

KIC 004739229

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})
004739229-01	OBS	No	0.913151	131.596116	18.3	4.747	10.9	11.4	1.73	6869	0.80	13670.11
004739229-02	OBS	No	160.426781	226.754607	74.6	4.869	11.2	2.6	1.73	6869	1.73	13.89
004739229-03	OBS	No	160.436301	227.347198	290.1	3.368	11.6	8.8	1.73	6869	3.42	13.89
004739229-04	OBS	No	88.472137	210.496417	217.4	3.874	8.5	7.9	1.73	6869	3.34	30.72

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004739229-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_ALT
004739229-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS
004739229-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—SAME_NTL_PERIOD
004739229-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT

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

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

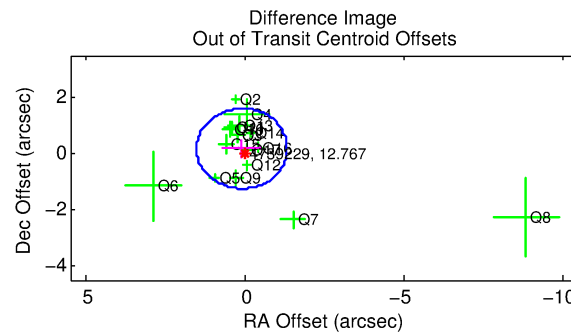
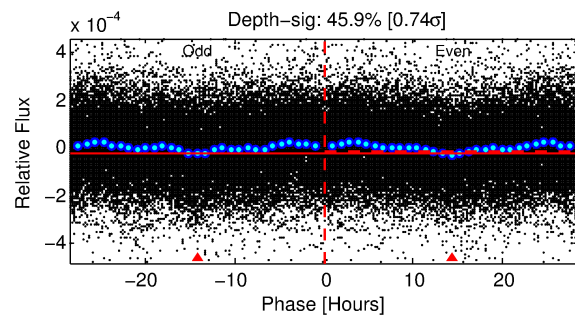
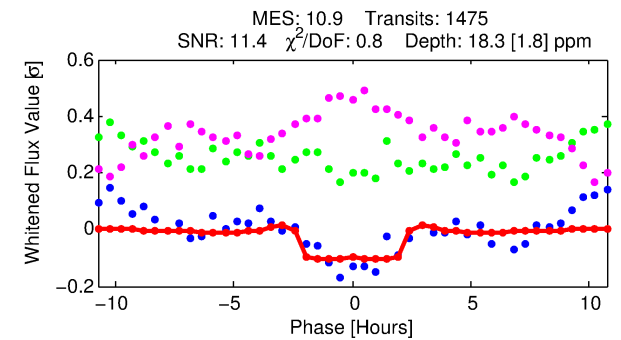
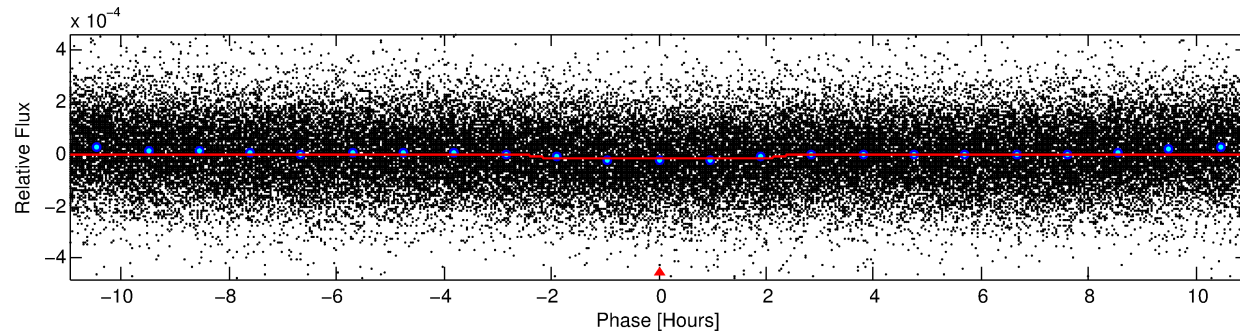
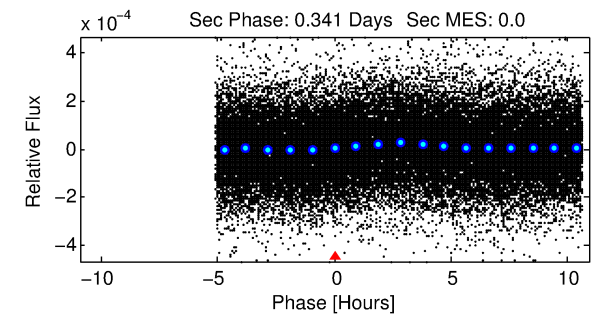
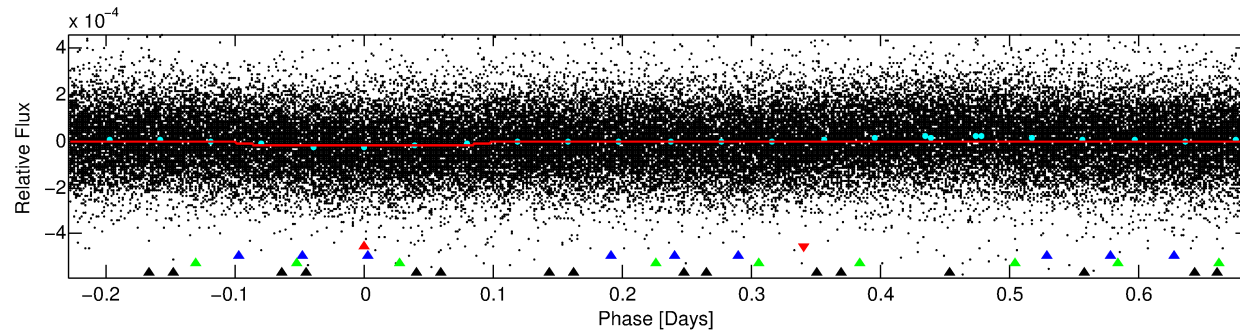
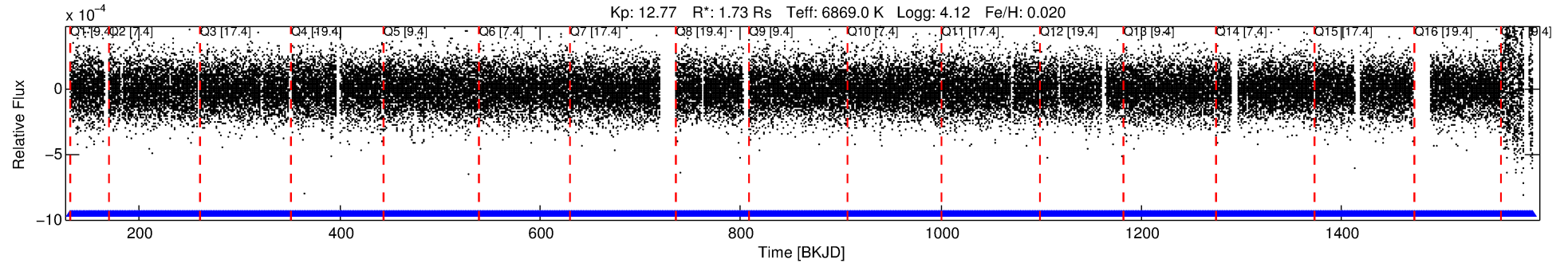
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004739229-01

No Significant Match Found

DV One-Page Summary

KIC: 4739229 Candidate: 1 of 4 Period: 0.913 d
KOI: K06118 Corr: No Ephemeris Match



DV Fit Results:

Period = 0.91315 [0.00001] d
Epoch = 131.5961 [0.0033] BKJD
Rp/R* = 0.0042 [0.0012]
a/R* = 1.31 [0.88]
b = 0.73 [1.01]
Seff = 13670.11 [2896.62]
Teq = 2757 [146] K
Rp = 0.80 [0.26] Re
a = 0.0208 [0.0030] AU
Ag = N/A
Teffp = N/A

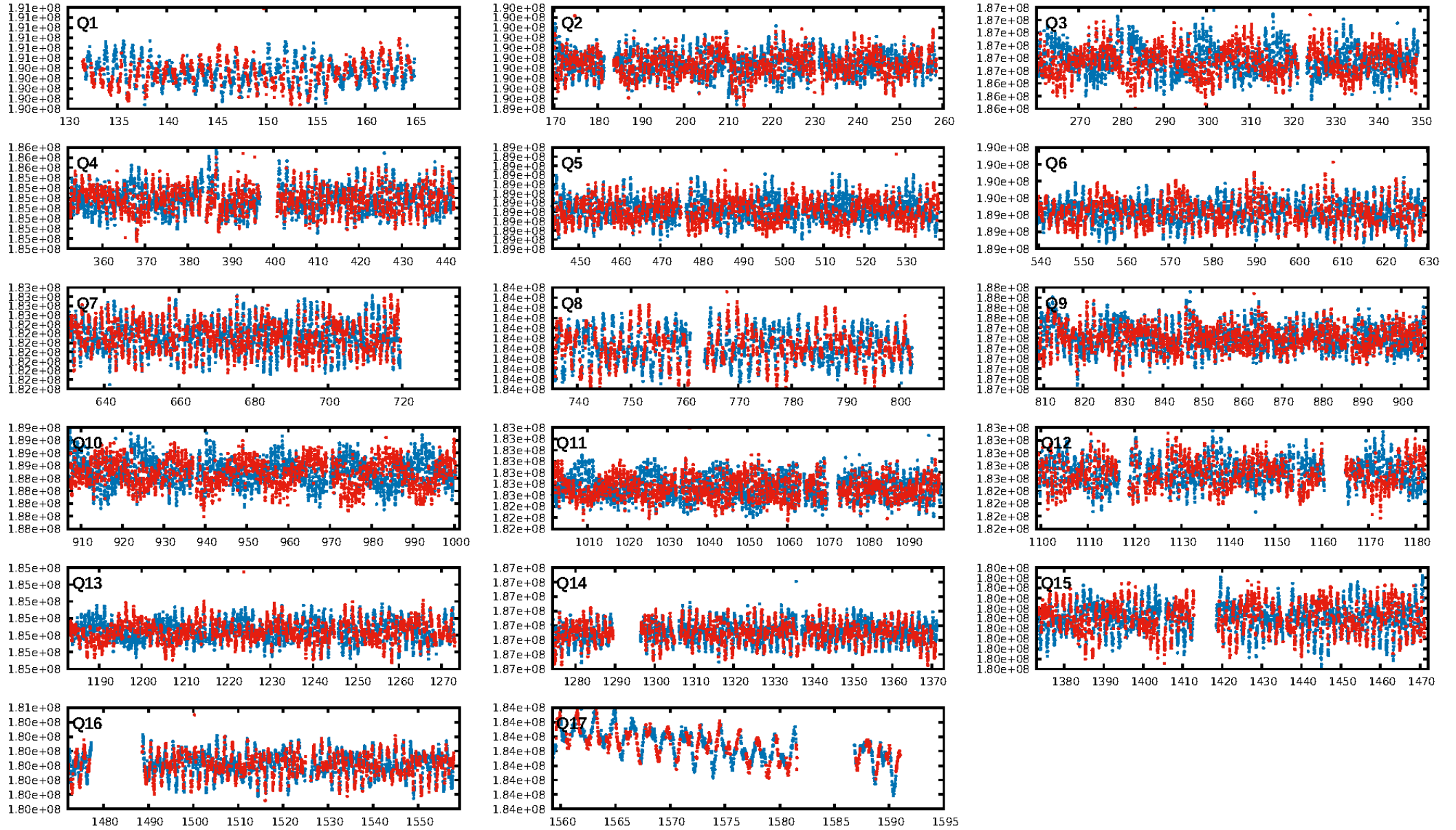
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [342.97σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 1.74e-18
RollingBand-fgt: 1.00 [1408/1408]
GhostDiagnostic-chr: 2.074
Centroid-sig: 1.5%
Centroid-so: 1.077 arcsec [1.89σ]
OotOffset-rm: 0.206 arcsec [0.43σ]
KicOffset-rm: 0.249 arcsec [0.58σ]
OotOffset-st: 4/4/4/4 [16]
KicOffset-st: 4/4/4/4 [16]
DiffImageQuality-fgm: 0.81 [13/16]
DiffImageOverlap-fno: 1.00 [17/17]

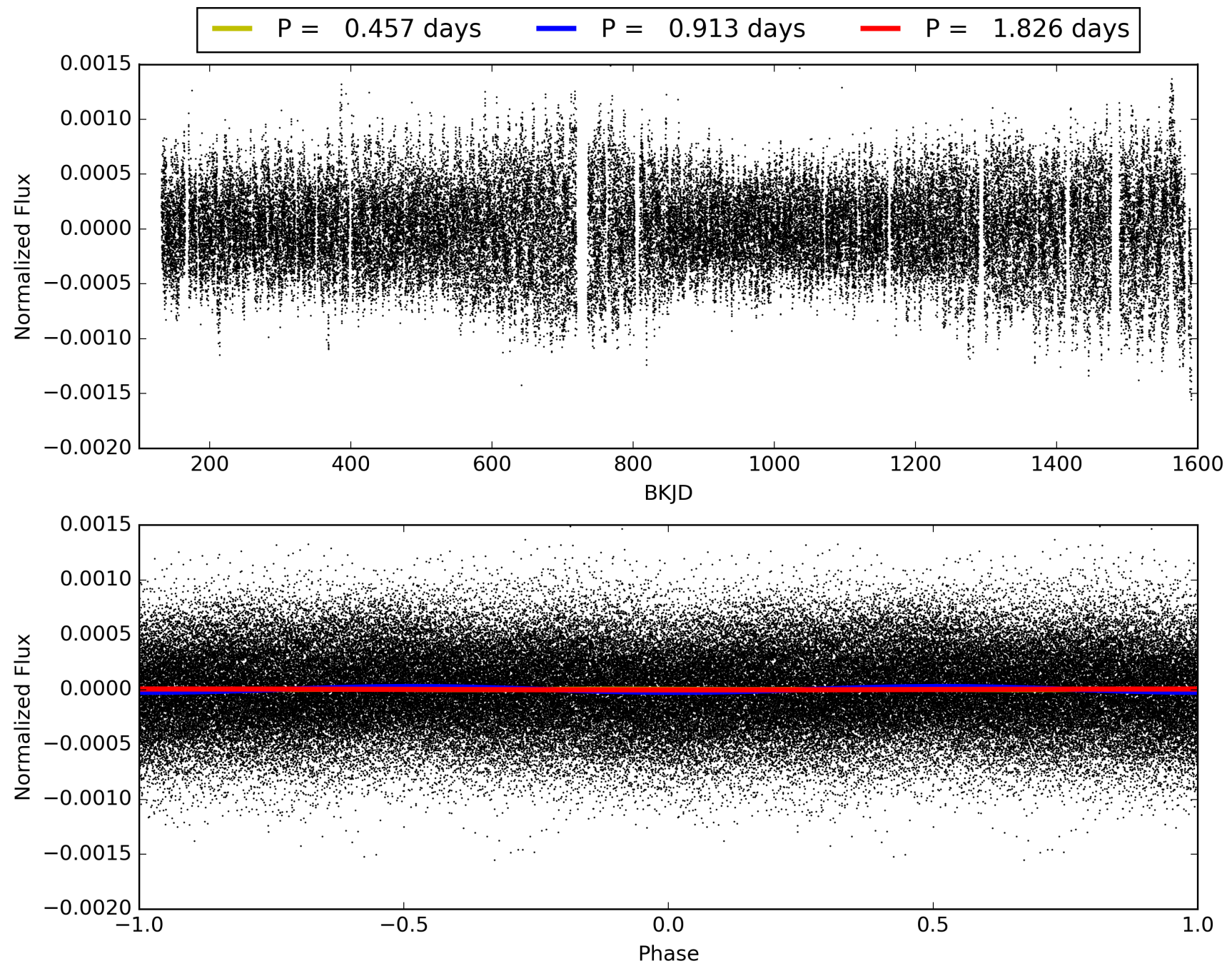
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 08:00:53 Z

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

TCE 004739229-01, PDC Light Curves

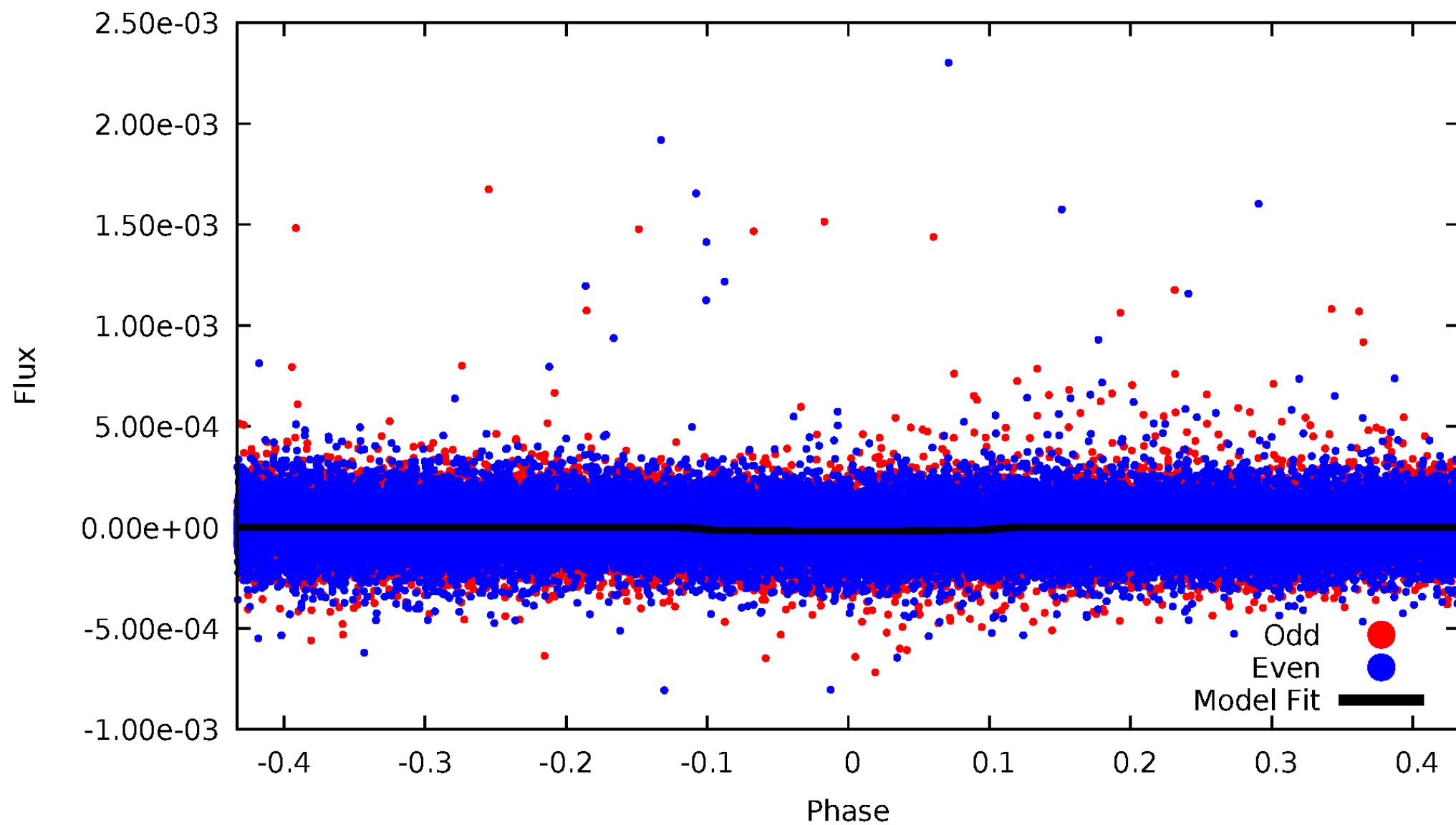


TCE 004739229-01



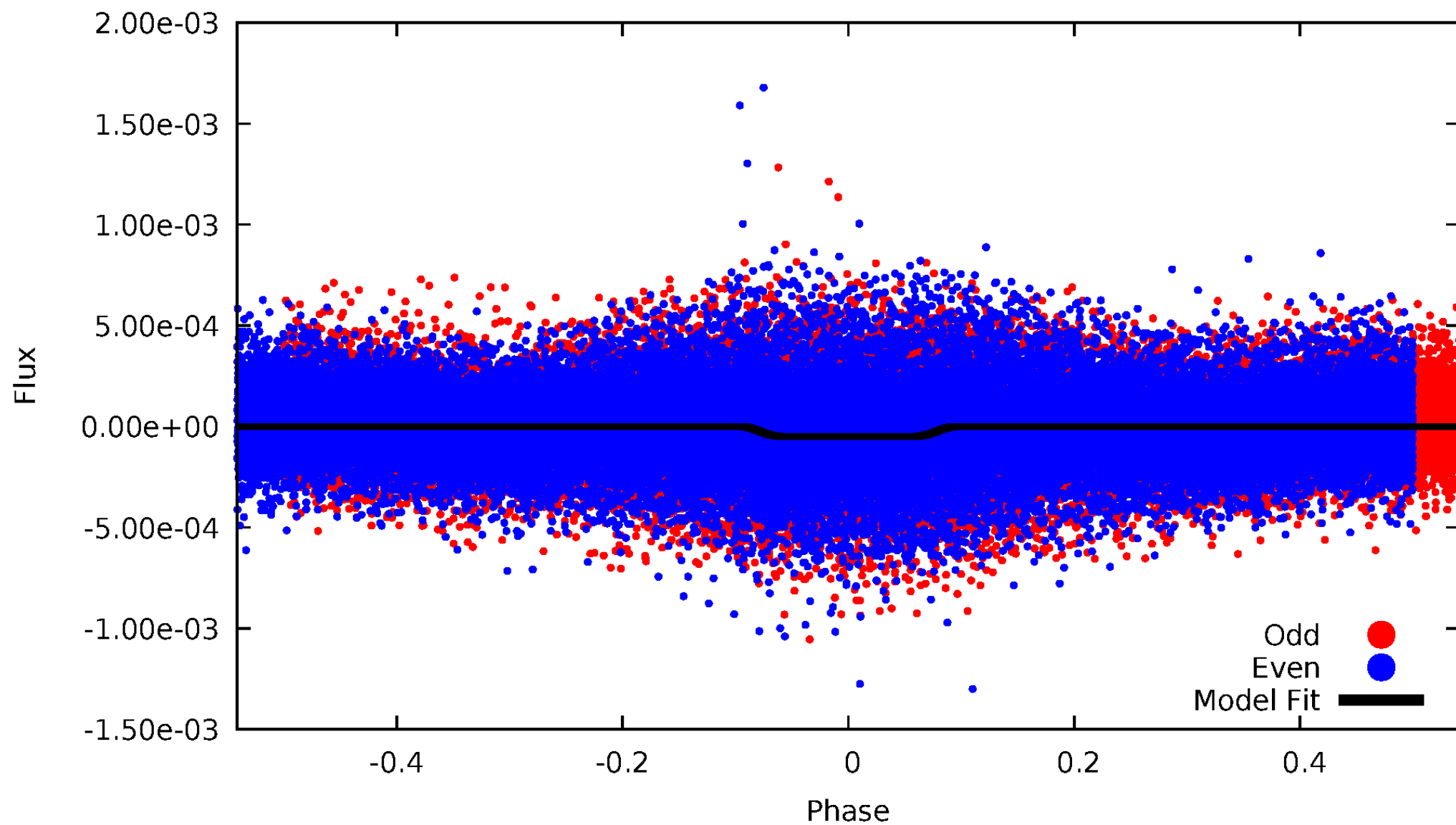
DV Odd/Even

TCE 004739229-01

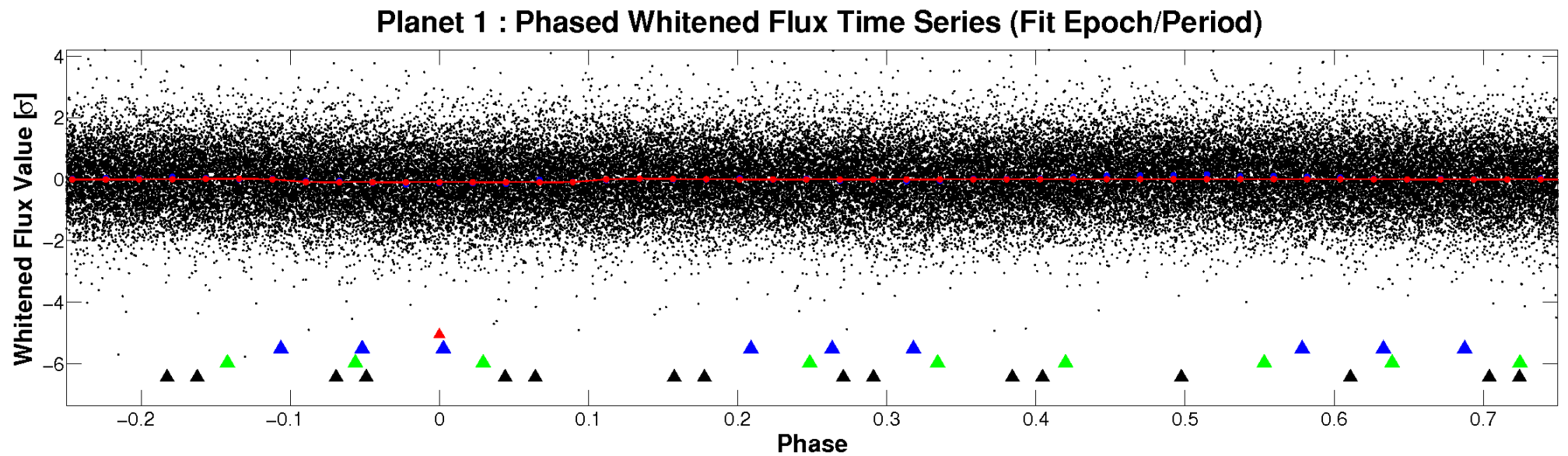
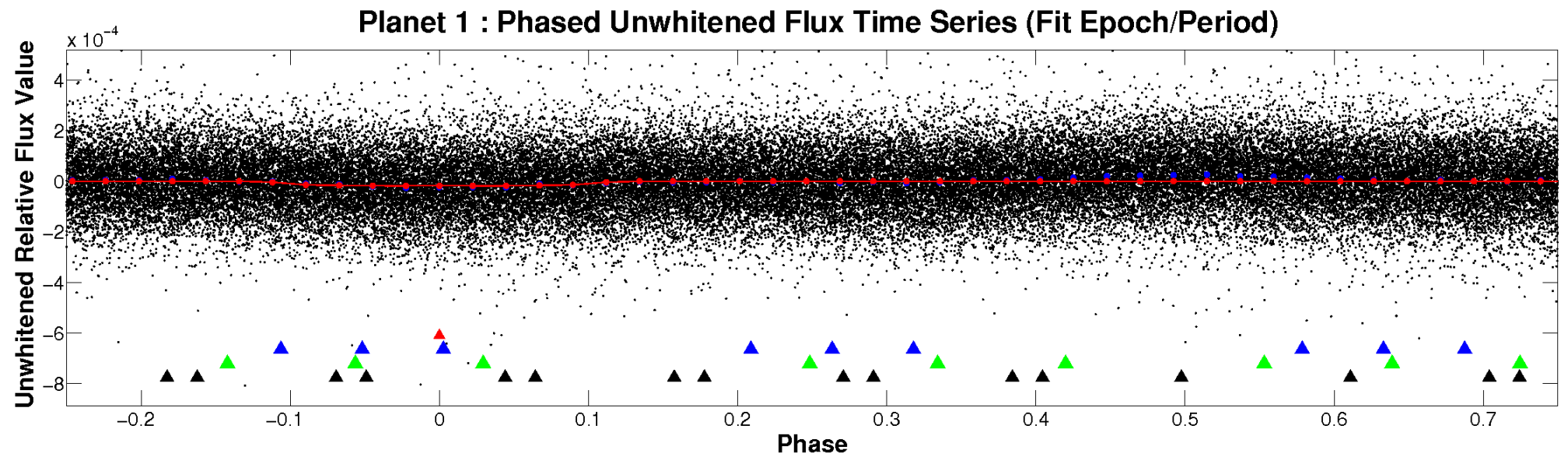


ALT Odd/Even

TCE 004739229-01

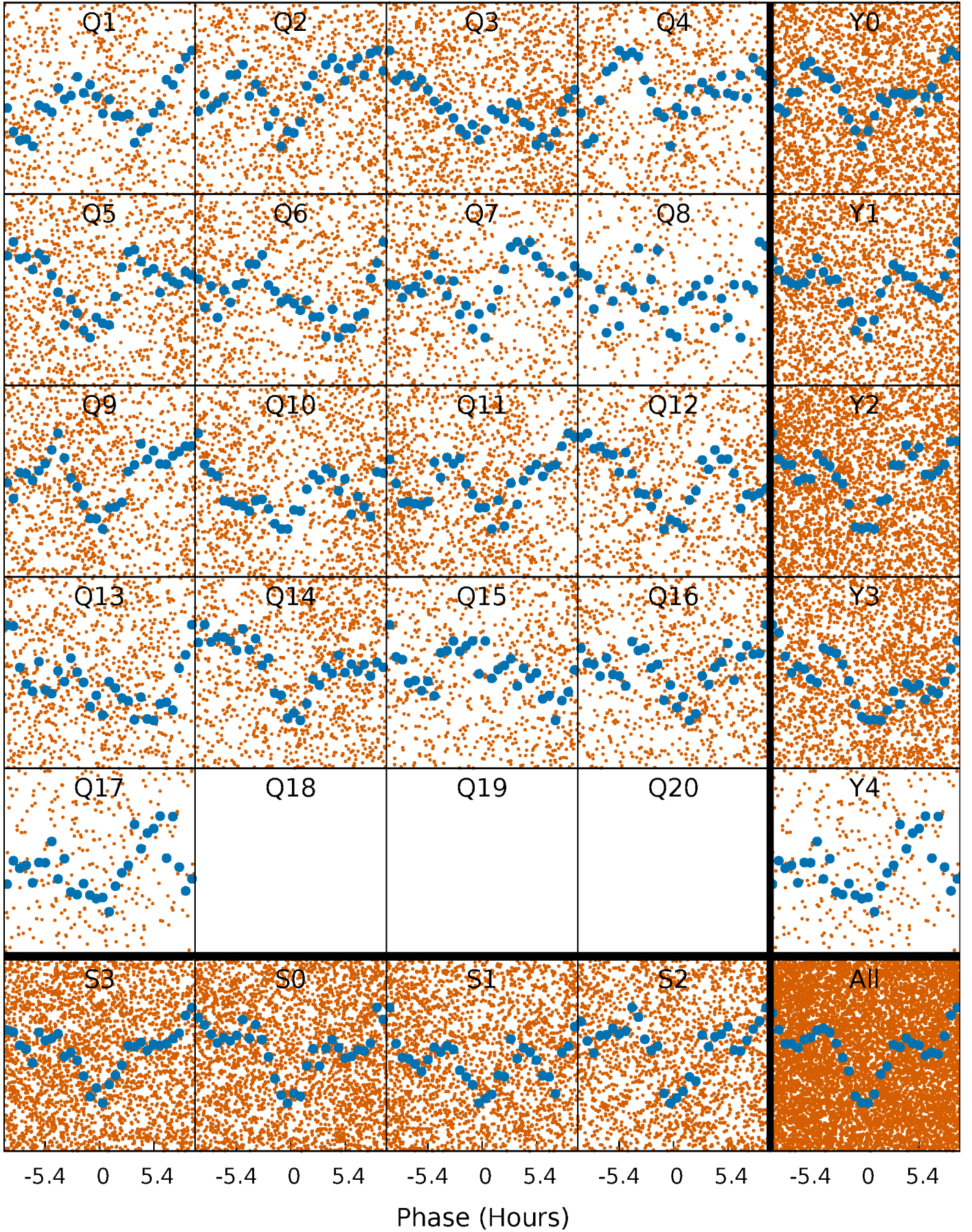


Non-Whitened Vs. Whitened Light Curve



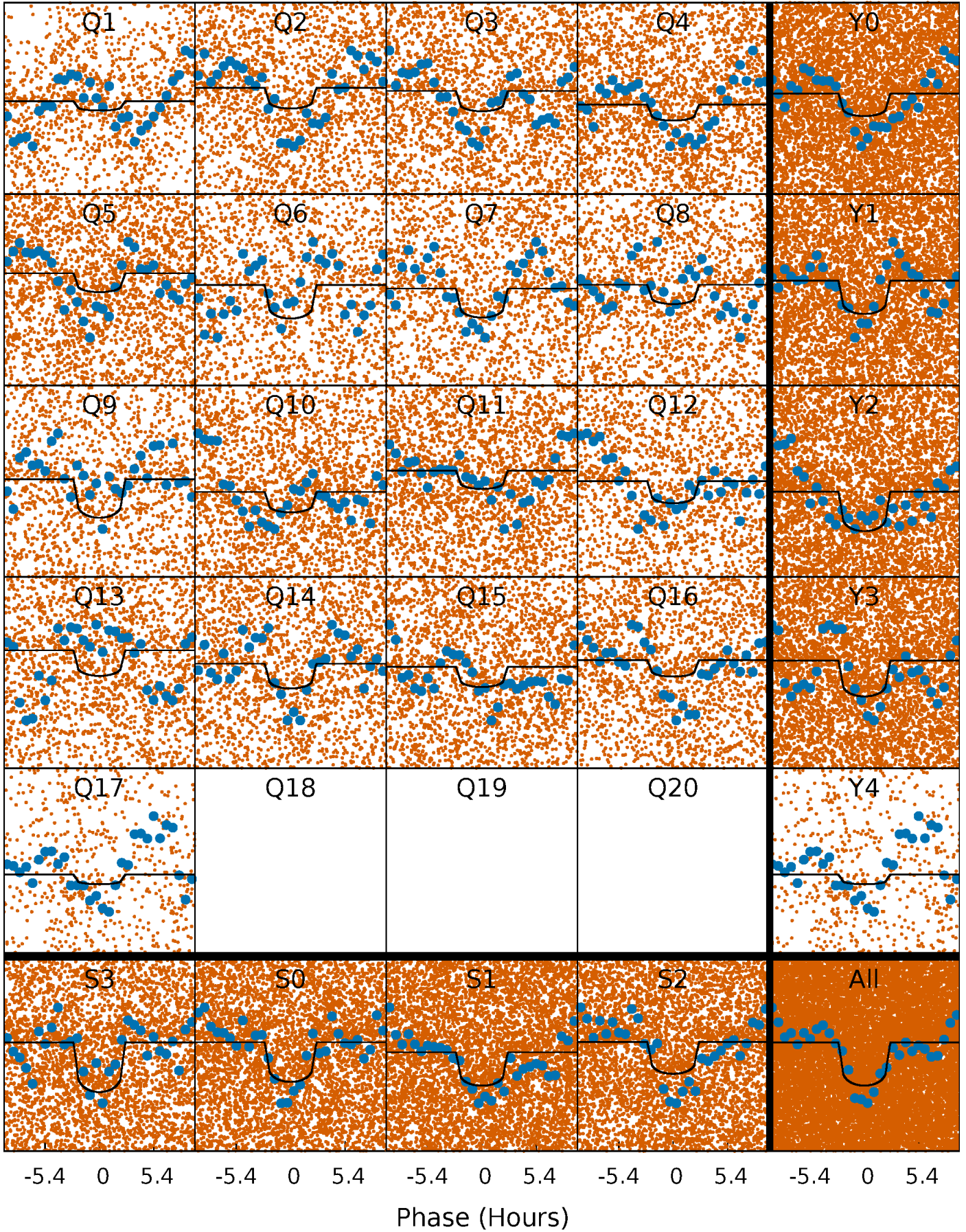
PDC Quarter-Phased Transit Curves

TCE 004739229-01 P= 0.913151 Days $T_0=131.596116$ (BKJD)



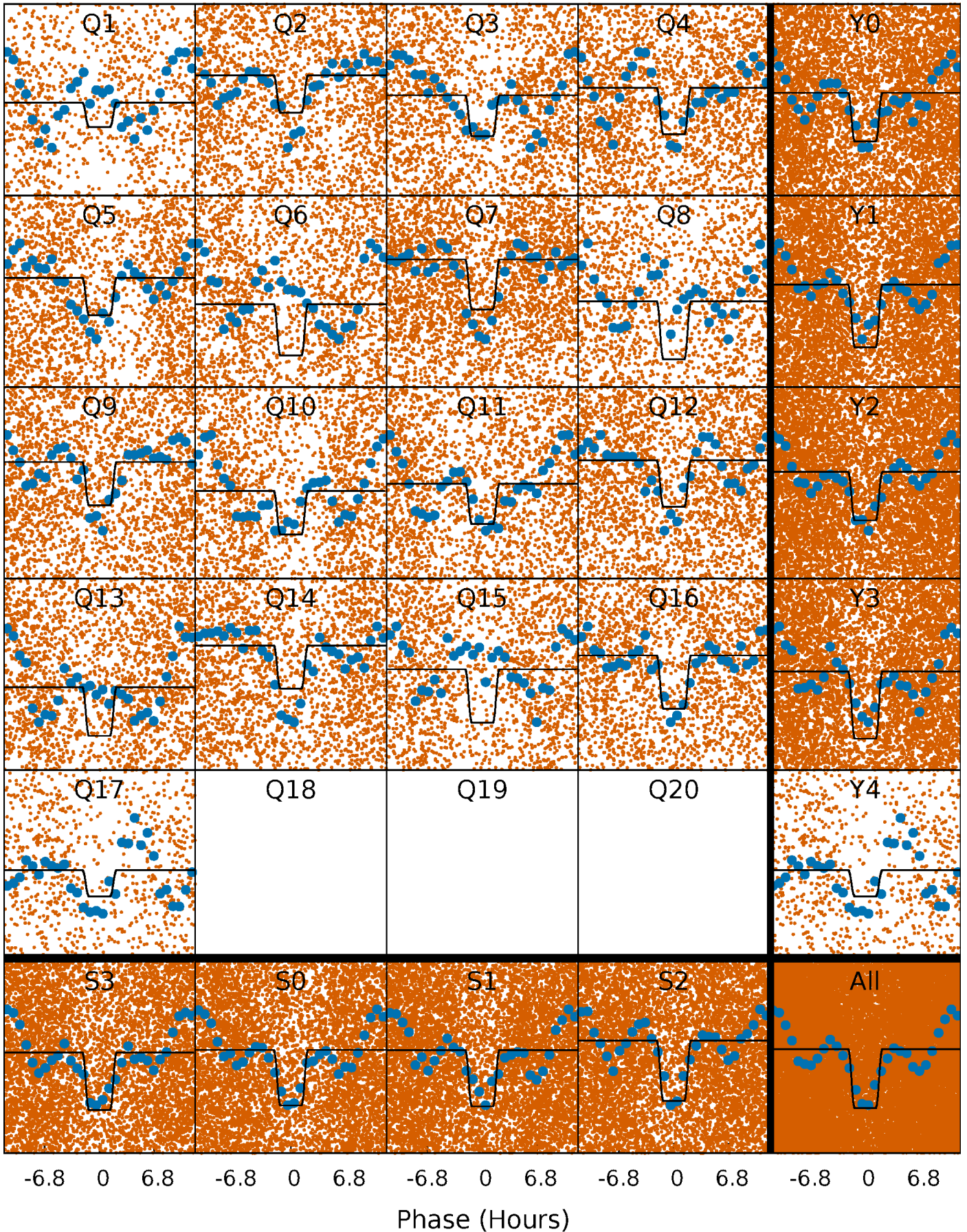
DV Quarter-Phased Transit Curves

TCE 004739229-01 P= 0.913151 Days $T_0=131.596116$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

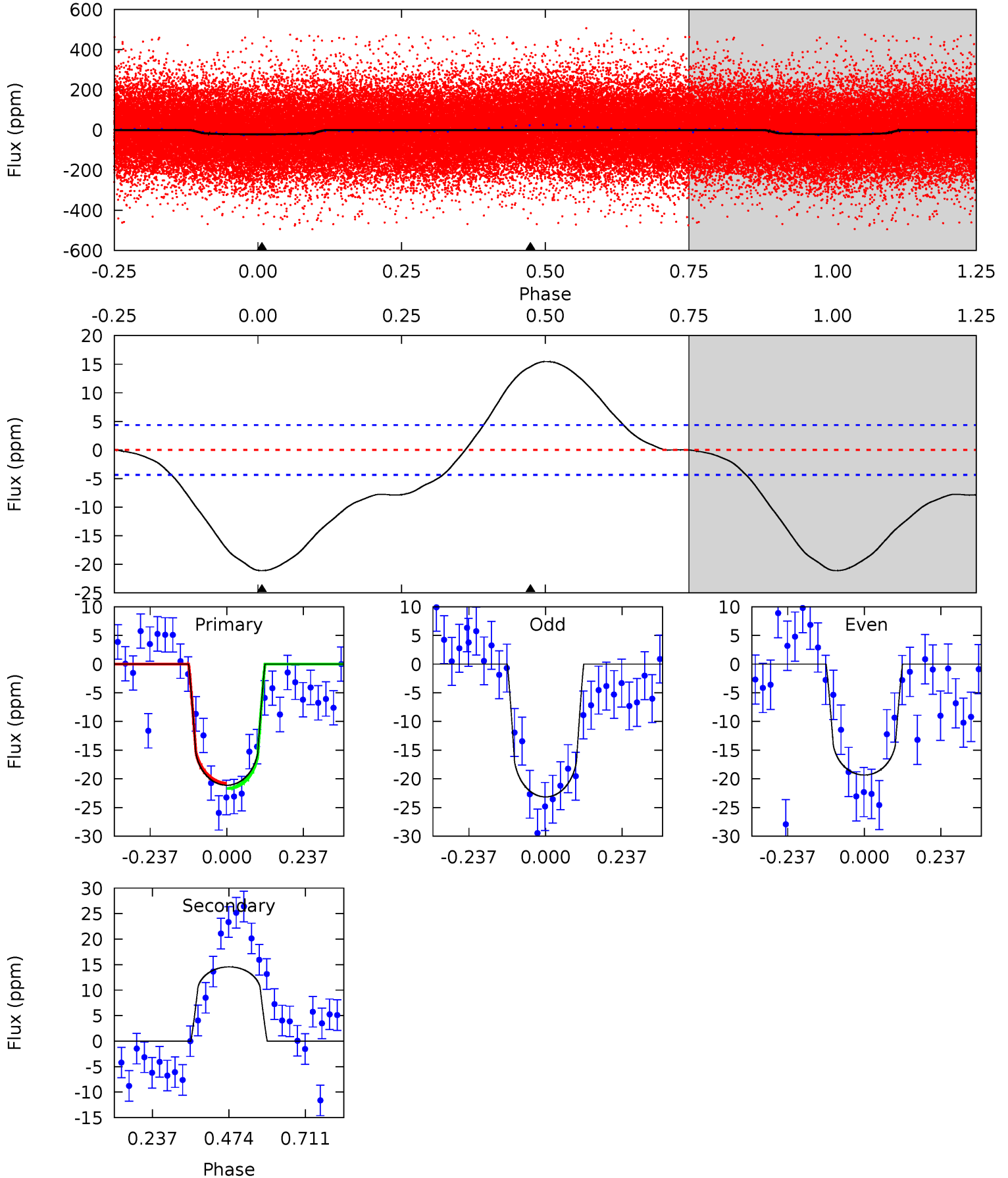
TCE 004739229-01 P= 0.913190 Days $T_0=131.565411$ (BKJD)



DV Model-Shift Uniqueness Test

004739229-01, P = 0.913151 Days, E = 130.682965 Days

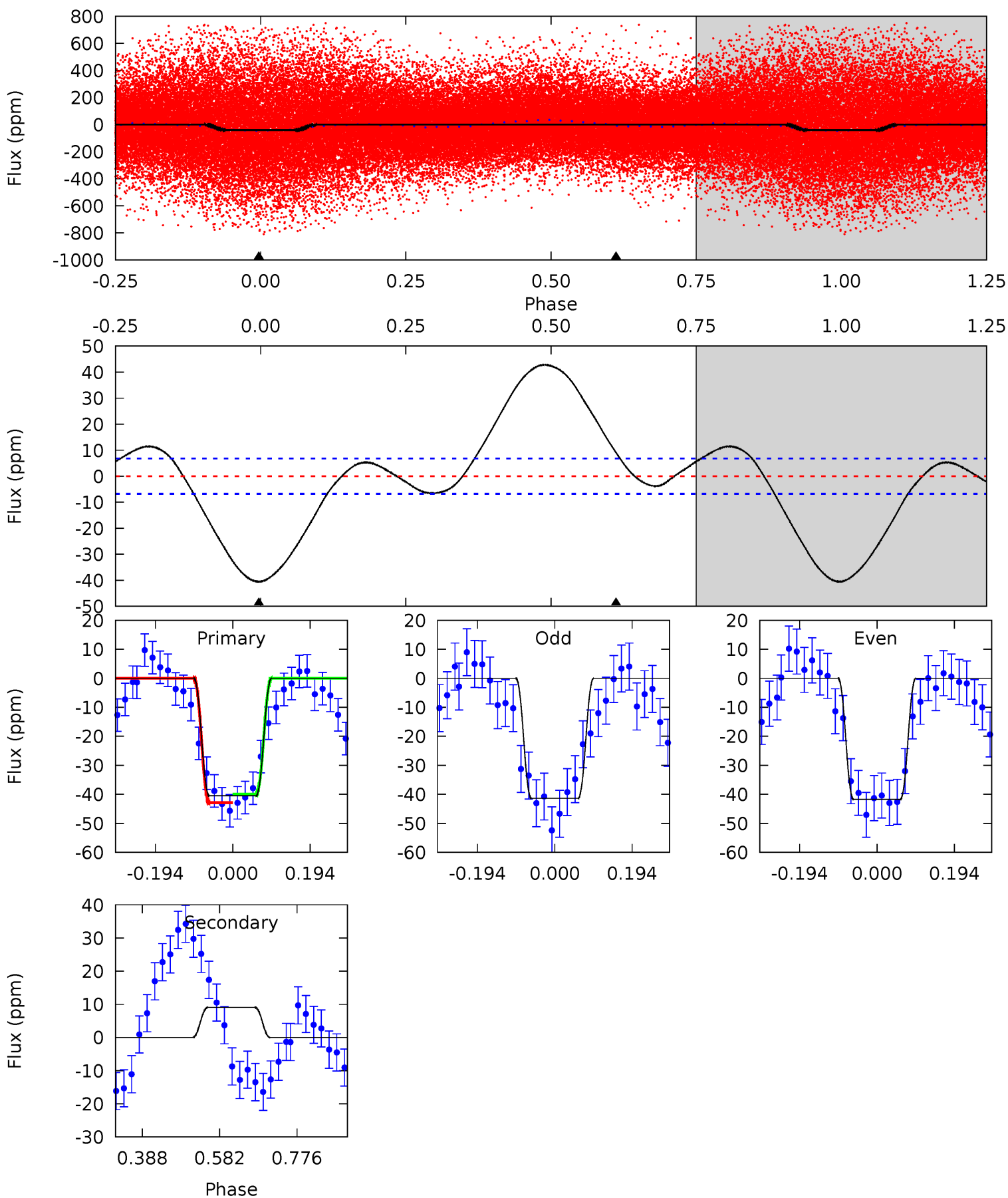
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
21.3	-14.7	0	0	4.38	1.18	3.05	21.3	21.3	-14.7	-14.7	1.92	1.03	0.42	0.47



Alt Model-Shift Uniqueness Test

004739229-01, P = 0.913190 Days, E = 130.652221 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
26.3	-5.89	0	0	4.42	1.30	5.54	26.3	26.3	-5.89	-5.89	0.12	0.93	0.51	0.93



Stellar Parameters For KIC 004739229

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6869^{+72}_{-92}	$4.125^{+0.099}_{-0.110}$	$0.020^{+0.150}_{-0.150}$	$1.726^{+0.301}_{-0.246}$	$1.450^{+0.111}_{-0.091}$	$0.397^{+0.196}_{-0.141}$
	+1%/-1%	+2%/-3%	+750%/-750%	+17%/-14%	+8%/-6%	+49%/-36%
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 004739229-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	15 ± 1	$0.80^{+0.25}_{-0.22}$	3852^{+160}_{-145}	-6540^{+718}_{-1308}	$-5.453^{+2.341}_{-5.159}$
Alt.	9 ± 2	$1.32^{+0.24}_{-0.23}$	3852^{+148}_{-157}	-4847^{+261}_{-342}	$-1.238^{+0.399}_{-0.672}$

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 $A_{obs} \gg 1.0$

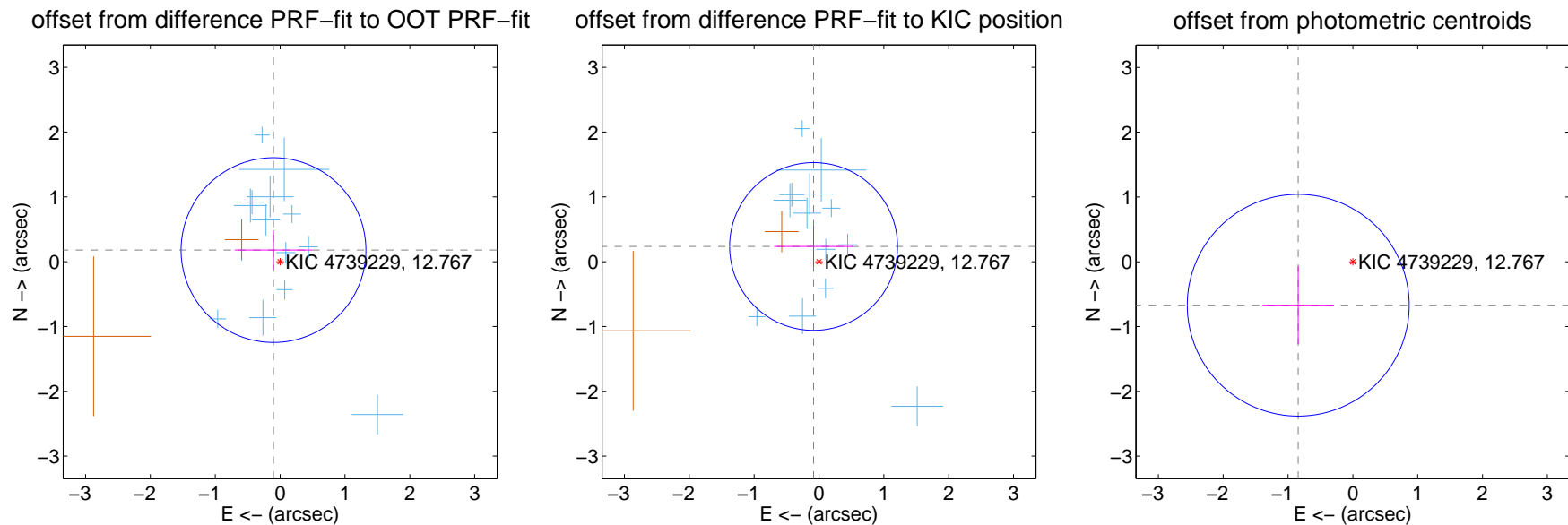
DV Centroid Data

Supplemental centroid analysis for 004739229-01. Kepler magnitude: 12.77. Transit SNR 11.44

There are 13 quarters with good PRF difference image offsets

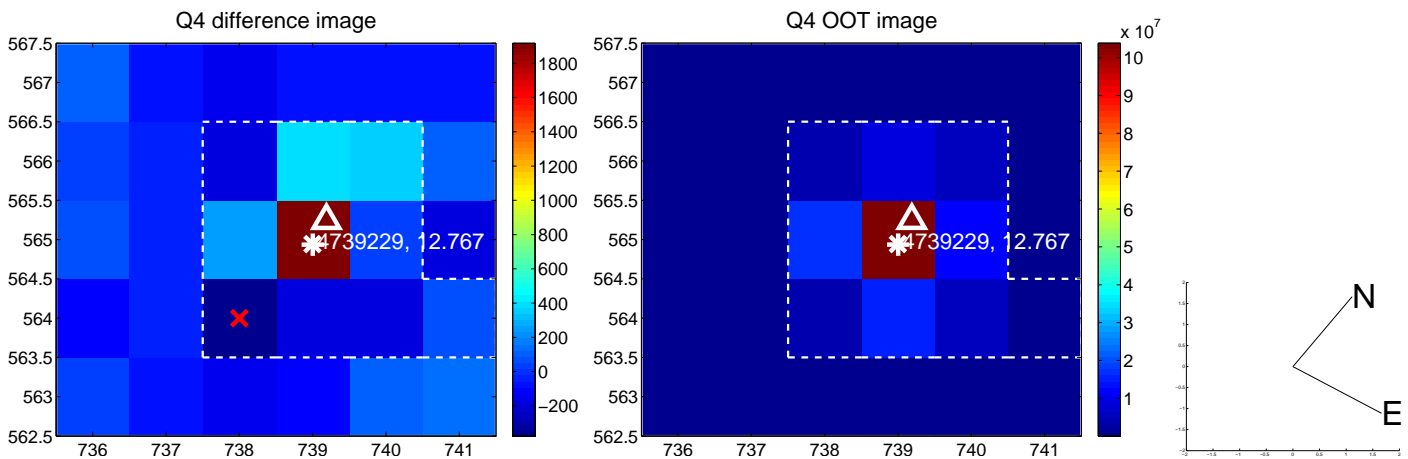
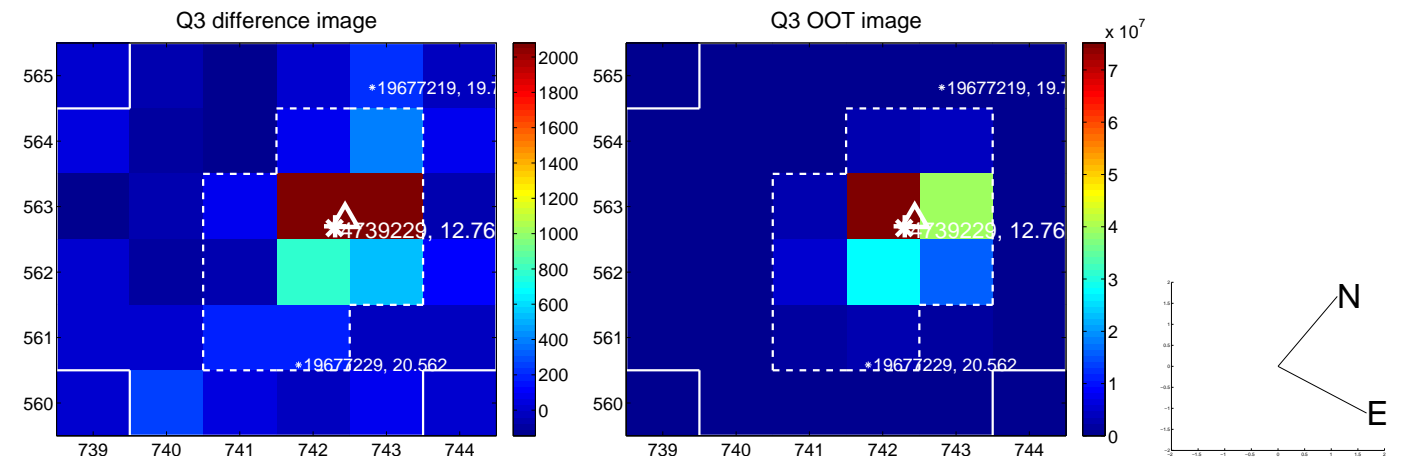
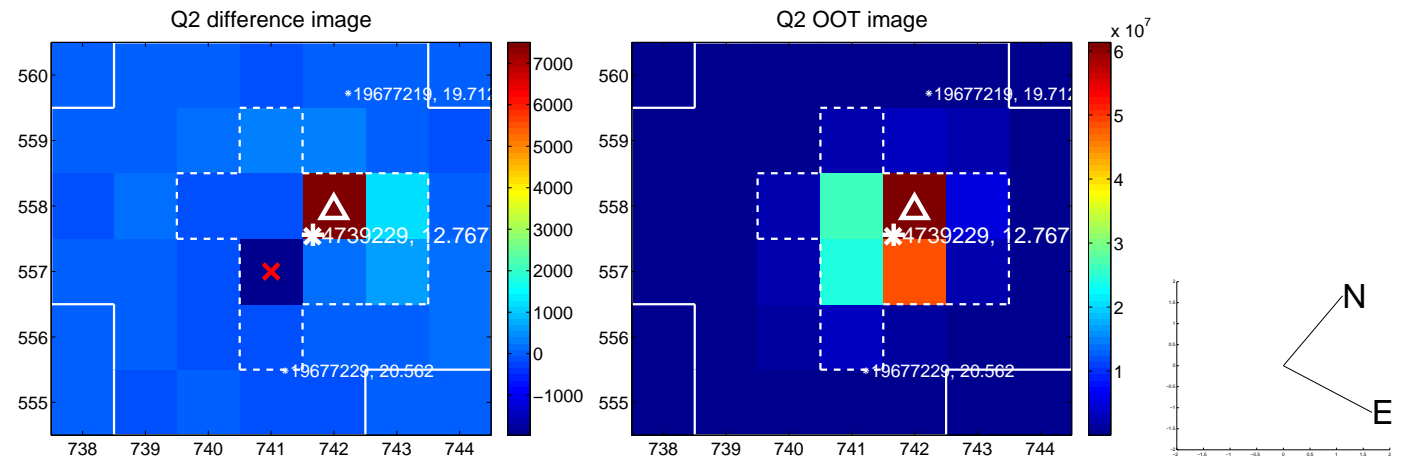
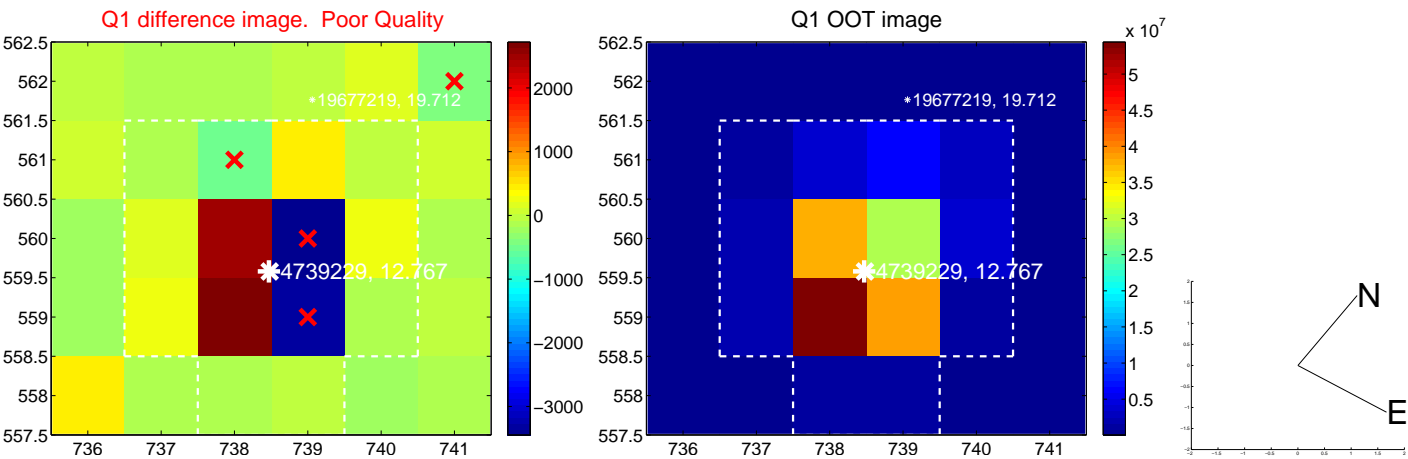
The direct PRF centroid is offset from the target star catalog position by about 0.05 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.206 ± 0.475	0.43	0.102 ± 0.600	0.179 ± 0.304
PRF-fit source offset from KIC position	0.249 ± 0.431	0.58	0.083 ± 0.608	0.235 ± 0.318
photometric centroid source offset	1.08 ± 0.57	1.89	0.84 ± 0.55	-0.67 ± 0.60

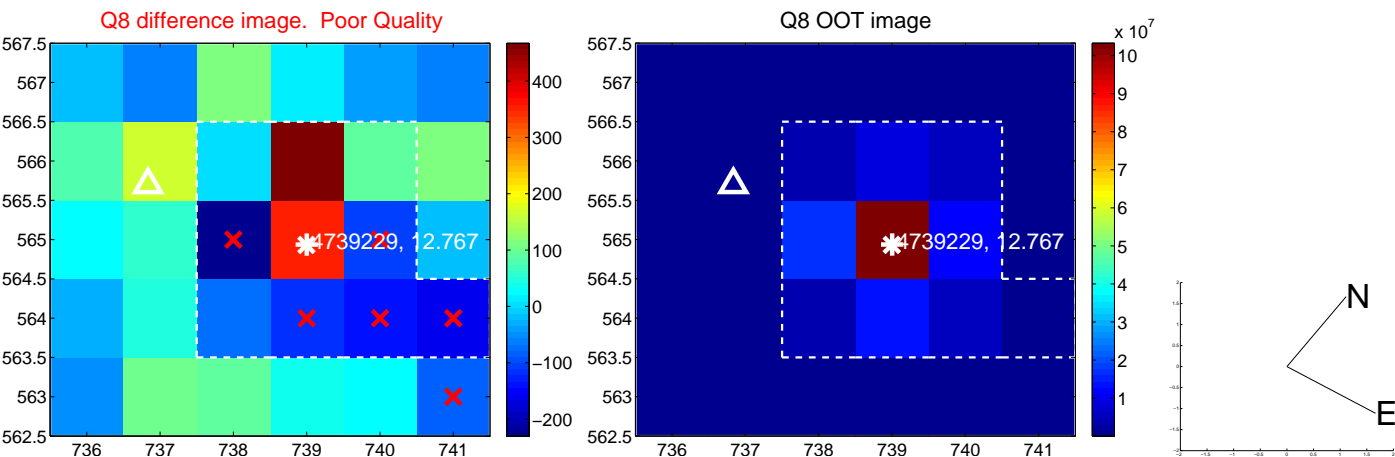
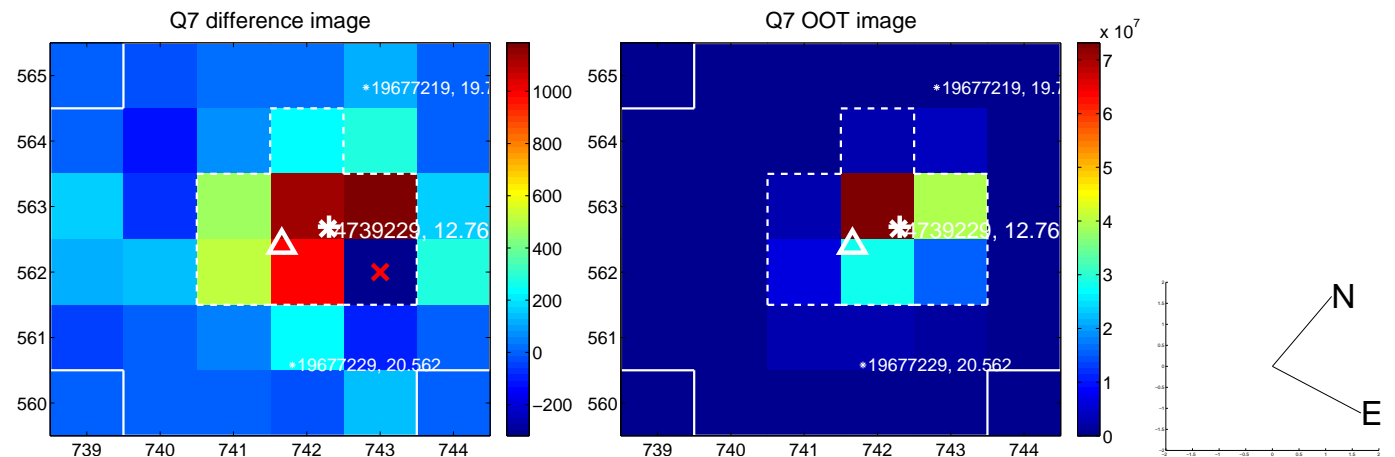
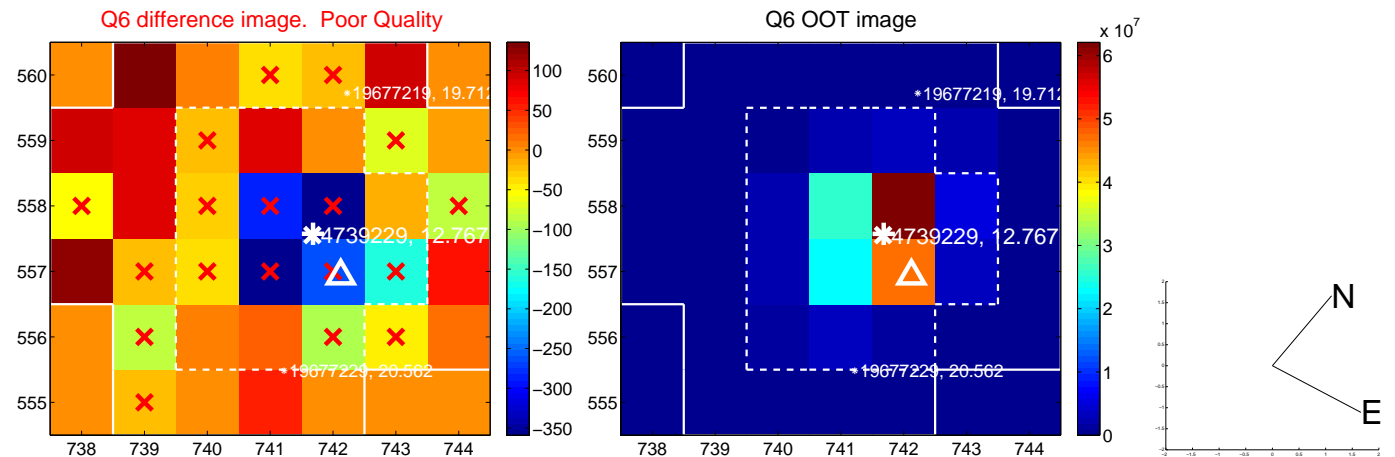
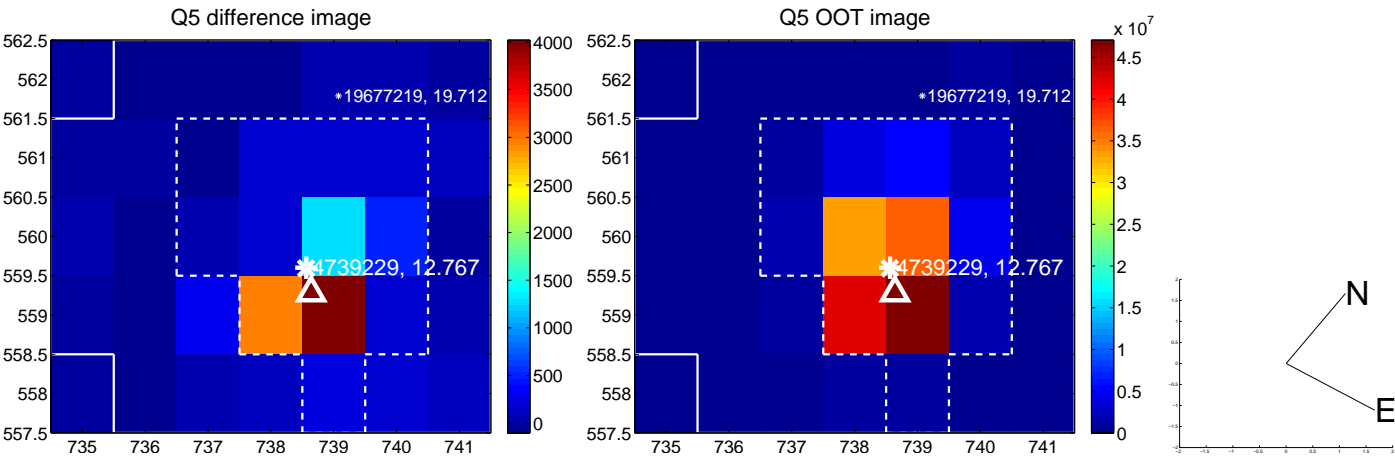


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

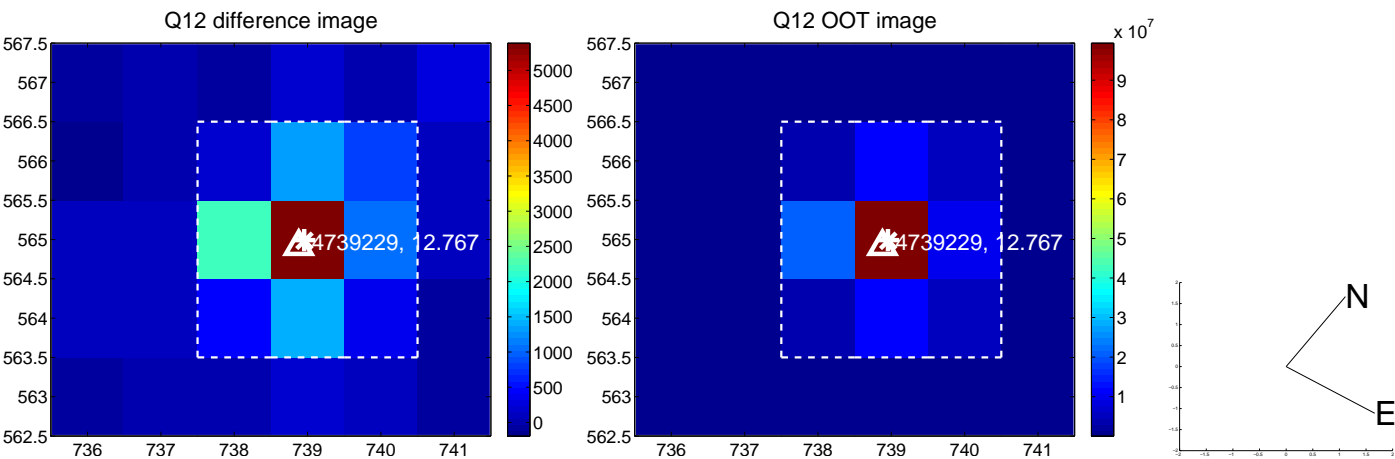
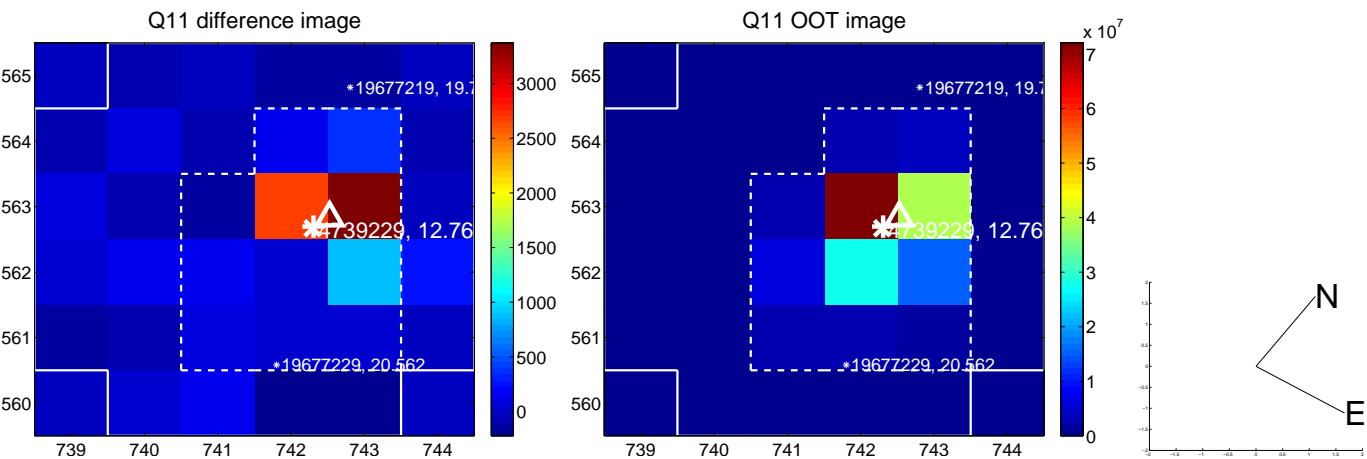
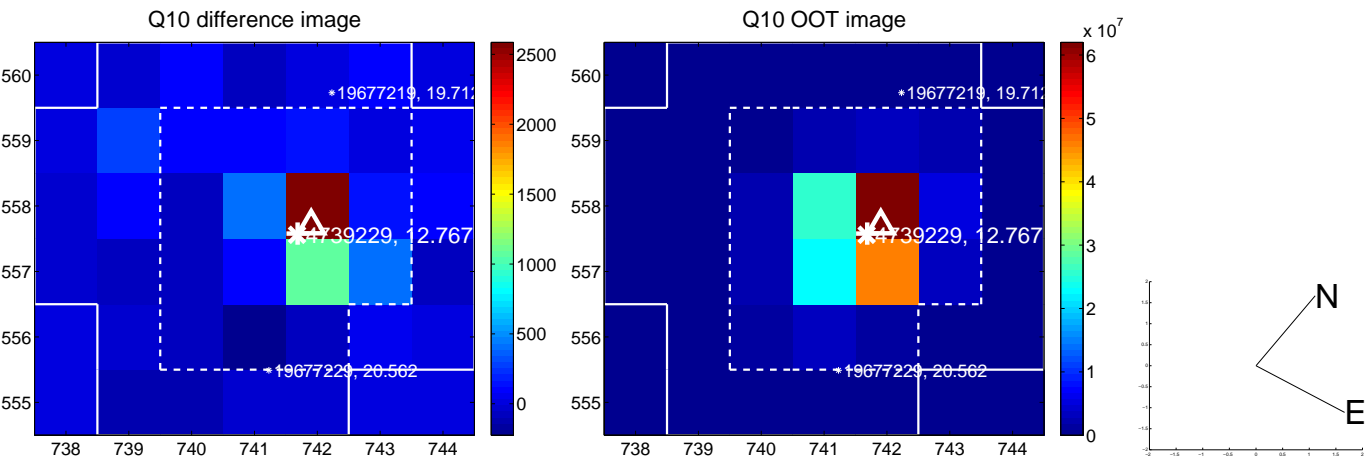
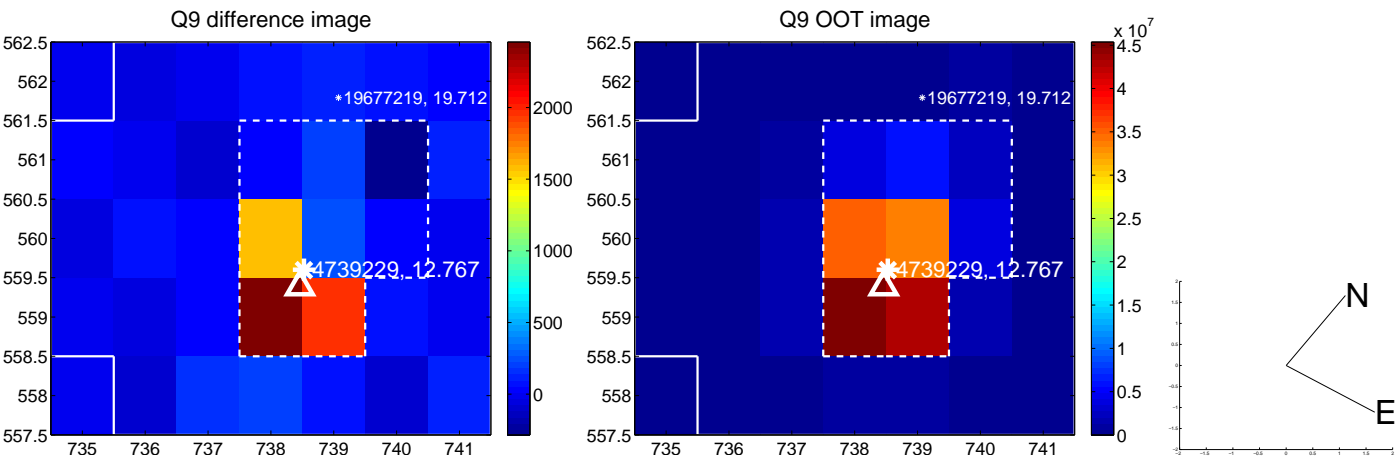
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



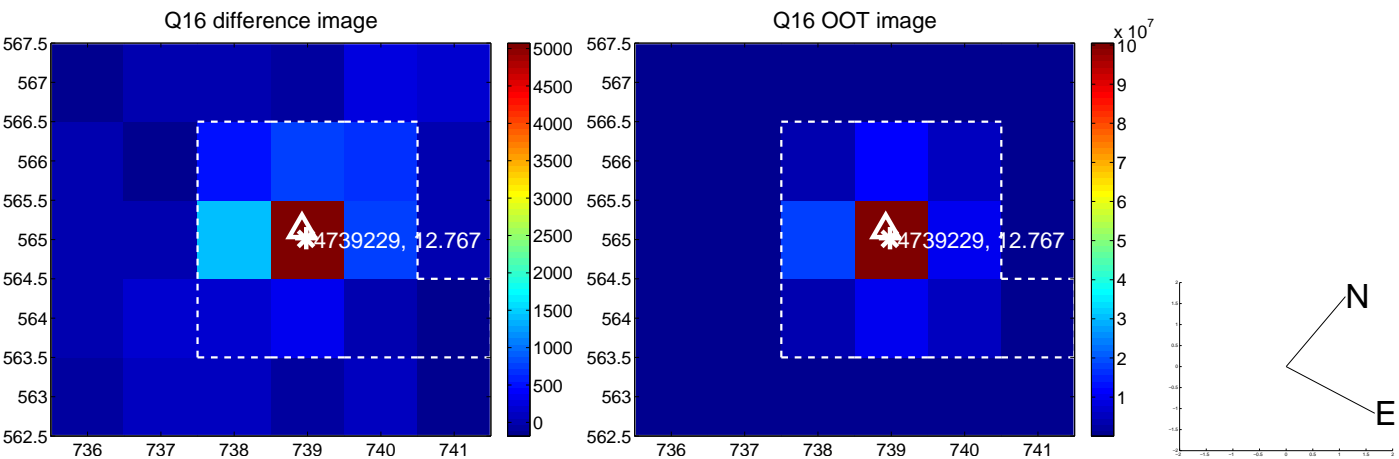
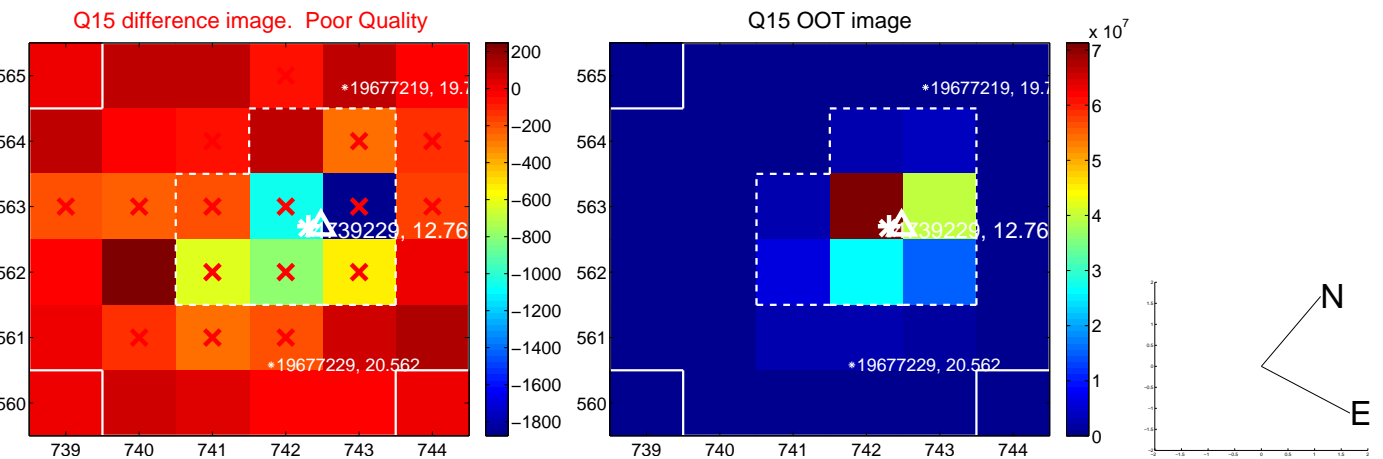
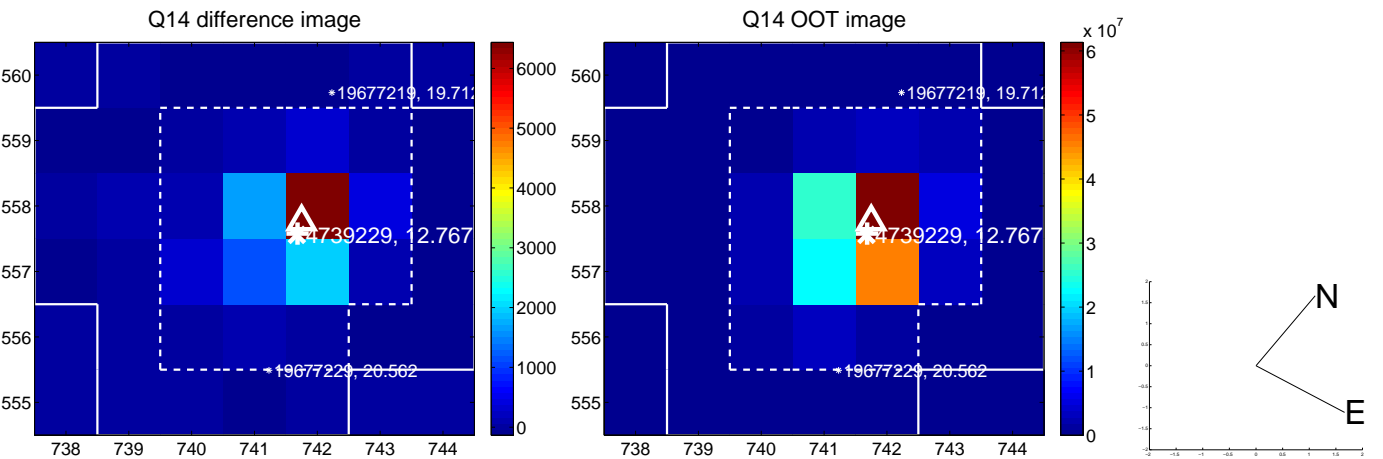
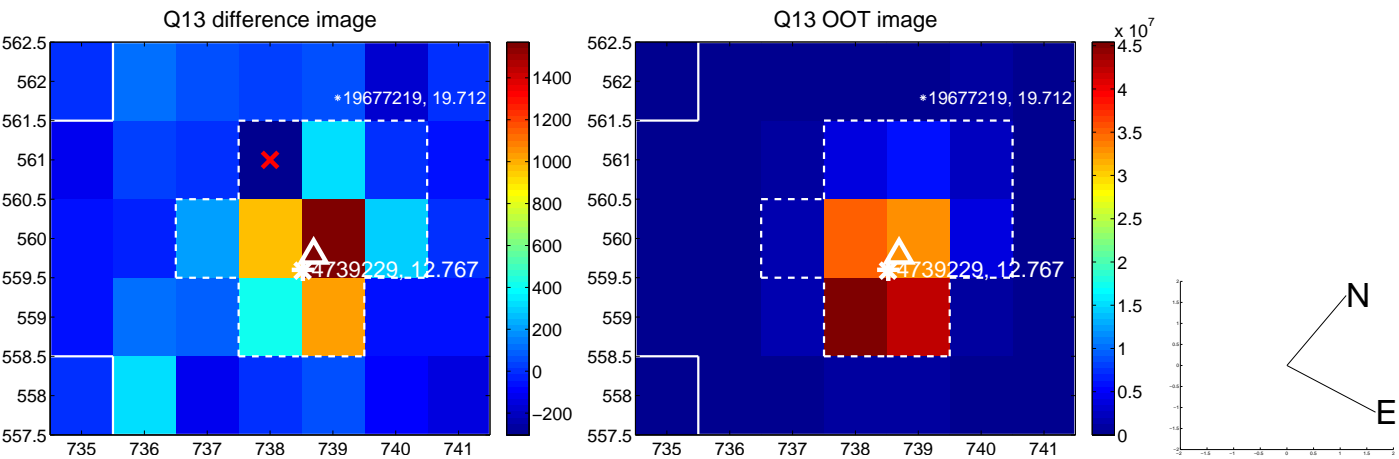
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



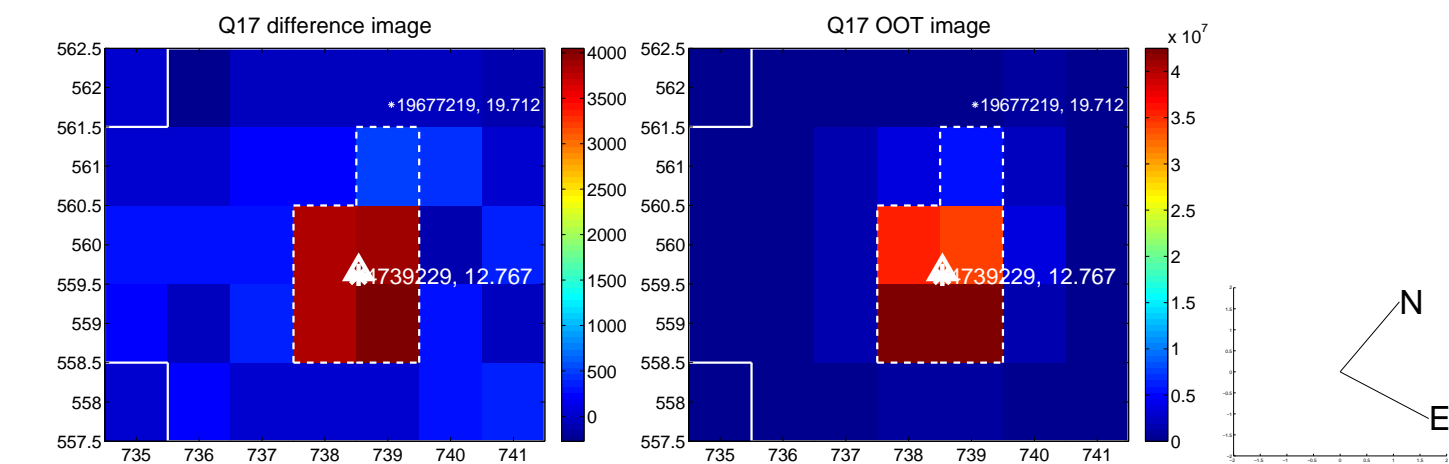
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



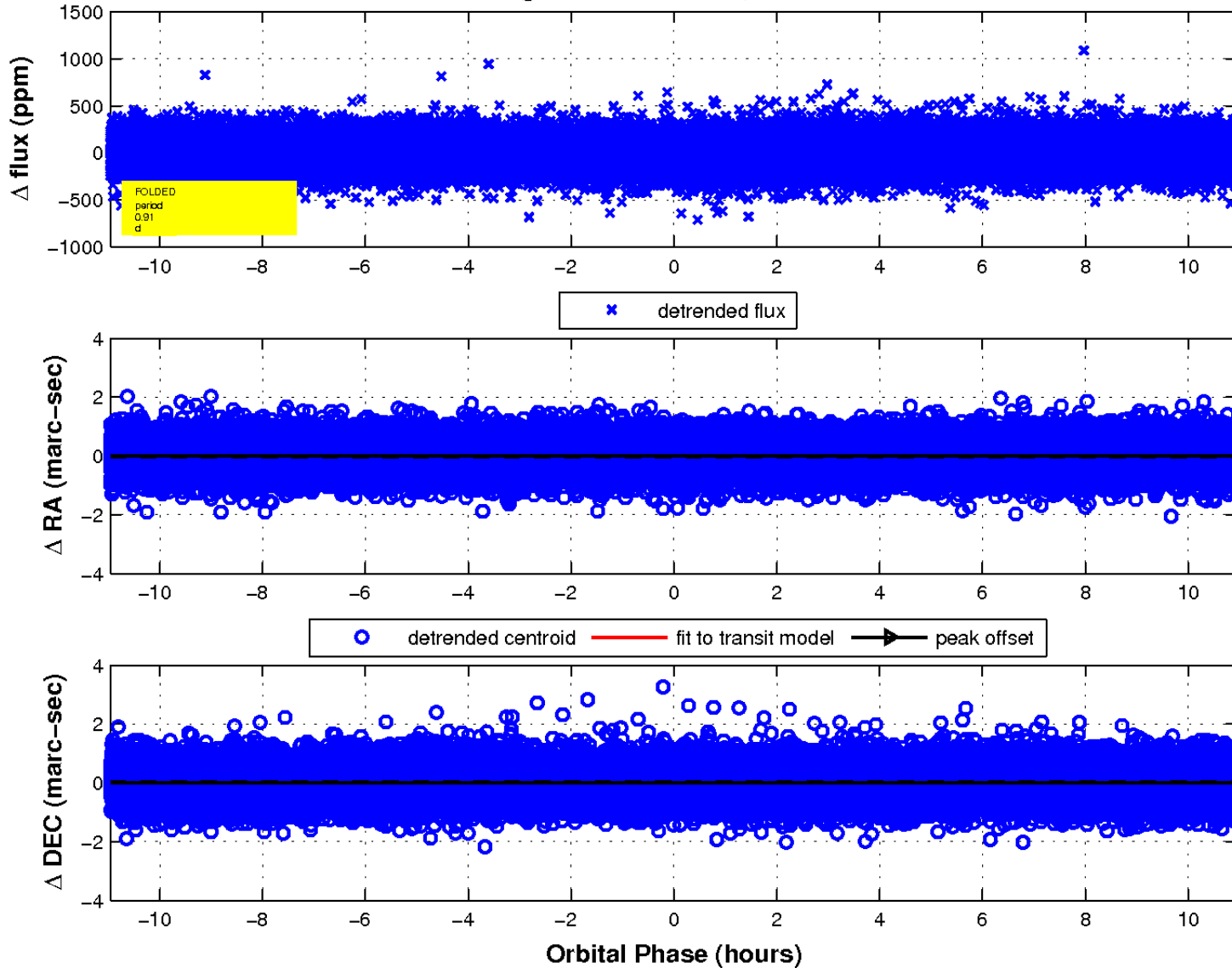
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

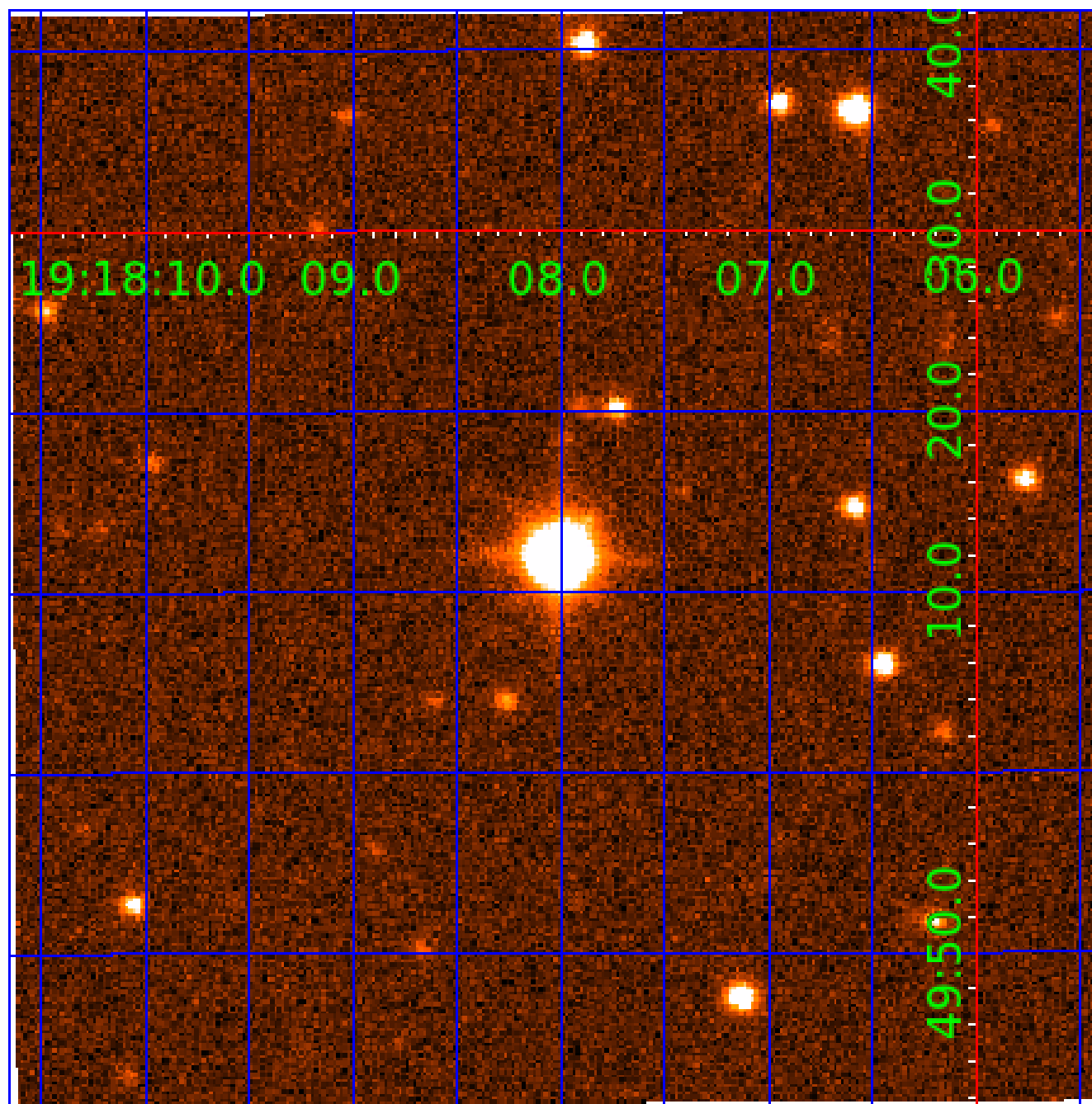


fluxWeightedCentroids, Planet 1 of 4



UKIRT Image

Declination



KIC 004739229

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})
004739229-01	OBS	No	0.913151	131.596116	18.3	4.747	10.9	11.4	1.73	6869	0.80	13670.11
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004739229-03	OBS	No	160.436301	227.347198	290.1	3.368	11.6	8.8	1.73	6869	3.42	13.89
004739229-04	OBS	No	88.472137	210.496417	217.4	3.874	8.5	7.9	1.73	6869	3.34	30.72

Robovetter Results

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004739229-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS
004739229-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—SAME_NTL_PERIOD
004739229-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT

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

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

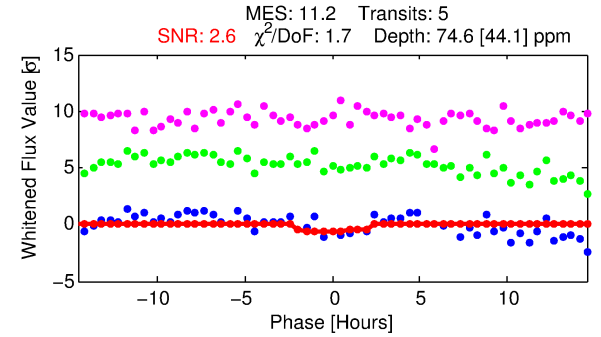
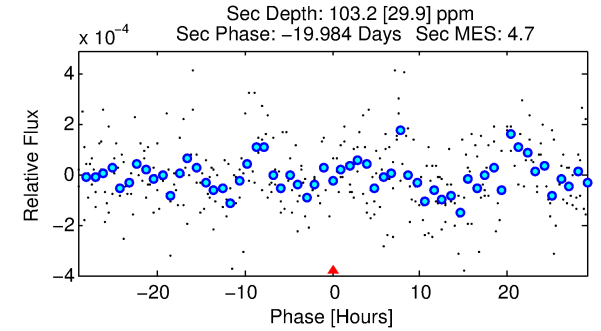
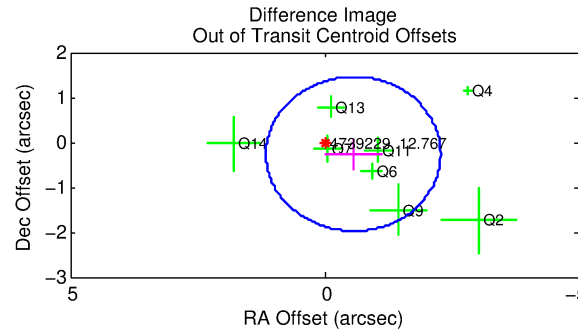
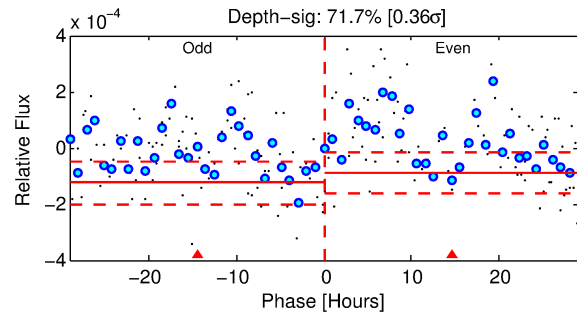
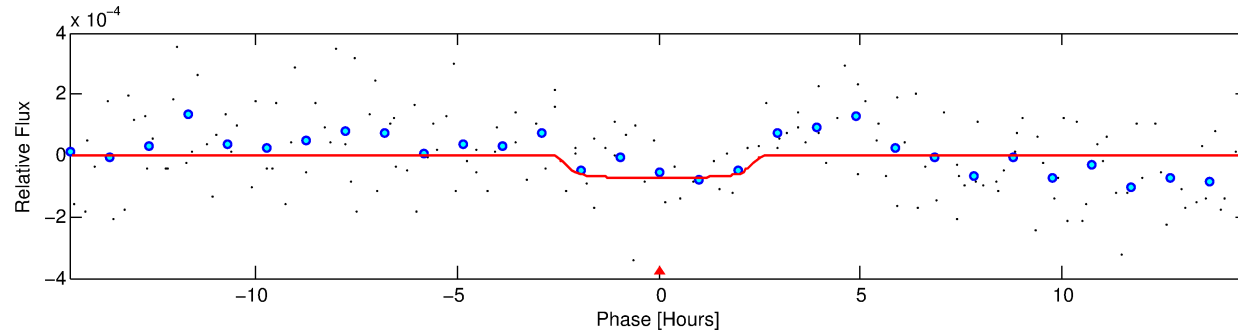
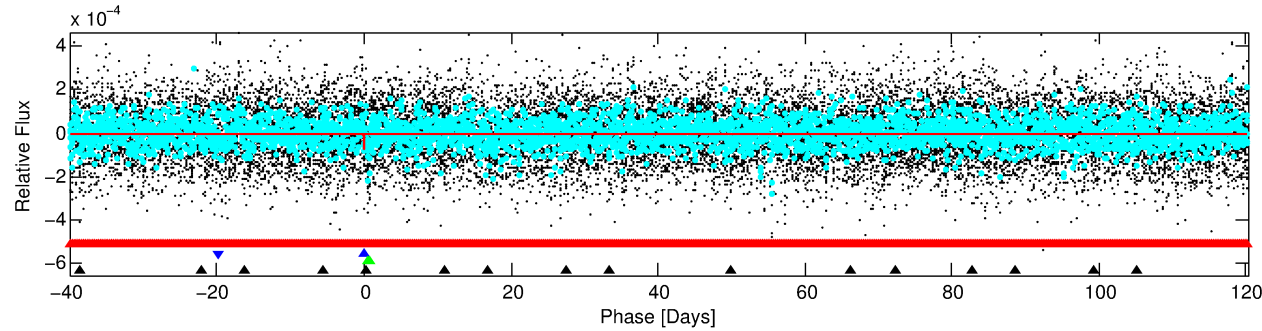
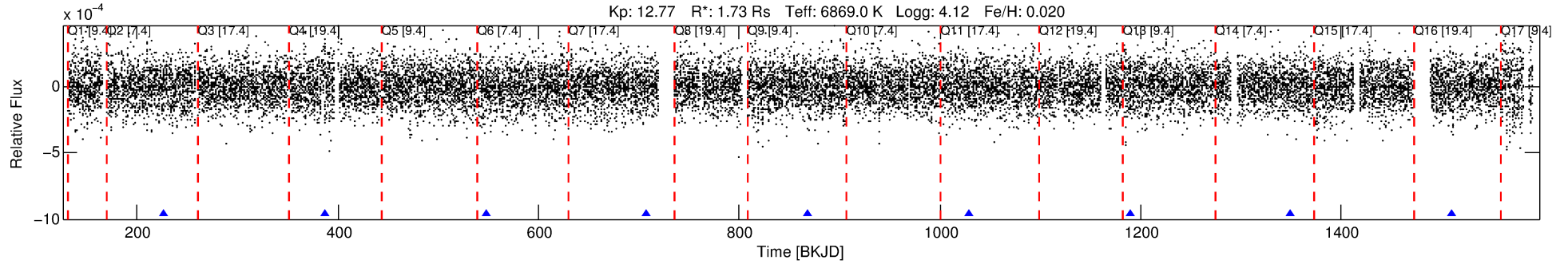
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004739229-02

No Significant Match Found

DV One-Page Summary

KIC: 4739229 Candidate: 2 of 4 Period: 160.427 d
KOI: K06118 Corr: No Ephemeris Match



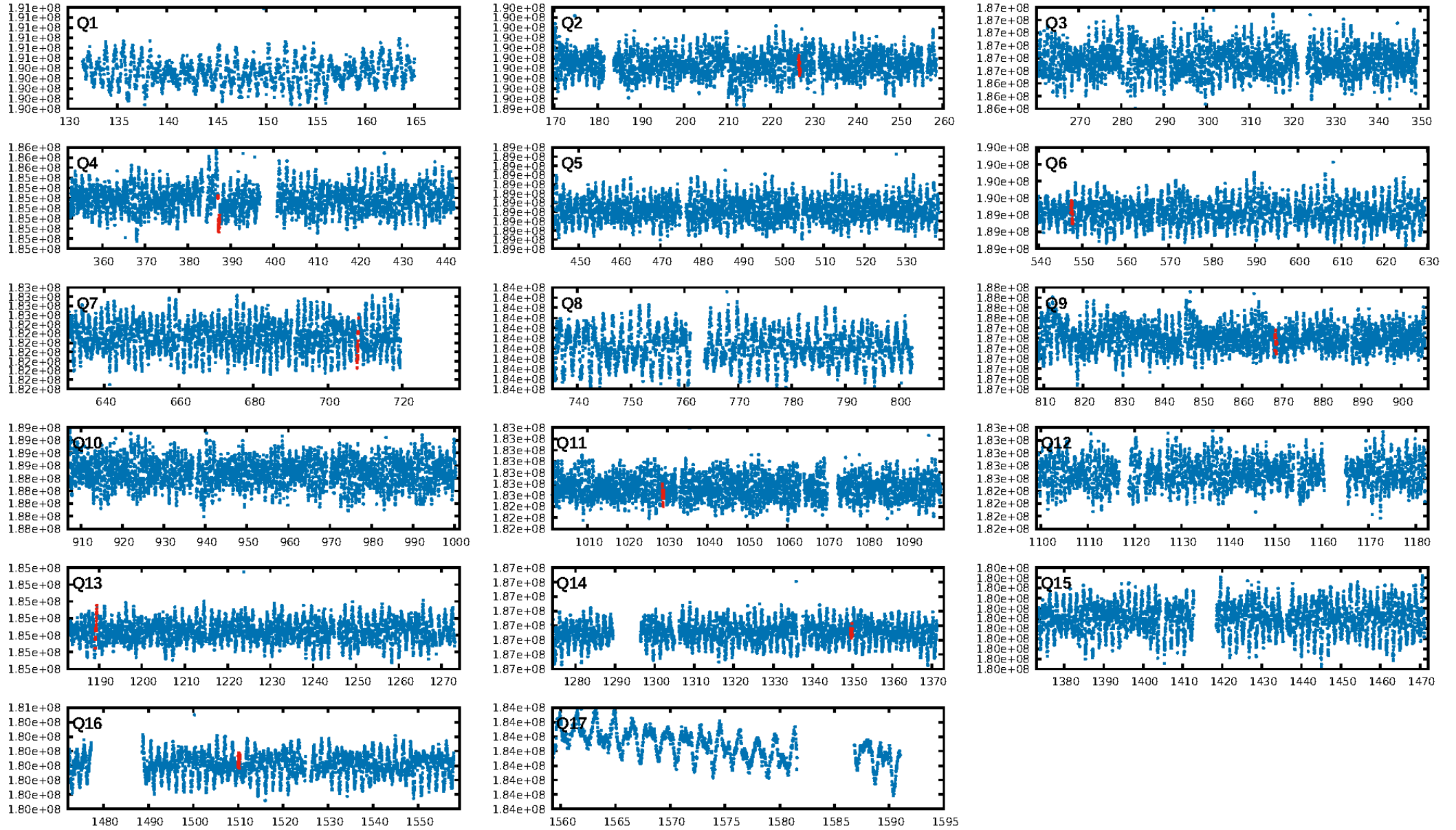
DV Fit Results:

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Epoch = 226.7546 [0.0625] BKJD
Rp/R* = 0.0092 [0.0110]
a/R* = 116.36 [790.69]
b = 0.90 [1.50]
Seff = 13.89 [2.94]
Teq = 492 [26] K
Rp = 1.73 [2.10] Re
a = 0.6540 [0.0940] AU
Ag = 8103.93 [19693.47] [0.41 σ]
Teffp = 7222 [4373] K [1.54 σ]

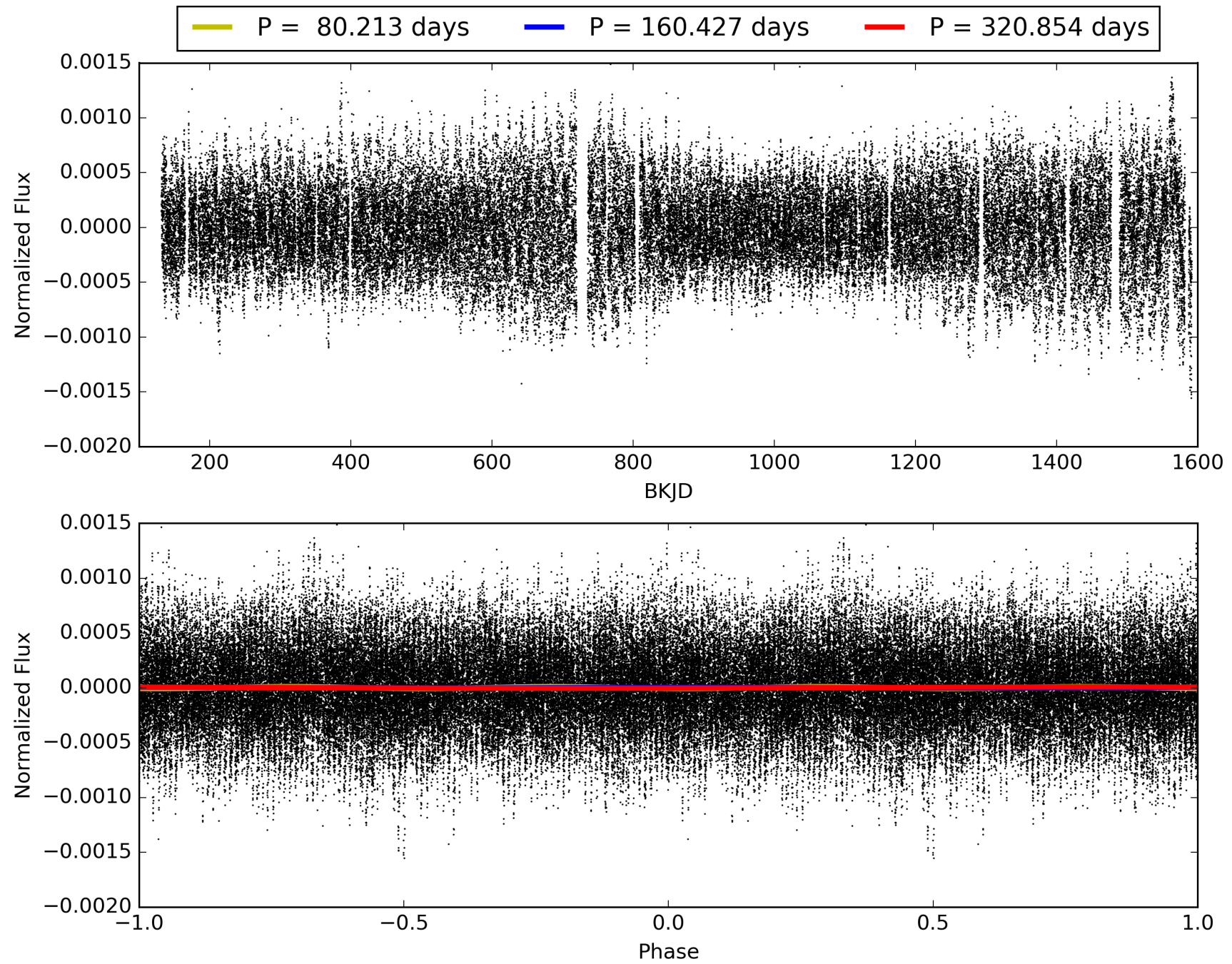
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [277.53 σ]
LongPeriod-sig: 3.1% [0.04 σ]
ModelChiSquare2-sig: 65.5%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 2.40e-16
RollingBand-fgt: 1.00 [5/5]
GhostDiagnostic-chr: 0.8768
Centroid-sig: 6.9%
Centroid-so: 2.944 arcsec [1.51 σ]
OotOffset-rm: 0.623 arcsec [1.09 σ]
OotOffset-st: 3/2/1/2 [8]
KicOffset-rm: 0.600 arcsec [1.08 σ]
KicOffset-st: 3/2/1/2 [8]
DiffImageQuality-fgm: 0.50 [4/8]
DiffImageOverlap-fno: 0.00 [0/8]

TCE 004739229-02, PDC Light Curves

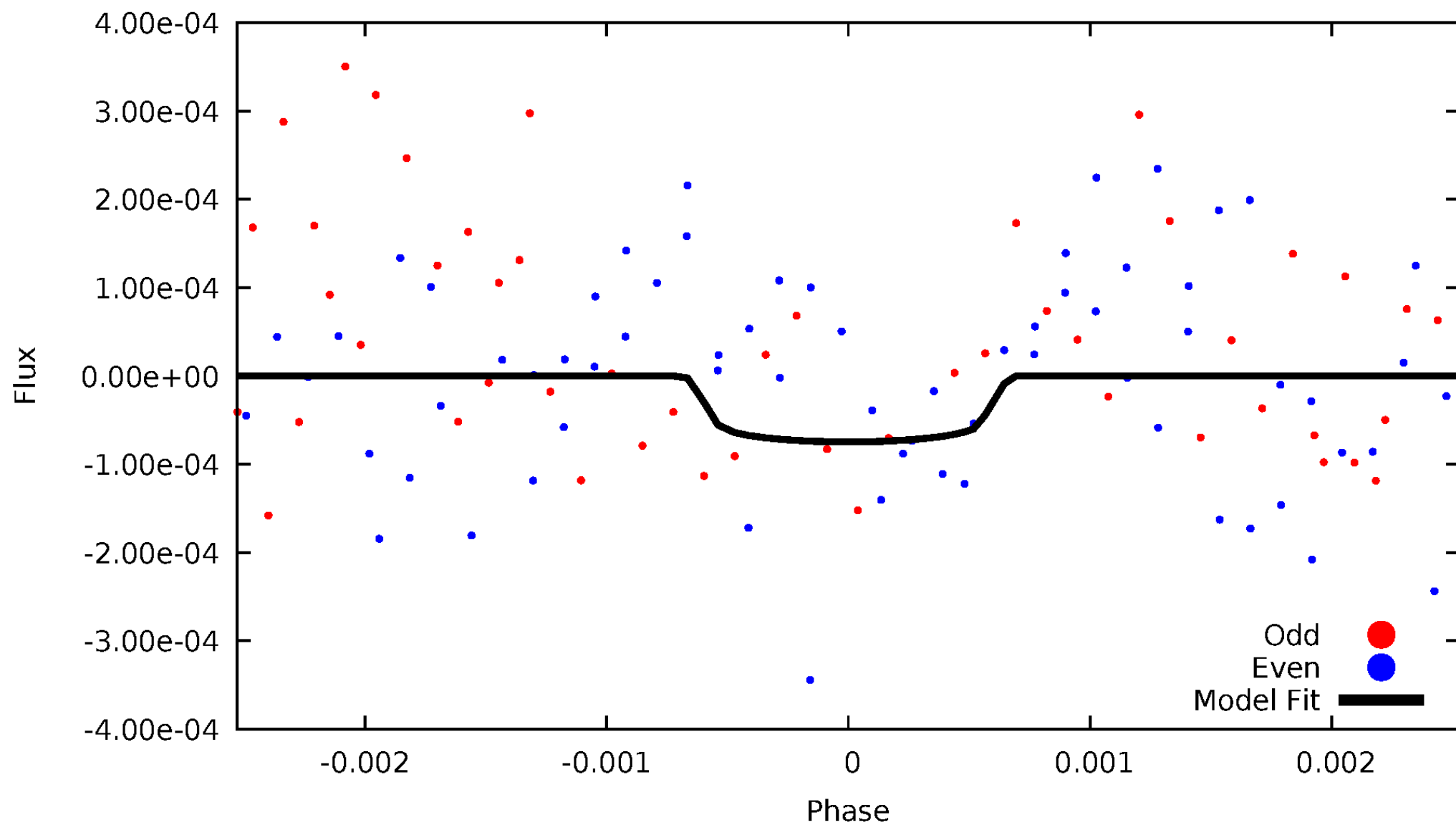


TCE 004739229-02



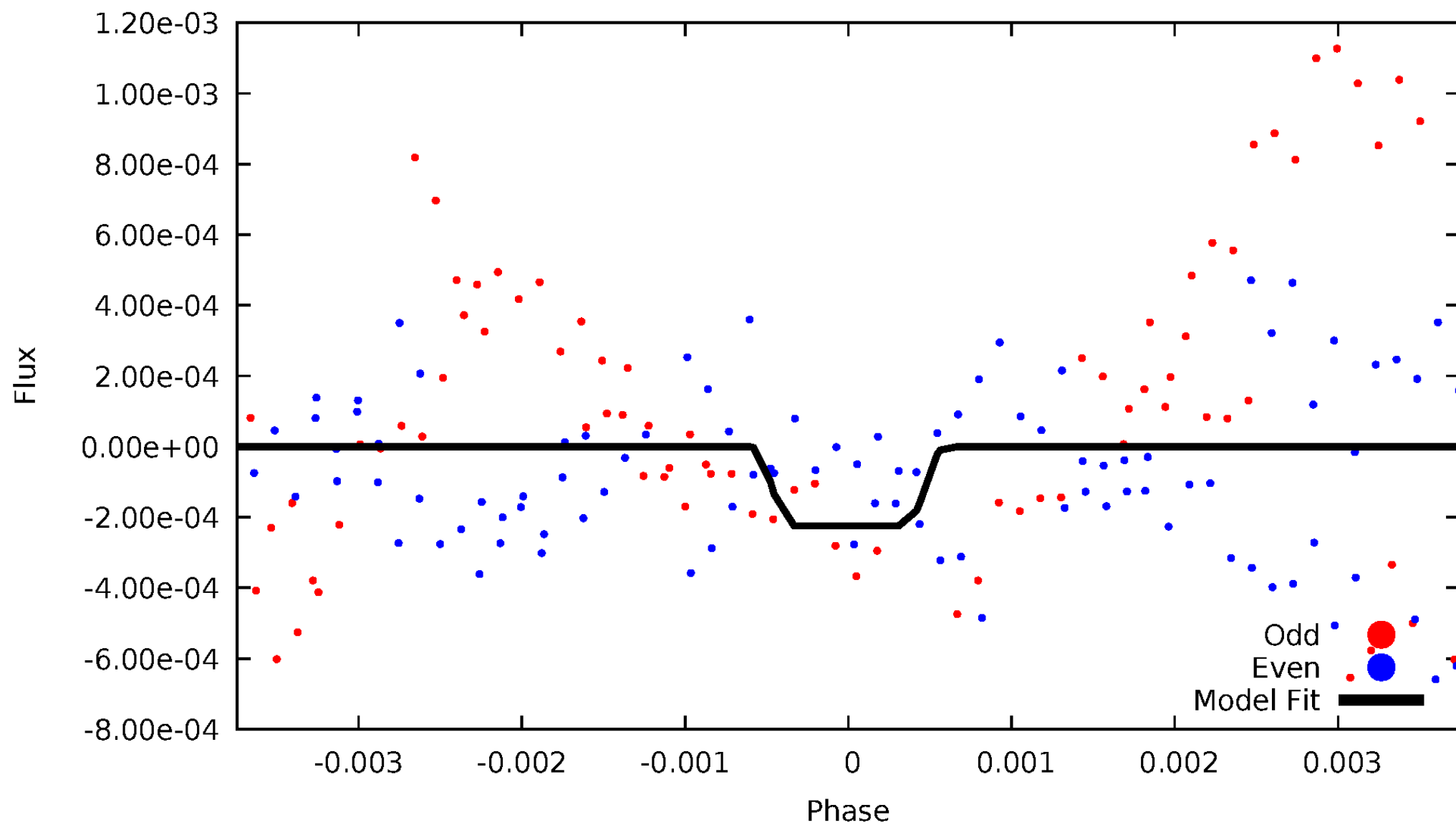
DV Odd/Even

TCE 004739229-02



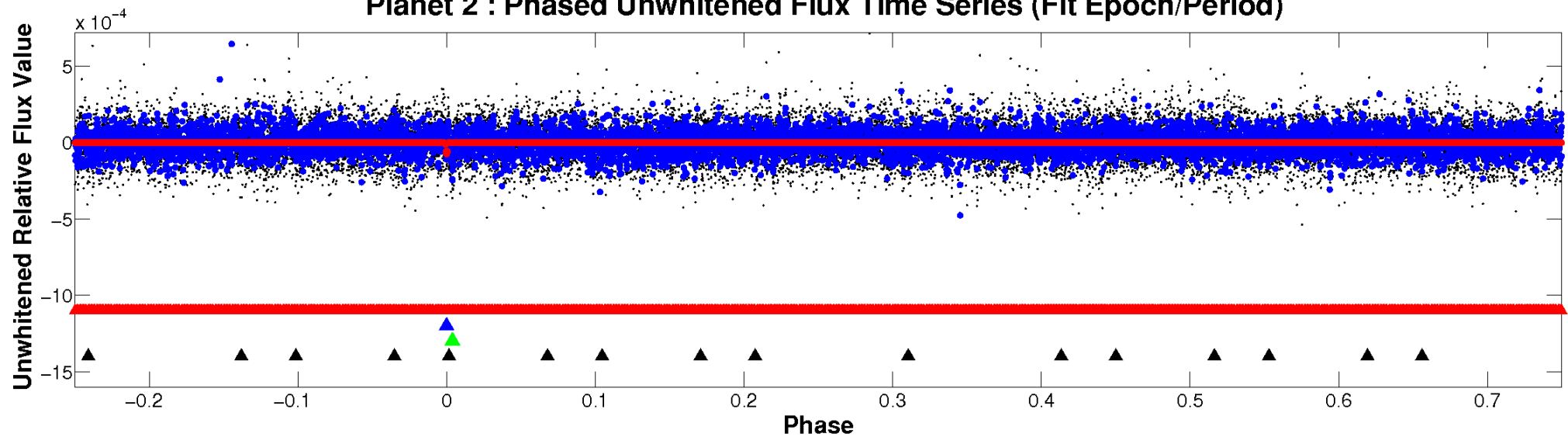
ALT Odd/Even

TCE 004739229-02

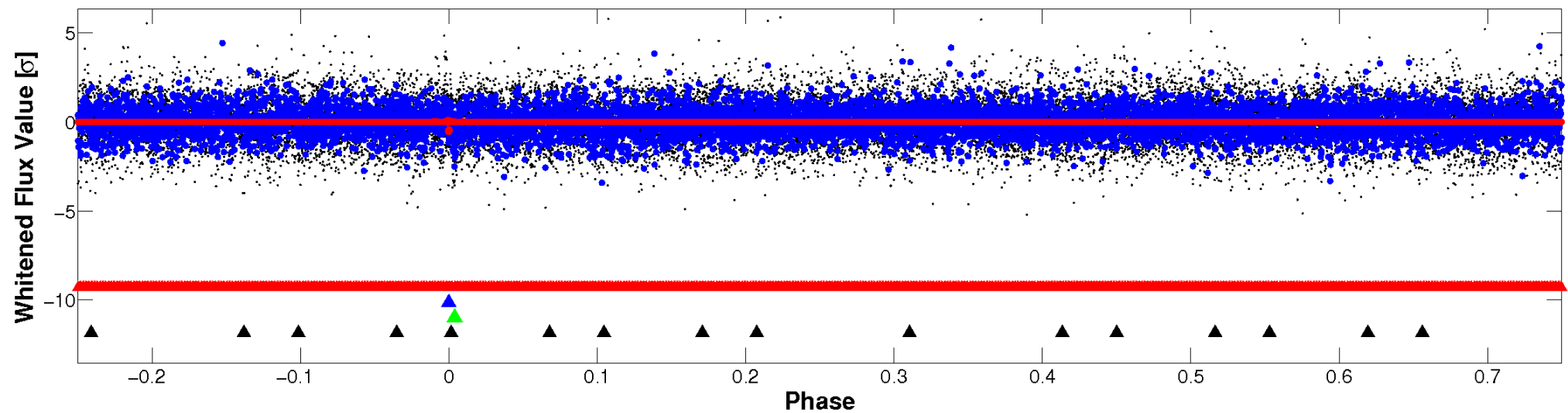


Non-Whitened Vs. Whitened Light Curve

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

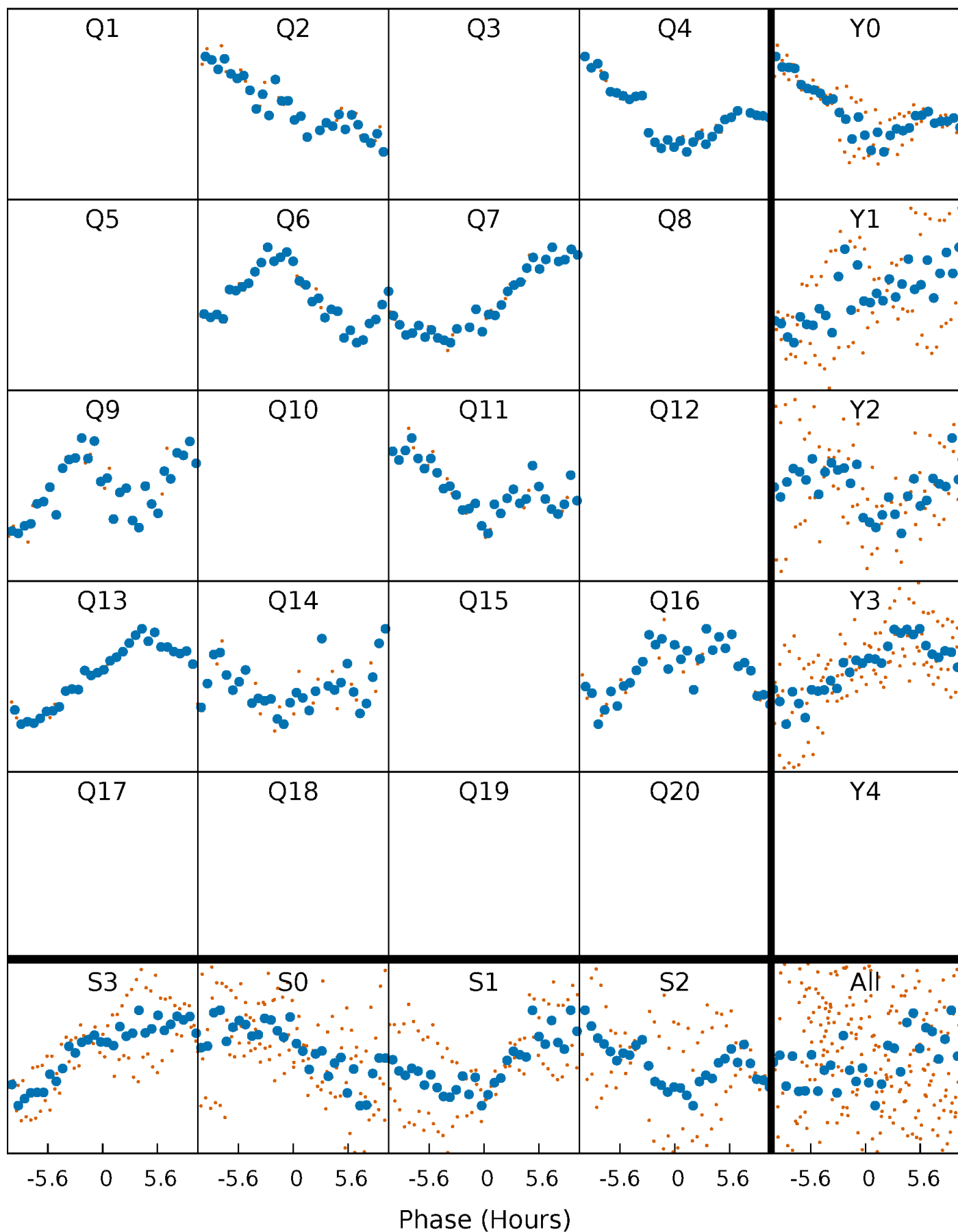


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



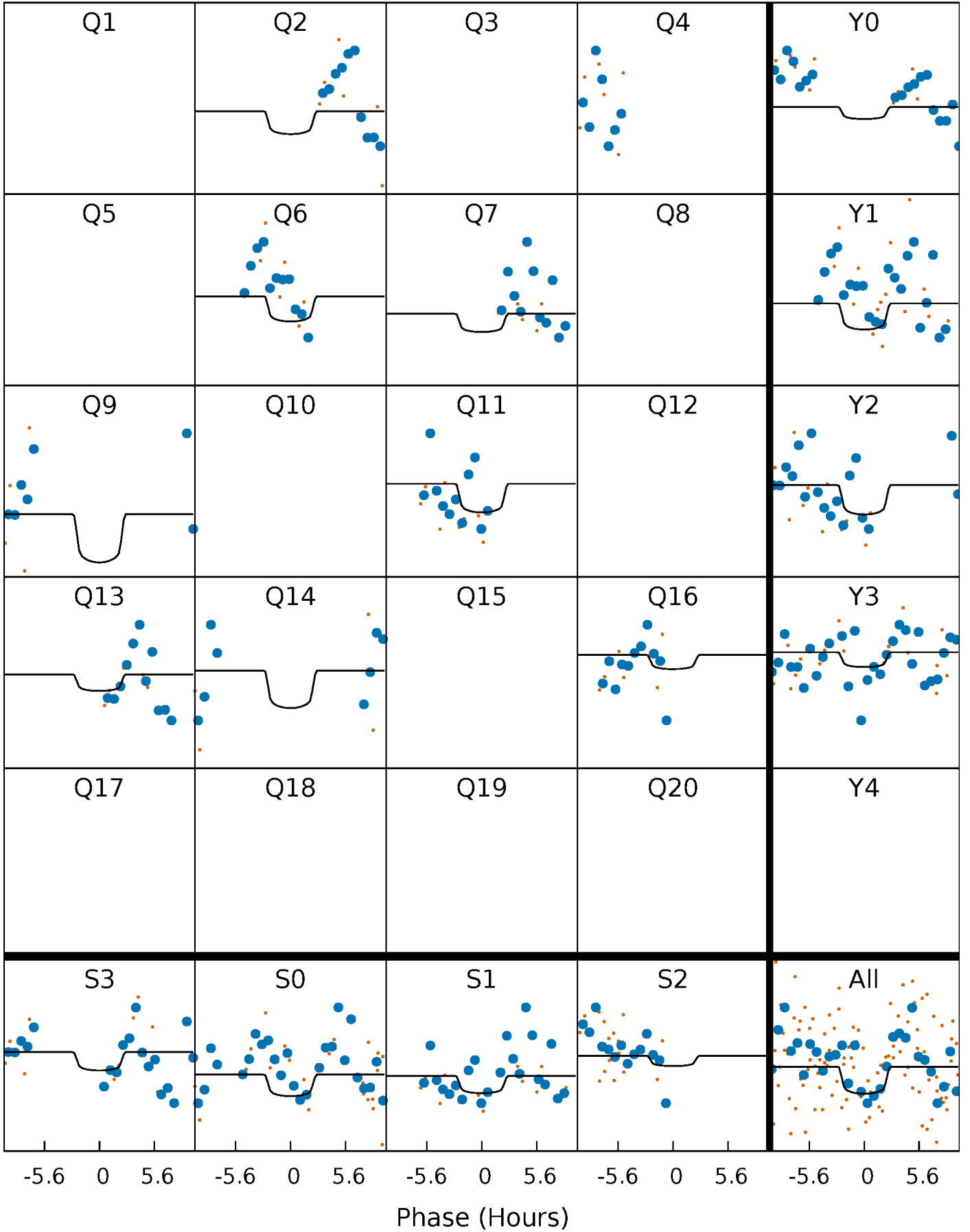
PDC Quarter-Phased Transit Curves

TCE 004739229-02 P=160.426781 Days $T_0=226.754607$ (BKJD)



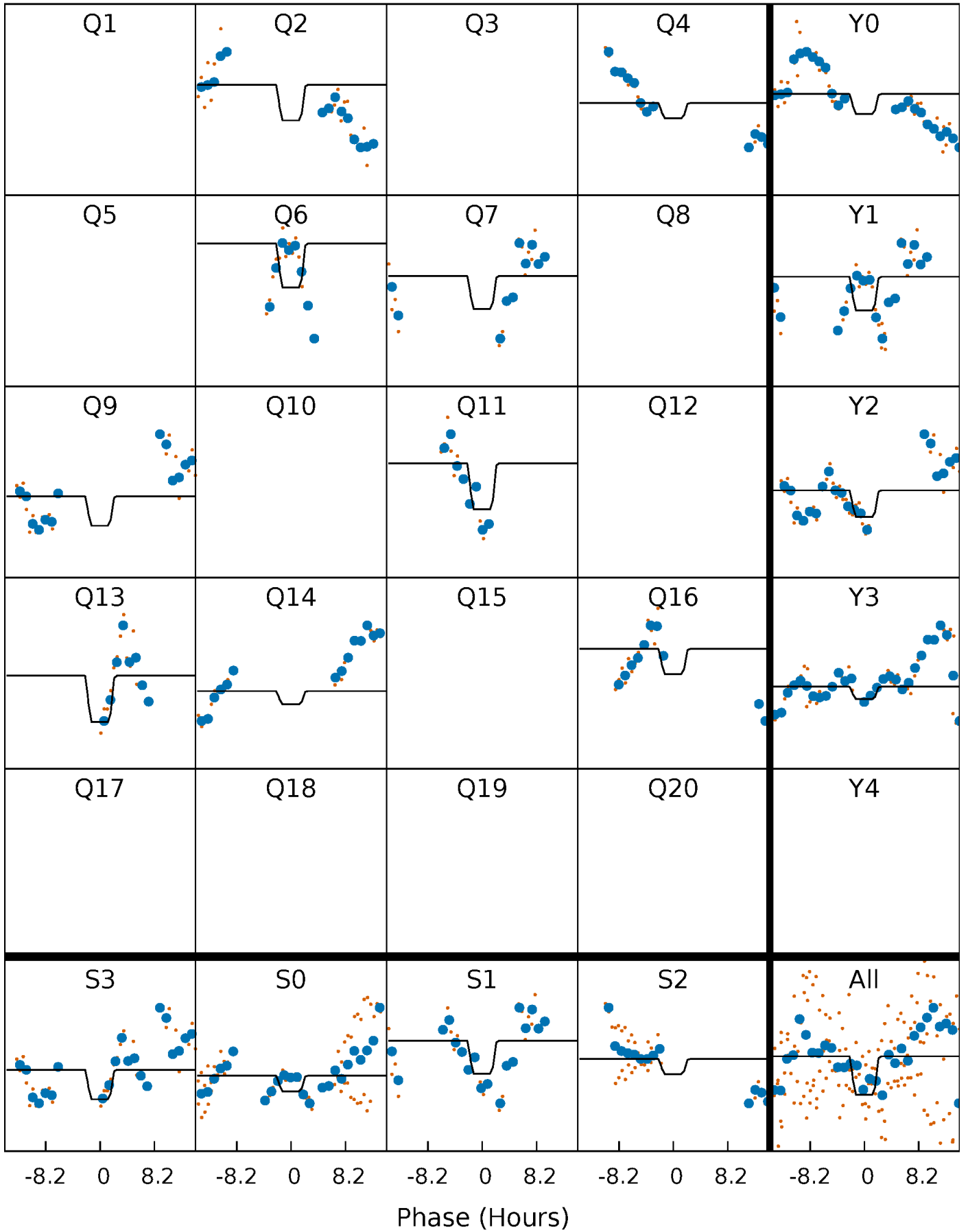
DV Quarter-Phased Transit Curves

TCE 004739229-02 $P=160.426781$ Days $T_0=226.754607$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

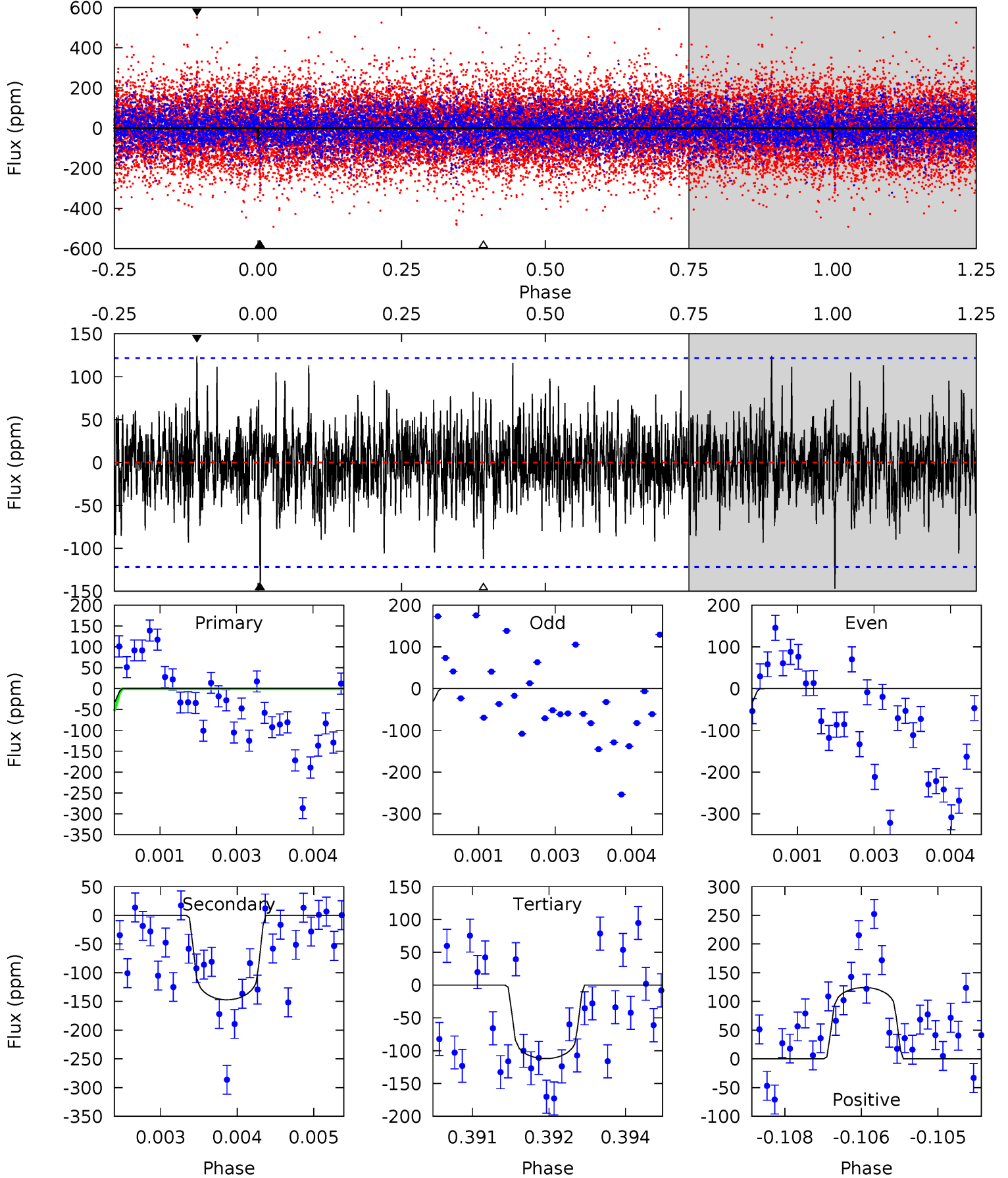
TCE 004739229-02 P=160.444313 Days $T_0=226.665437$ (BKJD)



DV Model-Shift Uniqueness Test

004739229-02, P = 160.426781 Days, E = 66.327826 Days

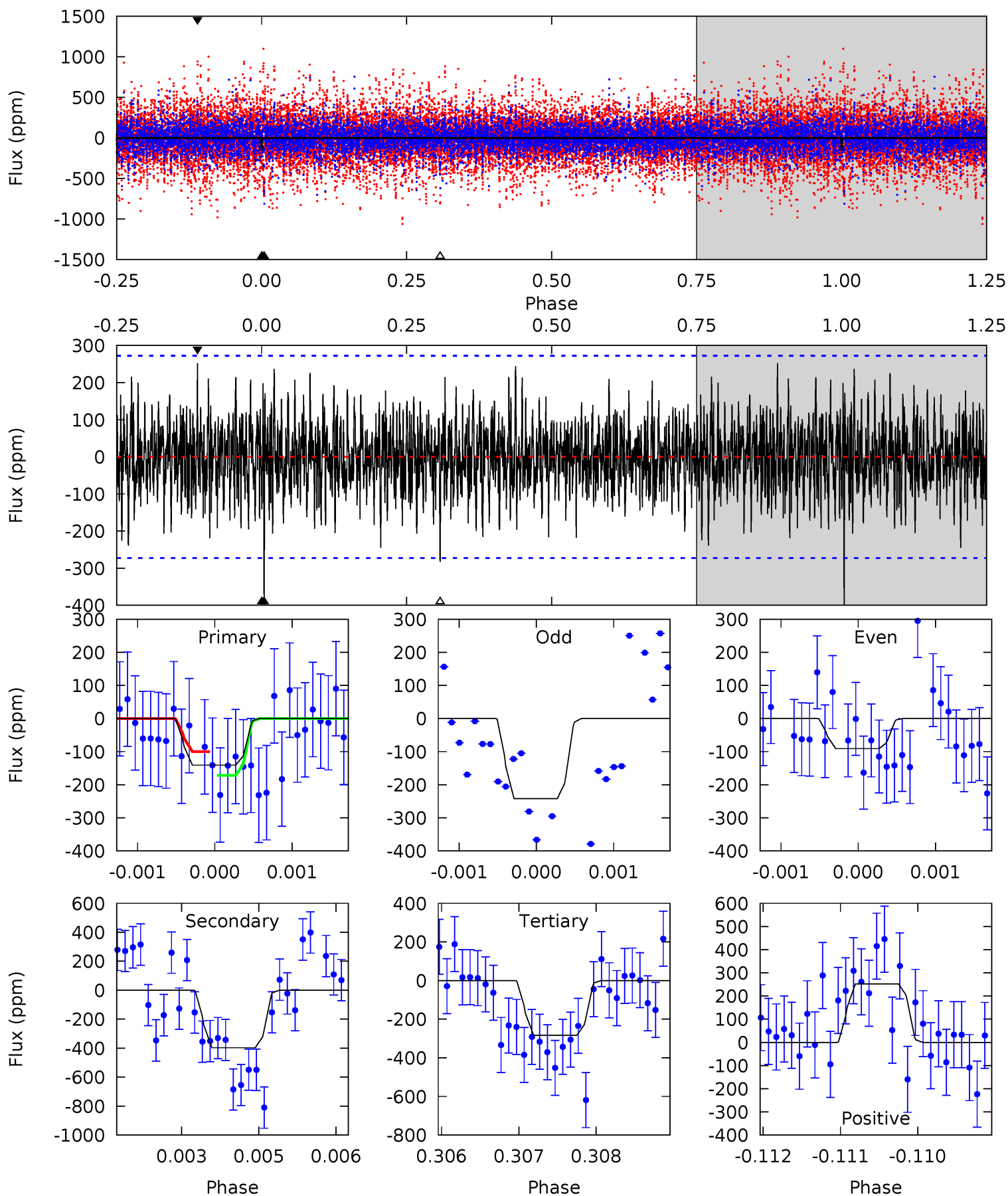
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2.24	6.52	4.97	5.51	5.40	3.20	1.36	-2.74	-3.27	1.55	1.01	0.11	0.90	0.46	1.21



Alt Model-Shift Uniqueness Test

004739229-02, P = 160.444313 Days, E = 66.221124 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2.81	7.91	5.64	5.02	5.43	3.25	1.48	-2.83	-2.21	2.27	2.90	1.39	0.87	0.39	0.72



Stellar Parameters For KIC 004739229

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6869^{+72}_{-92}	$4.125^{+0.099}_{-0.110}$	$0.020^{+0.150}_{-0.150}$	$1.726^{+0.301}_{-0.246}$	$1.450^{+0.111}_{-0.091}$	$0.397^{+0.196}_{-0.141}$
	+1%/-1%	+2%/-3%	+750%/-750%	+17%/-14%	+8%/-6%	+49%/-36%
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 004739229-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-147 ± 23	$2.23^{+2.00}_{-1.39}$	687^{+29}_{-26}	6969^{+7080}_{-1854}	7089^{+42360}_{-5140}
Alt.	-397 ± 50	$3.03^{+2.06}_{-1.77}$	689^{+32}_{-30}	7870^{+7568}_{-1988}	10627^{+48654}_{-7052}

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

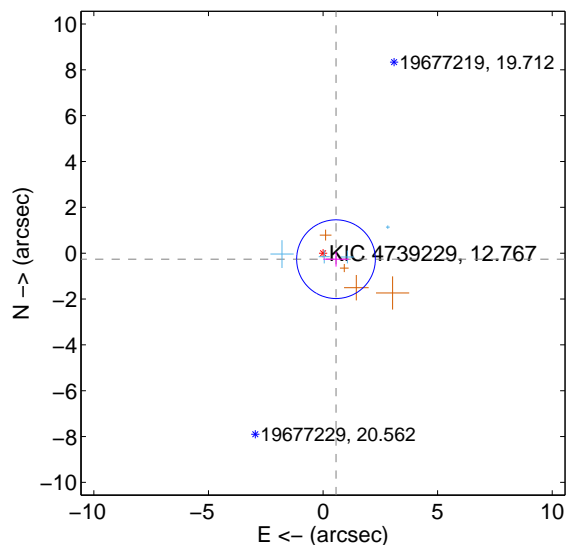
Supplemental centroid analysis for 004739229-02. Kepler magnitude: 12.77. Transit SNR 2.60

There are 4 quarters with good PRF difference image offsets

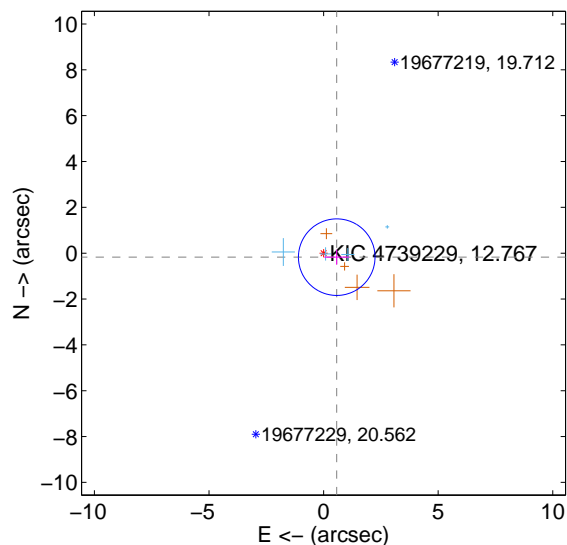
The direct PRF centroid is offset from the target star catalog position by about 0.10 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.623 ± 0.572	1.09	-0.566 ± 0.556	-0.262 ± 0.324
PRF-fit source offset from KIC position	0.600 ± 0.557	1.08	-0.574 ± 0.546	-0.174 ± 0.327
photometric centroid source offset	2.94 ± 1.95	1.51	-2.21 ± 1.90	1.95 ± 2.02

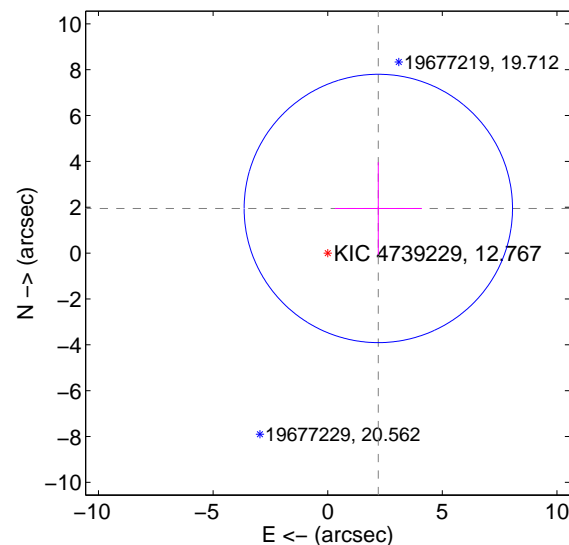
offset from difference PRF-fit to OOT PRF-fit



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.

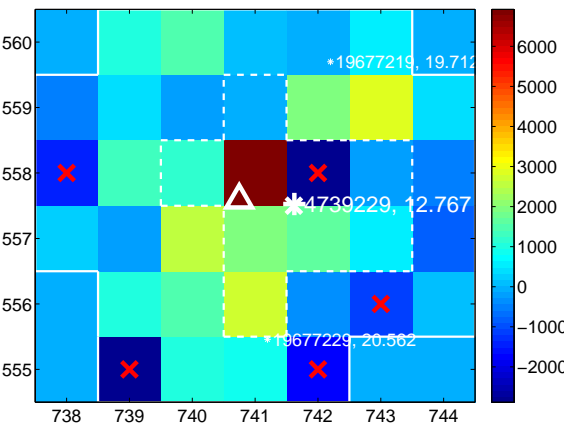
Q1 no difference image



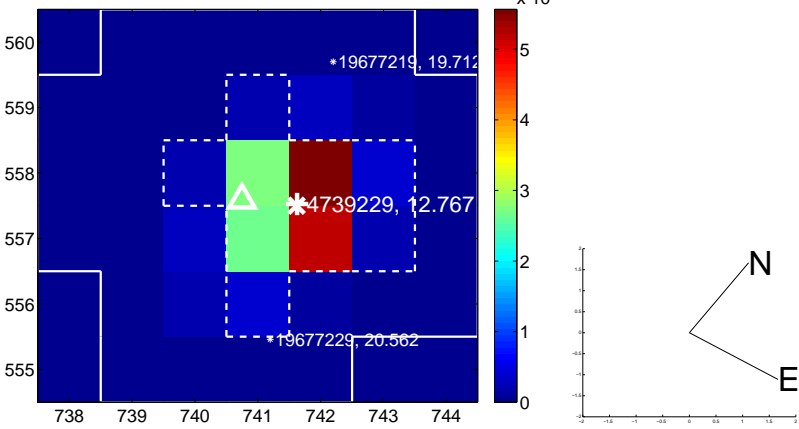
Q1 no OOT image



Q2 difference image. Poor Quality



Q2 OOT image



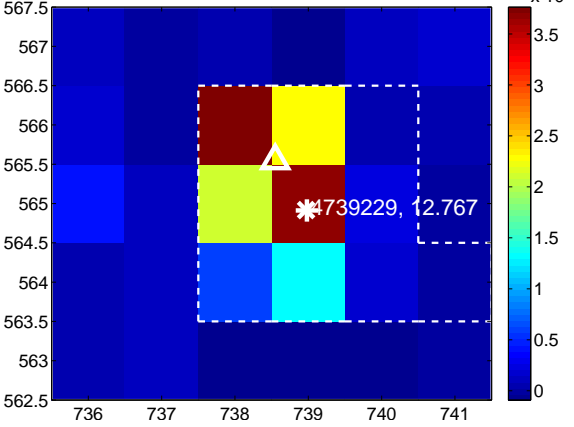
Q3 no difference image



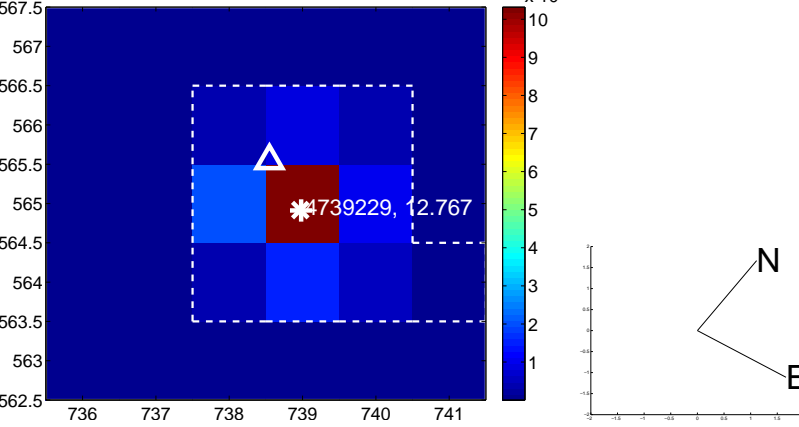
Q3 no OOT image



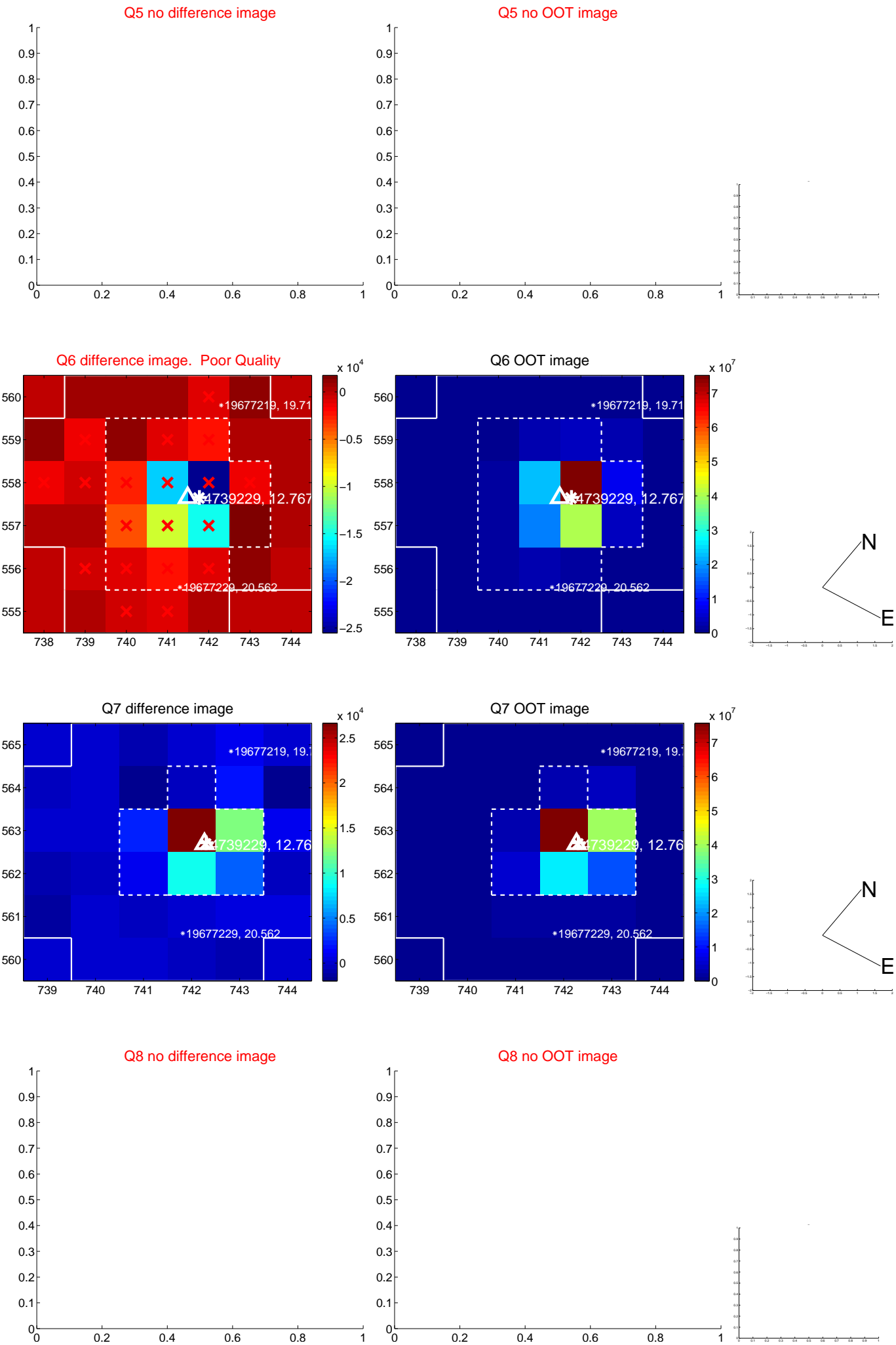
Q4 difference image



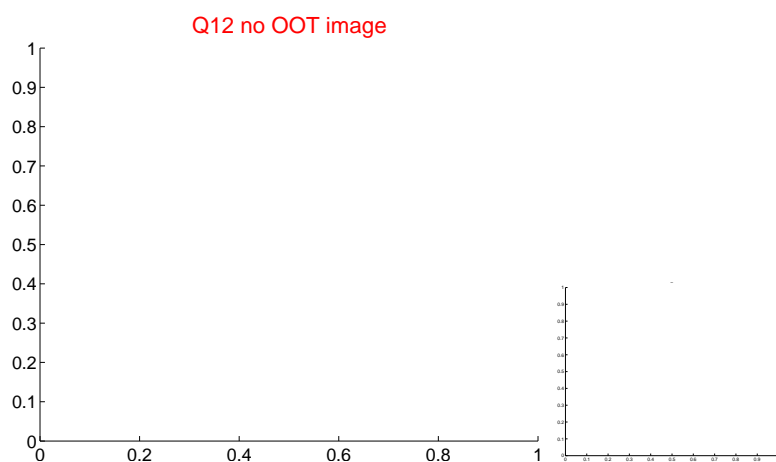
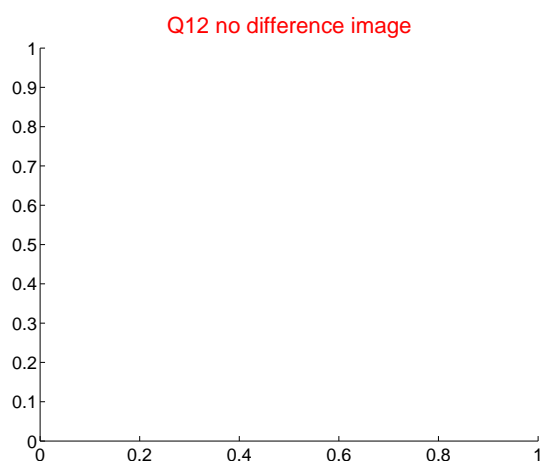
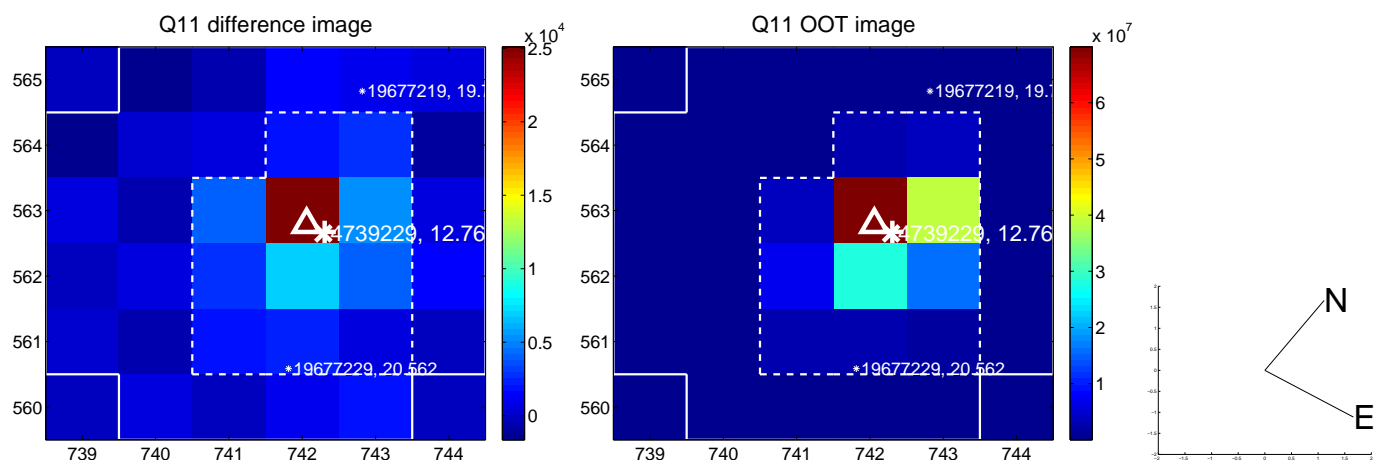
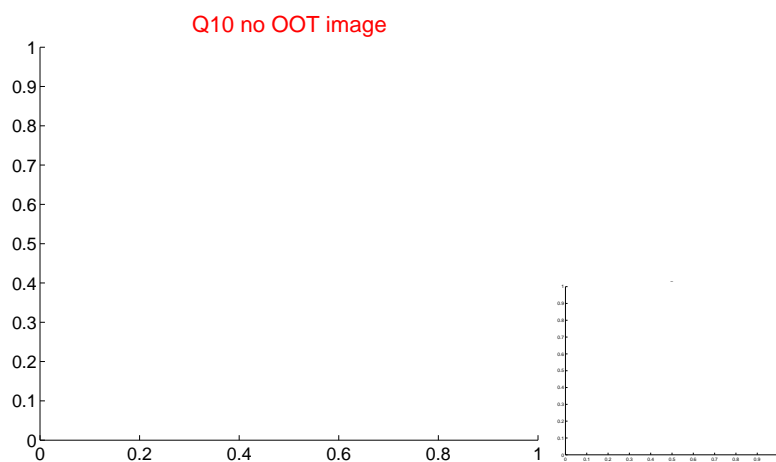
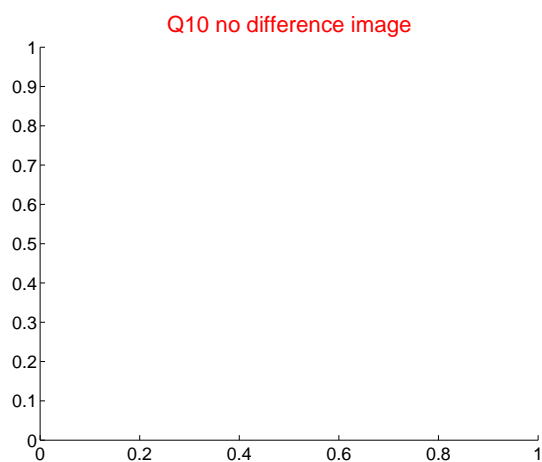
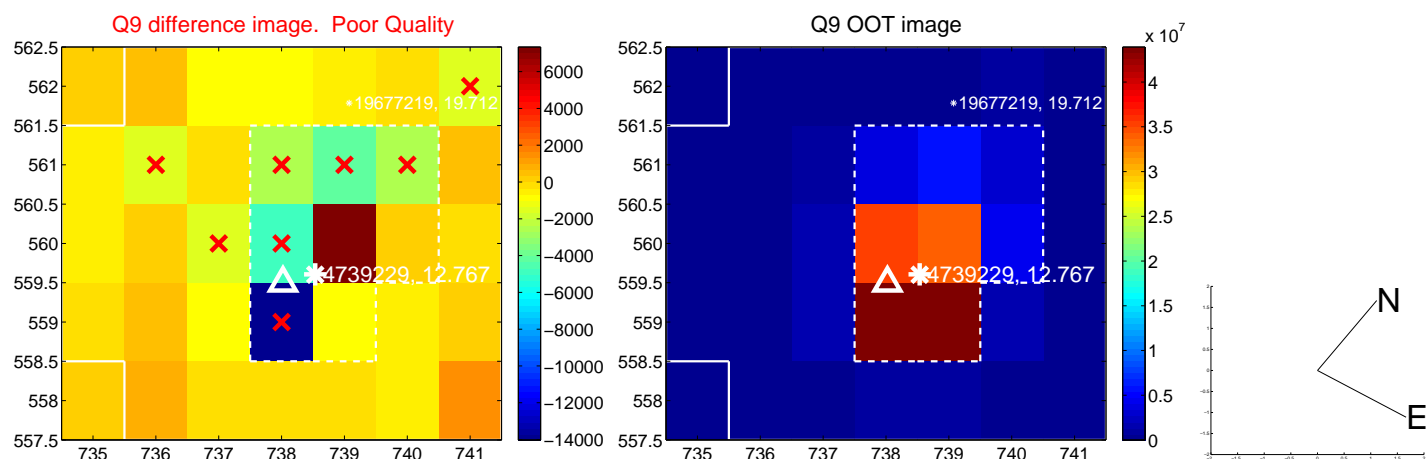
Q4 OOT image



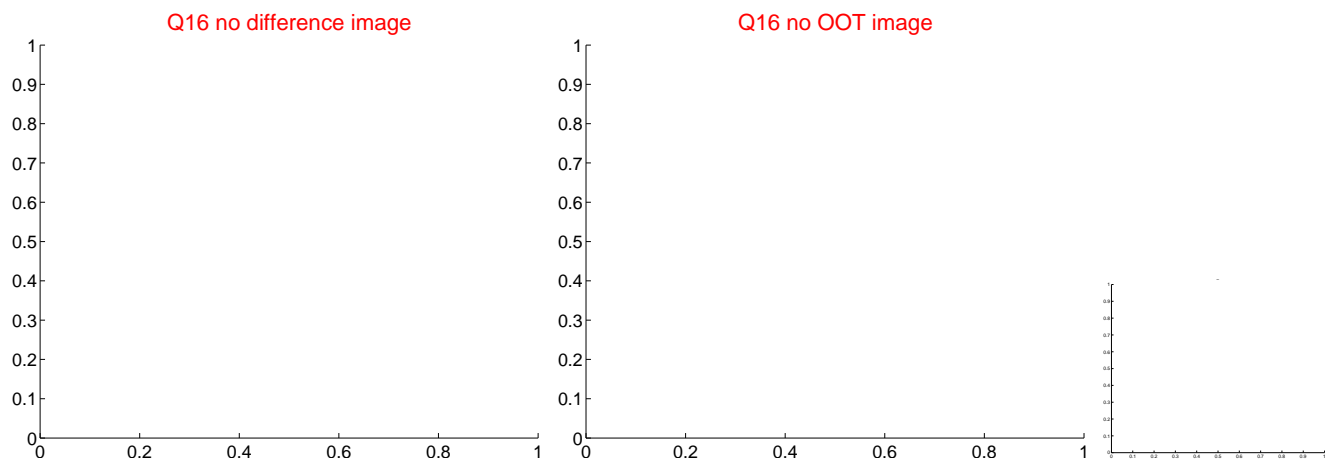
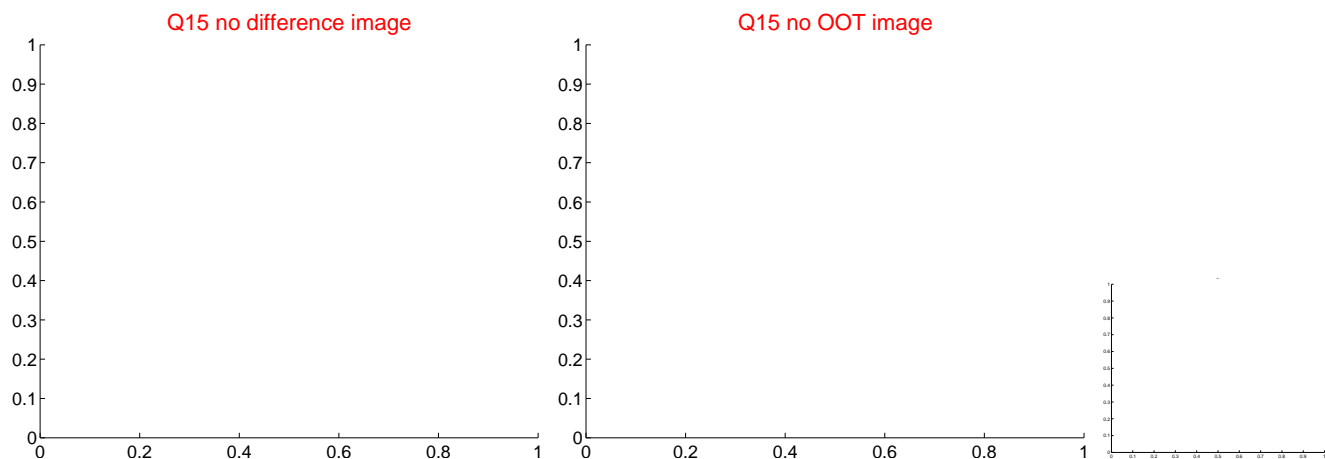
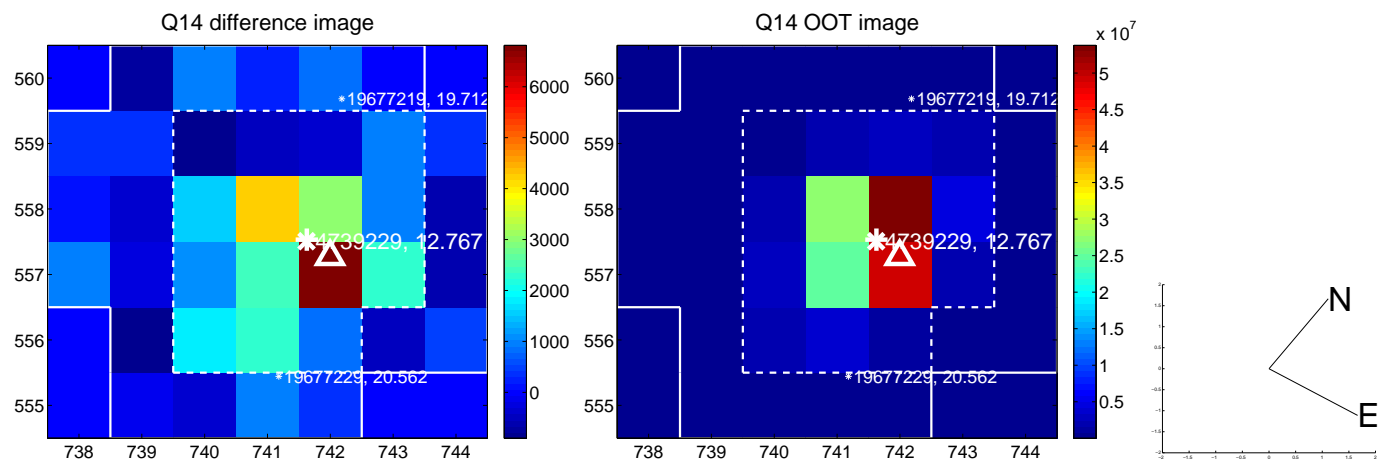
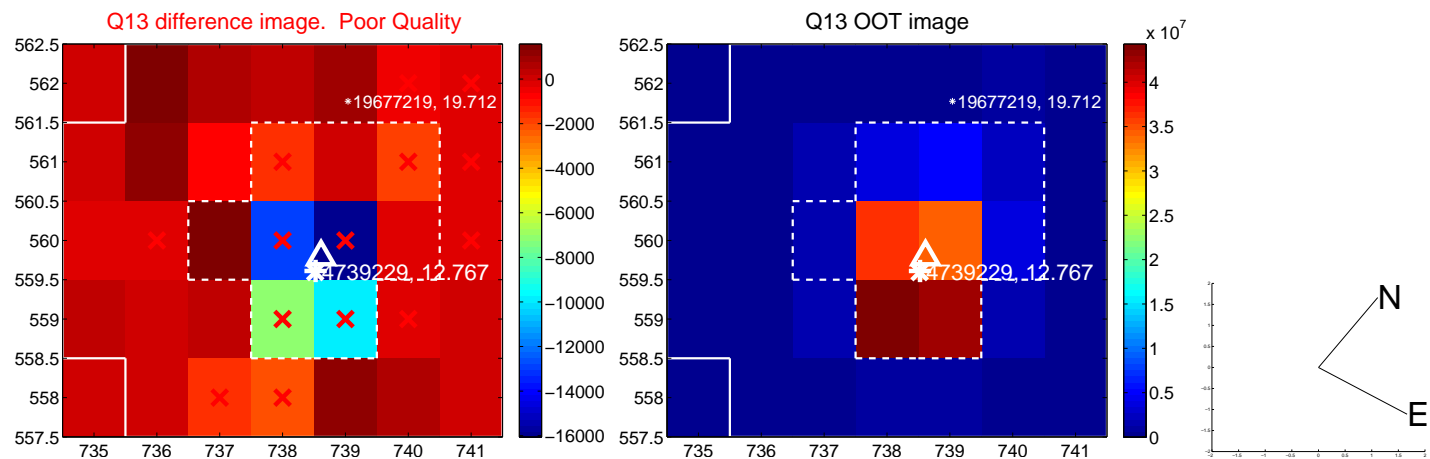
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



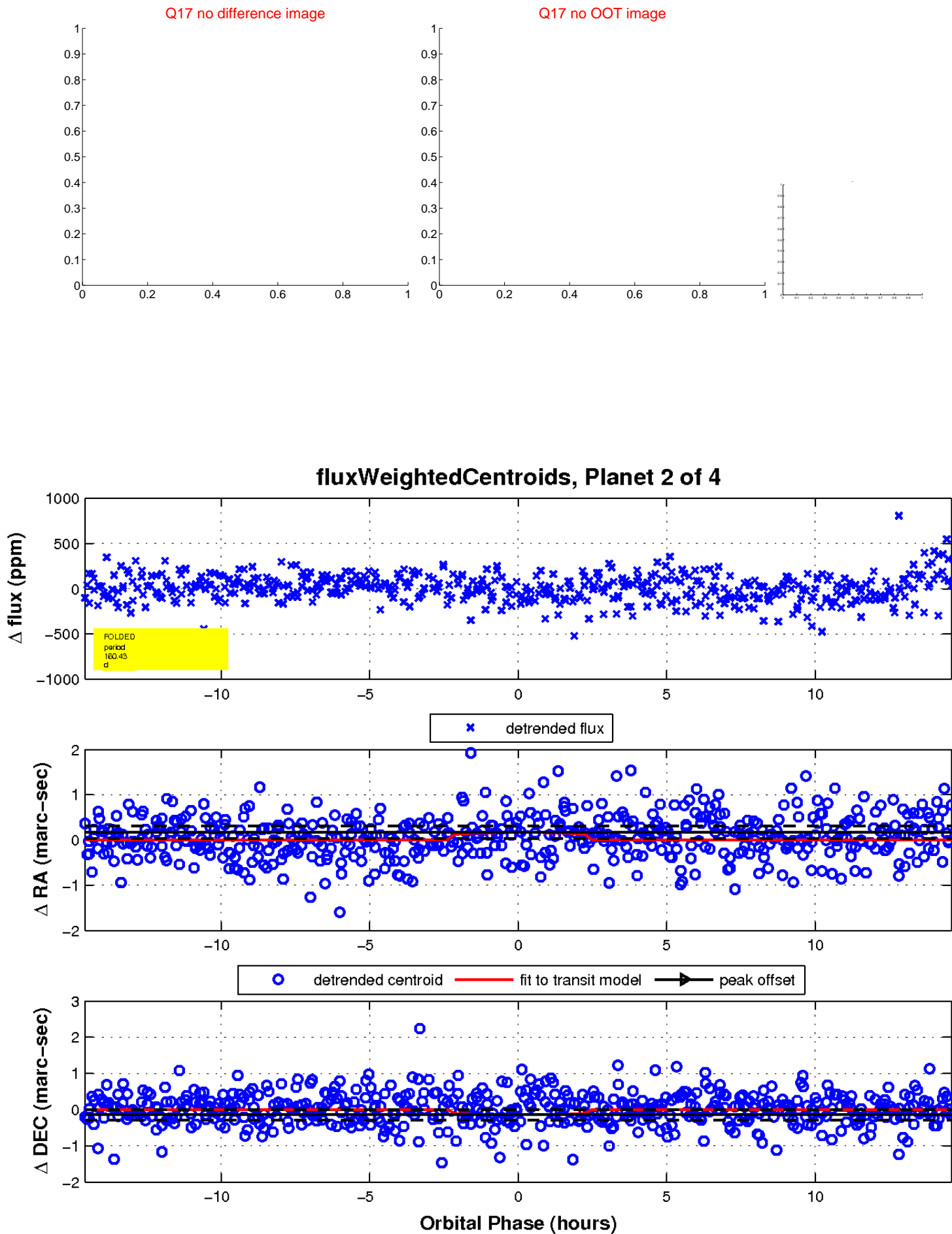
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

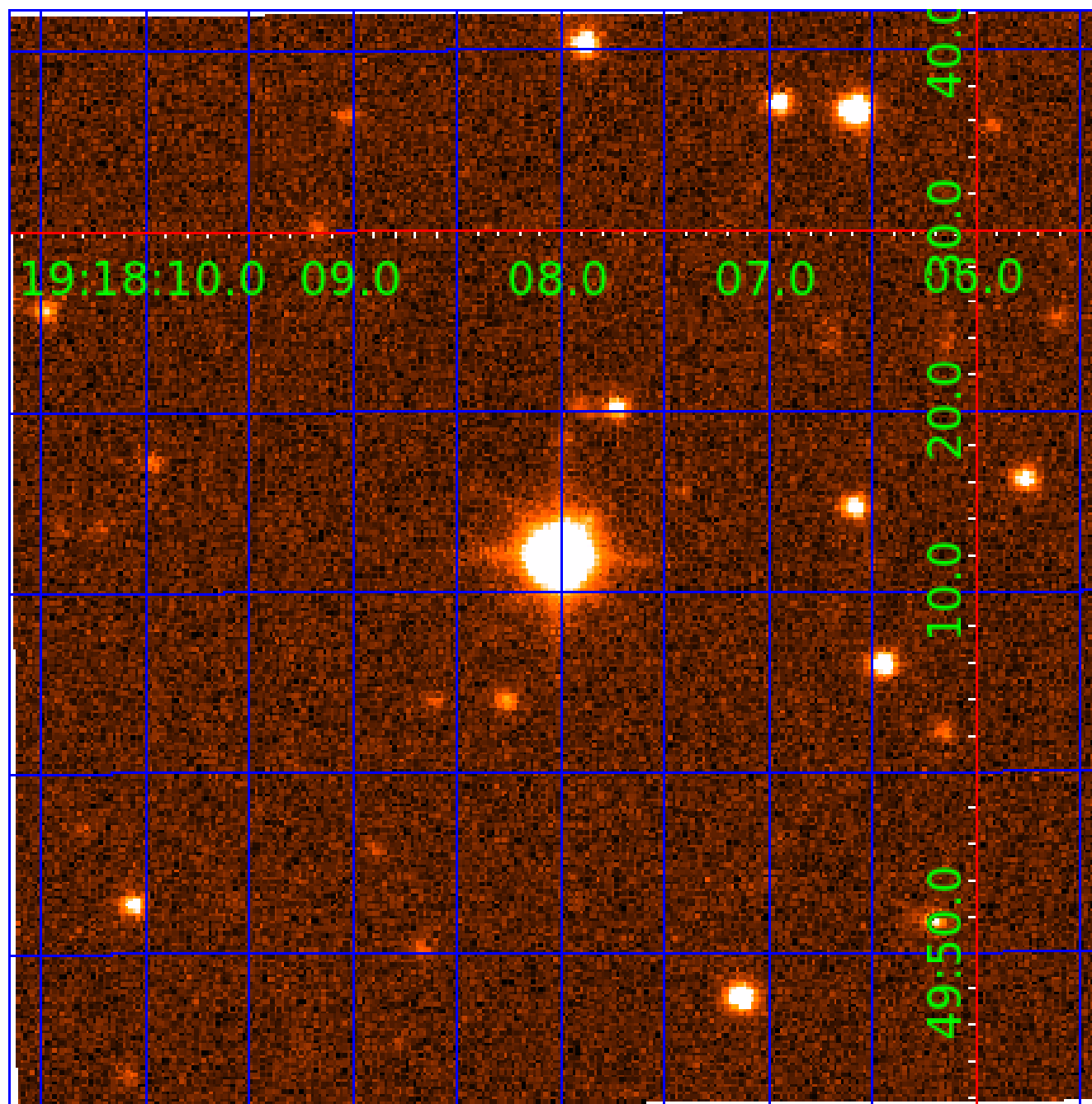


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 004739229

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})
004739229-01	OBS	No	0.913151	131.596116	18.3	4.747	10.9	11.4	1.73	6869	0.80	13670.11
004739229-02	OBS	No	160.426781	226.754607	74.6	4.869	11.2	2.6	1.73	6869	1.73	13.89
004739229-03	OBS	No	160.436301	227.347198	290.1	3.368	11.6	8.8	1.73	6869	3.42	13.89
004739229-04	OBS	No	88.472137	210.496417	217.4	3.874	8.5	7.9	1.73	6869	3.34	30.72

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004739229-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_ALT
004739229-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS
004739229-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—SAME_NTL_PERIOD
004739229-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT

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

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

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

Ephemeris Match Information For 004739229-03

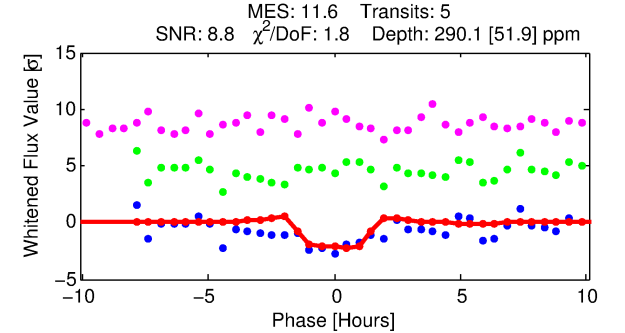
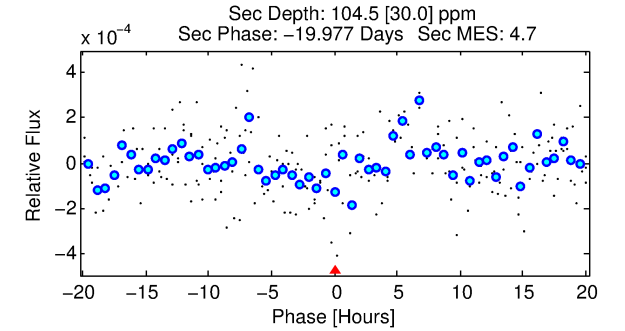
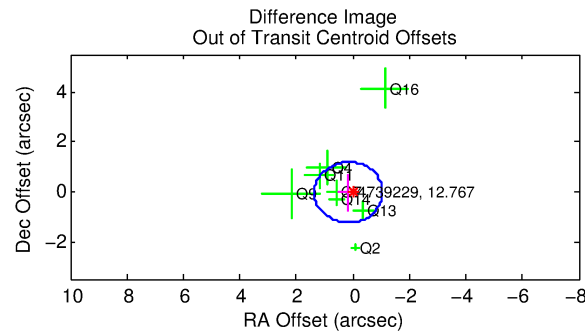
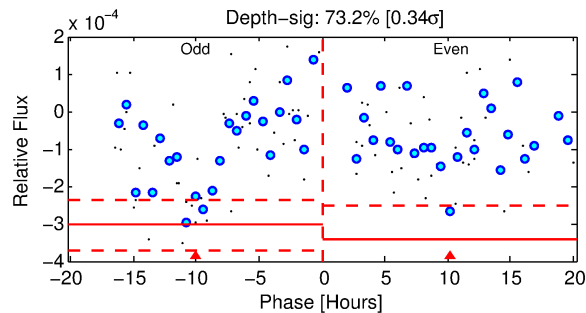
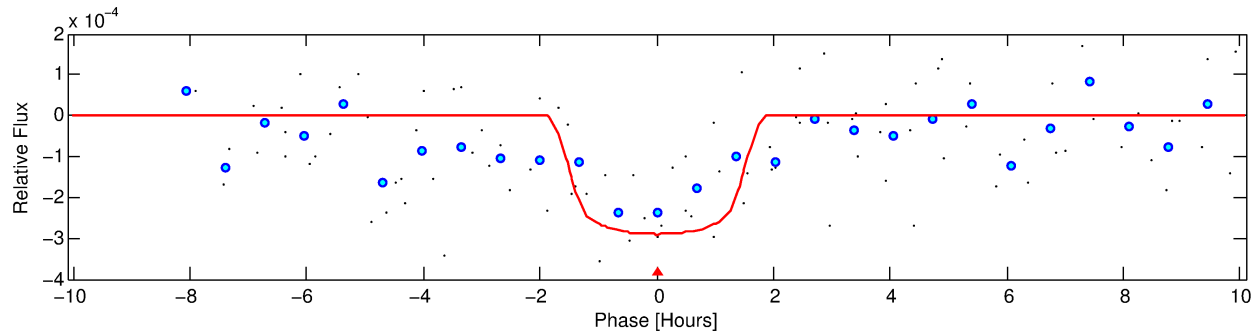
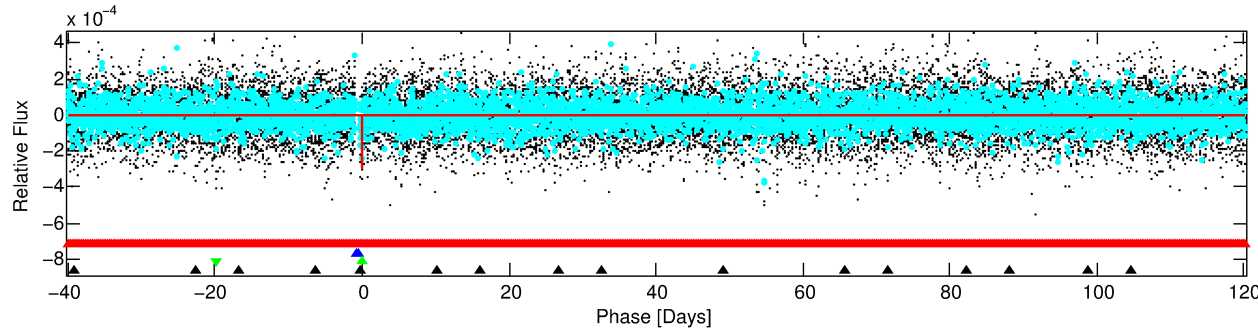
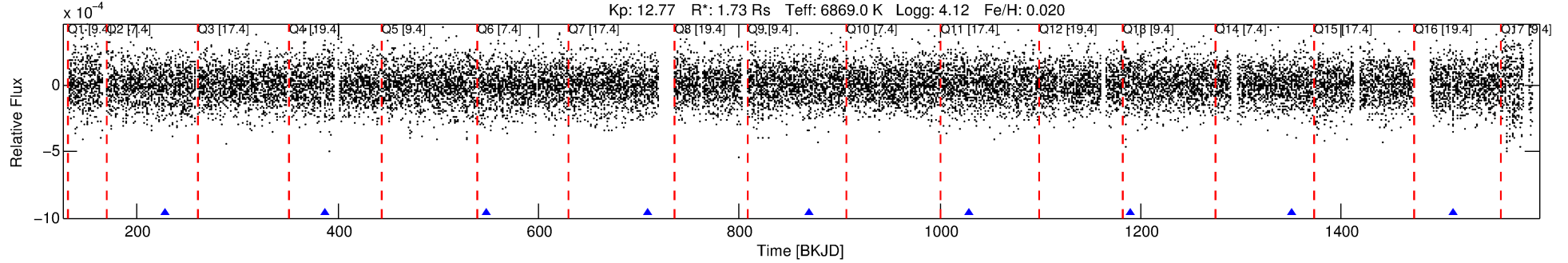
No Significant Match Found

DV One-Page Summary

KIC: 4739229 Candidate: 3 of 4 Period: 160.436 d

KOI: K06118 Corr: No Ephemeris Match

Kp: 12.77 R*: 1.73 Rs Teff: 6869.0 K Logg: 4.12 Fe/H: 0.020



DV Fit Results:

Period = 160.43630 [0.00169] d
Epoch = 227.3472 [0.0096] BKJD
Rp/R* = 0.0181 [0.0138]
a/R* = 174.68 [790.26]
b = 0.90 [0.99]
Seff = 13.89 [2.94]
Teq = 492 [26] K
Rp = 3.42 [2.67] Re
a = 0.6540 [0.0940] AU
Ag = 2105.69 [3288.82] [0.64σ]
Teffp = 5156 [1997] K [2.34σ]

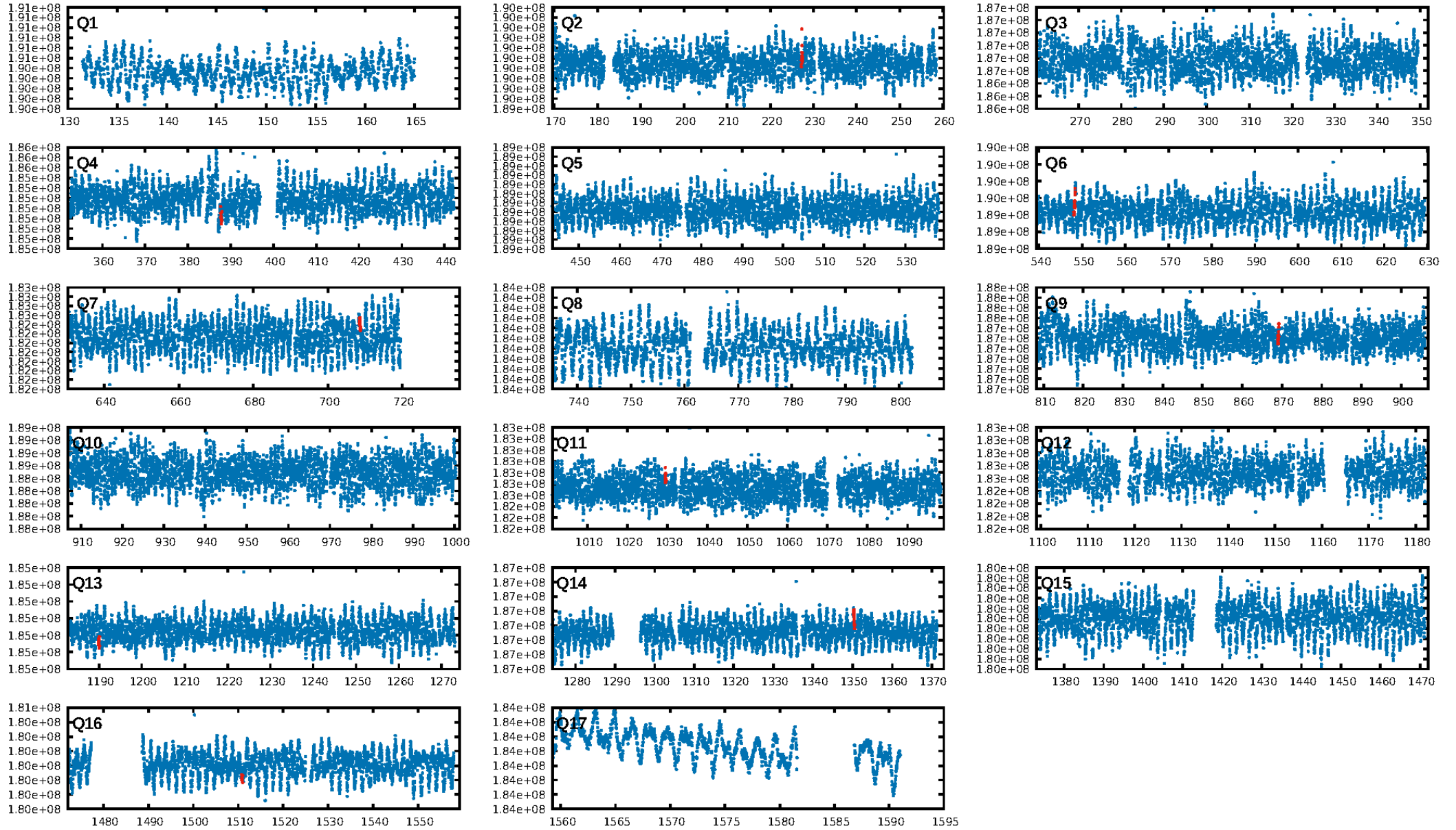
DV Diagnostic Results:

ShortPeriod-sig: 3.1% [0.04σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 1.7%
ModelChiSquareGof-sig: 98.2%
Bootstrap-pfa: 2.60e-17
RollingBand-fgt: 1.00 [5/5]
GhostDiagnostic-chr: -0.7396
Centroid-sig: 74.2%
Centroid-so: 0.315 arcsec [0.54σ]
OotOffset-rm: 0.167 arcsec [0.41σ]
OotOffset-st: 2/2/2 [8]
KicOffset-rm: 0.146 arcsec [0.50σ]
KicOffset-st: 2/2/2 [8]
DiffImageQuality-fgm: 0.50 [4/8]
DiffImageOverlap-fno: 0.00 [0/9]

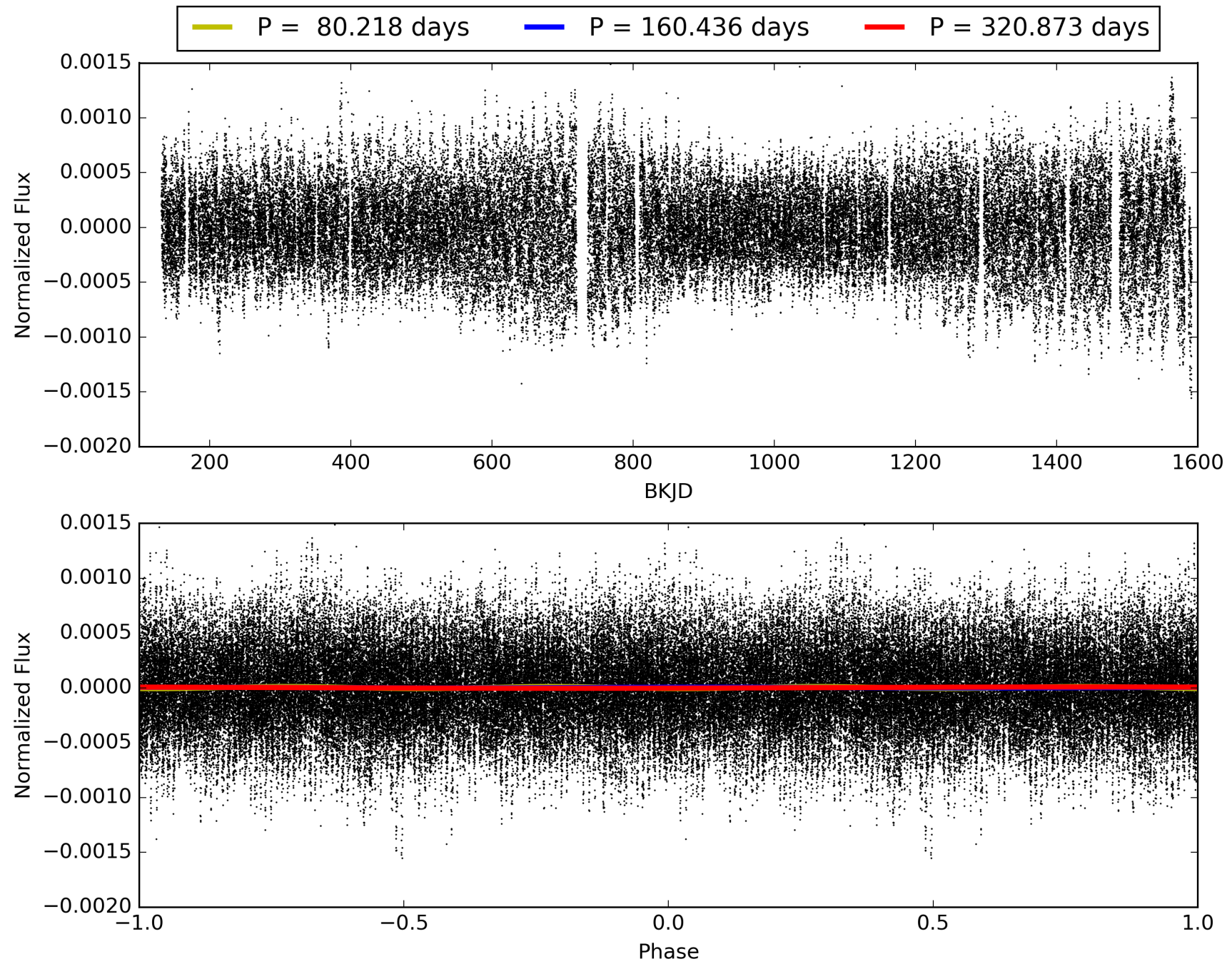
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 08:01:12 Z

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

TCE 004739229-03, PDC Light Curves

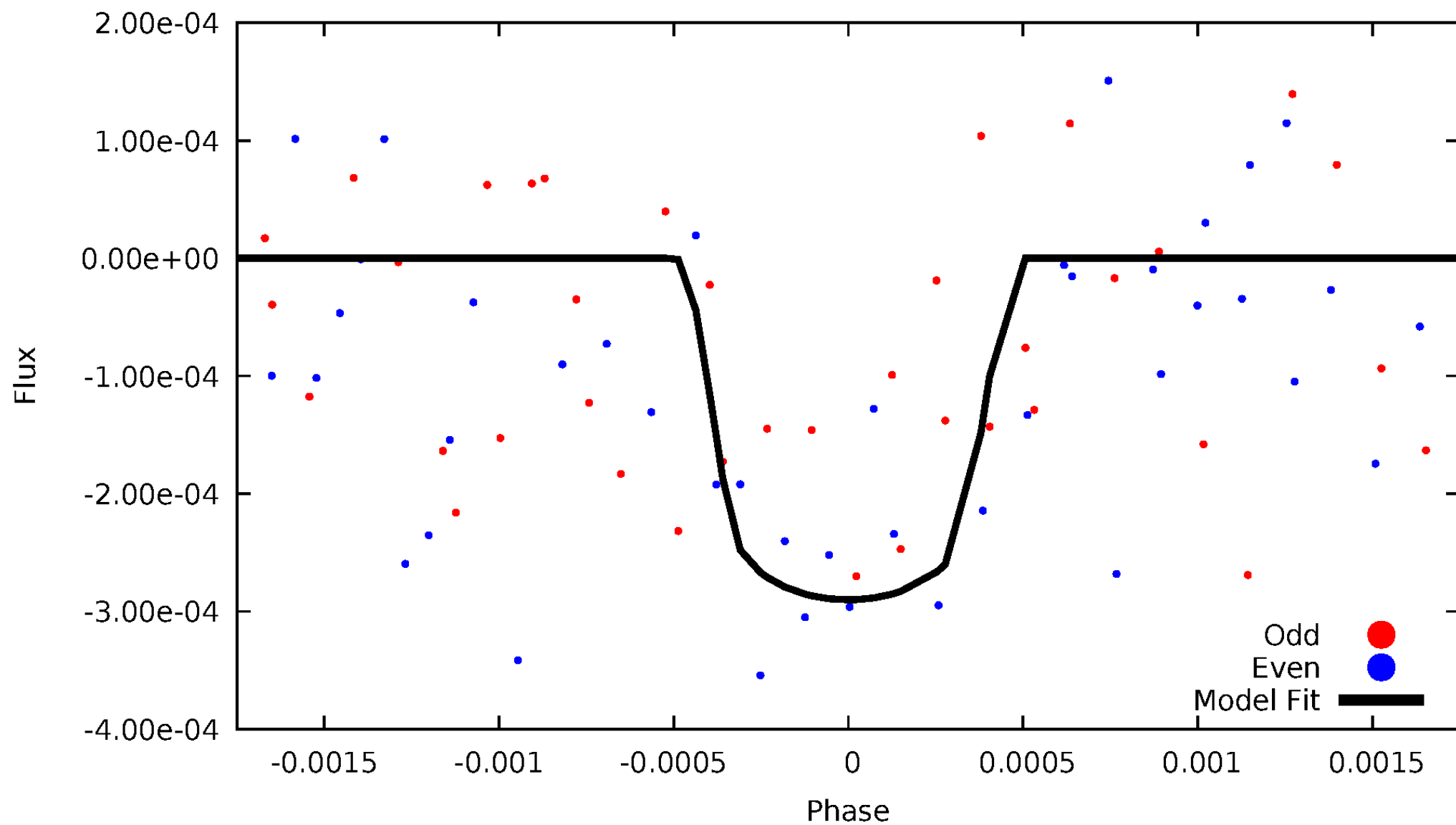


TCE 004739229-03



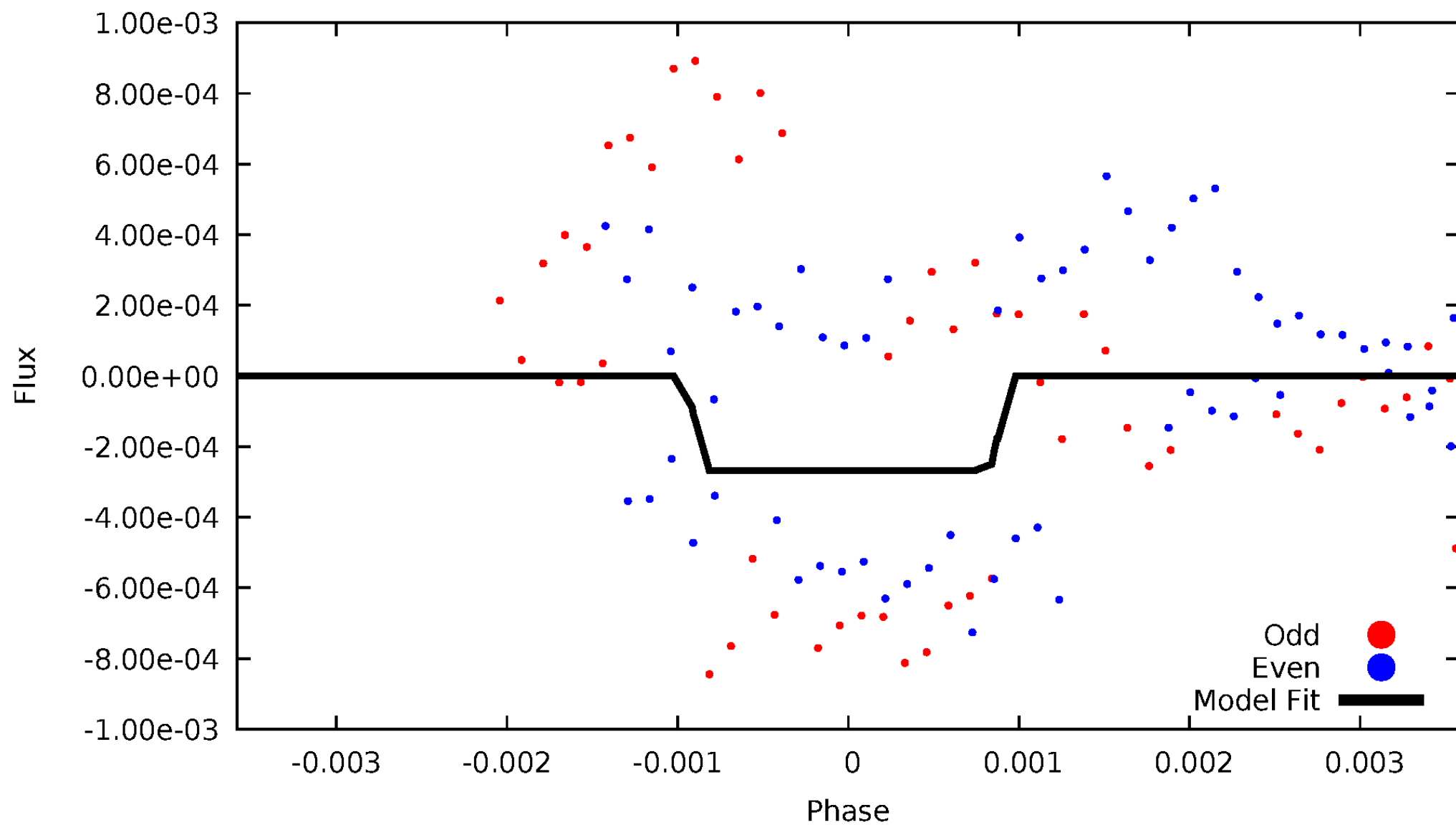
DV Odd/Even

TCE 004739229-03



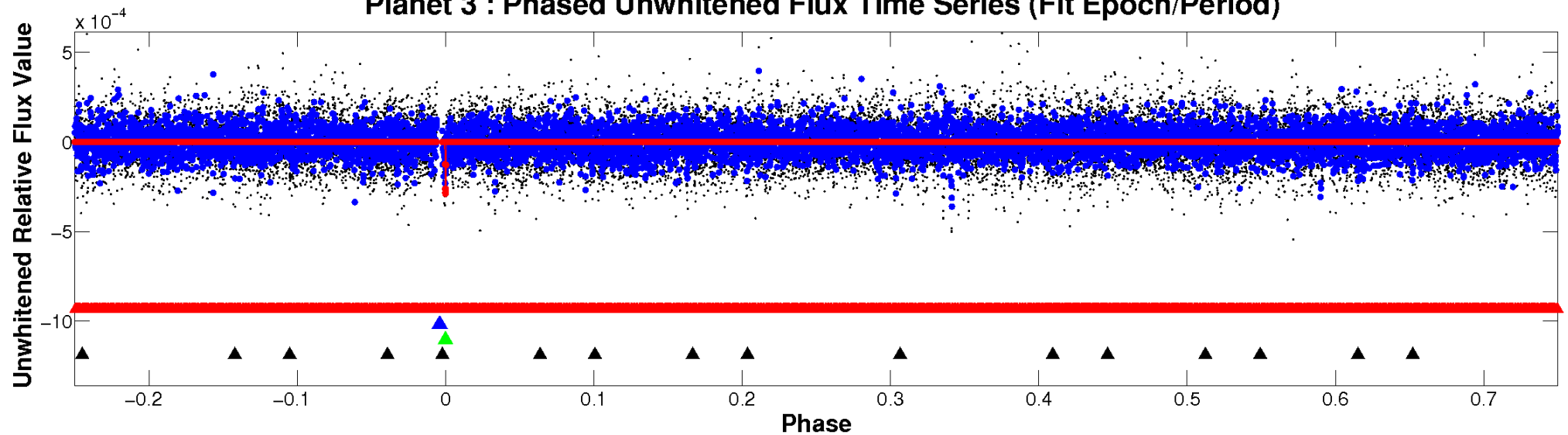
ALT Odd/Even

TCE 004739229-03

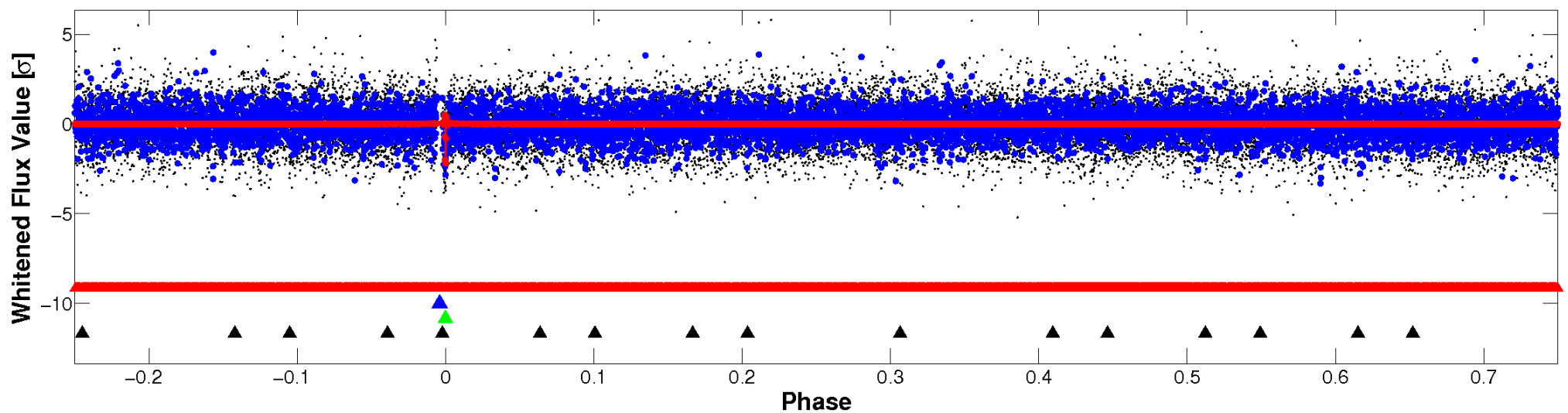


Non-Whitened Vs. Whitened Light Curve

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

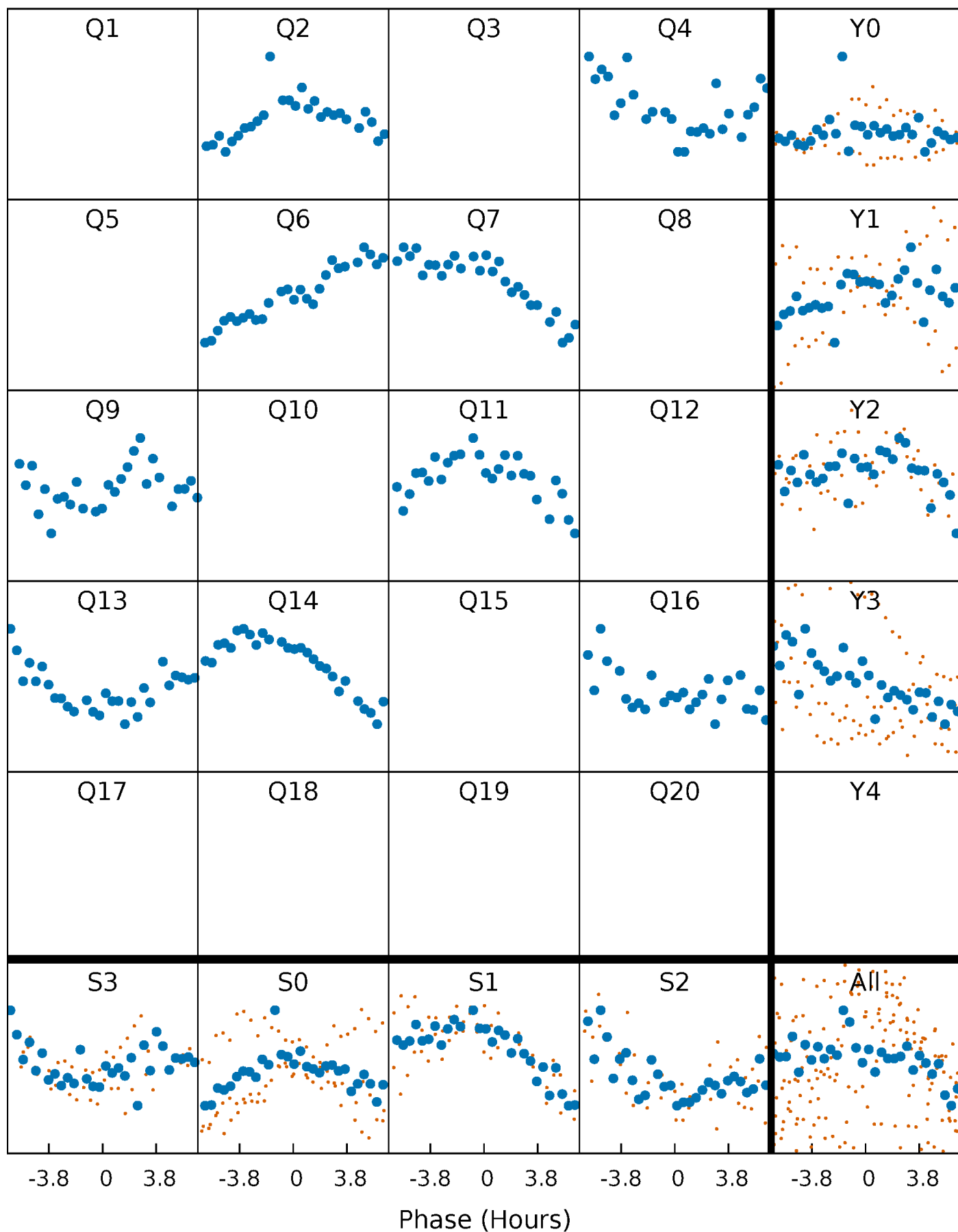


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



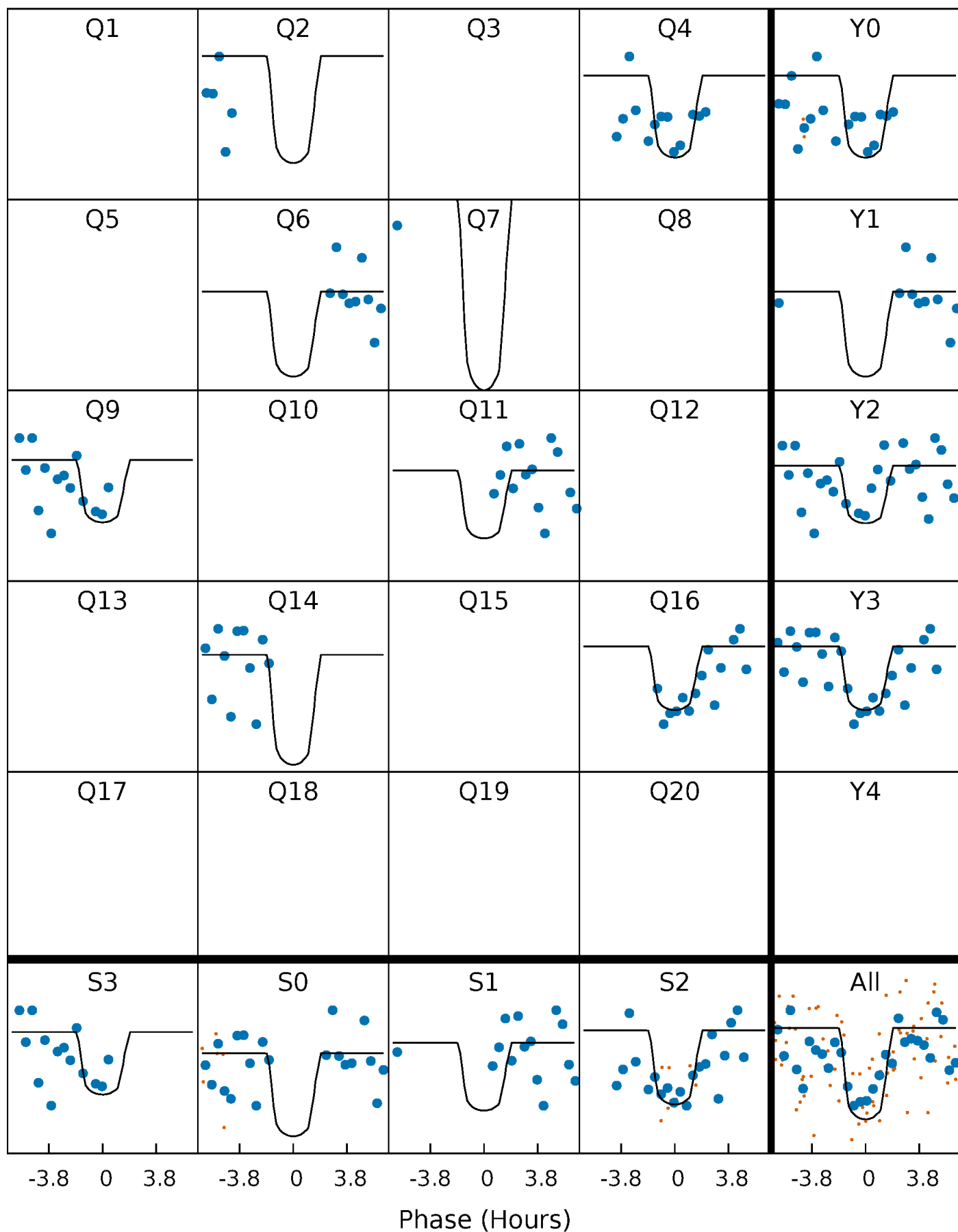
PDC Quarter-Phased Transit Curves

TCE 004739229-03 P=160.436301 Days $T_0=227.347198$ (BKJD)



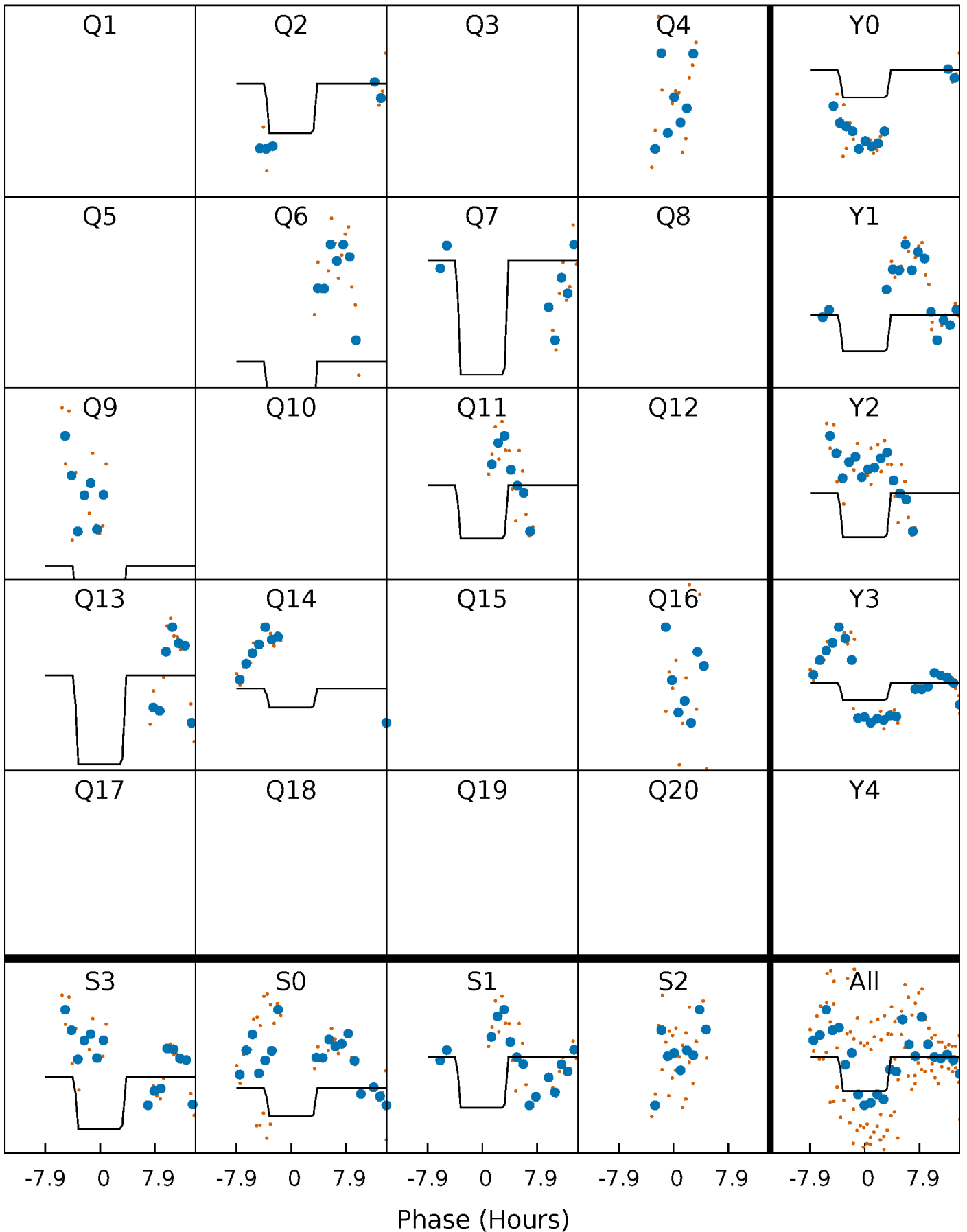
DV Quarter-Phased Transit Curves

TCE 004739229-03 P=160.436301 Days $T_0=227.347198$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

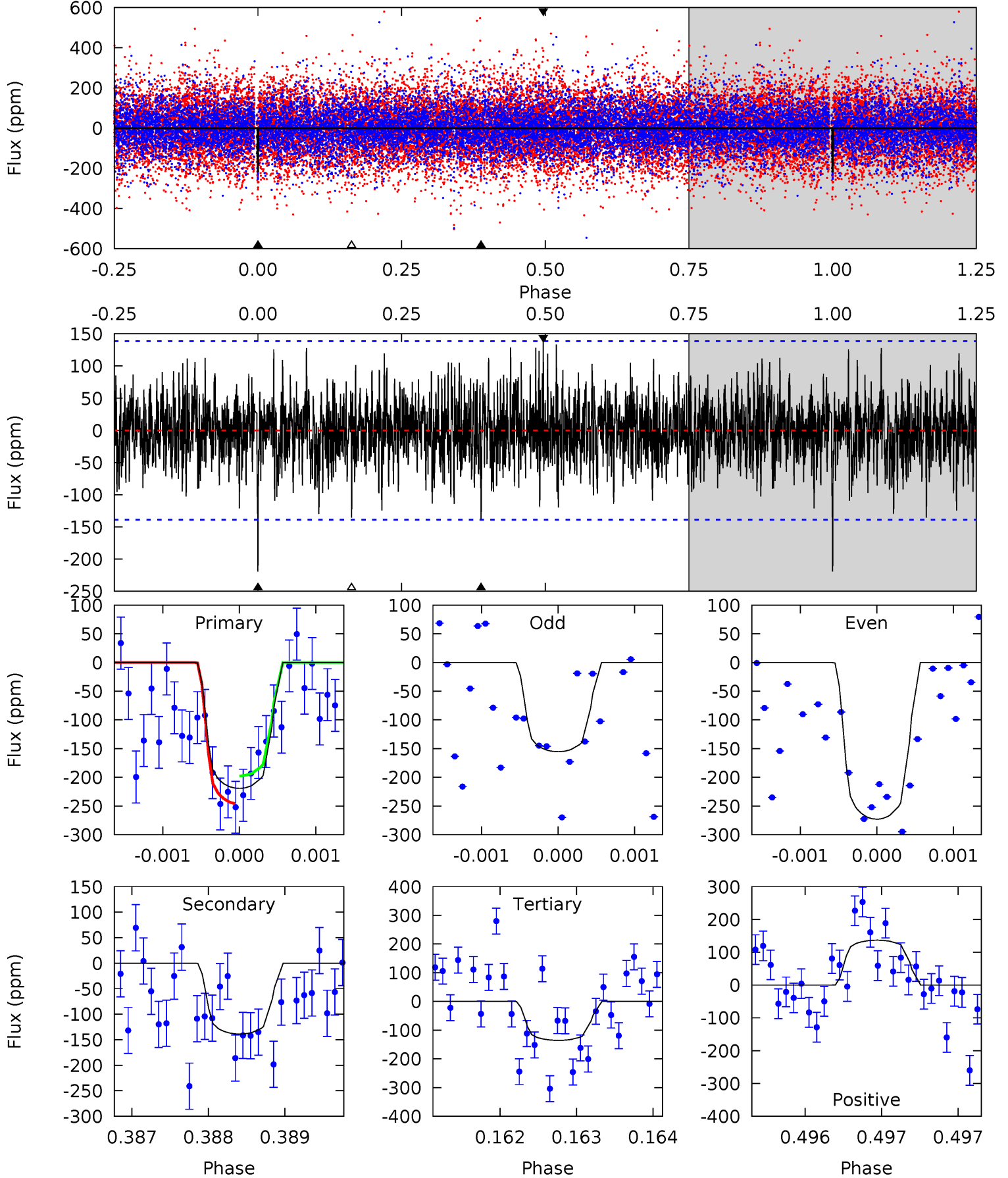
TCE 004739229-03 P=160.444313 Days $T_0=227.289655$ (BKJD)



DV Model-Shift Uniqueness Test

004739229-03, P = 160.436301 Days, E = 66.910897 Days

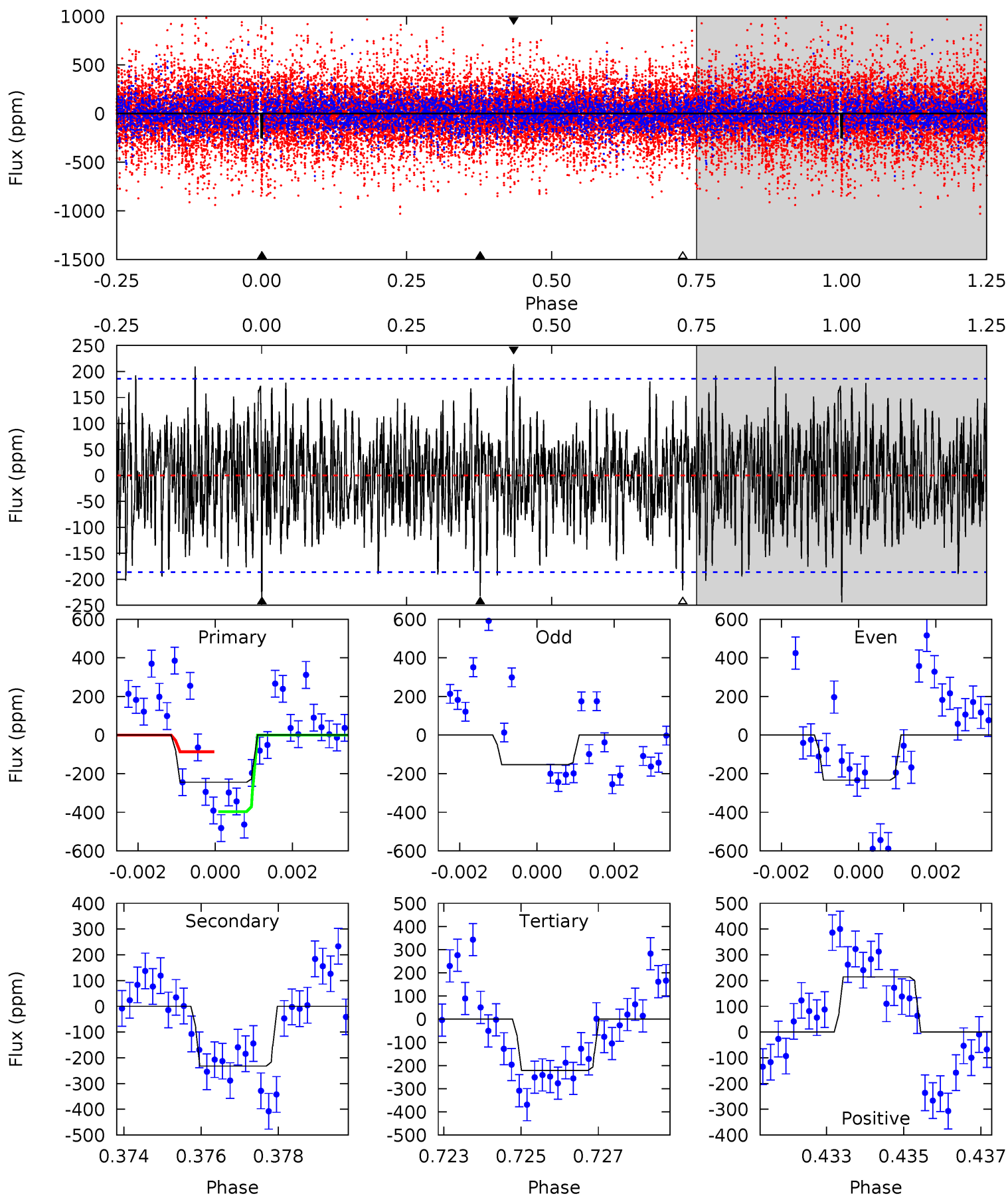
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.65	5.48	5.35	5.40	5.47	3.32	1.56	3.30	3.25	0.13	0.08	2.32	0.91	0.38	0.95



Alt Model-Shift Uniqueness Test

004739229-03, P = 160.444313 Days, E = 66.845342 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.02	6.67	6.35	6.15	5.35	3.12	1.95	0.67	0.87	0.31	0.51	1.17	0.65	0.47	4.42



Stellar Parameters For KIC 004739229

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6869^{+72}_{-92}	$4.125^{+0.099}_{-0.110}$	$0.020^{+0.150}_{-0.150}$	$1.726^{+0.301}_{-0.246}$	$1.450^{+0.111}_{-0.091}$	$0.397^{+0.196}_{-0.141}$
	+1%/-1%	+2%/-3%	+750%/-750%	+17%/-14%	+8%/-6%	+49%/-36%
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 004739229-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-139 ± 25	$3.77^{+2.74}_{-2.17}$	689^{+27}_{-26}	5355^{+2986}_{-1116}	2389^{+10313}_{-1633}
Alt.	-232 ± 35	$3.47^{+2.24}_{-2.03}$	689^{+30}_{-29}	6311^{+4593}_{-1392}	4496^{+22084}_{-2897}

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 $A_{obs} \gg 1.0$

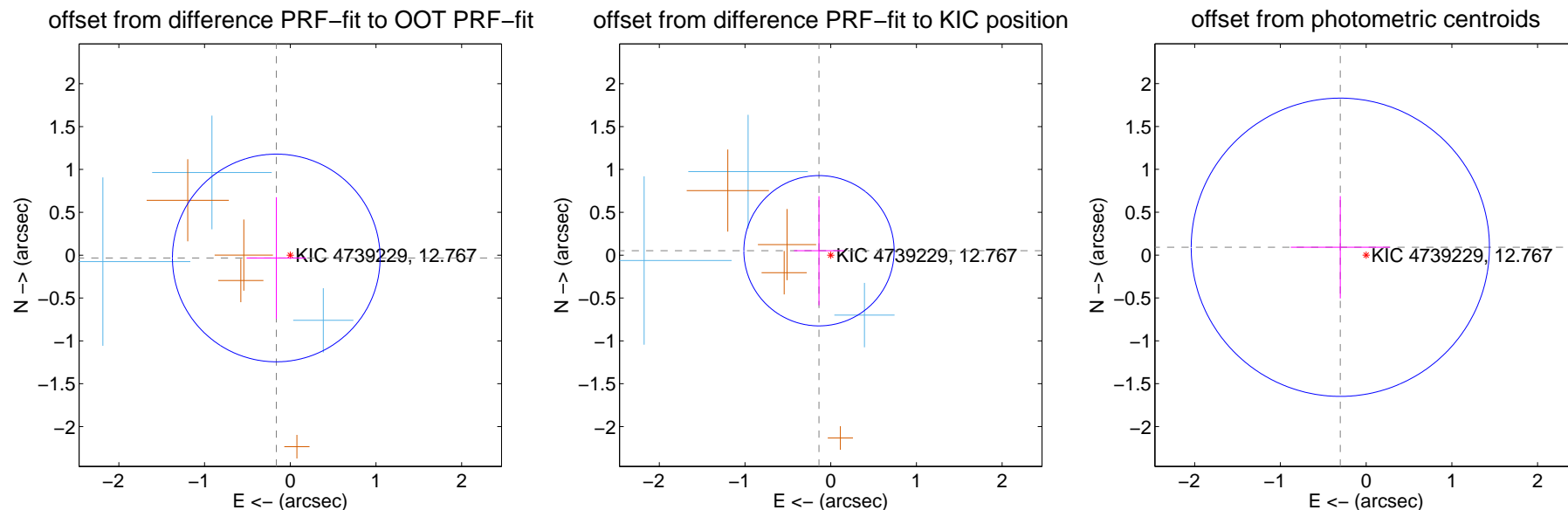
DV Centroid Data

Supplemental centroid analysis for 004739229-03. Kepler magnitude: 12.77. Transit SNR 8.75

There are 4 quarters with good PRF difference image offsets

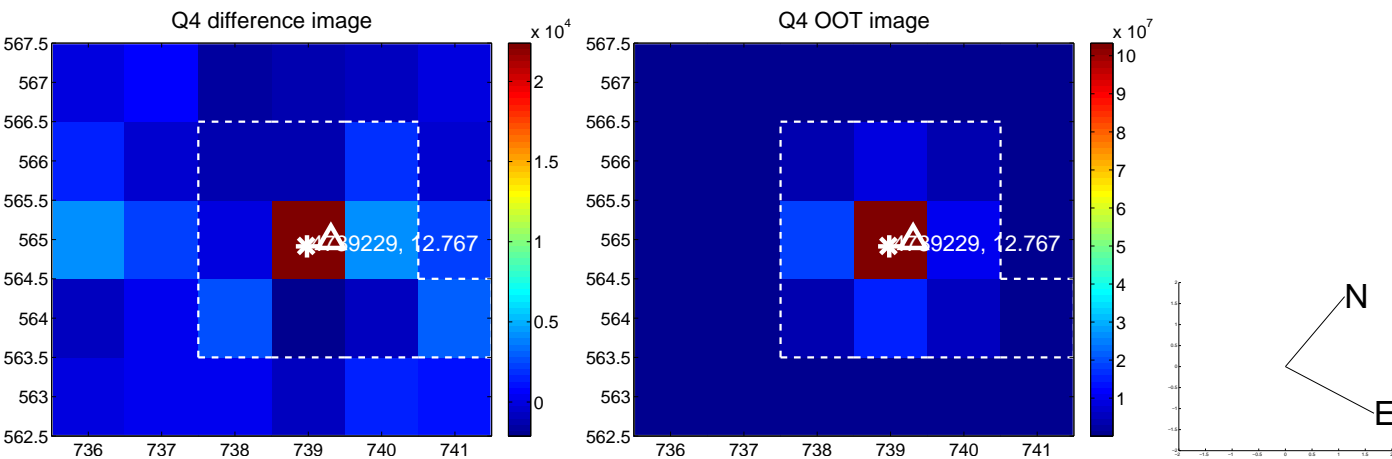
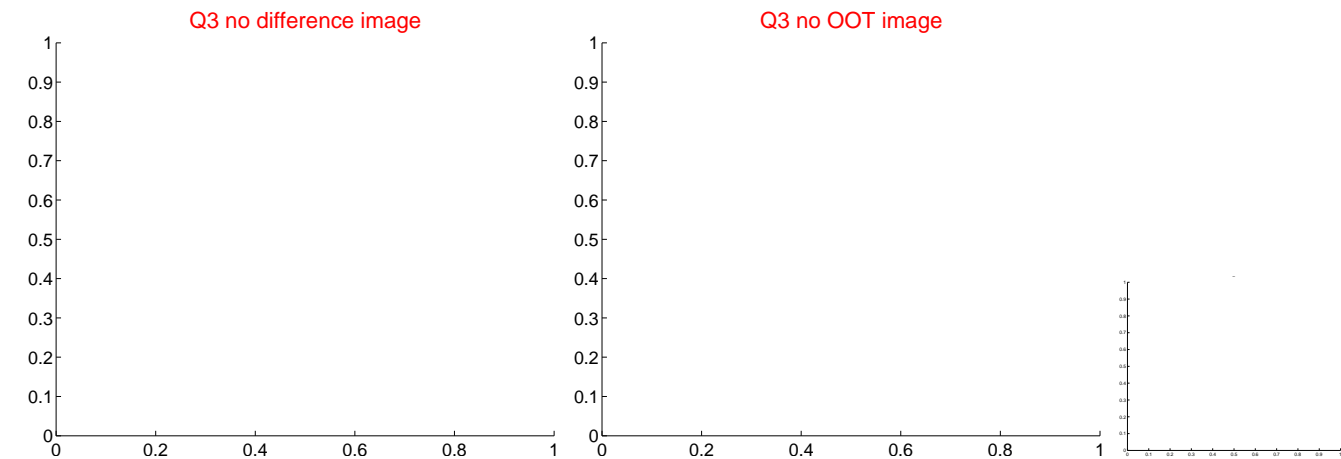
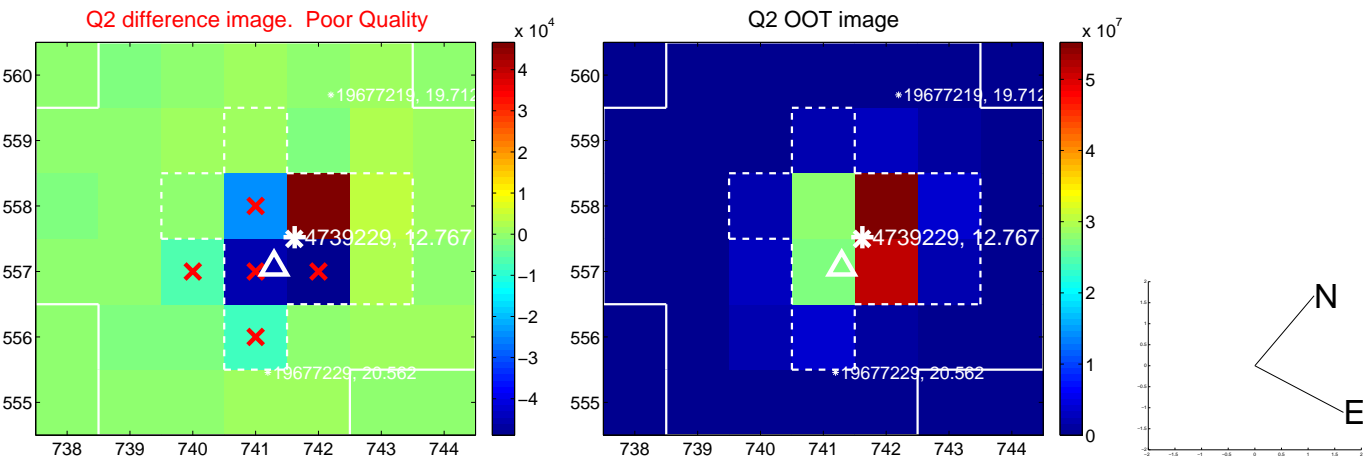
The direct PRF centroid is offset from the target star catalog position by about 0.04 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.167 ± 0.404	0.41	0.163 ± 0.347	-0.033 ± 0.709
PRF-fit source offset from KIC position	0.146 ± 0.292	0.50	0.137 ± 0.292	0.052 ± 0.637
photometric centroid source offset	0.31 ± 0.58	0.54	0.30 ± 0.58	0.09 ± 0.60



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

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



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

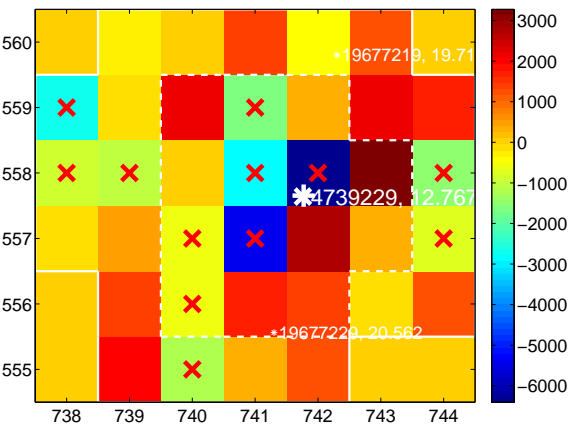
Q5 no difference image



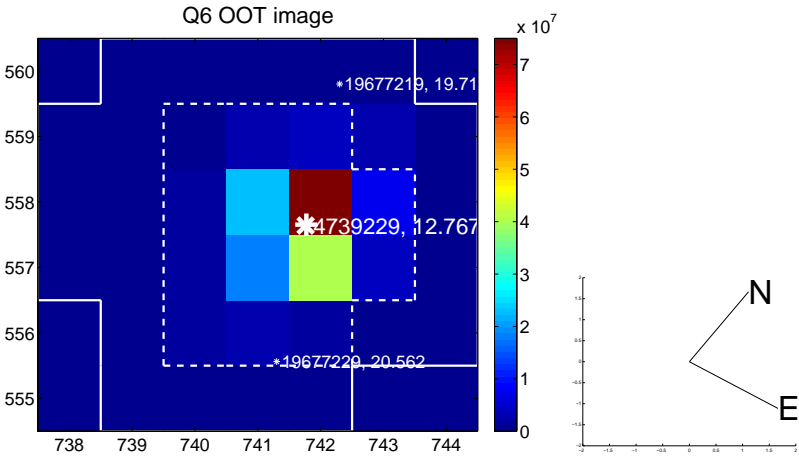
Q5 no OOT image



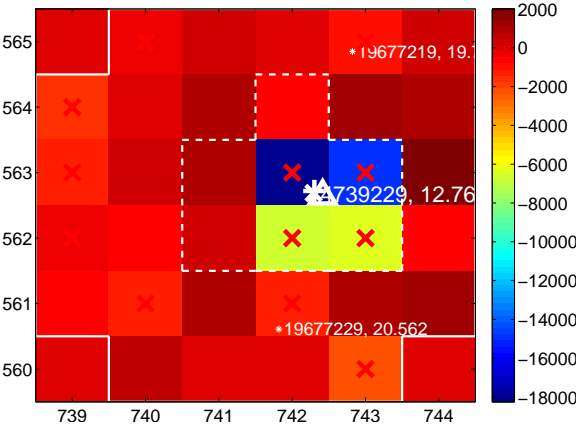
Q6 difference image. Poor Quality



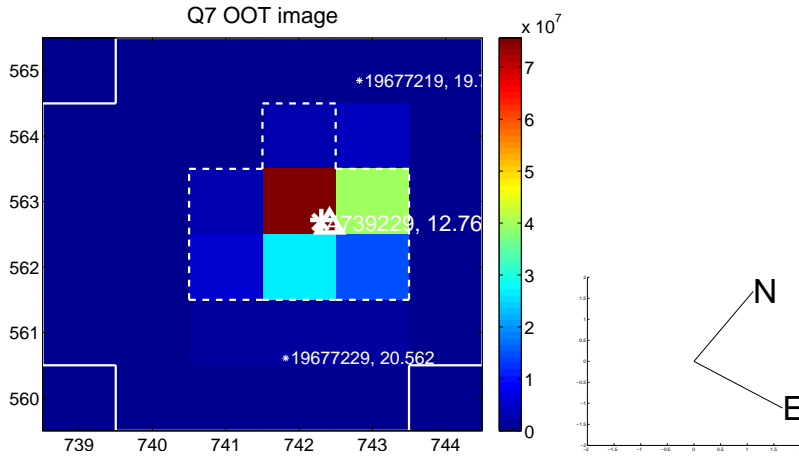
Q6 OOT image



Q7 difference image. Poor Quality



Q7 OOT image



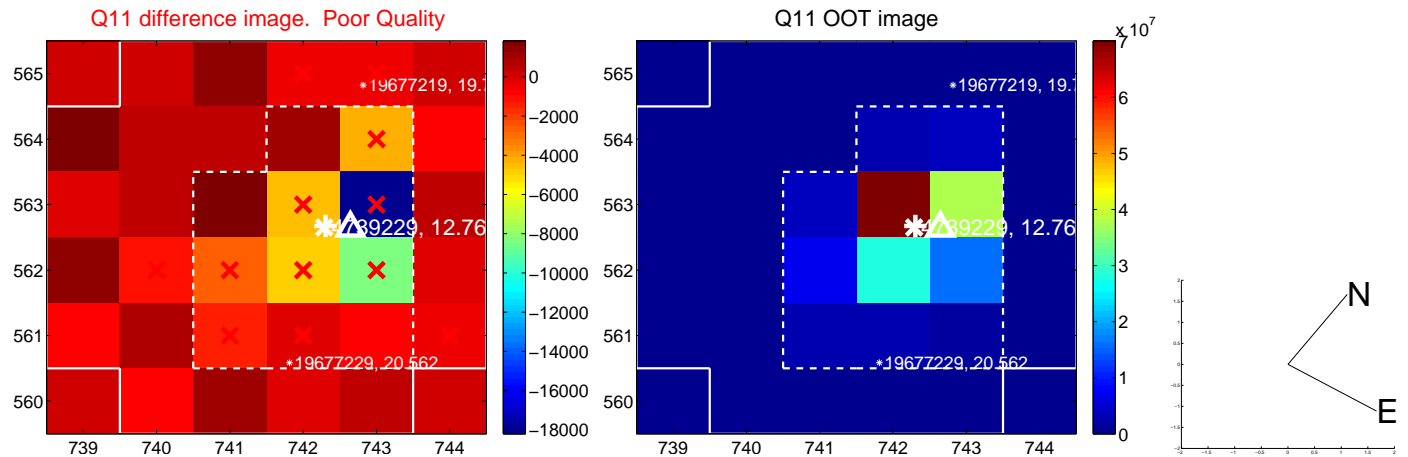
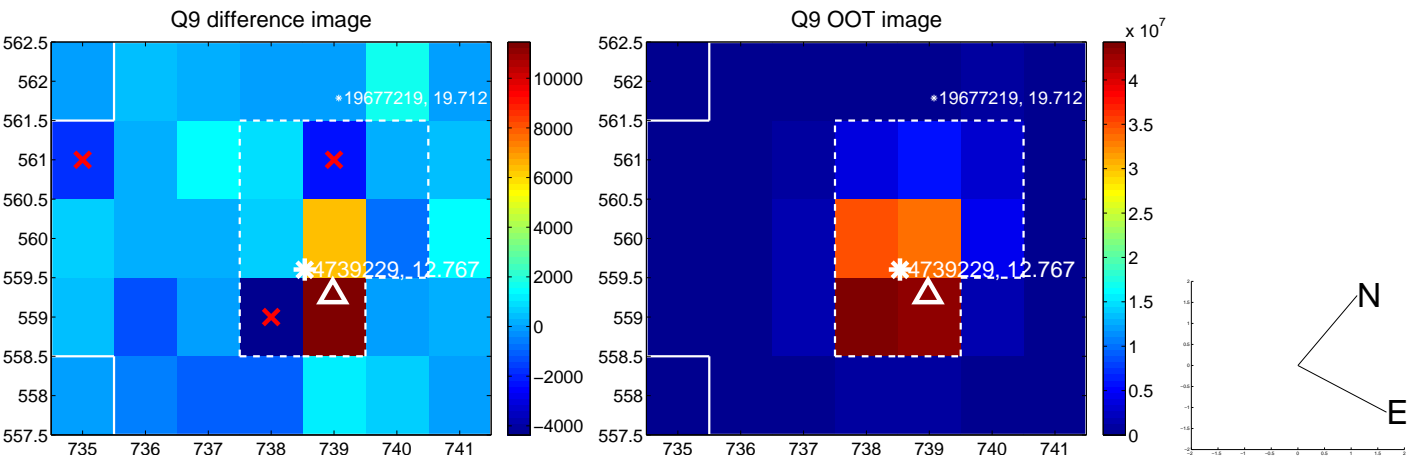
Q8 no difference image



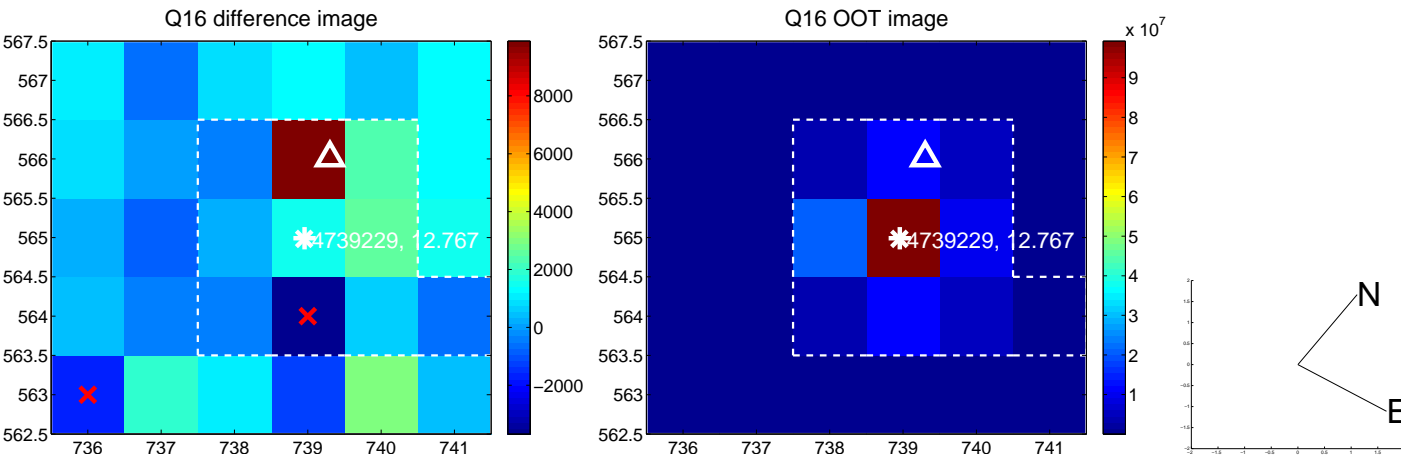
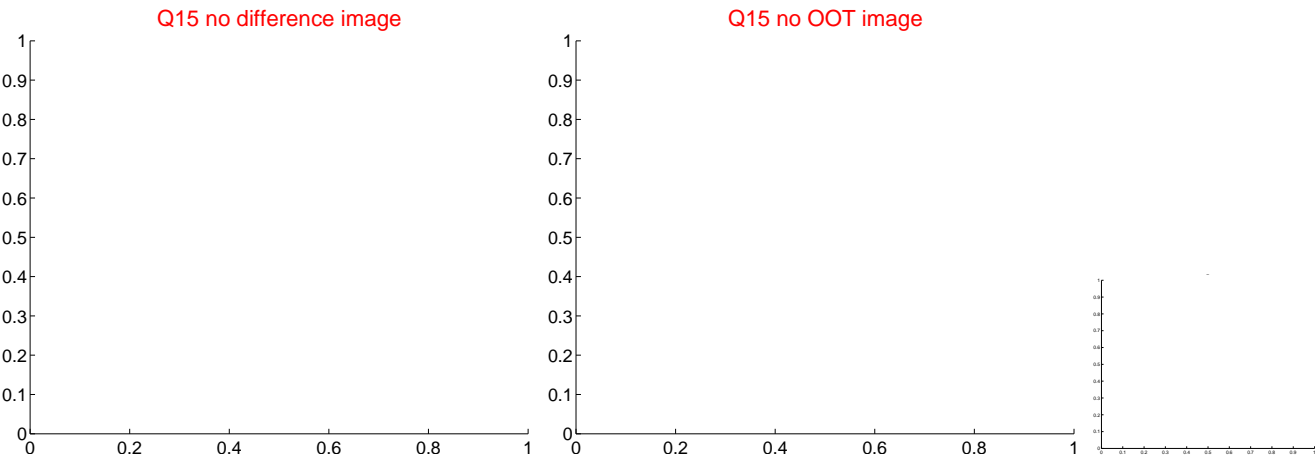
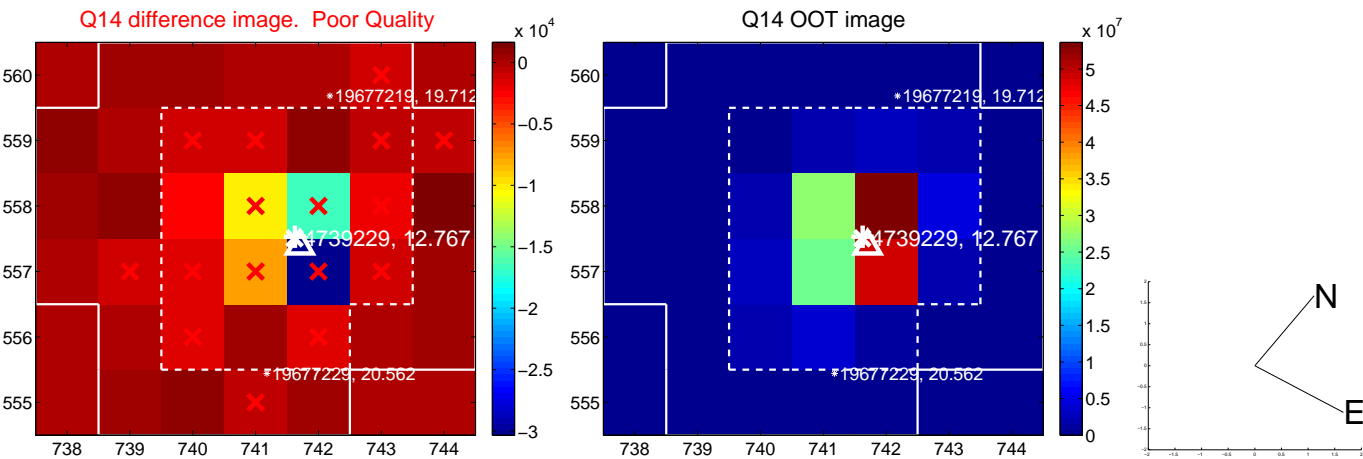
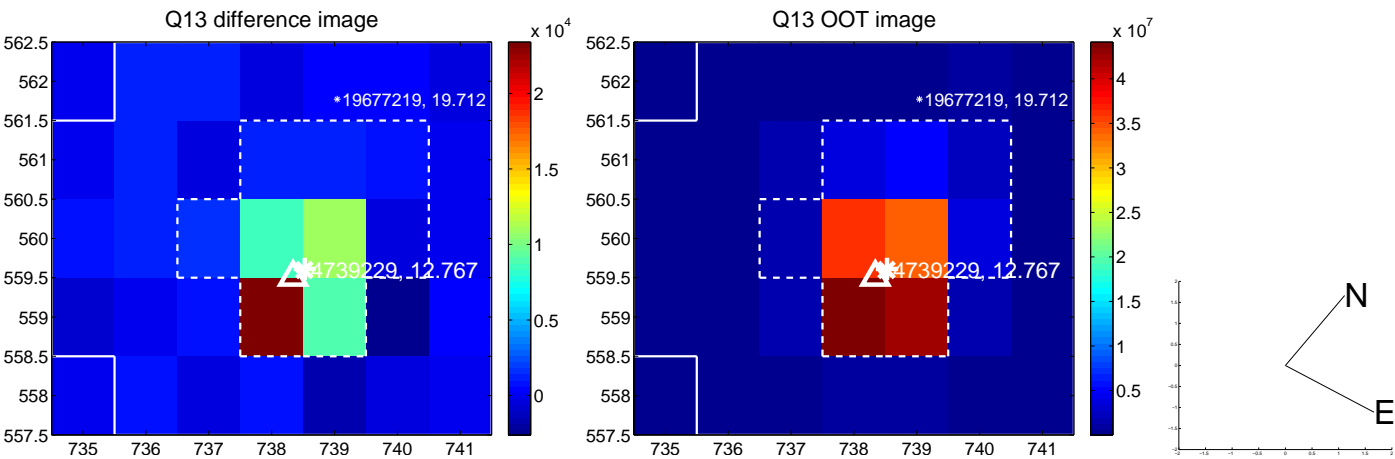
Q8 no OOT image



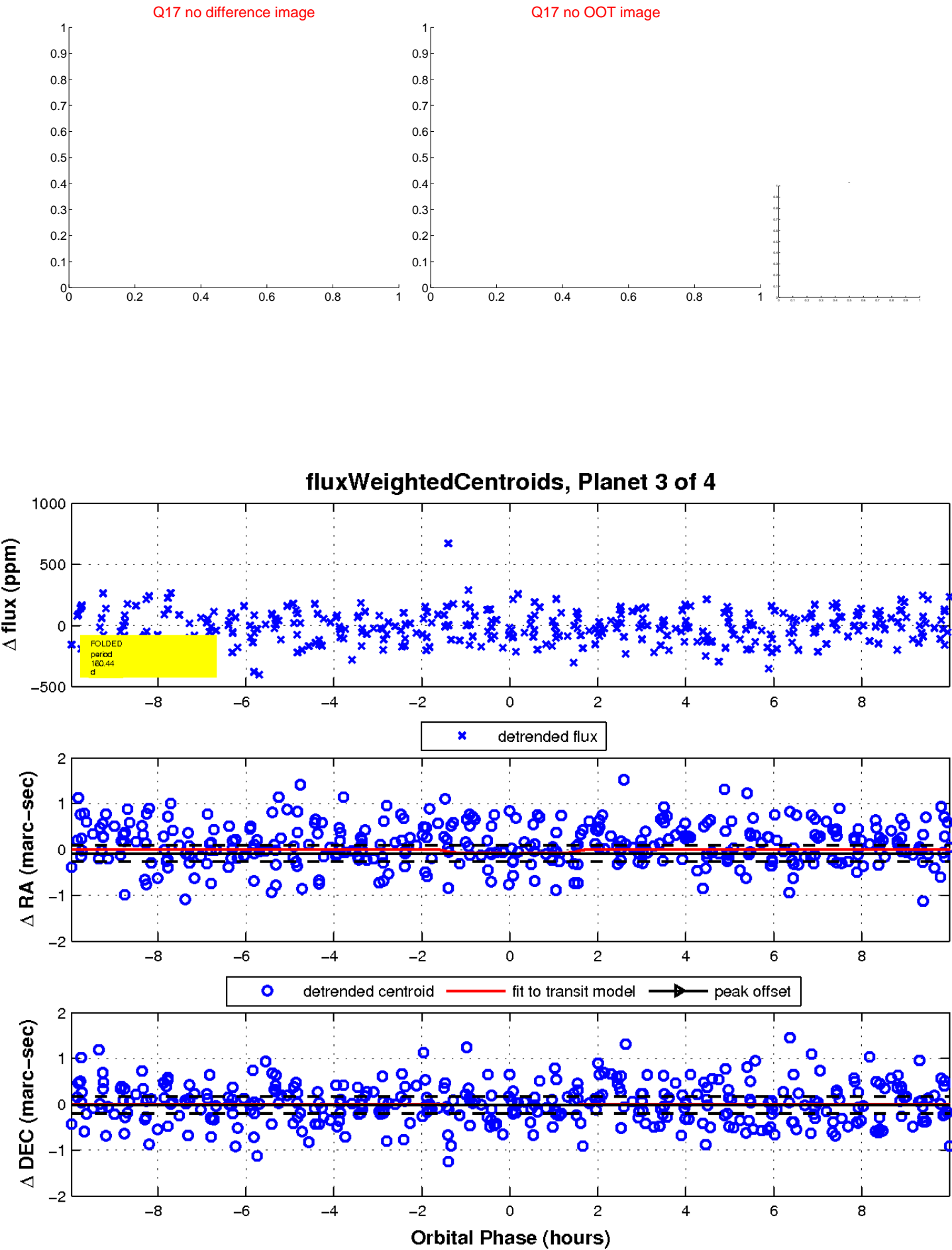
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

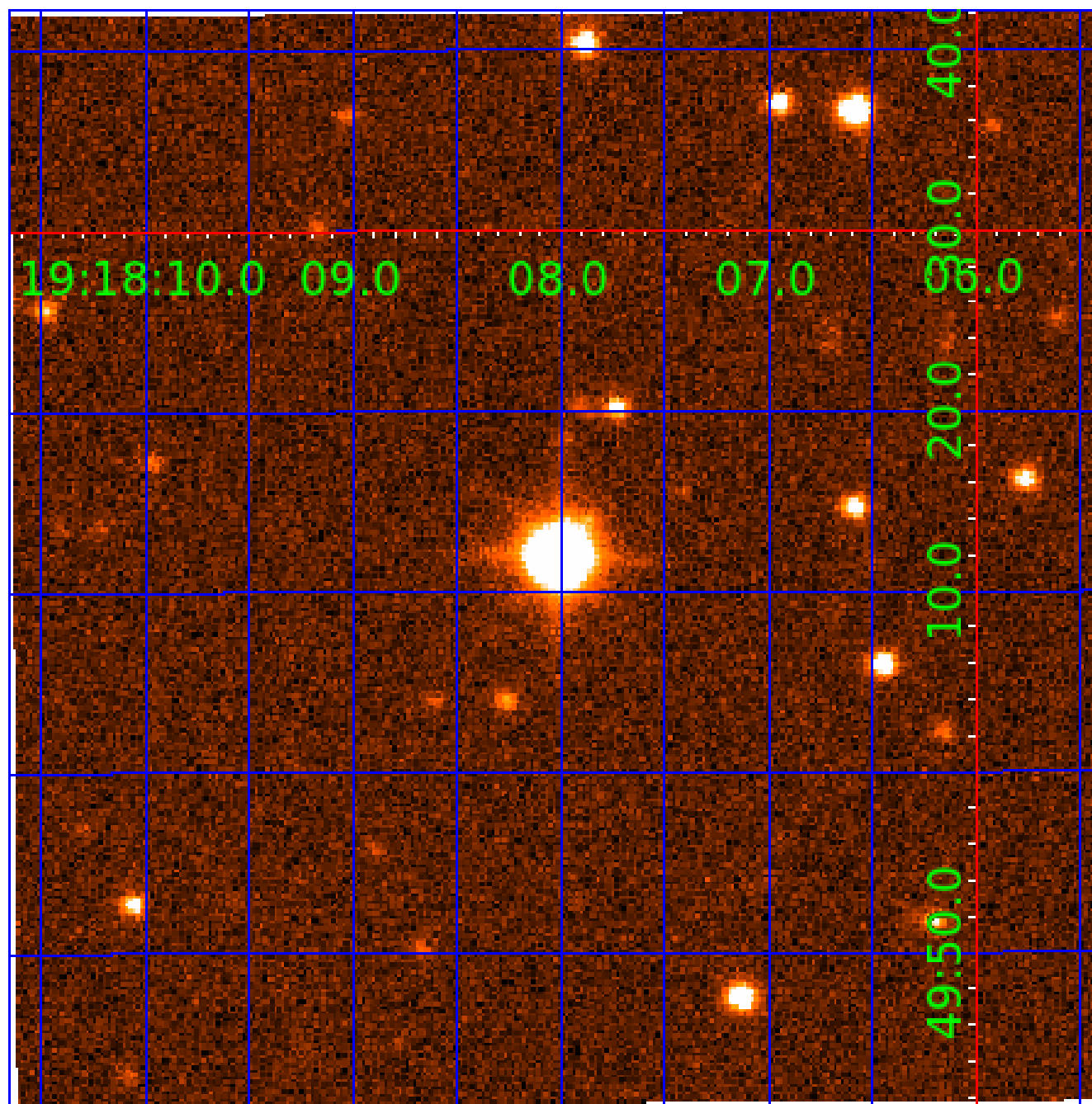


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 004739229

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})
004739229-01	OBS	No	0.913151	131.596116	18.3	4.747	10.9	11.4	1.73	6869	0.80	13670.11
004739229-02	OBS	No	160.426781	226.754607	74.6	4.869	11.2	2.6	1.73	6869	1.73	13.89
004739229-03	OBS	No	160.436301	227.347198	290.1	3.368	11.6	8.8	1.73	6869	3.42	13.89
004739229-04	OBS	No	88.472137	210.496417	217.4	3.874	8.5	7.9	1.73	6869	3.34	30.72

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004739229-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_ALT
004739229-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS
004739229-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—SAME_NTL_PERIOD
004739229-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT

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

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

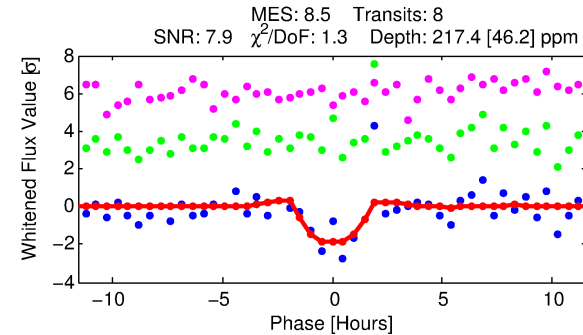
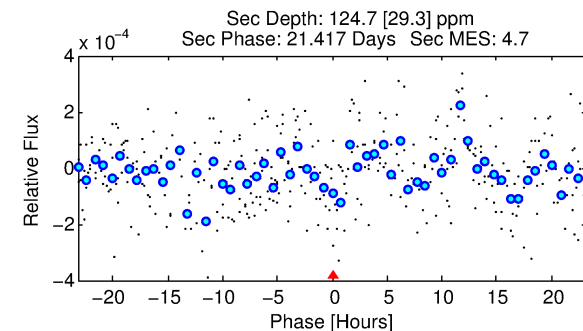
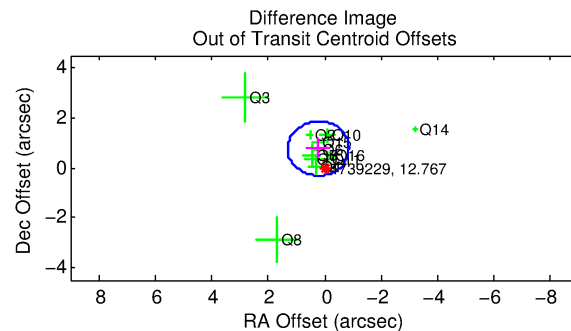
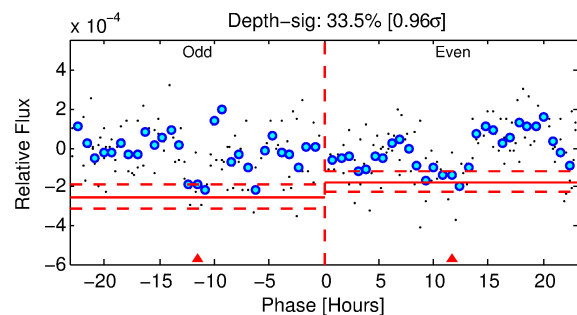
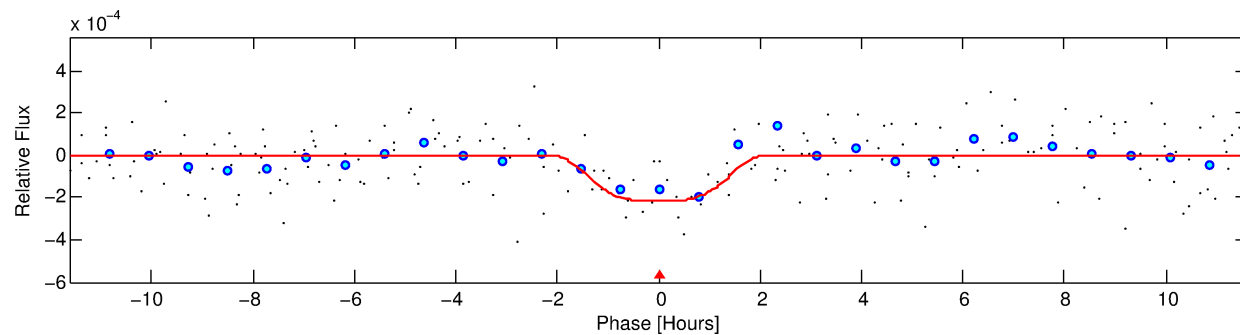
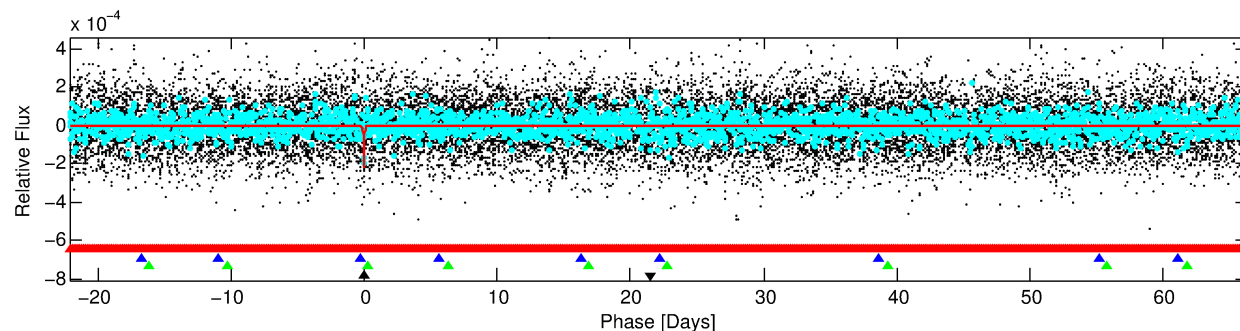
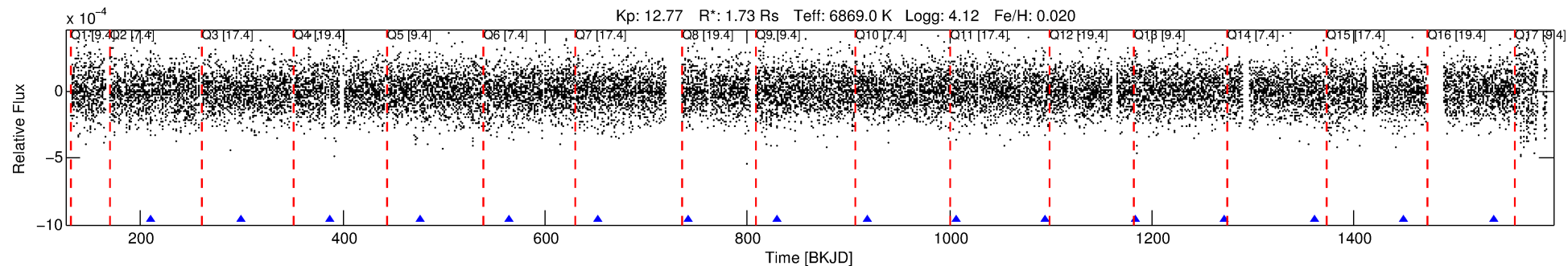
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004739229-04

No Significant Match Found

DV One-Page Summary

KIC: 4739229 Candidate: 4 of 4 Period: 88.472 d
KOI: K06118 Corr: No Ephemeris Match



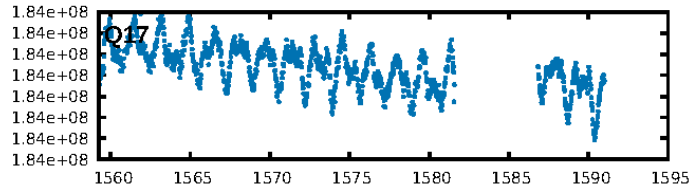
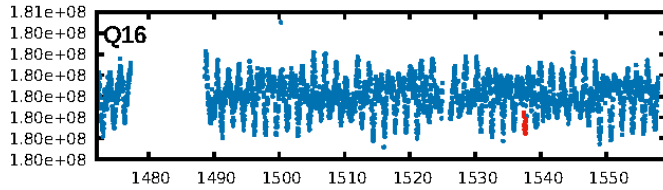
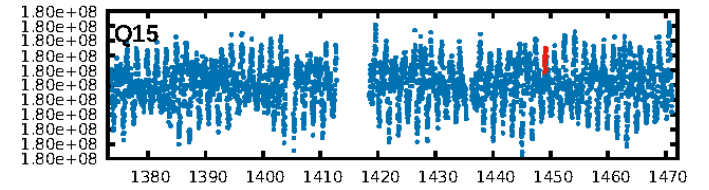
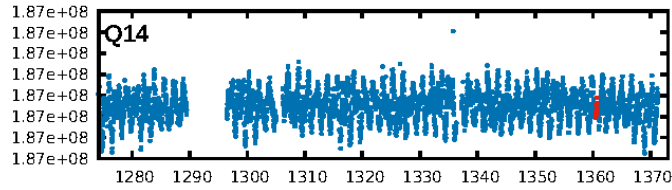
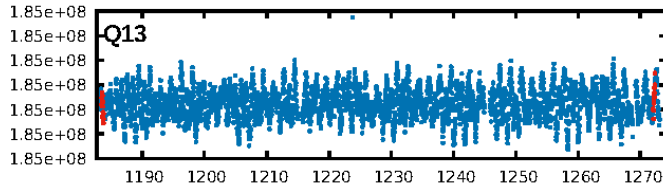
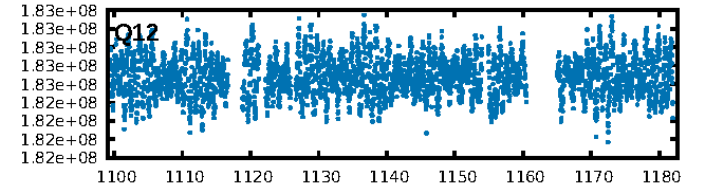
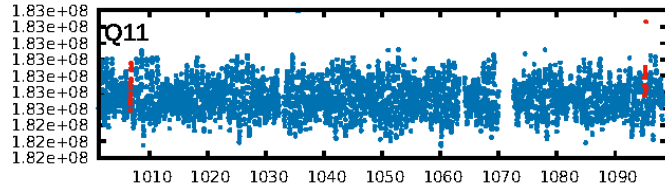
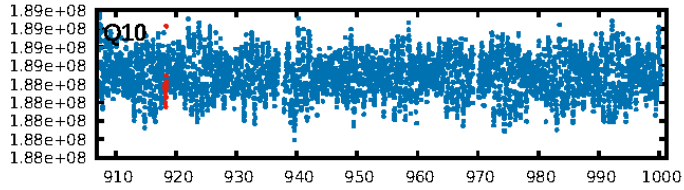
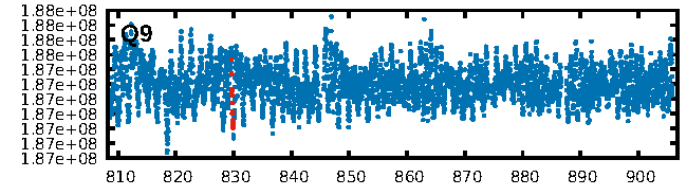
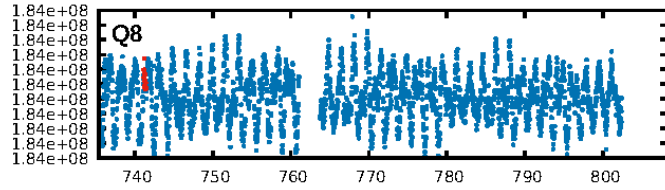
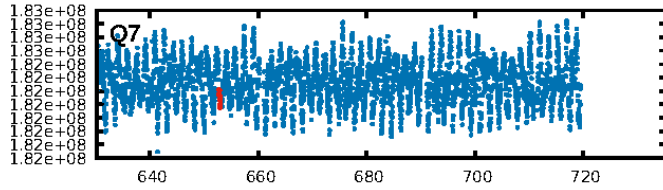
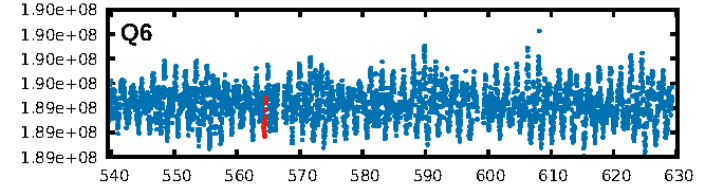
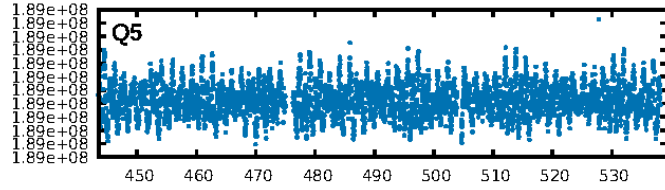
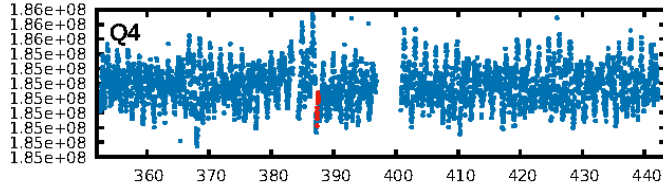
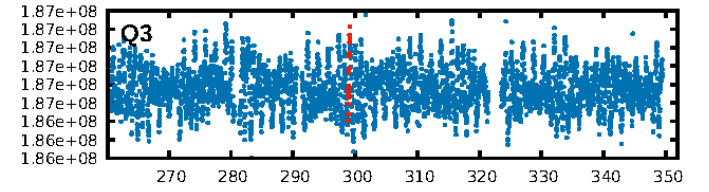
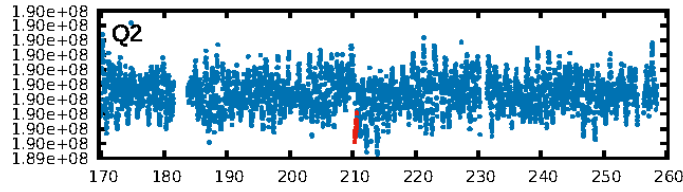
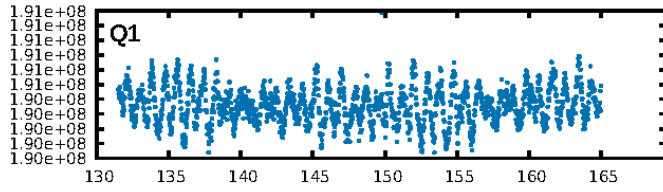
DV Fit Results:

Period = 88.47214 [0.00171] d
Epoch = 210.4964 [0.0137] BKJD
Rp/R* = 0.0177 [0.0025]
a/R* = 48.85 [17.15]
b = 0.98 [0.02]
Seff = 30.72 [6.51]
Teff = 600 [32] K
Rp = 3.34 [0.75] Re
a = 0.4398 [0.0632] AU
Ag = 1192.38 [505.10] [2.36 σ]
Teffp = 5454 [511] K [9.49 σ]

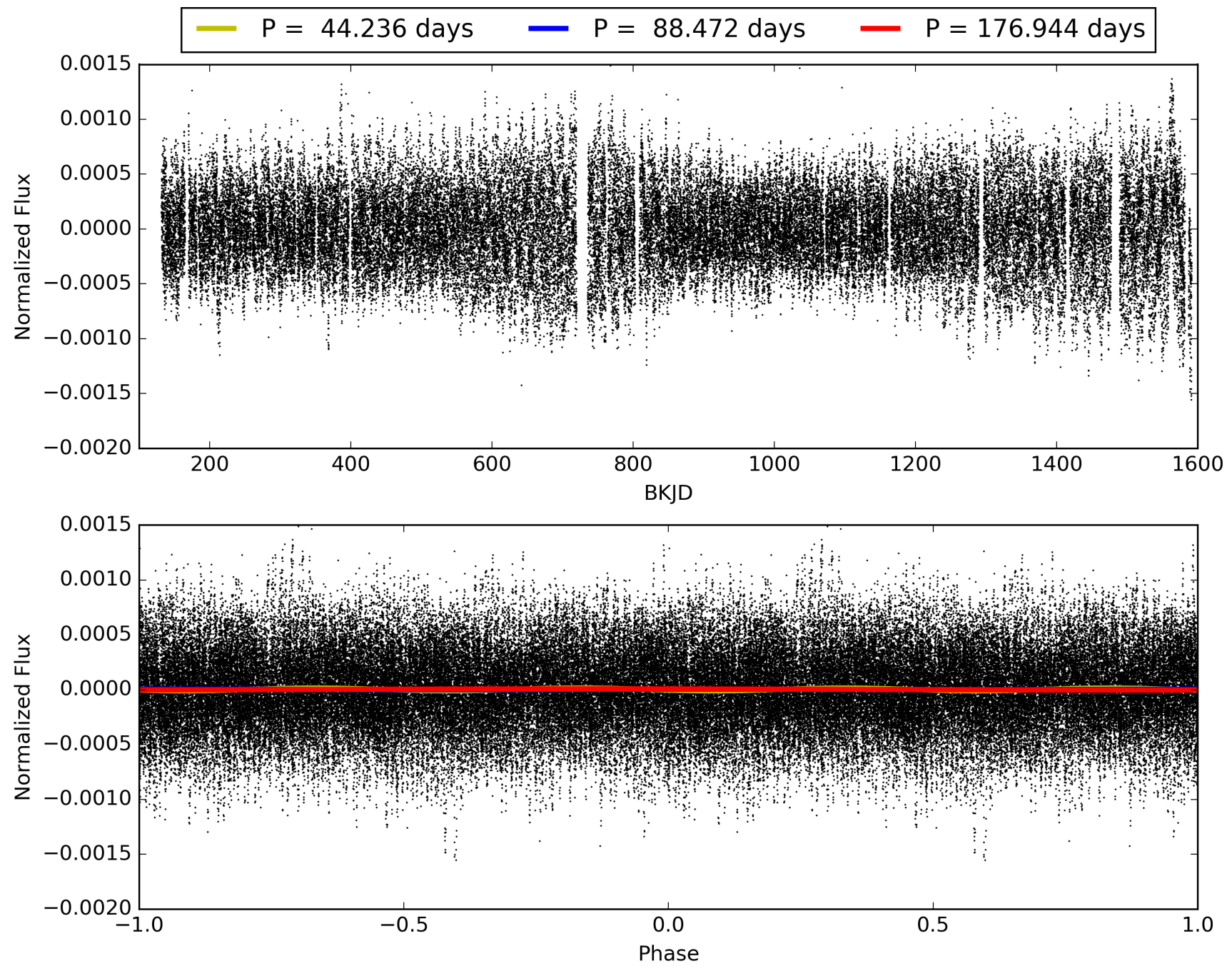
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [342.97 σ]
LongPeriod-sig: 100.0% [277.53 σ]
ModelChiSquare2-sig: 35.1%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 5.36e-11
RollingBand-fgt: 1.00 [8/8]
GhostDiagnostic-chr: 1.98
Centroid-sig: 3.4%
Centroid-so: 0.922 arcsec [1.37 σ]
OotOffset-rm: 0.797 arcsec [2.20 σ]
KicOffset-rm: 0.869 arcsec [2.64 σ]
OotOffset-st: 4/4/3/1 [12]
KicOffset-st: 4/4/3/1 [12]
DiffImageQuality-fgm: 0.50 [6/12]
DiffImageOverlap-fno: 0.00 [0/13]

TCE 004739229-04, PDC Light Curves

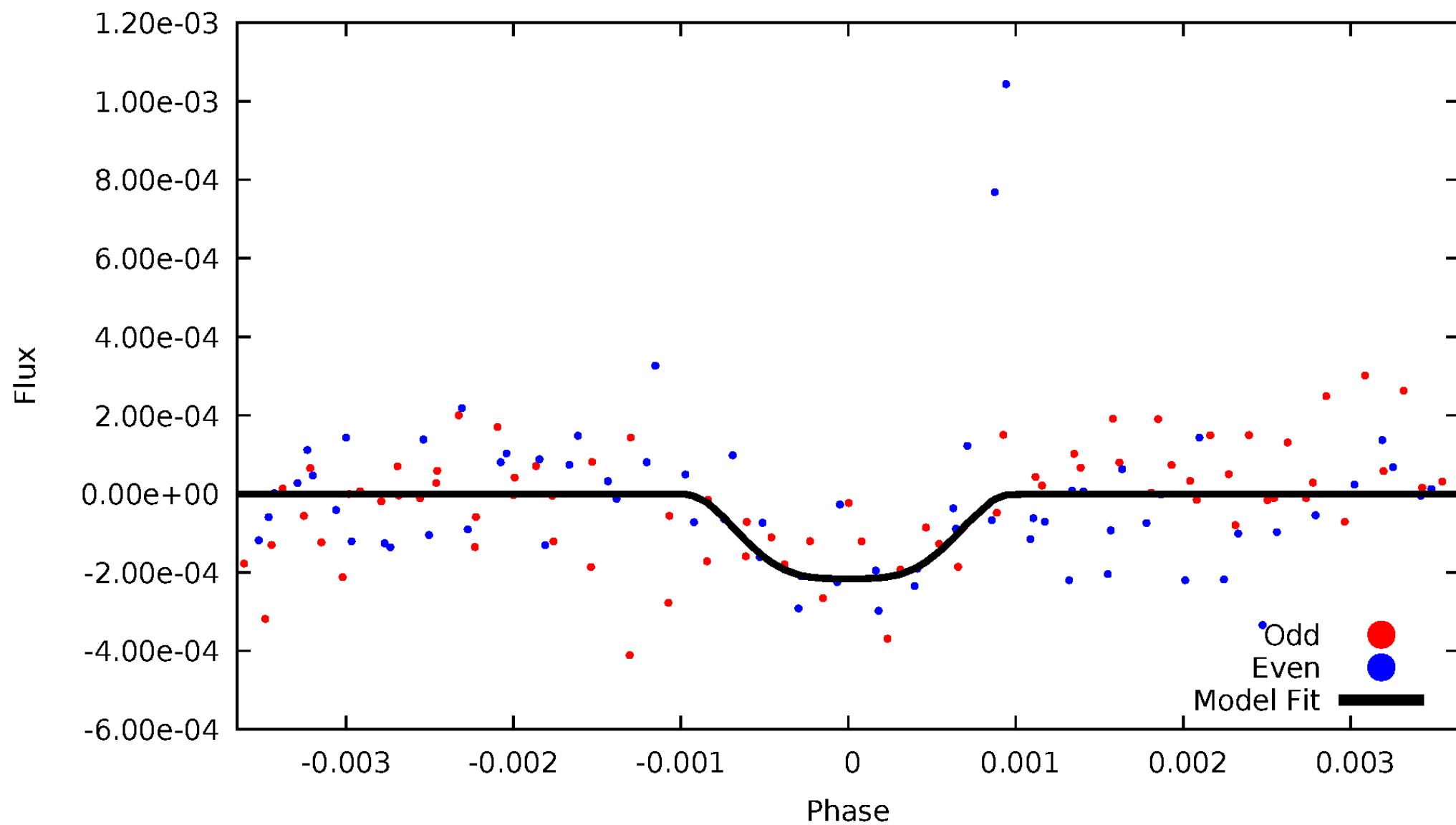


TCE 004739229-04



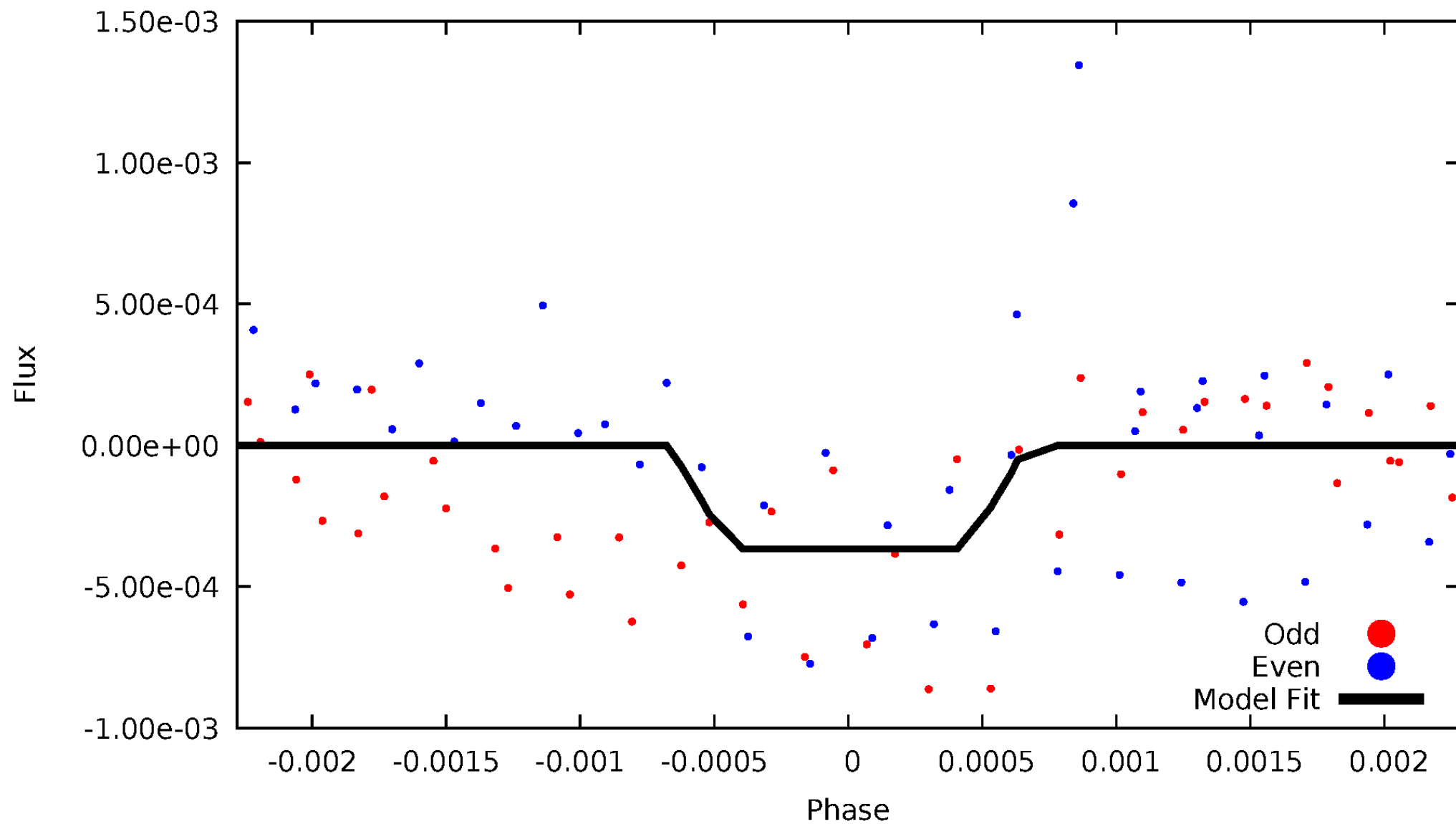
DV Odd/Even

TCE 004739229-04



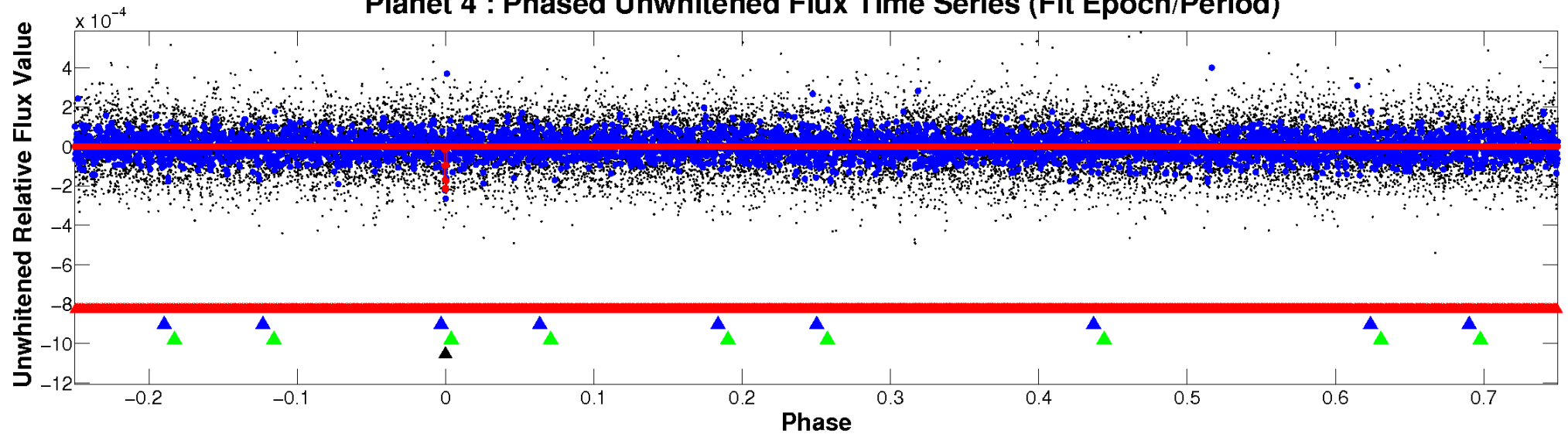
ALT Odd/Even

TCE 004739229-04

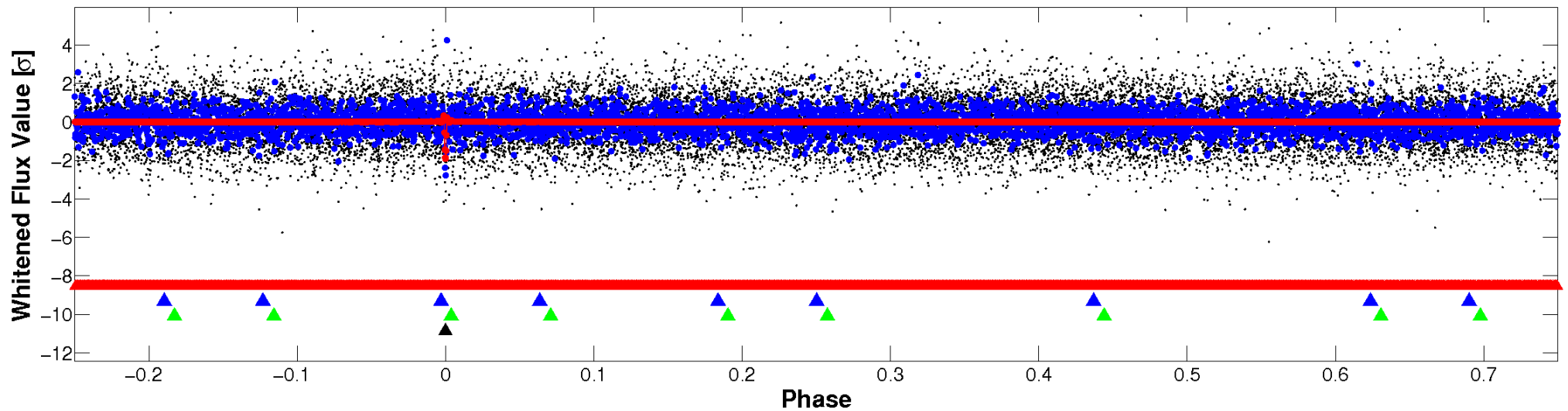


Non-Whitened Vs. Whitened Light Curve

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

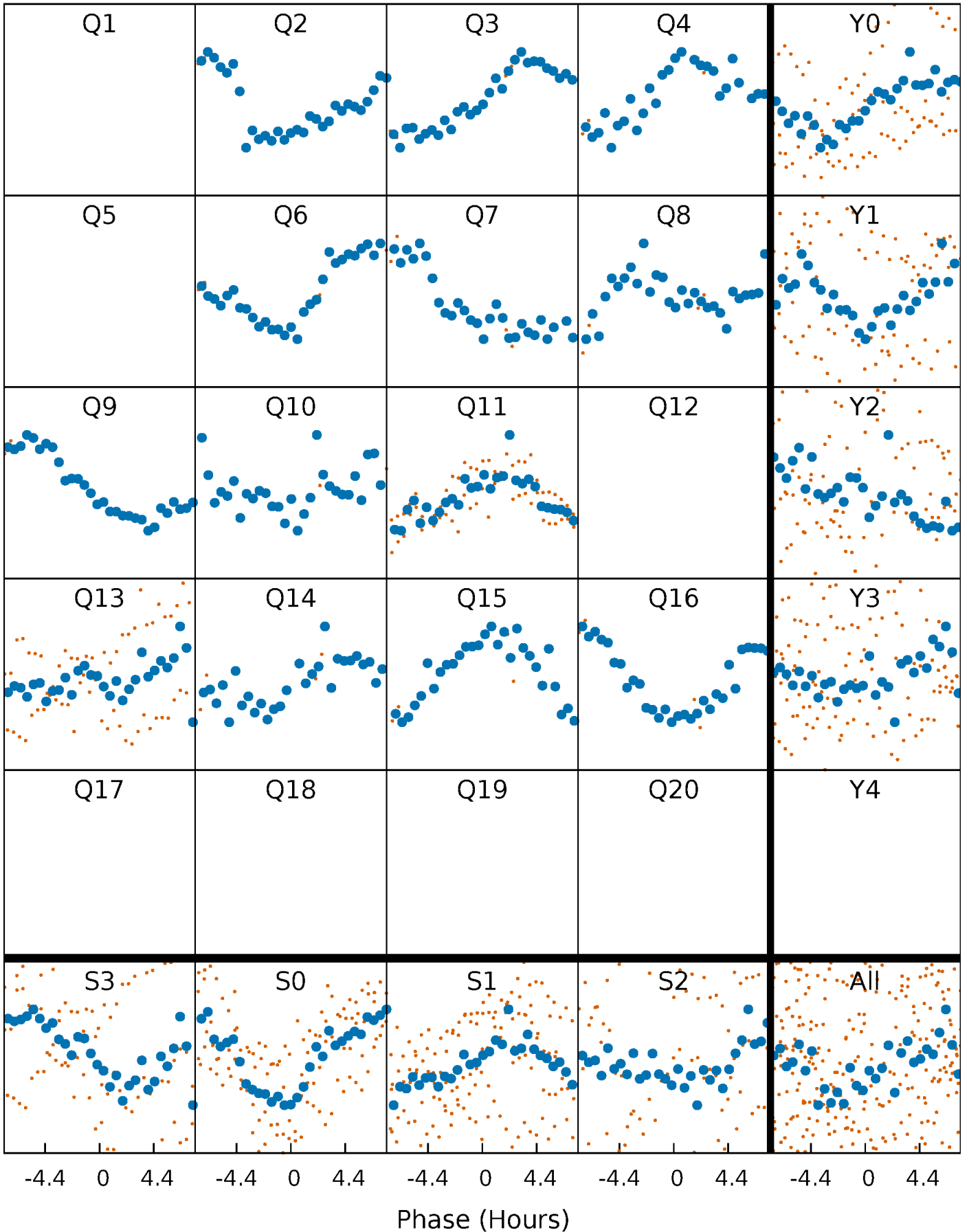


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



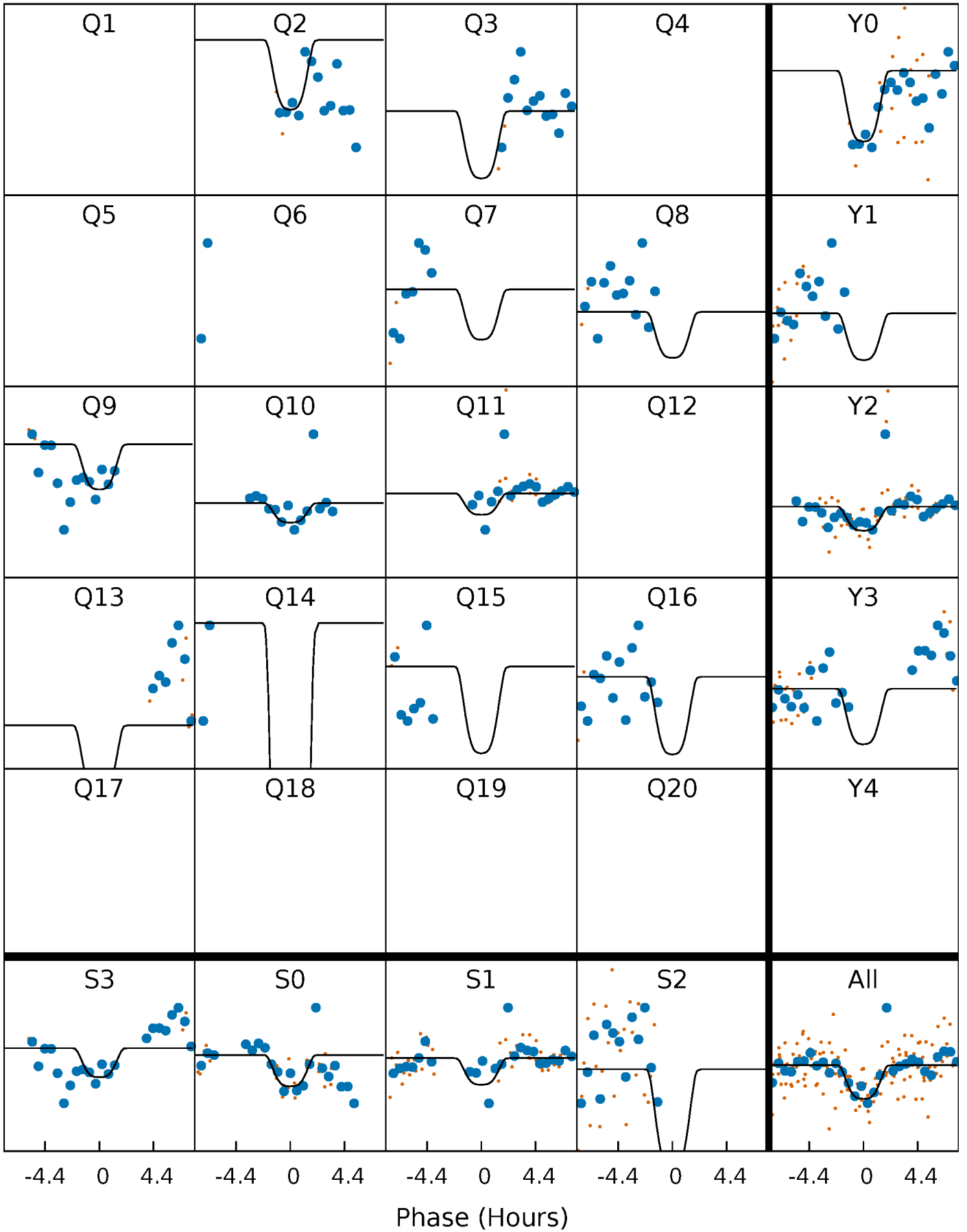
PDC Quarter-Phased Transit Curves

TCE 004739229-04 P= 88.472137 Days $T_0=210.496417$ (BKJD)



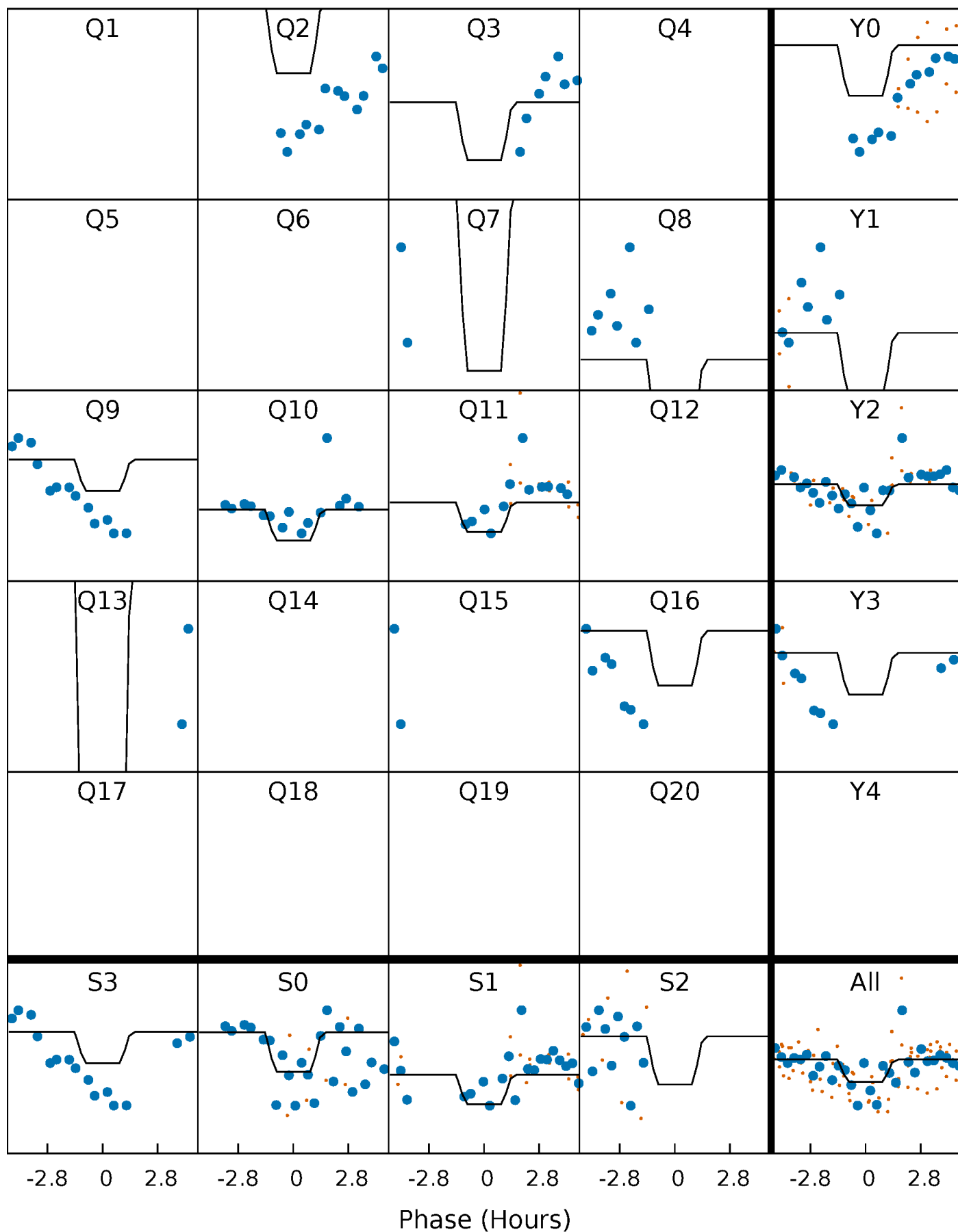
DV Quarter-Phased Transit Curves

TCE 004739229-04 P= 88.472137 Days $T_0=210.496417$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

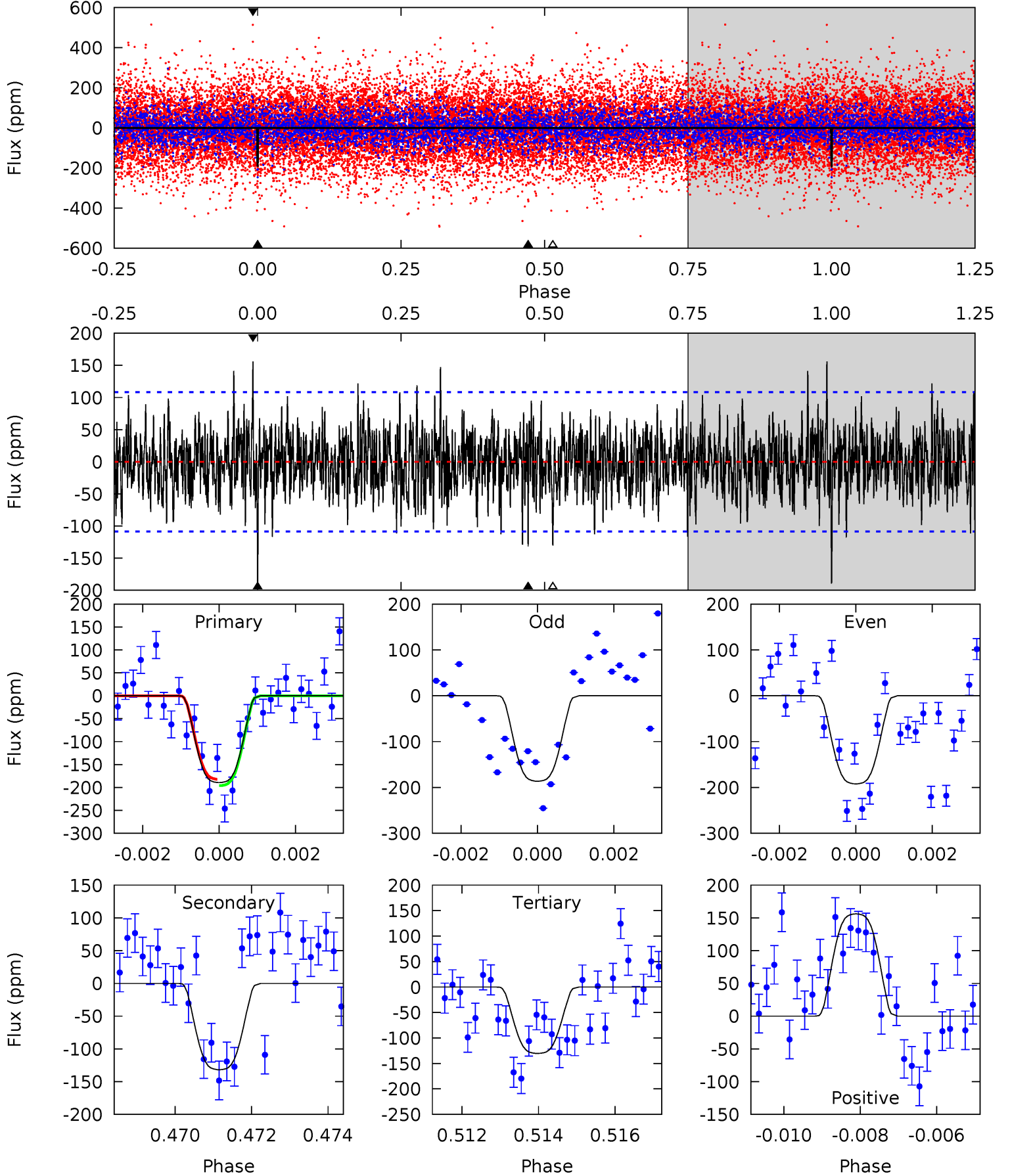
TCE 004739229-04 P= 88.474238 Days $T_0=210.482690$ (BKJD)



DV Model-Shift Uniqueness Test

004739229-04, P = 88.472137 Days, E = 122.024280 Days

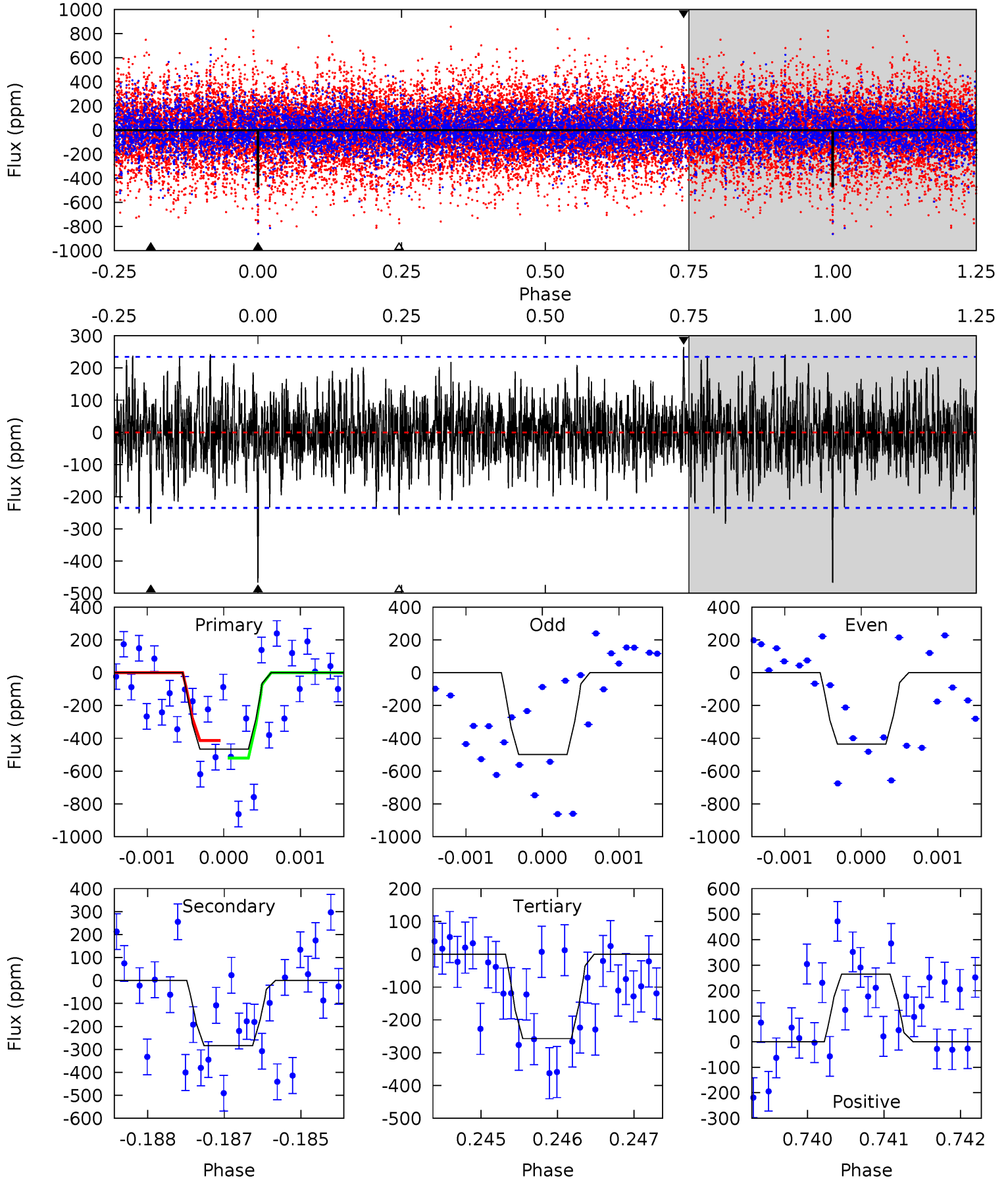
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.31	6.48	6.40	7.67	5.33	3.09	1.88	2.90	1.64	0.07	-1.19	0.14	0.44	0.45	0.34



Alt Model-Shift Uniqueness Test

004739229-04, P = 88.474238 Days, E = 122.008452 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	6.55	5.93	6.10	5.41	3.22	1.72	4.84	4.67	0.62	0.45	0.73	1.01	0.36	1.23



Stellar Parameters For KIC 004739229

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6869^{+72}_{-92}	$4.125^{+0.099}_{-0.110}$	$0.020^{+0.150}_{-0.150}$	$1.726^{+0.301}_{-0.246}$	$1.450^{+0.111}_{-0.091}$	$0.397^{+0.196}_{-0.141}$
	+1%/-1%	+2%/-3%	+750%/-750%	+17%/-14%	+8%/-6%	+49%/-36%
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 004739229-04 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-132 ± 20	$3.36^{+0.61}_{-0.57}$	839^{+37}_{-34}	5537^{+473}_{-403}	1264^{+549}_{-398}
Alt.	-284 ± 43	$3.63^{+0.62}_{-0.55}$	841^{+36}_{-32}	6414^{+590}_{-489}	2288^{+941}_{-671}

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

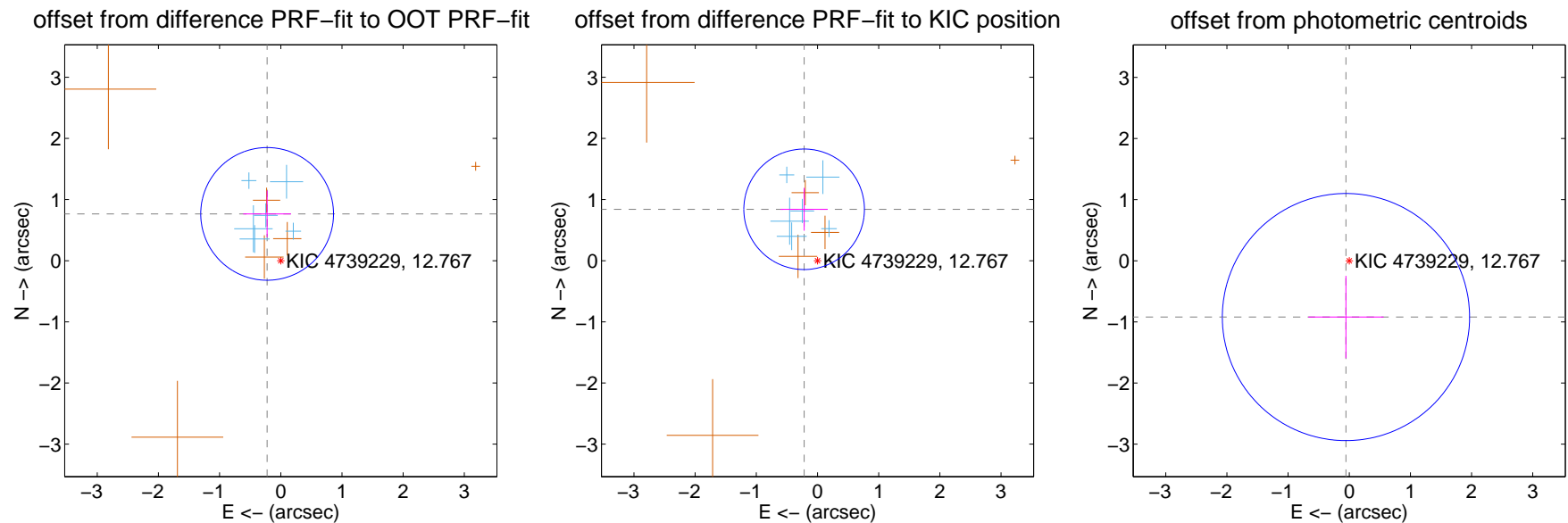
DV Centroid Data

Supplemental centroid analysis for 004739229-04. Kepler magnitude: 12.77. Transit SNR 7.89

There are 6 quarters with good PRF difference image offsets

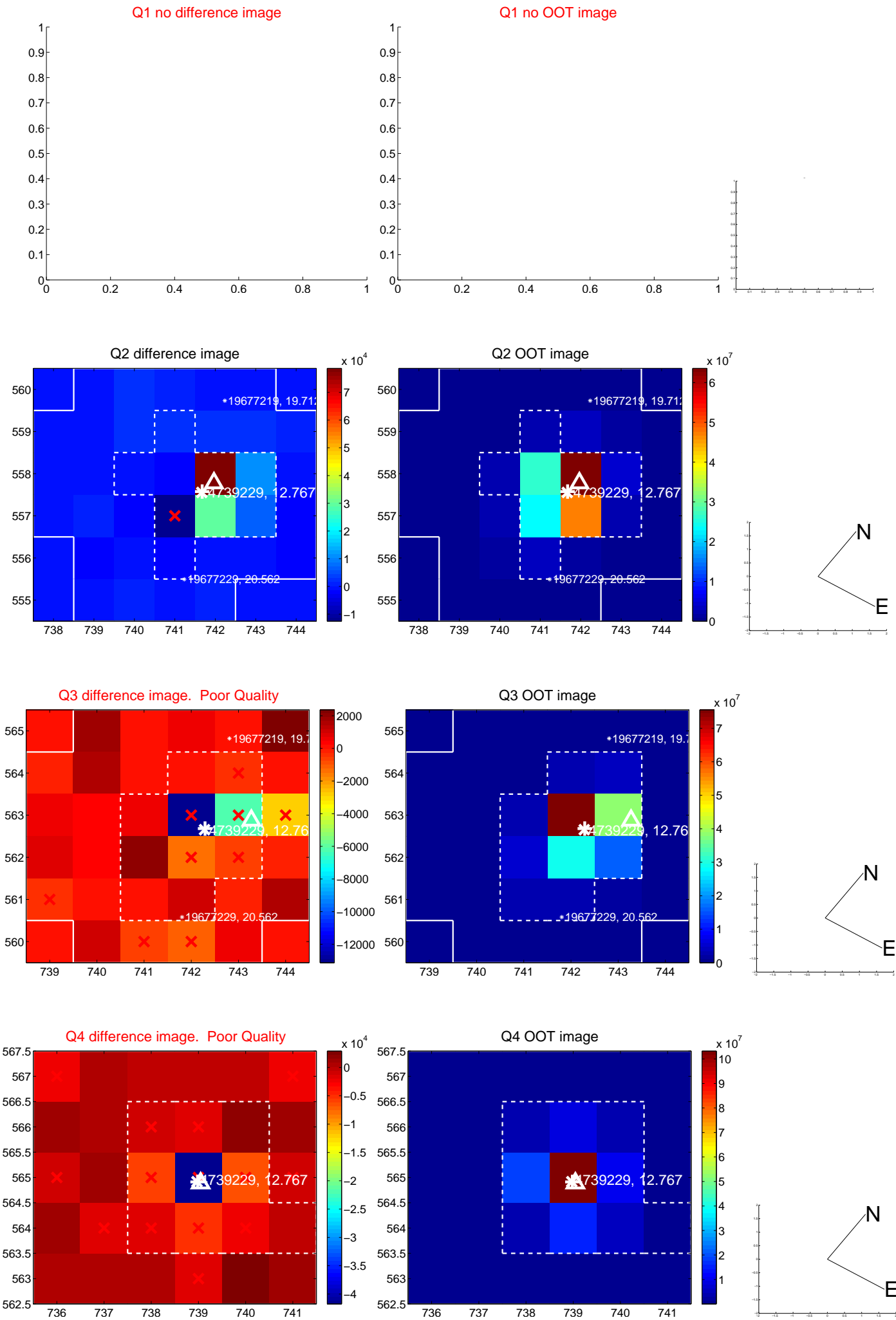
The direct PRF centroid is offset from the target star catalog position by about 0.05 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.797 ± 0.362	2.20	0.223 ± 0.391	0.765 ± 0.381
PRF-fit source offset from KIC position	0.869 ± 0.329	2.64	0.219 ± 0.386	0.841 ± 0.350
photometric centroid source offset	0.92 ± 0.67	1.37	0.05 ± 0.62	-0.92 ± 0.67

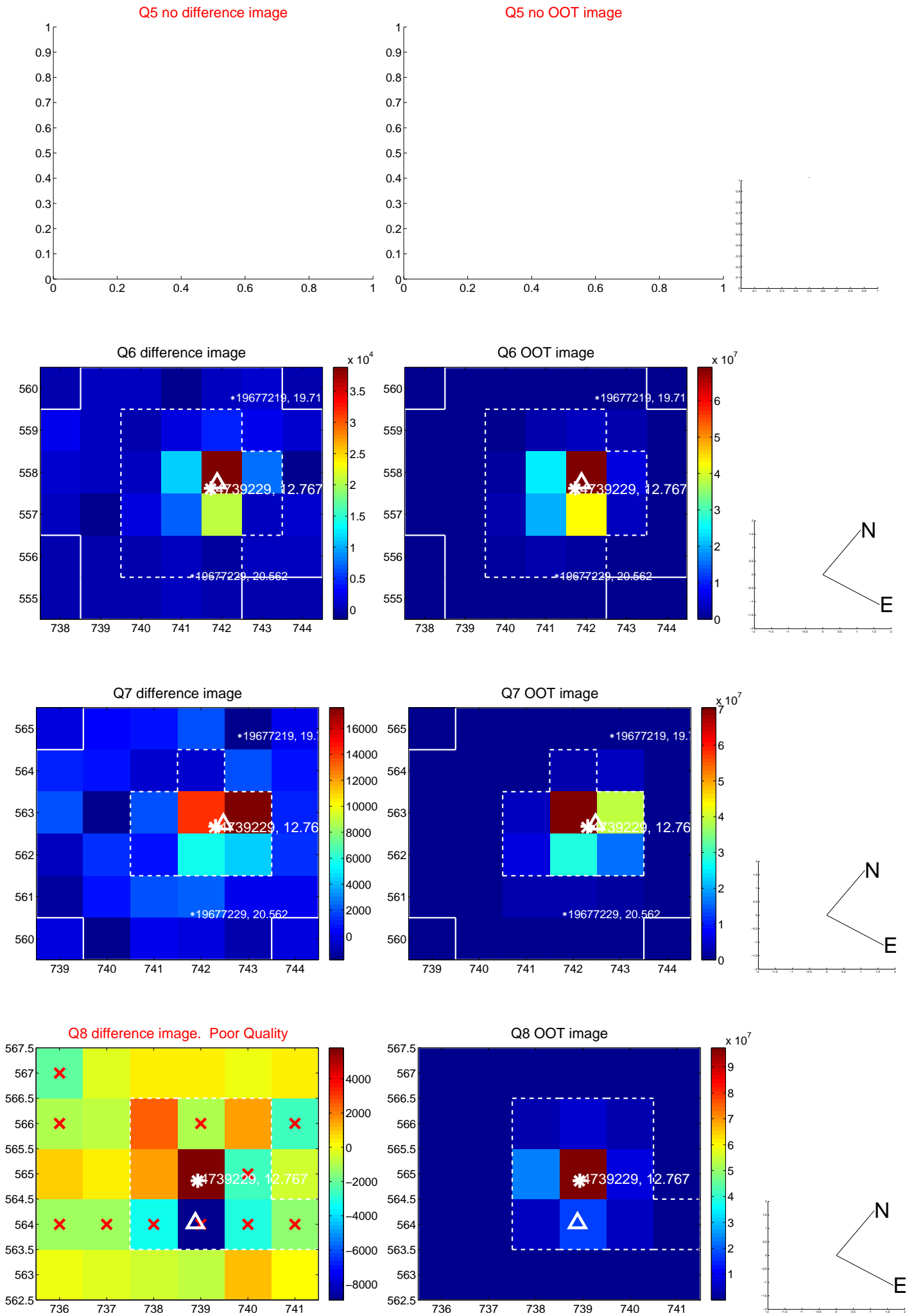


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

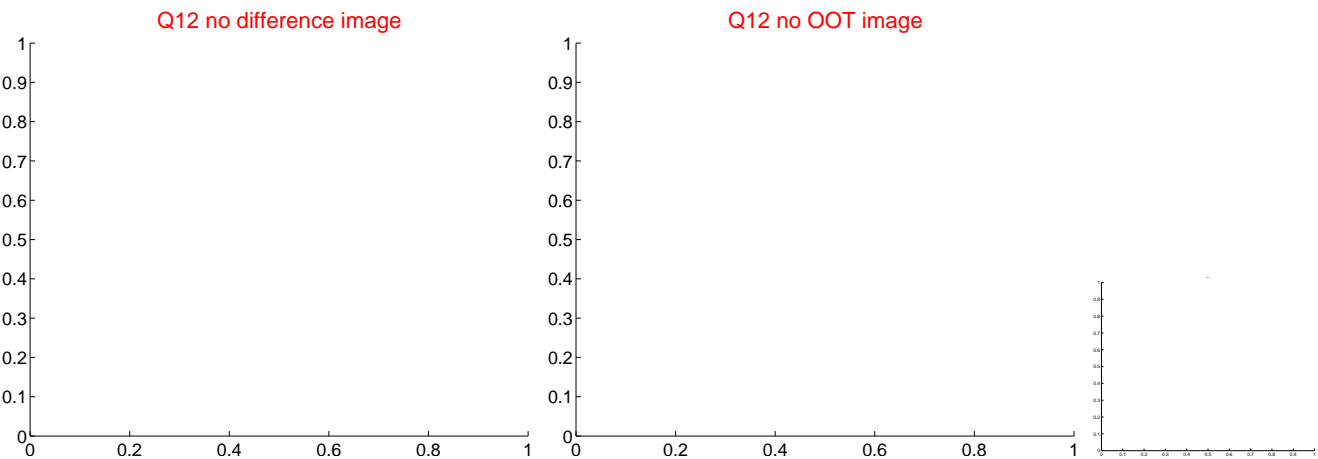
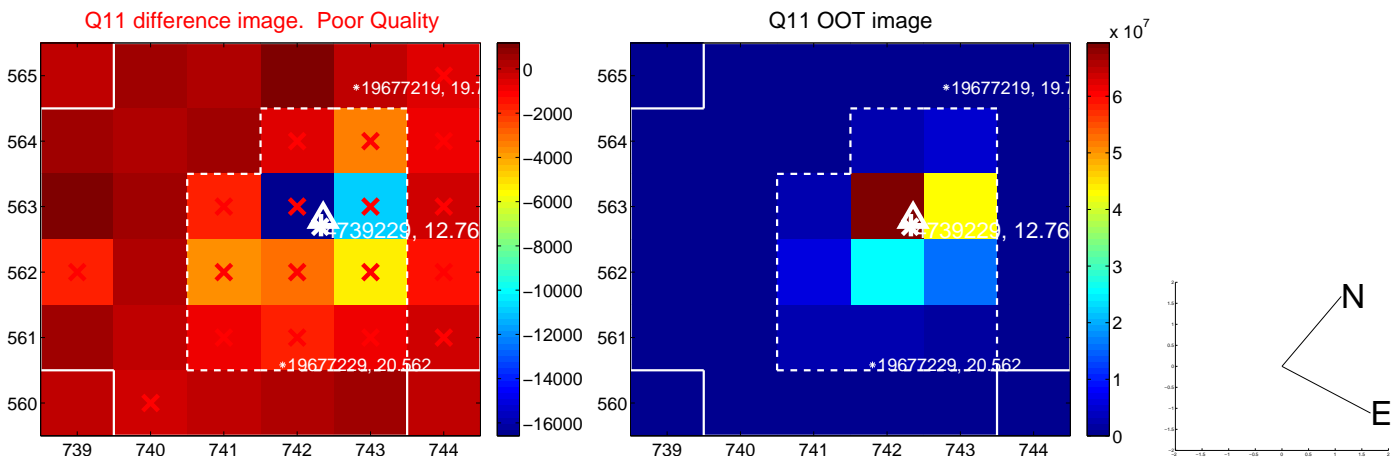
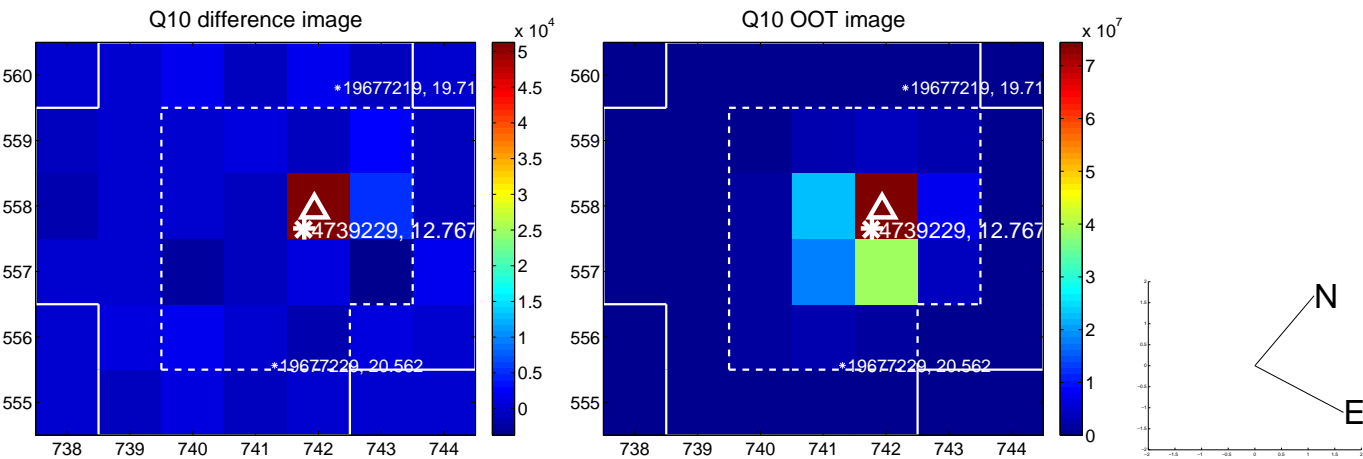
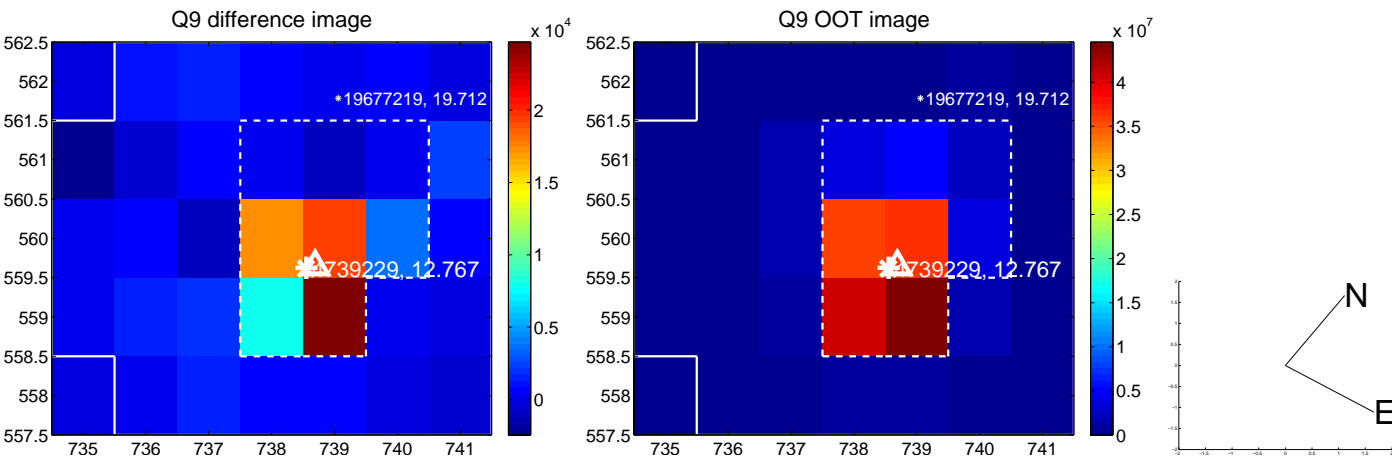
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



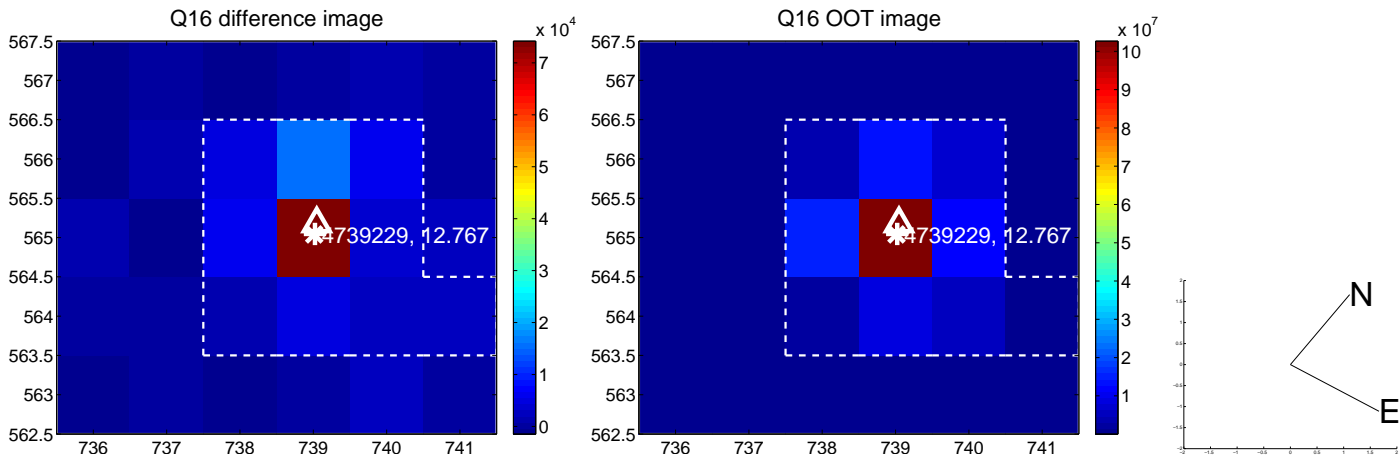
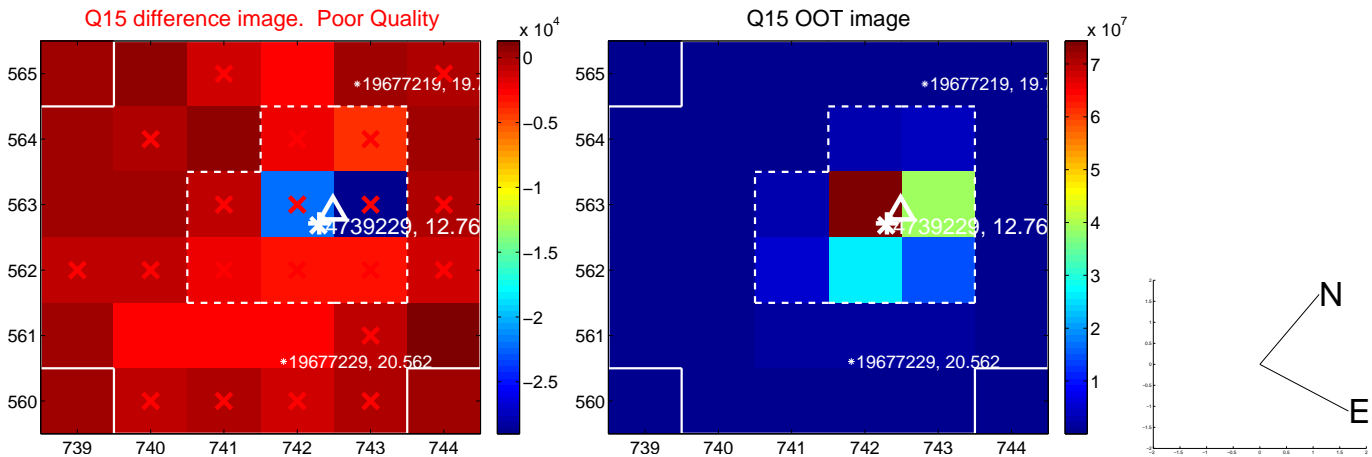
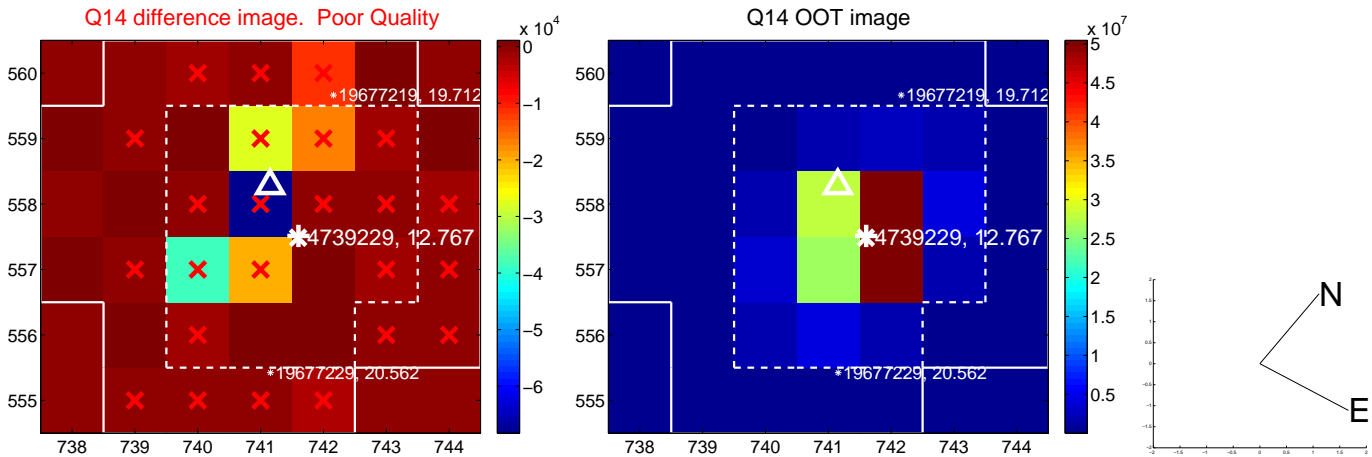
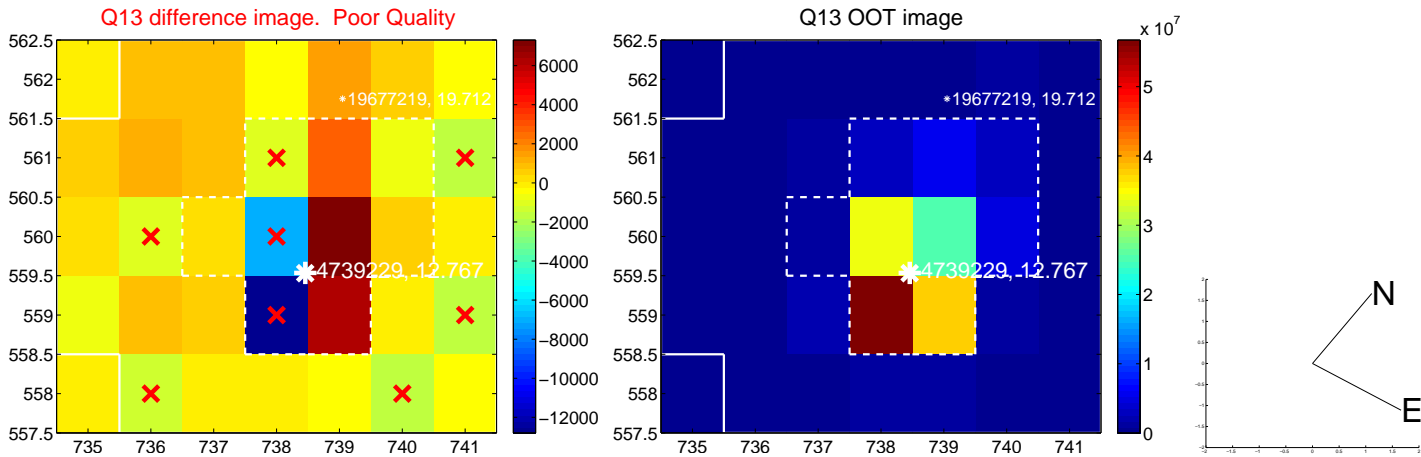
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



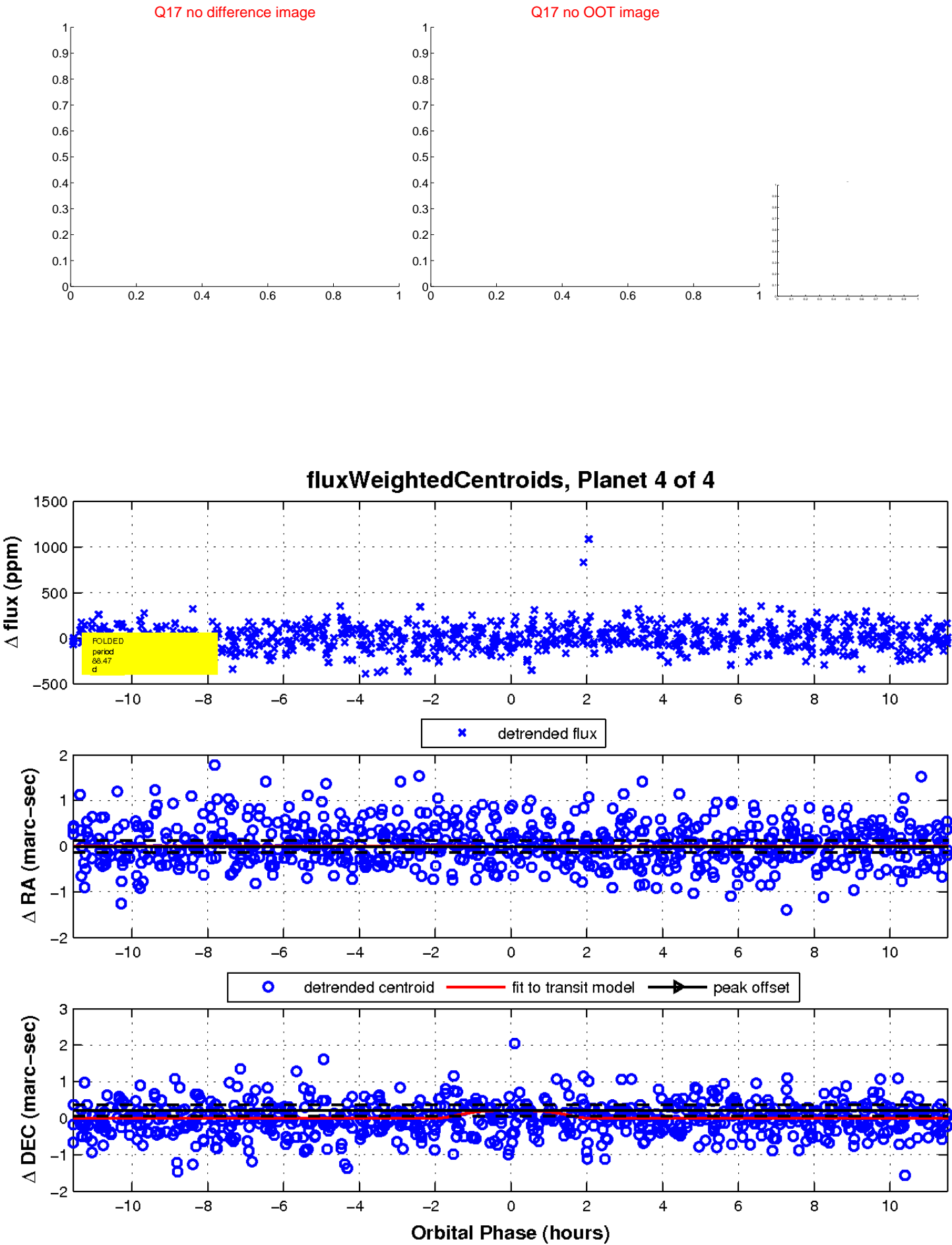
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

