

KIC 005364071

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})
005364071-01	OBS	0248.01	7.203863	134.265790	1768.9	2.829	82.7	84.3	0.54	3834	2.60	15.89
005364071-02	OBS	0248.03	2.576562	133.481102	748.3	1.839	48.3	53.4	0.54	3834	1.77	62.59
005364071-03	OBS	0248.02	10.912740	137.114599	1381.8	3.067	42.7	48.3	0.54	3834	3.18	9.13
005364071-04	OBS	0248.04	18.596122	141.264785	785.9	2.376	20.6	22.9	0.54	3834	1.69	4.49

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005364071-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT
005364071-02	OBS	PC	1.00	0	0	0	0	NO_COMMENT
005364071-03	OBS	PC	1.00	0	0	0	0	NO_COMMENT
005364071-04	OBS	PC	1.00	0	0	0	0	NO_COMMENT

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.

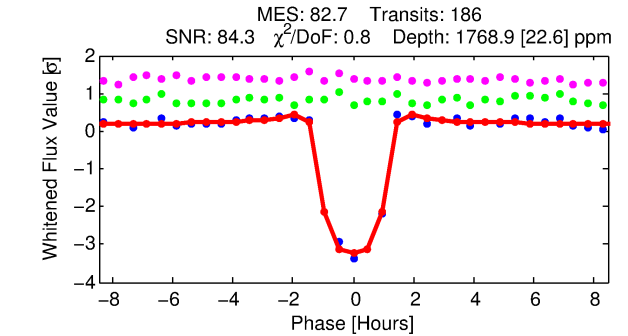
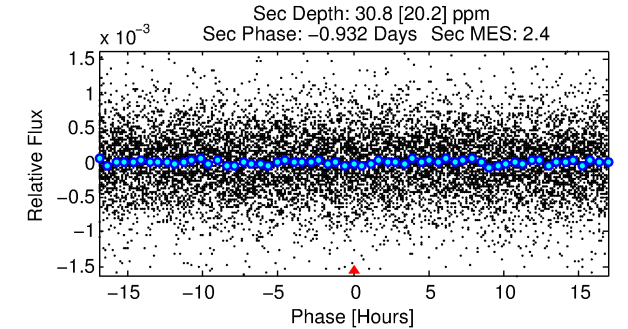
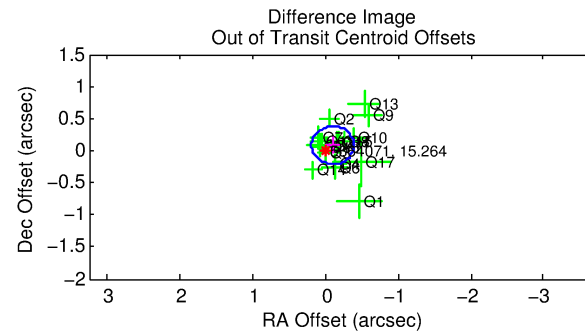
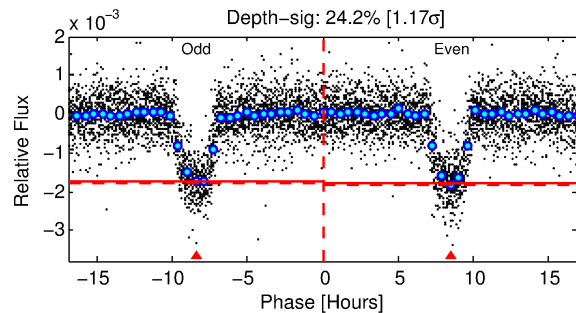
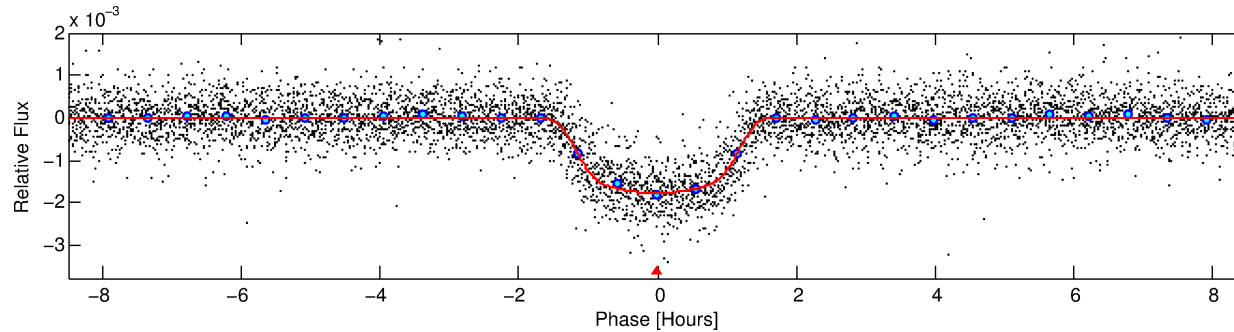
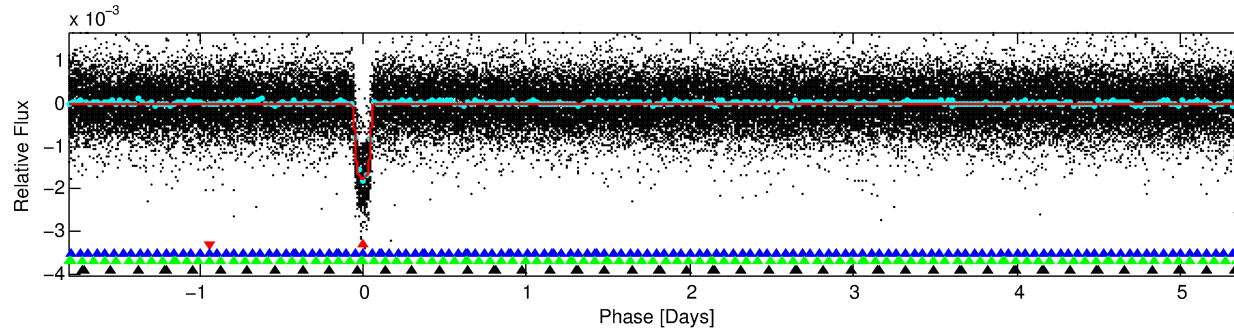
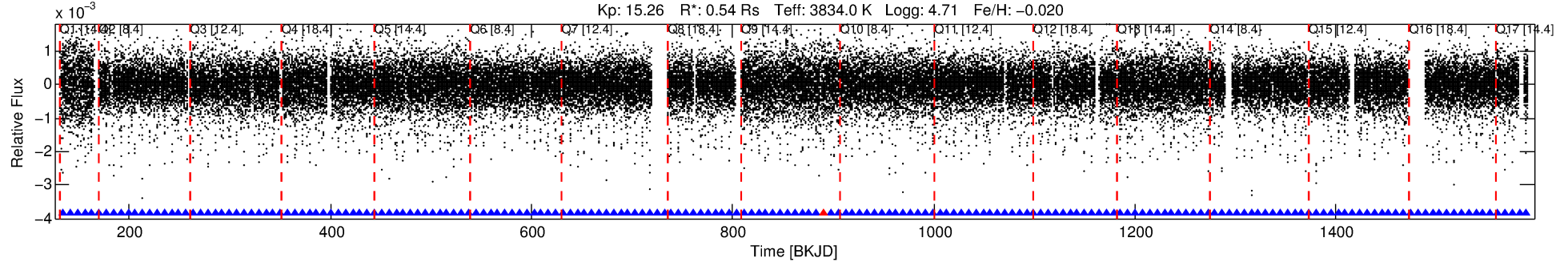
Ephemeris Match Information For 005364071-01

No Significant Match Found

DV One-Page Summary

KIC: 5364071 Candidate: 1 of 4 Period: 7.204 d
KOI: K00248.01 Name: Kepler-49b Corr: 0.950

Kp: 15.26 R*: 0.54 Rs Teff: 3834.0 K Logg: 4.71 Fe/H: -0.020



DV Fit Results:

Period = 7.20386 [0.00001] d
Epoch = 134.2658 [0.0006] BKJD
Rp/R* = 0.0443 [0.0014]
a/R* = 11.82 [1.39]
b = 0.85 [0.04]
Seff = 15.89 [1.95]
Teq = 509 [16] K
Rp = 2.60 [0.21] Re
a = 0.0595 [0.0037] AU
Ag = 8.84 [5.89] [1.33σ]
Teffp = 1357 [226] K [3.75σ]

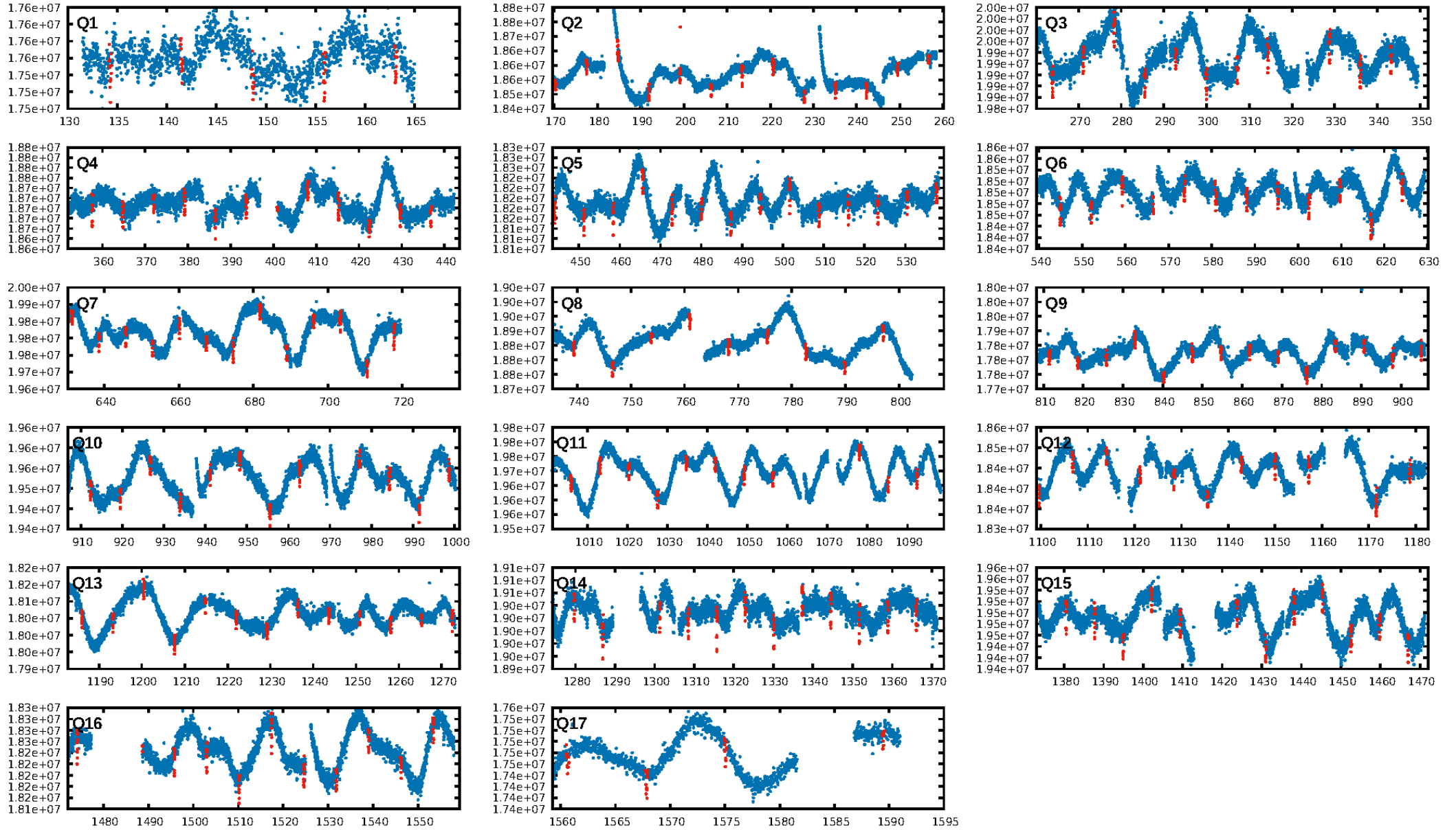
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [32.91σ]
LongPeriod-sig: 100.0% [21.33σ]
ModelChiSquare2-sig: 99.5%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 0.99 [176/177]
GhostDiagnostic-chr: 3.34
Centroid-sig: 15.2%
Centroid-so: 0.468 arcsec [3.90σ]
OotOffset-rm: 0.130 arcsec [1.32σ]
KicOffset-rm: 0.230 arcsec [2.52σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 1.00 [17/17]
DiffImageOverlap-fno: 1.00 [17/17]

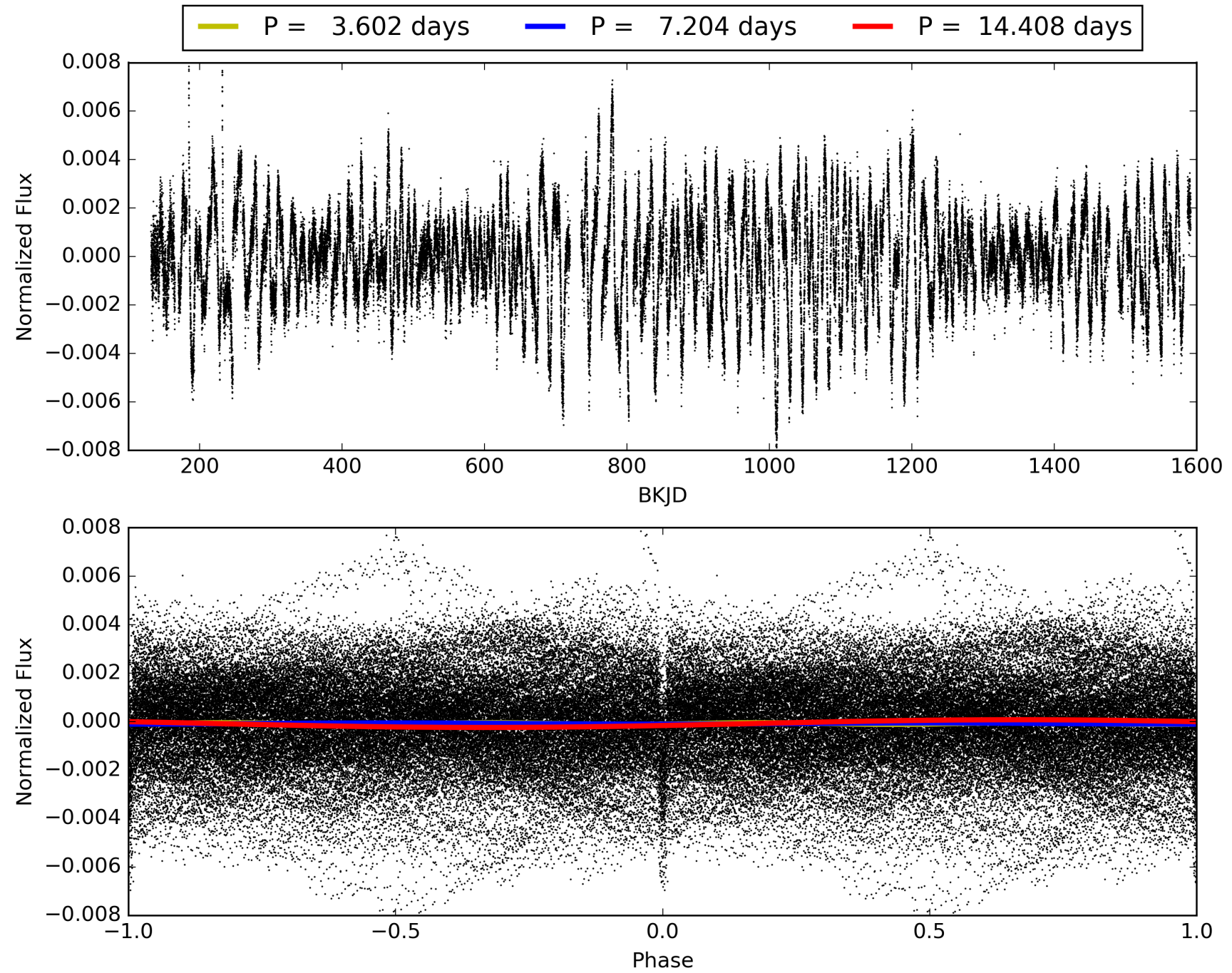
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 08:03:59 Z

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

TCE 005364071-01, PDC Light Curves

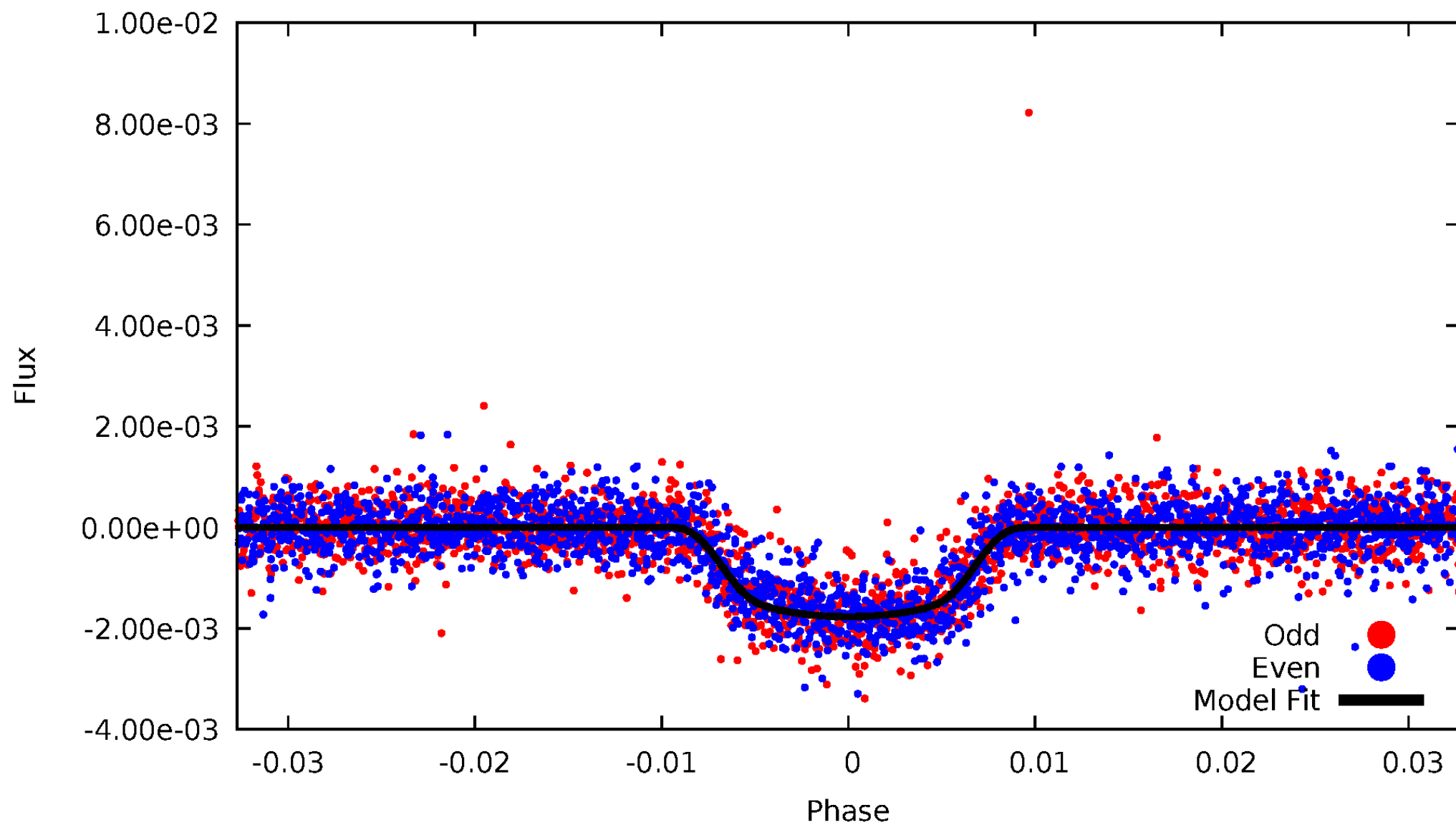


TCE 005364071-01



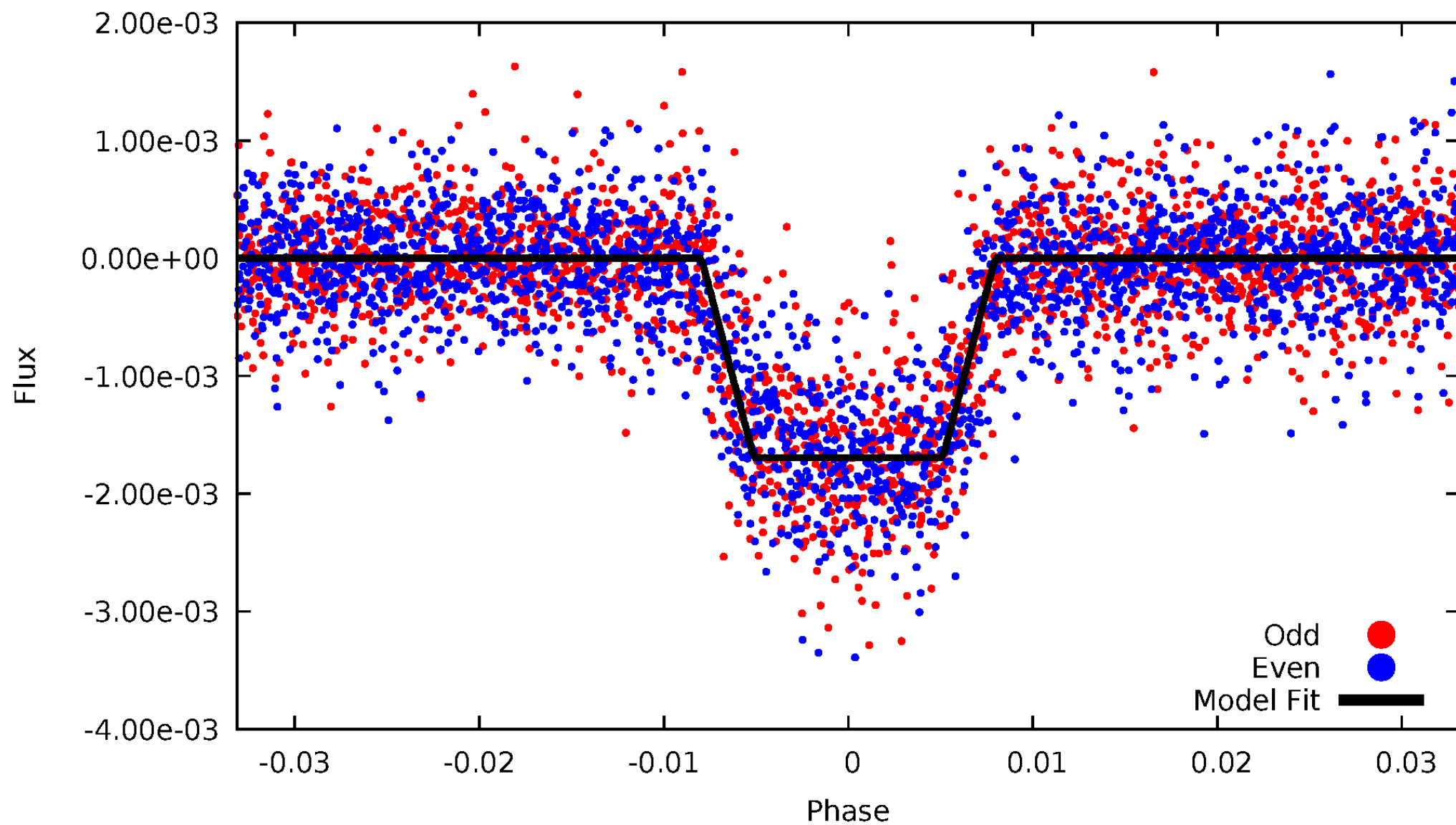
DV Odd/Even

TCE 005364071-01



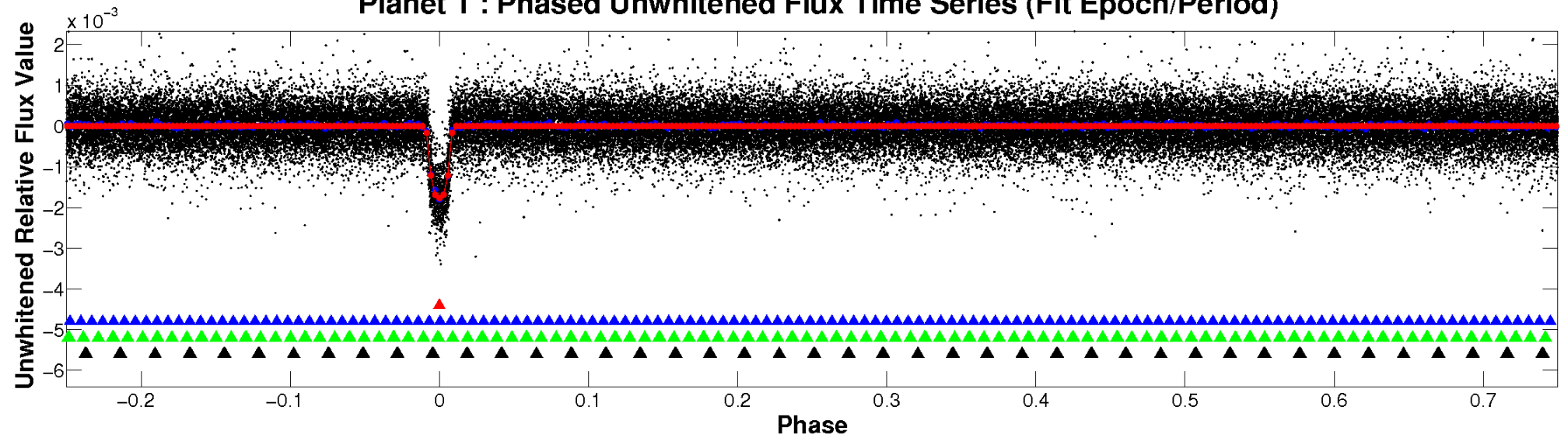
ALT Odd/Even

TCE 005364071-01

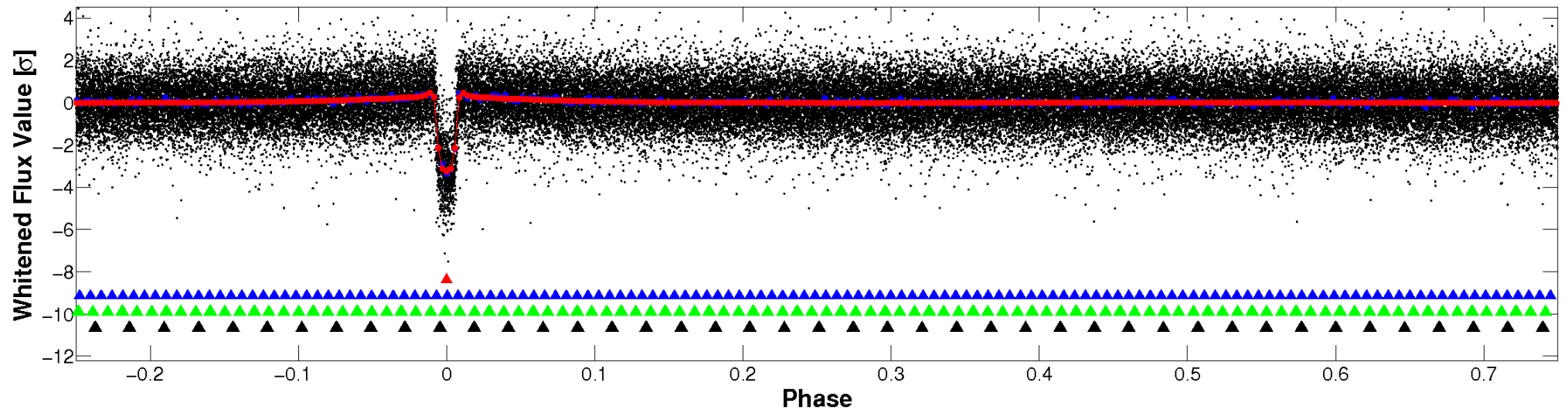


Non-Whitened Vs. Whitened Light Curve

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

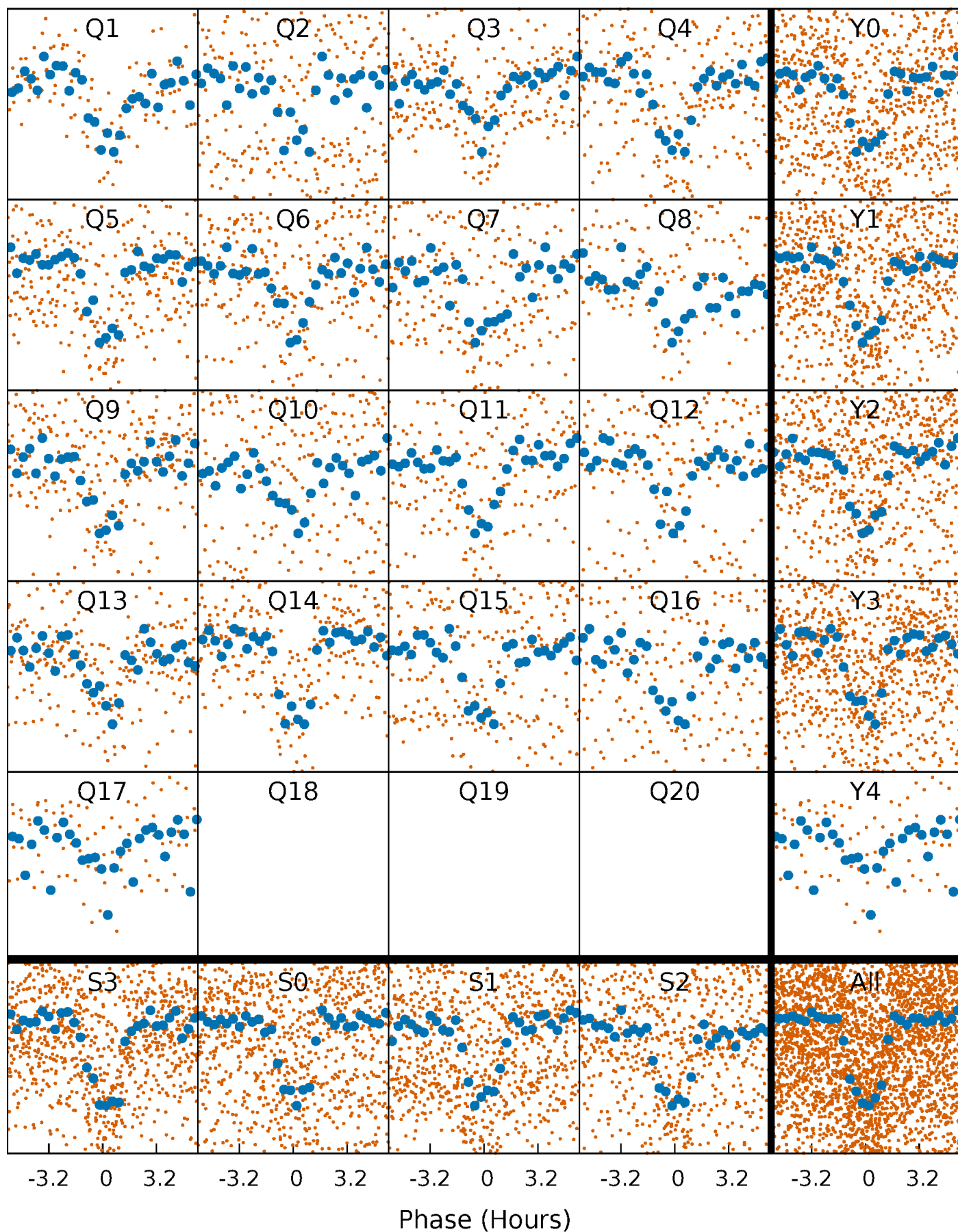


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



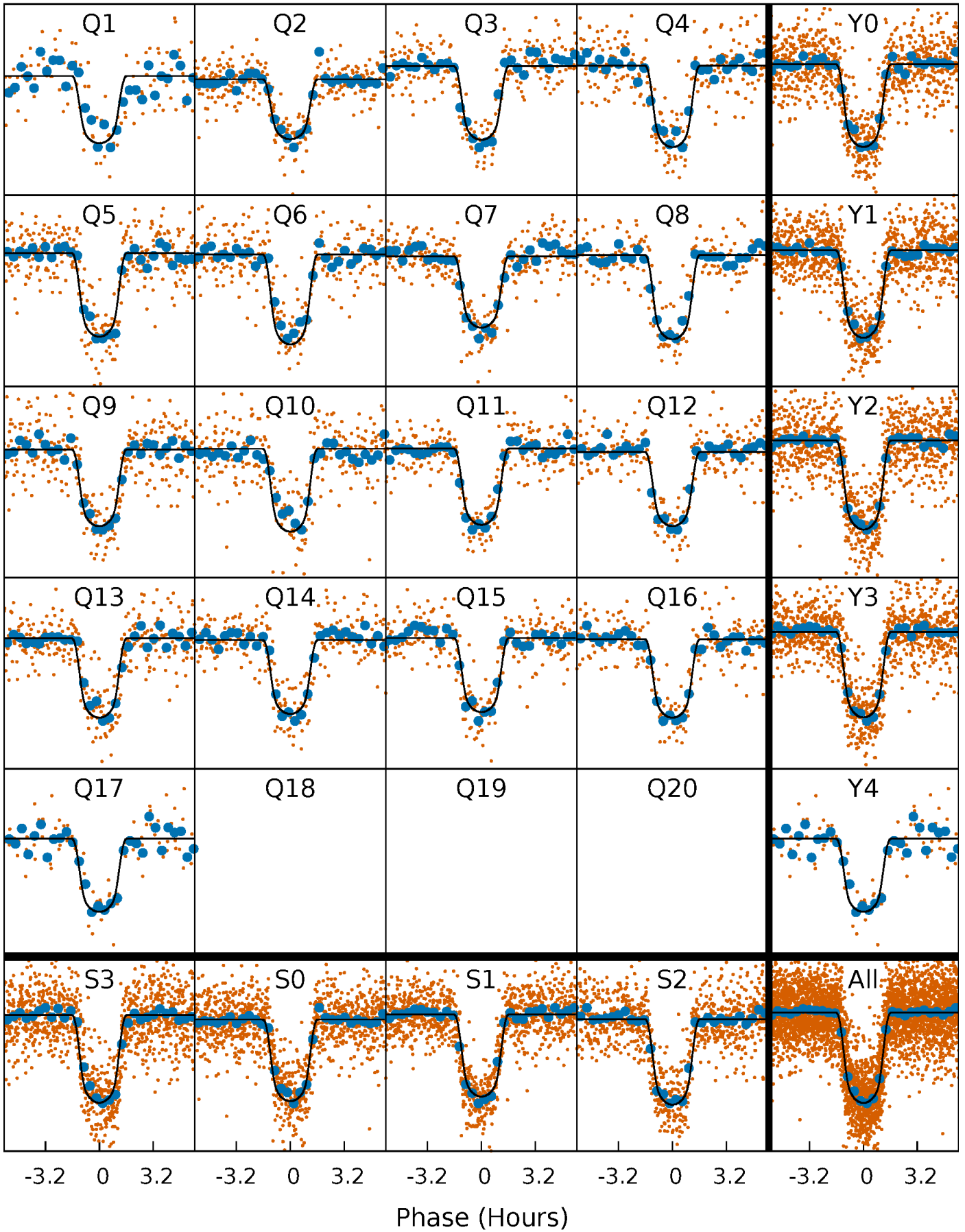
PDC Quarter-Phased Transit Curves

TCE 005364071-01 P= 7.203863 Days $T_0=134.265790$ (BKJD)



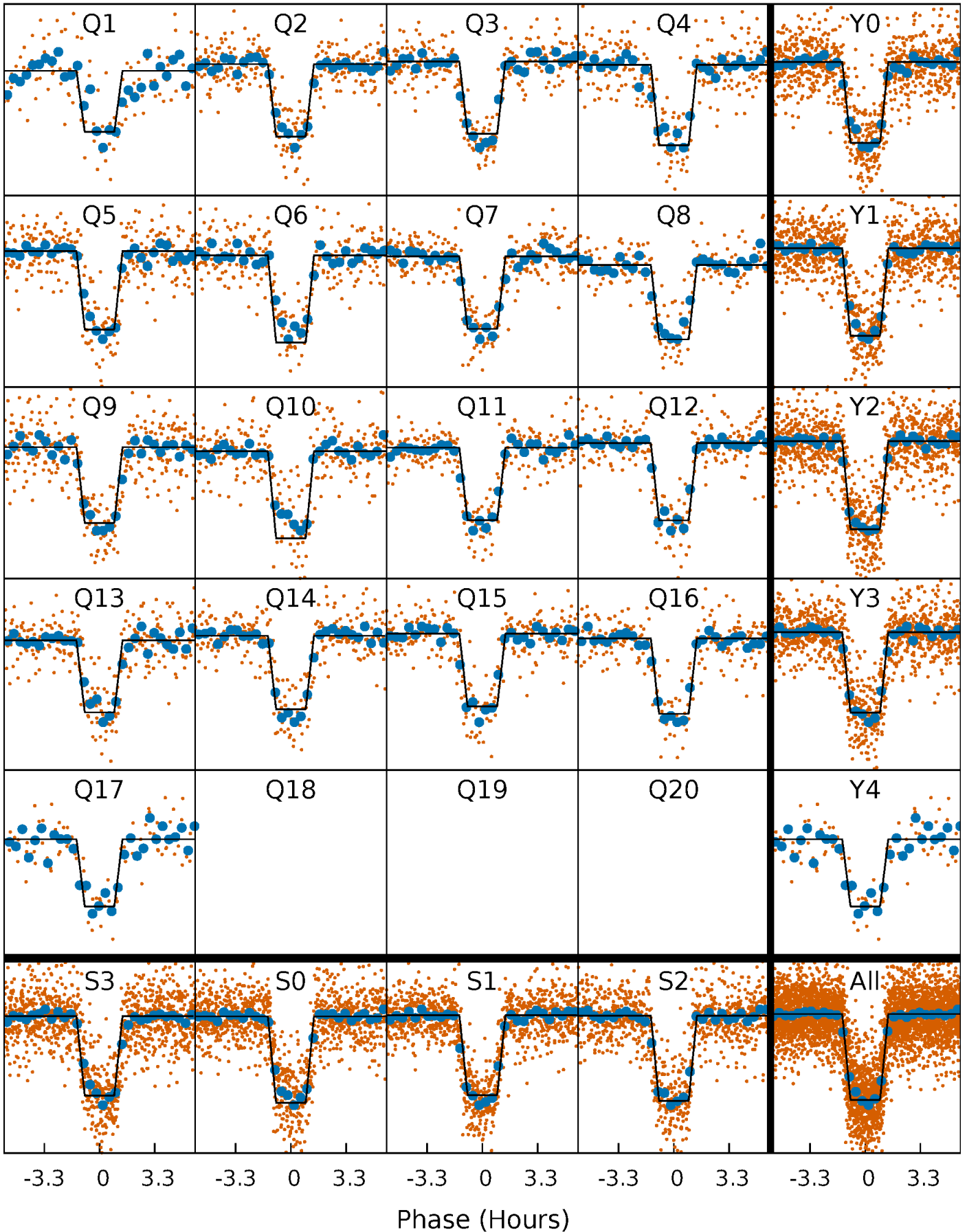
DV Quarter-Phased Transit Curves

TCE 005364071-01 P= 7.203863 Days $T_0=134.265790$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

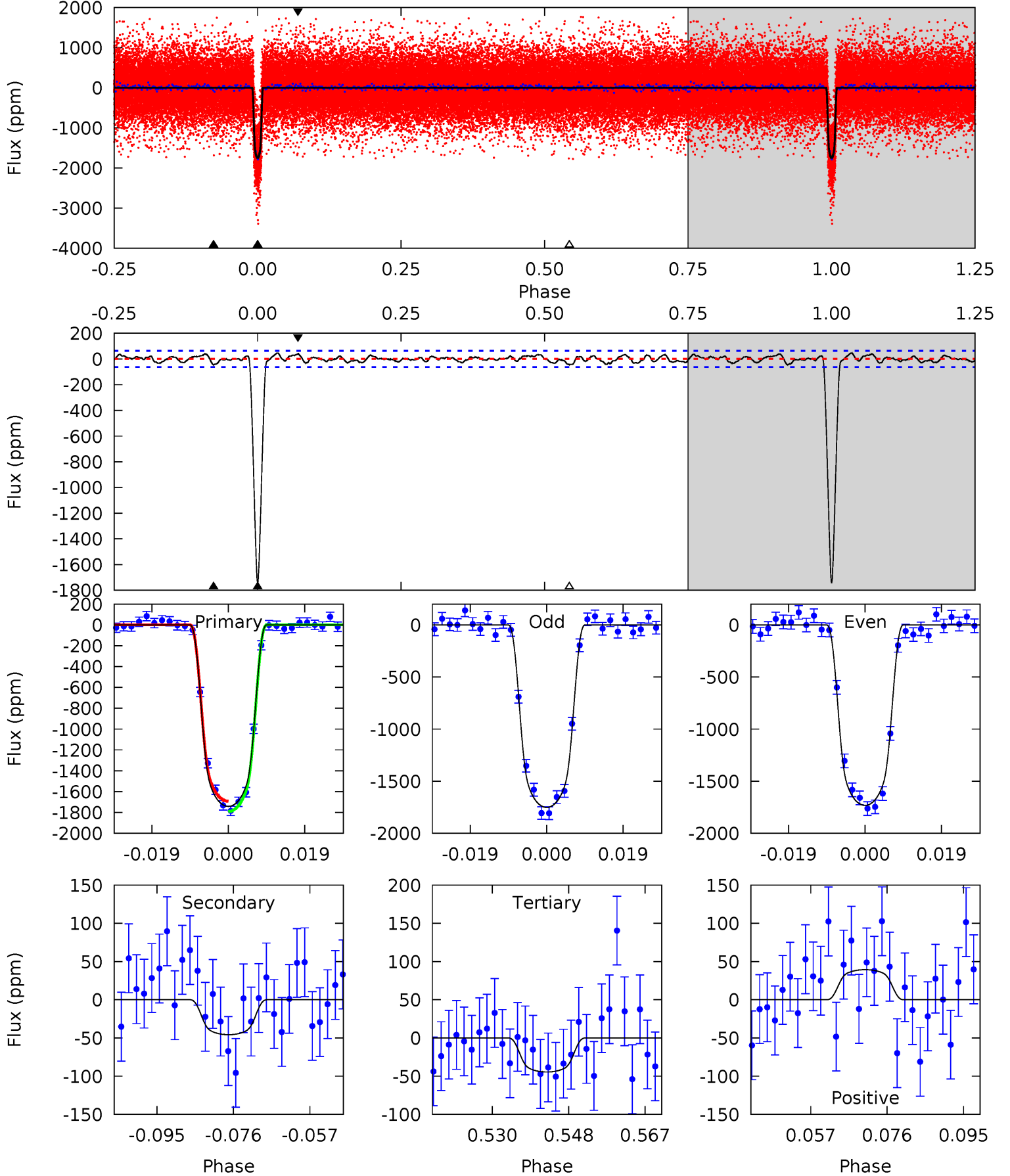
TCE 005364071-01 P= 7.203881 Days $T_0=134.263774$ (BKJD)



DV Model-Shift Uniqueness Test

005364071-01, P = 7.203863 Days, E = 127.061927 Days

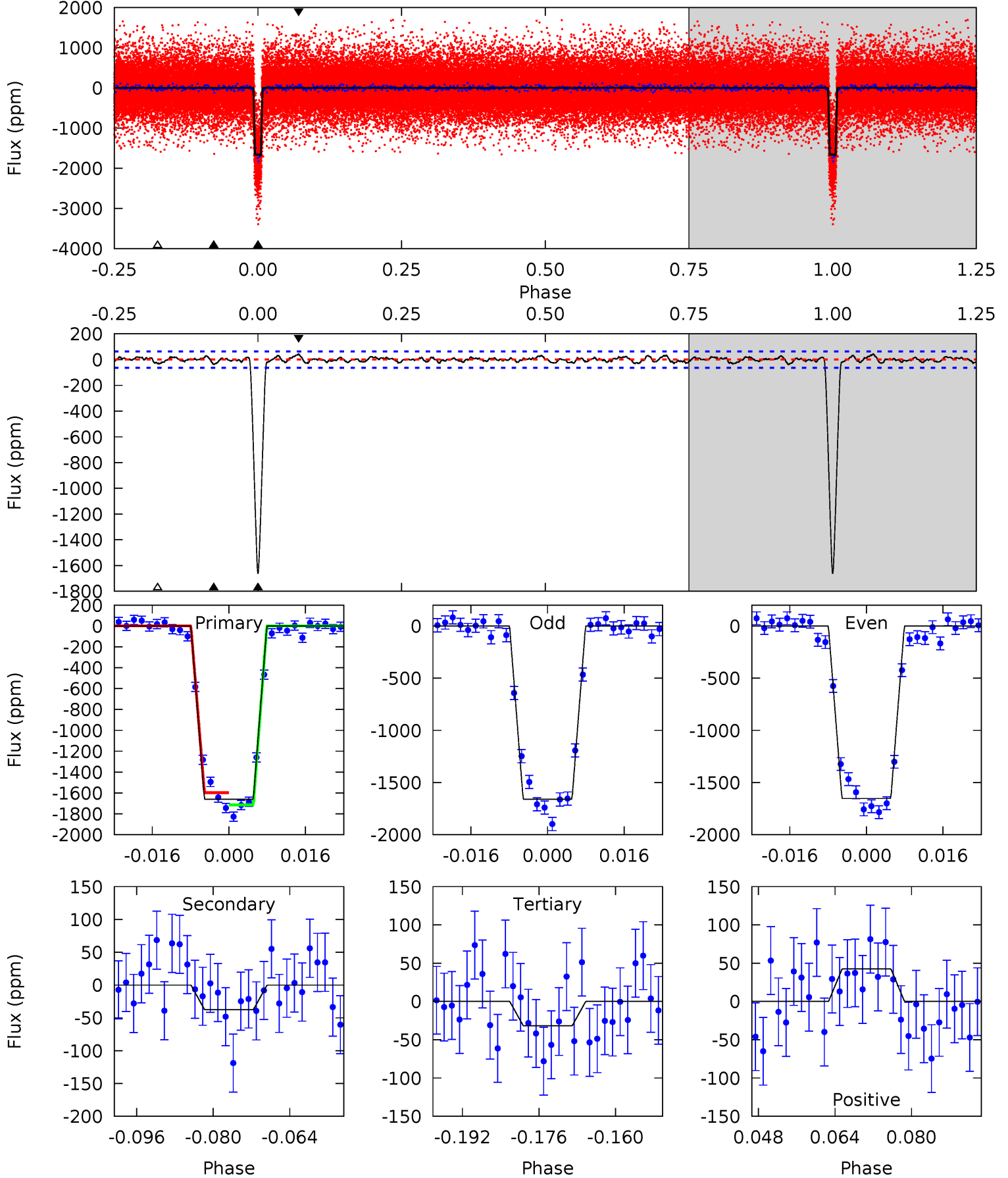
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
136.7	3.59	3.49	3.09	4.90	2.35	1.42	133.2	133.6	0.09	0.50	0.78	0.99	0.03	3.87



Alt Model-Shift Uniqueness Test

005364071-01, P = 7.203881 Days, E = 127.059893 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
128.3	2.90	2.46	3.28	4.93	2.41	1.07	125.8	125.0	0.45	-0.38	0.25	1.00	0.02	4.54



Stellar Parameters For KIC 005364071

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	3834^{+77}_{-84}	$4.708^{+0.045}_{-0.021}$	$-0.020^{+0.150}_{-0.150}$	$0.539^{+0.030}_{-0.041}$	$0.541^{+0.037}_{-0.037}$	$4.872^{+0.958}_{-0.449}$
	+2%/-2%	+1%/-0%	+750%/-750%	+6%/-8%	+7%/-7%	+20%/-9%
Source	SPE70	SPE60	SPE70	DSEP		

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

Secondary Eclipse Parameters for KIC 005364071-01 / KOI 0248.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-46 ± 13	$2.59^{+0.12}_{-0.12}$	708^{+16}_{-18}	2270^{+78}_{-80}	13^{+4}_{-4}
Alt.	-38 ± 13	$2.40^{+0.13}_{-0.12}$	706^{+16}_{-18}	2257^{+88}_{-109}	13^{+5}_{-4}

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

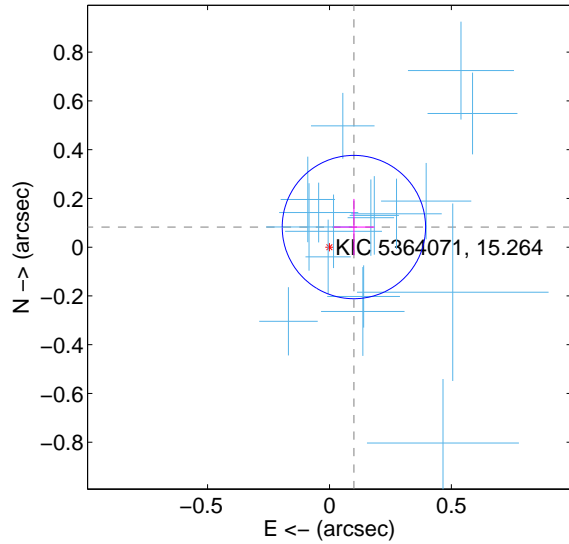
Supplemental centroid analysis for 005364071-01. Kepler magnitude: 15.26. Transit SNR 84.27

There are 17 quarters with good PRF difference image offsets

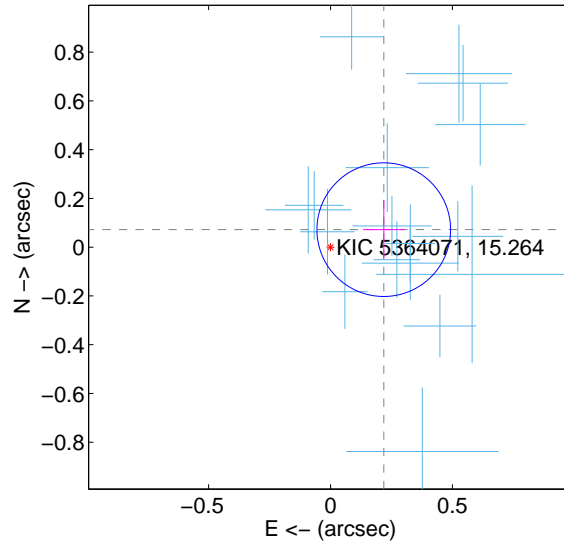
The direct PRF centroid is offset from the target star catalog position by about 0.11 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.130 ± 0.098	1.32	-0.100 ± 0.084	0.083 ± 0.115
PRF-fit source offset from KIC position	0.230 ± 0.091	2.52	-0.218 ± 0.085	0.072 ± 0.122
photometric centroid source offset	0.47 ± 0.12	3.90	-0.47 ± 0.12	-0.04 ± 0.10

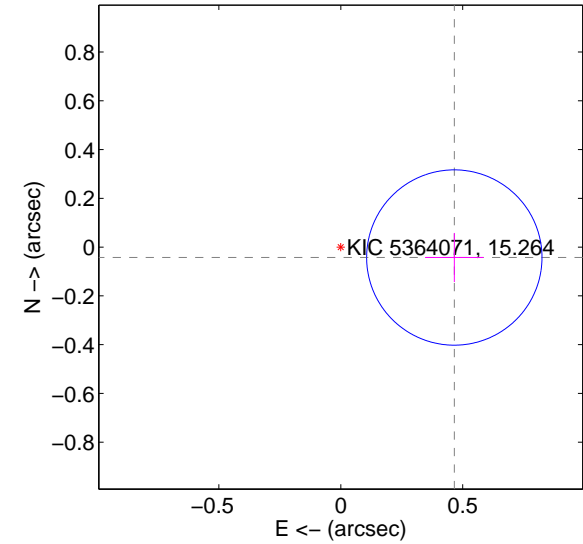
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

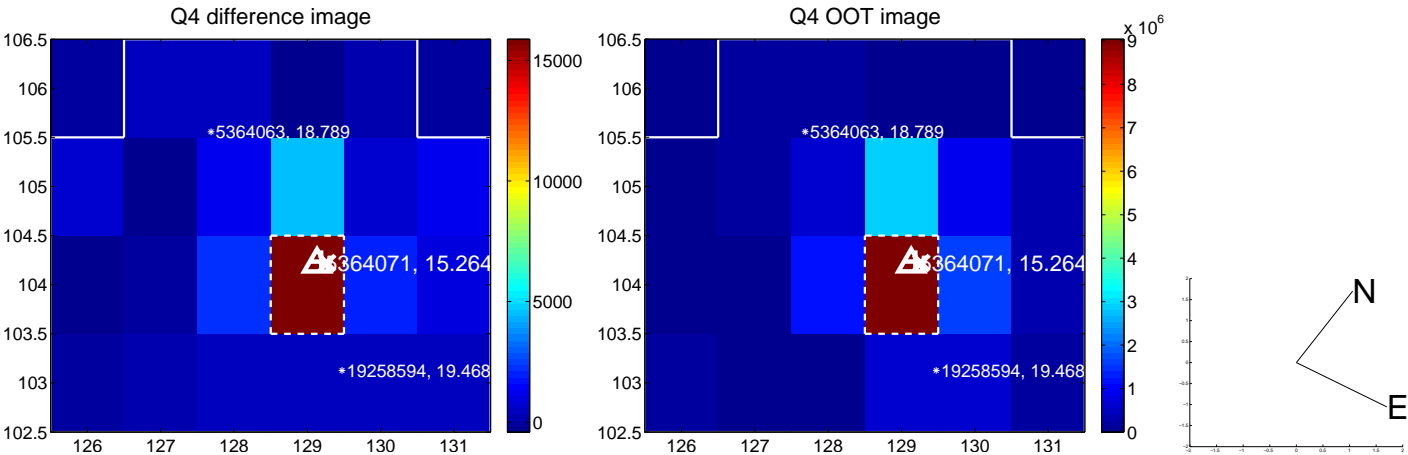
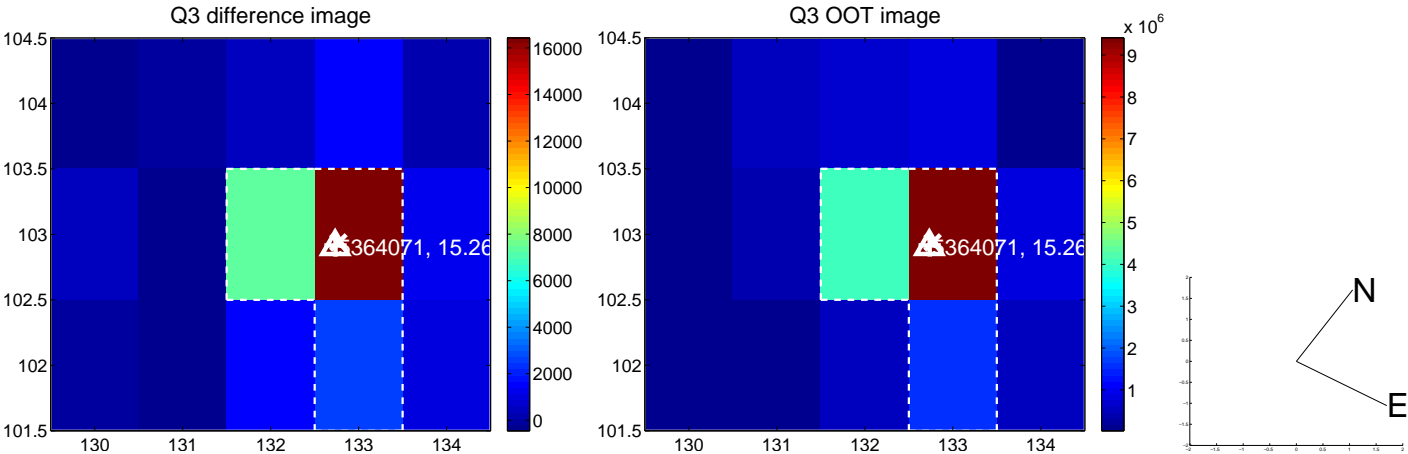
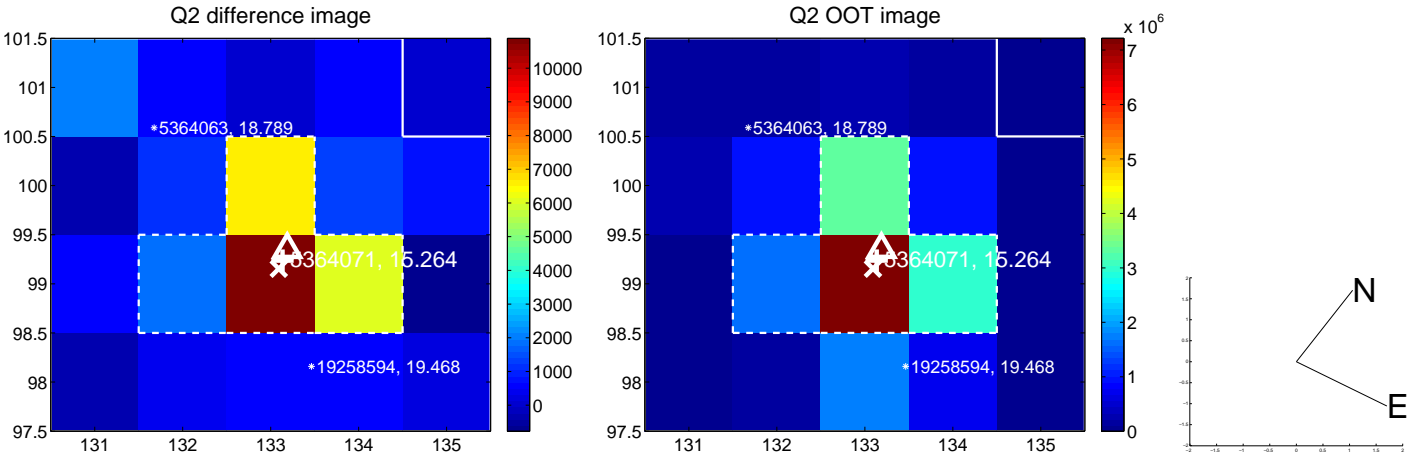
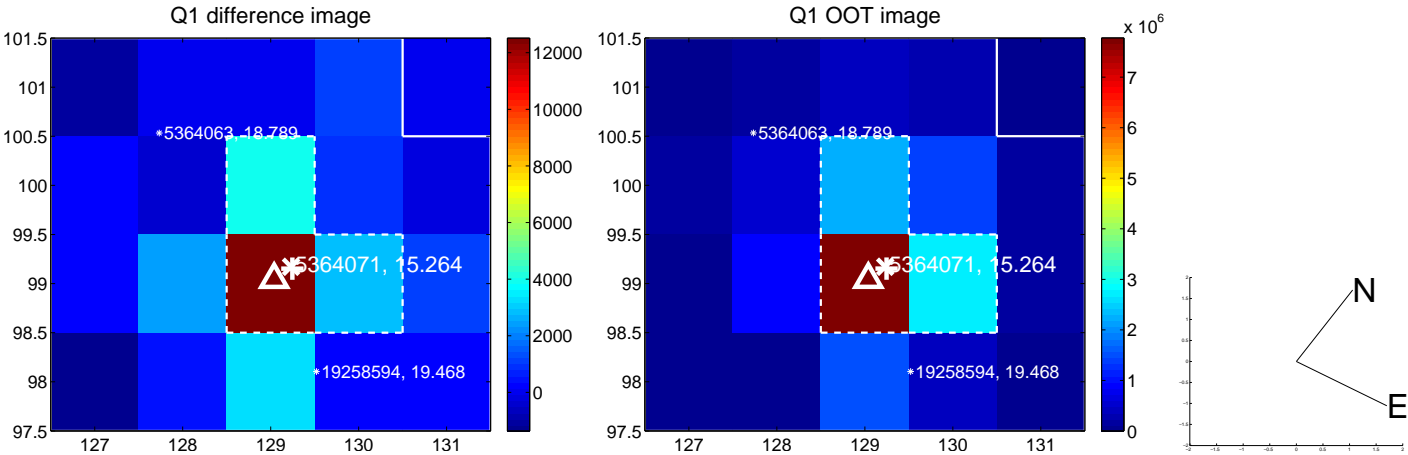


offset from photometric centroids

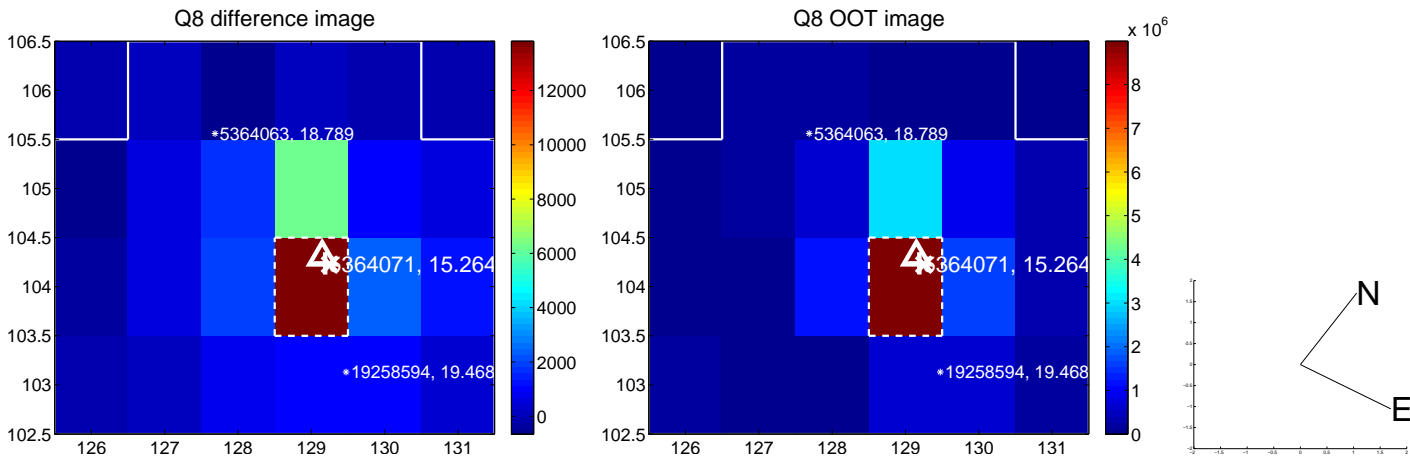
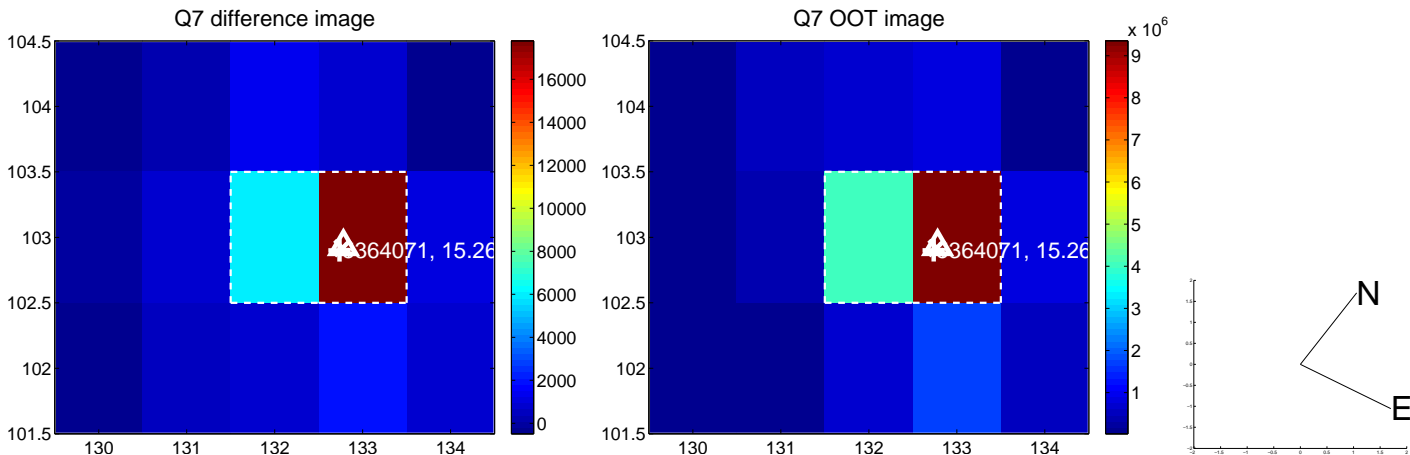
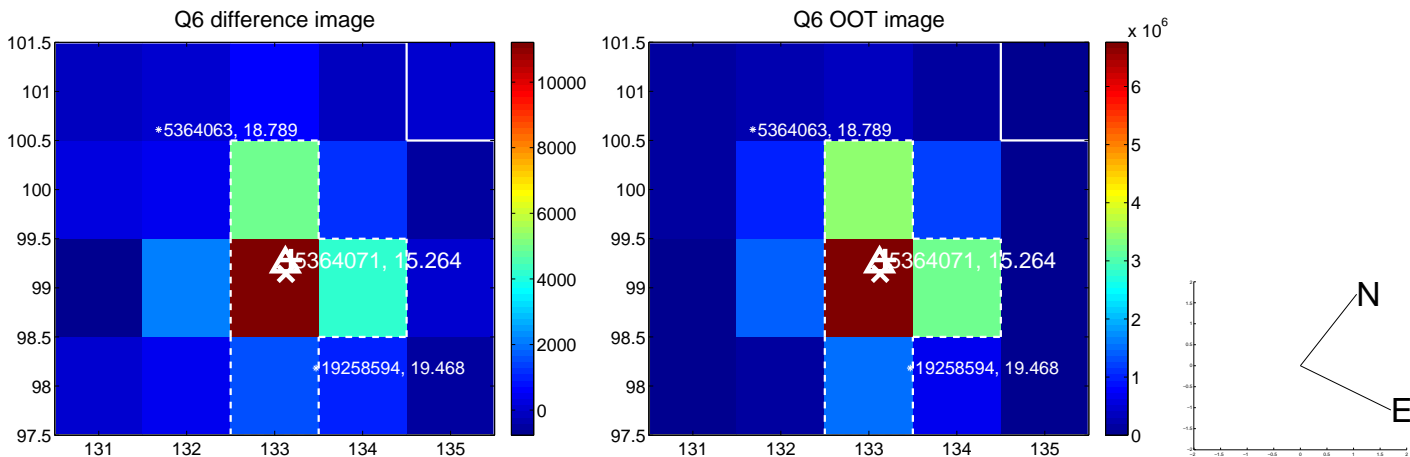
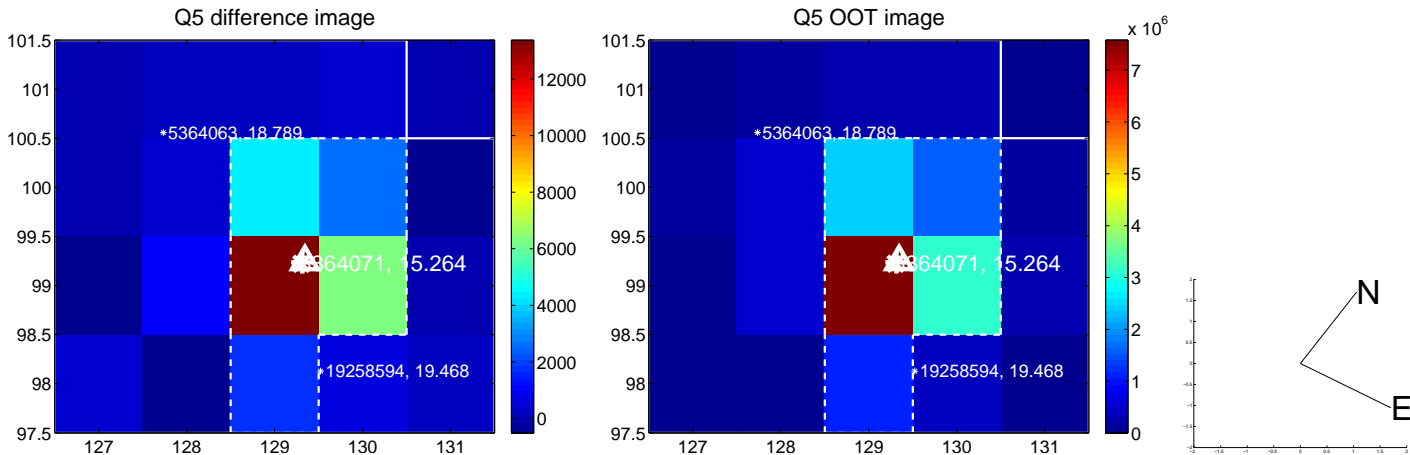


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

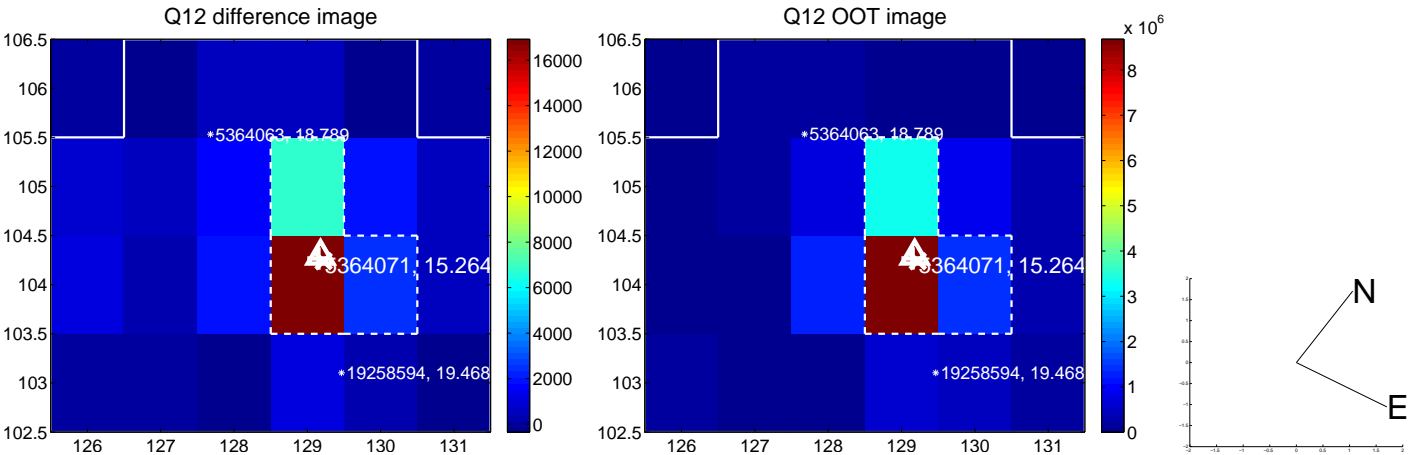
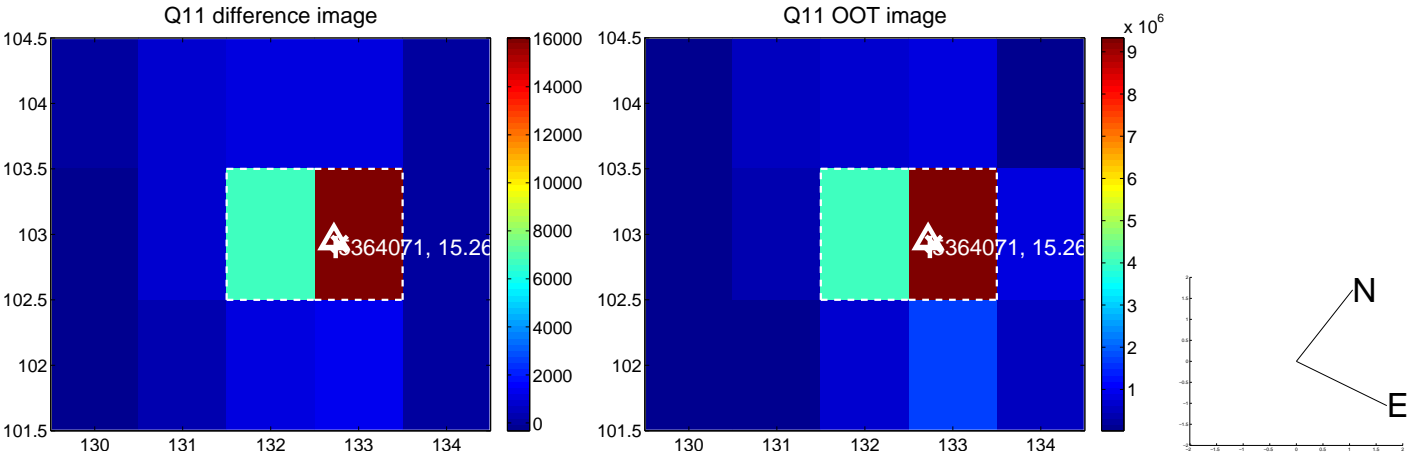
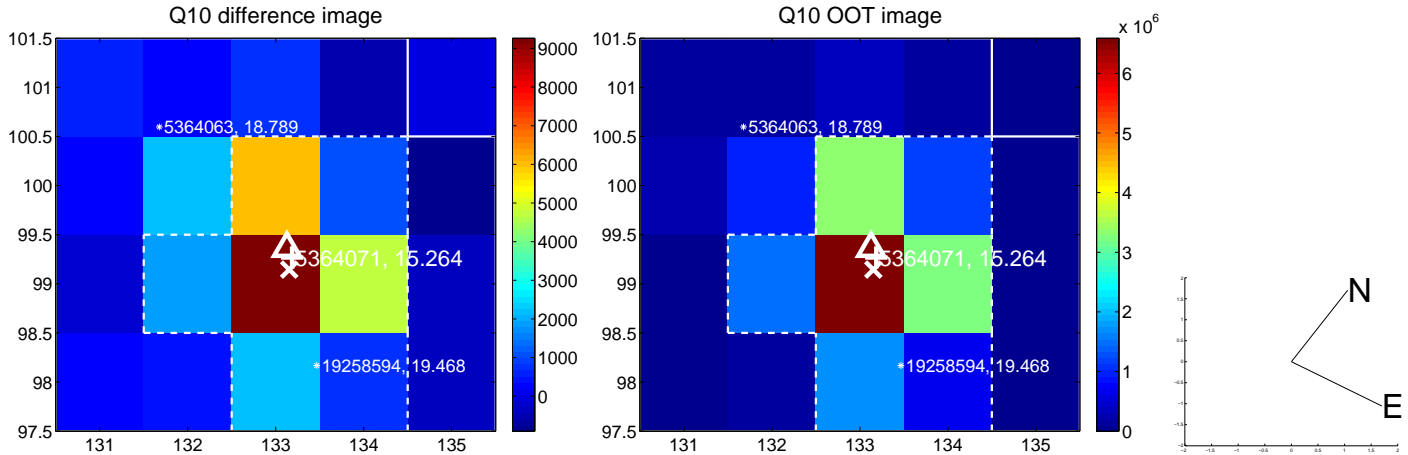
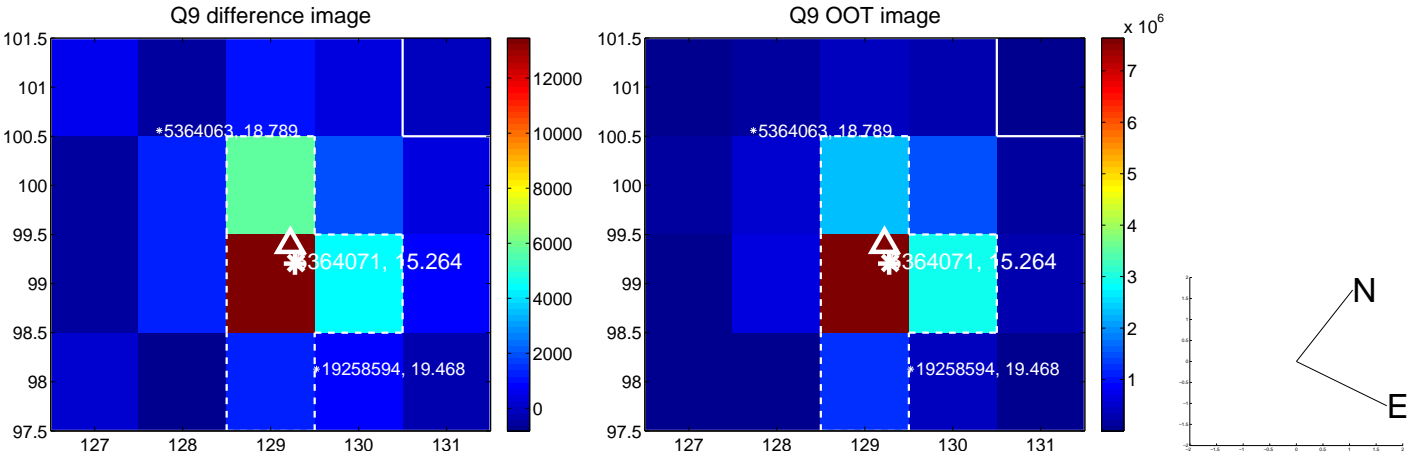
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



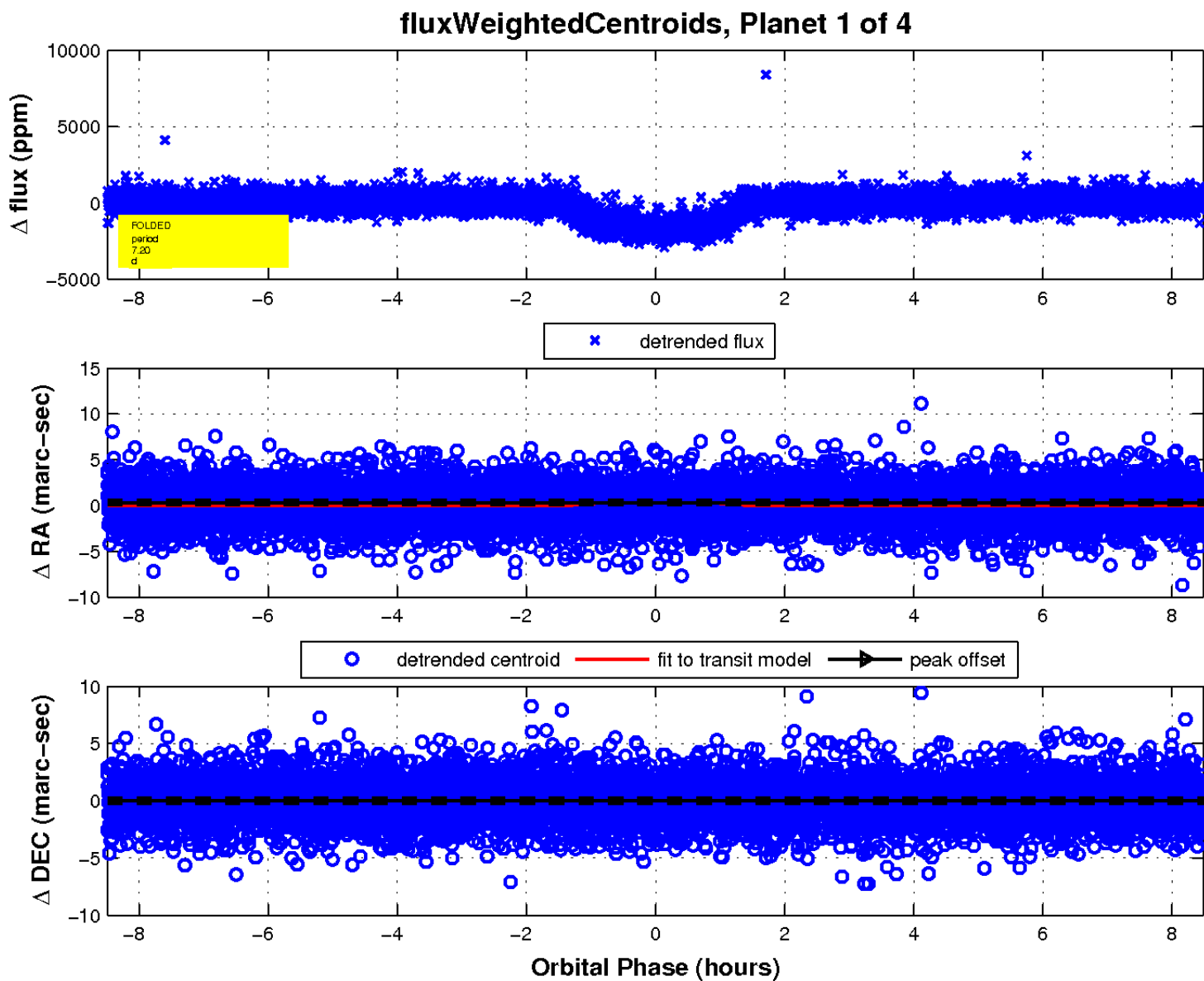
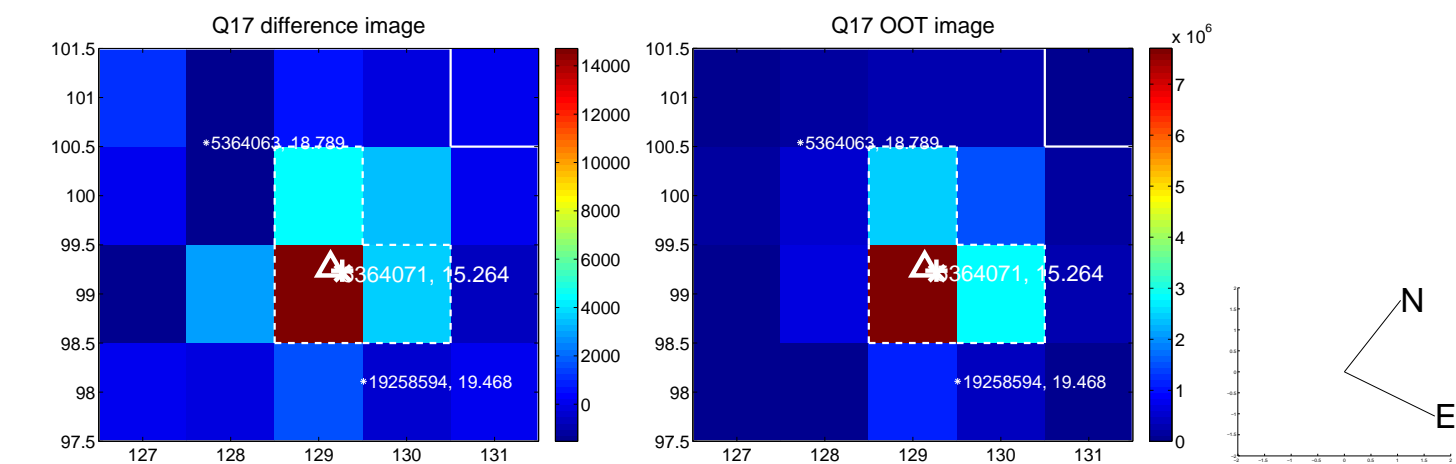
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

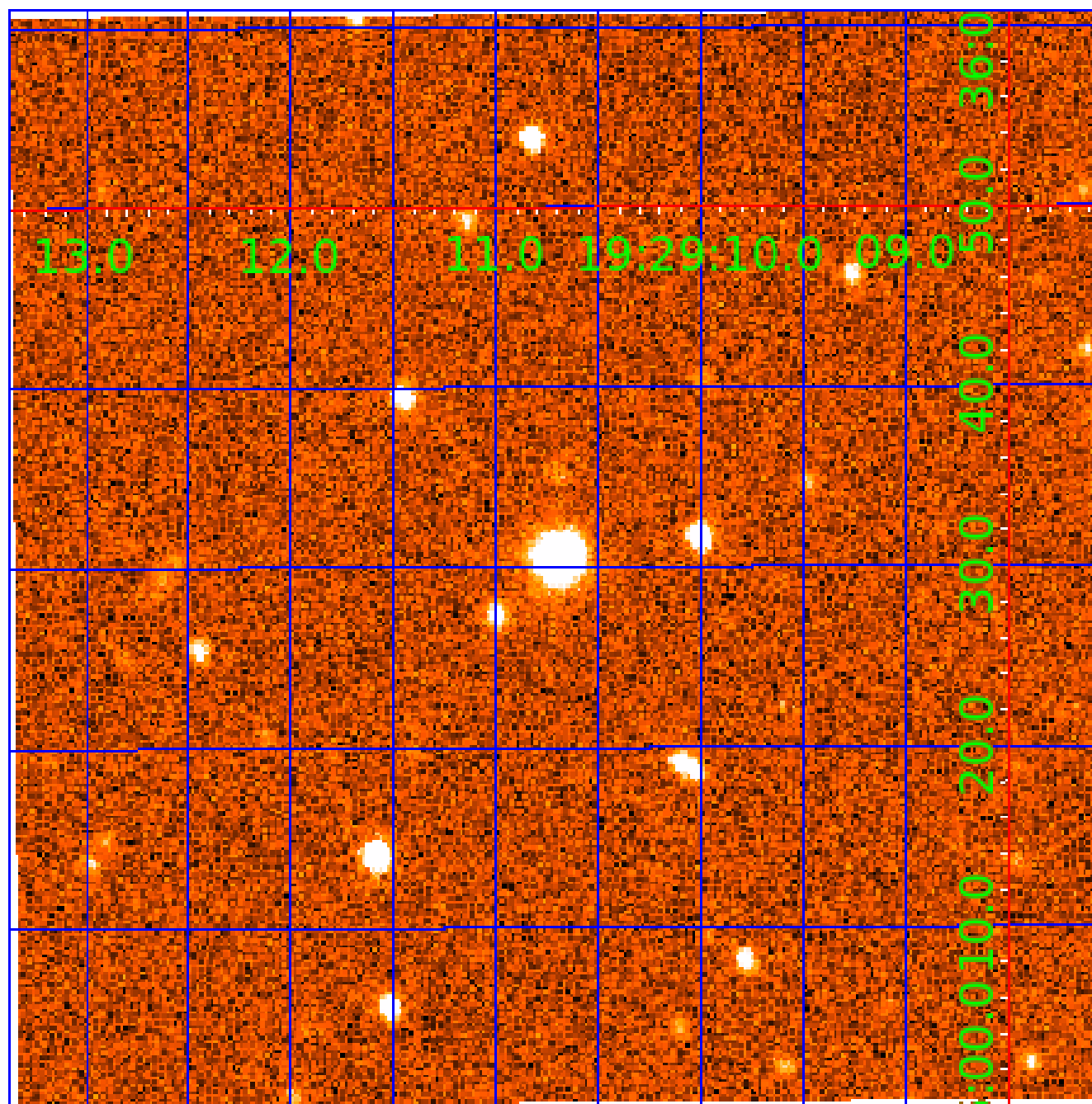


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 005364071

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})
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005364071-04	OBS	0248.04	18.596122	141.264785	785.9	2.376	20.6	22.9	0.54	3834	1.69	4.49

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005364071-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT
005364071-02	OBS	PC	1.00	0	0	0	0	NO_COMMENT
005364071-03	OBS	PC	1.00	0	0	0	0	NO_COMMENT
005364071-04	OBS	PC	1.00	0	0	0	0	NO_COMMENT

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.

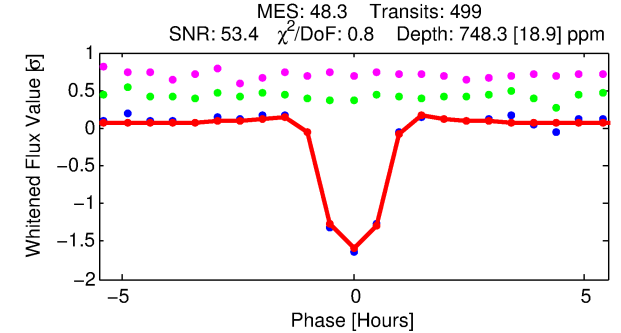
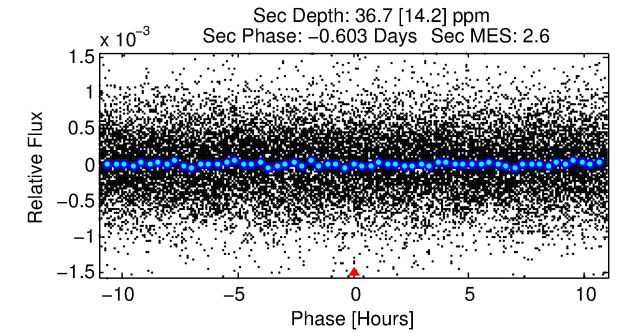
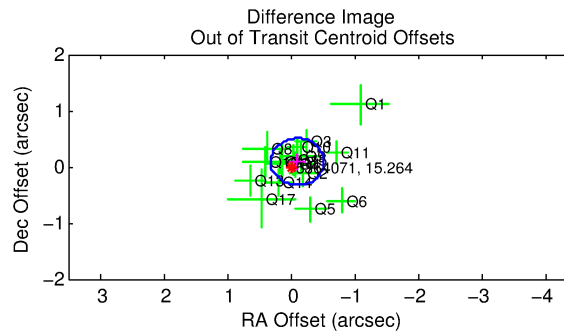
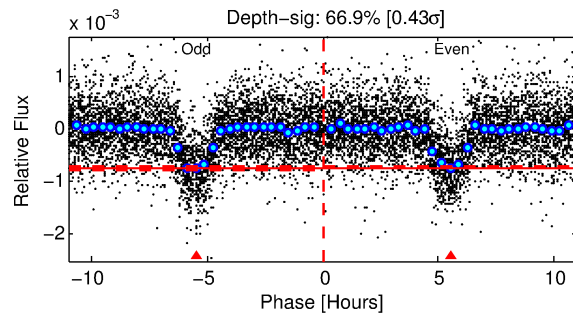
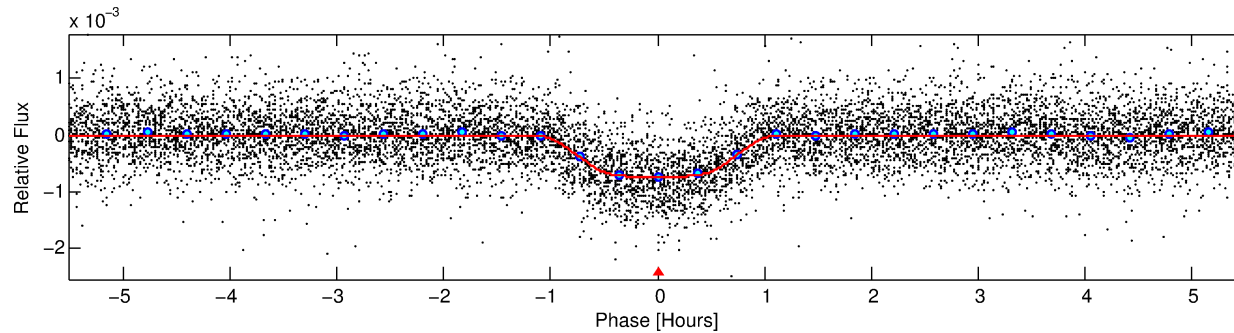
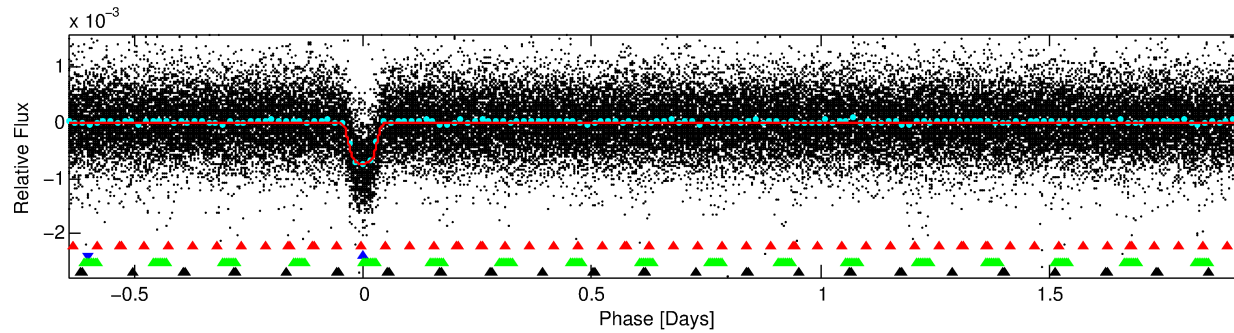
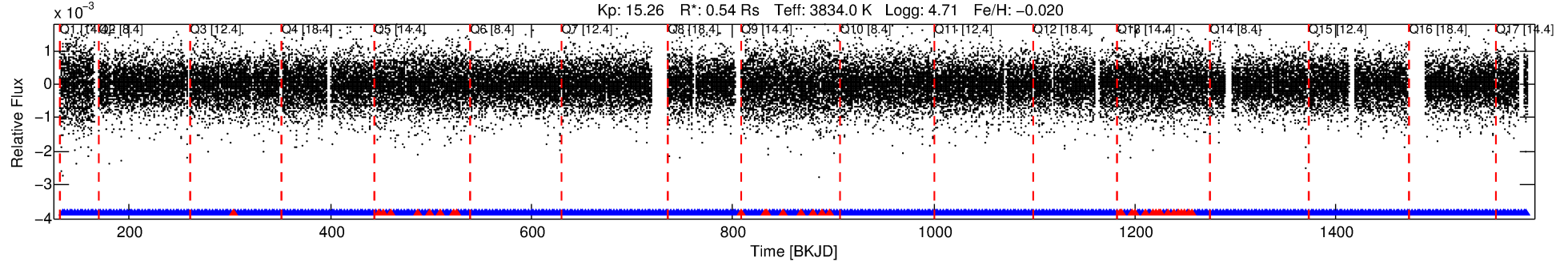
Ephemeris Match Information For 005364071-02

No Significant Match Found

DV One-Page Summary

KIC: 5364071 Candidate: 2 of 4 Period: 2.577 d
KOI: K00248.03 Name: Kepler-49d Corr: 0.927

Kp: 15.26 R*: 0.54 Rs Teff: 3834.0 K Logg: 4.71 Fe/H: -0.020



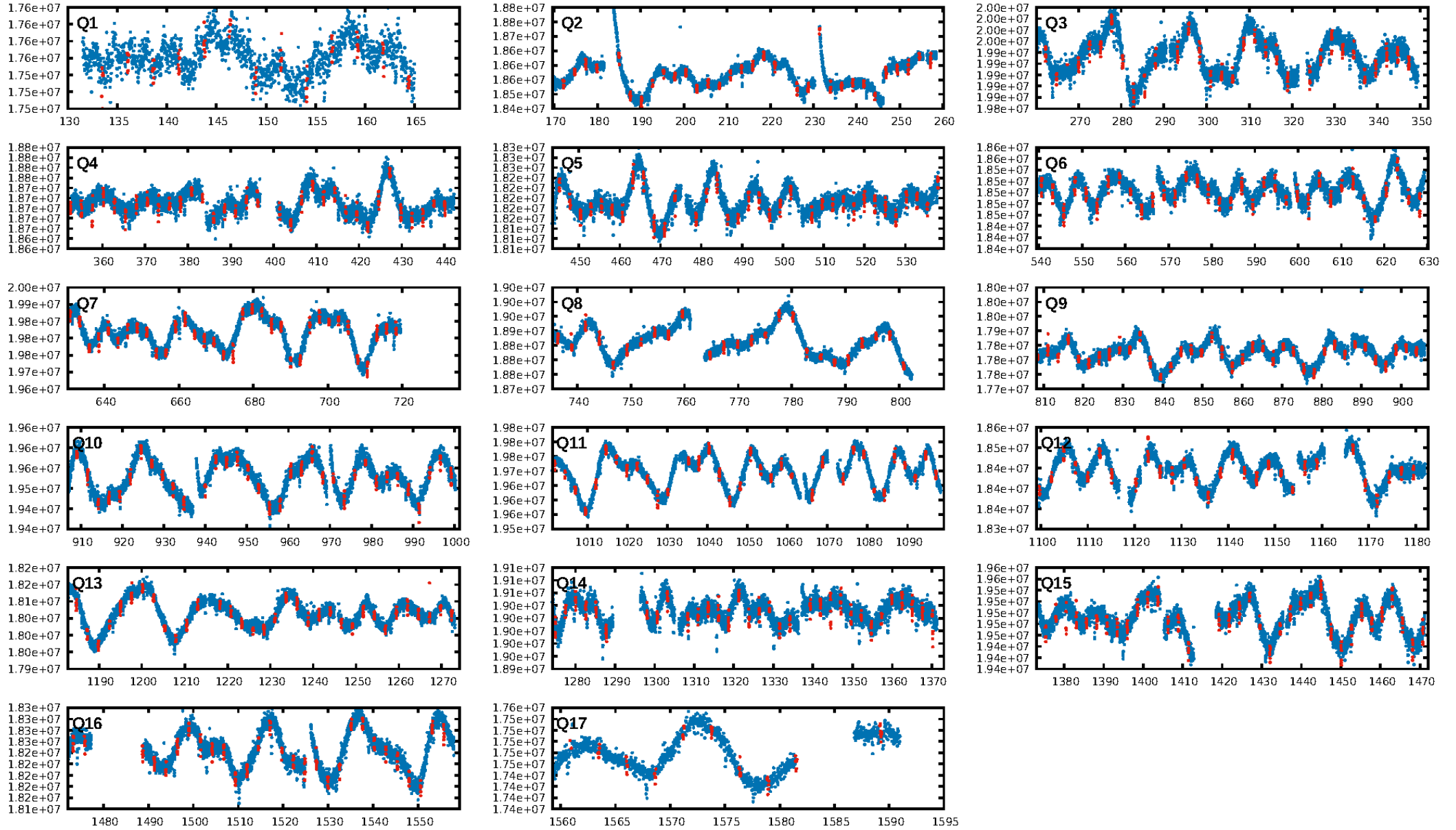
DV Fit Results:

Period = 2.57656 [0.00000] d
Epoch = 133.4811 [0.0005] BKJD
Rp/R* = 0.0301 [0.0022]
a/R* = 5.45 [1.56]
b = 0.90 [0.06]
Seff = 62.59 [7.67]
Teq = 717 [22] K
Rp = 1.77 [0.19] Re
a = 0.0300 [0.0018] AU
Ag = 5.79 [2.44] [1.97σ]
Teffp = 1720 [181] K [5.50σ]

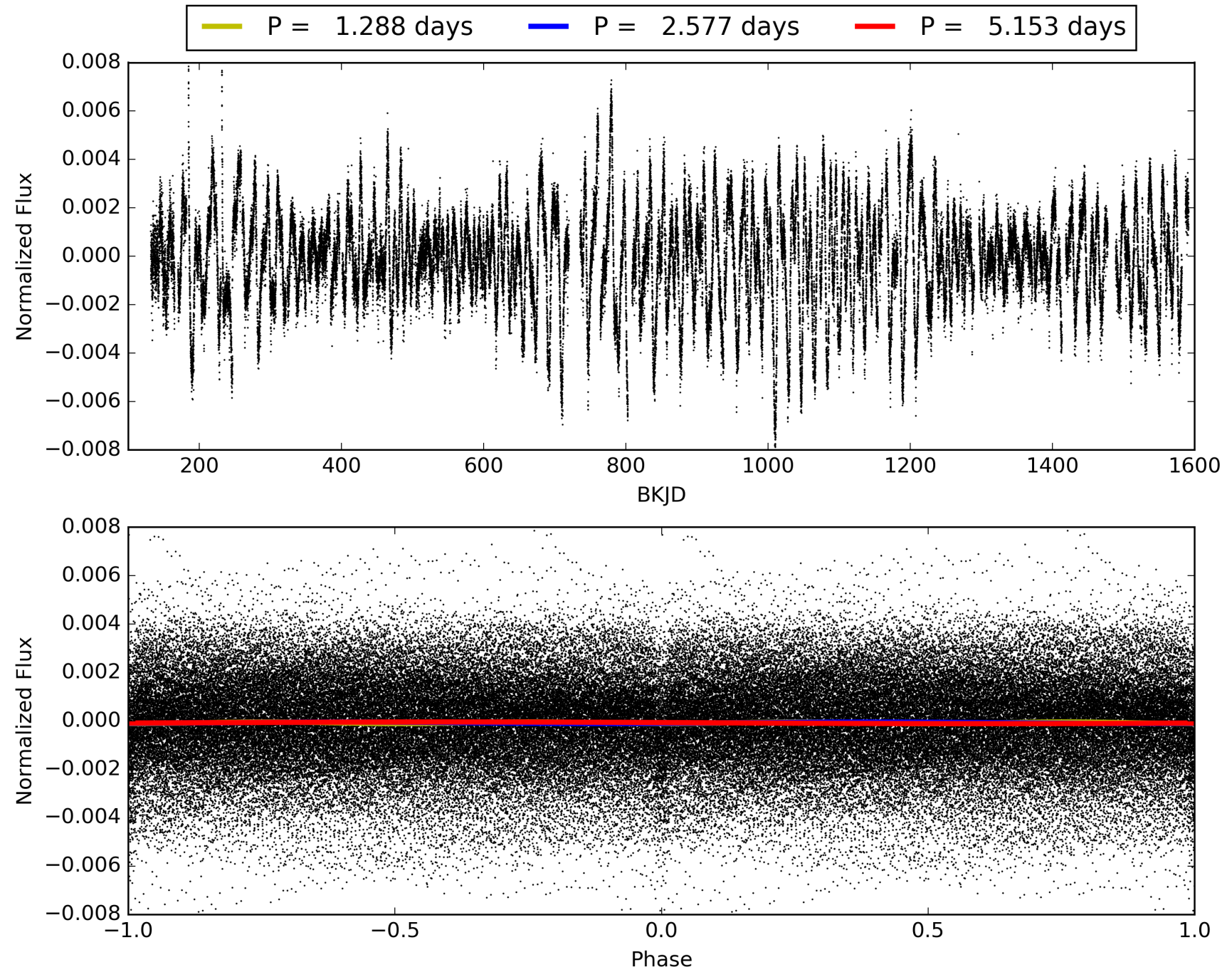
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [32.91σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 0.93 [444/477]
GhostDiagnostic-chr: 3.562
Centroid-sig: 0.0%
Centroid-so: 0.770 arcsec [3.77σ]
OotOffset-rm: 0.133 arcsec [0.96σ]
KicOffset-rm: 0.219 arcsec [1.73σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 1.00 [17/17]
DiffImageOverlap-fno: 1.00 [17/17]

TCE 005364071-02, PDC Light Curves

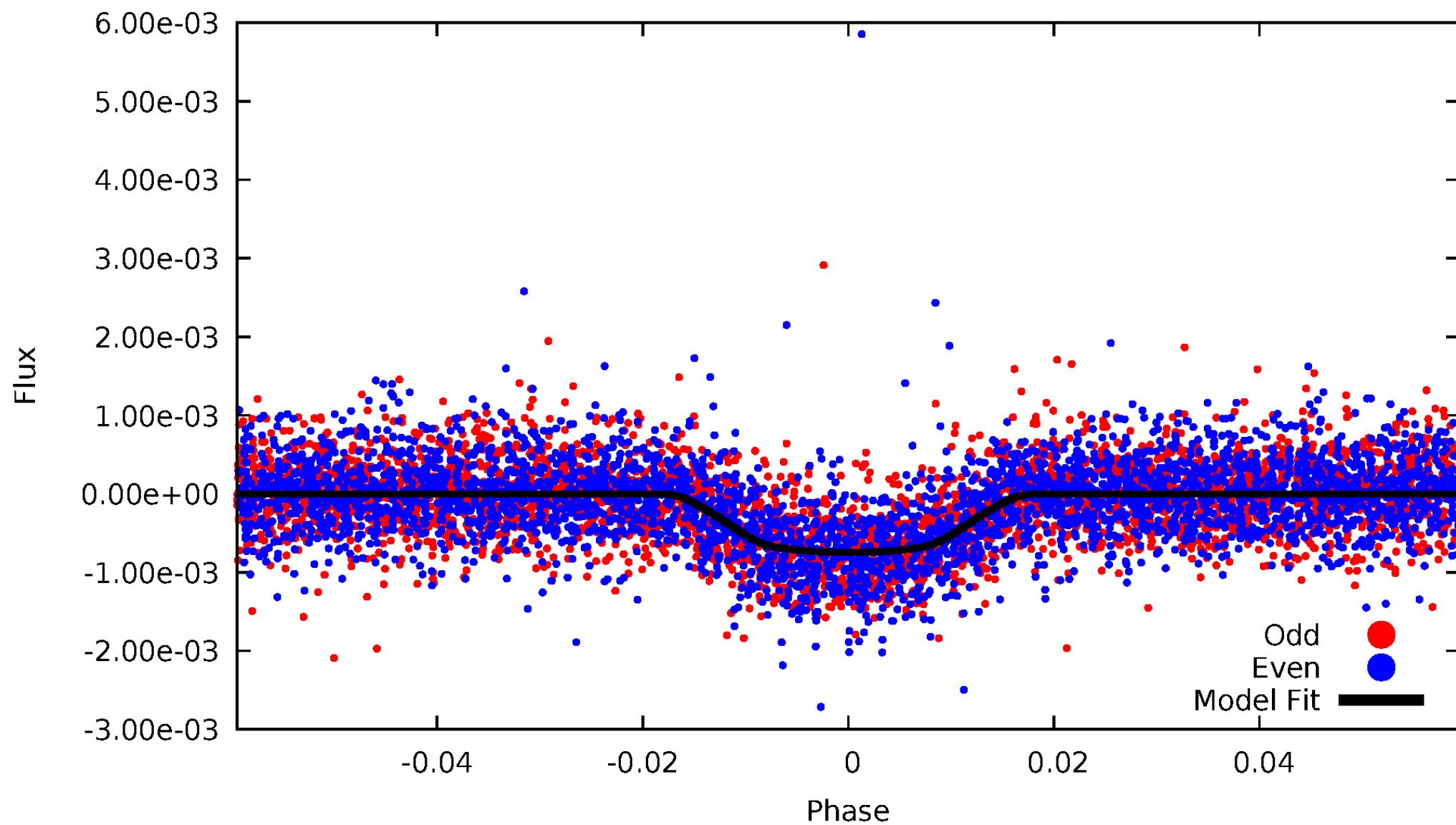


TCE 005364071-02



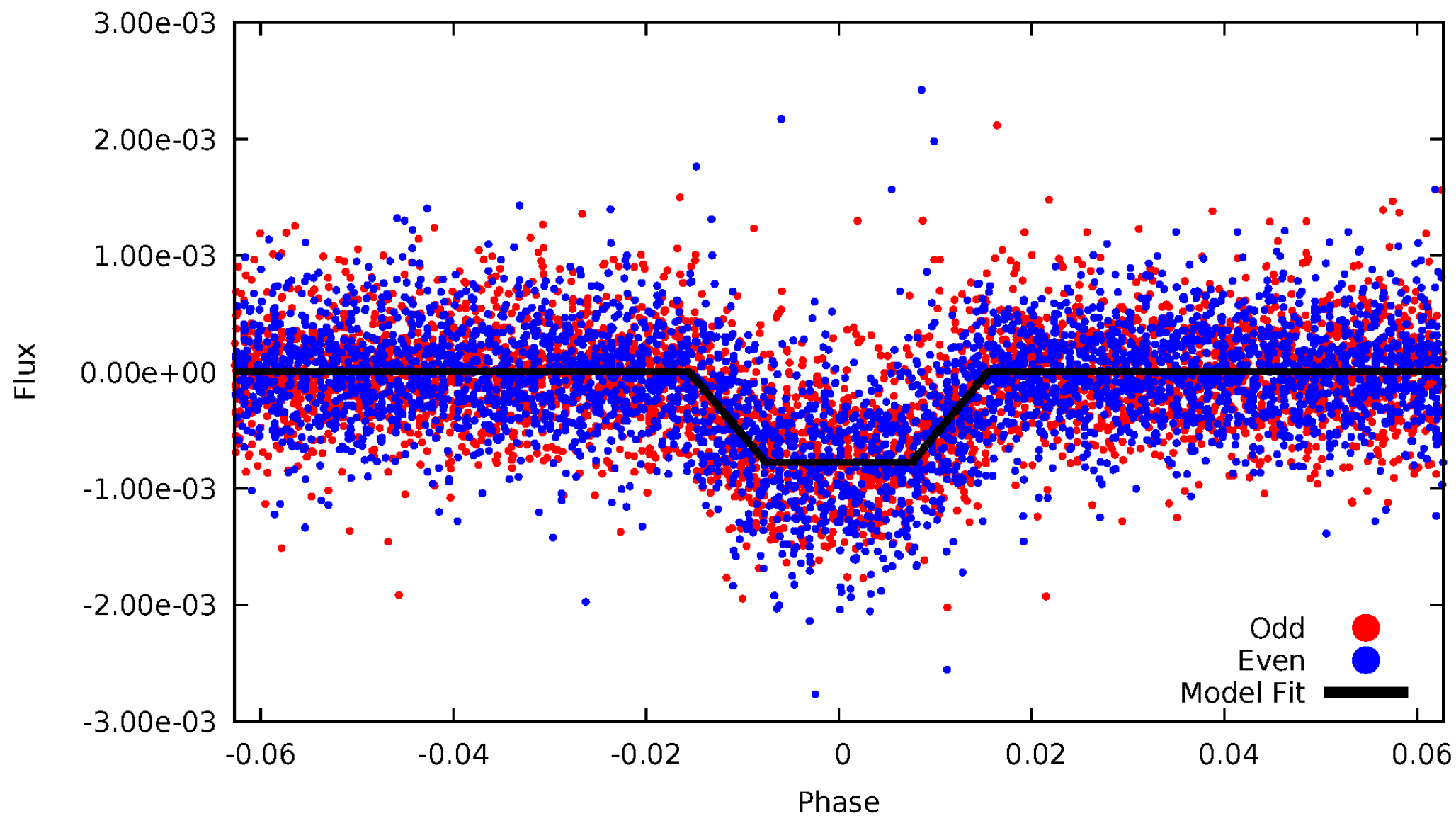
DV Odd/Even

TCE 005364071-02



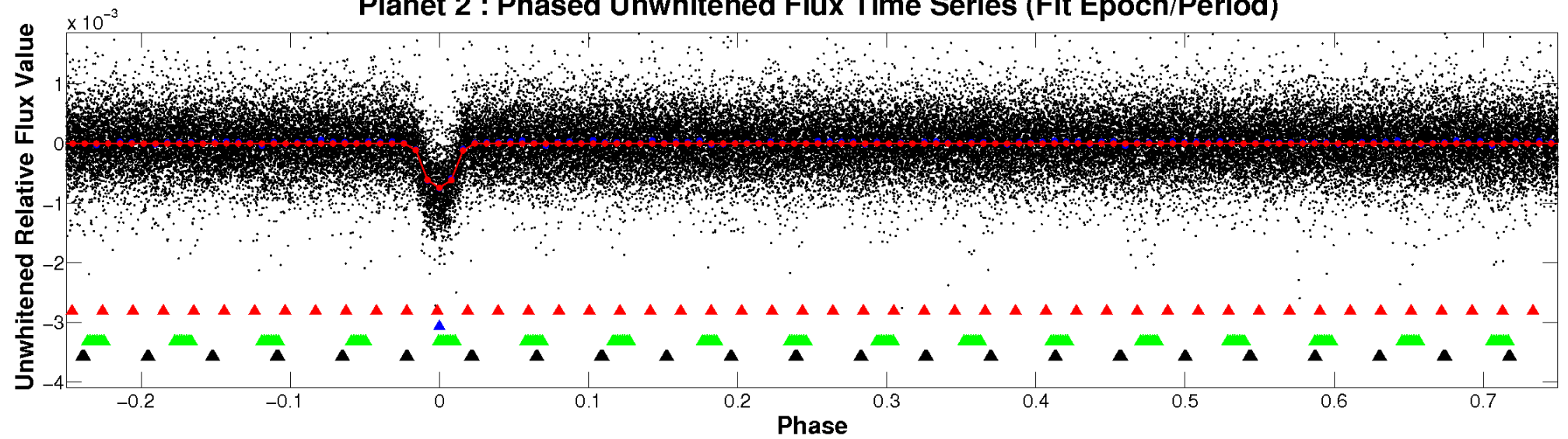
ALT Odd/Even

TCE 005364071-02

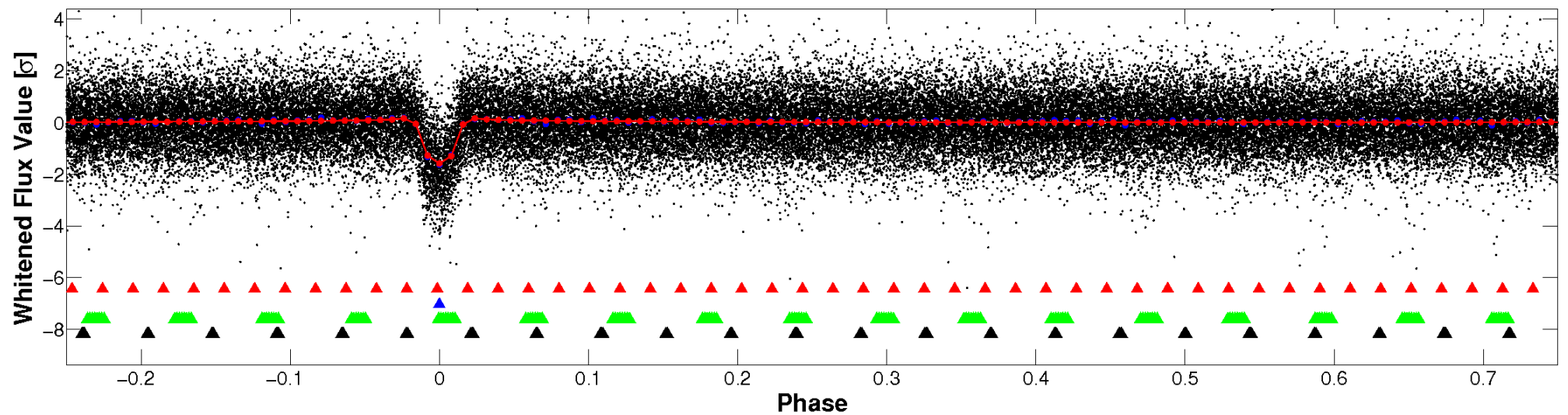


Non-Whitened Vs. Whitened Light Curve

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

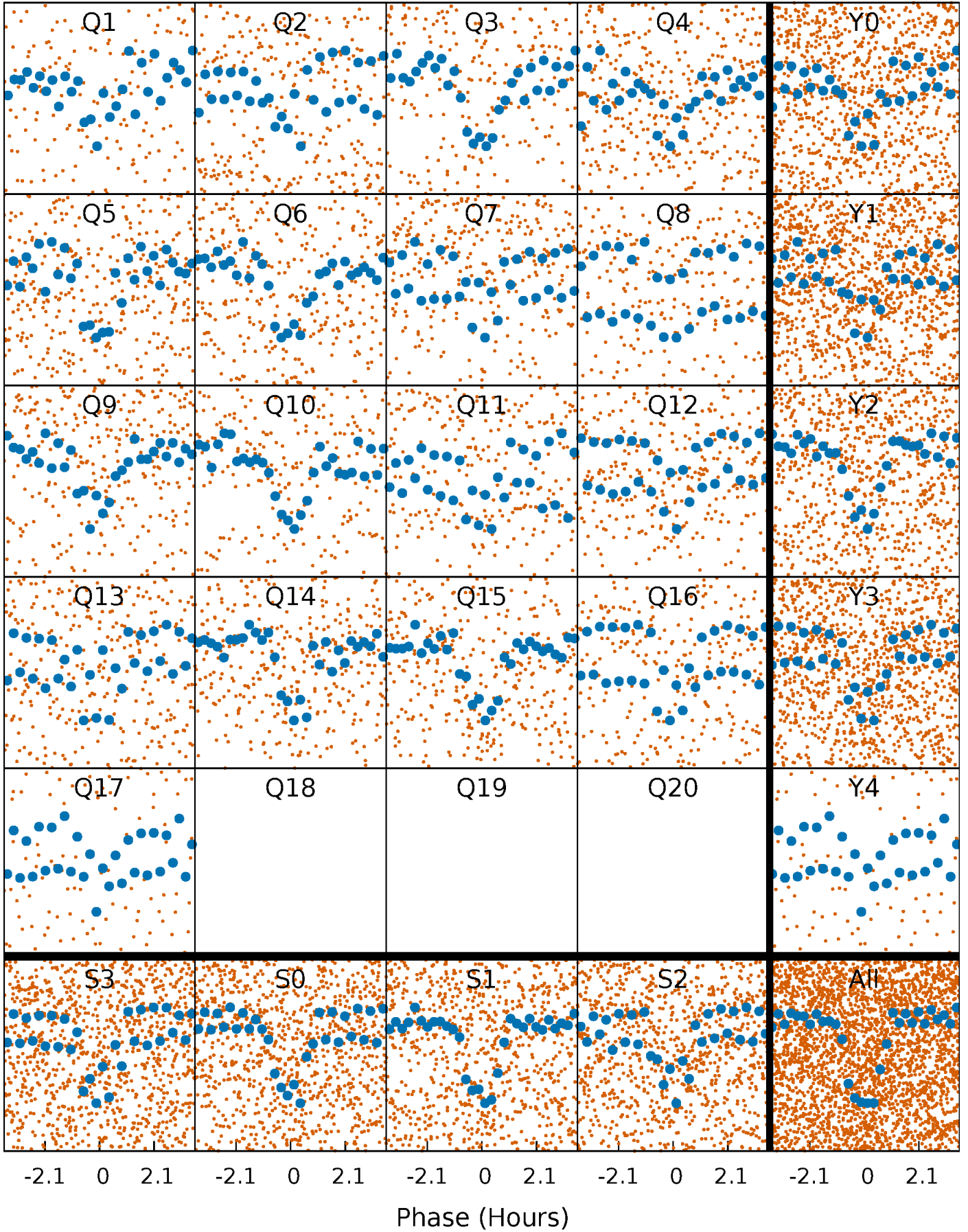


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



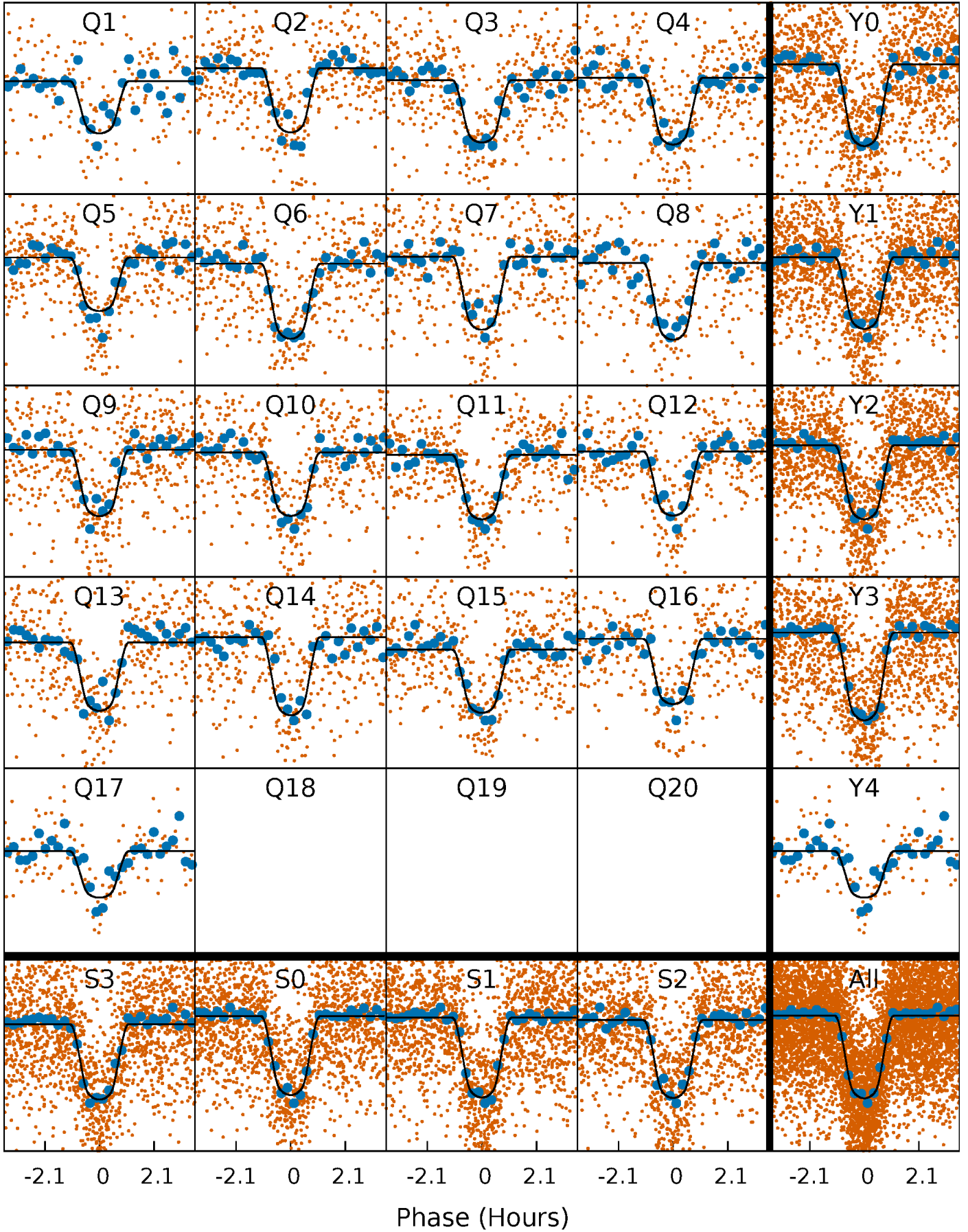
PDC Quarter-Phased Transit Curves

TCE 005364071-02 P= 2.576562 Days $T_0=133.481102$ (BKJD)



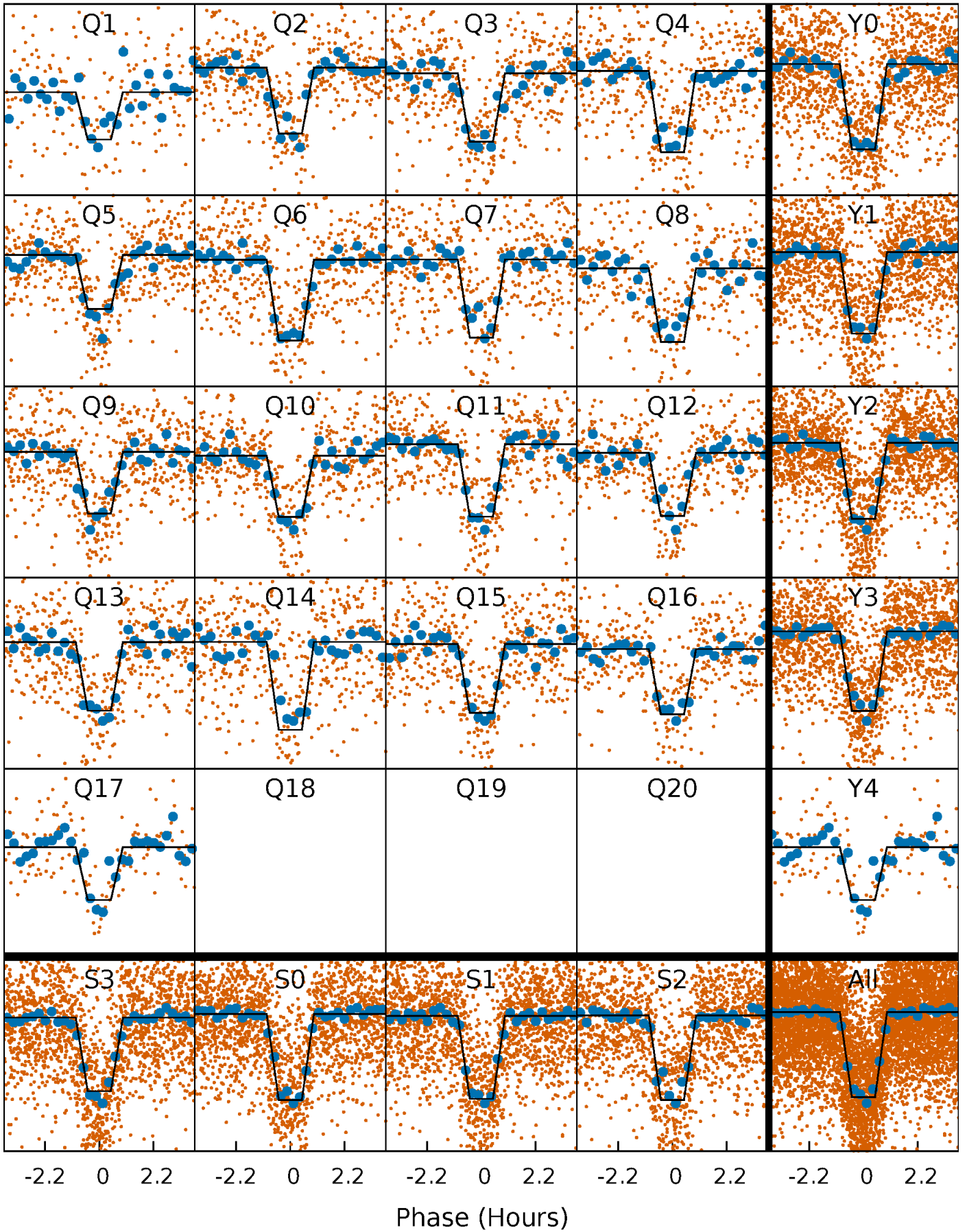
DV Quarter-Phased Transit Curves

TCE 005364071-02 P= 2.576562 Days $T_0=133.481102$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

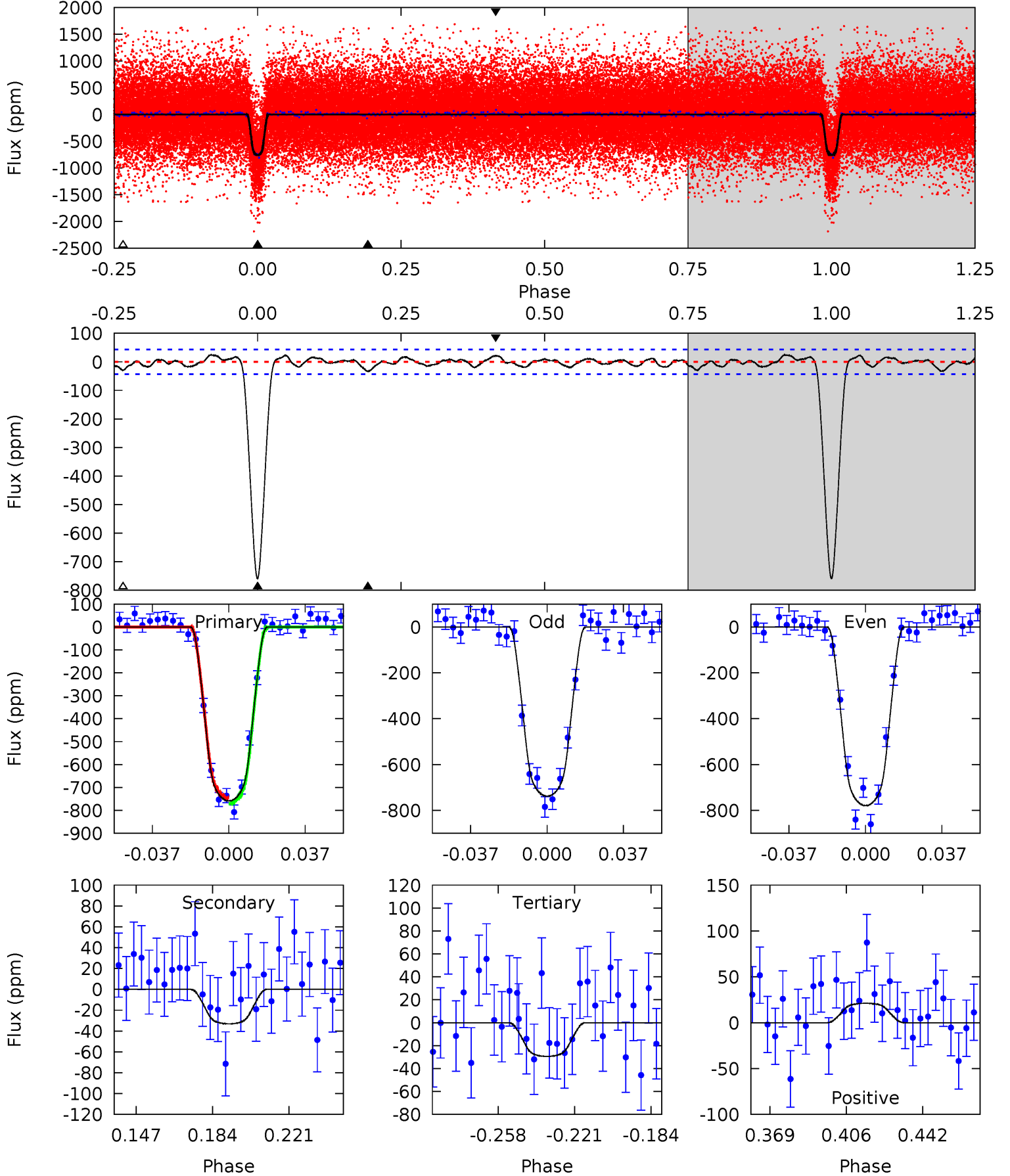
TCE 005364071-02 P= 2.576564 Days $T_0=133.480484$ (BKJD)



DV Model-Shift Uniqueness Test

005364071-02, P = 2.576562 Days, E = 130.904540 Days

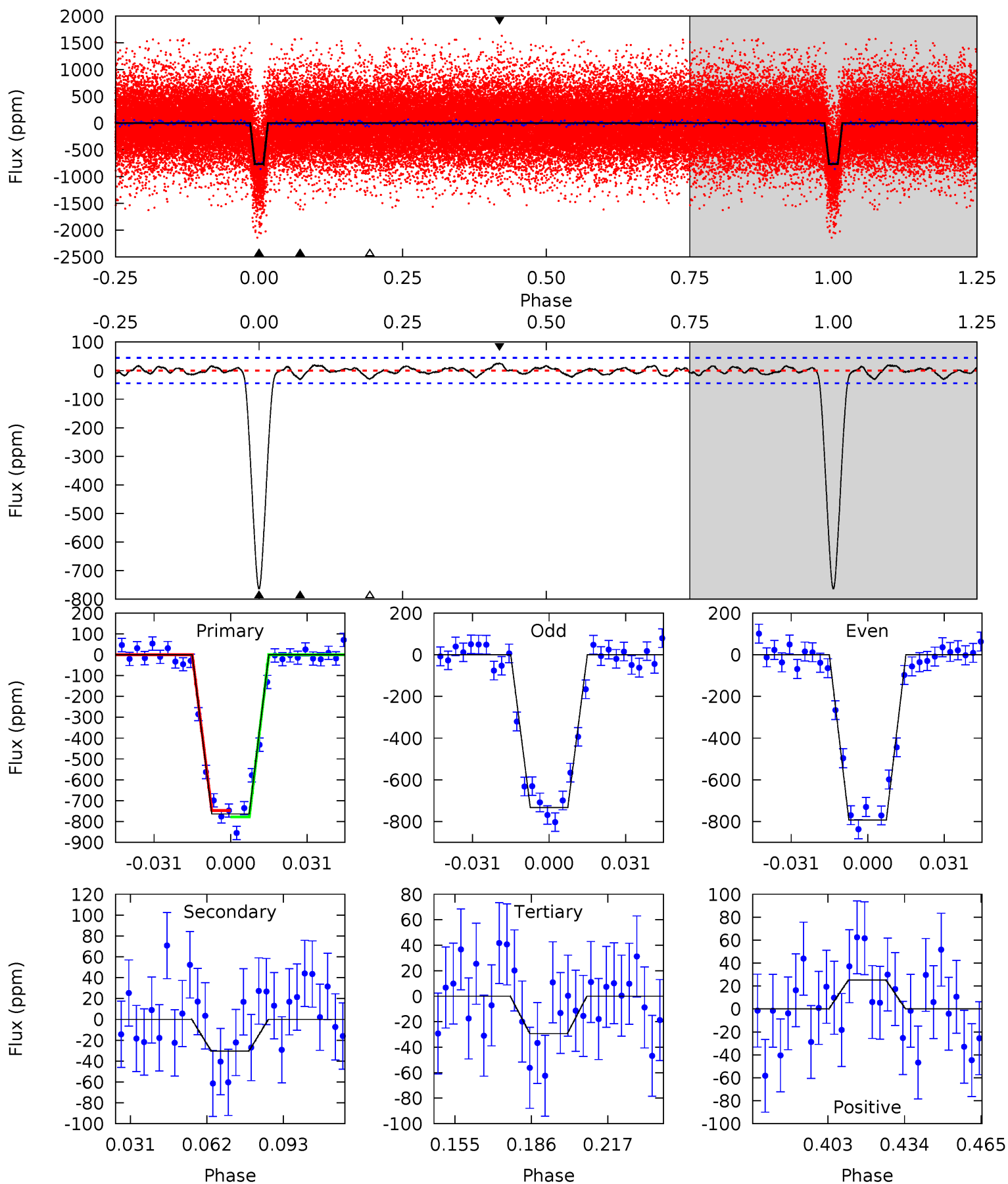
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
84.0	3.67	3.26	2.34	4.77	2.09	1.20	80.7	81.7	0.41	1.33	2.29	0.97	0.03	1.25



Alt Model-Shift Uniqueness Test

005364071-02, P = 2.576564 Days, E = 130.903920 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
82.2	3.28	3.16	2.72	4.80	2.16	1.08	79.1	79.5	0.12	0.56	3.22	0.97	0.03	1.68



Stellar Parameters For KIC 005364071

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	3834^{+77}_{-84}	$4.708^{+0.045}_{-0.021}$	$-0.020^{+0.150}_{-0.150}$	$0.539^{+0.030}_{-0.041}$	$0.541^{+0.037}_{-0.037}$	$4.872^{+0.958}_{-0.449}$
	+2%/-2%	+1%/-0%	+750%/-750%	+6%/-8%	+7%/-7%	+20%/-9%
Source	SPE70	SPE60	SPE70	DSEP		

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

Secondary Eclipse Parameters for KIC 005364071-02 / KOI 0248.03

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-33 ± 9	$1.76^{+0.14}_{-0.15}$	998^{+25}_{-25}	2381^{+98}_{-99}	$5.291^{+1.743}_{-1.502}$
Alt.	-30 ± 9	$1.63^{+0.14}_{-0.14}$	995^{+26}_{-24}	2398^{+109}_{-113}	$5.642^{+2.117}_{-1.807}$

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 $A_{obs} \gg 1.0$

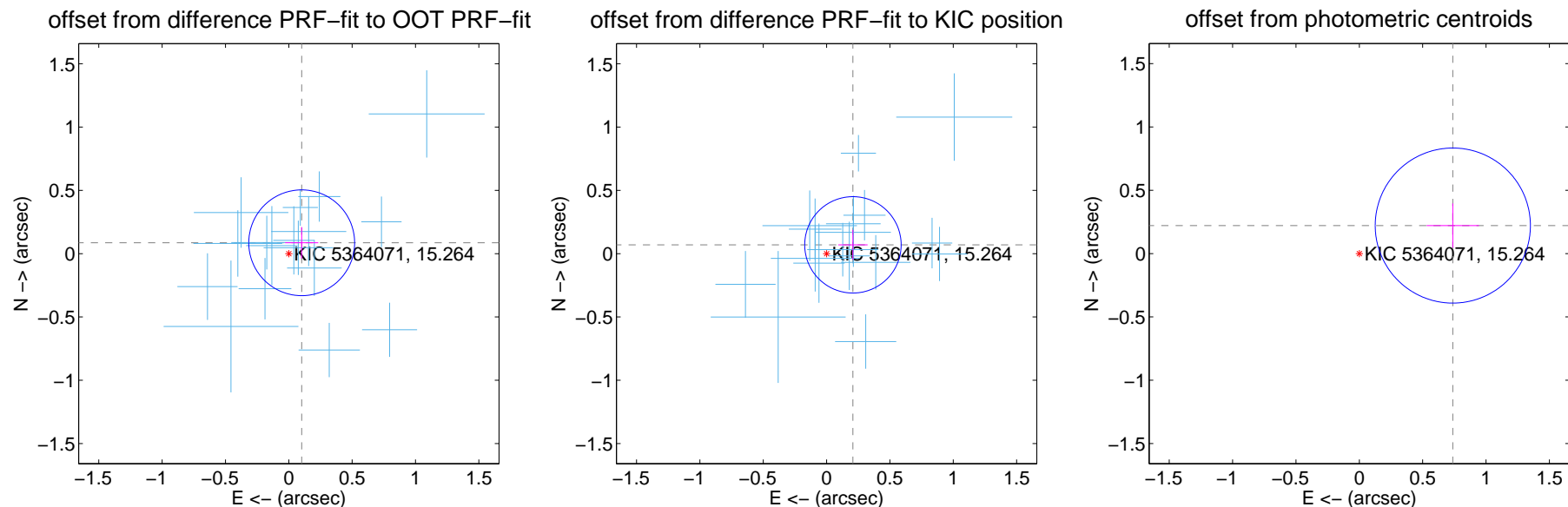
DV Centroid Data

Supplemental centroid analysis for 005364071-02. Kepler magnitude: 15.26. Transit SNR 53.40

There are 17 quarters with good PRF difference image offsets

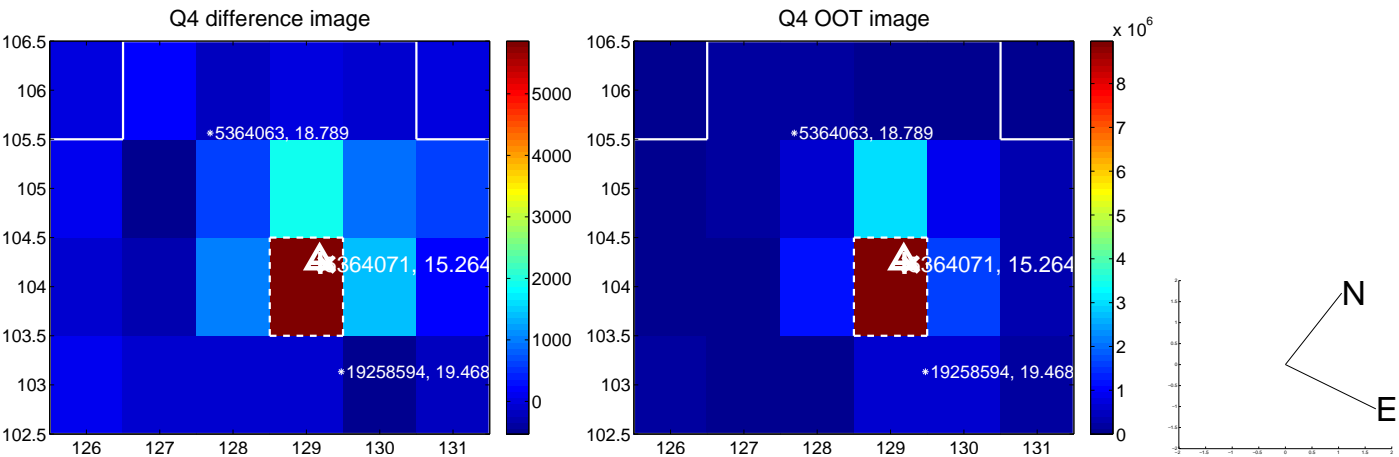
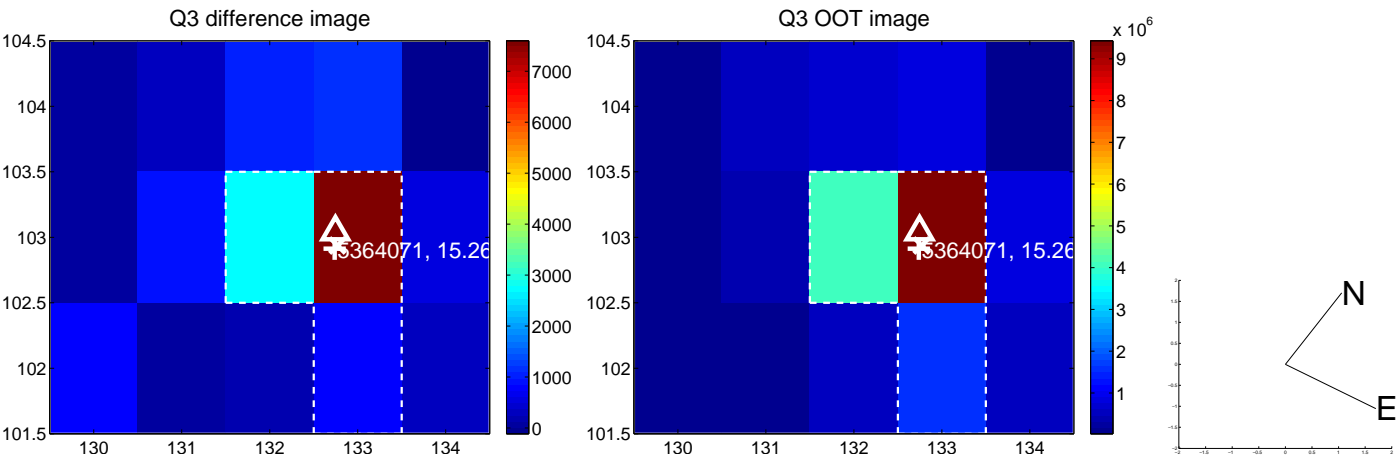
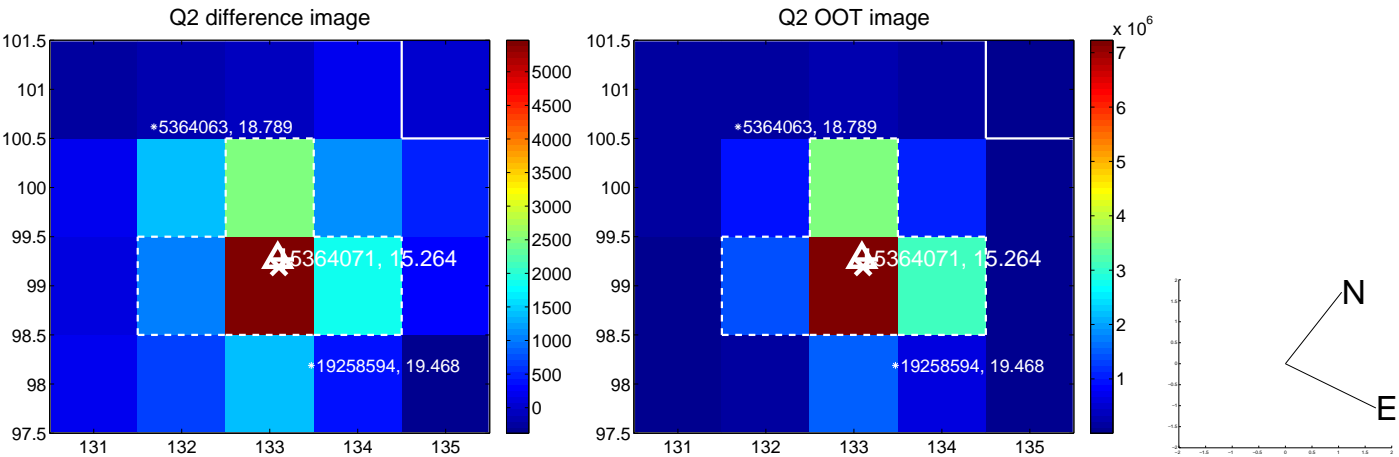
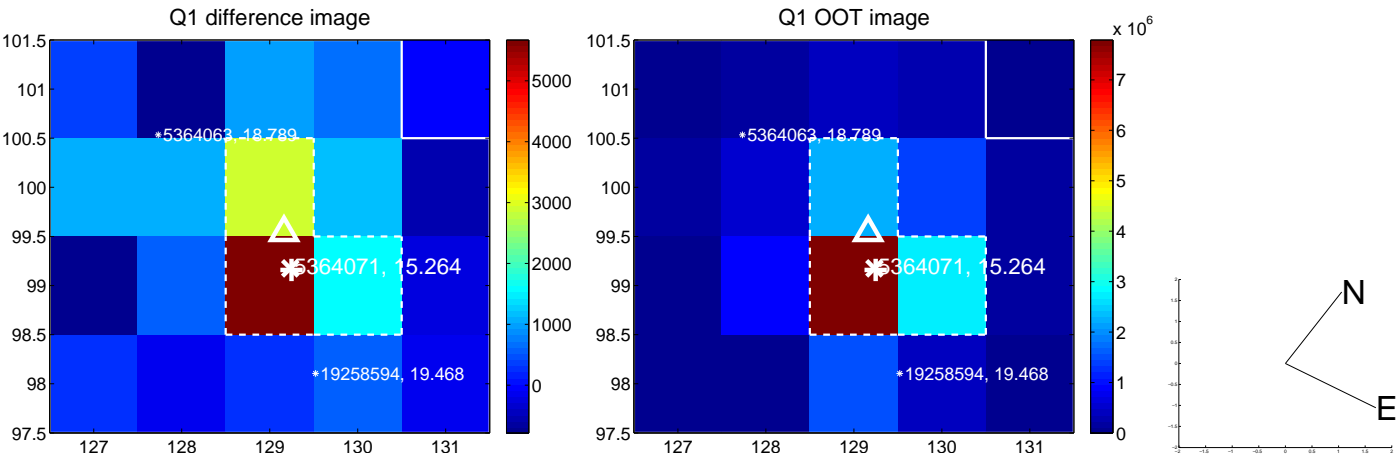
The direct PRF centroid is offset from the target star catalog position by about 0.11 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.133 ± 0.139	0.96	-0.102 ± 0.131	0.086 ± 0.124
PRF-fit source offset from KIC position	0.219 ± 0.127	1.73	-0.208 ± 0.116	0.070 ± 0.118
photometric centroid source offset	0.77 ± 0.20	3.77	-0.74 ± 0.21	0.22 ± 0.18

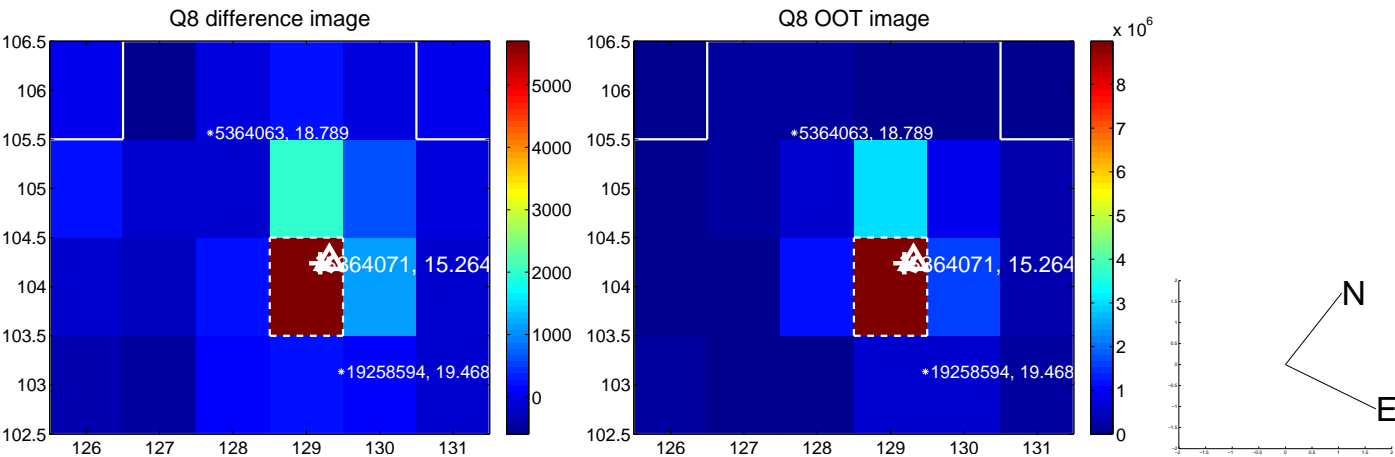
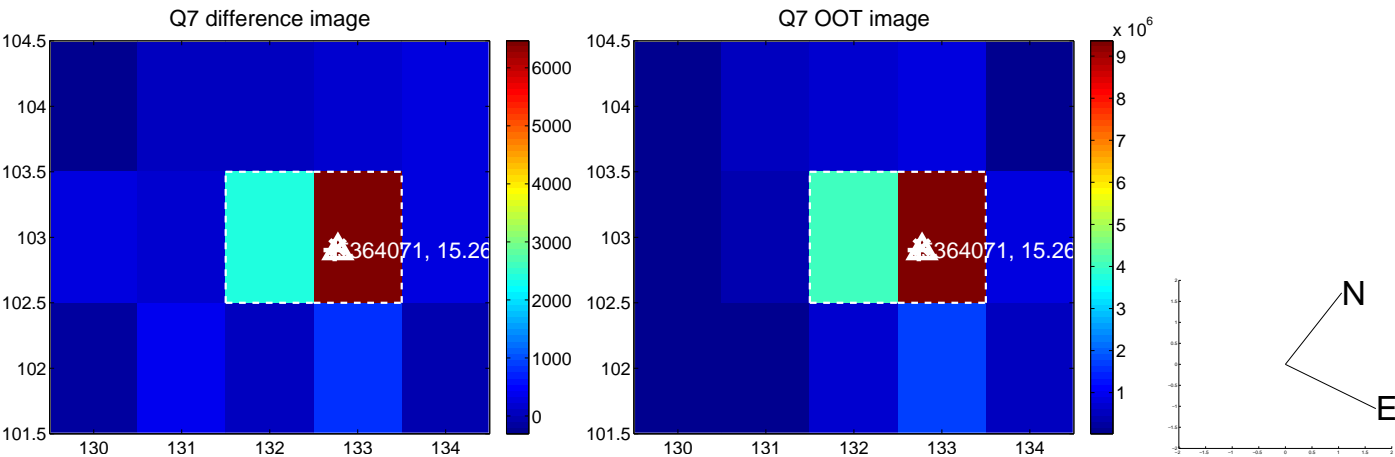
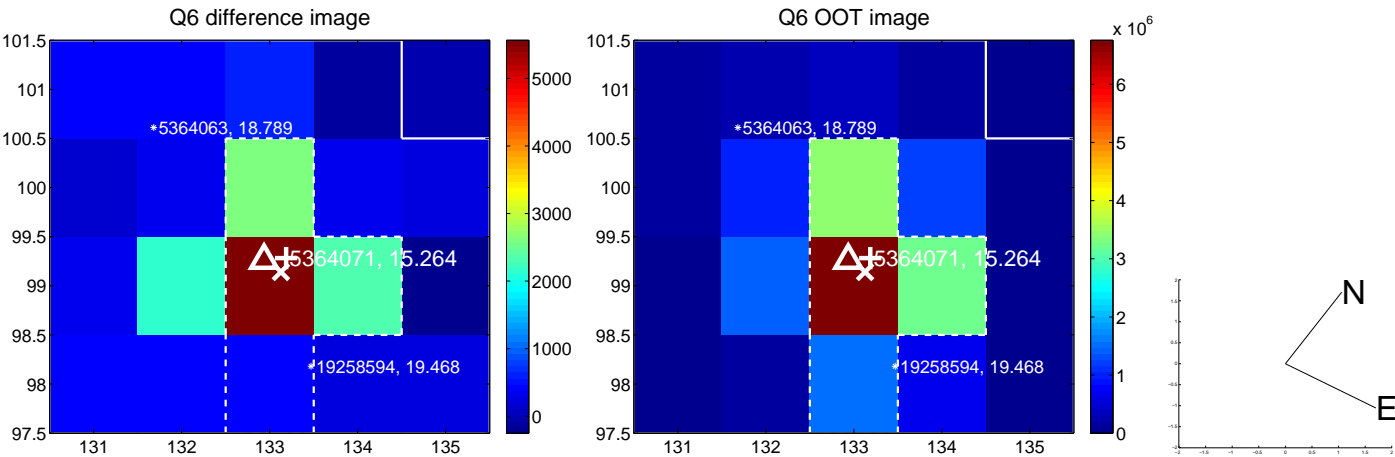
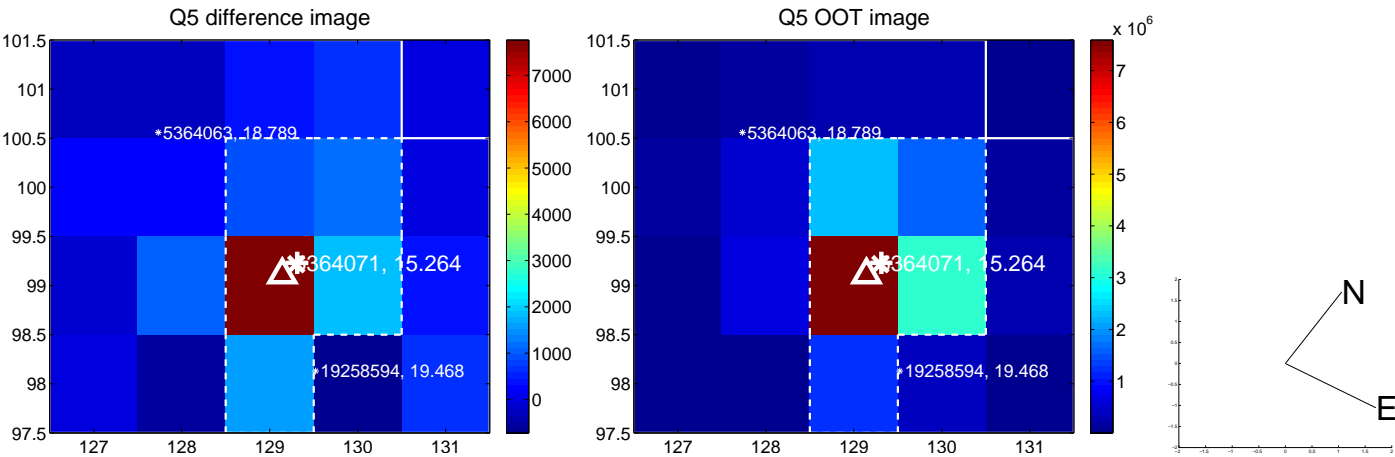


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

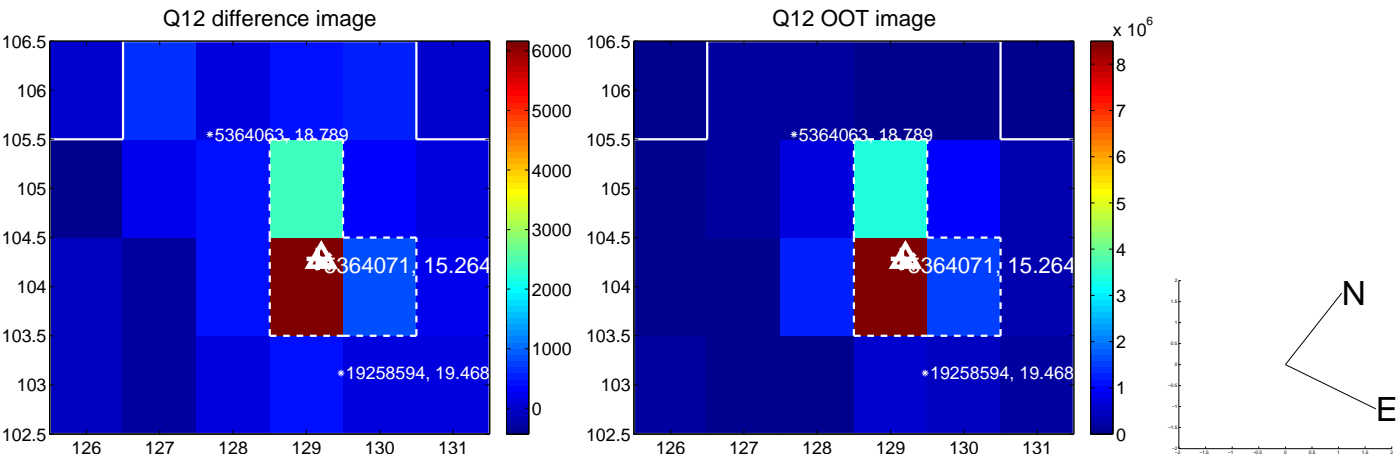
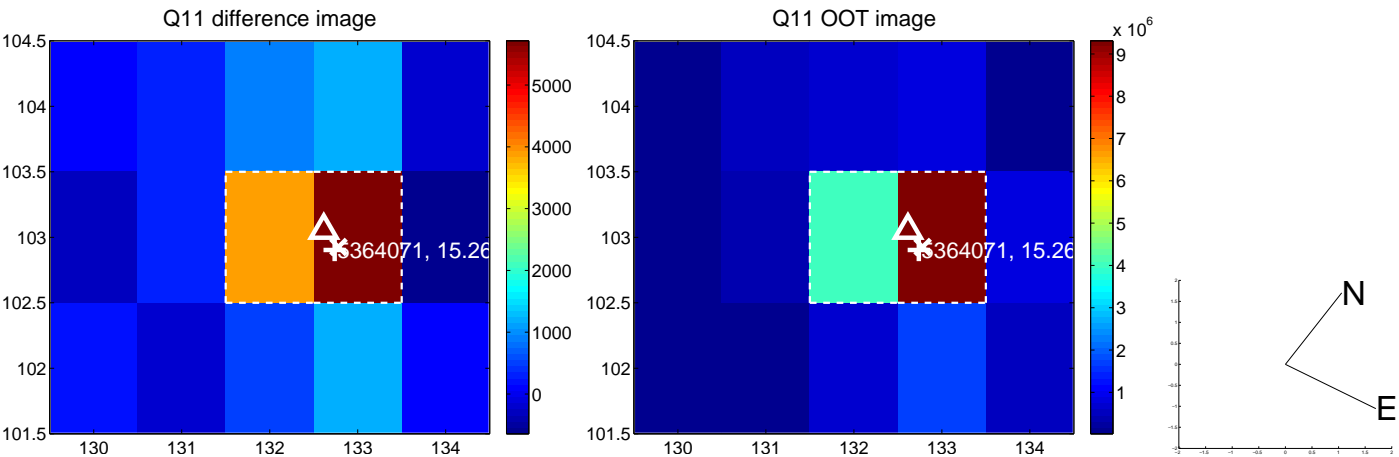
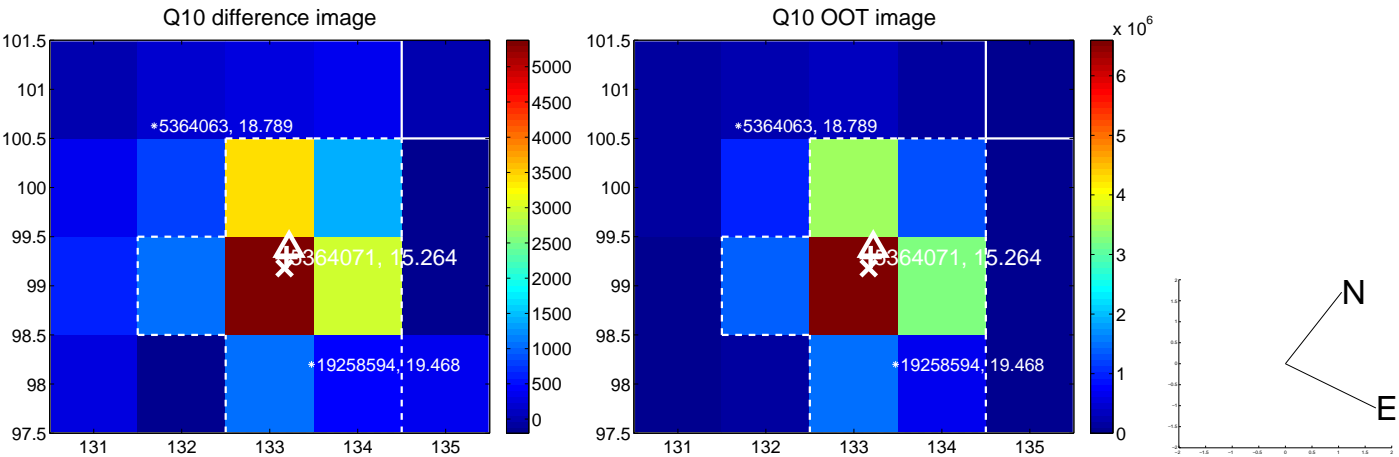
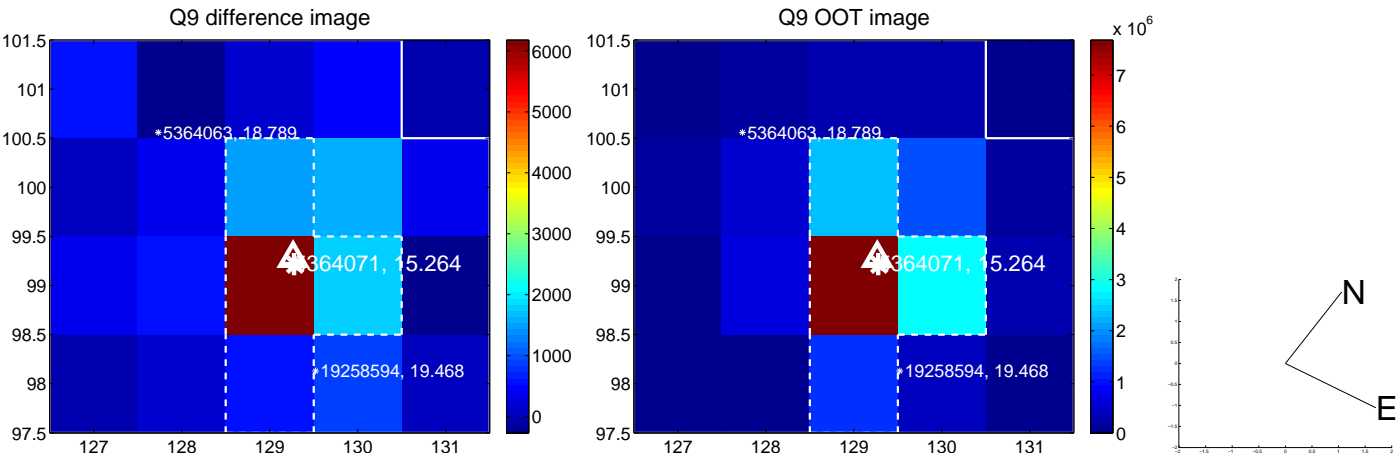
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



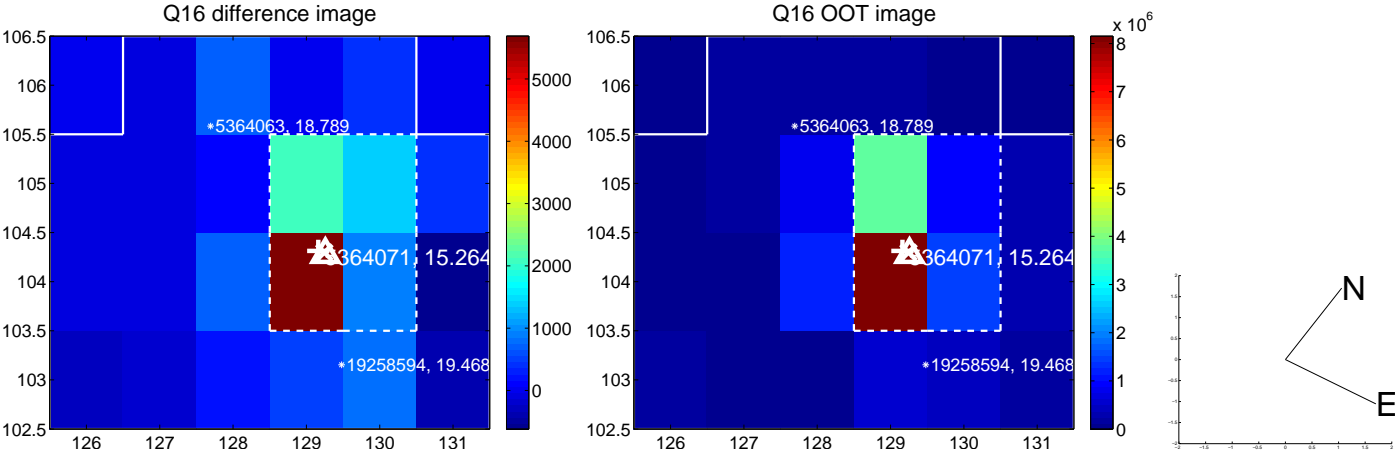
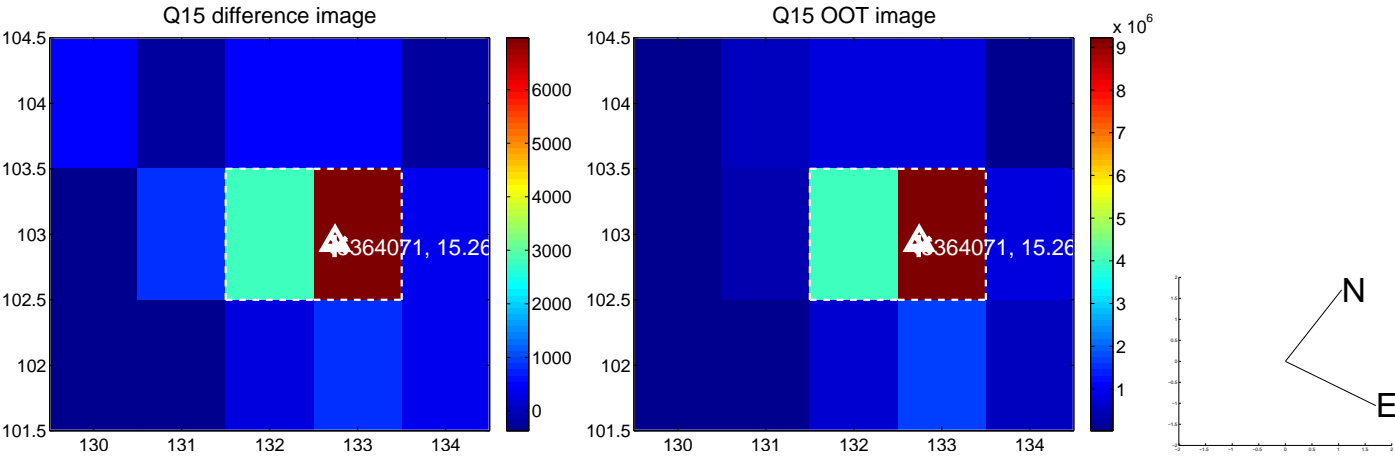
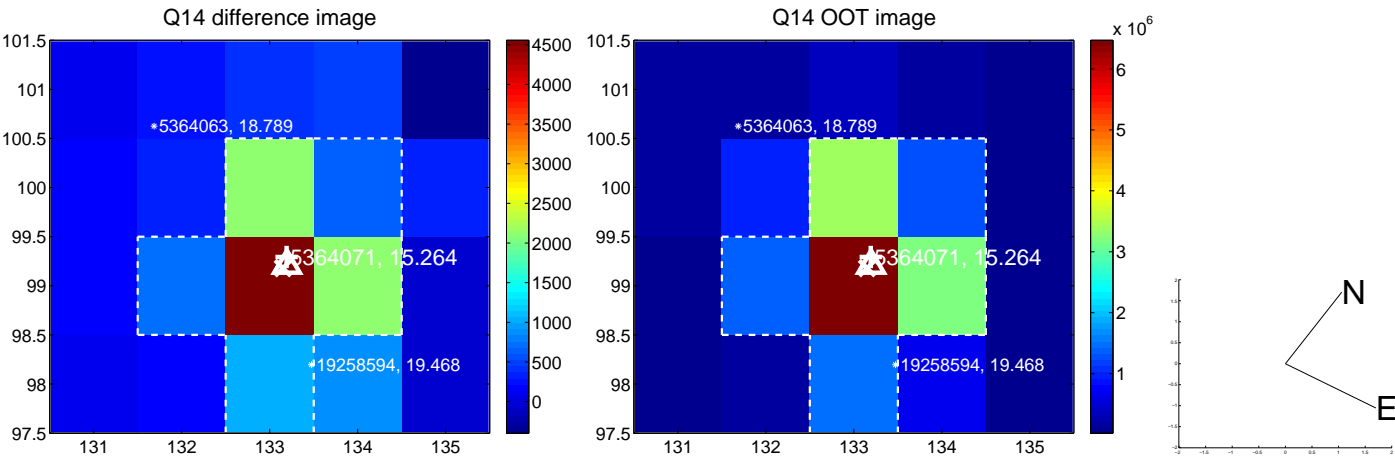
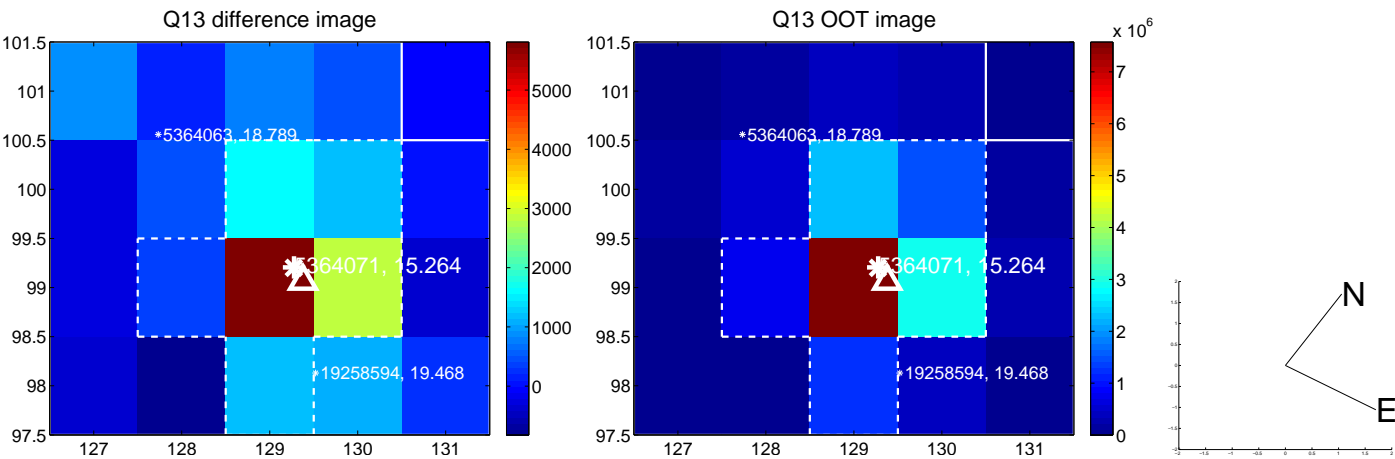
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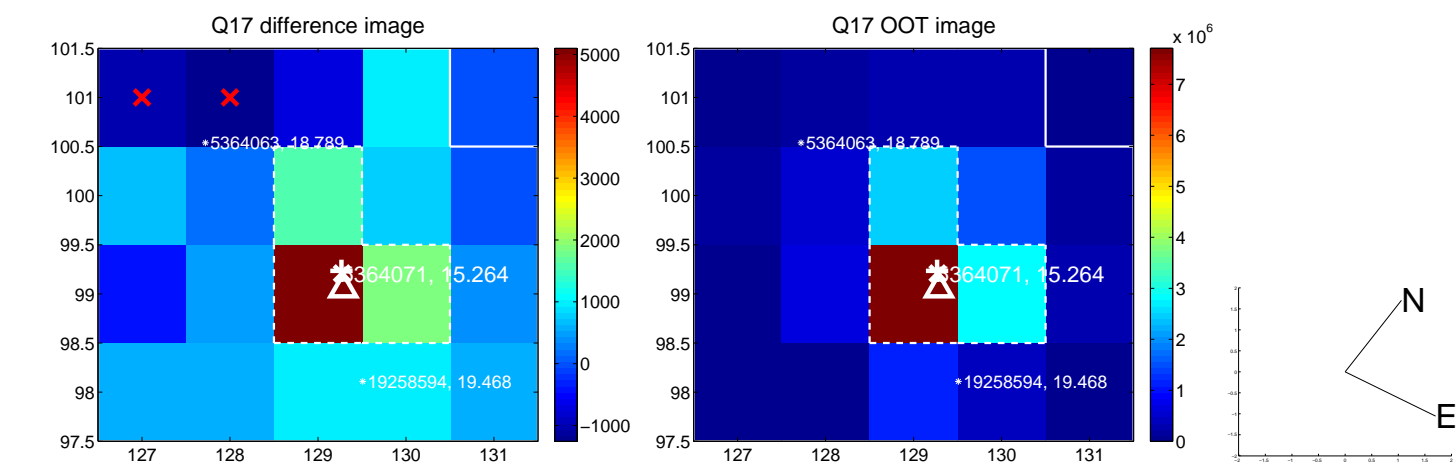
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



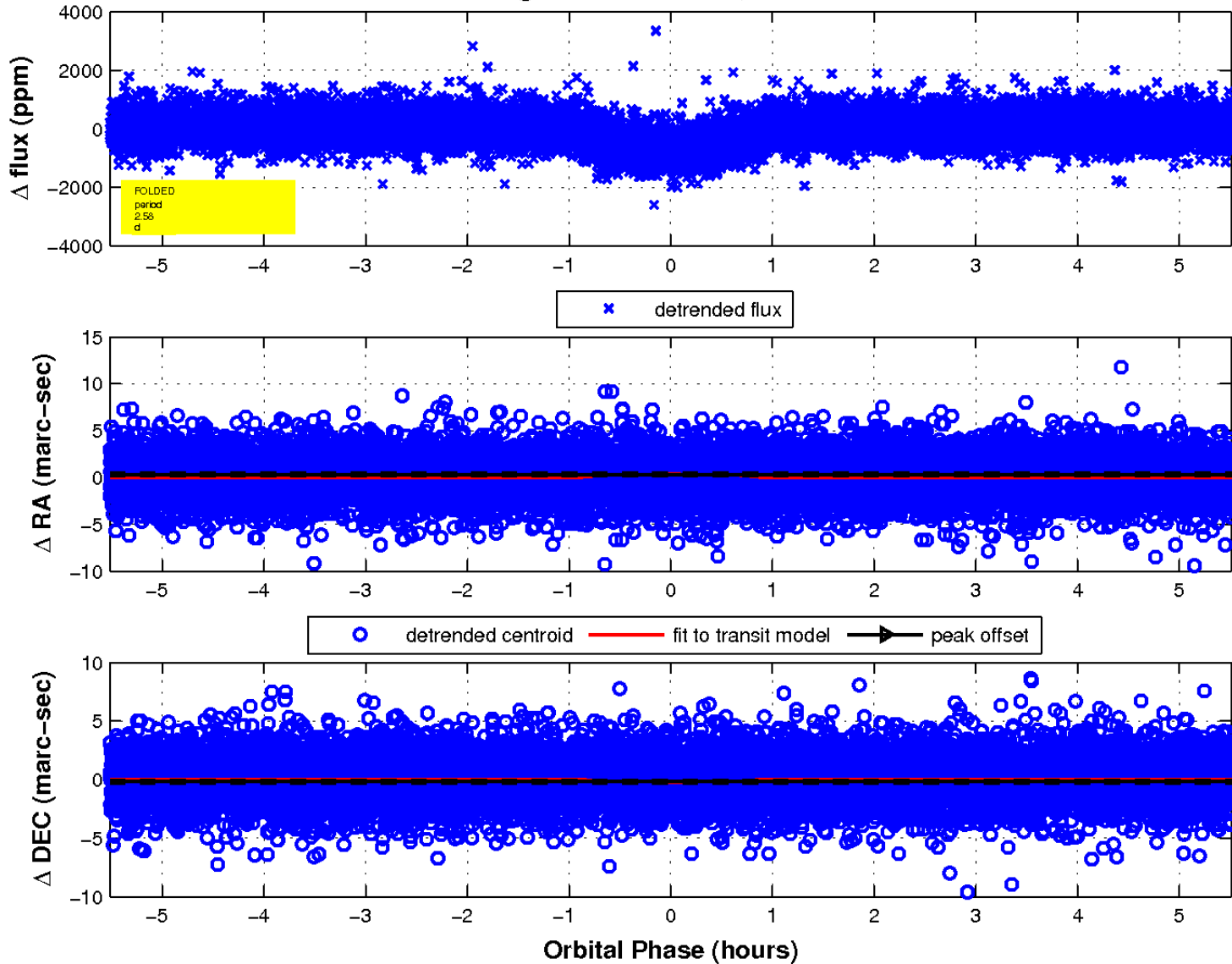
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

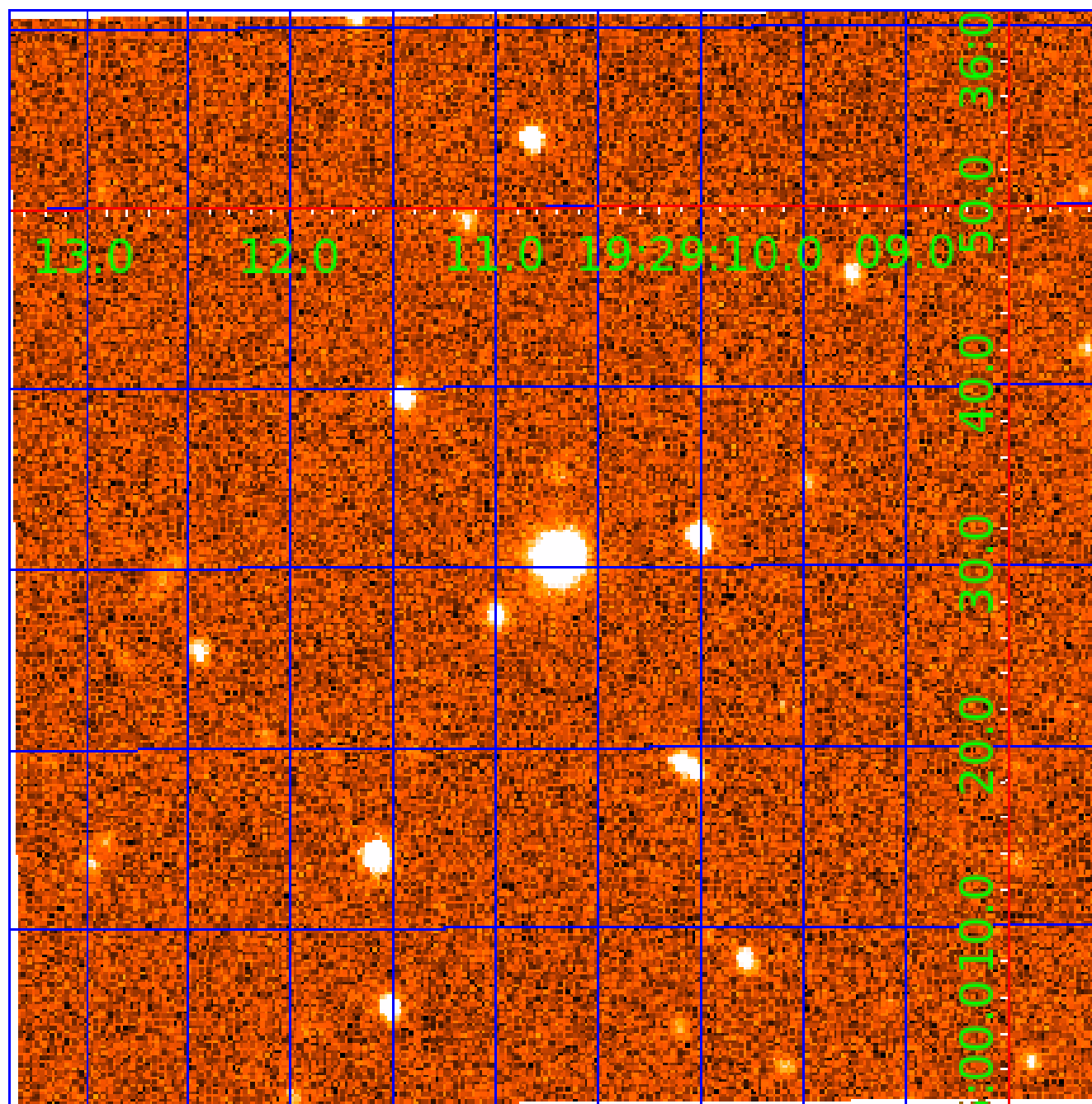


fluxWeightedCentroids, Planet 2 of 4



UKIRT Image

Declination



KIC 005364071

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})
005364071-01	OBS	0248.01	7.203863	134.265790	1768.9	2.829	82.7	84.3	0.54	3834	2.60	15.89
005364071-02	OBS	0248.03	2.576562	133.481102	748.3	1.839	48.3	53.4	0.54	3834	1.77	62.59
005364071-03	OBS	0248.02	10.912740	137.114599	1381.8	3.067	42.7	48.3	0.54	3834	3.18	9.13
005364071-04	OBS	0248.04	18.596122	141.264785	785.9	2.376	20.6	22.9	0.54	3834	1.69	4.49

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005364071-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT
005364071-02	OBS	PC	1.00	0	0	0	0	NO_COMMENT
005364071-03	OBS	PC	1.00	0	0	0	0	NO_COMMENT
005364071-04	OBS	PC	1.00	0	0	0	0	NO_COMMENT

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.

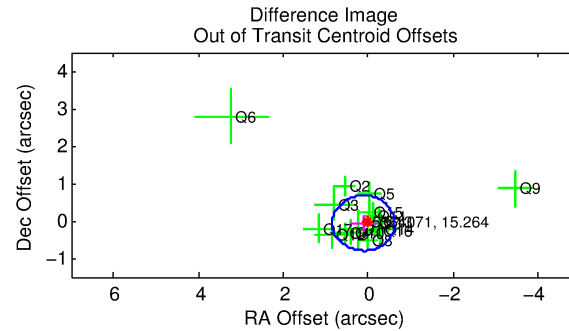
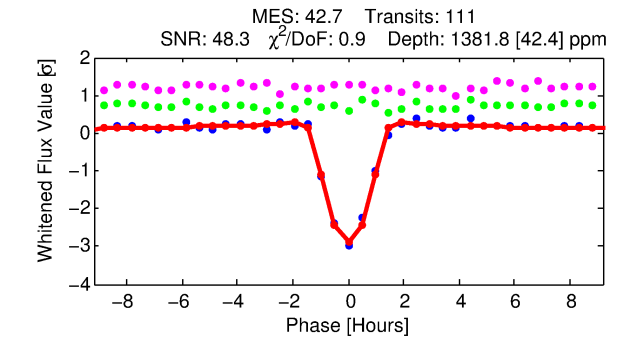
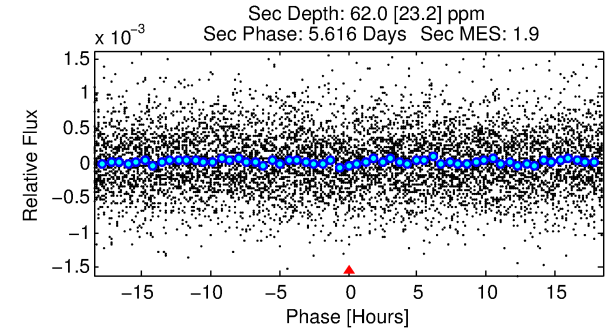
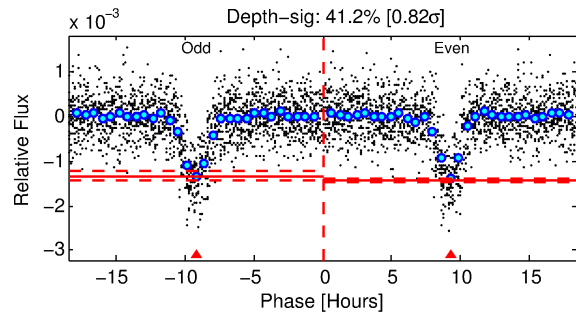
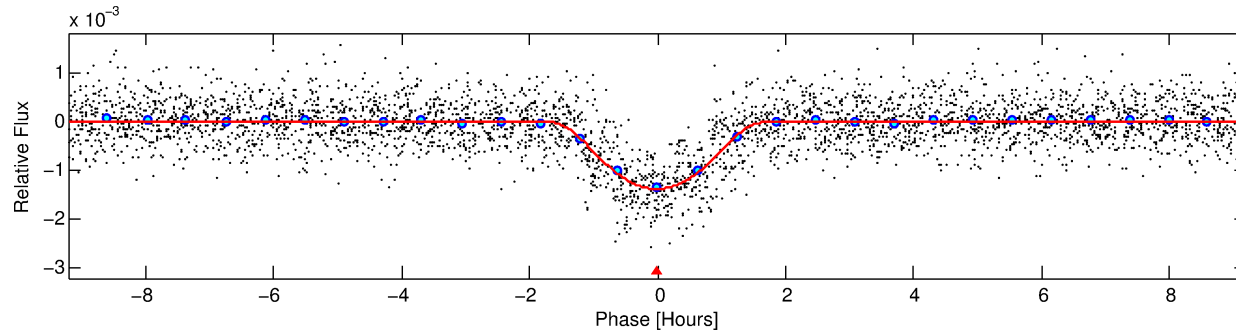
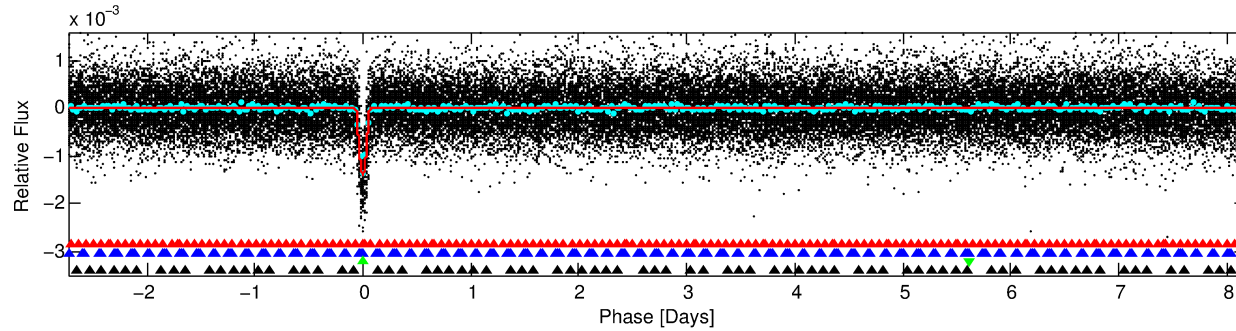
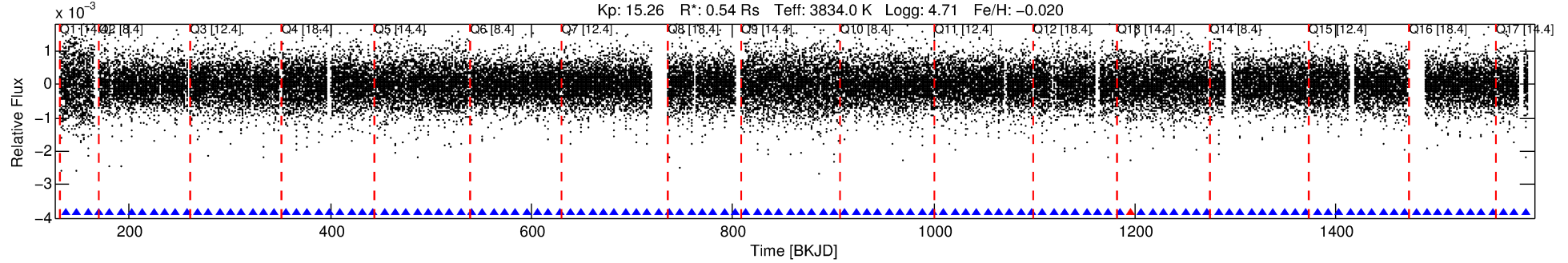
Ephemeris Match Information For 005364071-03

No Significant Match Found

DV One-Page Summary

KIC: 5364071 Candidate: 3 of 4 Period: 10.913 d
KOI: K00248.02 Name: Kepler-49c Corr: 0.956

Kp: 15.26 R*: 0.54 Rs Teff: 3834.0 K Logg: 4.71 Fe/H: -0.020



DV Fit Results:

Period = 10.91274 [0.00002] d
Epoch = 137.1146 [0.0014] BKJD
Rp/R* = 0.0541 [0.0205]
a/R* = 10.73 [1.41]
b = 0.98 [0.04]
Seff = 9.13 [1.12]
Teq = 443 [14] K
Rp = 3.18 [1.23] Re
a = 0.0785 [0.0048] AU
Ag = 20.73 [17.64] [1.12σ]
Teffp = 1462 [311] K [3.27σ]

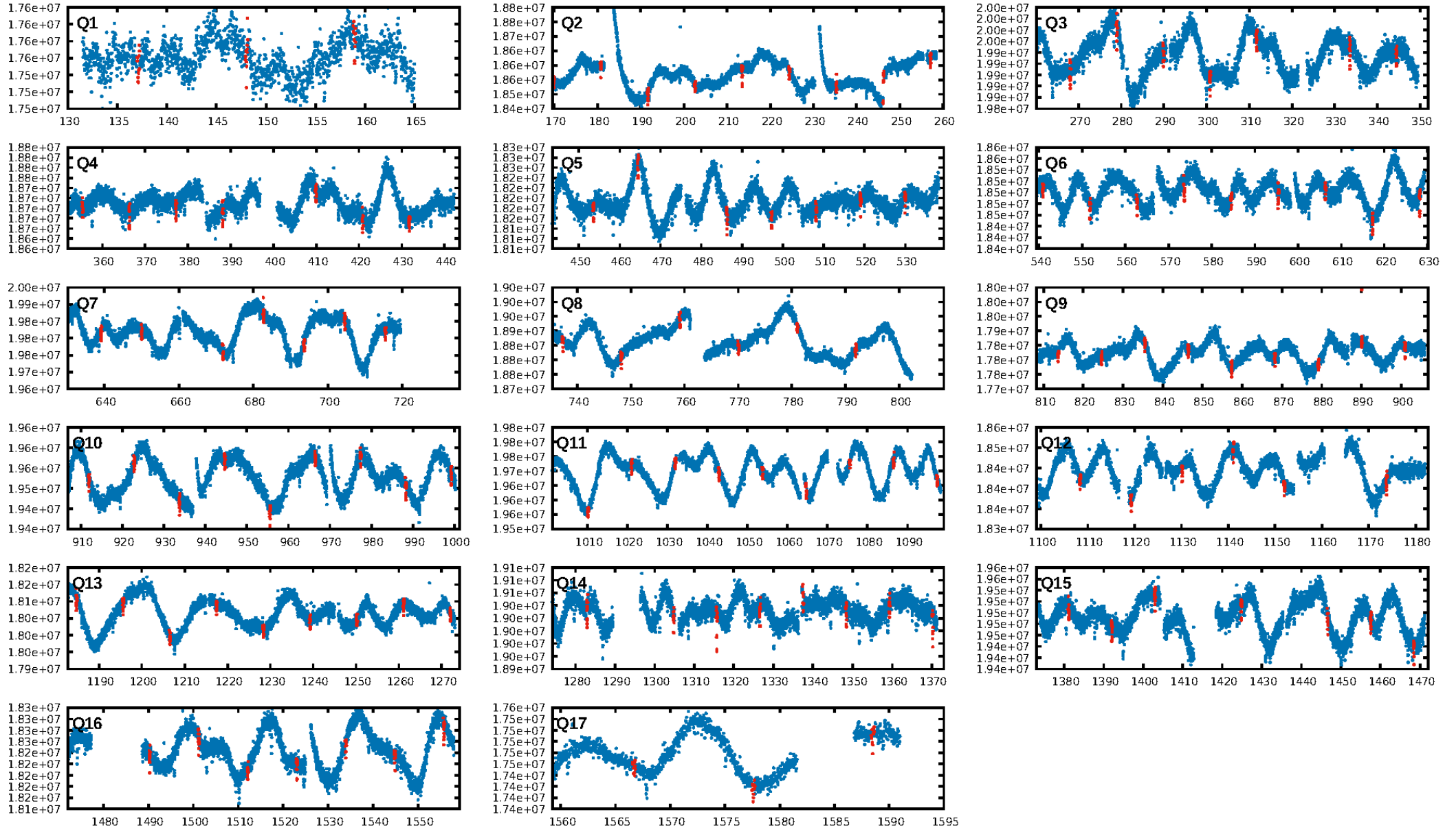
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [21.33σ]
LongPeriod-sig: 100.0% [47.53σ]
ModelChiSquare2-sig: 99.6%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 0.99 [104/105]
GhostDiagnostic-chr: 3.718
Centroid-sig: 66.8%
Centroid-so: 0.323 arcsec [1.50σ]
OotOffset-rm: 0.127 arcsec [0.52σ]
KicOffset-rm: 0.121 arcsec [0.53σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 0.88 [15/17]
DiffImageOverlap-fno: 1.00 [17/17]

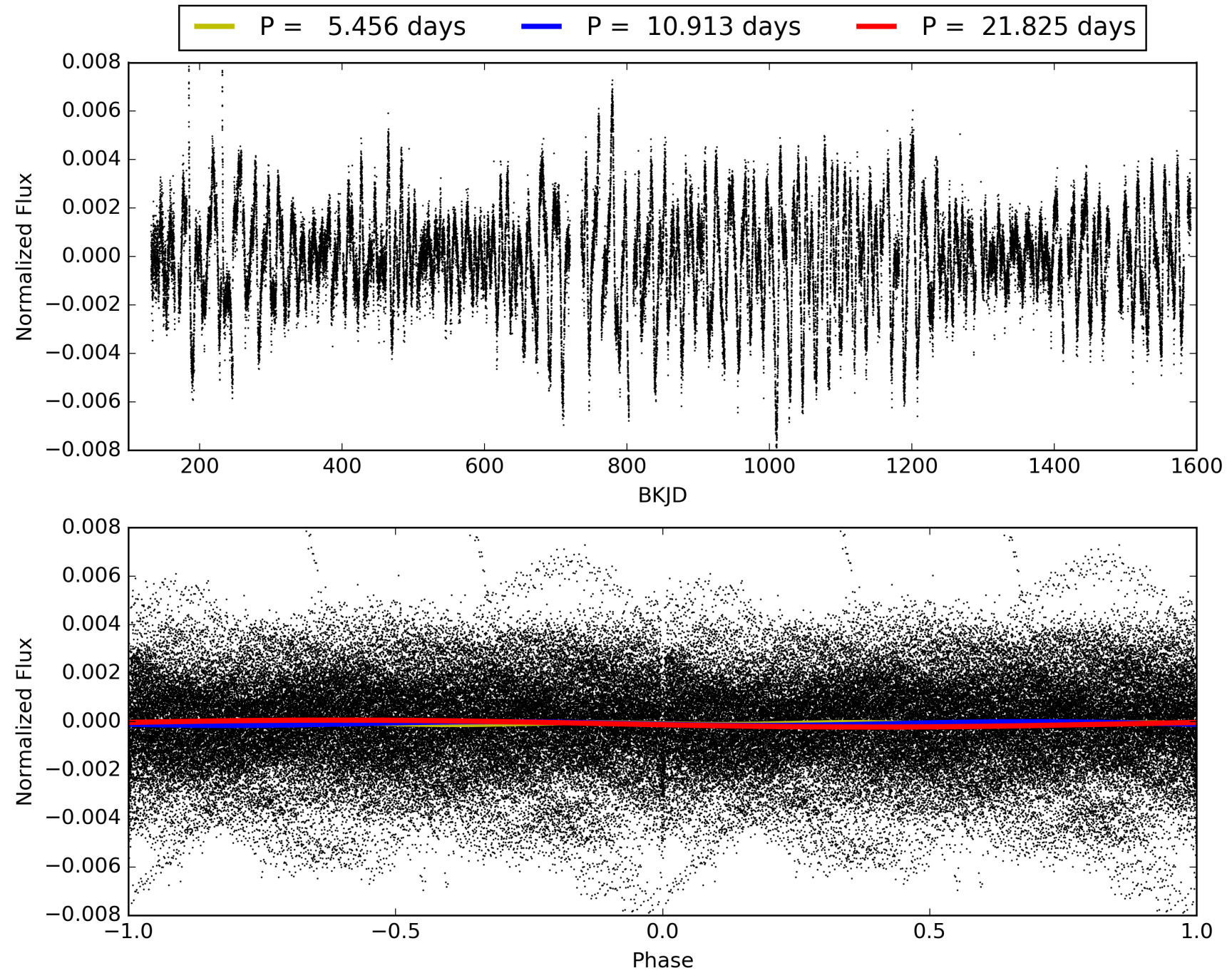
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 08:04:14 Z

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

TCE 005364071-03, PDC Light Curves

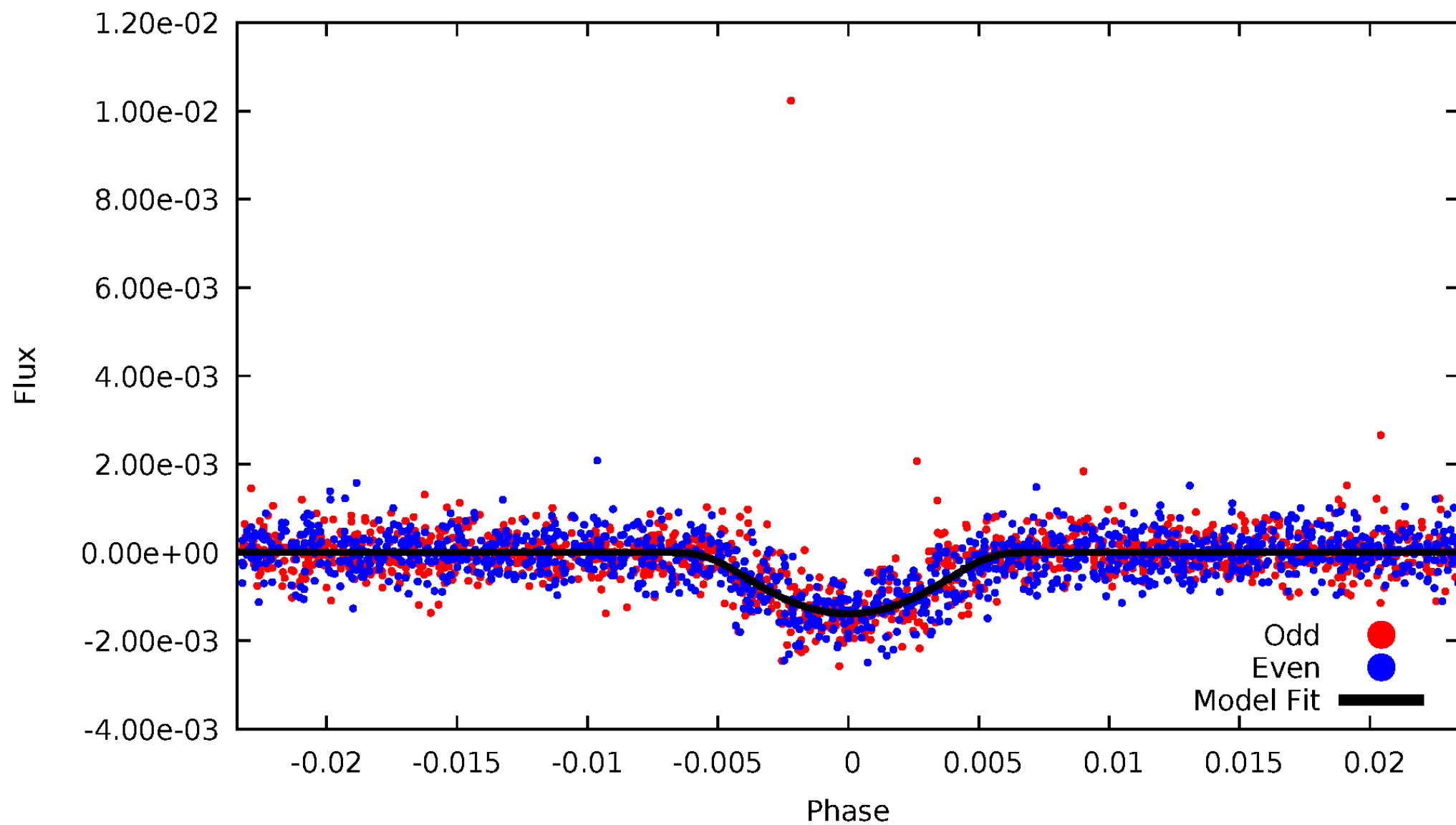


TCE 005364071-03



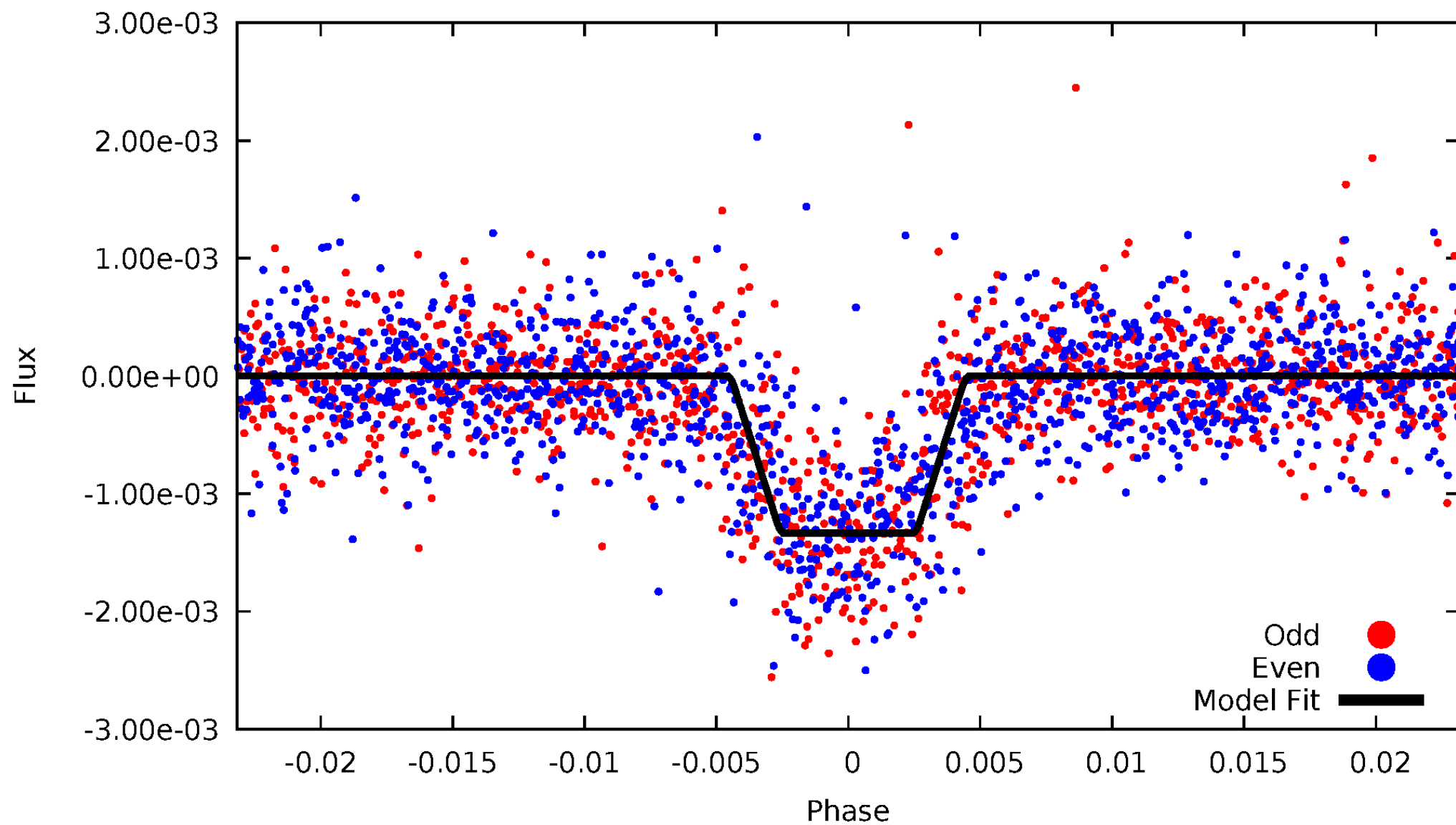
DV Odd/Even

TCE 005364071-03



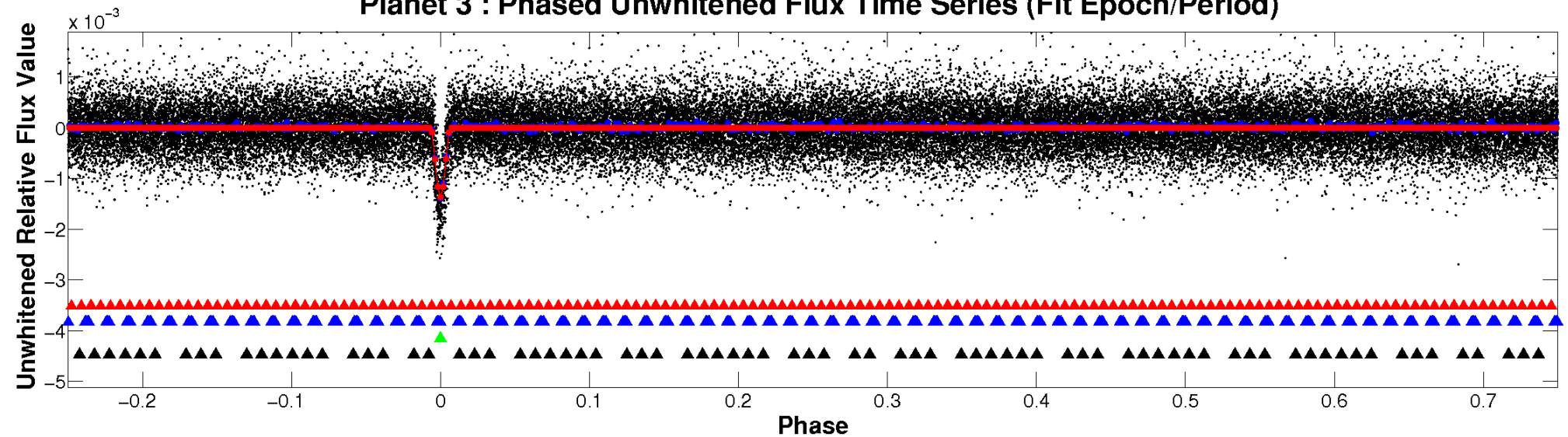
ALT Odd/Even

TCE 005364071-03

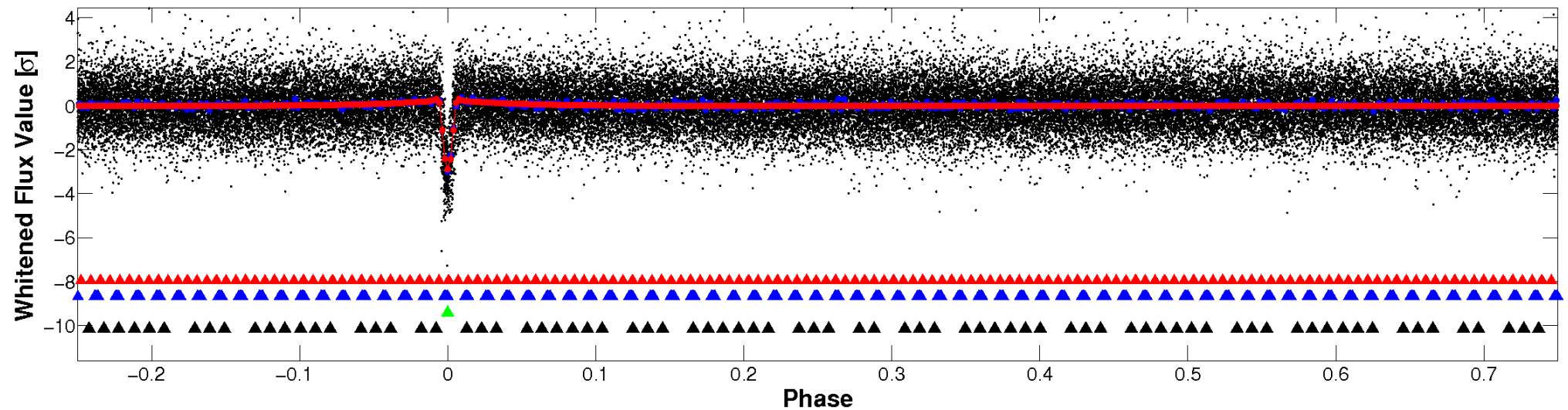


Non-Whitened Vs. Whitened Light Curve

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

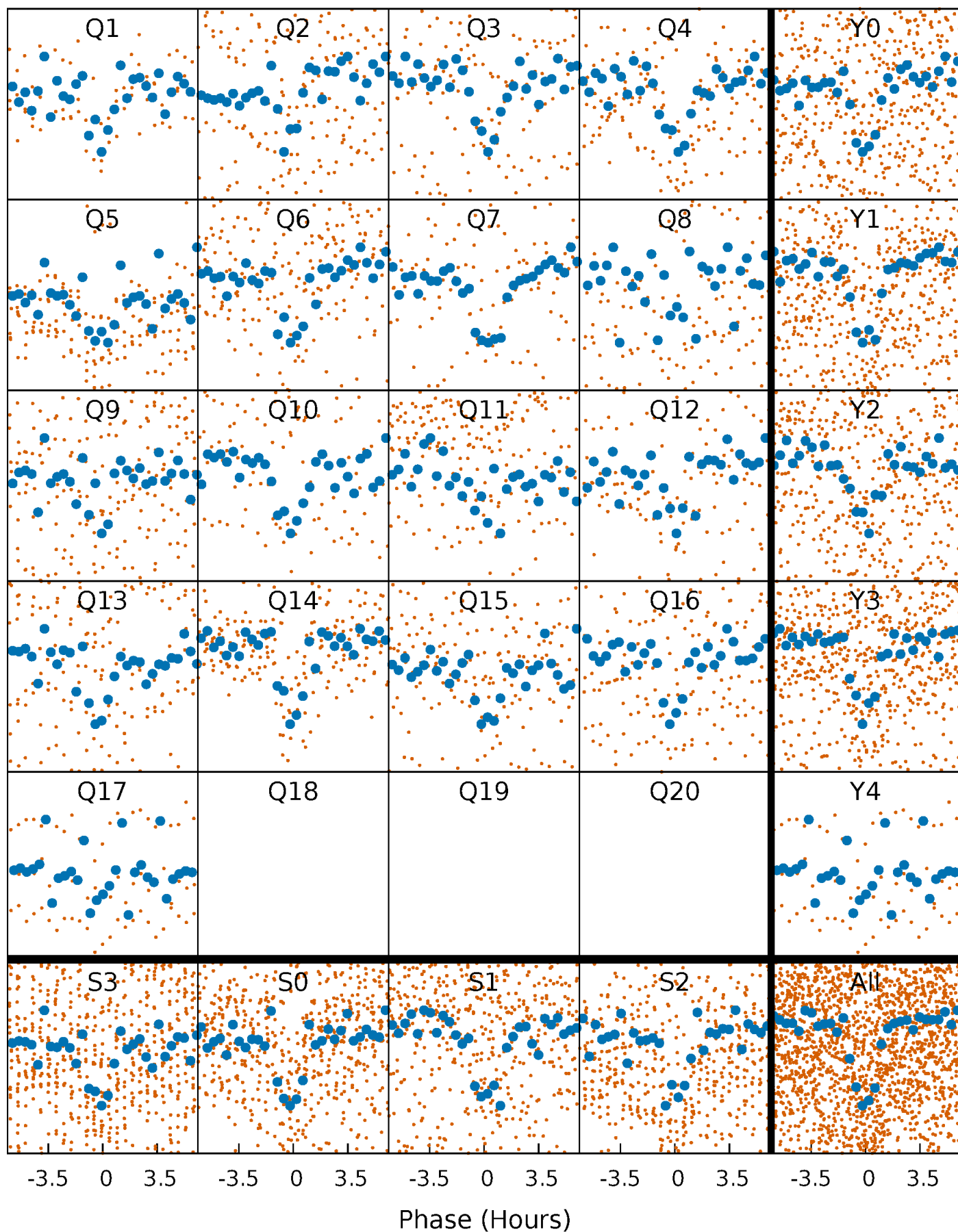


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



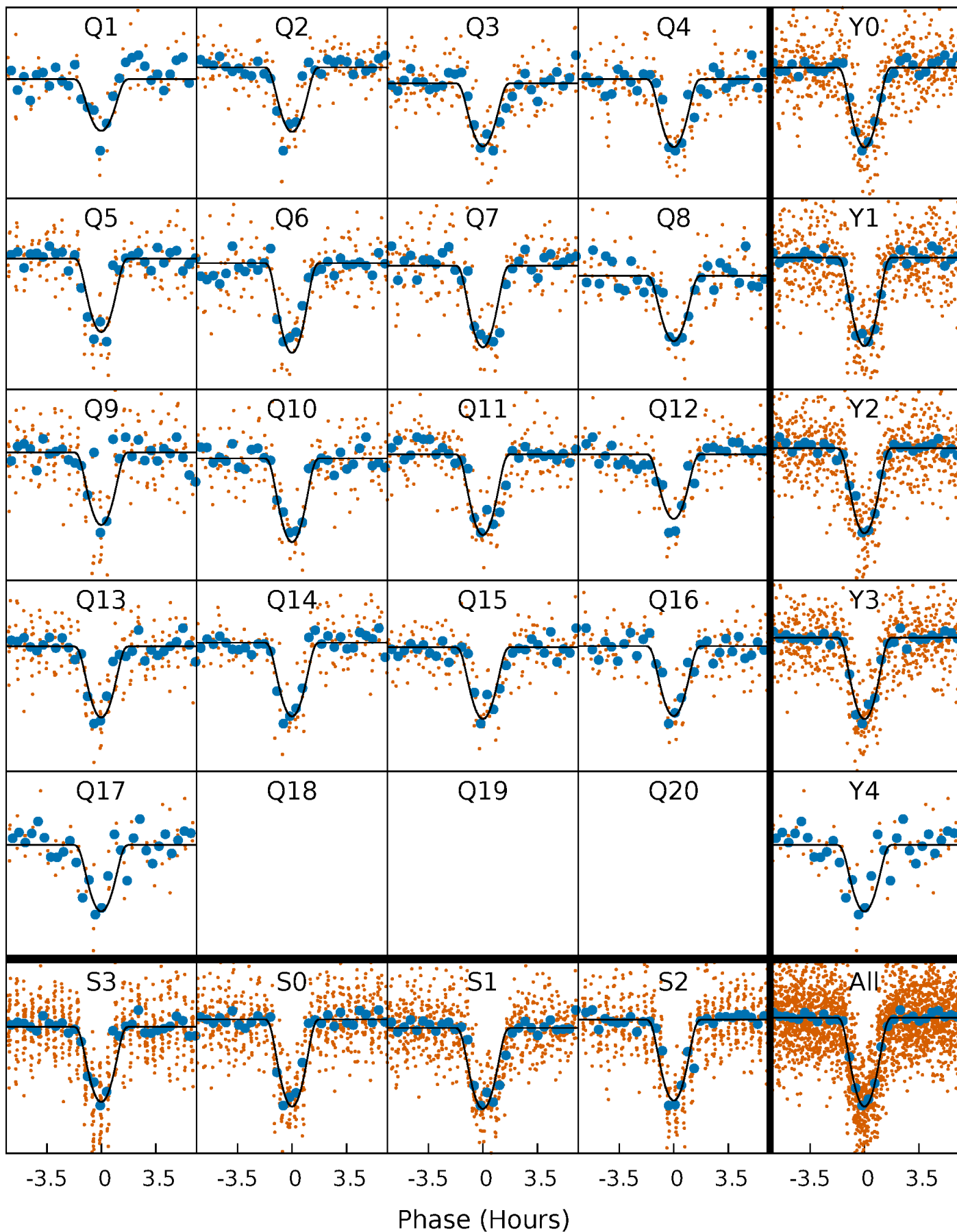
PDC Quarter-Phased Transit Curves

TCE 005364071-03 P= 10.912740 Days $T_0=137.114599$ (BKJD)



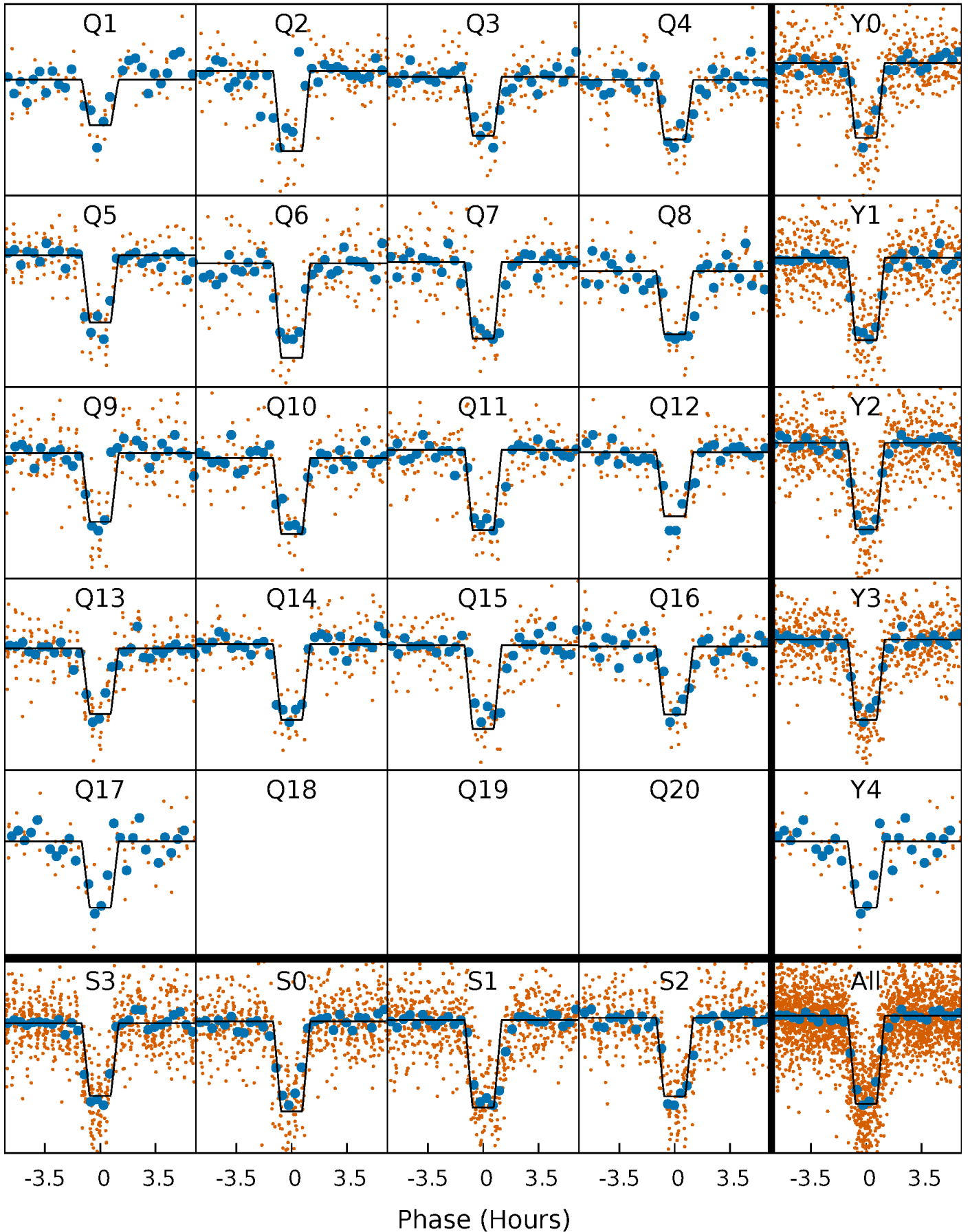
DV Quarter-Phased Transit Curves

TCE 005364071-03 P= 10.912740 Days $T_0=137.114599$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

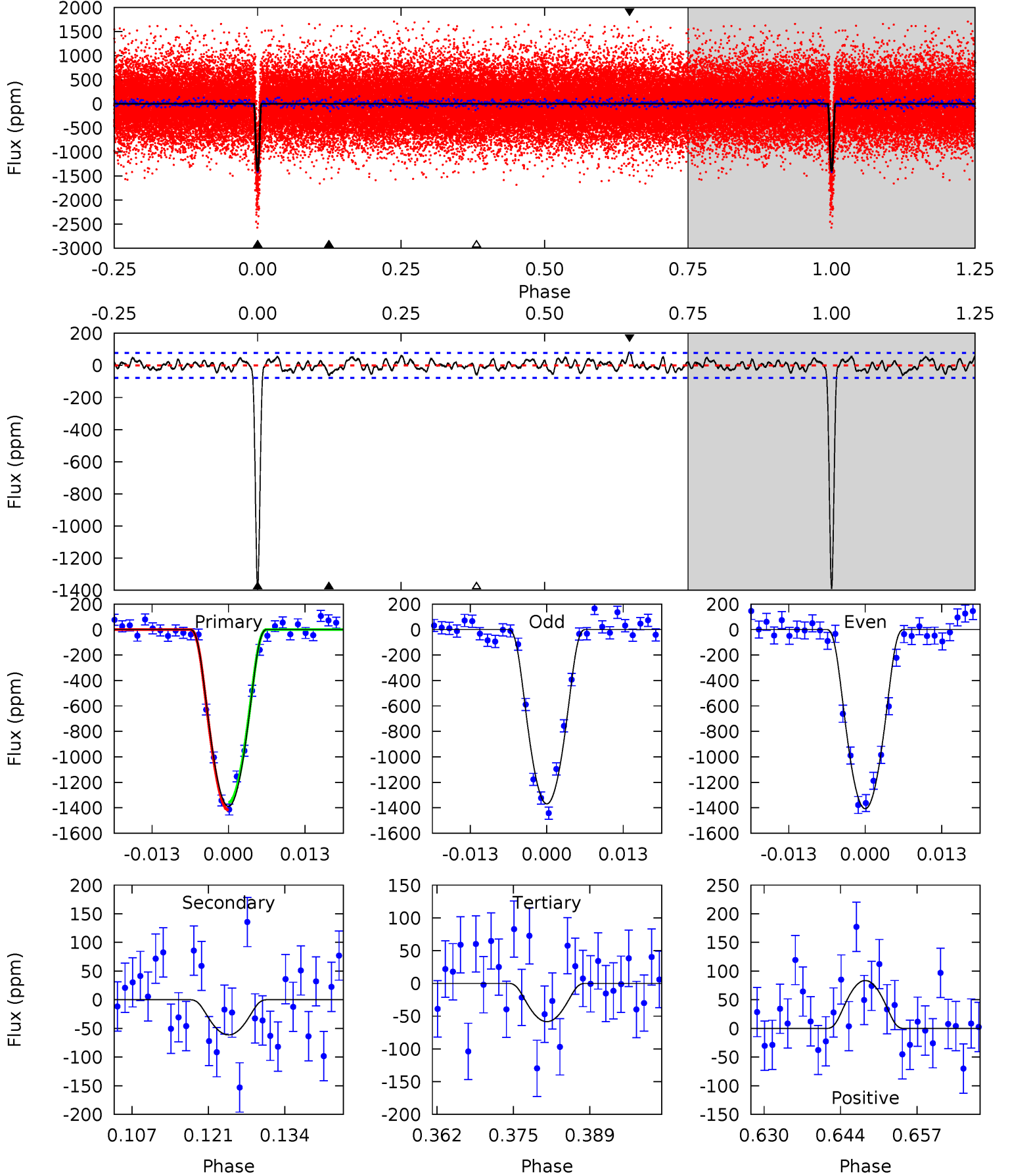
TCE 005364071-03 P= 10.912677 Days $T_0=137.118898$ (BKJD)



DV Model-Shift Uniqueness Test

005364071-03, P = 10.912740 Days, E = 126.201859 Days

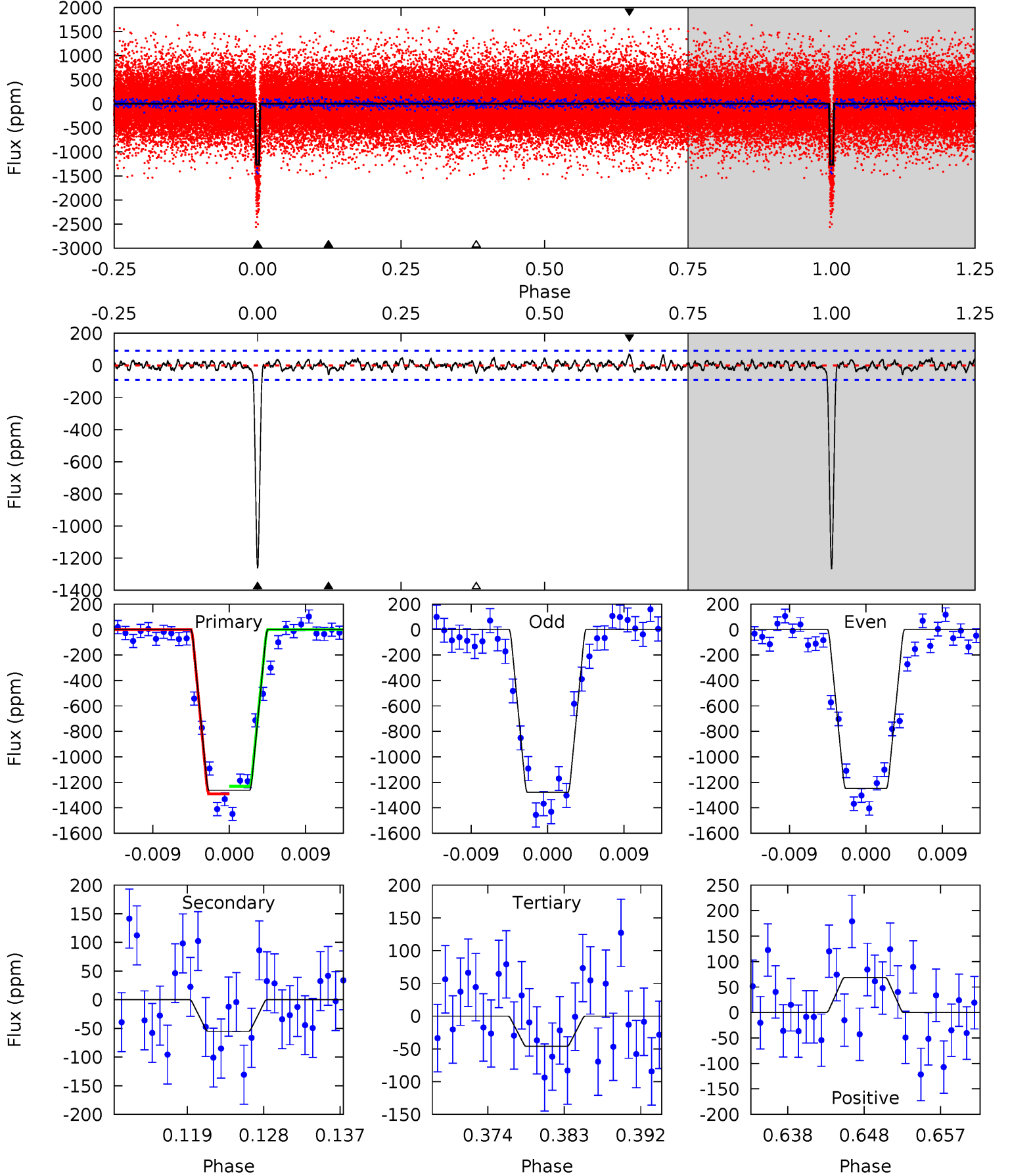
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
88.5	3.91	3.72	5.33	4.97	2.47	1.53	84.8	83.2	0.18	-1.42	1.22	1.00	0.06	1.92



Alt Model-Shift Uniqueness Test

005364071-03, $P = 10.912677$ Days, $E = 126.206221$ Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
69.9	3.04	2.56	3.80	5.04	2.61	1.04	67.4	66.1	0.48	-0.75	0.80	0.98	0.05	1.64



Stellar Parameters For KIC 005364071

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	3834^{+77}_{-84}	$4.708^{+0.045}_{-0.021}$	$-0.020^{+0.150}_{-0.150}$	$0.539^{+0.030}_{-0.041}$	$0.541^{+0.037}_{-0.037}$	$4.872^{+0.958}_{-0.449}$
	+2%/-2%	+1%/-0%	+750%/-750%	+6%/-8%	+7%/-7%	+20%/-9%
Source	SPE70	SPE60	SPE70	DSEP		

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

Secondary Eclipse Parameters for KIC 005364071-03 / KOI 0248.02

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-61 ± 16	$3.23^{+1.21}_{-1.25}$	616^{+16}_{-16}	2229^{+278}_{-163}	19^{+35}_{-9}
Alt.	-55 ± 18	$2.13^{+1.14}_{-1.04}$	617^{+15}_{-17}	2434^{+475}_{-271}	40^{+123}_{-25}

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

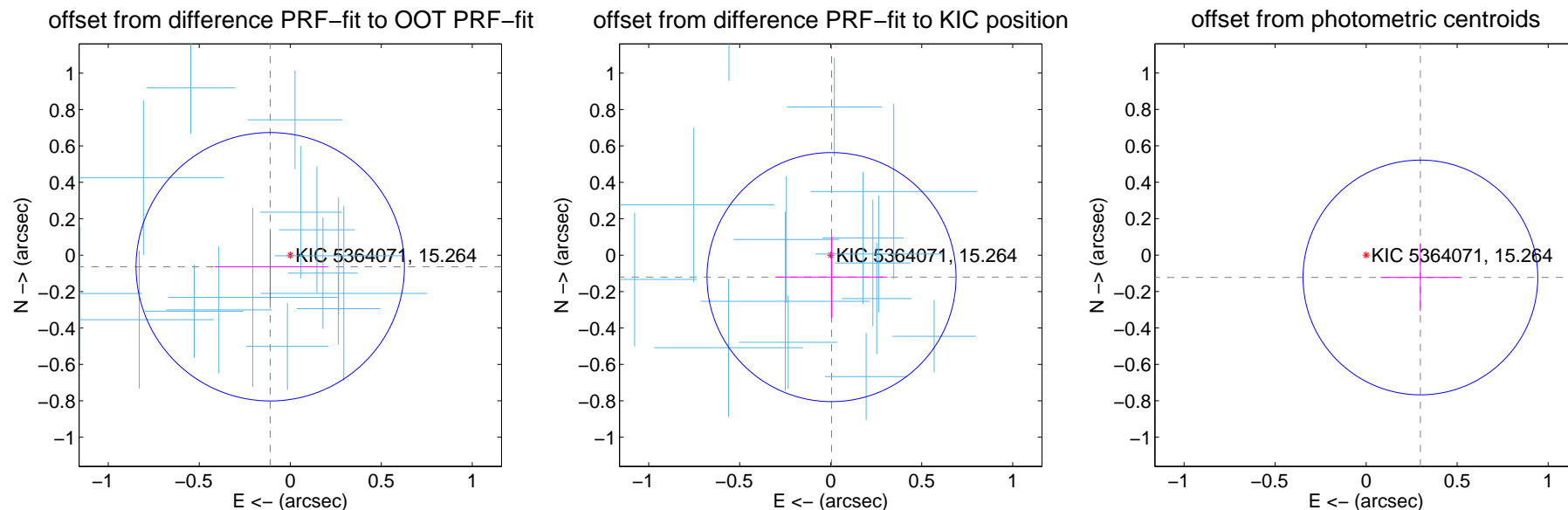
DV Centroid Data

Supplemental centroid analysis for 005364071-03. Kepler magnitude: 15.26. Transit SNR 48.25

There are 15 quarters with good PRF difference image offsets

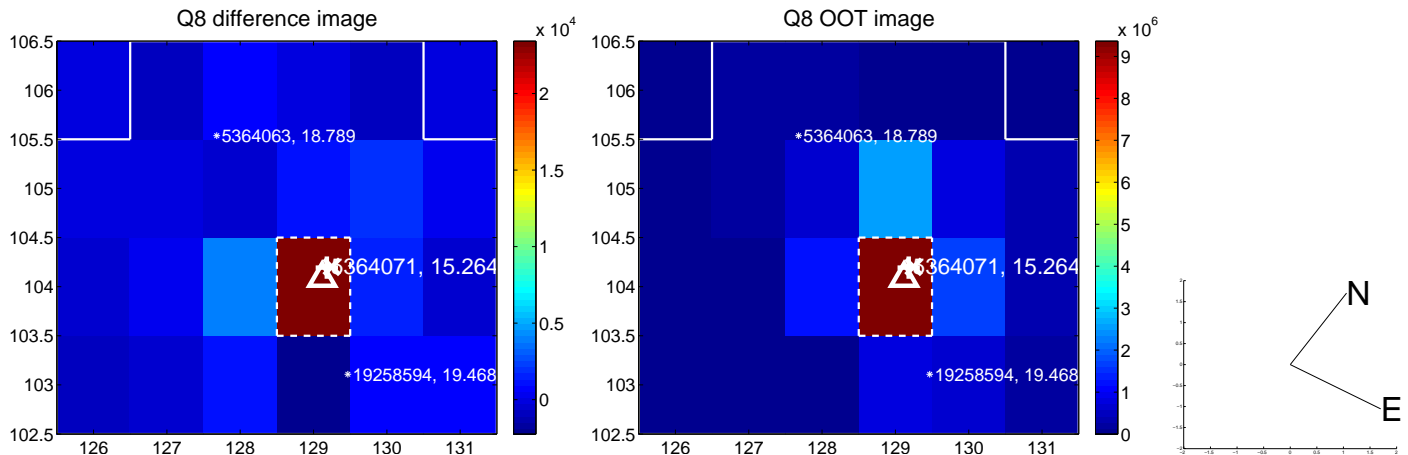
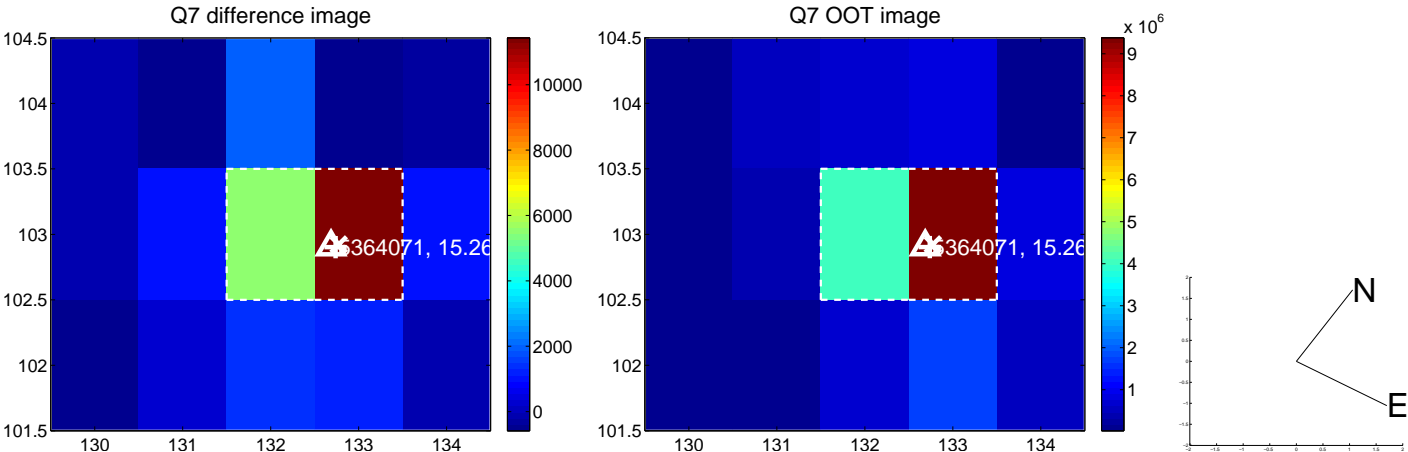
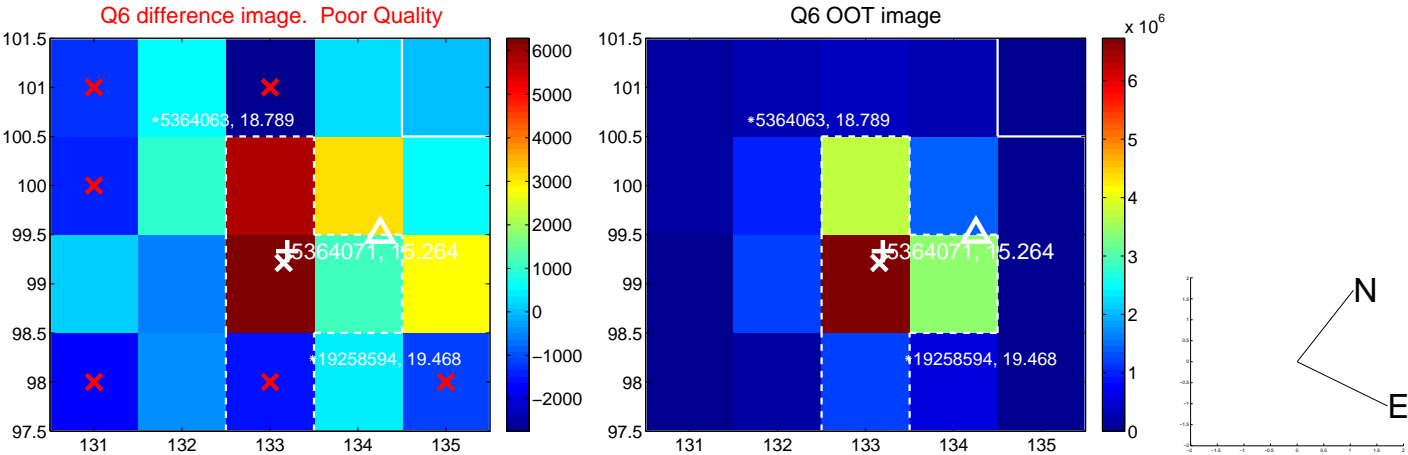
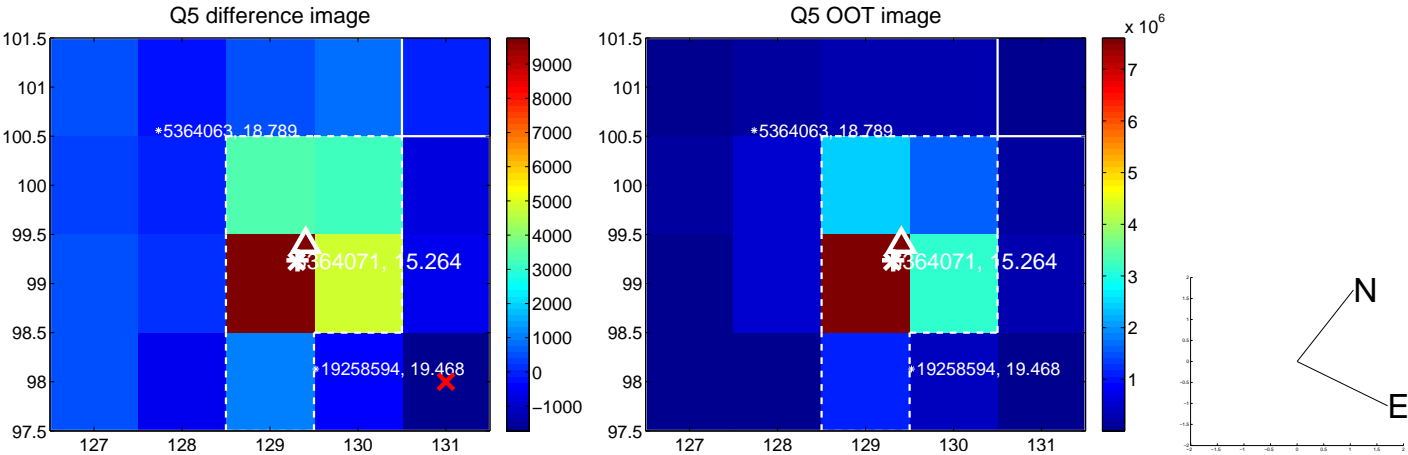
The direct PRF centroid is offset from the target star catalog position by about 0.11 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.127 ± 0.246	0.52	0.110 ± 0.306	-0.064 ± 0.193
PRF-fit source offset from KIC position	0.121 ± 0.228	0.53	-0.004 ± 0.307	-0.121 ± 0.224
photometric centroid source offset	0.32 ± 0.21	1.50	-0.30 ± 0.22	-0.12 ± 0.18

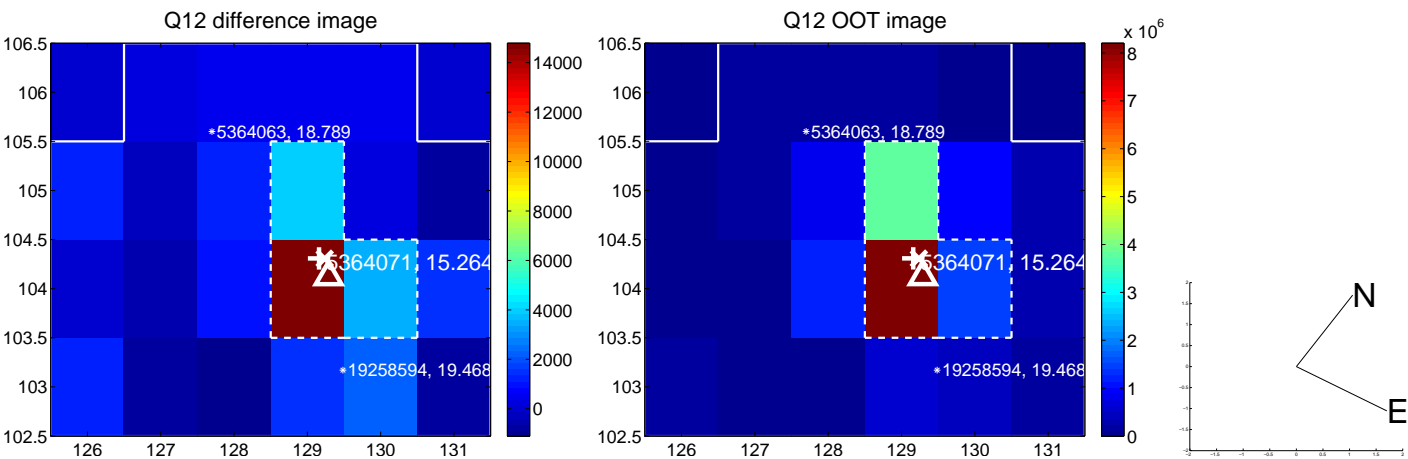
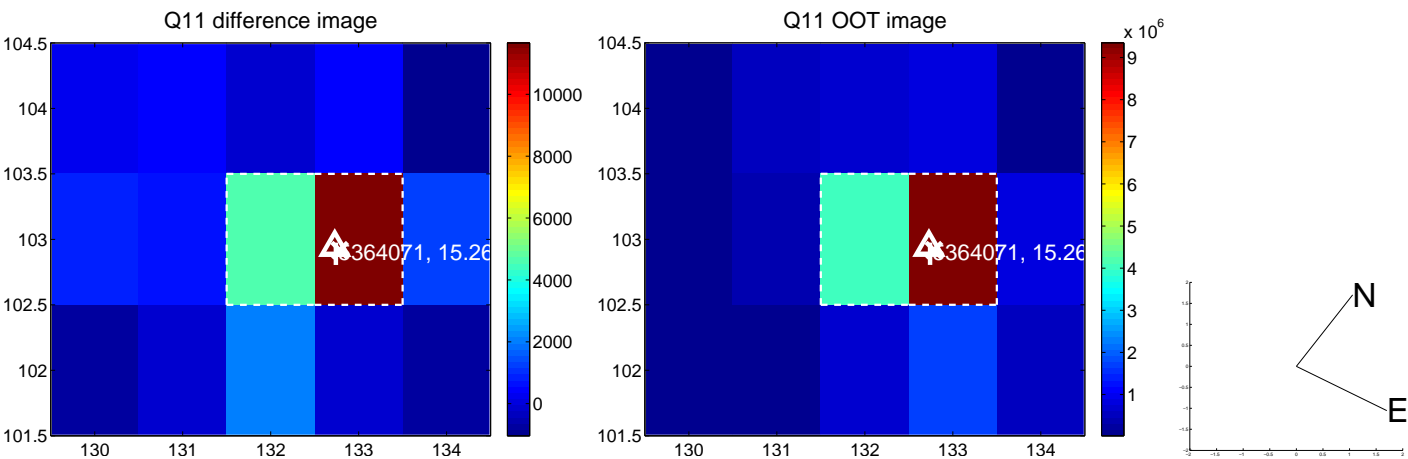
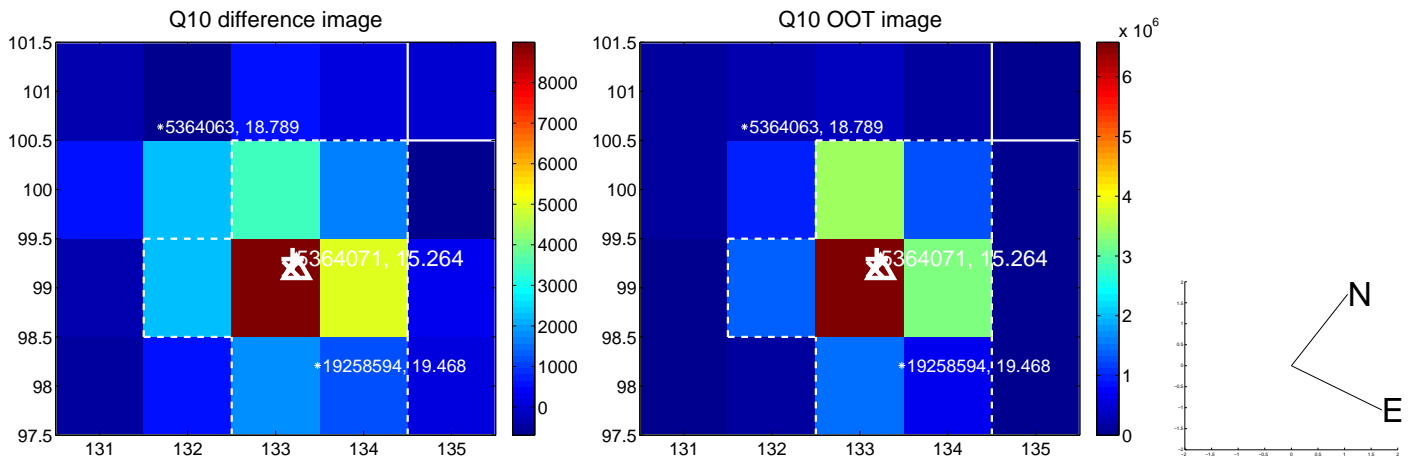
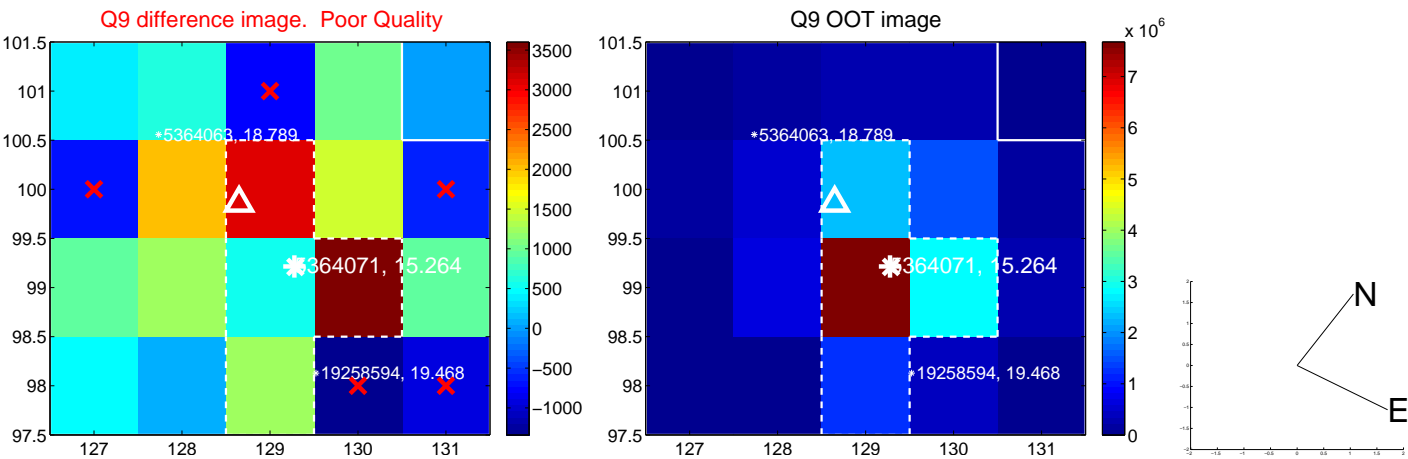


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

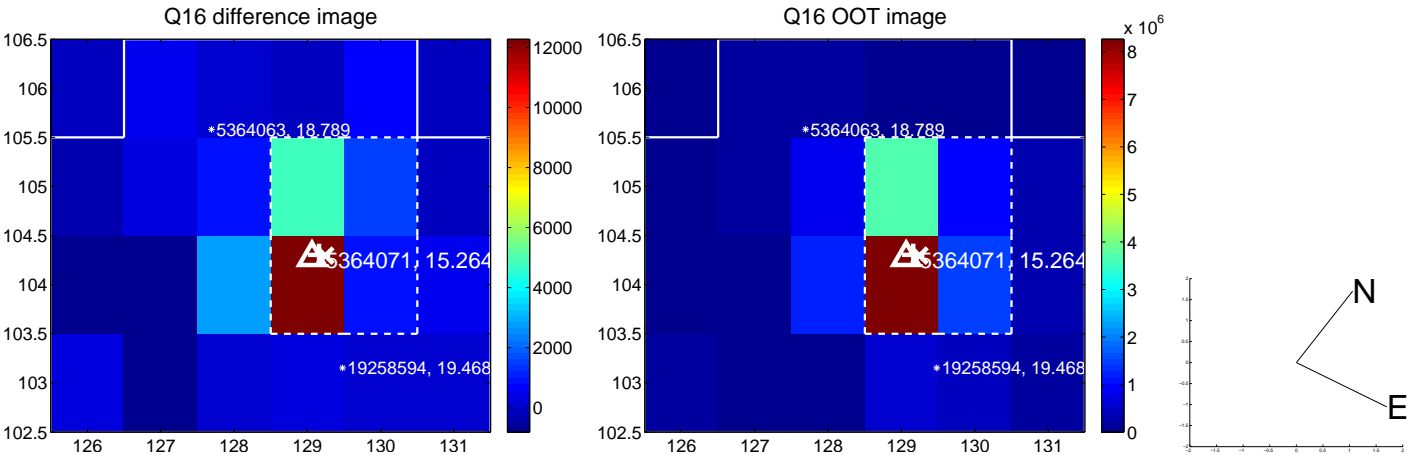
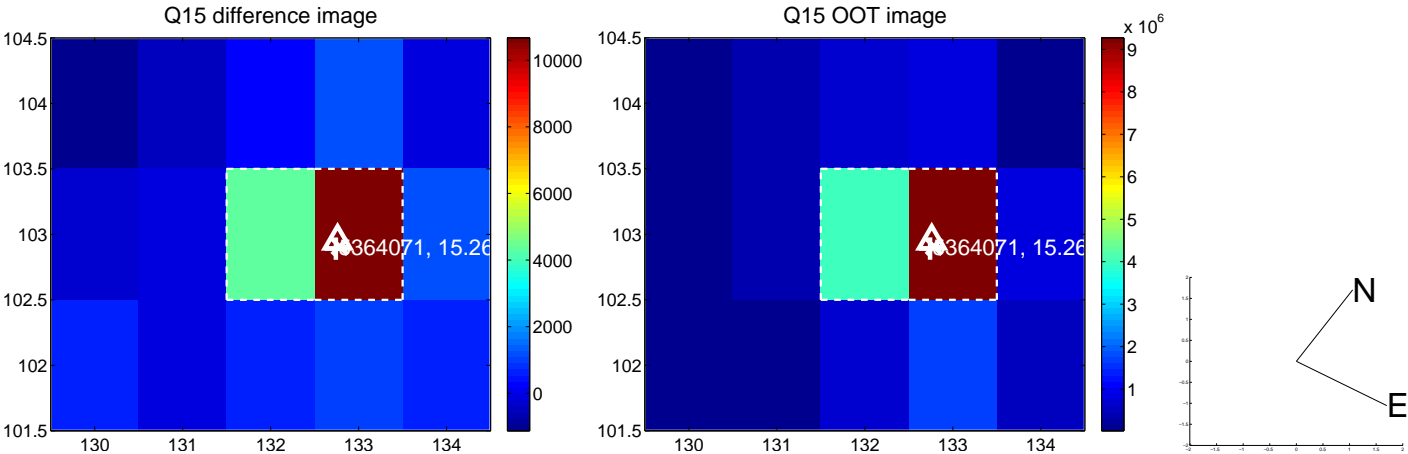
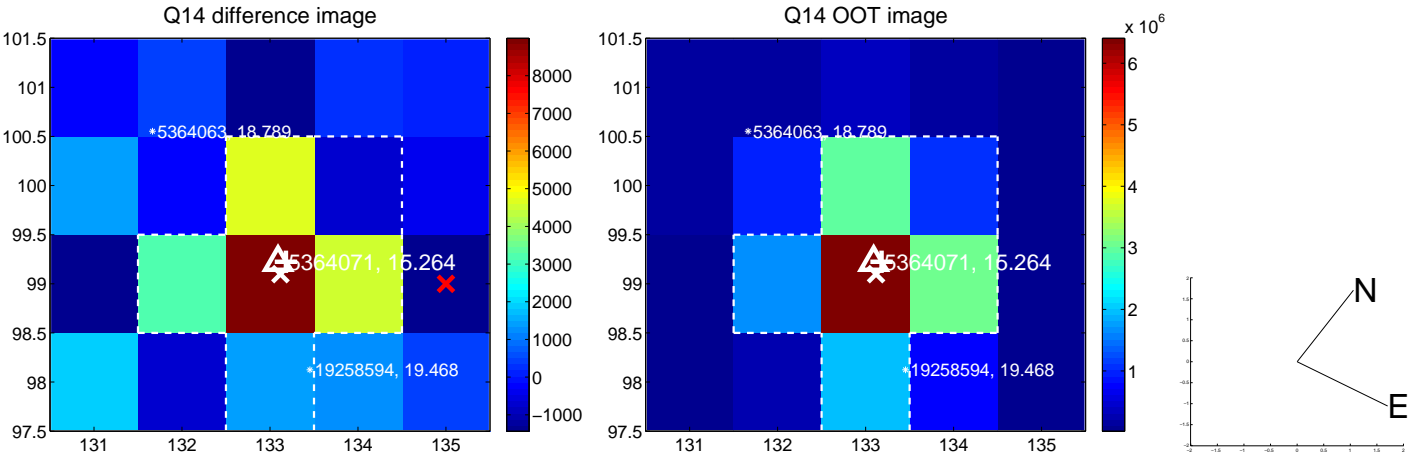
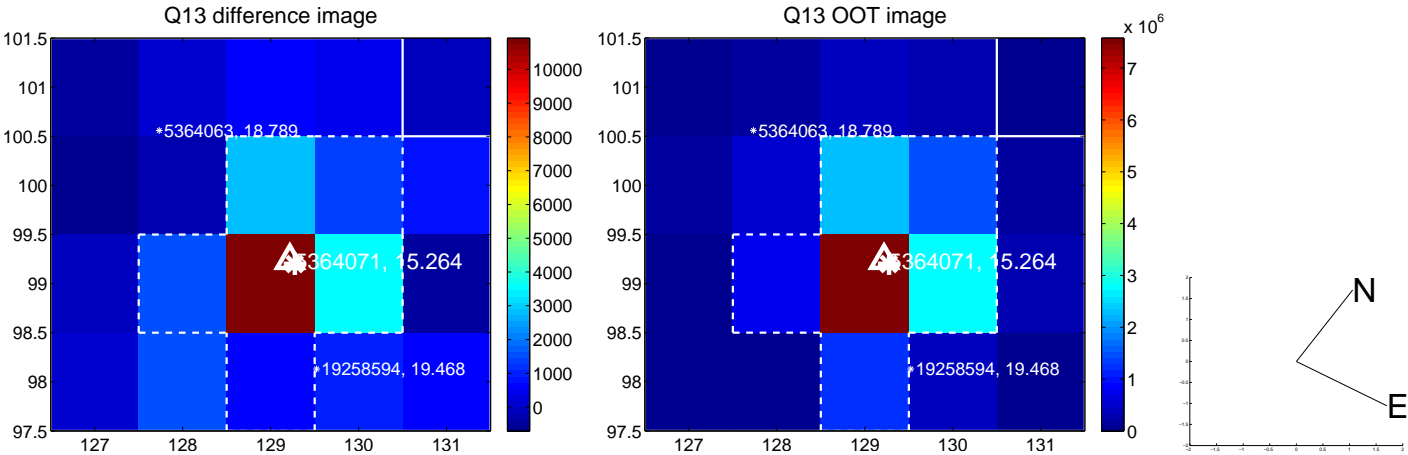
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



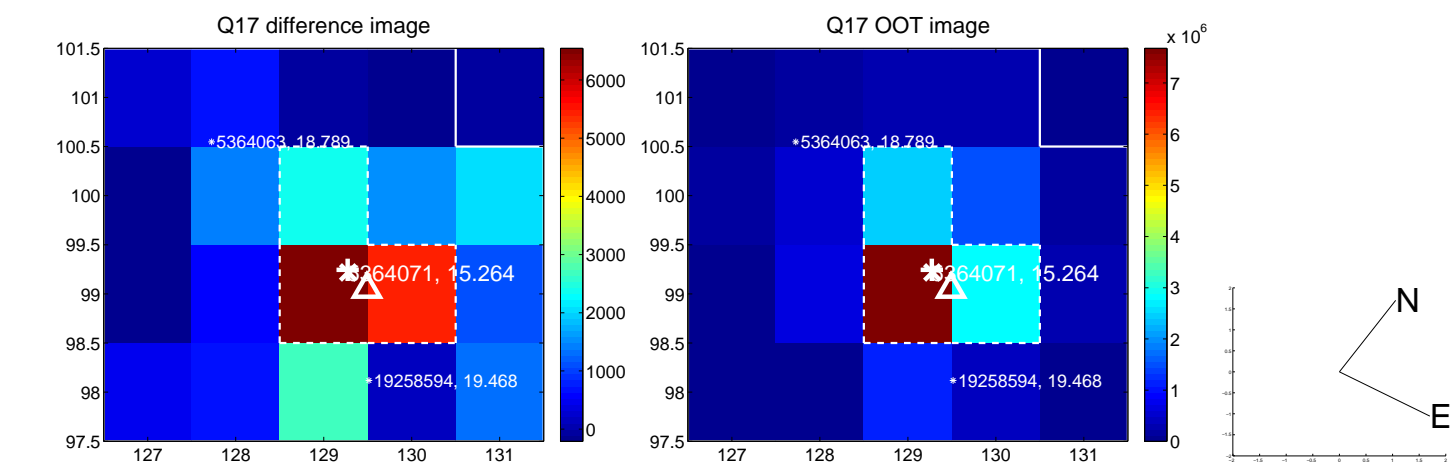
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



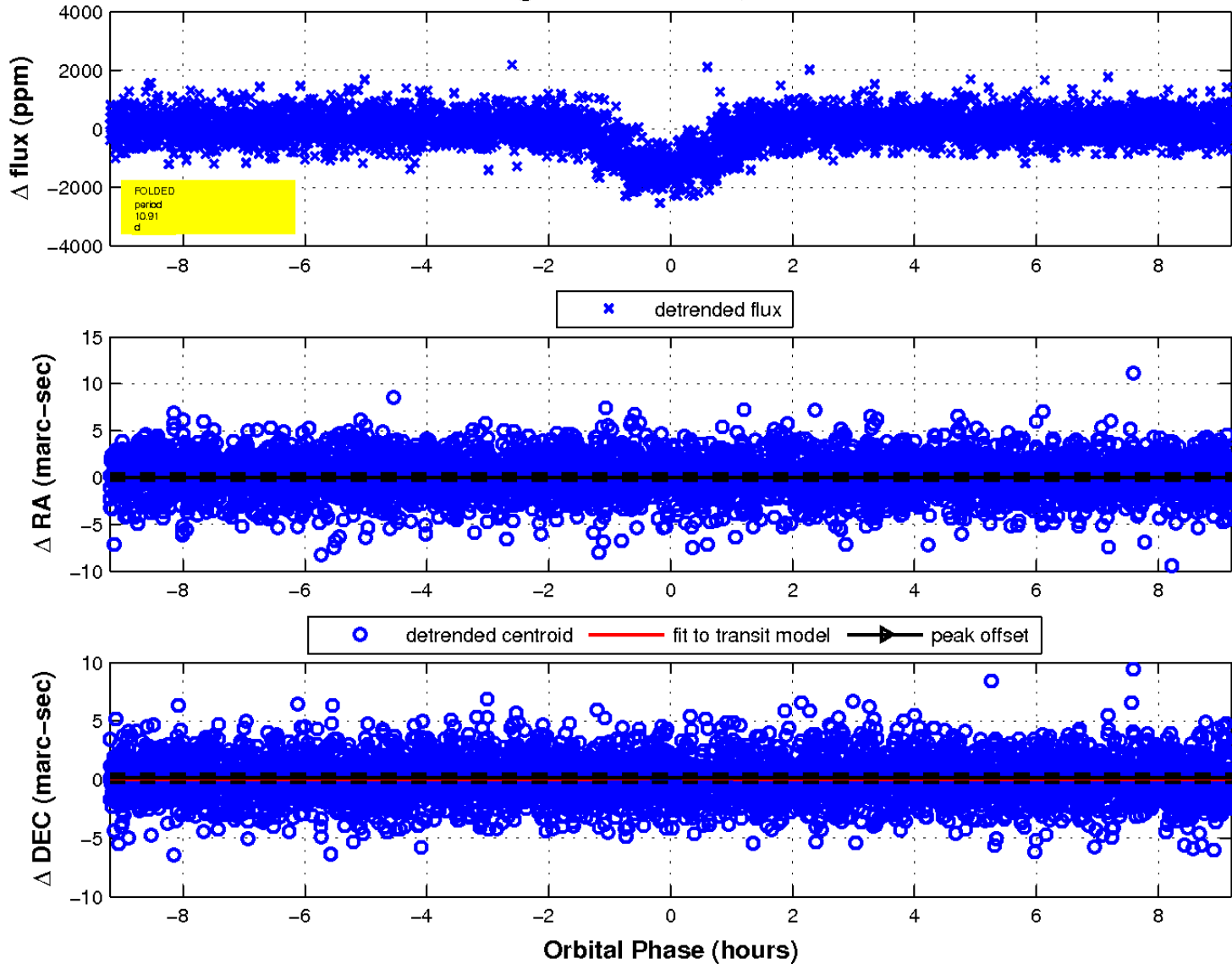
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

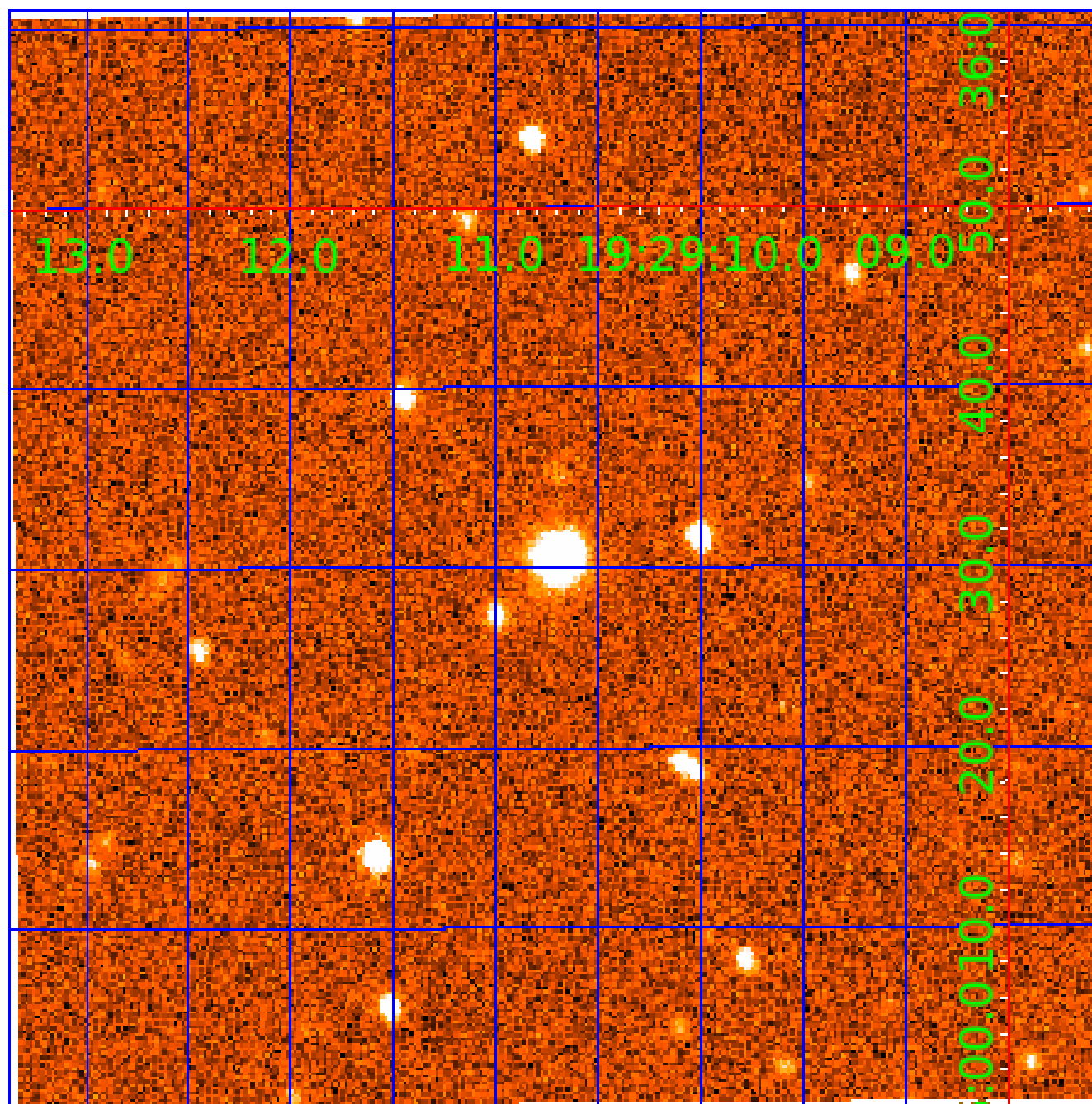


fluxWeightedCentroids, Planet 3 of 4



UKIRT Image

Declination



KIC 005364071

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})
005364071-01	OBS	0248.01	7.203863	134.265790	1768.9	2.829	82.7	84.3	0.54	3834	2.60	15.89
005364071-02	OBS	0248.03	2.576562	133.481102	748.3	1.839	48.3	53.4	0.54	3834	1.77	62.59
005364071-03	OBS	0248.02	10.912740	137.114599	1381.8	3.067	42.7	48.3	0.54	3834	3.18	9.13
005364071-04	OBS	0248.04	18.596122	141.264785	785.9	2.376	20.6	22.9	0.54	3834	1.69	4.49

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005364071-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT
005364071-02	OBS	PC	1.00	0	0	0	0	NO_COMMENT
005364071-03	OBS	PC	1.00	0	0	0	0	NO_COMMENT
005364071-04	OBS	PC	1.00	0	0	0	0	NO_COMMENT

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.

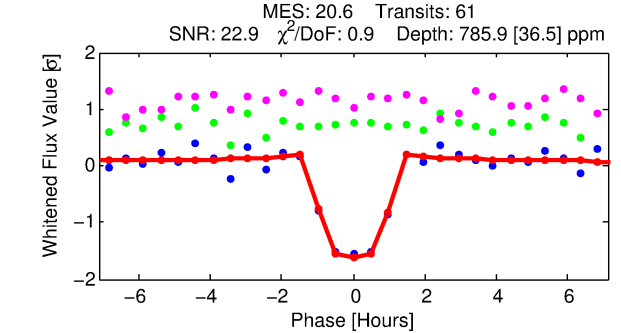
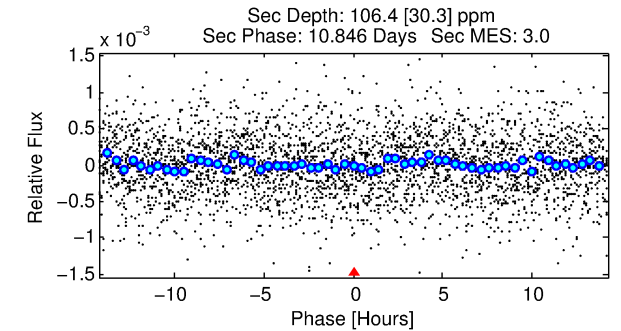
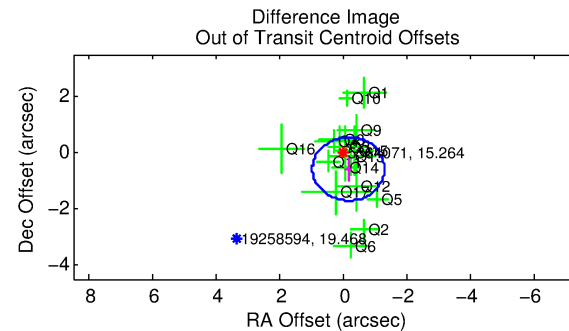
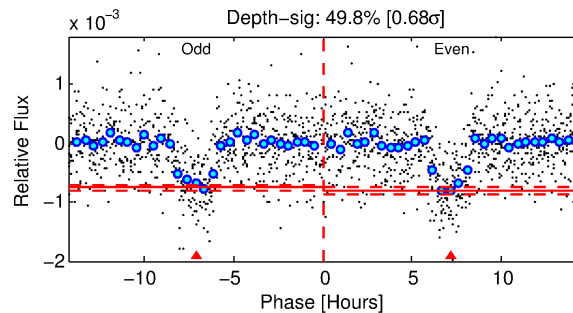
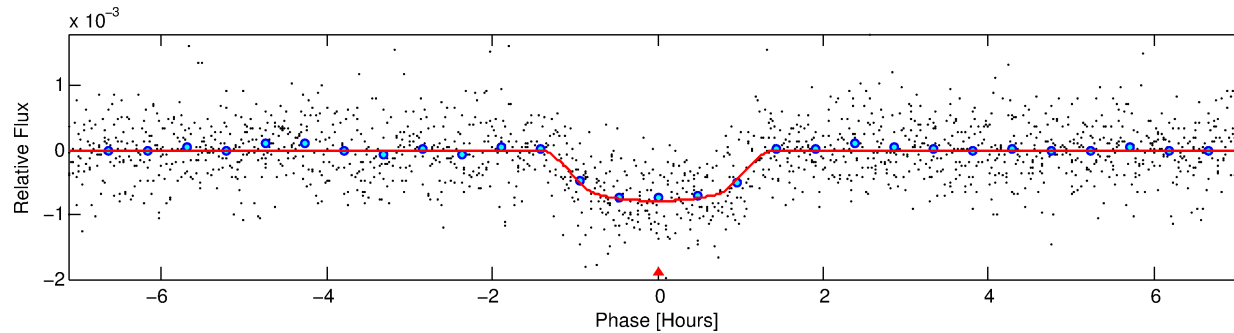
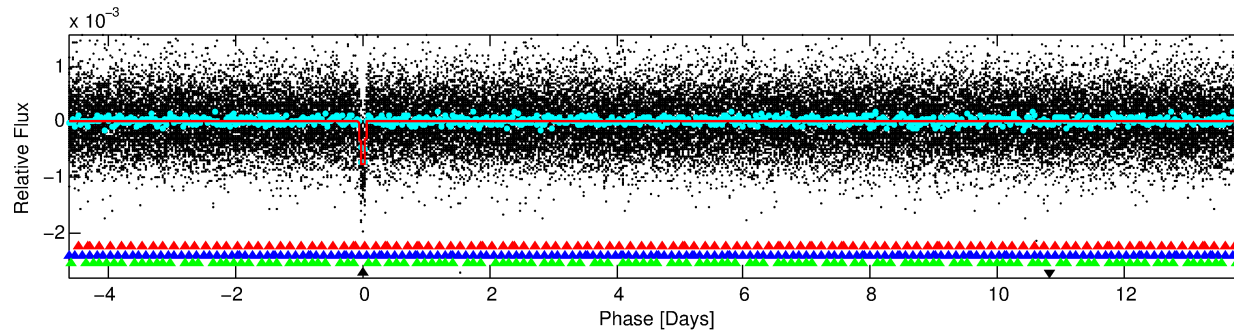
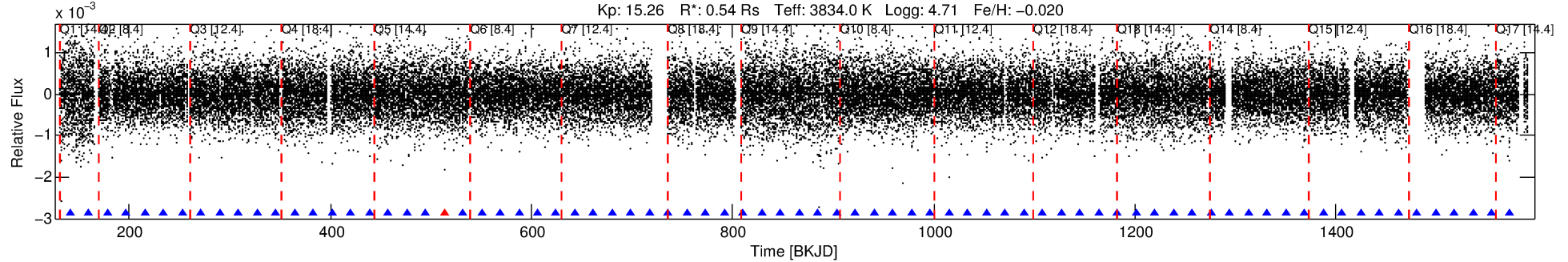
Ephemeris Match Information For 005364071-04

No Significant Match Found

DV One-Page Summary

KIC: 5364071 Candidate: 4 of 4 Period: 18.596 d
KOI: K00248.04 Name: Kepler-49e Corr: 0.976

Kp: 15.26 R*: 0.54 Rs Teff: 3834.0 K Logg: 4.71 Fe/H: -0.020



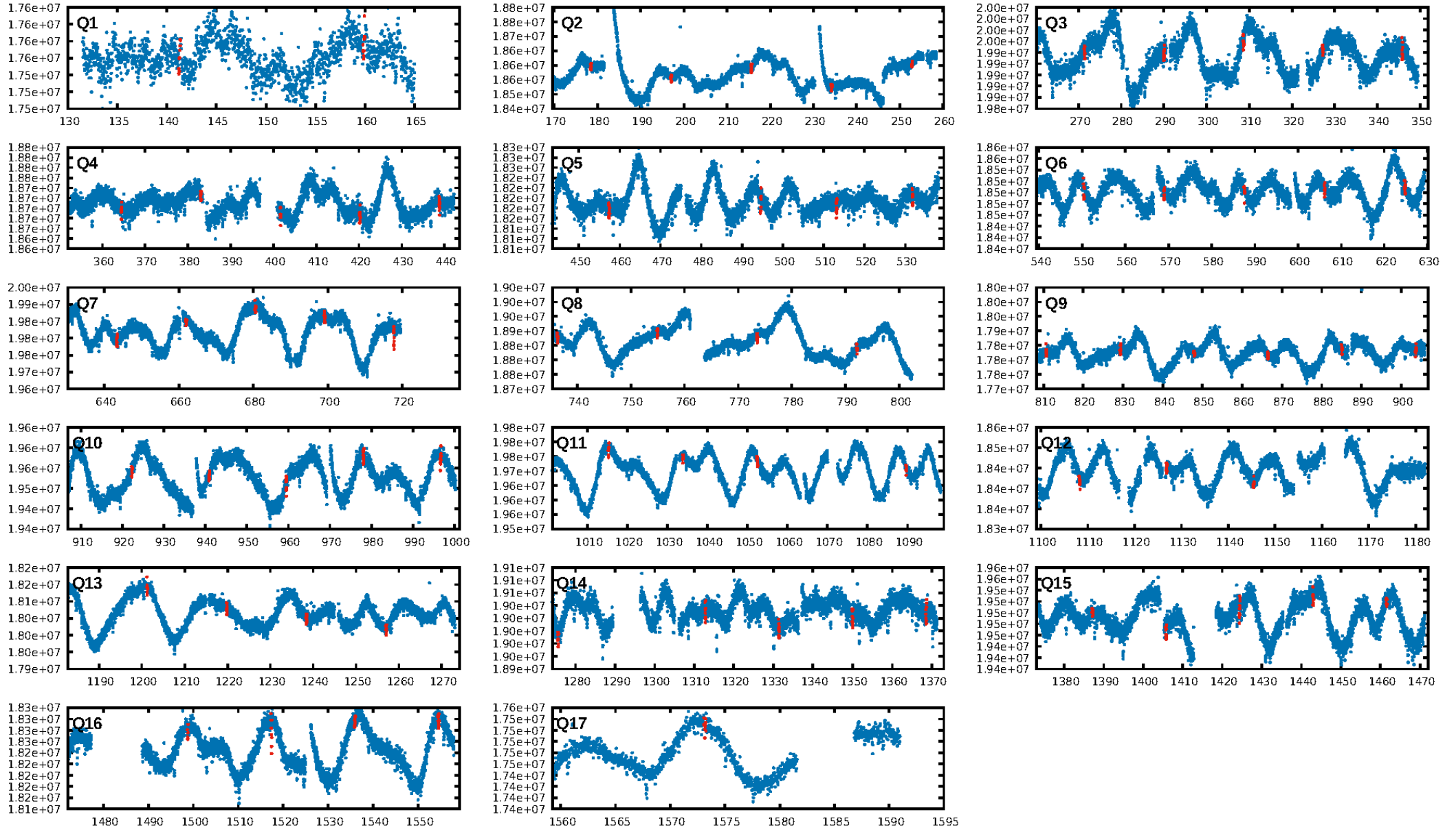
DV Fit Results:

Period = 18.59612 [0.00005] d
Epoch = 141.2648 [0.0025] BKJD
Rp/R* = 0.0287 [0.0097]
a/R* = 38.30 [53.52]
b = 0.81 [0.62]
Seff = 4.49 [0.55]
Teq = 371 [11] K
Rp = 1.69 [0.58] Re
a = 0.1120 [0.0069] AU
Ag = 257.86 [190.29] [1.35σ]
Teffp = 2299 [424] K [4.54σ]

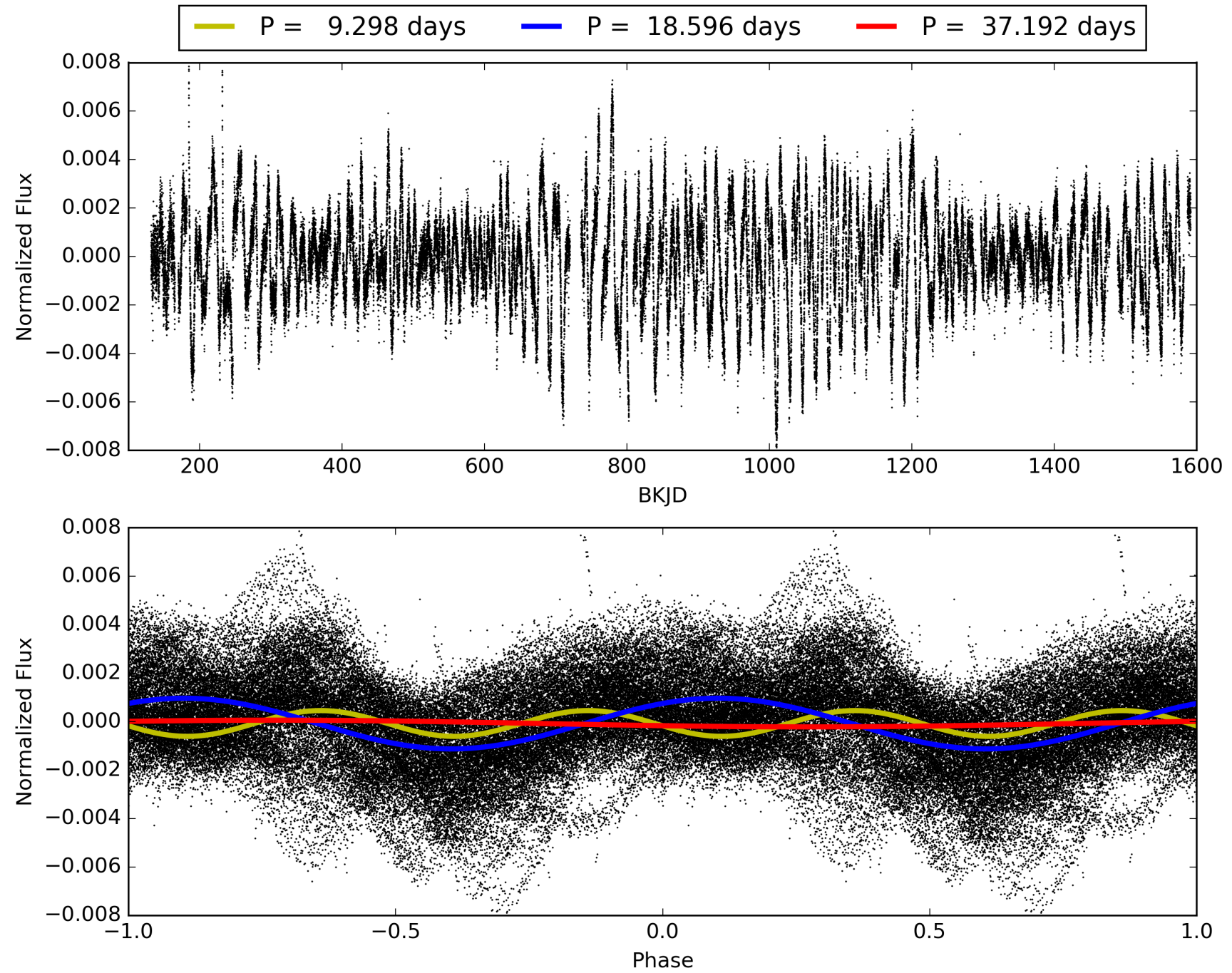
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [47.53σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 75.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 8.70e-91
RollingBand-fgt: 0.98 [58/59]
GhostDiagnostic-chr: 2.866
Centroid-sig: 75.3%
Centroid-so: 0.519 arcsec [1.17σ]
OotOffset-rm: 0.600 arcsec [1.59σ]
KicOffset-rm: 0.690 arcsec [2.01σ]
OotOffset-st: 4/3/4/5 [16]
KicOffset-st: 4/3/4/5 [16]
DiffImageQuality-fgm: 0.94 [15/16]
DiffImageOverlap-fno: 1.00 [17/17]

TCE 005364071-04, PDC Light Curves

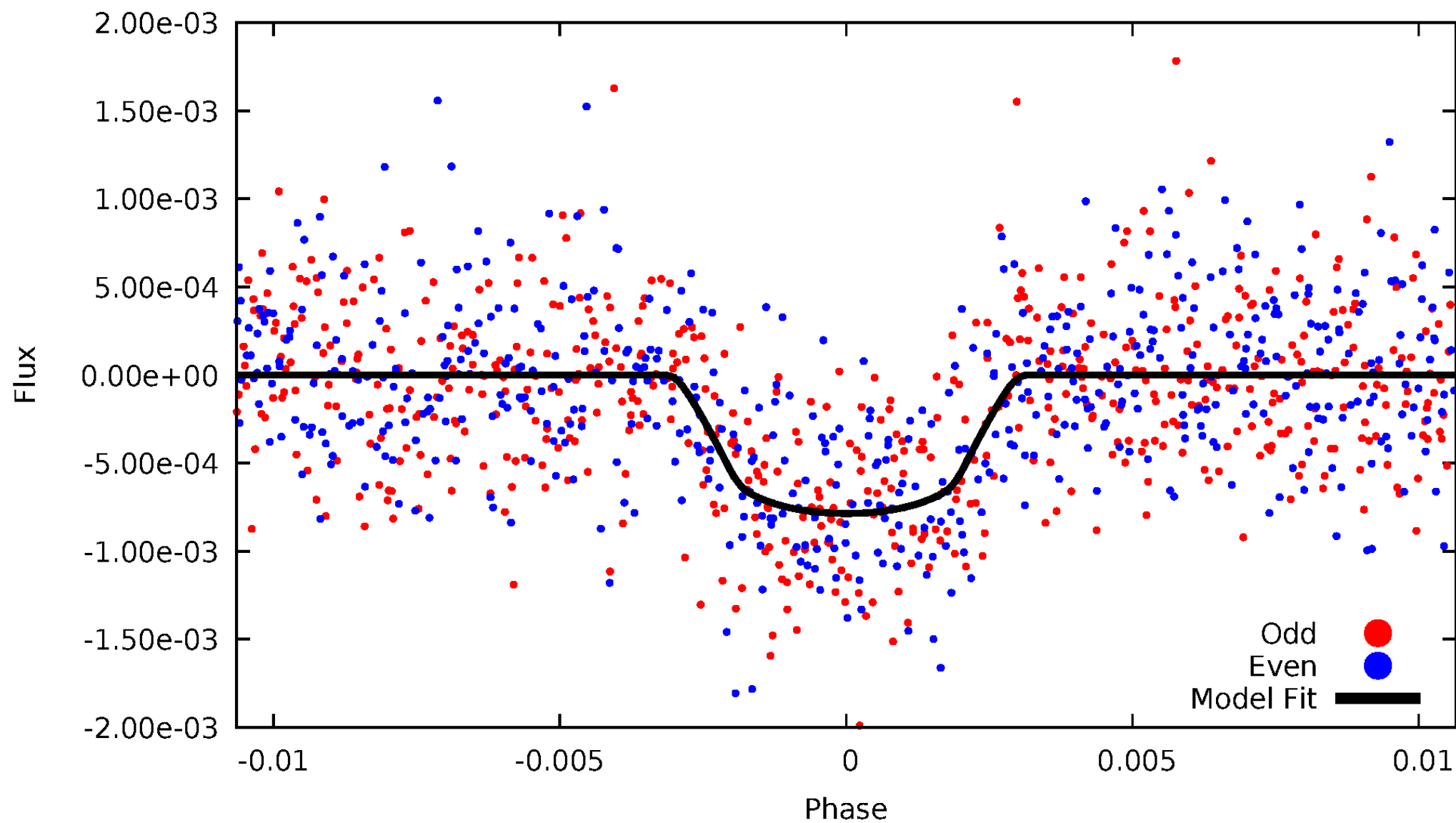


TCE 005364071-04



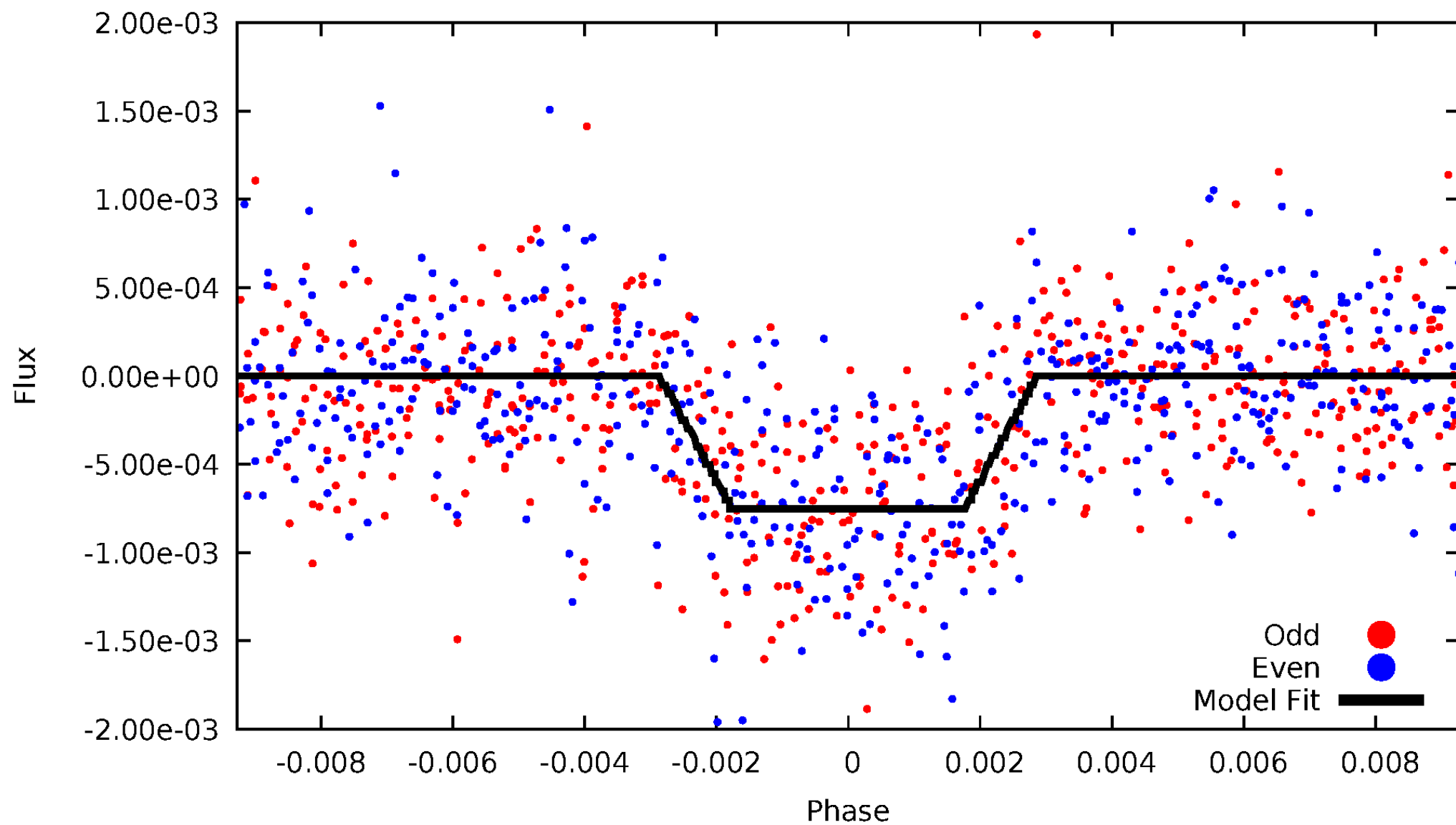
DV Odd/Even

TCE 005364071-04



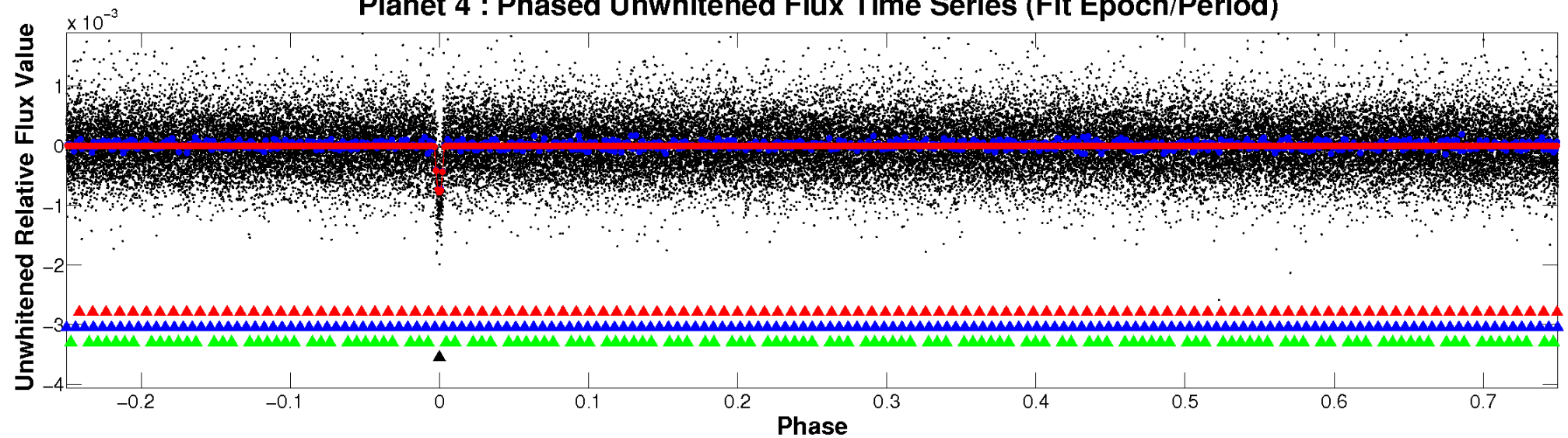
ALT Odd/Even

TCE 005364071-04

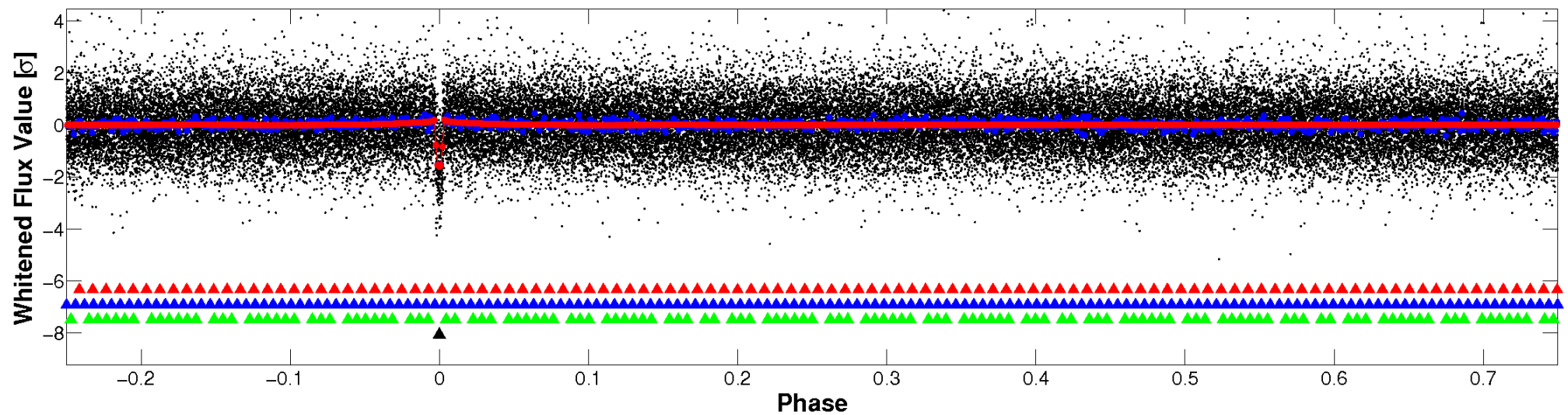


Non-Whitened Vs. Whitened Light Curve

Planet 4 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

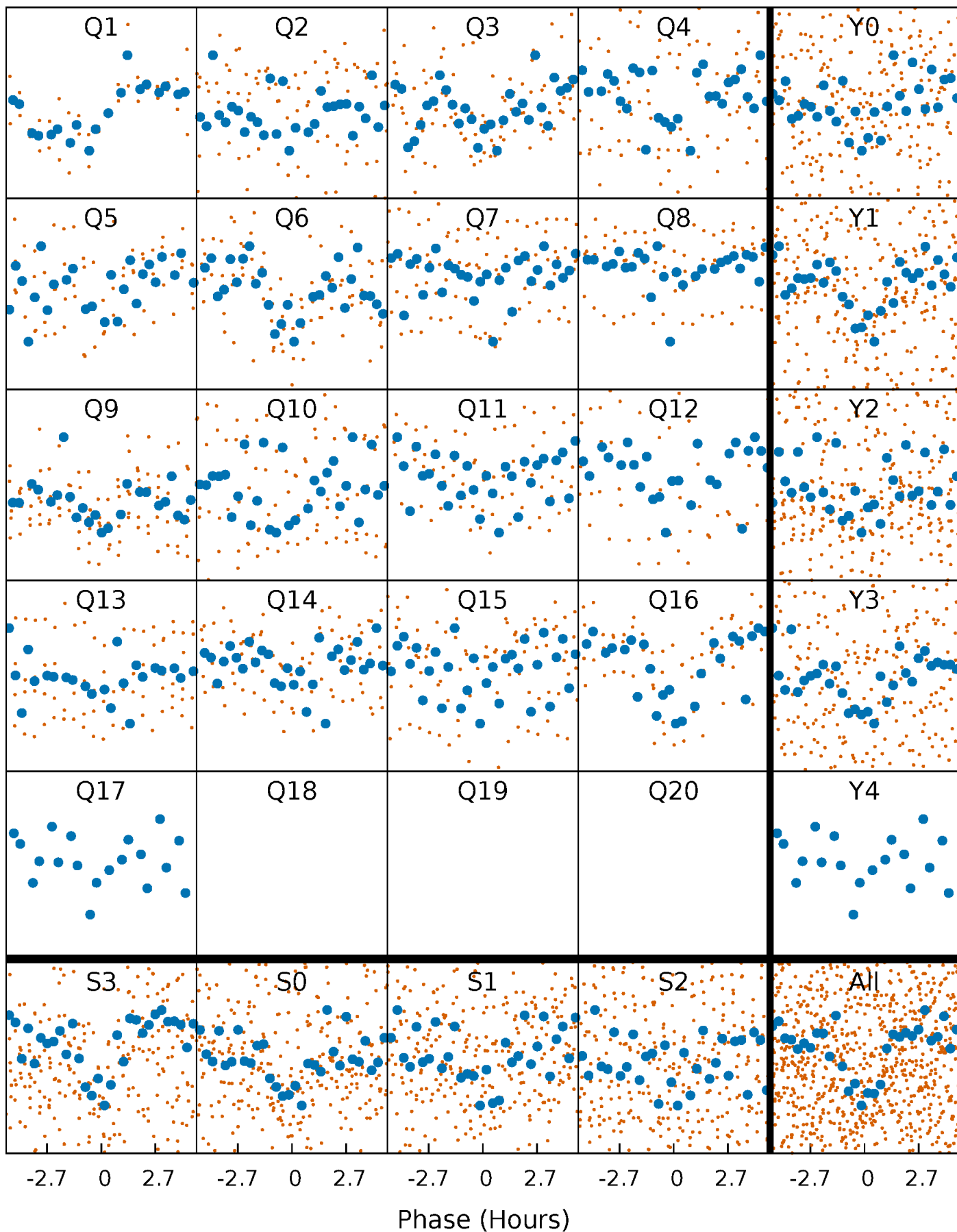


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



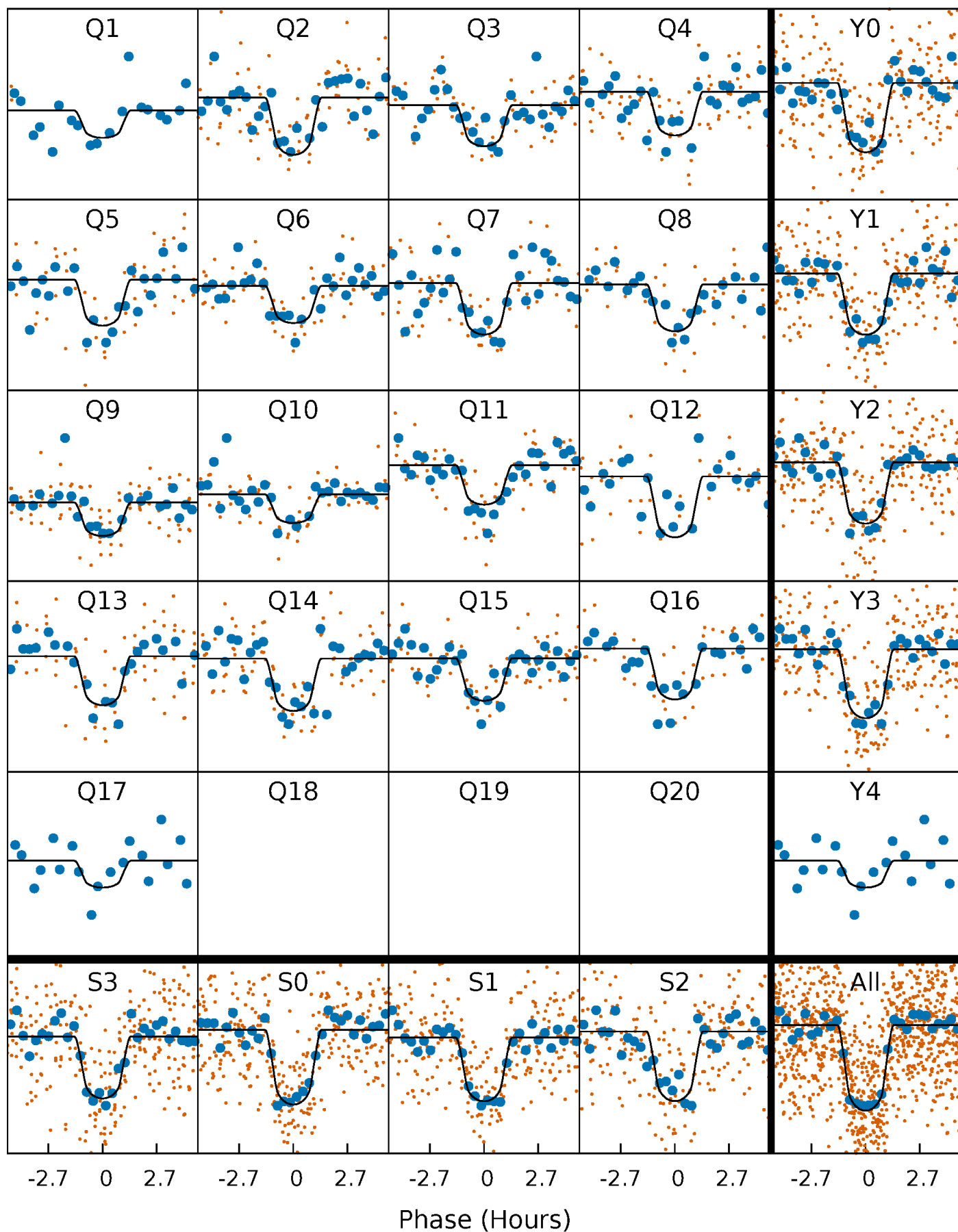
PDC Quarter-Phased Transit Curves

TCE 005364071-04 P= 18.596122 Days $T_0=141.264785$ (BKJD)



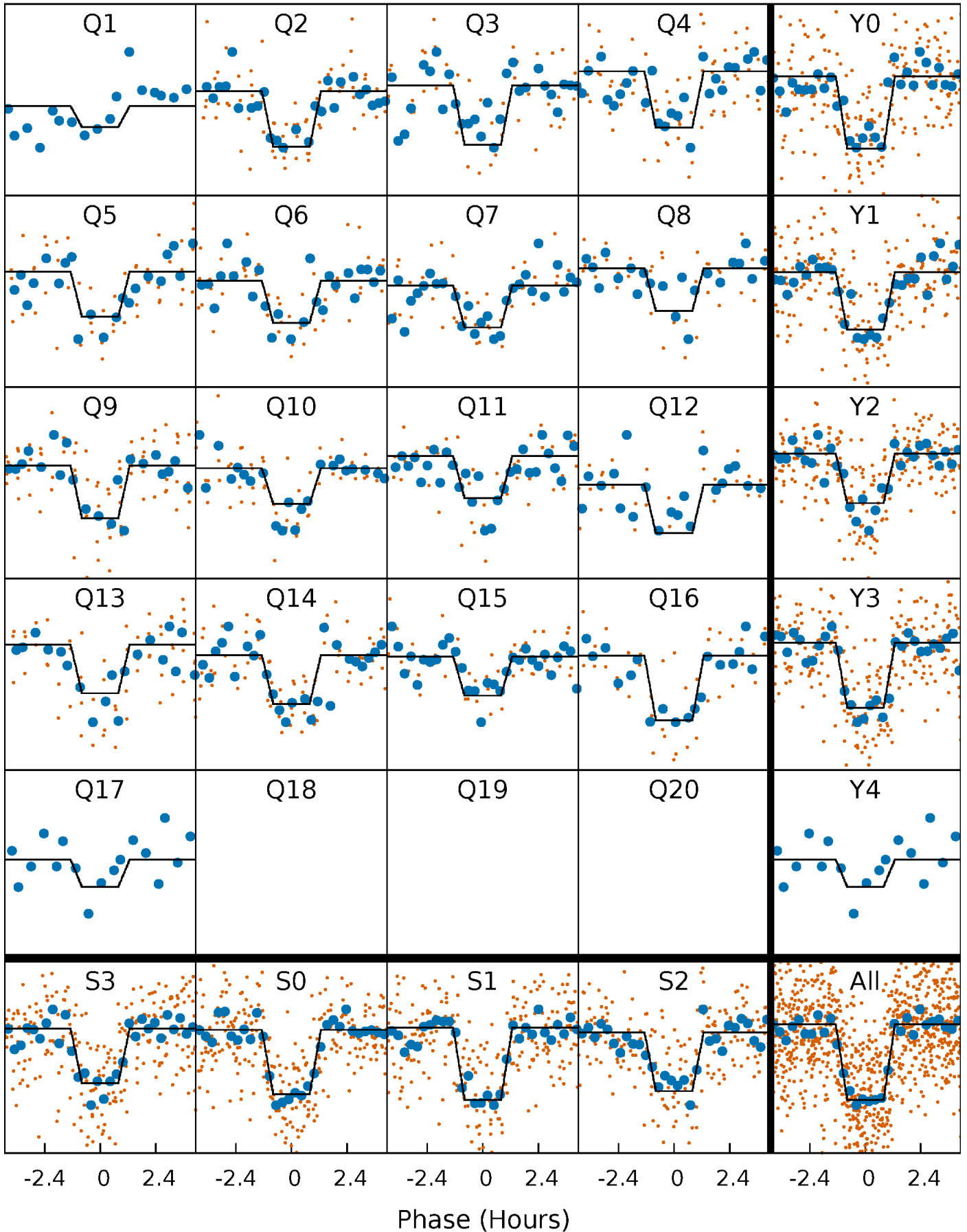
DV Quarter-Phased Transit Curves

TCE 005364071-04 P= 18.596122 Days $T_0=141.264785$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

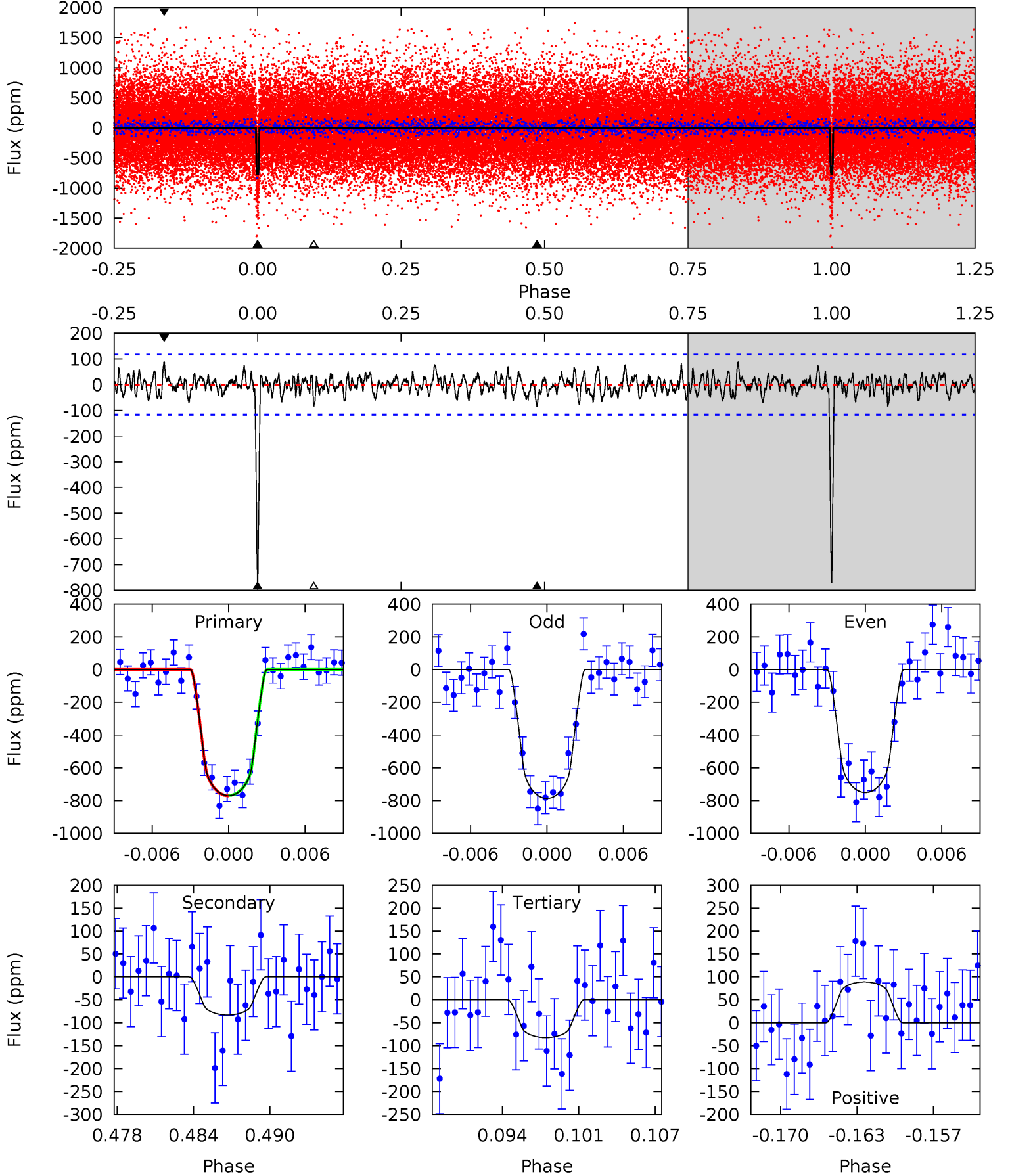
TCE 005364071-04 P= 18.596054 Days $T_0=141.267103$ (BKJD)



DV Model-Shift Uniqueness Test

005364071-04, $P = 18.596122$ Days, $E = 122.668663$ Days

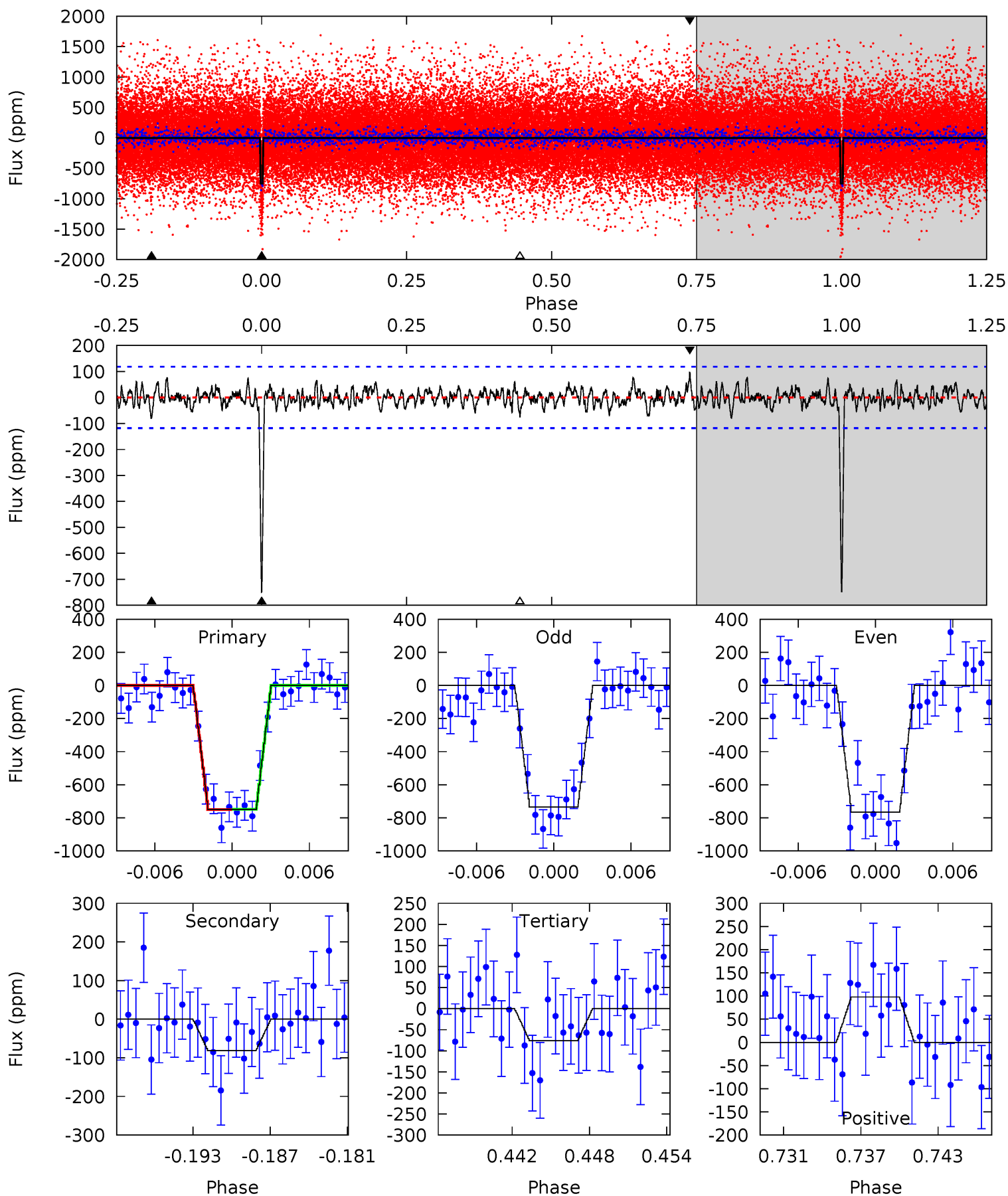
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
33.7	3.64	3.61	3.88	5.11	2.73	1.23	30.1	29.8	0.02	-0.25	0.79	1.00	0.10	0.06



Alt Model-Shift Uniqueness Test

005364071-04, P = 18.596054 Days, E = 122.671049 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
32.6	3.53	3.31	4.25	5.13	2.77	1.10	29.2	28.3	0.22	-0.72	0.65	1.06	0.12	0.05



Stellar Parameters For KIC 005364071

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	3834^{+77}_{-84}	$4.708^{+0.045}_{-0.021}$	$-0.020^{+0.150}_{-0.150}$	$0.539^{+0.030}_{-0.041}$	$0.541^{+0.037}_{-0.037}$	$4.872^{+0.958}_{-0.449}$
	+2%/-2%	+1%/-0%	+750%/-750%	+6%/-8%	+7%/-7%	+20%/-9%
Source	SPE70	SPE60	SPE70	DSEP		

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

Secondary Eclipse Parameters for KIC 005364071-04 / KOI 0248.04

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-83 ± 23	$1.69^{+0.55}_{-0.54}$	515^{+13}_{-14}	2709^{+330}_{-202}	200^{+245}_{-94}
Alt.	-81 ± 23	$1.56^{+0.59}_{-0.52}$	516^{+12}_{-15}	2750^{+359}_{-233}	225^{+311}_{-112}

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 $A_{obs} \gg 1.0$

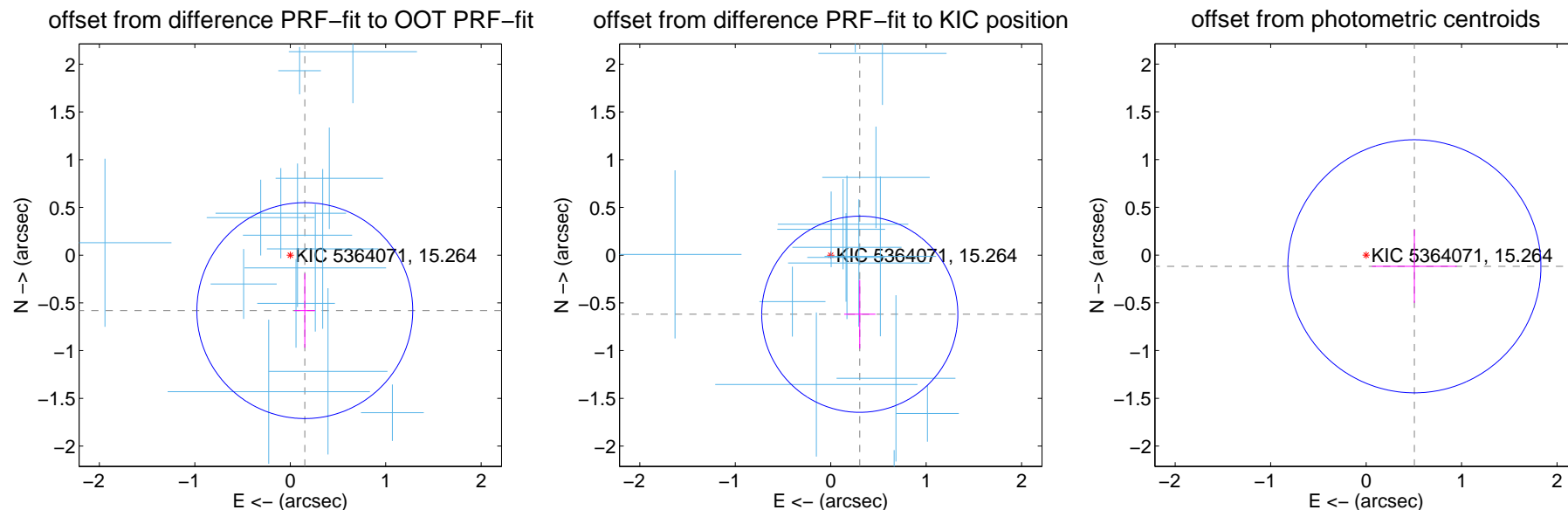
DV Centroid Data

Supplemental centroid analysis for 005364071-04. Kepler magnitude: 15.26. Transit SNR 22.85

There are 15 quarters with good PRF difference image offsets

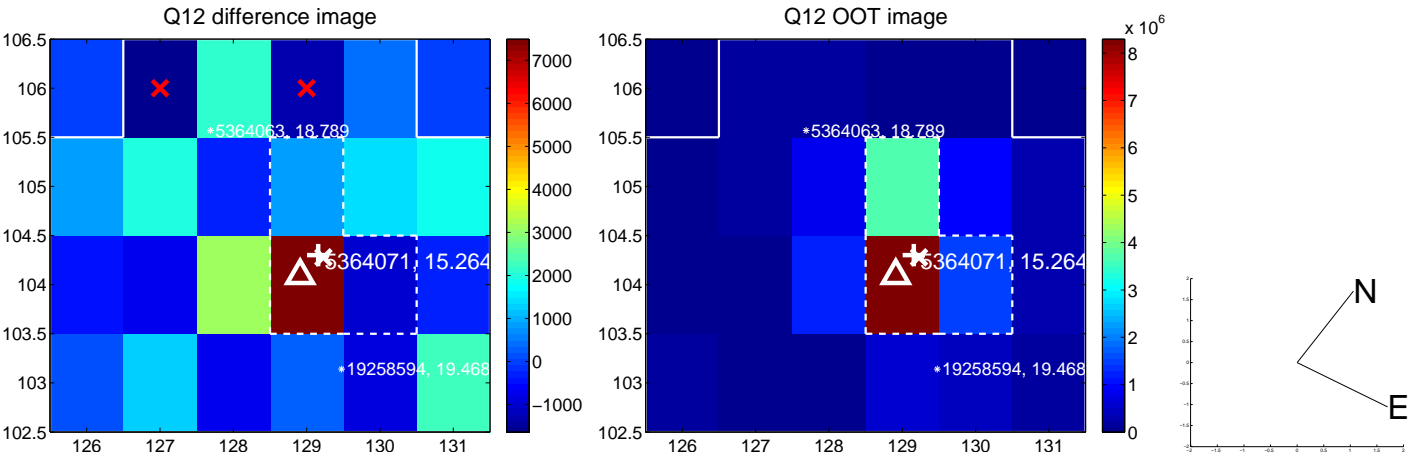
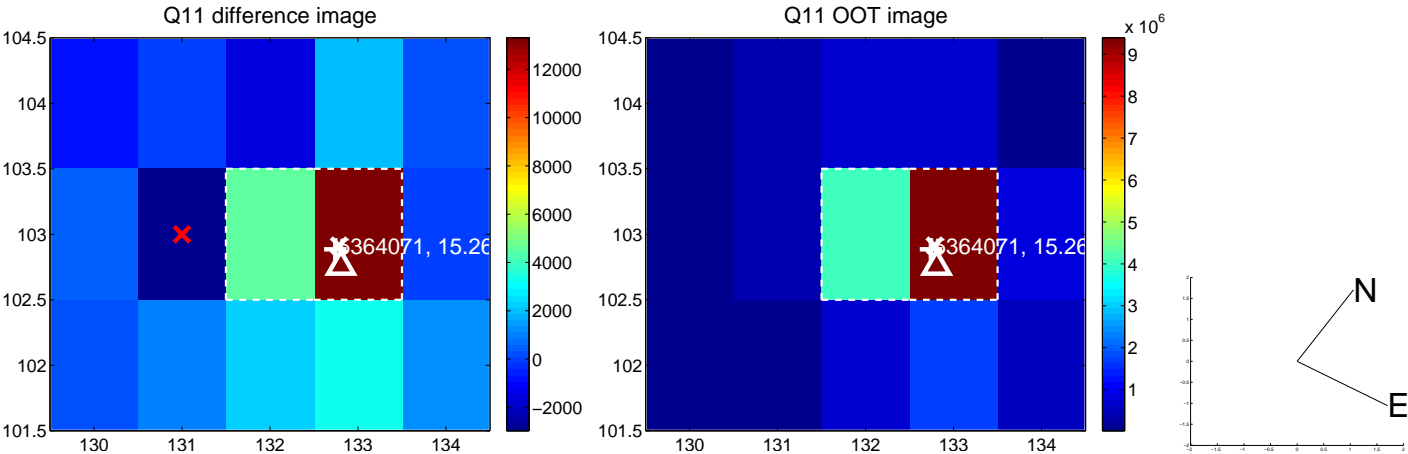
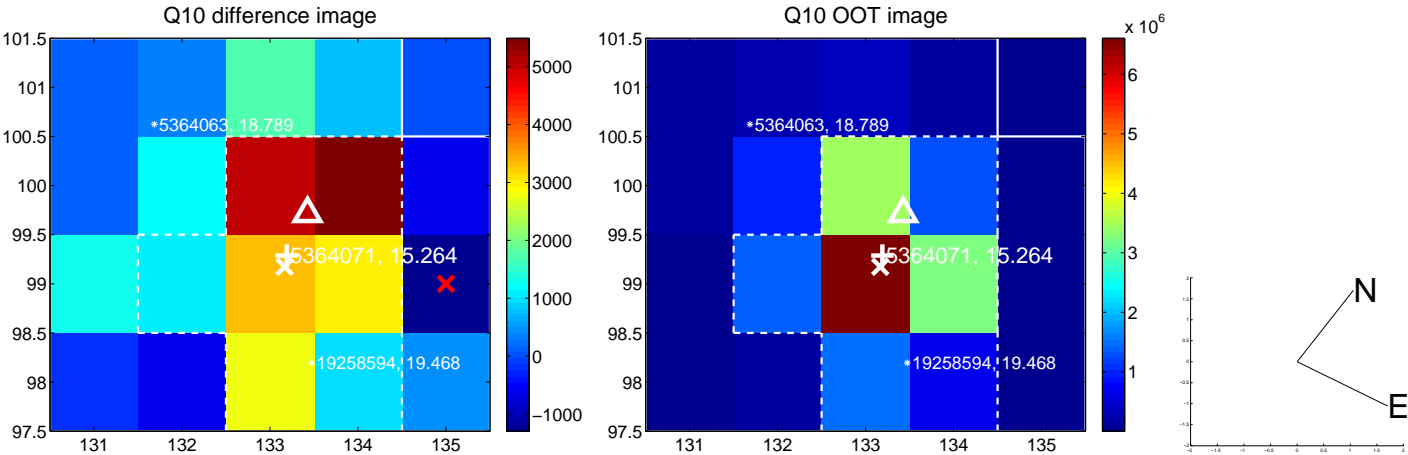
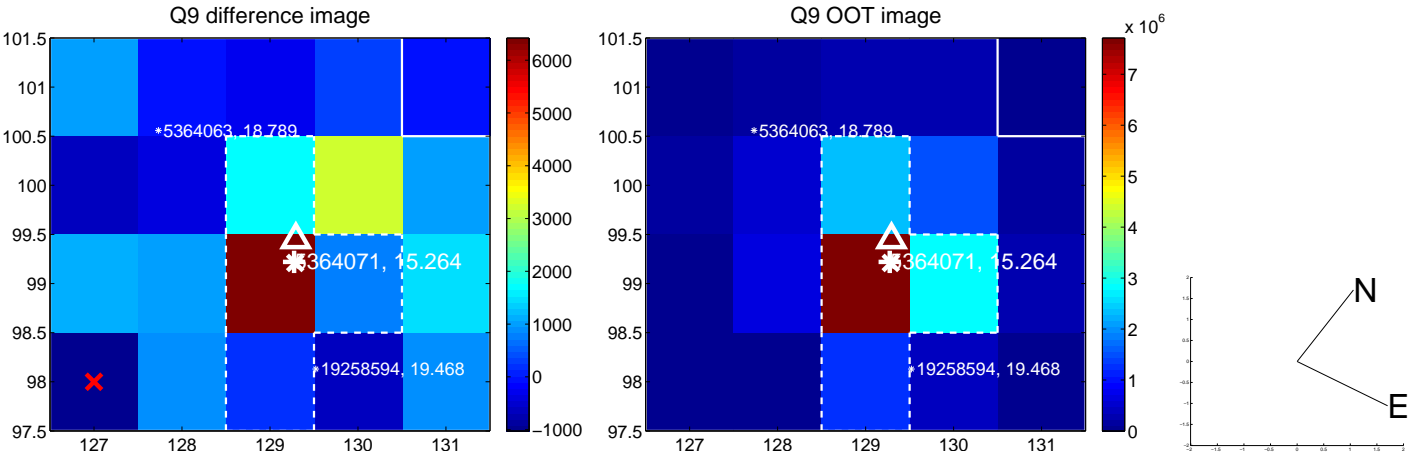
The direct PRF centroid is offset from the target star catalog position by about 0.11 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.600 ± 0.377	1.59	-0.152 ± 0.109	-0.581 ± 0.389
PRF-fit source offset from KIC position	0.690 ± 0.342	2.01	-0.305 ± 0.164	-0.619 ± 0.359
photometric centroid source offset	0.52 ± 0.44	1.17	-0.51 ± 0.44	-0.12 ± 0.38

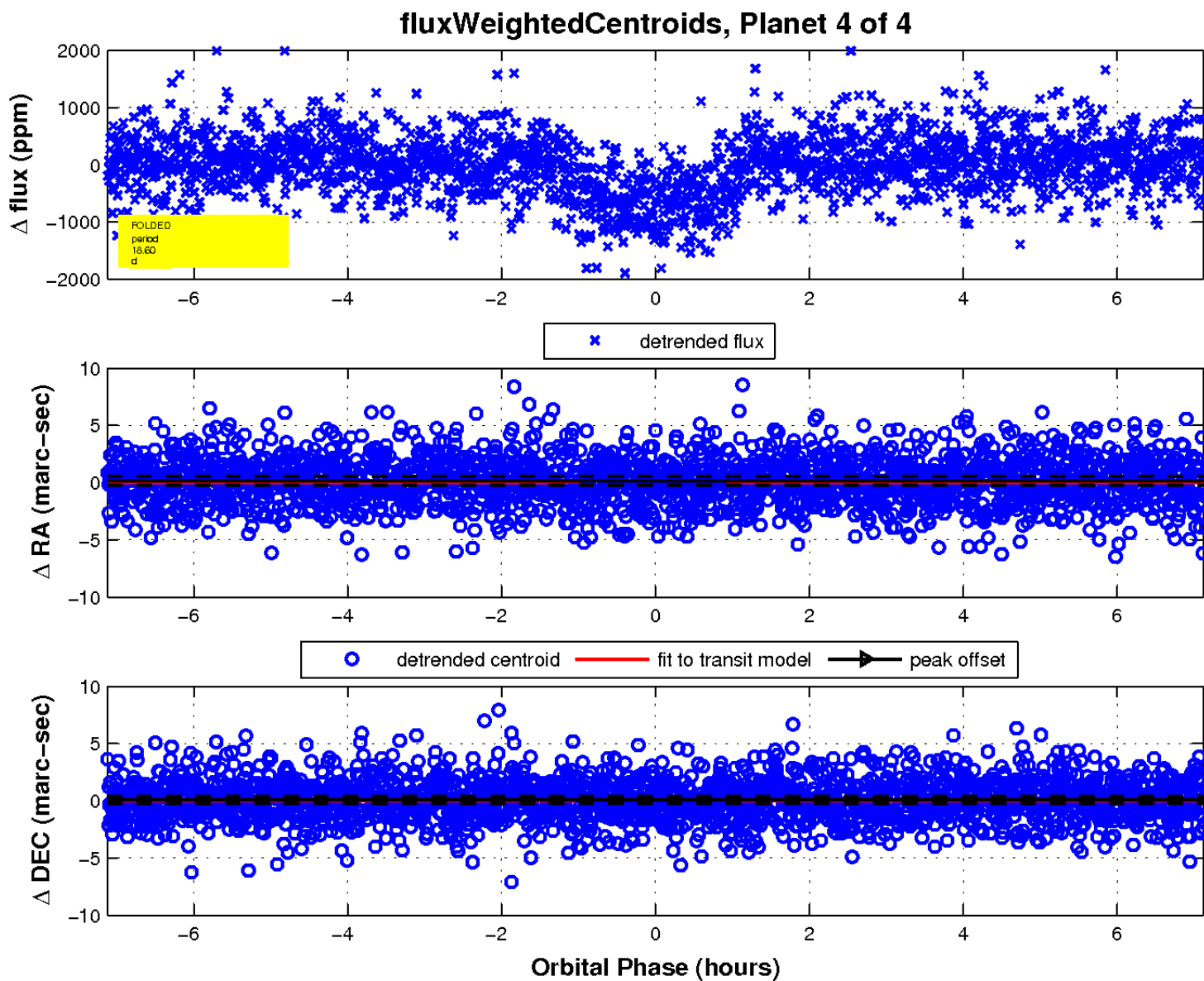
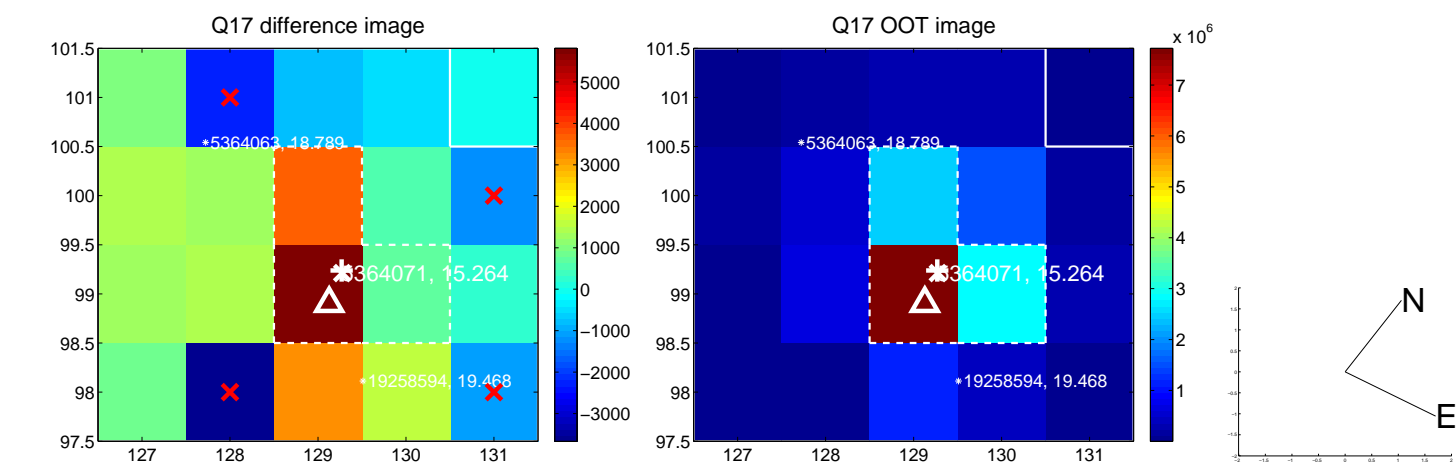


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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



UKIRT Image

Declination

