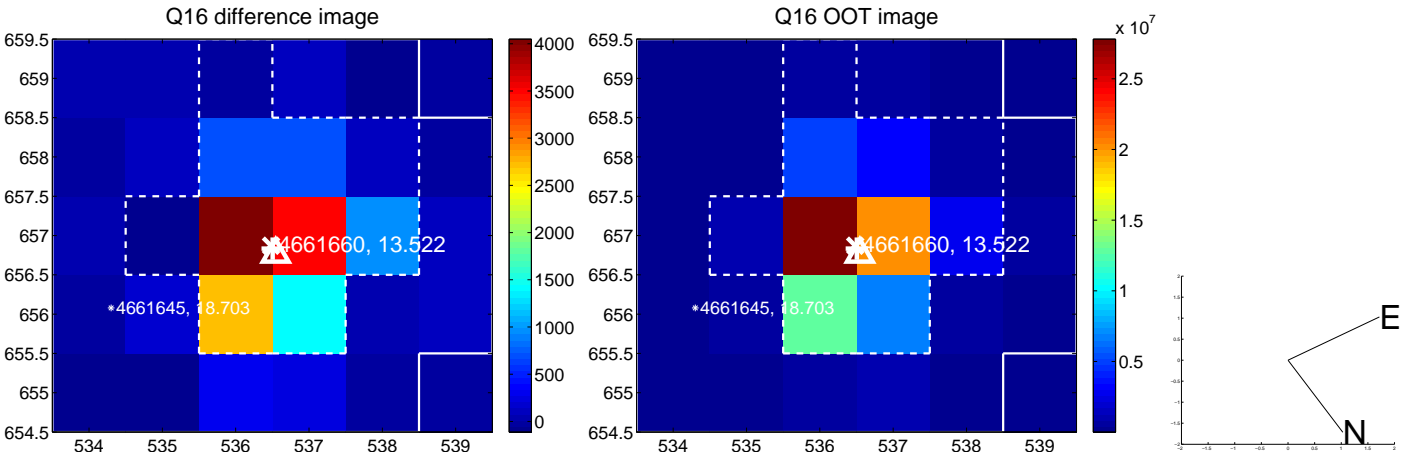
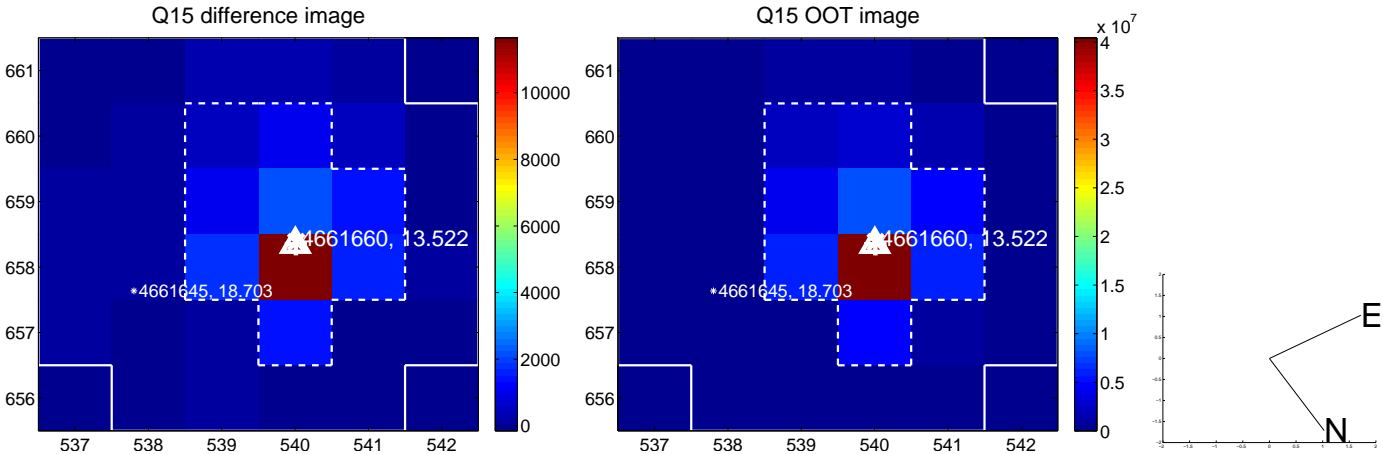
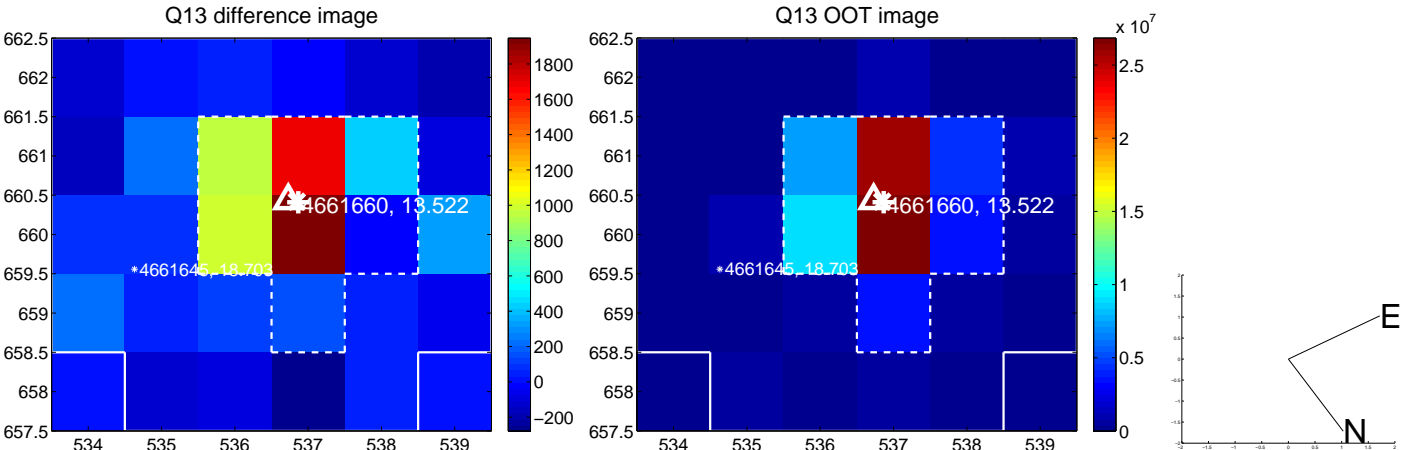
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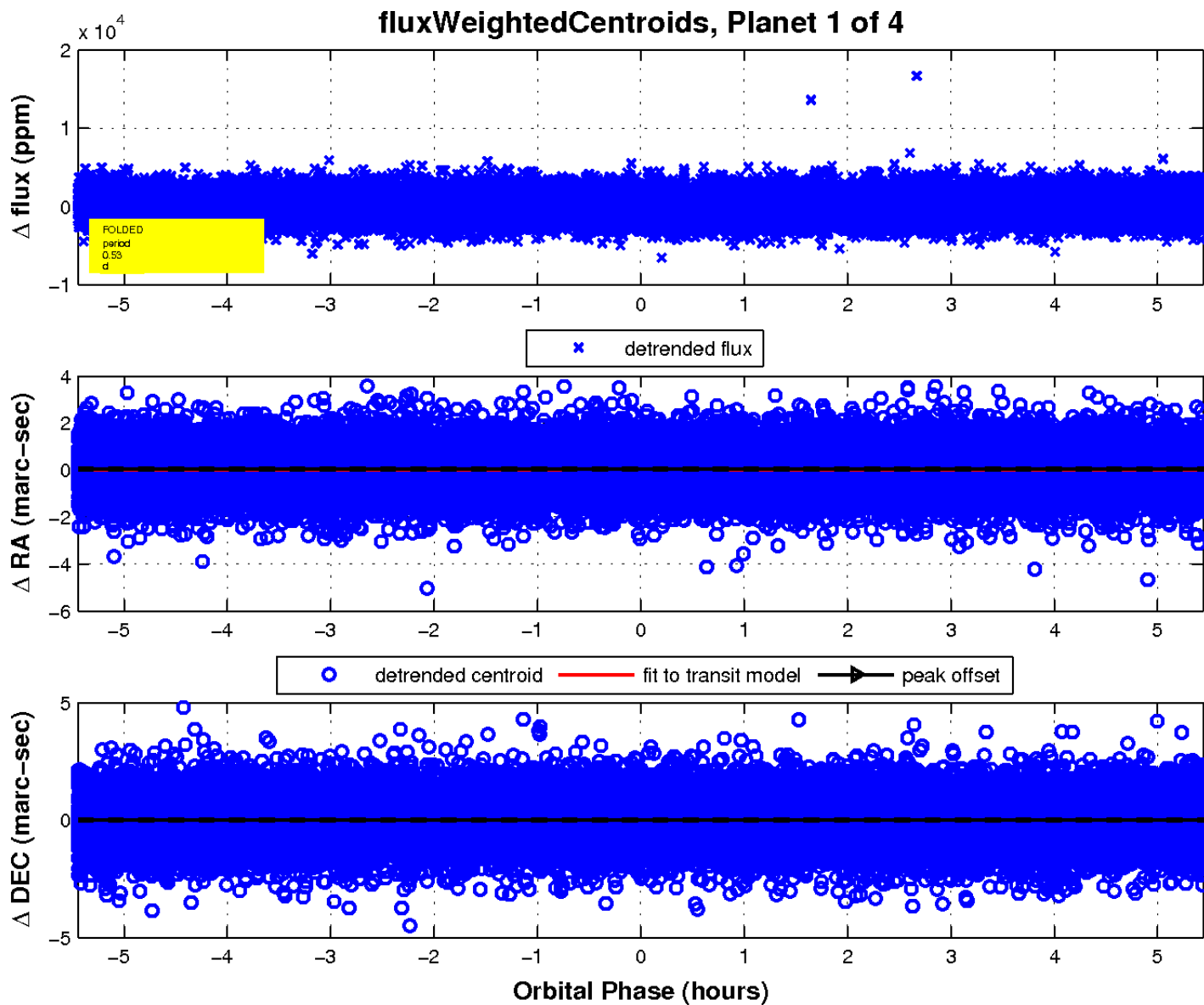
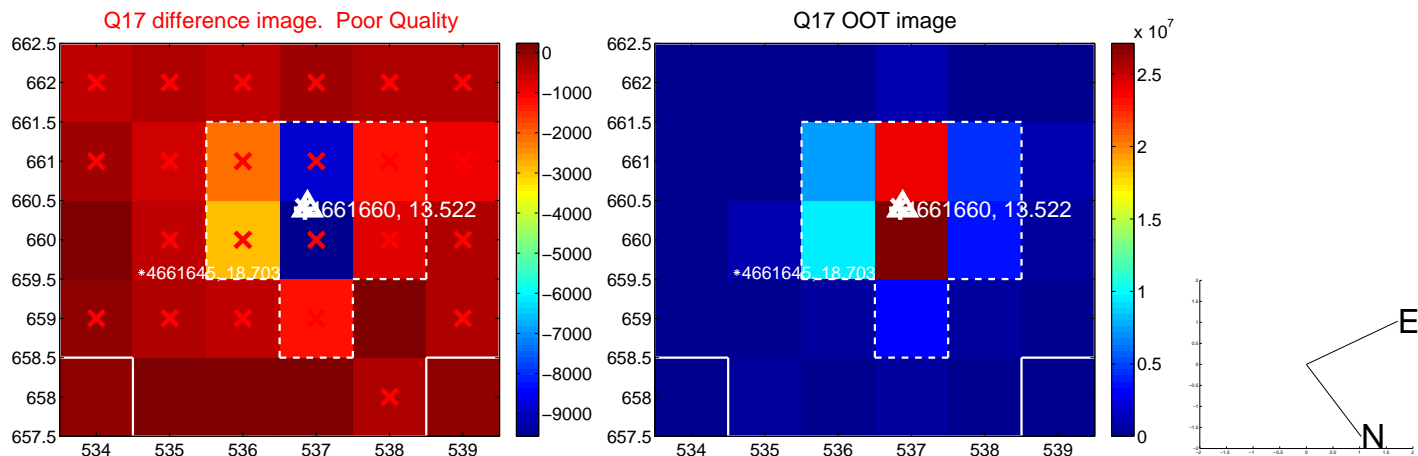
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white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

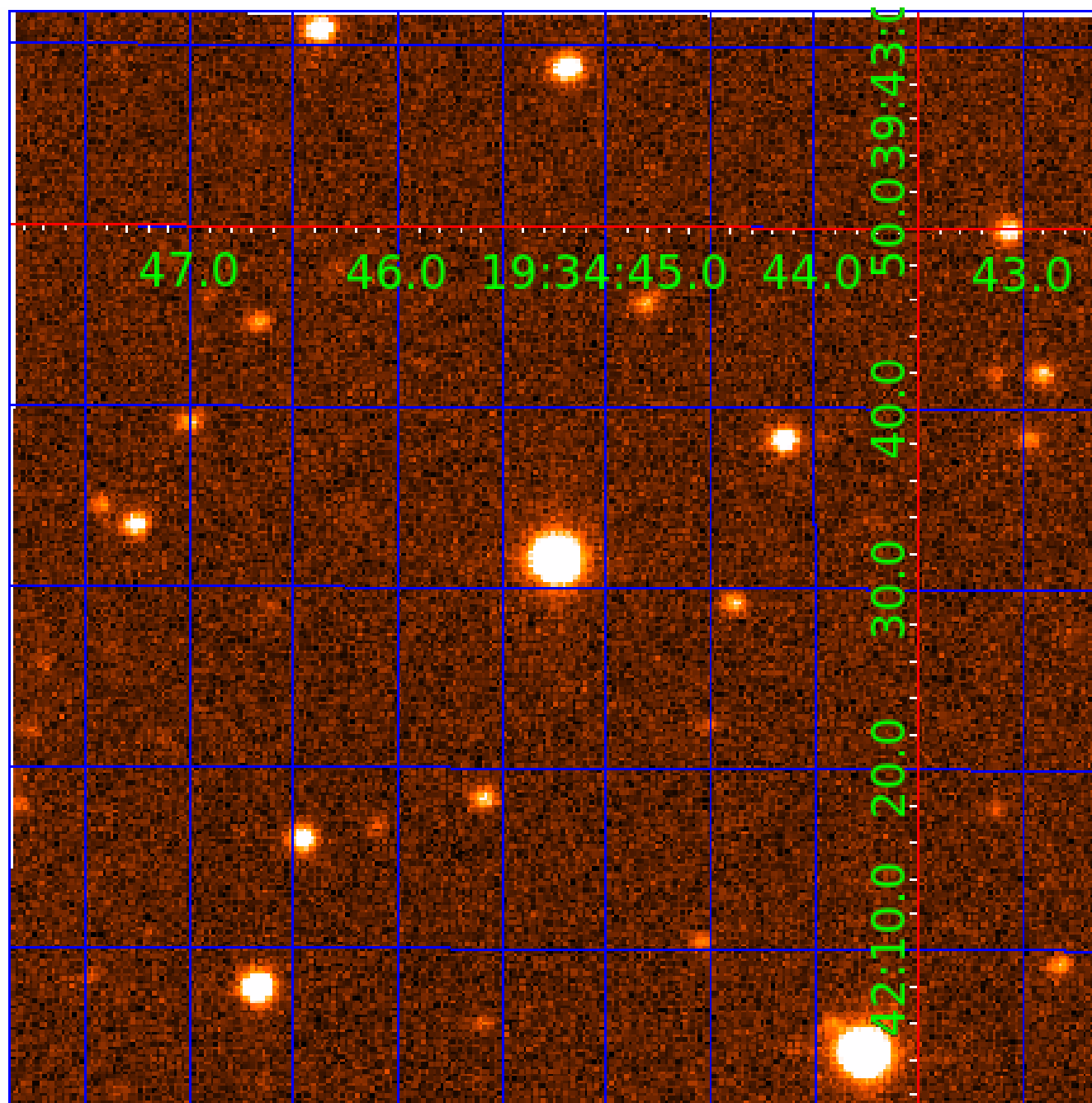


white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 004661660

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})
004661660-01	OBS	No	0.534565	131.752627	82.7	1.815	9.7	7.6	3.52	8211	3.70	178273.18
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004661660-03	OBS	No	0.630863	131.600023	583.3	0.755	9.6	16.1	3.52	8211	10.06	142946.41
004661660-04	OBS	No	0.630865	131.775095	267.6	1.282	10.8	11.0	3.52	8211	5.89	142945.92

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
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004661660-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
004661660-03	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—SAME_NTL_PERIOD
004661660-04	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—SAME_NTL_PERIOD

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

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

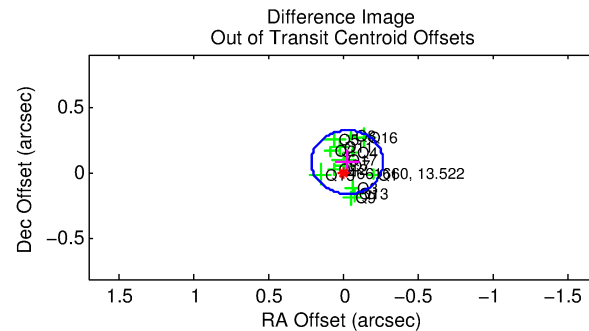
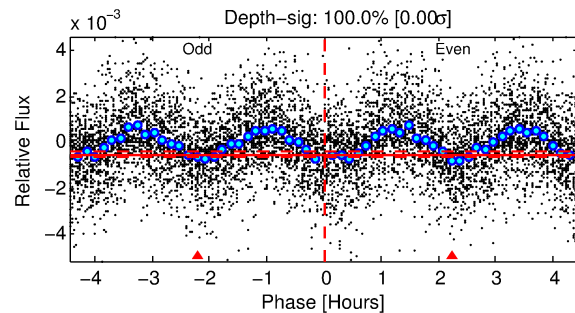
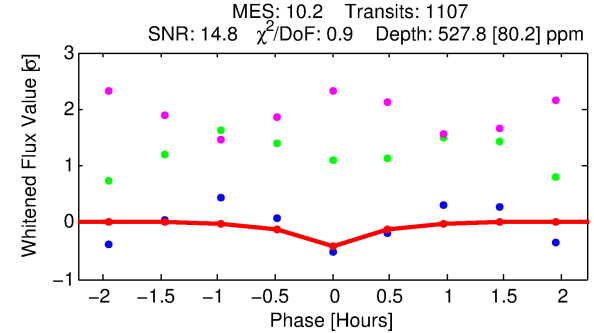
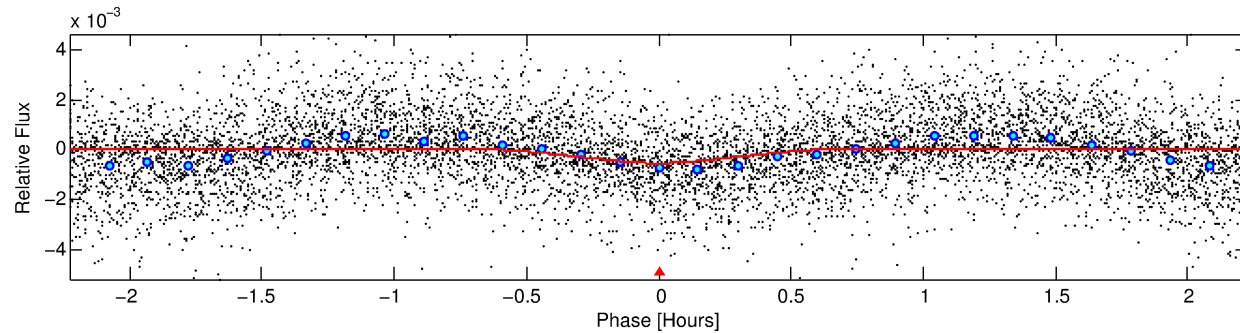
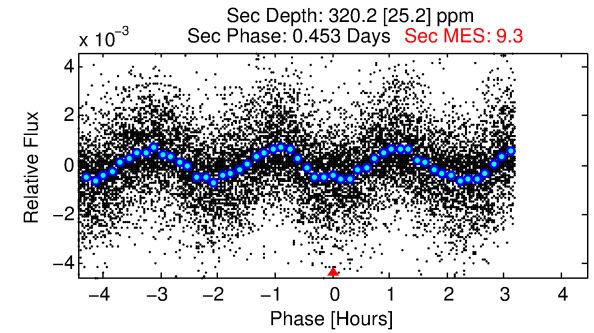
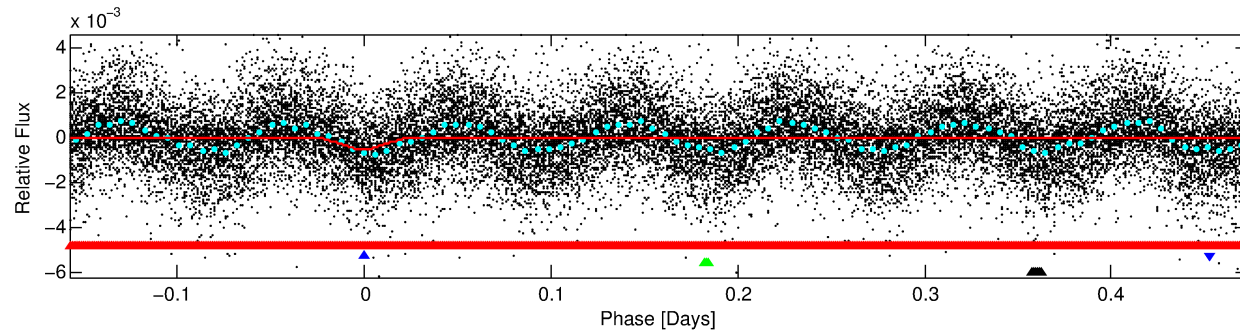
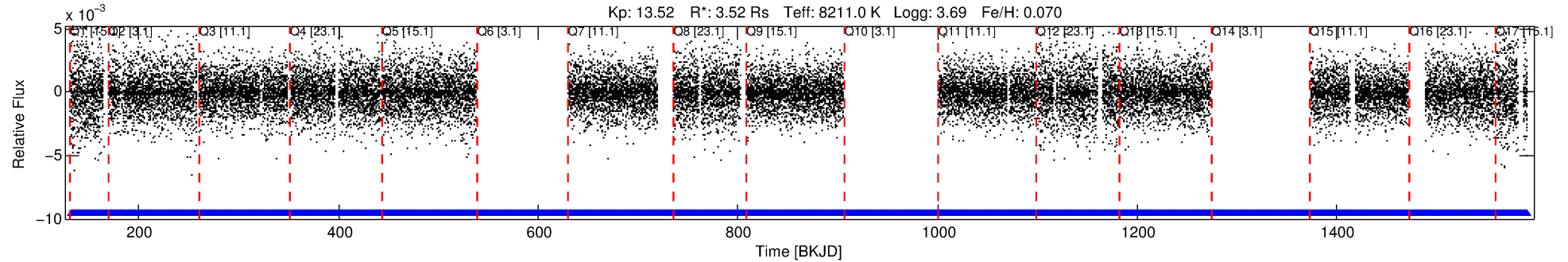
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004661660-02

No Significant Match Found

DV One-Page Summary

KIC: 4661660 Candidate: 2 of 4 Period: 0.631 d



DV Fit Results:

Period = 0.63086 [0.00001] d
Epoch = 132.0484 [0.0012] BKJD
Rp/R* = 0.0249 [0.0089]
a/R* = 3.32 [6.23]
b = 0.90 [0.45]
Seff = 142946.57 [108870.51]
Teq = 4958 [944] K
Rp = 9.57 [5.72] Re
a = 0.0188 [0.0087] AU
Ag = 0.68 [0.70] [-0.46σ]
Teffp = 6960 [1287] K [1.25σ]

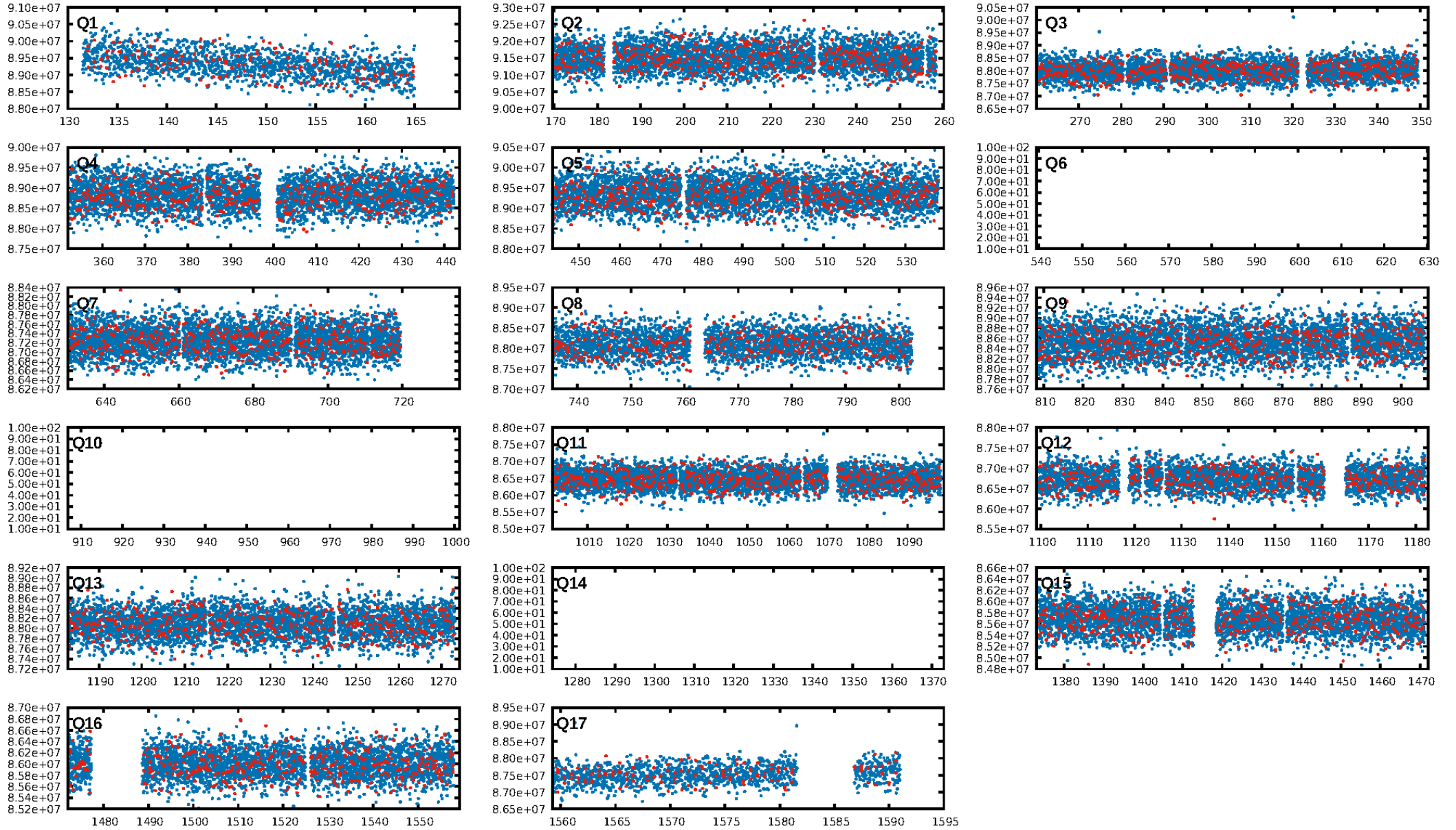
DV Diagnostic Results:

ShortPeriod-sig: 76.1% [1.18σ]
LongPeriod-sig: 0.0% [0.00σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [1047/1047]
GhostDiagnostic-chr: -5.953
Centroid-sig: 0.0%
Centroid-so: 0.289 arcsec [2.95σ]
OotOffset-rm: 0.090 arcsec [1.12σ]
KicOffset-rm: 0.222 arcsec [2.65σ]
OotOffset-st: 1/4/4/5 [14]
KicOffset-st: 1/4/4/5 [14]
DiffImageQuality-fgm: 1.00 [14/14]
DiffImageOverlap-fno: 0.00 [0/14]

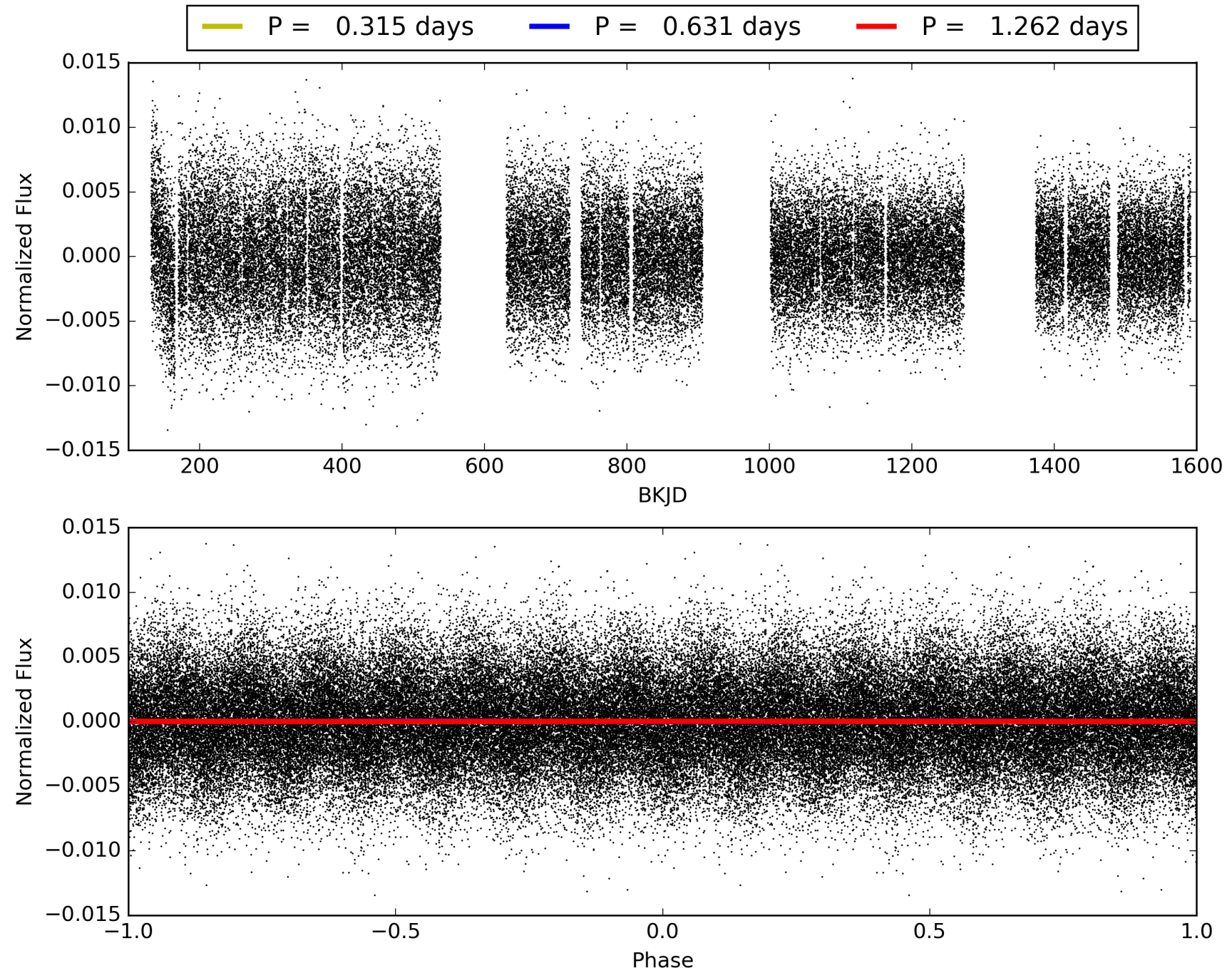
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 12:50:46 Z

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

TCE 004661660-02, PDC Light Curves

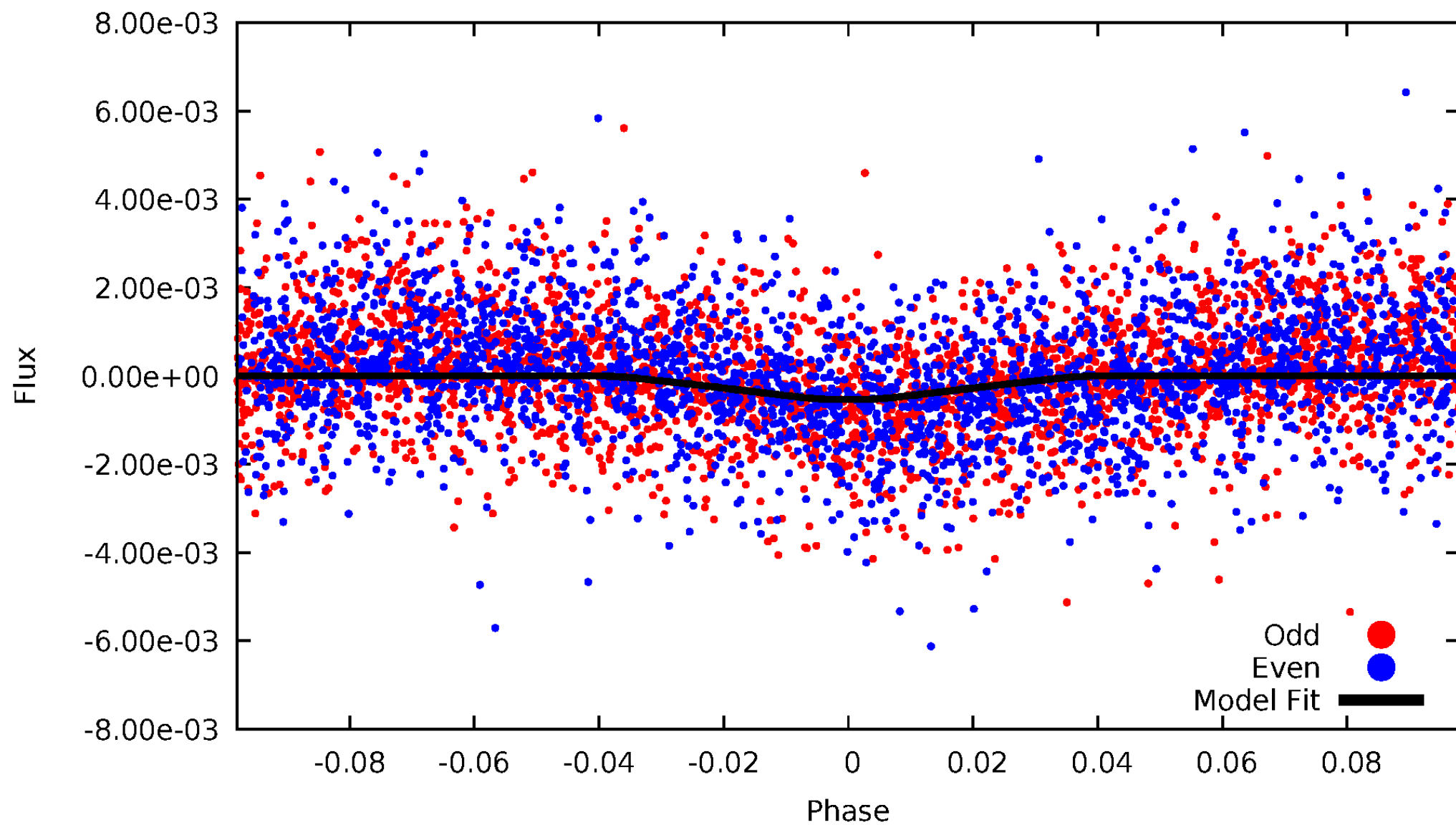


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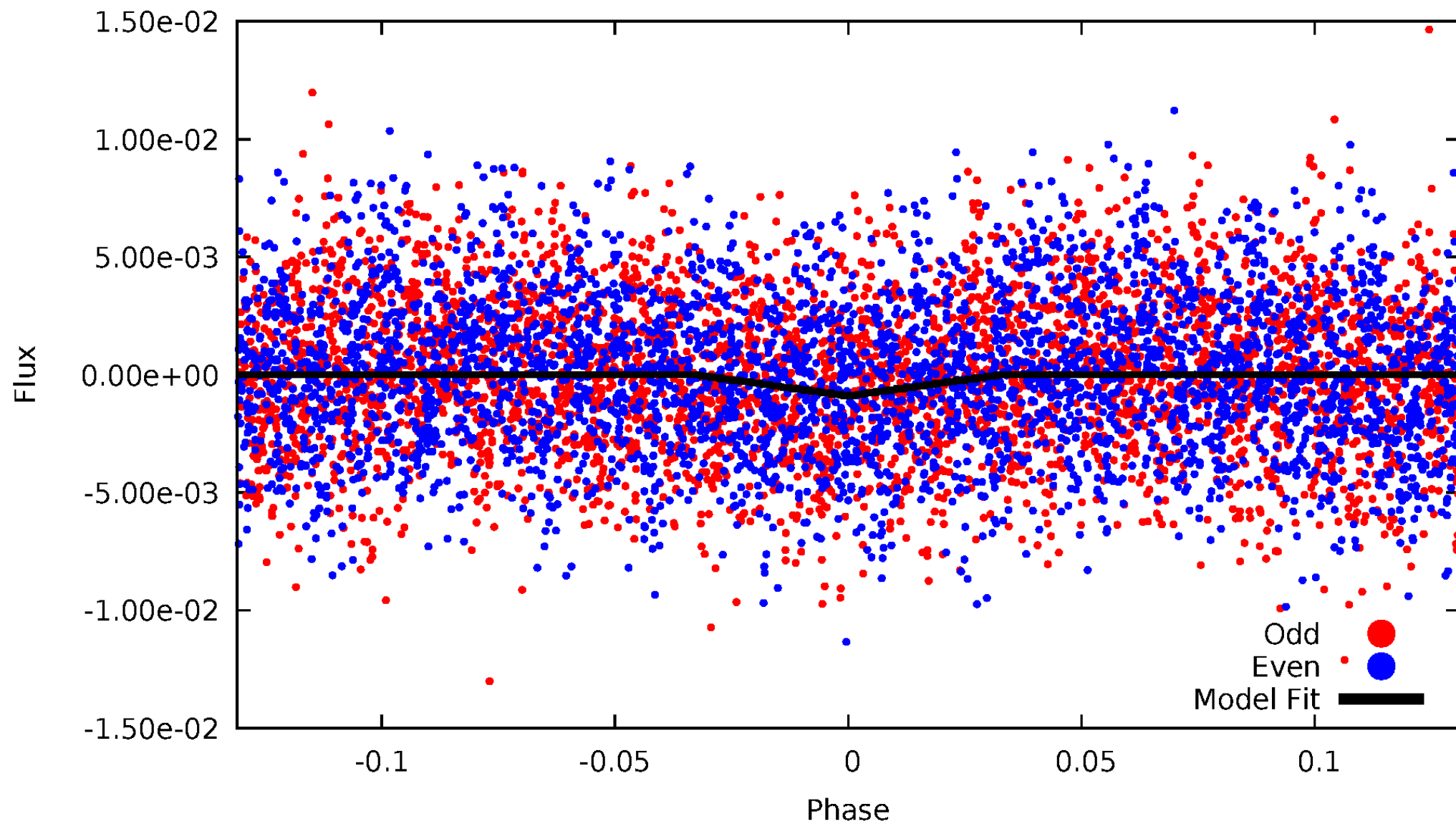
DV Odd/Even

TCE 004661660-02



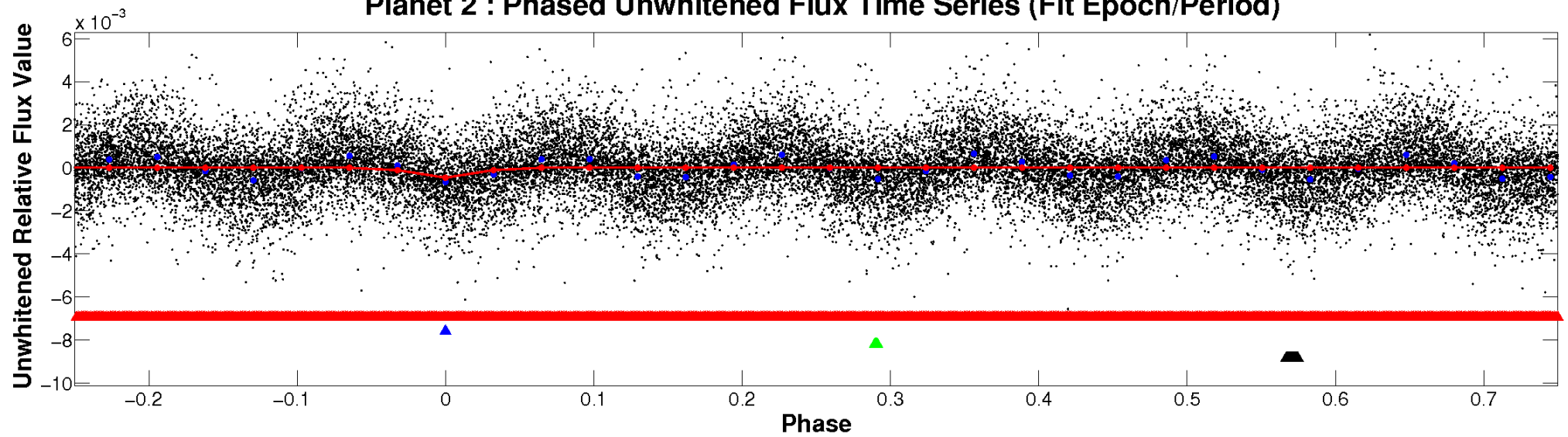
ALT Odd/Even

TCE 004661660-02

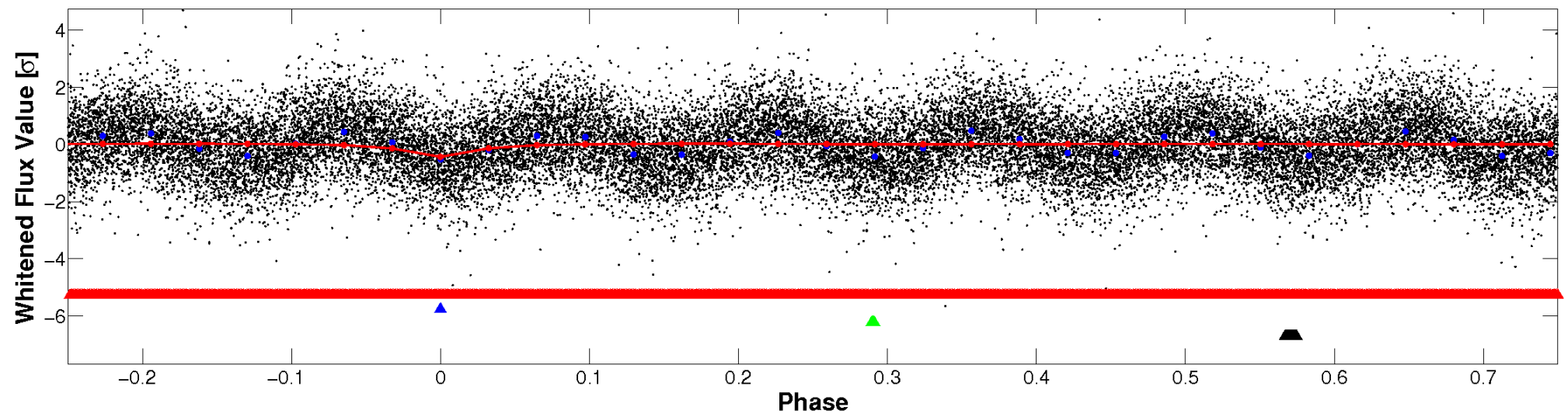


Non-Whitened Vs. Whitened Light Curve

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

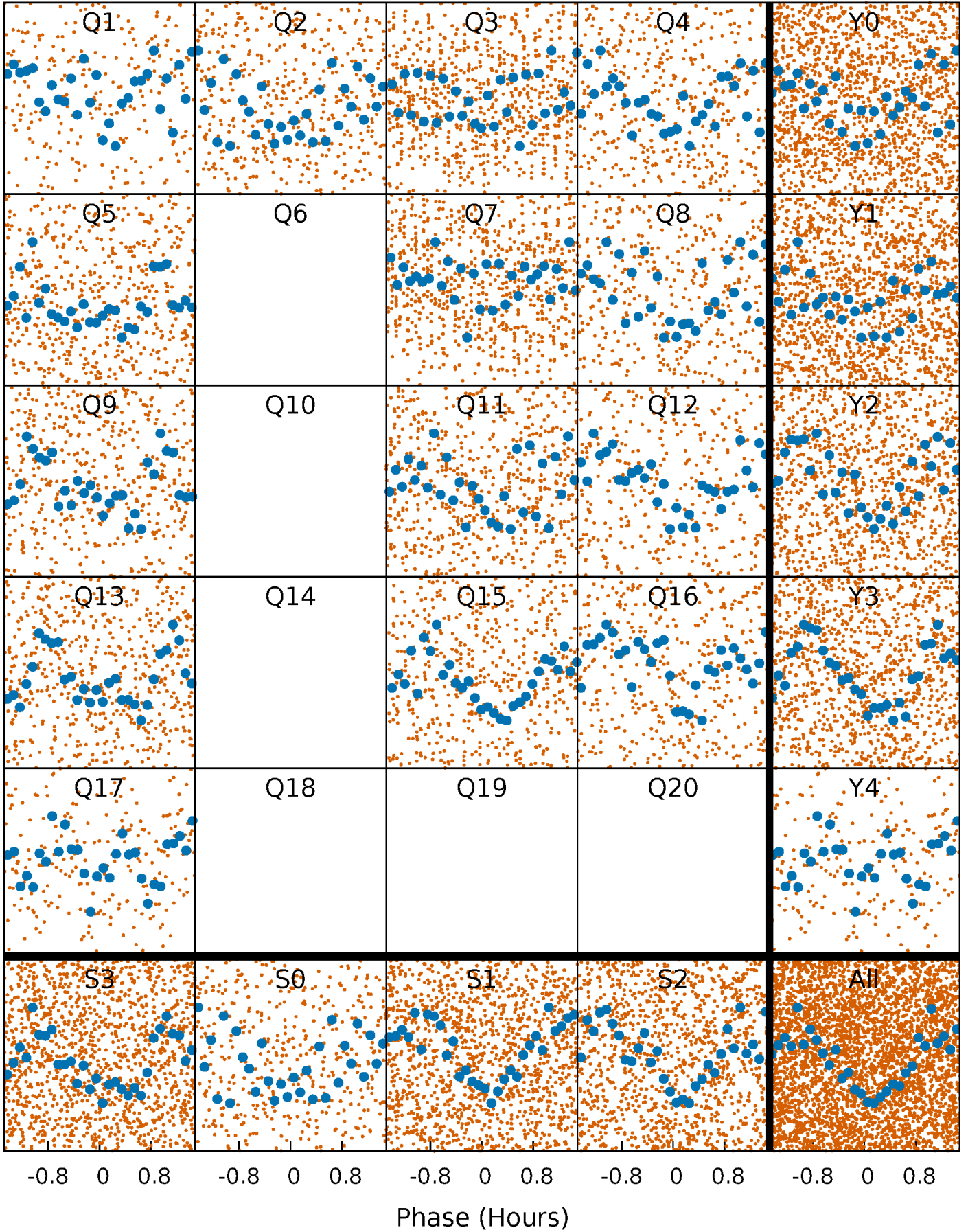


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



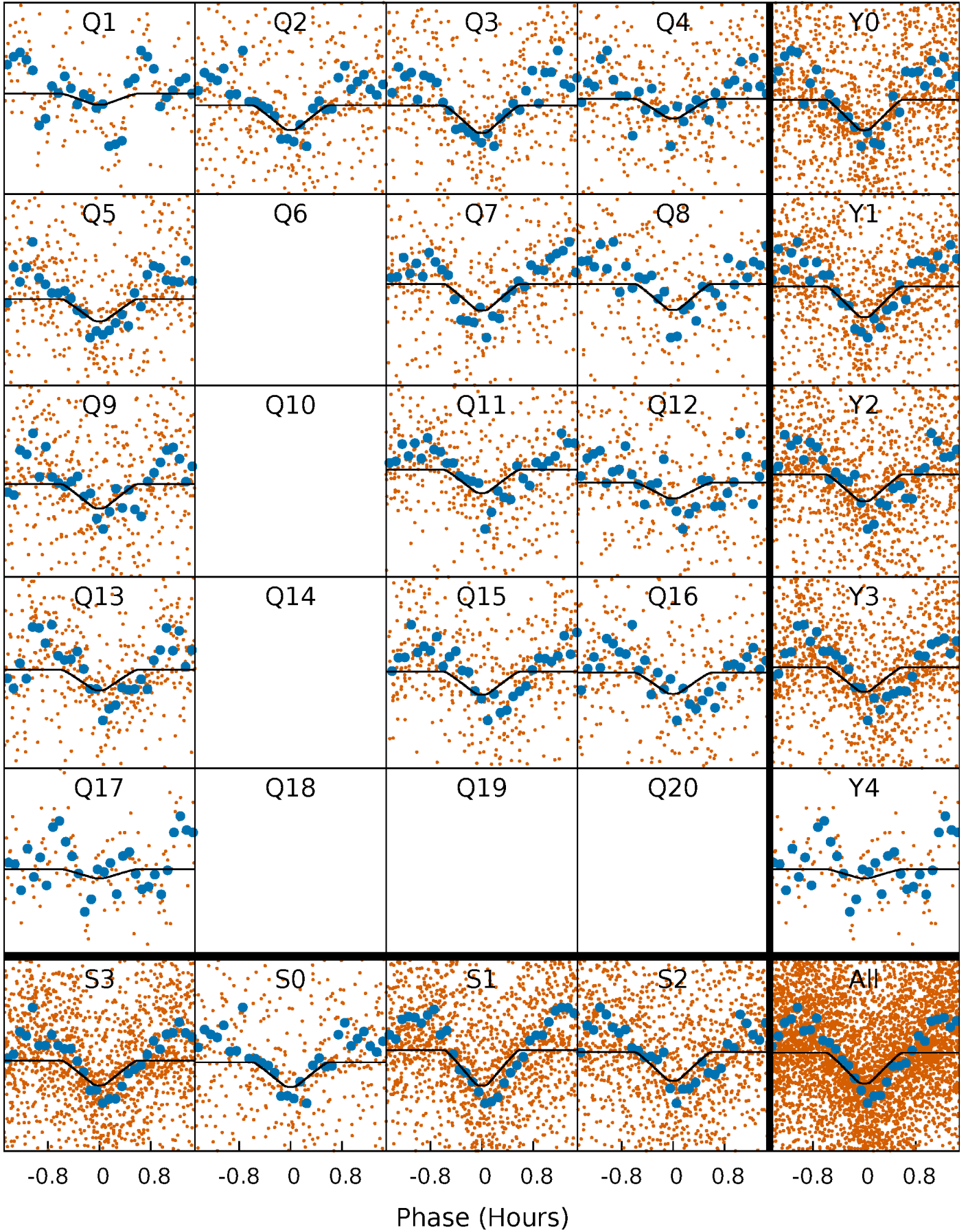
PDC Quarter-Phased Transit Curves

TCE 004661660-02 P= 0.630863 Days $T_0=132.048359$ (BKJD)



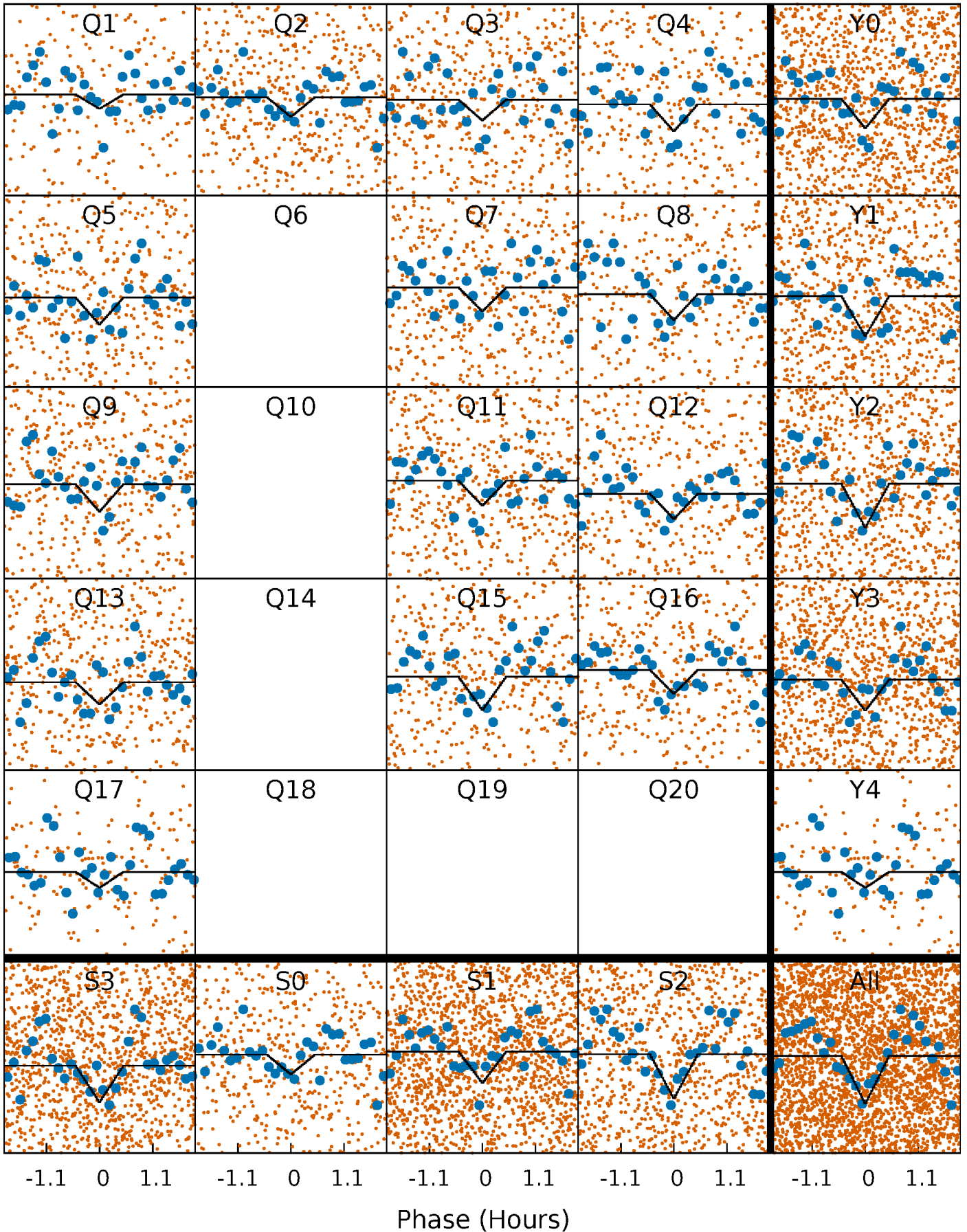
DV Quarter-Phased Transit Curves

TCE 004661660-02 P= 0.630863 Days $T_0=132.048359$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

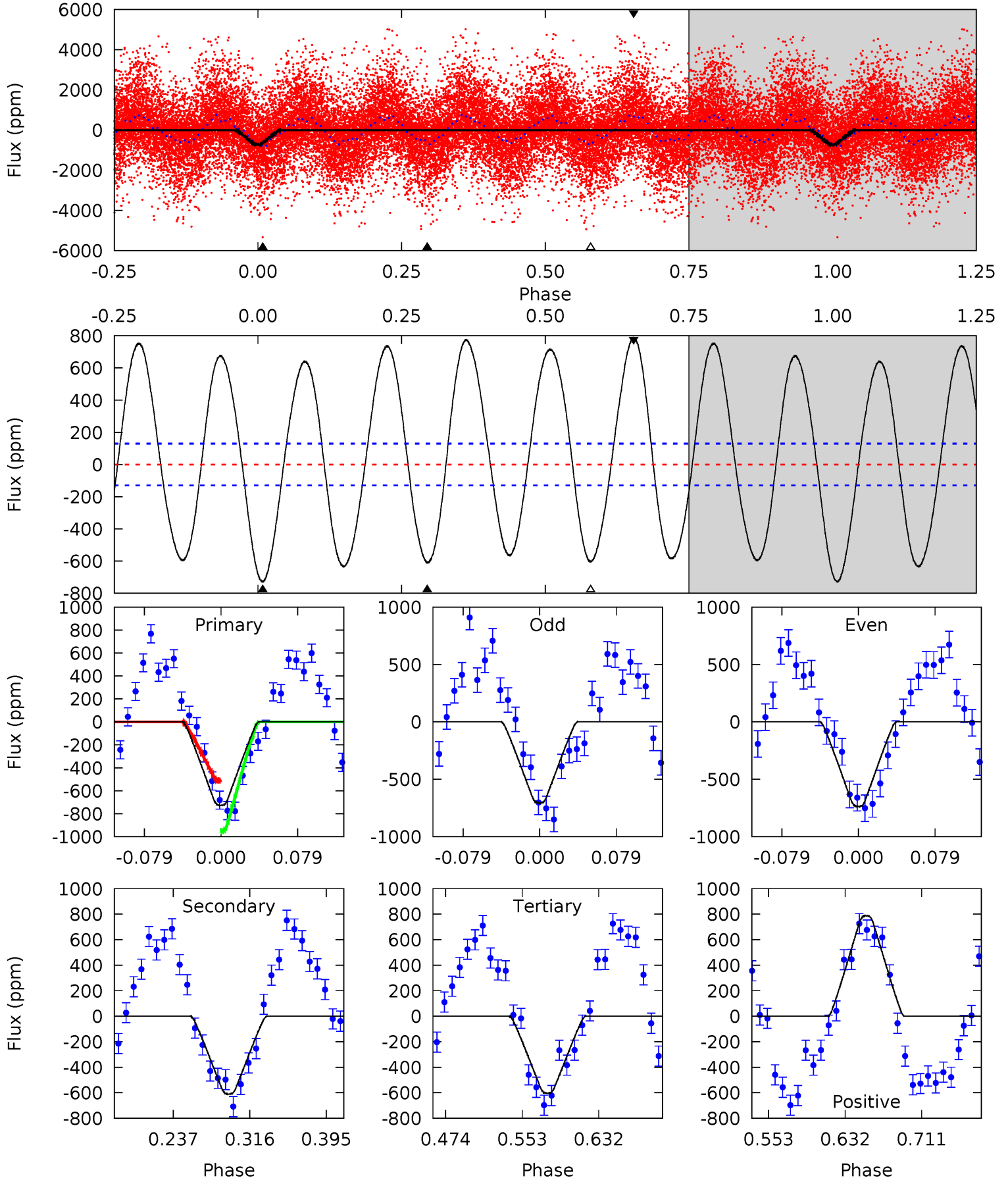
TCE 004661660-02 $P = 0.630869$ Days $T_0 = 132.052105$ (BKJD)



DV Model-Shift Uniqueness Test

004661660-02, P = 0.630863 Days, E = 131.417496 Days

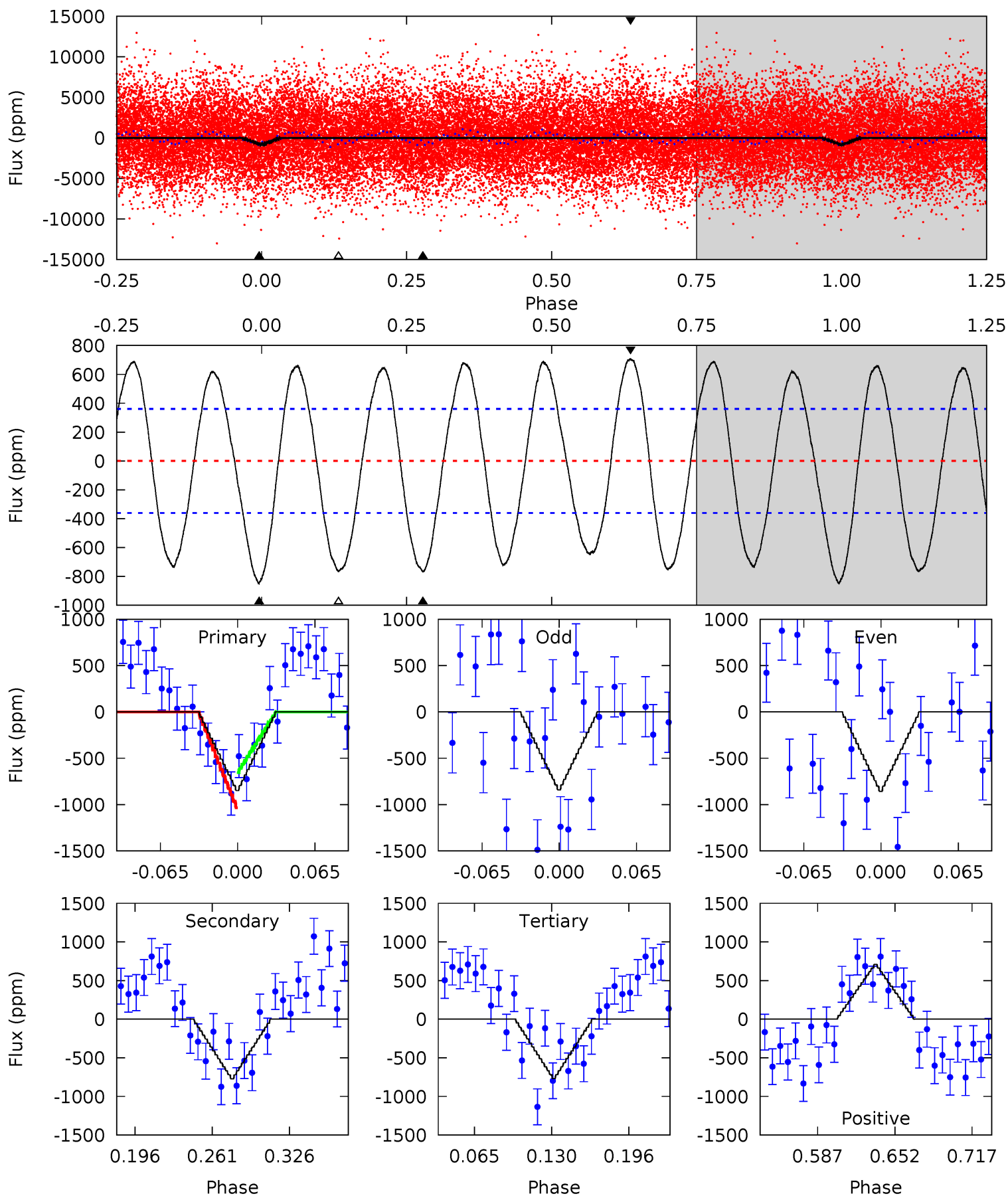
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
25.8	21.6	21.4	27.9	4.61	1.76	16.3	4.40	-2.13	0.23	-6.30	0.55	1.04	0.52	7.86



Alt Model-Shift Uniqueness Test

004661660-02, P = 0.630869 Days, E = 131.421236 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.0	9.95	9.92	9.17	4.65	1.84	6.43	1.04	1.79	0.02	0.78	0.10	1.07	0.46	2.45



Stellar Parameters For KIC 004661660

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	ρ_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	8211^{+226}_{-368}	$3.692^{+0.435}_{-0.145}$	$0.070^{+0.250}_{-0.450}$	$3.523^{+0.909}_{-1.688}$	$2.225^{+0.329}_{-0.611}$	$0.072^{+0.314}_{-0.031}$
	+3%/-4%	+12%/-4%	+357%/-643%	+26%/-48%	+15%/-27%	+439%/-44%
Source	KIC0	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 004661660-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-610 ± 28	$8.64^{+3.92}_{-3.47}$	6678^{+605}_{-777}	7550^{+3073}_{-1616}	$1.546^{+2.487}_{-0.756}$
Alt.	-771 ± 78	$10.62^{+4.06}_{-3.86}$	6749^{+579}_{-792}	7227^{+2343}_{-1350}	$1.326^{+1.731}_{-0.633}$

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

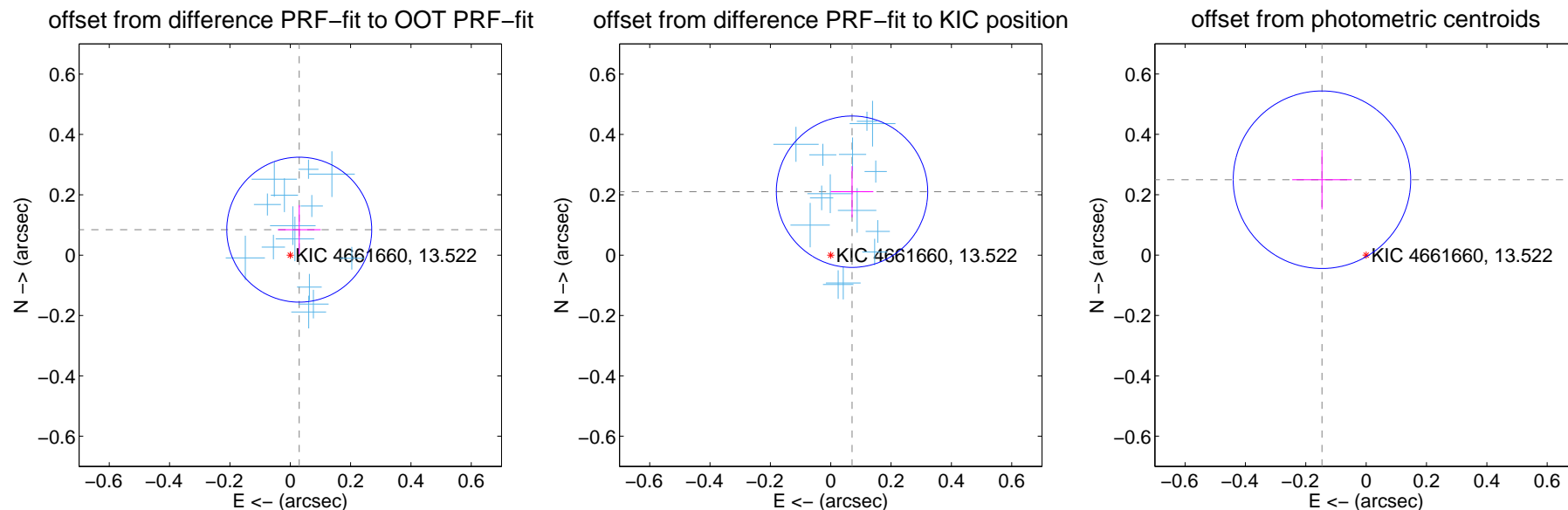
DV Centroid Data

Supplemental centroid analysis for 004661660-02. Kepler magnitude: 13.52. Transit SNR 14.78

There are 14 quarters with good PRF difference image offsets

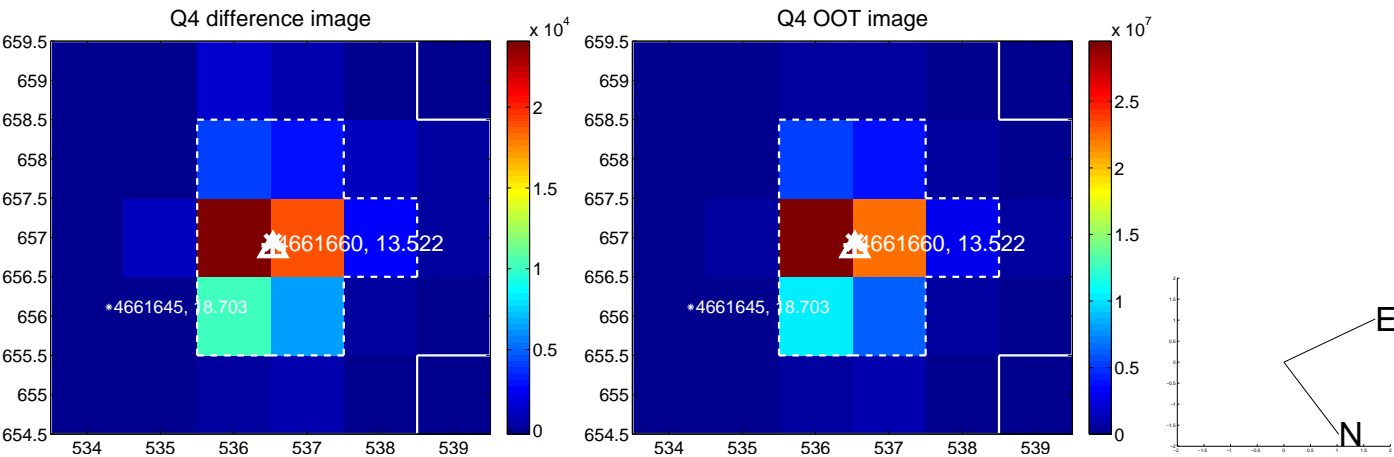
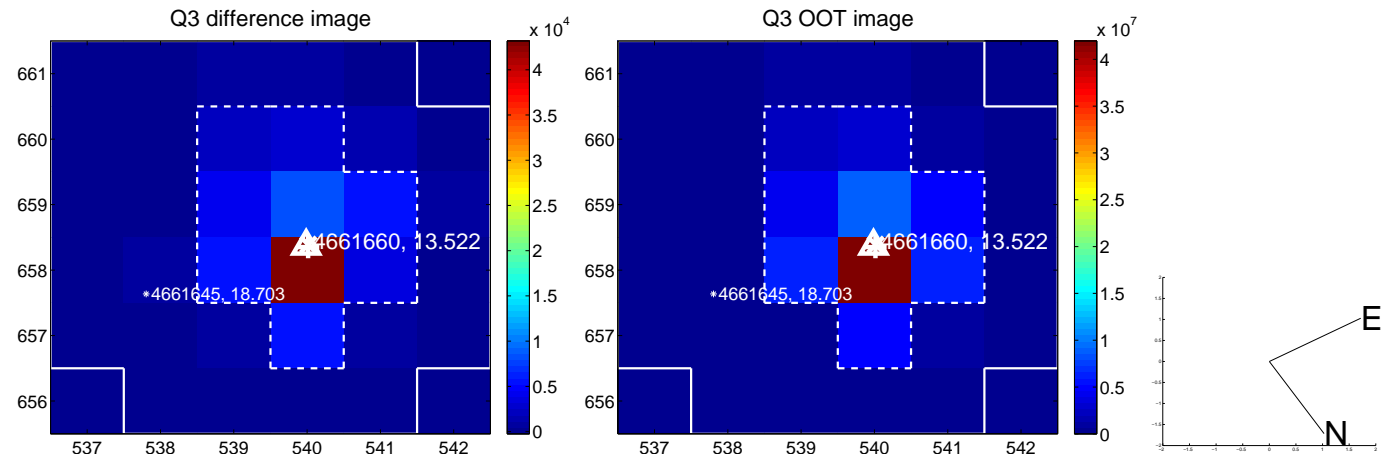
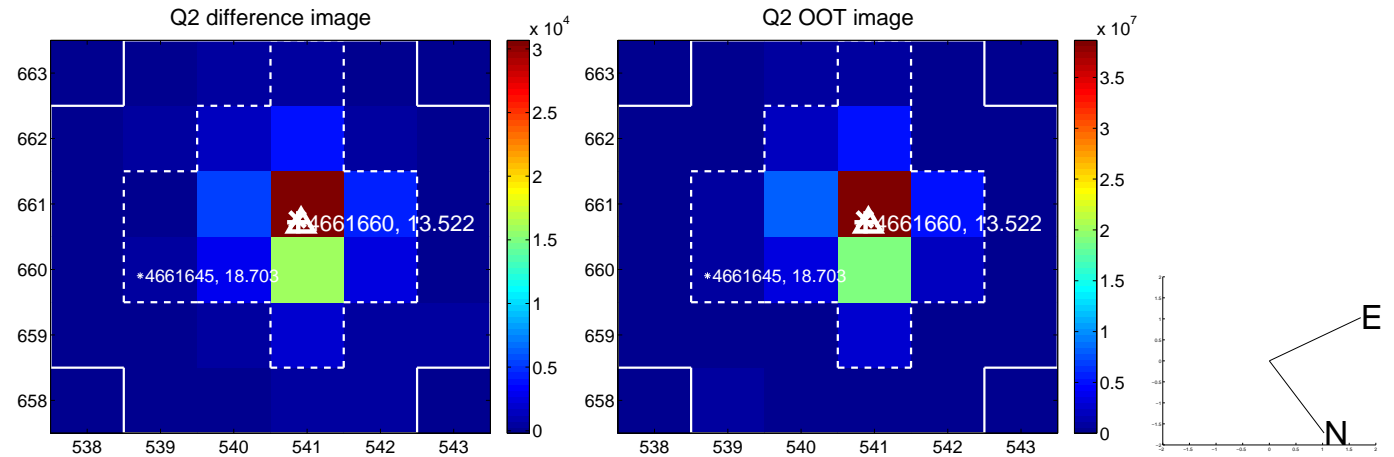
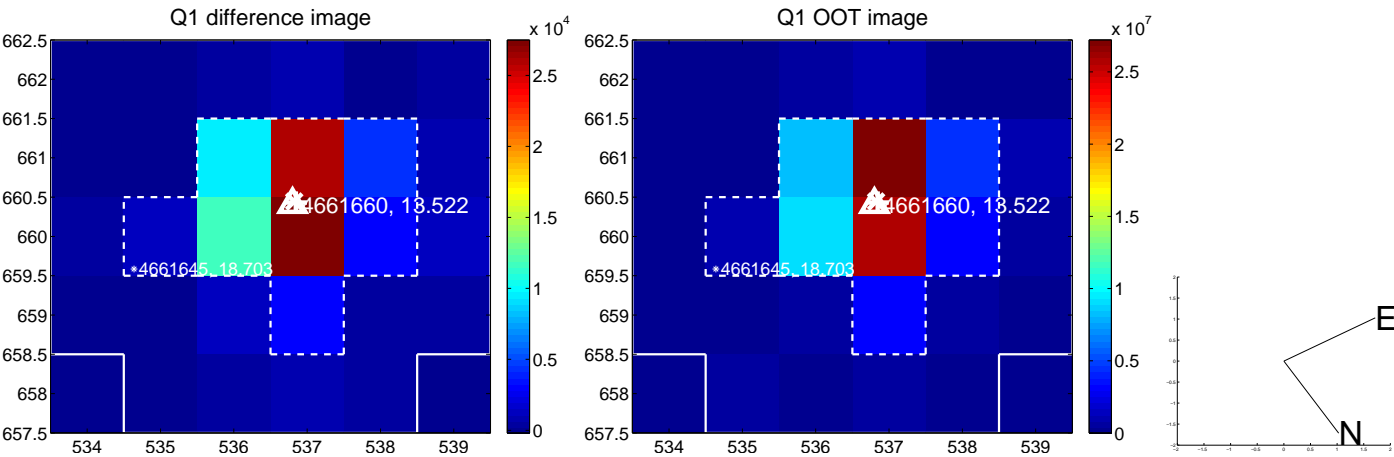
The direct PRF centroid is offset from the target star catalog position by about 0.11 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.090 ± 0.080	1.12	-0.030 ± 0.071	0.084 ± 0.081
PRF-fit source offset from KIC position	0.222 ± 0.084	2.65	-0.071 ± 0.071	0.210 ± 0.085
photometric centroid source offset	0.29 ± 0.10	2.95	0.15 ± 0.10	0.25 ± 0.10

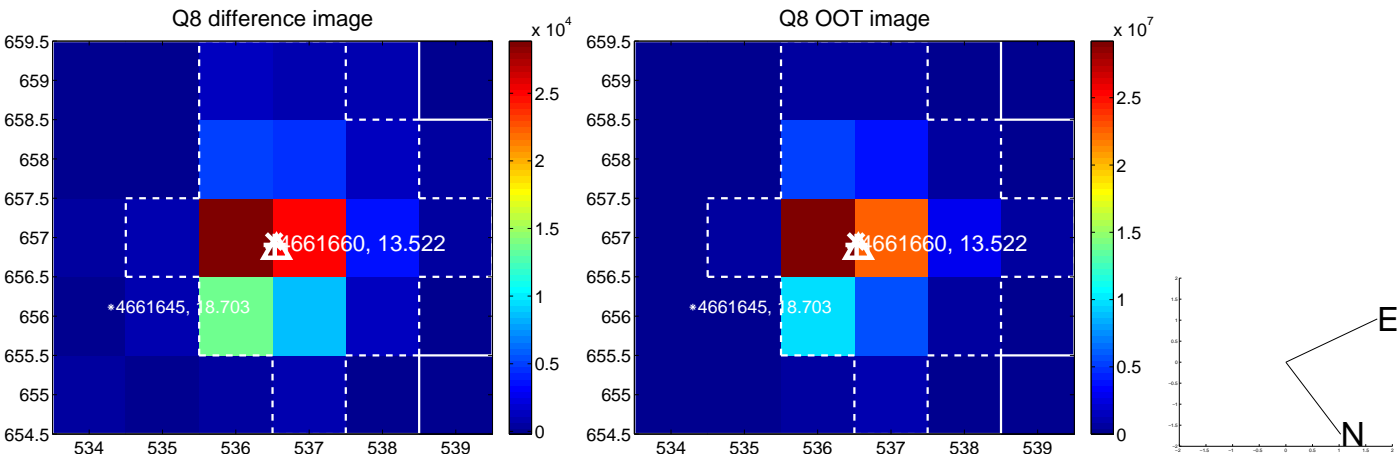
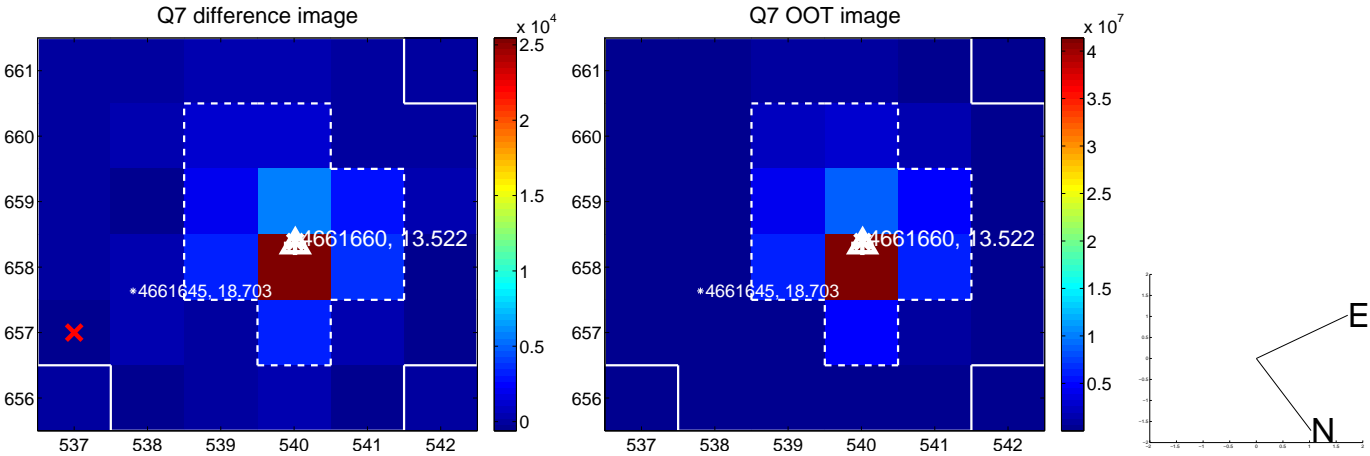
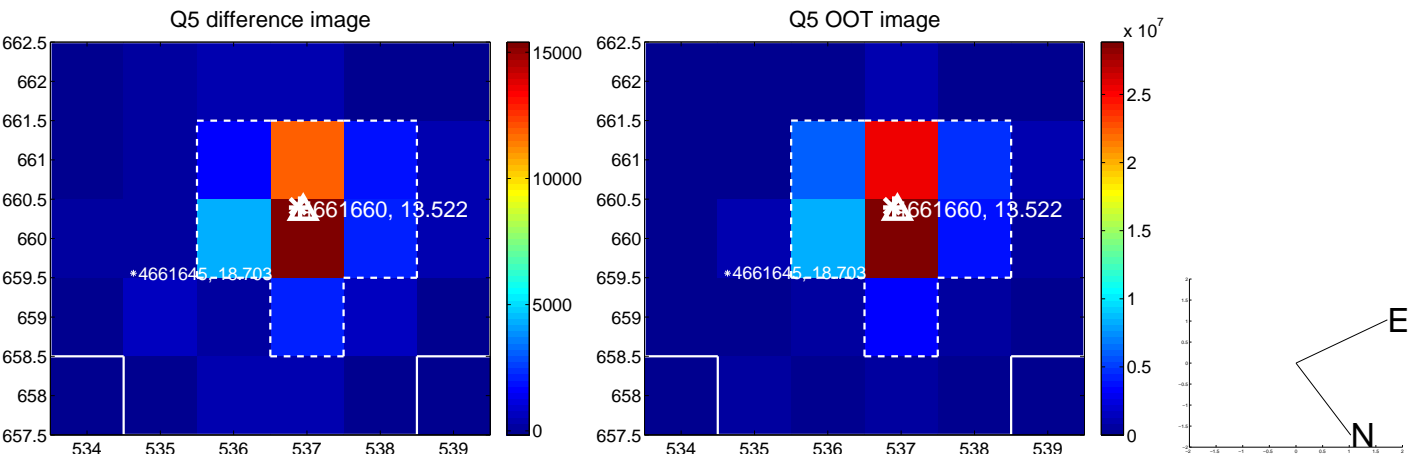


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

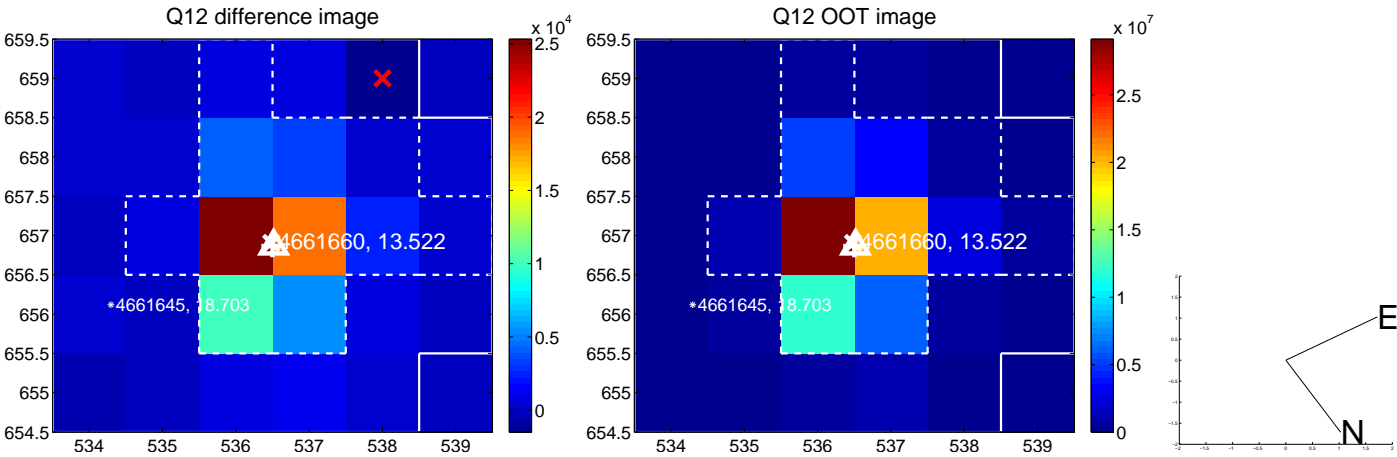
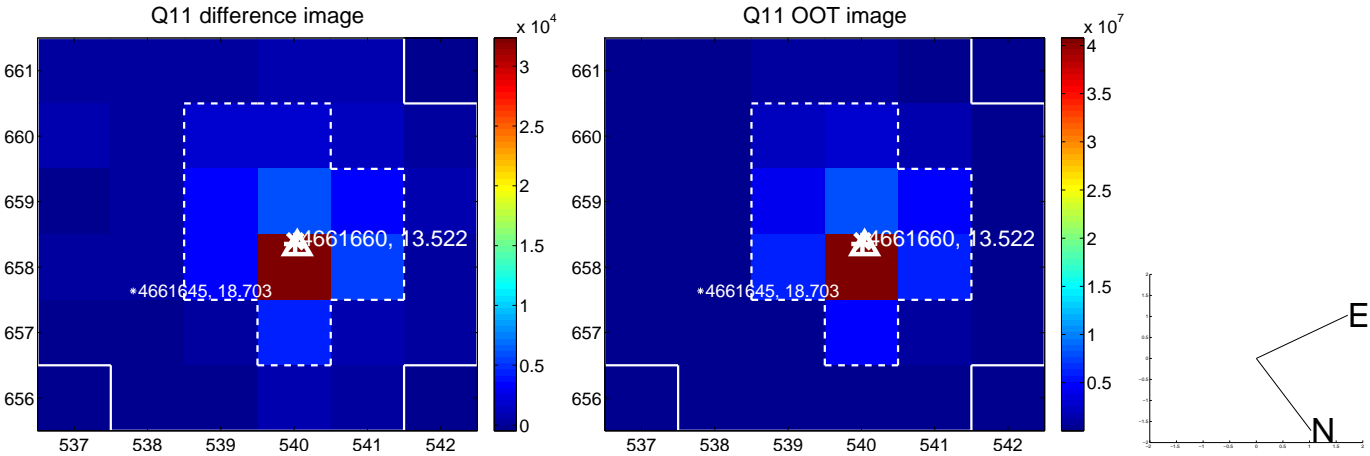
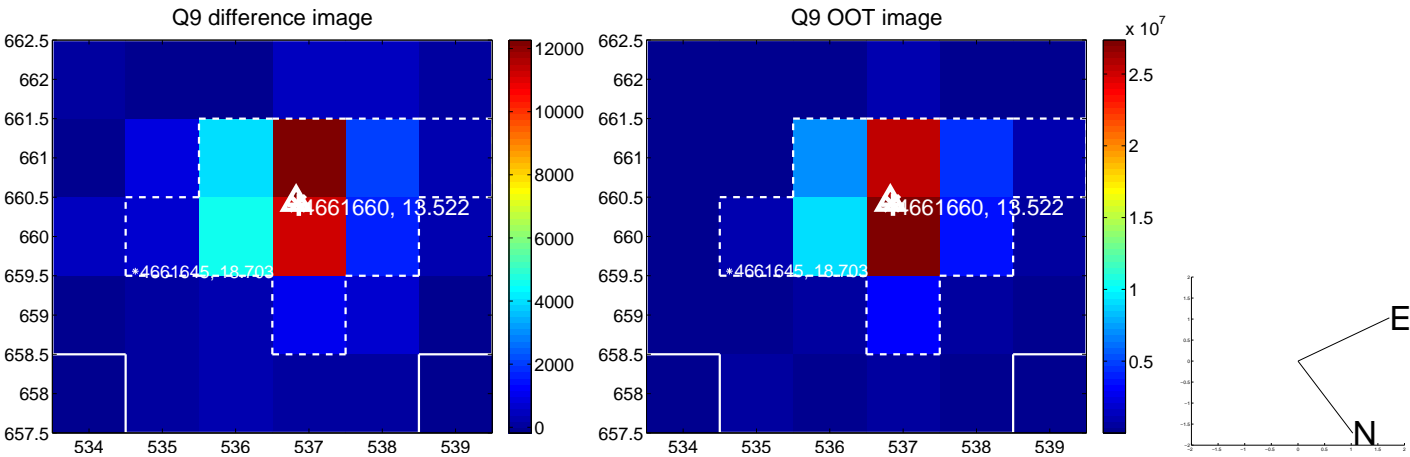
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



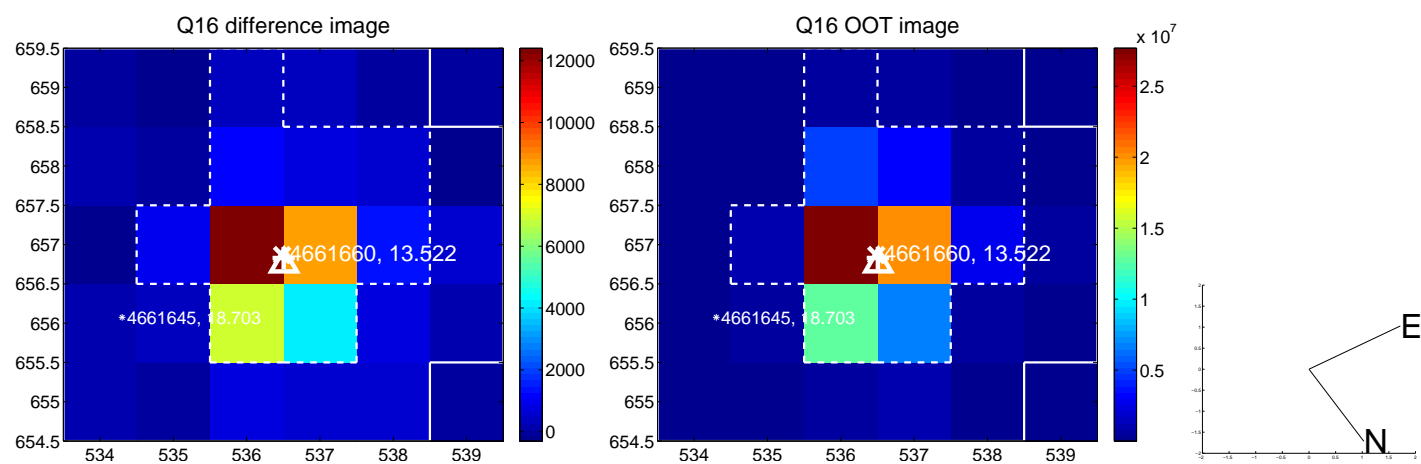
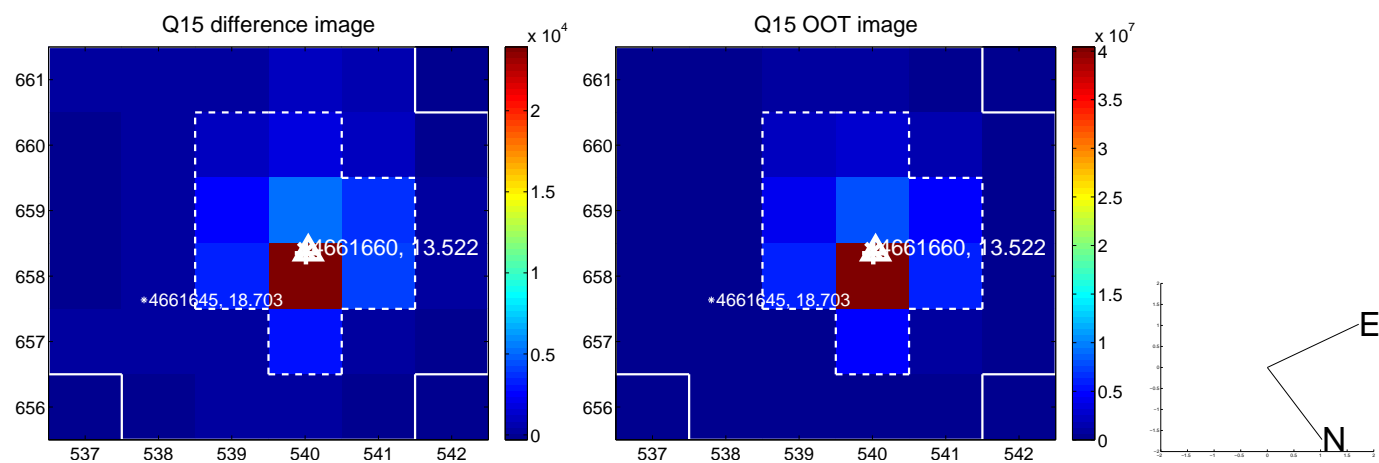
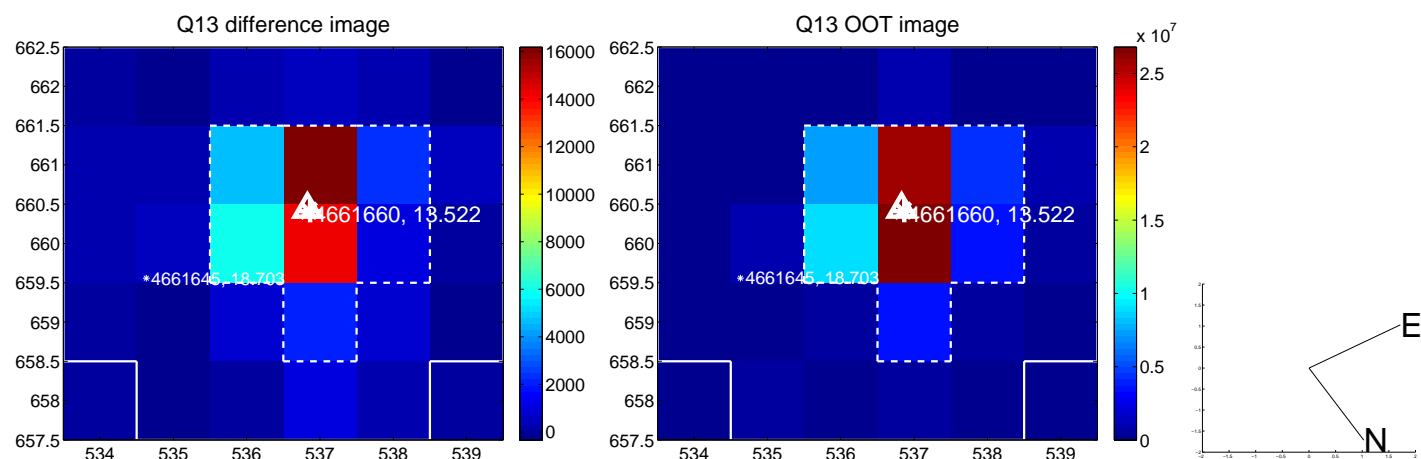
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



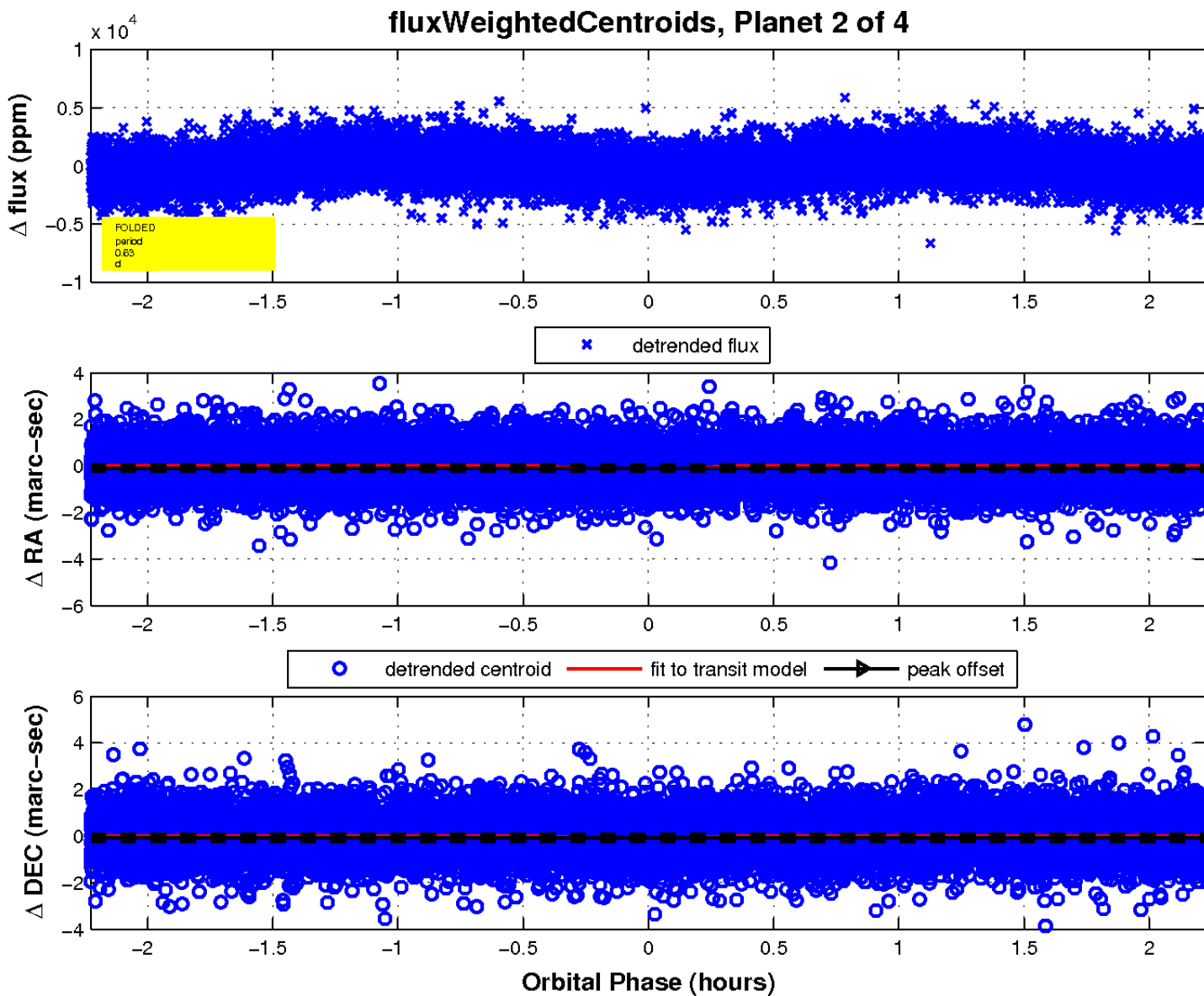
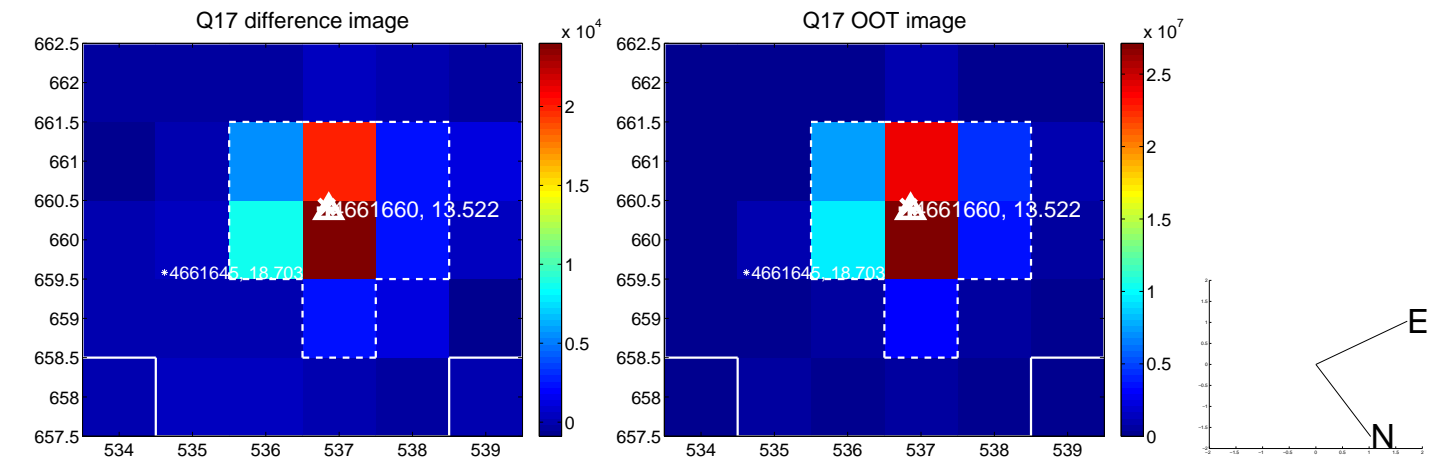
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

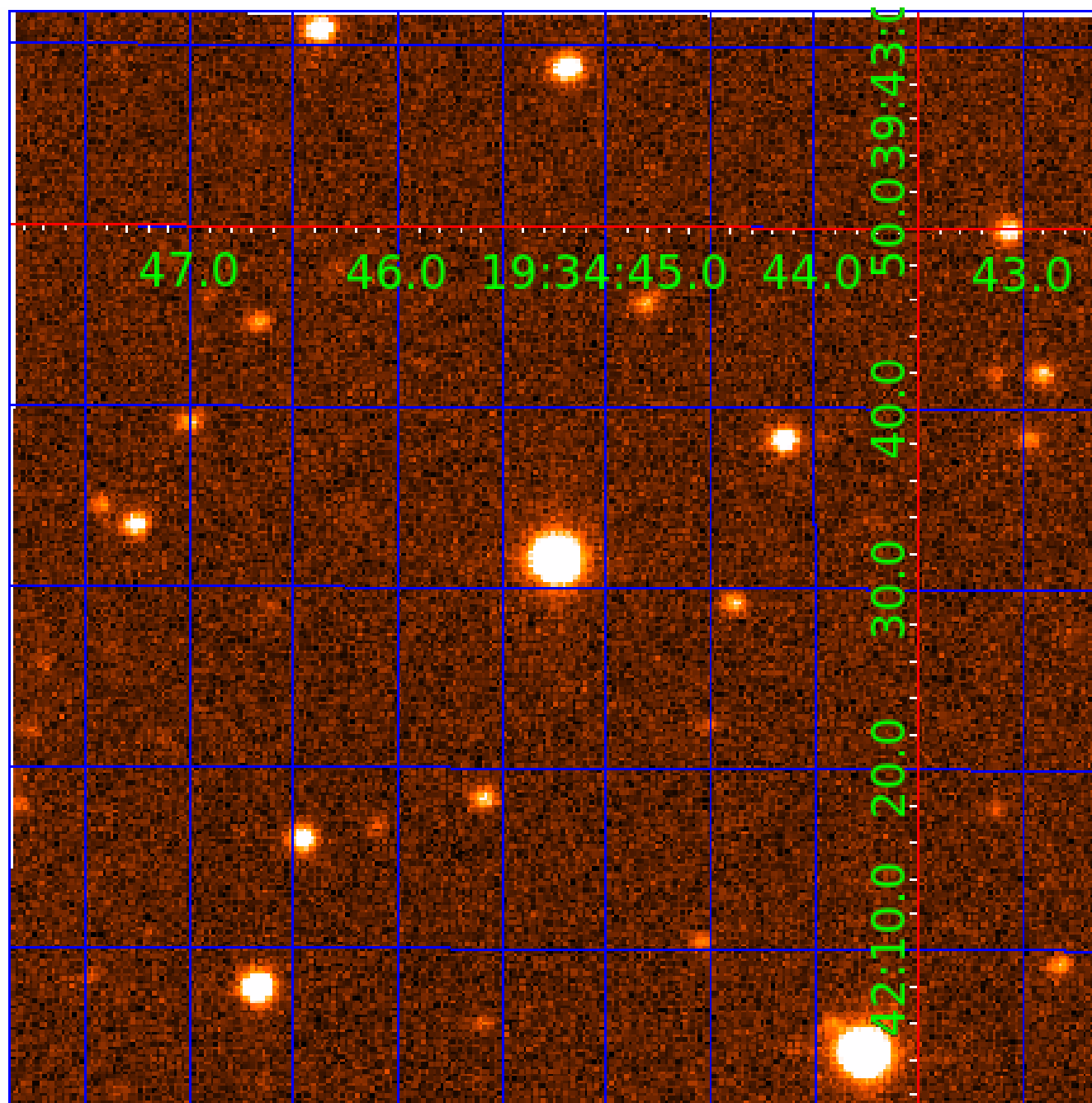


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 004661660

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})
004661660-01	OBS	No	0.534565	131.752627	82.7	1.815	9.7	7.6	3.52	8211	3.70	178273.18
004661660-02	OBS	No	0.630863	132.048359	527.8	0.742	10.2	14.8	3.52	8211	9.57	142946.57
004661660-03	OBS	No	0.630863	131.600023	583.3	0.755	9.6	16.1	3.52	8211	10.06	142946.41
004661660-04	OBS	No	0.630865	131.775095	267.6	1.282	10.8	11.0	3.52	8211	5.89	142945.92

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004661660-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT
004661660-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
004661660-03	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—SAME_NTL_PERIOD
004661660-04	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—SAME_NTL_PERIOD

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

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

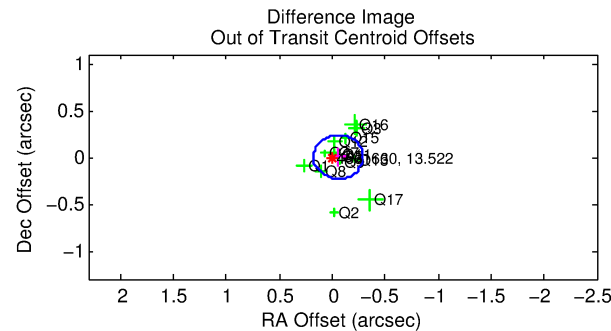
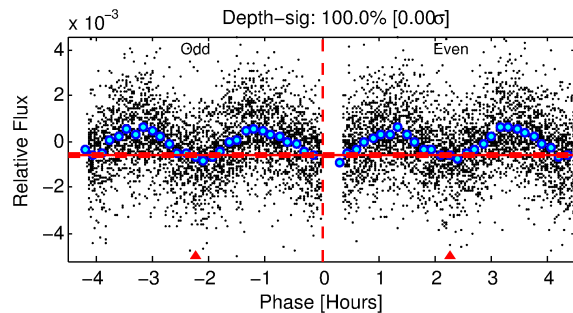
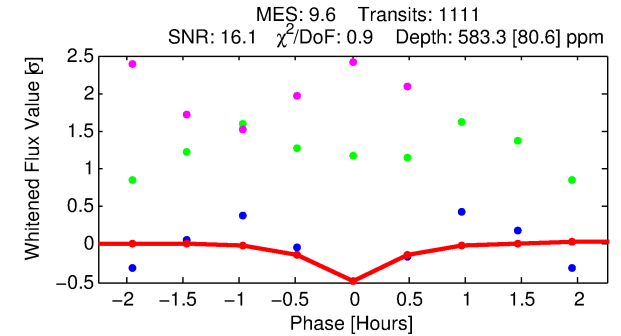
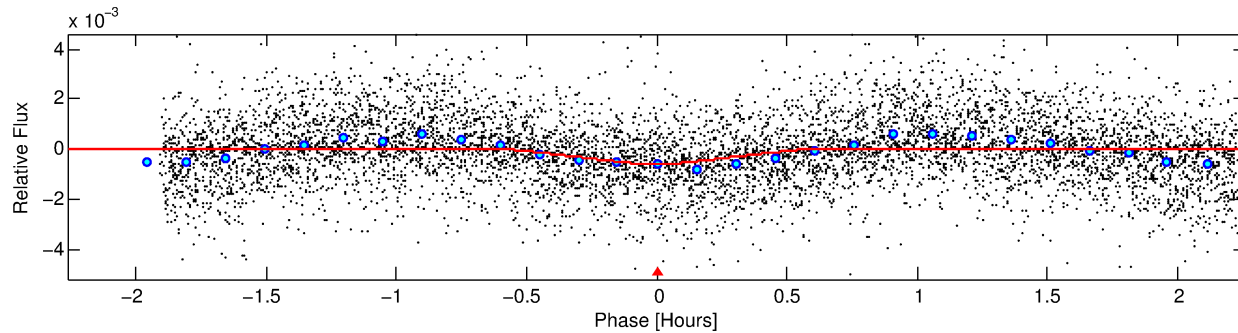
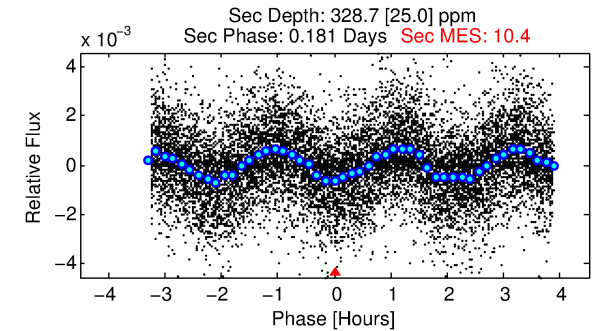
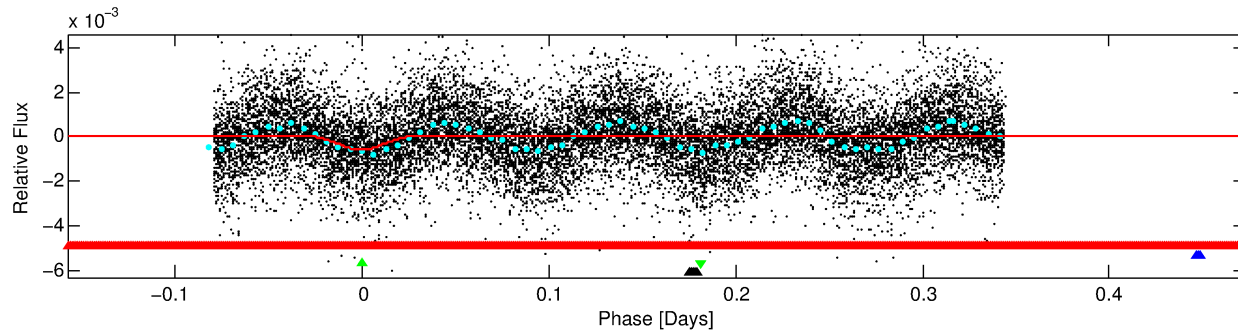
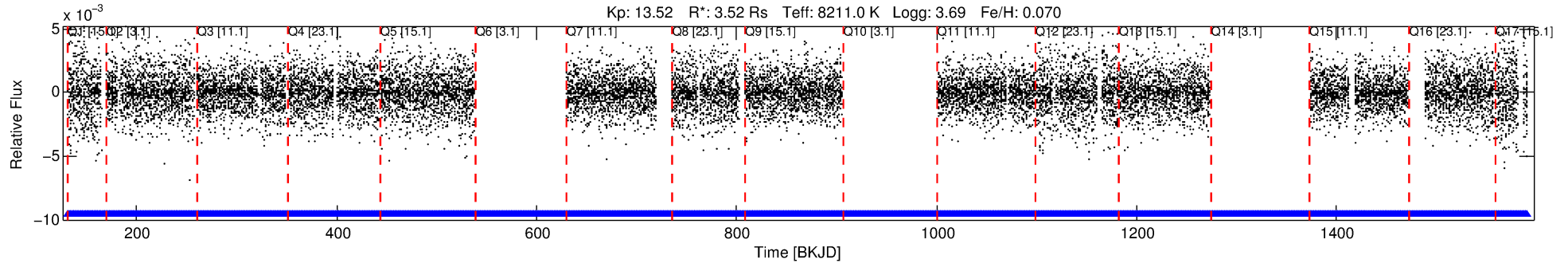
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004661660-03

No Significant Match Found

DV One-Page Summary

KIC: 4661660 Candidate: 3 of 4 Period: 0.631 d



DV Fit Results:

Period = 0.63086 [0.00001] d
Epoch = 131.6000 [0.0010] BKJD
Rp/R* = 0.0262 [0.0086]
a/R* = 3.29 [5.61]
b = 0.90 [0.41]
Seff = 142946.41 [108870.39]
Teff = 4958 [944] K
Rp = 10.06 [5.84] Re
a = 0.0188 [0.0087] AU
Ag = 0.63 [0.63] [-0.59σ]
Teffp = 6834 [1171] K [1.25σ]

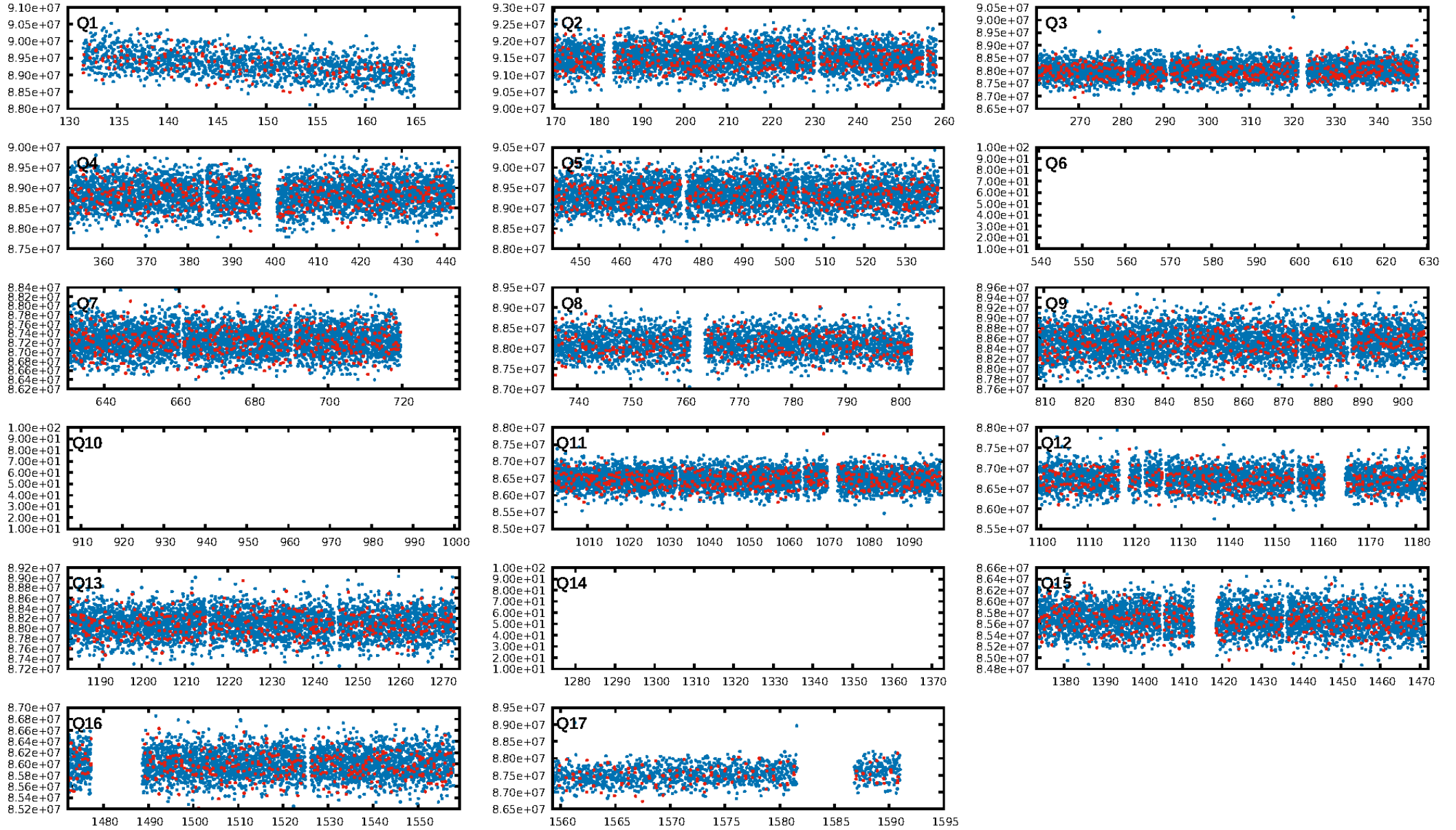
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]
LongPeriod-sig: 0.0% [0.00σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [1046/1046]
GhostDiagnostic-chr: 6.153
Centroid-sig: 19.3%
Centroid-so: 0.140 arcsec [1.59σ]
OotOffset-rm: 0.057 arcsec [0.73σ]
OotOffset-st: 1/4/4/5 [14]
KicOffset-rm: 0.132 arcsec [1.47σ]
KicOffset-st: 1/4/4/5 [14]
DiffImageQuality-fgm: 1.00 [14/14]
DiffImageOverlap-fno: 0.00 [0/14]

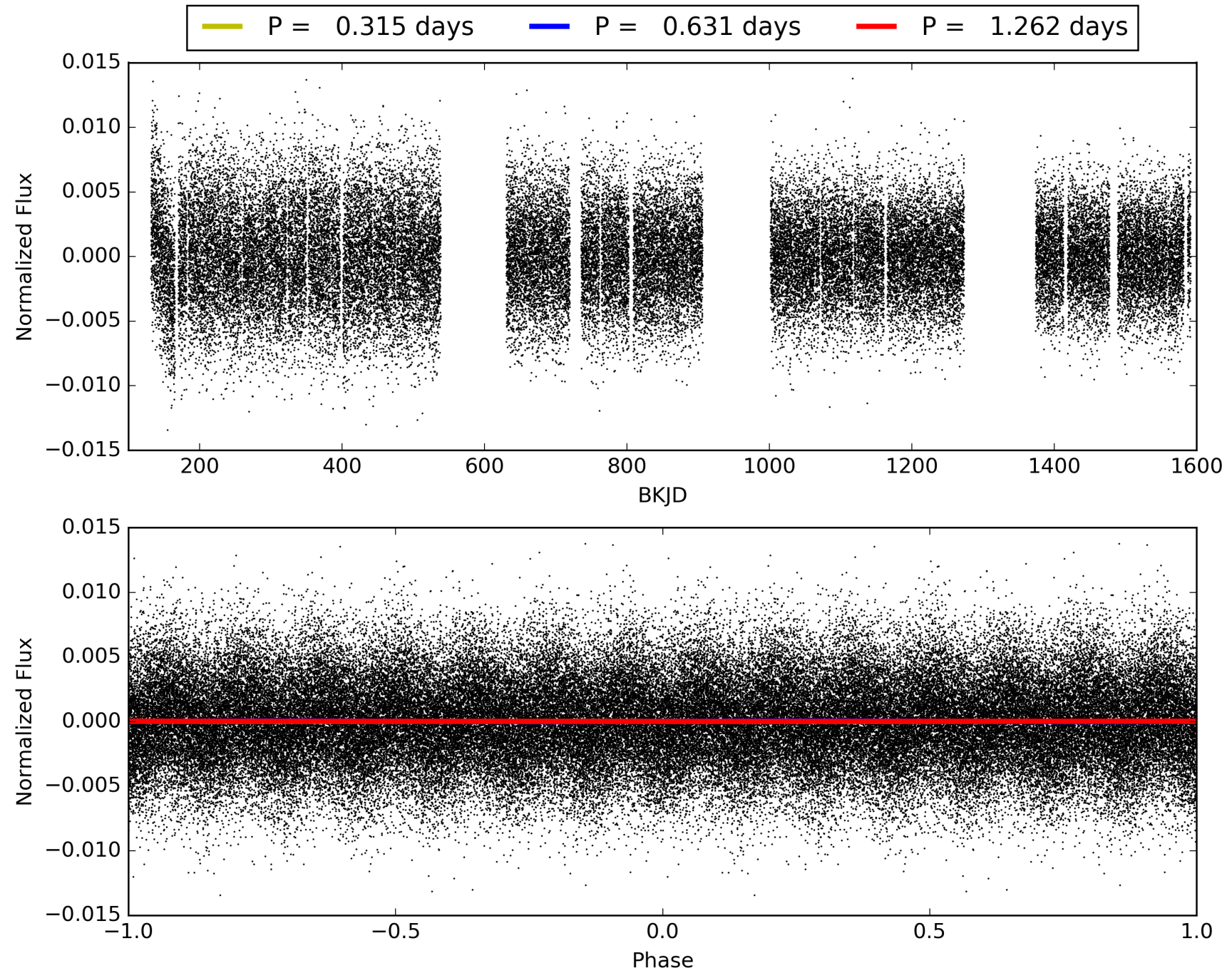
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 12:50:52 Z

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

TCE 004661660-03, PDC Light Curves

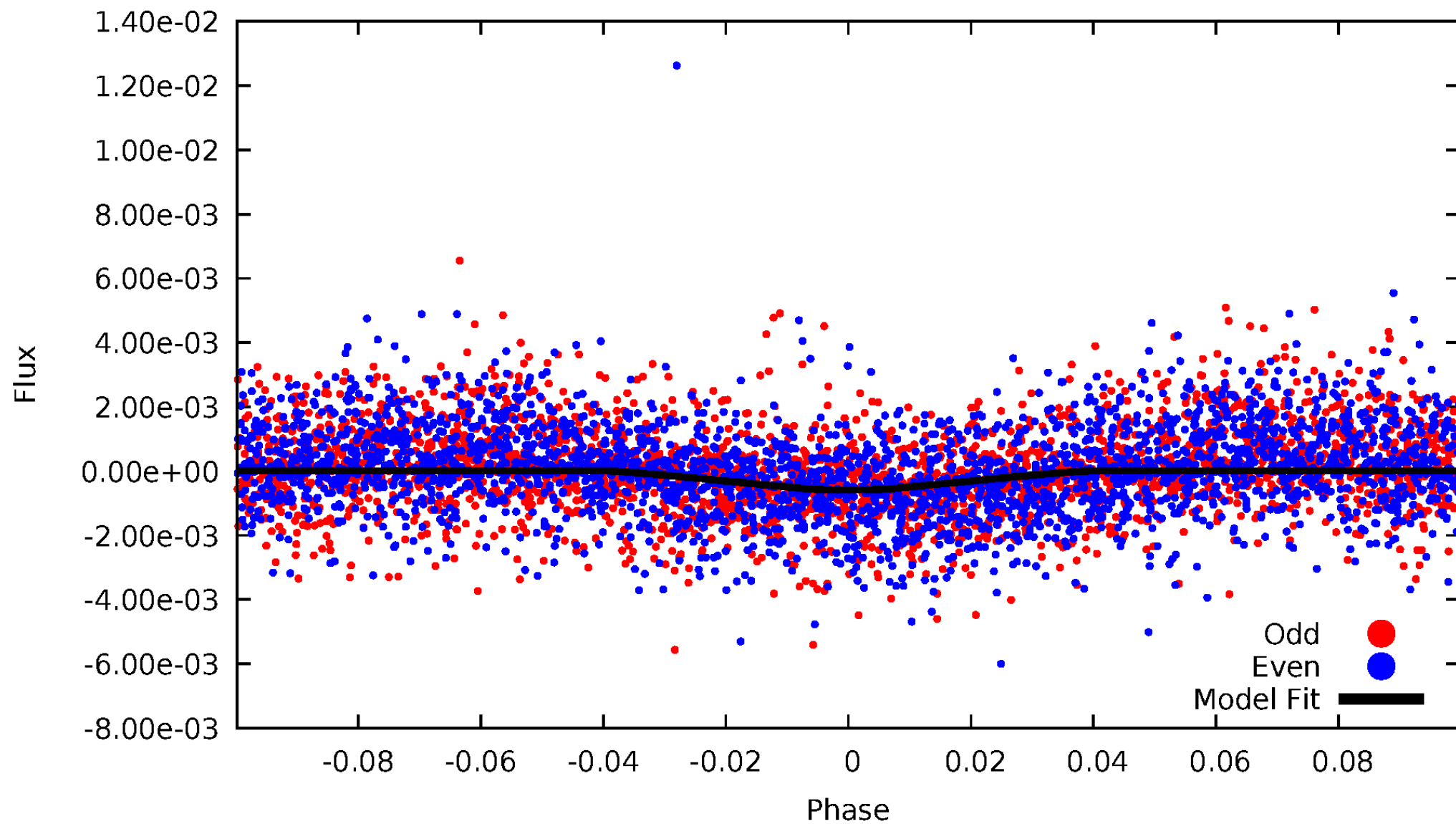


TCE 004661660-03



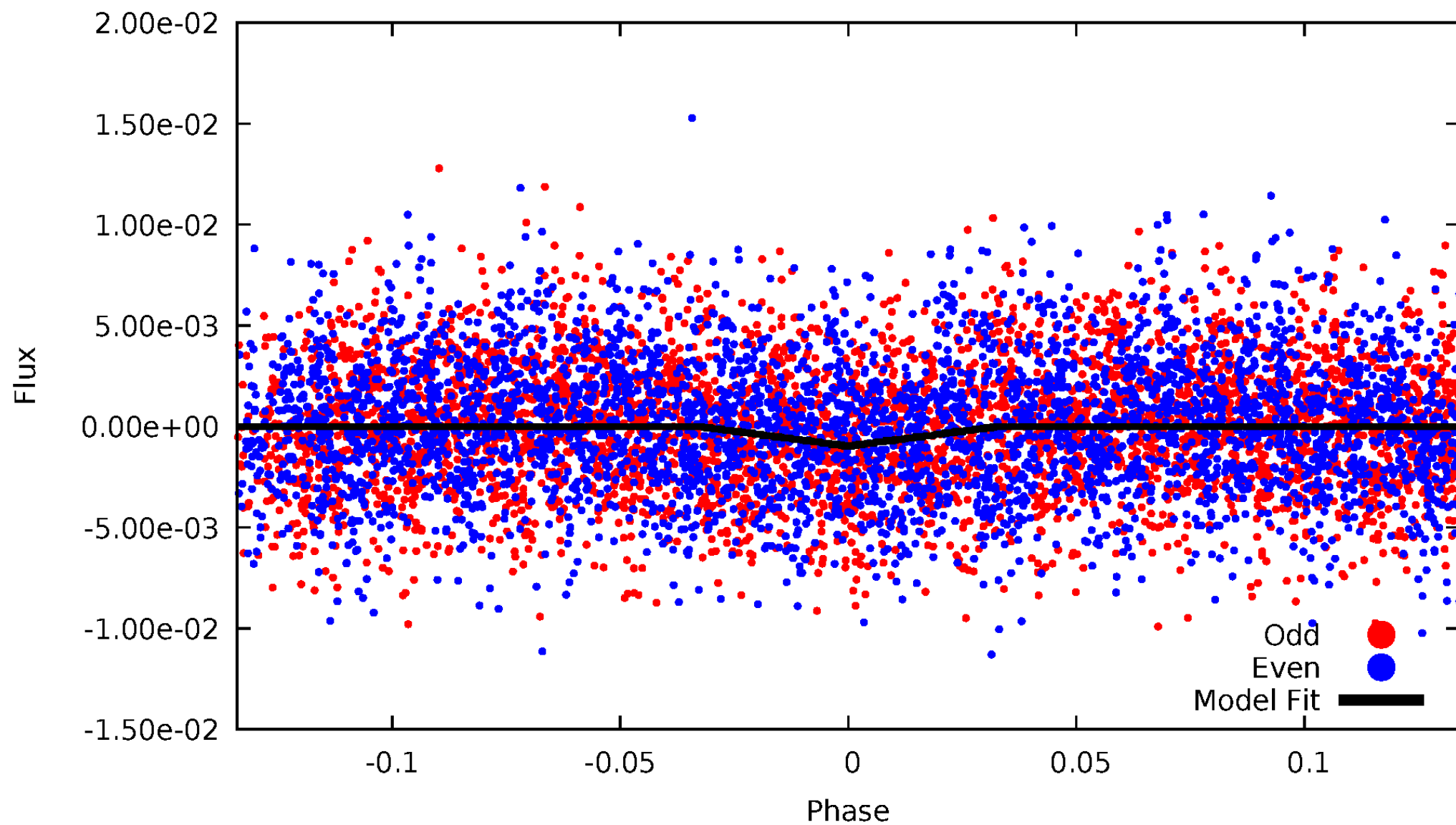
DV Odd/Even

TCE 004661660-03



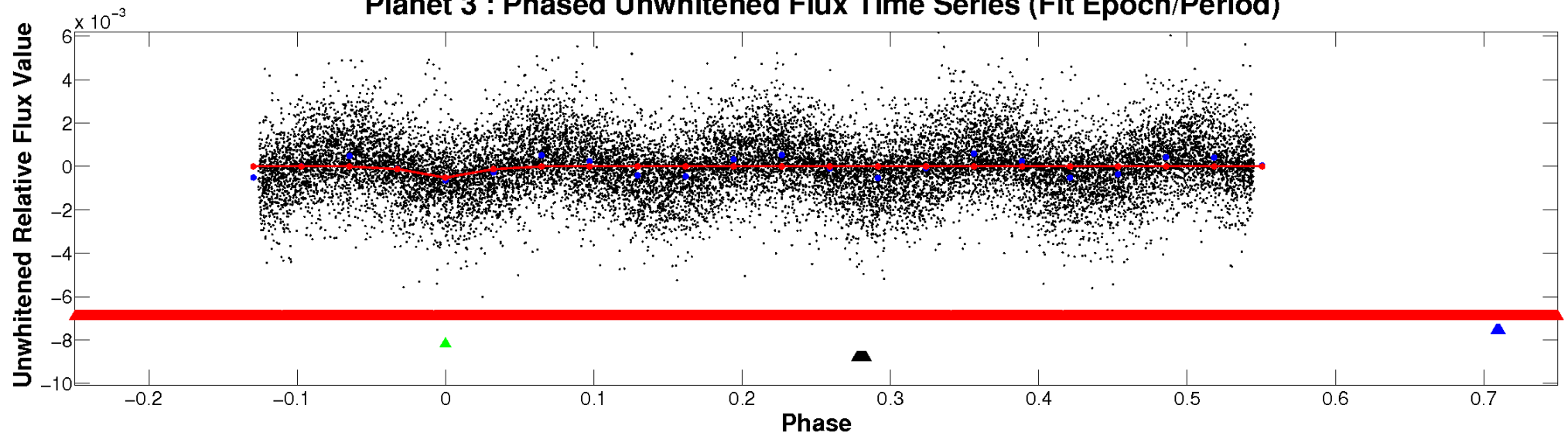
ALT Odd/Even

TCE 004661660-03

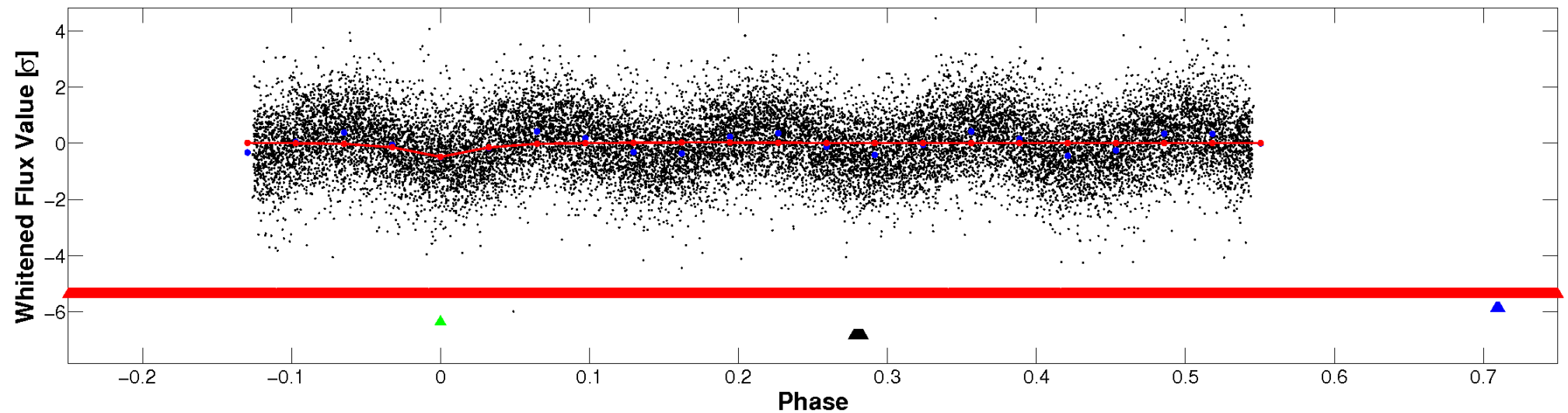


Non-Whitened Vs. Whitened Light Curve

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

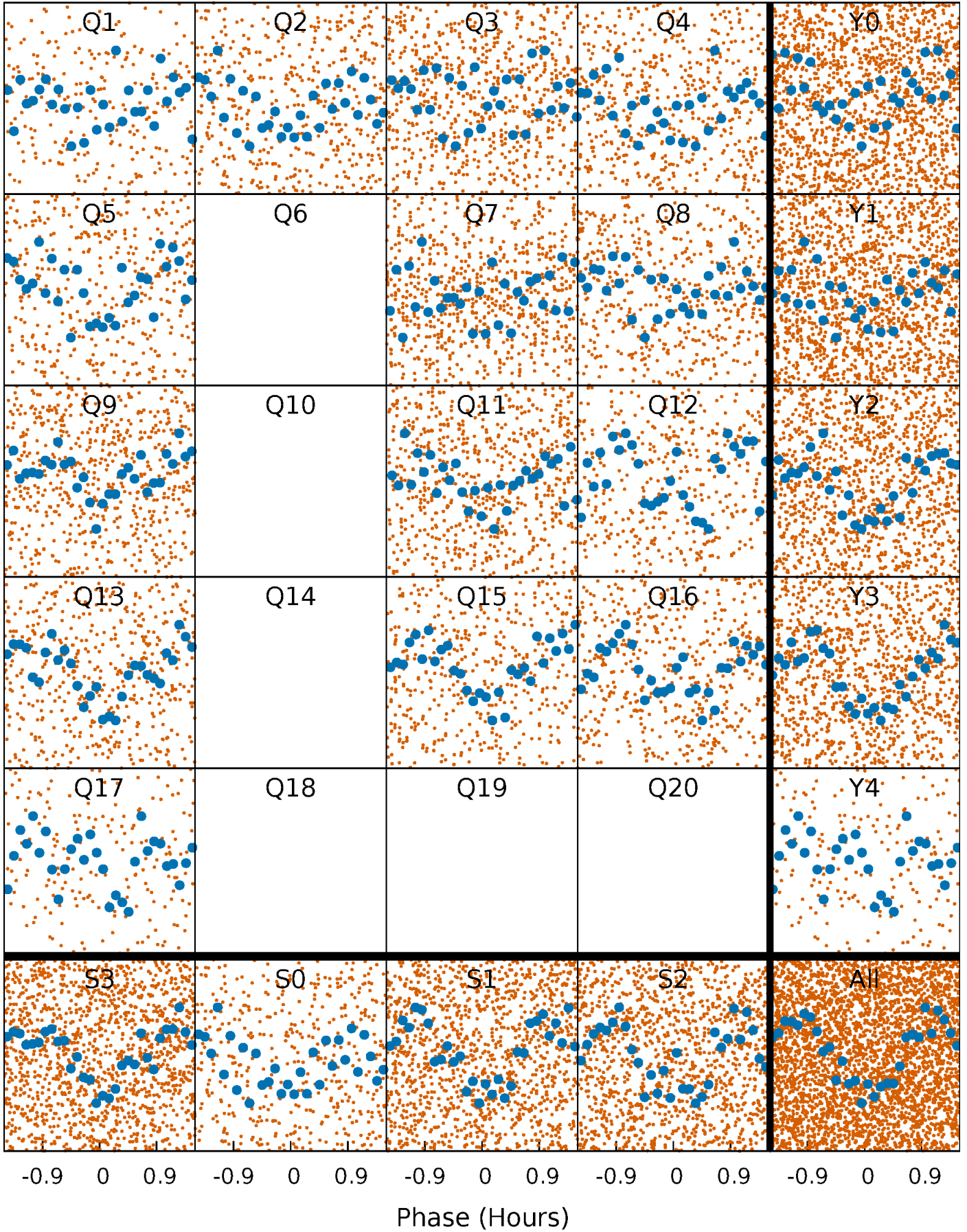


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



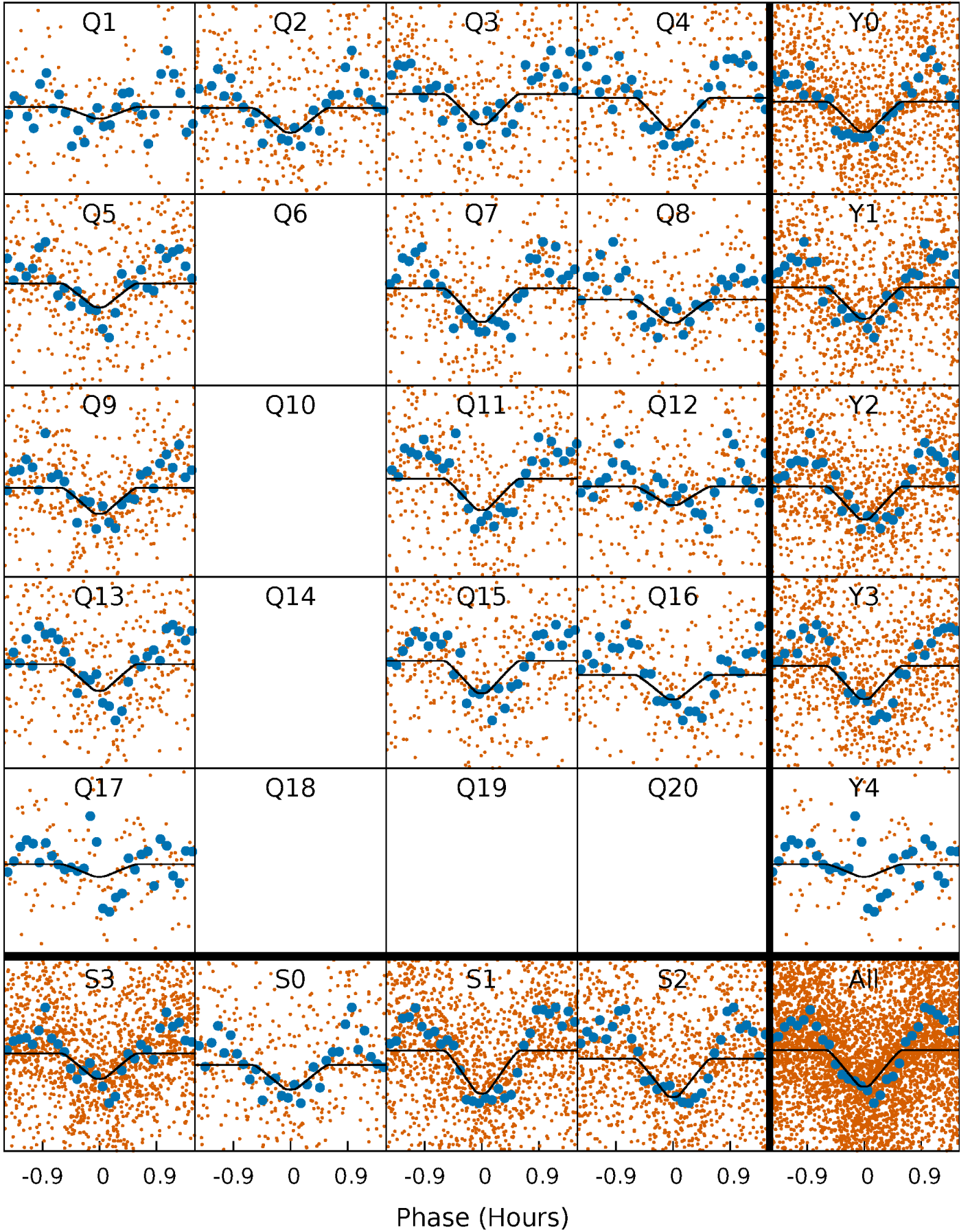
PDC Quarter-Phased Transit Curves

TCE 004661660-03 P= 0.630863 Days $T_0=131.600023$ (BKJD)



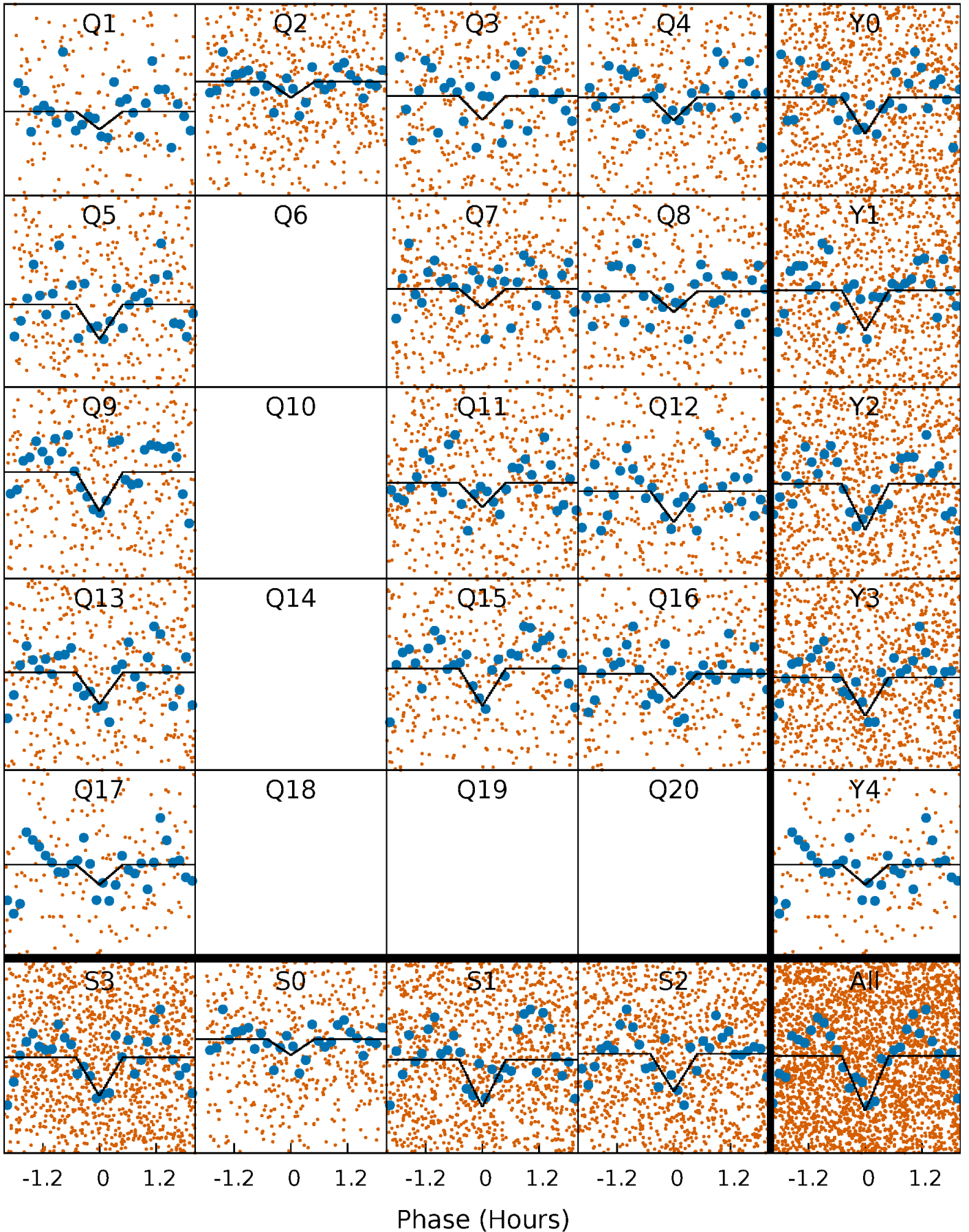
DV Quarter-Phased Transit Curves

TCE 004661660-03 $P = 0.630863$ Days $T_0 = 131.600023$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

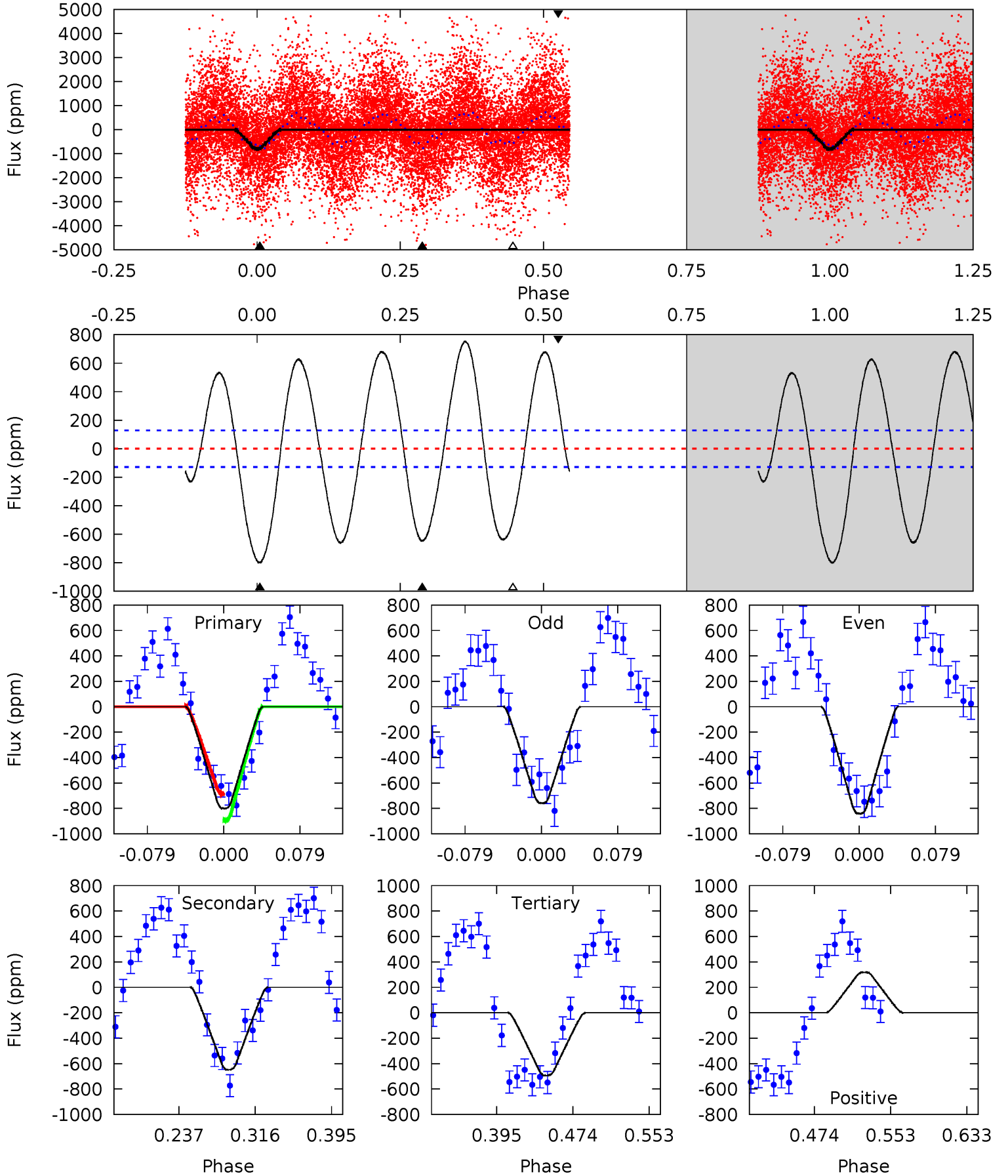
TCE 004661660-03 P= 0.630869 Days $T_0=131.595843$ (BKJD)



DV Model-Shift Uniqueness Test

004661660-03, P = 0.630863 Days, E = 130.969160 Days

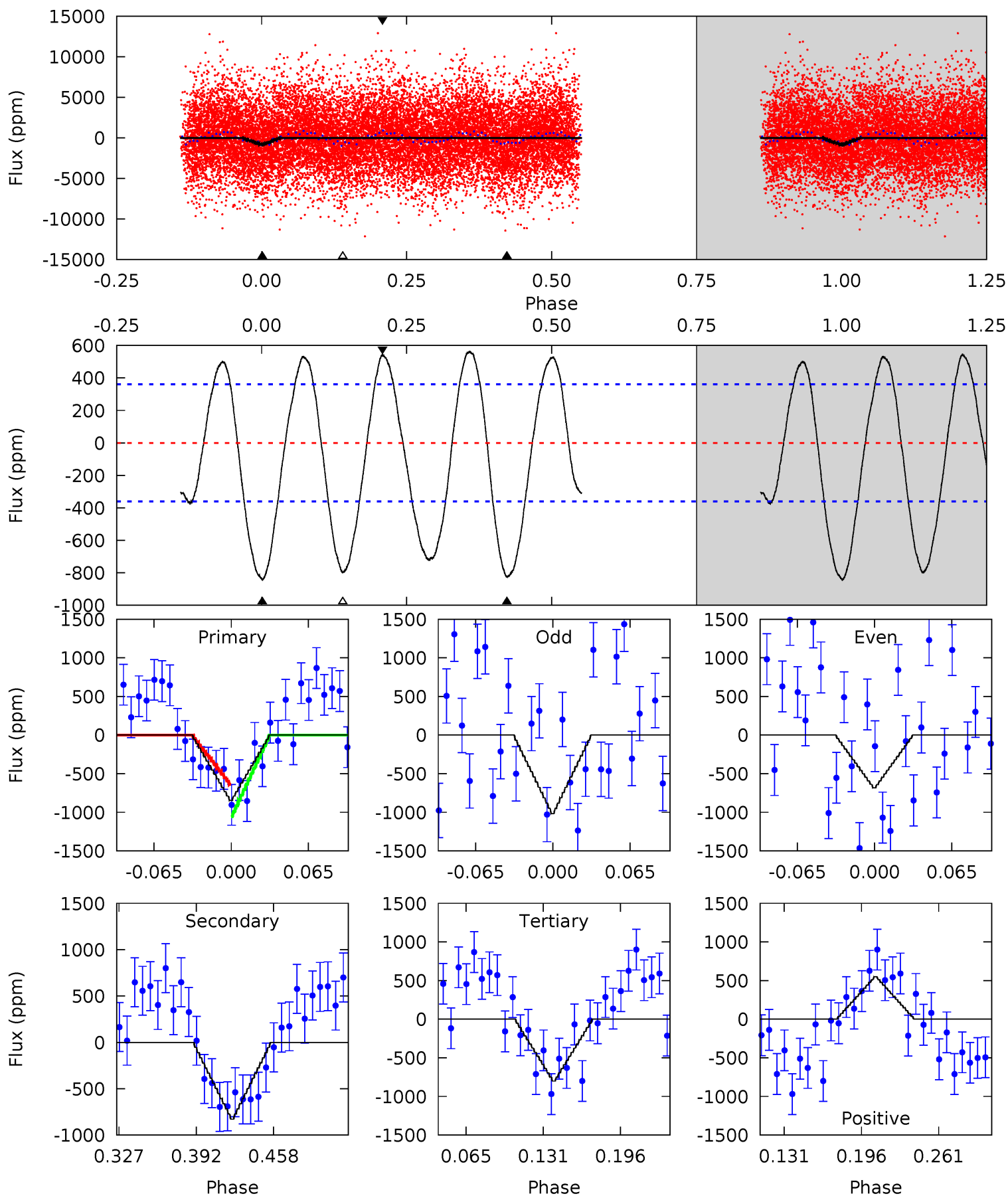
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
28.6	23.2	17.6	11.4	4.61	1.76	15.2	11.0	17.2	5.53	11.8	1.48	1.04	0.48	3.67



Alt Model-Shift Uniqueness Test

004661660-03, P = 0.630869 Days, E = 130.964974 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	10.7	10.3	7.07	4.65	1.84	5.68	0.59	3.84	0.35	3.61	2.15	1.00	0.40	2.76



Stellar Parameters For KIC 004661660

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	8211^{+226}_{-368}	$3.692^{+0.435}_{-0.145}$	$0.070^{+0.250}_{-0.450}$	$3.523^{+0.909}_{-1.688}$	$2.225^{+0.329}_{-0.611}$	$0.072^{+0.314}_{-0.031}$
	+3%/-4%	+12%/-4%	+357%/-643%	+26%/-48%	+15%/-27%	+439%/-44%
Source	KIC0	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 004661660-03 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-648 ± 28	$9.23^{+3.99}_{-3.51}$	6782^{+513}_{-793}	7504^{+2787}_{-1583}	$1.465^{+2.355}_{-0.739}$
Alt.	-829 ± 78	$11.16^{+4.31}_{-3.83}$	6774^{+564}_{-800}	7102^{+2244}_{-1270}	$1.272^{+1.698}_{-0.601}$

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

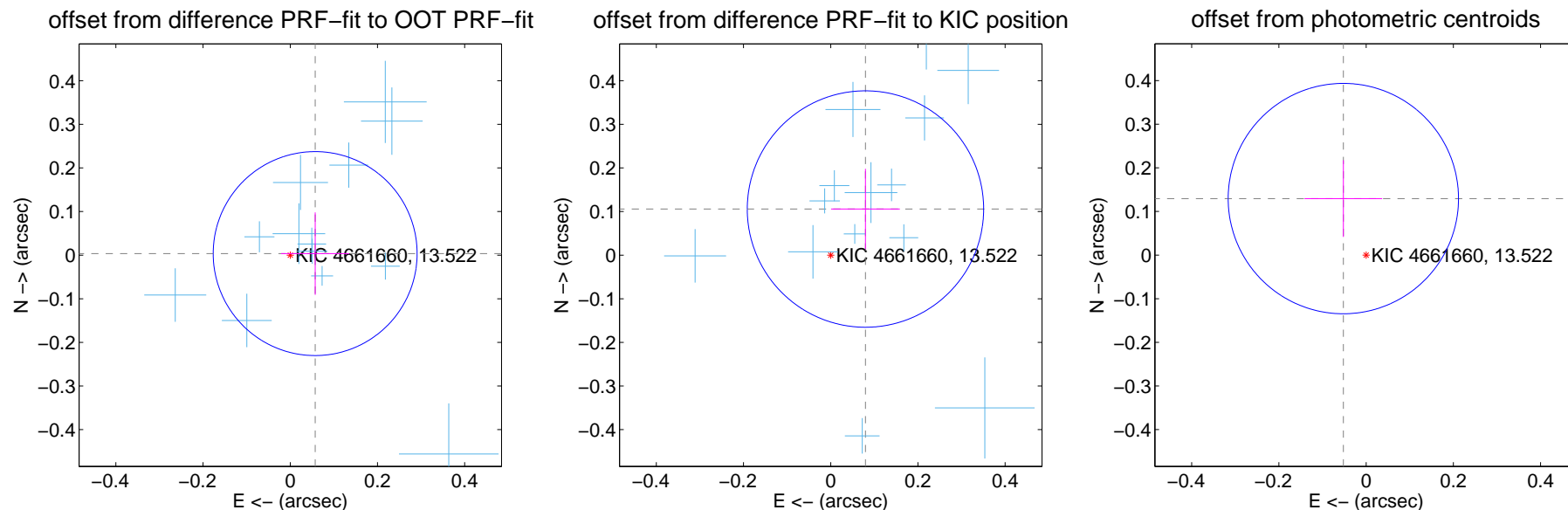
DV Centroid Data

Supplemental centroid analysis for 004661660-03. Kepler magnitude: 13.52. Transit SNR 16.05

There are 14 quarters with good PRF difference image offsets

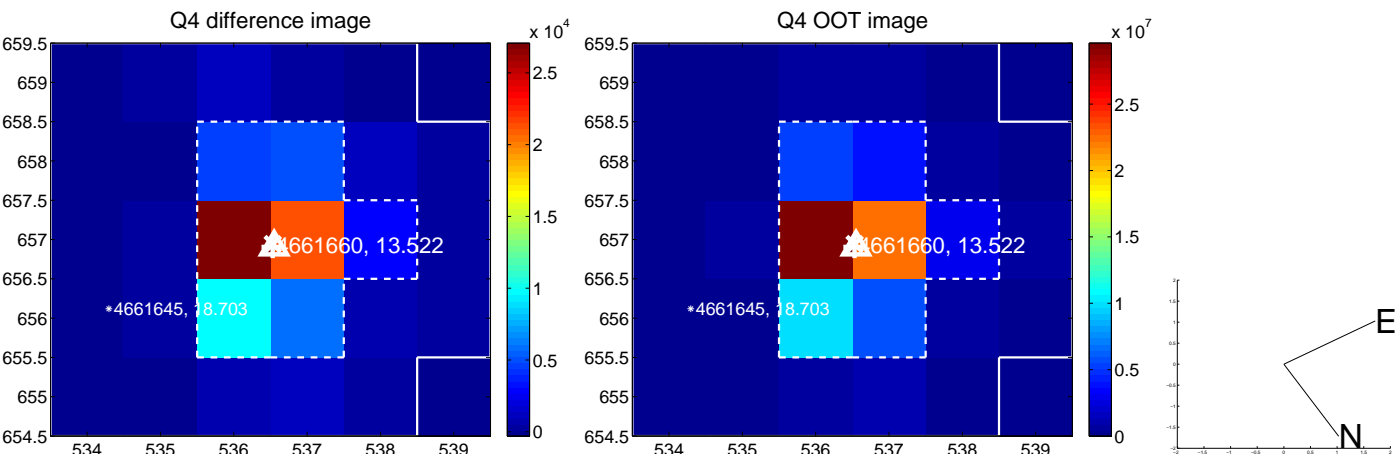
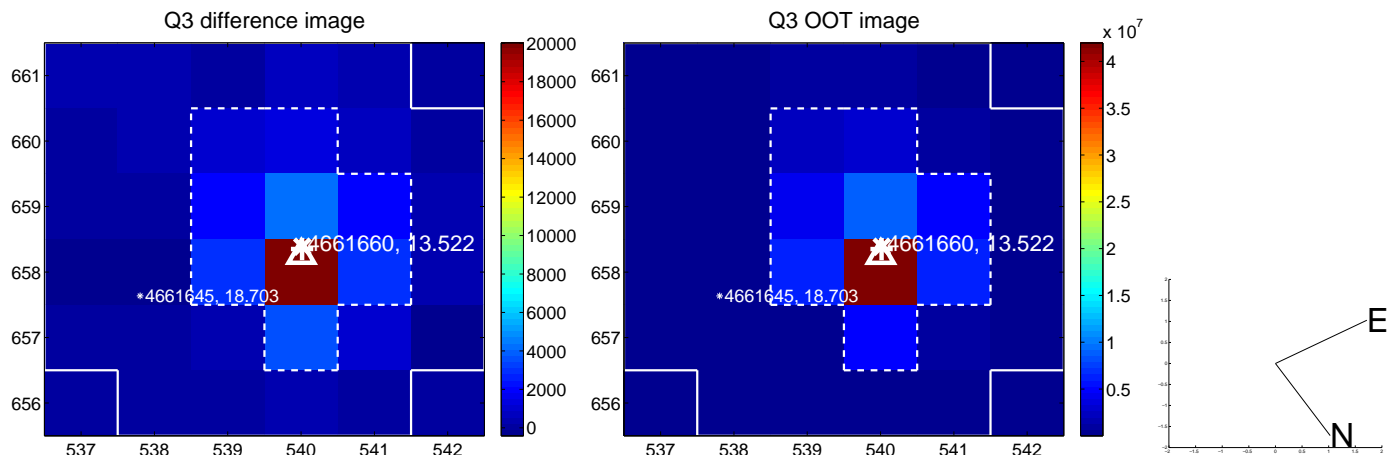
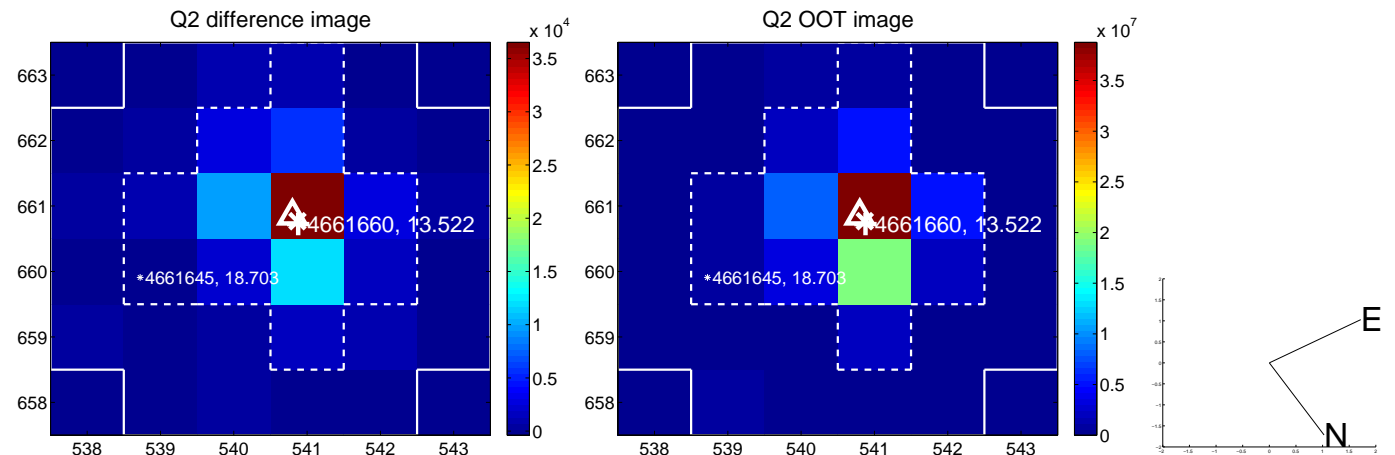
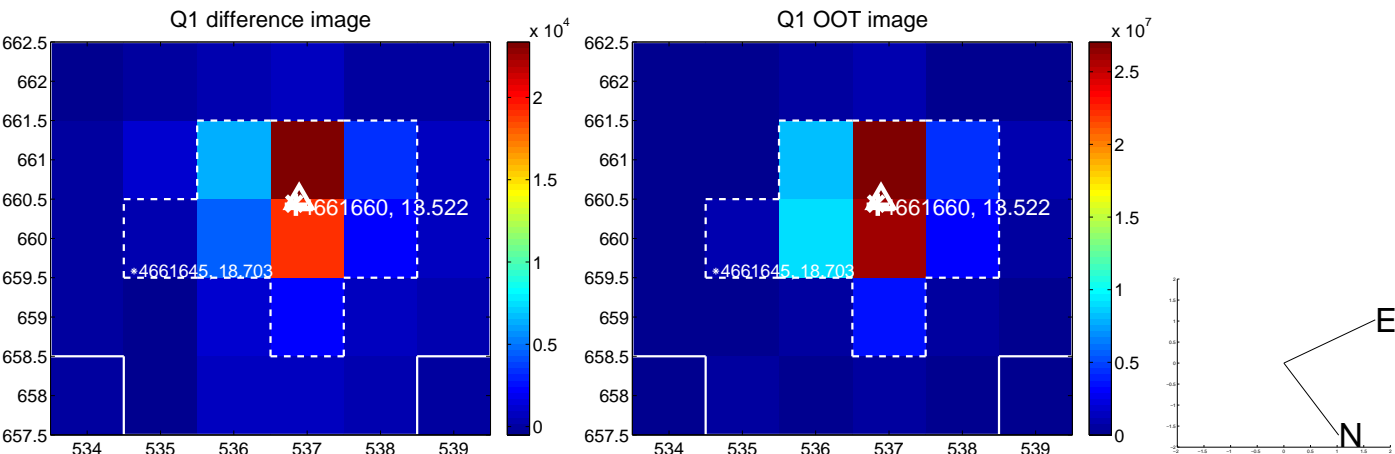
The direct PRF centroid is offset from the target star catalog position by about 0.11 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.057 ± 0.078	0.73	-0.057 ± 0.078	0.004 ± 0.095
PRF-fit source offset from KIC position	0.132 ± 0.090	1.47	-0.080 ± 0.079	0.106 ± 0.092
photometric centroid source offset	0.14 ± 0.09	1.59	0.05 ± 0.09	0.13 ± 0.09

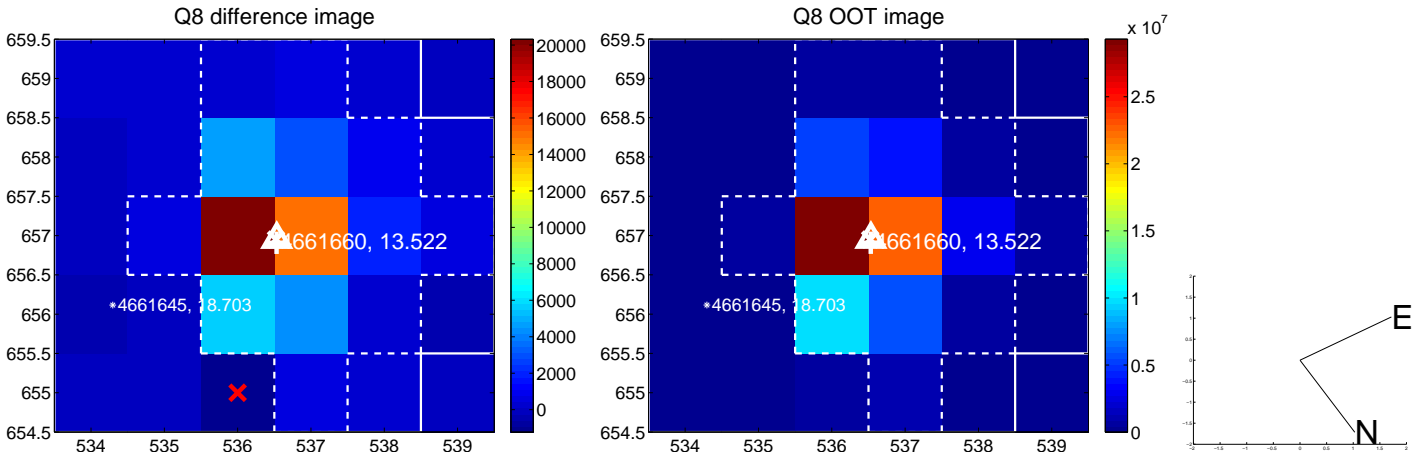
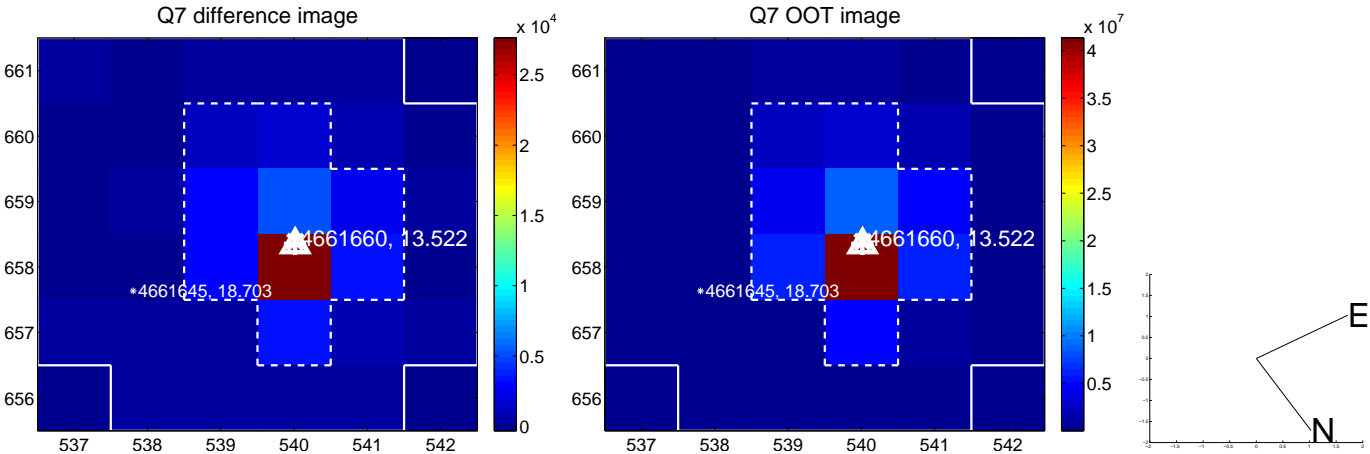
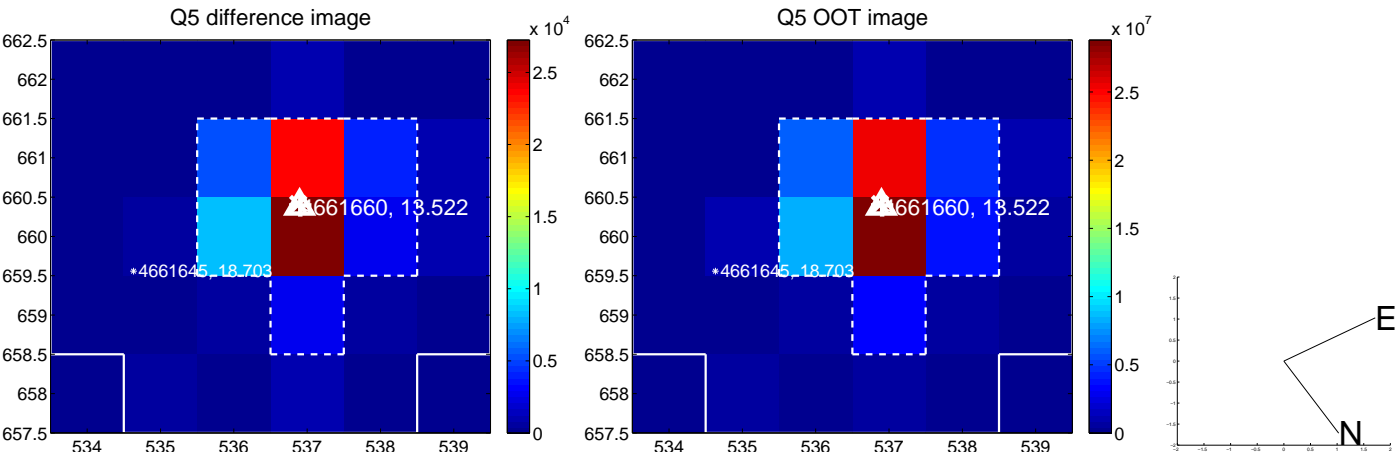


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

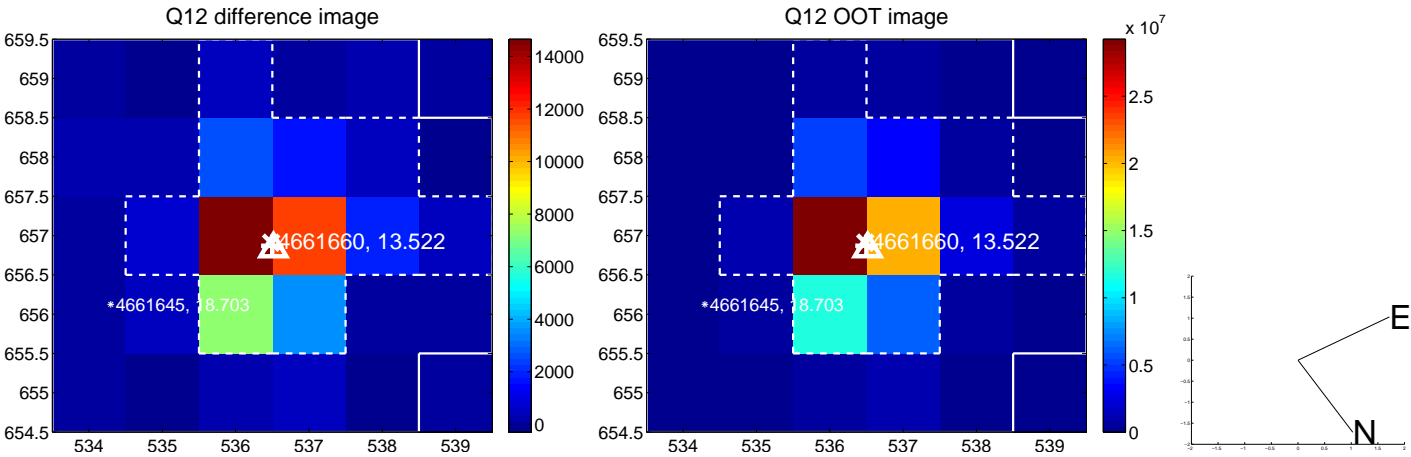
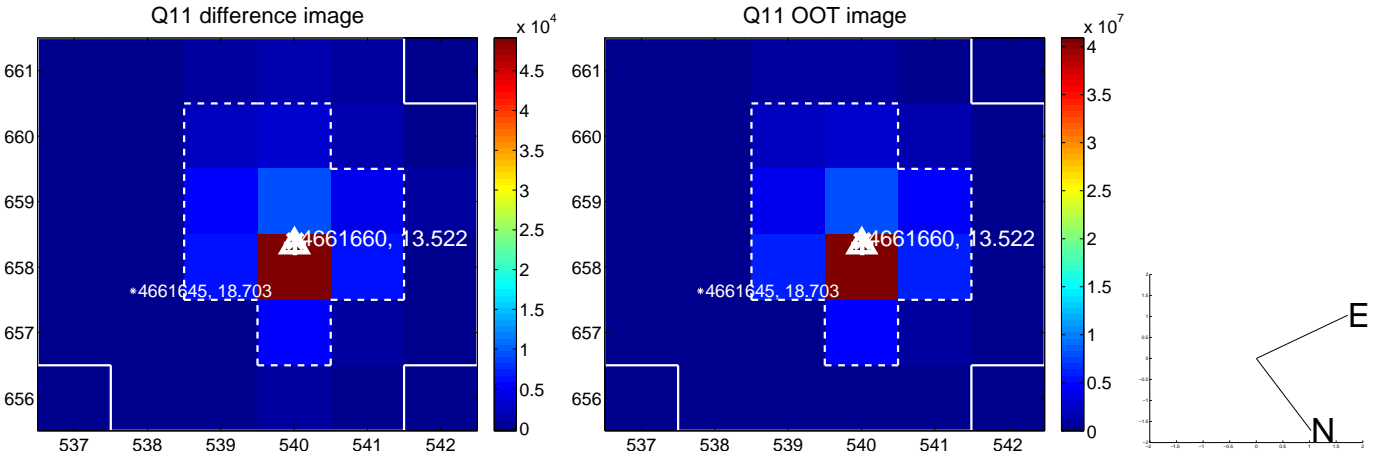
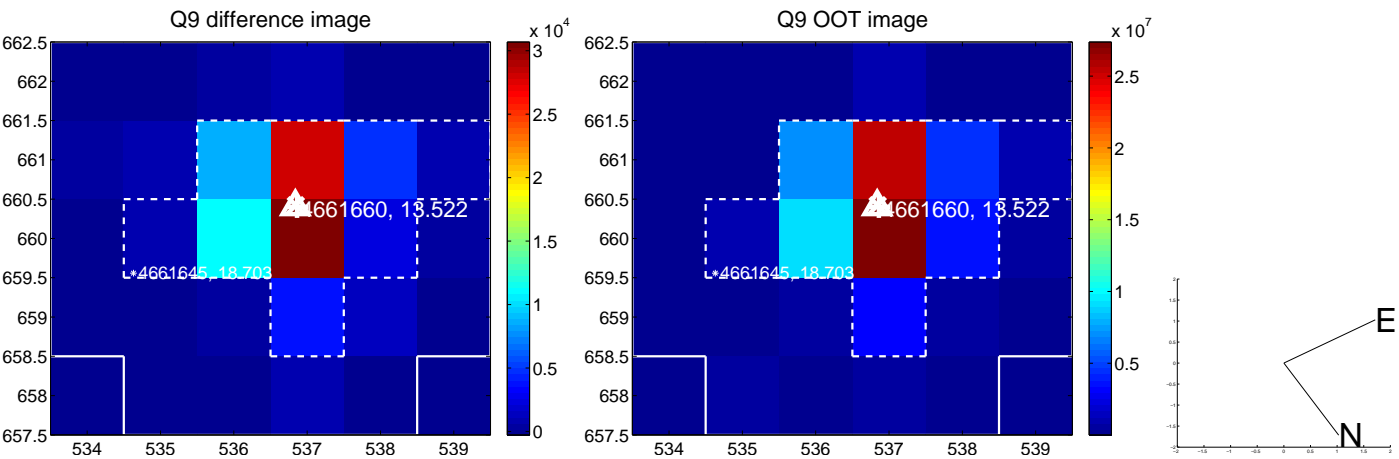
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



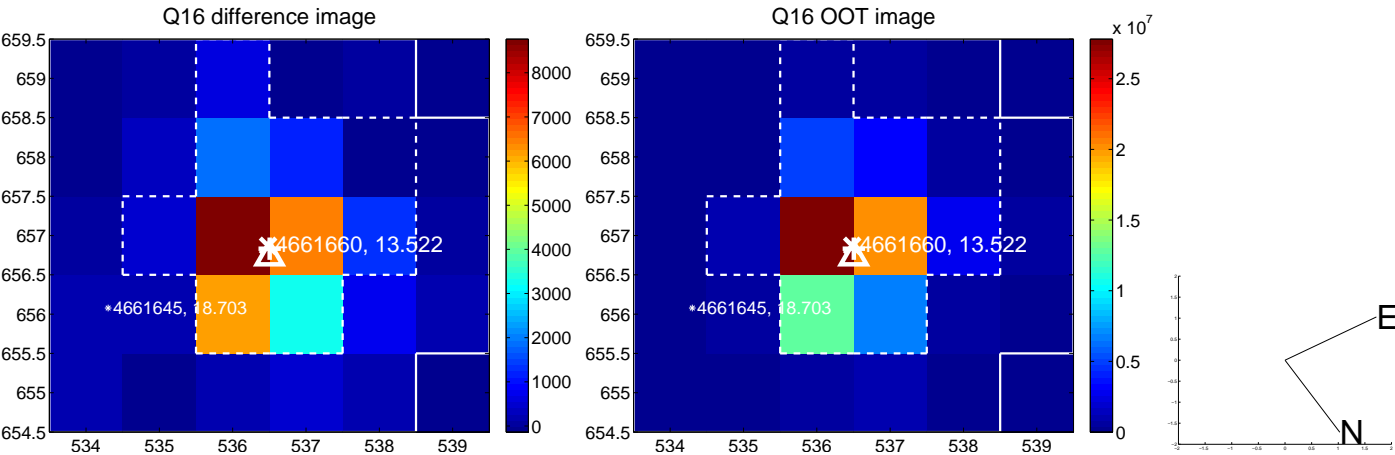
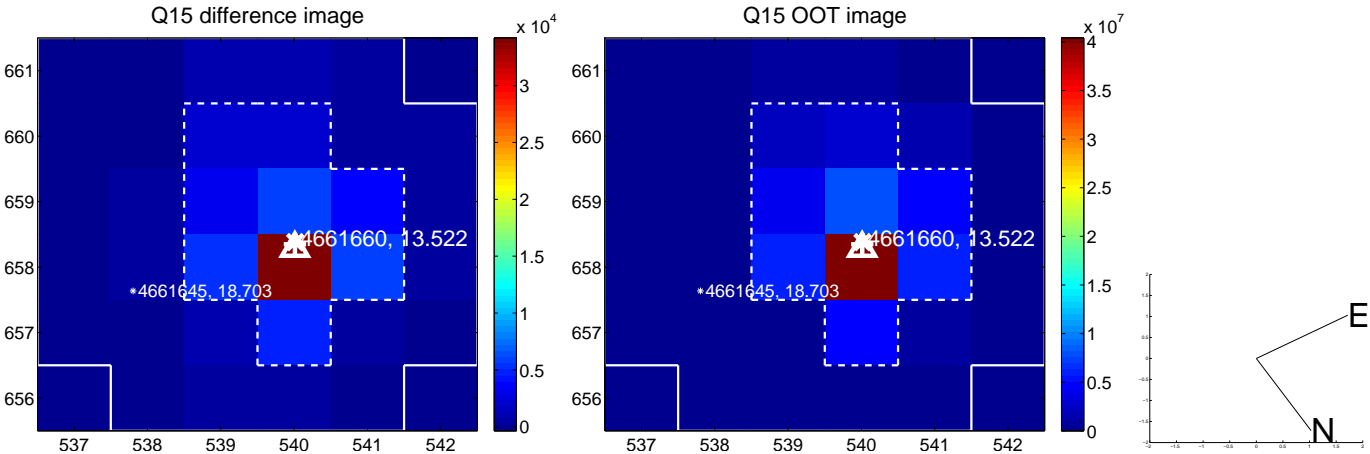
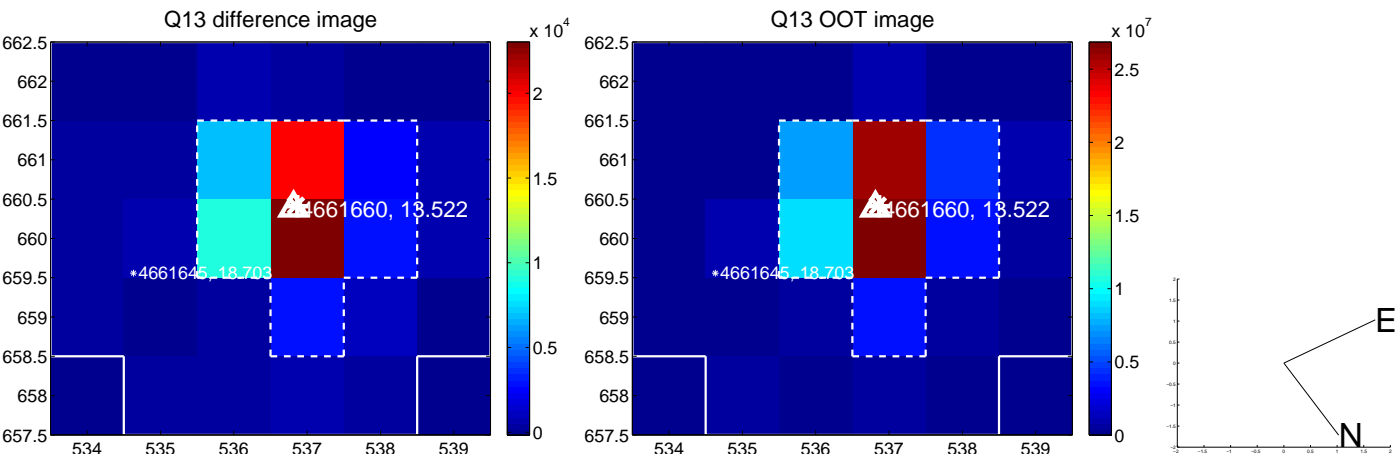
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



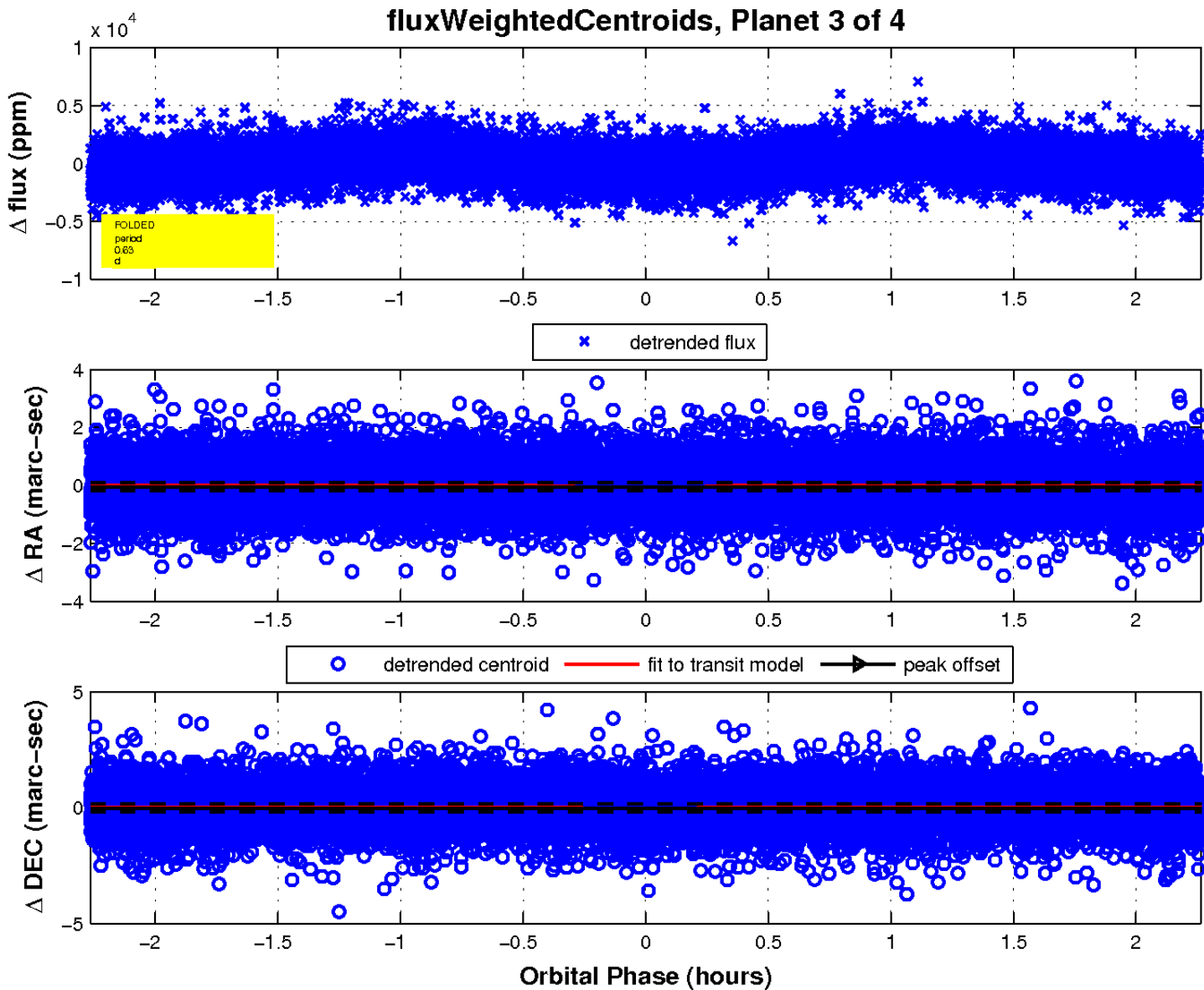
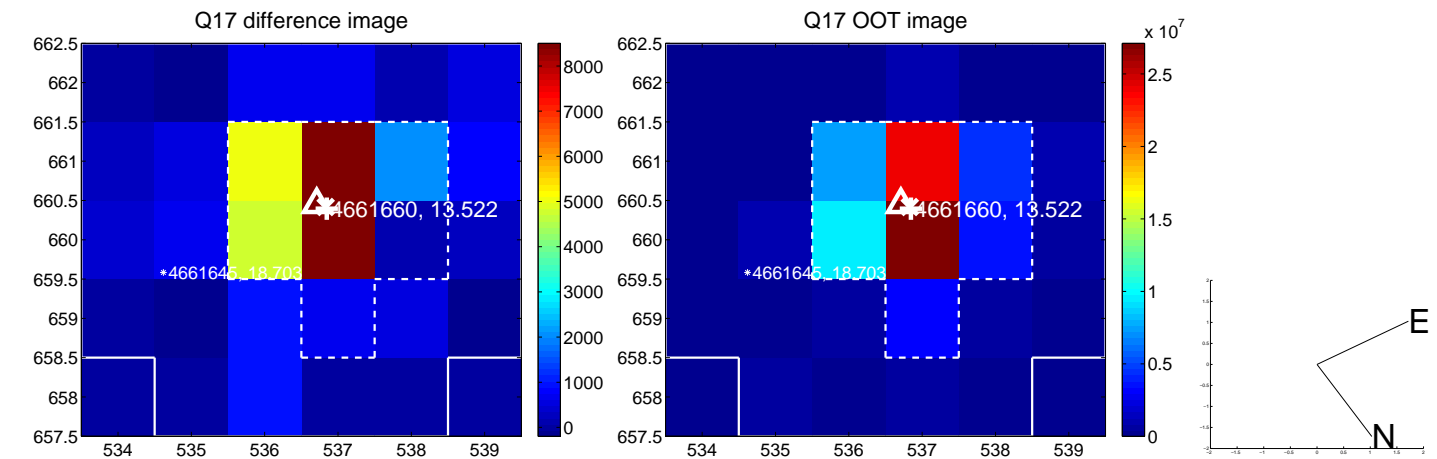
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

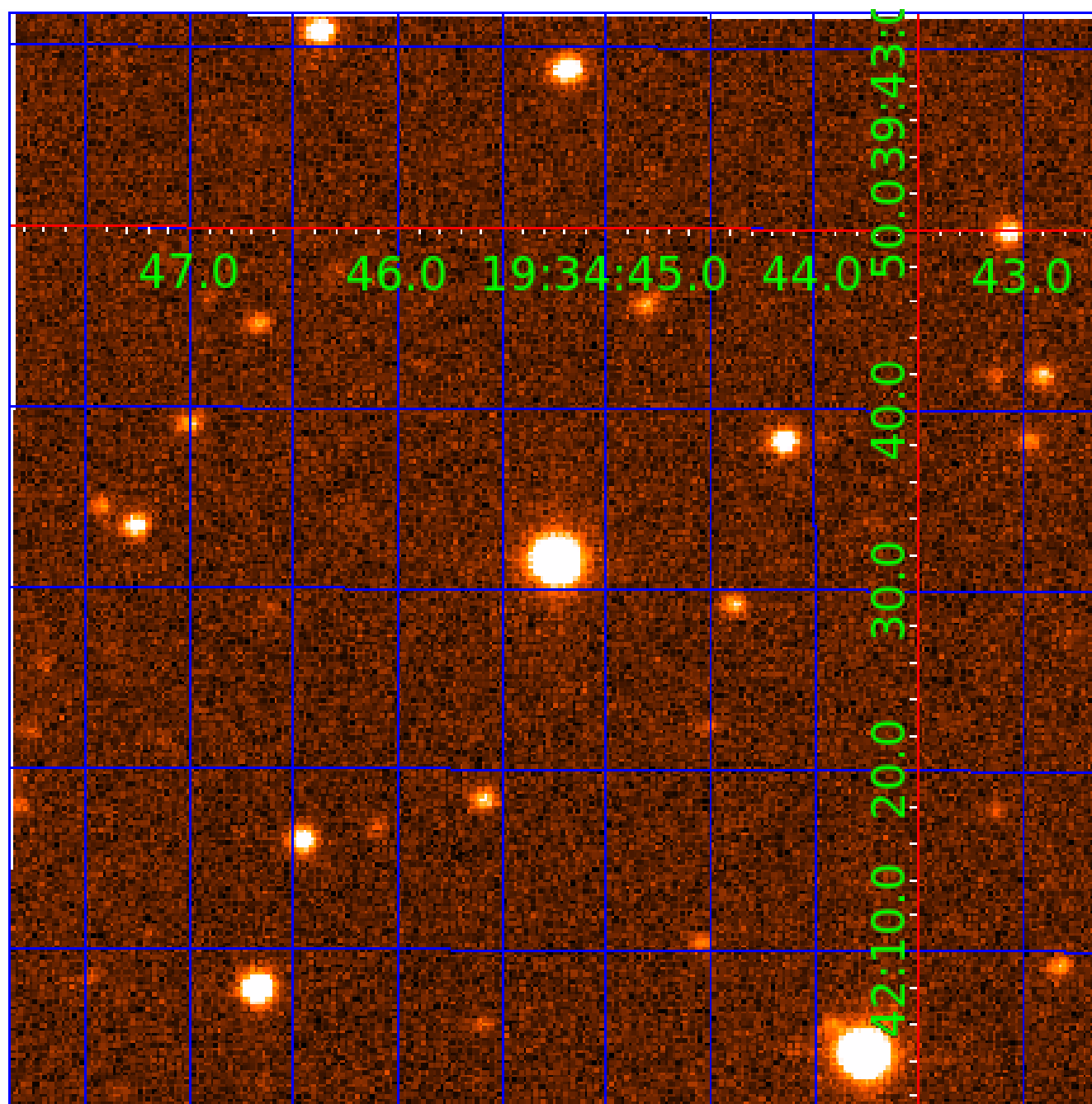


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

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KIC 004661660

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})
004661660-01	OBS	No	0.534565	131.752627	82.7	1.815	9.7	7.6	3.52	8211	3.70	178273.18
004661660-02	OBS	No	0.630863	132.048359	527.8	0.742	10.2	14.8	3.52	8211	9.57	142946.57
004661660-03	OBS	No	0.630863	131.600023	583.3	0.755	9.6	16.1	3.52	8211	10.06	142946.41
004661660-04	OBS	No	0.630865	131.775095	267.6	1.282	10.8	11.0	3.52	8211	5.89	142945.92

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004661660-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT
004661660-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
004661660-03	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—SAME_NTL_PERIOD
004661660-04	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—SAME_NTL_PERIOD

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

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

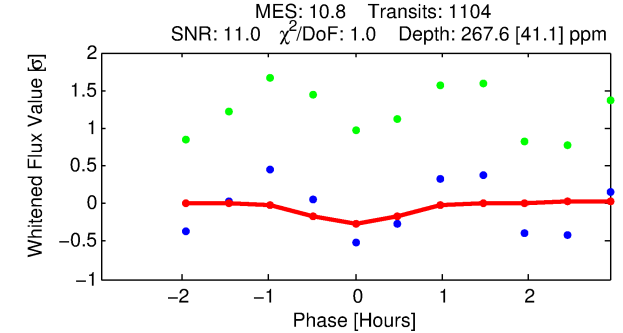
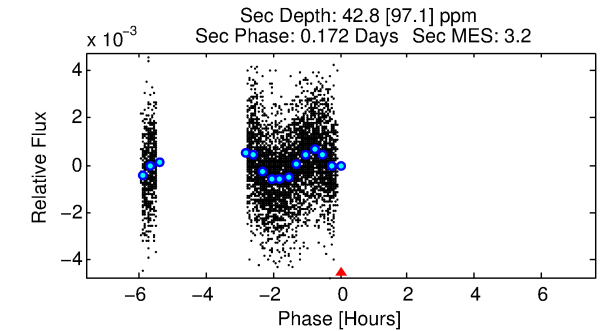
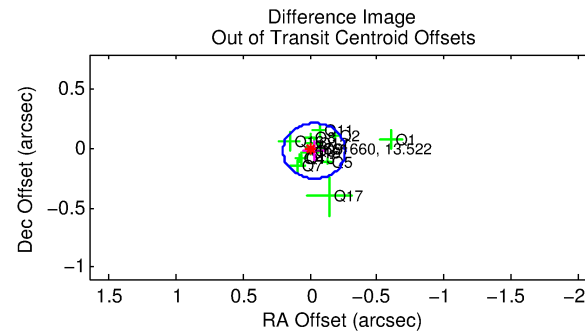
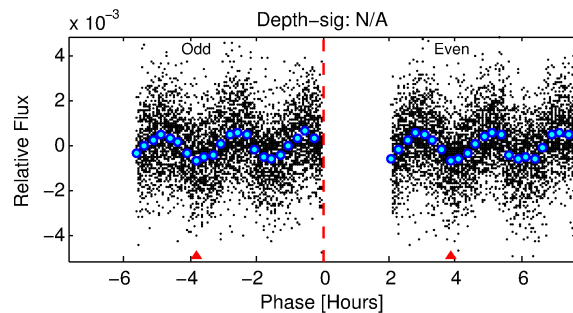
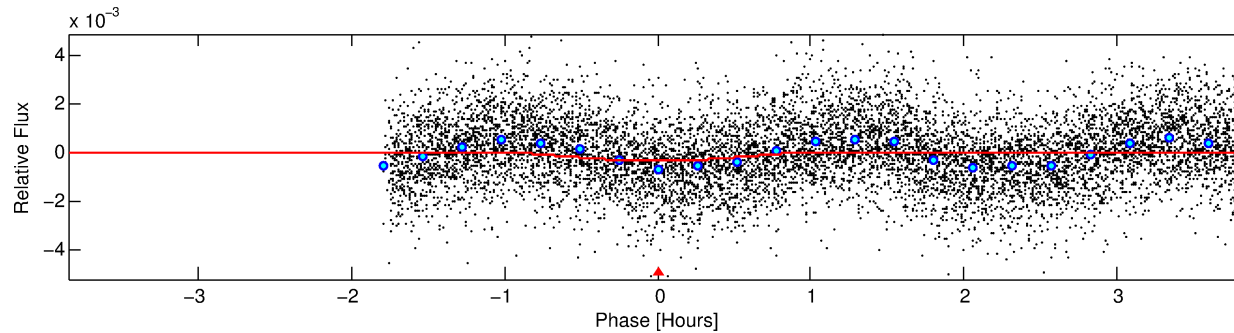
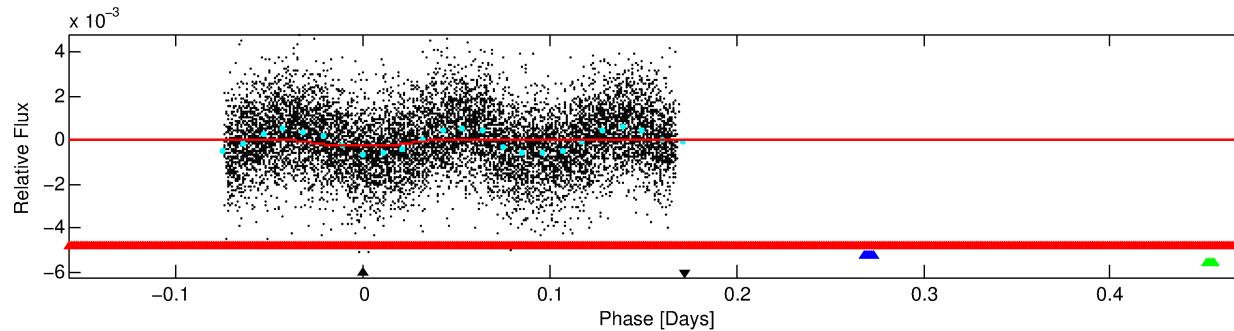
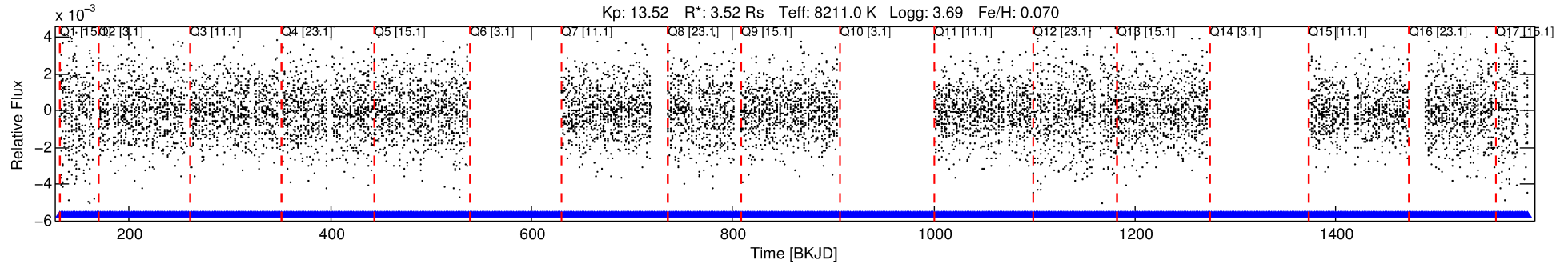
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004661660-04

No Significant Match Found

DV One-Page Summary

KIC: 4661660 Candidate: 4 of 4 Period: 0.631 d



DV Fit Results:

Period = 0.63086 [0.00001] d
Epoch = 131.7751 [0.0023] BKJD
Rp/R* = 0.0153 [0.0136]
a/R* = 3.71 [17.42]
b = 0.29 [15.93]
Seff = 142945.92 [108870.02]
Teq = 4958 [944] K
Rp = 5.90 [5.94] Re
a = 0.0188 [0.0087] AU
Ag = 0.24 [0.71] [-1.07σ]
Teffp = 5364 [3866] K [0.10σ]

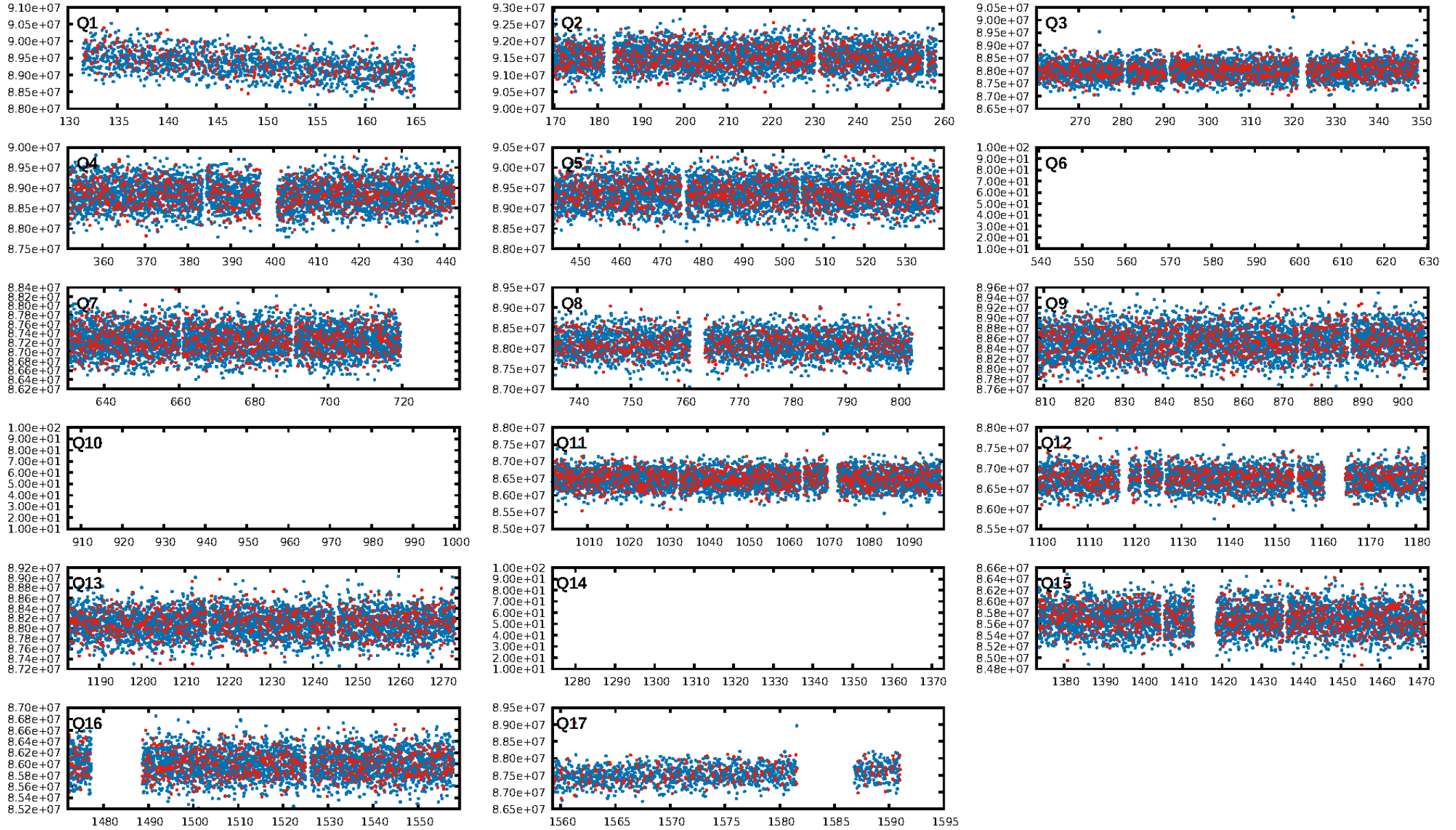
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [1044/1044]
GhostDiagnostic-chr: -0.4685
Centroid-sig: 4.7%
Centroid-so: 0.108 arcsec [0.79σ]
OotOffset-rm: 0.035 arcsec [0.45σ]
OotOffset-st: 1/4/4/5 [14]
KicOffset-rm: 0.114 arcsec [1.43σ]
KicOffset-st: 1/4/4/5 [14]
DiffImageQuality-fgm: 1.00 [14/14]
DiffImageOverlap-fno: 0.00 [0/14]

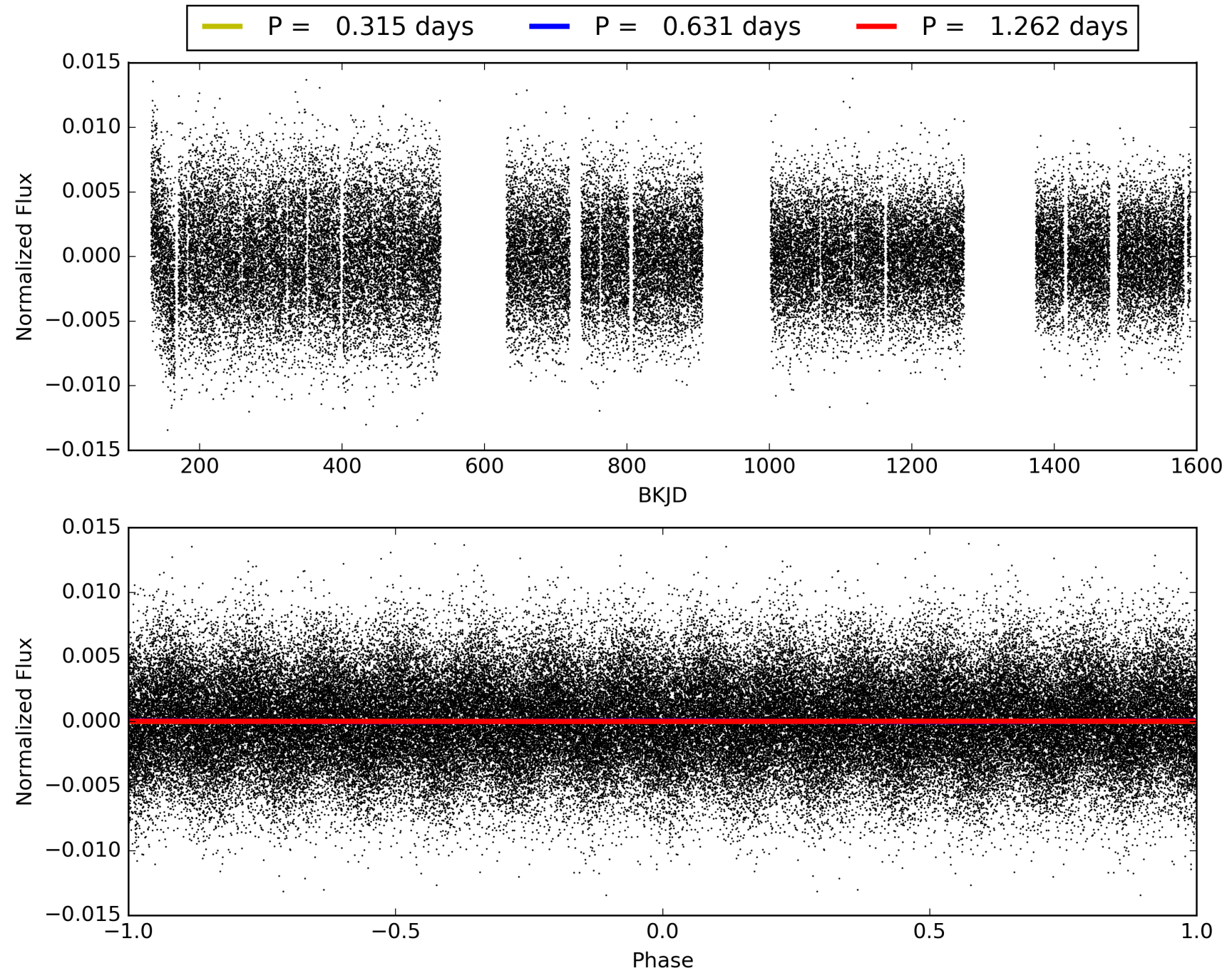
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 12:50:59 Z

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

TCE 004661660-04, PDC Light Curves

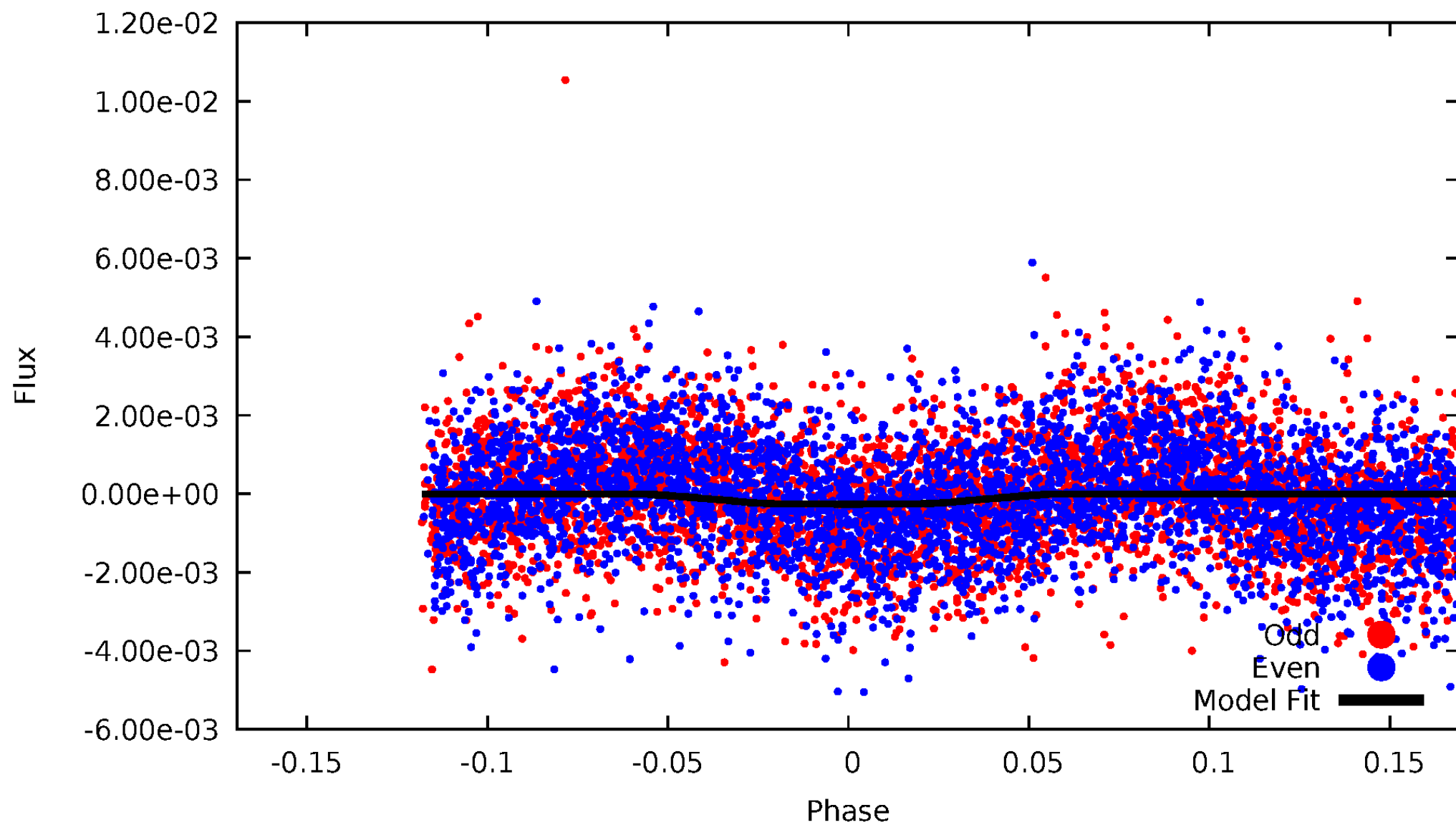


TCE 004661660-04



DV Odd/Even

TCE 004661660-04

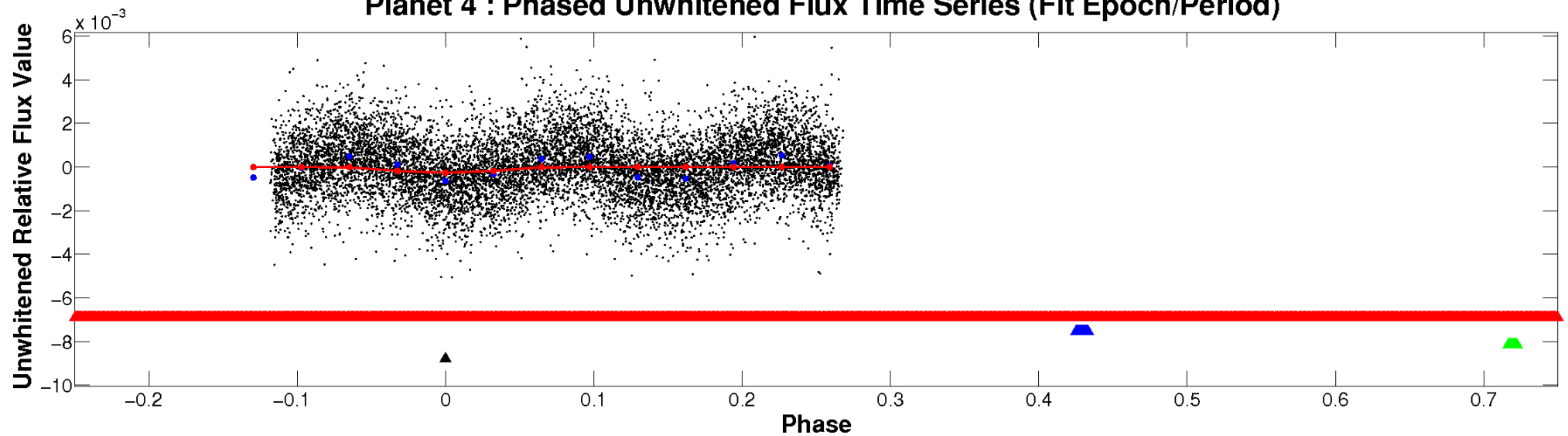


ALT Odd/Even

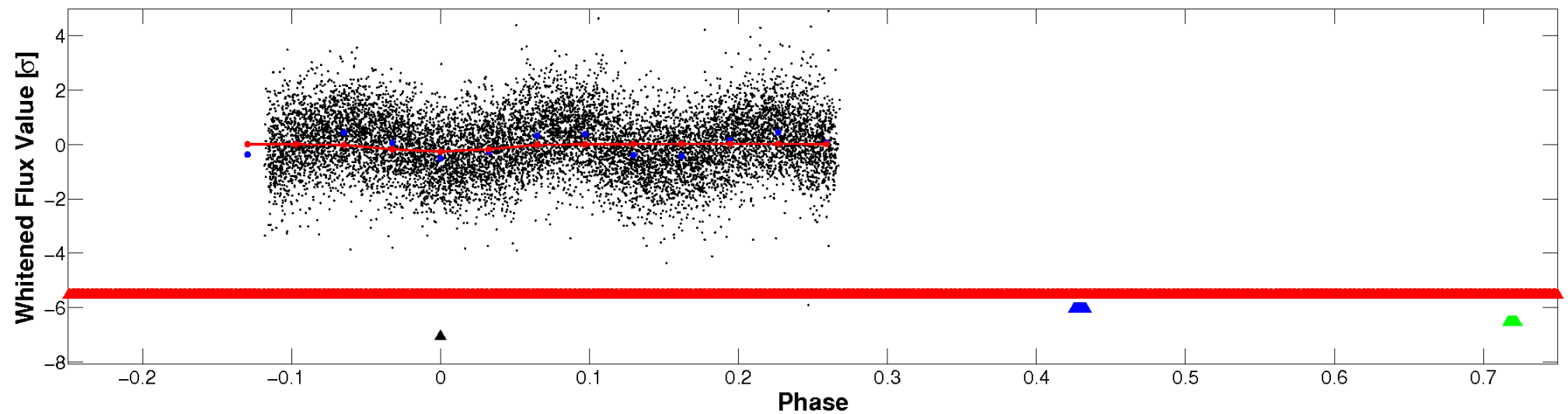
This plot does not exist for this TCE.

Non-Whitened Vs. Whitened Light Curve

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

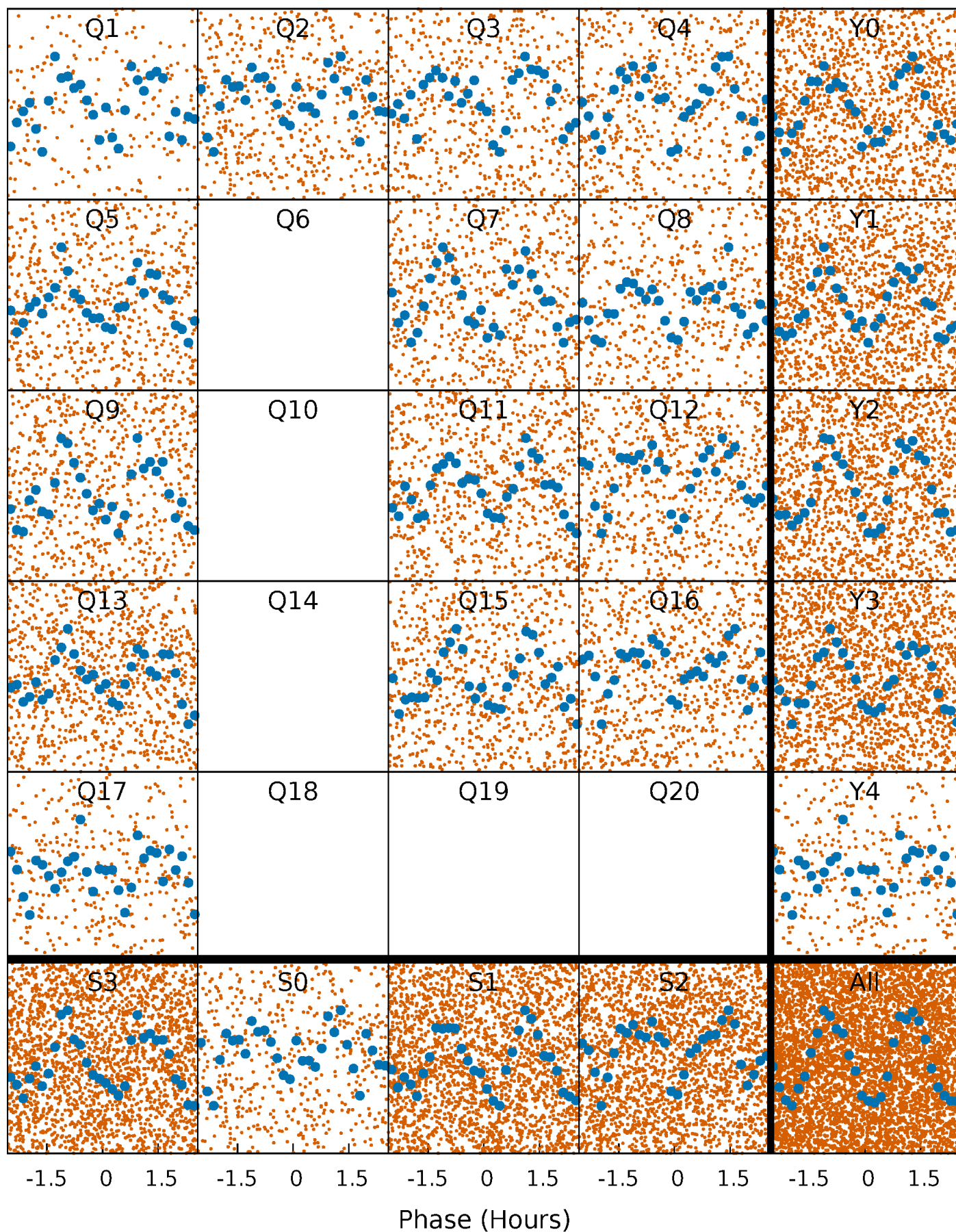


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



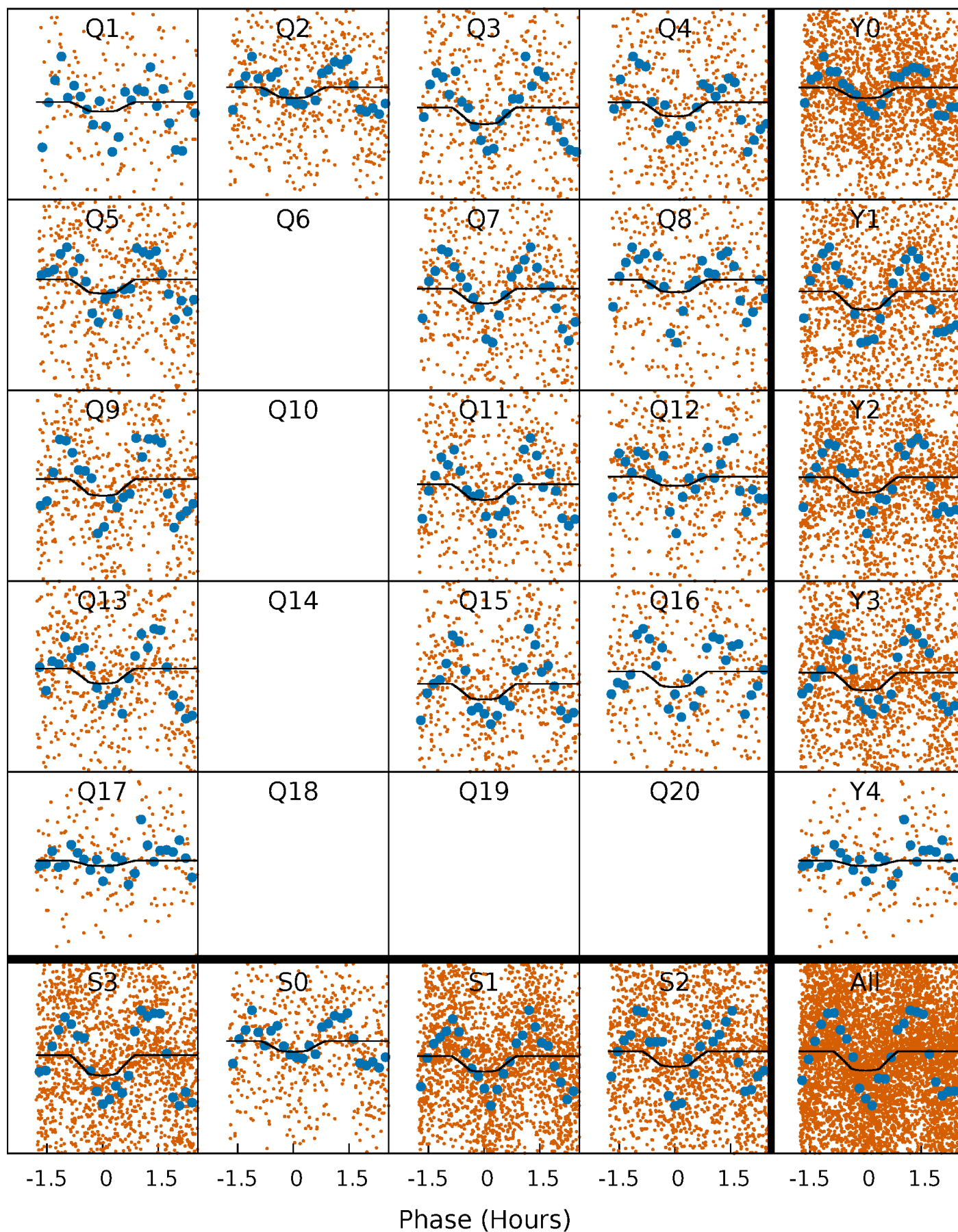
PDC Quarter-Phased Transit Curves

TCE 004661660-04 P= 0.630865 Days $T_0=131.775095$ (BKJD)



DV Quarter-Phased Transit Curves

TCE 004661660-04 P= 0.630865 Days $T_0=131.775095$ (BKJD)

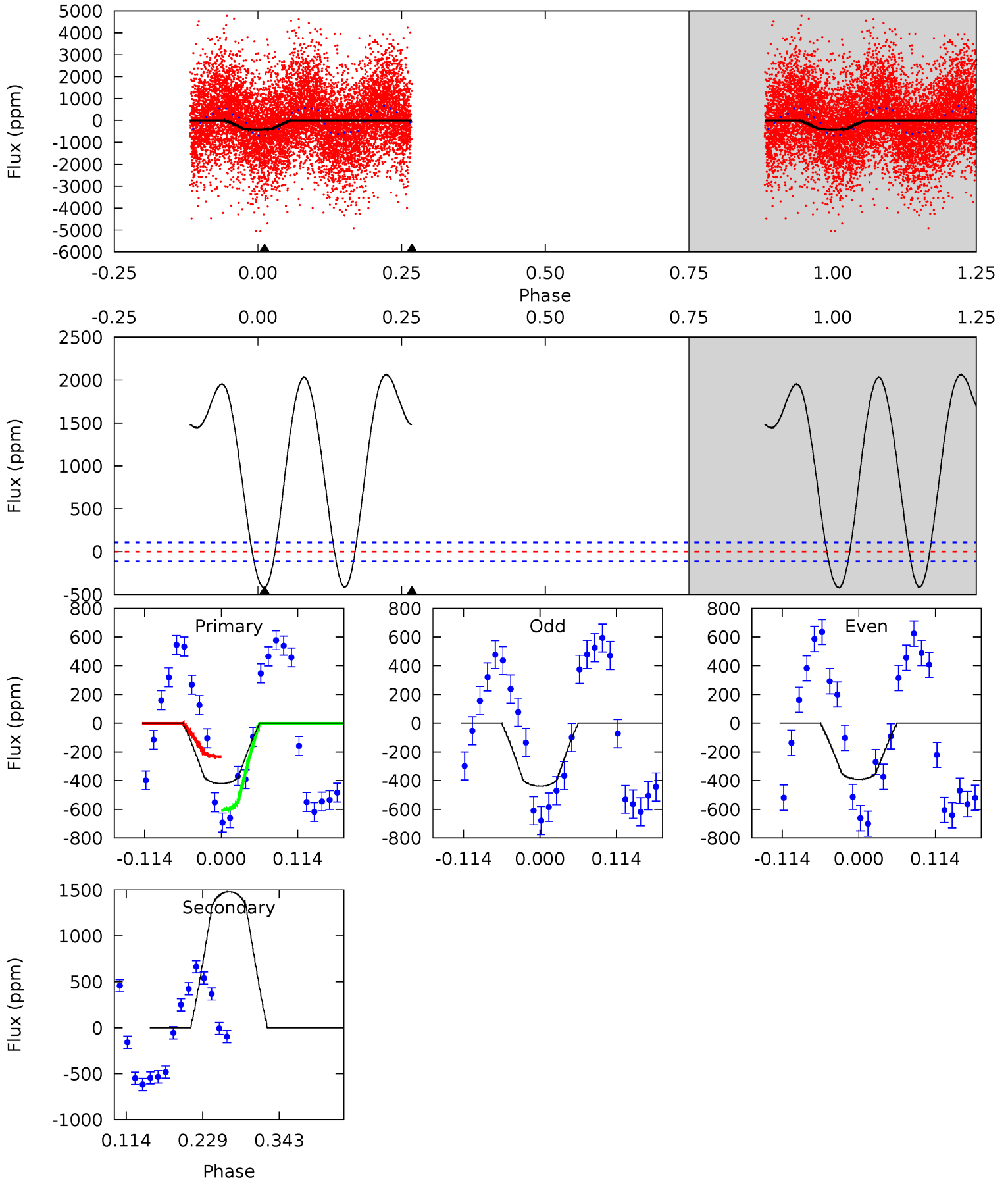


This plot does not exist for this TCE.

DV Model-Shift Uniqueness Test

004661660-04, P = 0.630865 Days, E = 131.775095 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
17.4	-61.1	0	0	4.54	1.58	32.1	17.4	17.4	-61.1	-61.1	1.04	0.99	0.83	8.19



Alt Model-Shift Uniqueness Test

This plot does not exist for this TCE.

Stellar Parameters For KIC 004661660

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	8211^{+226}_{-368}	$3.692^{+0.435}_{-0.145}$	$0.070^{+0.250}_{-0.450}$	$3.523^{+0.909}_{-1.688}$	$2.225^{+0.329}_{-0.611}$	$0.072^{+0.314}_{-0.031}$
	+3%/-4%	+12%/-4%	+357%/-643%	+26%/-48%	+15%/-27%	+439%/-44%
Source	KIC0	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 004661660-04 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	1481 ± 24	$5.93^{+5.07}_{-3.53}$	6733^{+590}_{-827}	-15166^{+5047}_{-34771}	$-7.644^{+5.266}_{-43.318}$
Alt.	N/A	N/A	N/A	N/A	N/A

T_{max} = Theoretical Maximum Planetary Temperature
 T_{obs} = Observed Planetary Temperature (Assuming $A=0.3$)
 A_{obs} = Observed Albedo (Assuming $T=0$)

If a secondary eclipse is present, the system is likely an EB if $T_{\text{obs}} \gg T_{\text{max}}$ AND $A_{\text{obs}} \gg 1.0$

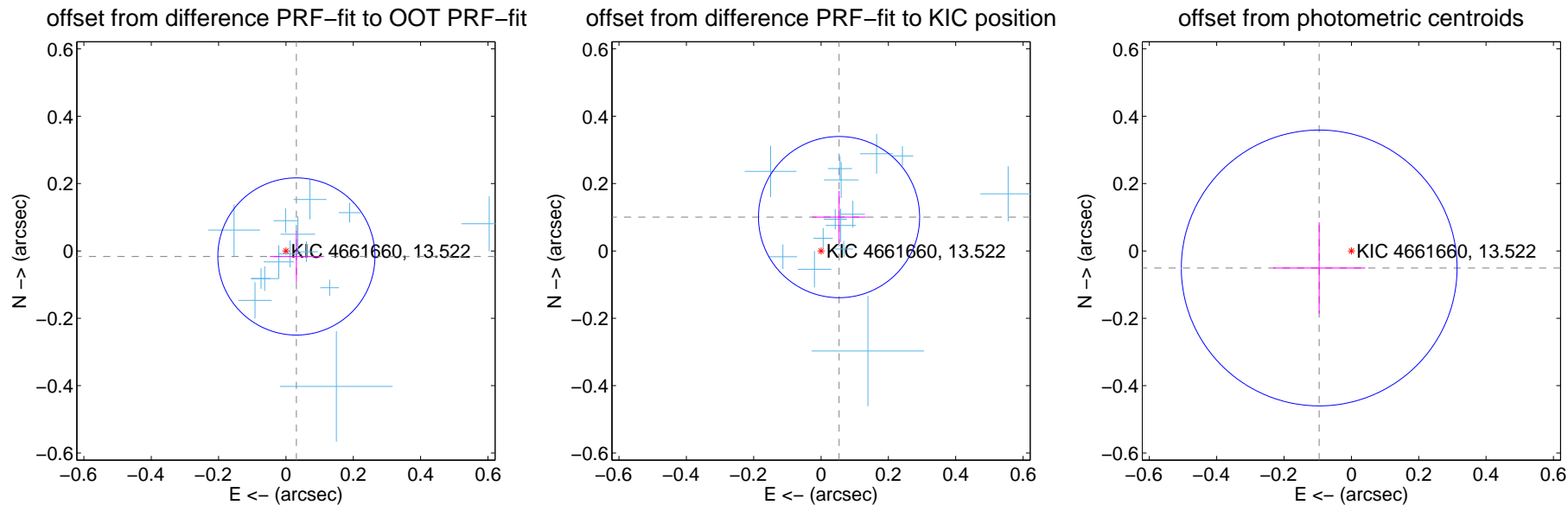
DV Centroid Data

Supplemental centroid analysis for 004661660-04. Kepler magnitude: 13.52. Transit SNR 10.96

There are 14 quarters with good PRF difference image offsets

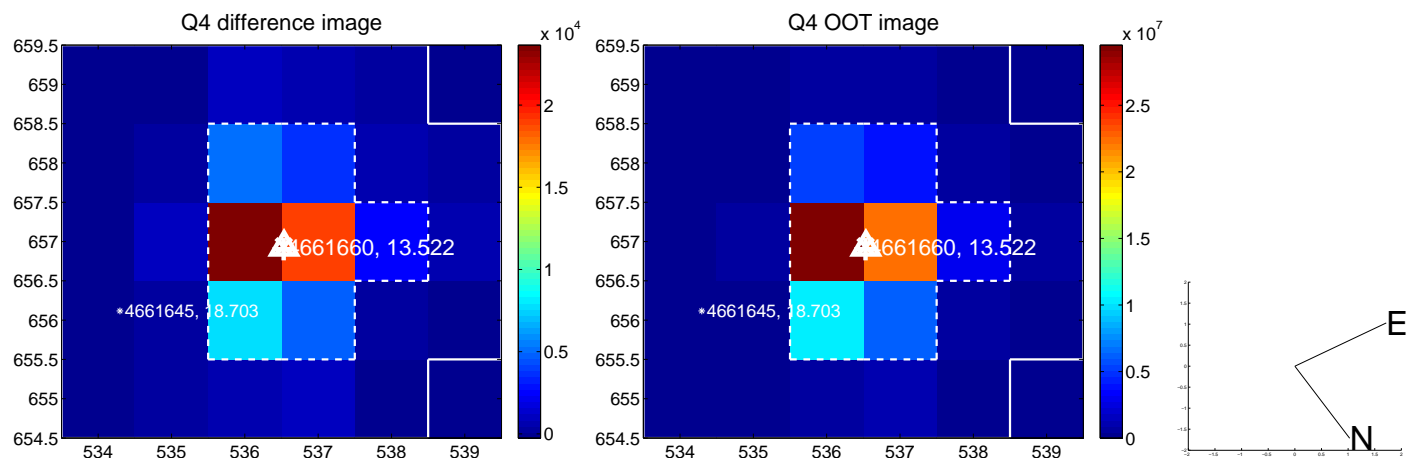
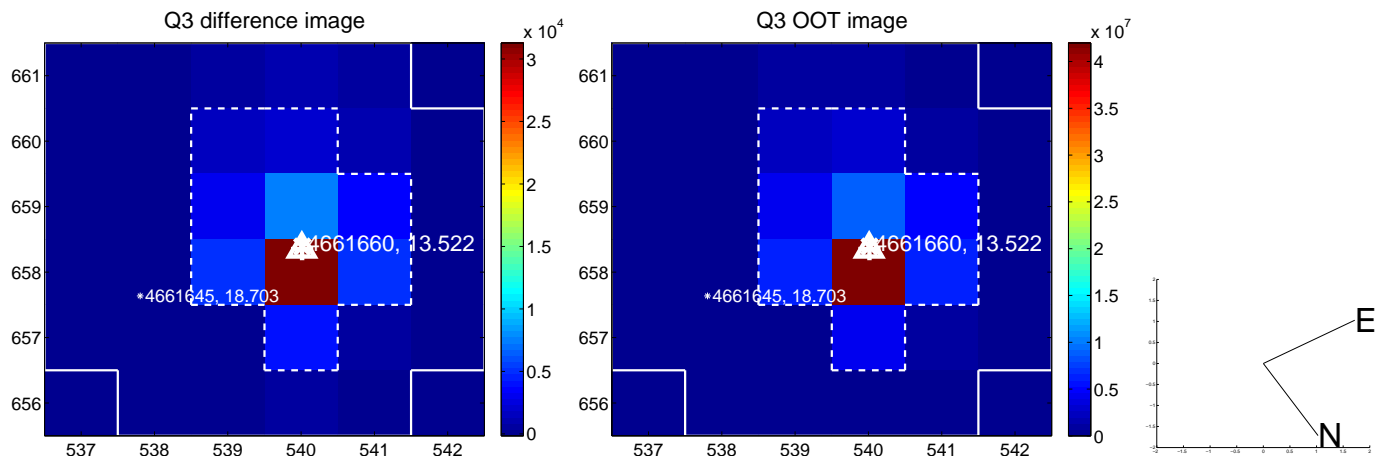
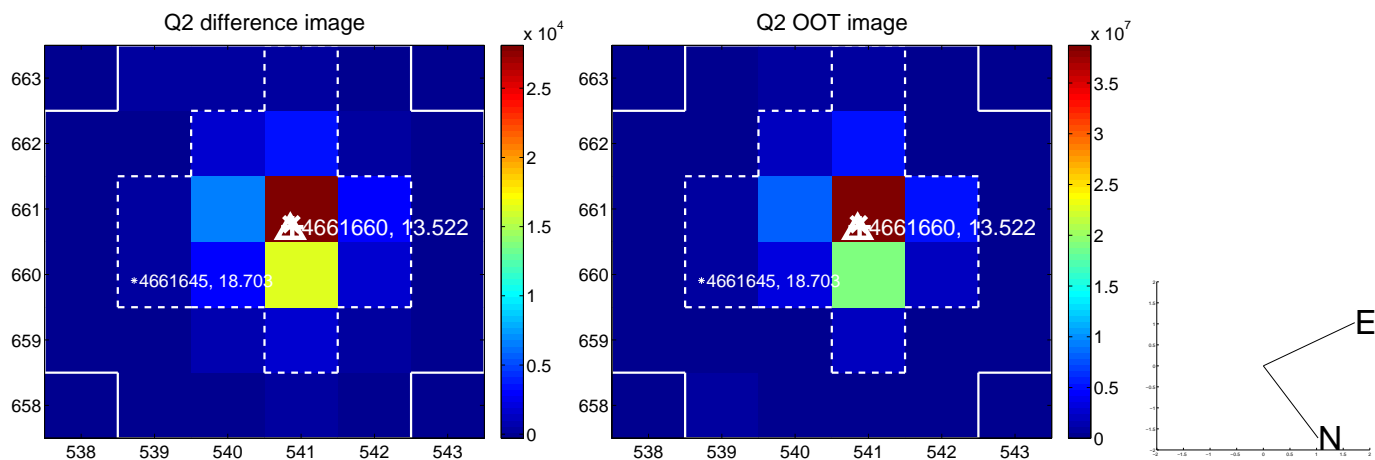
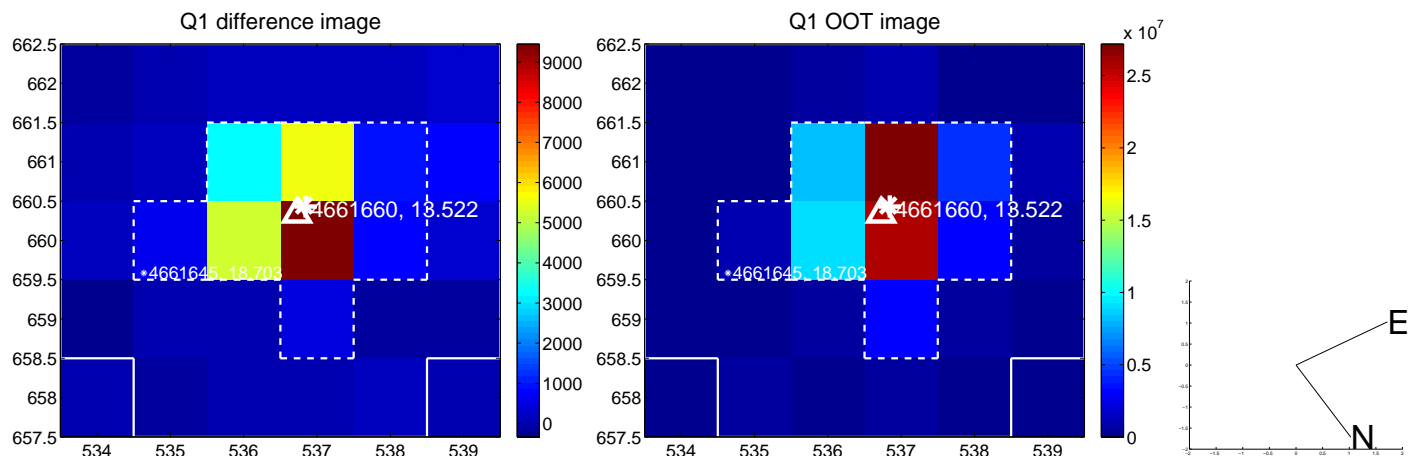
The direct PRF centroid is offset from the target star catalog position by about 0.11 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.035 ± 0.078	0.45	-0.031 ± 0.079	-0.016 ± 0.075
PRF-fit source offset from KIC position	0.114 ± 0.080	1.43	-0.054 ± 0.080	0.100 ± 0.078
photometric centroid source offset	0.11 ± 0.14	0.79	0.10 ± 0.14	-0.05 ± 0.14

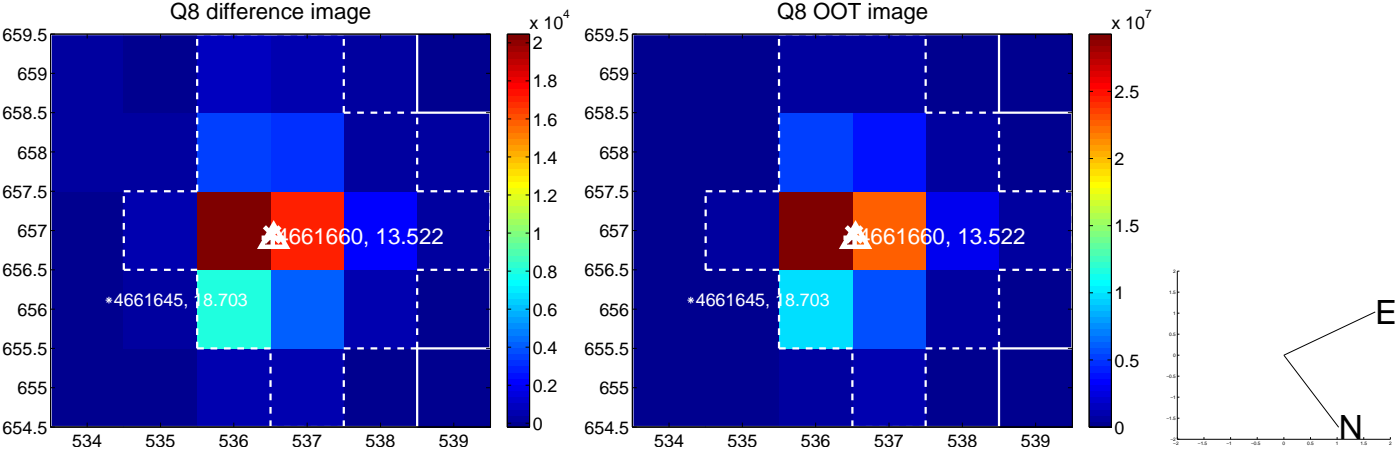
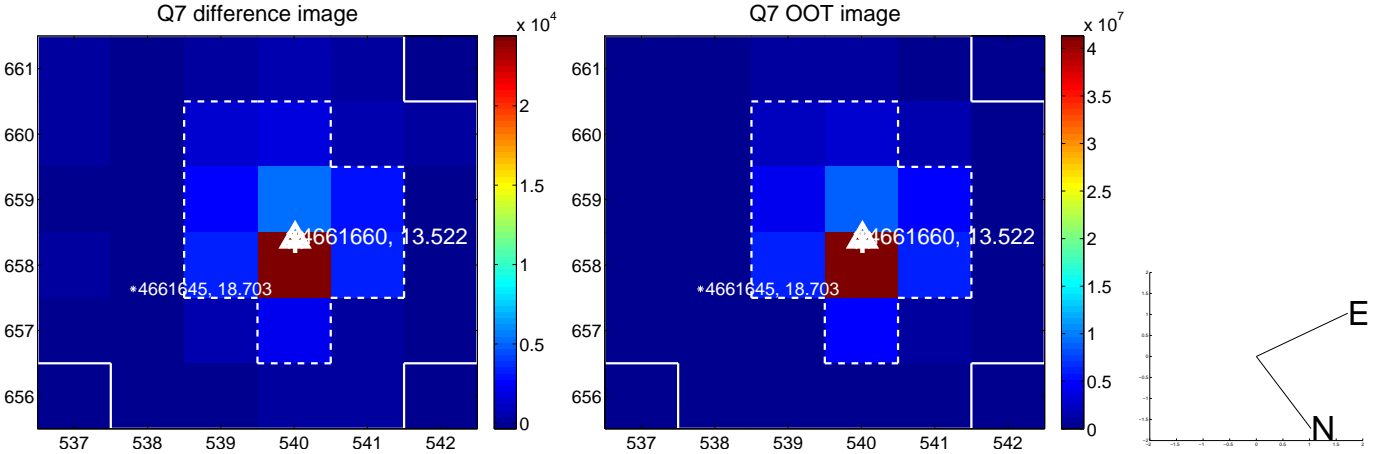
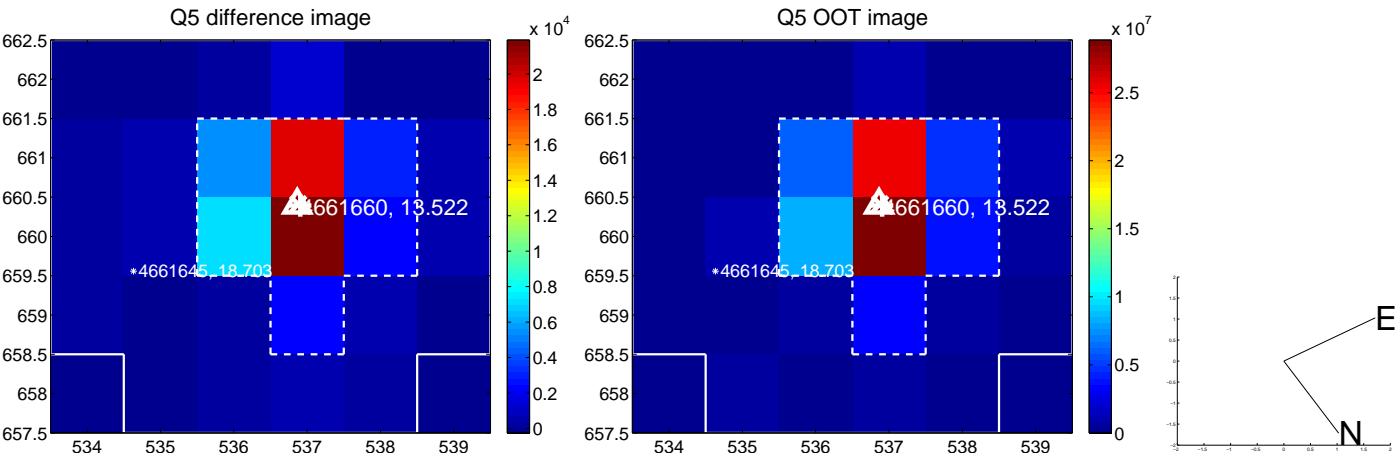


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

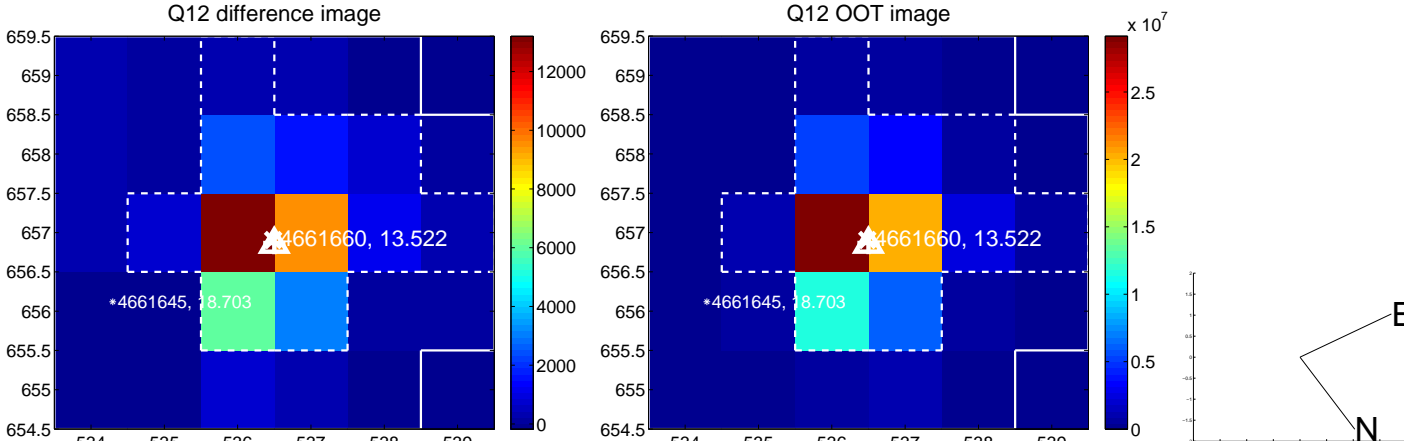
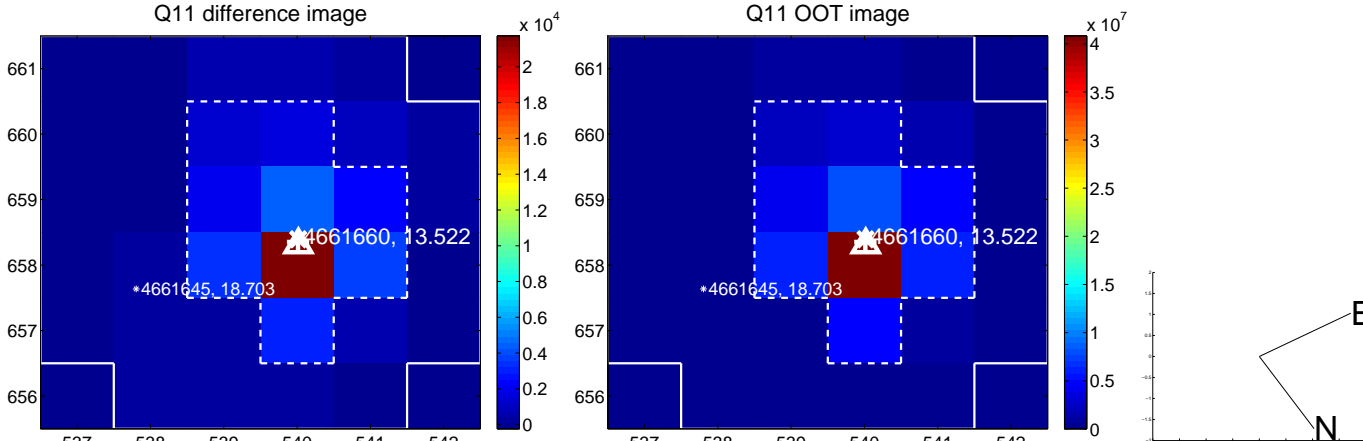
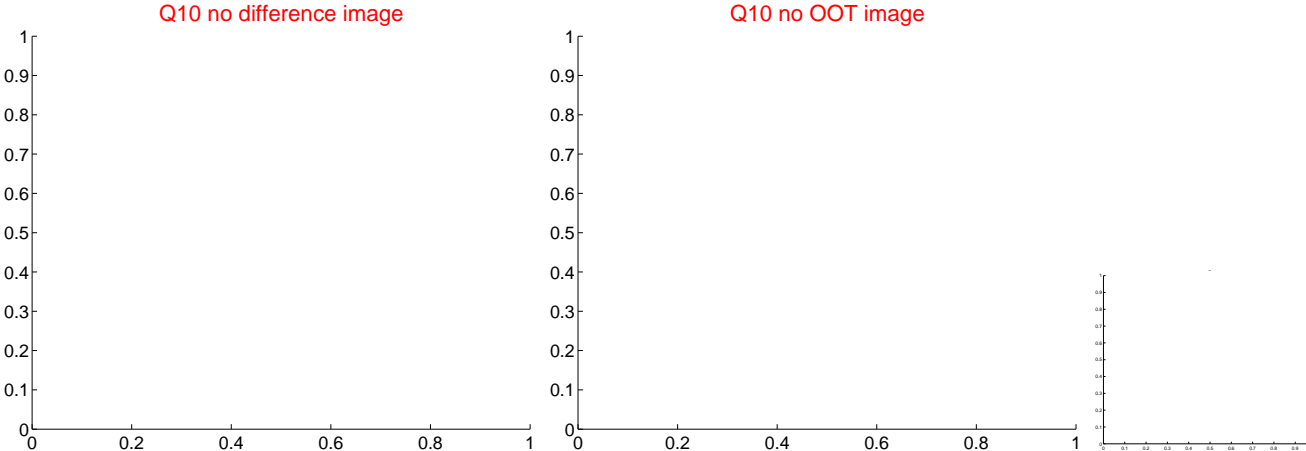
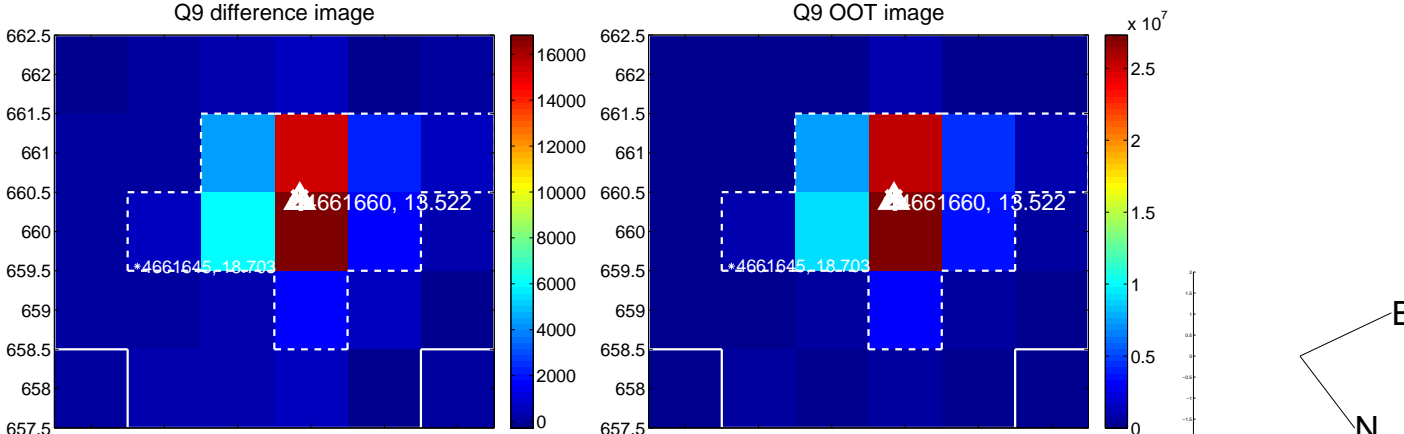
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



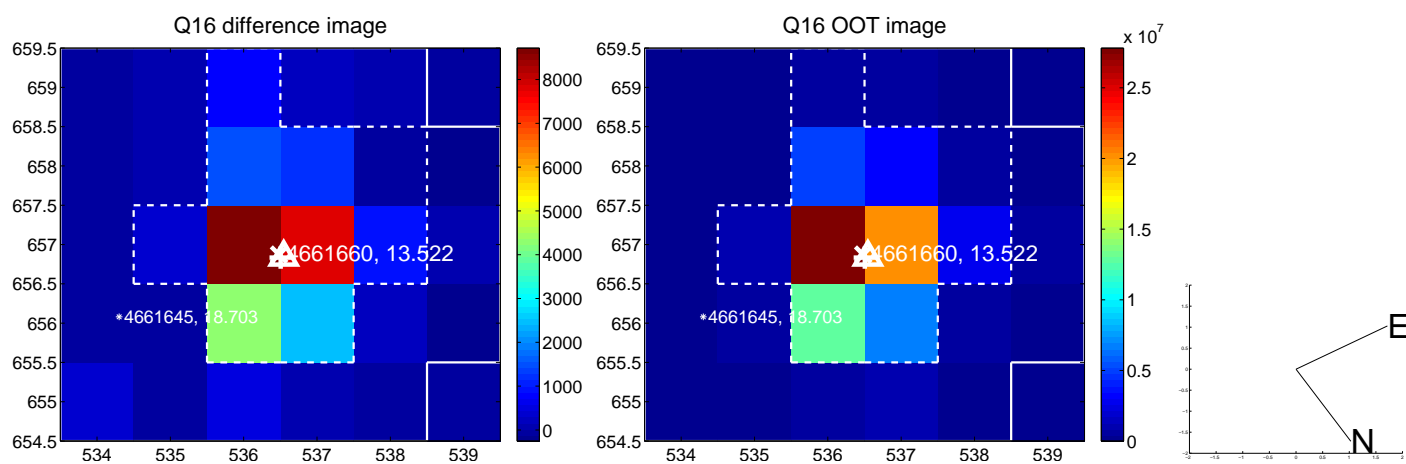
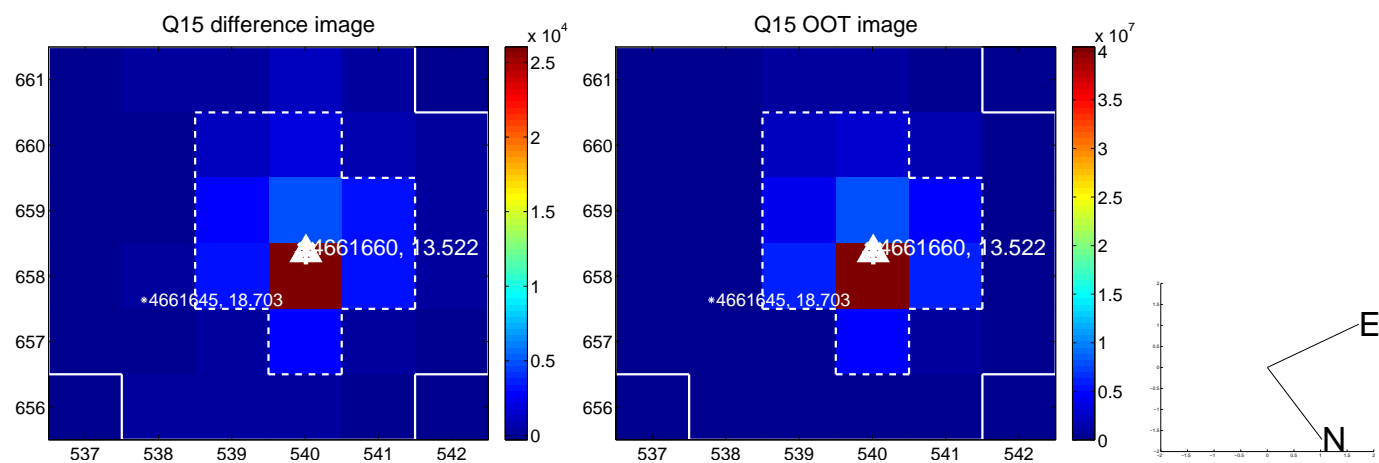
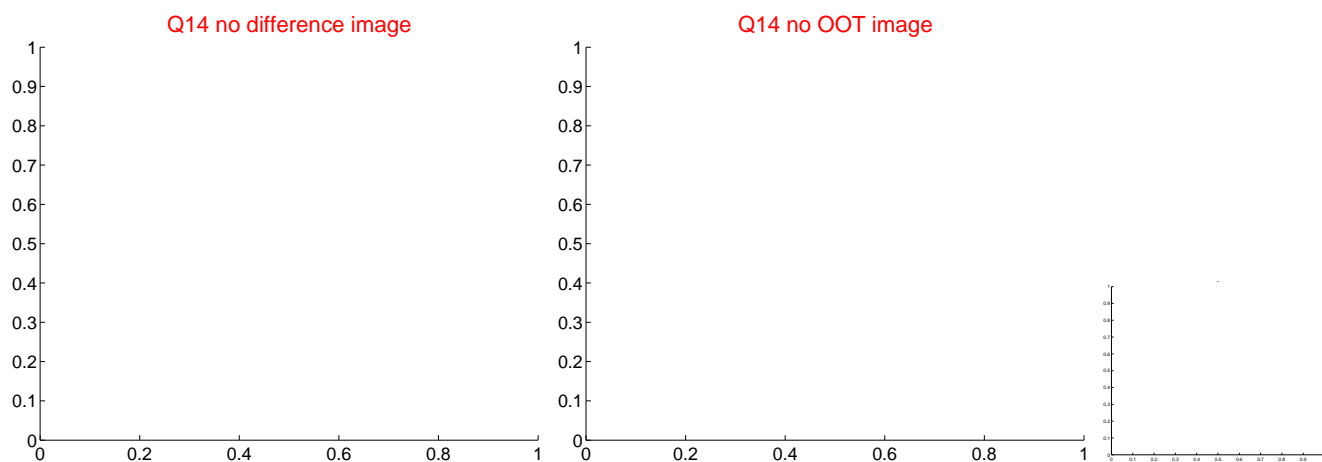
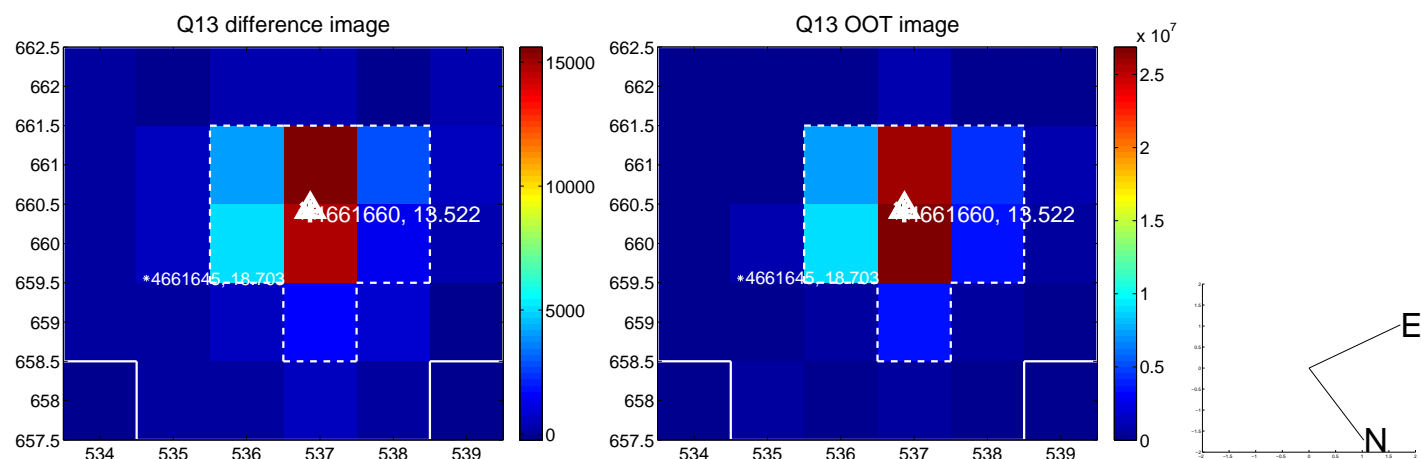
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



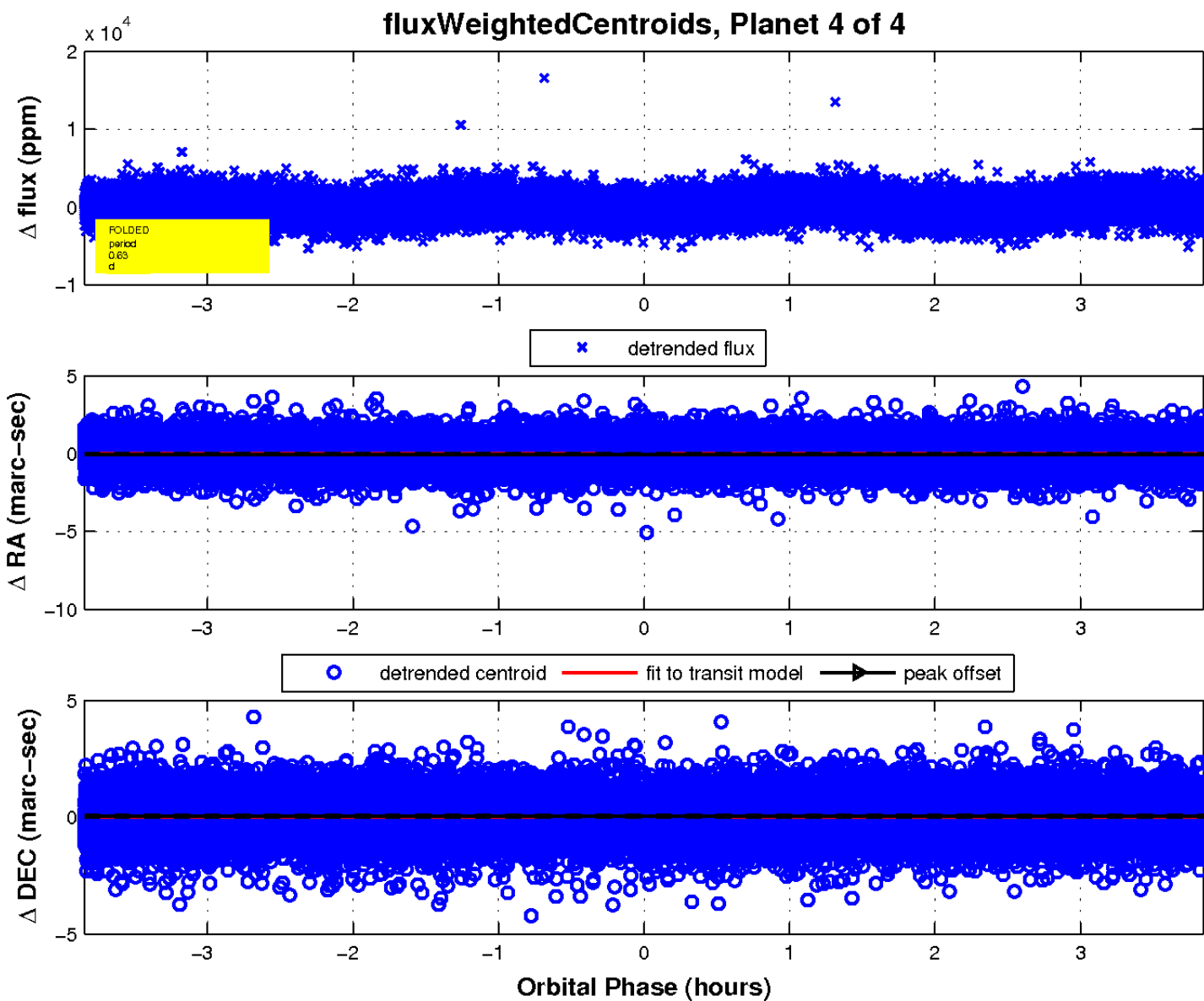
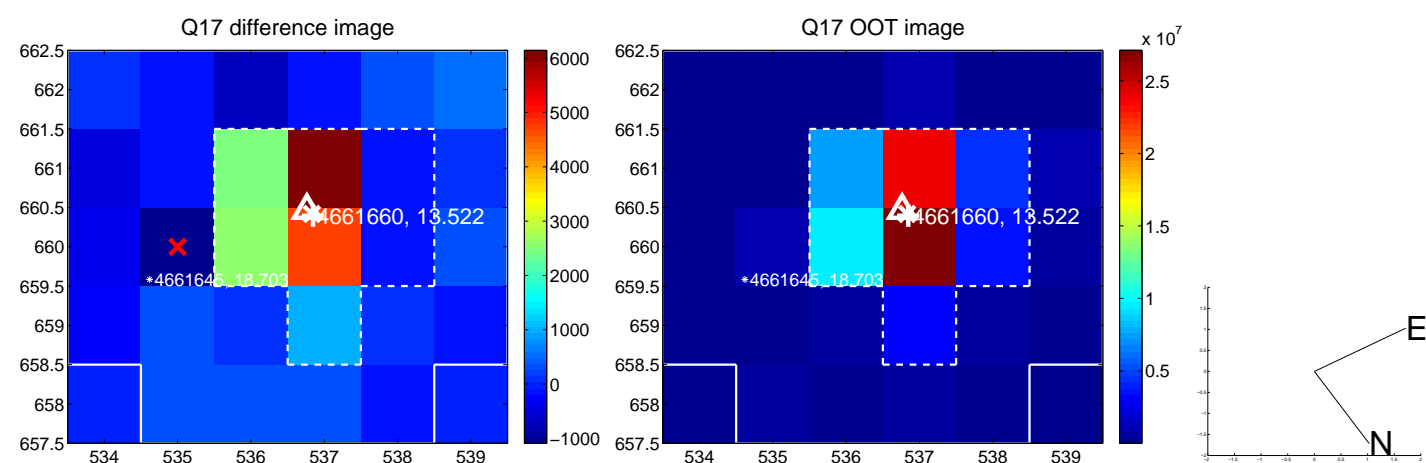
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value



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



UKIRT Image

Declination

