KIC 009032900

Link to DV Report: `http://exoplanetarchive.ipac.caltech.edu/data/KeplerData/009/009032/009032900/dv/kplr009032900-20130815195353_dvr.pdf`
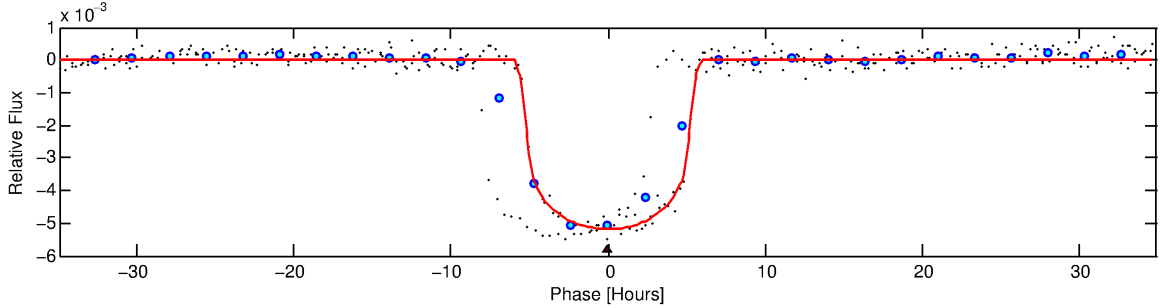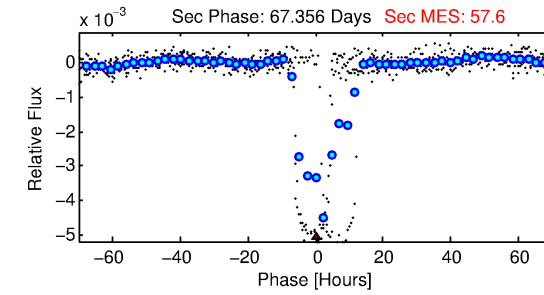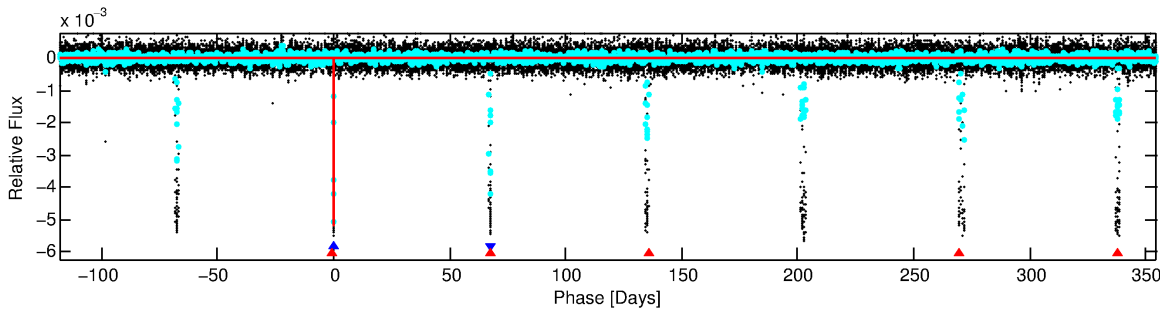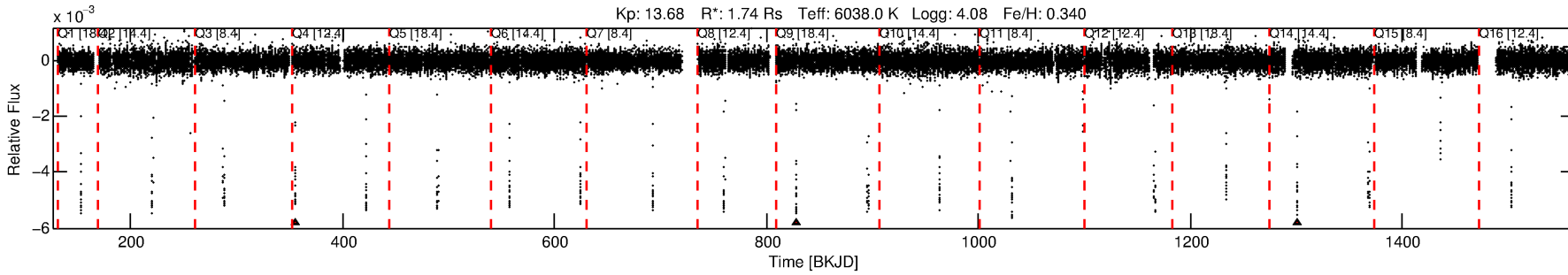
TCE	KOI?	Period (Days)	T_0 (BKJD)	Depth (ppm)	Duration (Hours)	MES
009032900-01	Yes	473.016	354.799	5187.1	11.6521	101.7
009032900-02	Yes	270.684	353.958	5063.5	11.4879	60.1

Flux Vetting: DV One-Page Summary

KIC: 9032900   Candidate: 1 of 2   Period: 473.016 d

Kp: 13.68   R*: 1.74 Rs   Teff: 6038.0 K   Logg: 4.08   Fe/H: 0.340

Q1 [18.4] Q2 [14.4]   Q3 [8.4]   Q4 [12.4]   Q5 [18.4]   Q6 [14.4]   Q7 [8.4]   Q8 [12.4]   Q9 [18.4]   Q10 [14.4]   Q11 [8.4]   Q12 [12.4]   Q13 [18.4]   Q14 [14.4]   Q15 [8.4]   Q16 [12.4]

Relative Flux — Time [BKJD]

Relative Flux — Phase [Days]

Sec Phase: 67.356 Days   Sec MES: 57.6

Relative Flux — Phase [Hours]

Relative Flux — Phase [Hours]

MES: 101.7   Transits: 3
SNR: 109.6   χ²/DoF: 1.2   Depth: 5187.1 [63.0] ppm

Whitened Flux Value [σ] — Phase [Hours]

Depth-sig: 61.2% [0.51σ]

Odd   Even

Relative Flux — Phase [Hours]

Difference Image
Out of Transit Centroid Offsets

Q9
Q1 9032900, 13.675

Dec Offset (arcsec) — RA Offset (arcsec)

DV Fit Results:

Period = 473.01578 [0.00094] d
Epoch = 354.7994 [0.0013] BKJD
Rp/R* = 0.0678 [0.0011]
a/R* = 288.95 [18.12]
b = 0.52 [0.09]

Teq = 307 K
Rp = 12.90 Re
a = 1.3101 AU

DV Diagnostic Results:

Epoch-sig: 81.8% [0.23σ]
ShortPeriod-sig: 100.0% [0.00σ]
LongPeriod-sig: N/A
Bootstrap-pfa: N/A

Centroid-sig: 5.9%
Centroid-so: 0.074 arcsec [1.21σ]
OotOffset-rm: 0.150 arcsec [1.51σ]
KicOffset-rm: 0.185 arcsec [1.57σ]
OotOffset-bf: N/A
KicOffset-bf: N/A
OotOffset-st: 1/0/0/1 [2]
KicOffset-st: 1/0/0/1 [2]
DiffImageQuality-fgm: 1.00 [2/2 of 2]

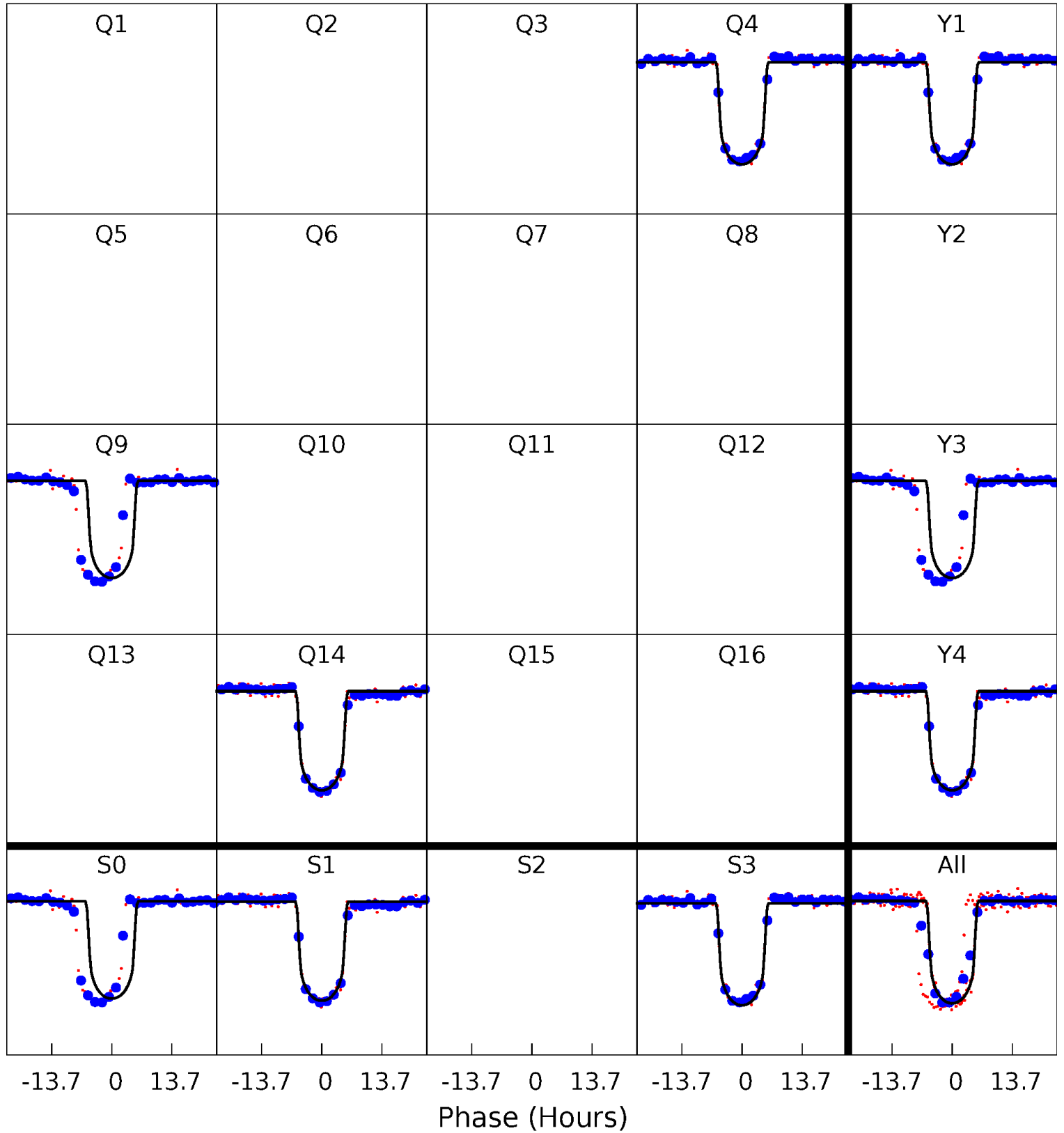KepId: 9032900   Kpmag: 13.68   Teff: 6038.0   Logg: 4.08   Rstar: 1.74
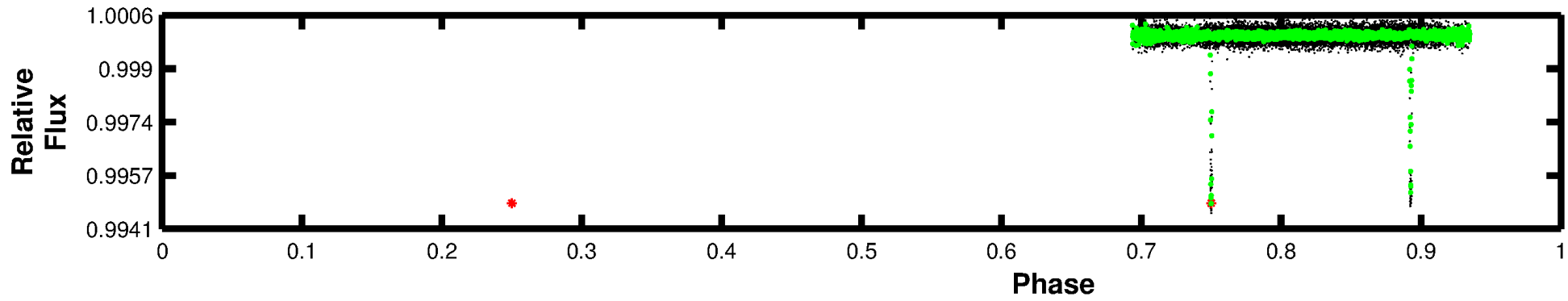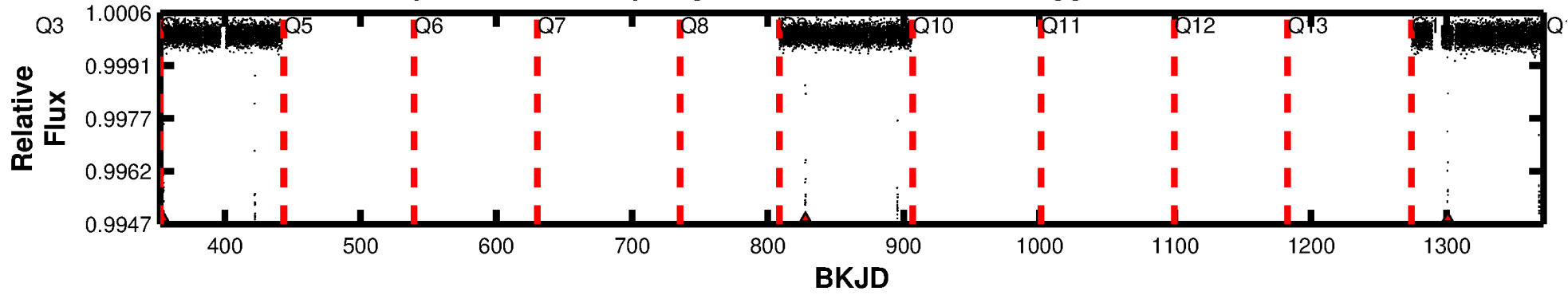
Flux Vetting - Alternate Detrending with Trapezoid Fit

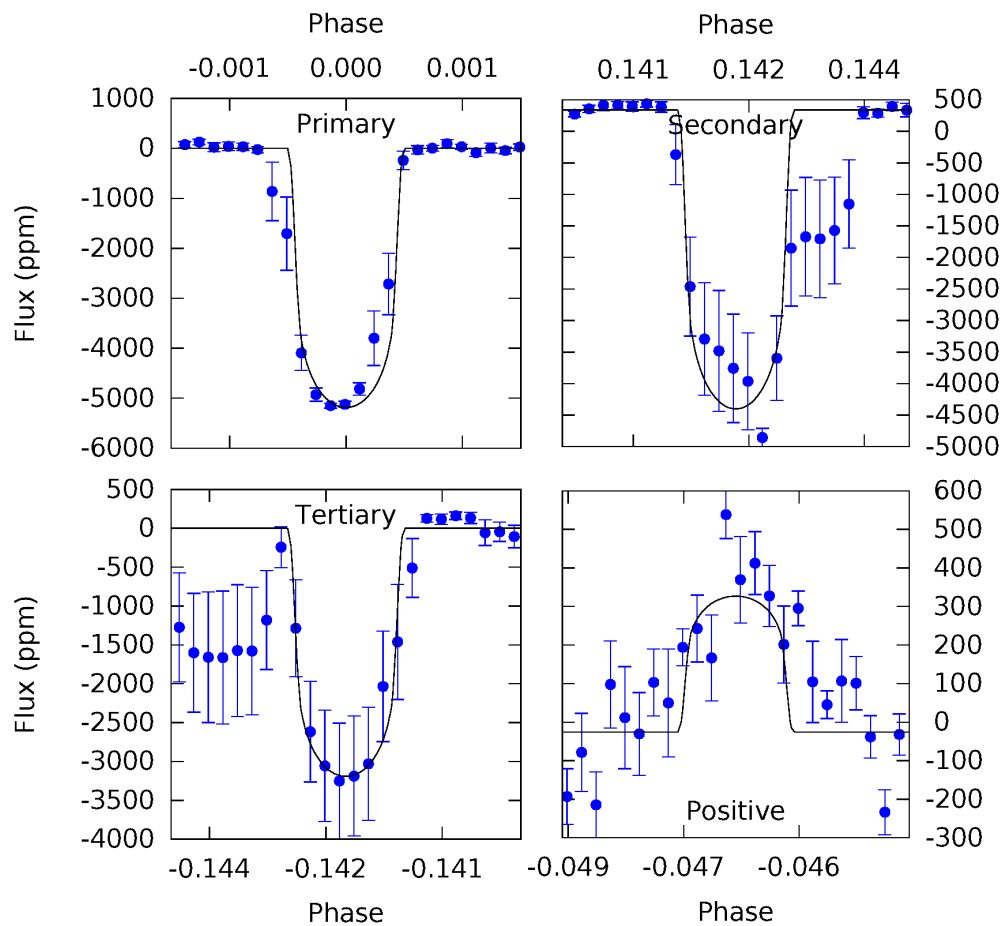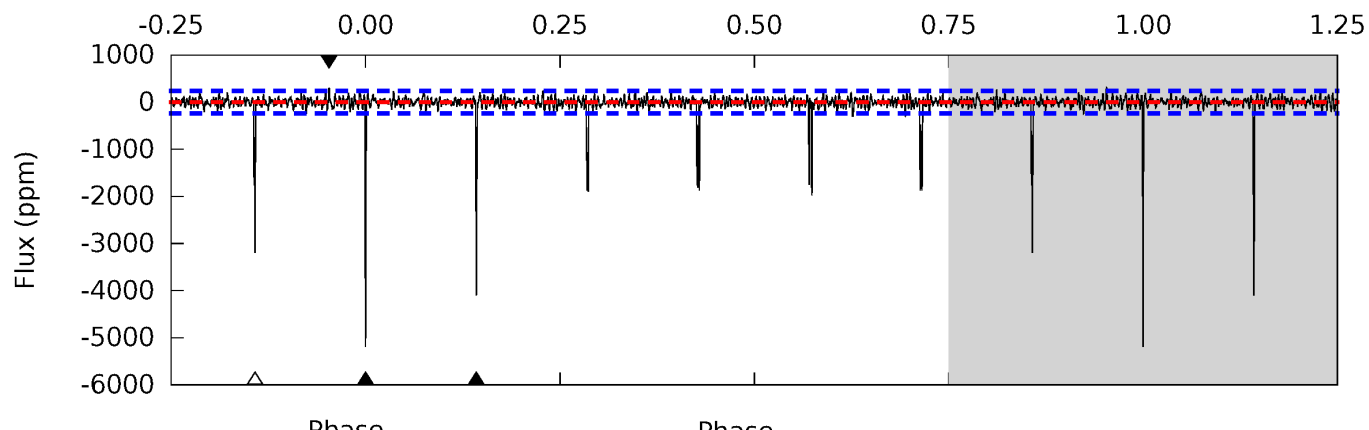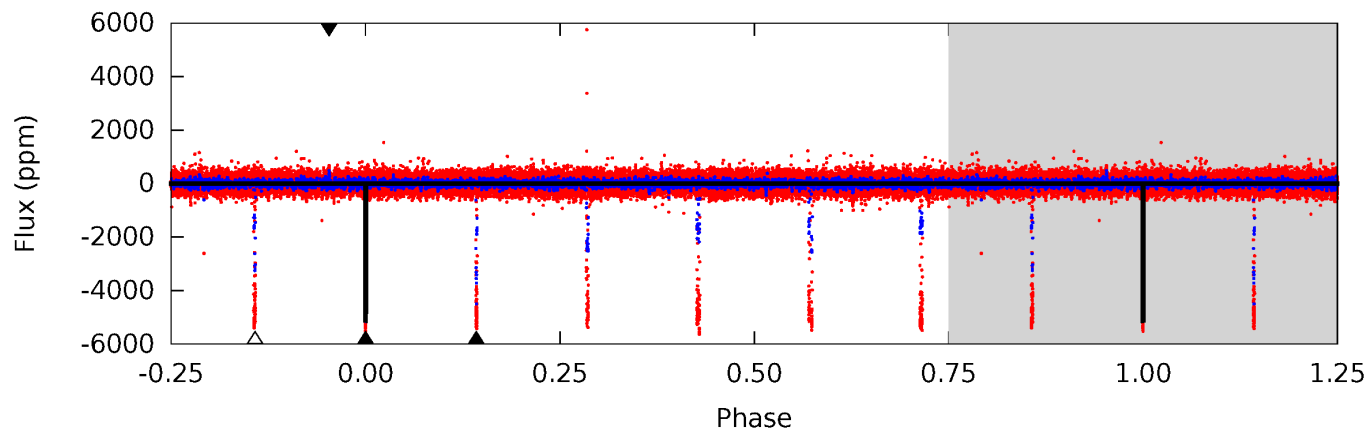Per: 473.017   Dep: 4958.7   Teq: 307.2   Rp: 13.40   b: −1.00 SNR: 215.13
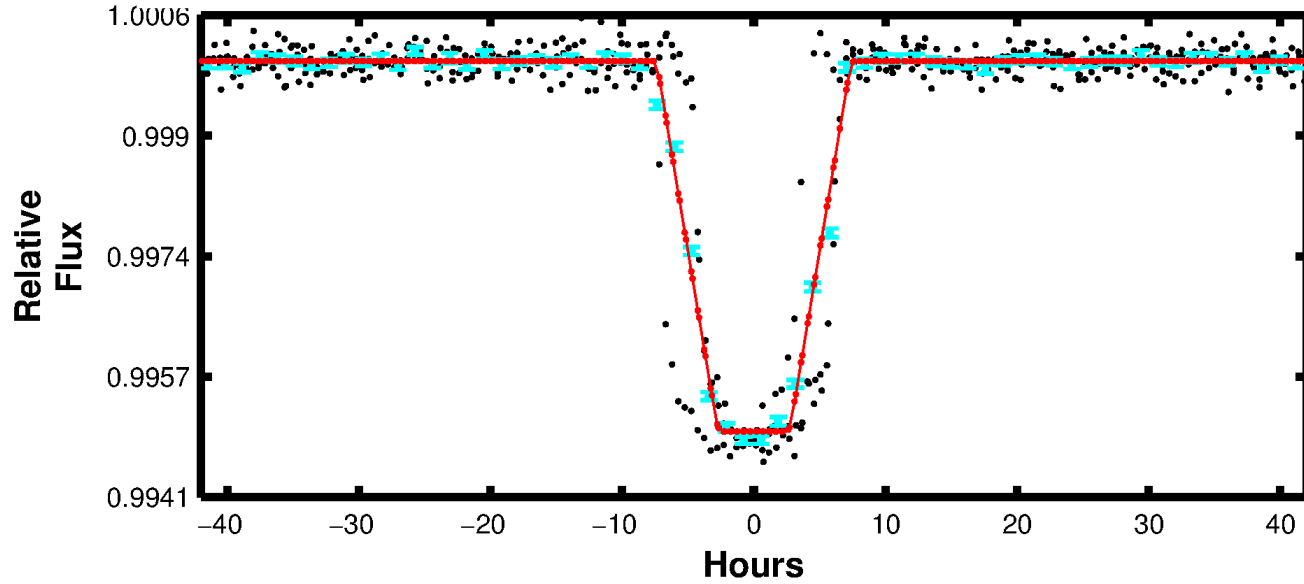
Flux Vetting - Quarter-Phased Transit Curves

TCE 009032900-01   P=473.015777 Days T_0=354.7994 (BKJD)

Flux Vetting - Model-Shift Uniqueness Test

TCE 009032900-01, P = 473.015777 Days

σ_{FA}	5.3
σ_{Pri}	118.2
σ_{Sec}	93.5
σ_{Ter}	72.7
σ_{Pos}	7.0
$\sigma_{Pri-Sec}$	24.7
$\sigma_{Pri-Pos}$	111.2
F_{Red}	4.7
σ_{Pri}/F_{red}	25.2

Supplemental centroid analysis for 009032900-01. Kepler magnitude: 13.68. Transit SNR 109.62

There are 2 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.09 arcsec

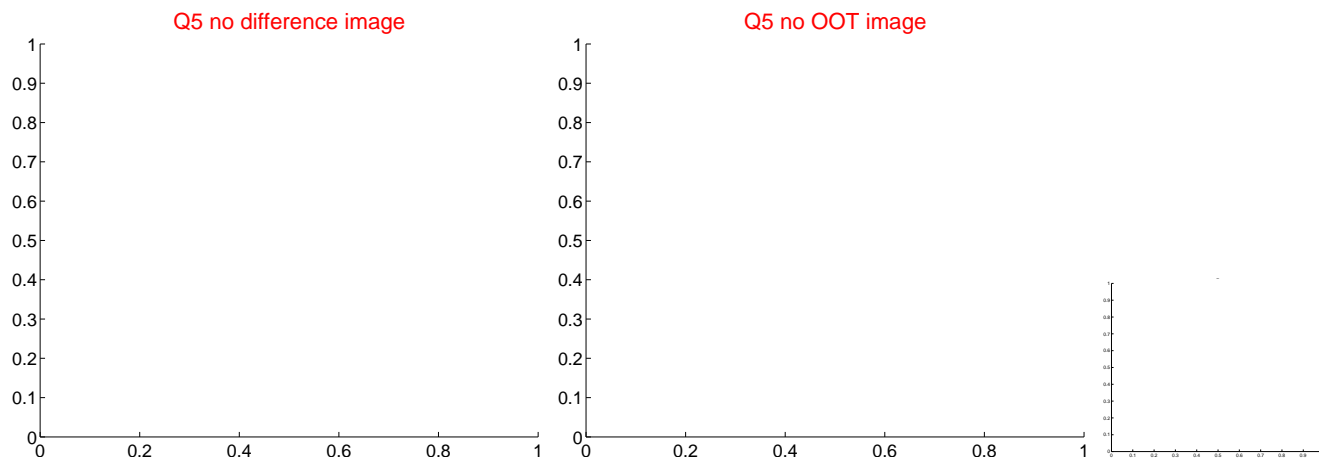|	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.150 ± 0.099	1.51	0.128 ± 0.097	0.079 ± 0.105
PRF-fit source offset from KIC position	0.185 ± 0.118	1.57	0.183 ± 0.118	0.024 ± 0.081
photometric centroid source offset	0.07 ± 0.06	1.21	0.04 ± 0.05	-0.06 ± 0.06
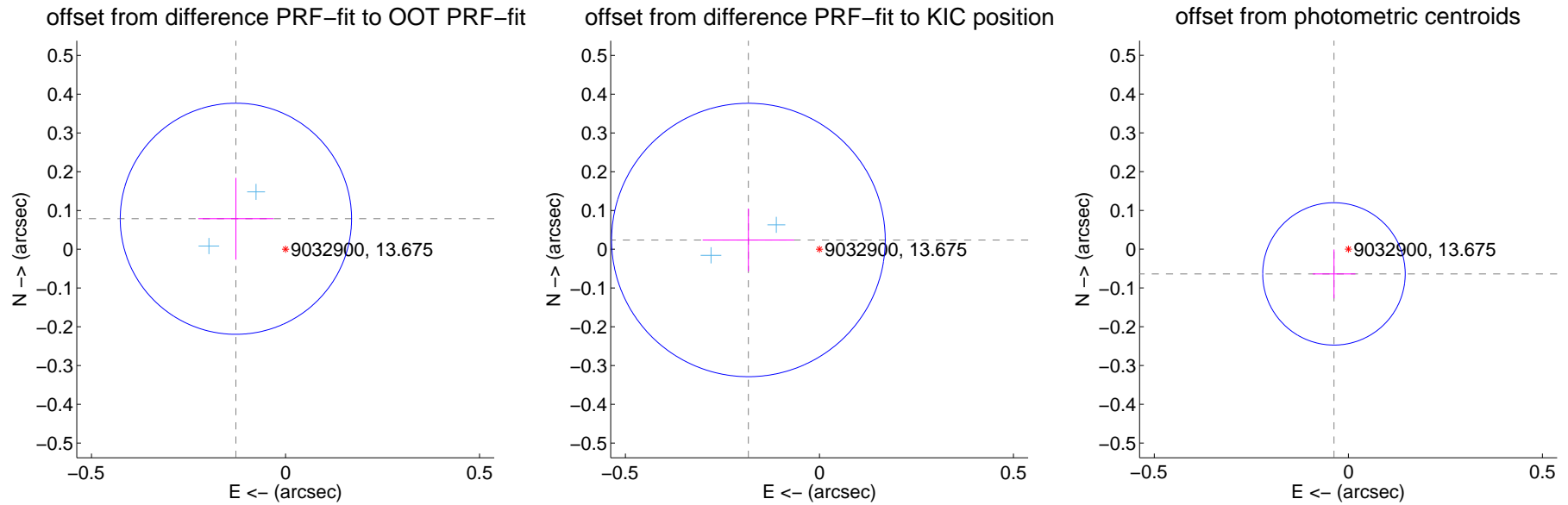
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one-σ uncertainty. Blue circle: three-σ. Red *: 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.

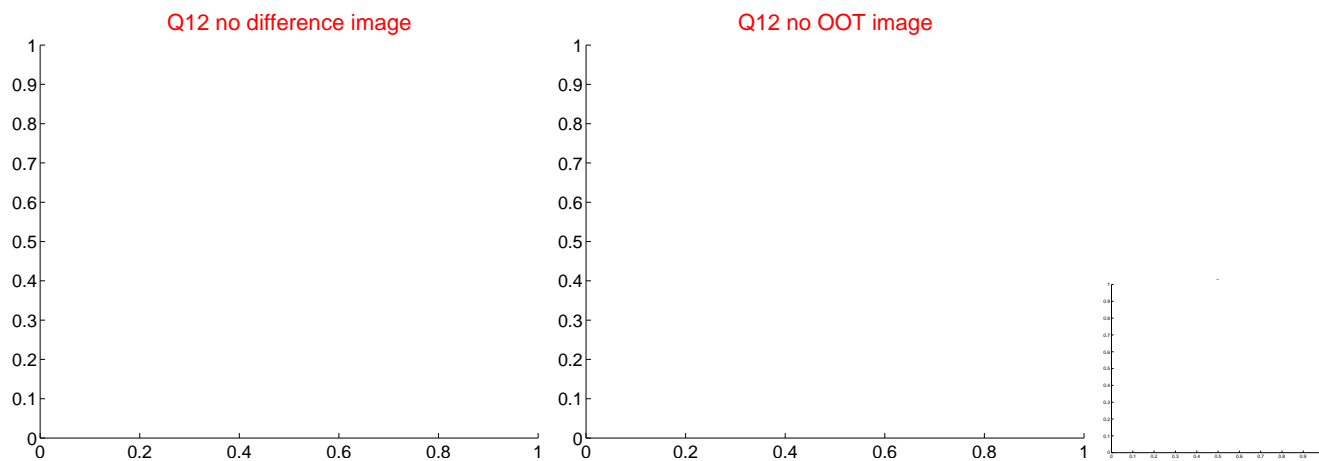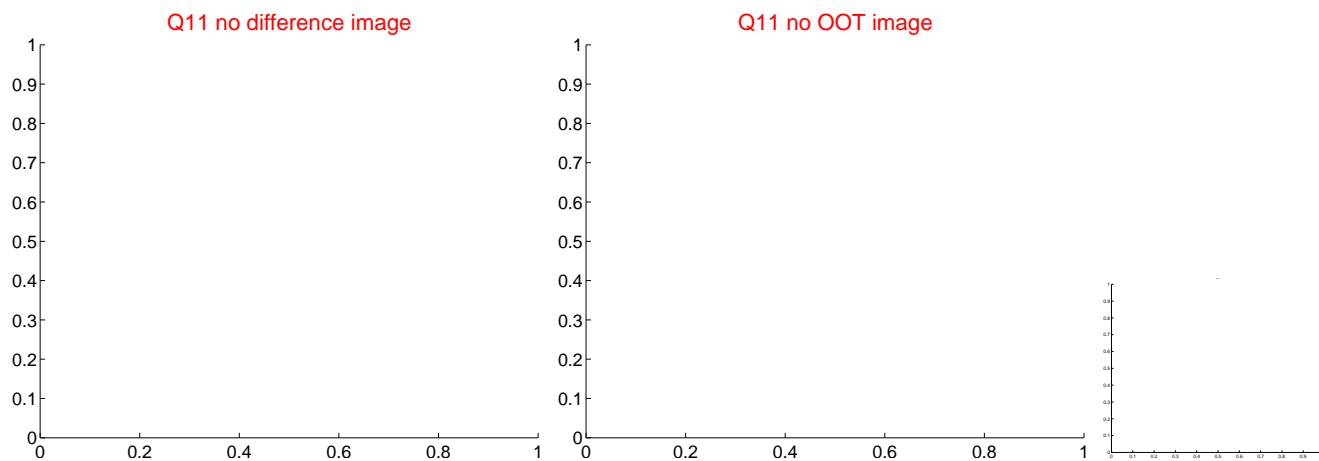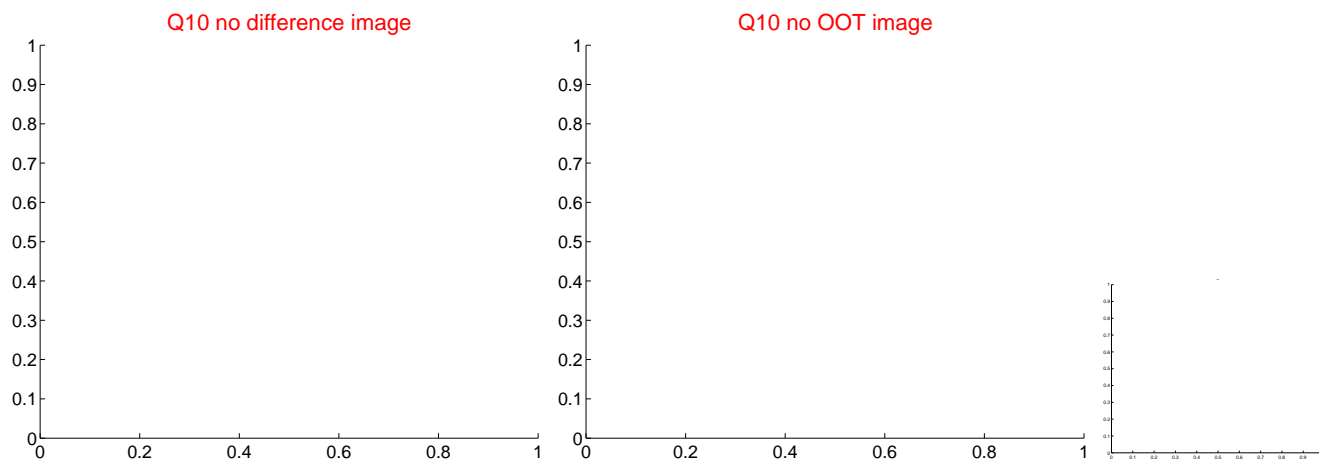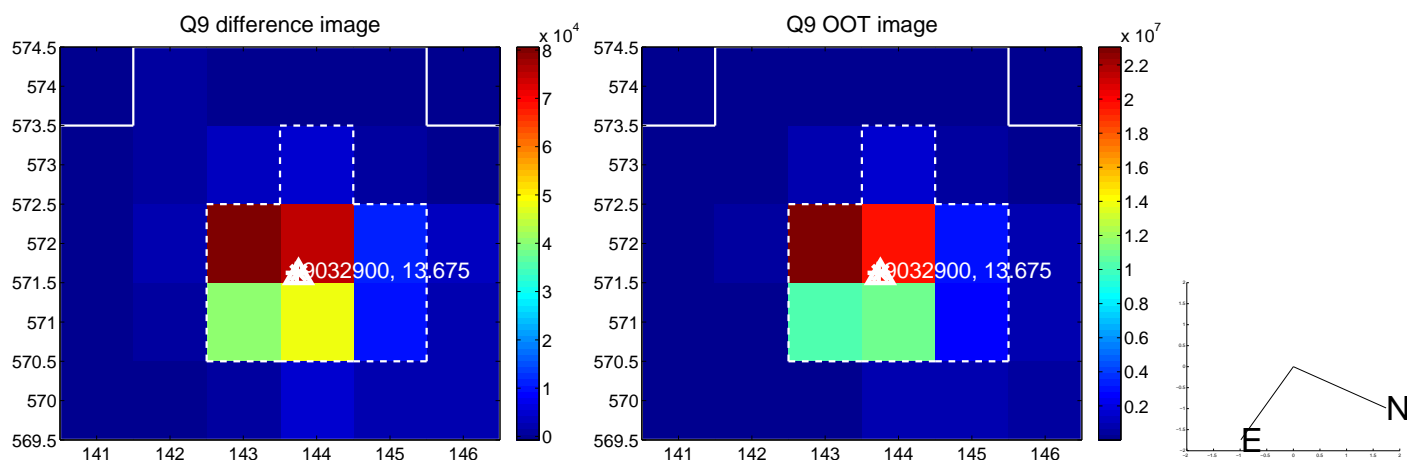white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.

Q1 no difference image

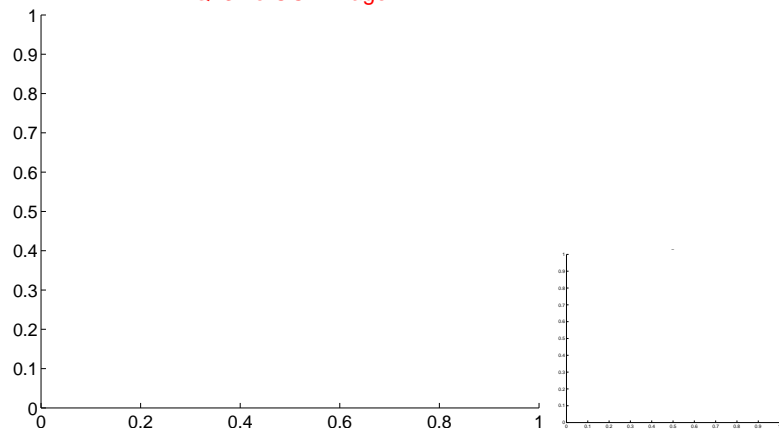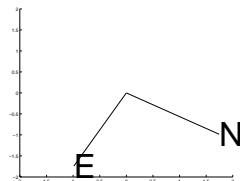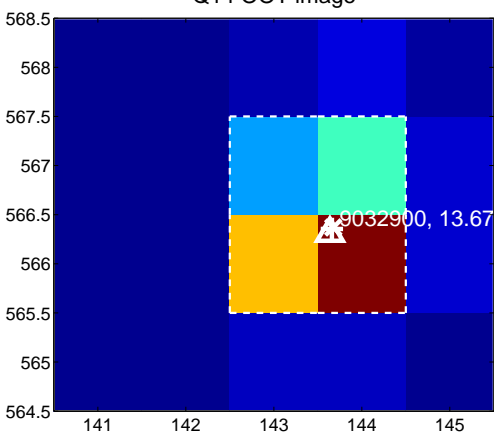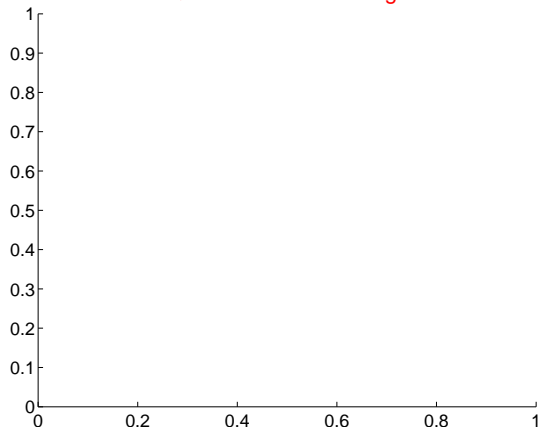**Q1 no OOT image**

Q2 no difference image

Q2 no OOT image

Q3 no difference image

Q3 no OOT image

Q4 no difference image

Q4 no OOT image

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

Q5 no difference image

Q5 no OOT image

Q6 no difference image

Q6 no 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 ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.

Q13 no difference image
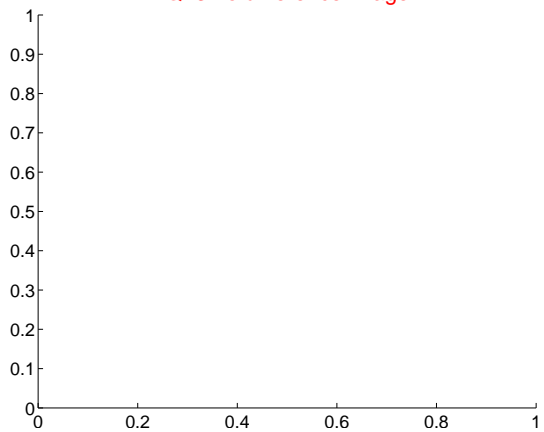
Q13 no OOT image
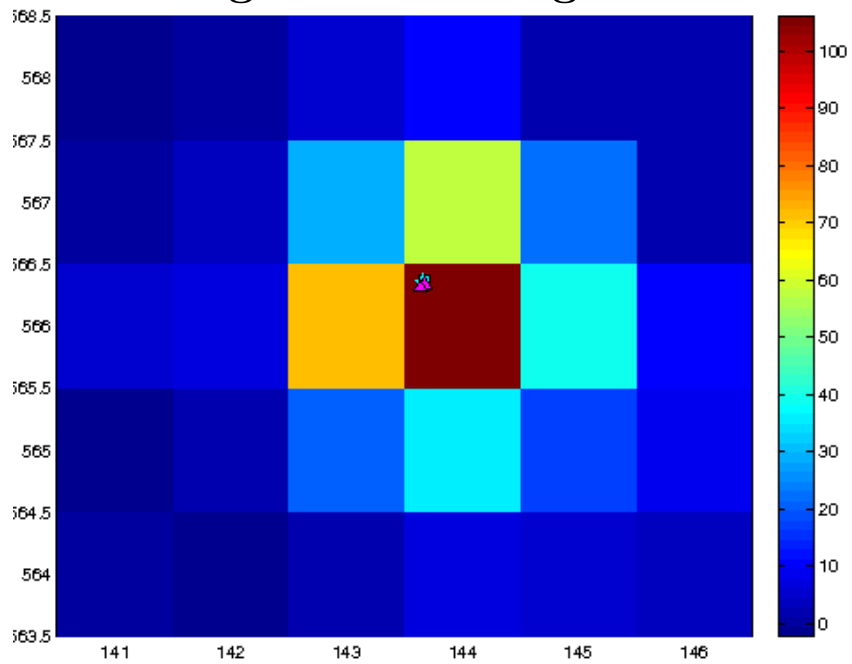
Q14 difference image
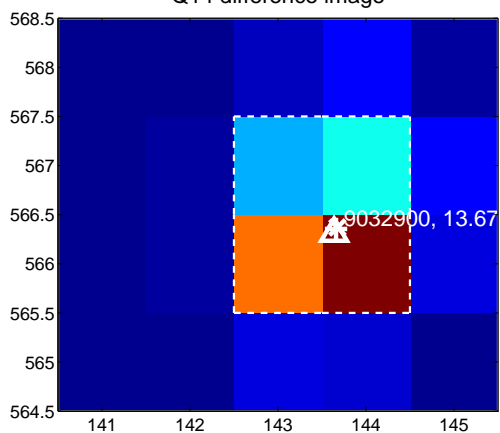
Q14 OOT image

Q15 no difference image
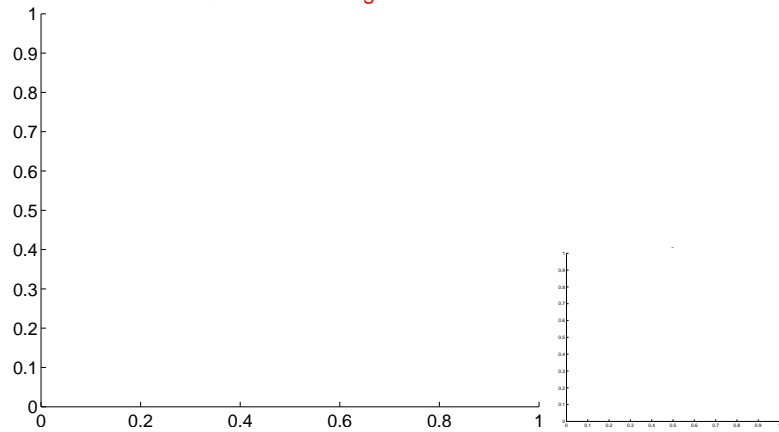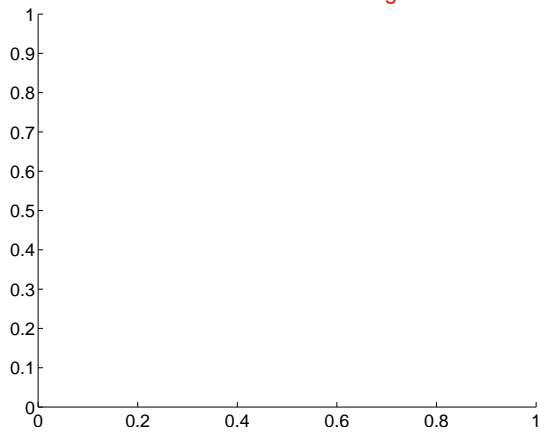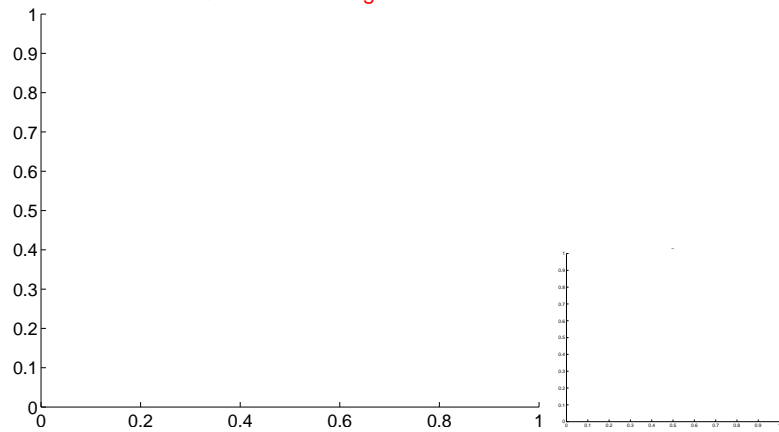
Q15 no OOT image

Q16 no difference image

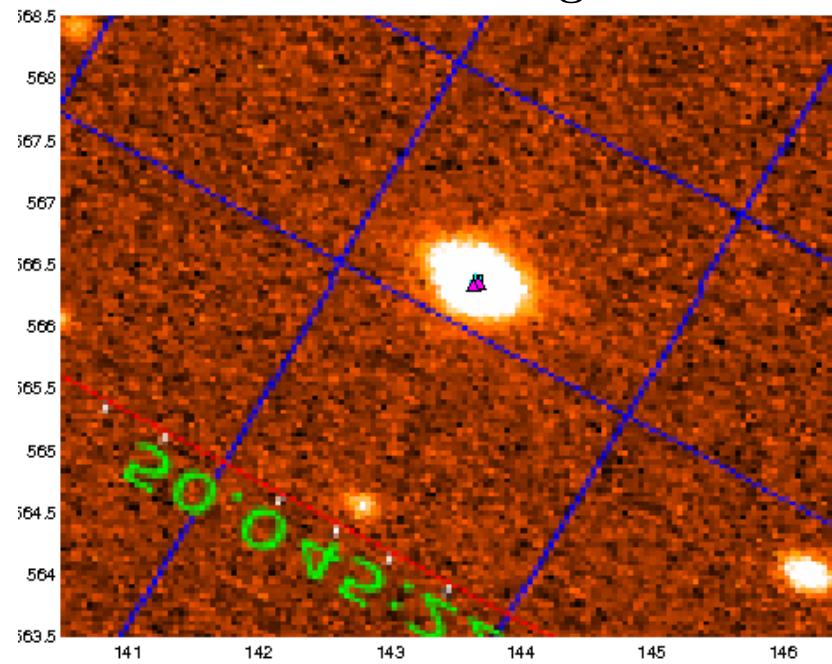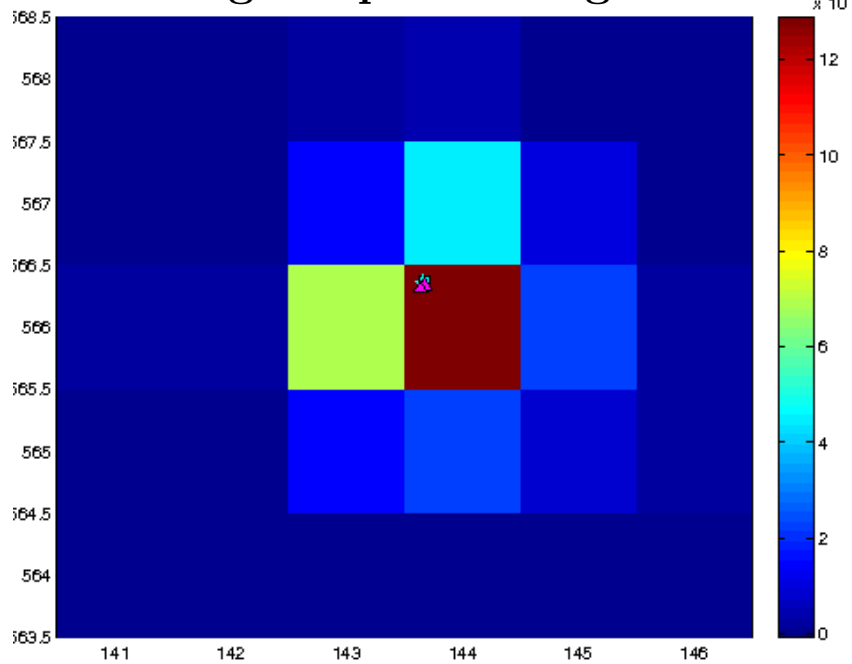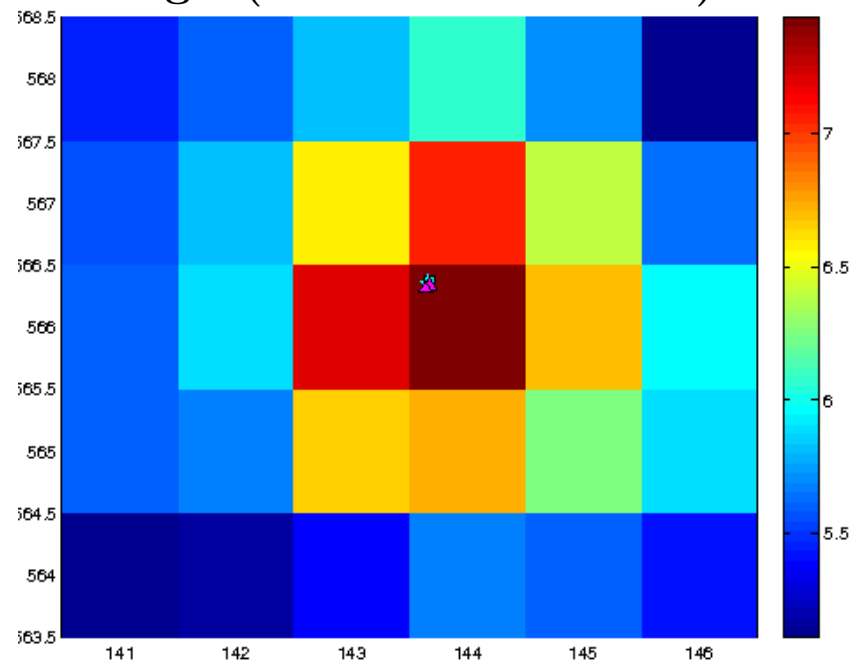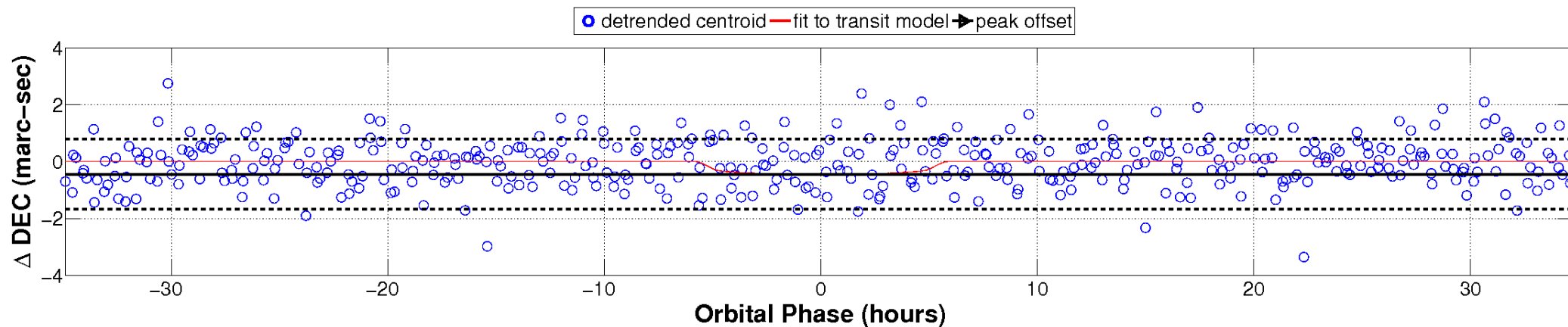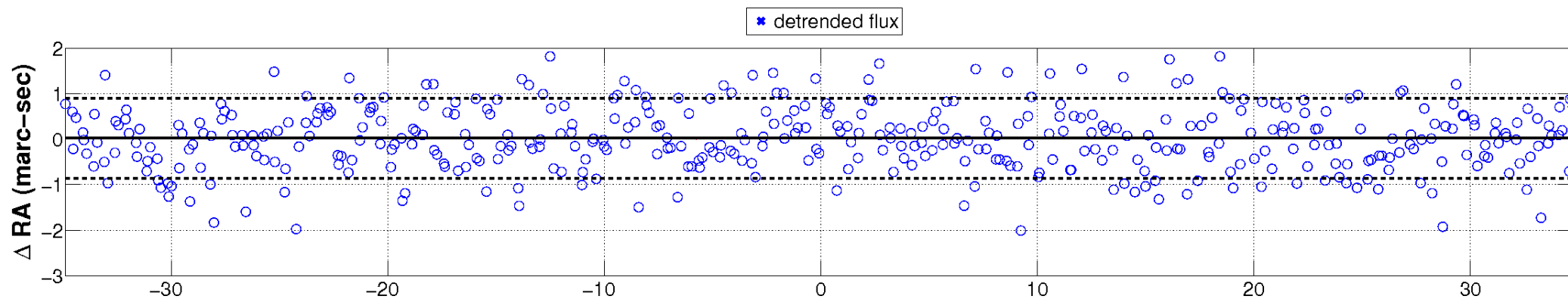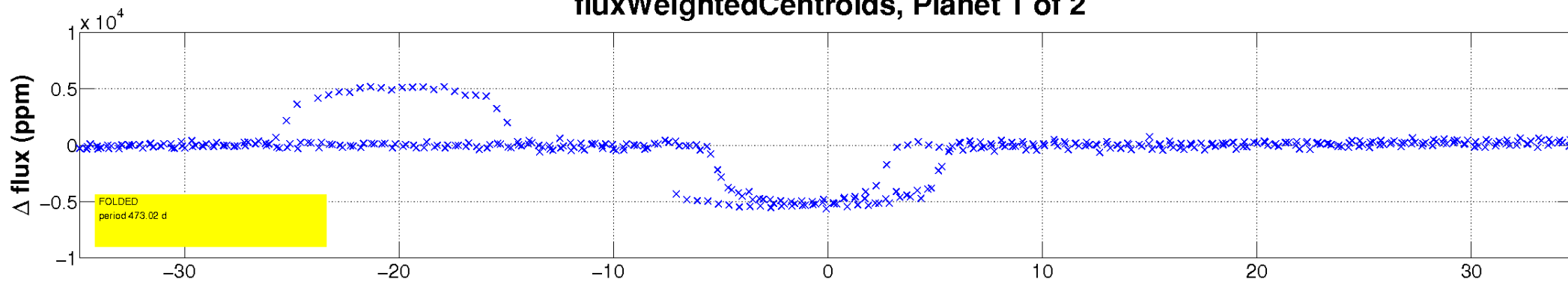Q16 no OOT image

Average SNR During Transit

UKIRT Image
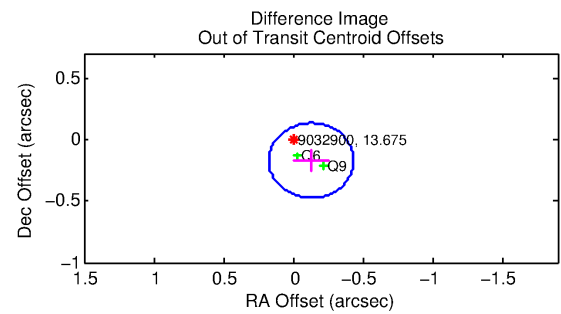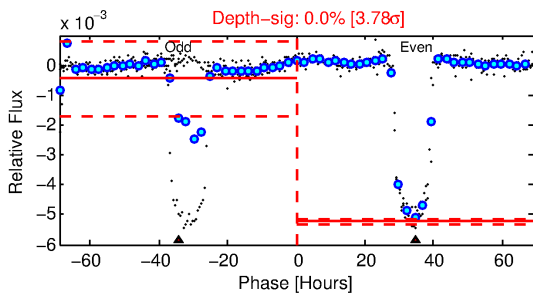
Average Depth During Transit

log10(Out-of-transit Flux)

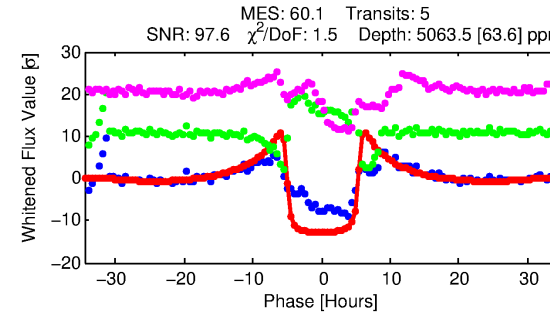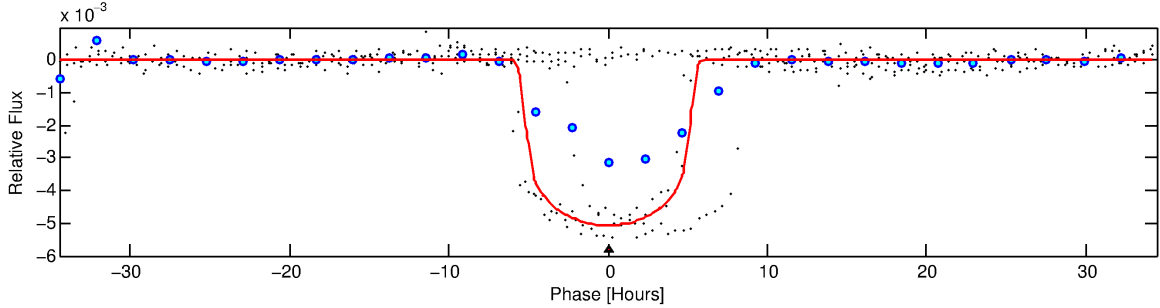fluxWeightedCentroids, Planet 1 of 2

KIC: 9032900   Candidate: 2 of 2   Period: 270.684 d

Kp: 13.68   R*: 1.74 Rs   Teff: 6038.0 K   Logg: 4.08   Fe/H: 0.340

Sec Phase: 67.737 Days   Sec MES: 31.5

MES: 60.1   Transits: 5

SNR: 97.6   χ²/DoF: 1.5   Depth: 5063.5 [63.6] ppm

Depth-sig: 0.0% [3.78σ]

Difference Image
Out of Transit Centroid Offsets

9032900, 13.675
Q6
Q9
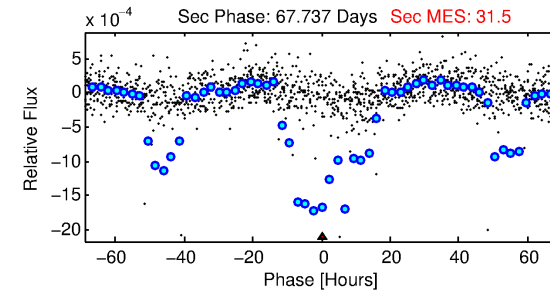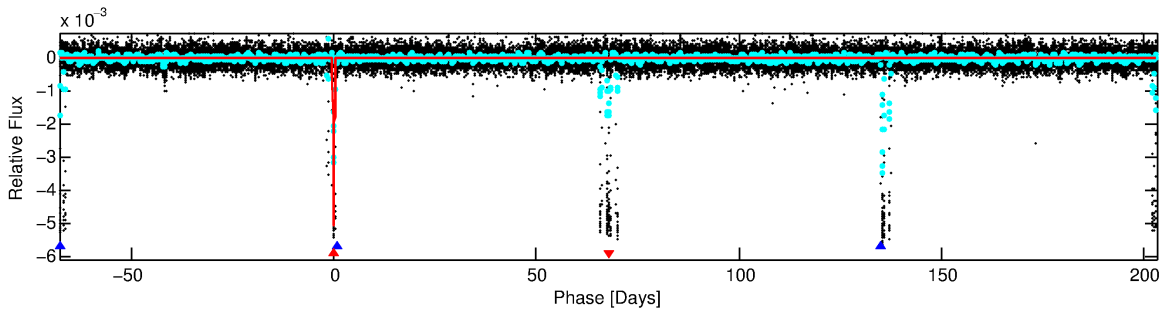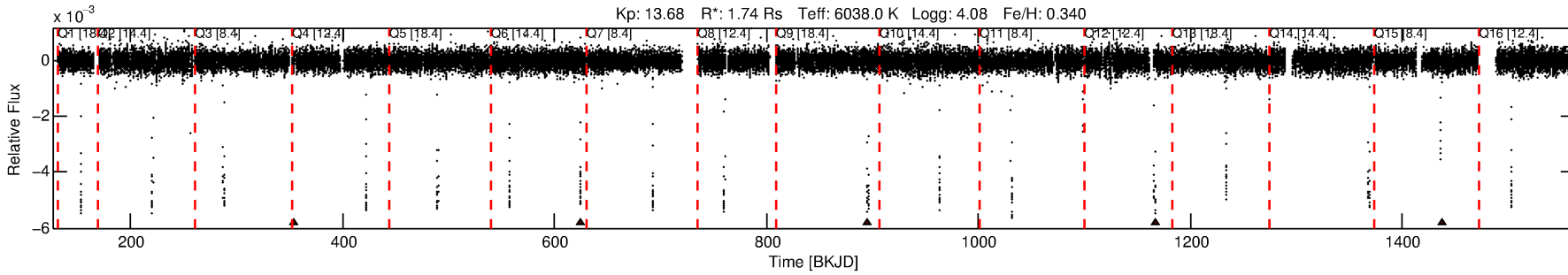
DV Fit Results:

Period = 270.68431 [0.00063] d
Epoch = 353.9583 [0.0017] BKJD
Rp/R* = 0.0669 [0.0012]
a/R* = 168.01 [11.52]
b = 0.52 [0.10]

Teq = 370 K
Rp = 12.74 Re
a = 0.9030 AU

DV Diagnostic Results:

Epoch-sig: 17.7% [1.35σ]
ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [0.00σ]
Bootstrap-pfa: N/A

Centroid-sig: 24.6%
Centroid-so: 0.198 arcsec [4.19σ]
OotOffset-rm: 0.214 arcsec [2.11σ]
KicOffset-rm: 0.248 arcsec [2.82σ]
OotOffset-bf: N/A
KicOffset-bf: N/A
OotOffset-st: 1/0/0/1 [2]
KicOffset-st: 1/0/0/1 [2]
DiffImageQuality-fgm: 1.00 [2/2 of 2]

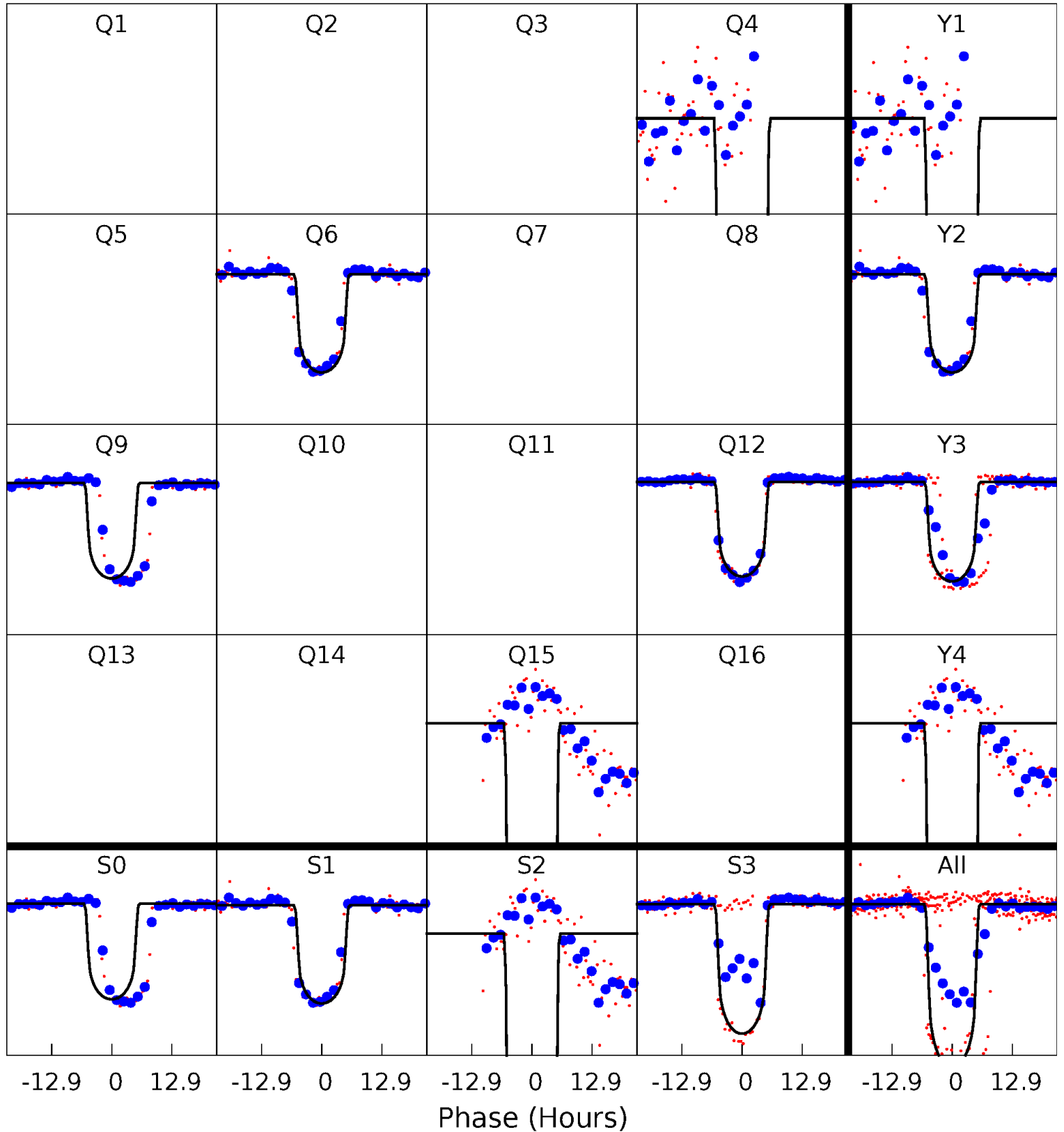KepId: 9032900   Kpmag: 13.68   Teff: 6038.0   Logg: 4.08   Rstar: 1.74
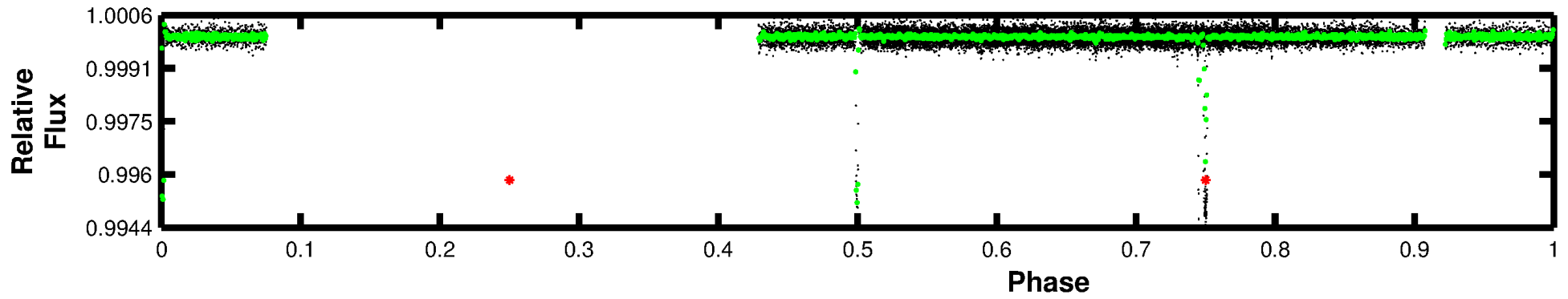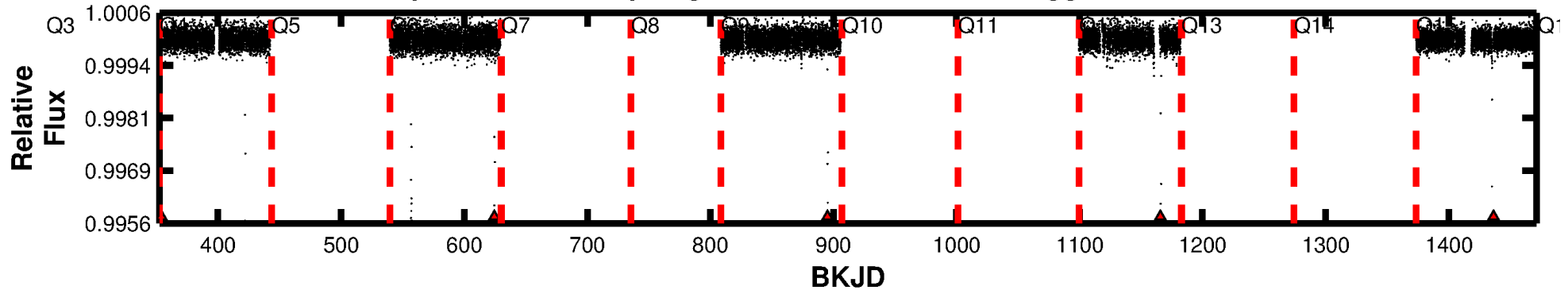
Flux Vetting - Alternate Detrending with Trapezoid Fit

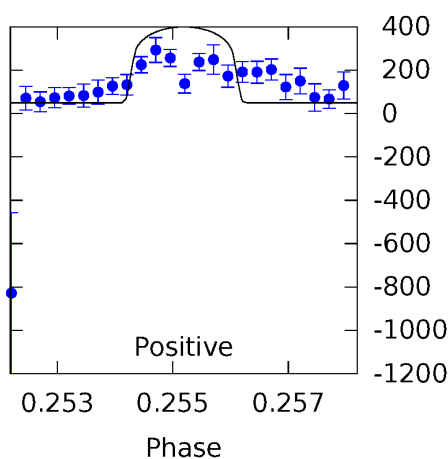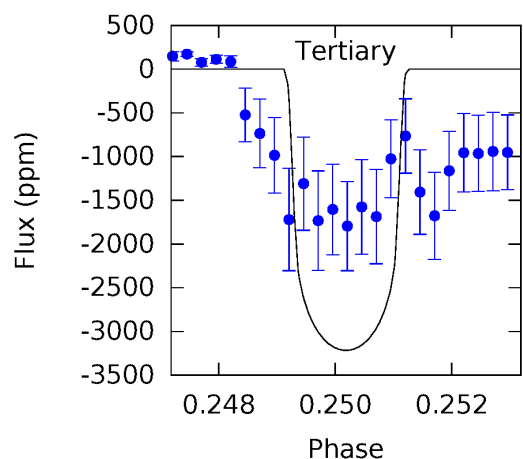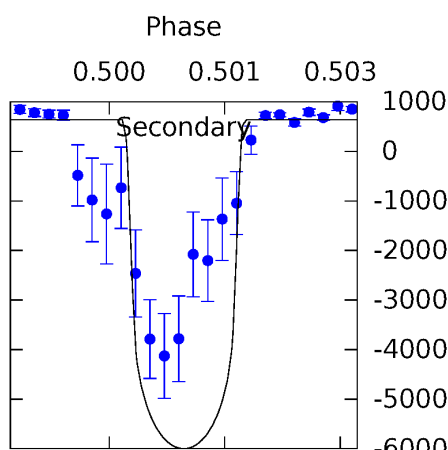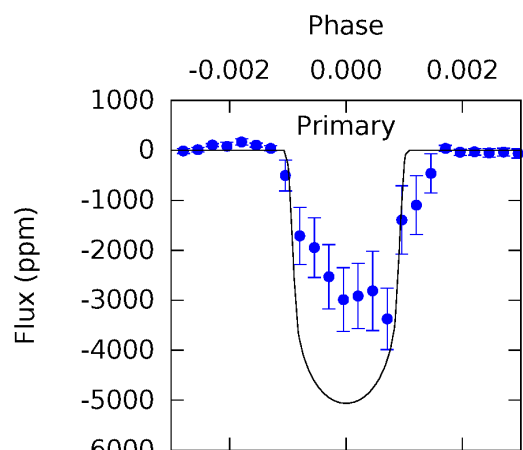Per: 270.595   Dep: 4060.8   Teq: 370.1   Rp: 12.13   b: −1.00 SNR: 236.30
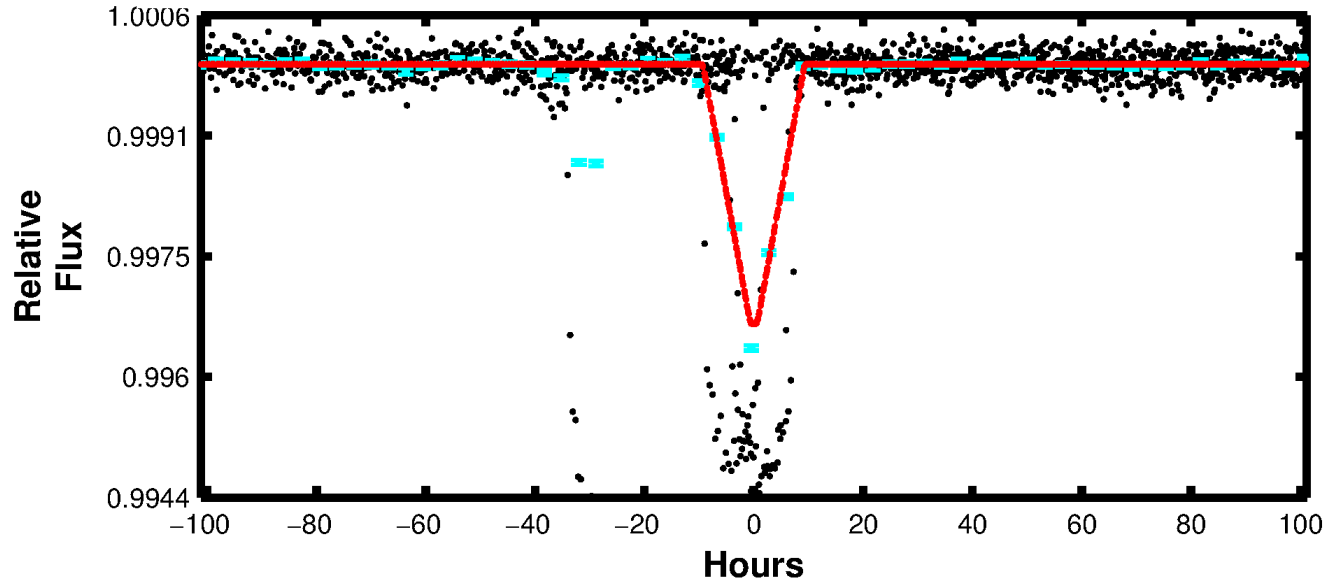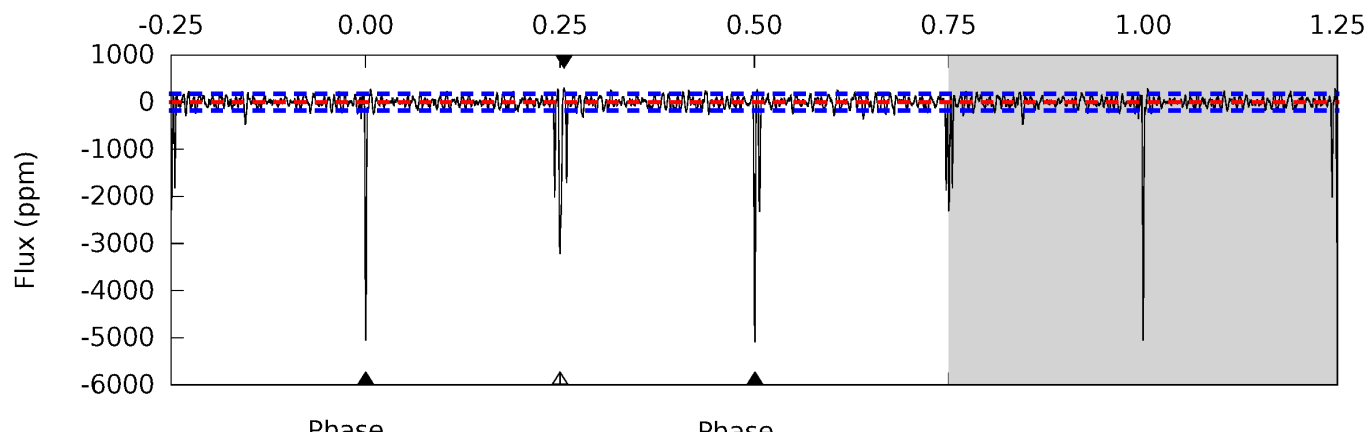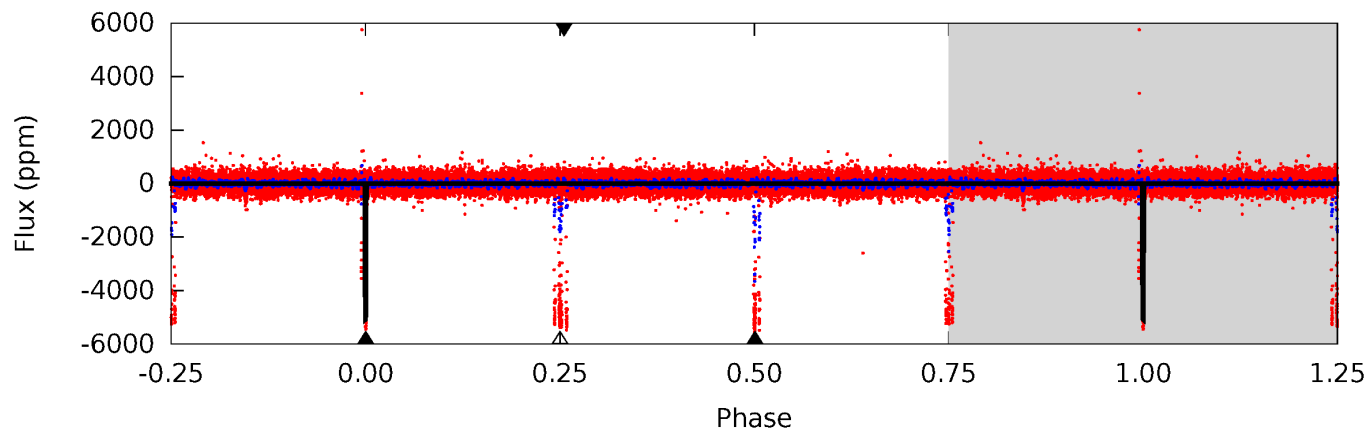
Flux Vetting - Quarter-Phased Transit Curves

TCE 009032900-02   P=270.684309 Days T_0=353.9583 (BKJD)

Phase (Hours)

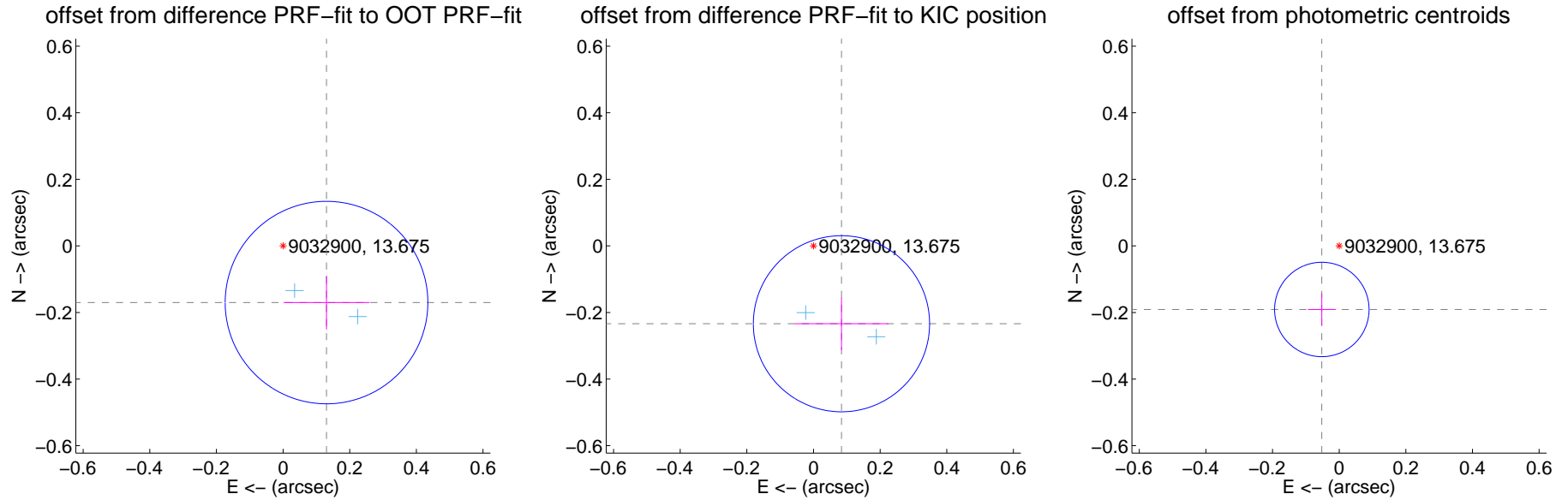# Flux Vetting - Model-Shift Uniqueness Test

TCE 009032900-02, P = 270.684309 Days

σ_{FA}	5.2
σ_{Pri}	151.2
σ_{Sec}	152.0
σ_{Ter}	96.1
σ_{Pos}	8.9
$\sigma_{Pri-Sec}$	-0.8
$\sigma_{Pri-Pos}$	142.4
F_{Red}	7.8
σ_{Pri}/F_{red}	19.4

Supplemental centroid analysis for 009032900-02. Kepler magnitude: 13.68. Transit SNR 97.59
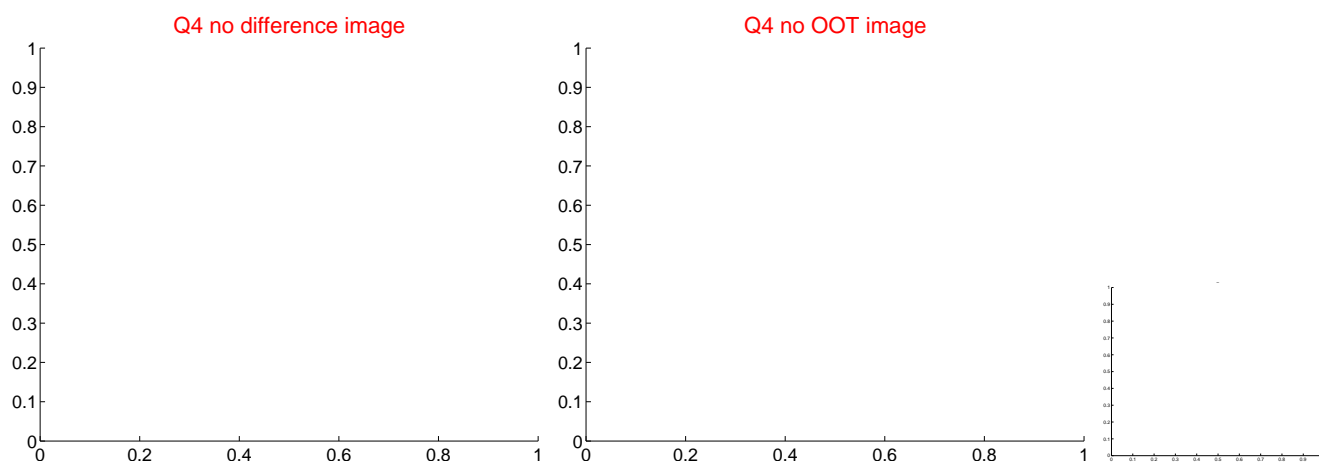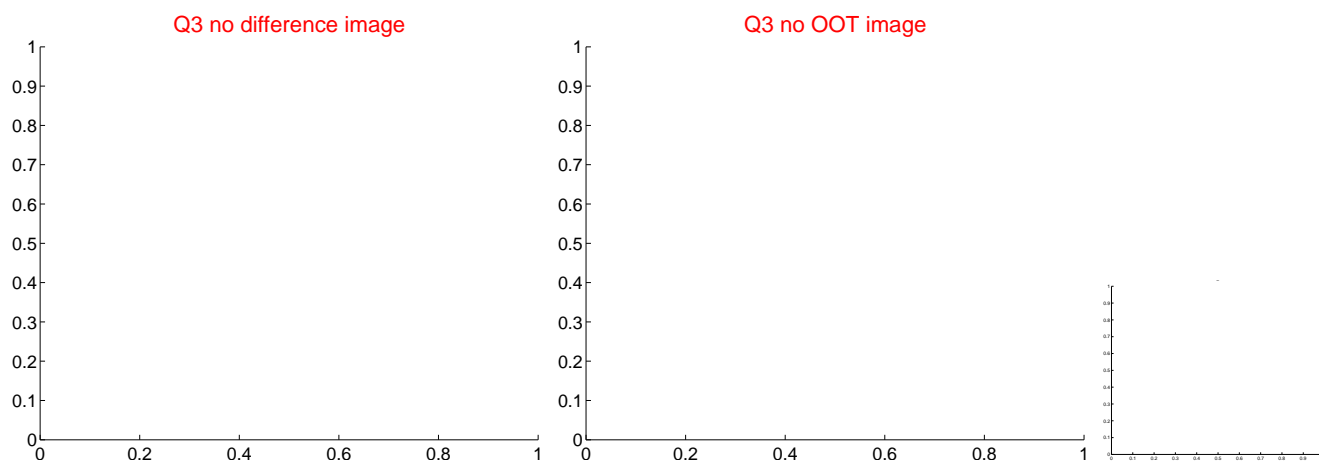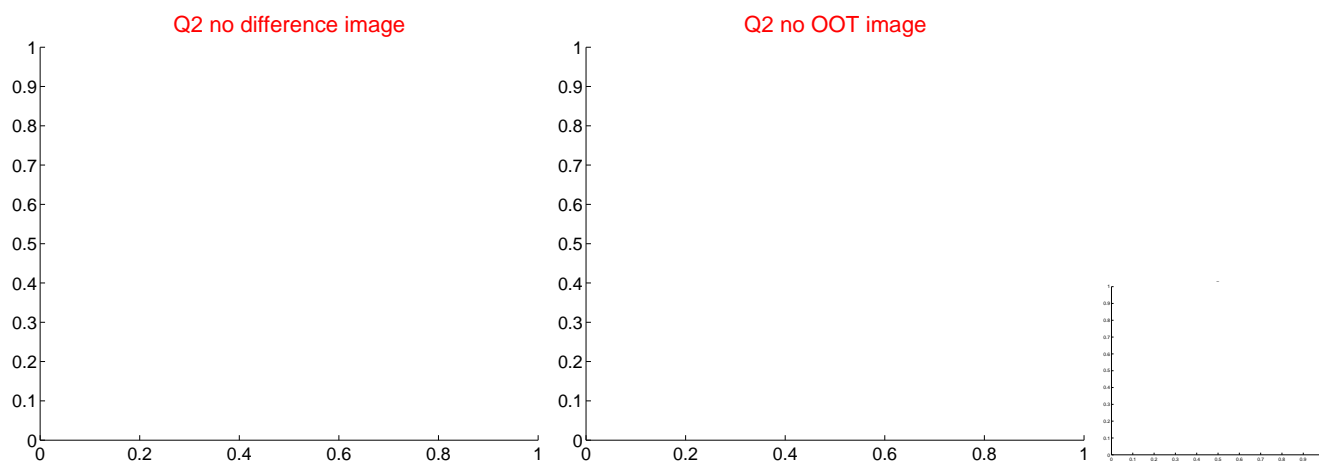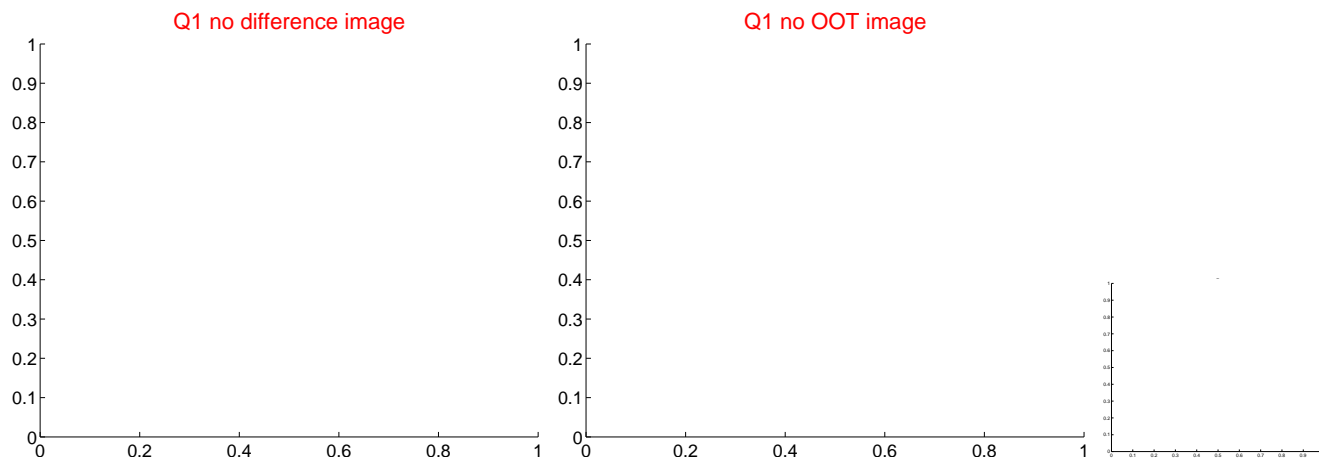There are 2 quarters with good PRF difference image offsets
The direct PRF centroid is offset from the target star catalog position by about 0.07 arcsec

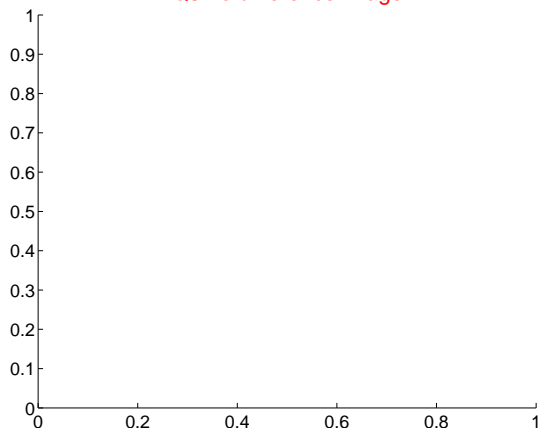|	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.214 $\pm$ 0.101	2.11	-0.130 $\pm$ 0.129	-0.170 $\pm$ 0.081
PRF-fit source offset from KIC position	0.248 $\pm$ 0.088	2.82	-0.084 $\pm$ 0.141	-0.234 $\pm$ 0.079
photometric centroid source offset	0.20 $\pm$ 0.05	4.19	0.05 $\pm$ 0.04	-0.19 $\pm$ 0.05

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.

Q1 no difference image
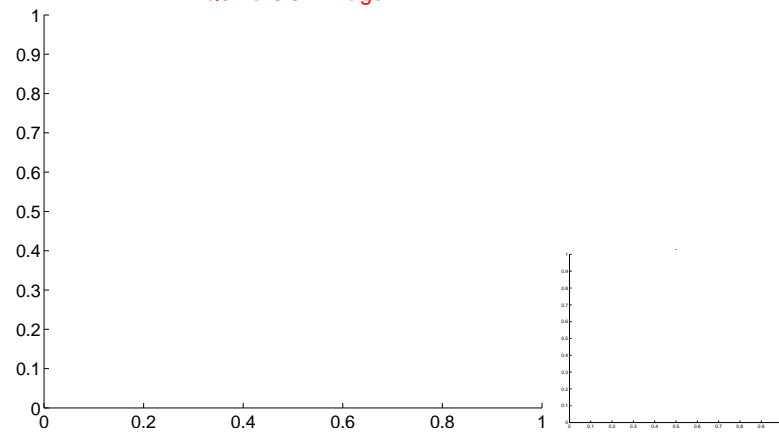
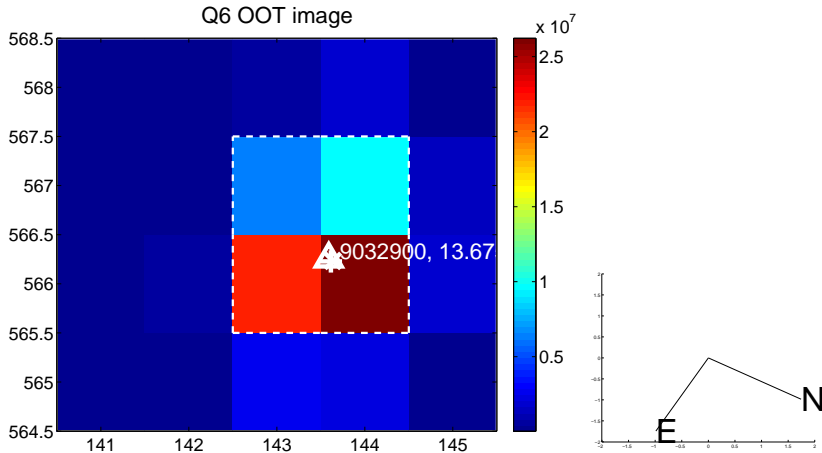**Q1 no OOT image**

Q2 no difference image

Q2 no OOT image

Q3 no difference image

Q3 no OOT image

Q4 no difference image

Q4 no OOT image

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

Q5 no difference image

Q5 no OOT image

Q6 difference image
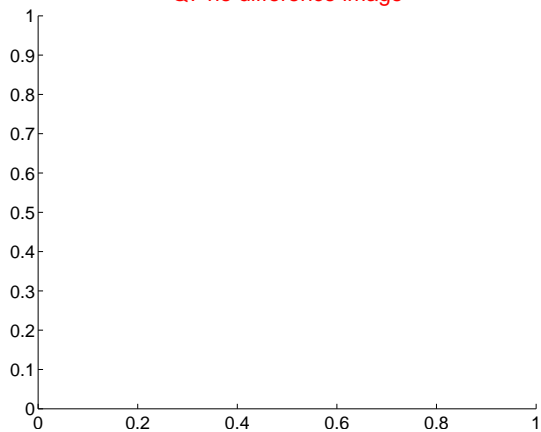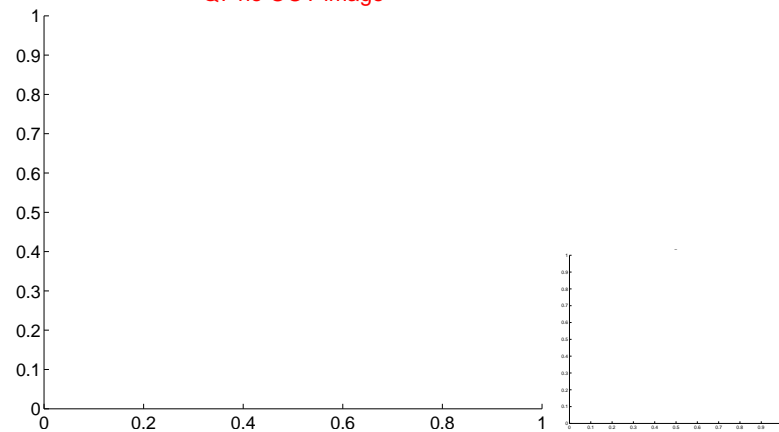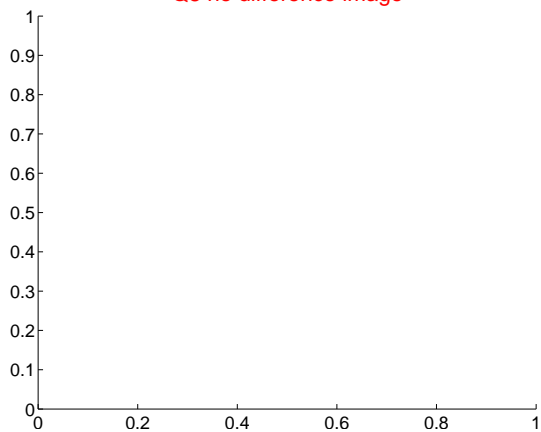
Q6 OOT image

9032900, 13.67
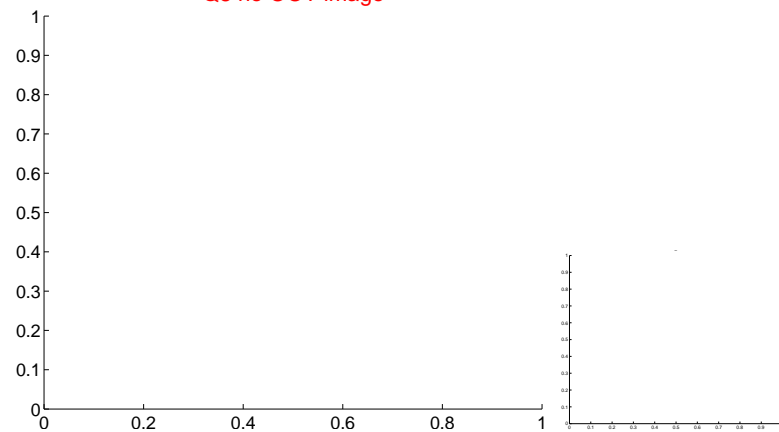
9032900, 13.67

Q7 no difference image
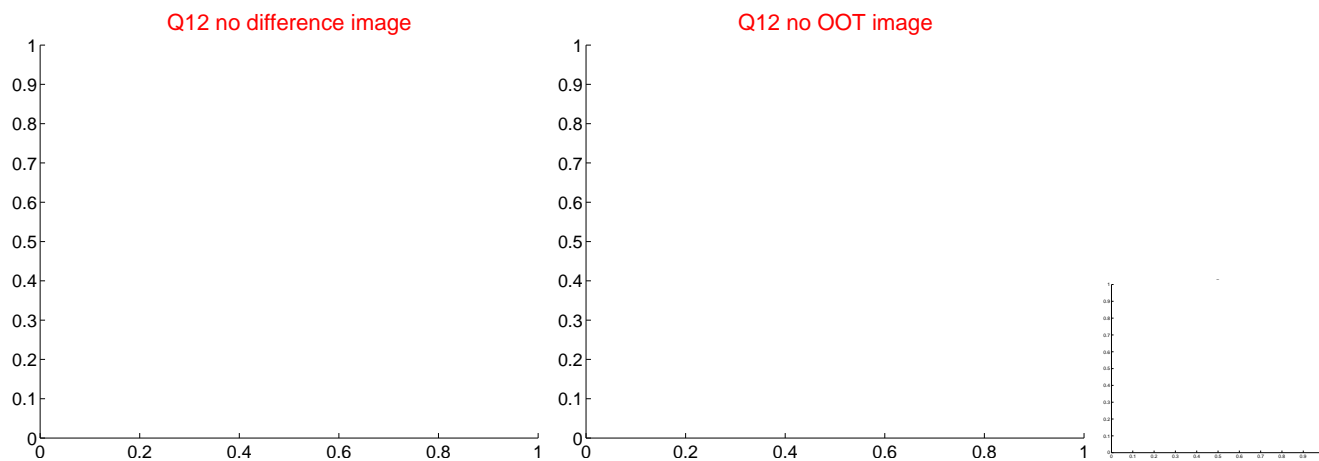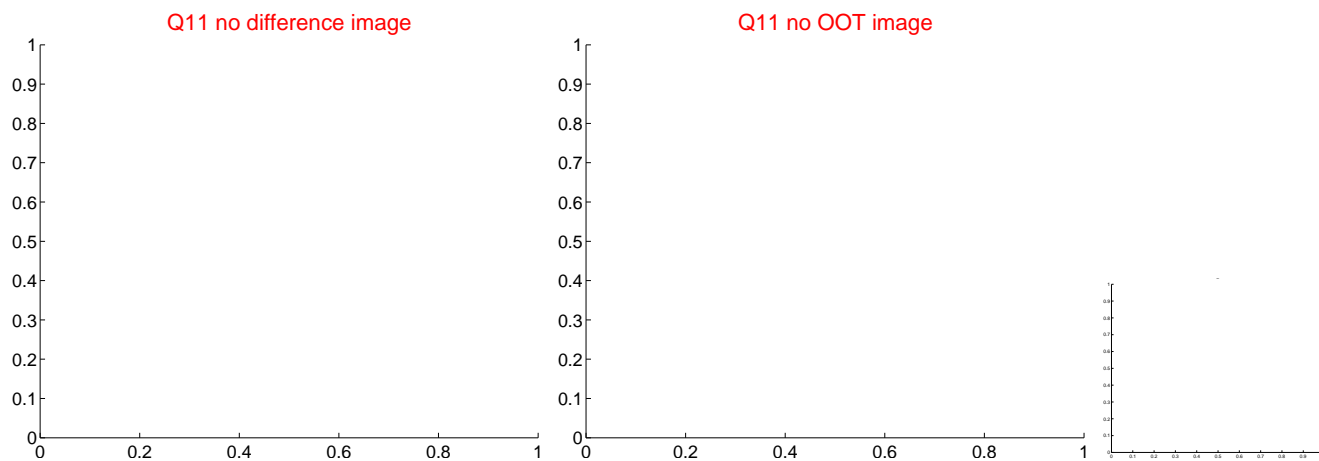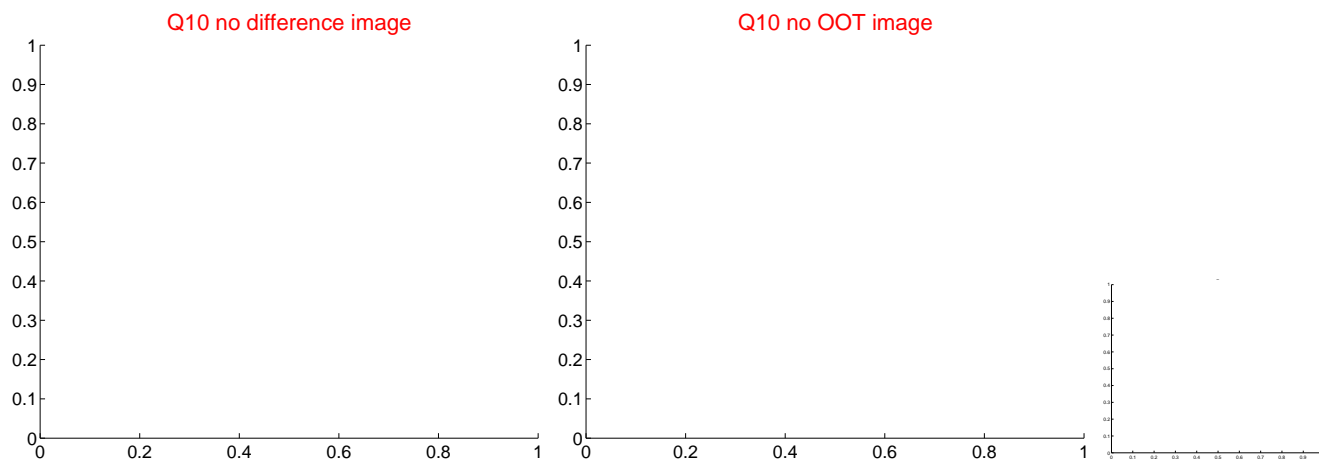
Q7 no OOT image

Q8 no difference image

Q8 no OOT image

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

Q9 difference image

0032900, 13.675

Q9 OOT image

0032900, 13.675

N

E

Q10 no difference image

Q10 no OOT image

Q11 no difference image

Q11 no OOT image

Q12 no difference image
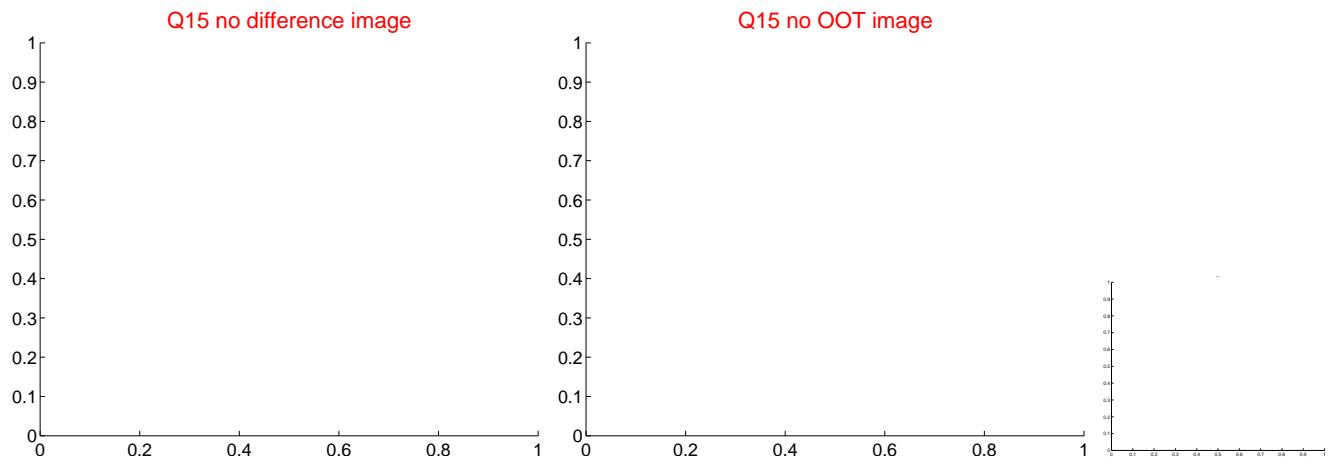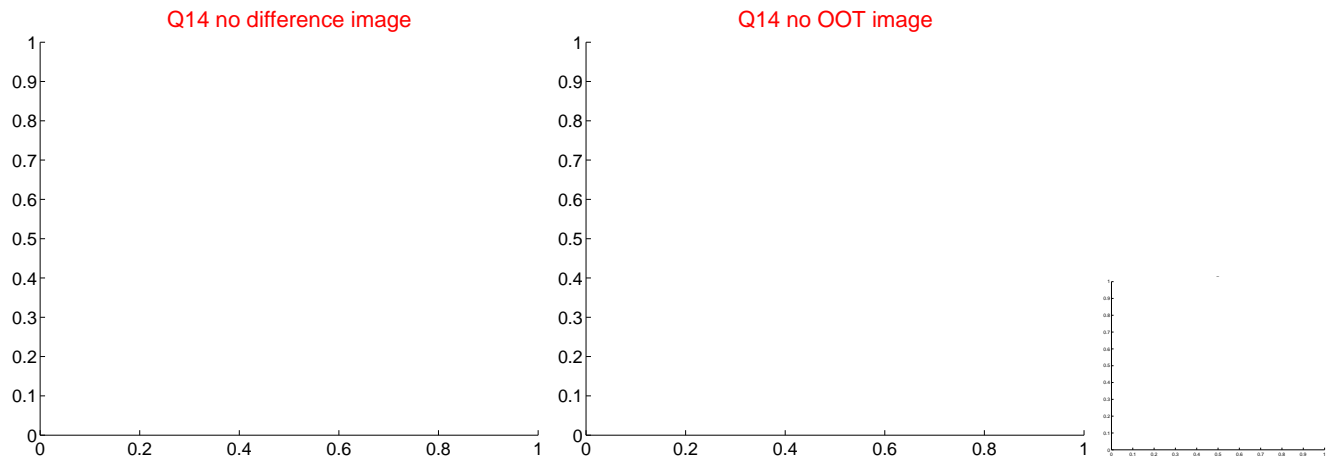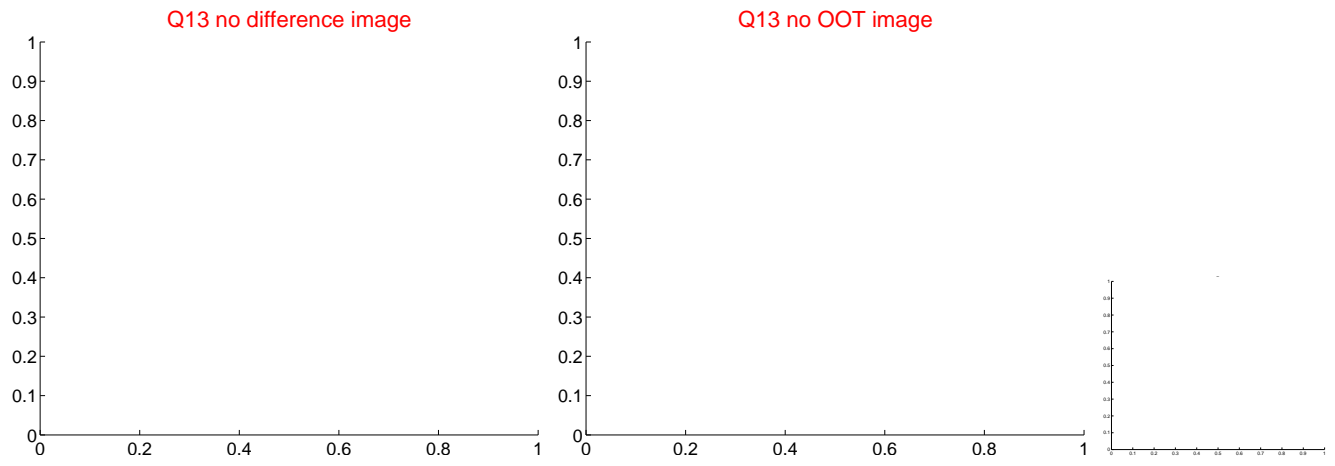
Q12 no OOT image

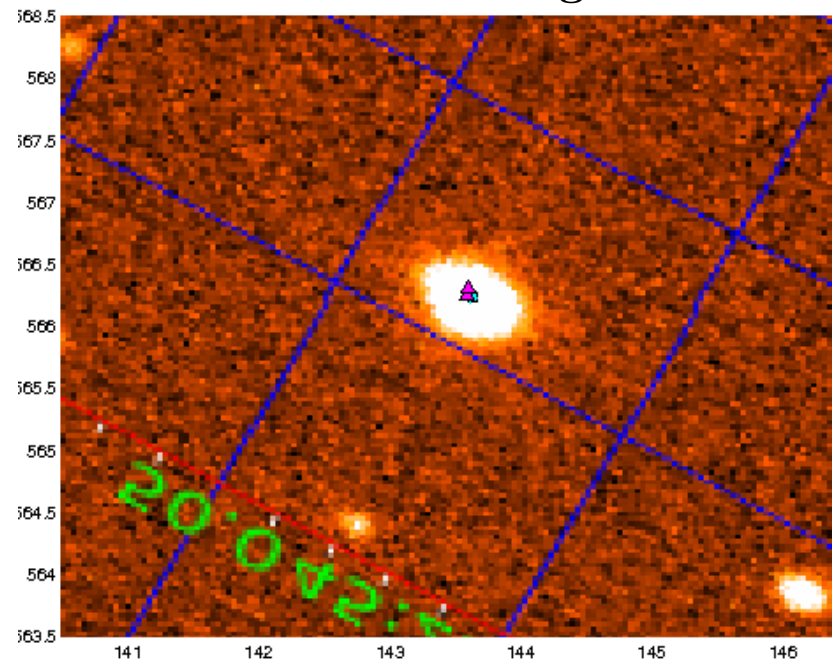white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.

Q13 no difference image

Q13 no OOT image

Q14 no difference image

Q14 no OOT image

Q15 no difference image

Q15 no OOT image

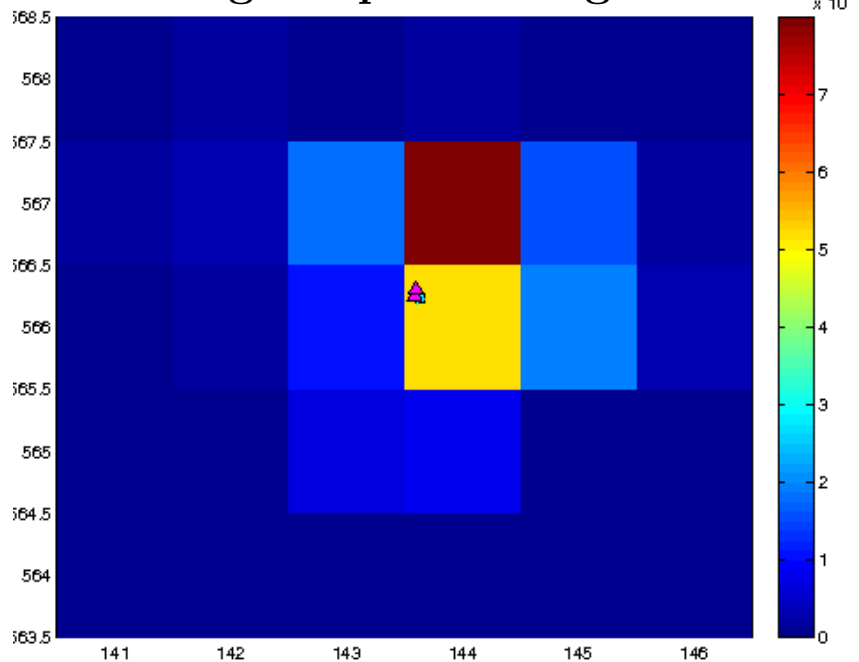**Q16 no difference image**

Q16 no OOT image

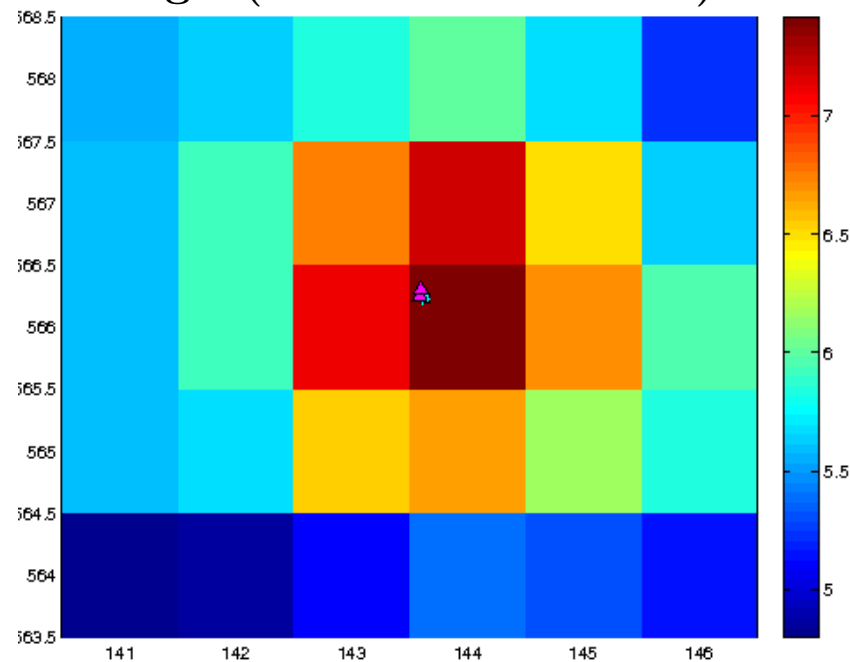Average SNR During Transit

UKIRT Image

Average Depth During Transit

log10(Out-of-transit Flux)

fluxWeightedCentroids, Planet 2 of 2

FOLDED
period 270.68 d

* detrended flux

○ detrended centroid — fit to transit model ► peak offset

Orbital Phase (hours)