

KIC 005709725

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})
005709725-01	OBS	0555.02	86.494503	181.886579	959.8	7.790	30.6	33.4	0.90	5252	3.17	4.30
005709725-02	OBS	0555.01	3.701764	131.728504	275.1	2.621	28.4	31.4	0.90	5252	1.72	287.41

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005709725-01	OBS	PC	0.97	0	0	0	0	NO_COMMENT
005709725-02	OBS	PC	1.00	0	0	0	0	NO_COMMENT

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

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

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

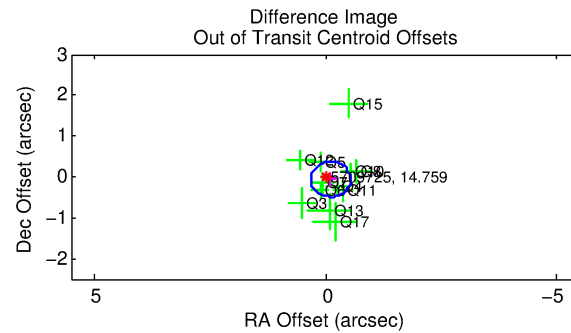
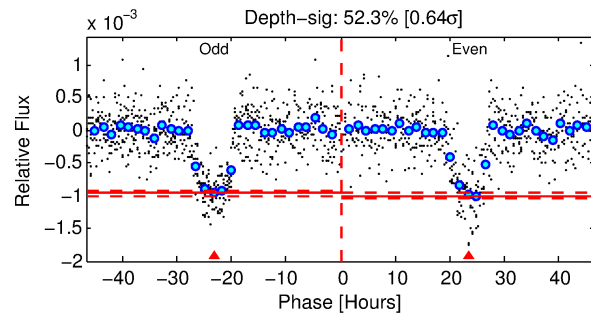
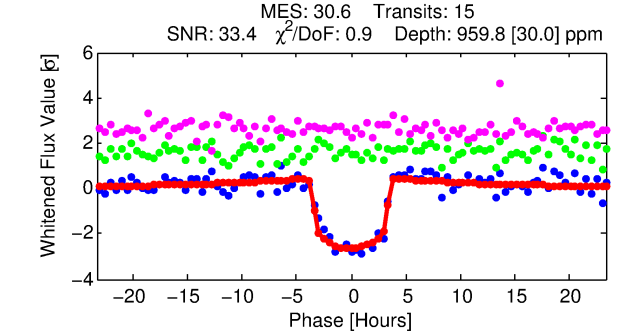
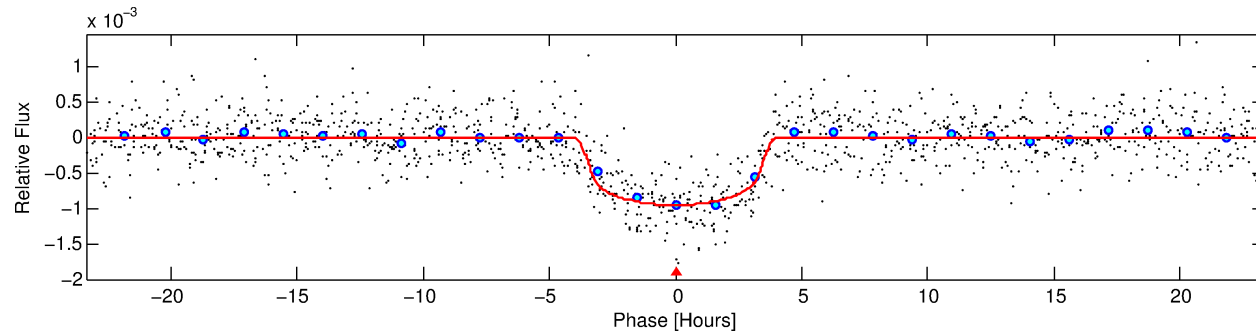
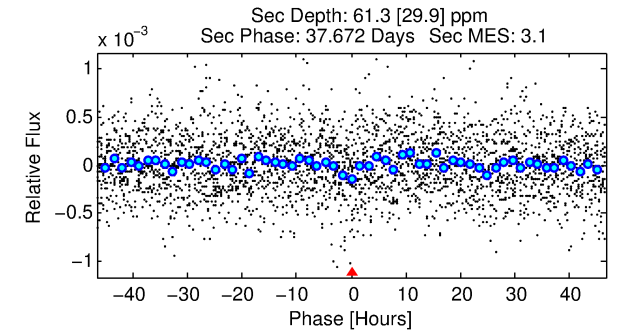
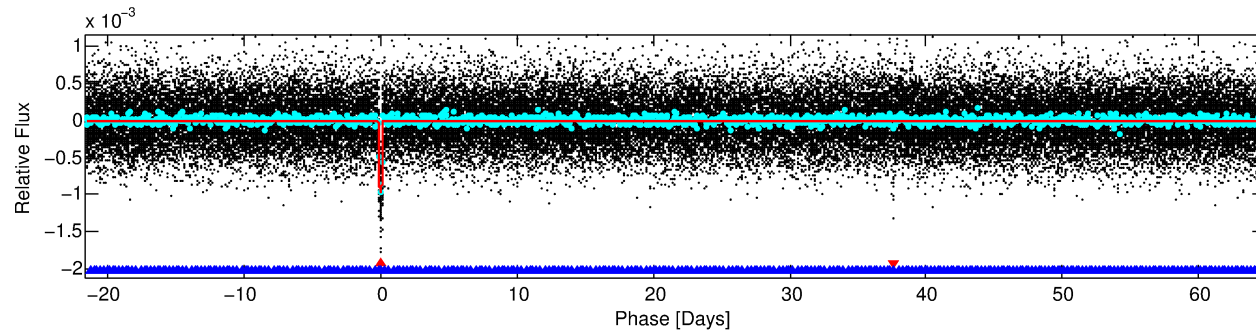
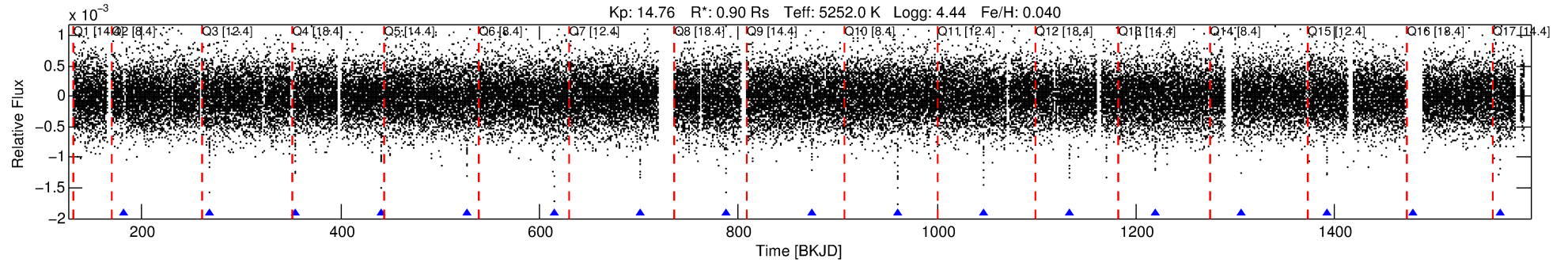
Ephemeris Match Information For 005709725-01

No Significant Match Found

DV One-Page Summary

KIC: 5709725 Candidate: 1 of 2 Period: 86.495 d

KOI: K00555.02 Corr: 0.967



DV Fit Results:

Period = 86.49450 [0.00050] d
Epoch = 181.8866 [0.0047] BKJD
Rp/R* = 0.0324 [0.0022]
a/R* = 51.64 [13.12]
b = 0.83 [0.09]
Seff = 4.30 [0.83]
Teq = 367 [18] K
Rp = 3.17 [0.40] Re
a = 0.3574 [0.0383] AU
Ag = 427.49 [229.44] [1.86σ]
Teffp = 2582 [331] K [6.67σ]

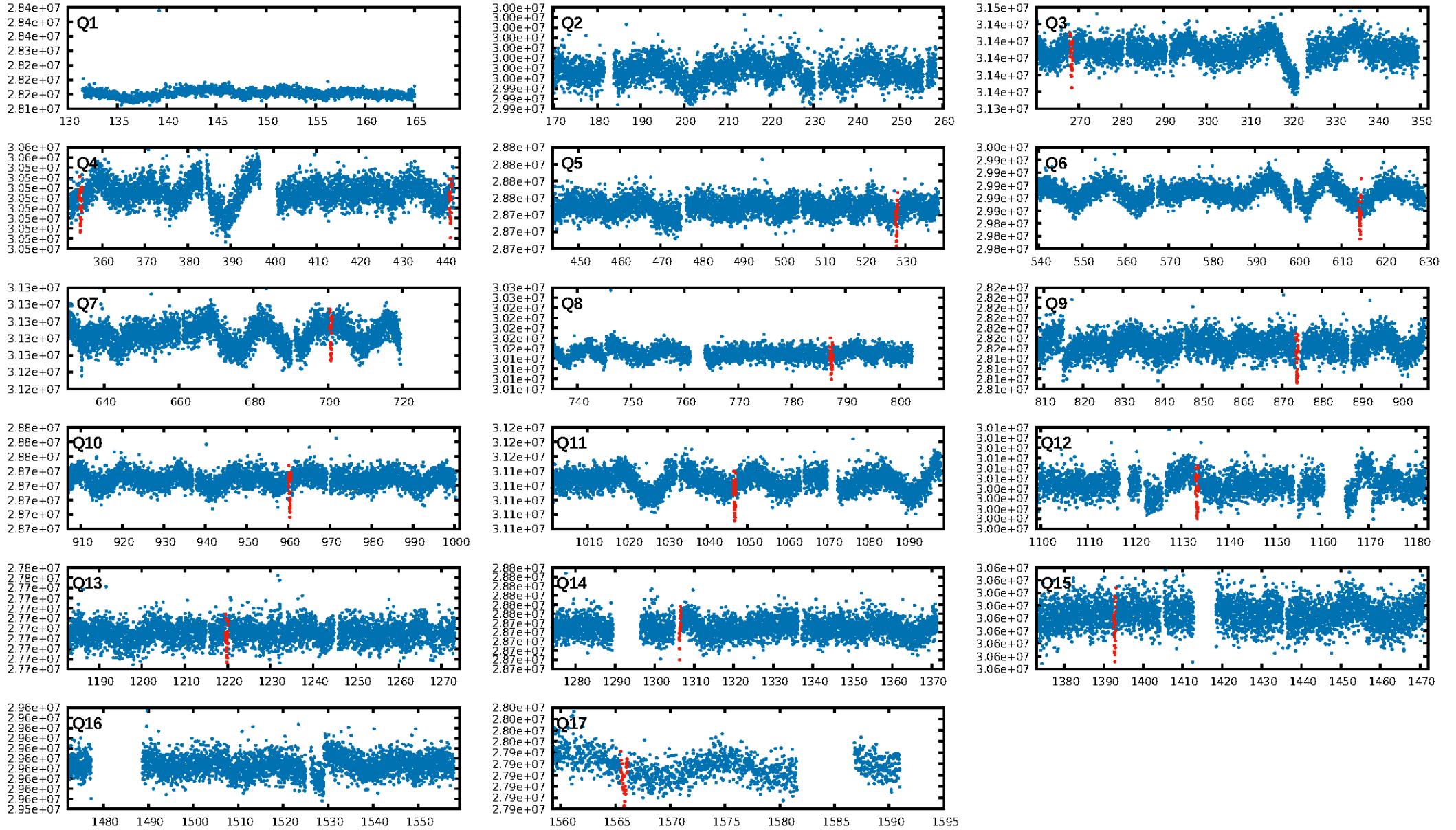
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [241.75σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 0.1%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 1.58e-177
RollingBand-fgt: 1.00 [14/14]
GhostDiagnostic-chr: 6.996
Centroid-sig: 0.0%
Centroid-so: 0.535 arcsec [1.65σ]
OotOffset-rm: 0.123 arcsec [0.86σ]
KicOffset-rm: 0.159 arcsec [0.89σ]
OotOffset-st: 2/4/3/3 [12]
KicOffset-st: 2/4/3/3 [12]
DiffImageQuality-fgm: 1.00 [12/12]
DiffImageOverlap-fno: 0.58 [7/12]

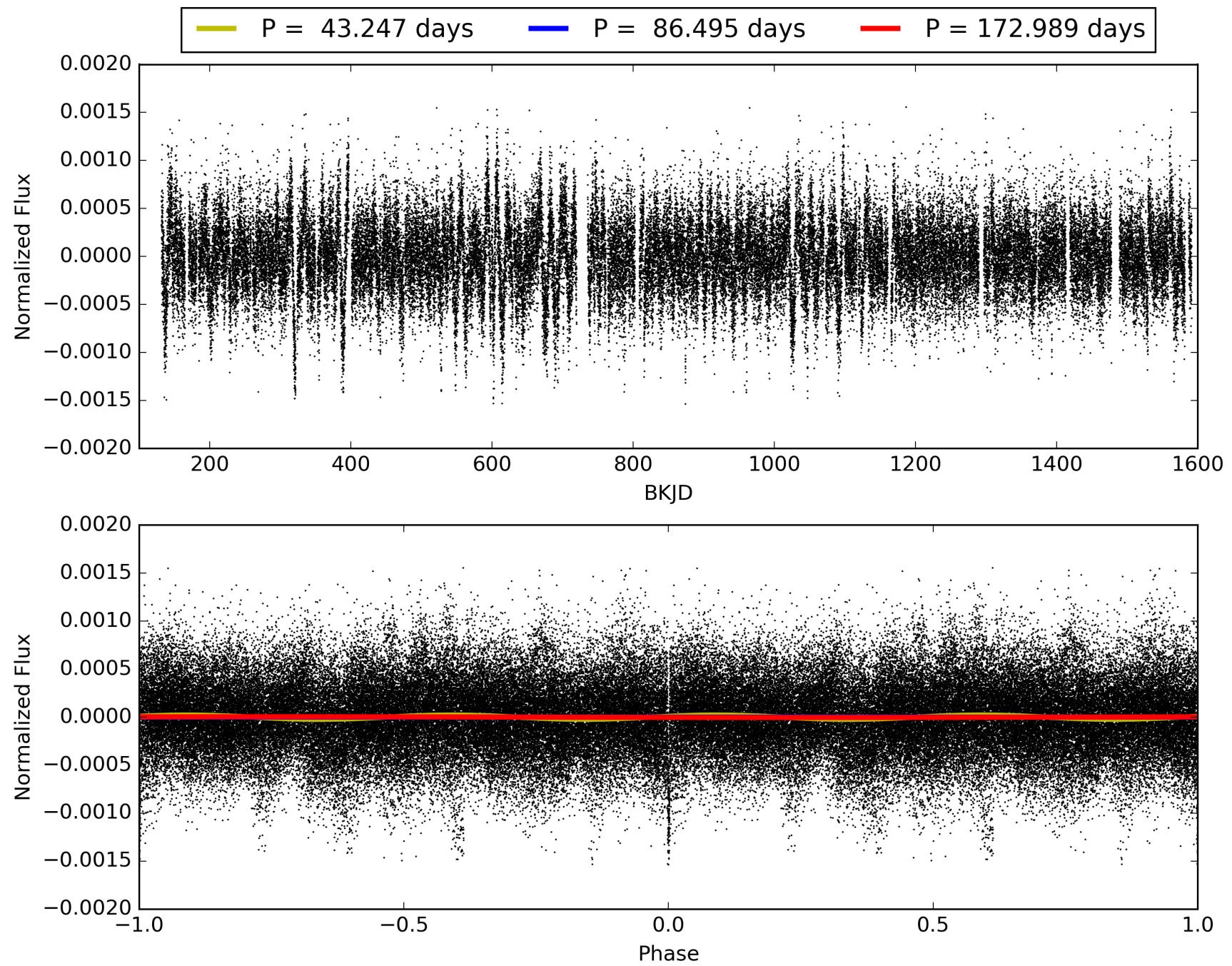
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 21:55:03 Z

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

TCE 005709725-01, PDC Light Curves

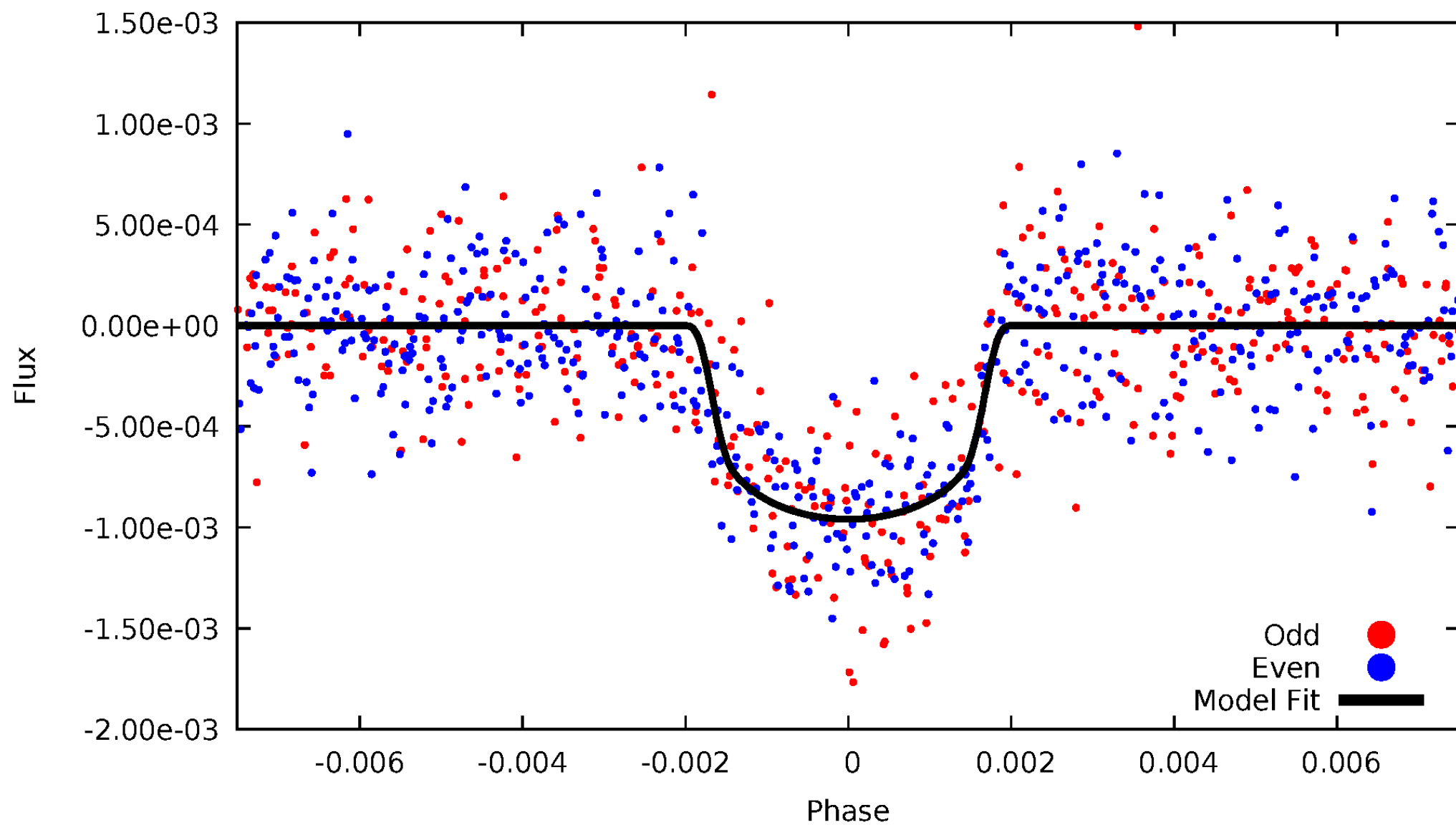


TCE 005709725-01



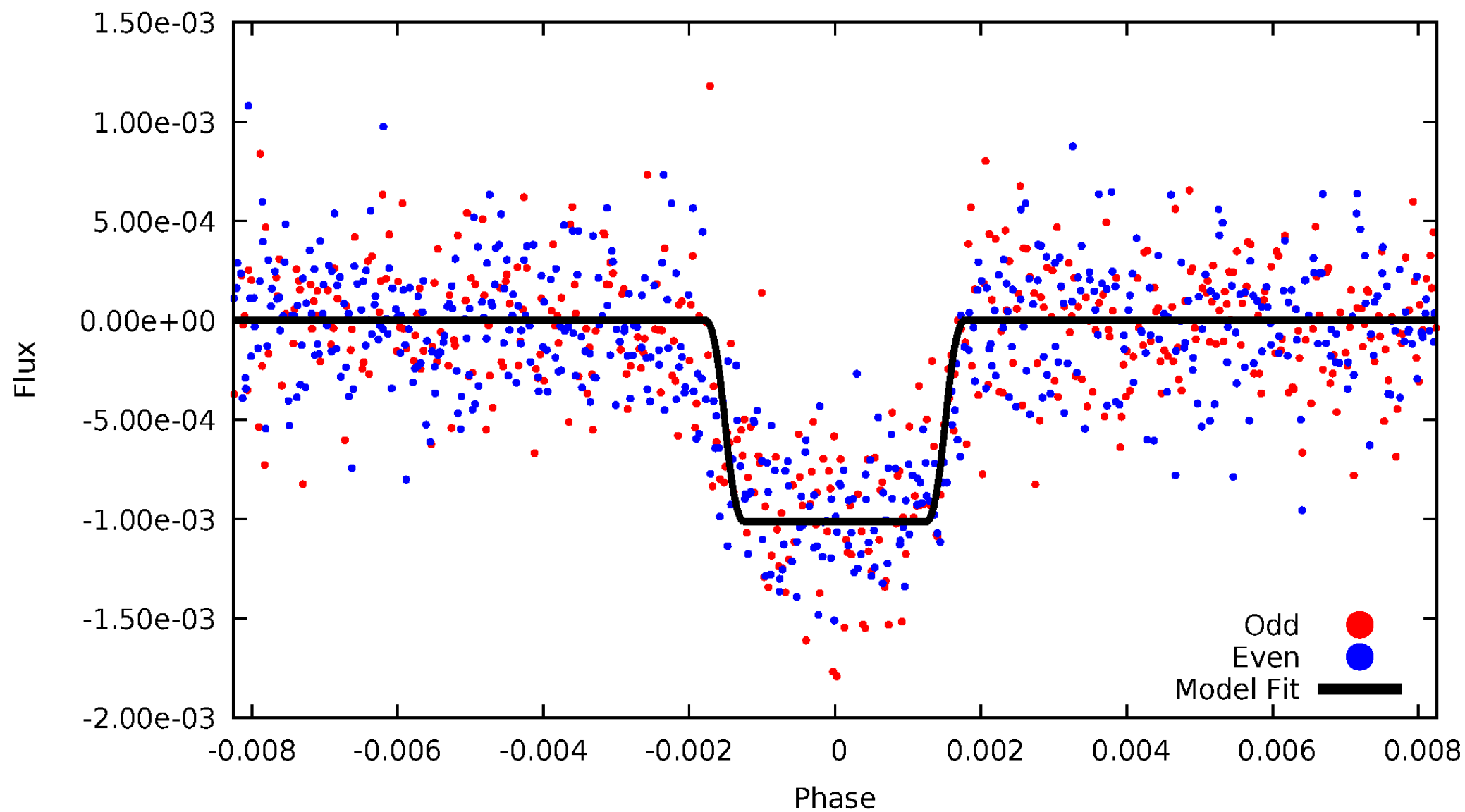
DV Odd/Even

TCE 005709725-01

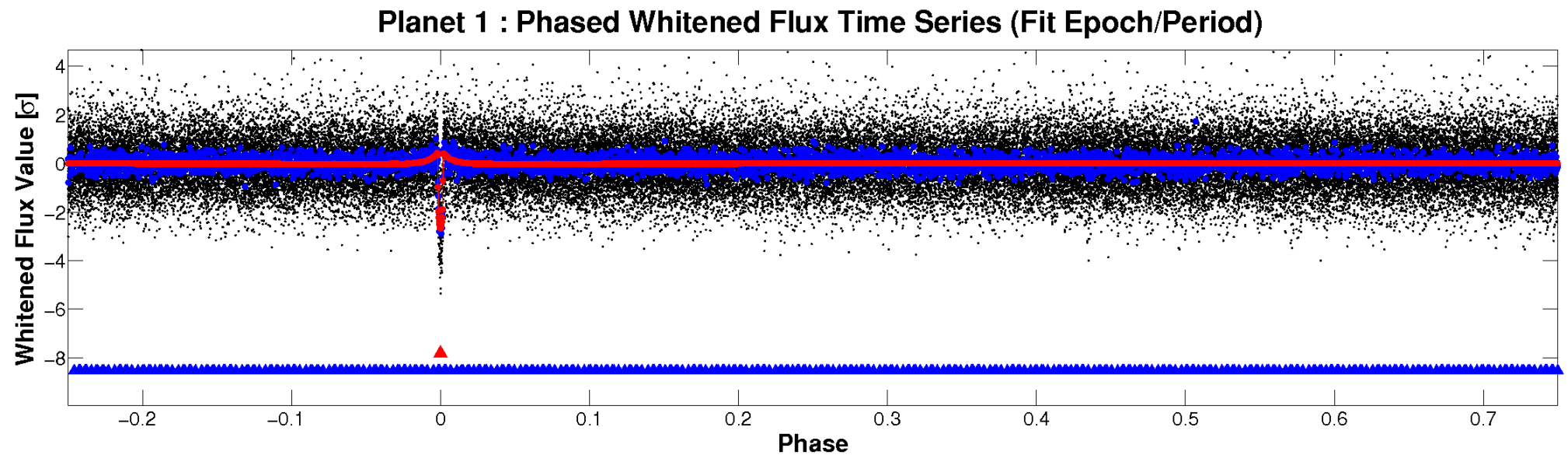
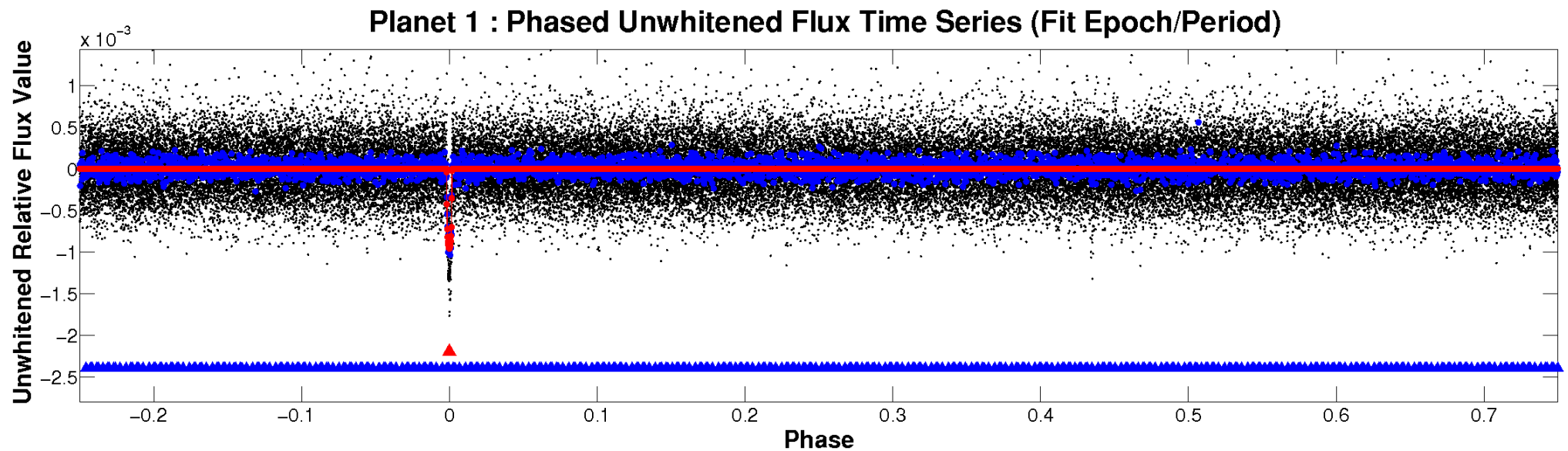


ALT Odd/Even

TCE 005709725-01

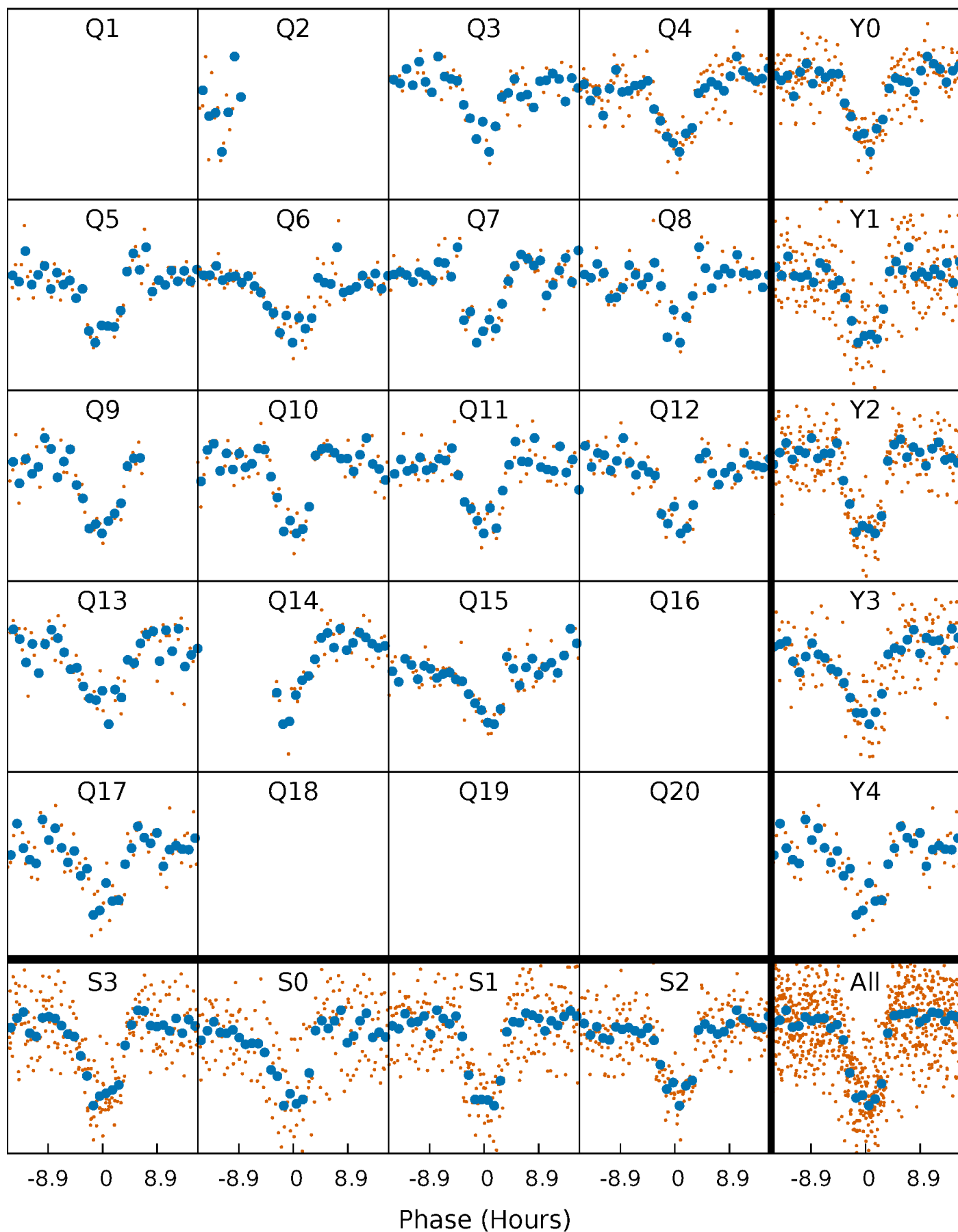


Non-Whitened Vs. Whitened Light Curve



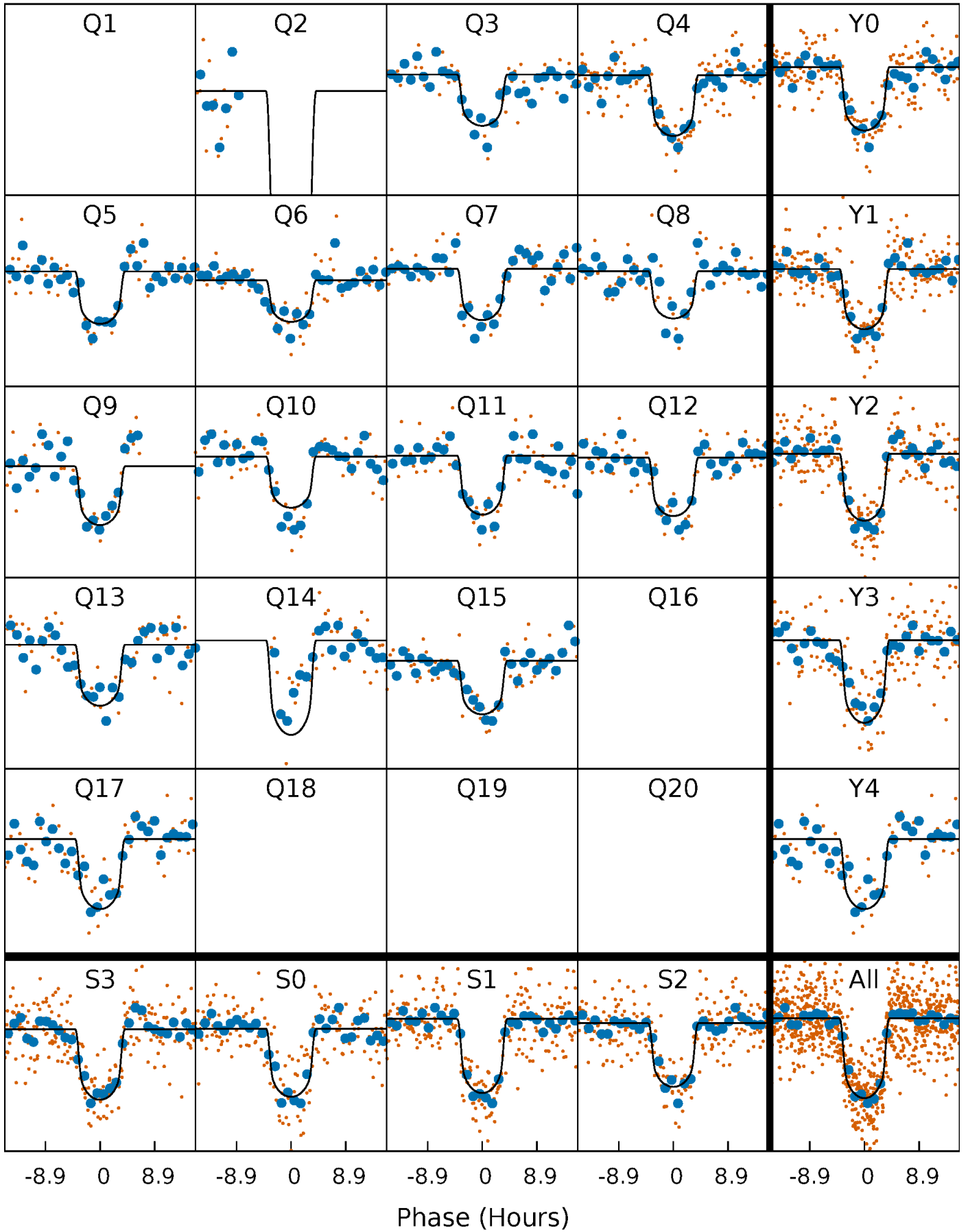
PDC Quarter-Phased Transit Curves

TCE 005709725-01 P= 86.494503 Days $T_0=181.886579$ (BKJD)



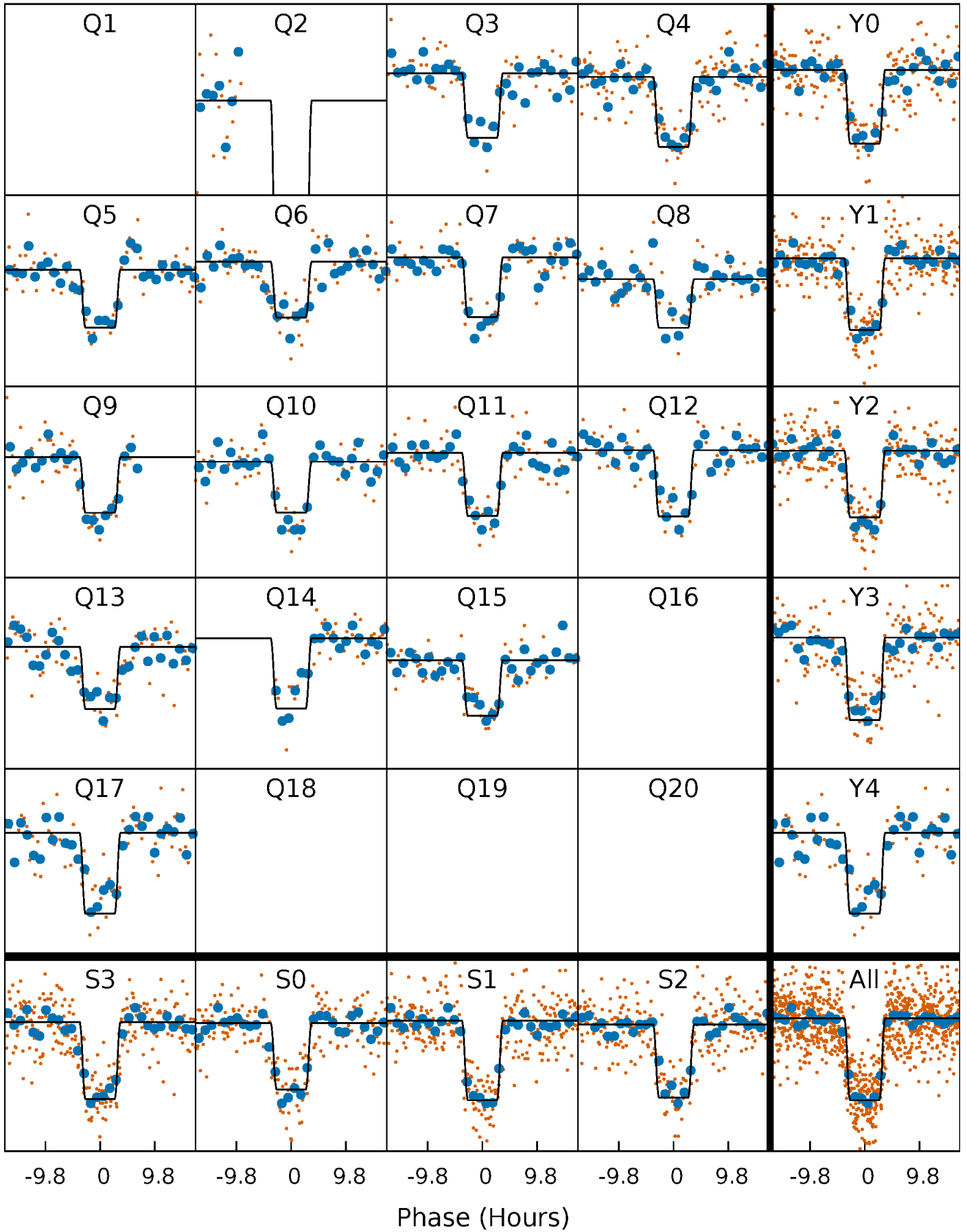
DV Quarter-Phased Transit Curves

TCE 005709725-01 P= 86.494503 Days $T_0=181.886579$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

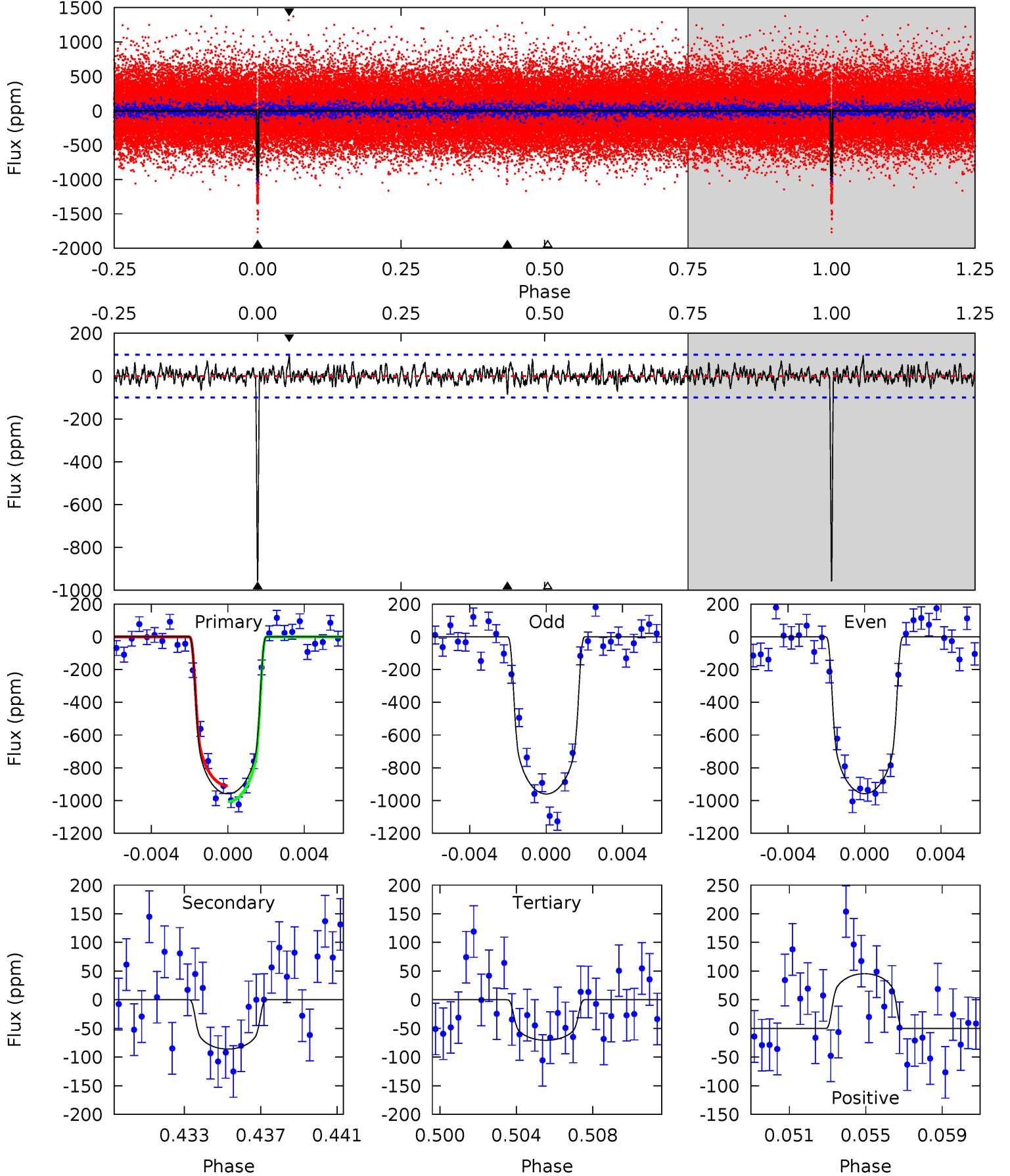
TCE 005709725-01 P= 86.494329 Days $T_0=181.890964$ (BKJD)



DV Model-Shift Uniqueness Test

005709725-01, P = 86.494503 Days, E = 95.392076 Days

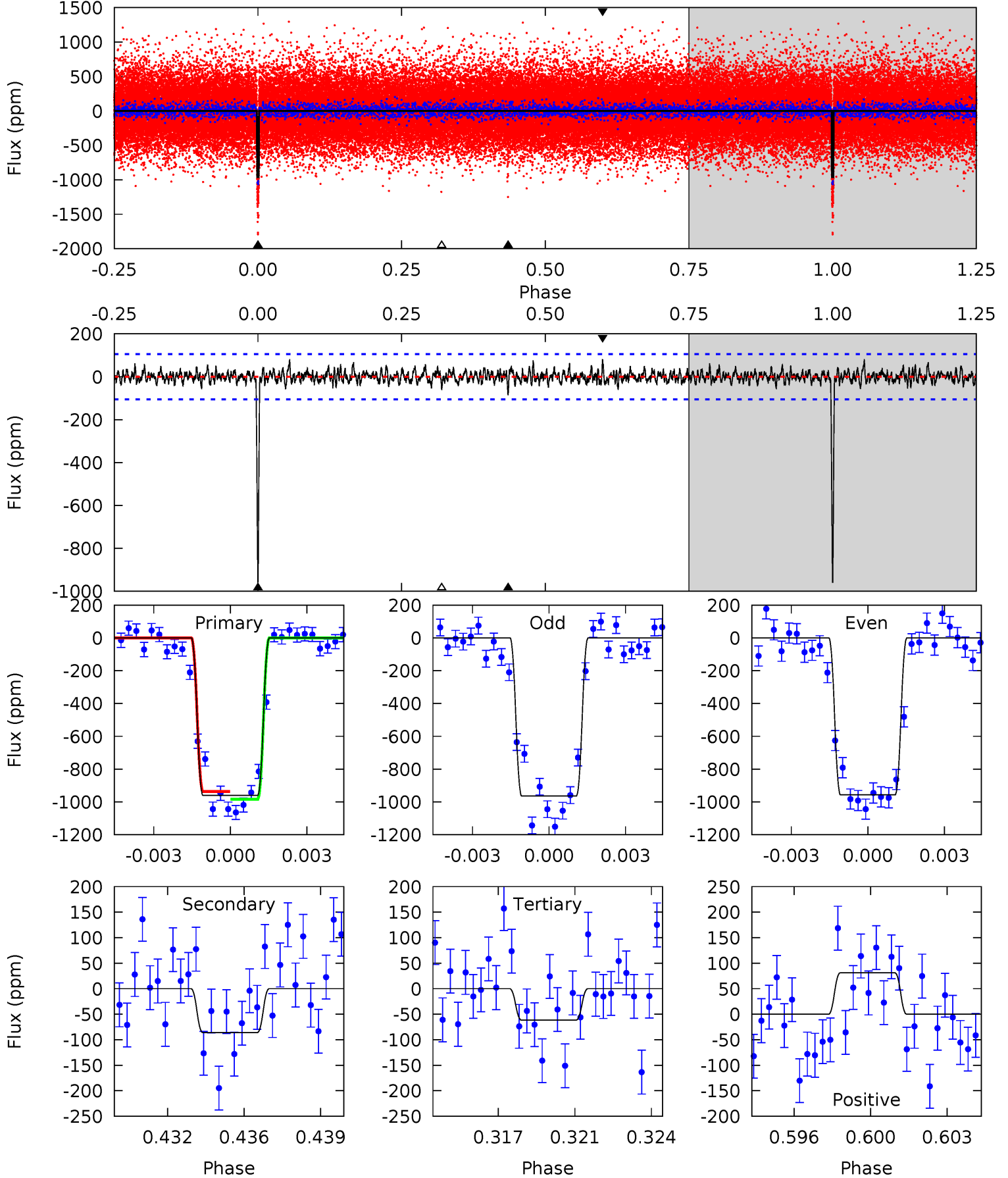
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
50.0	4.48	3.68	4.97	5.20	2.88	1.25	46.3	45.0	0.80	-0.49	0.05	0.98	0.09	2.54



Alt Model-Shift Uniqueness Test

005709725-01, P = 86.494329 Days, E = 95.396635 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
47.7	4.26	3.06	4.02	5.22	2.92	1.01	44.6	43.7	1.20	0.24	0.17	1.01	0.08	1.16



Stellar Parameters For KIC 005709725

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5252^{+105}_{-105}	$4.442^{+0.105}_{-0.052}$	$0.040^{+0.150}_{-0.150}$	$0.898^{+0.063}_{-0.095}$	$0.815^{+0.064}_{-0.032}$	$1.583^{+0.688}_{-0.280}$
	+2%/-2%	+2%/-1%	+375%/-375%	+7%/-11%	+8%/-4%	+43%/-18%
Source	SPE58	SPE58	SPE58	DSEP		

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

Secondary Eclipse Parameters for KIC 005709725-01 / KOI 0555.02

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-86 ± 19	$3.14^{+0.29}_{-0.27}$	510^{+17}_{-17}	3325^{+139}_{-149}	616^{+194}_{-166}
Alt.	-86 ± 20	$3.09^{+0.26}_{-0.29}$	511^{+16}_{-19}	3355^{+137}_{-156}	647^{+207}_{-171}

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 $A_{obs} \gg 1.0$

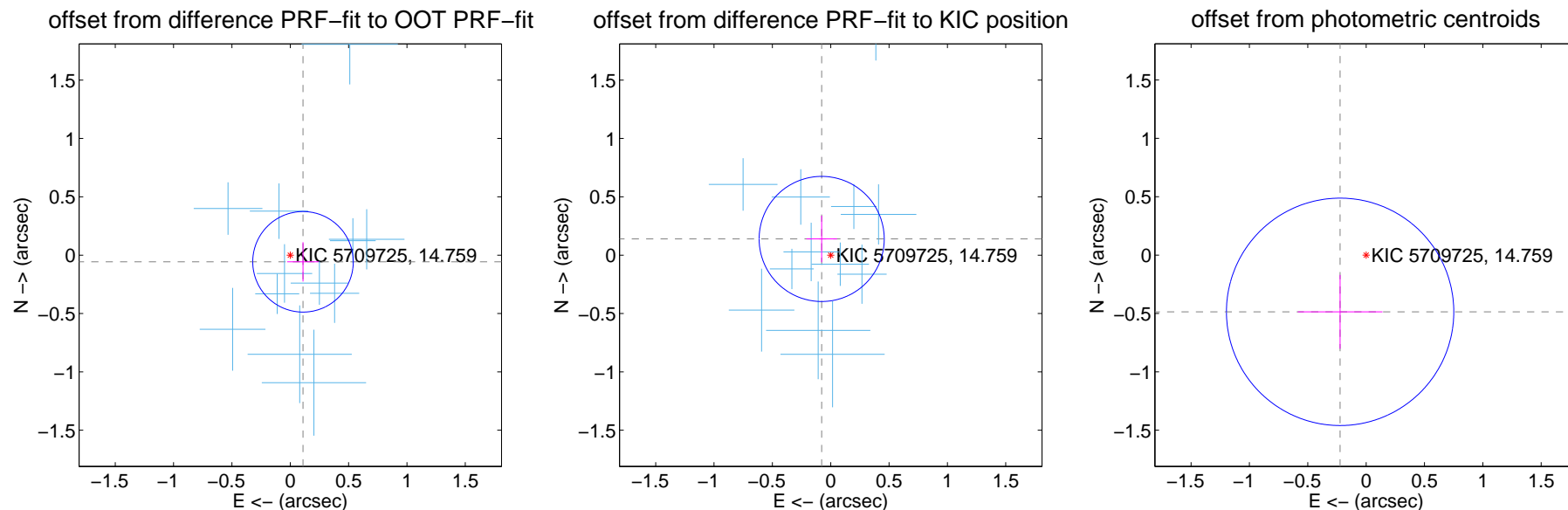
DV Centroid Data

Supplemental centroid analysis for 005709725-01. Kepler magnitude: 14.76. Transit SNR 33.35

There are 12 quarters with good PRF difference image offsets

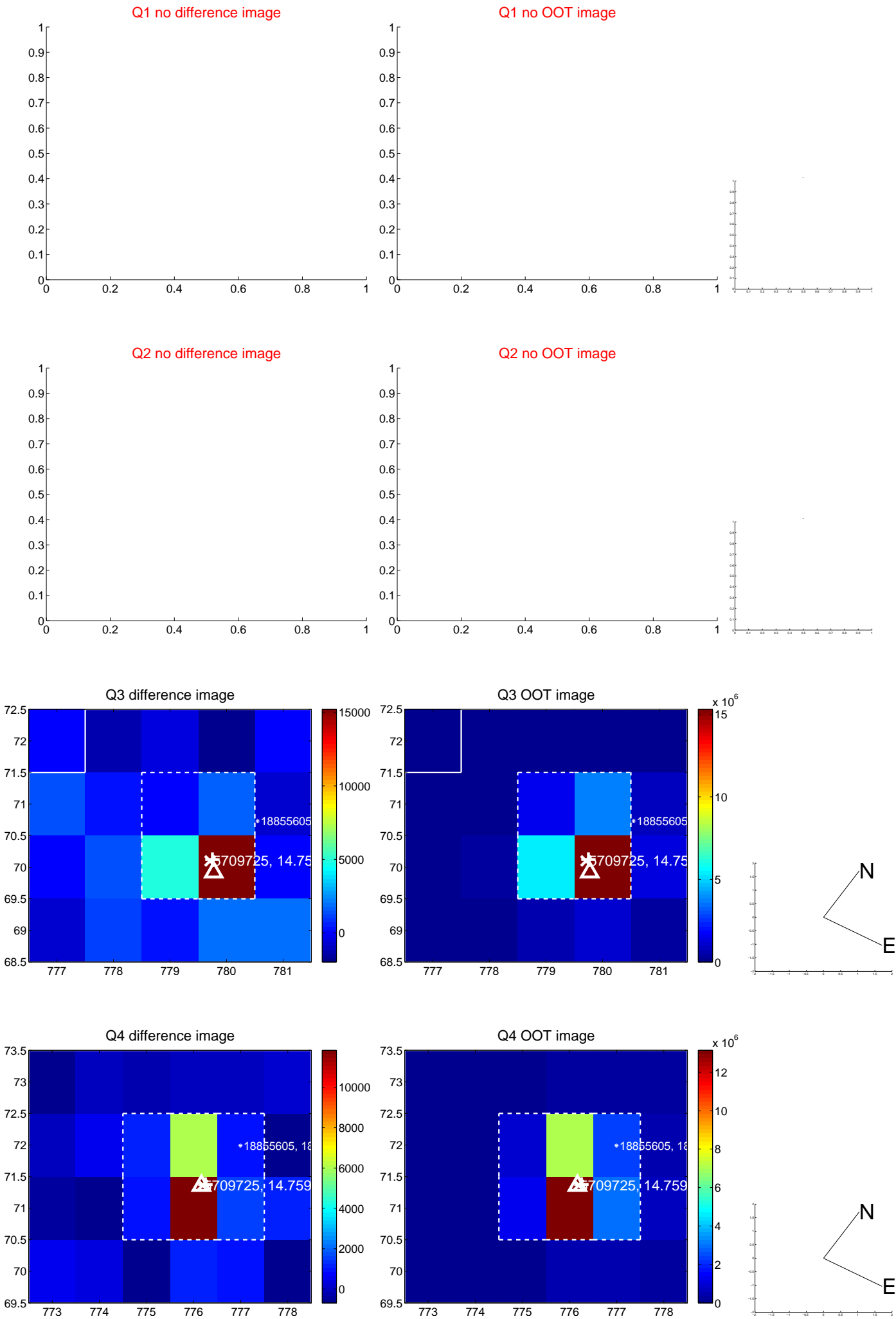
The direct PRF centroid is offset from the target star catalog position by about 0.31 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.123 ± 0.144	0.86	-0.109 ± 0.136	-0.057 ± 0.168
PRF-fit source offset from KIC position	0.159 ± 0.179	0.89	0.077 ± 0.131	0.139 ± 0.200
photometric centroid source offset	0.53 ± 0.32	1.65	0.22 ± 0.36	-0.49 ± 0.32

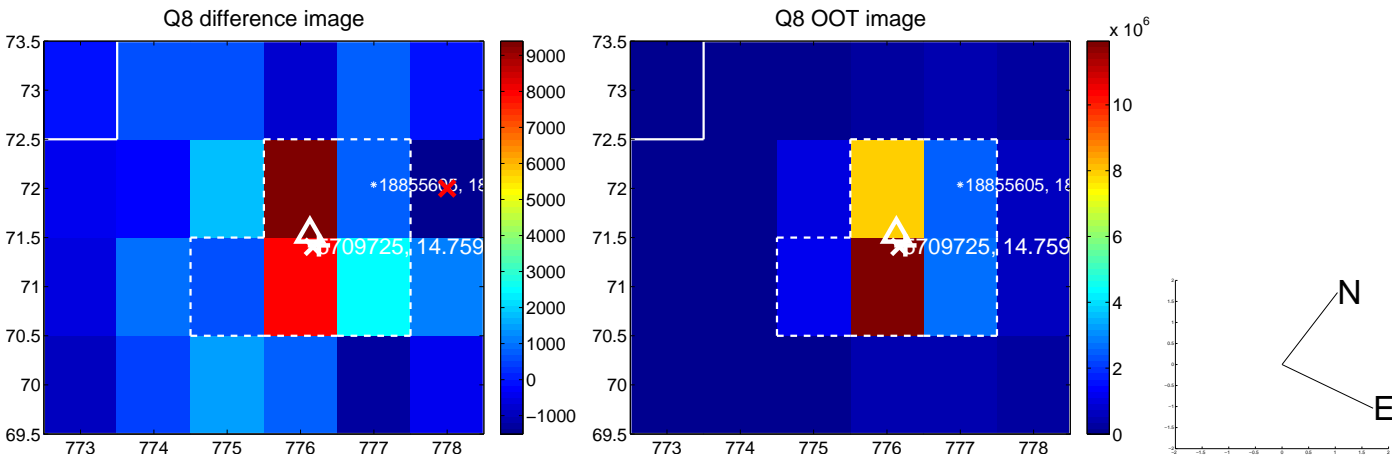
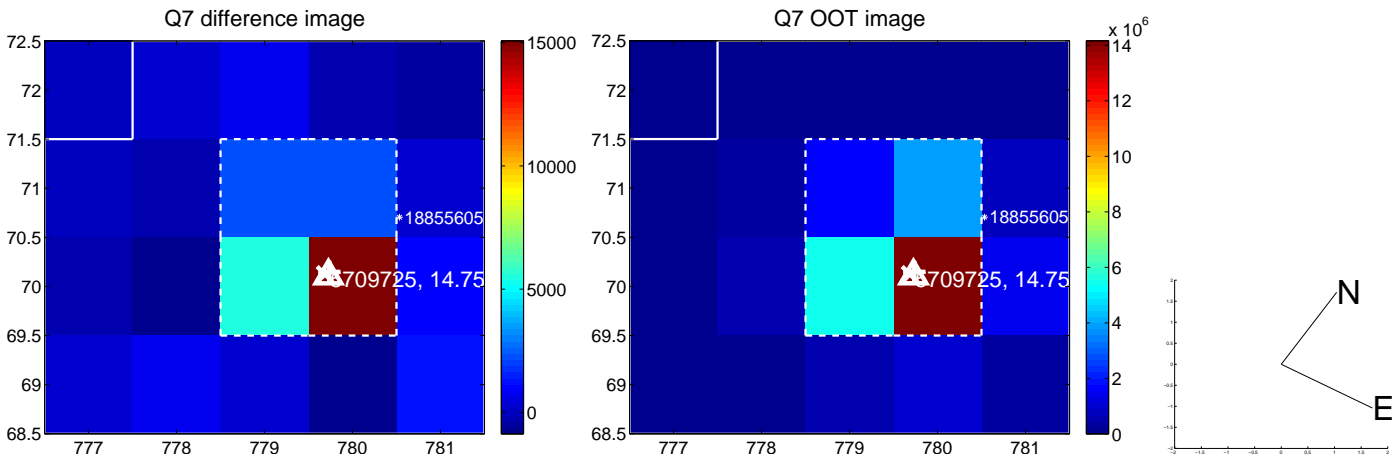
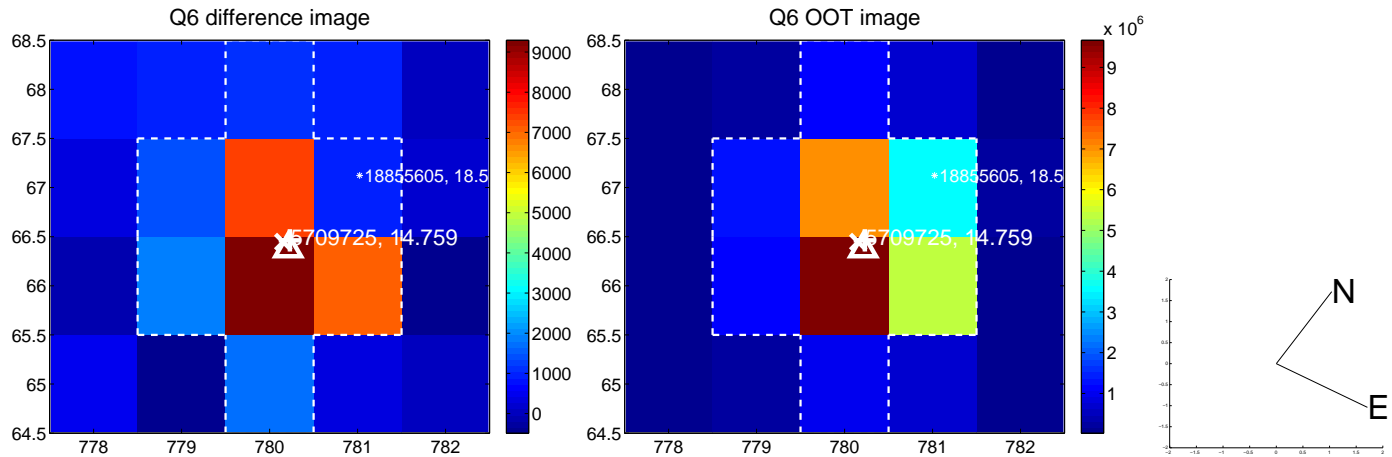
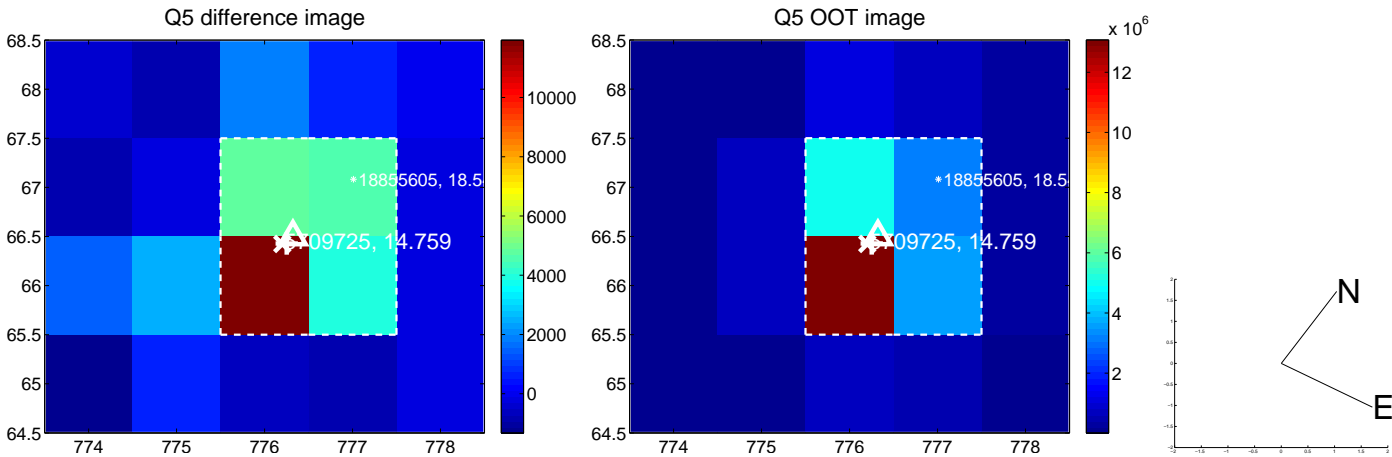


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

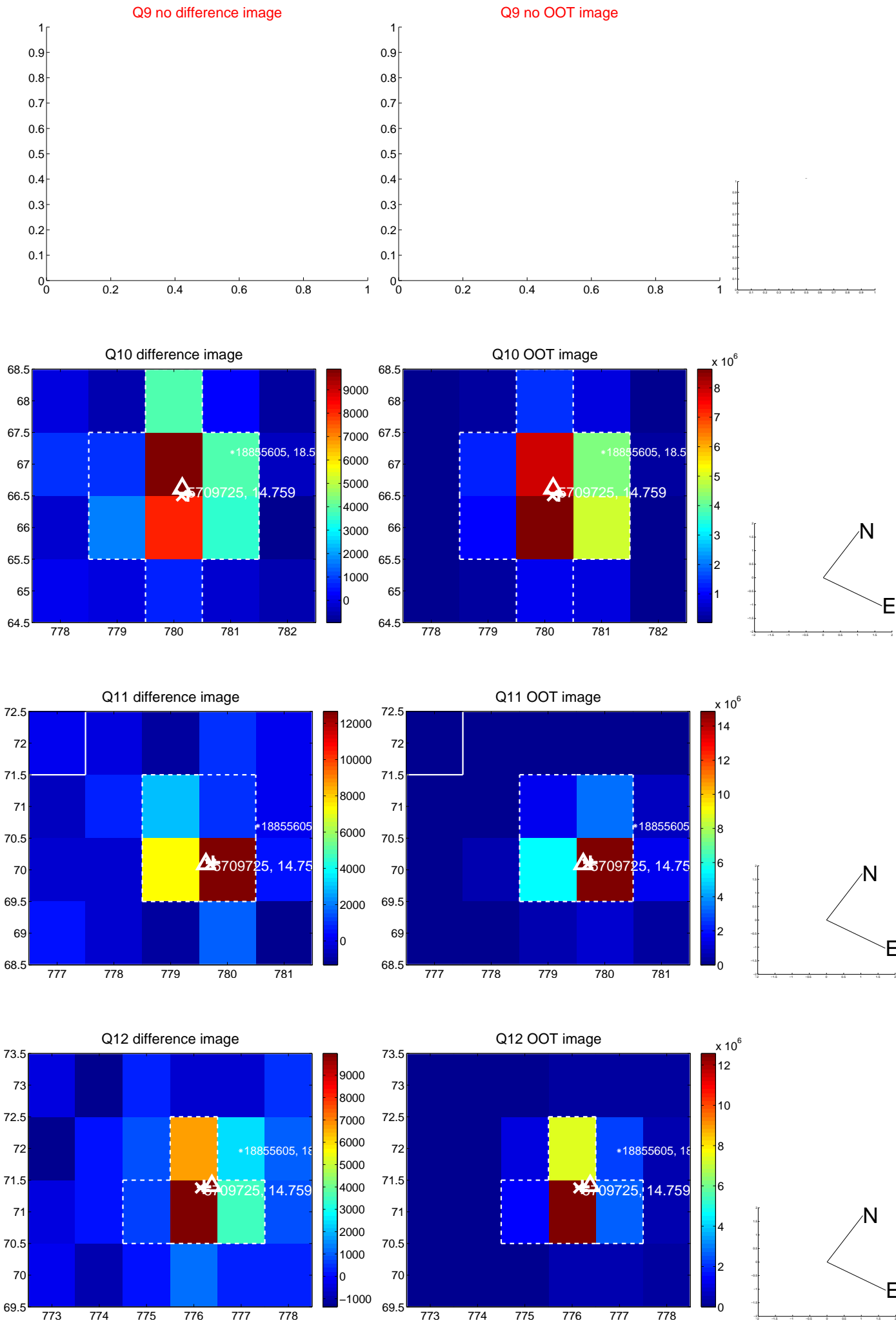
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



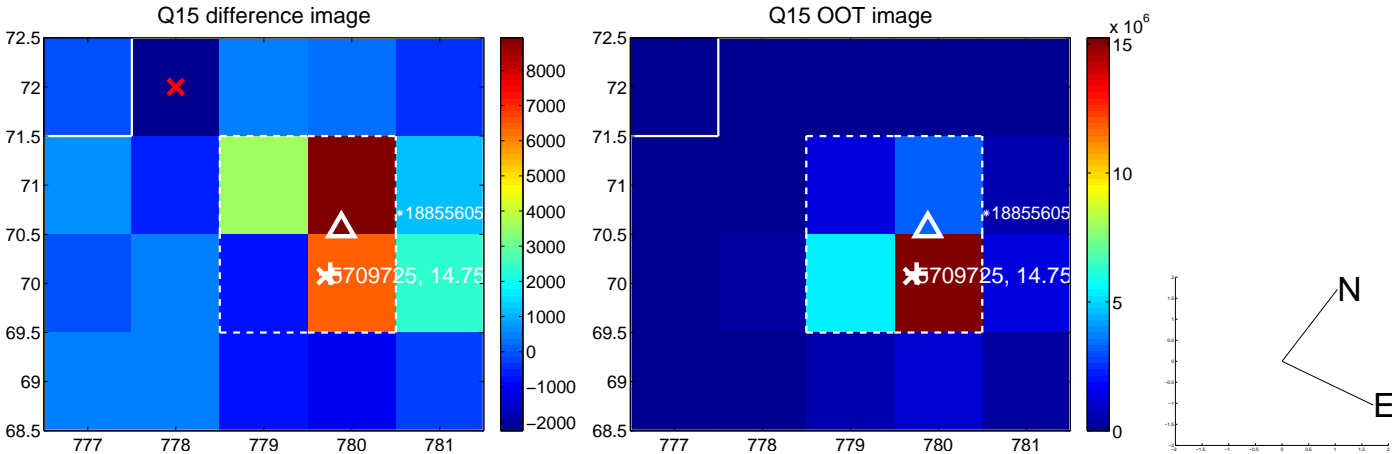
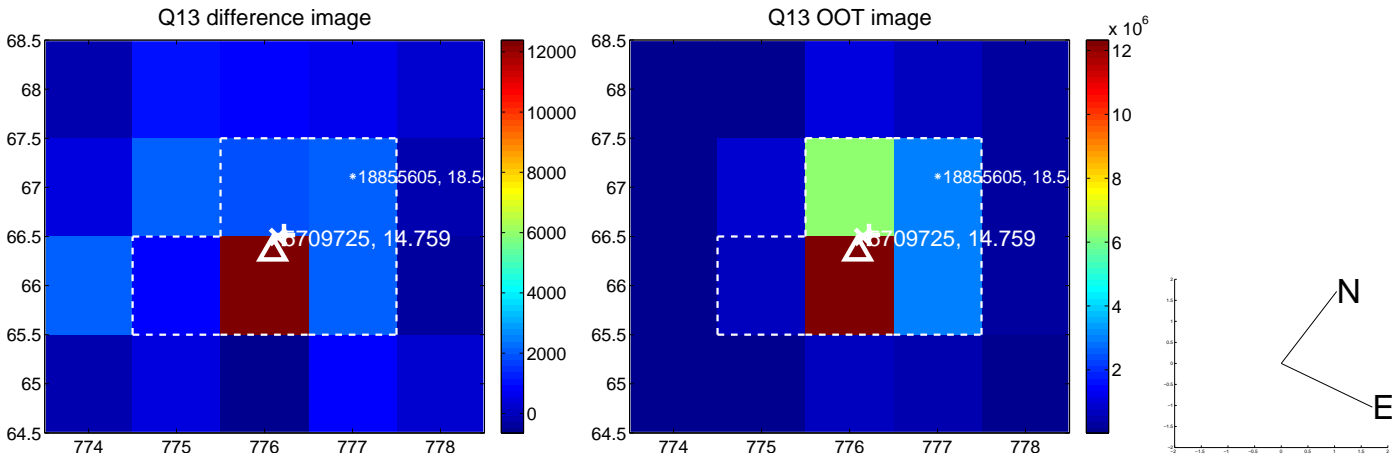
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



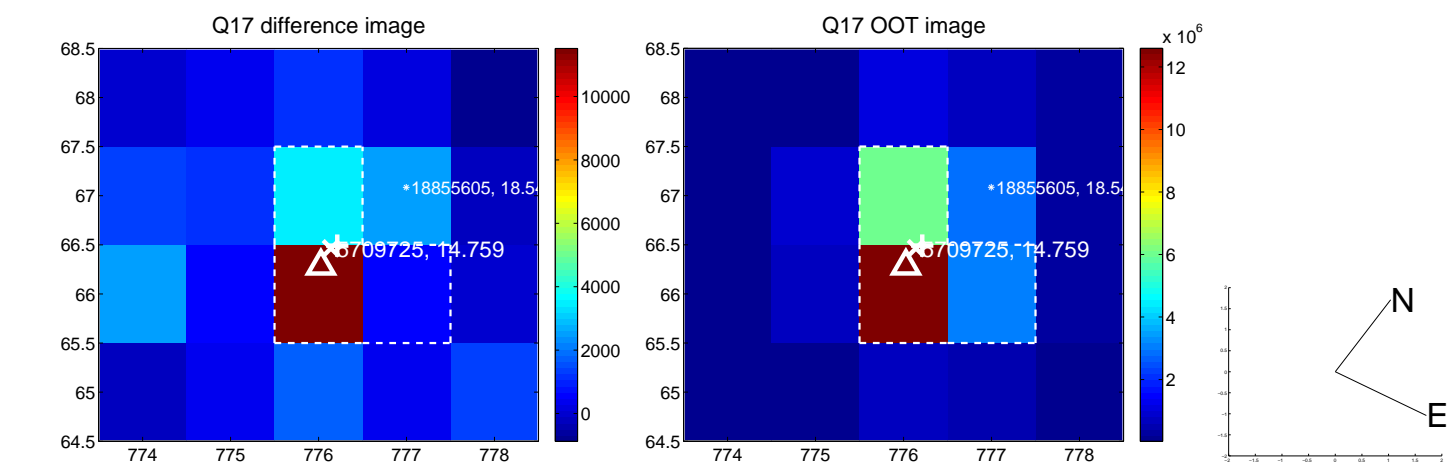
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



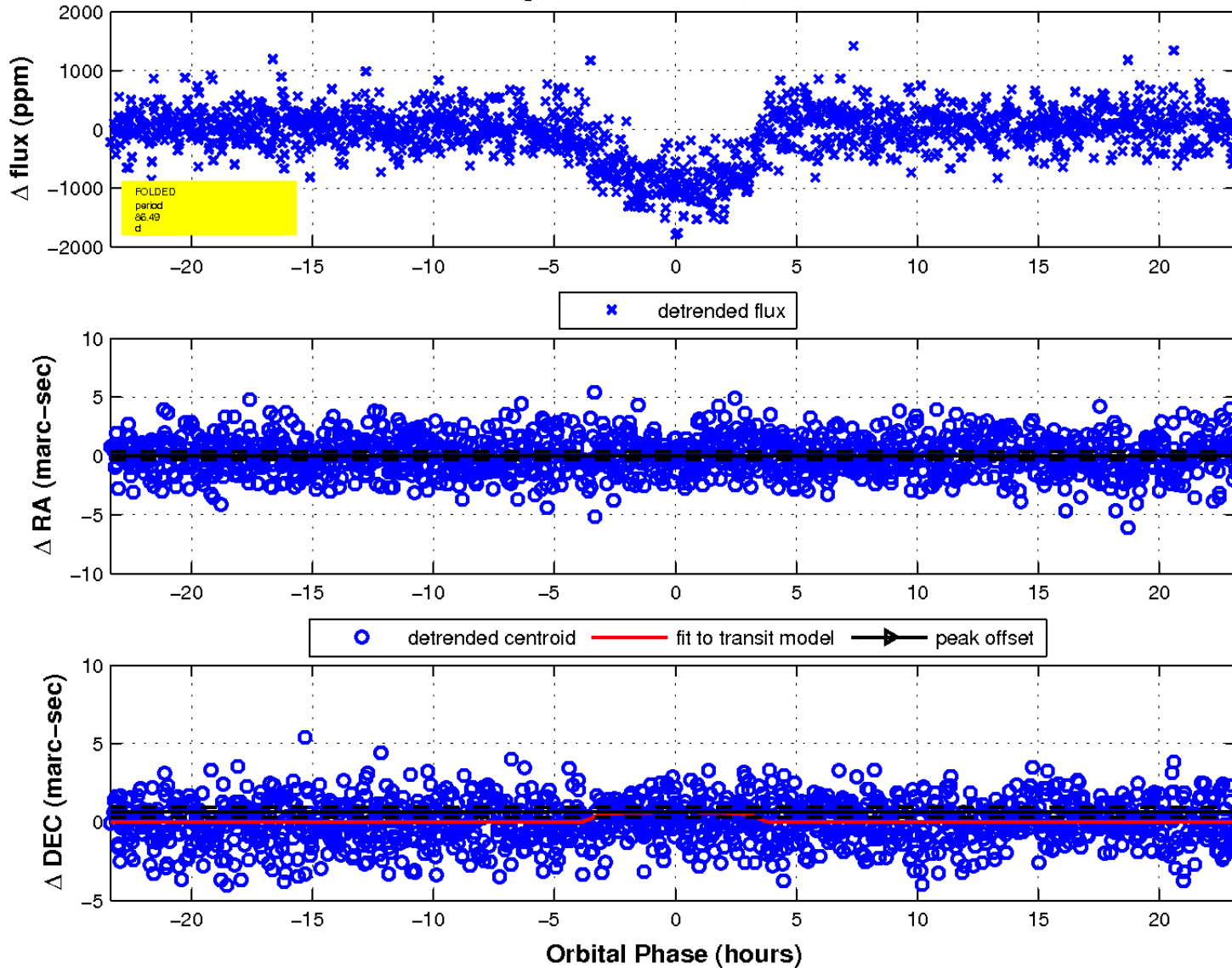
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

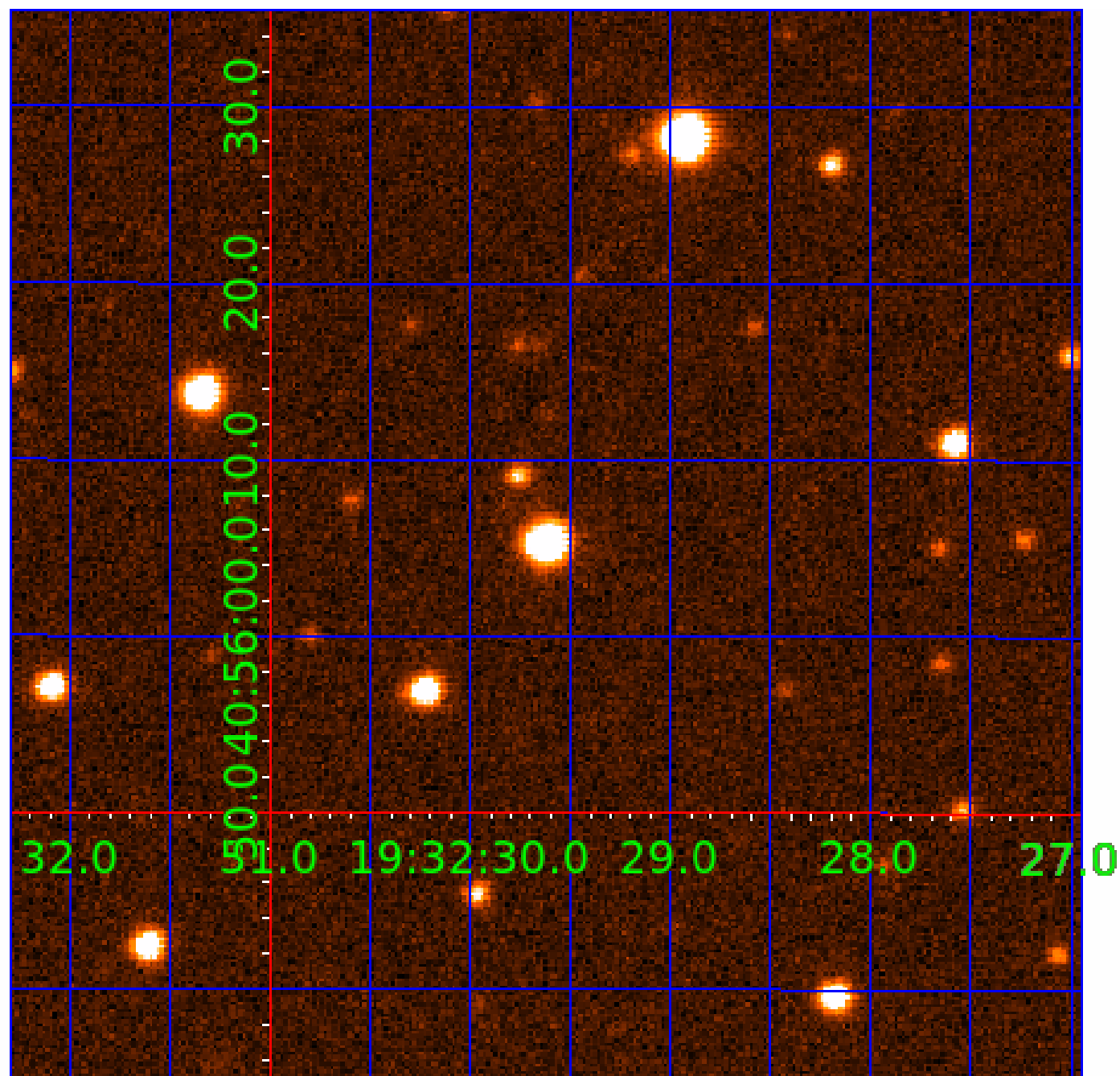


fluxWeightedCentroids, Planet 1 of 2



UKIRT Image

Declination



KIC 005709725

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})
005709725-01	OBS	0555.02	86.494503	181.886579	959.8	7.790	30.6	33.4	0.90	5252	3.17	4.30
005709725-02	OBS	0555.01	3.701764	131.728504	275.1	2.621	28.4	31.4	0.90	5252	1.72	287.41

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005709725-01	OBS	PC	0.97	0	0	0	0	NO_COMMENT
005709725-02	OBS	PC	1.00	0	0	0	0	NO_COMMENT

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

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

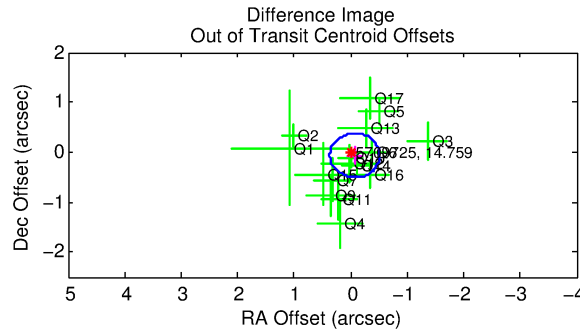
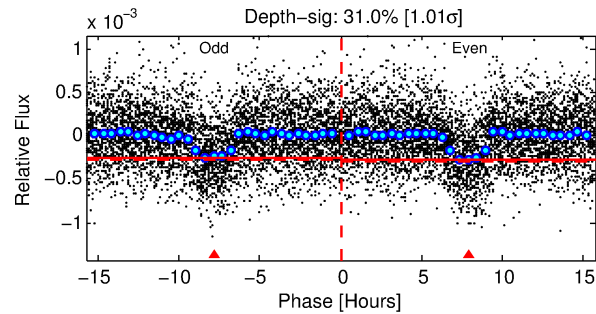
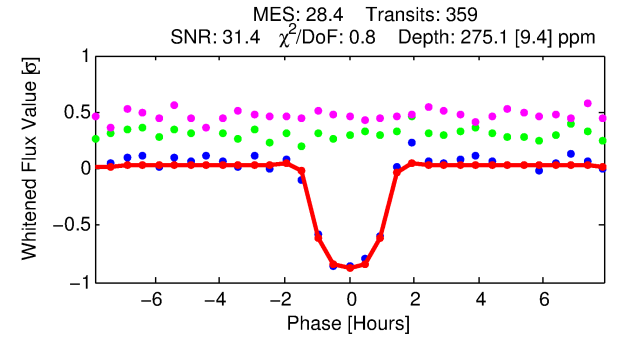
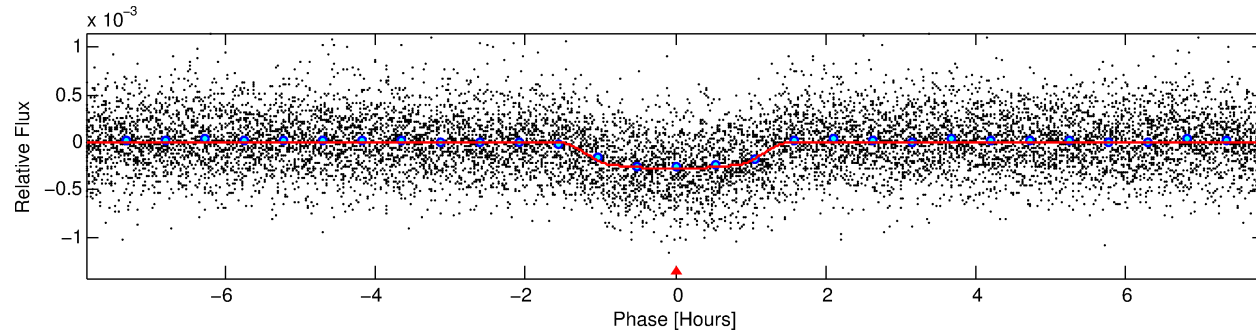
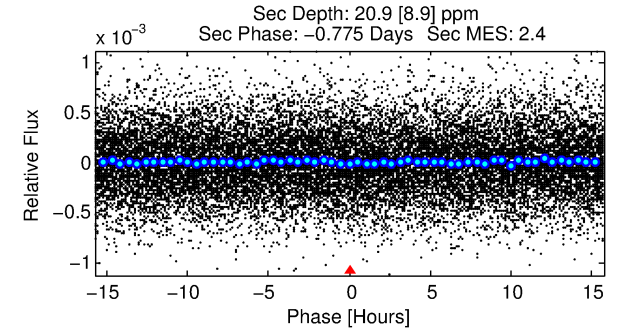
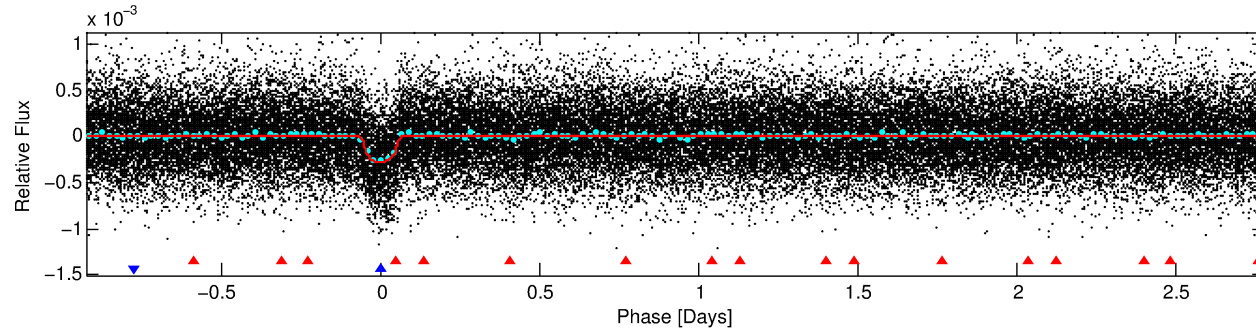
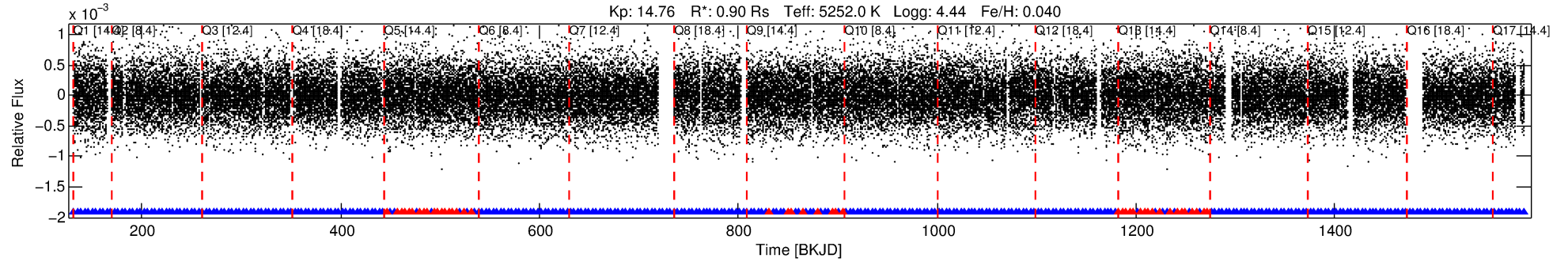
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 005709725-02

No Significant Match Found

DV One-Page Summary

KIC: 5709725 Candidate: 2 of 2 Period: 3.702 d
KOI: K00555.01 Corr: 0.990



DV Fit Results:

Period = 3.70176 [0.00001] d
Epoch = 131.7285 [0.0014] BKJD
Rp/R* = 0.0175 [0.0056]
a/R* = 6.14 [7.52]
b = 0.85 [0.43]
Seff = 287.41 [55.54]
Teff = 1050 [51] K
Rp = 1.72 [0.57] Re
a = 0.0437 [0.0047] AU
Ag = 7.44 [5.83] [1.10σ]
Teffp = 2681 [515] K [3.16σ]

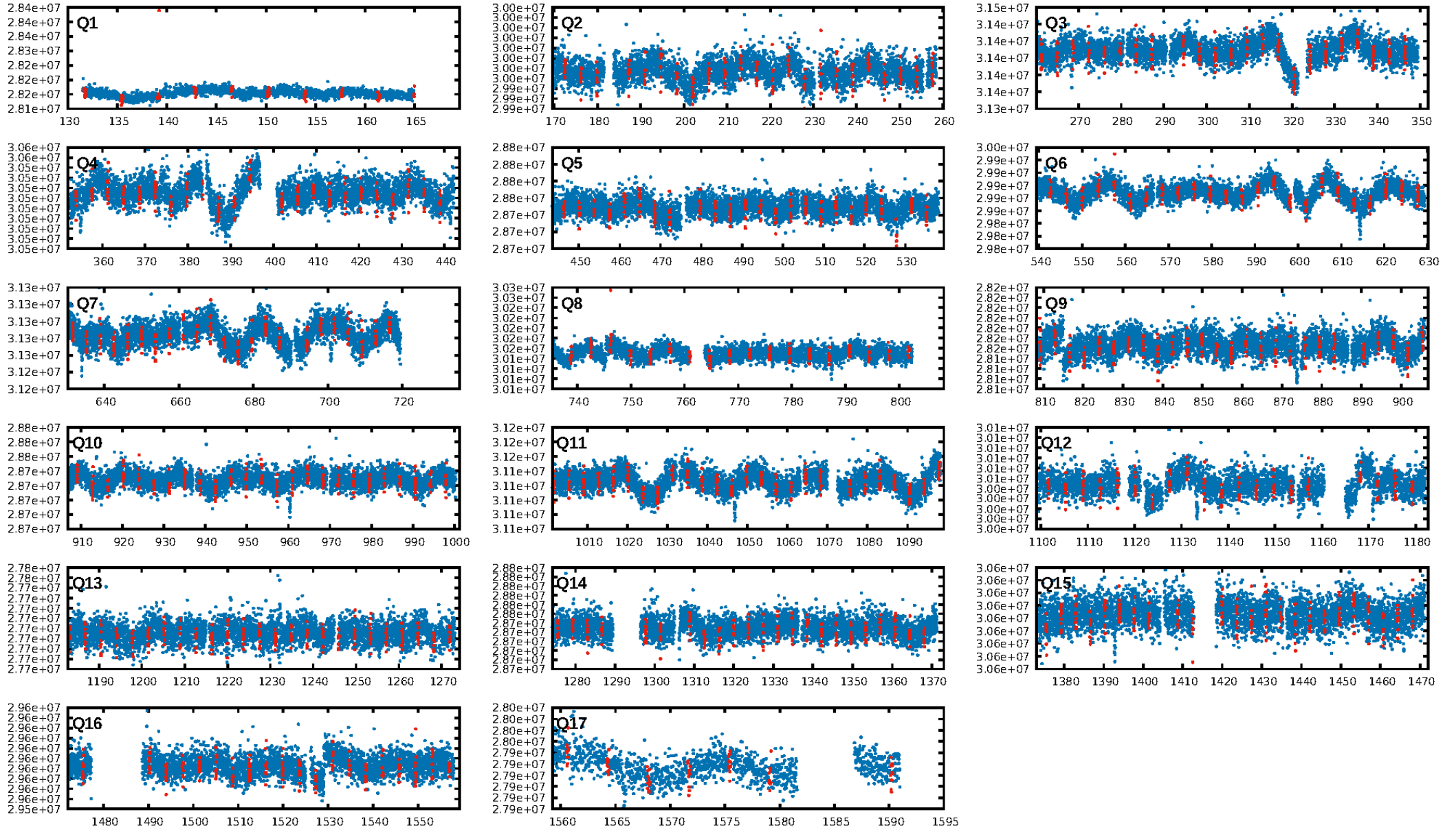
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [241.75σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 8.29e-173
RollingBand-fgt: 0.87 [298/342]
GhostDiagnostic-chr: 4.282
Centroid-sig: 3.2%
Centroid-so: 0.729 arcsec [1.89σ]
OotOffset-rm: 0.094 arcsec [0.63σ]
KicOffset-rm: 0.219 arcsec [1.49σ]
OotOffset-st: 4/4/3/5 [16]
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DiffImageQuality-fgm: 1.00 [16/16]
DiffImageOverlap-fno: 1.00 [17/17]

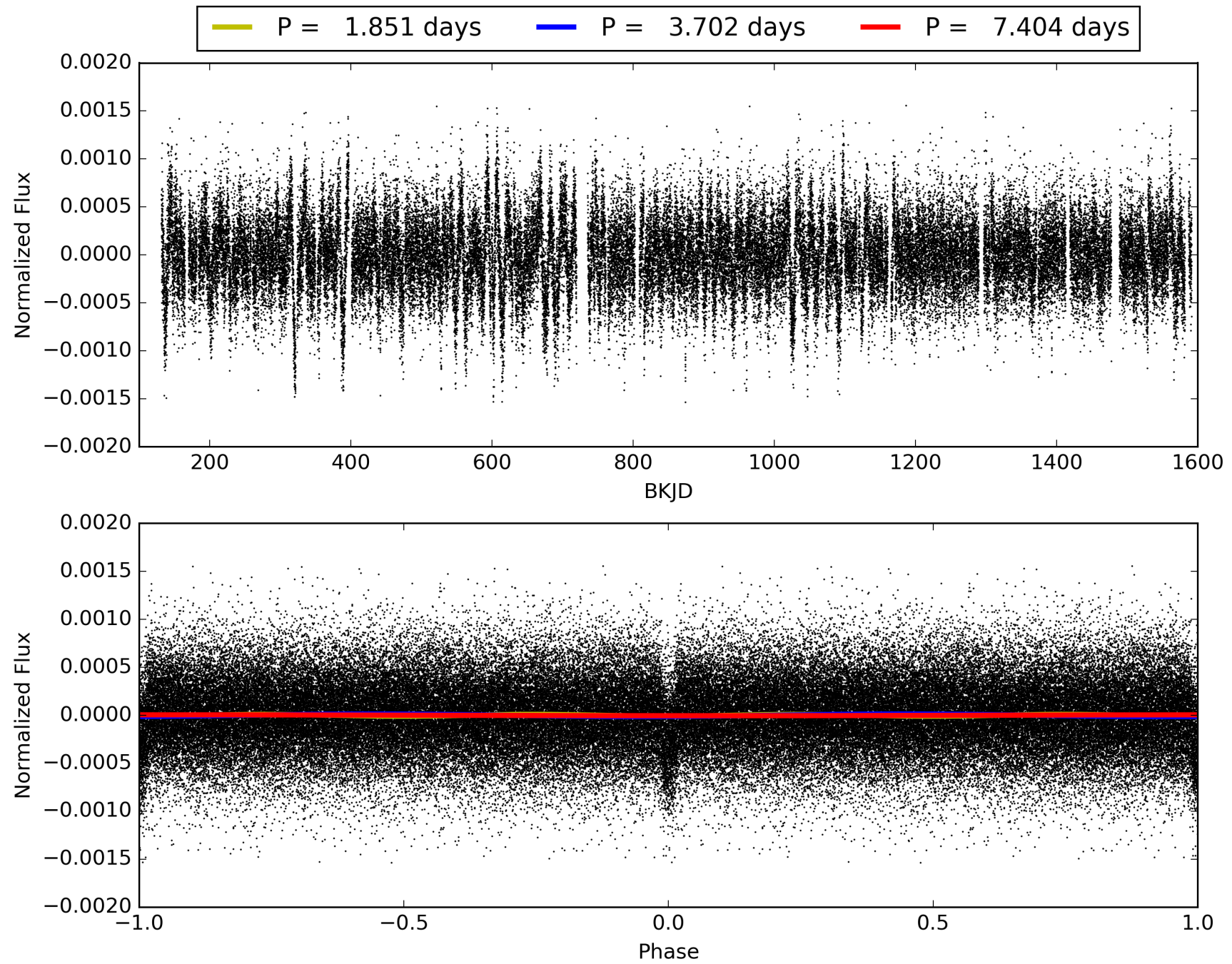
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 21:55:10 Z

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

TCE 005709725-02, PDC Light Curves

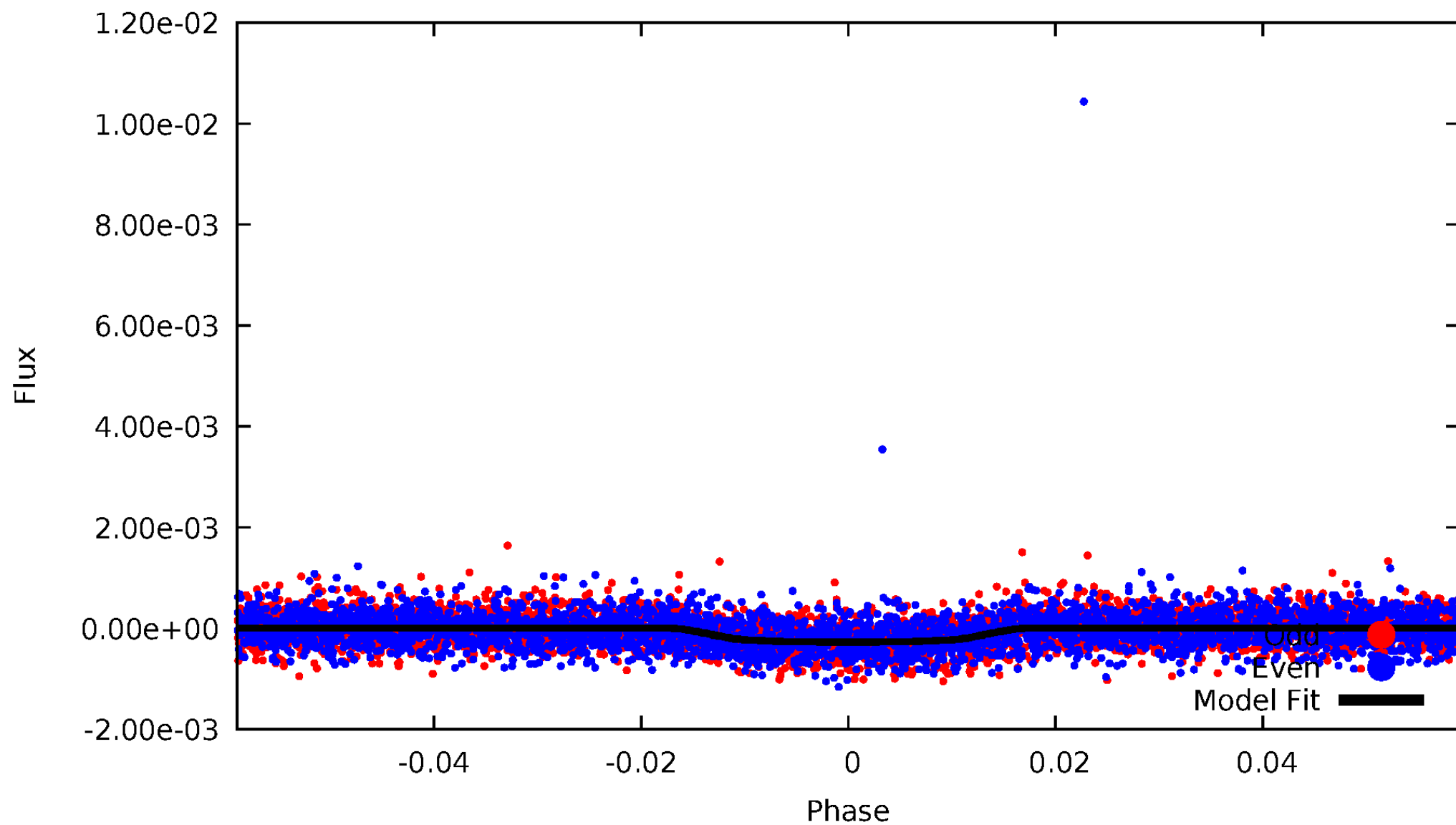


TCE 005709725-02



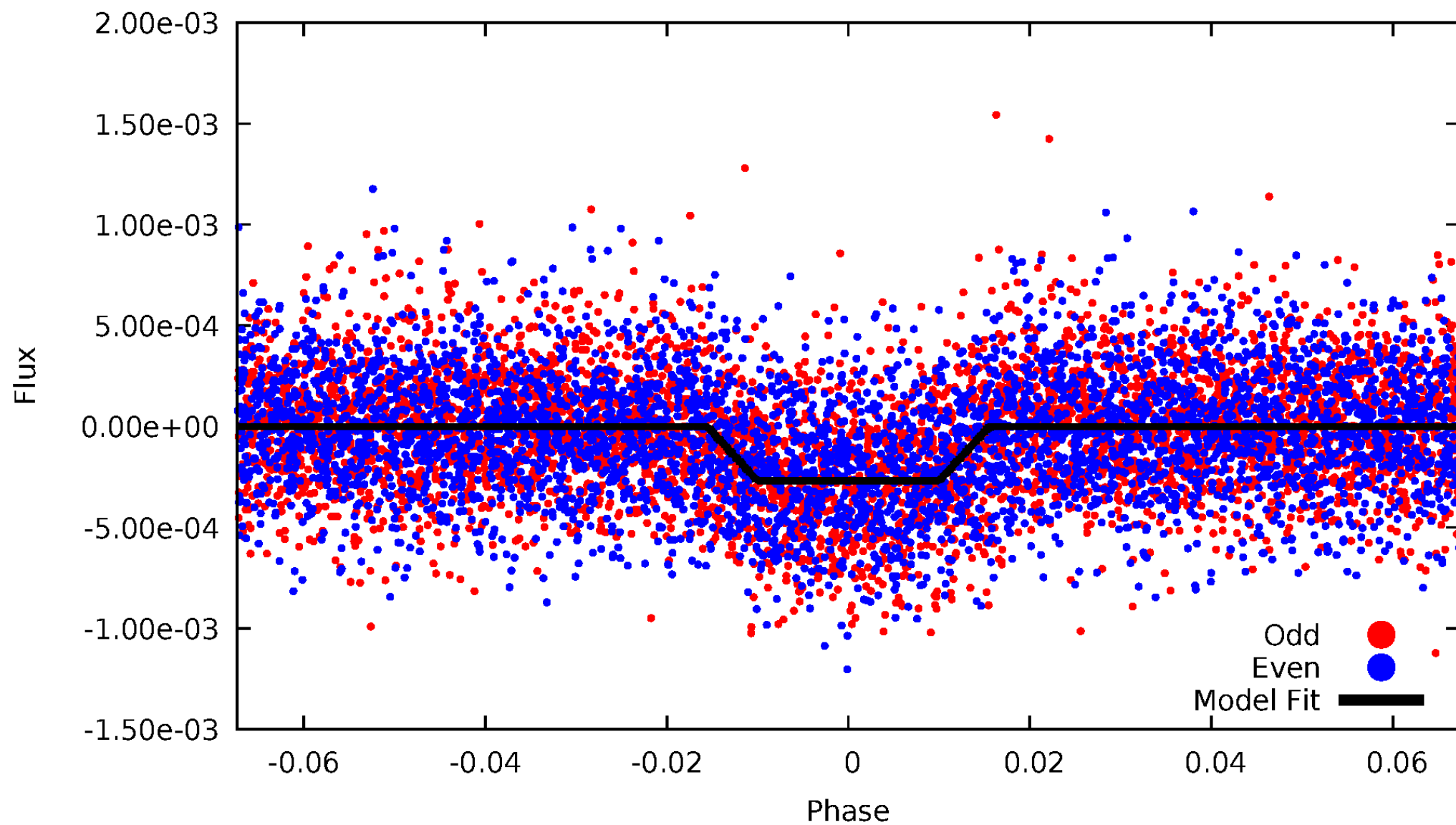
DV Odd/Even

TCE 005709725-02



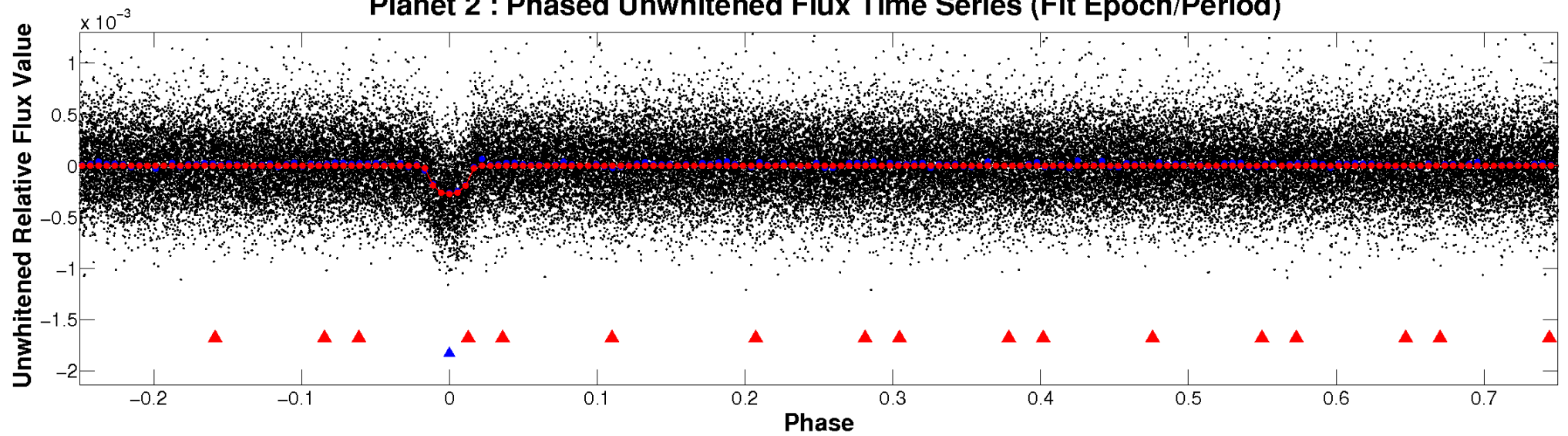
ALT Odd/Even

TCE 005709725-02

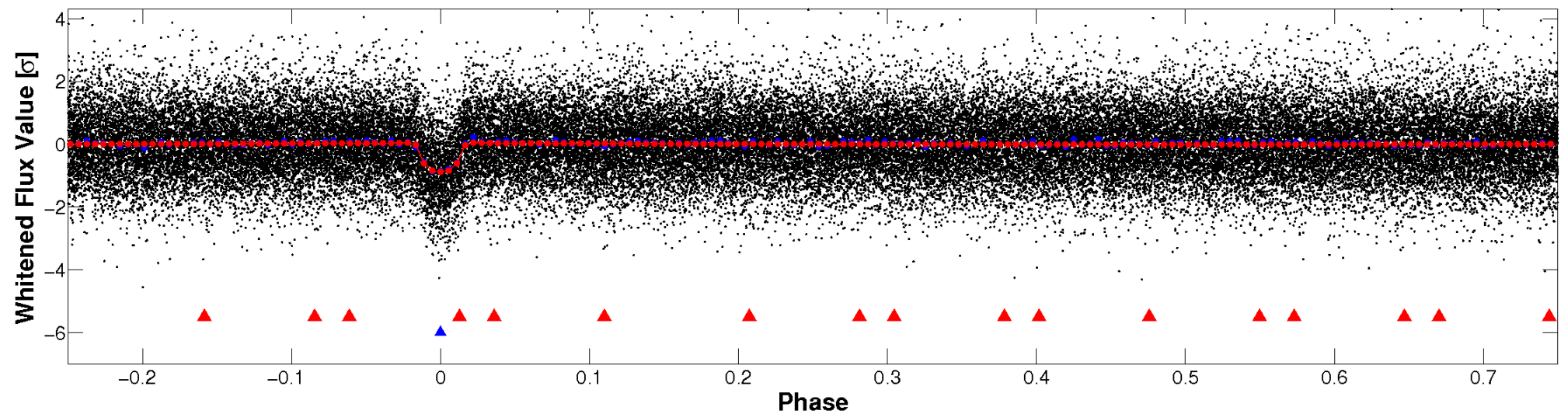


Non-Whitened Vs. Whitened Light Curve

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

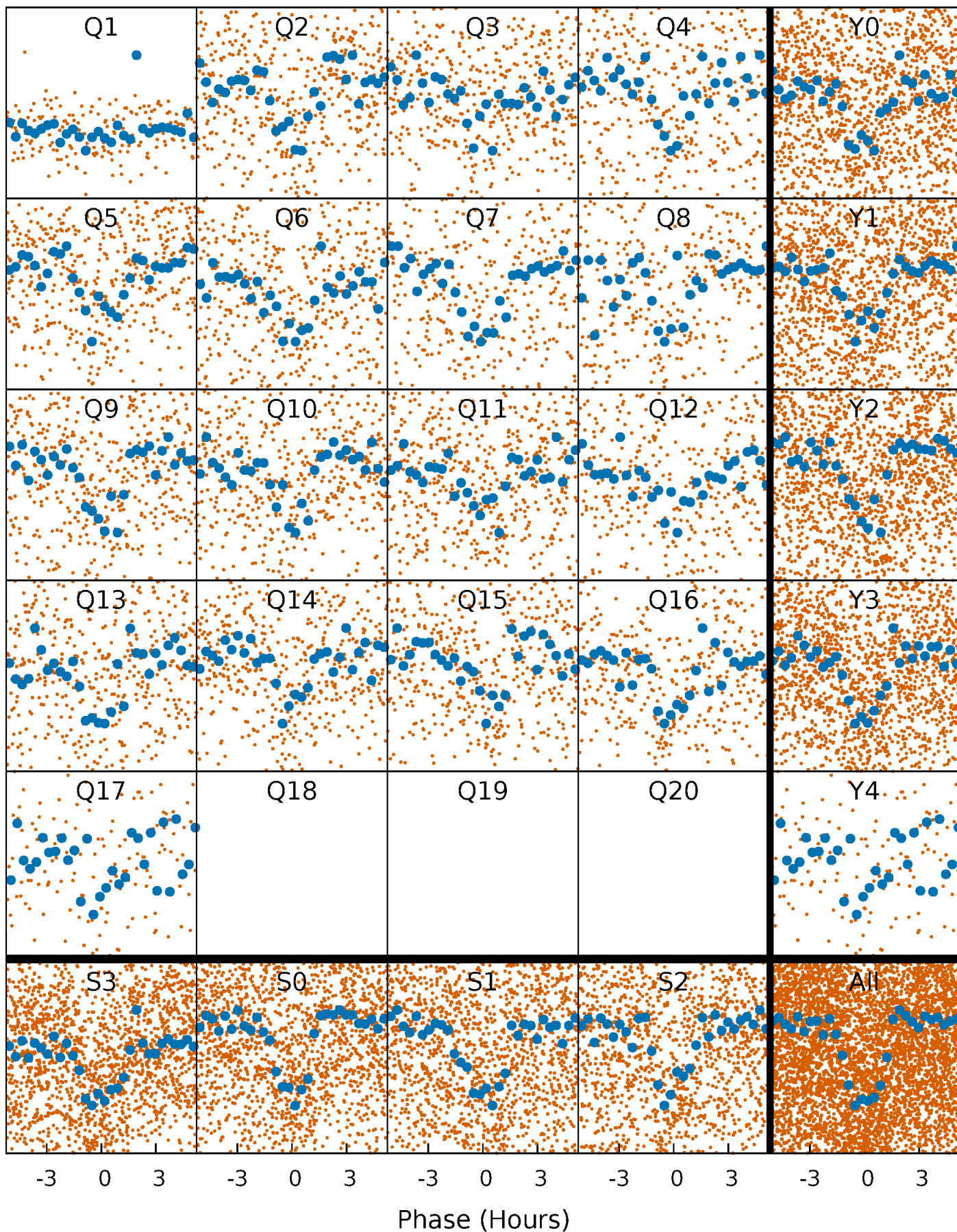


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



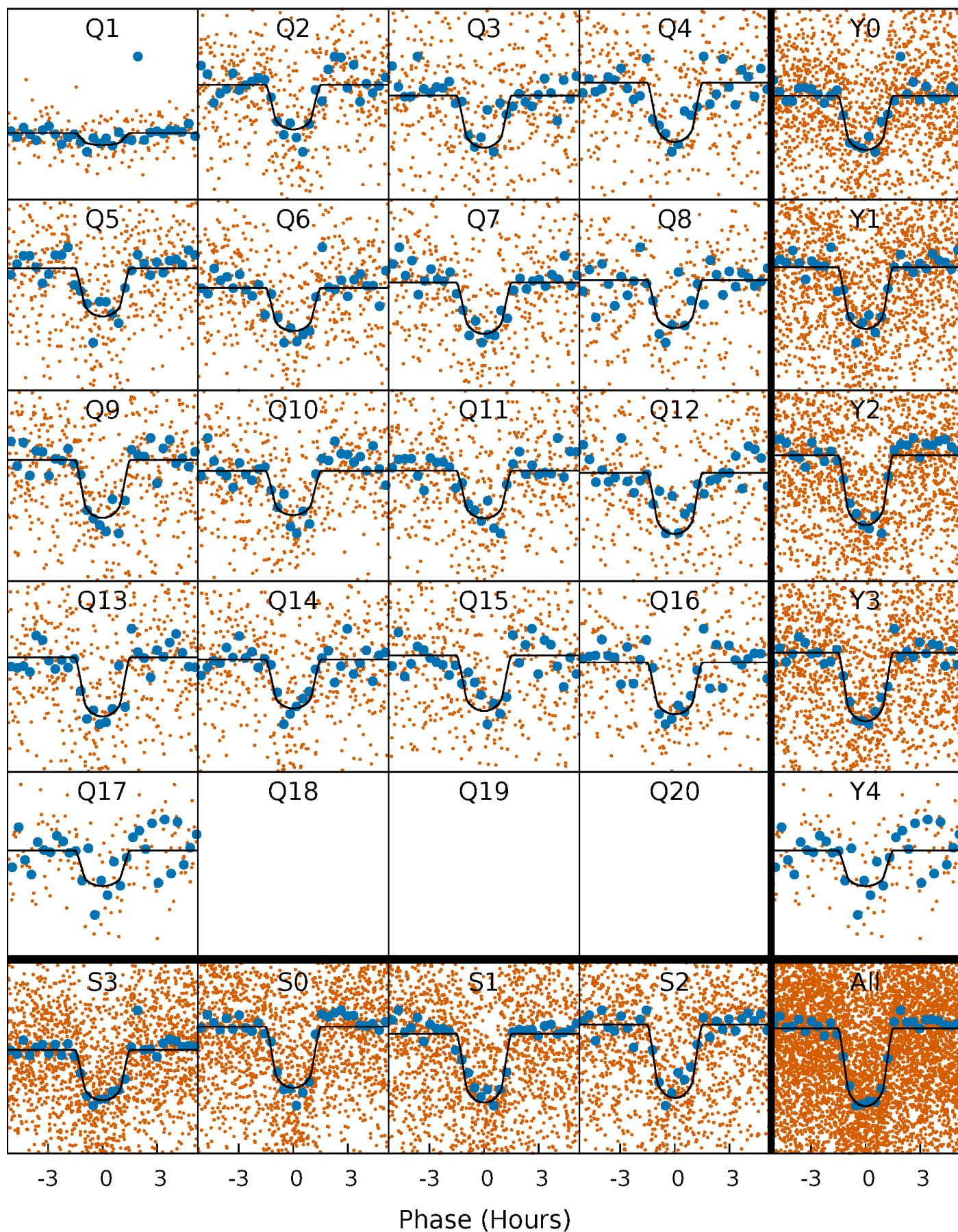
PDC Quarter-Phased Transit Curves

TCE 005709725-02 P= 3.701764 Days $T_0=131.728504$ (BKJD)



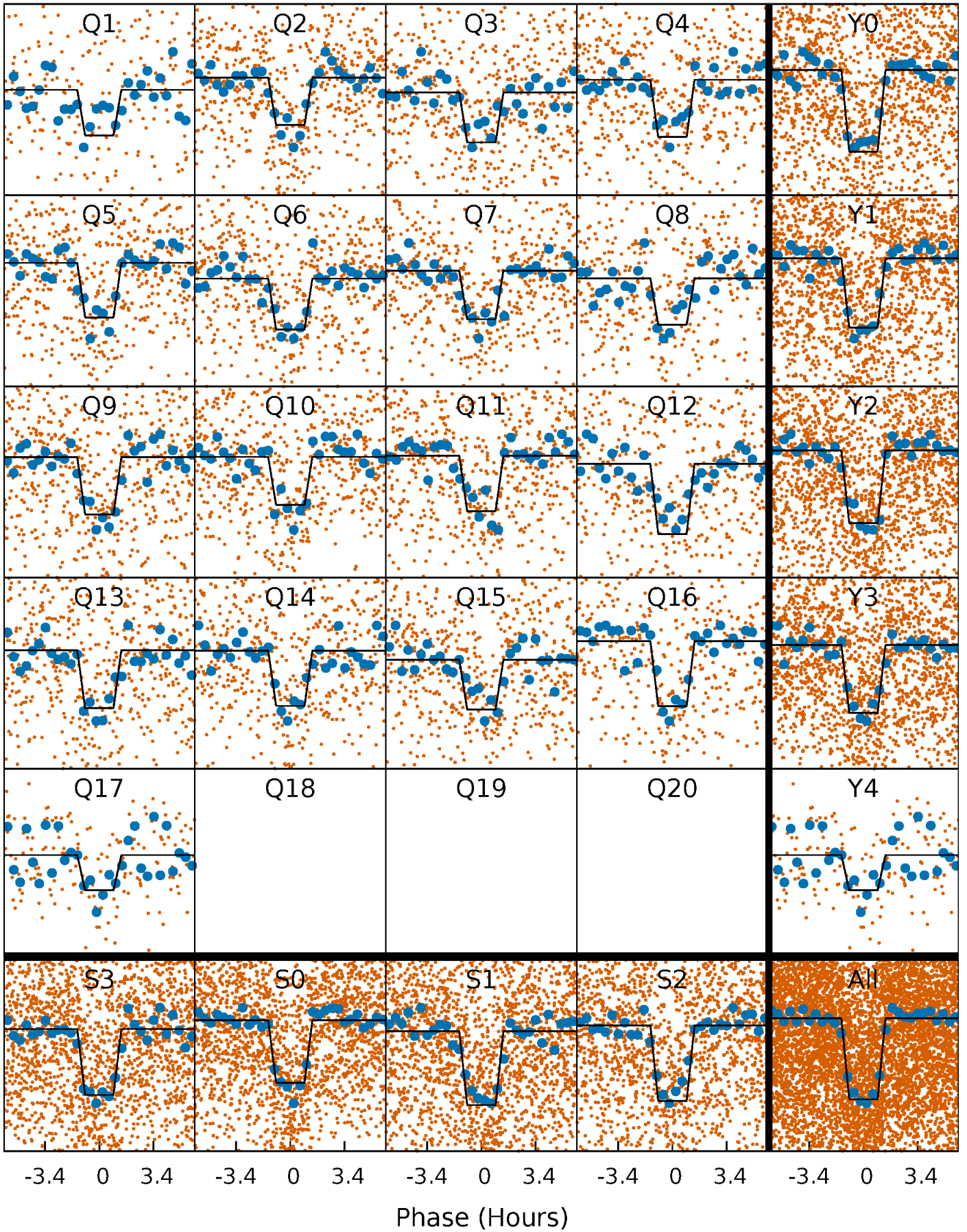
DV Quarter-Phased Transit Curves

TCE 005709725-02 $P = 3.701764$ Days $T_0 = 131.728504$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

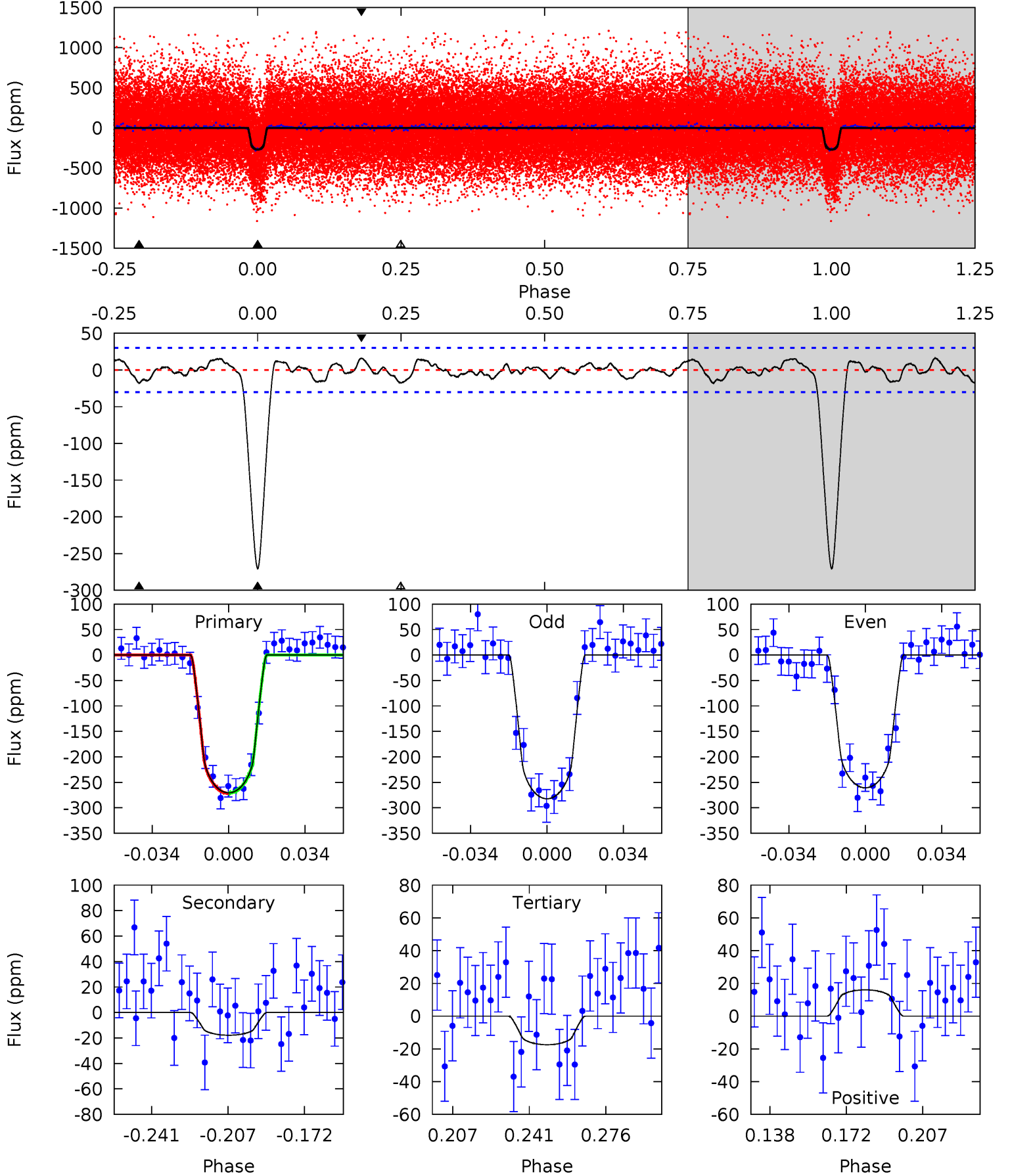
TCE 005709725-02 $P = 3.701743$ Days $T_0 = 131.732763$ (BKJD)



DV Model-Shift Uniqueness Test

005709725-02, P = 3.701764 Days, E = 128.026740 Days

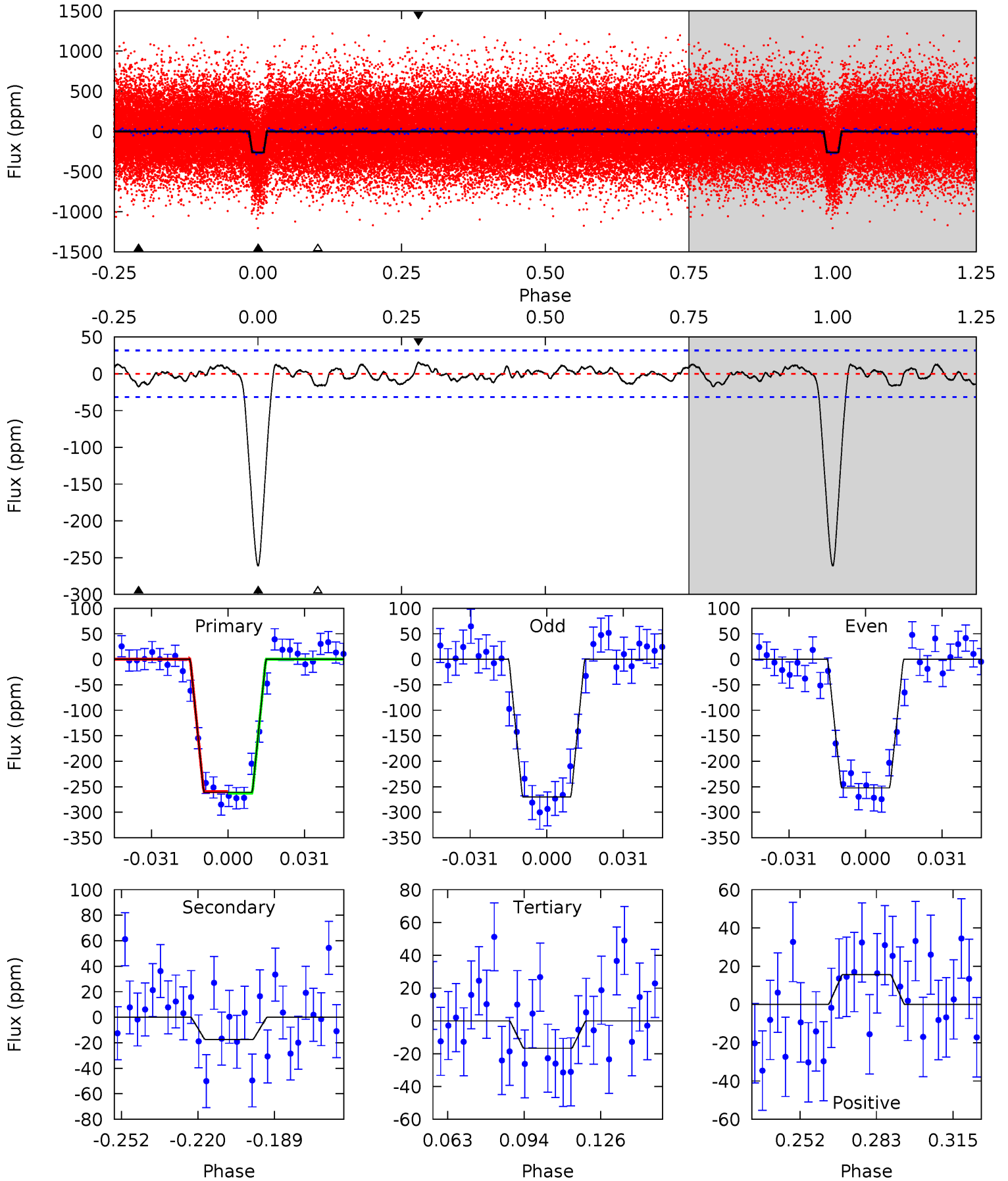
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
43.0	2.84	2.77	2.55	4.78	2.11	1.17	40.2	40.4	0.06	0.29	1.71	0.98	0.06	0.06



Alt Model-Shift Uniqueness Test

005709725-02, P = 3.701743 Days, E = 128.031020 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
39.6	2.63	2.53	2.38	4.80	2.15	1.05	37.1	37.2	0.10	0.26	1.32	1.02	0.06	0.22



Stellar Parameters For KIC 005709725

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (g \cdot \text{cm}^{-3})$
	5252^{+105}_{-105}	$4.442^{+0.105}_{-0.052}$	$0.040^{+0.150}_{-0.150}$	$0.898^{+0.063}_{-0.095}$	$0.815^{+0.064}_{-0.032}$	$1.583^{+0.688}_{-0.280}$
	+2%/-2%	+2%/-1%	+375%/-375%	+7%/-11%	+8%/-4%	+43%/-18%
Source	SPE58	SPE58	SPE58	DSEP		

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

Secondary Eclipse Parameters for KIC 005709725-02 / KOI 0555.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-18 ± 6	$1.68^{+0.60}_{-0.51}$	1459^{+42}_{-50}	3138^{+449}_{-321}	$6.590^{+8.593}_{-3.488}$
Alt.	-17 ± 7	$1.57^{+0.61}_{-0.53}$	1458^{+45}_{-48}	3201^{+455}_{-358}	$7.365^{+9.988}_{-4.009}$

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

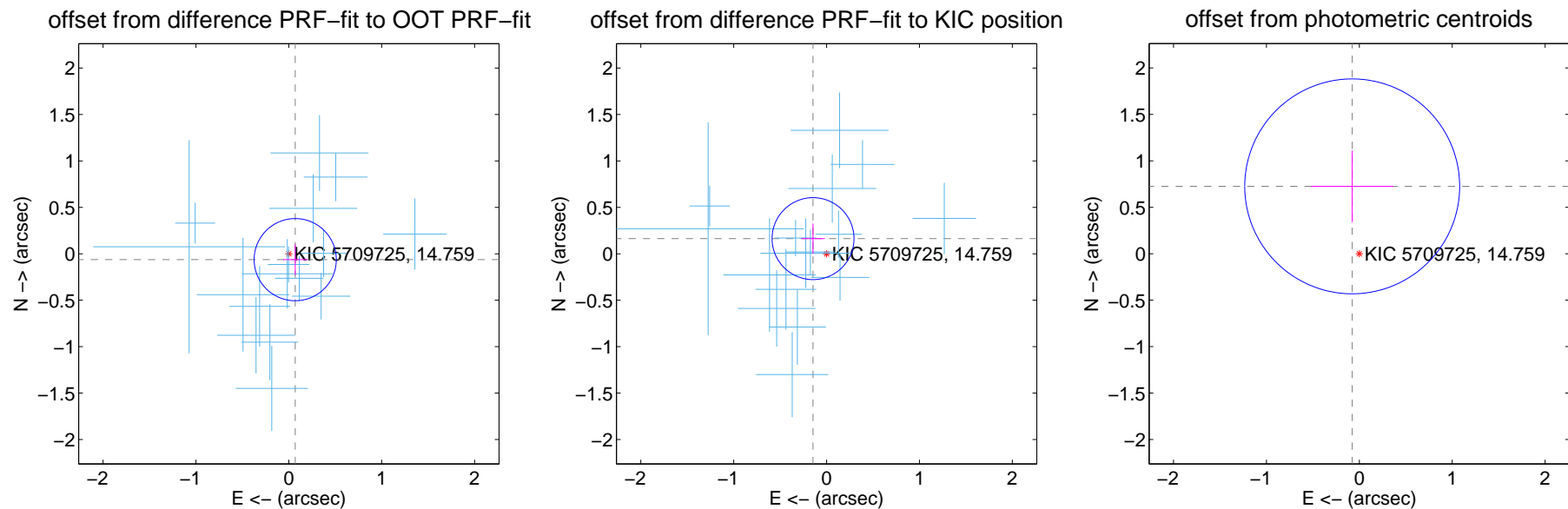
DV Centroid Data

Supplemental centroid analysis for 005709725-02. Kepler magnitude: 14.76. Transit SNR 31.40

There are 16 quarters with good PRF difference image offsets

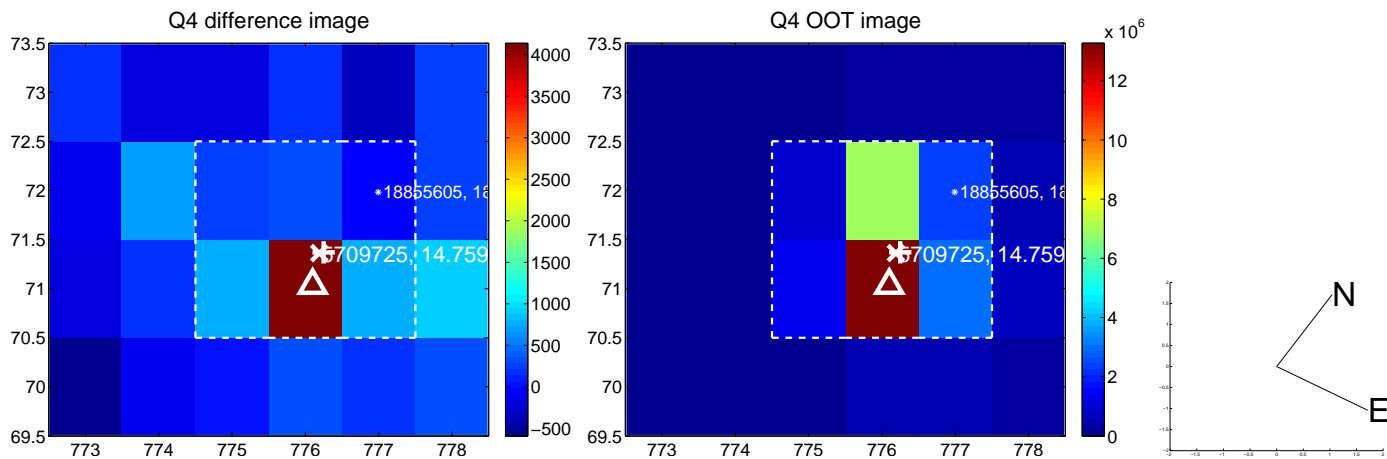
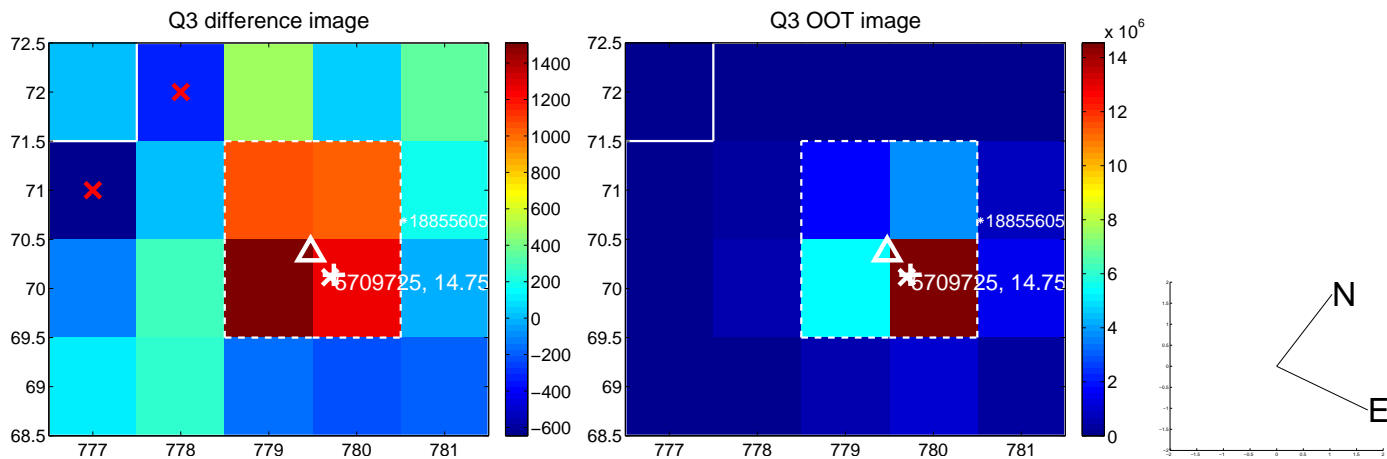
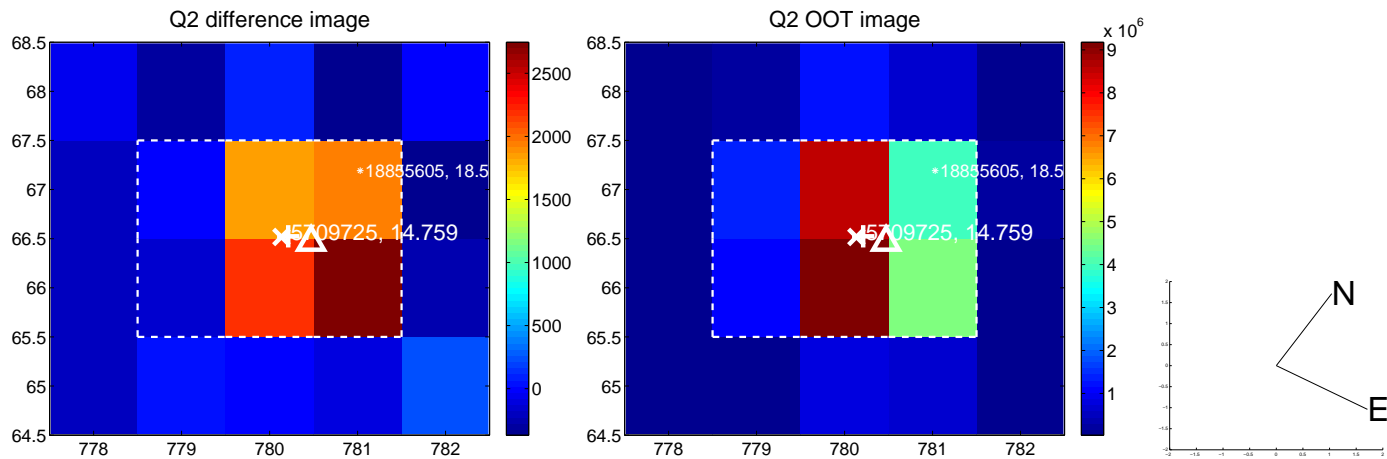
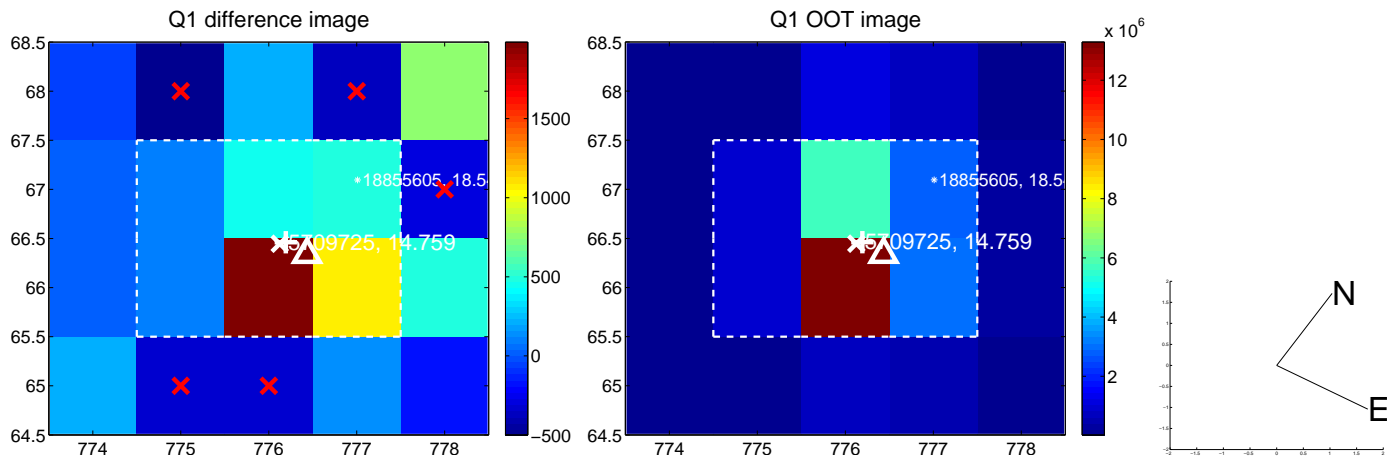
The direct PRF centroid is offset from the target star catalog position by about 0.31 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.094 ± 0.147	0.63	-0.069 ± 0.130	-0.063 ± 0.165
PRF-fit source offset from KIC position	0.219 ± 0.147	1.49	0.146 ± 0.126	0.163 ± 0.162
photometric centroid source offset	0.73 ± 0.39	1.89	0.08 ± 0.44	0.73 ± 0.38

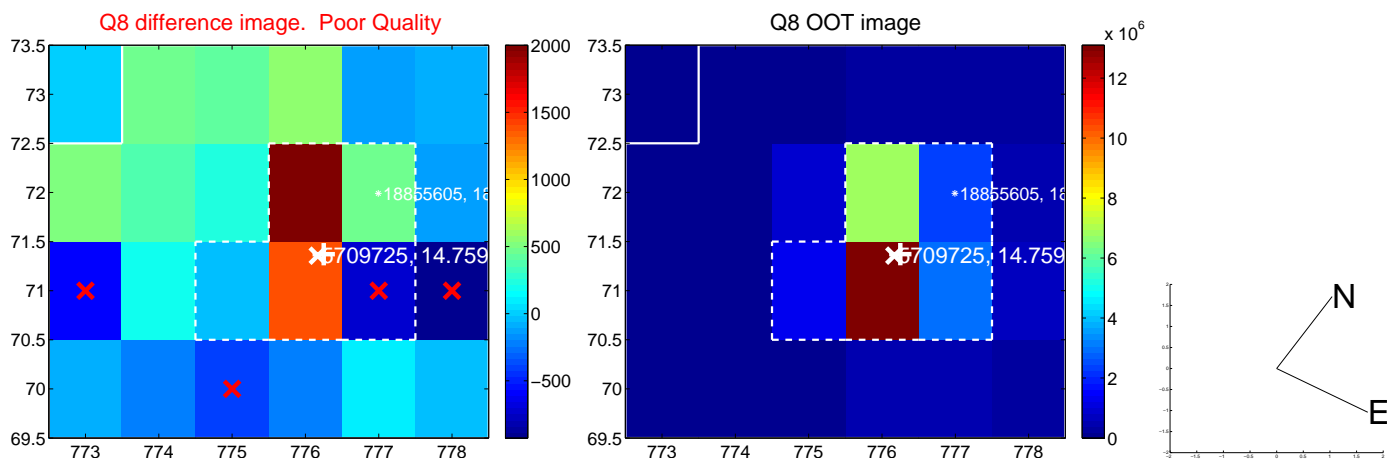
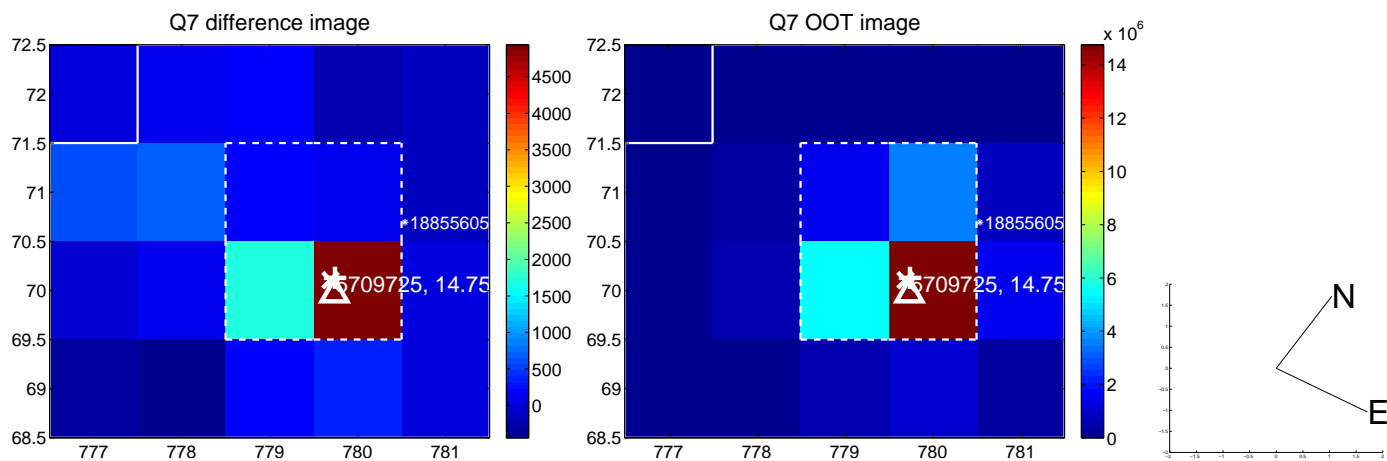
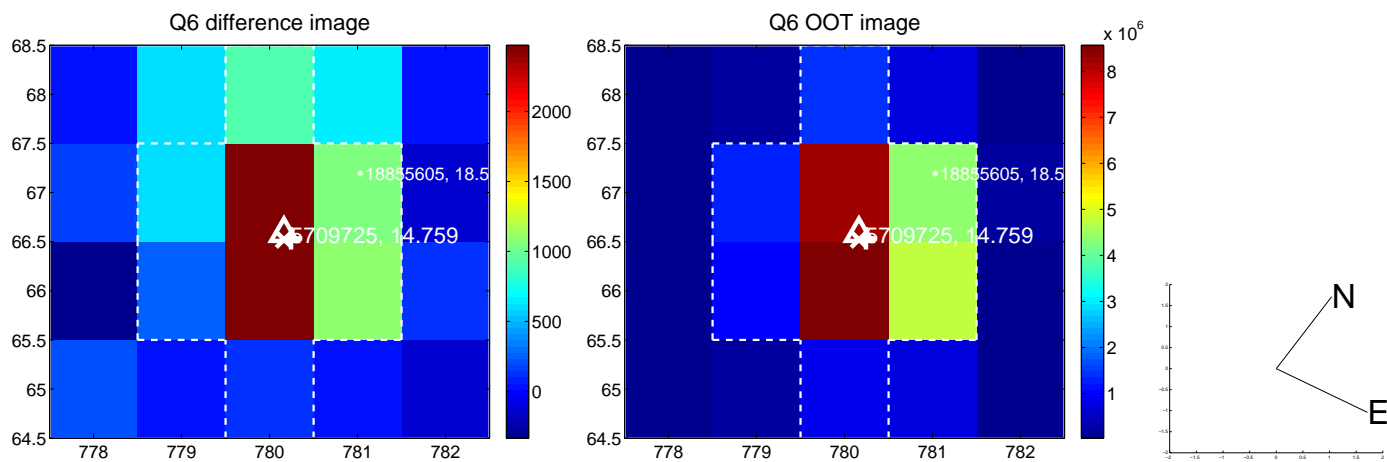
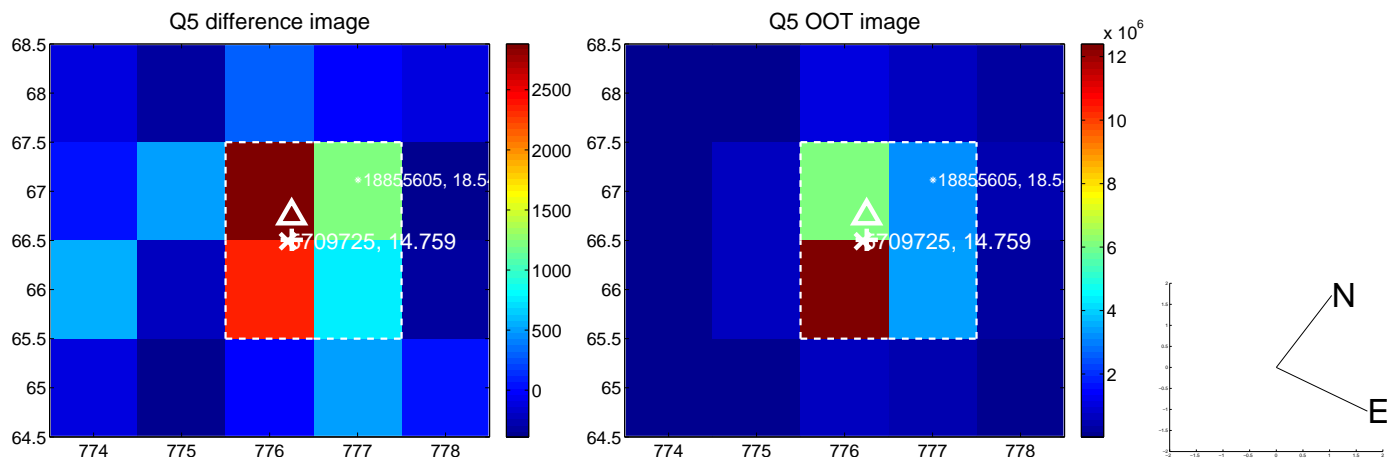


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

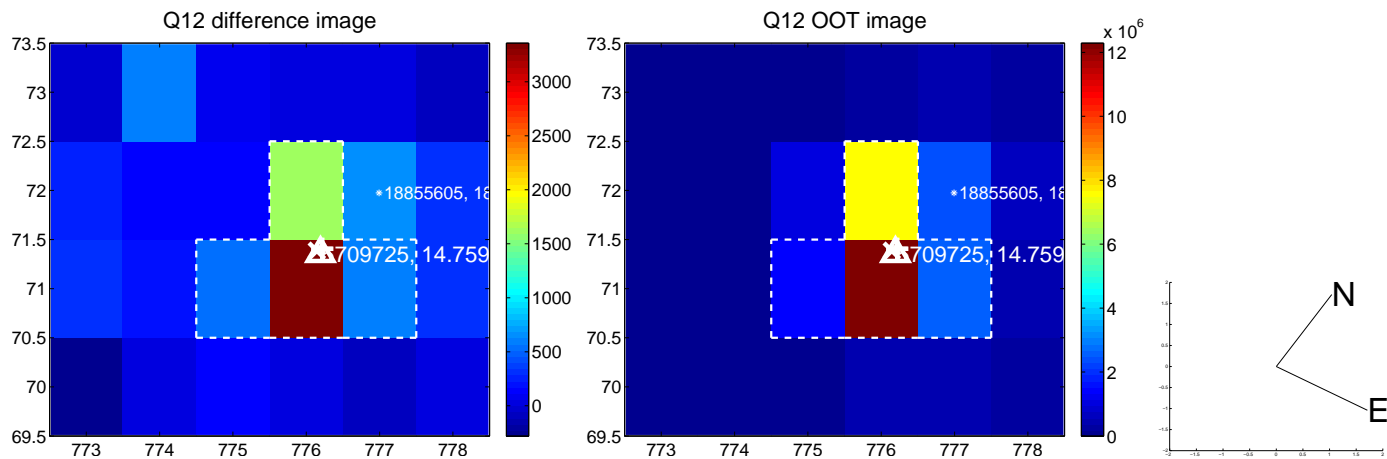
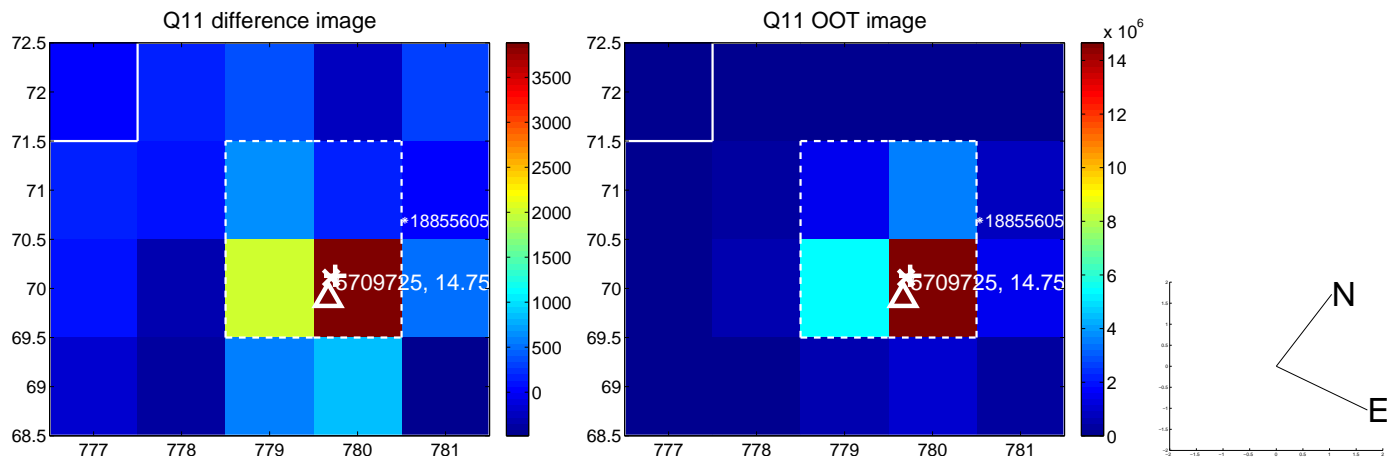
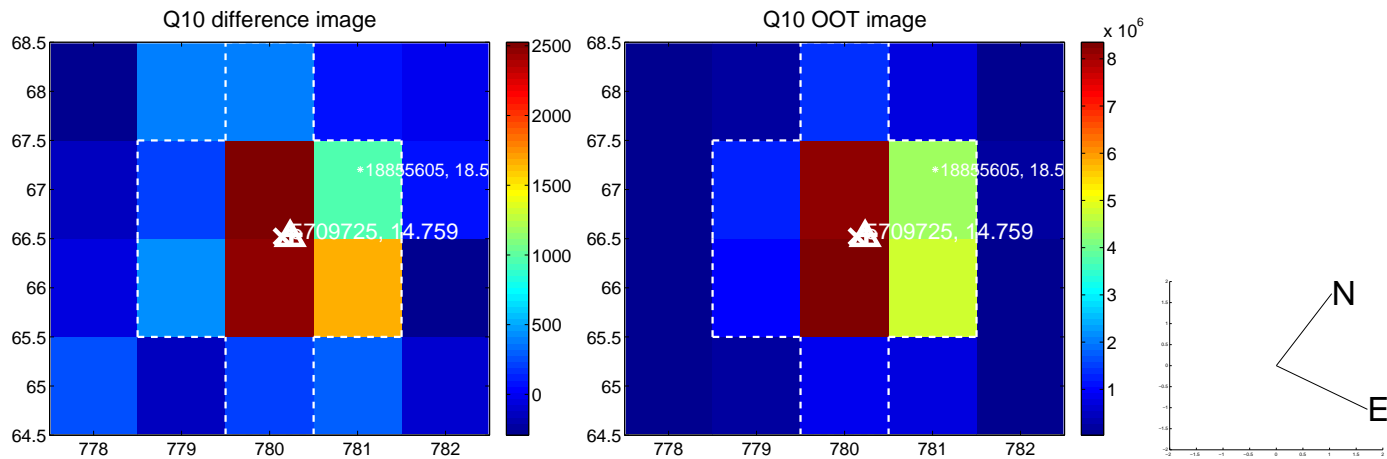
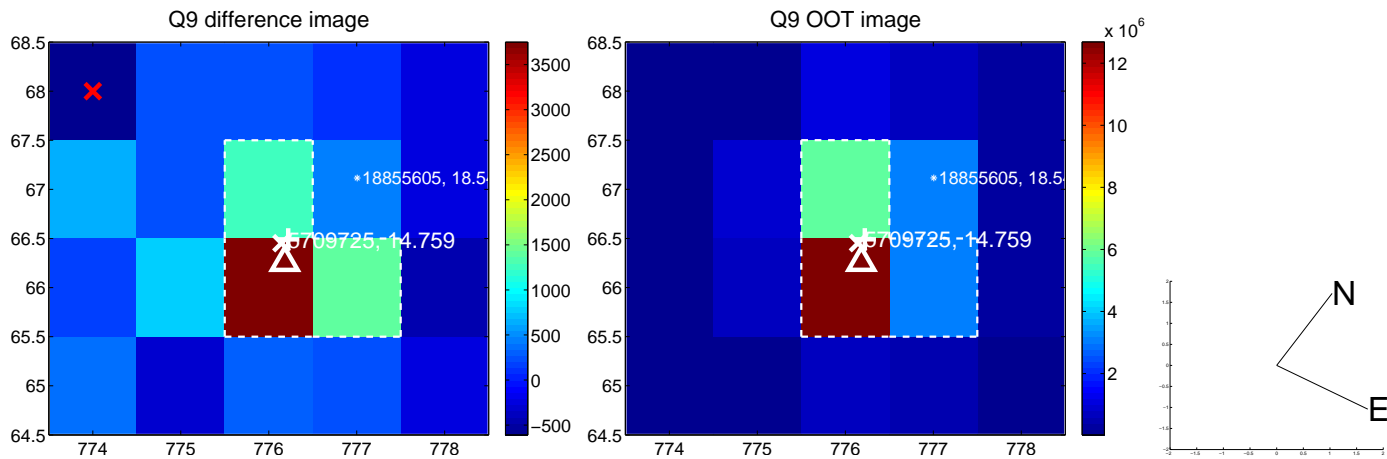
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



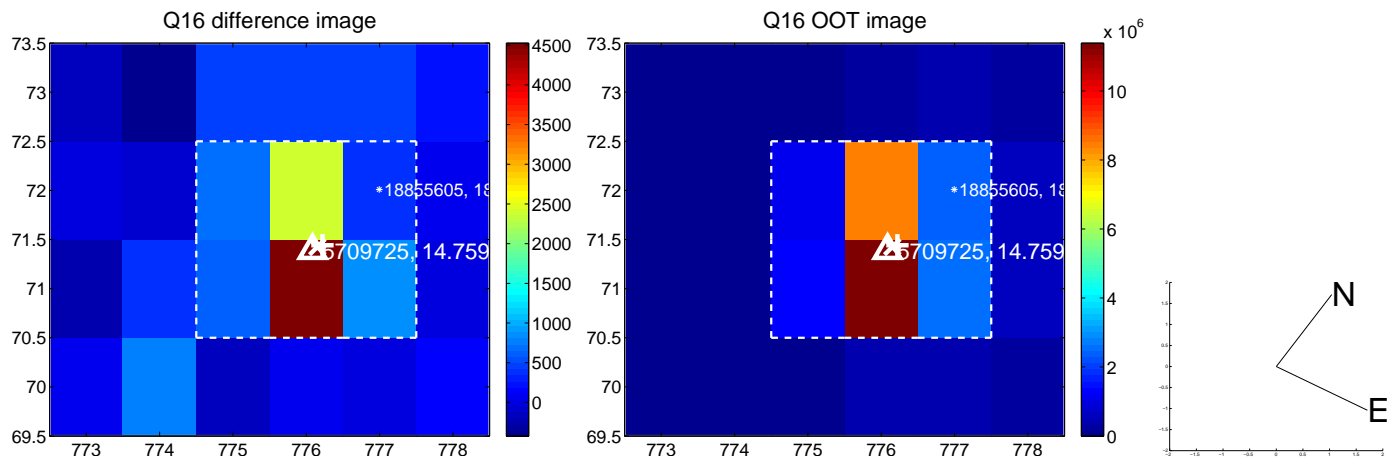
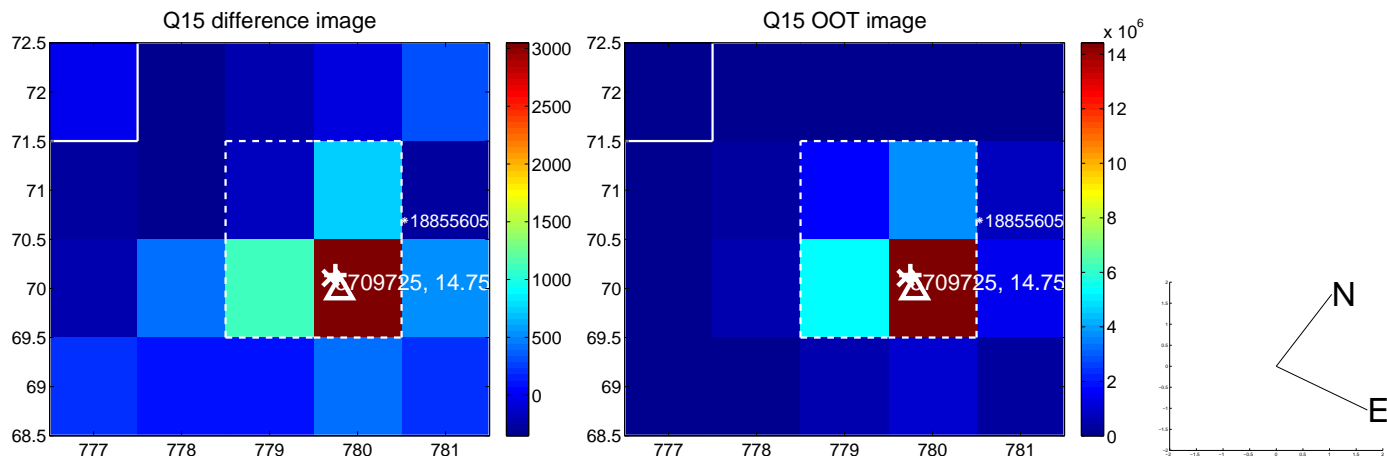
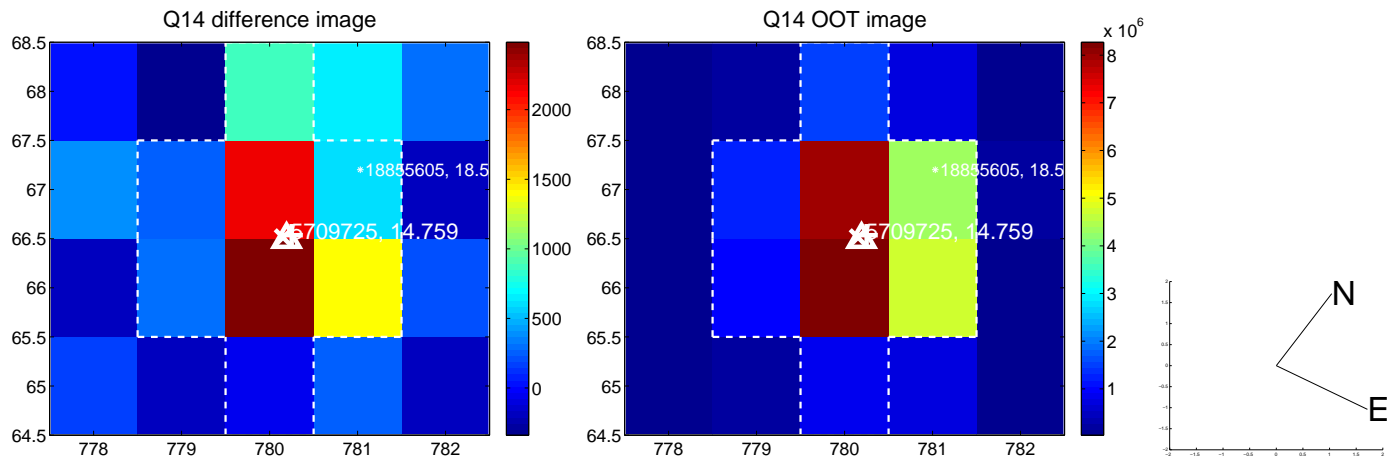
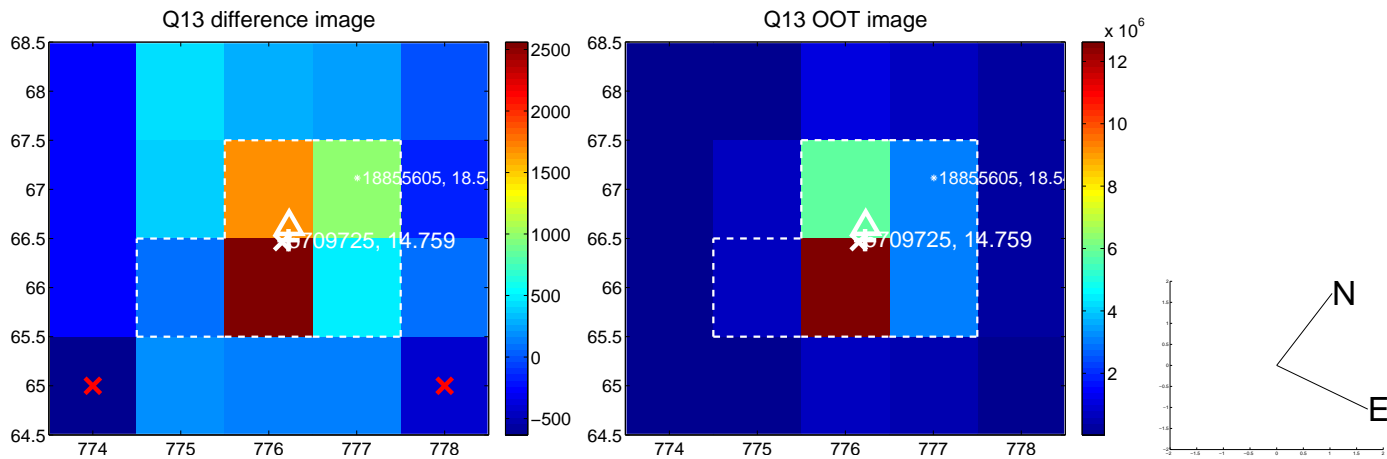
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



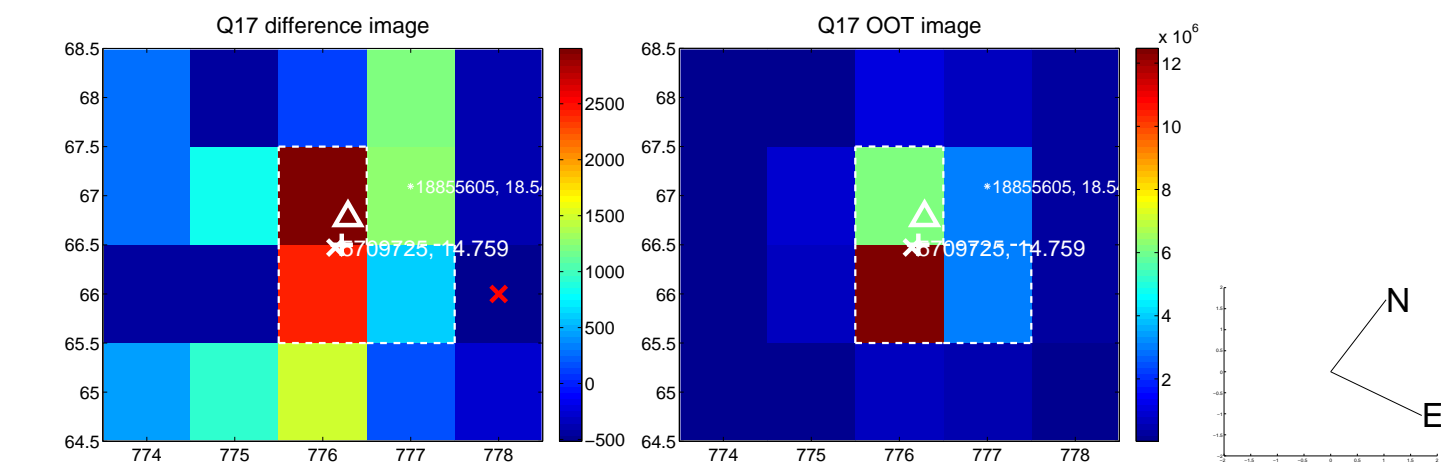
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



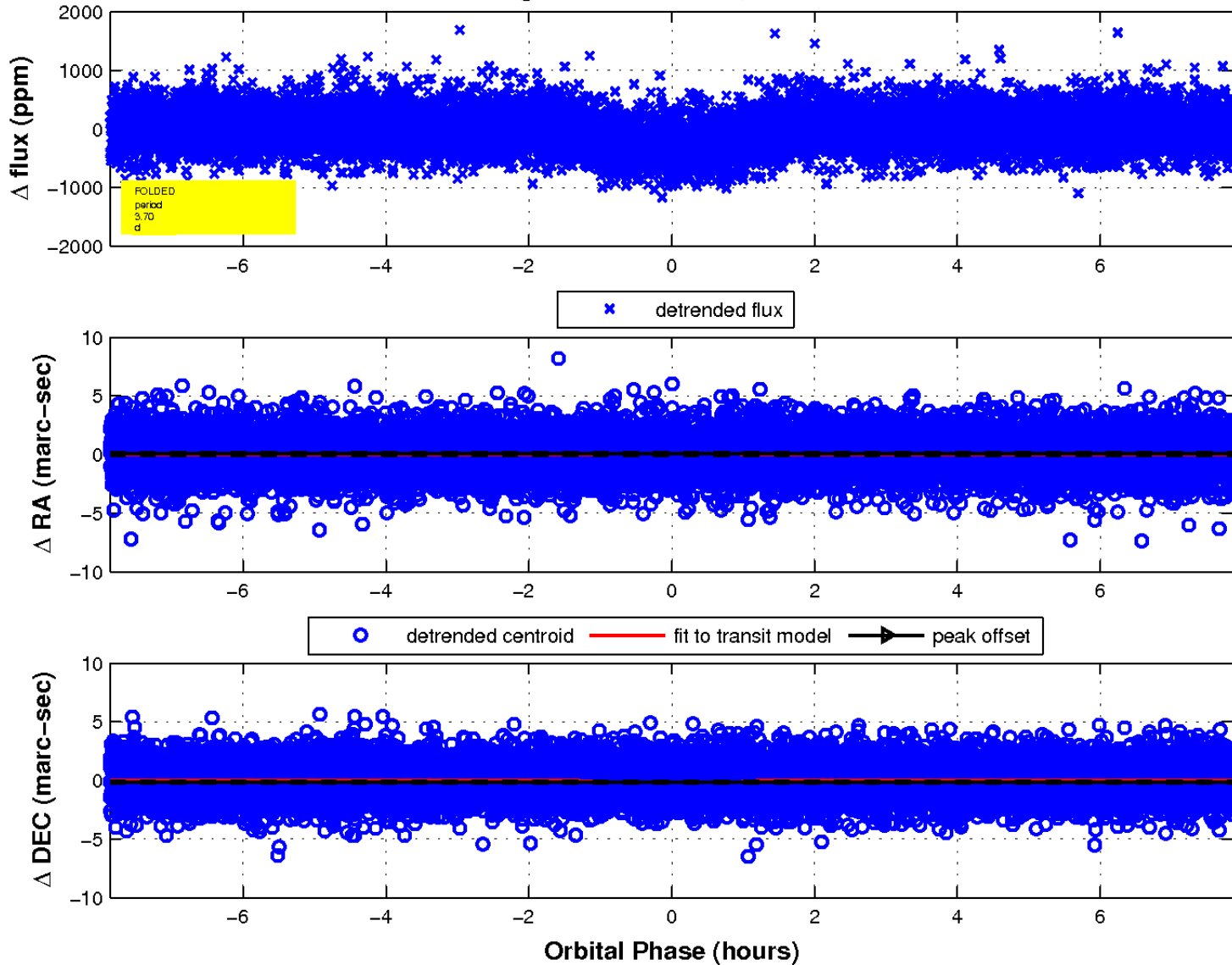
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 2 of 2



UKIRT Image

