

KIC 009152999

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})
009152999-01	OBS	No	2.337623	131.605526	184.8	7.359	8.1	8.5	0.98	5757	1.58	801.23
009152999-02	OBS	No	216.026973	182.070903	2911.9	17.807	11.2	8.3	0.98	5757	6.37	1.92

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009152999-01	OBS	FP	0.00	1	0	1	0	LPP_DV—CENT_KIC_POS—HALO_GHOST
009152999-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_MEAS

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

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

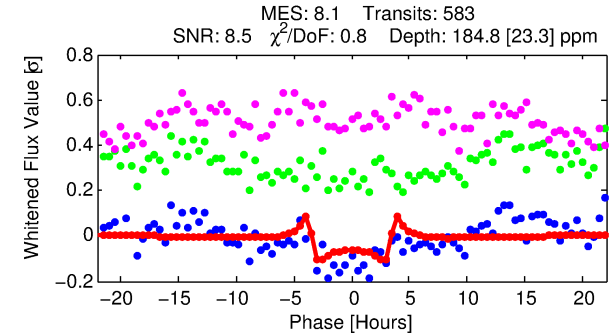
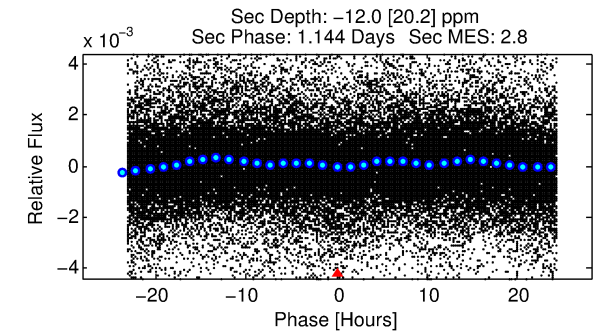
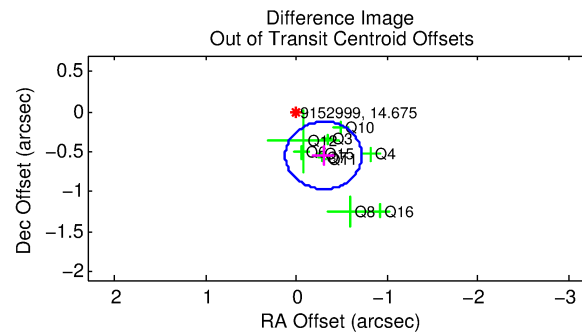
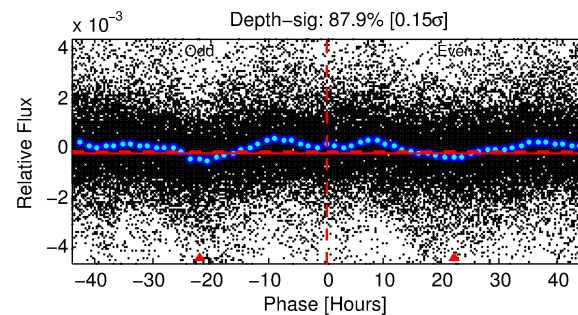
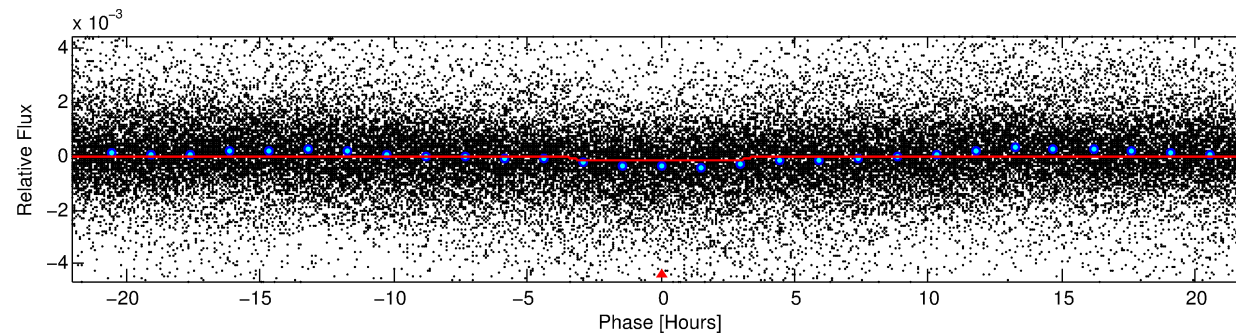
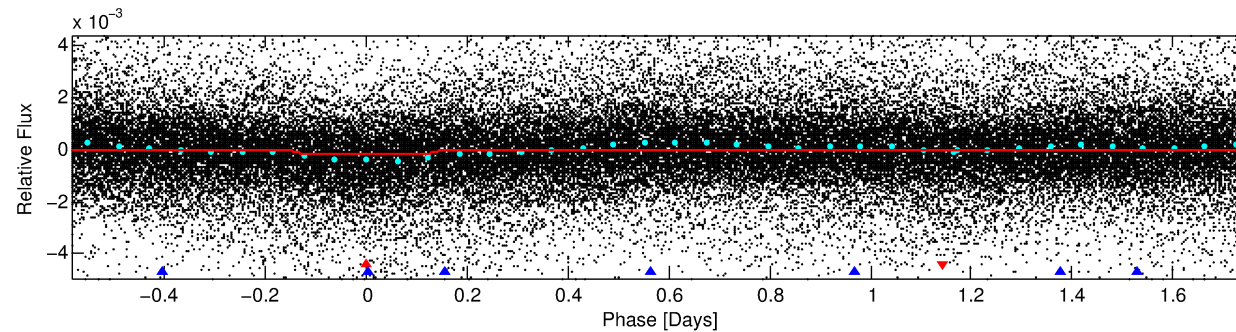
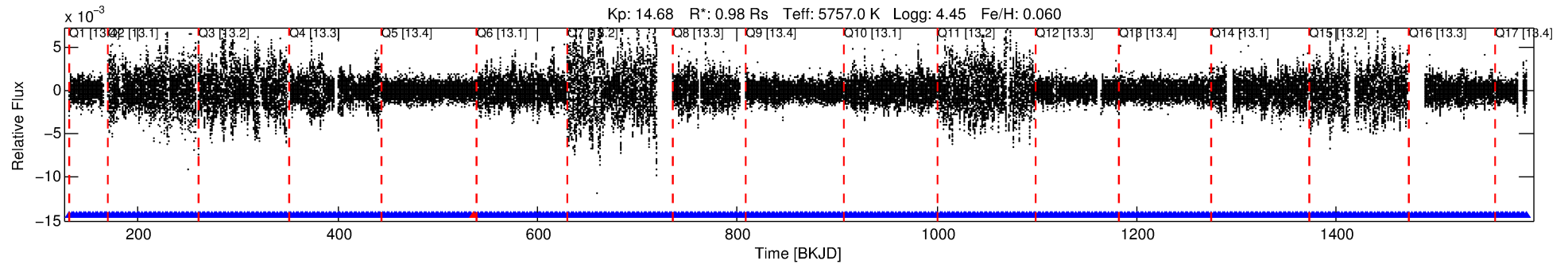
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009152999-01

No Significant Match Found

DV One-Page Summary

KIC: 9152999 Candidate: 1 of 2 Period: 2.338 d



DV Fit Results:

Period = 2.33762 [0.00002] d
Epoch = 131.6055 [0.0035] BKJD
Rp/R* = 0.0147 [0.0018]
a/R* = 1.50 [0.38]
b = 0.89 [0.10]
Seff = 801.23 [297.72]
Teq = 1357 [126] K
Rp = 1.58 [0.49] Re
a = 0.0344 [0.0082] AU
Ag = N/A
Teffp = N/A

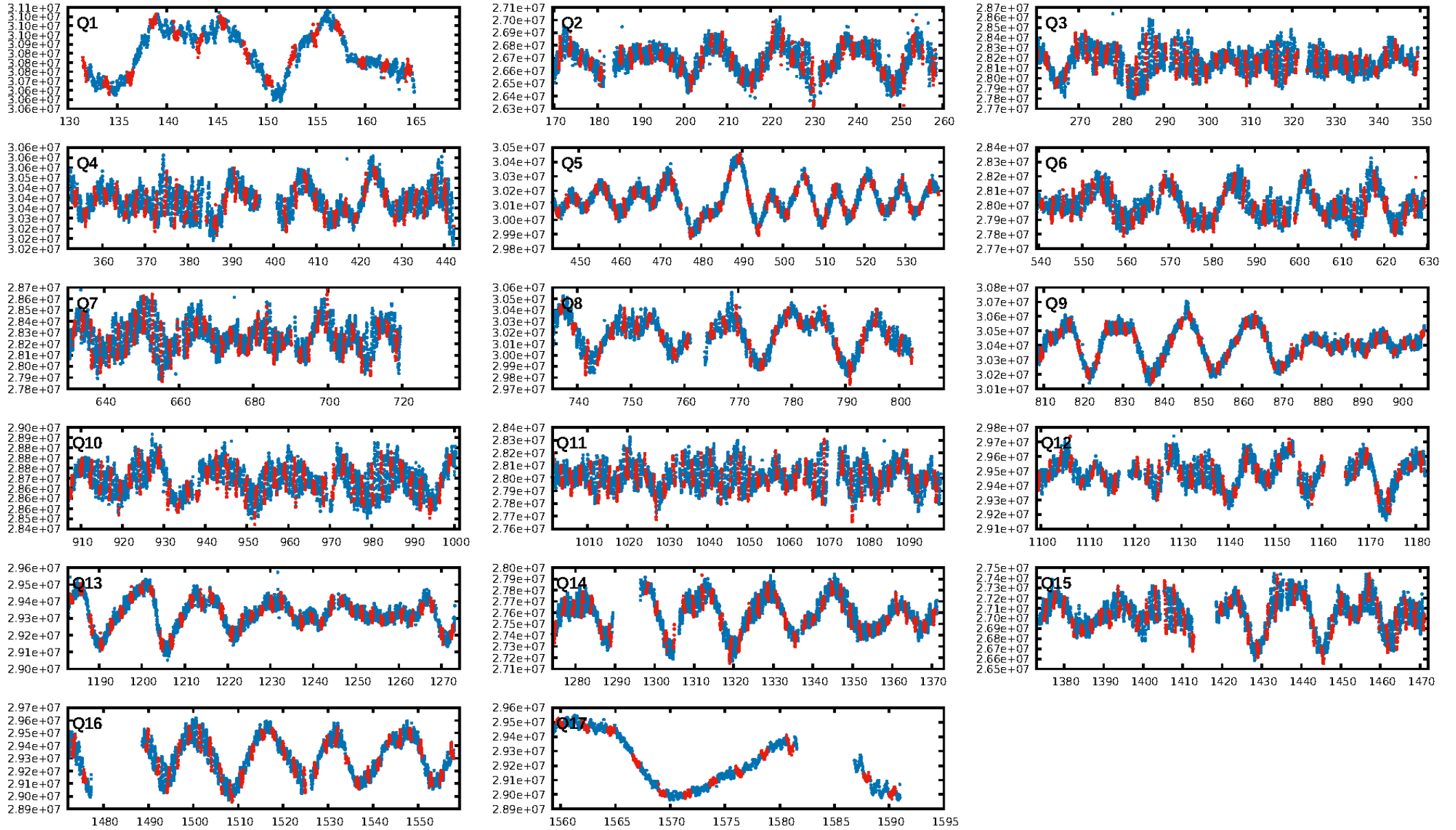
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [266.17 σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 3.79e-14
RollingBand-fgt: 1.00 [555/556]
GhostDiagnostic-chr: -0.07276
Centroid-sig: 0.0%
Centroid-so: 3.325 arcsec [9.45 σ]
OotOffset-rm: 0.623 arcsec [4.45 σ]
KicOffset-rm: 4.232 arcsec [28.73 σ]
OotOffset-st: 2/4/4/0 [10]
KicOffset-st: 2/4/4/0 [10]
DiffImageQuality-fgm: 0.70 [7/10]
DiffImageOverlap-fno: 1.00 [17/17]

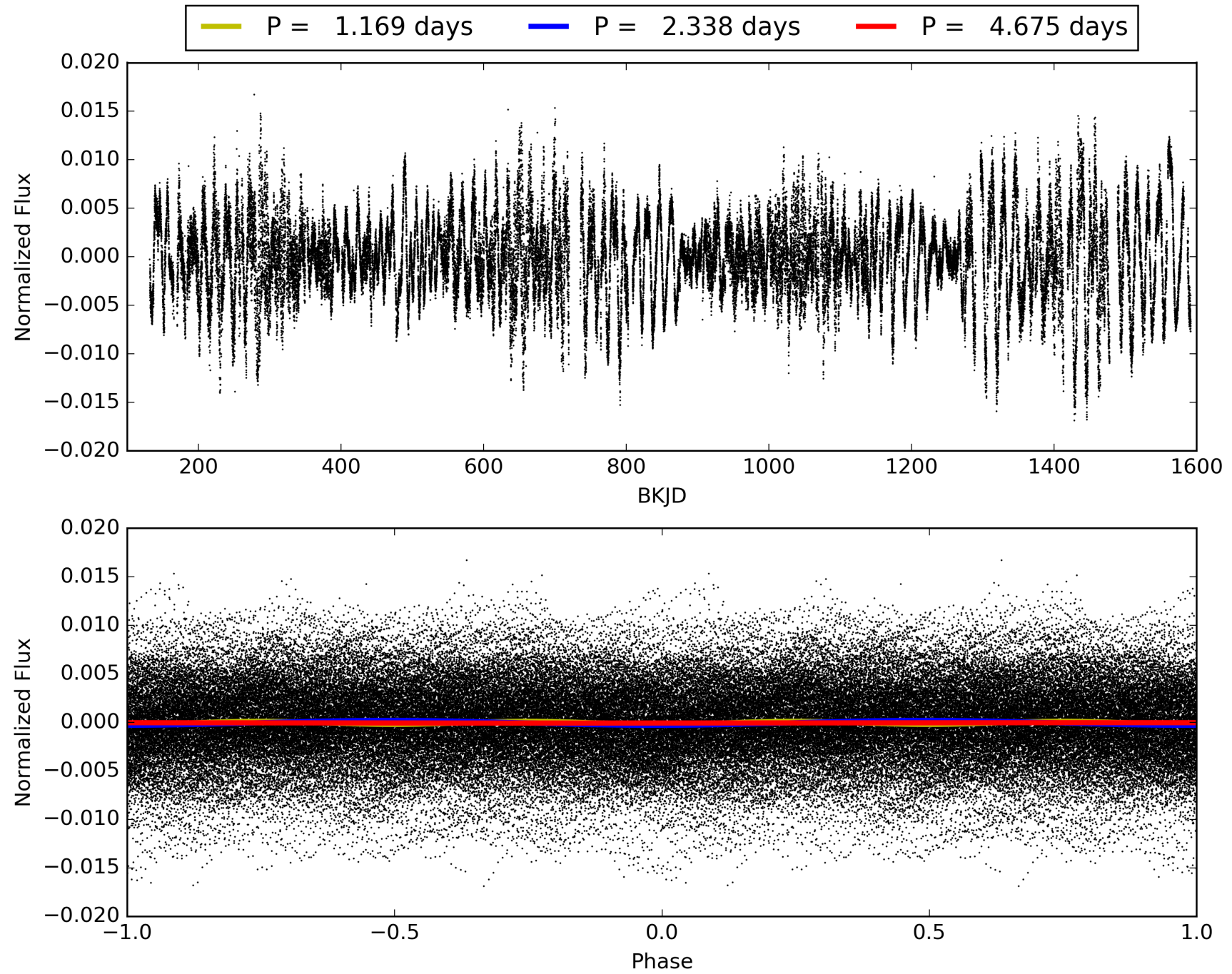
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 02:35:08 Z

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

TCE 009152999-01, PDC Light Curves

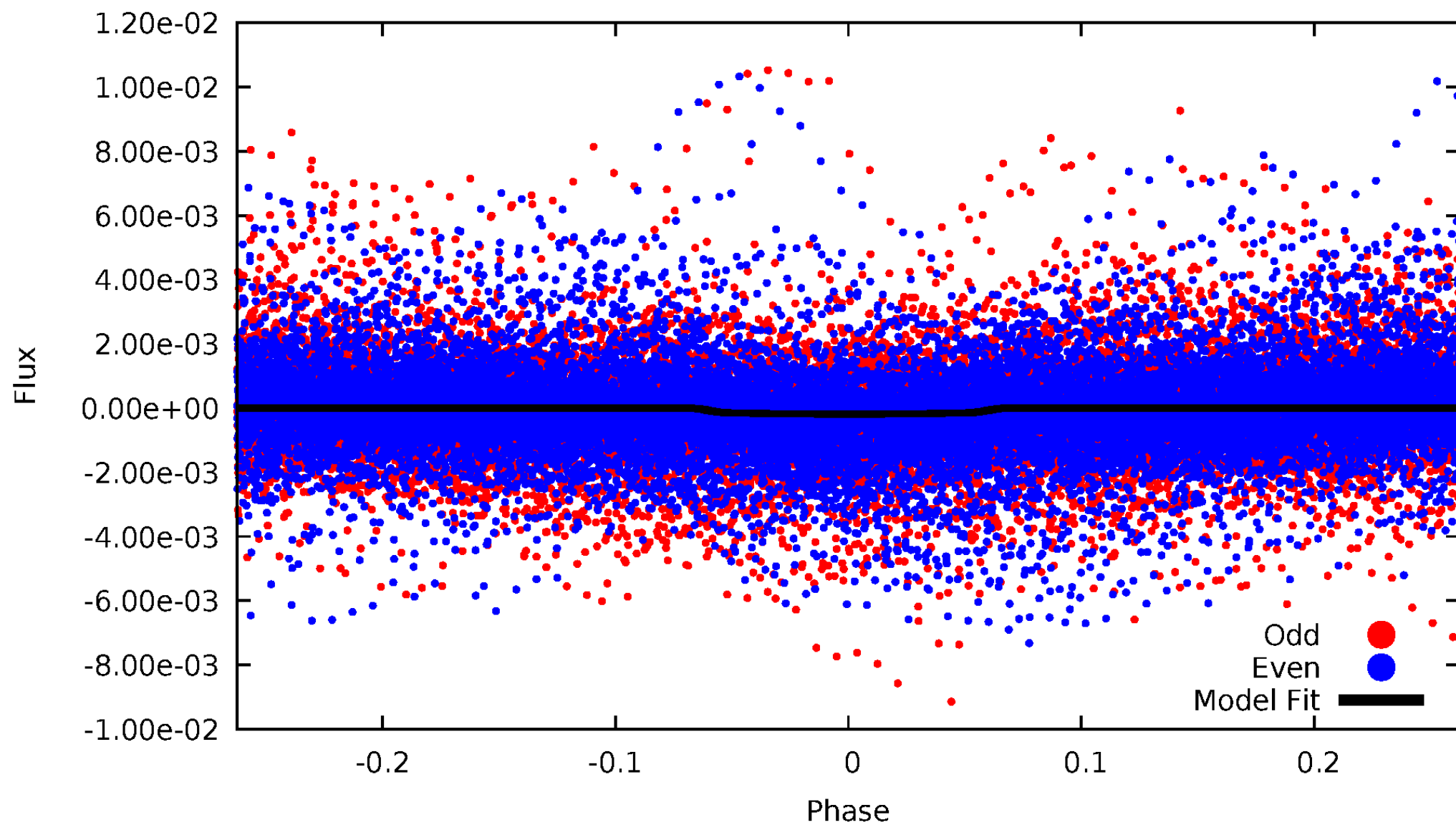


TCE 009152999-01



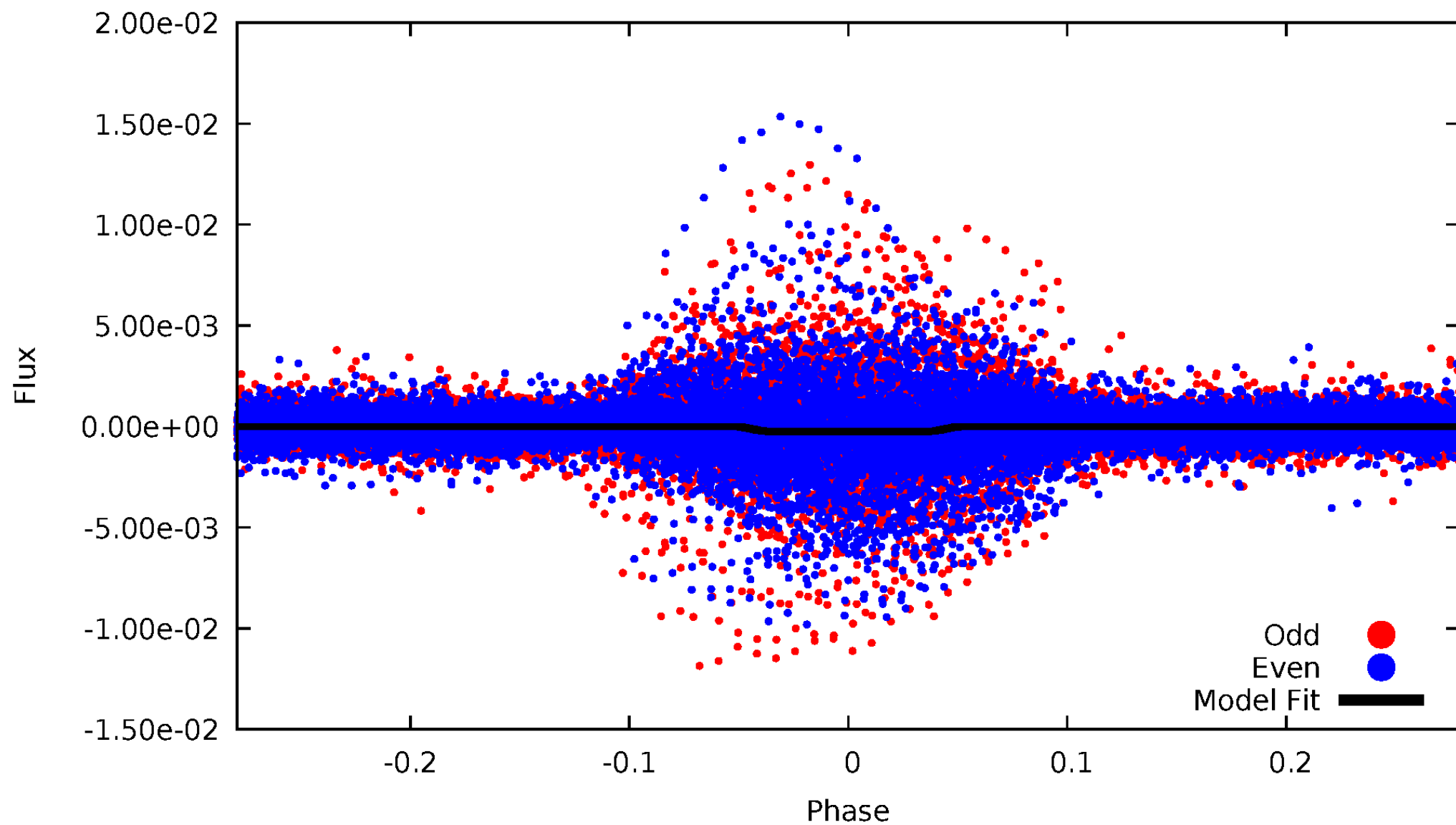
DV Odd/Even

TCE 009152999-01



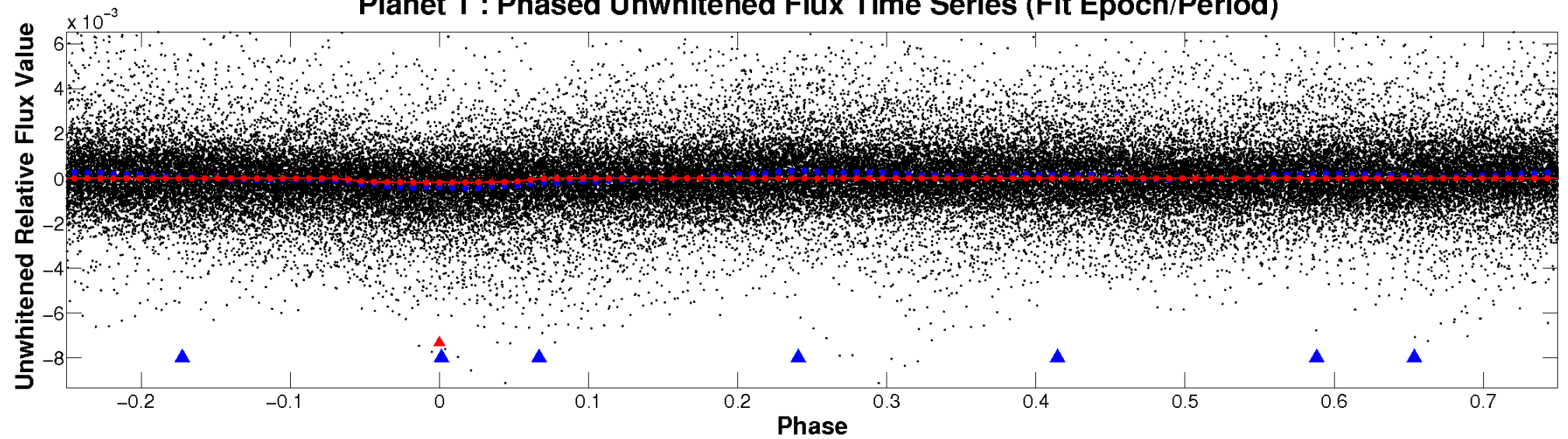
ALT Odd/Even

TCE 009152999-01

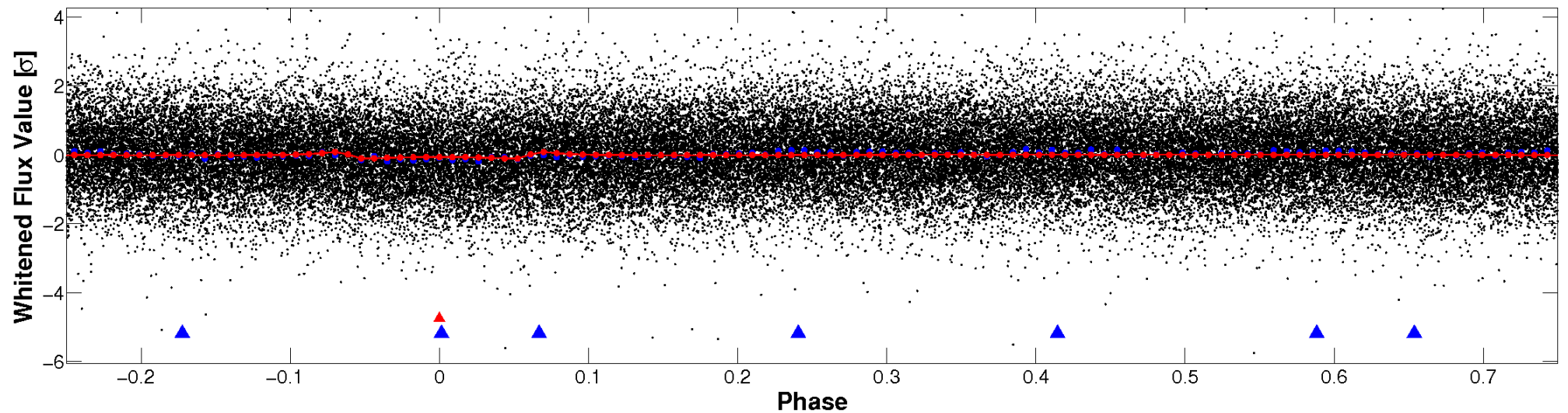


Non-Whitened Vs. Whitened Light Curve

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

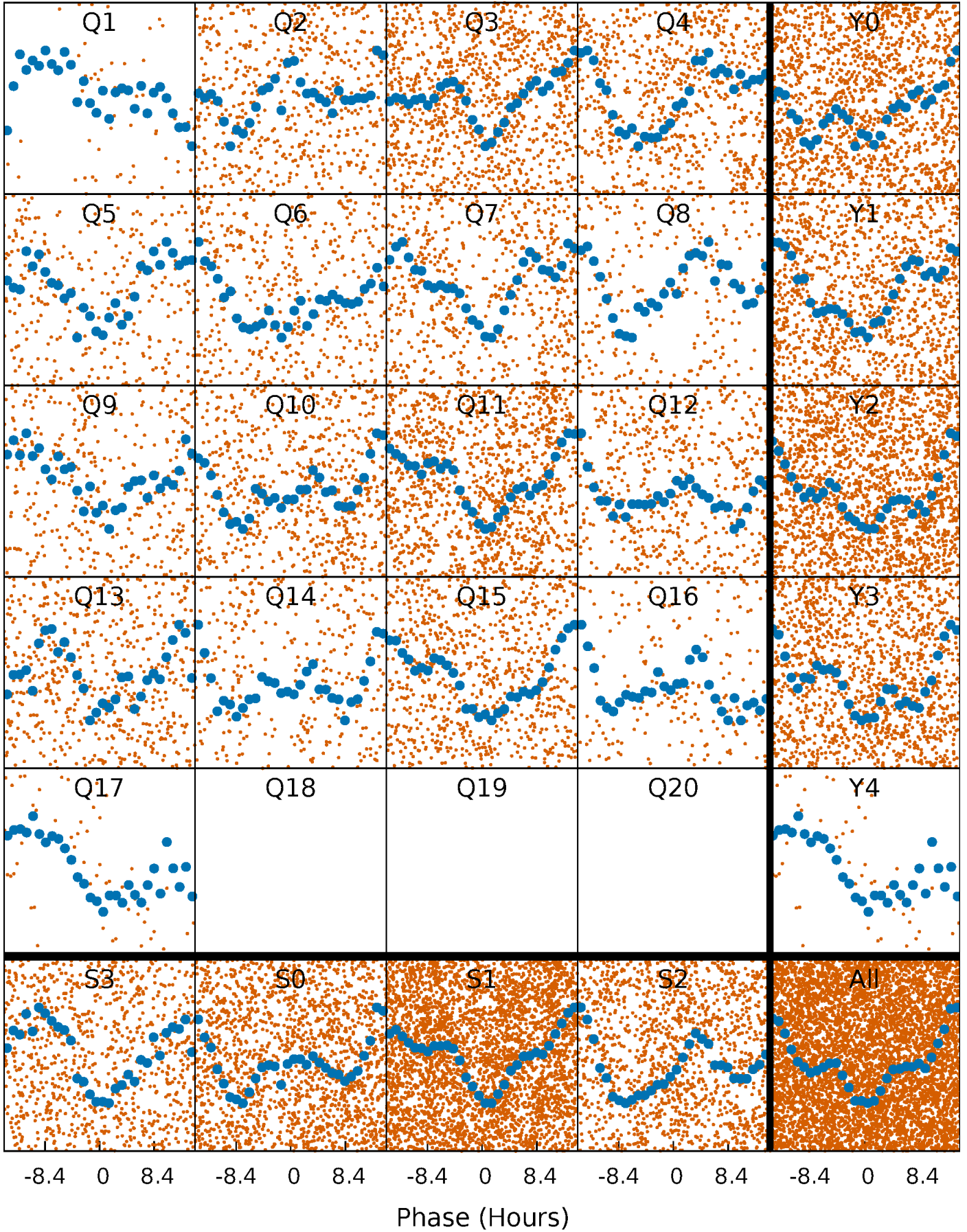


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



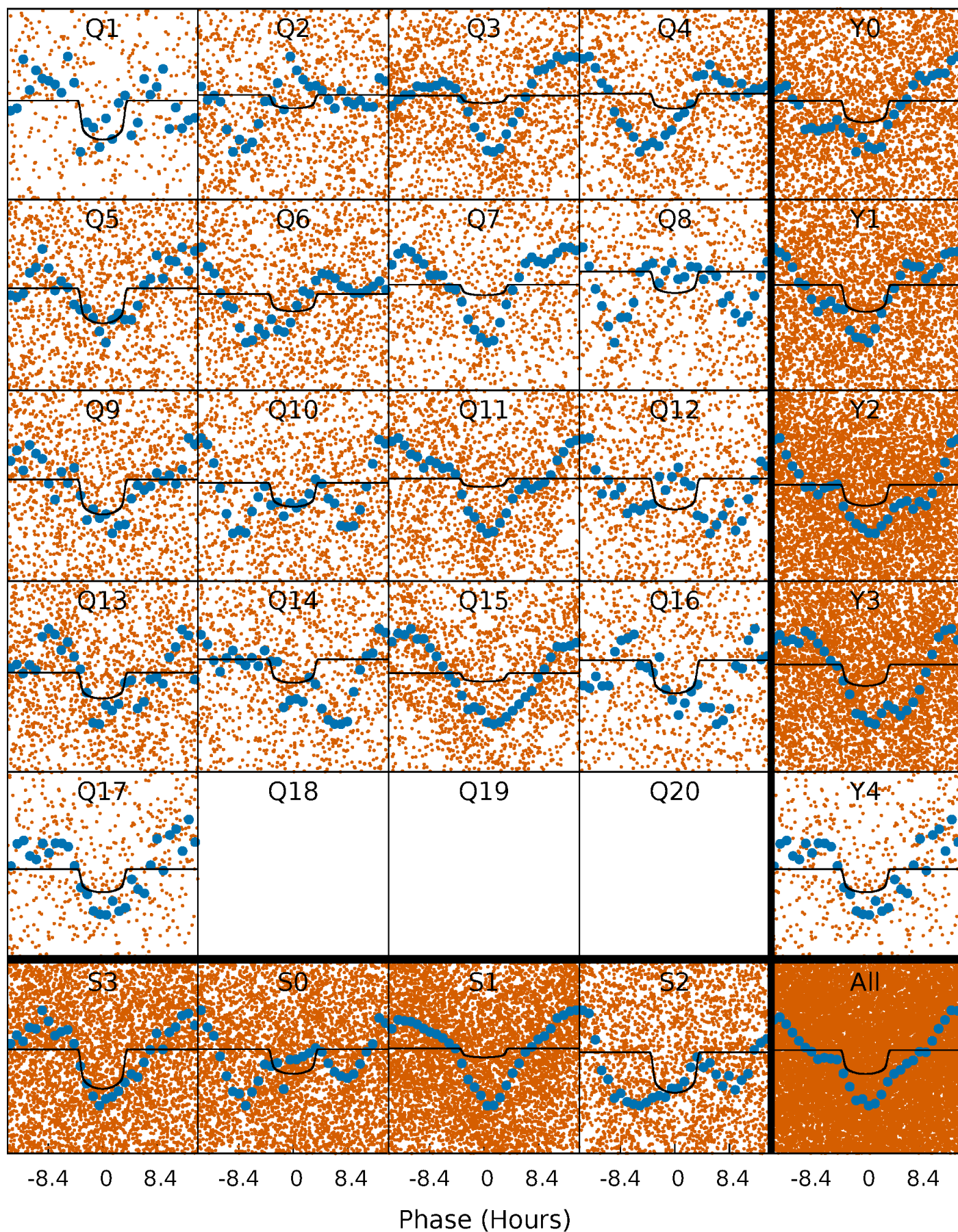
PDC Quarter-Phased Transit Curves

TCE 009152999-01 P= 2.337623 Days $T_0=131.605525$ (BKJD)



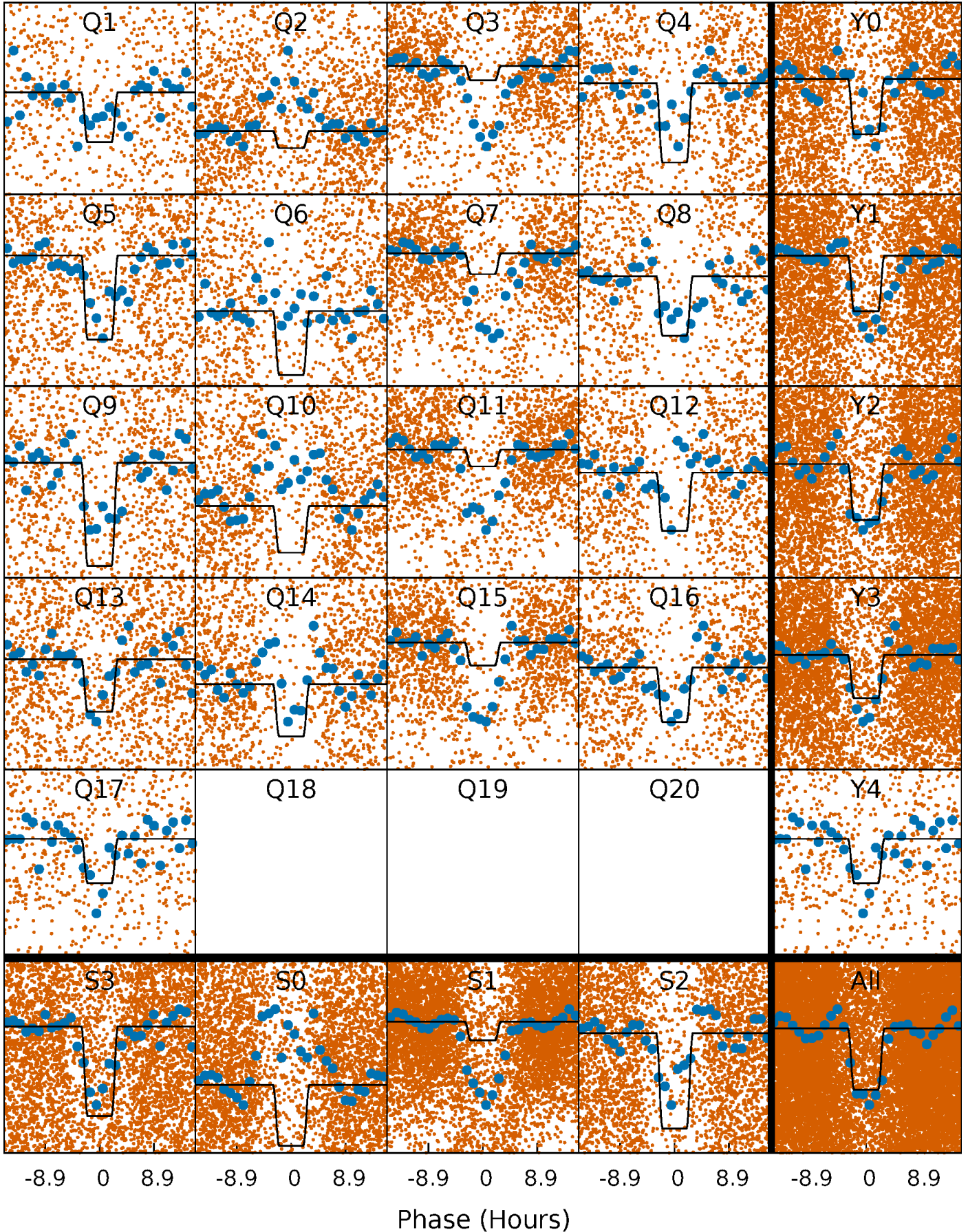
DV Quarter-Phased Transit Curves

TCE 009152999-01 P= 2.337623 Days $T_0=131.605525$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

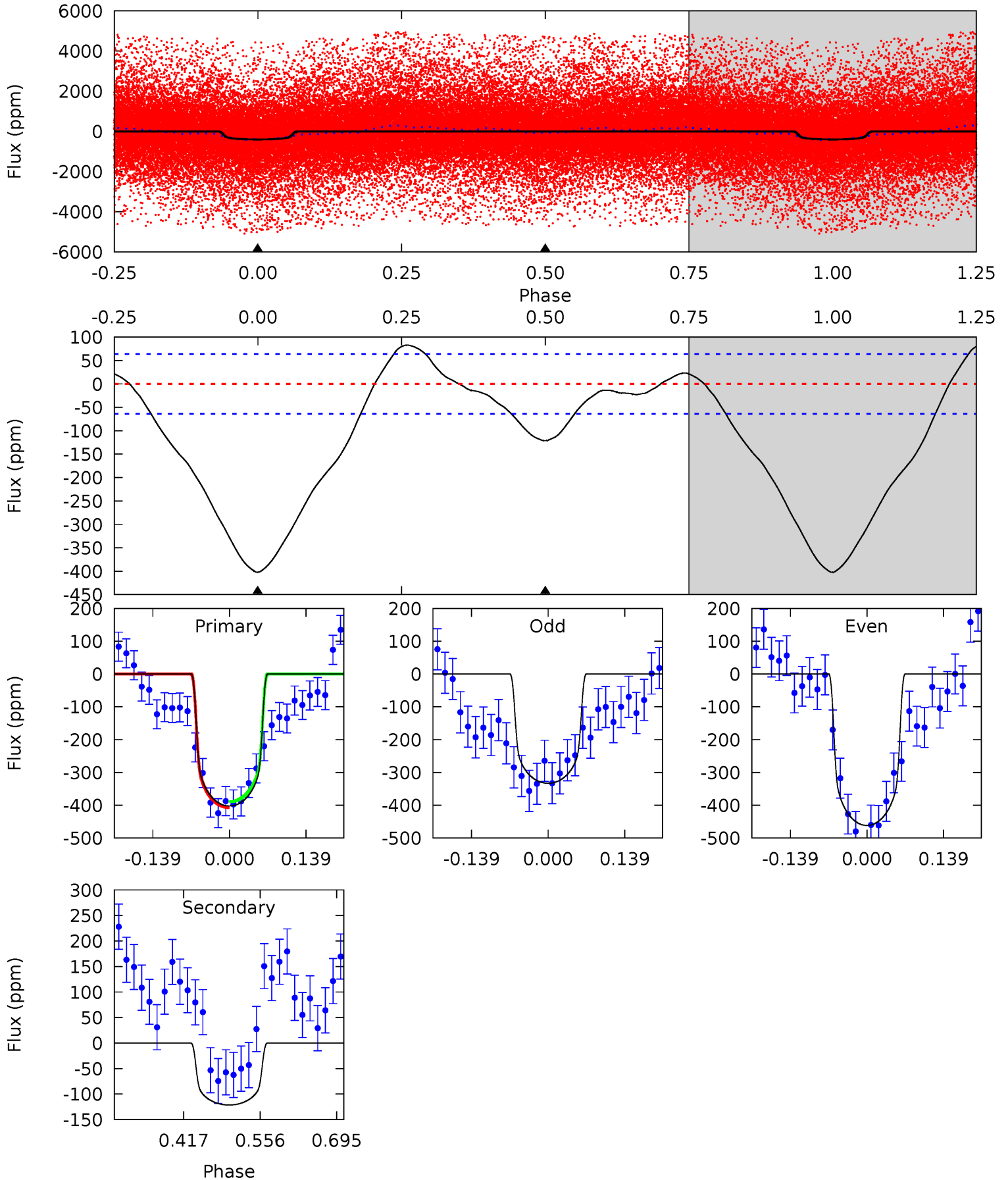
TCE 009152999-01 P= 2.337559 Days $T_0=131.620868$ (BKJD)



DV Model-Shift Uniqueness Test

009152999-01, P = 2.337623 Days, E = 129.267902 Days

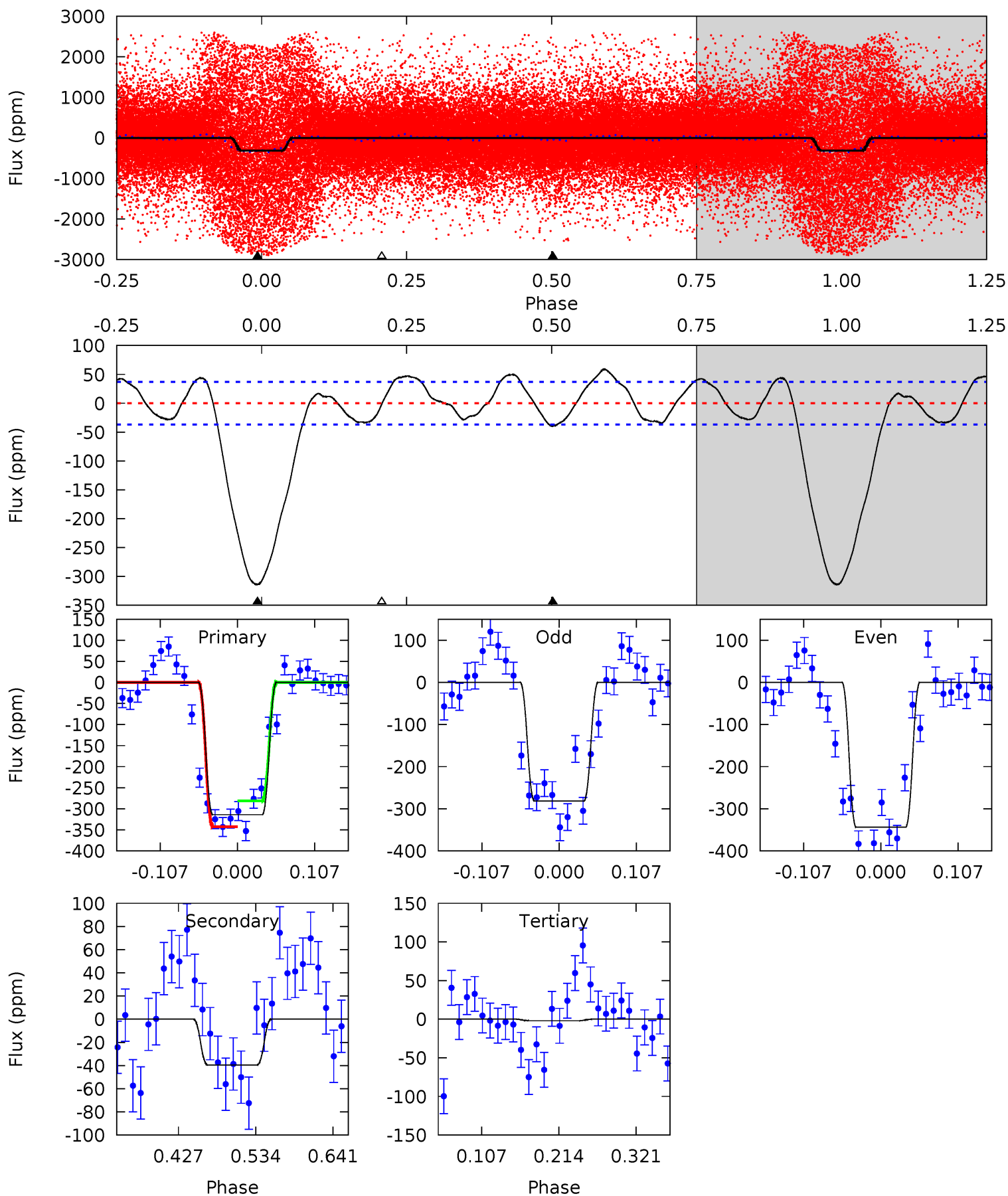
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
28.3	8.53	0	0	4.50	1.48	4.27	28.3	28.3	8.53	8.53	4.57	1.24	0.17	0.62



Alt Model-Shift Uniqueness Test

009152999-01, P = 2.337559 Days, E = 129.283309 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
38.7	4.86	0.24	0	4.55	1.61	3.13	38.4	38.7	4.63	4.86	3.80	0.93	0.16	3.79



Stellar Parameters For KIC 009152999

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5757^{+156}_{-190}	$4.451^{+0.081}_{-0.189}$	$0.060^{+0.250}_{-0.300}$	$0.981^{+0.281}_{-0.120}$	$0.990^{+0.114}_{-0.102}$	$1.478^{+0.514}_{-0.743}$
	+3%/-3%	+2%/-4%	+417%/-500%	+29%/-12%	+12%/-10%	+35%/-50%
Source	PHO1	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 009152999-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-121±14	$1.62^{+0.29}_{-0.23}$	1916^{+148}_{-92}	5029^{+338}_{-299}	30^{+12}_{-9}
Alt.	-39±8	$1.77^{+0.32}_{-0.24}$	1925^{+127}_{-109}	3908^{+240}_{-227}	$7.902^{+3.602}_{-2.370}$

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

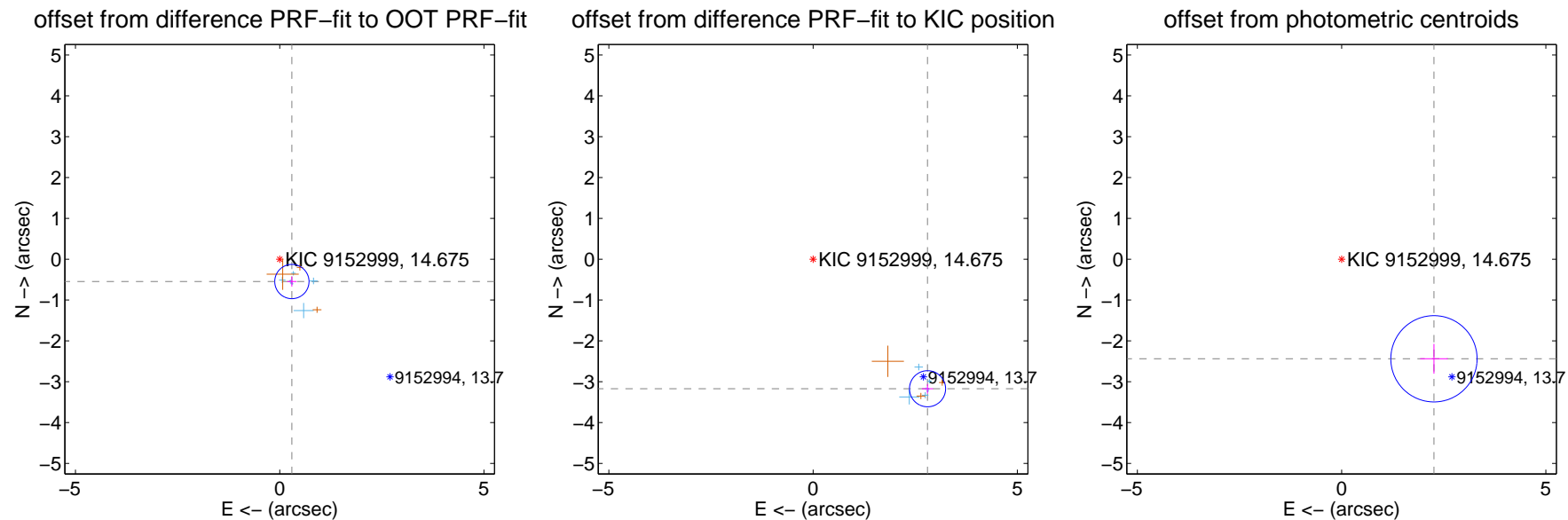
DV Centroid Data

Supplemental centroid analysis for 009152999-01. Kepler magnitude: 14.68. Transit SNR 8.49

There are 7 quarters with good PRF difference image offsets

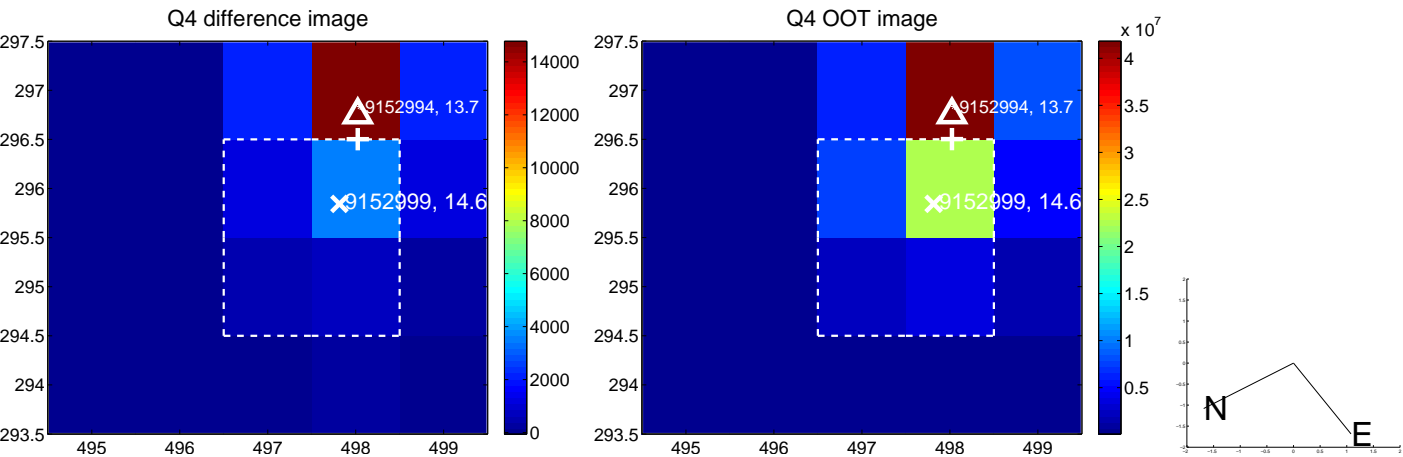
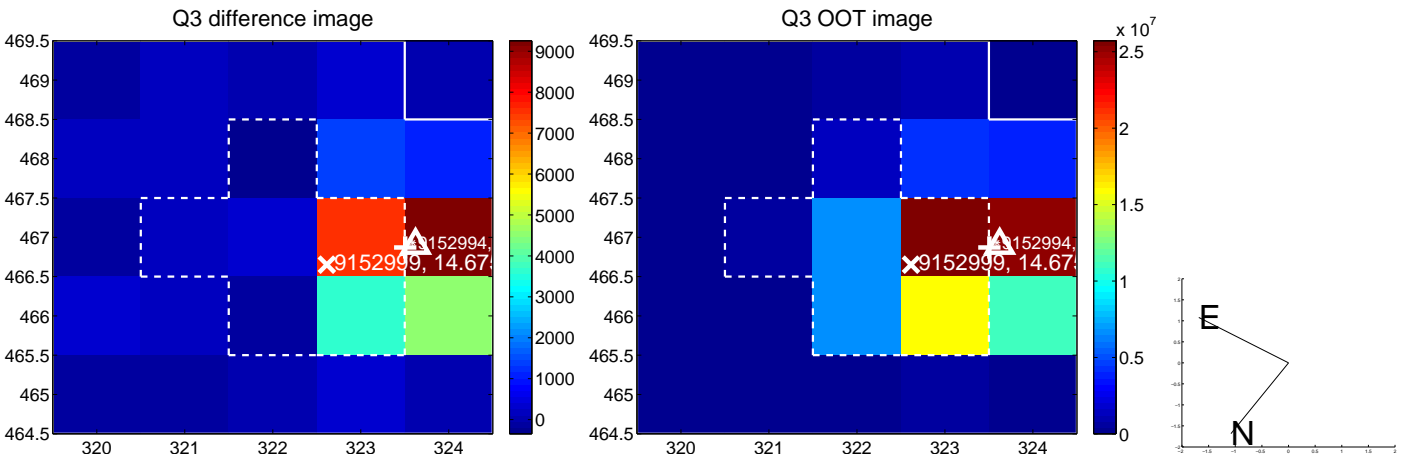
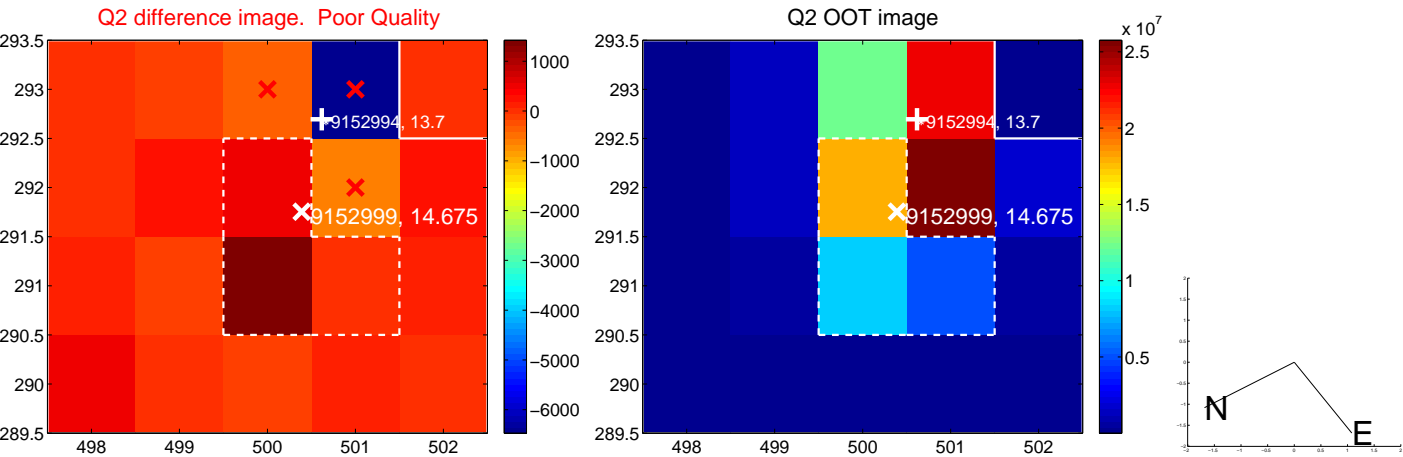
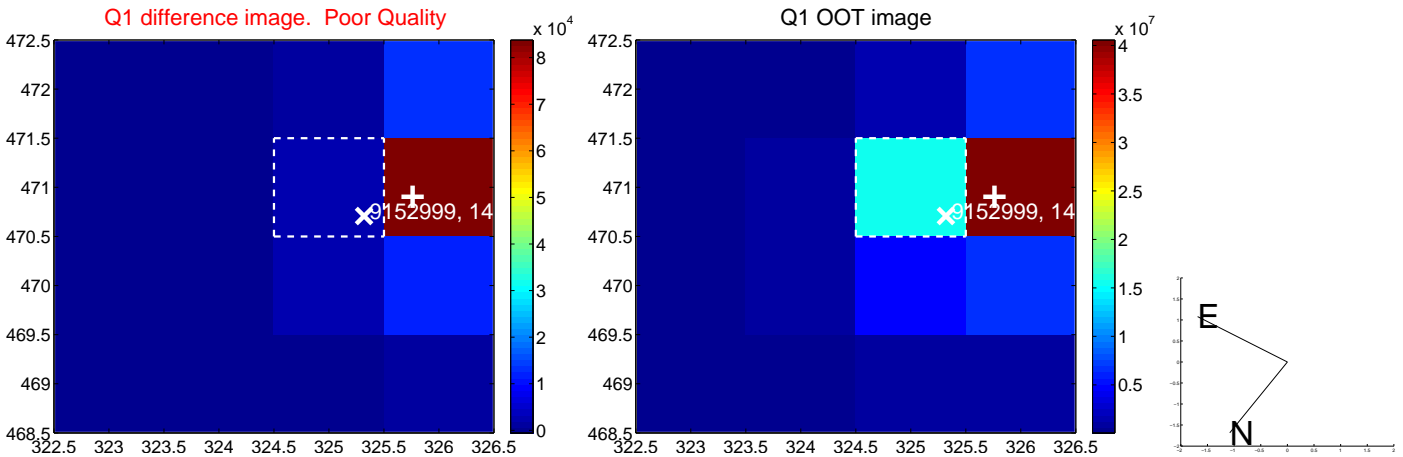
The OOT PRF centroid is offset from the target star catalog position by about 2.73 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.623 ± 0.140	4.45	-0.298 ± 0.111	-0.547 ± 0.124
PRF-fit source offset from KIC position	4.232 ± 0.147	28.73	-2.802 ± 0.137	-3.172 ± 0.115
photometric centroid source offset	3.33 ± 0.35	9.45	-2.26 ± 0.34	-2.44 ± 0.36

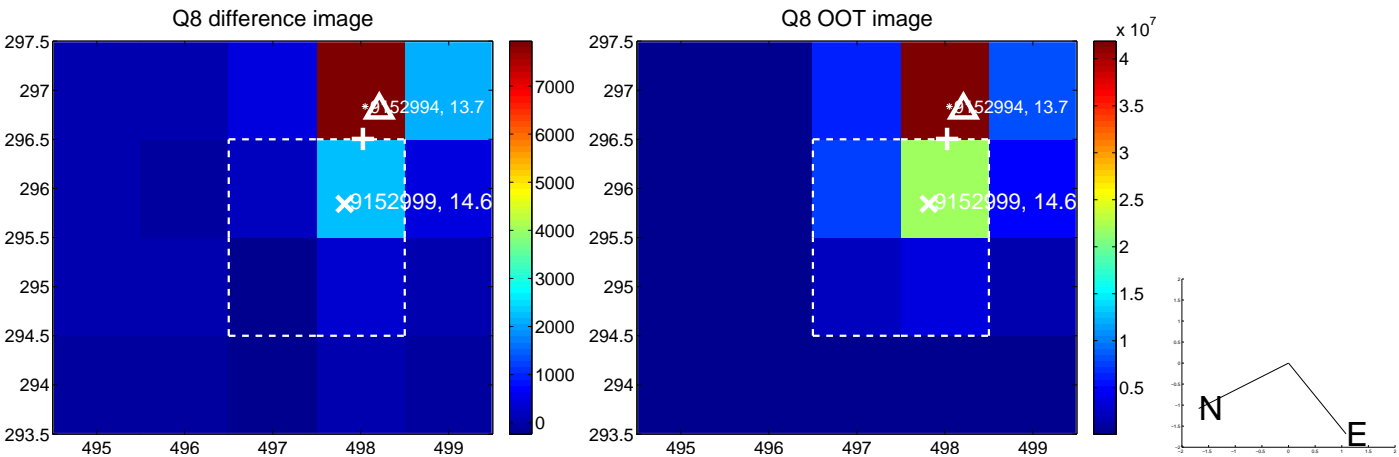
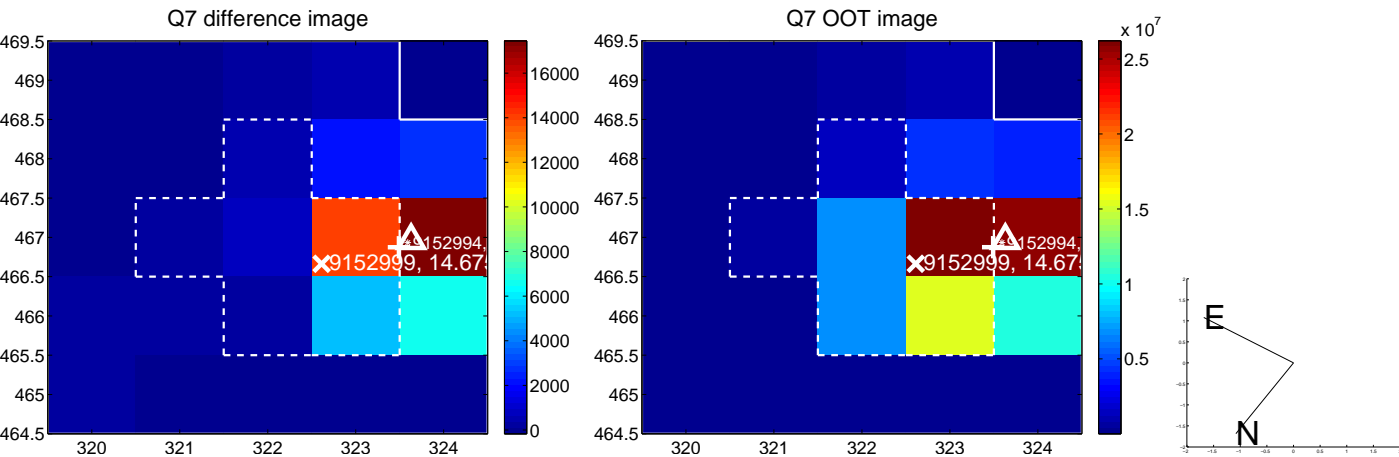
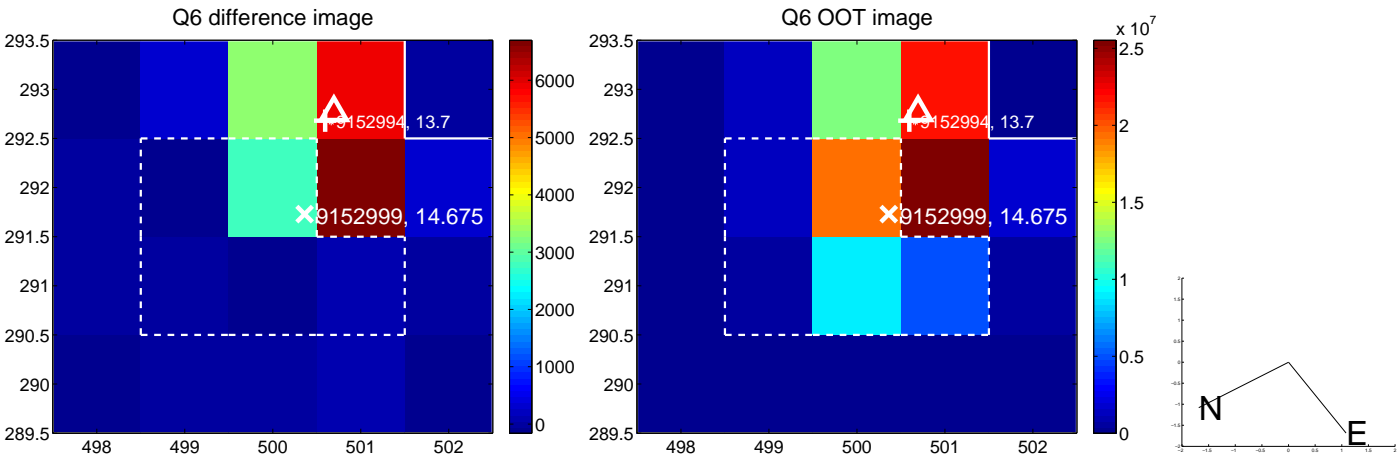
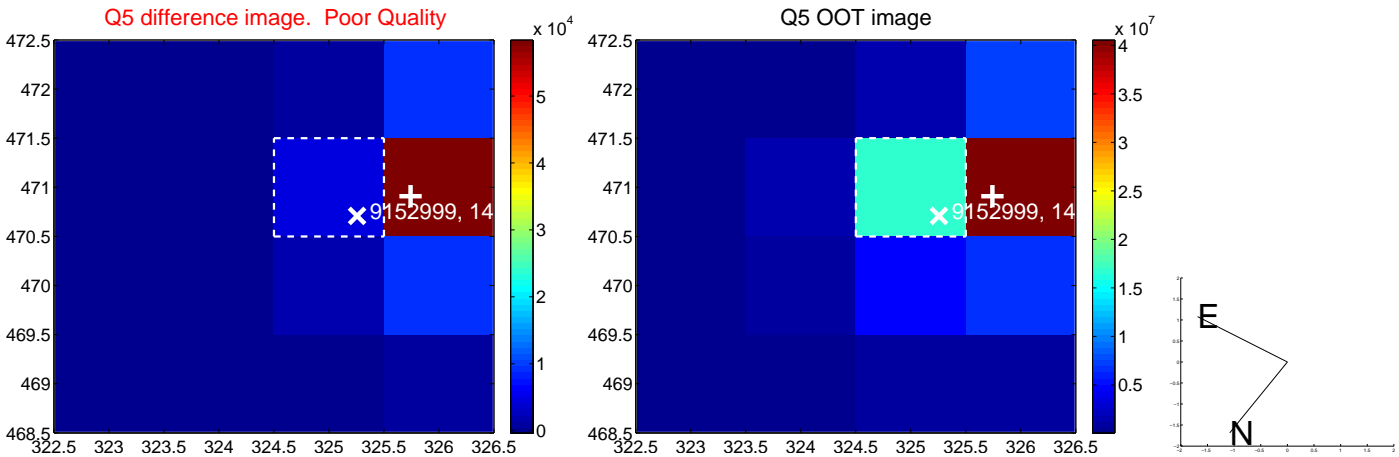


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

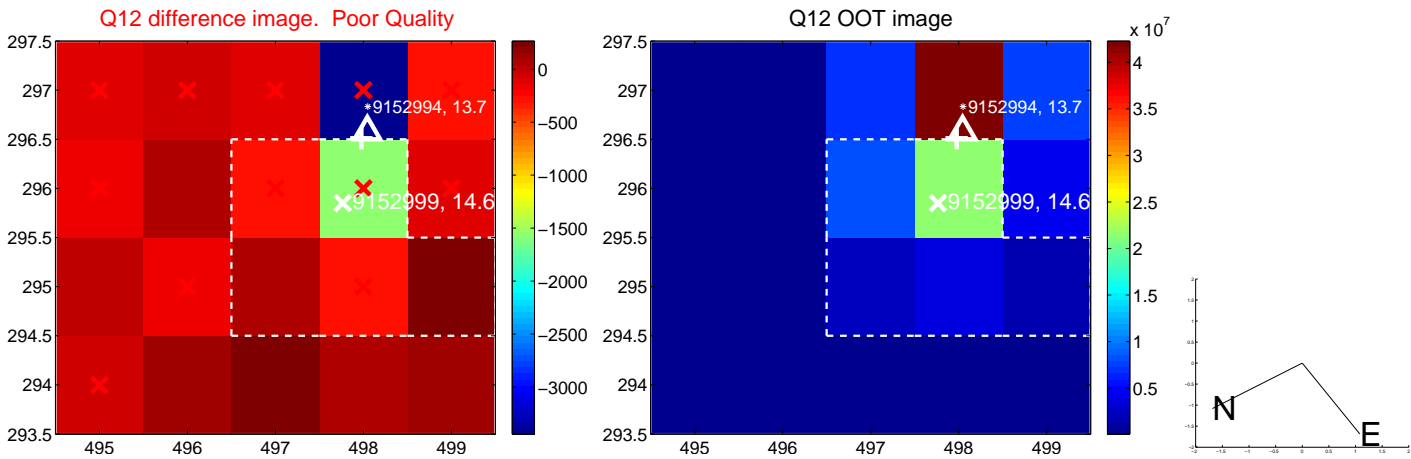
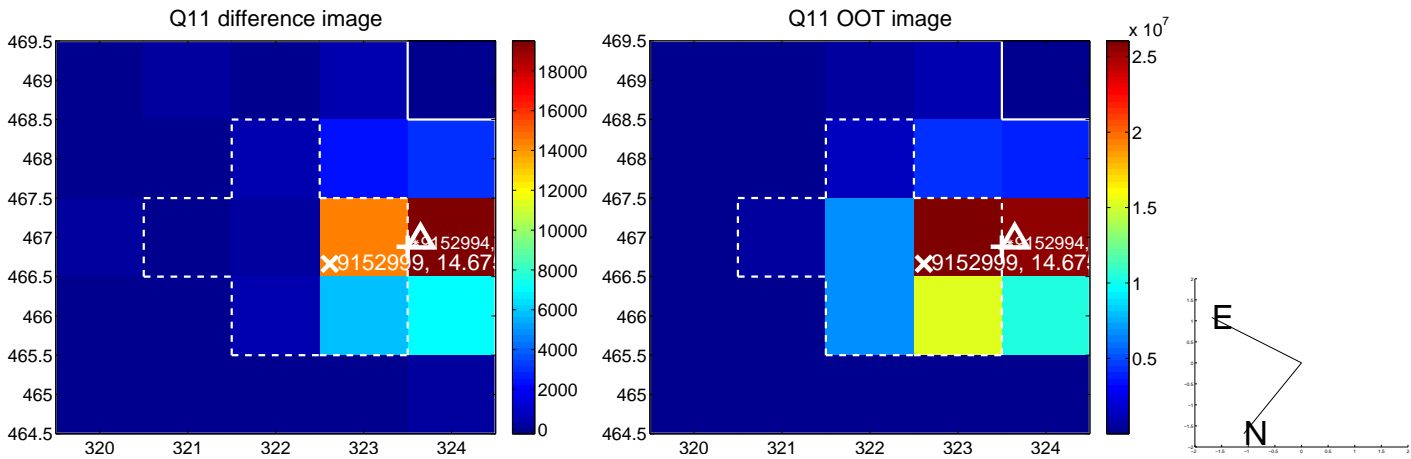
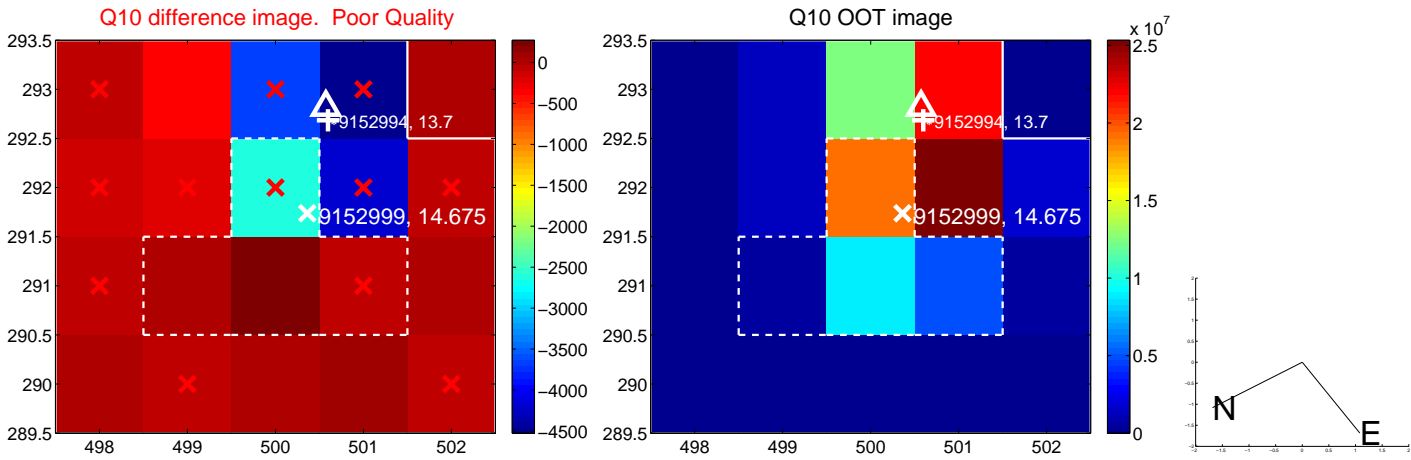
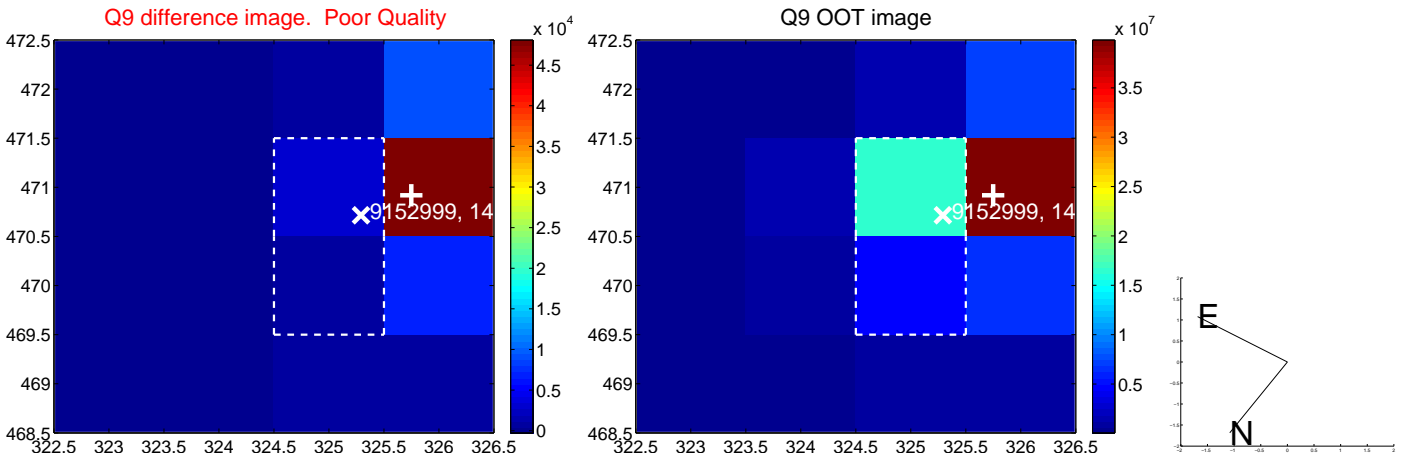
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



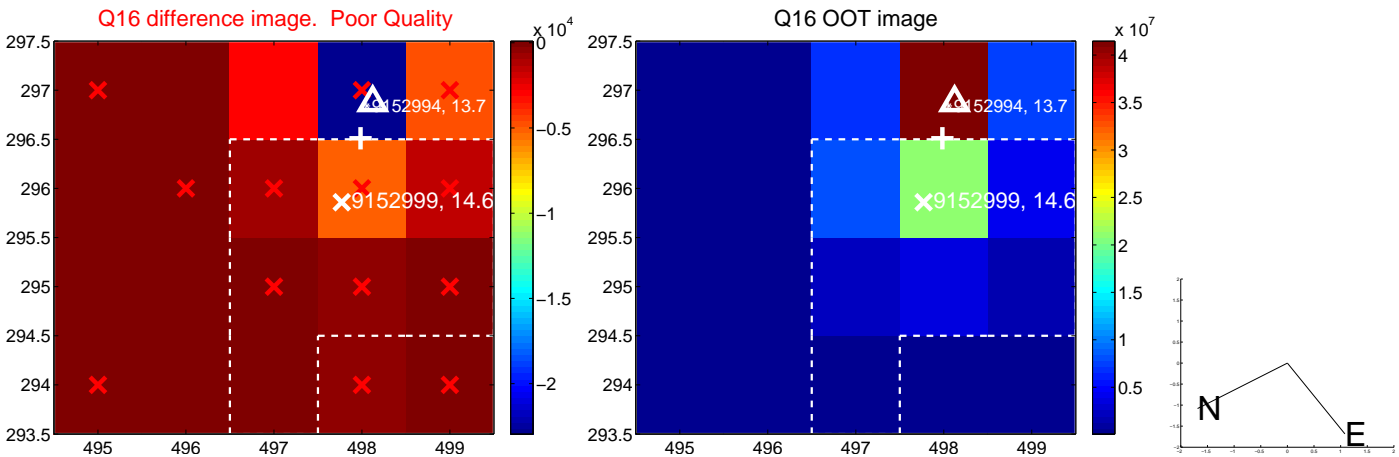
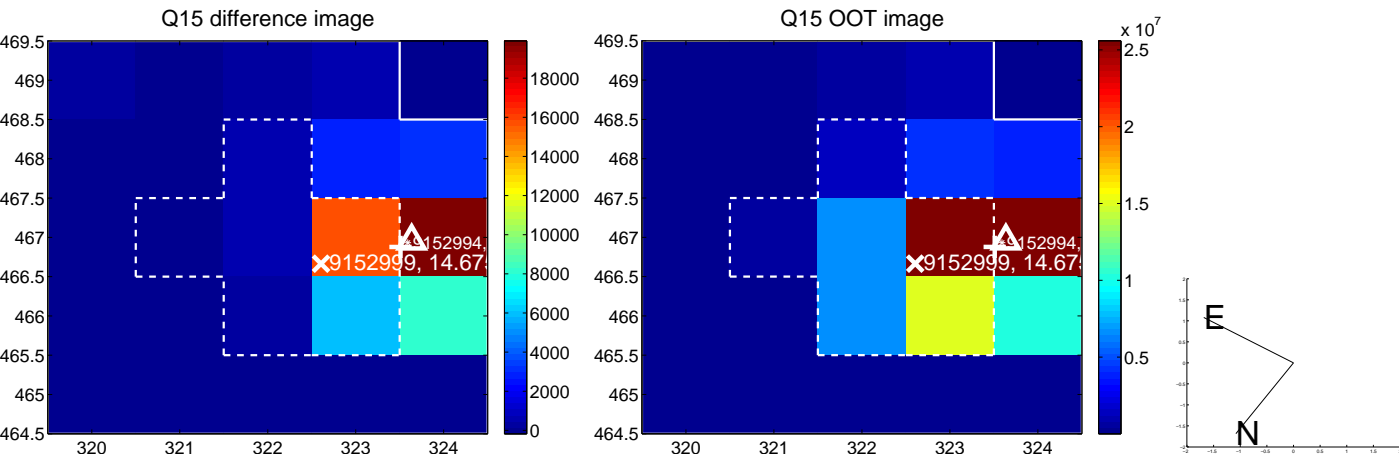
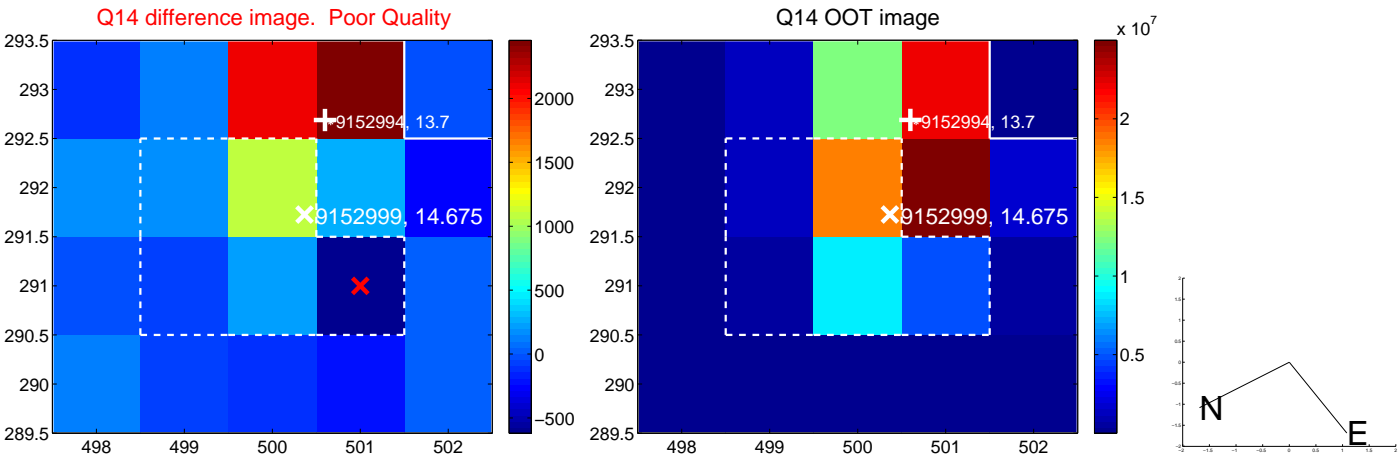
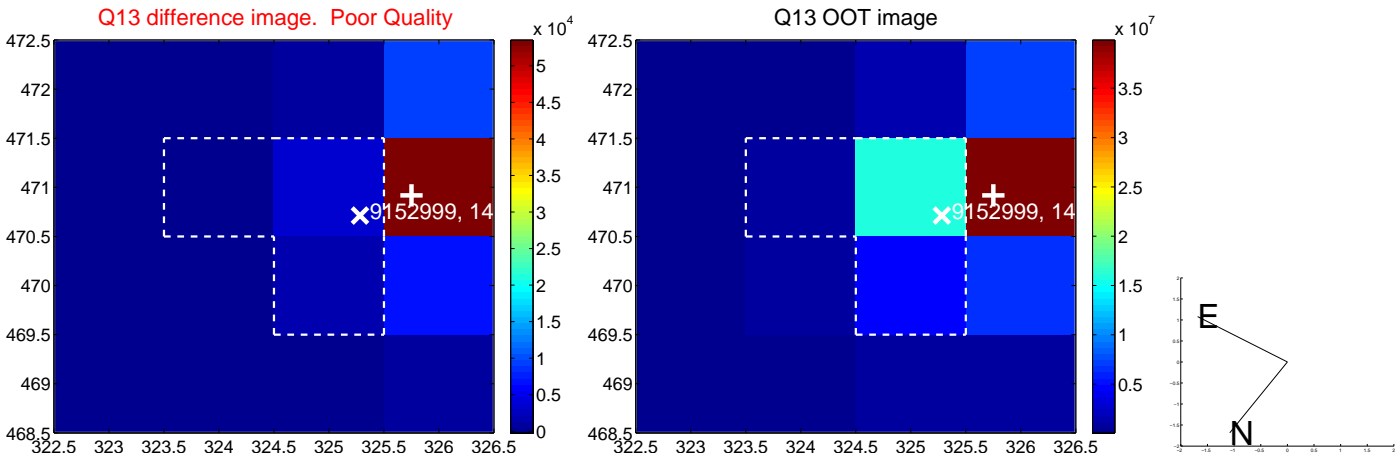
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



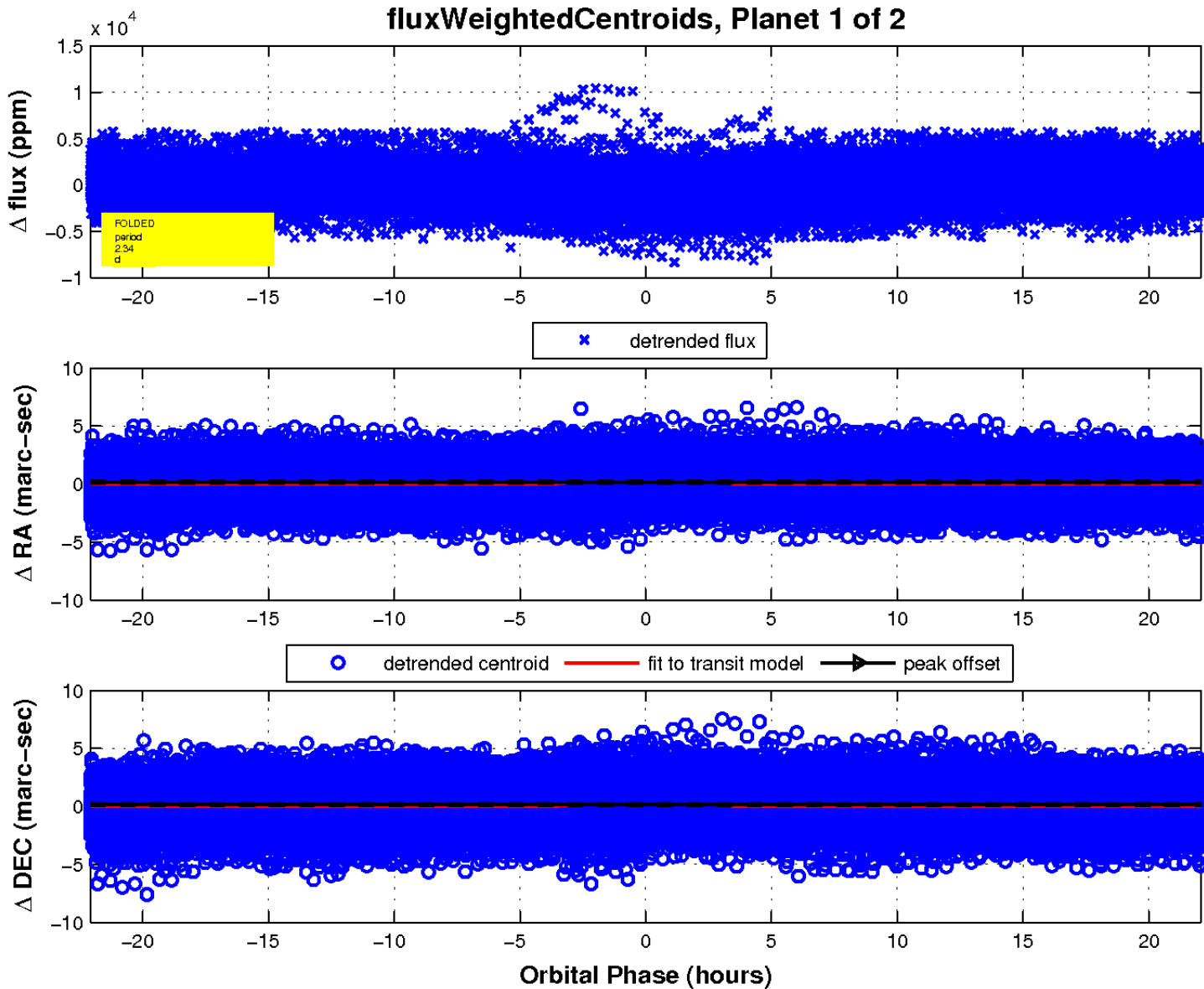
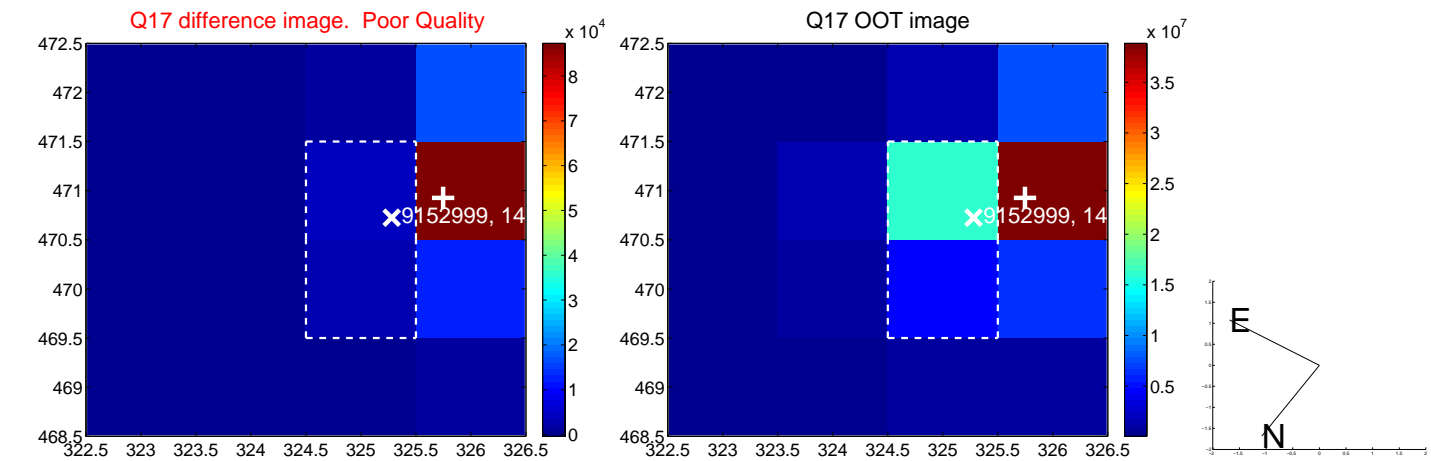
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

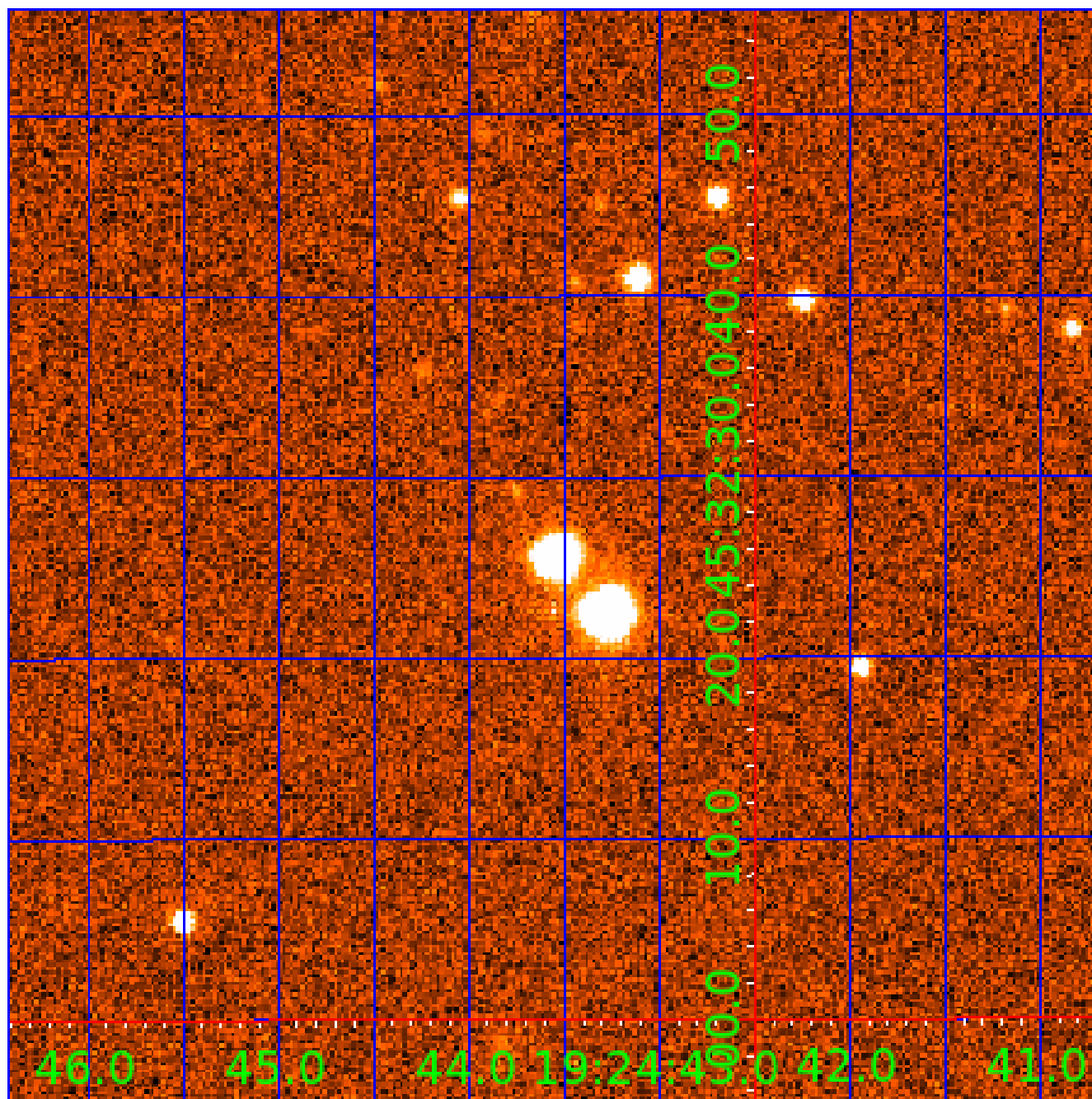


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009152999

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})
009152999-01	OBS	No	2.337623	131.605526	184.8	7.359	8.1	8.5	0.98	5757	1.58	801.23
009152999-02	OBS	No	216.026973	182.070903	2911.9	17.807	11.2	8.3	0.98	5757	6.37	1.92

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009152999-01	OBS	FP	0.00	1	0	1	0	LPP_DV—CENT_KIC_POS—HALO_GHOST
009152999-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_MEAS

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

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

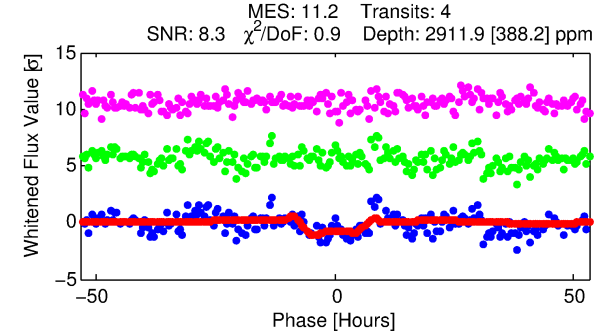
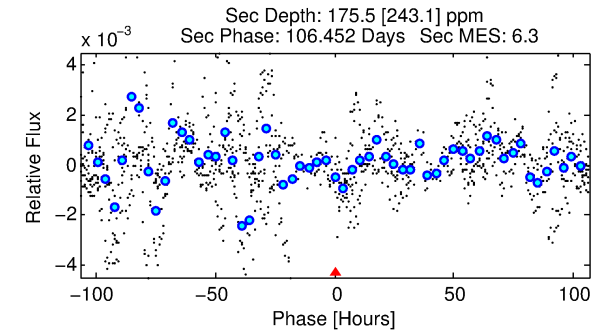
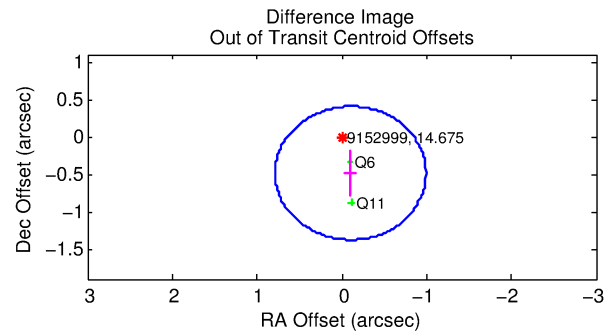
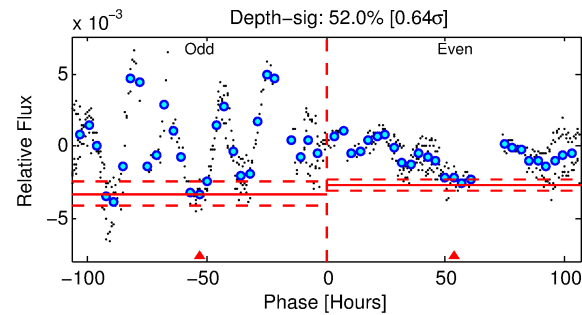
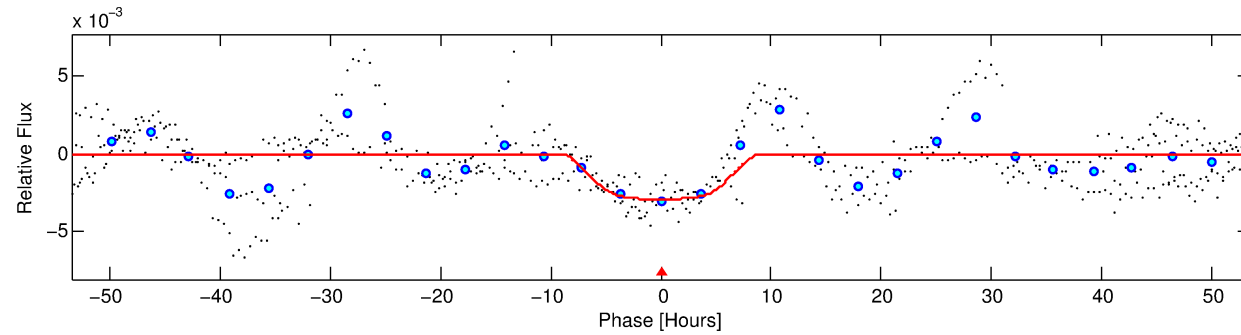
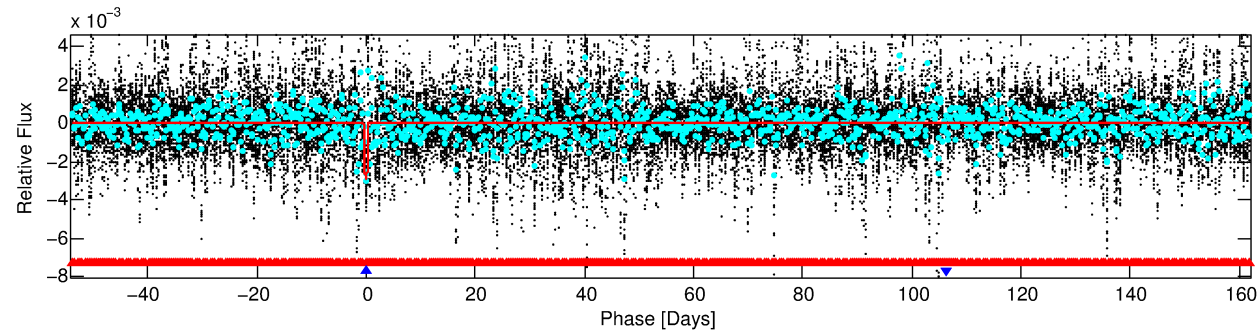
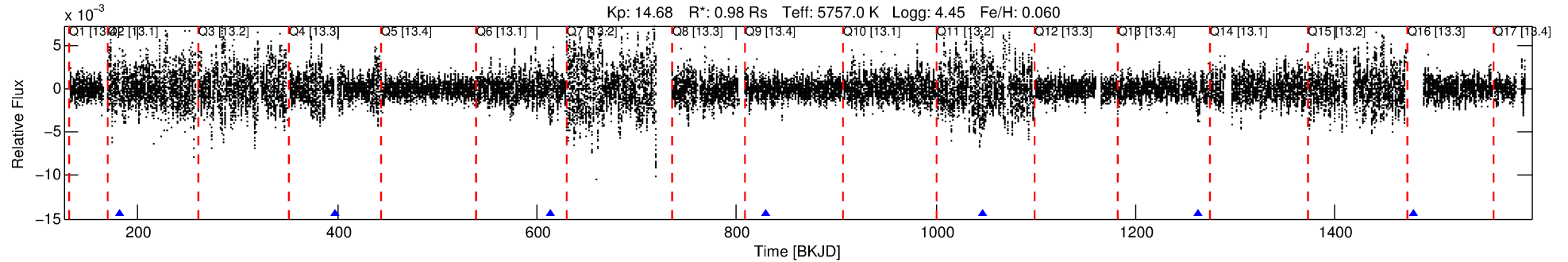
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009152999-02

No Significant Match Found

DV One-Page Summary

KIC: 9152999 Candidate: 2 of 2 Period: 216.027 d



DV Fit Results:

Period = 216.02697 [0.01181] d
Epoch = 182.0709 [0.0458] BKJD
Rp/R* = 0.0595 [0.0045]
a/R* = 50.86 [5.42]
b = 0.91 [0.02]
Seff = 1.92 [0.71]
Teq = 300 [28] K
Rp = 6.37 [1.89] Re
a = 0.7028 [0.1685] AU
Ag = 1176.95 [1689.83] [0.70 σ]
Teffp = 2717 [951] K [2.54 σ]

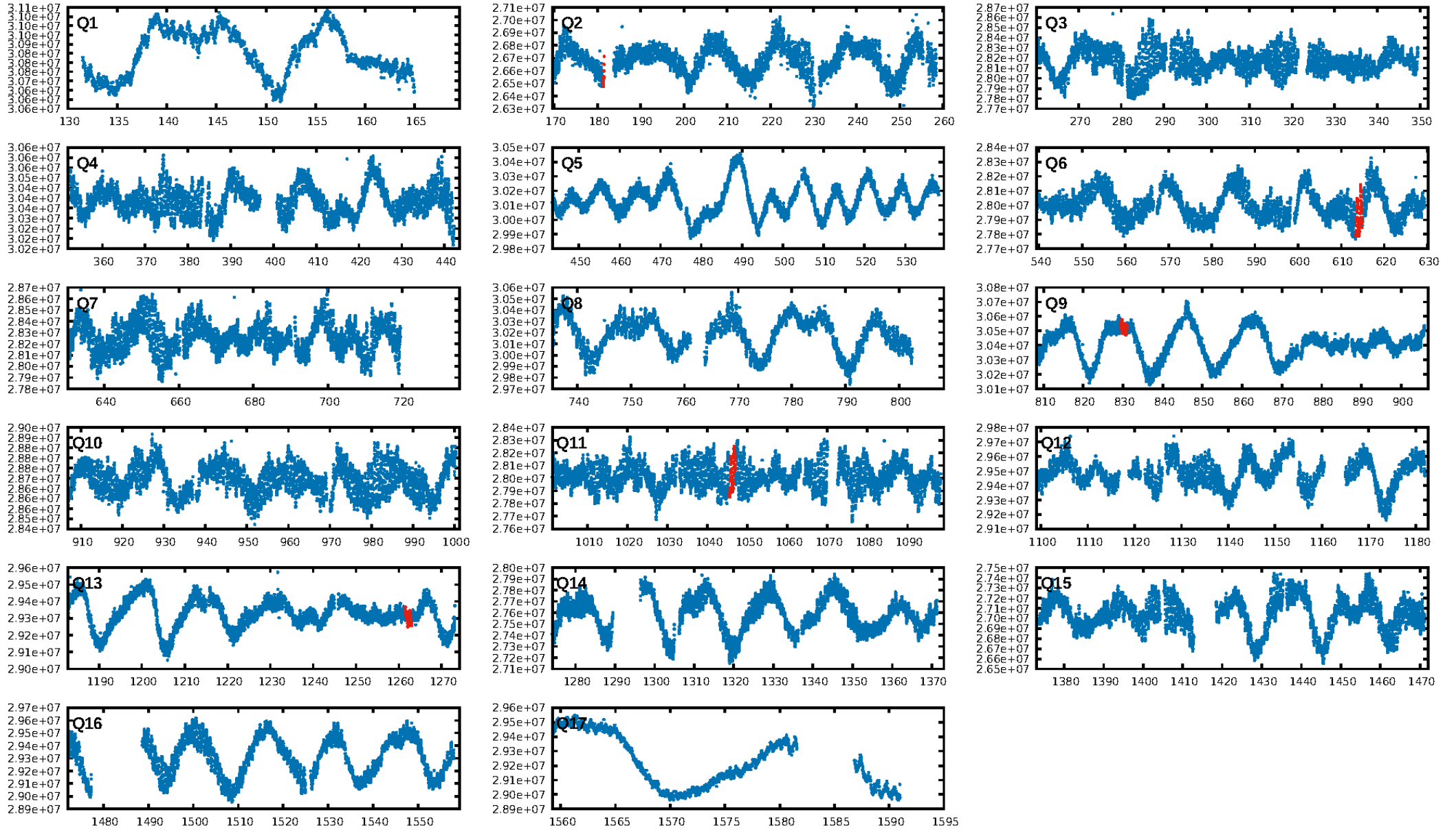
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [266.17 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 47.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 3.66e-23
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: 0.4911
Centroid-sig: 1.0%
Centroid-so: 2.266 arcsec [5.71 σ]
OotOffset-rm: 0.497 arcsec [1.68 σ]
KicOffset-rm: 4.256 arcsec [26.44 σ]
OotOffset-st: 1/1/0/0 [2]
KicOffset-st: 1/1/0/0 [2]
DiffImageQuality-fgm: 1.00 [2/2]
DiffImageOverlap-fno: 0.00 [0/4]

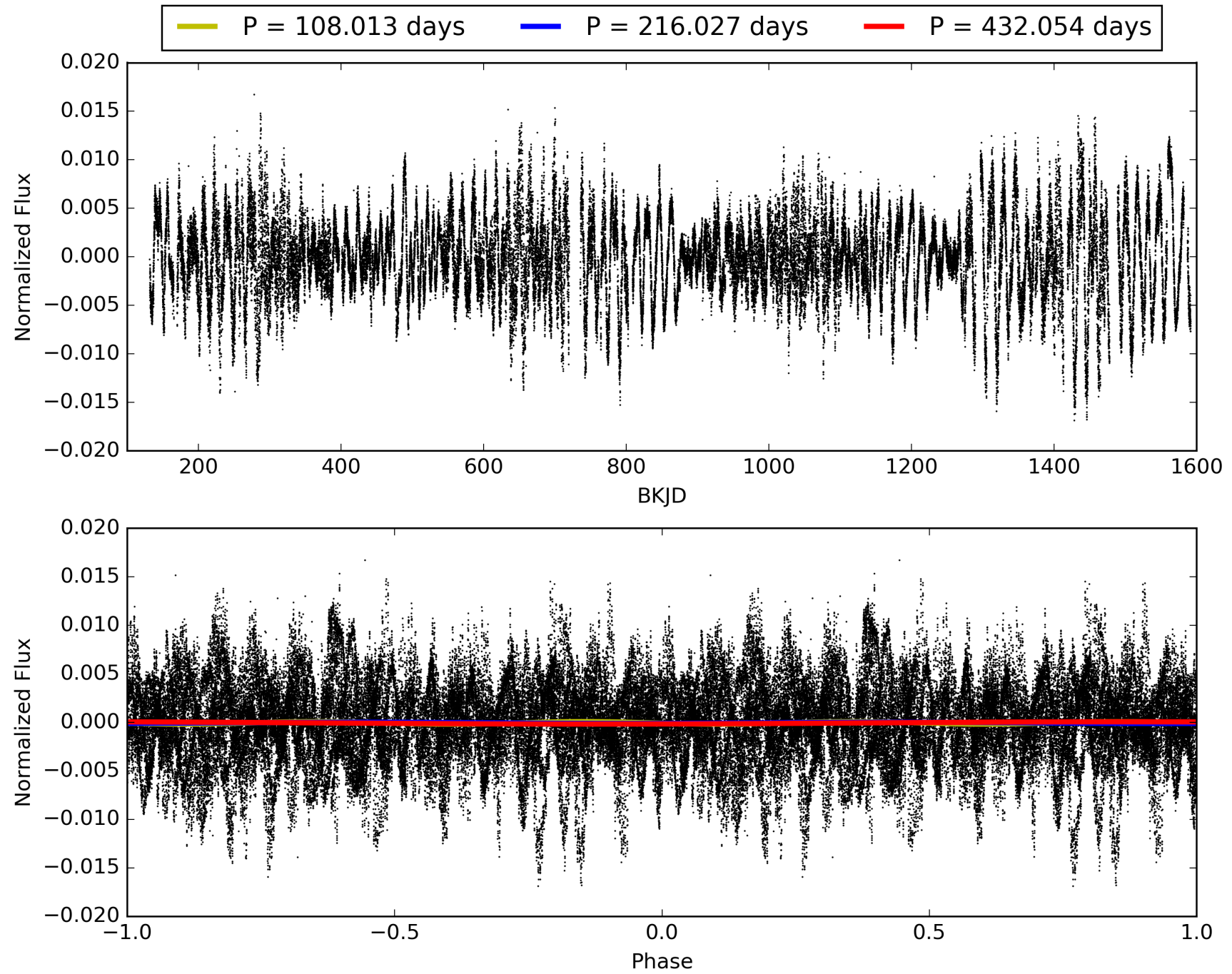
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 02:35:18 Z

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

TCE 009152999-02, PDC Light Curves

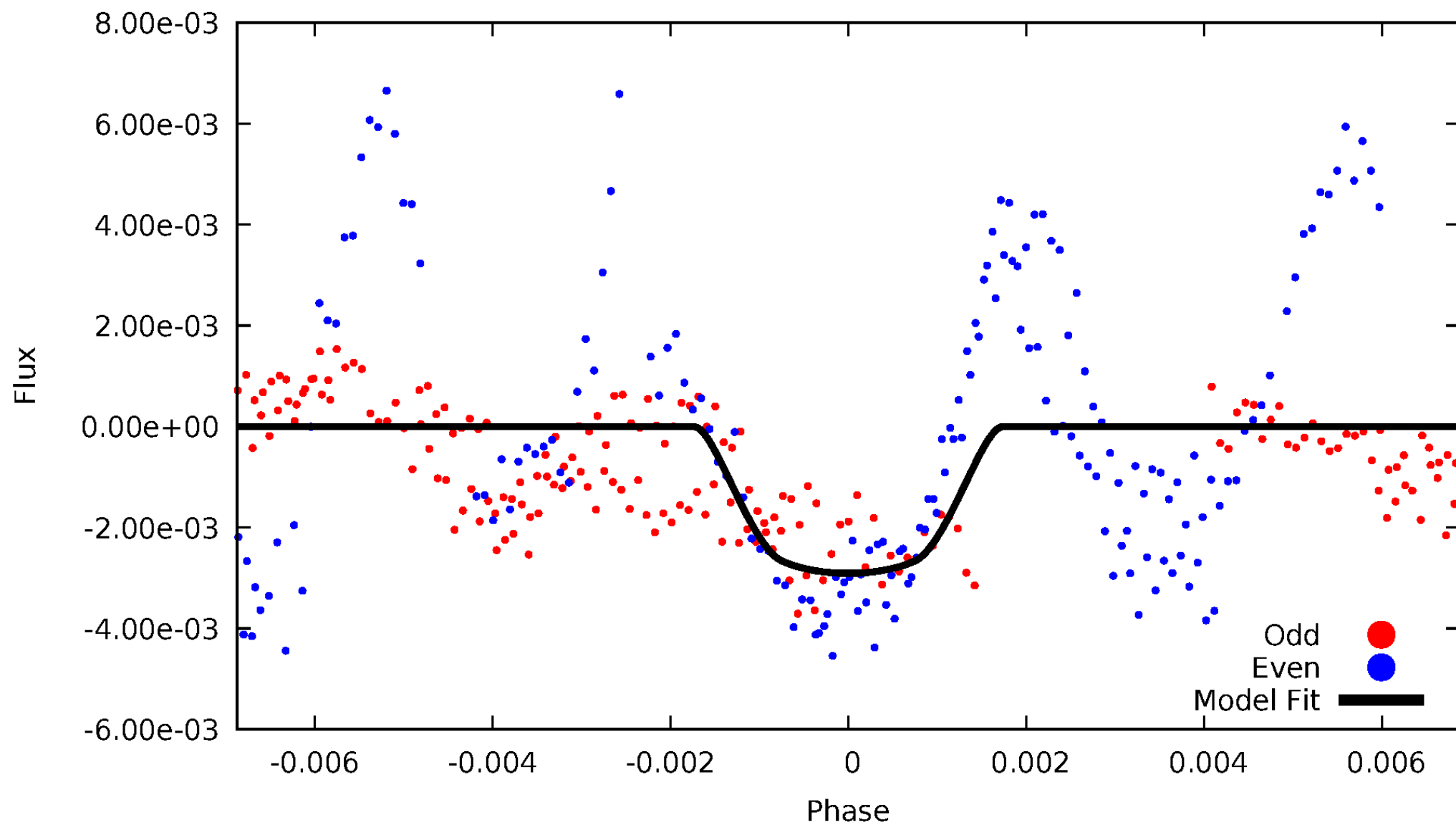


TCE 009152999-02



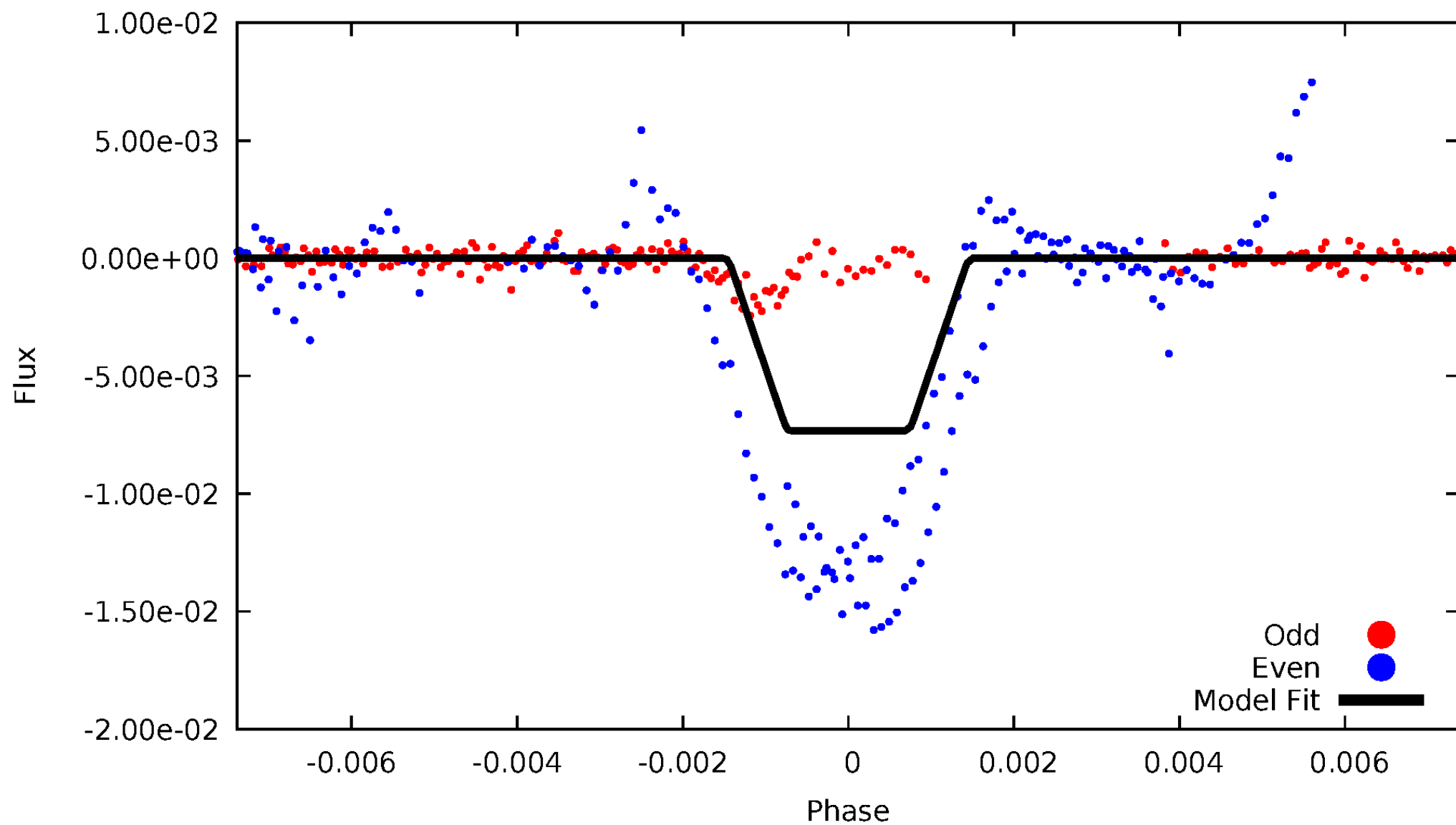
DV Odd/Even

TCE 009152999-02



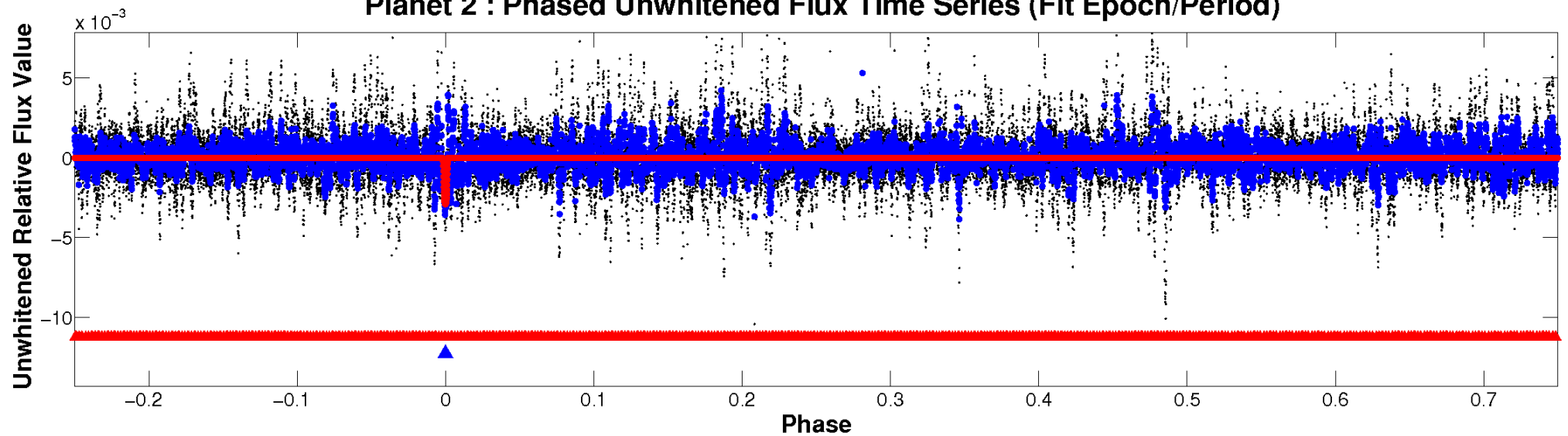
ALT Odd/Even

TCE 009152999-02

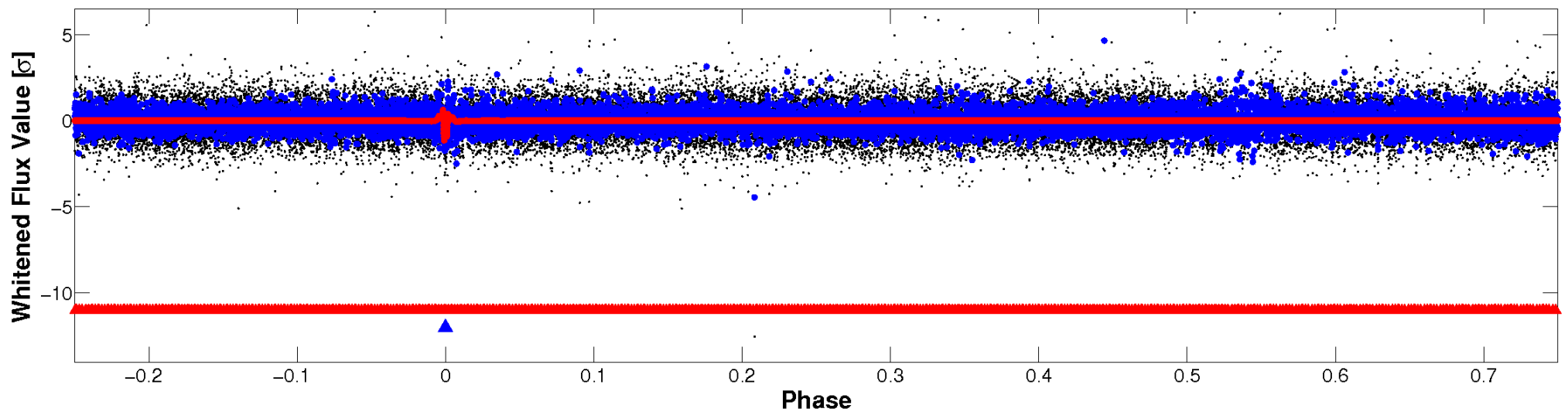


Non-Whitened Vs. Whitened Light Curve

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

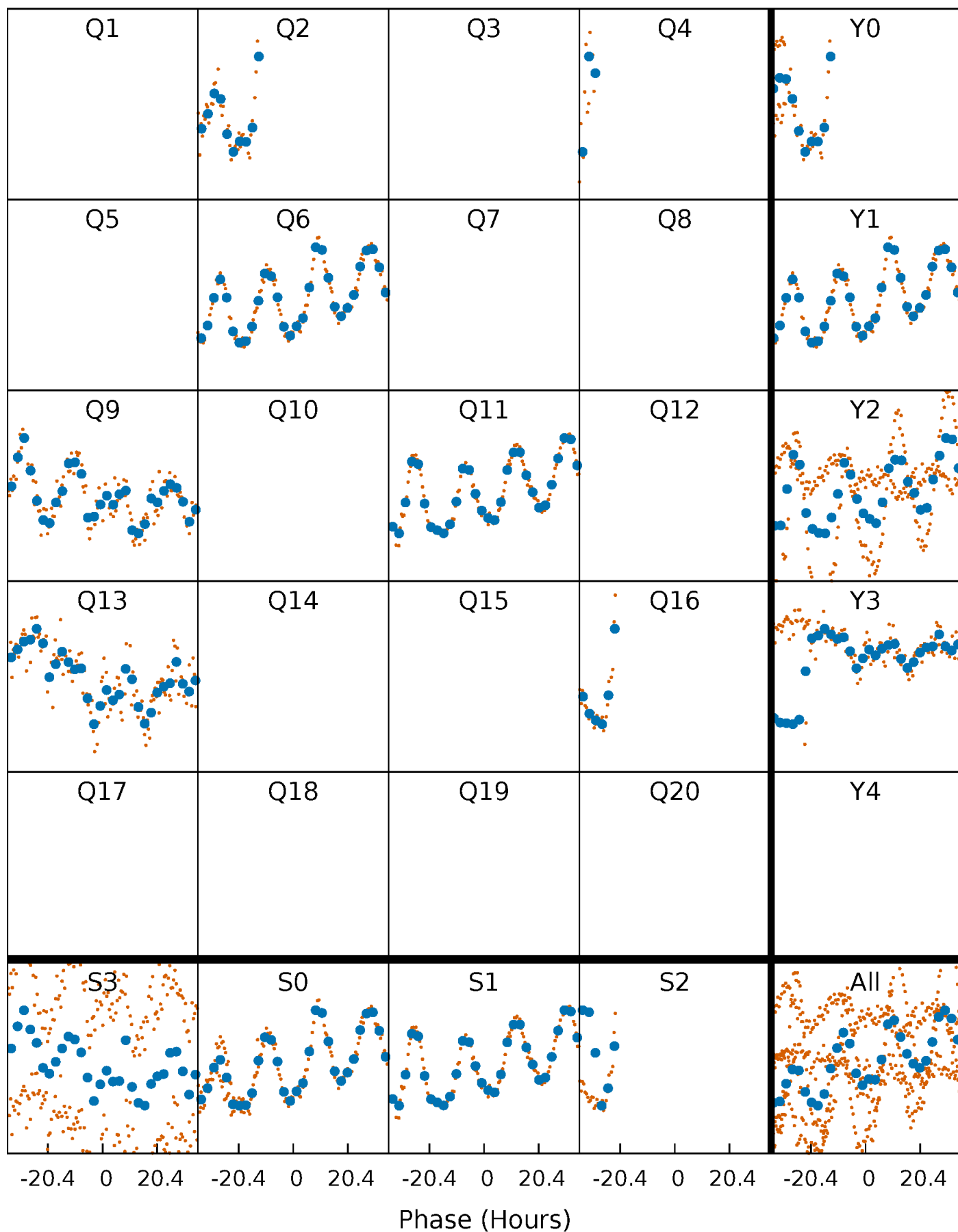


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



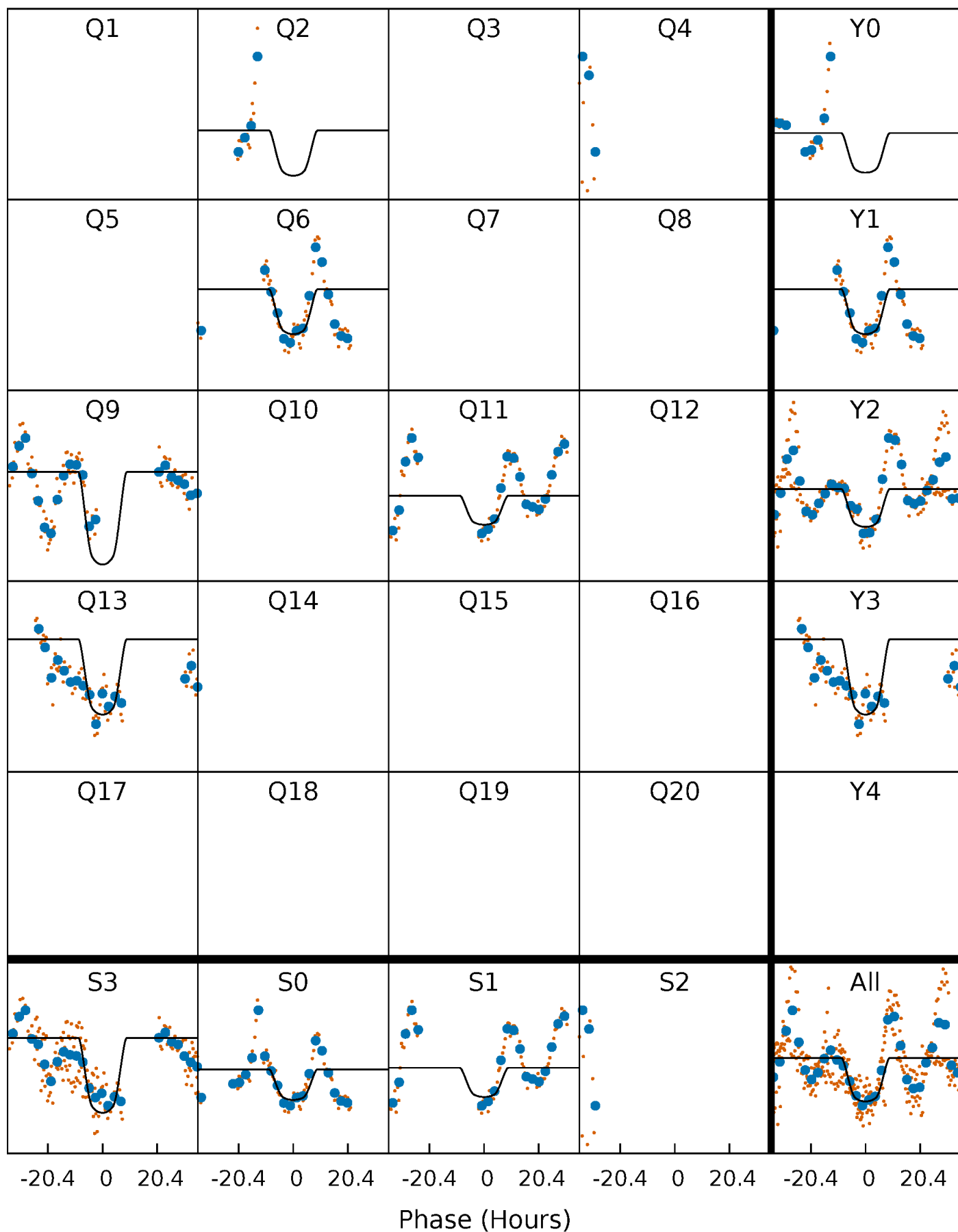
PDC Quarter-Phased Transit Curves

TCE 009152999-02 $P=216.026973$ Days $T_0=182.070903$ (BKJD)



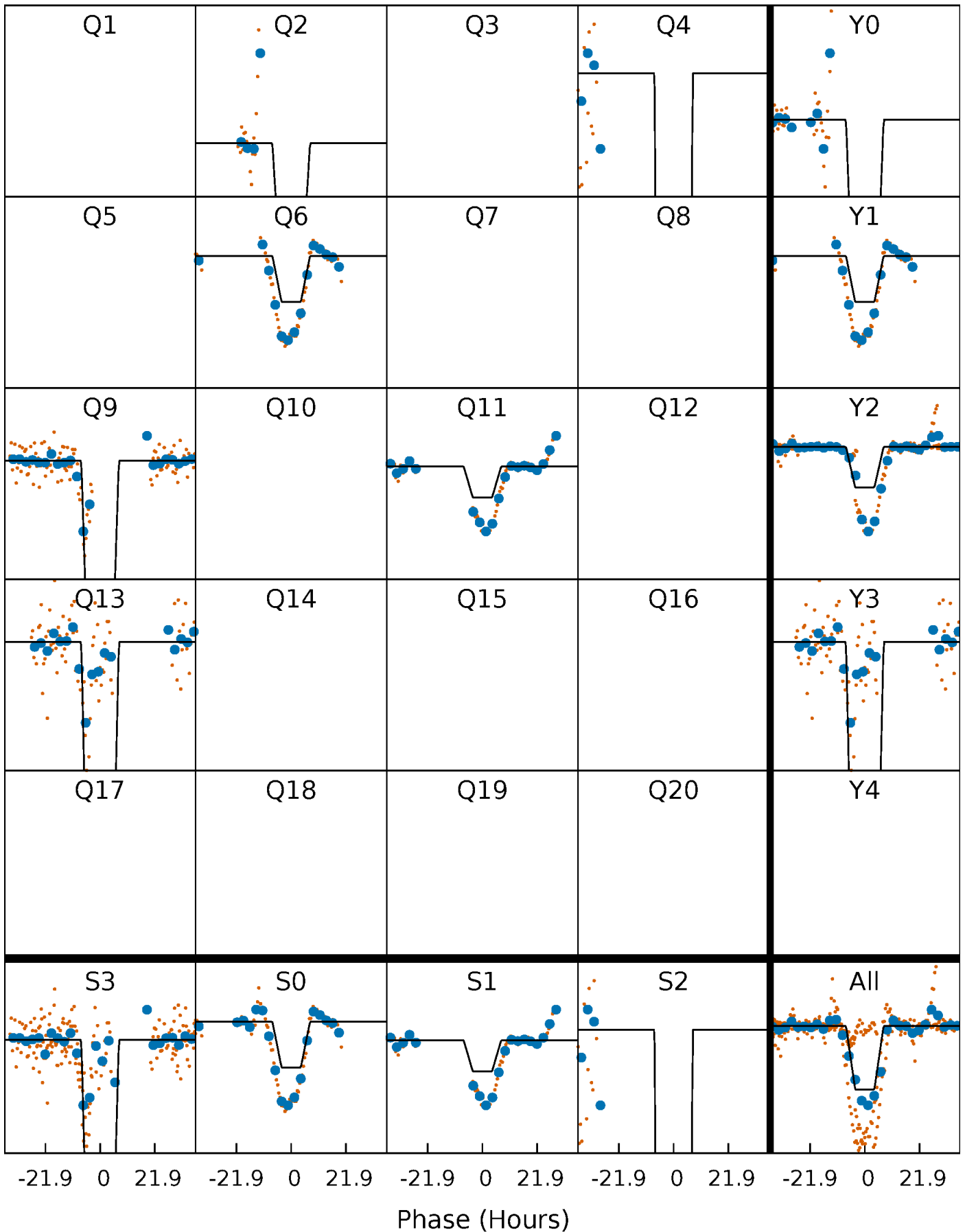
DV Quarter-Phased Transit Curves

TCE 009152999-02 P=216.026973 Days $T_0=182.070903$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

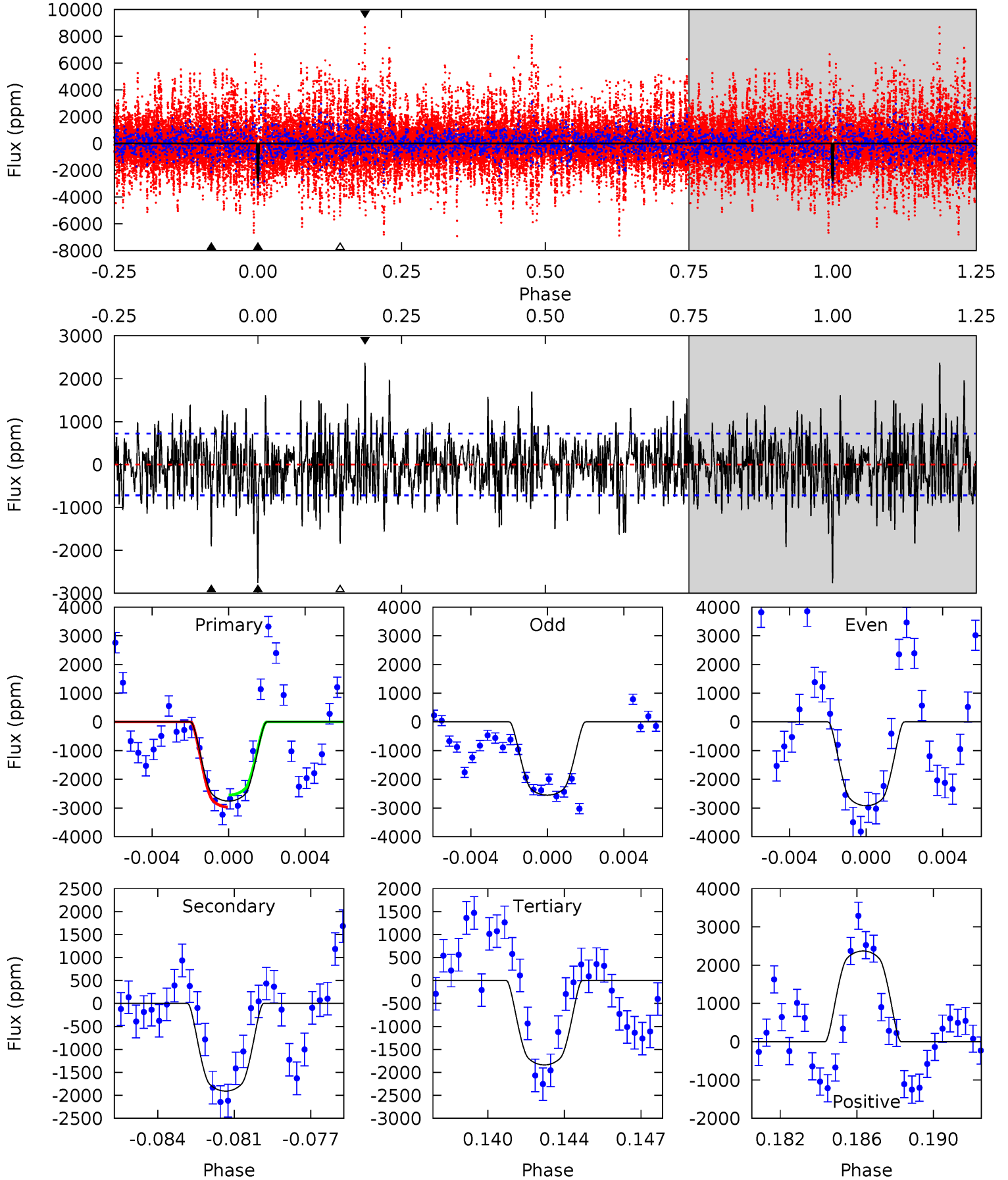
TCE 009152999-02 P=216.050841 Days $T_0=182.055087$ (BKJD)



DV Model-Shift Uniqueness Test

009152999-02, P = 216.026973 Days, E = 182.070903 Days

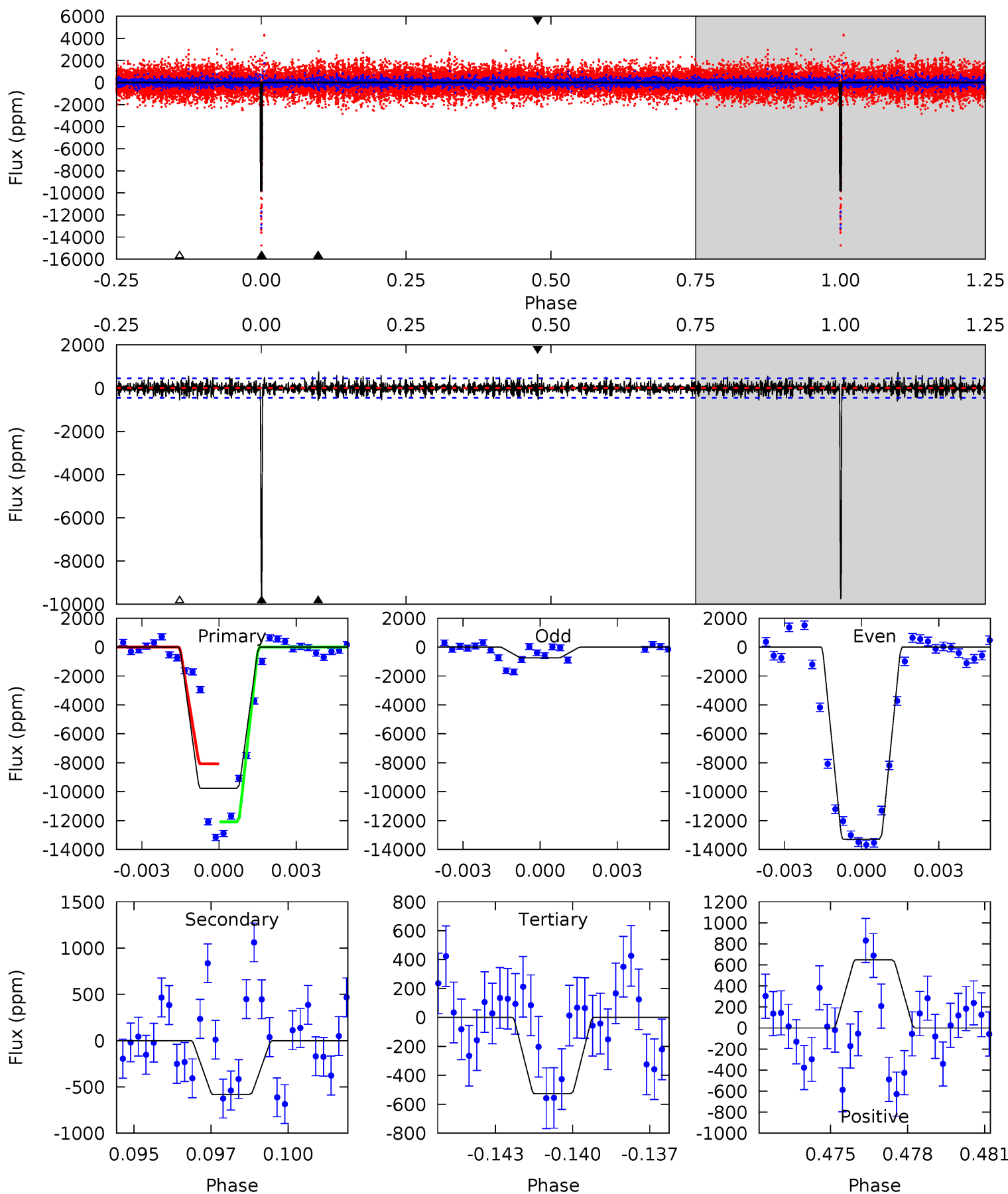
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
20.1	13.9	13.4	17.2	5.22	2.92	3.93	6.69	2.82	0.51	-3.36	1.34	0.90	0.46	1.55



Alt Model-Shift Uniqueness Test

009152999-02, P = 216.050841 Days, E = 182.055087 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
114.3	6.81	6.16	7.58	5.26	2.98	1.81	108.1	106.7	0.65	-0.77	97.8	1.01	0.07	0



Stellar Parameters For KIC 009152999

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5757^{+156}_{-190}	$4.451^{+0.081}_{-0.189}$	$0.060^{+0.250}_{-0.300}$	$0.981^{+0.281}_{-0.120}$	$0.990^{+0.114}_{-0.102}$	$1.478^{+0.514}_{-0.743}$
	+3%/-3%	+2%/-4%	+417%/-500%	+29%/-12%	+12%/-10%	+35%/-50%
Source	PHO1	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 009152999-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-1908 ± 138	$6.48^{+1.00}_{-0.70}$	425^{+29}_{-23}	5025^{+235}_{-226}	12277^{+3046}_{-3089}
Alt.	-582 ± 85	$9.34^{+1.38}_{-0.85}$	424^{+28}_{-22}	3519^{+118}_{-138}	1740^{+490}_{-439}

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

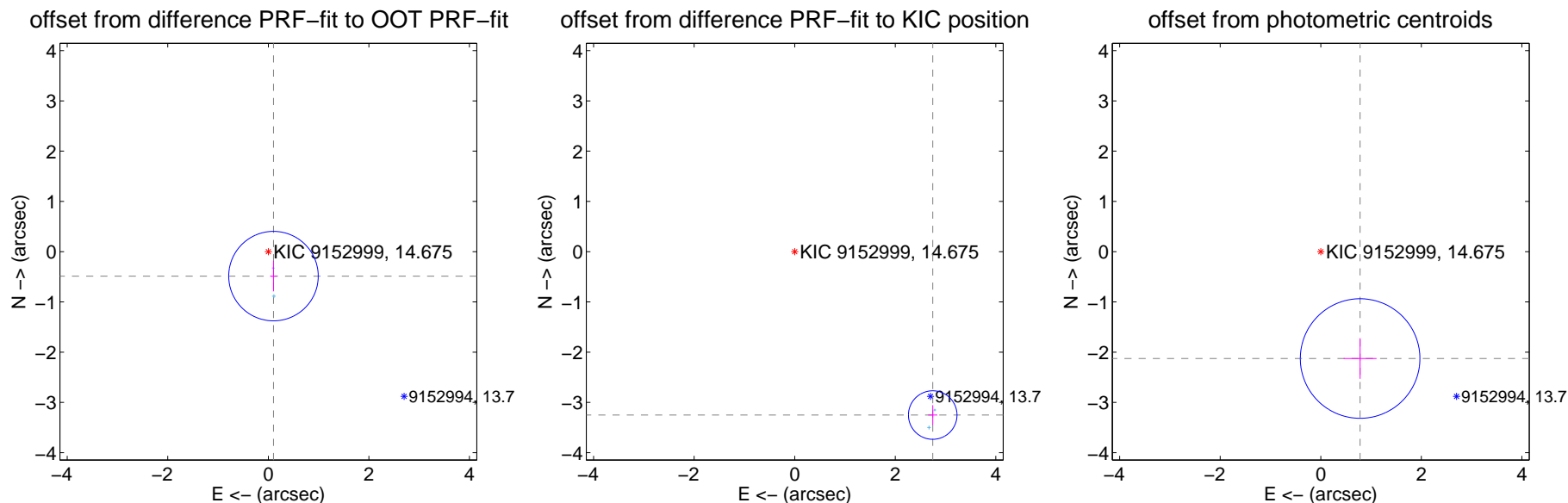
DV Centroid Data

Supplemental centroid analysis for 009152999-02. Kepler magnitude: 14.68. Transit SNR 8.32

There are 2 quarters with good PRF difference image offsets

The OOT PRF centroid is offset from the target star catalog position by about 3.66 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.497 ± 0.297	1.68	-0.103 ± 0.067	-0.487 ± 0.303
PRF-fit source offset from KIC position	4.256 ± 0.161	26.44	-2.746 ± 0.091	-3.251 ± 0.196
photometric centroid source offset	2.27 ± 0.40	5.71	-0.78 ± 0.33	-2.13 ± 0.40



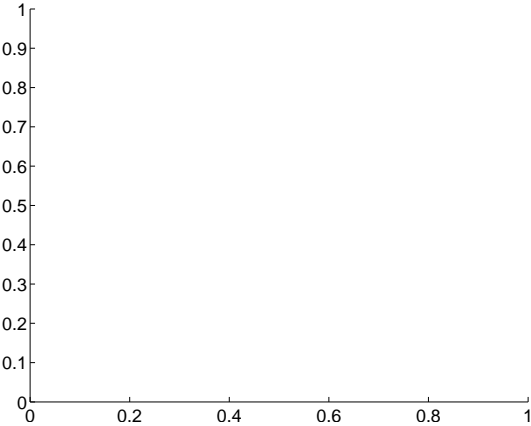
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

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

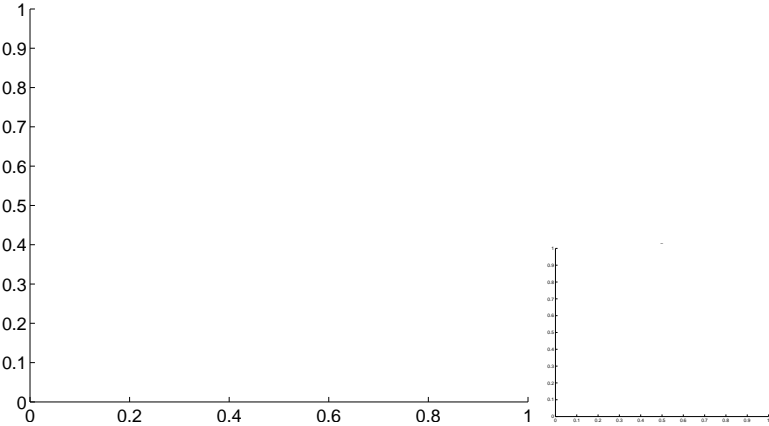


white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.

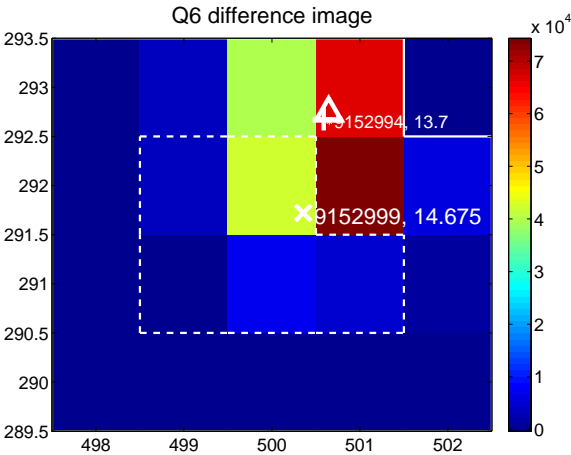
Q5 no difference image



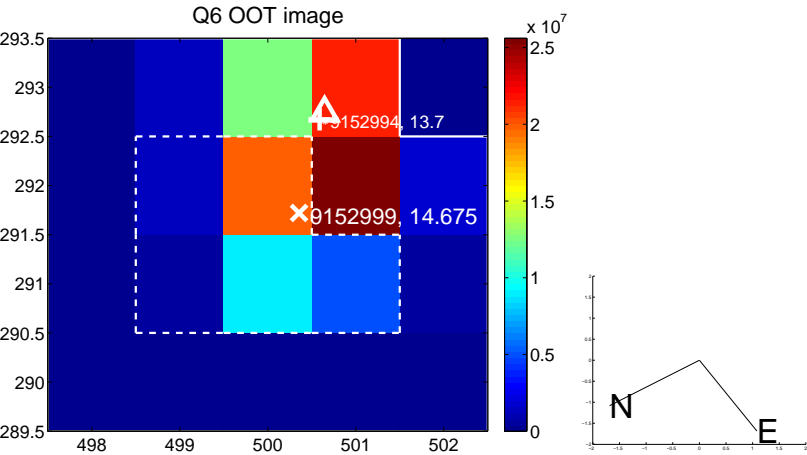
Q5 no OOT image



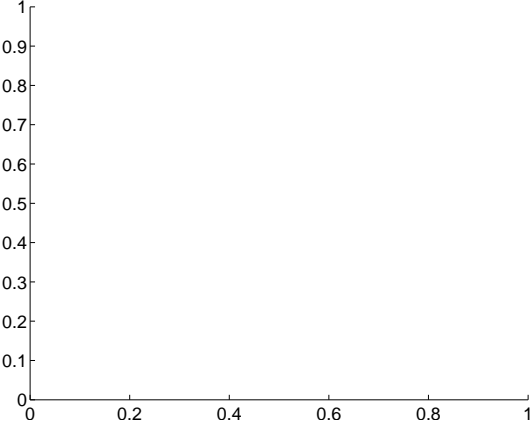
Q6 difference image



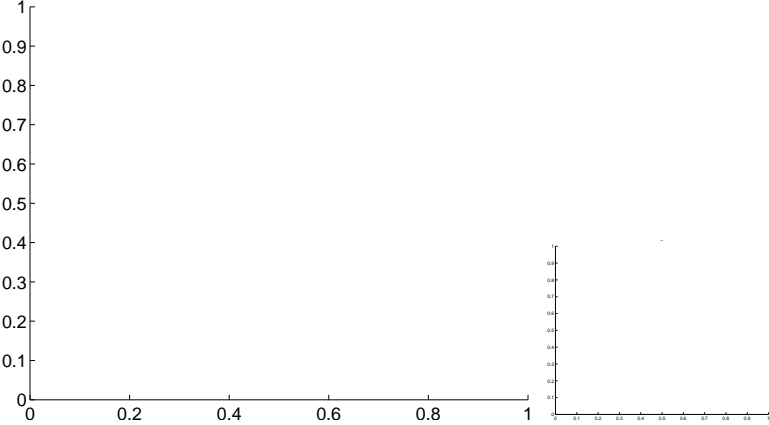
Q6 OOT image



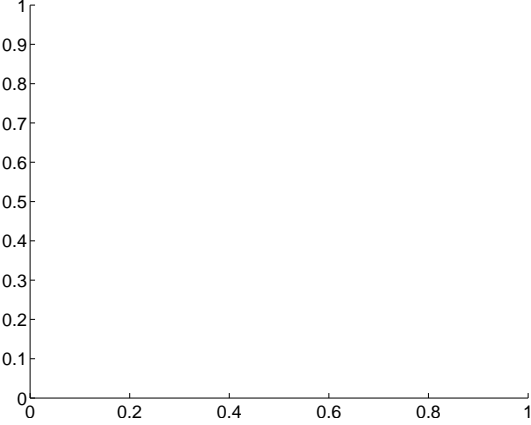
Q7 no difference image



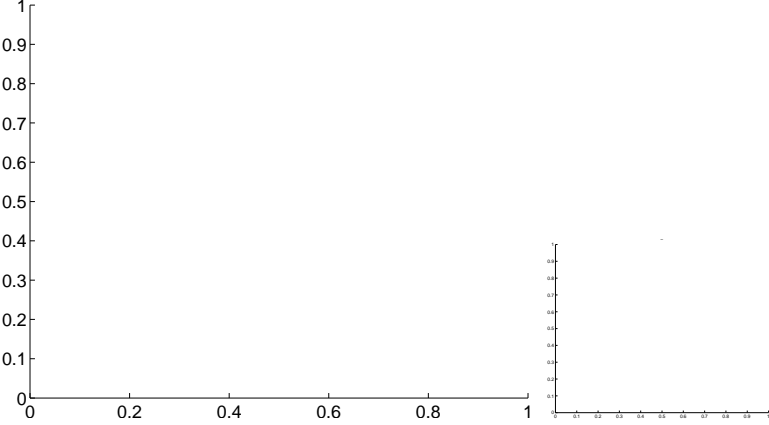
Q7 no OOT image



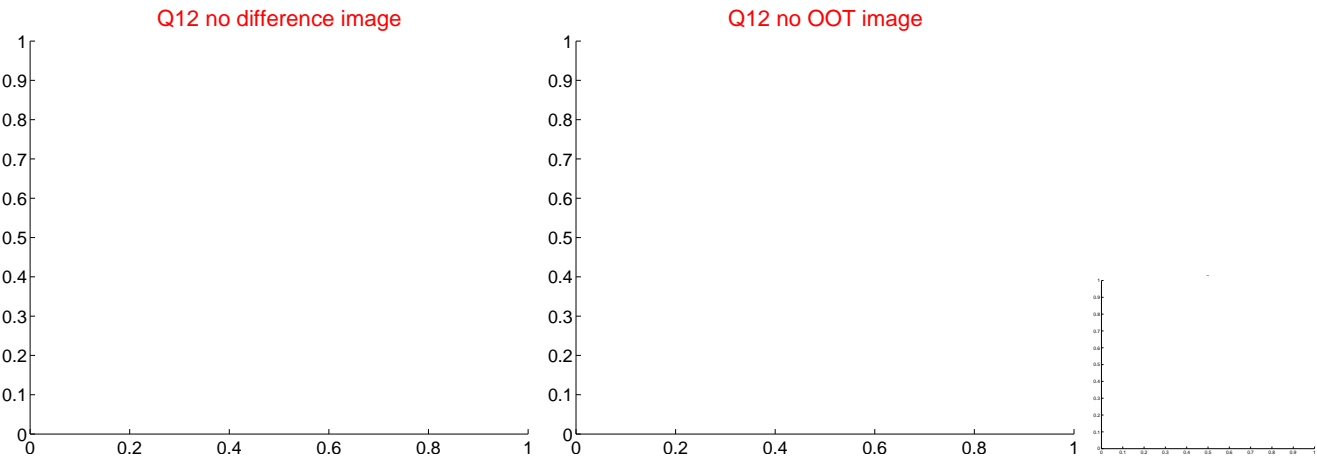
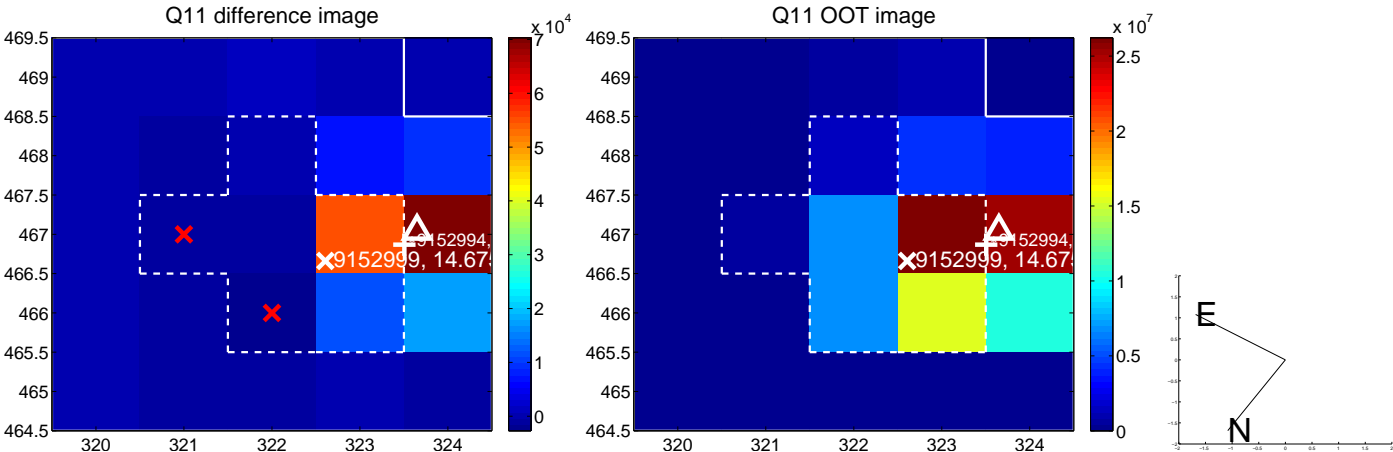
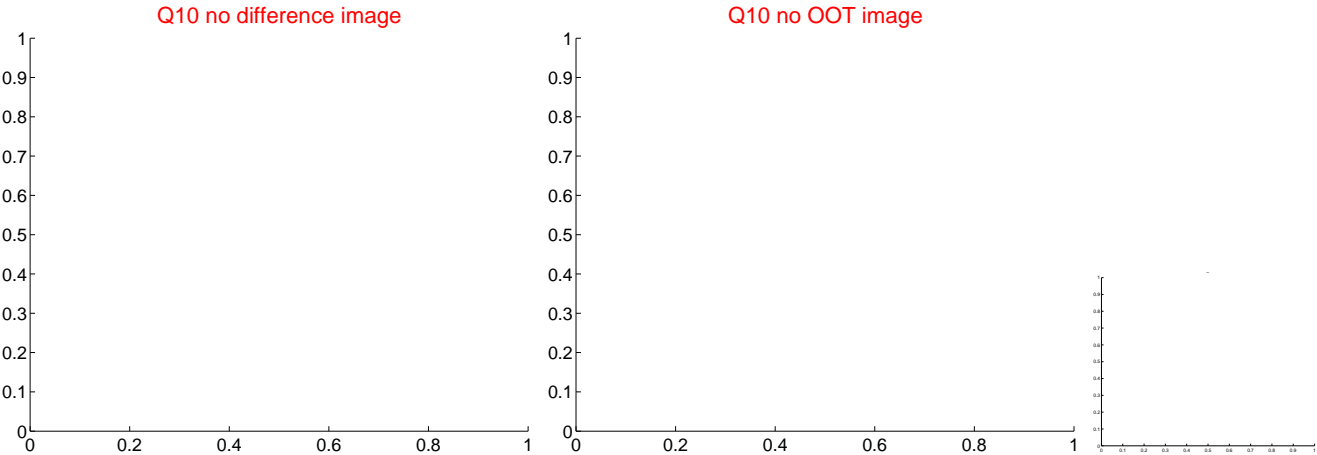
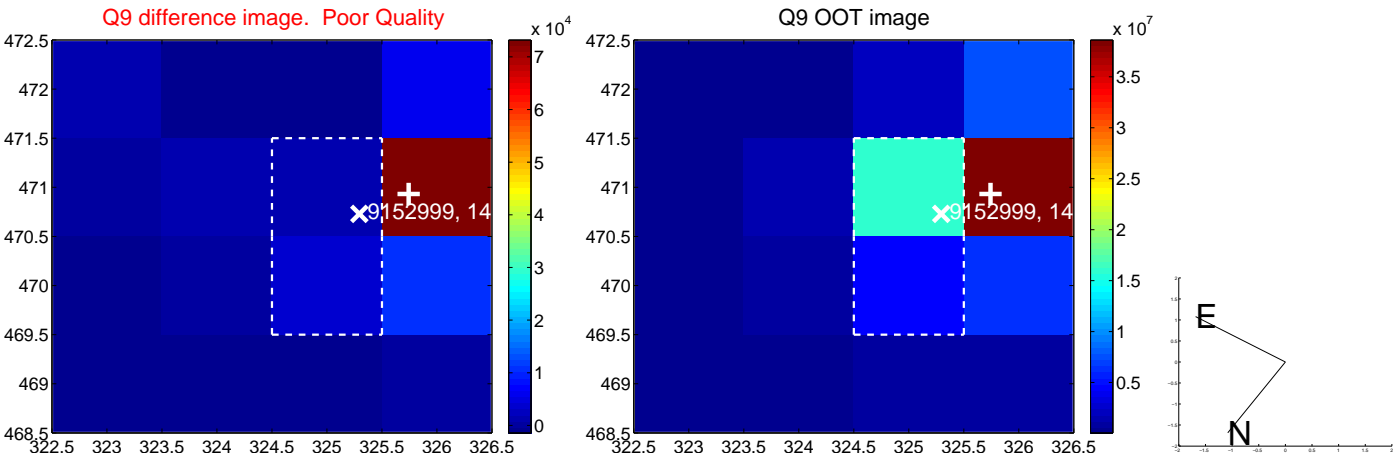
Q8 no difference image



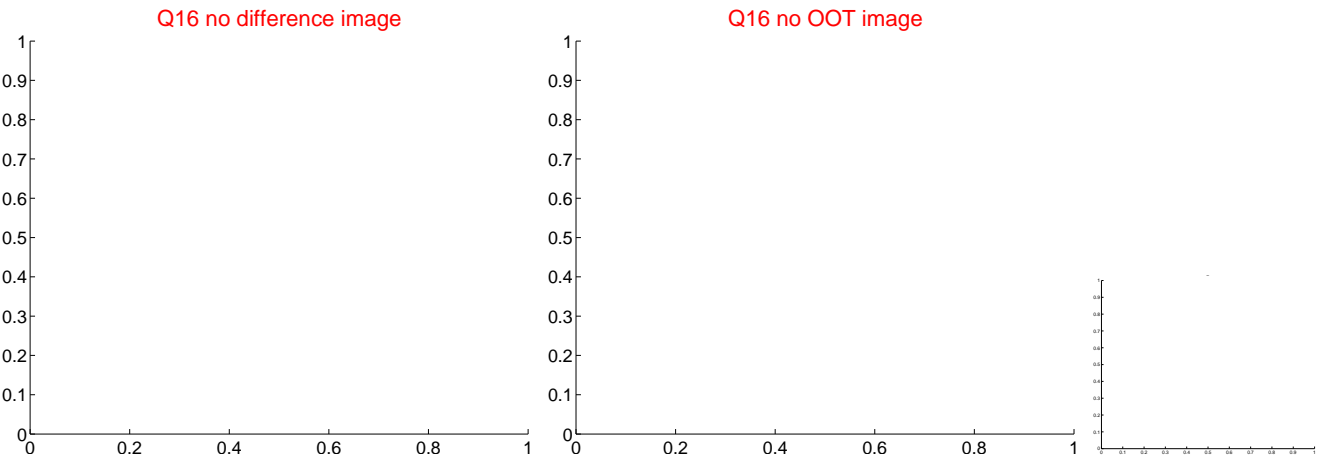
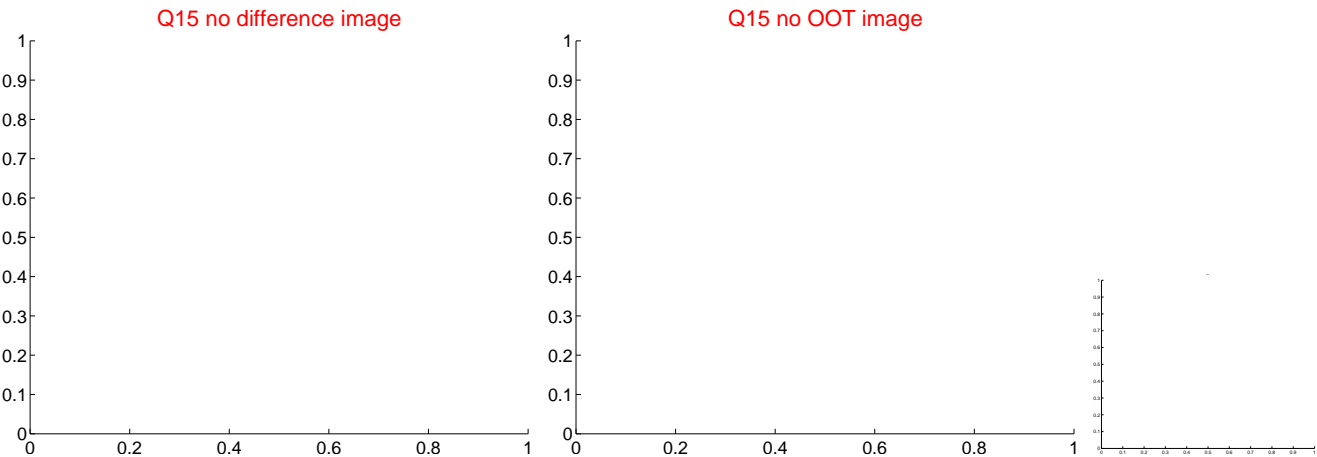
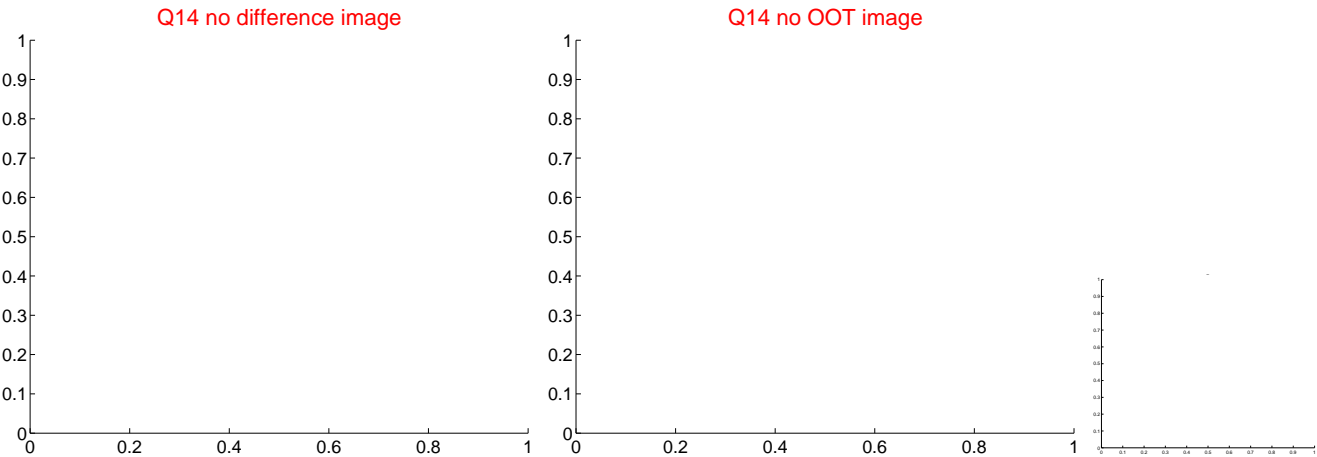
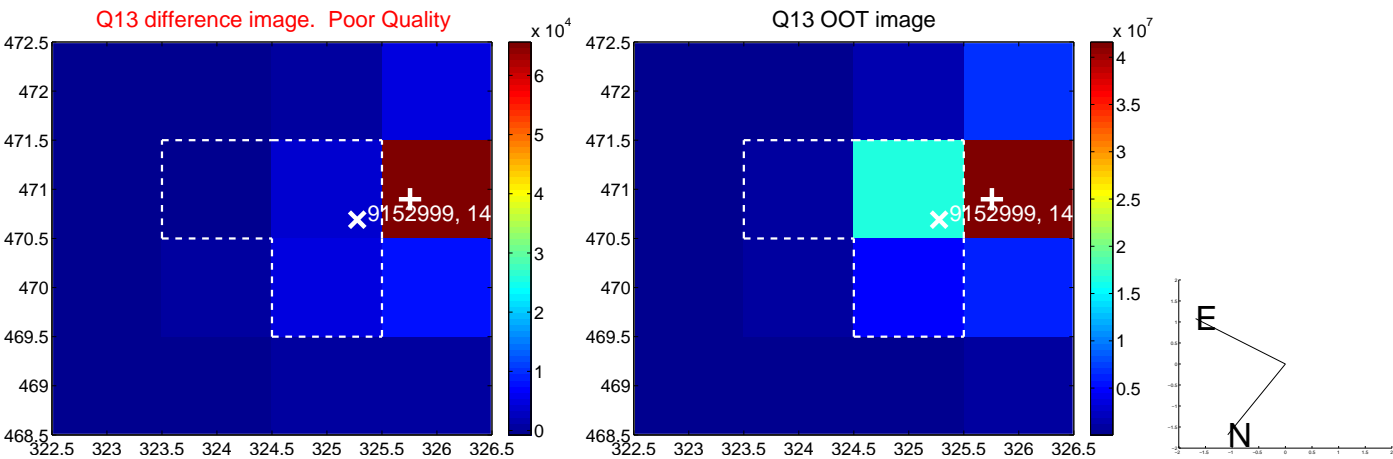
Q8 no OOT image



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



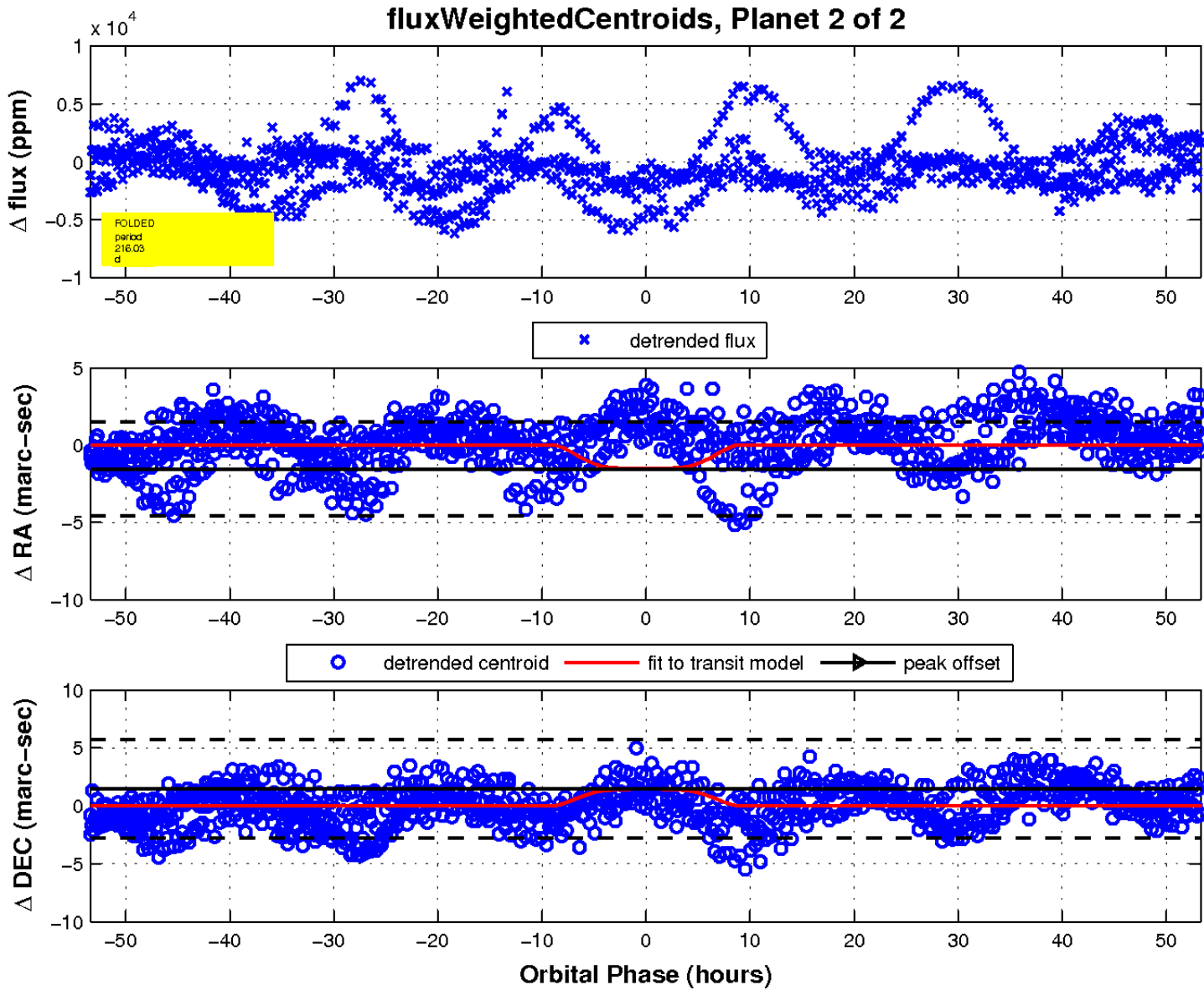
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

Q17 no difference image

Q17 no OOT image



UKIRT Image

Declination

