

KIC 004741455

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})
004741455-02	OBS	No	613.272130	199.745849	2817.1	7.631	10.9	13.0	0.49	3801	2.59	0.04
004741455-03	OBS	No	437.752204	391.940167	1824.7	6.438	10.7	9.9	0.49	3801	2.08	0.06
004741455-04	OBS	No	286.849136	367.514810	1017.4	3.338	11.2	7.2	0.49	3801	1.61	0.10
004741455-05	OBS	No	424.630677	133.975685	1752.5	4.885	13.2	9.0	0.49	3801	2.04	0.06
004741455-06	OBS	No	346.094925	187.784759	1054.0	3.821	9.8	6.5	0.49	3801	1.69	0.08
004741455-07	OBS	No	620.151735	293.937362	806.4	7.500	9.3	-1.0	0.49	3801	1.39	0.04

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004741455-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
004741455-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
004741455-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_TER_DV—MOD_POS_DV
004741455-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES
004741455-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV
004741455-07	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_NOFITS—HALO_GHOST

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

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

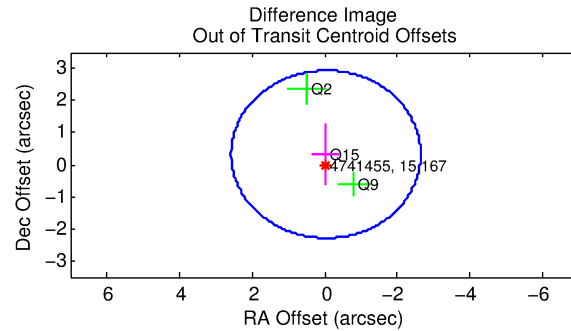
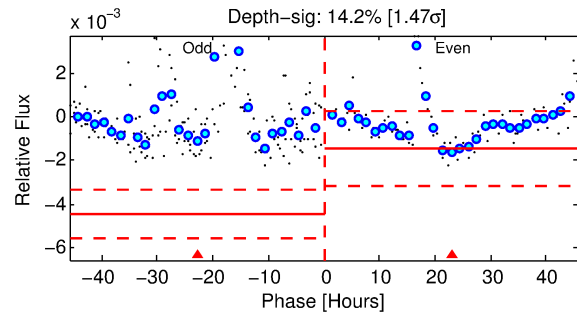
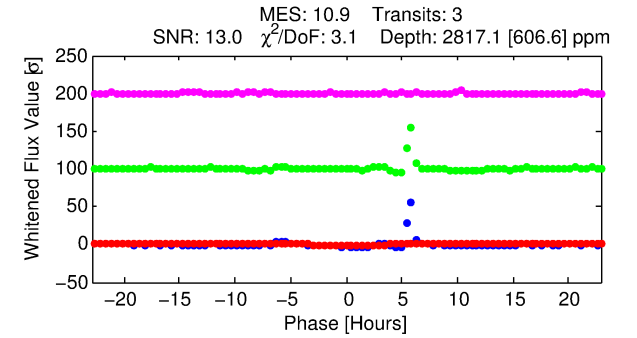
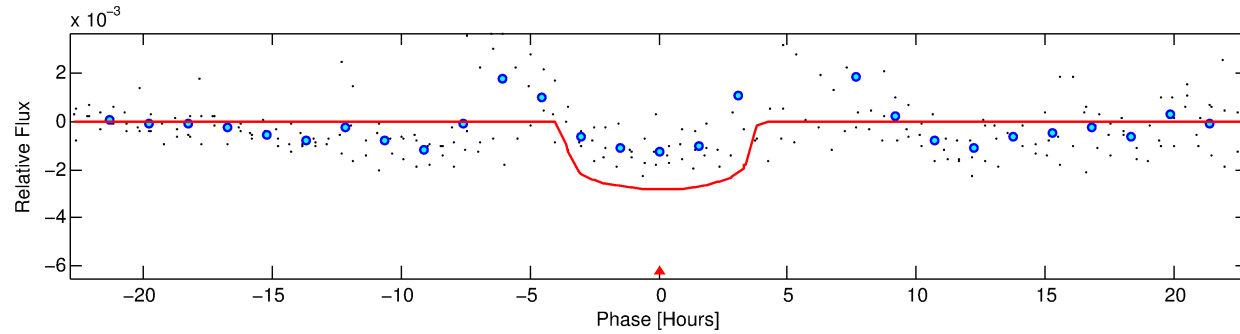
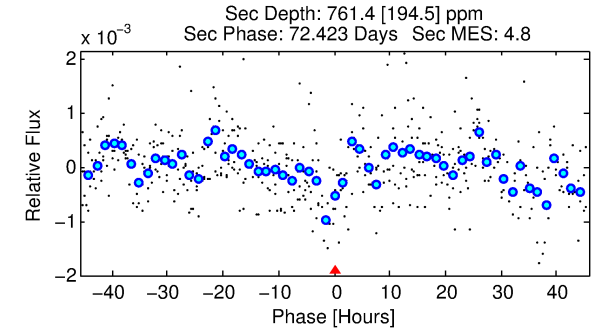
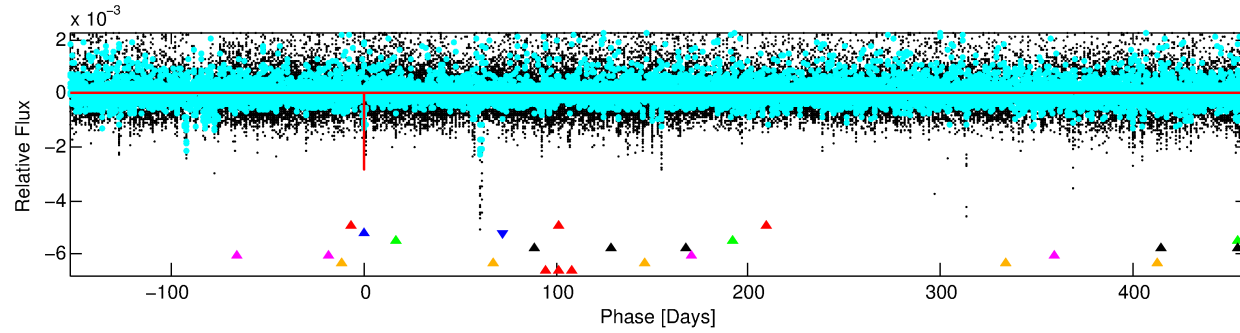
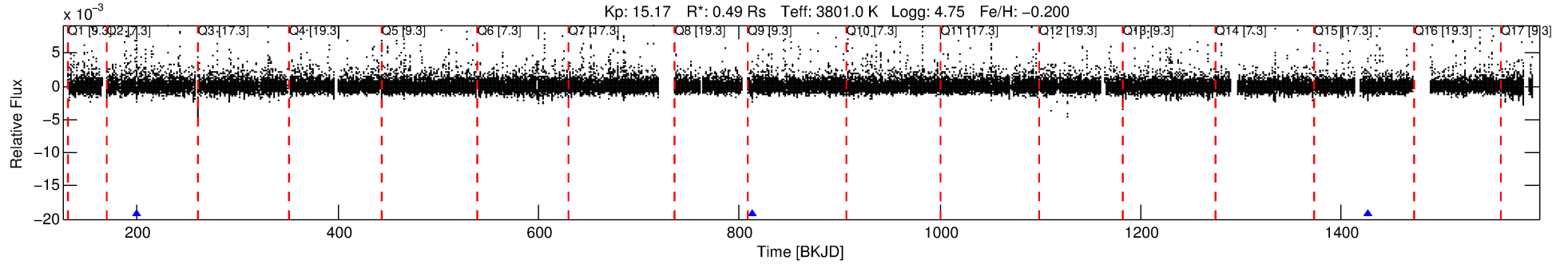
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004741455-02

No Significant Match Found

DV One-Page Summary

KIC: 4741455 Candidate: 2 of 7 Period: 613.272 d



DV Fit Results:

Period = 613.27213 [0.00985] d
Epoch = 199.7458 [0.0135] BKJD
Rp/R* = 0.0482 [0.0332]
a/R* = 640.81 [1903.96]
b = 0.10 [30.60]
Seff = 0.04 [0.00]
Teq = 111 [3] K
Rp = 2.59 [1.79] Re
a = 1.1206 [0.0681] AU
Ag = 78394.72 [109873.20] [0.71 σ]
Teffp = 2875 [1007] K [2.74 σ]

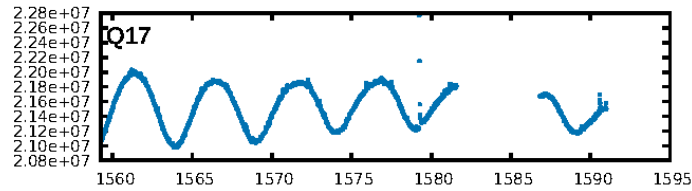
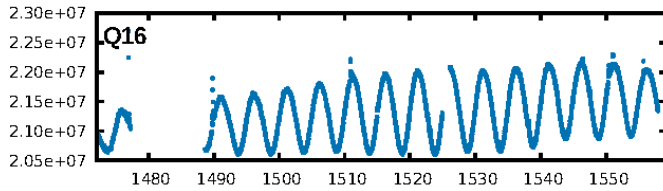
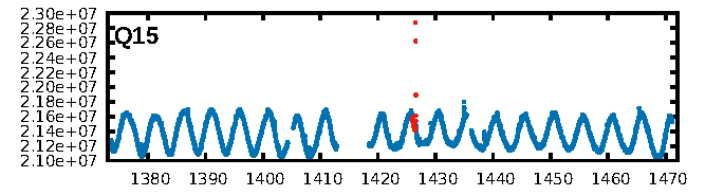
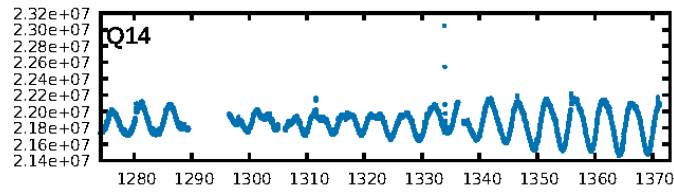
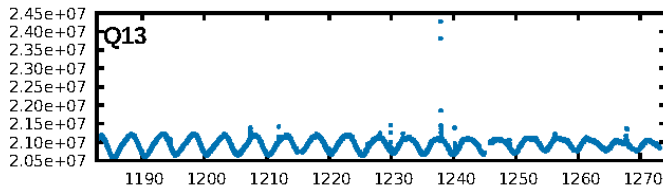
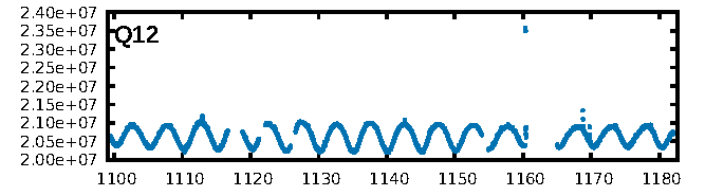
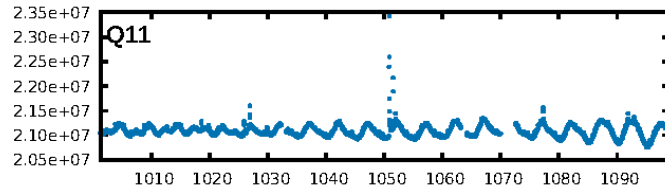
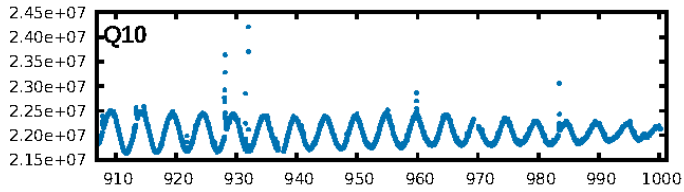
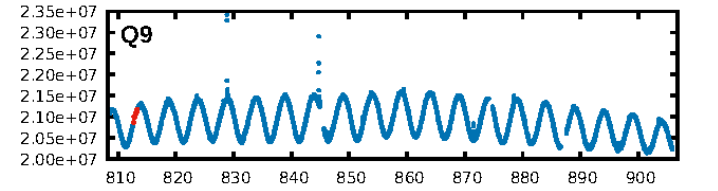
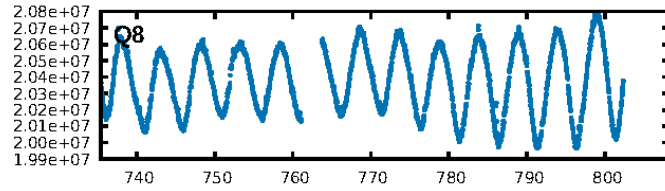
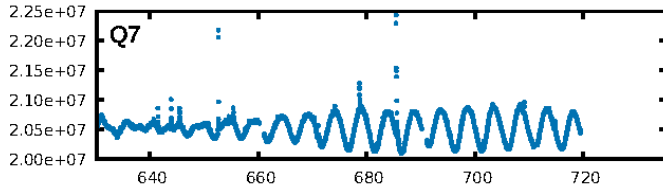
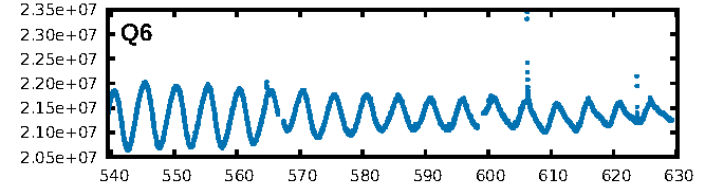
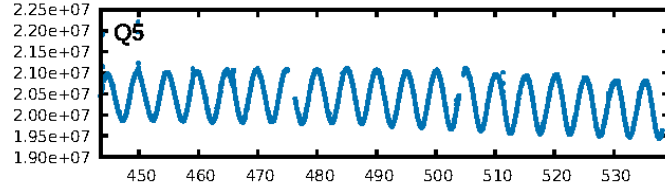
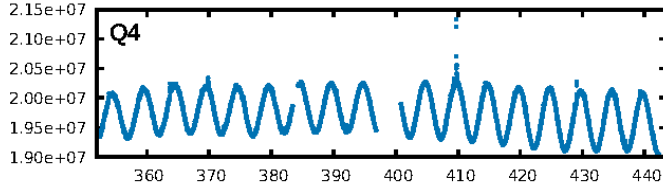
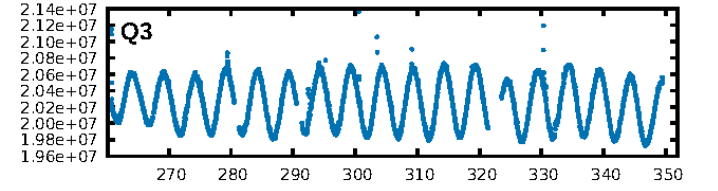
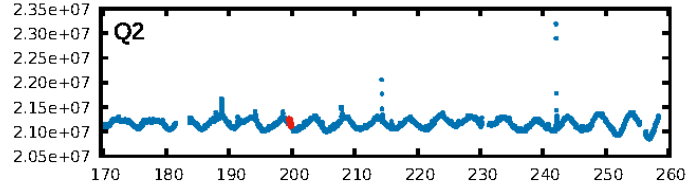
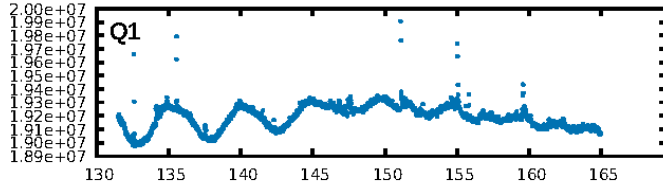
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [275.40 σ]
LongPeriod-sig: 100.0% [15.43 σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 0.0%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 2.122
Centroid-sig: 23.3%
Centroid-so: 0.293 arcsec [0.72 σ]
OotOffset-rm: 0.323 arcsec [0.37 σ]
OotOffset-st: 1/1/0/1 [3]
KicOffset-rm: 0.348 arcsec [0.90 σ]
KicOffset-st: 1/1/0/1 [3]
DiffImageQuality-fgm: 0.33 [1/3]
DiffImageOverlap-fno: 1.00 [3/3]

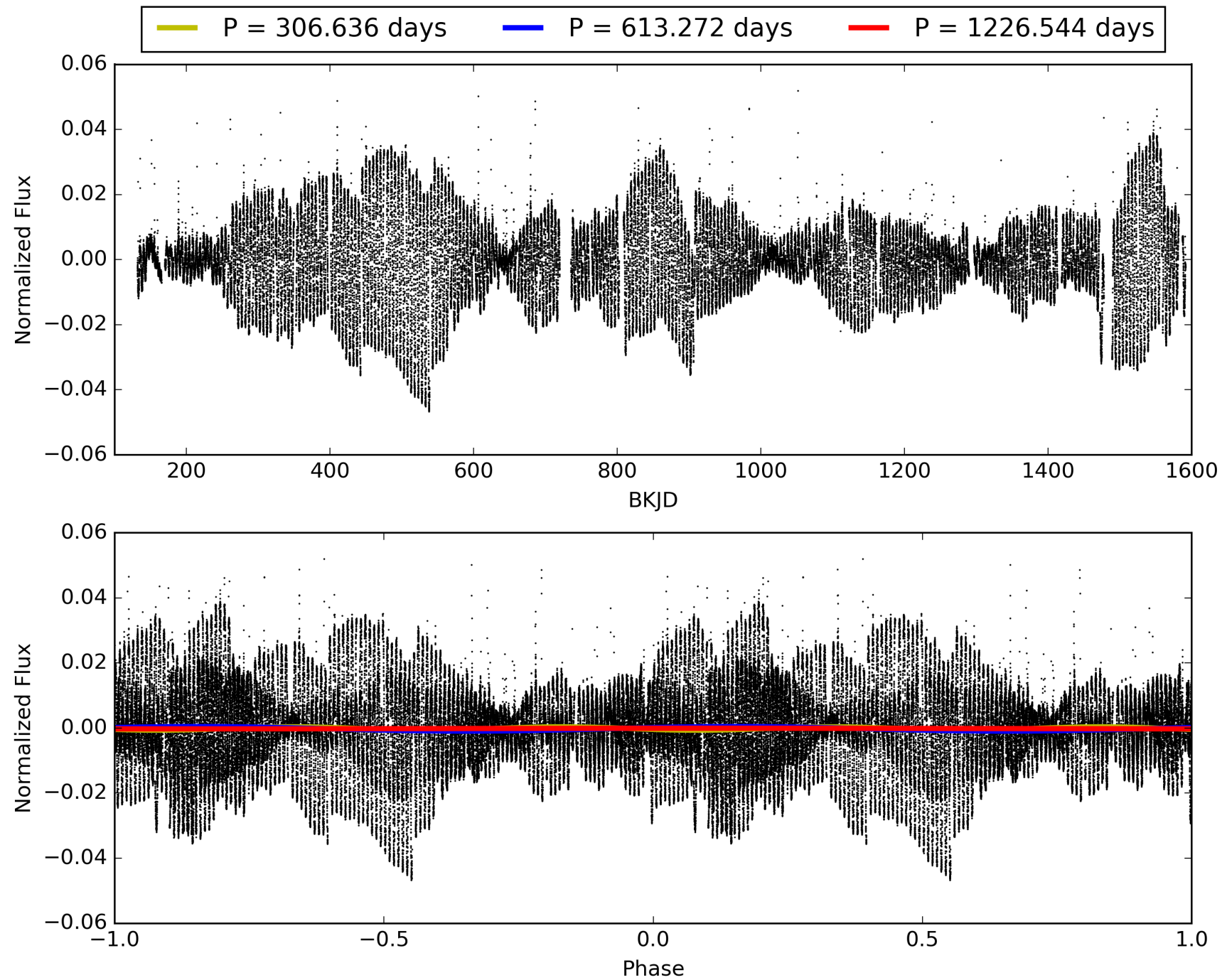
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 13:07:37 Z

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

TCE 004741455-02, PDC Light Curves

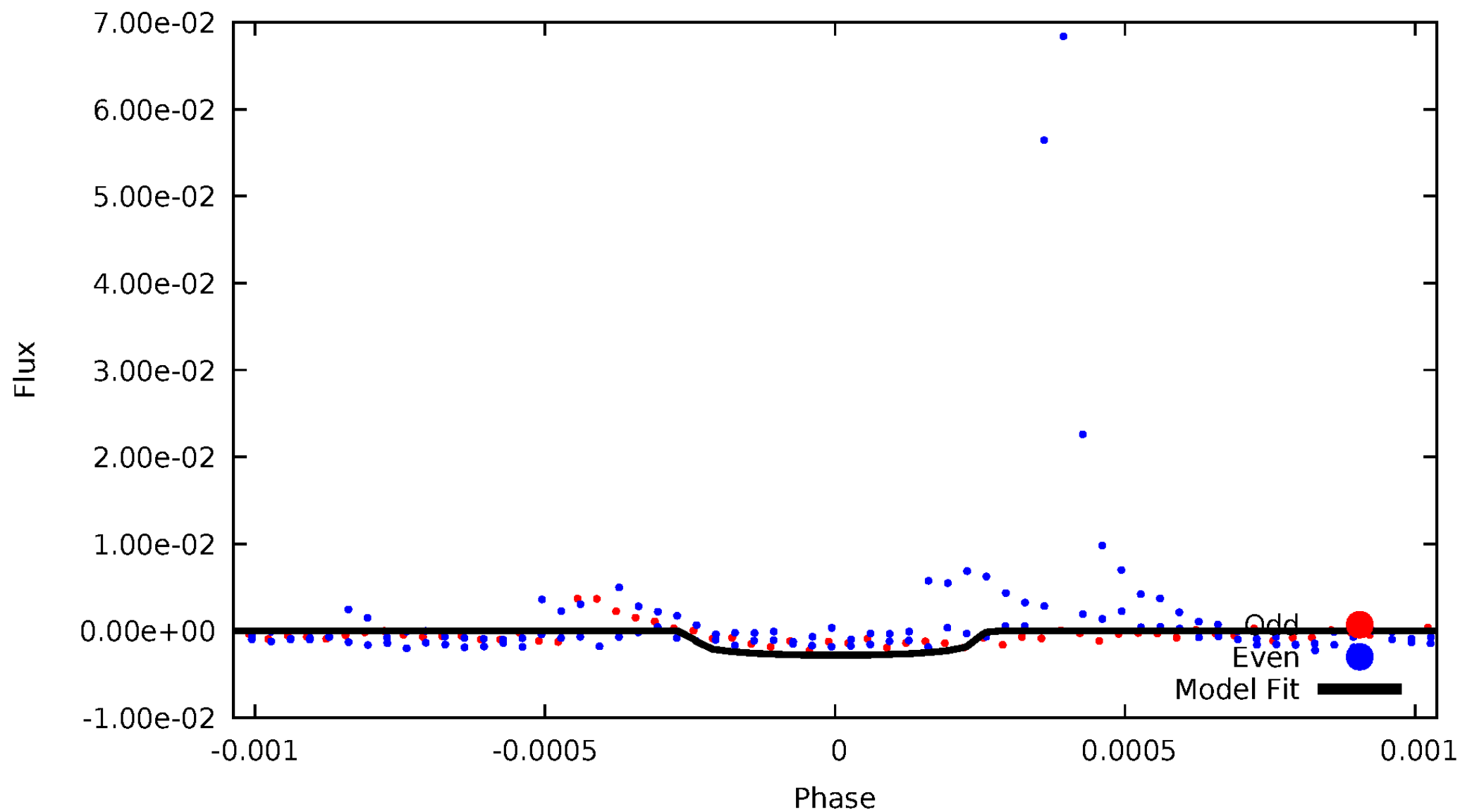


TCE 004741455-02



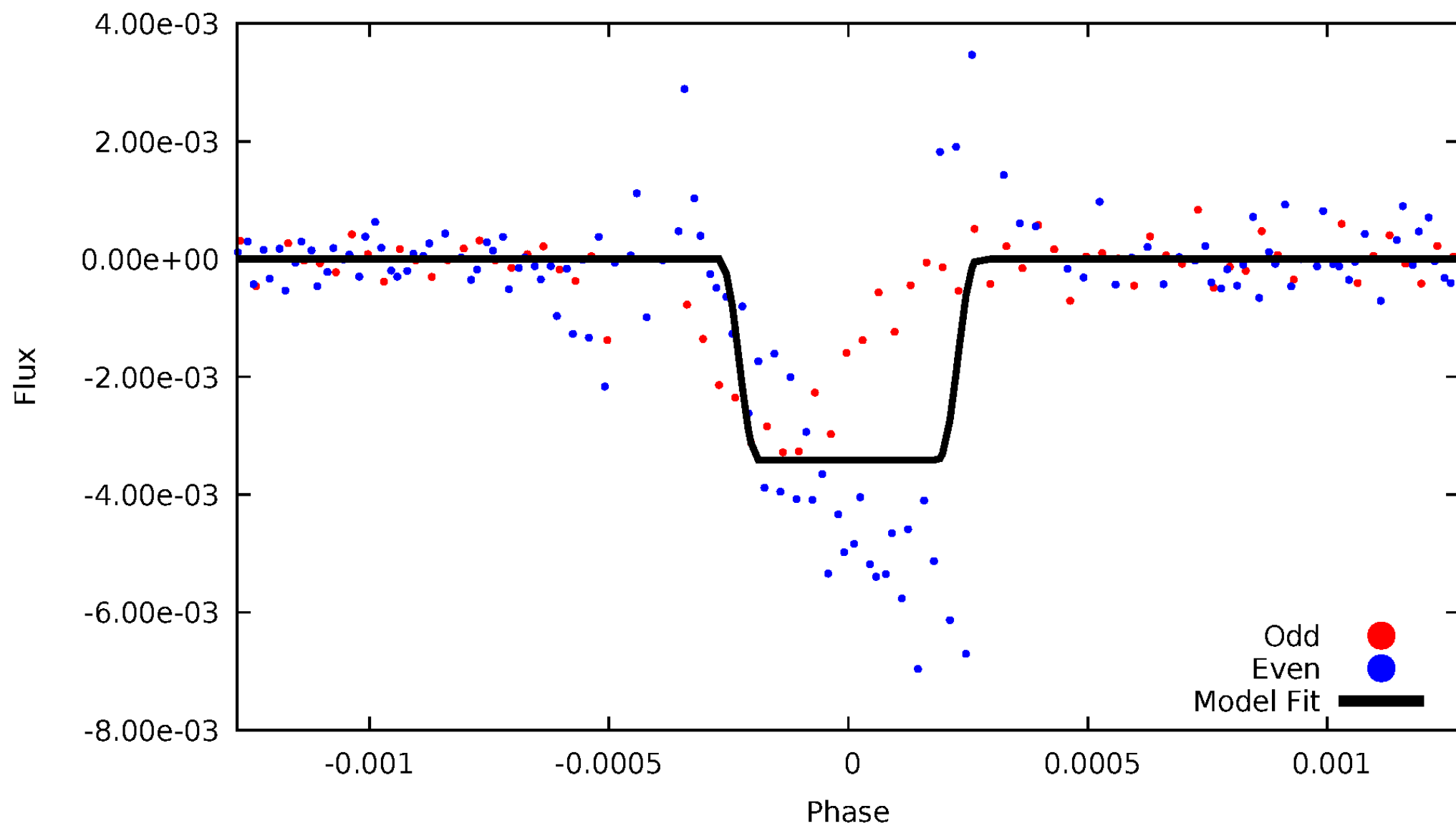
DV Odd/Even

TCE 004741455-02



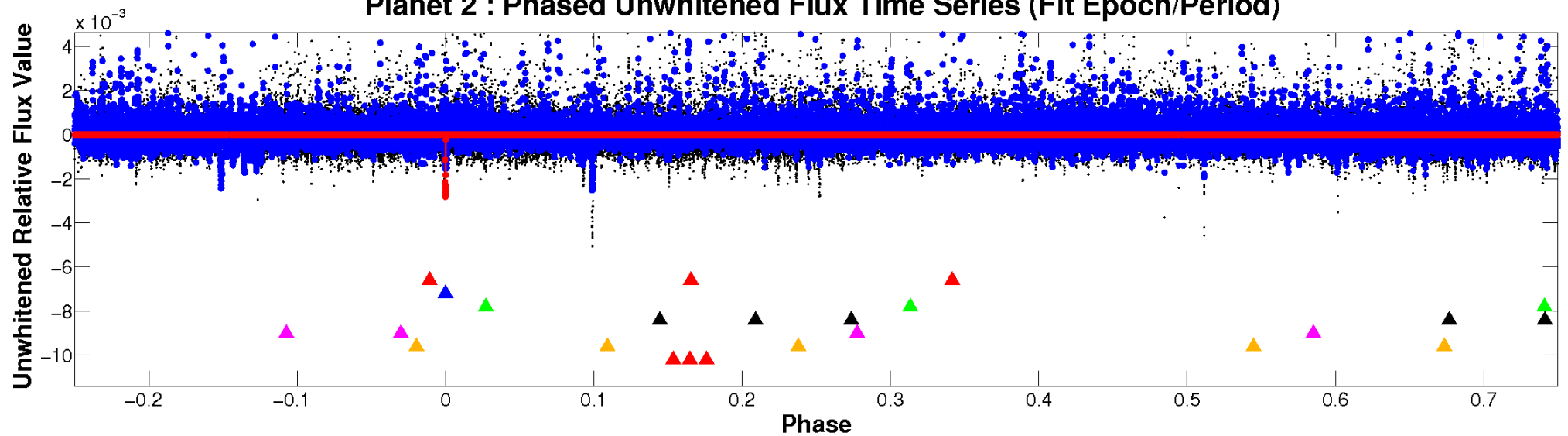
ALT Odd/Even

TCE 004741455-02

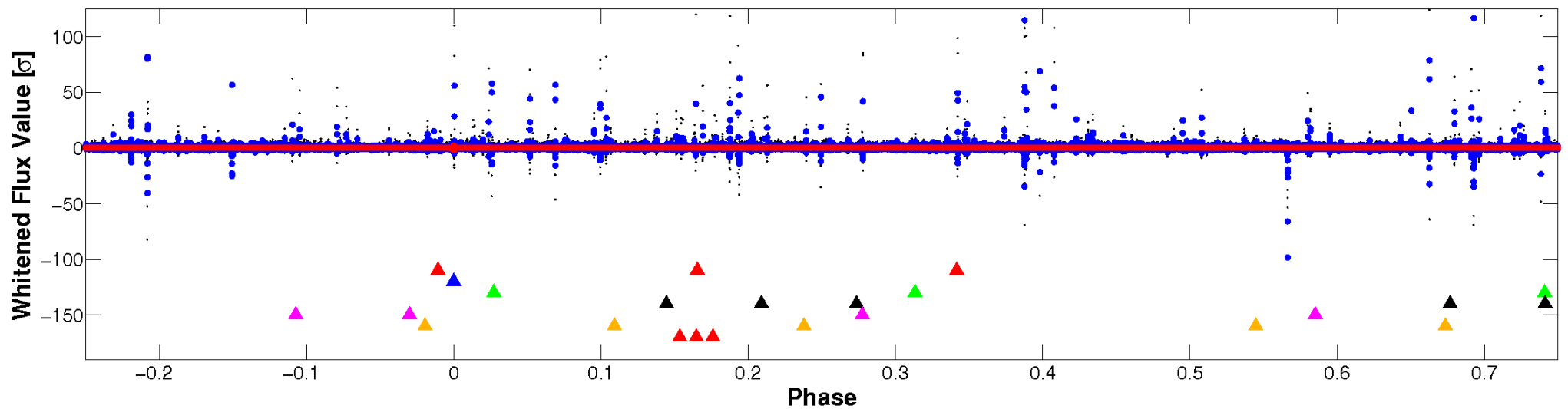


Non-Whitened Vs. Whitened Light Curve

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

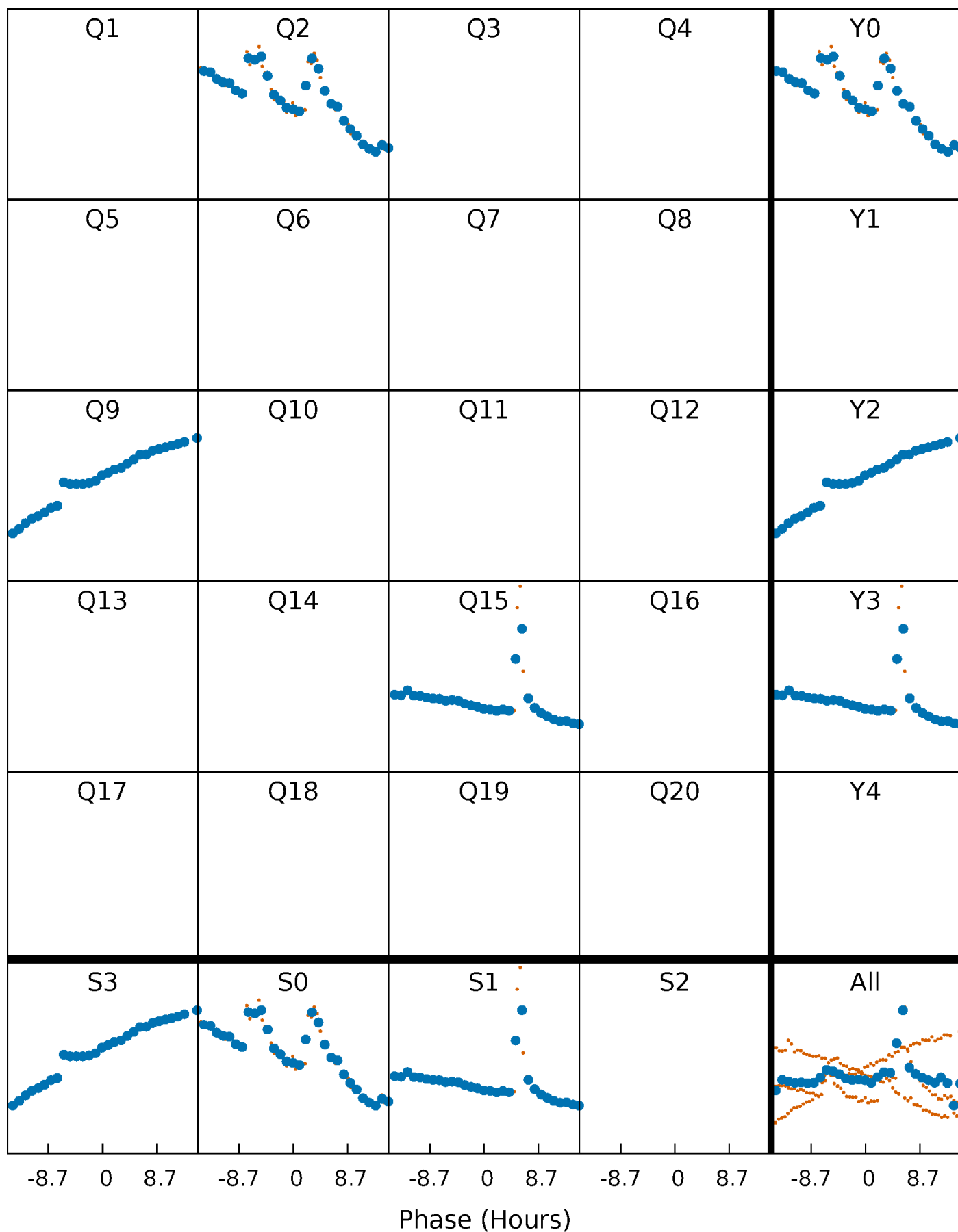


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



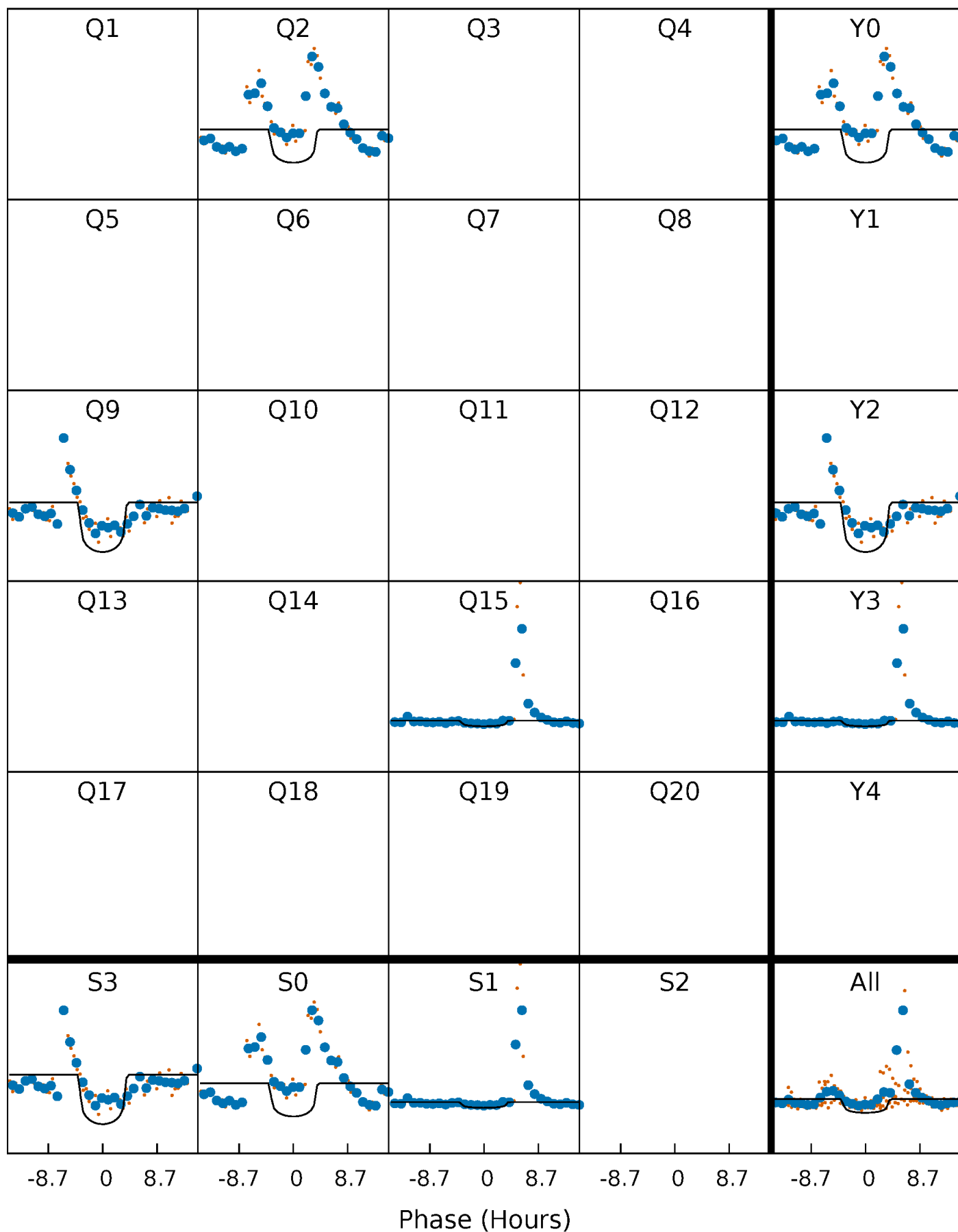
PDC Quarter-Phased Transit Curves

TCE 004741455-02 $P=613.272130$ Days $T_0=199.745849$ (BKJD)



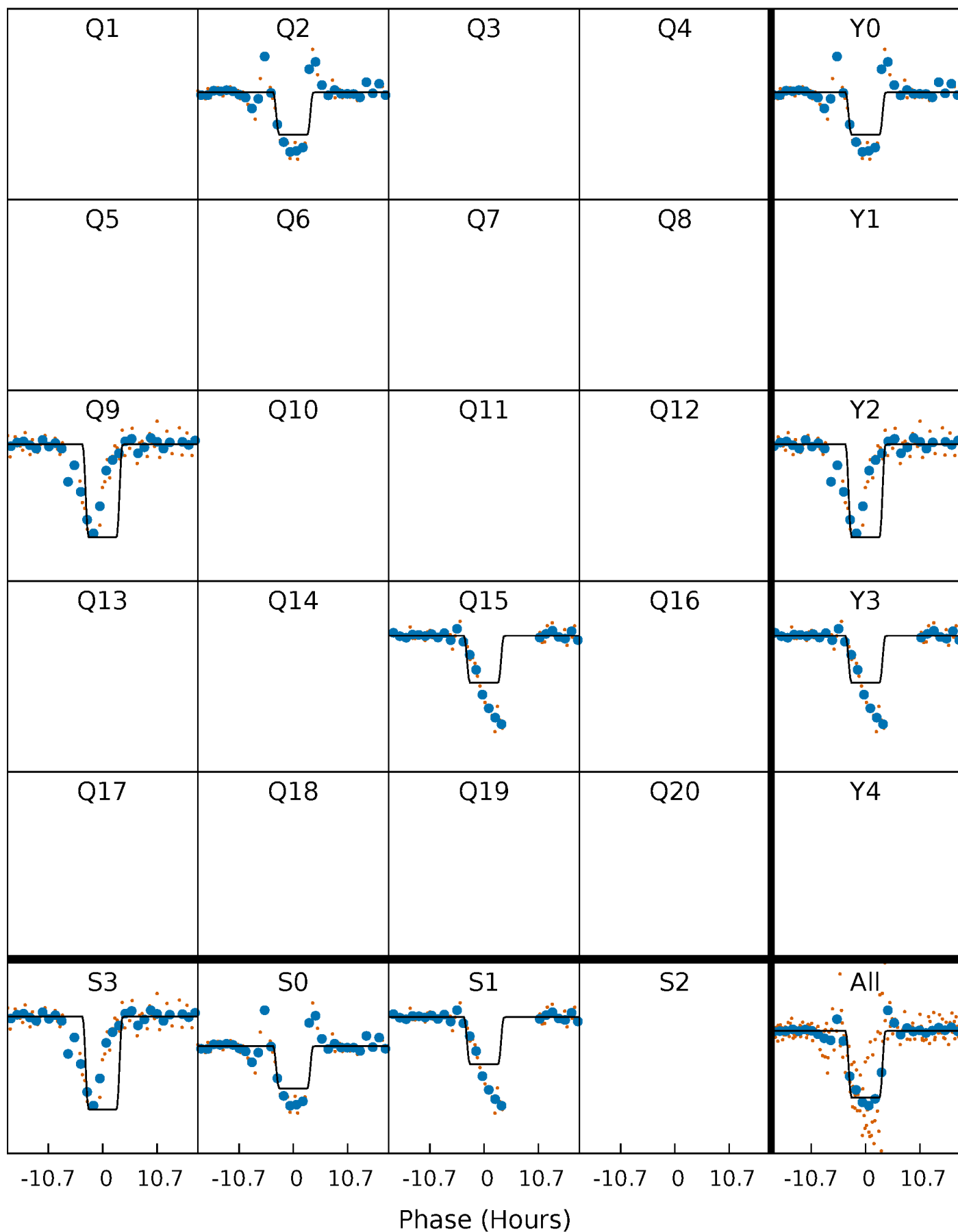
DV Quarter-Phased Transit Curves

TCE 004741455-02 P=613.272130 Days $T_0=199.745849$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

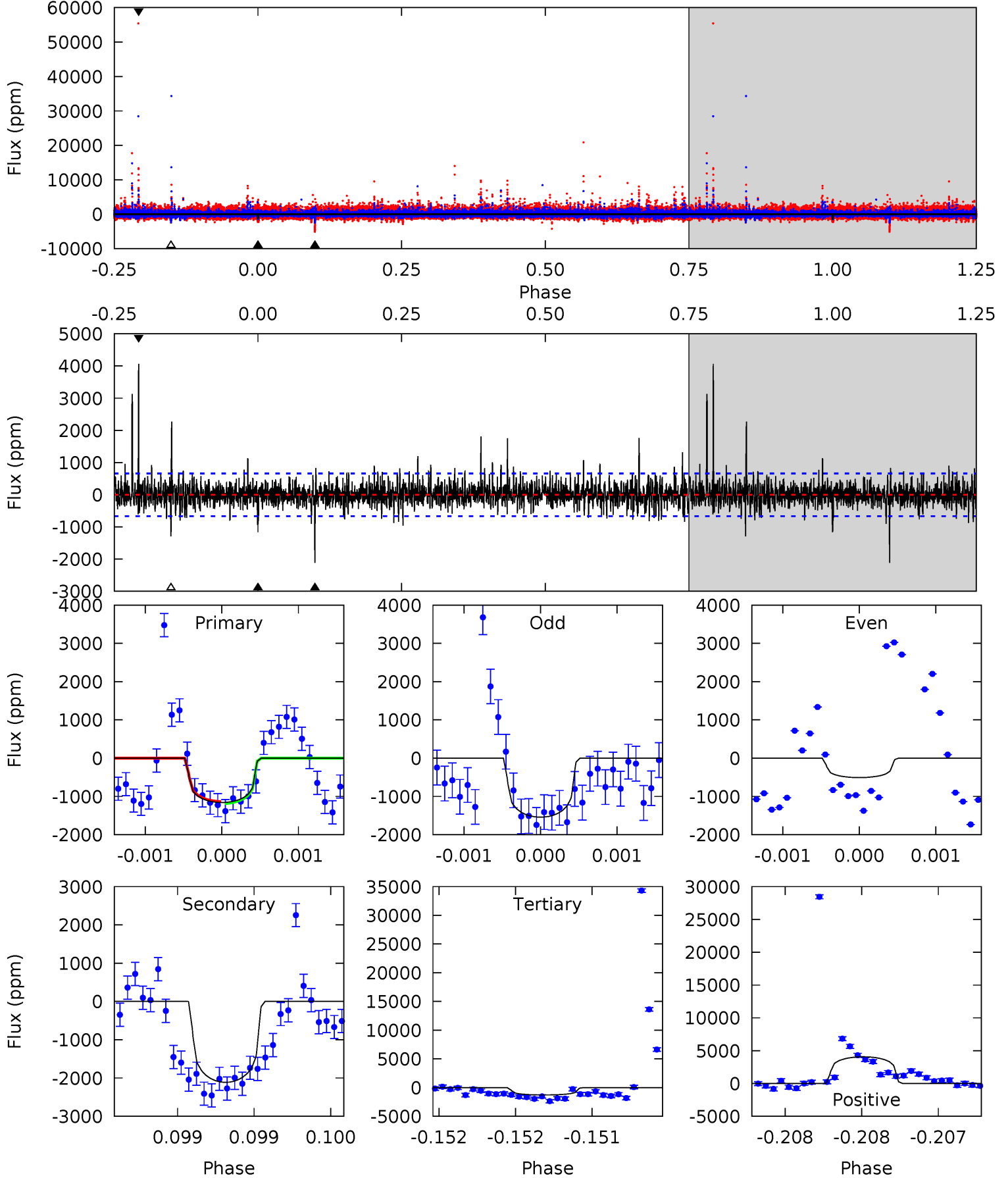
TCE 004741455-02 P=613.286059 Days $T_0=199.727265$ (BKJD)



DV Model-Shift Uniqueness Test

004741455-02, P = 613.272130 Days, E = 199.745849 Days

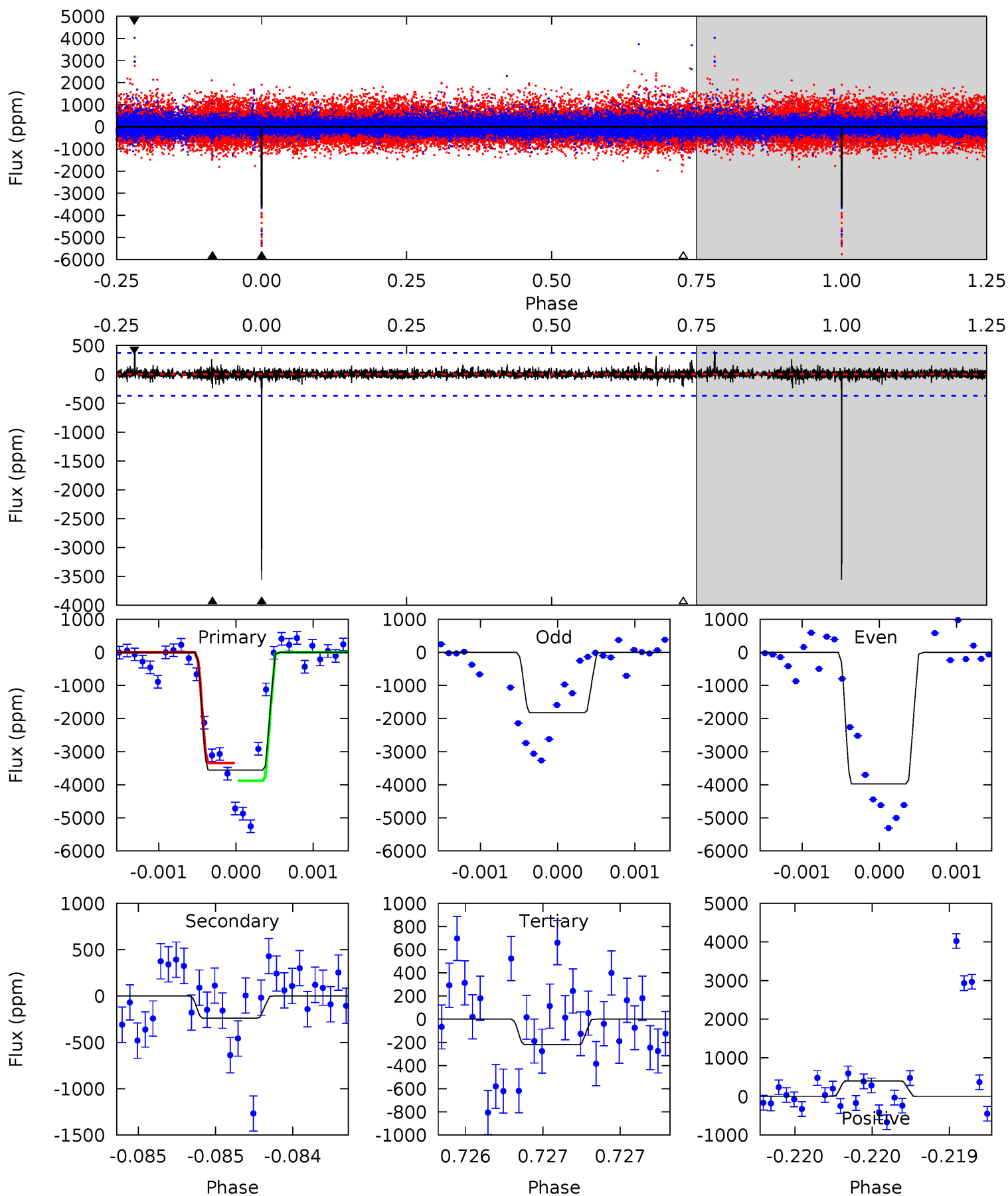
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.68	17.7	10.8	34.0	5.55	3.45	2.41	-1.08	-24.3	6.90	-16.3	1.97	0.49	0.66	0.23



Alt Model-Shift Uniqueness Test

004741455-02, P = 613.286059 Days, E = 199.727265 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
53.2	3.57	3.28	6.03	5.57	3.47	0.59	50.0	47.2	0.30	-2.46	15.3	0.88	0.10	0



Stellar Parameters For KIC 004741455

	$T_{\text{eff}} (K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (g \cdot \text{cm}^{-3})$
	3801^{+76}_{-83}	$4.752^{+0.042}_{-0.025}$	$-0.200^{+0.100}_{-0.100}$	$0.492^{+0.027}_{-0.038}$	$0.499^{+0.031}_{-0.034}$	$5.898^{+1.160}_{-0.665}$
	+2%/-2%	+1%/-1%	+50%/-50%	+5%/-8%	+6%/-7%	+20%/-11%
Source	PHO2	PHO2	PHO2	DSEP		

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

Secondary Eclipse Parameters for KIC 004741455-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-2113 ± 120	$2.68^{+1.77}_{-1.52}$	155^{+4}_{-4}	3685^{+1316}_{-537}	$202713^{+861538}_{-126930}$
Alt.	-238 ± 67	$3.18^{+1.66}_{-1.71}$	154^{+4}_{-4}	2554^{+594}_{-259}	16013^{+53990}_{-9734}

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

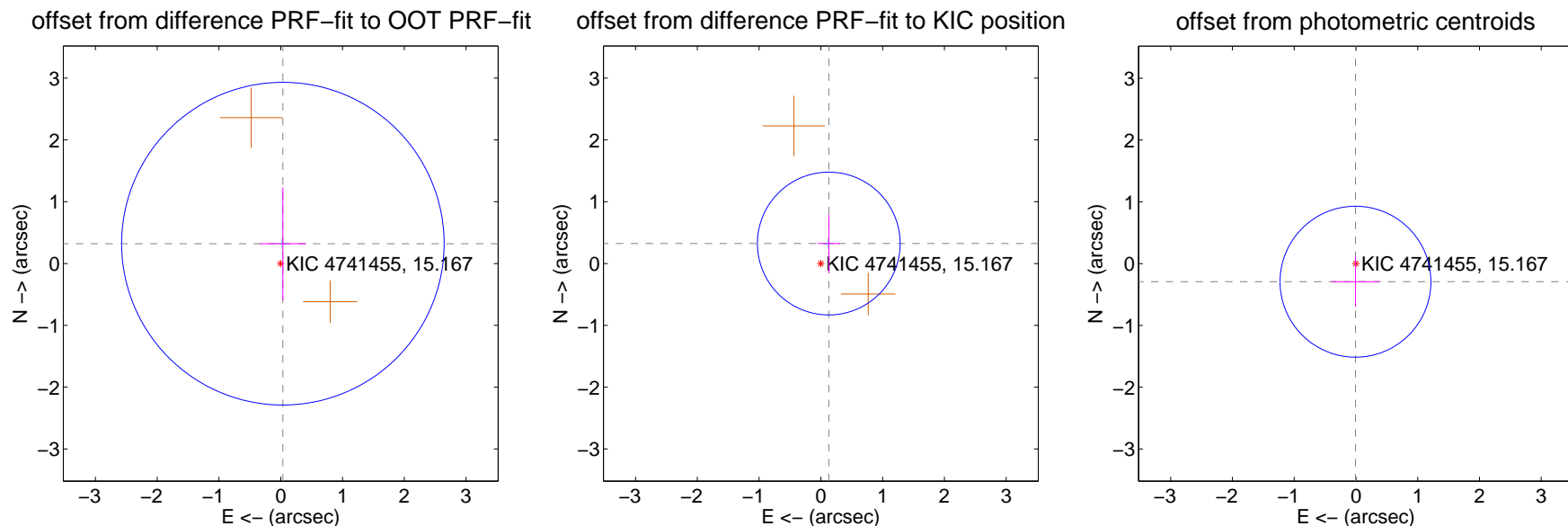
DV Centroid Data

Supplemental centroid analysis for 004741455-02. Kepler magnitude: 15.17. Transit SNR 13.03

There are 1 quarters with good PRF difference image offsets

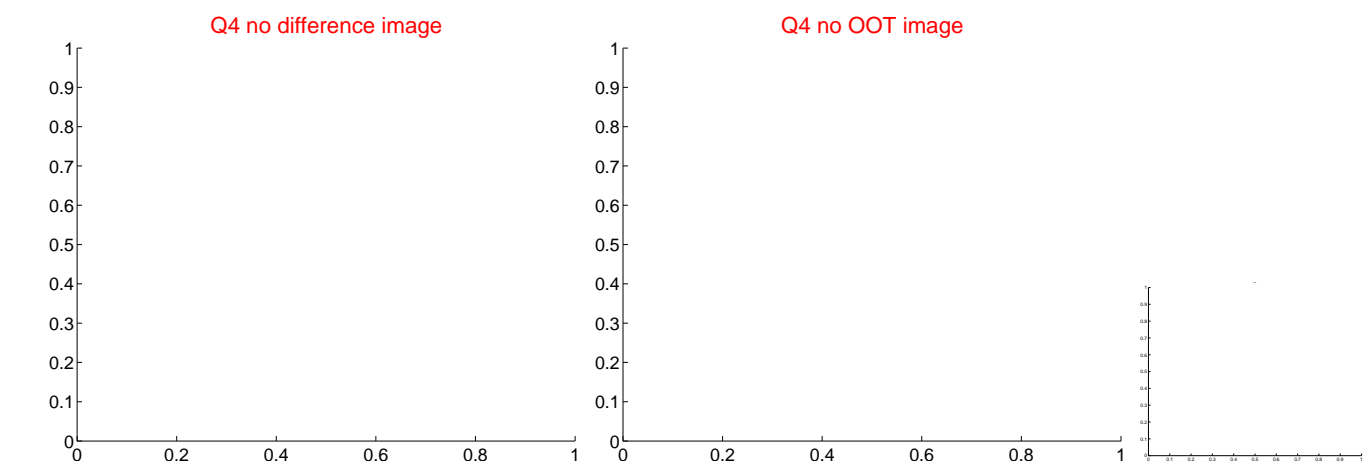
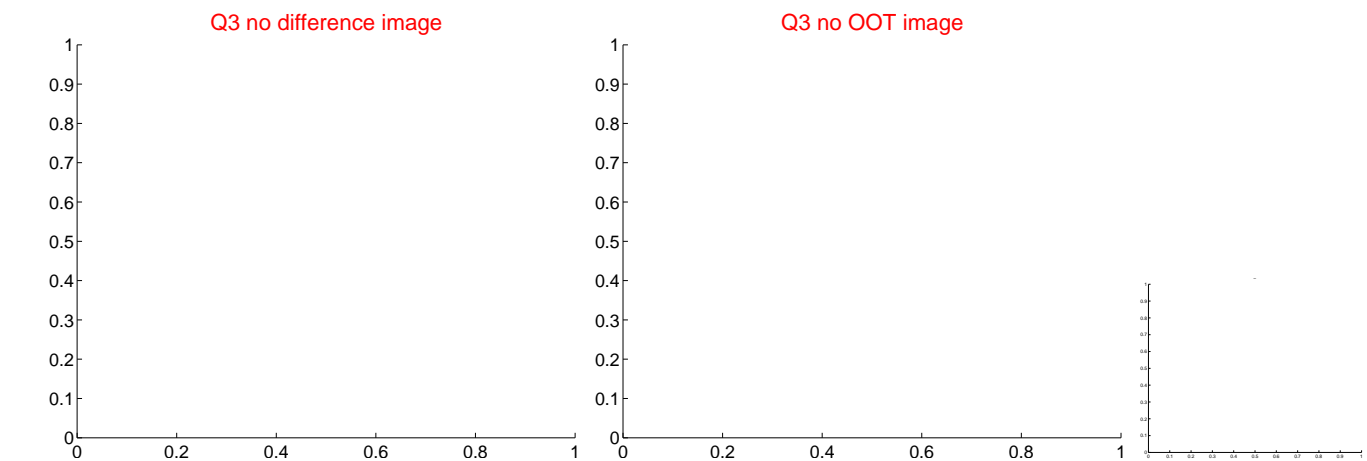
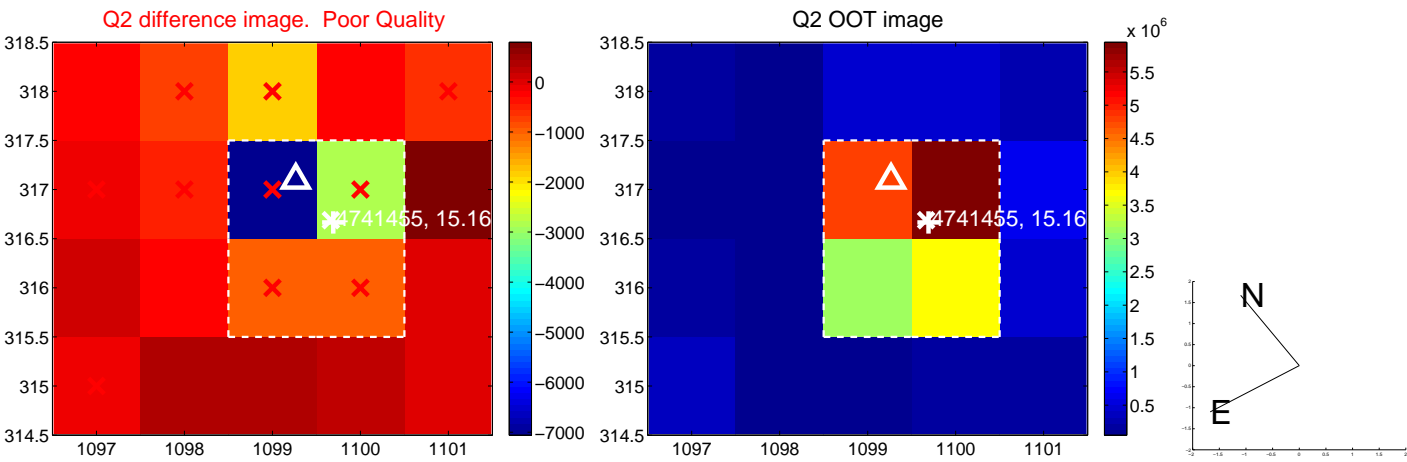
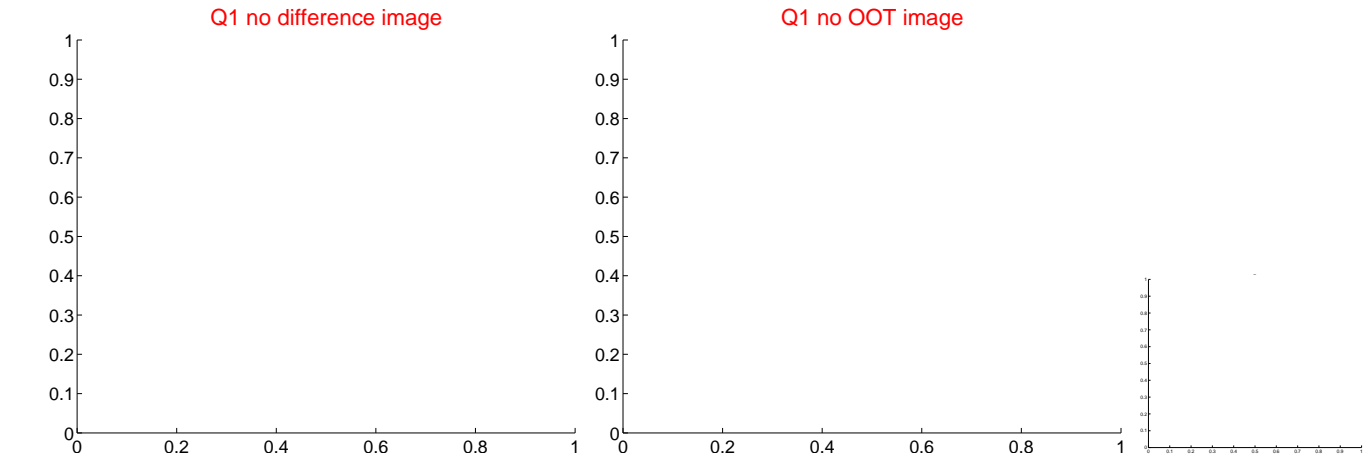
The direct PRF centroid is offset from the target star catalog position by about 0.10 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.323 ± 0.870	0.37	-0.035 ± 0.374	0.322 ± 0.914
PRF-fit source offset from KIC position	0.348 ± 0.385	0.90	-0.128 ± 0.182	0.324 ± 0.474
photometric centroid source offset	0.29 ± 0.41	0.72	0.01 ± 0.39	-0.29 ± 0.41



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.

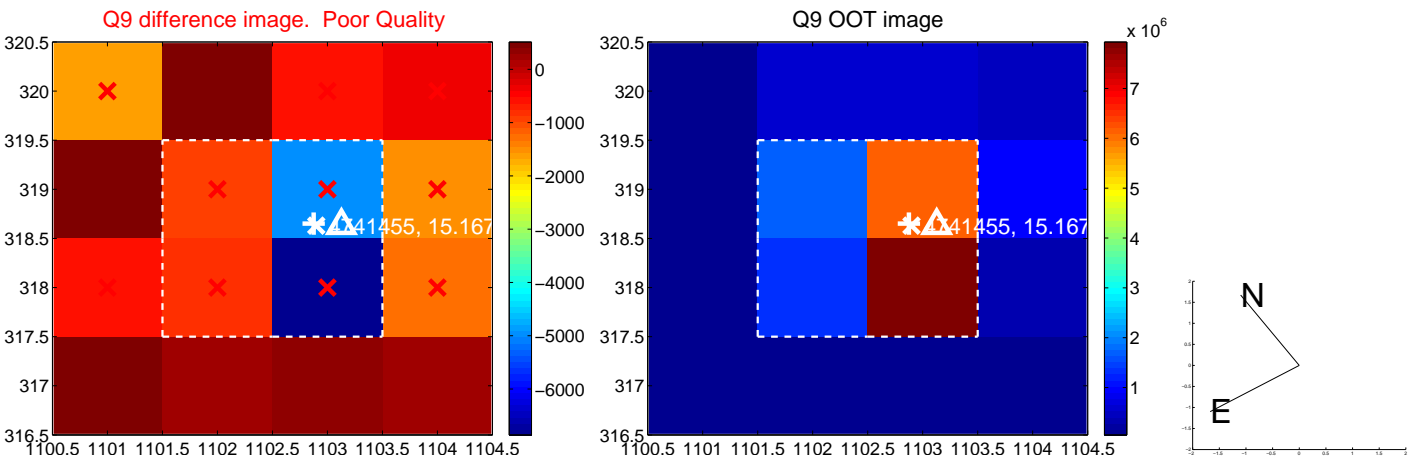
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



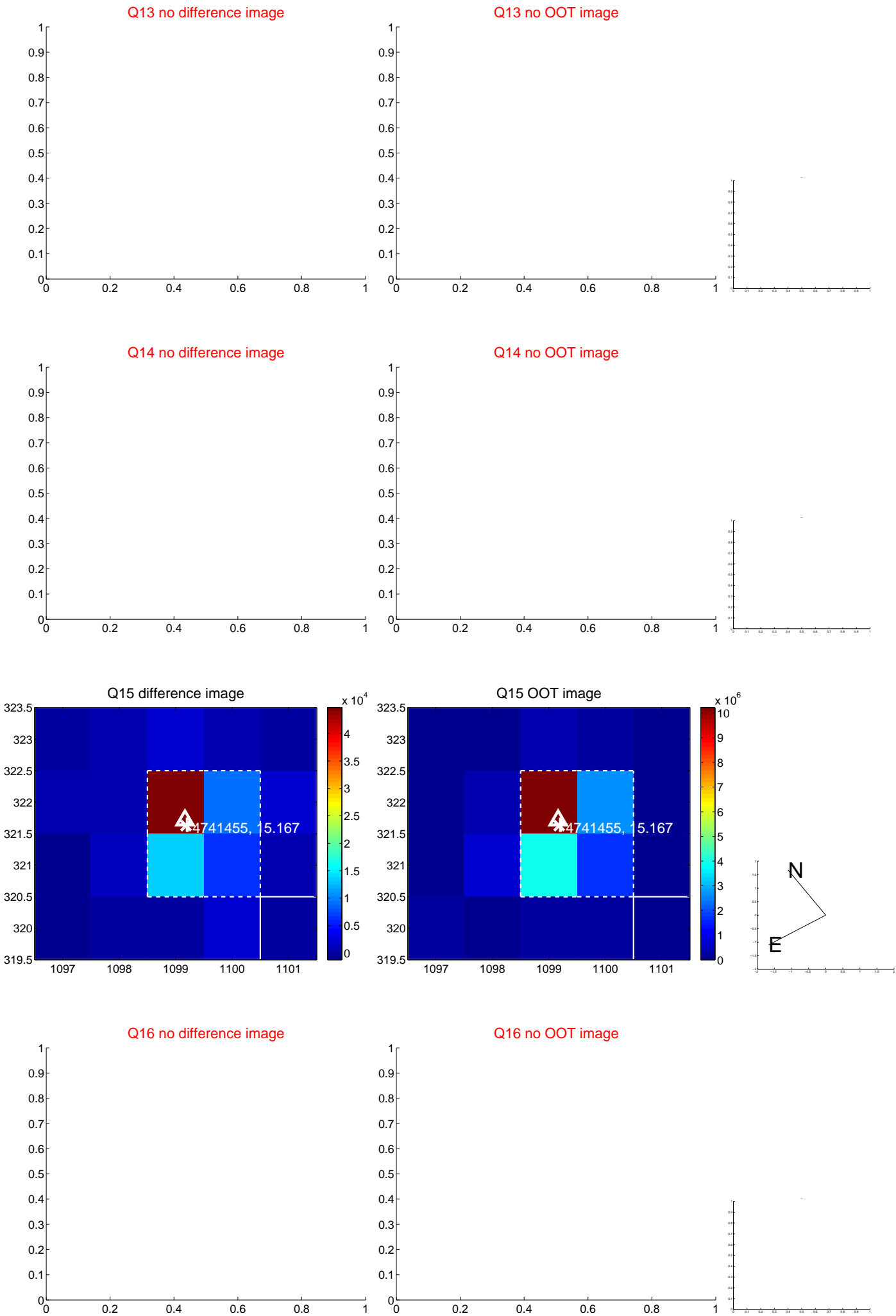
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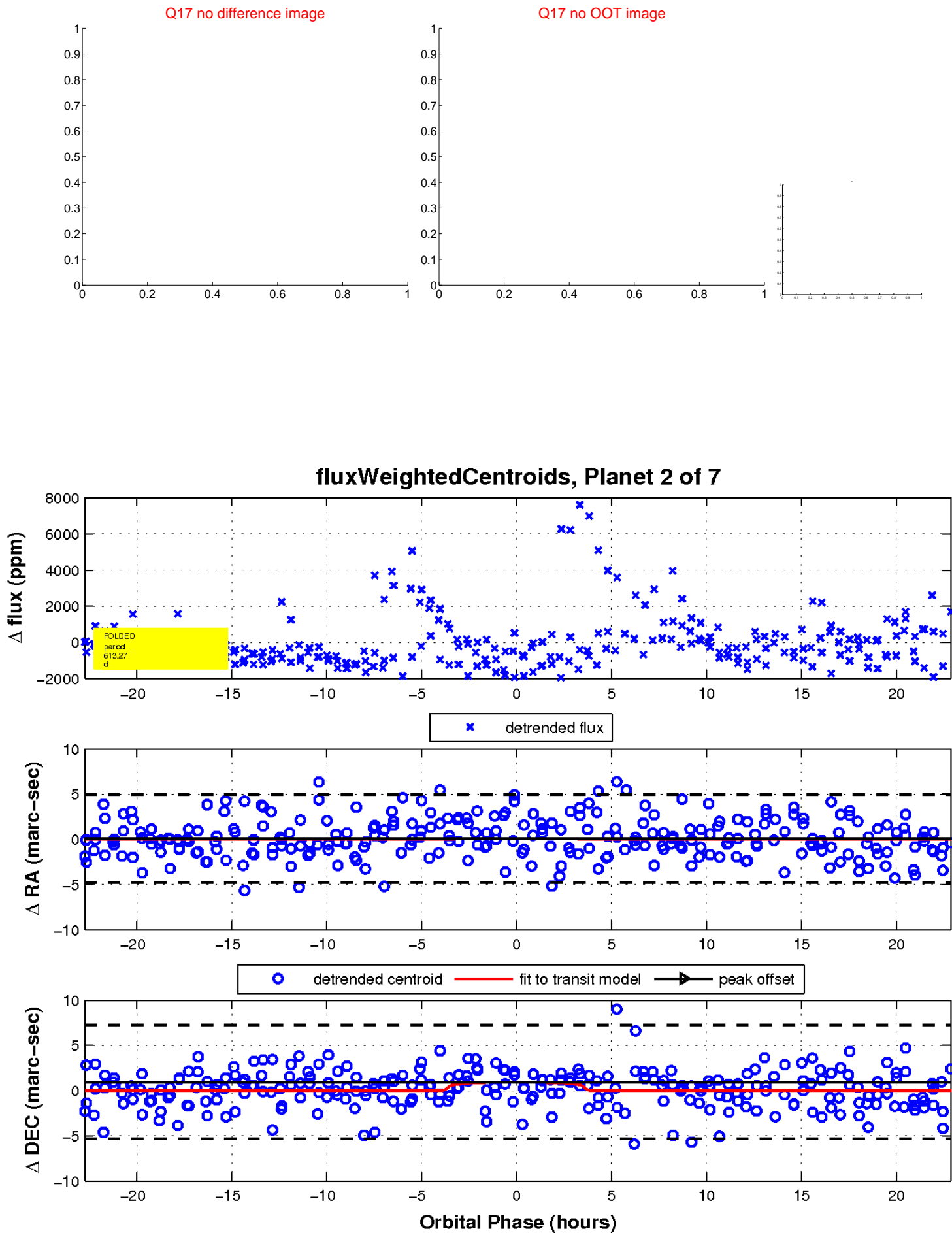
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white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

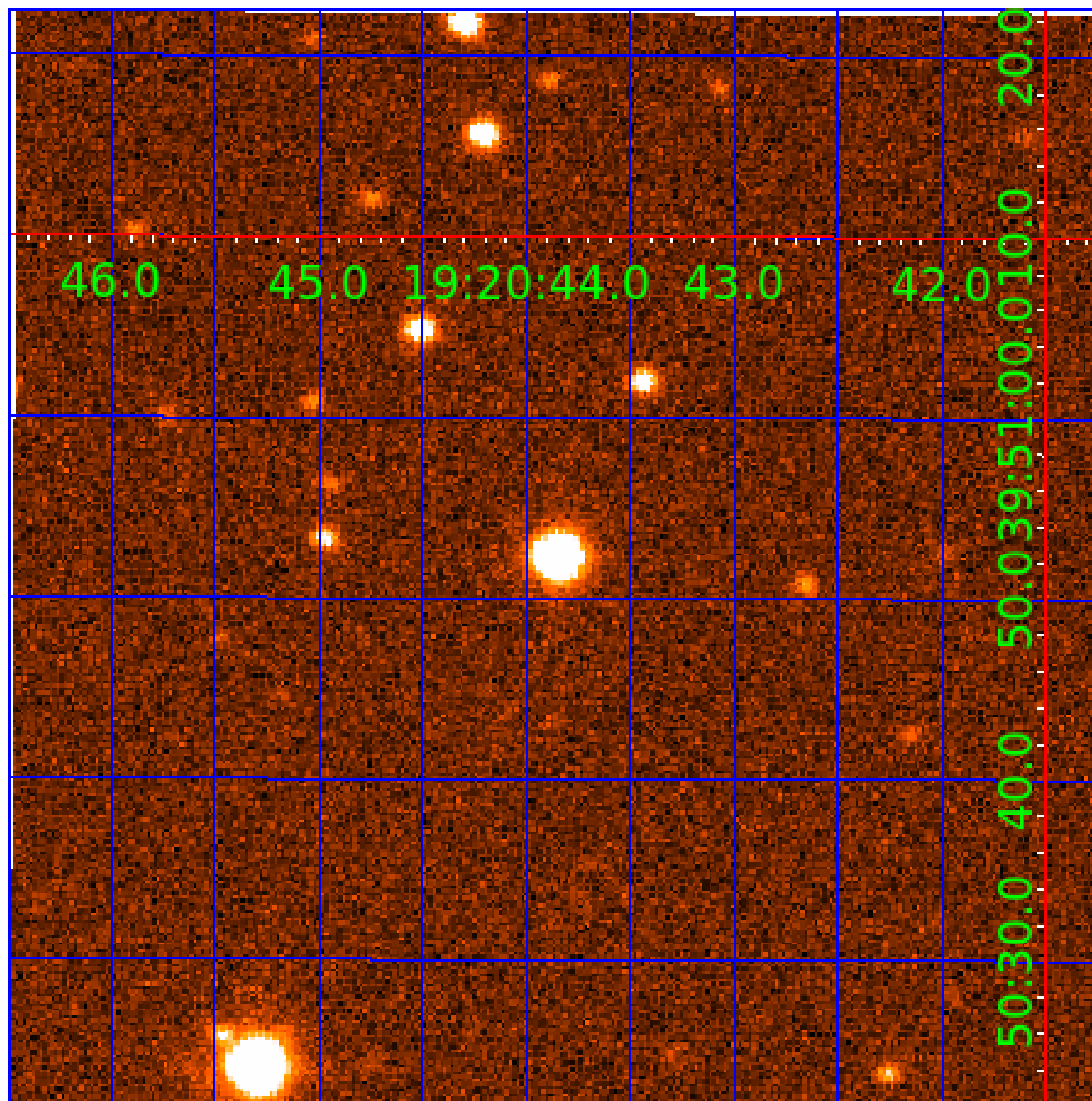


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 004741455

Q1-17 DR25 TCE Parameters

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Robovetter Results

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004741455-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
004741455-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_TER_DV—MOD_POS_DV
004741455-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES
004741455-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV
004741455-07	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_NOFITS—HALO_GHOST

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

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

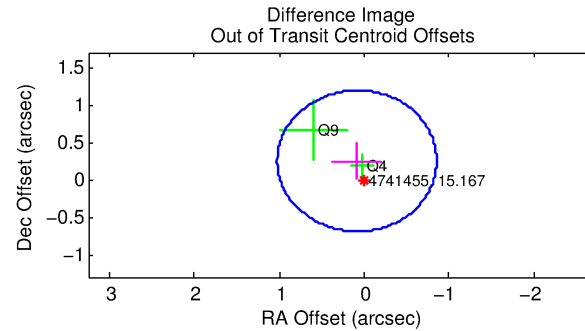
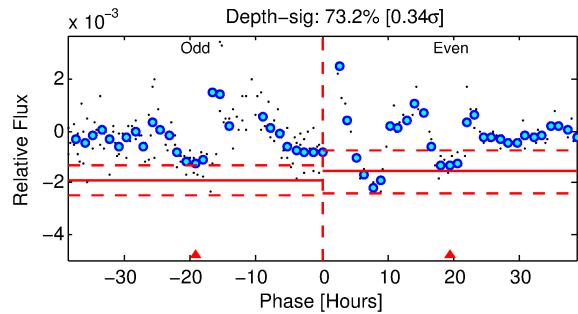
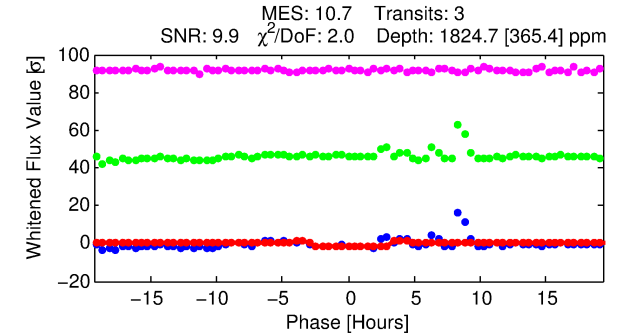
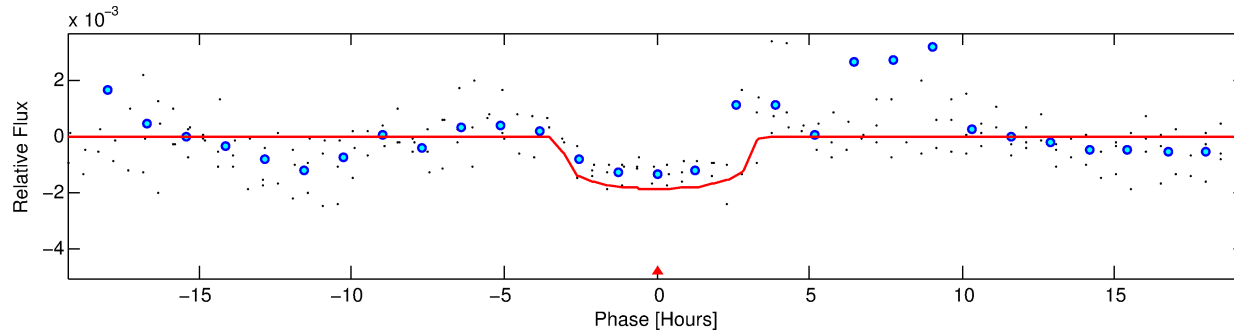
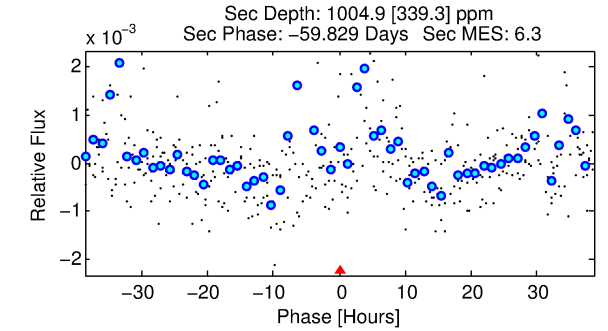
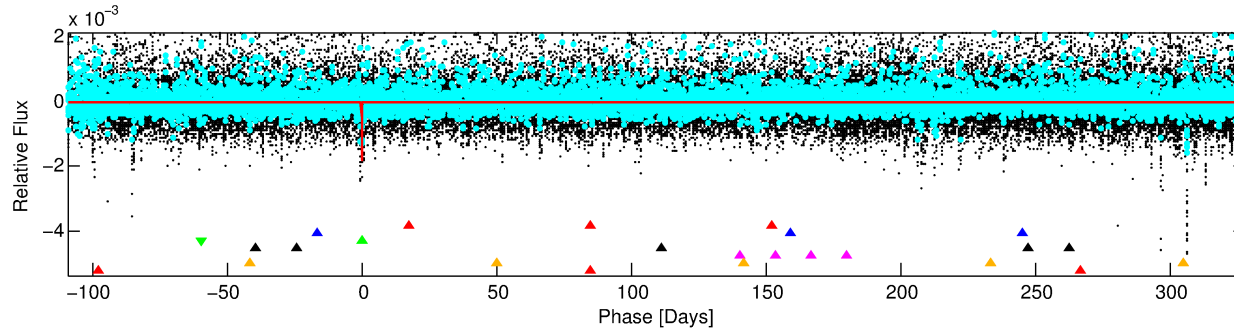
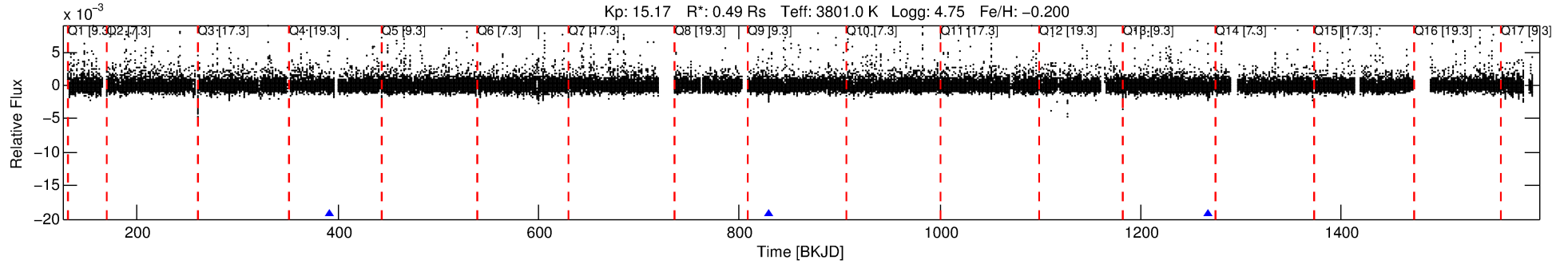
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004741455-03

No Significant Match Found

DV One-Page Summary

KIC: 4741455 Candidate: 3 of 7 Period: 437.752 d



DV Fit Results:

Period = 437.75220 [0.01006] d
Epoch = 391.9402 [0.0120] BKJD
Rp/R* = 0.0388 [0.0414]
a/R* = 537.27 [2527.22]
b = 0.10 [48.69]
Seff = 0.06 [0.01]
Teq = 124 [4] K
Rp = 2.08 [2.23] Re
a = 0.8950 [0.0544] AU
Ag = 101875.74 [220194.69] [0.46 σ]
Teffp = 3434 [1856] K [1.78 σ]

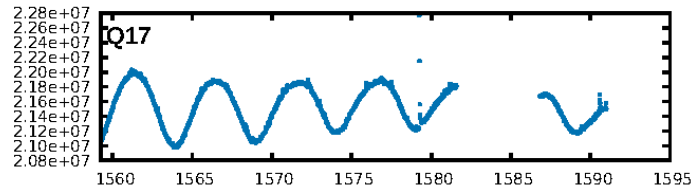
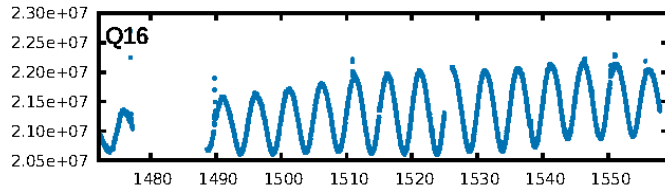
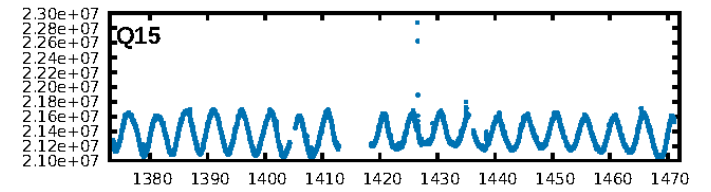
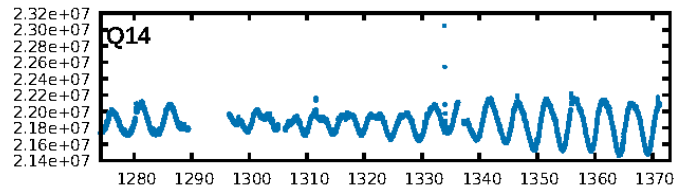
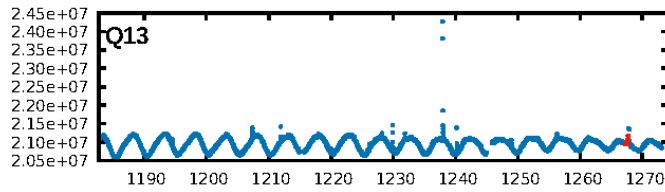
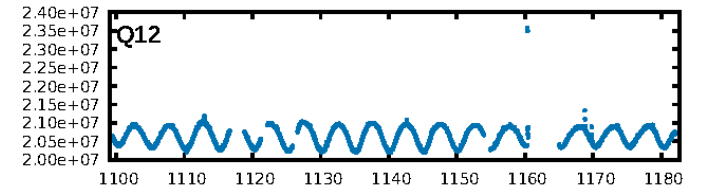
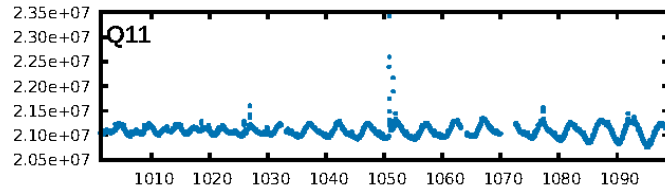
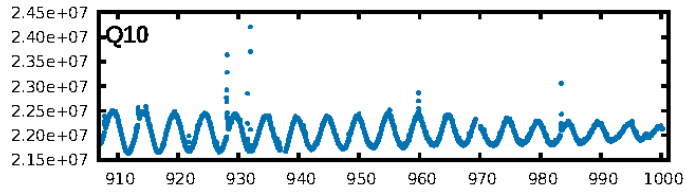
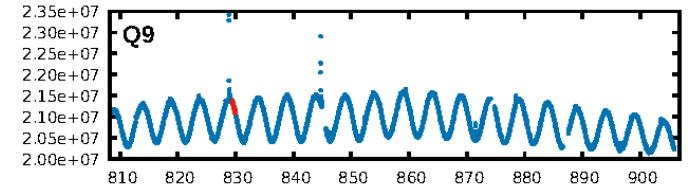
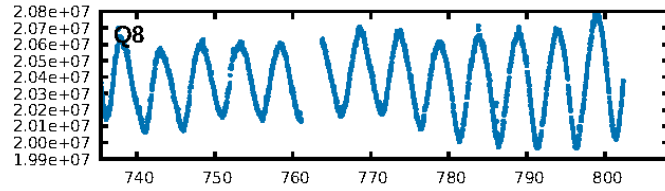
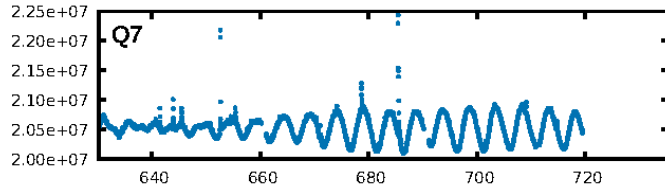
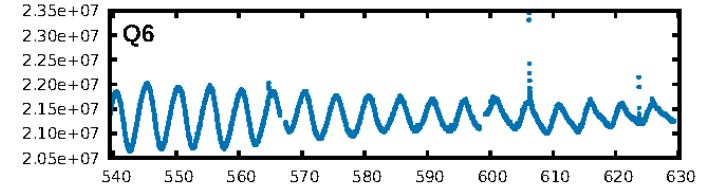
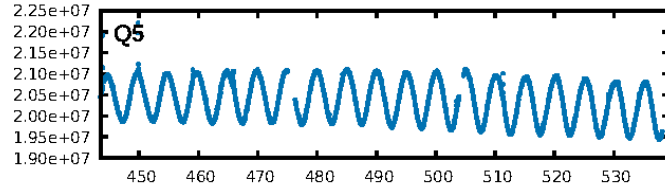
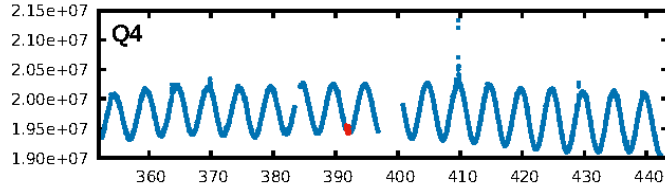
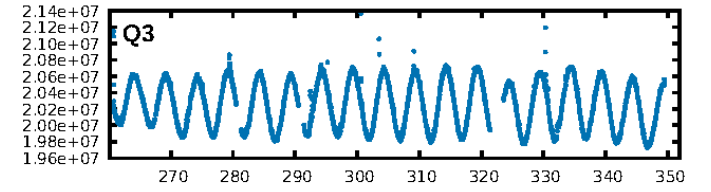
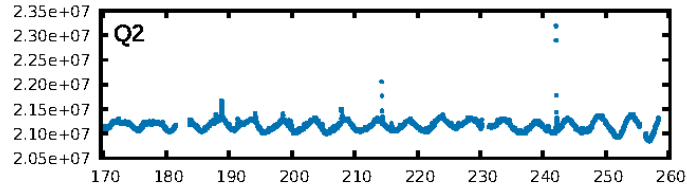
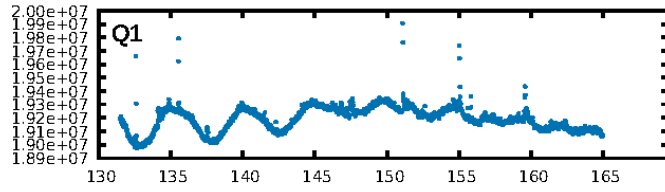
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [38.97 σ]
LongPeriod-sig: 100.0% [191.04 σ]
ModelChiSquare2-sig: 9.5%
ModelChiSquareGof-sig: 85.2%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 1.445
Centroid-sig: 73.6%
Centroid-so: 0.283 arcsec [0.48 σ]
OotOffset-rm: 0.263 arcsec [0.84 σ]
OotOffset-st: 0/0/1/1 [2]
KicOffset-rm: 0.288 arcsec [1.15 σ]
KicOffset-st: 0/0/1/1 [2]
DiffImageQuality-fgm: 0.50 [1/2]
DiffImageOverlap-fno: 1.00 [2/2]

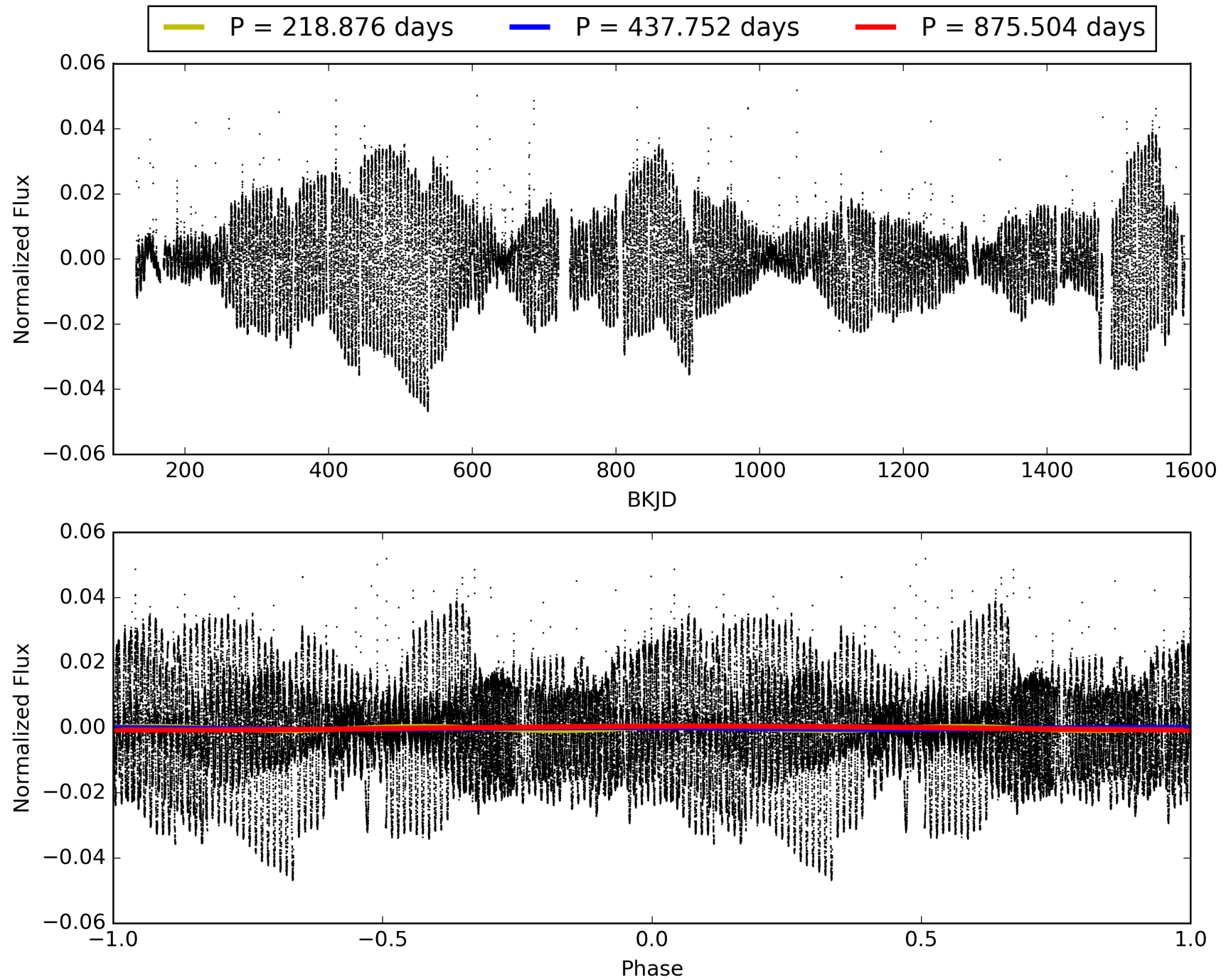
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 13:07:50 Z

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

TCE 004741455-03, PDC Light Curves

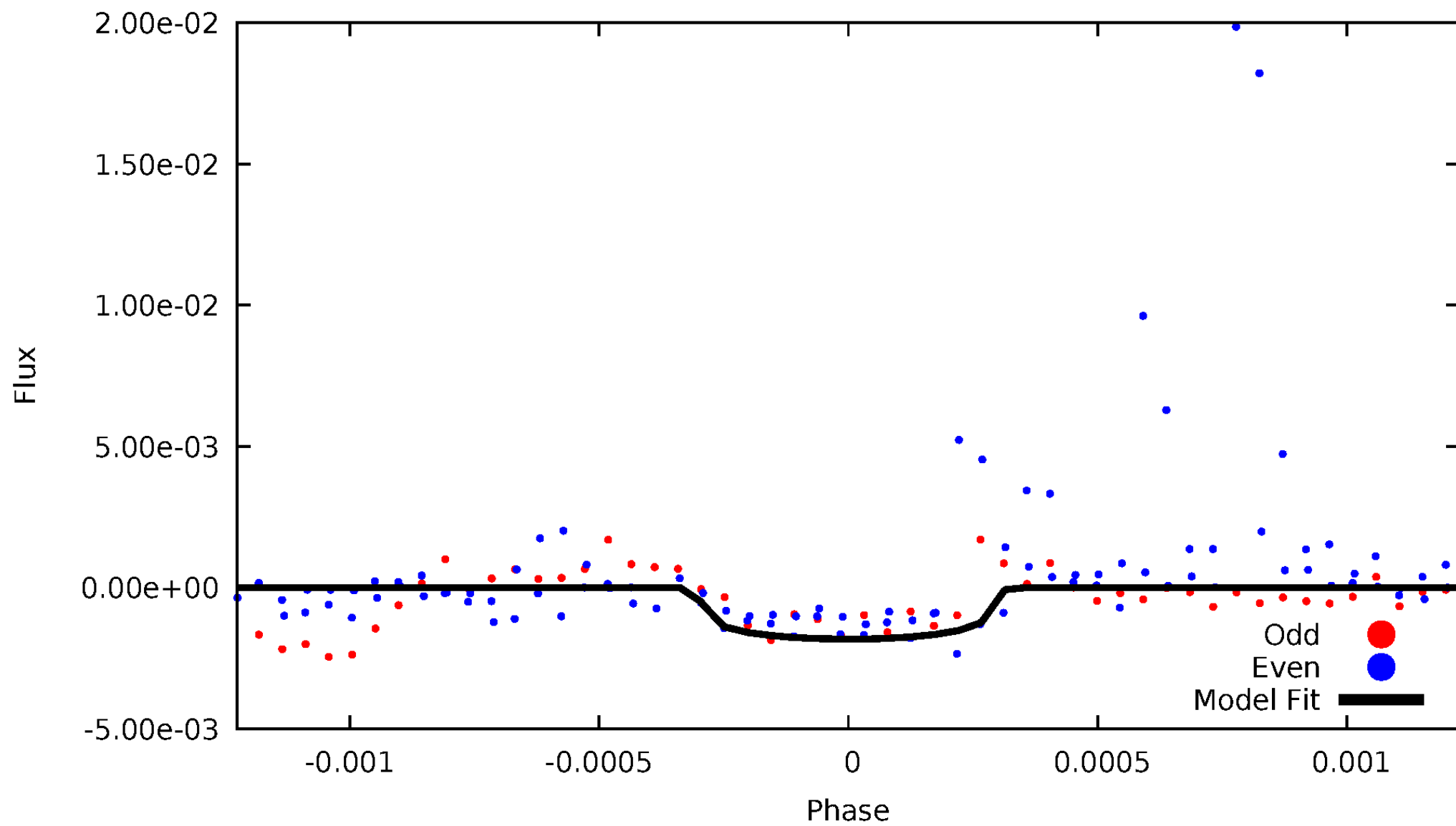


TCE 004741455-03



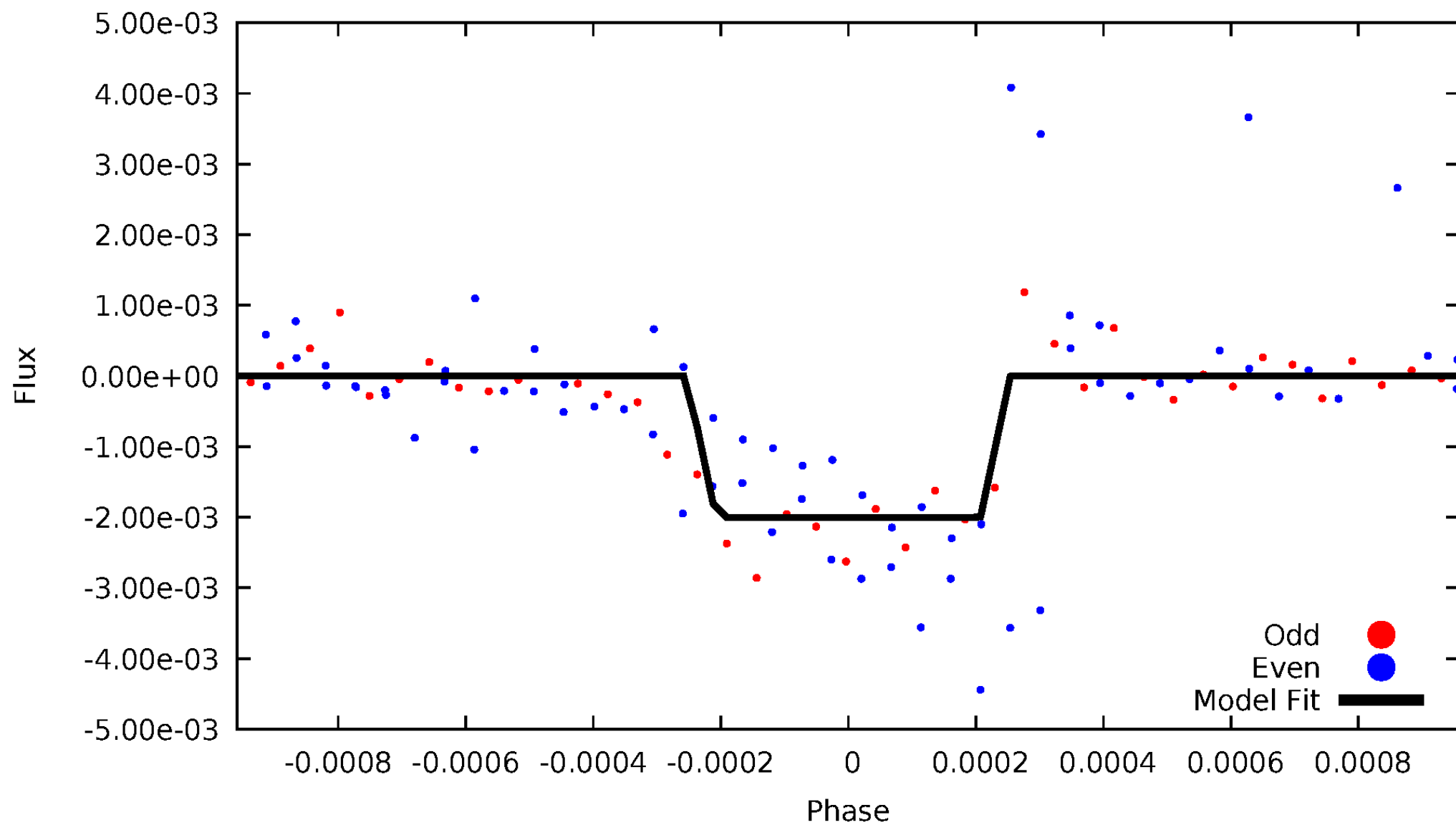
DV Odd/Even

TCE 004741455-03



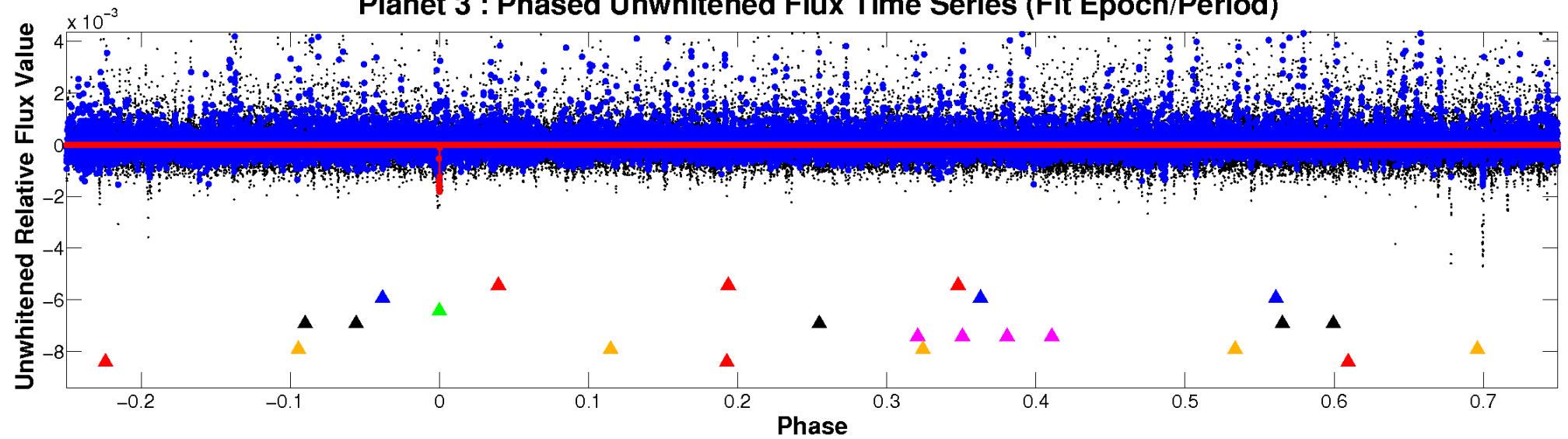
ALT Odd/Even

TCE 004741455-03

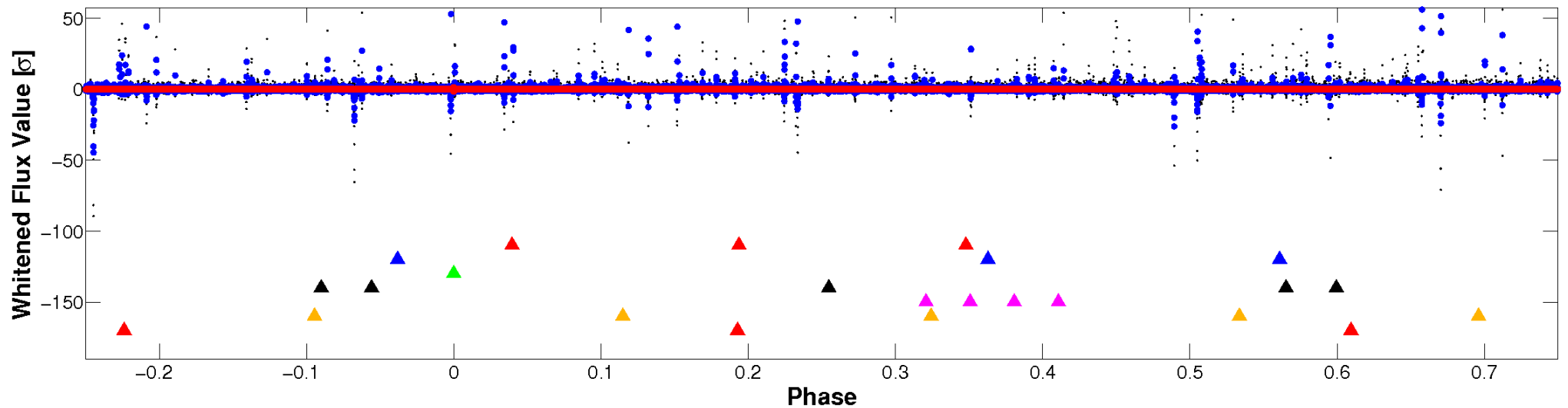


Non-Whitened Vs. Whitened Light Curve

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

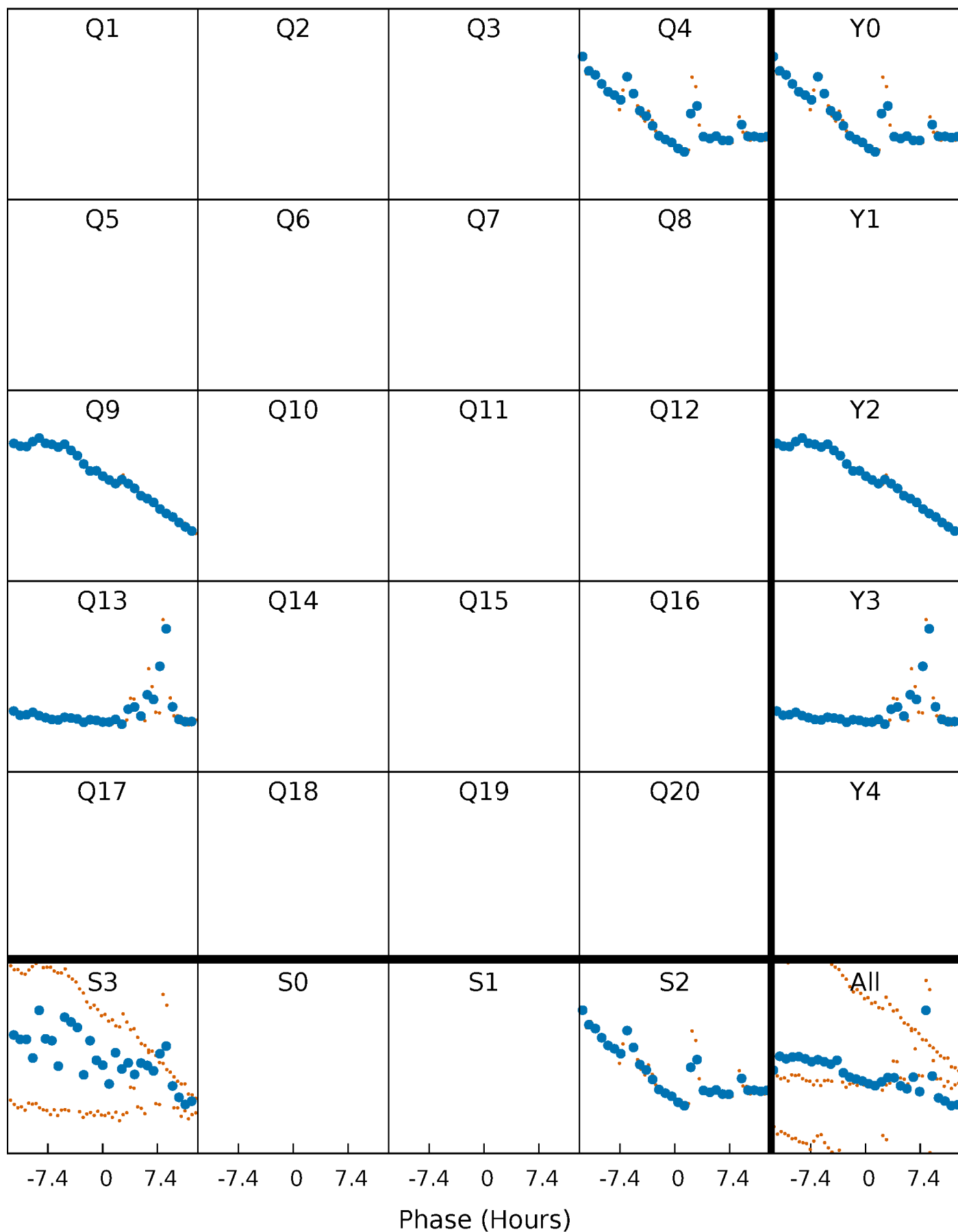


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



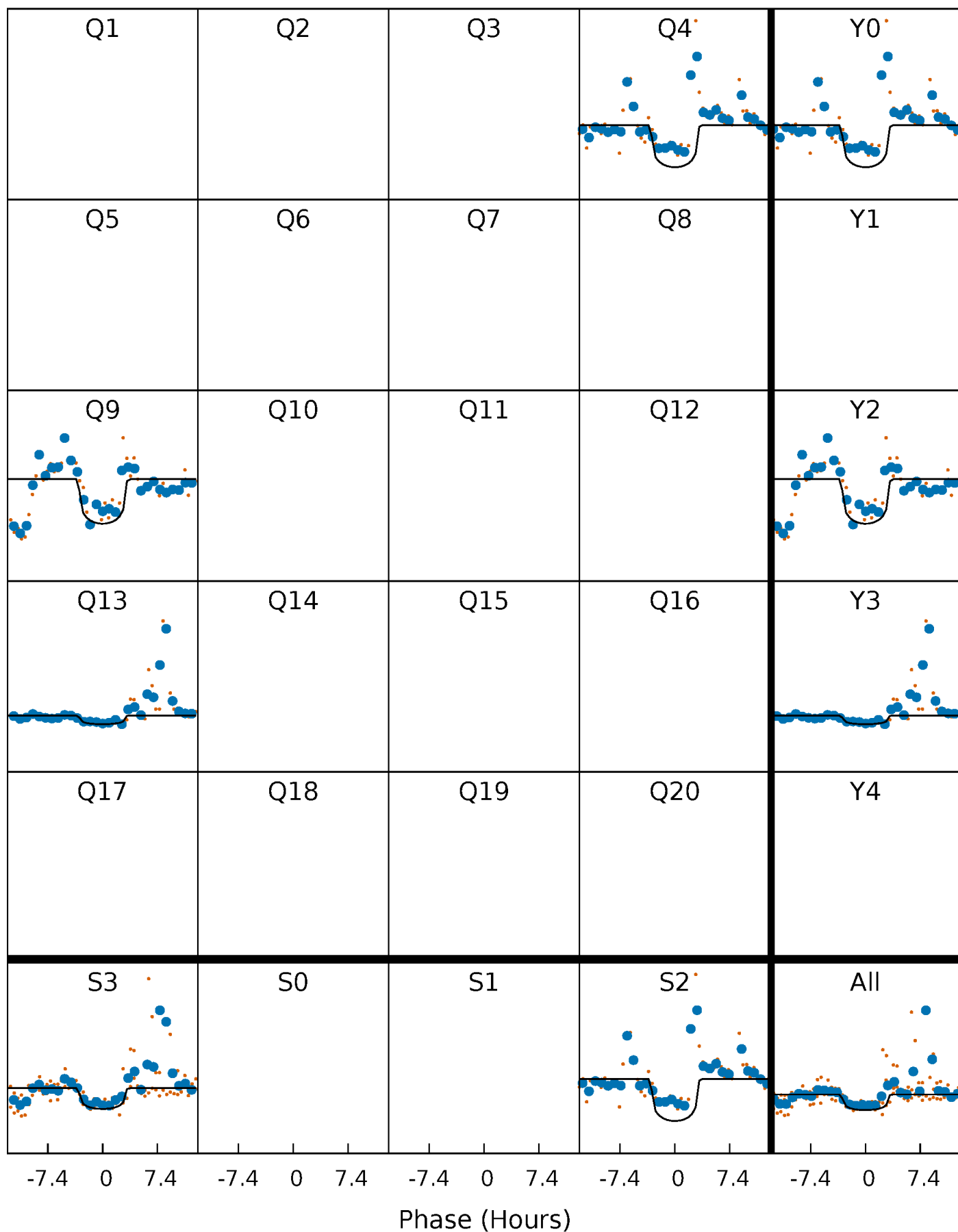
PDC Quarter-Phased Transit Curves

TCE 004741455-03 P=437.752204 Days $T_0=391.940166$ (BKJD)



DV Quarter-Phased Transit Curves

TCE 004741455-03 $P=437.752204$ Days $T_0=391.940166$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

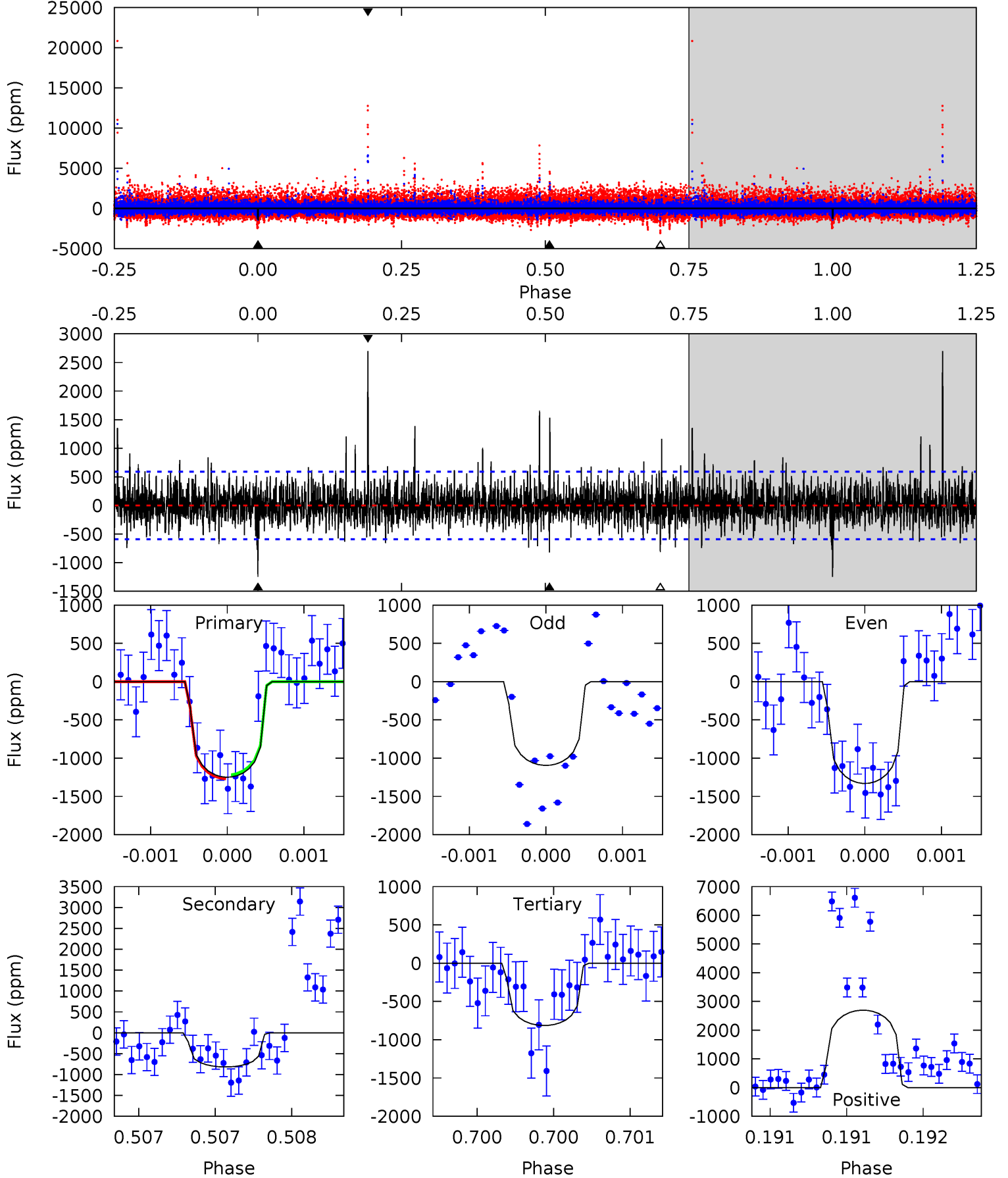
TCE 004741455-03 P=437.761778 Days $T_0=391.925641$ (BKJD)



DV Model-Shift Uniqueness Test

004741455-03, P = 437.752204 Days, E = 391.940166 Days

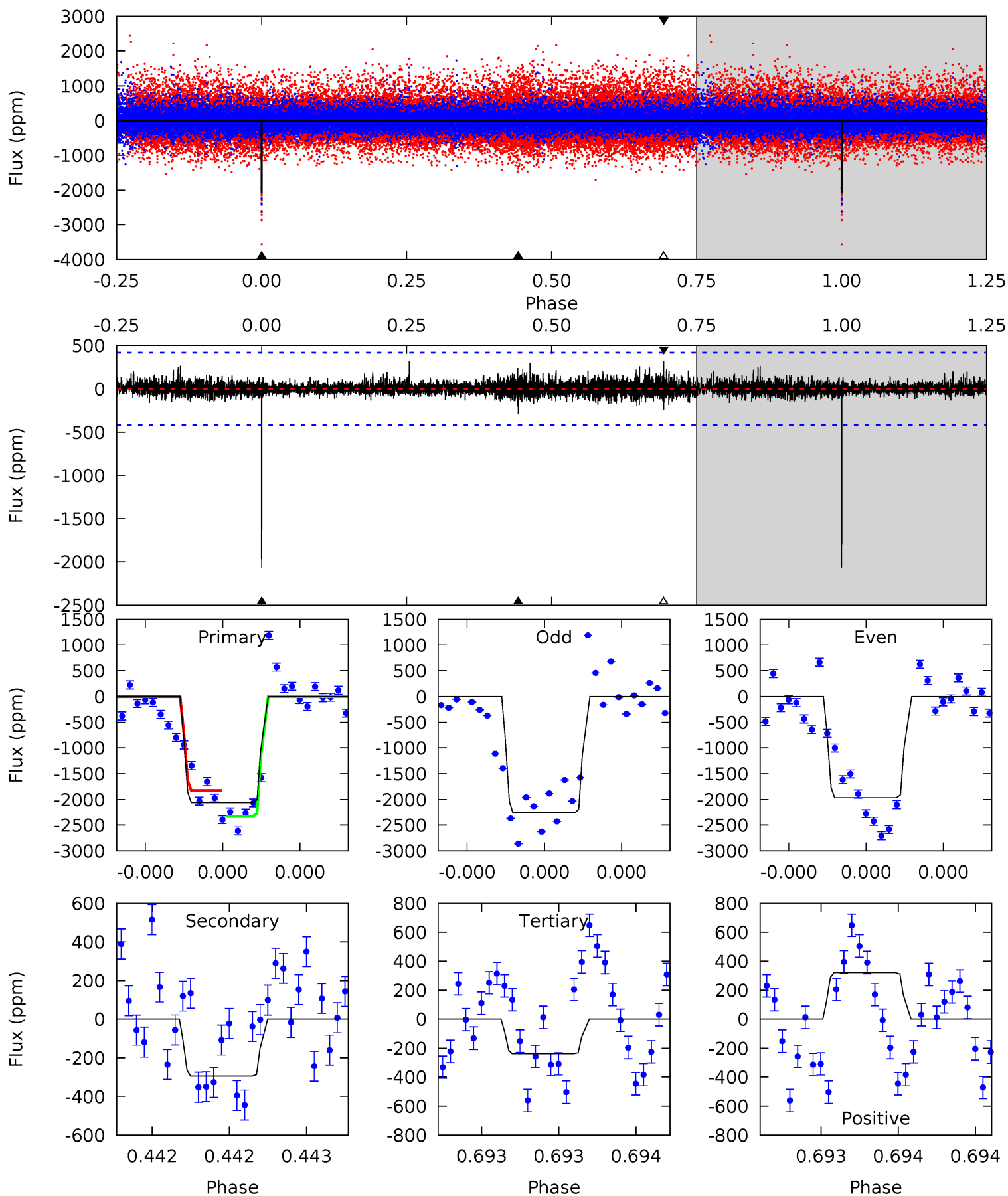
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.7	7.70	7.66	25.3	5.54	3.43	2.18	4.09	-13.6	0.04	-17.7	0.54	0.88	0.68	0.24



Alt Model-Shift Uniqueness Test

004741455-03, P = 437.761778 Days, E = 391.925641 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
27.6	3.95	3.18	4.30	5.58	3.50	0.68	24.4	23.3	0.76	-0.35	1.82	0.95	0.13	3.44



Stellar Parameters For KIC 004741455

	$T_{\text{eff}} (K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (g \cdot \text{cm}^{-3})$
	3801^{+76}_{-83}	$4.752^{+0.042}_{-0.025}$	$-0.200^{+0.100}_{-0.100}$	$0.492^{+0.027}_{-0.038}$	$0.499^{+0.031}_{-0.034}$	$5.898^{+1.160}_{-0.665}$
	+2%/-2%	+1%/-1%	+50%/-50%	+5%/-8%	+6%/-7%	+20%/-11%
Source	PHO2	PHO2	PHO2	DSEP		

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

Secondary Eclipse Parameters for KIC 004741455-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-818 ± 106	$2.64^{+2.02}_{-1.53}$	173^{+4}_{-5}	3178^{+1081}_{-453}	$50056^{+248123}_{-33642}$
Alt.	-295 ± 75	$2.63^{+2.04}_{-1.56}$	173^{+4}_{-5}	2757^{+876}_{-372}	$18124^{+105546}_{-12553}$

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

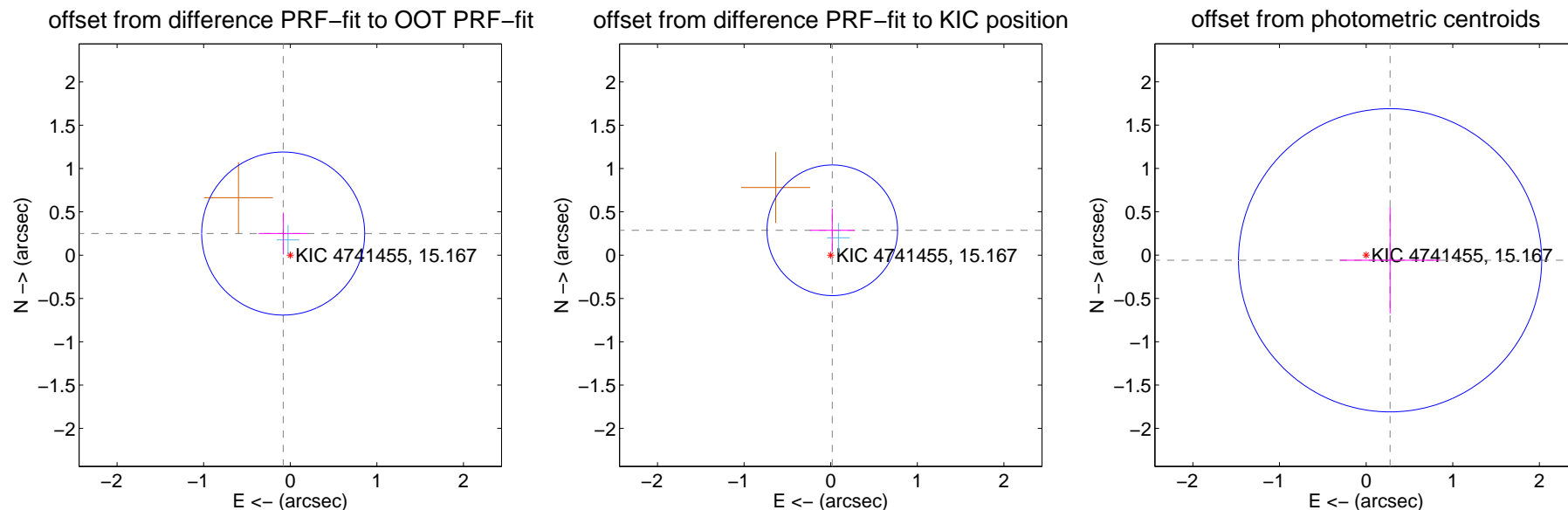
DV Centroid Data

Supplemental centroid analysis for 004741455-03. Kepler magnitude: 15.17. Transit SNR 9.93

There are 1 quarters with good PRF difference image offsets

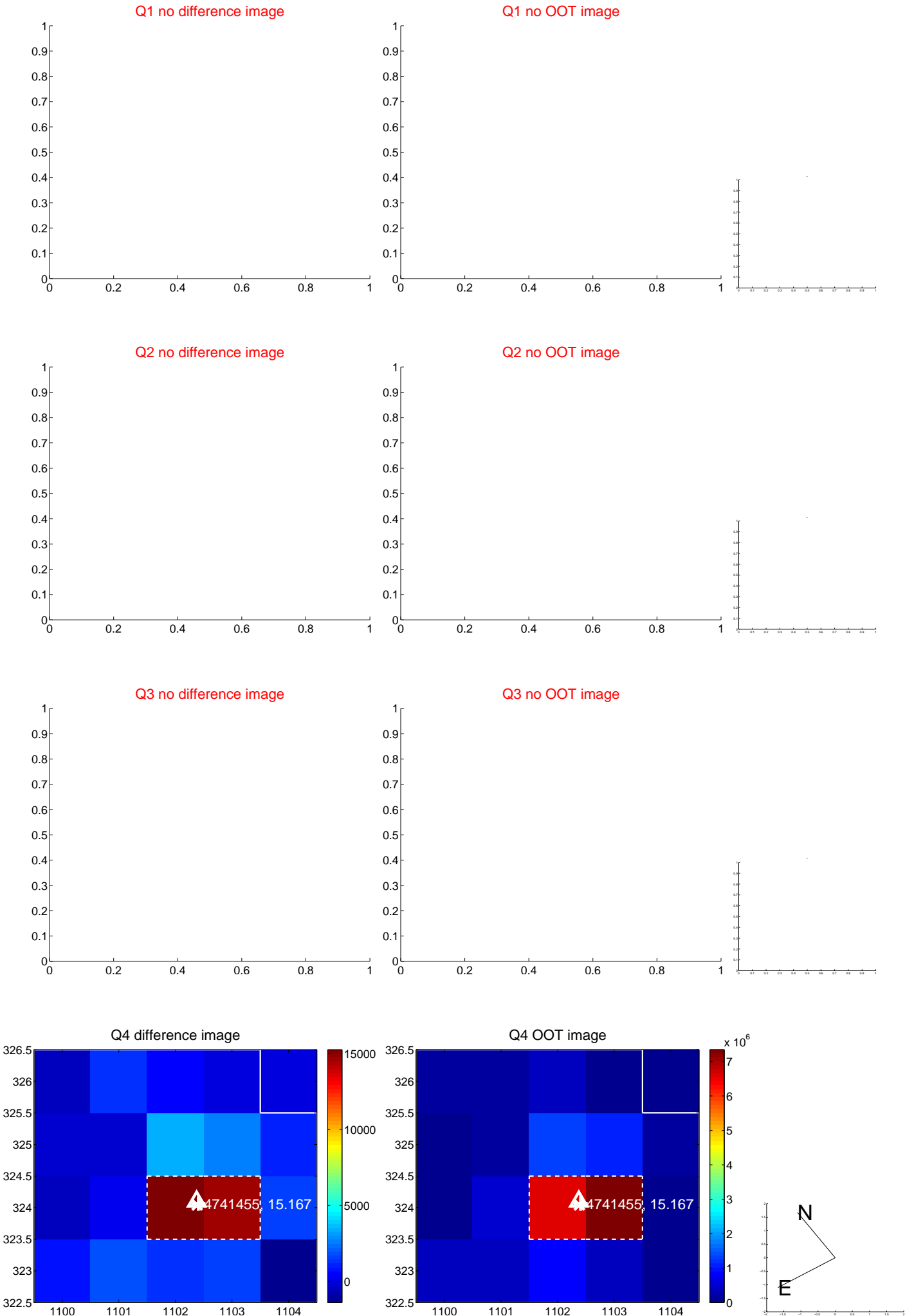
The direct PRF centroid is offset from the target star catalog position by about 0.12 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.263 ± 0.314	0.84	0.082 ± 0.282	0.249 ± 0.242
PRF-fit source offset from KIC position	0.288 ± 0.251	1.15	-0.018 ± 0.260	0.287 ± 0.251
photometric centroid source offset	0.28 ± 0.58	0.48	-0.28 ± 0.58	-0.06 ± 0.61



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.

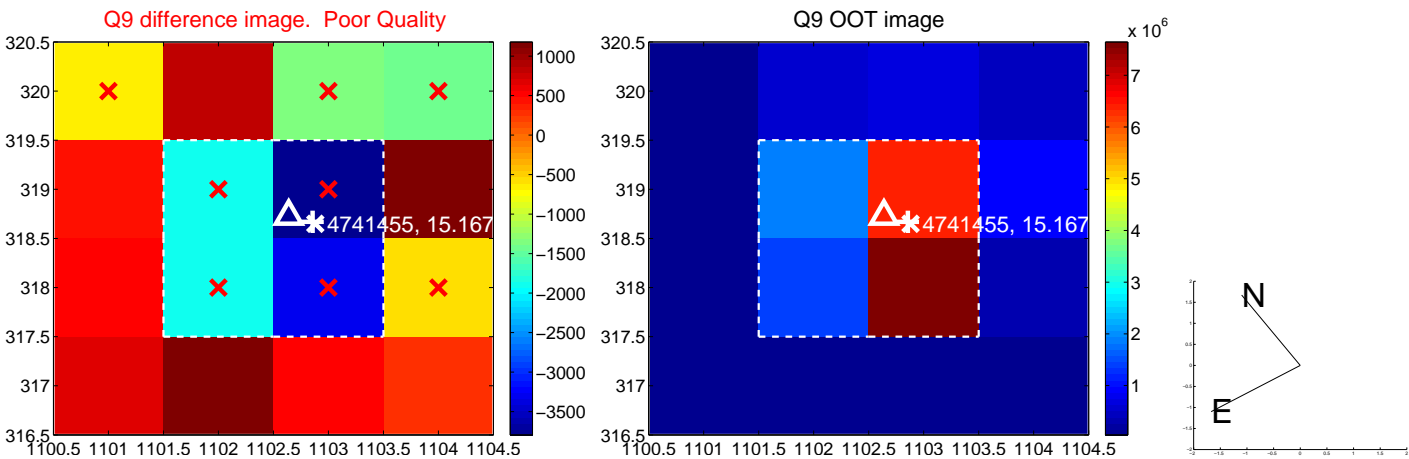
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



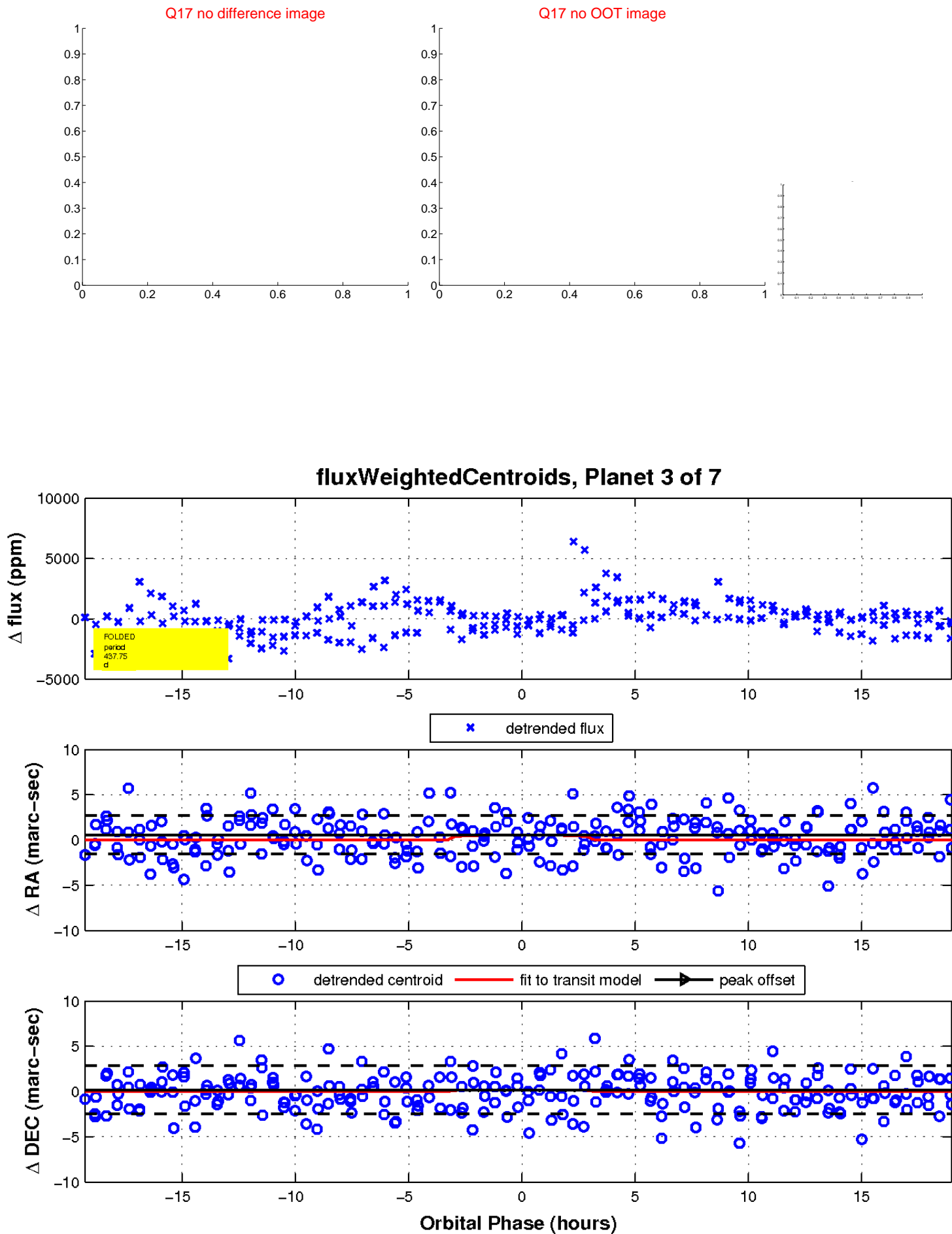
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.



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

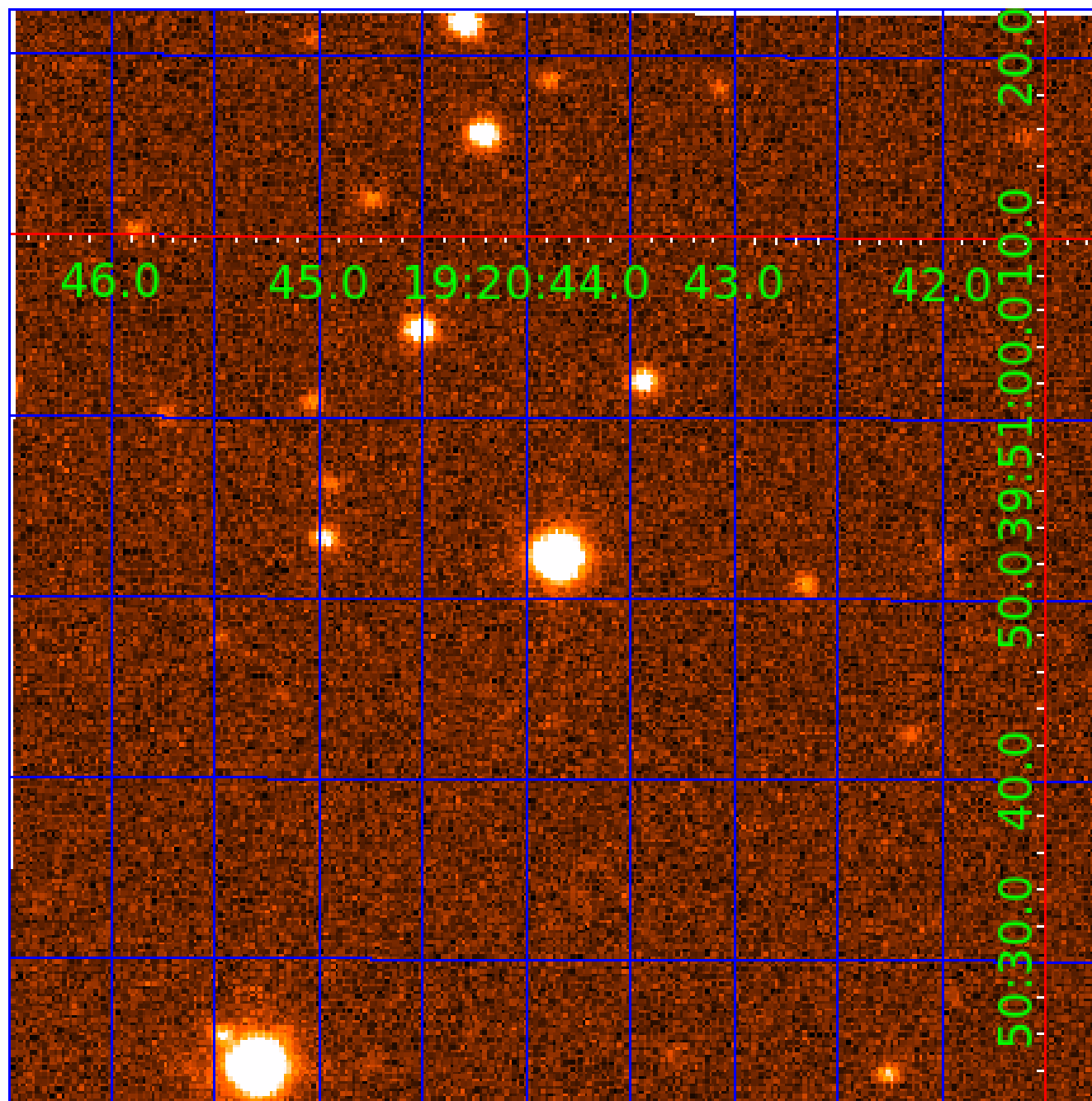


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 004741455

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})
004741455-02	OBS	No	613.272130	199.745849	2817.1	7.631	10.9	13.0	0.49	3801	2.59	0.04
004741455-03	OBS	No	437.752204	391.940167	1824.7	6.438	10.7	9.9	0.49	3801	2.08	0.06
004741455-04	OBS	No	286.849136	367.514810	1017.4	3.338	11.2	7.2	0.49	3801	1.61	0.10
004741455-05	OBS	No	424.630677	133.975685	1752.5	4.885	13.2	9.0	0.49	3801	2.04	0.06
004741455-06	OBS	No	346.094925	187.784759	1054.0	3.821	9.8	6.5	0.49	3801	1.69	0.08
004741455-07	OBS	No	620.151735	293.937362	806.4	7.500	9.3	-1.0	0.49	3801	1.39	0.04

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004741455-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
004741455-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
004741455-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_TER_DV—MOD_POS_DV
004741455-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES
004741455-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV
004741455-07	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_NOFITS—HALO_GHOST

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

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

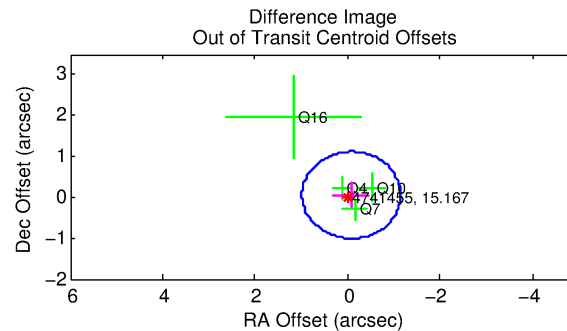
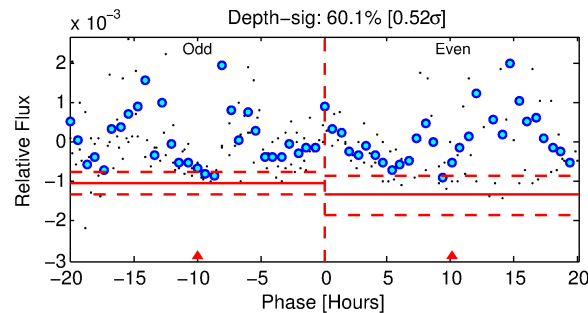
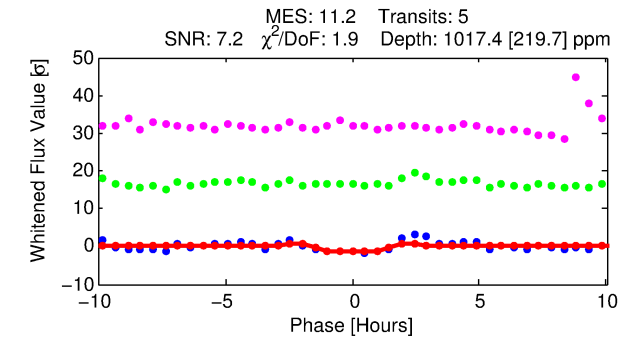
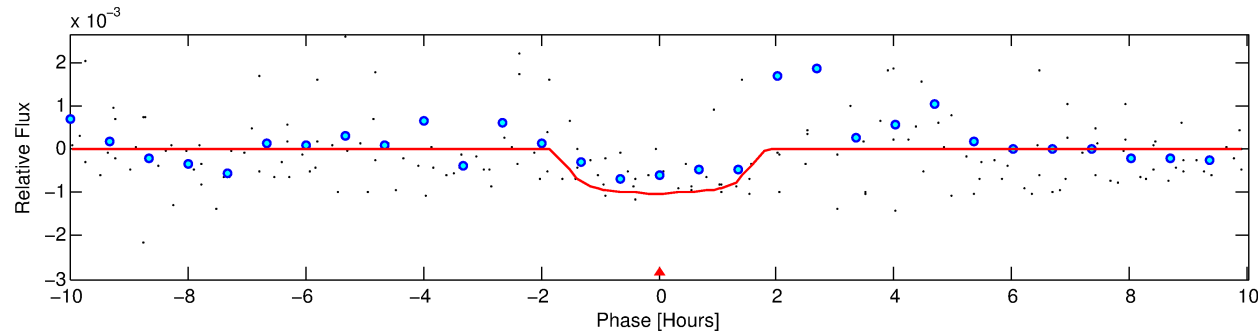
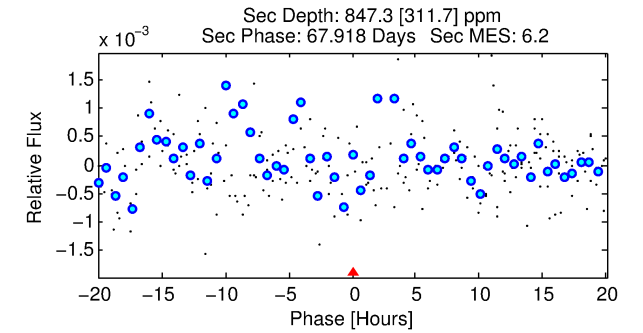
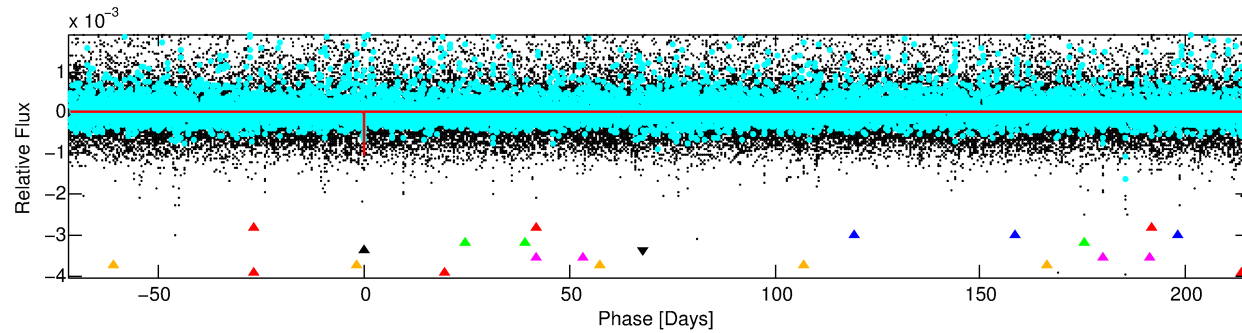
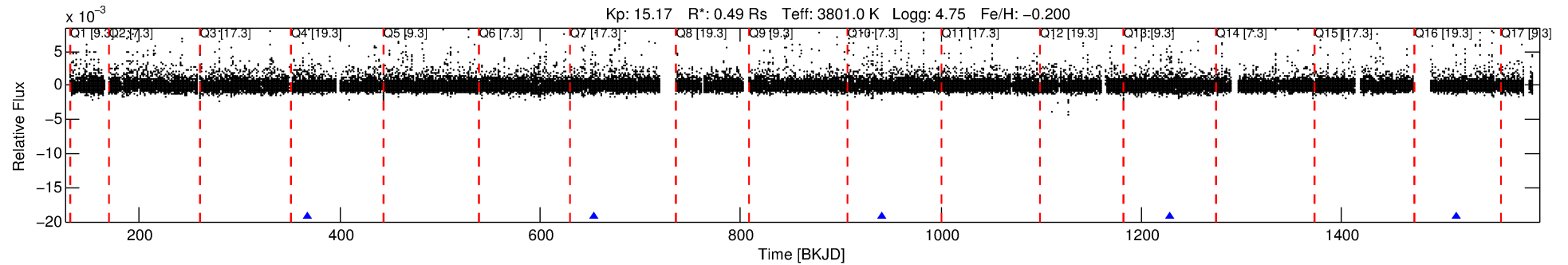
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004741455-04

No Significant Match Found

DV One-Page Summary

KIC: 4741455 Candidate: 4 of 7 Period: 286.849 d



DV Fit Results:

Period = 286.84914 [0.00369] d
Epoch = 367.5148 [0.0099] BKJD
Rp/R* = 0.0300 [0.0940]
a/R* = 588.16 [8393.69]
b = 0.51 [20.93]
Seff = 0.10 [0.01]
Teq = 143 [4] K
Rp = 1.61 [5.05] Re
a = 0.6752 [0.0410] AU
Ag = 82169.34 [516675.73] [0.16σ]
Teffp = 3747 [5890] K [0.61σ]

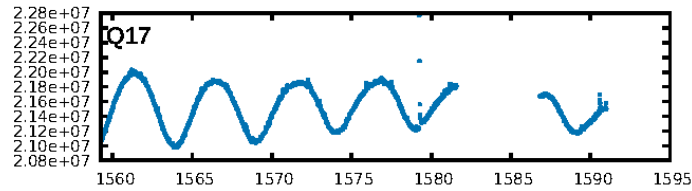
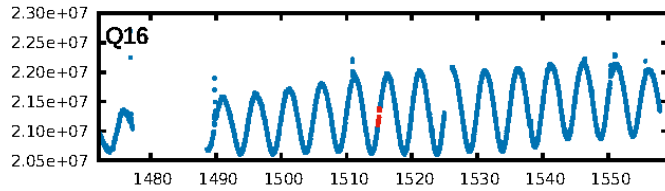
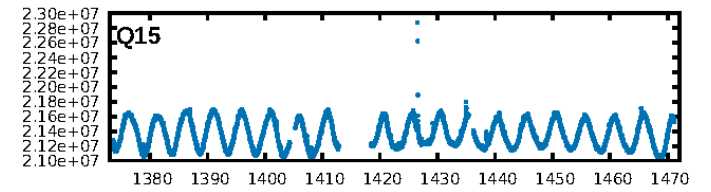
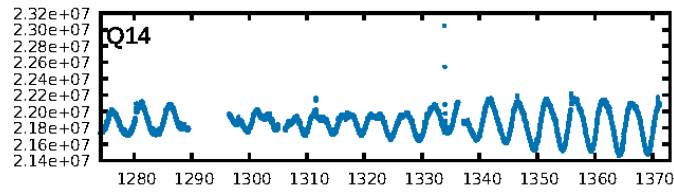
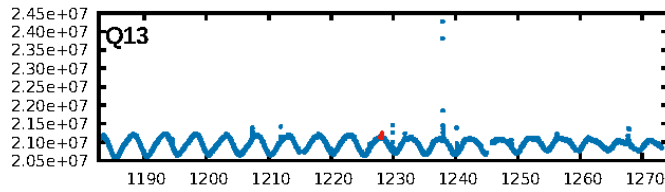
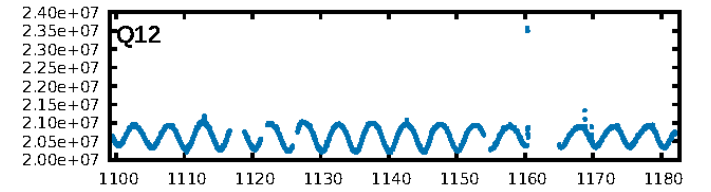
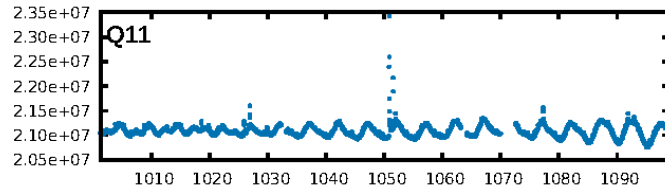
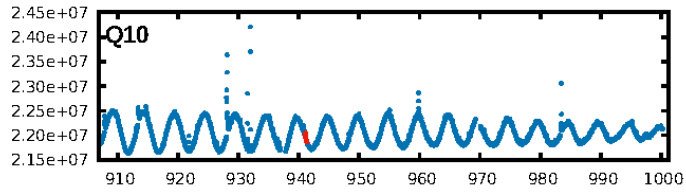
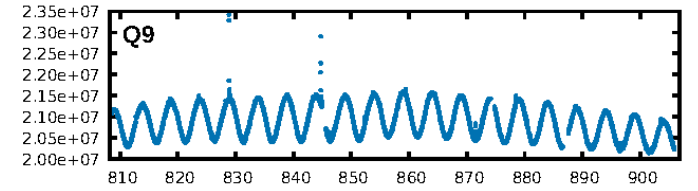
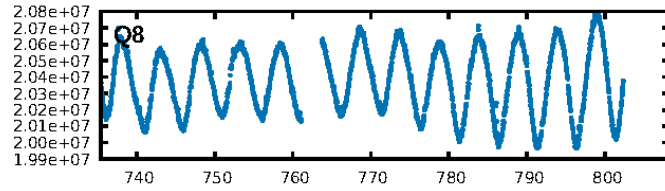
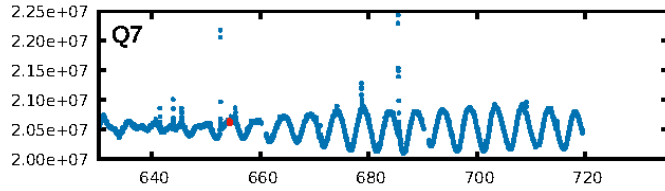
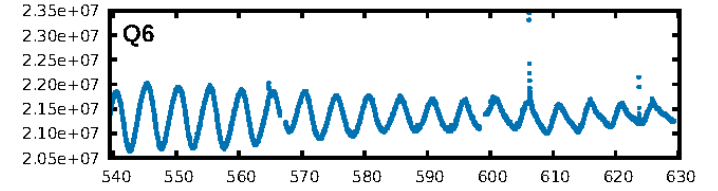
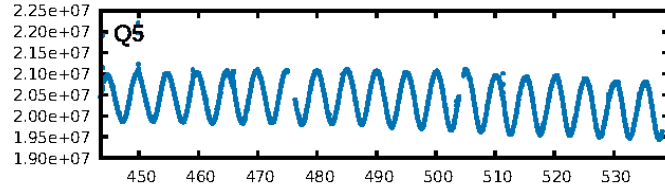
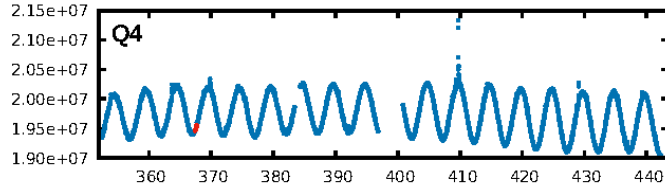
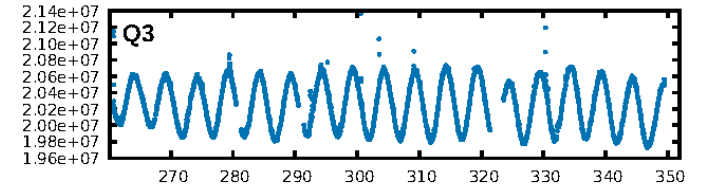
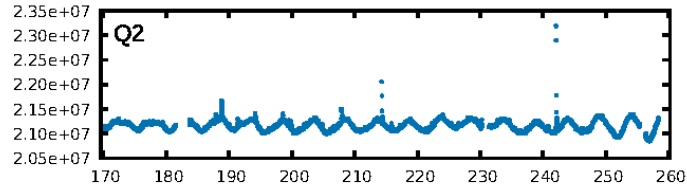
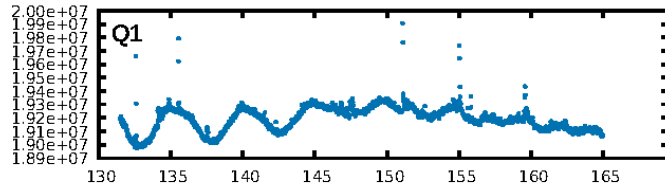
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [280.28σ]
ModelChiSquare2-sig: 69.7%
ModelChiSquareGof-sig: 98.6%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [5/5]
GhostDiagnostic-chr: 0.593
Centroid-sig: 33.2%
Centroid-so: 0.902 arcsec [0.73σ]
OotOffset-rm: 0.093 arcsec [0.26σ]
OotOffset-st: 1/1/2/0 [4]
KicOffset-rm: 0.166 arcsec [0.43σ]
KicOffset-st: 1/1/2/0 [4]
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DiffImageOverlap-fno: 1.00 [5/5]

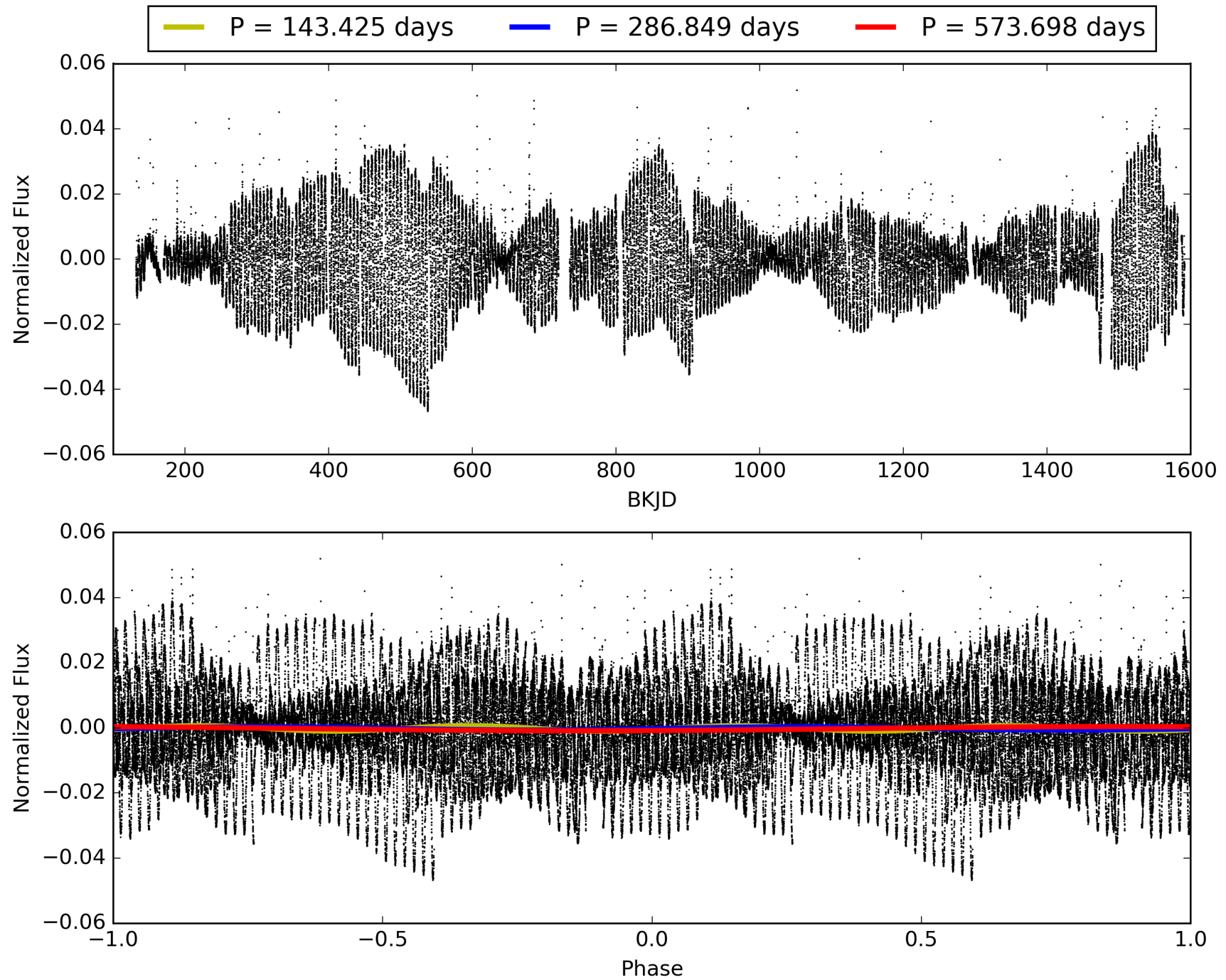
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 13:08:04 Z

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

TCE 004741455-04, PDC Light Curves

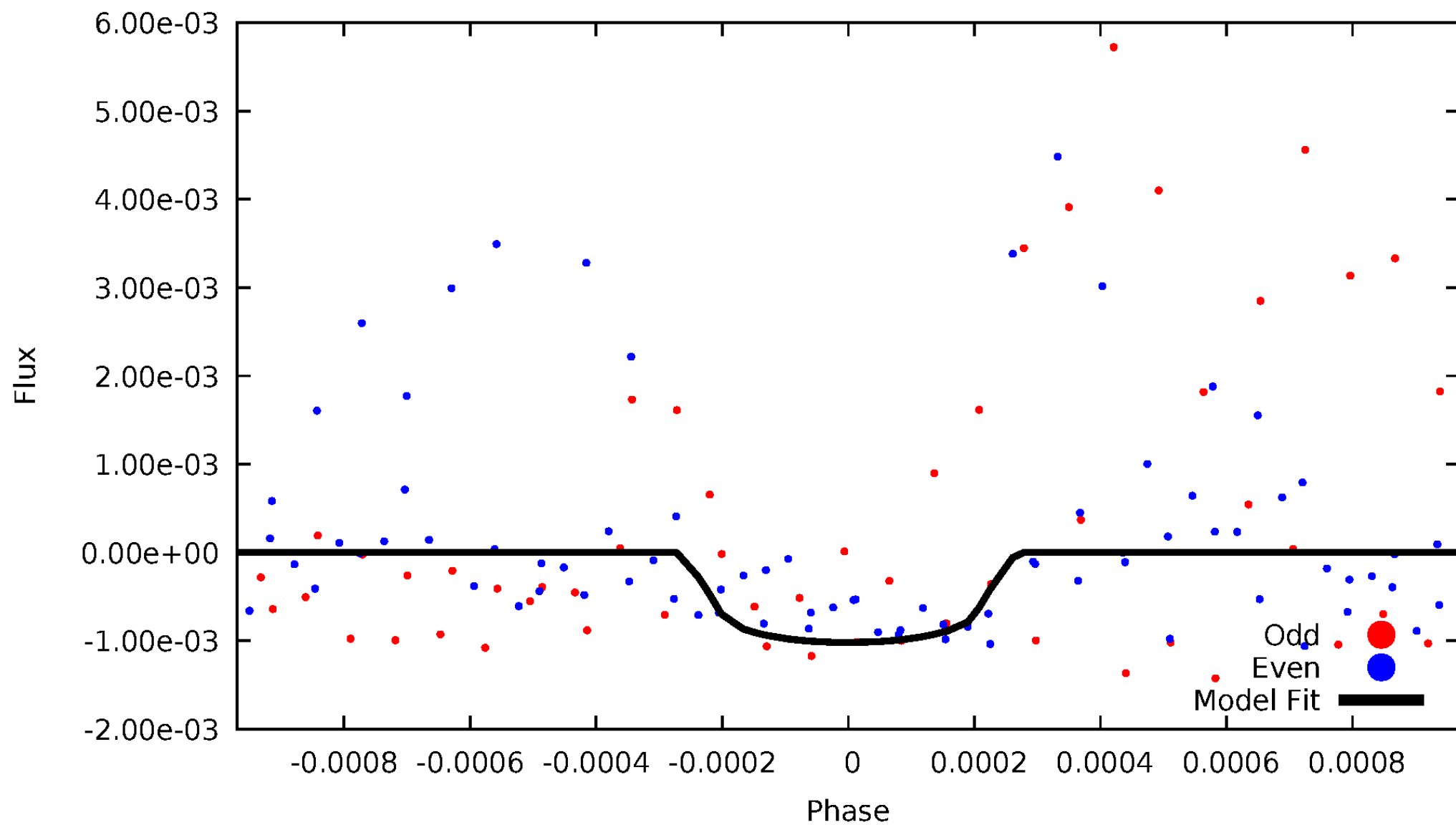


TCE 004741455-04



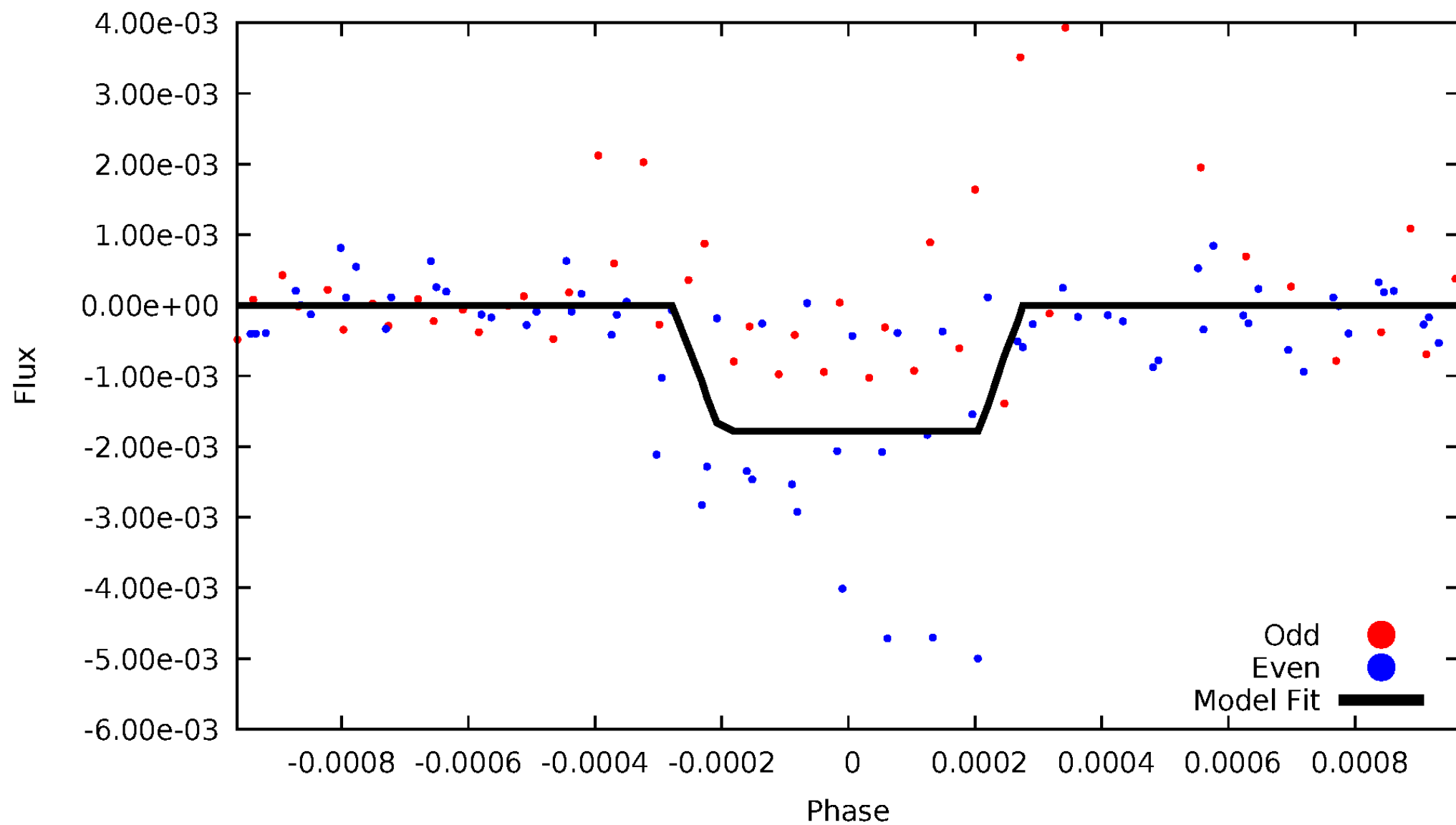
DV Odd/Even

TCE 004741455-04



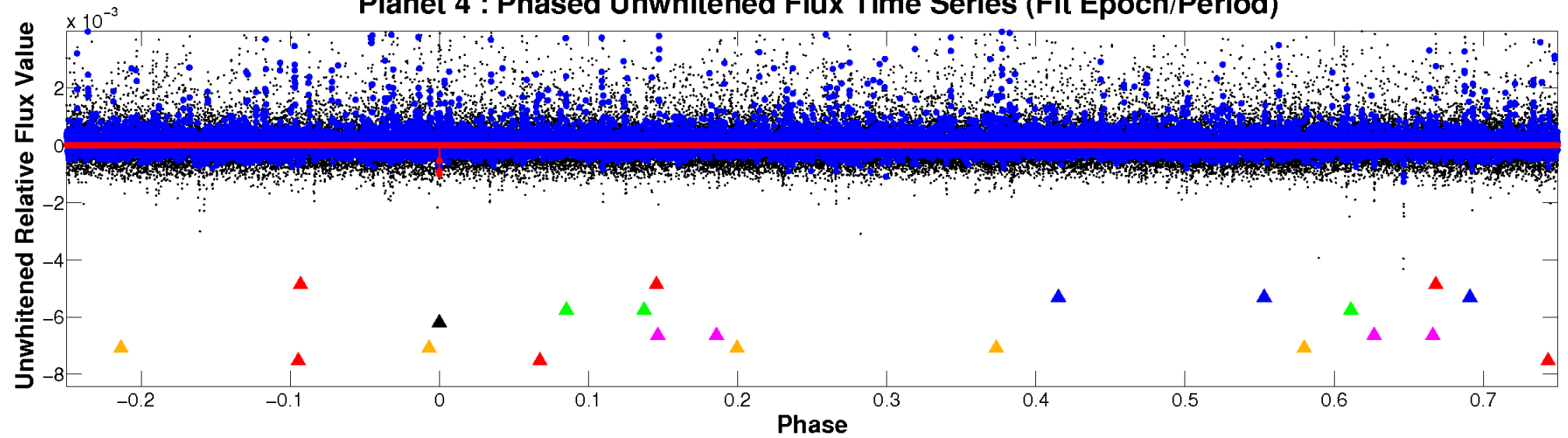
ALT Odd/Even

TCE 004741455-04

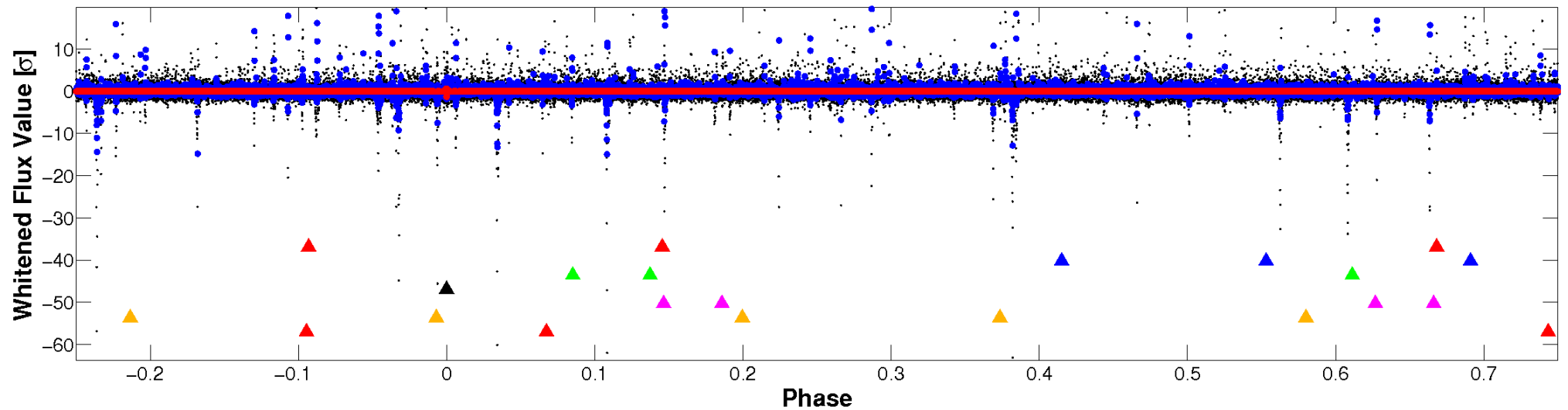


Non-Whitened Vs. Whitened Light Curve

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

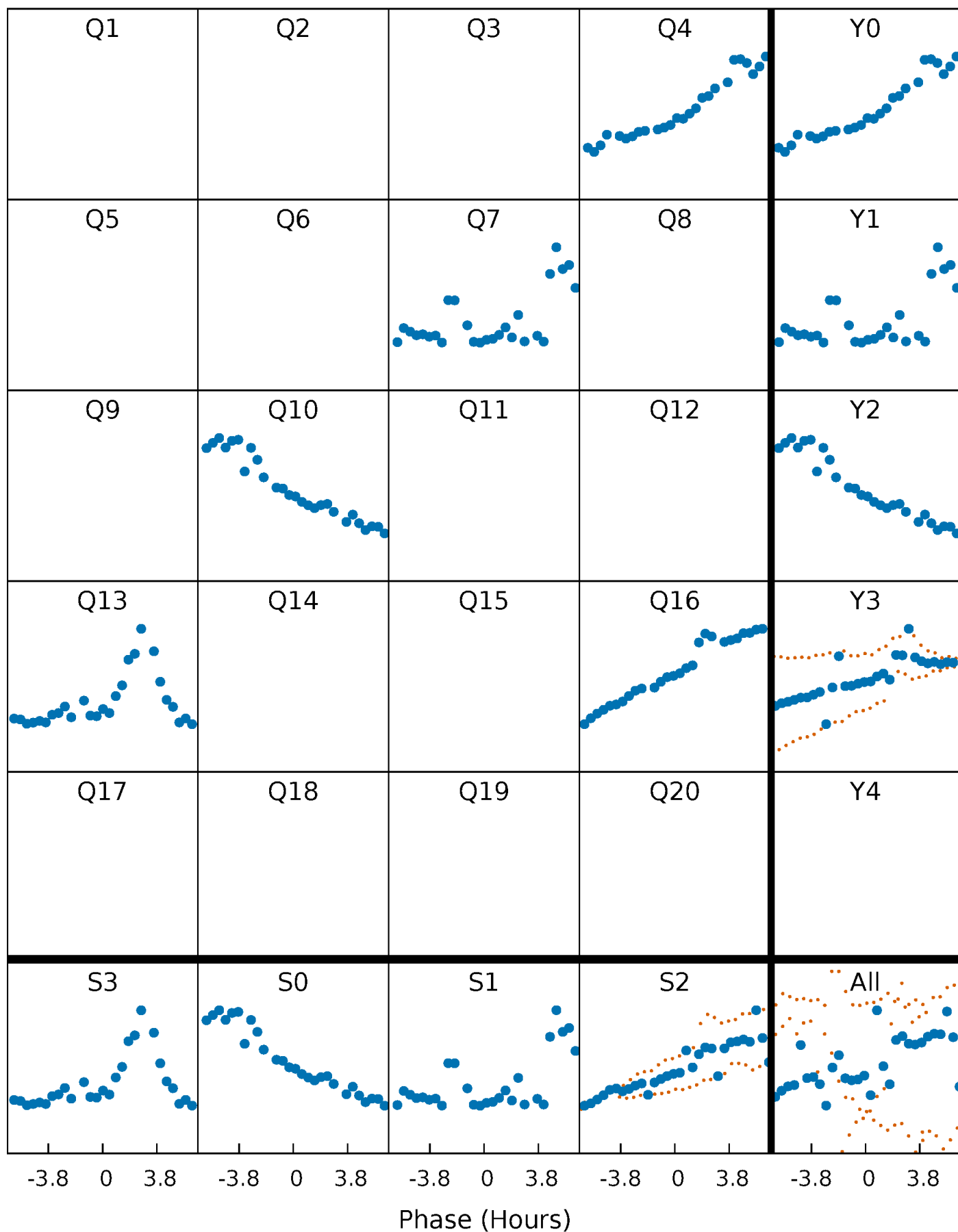


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



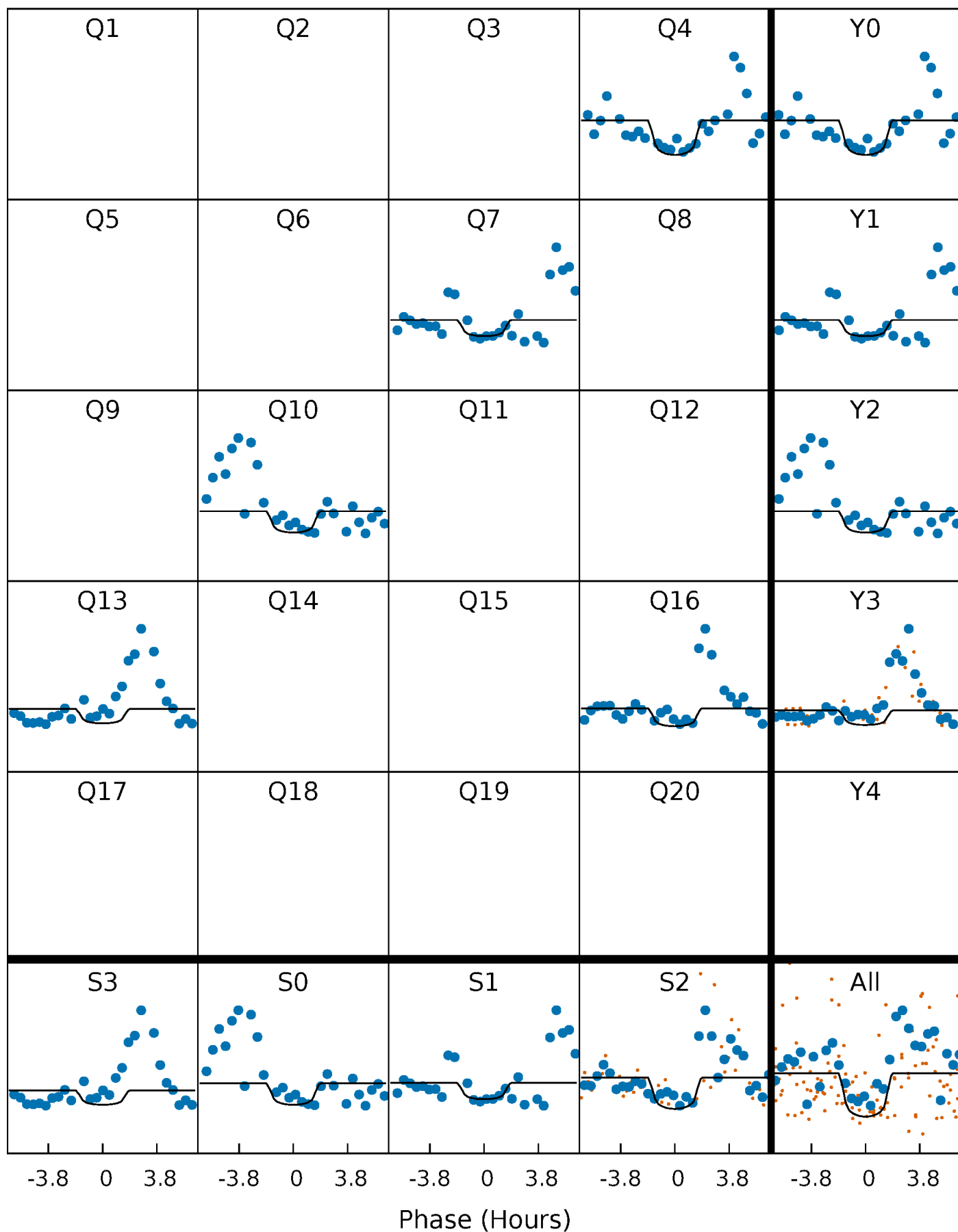
PDC Quarter-Phased Transit Curves

TCE 004741455-04 $P=286.849136$ Days $T_0=367.514810$ (BKJD)



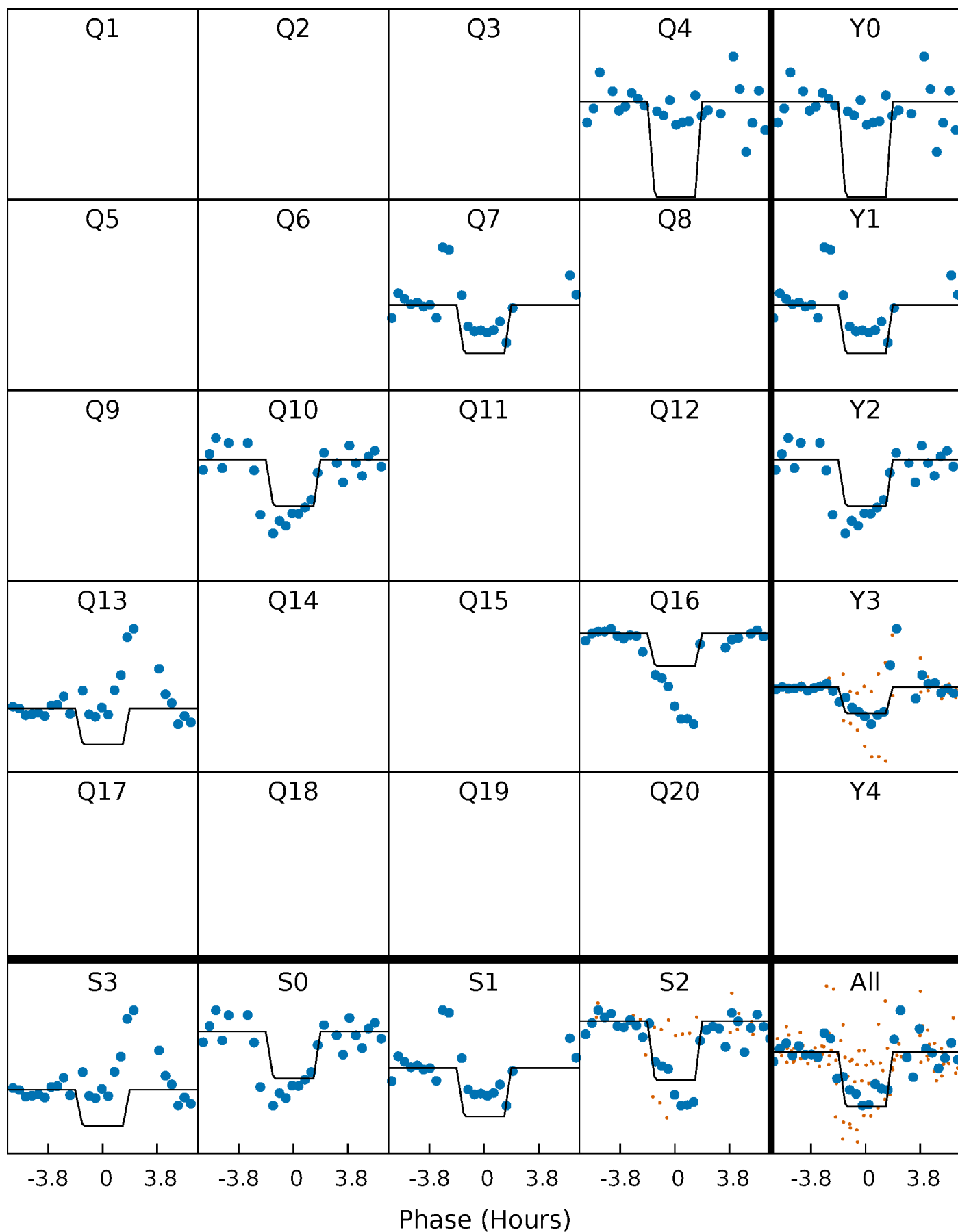
DV Quarter-Phased Transit Curves

TCE 004741455-04 $P=286.849136$ Days $T_0=367.514810$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

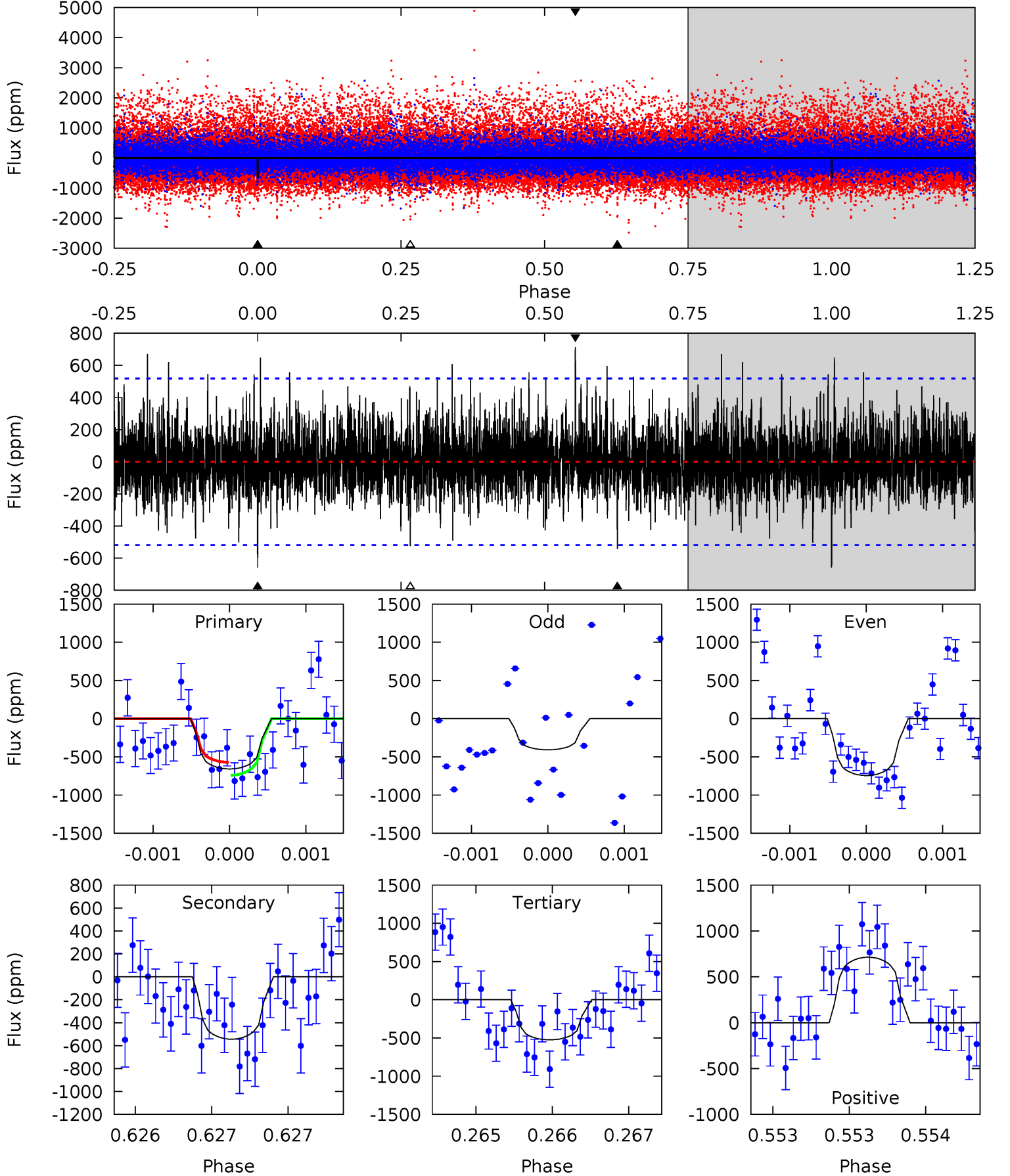
TCE 004741455-04 P=286.842811 Days $T_0=367.535874$ (BKJD)



DV Model-Shift Uniqueness Test

004741455-04, P = 286.849136 Days, E = 80.665674 Days

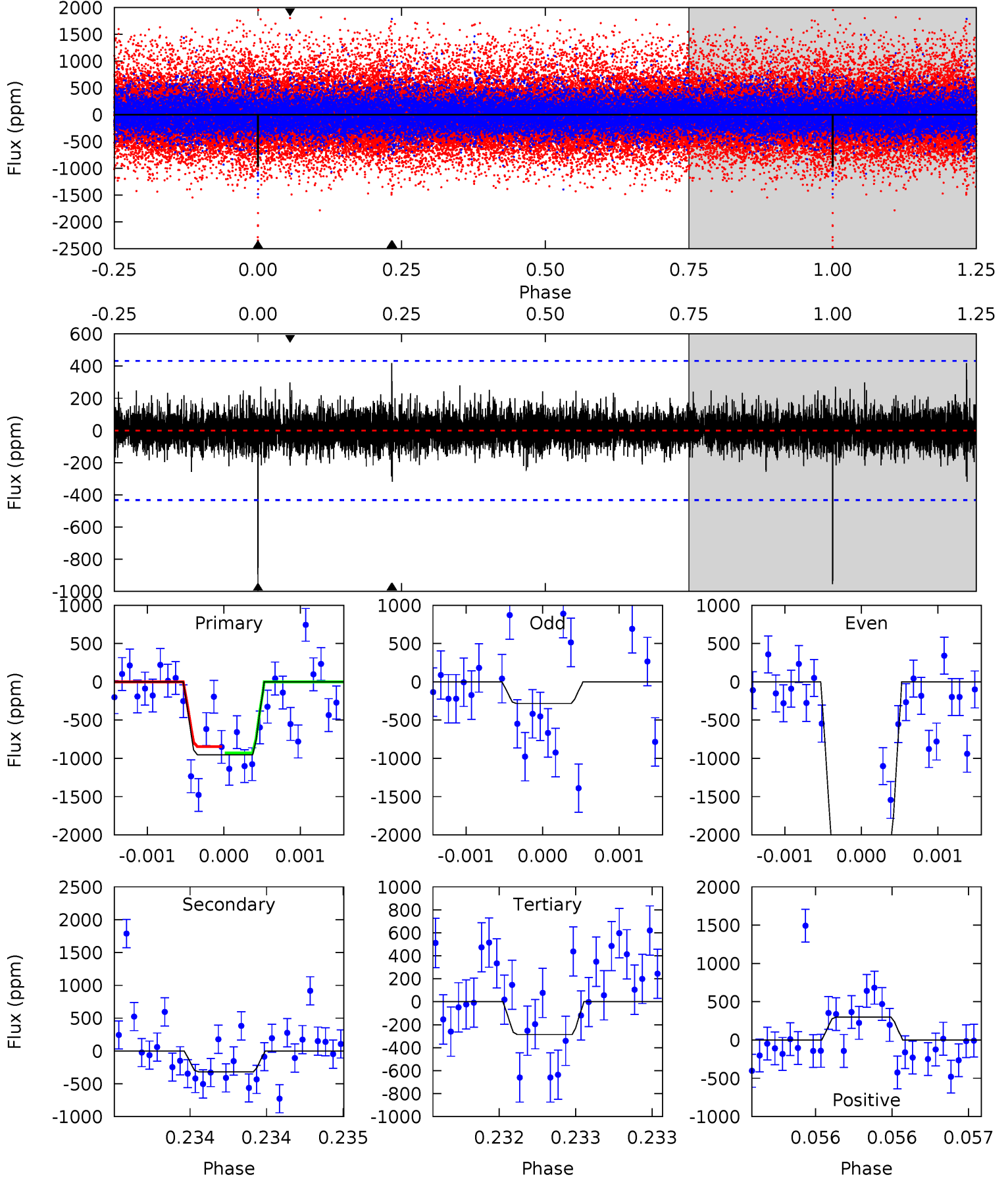
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.06	5.83	5.62	7.66	5.56	3.46	1.57	1.44	-0.60	0.21	-1.83	1.46	0.82	0.52	0.92



Alt Model-Shift Uniqueness Test

004741455-04, P = 286.842811 Days, E = 80.693063 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	4.08	3.67	3.83	5.57	3.47	0.86	8.62	8.46	0.41	0.25	12.0	1.51	0.30	0



Stellar Parameters For KIC 004741455

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	3801^{+76}_{-83}	$4.752^{+0.042}_{-0.025}$	$-0.200^{+0.100}_{-0.100}$	$0.492^{+0.027}_{-0.038}$	$0.499^{+0.031}_{-0.034}$	$5.898^{+1.160}_{-0.665}$
	+2%/-2%	+1%/-1%	+50%/-50%	+5%/-8%	+6%/-7%	+20%/-11%
Source	PHO2	PHO2	PHO2	DSEP		

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

Secondary Eclipse Parameters for KIC 004741455-04 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-544 ± 93	$4.18^{+4.30}_{-2.86}$	199^{+5}_{-5}	2672^{+1043}_{-438}	7830^{+71941}_{-5929}
Alt.	-317 ± 78	$4.21^{+3.95}_{-2.86}$	200^{+5}_{-6}	2486^{+933}_{-380}	4404^{+41292}_{-3350}

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 $A_{obs} \gg 1.0$

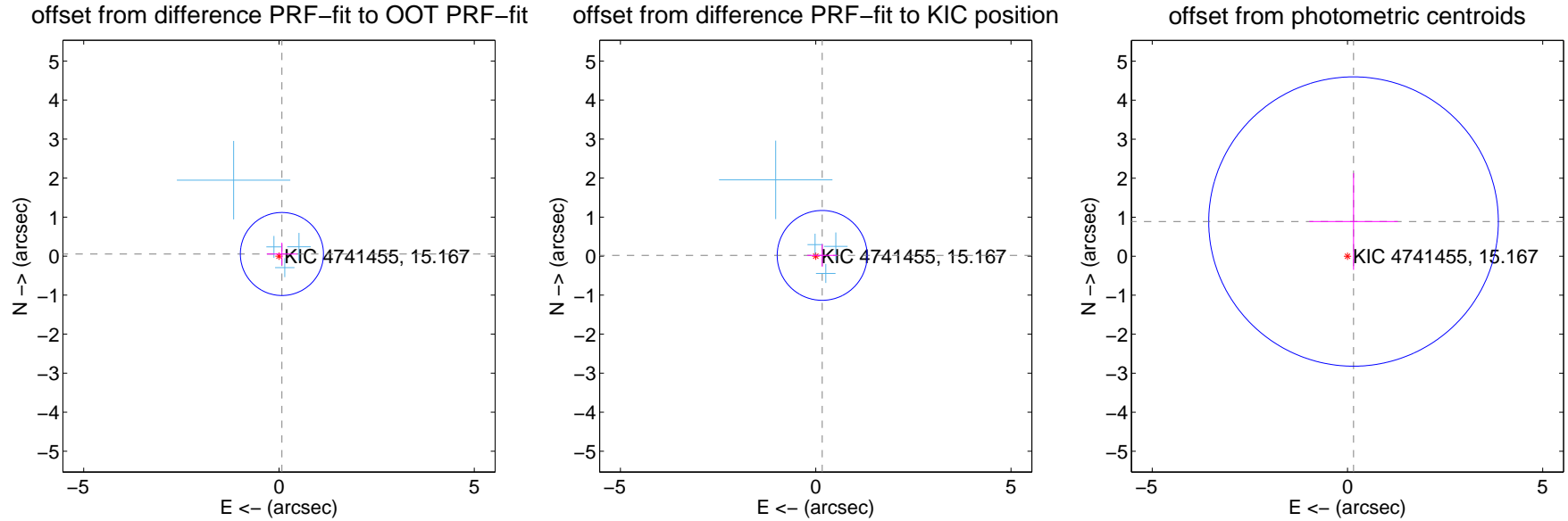
DV Centroid Data

Supplemental centroid analysis for 004741455-04. Kepler magnitude: 15.17. Transit SNR 7.17

There are 4 quarters with good PRF difference image offsets

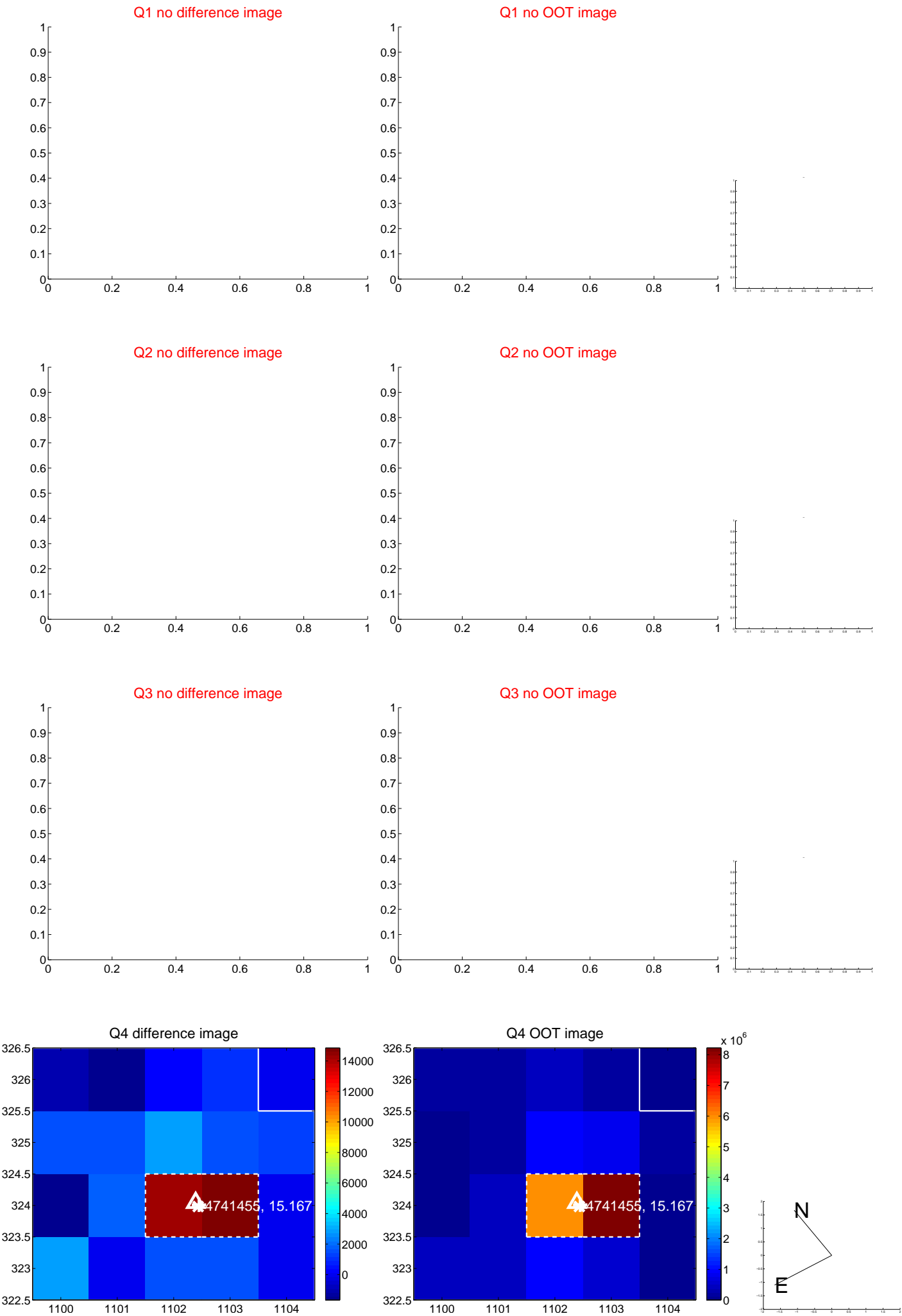
The direct PRF centroid is offset from the target star catalog position by about 0.14 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.093 ± 0.355	0.26	-0.075 ± 0.385	0.055 ± 0.290
PRF-fit source offset from KIC position	0.166 ± 0.384	0.43	-0.165 ± 0.385	0.019 ± 0.290
photometric centroid source offset	0.90 ± 1.24	0.73	-0.16 ± 1.13	0.89 ± 1.24

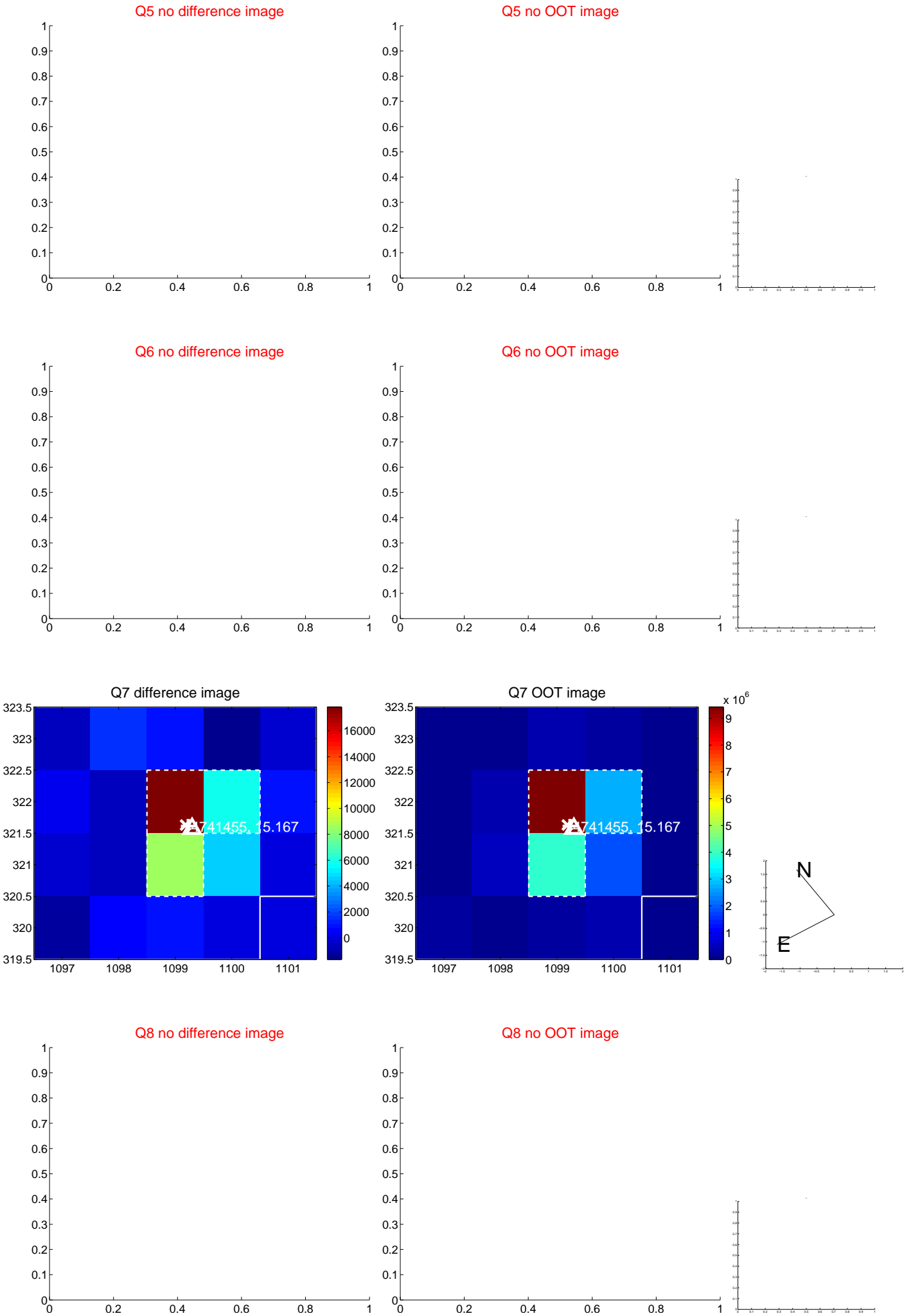


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

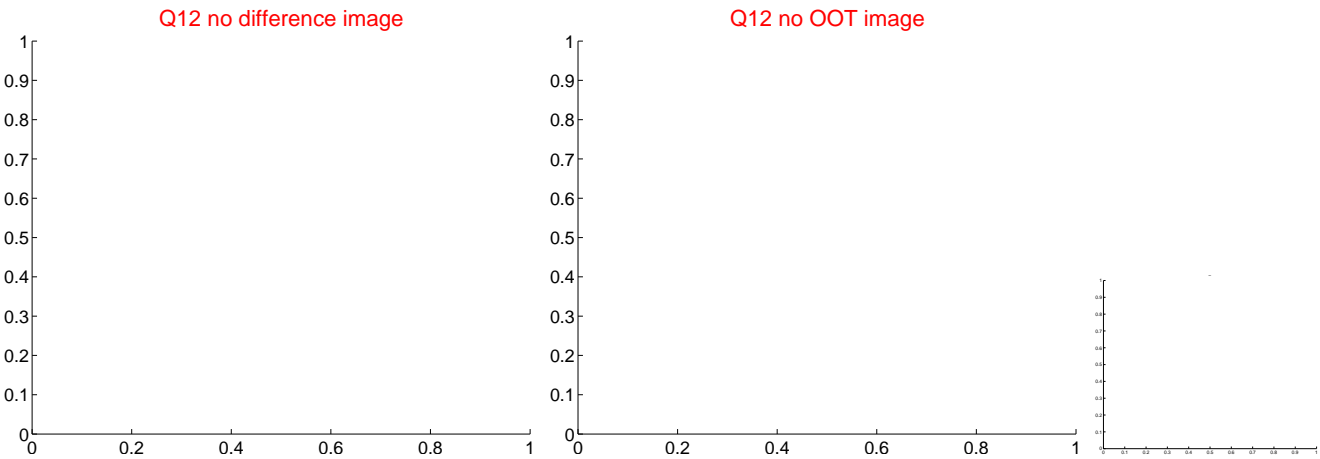
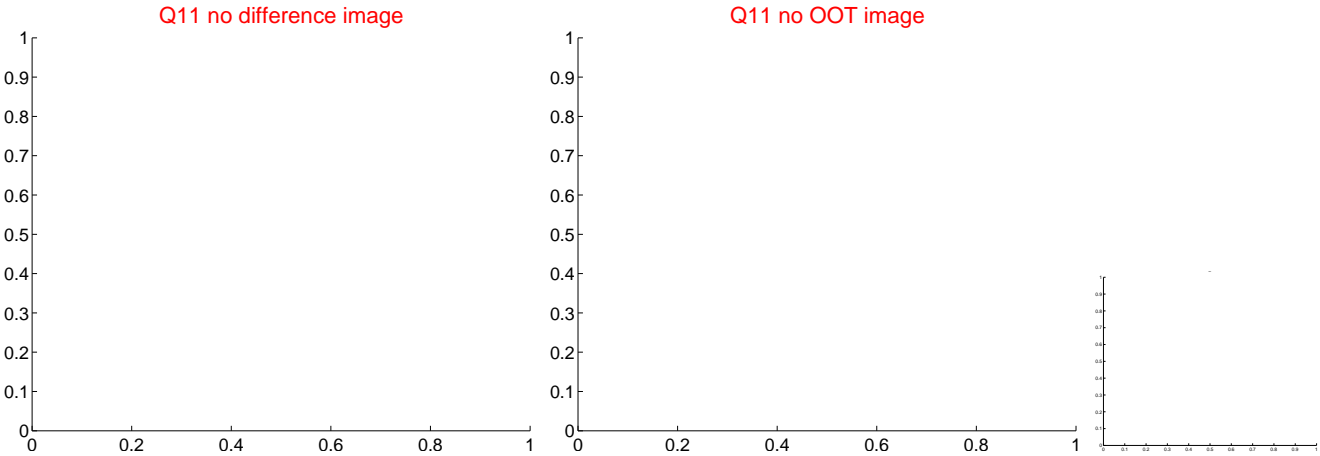
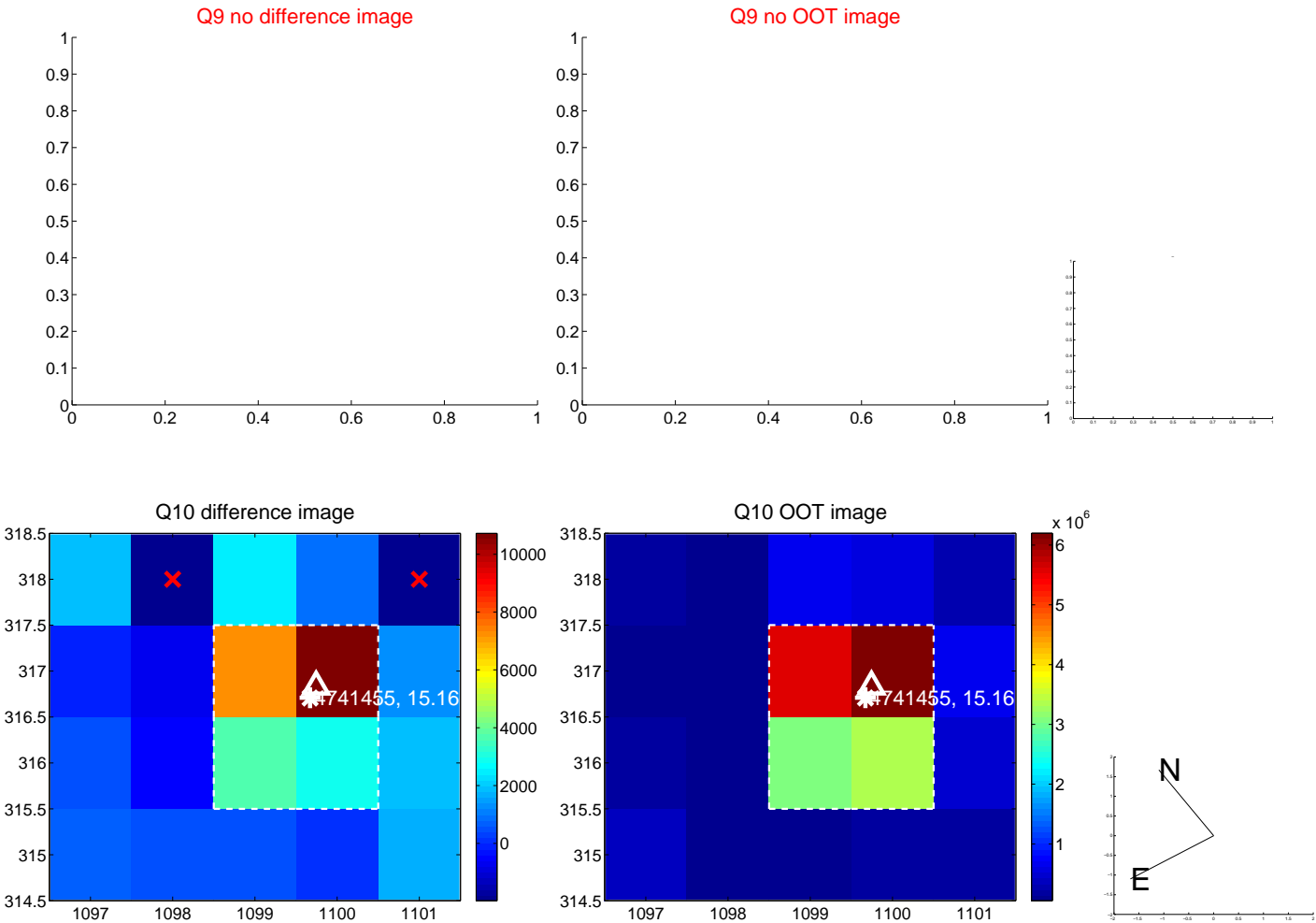
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



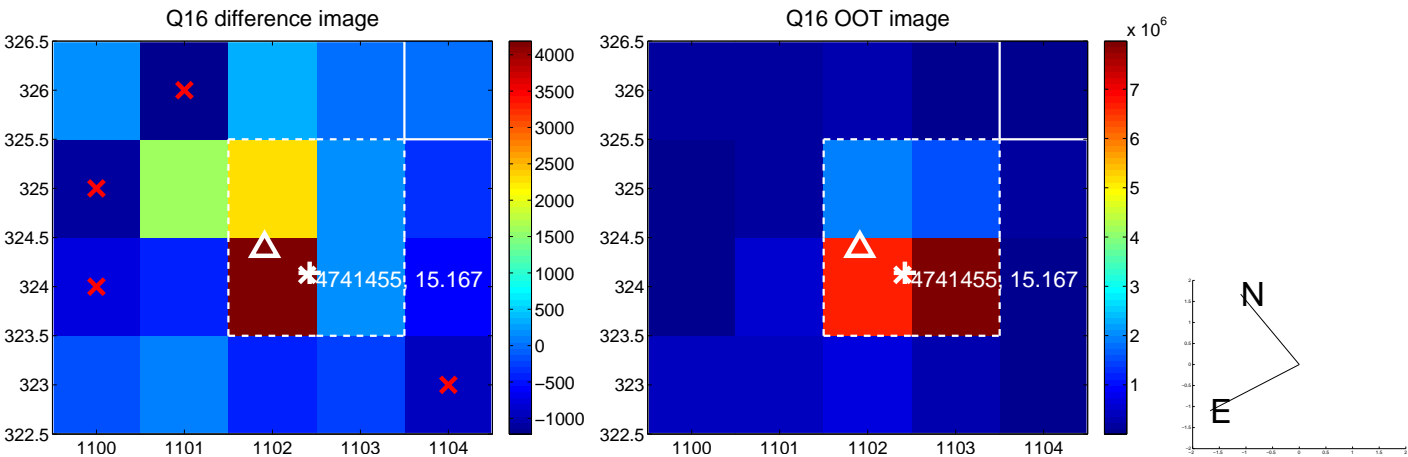
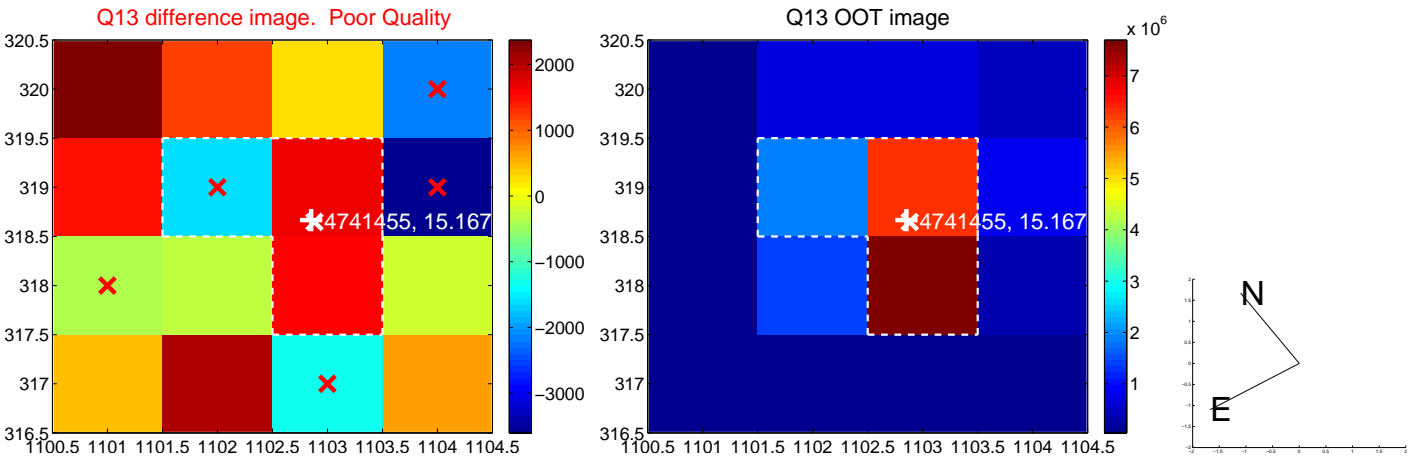
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



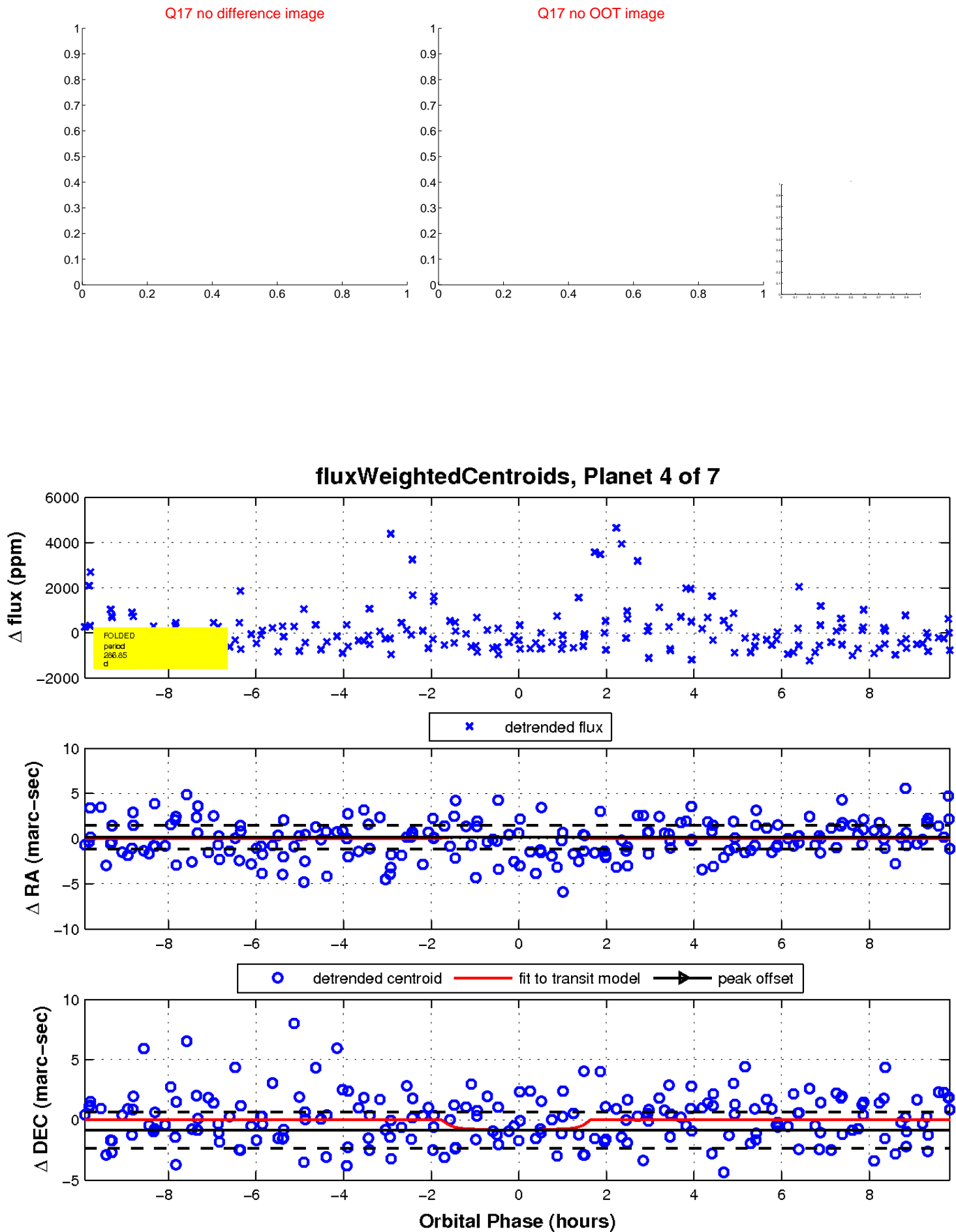
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

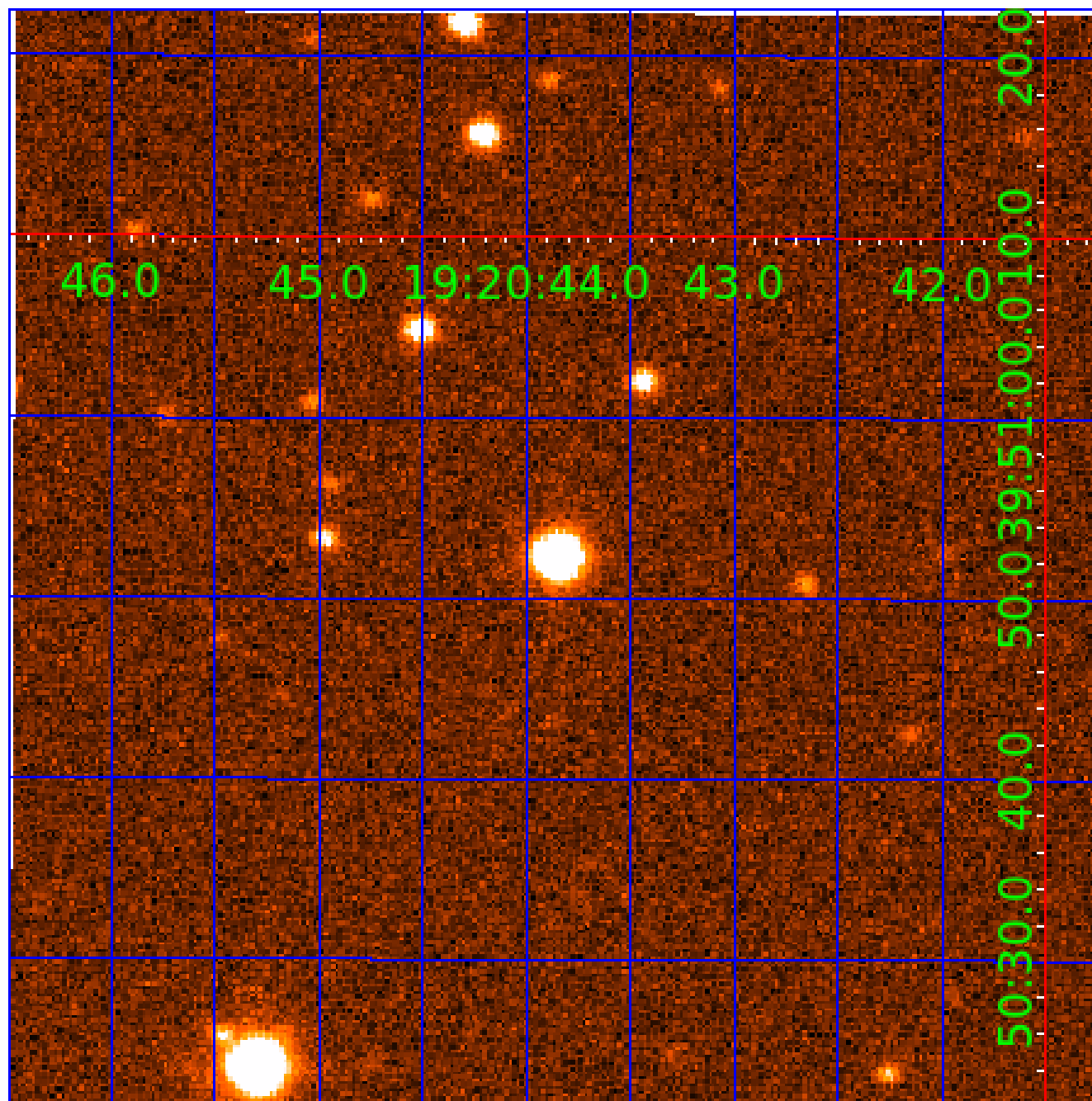


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 004741455

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})
004741455-02	OBS	No	613.272130	199.745849	2817.1	7.631	10.9	13.0	0.49	3801	2.59	0.04
004741455-03	OBS	No	437.752204	391.940167	1824.7	6.438	10.7	9.9	0.49	3801	2.08	0.06
004741455-04	OBS	No	286.849136	367.514810	1017.4	3.338	11.2	7.2	0.49	3801	1.61	0.10
004741455-05	OBS	No	424.630677	133.975685	1752.5	4.885	13.2	9.0	0.49	3801	2.04	0.06
004741455-06	OBS	No	346.094925	187.784759	1054.0	3.821	9.8	6.5	0.49	3801	1.69	0.08
004741455-07	OBS	No	620.151735	293.937362	806.4	7.500	9.3	-1.0	0.49	3801	1.39	0.04

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004741455-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
004741455-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
004741455-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_TER_DV—MOD_POS_DV
004741455-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES
004741455-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV
004741455-07	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_NOFITS—HALO_GHOST

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

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

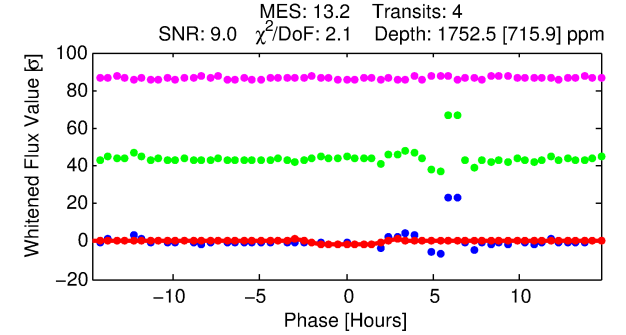
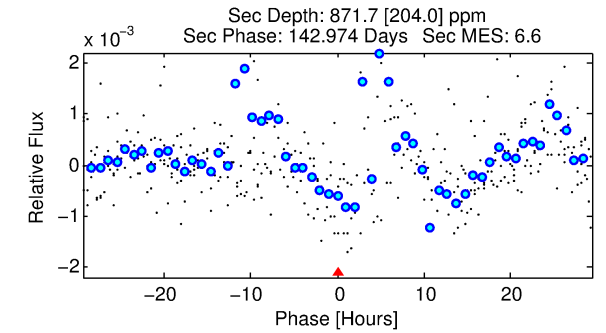
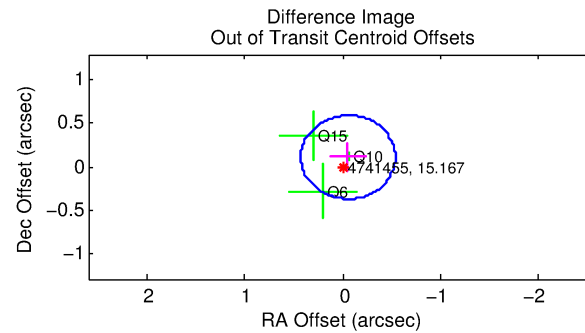
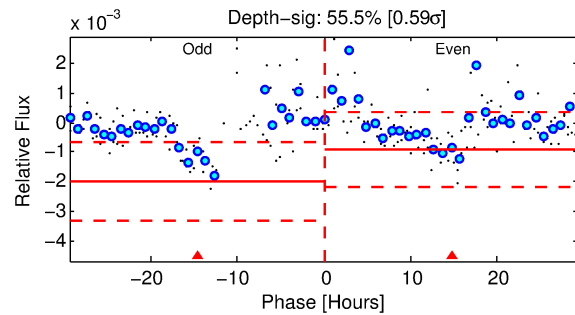
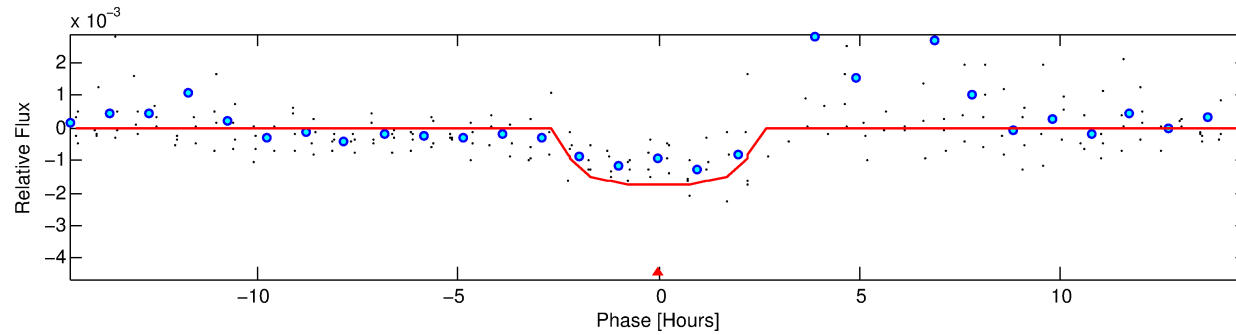
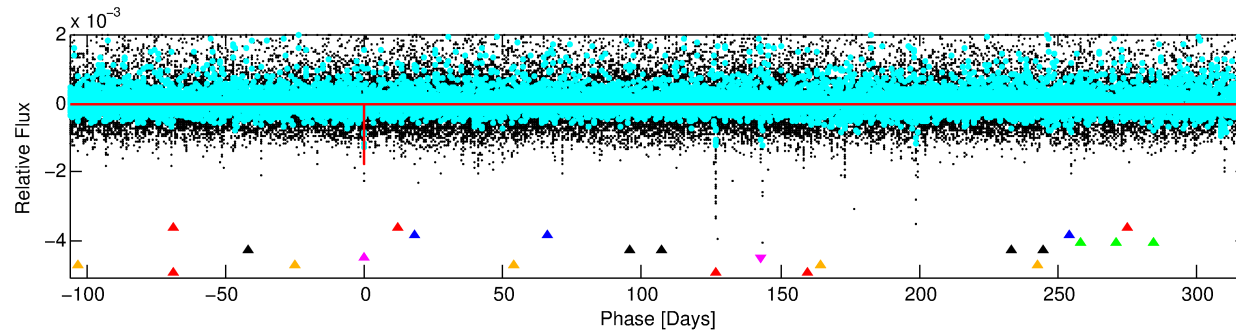
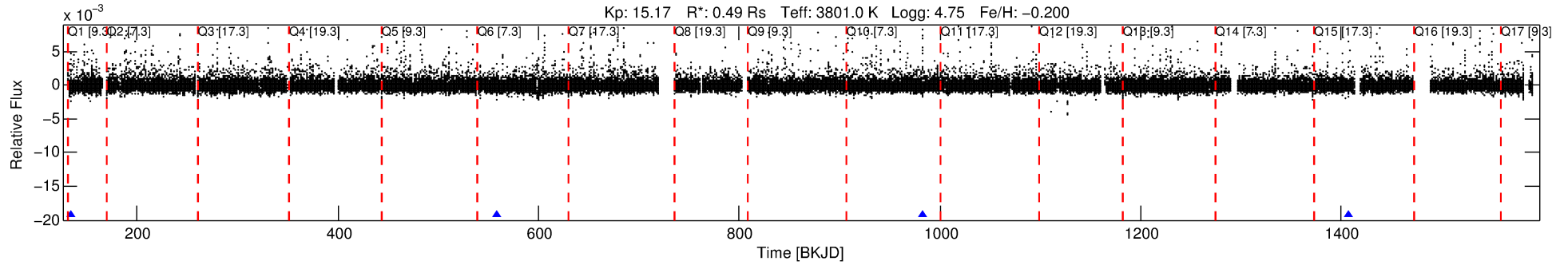
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004741455-05

No Significant Match Found

DV One-Page Summary

KIC: 4741455 Candidate: 5 of 7 Period: 424.631 d



DV Fit Results:

Period = 424.63068 [0.00800] d
Epoch = 133.9757 [0.0168] BKJD
Rp/R* = 0.0381 [0.3323]
a/R* = 689.28 [27283.60]
b = 0.02 [2616.13]
Seff = 0.06 [0.01]
Teq = 126 [4] K
Rp = 2.04 [17.84] Re
a = 0.8770 [0.0533] AU
Ag = 88374.76 [1543643.85] [0.06 σ]
Teffp = 3348 [14620] K [0.22 σ]

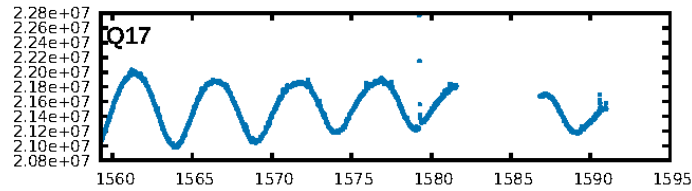
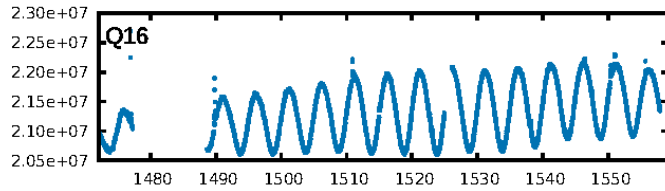
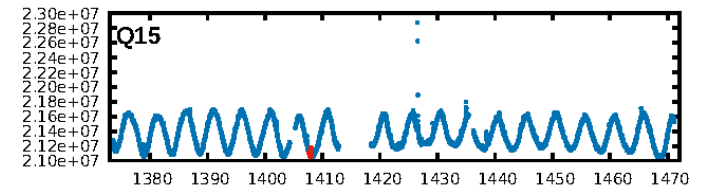
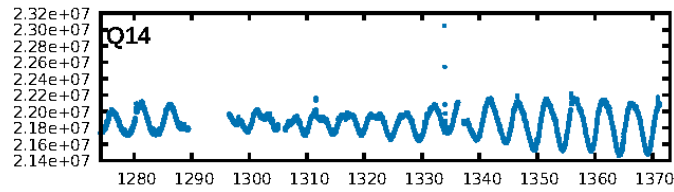
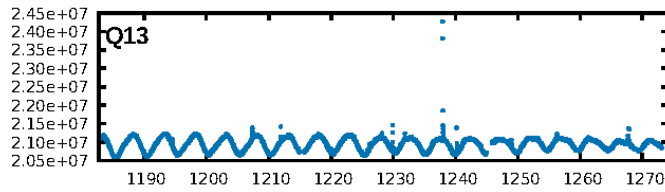
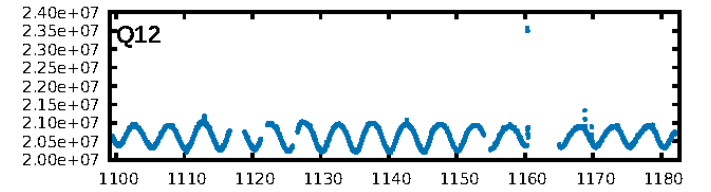
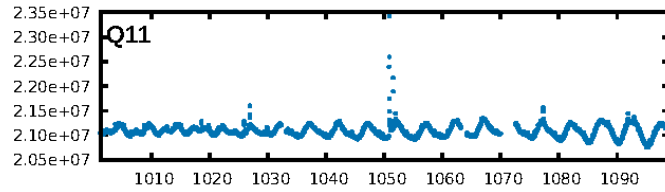
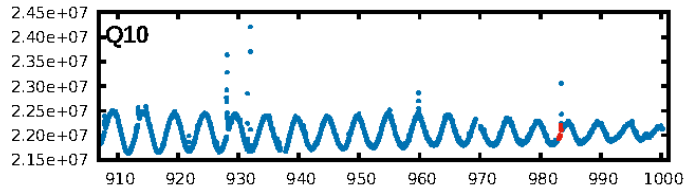
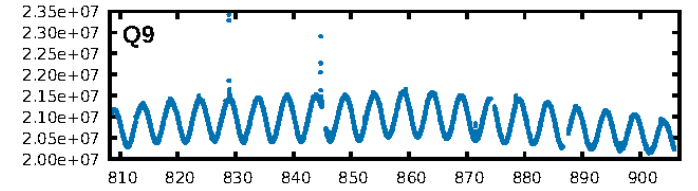
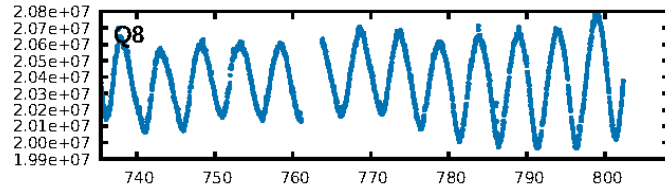
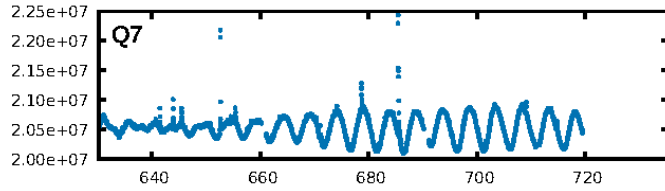
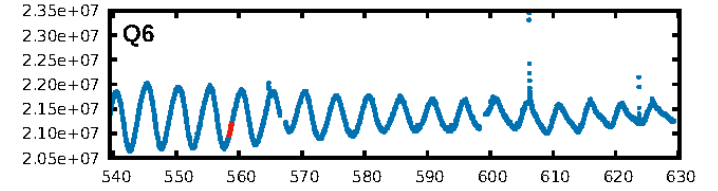
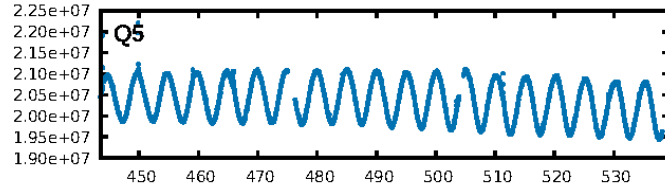
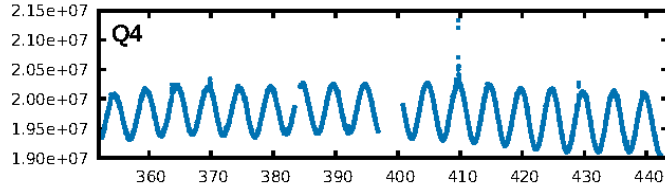
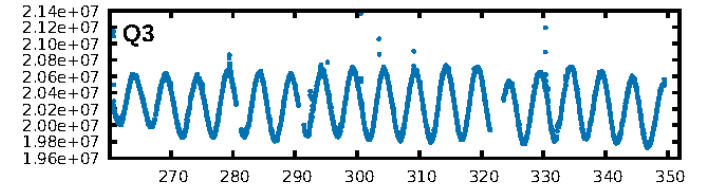
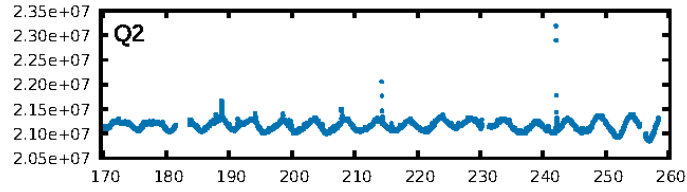
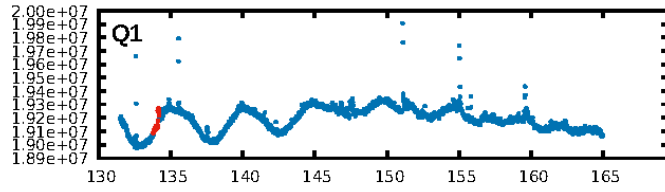
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [303.93 σ]
LongPeriod-sig: 100.0% [38.97 σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 3.3%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: -4.208
Centroid-sig: 7.4%
Centroid-so: 0.863 arcsec [1.45 σ]
OotOffset-rm: 0.123 arcsec [0.76 σ]
KicOffset-rm: 0.186 arcsec [1.18 σ]
OotOffset-st: 2/1/0/0 [3]
KicOffset-st: 2/1/0/0 [3]
DiffImageQuality-fgm: 1.00 [3/3]
DiffImageOverlap-fno: 1.00 [4/4]

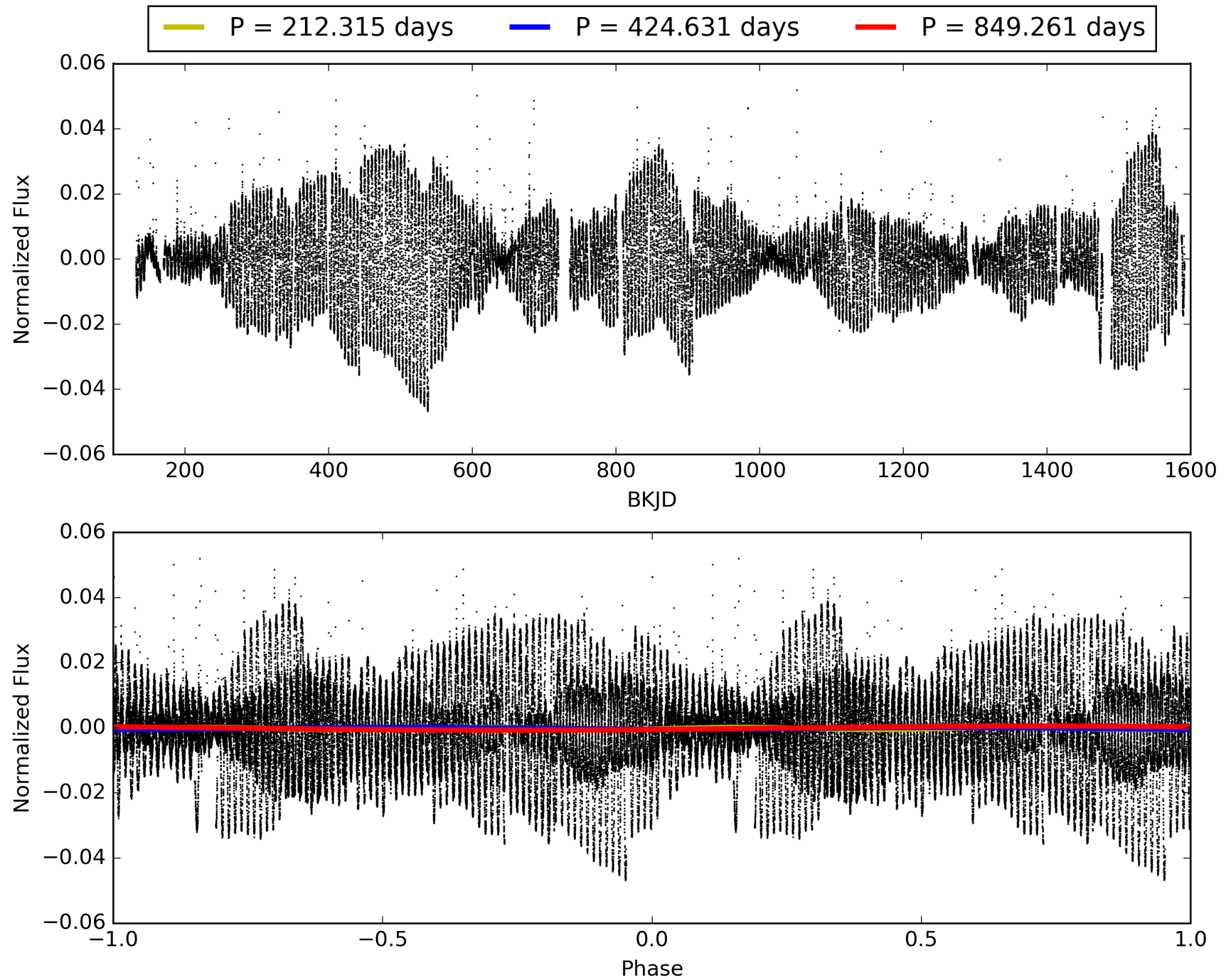
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 13:08:18 Z

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TCE 004741455-05, PDC Light Curves

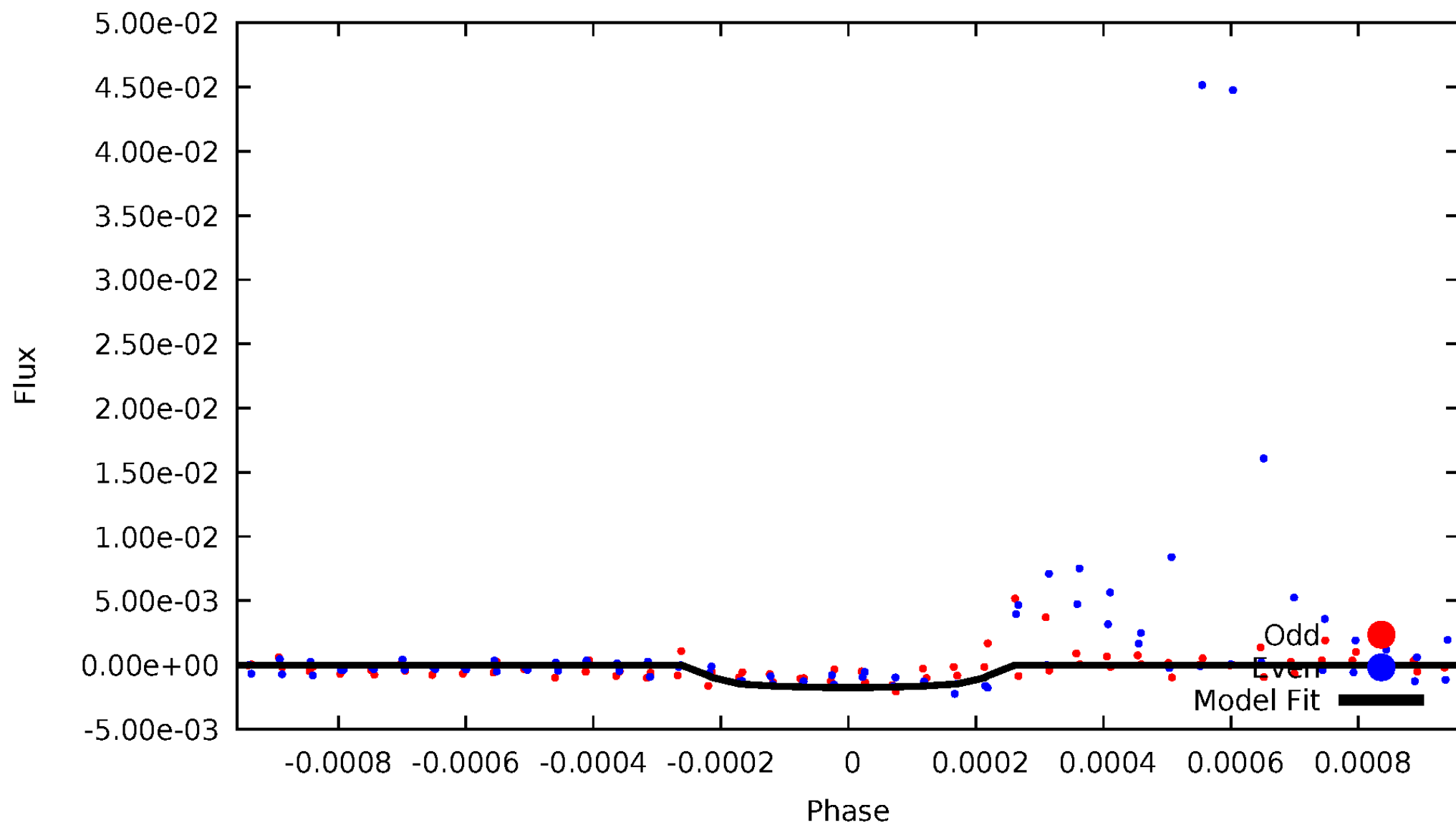


TCE 004741455-05



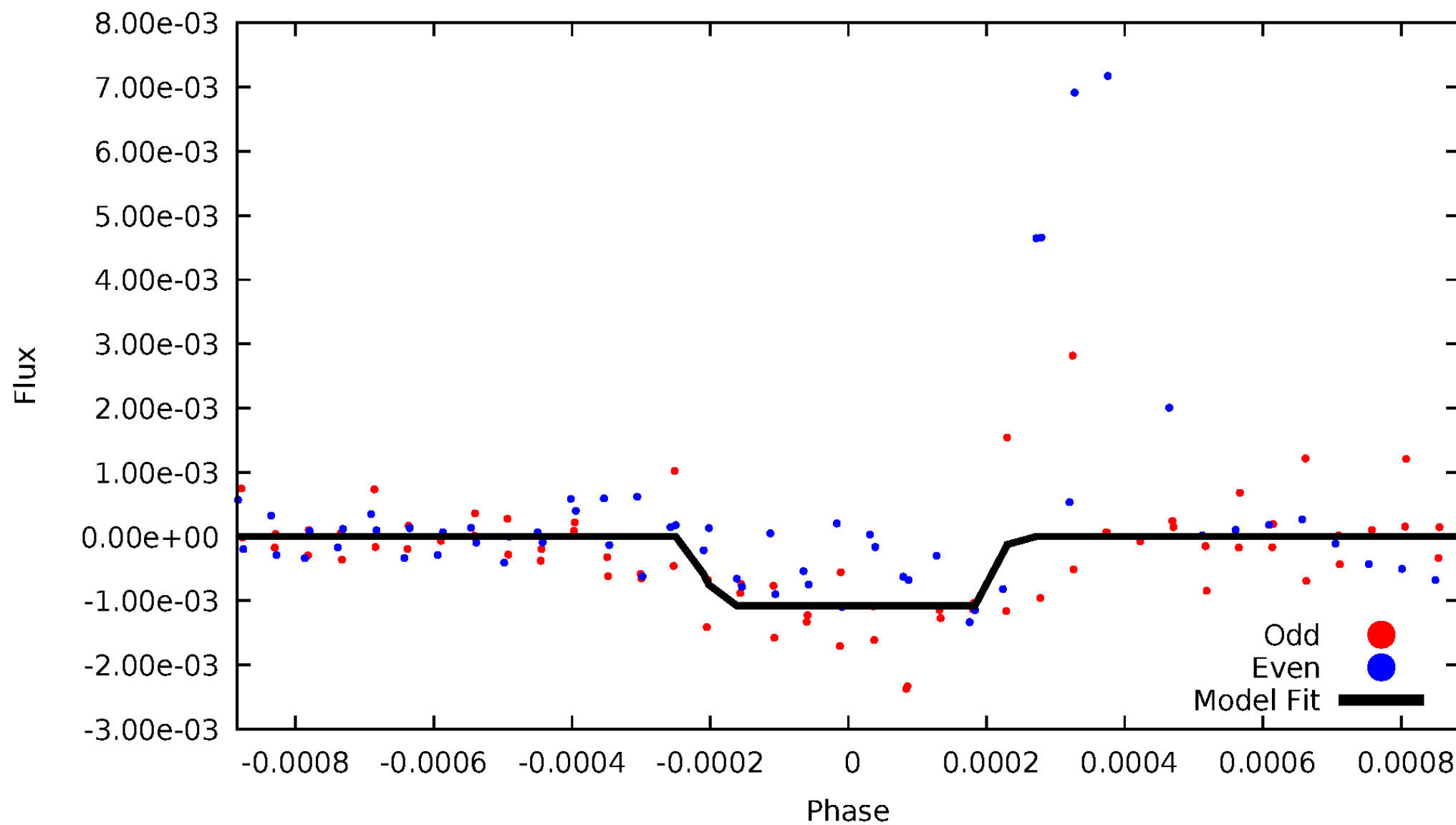
DV Odd/Even

TCE 004741455-05



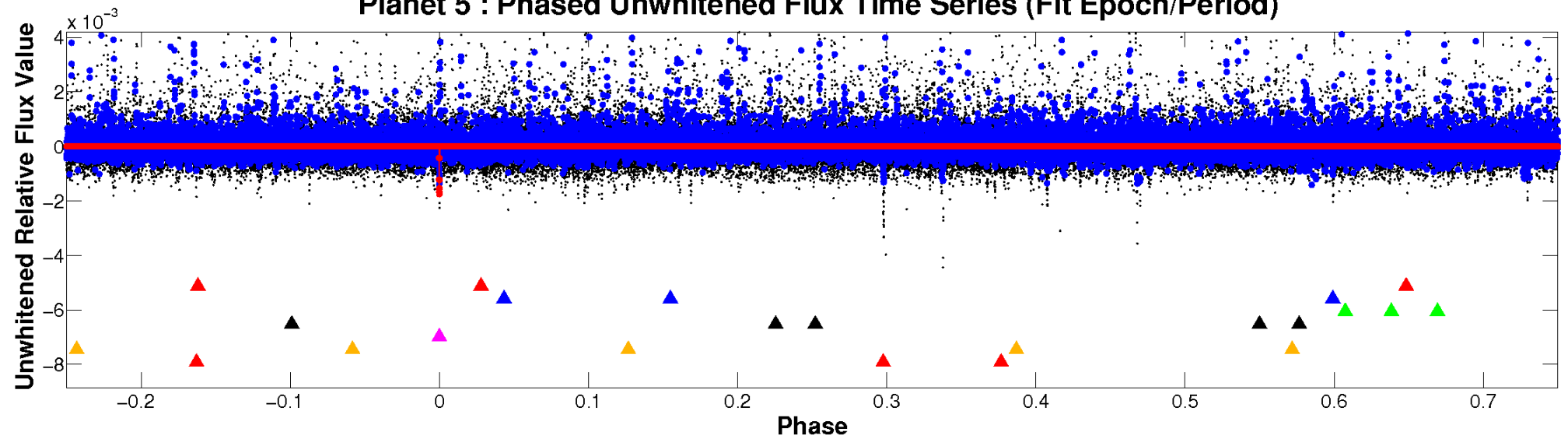
ALT Odd/Even

TCE 004741455-05

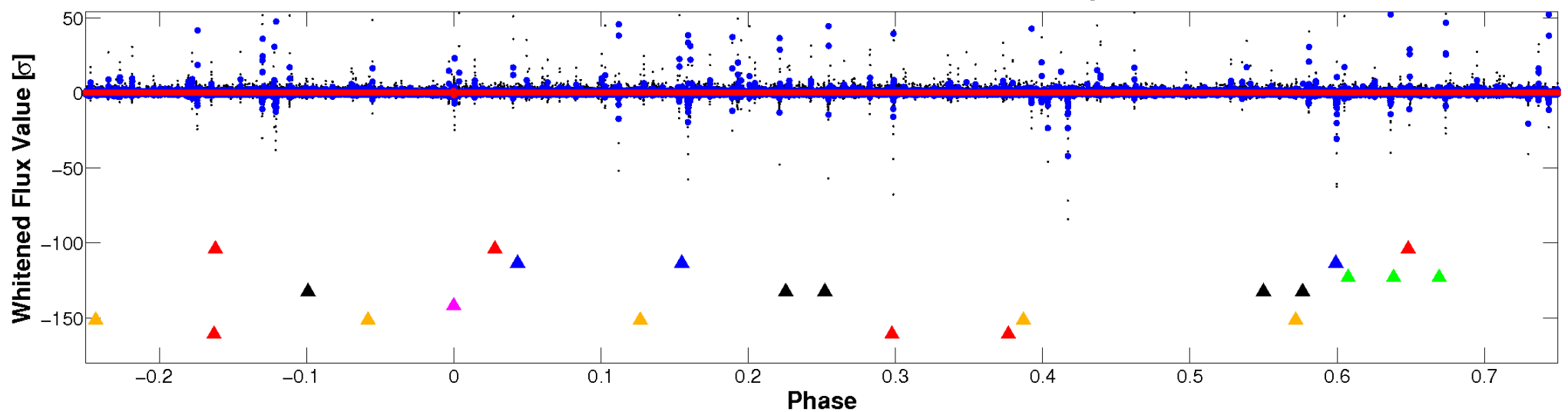


Non-Whitened Vs. Whitened Light Curve

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

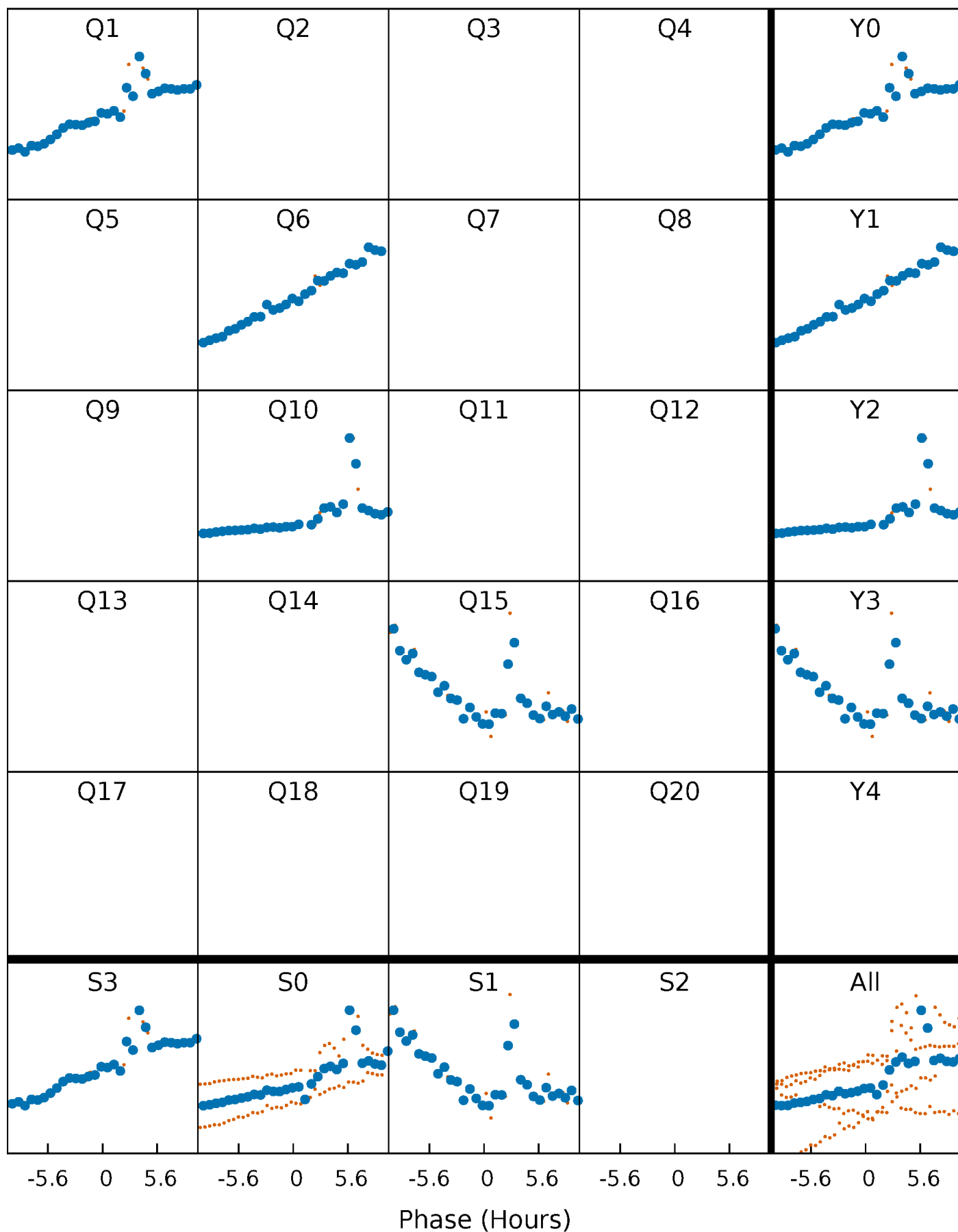


Planet 5 : Phased Whitened Flux Time Series (Fit Epoch/Period)



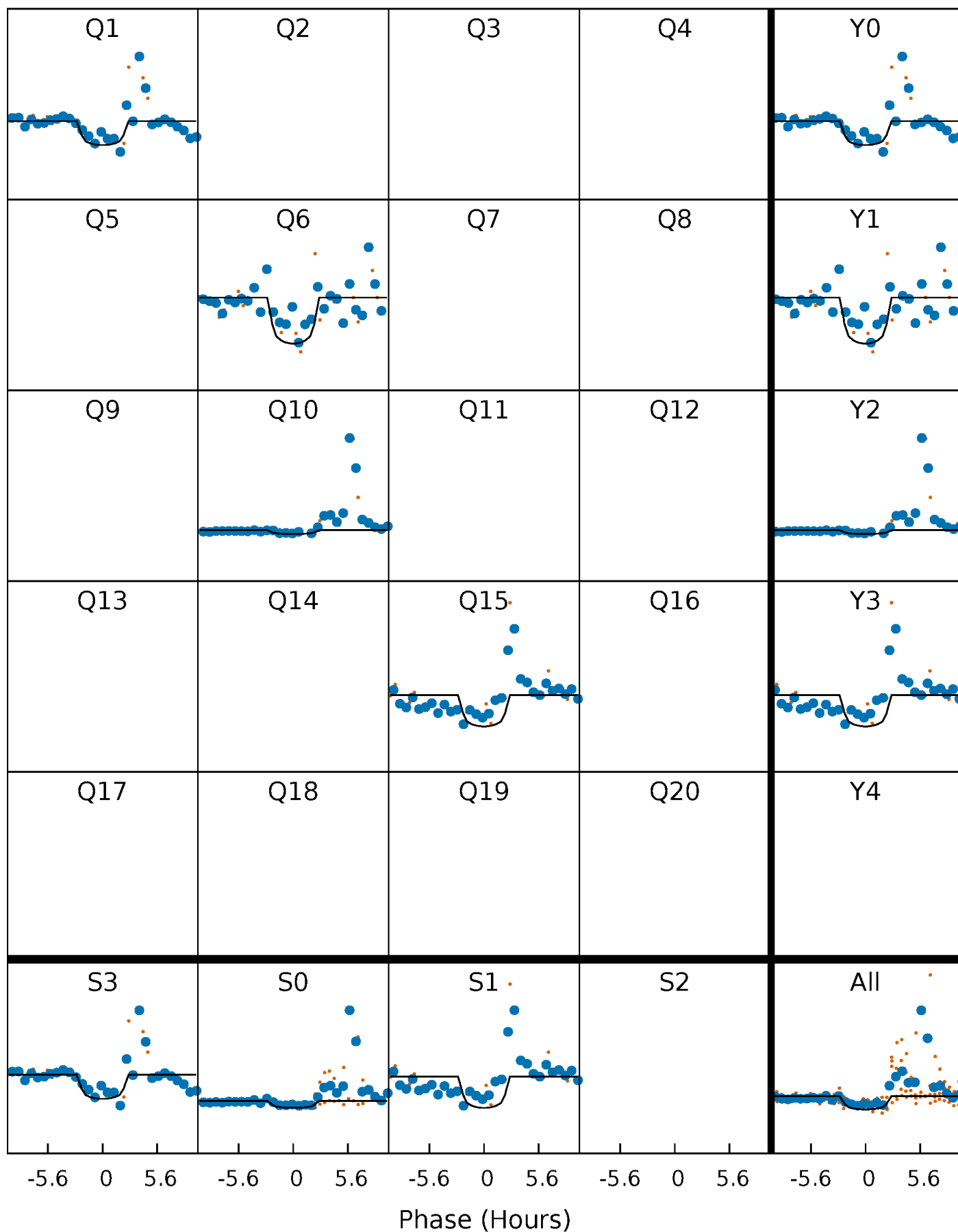
PDC Quarter-Phased Transit Curves

TCE 004741455-05 $P=424.630677$ Days $T_0=133.975685$ (BKJD)



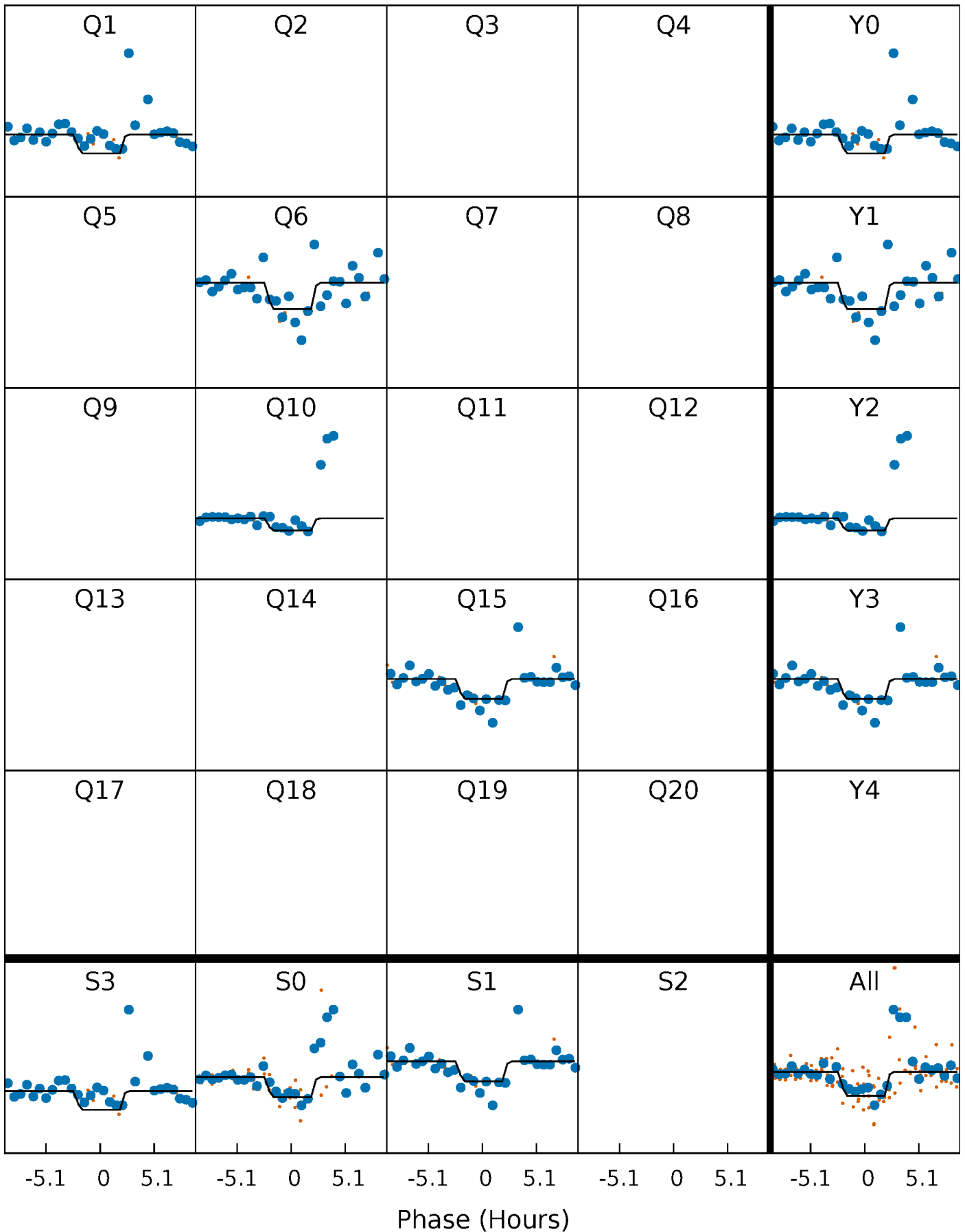
DV Quarter-Phased Transit Curves

TCE 004741455-05 $P=424.630677$ Days $T_0=133.975685$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

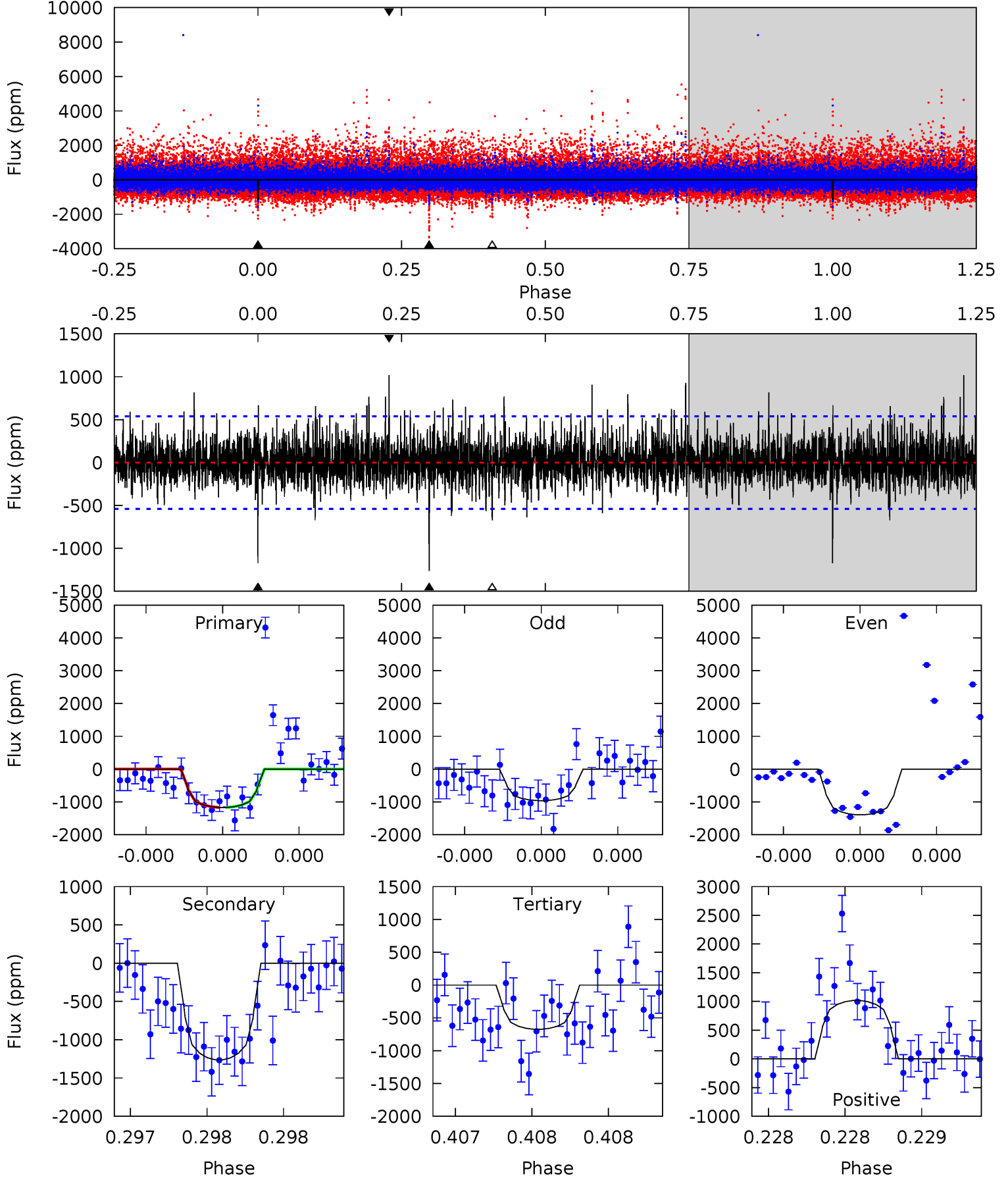
TCE 004741455-05 $P=424.629810$ Days $T_0=133.971909$ (BKJD)



DV Model-Shift Uniqueness Test

004741455-05, P = 424.630677 Days, E = 133.975685 Days

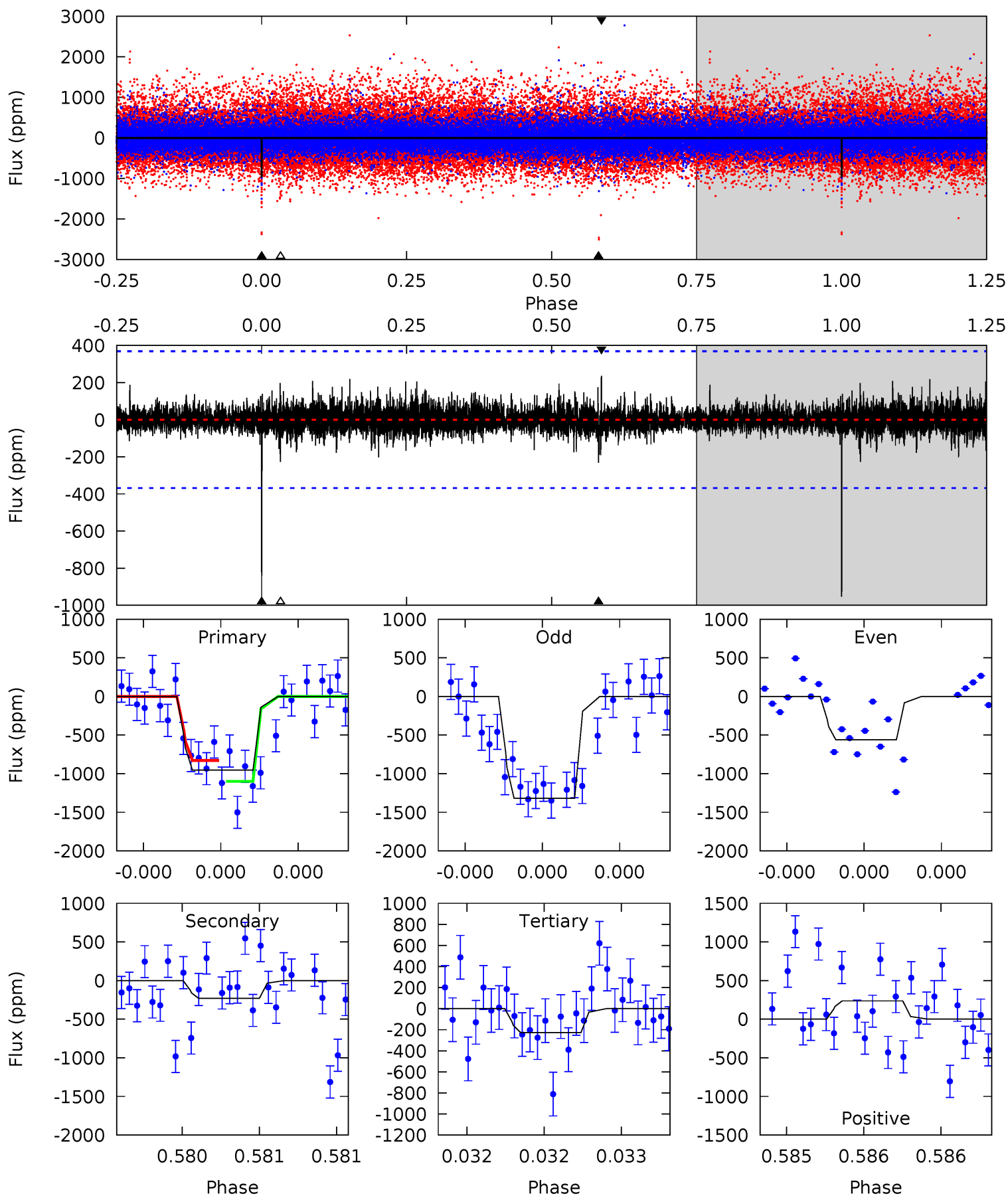
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.1	13.1	6.97	10.5	5.58	3.49	1.91	5.14	1.60	6.09	2.54	1.24	1.02	0.45	0.02



Alt Model-Shift Uniqueness Test

004741455-05, P = 424.629810 Days, E = 133.971909 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
14.5	3.51	3.44	3.59	5.60	3.52	0.65	11.0	10.9	0.07	-0.07	5.39	0.95	0.20	2.05



Stellar Parameters For KIC 004741455

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	3801^{+76}_{-83}	$4.752^{+0.042}_{-0.025}$	$-0.200^{+0.100}_{-0.100}$	$0.492^{+0.027}_{-0.038}$	$0.499^{+0.031}_{-0.034}$	$5.898^{+1.160}_{-0.665}$
	+2%/-2%	+1%/-1%	+50%/-50%	+5%/-8%	+6%/-7%	+20%/-11%
Source	PHO2	PHO2	PHO2	DSEP		

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

Secondary Eclipse Parameters for KIC 004741455-05 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-1262 ± 97	$13.16^{+13.67}_{-9.42}$	175^{+4}_{-5}	2245^{+828}_{-314}	3128^{+37827}_{-2385}
Alt.	-231 ± 66	$13.40^{+13.70}_{-9.26}$	175^{+5}_{-4}	1864^{+517}_{-232}	520^{+4669}_{-399}

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

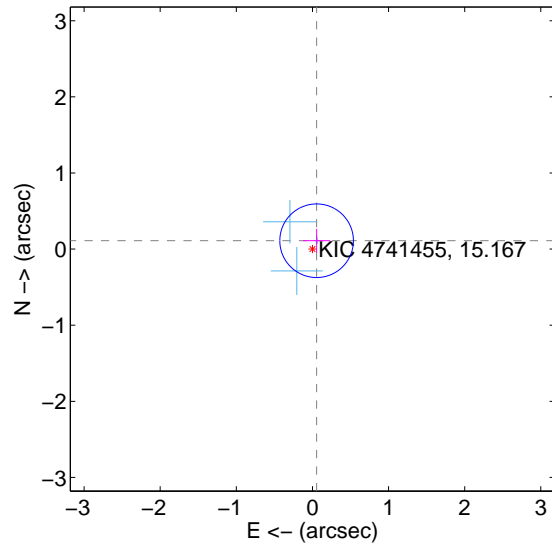
Supplemental centroid analysis for 004741455-05. Kepler magnitude: 15.17. Transit SNR 8.96

There are 3 quarters with good PRF difference image offsets

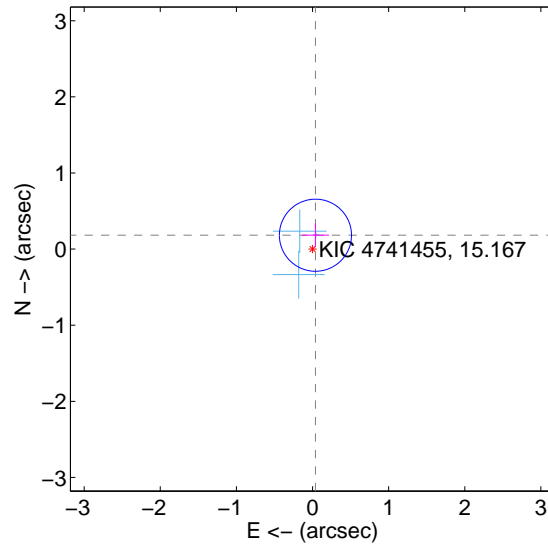
The direct PRF centroid is offset from the target star catalog position by about 0.18 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.123 ± 0.161	0.76	-0.055 ± 0.177	0.110 ± 0.157
PRF-fit source offset from KIC position	0.186 ± 0.158	1.18	-0.038 ± 0.177	0.182 ± 0.157
photometric centroid source offset	0.86 ± 0.60	1.45	0.70 ± 0.58	0.51 ± 0.63

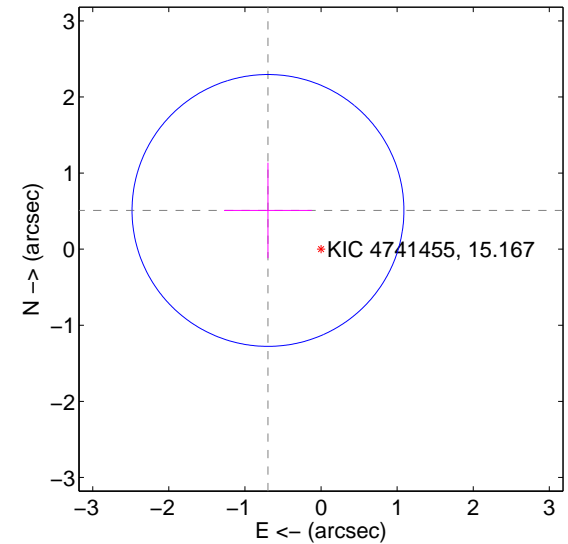
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

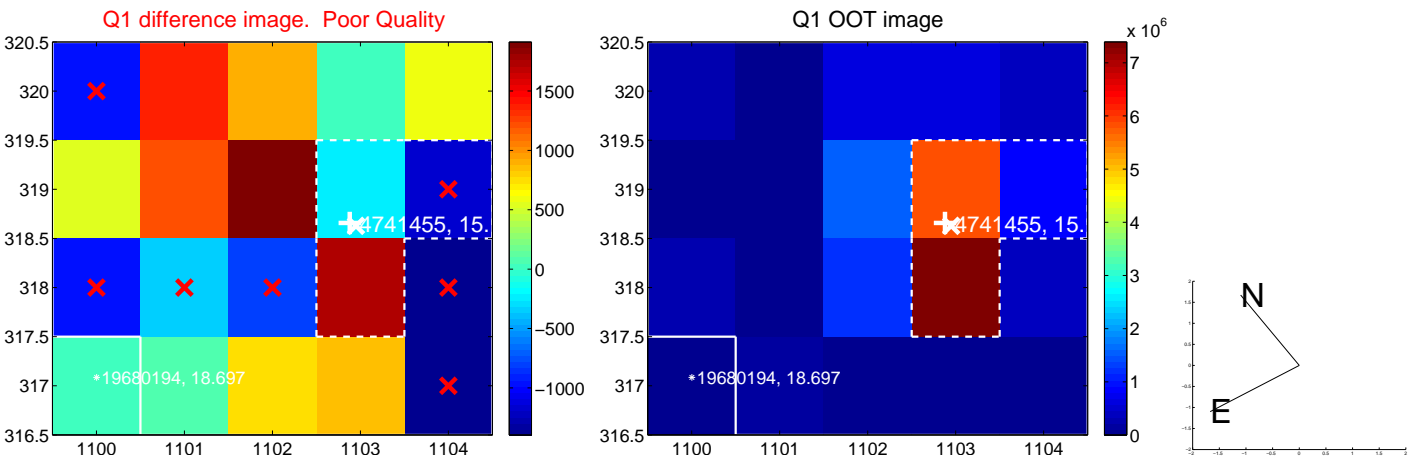


offset from photometric centroids

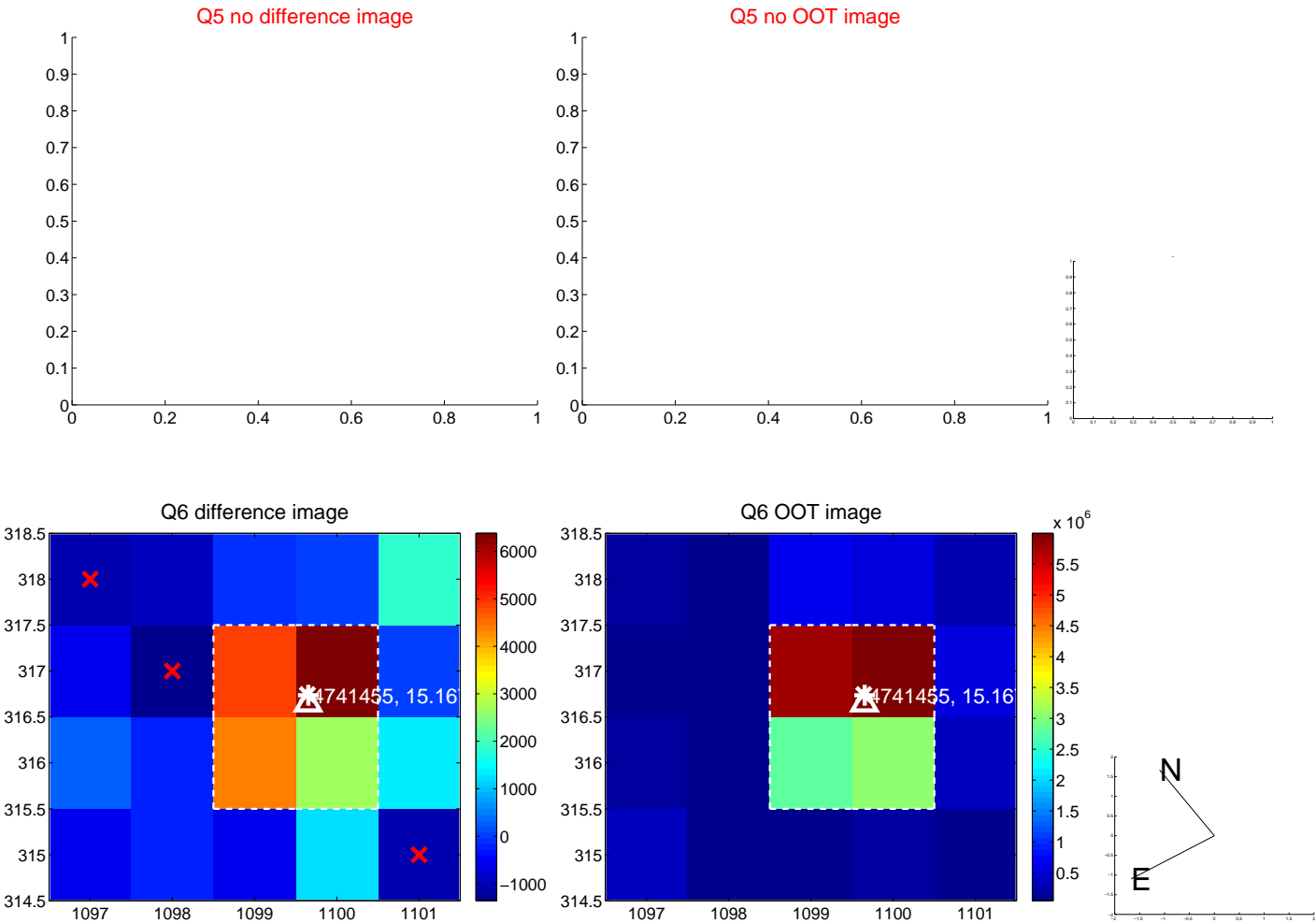


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

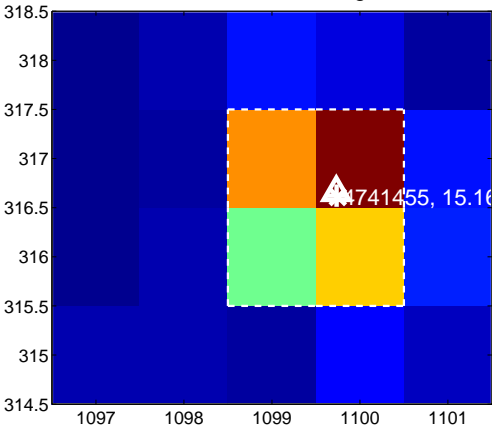
Q9 no difference image



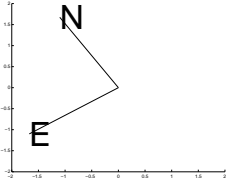
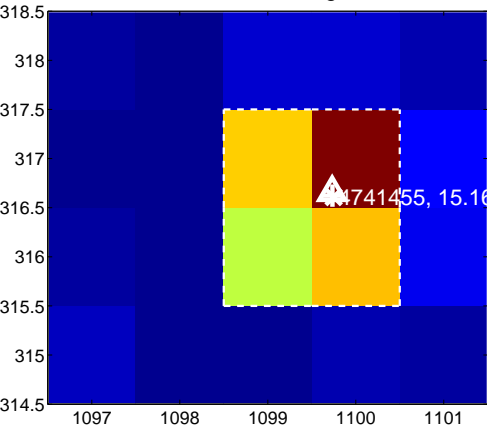
Q9 no OOT image



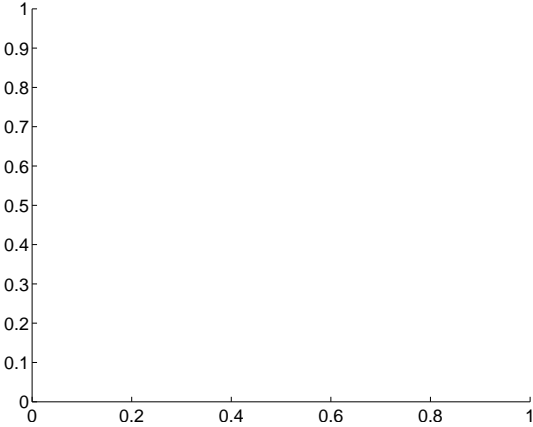
Q10 difference image



Q10 OOT image



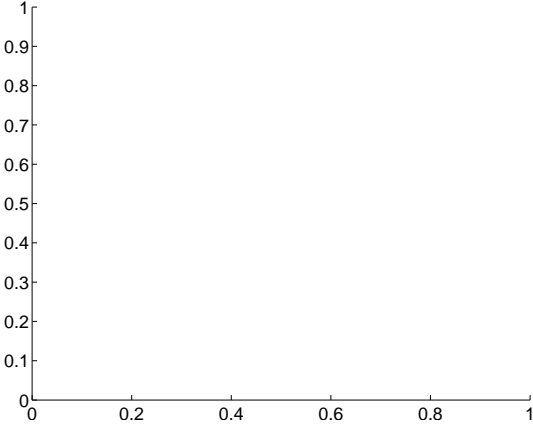
Q11 no difference image



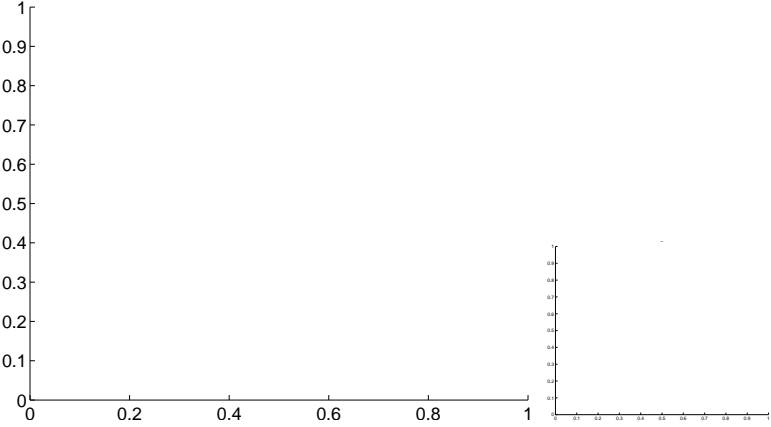
Q11 no OOT image



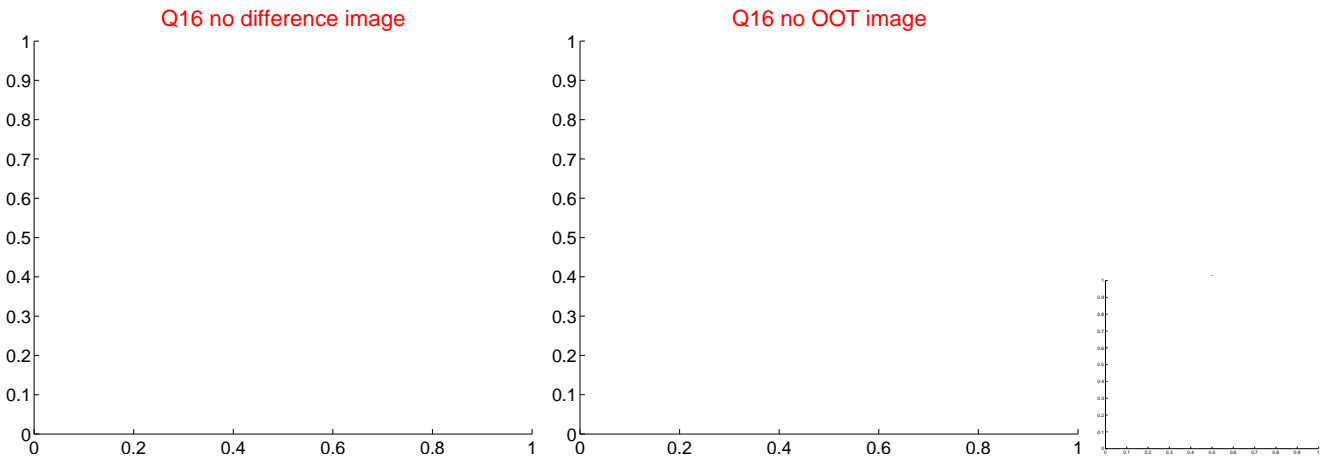
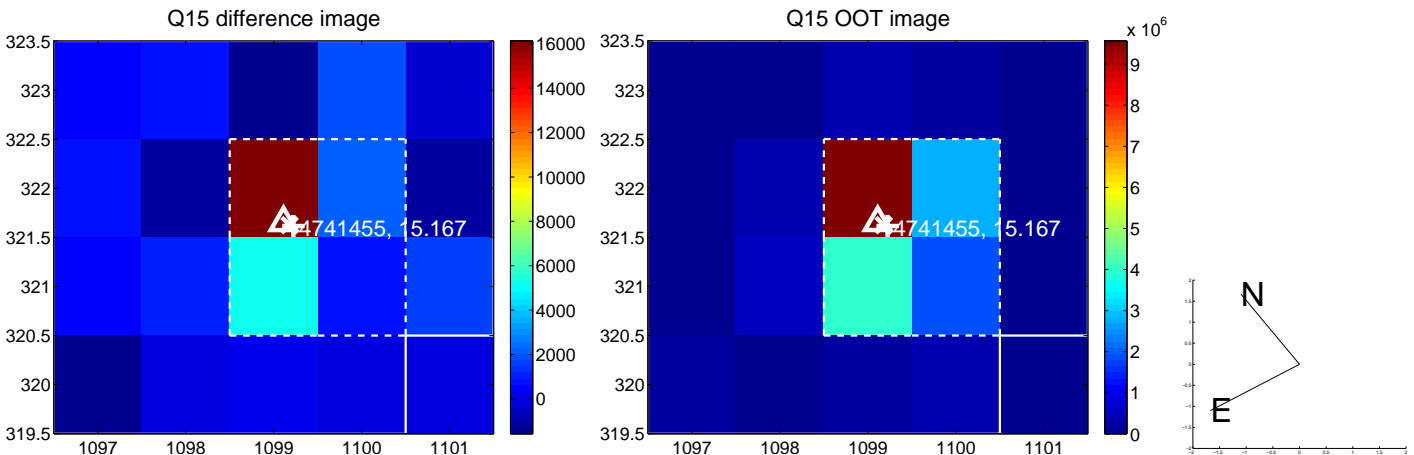
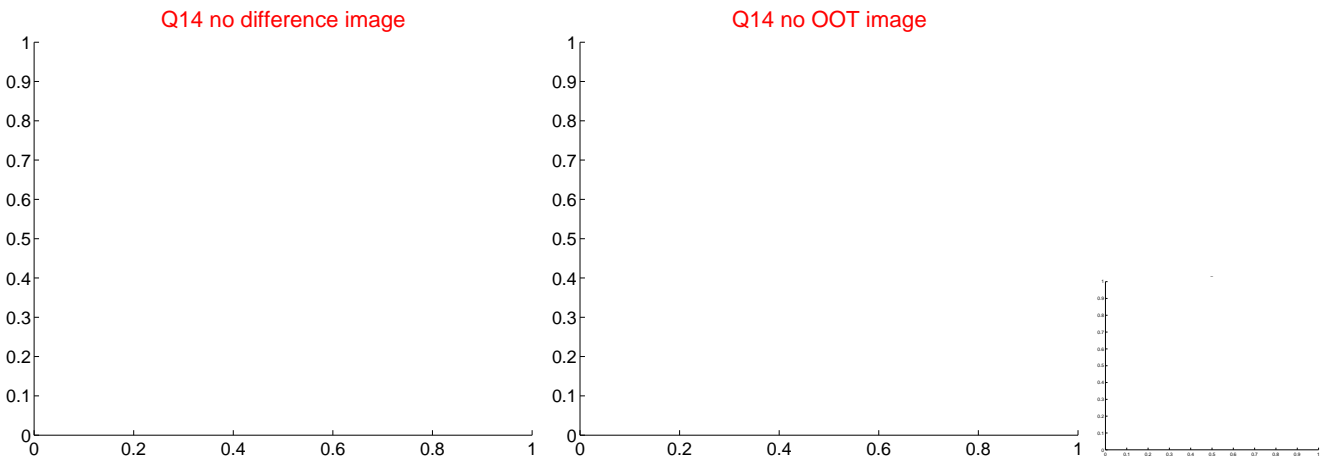
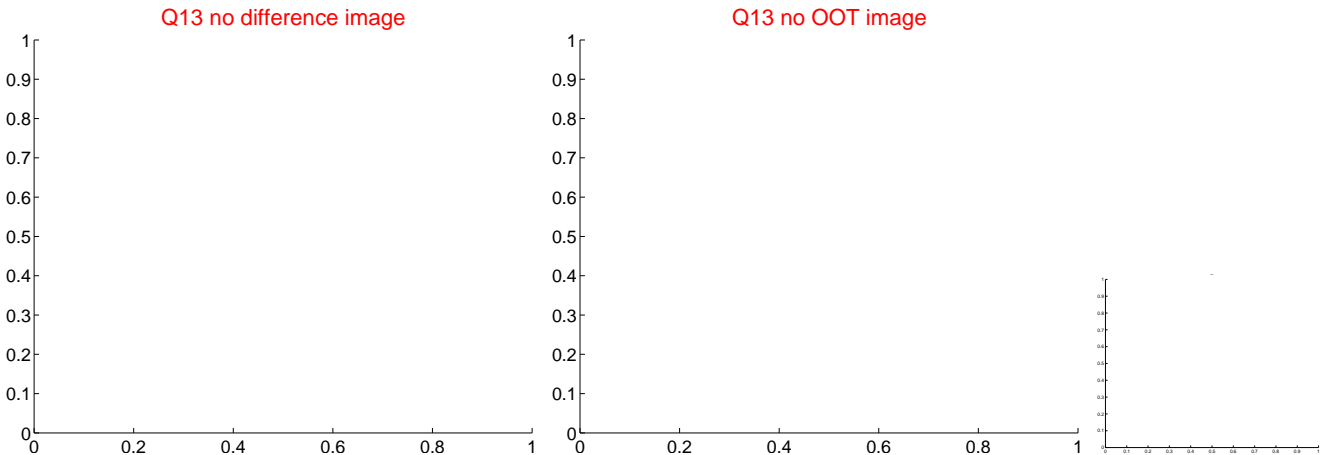
Q12 no difference image



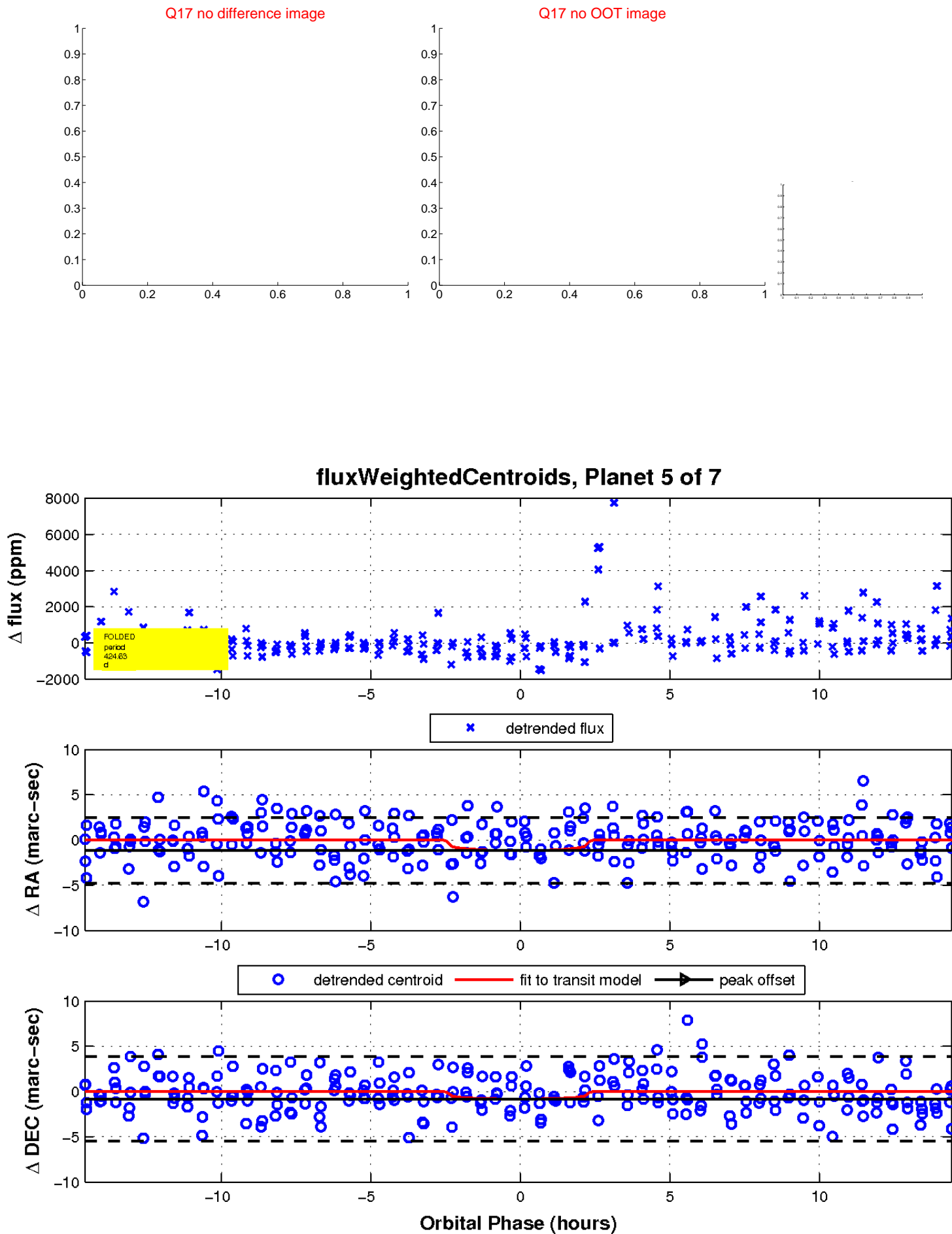
Q12 no OOT image



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

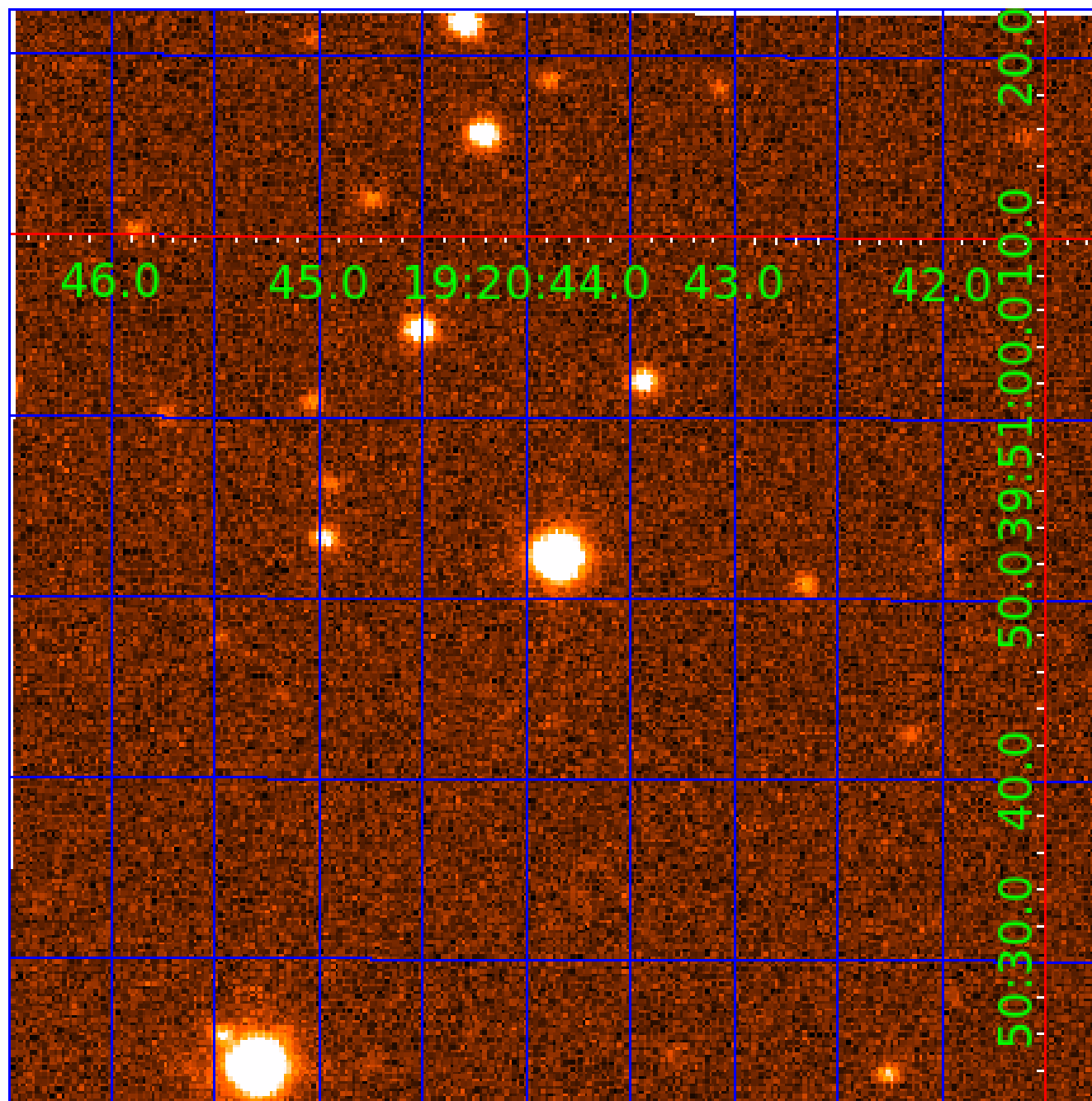


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 004741455

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})
004741455-02	OBS	No	613.272130	199.745849	2817.1	7.631	10.9	13.0	0.49	3801	2.59	0.04
004741455-03	OBS	No	437.752204	391.940167	1824.7	6.438	10.7	9.9	0.49	3801	2.08	0.06
004741455-04	OBS	No	286.849136	367.514810	1017.4	3.338	11.2	7.2	0.49	3801	1.61	0.10
004741455-05	OBS	No	424.630677	133.975685	1752.5	4.885	13.2	9.0	0.49	3801	2.04	0.06
004741455-06	OBS	No	346.094925	187.784759	1054.0	3.821	9.8	6.5	0.49	3801	1.69	0.08
004741455-07	OBS	No	620.151735	293.937362	806.4	7.500	9.3	-1.0	0.49	3801	1.39	0.04

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004741455-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
004741455-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
004741455-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_TER_DV—MOD_POS_DV
004741455-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES
004741455-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV
004741455-07	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_NOFITS—HALO_GHOST

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

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

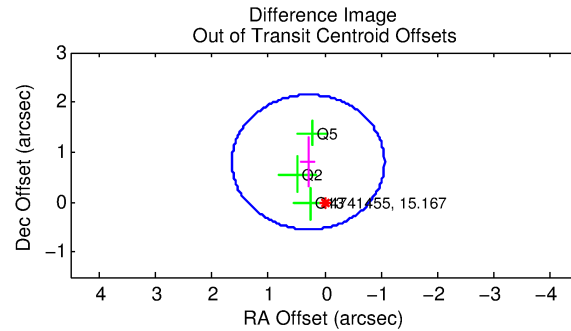
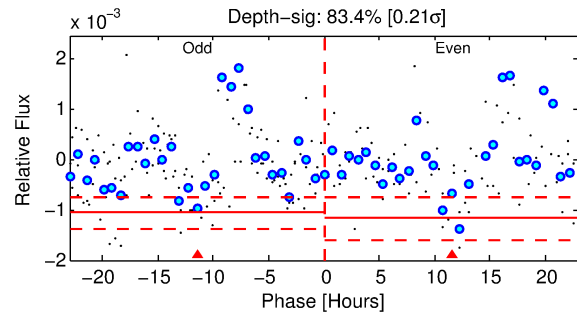
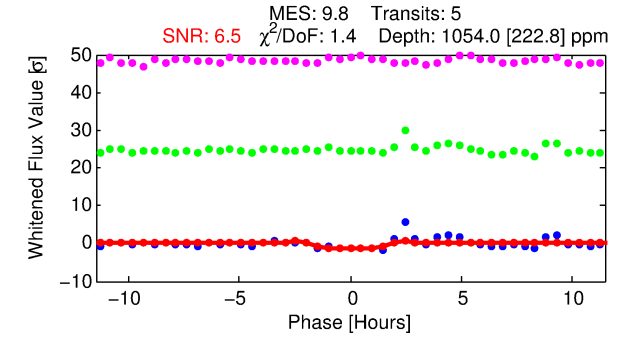
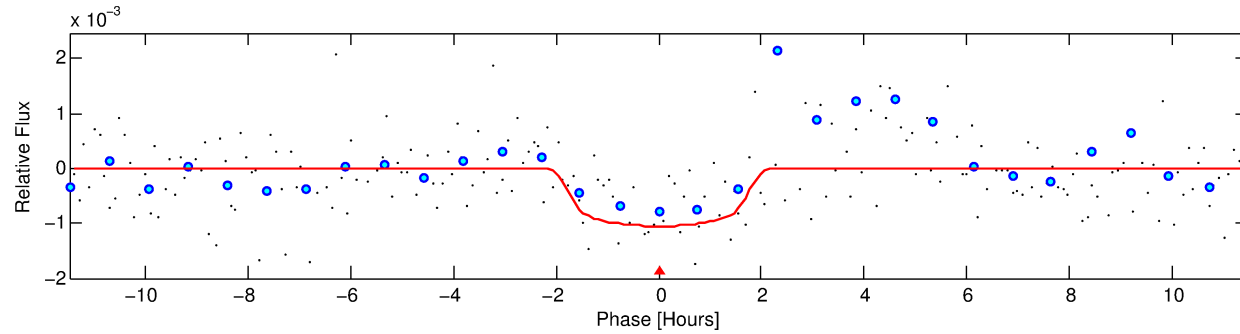
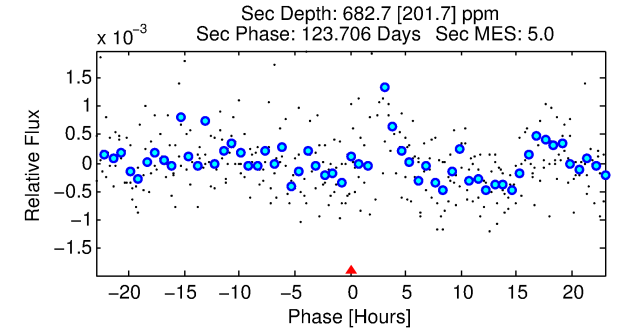
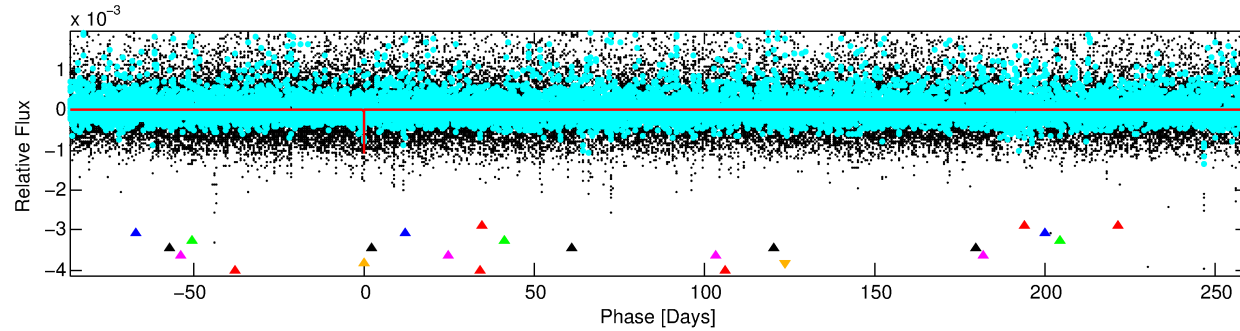
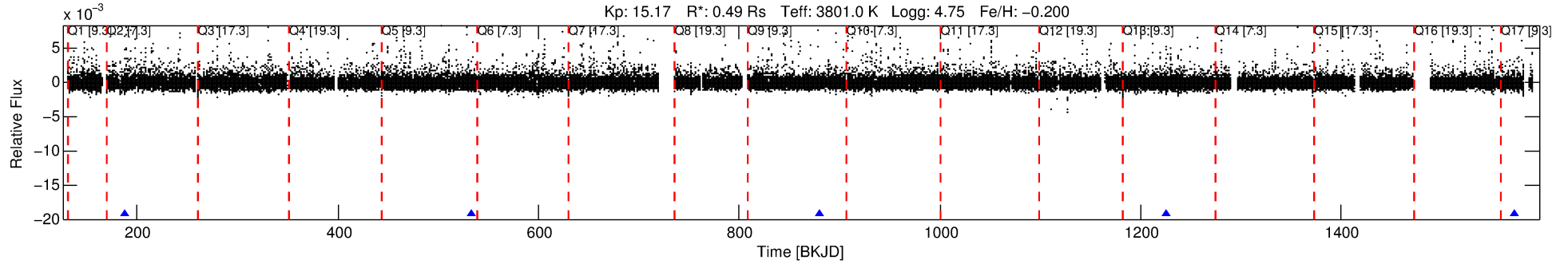
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004741455-06

No Significant Match Found

DV One-Page Summary

KIC: 4741455 Candidate: 6 of 7 Period: 346.095 d



DV Fit Results:

Period = 346.09493 [0.00473] d
Epoch = 187.7848 [0.0116] BKJD
Rp/R* = 0.0315 [0.0317]
a/R* = 541.80 [2443.34]
b = 0.67 [3.70]
Seff = 0.08 [0.01]
Teq = 134 [4] K
Rp = 1.69 [1.71] Re
a = 0.7653 [0.0465] AU
Ag = 76935.40 [156527.87] [0.49 σ]
Teffp = 3462 [1761] K [1.89 σ]

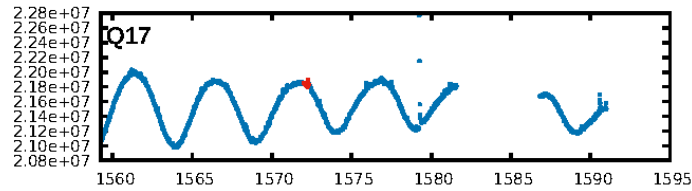
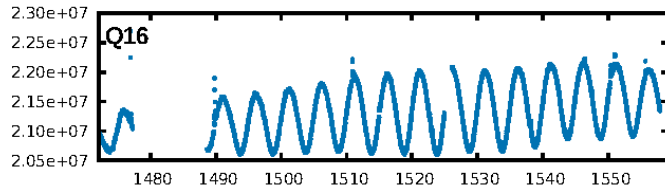
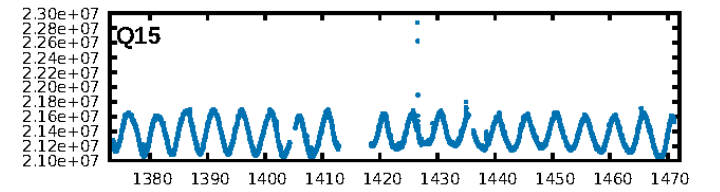
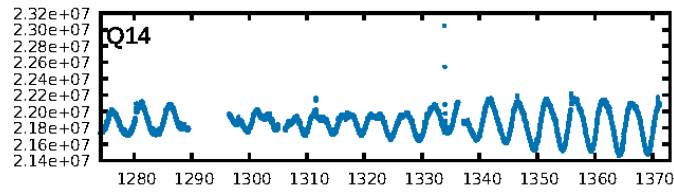
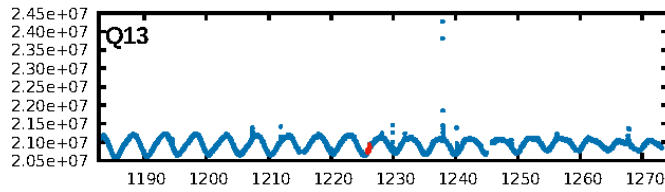
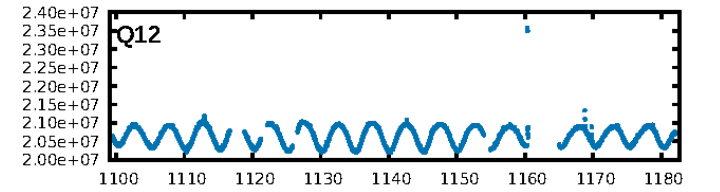
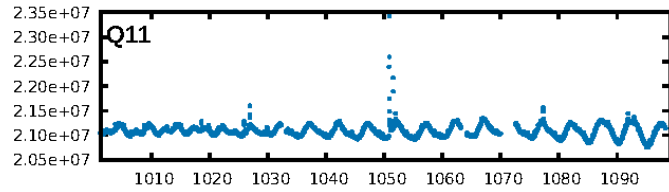
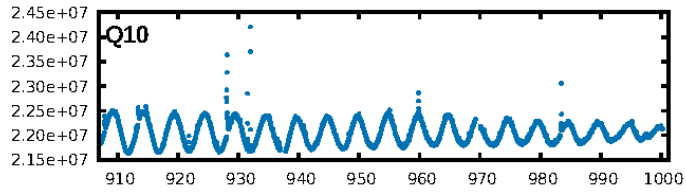
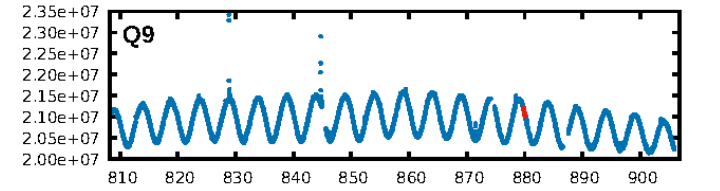
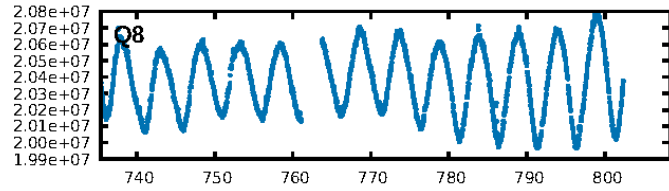
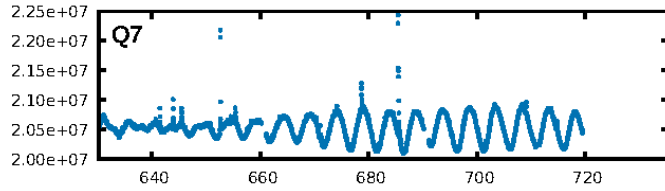
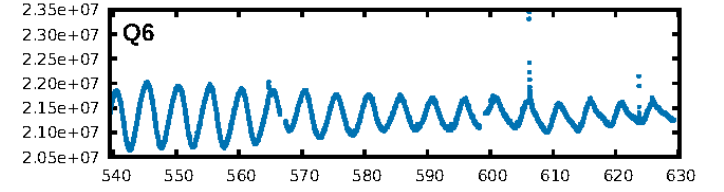
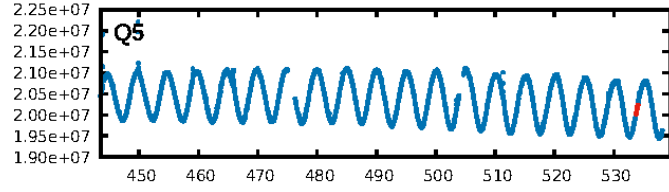
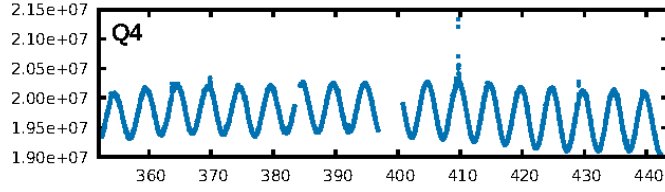
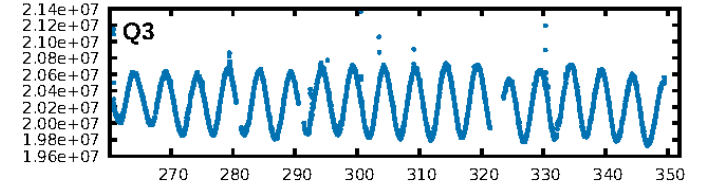
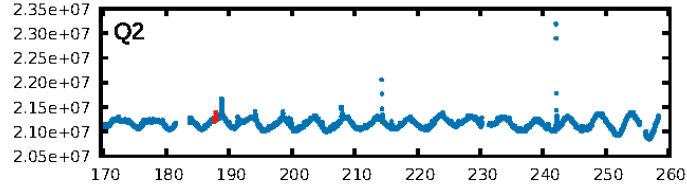
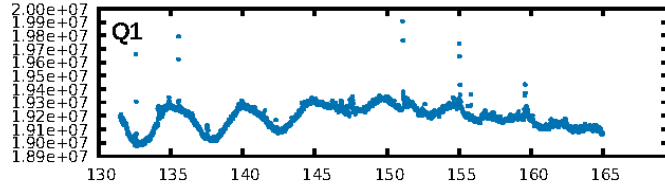
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [280.28 σ]
LongPeriod-sig: 100.0% [303.93 σ]
ModelChiSquare2-sig: 6.6%
ModelChiSquareGof-sig: 43.2%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: 0.3548
Centroid-sig: 16.0%
Centroid-so: 1.317 arcsec [1.12 σ]
OotOffset-rm: 0.853 arcsec [1.90 σ]
OotOffset-st: 1/0/0/2 [3]
KicOffset-rm: 0.961 arcsec [1.82 σ]
KicOffset-st: 1/0/0/2 [3]
DiffImageQuality-fgm: 1.00 [3/3]
DiffImageOverlap-fno: 1.00 [5/5]

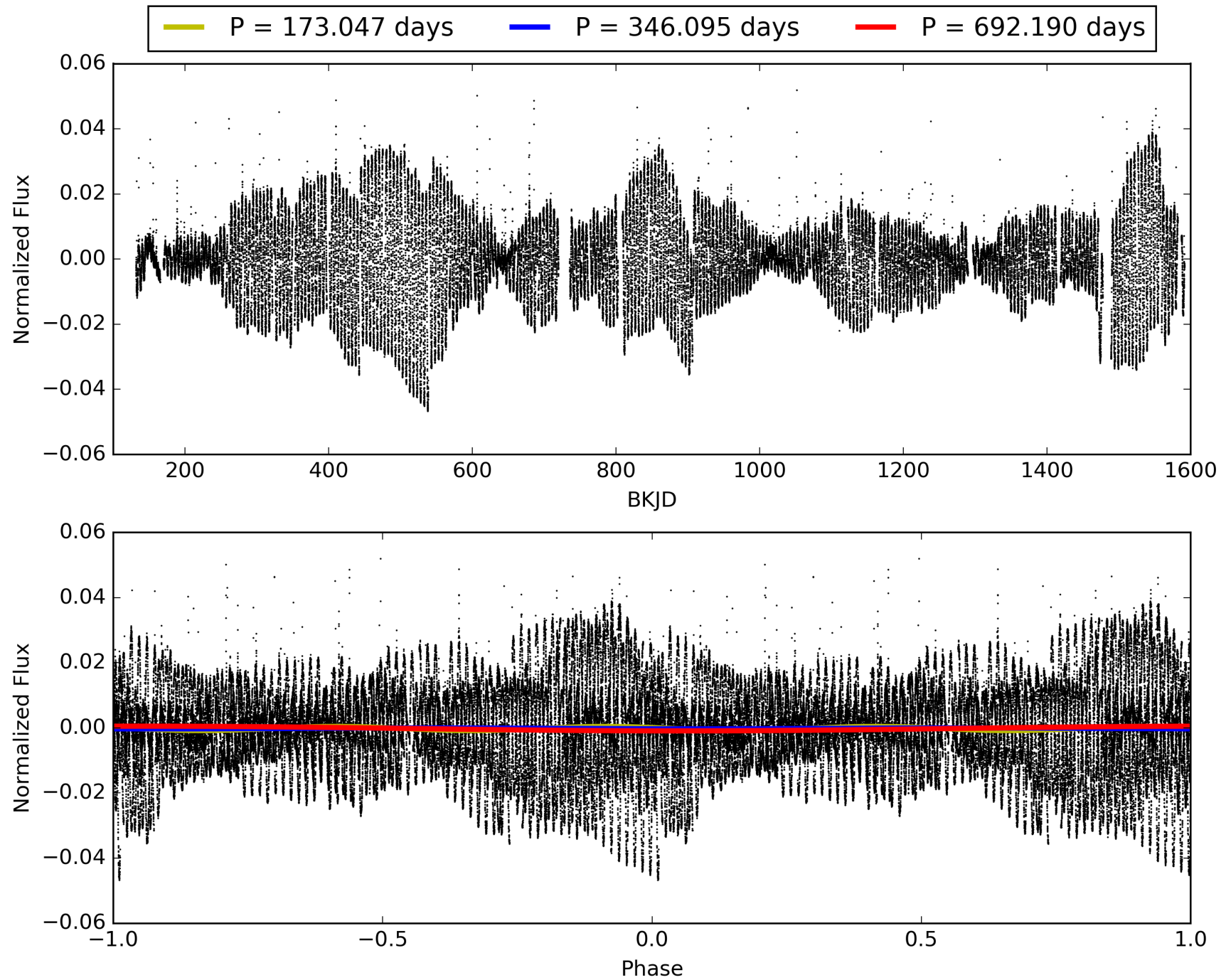
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 13:08:33 Z

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

TCE 004741455-06, PDC Light Curves

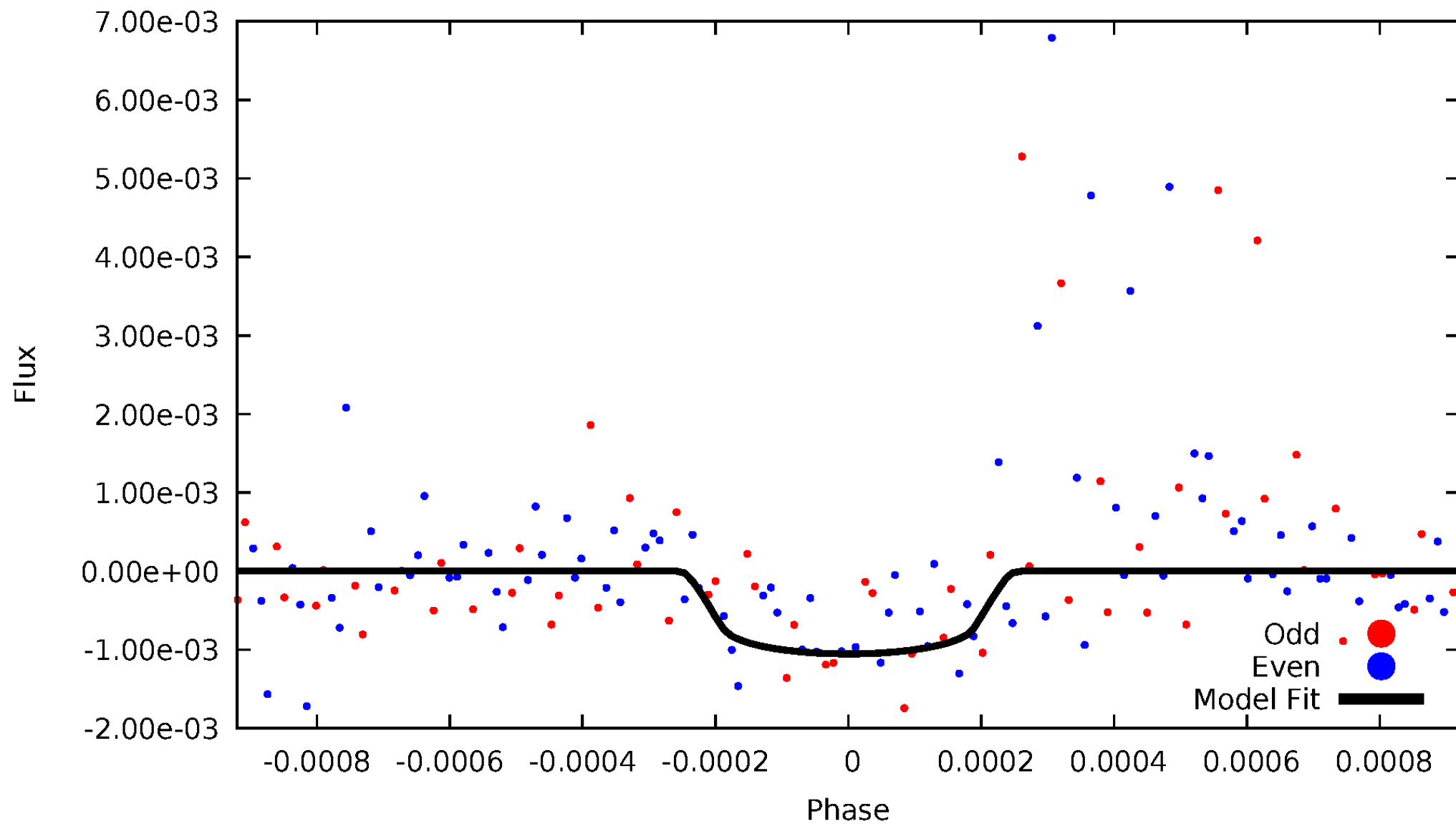


TCE 004741455-06



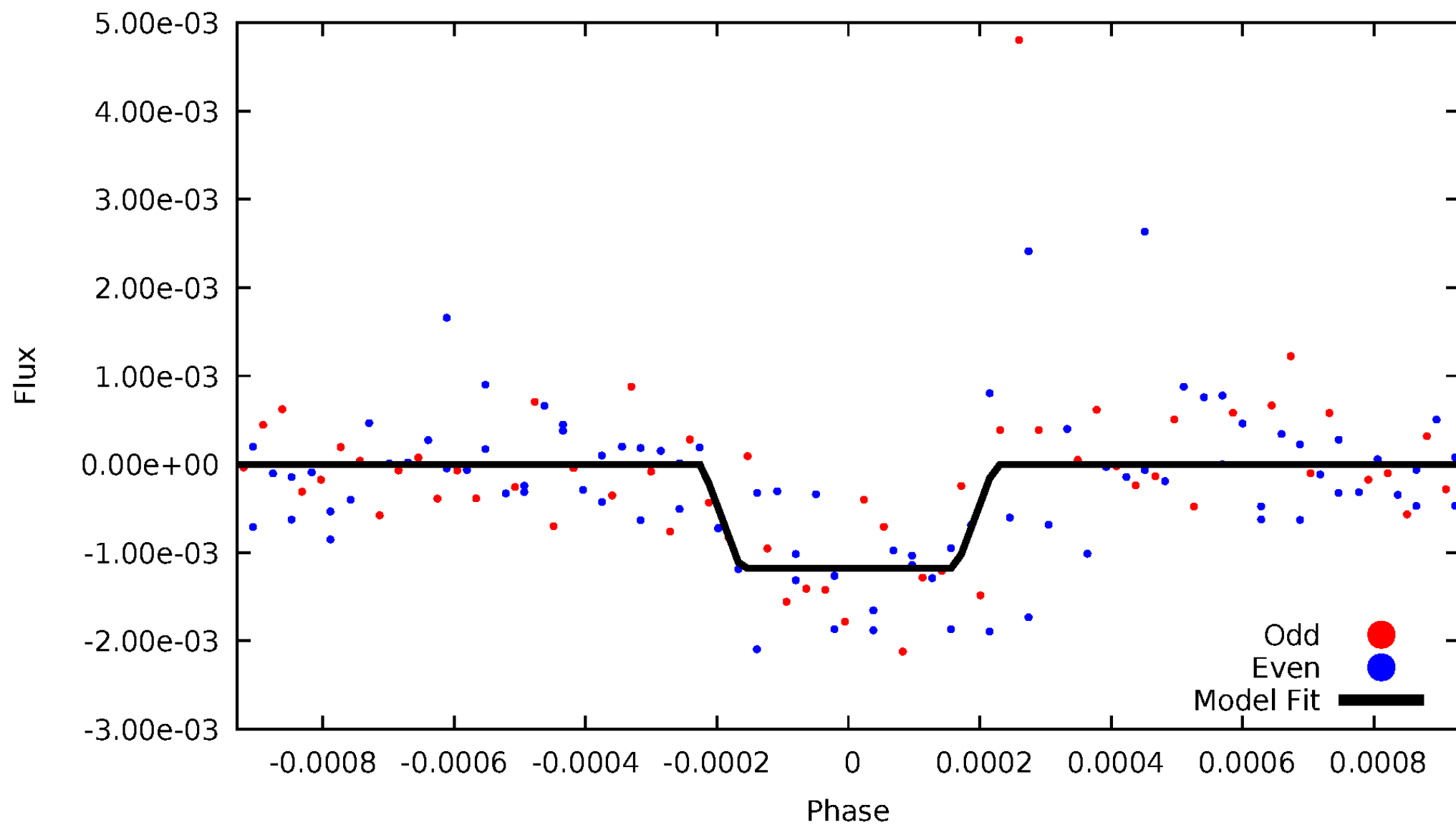
DV Odd/Even

TCE 004741455-06



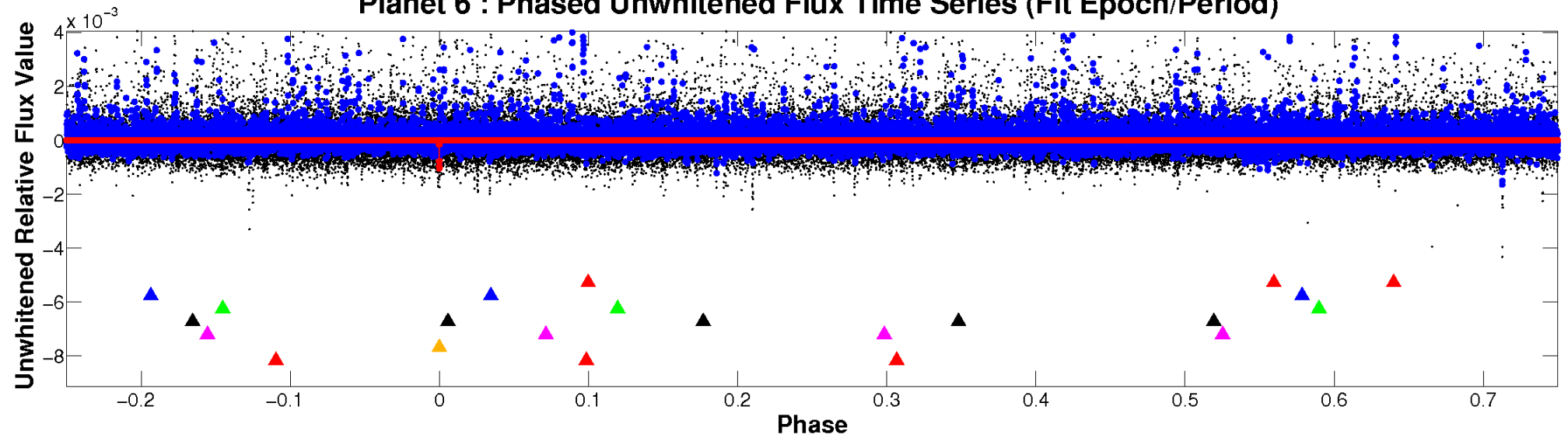
ALT Odd/Even

TCE 004741455-06

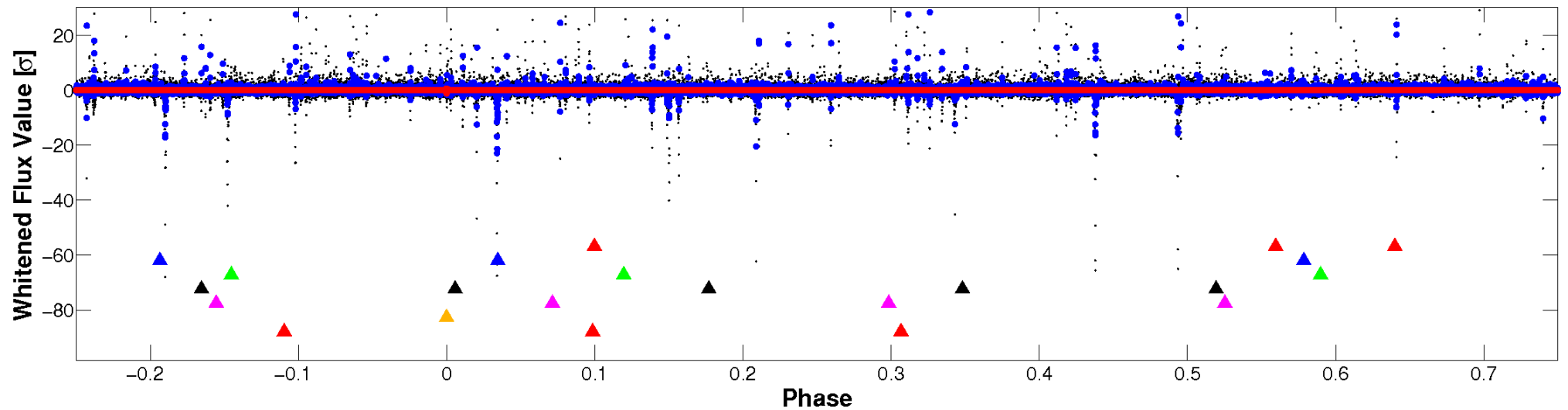


Non-Whitened Vs. Whitened Light Curve

Planet 6 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

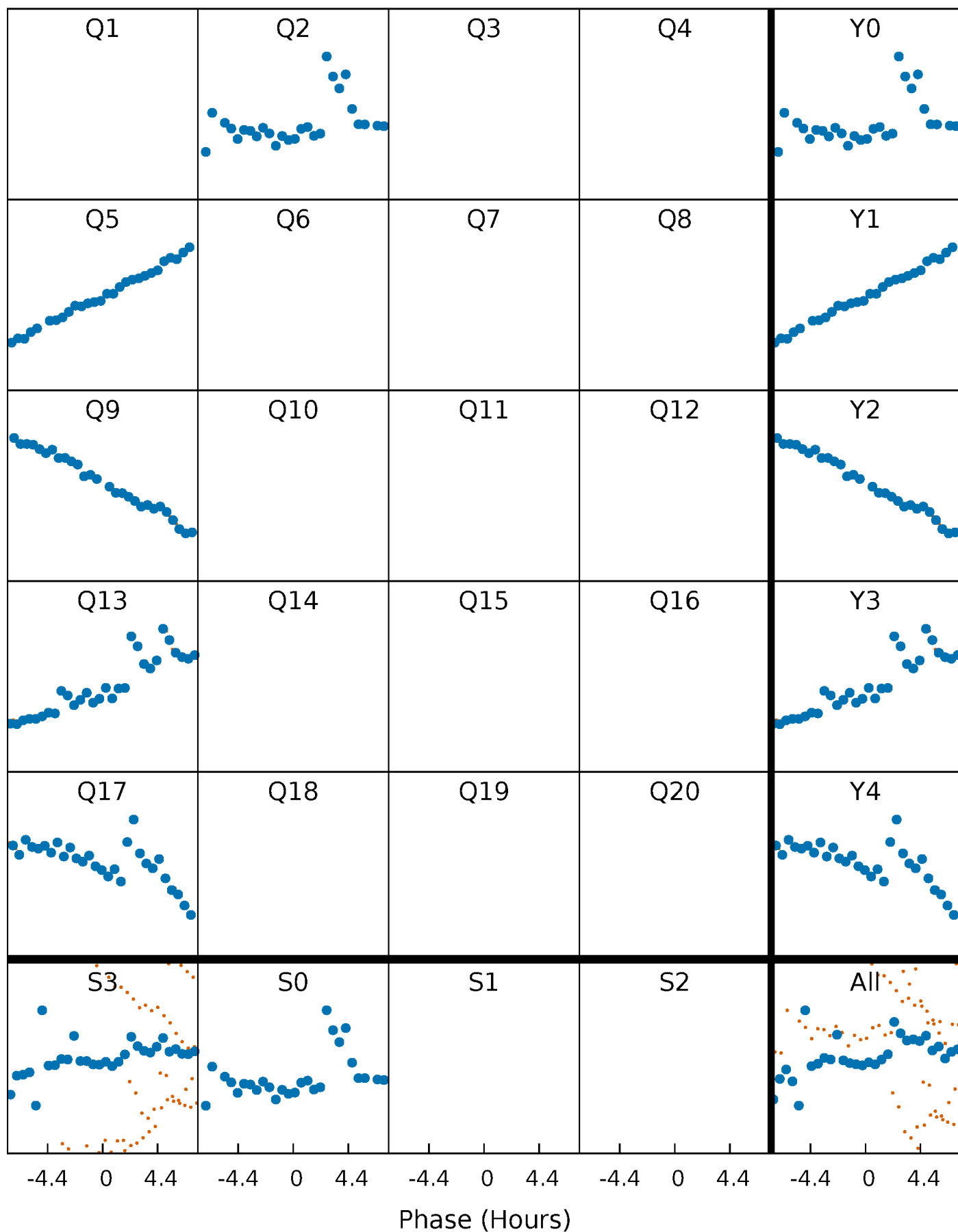


Planet 6 : Phased Whitened Flux Time Series (Fit Epoch/Period)



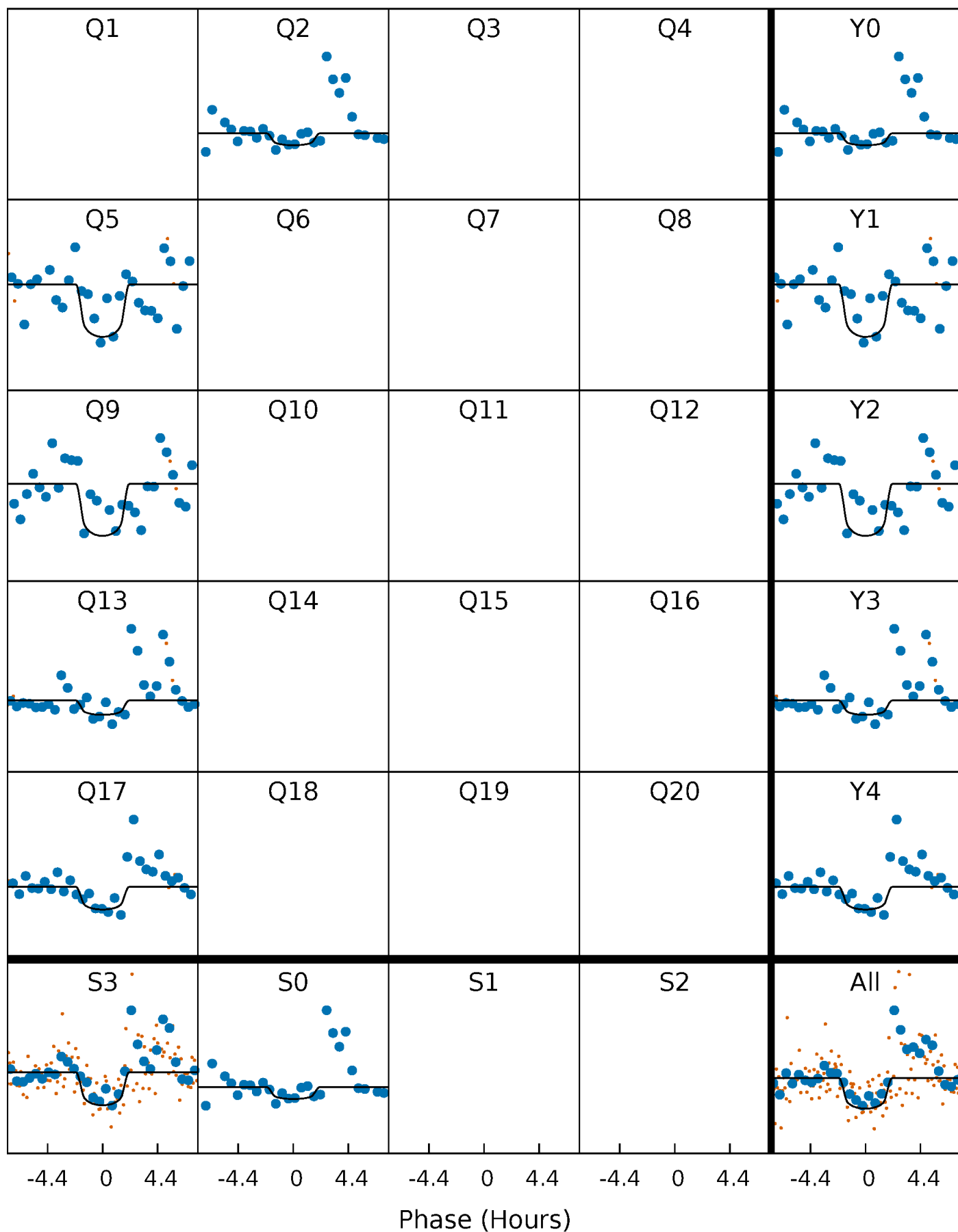
PDC Quarter-Phased Transit Curves

TCE 004741455-06 $P=346.094925$ Days $T_0=187.784759$ (BKJD)



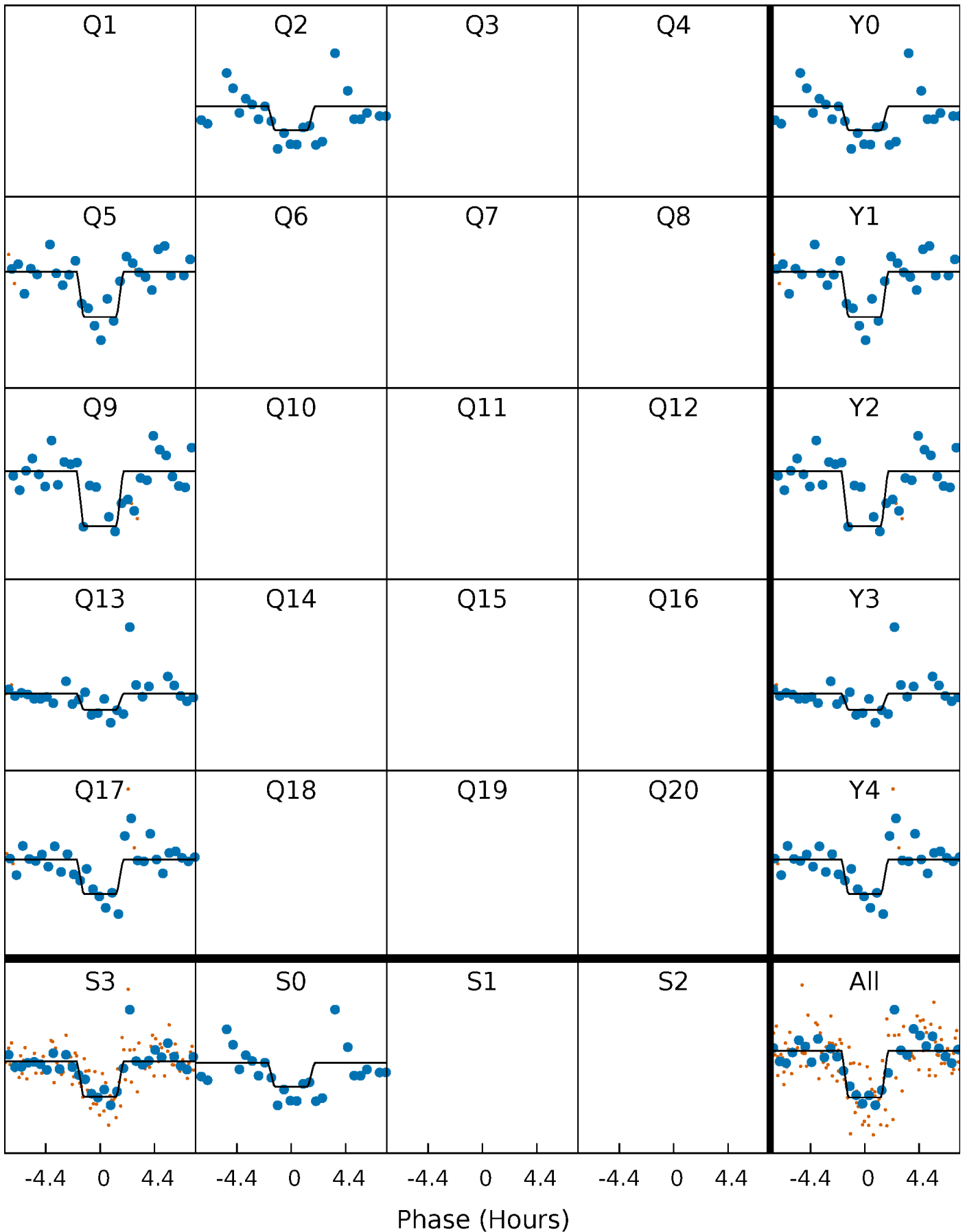
DV Quarter-Phased Transit Curves

TCE 004741455-06 $P=346.094925$ Days $T_0=187.784759$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

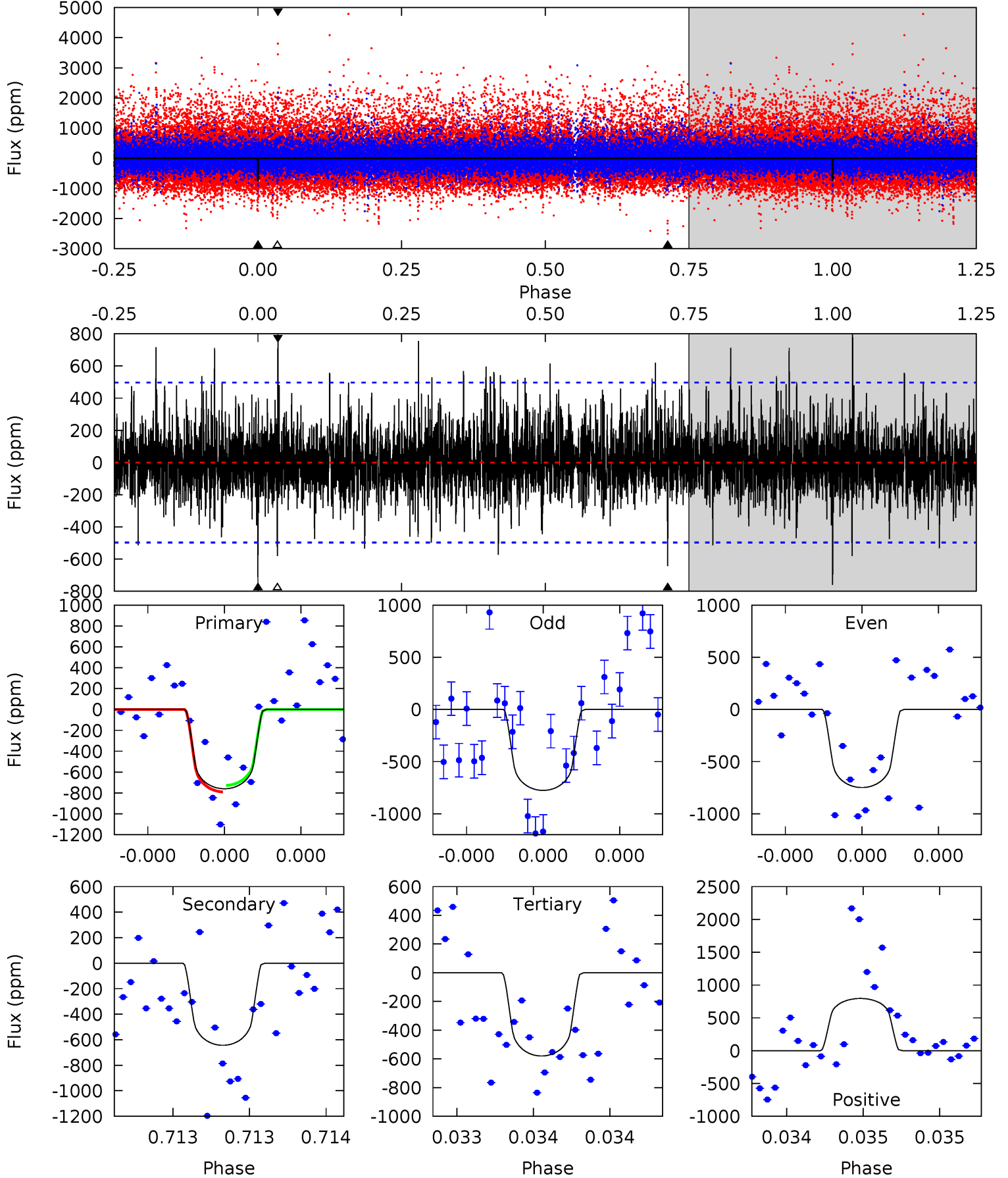
TCE 004741455-06 P=346.098182 Days $T_0=187.775454$ (BKJD)



DV Model-Shift Uniqueness Test

004741455-06, P = 346.094925 Days, E = 187.784759 Days

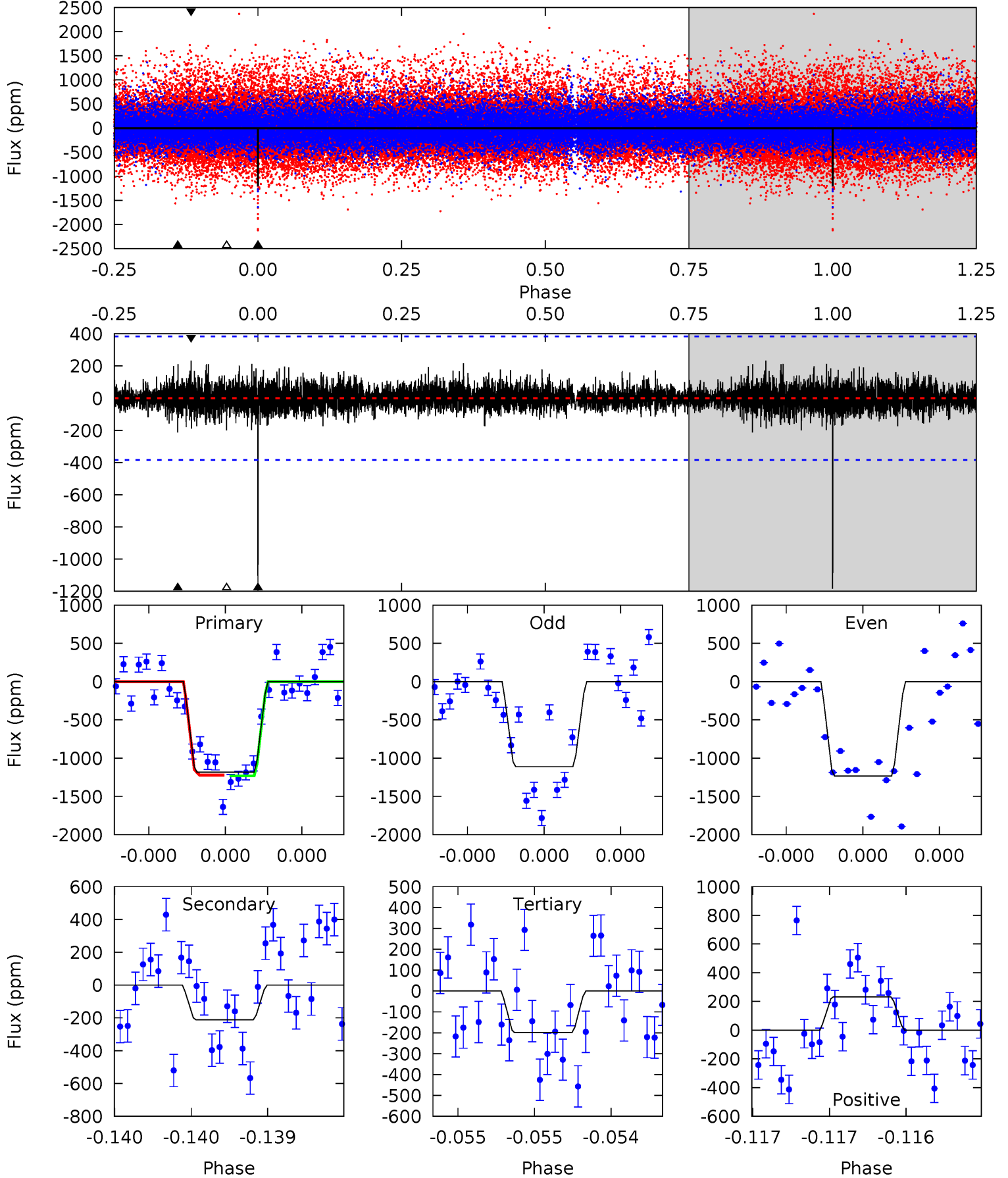
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.52	7.22	6.50	8.92	5.57	3.48	1.72	2.02	-0.40	0.71	-1.71	0.13	1.03	0.51	0.35



Alt Model-Shift Uniqueness Test

004741455-06, P = 346.098182 Days, E = 187.775454 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	3.09	2.91	3.39	5.61	3.53	0.72	14.3	13.9	0.19	-0.30	0.86	1.00	0.16	0.08



Stellar Parameters For KIC 004741455

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	3801^{+76}_{-83}	$4.752^{+0.042}_{-0.025}$	$-0.200^{+0.100}_{-0.100}$	$0.492^{+0.027}_{-0.038}$	$0.499^{+0.031}_{-0.034}$	$5.898^{+1.160}_{-0.665}$
	+2%/-2%	+1%/-1%	+50%/-50%	+5%/-8%	+6%/-7%	+20%/-11%
Source	PHO2	PHO2	PHO2	DSEP		

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

Secondary Eclipse Parameters for KIC 004741455-06 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-643 ± 89	$1.98^{+1.42}_{-1.23}$	187^{+4}_{-5}	3363^{+1317}_{-526}	$53216^{+306855}_{-36081}$
Alt.	-212 ± 69	$2.05^{+1.54}_{-1.27}$	187^{+4}_{-5}	2833^{+965}_{-412}	16415^{+93276}_{-11719}

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

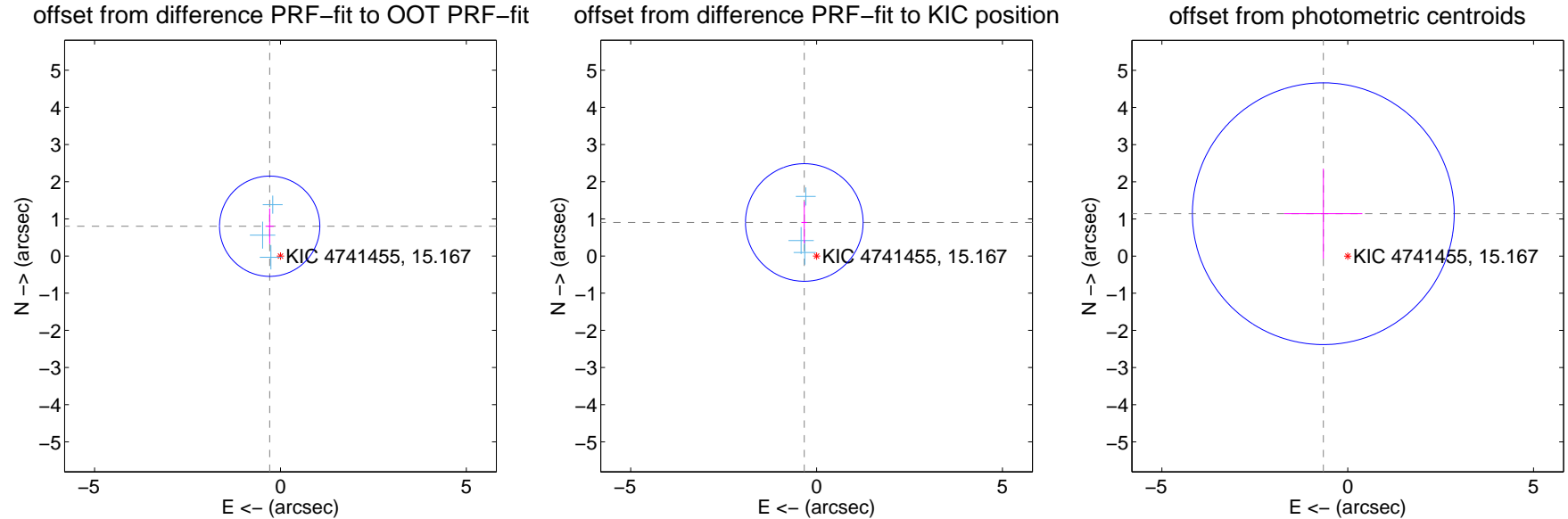
DV Centroid Data

Supplemental centroid analysis for 004741455-06. Kepler magnitude: 15.17. Transit SNR 6.54

There are 3 quarters with good PRF difference image offsets

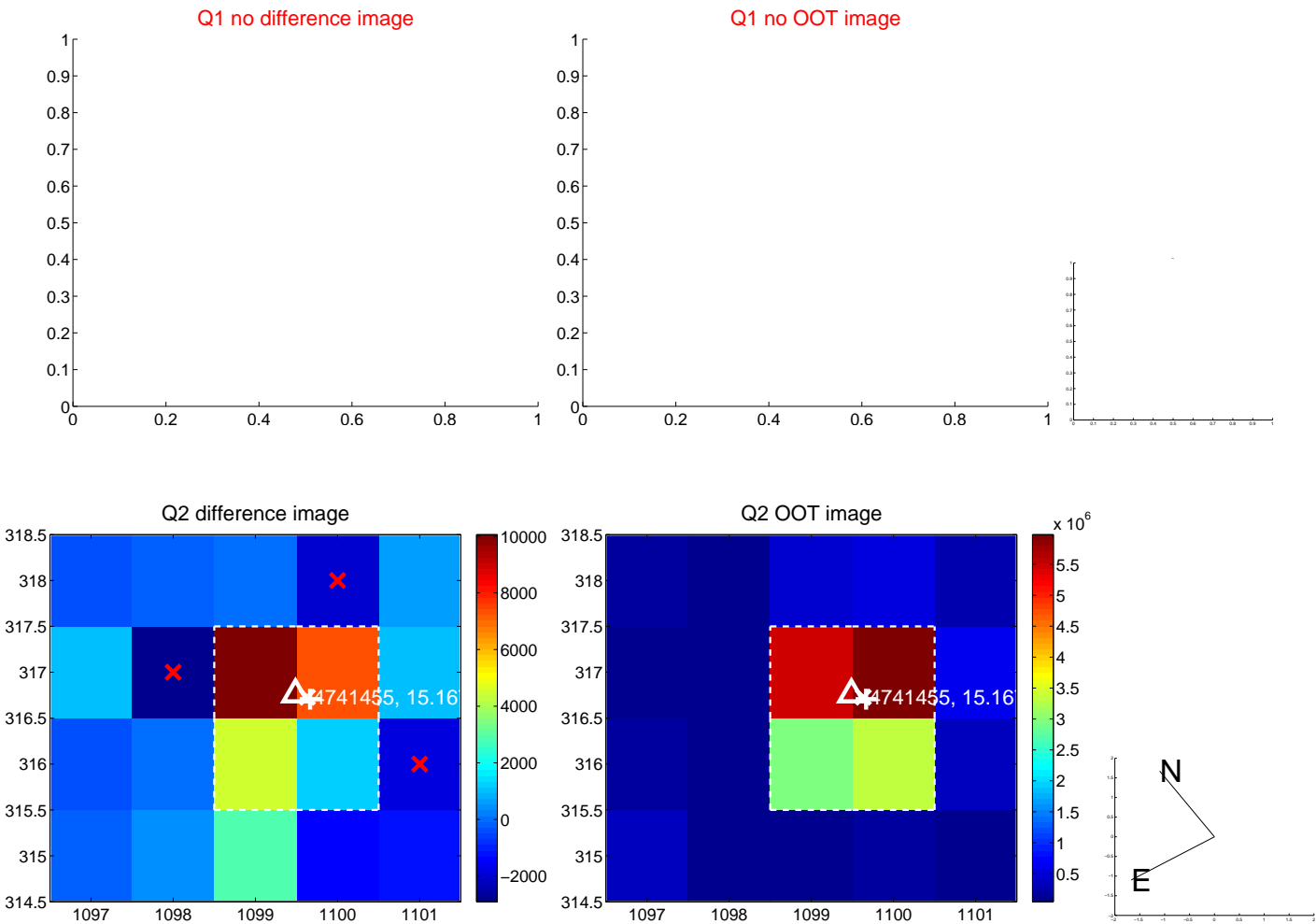
The direct PRF centroid is offset from the target star catalog position by about 0.14 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.853 ± 0.450	1.90	0.290 ± 0.111	0.802 ± 0.477
PRF-fit source offset from KIC position	0.961 ± 0.527	1.82	0.331 ± 0.078	0.903 ± 0.561
photometric centroid source offset	1.32 ± 1.17	1.12	0.66 ± 1.05	1.14 ± 1.21

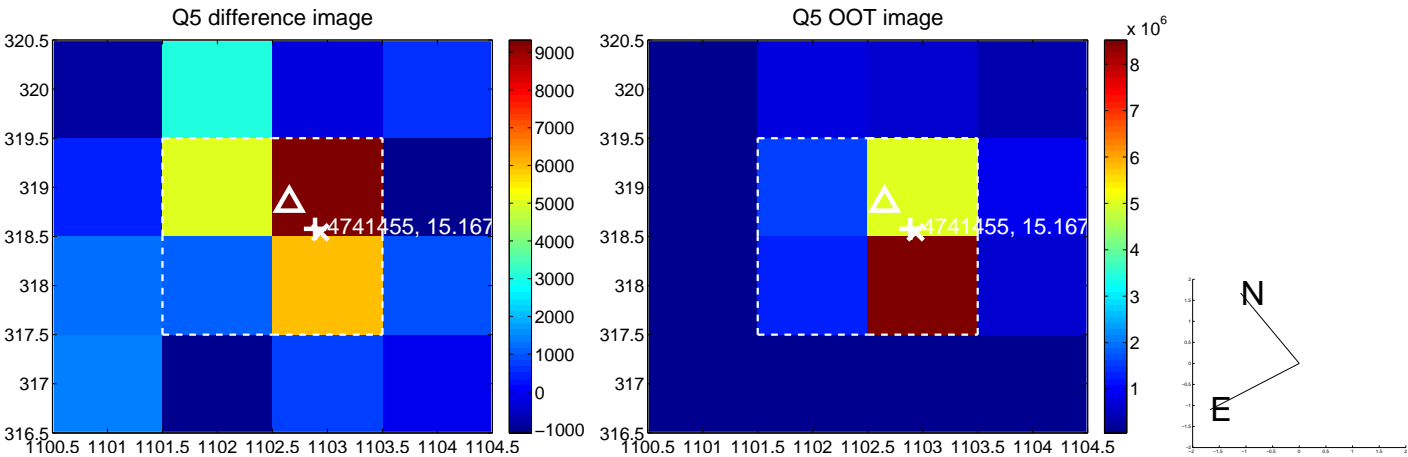


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

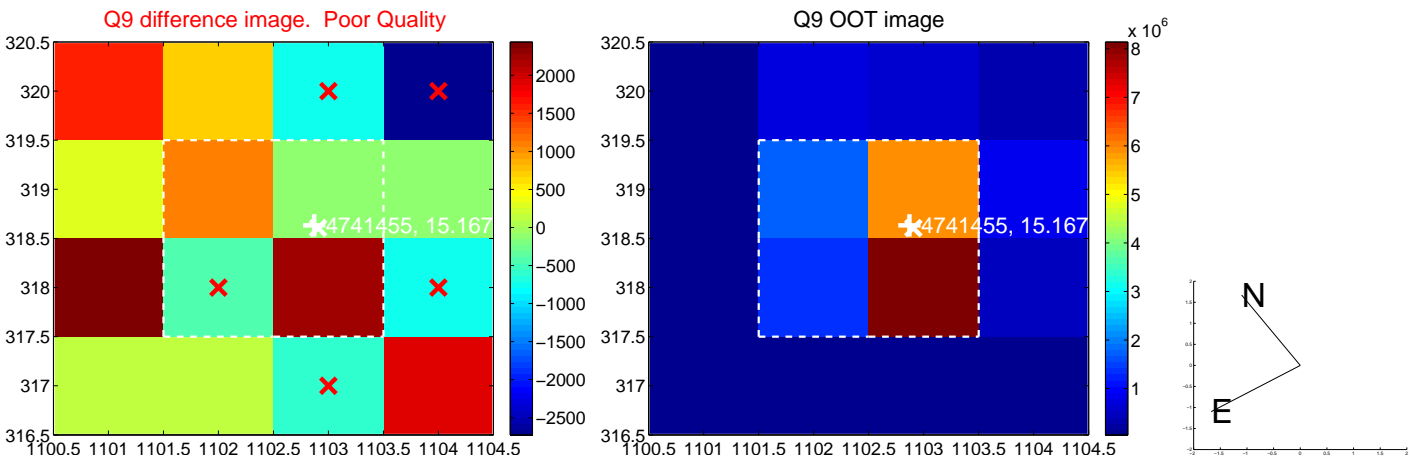
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



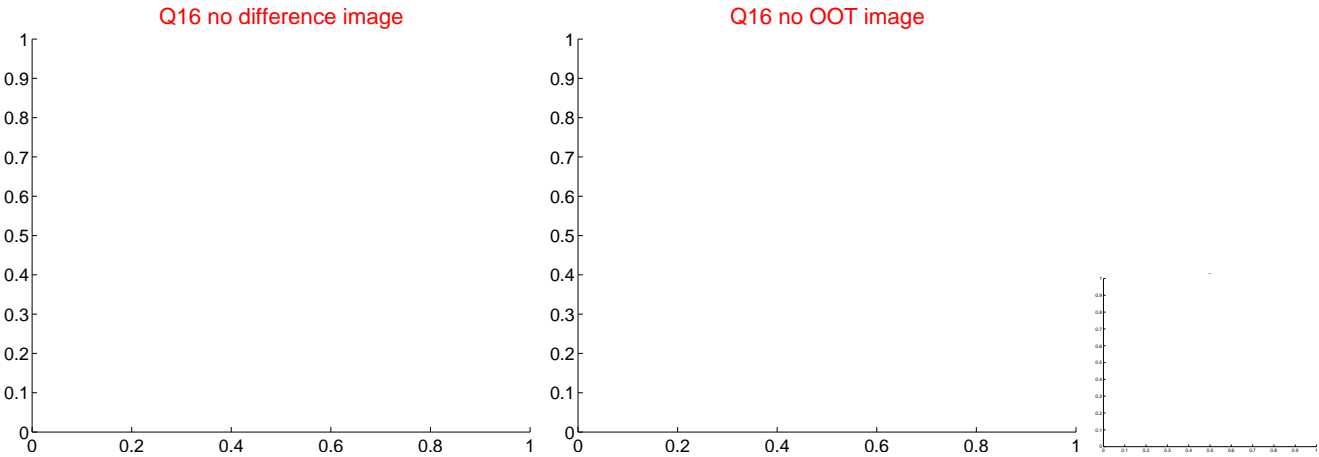
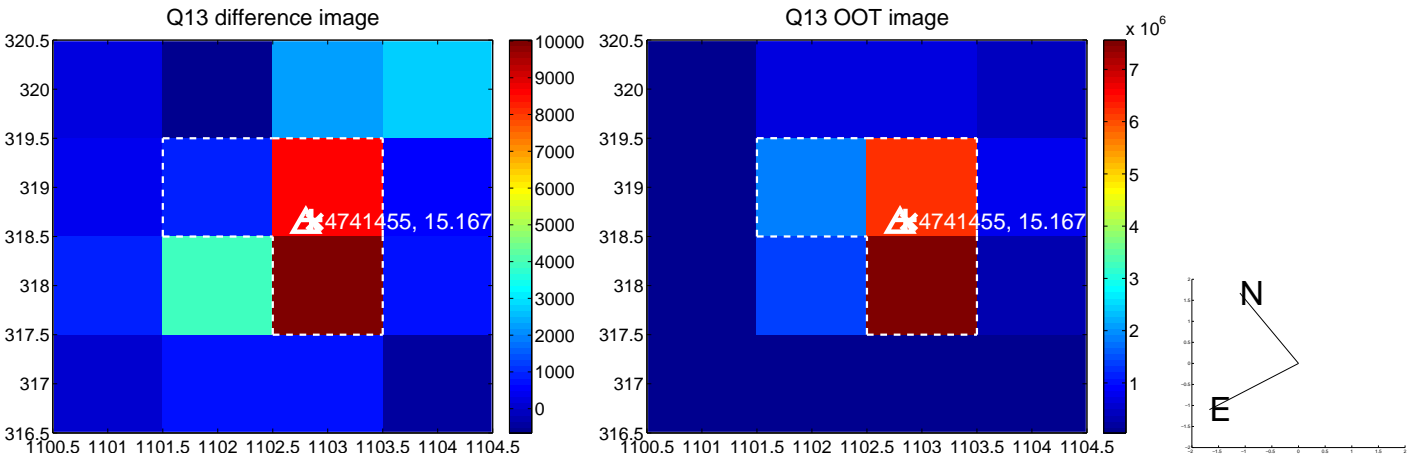
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



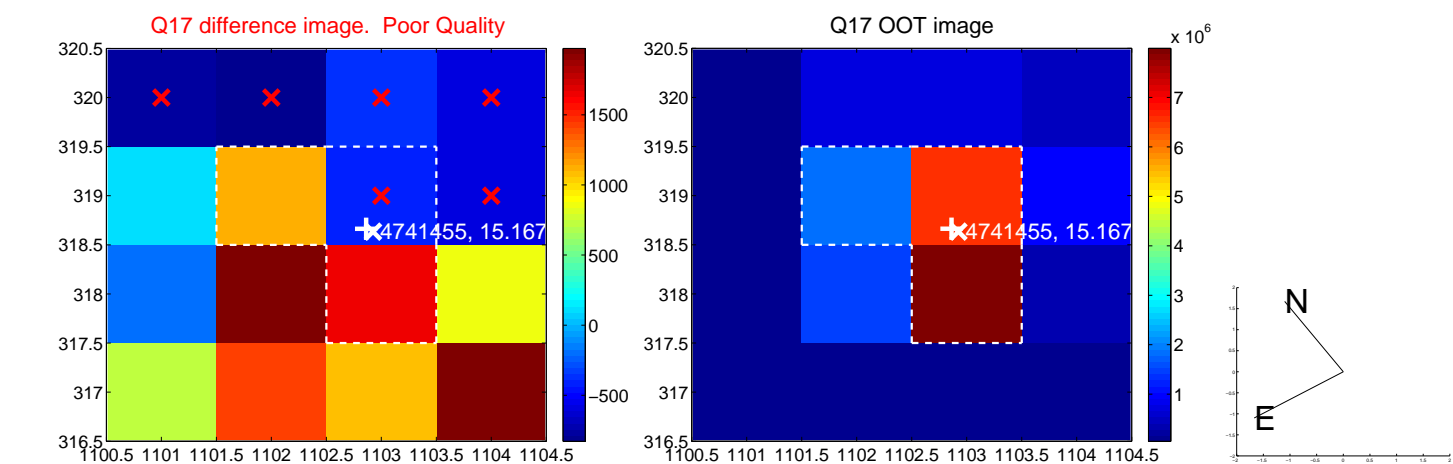
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.



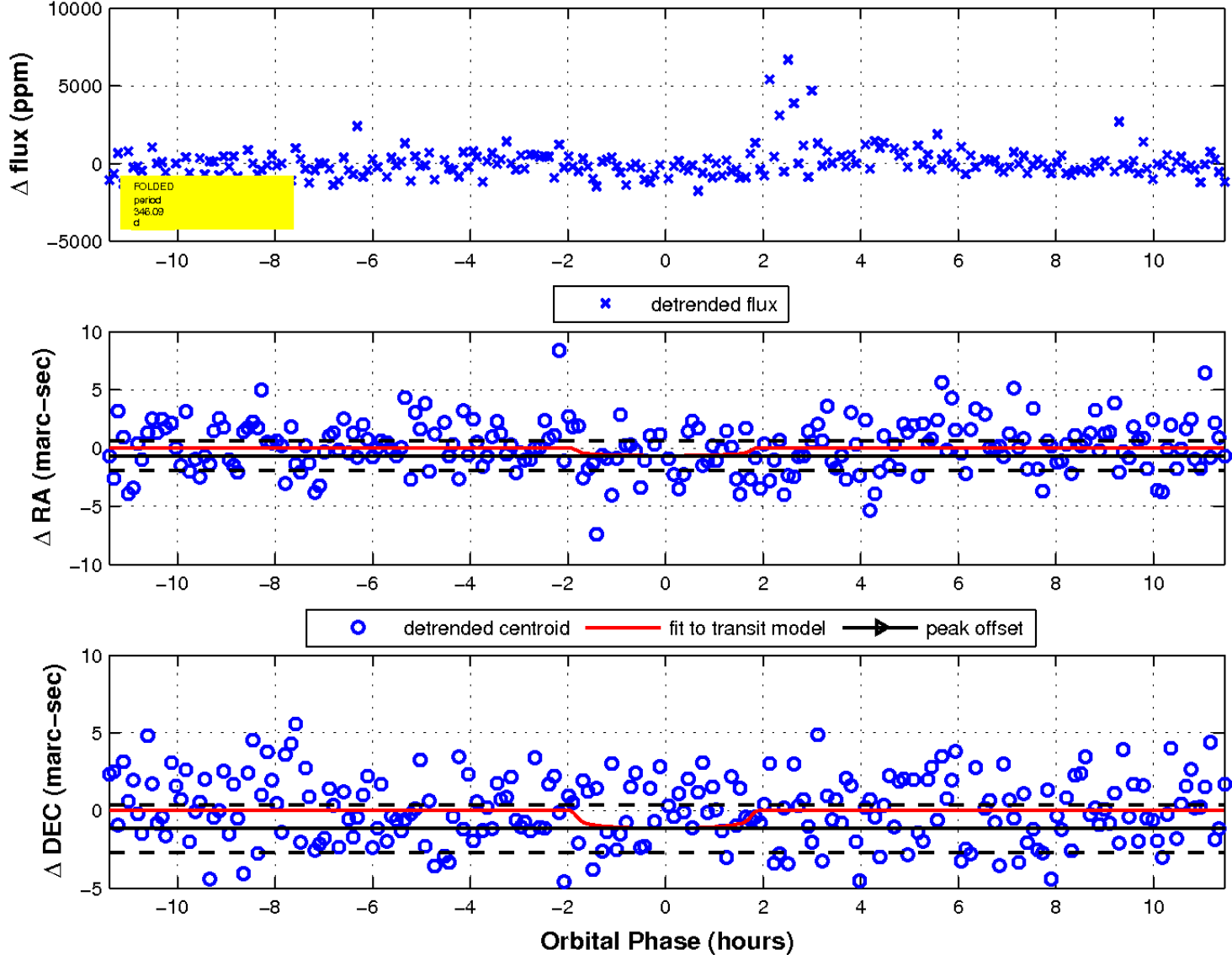
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

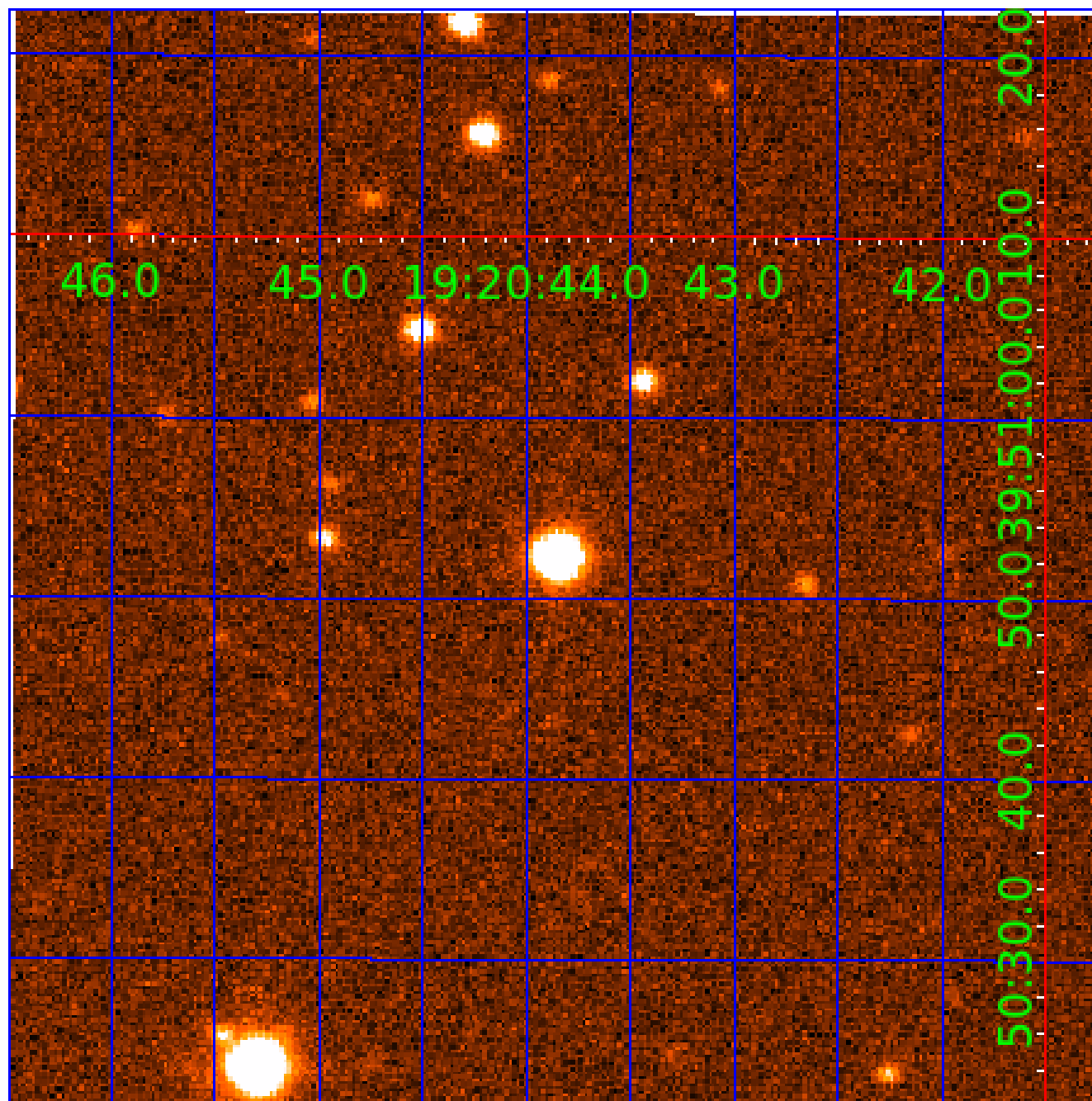


fluxWeightedCentroids, Planet 6 of 7



UKIRT Image

Declination



KIC 004741455

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})
004741455-02	OBS	No	613.272130	199.745849	2817.1	7.631	10.9	13.0	0.49	3801	2.59	0.04
004741455-03	OBS	No	437.752204	391.940167	1824.7	6.438	10.7	9.9	0.49	3801	2.08	0.06
004741455-04	OBS	No	286.849136	367.514810	1017.4	3.338	11.2	7.2	0.49	3801	1.61	0.10
004741455-05	OBS	No	424.630677	133.975685	1752.5	4.885	13.2	9.0	0.49	3801	2.04	0.06
004741455-06	OBS	No	346.094925	187.784759	1054.0	3.821	9.8	6.5	0.49	3801	1.69	0.08
004741455-07	OBS	No	620.151735	293.937362	806.4	7.500	9.3	-1.0	0.49	3801	1.39	0.04

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004741455-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
004741455-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
004741455-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_TER_DV—MOD_POS_DV
004741455-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES
004741455-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV
004741455-07	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_NOFITS—HALO_GHOST

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

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

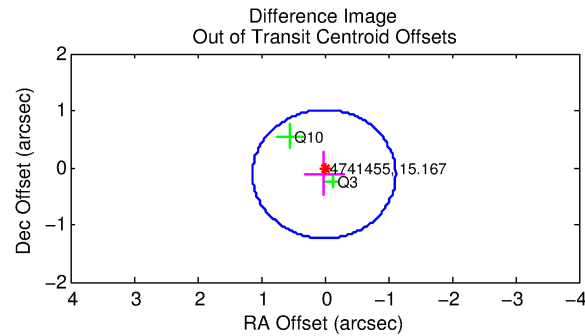
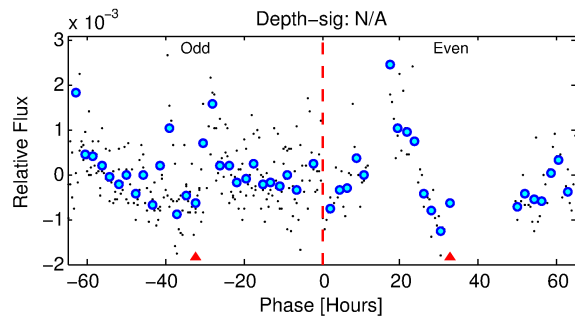
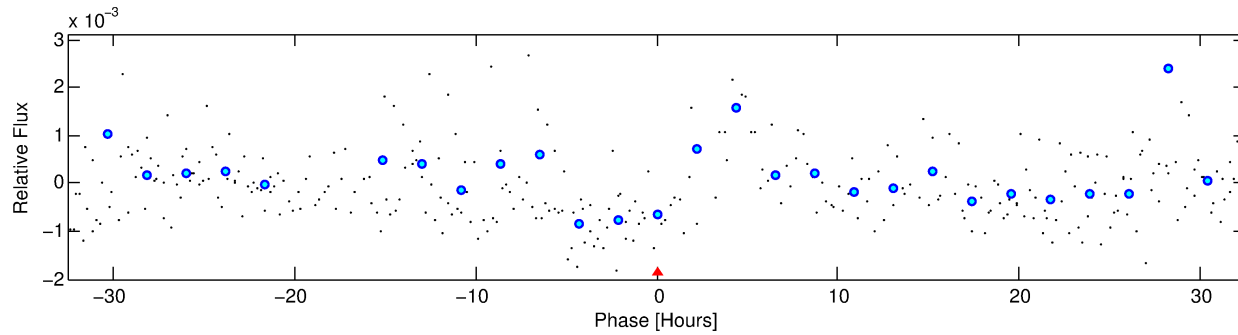
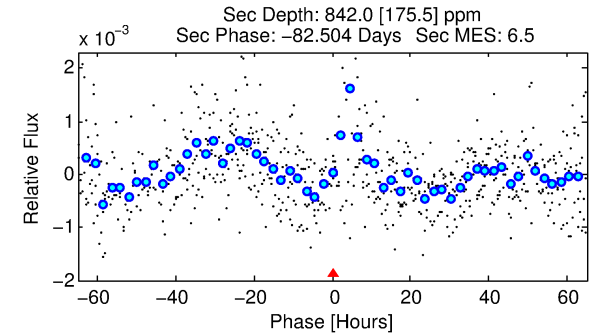
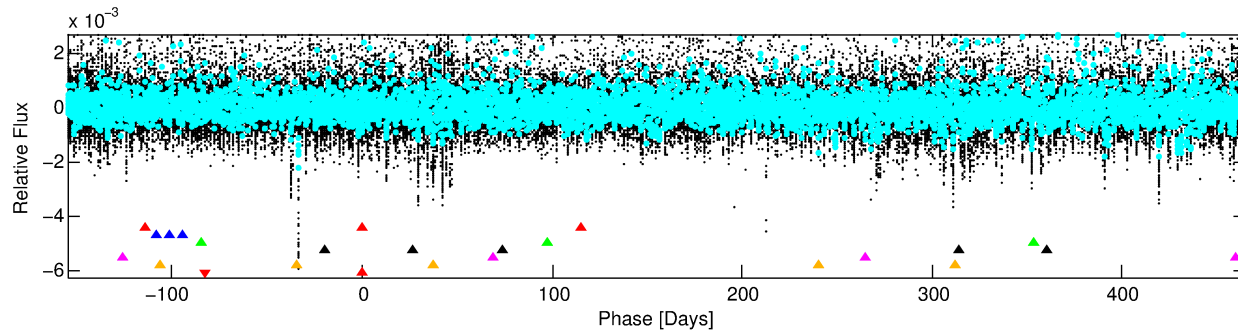
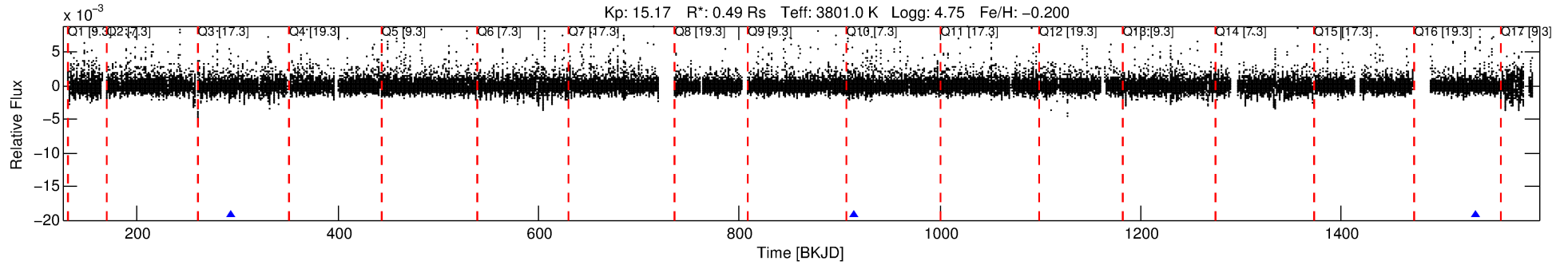
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004741455-07

No Significant Match Found

DV One-Page Summary

KIC: 4741455 Candidate: 7 of 7 Period: 620.152 d



TPS TCE Results:

Period = 620.15173 d
Epoch = 293.9374 BKJD

DV fit results are unavailable

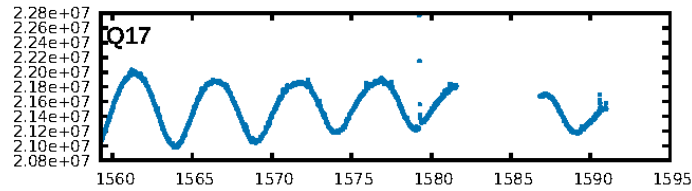
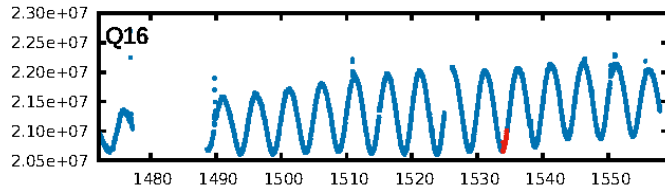
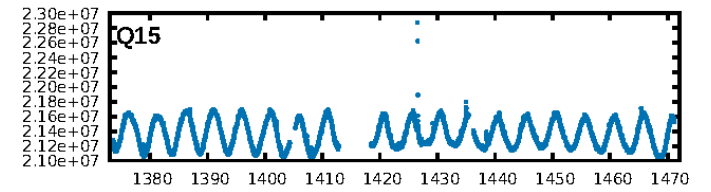
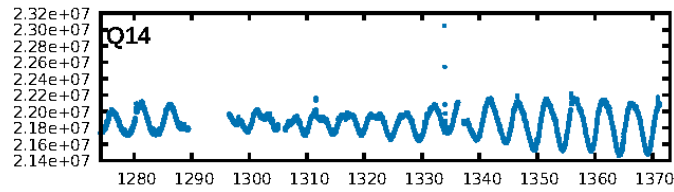
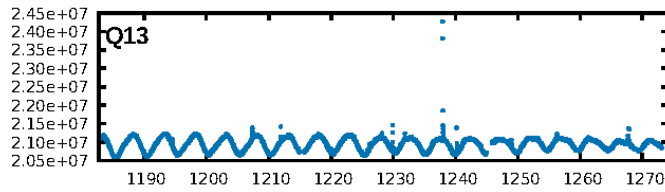
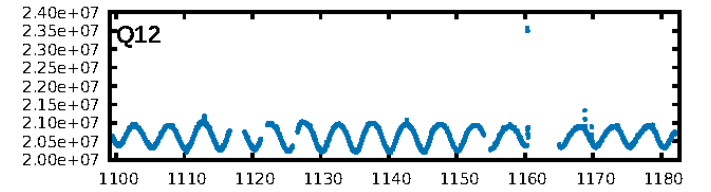
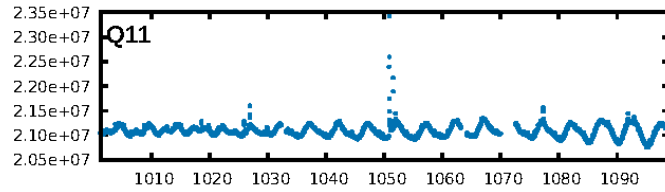
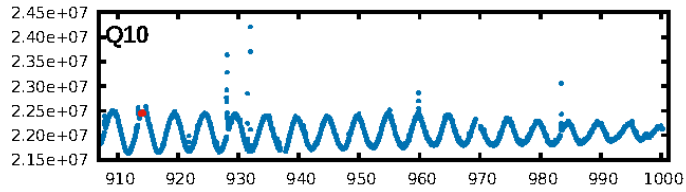
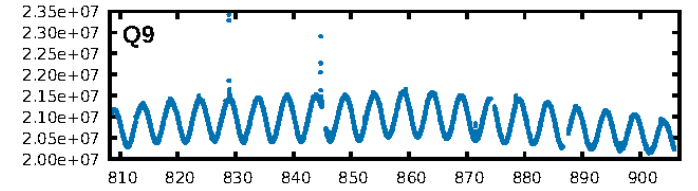
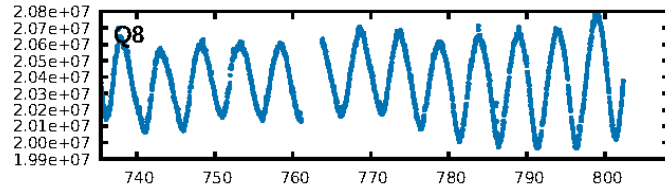
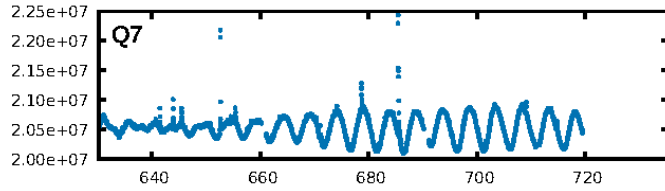
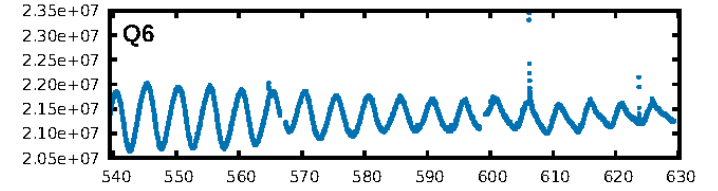
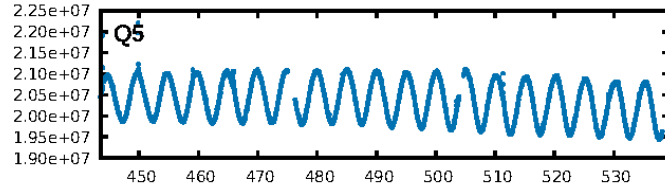
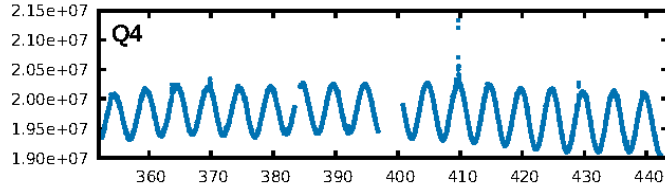
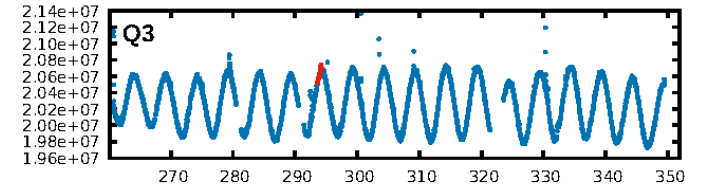
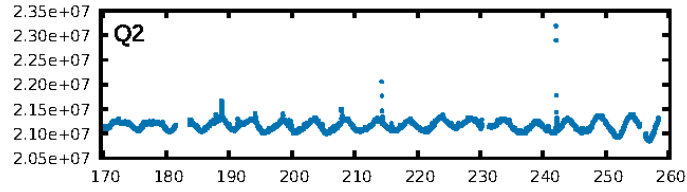
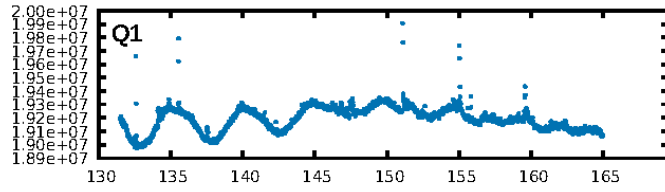
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [15.43σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 0.02989
Centroid-sig: 14.2%
Centroid-so: 0.639 arcsec [0.97σ]
OotOffset-rm: 0.111 arcsec [0.30σ]
KicOffset-rm: 0.162 arcsec [0.40σ]
OotOffset-st: 1/1/0/0 [2]
KicOffset-st: 1/1/0/0 [2]
DiffImageQuality-fgm: 0.00 [0/2]
DiffImageOverlap-fno: 0.50 [1/2]

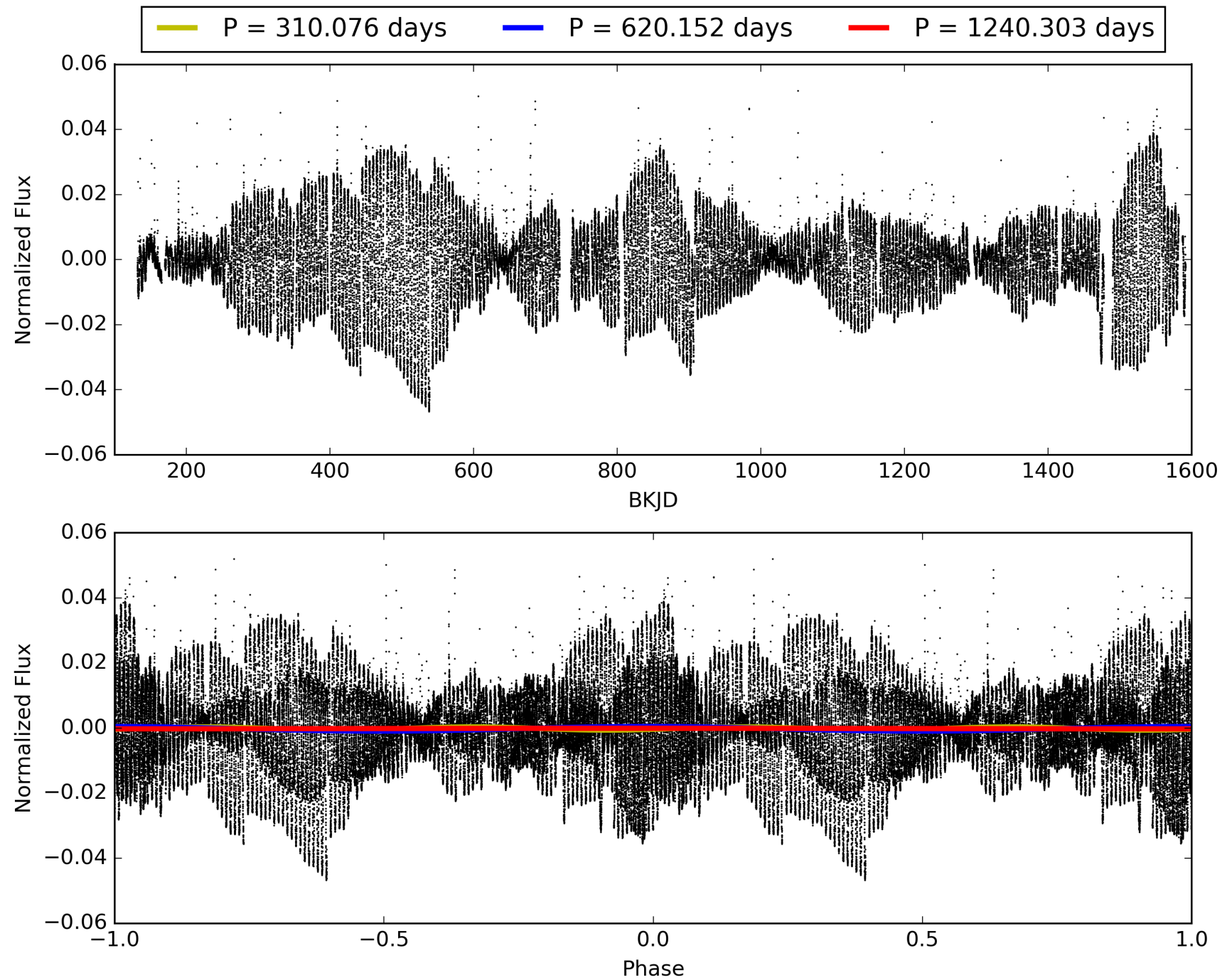
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 13:08:45 Z

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

TCE 004741455-07, PDC Light Curves

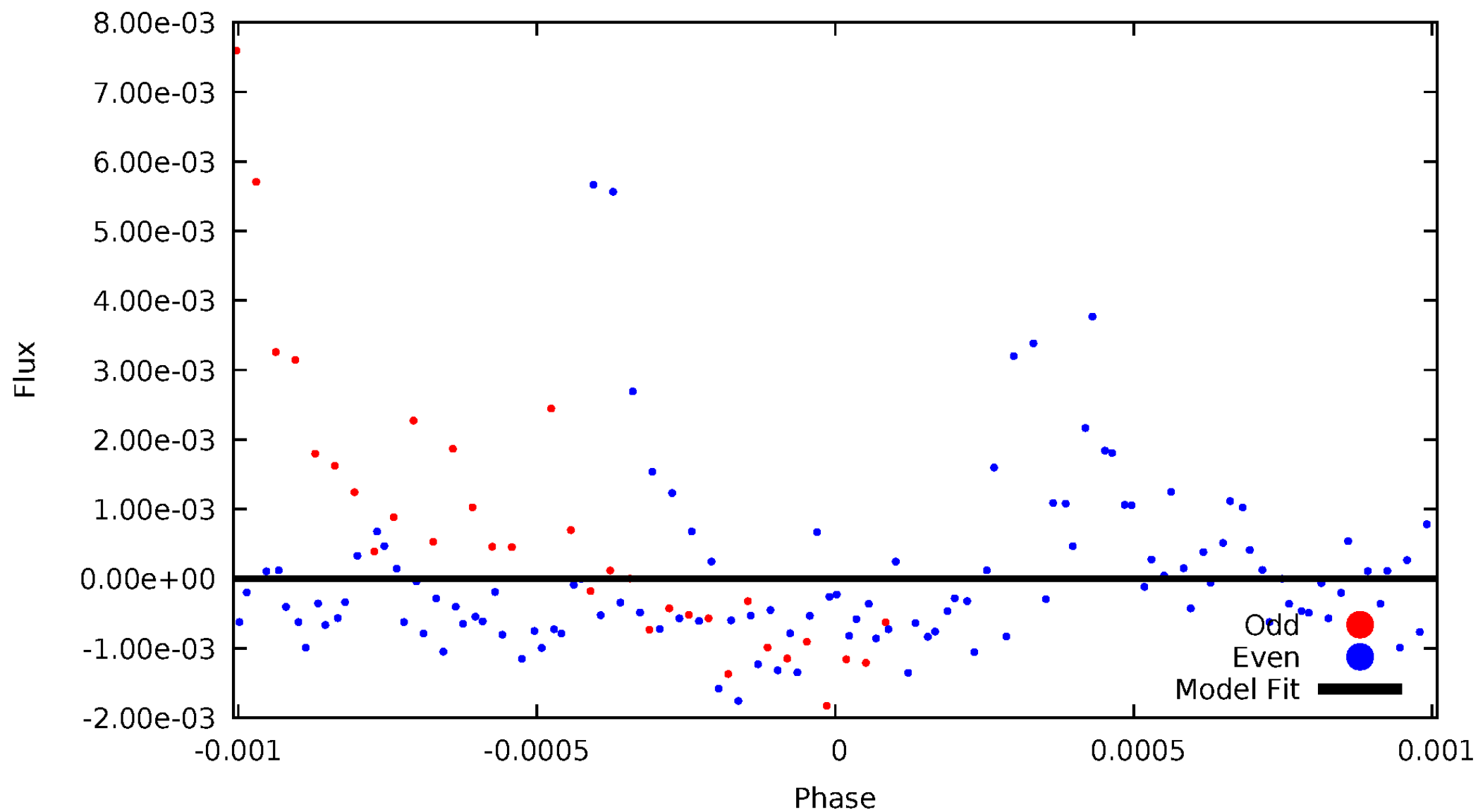


TCE 004741455-07



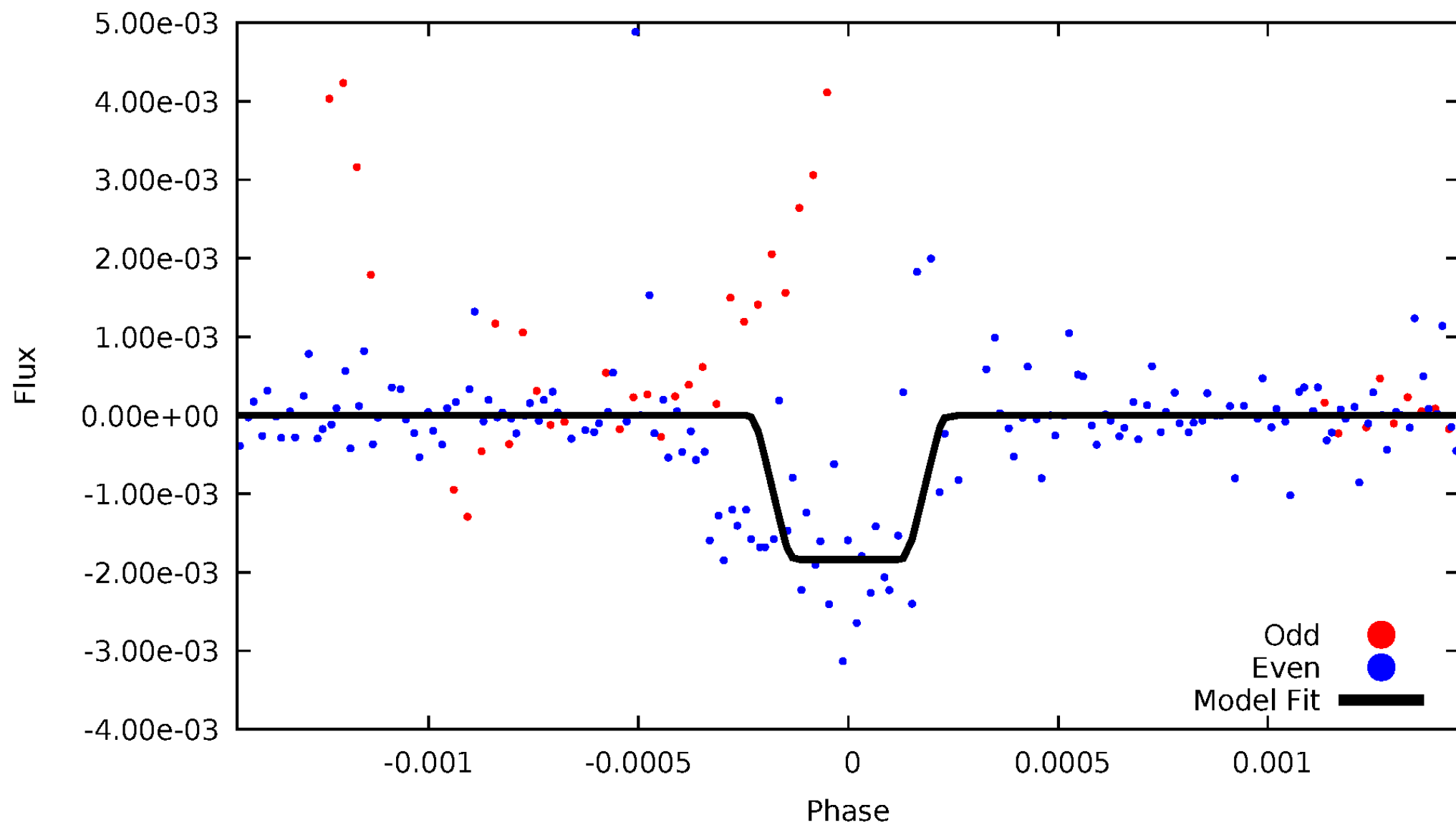
DV Odd/Even

TCE 004741455-07

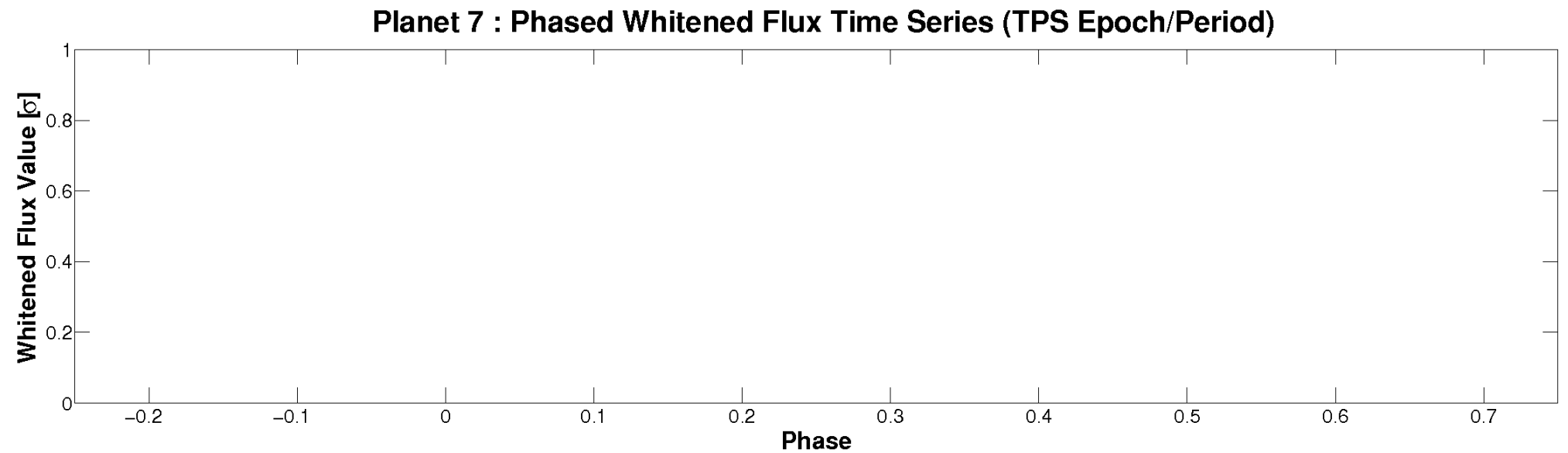
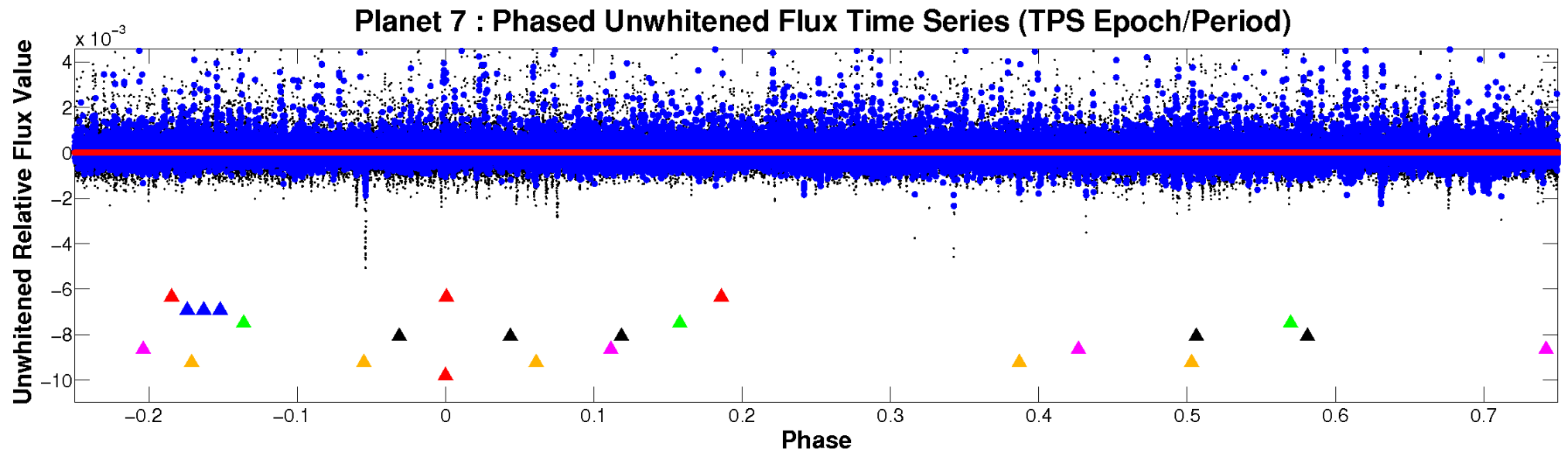


ALT Odd/Even

TCE 004741455-07

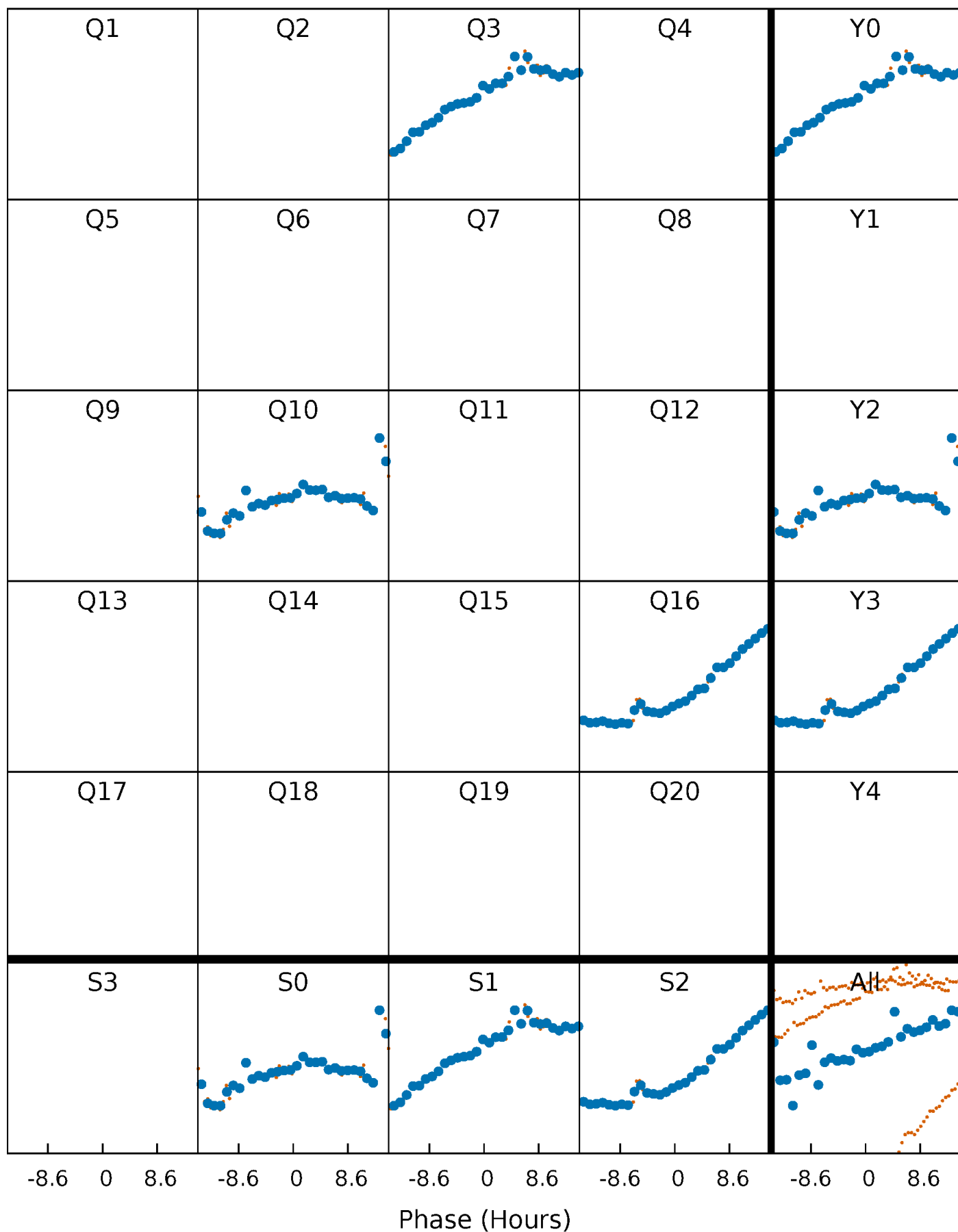


Non-Whitened Vs. Whitened Light Curve



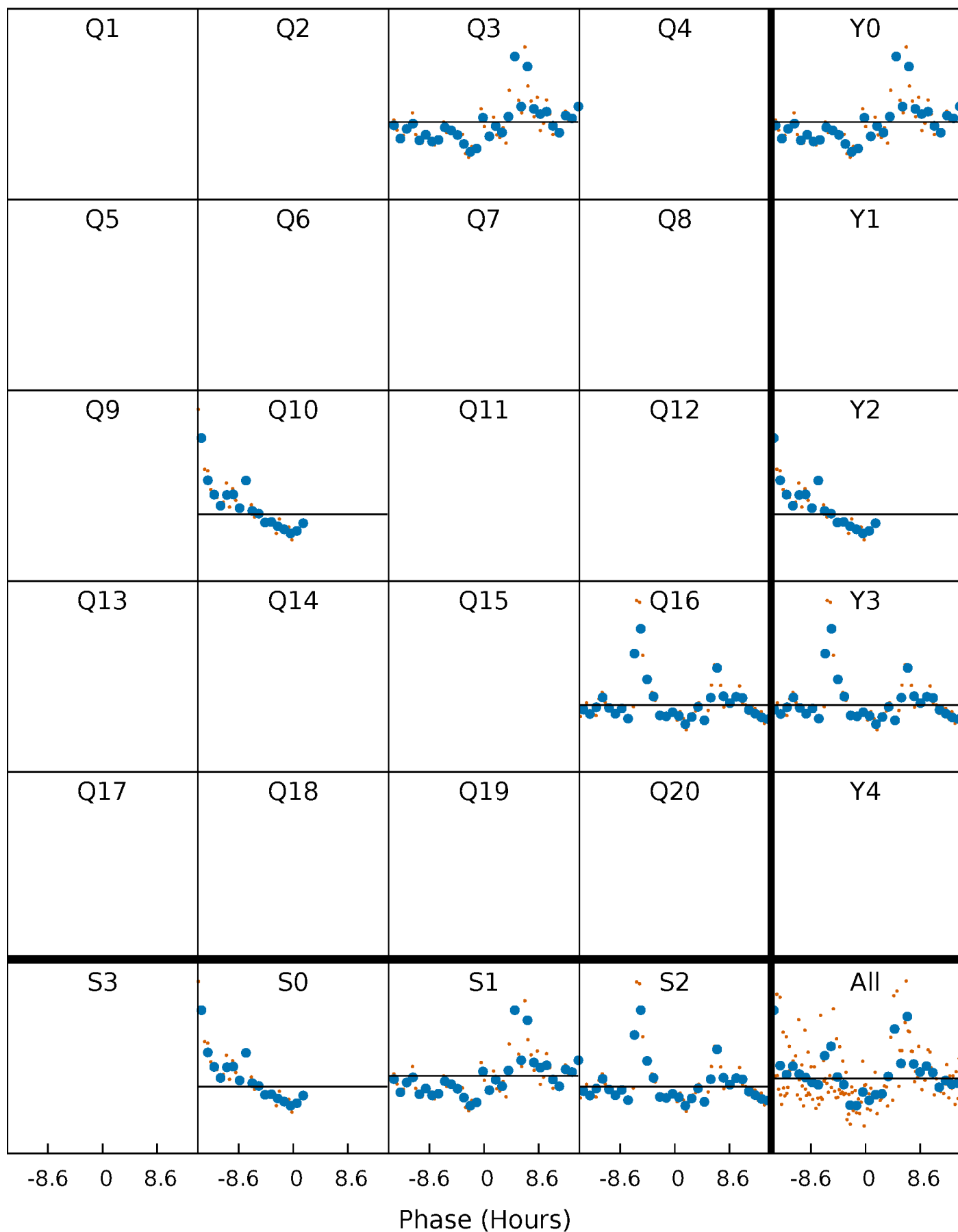
PDC Quarter-Phased Transit Curves

TCE 004741455-07 P=620.151735 Days $T_0=293.937362$ (BKJD)



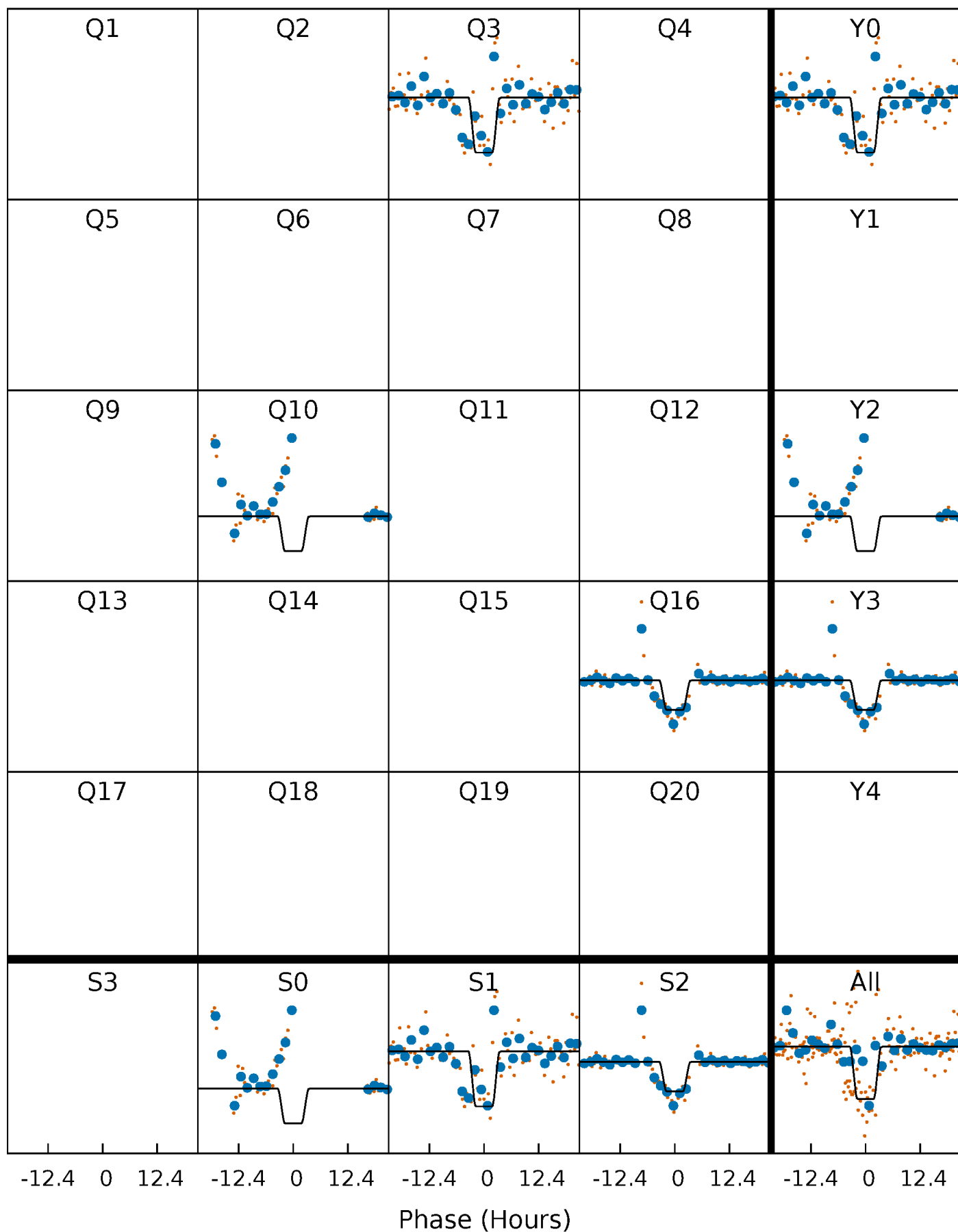
DV Quarter-Phased Transit Curves

TCE 004741455-07 P=620.151735 Days $T_0=293.937362$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

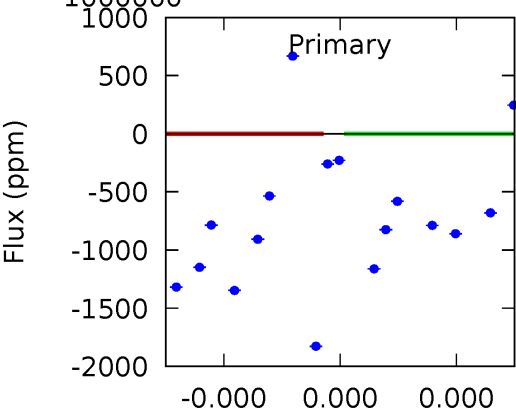
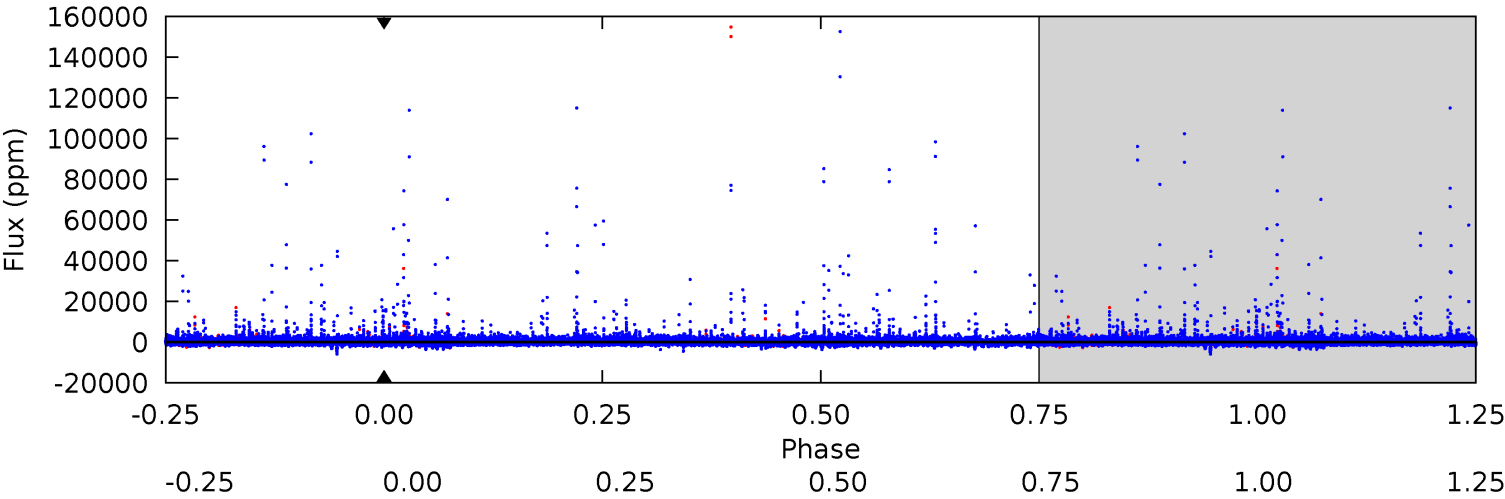
TCE 004741455-07 $P=620.151735$ Days $T_0=294.021150$ (BKJD)



DV Model-Shift Uniqueness Test

004741455-07, P = 620.151735 Days, E = 293.937362 Days

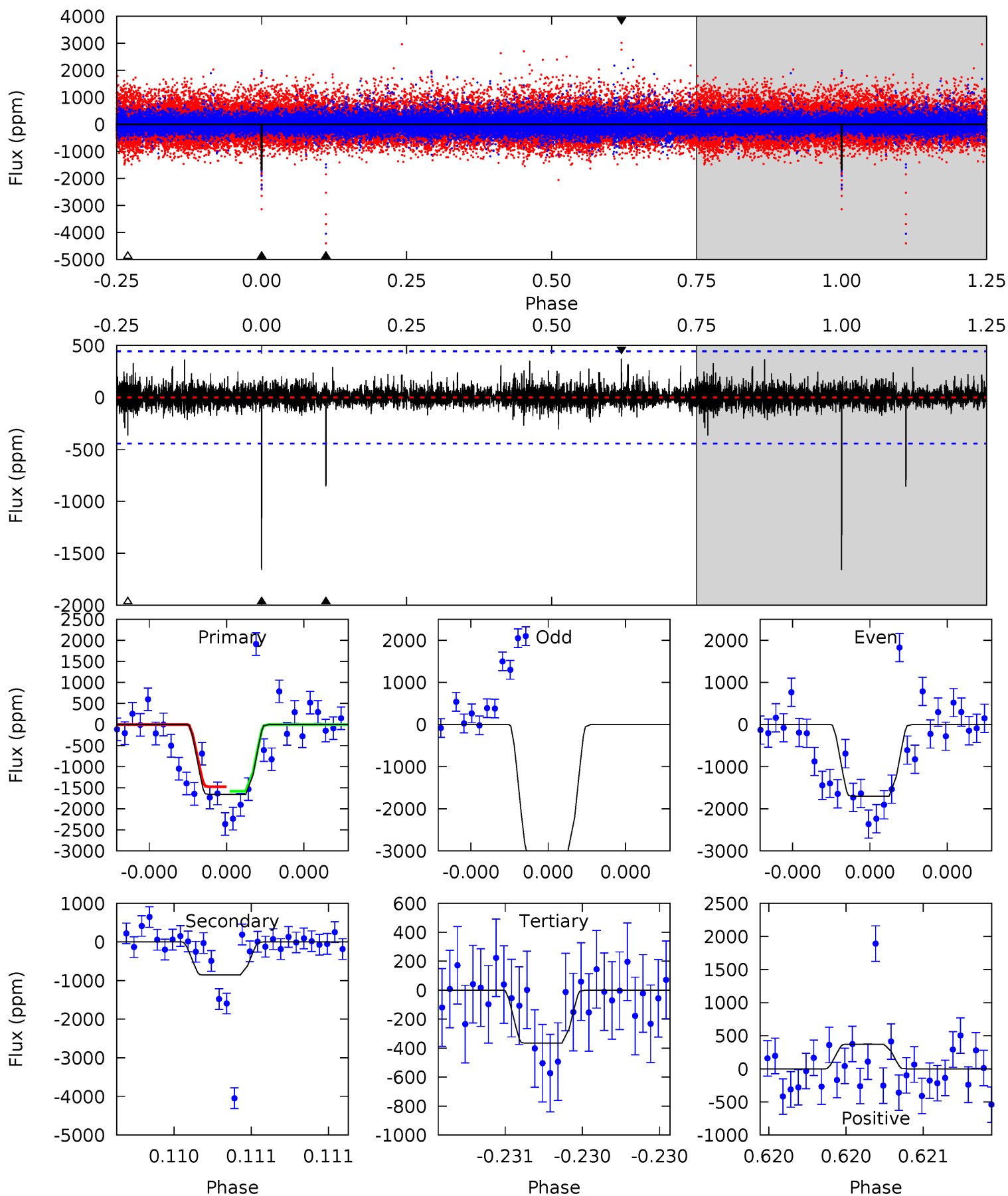
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



Alt Model-Shift Uniqueness Test

004741455-07, P = 620.151735 Days, E = 294.021150 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
20.8	10.7	4.59	4.67	5.58	3.49	0.71	16.3	16.2	6.16	6.07	6.21	0.06	0.18	0.67



Stellar Parameters For KIC 004741455

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	3801^{+76}_{-83}	$4.752^{+0.042}_{-0.025}$	$-0.200^{+0.100}_{-0.100}$	$0.492^{+0.027}_{-0.038}$	$0.499^{+0.031}_{-0.034}$	$5.898^{+1.160}_{-0.665}$
	+2%/-2%	+1%/-1%	+50%/-50%	+5%/-8%	+6%/-7%	+20%/-11%
Source	PHO2	PHO2	PHO2	DSEP		

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

Secondary Eclipse Parameters for KIC 004741455-07 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	0 ± 1000000	$4.25^{+3.93}_{-2.95}$	154^{+4}_{-4}	2586^{+5631}_{-10081}	$19904^{+7991539}_{-5608268}$
Alt.	-855 ± 80	$4.74^{+4.27}_{-3.26}$	154^{+4}_{-4}	2750^{+1146}_{-415}	$26818^{+235043}_{-19240}$

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

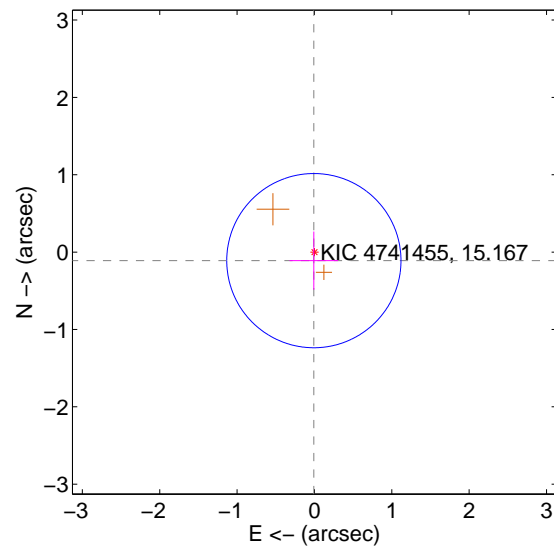
Supplemental centroid analysis for 004741455-07. Kepler magnitude: 15.17. Transit SNR -1.00

There are 0 quarters with good PRF difference image offsets

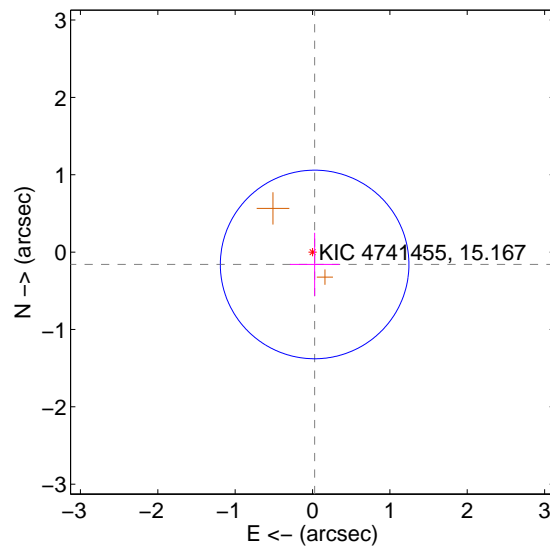
The direct PRF centroid is offset from the target star catalog position by about 0.03 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.111 ± 0.375	0.30	0.007 ± 0.314	-0.110 ± 0.376
PRF-fit source offset from KIC position	0.162 ± 0.406	0.40	-0.027 ± 0.319	-0.160 ± 0.409
photometric centroid source offset	0.64 ± 0.66	0.97	-0.04 ± 0.59	-0.64 ± 0.66

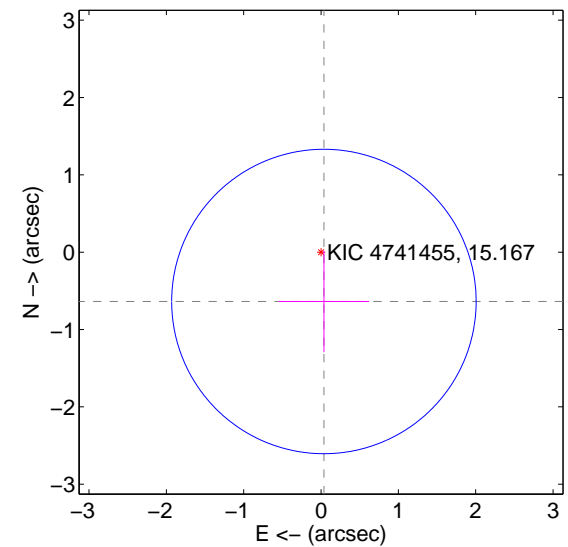
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

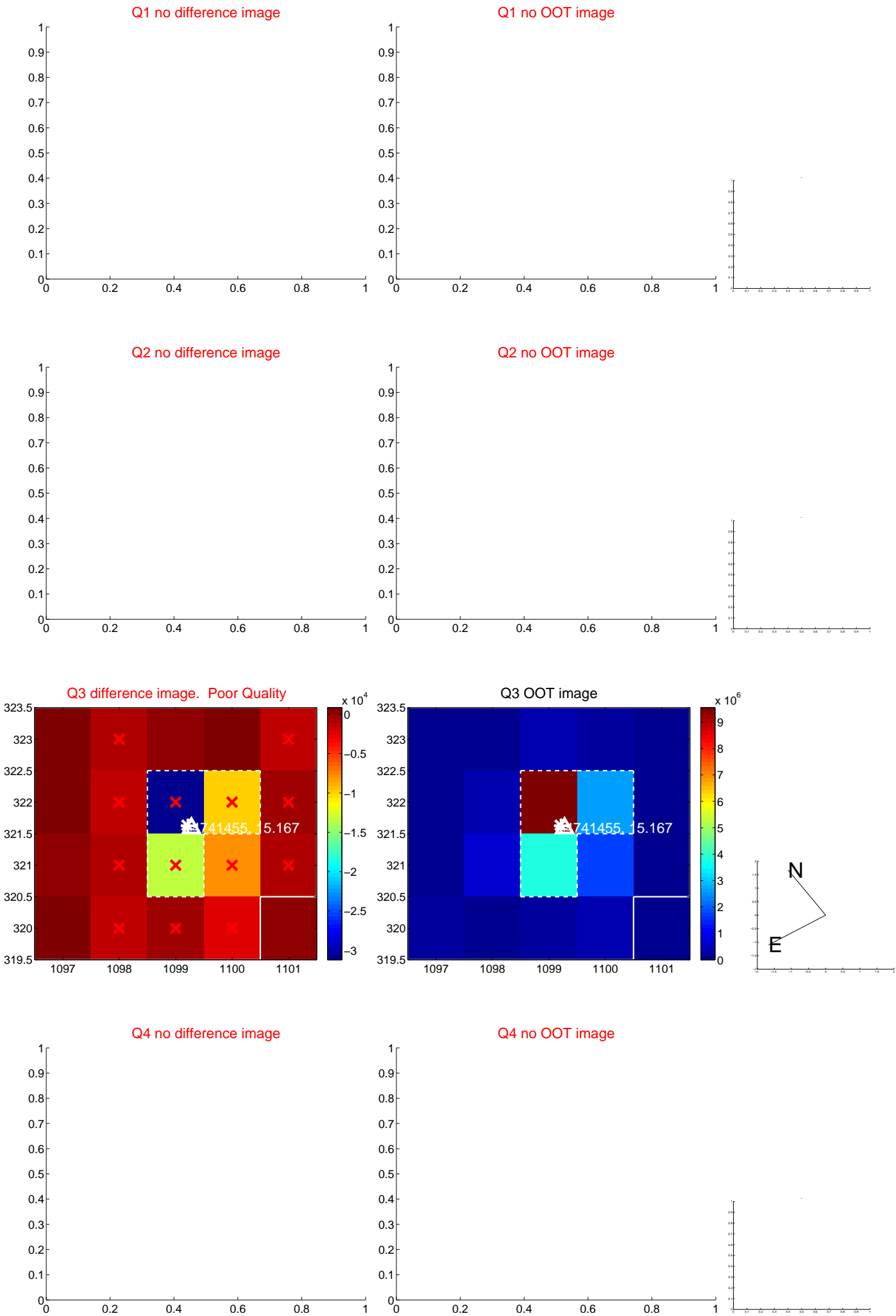


offset from photometric centroids



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.

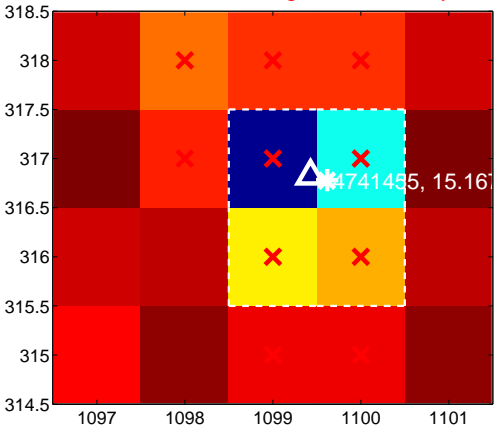
Q9 no difference image



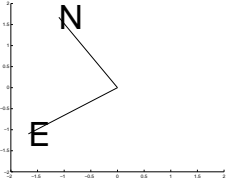
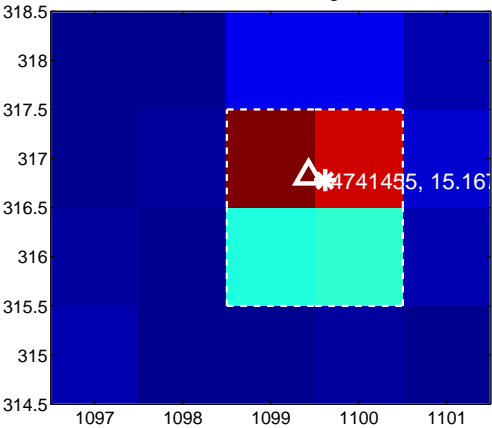
Q9 no OOT image



Q10 difference image. Poor Quality



Q10 OOT image



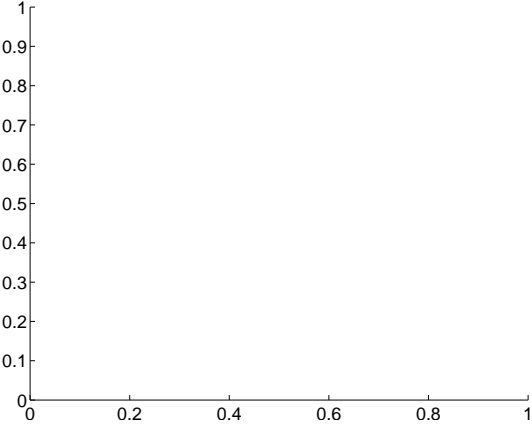
Q11 no difference image



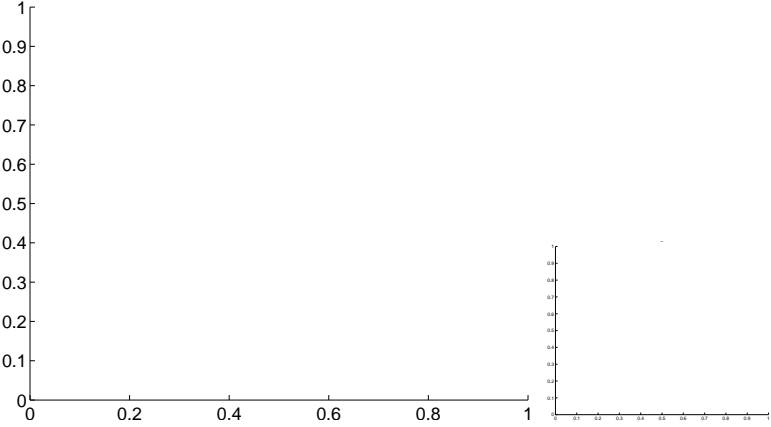
Q11 no OOT image



Q12 no difference image



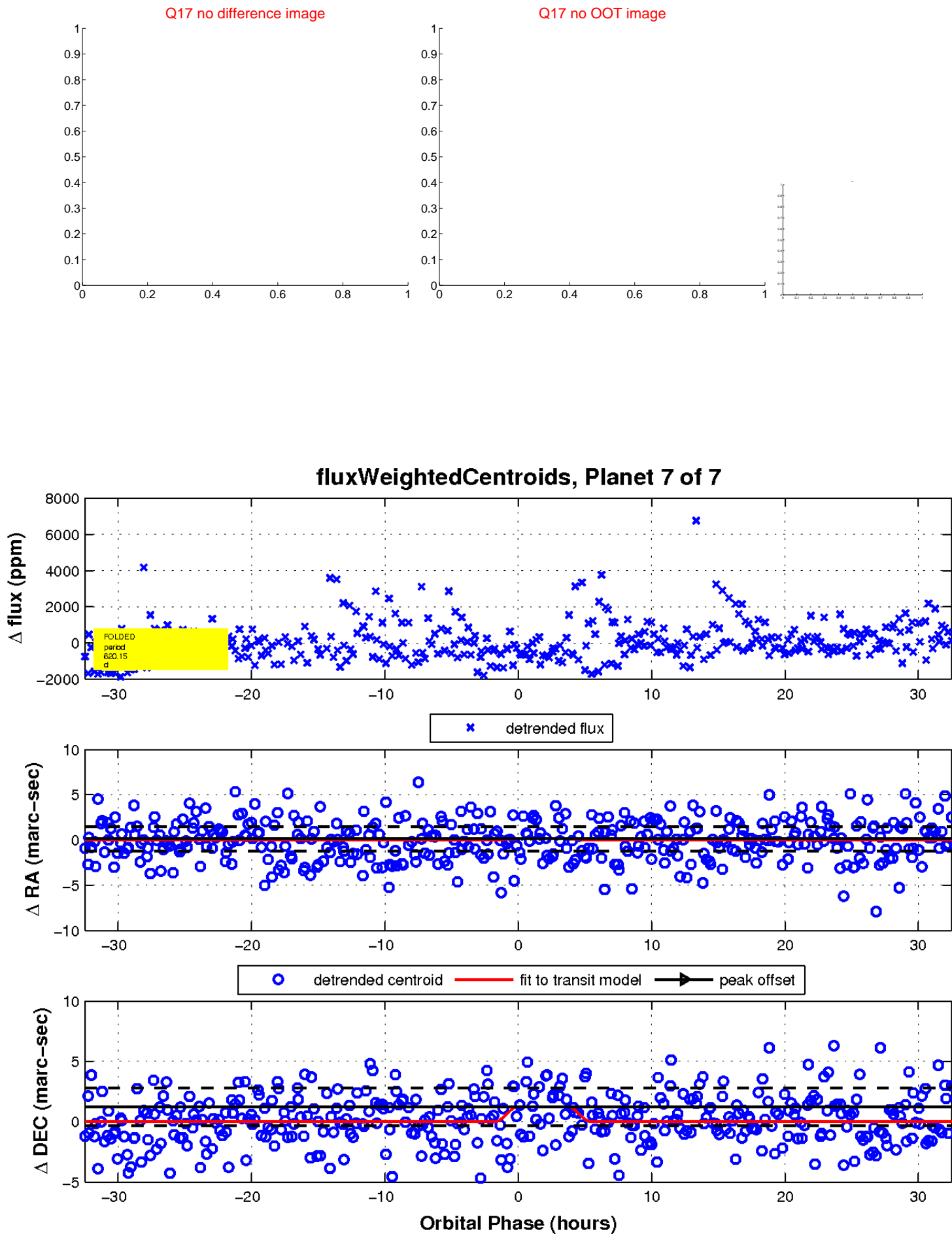
Q12 no OOT image



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.



UKIRT Image

Declination

