

KIC 009429998

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})
009429998-01	OBS	No	1.499254	131.665925	12.2	5.165	7.9	9.2	2.98	8665	1.24	43261.14
009429998-02	OBS	No	1.499242	132.397363	10.6	7.481	8.9	10.0	2.98	8665	1.02	43261.61

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009429998-01	OBS	FP	0.00	1	0	0	0	LPP_DV
009429998-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—SAME_NTL_PERIOD

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

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

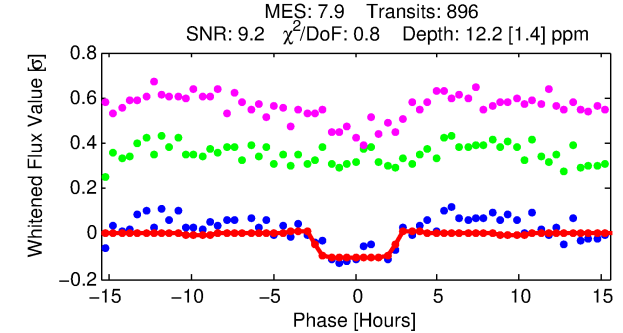
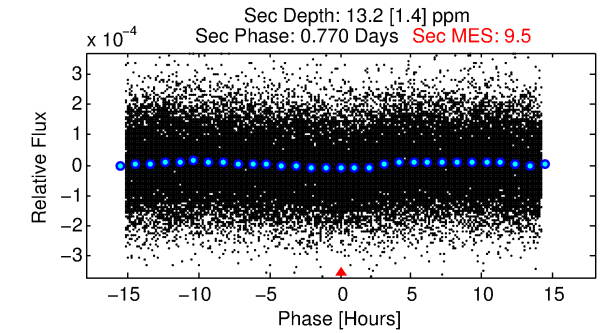
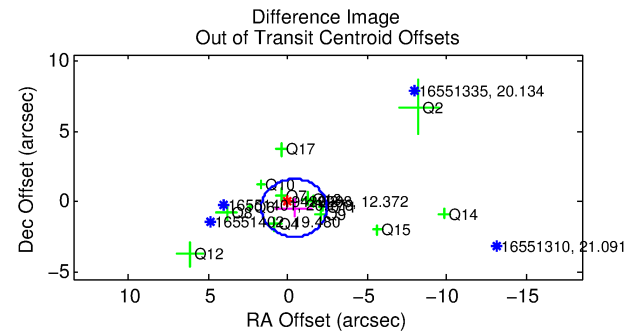
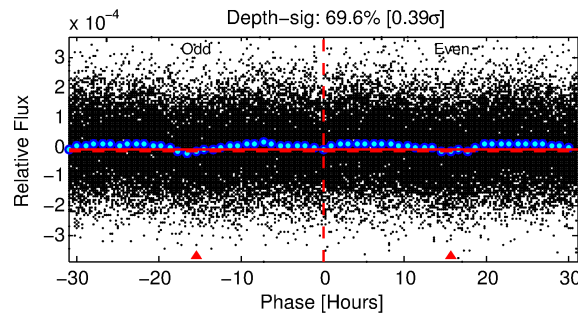
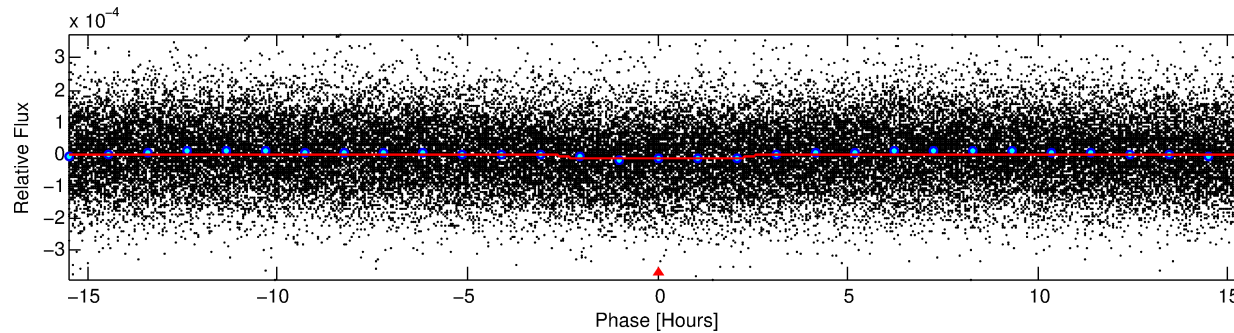
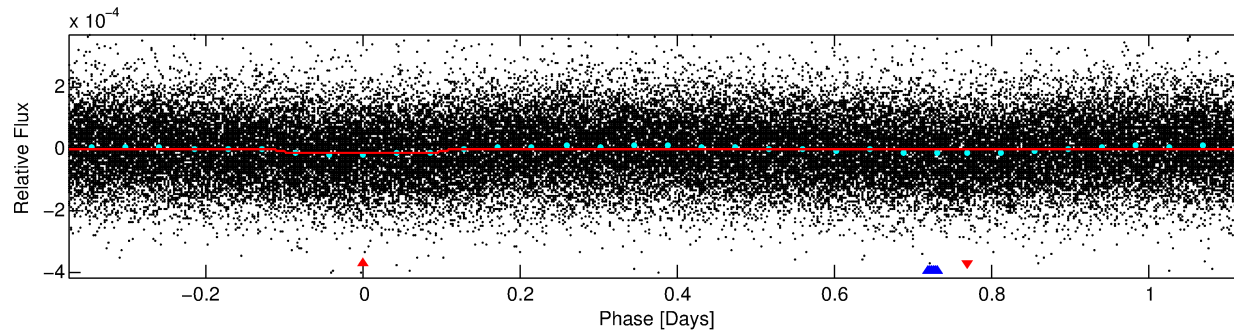
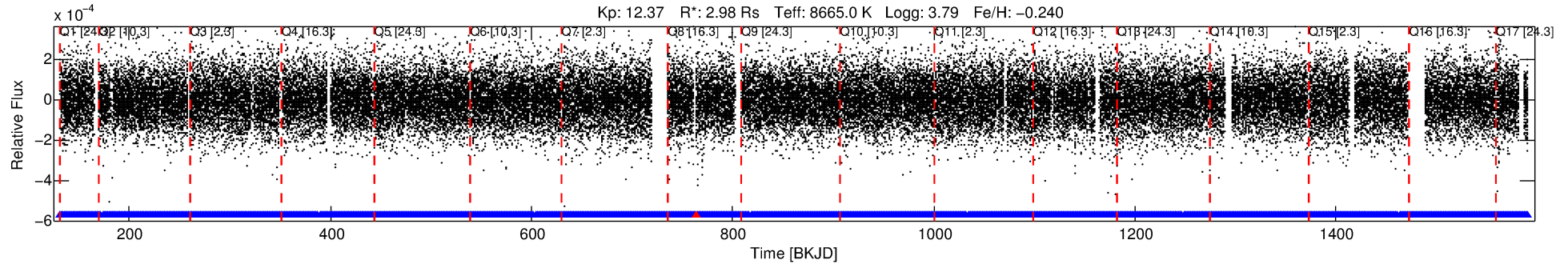
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009429998-01

No Significant Match Found

DV One-Page Summary

KIC: 9429998 Candidate: 1 of 2 Period: 1.499 d



DV Fit Results:

Period = 1.49925 [0.00002] d
Epoch = 131.6659 [0.0055] BKJD
Rp/R* = 0.0038 [0.0010]
a/R* = 1.27 [0.91]
b = 0.93 [0.28]
Seff = 43261.14 [31063.21]
Teq = 3677 [660] K
Rp = 1.24 [0.63] Re
a = 0.0323 [0.0139] AU
Ag = 4.95 [4.38] [0.90 σ]
Teffp = 8483 [1211] K [3.48 σ]

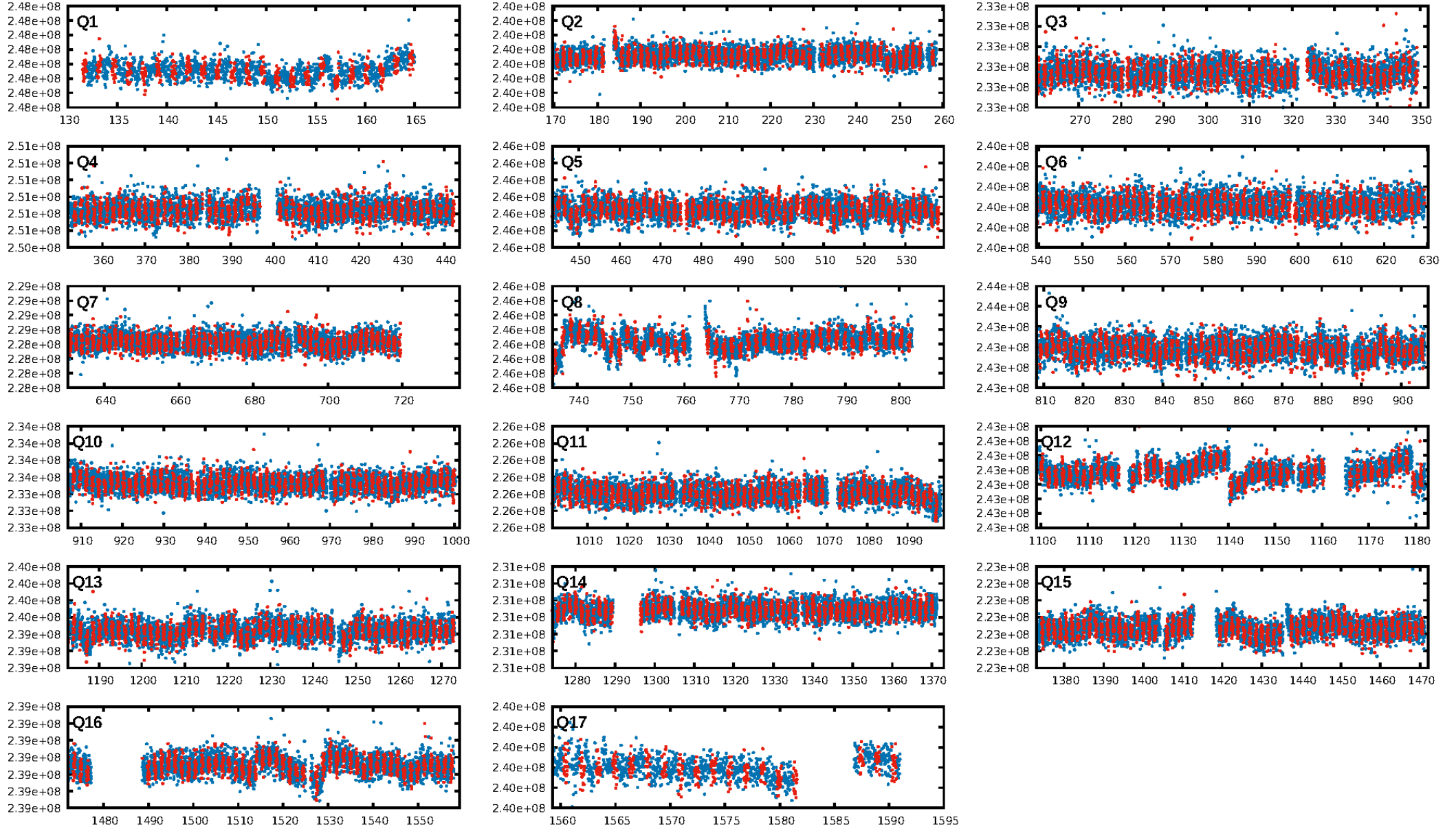
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [854/855]
GhostDiagnostic-chr: 1.701
Centroid-sig: N/A
Centroid-so: 0.900 arcsec [0.55 σ]
OotOffset-rm: 0.583 arcsec [0.85 σ]
OotOffset-st: 4/4/3/3 [14]
KicOffset-rm: 0.778 arcsec [0.96 σ]
KicOffset-st: 4/4/3/3 [14]
DiffImageQuality-fgm: 0.57 [8/14]
DiffImageOverlap-fno: 1.00 [17/17]

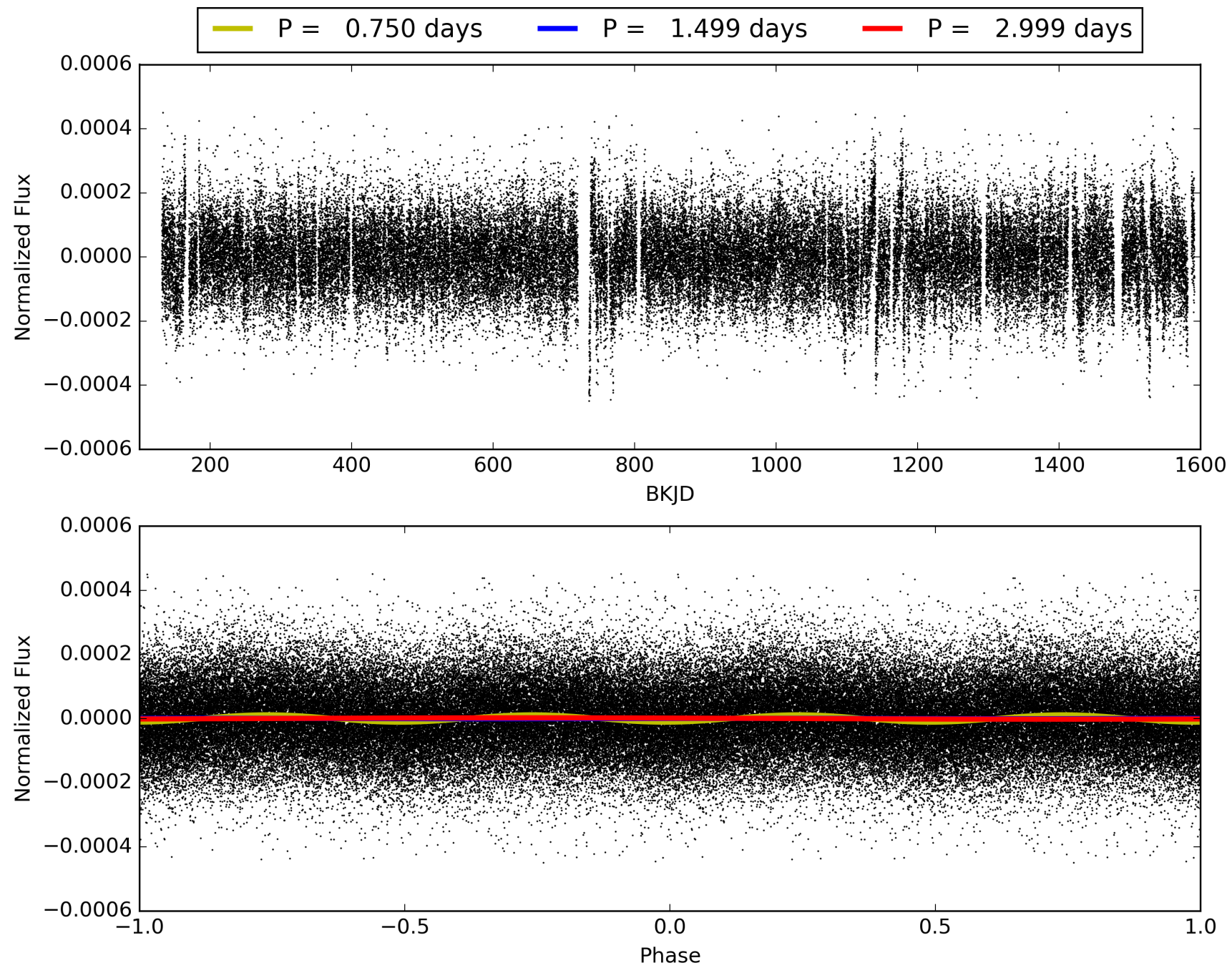
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 12:37:38 Z

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

TCE 009429998-01, PDC Light Curves

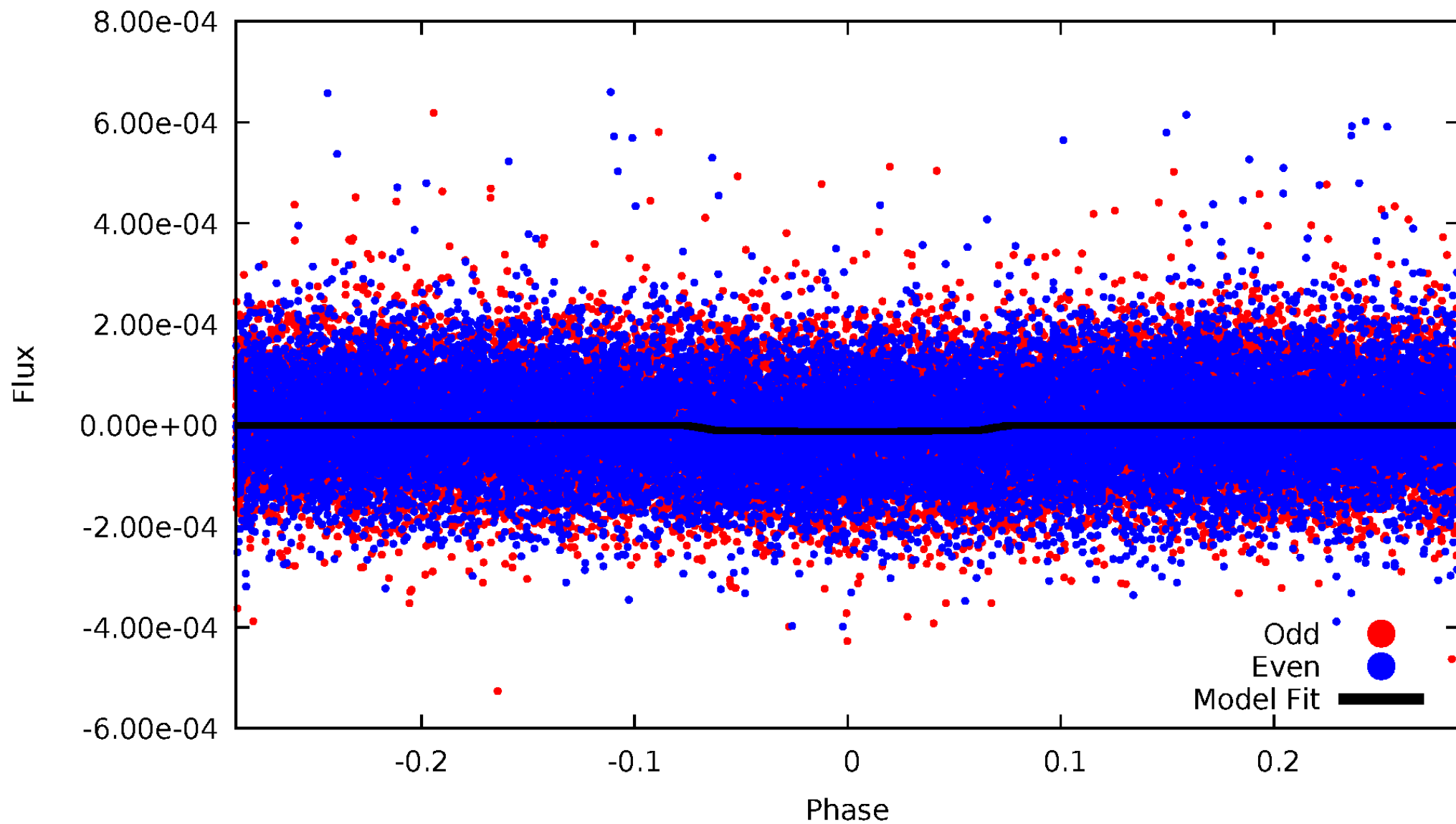


TCE 009429998-01



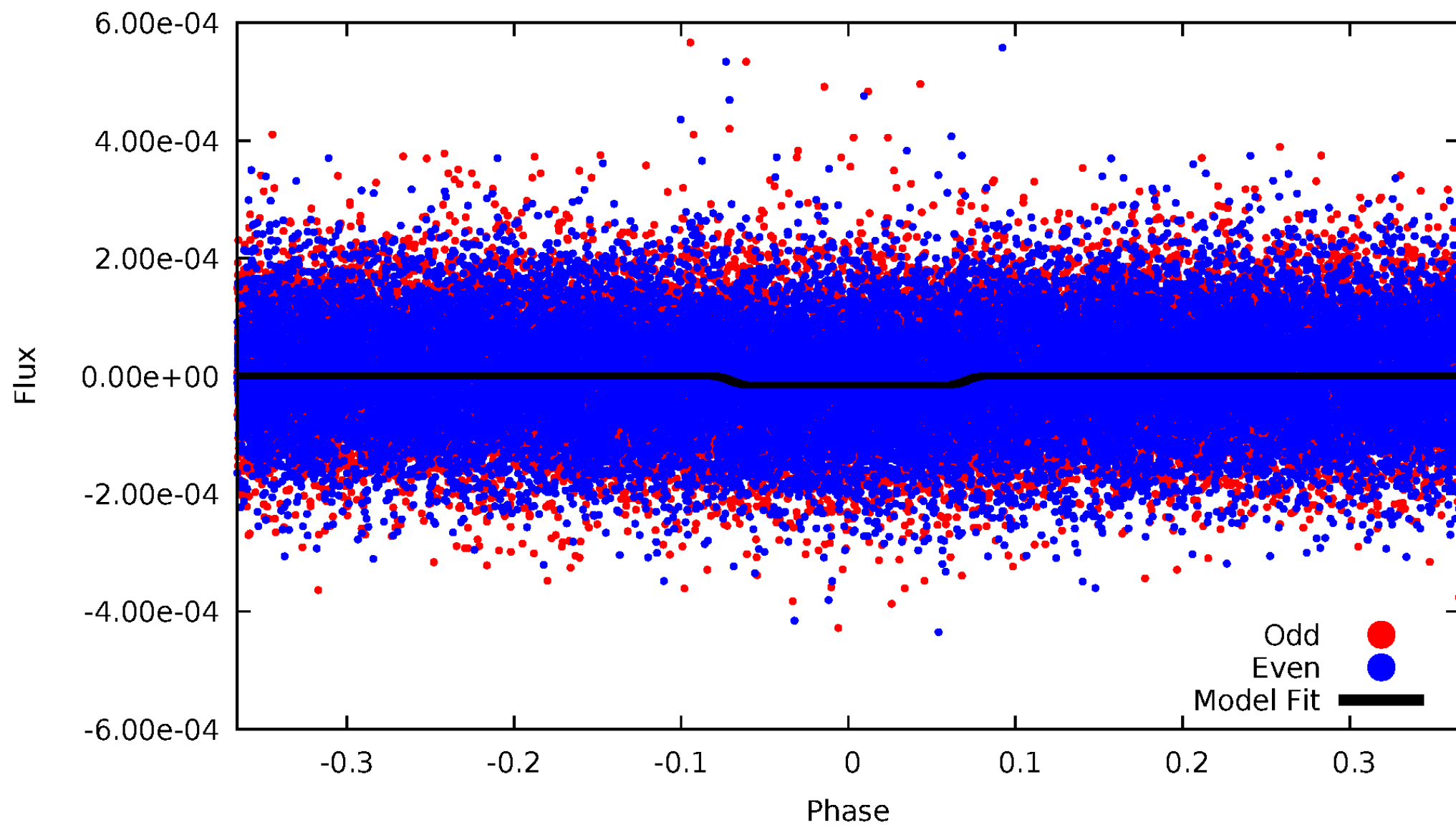
DV Odd/Even

TCE 009429998-01



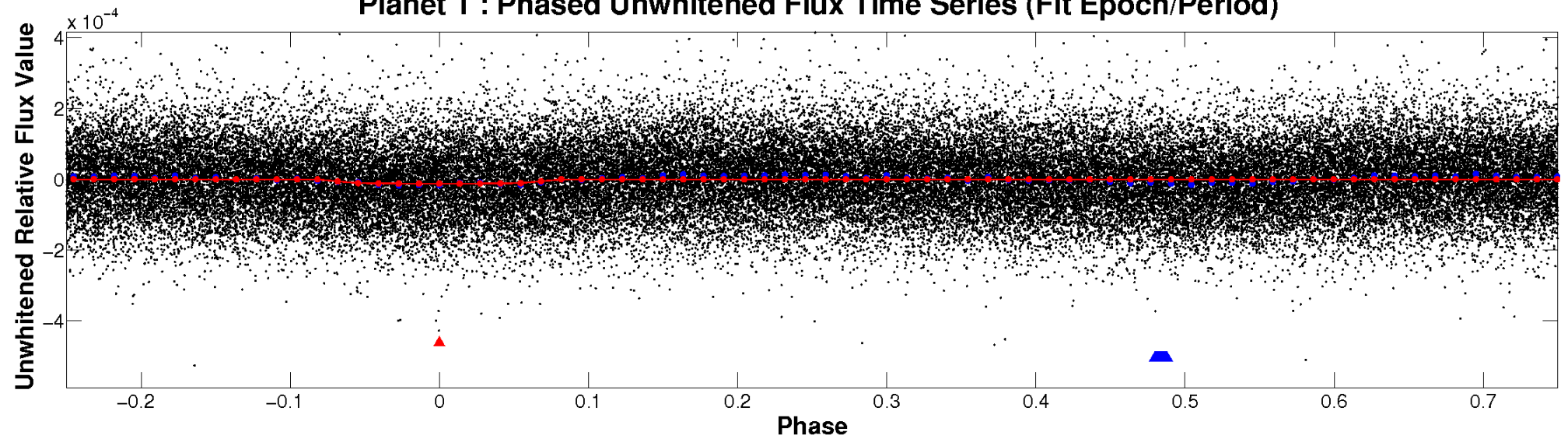
ALT Odd/Even

TCE 009429998-01

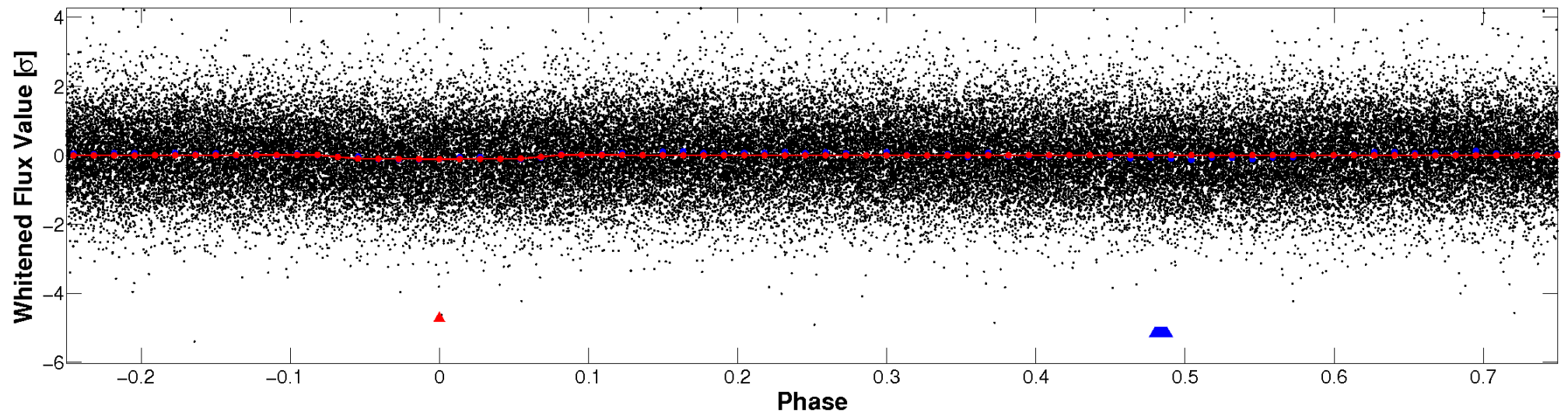


Non-Whitened Vs. Whitened Light Curve

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

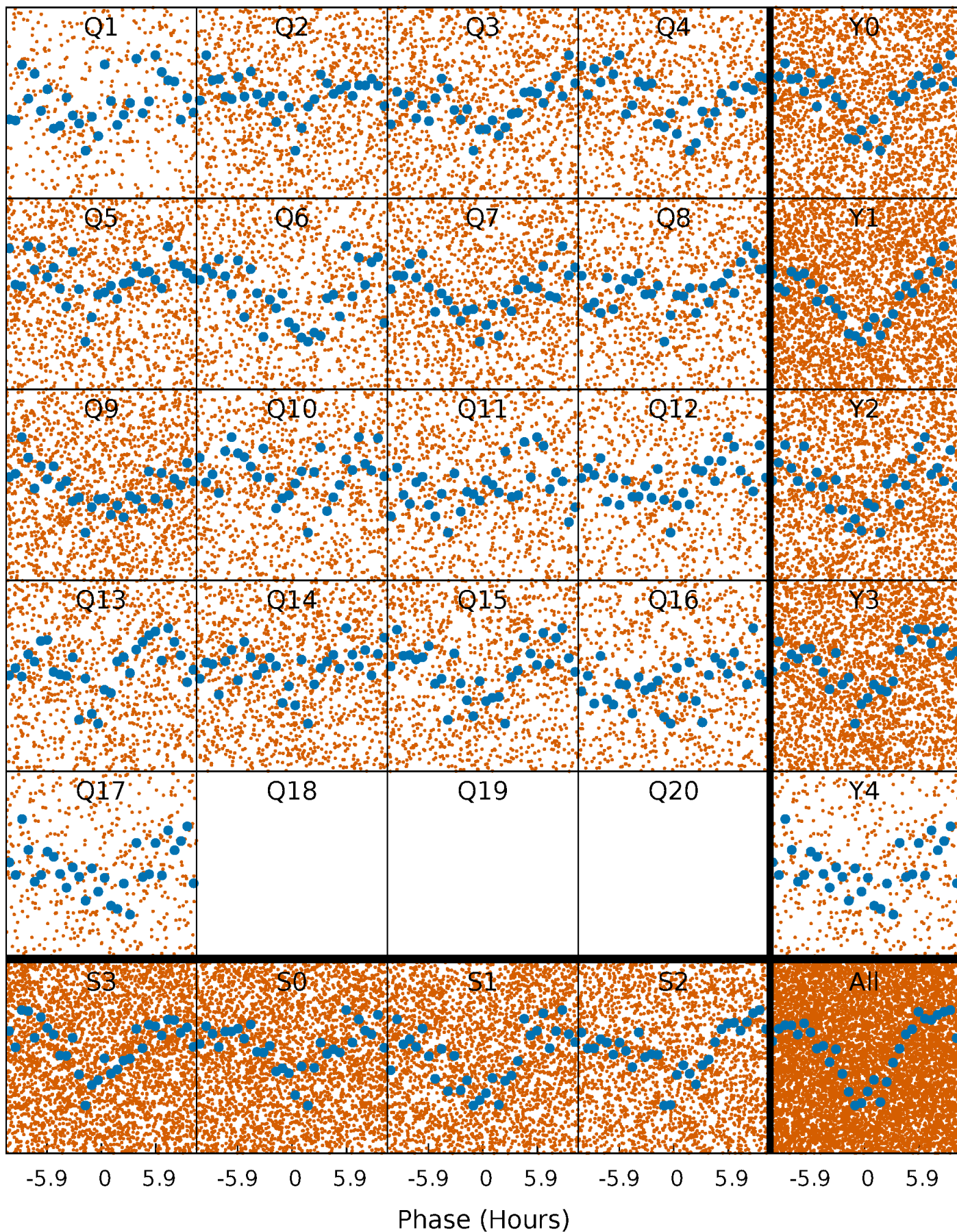


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



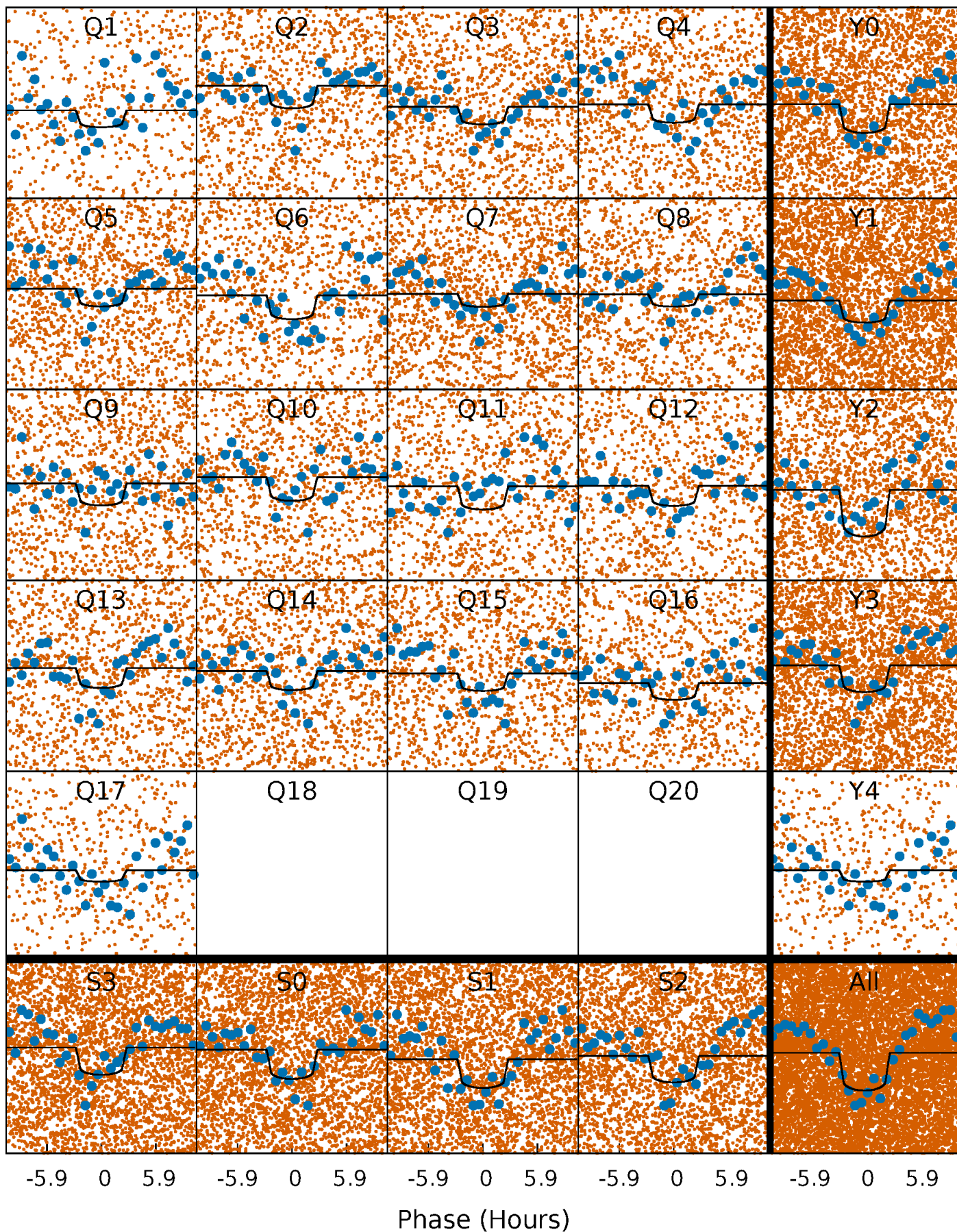
PDC Quarter-Phased Transit Curves

TCE 009429998-01 P= 1.499254 Days $T_0=131.665925$ (BKJD)



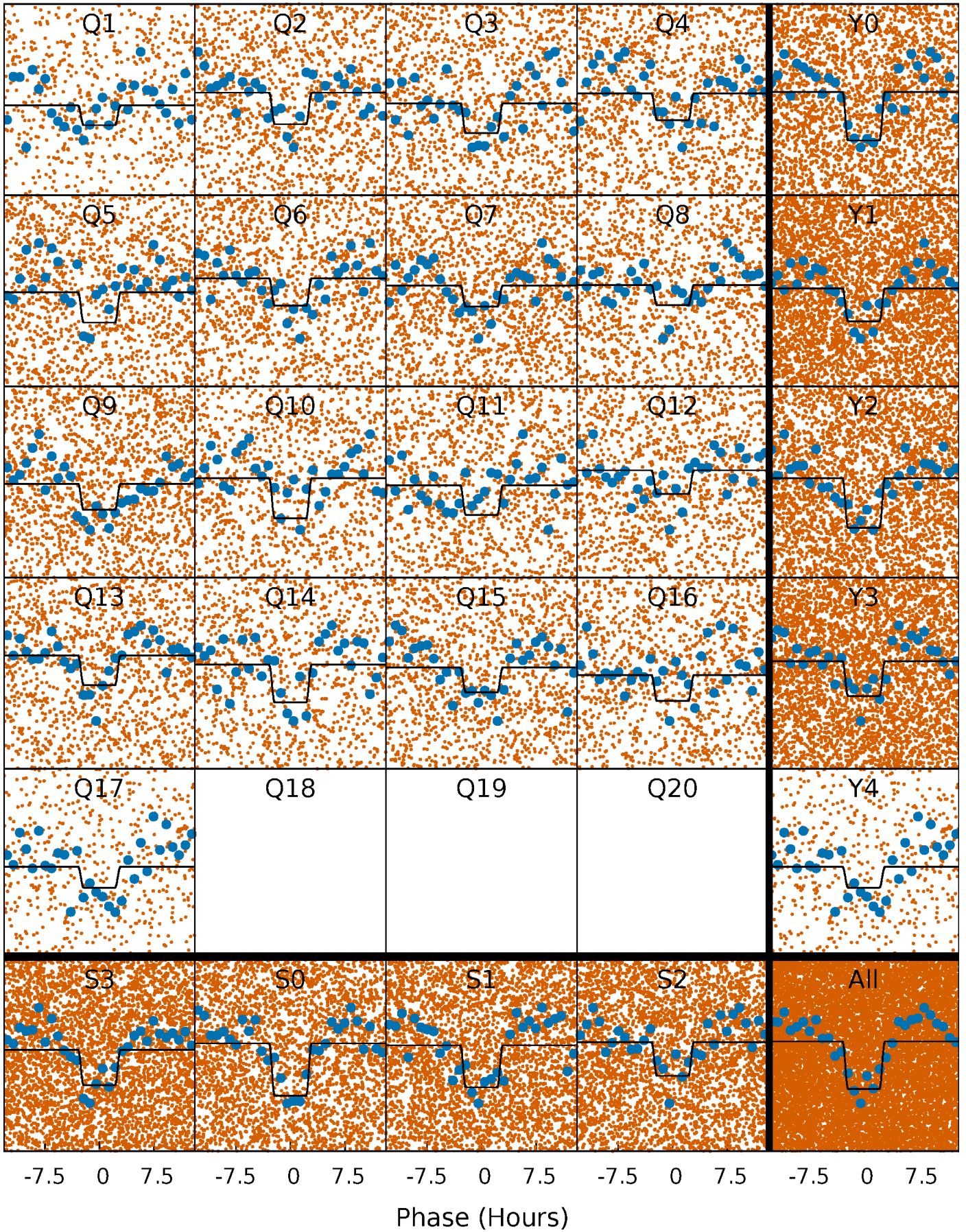
DV Quarter-Phased Transit Curves

TCE 009429998-01 P= 1.499254 Days $T_0=131.665925$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

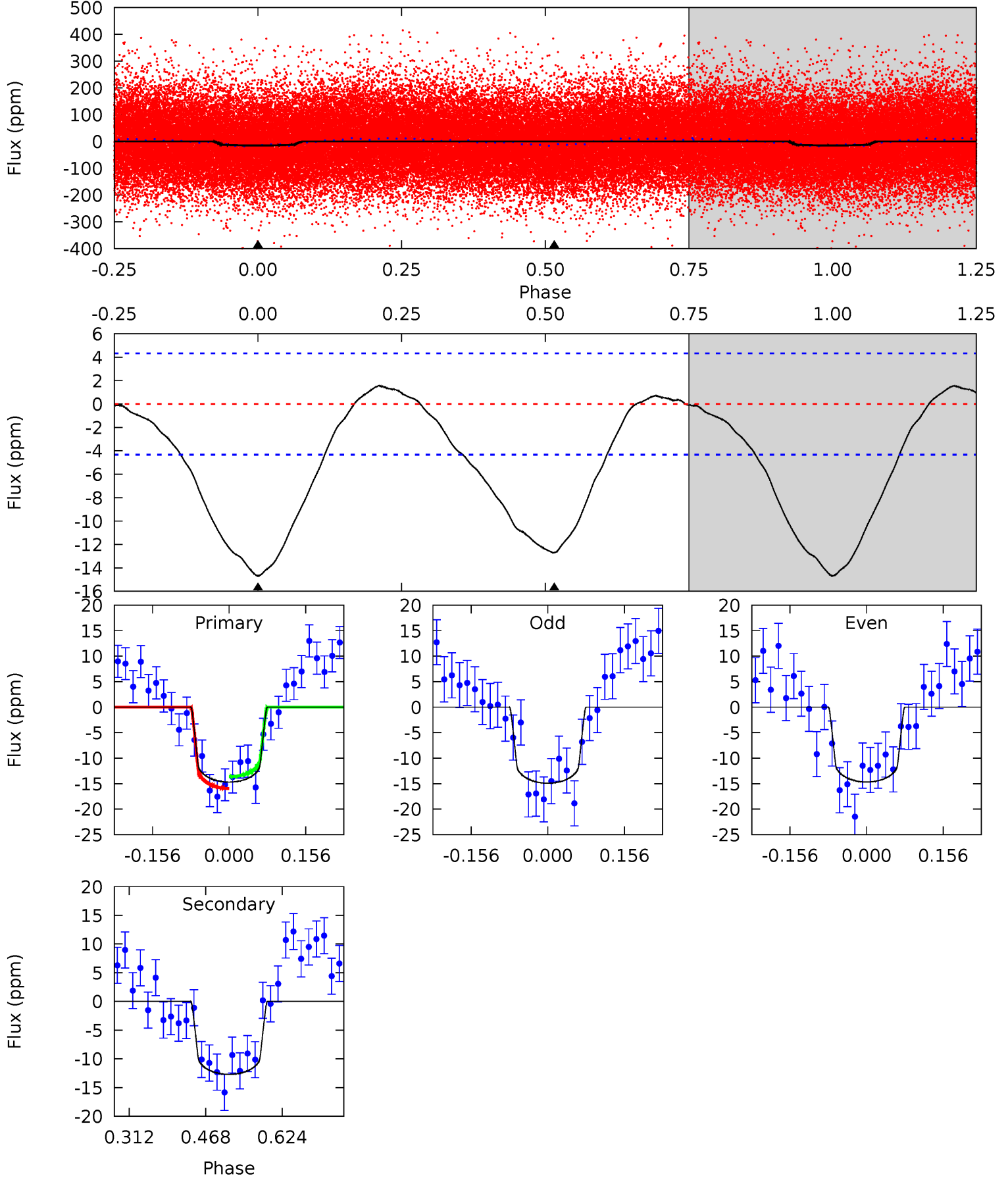
TCE 009429998-01 P= 1.499233 Days $T_0=131.683284$ (BKJD)



DV Model-Shift Uniqueness Test

009429998-01, P = 1.499254 Days, E = 130.166671 Days

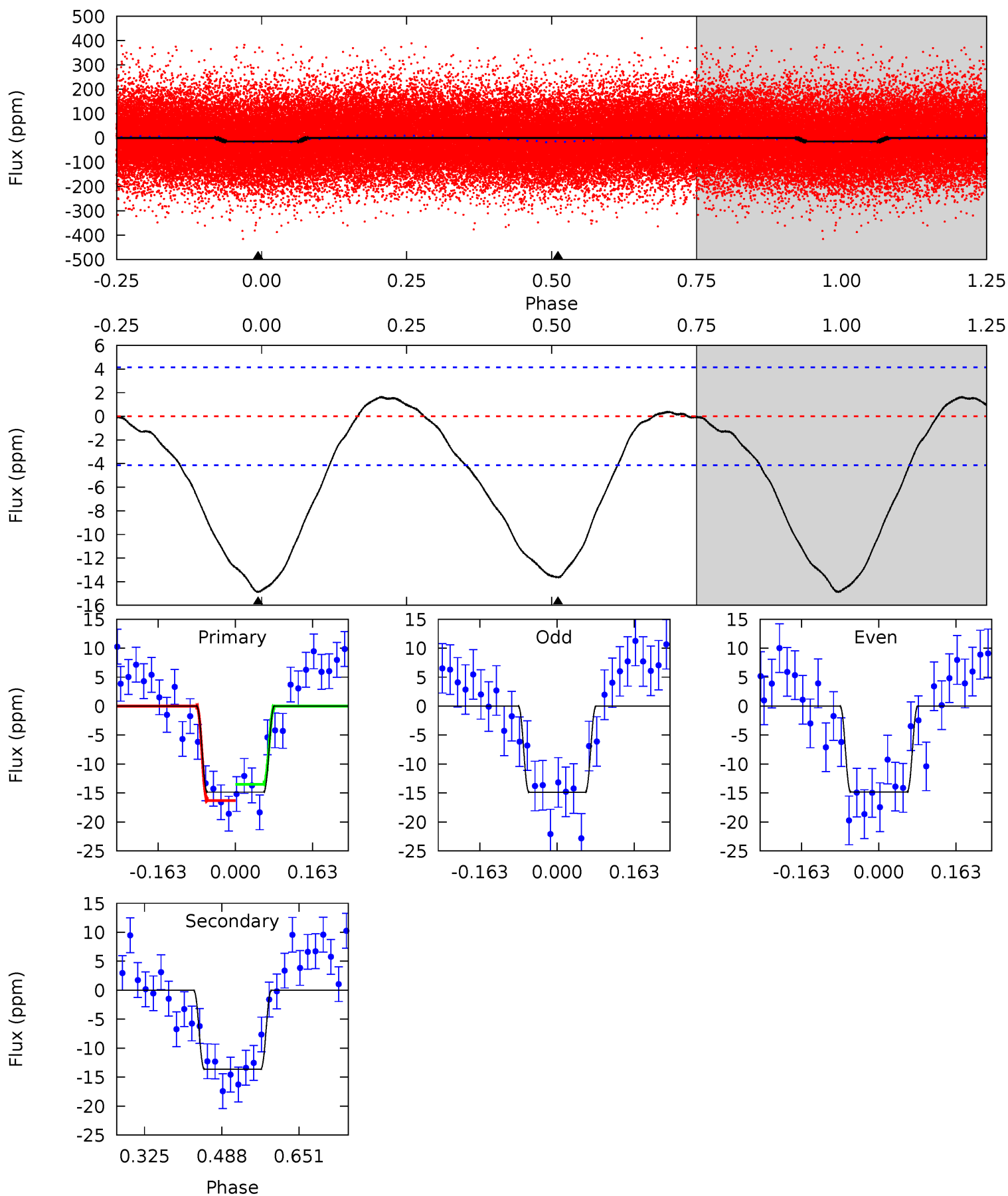
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
15.2	13.1	0	0	4.47	1.42	1.52	15.2	15.2	13.1	13.1	0.12	0.90	0.10	1.21



Alt Model-Shift Uniqueness Test

009429998-01, P = 1.499233 Days, E = 130.184051 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
16.0	14.7	0	0	4.46	1.40	1.42	16.0	16.0	14.7	14.7	0.01	1.01	0.10	1.52



Stellar Parameters For KIC 009429998

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	8665^{+239}_{-376}	$3.787^{+0.412}_{-0.137}$	$-0.240^{+0.400}_{-0.350}$	$2.985^{+0.872}_{-1.309}$	$1.994^{+0.426}_{-0.426}$	$0.106^{+0.376}_{-0.047}$
	+3%/-4%	+11%/-4%	+167%/-146%	+29%/-44%	+21%/-21%	+356%/-44%
Source	KIC0	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 009429998-01 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-13 ± 1	$1.14^{+0.42}_{-0.36}$	4957^{+424}_{-534}	8146^{+1949}_{-1238}	$5.738^{+6.221}_{-2.754}$
Alt.	-14 ± 1	$1.15^{+0.46}_{-0.37}$	4983^{+475}_{-623}	8185^{+1982}_{-1172}	$5.930^{+6.960}_{-2.883}$

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

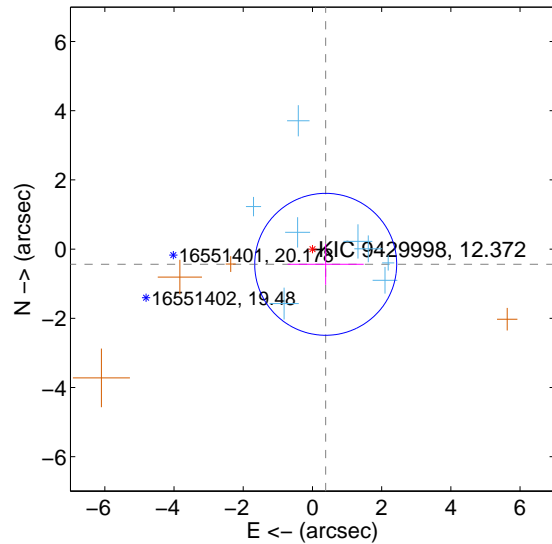
Supplemental centroid analysis for 009429998-01. Kepler magnitude: 12.37. Transit SNR 9.20

There are 8 quarters with good PRF difference image offsets

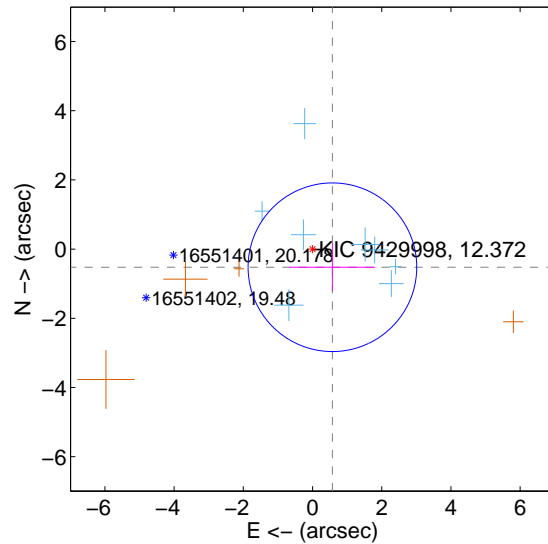
The direct PRF centroid is offset from the target star catalog position by about 0.20 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.583 ± 0.684	0.85	-0.383 ± 1.099	-0.440 ± 0.594
PRF-fit source offset from KIC position	0.778 ± 0.812	0.96	-0.575 ± 1.237	-0.524 ± 0.688
photometric centroid source offset	0.90 ± 1.64	0.55	-0.59 ± 1.84	-0.68 ± 1.48

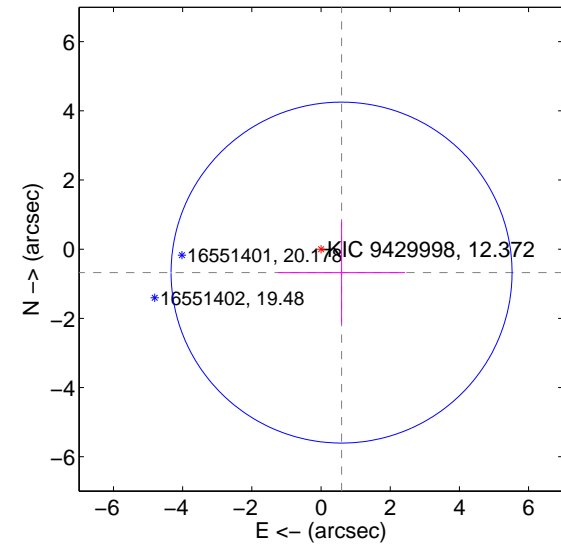
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

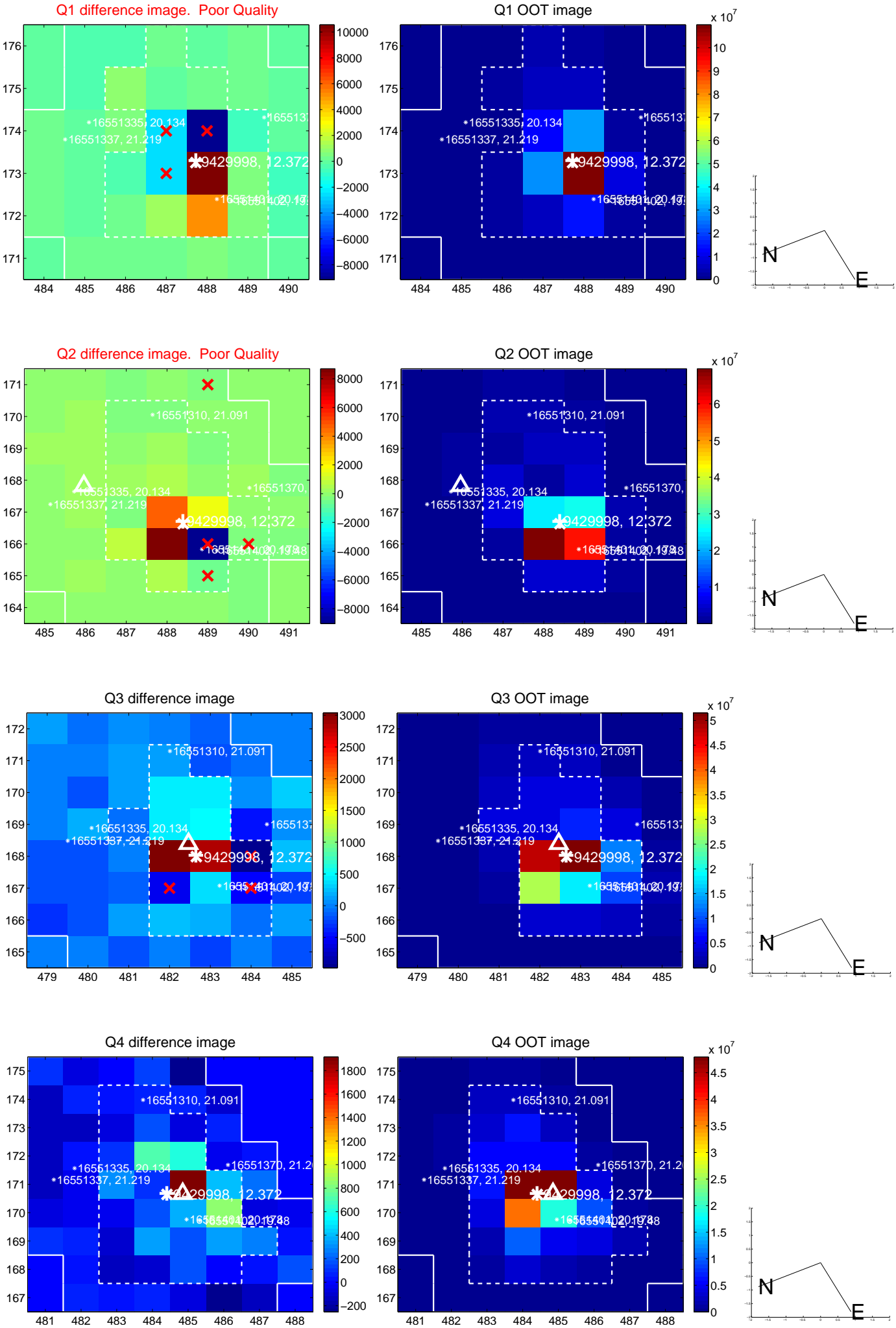


offset from photometric centroids

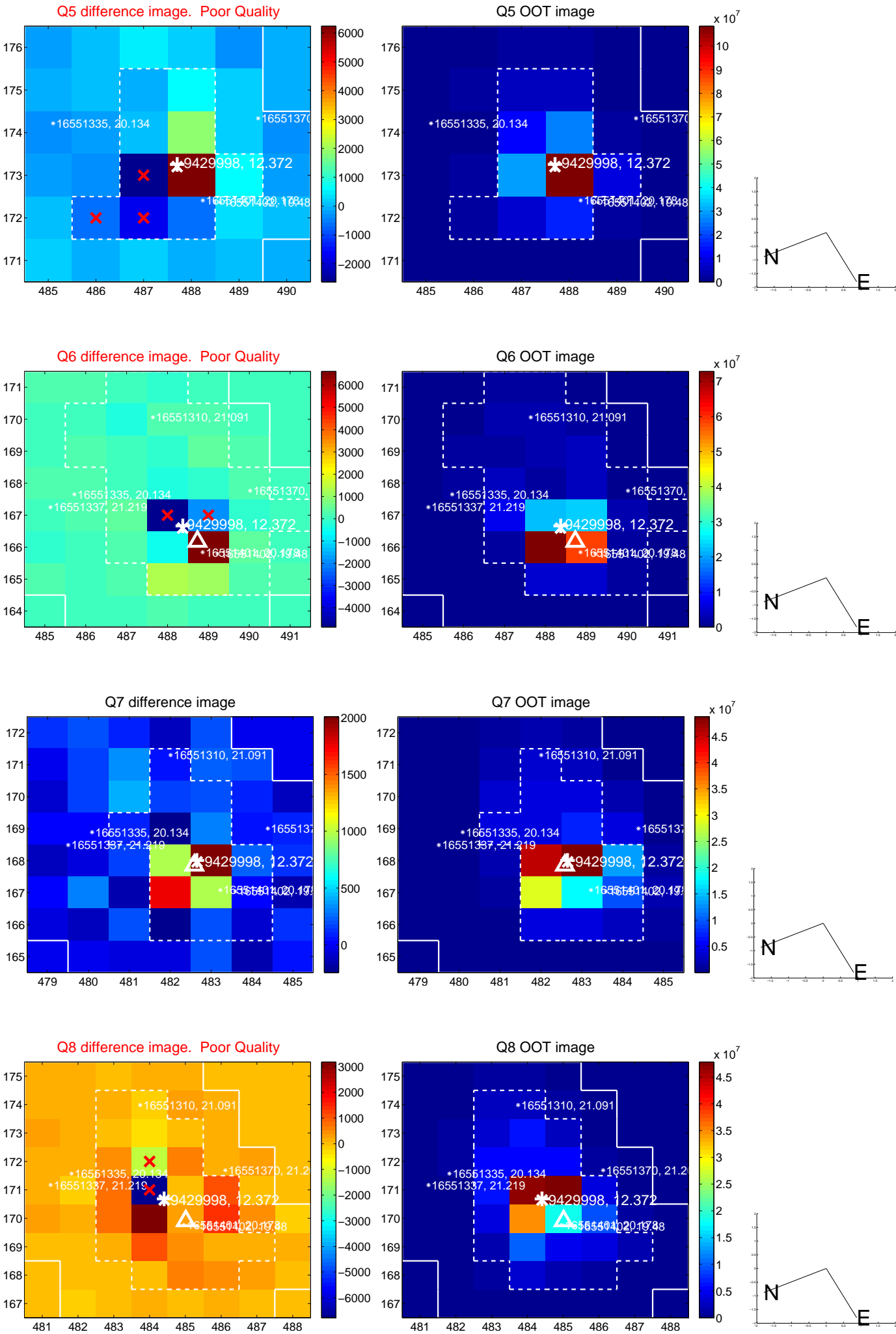


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

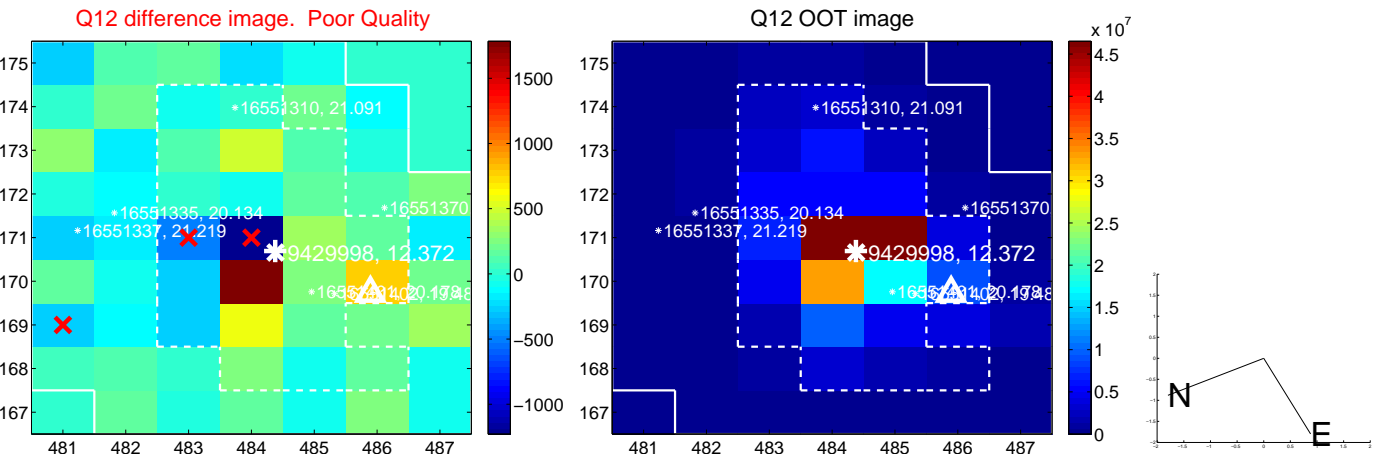
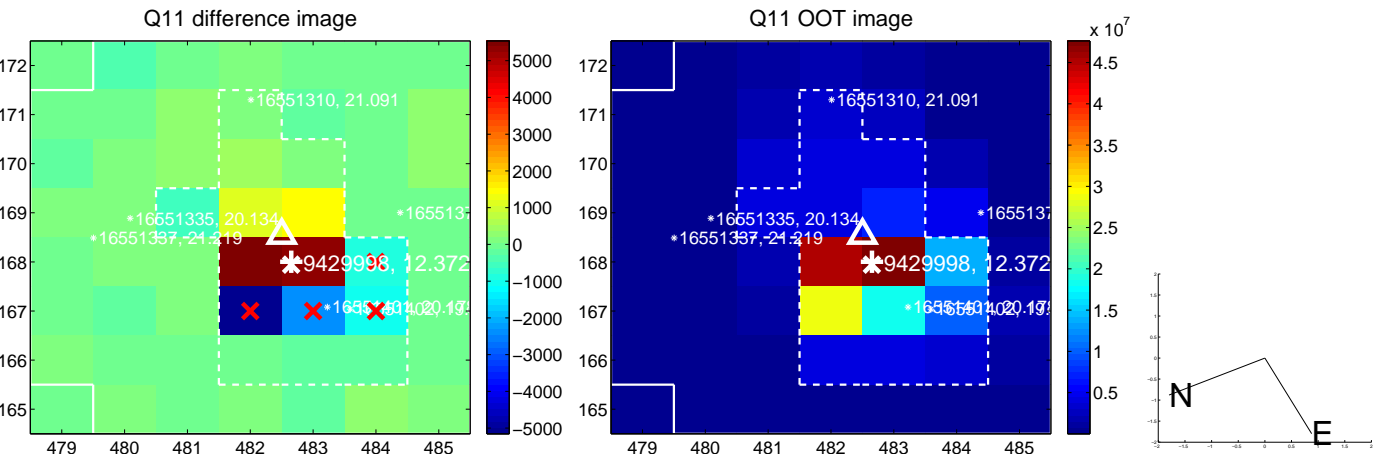
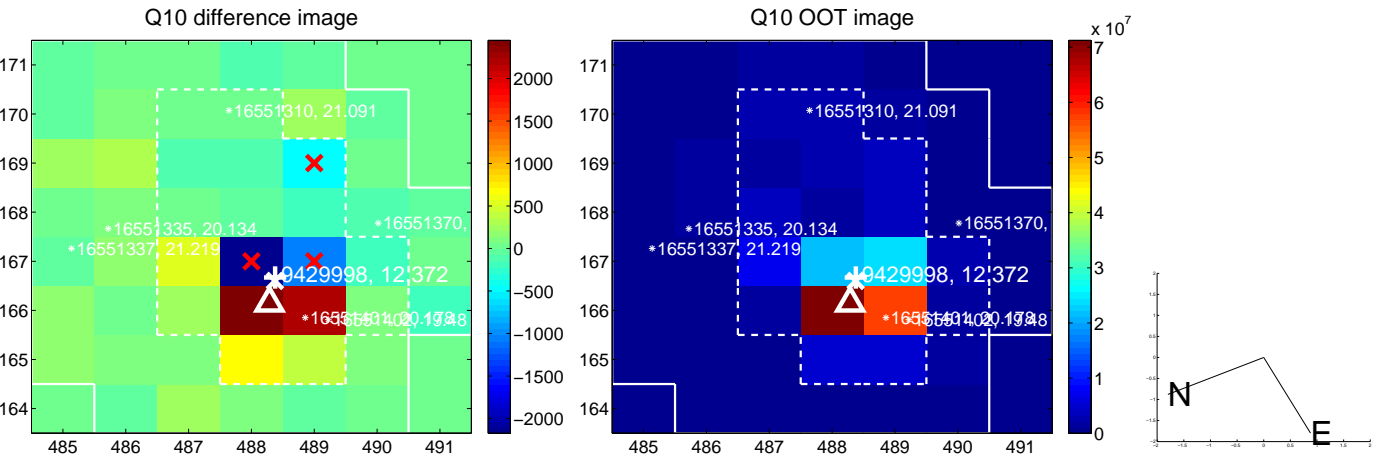
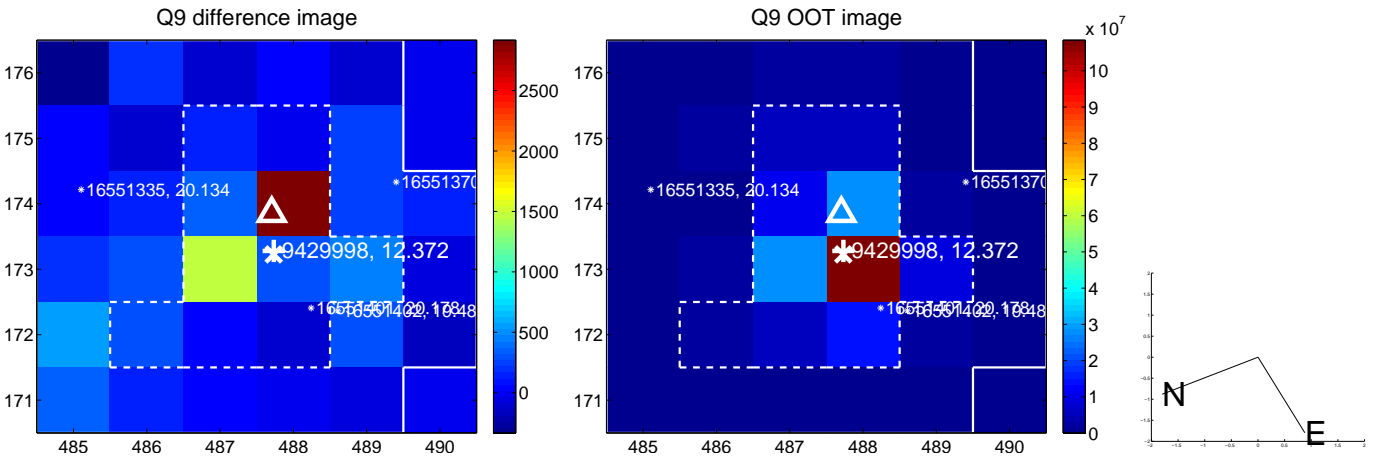
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



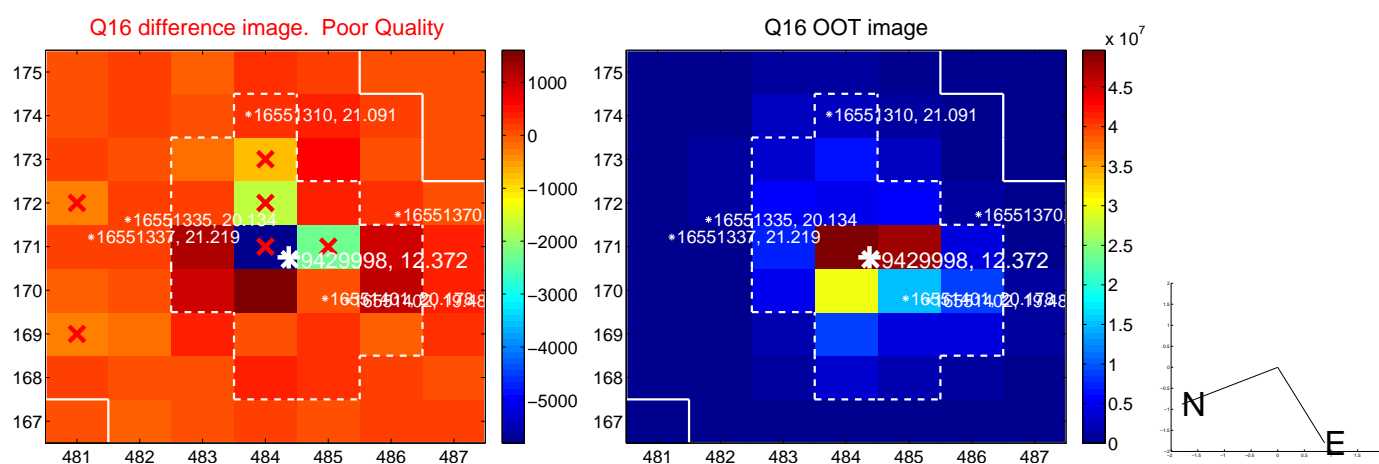
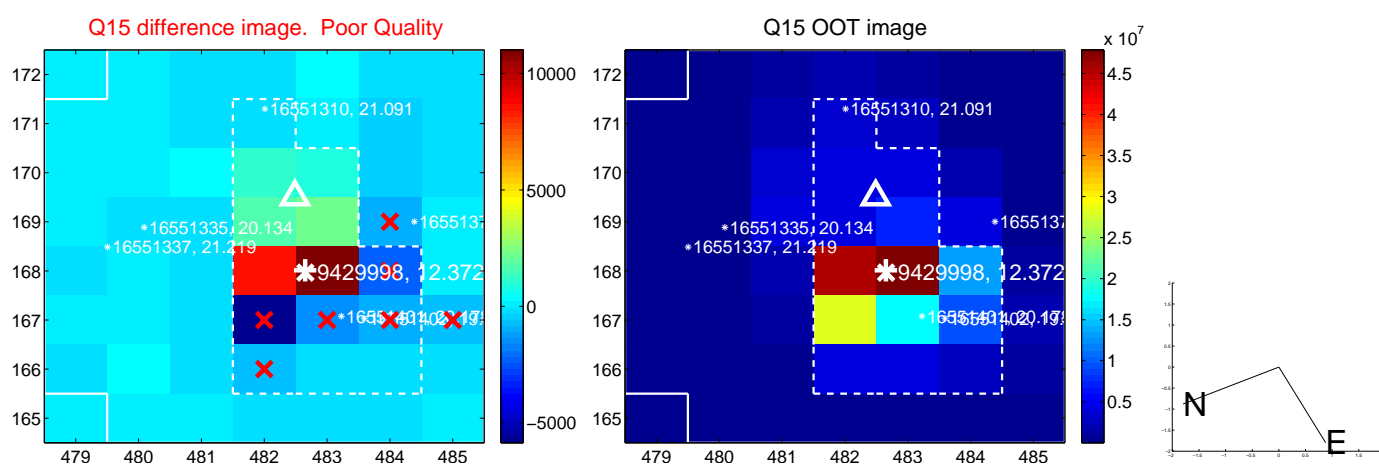
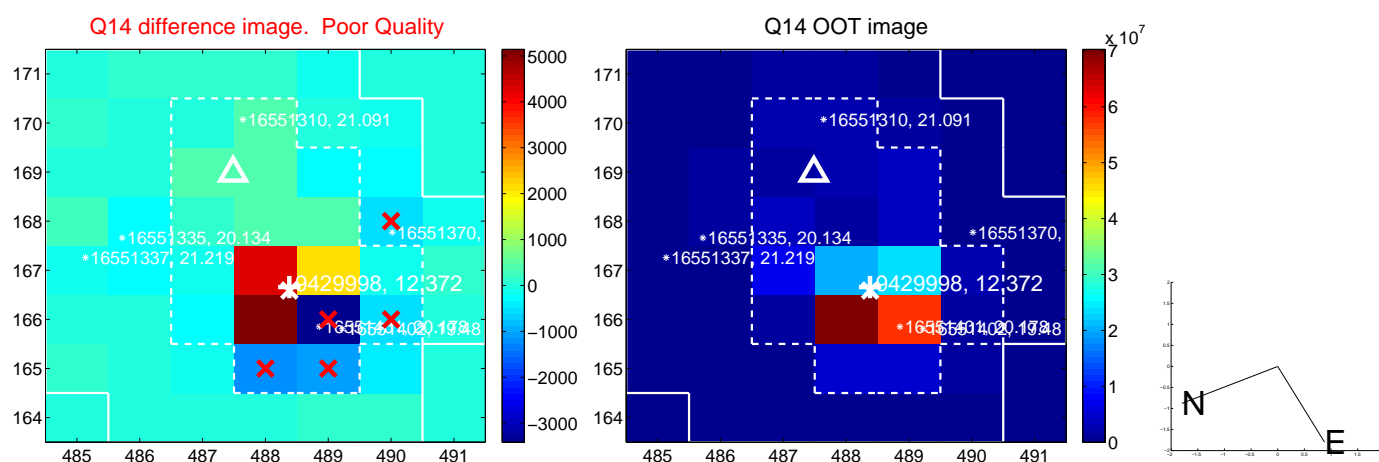
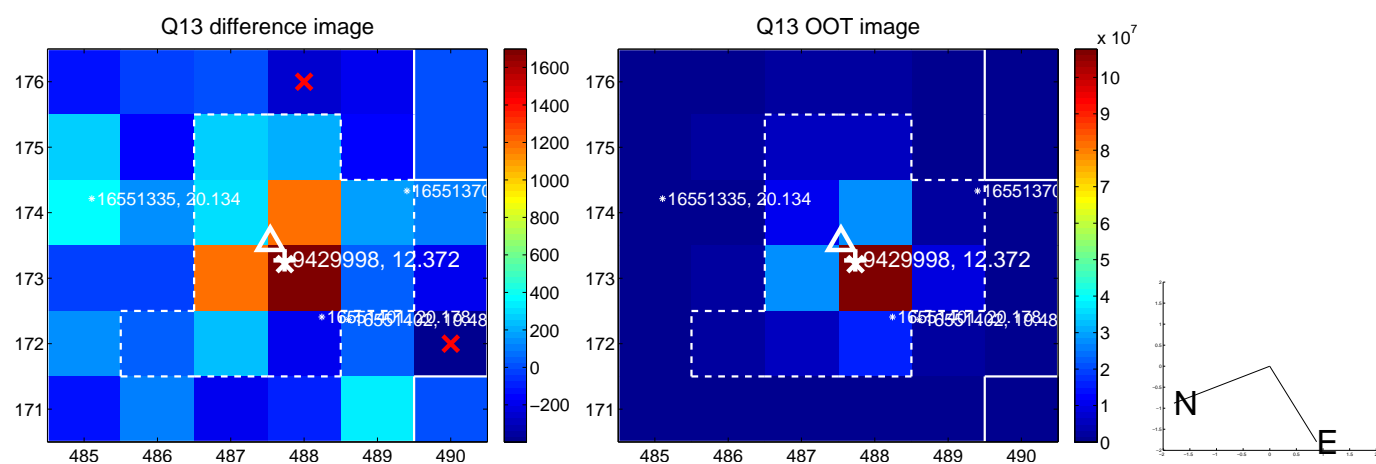
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

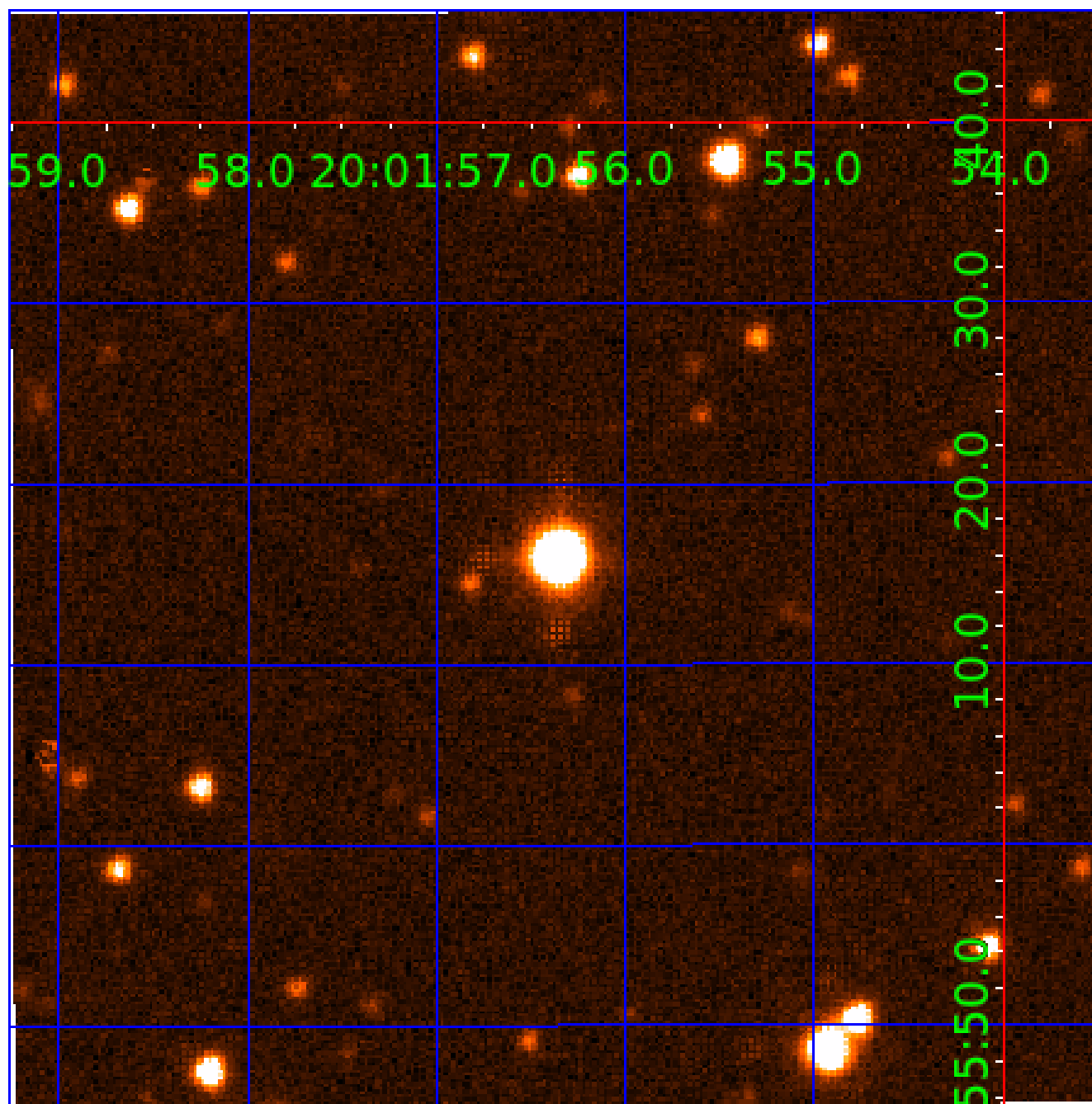


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009429998

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})
009429998-01	OBS	No	1.499254	131.665925	12.2	5.165	7.9	9.2	2.98	8665	1.24	43261.14
009429998-02	OBS	No	1.499242	132.397363	10.6	7.481	8.9	10.0	2.98	8665	1.02	43261.61

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009429998-01	OBS	FP	0.00	1	0	0	0	LPP_DV
009429998-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—SAME_NTL_PERIOD

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

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

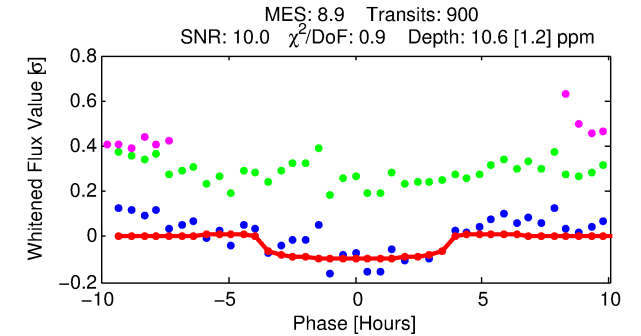
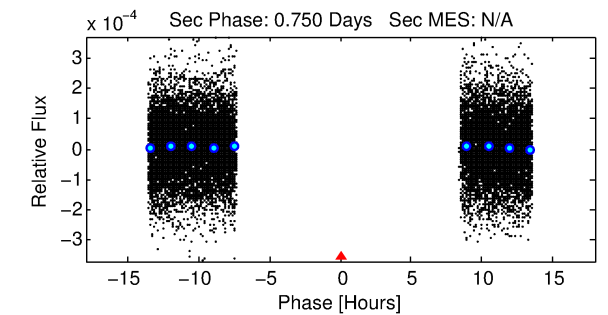
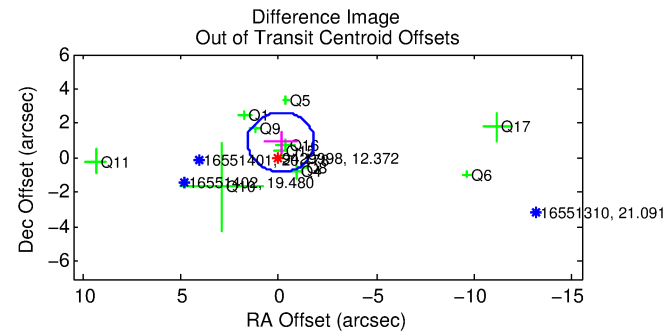
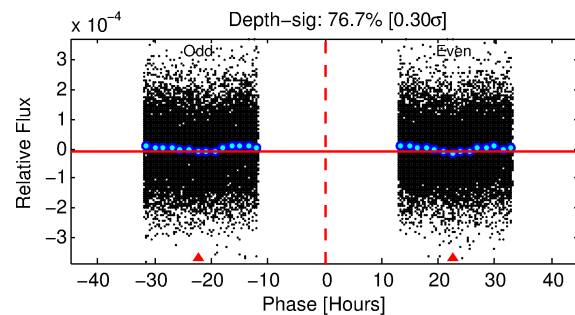
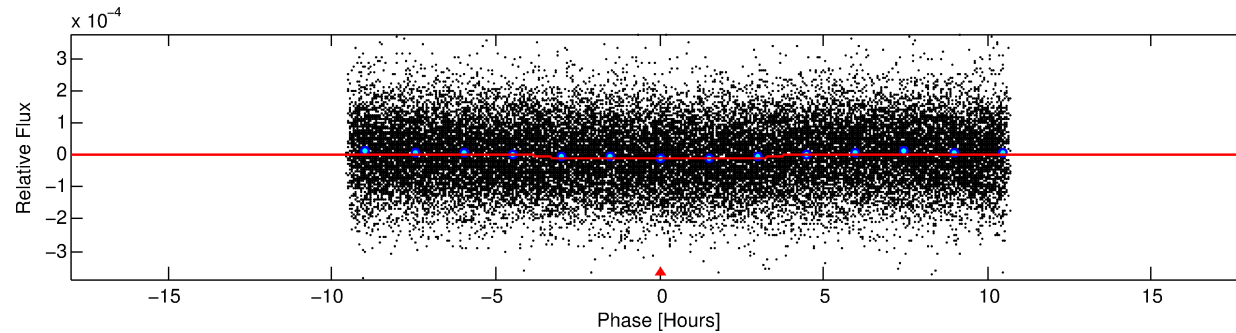
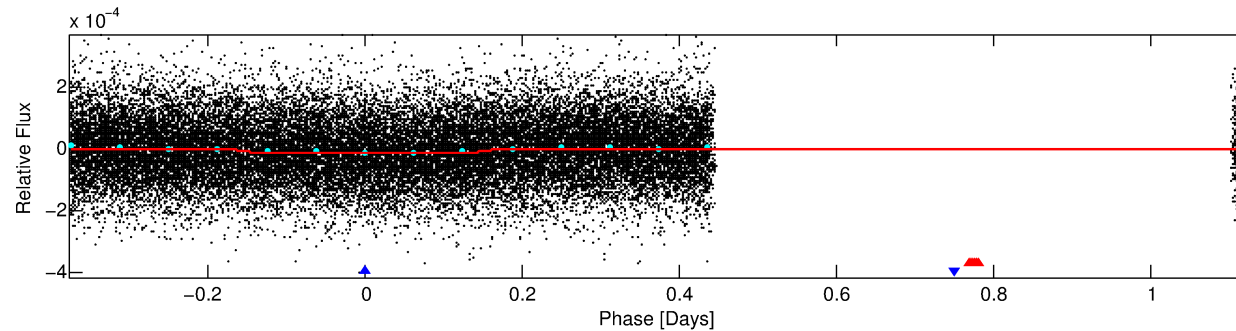
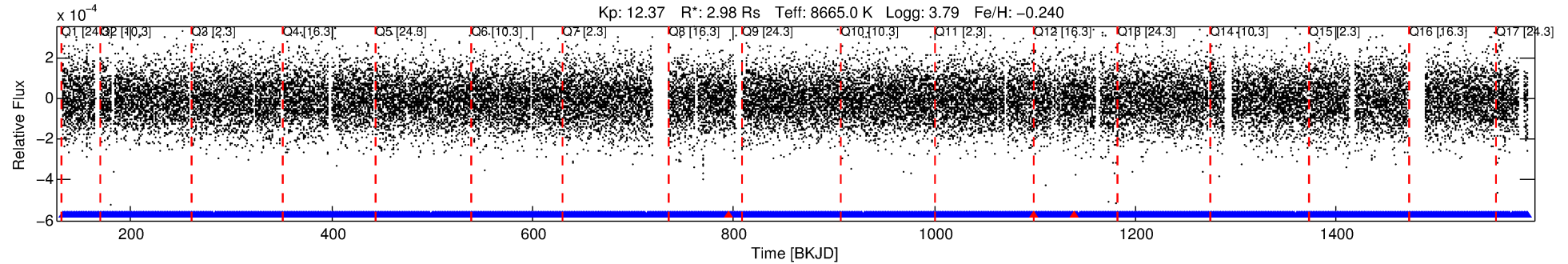
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009429998-02

No Significant Match Found

DV One-Page Summary

KIC: 9429998 Candidate: 2 of 2 Period: 1.499 d



DV Fit Results:

Period = 1.49924 [0.00002] d
Epoch = 132.3974 [0.0069] BKJD
Rp/R* = 0.0031 [0.0007]
a/R* = 1.47 [1.06]
b = 0.57 [1.58]
Seff = 43261.61 [31063.55]
Teff = 3677 [660] K
Rp = 1.02 [0.50] Re
a = 0.0323 [0.0139] AU

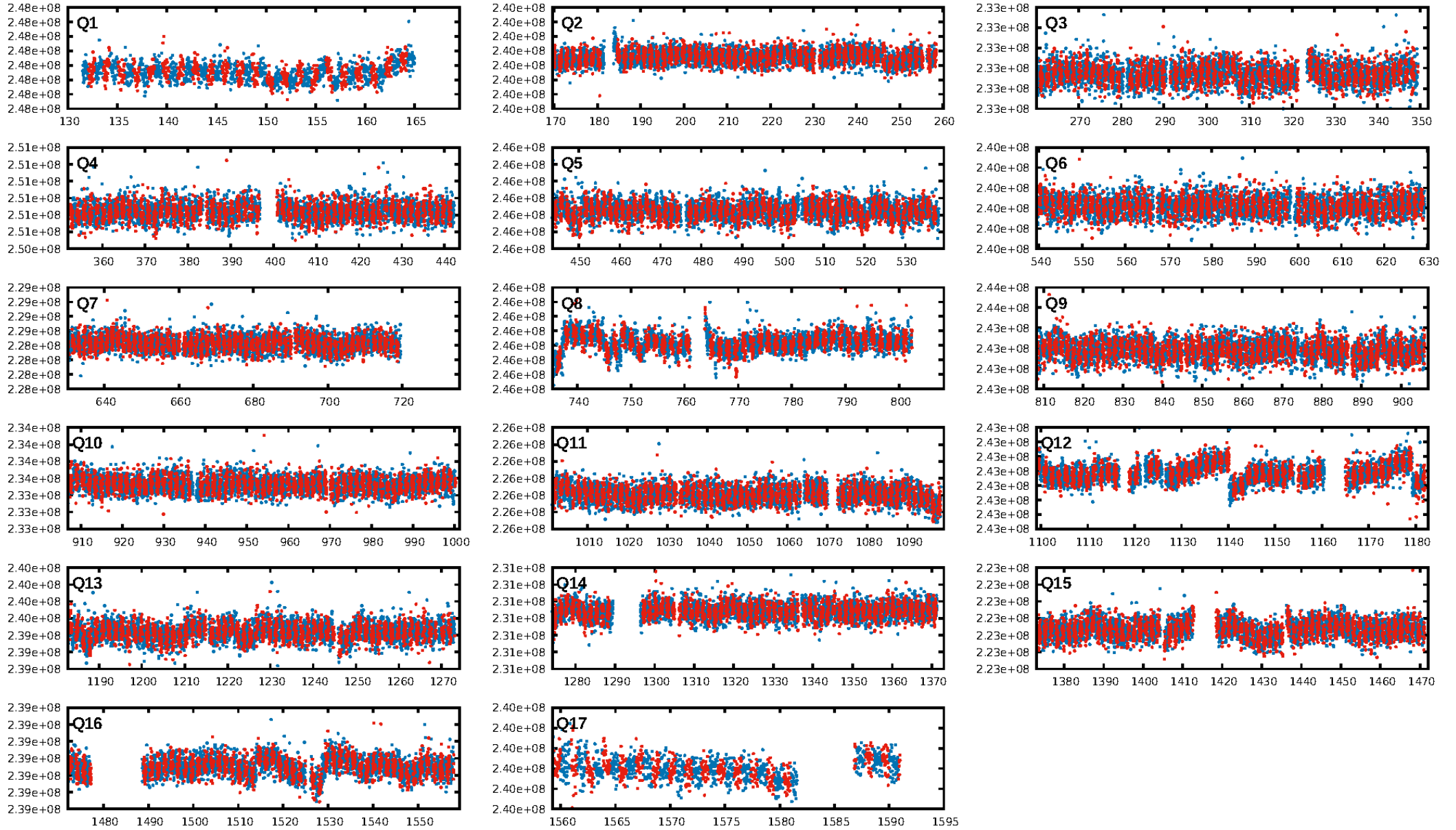
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.0% [0.00 σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [857/860]
GhostDiagnostic-chr: 3.891
Centroid-sig: N/A
Centroid-so: 1.134 arcsec [0.64 σ]
OotOffset-rm: 0.927 arcsec [1.62 σ]
KicOffset-rm: 0.908 arcsec [1.24 σ]
OotOffset-st: 2/2/3/4 [11]
KicOffset-st: 2/2/3/4 [11]
DiffImageQuality-fgm: 0.64 [7/11]
DiffImageOverlap-fno: 1.00 [17/17]

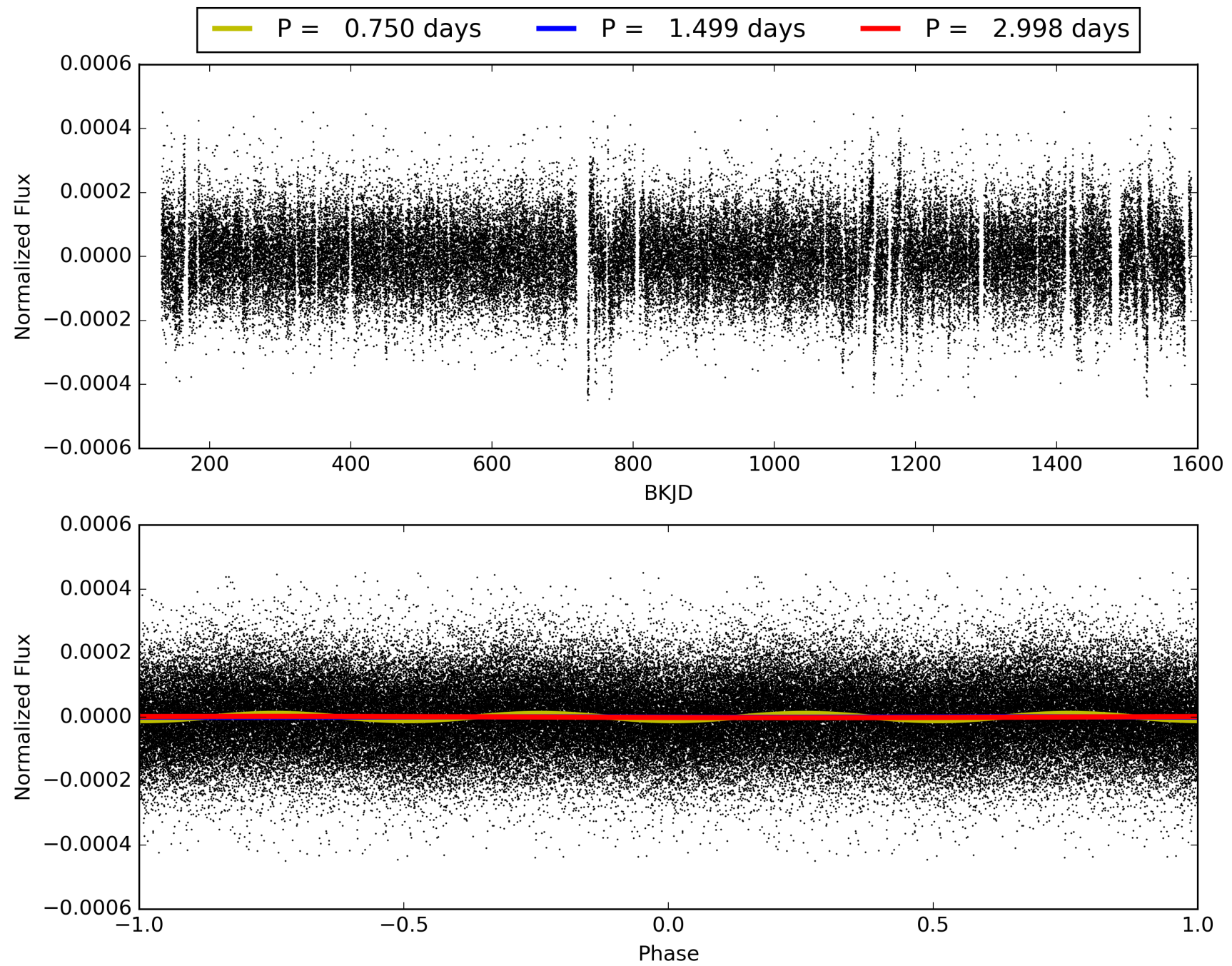
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 12:37:51 Z

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

TCE 009429998-02, PDC Light Curves

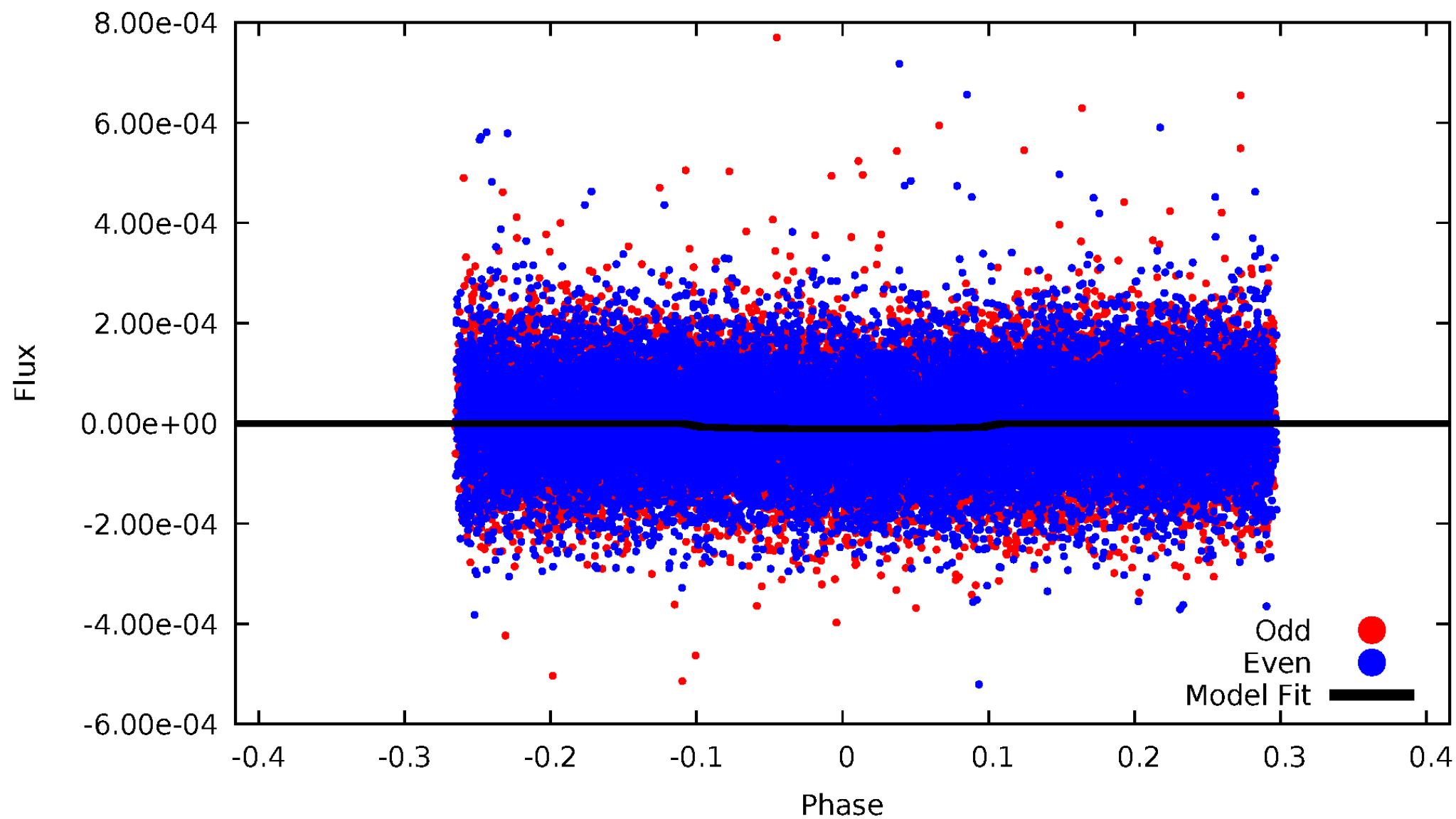


TCE 009429998-02



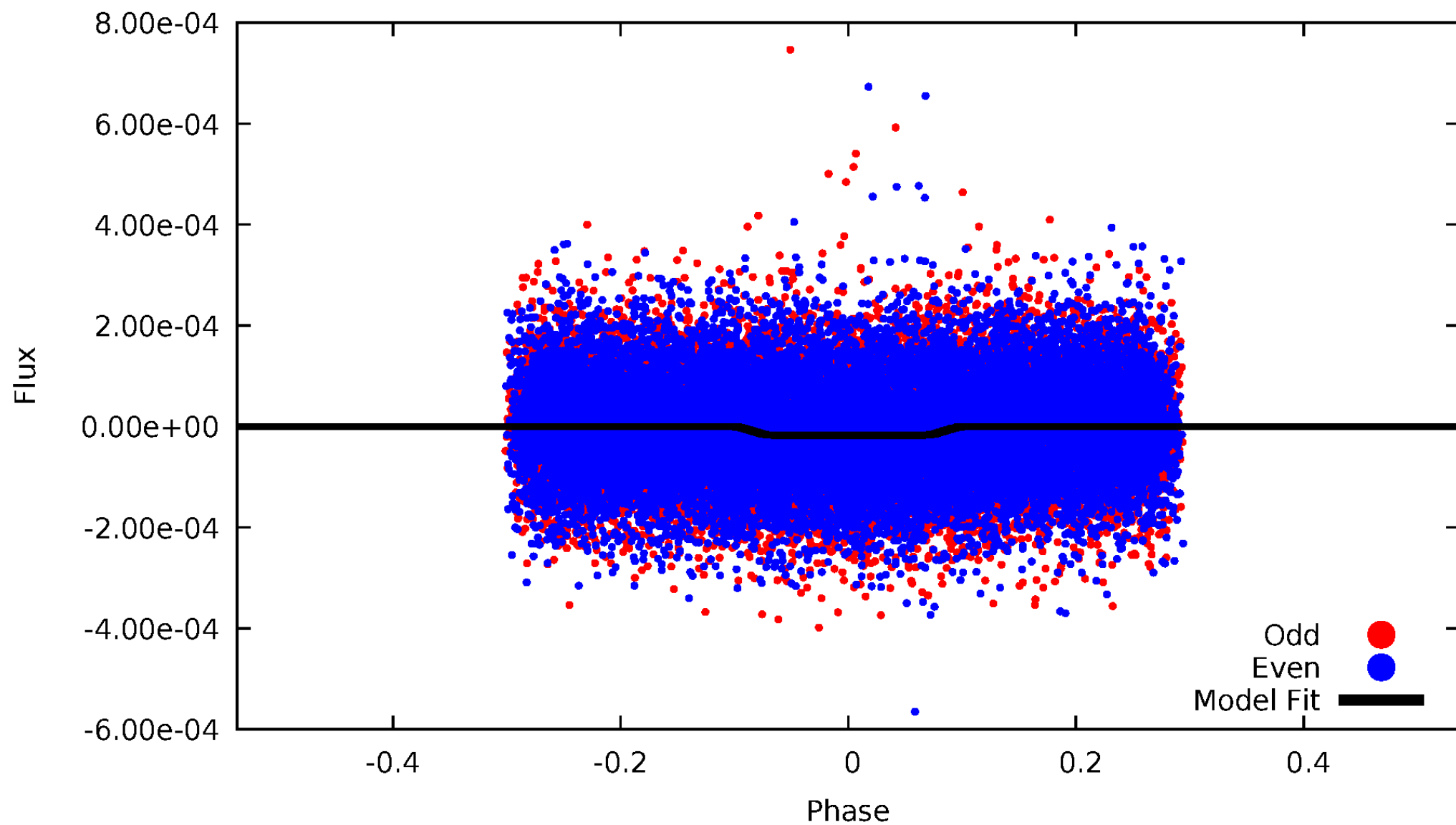
DV Odd/Even

TCE 009429998-02



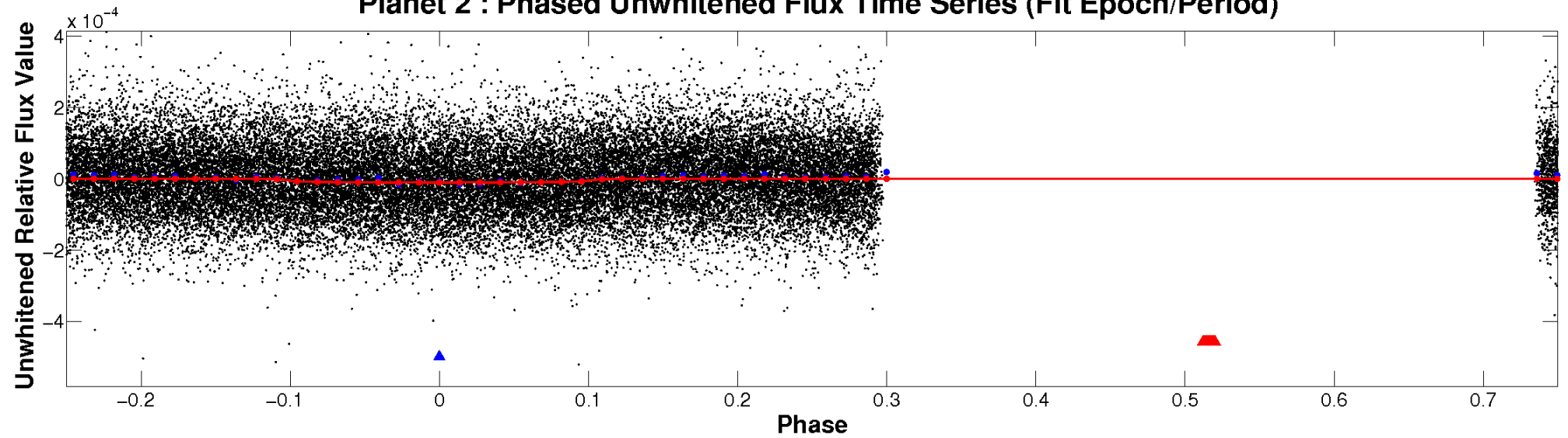
ALT Odd/Even

TCE 009429998-02

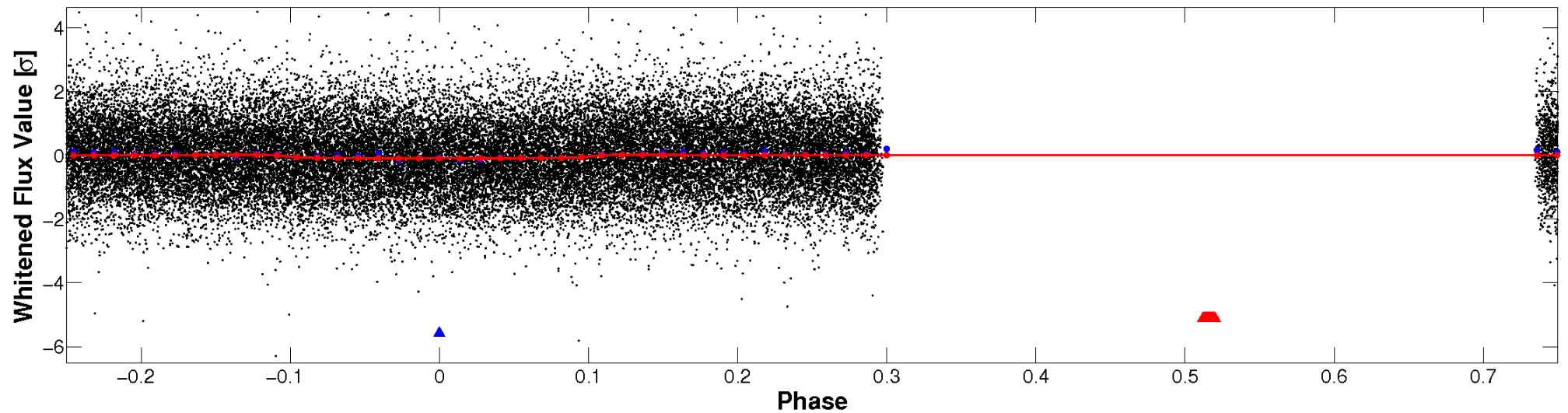


Non-Whitened Vs. Whitened Light Curve

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

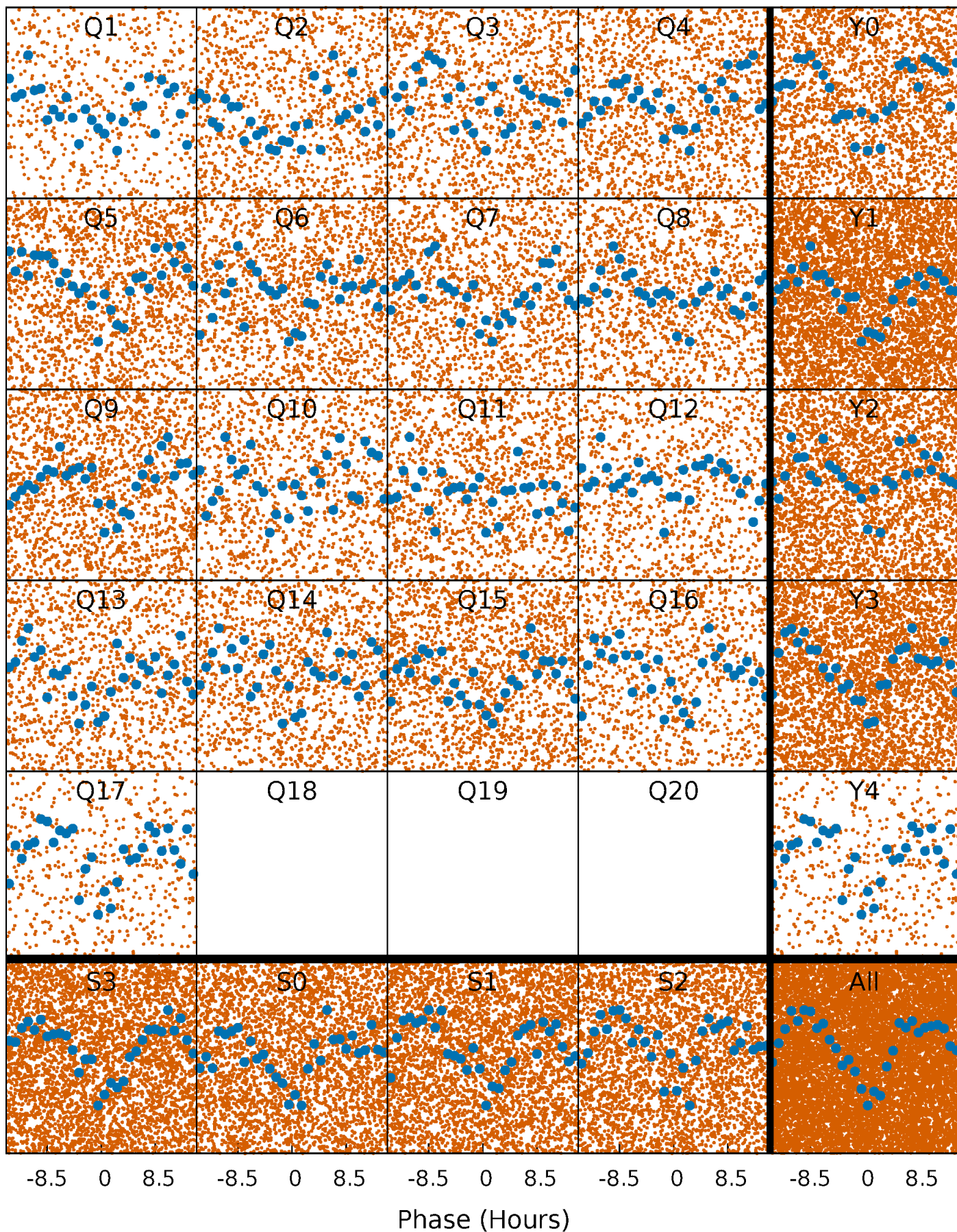


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



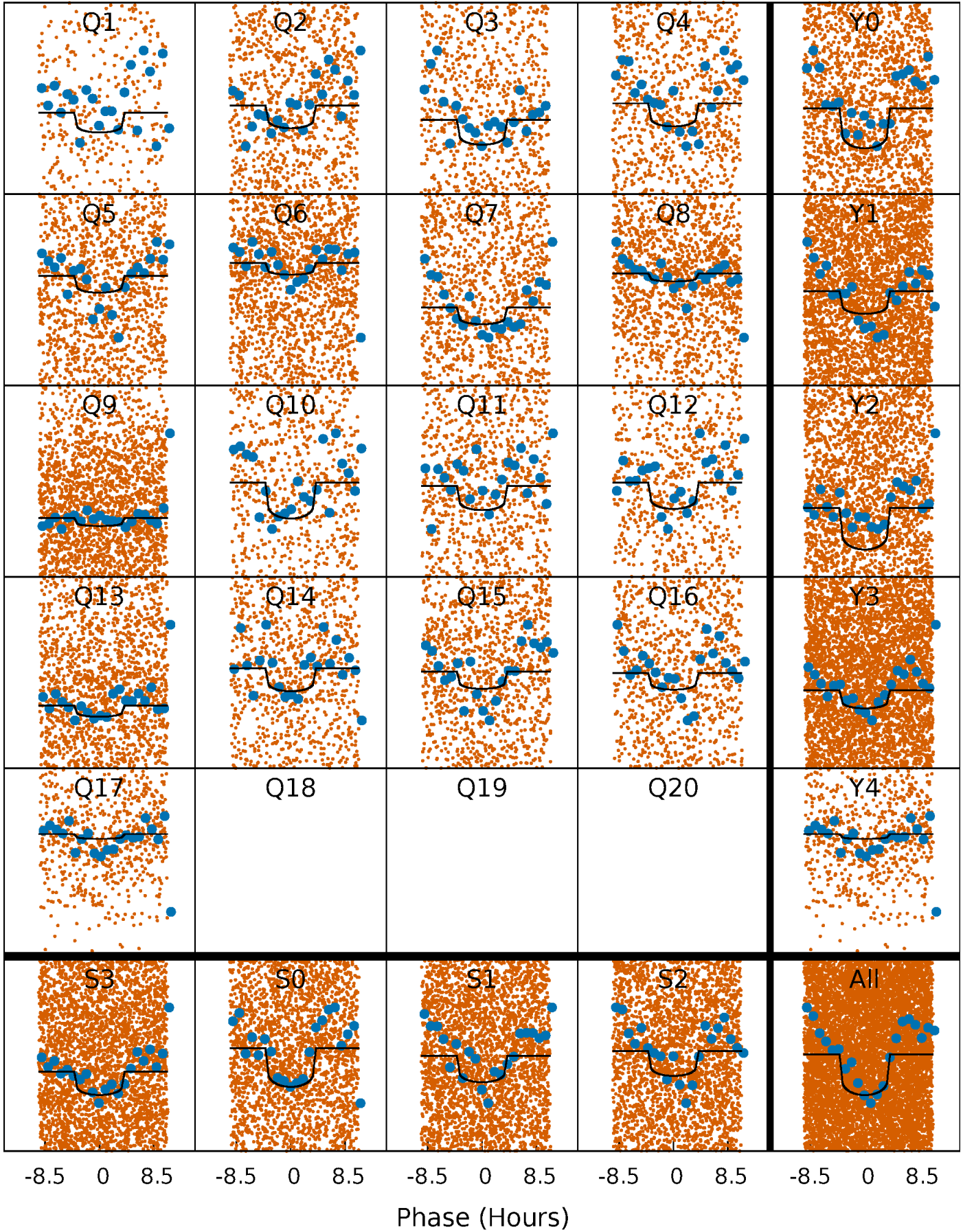
PDC Quarter-Phased Transit Curves

TCE 009429998-02 P= 1.499242 Days $T_0=132.397364$ (BKJD)



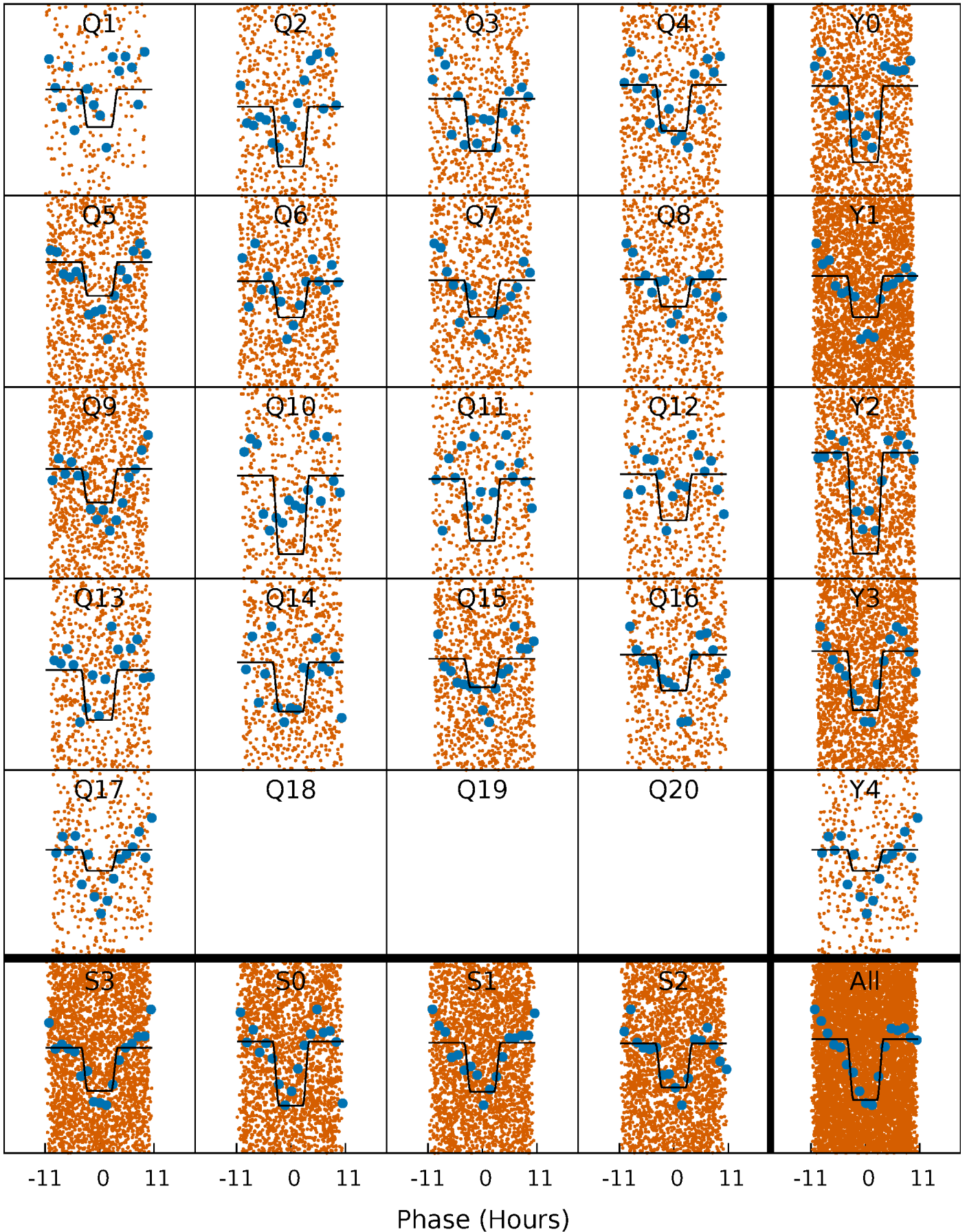
DV Quarter-Phased Transit Curves

TCE 009429998-02 $P = 1.499242$ Days $T_0 = 132.397364$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

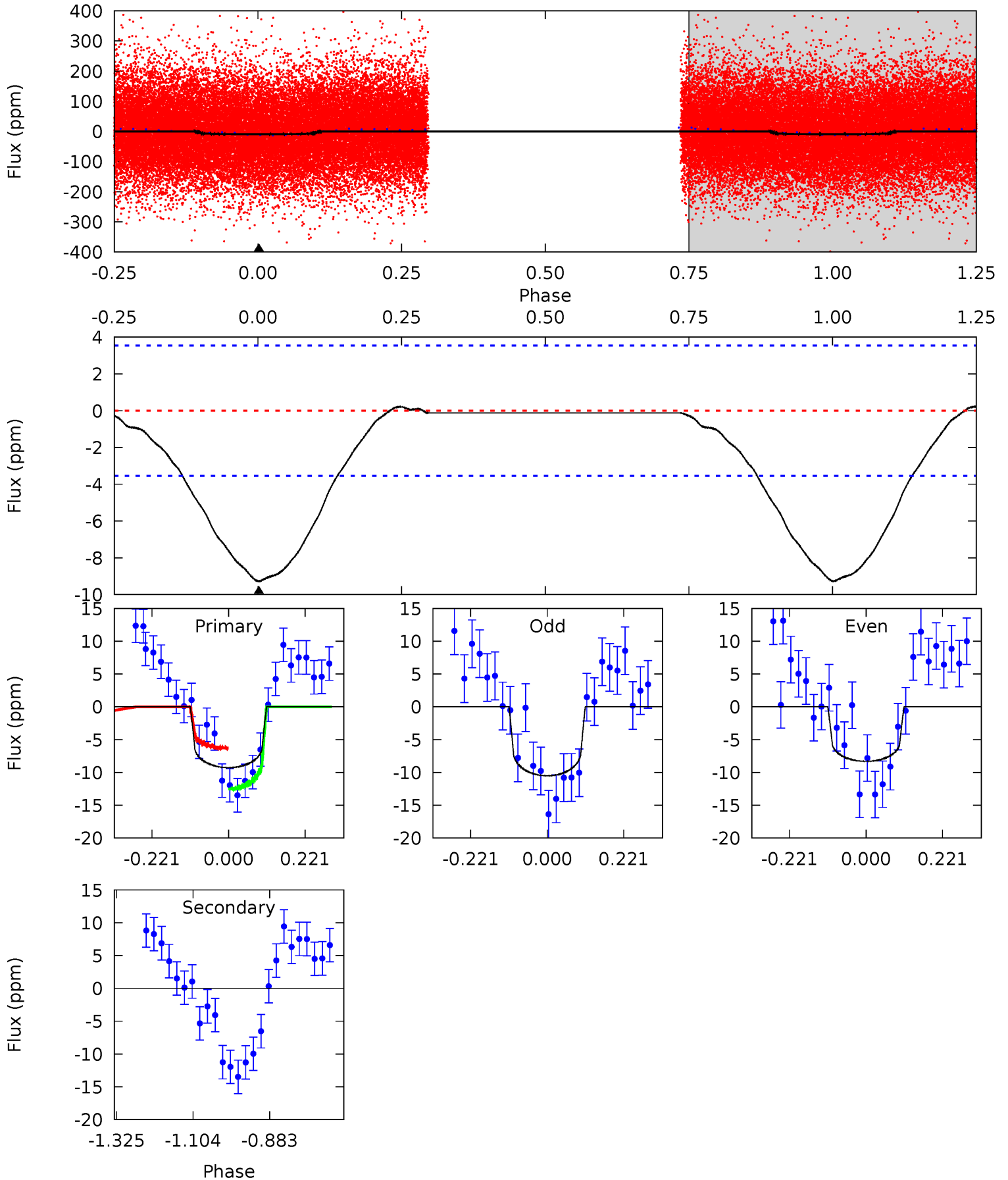
TCE 009429998-02 P= 1.499191 Days $T_0=132.451496$ (BKJD)



DV Model-Shift Uniqueness Test

009429998-02, P = 1.499242 Days, E = 130.898122 Days

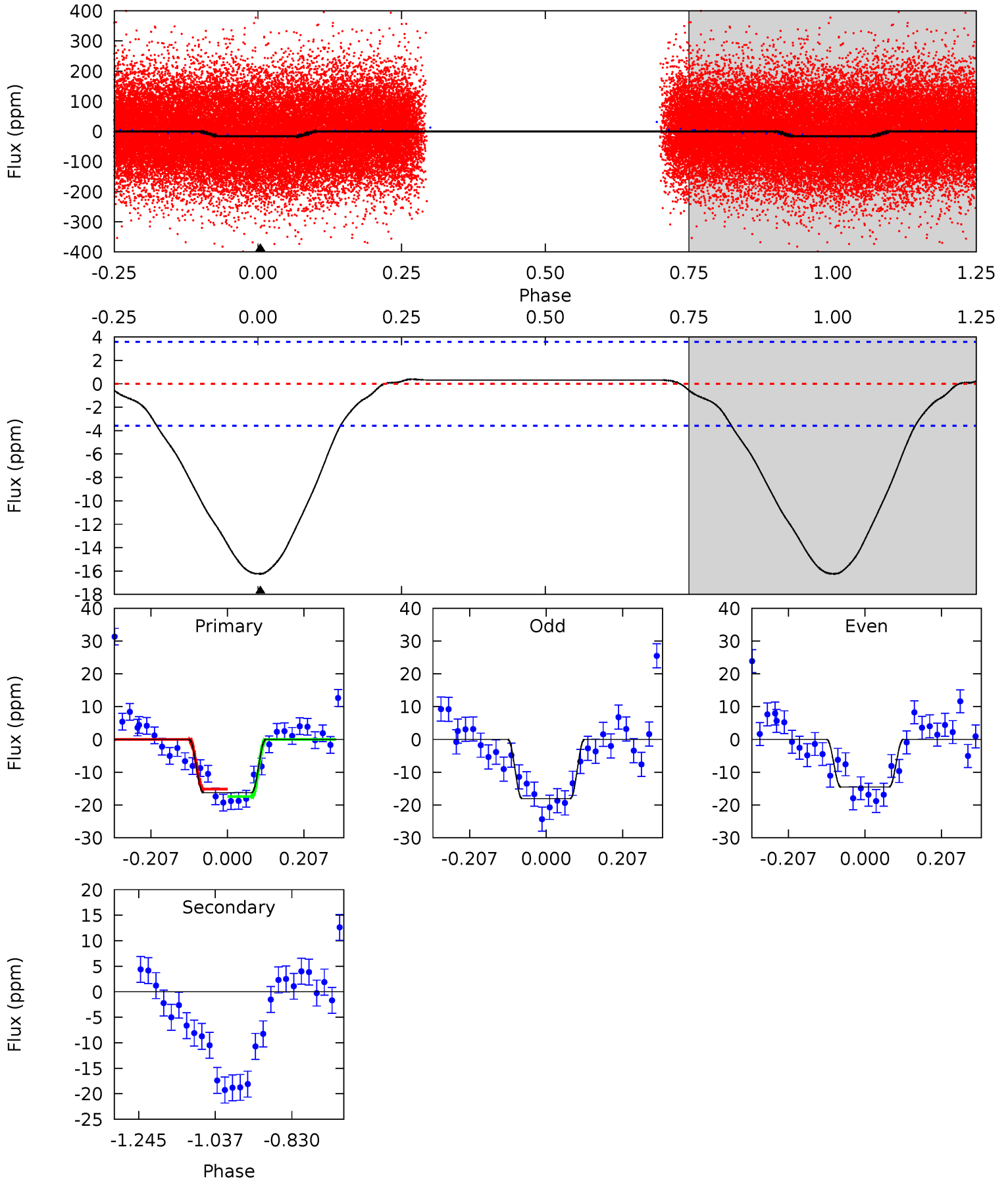
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.5	0	0	0	4.40	1.22	0.42	11.5	11.5	0	0	1.36	1.05	0.02	3.89



Alt Model-Shift Uniqueness Test

009429998-02, P = 1.499191 Days, E = 130.952305 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
20.0	0	0	0	4.41	1.26	0.81	20.0	20.0	0	0	2.16	0.88	0.02	1.32



Stellar Parameters For KIC 009429998

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	8665^{+239}_{-376}	$3.787^{+0.412}_{-0.137}$	$-0.240^{+0.400}_{-0.350}$	$2.985^{+0.872}_{-1.309}$	$1.994^{+0.426}_{-0.426}$	$0.106^{+0.376}_{-0.047}$
	+3%/-4%	+11%/-4%	+167%/-146%	+29%/-44%	+21%/-21%	+356%/-44%
Source	KIC0	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 009429998-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	0 ± 1	$0.97^{+0.32}_{-0.30}$	4971^{+427}_{-556}	-4206^{+8114}_{-965}	$-0.005^{+0.562}_{-0.601}$
Alt.	0 ± 1	$1.29^{+0.32}_{-0.33}$	4973^{+417}_{-542}	-4173^{+6835}_{-608}	$0.010^{+0.308}_{-0.292}$

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

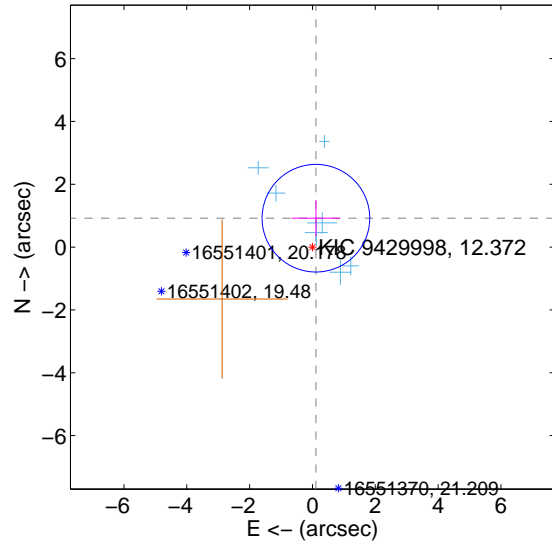
Supplemental centroid analysis for 009429998-02. Kepler magnitude: 12.37. Transit SNR 10.02

There are 7 quarters with good PRF difference image offsets

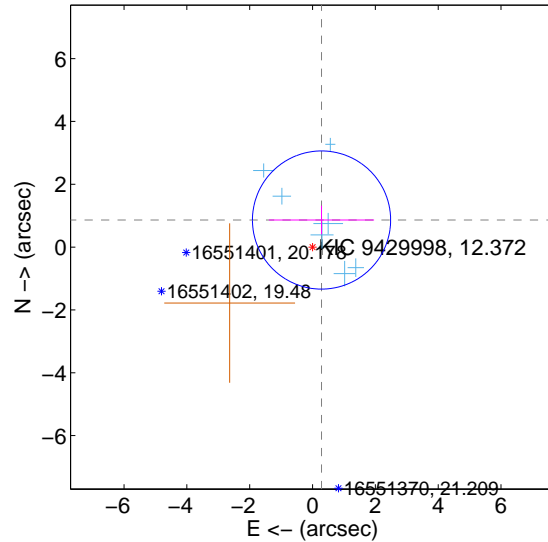
The direct PRF centroid is offset from the target star catalog position by about 0.20 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.927 ± 0.571	1.62	-0.111 ± 0.775	0.920 ± 0.568
PRF-fit source offset from KIC position	0.908 ± 0.733	1.24	-0.287 ± 1.673	0.862 ± 0.457
photometric centroid source offset	1.13 ± 1.76	0.64	-1.08 ± 1.79	0.34 ± 1.45

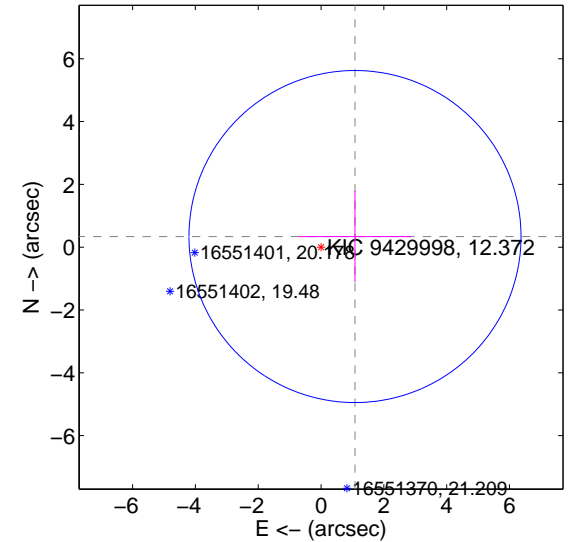
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

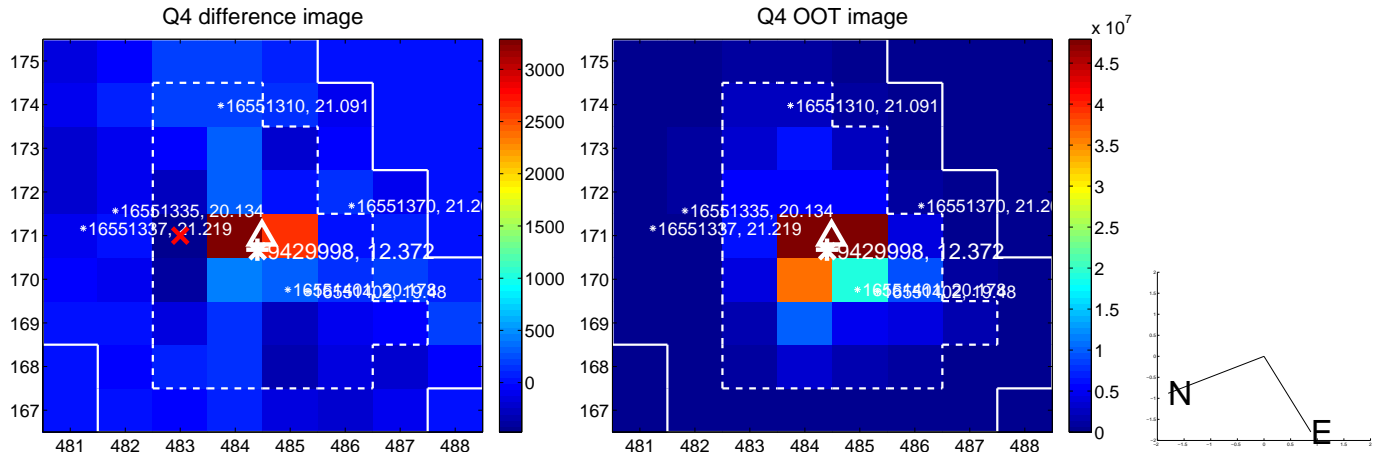
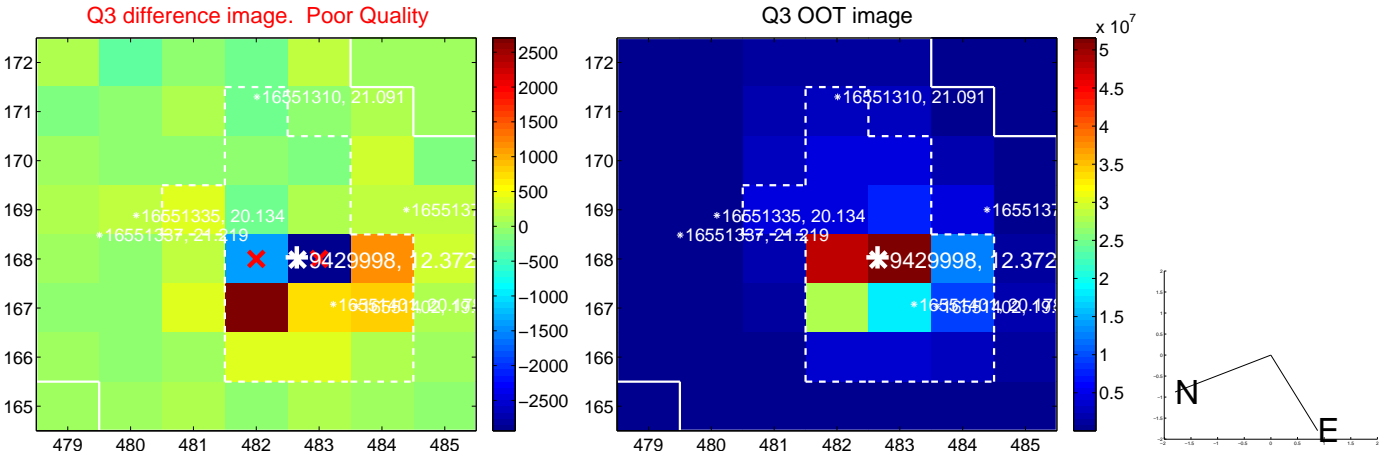
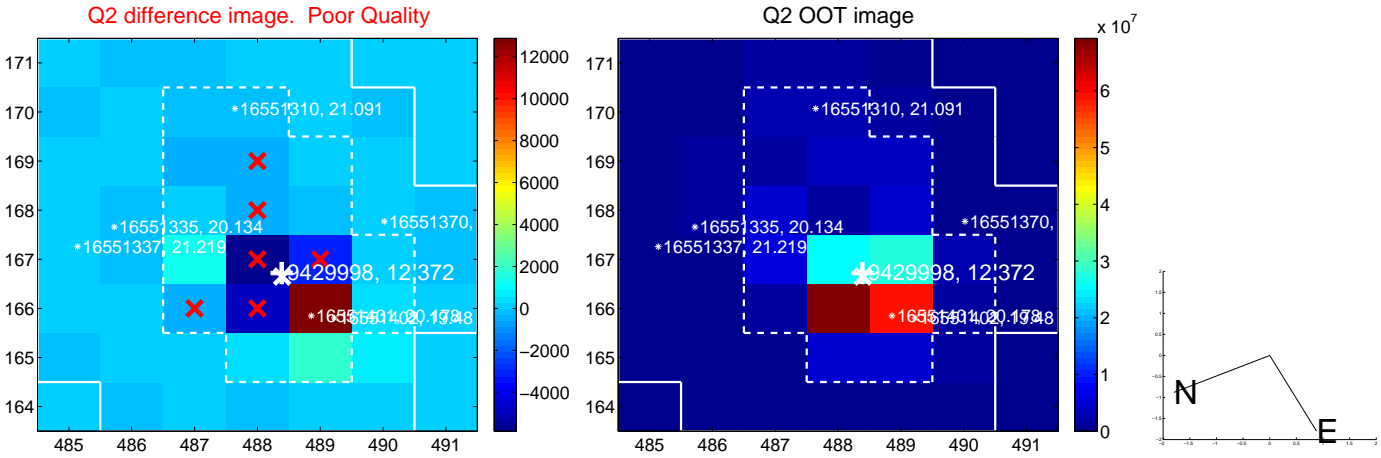
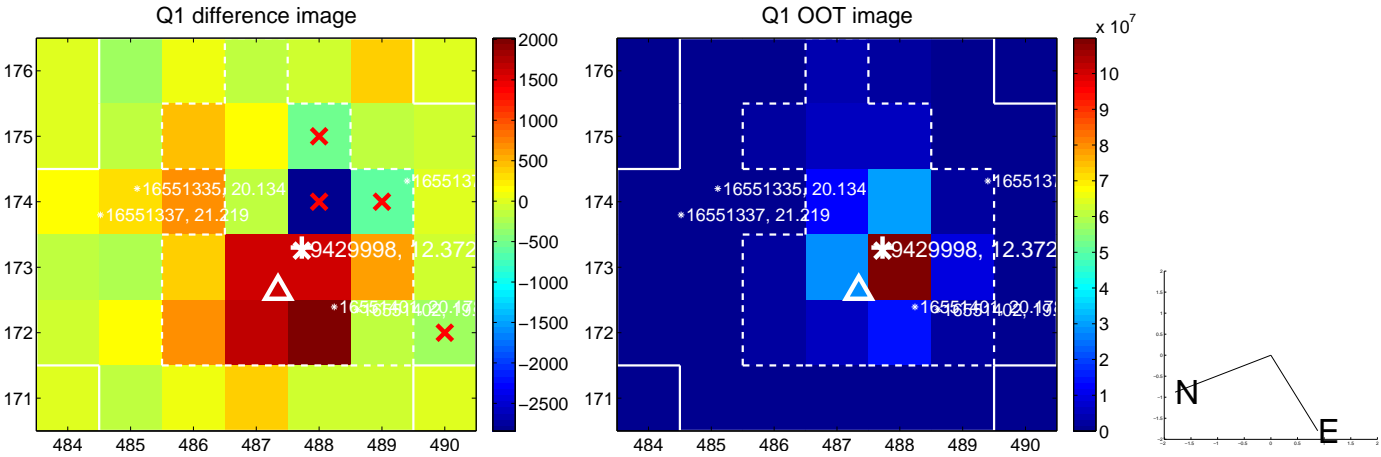


offset from photometric centroids

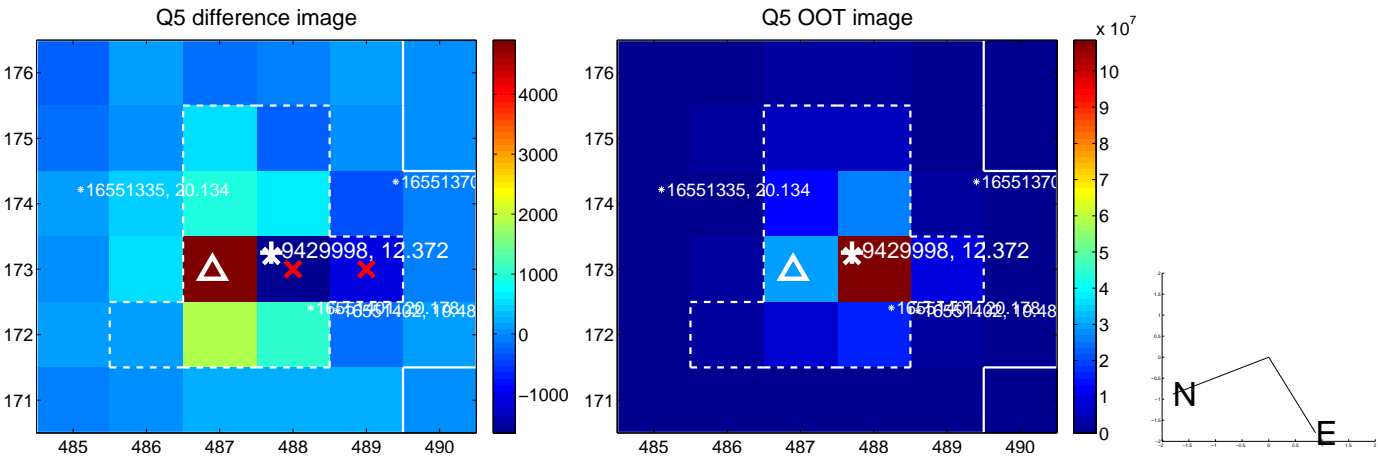


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

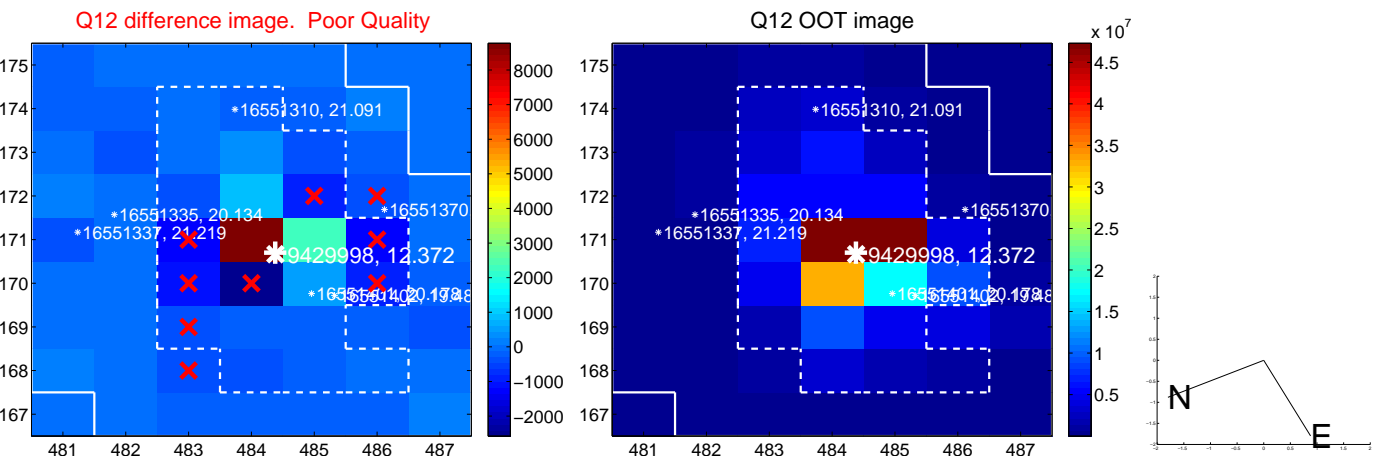
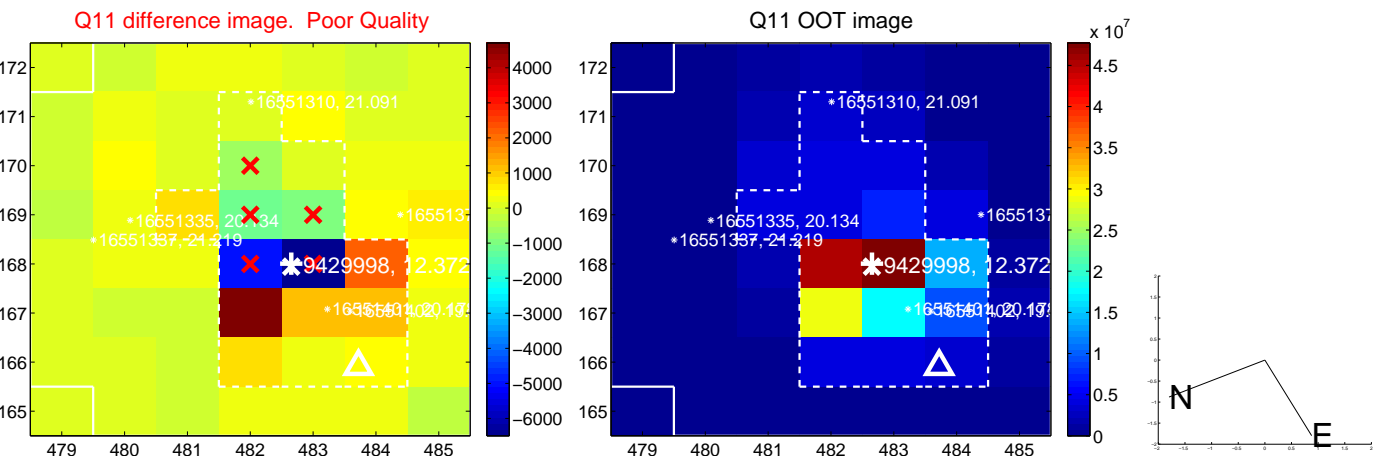
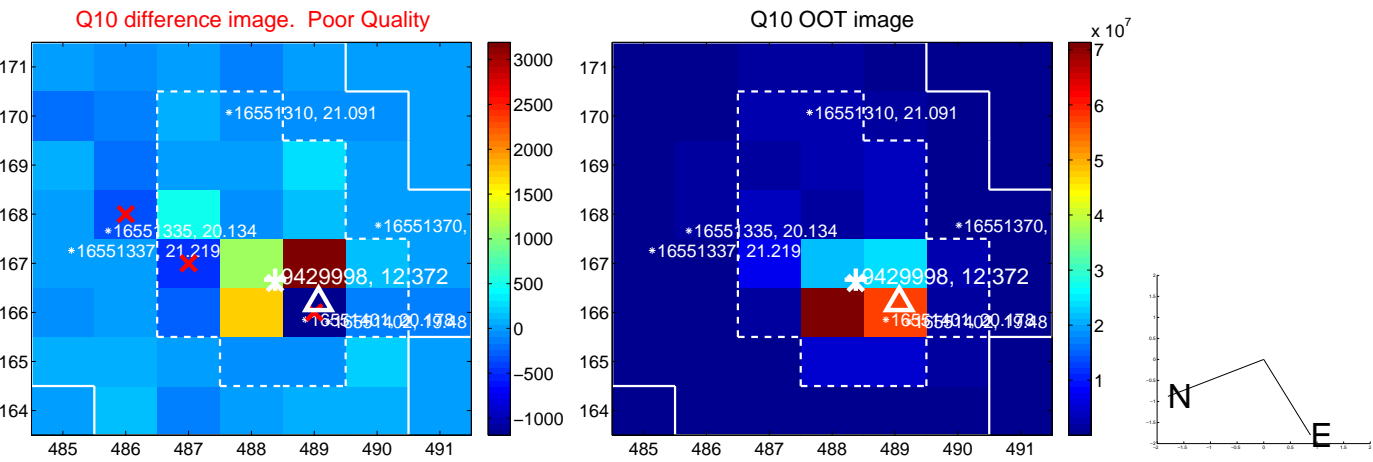
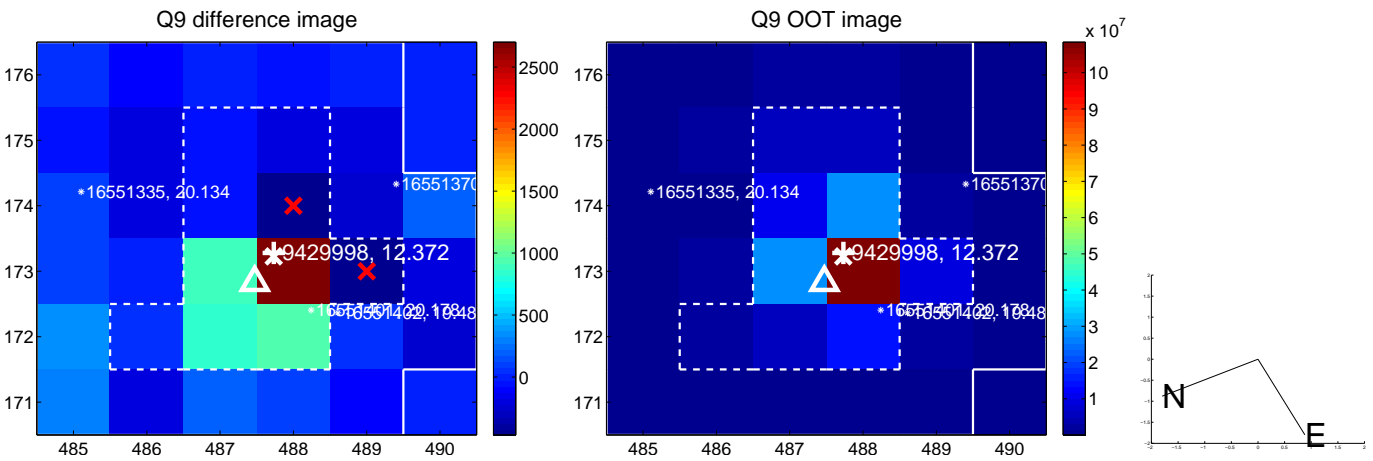
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



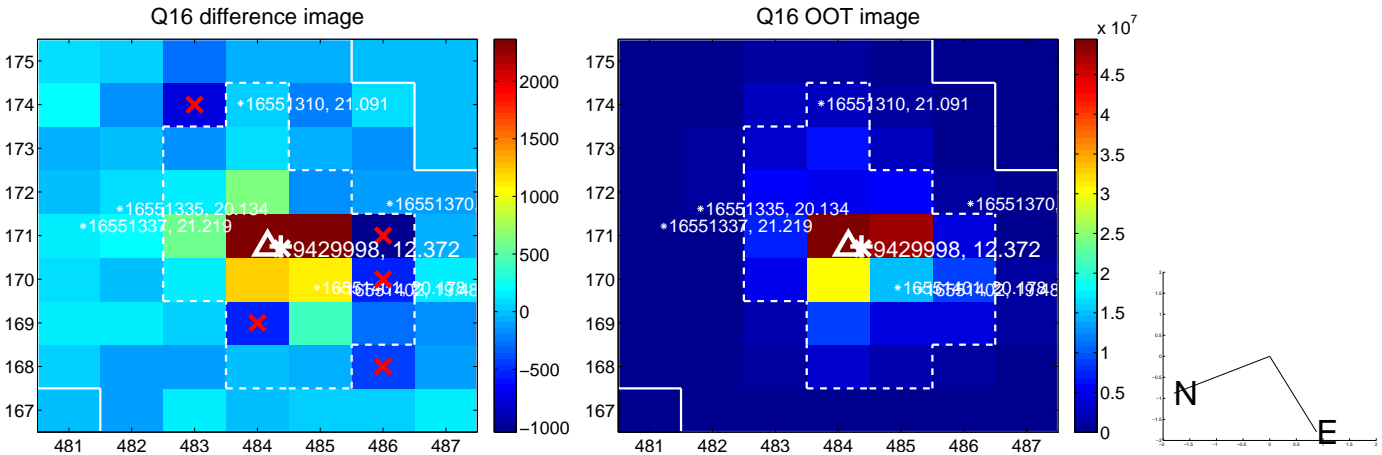
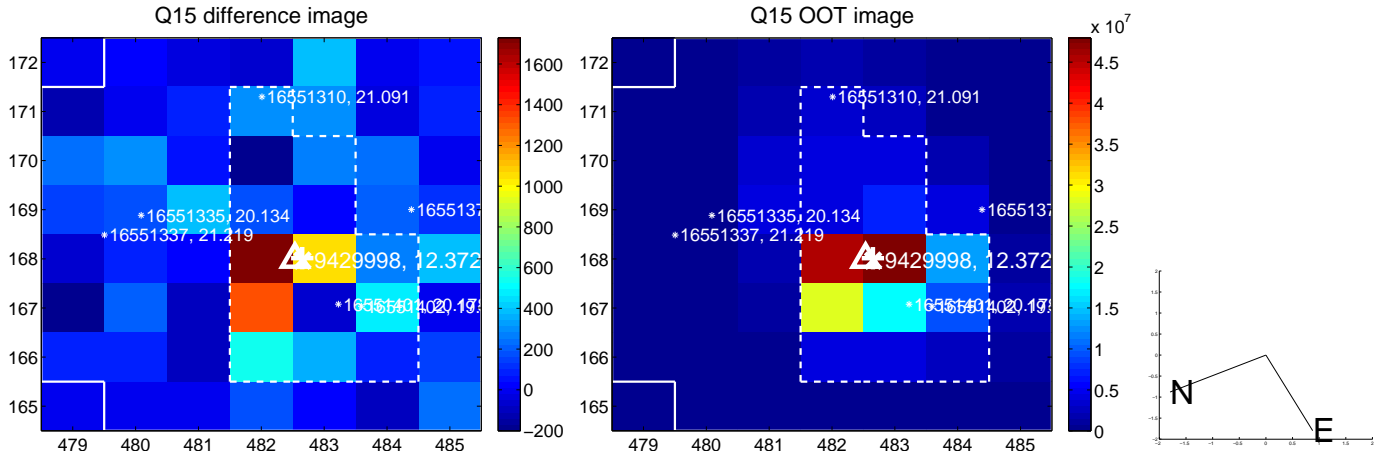
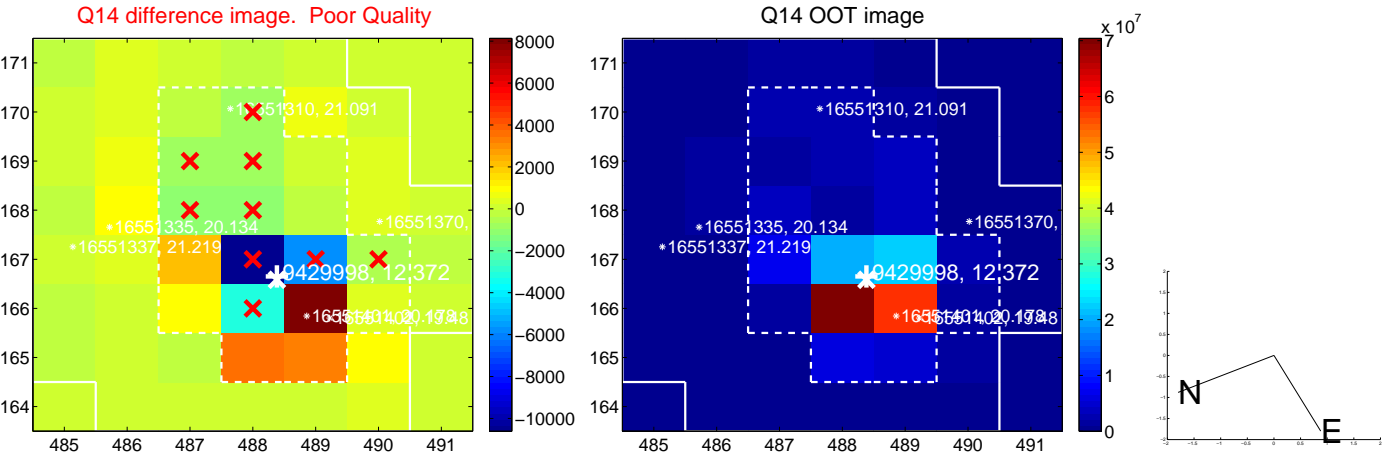
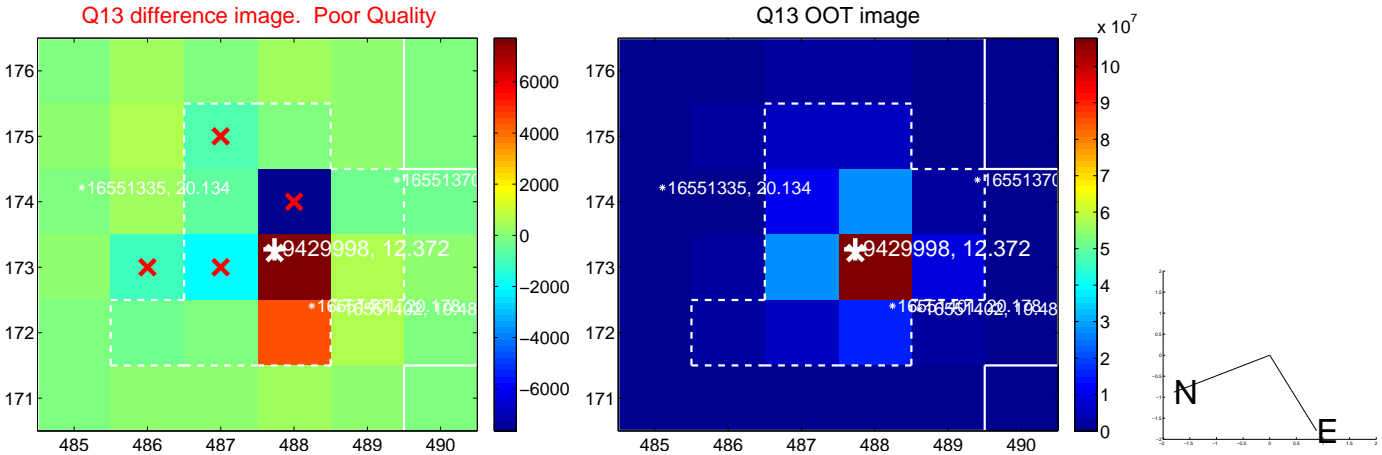
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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UKIRT Image

Declination

