

KIC 011390838

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})
011390838-01	OBS	No	193.083118	324.004984	131.6	21.596	15.3	5.3	1.50	5941	2.32	5.96
011390838-02	OBS	No	433.923883	264.814535	256.0	32.329	9.1	10.6	1.50	5941	3.31	2.02
011390838-03	OBS	No	359.650258	341.296184	46.3	2.251	11.6	2.7	1.50	5941	1.29	2.60
011390838-04	OBS	No	359.855854	341.645053	991.4	50.555	11.9	27.1	1.50	5941	6.29	2.60
011390838-05	OBS	No	561.481363	154.172417	152.4	20.888	7.9	6.7	1.50	5941	2.44	1.44

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011390838-01	OBS	FP	0.00	1	0	1	0	LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_SATURATED—HALO_GHOST
011390838-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_SATURATED
011390838-03	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_MARSHALL_SKYE_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED—HALO_GHOST
011390838-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—INCONSISTENT_TRANS—CENT_SATURATED
011390838-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_SATURATED

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

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

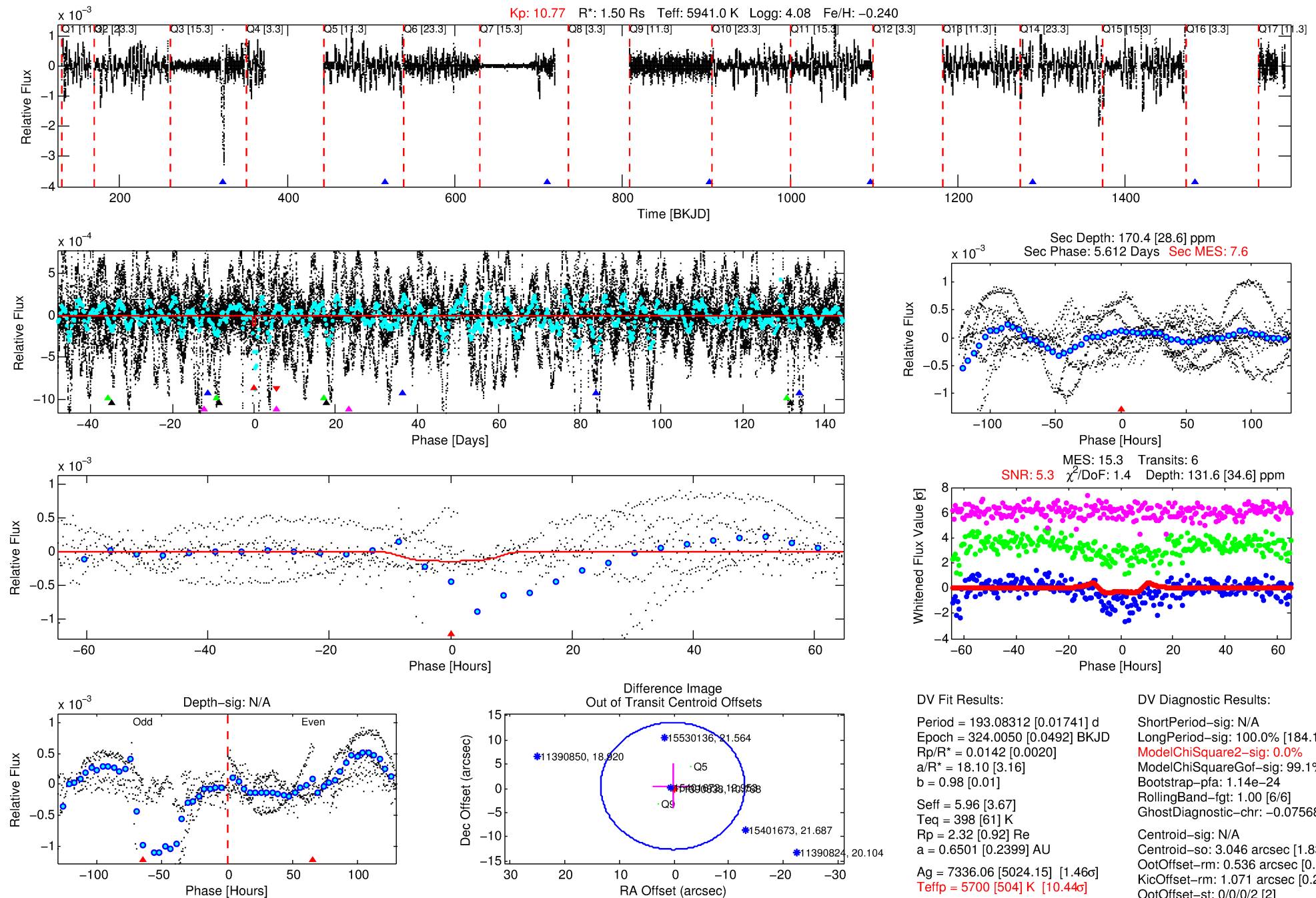
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 011390838-01

No Significant Match Found

DV One-Page Summary

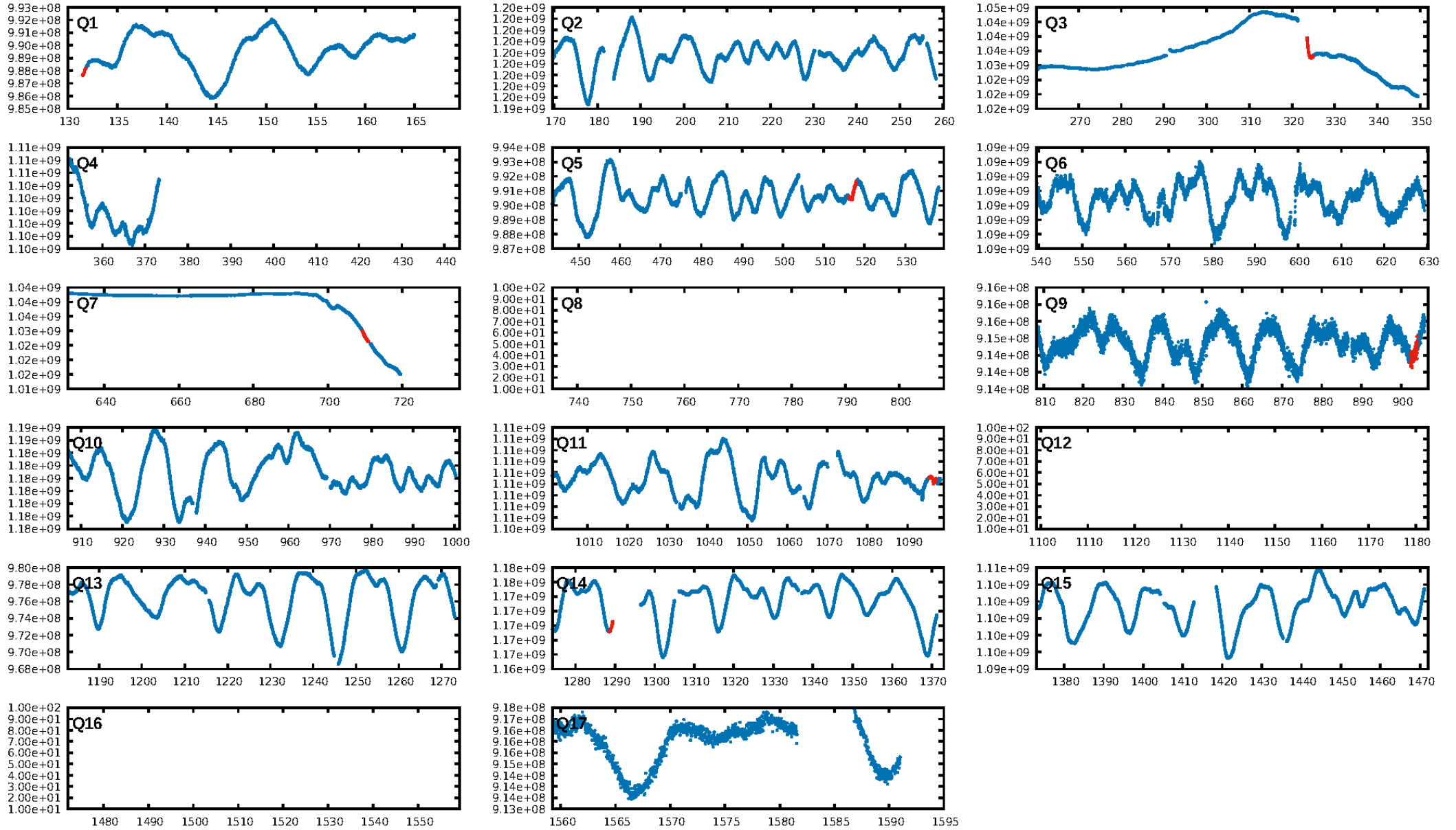
KIC: 11390838 Candidate: 1 of 5 Period: 193.083 d



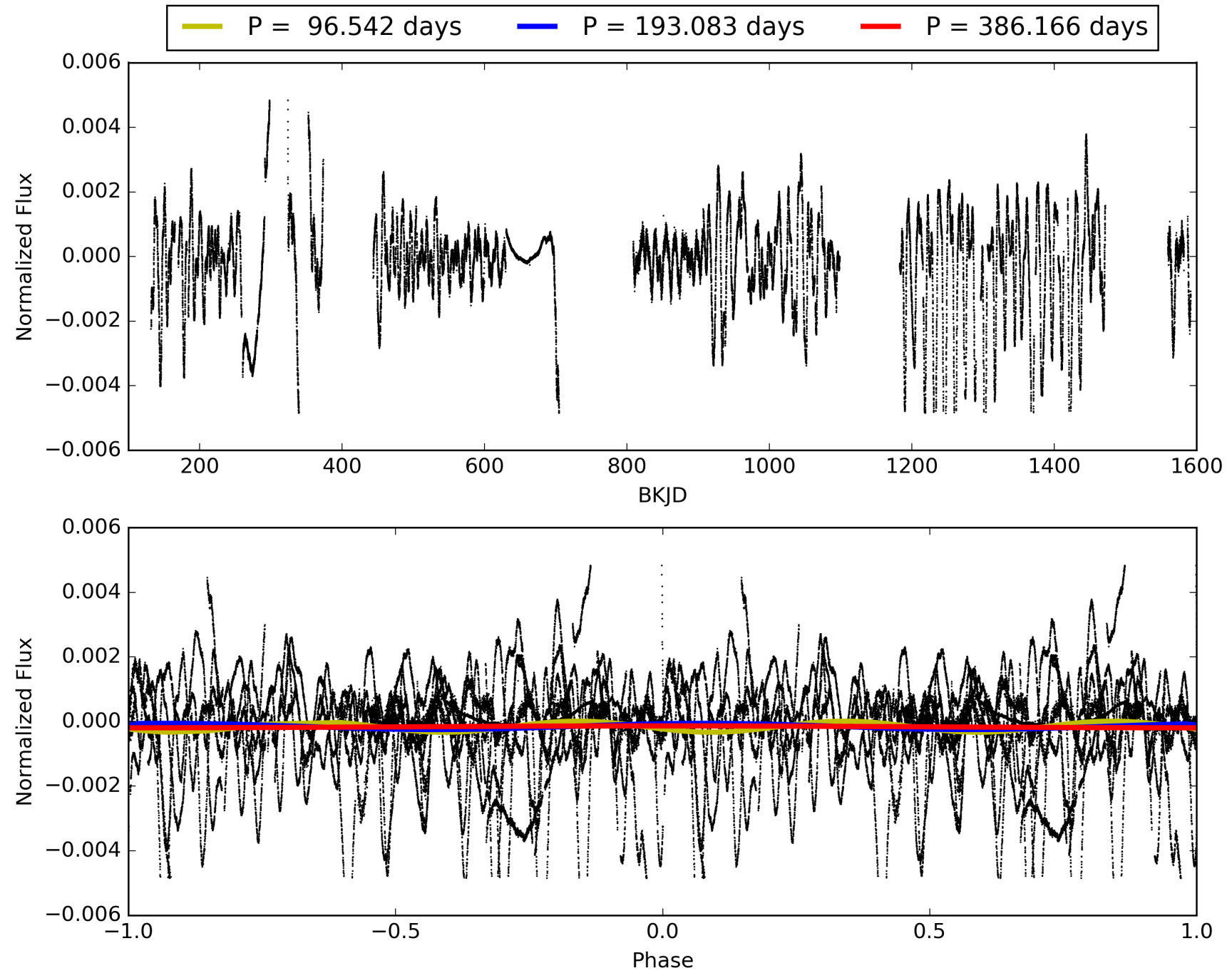
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 16:51:29 Z

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

TCE 011390838-01, PDC Light Curves

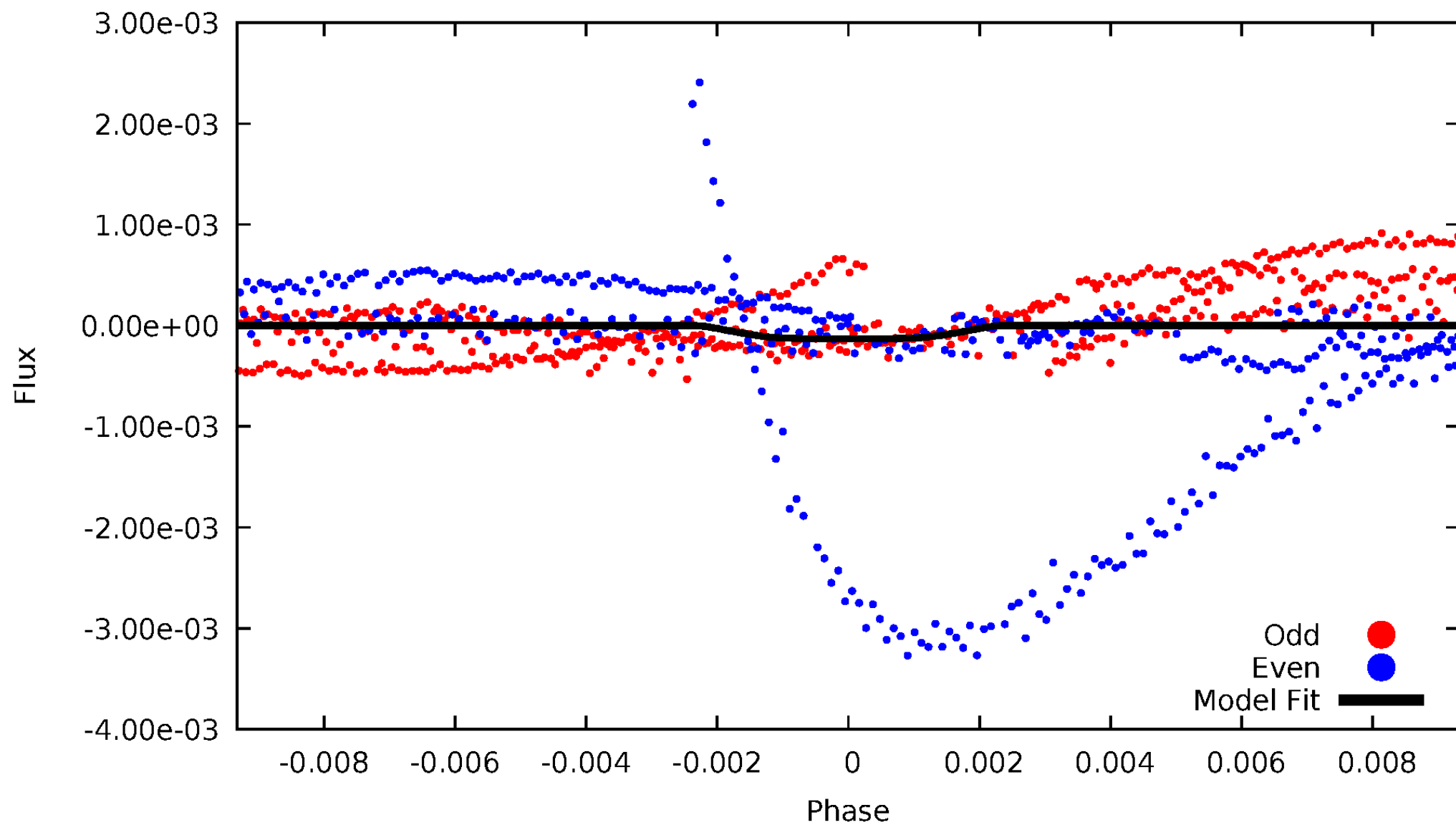


TCE 011390838-01



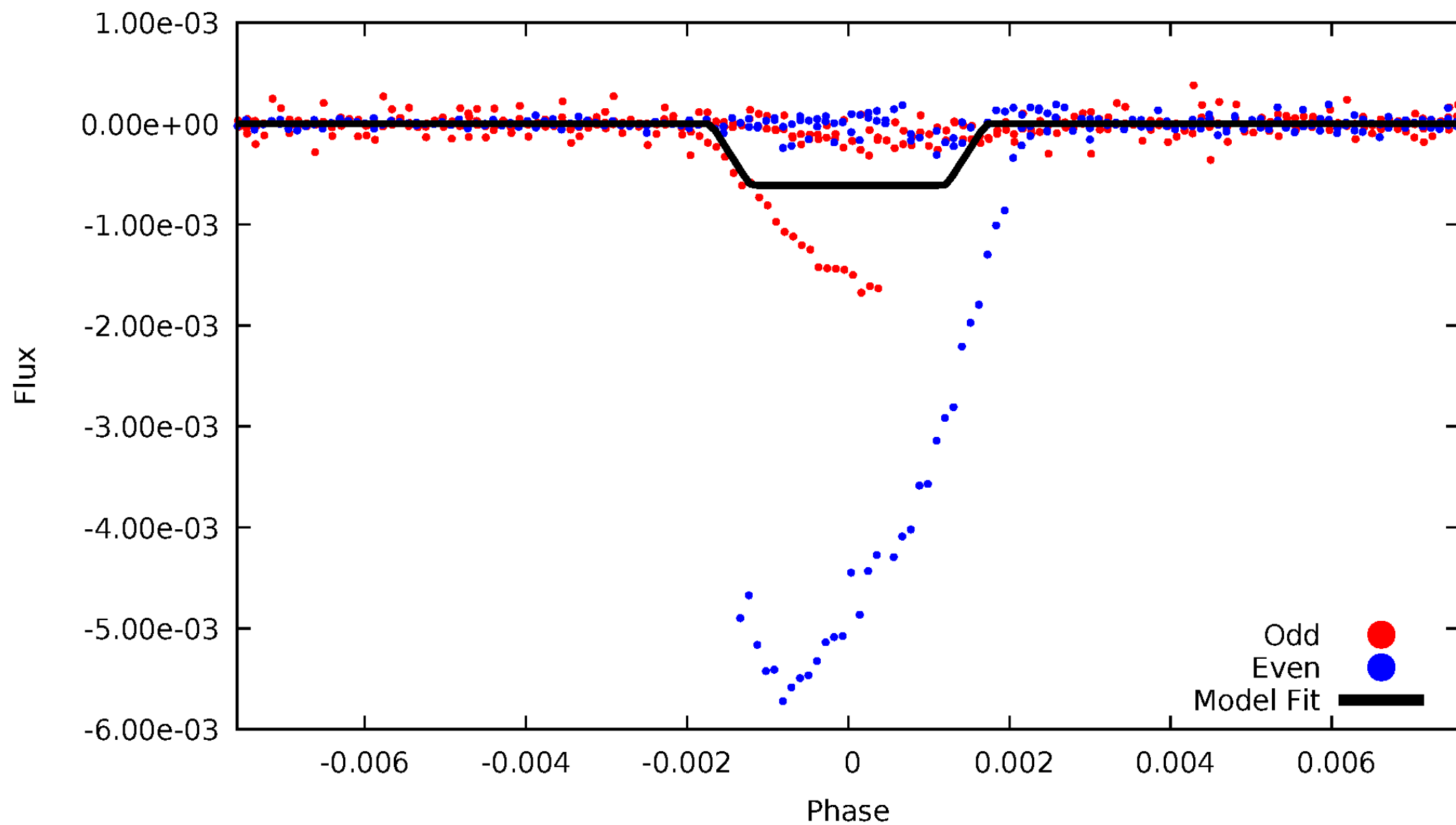
DV Odd/Even

TCE 011390838-01

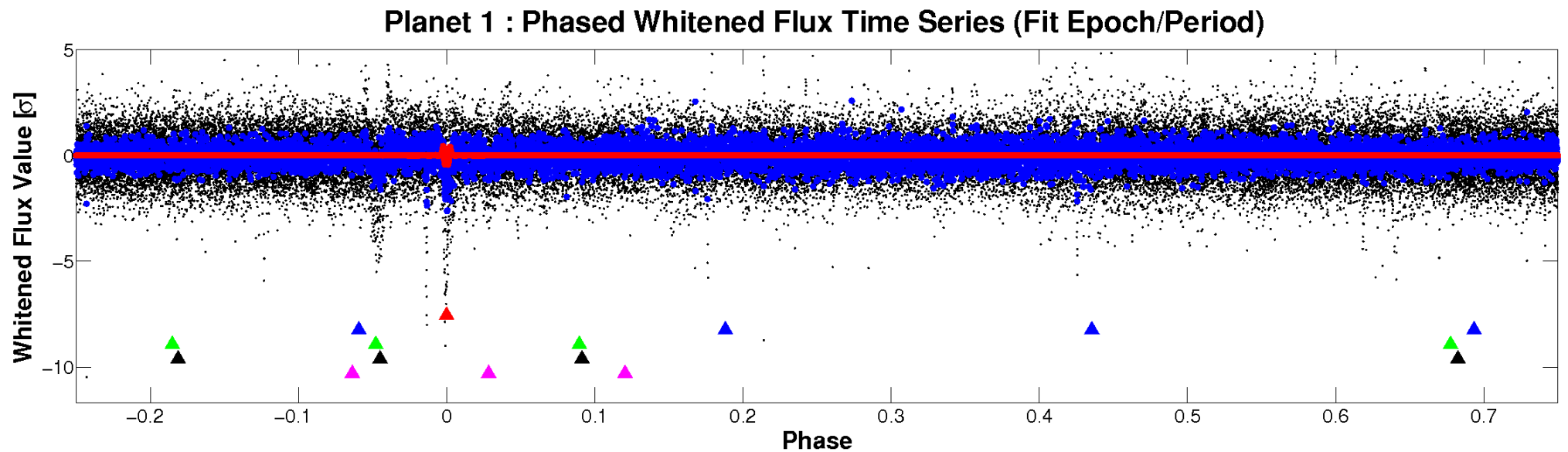
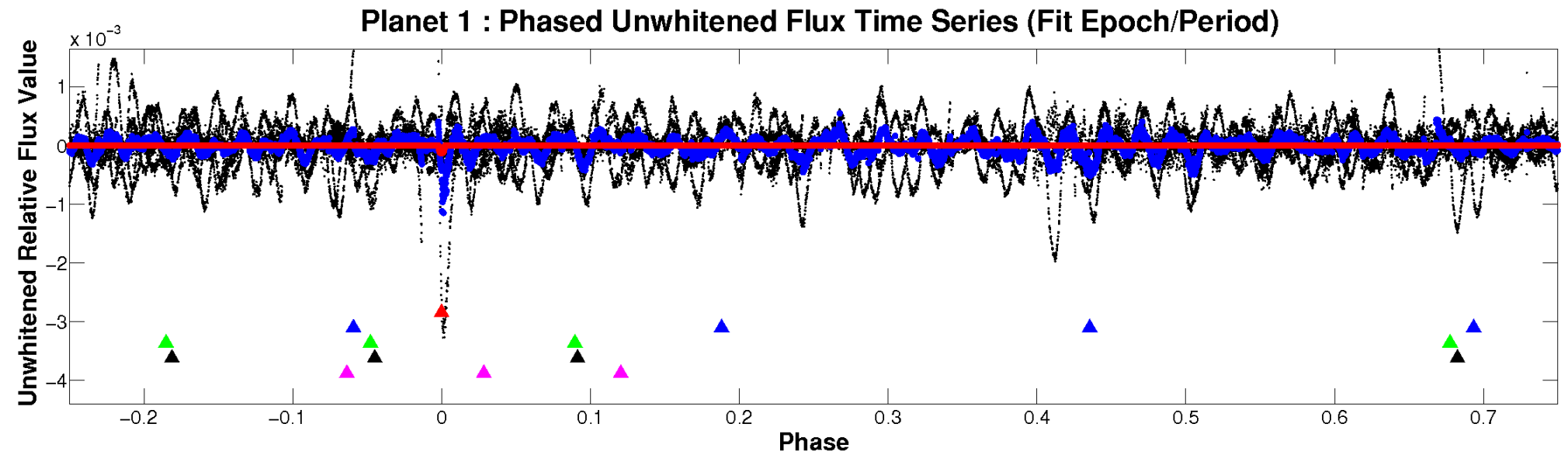


ALT Odd/Even

TCE 011390838-01

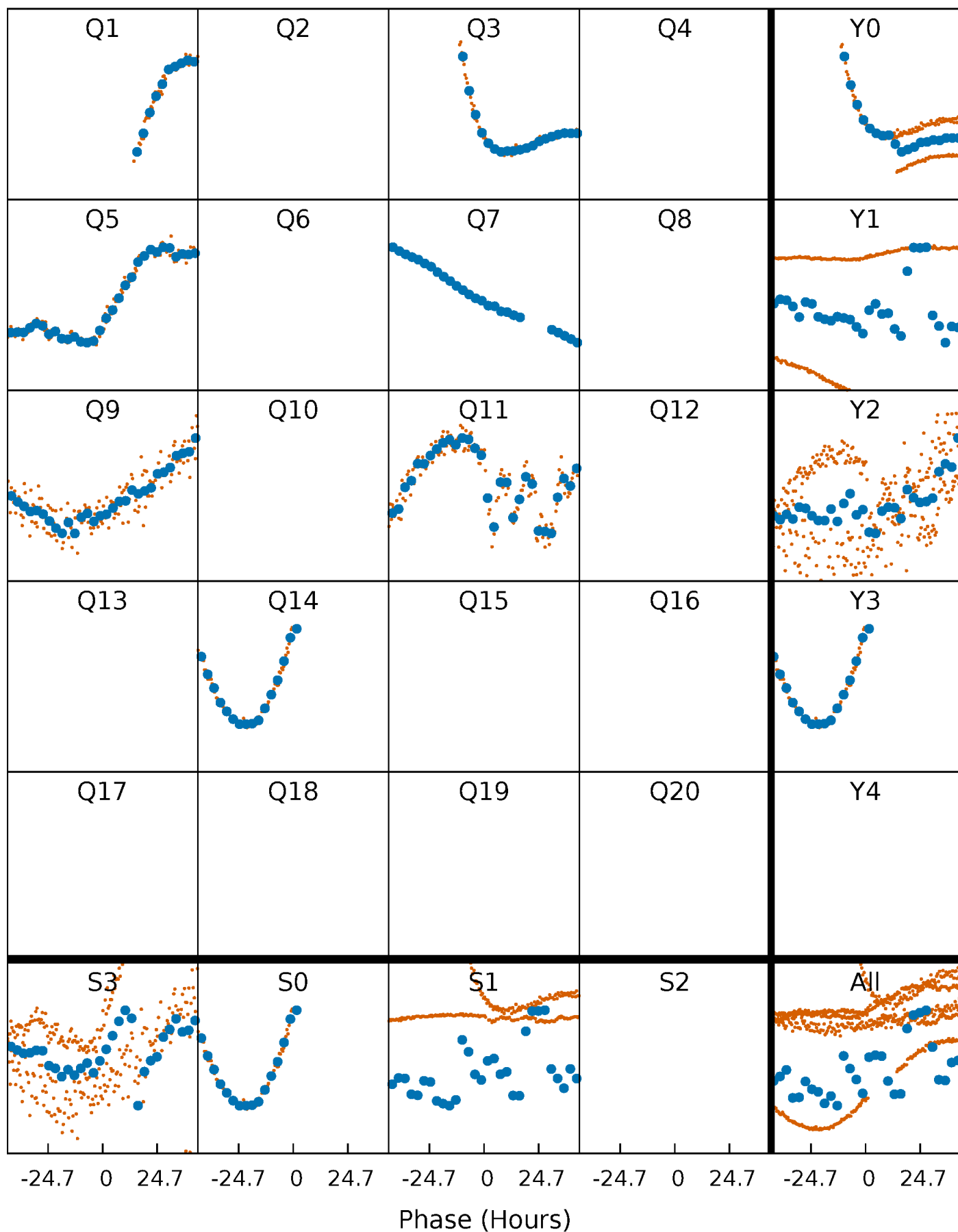


Non-Whitened Vs. Whitened Light Curve



PDC Quarter-Phased Transit Curves

TCE 011390838-01 P=193.083118 Days $T_0=324.004984$ (BKJD)



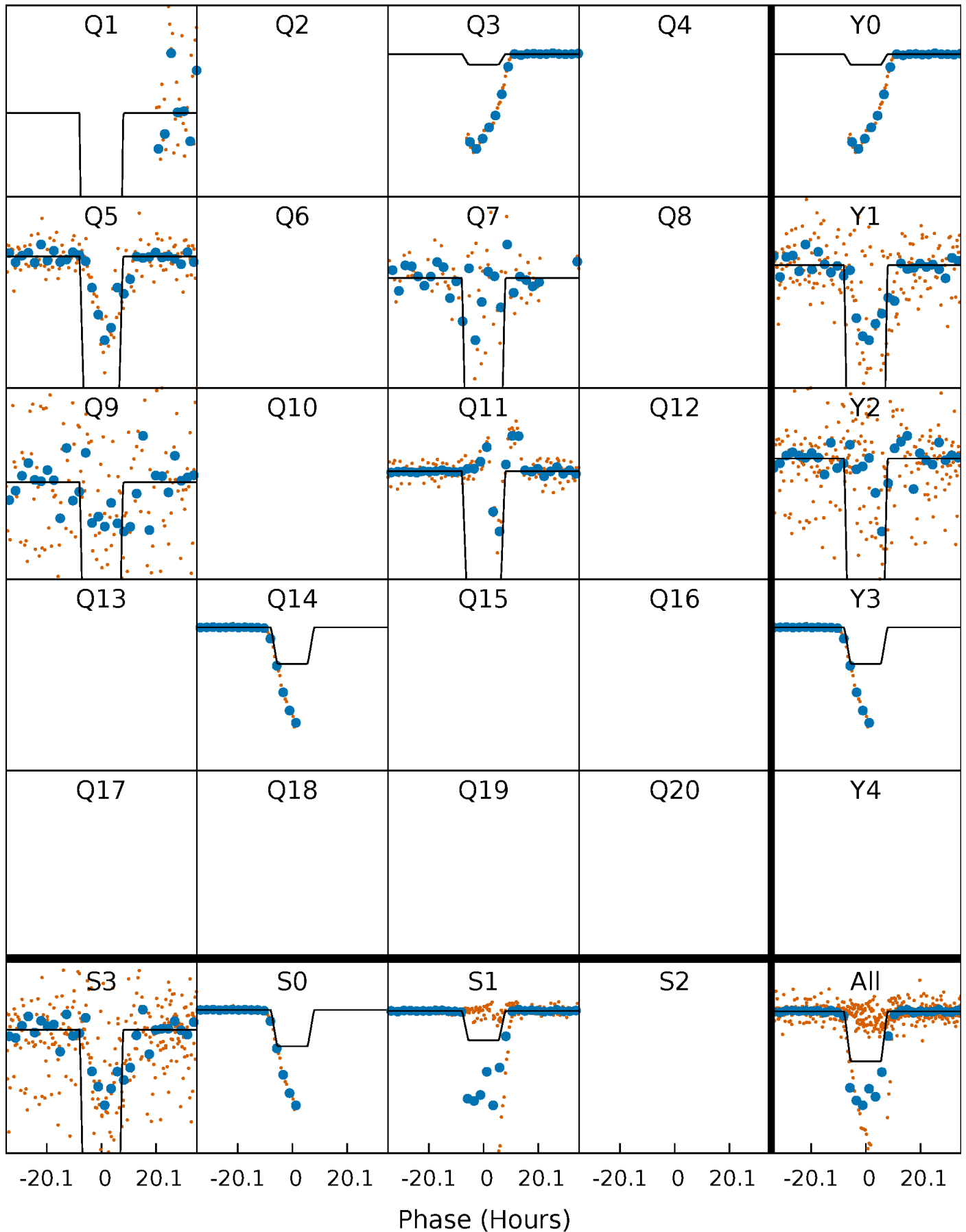
DV Quarter-Phased Transit Curves

TCE 011390838-01 P=193.083118 Days $T_0=324.004984$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

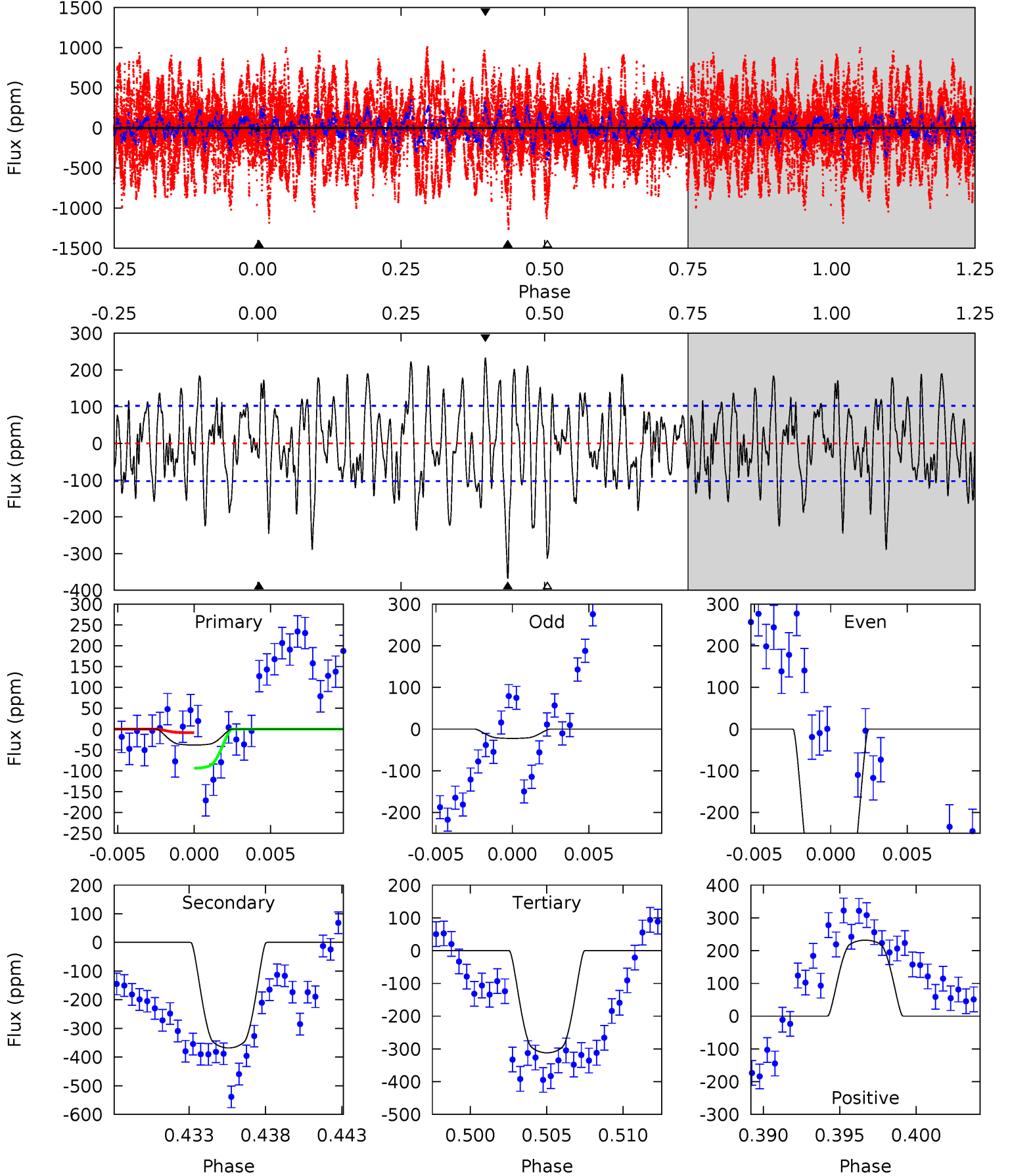
TCE 011390838-01 P=193.117576 Days $T_0=323.804940$ (BKJD)



DV Model-Shift Uniqueness Test

011390838-01, P = 193.083118 Days, E = 130.921866 Days

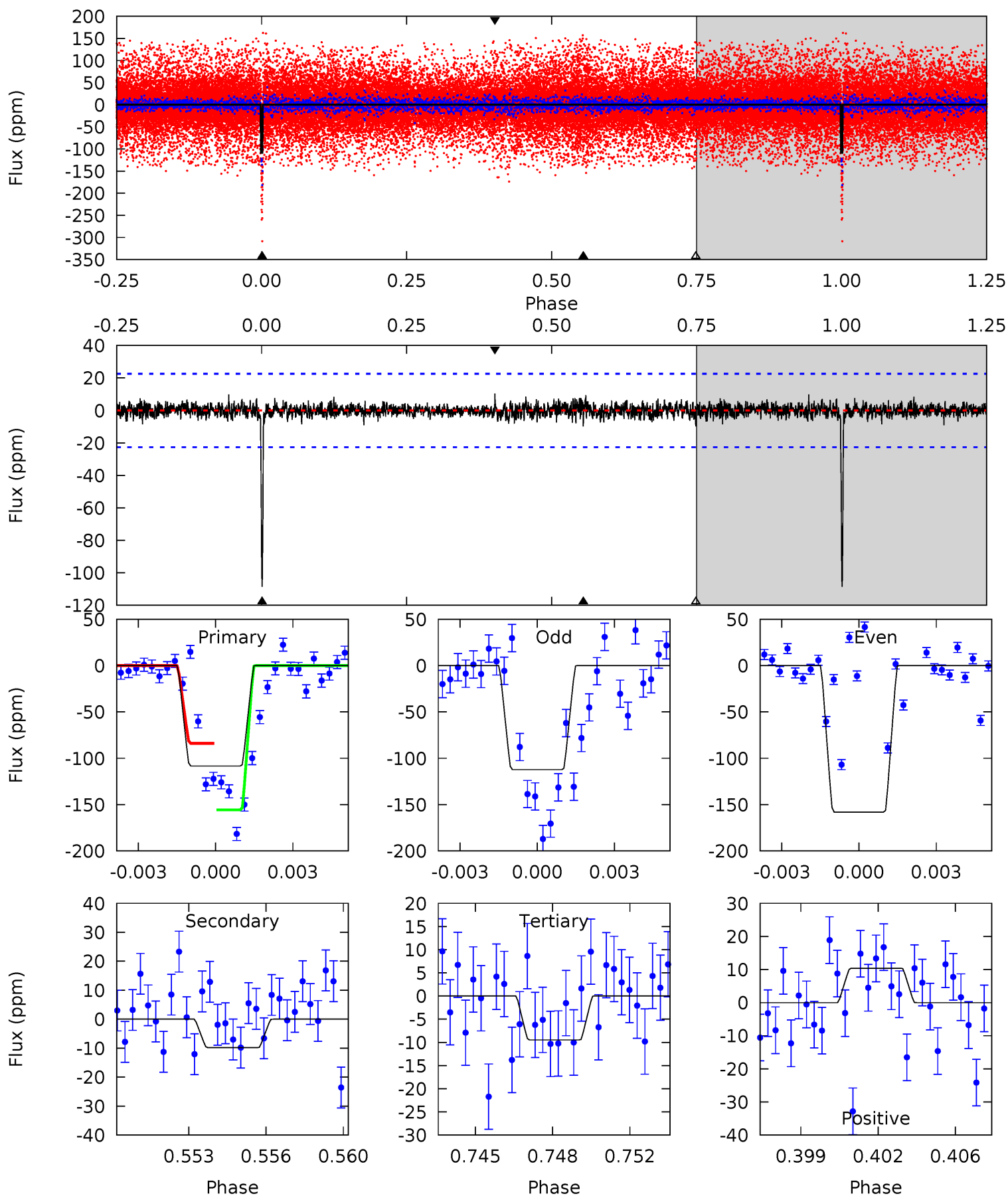
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1.93	18.5	15.7	11.7	5.17	2.82	4.73	-13.8	-9.75	2.83	6.86	11.3	2.66	0.39	2.05



Alt Model-Shift Uniqueness Test

011390838-01, P = 193.117576 Days, E = 130.687364 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
25.0	2.27	2.19	2.40	5.22	2.92	0.58	22.8	22.6	0.08	-0.13	5.47	10.9	0.09	0



Stellar Parameters For KIC 011390838

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5941^{+197}_{-197}	$4.077^{+0.357}_{-0.153}$	$-0.240^{+0.300}_{-0.300}$	$1.502^{+0.418}_{-0.557}$	$0.982^{+0.157}_{-0.118}$	$0.408^{+1.037}_{-0.167}$
	+3%/-3%	+9%/-4%	+125%/-125%	+28%/-37%	+16%/-12%	+254%/-41%
Source	PHO54	PHO54	PHO54	DSEP		

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

Secondary Eclipse Parameters for KIC 011390838-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-368 ± 20	$2.25^{+0.47}_{-0.50}$	547^{+46}_{-58}	6973^{+649}_{-541}	17638^{+10747}_{-6059}
Alt.	-10 ± 4	$3.87^{+0.81}_{-0.79}$	545^{+46}_{-60}	2843^{+167}_{-242}	151^{+123}_{-73}

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

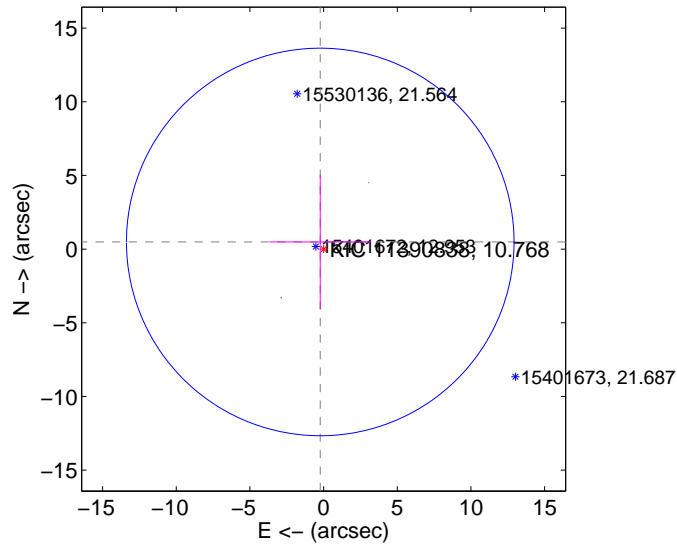
Supplemental centroid analysis for 011390838-01. **Kepler magnitude: 10.77.** Transit SNR 5.33

There are 1 quarters with good PRF difference image offsets

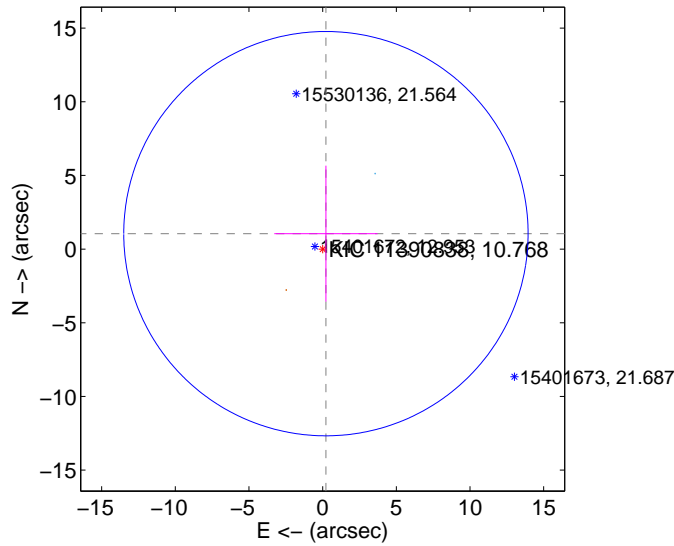
The direct PRF centroid is offset from the target star catalog position by about 0.66 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.536 ± 4.383	0.12	0.228 ± 3.443	0.485 ± 4.565
PRF-fit source offset from KIC position	1.071 ± 4.573	0.23	-0.222 ± 3.504	1.048 ± 4.615
photometric centroid source offset	3.05 ± 1.67	1.83	1.74 ± 1.38	2.50 ± 1.79

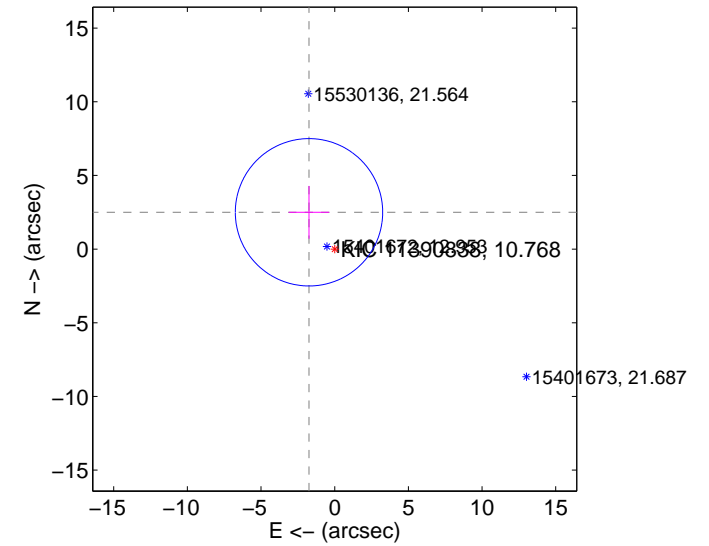
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



offset from photometric centroids

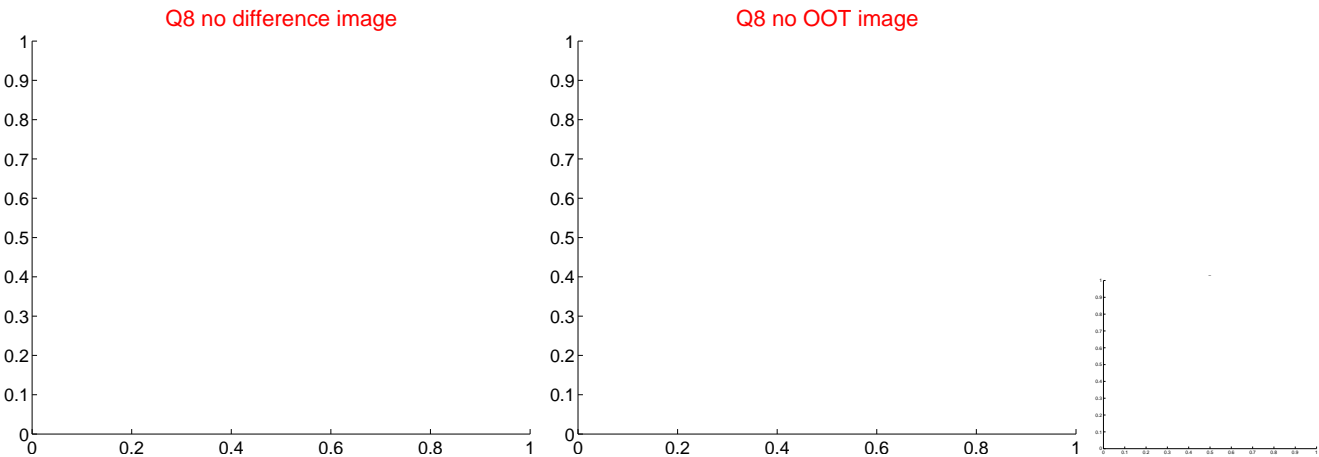
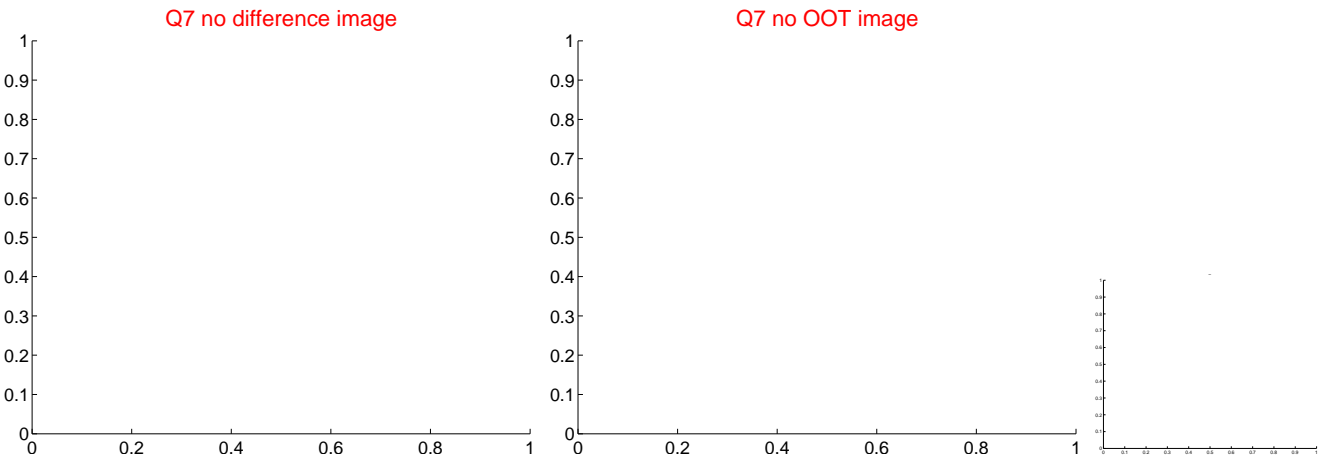
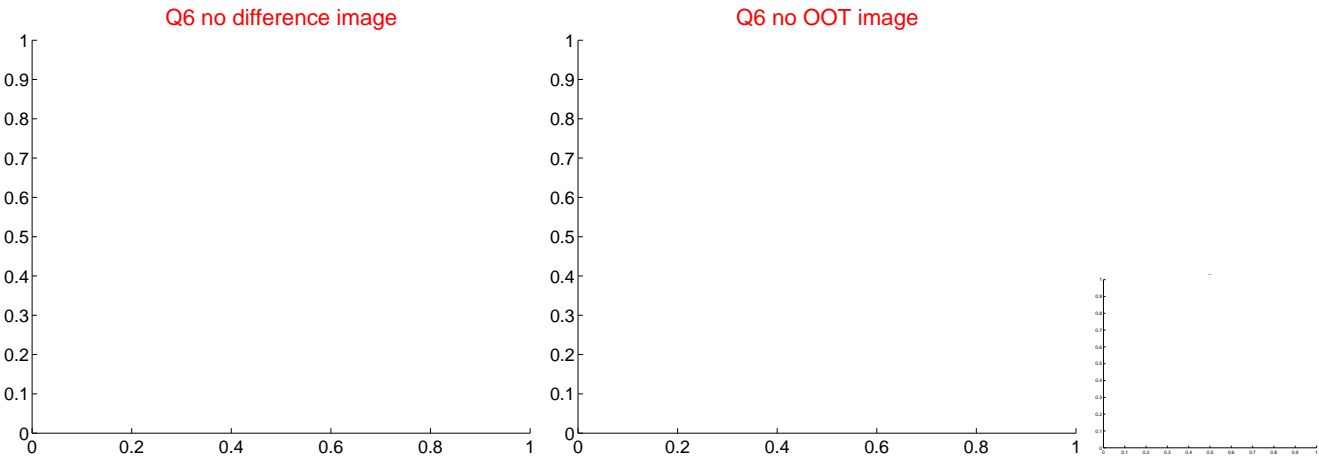
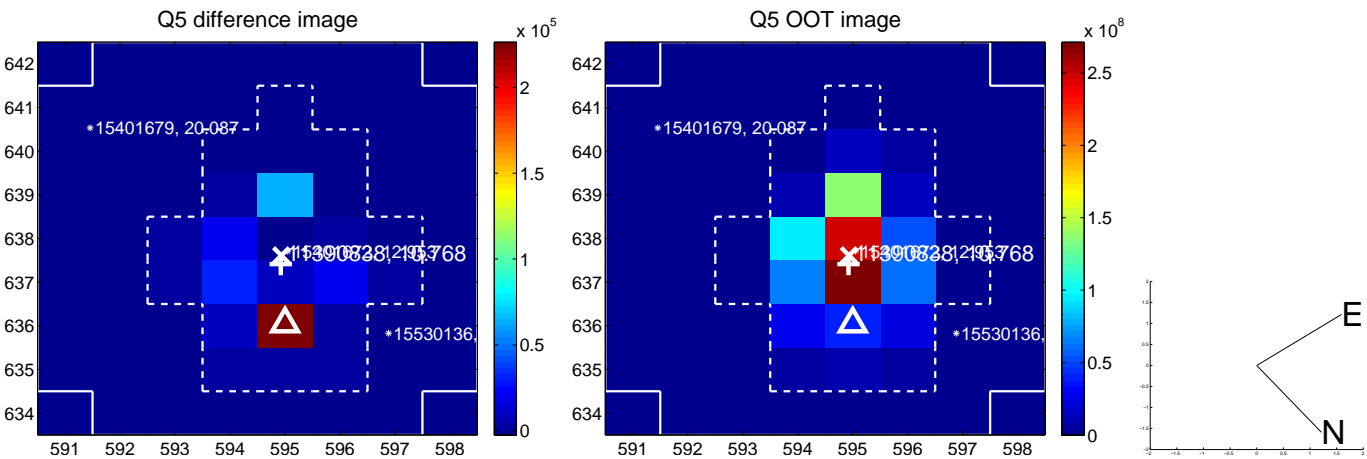


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

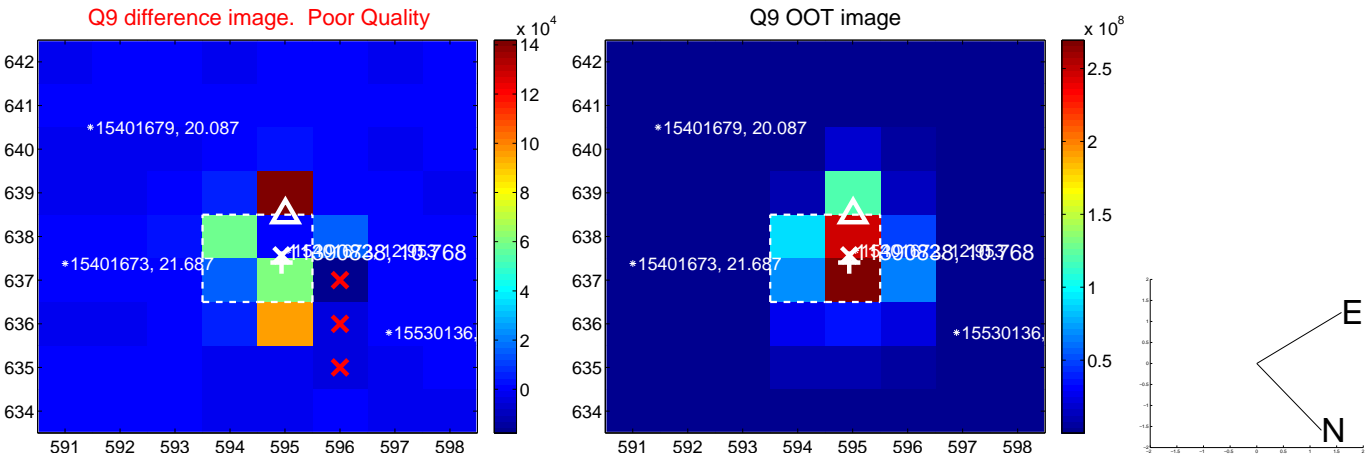
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



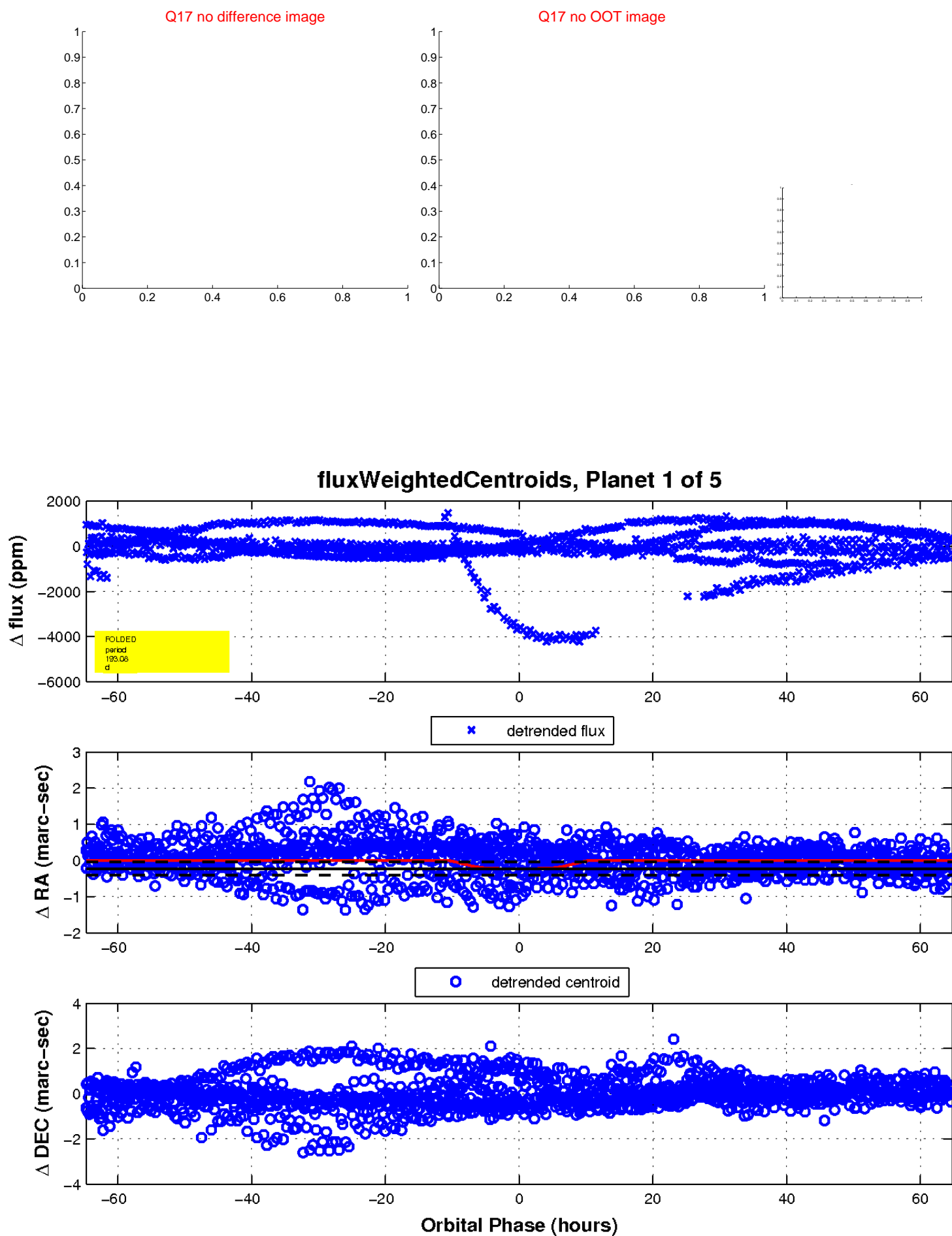
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



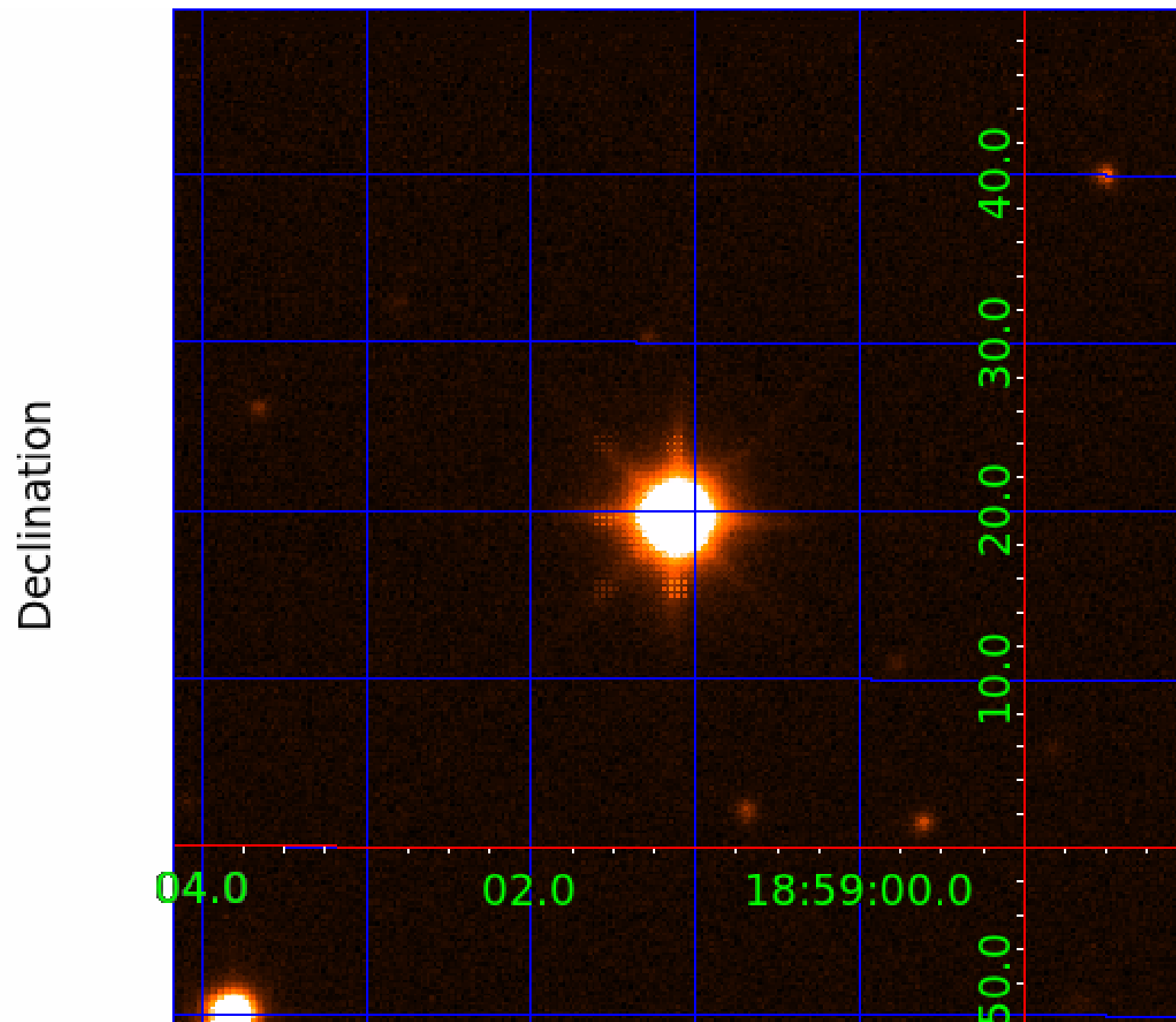
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image



KIC 011390838

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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011390838-05	OBS	No	561.481363	154.172417	152.4	20.888	7.9	6.7	1.50	5941	2.44	1.44

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011390838-01	OBS	FP	0.00	1	0	1	0	LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_SATURATED—HALO_GHOST
011390838-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_SATURATED
011390838-03	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_MARSHALL_SKYE_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED—HALO_GHOST
011390838-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—INCONSISTENT_TRANS—CENT_SATURATED
011390838-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_SATURATED

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

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

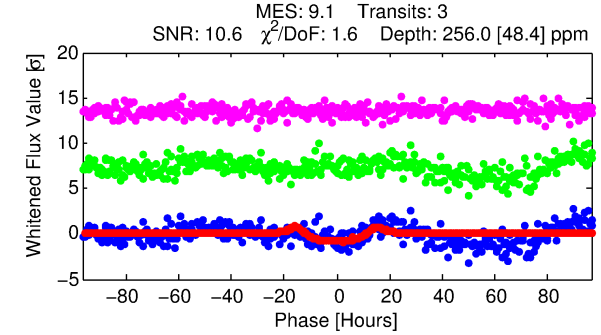
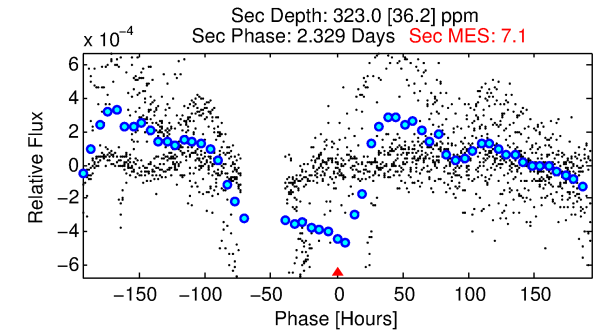
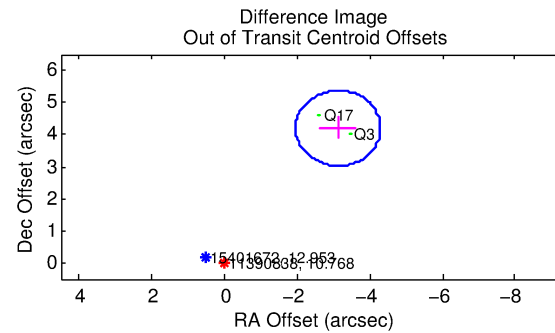
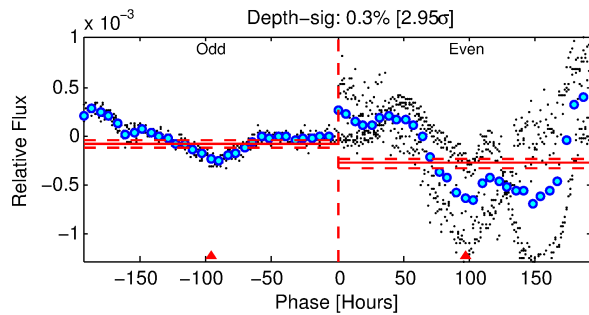
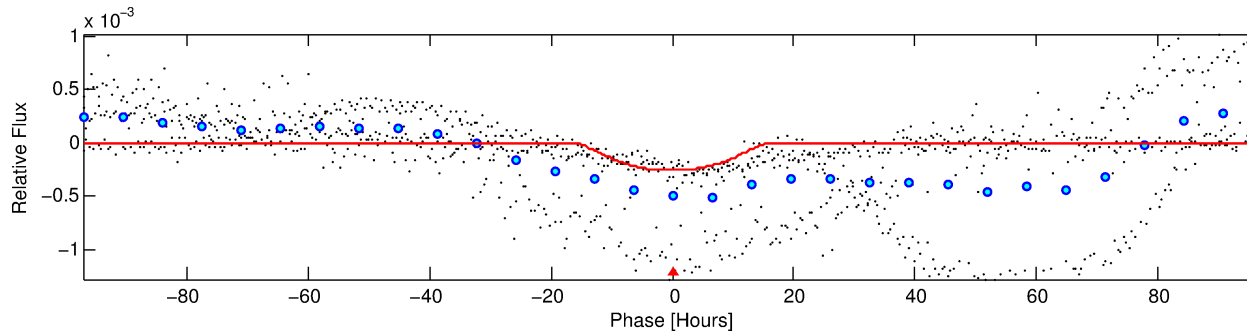
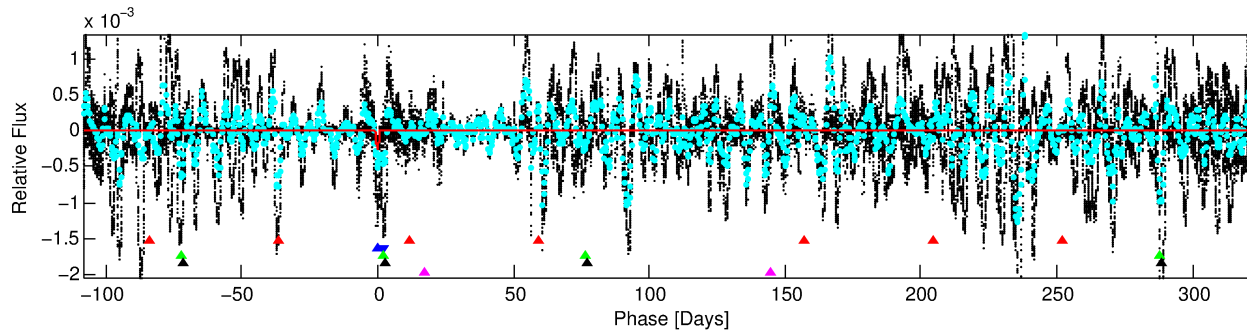
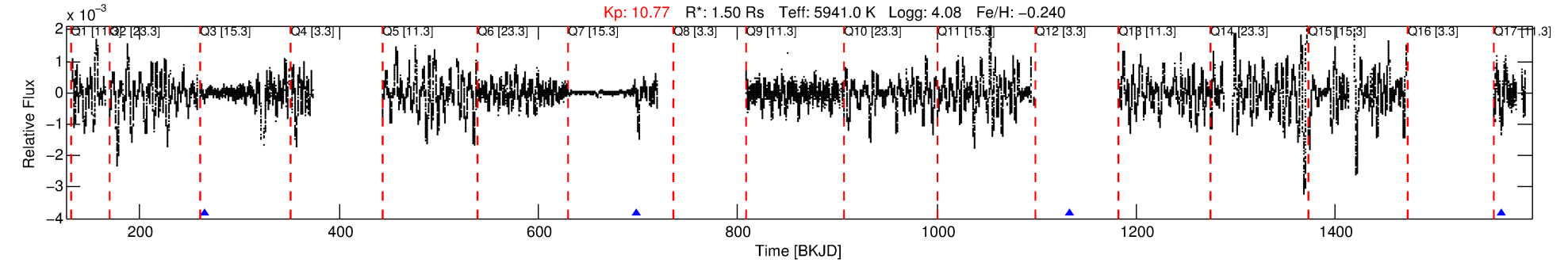
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 011390838-02

No Significant Match Found

DV One-Page Summary

KIC: 11390838 Candidate: 2 of 5 Period: 433.924 d



DV Fit Results:

Period = 433.92388 [0.03875] d
Epoch = 264.8145 [0.0449] BKJD
Rp/R* = 0.0202 [0.0028]
a/R* = 28.58 [2.91]
b = 0.98 [0.01]
Seff = 2.02 [1.25]
Teq = 304 [47] K
Rp = 3.31 [1.31] Re
a = 1.1154 [0.4116] AU
Ag = 20147.16 [13506.27] [1.49 σ]
Teffp = 5602 [455] K [11.58 σ]

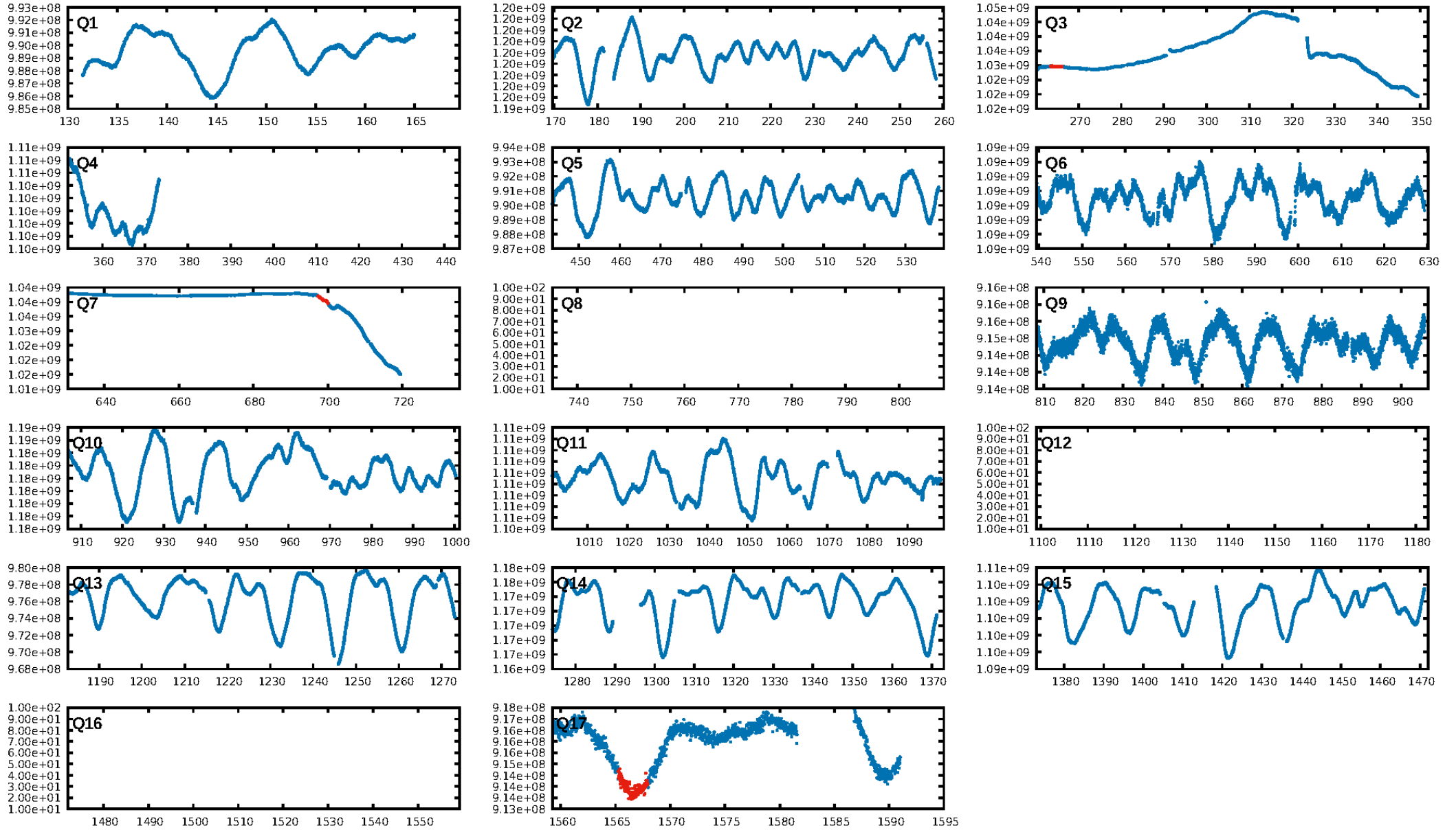
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [29.62 σ]
LongPeriod-sig: 100.0% [79.54 σ]
ModelChiSquare2-sig: 12.2%
ModelChiSquareGof-sig: 72.7%
Bootstrap-pfa: 3.95e-11
RollingBand-fgt: 1.00 [2/2]
GhostDiagnostic-chr: 0.5431
Centroid-sig: N/A
Centroid-so: 1.717 arcsec [1.55 σ]
OotOffset-rm: 5.234 arcsec [13.40 σ]
KicOffset-rm: 5.484 arcsec [12.51 σ]
OotOffset-st: 0/1/0/1 [2]
KicOffset-st: 0/1/0/1 [2]
DiffImageQuality-fgm: 0.50 [1/2]
DiffImageOverlap-fno: 0.67 [2/3]

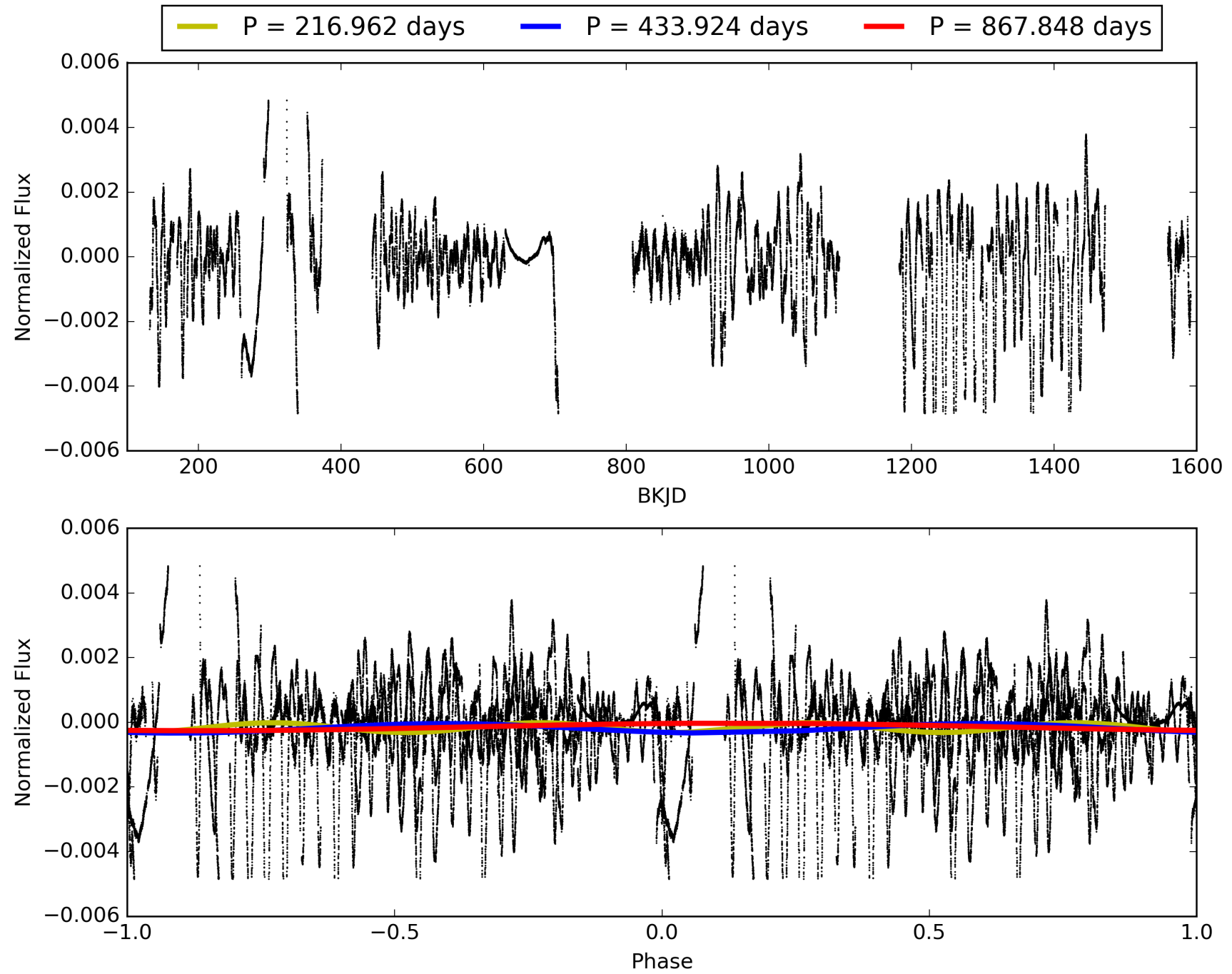
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TCE 011390838-02, PDC Light Curves

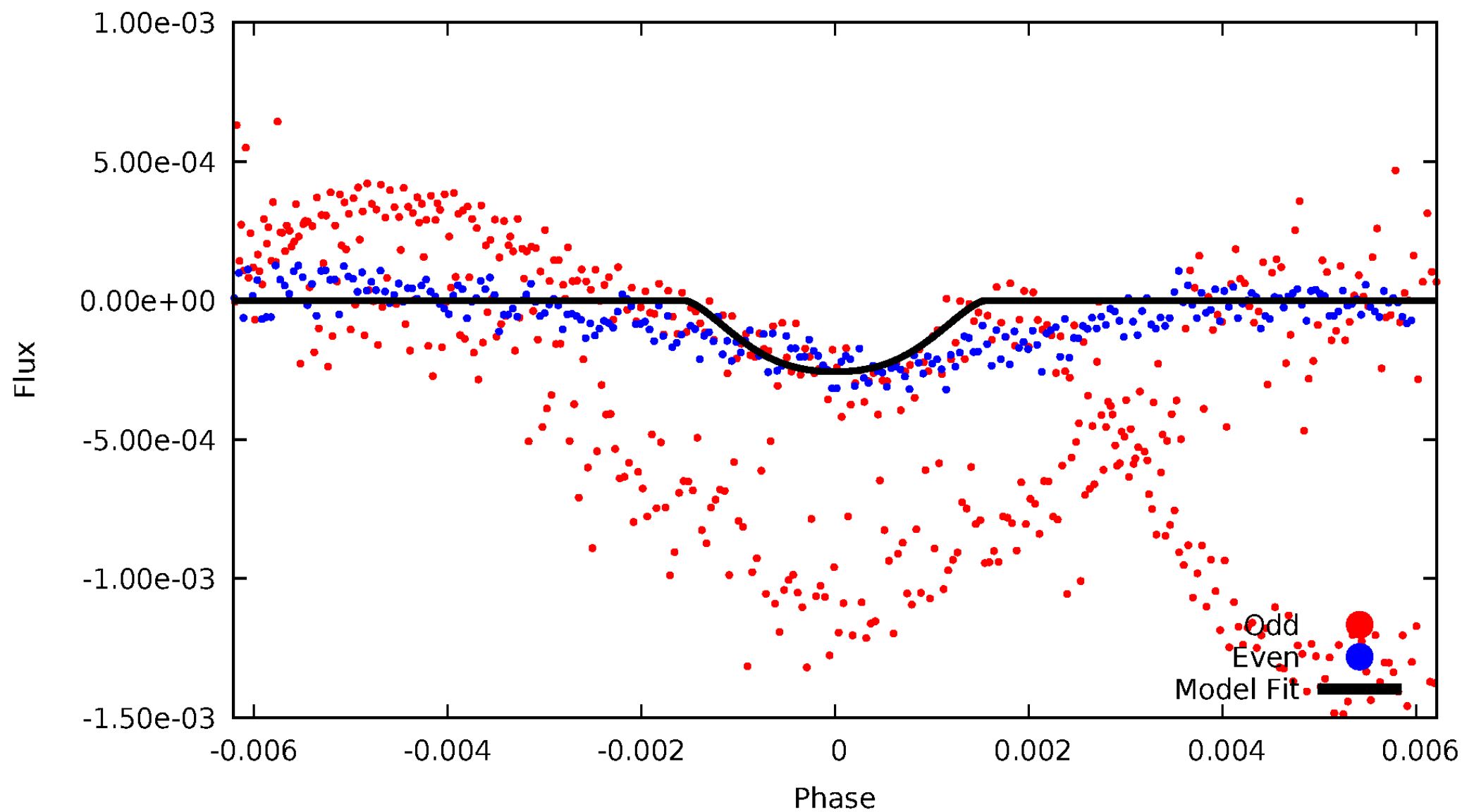


TCE 011390838-02



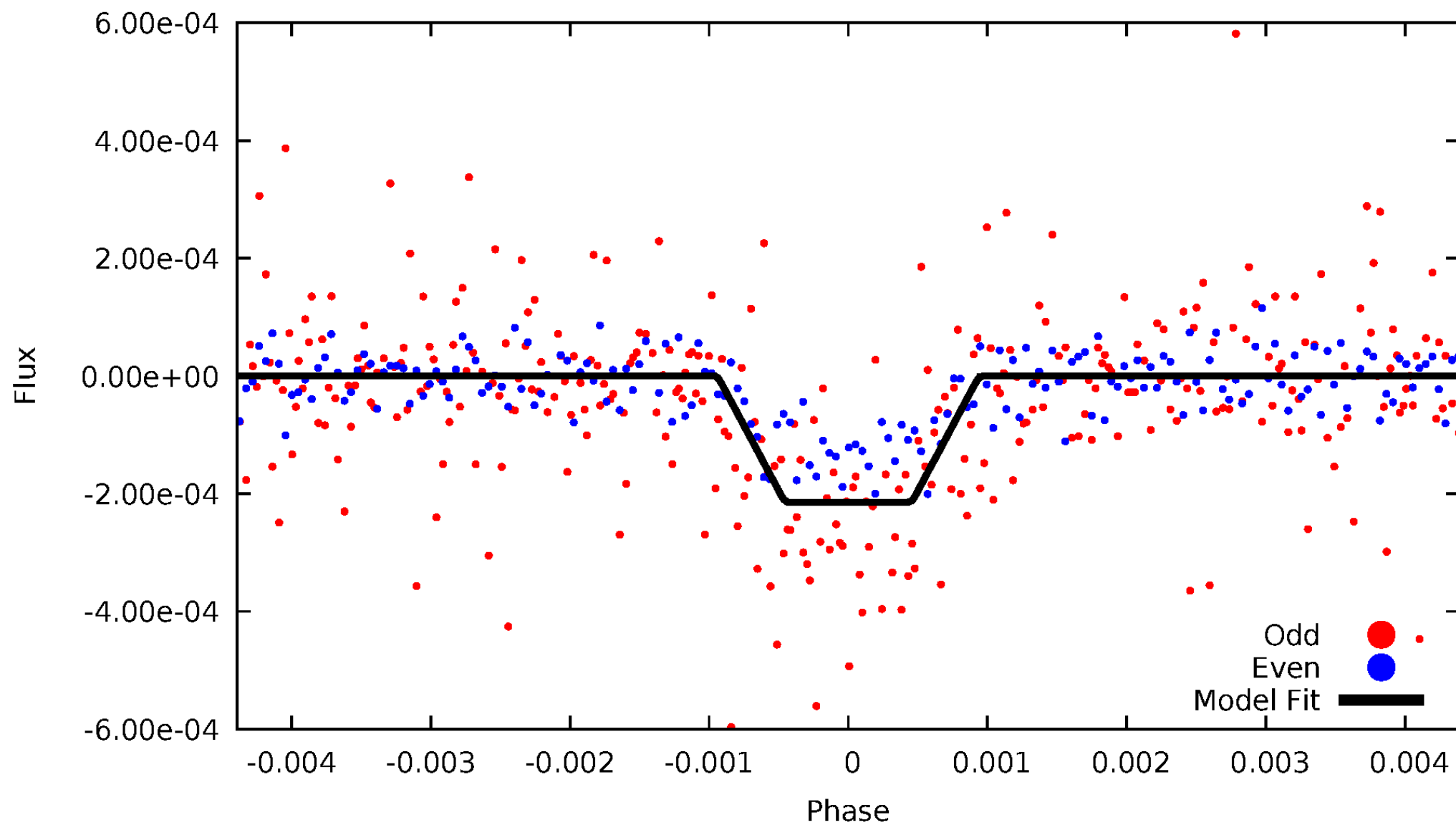
DV Odd/Even

TCE 011390838-02



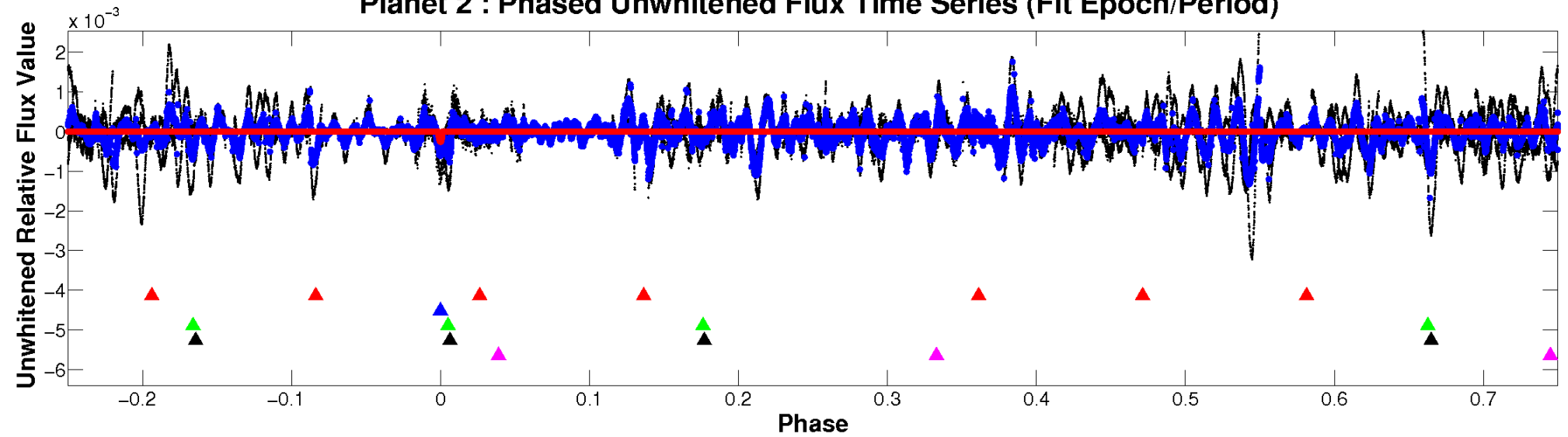
ALT Odd/Even

TCE 011390838-02

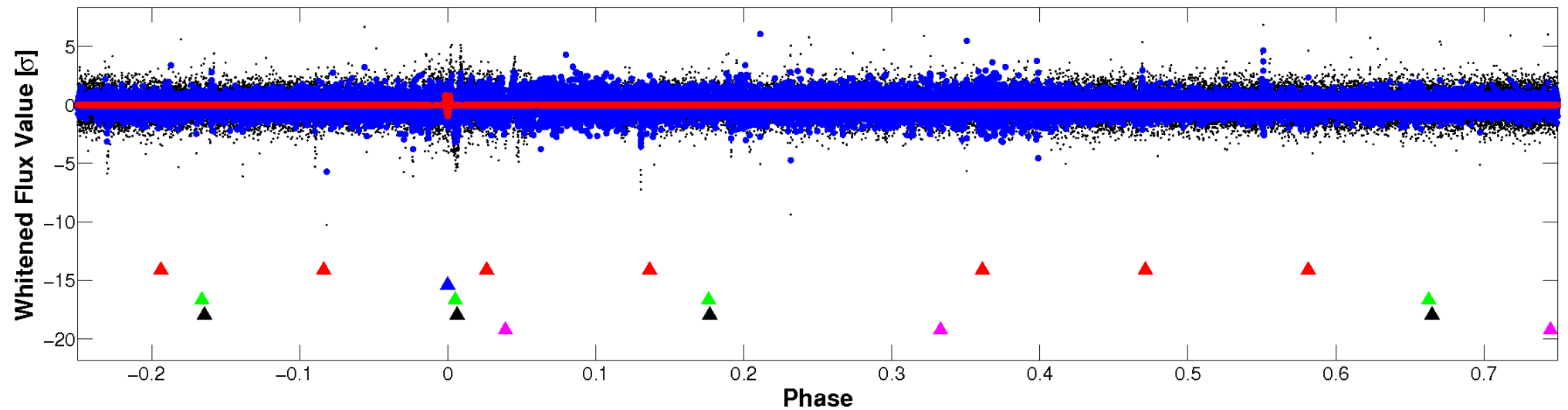


Non-Whitened Vs. Whitened Light Curve

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

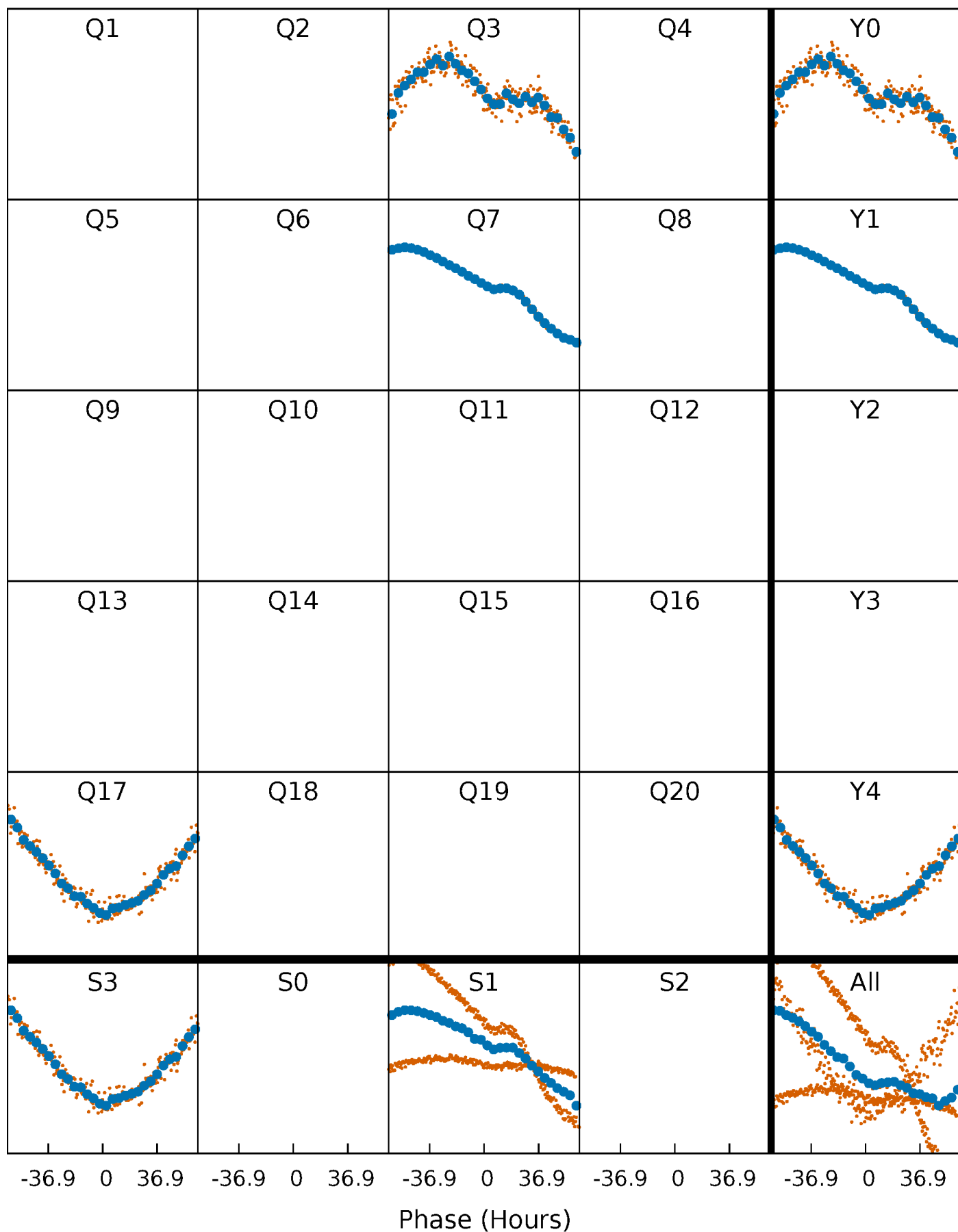


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



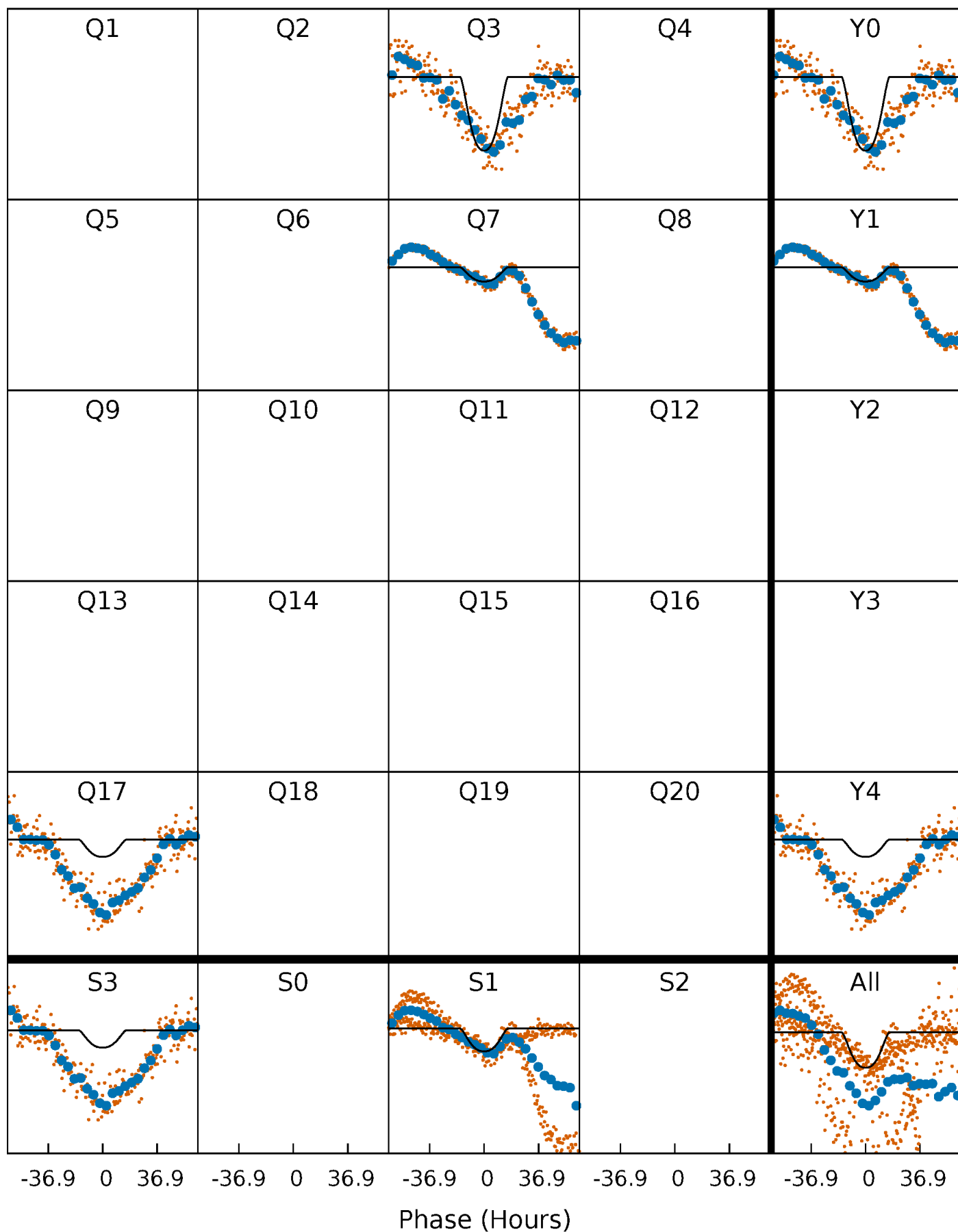
PDC Quarter-Phased Transit Curves

TCE 011390838-02 $P=433.923883$ Days $T_0=264.814535$ (BKJD)



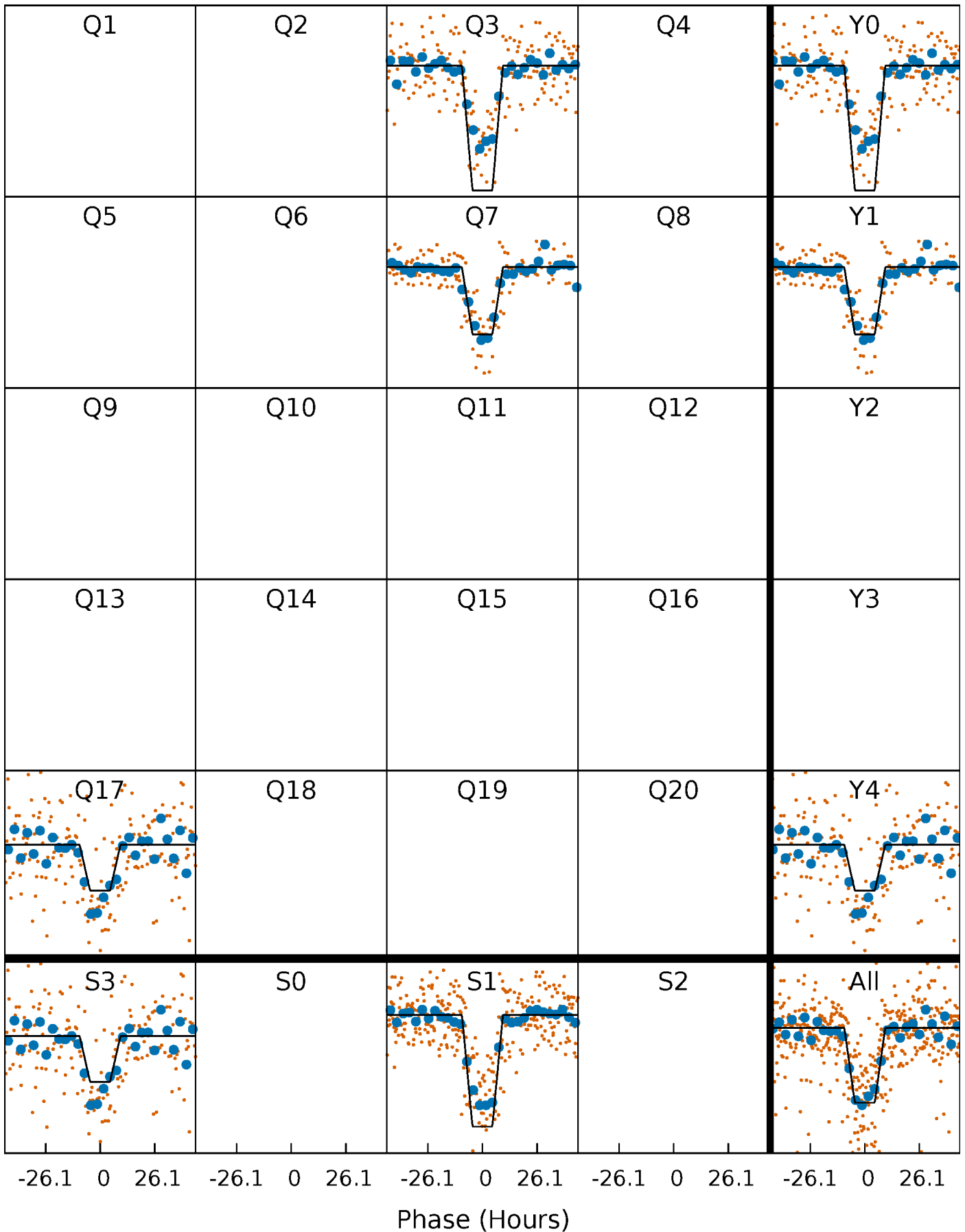
DV Quarter-Phased Transit Curves

TCE 011390838-02 $P=433.923883$ Days $T_0=264.814535$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

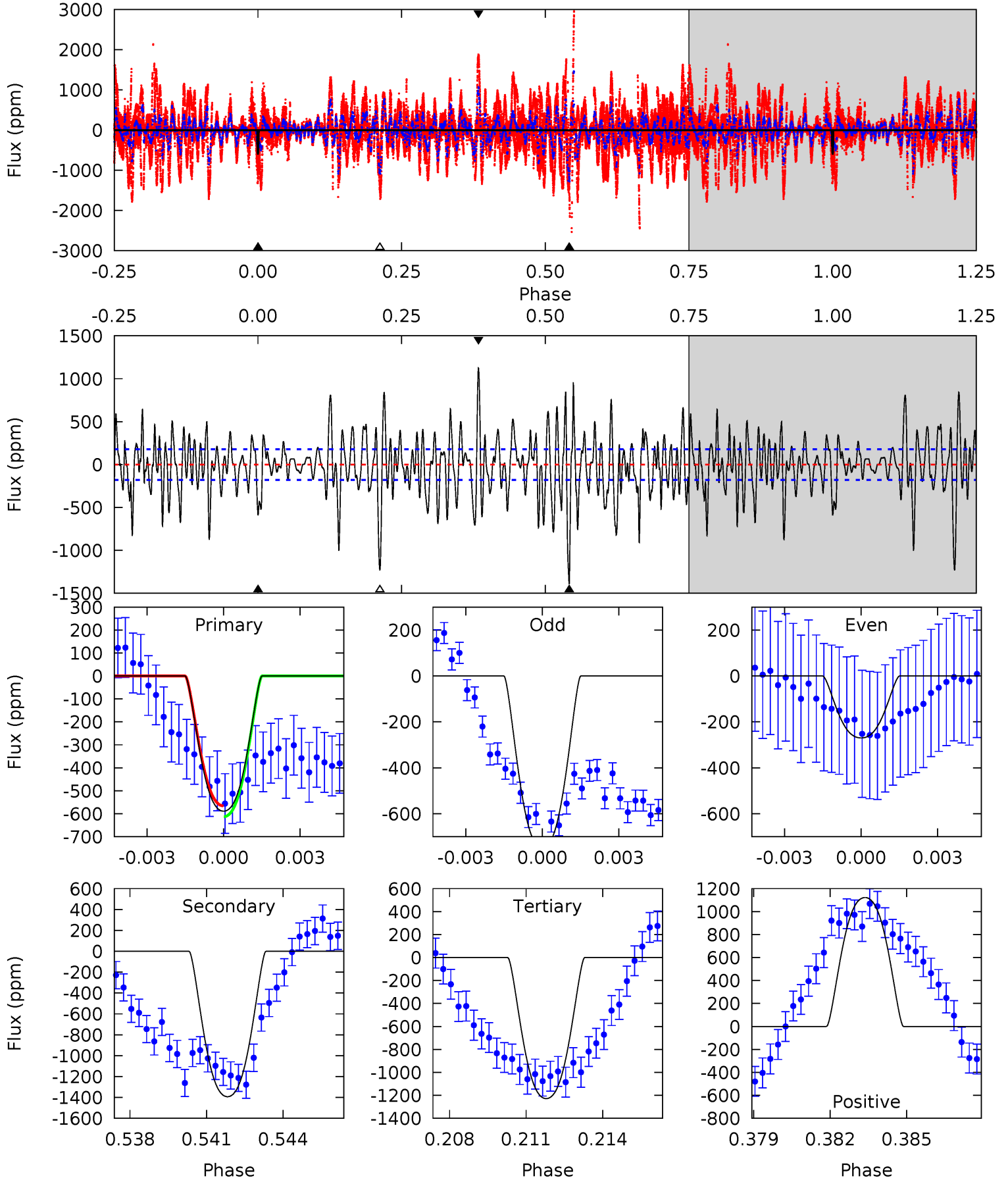
TCE 011390838-02 $P=433.831724$ Days $T_0=265.064576$ (BKJD)



DV Model-Shift Uniqueness Test

011390838-02, P = 433.923883 Days, E = 264.814535 Days

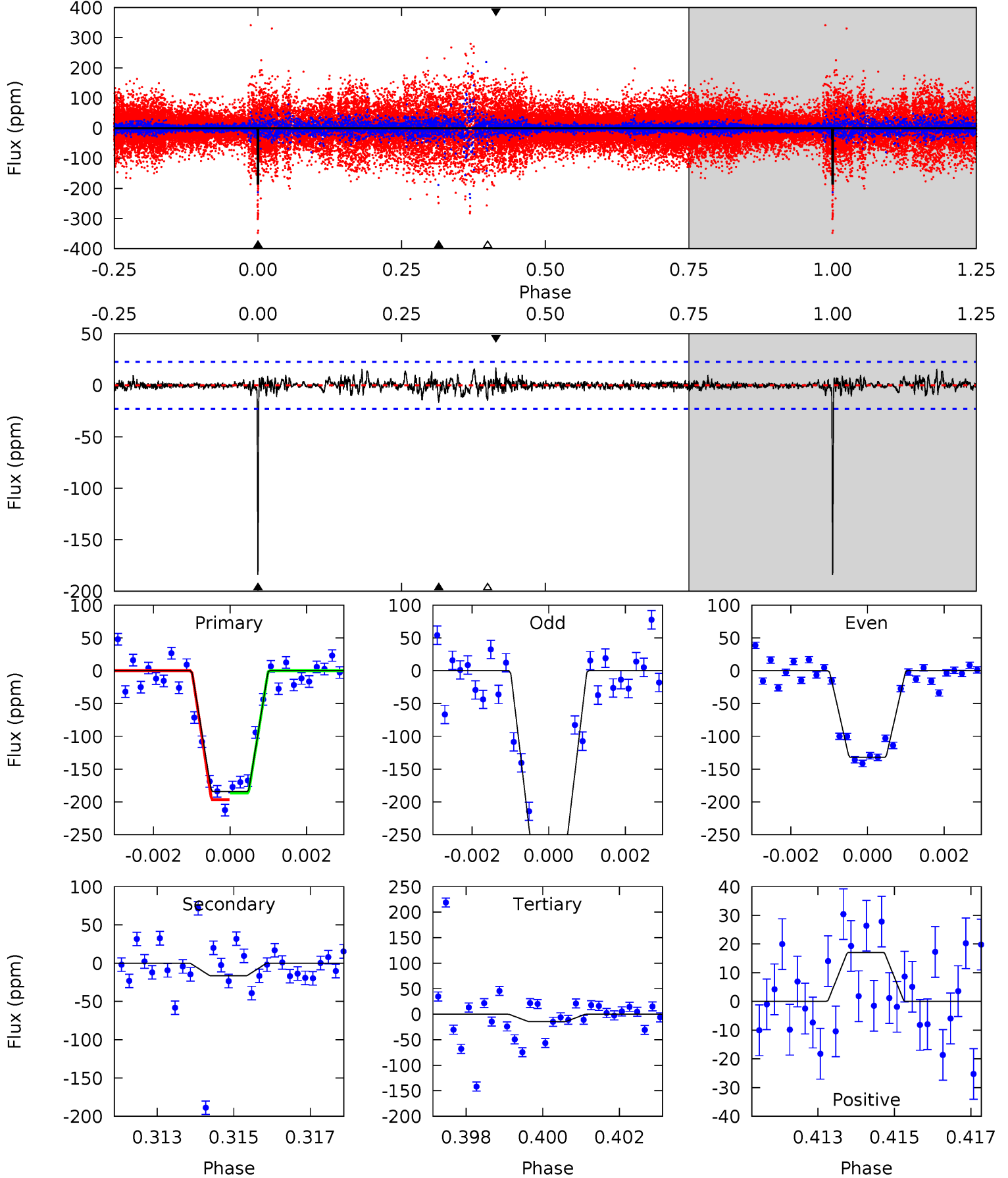
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
17.3	41.0	36.1	33.0	5.25	2.96	9.23	-18.8	-15.7	4.84	7.96	6.21	2.09	0.45	0.70



Alt Model-Shift Uniqueness Test

011390838-02, P = 433.831724 Days, E = 265.064576 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
42.9	3.83	3.40	3.98	5.34	3.11	0.71	39.5	39.0	0.43	-0.15	13.3	0.99	0.08	1.03



Stellar Parameters For KIC 011390838

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5941^{+197}_{-197}	$4.077^{+0.357}_{-0.153}$	$-0.240^{+0.300}_{-0.300}$	$1.502^{+0.418}_{-0.557}$	$0.982^{+0.157}_{-0.118}$	$0.408^{+1.037}_{-0.167}$
	+3%/-3%	+9%/-4%	+125%/-125%	+28%/-37%	+16%/-12%	+254%/-41%
Source	PHO54	PHO54	PHO54	DSEP		

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

Secondary Eclipse Parameters for KIC 011390838-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-1393 ± 34	$3.20^{+0.73}_{-0.71}$	419^{+34}_{-45}	8350^{+921}_{-660}	94581^{+60924}_{-32244}
Alt.	-16 ± 4	$2.31^{+0.63}_{-0.60}$	420^{+34}_{-47}	3576^{+299}_{-266}	2079^{+1852}_{-907}

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

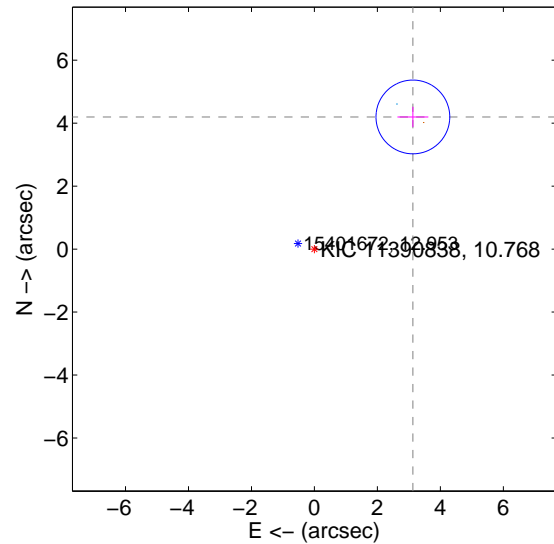
Supplemental centroid analysis for 011390838-02. **Kepler magnitude: 10.77.** Transit SNR 10.63

There are 1 quarters with good PRF difference image offsets

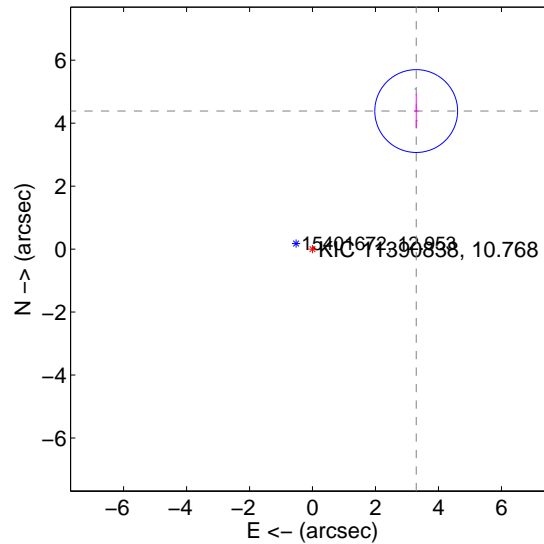
The direct PRF centroid is offset from the target star catalog position by about 0.80 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	5.234 \pm 0.390	13.40	-3.127 \pm 0.492	4.198 \pm 0.321
PRF-fit source offset from KIC position	5.484 \pm 0.438	12.51	-3.293 \pm 0.072	4.385 \pm 0.546
photometric centroid source offset	1.72 \pm 1.11	1.55	1.63 \pm 1.09	0.54 \pm 1.29

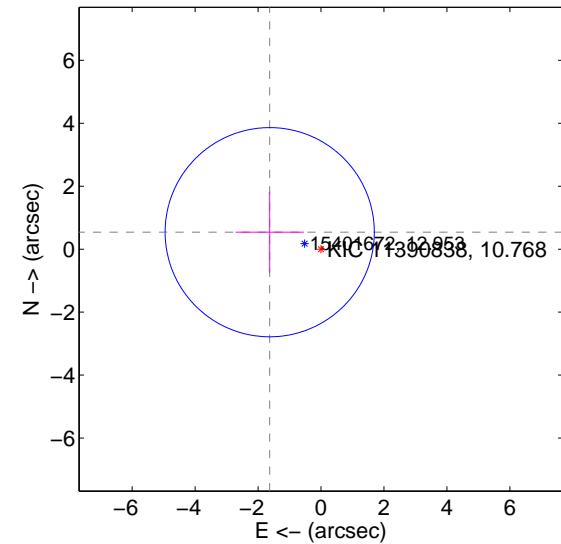
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

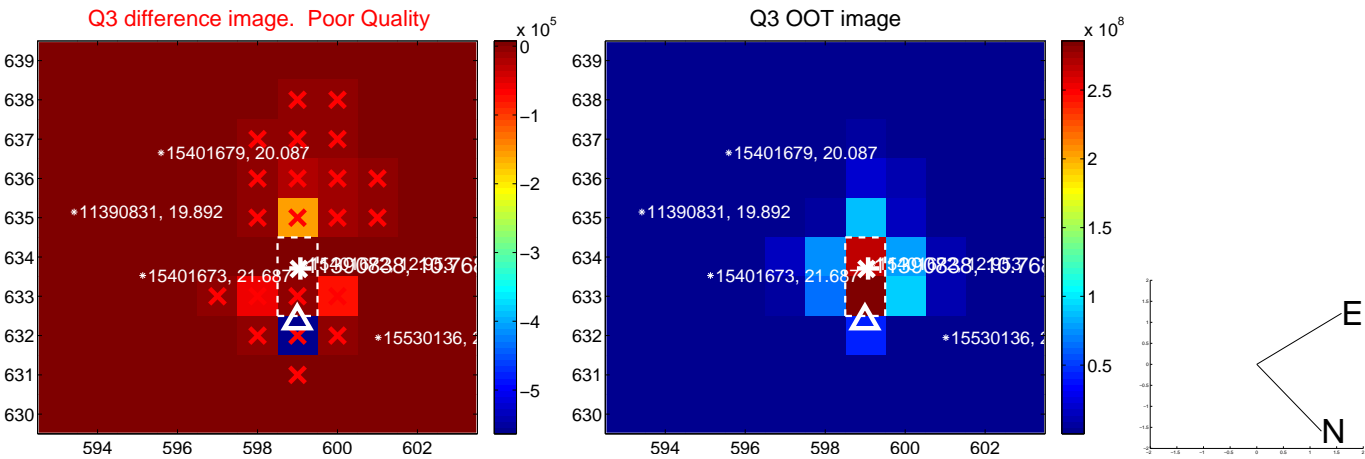


offset from photometric centroids

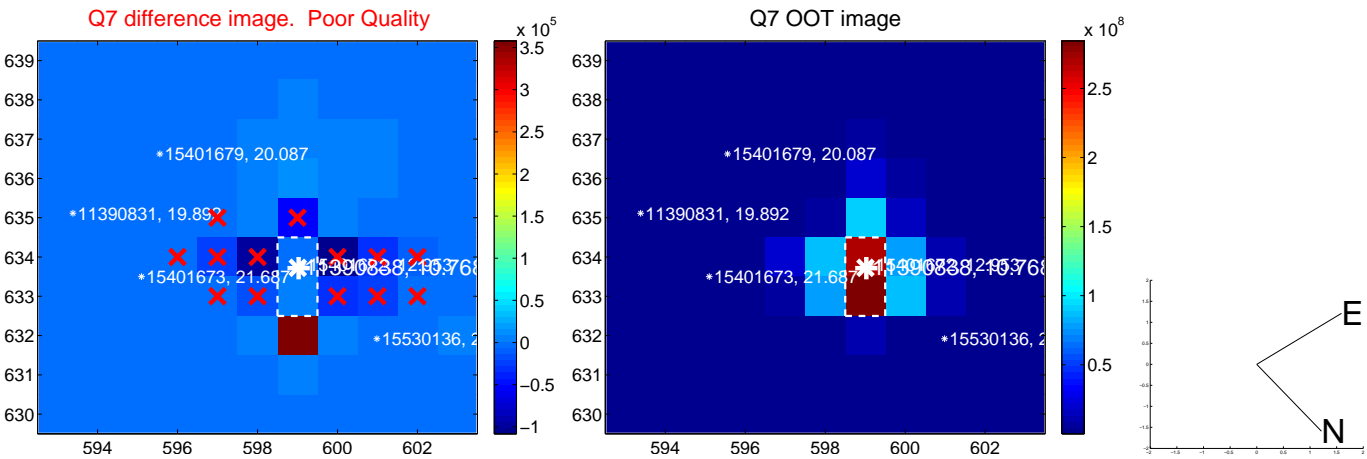


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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



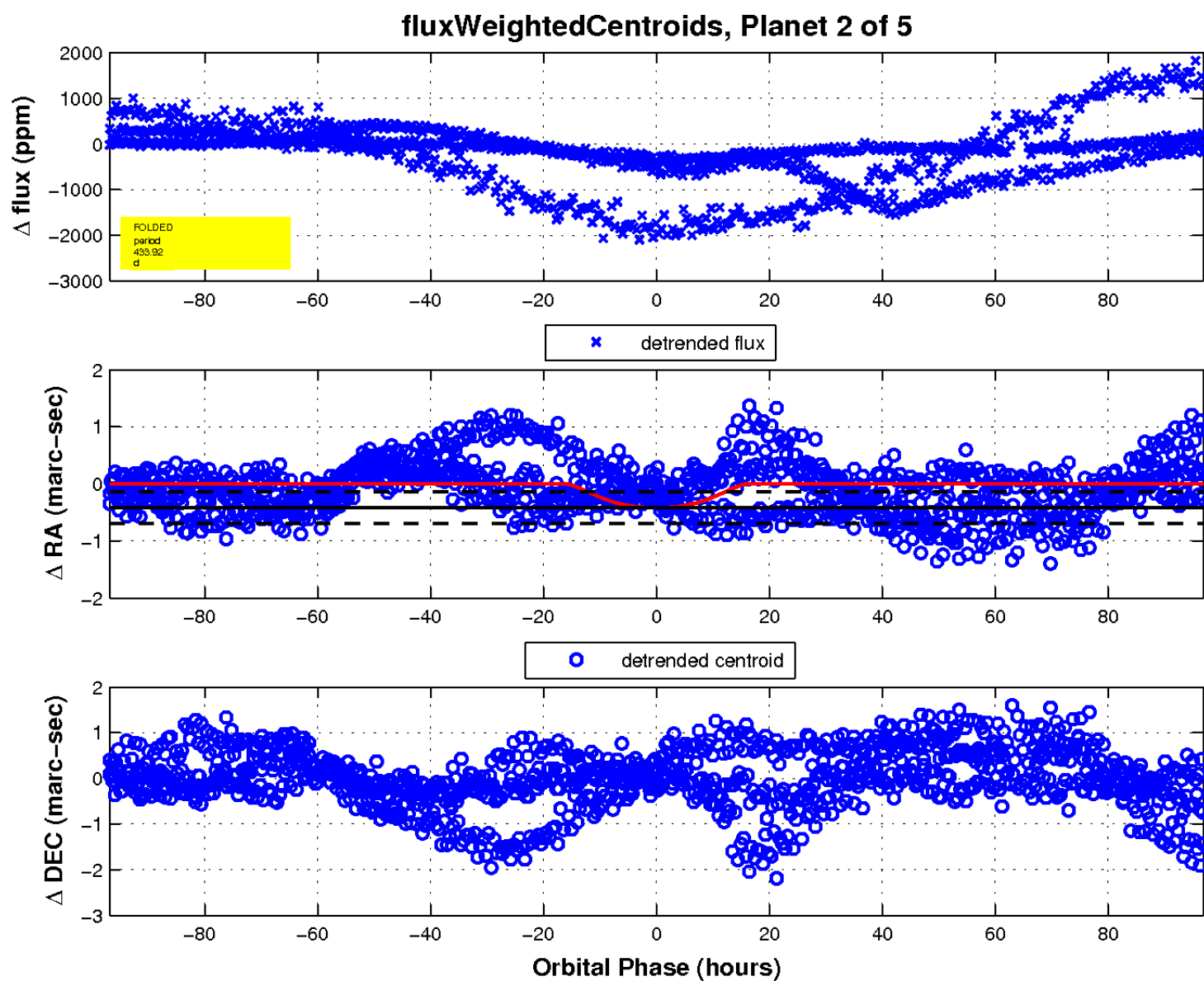
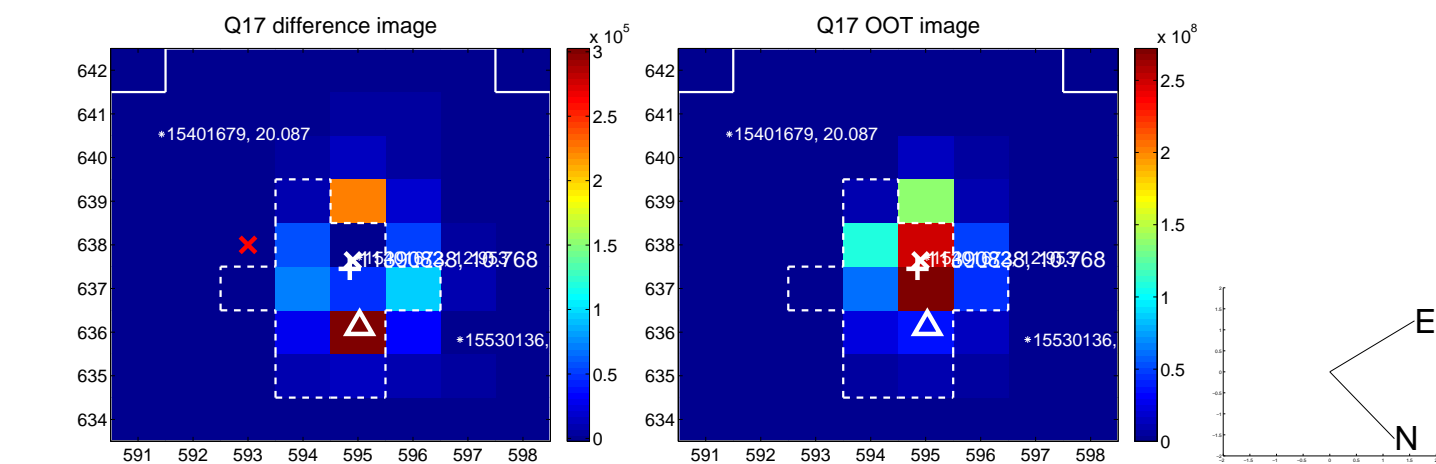
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



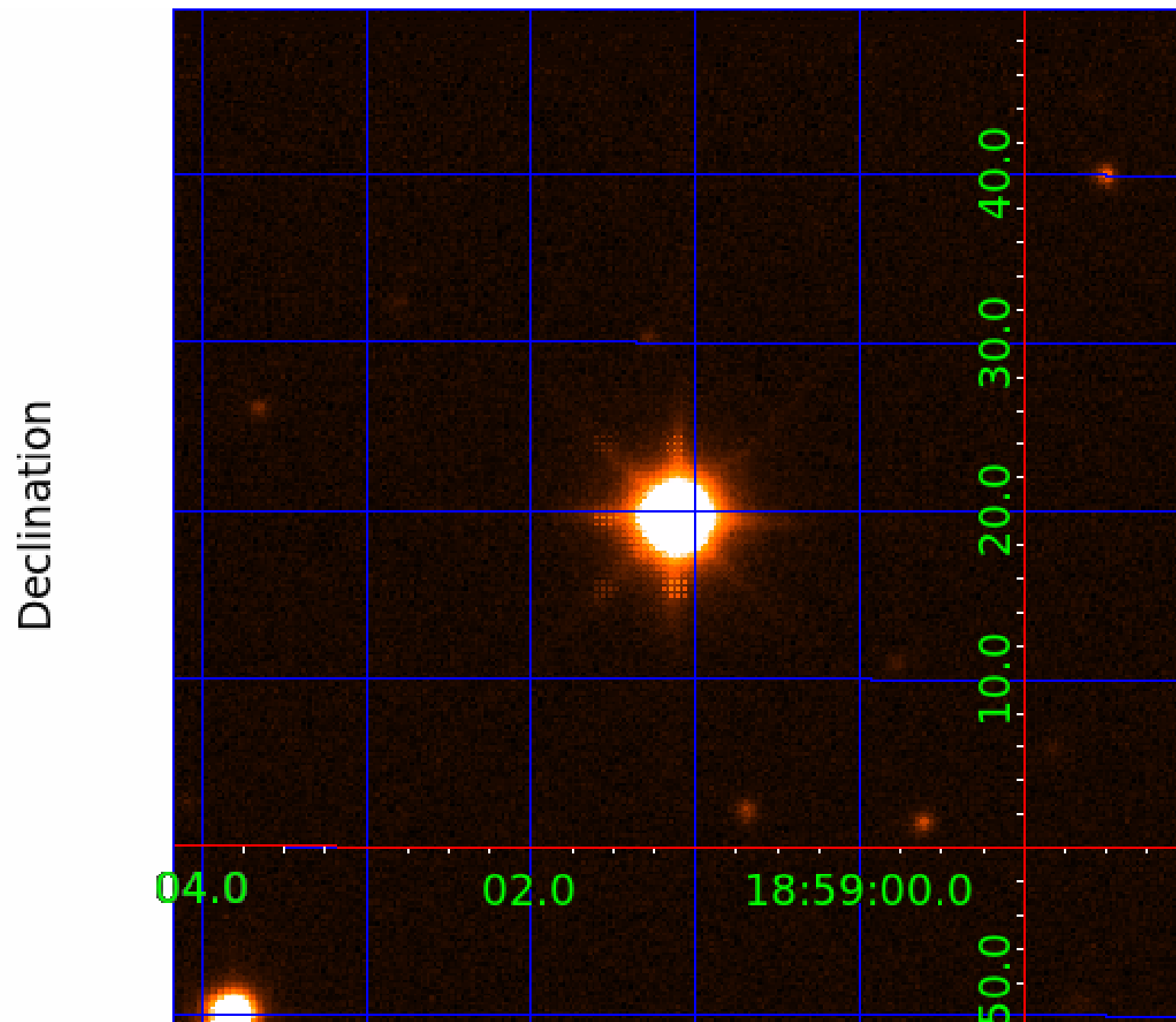
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image



KIC 011390838

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})
011390838-01	OBS	No	193.083118	324.004984	131.6	21.596	15.3	5.3	1.50	5941	2.32	5.96
011390838-02	OBS	No	433.923883	264.814535	256.0	32.329	9.1	10.6	1.50	5941	3.31	2.02
011390838-03	OBS	No	359.650258	341.296184	46.3	2.251	11.6	2.7	1.50	5941	1.29	2.60
011390838-04	OBS	No	359.855854	341.645053	991.4	50.555	11.9	27.1	1.50	5941	6.29	2.60
011390838-05	OBS	No	561.481363	154.172417	152.4	20.888	7.9	6.7	1.50	5941	2.44	1.44

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011390838-01	OBS	FP	0.00	1	0	1	0	LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_SATURATED—HALO_GHOST
011390838-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_SATURATED
011390838-03	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_MARSHALL_SKYE_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED—HALO_GHOST
011390838-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—INCONSISTENT_TRANS—CENT_SATURATED
011390838-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_SATURATED

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

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

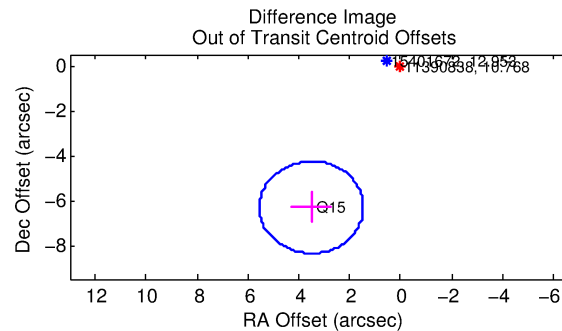
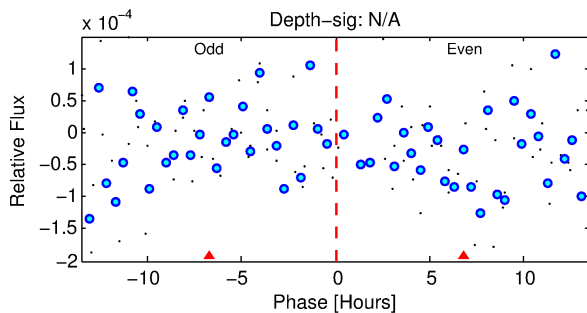
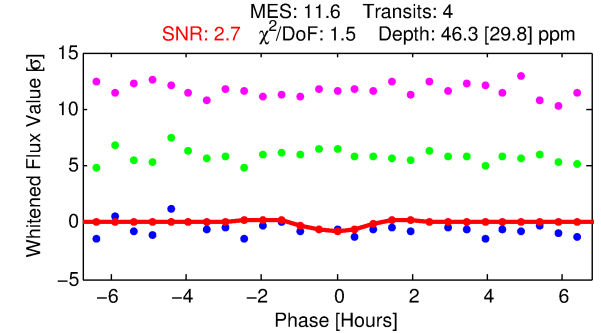
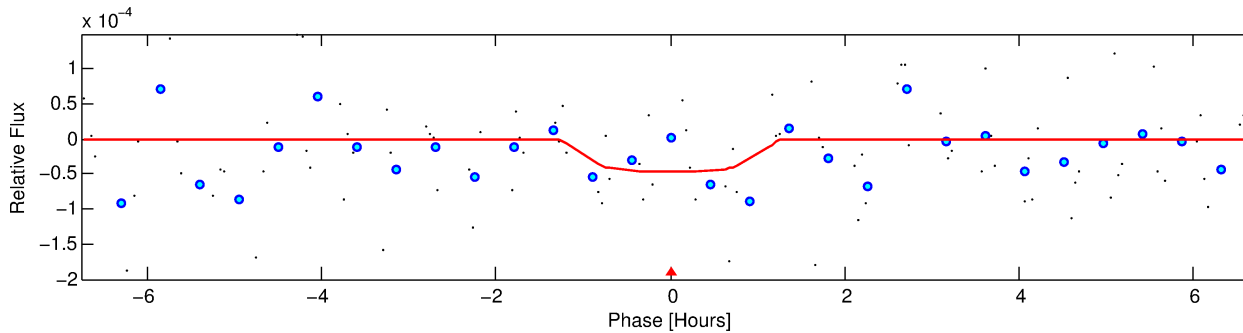
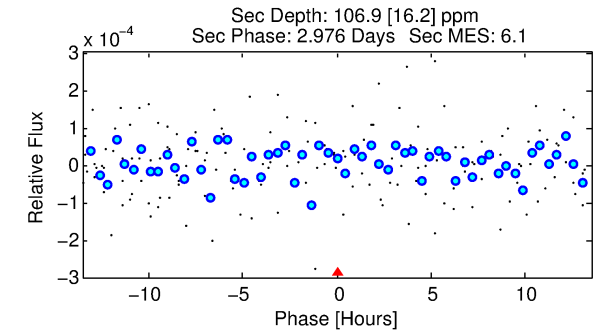
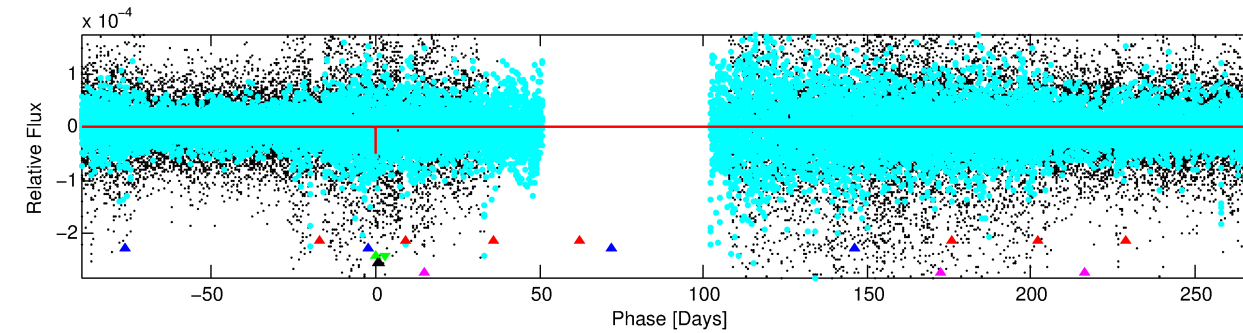
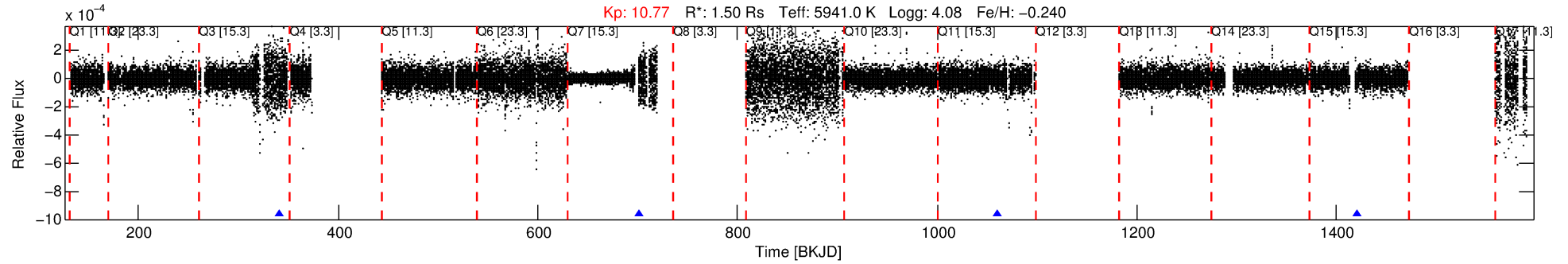
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 011390838-03

No Significant Match Found

DV One-Page Summary

KIC: 11390838 Candidate: 3 of 5 Period: 359.650 d



DV Fit Results:

Period = 359.65026 [0.01360] d
Epoch = 341.2962 [0.0258] BKJD
Rp/R* = 0.0079 [0.0185]
a/R* = 405.36 [5196.19]
b = 0.95 [1.30]
Seff = 2.60 [1.60]
Teq = 324 [50] K
Rp = 1.29 [3.08] Re
a = 0.9842 [0.3632] AU
Ag = 34288.63 [163002.03] [0.21σ]
Teffp = 6812 [8034] K [0.81σ]

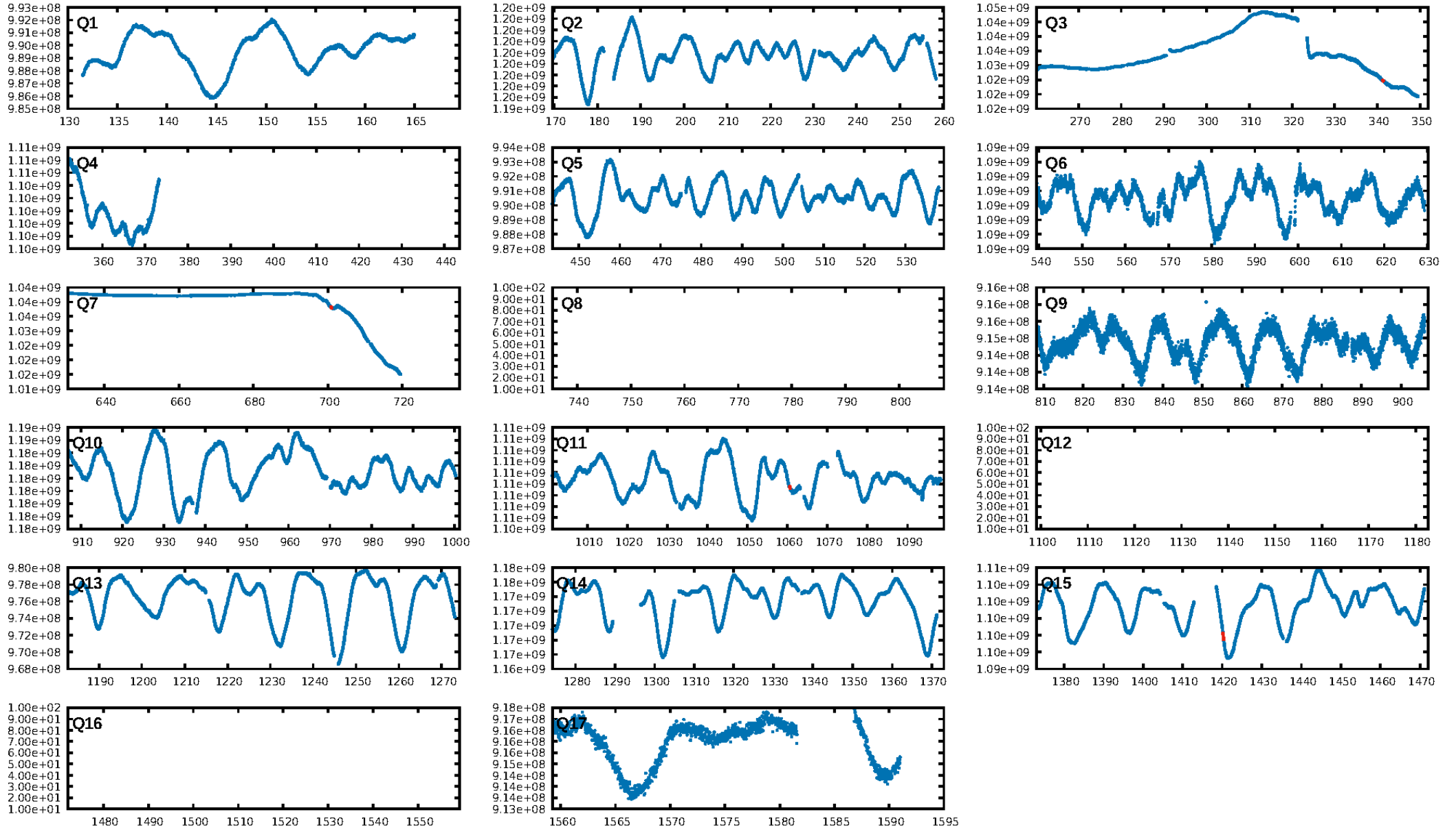
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [184.12σ]
LongPeriod-sig: 7.8% [0.10σ]
ModelChiSquare2-sig: 18.2%
ModelChiSquareGof-sig: 94.1%
Bootstrap-pfa: 5.88e-16
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: 0.0588
Centroid-sig: N/A
Centroid-so: 1.682 arcsec [0.34σ]
OotOffset-rm: 7.224 arcsec [10.58σ]
KicOffset-rm: 7.285 arcsec [10.64σ]
OotOffset-st: 0/1/0/0 [1]
KicOffset-st: 0/1/0/0 [1]
DiffImageQuality-fgm: 0.00 [0/1]
DiffImageOverlap-fno: 0.00 [0/4]

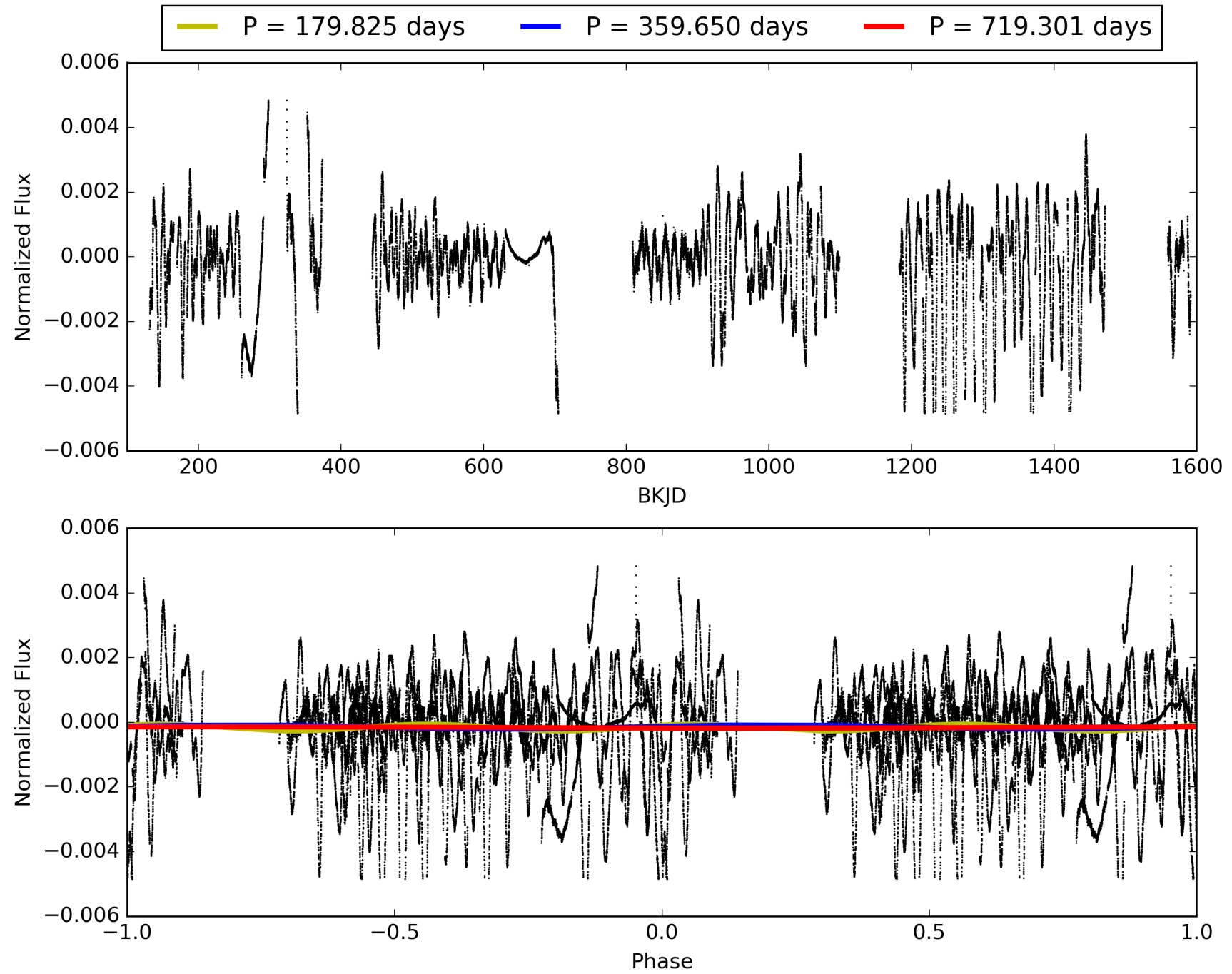
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 16:51:53 Z

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

TCE 011390838-03, PDC Light Curves

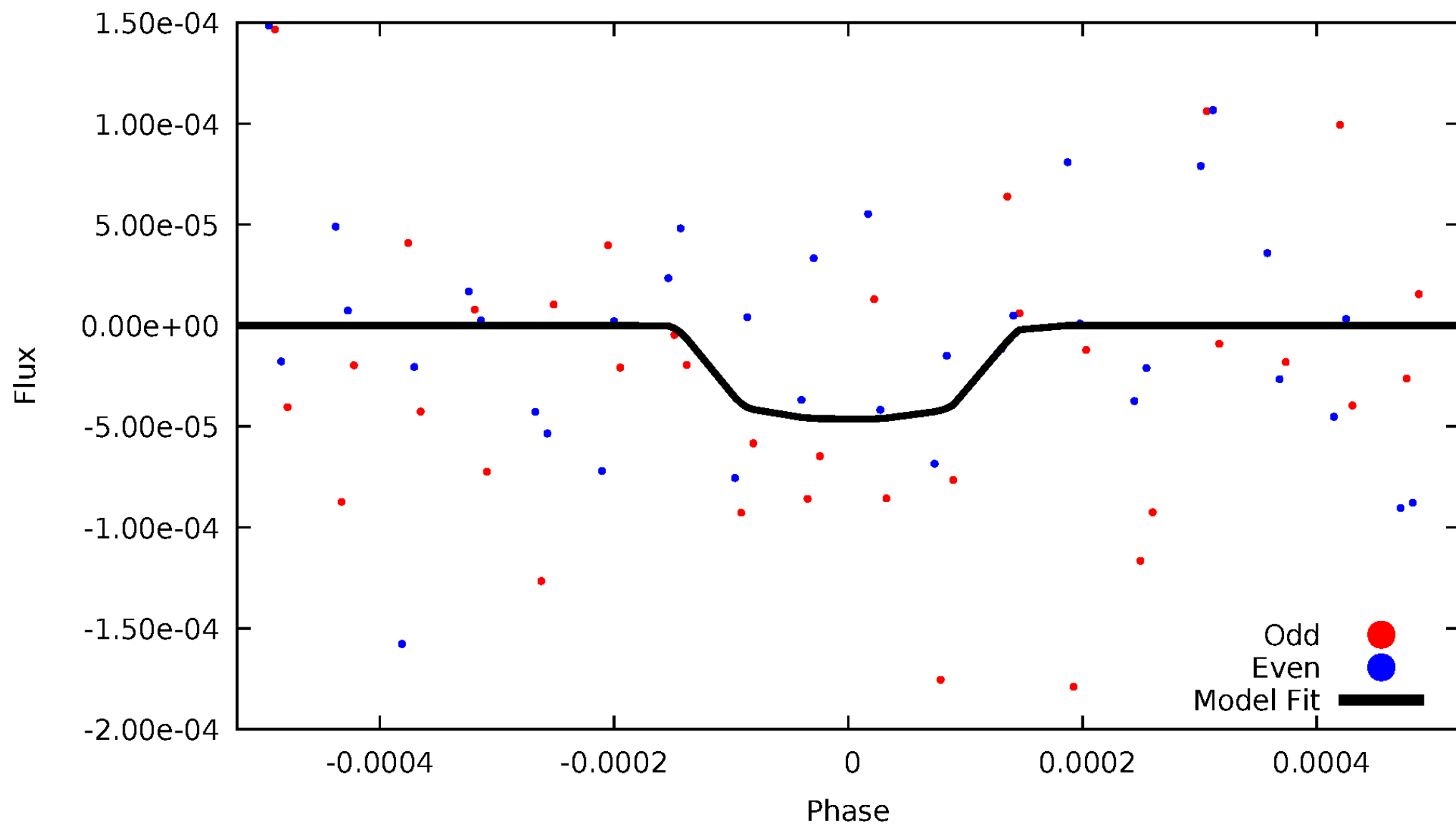


TCE 011390838-03



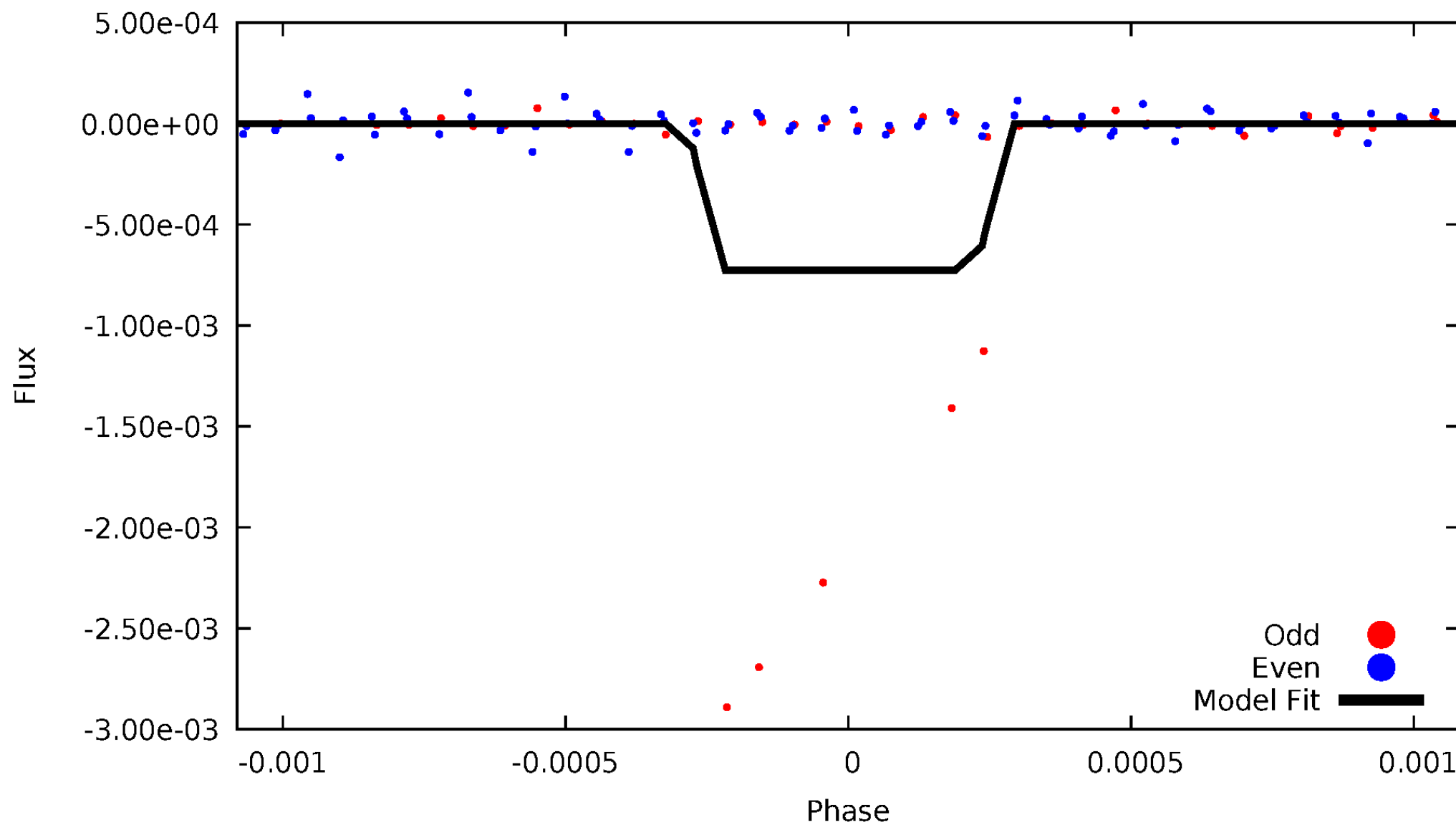
DV Odd/Even

TCE 011390838-03

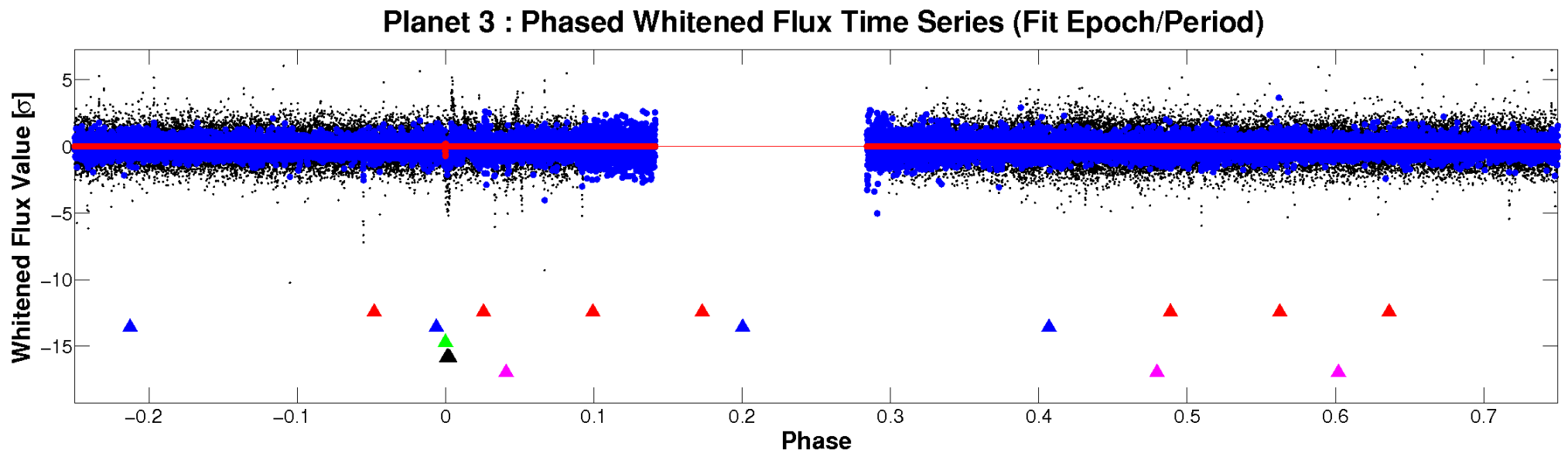
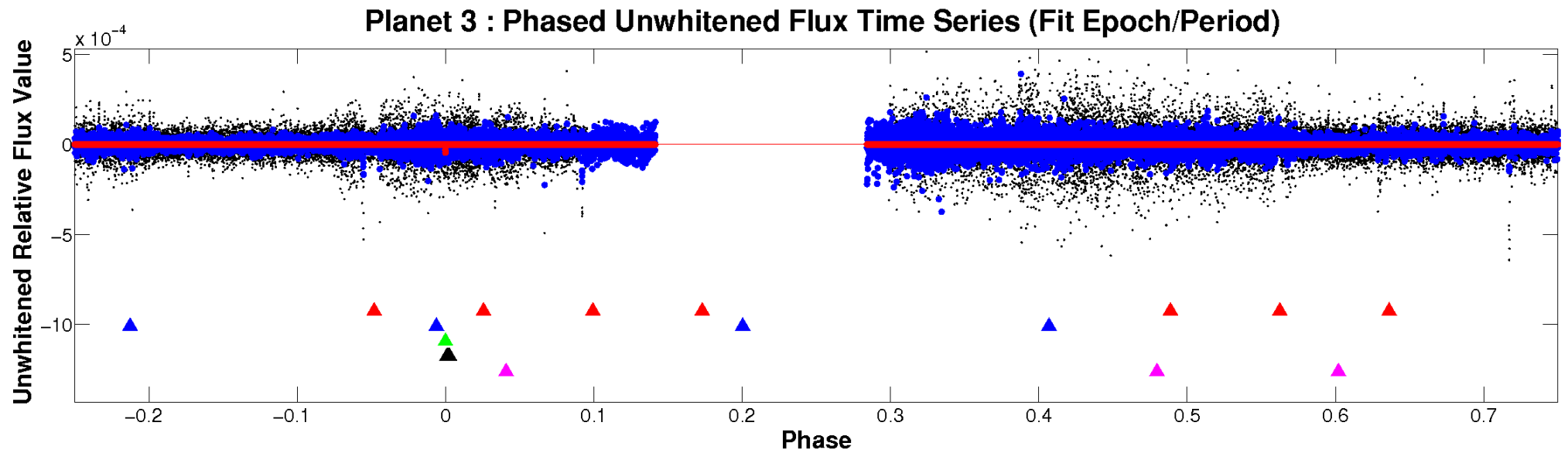


ALT Odd/Even

TCE 011390838-03

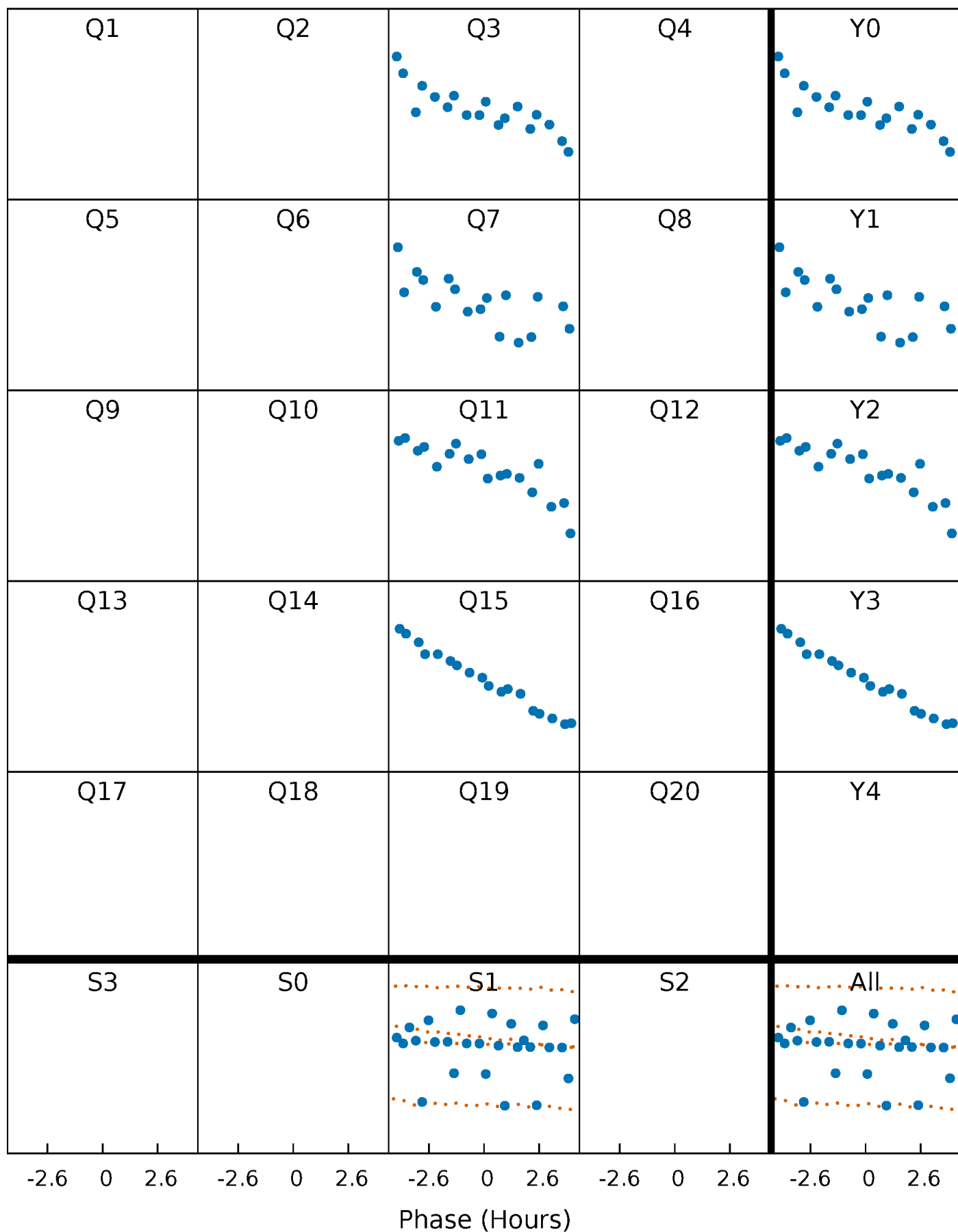


Non-Whitened Vs. Whitened Light Curve



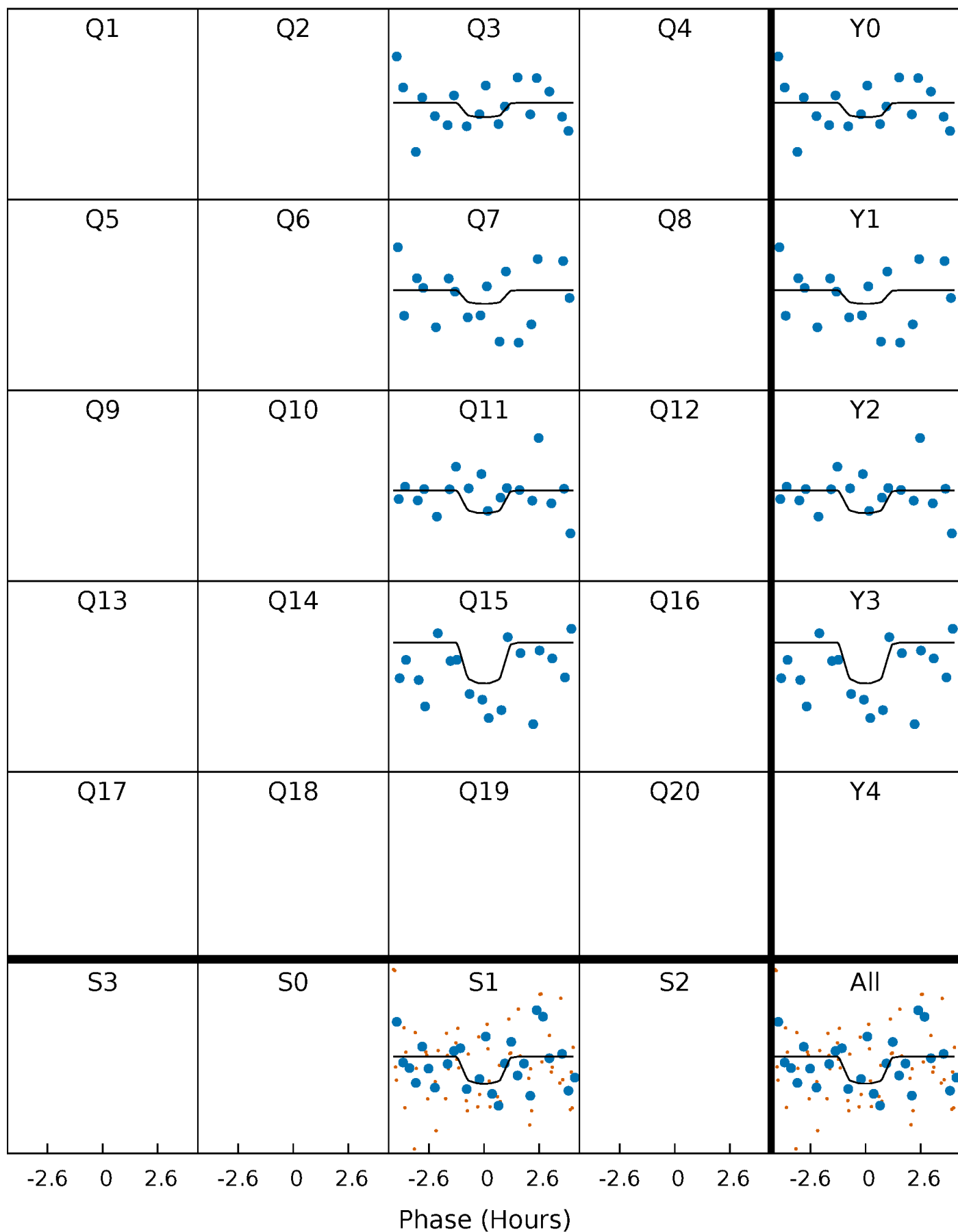
PDC Quarter-Phased Transit Curves

TCE 011390838-03 $P=359.650258$ Days $T_0=341.296184$ (BKJD)



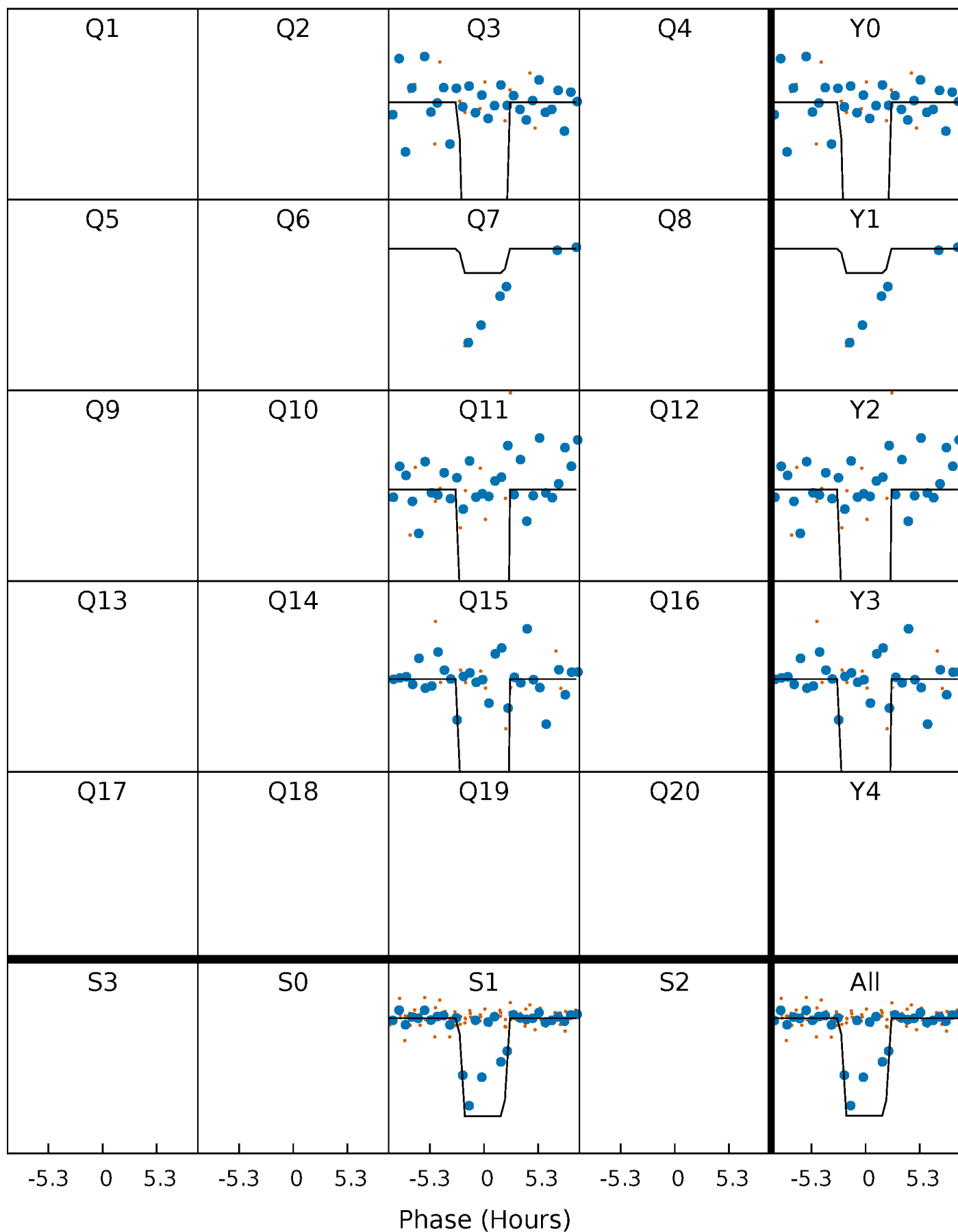
DV Quarter-Phased Transit Curves

TCE 011390838-03 $P=359.650258$ Days $T_0=341.296184$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

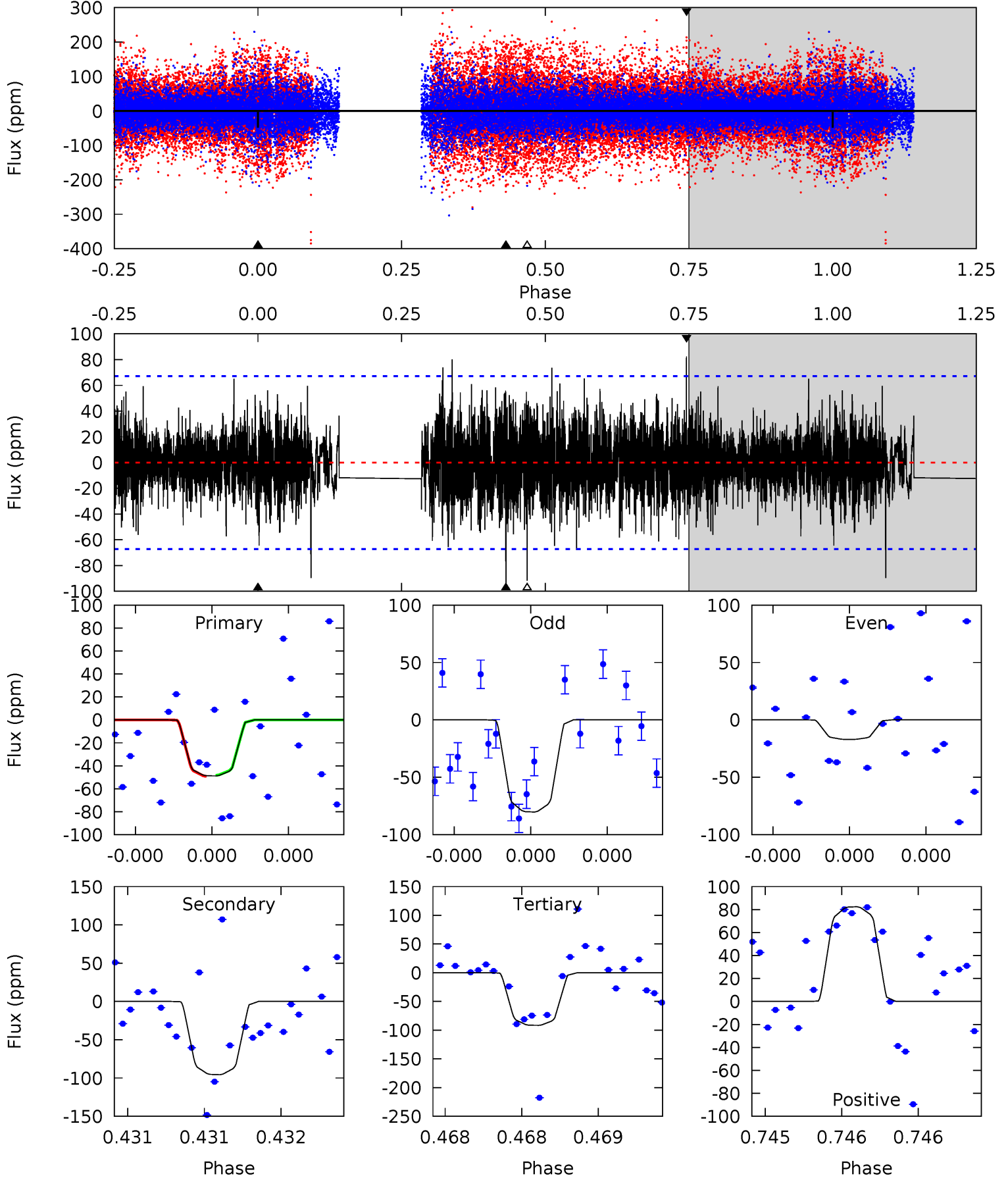
TCE 011390838-03 P=359.651090 Days $T_0=341.298813$ (BKJD)



DV Model-Shift Uniqueness Test

011390838-03, P = 359.650258 Days, E = 341.296184 Days

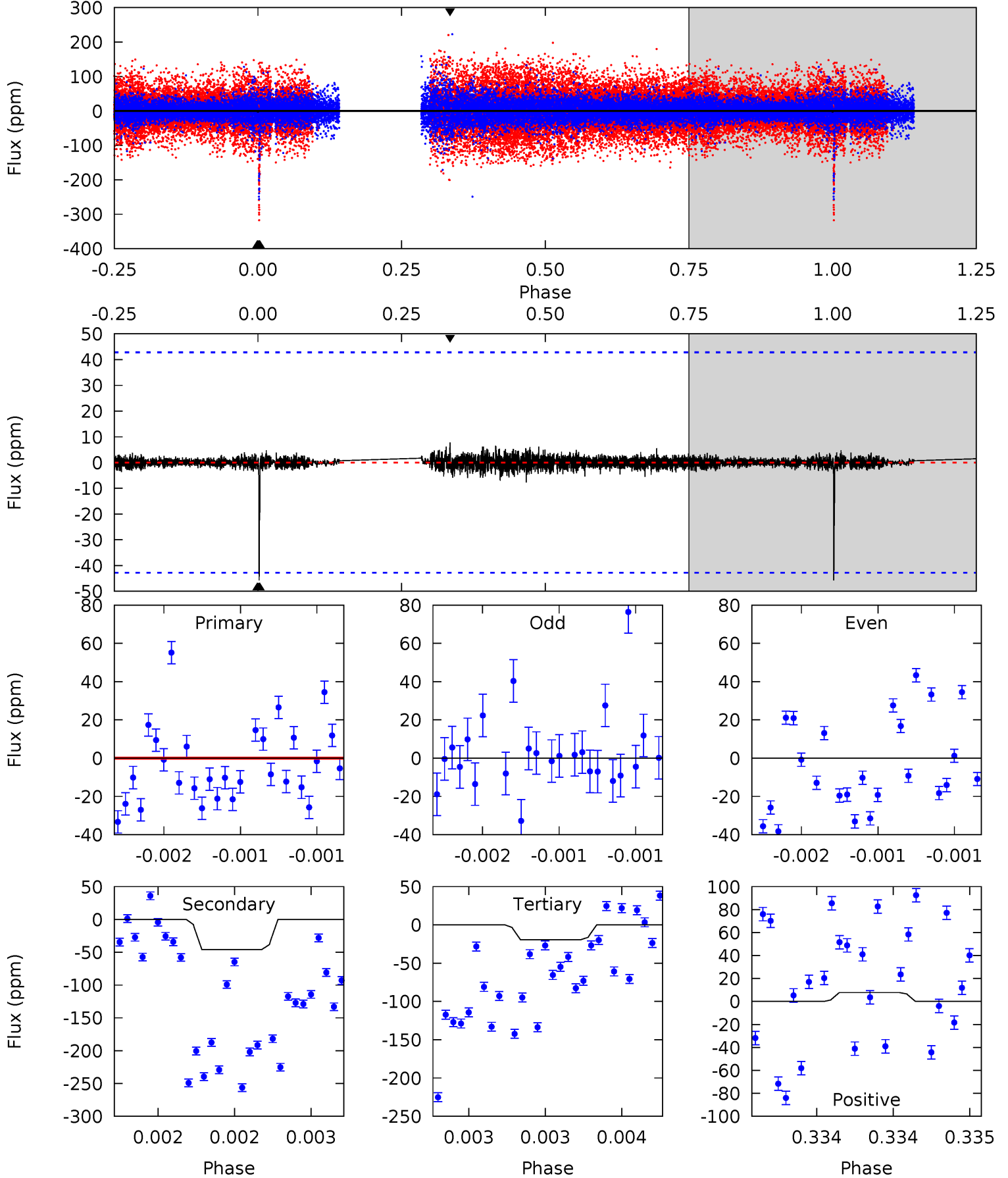
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4.10	8.03	7.70	6.93	5.64	3.59	1.46	-3.60	-2.83	0.34	1.11	2.55	0.91	0.46	0.03



Alt Model-Shift Uniqueness Test

011390838-03, P = 359.651090 Days, E = 341.298813 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0.30	5.96	2.53	1.01	5.57	3.47	0.19	-2.23	-0.71	3.43	4.94	0.01	363.1	0.15	0.13



Stellar Parameters For KIC 011390838

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5941^{+197}_{-197}	$4.077^{+0.357}_{-0.153}$	$-0.240^{+0.300}_{-0.300}$	$1.502^{+0.418}_{-0.557}$	$0.982^{+0.157}_{-0.118}$	$0.408^{+1.037}_{-0.167}$
	+3%/-3%	+9%/-4%	+125%/-125%	+28%/-37%	+16%/-12%	+254%/-41%
Source	PHO54	PHO54	PHO54	DSEP		

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

Secondary Eclipse Parameters for KIC 011390838-03 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-96 ± 12	$2.47^{+2.63}_{-1.64}$	447^{+38}_{-50}	4770^{+3628}_{-1072}	8499^{+65812}_{-6613}
Alt.	-46 ± 8	$4.24^{+3.12}_{-2.31}$	444^{+36}_{-45}	3423^{+1061}_{-471}	1360^{+5238}_{-916}

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 $A_{obs} \gg 1.0$

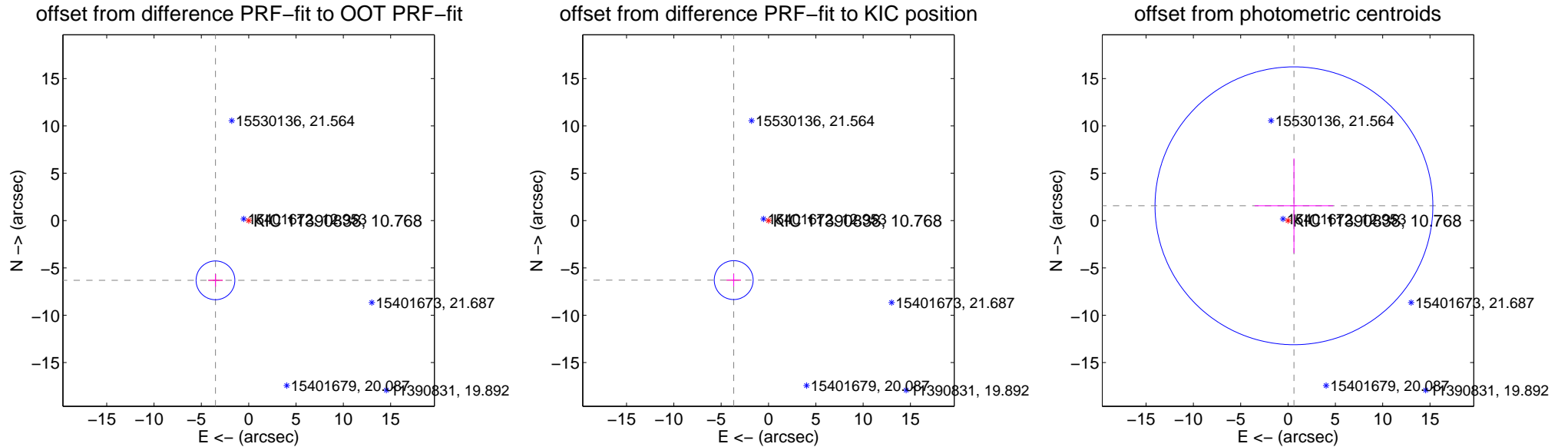
DV Centroid Data

Supplemental centroid analysis for 011390838-03. **Kepler magnitude: 10.77.** Transit SNR 2.72

There are 0 quarters with good PRF difference image offsets

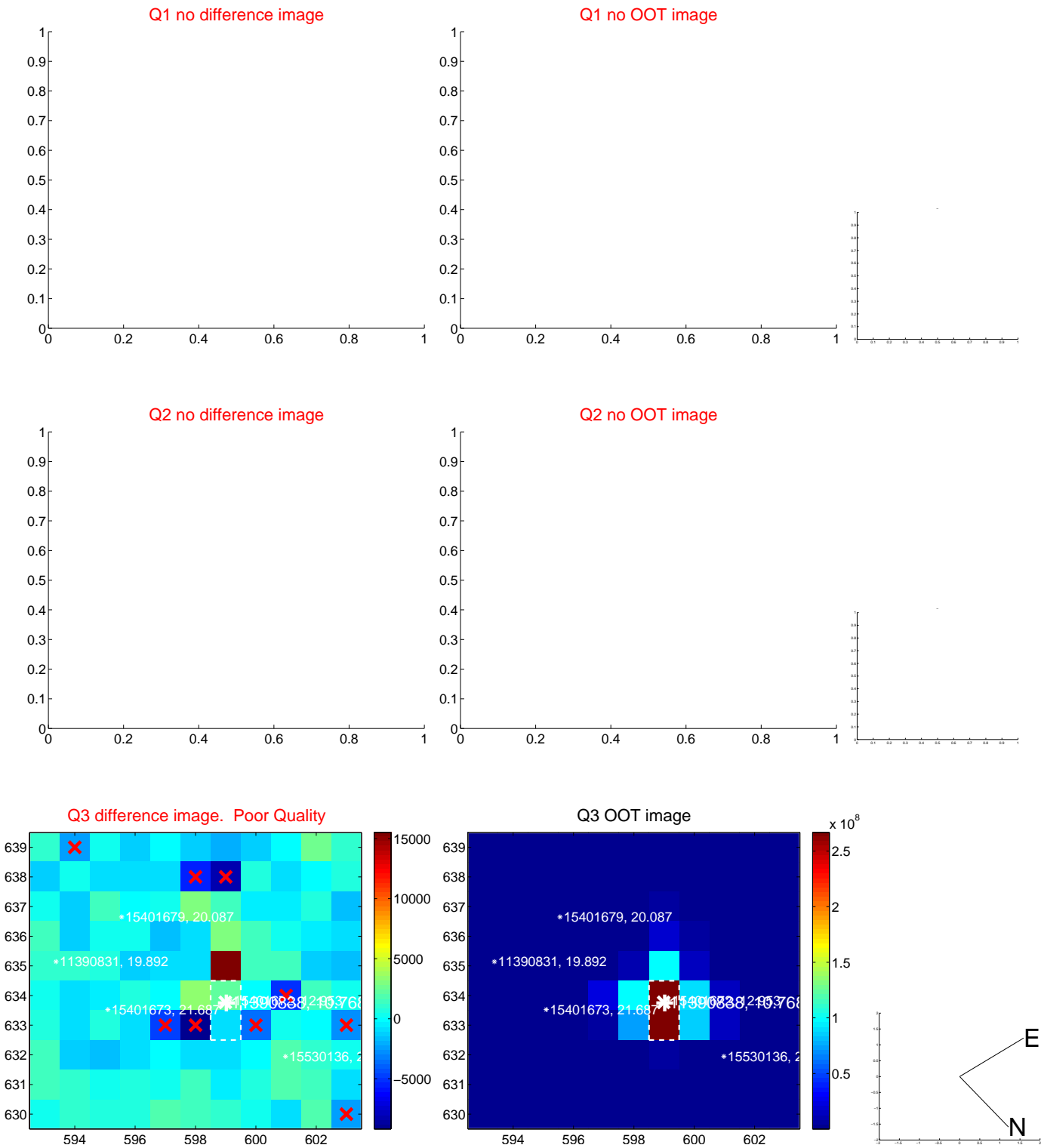
The direct PRF centroid is offset from the target star catalog position by about 0.17 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	7.224 \pm 0.683	10.58	3.509 \pm 0.763	-6.315 \pm 0.656
PRF-fit source offset from KIC position	7.285 \pm 0.685	10.64	3.677 \pm 0.763	-6.289 \pm 0.656
photometric centroid source offset	1.68 \pm 4.89	0.34	-0.62 \pm 4.15	1.56 \pm 5.00

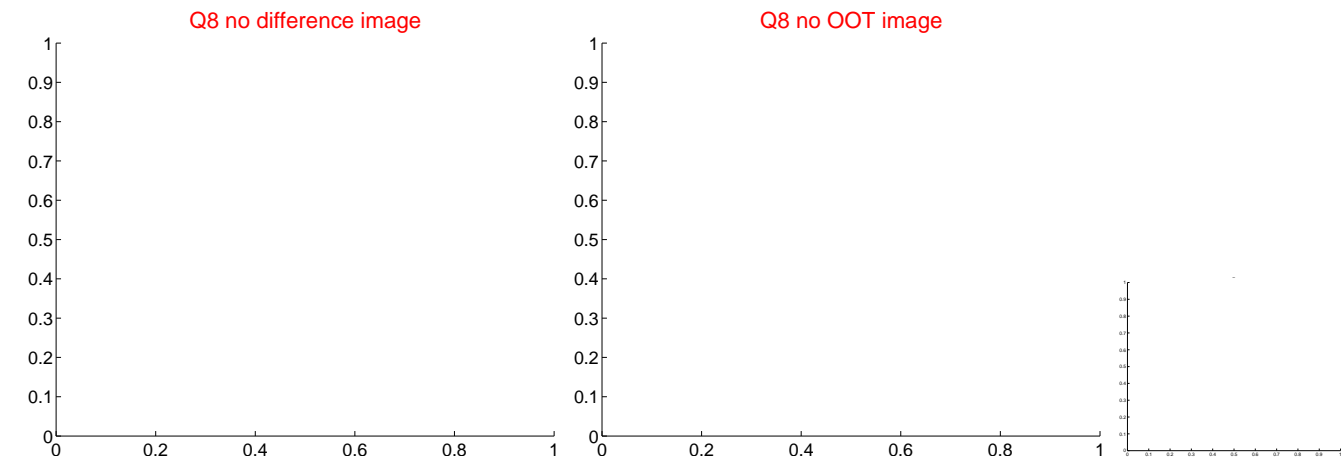
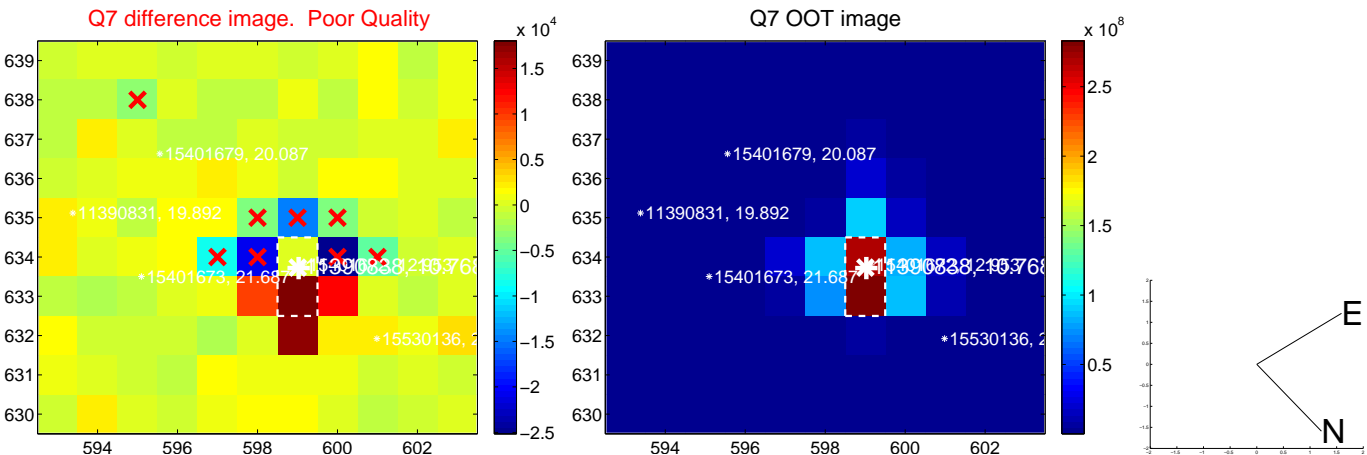


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

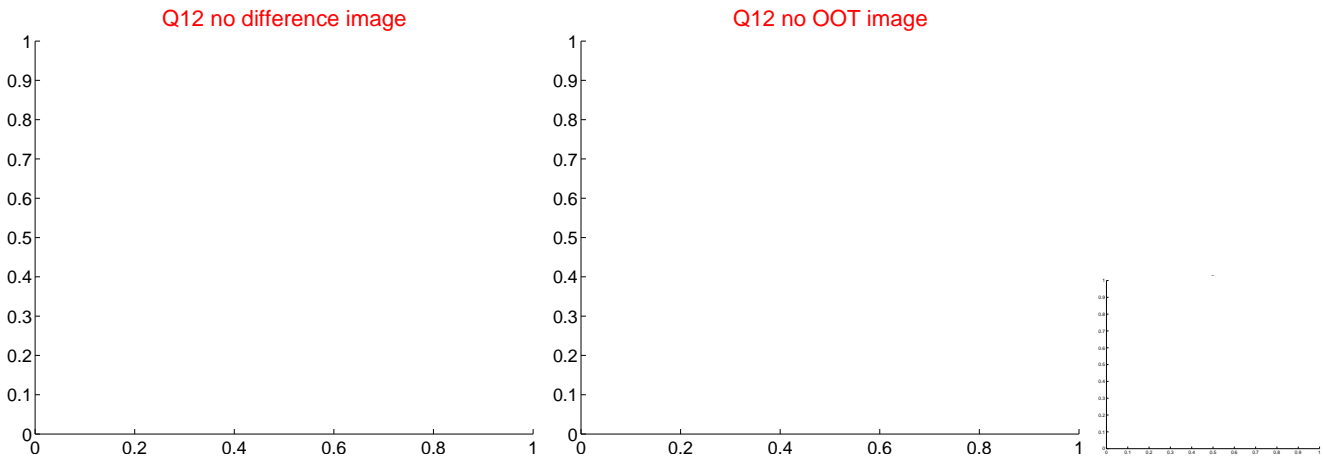
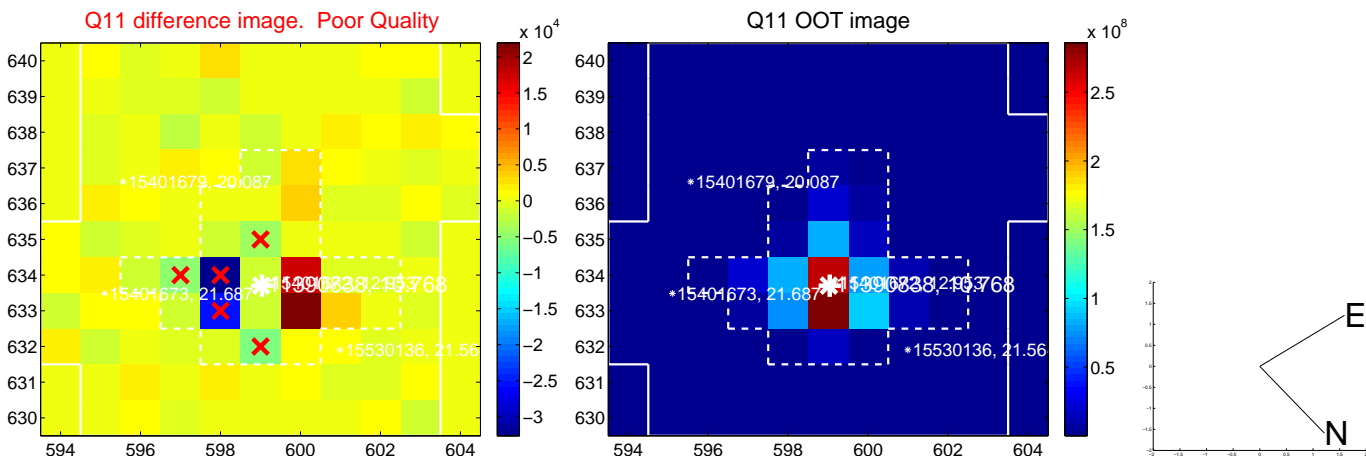
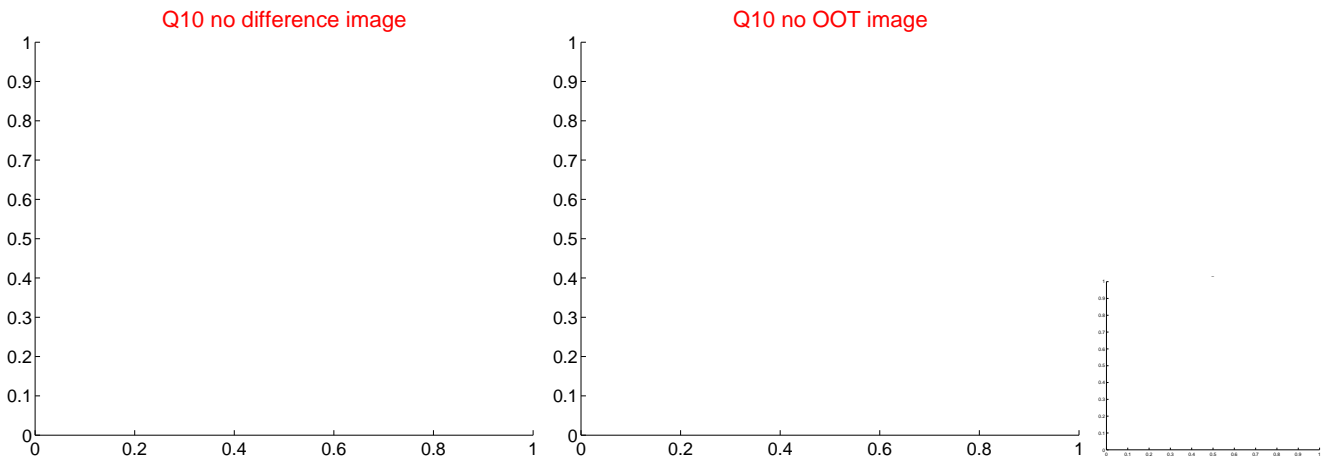
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



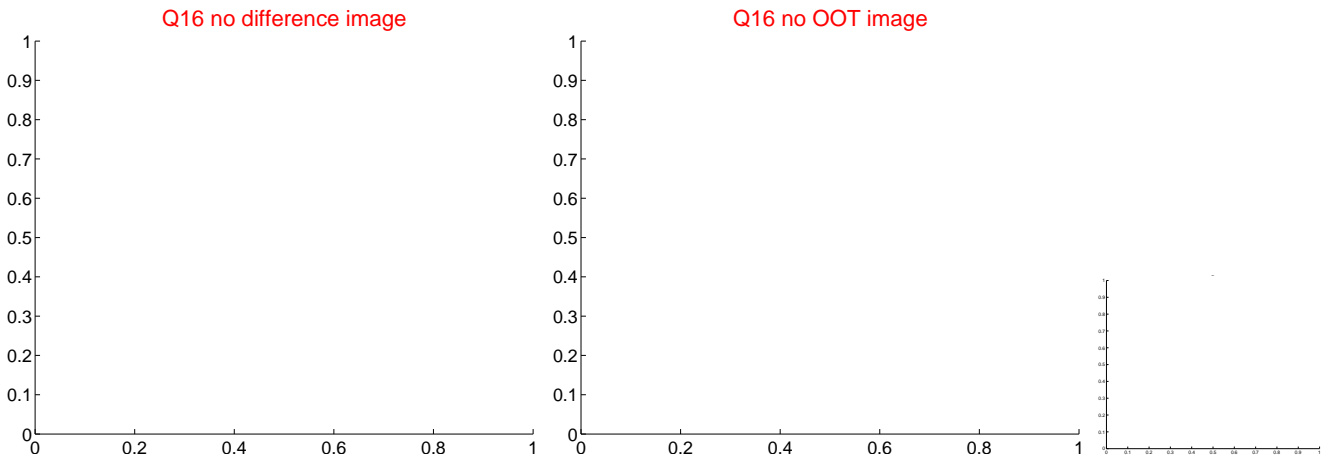
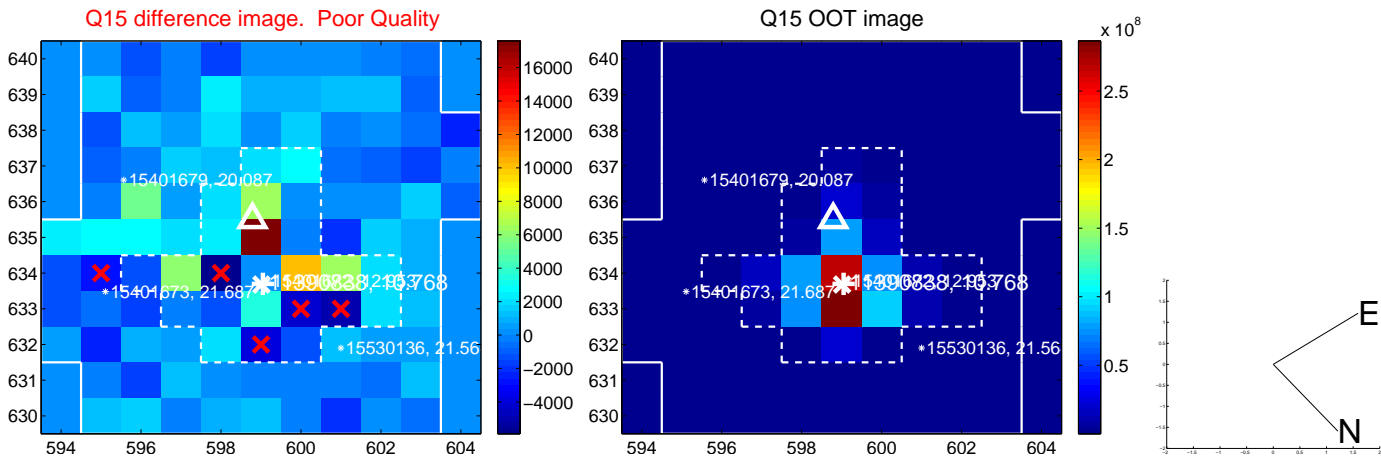
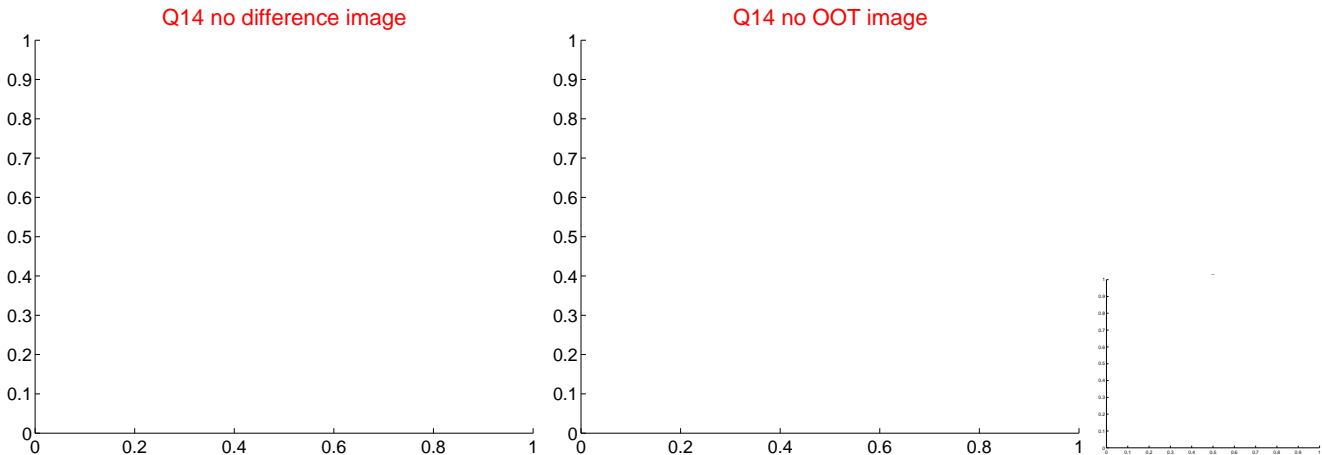
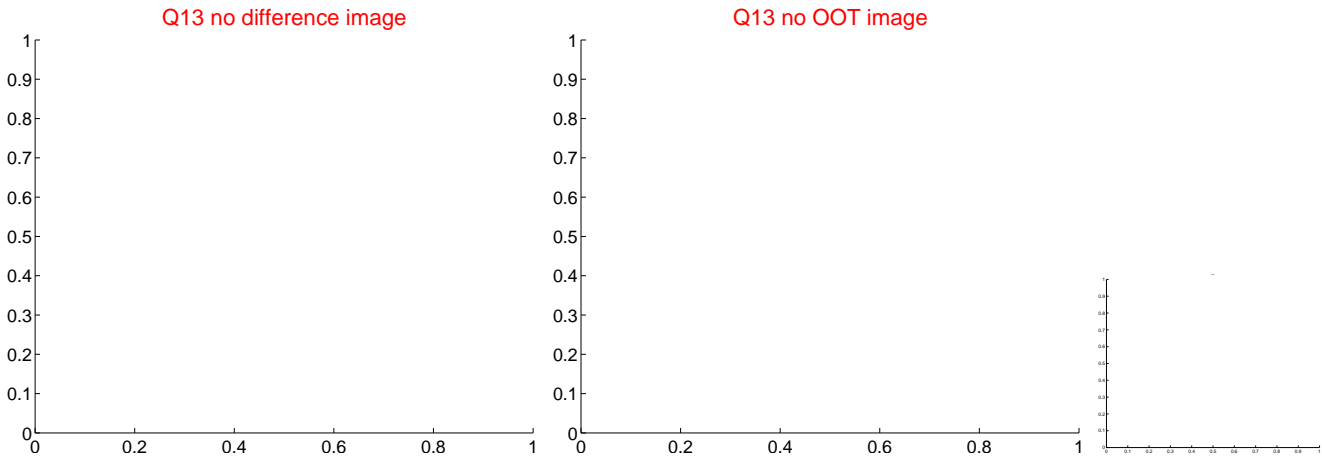
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



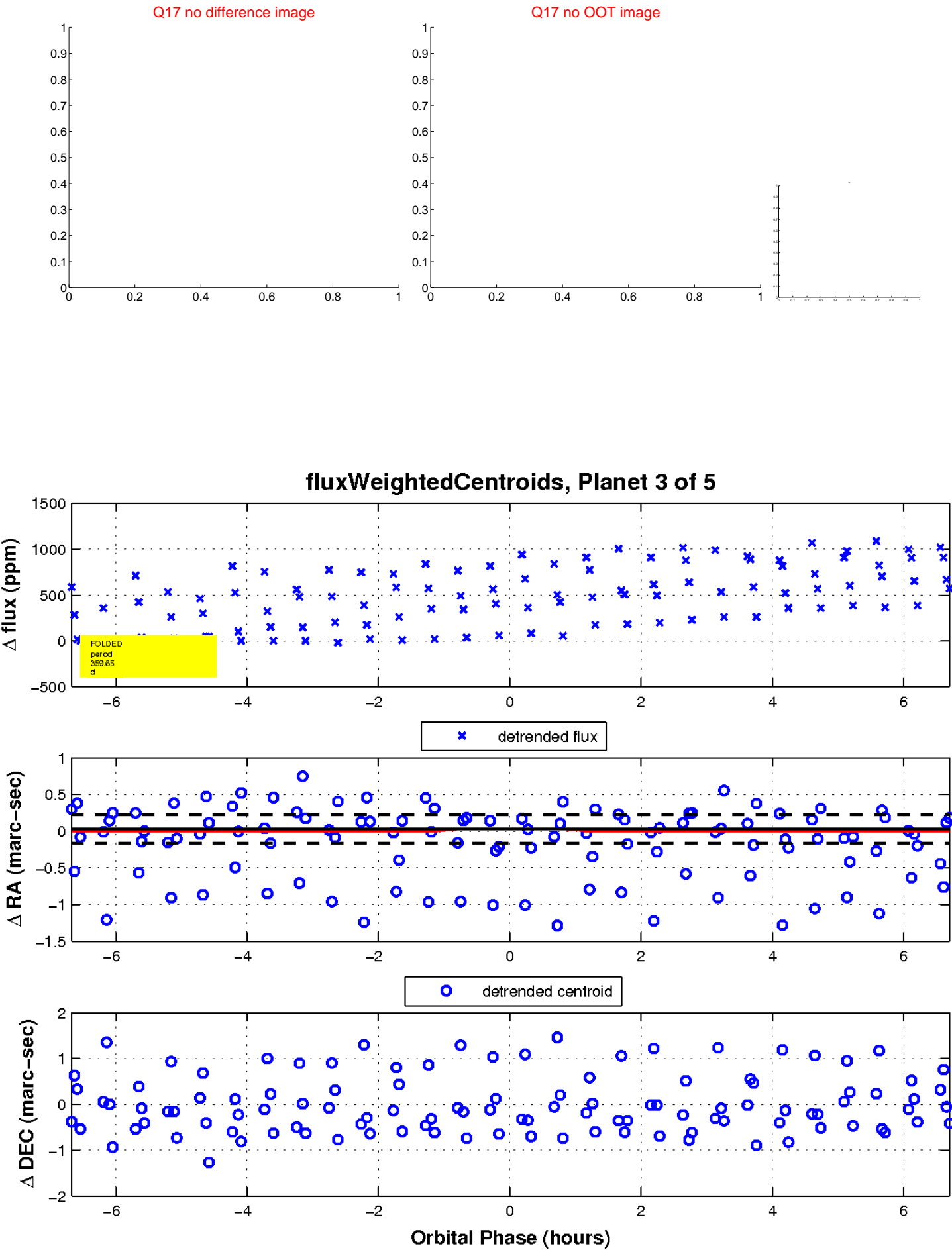
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value



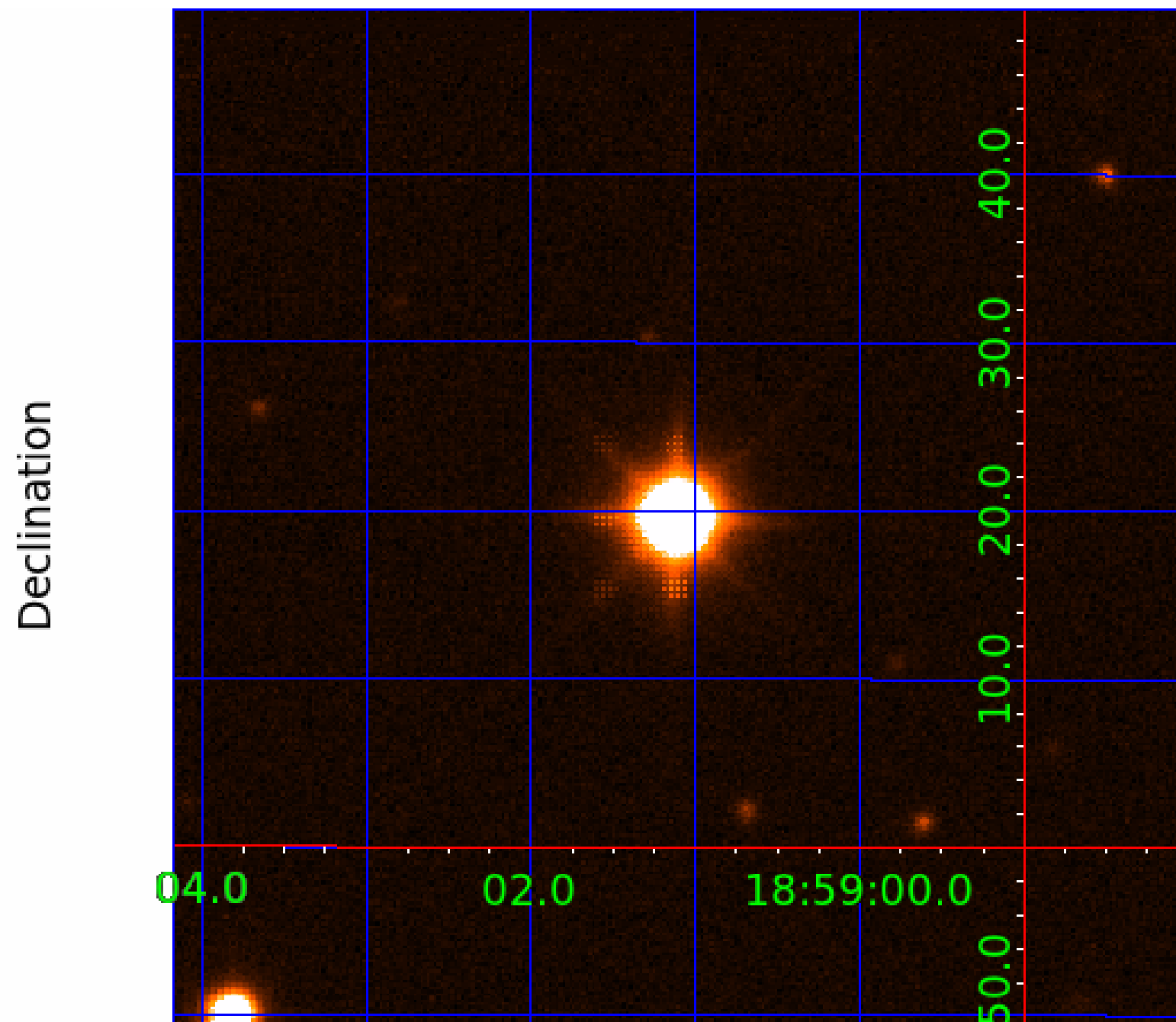
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value



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



UKIRT Image



KIC 011390838

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})
011390838-01	OBS	No	193.083118	324.004984	131.6	21.596	15.3	5.3	1.50	5941	2.32	5.96
011390838-02	OBS	No	433.923883	264.814535	256.0	32.329	9.1	10.6	1.50	5941	3.31	2.02
011390838-03	OBS	No	359.650258	341.296184	46.3	2.251	11.6	2.7	1.50	5941	1.29	2.60
011390838-04	OBS	No	359.855854	341.645053	991.4	50.555	11.9	27.1	1.50	5941	6.29	2.60
011390838-05	OBS	No	561.481363	154.172417	152.4	20.888	7.9	6.7	1.50	5941	2.44	1.44

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011390838-01	OBS	FP	0.00	1	0	1	0	LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_SATURATED—HALO_GHOST
011390838-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_SATURATED
011390838-03	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_MARSHALL_SKYE_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED—HALO_GHOST
011390838-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—INCONSISTENT_TRANS—CENT_SATURATED
011390838-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_SATURATED

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

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

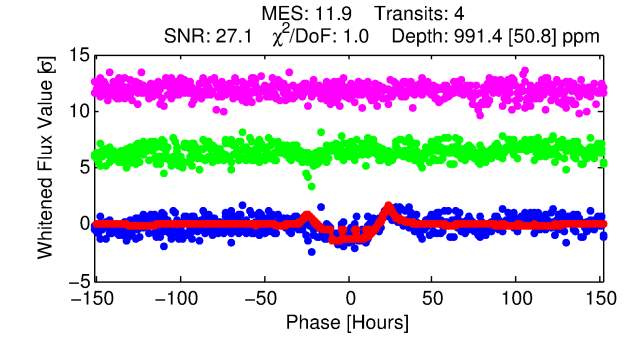
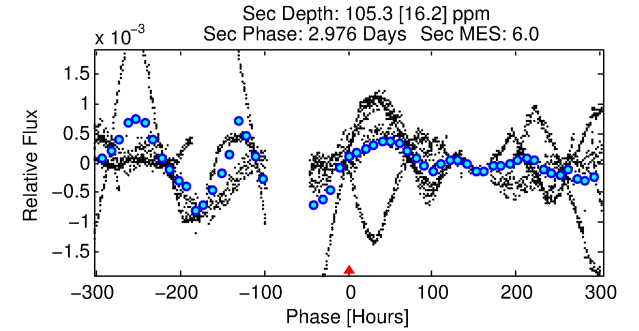
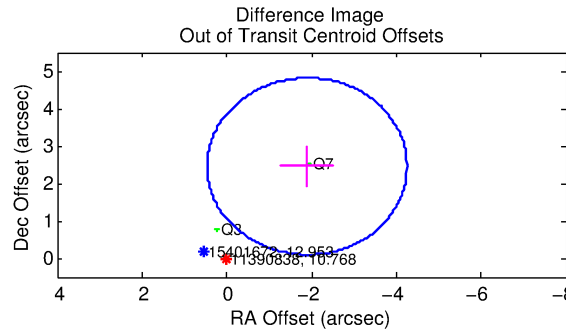
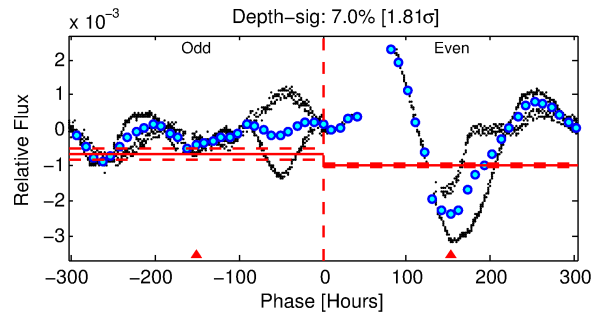
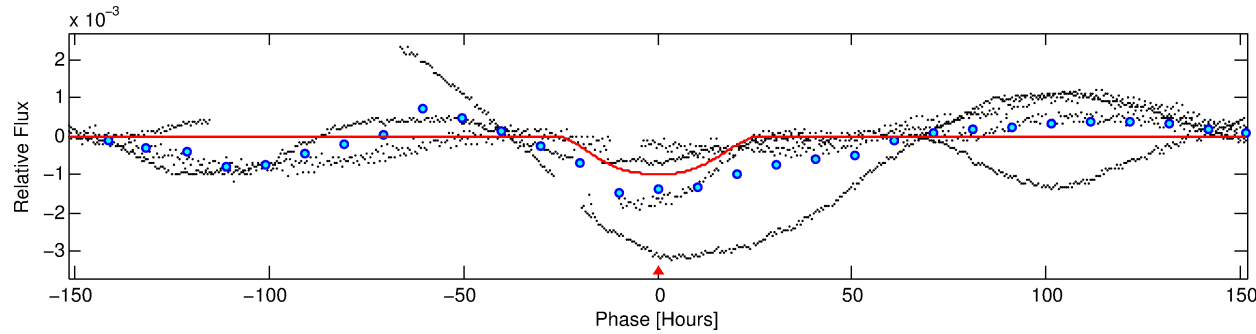
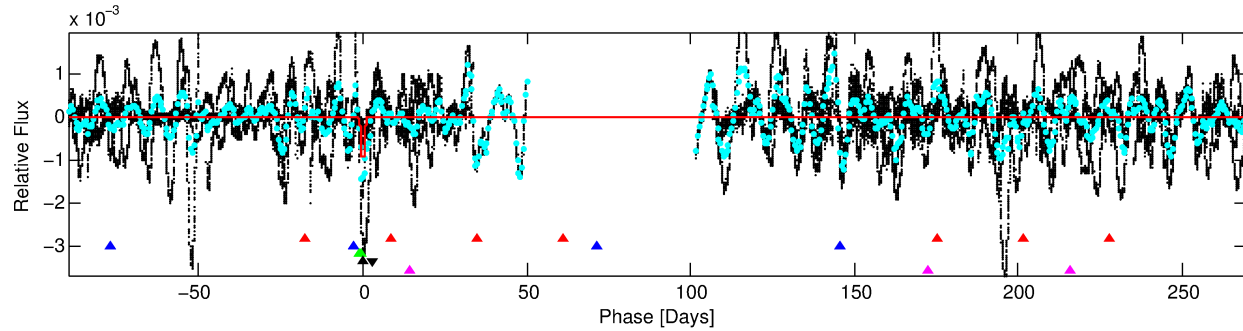
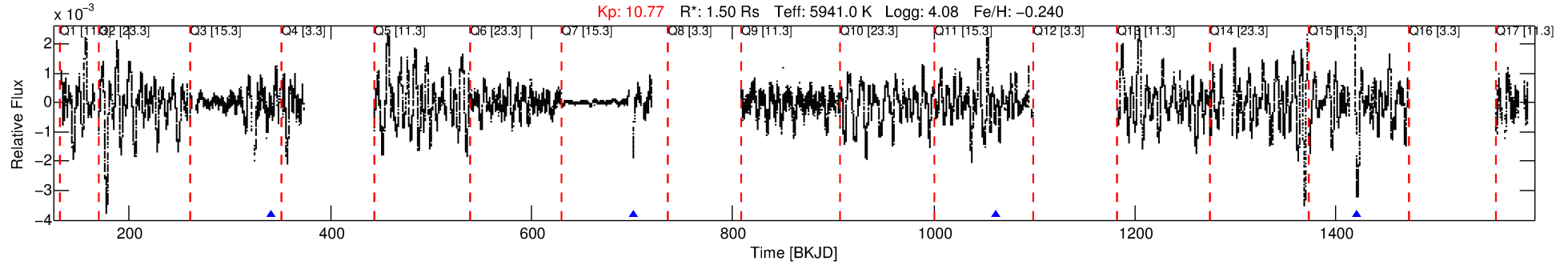
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 011390838-04

No Significant Match Found

DV One-Page Summary

KIC: 11390838 Candidate: 4 of 5 Period: 359.856 d



DV Fit Results:

Period = 359.8585 [0.01777] d
Epoch = 341.6451 [0.0250] BKJD
Rp/R* = 0.0384 [0.0018]
a/R* = 20.59 [0.70]
b = 0.97 [0.01]
Seff = 2.60 [1.60]
Teq = 324 [50] K
Rp = 6.29 [2.35] Re
a = 0.9845 [0.3633] AU
Ag = 1416.74 [889.60] [1.59 σ]
Teffp = 3071 [172] K [15.31 σ]

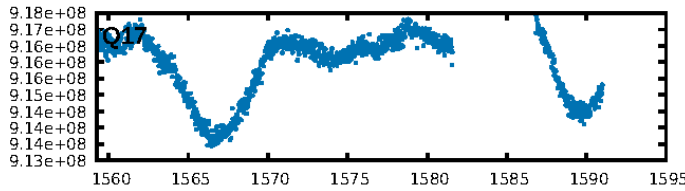
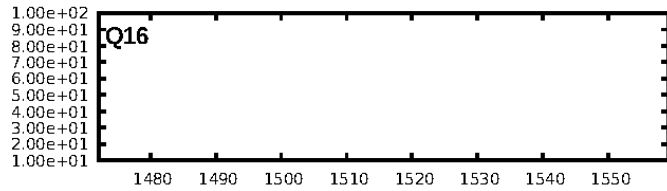
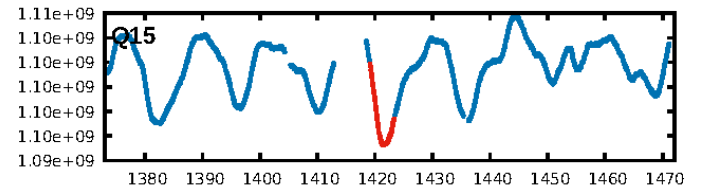
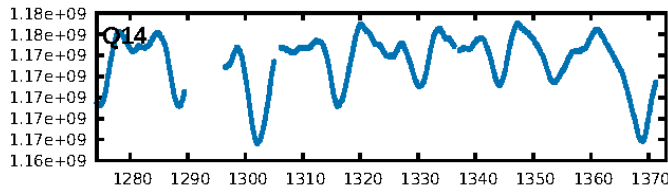
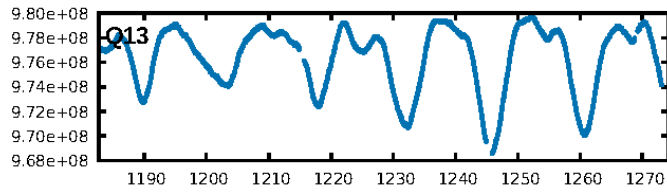
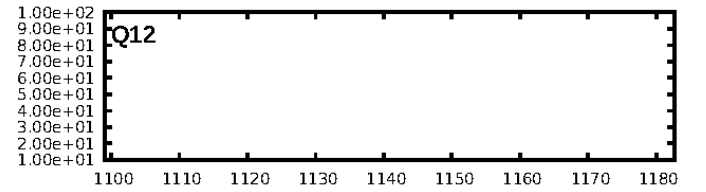
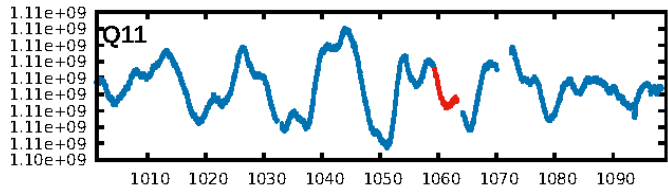
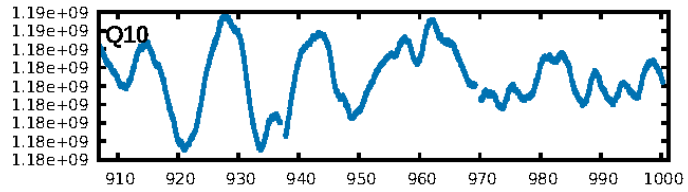
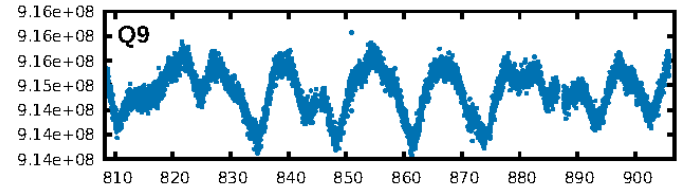
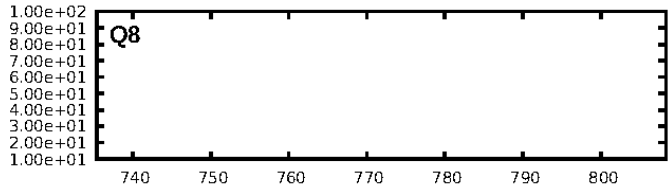
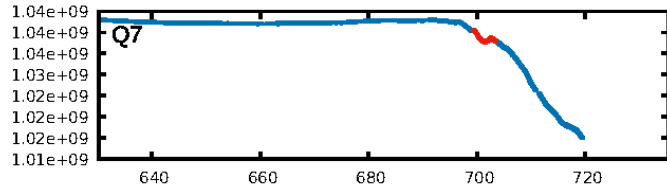
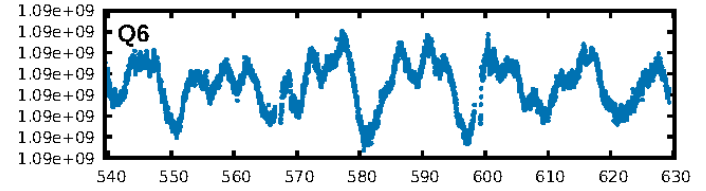
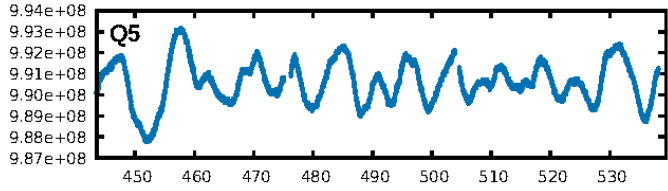
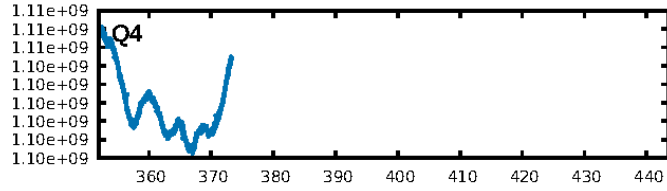
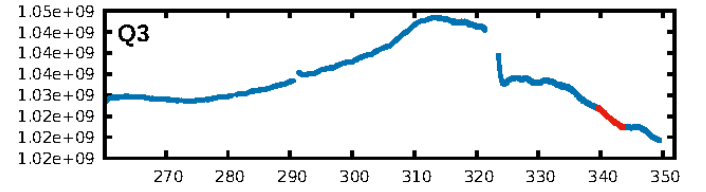
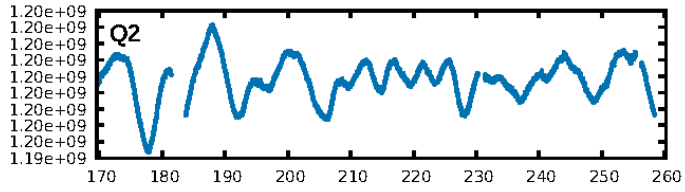
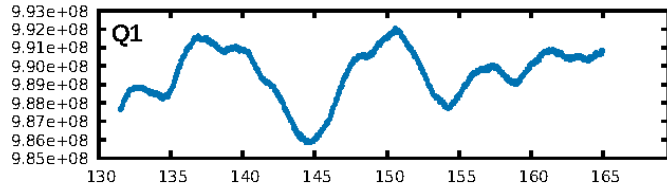
DV Diagnostic Results:

ShortPeriod-sig: 7.8% [0.10 σ]
LongPeriod-sig: 100.0% [29.62 σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 1.29e-16
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: 0.2707
Centroid-sig: N/A
Centroid-so: 0.232 arcsec [0.37 σ]
OotOffset-rm: 3.102 arcsec [3.94 σ]
KicOffset-rm: 3.148 arcsec [4.10 σ]
OotOffset-st: 0/2/0/0 [2]
KicOffset-st: 0/2/0/0 [2]
DiffImageQuality-fgm: 0.50 [1/2]
DiffImageOverlap-fno: 0.00 [0/2]

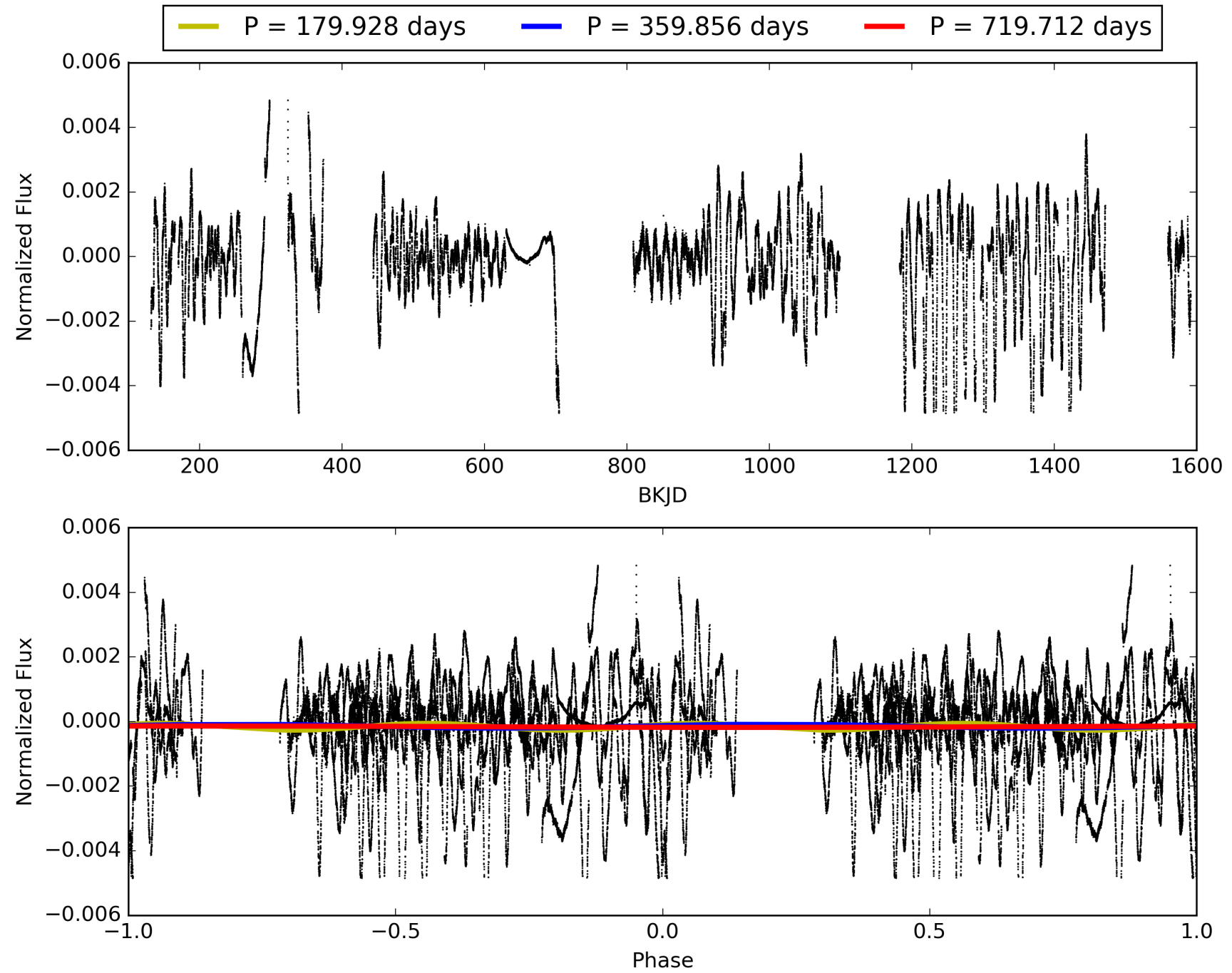
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 16:52:01 Z

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

TCE 011390838-04, PDC Light Curves

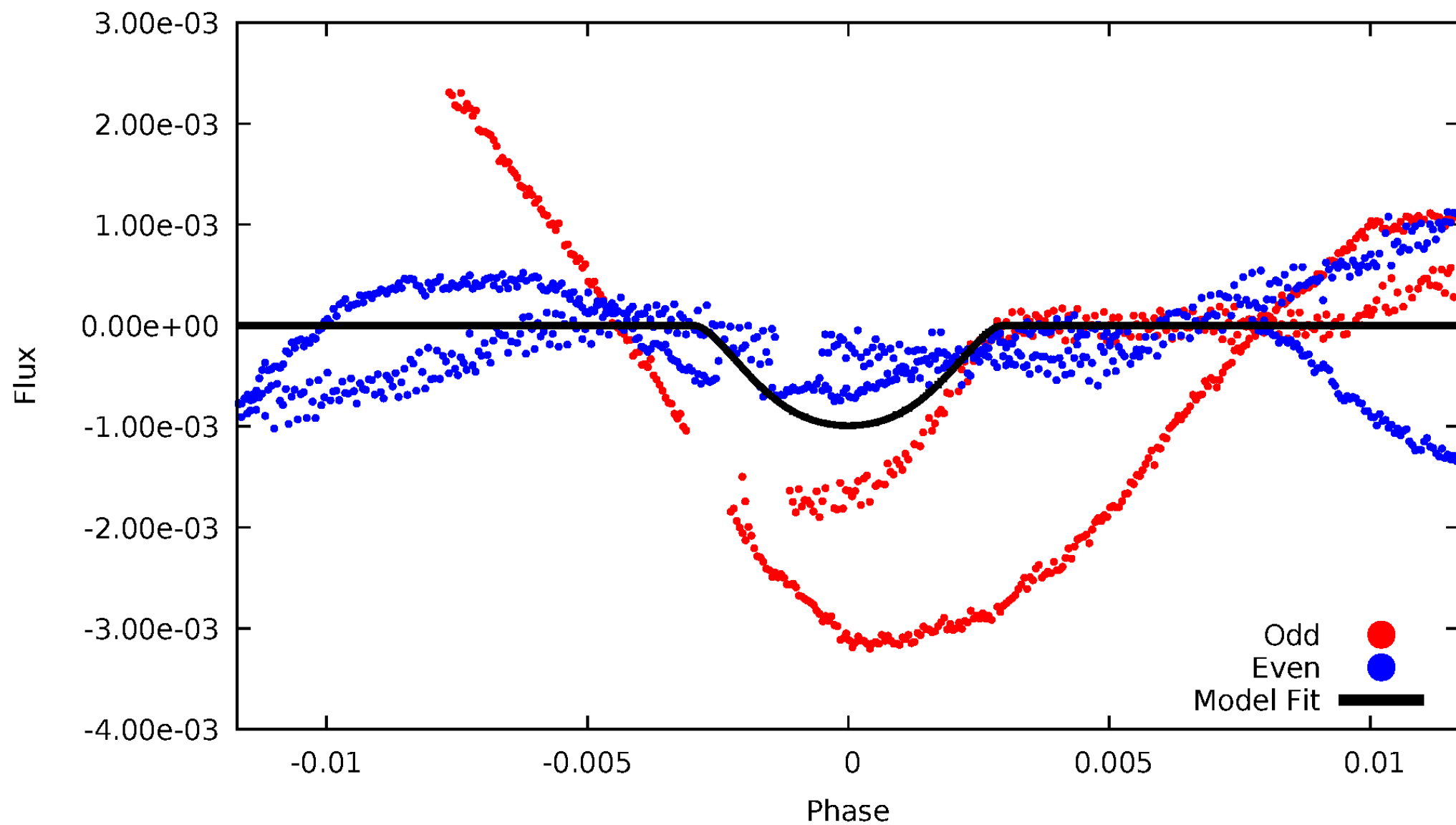


TCE 011390838-04



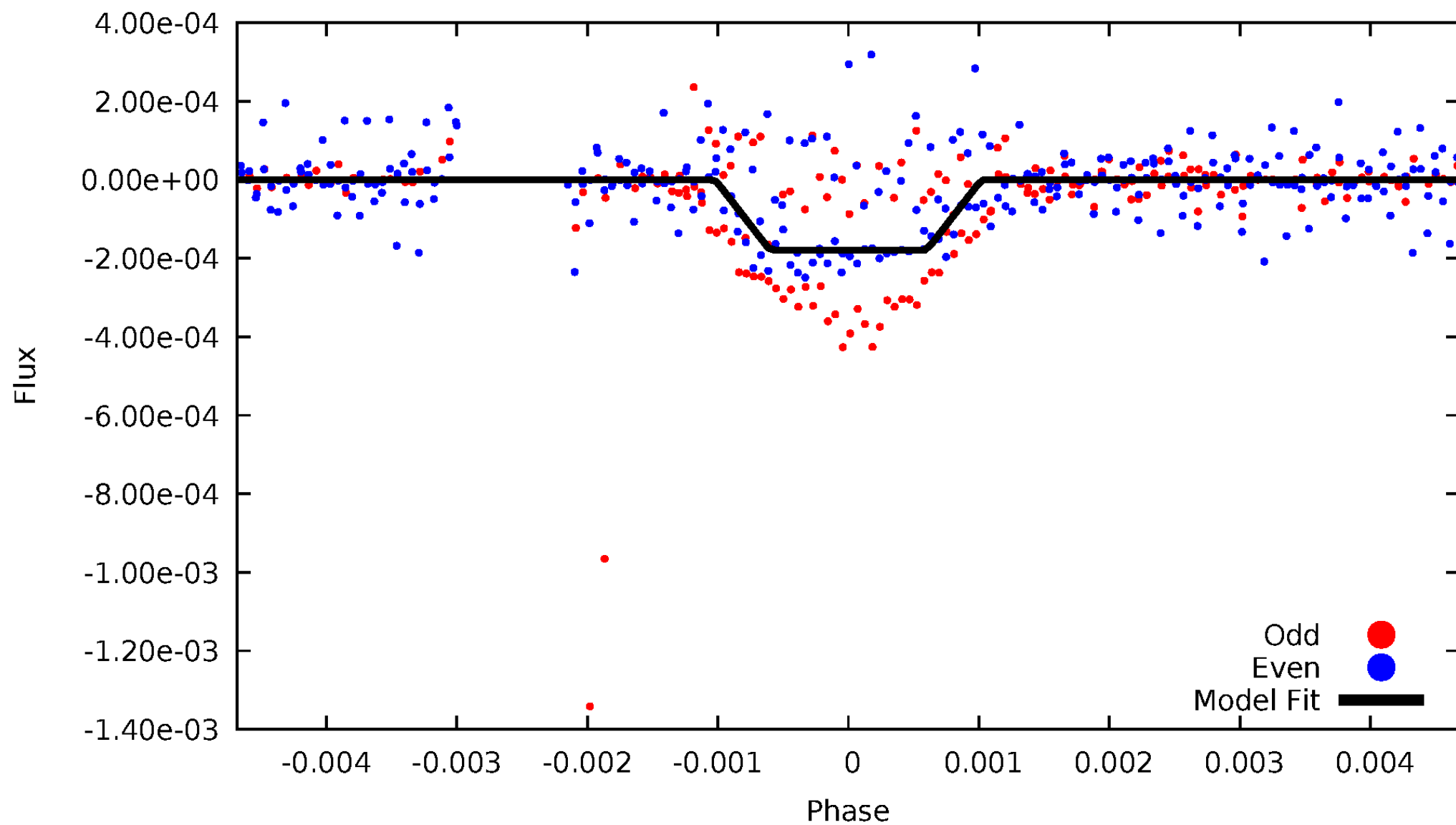
DV Odd/Even

TCE 011390838-04



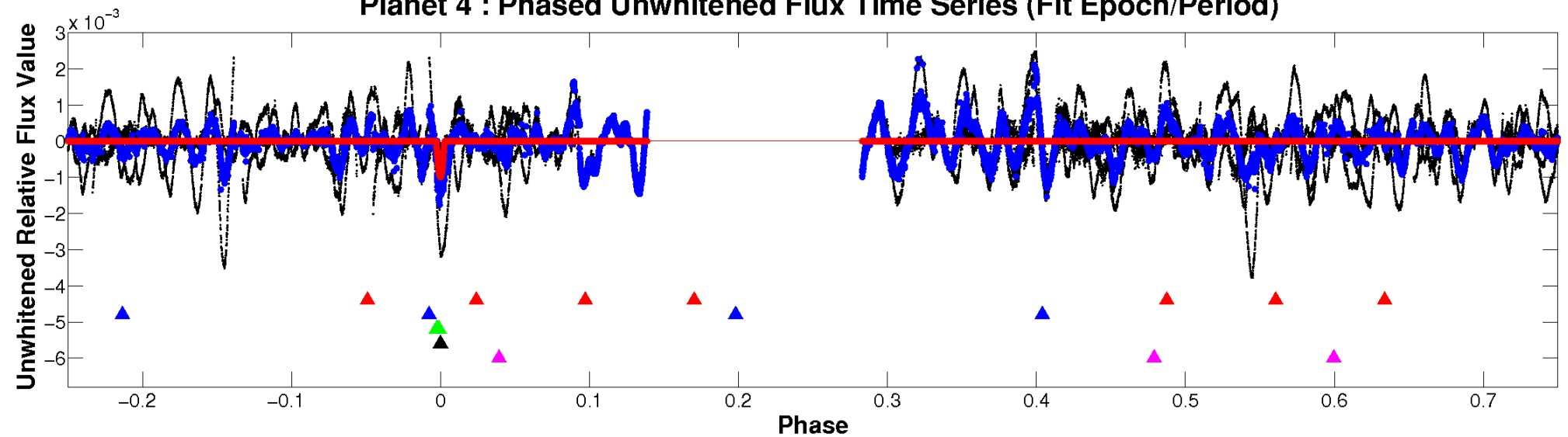
ALT Odd/Even

TCE 011390838-04

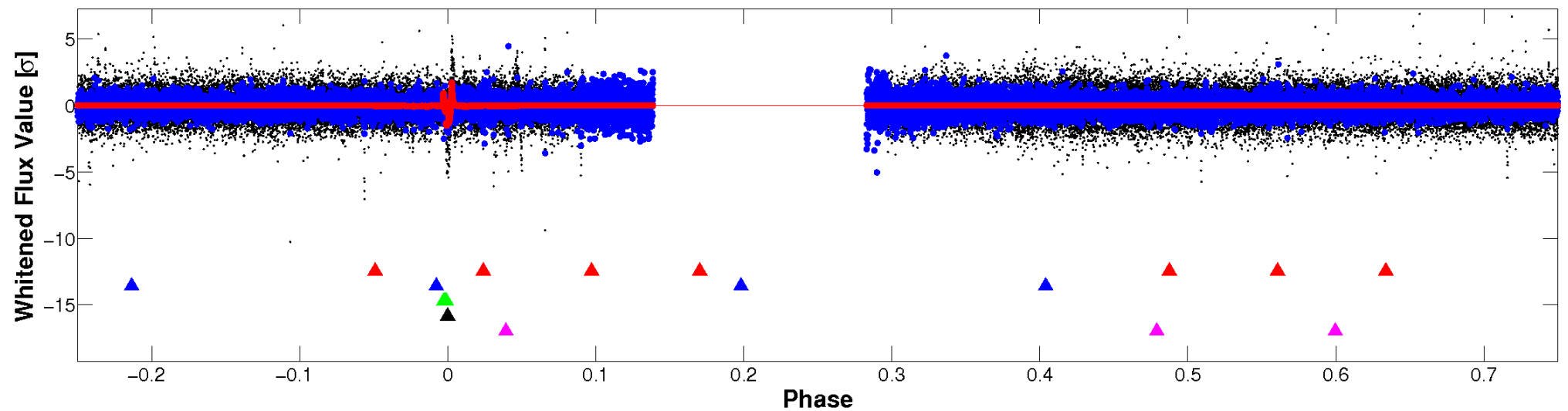


Non-Whitened Vs. Whitened Light Curve

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

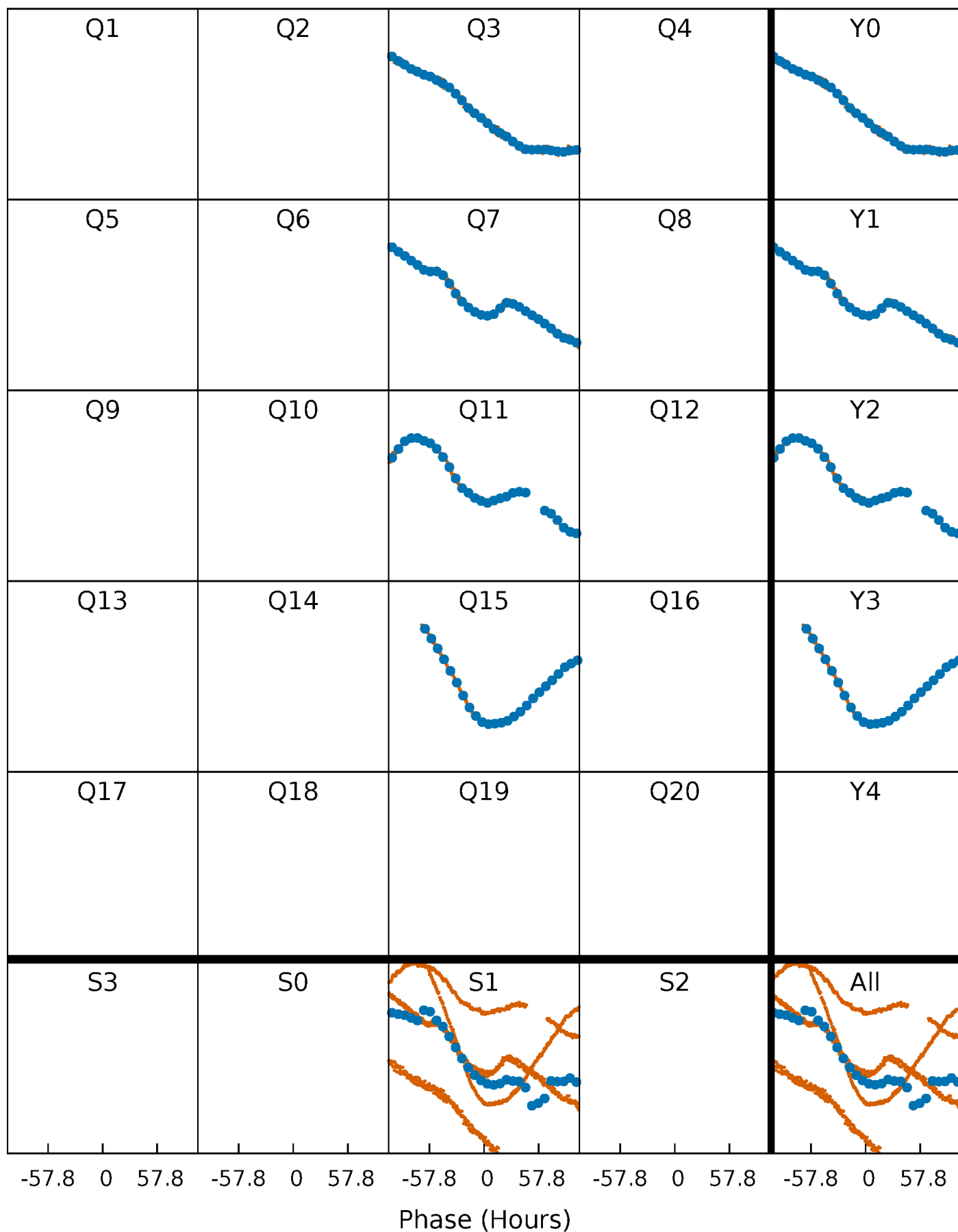


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



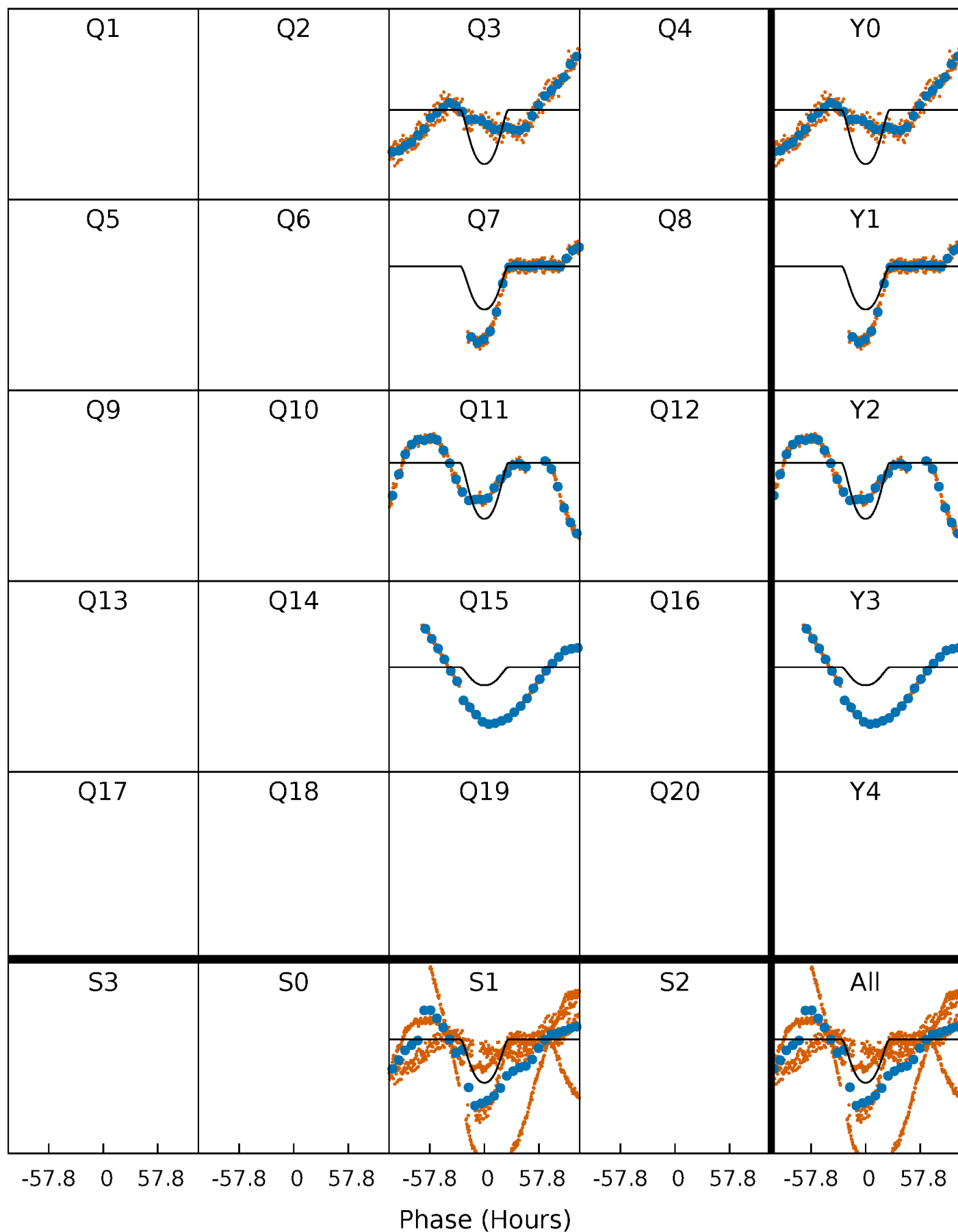
PDC Quarter-Phased Transit Curves

TCE 011390838-04 $P=359.855854$ Days $T_0=341.645053$ (BKJD)



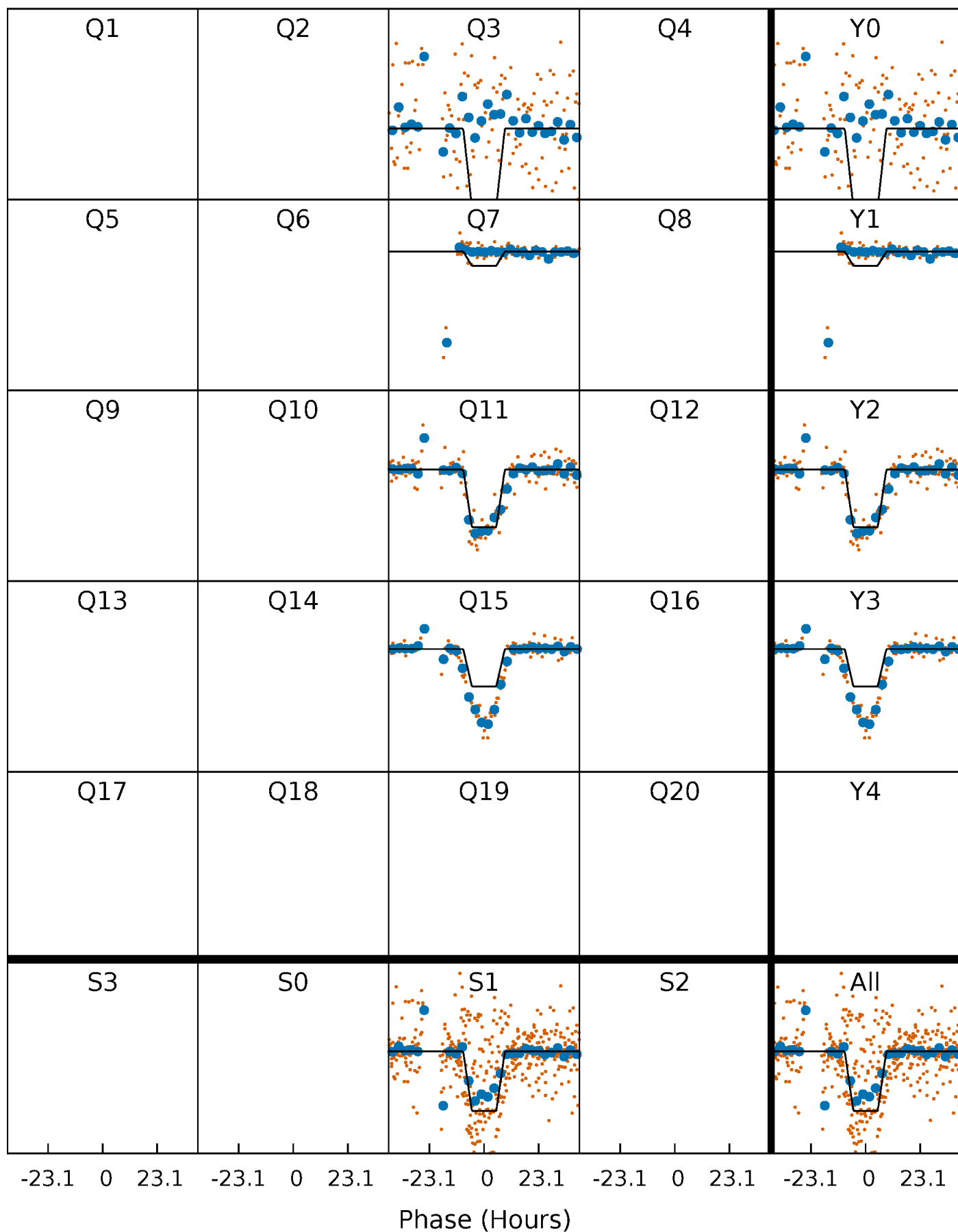
DV Quarter-Phased Transit Curves

TCE 011390838-04 $P=359.855854$ Days $T_0=341.645053$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

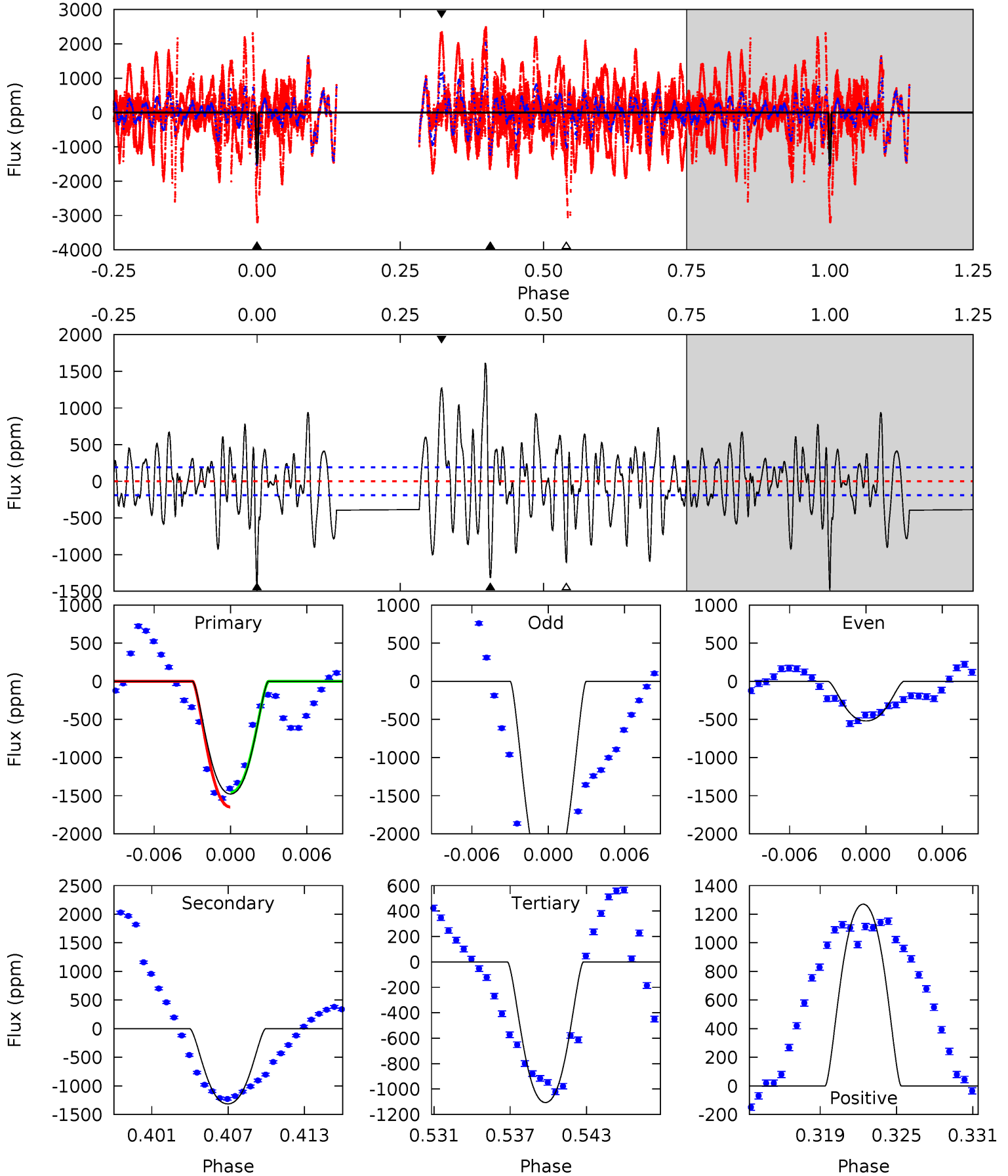
TCE 011390838-04 $P=359.651090$ Days $T_0=342.219765$ (BKJD)



DV Model-Shift Uniqueness Test

011390838-04, P = 359.855854 Days, E = 341.645053 Days

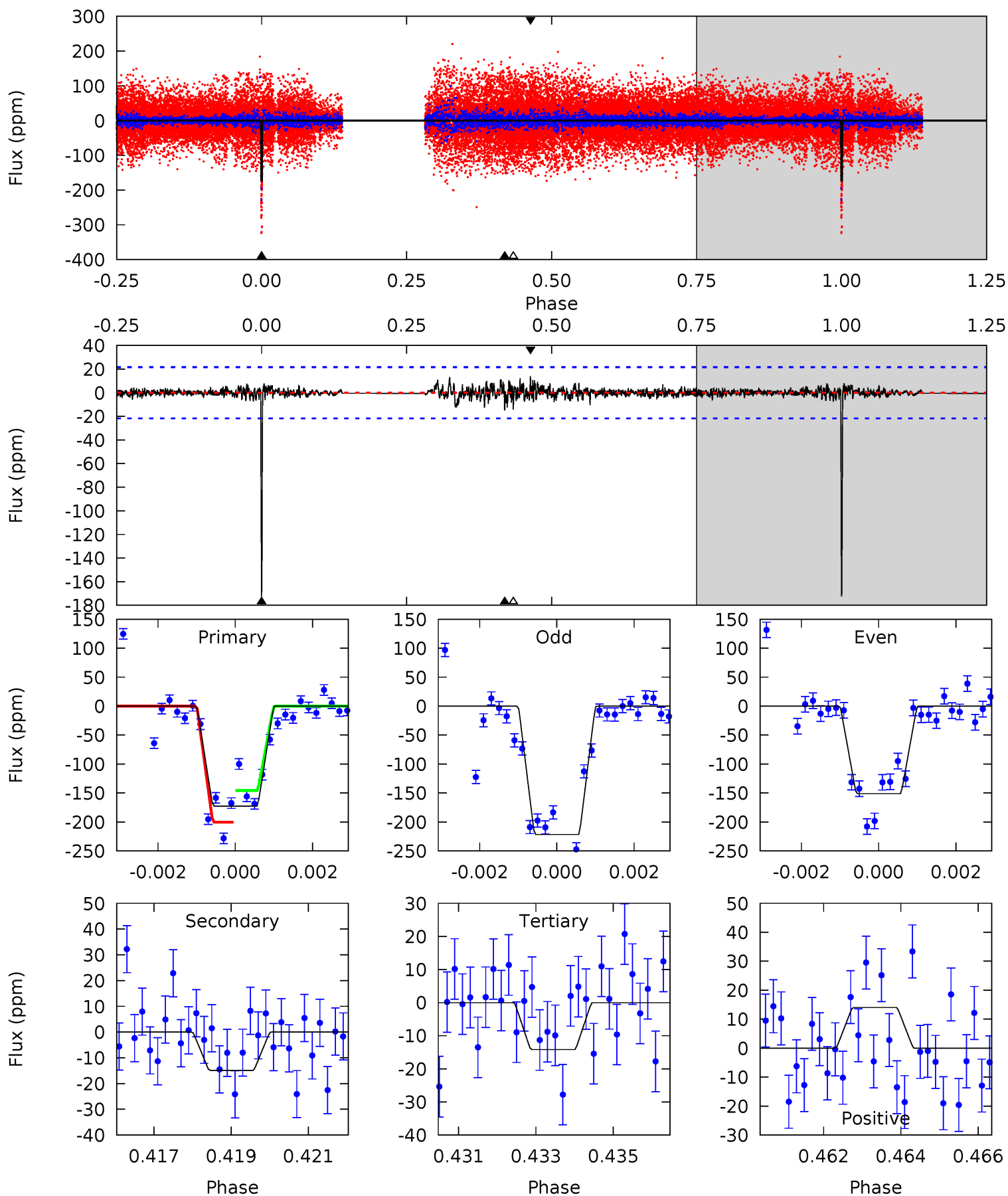
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
39.8	35.4	29.8	34.2	5.13	2.75	11.2	10.0	5.58	5.62	1.21	31.9	1.31	0.52	2.55



Alt Model-Shift Uniqueness Test

011390838-04, P = 359.651090 Days, E = 342.219765 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
42.4	3.66	3.48	3.45	5.32	3.08	0.69	38.9	39.0	0.17	0.21	8.95	1.27	0.08	0



Stellar Parameters For KIC 011390838

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5941^{+197}_{-197}	$4.077^{+0.357}_{-0.153}$	$-0.240^{+0.300}_{-0.300}$	$1.502^{+0.418}_{-0.557}$	$0.982^{+0.157}_{-0.118}$	$0.408^{+1.037}_{-0.167}$
	+3%/-3%	+9%/-4%	+125%/-125%	+28%/-37%	+16%/-12%	+254%/-41%
Source	PHO54	PHO54	PHO54	DSEP		

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

Secondary Eclipse Parameters for KIC 011390838-04 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-1315 ± 37	$6.13^{+1.12}_{-1.21}$	444^{+38}_{-45}	5789^{+238}_{-237}	18986^{+10016}_{-5141}
Alt.	-15 ± 4	$2.11^{+0.49}_{-0.53}$	444^{+35}_{-50}	3623^{+257}_{-260}	1816^{+1435}_{-744}

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

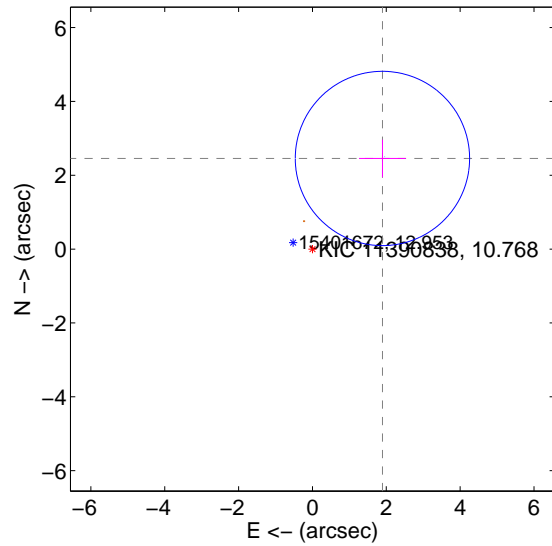
Supplemental centroid analysis for 011390838-04. **Kepler magnitude: 10.77.** Transit SNR 27.06

There are 1 quarters with good PRF difference image offsets

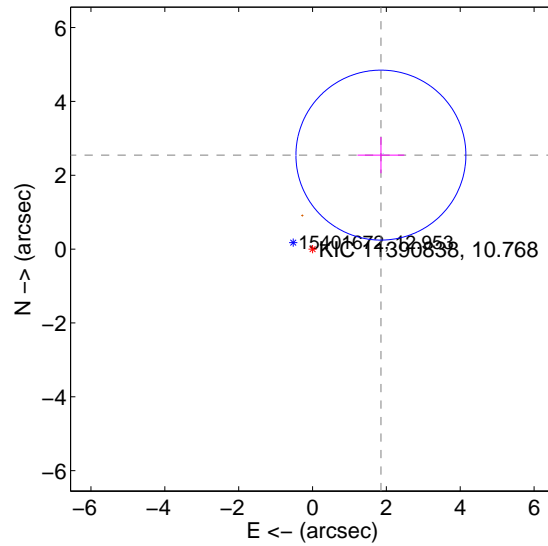
The direct PRF centroid is offset from the target star catalog position by about 0.10 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	3.102 ± 0.787	3.94	-1.896 ± 0.633	2.455 ± 0.509
PRF-fit source offset from KIC position	3.148 ± 0.767	4.10	-1.852 ± 0.635	2.545 ± 0.490
photometric centroid source offset	0.23 ± 0.63	0.37	-0.05 ± 0.46	0.23 ± 0.63

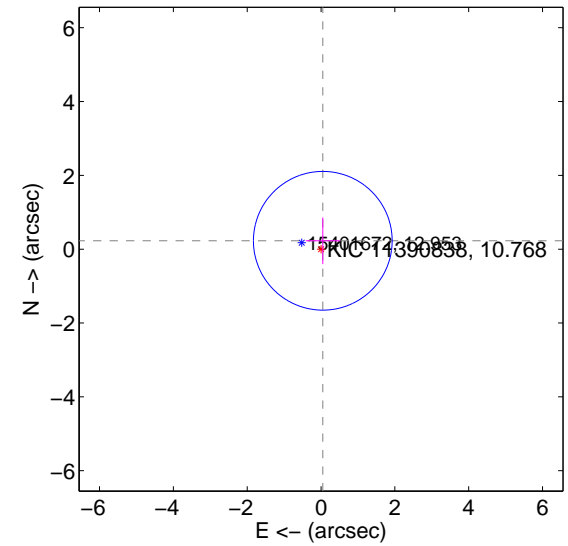
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

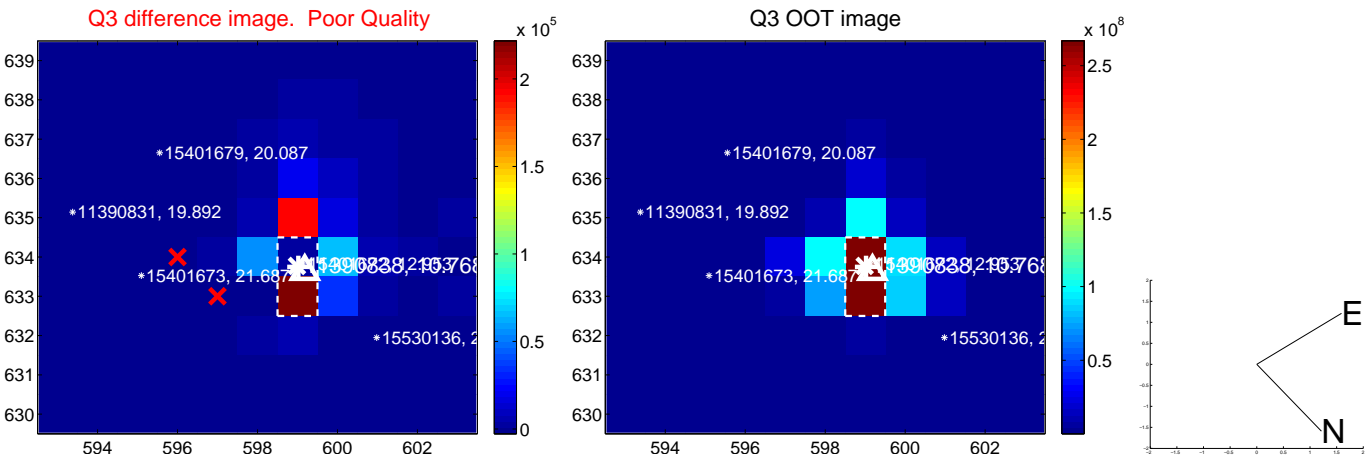


offset from photometric centroids



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 ×: 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.

Q5 no difference image



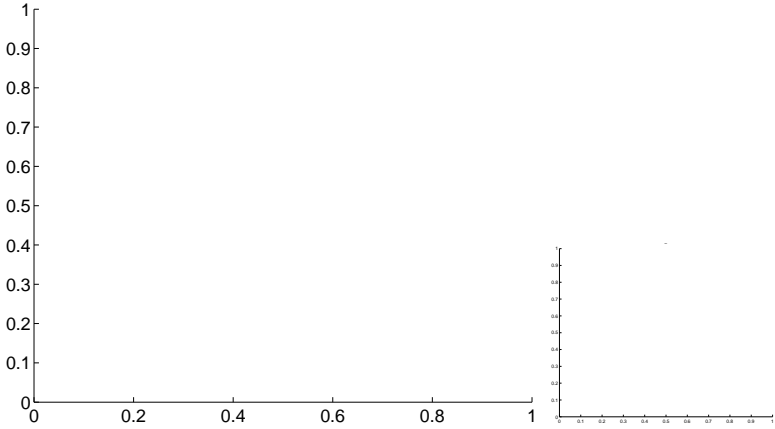
Q5 no OOT image



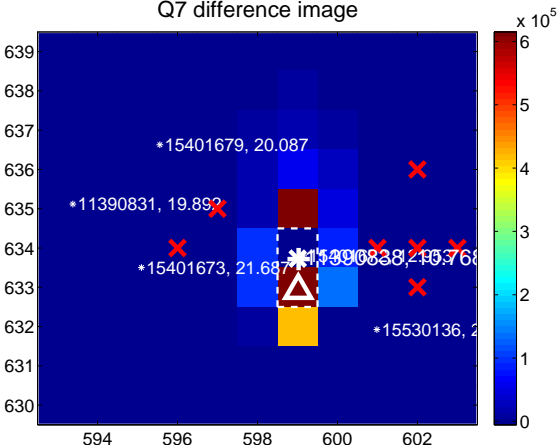
Q6 no difference image



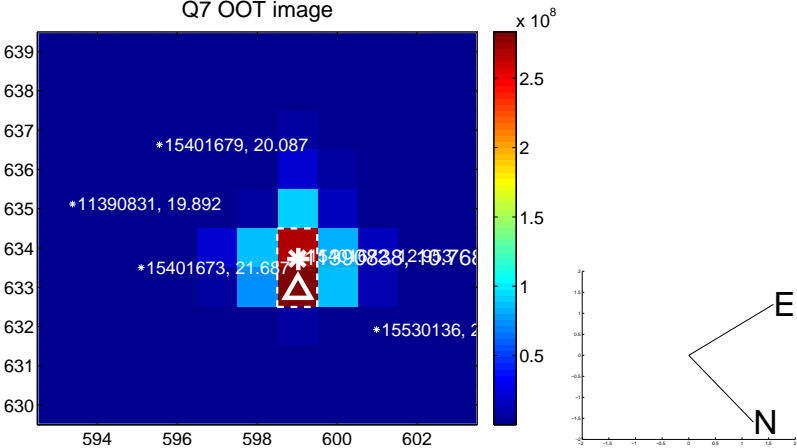
Q6 no OOT image



Q7 difference image



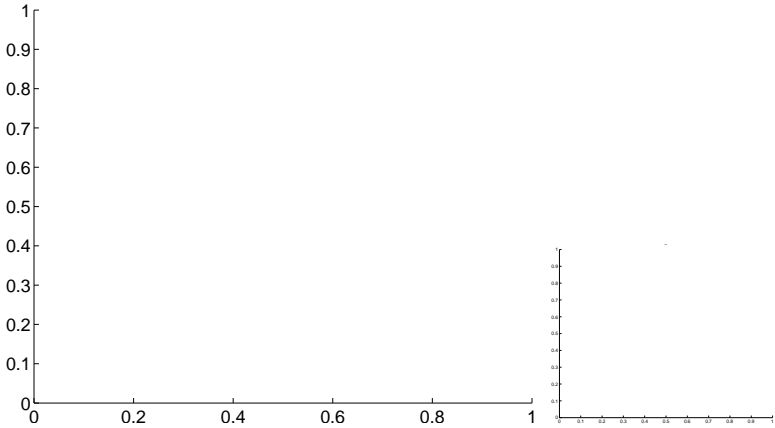
Q7 OOT image



Q8 no difference image



Q8 no OOT image



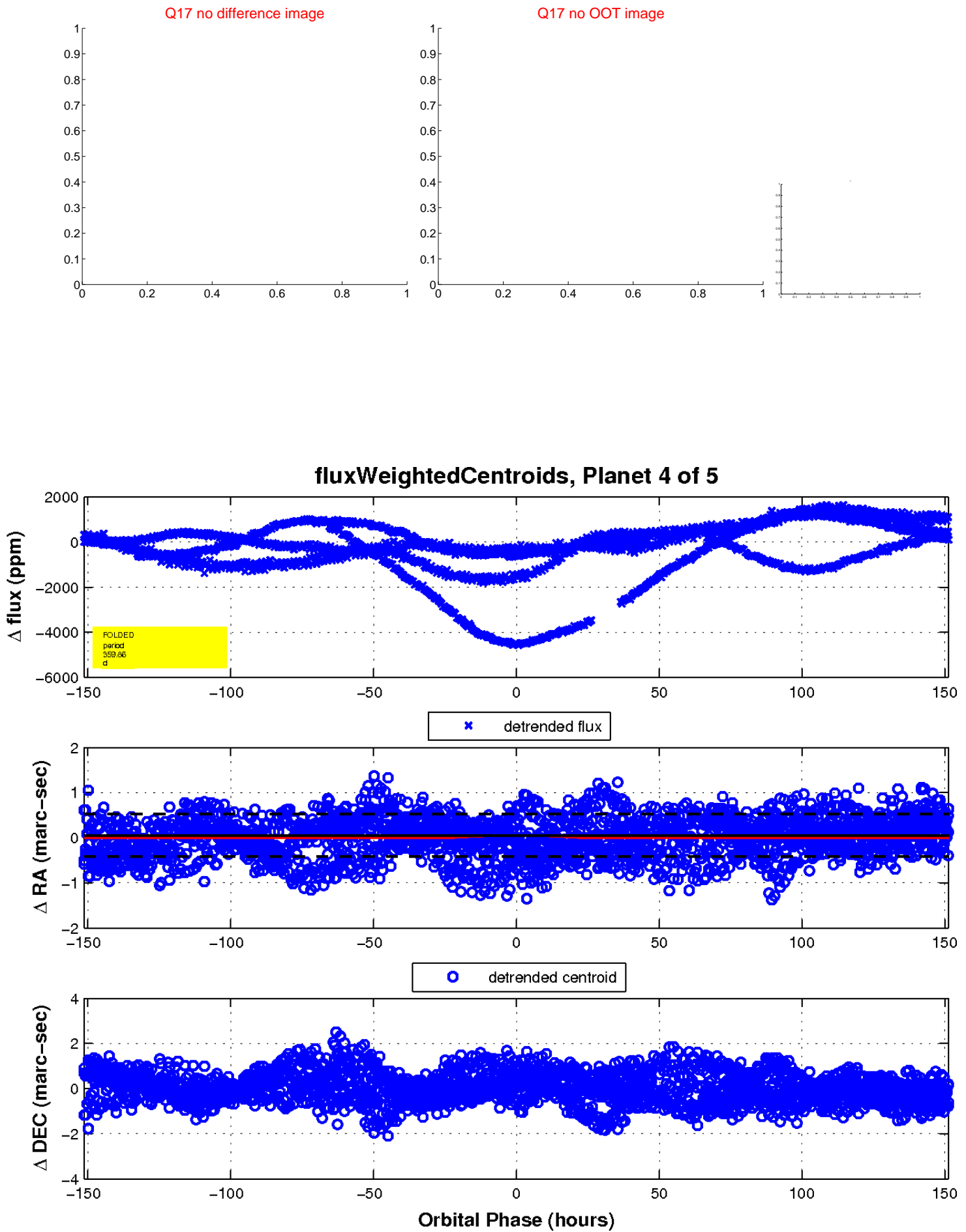
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



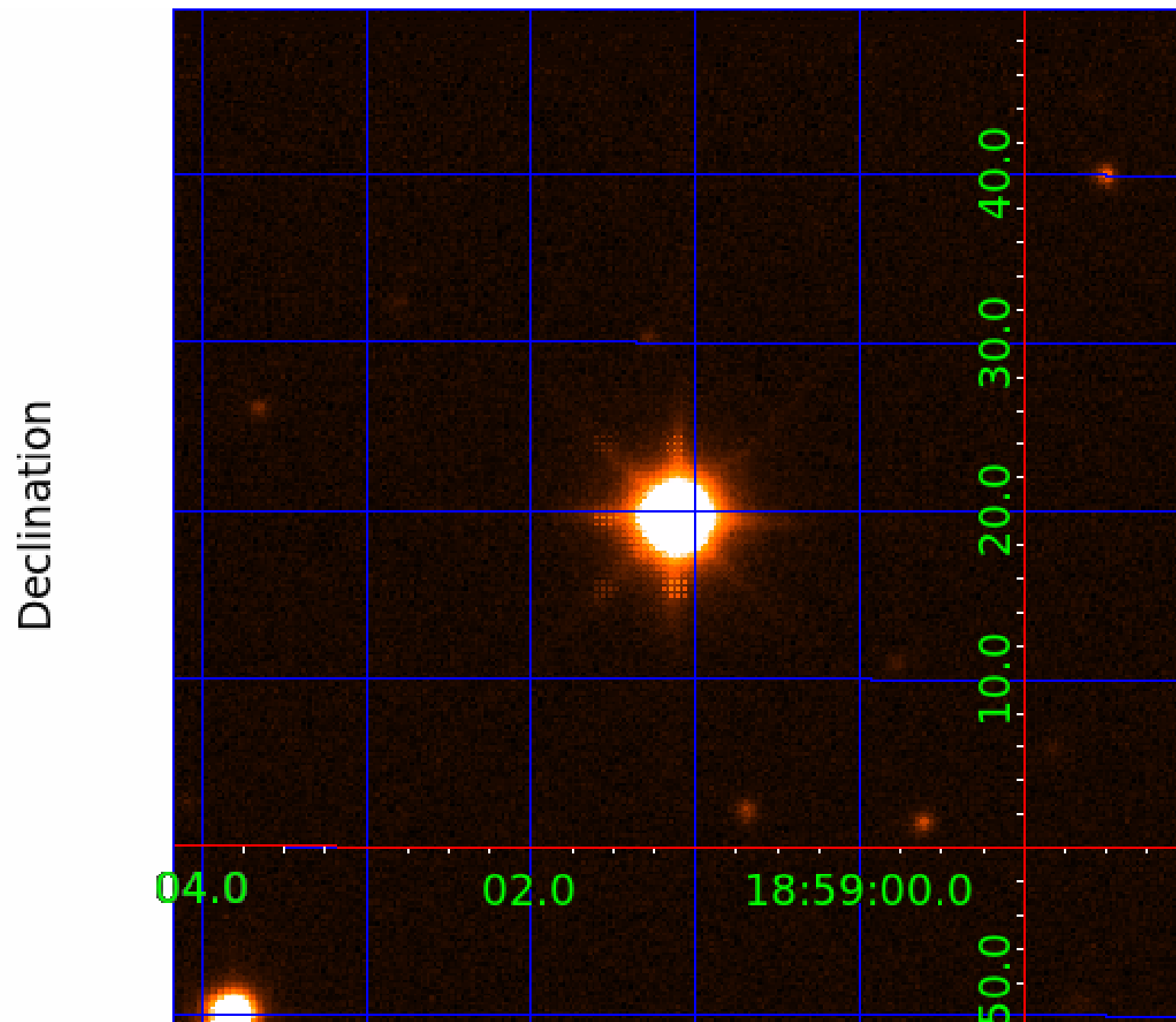
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image



KIC 011390838

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})
011390838-01	OBS	No	193.083118	324.004984	131.6	21.596	15.3	5.3	1.50	5941	2.32	5.96
011390838-02	OBS	No	433.923883	264.814535	256.0	32.329	9.1	10.6	1.50	5941	3.31	2.02
011390838-03	OBS	No	359.650258	341.296184	46.3	2.251	11.6	2.7	1.50	5941	1.29	2.60
011390838-04	OBS	No	359.855854	341.645053	991.4	50.555	11.9	27.1	1.50	5941	6.29	2.60
011390838-05	OBS	No	561.481363	154.172417	152.4	20.888	7.9	6.7	1.50	5941	2.44	1.44

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011390838-01	OBS	FP	0.00	1	0	1	0	LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_SATURATED—HALO_GHOST
011390838-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_SATURATED
011390838-03	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_MARSHALL_SKYE_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED—HALO_GHOST
011390838-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—INCONSISTENT_TRANS—CENT_SATURATED
011390838-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_SATURATED

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

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

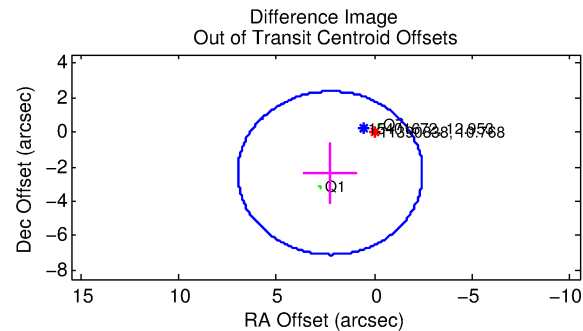
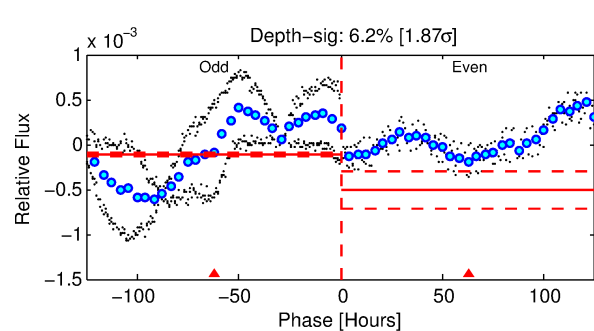
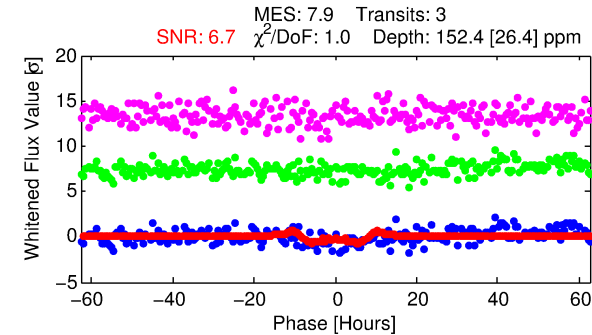
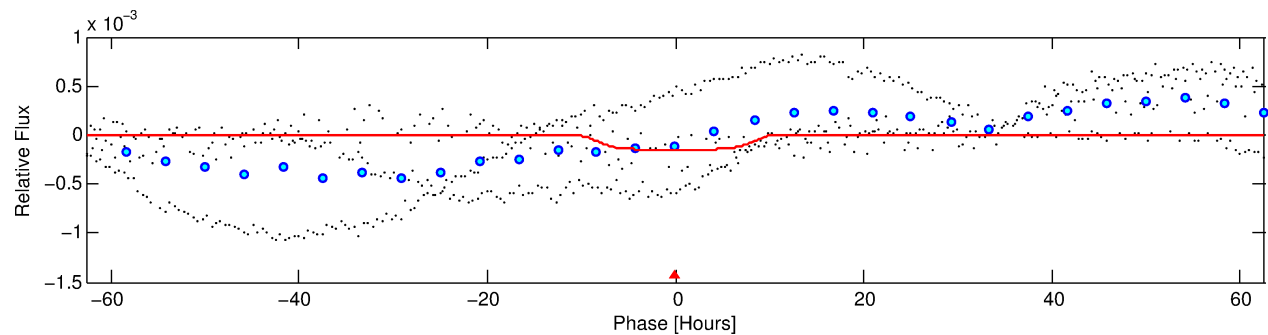
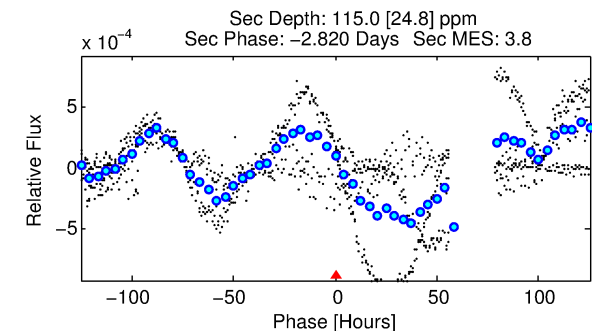
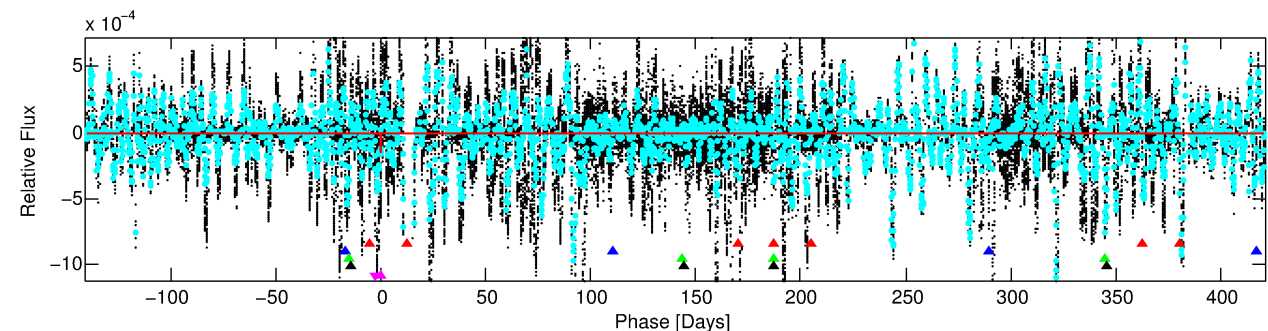
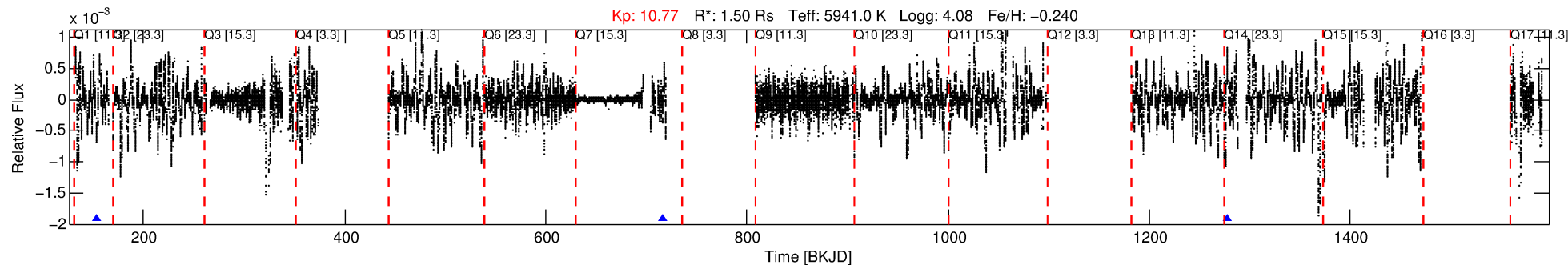
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 011390838-05

No Significant Match Found

DV One-Page Summary

KIC: 11390838 Candidate: 5 of 5 Period: 561.481 d



DV Fit Results:

Period = 561.48136 [0.02178] d
Epoch = 154.1724 [0.0313] BKJD
Rp/R* = 0.0149 [0.0014]
a/R* = 60.28 [8.72]
b = 0.97 [0.01]
Seff = 1.44 [0.88]
Teff = 279 [43] K
Rp = 2.44 [0.93] Re
a = 1.3244 [0.4888] AU
Ag = 18673.93 [12445.11] [1.50σ]
Teffp = 5045 [399] K [11.86σ]

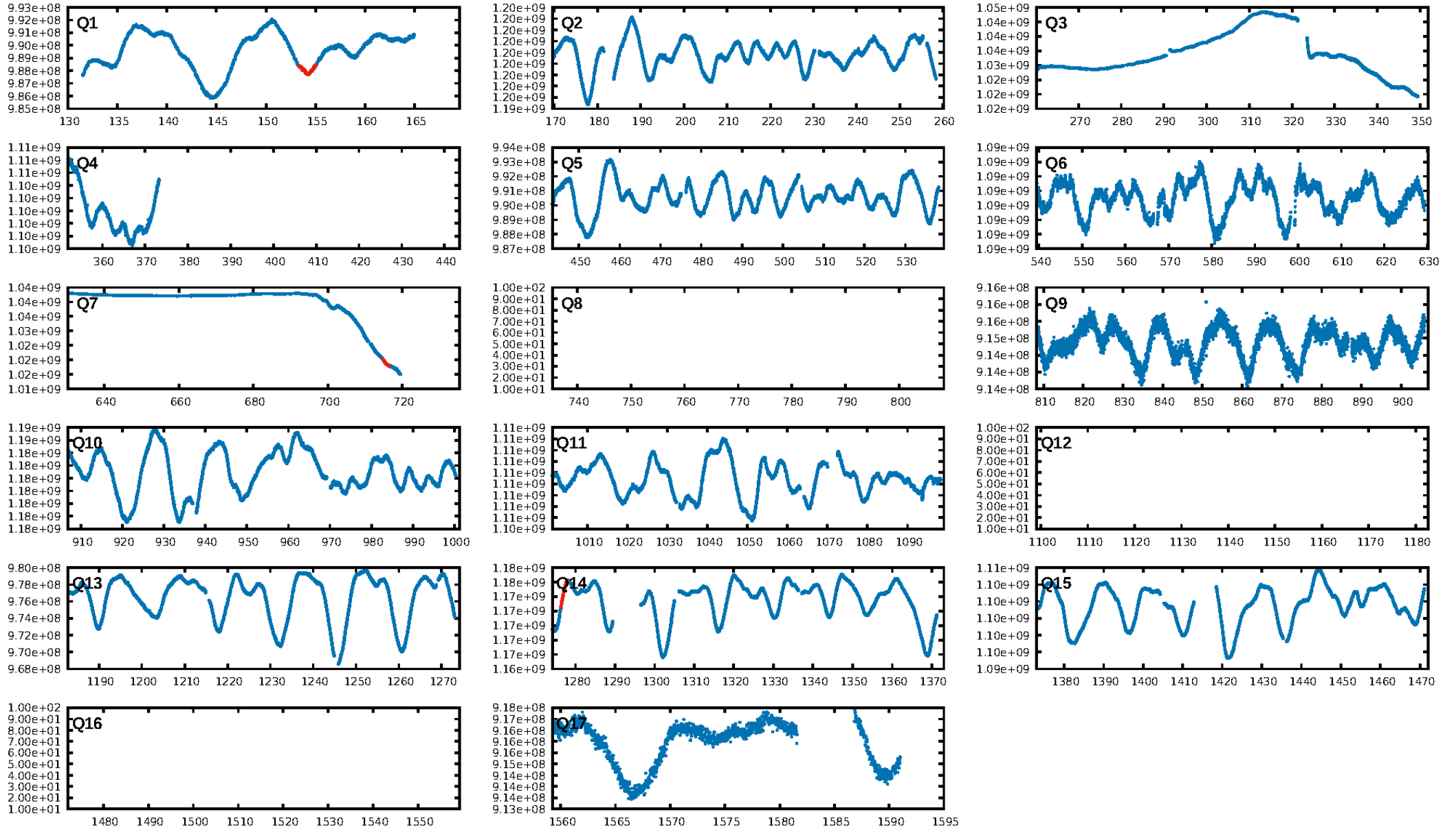
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [79.54σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 33.4%
ModelChiSquareGof-sig: 99.9%
Bootstrap-pfa: 1.10e-08
RollingBand-fgt: 1.00 [2/2]
GhostDiagnostic-chr: 0.4331
Centroid-sig: N/A
Centroid-so: 0.863 arcsec [0.79σ]
OotOffset-rm: 3.271 arcsec [2.08σ]
KicOffset-rm: 2.699 arcsec [1.92σ]
OotOffset-st: 0/1/0/1 [2]
KicOffset-st: 0/1/0/1 [2]
DiffImageQuality-fgm: 0.50 [1/2]
DiffImageOverlap-fno: 1.00 [2/2]

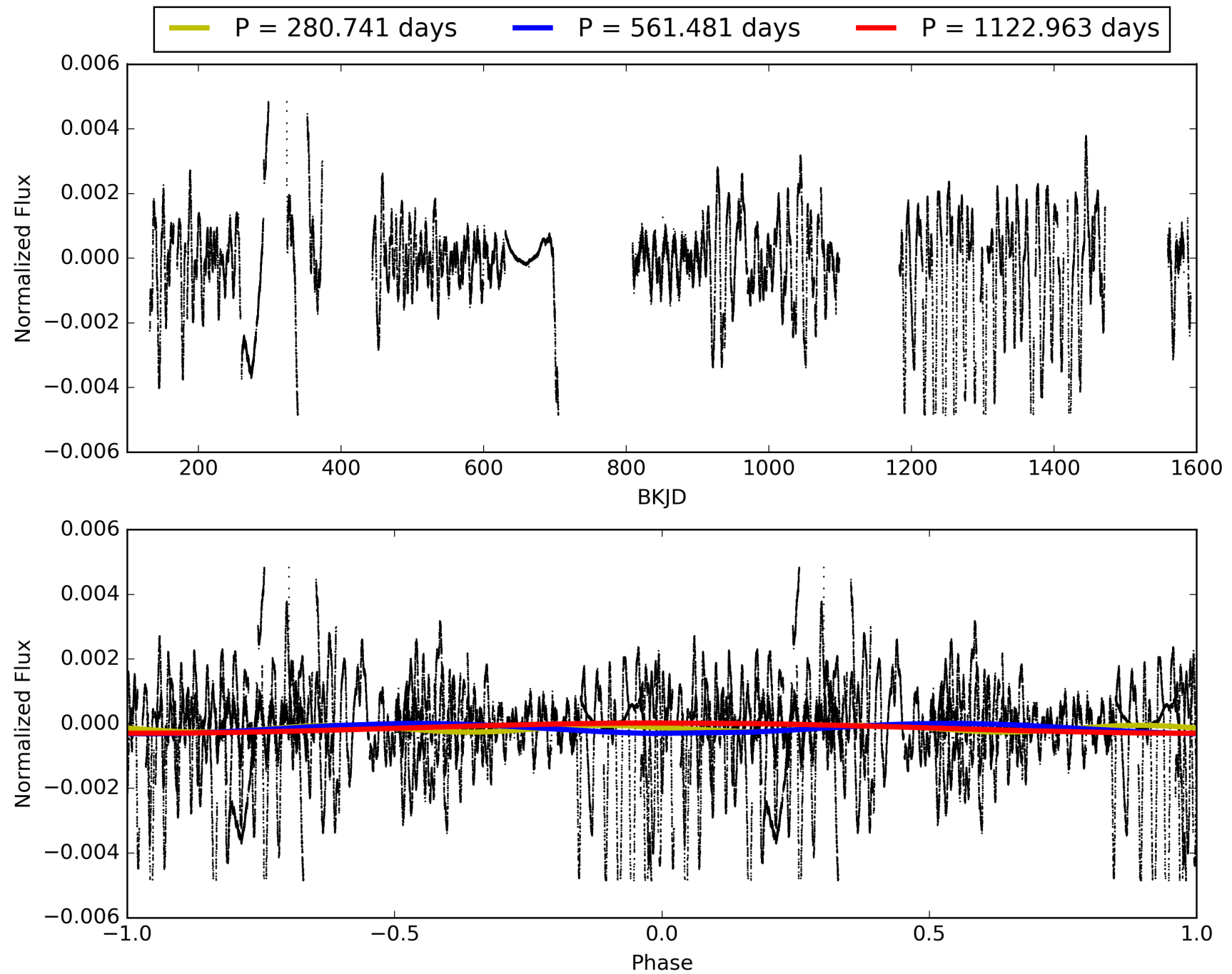
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 16:52:08 Z

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

TCE 011390838-05, PDC Light Curves

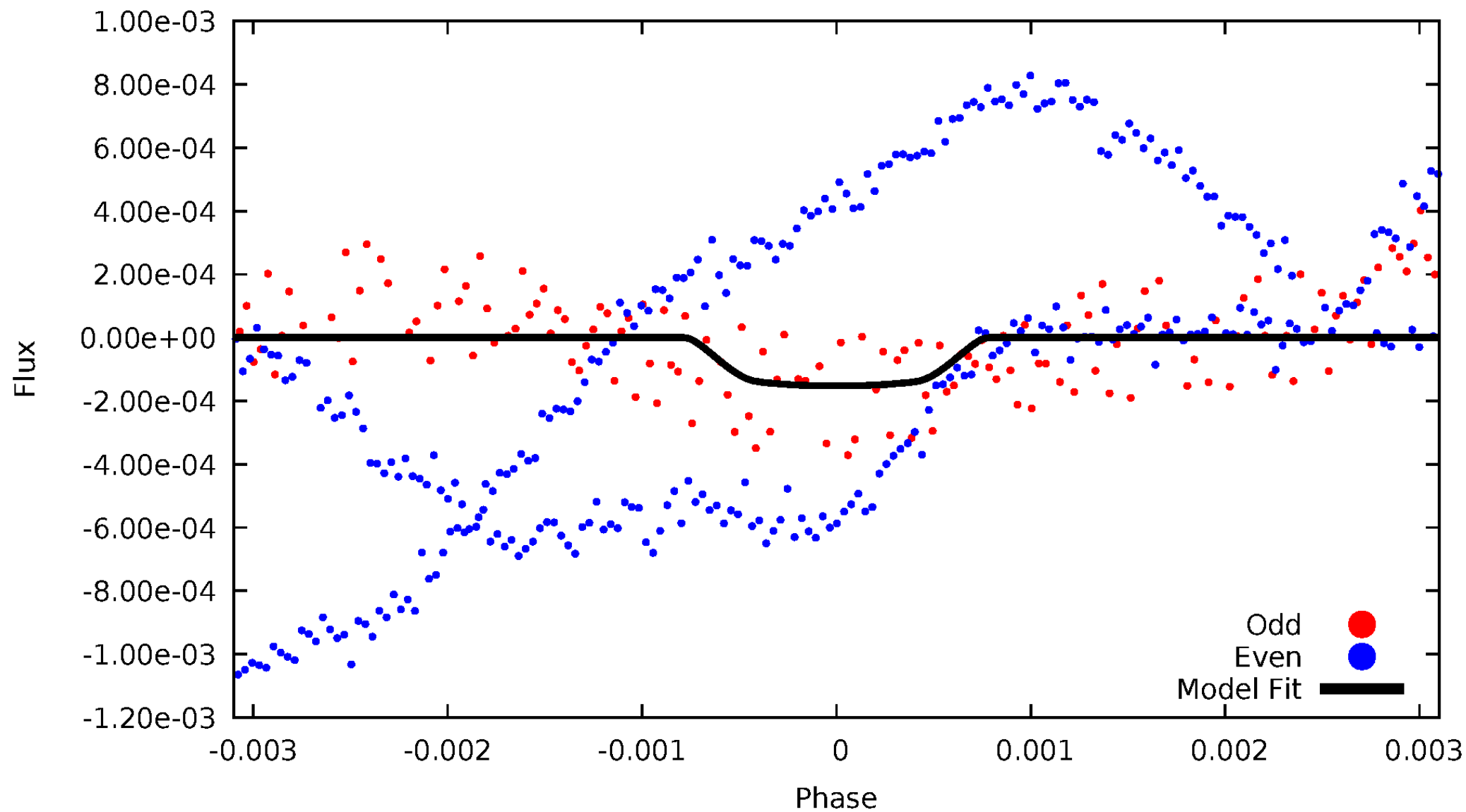


TCE 011390838-05



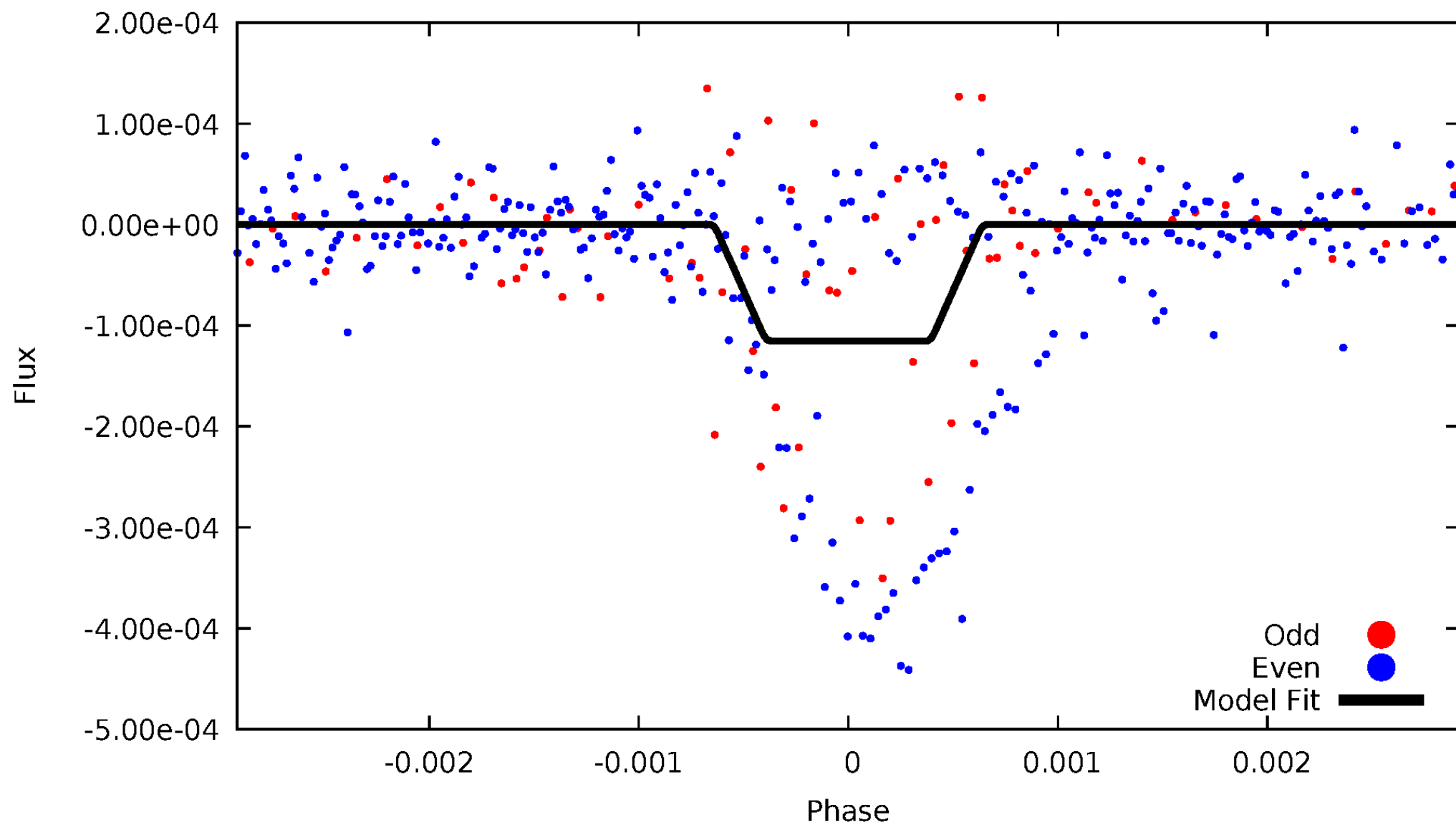
DV Odd/Even

TCE 011390838-05



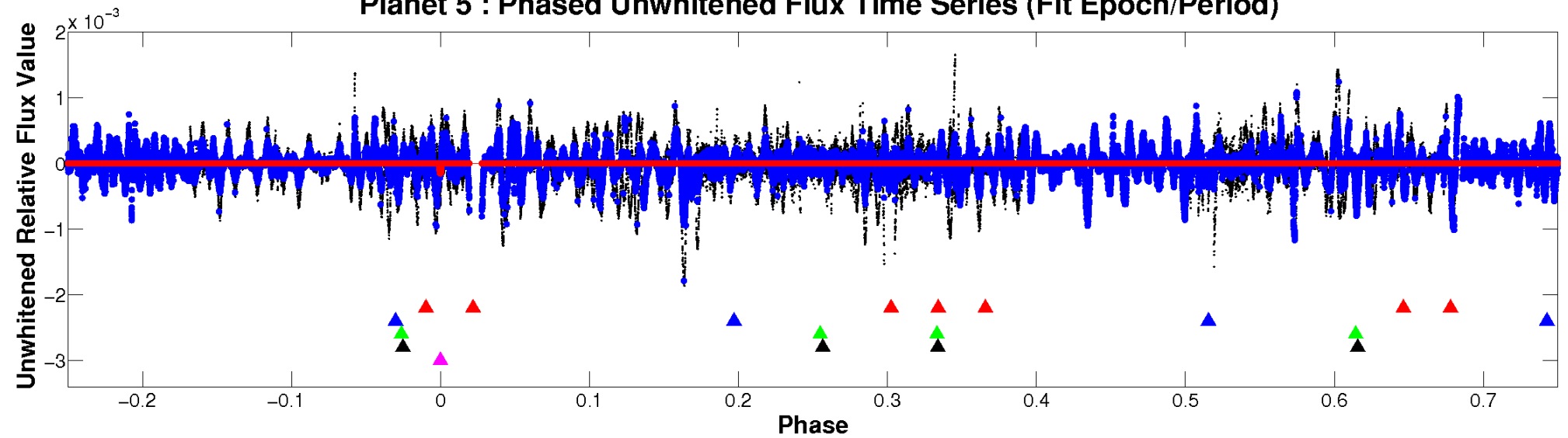
ALT Odd/Even

TCE 011390838-05

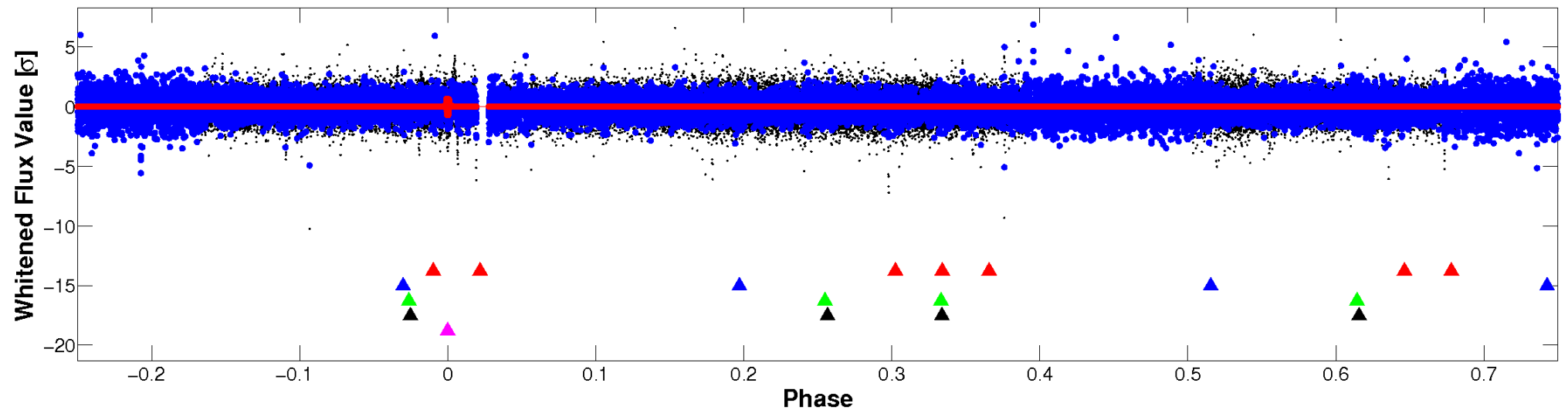


Non-Whitened Vs. Whitened Light Curve

Planet 5 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

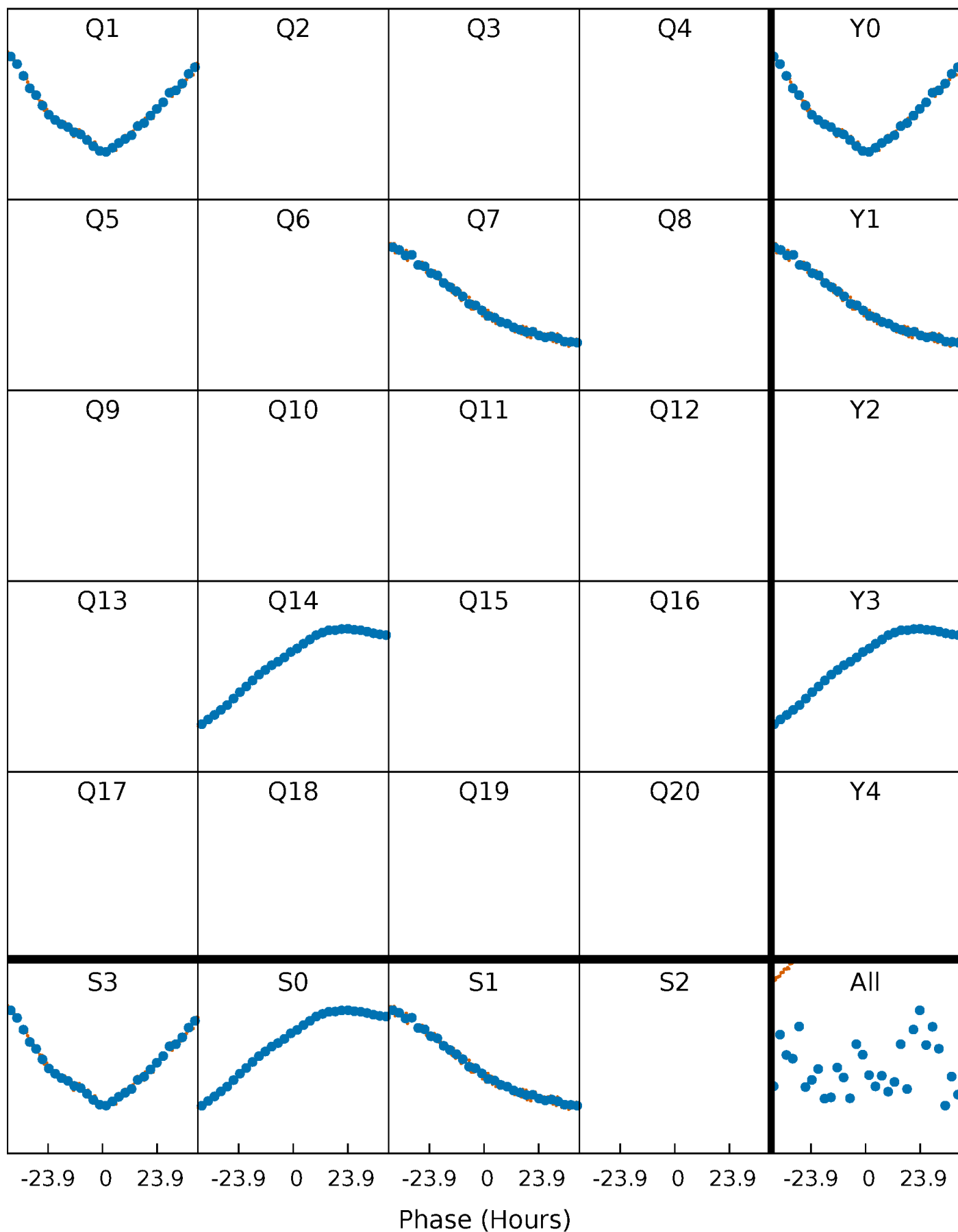


Planet 5 : Phased Whitened Flux Time Series (Fit Epoch/Period)



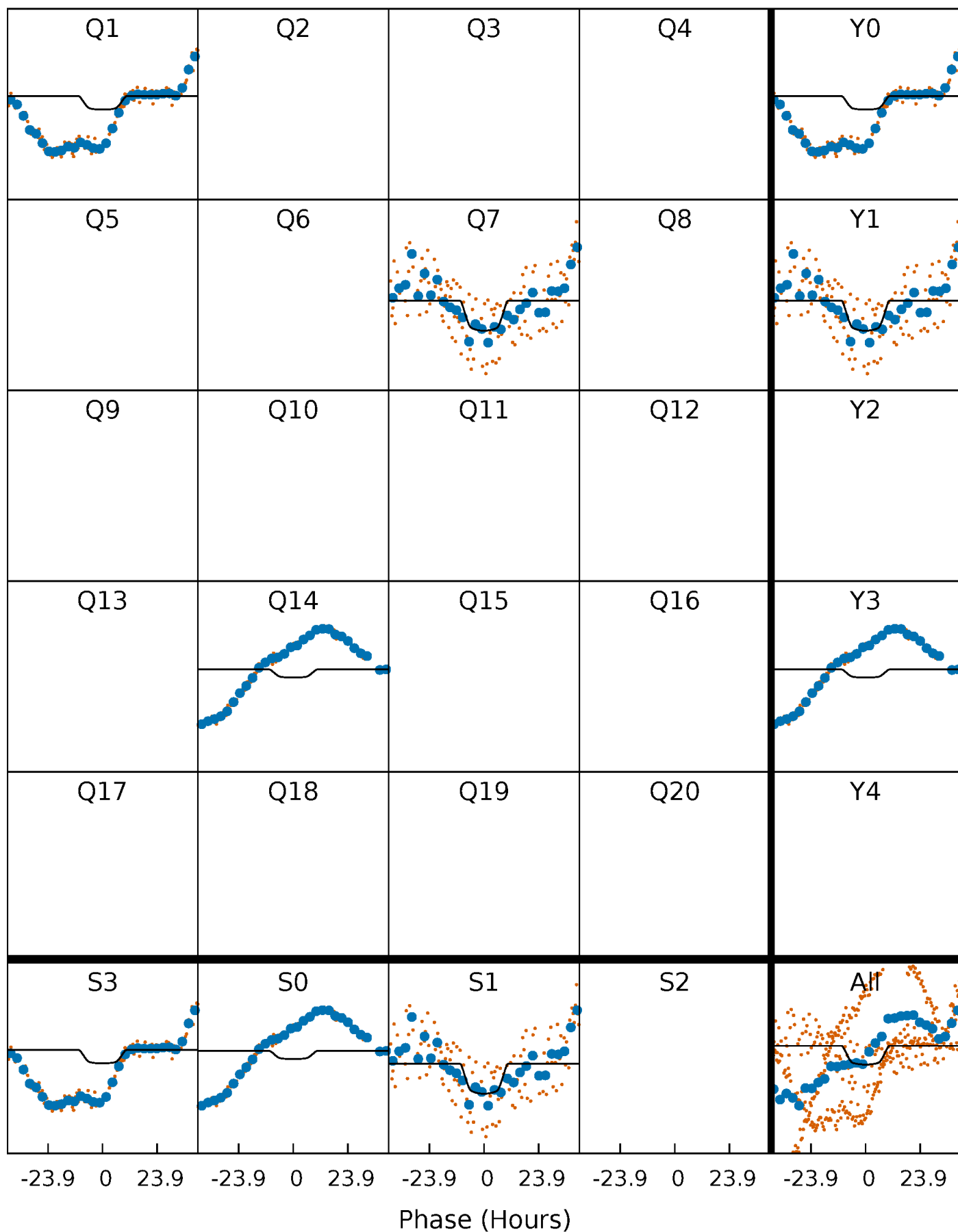
PDC Quarter-Phased Transit Curves

TCE 011390838-05 $P=561.481363$ Days $T_0=154.172417$ (BKJD)



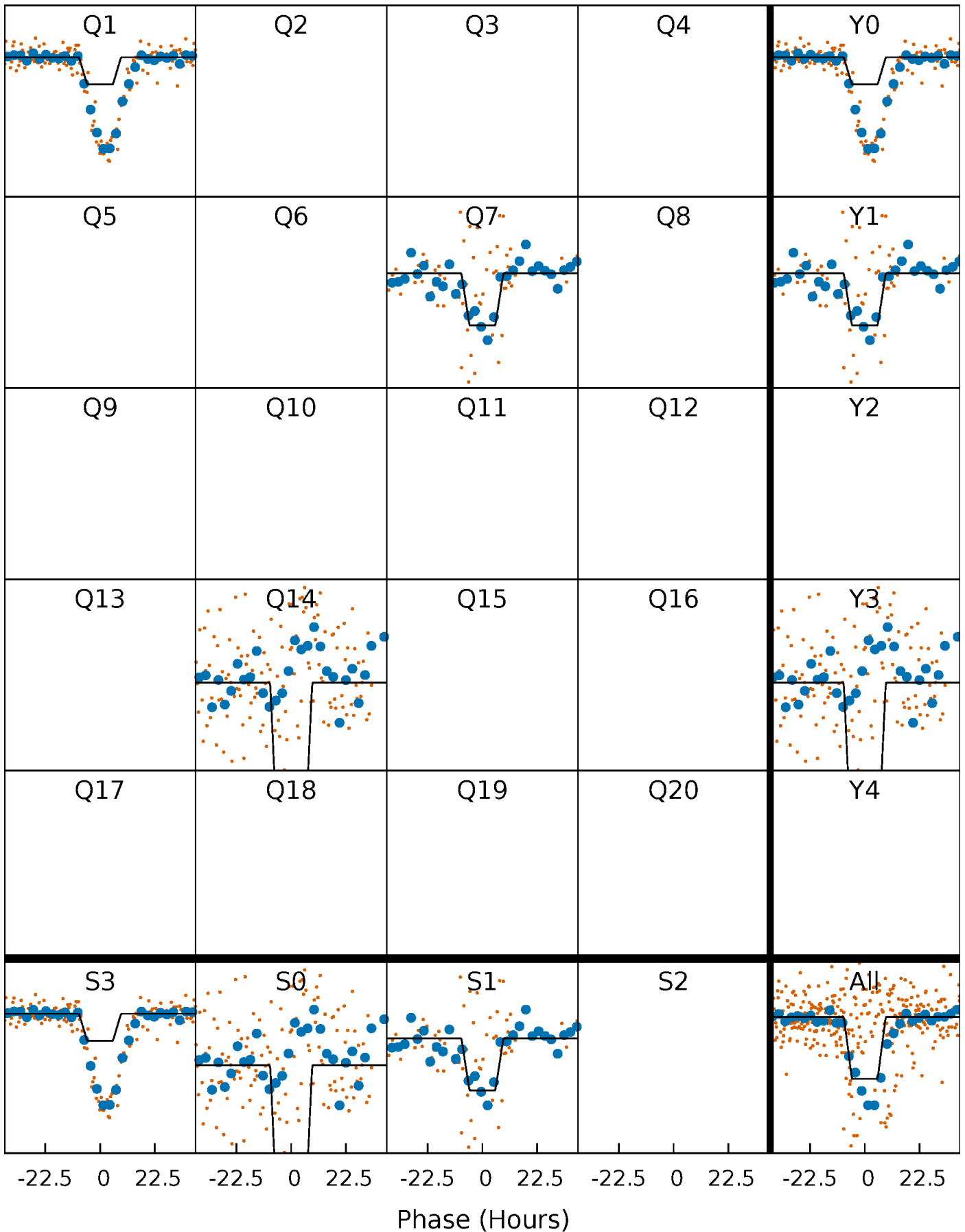
DV Quarter-Phased Transit Curves

TCE 011390838-05 $P=561.481363$ Days $T_0=154.172417$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

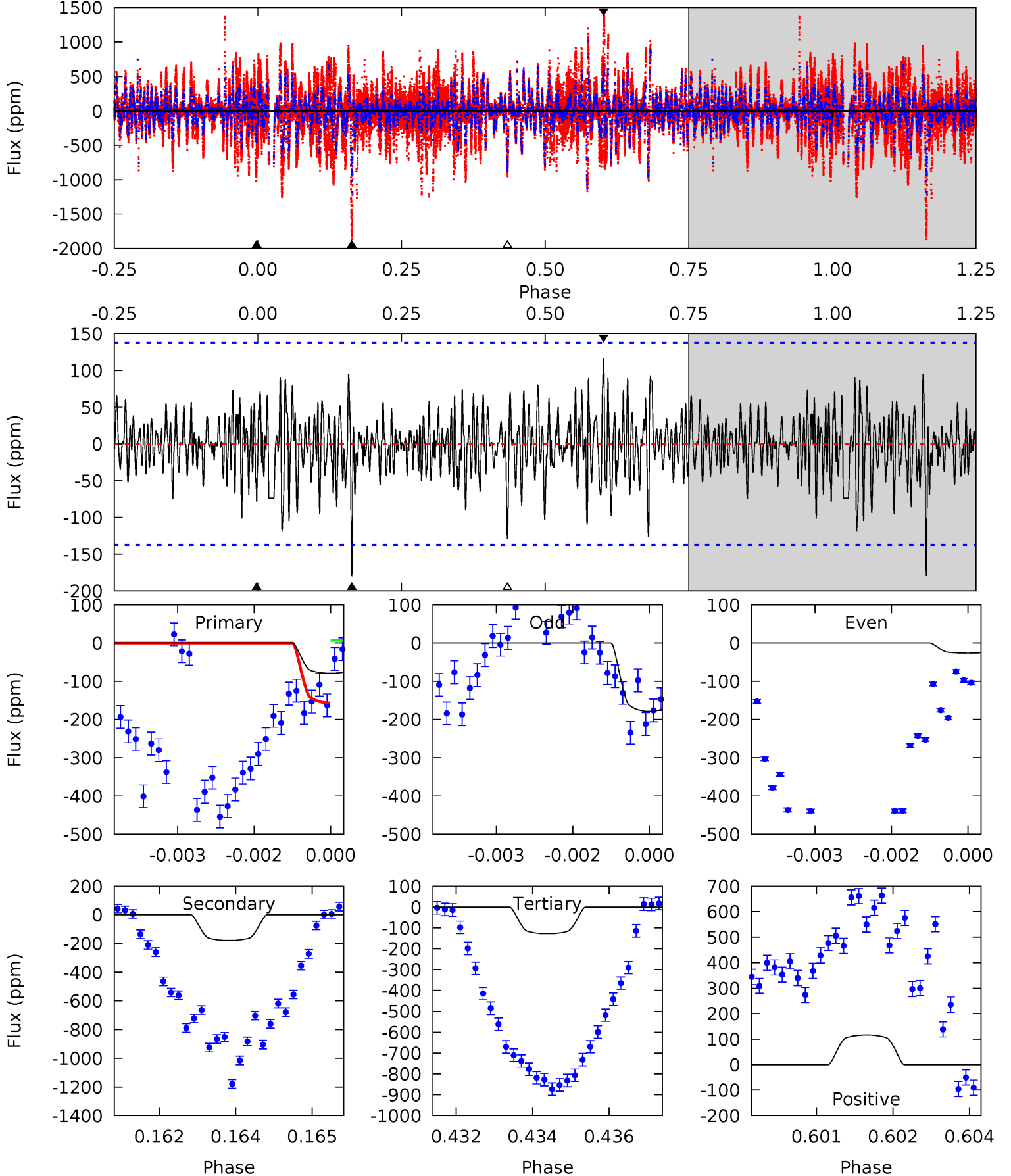
TCE 011390838-05 $P=561.480173$ Days $T_0=154.114514$ (BKJD)



DV Model-Shift Uniqueness Test

011390838-05, P = 561.481363 Days, E = 154.172417 Days

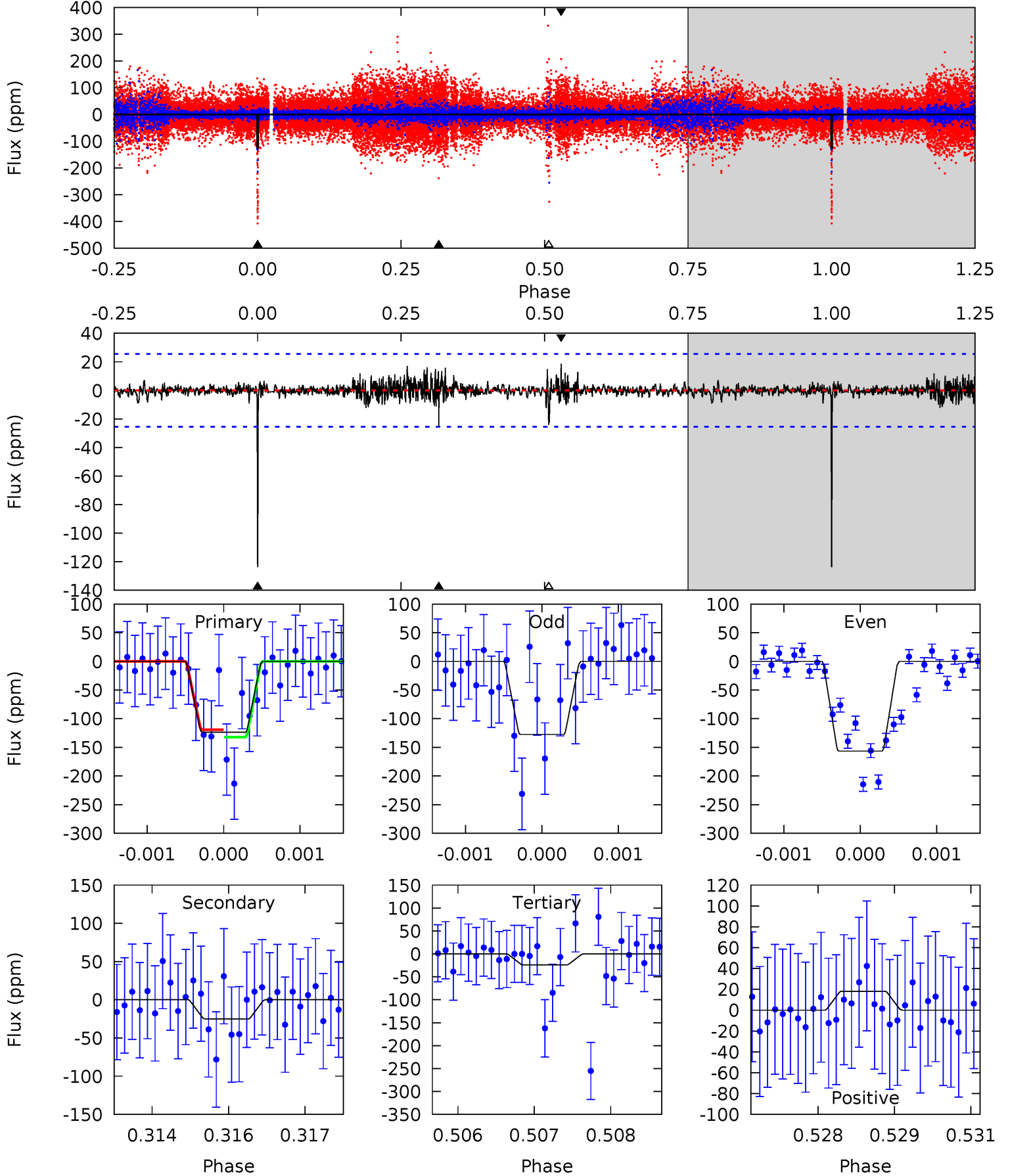
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3.09	6.99	5.01	4.54	5.37	3.16	1.32	-1.92	-1.45	1.98	2.45	2.96	0.43	0.39	2.98



Alt Model-Shift Uniqueness Test

011390838-05, P = 561.480173 Days, E = 154.114514 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
26.2	5.32	5.09	3.85	5.40	3.21	0.70	21.1	22.4	0.22	1.47	2.19	1.33	0.13	1.35



Stellar Parameters For KIC 011390838

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5941^{+197}_{-197}	$4.077^{+0.357}_{-0.153}$	$-0.240^{+0.300}_{-0.300}$	$1.502^{+0.418}_{-0.557}$	$0.982^{+0.157}_{-0.118}$	$0.408^{+1.037}_{-0.167}$
	+3%/-3%	+9%/-4%	+125%/-125%	+28%/-37%	+16%/-12%	+254%/-41%
Source	PHO54	PHO54	PHO54	DSEP		

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

Secondary Eclipse Parameters for KIC 011390838-05 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-179 ± 26	$2.35^{+0.48}_{-0.48}$	384^{+33}_{-41}	5628^{+408}_{-316}	31682^{+18229}_{-9787}
Alt.	-25 ± 5	$1.69^{+0.36}_{-0.35}$	382^{+30}_{-38}	4293^{+305}_{-265}	8691^{+5605}_{-3038}

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 $A_{obs} \gg 1.0$

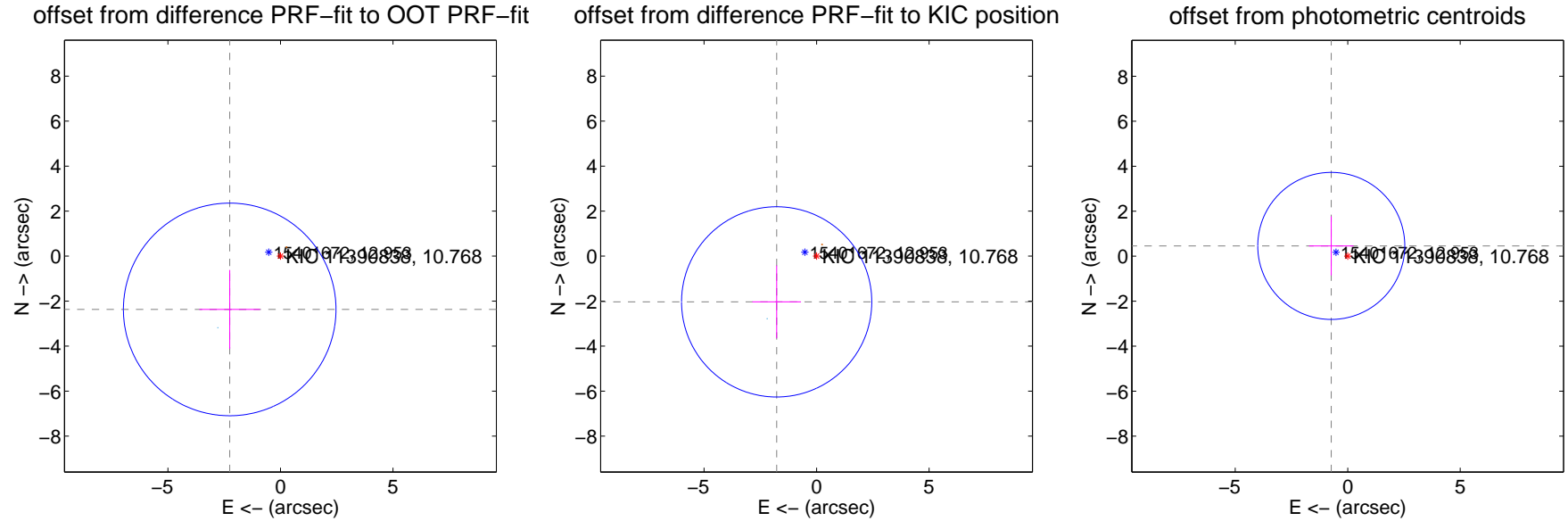
DV Centroid Data

Supplemental centroid analysis for 011390838-05. **Kepler magnitude: 10.77.** Transit SNR 6.74

There are 1 quarters with good PRF difference image offsets

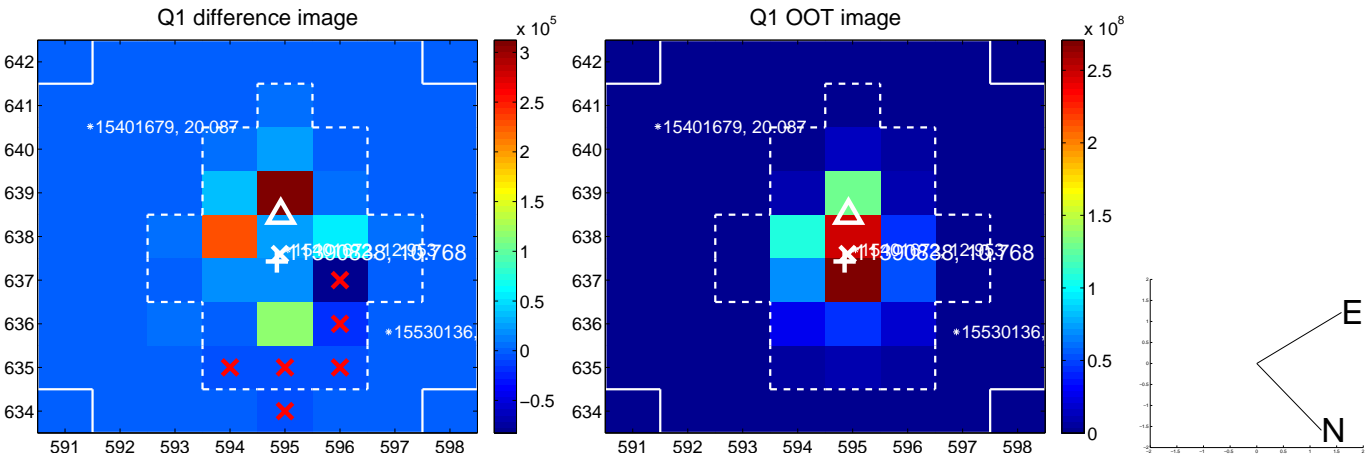
The direct PRF centroid is offset from the target star catalog position by about 0.12 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	3.271 ± 1.575	2.08	2.256 ± 1.351	-2.369 ± 1.754
PRF-fit source offset from KIC position	2.699 ± 1.409	1.92	1.774 ± 1.080	-2.033 ± 1.616
photometric centroid source offset	0.86 ± 1.09	0.79	0.73 ± 0.99	0.46 ± 1.31

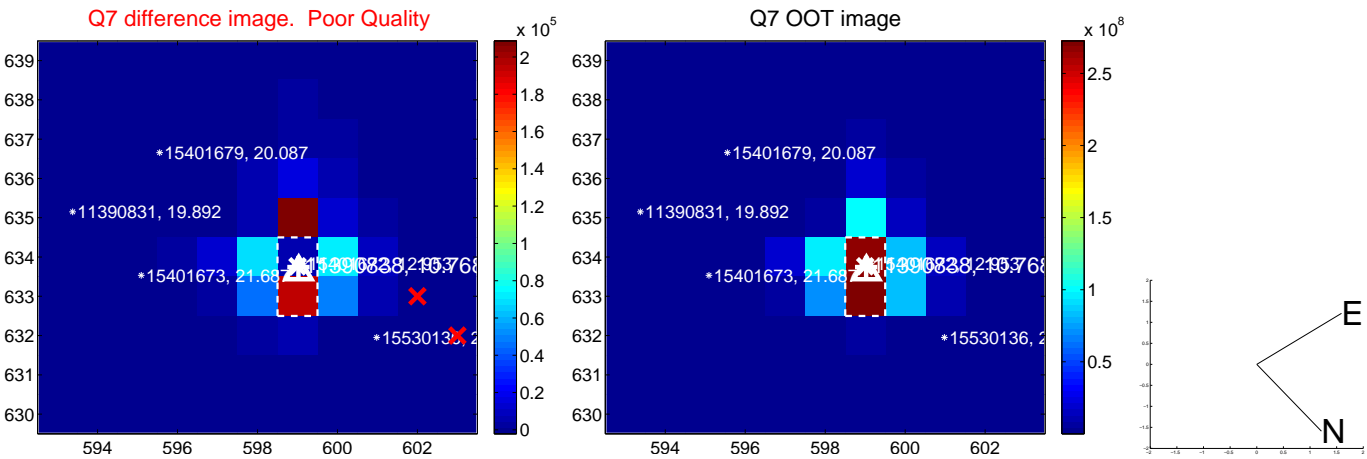


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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



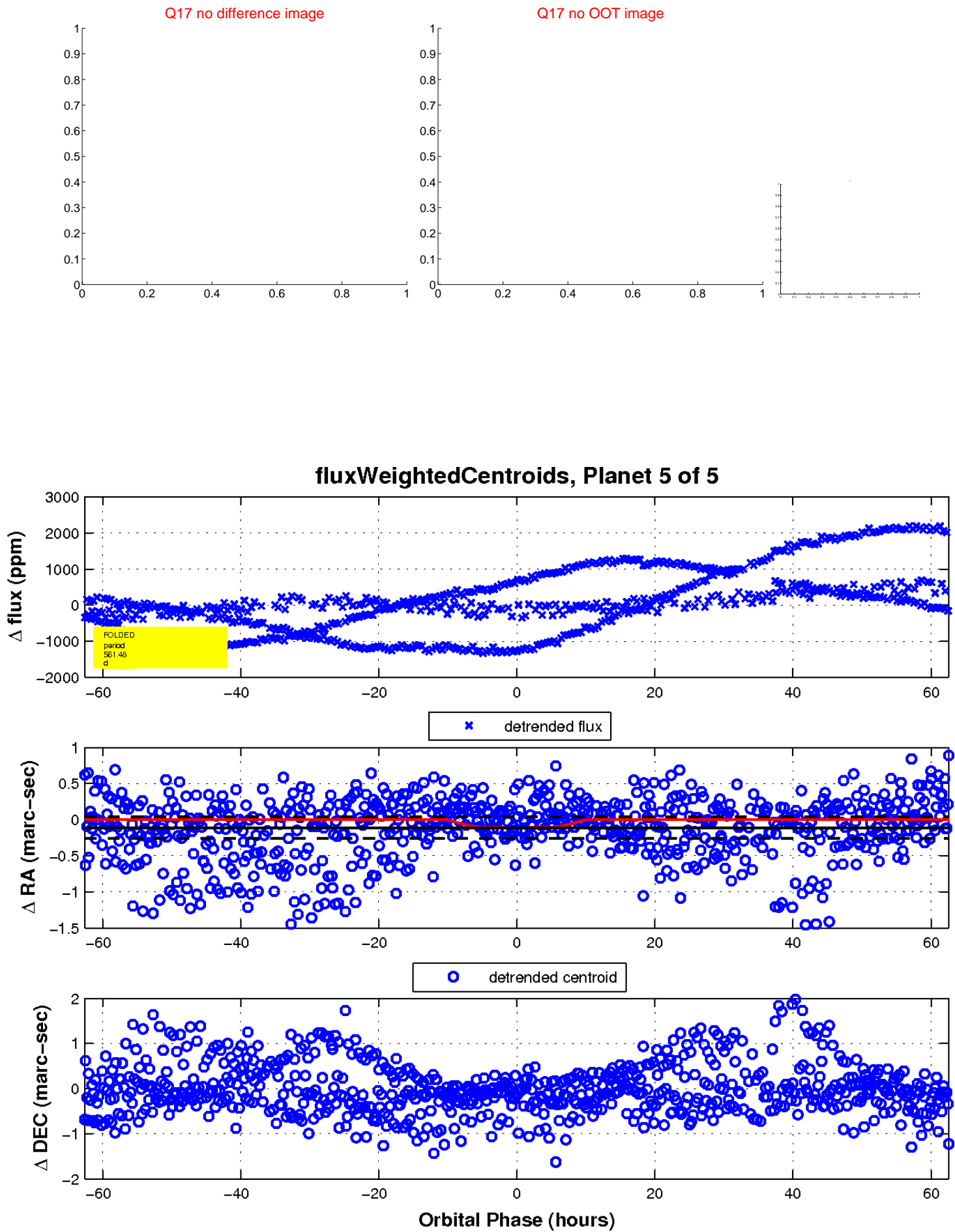
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



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



UKIRT Image

