

KIC 009229571

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})
009229571-01	OBS	No	1.995506	133.188302	25.7	8.288	12.2	9.3	4.06	6798	2.64	21678.65
009229571-02	OBS	No	1.995597	131.964453	22.3	8.105	10.5	9.4	4.06	6798	1.93	21677.33
009229571-03	OBS	No	480.903658	579.615080	423.2	3.000	13.3	10.4	4.06	6798	9.75	14.46

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009229571-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT
009229571-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD
009229571-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—INCONSISTENT_TRANS

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

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

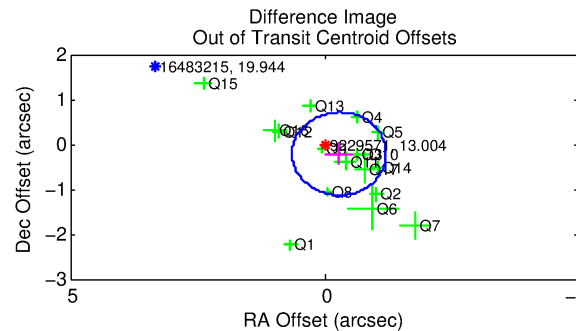
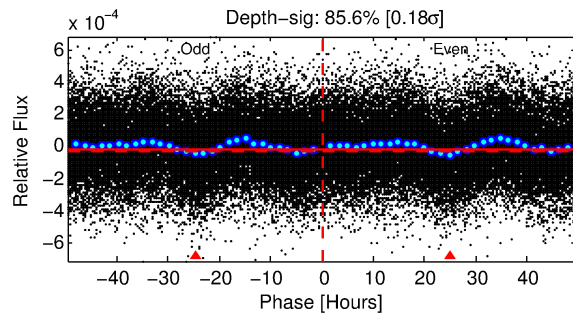
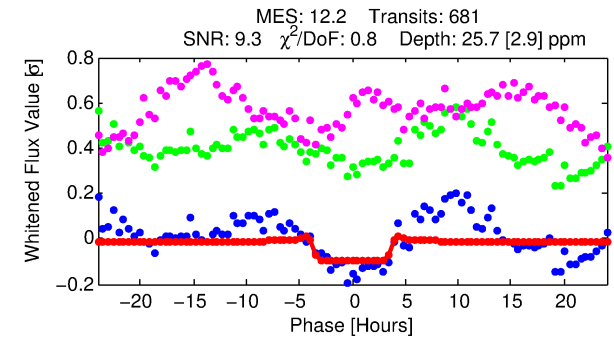
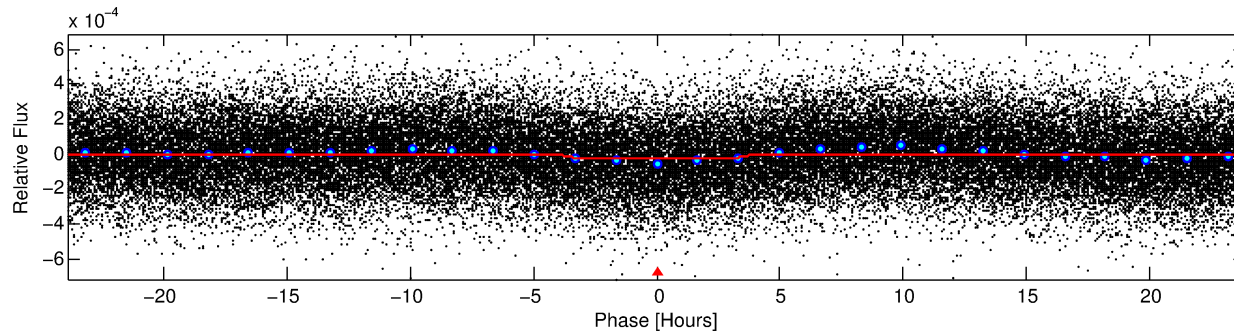
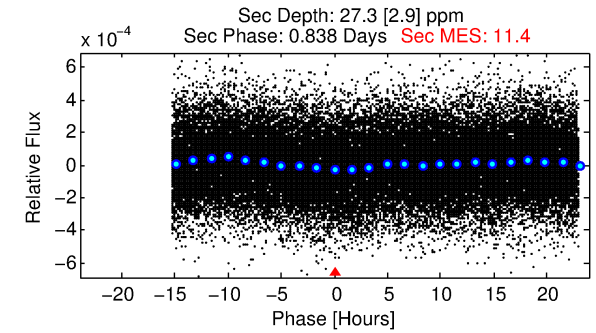
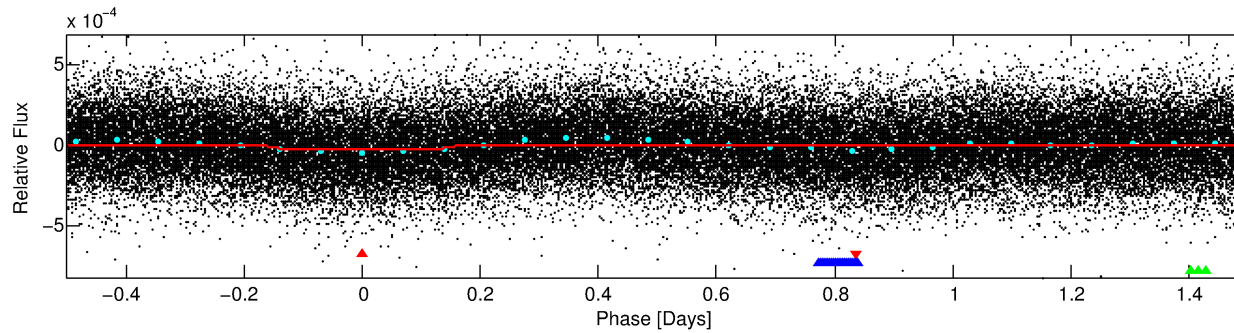
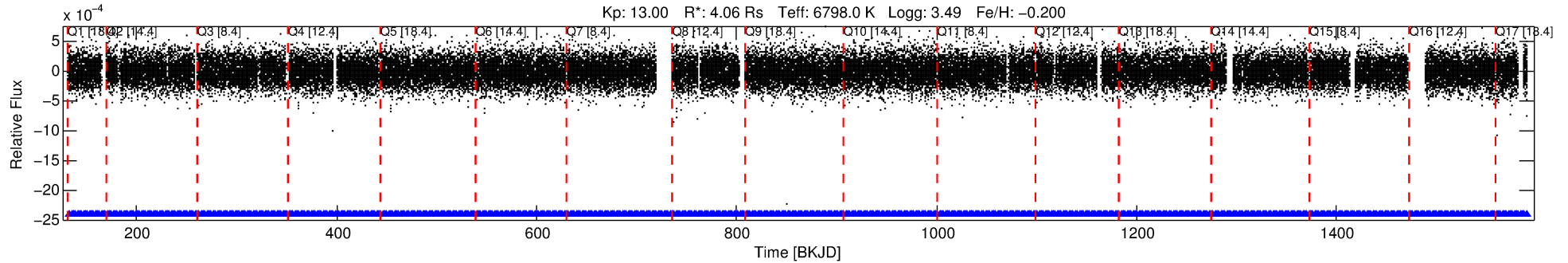
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009229571-01

No Significant Match Found

DV One-Page Summary

KIC: 9229571 Candidate: 1 of 3 Period: 1.996 d



DV Fit Results:

Period = 1.99551 [0.00003] d
Epoch = 133.1883 [0.0081] BKJD
Rp/R* = 0.0060 [0.0005]
a/R* = 1.09 [0.07]
b = 0.97 [0.02]
Seff = 21678.65 [12755.23]
Teq = 3094 [455] K
Rp = 2.64 [1.02] Re
a = 0.0381 [0.0137] AU
Ag = 3.14 [1.91] [1.12σ]
Teffp = 6366 [383] K [5.50σ]

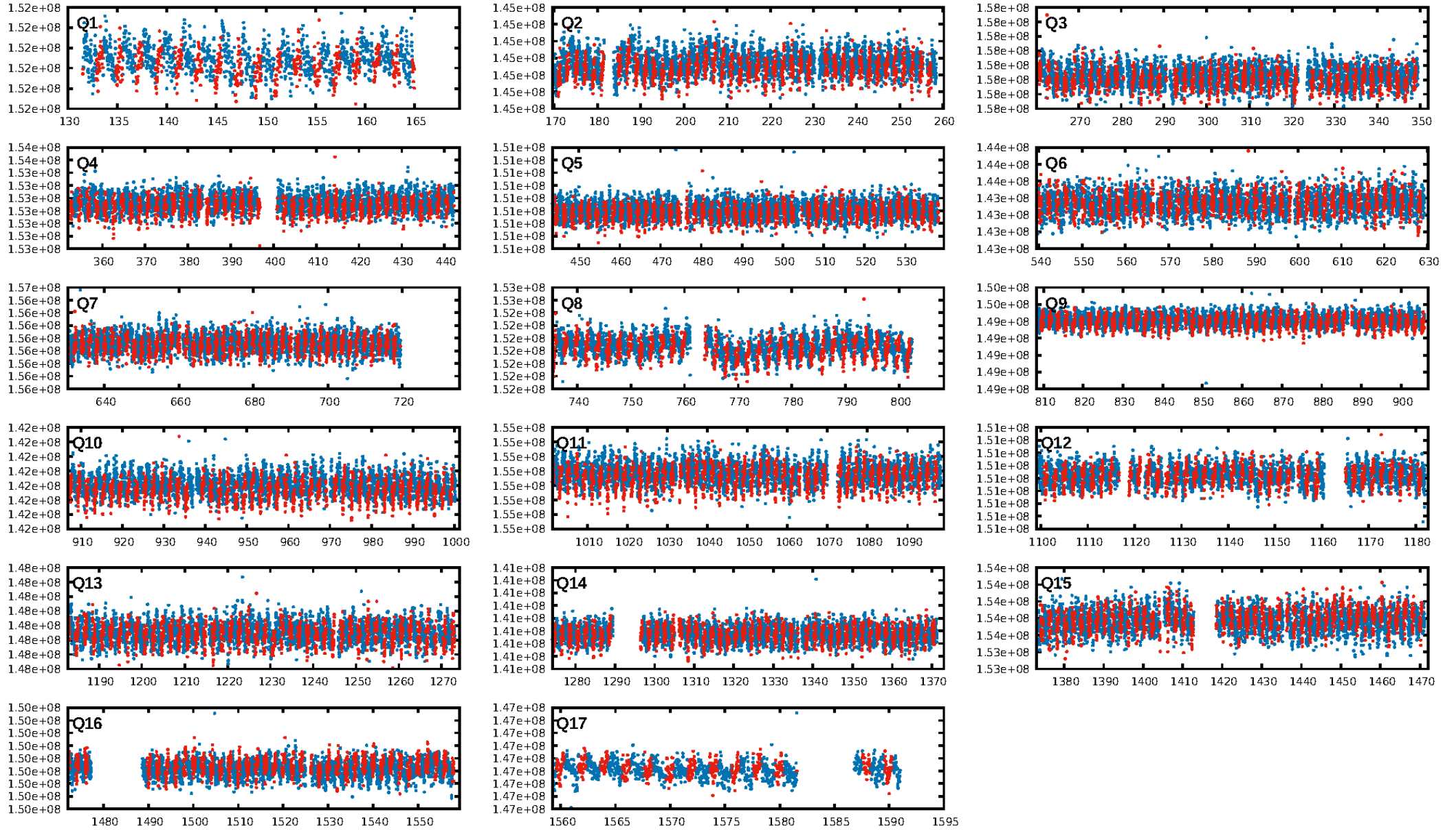
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.0% [0.00σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 3.57e-74
RollingBand-fgt: 1.00 [651/651]
GhostDiagnostic-chr: 2.561
Centroid-sig: 0.9%
Centroid-so: 1.185 arcsec [1.92σ]
OotOffset-rm: 0.355 arcsec [1.15σ]
KicOffset-rm: 0.397 arcsec [1.44σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 0.94 [16/17]
DiffImageOverlap-fno: 0.41 [7/17]

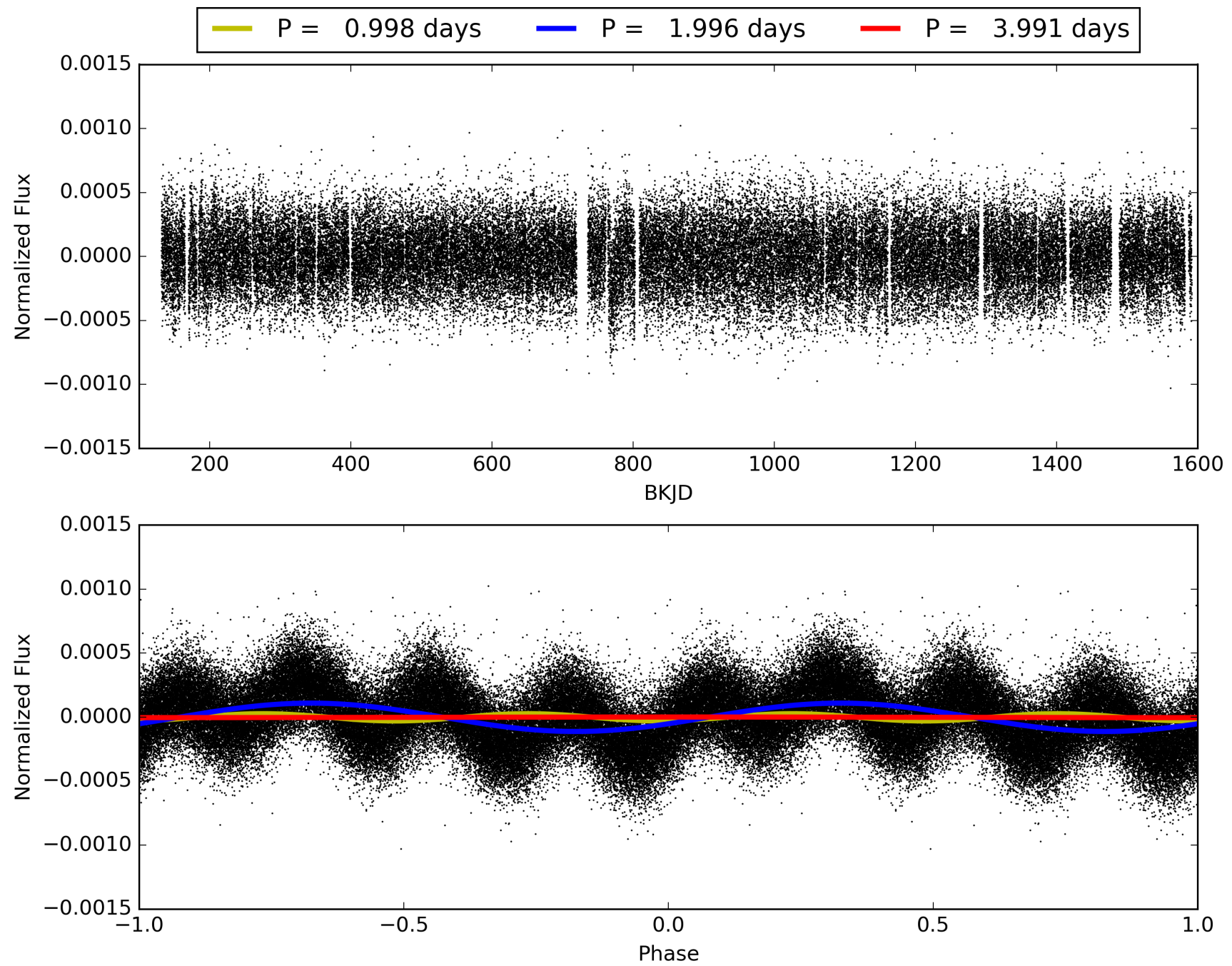
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 009229571-01, PDC Light Curves

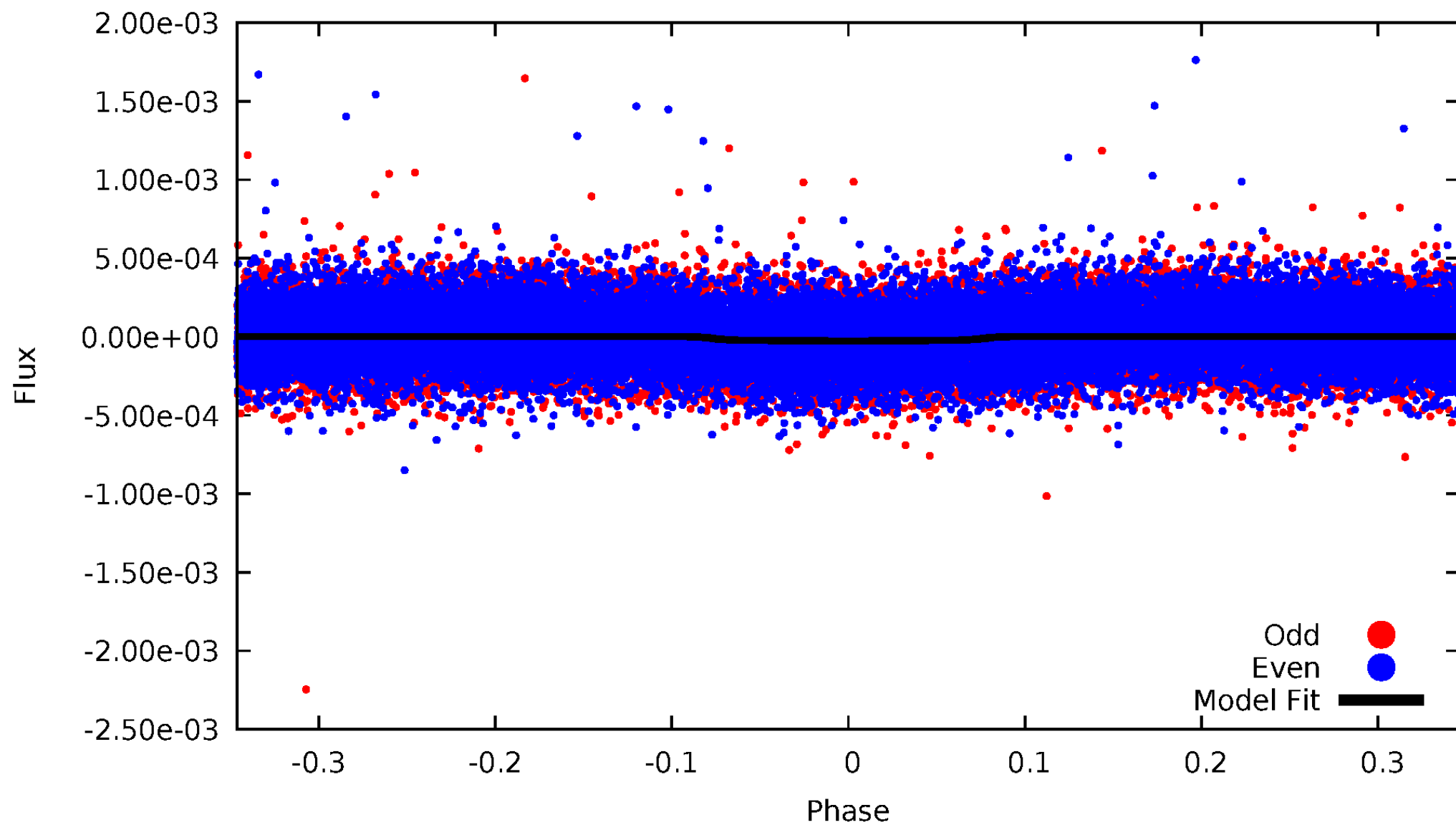


TCE 009229571-01



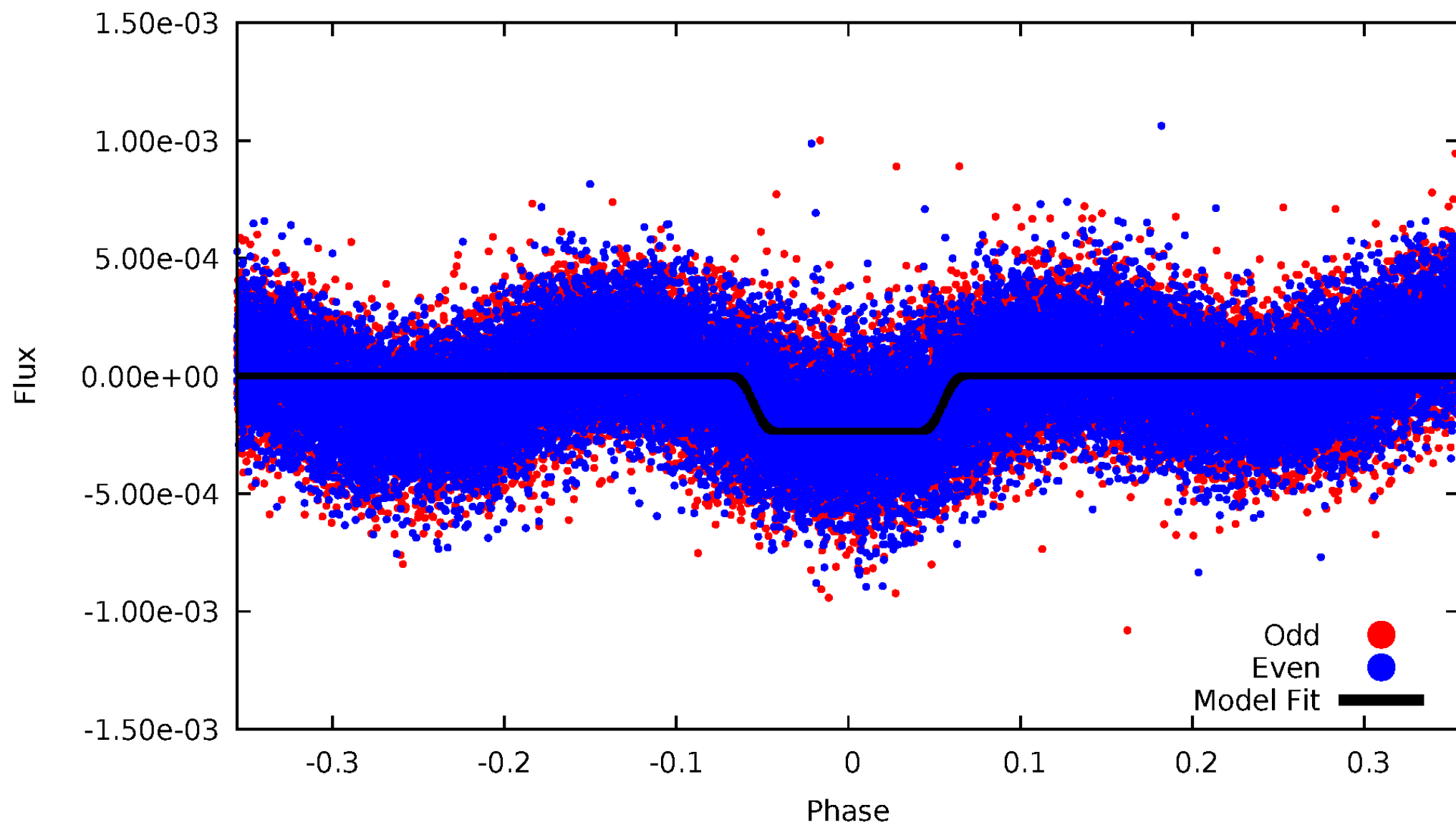
DV Odd/Even

TCE 009229571-01



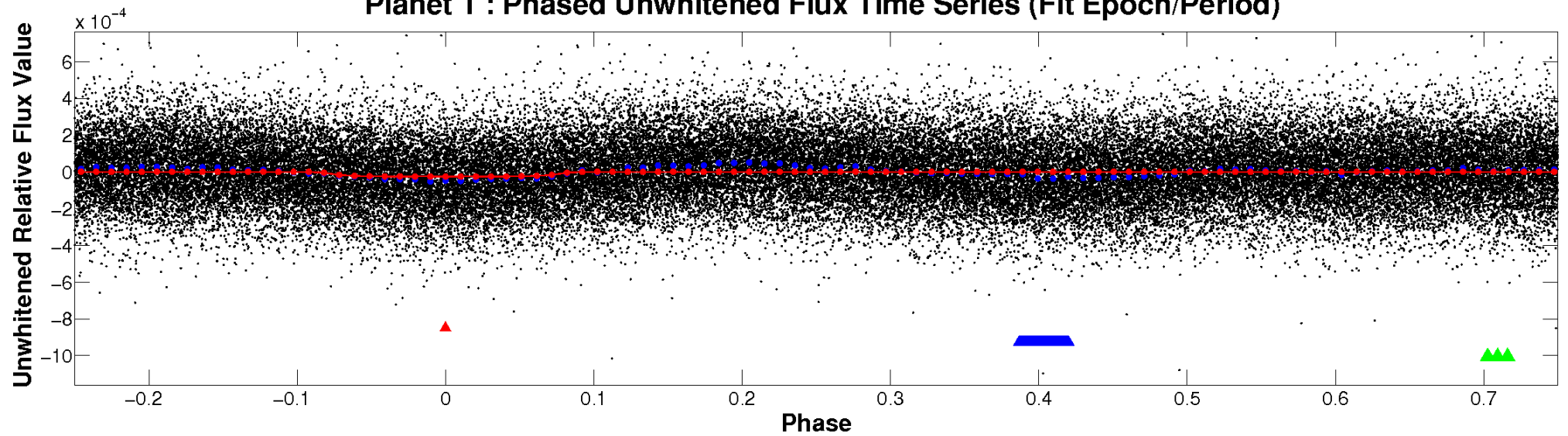
ALT Odd/Even

TCE 009229571-01

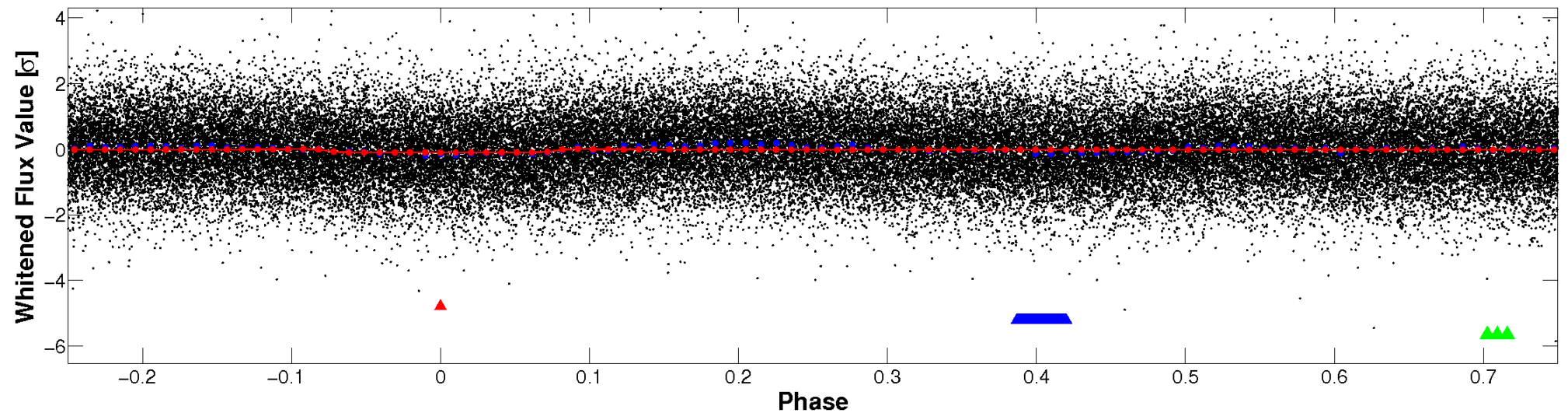


Non-Whitened Vs. Whitened Light Curve

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

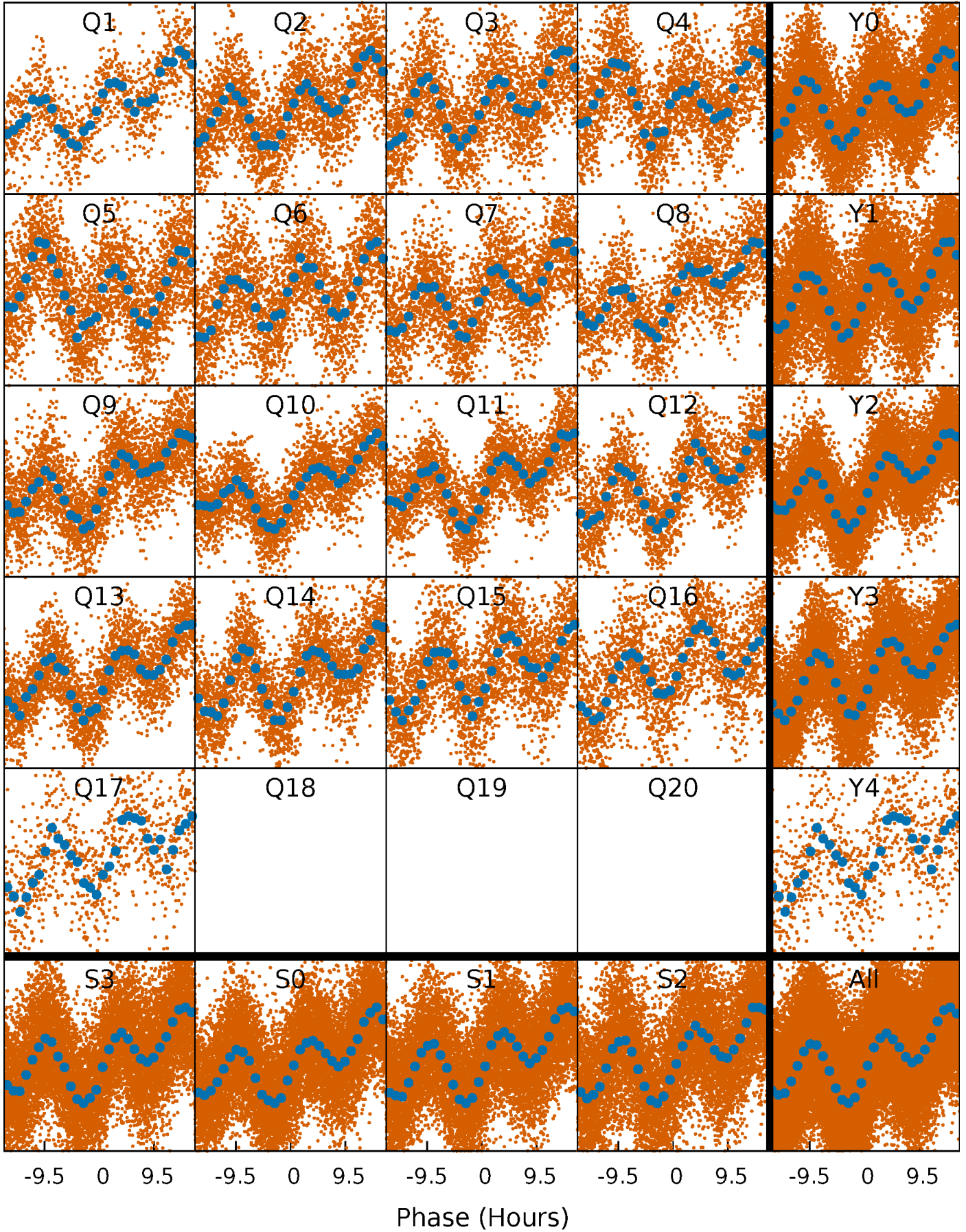


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



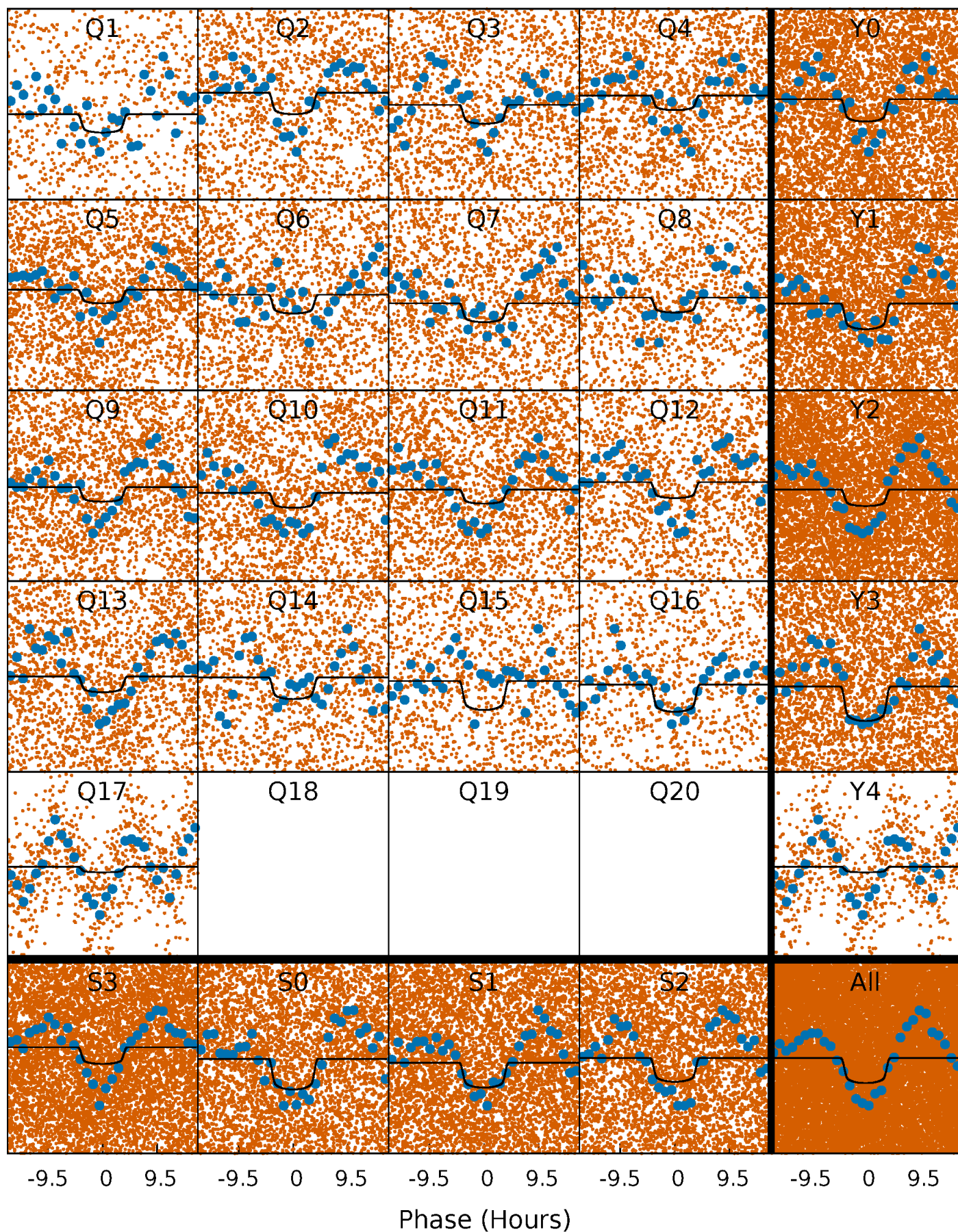
PDC Quarter-Phased Transit Curves

TCE 009229571-01 P= 1.995506 Days $T_0=133.188302$ (BKJD)



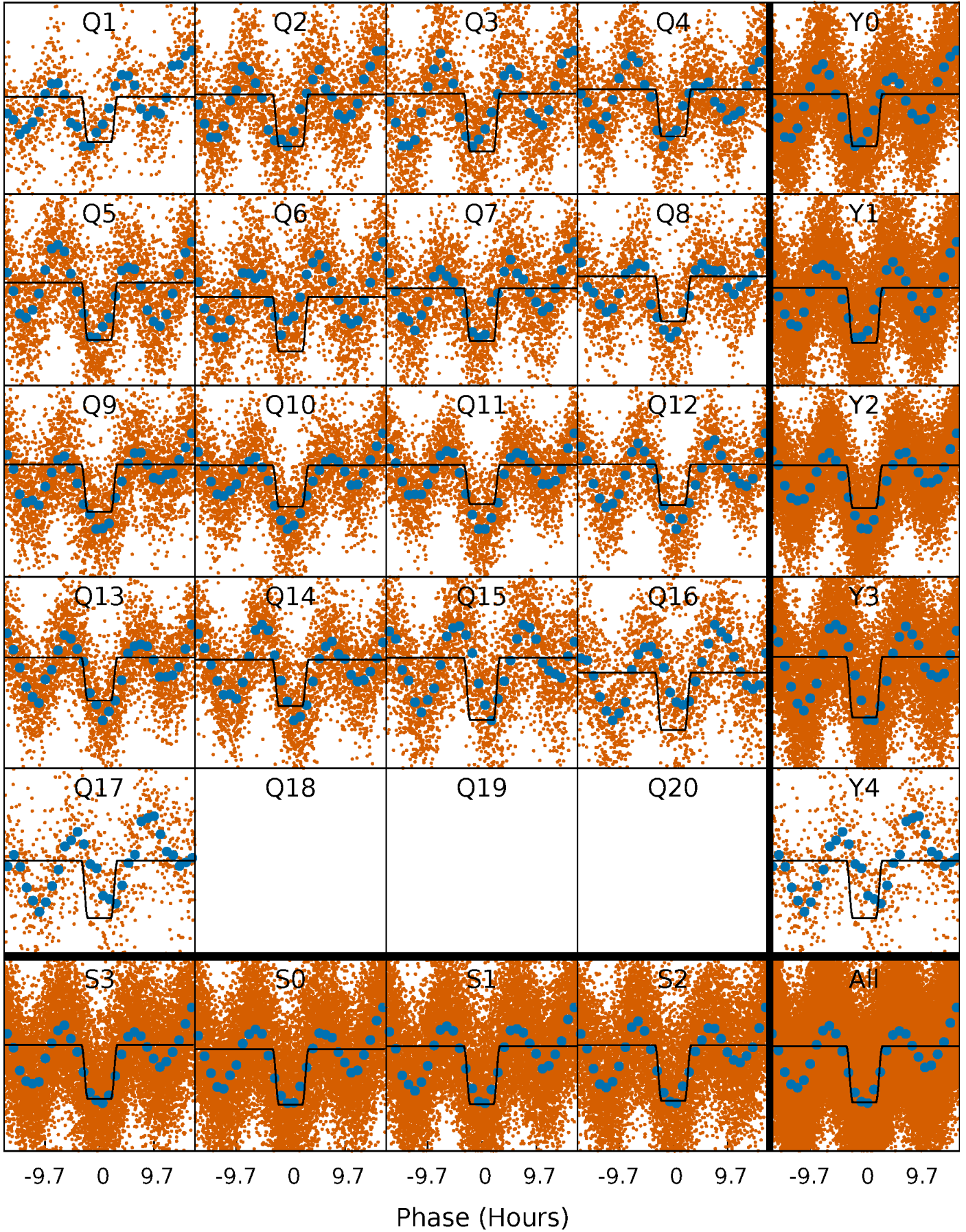
DV Quarter-Phased Transit Curves

TCE 009229571-01 P= 1.995506 Days $T_0=133.188302$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

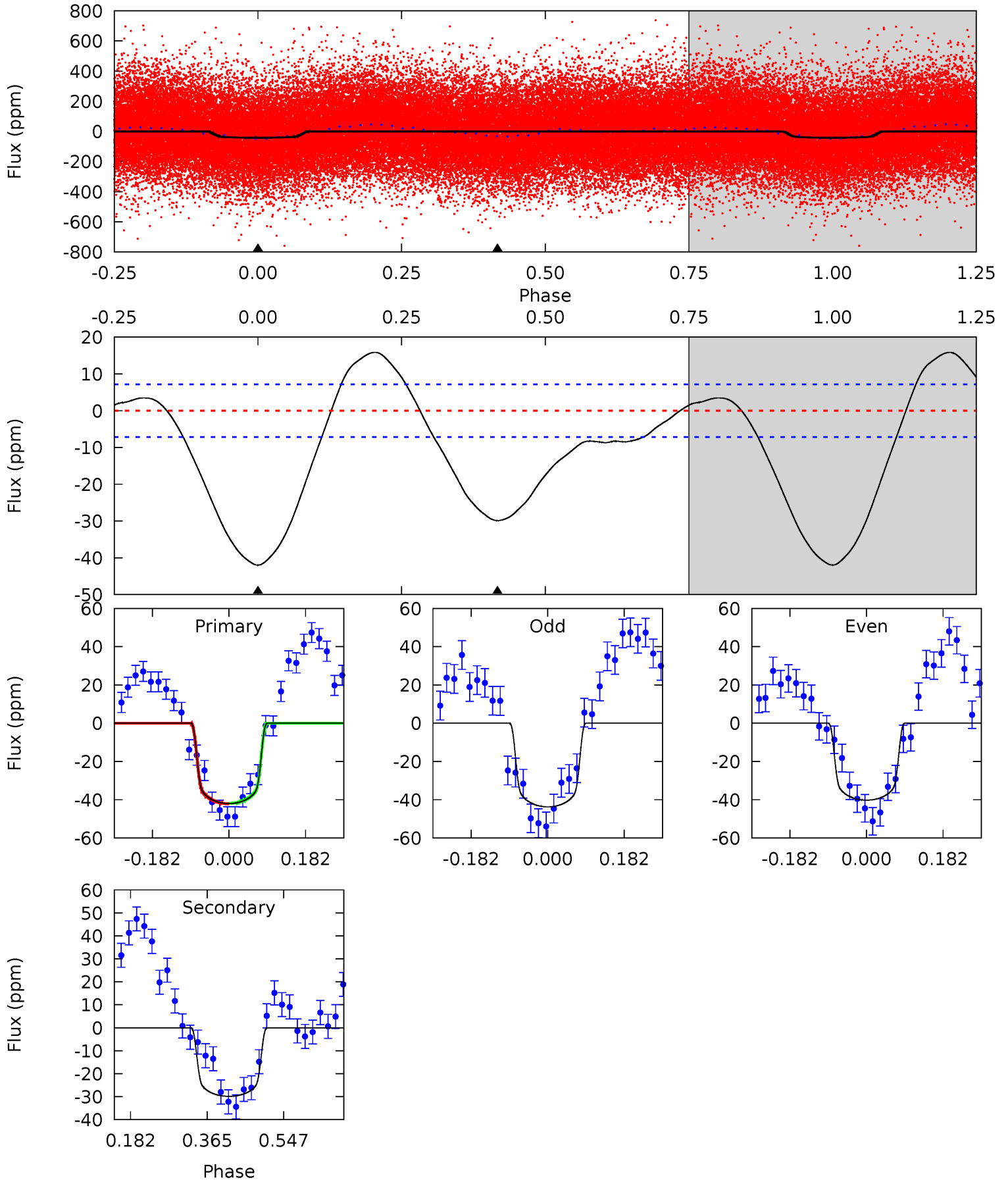
TCE 009229571-01 P= 1.995451 Days $T_0=133.095924$ (BKJD)



DV Model-Shift Uniqueness Test

009229571-01, P = 1.995506 Days, E = 131.192796 Days

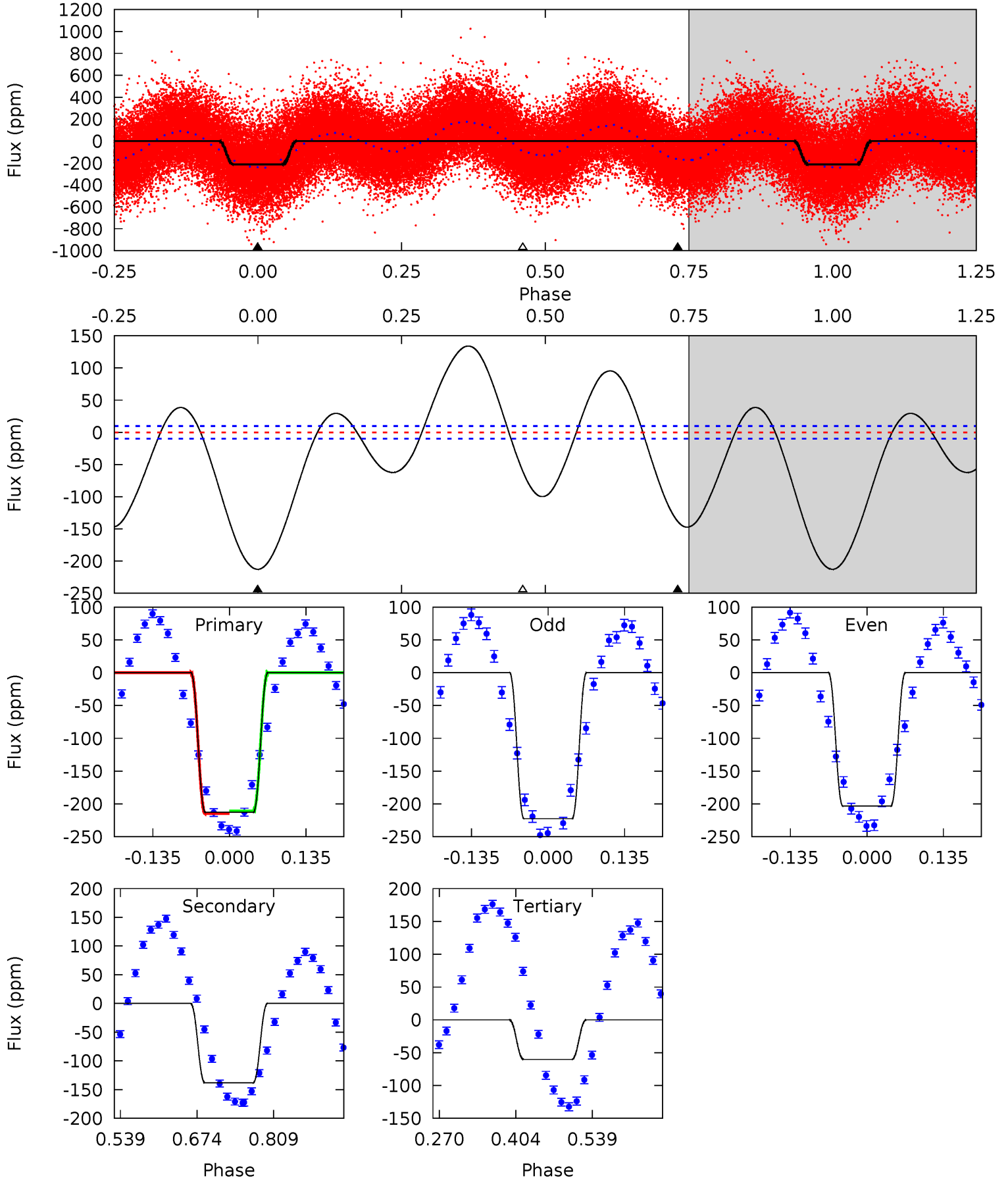
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
26.0	18.5	0	0	4.44	1.33	5.05	26.0	26.0	18.5	18.5	1.08	0.93	0.27	0.08



Alt Model-Shift Uniqueness Test

009229571-01, P = 1.995451 Days, E = 131.100473 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
97.6	63.4	27.7	0	4.50	1.50	31.9	69.9	97.6	35.8	63.4	4.44	1.03	0.39	0.84



Stellar Parameters For KIC 009229571

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6798^{+183}_{-224}	$3.490^{+0.336}_{-0.084}$	$-0.200^{+0.350}_{-0.250}$	$4.060^{+0.381}_{-1.526}$	$1.858^{+0.198}_{-0.368}$	$0.039^{+0.093}_{-0.010}$
	+3%/-3%	+10%/-2%	+175%/-125%	+9%/-38%	+11%/-20%	+239%/-26%
Source	PHO1	FLK73	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 009229571-01 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-30 ± 2	$2.55^{+0.36}_{-0.47}$	4243^{+226}_{-365}	6337^{+375}_{-327}	$3.736^{+1.635}_{-0.849}$
Alt.	-138 ± 2	$6.71^{+0.58}_{-1.28}$	4240^{+242}_{-397}	5747^{+214}_{-192}	$2.518^{+1.046}_{-0.374}$

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

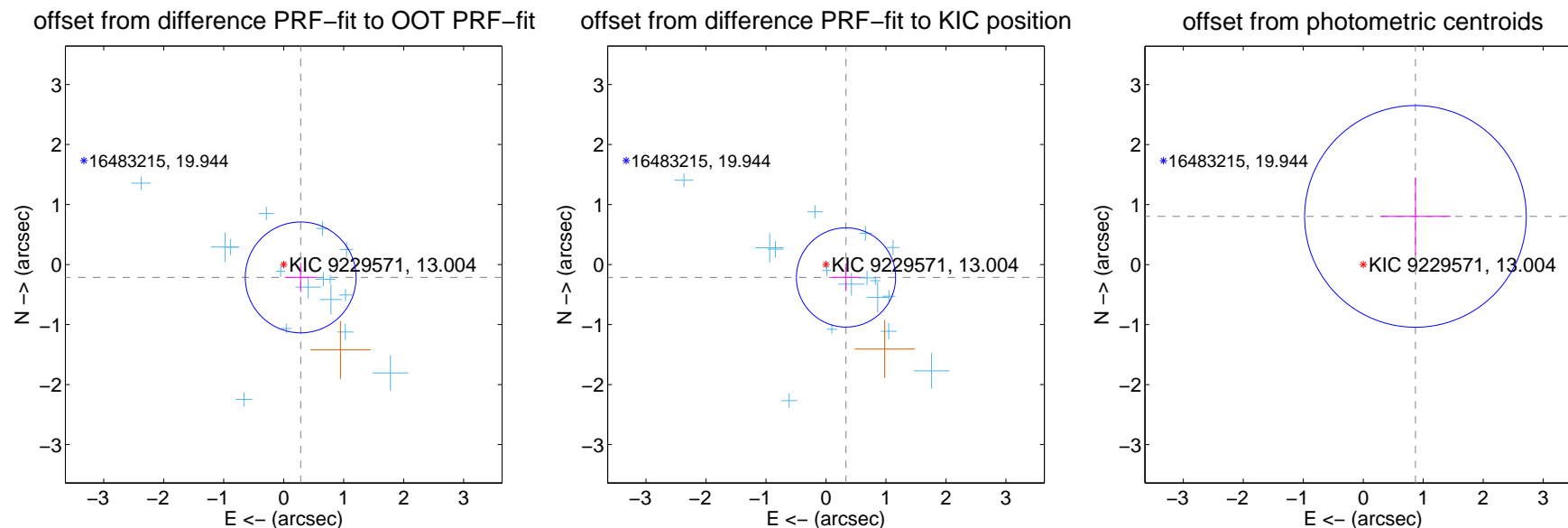
DV Centroid Data

Supplemental centroid analysis for 009229571-01. Kepler magnitude: 13.00. Transit SNR 9.29

There are 16 quarters with good PRF difference image offsets

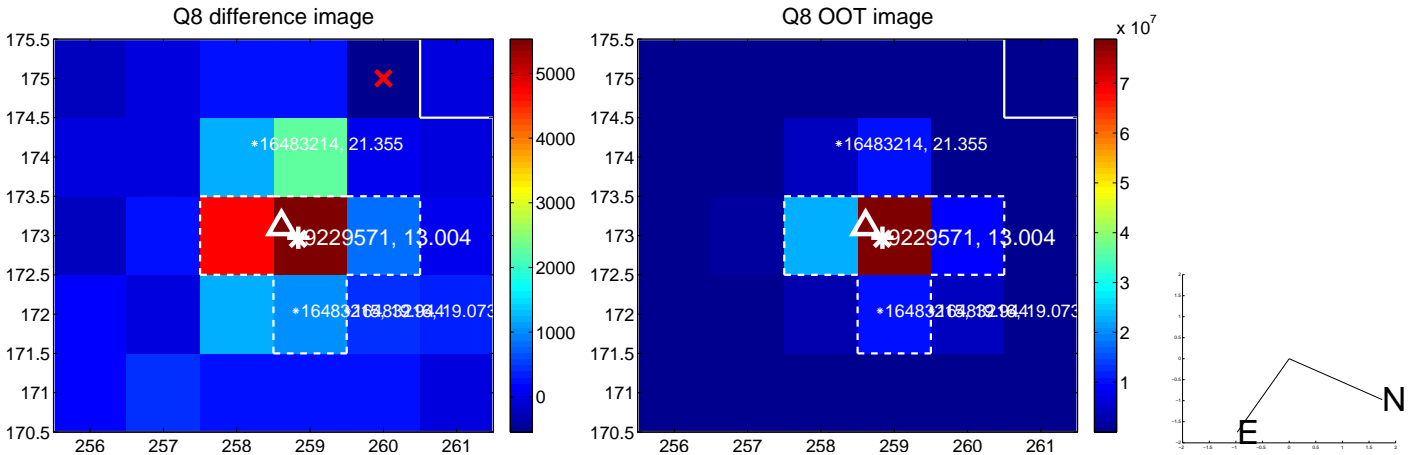
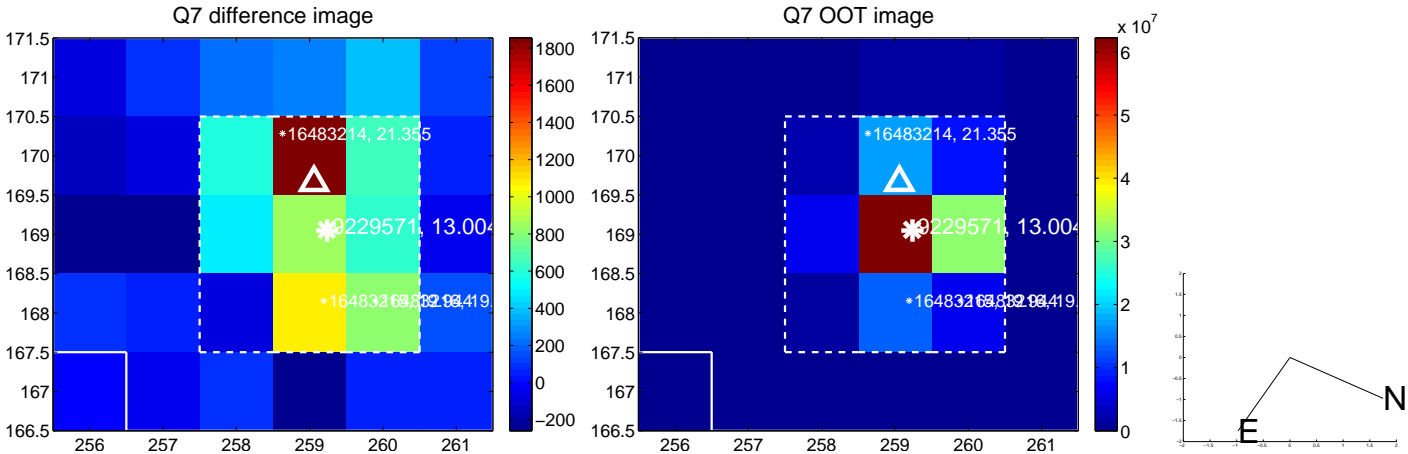
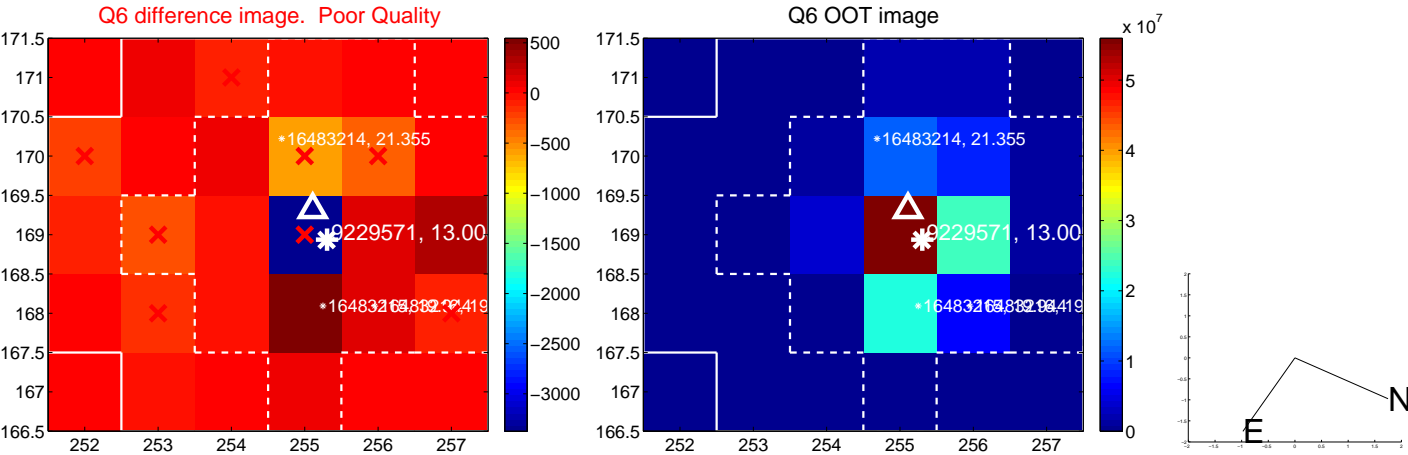
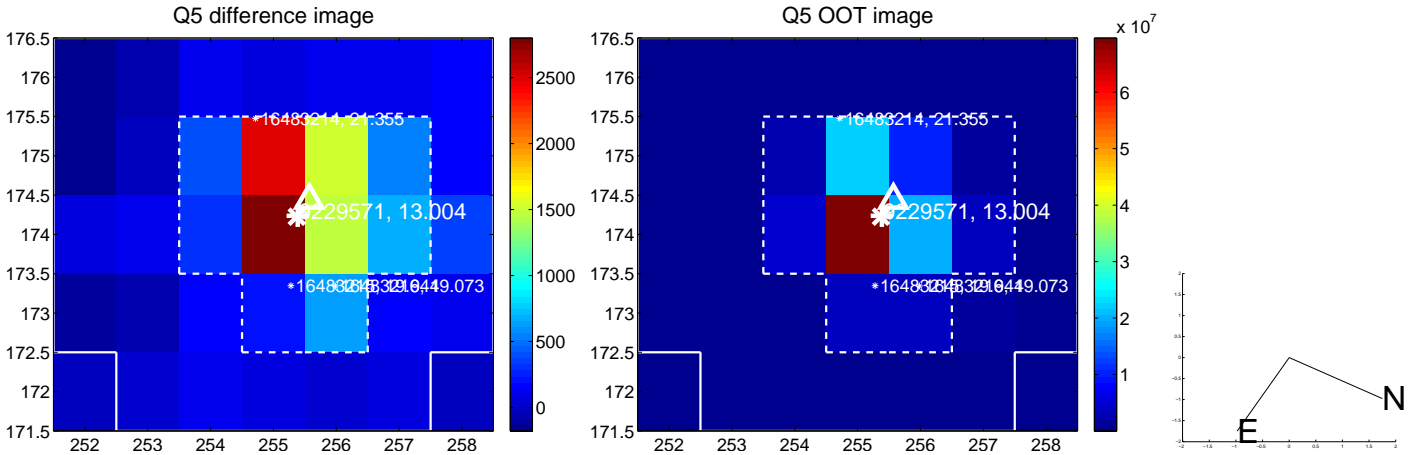
The direct PRF centroid is offset from the target star catalog position by about 0.08 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.355 ± 0.308	1.15	-0.283 ± 0.262	-0.214 ± 0.243
PRF-fit source offset from KIC position	0.397 ± 0.276	1.44	-0.334 ± 0.237	-0.215 ± 0.232
photometric centroid source offset	1.19 ± 0.62	1.92	-0.87 ± 0.59	0.80 ± 0.65

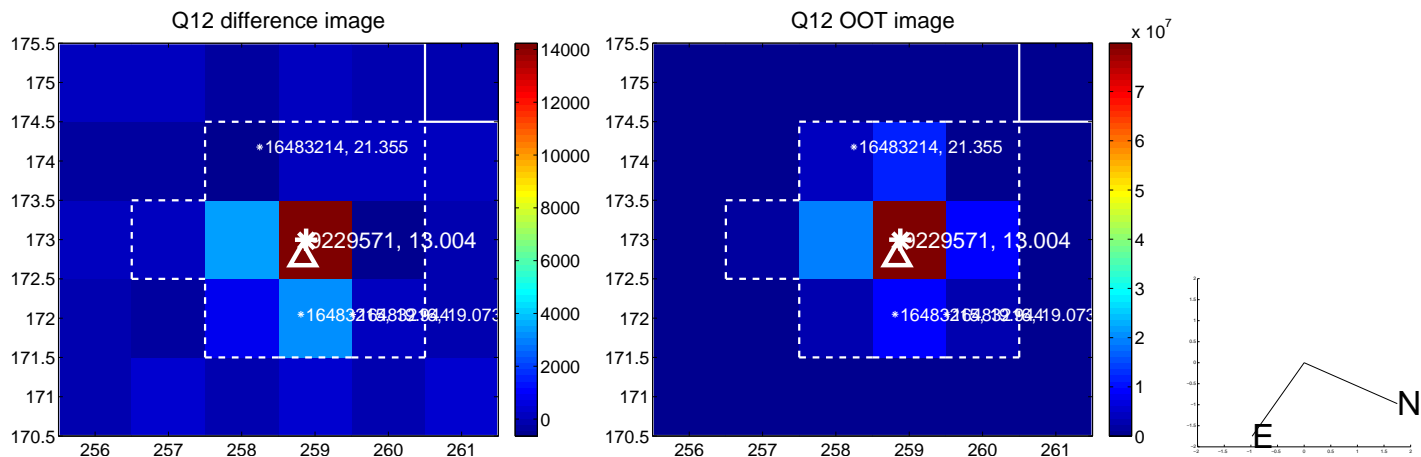
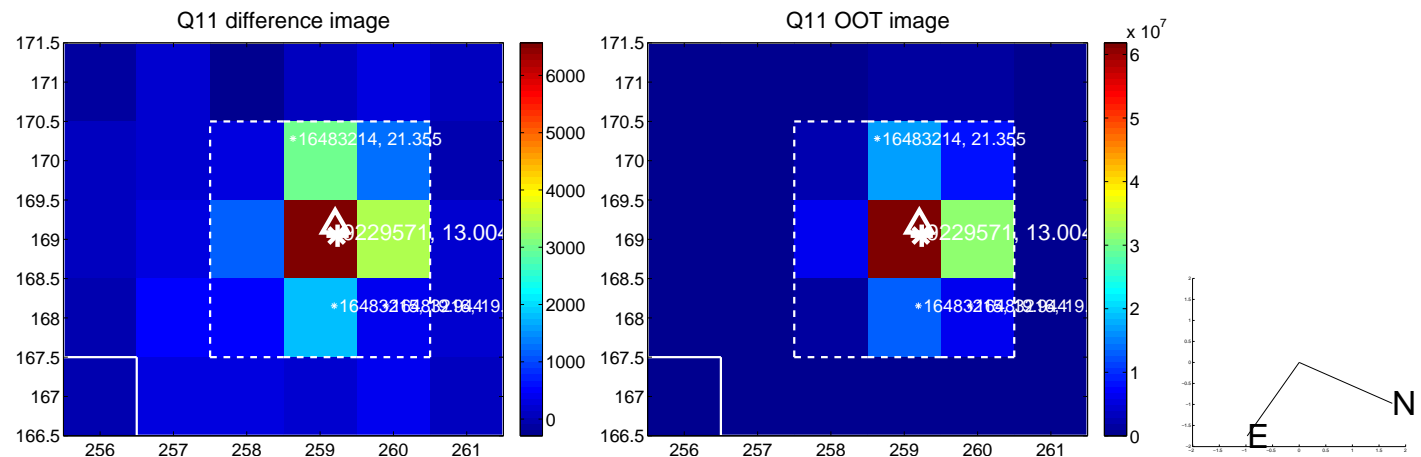
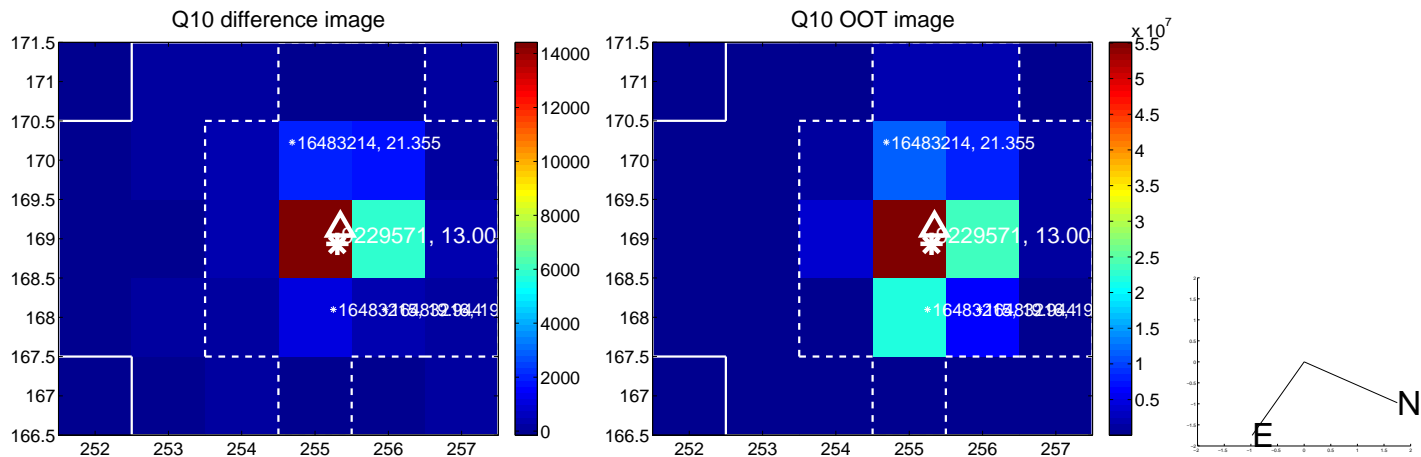
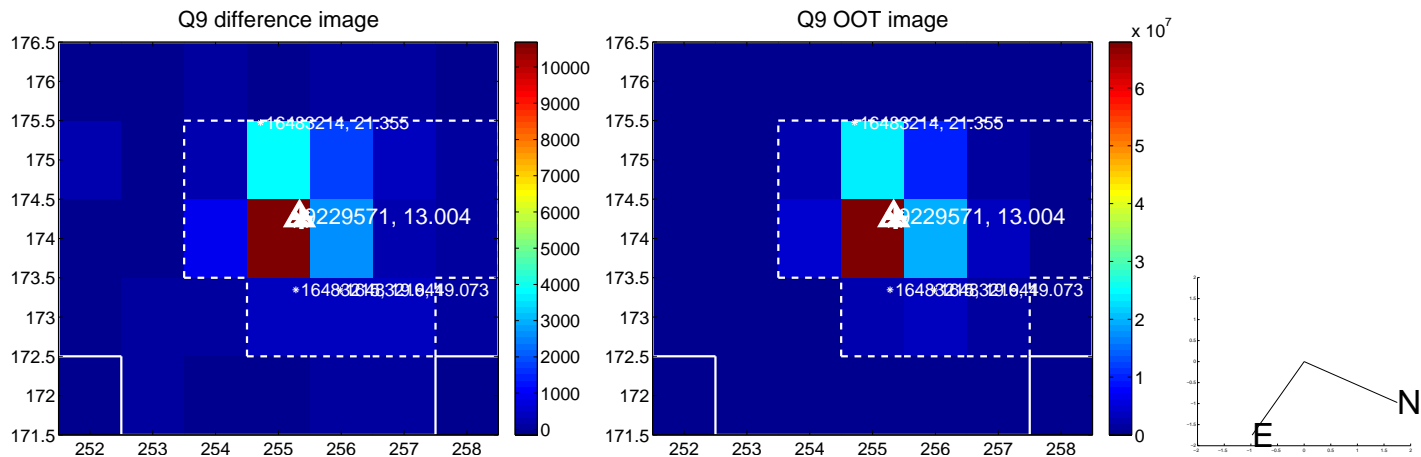


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

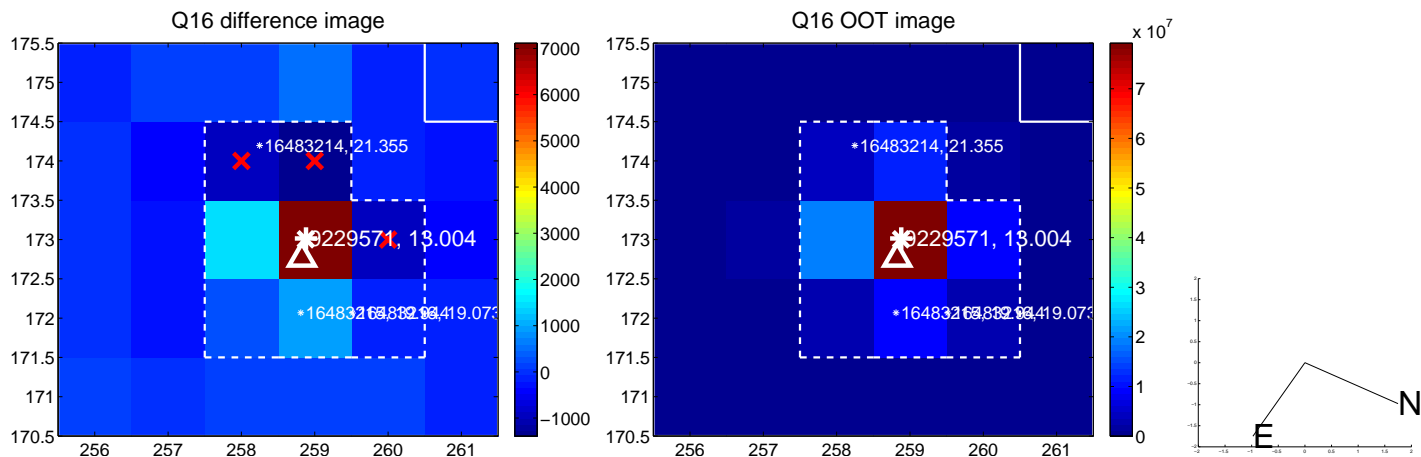
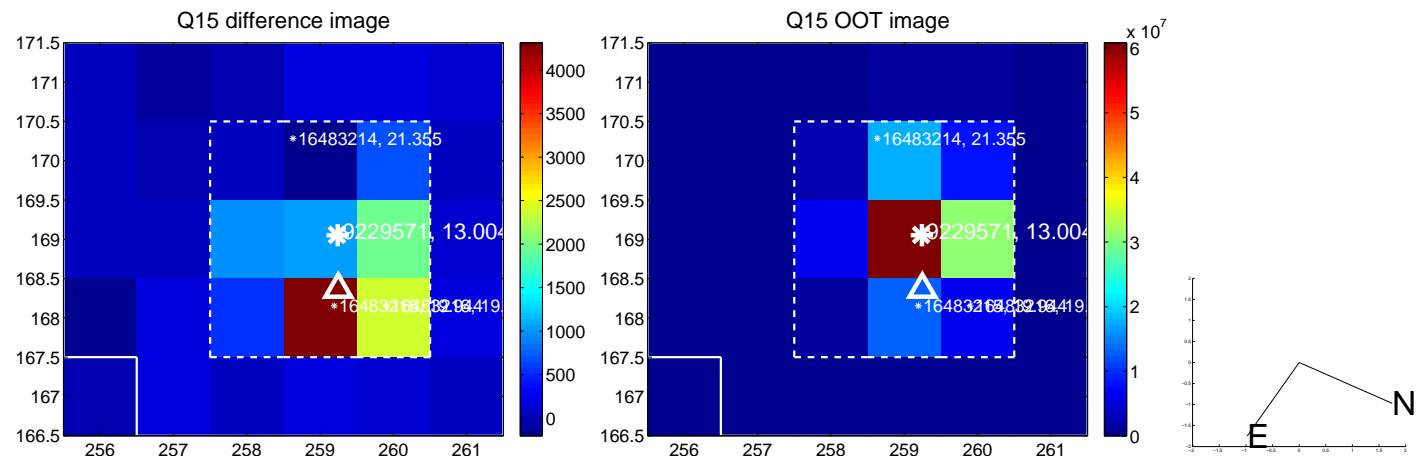
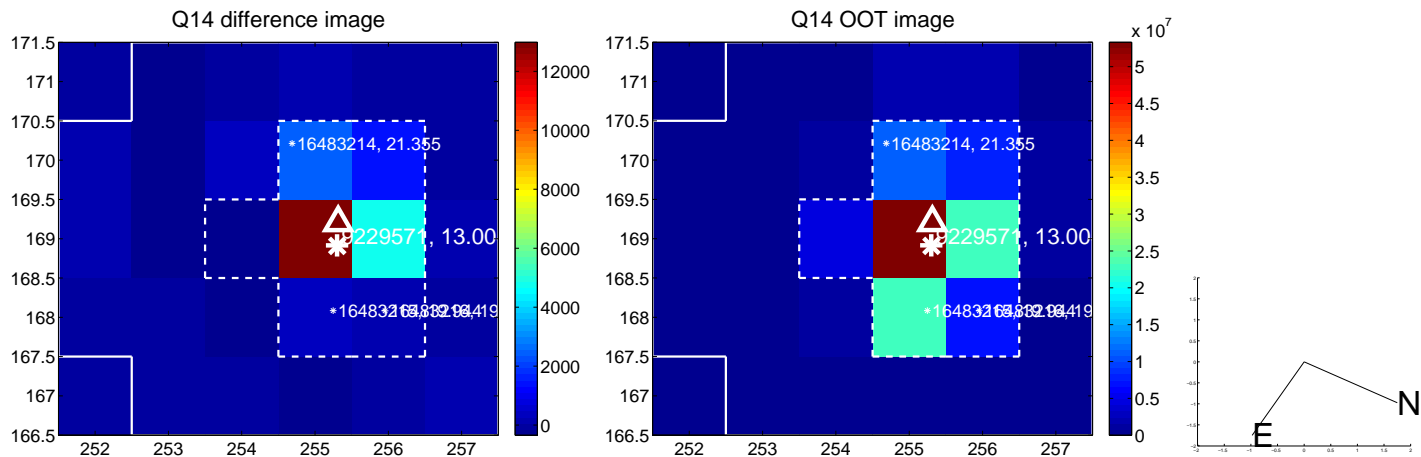
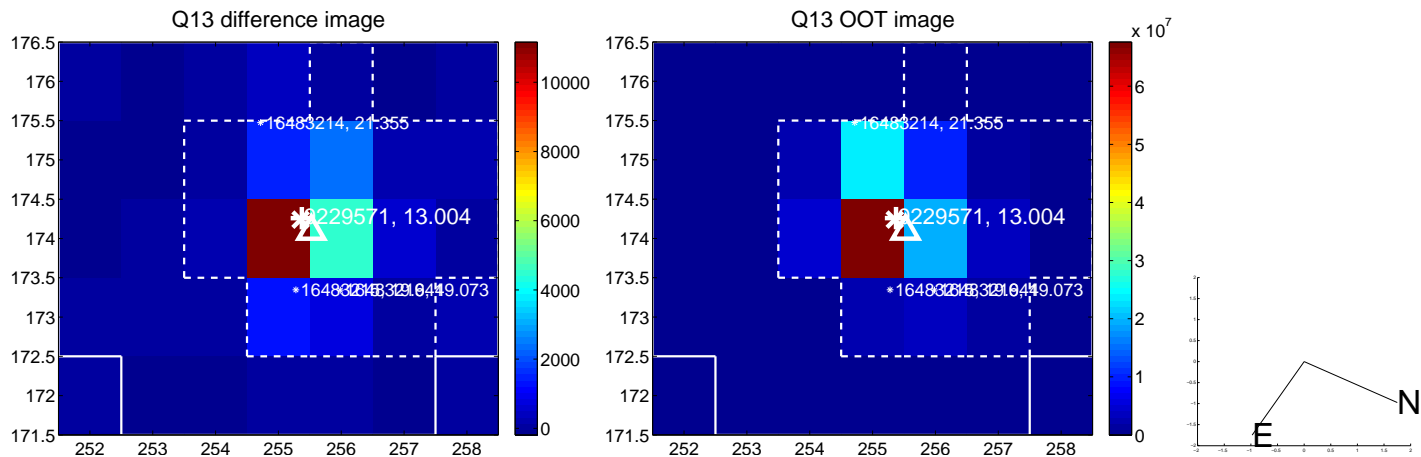
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



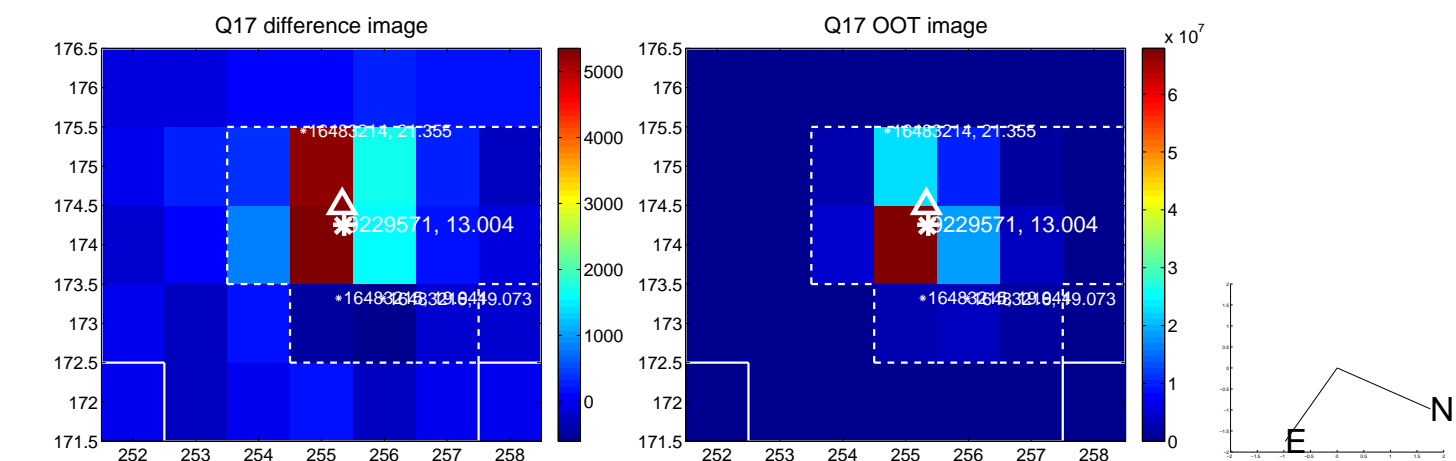
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



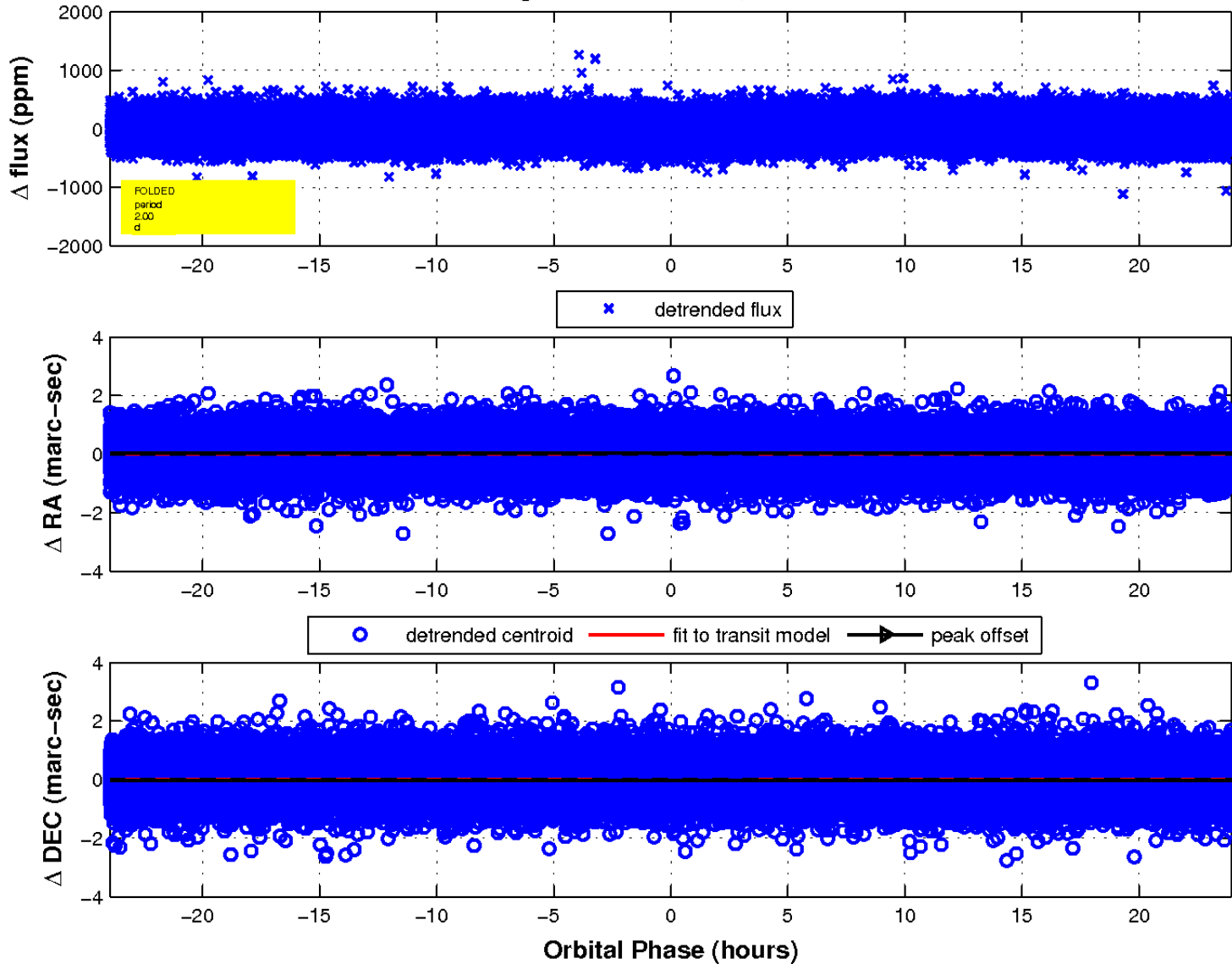
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 1 of 3



Declination

KIC 009229571

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})
009229571-01	OBS	No	1.995506	133.188302	25.7	8.288	12.2	9.3	4.06	6798	2.64	21678.65
009229571-02	OBS	No	1.995597	131.964453	22.3	8.105	10.5	9.4	4.06	6798	1.93	21677.33
009229571-03	OBS	No	480.903658	579.615080	423.2	3.000	13.3	10.4	4.06	6798	9.75	14.46

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009229571-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT
009229571-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD
009229571-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—INCONSISTENT_TRANS

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

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

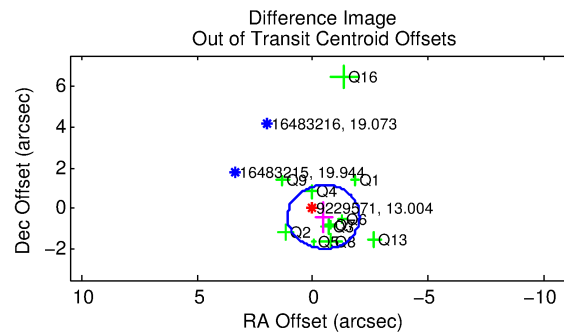
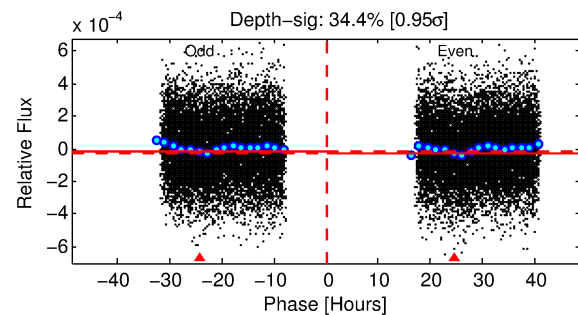
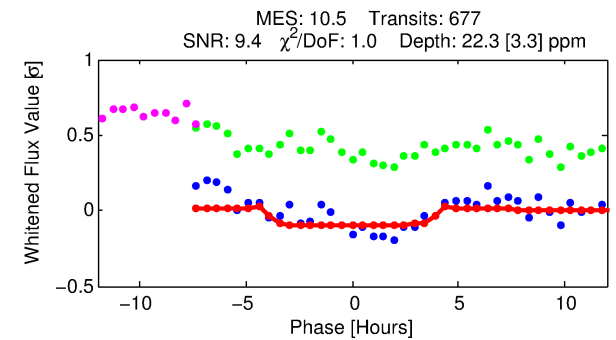
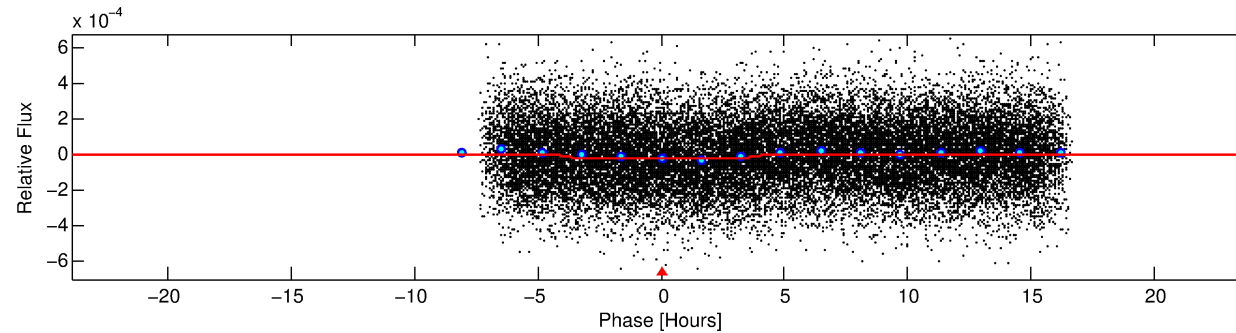
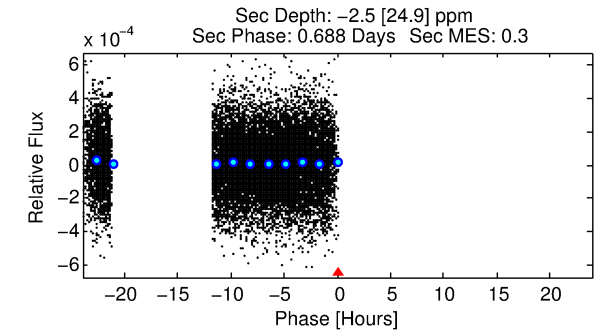
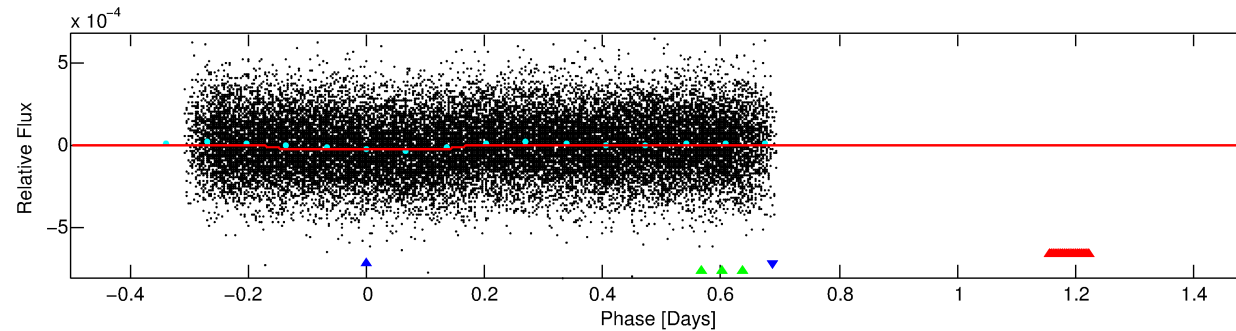
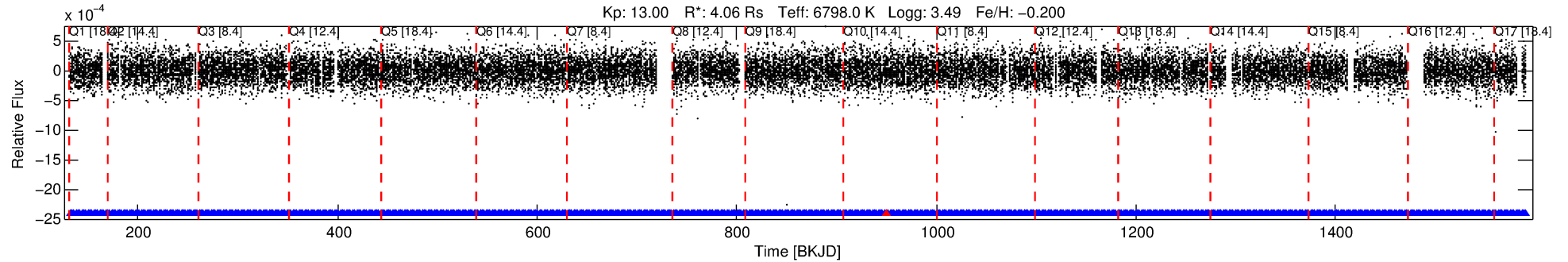
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009229571-02

No Significant Match Found

DV One-Page Summary

KIC: 9229571 Candidate: 2 of 3 Period: 1.996 d



DV Fit Results:

Period = 1.99560 [0.00003] d
Epoch = 131.9645 [0.0071] BKJD
Rp/R* = 0.0044 [0.0043]
a/R* = 1.98 [7.89]
b = 0.03 [164.57]
Seff = 21677.33 [12754.45]
Teq = 3094 [455] K
Rp = 1.93 [2.02] Re
a = 0.0381 [0.0137] AU
Ag = N/A
Teffp = N/A

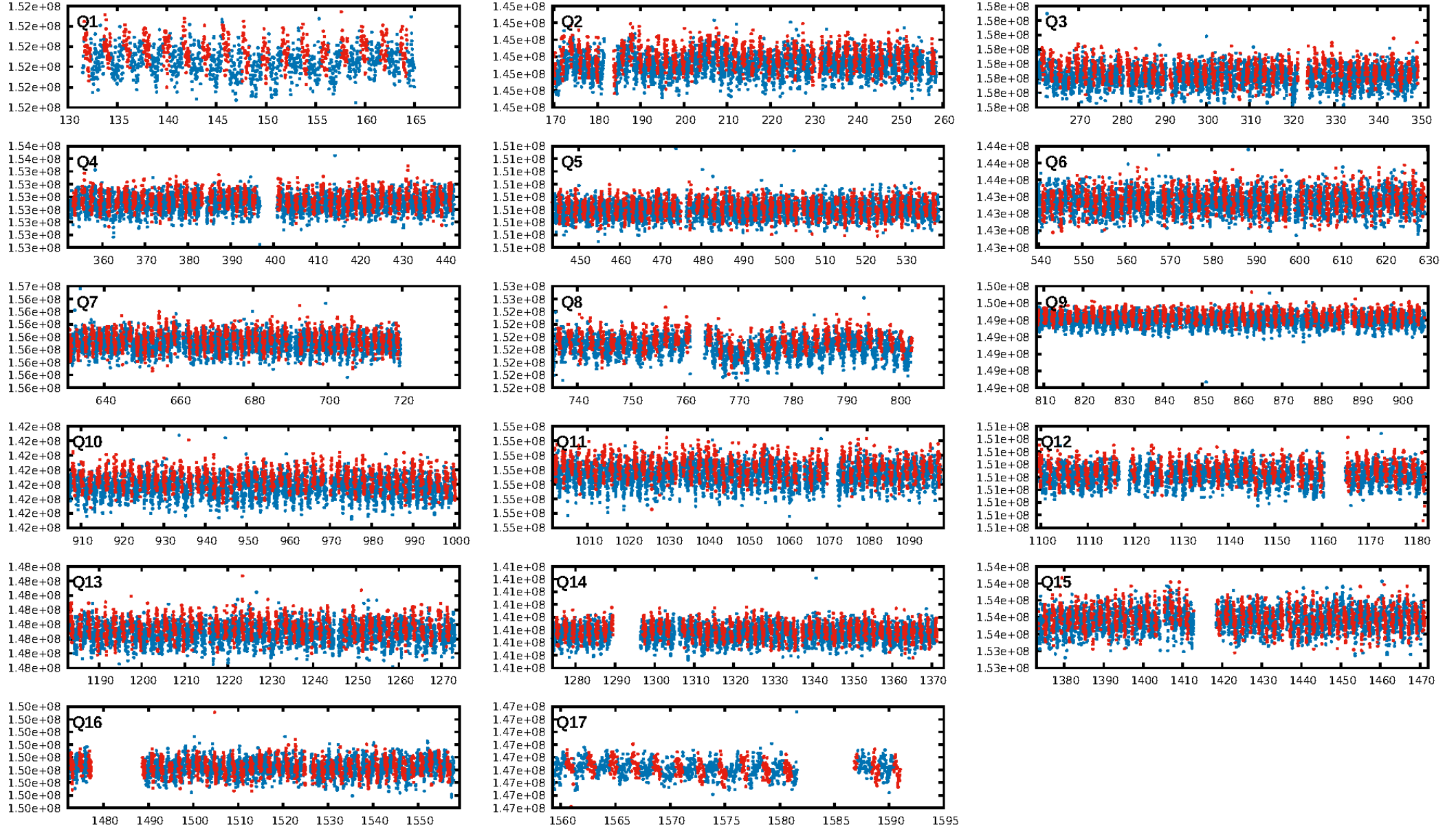
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]
LongPeriod-sig: 100.0% [1329.97σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 8.96e-25
RollingBand-fgt: 1.00 [645/646]
GhostDiagnostic-chr: -7.277
Centroid-sig: 4.3%
Centroid-so: 1.186 arcsec [1.74σ]
OotOffset-rm: 0.634 arcsec [1.22σ]
KicOffset-rm: 0.686 arcsec [1.44σ]
OotOffset-st: 2/2/3/4 [11]
KicOffset-st: 2/2/3/4 [11]
DiffImageQuality-fgm: 0.45 [5/11]
DiffImageOverlap-fno: 0.53 [9/17]

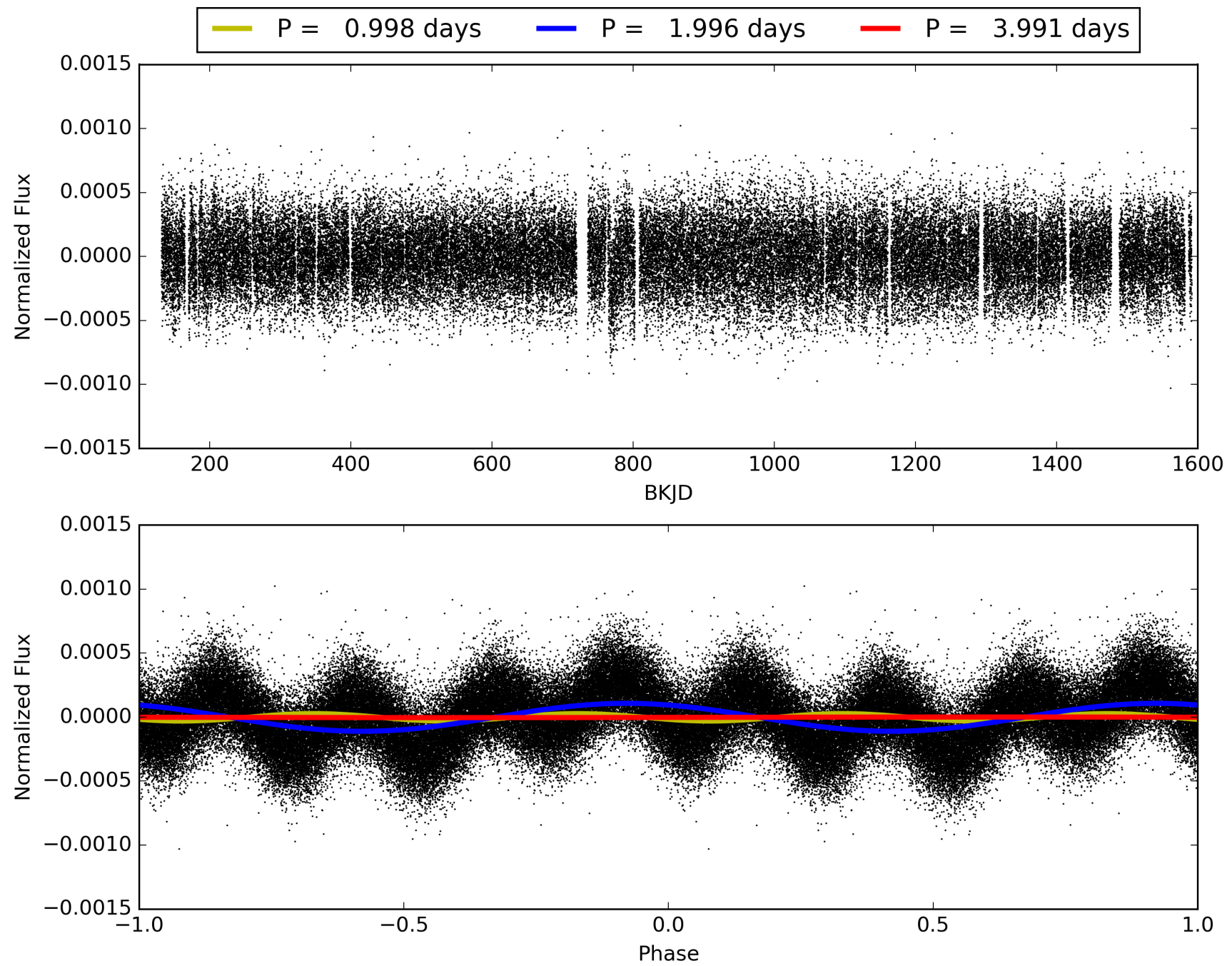
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 17:09:51 Z

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

TCE 009229571-02, PDC Light Curves

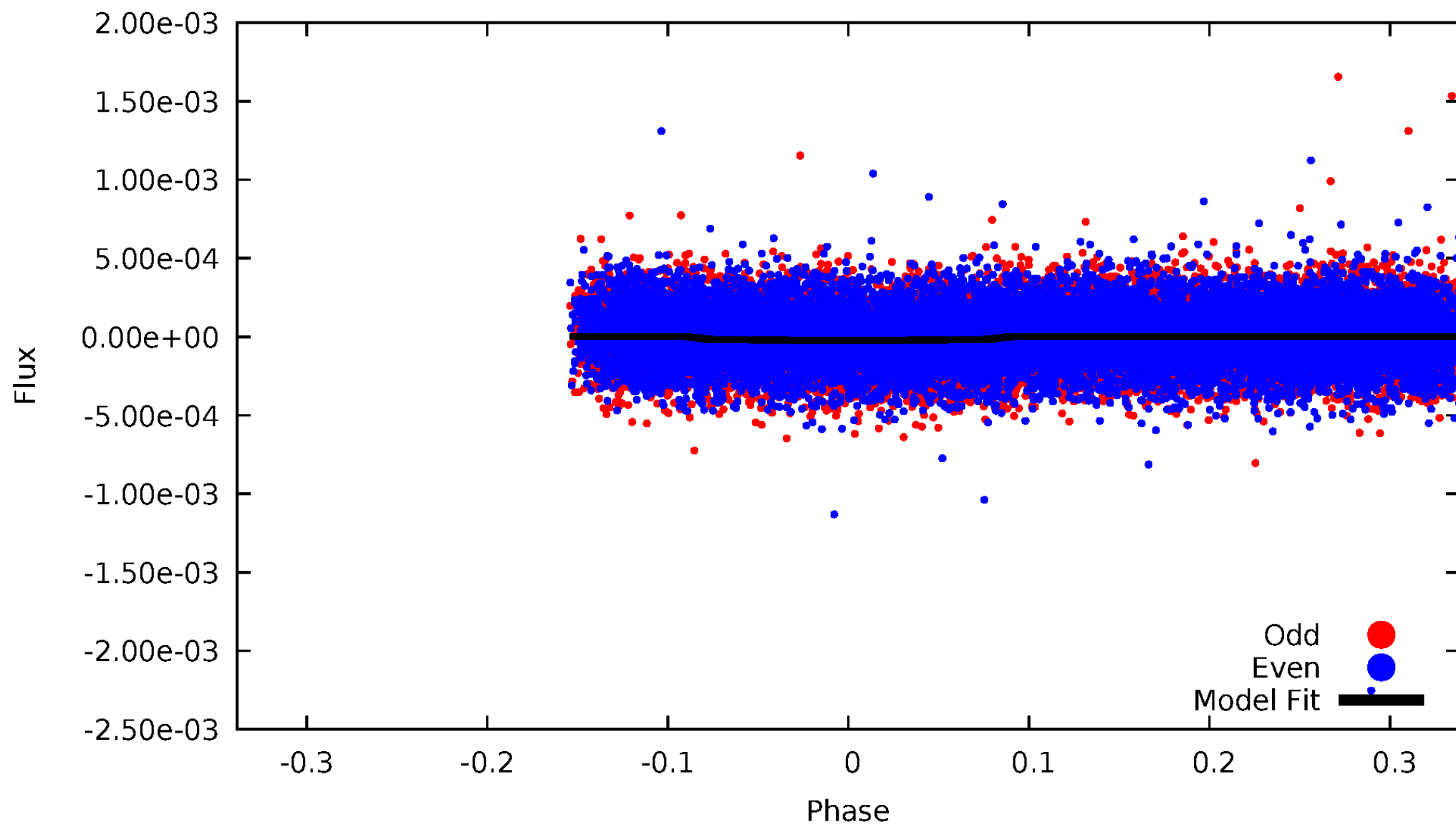


TCE 009229571-02



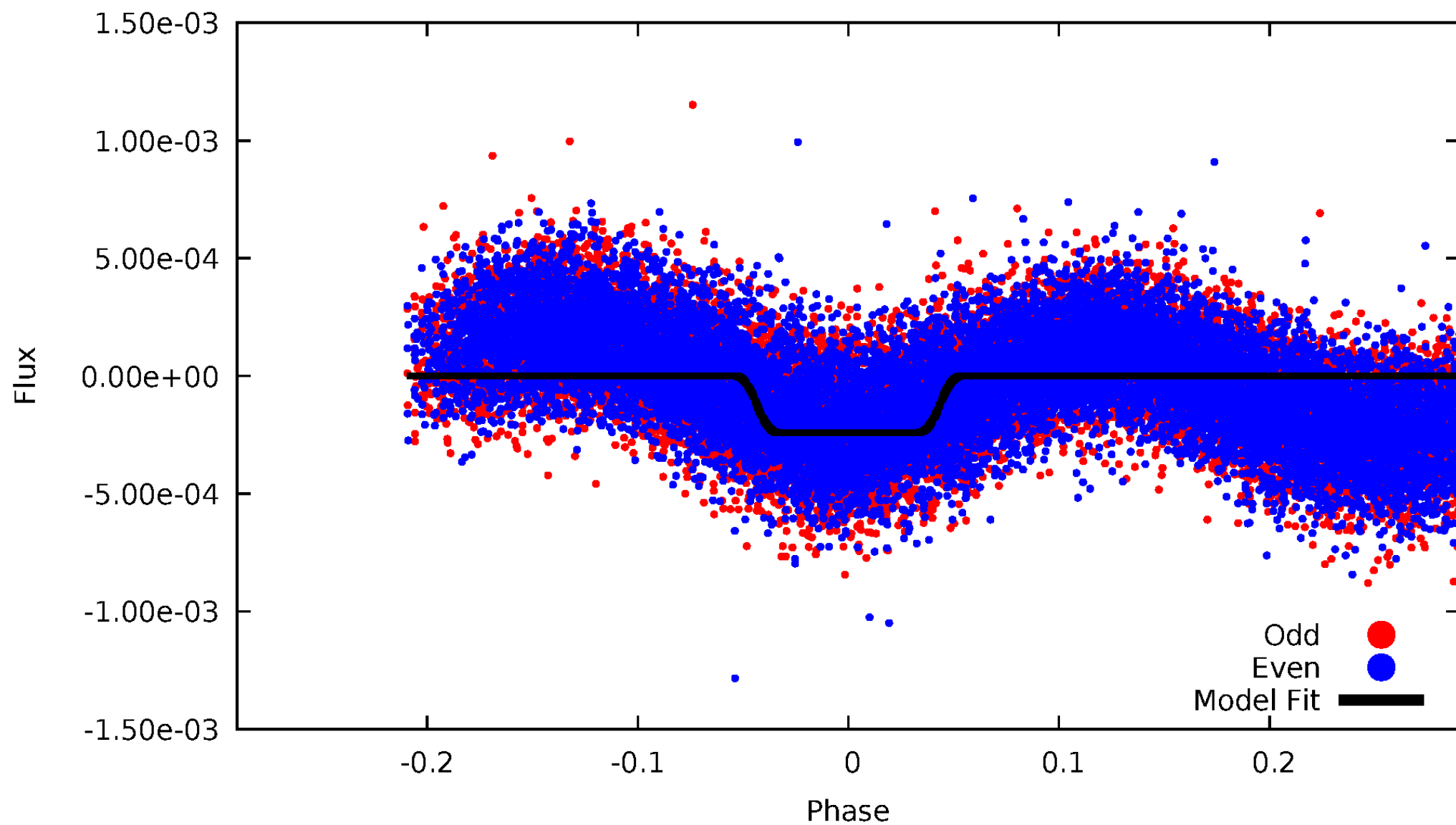
DV Odd/Even

TCE 009229571-02



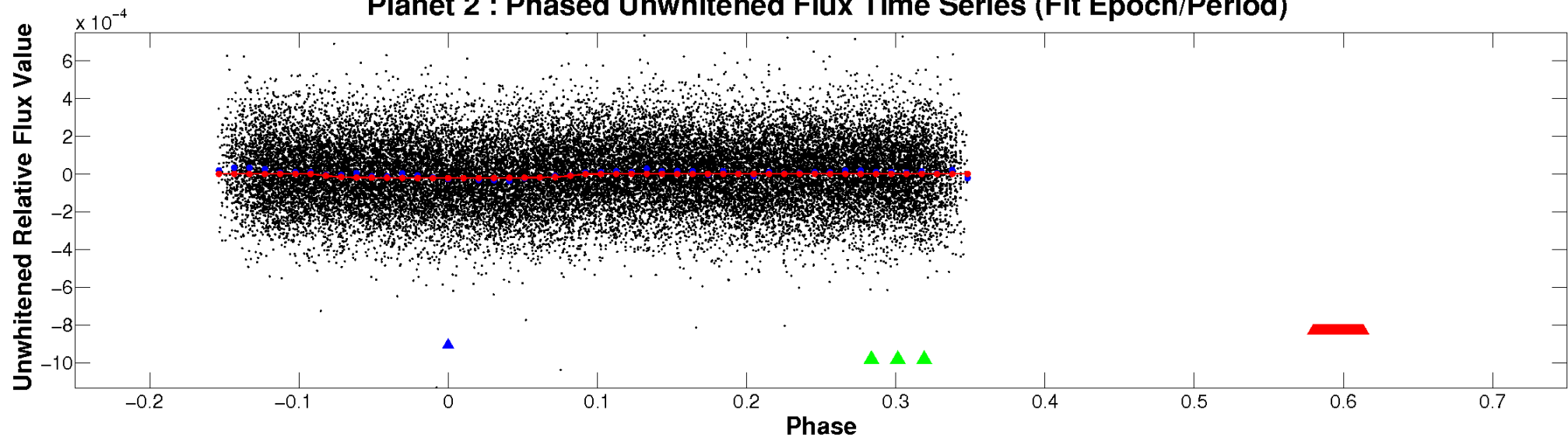
ALT Odd/Even

TCE 009229571-02

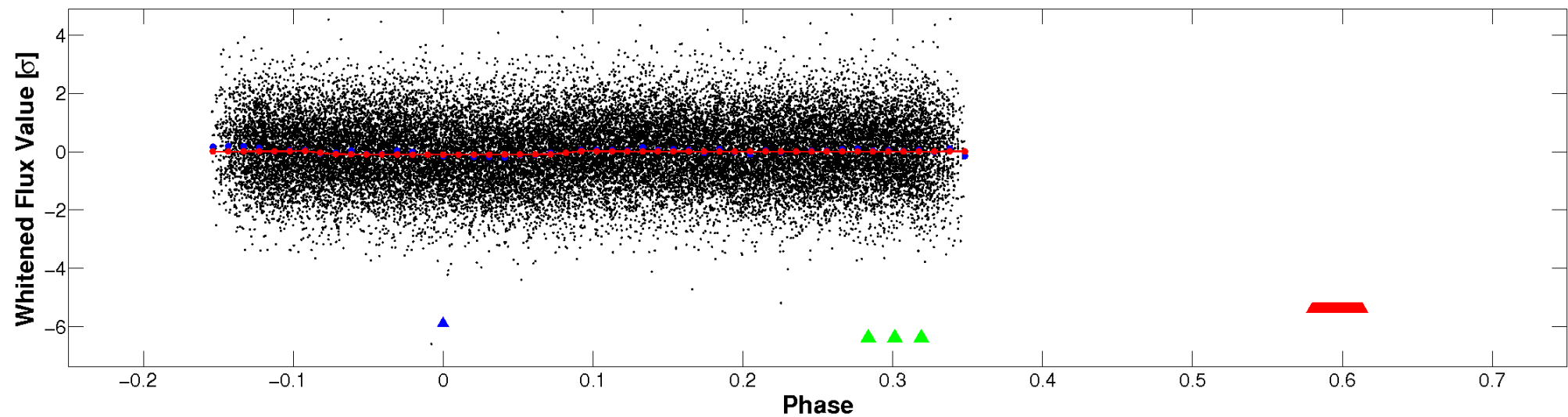


Non-Whitened Vs. Whitened Light Curve

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

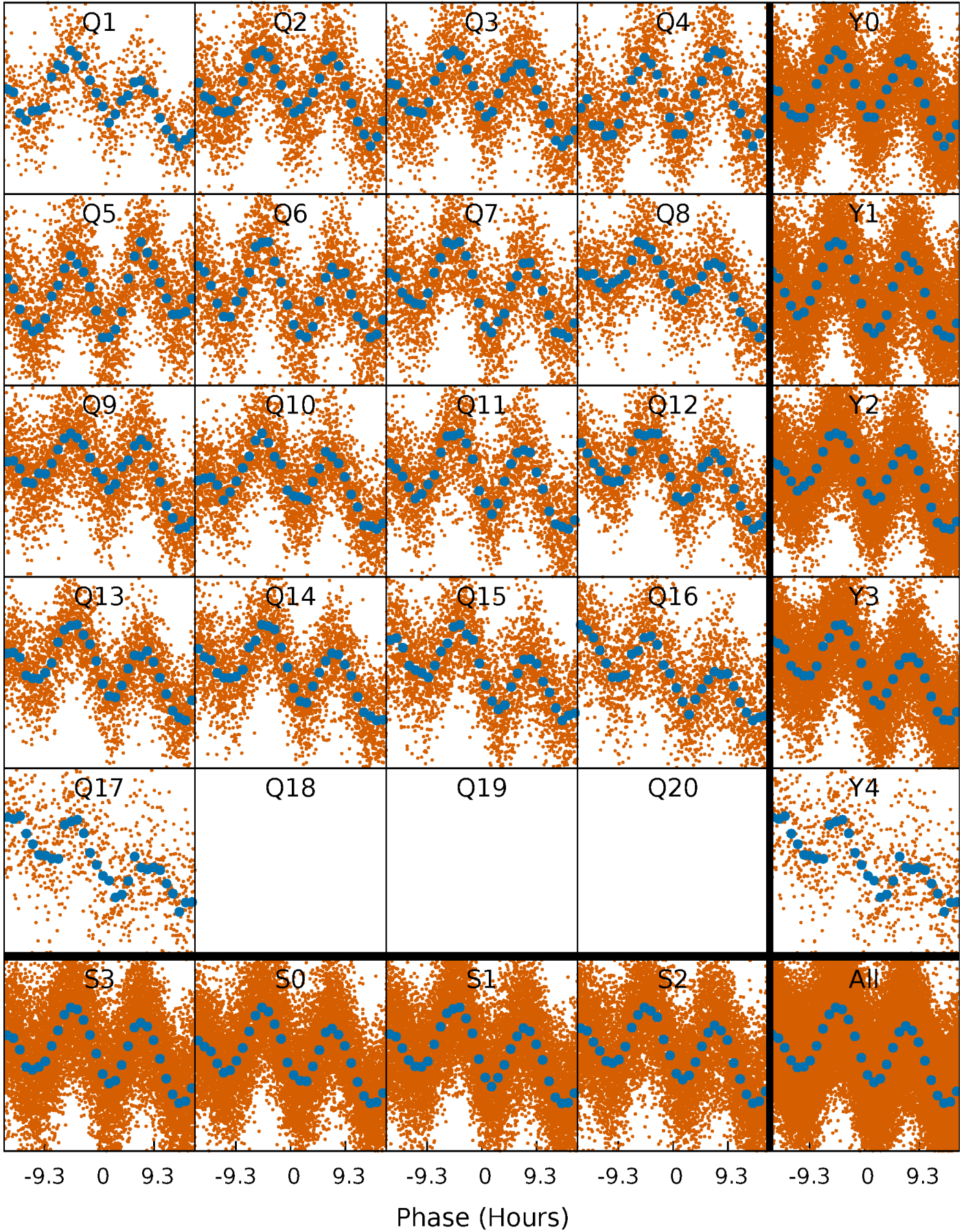


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



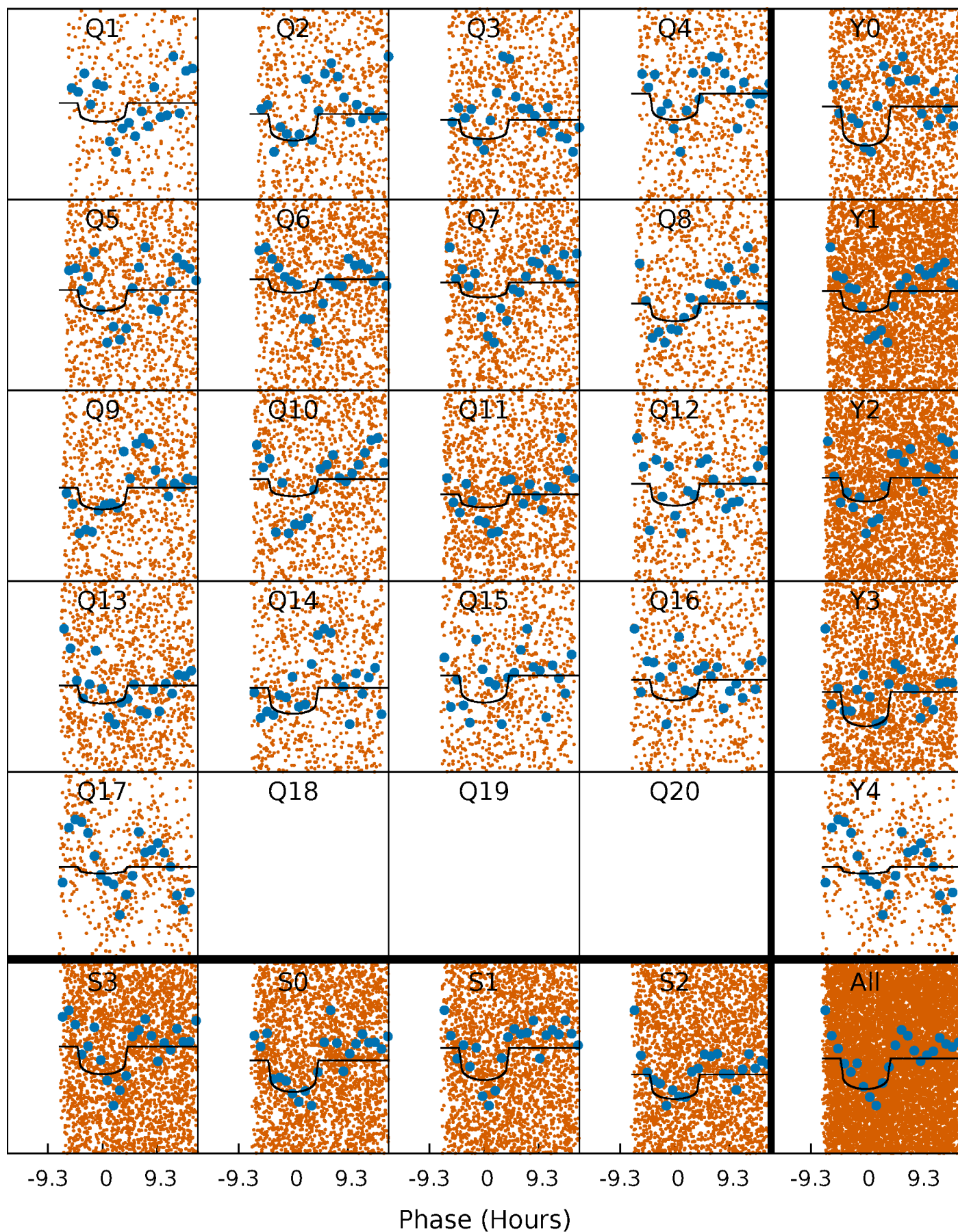
PDC Quarter-Phased Transit Curves

TCE 009229571-02 P= 1.995597 Days $T_0=131.964453$ (BKJD)



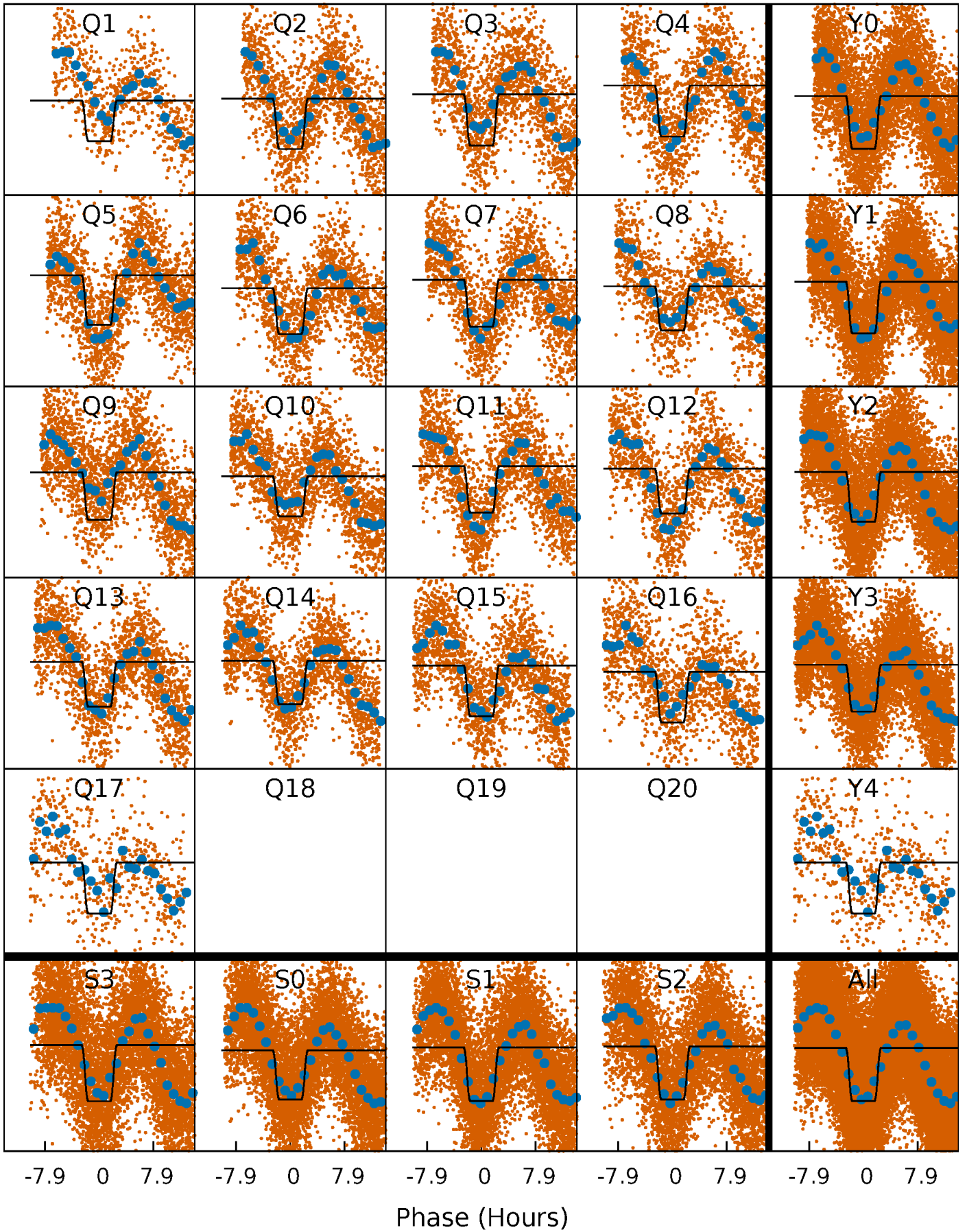
DV Quarter-Phased Transit Curves

TCE 009229571-02 P= 1.995597 Days $T_0=131.964453$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

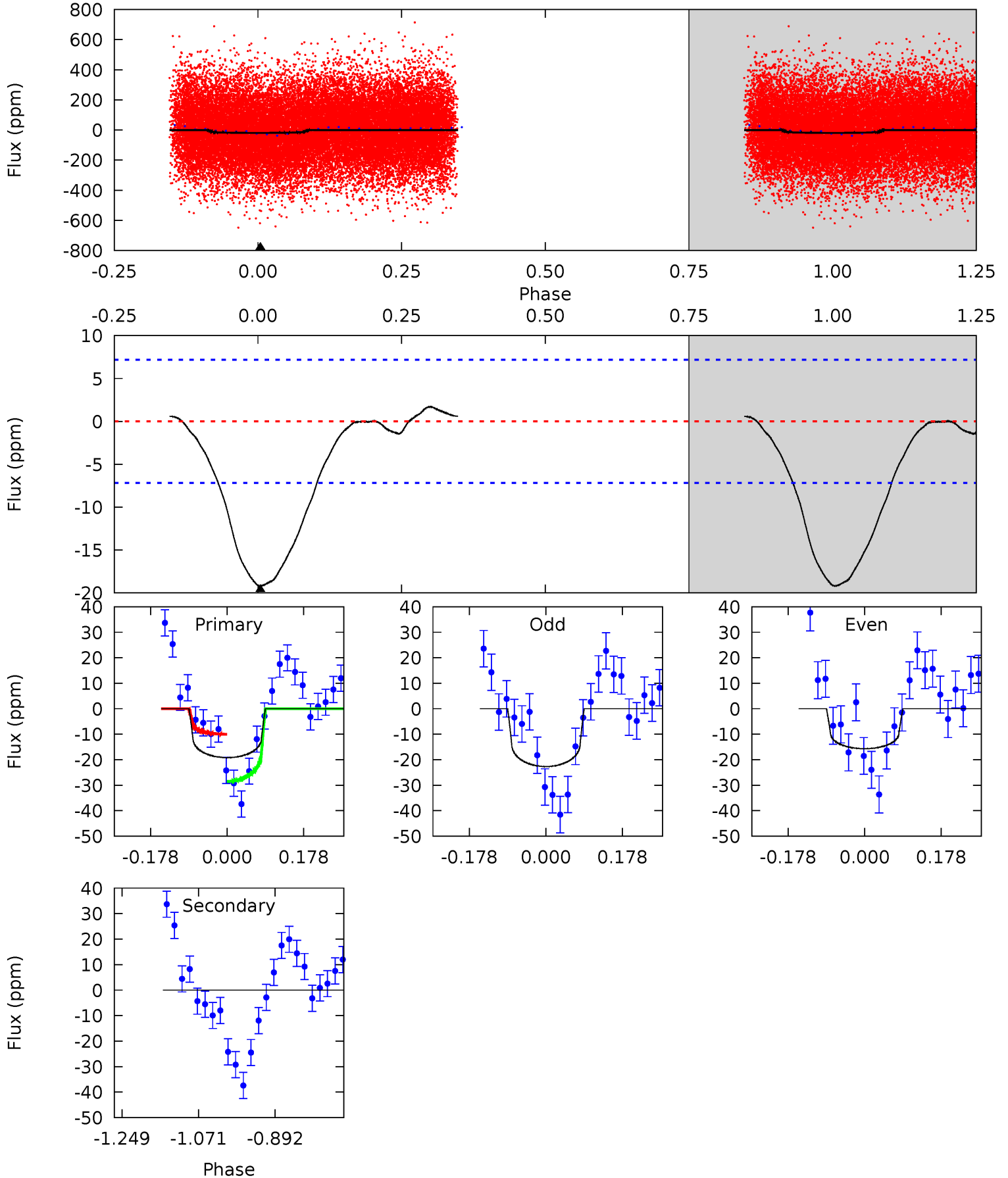
TCE 009229571-02 P= 1.995702 Days $T_0=132.001416$ (BKJD)



DV Model-Shift Uniqueness Test

009229571-02, P = 1.995597 Days, E = 129.968856 Days

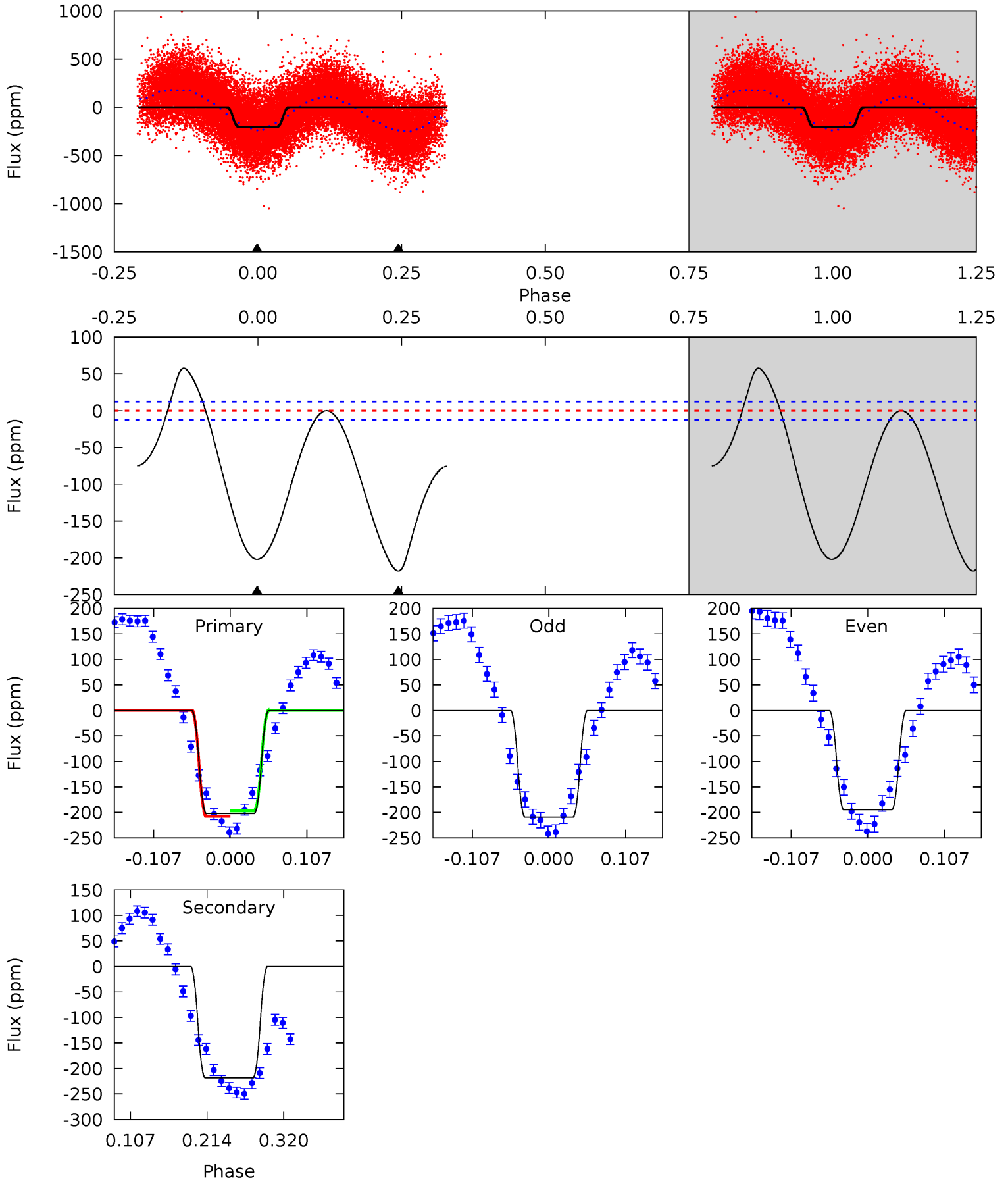
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.9	0	0	0	4.44	1.35	0.60	11.9	11.9	0	0	2.16	1.13	0.08	5.73



Alt Model-Shift Uniqueness Test

009229571-02, P = 1.995702 Days, E = 130.005714 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
74.3	80.1	0	0	4.55	1.61	12.8	74.3	74.3	80.1	80.1	2.65	1.00	0.21	2.35



Stellar Parameters For KIC 009229571

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6798^{+183}_{-224}	$3.490^{+0.336}_{-0.084}$	$-0.200^{+0.350}_{-0.250}$	$4.060^{+0.381}_{-1.526}$	$1.858^{+0.198}_{-0.368}$	$0.039^{+0.093}_{-0.010}$
	+3%/-3%	+10%/-2%	+175%/-125%	+9%/-38%	+11%/-20%	+239%/-26%
Source	PHO1	FLK73	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 009229571-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	0 ± 2	$2.06^{+1.77}_{-1.32}$	4254^{+234}_{-394}	-3818^{+7254}_{-593}	$0.000^{+0.498}_{-0.410}$
Alt.	-218 ± 3	$6.41^{+2.16}_{-2.02}$	4279^{+215}_{-415}	6526^{+1482}_{-843}	$4.321^{+4.182}_{-1.937}$

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

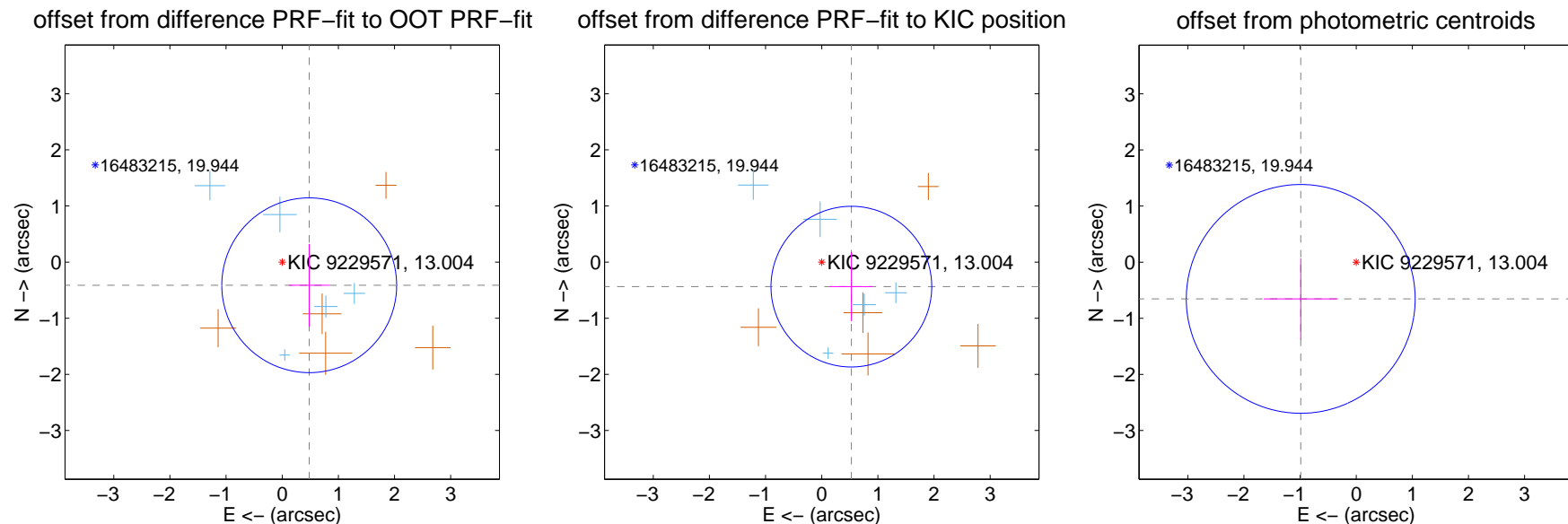
DV Centroid Data

Supplemental centroid analysis for 009229571-02. Kepler magnitude: 13.00. Transit SNR 9.41

There are 5 quarters with good PRF difference image offsets

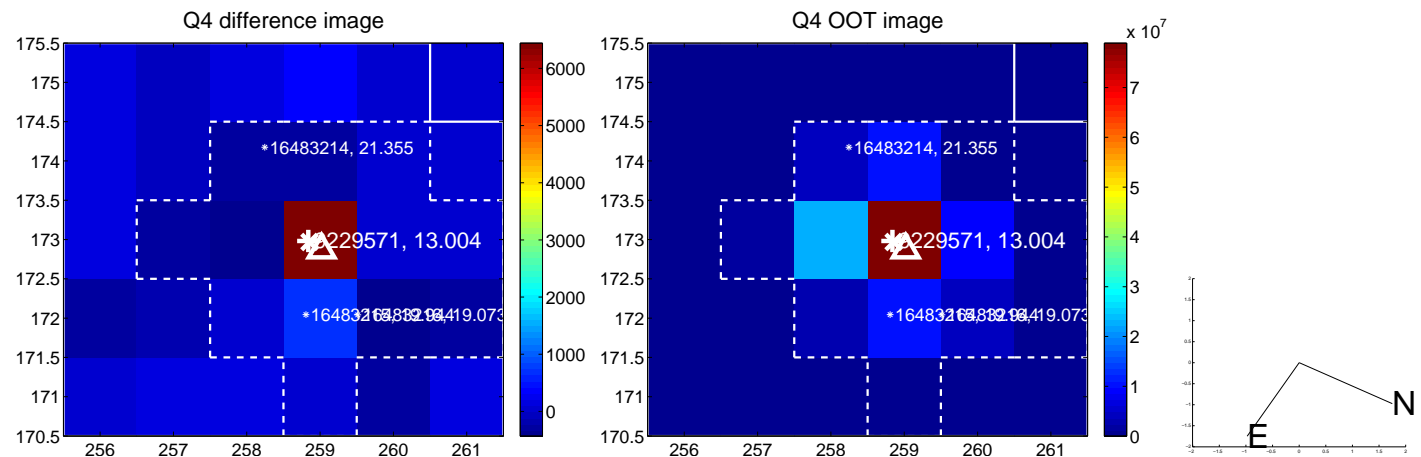
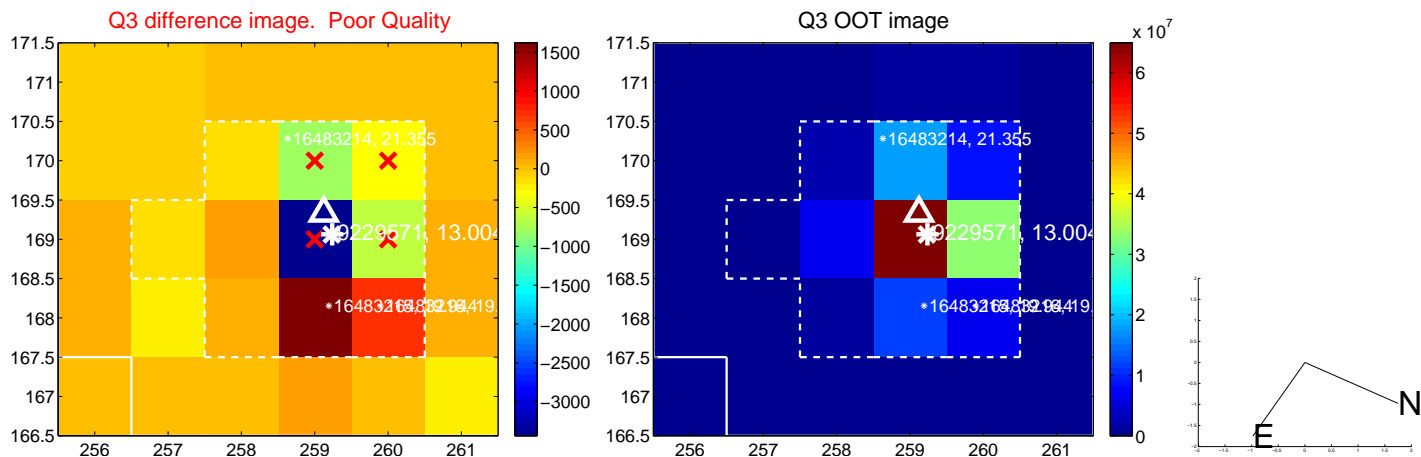
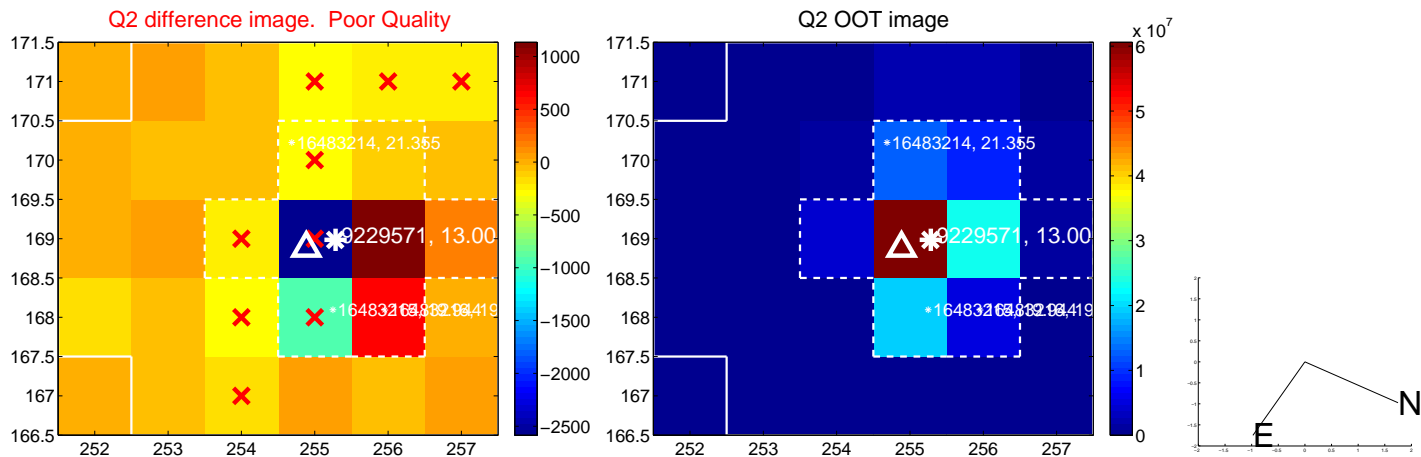
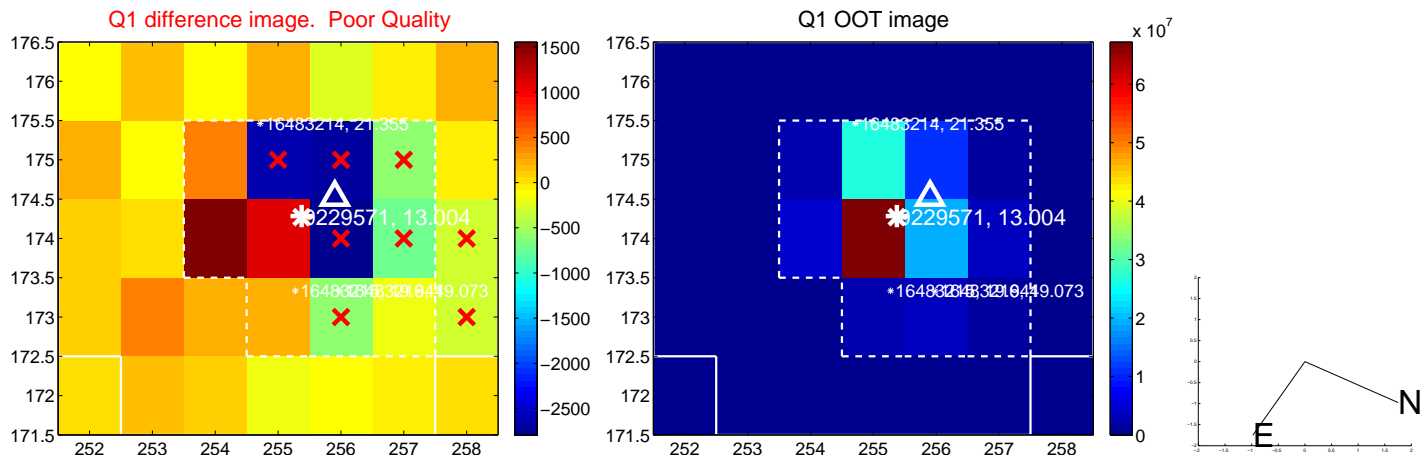
The direct PRF centroid is offset from the target star catalog position by about 0.04 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.634 ± 0.519	1.22	-0.481 ± 0.357	-0.413 ± 0.735
PRF-fit source offset from KIC position	0.686 ± 0.477	1.44	-0.528 ± 0.382	-0.437 ± 0.615
photometric centroid source offset	1.19 ± 0.68	1.74	0.99 ± 0.66	-0.65 ± 0.72

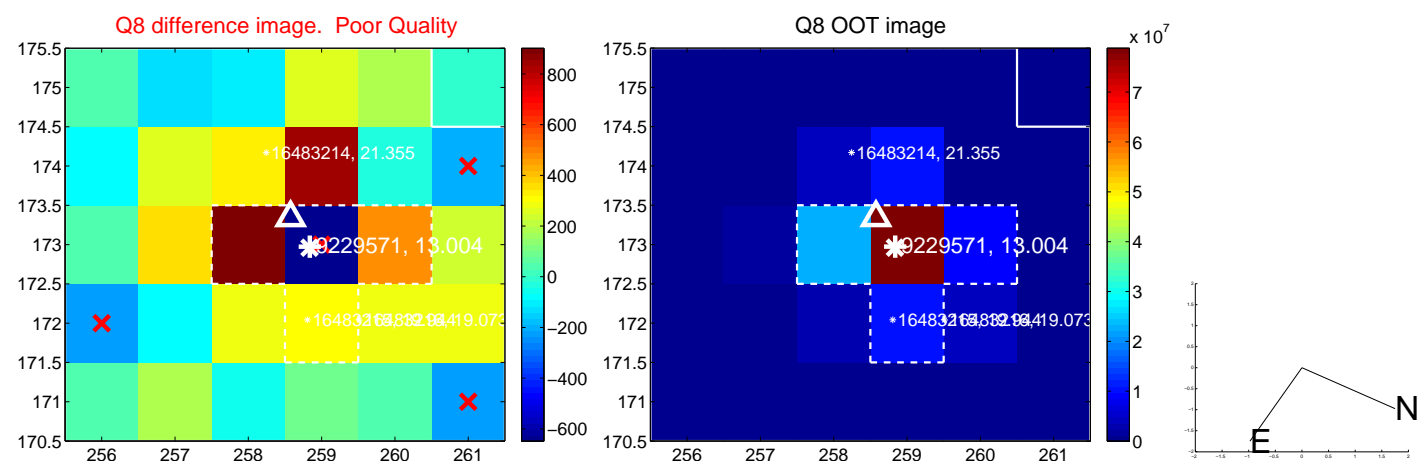
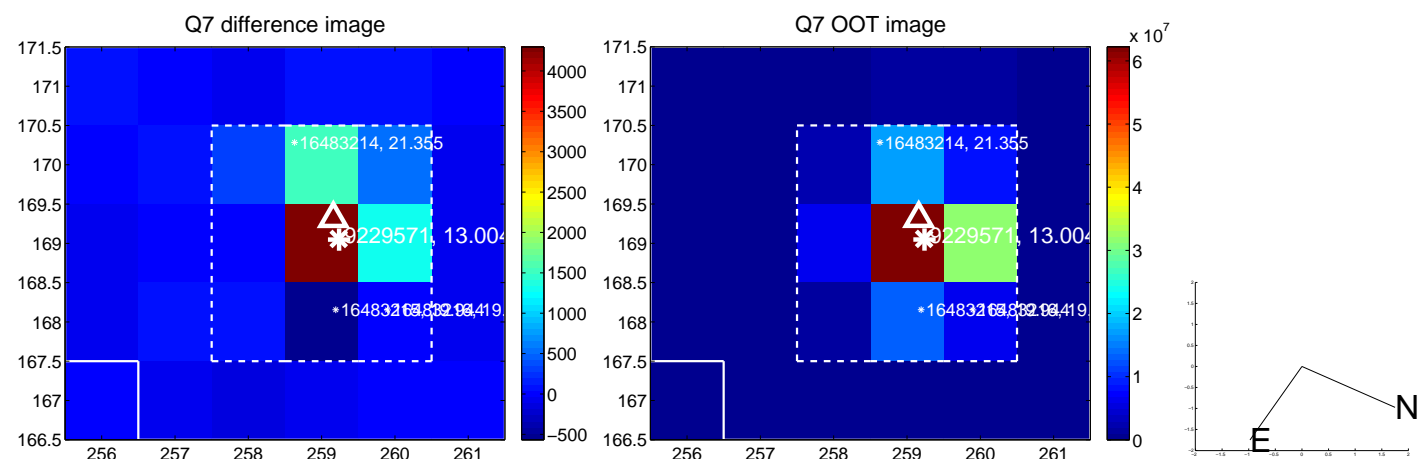
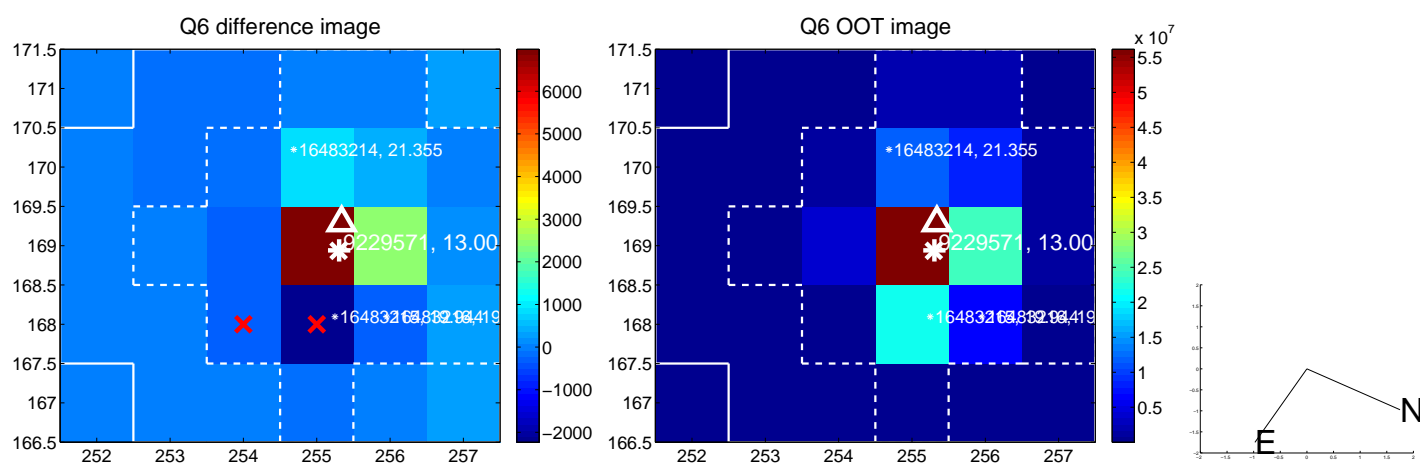
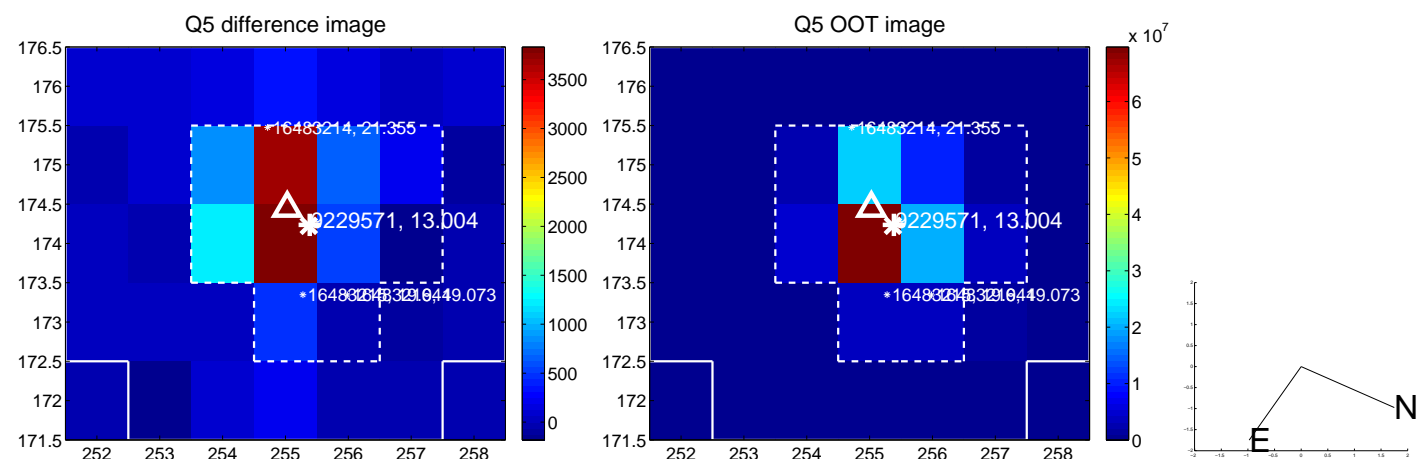


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

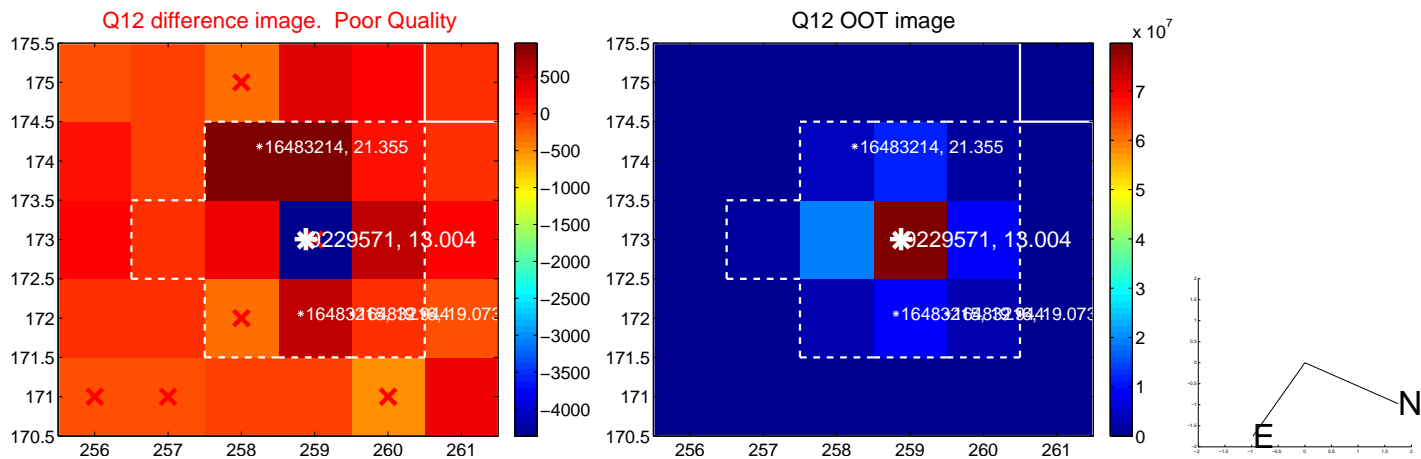
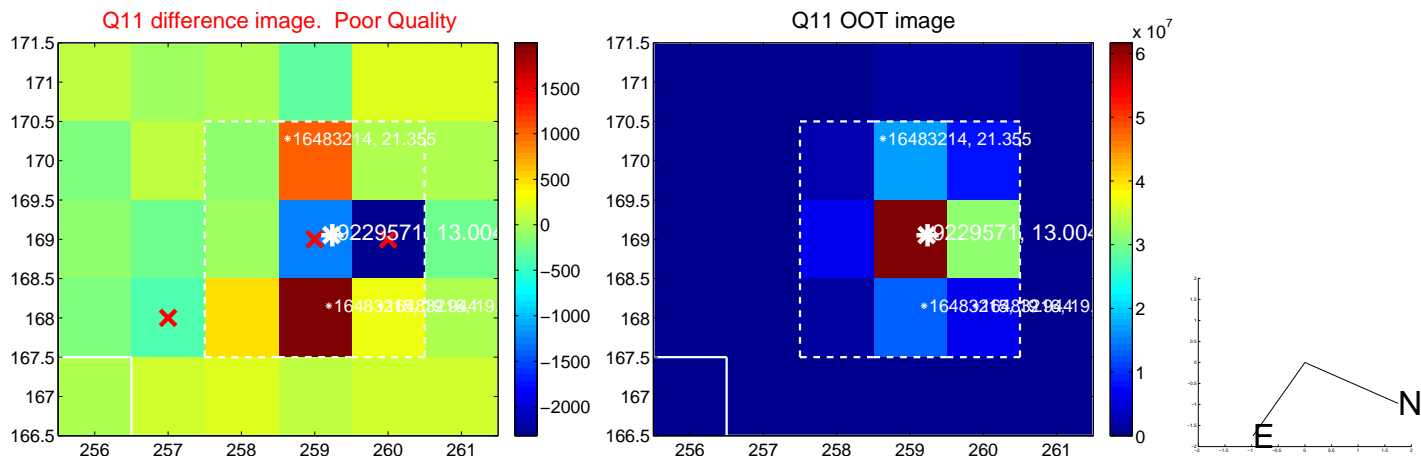
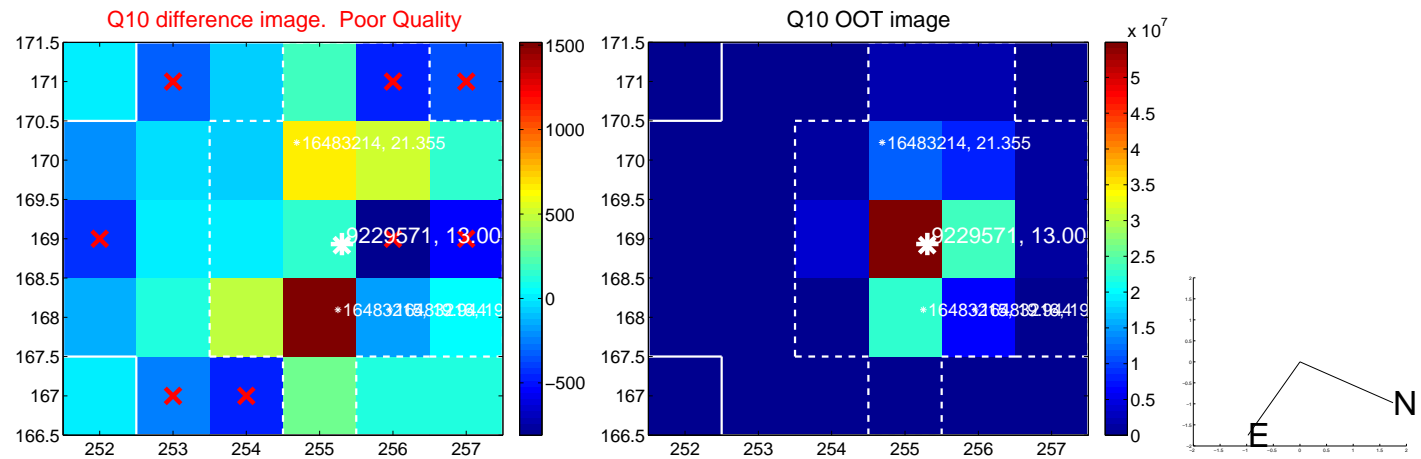
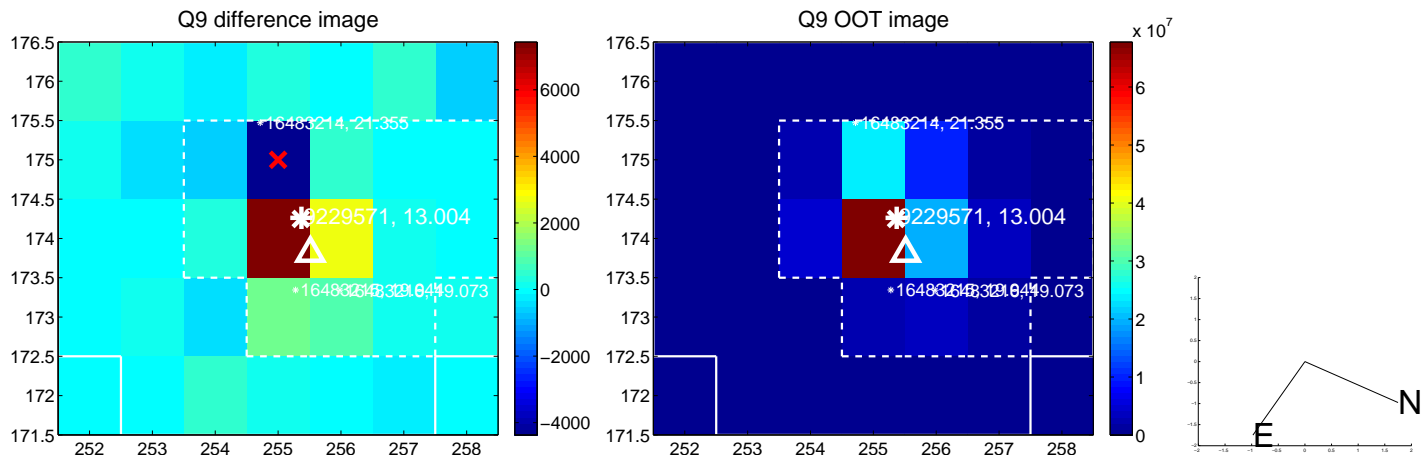
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



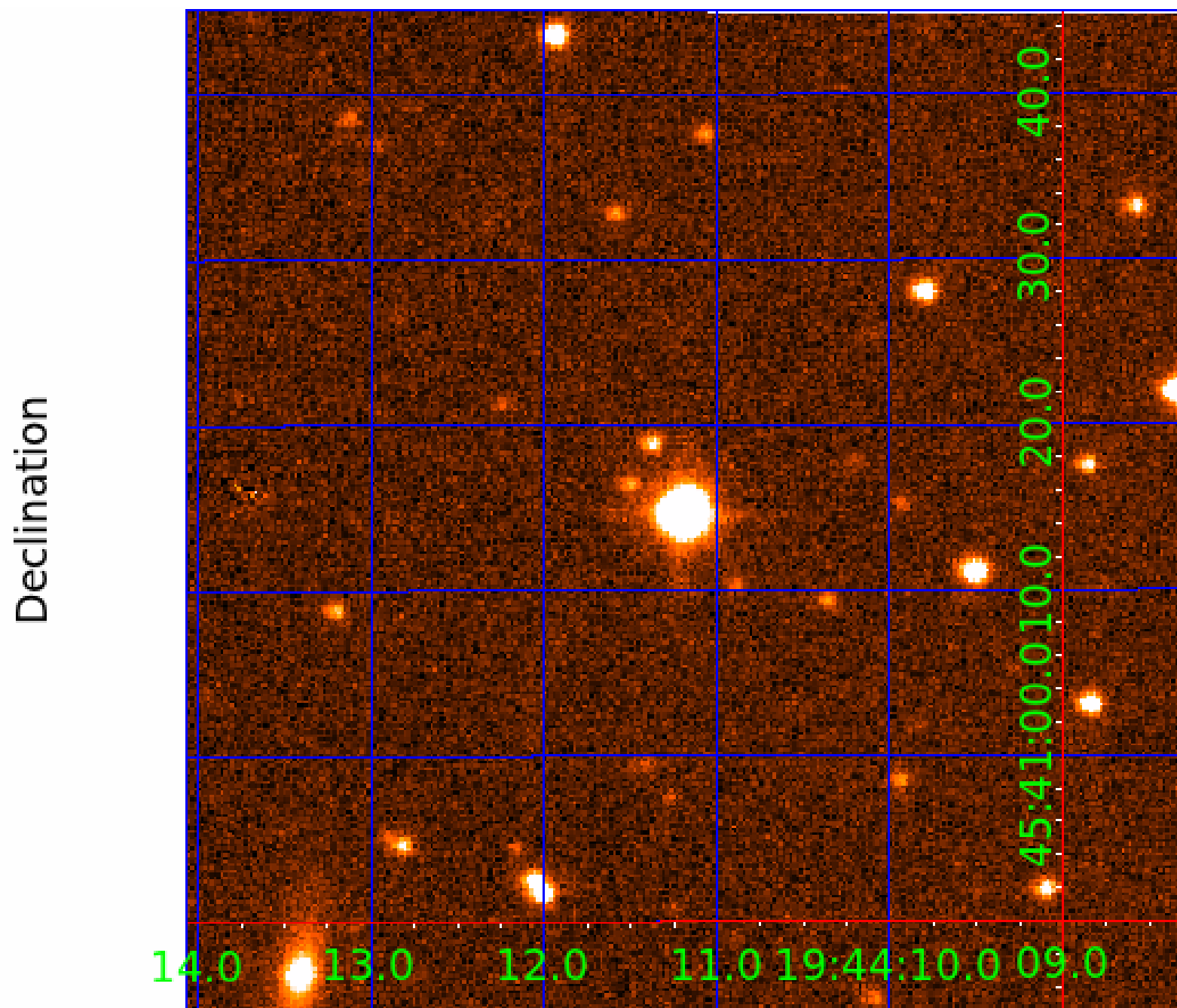
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image



KIC 009229571

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})
009229571-01	OBS	No	1.995506	133.188302	25.7	8.288	12.2	9.3	4.06	6798	2.64	21678.65
009229571-02	OBS	No	1.995597	131.964453	22.3	8.105	10.5	9.4	4.06	6798	1.93	21677.33
009229571-03	OBS	No	480.903658	579.615080	423.2	3.000	13.3	10.4	4.06	6798	9.75	14.46

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009229571-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT
009229571-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD
009229571-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—INCONSISTENT_TRANS

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

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

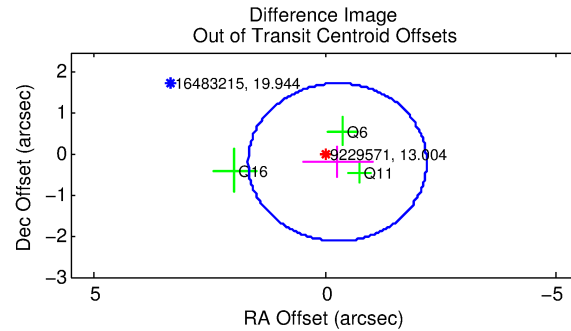
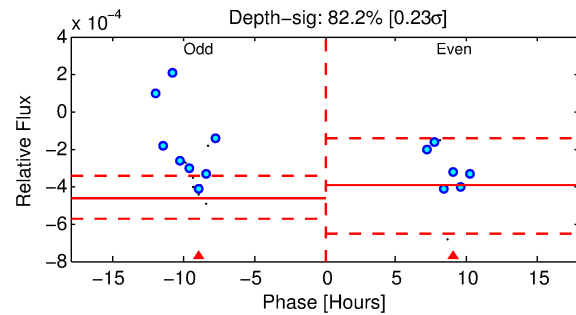
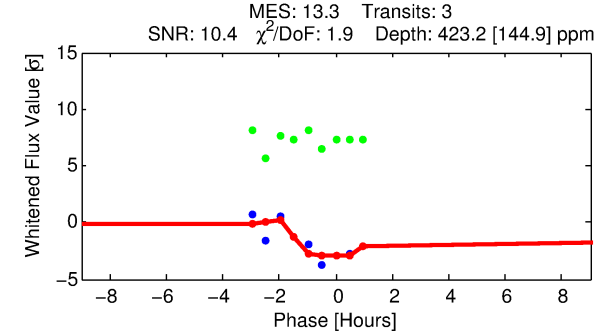
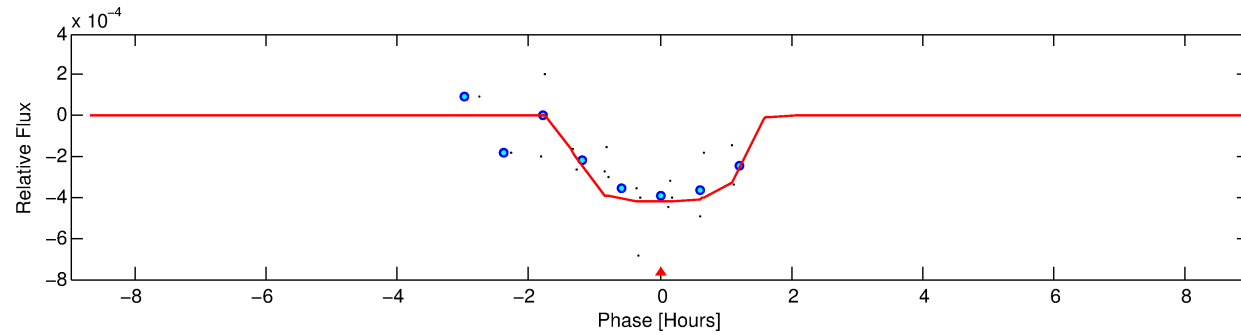
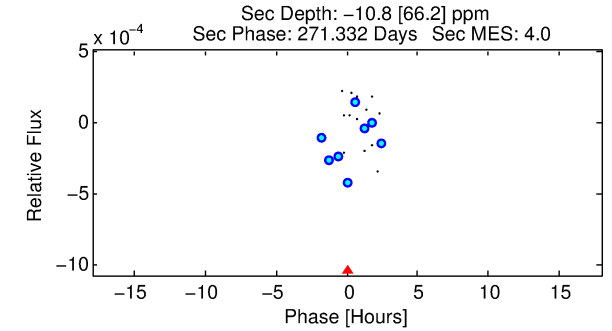
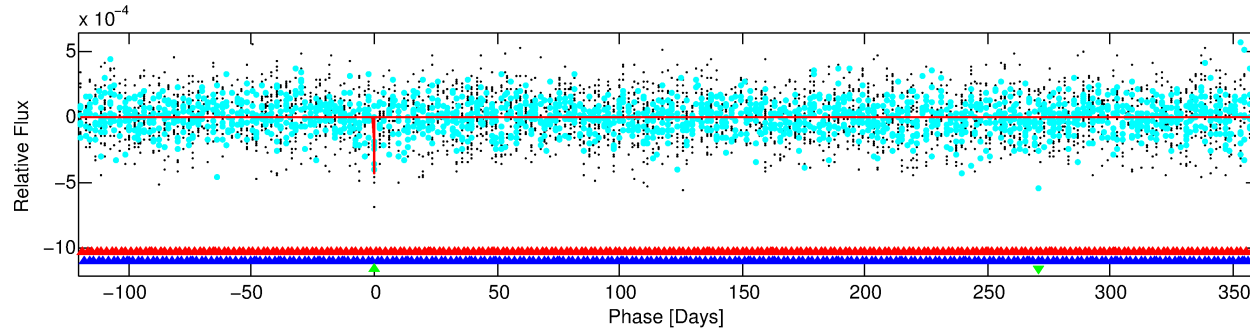
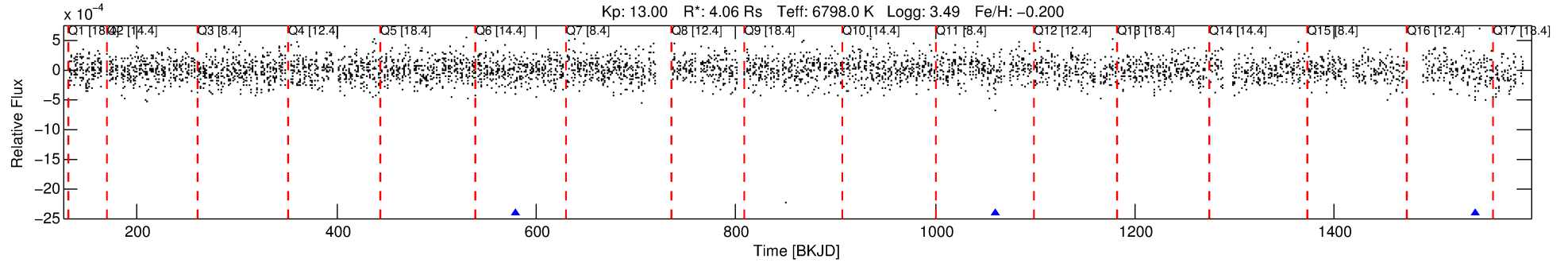
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009229571-03

No Significant Match Found

DV One-Page Summary

KIC: 9229571 Candidate: 3 of 3 Period: 480.904 d



DV Fit Results:

Period = 480.90366 [0.01268] d
Epoch = 579.6151 [0.0495] BKJD
Rp/R* = 0.0220 [0.0901]
a/R* = 589.09 [15041.54]
b = 0.90 [5.15]
Seff = 14.46 [8.51]
Teq = 497 [73] K
Rp = 9.75 [40.07] Re
a = 1.4771 [0.5311] AU
Ag = N/A
Teffp = N/A

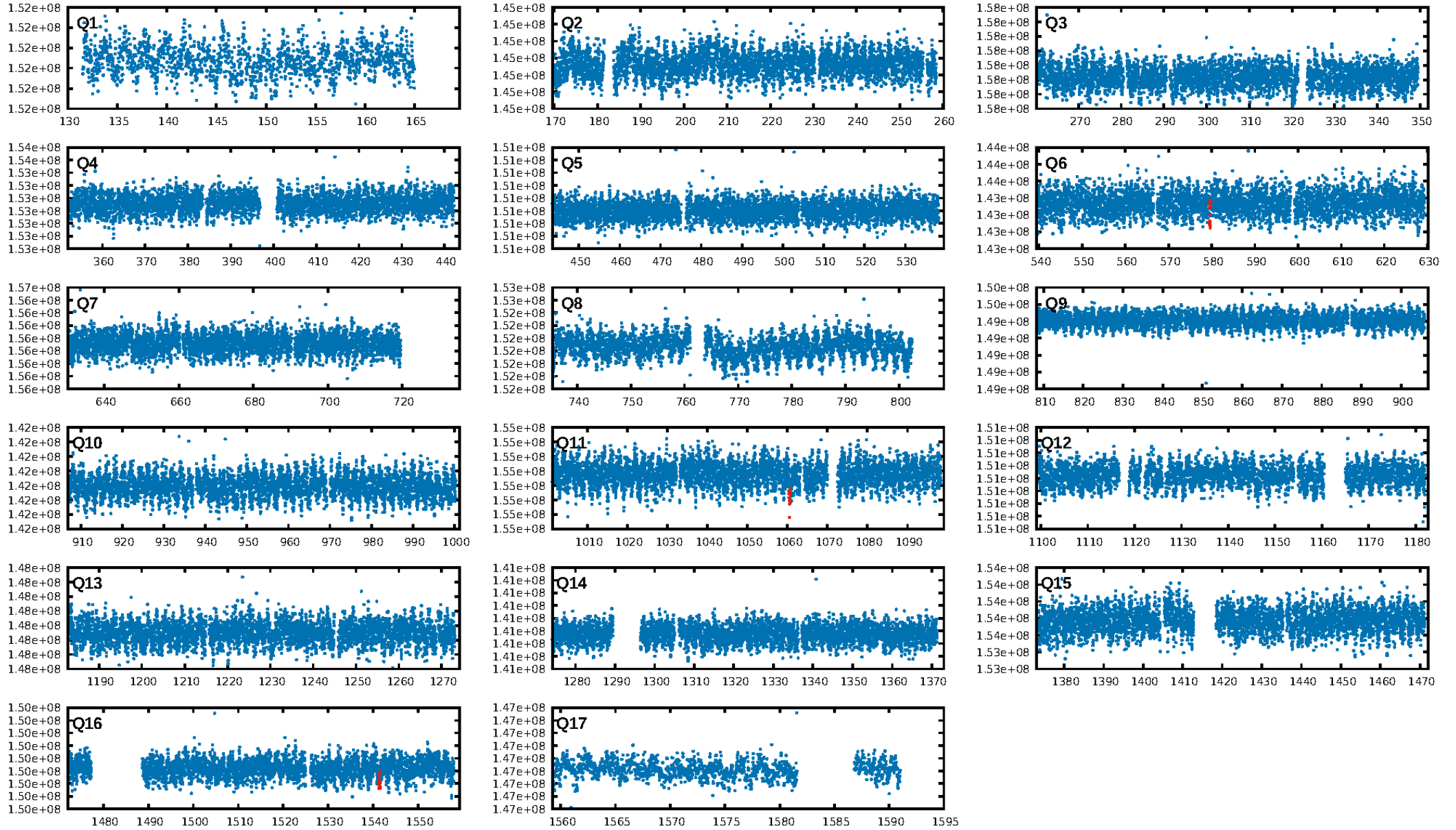
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [1329.97σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 6.4%
ModelChiSquareGof-sig: 74.2%
Bootstrap-pfa: 9.31e-31
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: -17.07
Centroid-sig: 77.4%
Centroid-so: 0.285 arcsec [0.30σ]
OotOffset-rm: 0.329 arcsec [0.51σ]
OotOffset-st: 1/1/1/0 [3]
KicOffset-rm: 0.347 arcsec [0.51σ]
KicOffset-st: 1/1/1/0 [3]
DiffImageQuality-fgm: 1.00 [3/3]
DiffImageOverlap-fno: 1.00 [3/3]

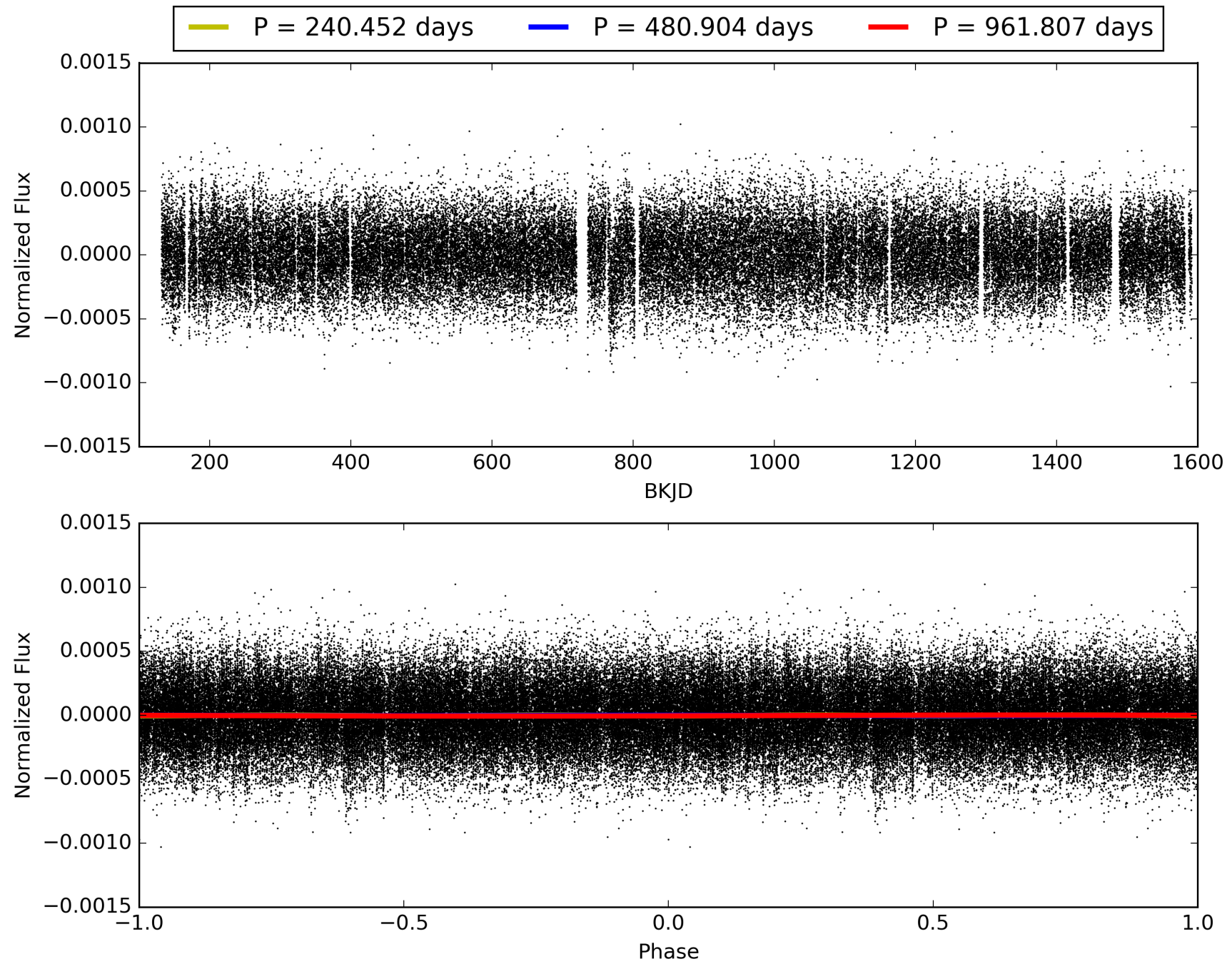
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 17:10:04 Z

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

TCE 009229571-03, PDC Light Curves

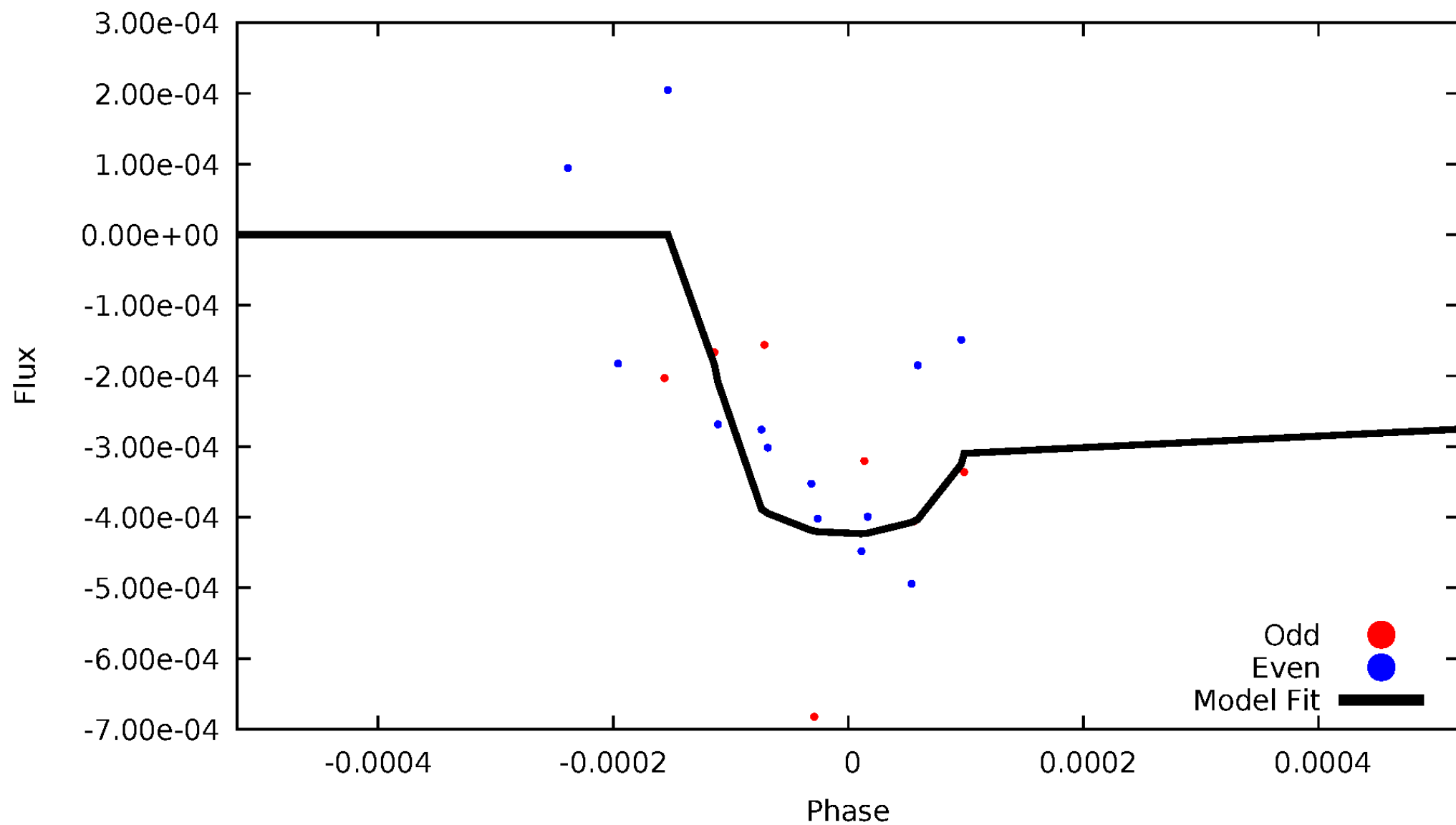


TCE 009229571-03



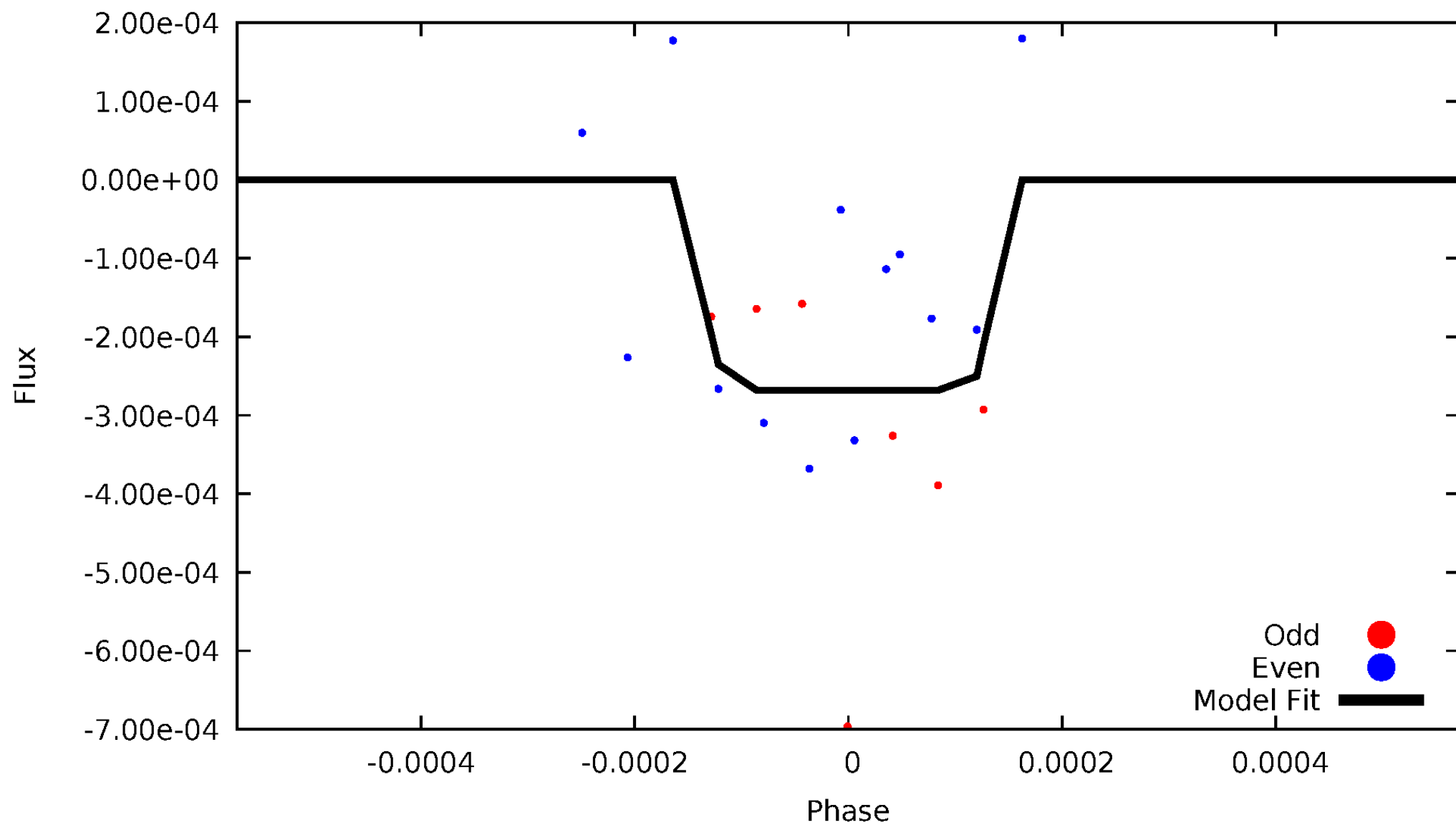
DV Odd/Even

TCE 009229571-03



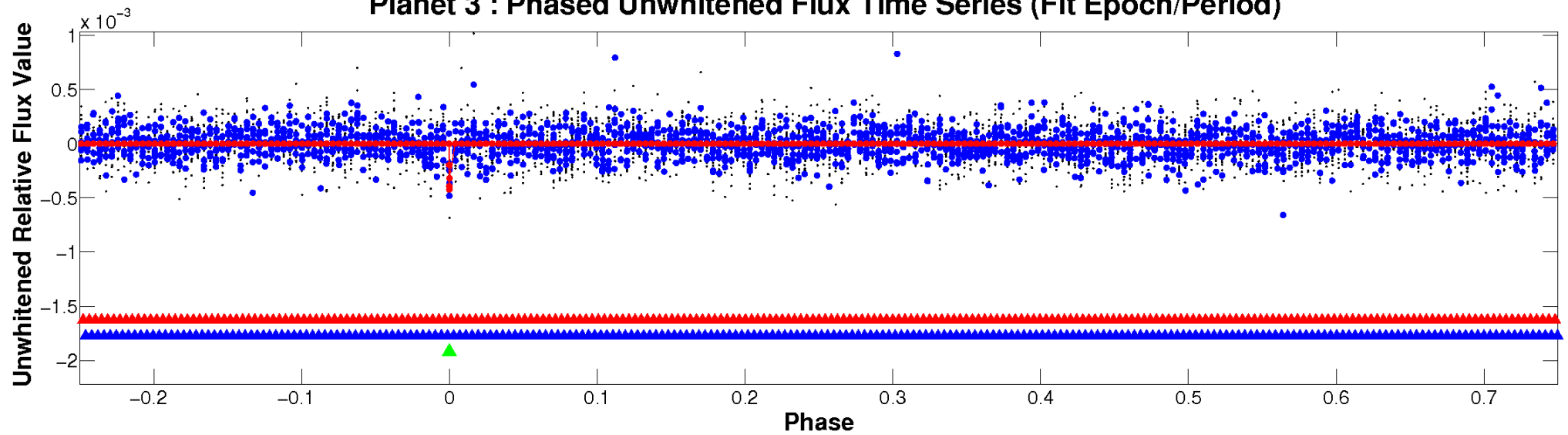
ALT Odd/Even

TCE 009229571-03

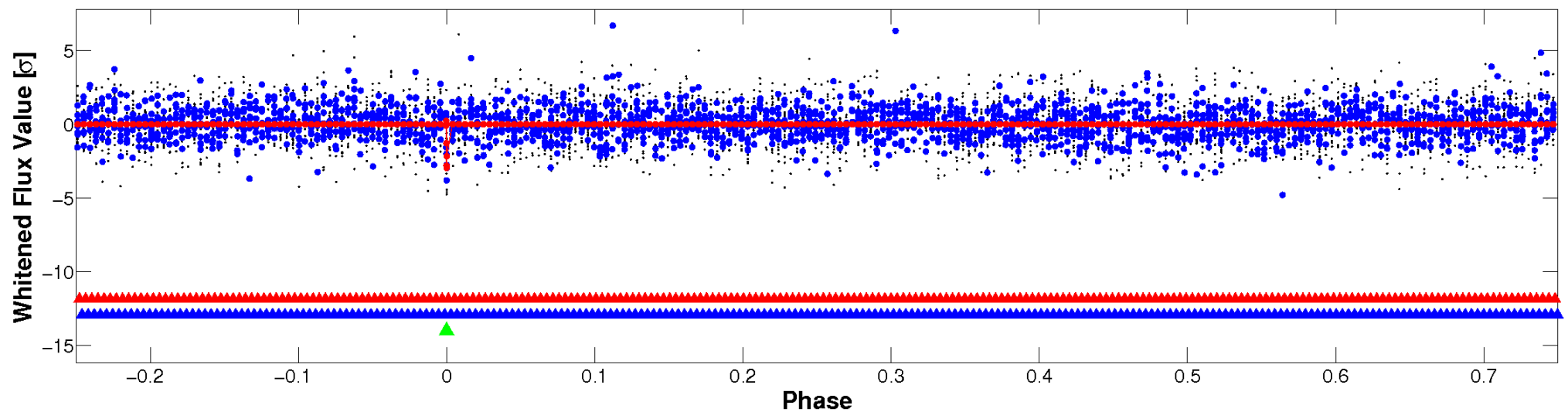


Non-Whitened Vs. Whitened Light Curve

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

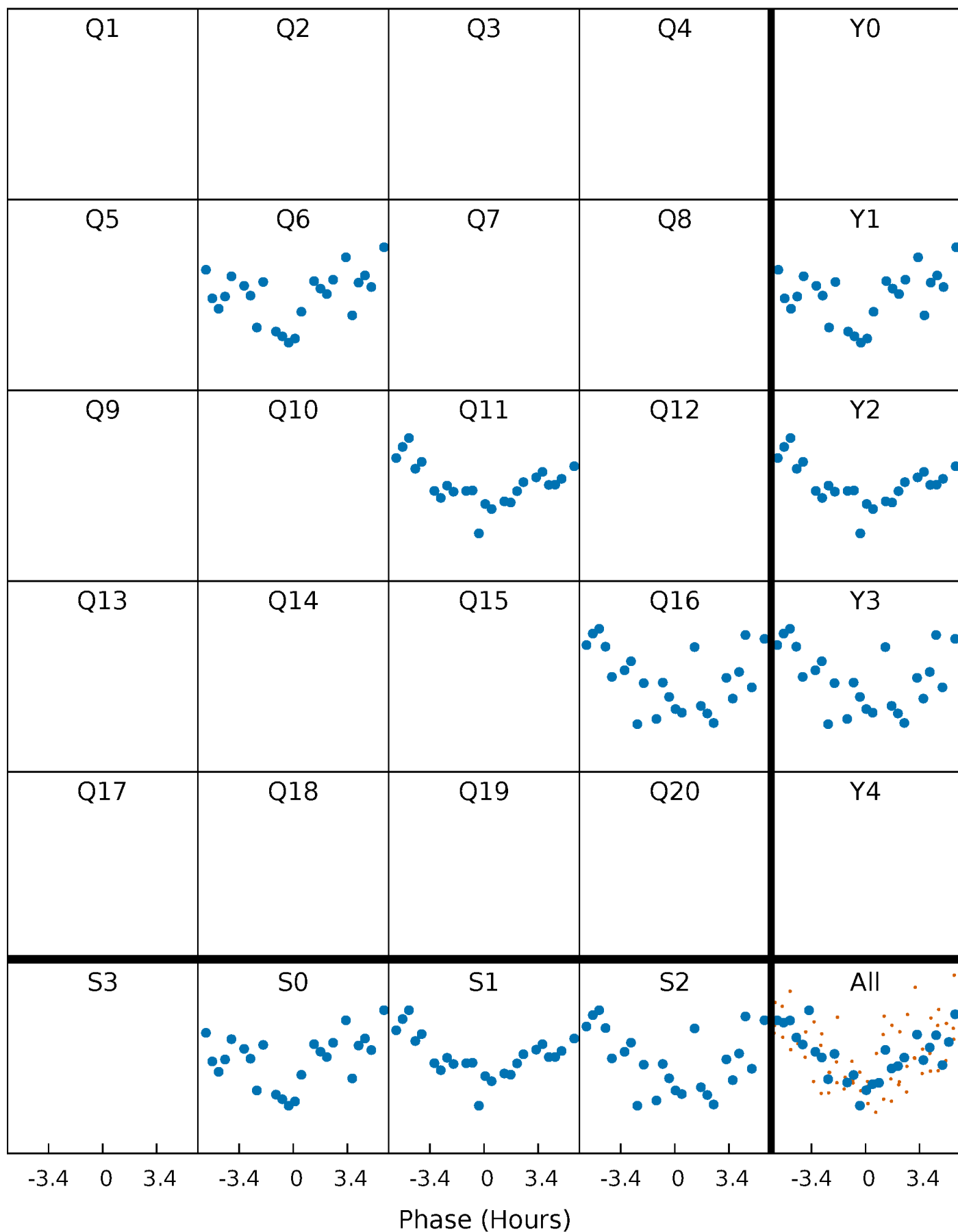


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



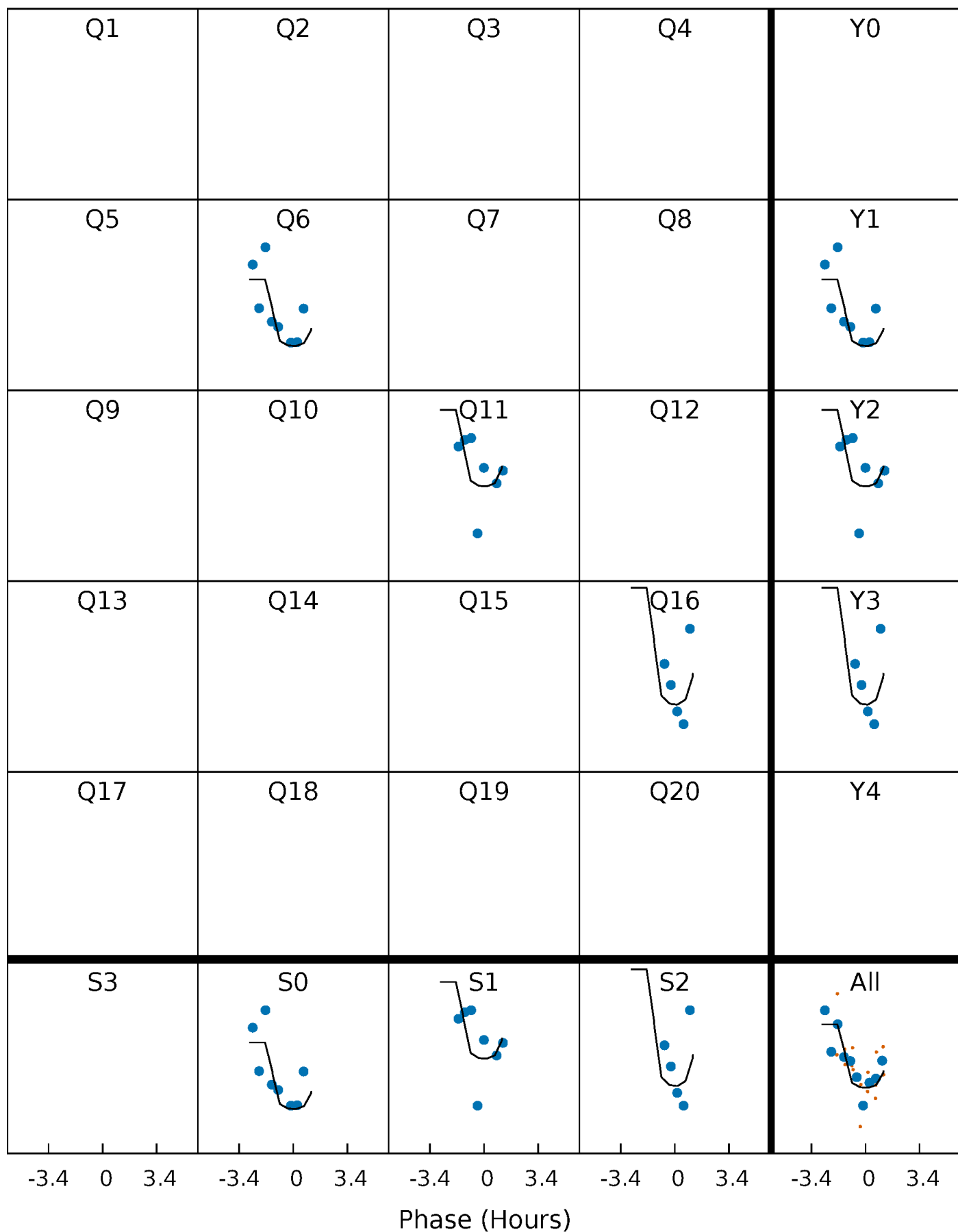
PDC Quarter-Phased Transit Curves

TCE 009229571-03 P=480.903658 Days $T_0=579.615080$ (BKJD)



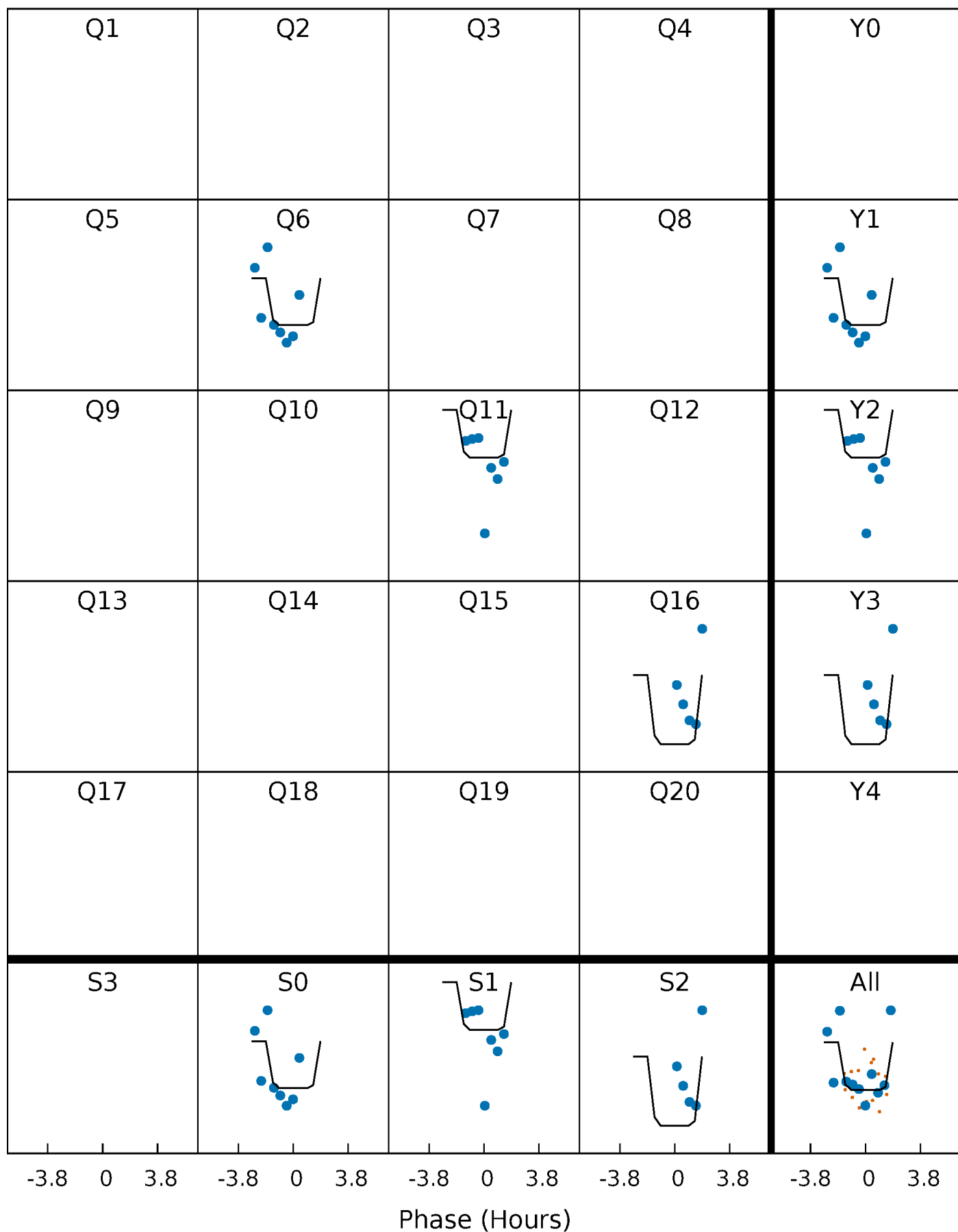
DV Quarter-Phased Transit Curves

TCE 009229571-03 P=480.903658 Days $T_0=579.615080$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

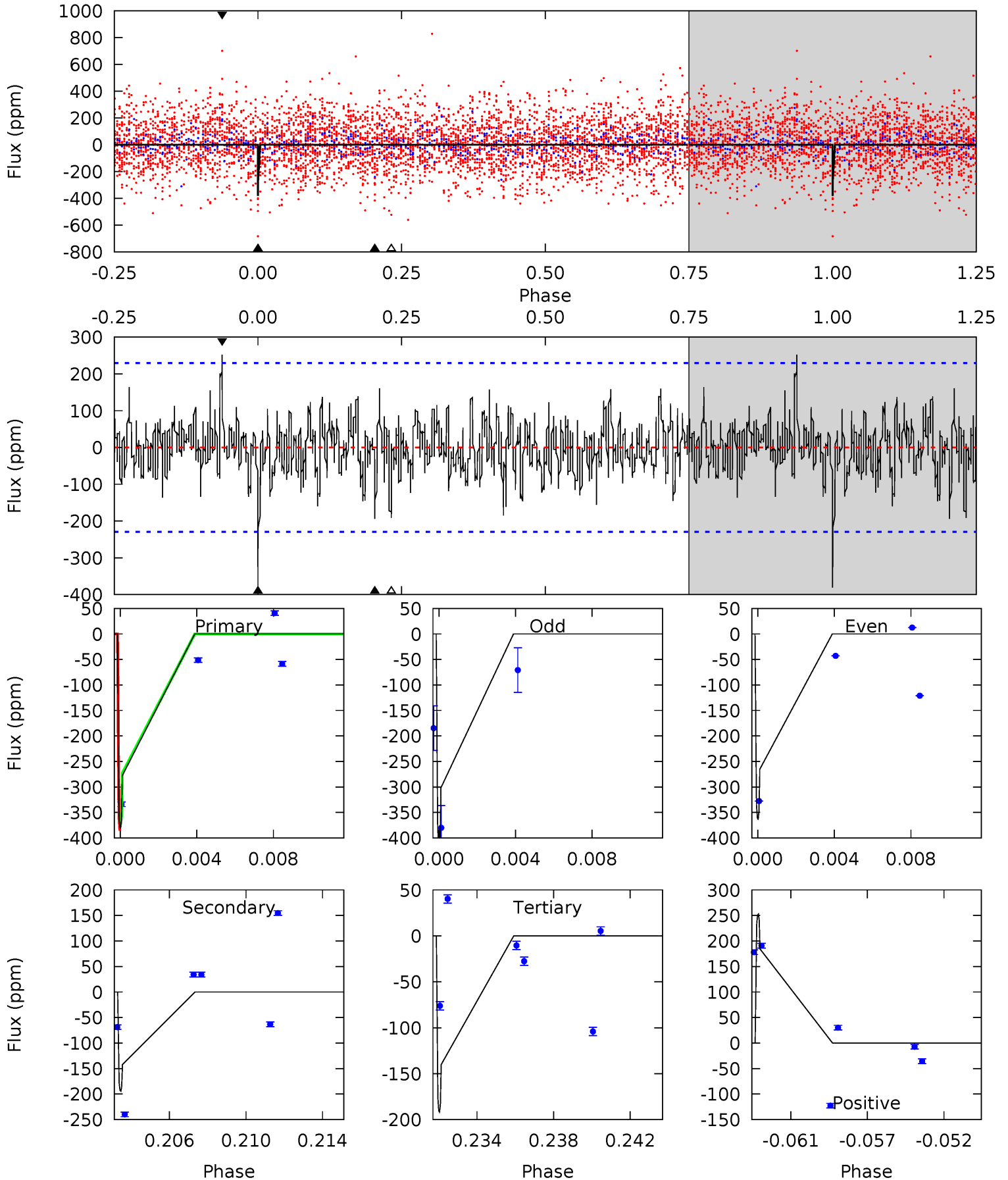
TCE 009229571-03 P=480.885019 Days $T_0=579.620237$ (BKJD)



DV Model-Shift Uniqueness Test

009229571-03, P = 480.903658 Days, E = 98.711422 Days

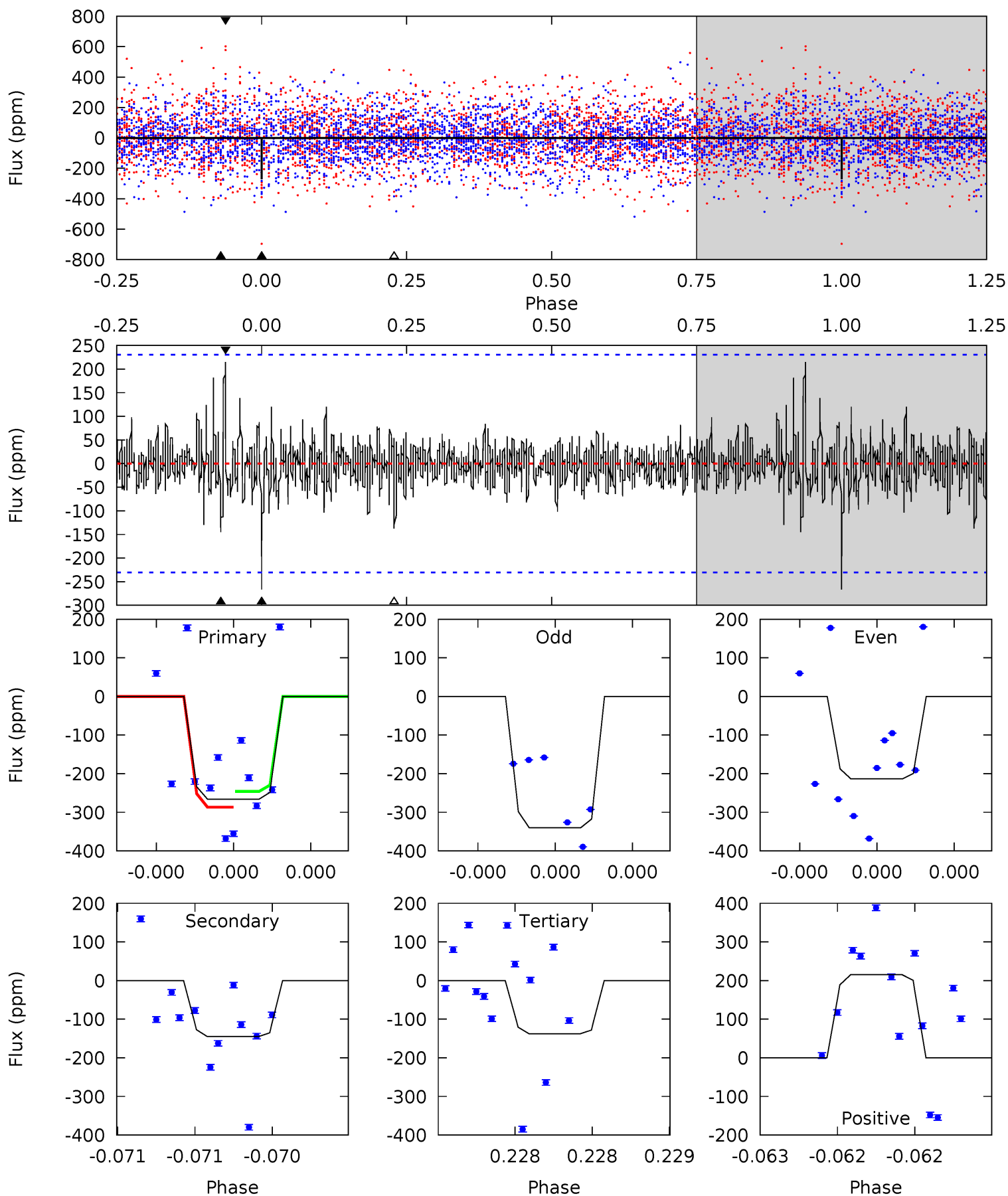
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.62	4.40	4.34	5.72	5.20	2.88	1.34	4.28	2.90	0.06	-1.32	0.53	1.00	0.40	0.13



Alt Model-Shift Uniqueness Test

009229571-03, P = 480.885019 Days, E = 98.735218 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.57	3.58	3.39	5.31	5.69	3.66	0.89	3.18	1.26	0.18	-1.73	1.49	0.89	0.45	0.51



Stellar Parameters For KIC 009229571

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6798^{+183}_{-224}	$3.490^{+0.336}_{-0.084}$	$-0.200^{+0.350}_{-0.250}$	$4.060^{+0.381}_{-1.526}$	$1.858^{+0.198}_{-0.368}$	$0.039^{+0.093}_{-0.010}$
	+3%/-3%	+10%/-2%	+175%/-125%	+9%/-38%	+11%/-20%	+239%/-26%
Source	PHO1	FLK73	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 009229571-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-194 ± 44	$29.74^{+28.08}_{-19.95}$	684^{+38}_{-58}	3475^{+1824}_{-619}	255^{+2355}_{-189}
Alt.	-145 ± 41	$27.52^{+31.48}_{-19.11}$	683^{+39}_{-62}	3357^{+1881}_{-620}	216^{+2139}_{-166}

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

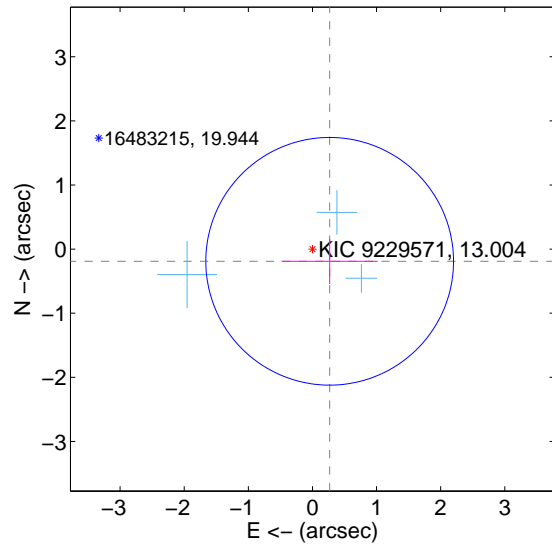
Supplemental centroid analysis for 009229571-03. Kepler magnitude: 13.00. Transit SNR 10.40

There are 3 quarters with good PRF difference image offsets

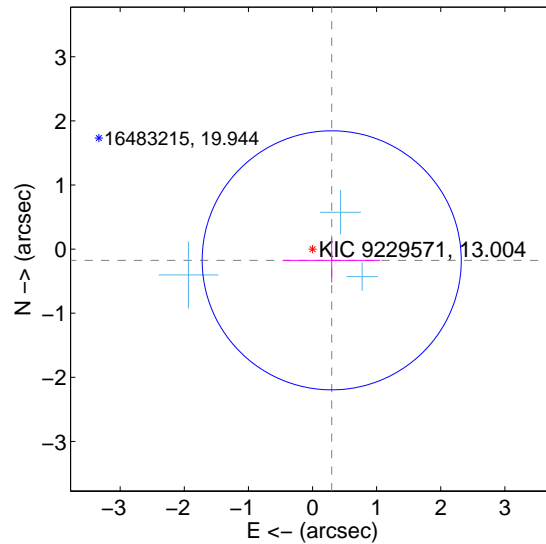
The direct PRF centroid is offset from the target star catalog position by about 0.02 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.329 ± 0.644	0.51	-0.269 ± 0.748	-0.190 ± 0.353
PRF-fit source offset from KIC position	0.347 ± 0.673	0.51	-0.299 ± 0.753	-0.175 ± 0.348
photometric centroid source offset	0.28 ± 0.95	0.30	-0.14 ± 0.89	0.25 ± 0.97

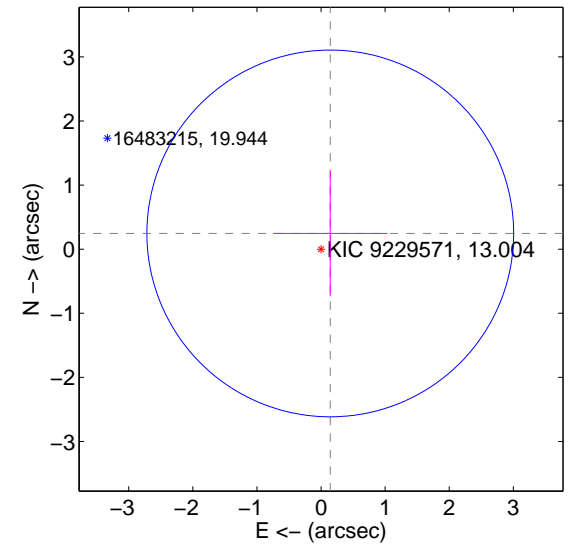
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

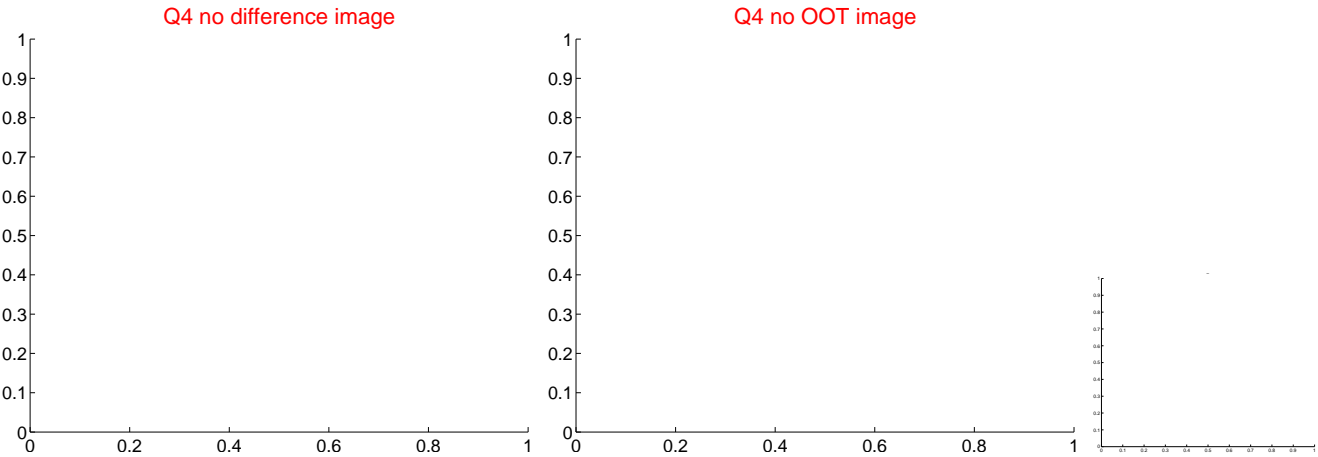
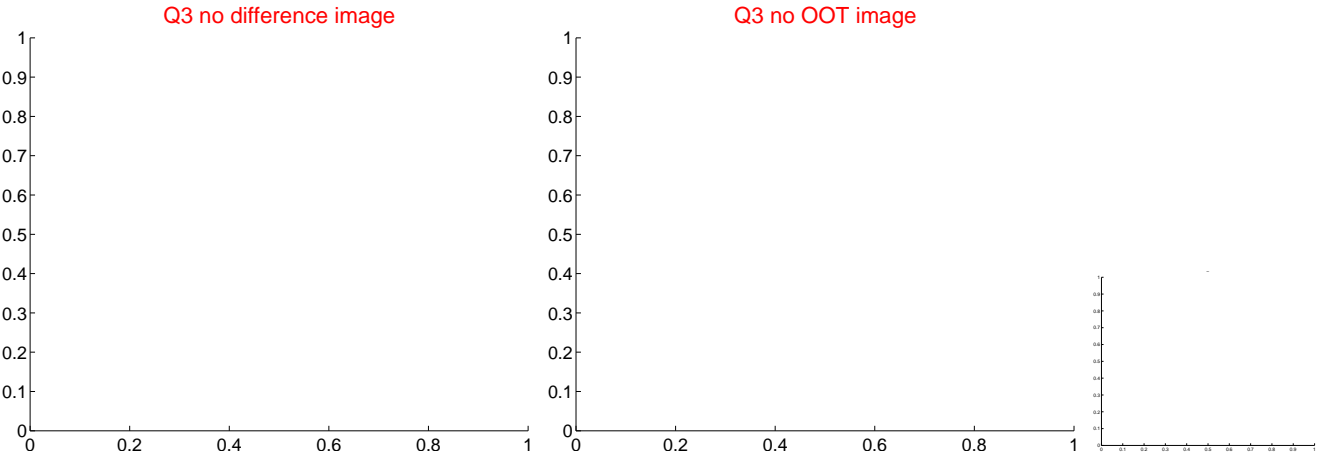
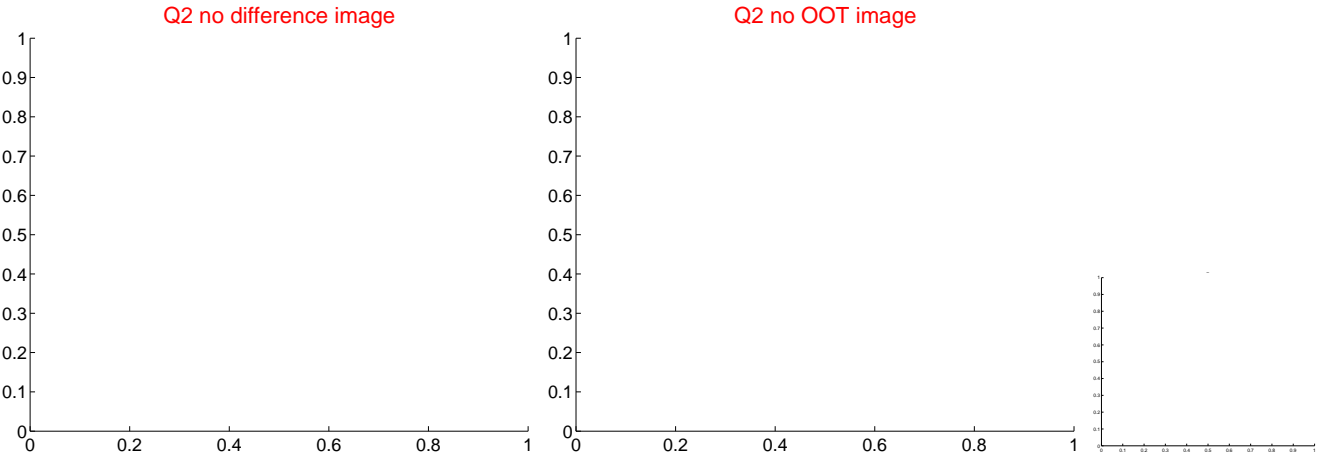
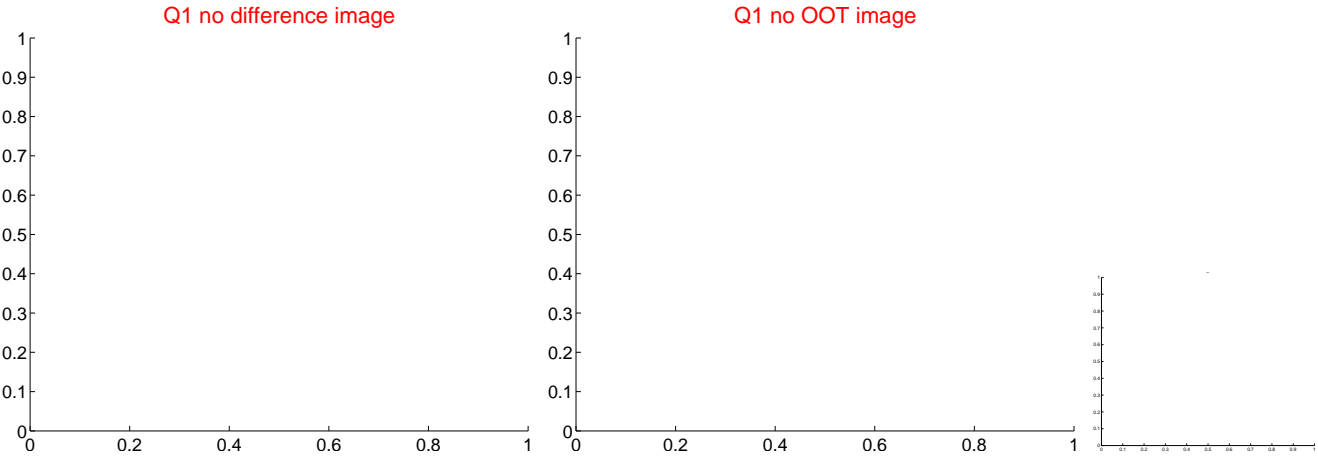


offset from photometric centroids



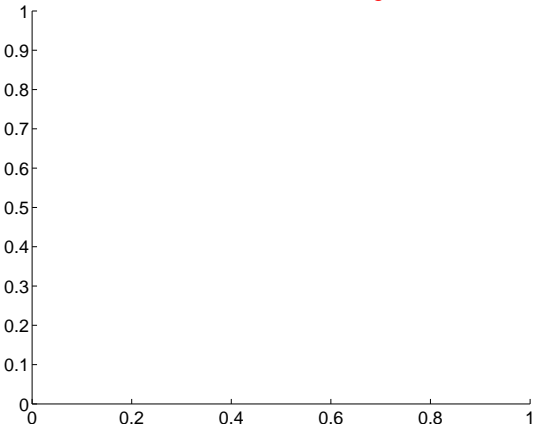
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

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

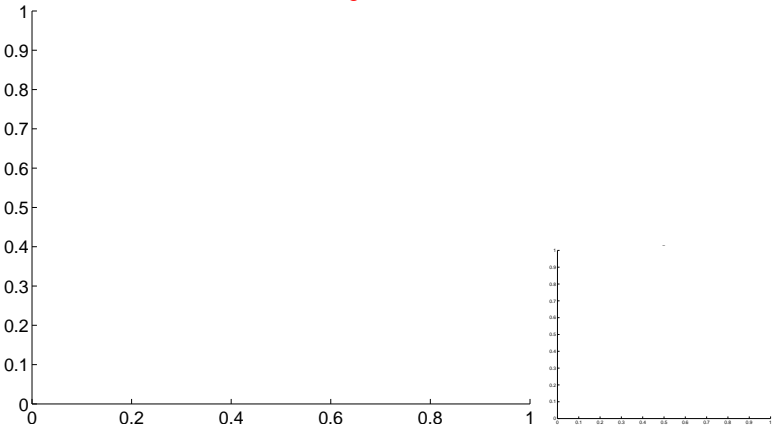


white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

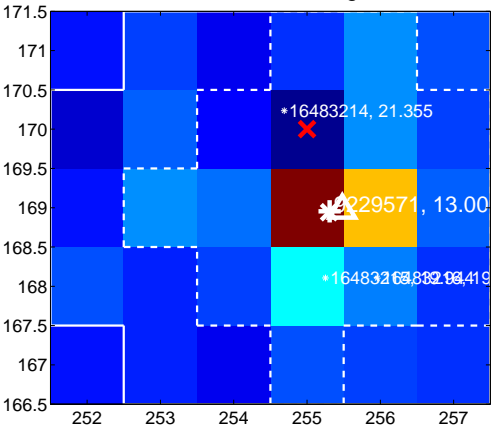
Q5 no difference image



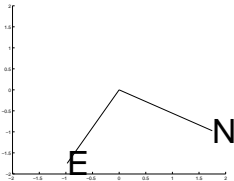
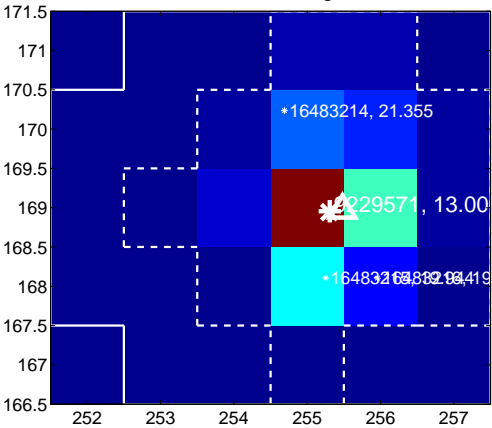
Q5 no OOT image



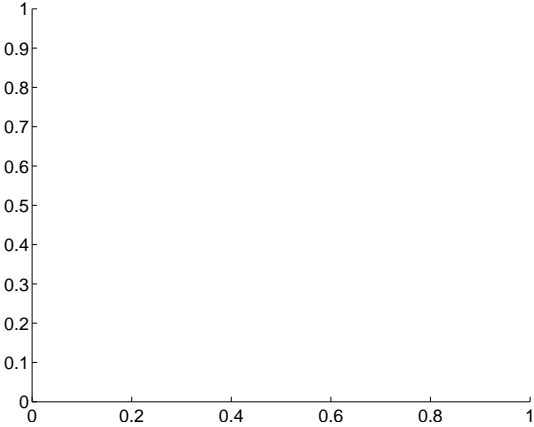
Q6 difference image



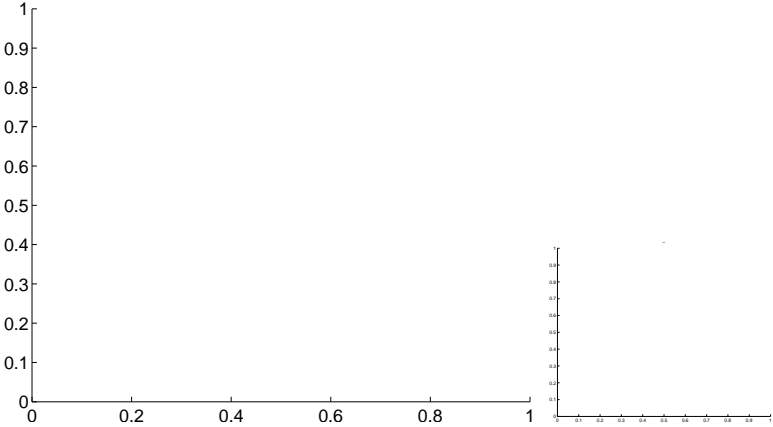
Q6 OOT image



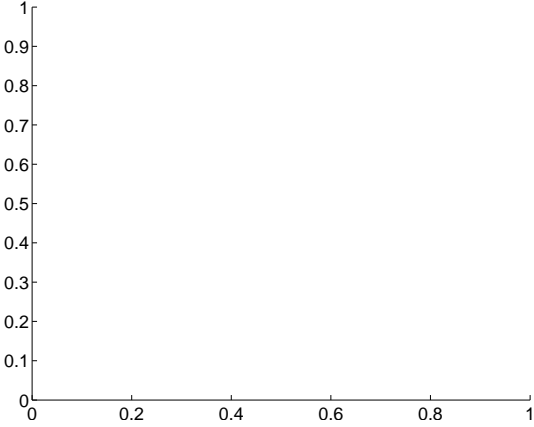
Q7 no difference image



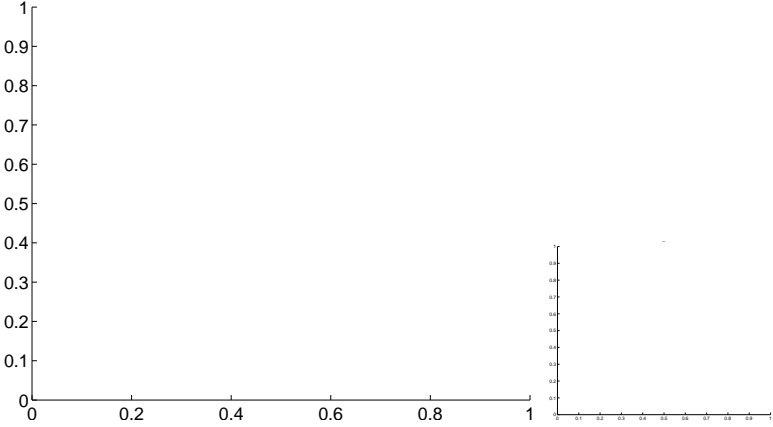
Q7 no OOT image



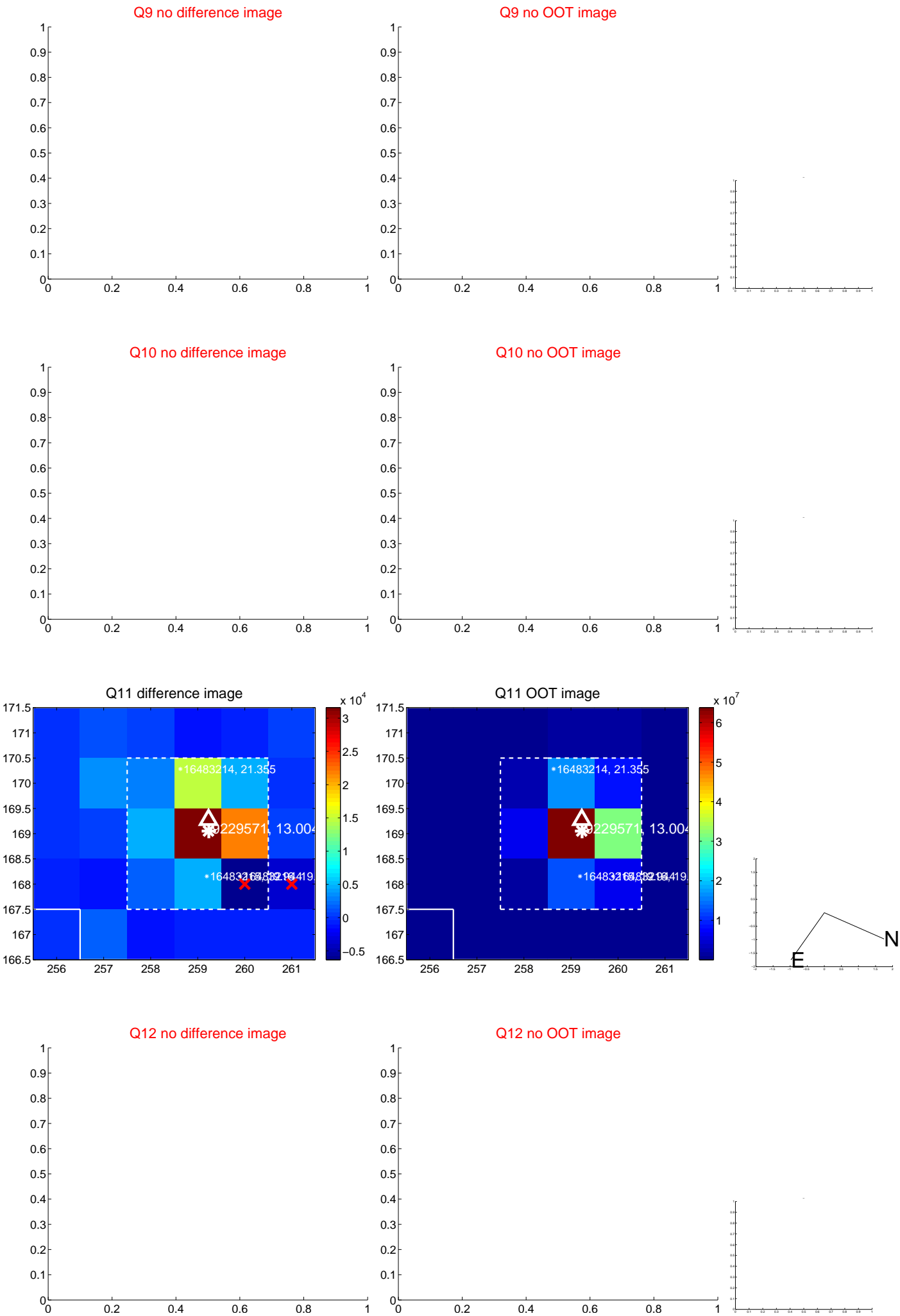
Q8 no difference image



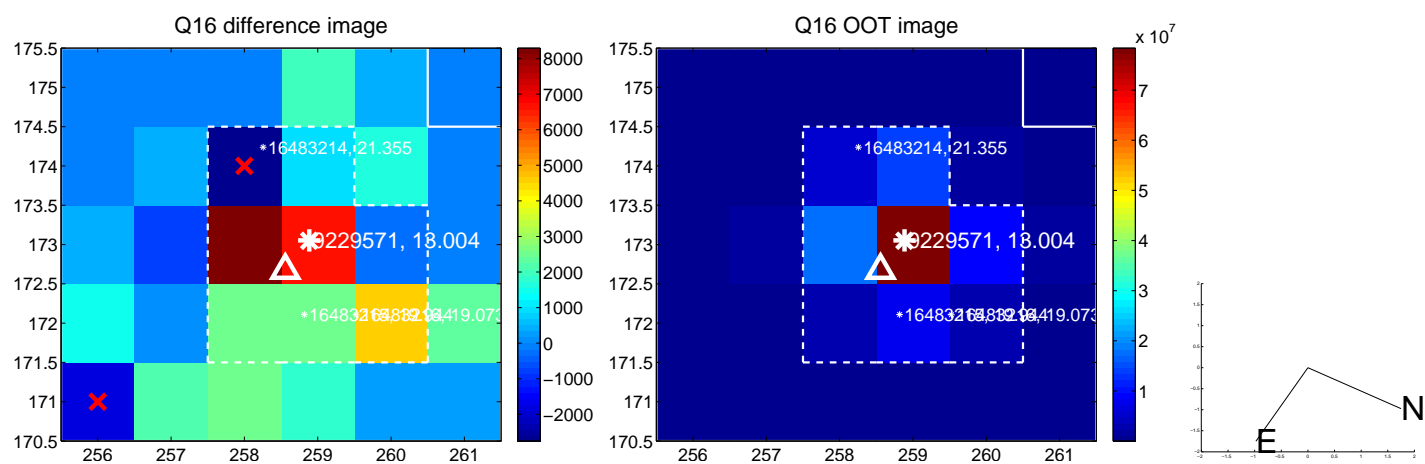
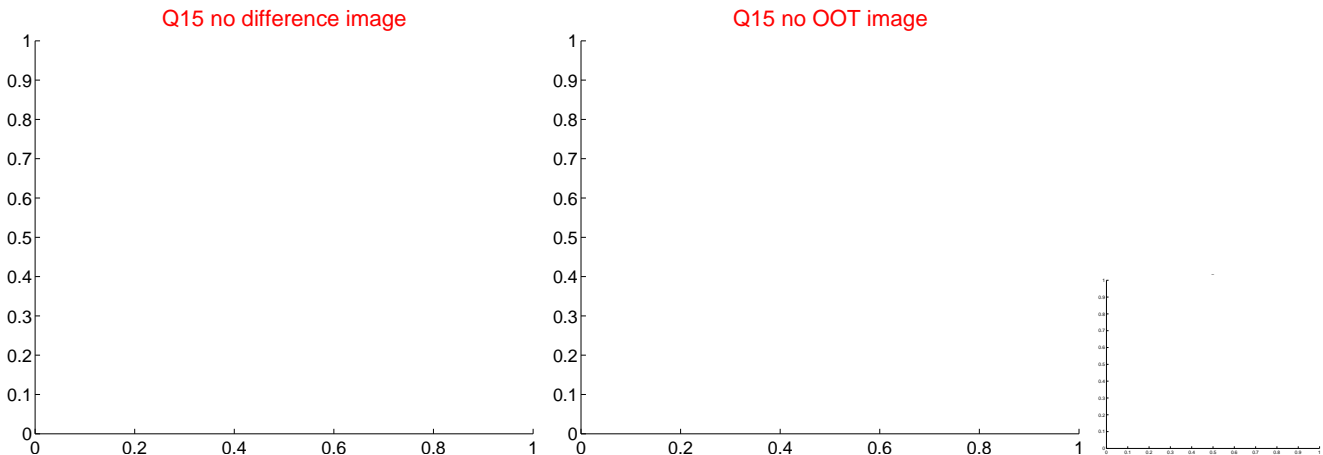
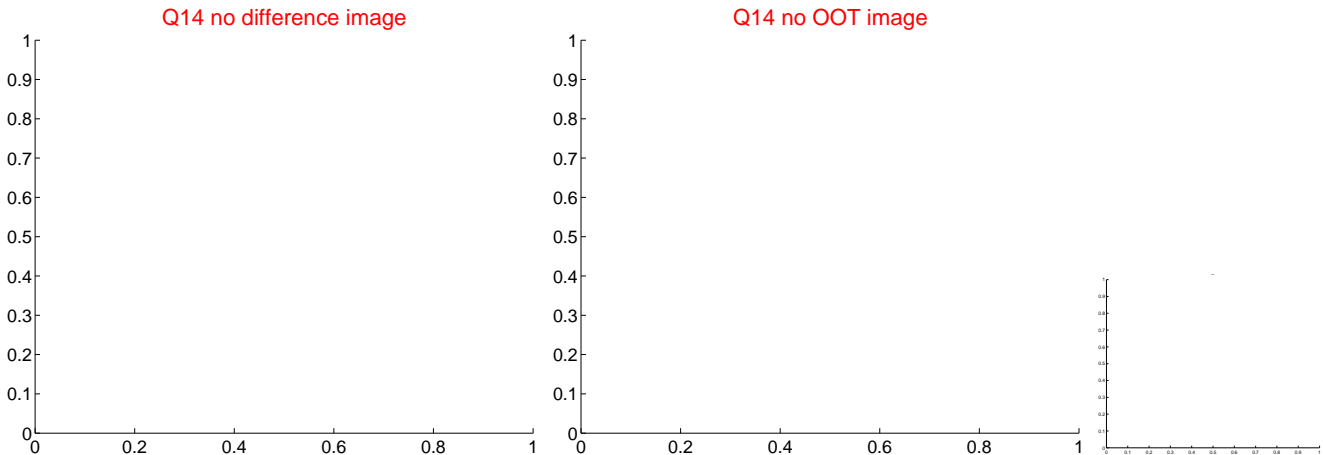
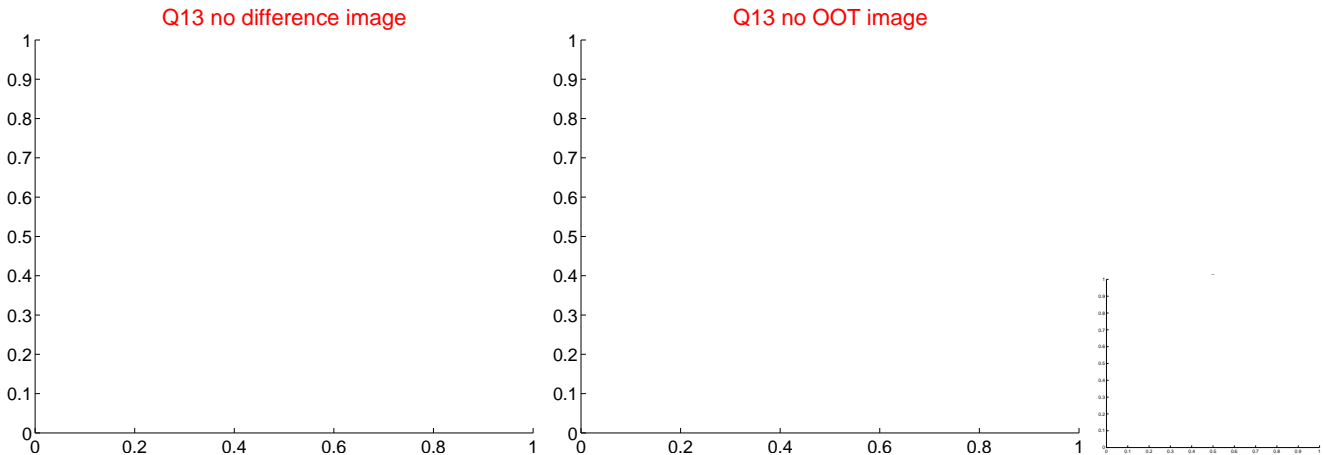
Q8 no OOT image



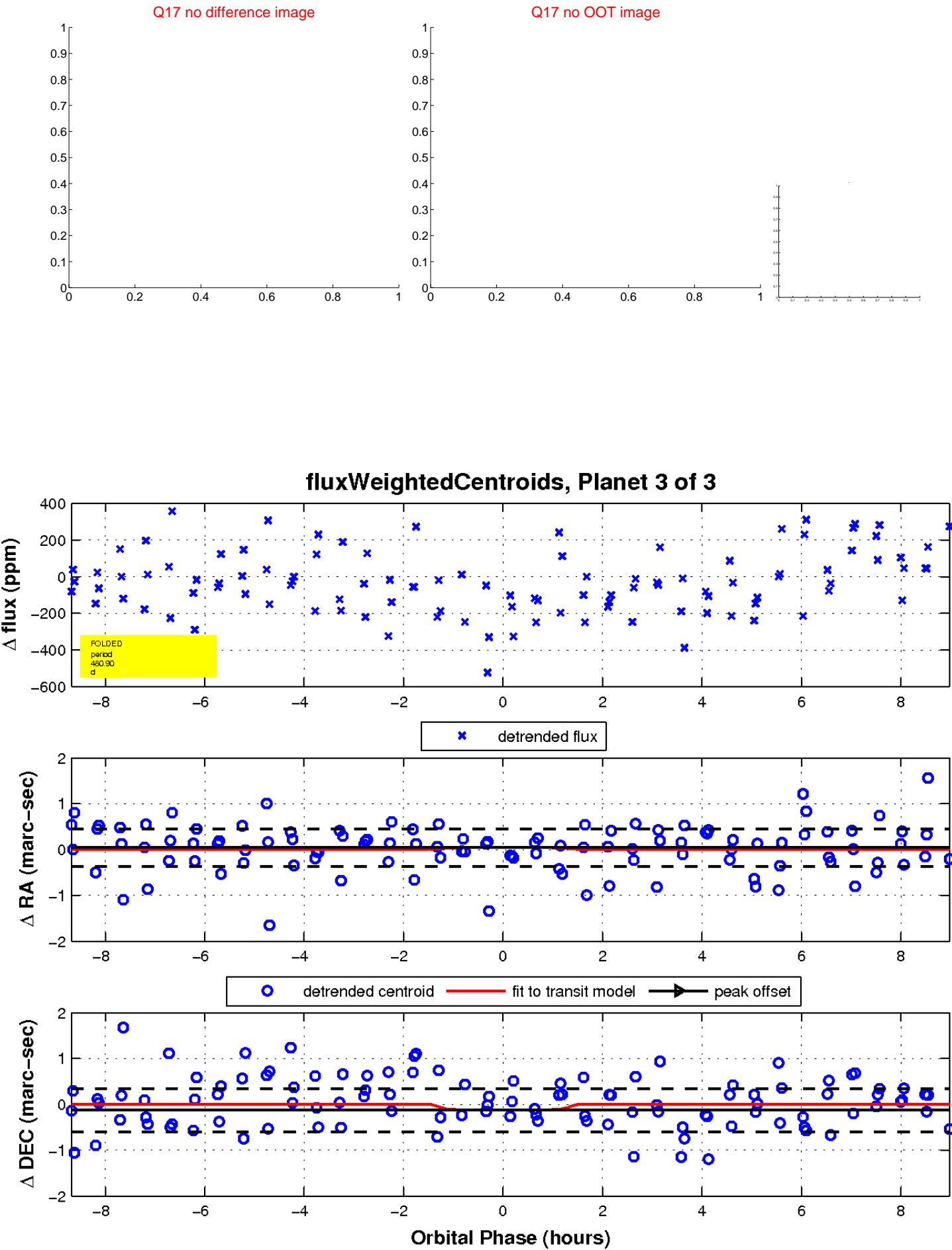
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



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



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



UKIRT Image

