

KIC 009851845

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})
009851845-01	OBS	4696.01	1.081957	131.512411	27.4	3.962	7.6	6.9	0.82	5233	0.52	1283.03
009851845-02	OBS	No	690.205220	172.246843	244.3	6.139	11.6	2.9	0.82	5233	1.38	0.23
009851845-03	OBS	No	225.437807	145.025464	514.3	11.828	9.7	6.5	0.82	5233	3.76	1.04

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009851845-01	OBS	FP	0.00	0	0	0	1	EPHEM_MATCH
009851845-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009851845-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV

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.

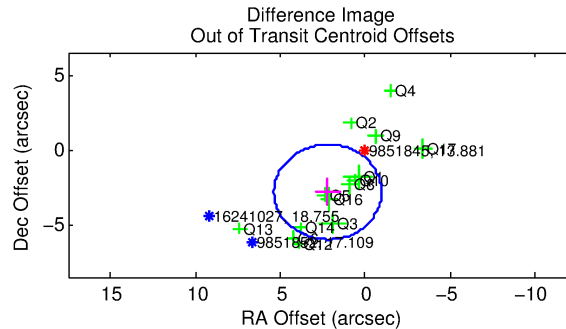
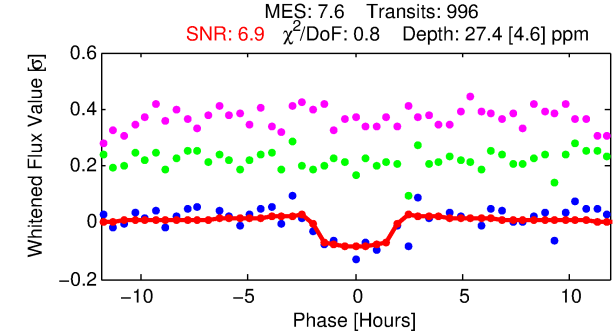
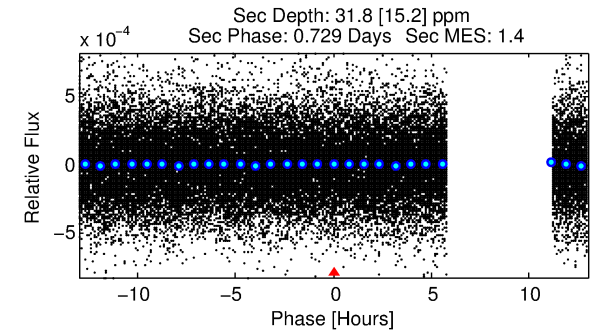
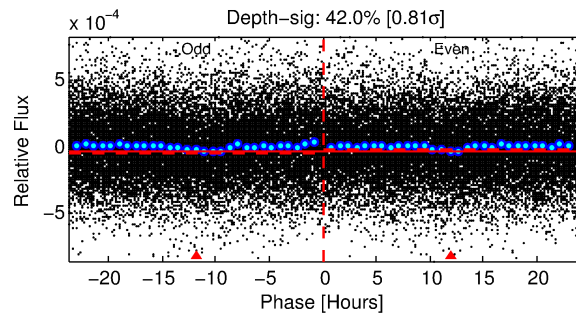
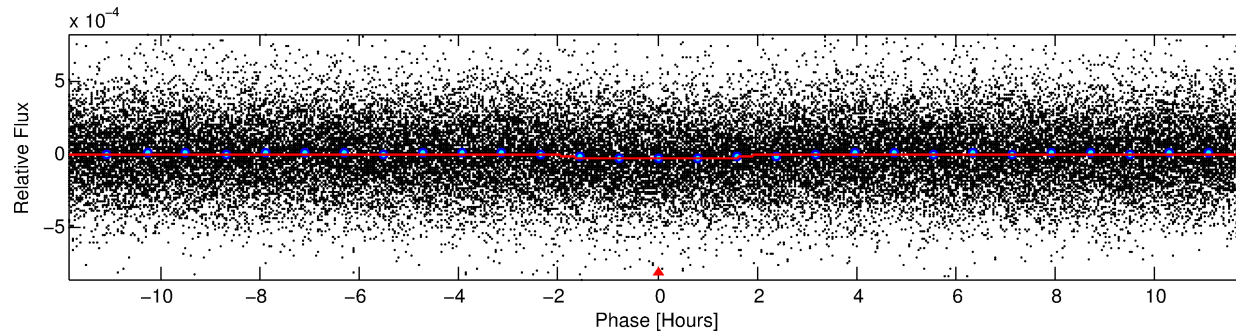
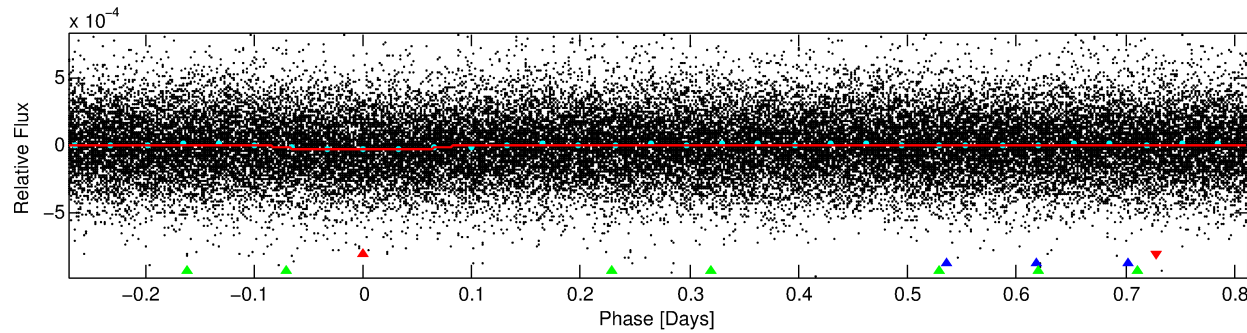
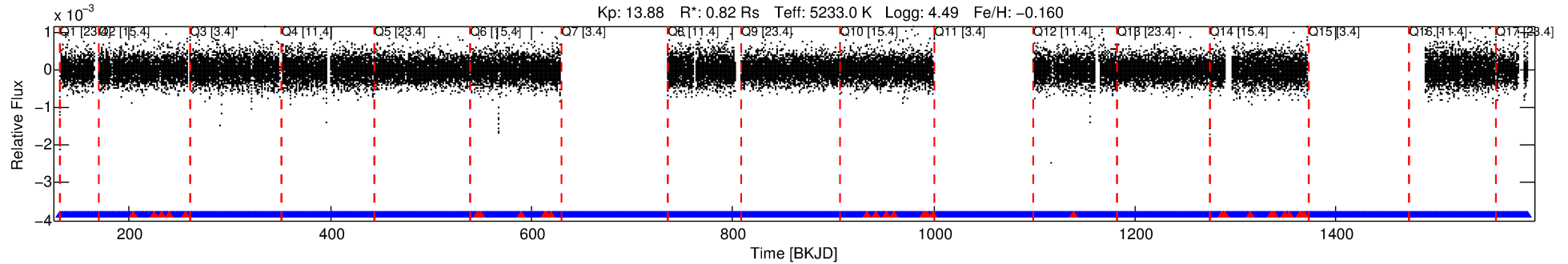
Ephemeris Match Information For 009851845-01

TCE (1)	KIC	Parent (2)	Parent KIC	$P_1:P_2$	Dist ($''$)	Δ Row	Δ Col	m_2	m_1	D_2/D_1	Mechanism	Flag	σ_P	σ_T
009851845-01	9851845	009851944-pri	9851944	1:2	113.9	7	27	11.25	13.88	7685.20	Direct-PRF	0	0.98	0.69

Notes: $P_1:P_2$ is the period ratio. Dist is the distance in arcseconds. Δ Row and Δ Col are the number of pixels apart in row and column. m_2 and m_1 are the magnitudes of the parent and child. D_2/D_1 is the parent's transit depth divided by the child's. σ_P and σ_T are the significance of the match in period and epoch. For a match to be considered significant $\sigma_P < 5.0$ and $\sigma_T < 5.0$. Matches which have σ_P and σ_T very close to this cutoff should receive extra scrutiny, especially if the period ratio is very large.

DV One-Page Summary

KIC: 9851845 Candidate: 1 of 3 Period: 1.082 d
KOI: K04696.01 Corr: 0.921



DV Fit Results:

Period = 1.08196 [0.00002] d
Epoch = 131.5124 [0.0055] BKJD
Rp/R* = 0.0058 [0.0037]
a/R* = 1.33 [1.63]
b = 0.90 [0.62]
Seff = 1283.03 [263.38]
Teq = 1526 [78] K
Rp = 0.52 [0.34] Re
a = 0.0189 [0.0020] AU
Ag = 23.05 [32.05] [0.69 σ]
Teffp = 5170 [1791] K [2.03 σ]

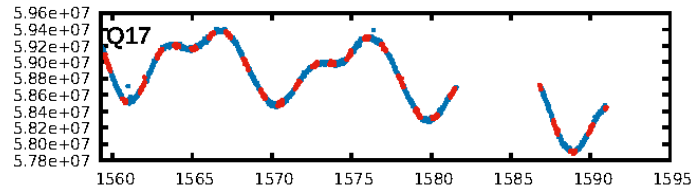
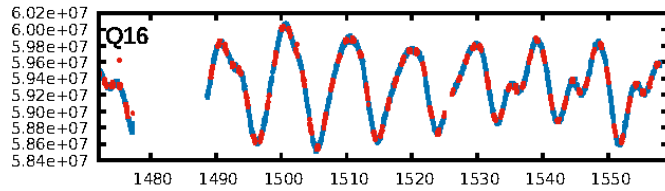
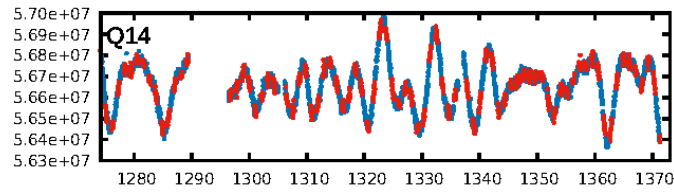
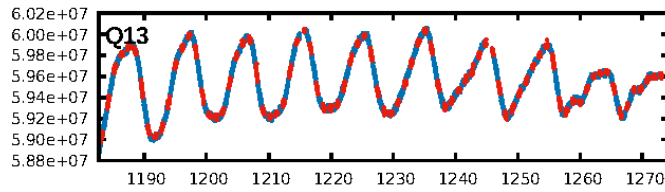
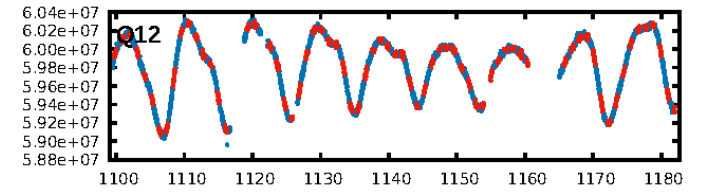
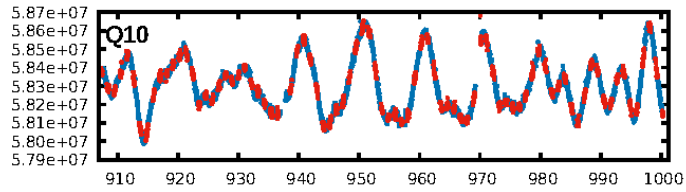
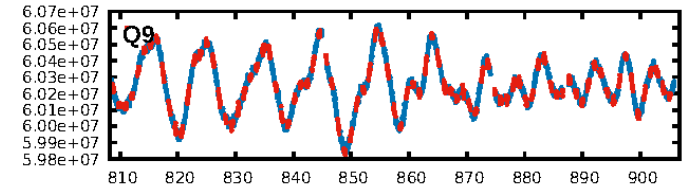
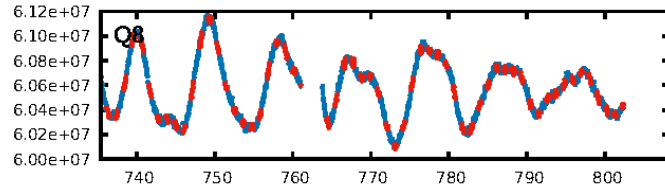
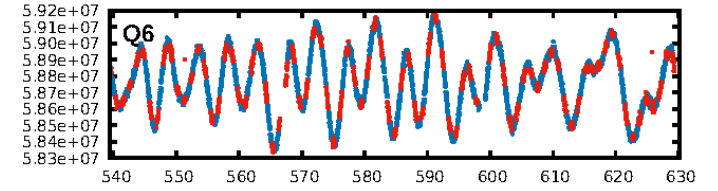
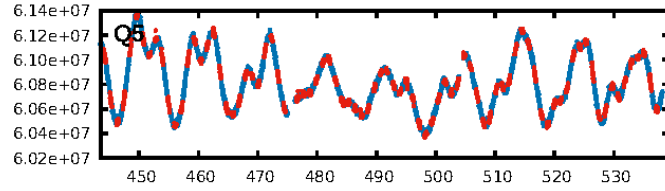
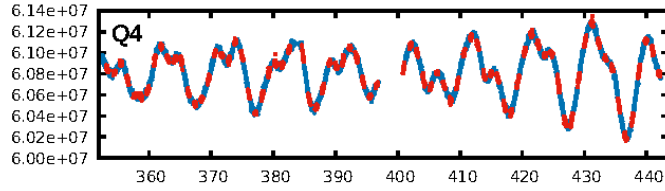
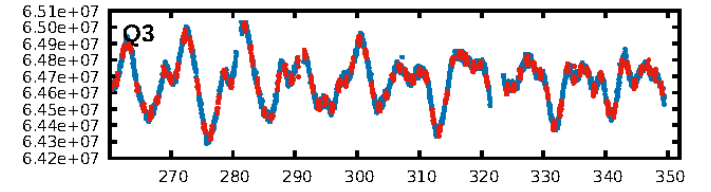
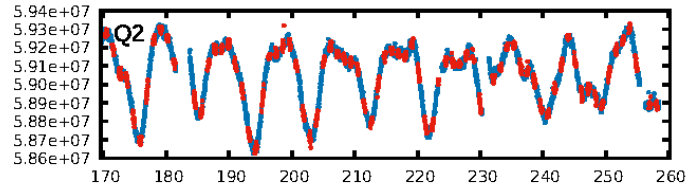
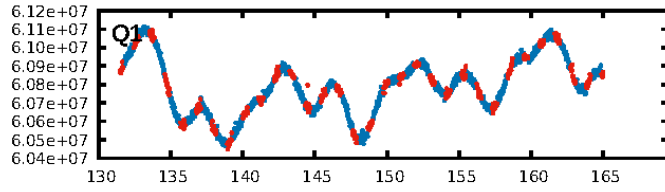
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [431.68 σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 4.62e-14
RollingBand-fgt: 0.97 [909/938]
GhostDiagnostic-chr: 0.3975
Centroid-sig: 0.7%
Centroid-so: 2.637 arcsec [1.82 σ]
OotOffset-rm: 3.585 arcsec [3.39 σ]
KicOffset-rm: 3.598 arcsec [3.61 σ]
OotOffset-st: 4/1/4/5 [14]
KicOffset-st: 4/1/4/5 [14]
DiffImageQuality-fgm: 0.07 [1/14]
DiffImageOverlap-fno: 1.00 [14/14]

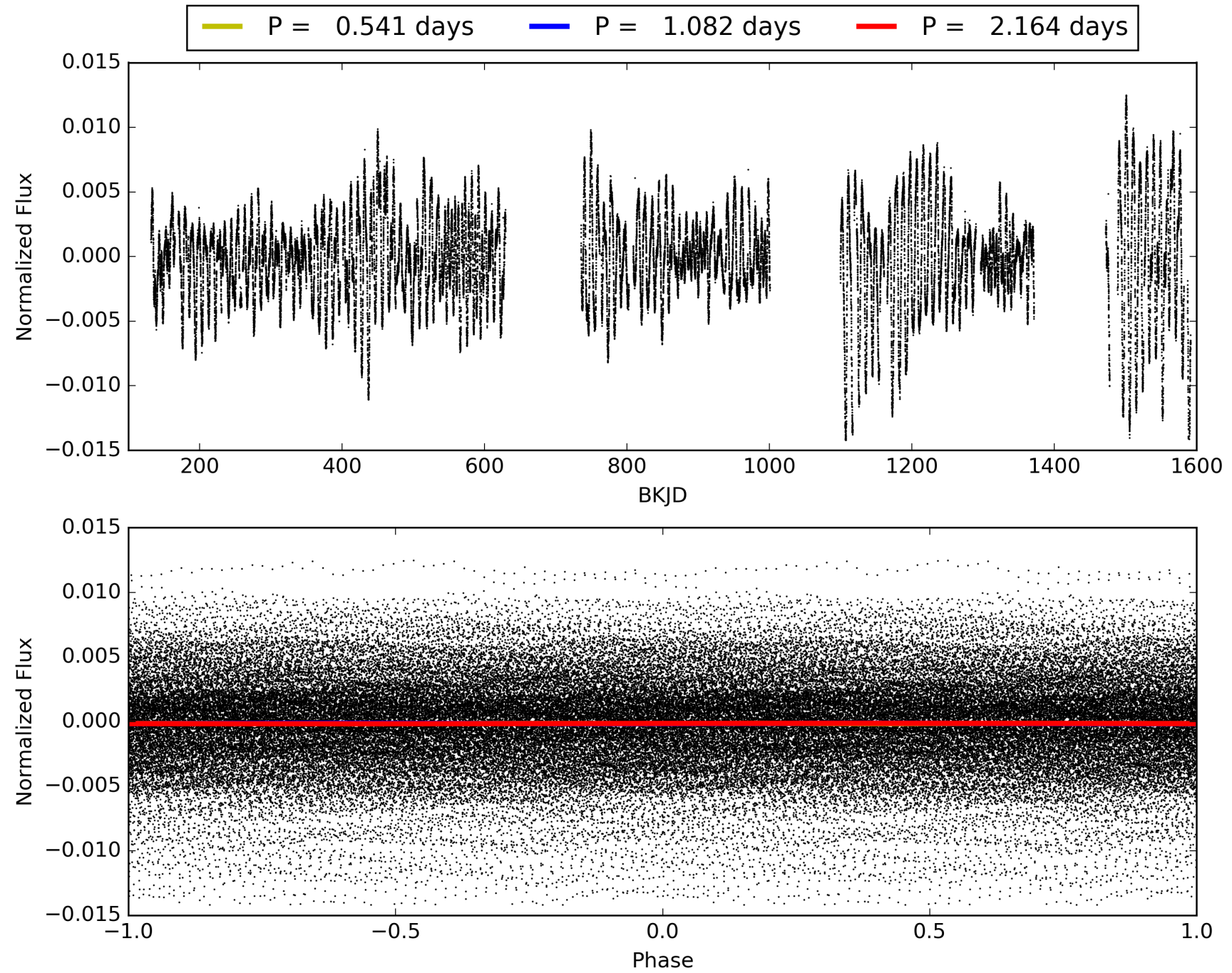
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 009851845-01, PDC Light Curves

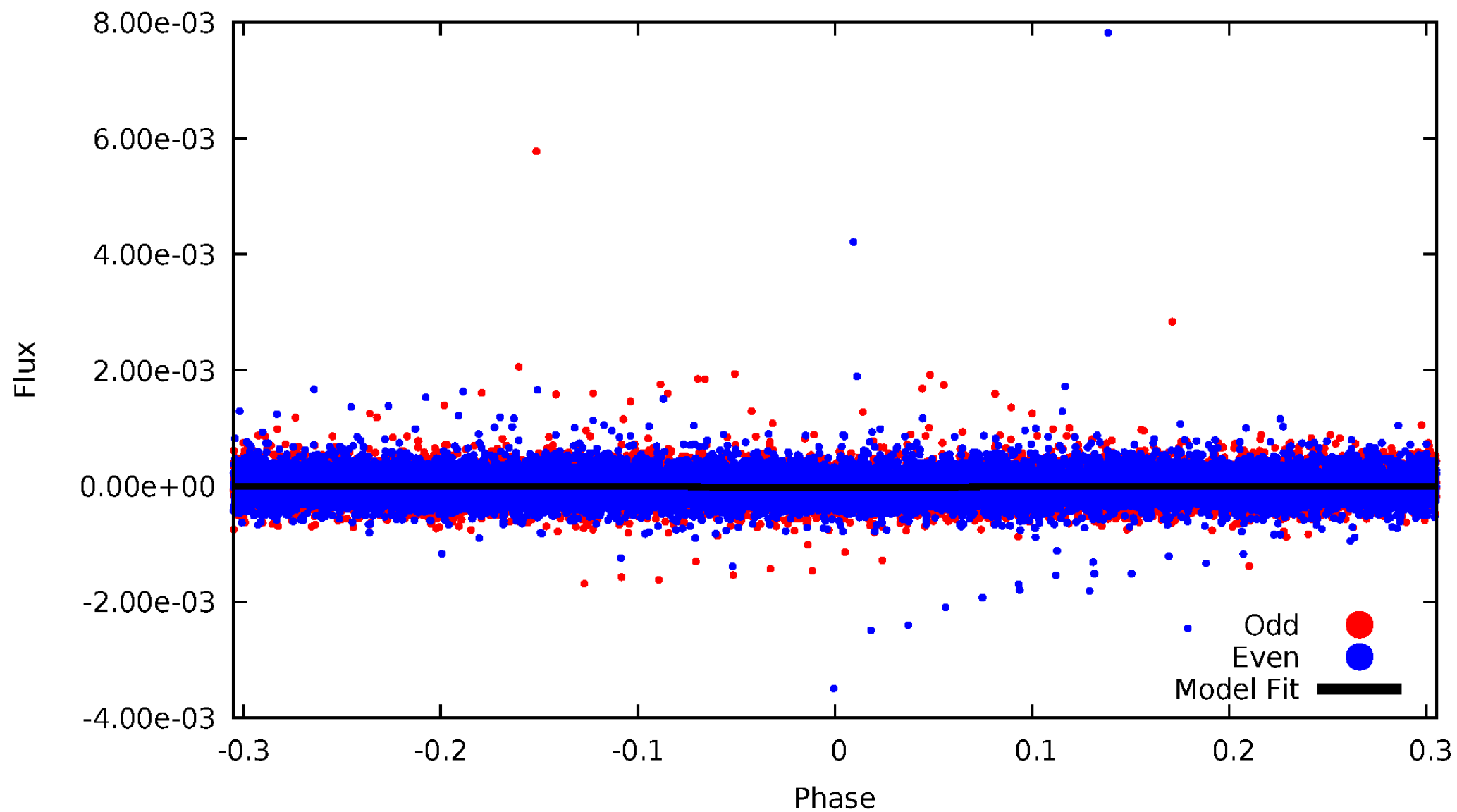


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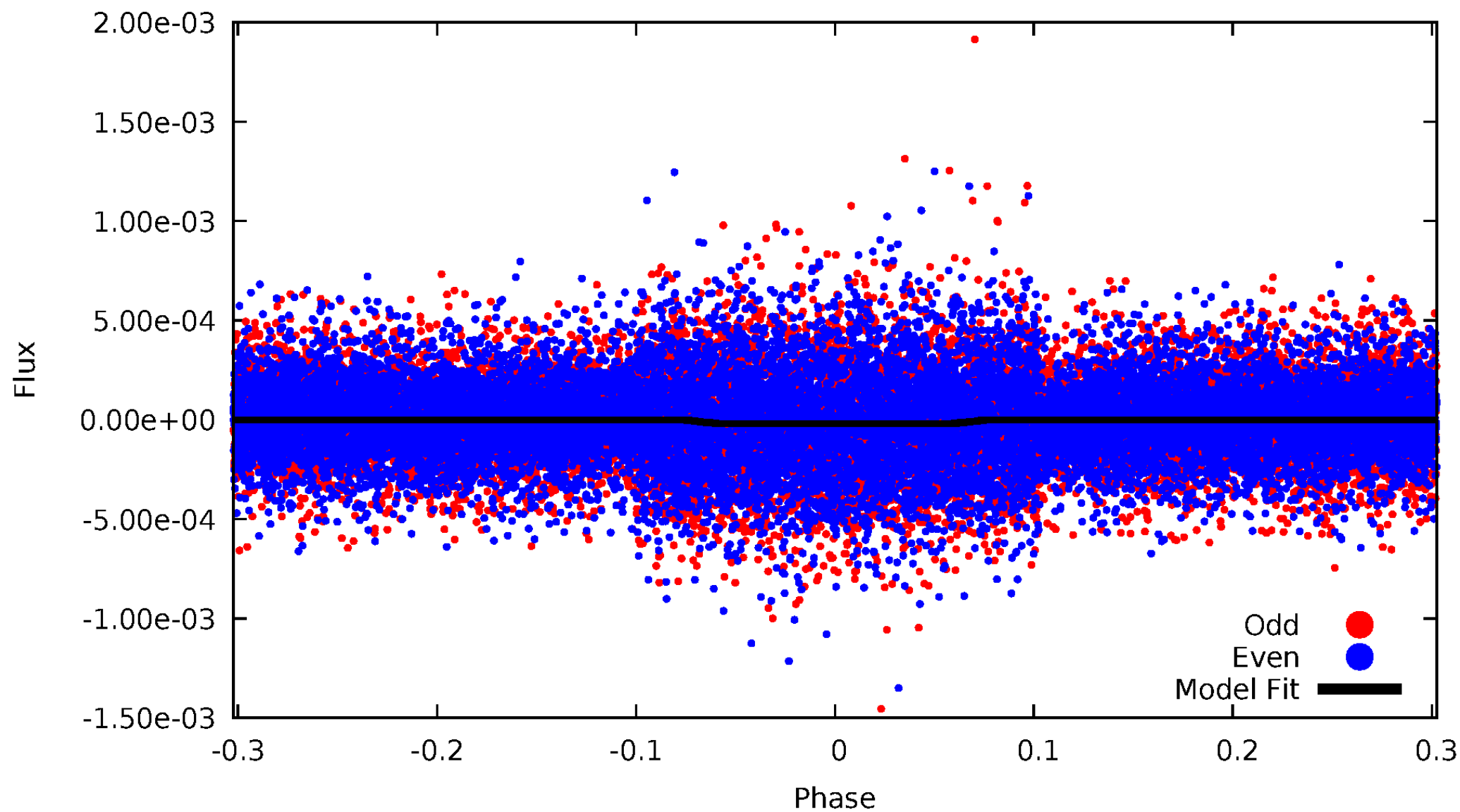
DV Odd/Even

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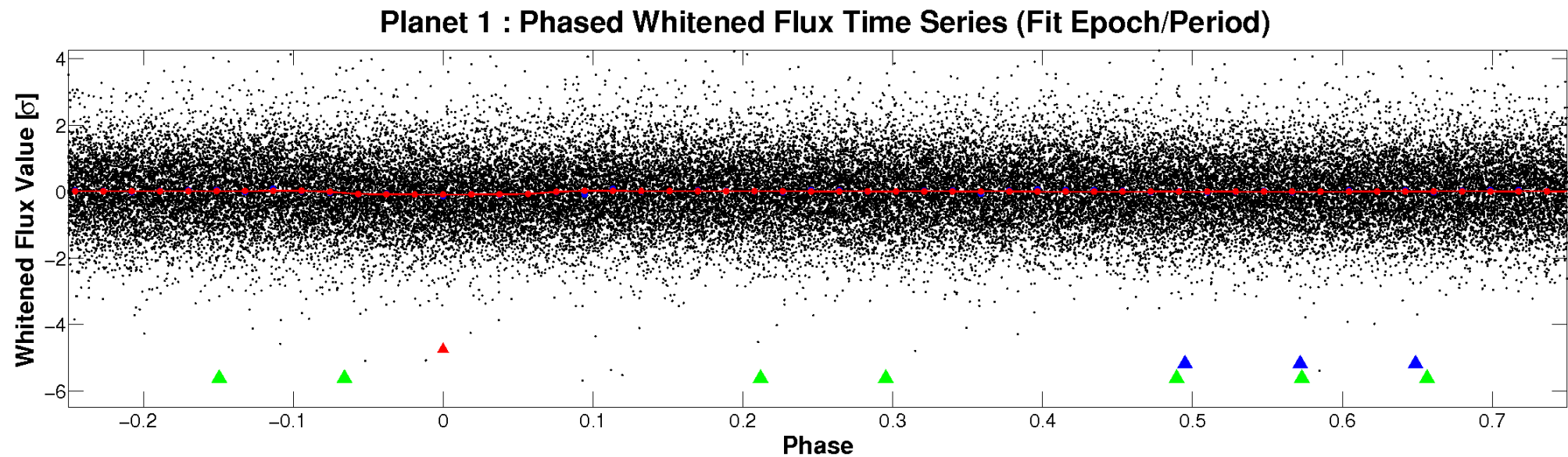
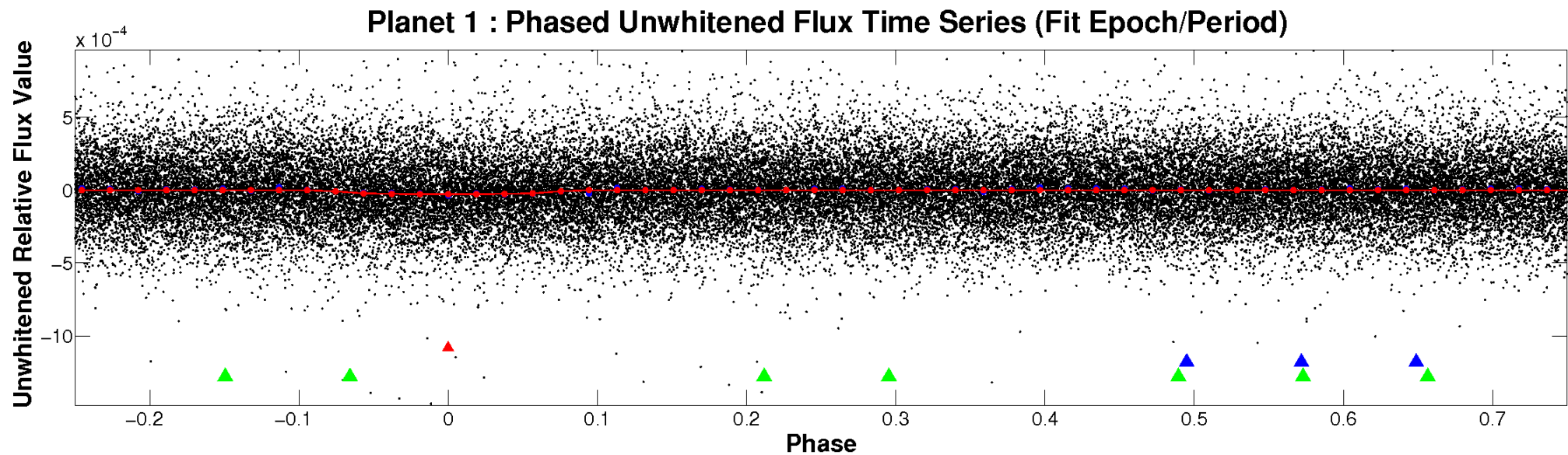


ALT Odd/Even

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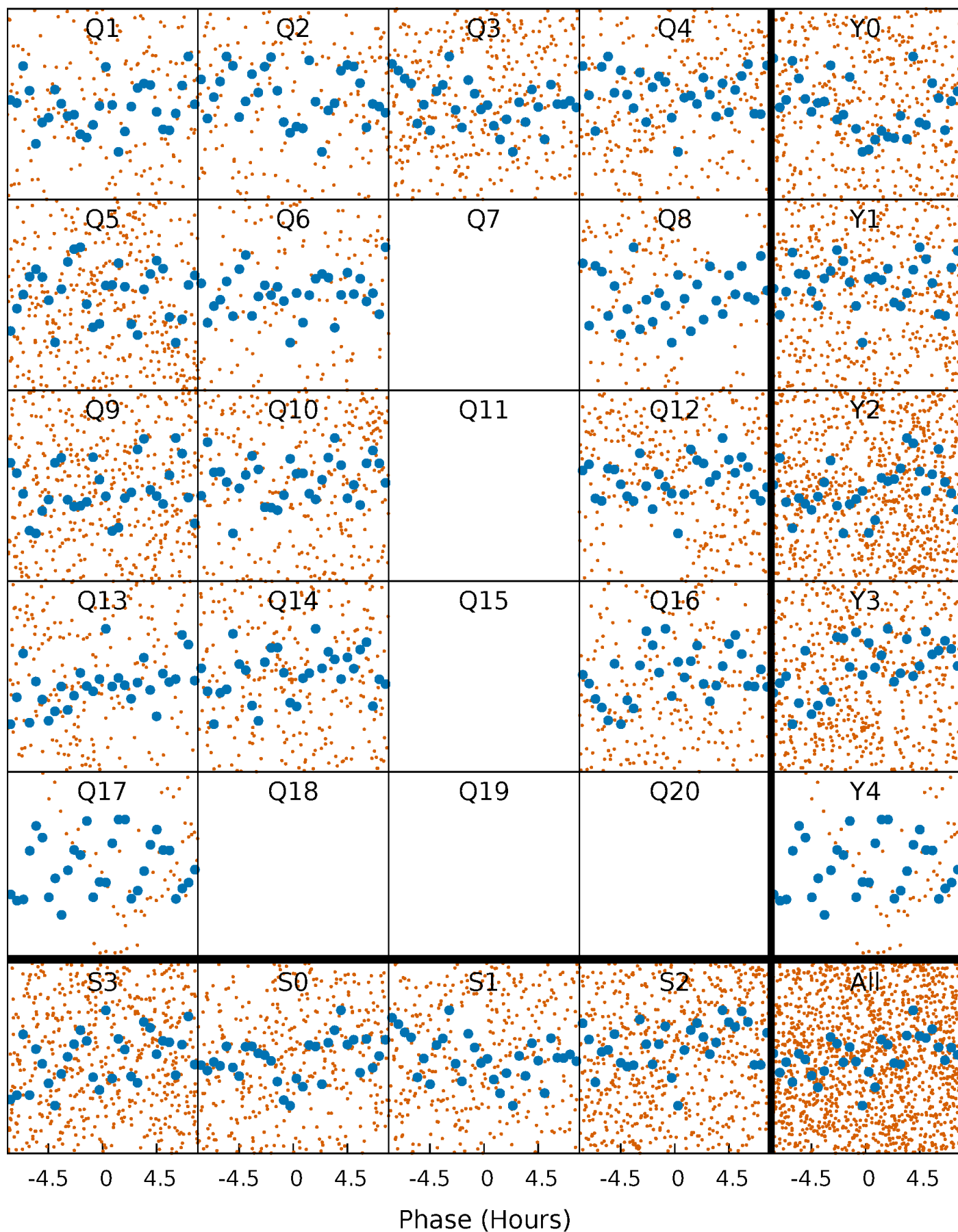


Non-Whitened Vs. Whitened Light Curve



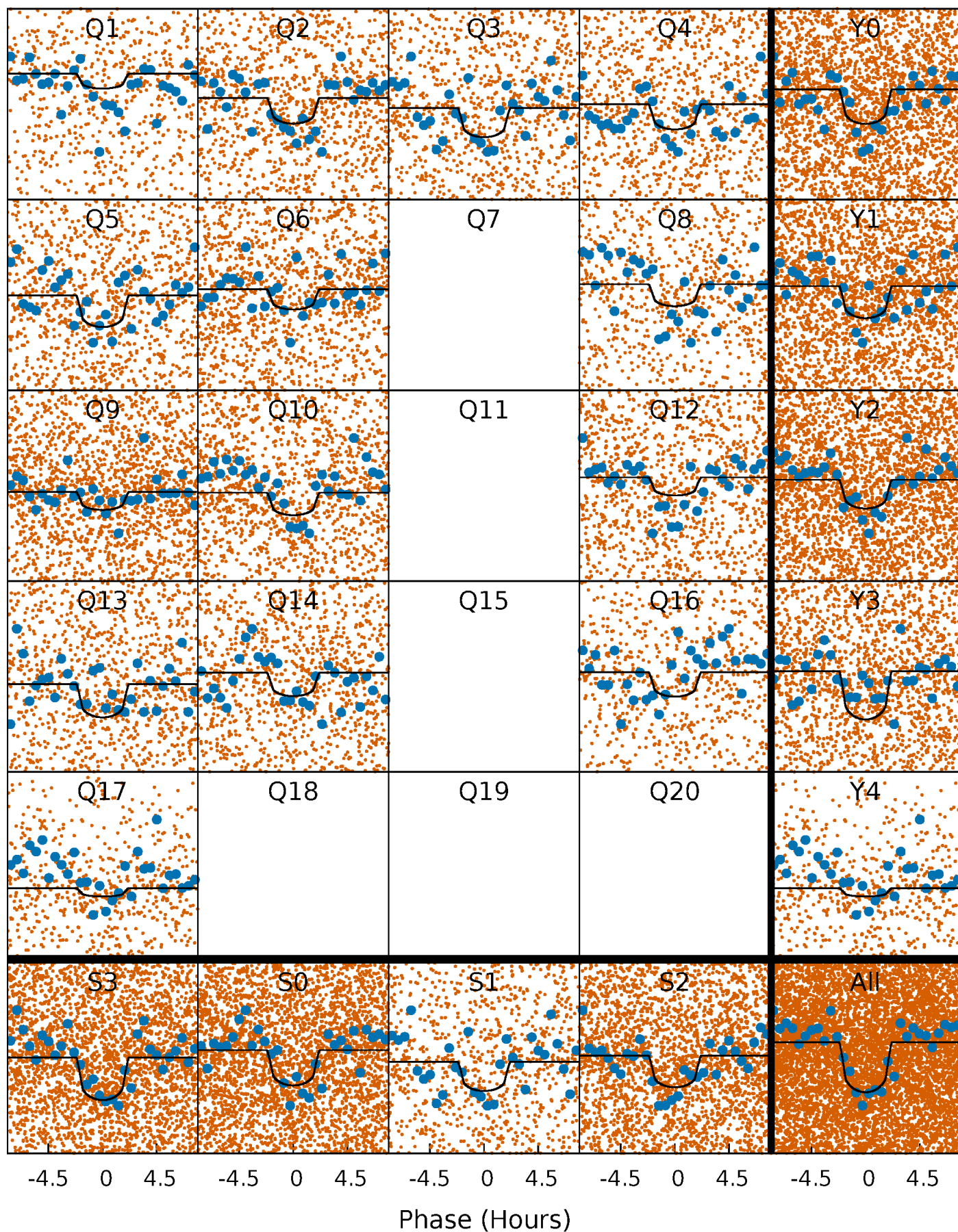
PDC Quarter-Phased Transit Curves

TCE 009851845-01 P= 1.081957 Days $T_0=131.512411$ (BKJD)



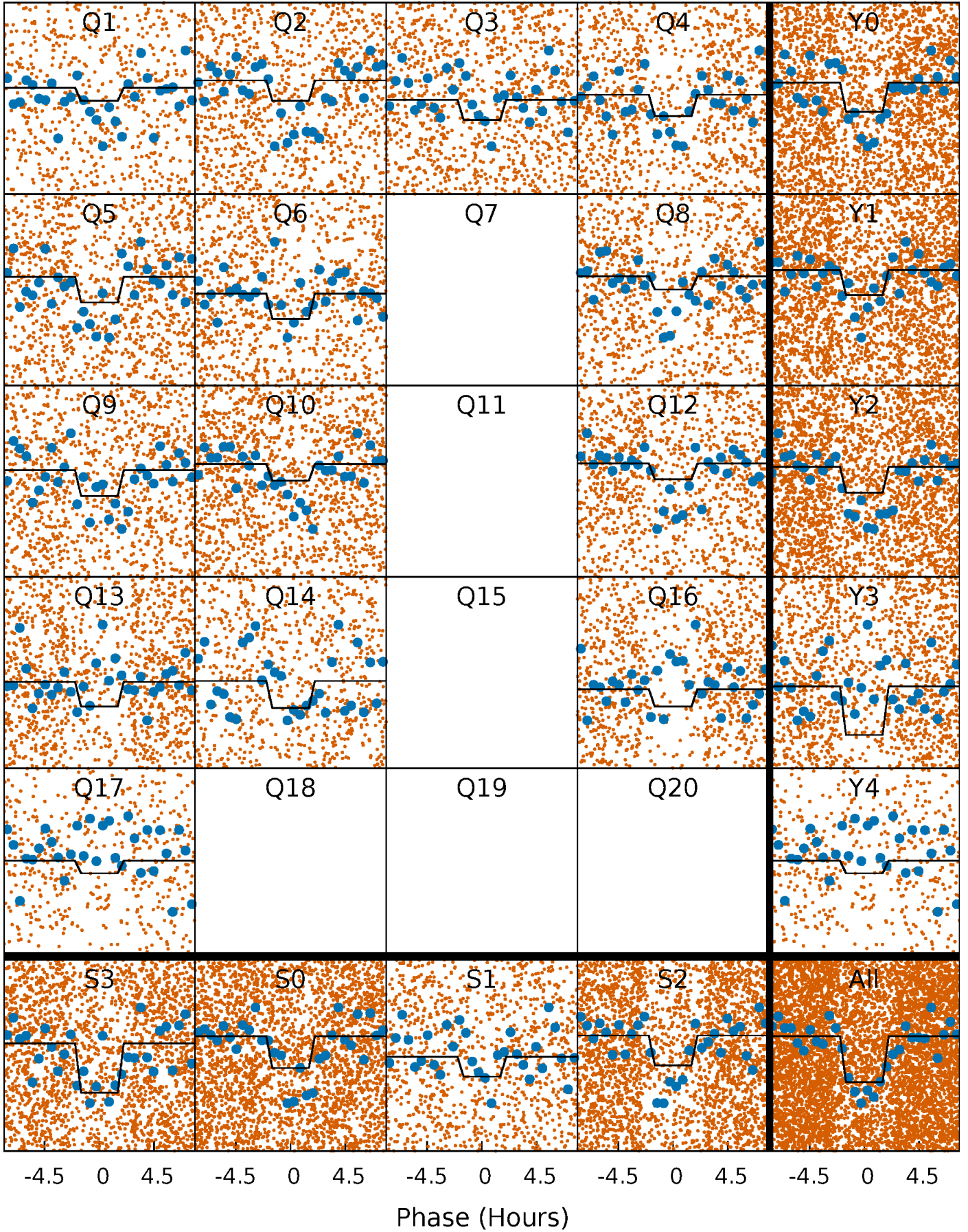
DV Quarter-Phased Transit Curves

TCE 009851845-01 P= 1.081957 Days $T_0=131.512411$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

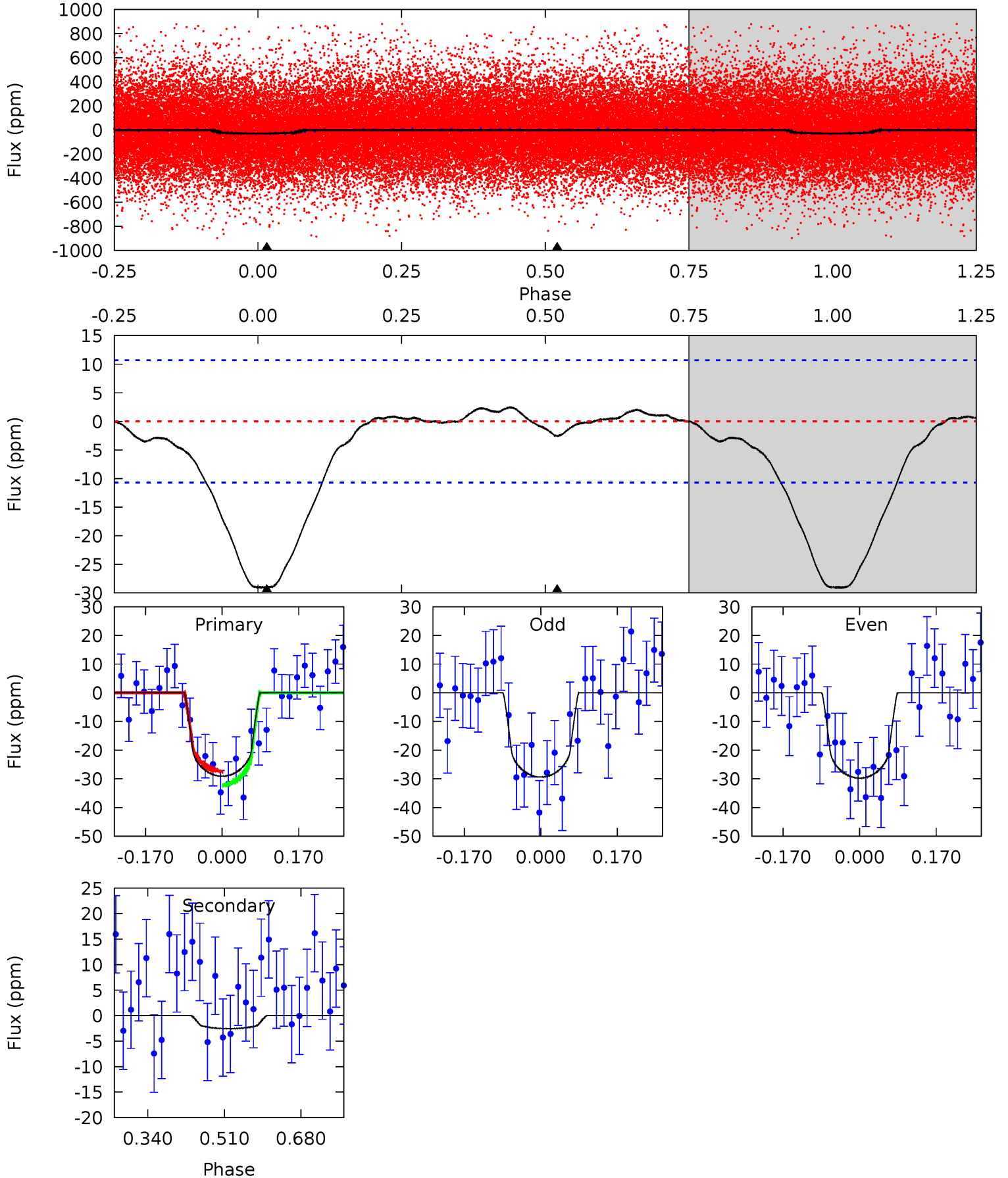
TCE 009851845-01 P= 1.081936 Days $T_0=131.510272$ (BKJD)



DV Model-Shift Uniqueness Test

009851845-01, P = 1.081957 Days, E = 130.430454 Days

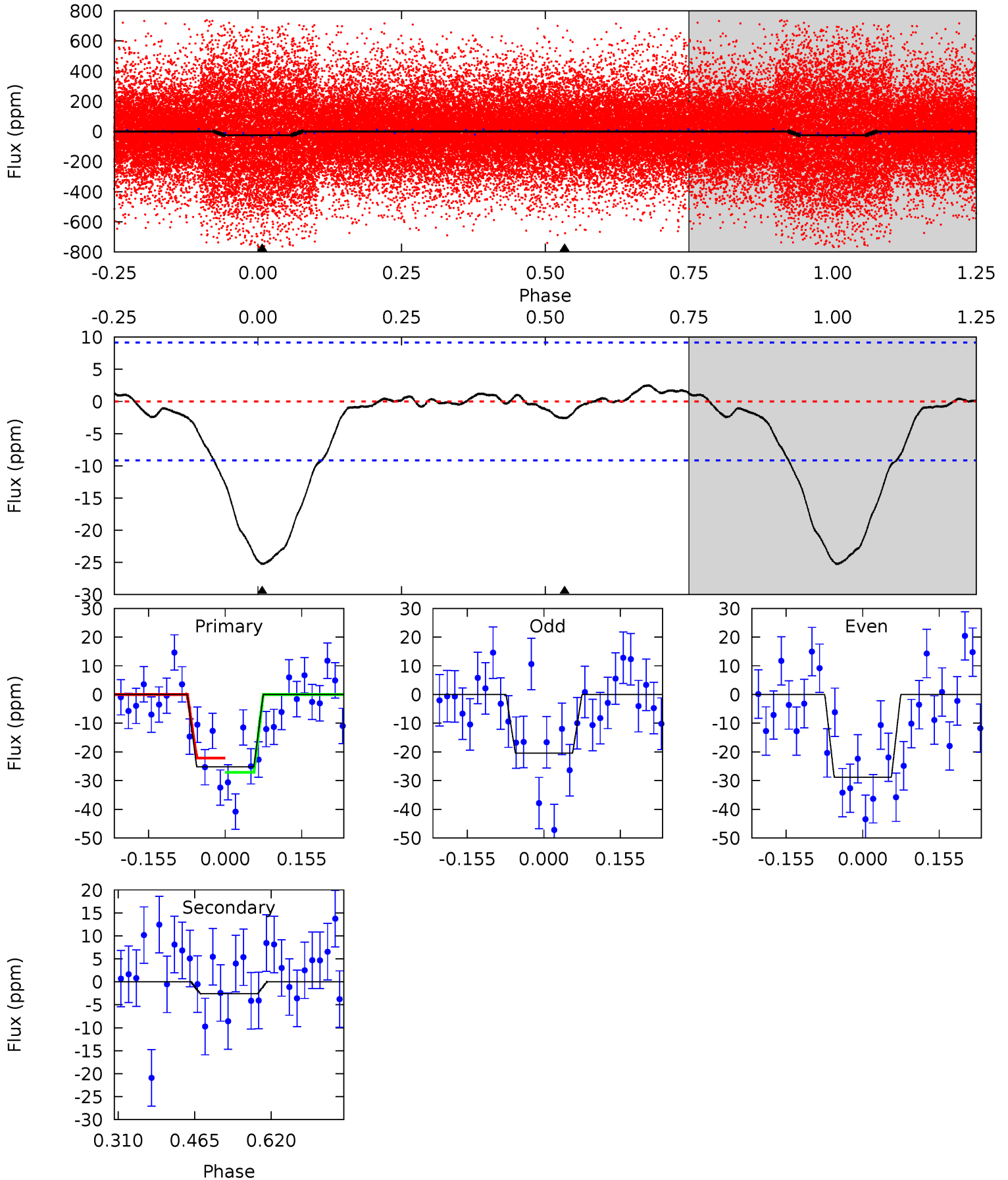
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.1	1.06	0	0	4.45	1.37	0.59	12.1	12.1	1.06	1.06	0.08	0.99	0.08	0.99



Alt Model-Shift Uniqueness Test

009851845-01, P = 1.081936 Days, E = 131.510272 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.3	1.27	0	0	4.47	1.42	0.51	12.3	12.3	1.27	1.27	2.07	1.02	0.09	1.21



Stellar Parameters For KIC 009851845

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5233^{+158}_{-142}	$4.489^{+0.095}_{-0.085}$	$-0.160^{+0.300}_{-0.300}$	$0.824^{+0.098}_{-0.098}$	$0.764^{+0.103}_{-0.060}$	$1.925^{+0.863}_{-0.504}$
	+3%/-3%	+2%/-2%	+188%/-188%	+12%/-12%	+13%/-8%	+45%/-26%
Source	PHO1	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 009851845-01 / KOI 4696.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-3 ± 2	$0.54^{+0.34}_{-0.29}$	2139^{+96}_{-88}	3070^{+1070}_{-5568}	$1.493^{+6.313}_{-1.440}$
Alt.	-3 ± 2	$0.45^{+0.34}_{-0.25}$	2136^{+98}_{-100}	3291^{+1330}_{-1289}	$2.130^{+11.180}_{-1.797}$

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

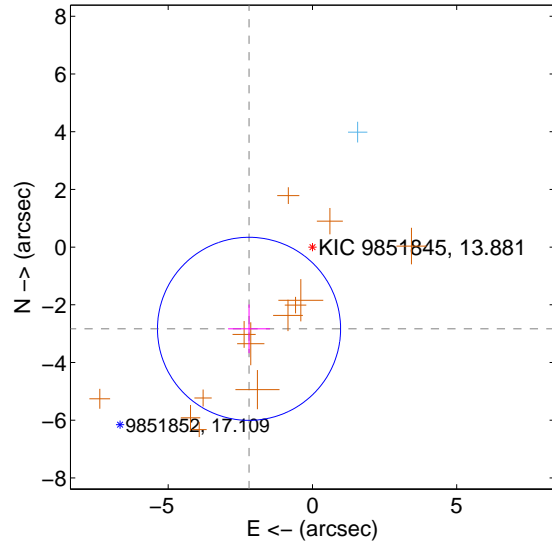
Supplemental centroid analysis for 009851845-01. Kepler magnitude: 13.88. Transit SNR 6.90

There are 1 quarters with good PRF difference image offsets

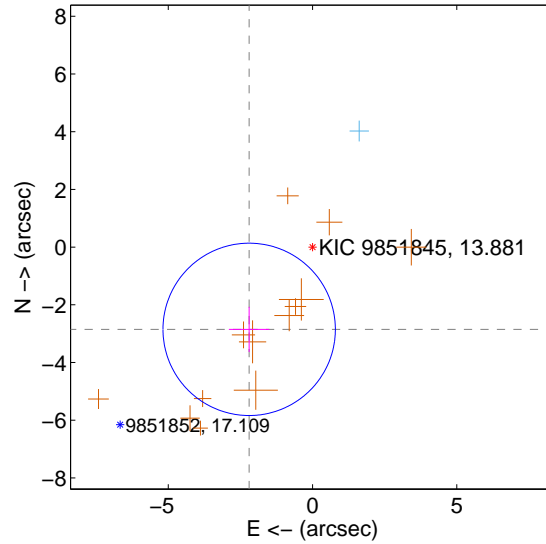
The direct PRF centroid is offset from the target star catalog position by about 0.04 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	3.585 ± 1.058	3.39	2.197 ± 0.726	-2.833 ± 0.840
PRF-fit source offset from KIC position	3.598 ± 0.996	3.61	2.196 ± 0.702	-2.851 ± 0.782
photometric centroid source offset	2.64 ± 1.45	1.82	-1.32 ± 1.51	-2.28 ± 1.43

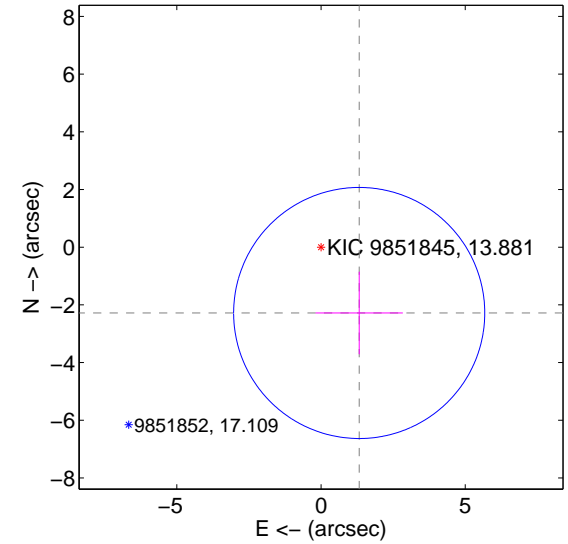
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

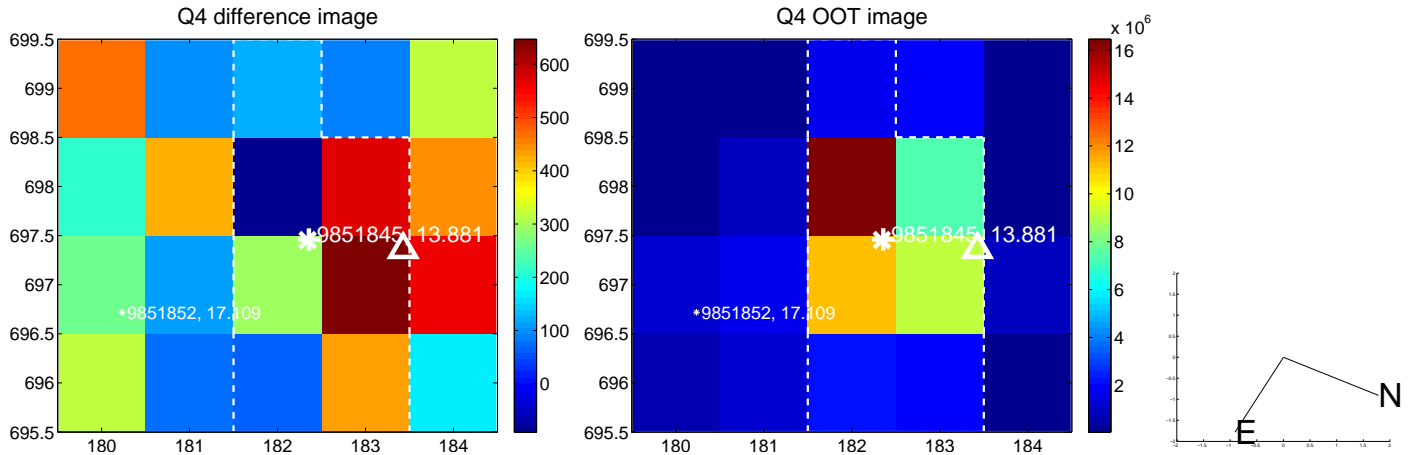
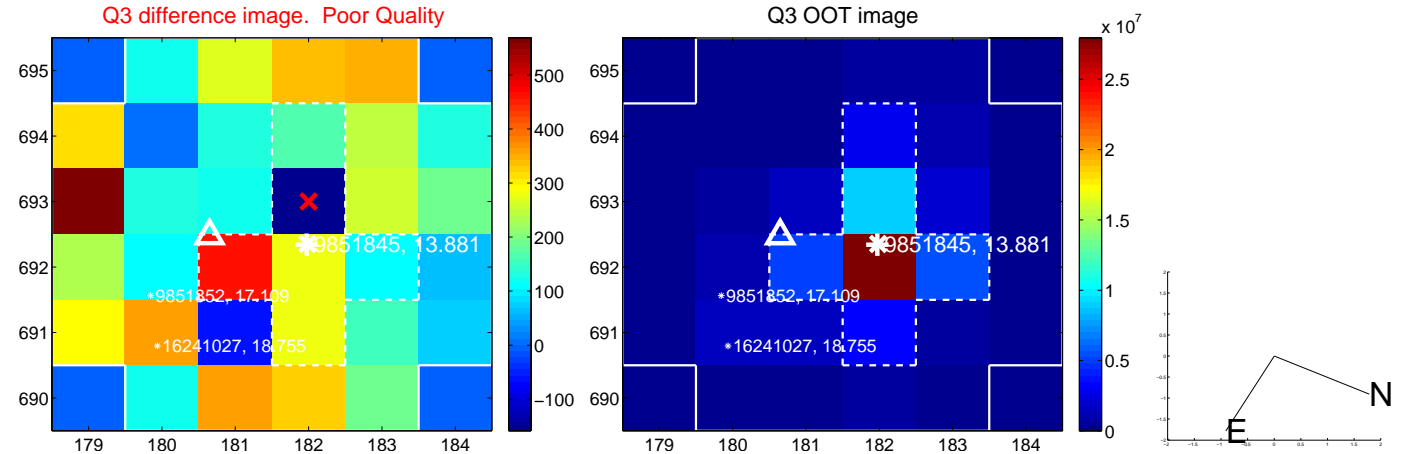
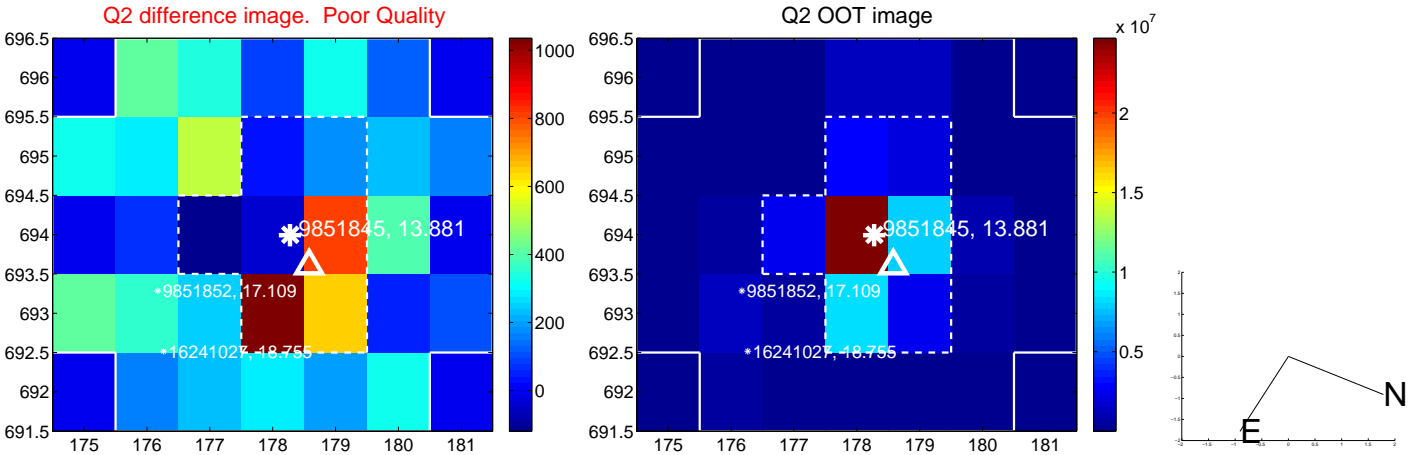
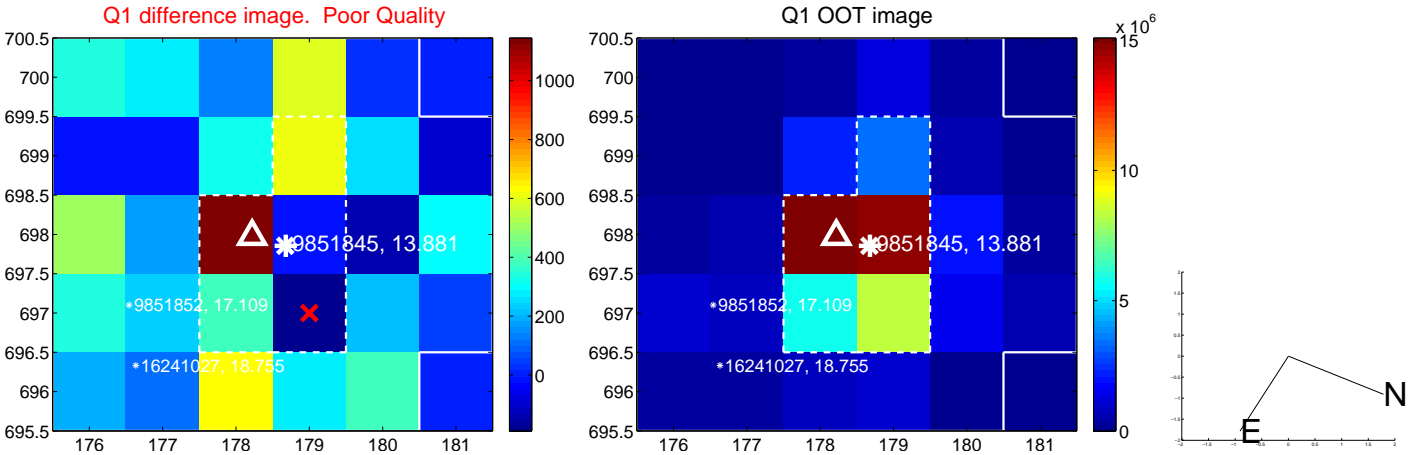


offset from photometric centroids

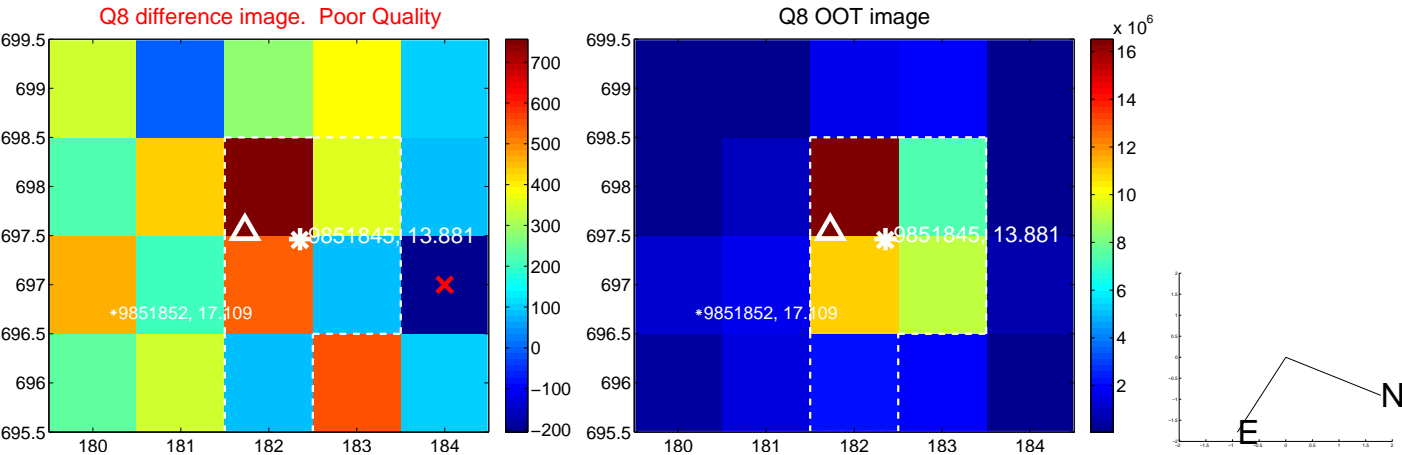
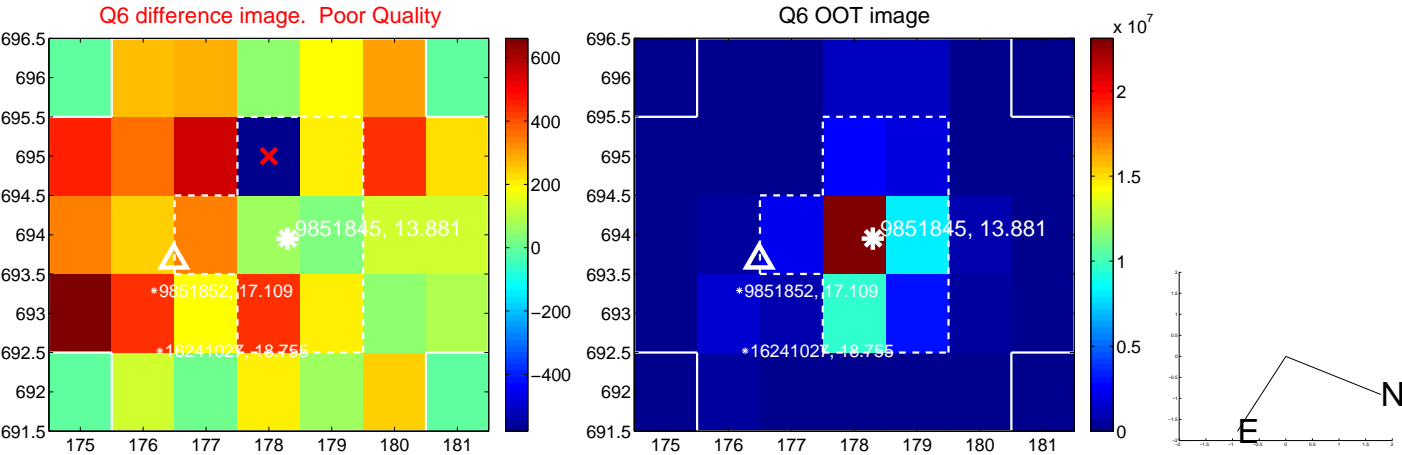
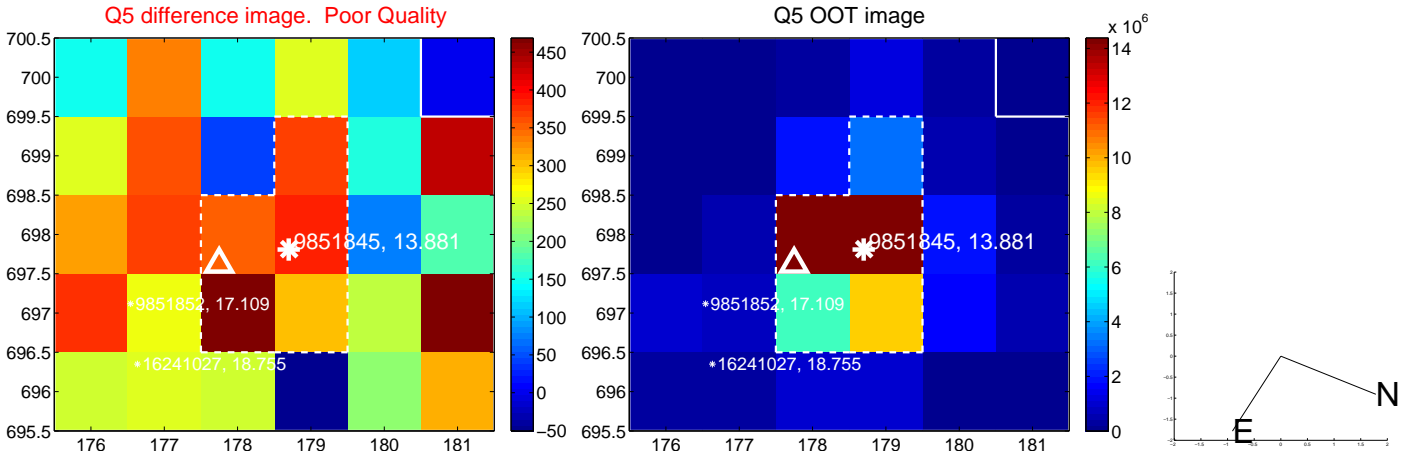


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

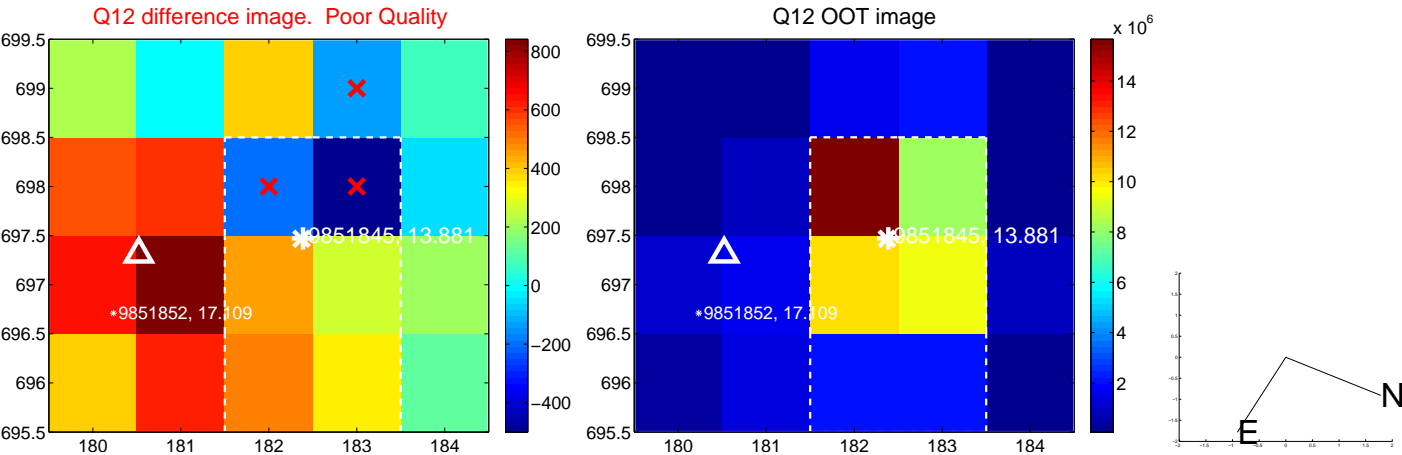
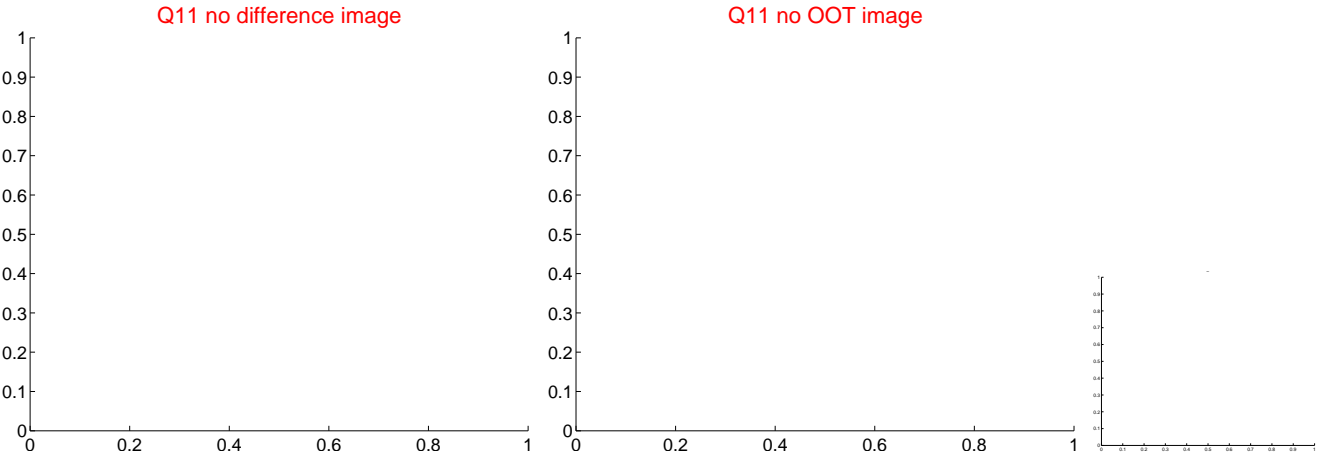
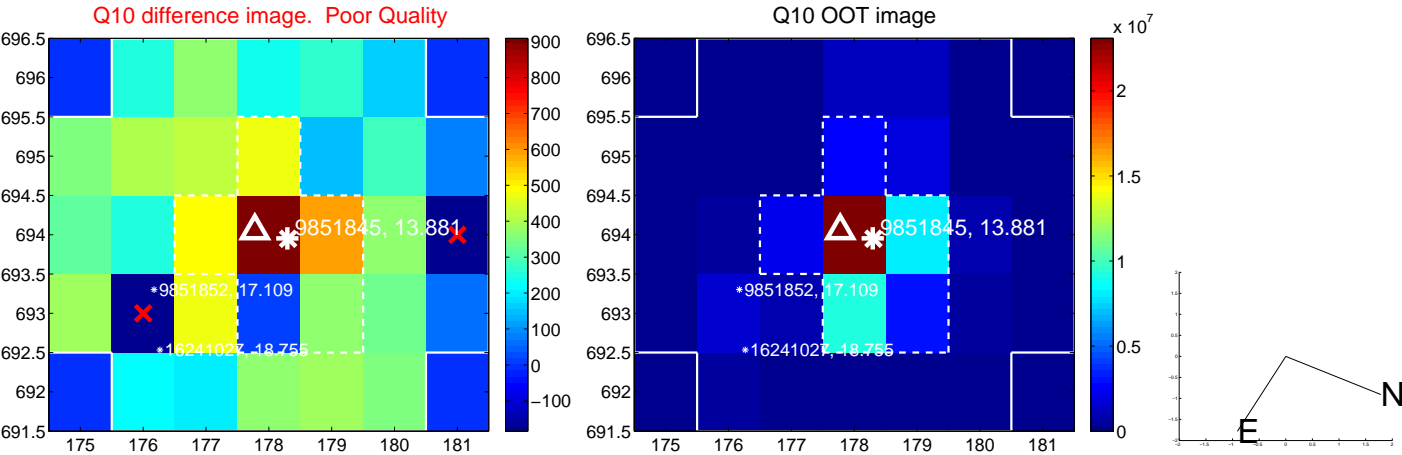
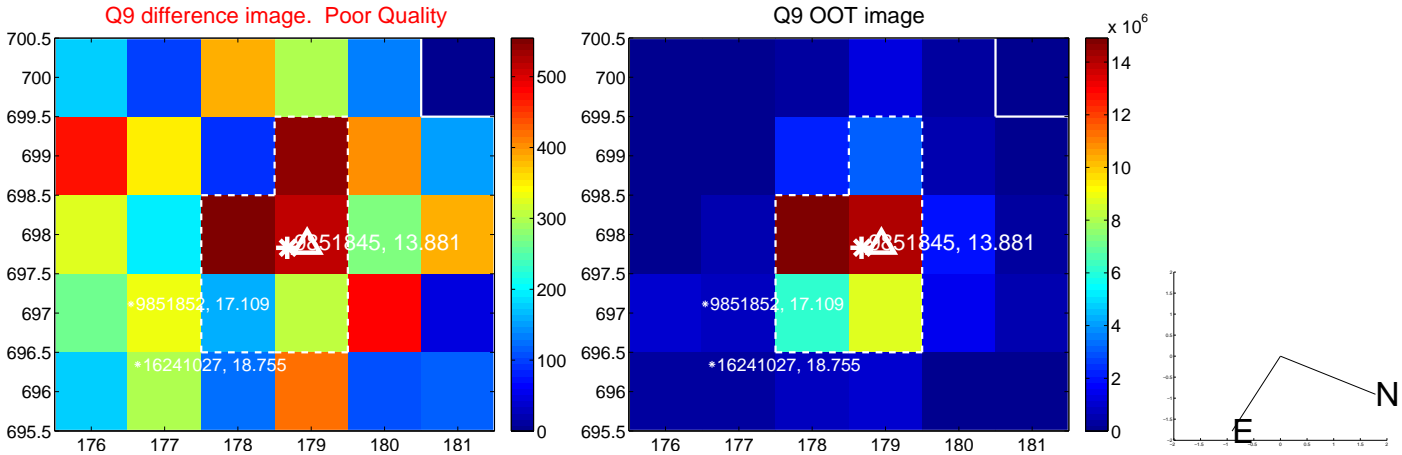
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



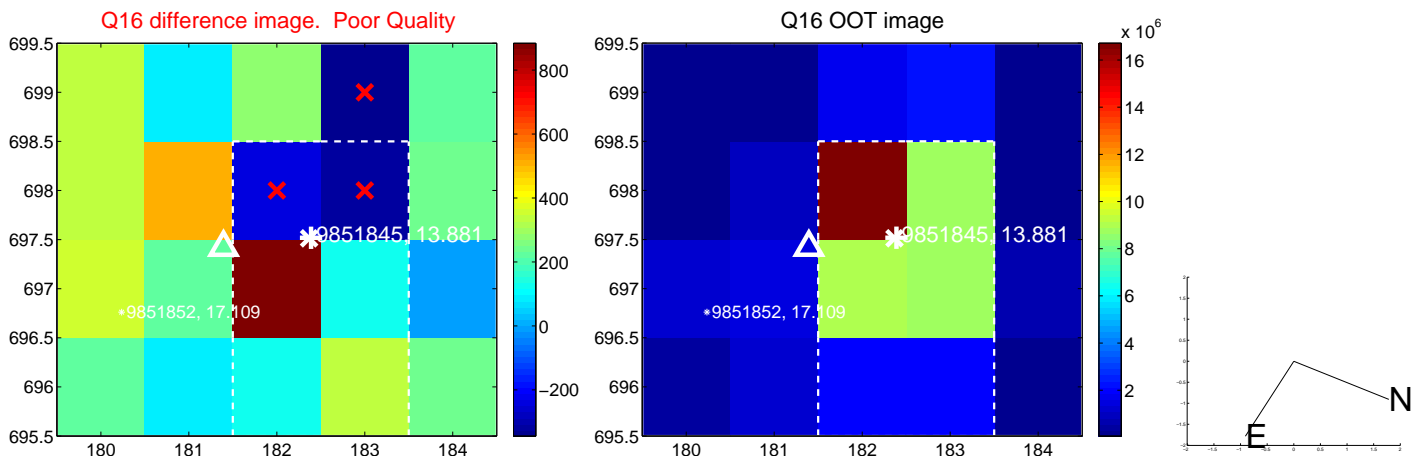
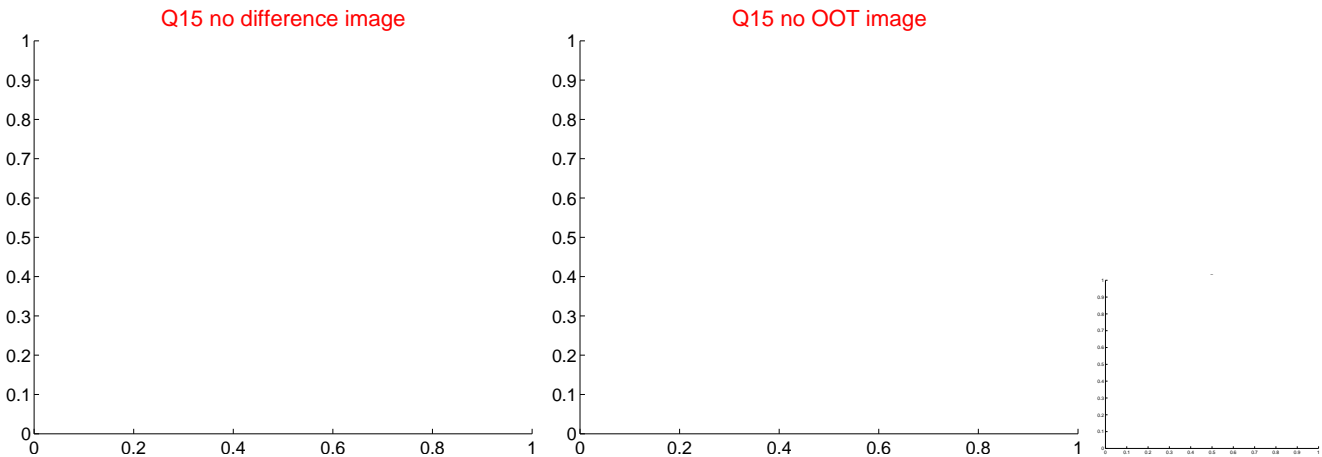
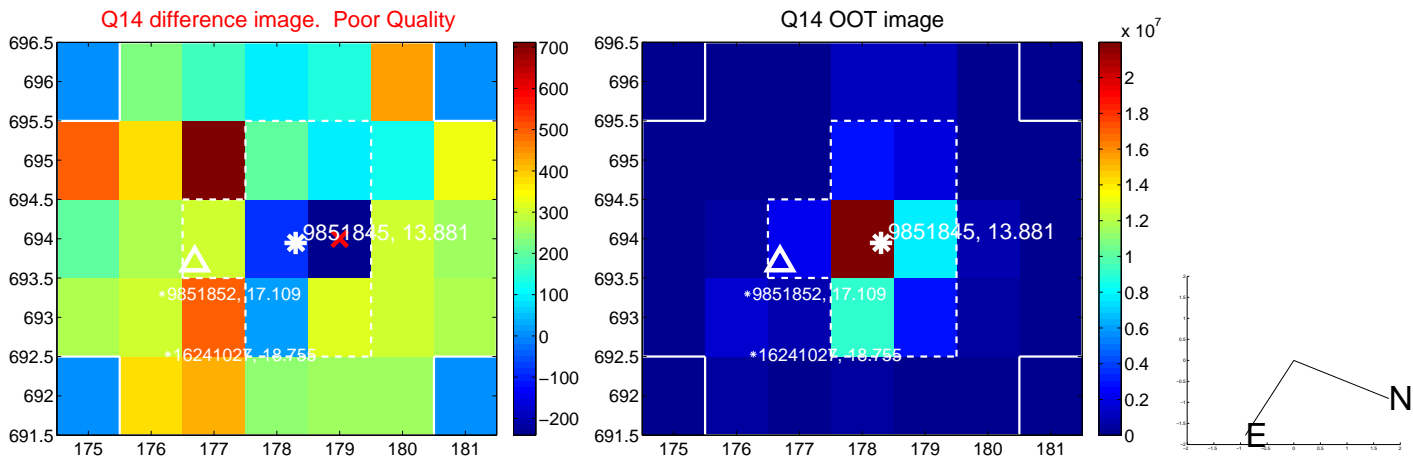
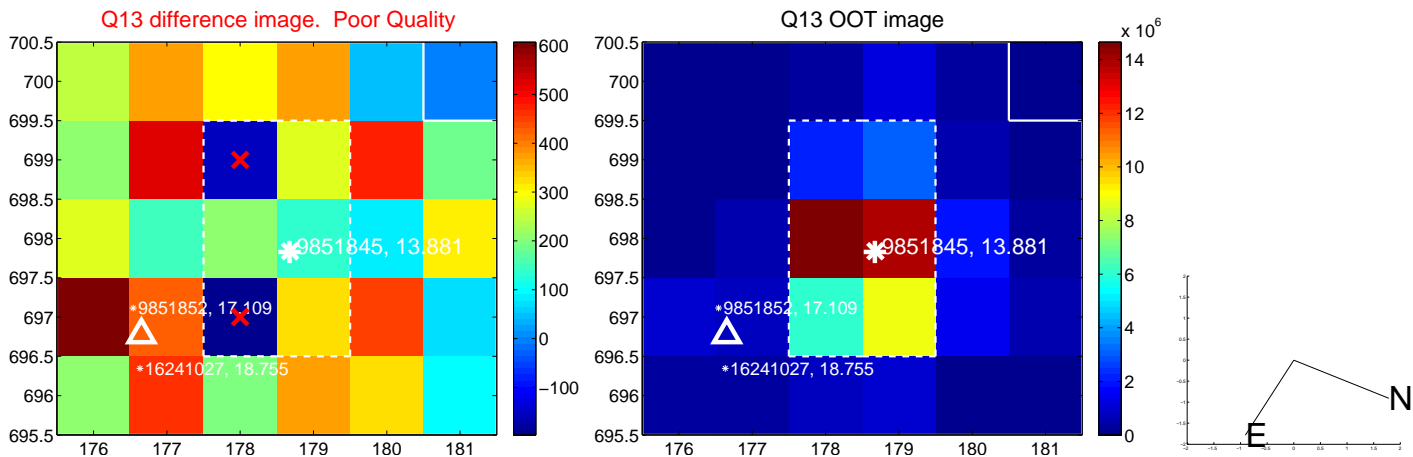
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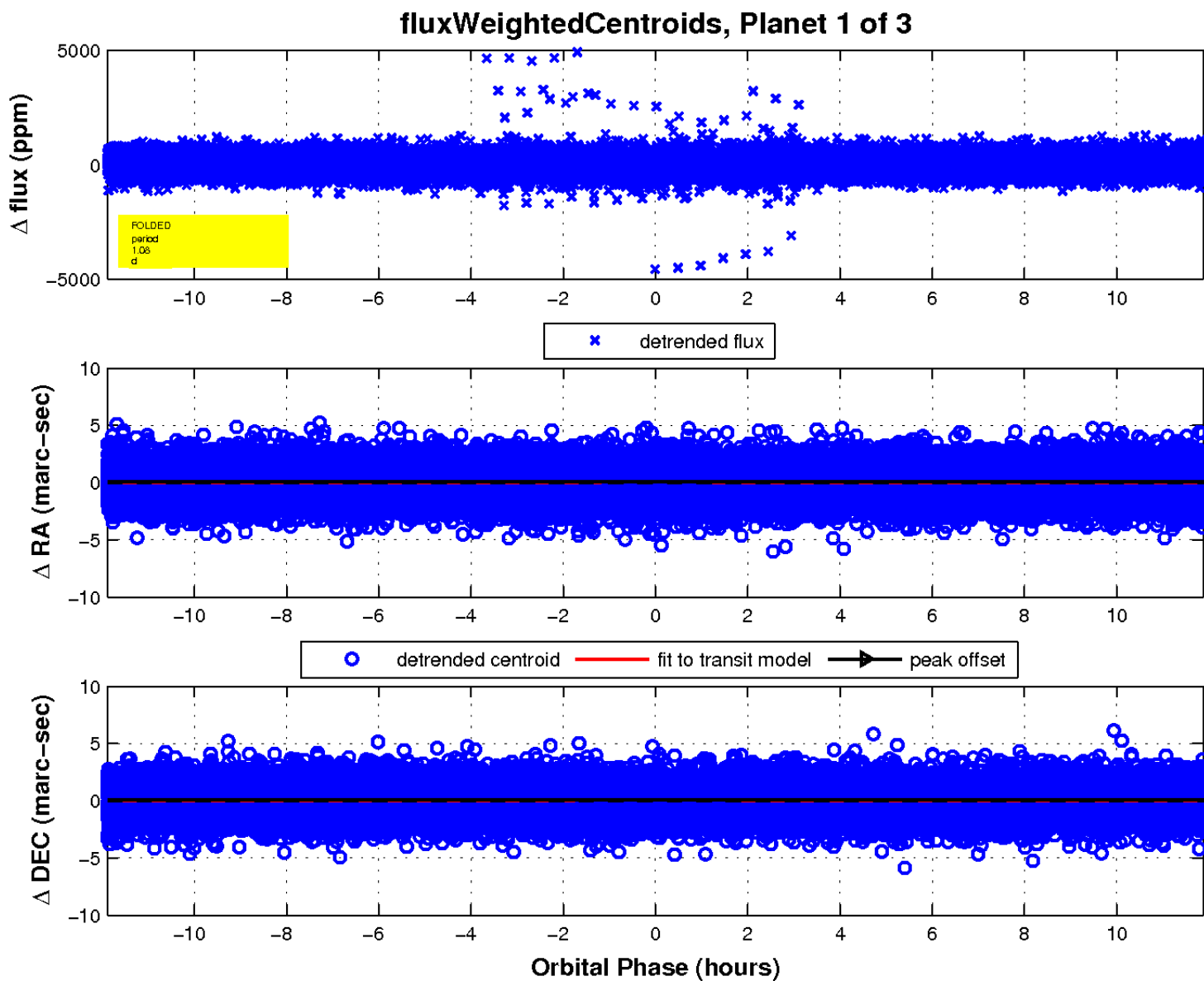
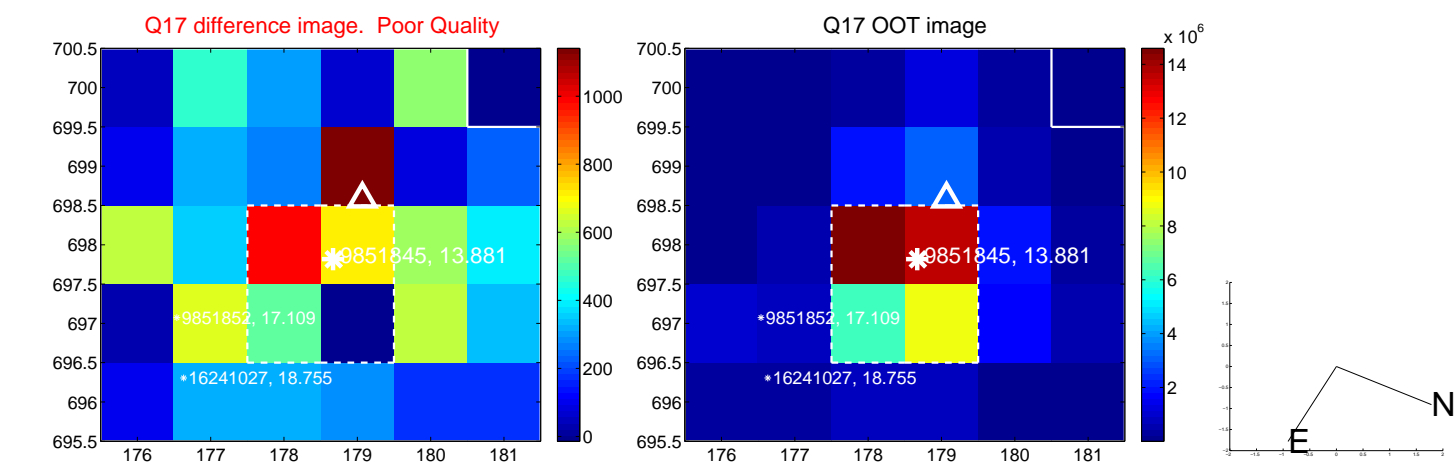
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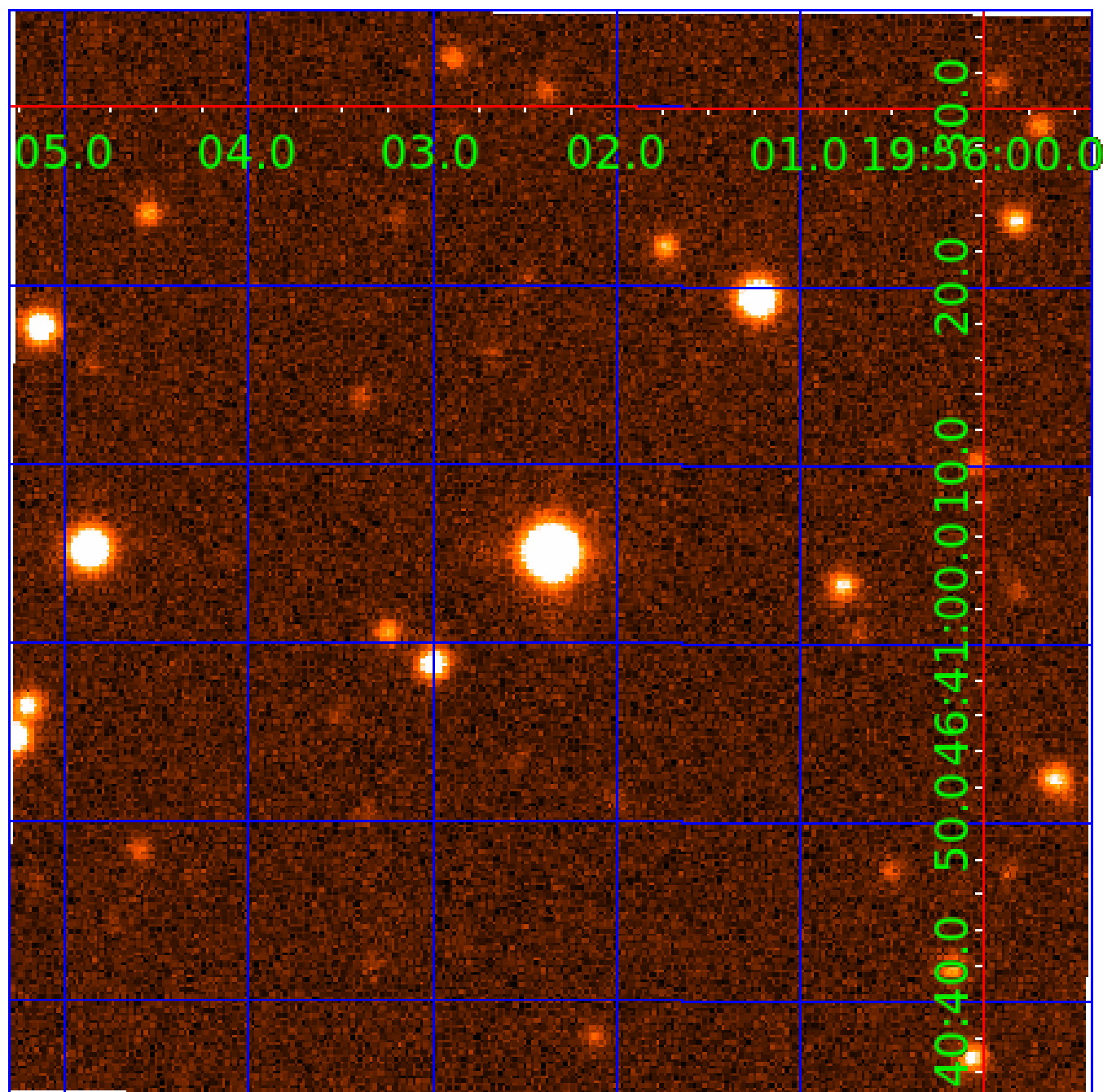


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009851845

Q1-17 DR25 TCE Parameters

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009851845-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
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See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009851845-02

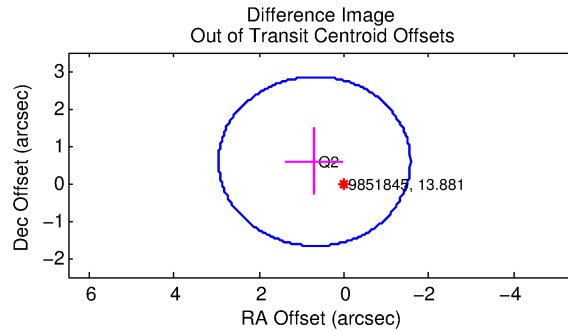
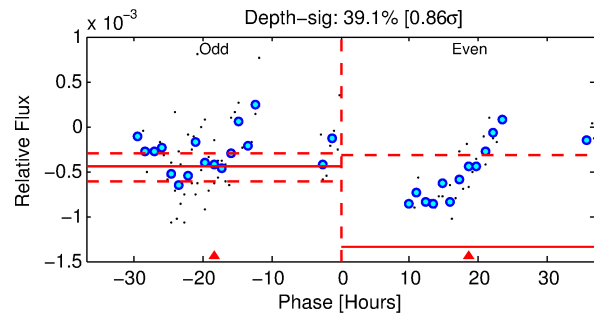
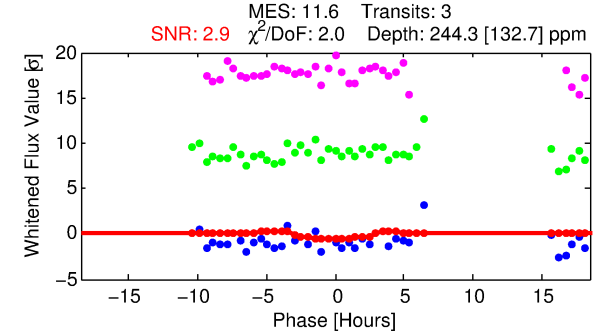
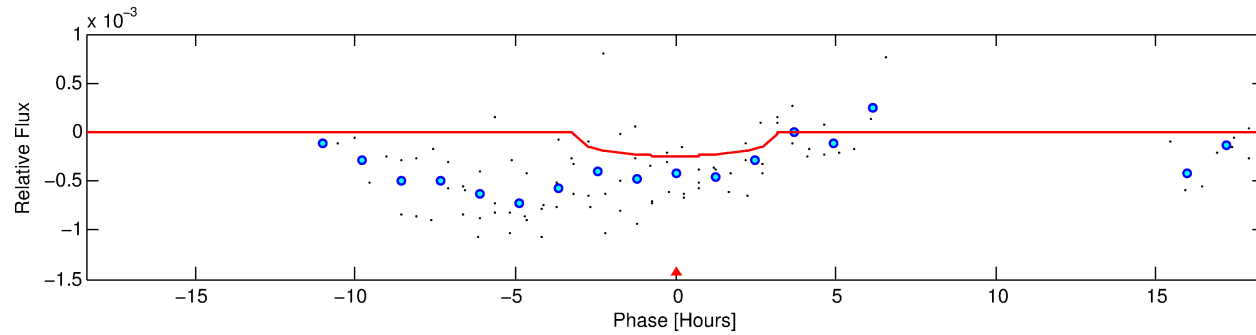
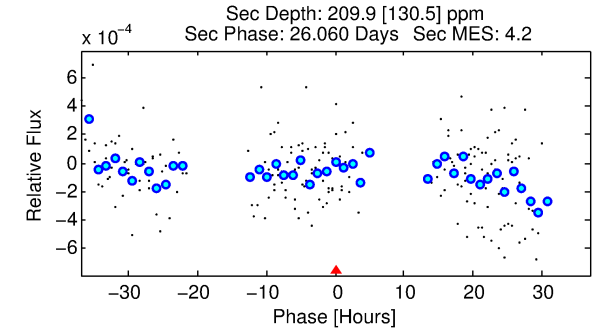
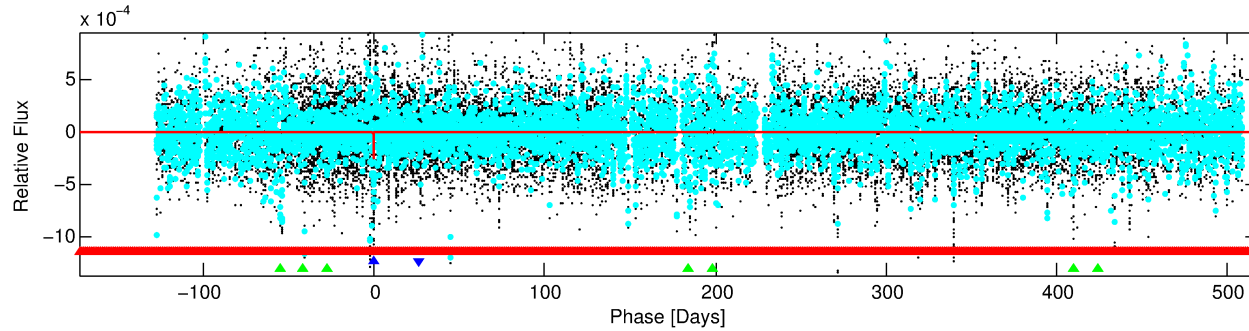
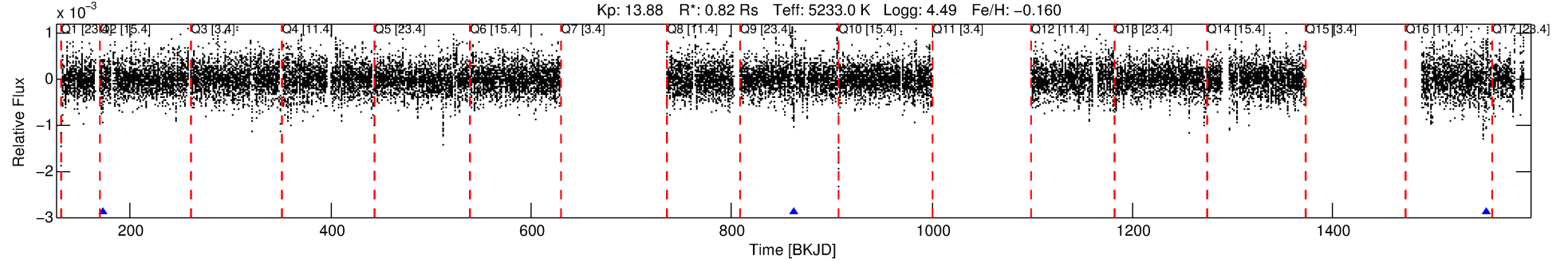
No Significant Match Found

DV One-Page Summary

KIC: 9851845 Candidate: 2 of 3 Period: 690.205 d

KOI: K04696 Corr: No Ephemeris Match

Kp: 13.88 R*: 0.82 Rs Teff: 5233.0 K Logg: 4.49 Fe/H: -0.160



DV Fit Results:

Period = 690.20522 [0.03315] d
Epoch = 172.2468 [0.0402] BKJD
Rp/R* = 0.0154 [0.0421]
a/R* = 617.69 [6349.13]
b = 0.72 [7.08]
Seff = 0.23 [0.05]
Teq = 177 [9] K
Rp = 1.38 [3.79] Re
a = 1.3973 [0.1505] AU
Ag = 117909.94 [649275.11] [0.18σ]
Teffp = 5079 [6991] K [0.70σ]

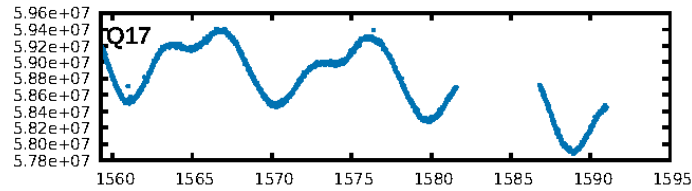
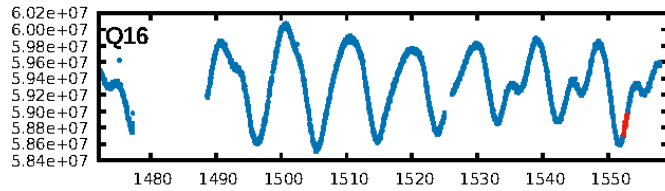
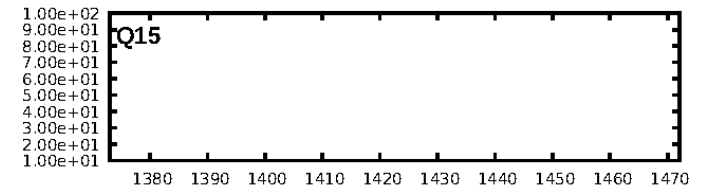
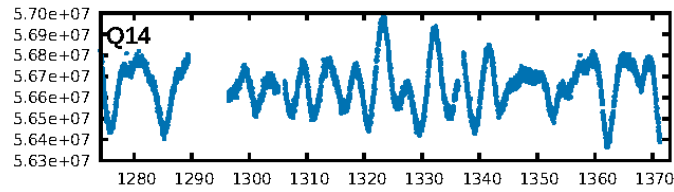
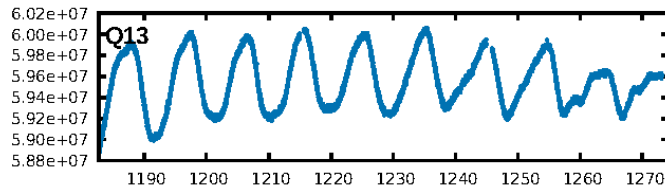
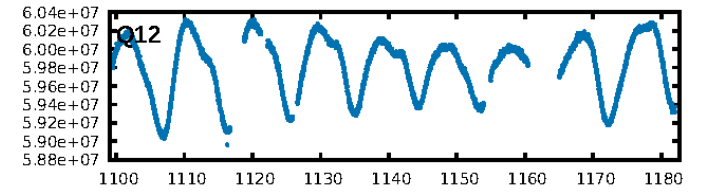
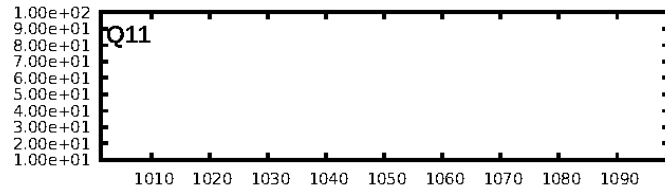
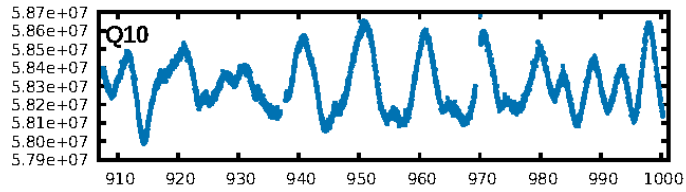
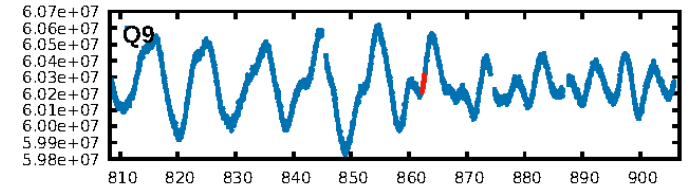
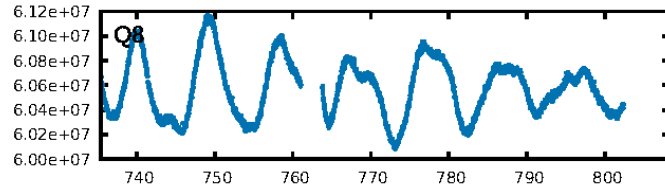
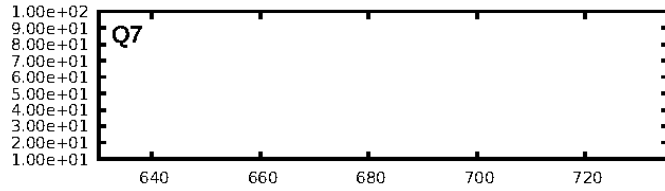
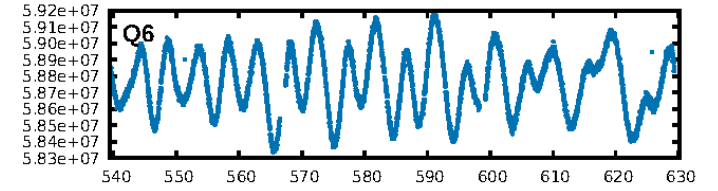
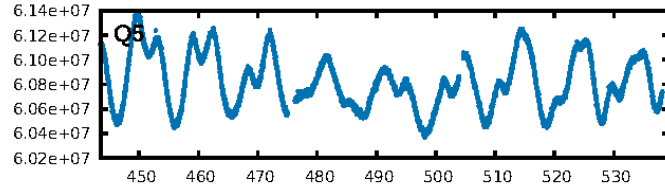
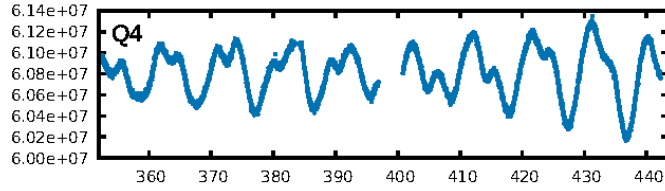
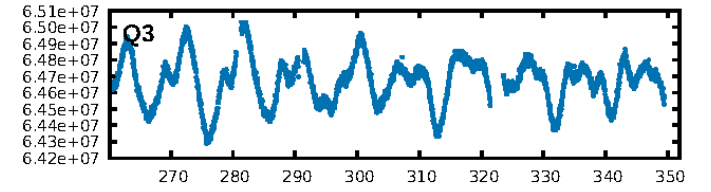
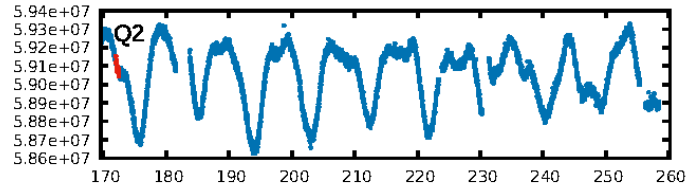
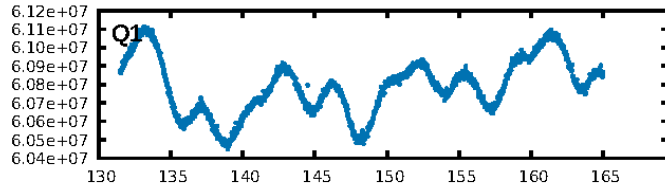
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [837.05σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 79.6%
ModelChiSquareGof-sig: 64.8%
Bootstrap-pfa: 3.03e-09
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 0.3032
Centroid-sig: 29.9%
Centroid-so: 1.981 arcsec [0.79σ]
OotOffset-rm: 0.901 arcsec [1.20σ]
KicOffset-rm: 0.856 arcsec [1.15σ]
OotOffset-st: 1/0/0/0 [1]
KicOffset-st: 1/0/0/0 [1]
DiffImageQuality-fgm: 0.00 [0/1]
DiffImageOverlap-fno: 0.00 [0/3]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 20:07:50 Z

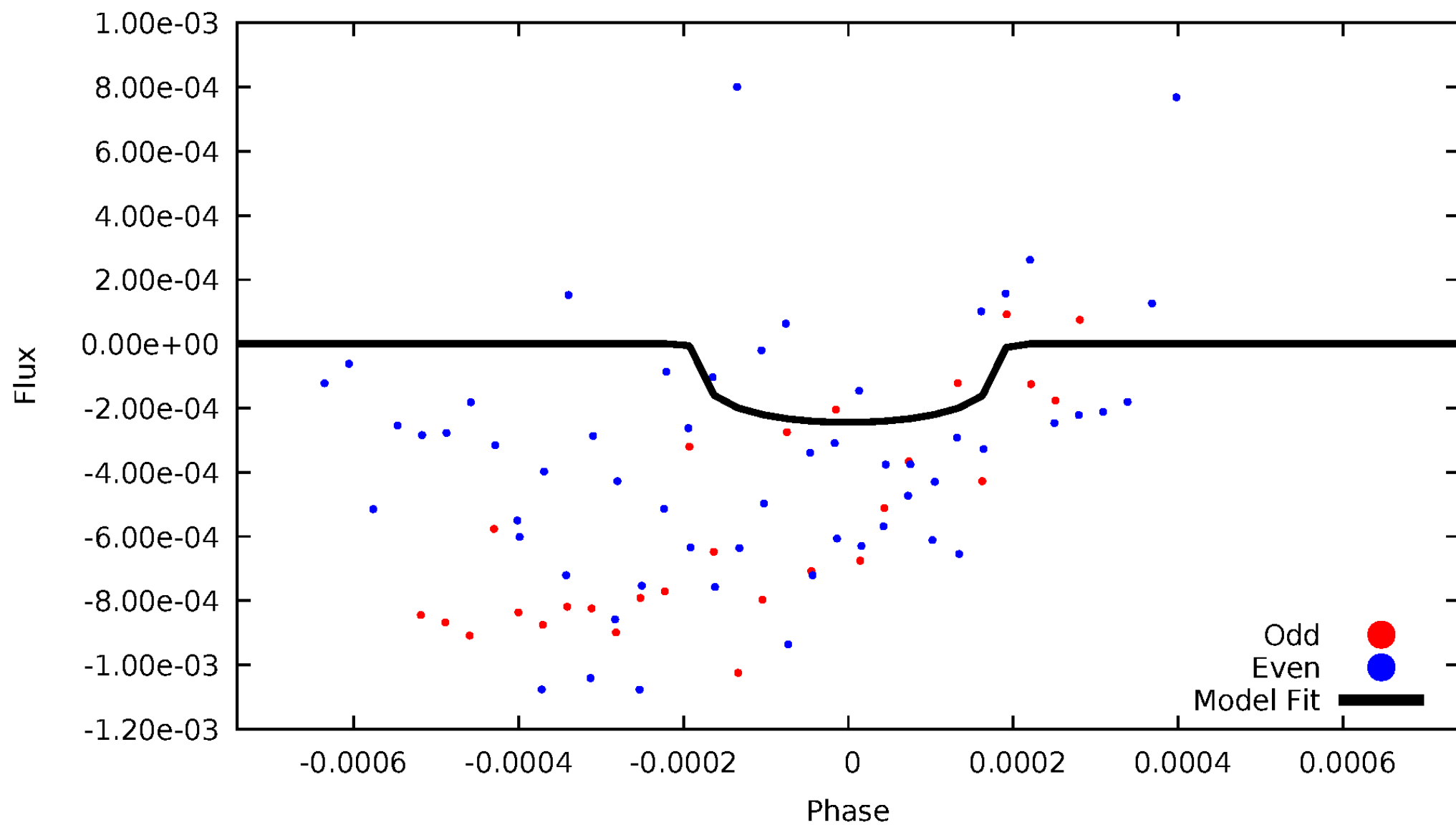
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 009851845-02, PDC Light Curves



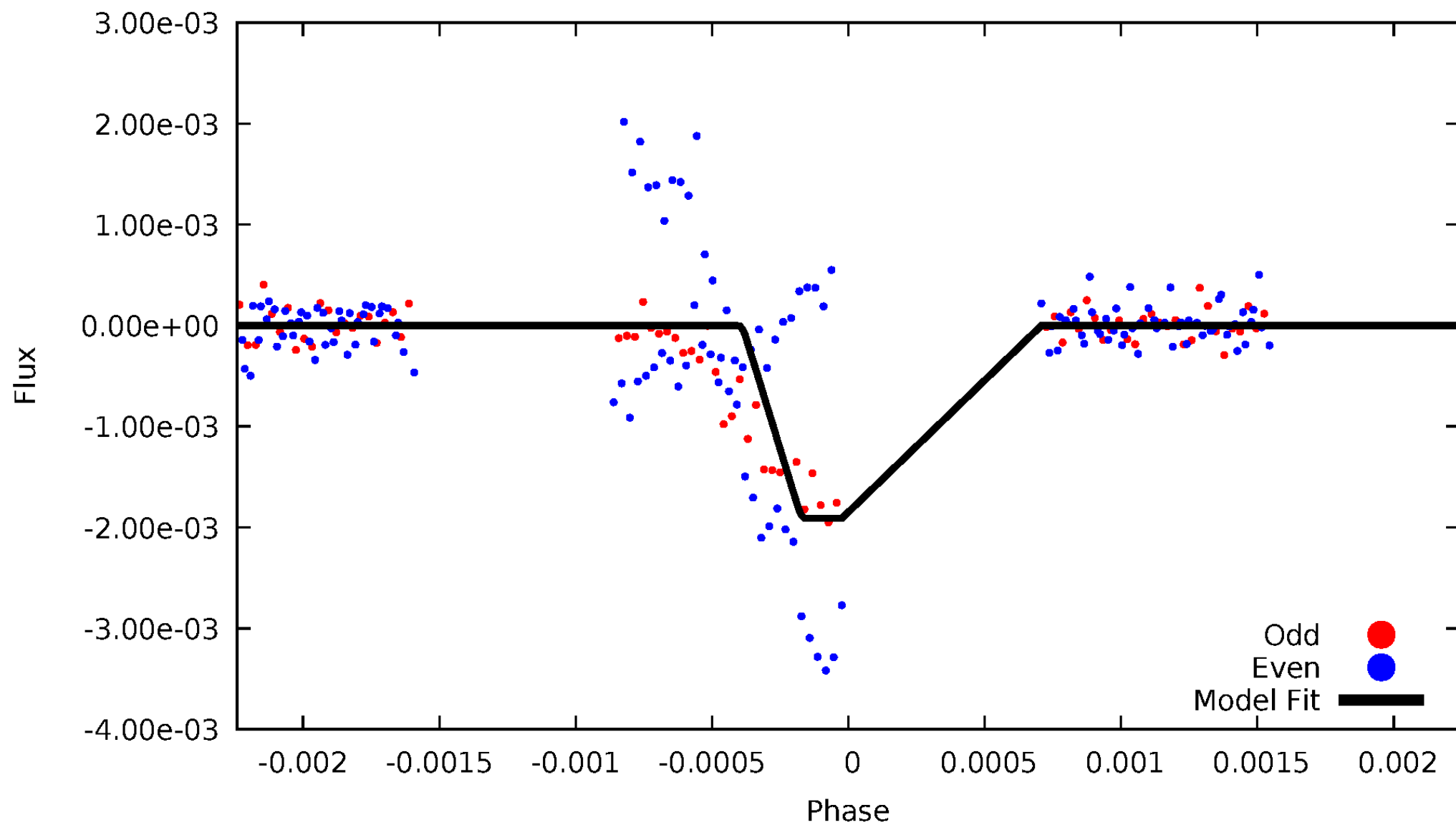
DV Odd/Even

TCE 009851845-02



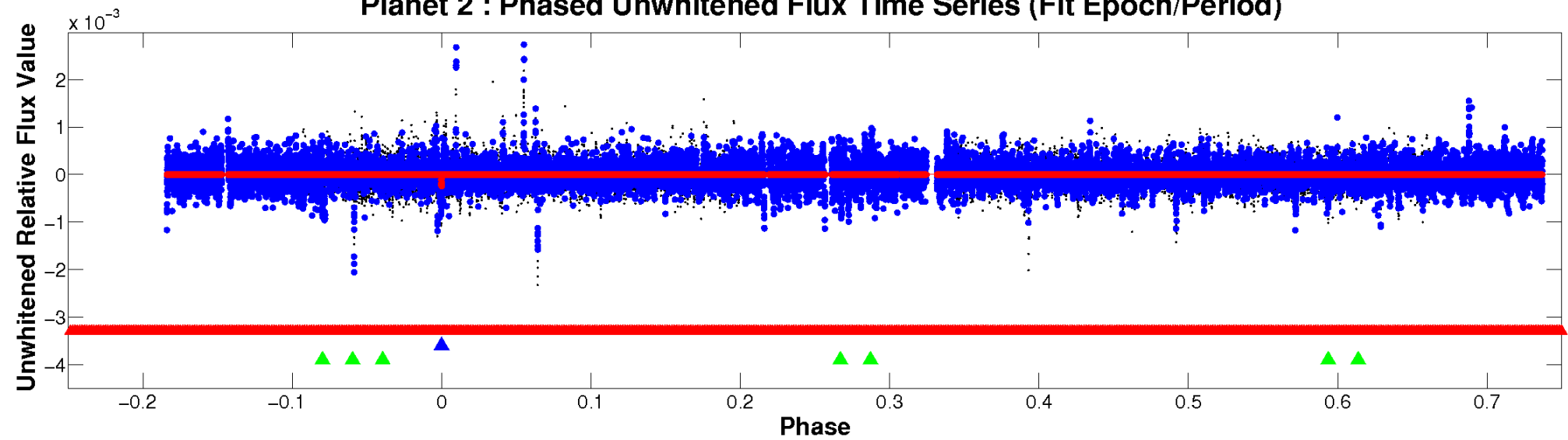
ALT Odd/Even

TCE 009851845-02

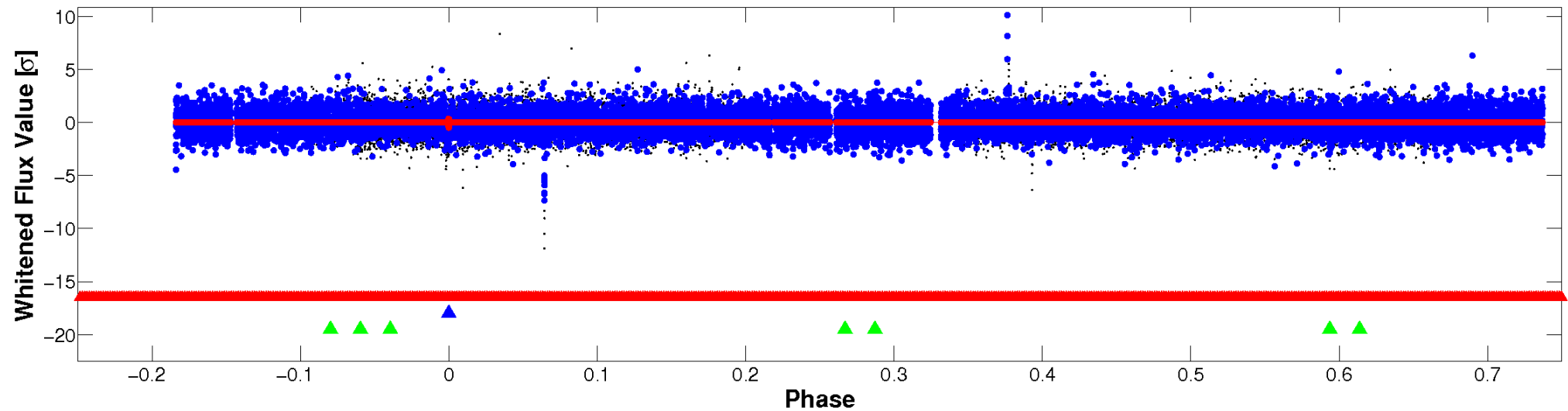


Non-Whitened Vs. Whitened Light Curve

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

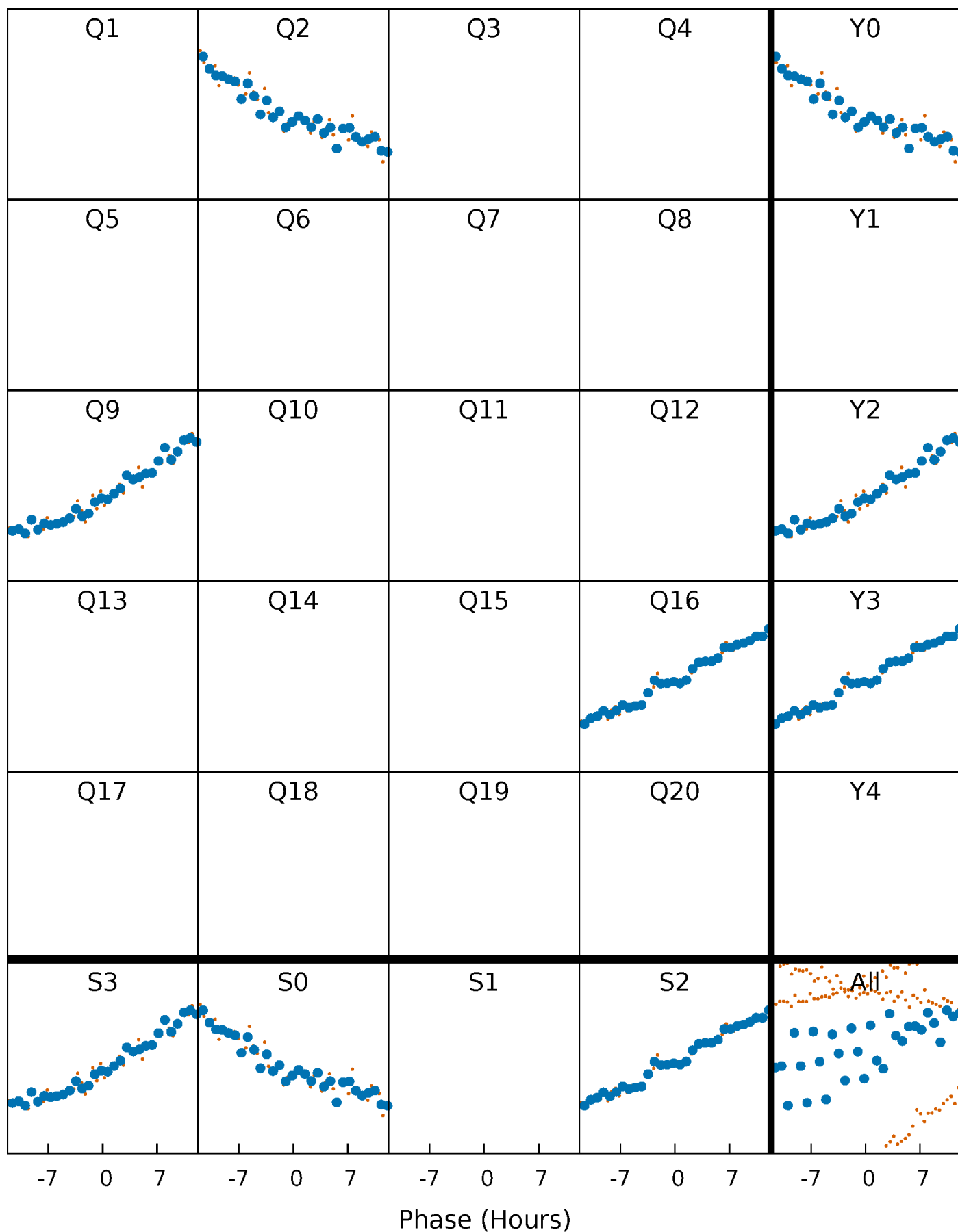


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



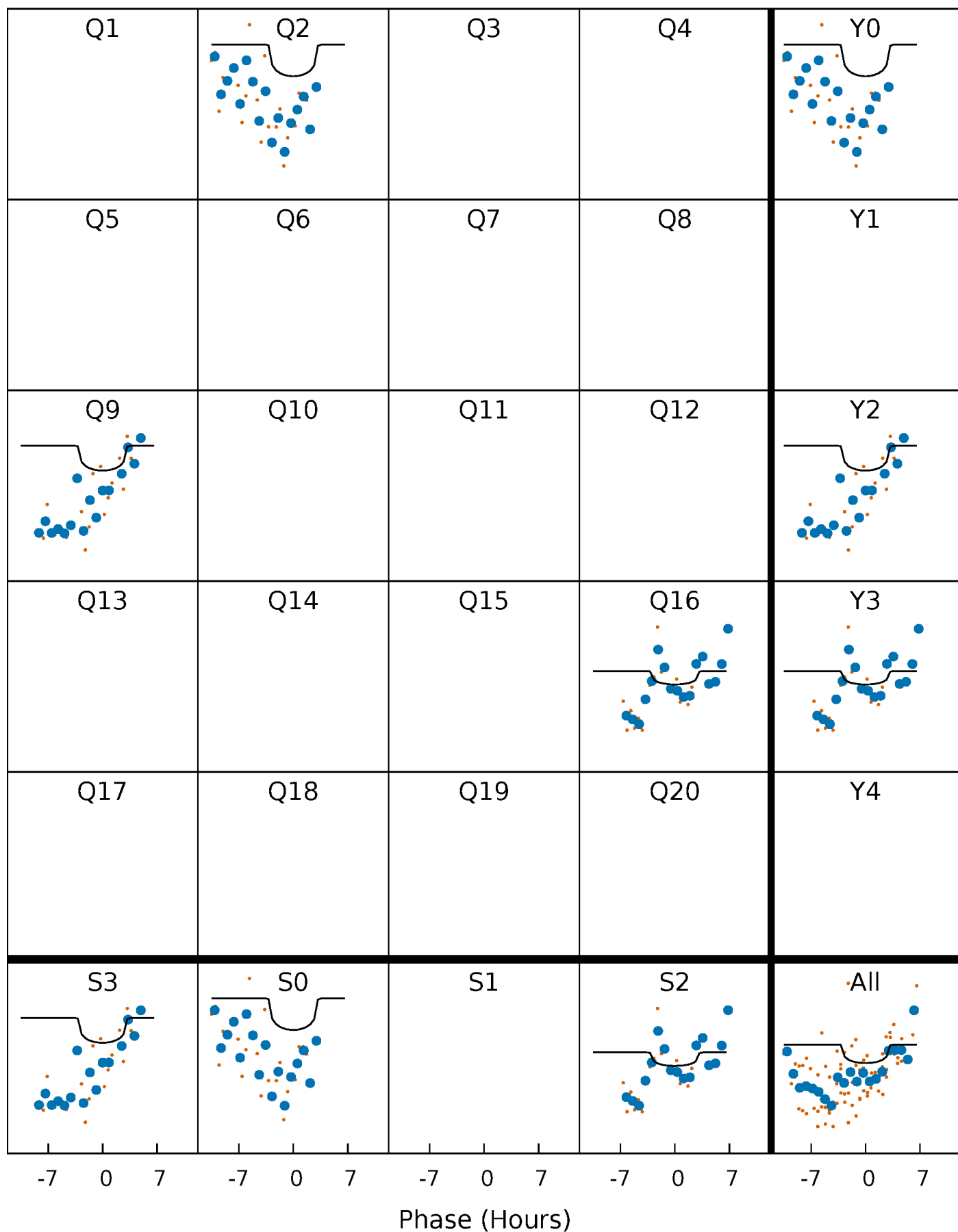
PDC Quarter-Phased Transit Curves

TCE 009851845-02 $P=690.205220$ Days $T_0=172.246843$ (BKJD)



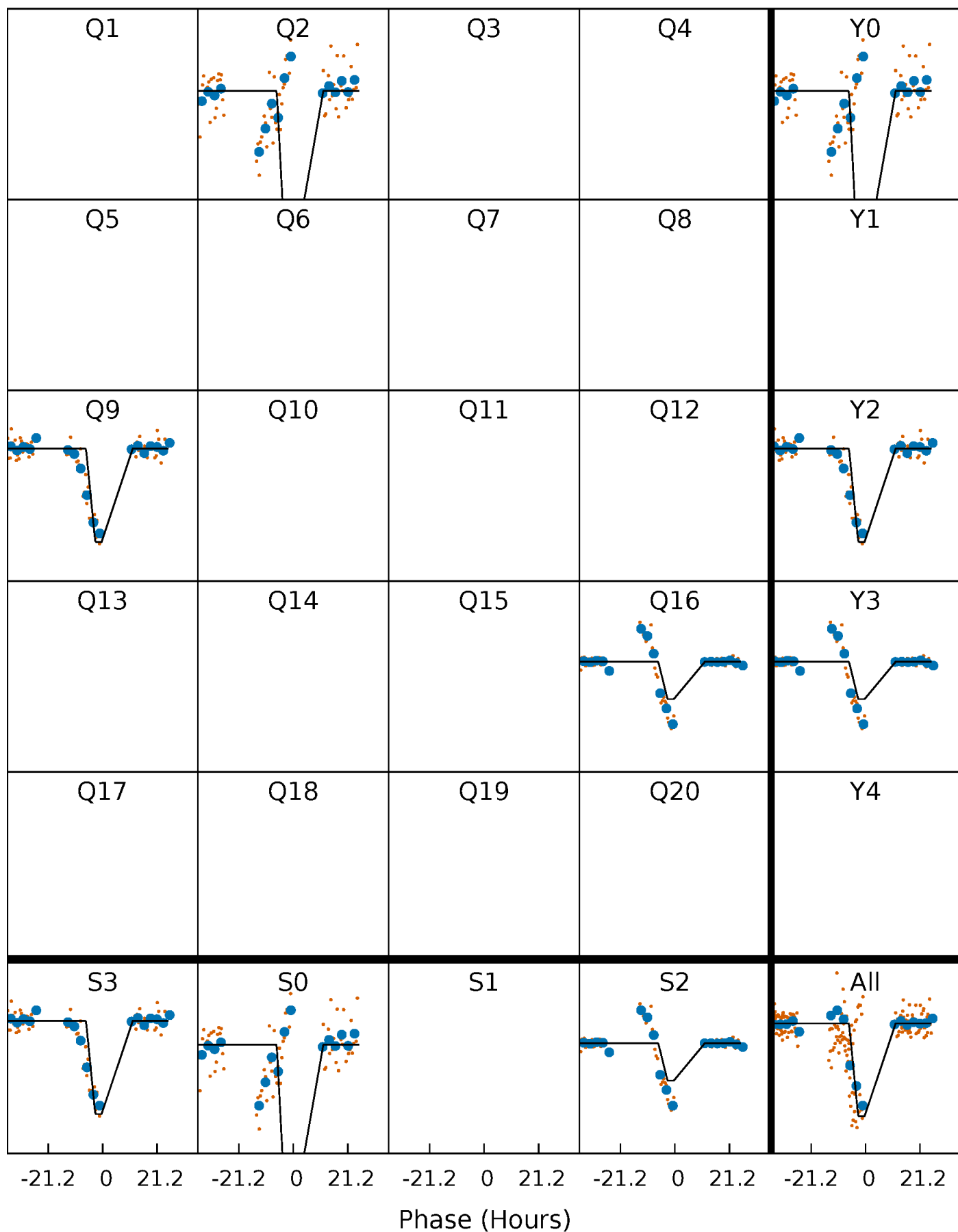
DV Quarter-Phased Transit Curves

TCE 009851845-02 P=690.205220 Days $T_0=172.246843$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

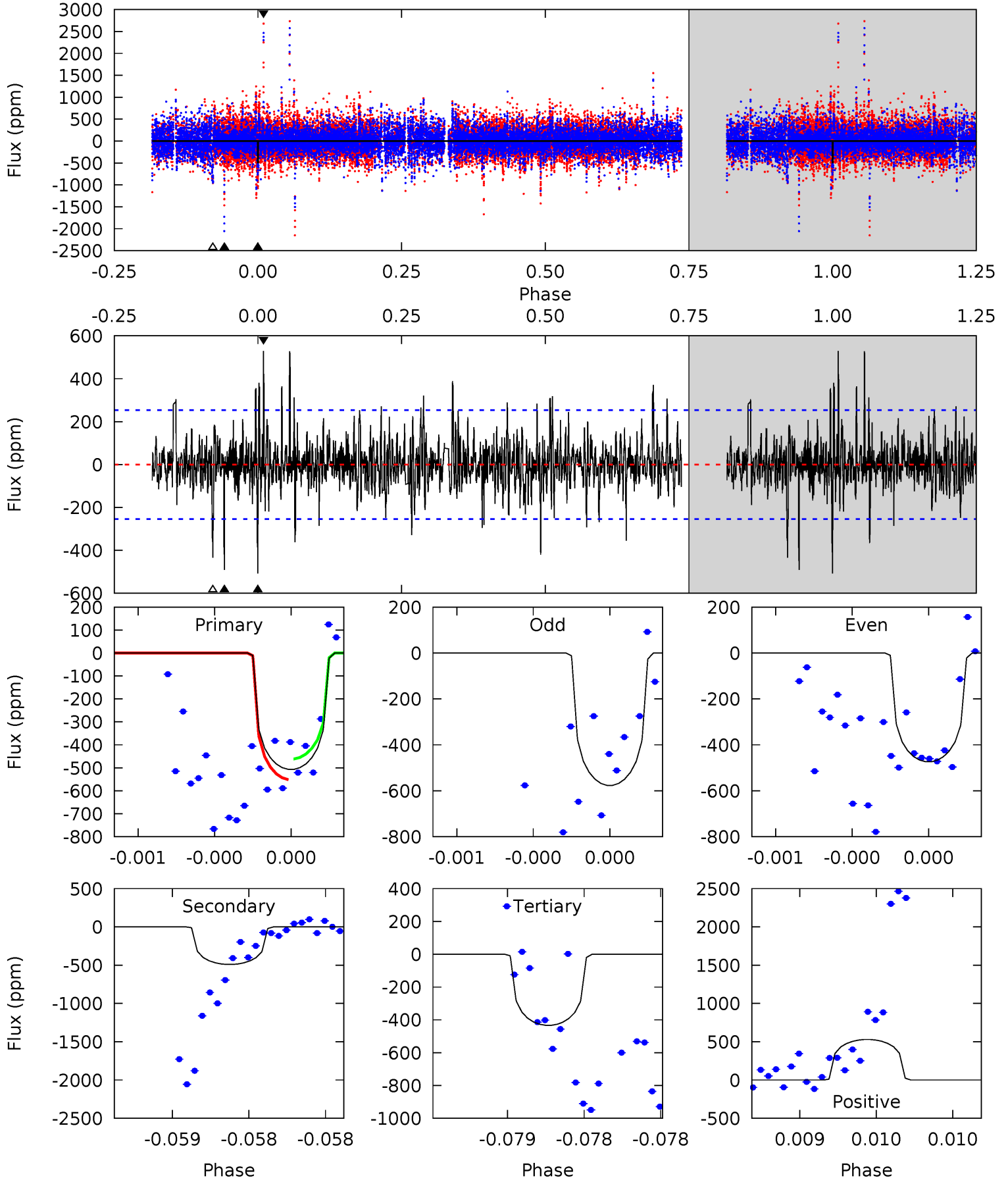
TCE 009851845-02 P=690.272901 Days $T_0=172.402482$ (BKJD)



DV Model-Shift Uniqueness Test

009851845-02, P = 690.205220 Days, E = 172.246843 Days

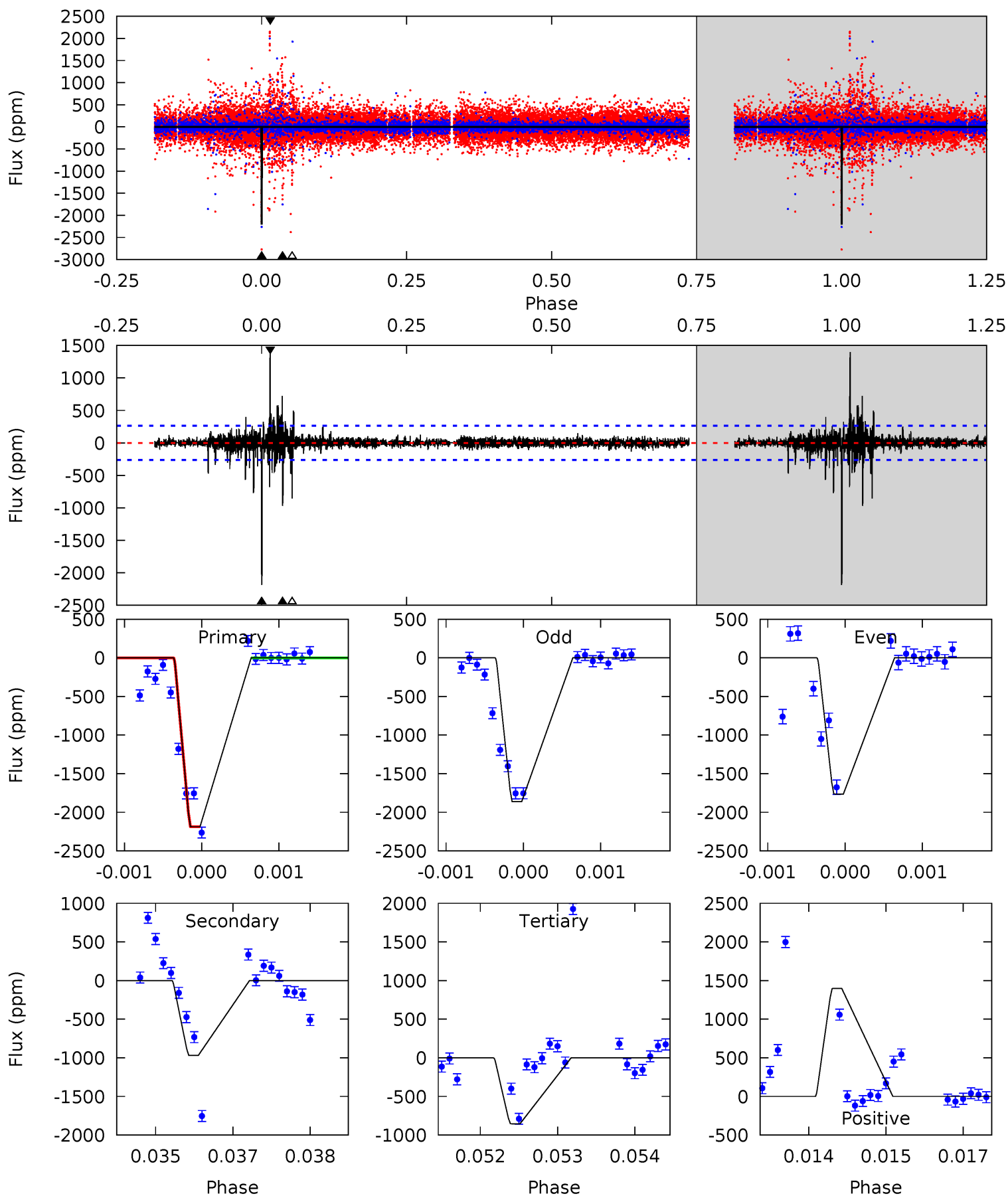
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.2	10.9	9.59	11.7	5.62	3.55	2.07	1.63	-0.50	1.26	-0.86	1.09	0.82	0.51	1.00



Alt Model-Shift Uniqueness Test

009851845-02, P = 690.272901 Days, E = 172.402482 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
45.1	20.0	17.6	28.8	5.43	3.26	1.46	27.5	16.3	2.35	-8.86	1.27	0	0.39	0



Stellar Parameters For KIC 009851845

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5233^{+158}_{-142}	$4.489^{+0.095}_{-0.085}$	$-0.160^{+0.300}_{-0.300}$	$0.824^{+0.098}_{-0.098}$	$0.764^{+0.103}_{-0.060}$	$1.925^{+0.863}_{-0.504}$
	+3%/-3%	+2%/-2%	+188%/-188%	+12%/-12%	+13%/-8%	+45%/-26%
Source	PHO1	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 009851845-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-490 ± 45	$3.46^{+2.82}_{-2.49}$	247^{+10}_{-10}	4210^{+3206}_{-778}	$45787^{+525658}_{-31877}$
Alt.	-968 ± 49	$4.52^{+3.42}_{-2.81}$	249^{+11}_{-11}	4332^{+2408}_{-789}	$52230^{+311887}_{-35558}$

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

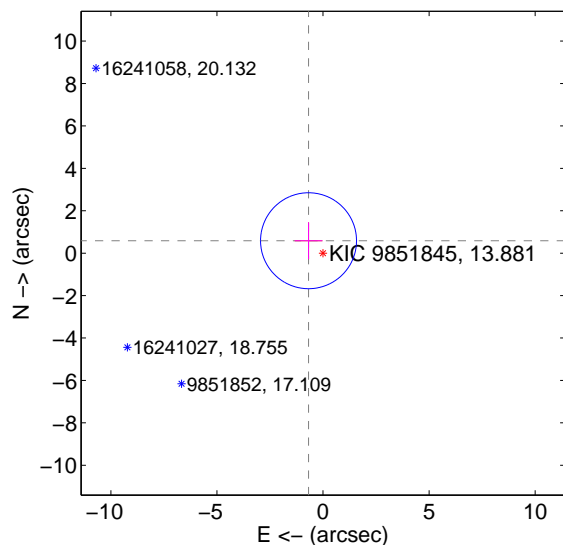
Supplemental centroid analysis for 009851845-02. Kepler magnitude: 13.88. Transit SNR 2.92

There are 0 quarters with good PRF difference image offsets

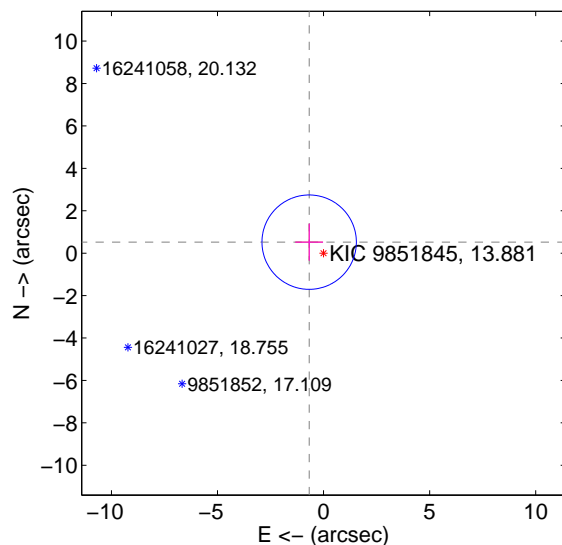
The direct PRF centroid is offset from the target star catalog position by about 0.07 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.901 ± 0.754	1.20	0.684 ± 0.655	0.587 ± 0.871
PRF-fit source offset from KIC position	0.856 ± 0.742	1.15	0.680 ± 0.655	0.519 ± 0.871
photometric centroid source offset	1.98 ± 2.51	0.79	0.61 ± 2.69	1.88 ± 2.49

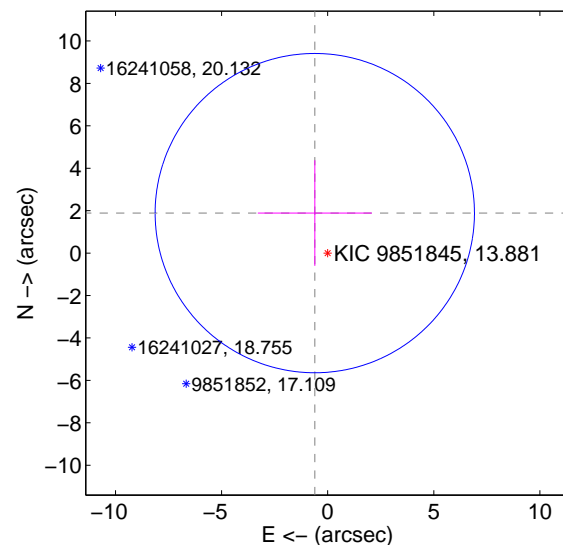
offset from difference PRF-fit to OOT PRF-fit



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.

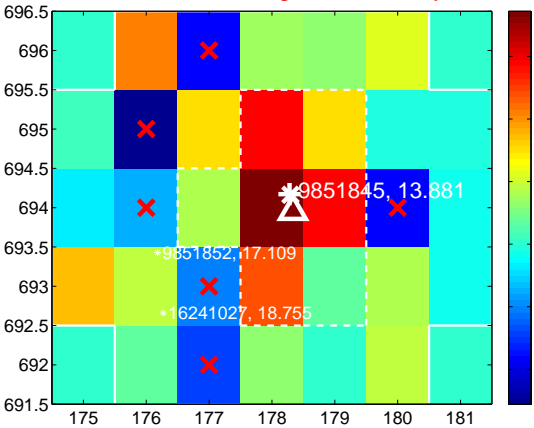
Q1 no difference image



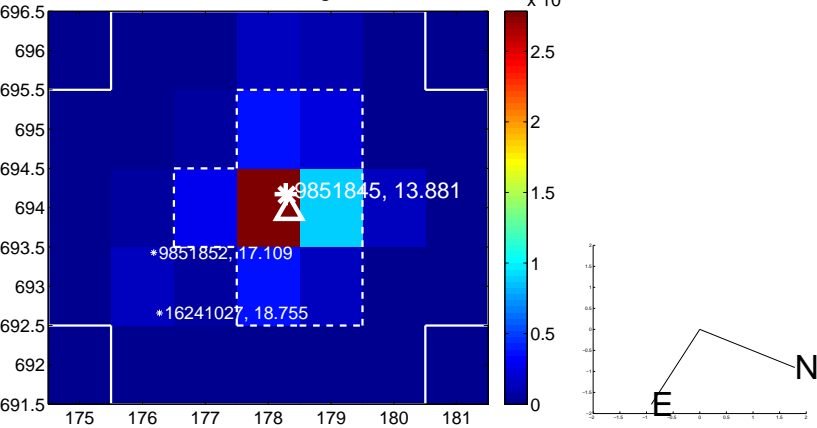
Q1 no OOT image



Q2 difference image. Poor Quality



Q2 OOT image



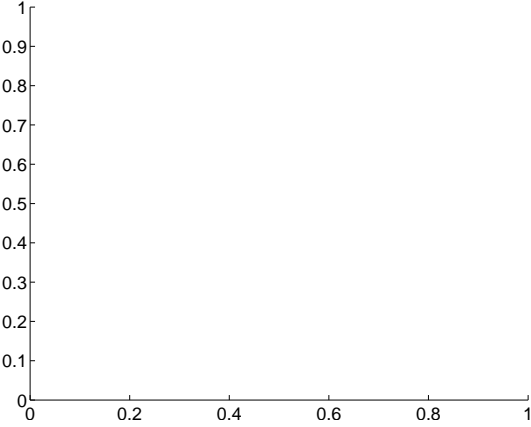
Q3 no difference image



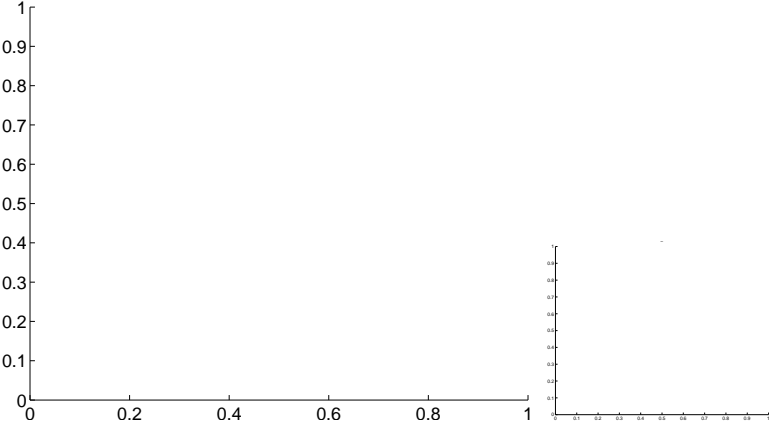
Q3 no OOT image



Q4 no difference image



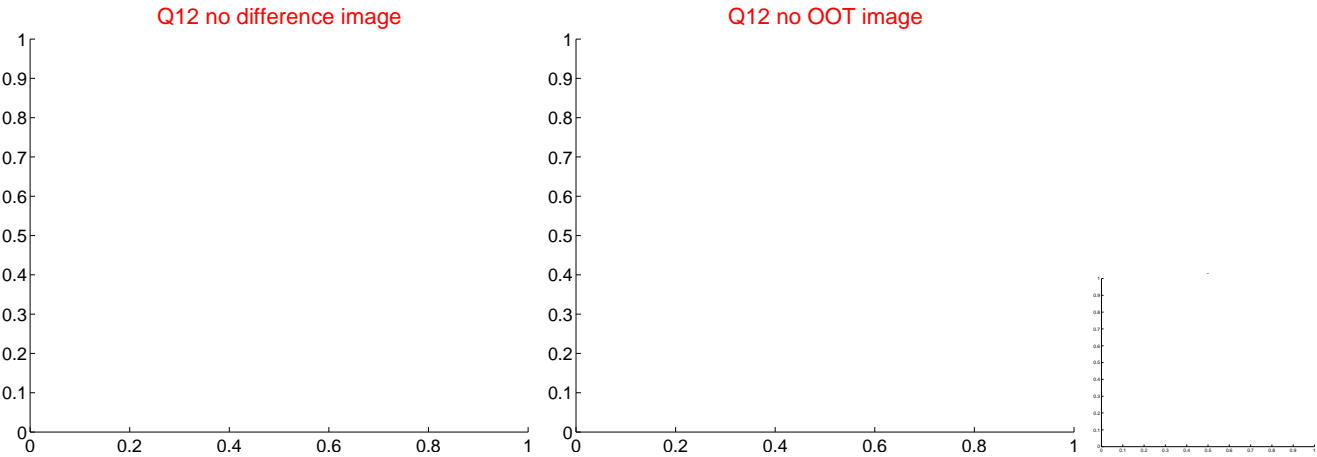
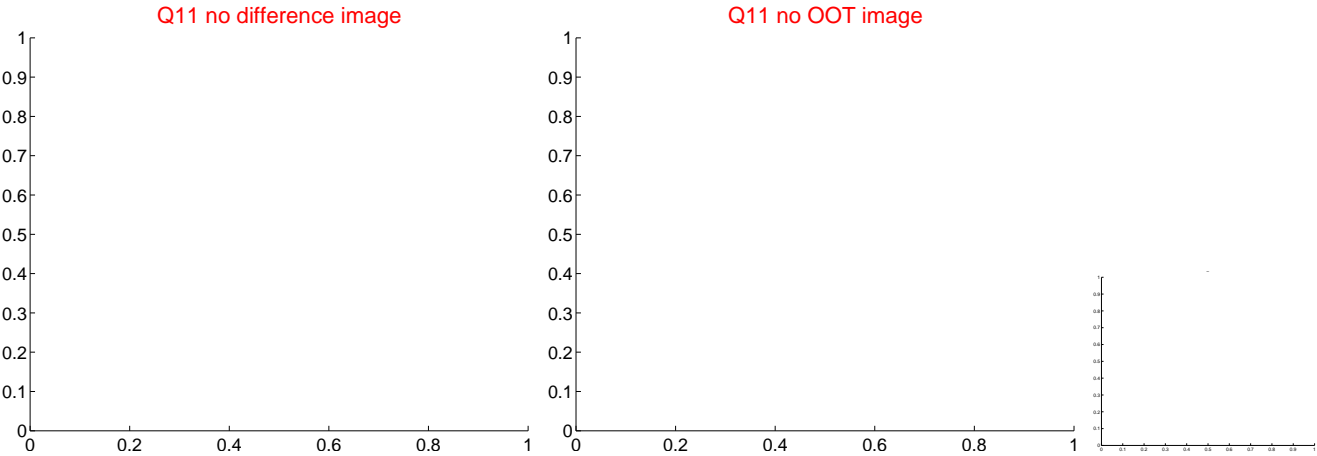
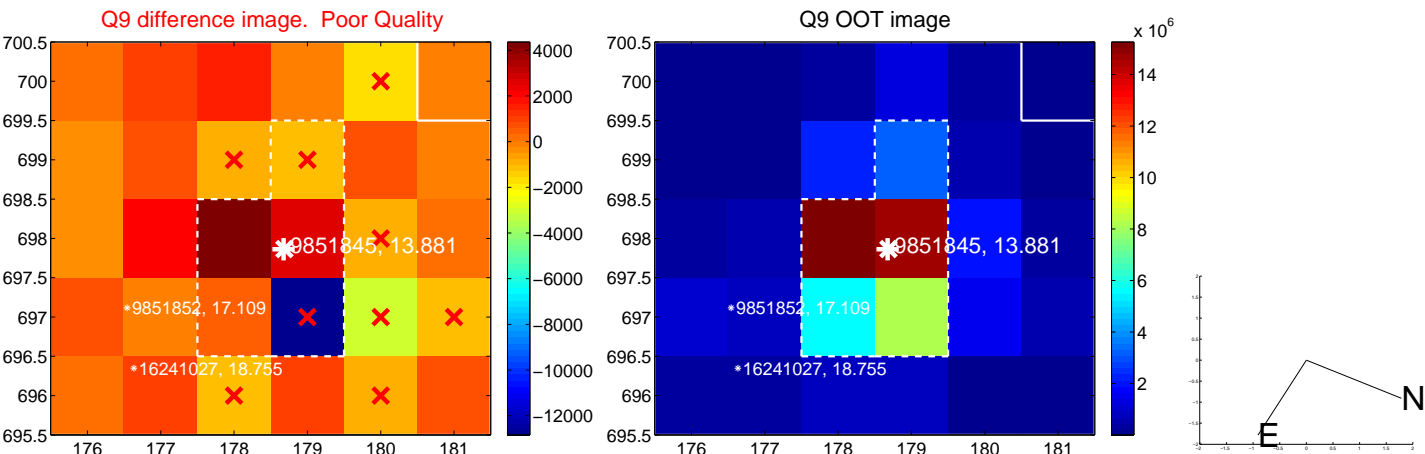
Q4 no OOT image



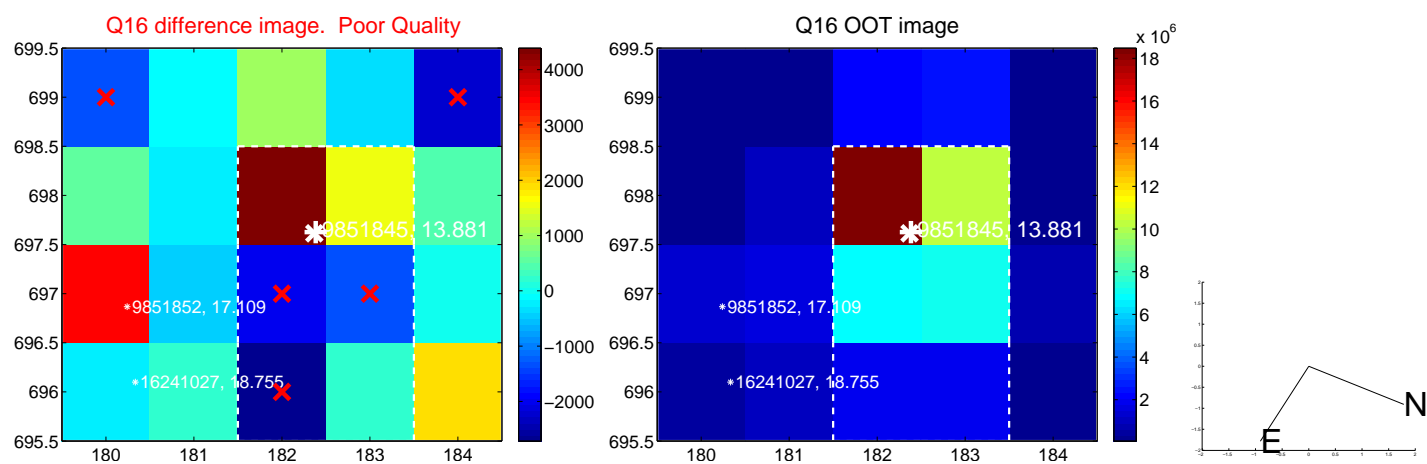
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



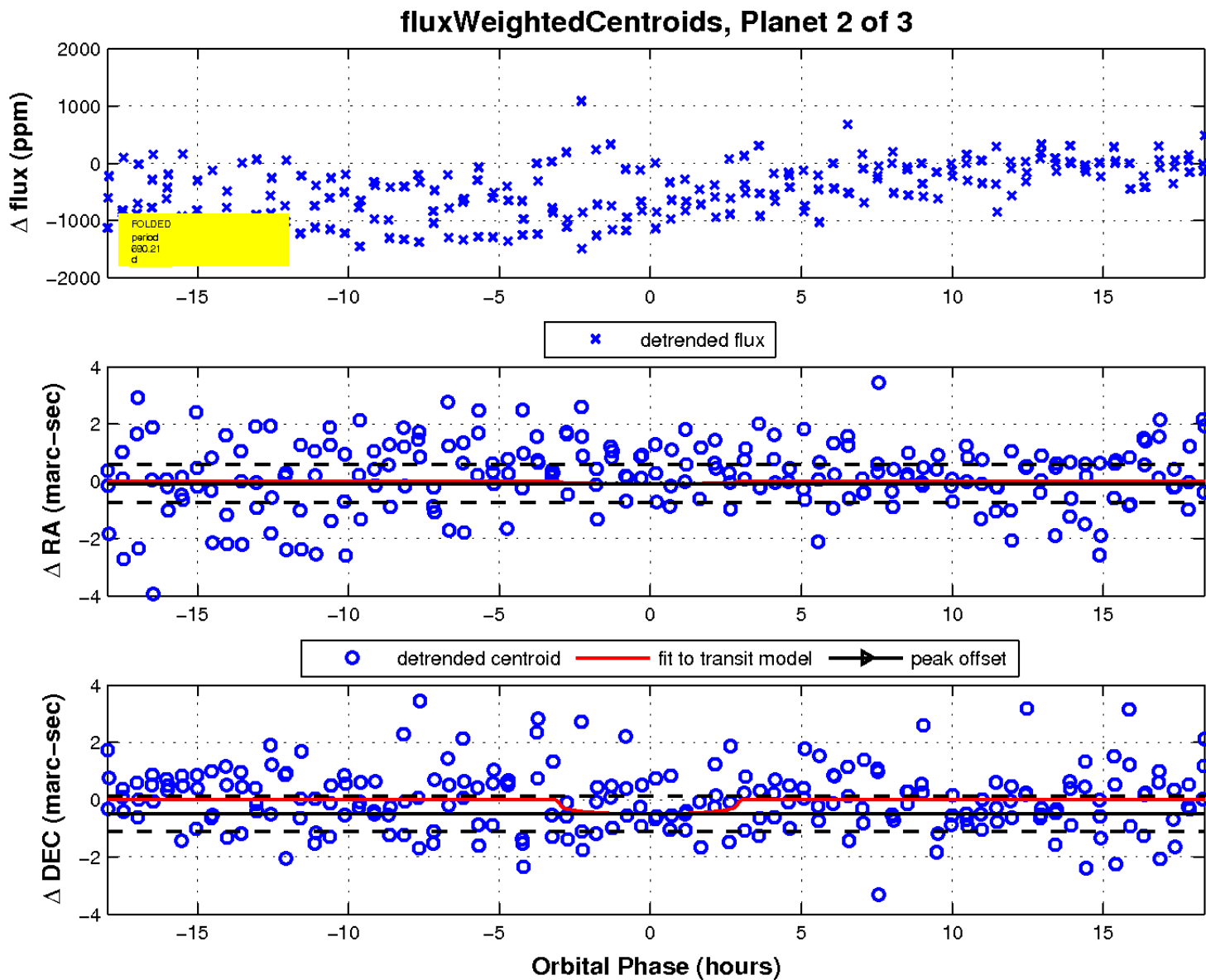
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



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

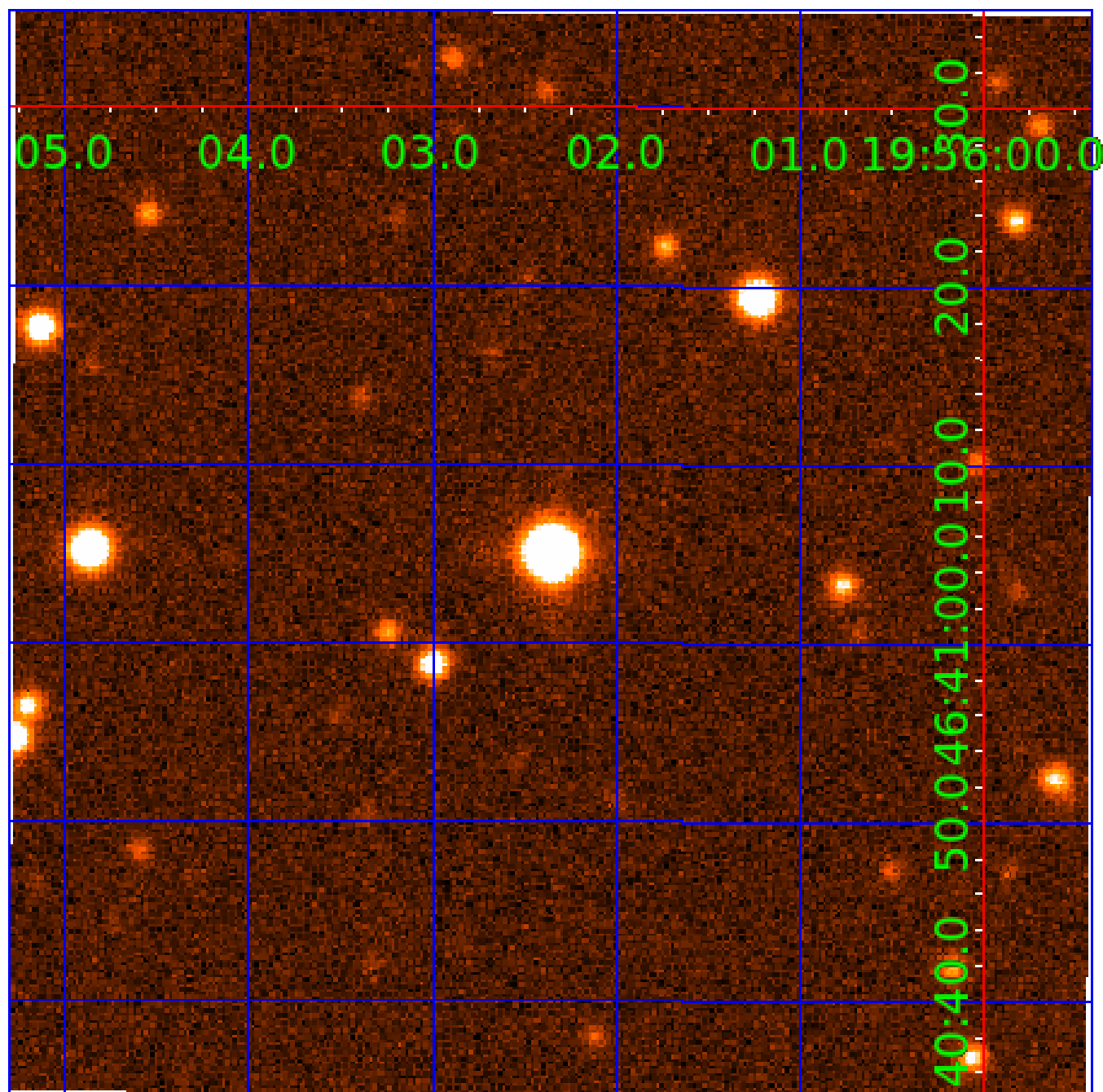


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009851845

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})
009851845-01	OBS	4696.01	1.081957	131.512411	27.4	3.962	7.6	6.9	0.82	5233	0.52	1283.03
009851845-02	OBS	No	690.205220	172.246843	244.3	6.139	11.6	2.9	0.82	5233	1.38	0.23
009851845-03	OBS	No	225.437807	145.025464	514.3	11.828	9.7	6.5	0.82	5233	3.76	1.04

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009851845-01	OBS	FP	0.00	0	0	0	1	EPHEM_MATCH
009851845-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009851845-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV

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

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

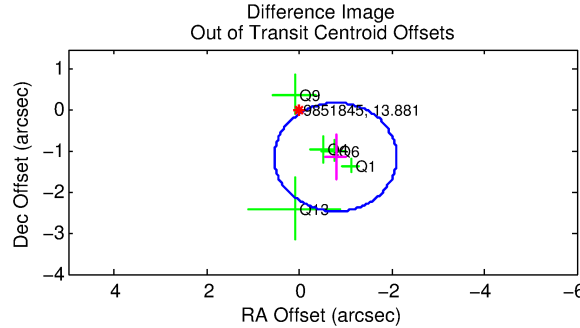
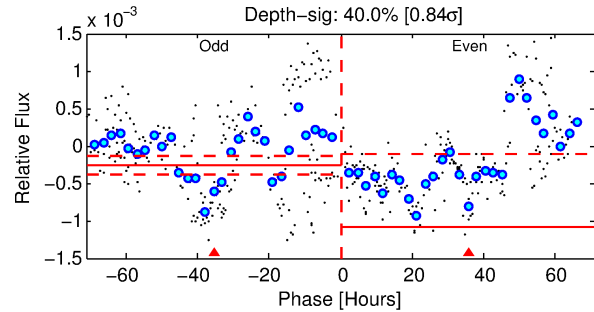
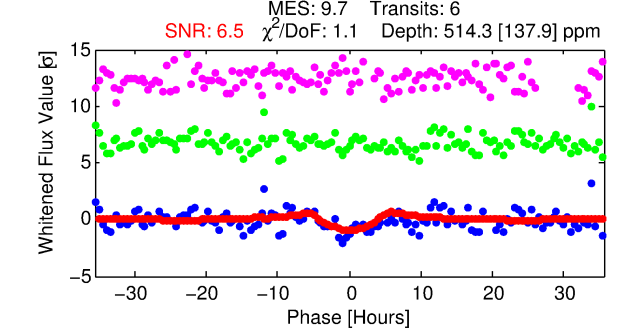
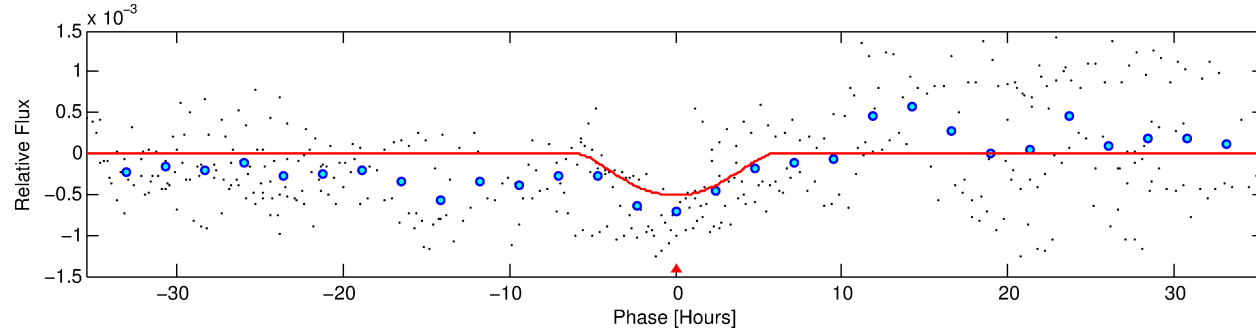
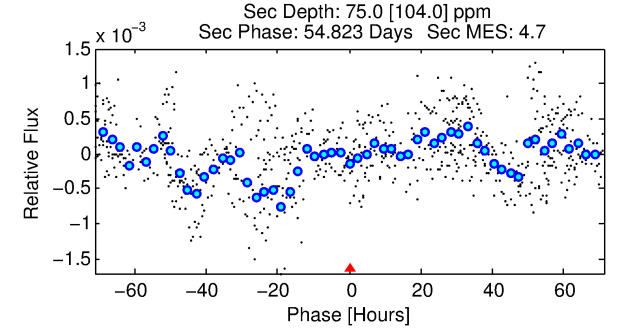
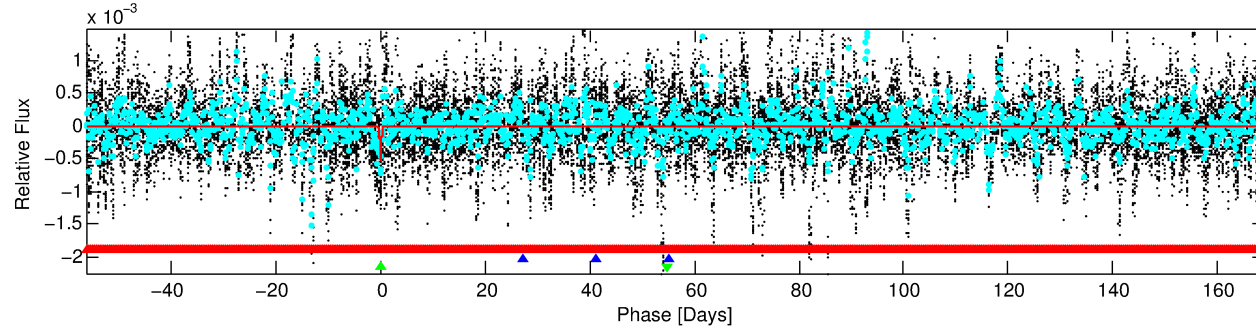
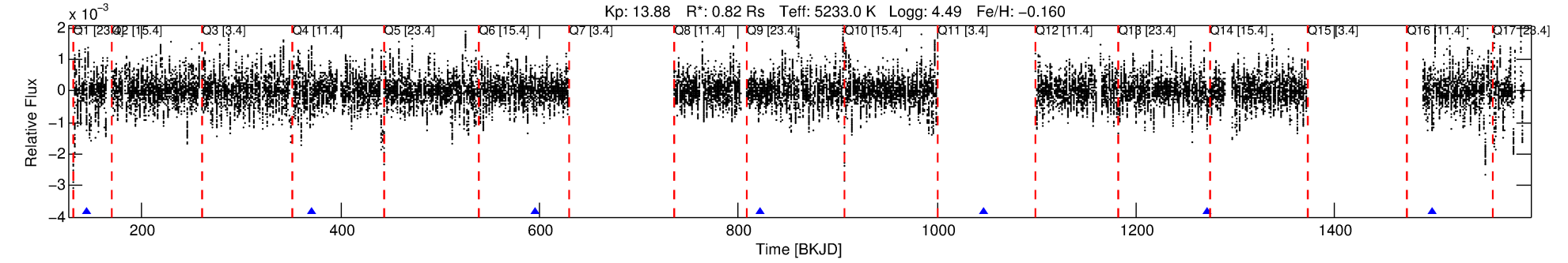
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009851845-03

No Significant Match Found

DV One-Page Summary

KIC: 9851845 Candidate: 3 of 3 Period: 225.438 d
KOI: K04696 Corr: No Ephemeris Match



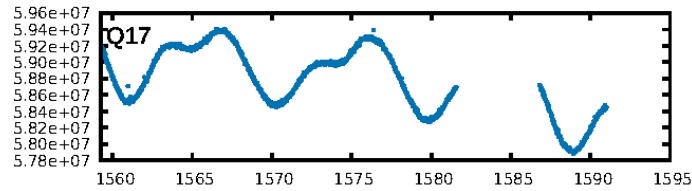
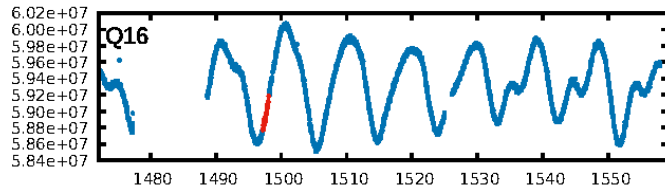
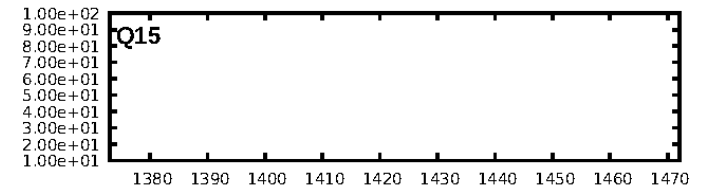
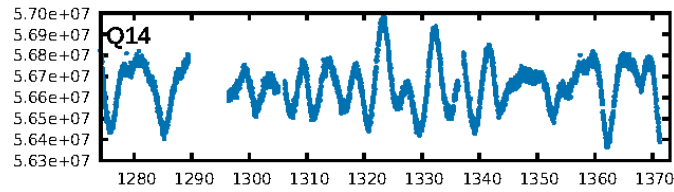
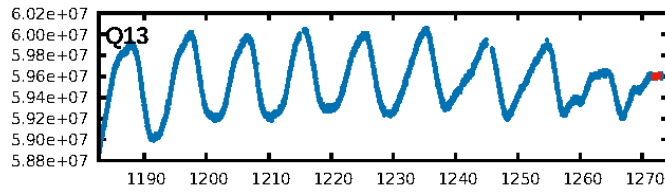
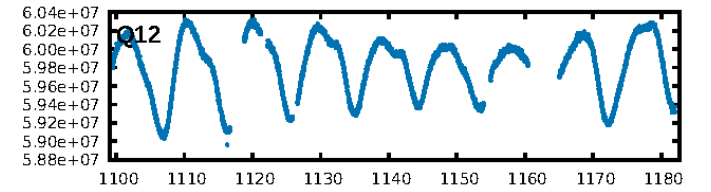
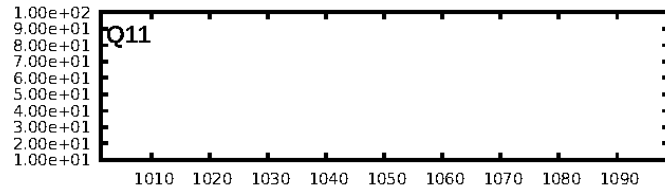
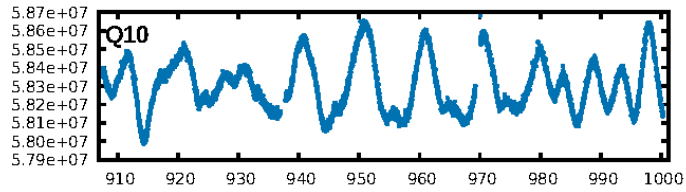
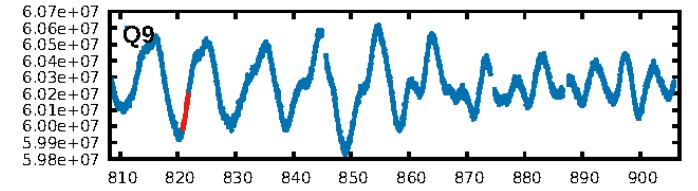
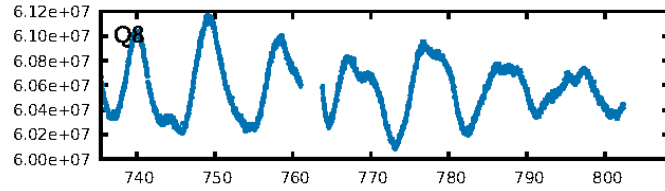
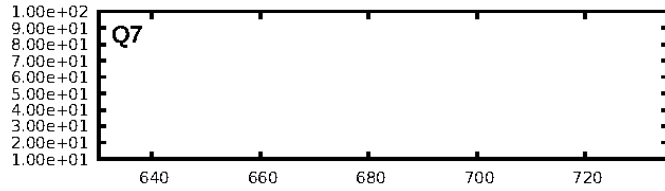
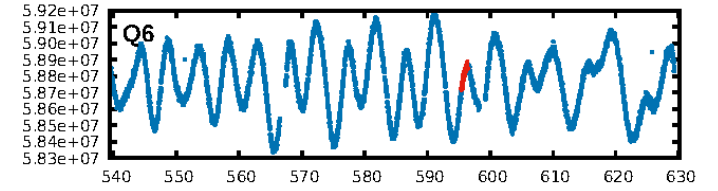
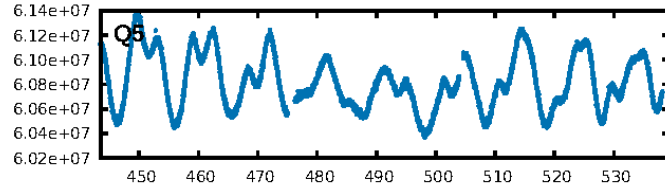
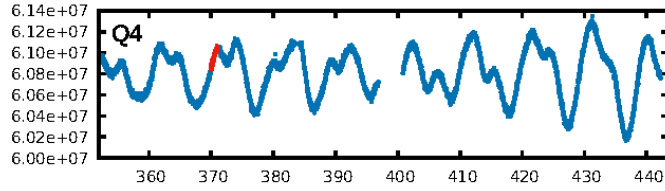
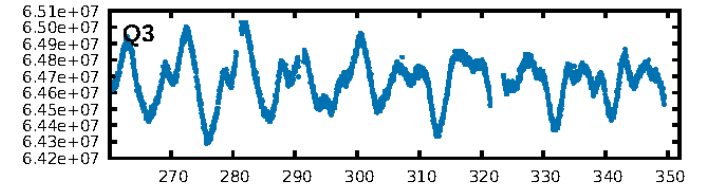
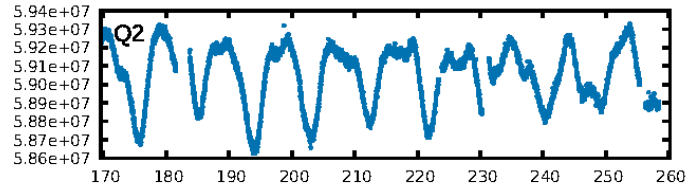
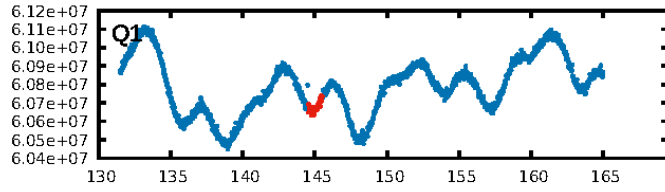
DV Fit Results:

Period = 225.43781 [0.00884] d
Epoch = 145.0255 [0.0278] BKJD
Rp/R* = 0.0418 [0.1352]
a/R* = 43.13 [35.18]
b = 1.00 [0.20]
Seff = 1.04 [0.21]
Teff = 257 [13] K
Rp = 3.76 [12.17] Re
a = 0.6627 [0.0714] AU
Ag = 1281.75 [8482.31] [0.15 σ]
Teffp = 2381 [3939] K [0.54 σ]

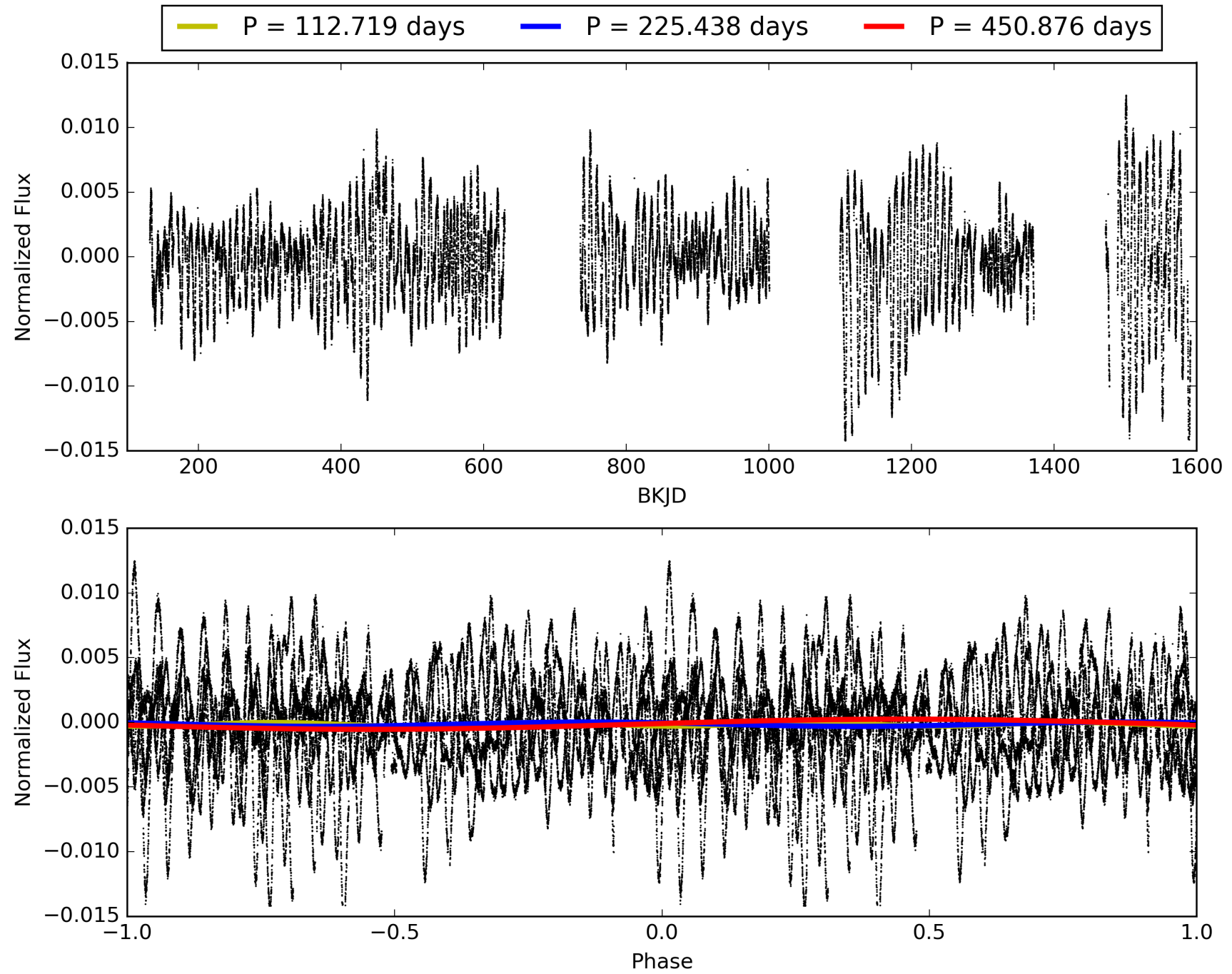
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [431.68 σ]
LongPeriod-sig: 100.0% [837.05 σ]
ModelChiSquare2-sig: 0.1%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 5.26e-10
RollingBand-fgt: 1.00 [5/5]
GhostDiagnostic-chr: 0.7846
Centroid-sig: 6.9%
Centroid-so: 1.404 arcsec [1.64 σ]
OotOffset-rm: 1.382 arcsec [3.13 σ]
KicOffset-rm: 1.374 arcsec [5.23 σ]
OotOffset-st: 1/0/1/3 [5]
KicOffset-st: 1/0/1/3 [5]
DiffImageQuality-fgm: 0.60 [3/5]
DiffImageOverlap-fno: 0.00 [0/5]

TCE 009851845-03, PDC Light Curves

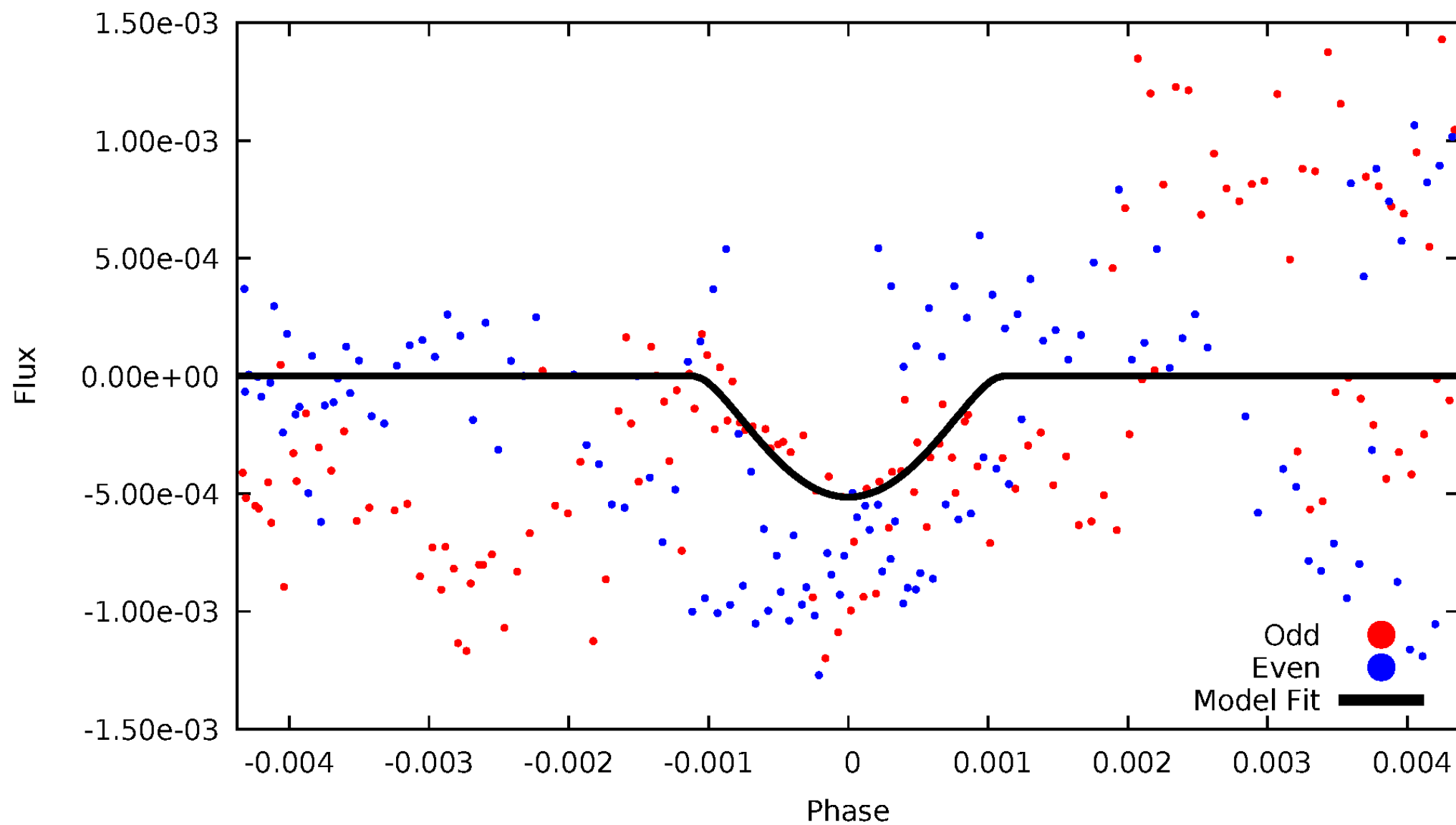


TCE 009851845-03



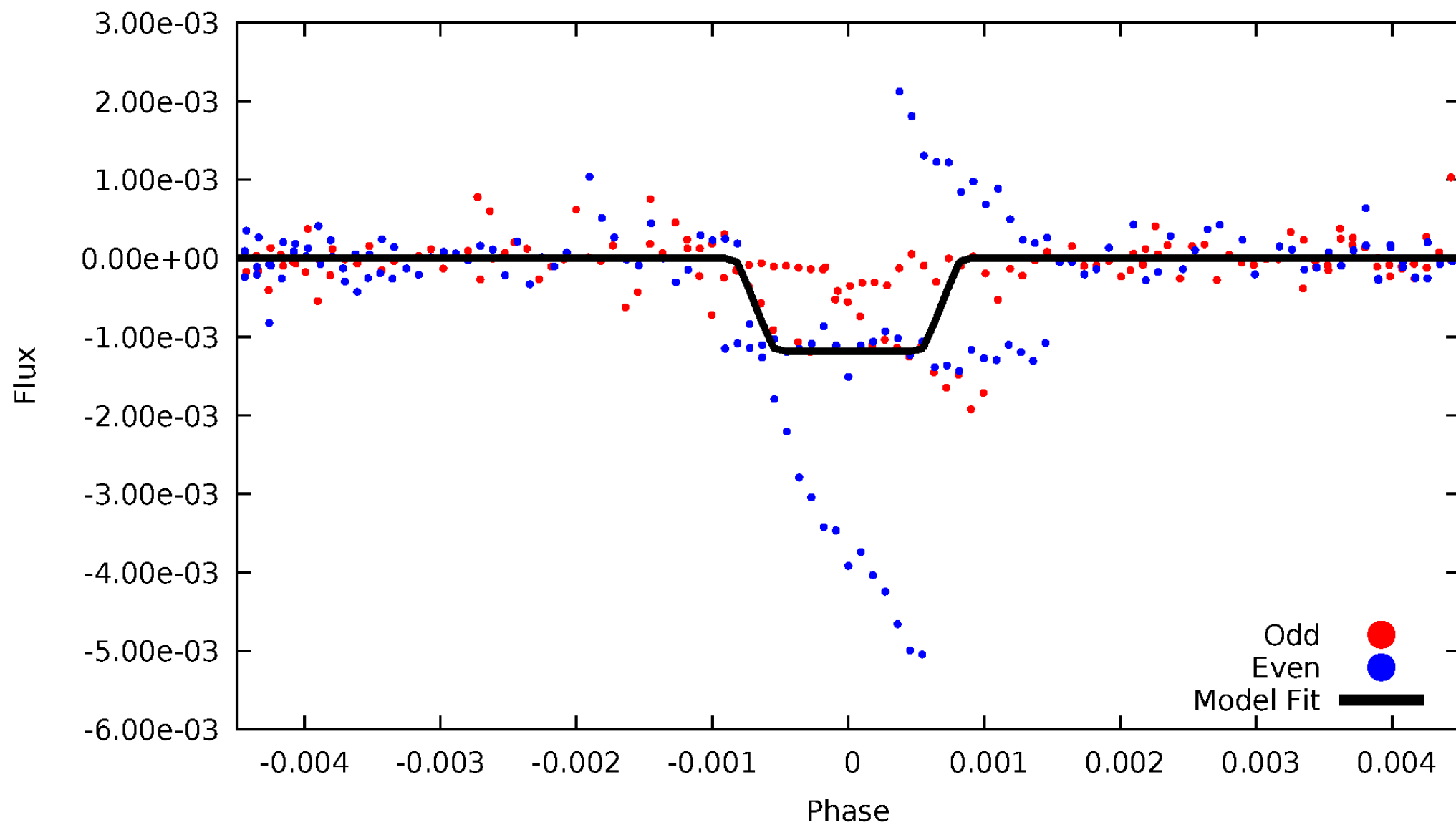
DV Odd/Even

TCE 009851845-03



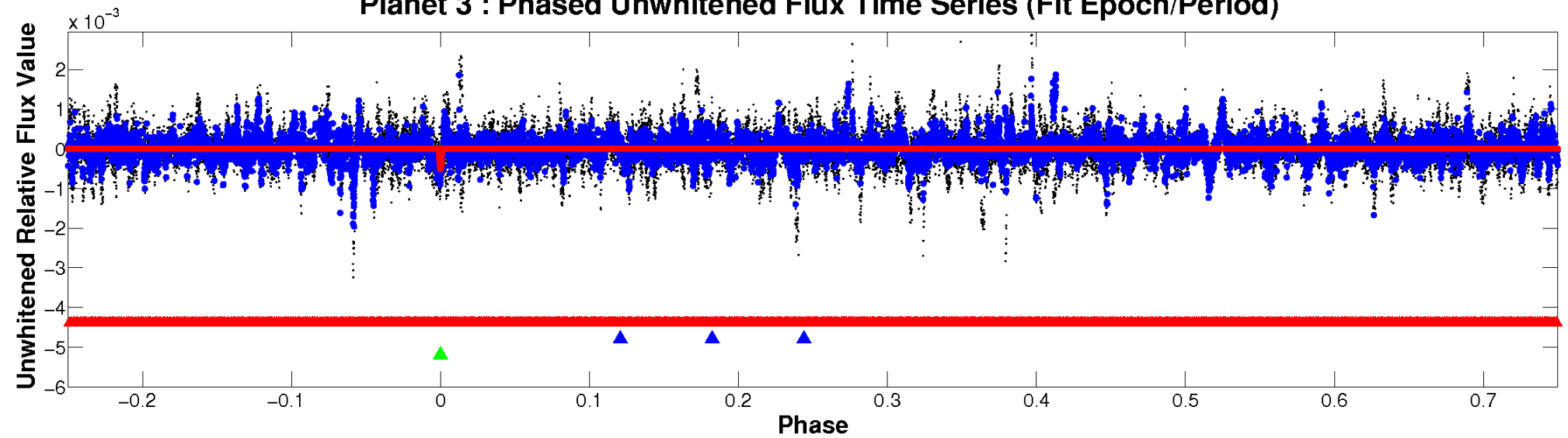
ALT Odd/Even

TCE 009851845-03

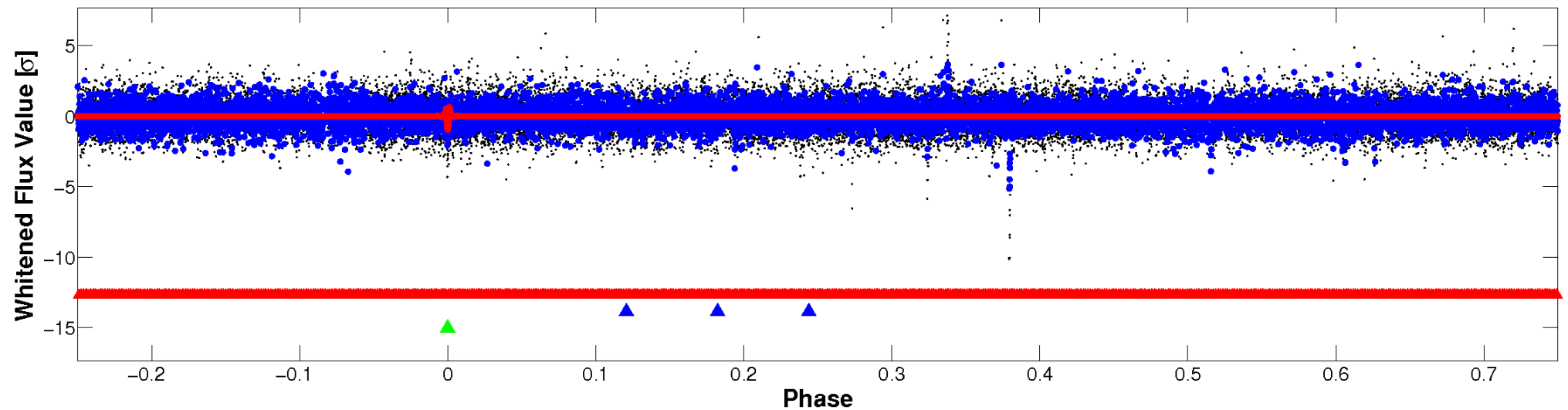


Non-Whitened Vs. Whitened Light Curve

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

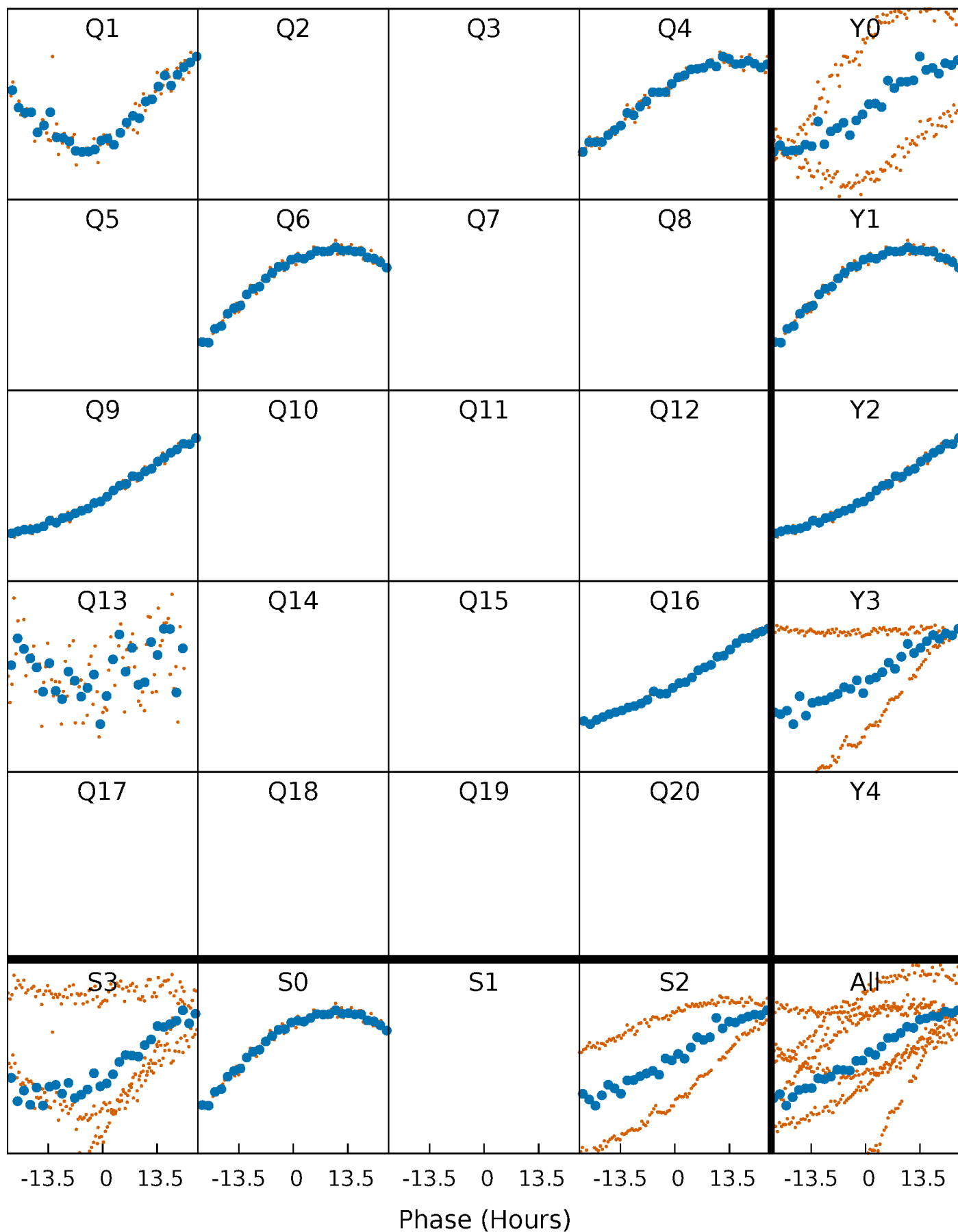


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



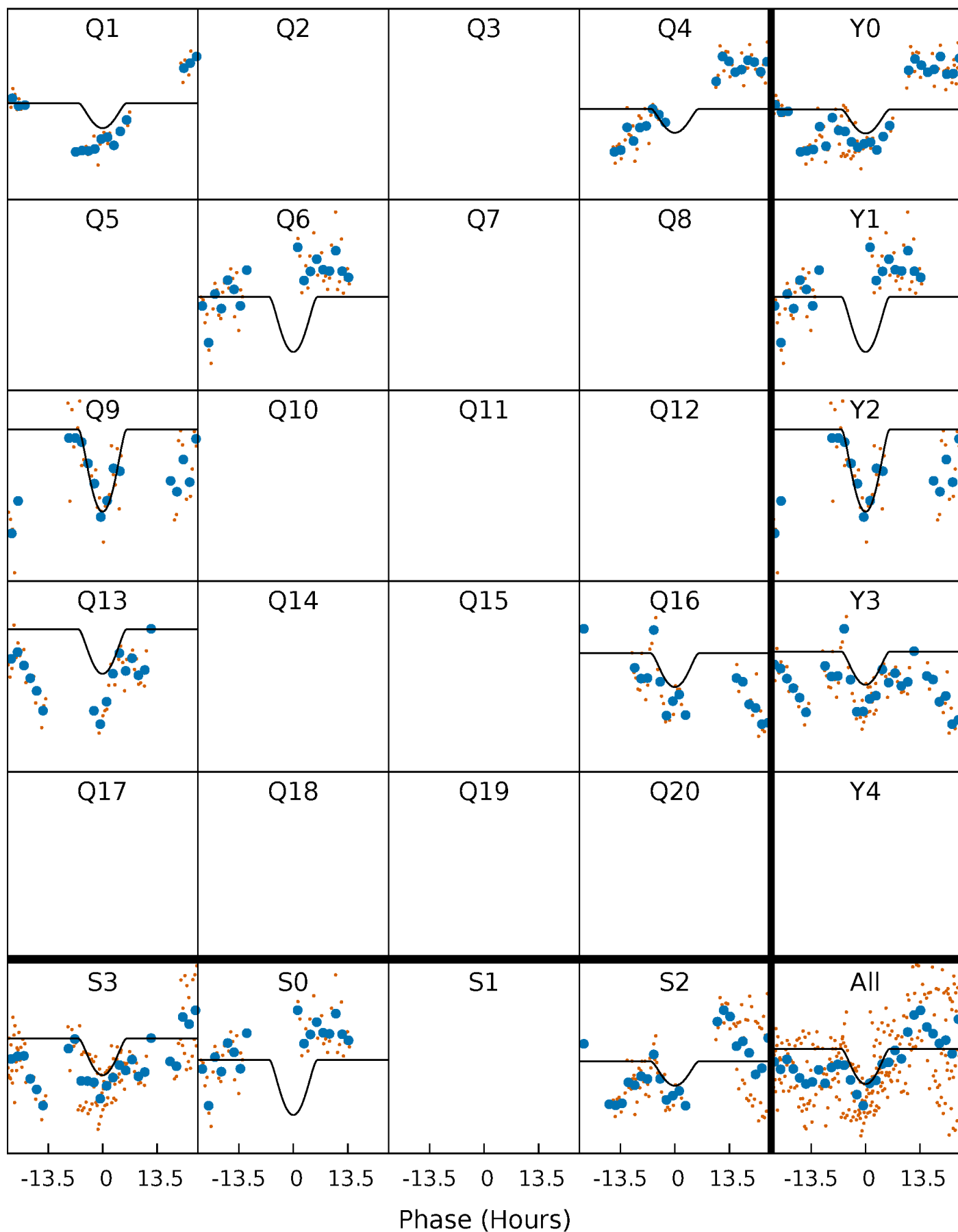
PDC Quarter-Phased Transit Curves

TCE 009851845-03 P=225.437807 Days $T_0=145.025464$ (BKJD)



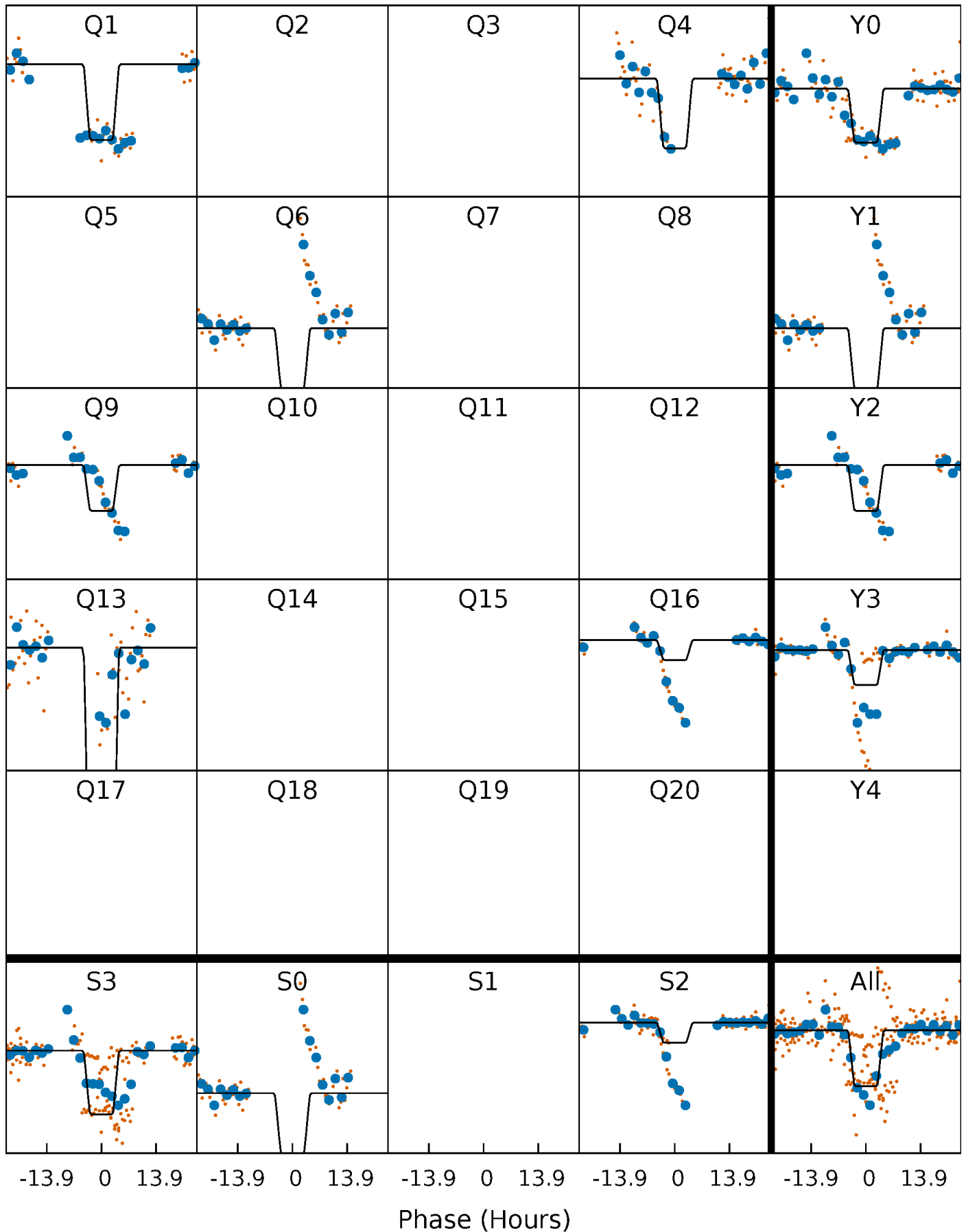
DV Quarter-Phased Transit Curves

TCE 009851845-03 P=225.437807 Days $T_0=145.025464$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

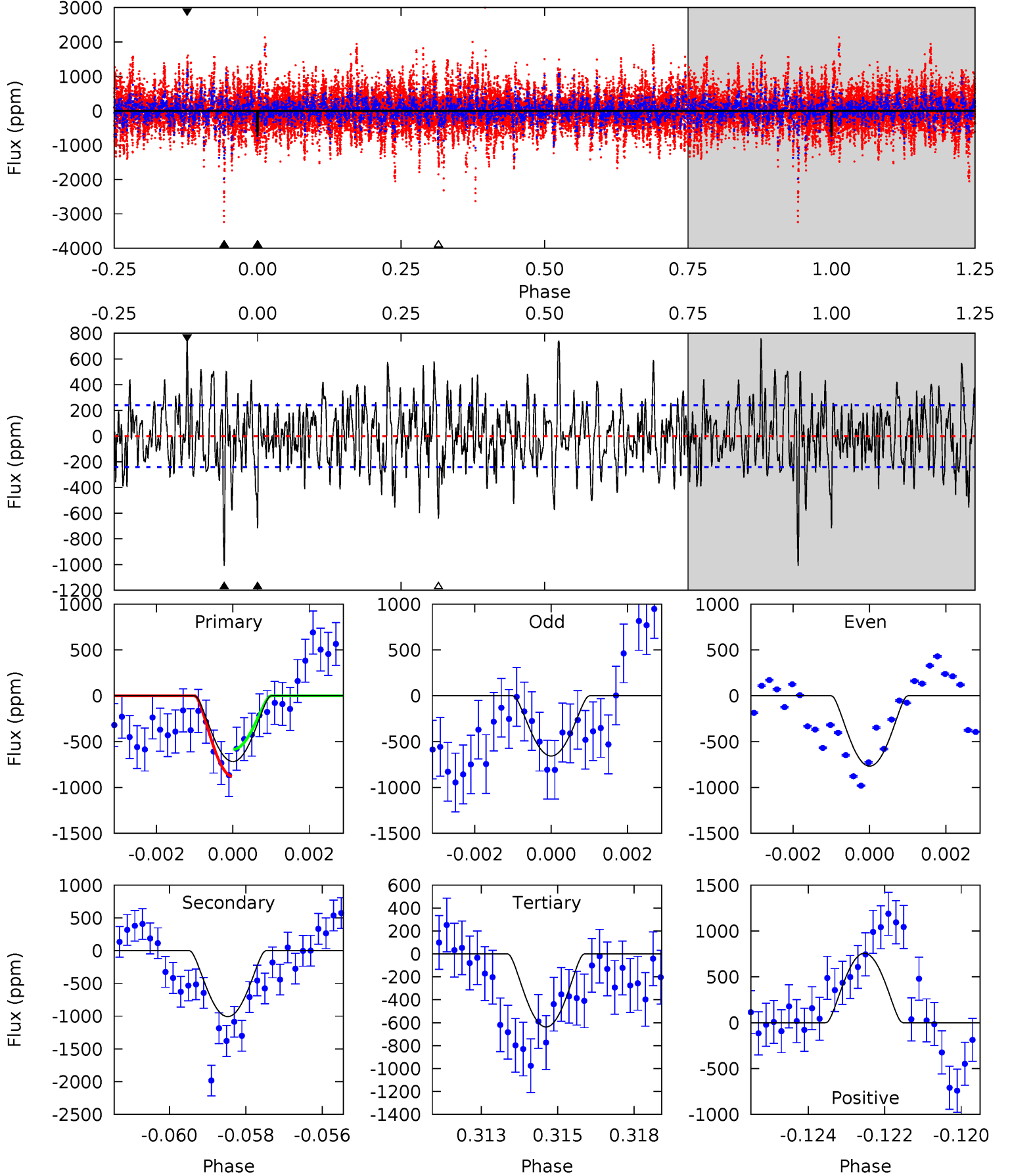
TCE 009851845-03 P=225.443467 Days $T_0=144.977892$ (BKJD)



DV Model-Shift Uniqueness Test

009851845-03, P = 225.437807 Days, E = 145.025464 Days

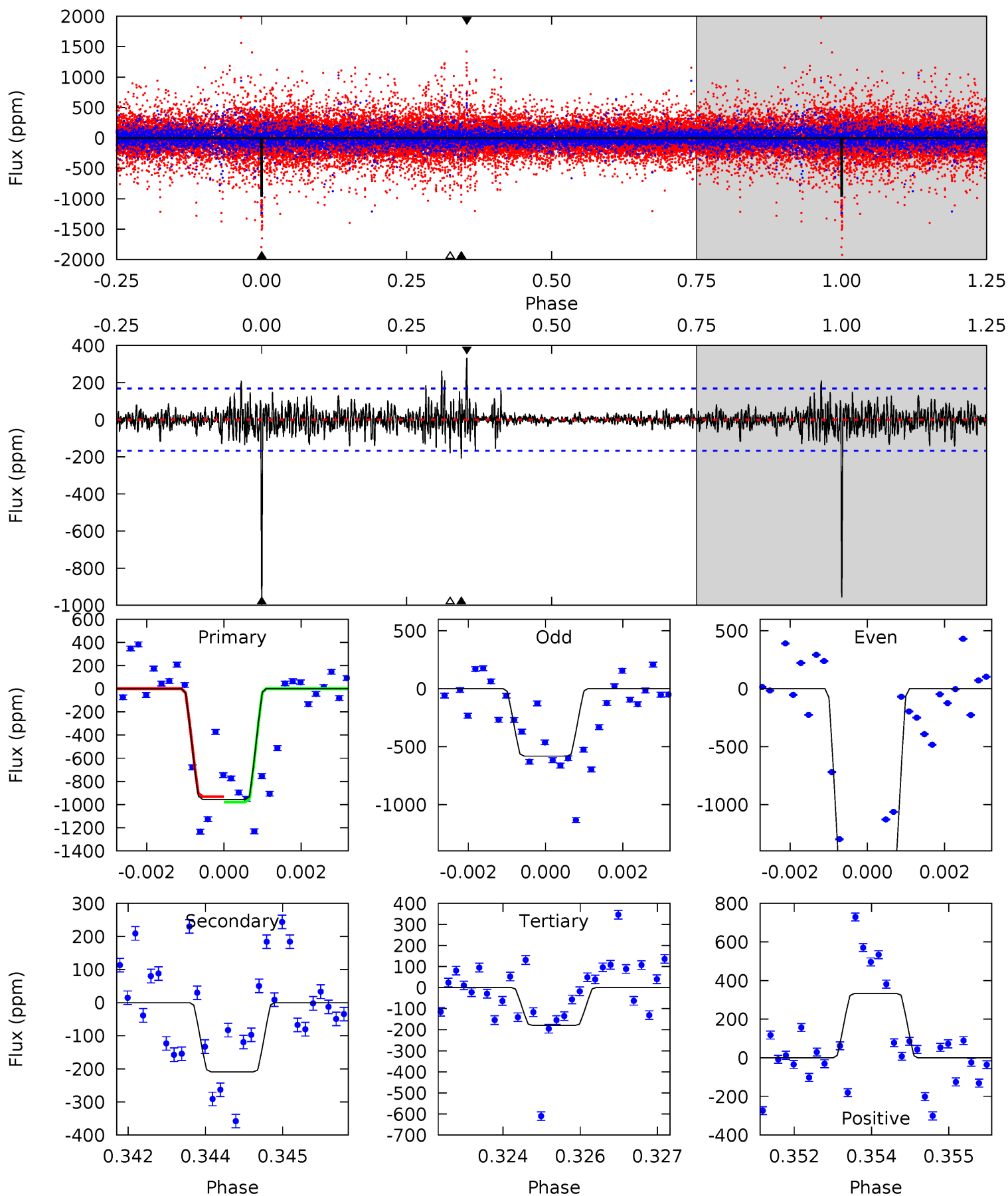
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
15.8	22.2	14.0	16.7	5.31	3.06	4.57	1.77	-0.87	8.16	5.52	1.11	0.83	0.43	3.25



Alt Model-Shift Uniqueness Test

009851845-03, P = 225.443467 Days, E = 144.977892 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
30.5	6.67	5.72	10.6	5.36	3.15	1.39	24.8	19.9	0.95	-3.96	22.6	0.93	0.26	0.74



Stellar Parameters For KIC 009851845

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5233^{+158}_{-142}	$4.489^{+0.095}_{-0.085}$	$-0.160^{+0.300}_{-0.300}$	$0.824^{+0.098}_{-0.098}$	$0.764^{+0.103}_{-0.060}$	$1.925^{+0.863}_{-0.504}$
	+3%/-3%	+2%/-2%	+188%/-188%	+12%/-12%	+13%/-8%	+45%/-26%
Source	PHO1	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 009851845-03 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-1007 ± 45	$9.77^{+10.34}_{-6.67}$	360^{+17}_{-16}	3331^{+1693}_{-585}	2574^{+22455}_{-1972}
Alt.	-209 ± 31	$9.67^{+9.56}_{-6.72}$	360^{+16}_{-15}	2705^{+1123}_{-424}	557^{+5093}_{-417}

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

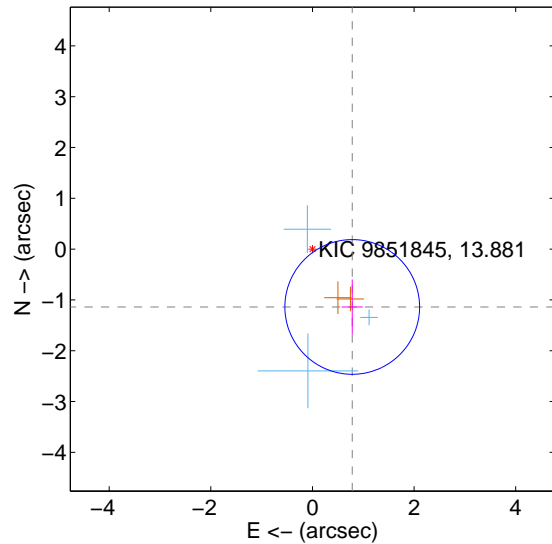
Supplemental centroid analysis for 009851845-03. Kepler magnitude: 13.88. Transit SNR 6.46

There are 3 quarters with good PRF difference image offsets

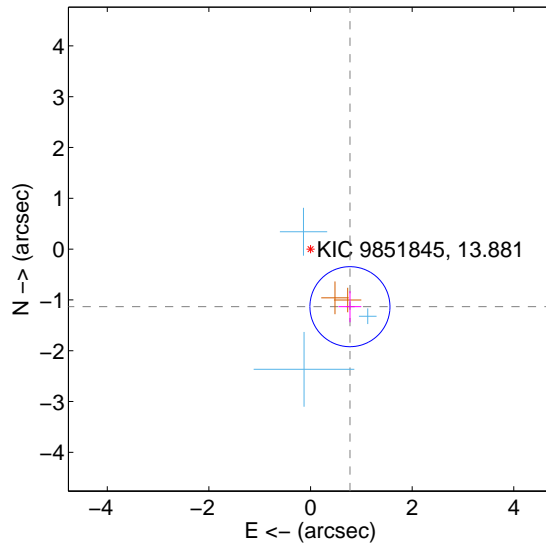
The direct PRF centroid is offset from the target star catalog position by about 0.05 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.382 ± 0.442	3.13	-0.783 ± 0.207	-1.139 ± 0.540
PRF-fit source offset from KIC position	1.374 ± 0.263	5.23	-0.776 ± 0.225	-1.134 ± 0.307
photometric centroid source offset	1.40 ± 0.86	1.64	1.34 ± 0.87	0.41 ± 0.72

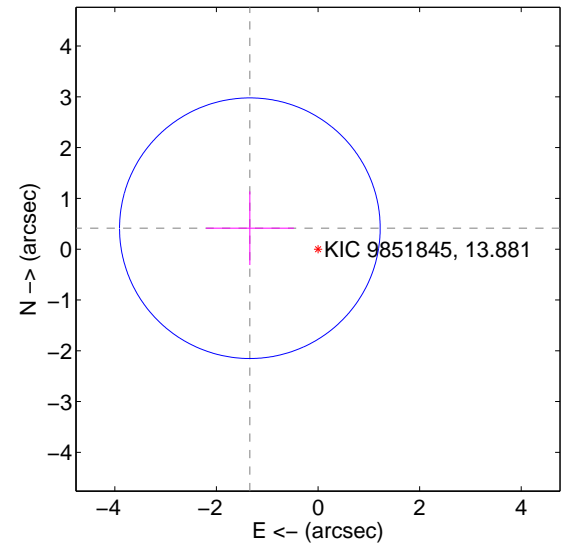
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

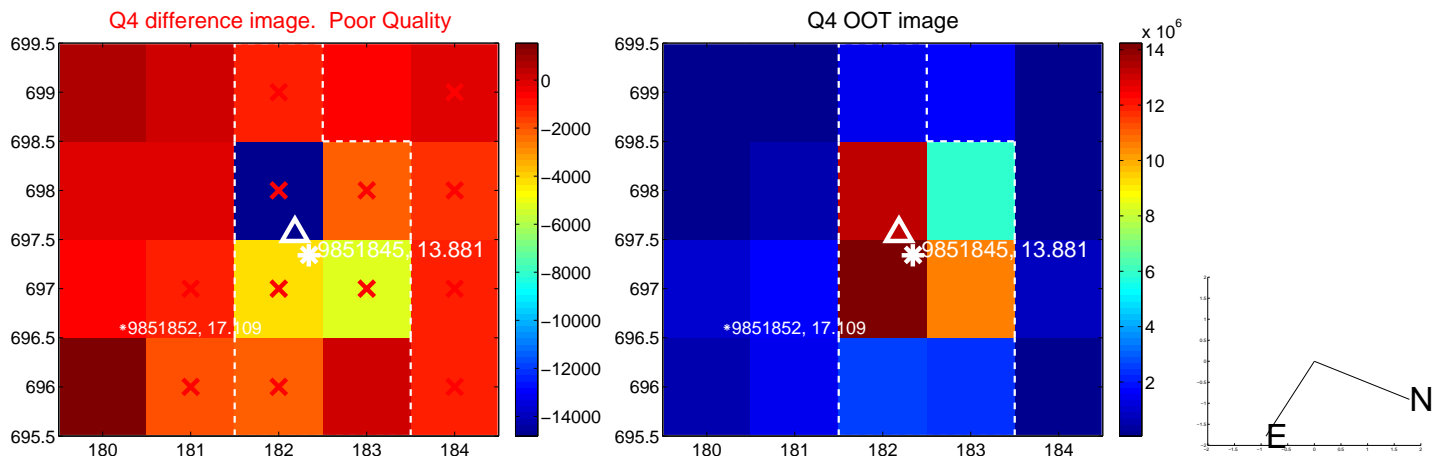
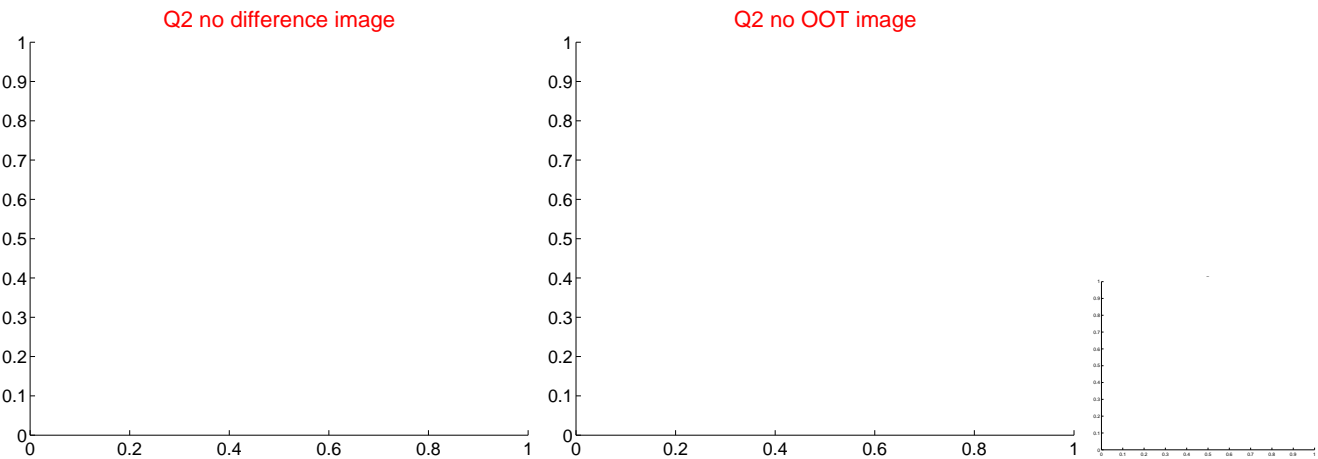
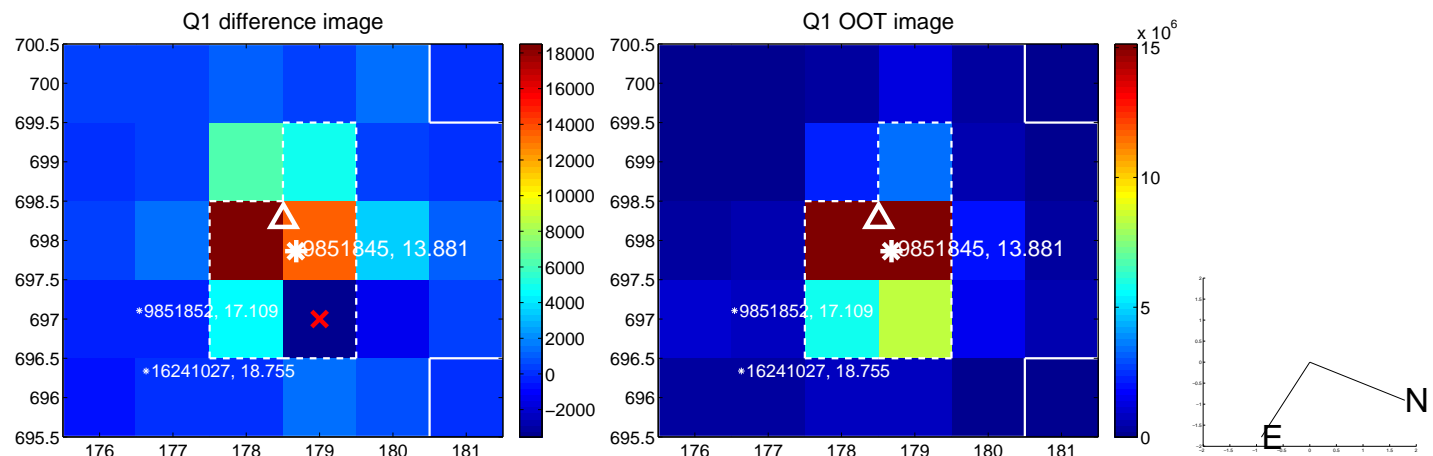


offset from photometric centroids

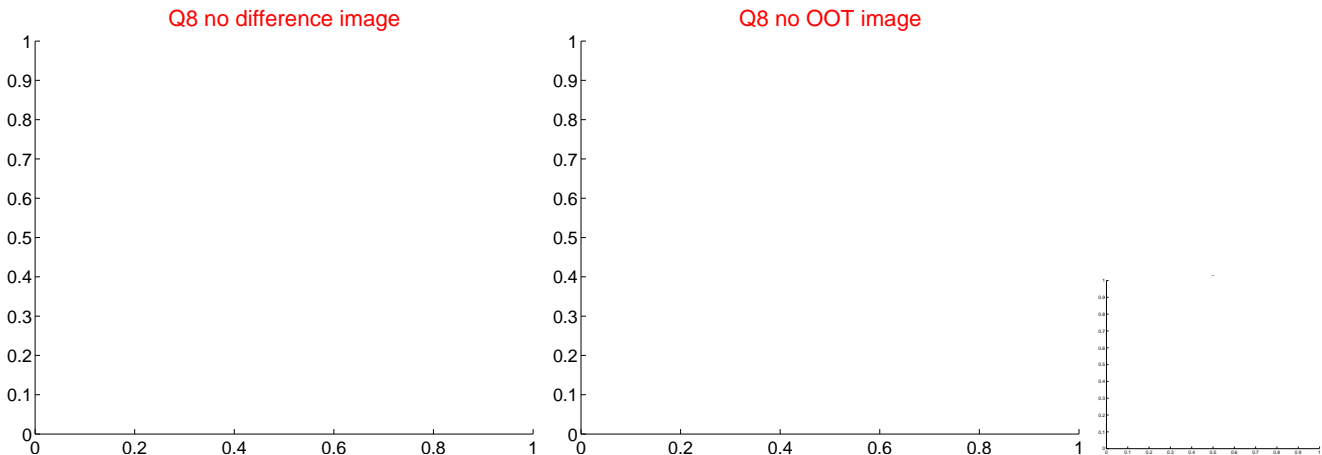
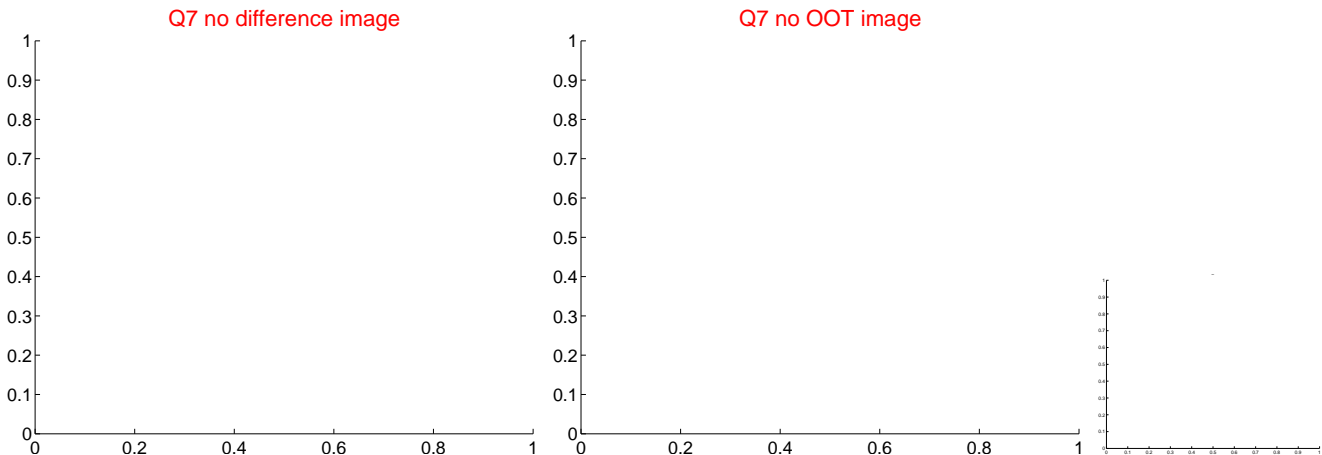
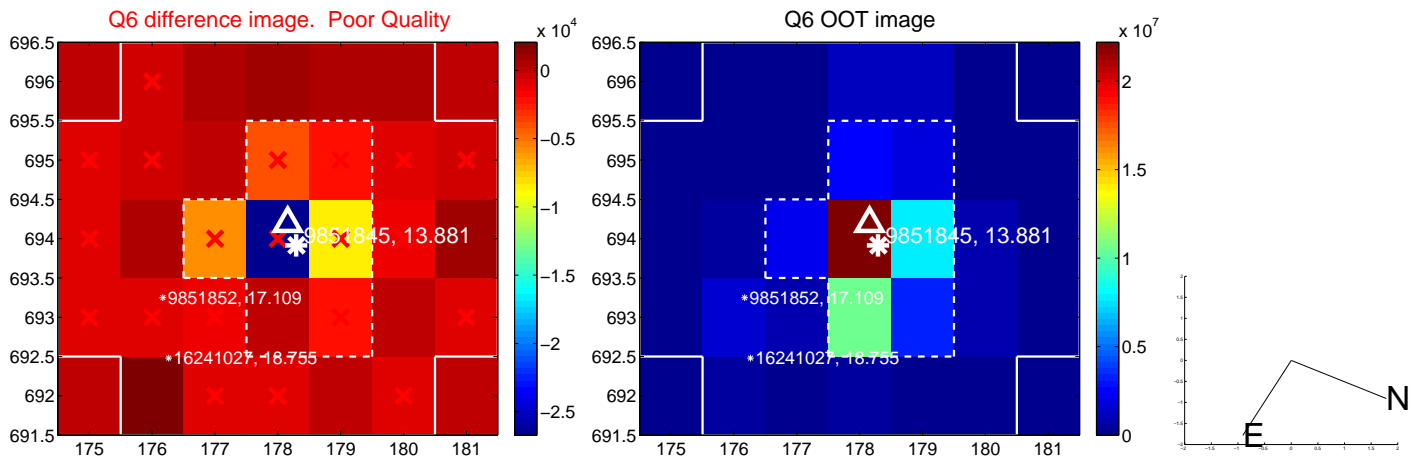
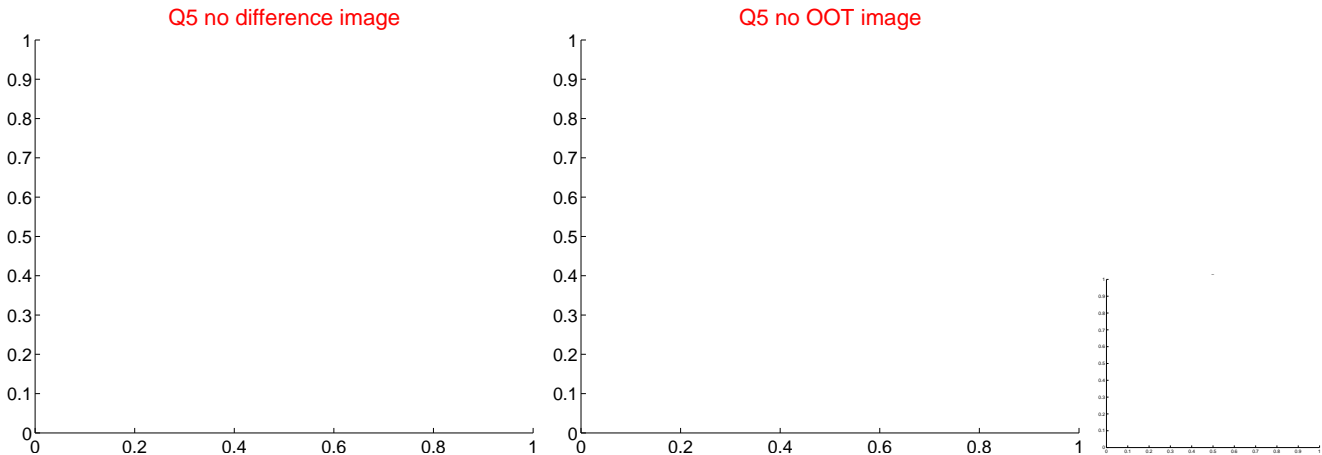


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

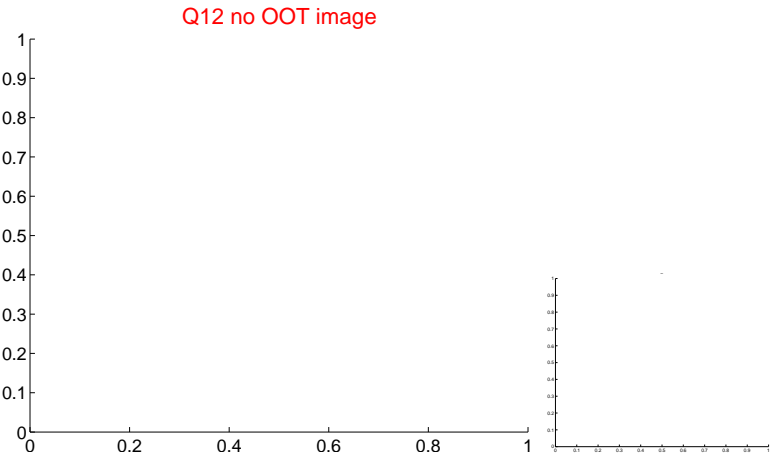
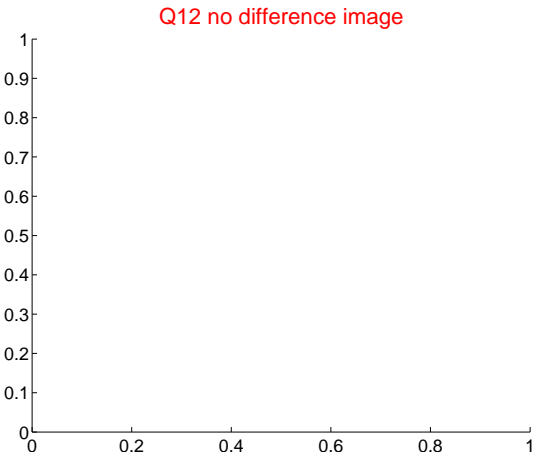
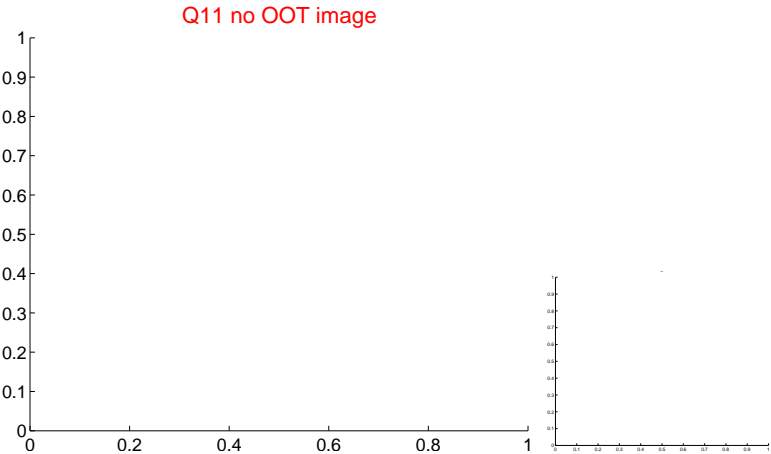
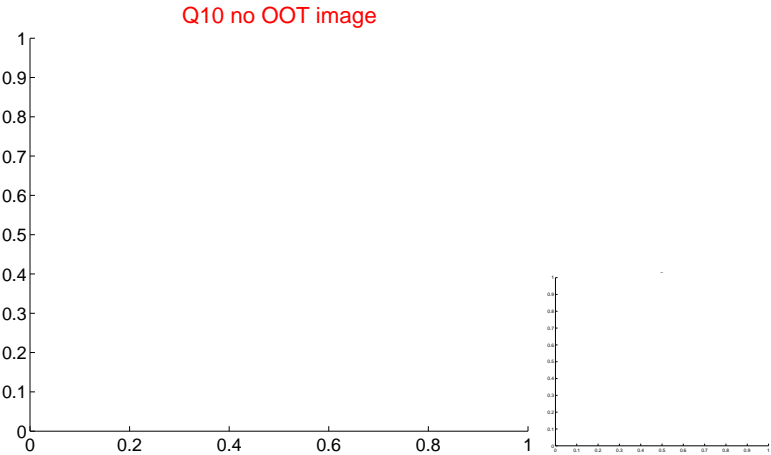
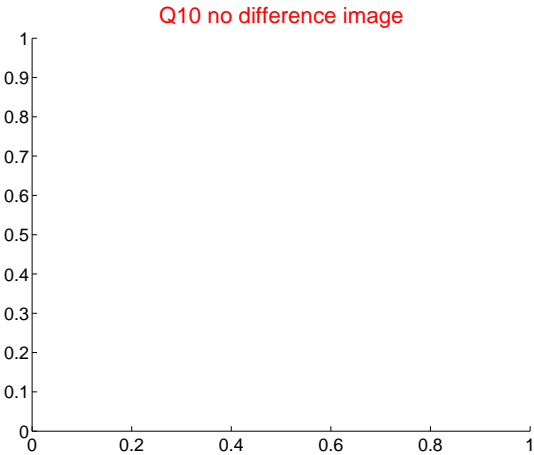
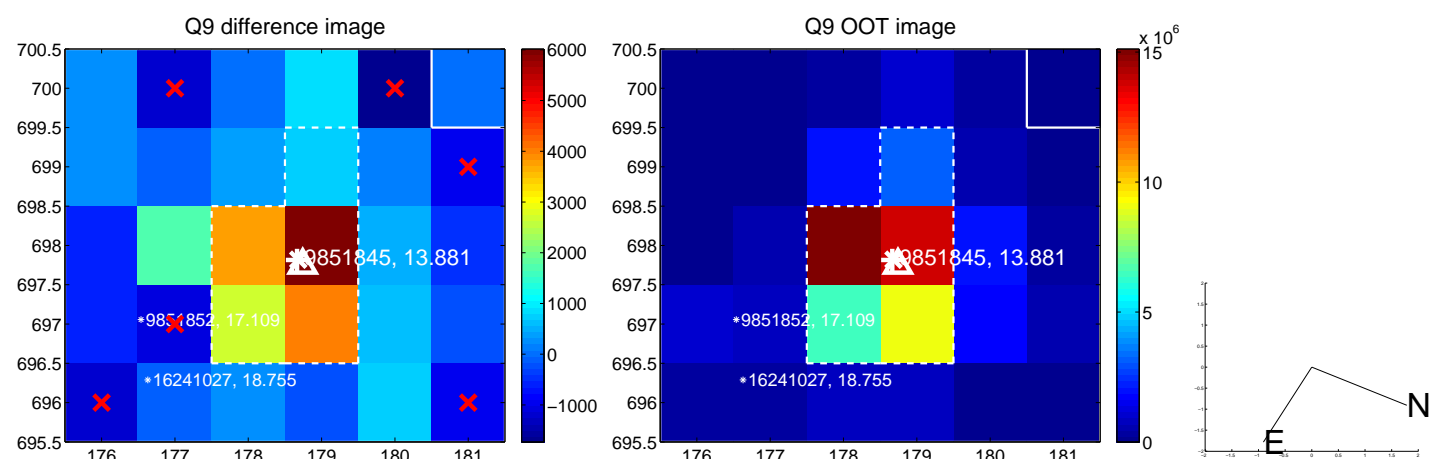
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



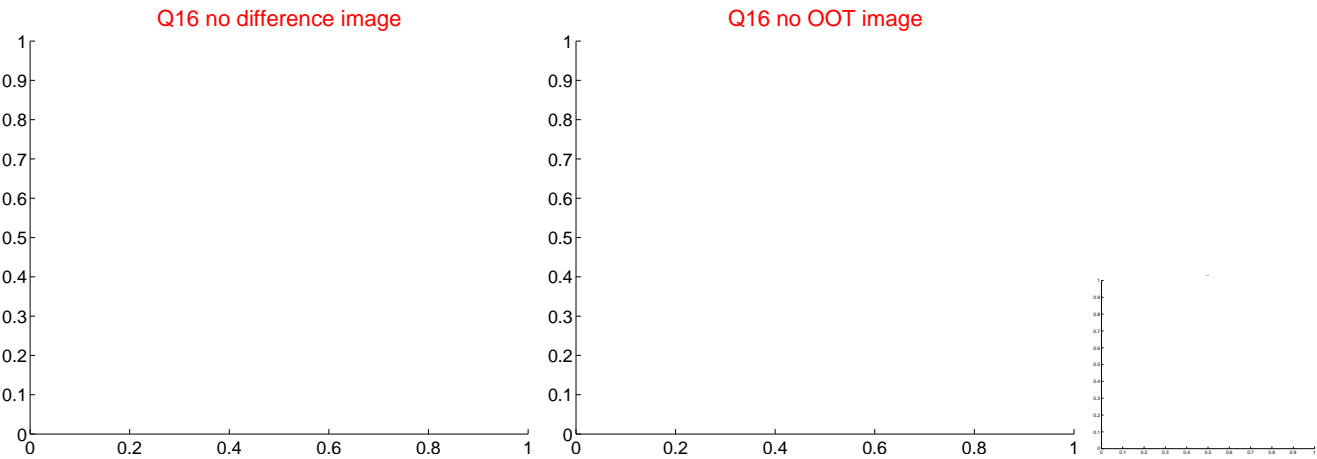
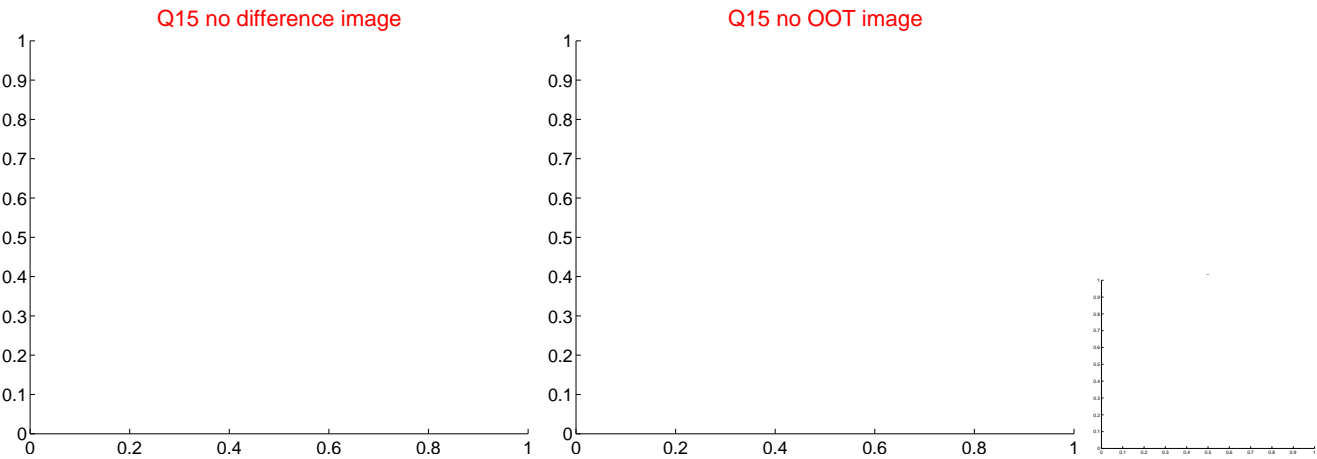
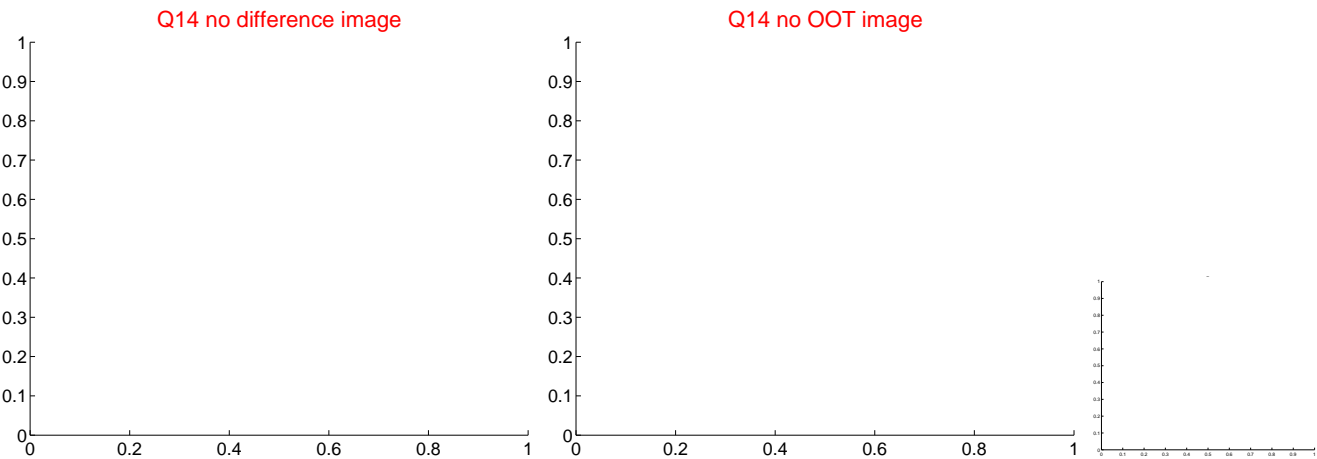
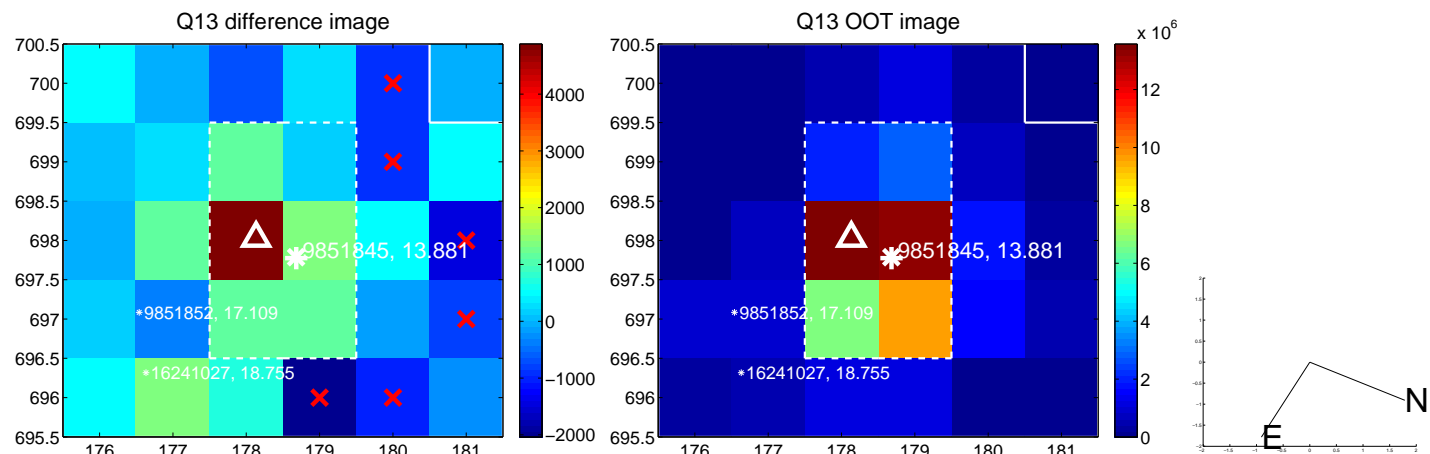
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value



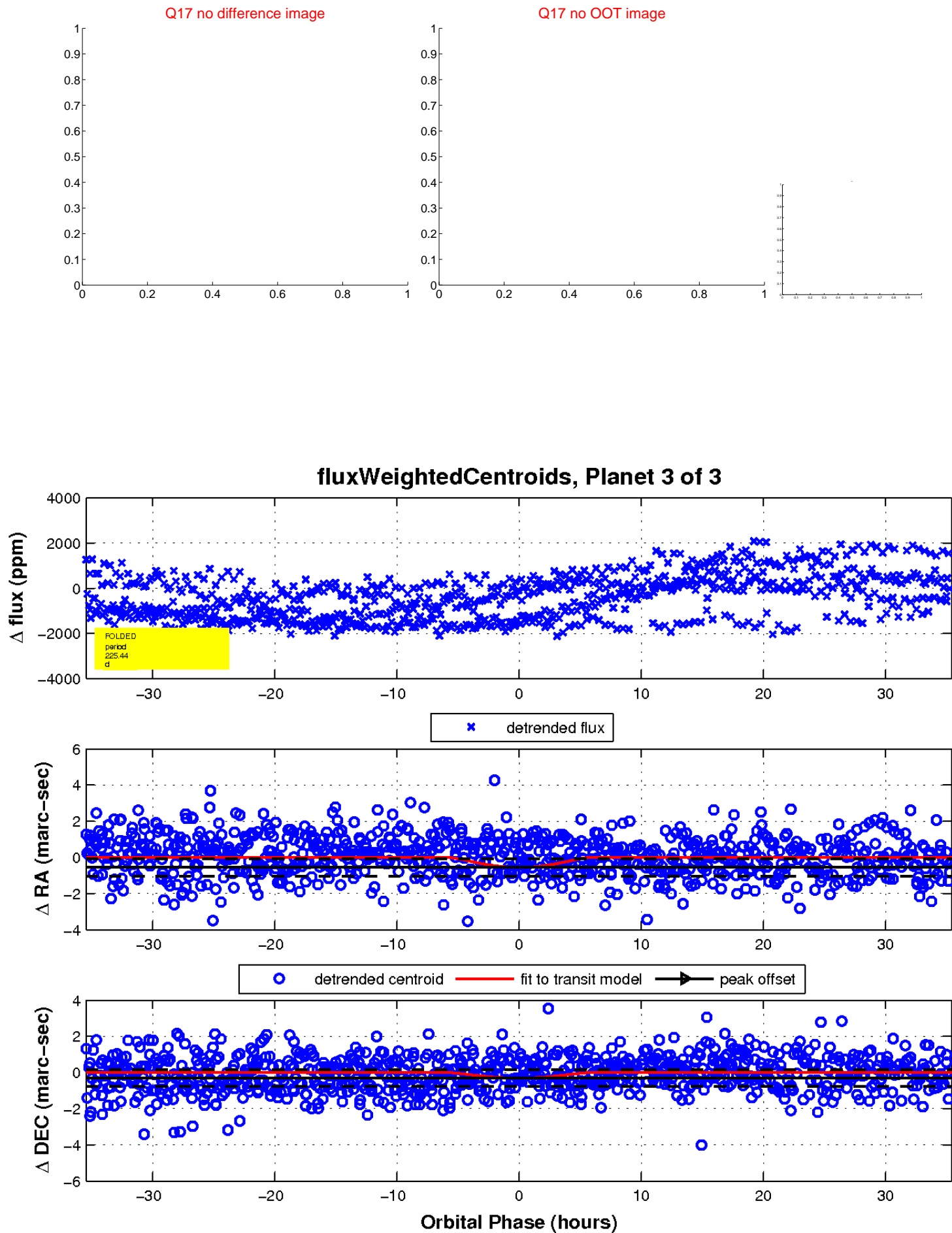
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.



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



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



UKIRT Image

Declination

