KIC 009602613

Link to DV Report: http://exoplanetarchive.ipac.caltech.edu/data/KeplerData/009/009602/009602613/dv/kplr009602613-20141002224145_dvr.pdf

Q1-17 (9.2) TCE Parameters

TCE	KOI?	Period (Days)	T_0 (BKJD)	Depth (ppm)	Duration (Hours)	MES	Bootstrap FAP
009602613-01	2612.01	4.612256	133.860202	27.4	2.630	11.8	6.0e-27
009602613-02	2612.02	7.573010	131.940801	31.1	2.754	9.6	1.9e-18

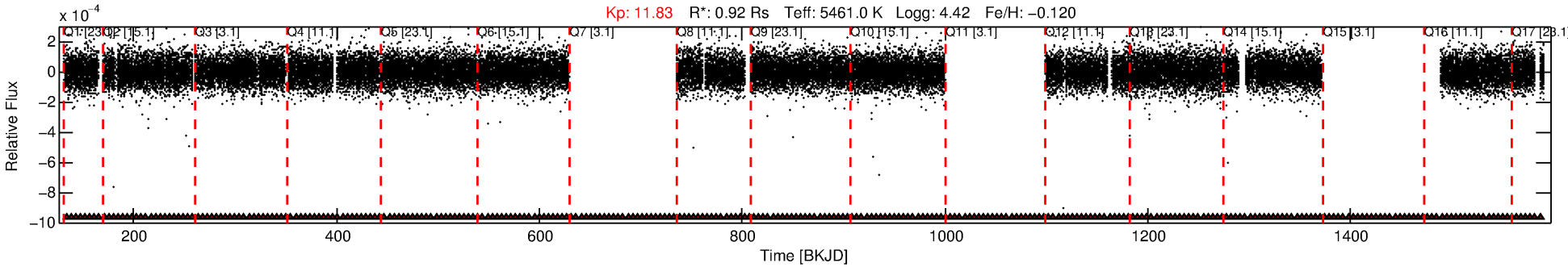
Notes: A bootstrap FAP value of $>$ 1E-10, with a MES value of $>$ 10, indicates a likely false alarm.

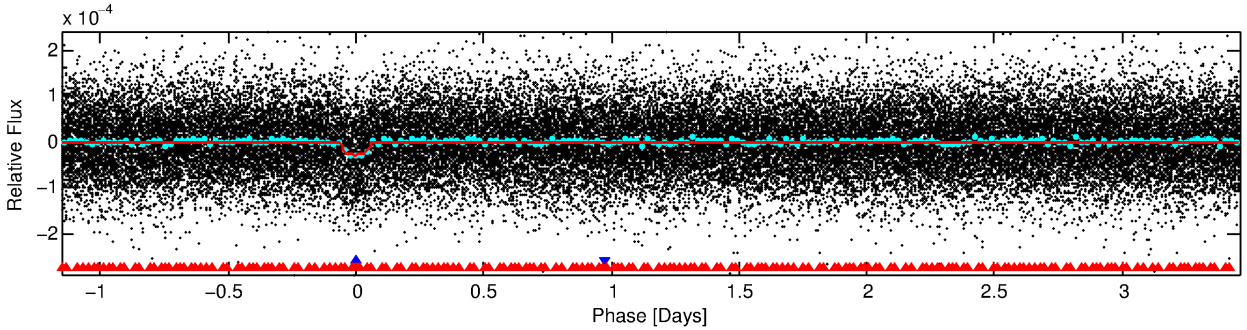
Ephemeris Match Information For 009602613-01

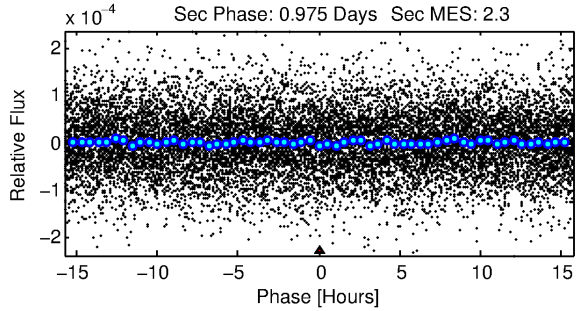
No Significant Match Found

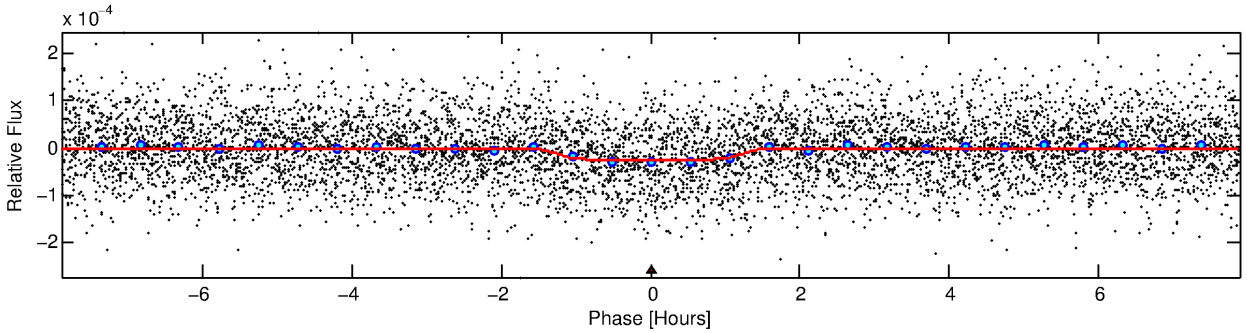
DV One-Page Summary

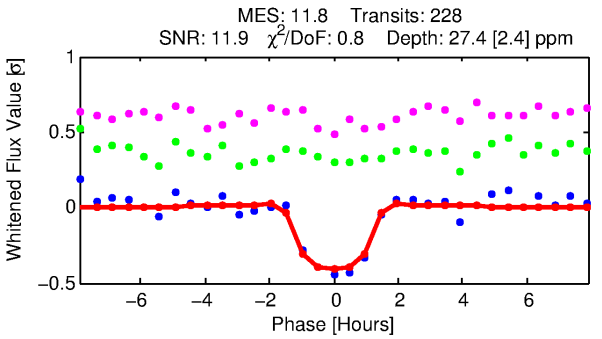
KIC: 9602613 Candidate: 1 of 2 Period: 4.612 d
KOI: K02612.01 Corr: 0.982

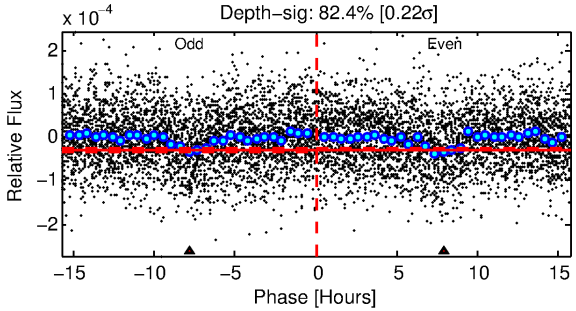


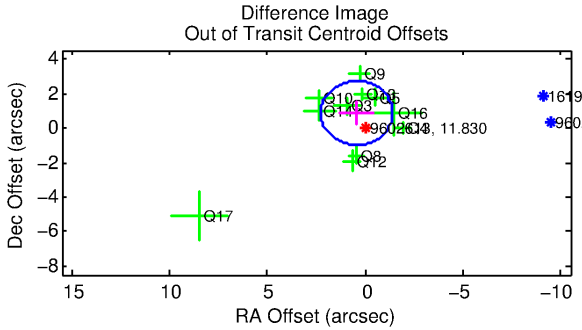












DV Fit Results:

Period = 4.61226 [0.00003] d
Epoch = 133.8602 [0.0041] BKJD
Rp/R* = 0.0051 [0.0015]
a/R* = 9.49 [11.24]
b = 0.71 [0.84]

Teq = 1027 K
Rp = 0.52 Re
a = 0.0509 AU

DV Diagnostic Results:

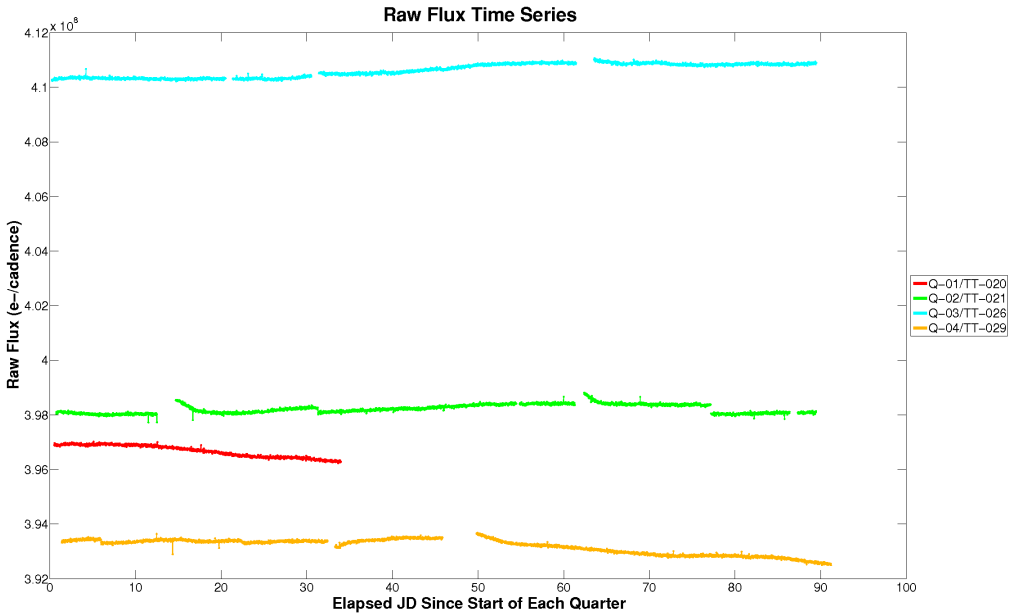
Epoch−sig: 95.6% [0.05σ]
ShortPeriod−sig: N/A
LongPeriod−sig: 100.0% [18.66σ]
ModelChiSquare2−sig: 100.0%
Bootstrap−pfa: 1.49e−23

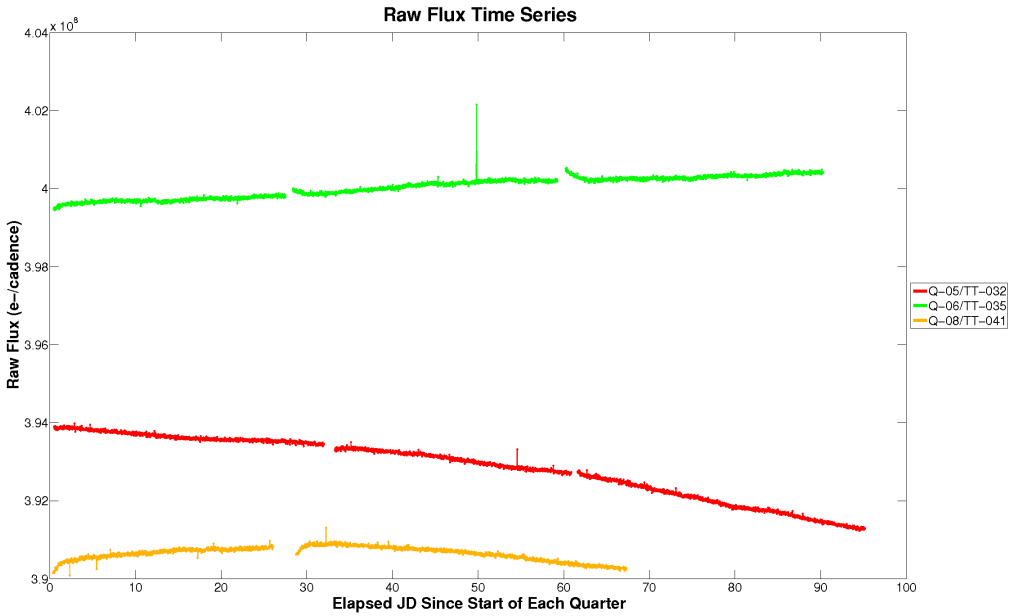
Centroid−sig: 0.0%
Centroid−so: 2.954 arcsec [3.33σ]
OotOffset−rm: 0.976 arcsec [1.59σ]
KicOffset−rm: 0.925 arcsec [1.40σ]
OotOffset−bf: N/A
KicOffset−bf: N/A
OotOffset−st: 2/1/4/4 [11]
KicOffset−st: 2/1/4/4 [11]
DiffImageQuality−fgm: 0.73 [8/11 of 14]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.2.19@56803 −− Date Generated: 24−Sep−2014 06:05:43 Z

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

Raw Flux


Raw Flux Time Series
x 10^8
Raw Flux (e−/cadence)
Elapsed JD Since Start of Each Quarter
Q−01/TT−020
Q−02/TT−021
Q−03/TT−026
Q−04/TT−029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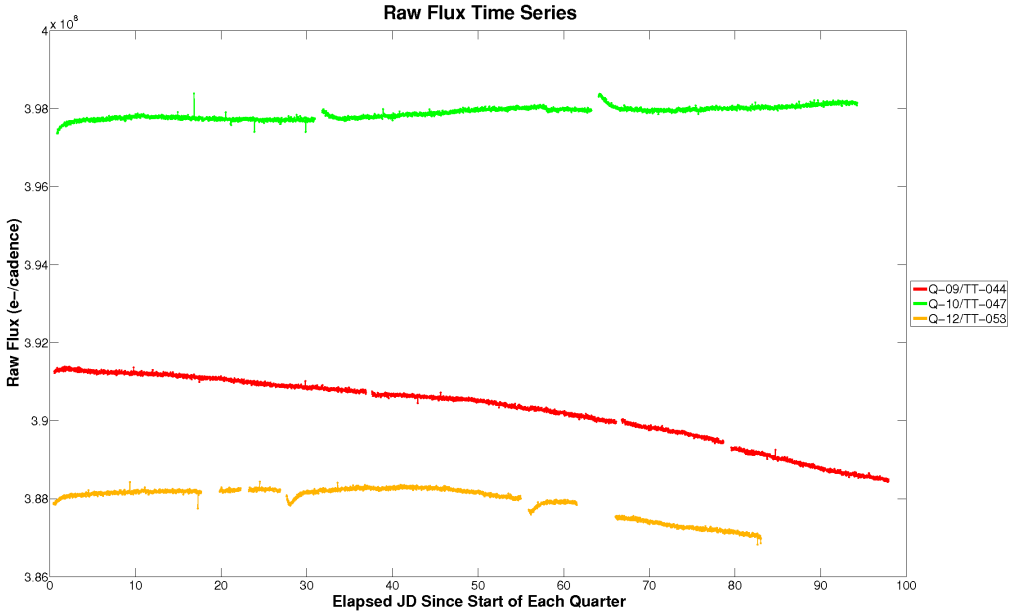
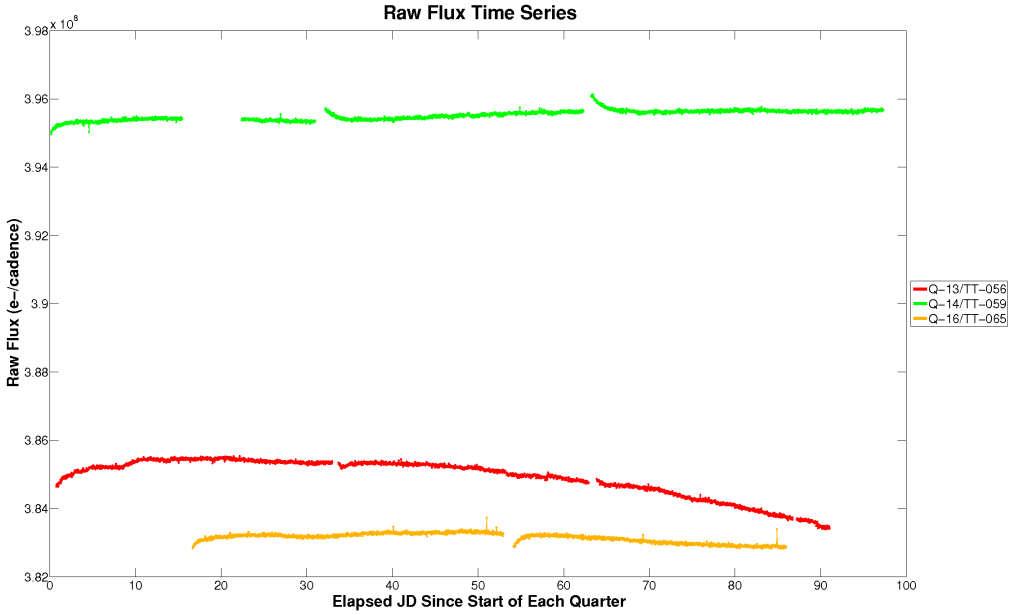
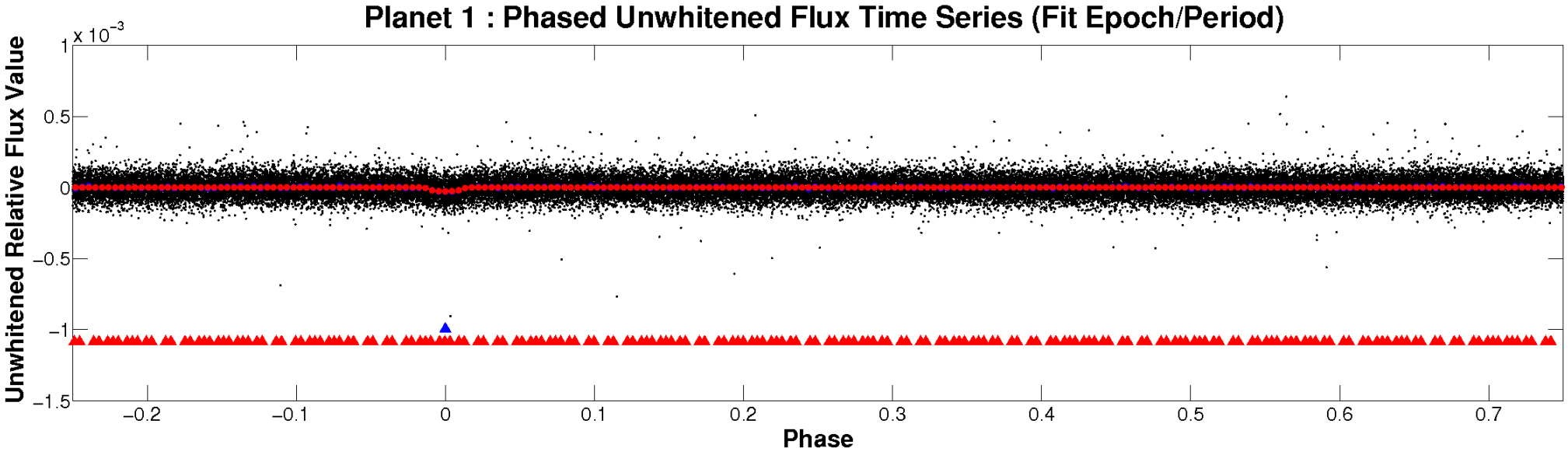
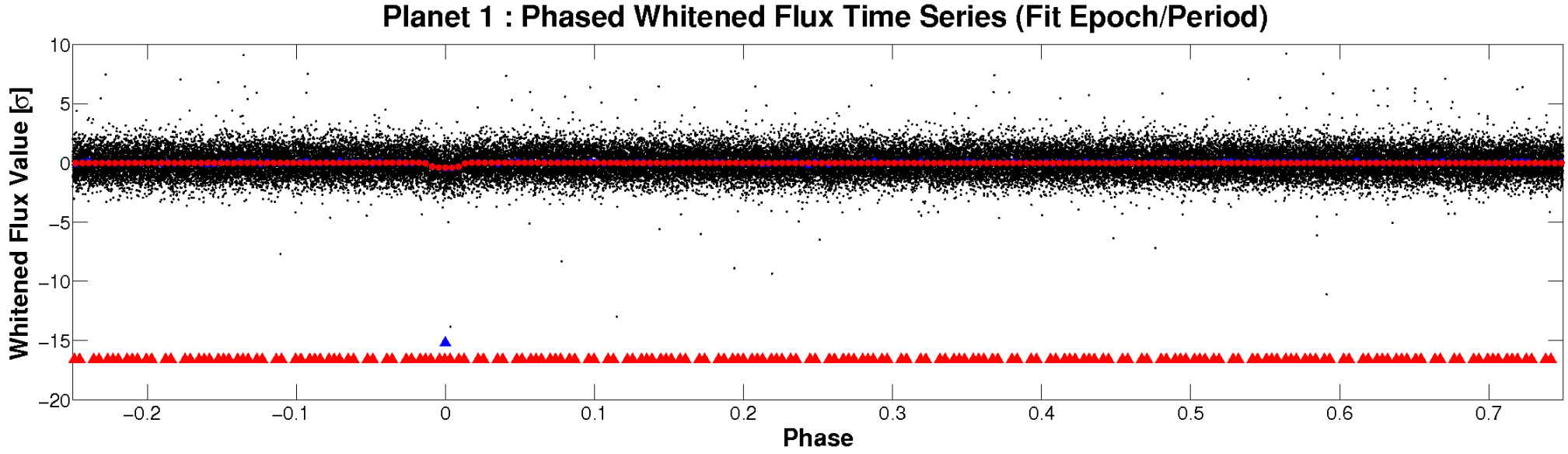
x 10^8
Raw Flux (e−/cadence)
Elapsed JD Since Start of Each Quarter
Q−05/TT−032
Q−06/TT−035
Q−08/TT−041

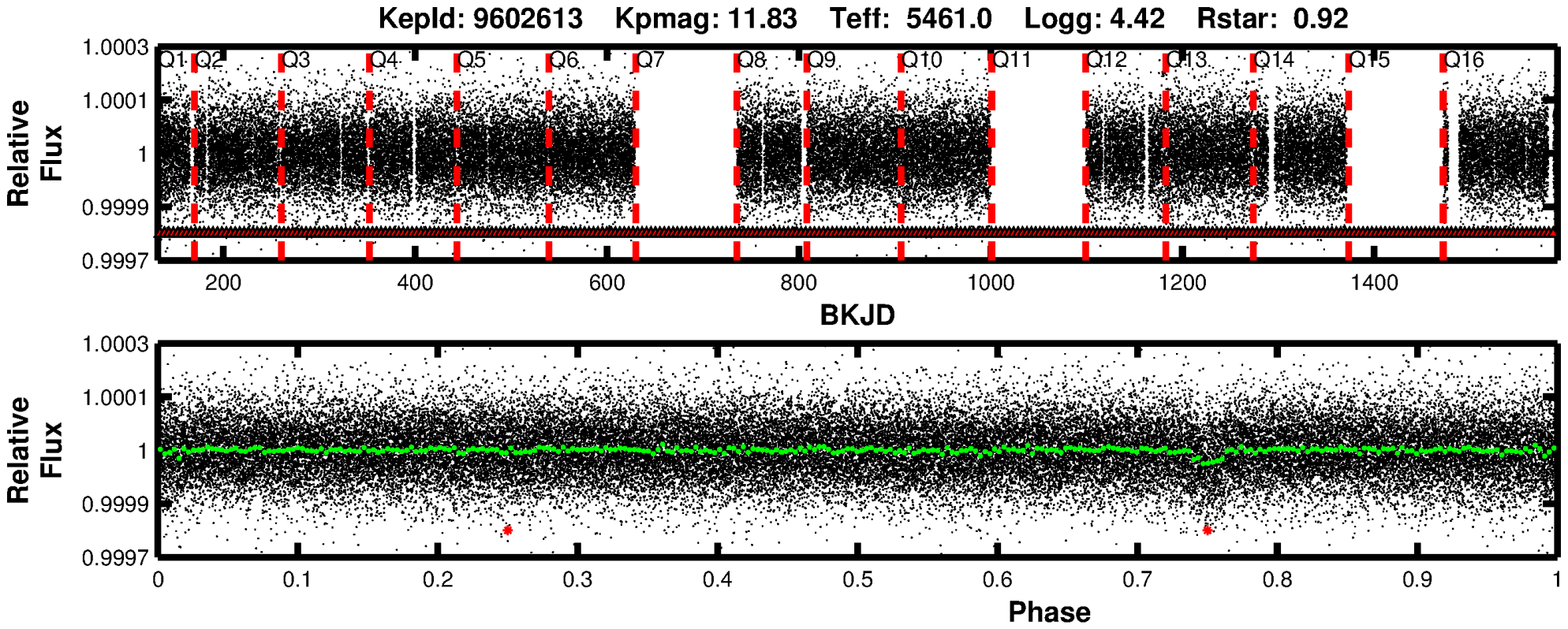

Raw Flux Time Series
x 10^8
Raw Flux (e−/cadence)
Elapsed JD Since Start of Each Quarter
Q−09/TT−044
Q−10/TT−047
Q−12/TT−053


Raw Flux Time Series
x 10^8
Raw Flux (e−/cadence)
Elapsed JD Since Start of Each Quarter
Q−13/TT−056
Q−14/TT−059
Q−16/TT−065

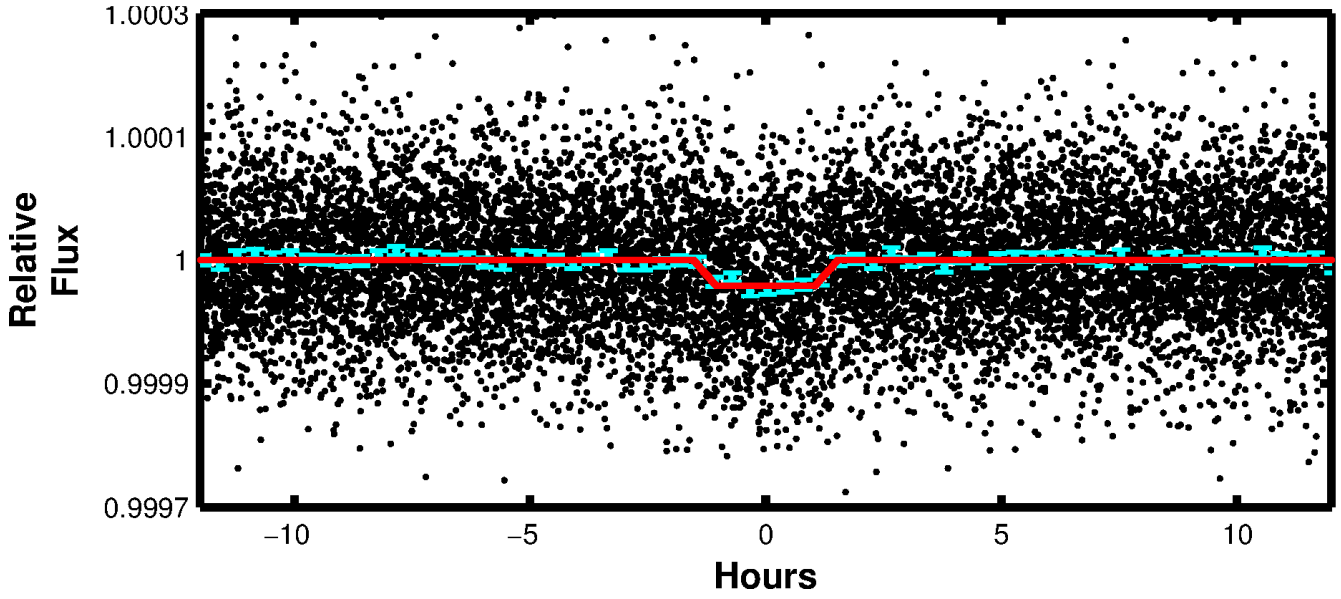
Non-Whitened Vs. Whitened Light Curve



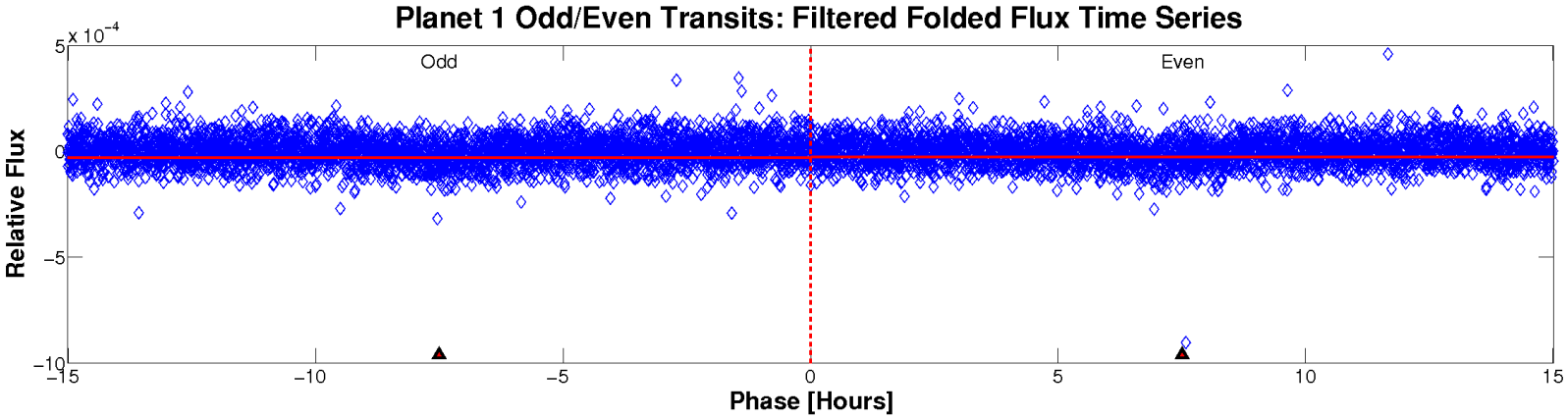


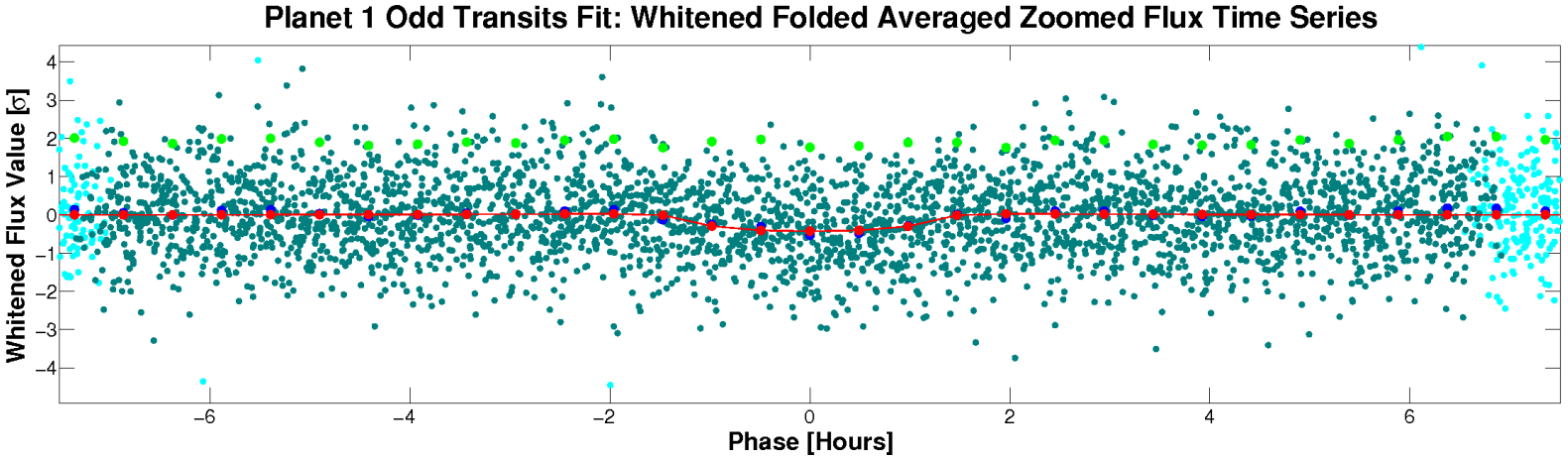


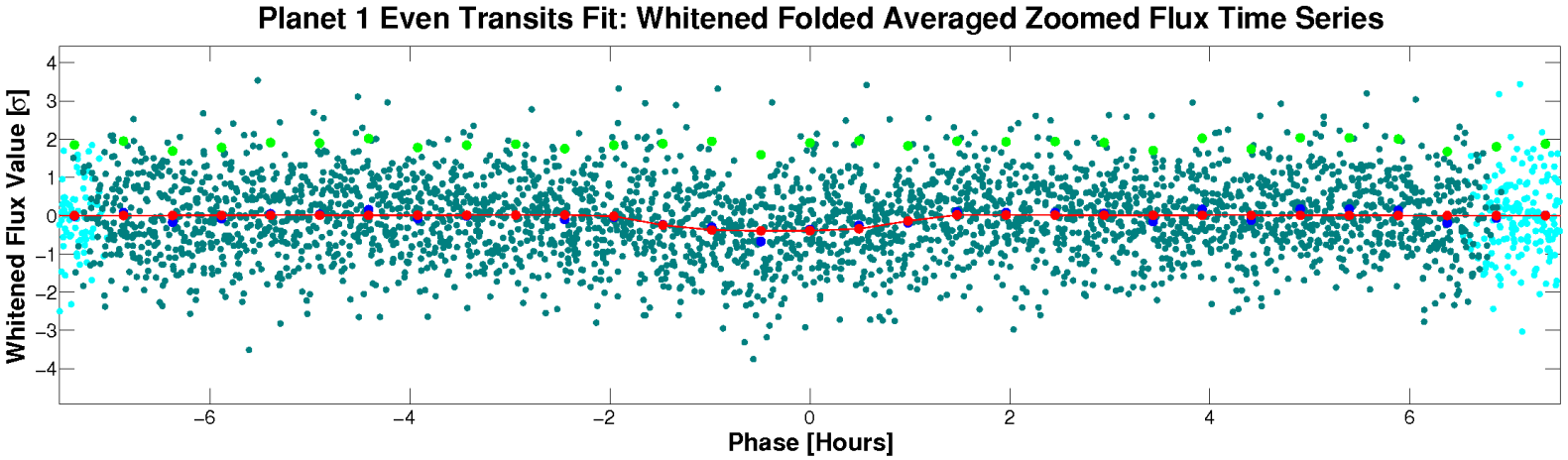
Alternate Detrending



Odd/Even Test

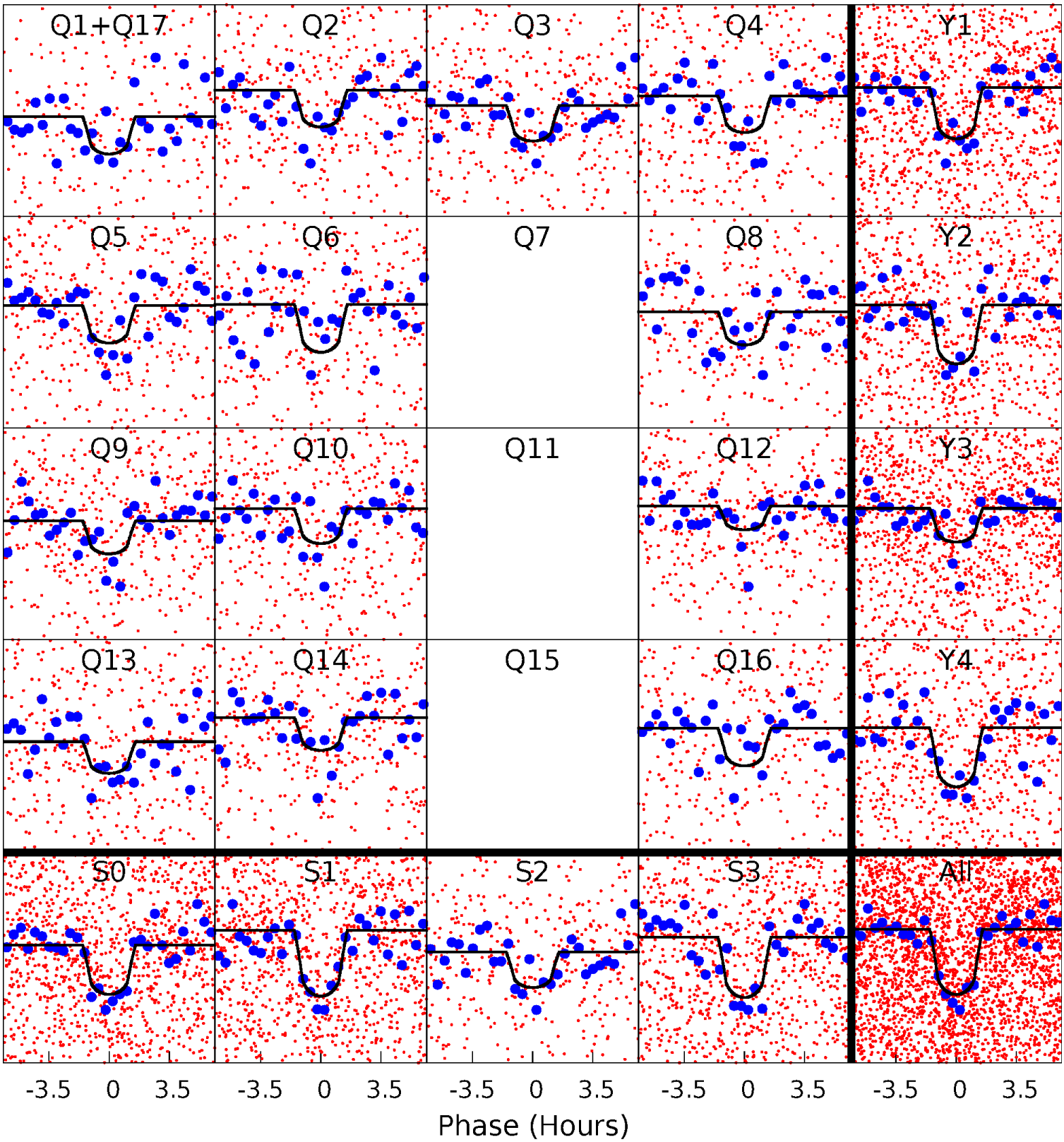






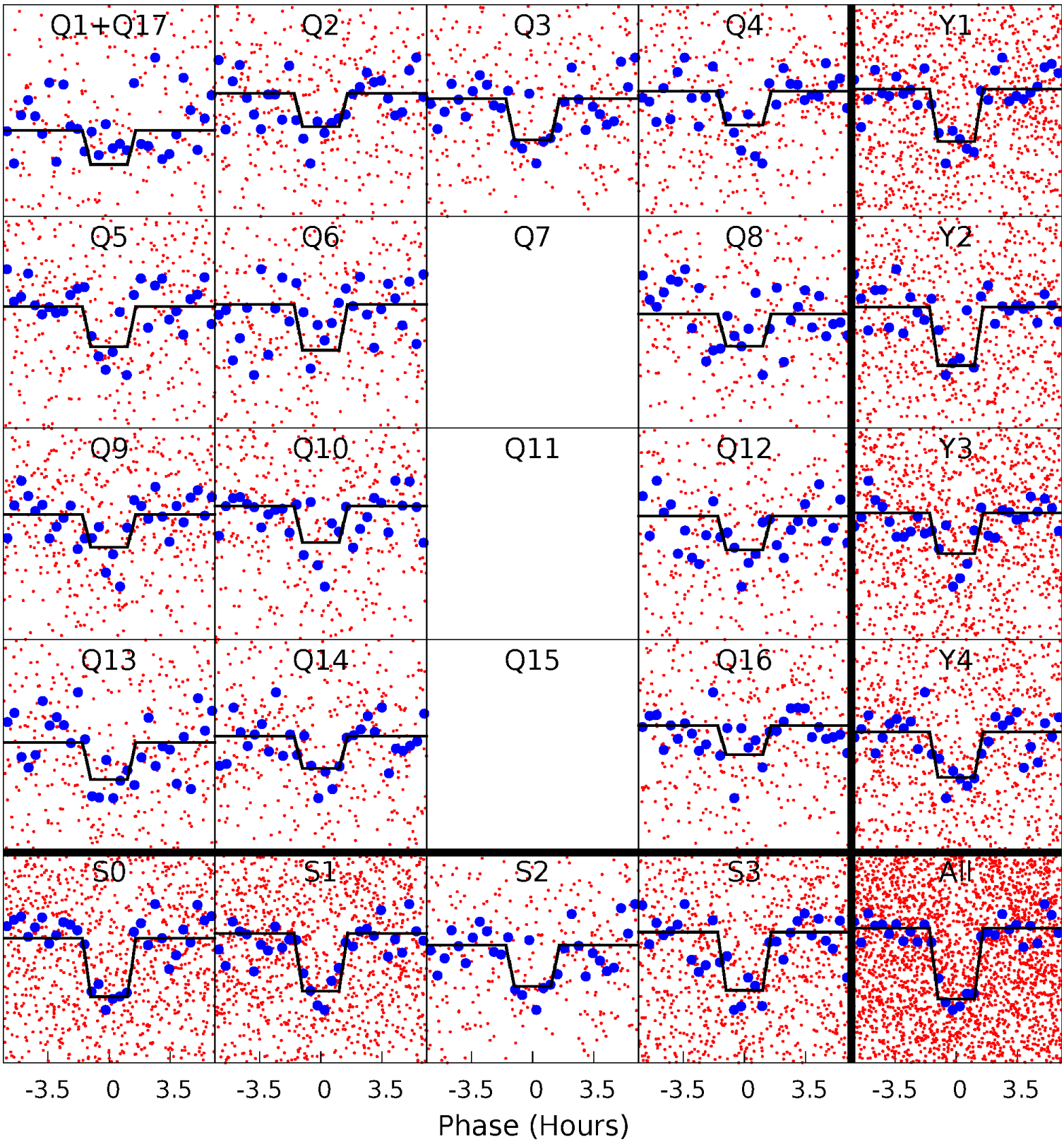
DV Quarter-Phased Transit Curves

TCE 009602613-01 P= 4.612256 Days T_0=133.8602 (BKJD)

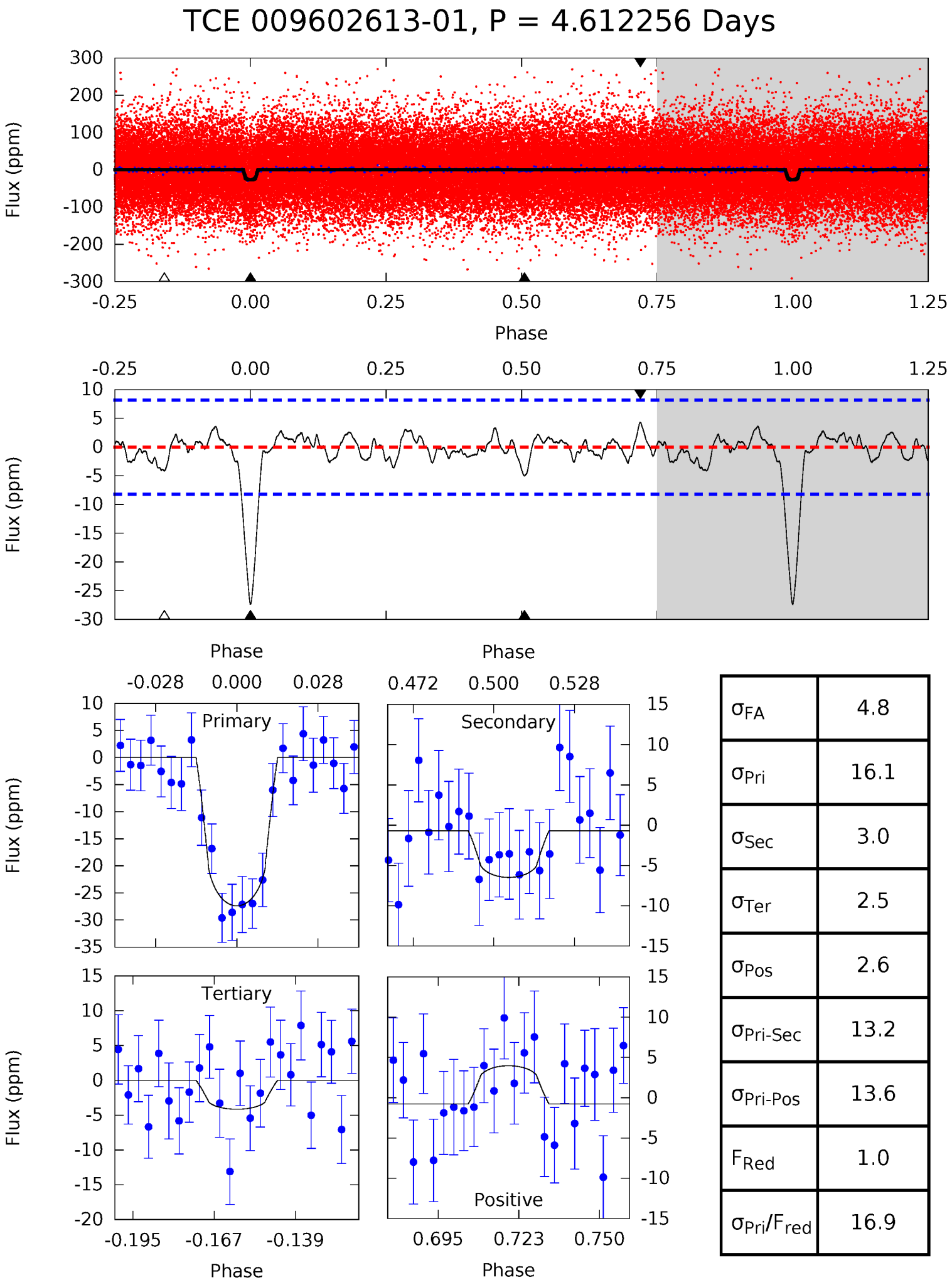


Alt. Detrend Quarter-Phased Transit Curves

TCE 009602613-01 P= 4.612256 Days T_0=133.8602 (BKJD)

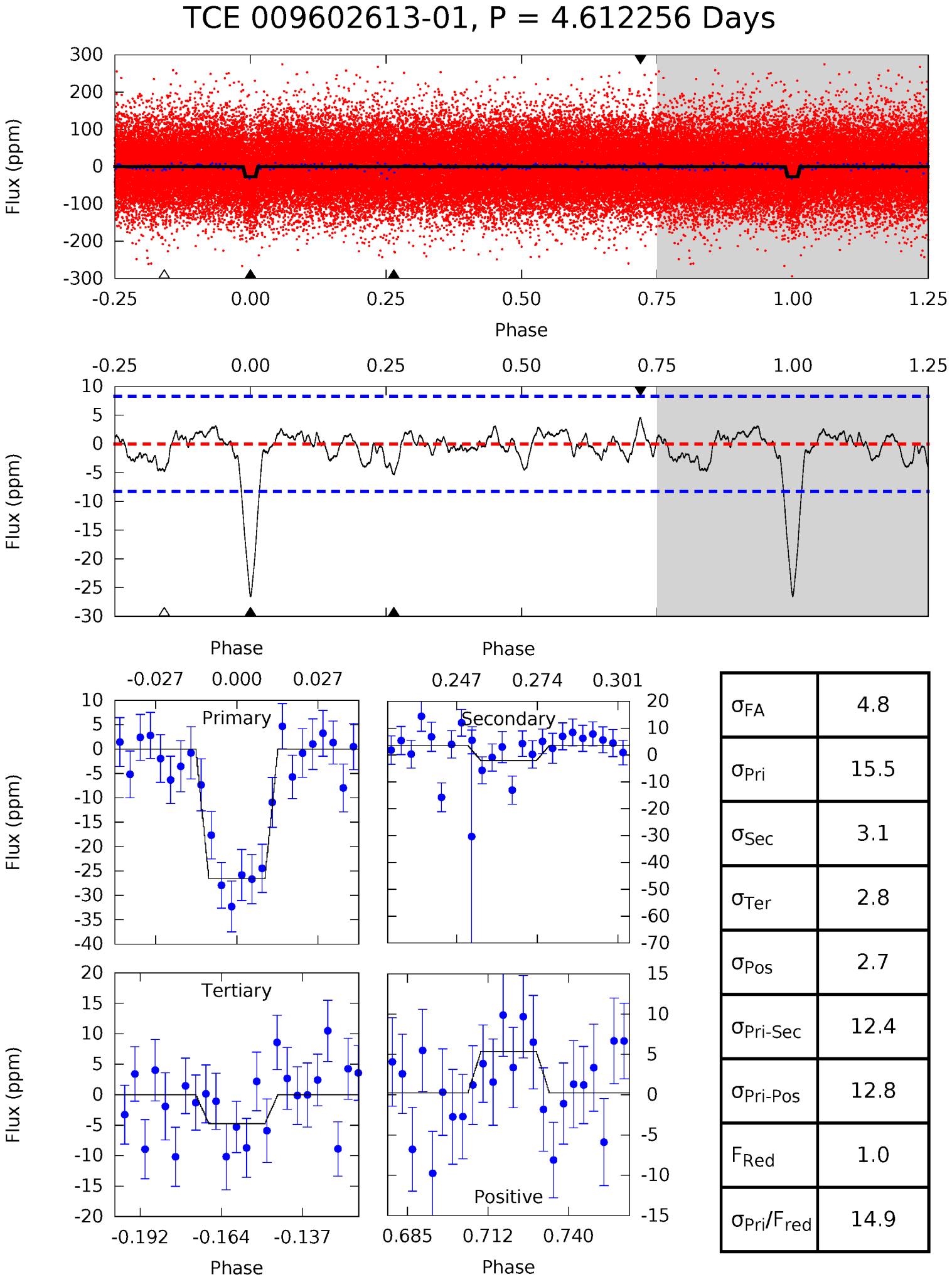


DV Model-Shift Uniqueness Test



σ_{FA}	4.8
σ_{Pri}	16.1
σ_{Sec}	3.0
σ_{Ter}	2.5
σ_{Pos}	2.6
$\sigma_{Pri\text{-}Sec}$	13.2
$\sigma_{Pri\text{-}Pos}$	13.6
F_{Red}	1.0
σ_{Pri}/F_{red}	16.9

Alt Model-Shift Uniqueness Test



σ_{FA}	4.8
σ_{Pri}	15.5
σ_{Sec}	3.1
σ_{Ter}	2.8
σ_{Pos}	2.7
$\sigma_{Pri-Sec}$	12.4
$\sigma_{Pri-Pos}$	12.8
F_{Red}	1.0
σ_{Pri}/F_{red}	14.9

Stellar Parameters For KIC 009602613

	$T_{\rm eff}(K)$	$\log(g)$	[Fe/H]	R ($R_\odot$)	$M(M_\odot)$	$p_\star$ (g·cm^{-3})	p_{obs} (g·cm^{-3})
	5461^{+162}_{-126}	$4.423^{+0.113}_{-0.265}$	$-0.120^{+0.320}_{-0.240}$	$0.924^{+0.375}_{-0.119}$	$0.824^{+0.129}_{-0.064}$	$1.472^{+0.698}_{-0.904}$	$1.297^{+2.266}_{-1.210}$
	+3%/-2%	+3%/-6%	+267%/-200%	+41%/-13%	+16%/-8%	+47%/-61%	+175%/-93%
Source	PHO1	KIC0	KIC0	DSEP			Transit Fit

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

If $p_\star$ is significantly different than p_{obs}, it may indicate a stellar blend.

Secondary Eclipse Parameters for KIC 009602613-01 / KOI 2612.01

Detrend	Depth (ppm)	R_p ($R_\oplus$)	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-5±2	$0.54^{+0.19}_{-0.17}$	1456^{+142}_{-81}	3913^{+592}_{-414}	24^{+28}_{-12}
Alt.	-5±2	$0.54^{+0.20}_{-0.17}$	1454^{+143}_{-81}	3952^{+626}_{-429}	25^{+32}_{-13}

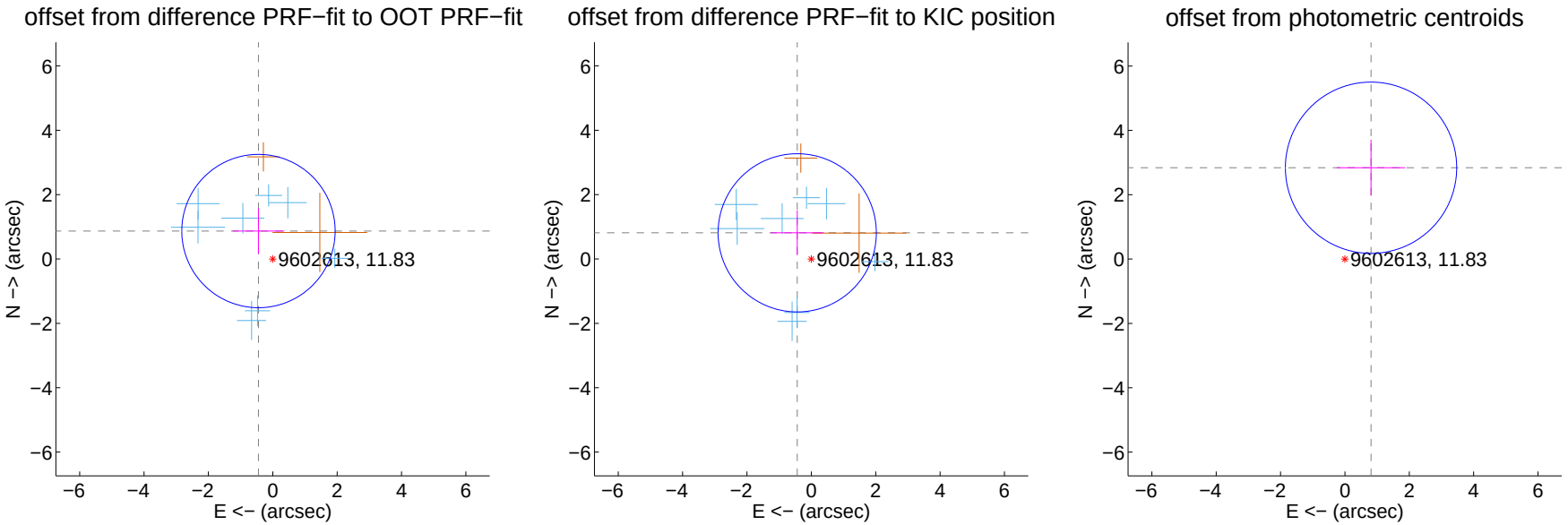
T_{max} = Theoretical Maximum Planetary Temperature
T_{obs} = Observed Planetary Temperature (Assuming A=0.3)
A_{obs} = Observed Albedo (Assuming T=0)

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

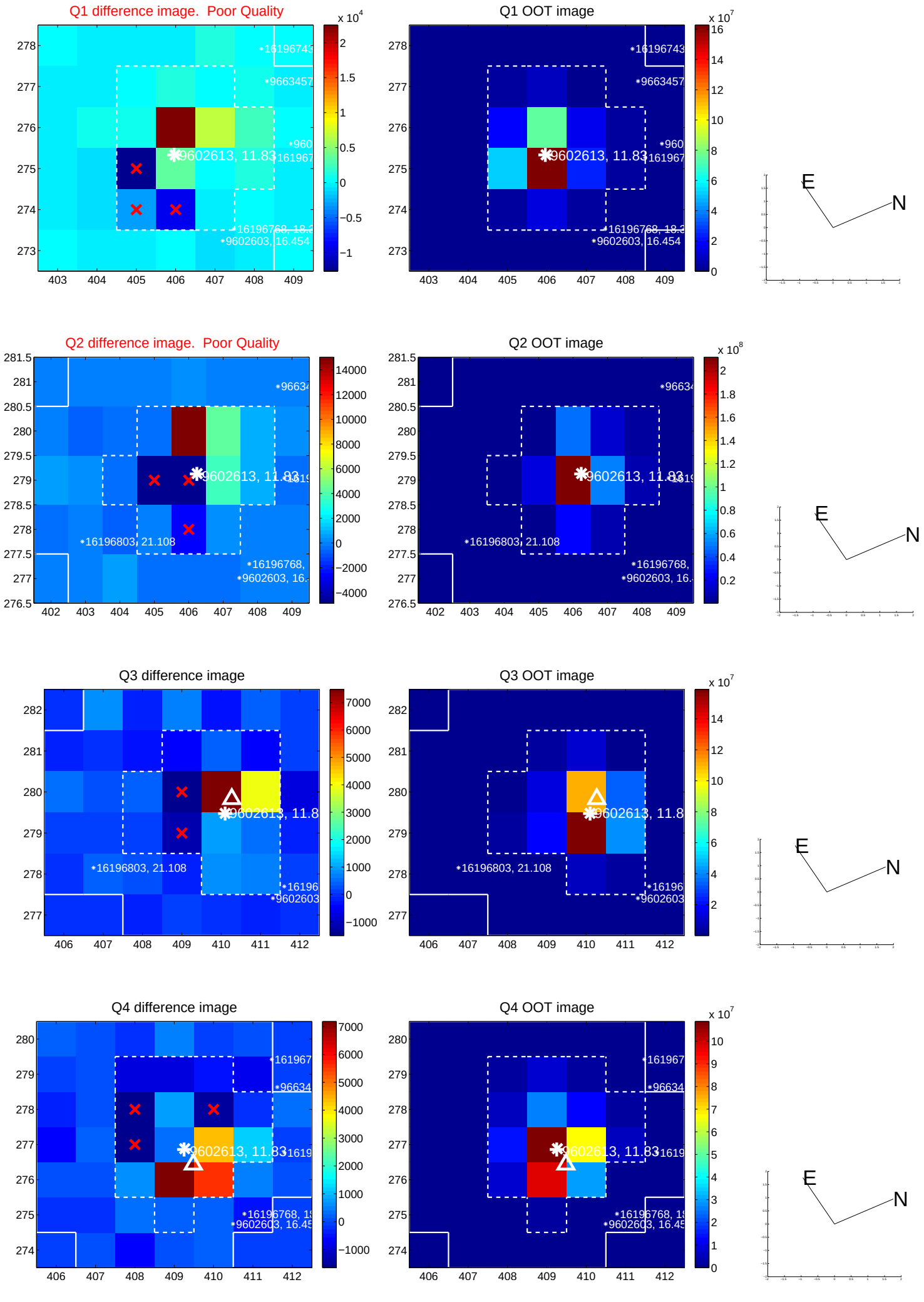
Supplemental centroid analysis for 009602613-01. Kepler magnitude: 11.83. Transit SNR 11.93
There are 8 quarters with good PRF difference image offsets
The direct PRF centroid is offset from the target star catalog position by about 0.05 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.976 ± 0.794	1.23	0.445 ± 0.800	0.869 ± 0.710
PRF-fit source offset from KIC position	0.925 ± 0.820	1.13	0.439 ± 0.825	0.814 ± 0.698
photometric centroid source offset	2.95 ± 0.89	3.33	-0.81 ± 1.07	2.84 ± 0.87



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



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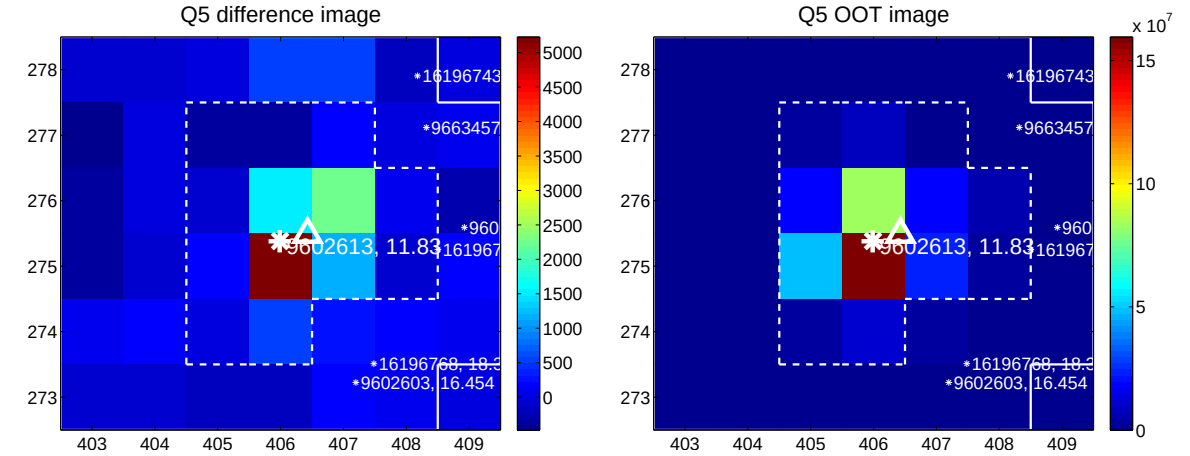

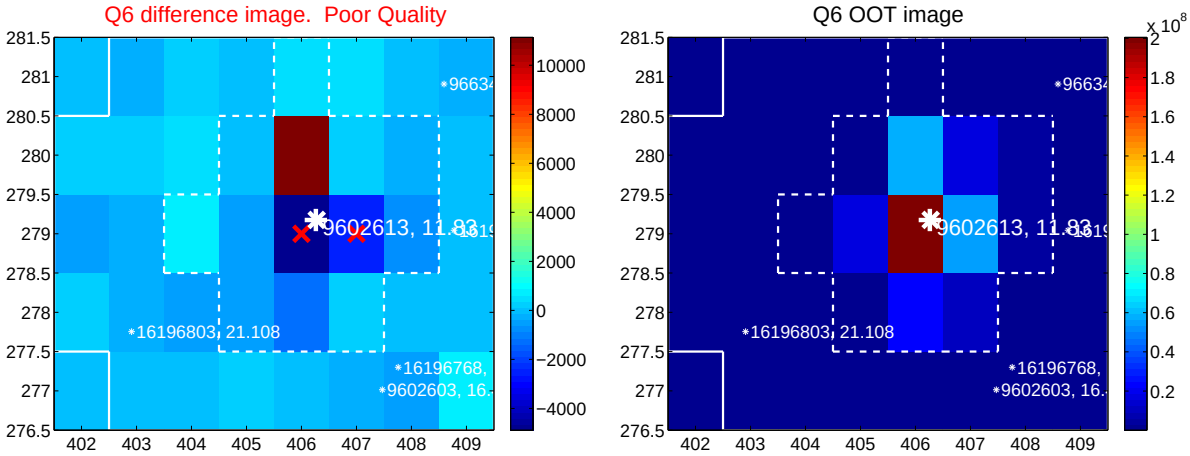

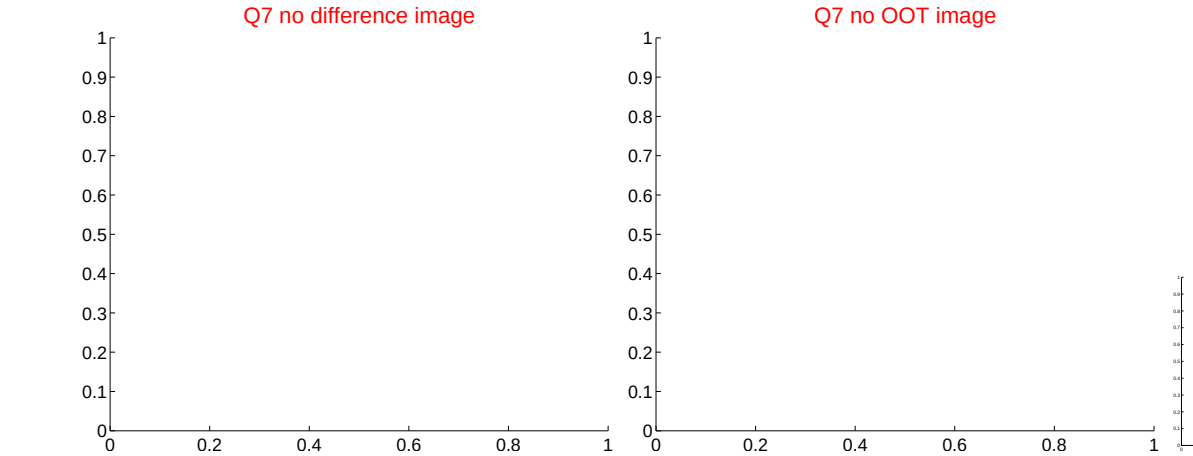

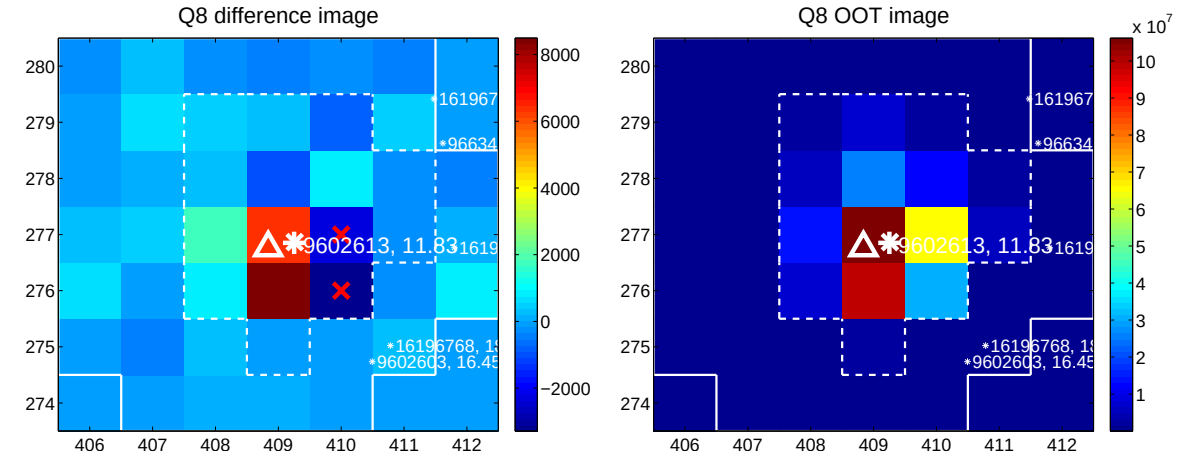

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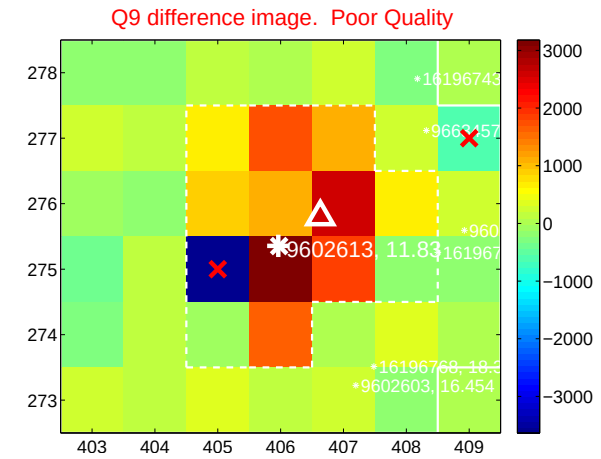
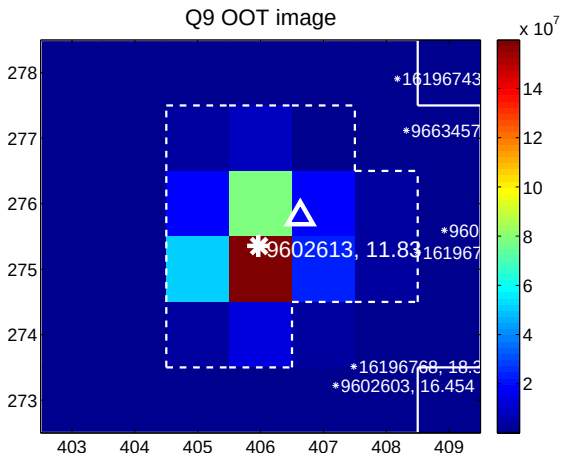
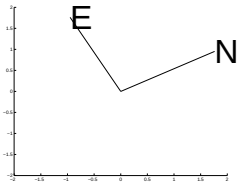
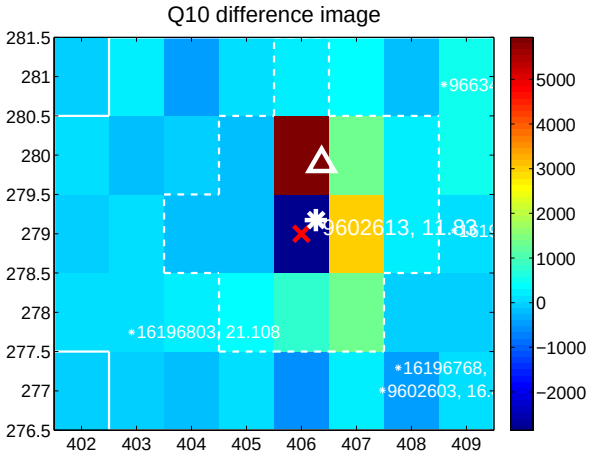
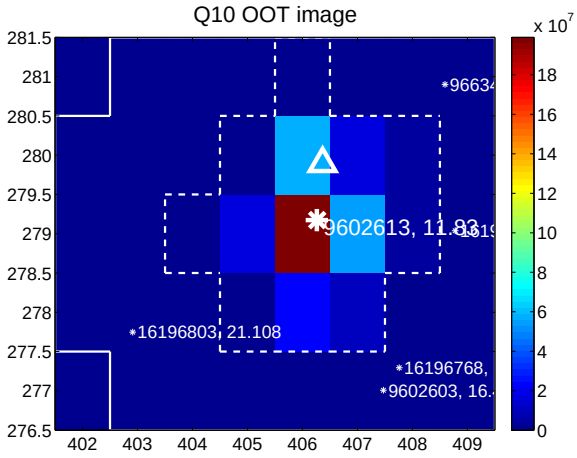
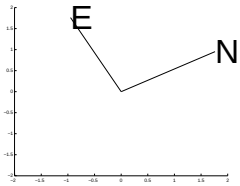


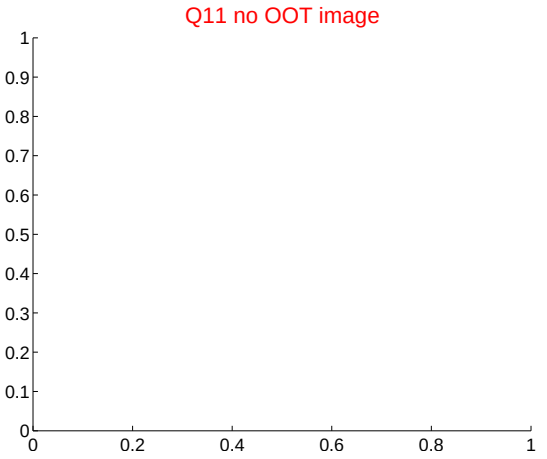


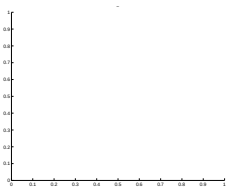


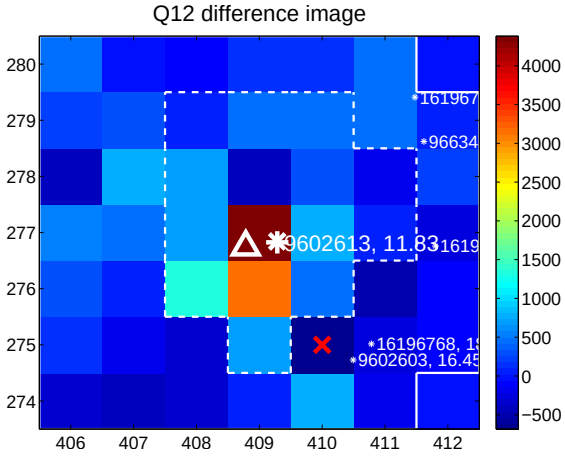


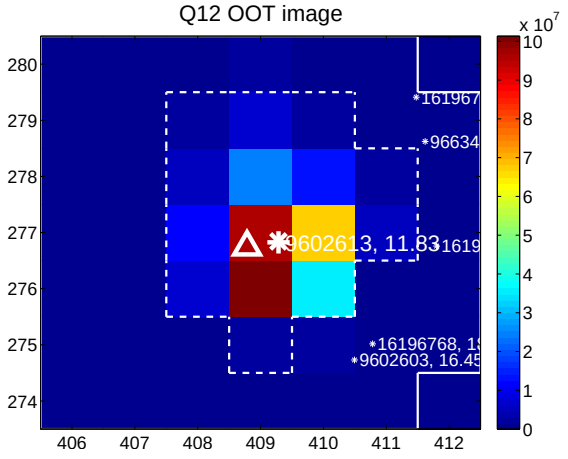


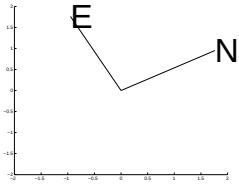




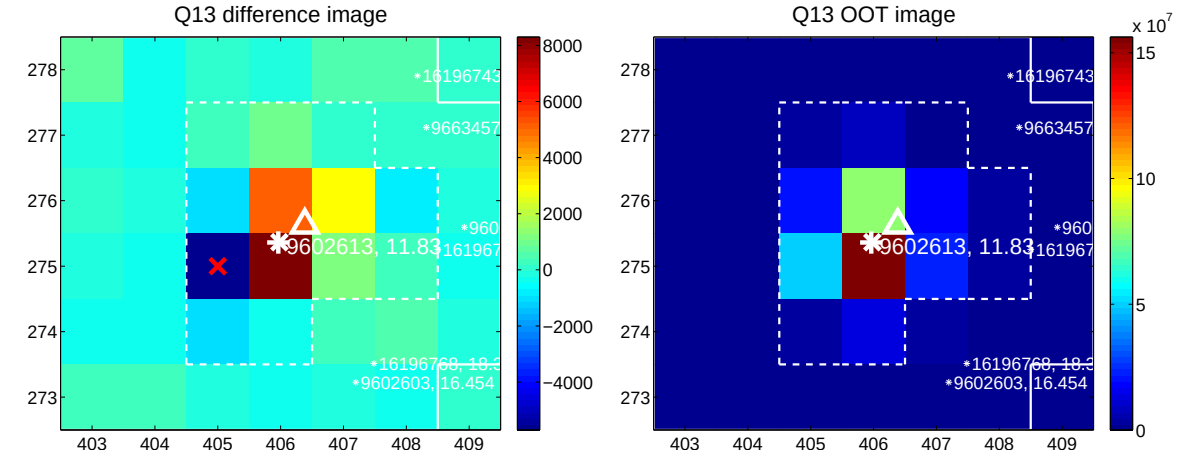


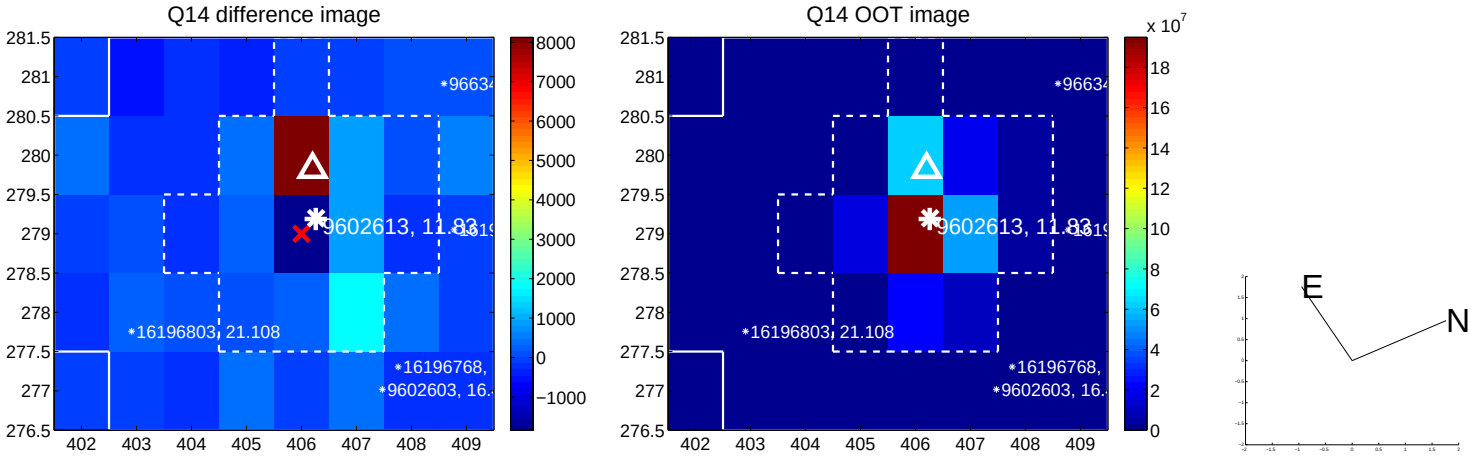


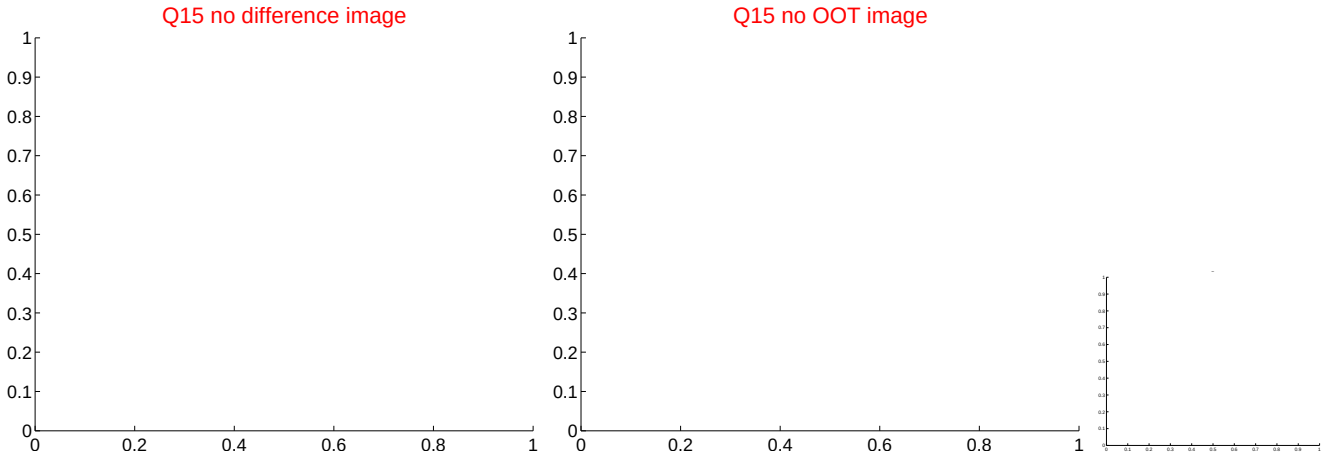


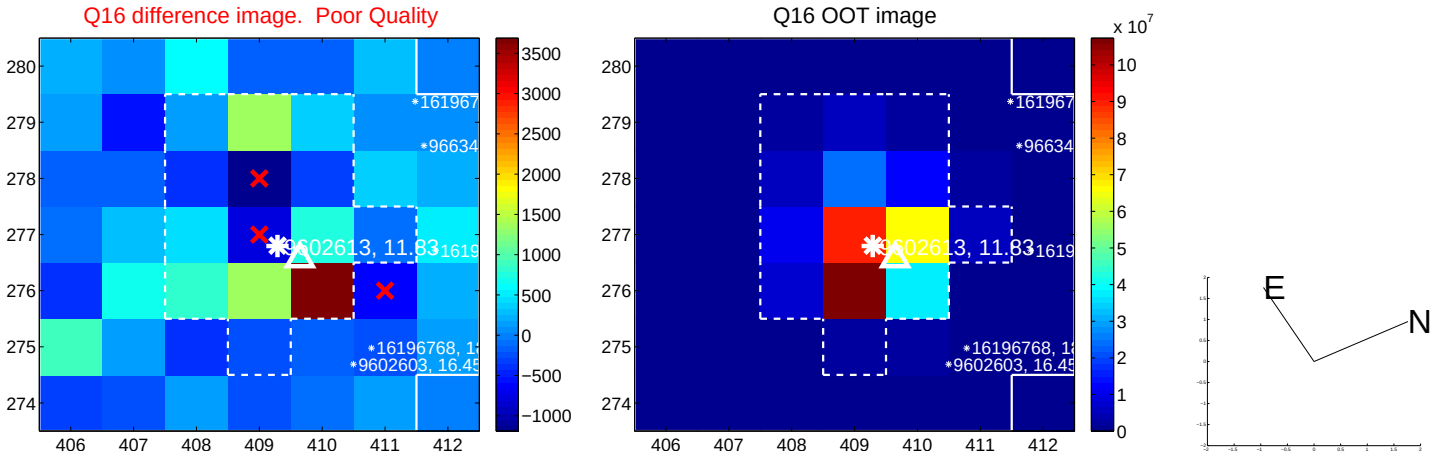


white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.









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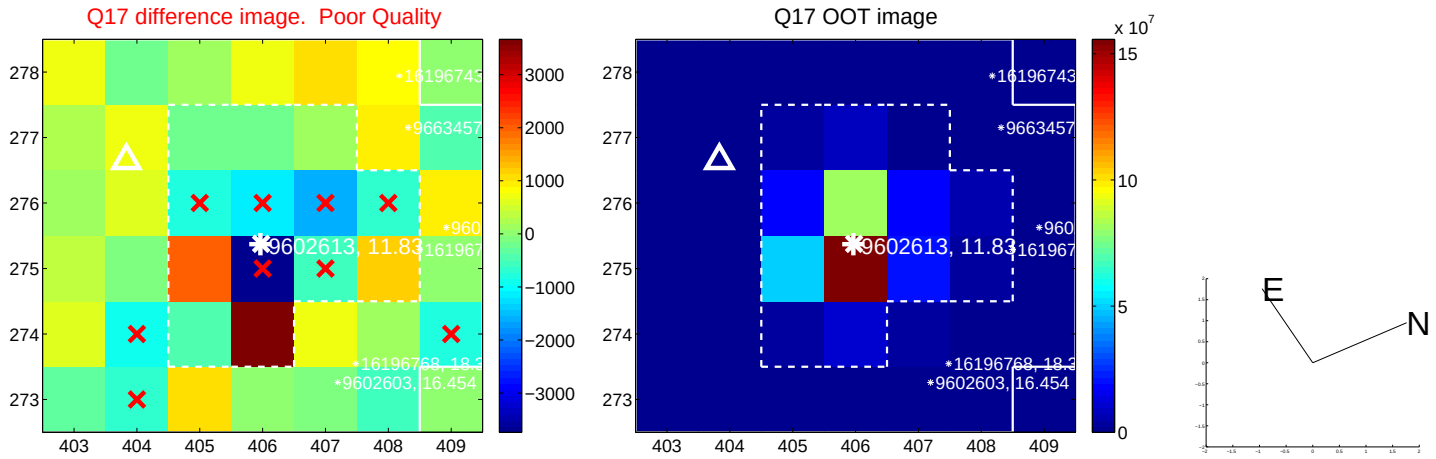
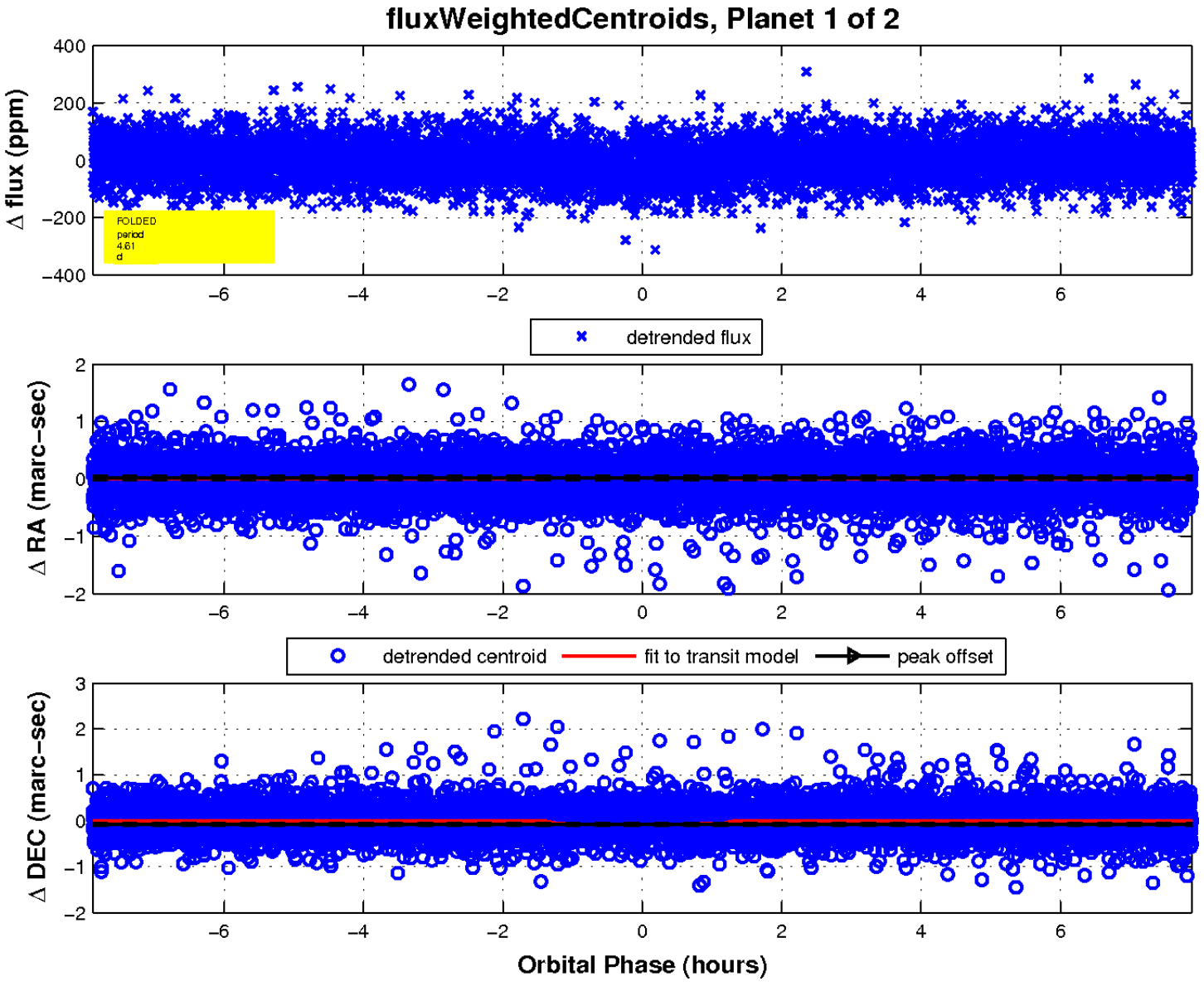




KIC 009602613

Link to DV Report: http://exoplanetarchive.ipac.caltech.edu/data/KeplerData/009/009602/009602613/dv/kplr009602613-20141002224145_dvr.pdf

Q1-17 (9.2) TCE Parameters

TCE	KOI?	Period (Days)	T_0 (BKJD)	Depth (ppm)	Duration (Hours)	MES	Bootstrap FAP
009602613-01	2612.01	4.612256	133.860202	27.4	2.630	11.8	6.0e-27
009602613-02	2612.02	7.573010	131.940801	31.1	2.754	9.6	1.9e-18

Notes: A bootstrap FAP value of > 1E-10, with a MES value of > 10, indicates a likely false alarm.

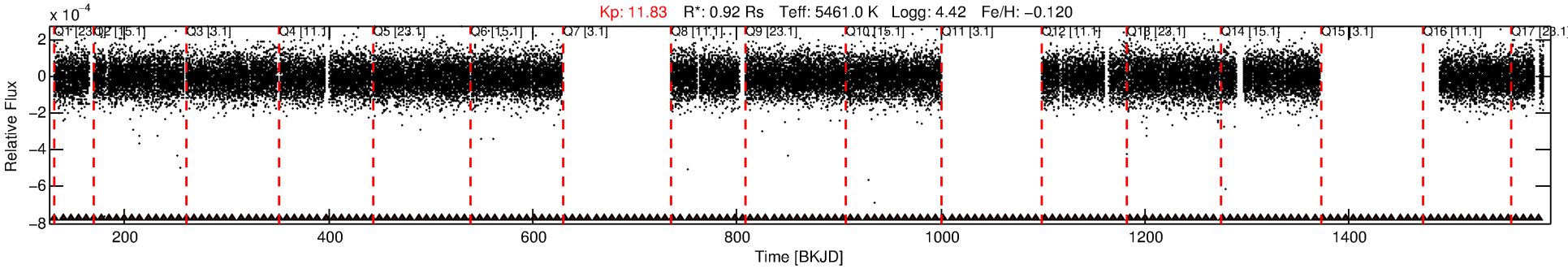
Ephemeris Match Information For 009602613-02

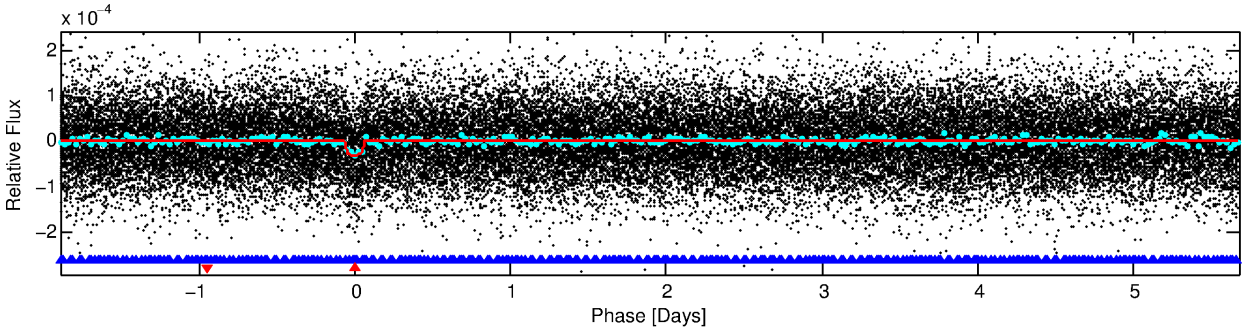
No Significant Match Found

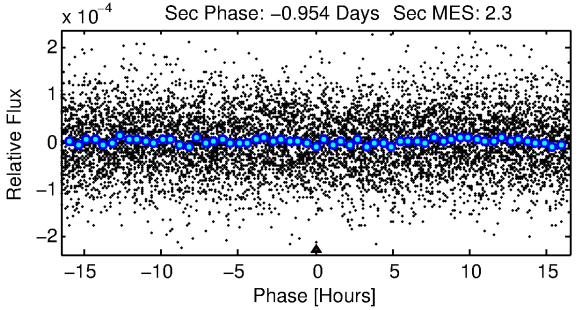
DV One-Page Summary

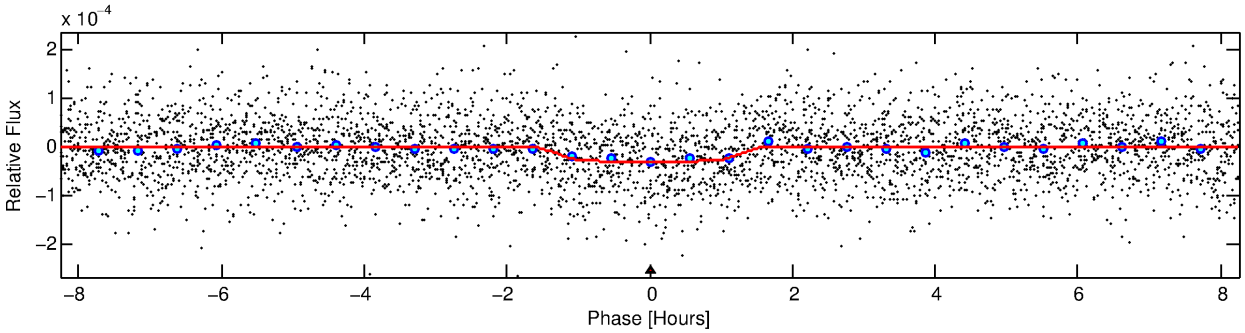
KIC: 9602613 Candidate: 2 of 2 Period: 7.573 d
KOI: K02612.02 Corr: 0.969

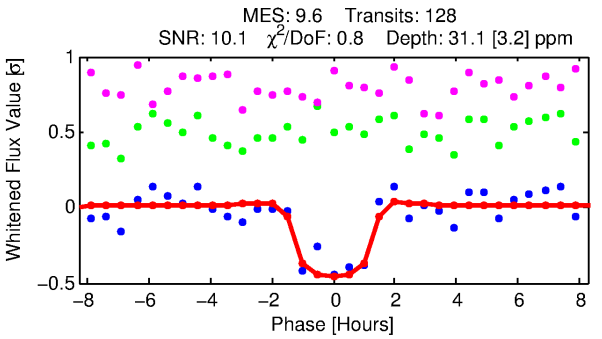
Kp: 11.83 R*: 0.92 Rs Teff: 5461.0 K Logg: 4.42 Fe/H: −0.120

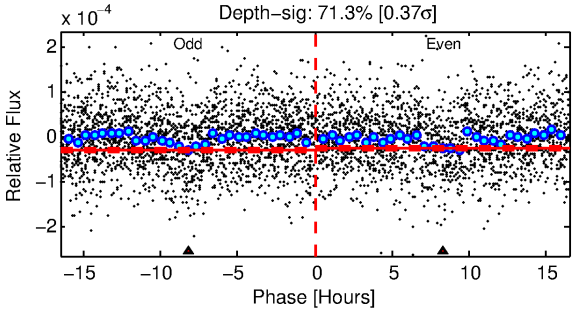


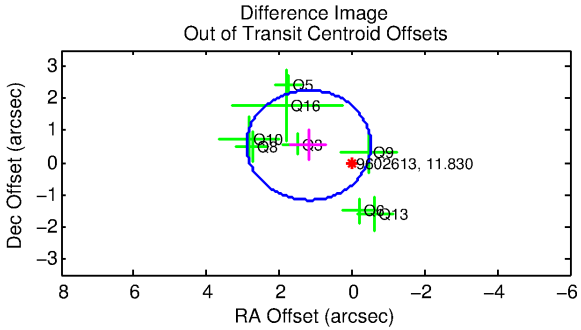












DV Fit Results:

Period = 7.57301 [0.00005] d
Epoch = 131.9408 [0.0052] BKJD
Rp/R* = 0.0059 [0.0027]
a/R* = 11.33 [22.06]
b = 0.85 [0.66]

Teq = 870 K
Rp = 0.59 Re
a = 0.0708 AU

DV Diagnostic Results:

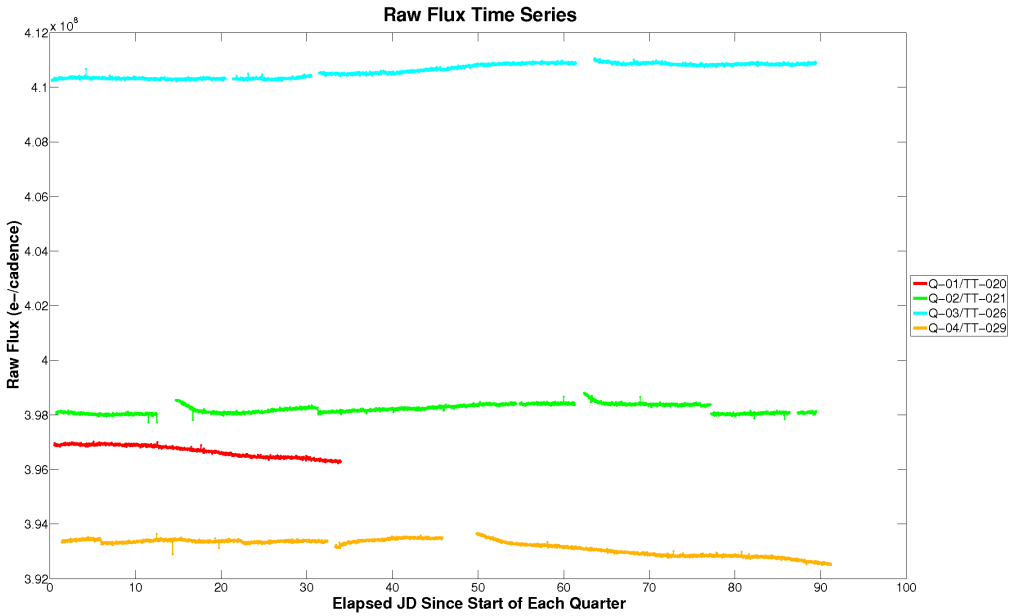
Epoch−sig: 97.6% [0.03σ]
ShortPeriod−sig: 100.0% [18.66σ]
LongPeriod−sig: N/A
ModelChiSquare2−sig: 100.0%
Bootstrap−pfa: 1.05e−19

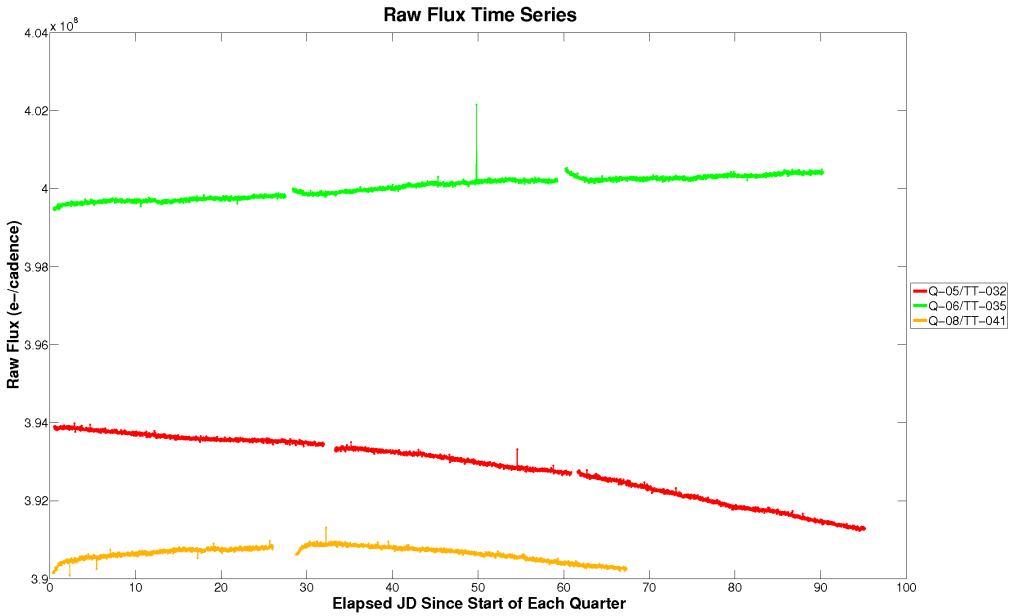
Centroid−sig: 37.4%
Centroid−so: 0.927 arcsec [0.93σ]
OotOffset−rm: 1.308 arcsec [2.29σ]
KicOffset−rm: 1.292 arcsec [2.39σ]
OotOffset−bf: N/A
KicOffset−bf: N/A
OotOffset−st: 2/1/2/3 [8]
KicOffset−st: 2/1/2/3 [8]
DiffImageQuality−fgm: 0.88 [7/8 of 14]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.2.19@56803 −− Date Generated: 24−Sep−2014 06:05:50 Z

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

Raw Flux


Raw Flux Time Series
x 10^8
Raw Flux (e−/cadence)
Elapsed JD Since Start of Each Quarter
Q−01/TT−020
Q−02/TT−021
Q−03/TT−026
Q−04/TT−029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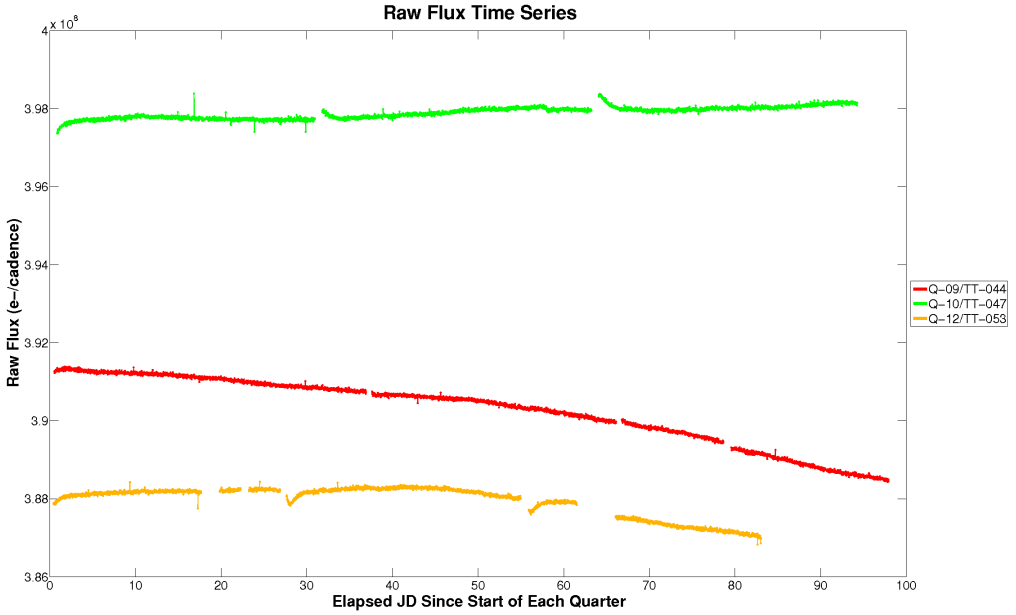
Raw Flux (e−/cadence)
Elapsed JD Since Start of Each Quarter
Q−05/TT−032
Q−06/TT−035
Q−08/TT−041


Raw Flux Time Series
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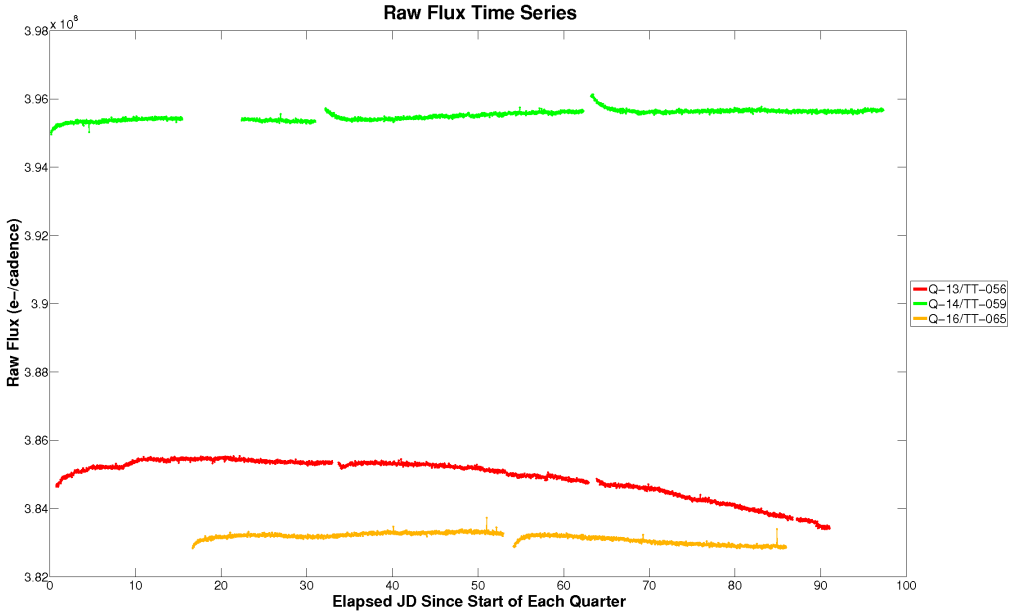
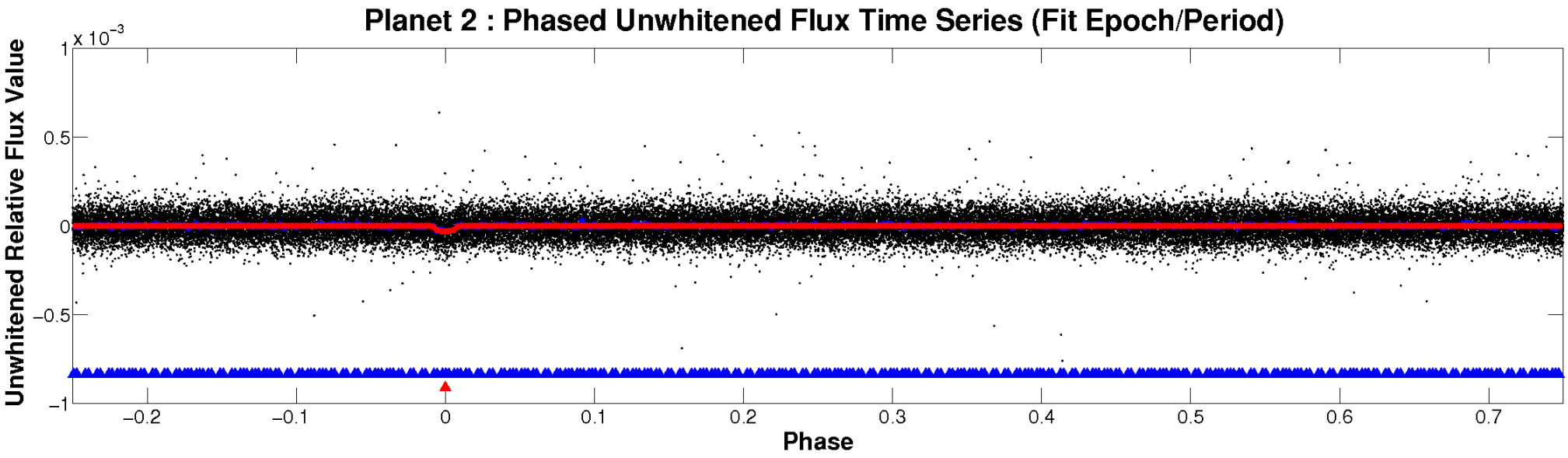
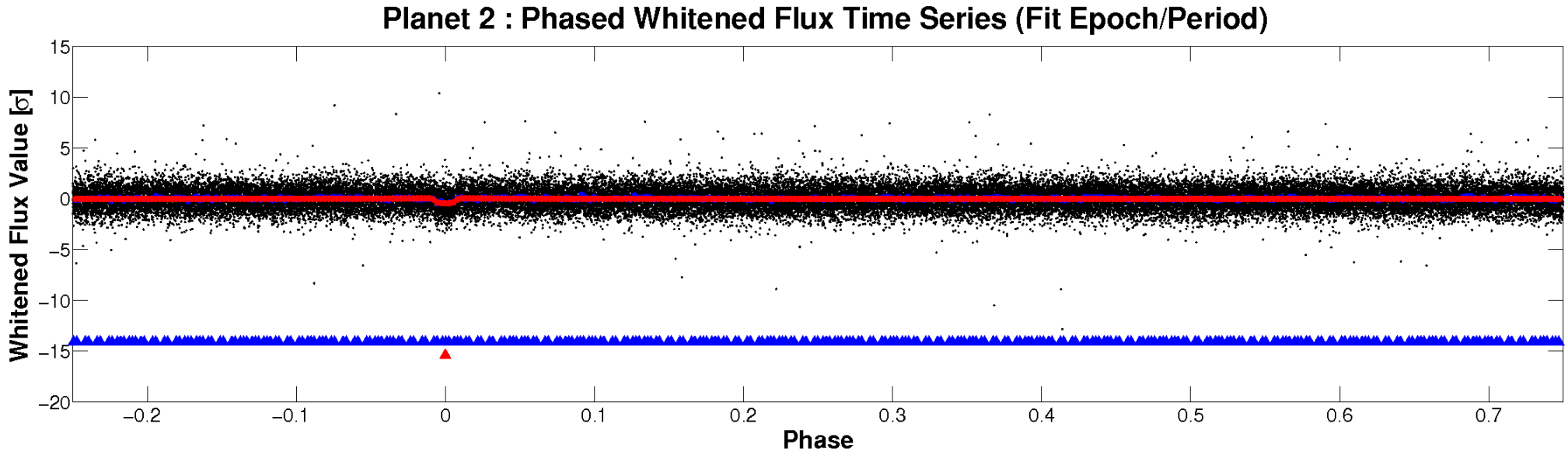
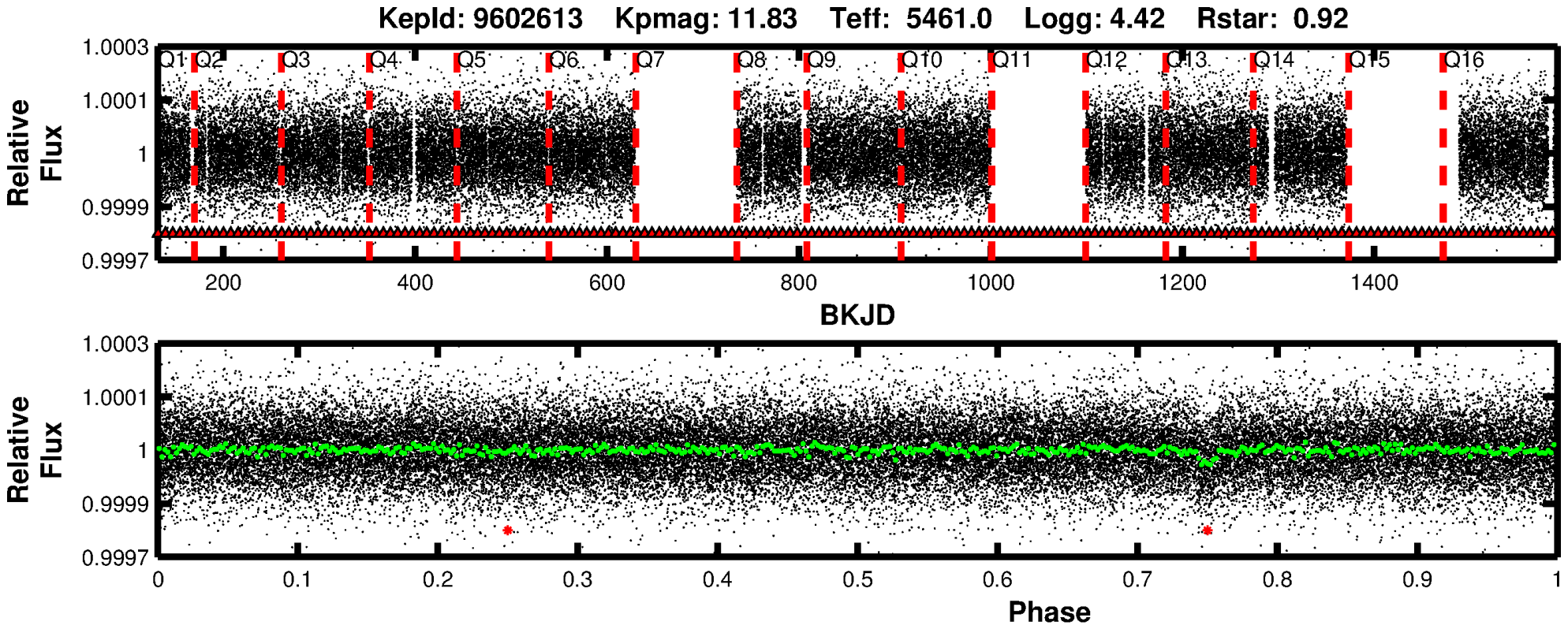
Raw Flux (e−/cadence)
Elapsed JD Since Start of Each Quarter
Q−09/TT−044
Q−10/TT−047
Q−12/TT−053


Raw Flux Time Series
x 10^8
Raw Flux (e−/cadence)
Elapsed JD Since Start of Each Quarter
Q−13/TT−056
Q−14/TT−059
Q−16/TT−065

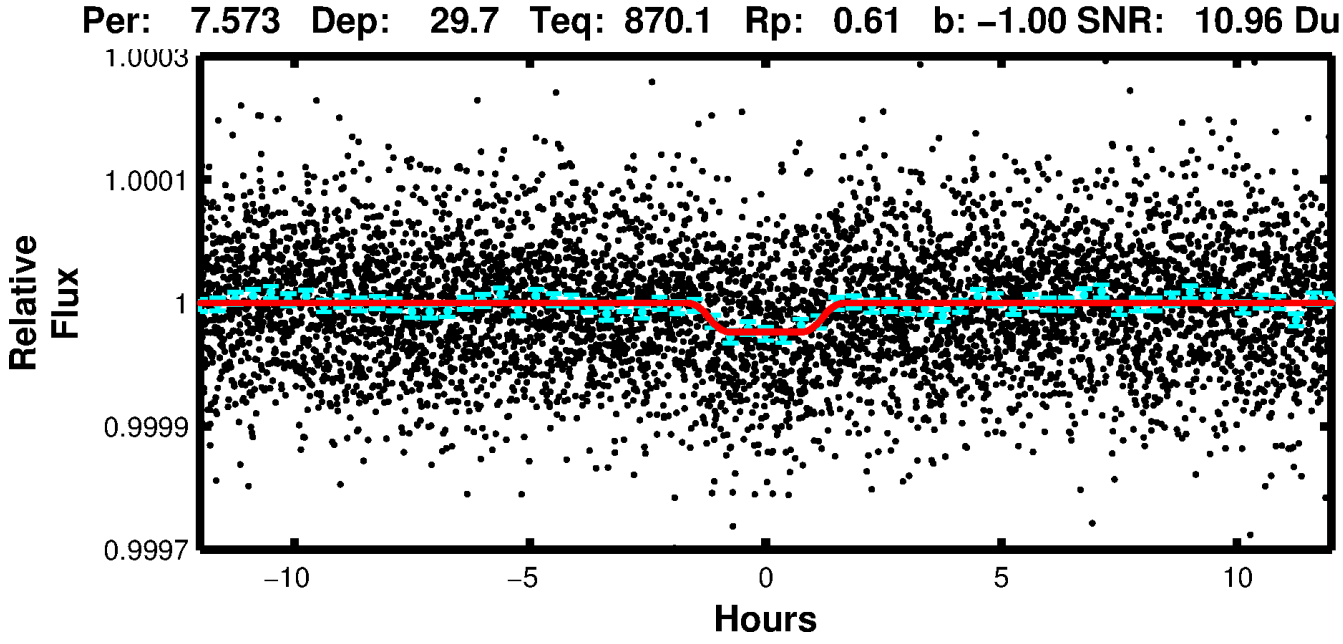
Non-Whitened Vs. Whitened Light Curve



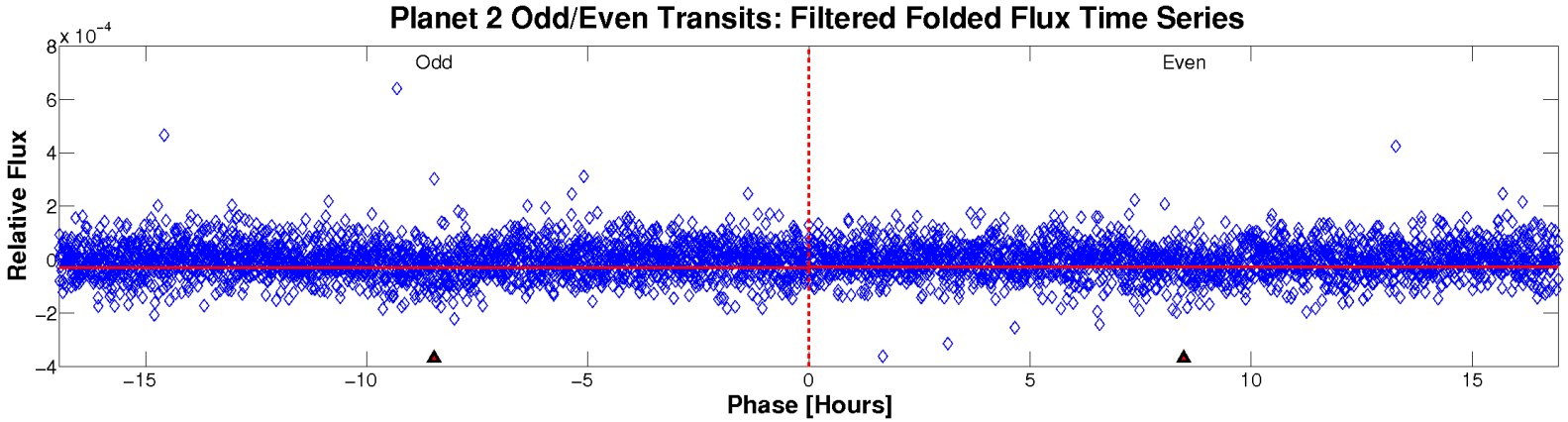


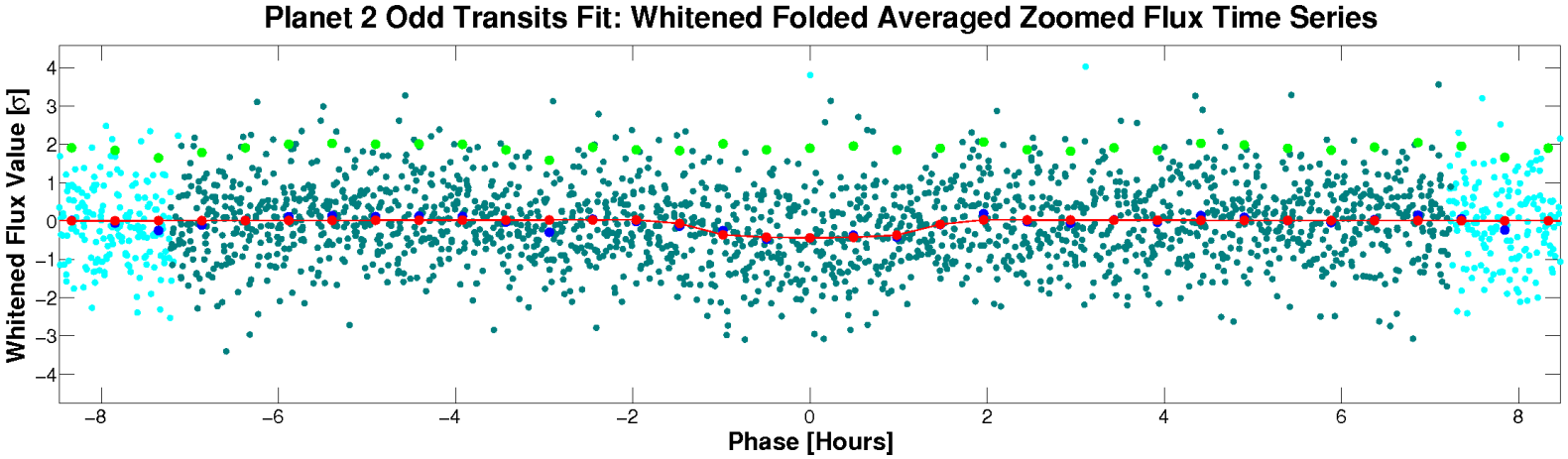


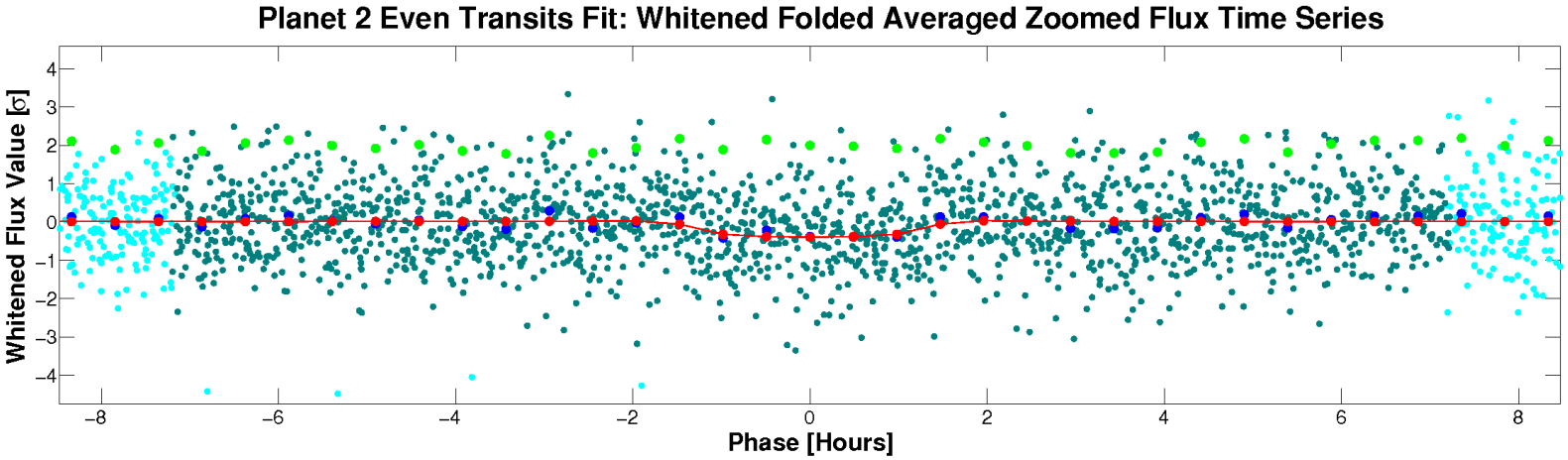
Alternate Detrending



Odd/Even Test

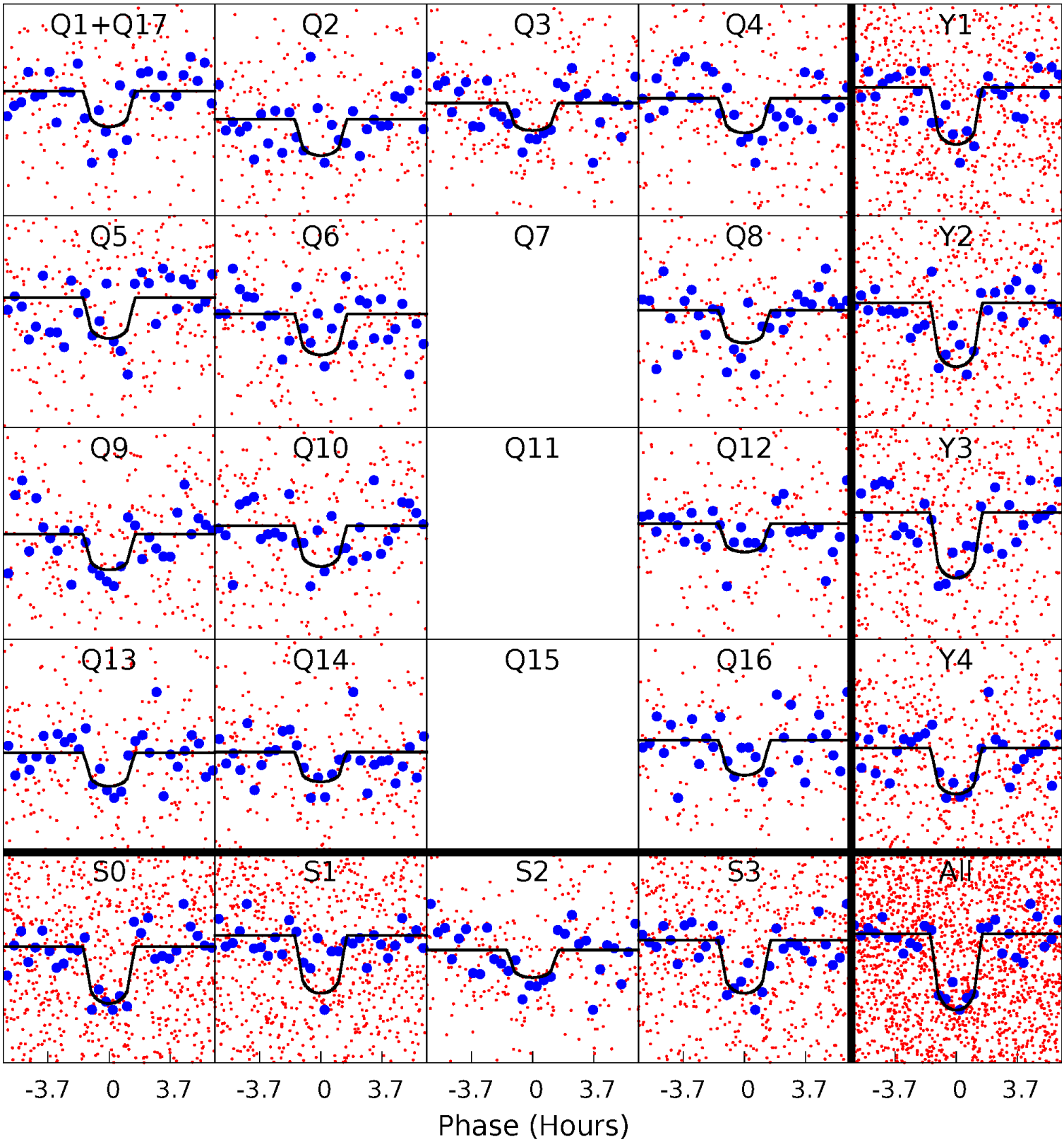






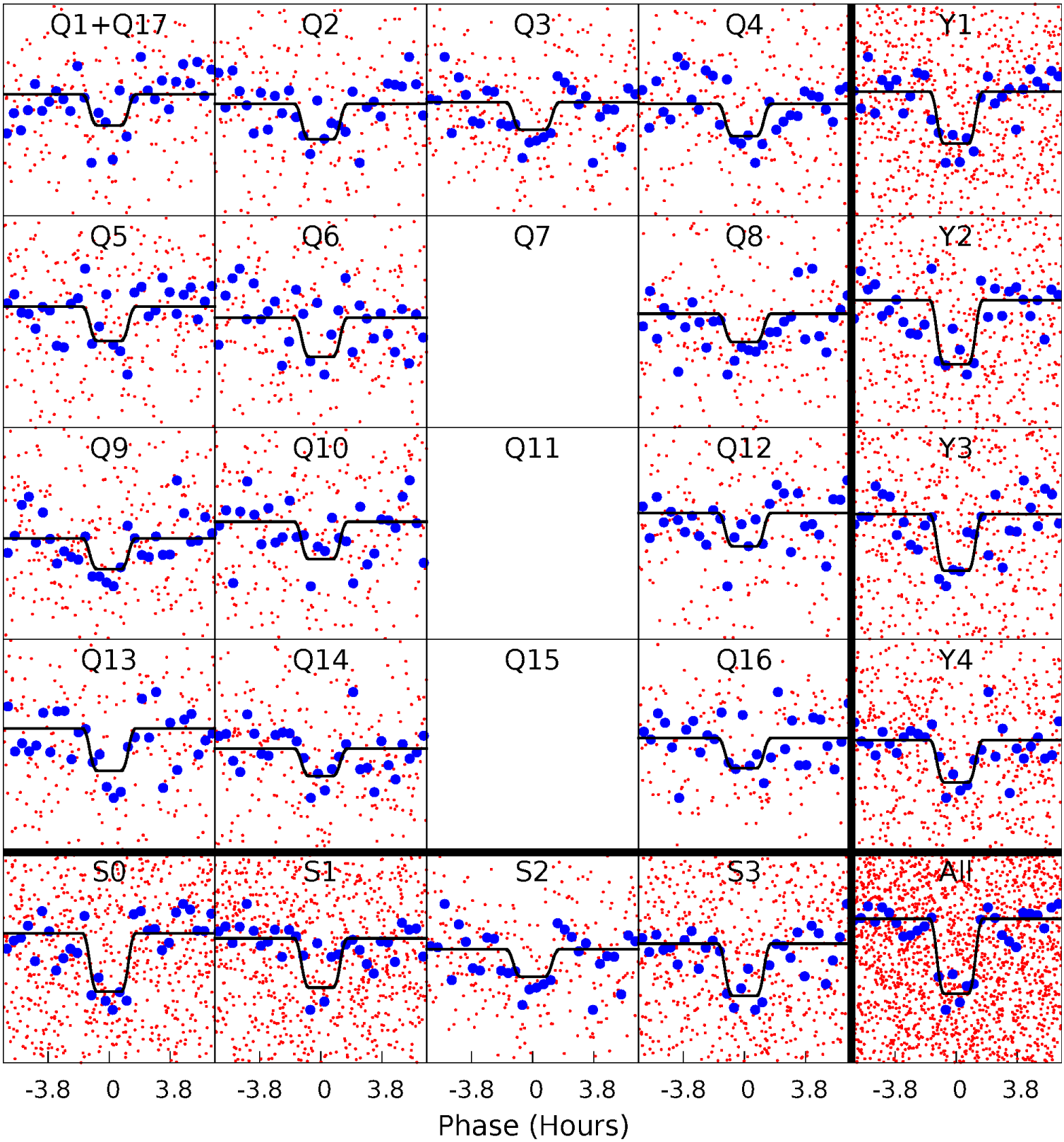
DV Quarter-Phased Transit Curves

TCE 009602613-02 P= 7.573010 Days T_0=131.9408 (BKJD)



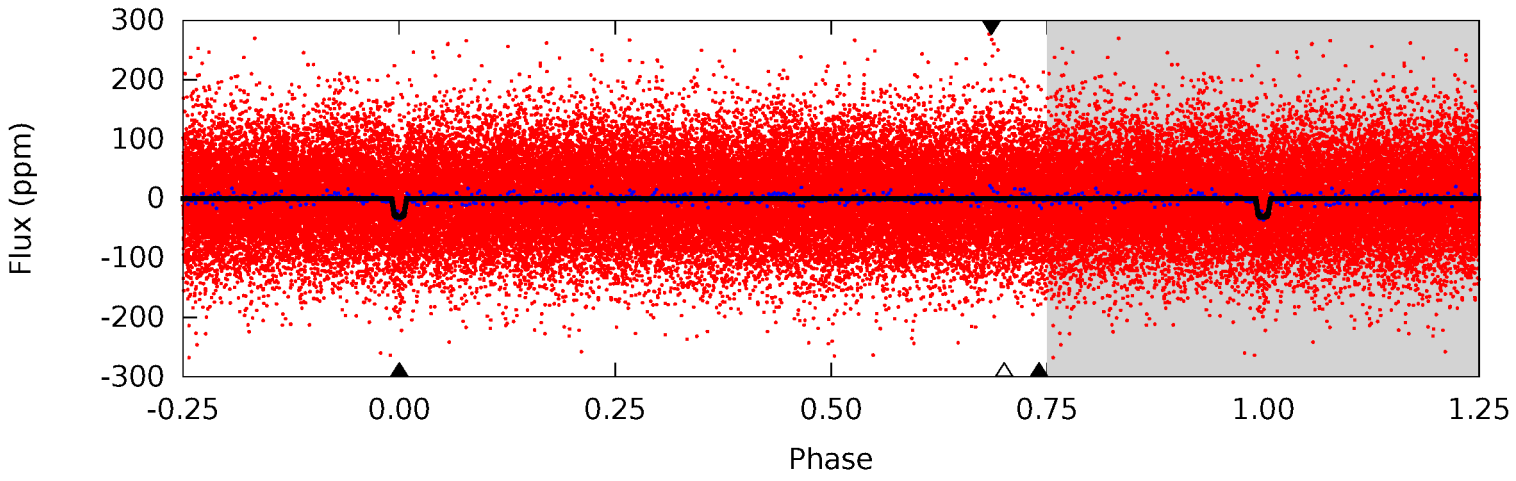
Alt. Detrend Quarter-Phased Transit Curves

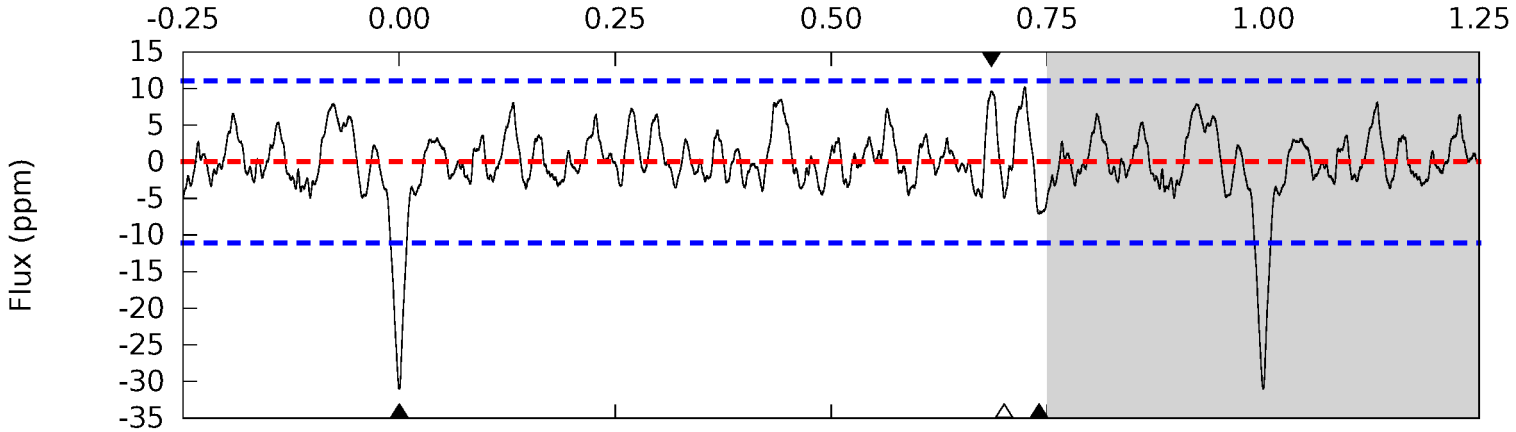
TCE 009602613-02 P= 7.573010 Days T_0=131.9408 (BKJD)

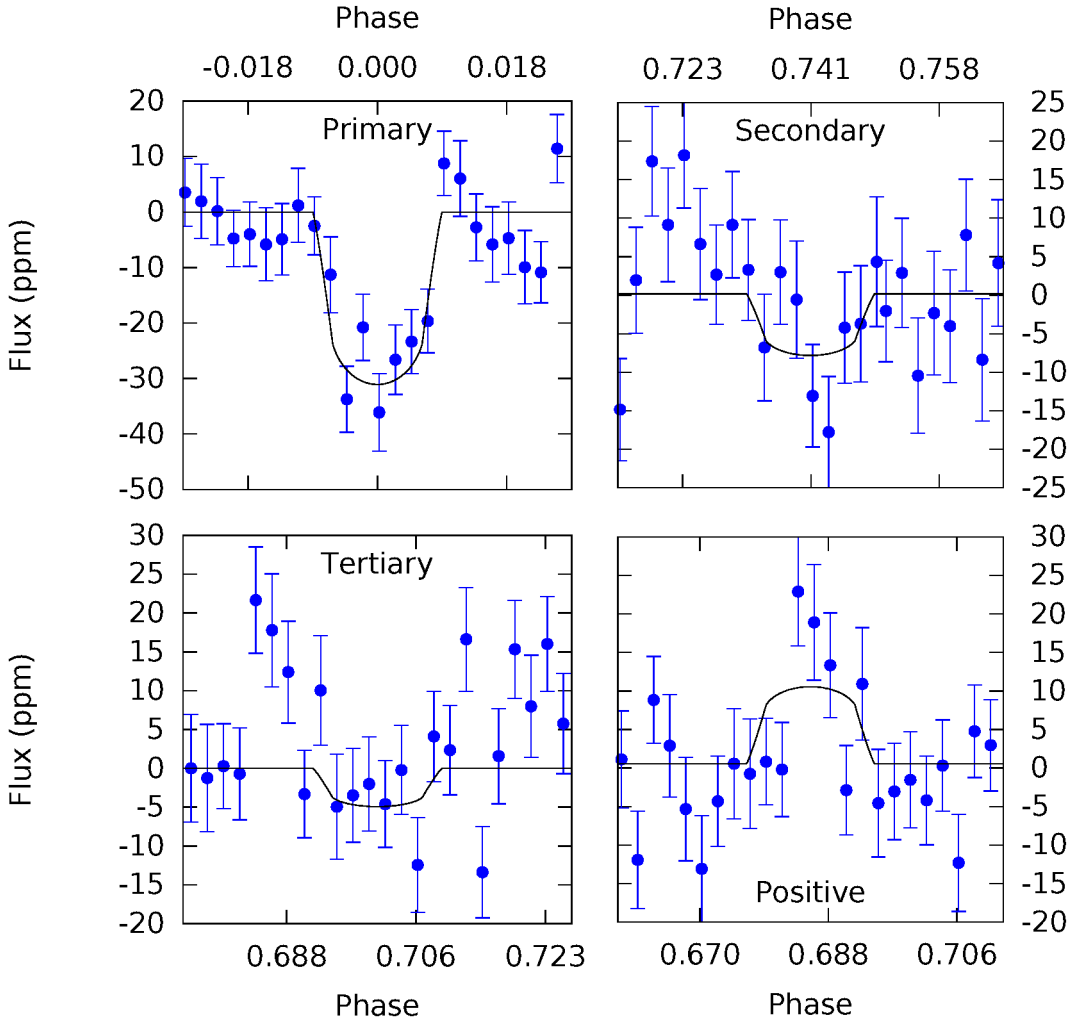


DV Model-Shift Uniqueness Test

TCE 009602613-02, P = 7.573010 Days

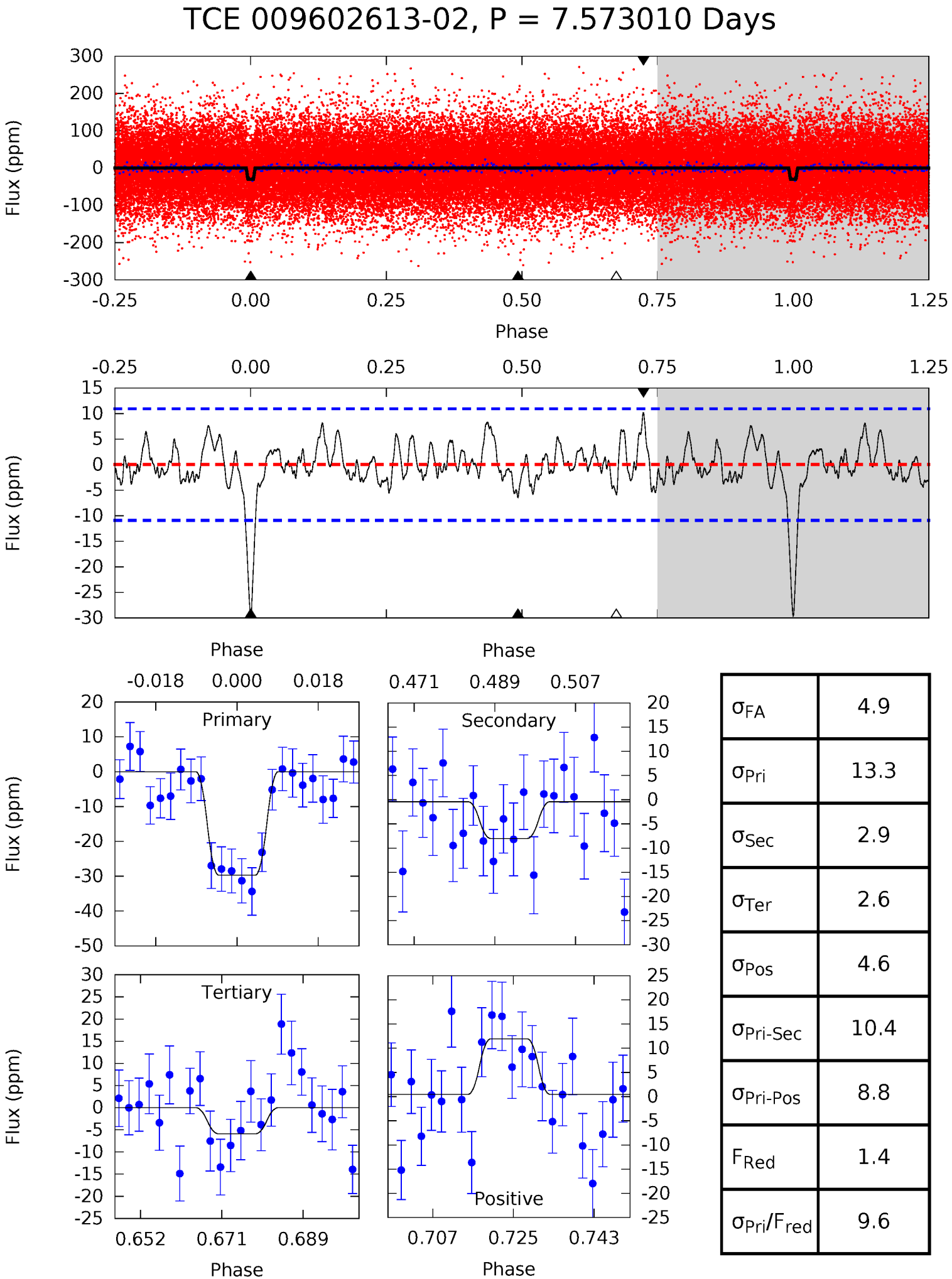






σ_{FA}	4.9
σ_{Pri}	13.8
σ_{Sec}	3.2
σ_{Ter}	2.2
σ_{Pos}	4.3
$\sigma_{Pri-Sec}$	10.7
$\sigma_{Pri-Pos}$	9.5
F_{Red}	1.4
σ_{Pri}/F_{red}	9.9

Alt Model-Shift Uniqueness Test



σ_{FA}	4.9
σ_{Pri}	13.3
σ_{Sec}	2.9
σ_{Ter}	2.6
σ_{Pos}	4.6
$\sigma_{Pri-Sec}$	10.4
$\sigma_{Pri-Pos}$	8.8
F_{Red}	1.4
σ_{Pri}/F_{red}	9.6

Stellar Parameters For KIC 009602613

	$T_{\rm eff}(K)$	$\log(g)$	[Fe/H]	R ($R_\odot$)	$M(M_\odot)$	$p_\star$ (g·cm^{-3})	p_{obs} (g·cm^{-3})
	5461^{+162}_{-126}	$4.423^{+0.113}_{-0.265}$	$-0.120^{+0.320}_{-0.240}$	$0.924^{+0.375}_{-0.119}$	$0.824^{+0.129}_{-0.064}$	$1.472^{+0.698}_{-0.904}$	$1.297^{+2.266}_{-1.210}$
	+3%/-2%	+3%/-6%	+267%/-200%	+41%/-13%	+16%/-8%	+47%/-61%	+175%/-93%
Source	PHO1	KIC0	KIC0	DSEP			Transit Fit

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

If $p_\star$ is significantly different than p_{obs}, it may indicate a stellar blend.

Secondary Eclipse Parameters for KIC 009602613-02 / KOI 2612.02

Detrend	Depth (ppm)	R_p ($R_\oplus$)	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-7±2	$0.62^{+0.31}_{-0.28}$	1233^{+119}_{-70}	3963^{+1072}_{-519}	51^{+127}_{-31}
Alt.	-6±2	$0.62^{+0.31}_{-0.28}$	1235^{+119}_{-70}	3905^{+1031}_{-527}	45^{+113}_{-27}

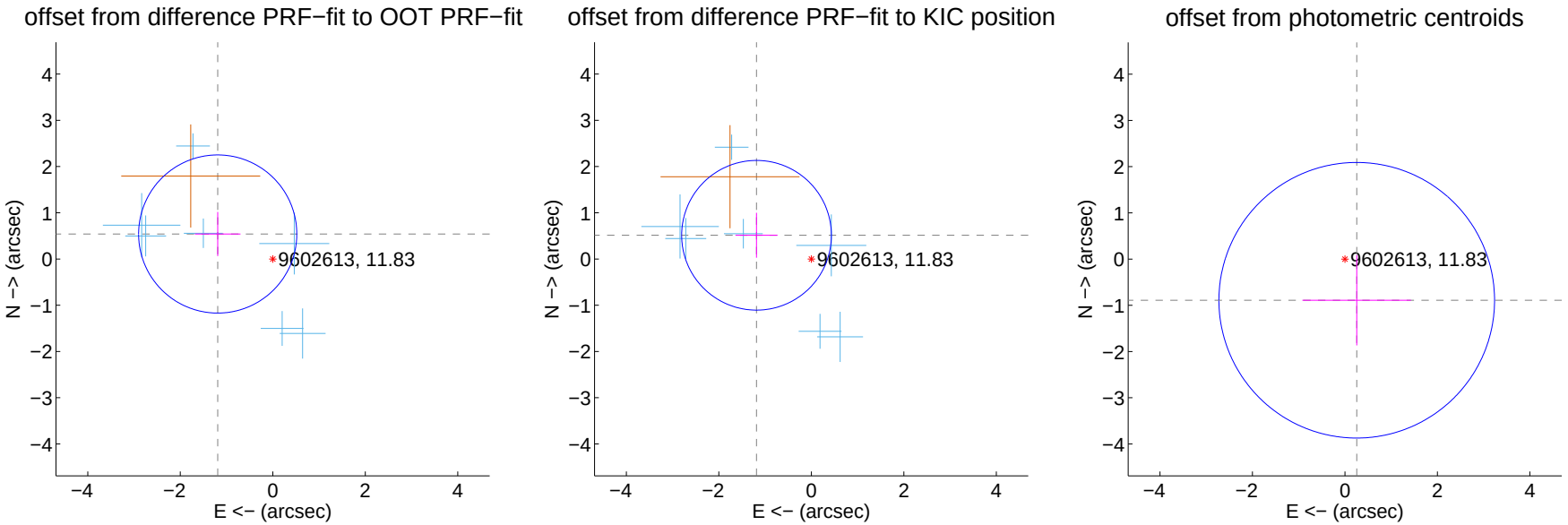
T_{max} = Theoretical Maximum Planetary Temperature
T_{obs} = Observed Planetary Temperature (Assuming A=0.3)
A_{obs} = Observed Albedo (Assuming T=0)

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

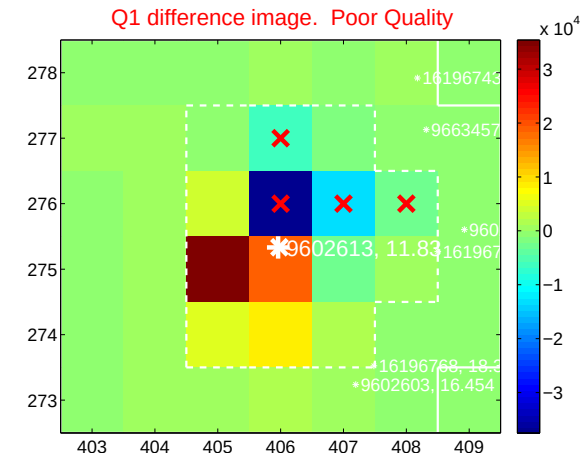
Supplemental centroid analysis for 009602613-02. Kepler magnitude: 11.83. Transit SNR 10.11
There are 7 quarters with good PRF difference image offsets
The direct PRF centroid is offset from the target star catalog position by about 0.02 arcsec

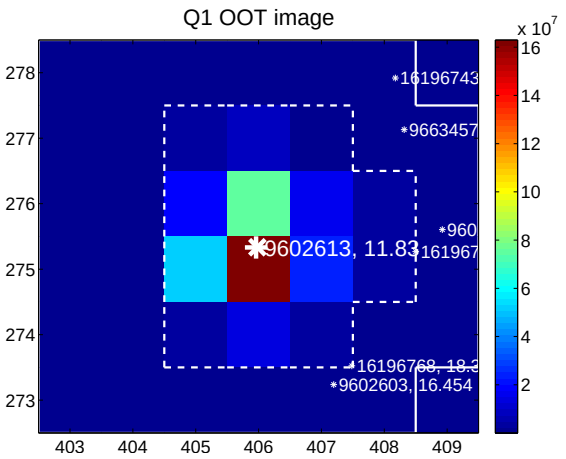
	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.308 ± 0.570	2.29	1.191 ± 0.494	0.541 ± 0.478
PRF-fit source offset from KIC position	1.292 ± 0.540	2.39	1.186 ± 0.455	0.513 ± 0.486
photometric centroid source offset	0.93 ± 0.99	0.93	-0.26 ± 1.18	-0.89 ± 0.98

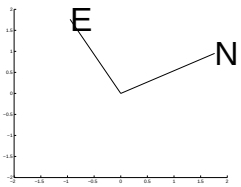


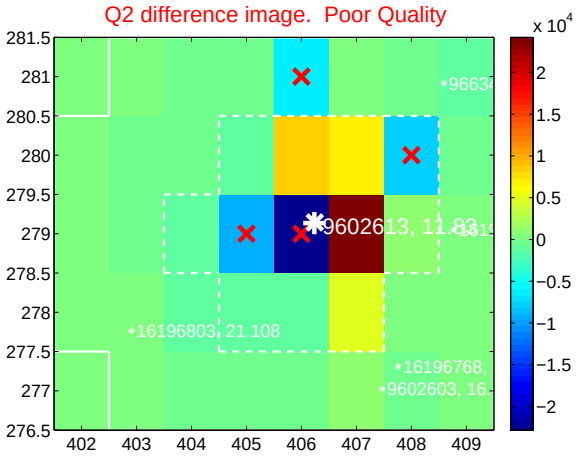
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one-σ uncertainty. Blue circle: three-σ. Red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

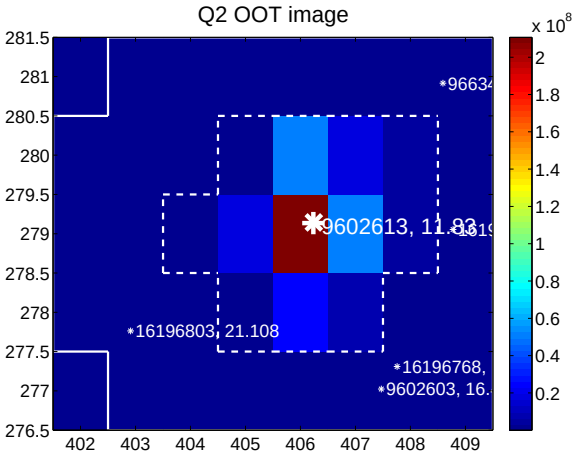
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.

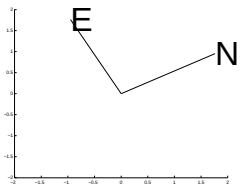


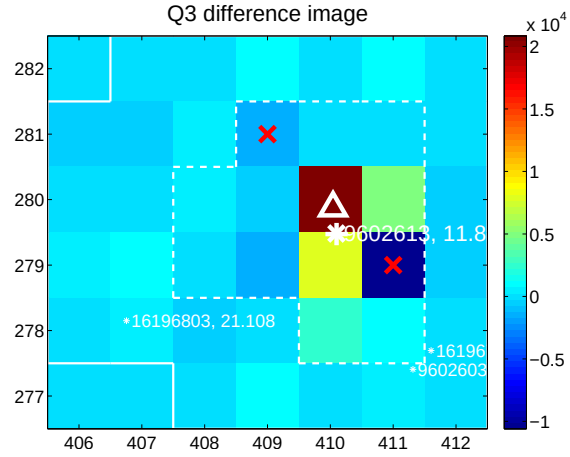


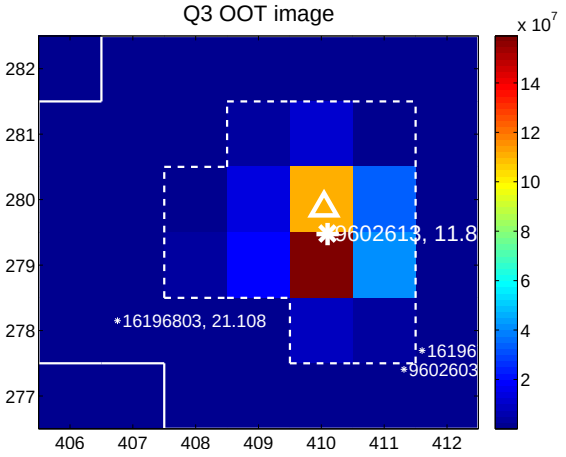


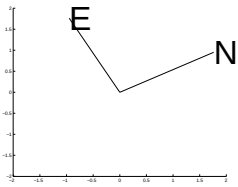


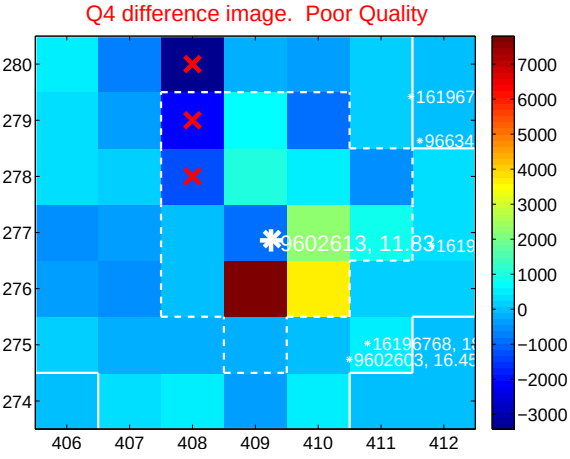


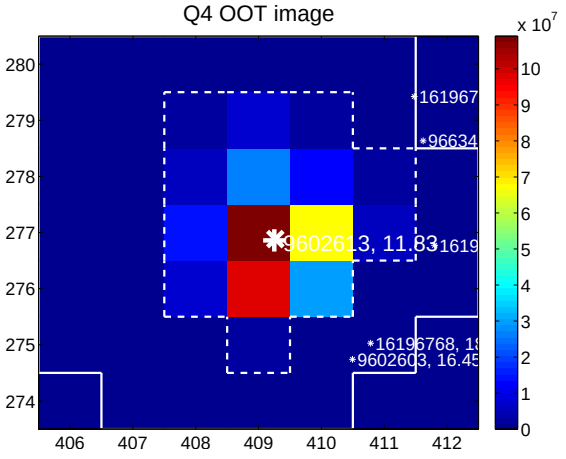


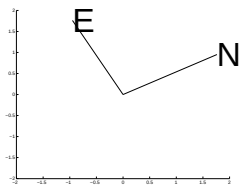




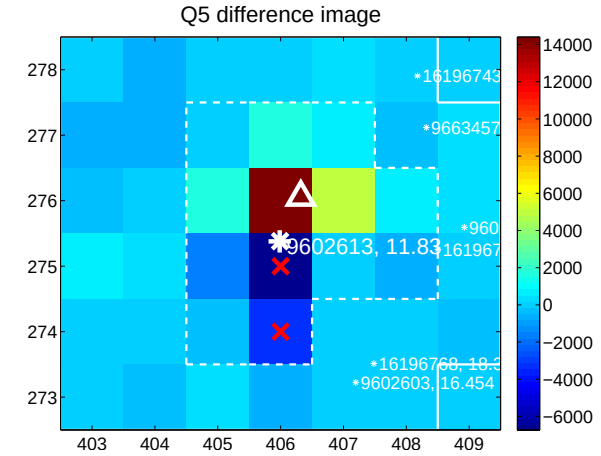


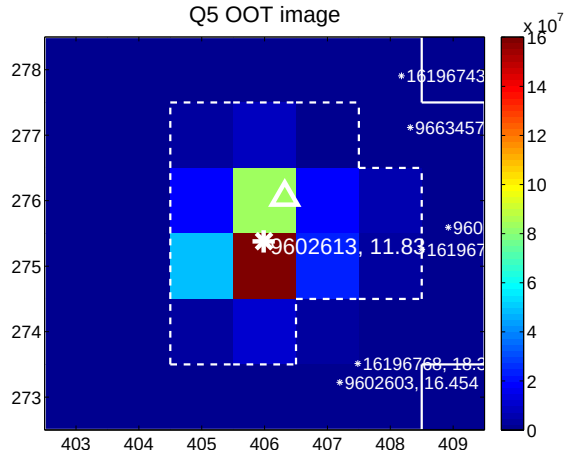


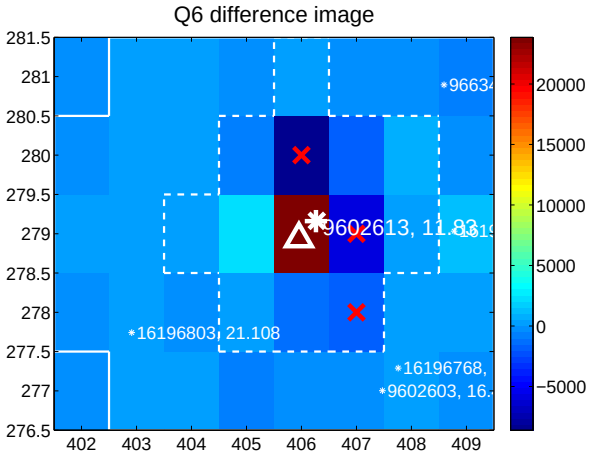


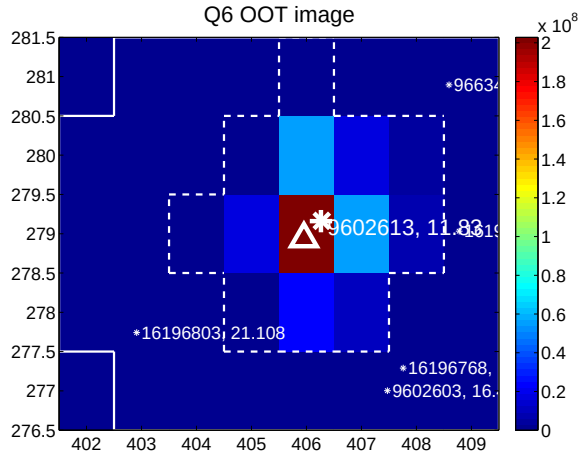


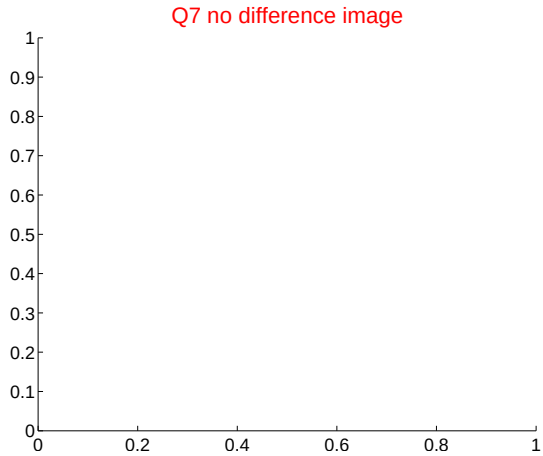
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.

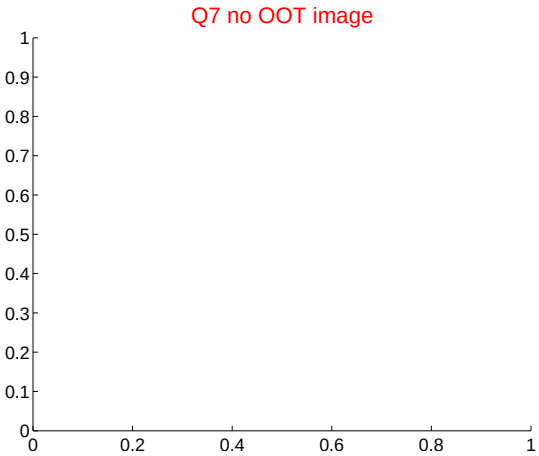


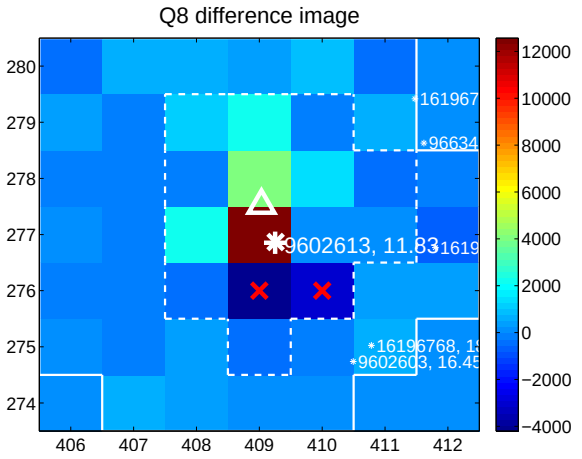


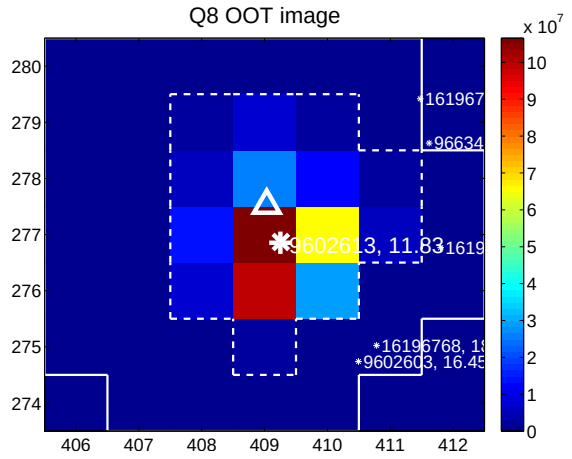




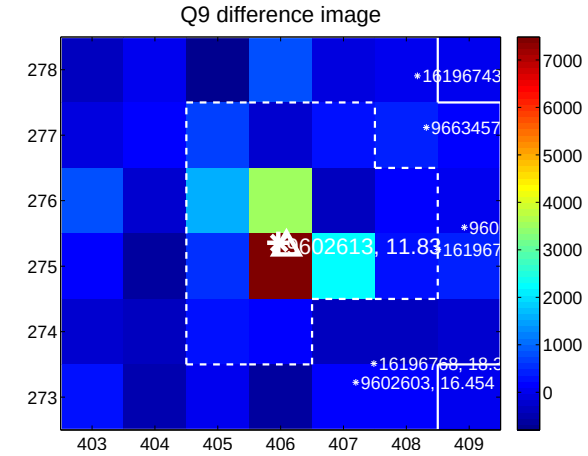


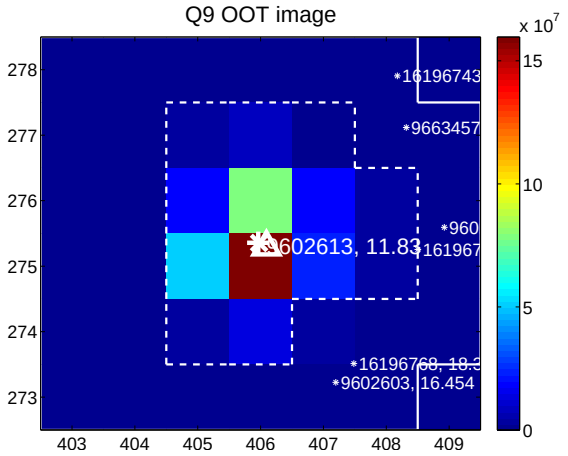


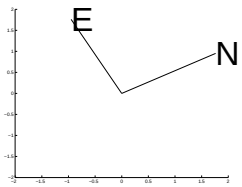


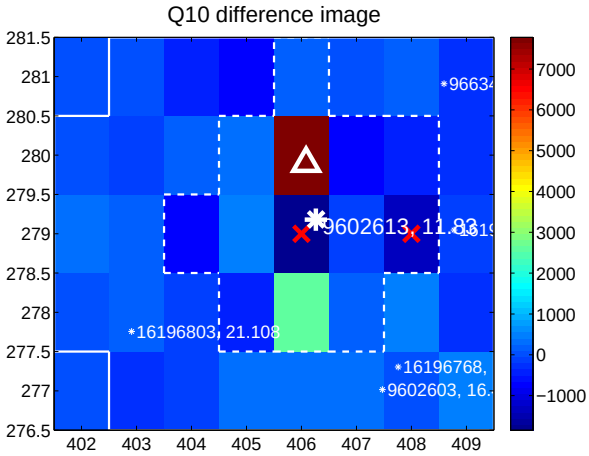


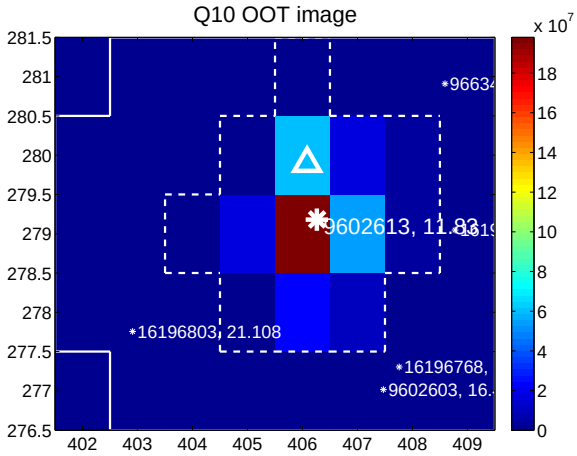
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.

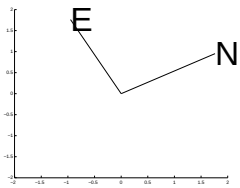


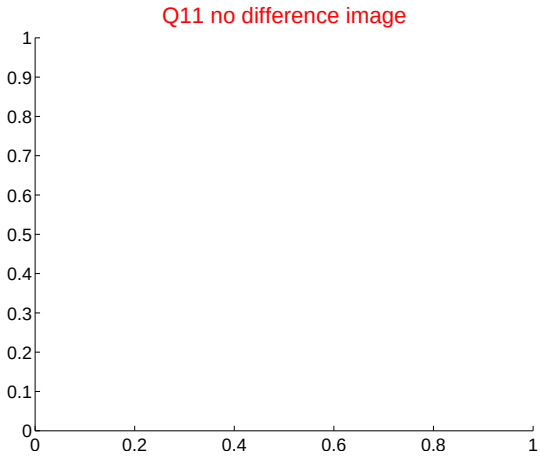


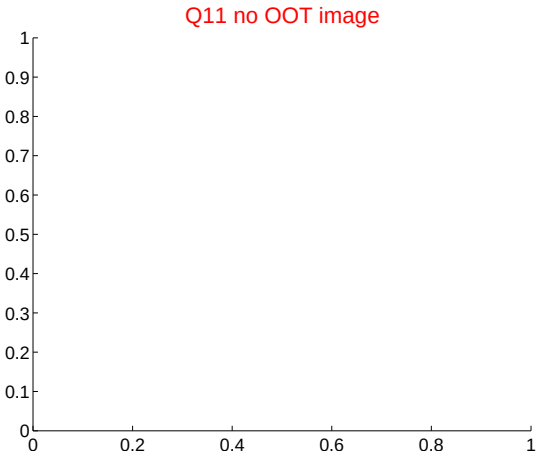


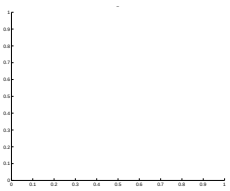


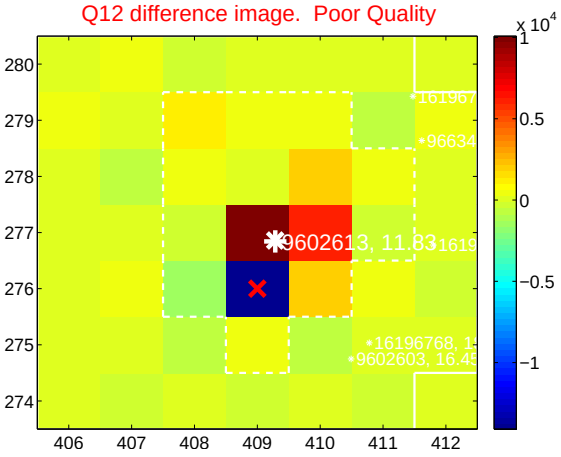


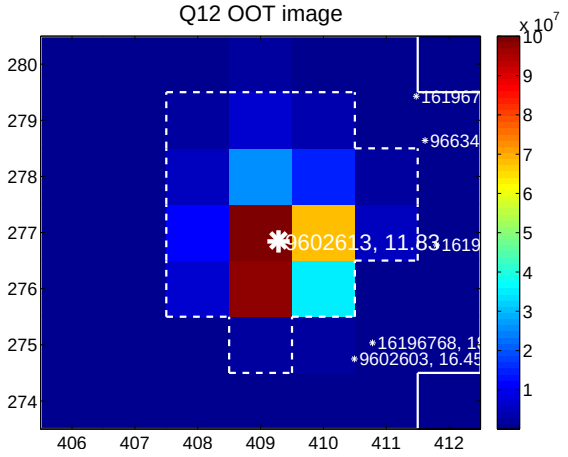


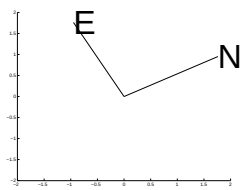




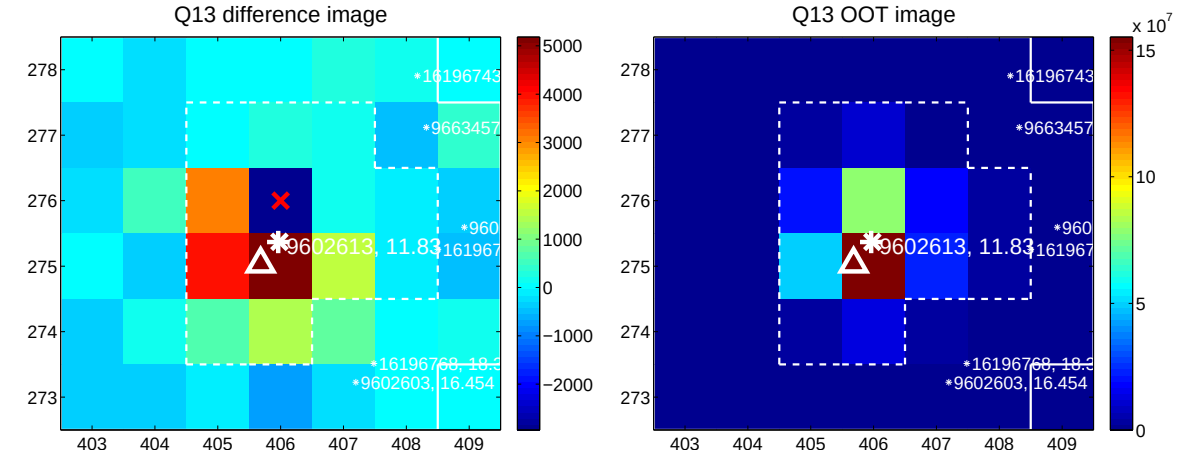


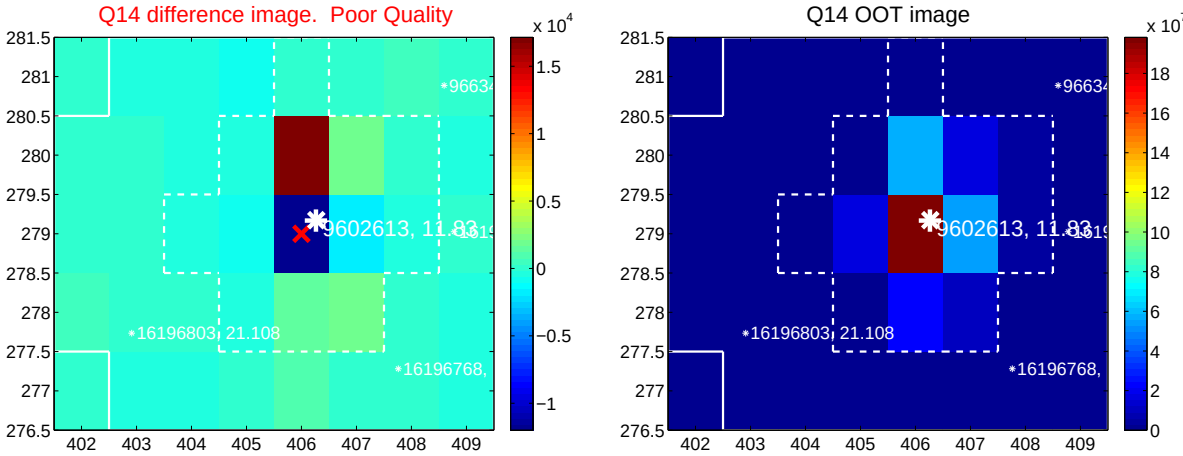


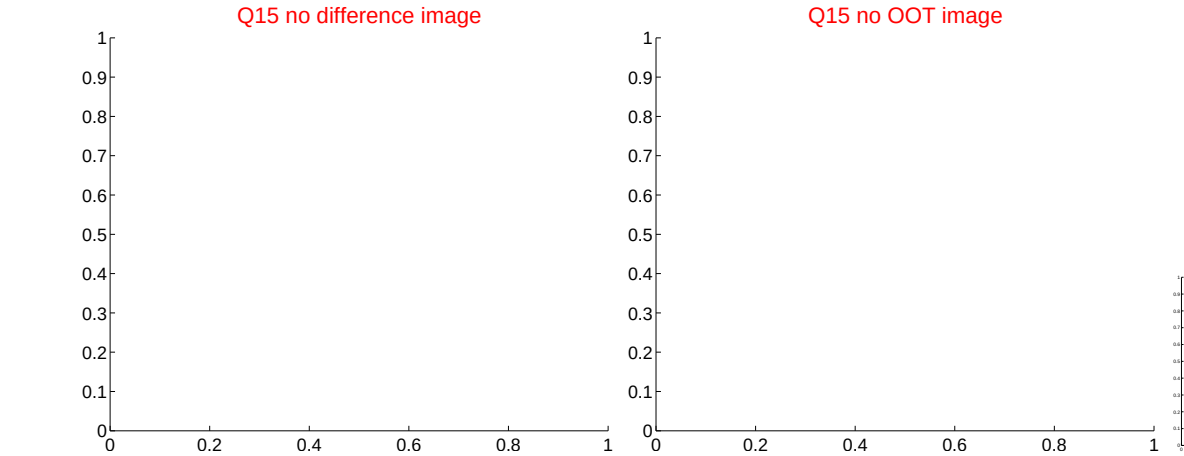


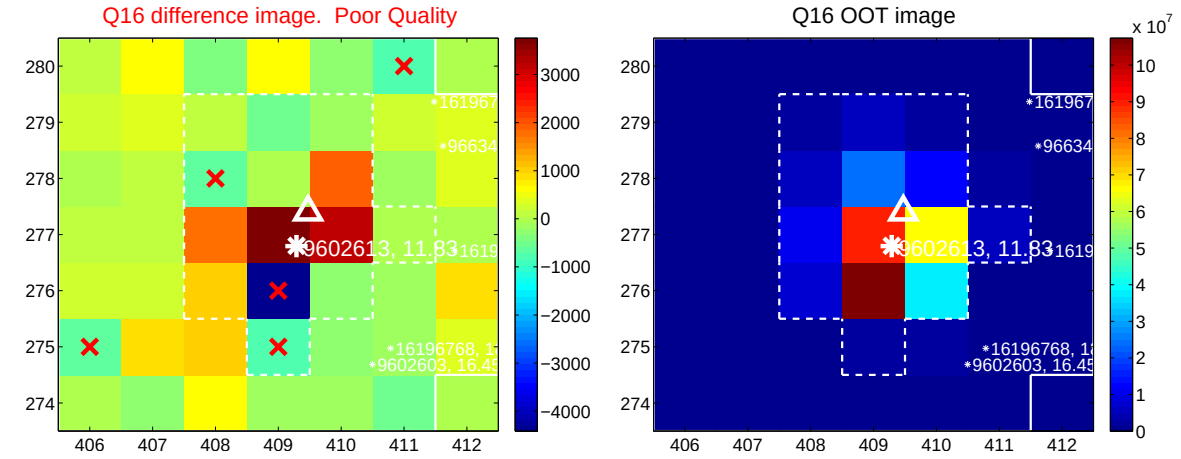


white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.









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