

KIC 005428088

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})
005428088-01	OBS	No	125.402324	164.783818	65.8	1.016	13.7	0.4	0.45	3671	0.37	0.23
005428088-02	OBS	No	381.780949	293.480821	1710.4	11.023	10.4	8.7	0.45	3671	1.94	0.05
005428088-03	OBS	No	370.082677	176.708862	1075.5	3.766	9.5	5.3	0.45	3671	1.53	0.05
005428088-04	OBS	No	604.366682	341.322915	1404.2	11.938	14.3	6.1	0.45	3671	1.70	0.03
005428088-05	OBS	No	298.541217	283.491662	1442.5	5.009	9.9	7.0	0.45	3671	1.80	0.07
005428088-06	OBS	No	281.270626	177.801168	1498.0	4.087	11.7	7.9	0.45	3671	1.82	0.08
005428088-07	OBS	No	566.821192	220.406558	1902.2	8.205	10.1	8.8	0.45	3671	2.05	0.03
005428088-08	OBS	No	165.303847	232.412060	1917.0	2.500	12.0	-1.0	0.45	3671	1.97	0.16

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005428088-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_SKYE_ZUMA_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS
005428088-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_TER_DV—MOD_POS_DV
005428088-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS
005428088-04	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
005428088-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—CENT_FEW_DIFFS
005428088-06	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
005428088-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005428088-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_NOFITS

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

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

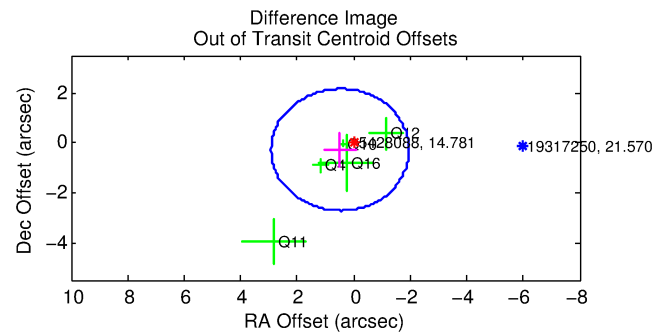
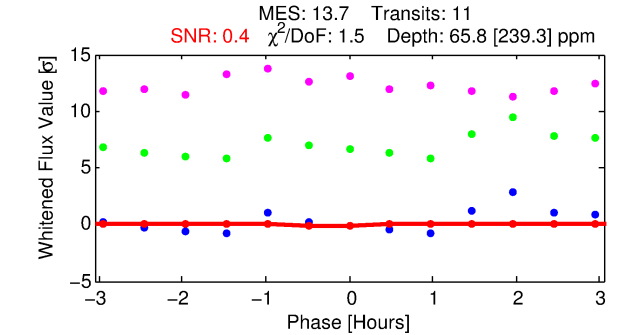
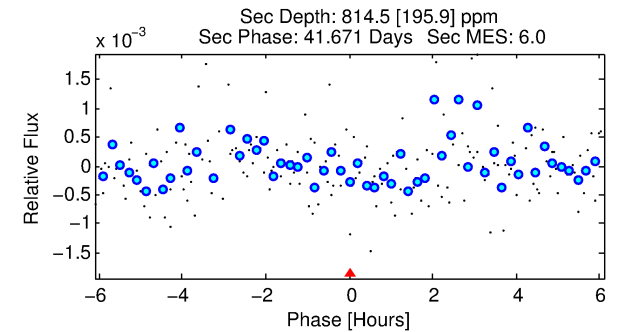
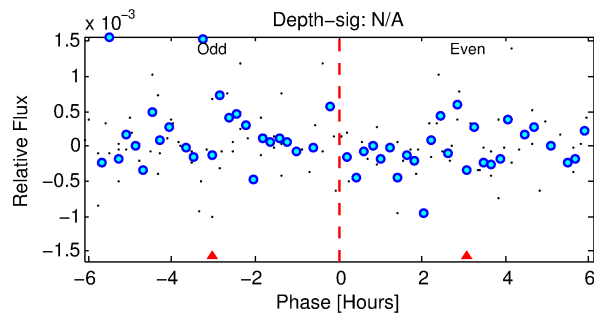
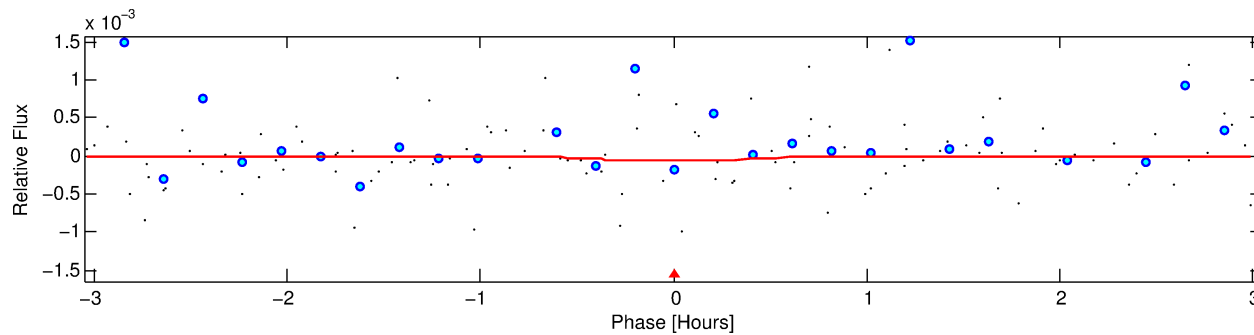
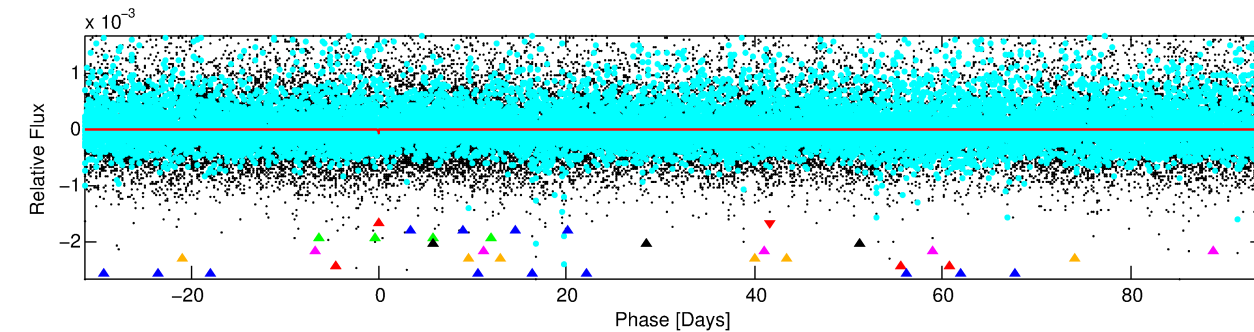
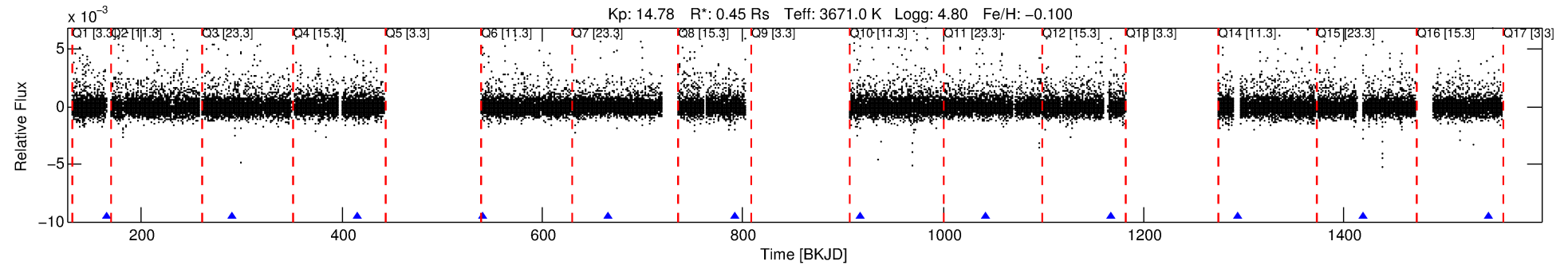
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 005428088-01

No Significant Match Found

DV One-Page Summary

KIC: 5428088 Candidate: 1 of 8 Period: 125.402 d



DV Fit Results:

Period = 125.40232 [0.01192] d
Epoch = 164.7838 [0.0920] BKJD
Rp/R* = 0.0074 [1.0274]
a/R* = 938.80 [581812.25]
b = 0.15 [3995.72]
Seff = 0.23 [0.03]
Teq = 177 [6] K
Rp = 0.37 [50.90] Re
a = 0.3816 [0.0280] AU
Ag = 480896.98 [132906309.02] [0.006]
Teffp = 7192 [496930] K [0.01 σ]

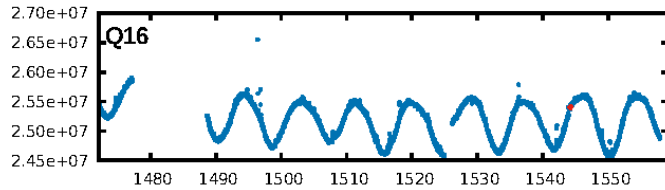
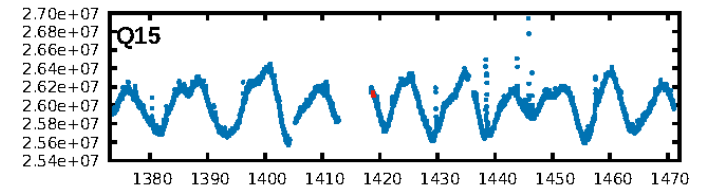
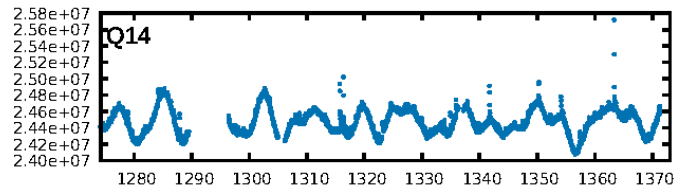
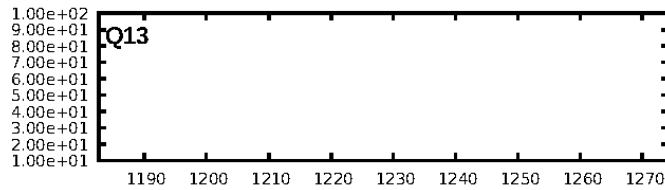
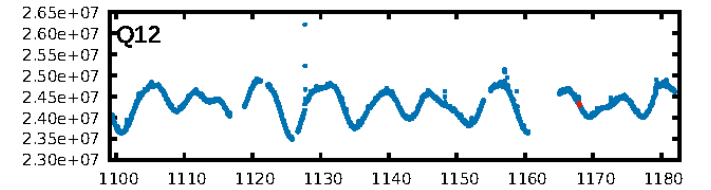
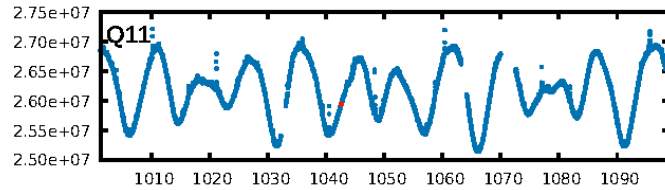
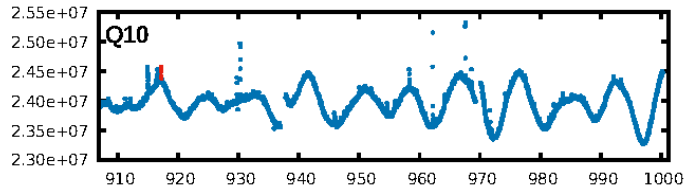
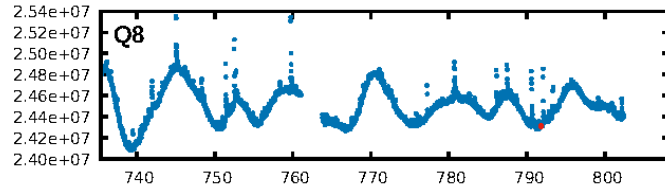
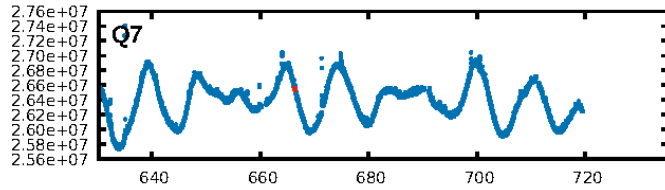
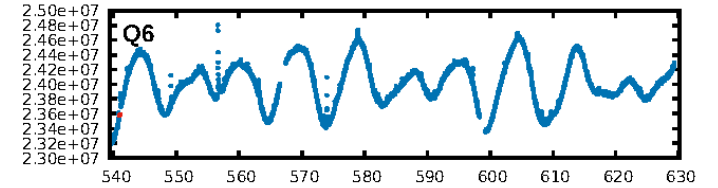
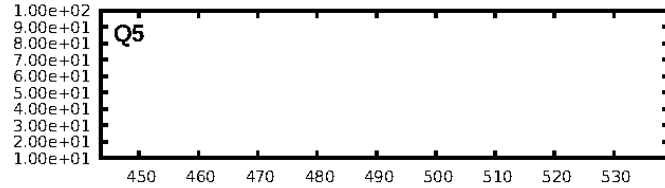
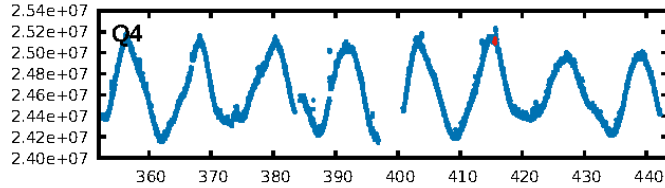
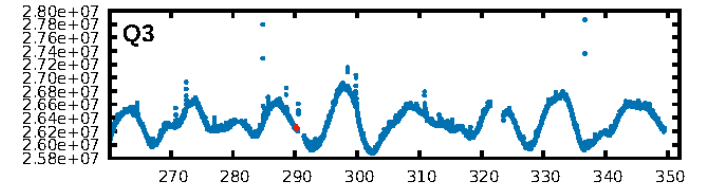
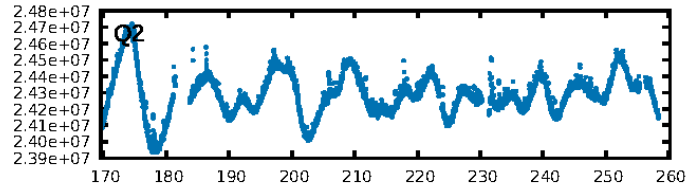
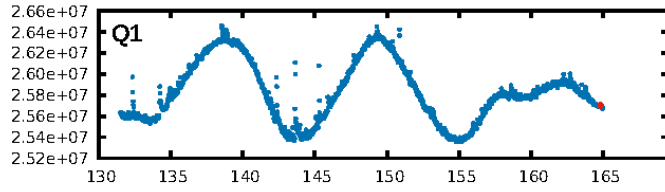
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [354.85 σ]
ModelChiSquare2-sig: 2.9%
ModelChiSquareGof-sig: 48.8%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [10/10]
GhostDiagnostic-chr: -0.7635
Centroid-sig: 69.5%
Centroid-so: 11.333 arcsec [0.54 σ]
OptOffset-rm: 0.560 arcsec [0.69 σ]
KicOffset-rm: 0.606 arcsec [0.65 σ]
OptOffset-st: 1/1/3/0 [5]
KicOffset-st: 1/1/3/0 [5]
DiffImageQuality-fgm: 0.40 [2/5]
DiffImageOverlap-fno: 1.00 [10/10]

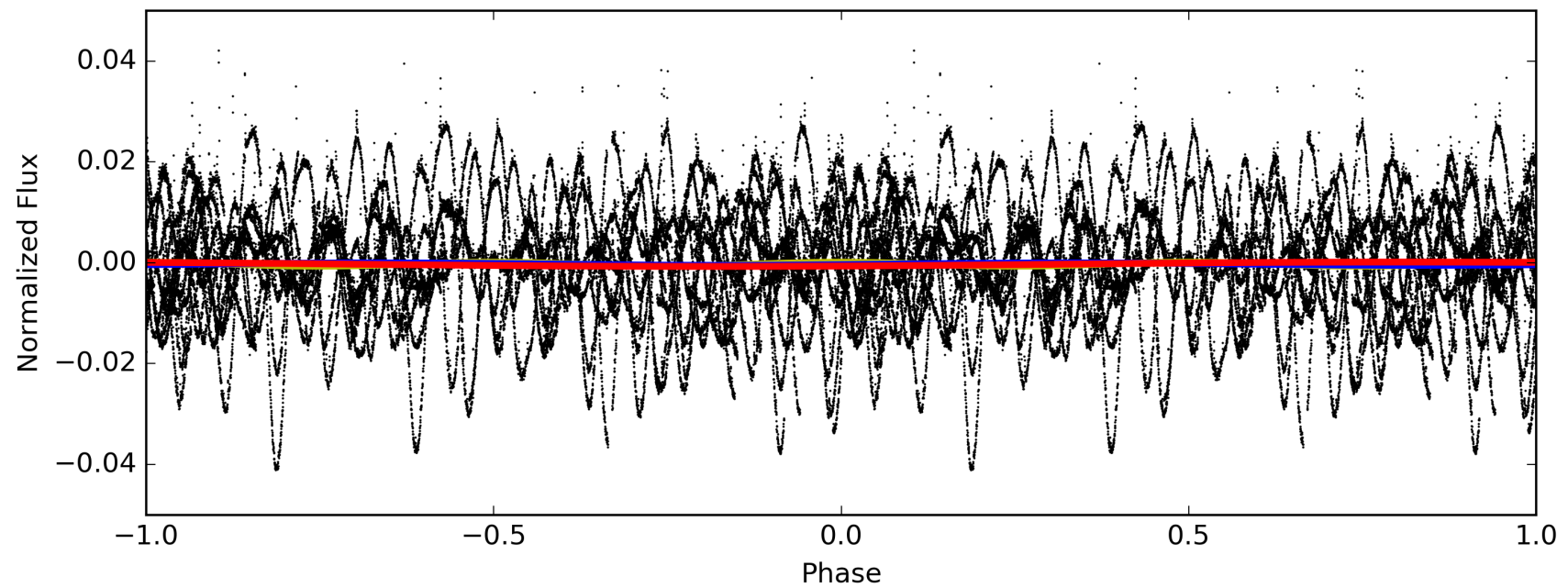
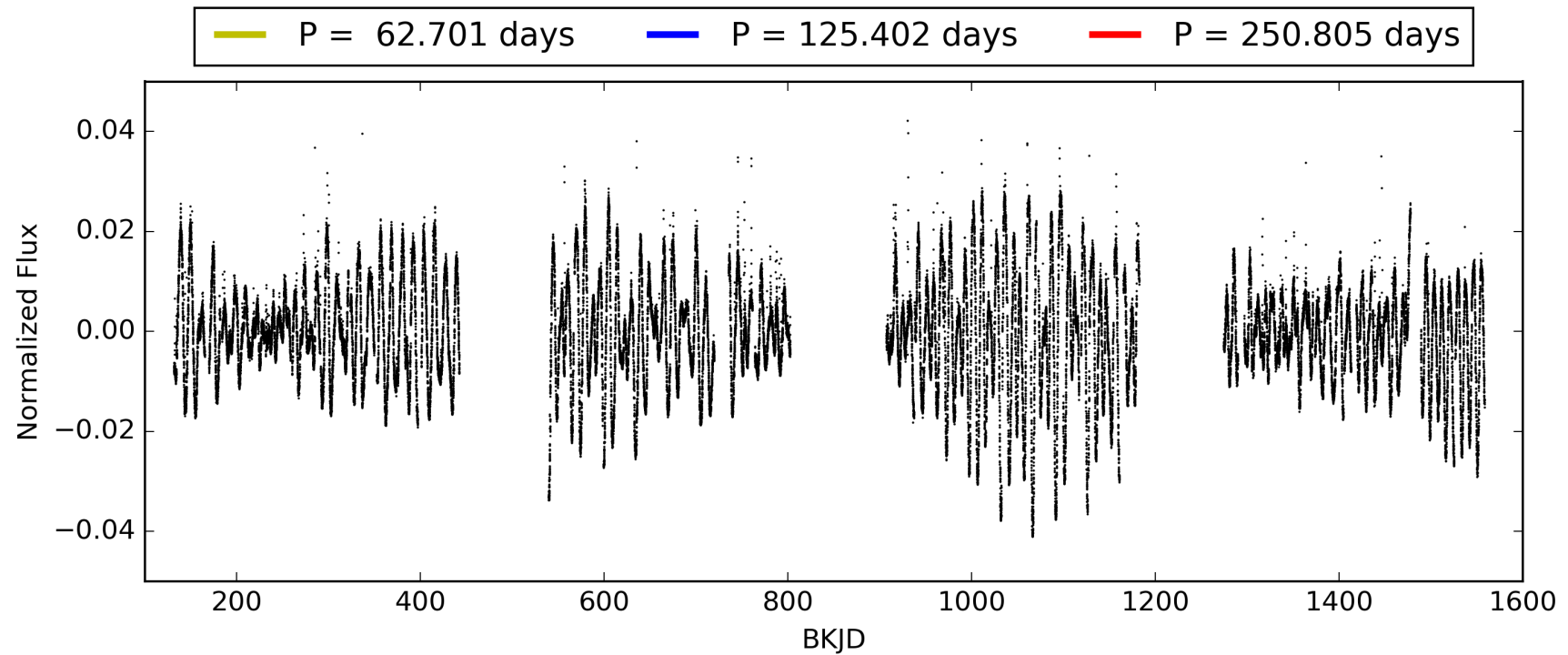
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 005428088-01, PDC Light Curves

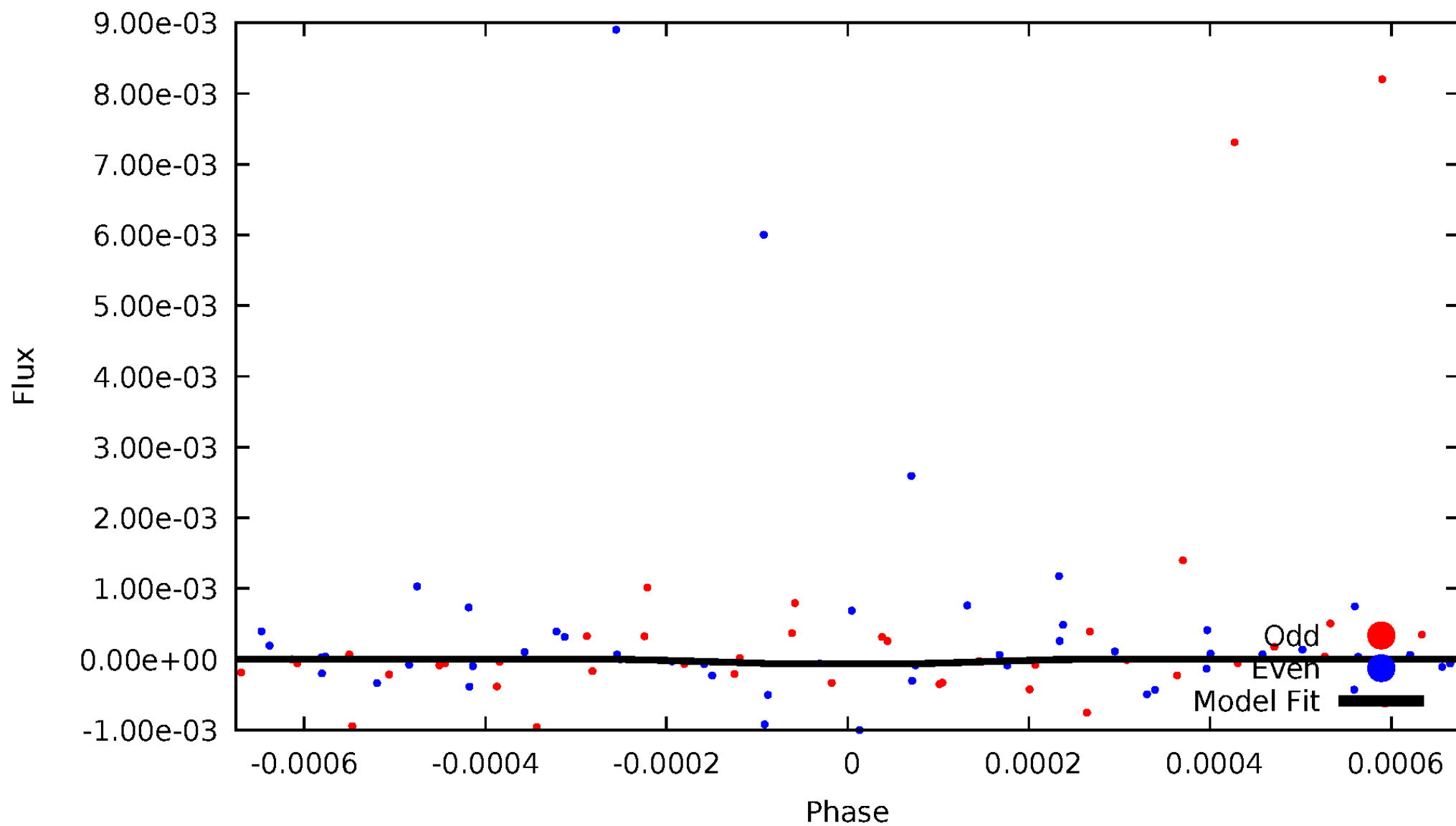


TCE 005428088-01



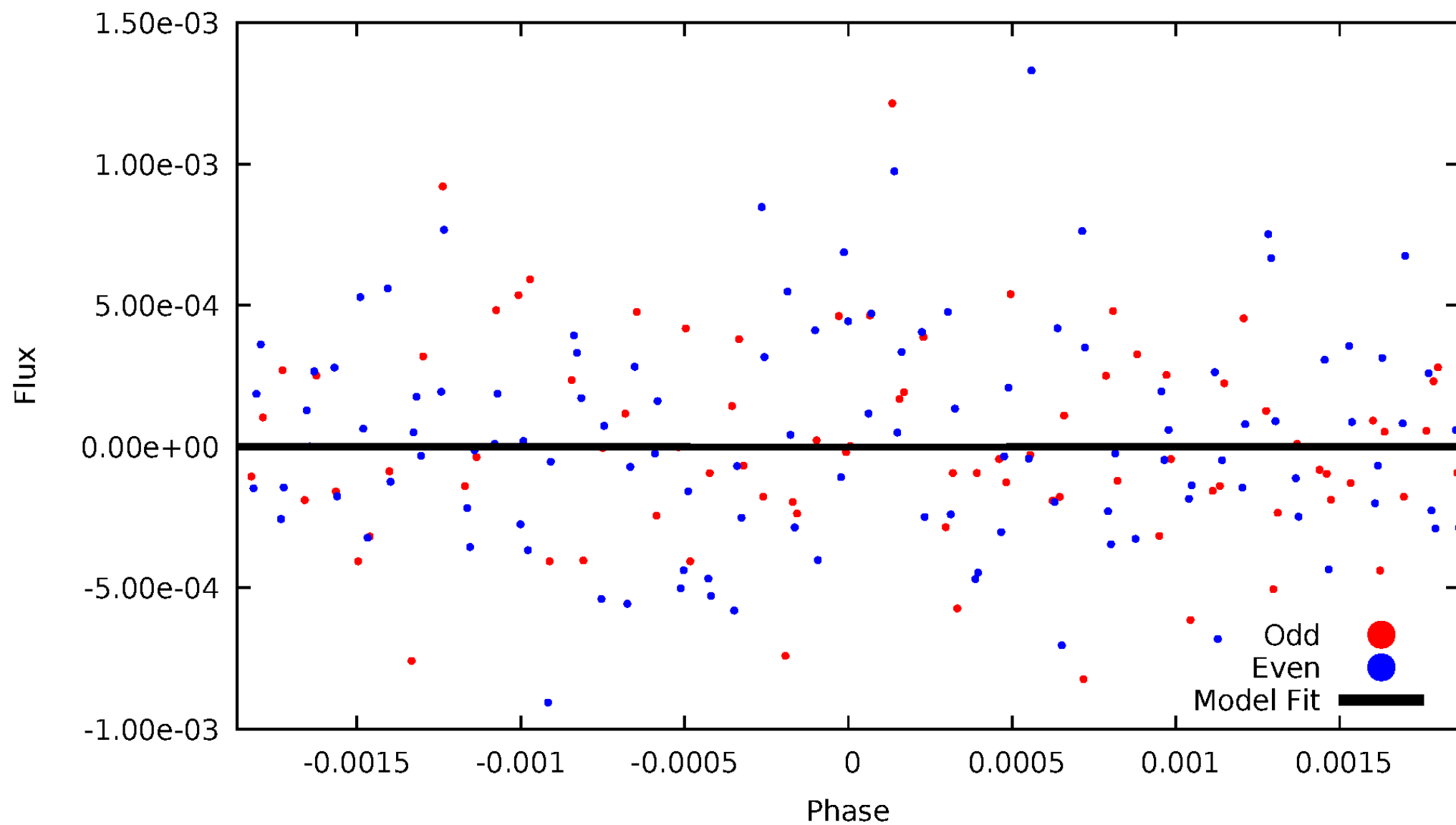
DV Odd/Even

TCE 005428088-01



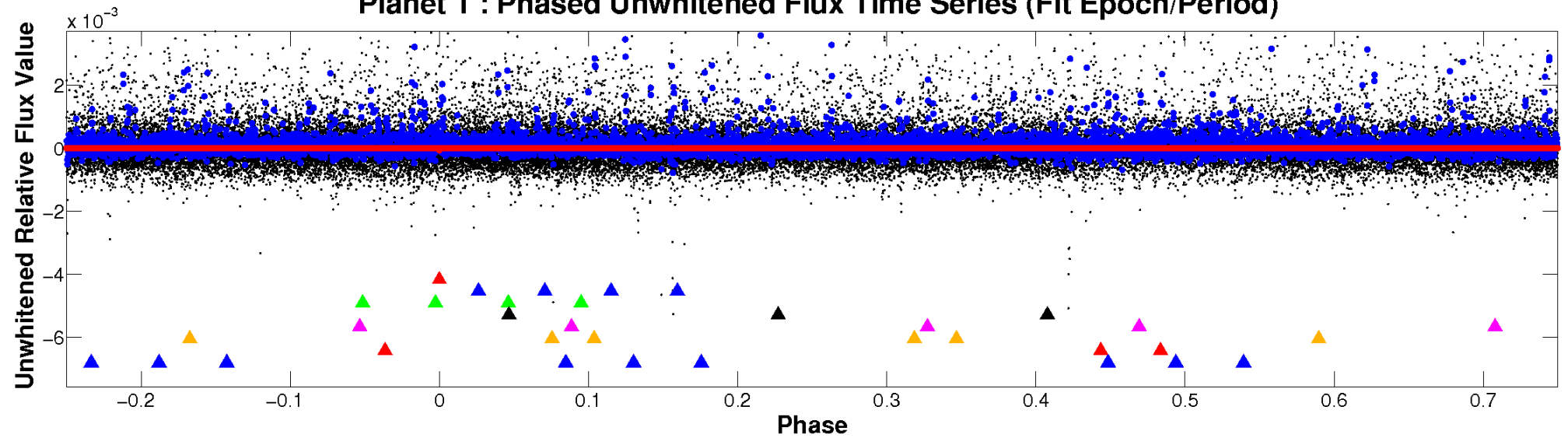
ALT Odd/Even

TCE 005428088-01

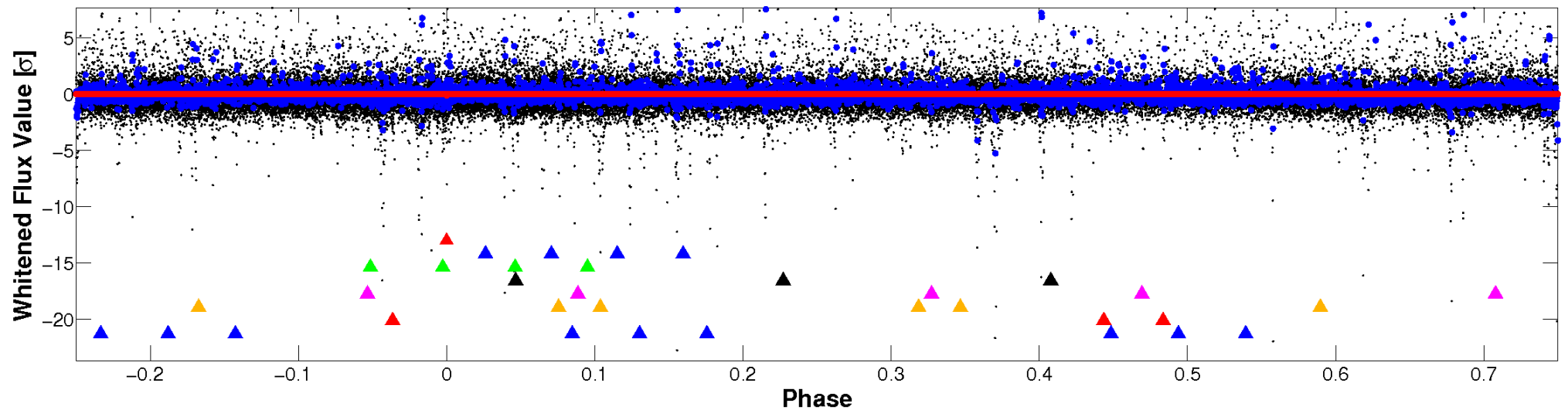


Non-Whitened Vs. Whitened Light Curve

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

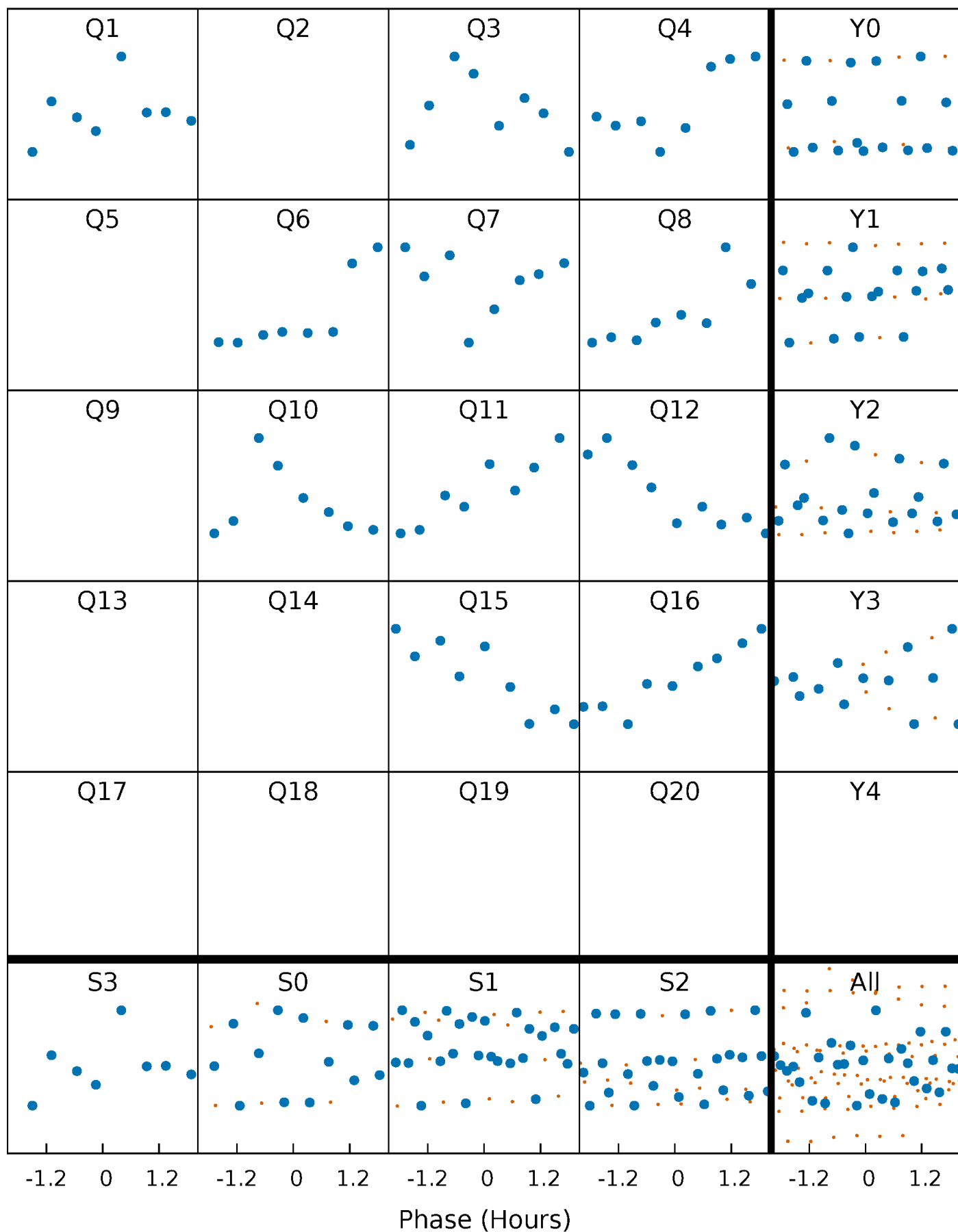


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



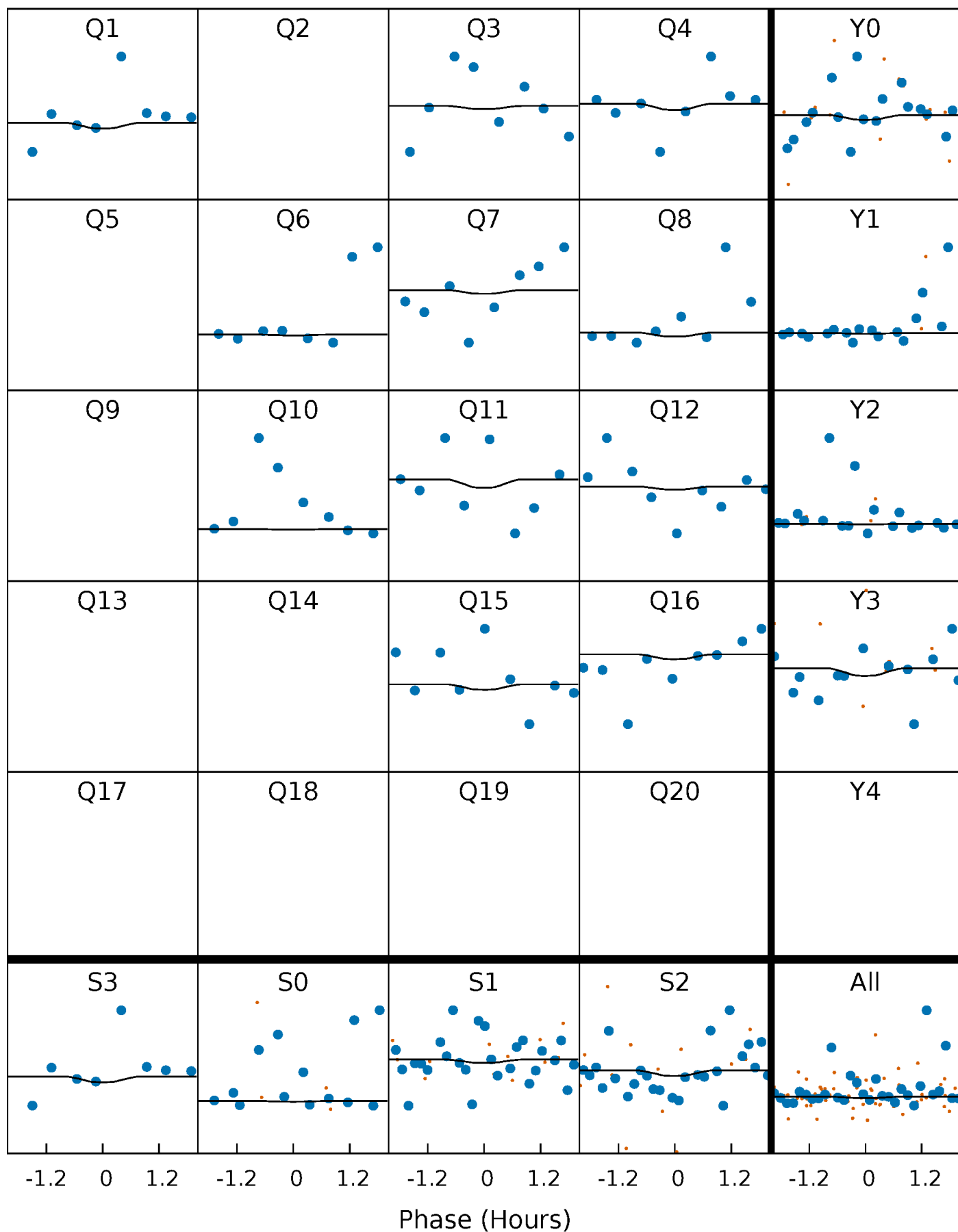
PDC Quarter-Phased Transit Curves

TCE 005428088-01 P=125.402324 Days $T_0=164.783818$ (BKJD)



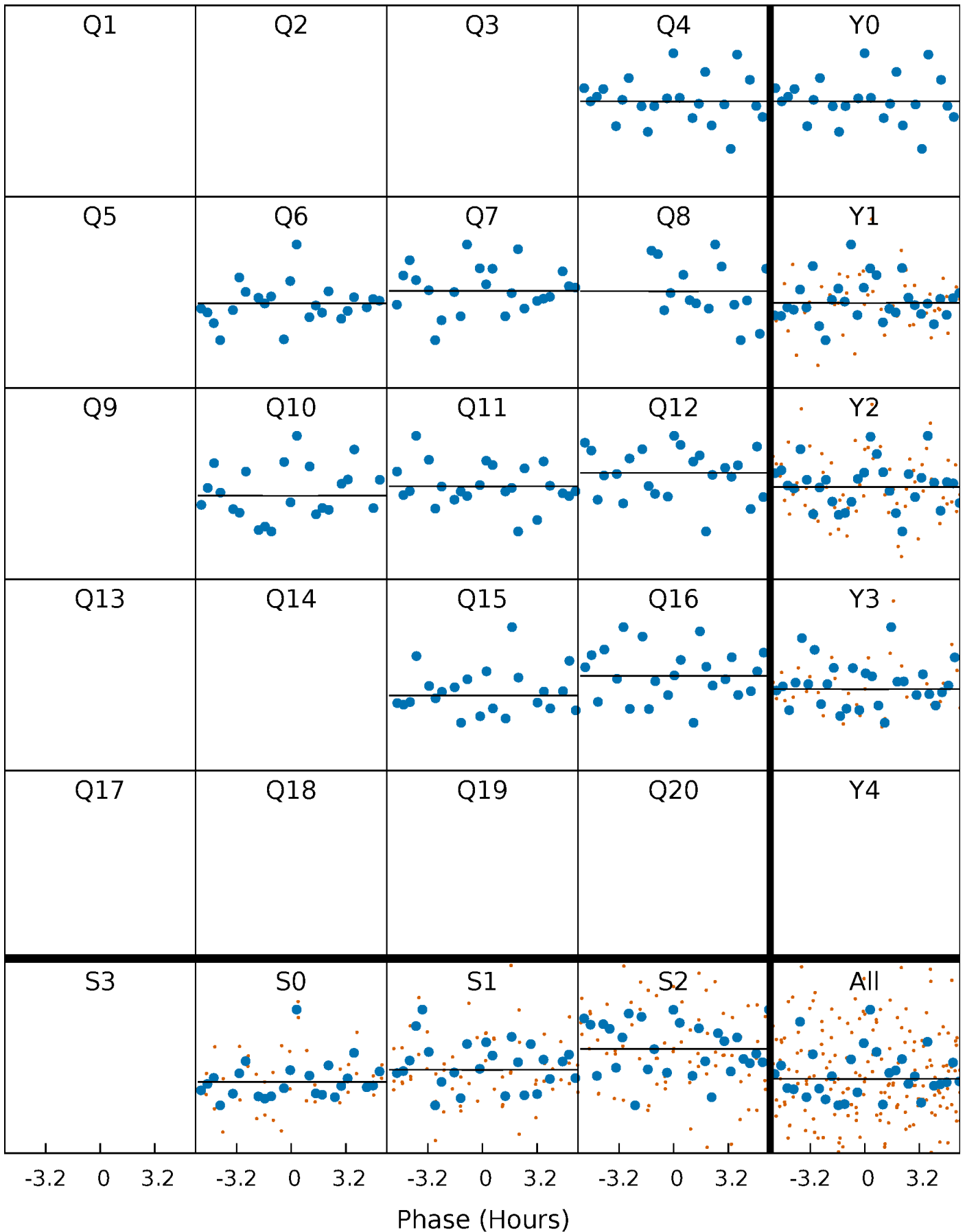
DV Quarter-Phased Transit Curves

TCE 005428088-01 P=125.402324 Days $T_0=164.783818$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

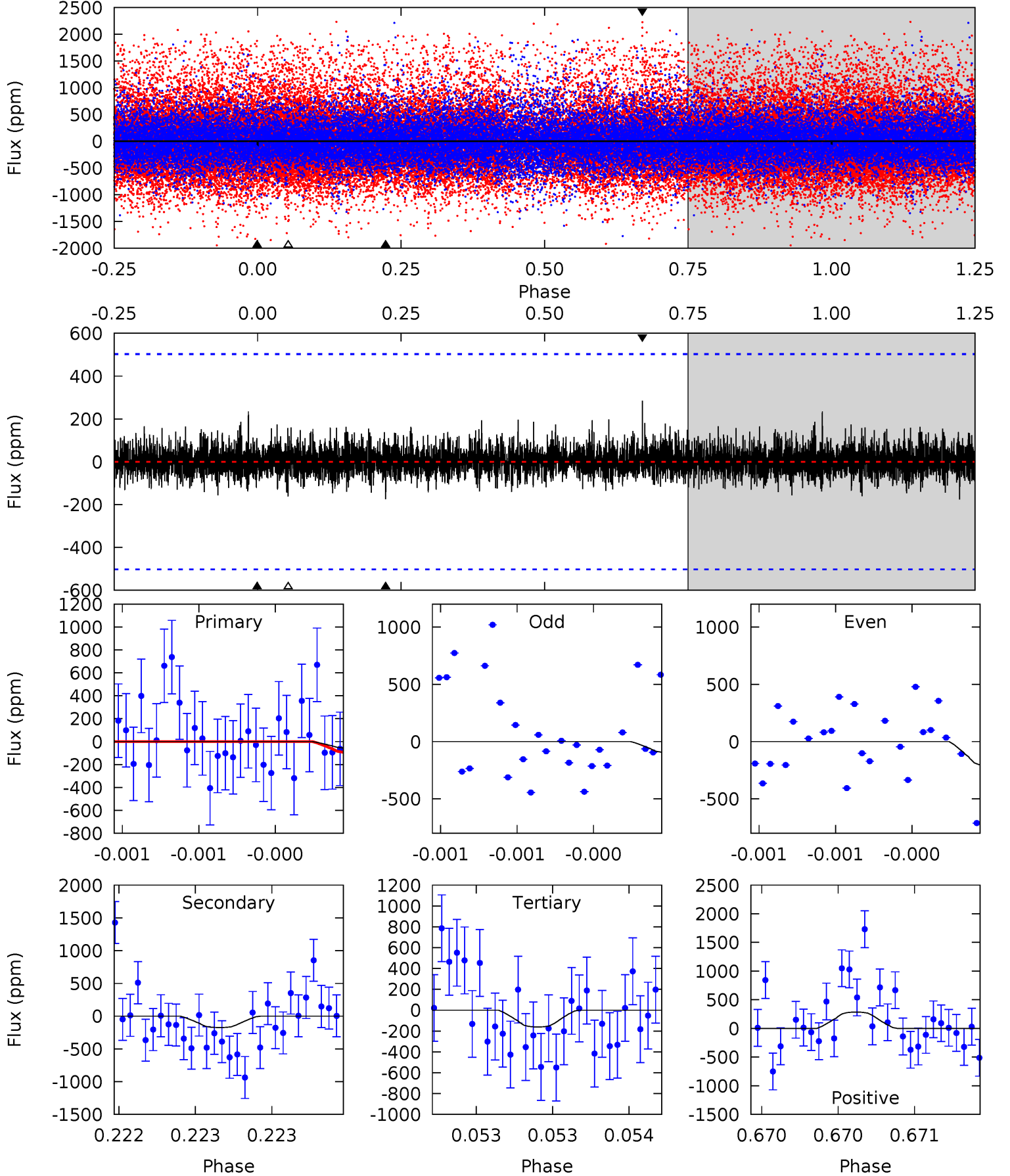
TCE 005428088-01 P=125.366702 Days $T_0=165.458748$ (BKJD)



DV Model-Shift Uniqueness Test

005428088-01, P = 125.402324 Days, E = 39.381494 Days

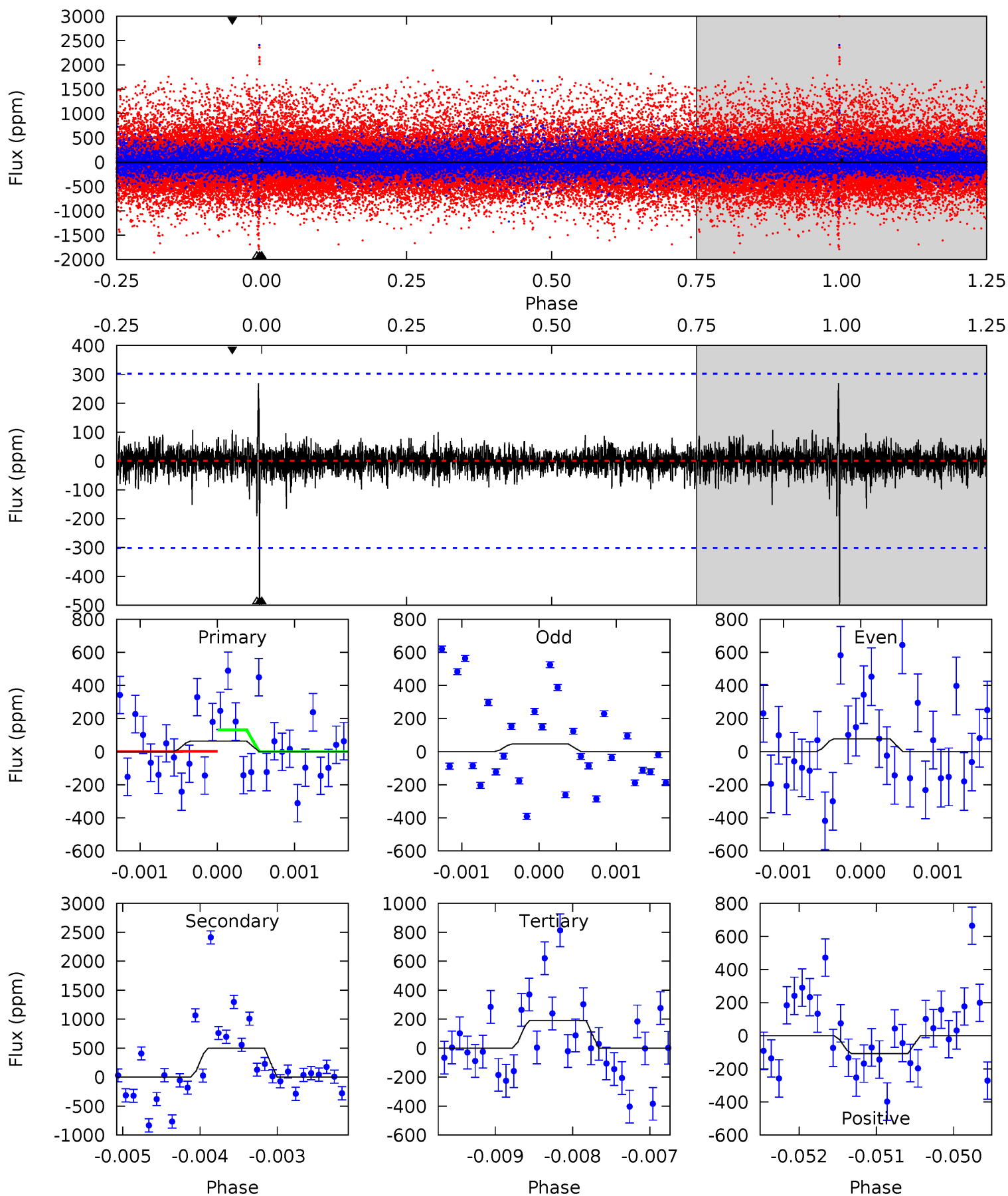
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0.64	1.94	1.79	3.17	5.58	3.49	0.57	-1.15	-2.53	0.15	-1.23	0.62	5.54	0.62	0.40



Alt Model-Shift Uniqueness Test

005428088-01, $P = 125.366702$ Days, $E = 40.092046$ Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1.14	9.00	3.45	1.94	5.45	3.29	0.57	-2.31	-0.80	5.55	7.05	0.28	0.85	0.35	1.18



Stellar Parameters For KIC 005428088

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	3671^{+65}_{-80}	$4.797^{+0.045}_{-0.031}$	$-0.100^{+0.100}_{-0.100}$	$0.454^{+0.032}_{-0.044}$	$0.472^{+0.034}_{-0.046}$	$7.100^{+1.752}_{-0.971}$
	+2%/-2%	+1%/-1%	+100%/-100%	+7%/-10%	+7%/-10%	+25%/-14%
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 005428088-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-174 ± 90	$34.31^{+35.44}_{-24.71}$	246^{+6}_{-7}	1481^{+382}_{-186}	10^{+147}_{-8}
Alt.	-499 ± 55	$35.65^{+36.53}_{-24.76}$	246^{+6}_{-6}	1622^{+393}_{-180}	31^{+287}_{-23}

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

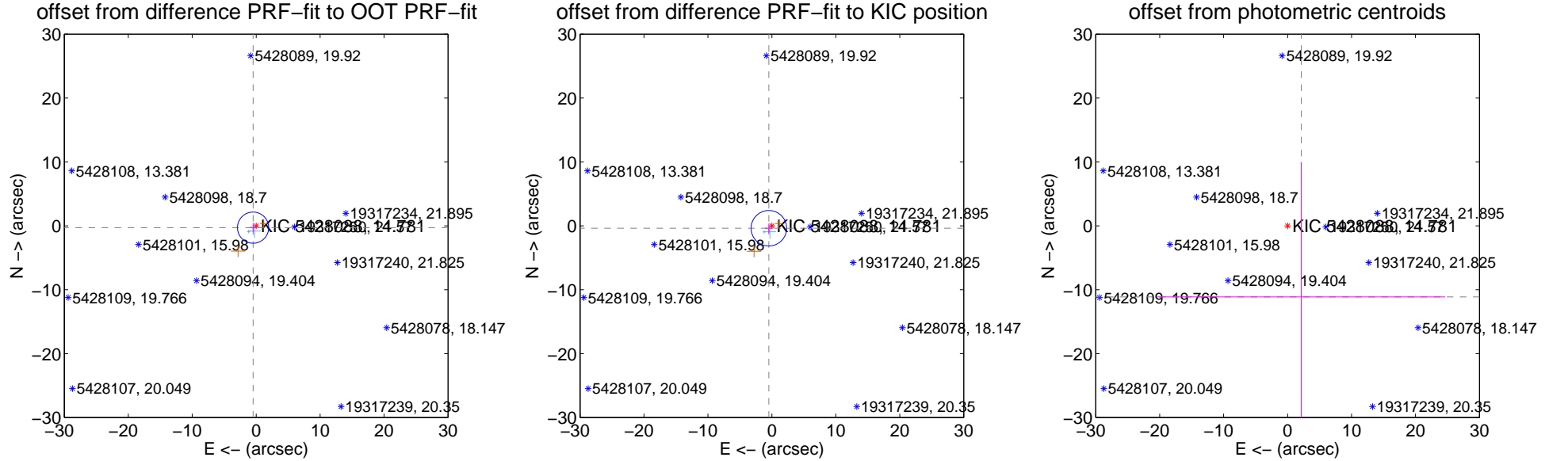
DV Centroid Data

Supplemental centroid analysis for 005428088-01. Kepler magnitude: 14.78. Transit SNR 0.45

There are 2 quarters with good PRF difference image offsets

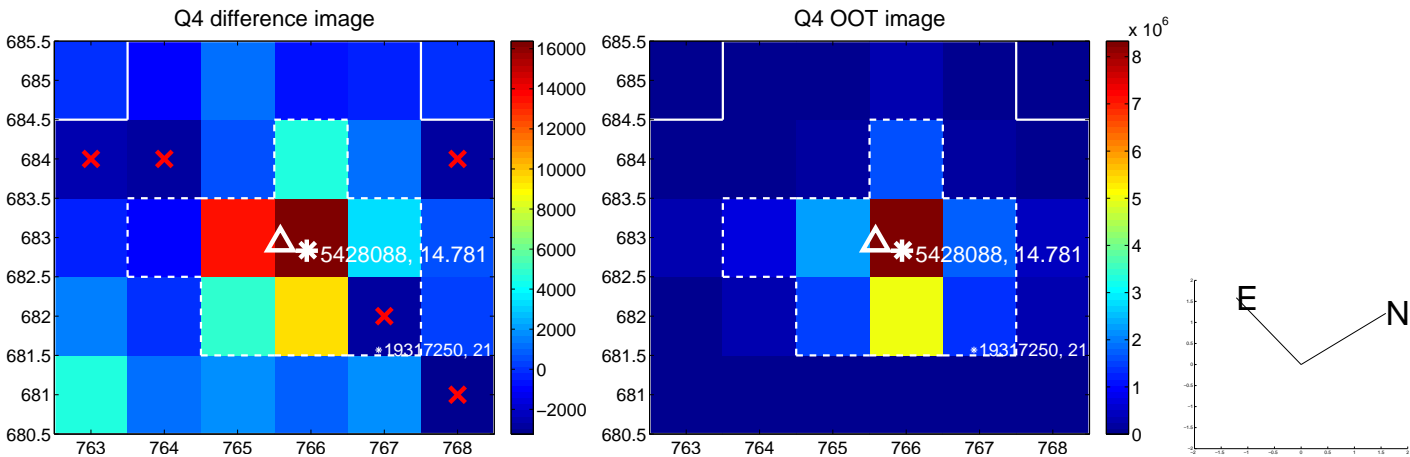
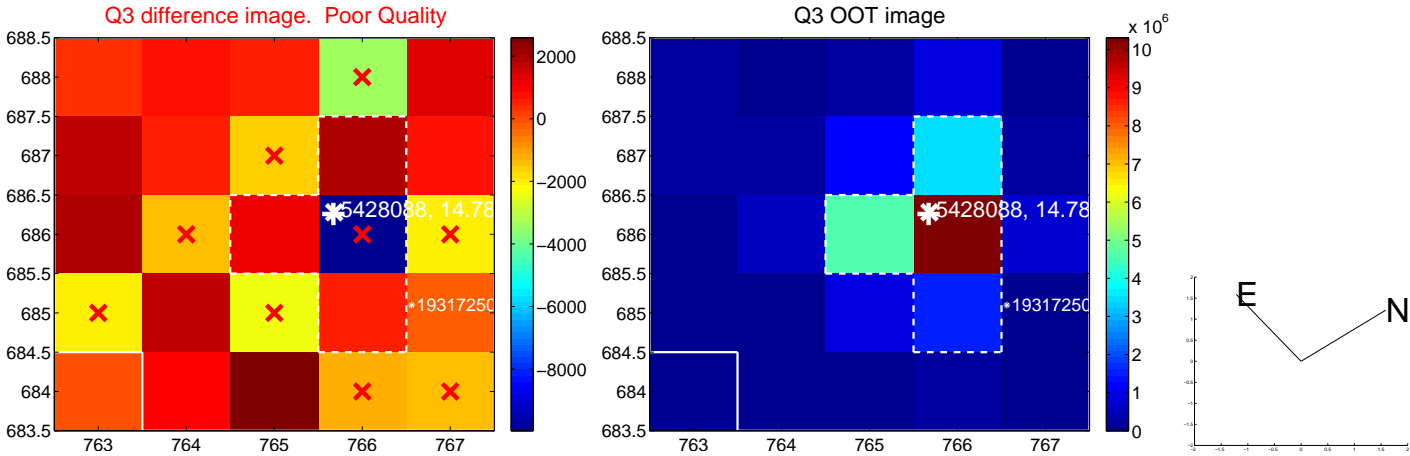
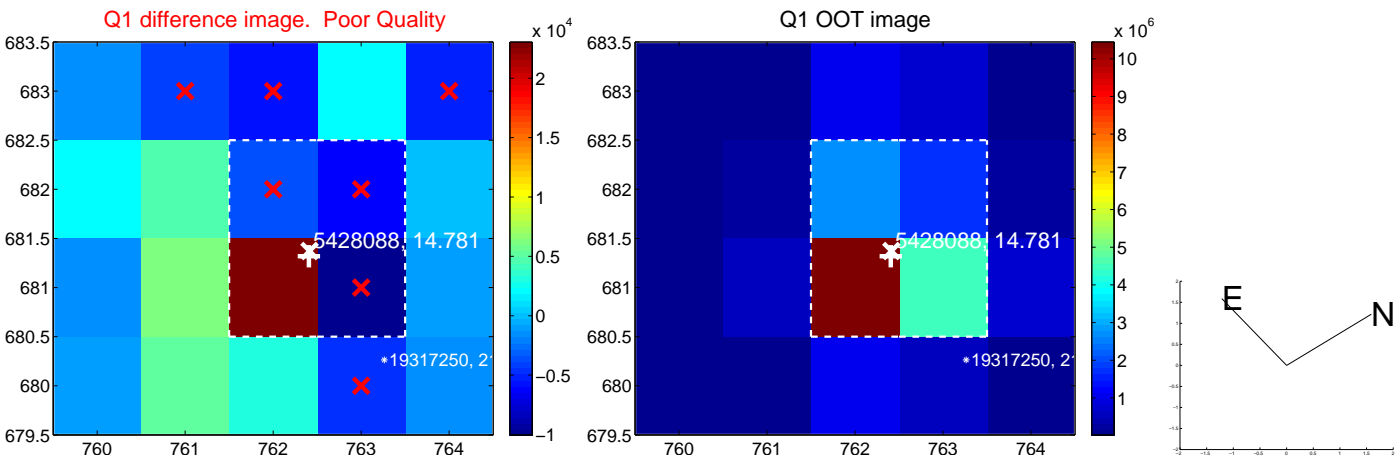
The direct PRF centroid is offset from the target star catalog position by about 0.13 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.560 ± 0.813	0.69	0.482 ± 0.558	-0.285 ± 0.681
PRF-fit source offset from KIC position	0.606 ± 0.926	0.65	0.474 ± 0.618	-0.378 ± 0.740
photometric centroid source offset	11.33 ± 21.17	0.54	-2.14 ± 22.53	-11.13 ± 21.12

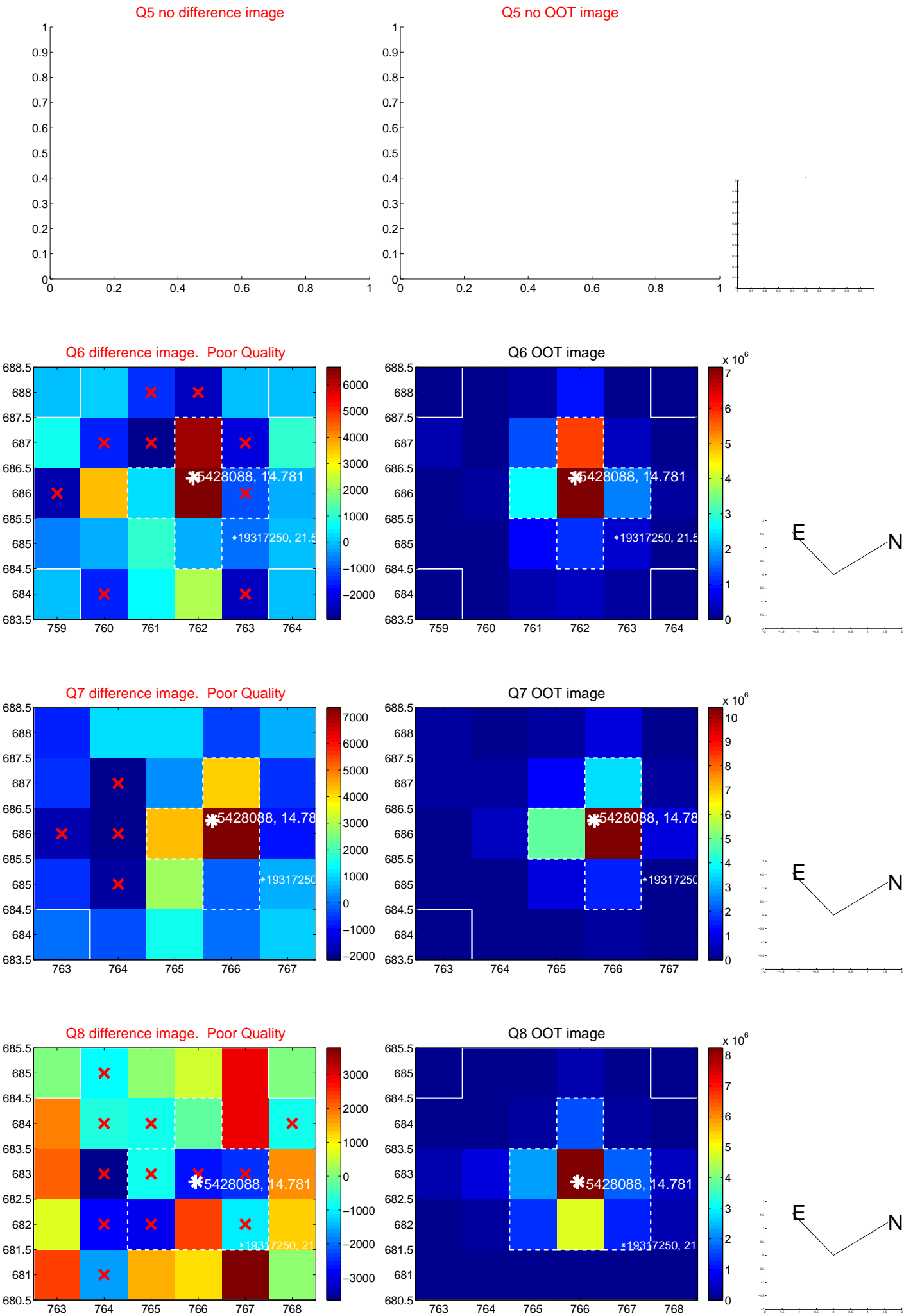


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

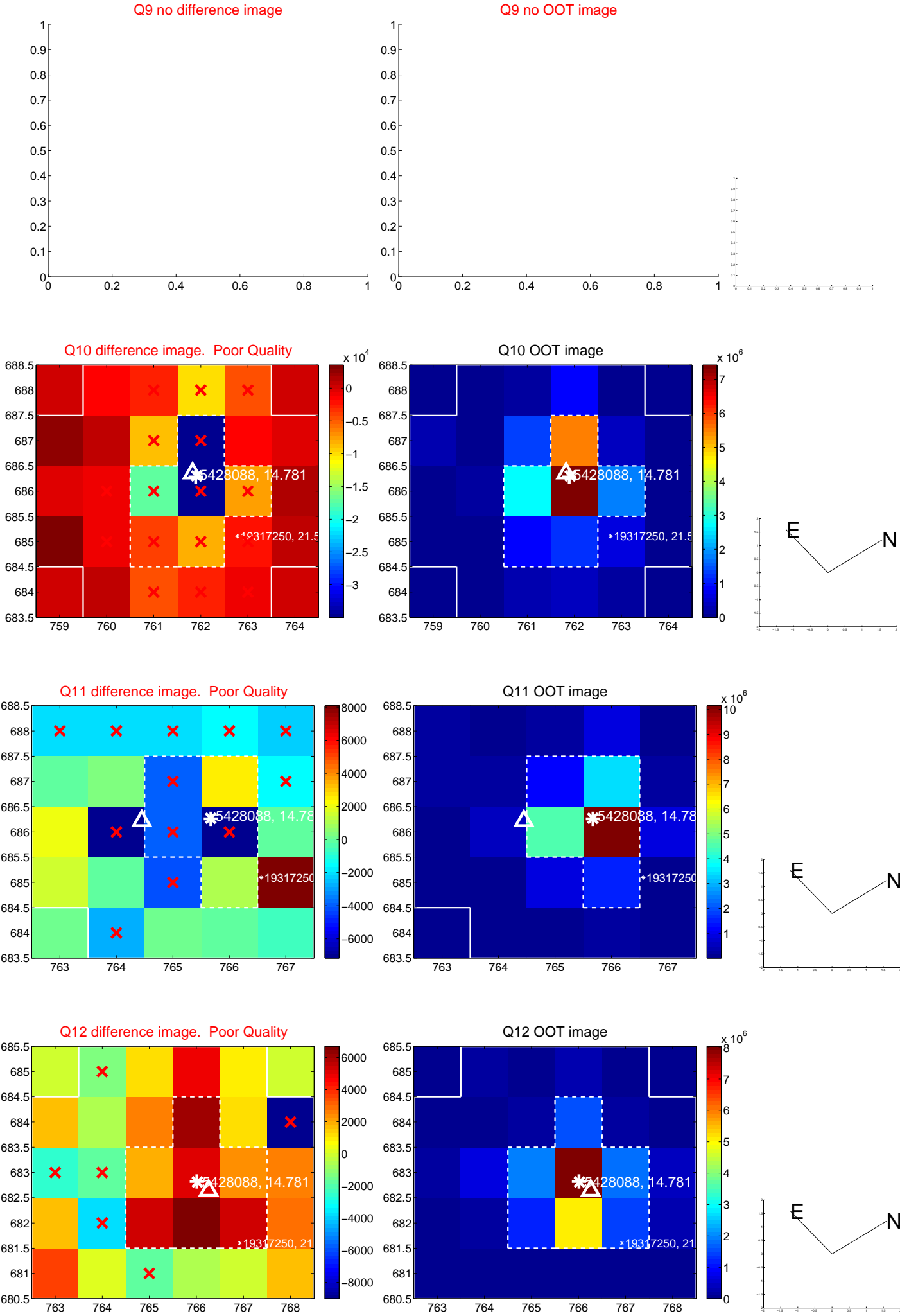
white \times : KIC target position; +: OOT centroid; Δ : difference centroid. red \times : large negative pixel value.



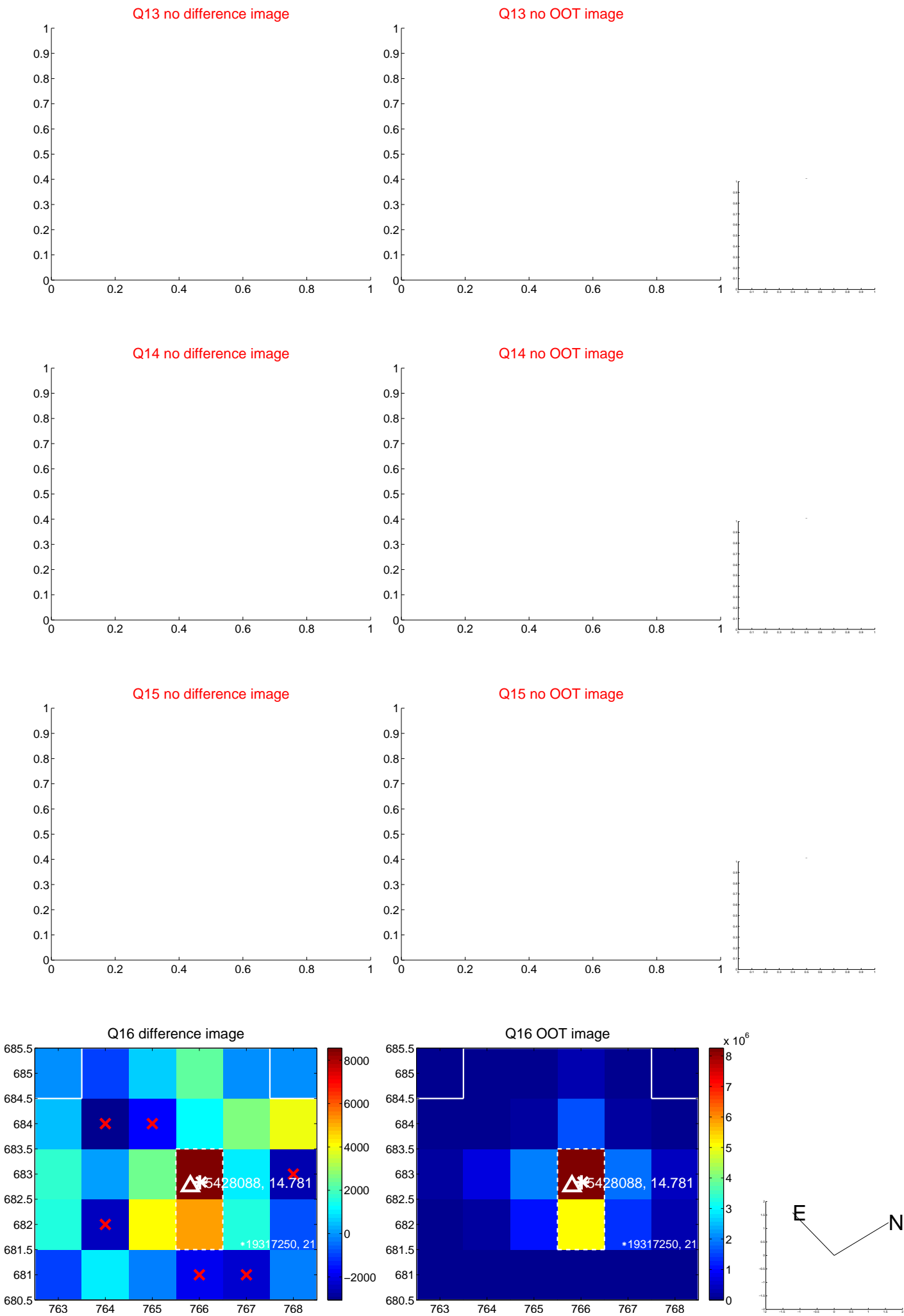
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



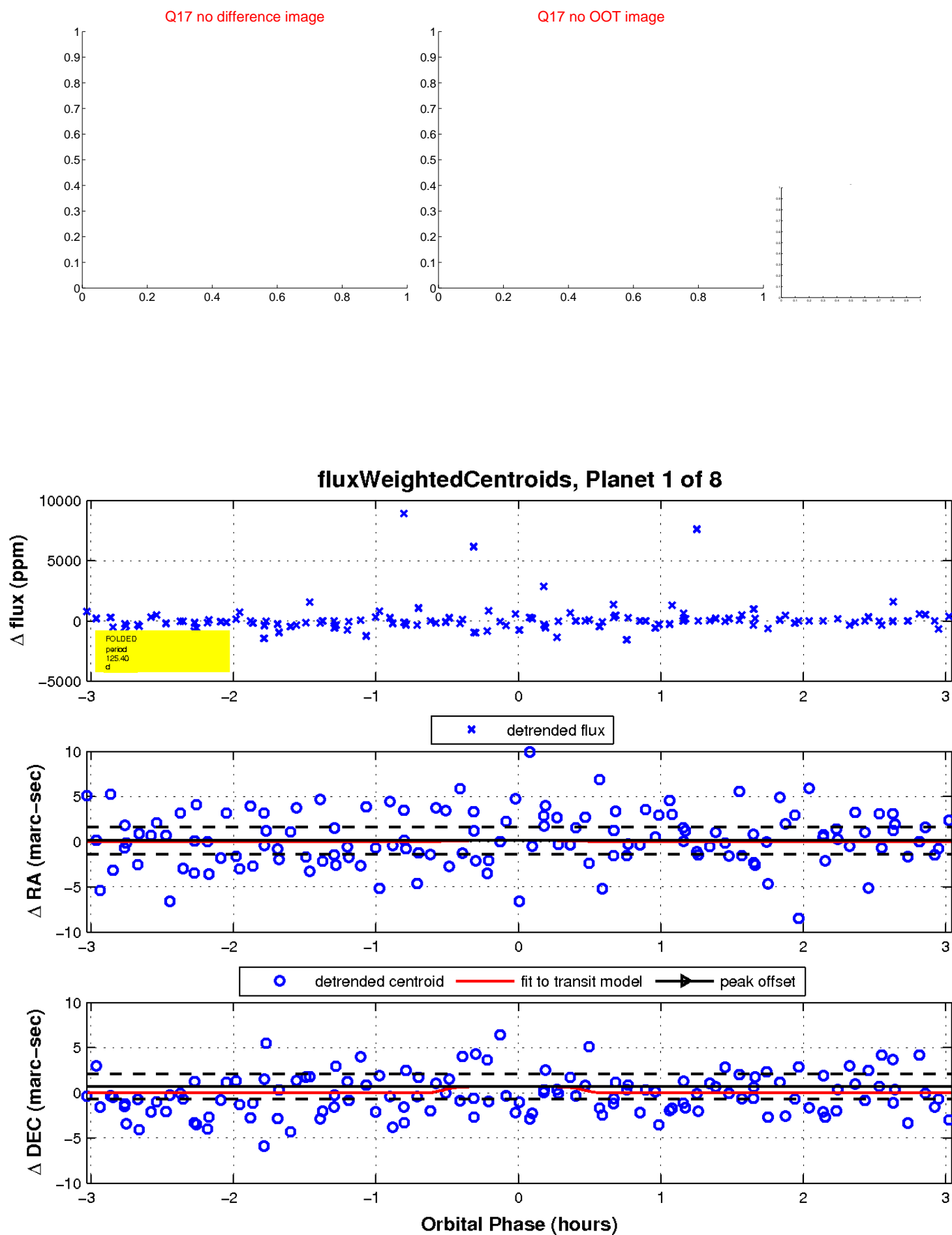
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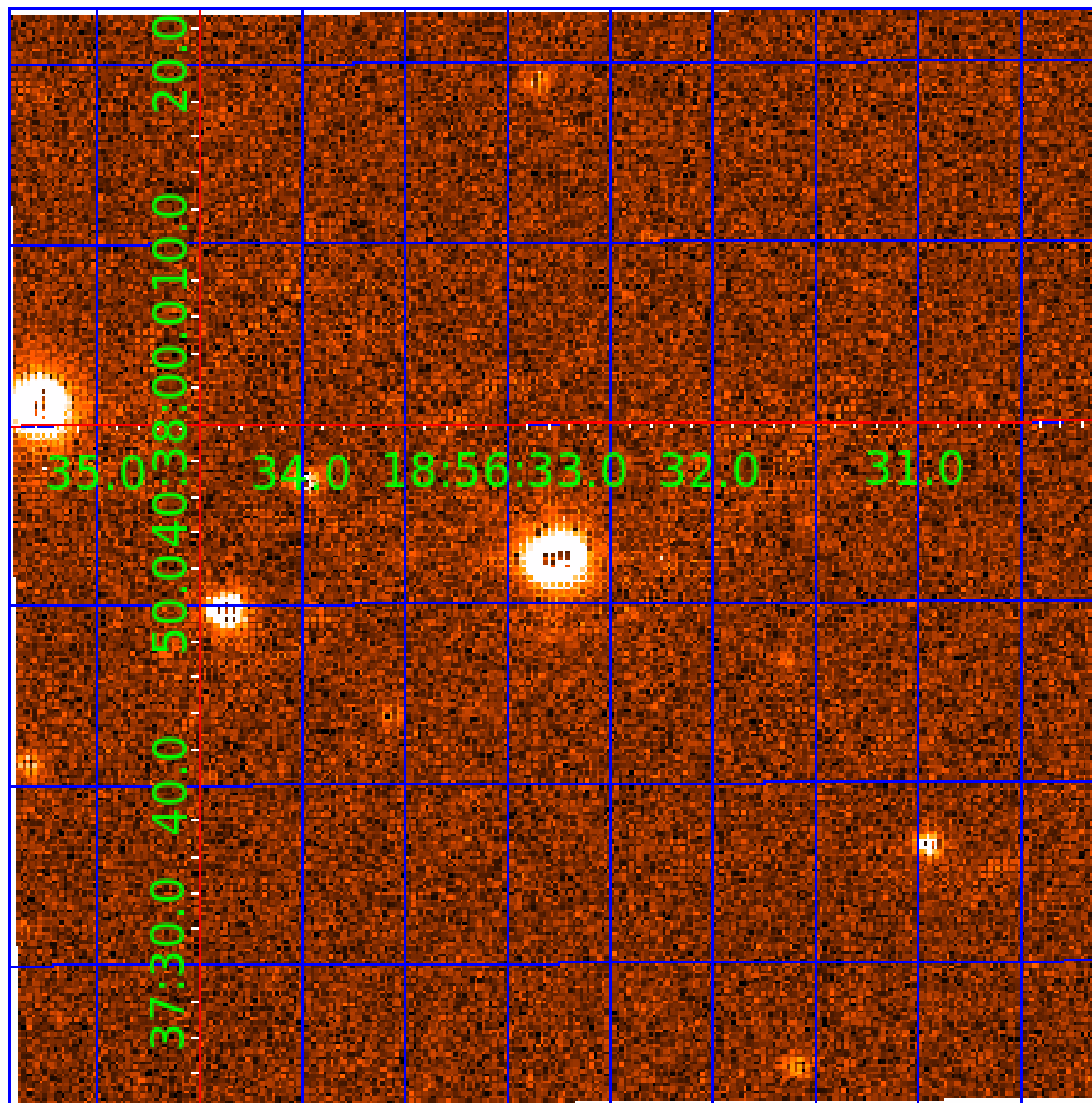


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UKIRT Image

Declination



KIC 005428088

Q1-17 DR25 TCE Parameters

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005428088-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS
005428088-04	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
005428088-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—CENT_FEW_DIFFS
005428088-06	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
005428088-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
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Notes: OBS = Observed. INJ = Injected. INV = Inverted. SCR = Scrambled.

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

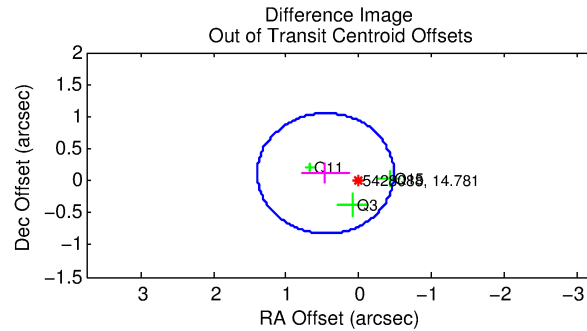
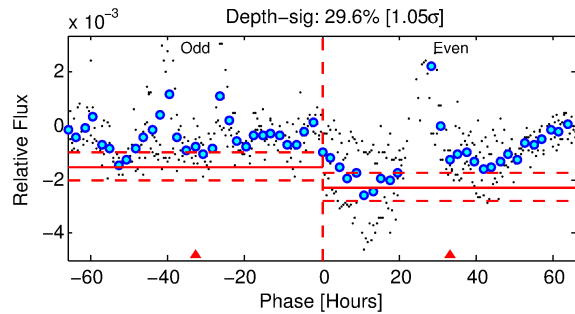
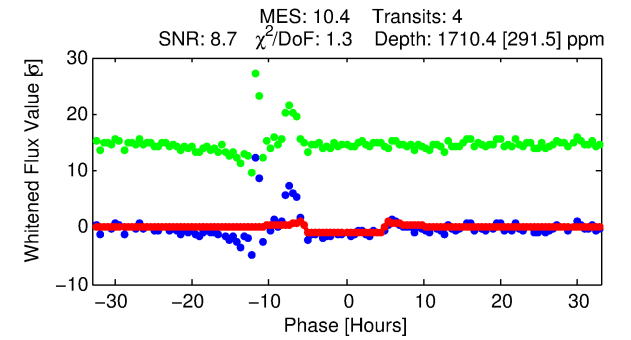
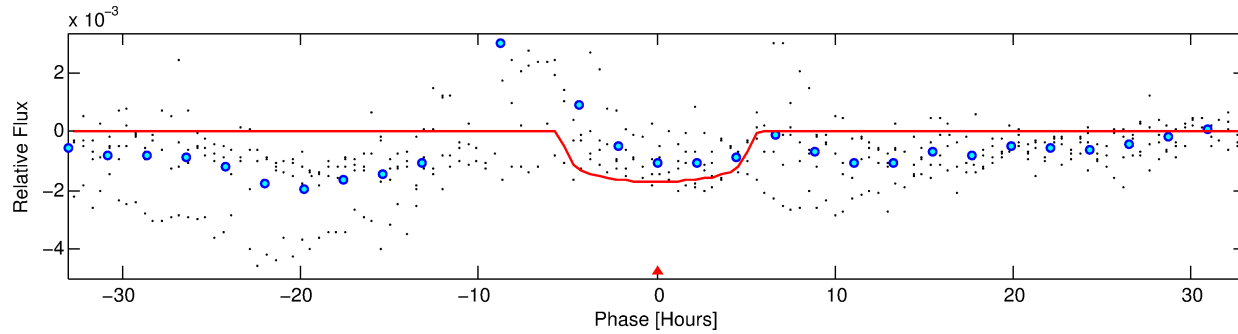
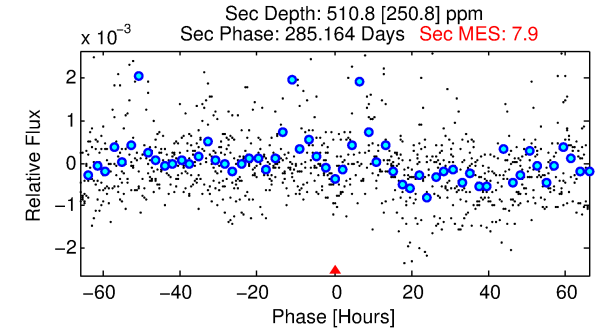
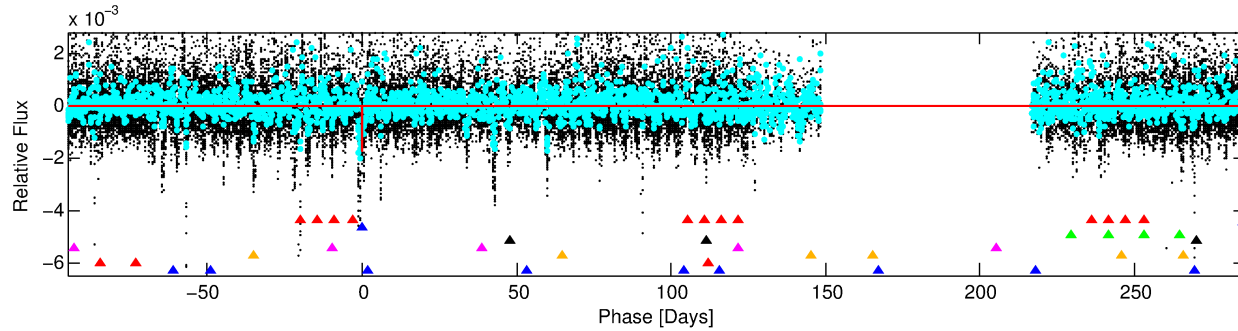
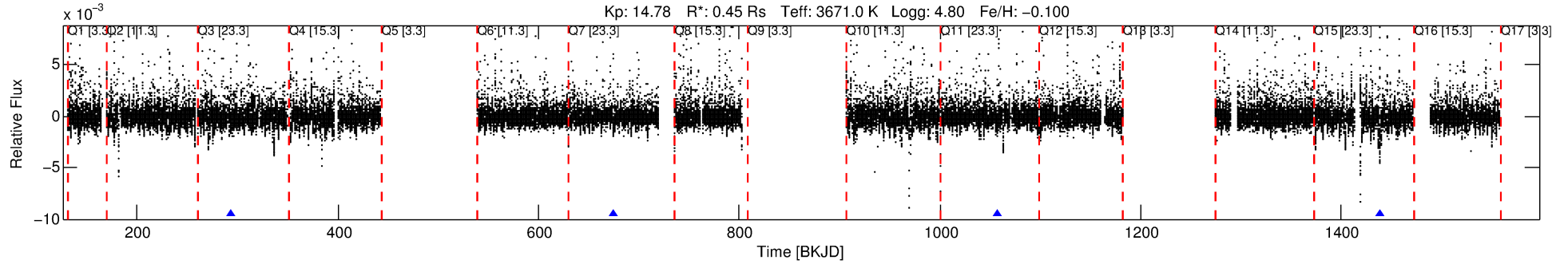
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 005428088-02

No Significant Match Found

DV One-Page Summary

KIC: 5428088 Candidate: 2 of 8 Period: 381.781 d



DV Fit Results:

Period = 381.78095 [0.00532] d
Epoch = 293.4808 [0.0107] BKJD
Rp/R* = 0.0392 [0.0131]
a/R* = 228.38 [306.27]
b = 0.58 [1.54]
Seff = 0.05 [0.01]
Teq = 122 [4] K
Rp = 1.94 [0.68] Re
a = 0.8016 [0.0587] AU
Ag = 47837.72 [39953.19] [1.20 σ]
Teffp = 2787 [581] K [4.58 σ]

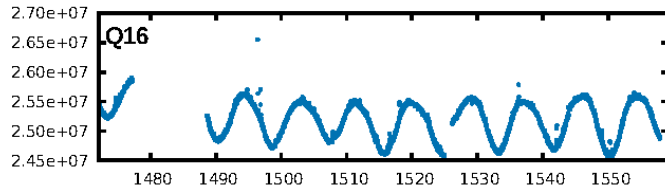
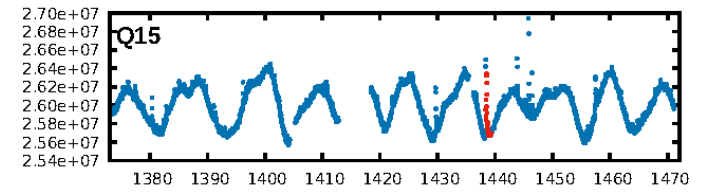
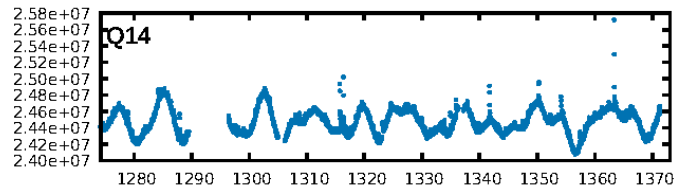
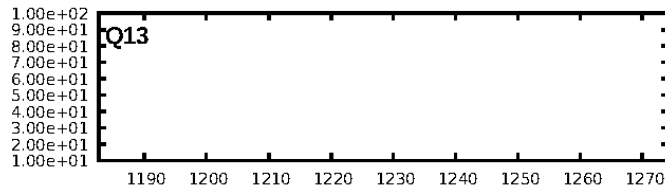
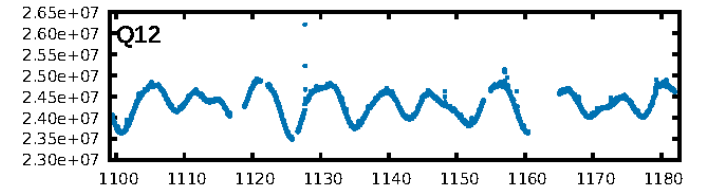
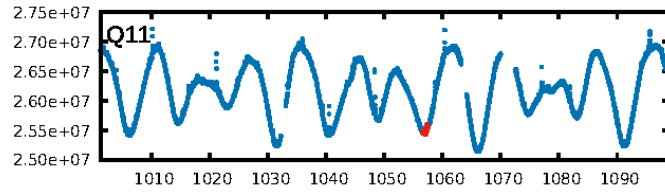
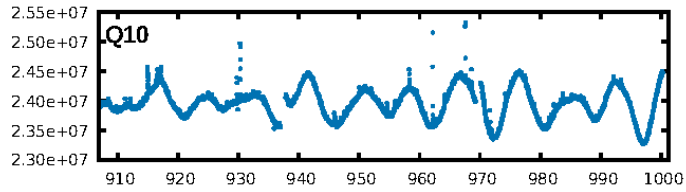
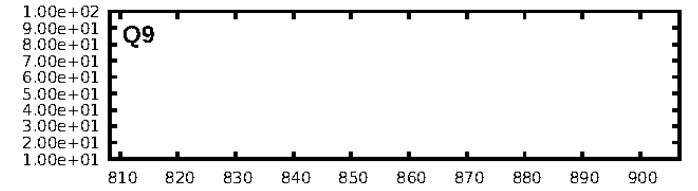
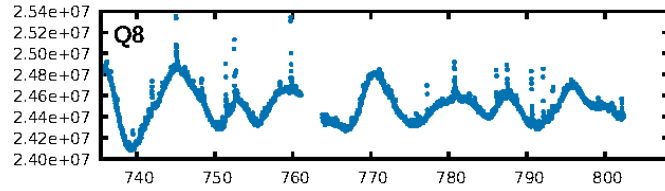
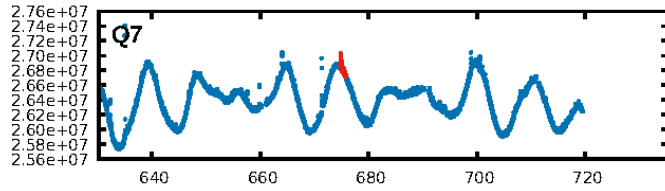
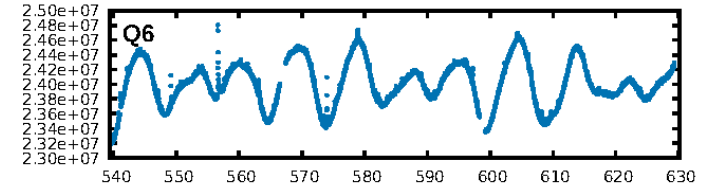
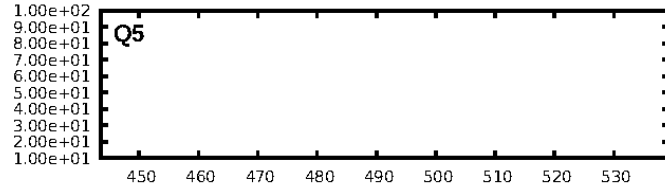
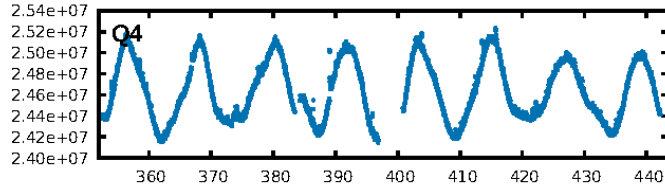
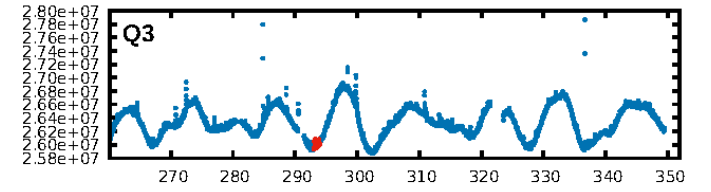
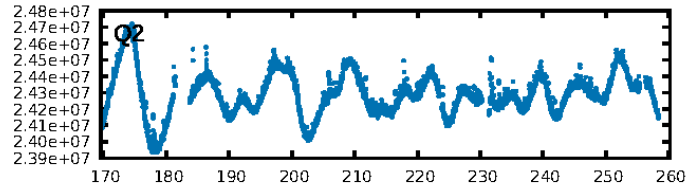
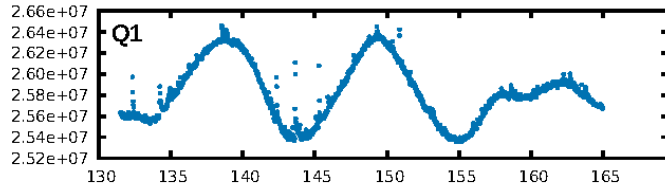
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [24.10 σ]
LongPeriod-sig: 100.0% [323.17 σ]
ModelChiSquare2-sig: 0.1%
ModelChiSquareGof-sig: 95.0%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: 1.563
Centroid-sig: 5.8%
Centroid-so: 0.827 arcsec [1.68 σ]
OotOffset-rm: 0.471 arcsec [1.51 σ]
OotOffset-st: 0/3/0/0 [3]
KicOffset-rm: 0.411 arcsec [1.38 σ]
KicOffset-st: 0/3/0/0 [3]
DiffImageQuality-fgm: 1.00 [3/3]
DiffImageOverlap-fno: 1.00 [4/4]

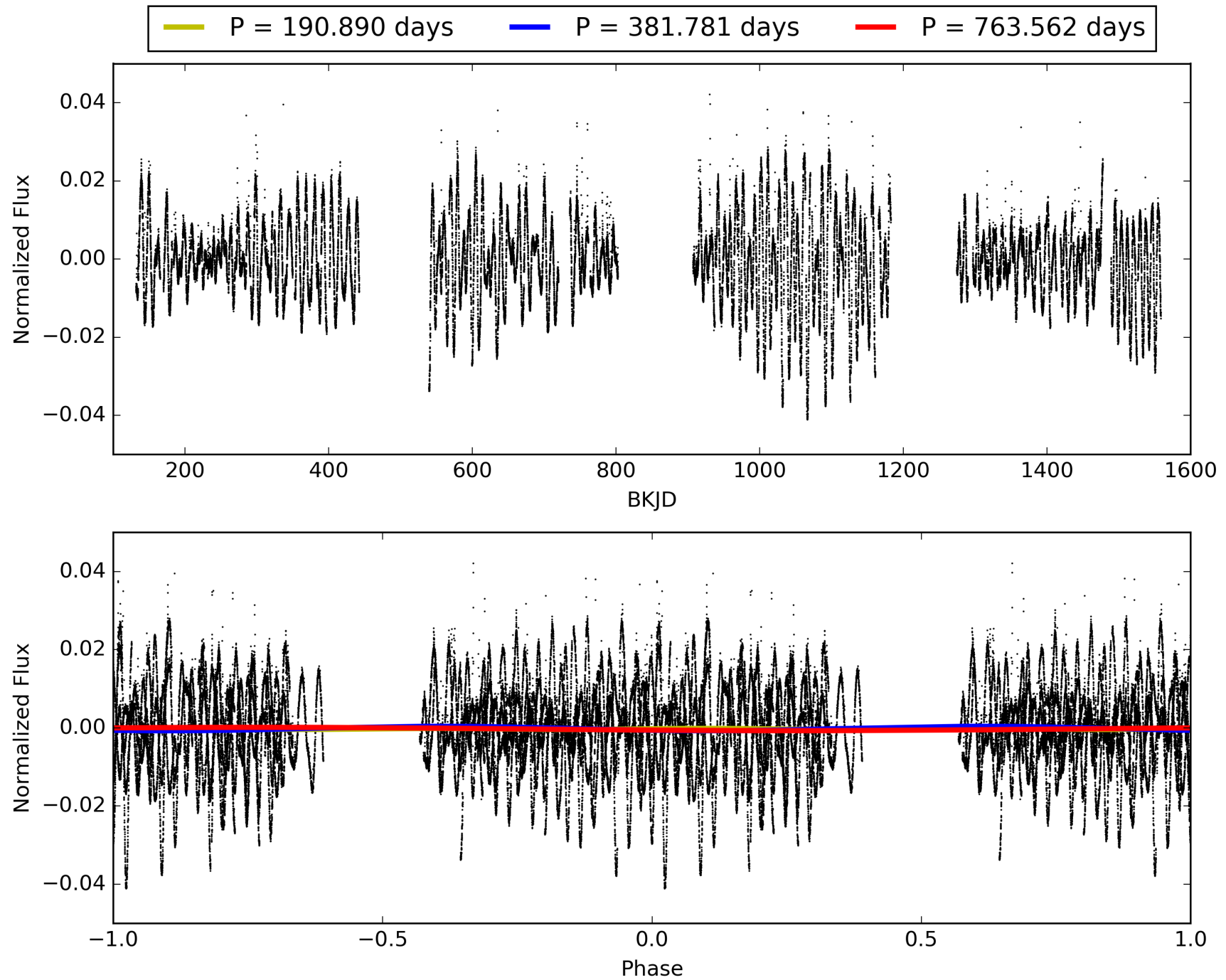
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 07:24:49 Z

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

TCE 005428088-02, PDC Light Curves

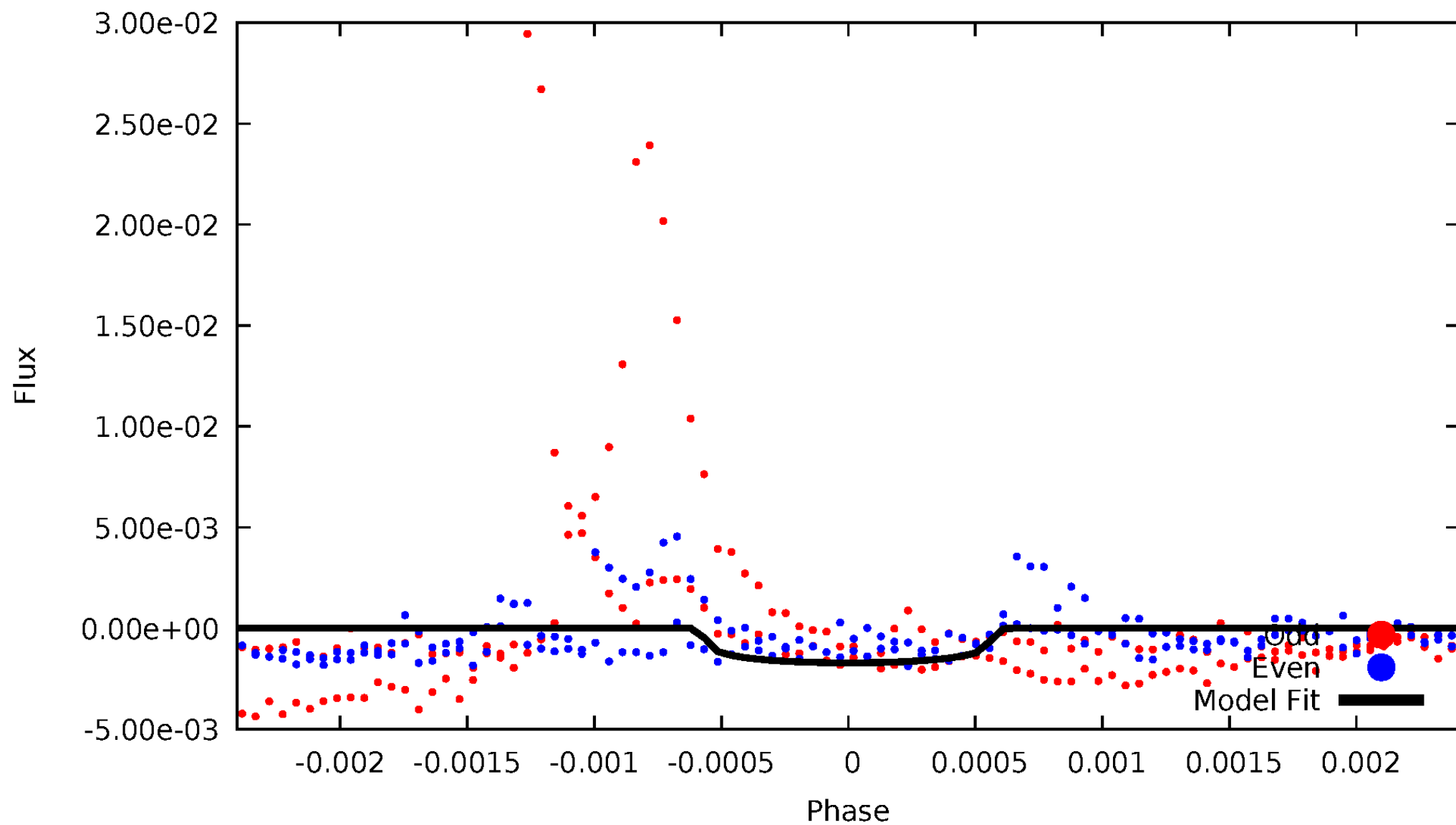


TCE 005428088-02



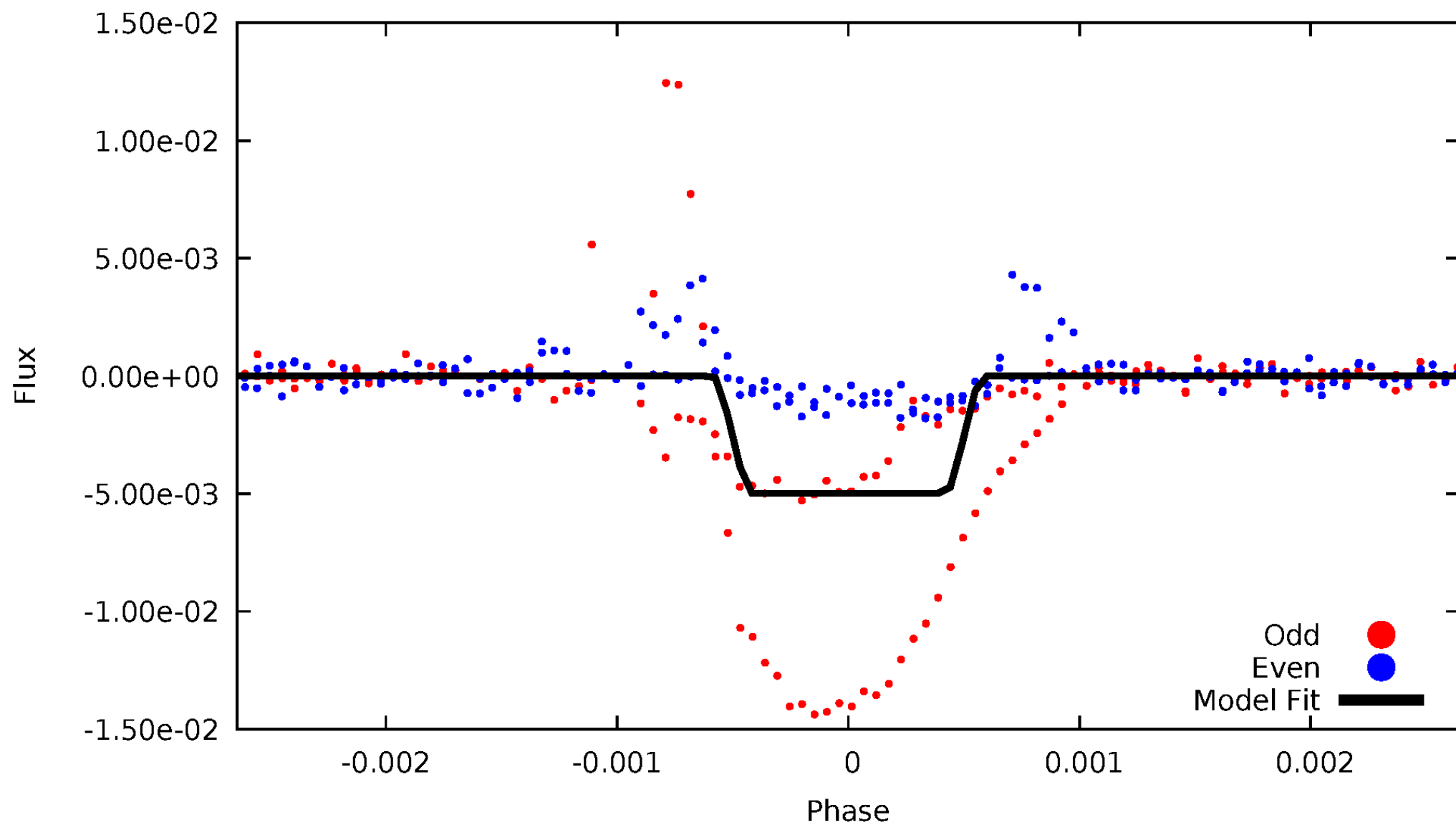
DV Odd/Even

TCE 005428088-02



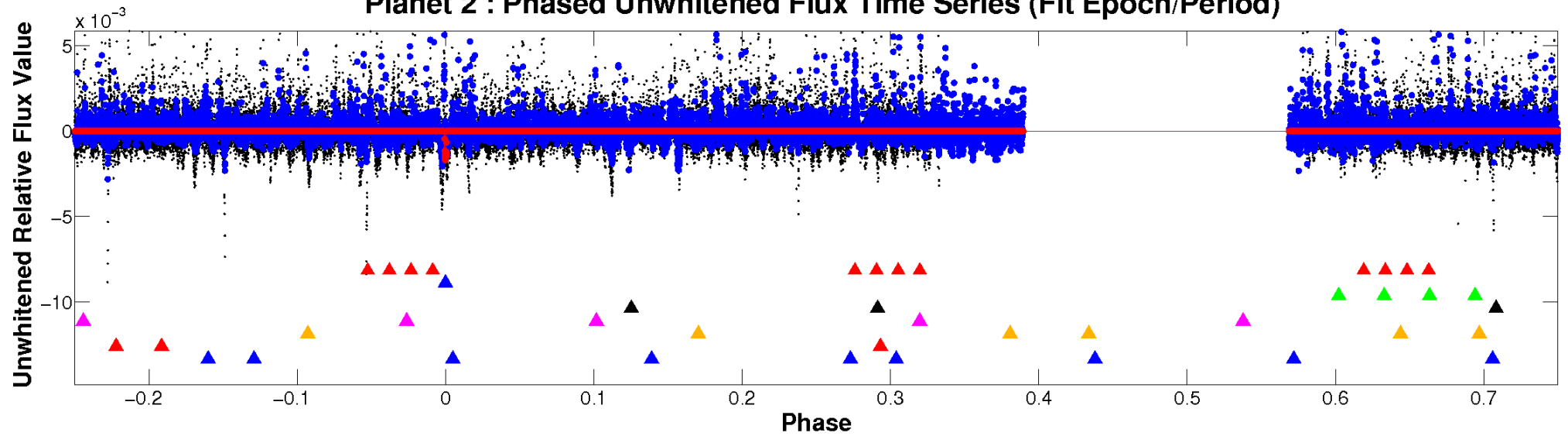
ALT Odd/Even

TCE 005428088-02

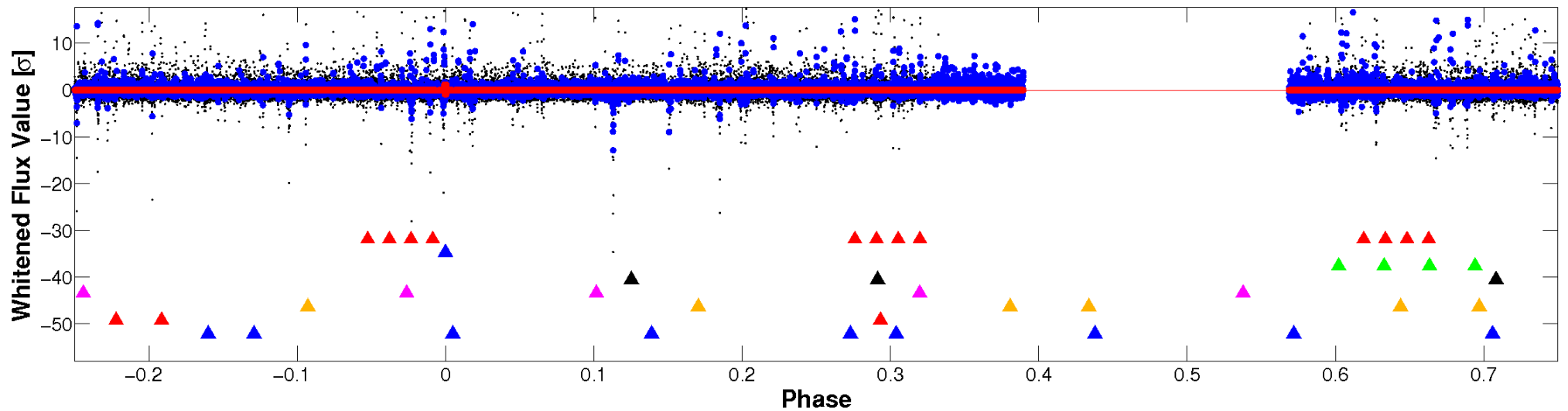


Non-Whitened Vs. Whitened Light Curve

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

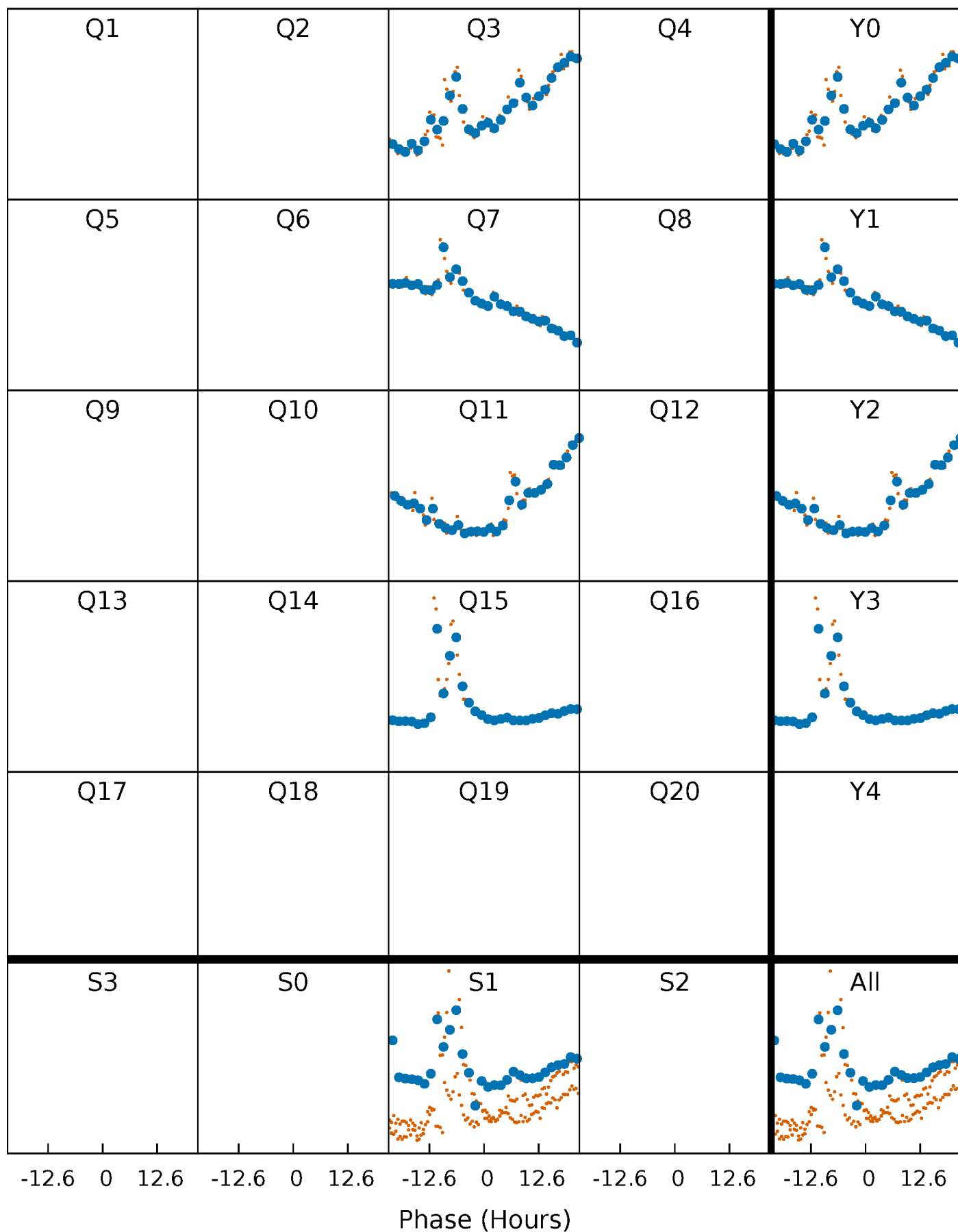


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



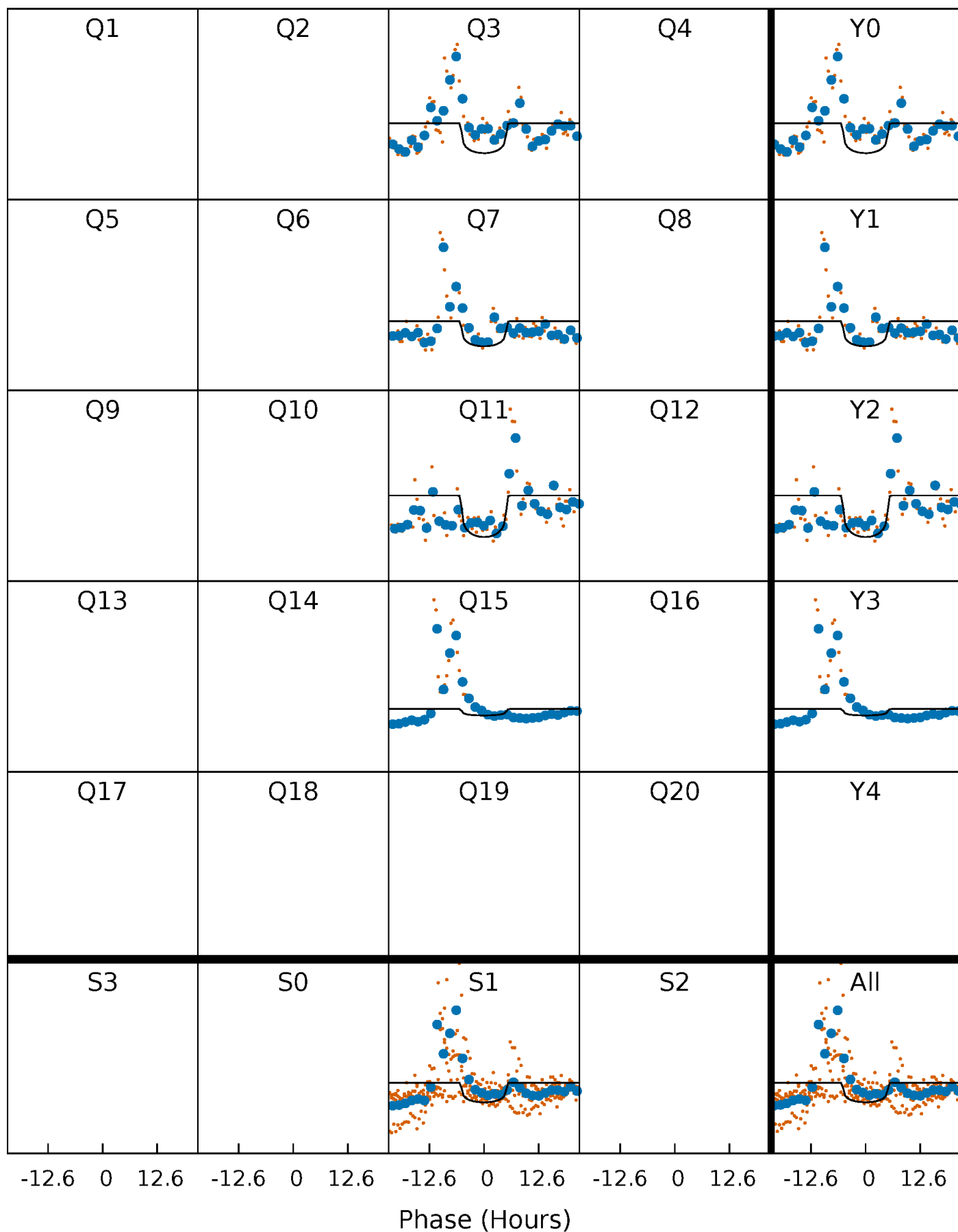
PDC Quarter-Phased Transit Curves

TCE 005428088-02 $P=381.780949$ Days $T_0=293.480821$ (BKJD)



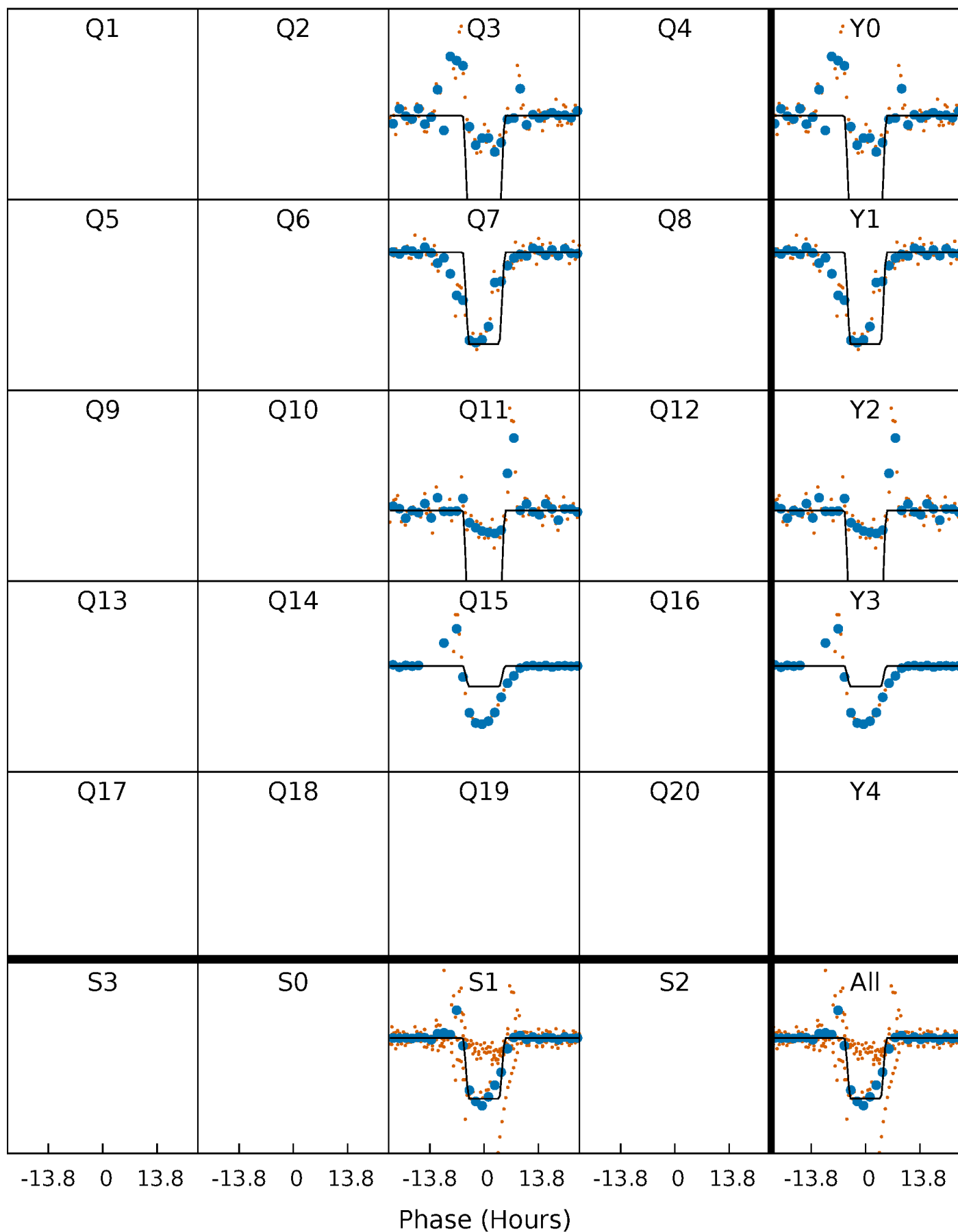
DV Quarter-Phased Transit Curves

TCE 005428088-02 $P=381.780949$ Days $T_0=293.480821$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

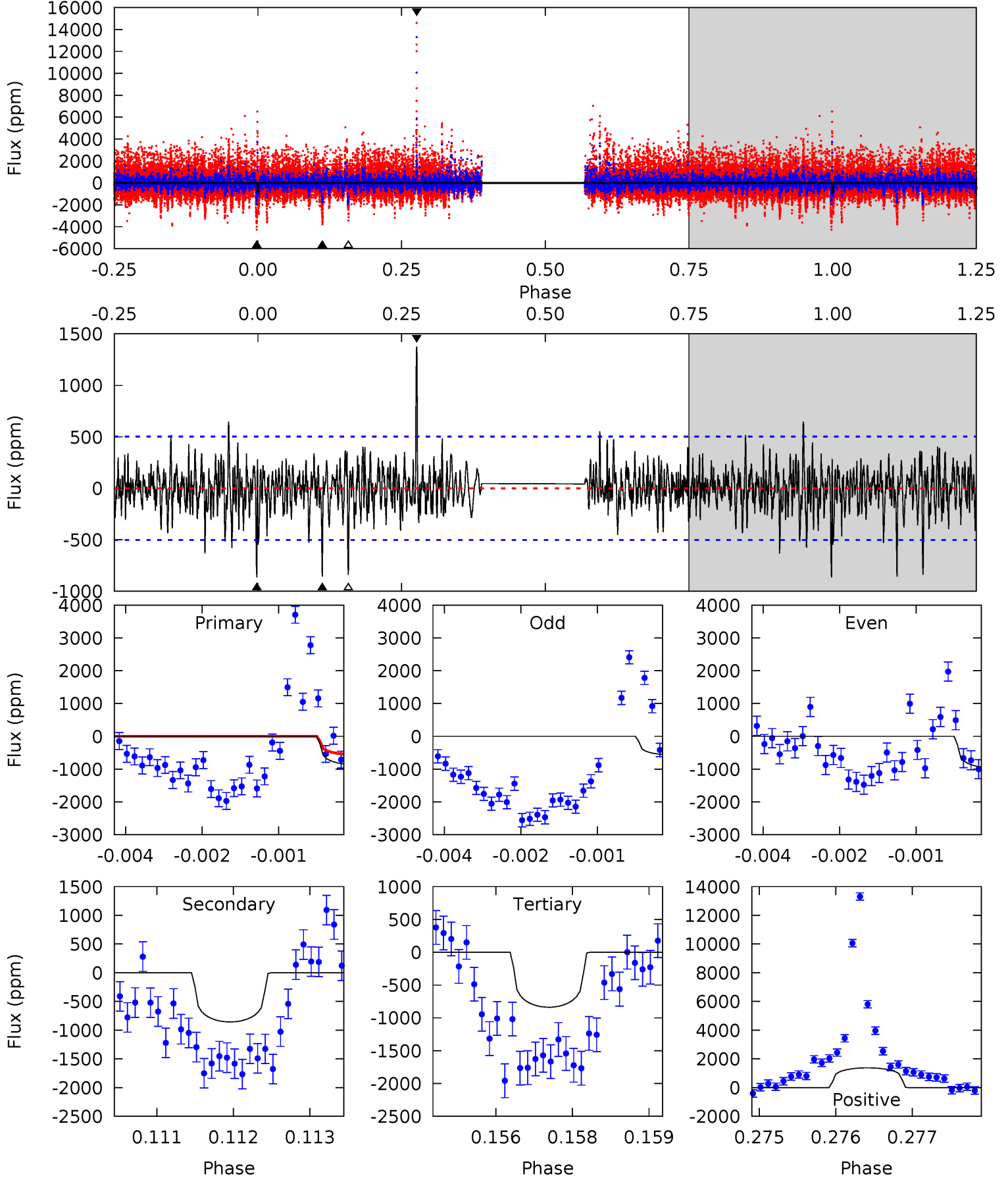
TCE 005428088-02 $P=381.780635$ Days $T_0=293.463958$ (BKJD)



DV Model-Shift Uniqueness Test

005428088-02, P = 381.780949 Days, E = 293.480821 Days

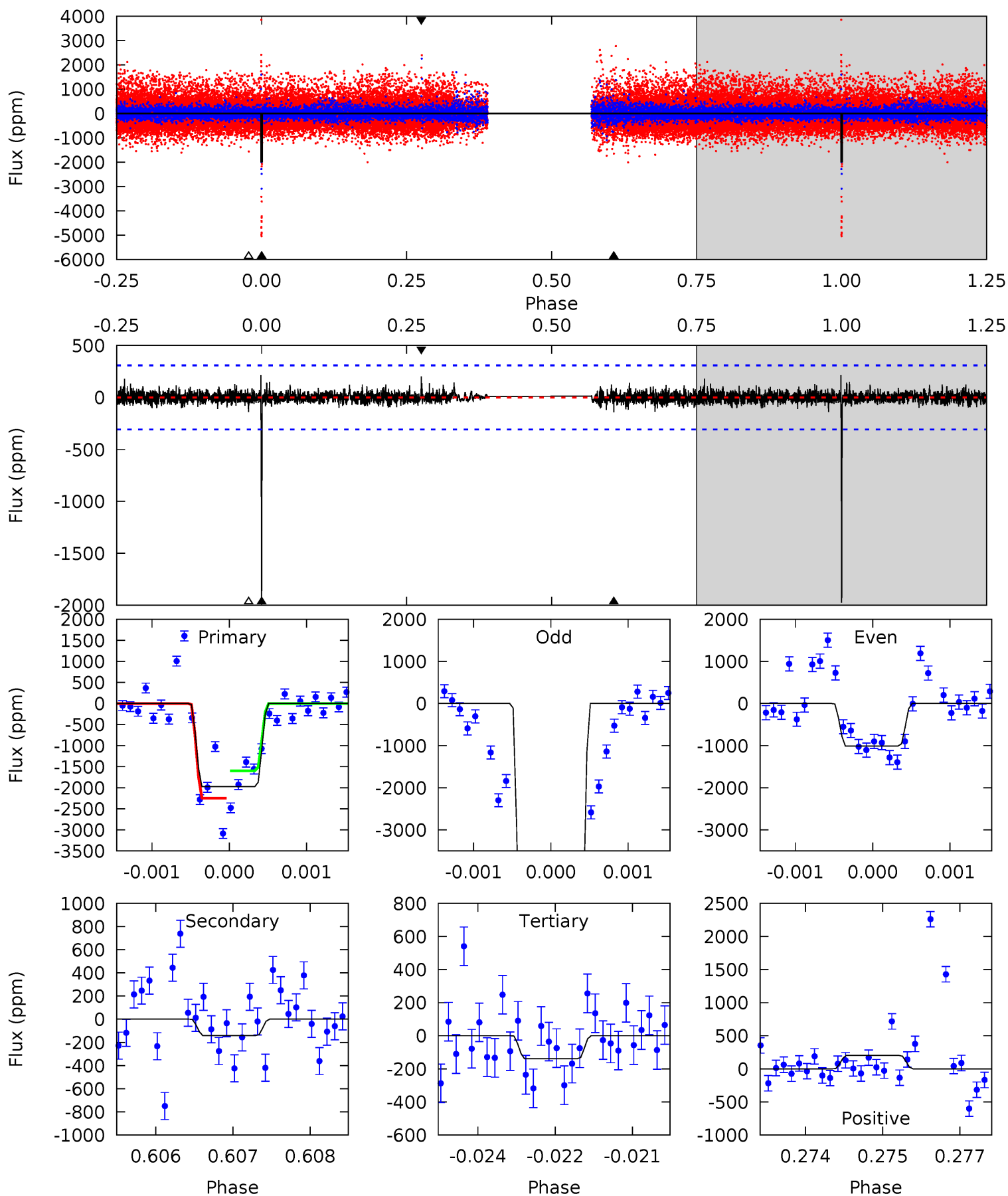
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.32	9.24	9.04	14.8	5.41	3.23	1.88	0.28	-5.53	0.20	-5.61	1.81	1.09	0.61	3.17



Alt Model-Shift Uniqueness Test

005428088-02, P = 381.780635 Days, E = 293.463958 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
34.8	2.48	2.44	3.56	5.42	3.24	0.59	32.3	31.2	0.04	-1.08	78.0	1.84	0.10	0



Stellar Parameters For KIC 005428088

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	3671^{+65}_{-80}	$4.797^{+0.045}_{-0.031}$	$-0.100^{+0.100}_{-0.100}$	$0.454^{+0.032}_{-0.044}$	$0.472^{+0.034}_{-0.046}$	$7.100^{+1.752}_{-0.971}$
	+2%/-2%	+1%/-1%	+100%/-100%	+7%/-10%	+7%/-10%	+25%/-14%
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 005428088-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-856 ± 93	$1.95^{+0.60}_{-0.66}$	170^{+4}_{-5}	3338^{+461}_{-269}	$80050^{+102838}_{-33472}$
Alt.	-141 ± 57	$3.48^{+0.68}_{-0.65}$	169^{+4}_{-4}	2248^{+153}_{-142}	4024^{+2909}_{-1918}

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

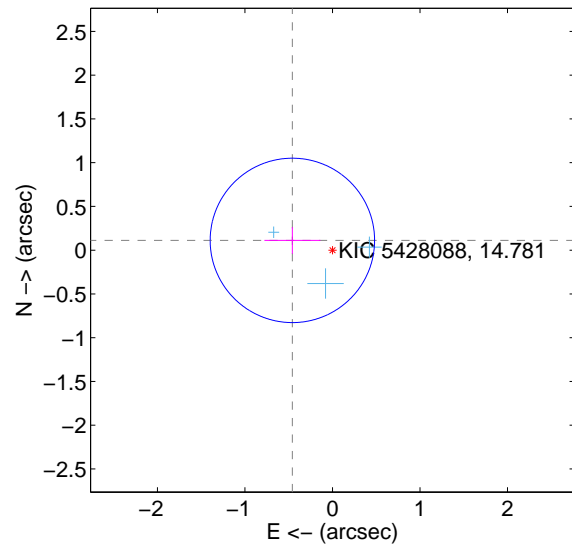
Supplemental centroid analysis for 005428088-02. Kepler magnitude: 14.78. Transit SNR 8.68

There are 3 quarters with good PRF difference image offsets

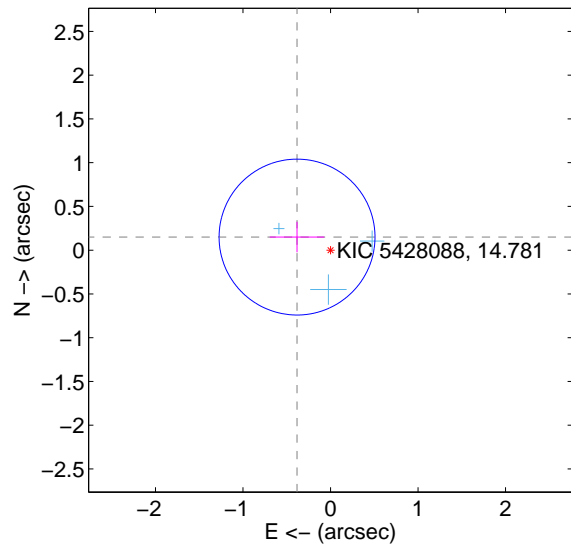
The direct PRF centroid is offset from the target star catalog position by about 0.09 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.471 ± 0.313	1.51	0.458 ± 0.320	0.112 ± 0.152
PRF-fit source offset from KIC position	0.411 ± 0.297	1.38	0.382 ± 0.311	0.150 ± 0.174
photometric centroid source offset	0.83 ± 0.49	1.68	-0.00 ± 0.73	-0.83 ± 0.49

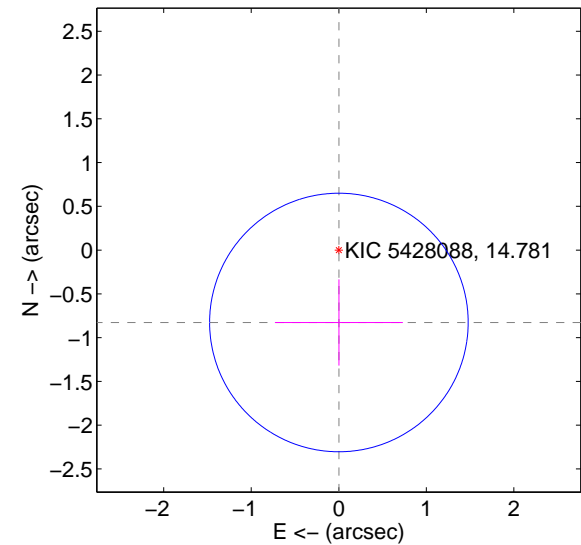
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

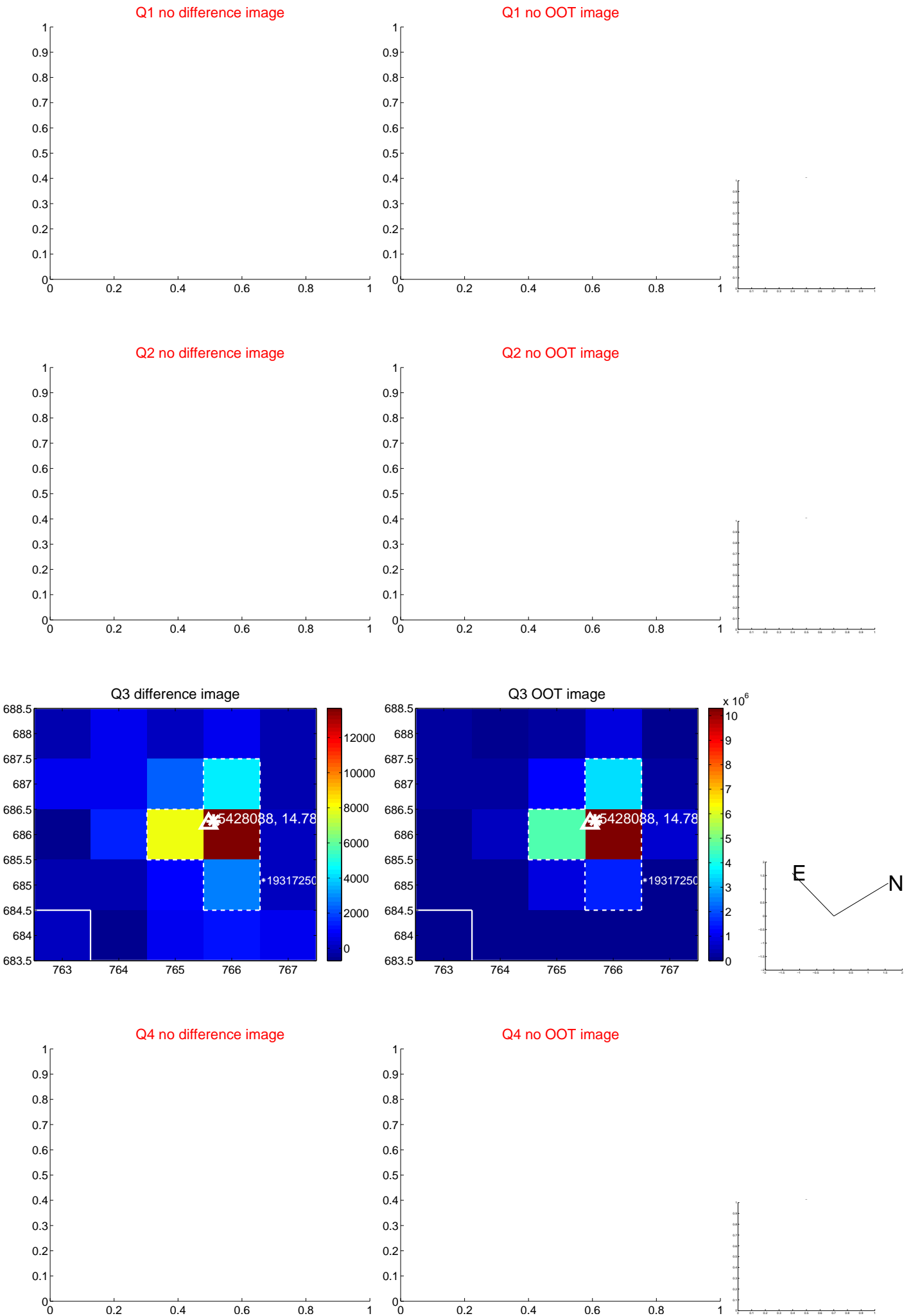


offset from photometric centroids

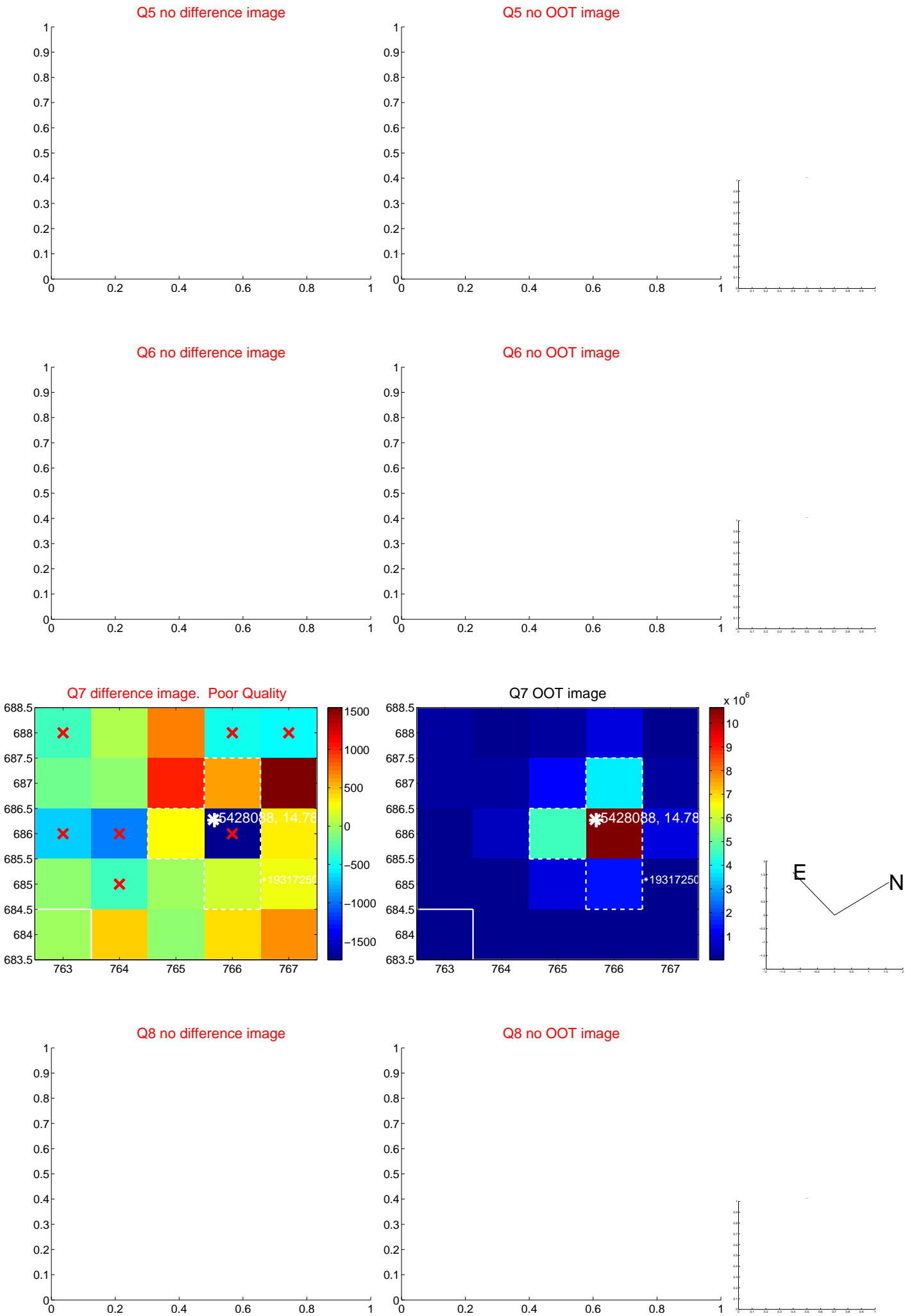


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ . Red *: target star. Blue *: Other stars. Text next to a star gives its KIC ID and kepmag. KIC IDs > 15,000,000 are from the UKIRT catalog.

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



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



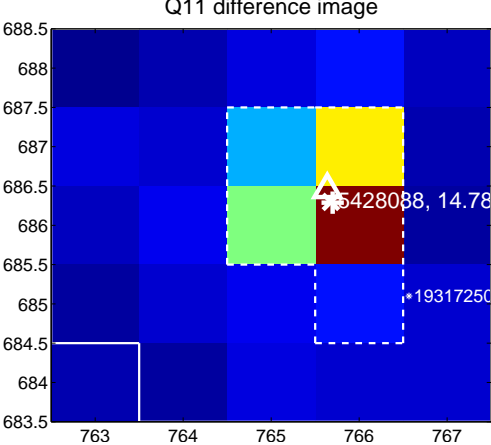
Q10 no difference image



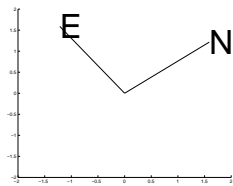
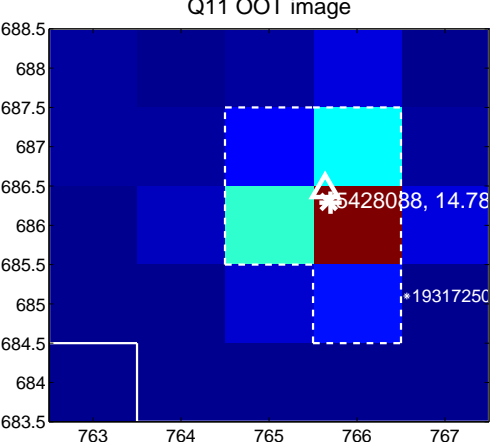
Q10 no OOT image



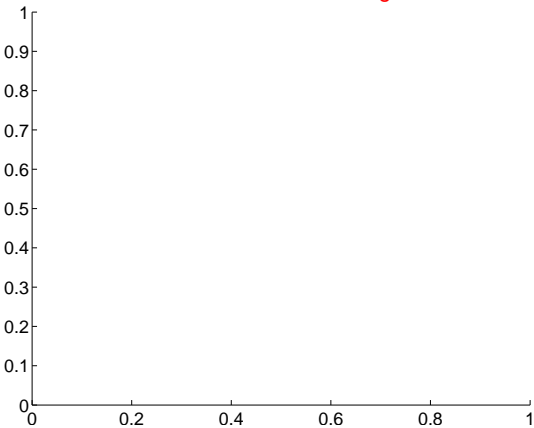
Q11 difference image



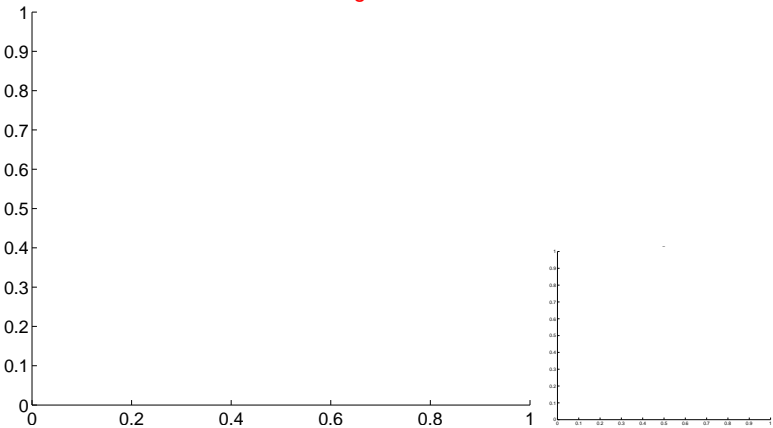
Q11 OOT image



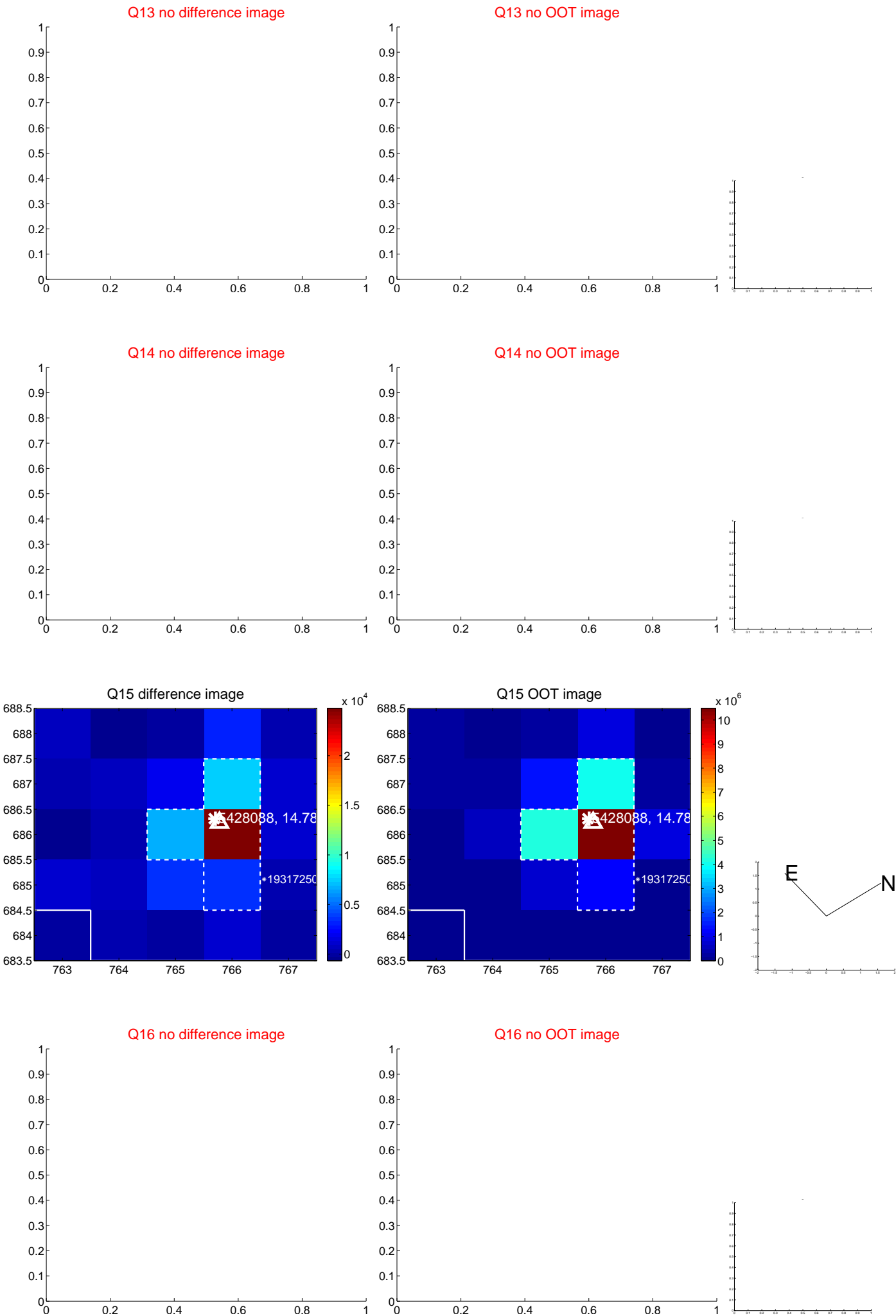
Q12 no difference image



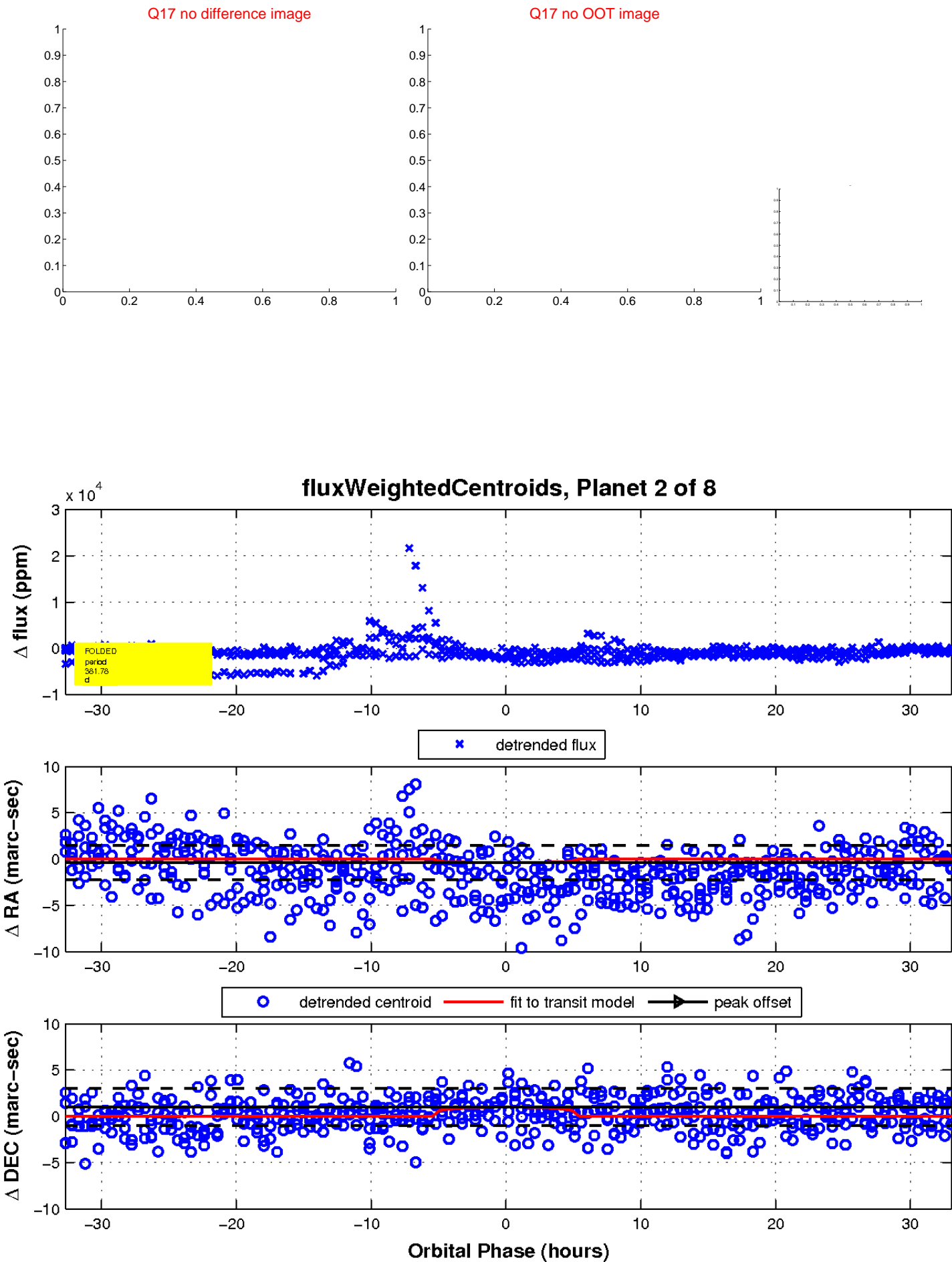
Q12 no OOT image



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

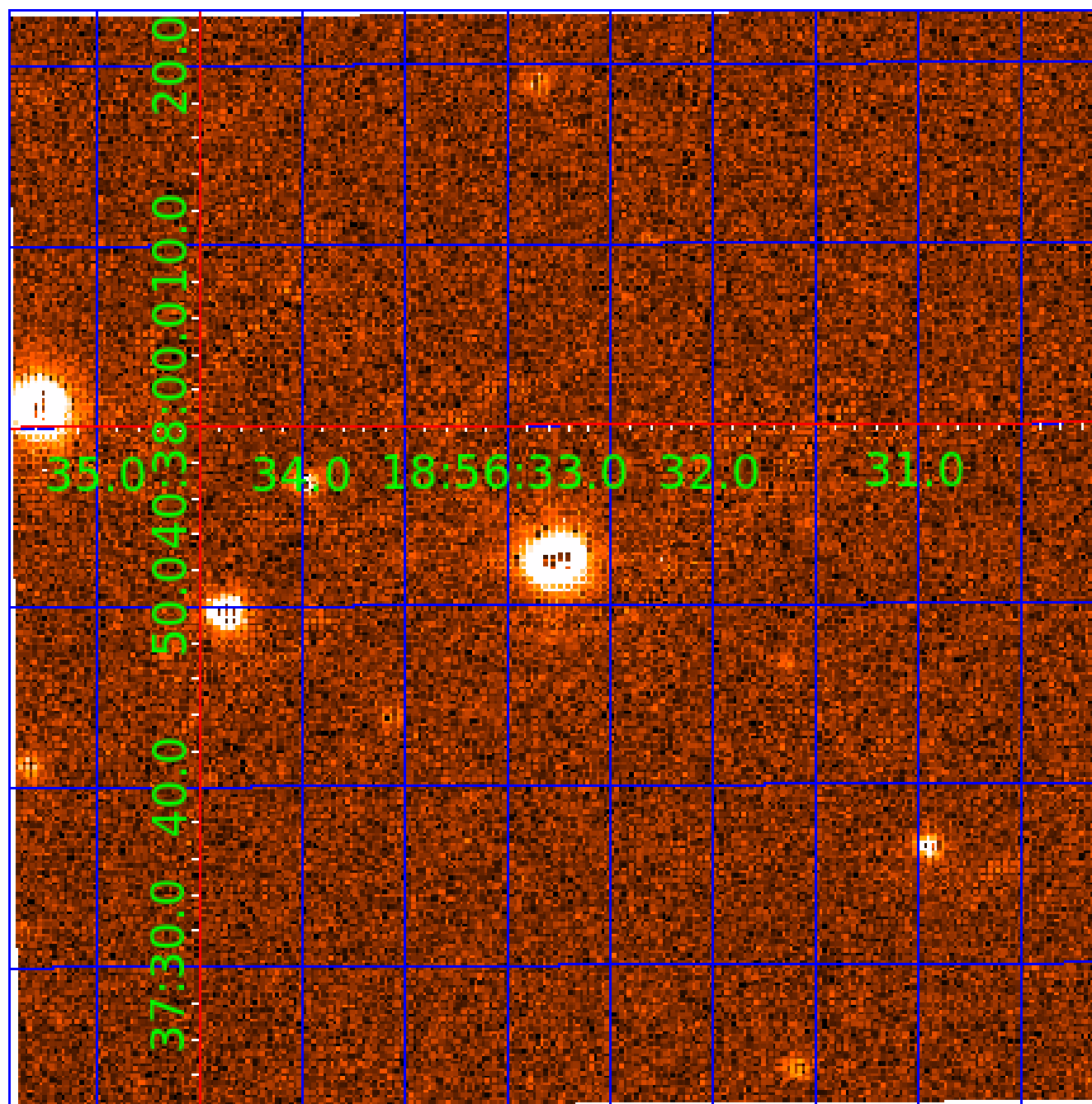


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 005428088

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})
005428088-01	OBS	No	125.402324	164.783818	65.8	1.016	13.7	0.4	0.45	3671	0.37	0.23
005428088-02	OBS	No	381.780949	293.480821	1710.4	11.023	10.4	8.7	0.45	3671	1.94	0.05
005428088-03	OBS	No	370.082677	176.708862	1075.5	3.766	9.5	5.3	0.45	3671	1.53	0.05
005428088-04	OBS	No	604.366682	341.322915	1404.2	11.938	14.3	6.1	0.45	3671	1.70	0.03
005428088-05	OBS	No	298.541217	283.491662	1442.5	5.009	9.9	7.0	0.45	3671	1.80	0.07
005428088-06	OBS	No	281.270626	177.801168	1498.0	4.087	11.7	7.9	0.45	3671	1.82	0.08
005428088-07	OBS	No	566.821192	220.406558	1902.2	8.205	10.1	8.8	0.45	3671	2.05	0.03
005428088-08	OBS	No	165.303847	232.412060	1917.0	2.500	12.0	-1.0	0.45	3671	1.97	0.16

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005428088-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_SKYE_ZUMA_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS
005428088-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_TER_DV—MOD_POS_DV
005428088-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS
005428088-04	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
005428088-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—CENT_FEW_DIFFS
005428088-06	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
005428088-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005428088-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_NOFITS

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

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

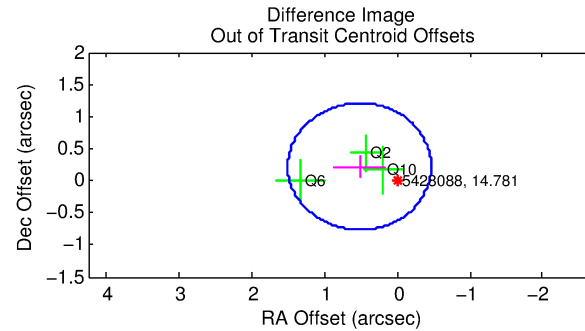
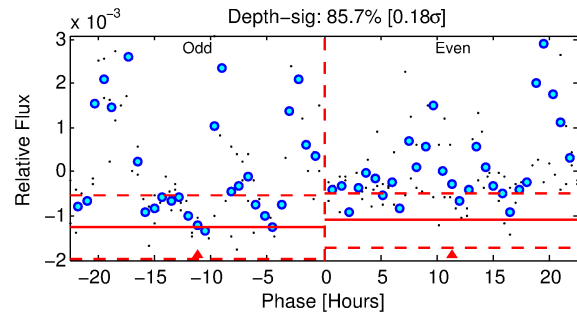
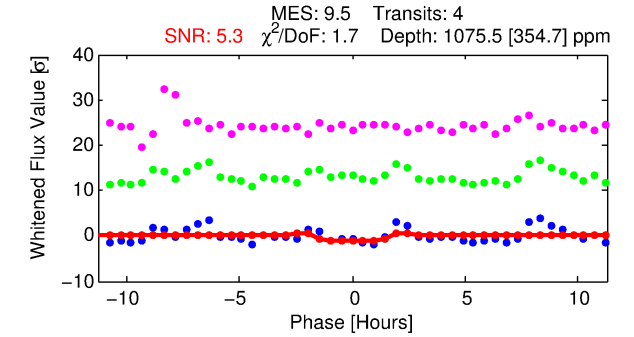
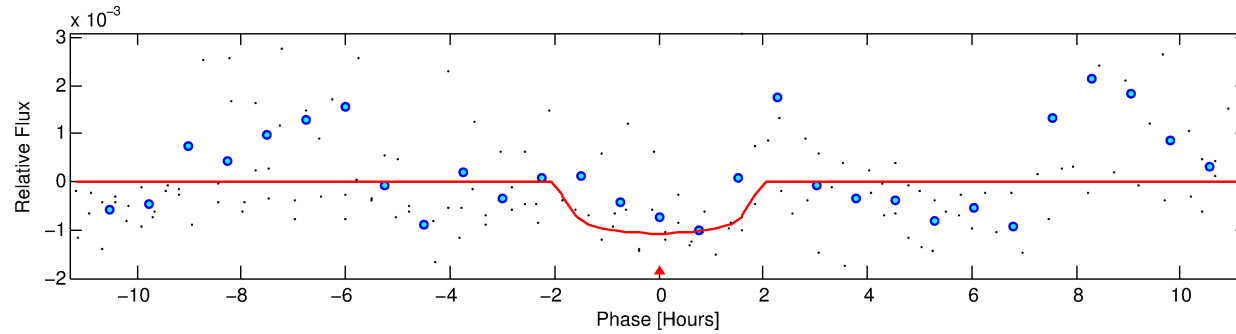
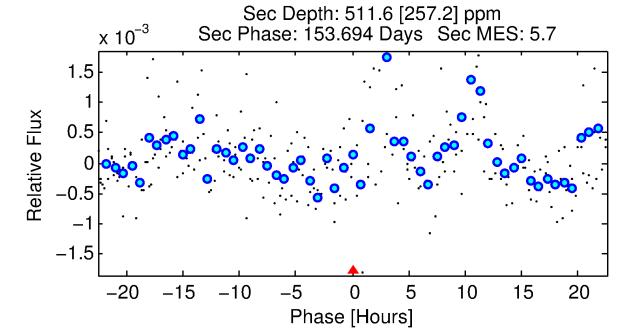
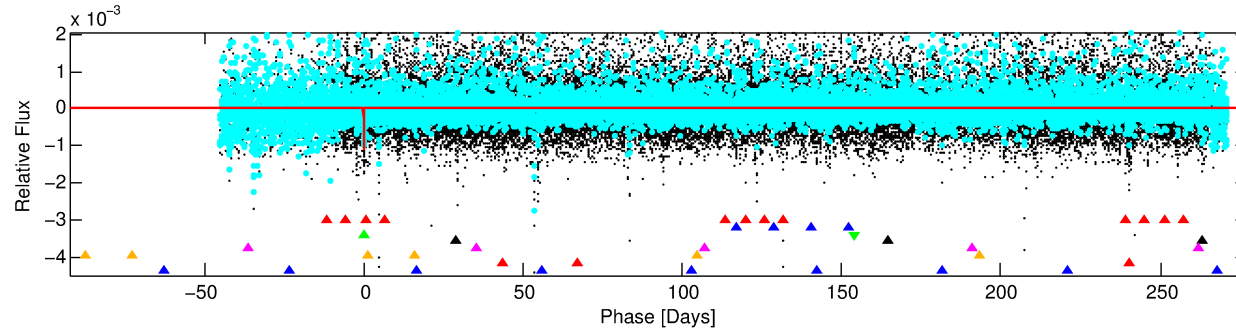
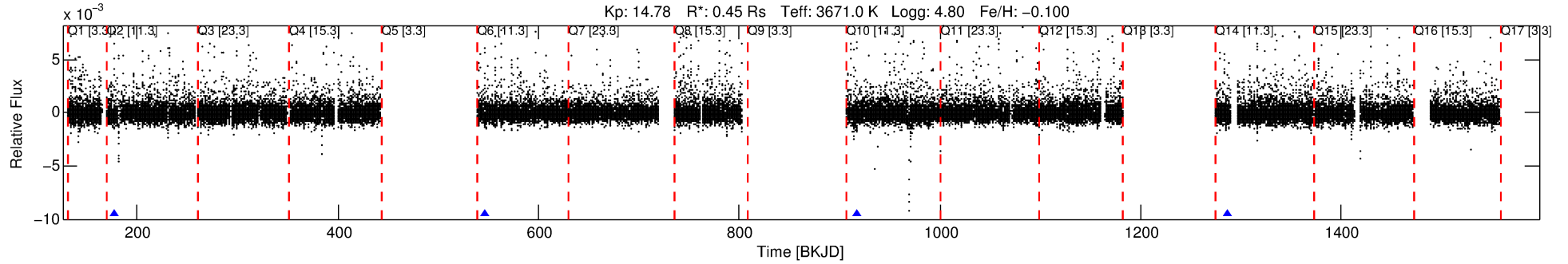
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 005428088-03

No Significant Match Found

DV One-Page Summary

KIC: 5428088 Candidate: 3 of 8 Period: 370.083 d



DV Fit Results:

Period = 370.08268 [0.00803] d
Epoch = 176.7089 [0.0147] BKJD
Rp/R* = 0.0309 [0.0771]
a/R* = 659.69 [7224.80]
b = 0.54 [14.41]
Seff = 0.05 [0.01]
Teq = 123 [4] K
Rp = 1.53 [3.82] Re
a = 0.7851 [0.0575] AU
Ag = 74040.60 [371215.45] [0.20 σ]
Teffp = 3141 [3937] K [0.77 σ]

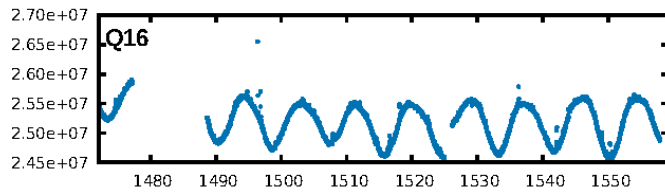
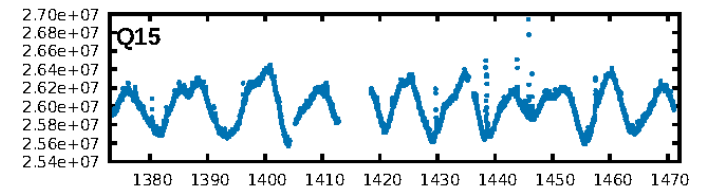
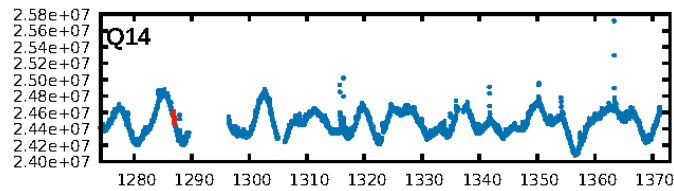
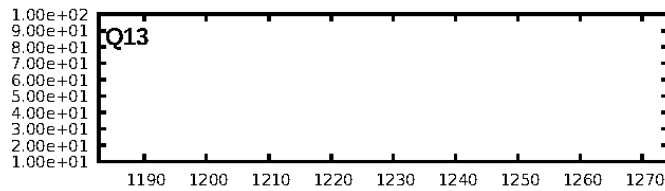
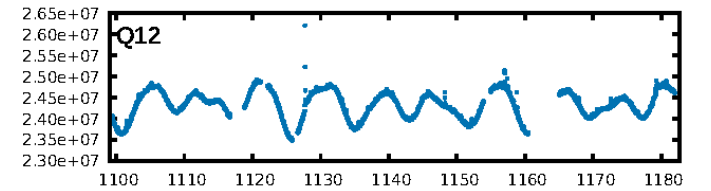
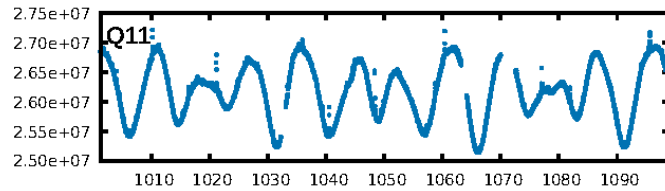
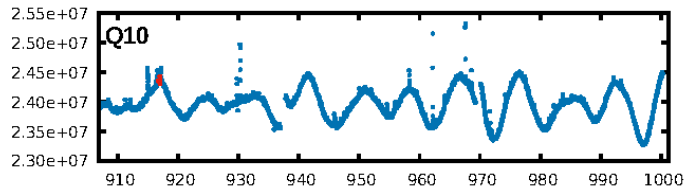
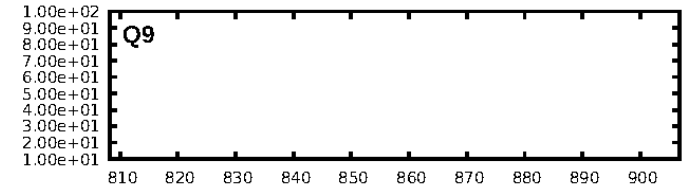
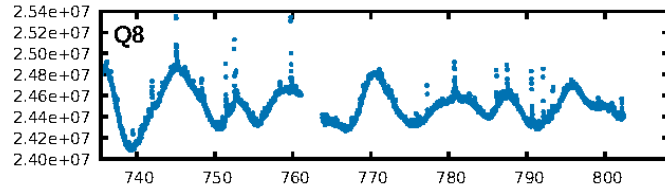
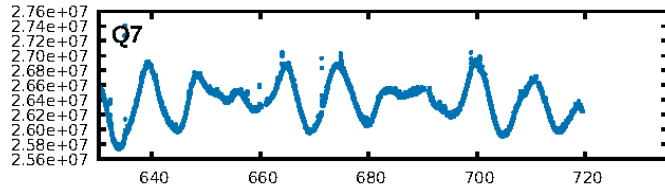
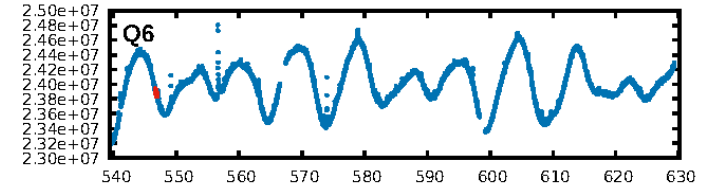
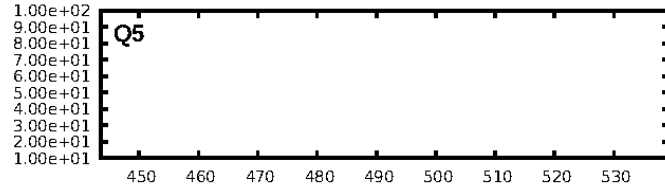
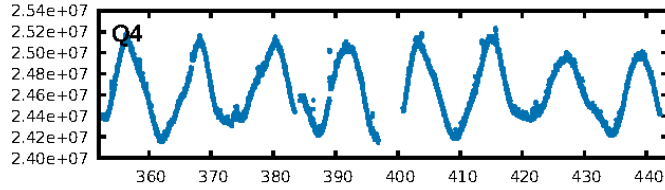
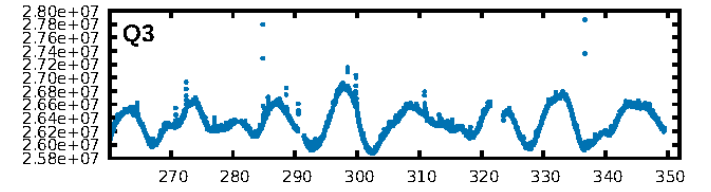
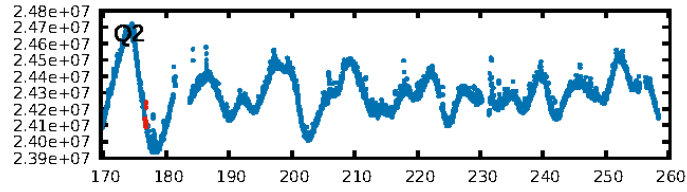
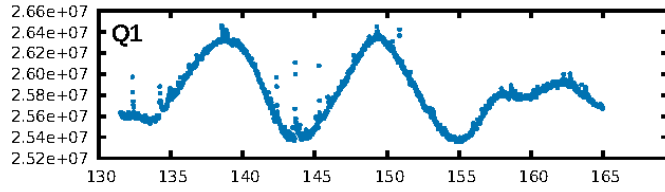
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [274.01 σ]
LongPeriod-sig: 100.0% [24.10 σ]
ModelChiSquare2-sig: 2.2%
ModelChiSquareGof-sig: 90.0%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: -0.4337
Centroid-sig: 16.9%
Centroid-so: 2.056 arcsec [1.46 σ]
OotOffset-rm: 0.563 arcsec [1.71 σ]
OotOffset-st: 3/0/0/0 [3]
KicOffset-rm: 0.543 arcsec [1.65 σ]
KicOffset-st: 3/0/0/0 [3]
DiffImageQuality-fgm: 1.00 [3/3]
DiffImageOverlap-fno: 0.75 [3/4]

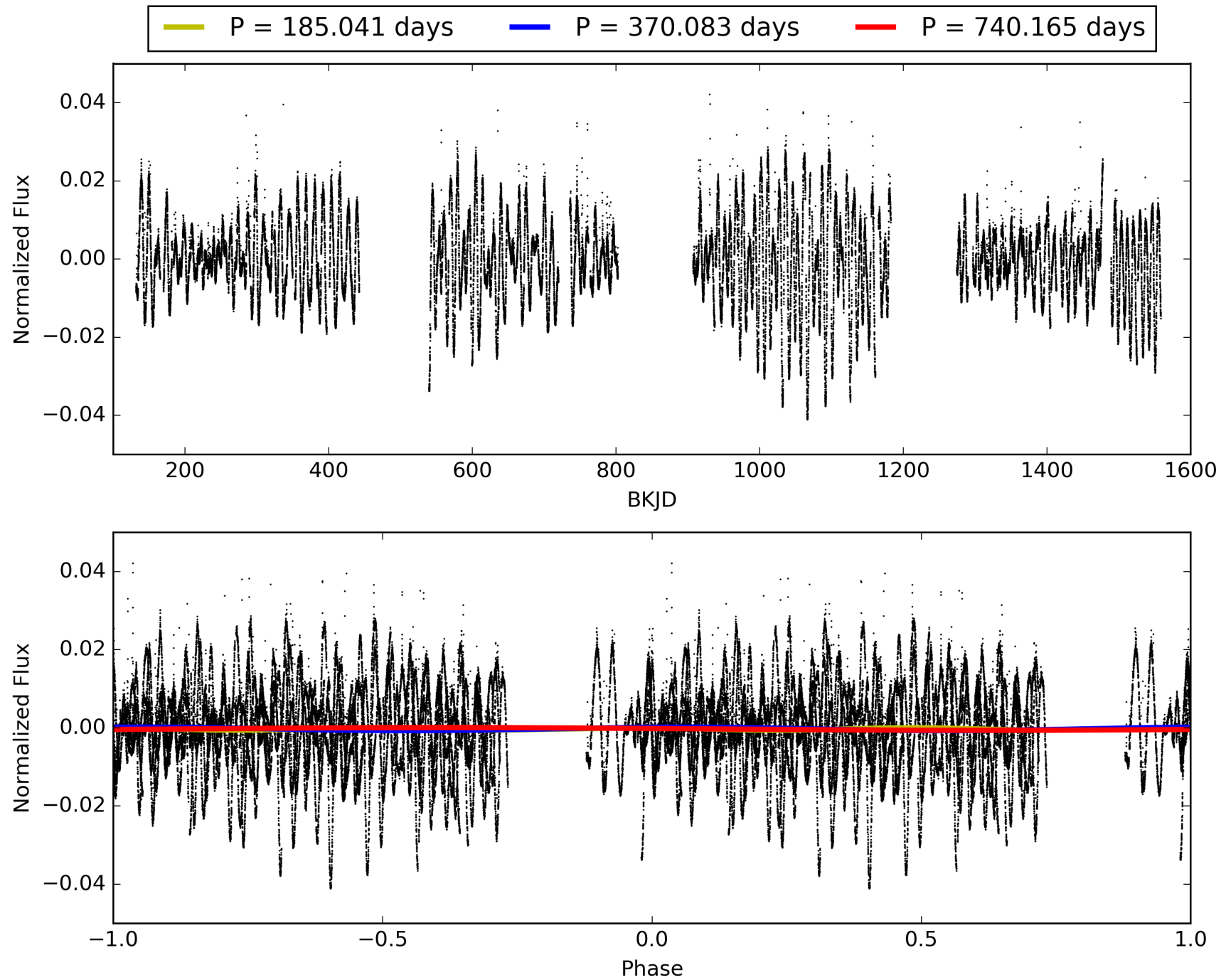
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 07:25:01 Z

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

TCE 005428088-03, PDC Light Curves

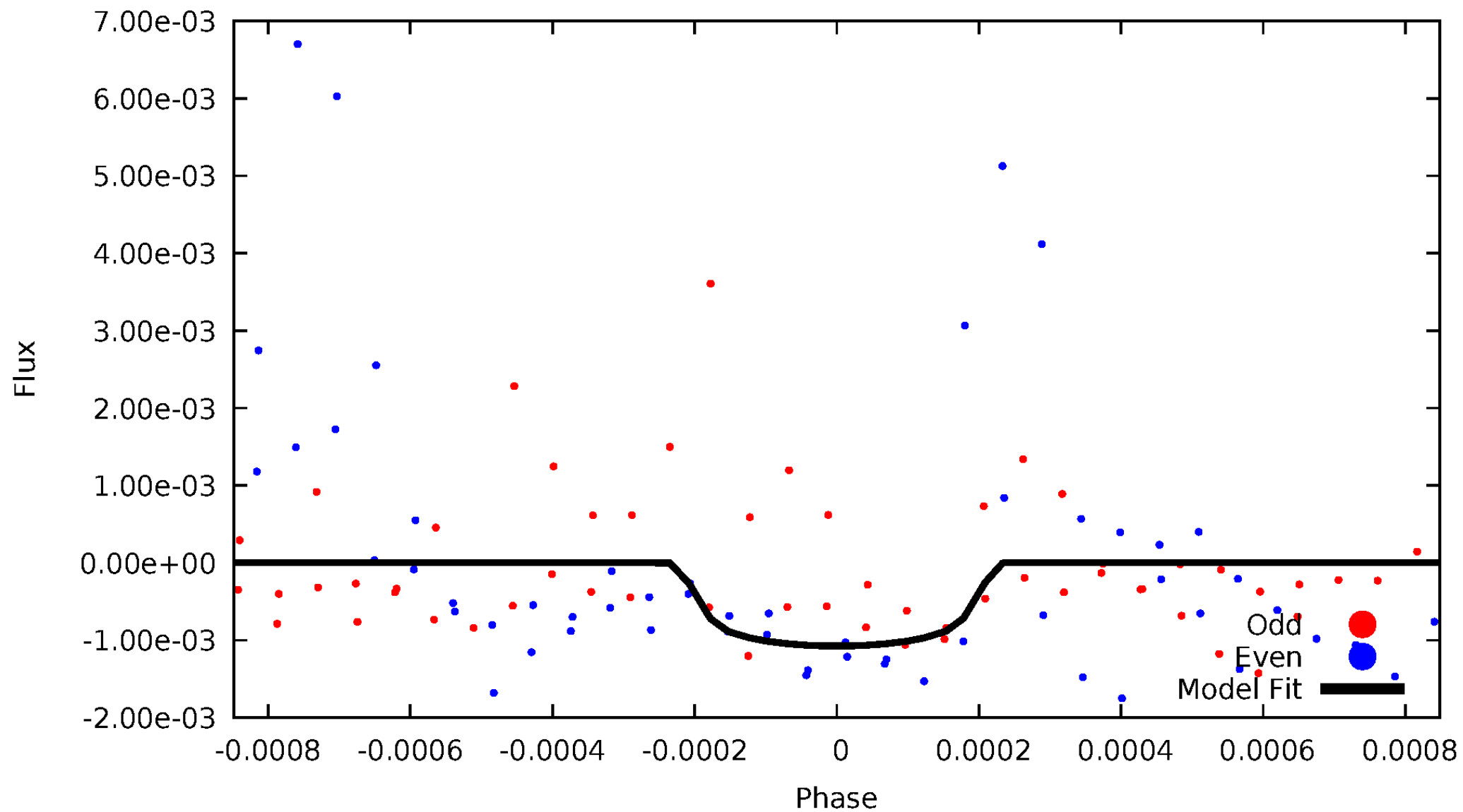


TCE 005428088-03



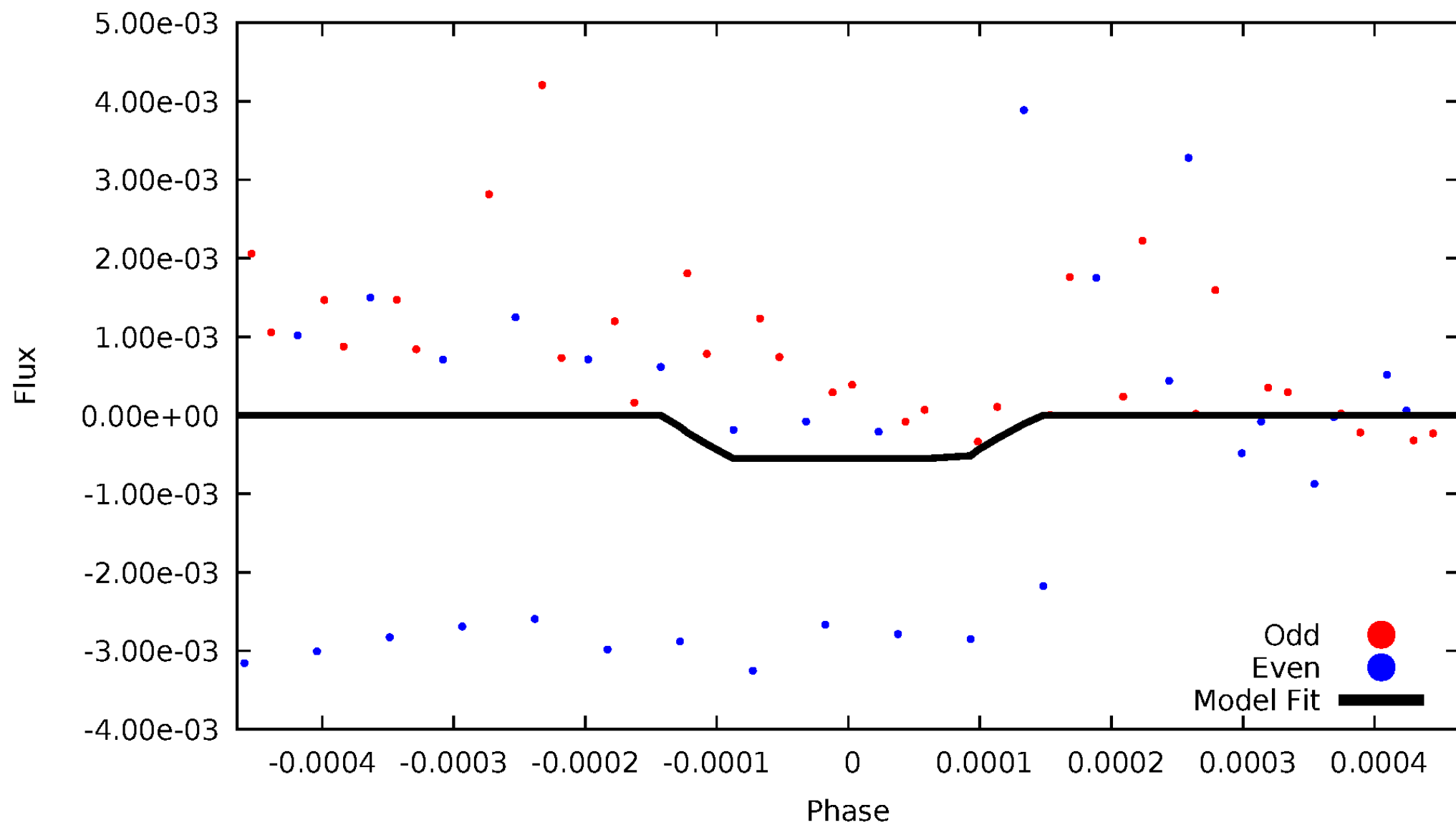
DV Odd/Even

TCE 005428088-03

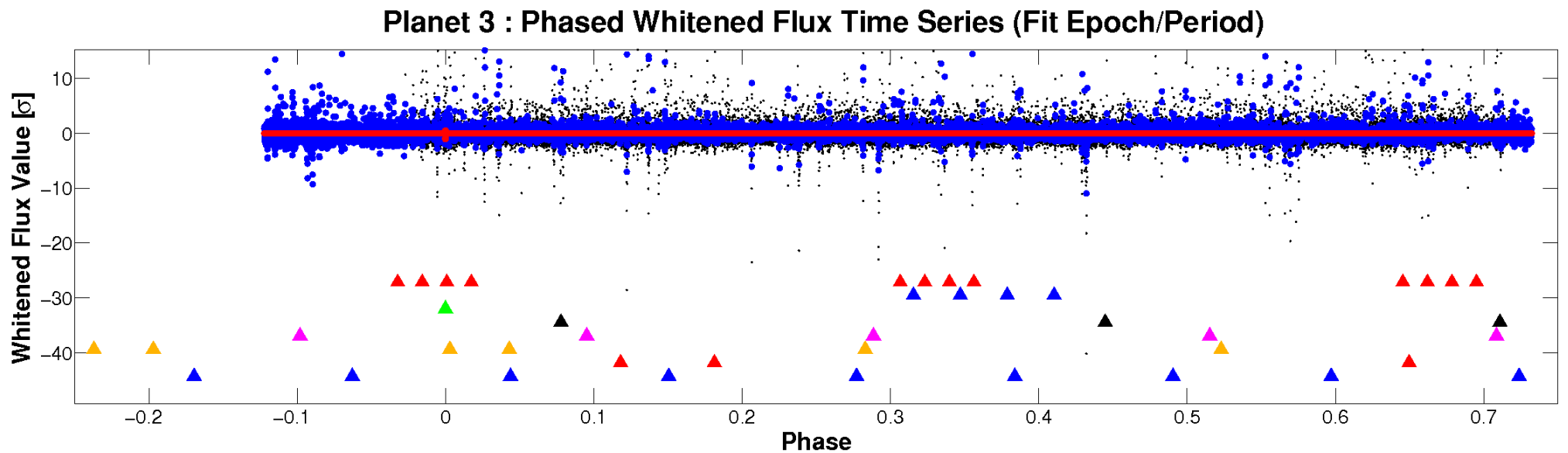
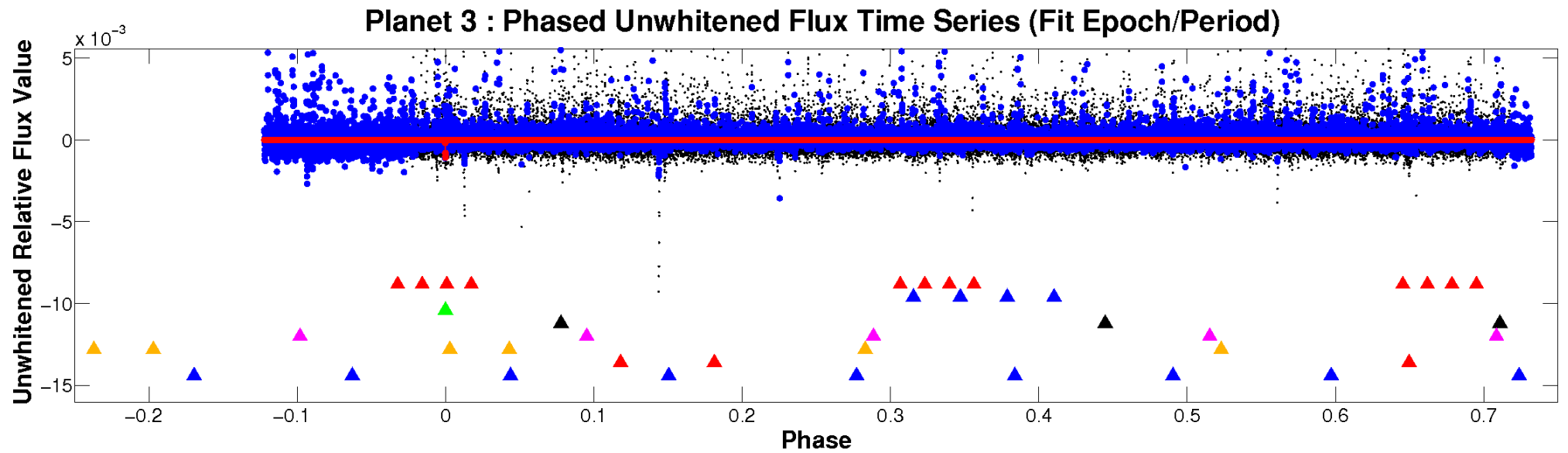


ALT Odd/Even

TCE 005428088-03

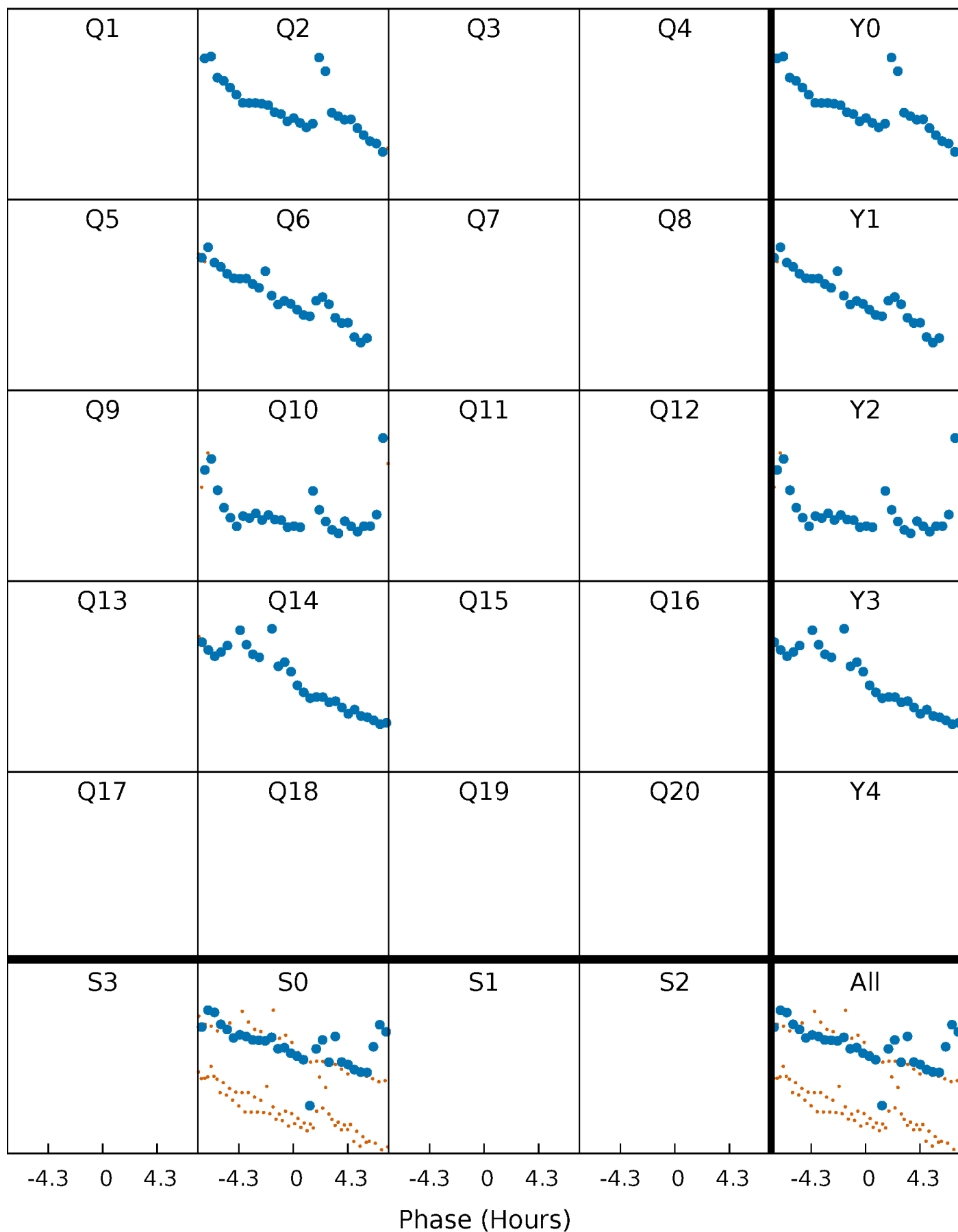


Non-Whitened Vs. Whitened Light Curve



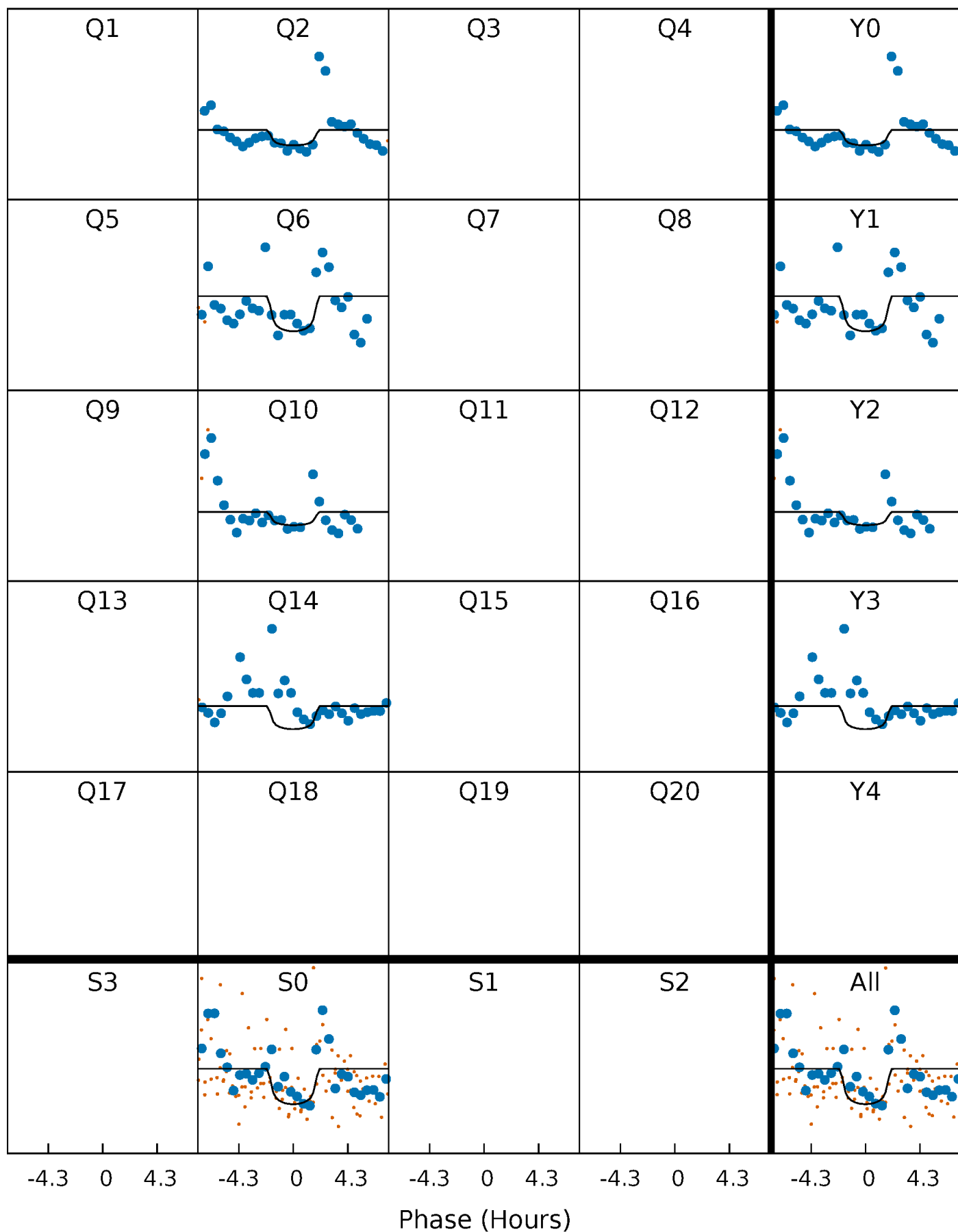
PDC Quarter-Phased Transit Curves

TCE 005428088-03 $P=370.082676$ Days $T_0=176.708862$ (BKJD)



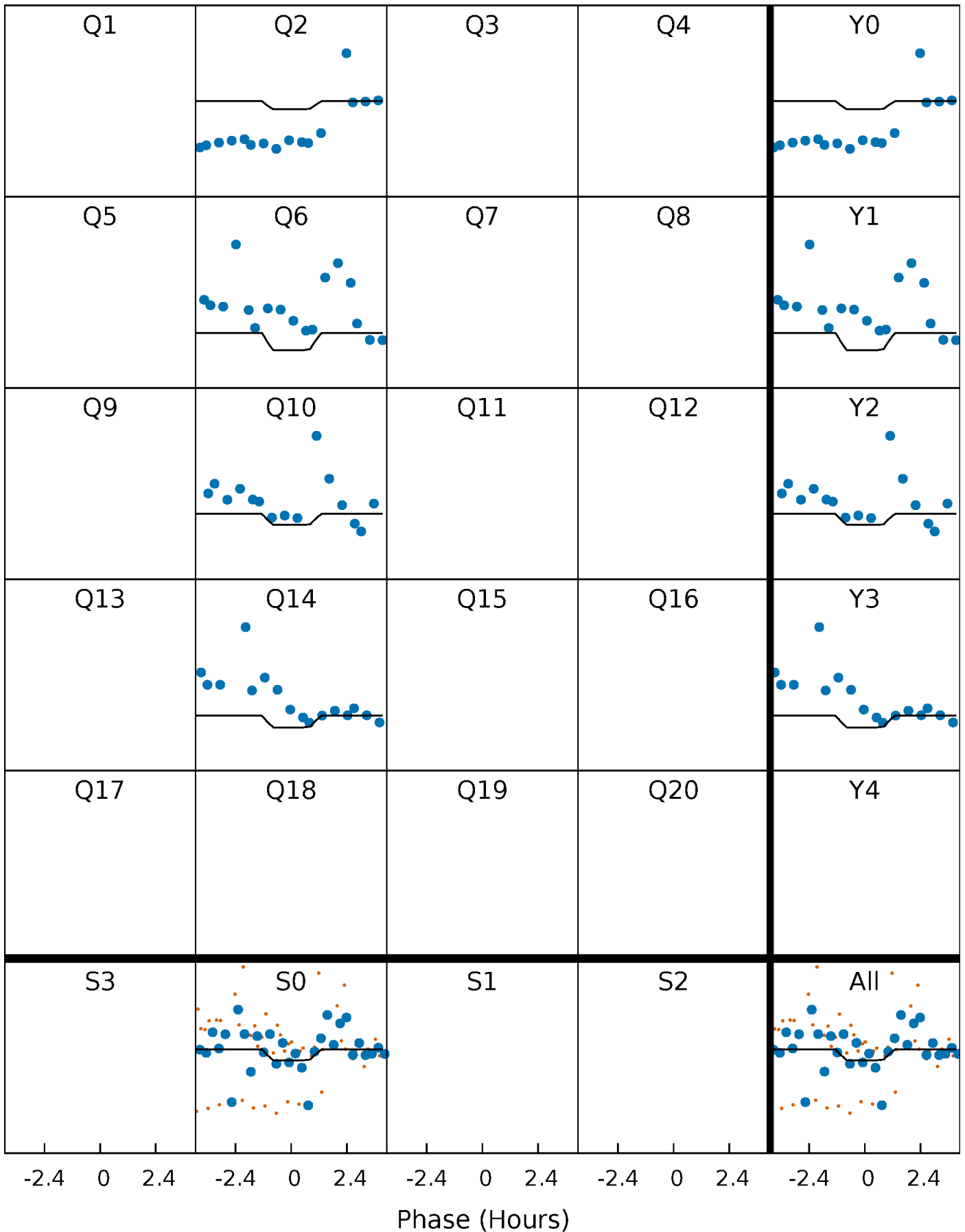
DV Quarter-Phased Transit Curves

TCE 005428088-03 $P=370.082676$ Days $T_0=176.708862$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

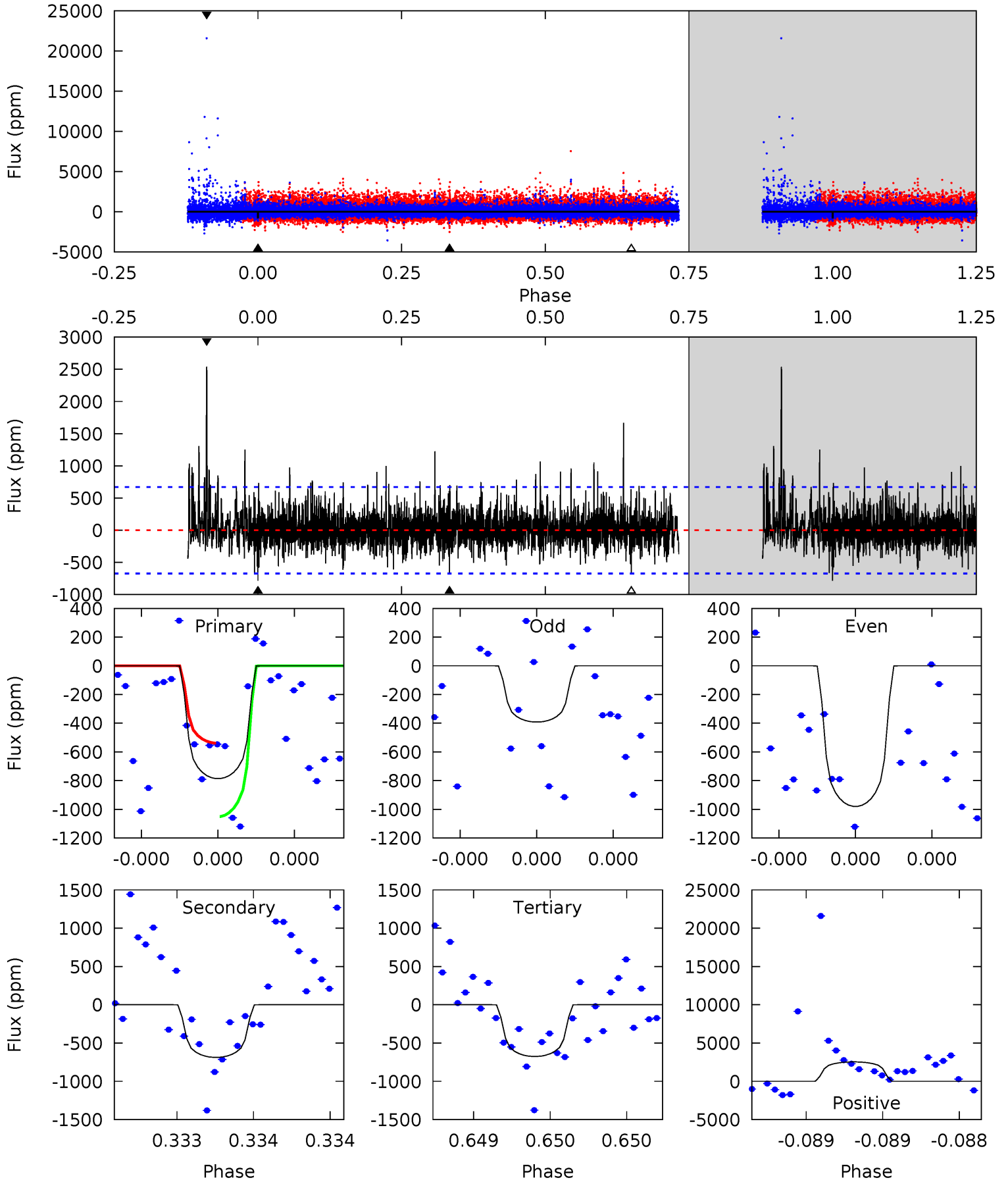
TCE 005428088-03 P=370.085827 Days $T_0=176.719872$ (BKJD)



DV Model-Shift Uniqueness Test

005428088-03, P = 370.082676 Days, E = 176.708862 Days

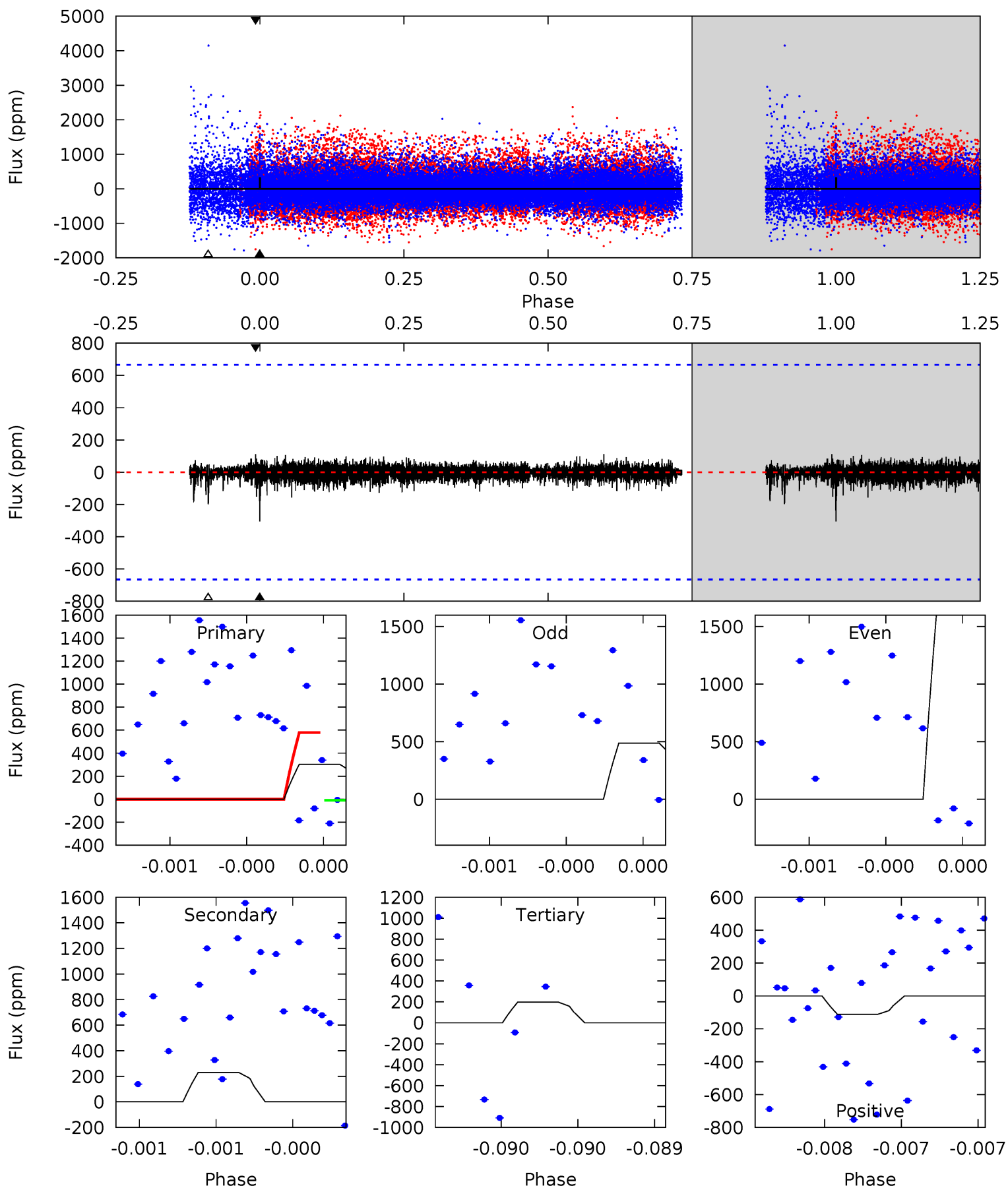
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.54	5.72	5.62	21.1	5.58	3.50	1.82	0.92	-14.6	0.10	-15.4	2.15	0.75	0.76	2.09



Alt Model-Shift Uniqueness Test

005428088-03, P = 370.085827 Days, E = 176.719872 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2.59	1.96	1.69	0.95	5.68	3.64	0.25	0.90	1.64	0.28	1.01	6.27	-1.74	0.27	2.42



Stellar Parameters For KIC 005428088

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	3671^{+65}_{-80}	$4.797^{+0.045}_{-0.031}$	$-0.100^{+0.100}_{-0.100}$	$0.454^{+0.032}_{-0.044}$	$0.472^{+0.034}_{-0.046}$	$7.100^{+1.752}_{-0.971}$
	+2%/-2%	+1%/-1%	+100%/-100%	+7%/-10%	+7%/-10%	+25%/-14%
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 005428088-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-687 ± 120	$3.01^{+3.12}_{-2.17}$	171^{+4}_{-4}	2845^{+1387}_{-471}	$26043^{+281174}_{-19883}$
Alt.	-230 ± 117	$3.01^{+3.05}_{-2.03}$	172^{+4}_{-5}	2424^{+898}_{-388}	7200^{+67303}_{-5682}

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

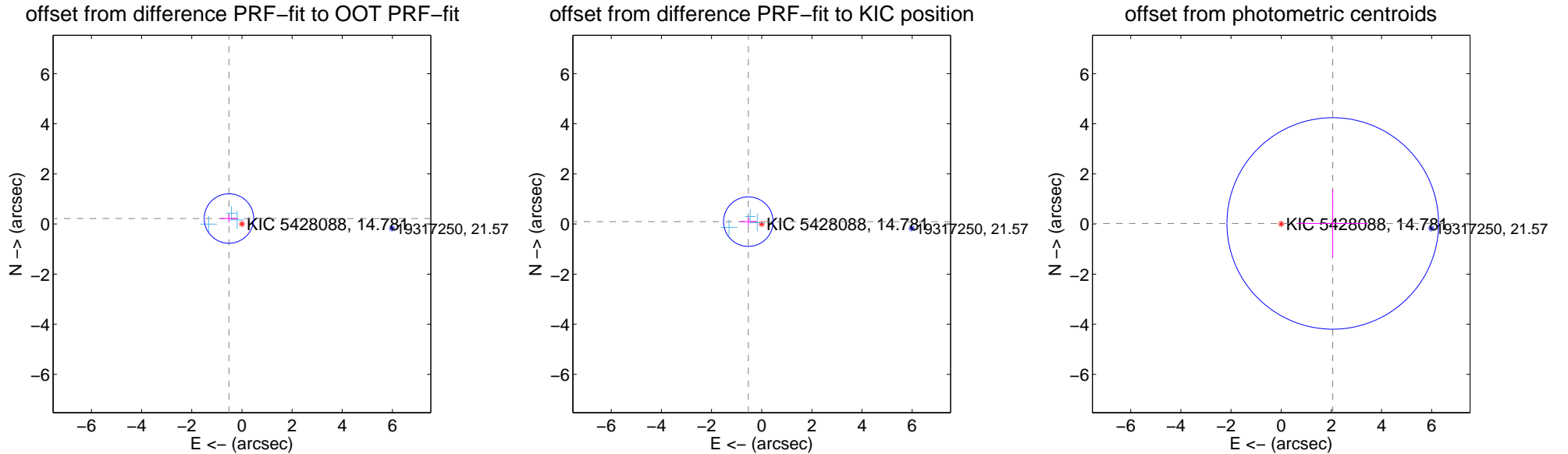
DV Centroid Data

Supplemental centroid analysis for 005428088-03. Kepler magnitude: 14.78. Transit SNR 5.29

There are 3 quarters with good PRF difference image offsets

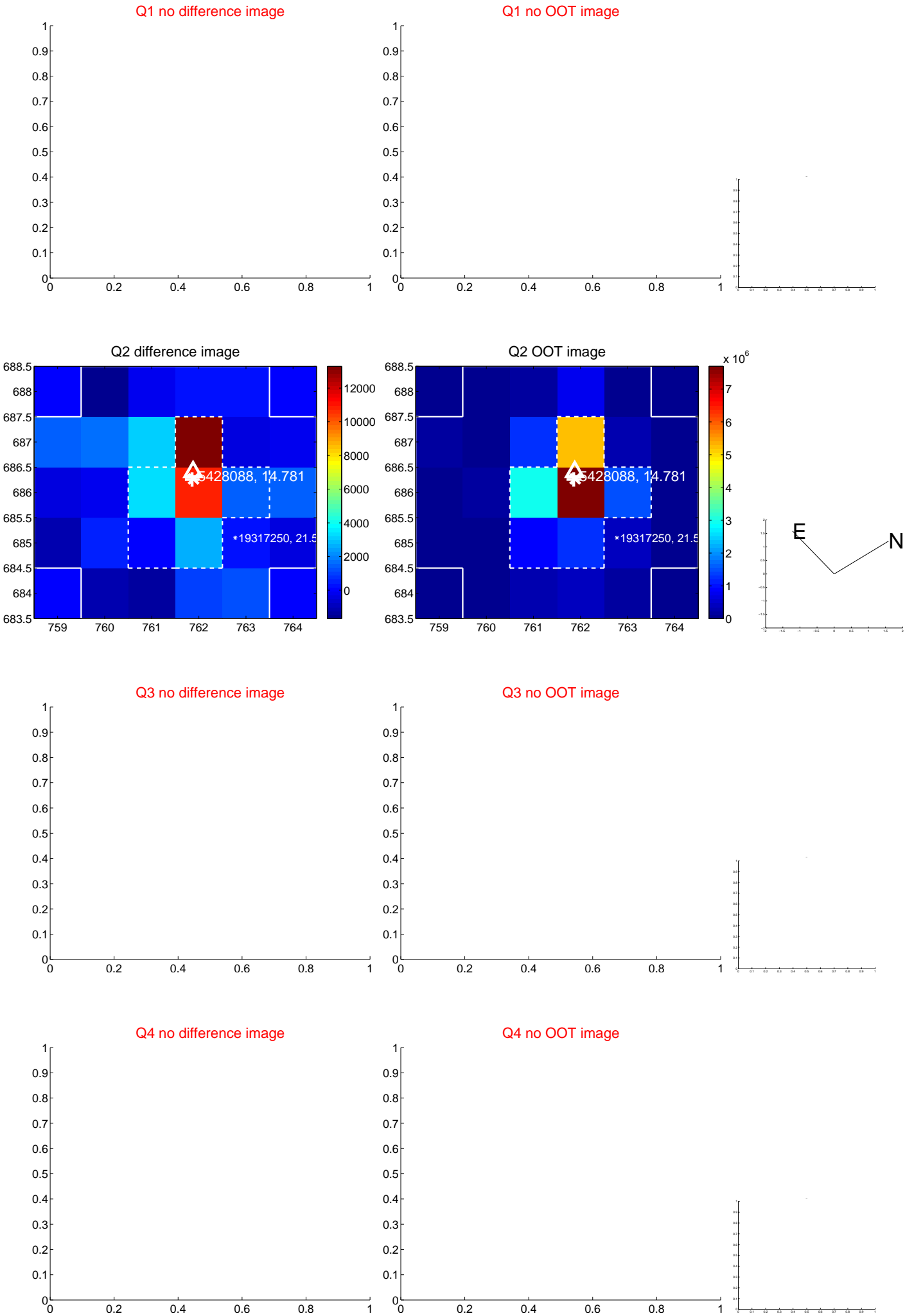
The direct PRF centroid is offset from the target star catalog position by about 0.11 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.563 ± 0.329	1.71	0.518 ± 0.351	0.220 ± 0.161
PRF-fit source offset from KIC position	0.543 ± 0.329	1.65	0.534 ± 0.333	0.095 ± 0.160
photometric centroid source offset	2.06 ± 1.41	1.46	-2.06 ± 1.41	0.02 ± 1.36



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.

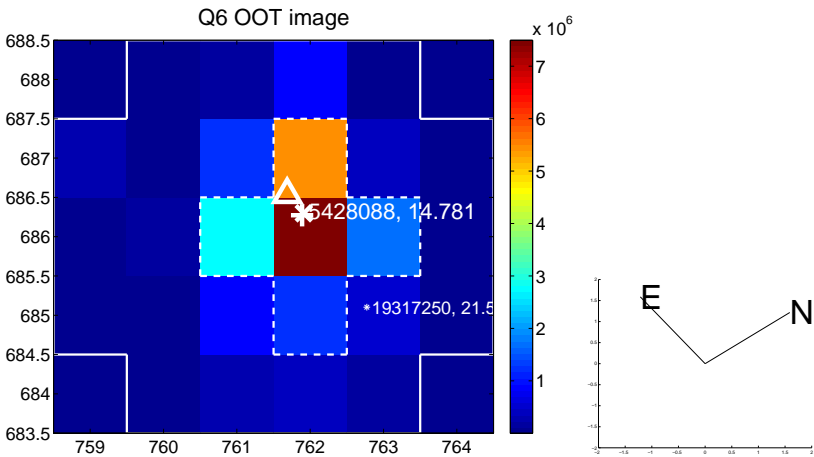
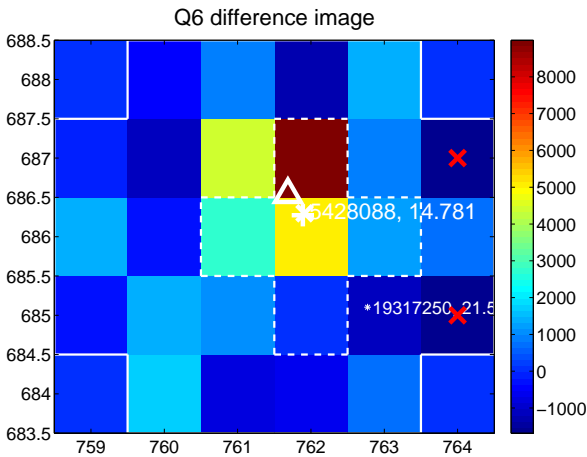


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

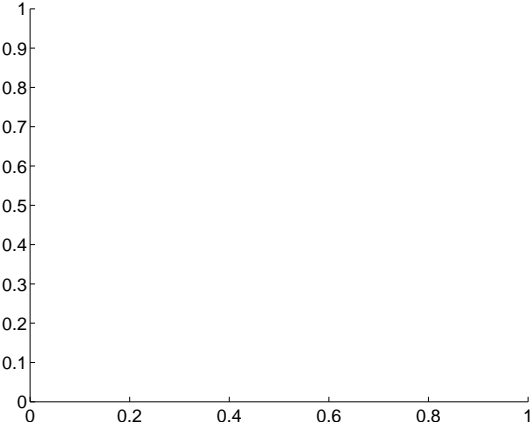
Q5 no difference image



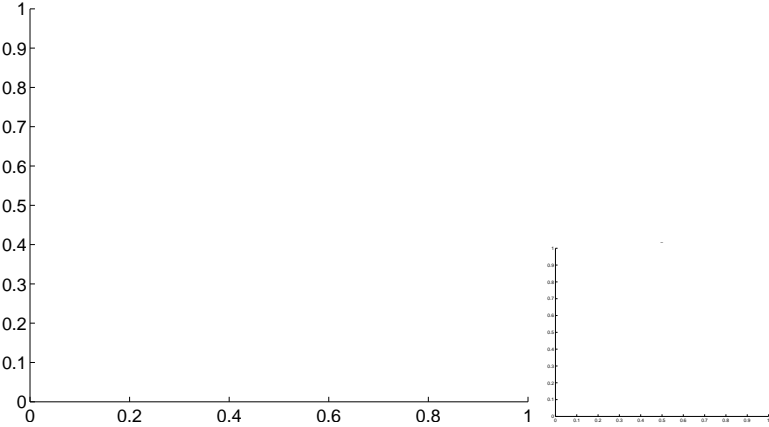
Q5 no OOT image



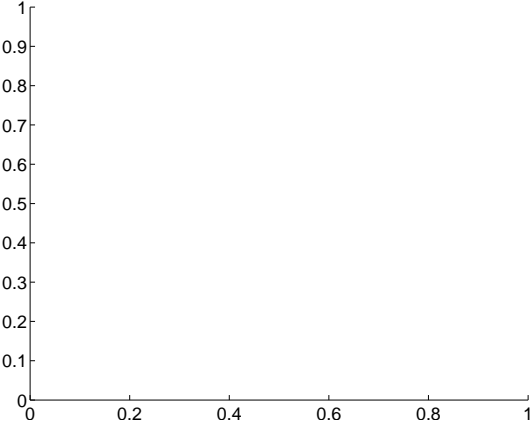
Q7 no difference image



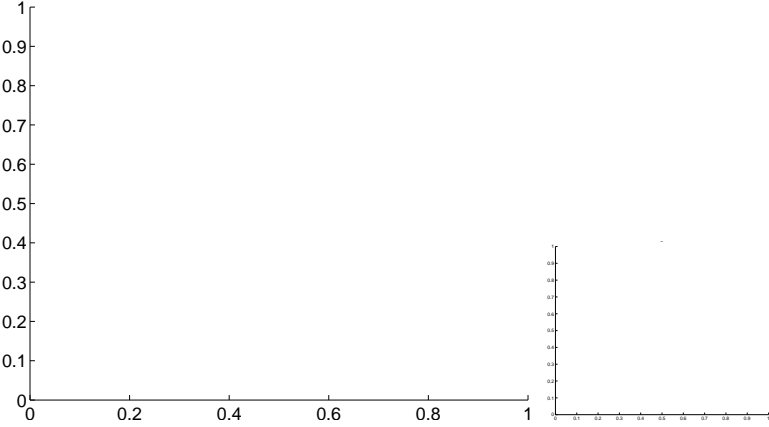
Q7 no OOT image



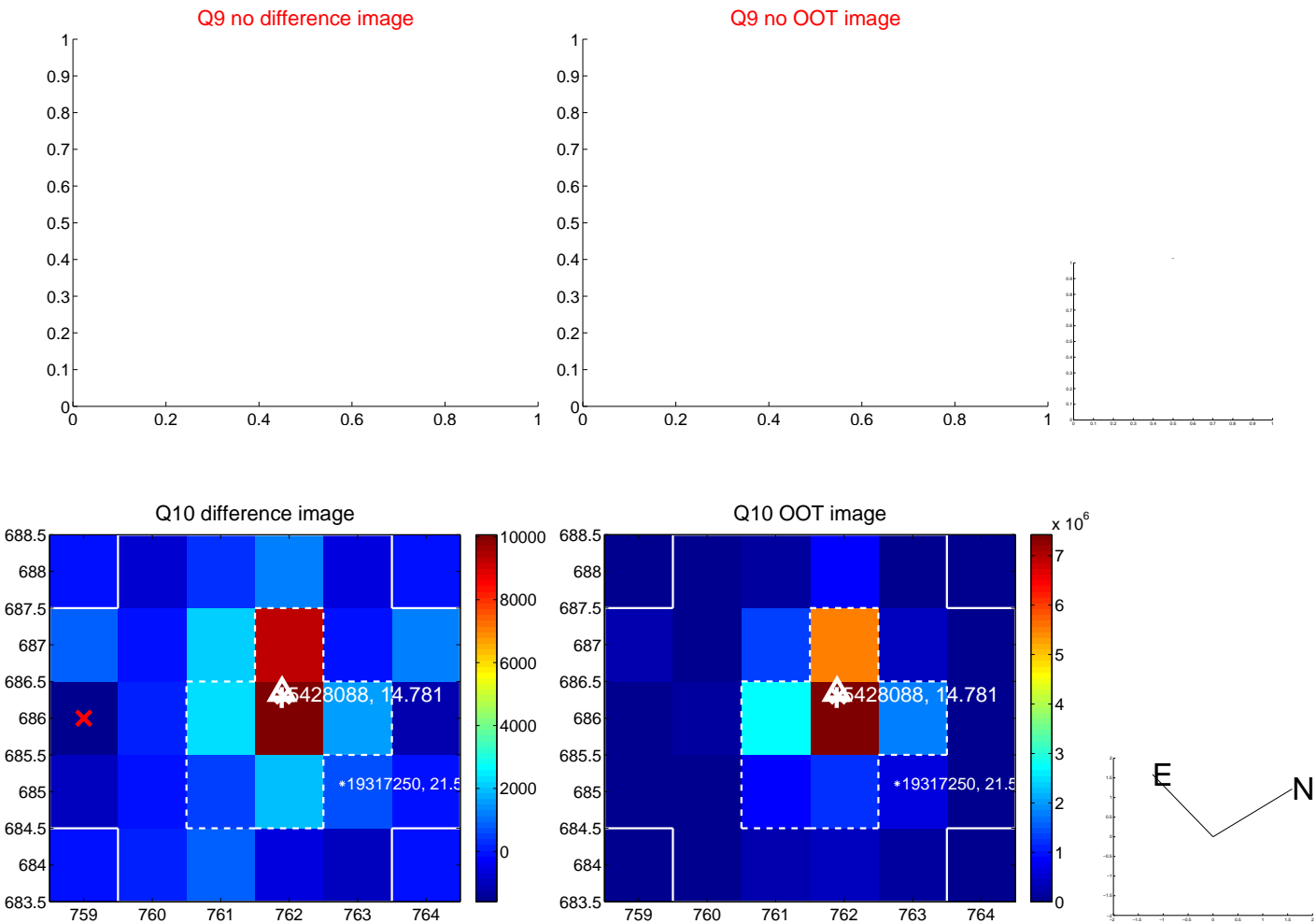
Q8 no difference image



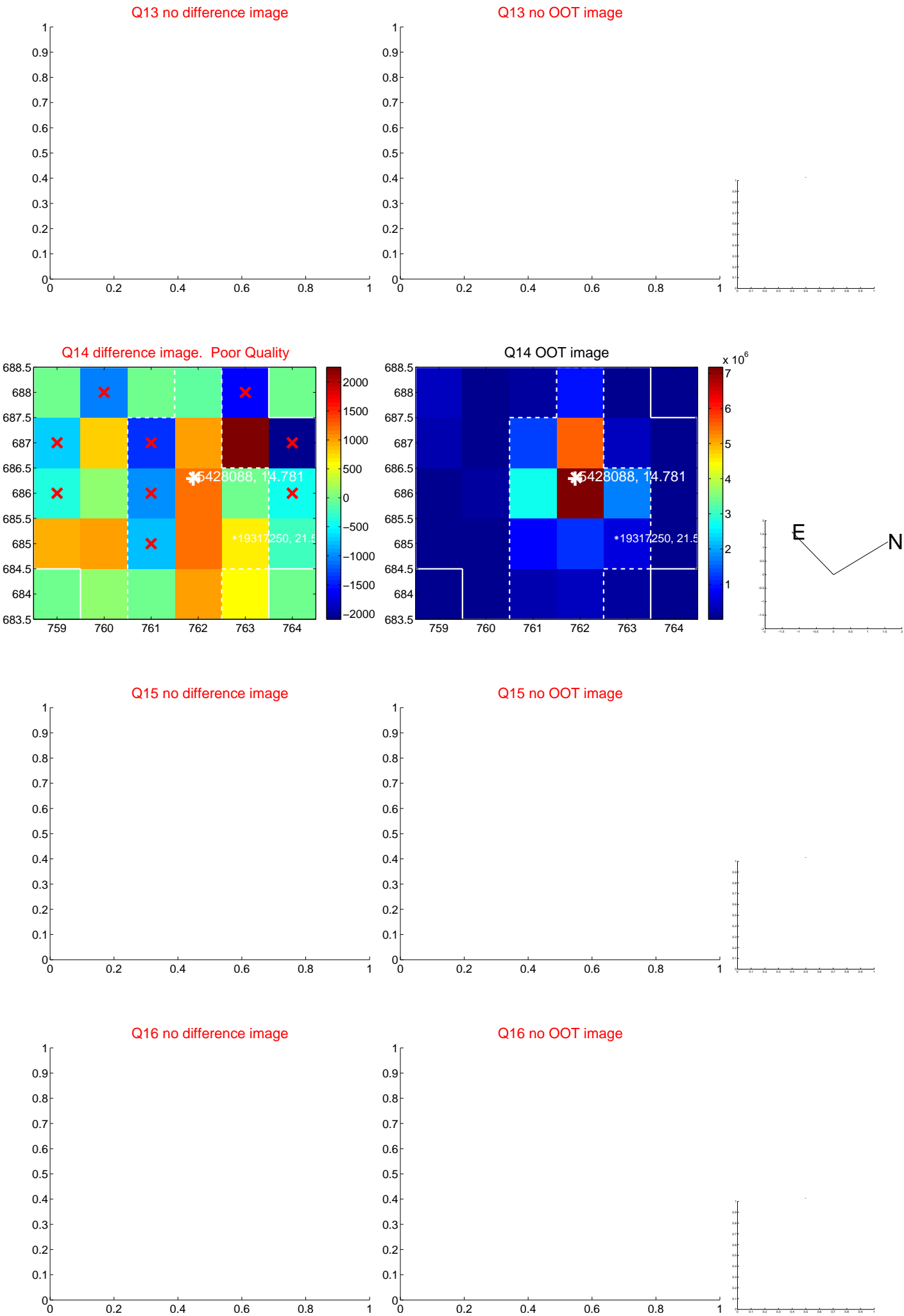
Q8 no OOT image



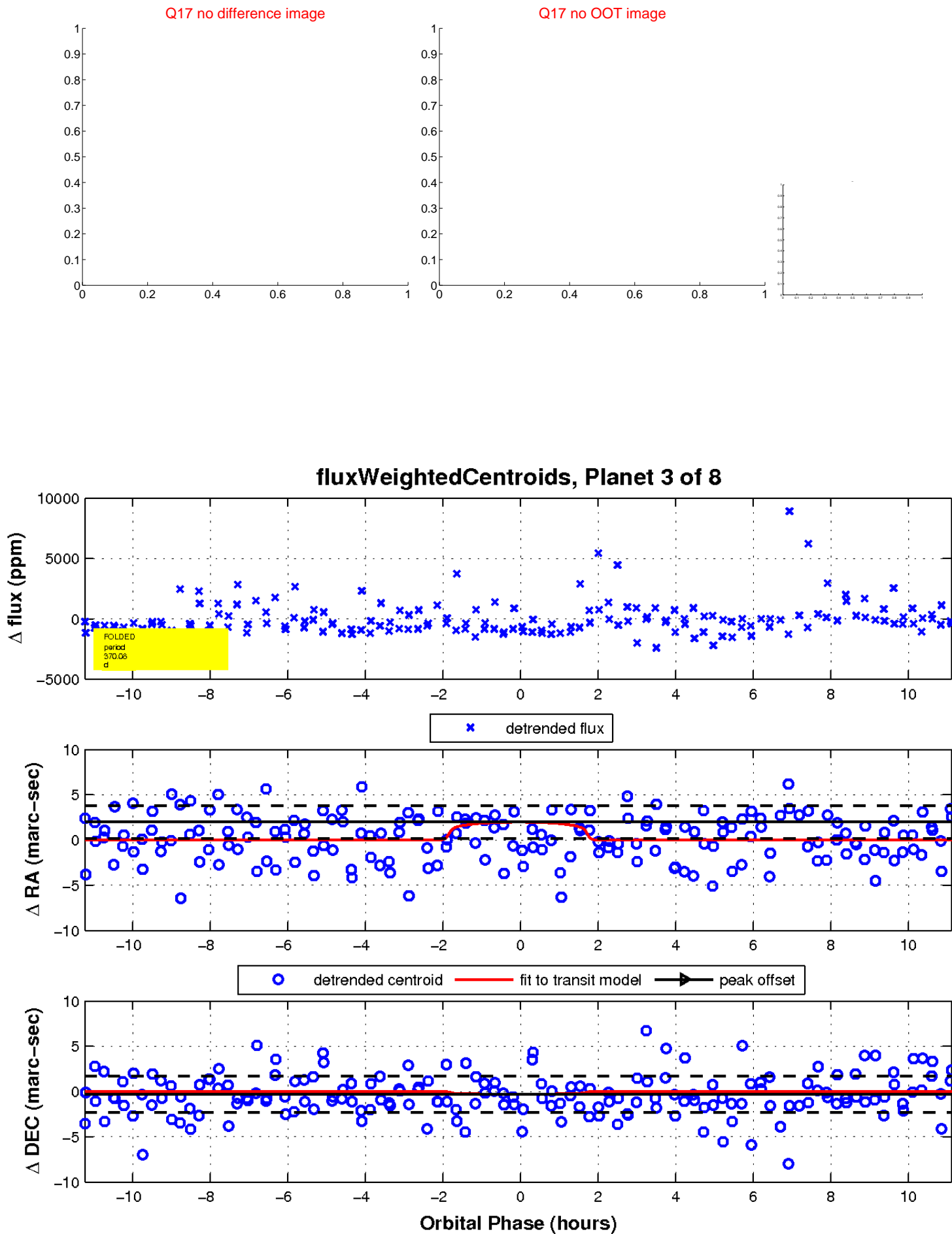
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

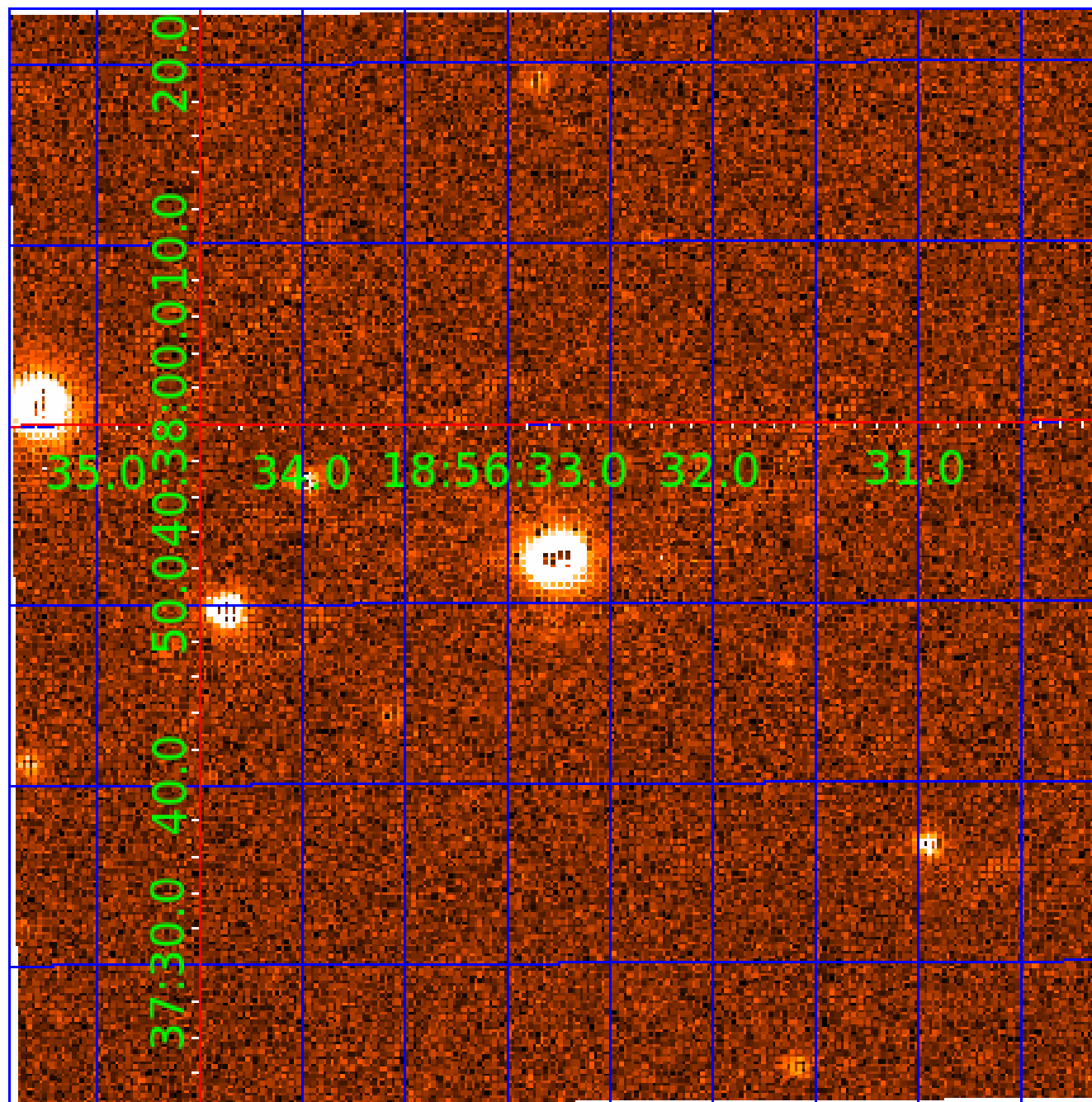


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 005428088

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})
005428088-01	OBS	No	125.402324	164.783818	65.8	1.016	13.7	0.4	0.45	3671	0.37	0.23
005428088-02	OBS	No	381.780949	293.480821	1710.4	11.023	10.4	8.7	0.45	3671	1.94	0.05
005428088-03	OBS	No	370.082677	176.708862	1075.5	3.766	9.5	5.3	0.45	3671	1.53	0.05
005428088-04	OBS	No	604.366682	341.322915	1404.2	11.938	14.3	6.1	0.45	3671	1.70	0.03
005428088-05	OBS	No	298.541217	283.491662	1442.5	5.009	9.9	7.0	0.45	3671	1.80	0.07
005428088-06	OBS	No	281.270626	177.801168	1498.0	4.087	11.7	7.9	0.45	3671	1.82	0.08
005428088-07	OBS	No	566.821192	220.406558	1902.2	8.205	10.1	8.8	0.45	3671	2.05	0.03
005428088-08	OBS	No	165.303847	232.412060	1917.0	2.500	12.0	-1.0	0.45	3671	1.97	0.16

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005428088-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_SKYE_ZUMA_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS
005428088-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_TER_DV—MOD_POS_DV
005428088-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS
005428088-04	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
005428088-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—CENT_FEW_DIFFS
005428088-06	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
005428088-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005428088-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_NOFITS

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

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

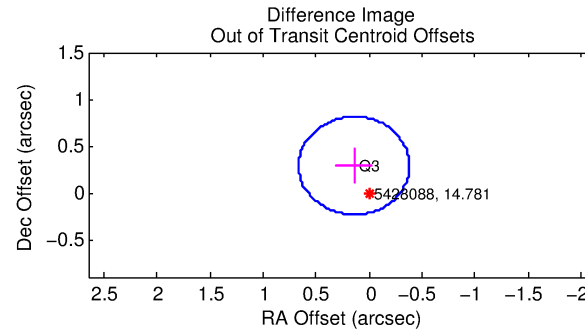
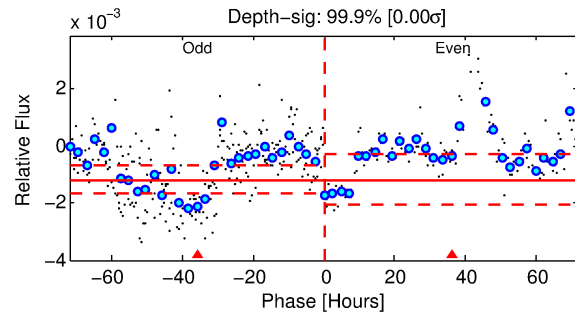
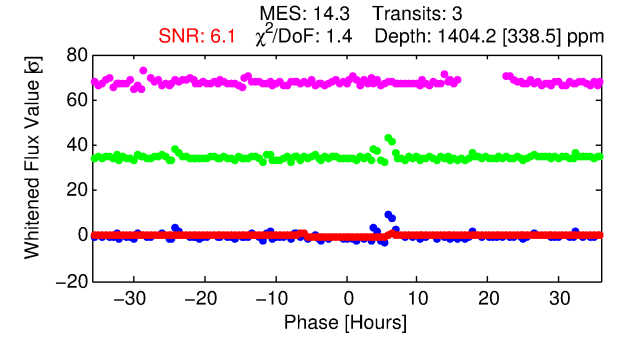
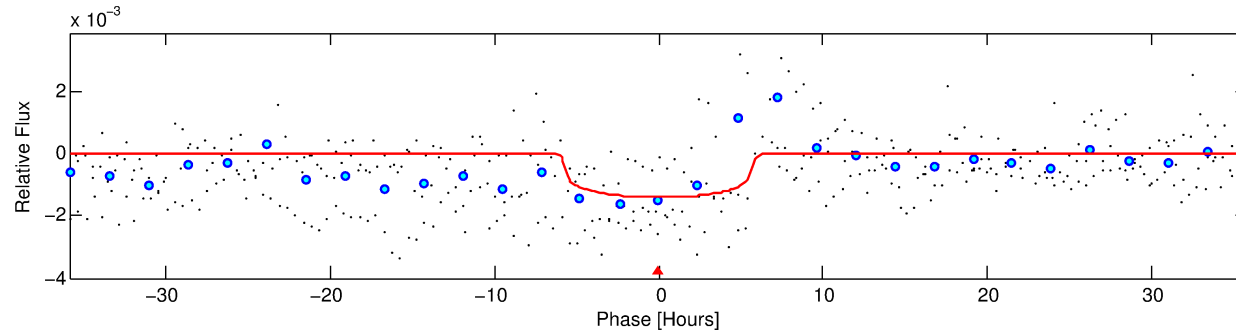
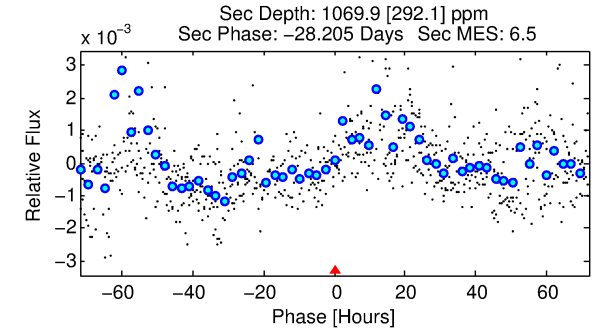
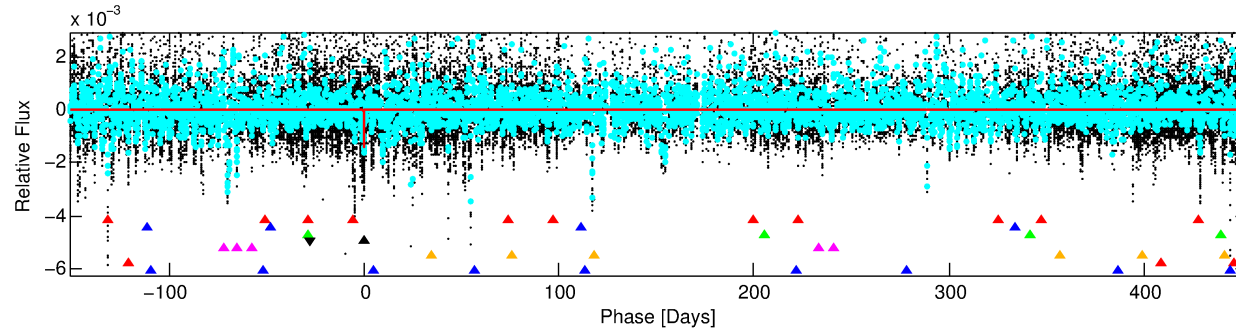
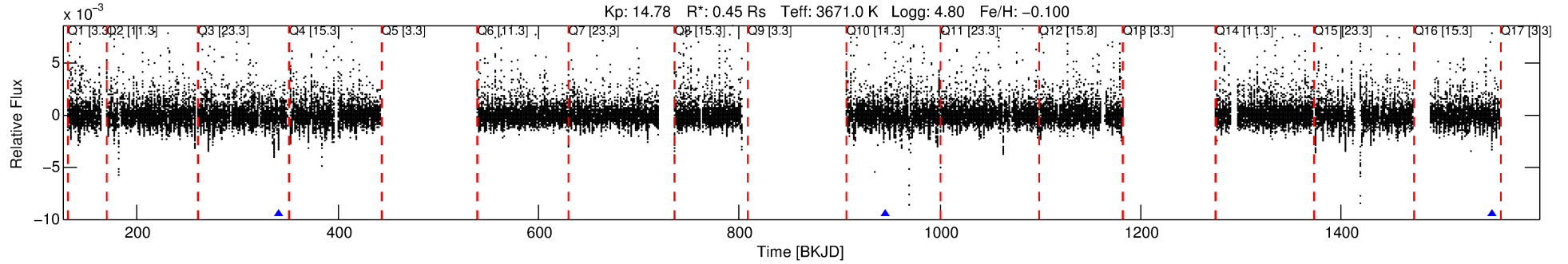
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 005428088-04

No Significant Match Found

DV One-Page Summary

KIC: 5428088 Candidate: 4 of 8 Period: 604.367 d



DV Fit Results:

Period = 604.36668 [0.01171] d
Epoch = 341.3229 [0.0156] BKJD
Rp/R* = 0.0343 [0.0159]
a/R* = 382.11 [720.88]
b = 0.31 [5.62]
Seff = 0.03 [0.00]
Teq = 105 [3] K
Rp = 1.70 [0.81] Re
a = 1.0888 [0.0798] AU
Ag = 241374.81 [234933.06] [1.03 σ]
Teffp = 3584 [871] K [3.99 σ]

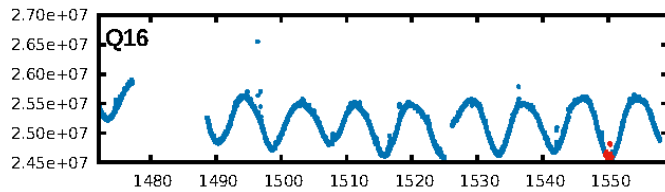
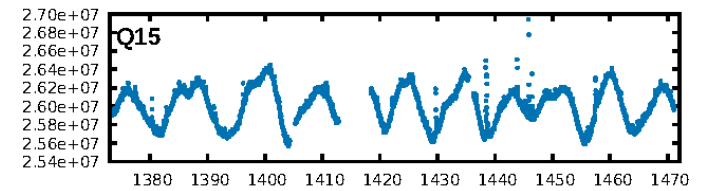
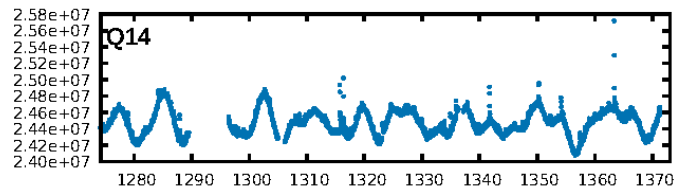
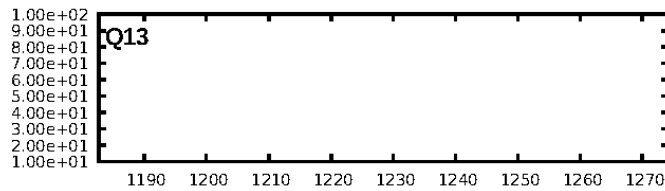
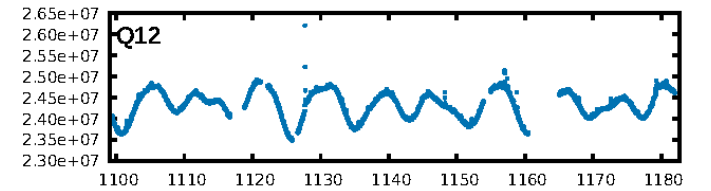
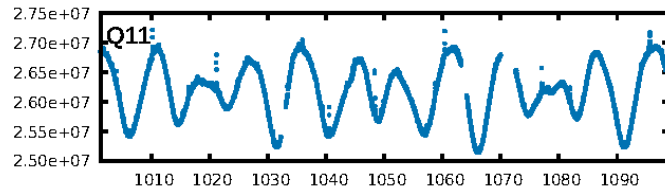
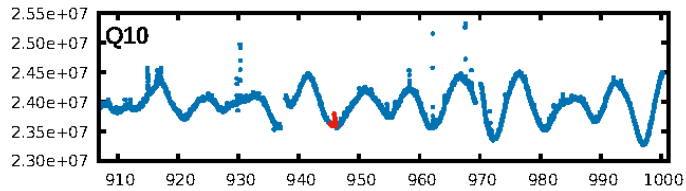
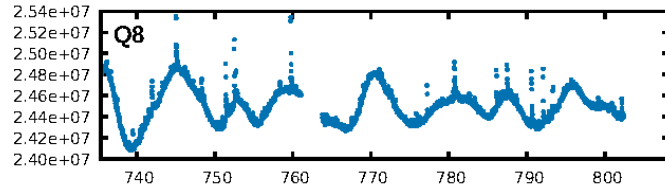
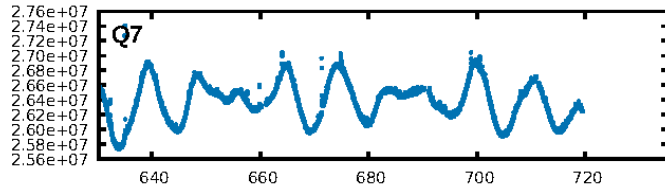
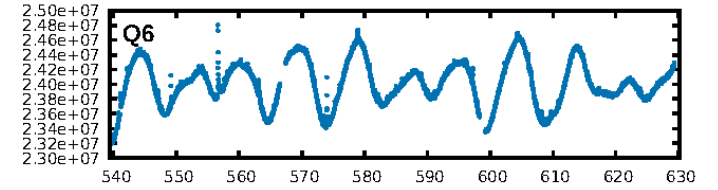
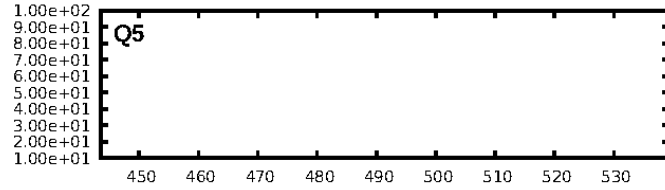
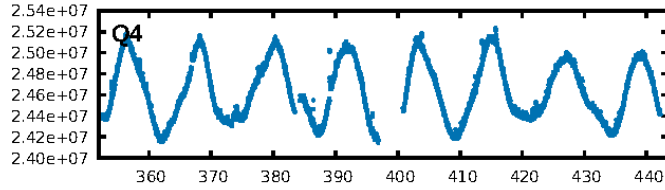
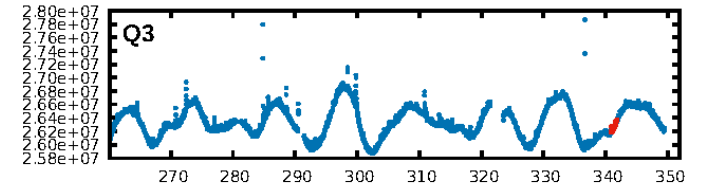
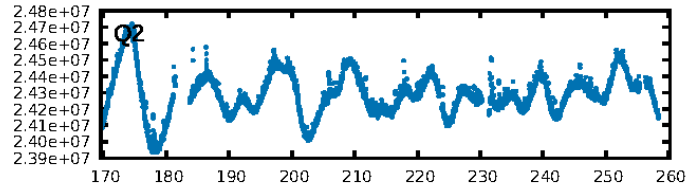
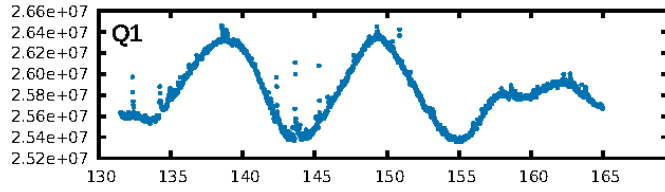
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [62.21 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 16.3%
ModelChiSquareGof-sig: 99.5%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 2.962
Centroid-sig: 11.0%
Centroid-so: 0.894 arcsec [1.46 σ]
OotOffset-rm: 0.323 arcsec [1.85 σ]
OotOffset-st: 0/1/0/0 [1]
KicOffset-rm: 0.334 arcsec [1.90 σ]
KicOffset-st: 0/1/0/0 [1]
DiffImageQuality-fgm: 1.00 [1/1]
DiffImageOverlap-fno: 1.00 [2/2]

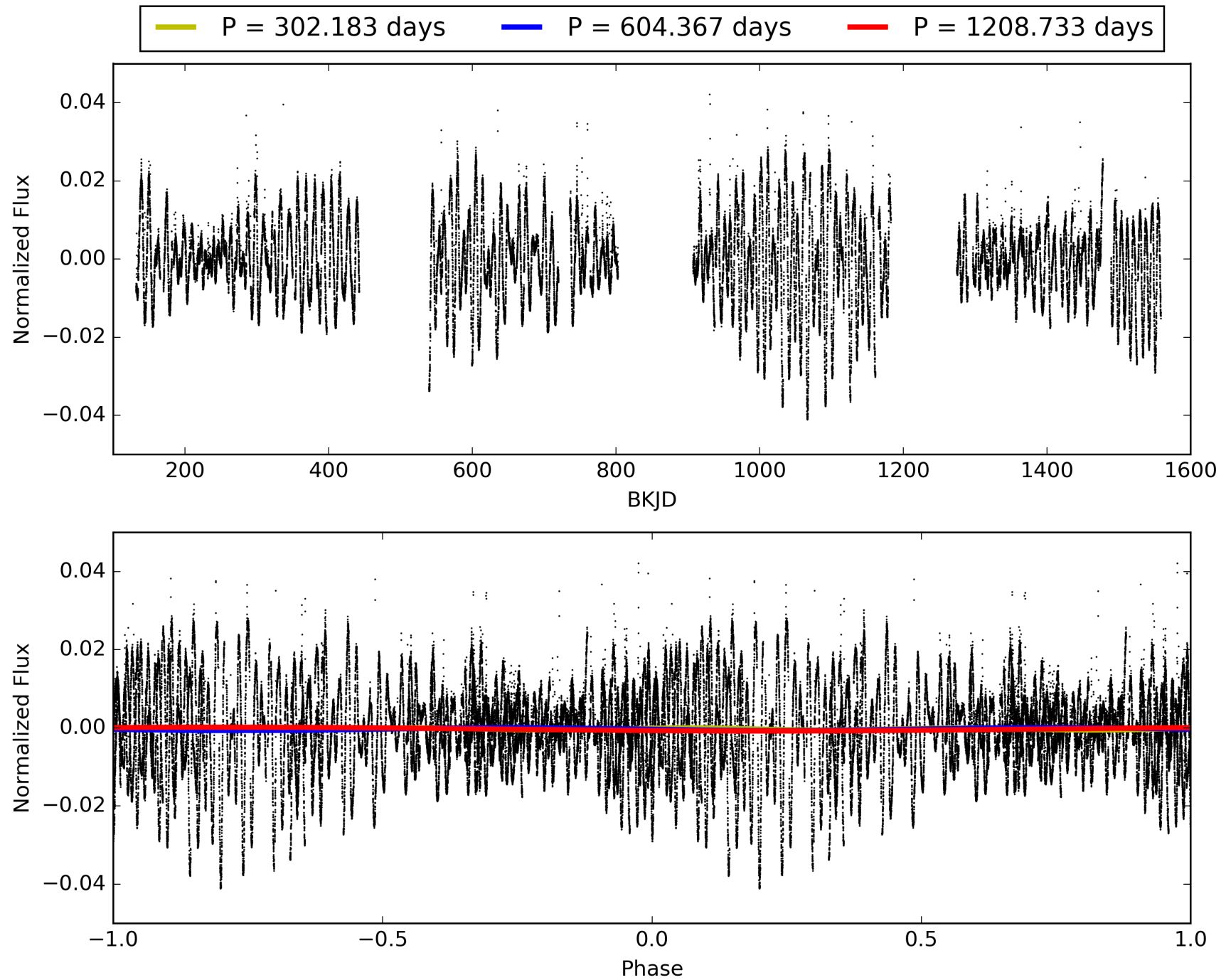
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 07:25:10 Z

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

TCE 005428088-04, PDC Light Curves

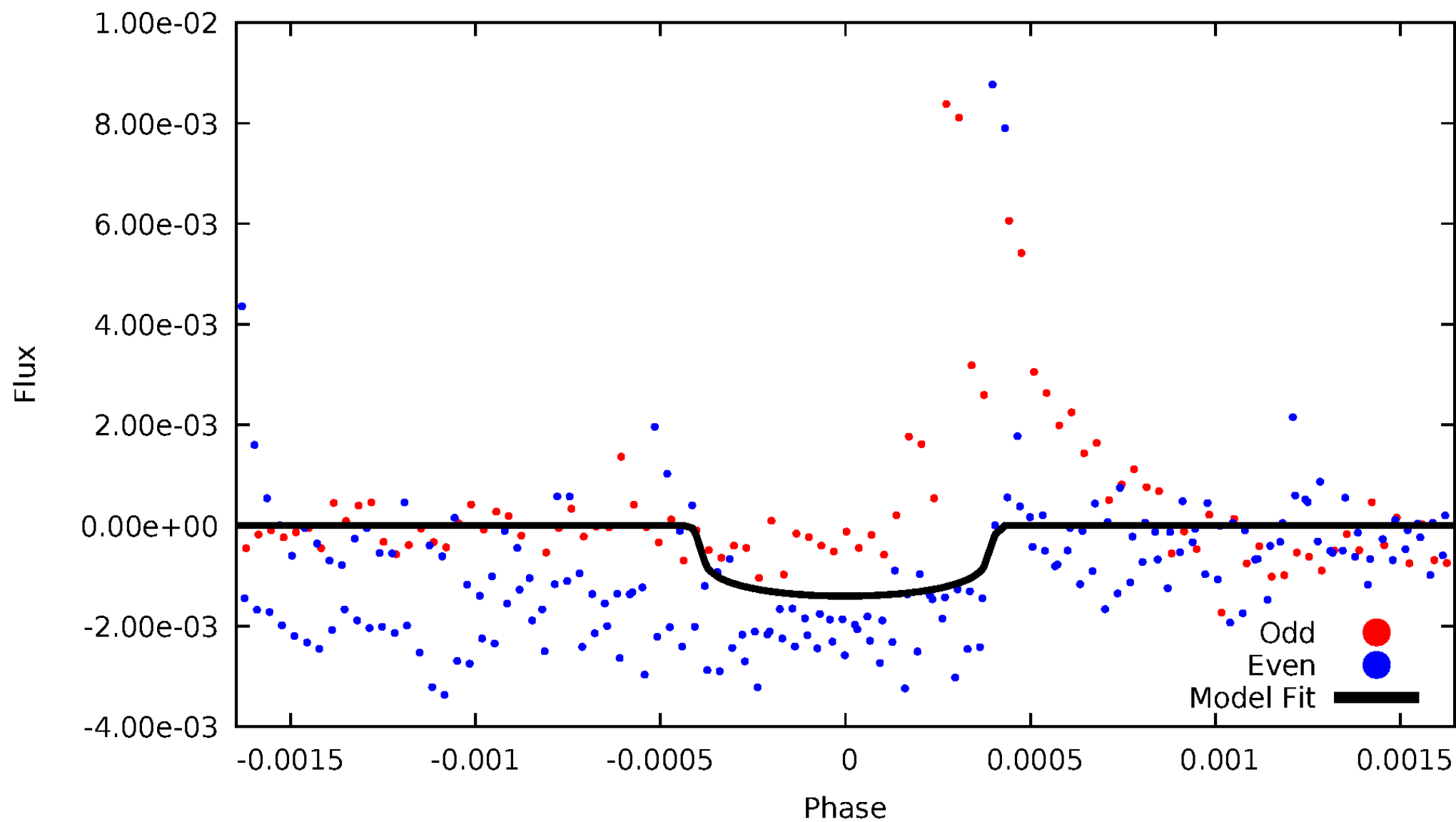


TCE 005428088-04



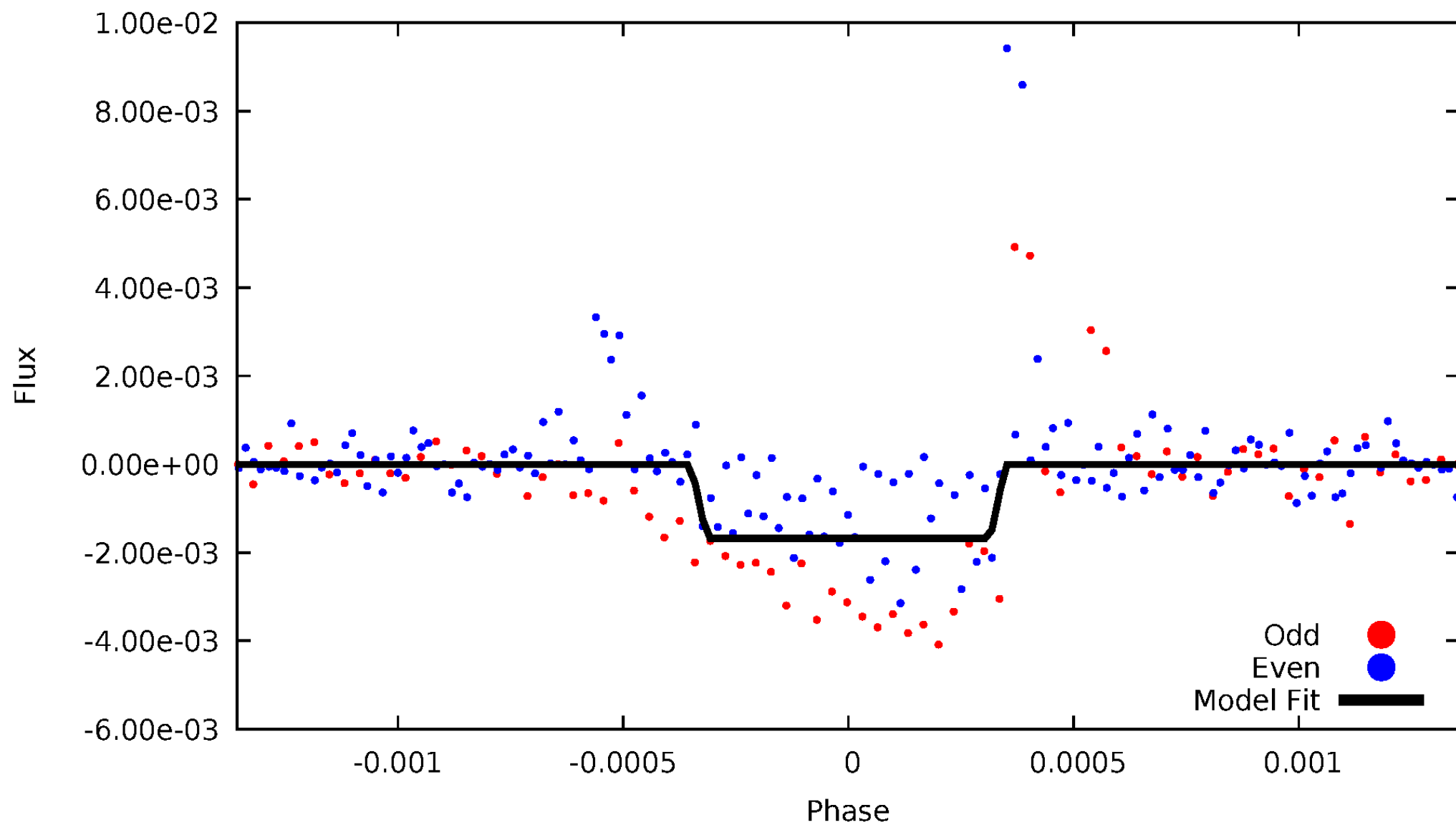
DV Odd/Even

TCE 005428088-04



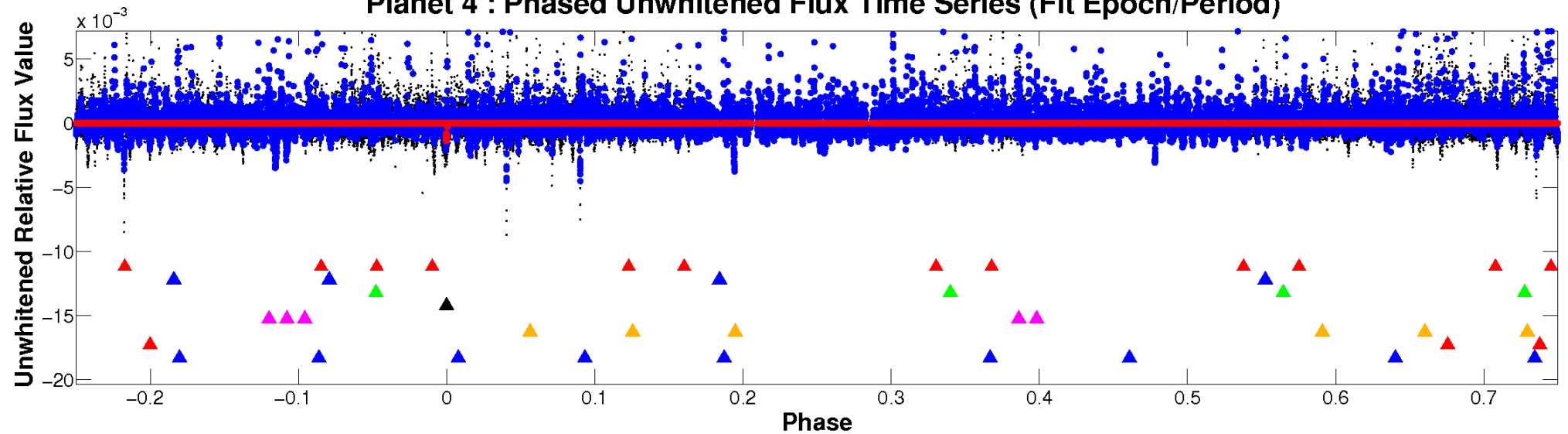
ALT Odd/Even

TCE 005428088-04

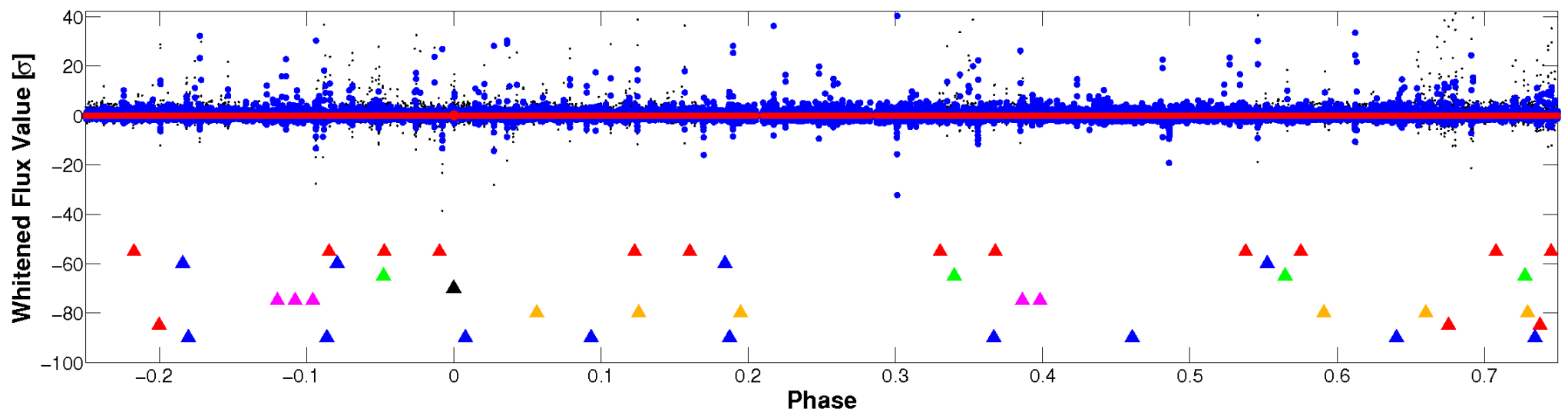


Non-Whitened Vs. Whitened Light Curve

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

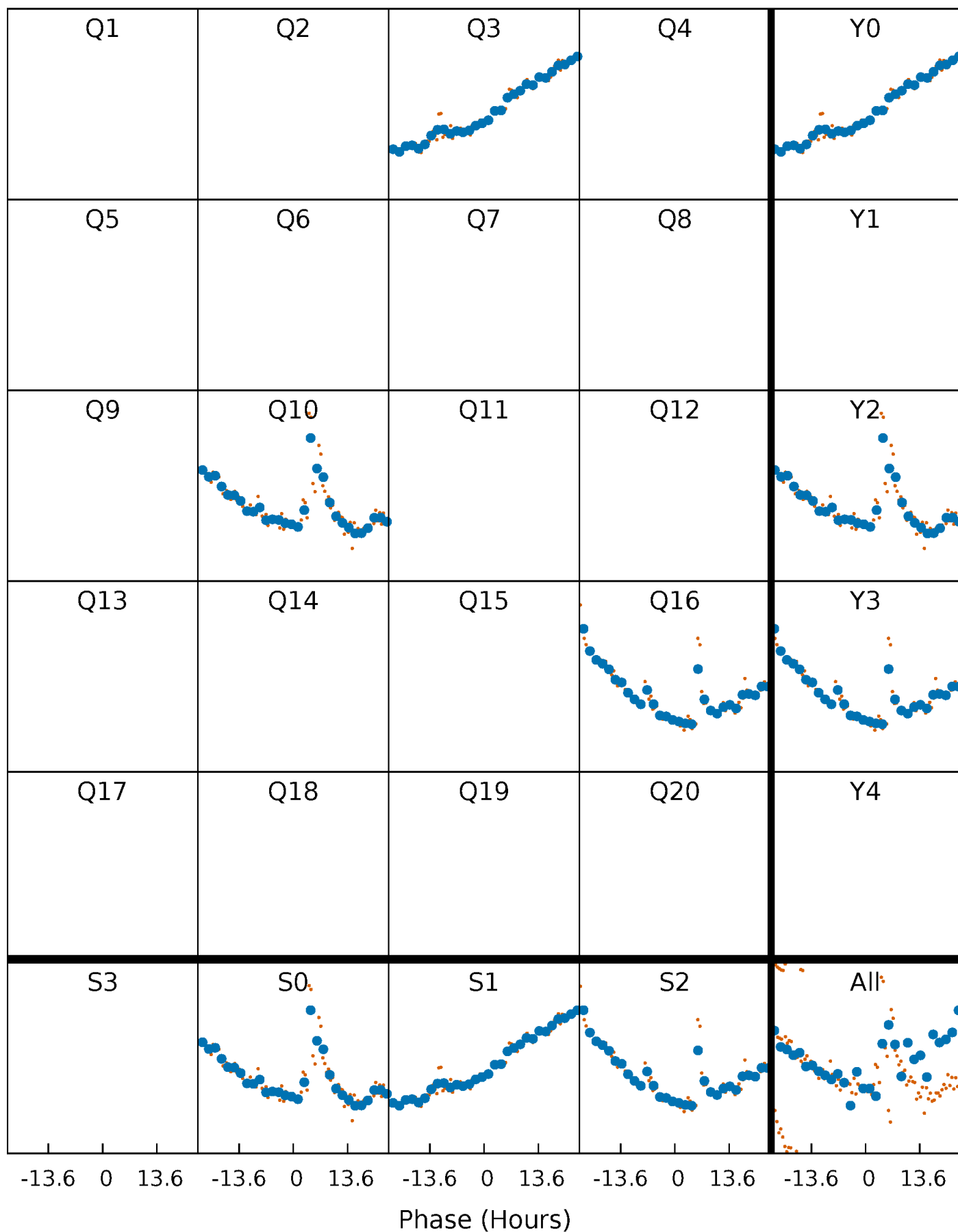


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



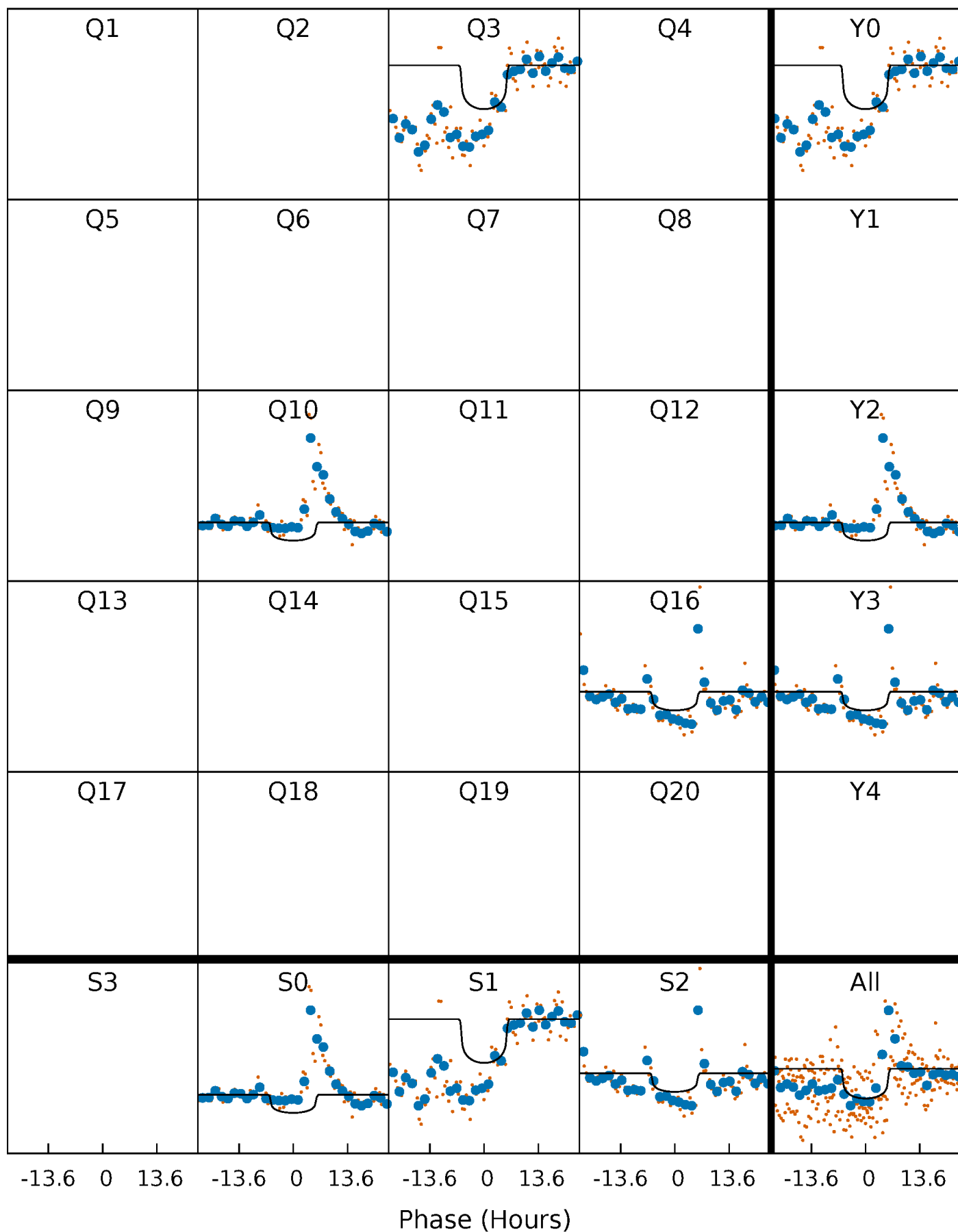
PDC Quarter-Phased Transit Curves

TCE 005428088-04 $P=604.366682$ Days $T_0=341.322915$ (BKJD)



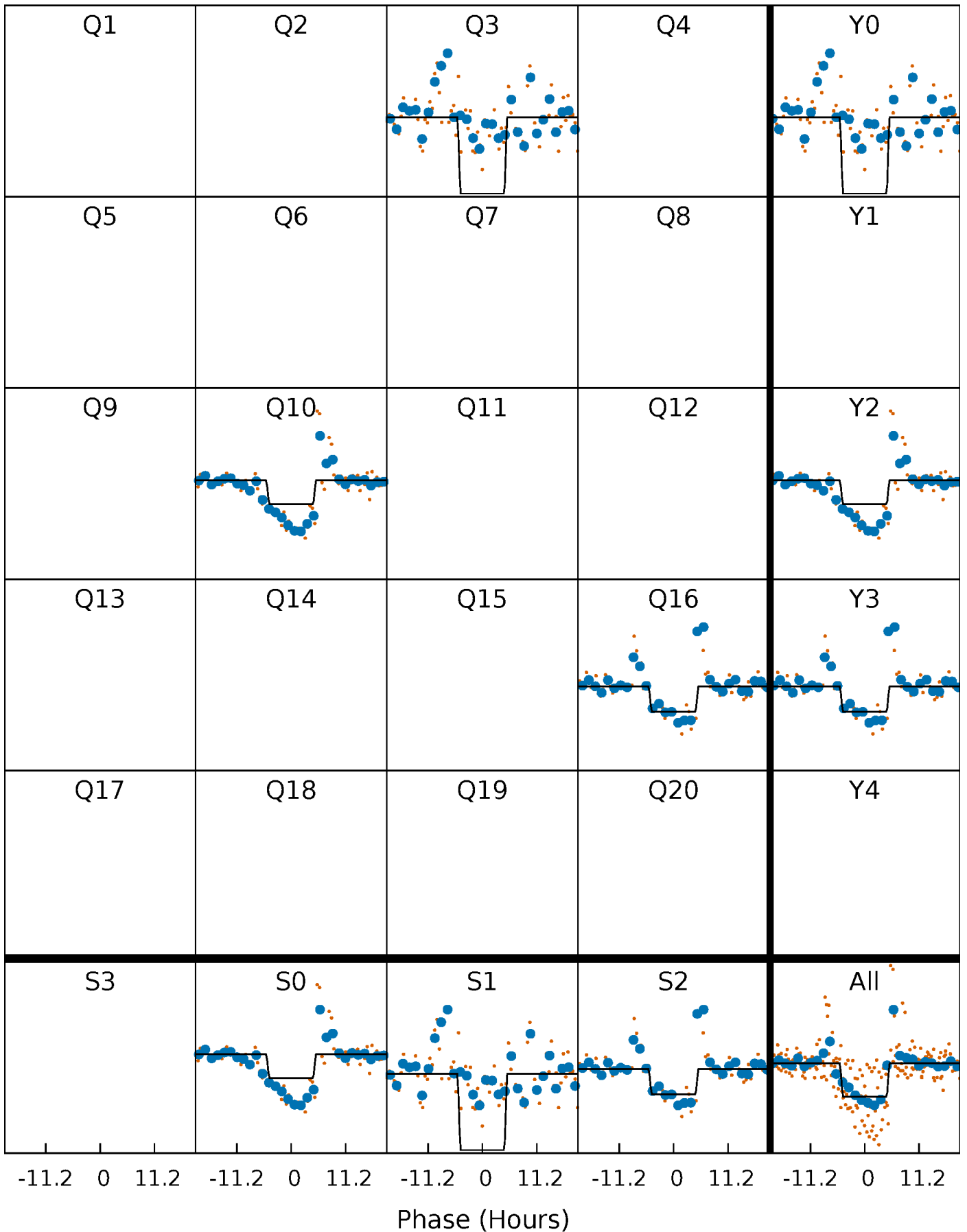
DV Quarter-Phased Transit Curves

TCE 005428088-04 $P=604.366682$ Days $T_0=341.322915$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

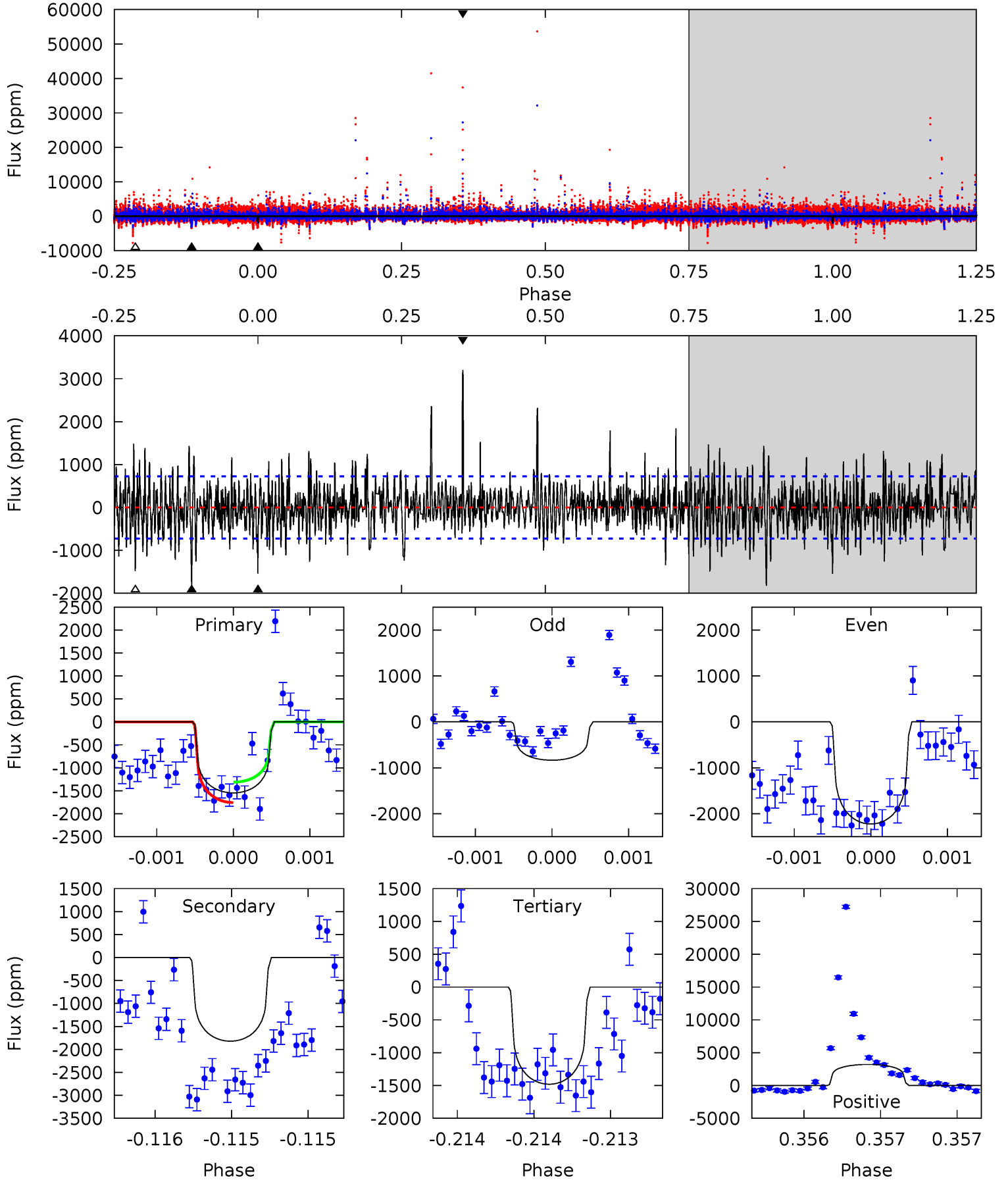
TCE 005428088-04 $P=604.451949$ Days $T_0=341.179548$ (BKJD)



DV Model-Shift Uniqueness Test

005428088-04, P = 604.366682 Days, E = 341.322915 Days

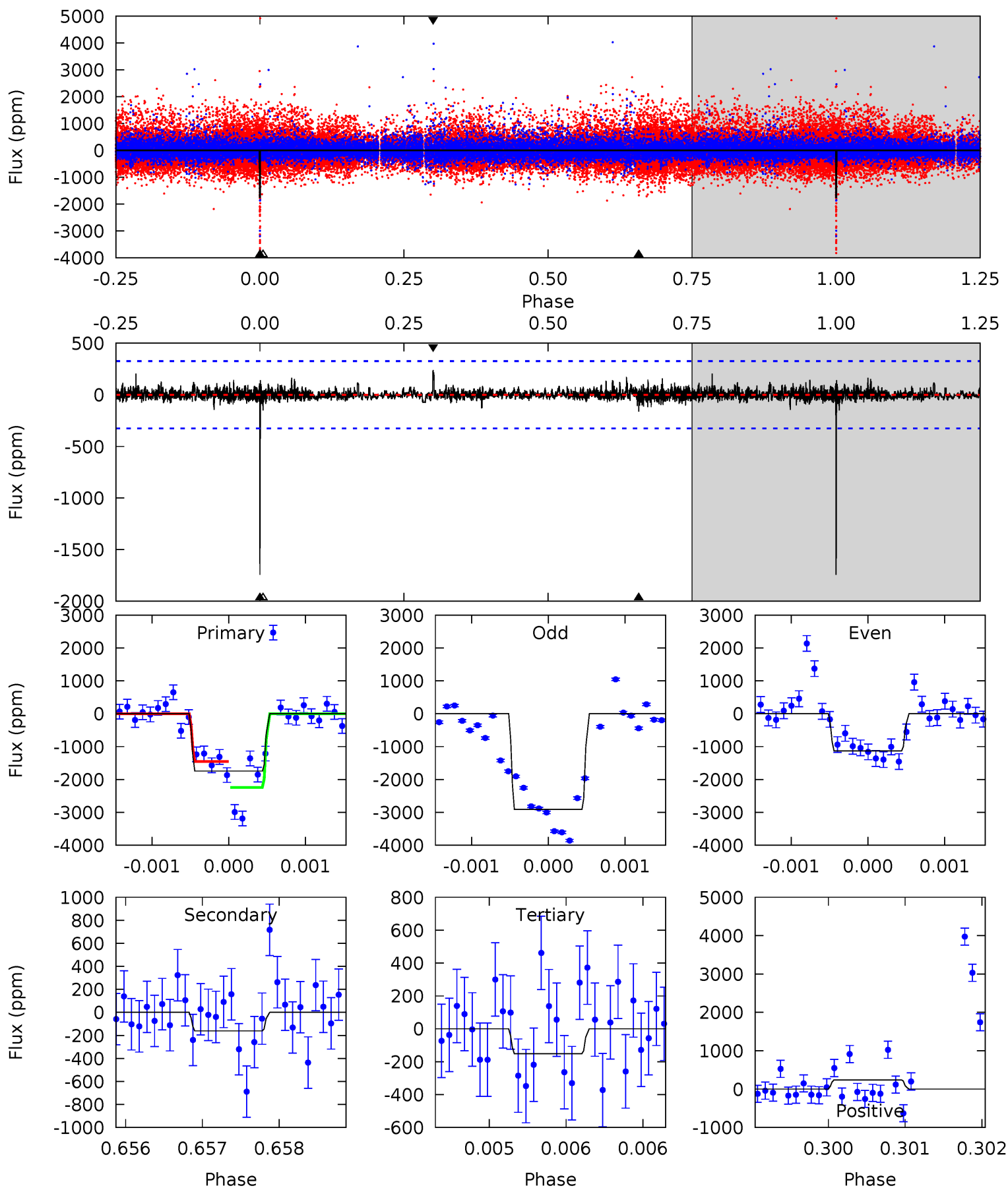
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.7	13.7	11.2	24.2	5.49	3.35	3.23	0.49	-12.5	2.57	-10.4	4.10	0.55	0.64	1.63



Alt Model-Shift Uniqueness Test

005428088-04, P = 604.451949 Days, E = 341.179548 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
29.5	2.73	2.56	4.05	5.52	3.39	0.54	27.0	25.5	0.18	-1.32	14.1	0.91	0.12	6.51



Stellar Parameters For KIC 005428088

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	3671^{+65}_{-80}	$4.797^{+0.045}_{-0.031}$	$-0.100^{+0.100}_{-0.100}$	$0.454^{+0.032}_{-0.044}$	$0.472^{+0.034}_{-0.046}$	$7.100^{+1.752}_{-0.971}$
	+2%/-2%	+1%/-1%	+100%/-100%	+7%/-10%	+7%/-10%	+25%/-14%
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 005428088-04 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-1821 ± 133	$1.72^{+0.84}_{-0.77}$	145^{+4}_{-4}	3934^{+1007}_{-497}	$405856^{+933766}_{-219816}$
Alt.	-162 ± 59	$2.04^{+0.77}_{-0.78}$	146^{+3}_{-4}	2598^{+365}_{-237}	24632^{+41990}_{-13535}

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

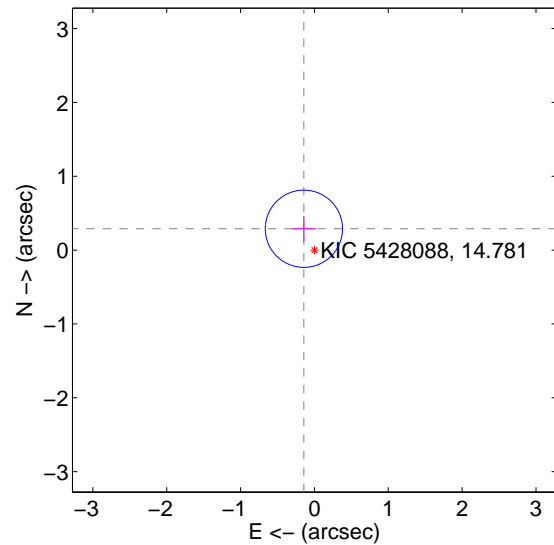
Supplemental centroid analysis for 005428088-04. Kepler magnitude: 14.78. Transit SNR 6.10

There are 1 quarters with good PRF difference image offsets

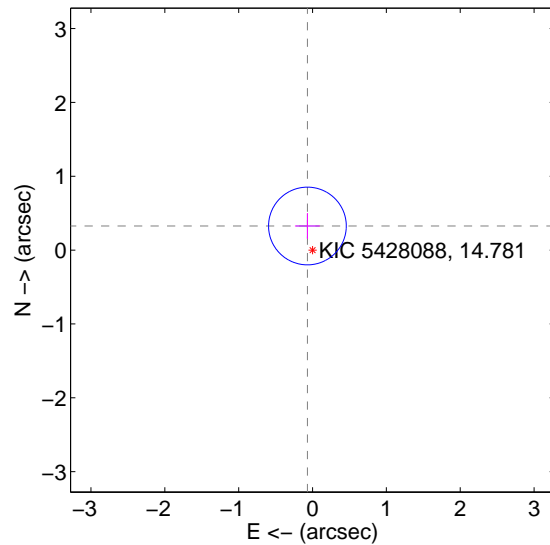
The direct PRF centroid is offset from the target star catalog position by about 0.08 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.323 ± 0.174	1.85	0.143 ± 0.168	0.289 ± 0.176
PRF-fit source offset from KIC position	0.334 ± 0.175	1.90	0.069 ± 0.168	0.326 ± 0.176
photometric centroid source offset	0.89 ± 0.61	1.46	0.34 ± 0.89	-0.83 ± 0.55

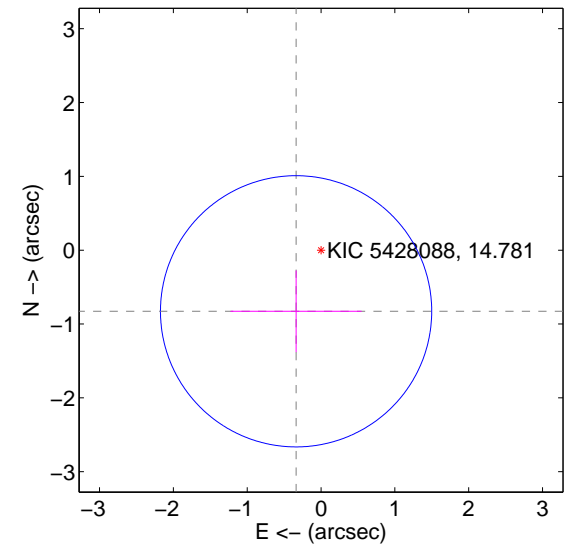
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

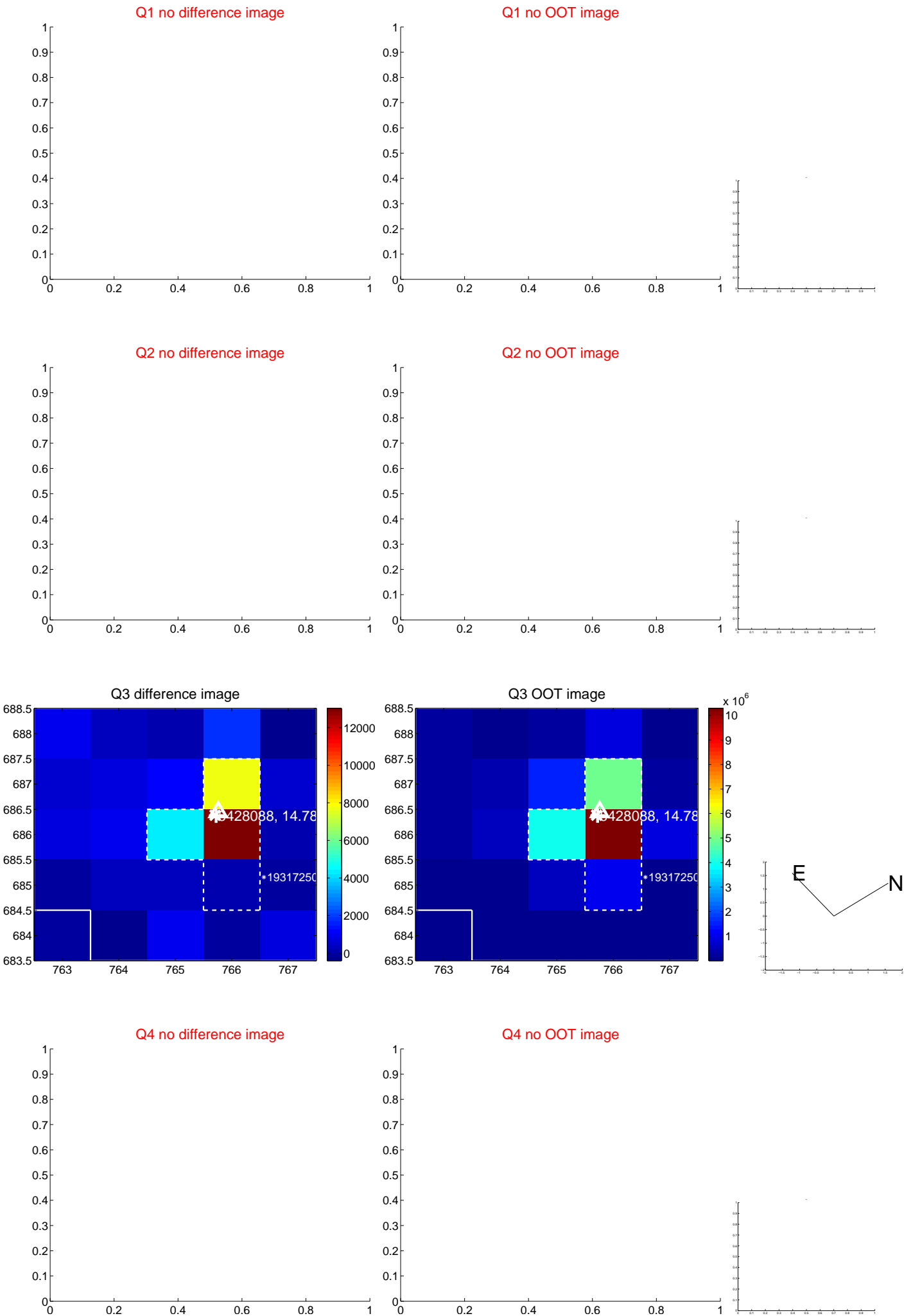


offset from photometric centroids



Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ . Red *: target star. Blue *: Other stars. Text next to a star gives its KIC ID and kepmag. KIC IDs > 15,000,000 are from the UKIRT catalog.

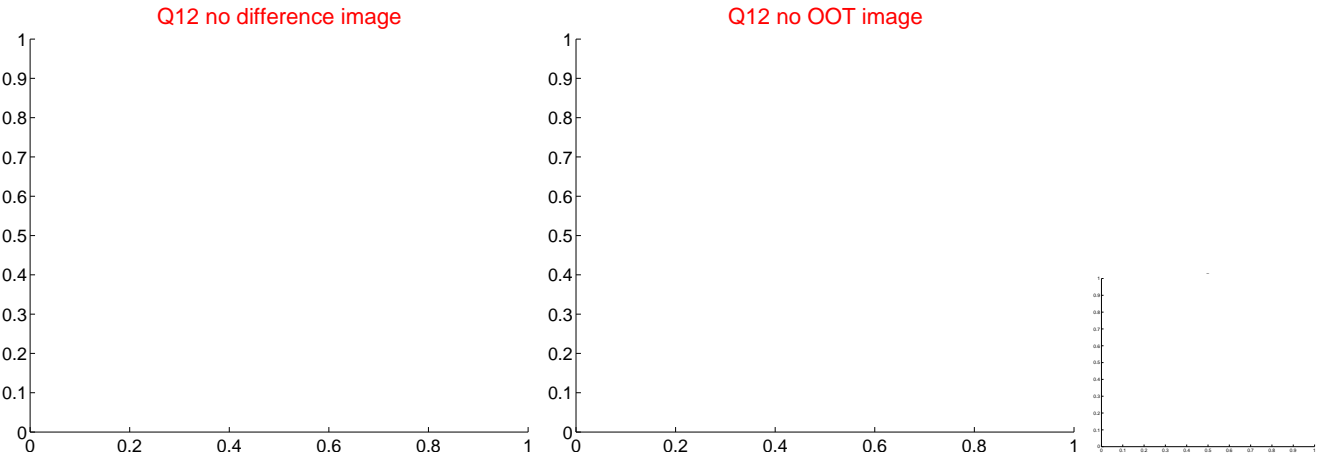
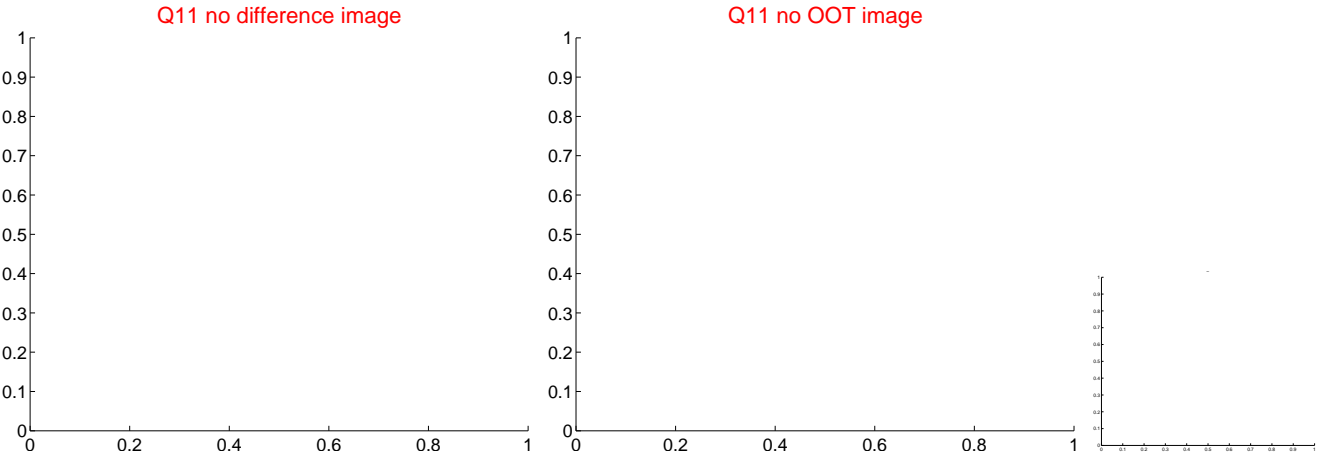
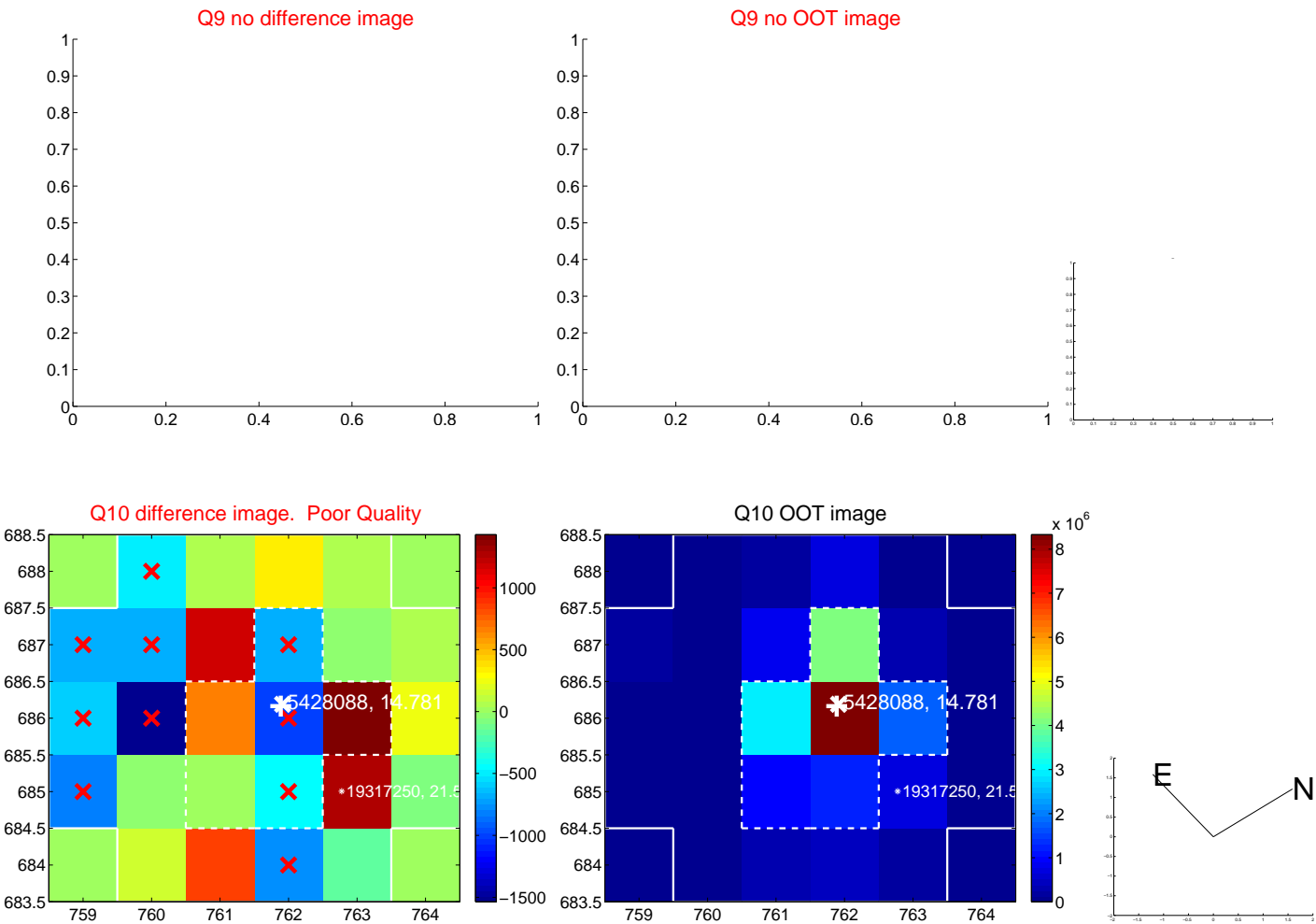
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



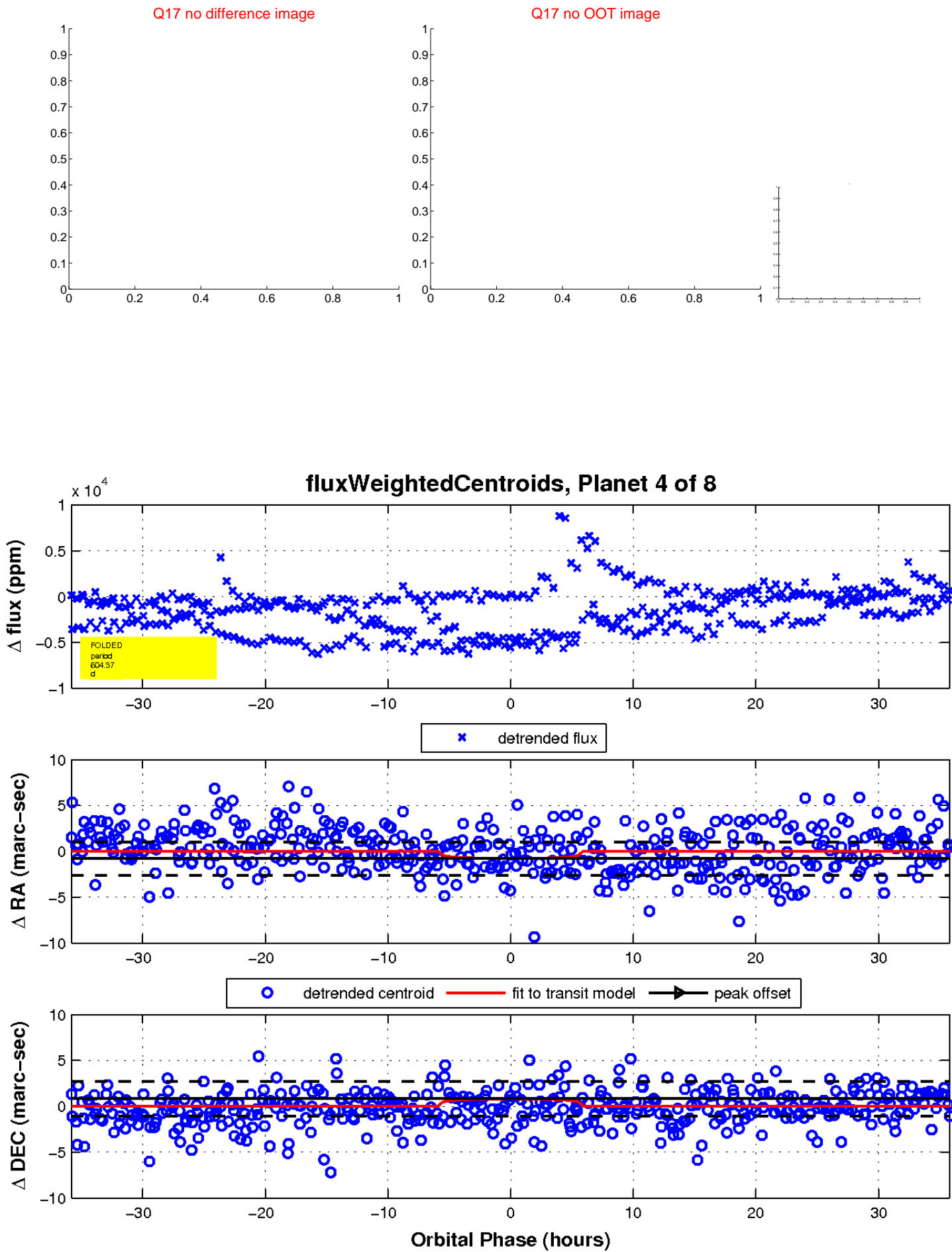
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



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

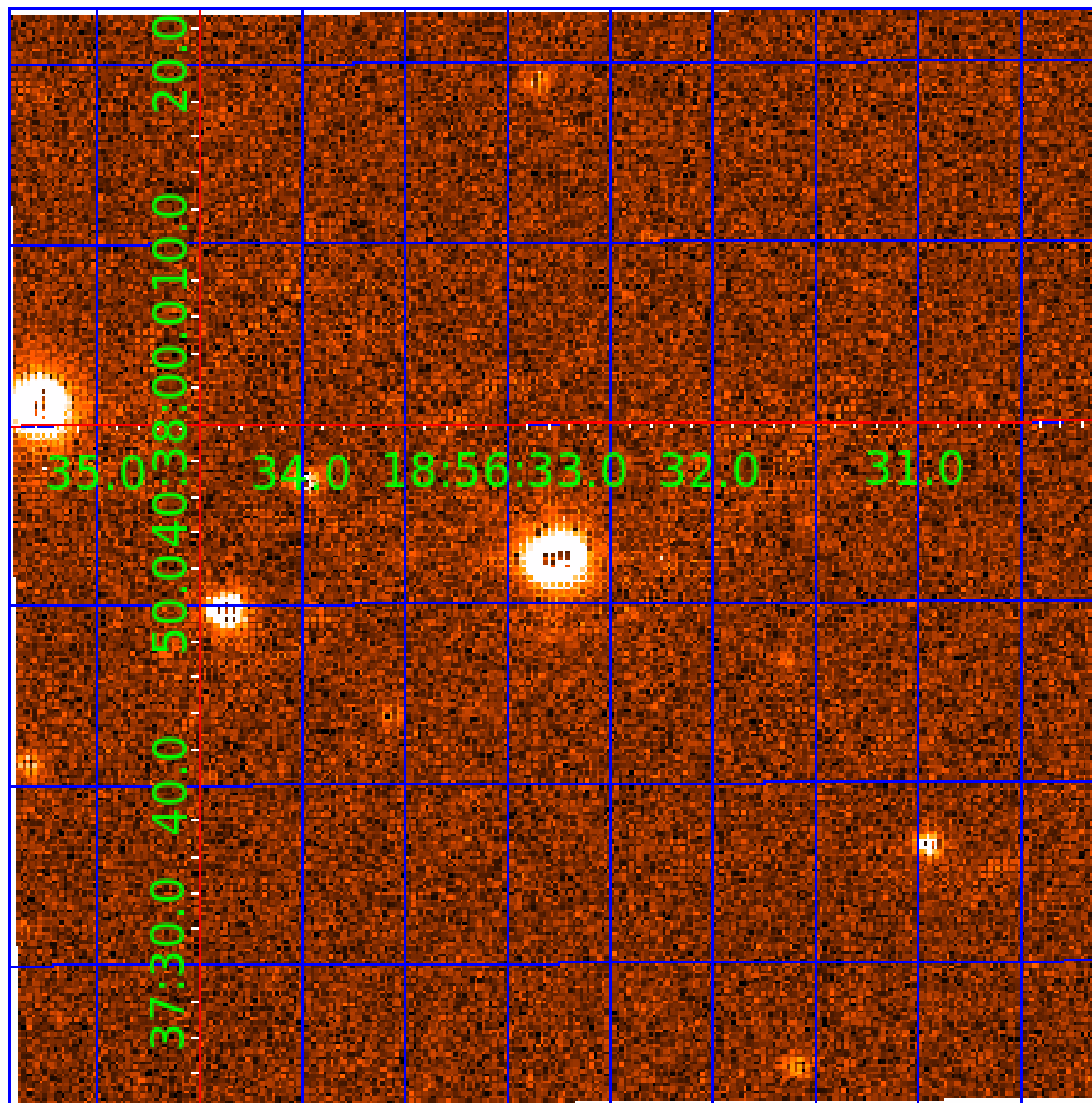


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 005428088

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})
005428088-01	OBS	No	125.402324	164.783818	65.8	1.016	13.7	0.4	0.45	3671	0.37	0.23
005428088-02	OBS	No	381.780949	293.480821	1710.4	11.023	10.4	8.7	0.45	3671	1.94	0.05
005428088-03	OBS	No	370.082677	176.708862	1075.5	3.766	9.5	5.3	0.45	3671	1.53	0.05
005428088-04	OBS	No	604.366682	341.322915	1404.2	11.938	14.3	6.1	0.45	3671	1.70	0.03
005428088-05	OBS	No	298.541217	283.491662	1442.5	5.009	9.9	7.0	0.45	3671	1.80	0.07
005428088-06	OBS	No	281.270626	177.801168	1498.0	4.087	11.7	7.9	0.45	3671	1.82	0.08
005428088-07	OBS	No	566.821192	220.406558	1902.2	8.205	10.1	8.8	0.45	3671	2.05	0.03
005428088-08	OBS	No	165.303847	232.412060	1917.0	2.500	12.0	-1.0	0.45	3671	1.97	0.16

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005428088-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_SKYE_ZUMA_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS
005428088-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_TER_DV—MOD_POS_DV
005428088-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS
005428088-04	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
005428088-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—CENT_FEW_DIFFS
005428088-06	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
005428088-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005428088-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_NOFITS

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

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

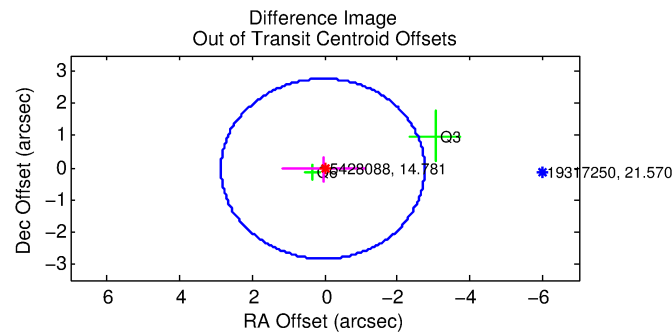
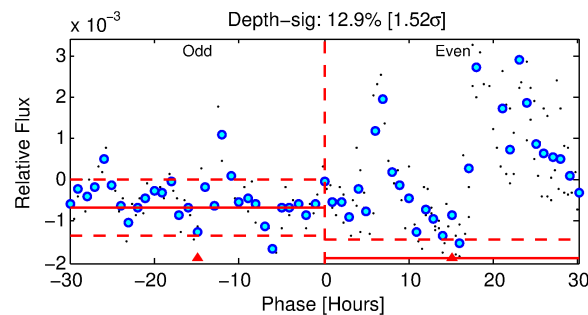
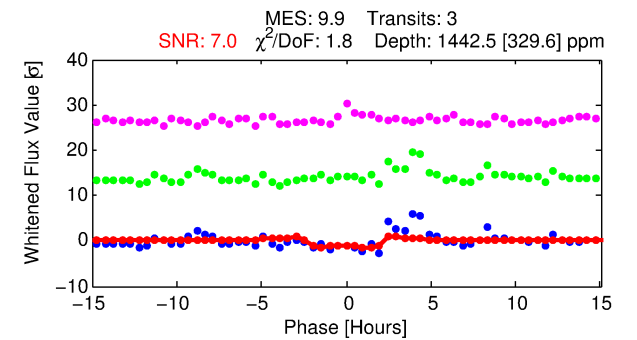
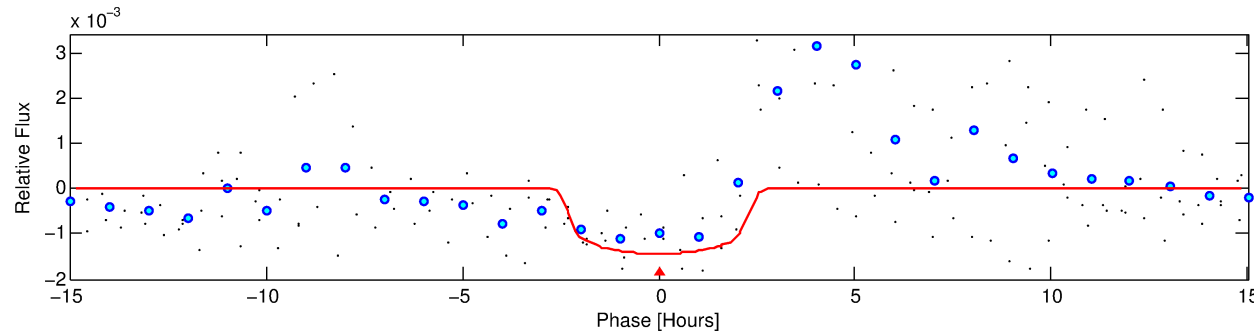
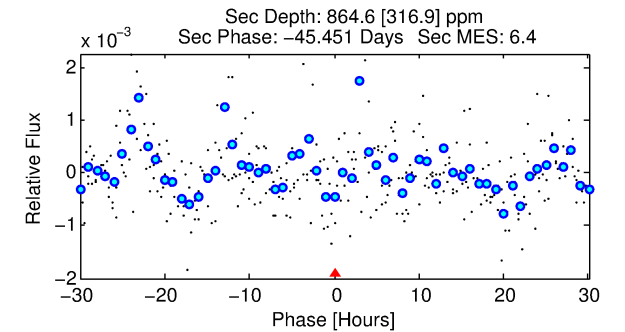
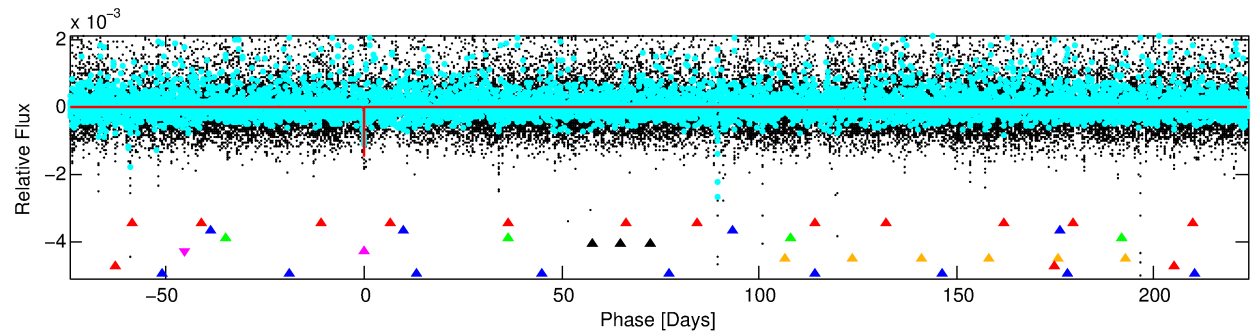
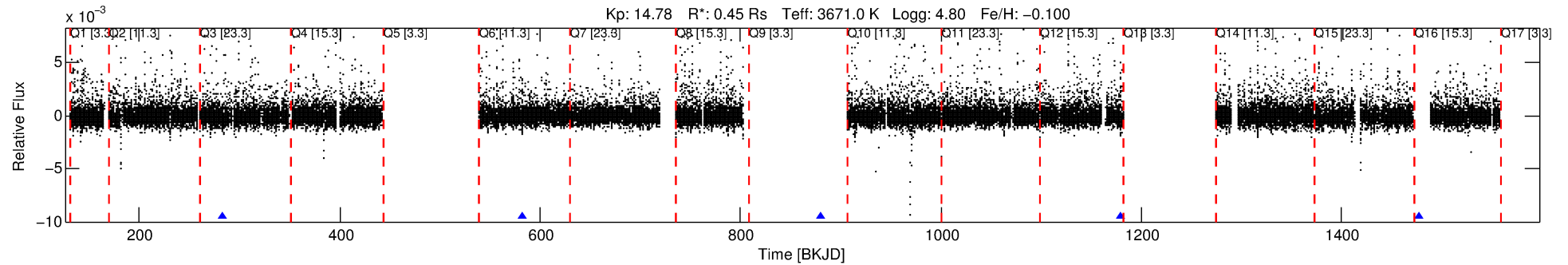
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 005428088-05

No Significant Match Found

DV One-Page Summary

KIC: 5428088 Candidate: 5 of 8 Period: 298.541 d



DV Fit Results:

Period = 298.54122 [0.00714] d
Epoch = 283.4917 [0.0124] BKJD
Rp/R* = 0.0364 [0.0373]
a/R* = 374.80 [1652.14]
b = 0.63 [4.28]
Seff = 0.07 [0.01]
Teq = 132 [4] K
Rp = 1.80 [1.86] Re
a = 0.6804 [0.0498] AU
Ag = 67658.01 [141032.15] [0.48 σ]
Teffp = 3299 [1719] K [1.84 σ]

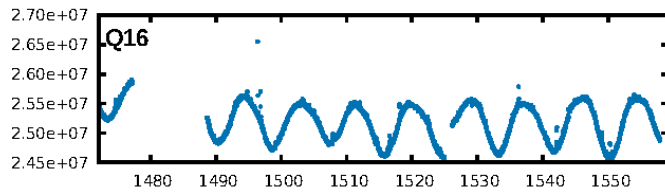
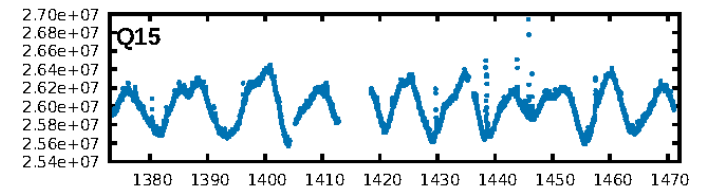
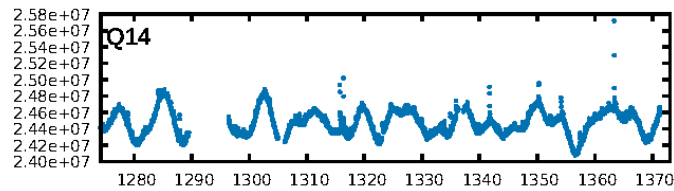
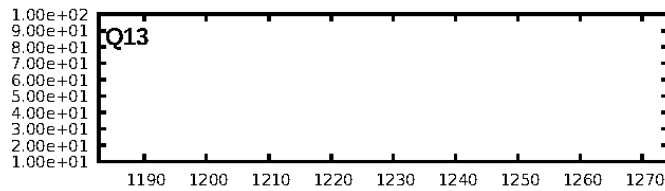
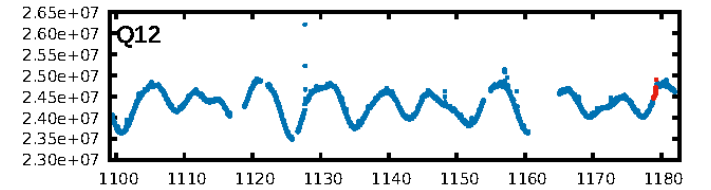
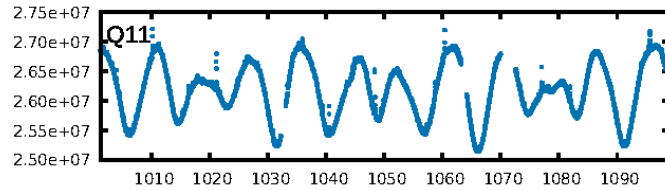
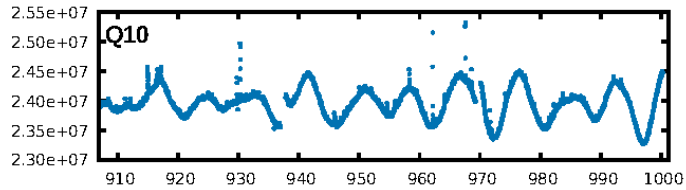
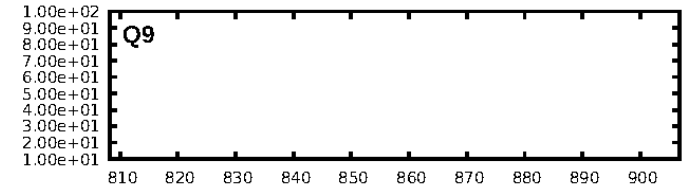
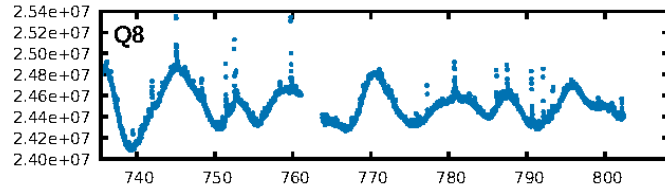
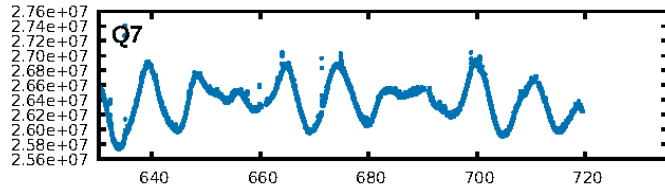
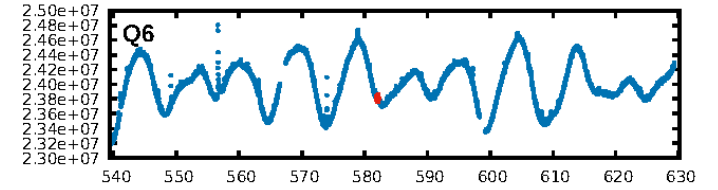
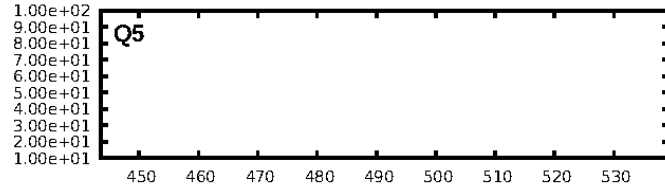
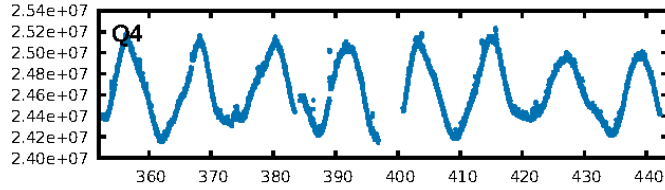
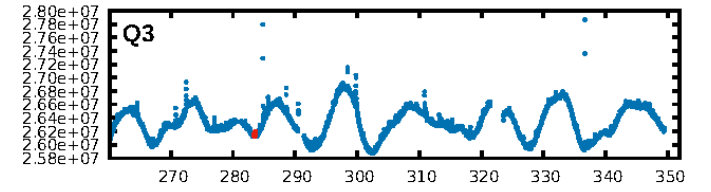
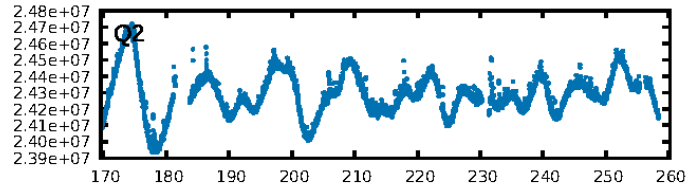
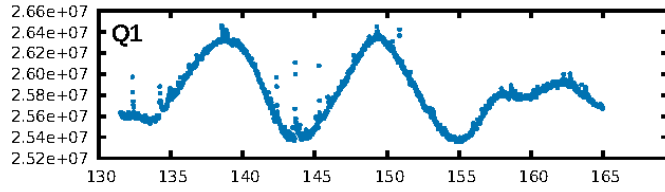
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [64.12 σ]
LongPeriod-sig: 100.0% [274.01 σ]
ModelChiSquare2-sig: 5.5%
ModelChiSquareGof-sig: 58.4%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 2.302
Centroid-sig: 31.7%
Centroid-so: 1.320 arcsec [1.17 σ]
OotOffset-rm: 0.060 arcsec [0.06 σ]
KicOffset-rm: 0.192 arcsec [0.24 σ]
OotOffset-st: 1/1/0/0 [2]
KicOffset-st: 1/1/0/0 [2]
DiffImageQuality-fgm: 1.00 [2/2]
DiffImageOverlap-fno: 1.00 [2/2]

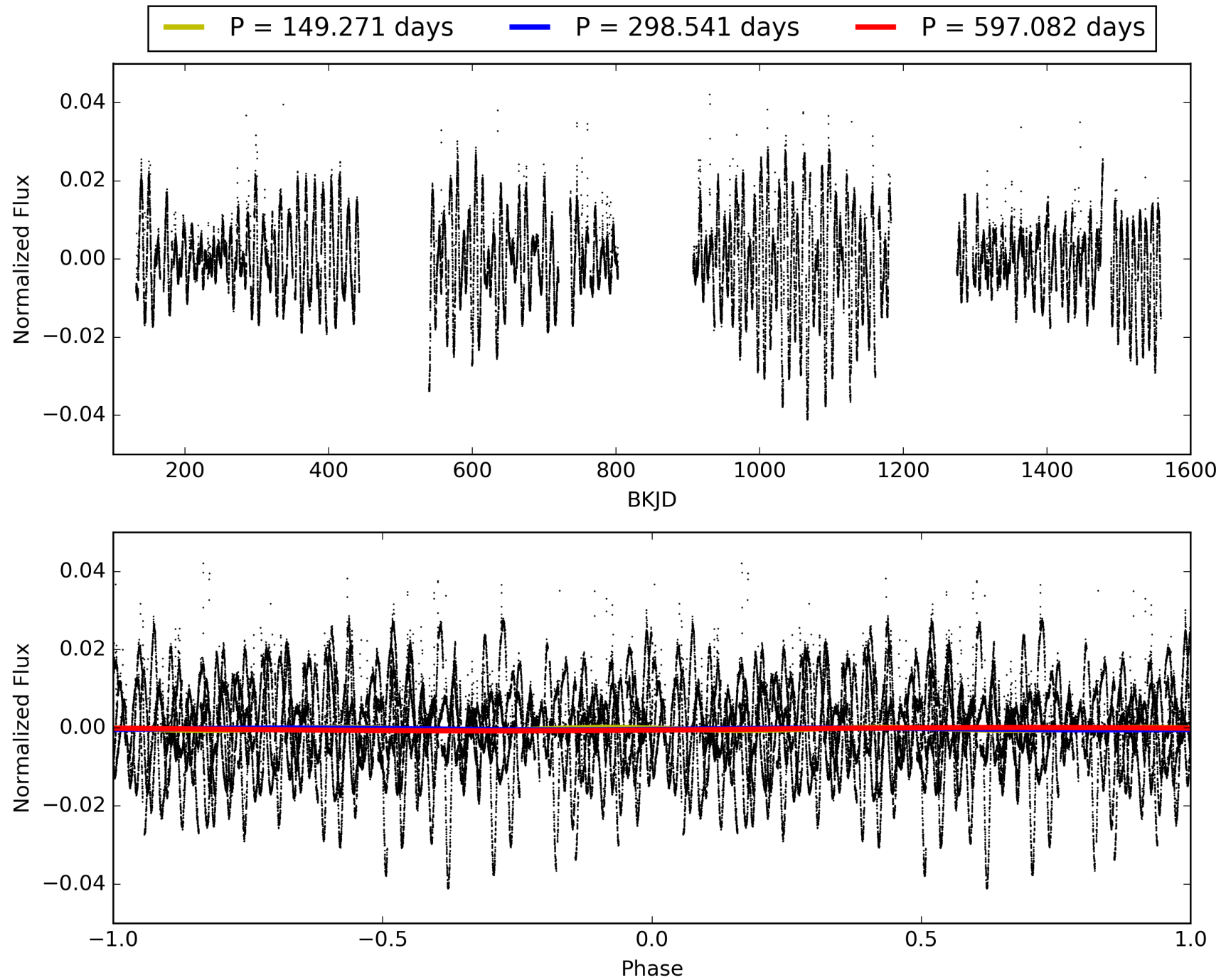
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 07:25:20 Z

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

TCE 005428088-05, PDC Light Curves

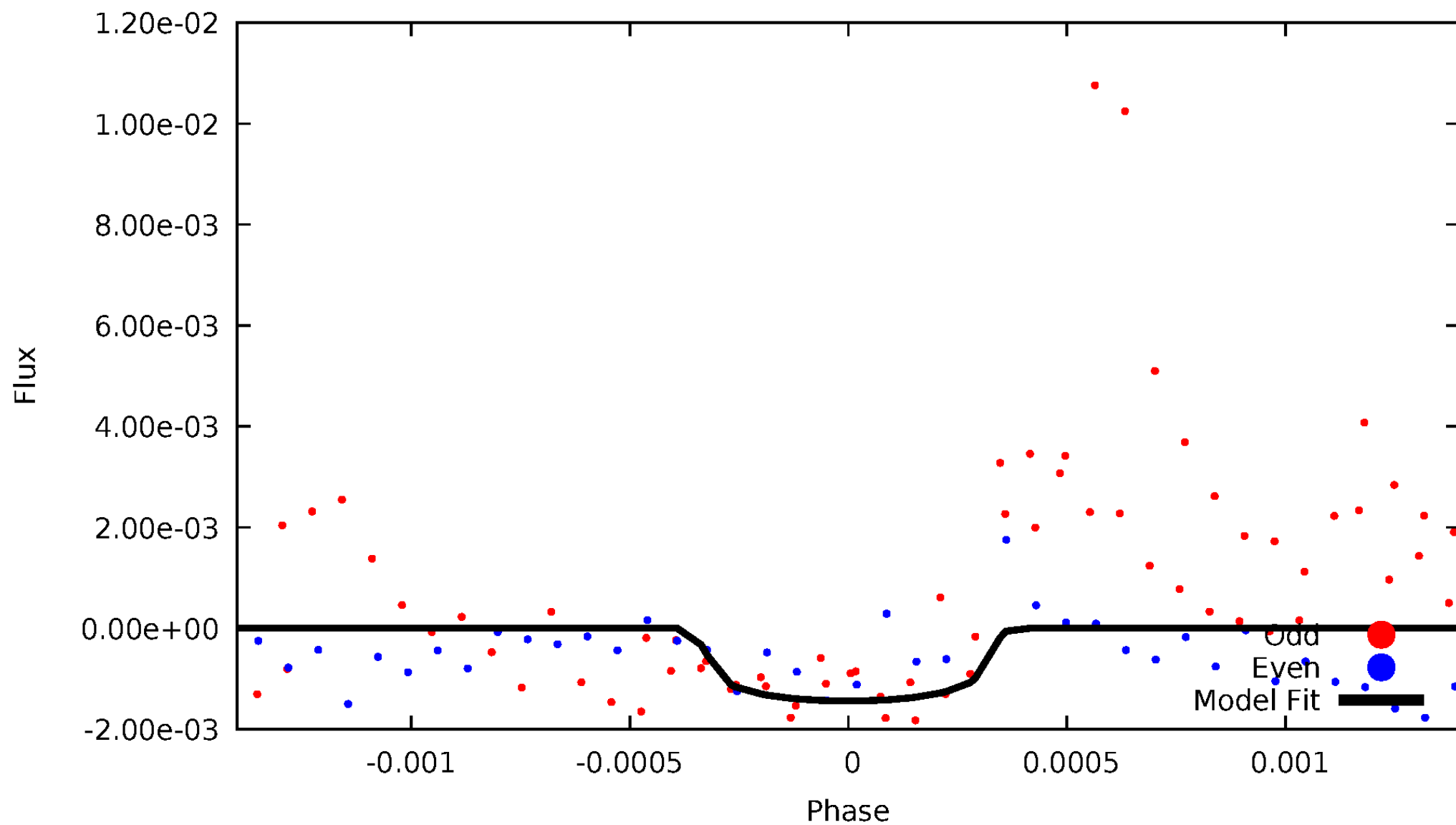


TCE 005428088-05



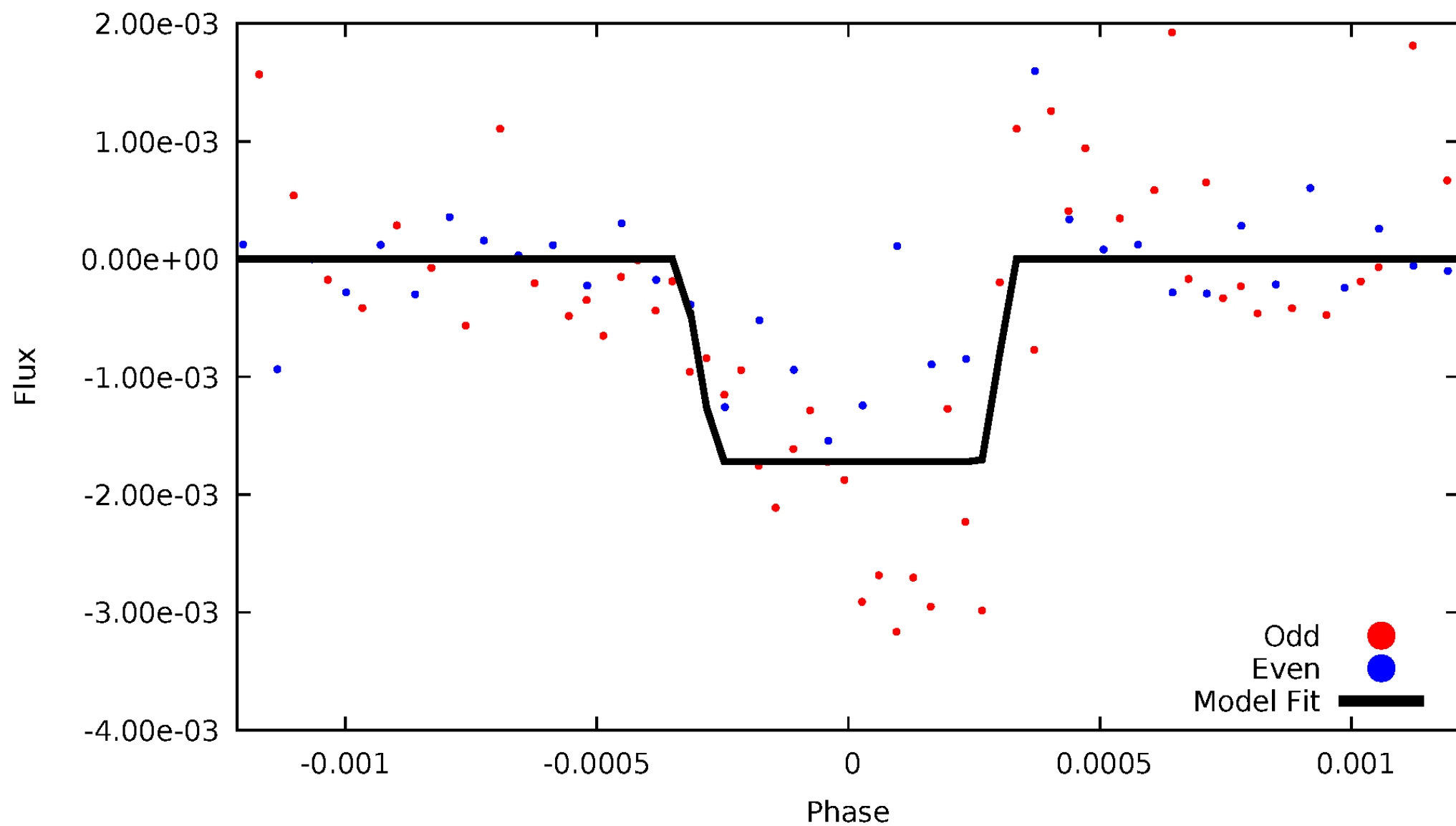
DV Odd/Even

TCE 005428088-05



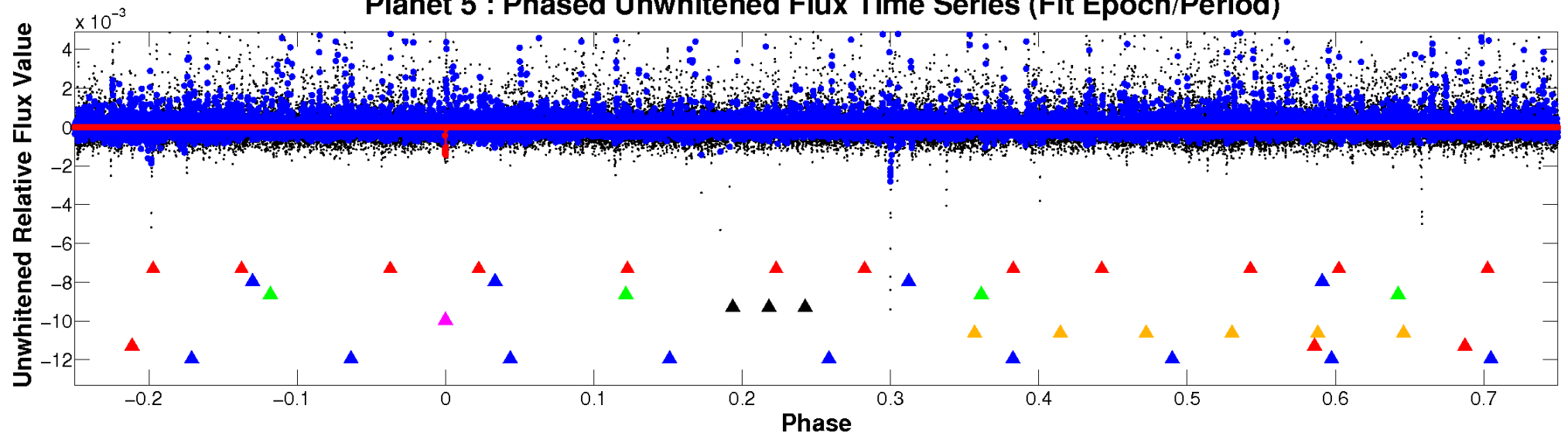
ALT Odd/Even

TCE 005428088-05

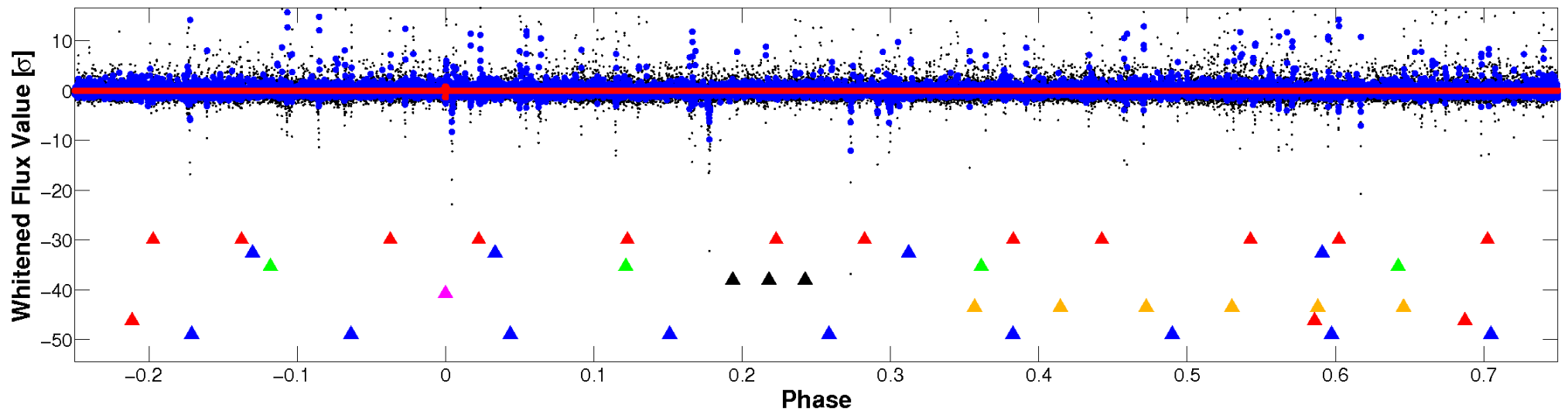


Non-Whitened Vs. Whitened Light Curve

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

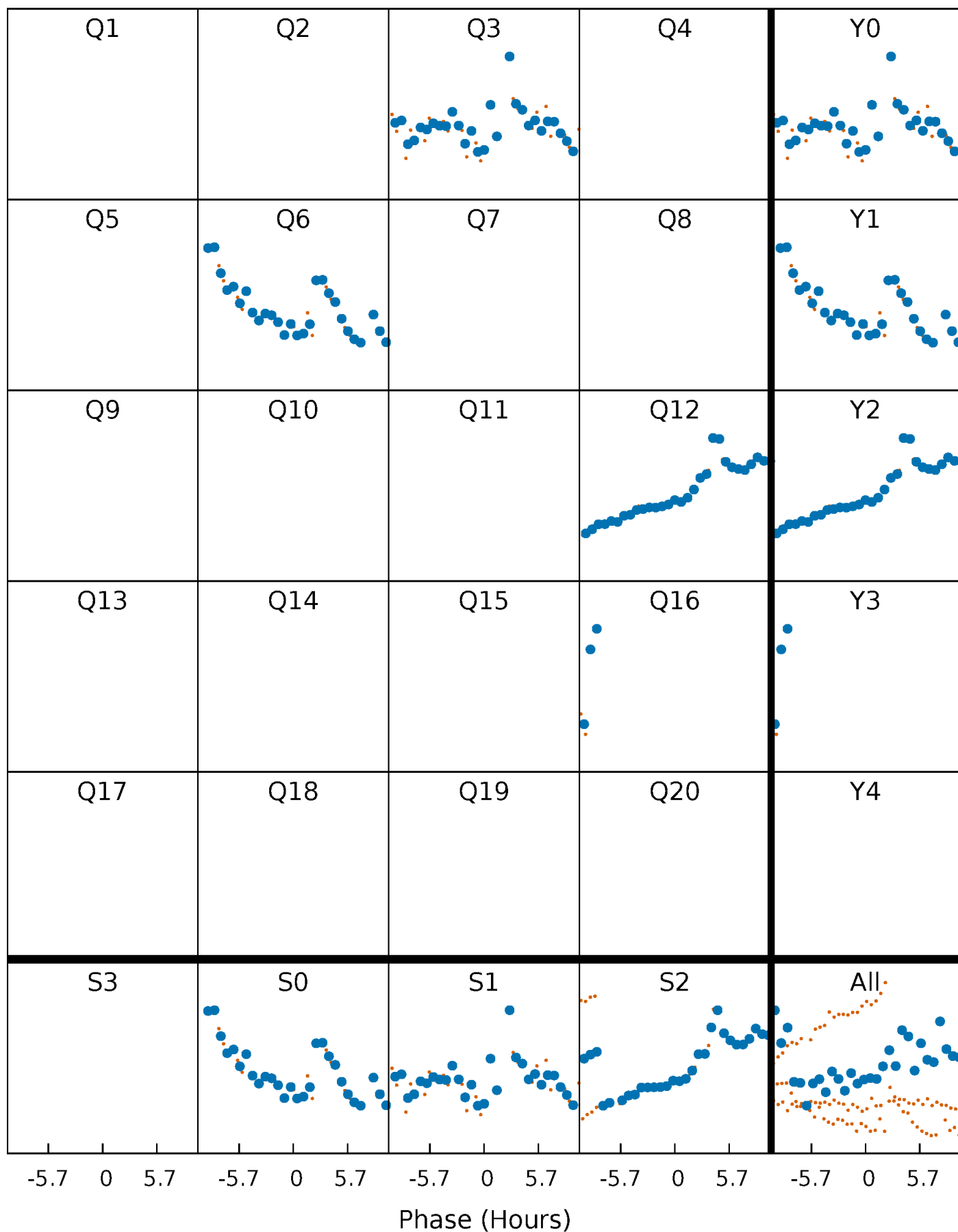


Planet 5 : Phased Whitened Flux Time Series (Fit Epoch/Period)



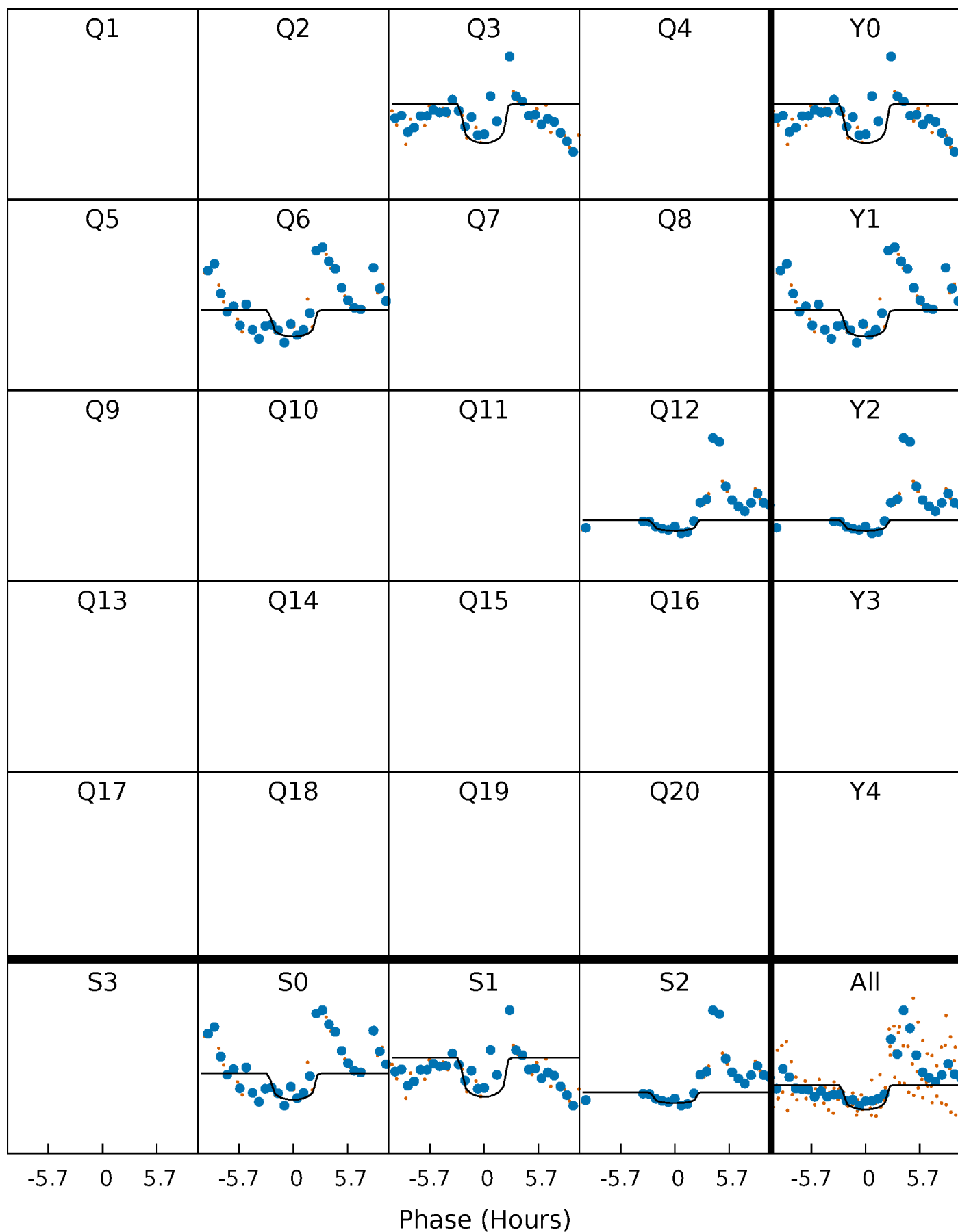
PDC Quarter-Phased Transit Curves

TCE 005428088-05 $P=298.541217$ Days $T_0=283.491662$ (BKJD)



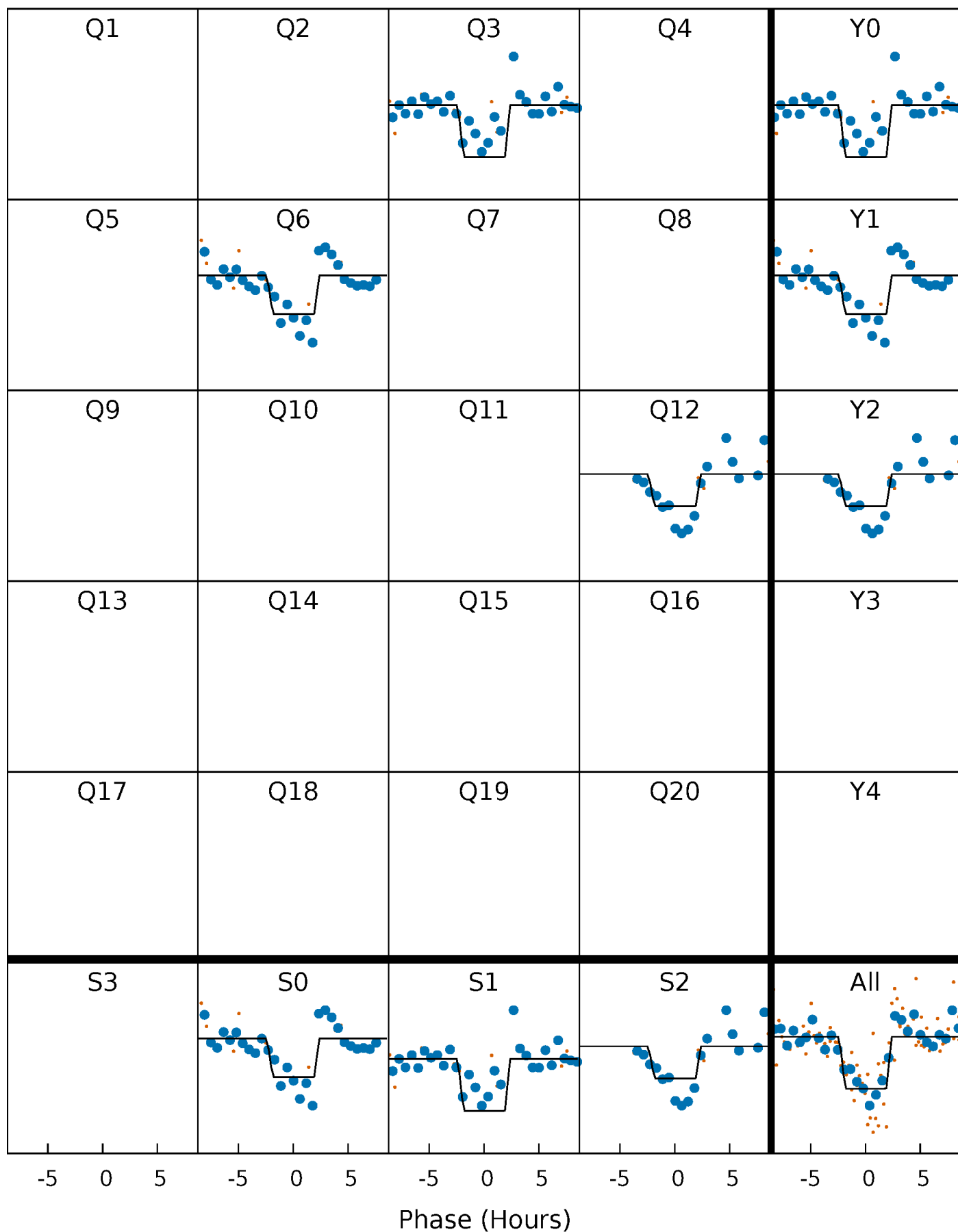
DV Quarter-Phased Transit Curves

TCE 005428088-05 $P=298.541217$ Days $T_0=283.491662$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

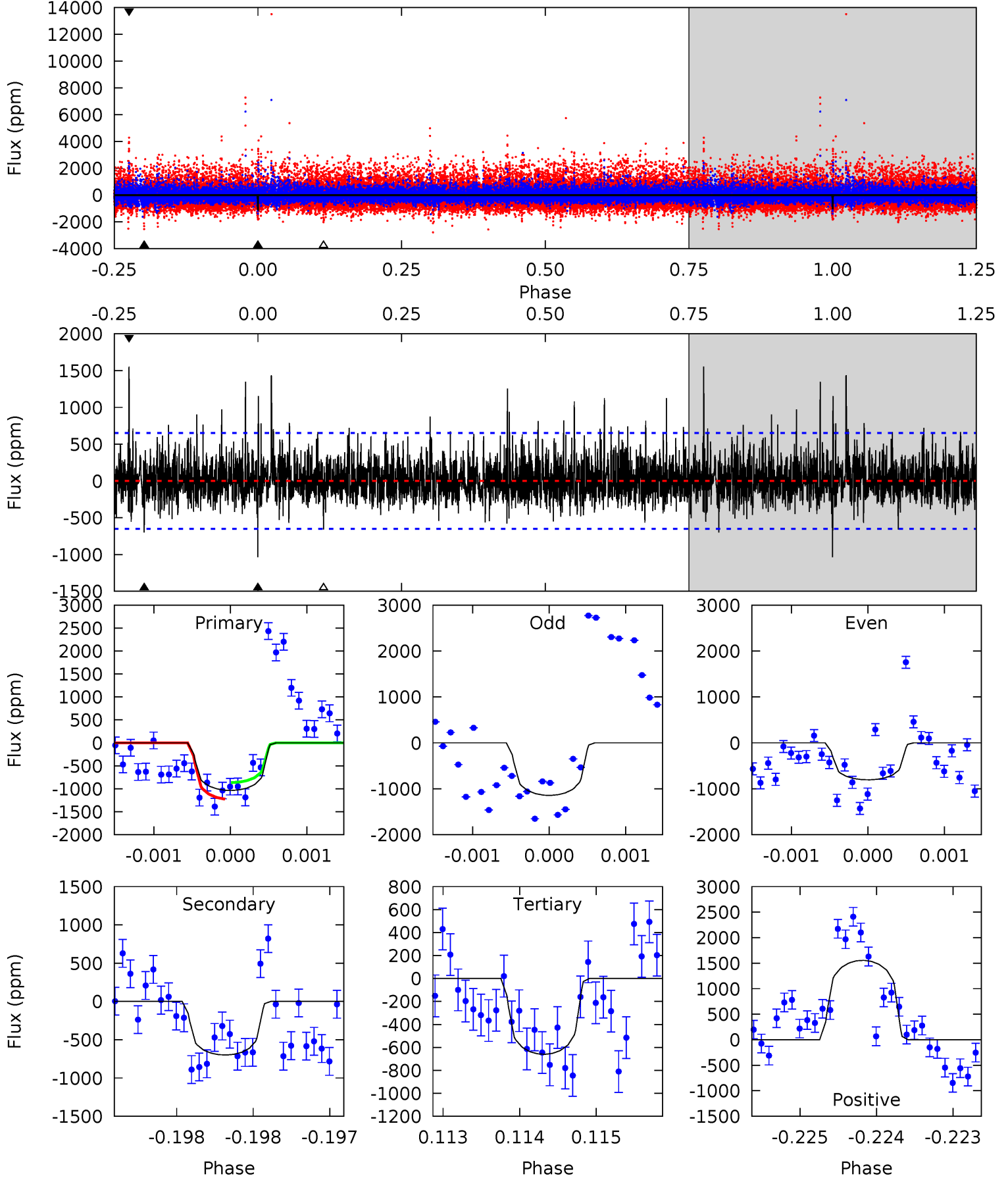
TCE 005428088-05 $P=298.547934$ Days $T_0=283.488841$ (BKJD)



DV Model-Shift Uniqueness Test

005428088-05, P = 298.541217 Days, E = 283.491662 Days

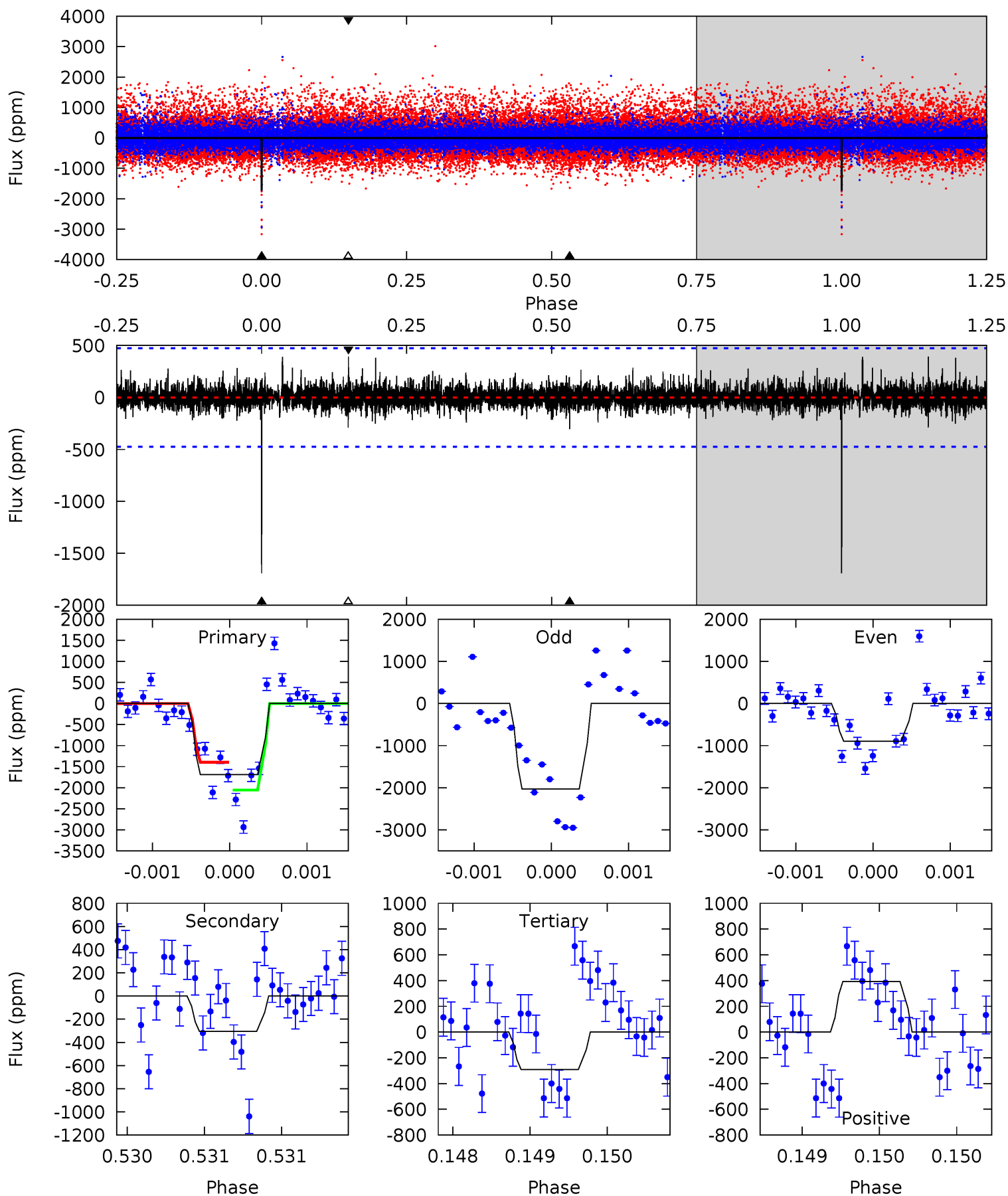
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.77	5.92	5.59	13.2	5.51	3.39	1.85	3.18	-4.39	0.33	-7.24	0.99	1.09	0.60	1.54



Alt Model-Shift Uniqueness Test

005428088-05, P = 298.547934 Days, E = 283.488841 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
19.7	3.55	3.39	4.57	5.53	3.41	0.76	16.3	15.1	0.16	-1.01	6.01	0.86	0.19	3.85



Stellar Parameters For KIC 005428088

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	3671^{+65}_{-80}	$4.797^{+0.045}_{-0.031}$	$-0.100^{+0.100}_{-0.100}$	$0.454^{+0.032}_{-0.044}$	$0.472^{+0.034}_{-0.046}$	$7.100^{+1.752}_{-0.971}$
	+2%/-2%	+1%/-1%	+100%/-100%	+7%/-10%	+7%/-10%	+25%/-14%
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 005428088-05 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-699 ± 118	$2.28^{+1.59}_{-1.44}$	184^{+5}_{-5}	3085^{+1203}_{-404}	$34077^{+225037}_{-21628}$
Alt.	-305 ± 86	$2.39^{+1.70}_{-1.44}$	184^{+4}_{-5}	2727^{+802}_{-358}	13720^{+67032}_{-9312}

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

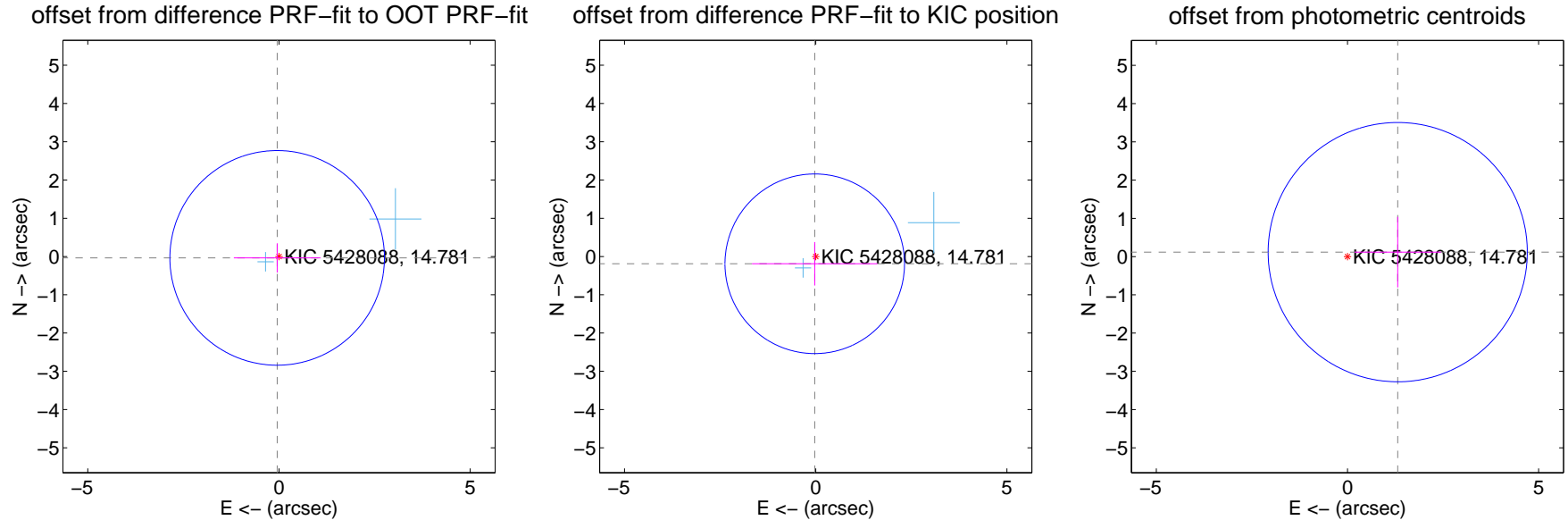
DV Centroid Data

Supplemental centroid analysis for 005428088-05. Kepler magnitude: 14.78. Transit SNR 6.99

There are 2 quarters with good PRF difference image offsets

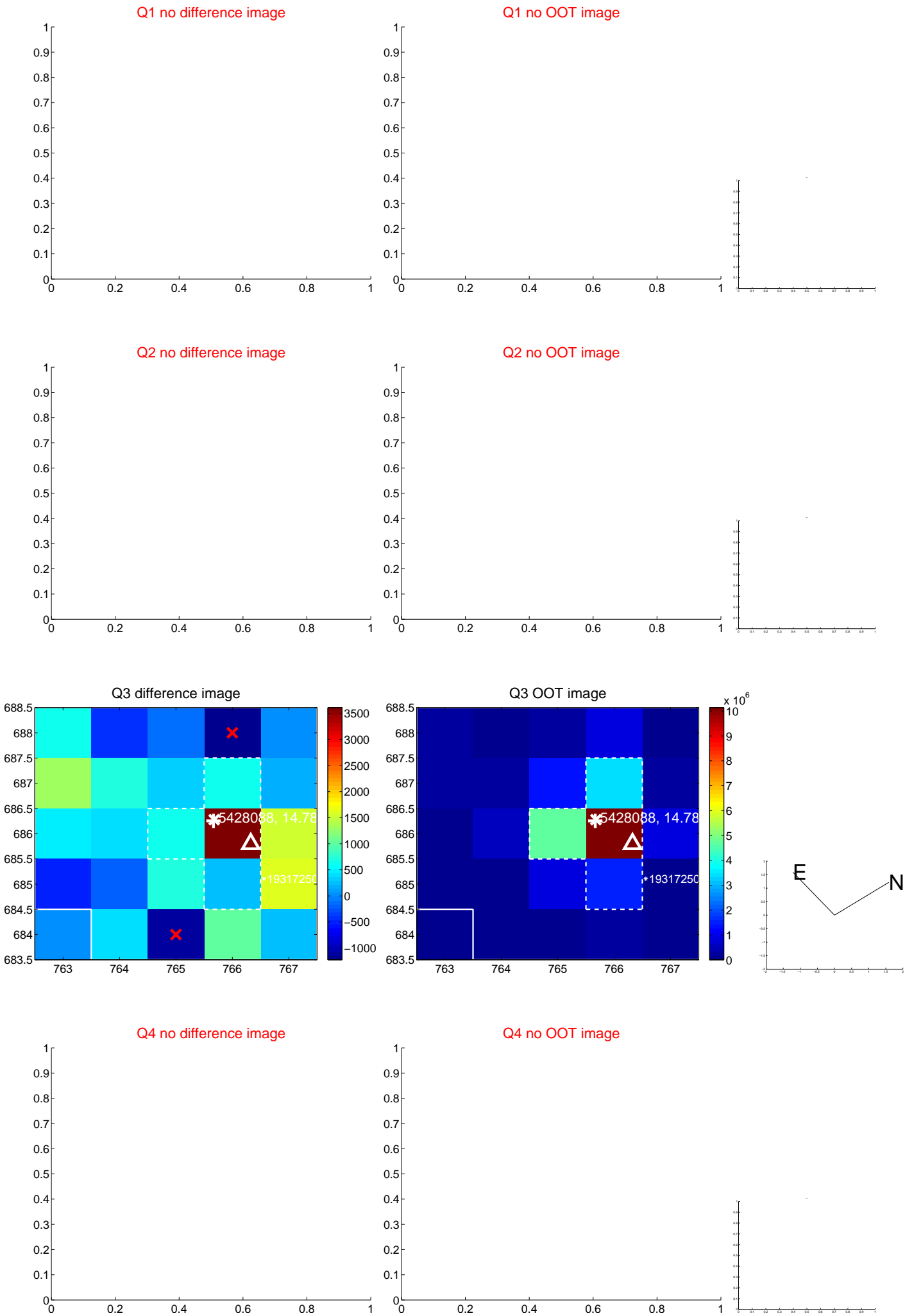
The direct PRF centroid is offset from the target star catalog position by about 0.16 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.060 ± 0.935	0.06	0.048 ± 1.134	-0.036 ± 0.382
PRF-fit source offset from KIC position	0.192 ± 0.782	0.24	0.026 ± 1.638	-0.190 ± 0.569
photometric centroid source offset	1.32 ± 1.13	1.17	-1.31 ± 1.13	0.12 ± 0.92

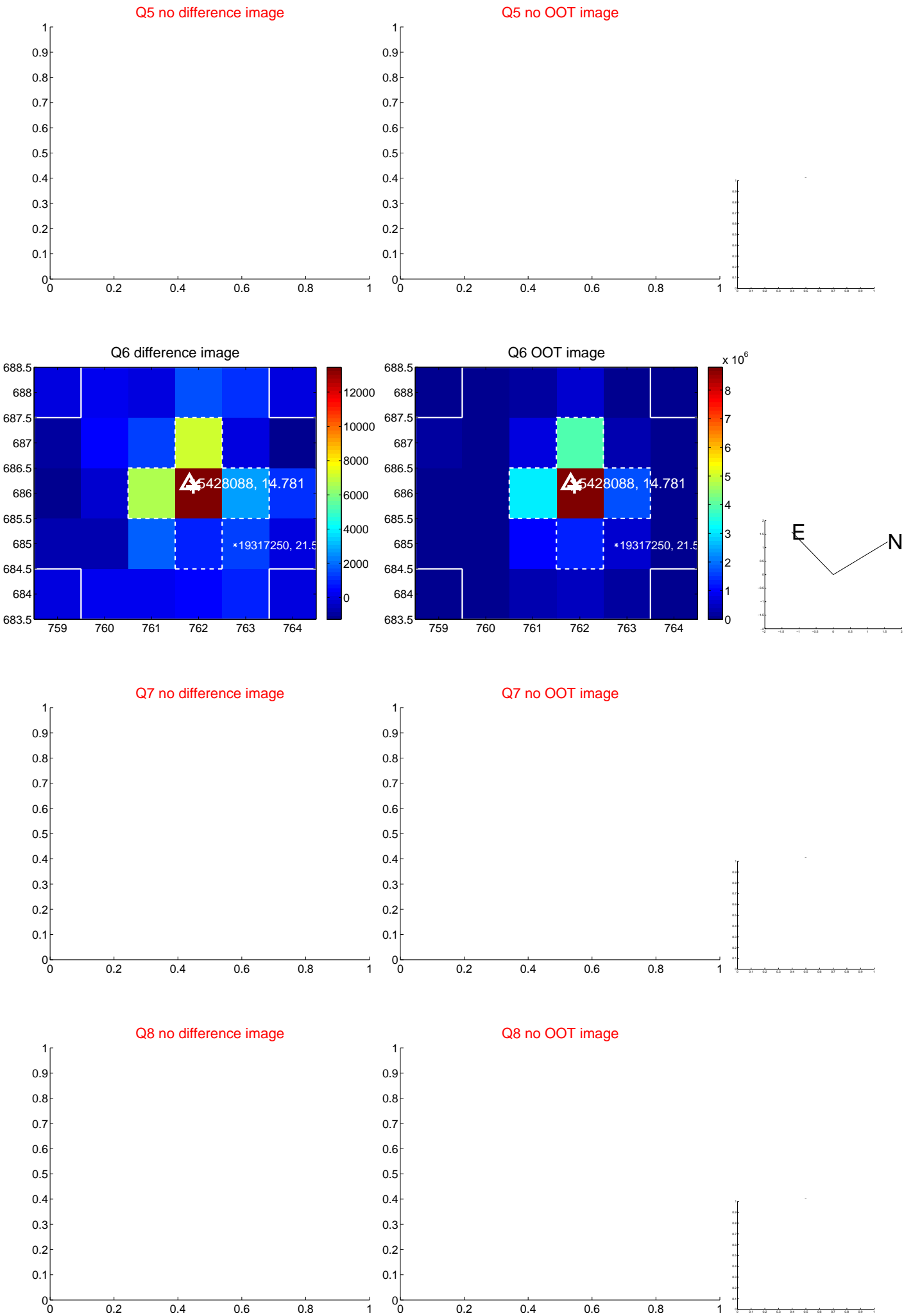


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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



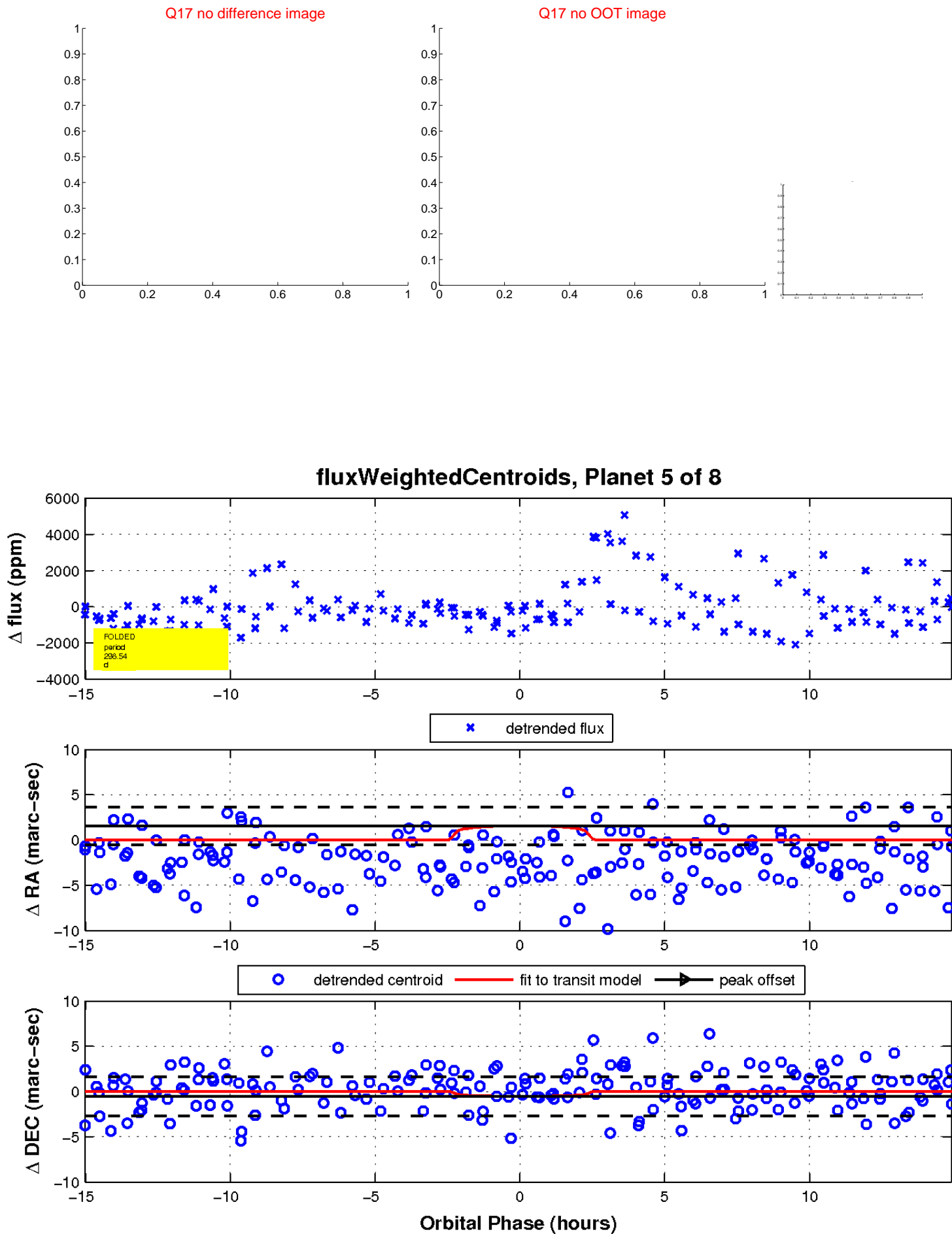
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

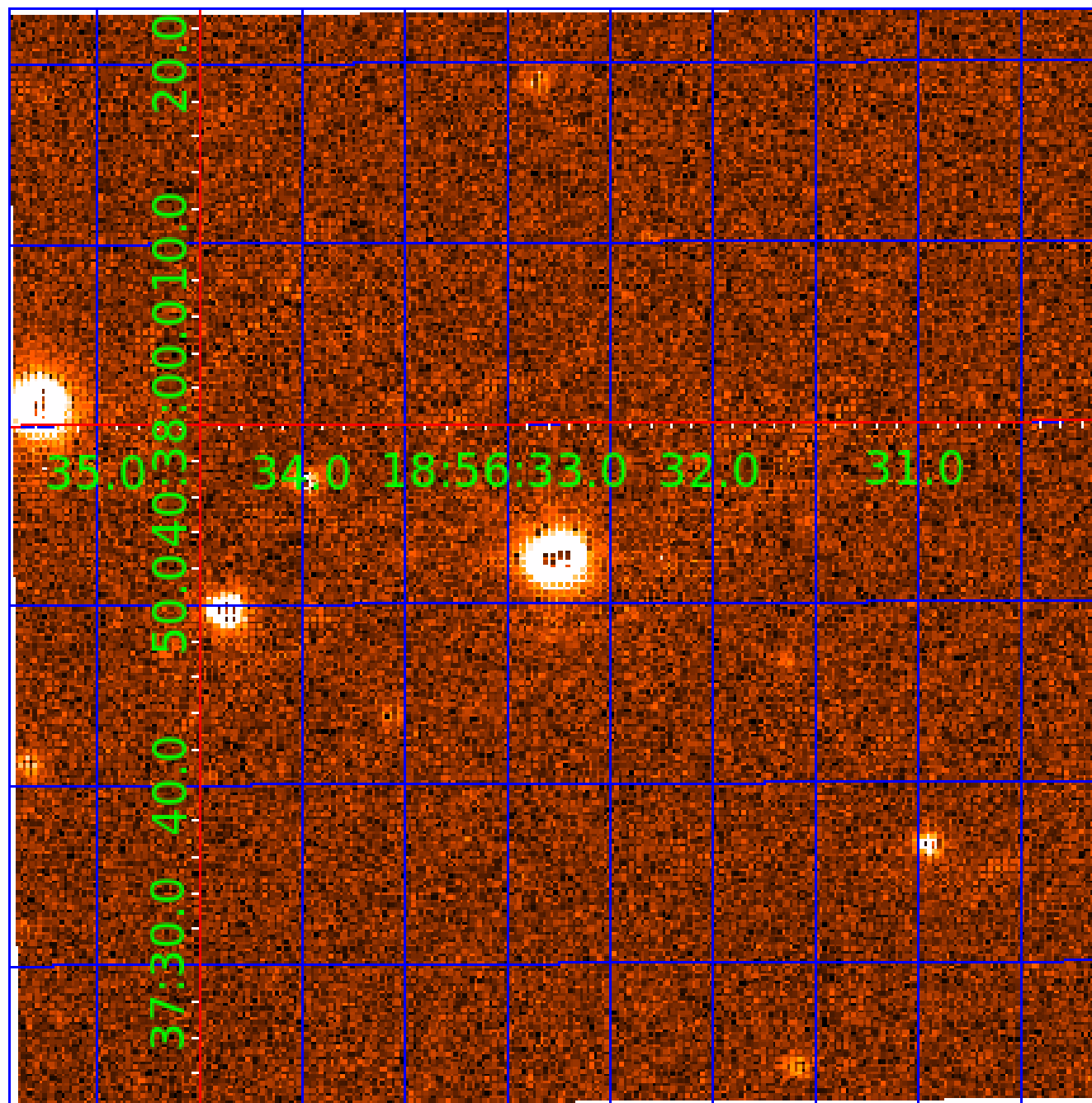


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 005428088

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})
005428088-01	OBS	No	125.402324	164.783818	65.8	1.016	13.7	0.4	0.45	3671	0.37	0.23
005428088-02	OBS	No	381.780949	293.480821	1710.4	11.023	10.4	8.7	0.45	3671	1.94	0.05
005428088-03	OBS	No	370.082677	176.708862	1075.5	3.766	9.5	5.3	0.45	3671	1.53	0.05
005428088-04	OBS	No	604.366682	341.322915	1404.2	11.938	14.3	6.1	0.45	3671	1.70	0.03
005428088-05	OBS	No	298.541217	283.491662	1442.5	5.009	9.9	7.0	0.45	3671	1.80	0.07
005428088-06	OBS	No	281.270626	177.801168	1498.0	4.087	11.7	7.9	0.45	3671	1.82	0.08
005428088-07	OBS	No	566.821192	220.406558	1902.2	8.205	10.1	8.8	0.45	3671	2.05	0.03
005428088-08	OBS	No	165.303847	232.412060	1917.0	2.500	12.0	-1.0	0.45	3671	1.97	0.16

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005428088-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_SKYE_ZUMA_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS
005428088-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_TER_DV—MOD_POS_DV
005428088-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS
005428088-04	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
005428088-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—CENT_FEW_DIFFS
005428088-06	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
005428088-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005428088-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_NOFITS

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

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

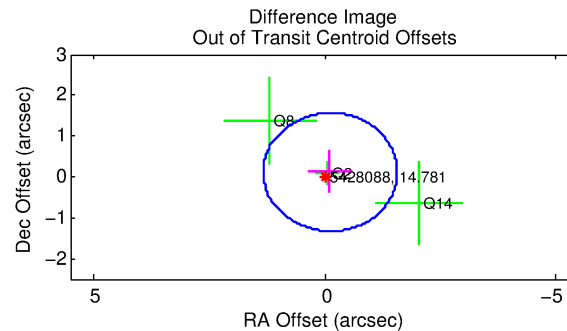
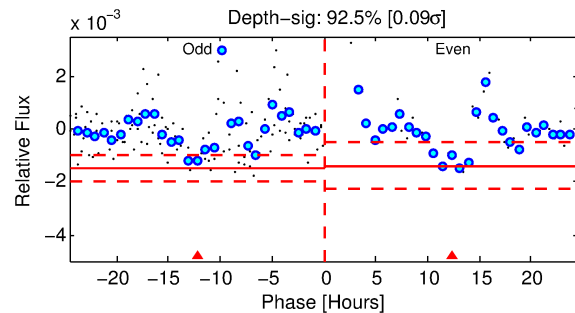
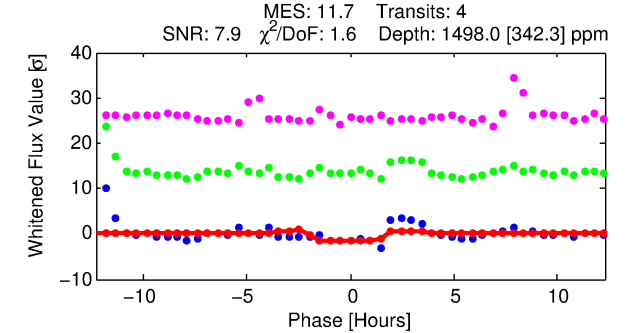
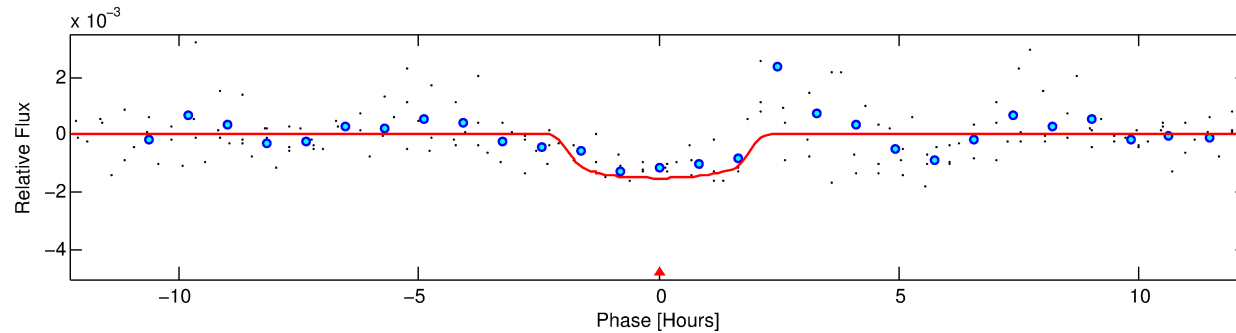
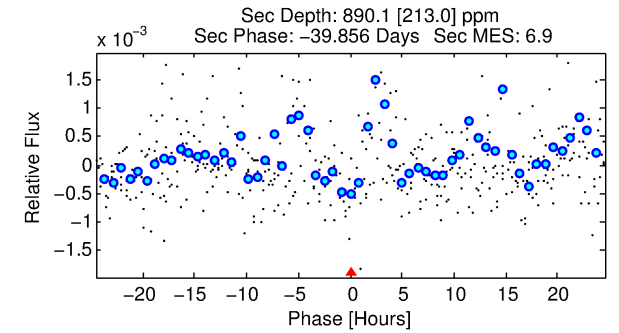
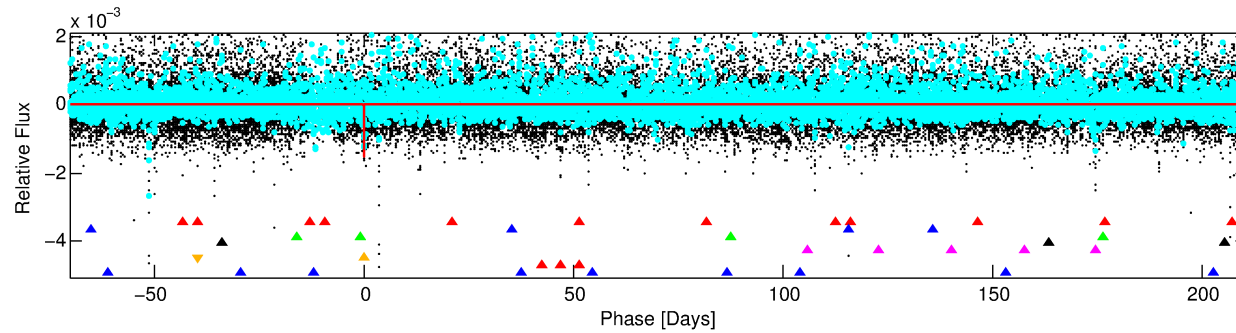
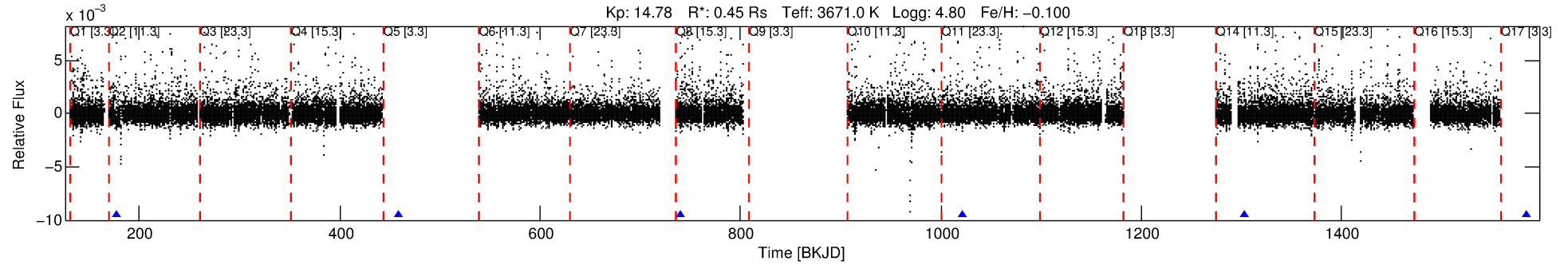
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 005428088-06

No Significant Match Found

DV One-Page Summary

KIC: 5428088 Candidate: 6 of 8 Period: 281.271 d



DV Fit Results:

Period = 281.27063 [0.00446] d
Epoch = 177.8012 [0.0119] BKJD
Rp/R* = 0.0368 [0.0351]
a/R* = 450.43 [1839.99]
b = 0.58 [4.64]
Seff = 0.08 [0.01]
Teq = 135 [4] K
Rp = 1.82 [1.75] Re
a = 0.6539 [0.0479] AU
Ag = 63146.46 [121715.85] [0.52 σ]
Teffp = 3307 [1594] K [1.99 σ]

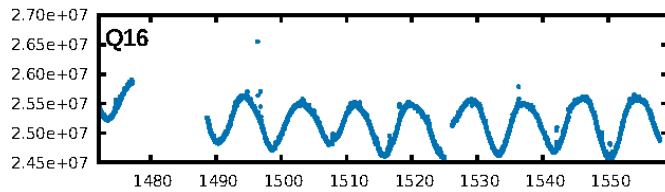
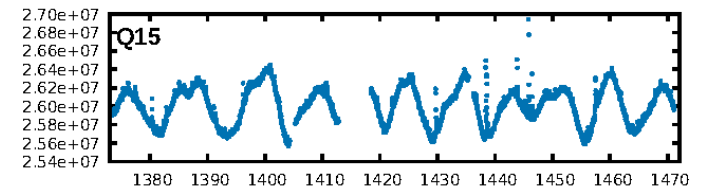
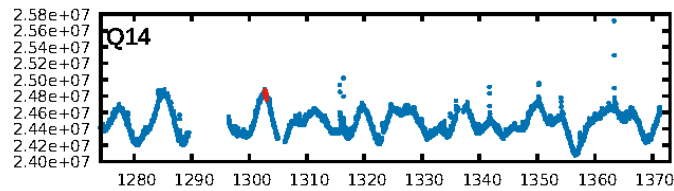
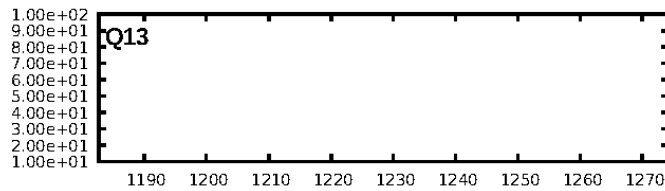
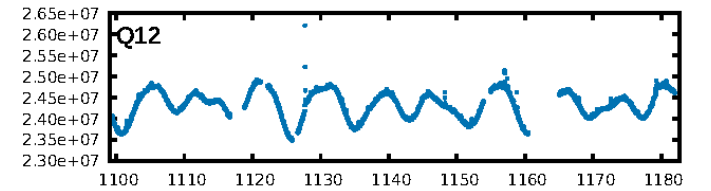
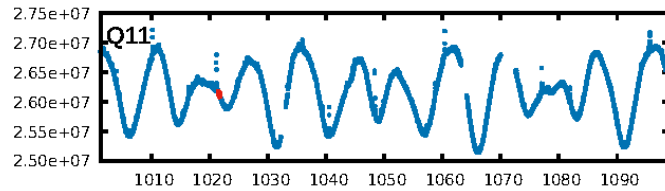
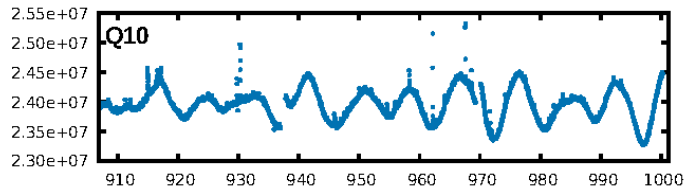
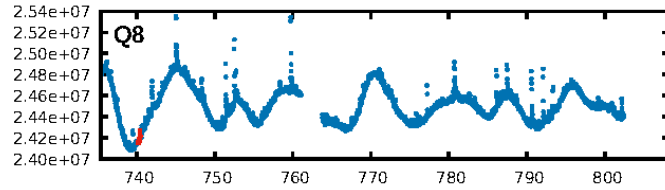
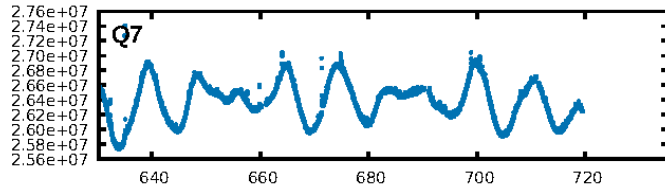
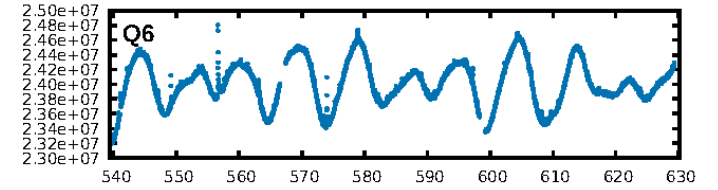
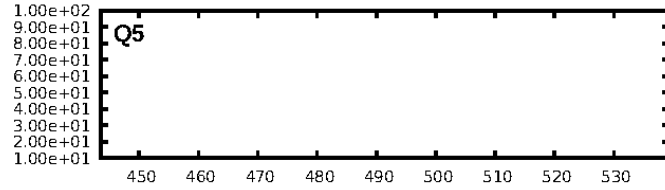
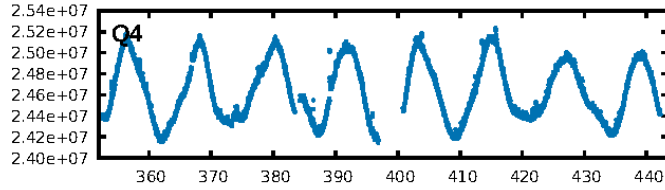
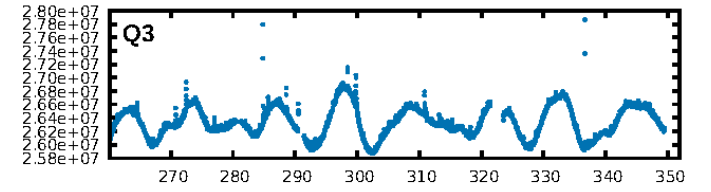
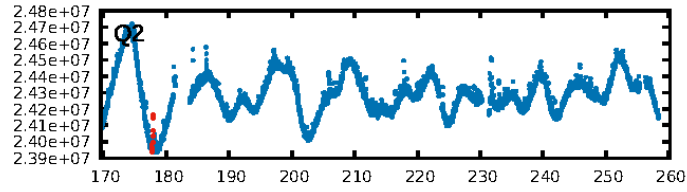
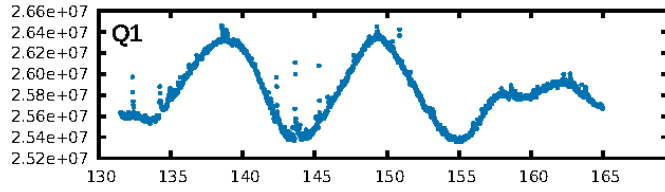
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [580.94 σ]
LongPeriod-sig: 100.0% [64.12 σ]
ModelChiSquare2-sig: 13.0%
ModelChiSquareGof-sig: 72.6%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: -0.4336
Centroid-sig: 9.0%
Centroid-so: 0.722 arcsec [0.80 σ]
OotOffset-rm: 0.169 arcsec [0.35 σ]
OotOffset-st: 2/0/1/0 [3]
KicOffset-rm: 0.082 arcsec [0.11 σ]
KicOffset-st: 2/0/1/0 [3]
DiffImageQuality-fgm: 1.00 [3/3]
DiffImageOverlap-fno: 1.00 [3/3]

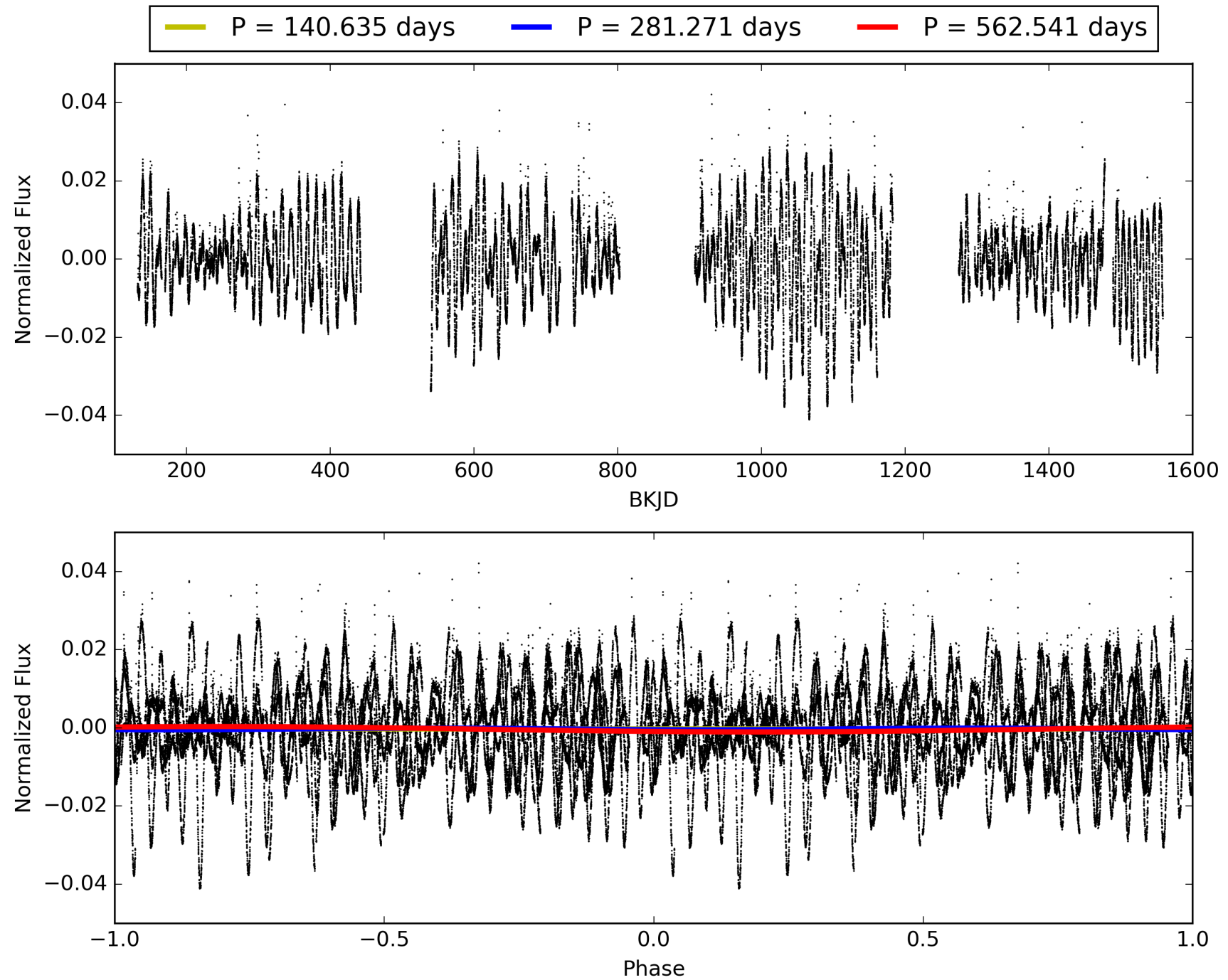
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 07:25:30 Z

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

TCE 005428088-06, PDC Light Curves

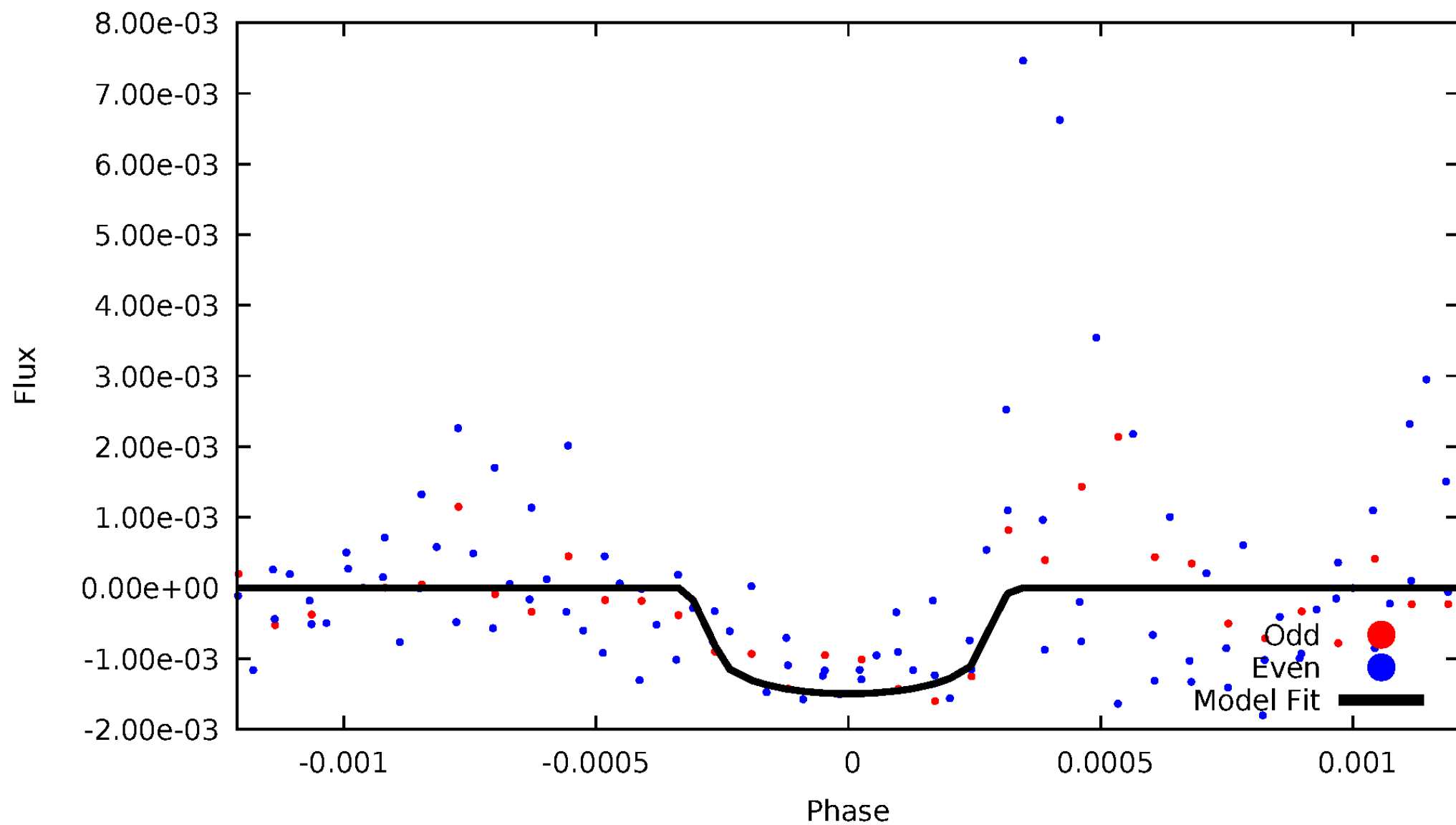


TCE 005428088-06



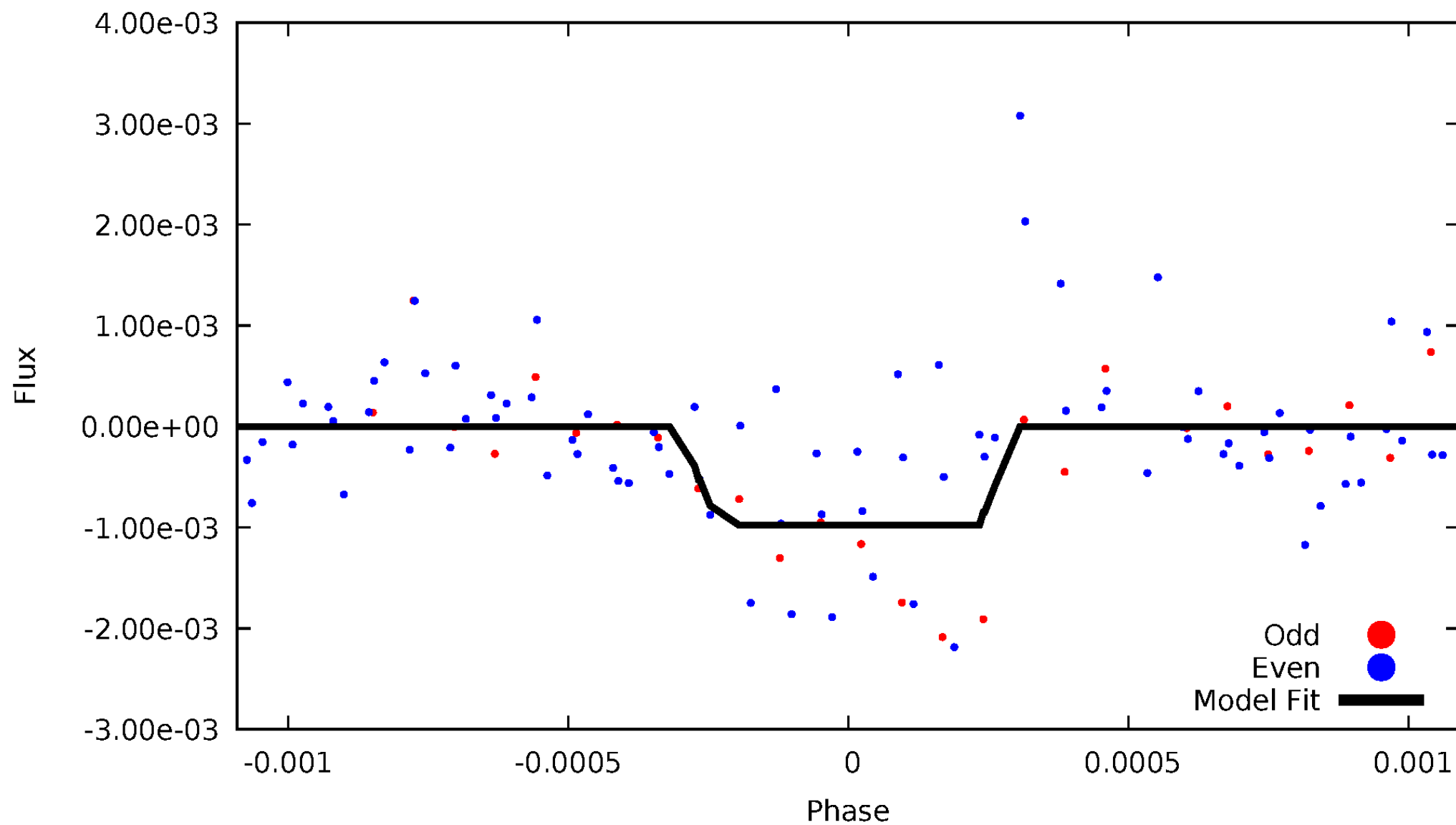
DV Odd/Even

TCE 005428088-06



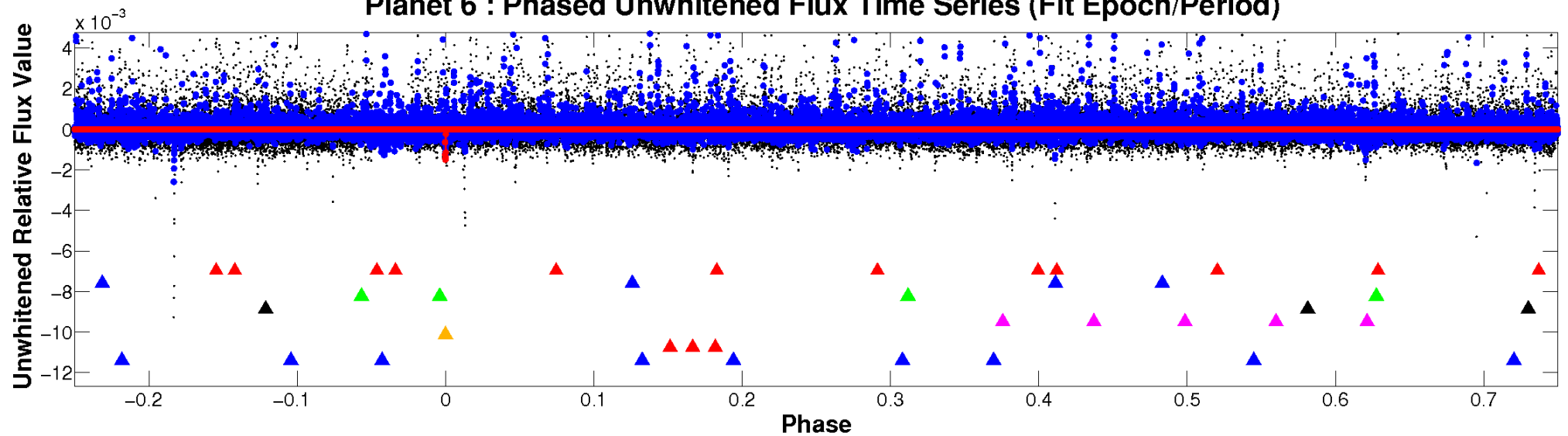
ALT Odd/Even

TCE 005428088-06

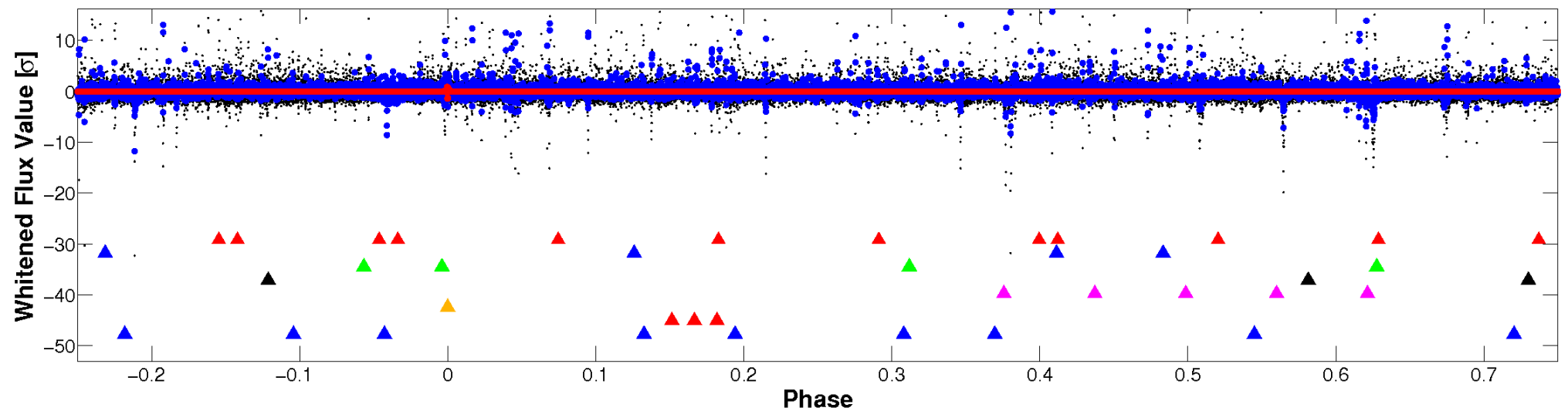


Non-Whitened Vs. Whitened Light Curve

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

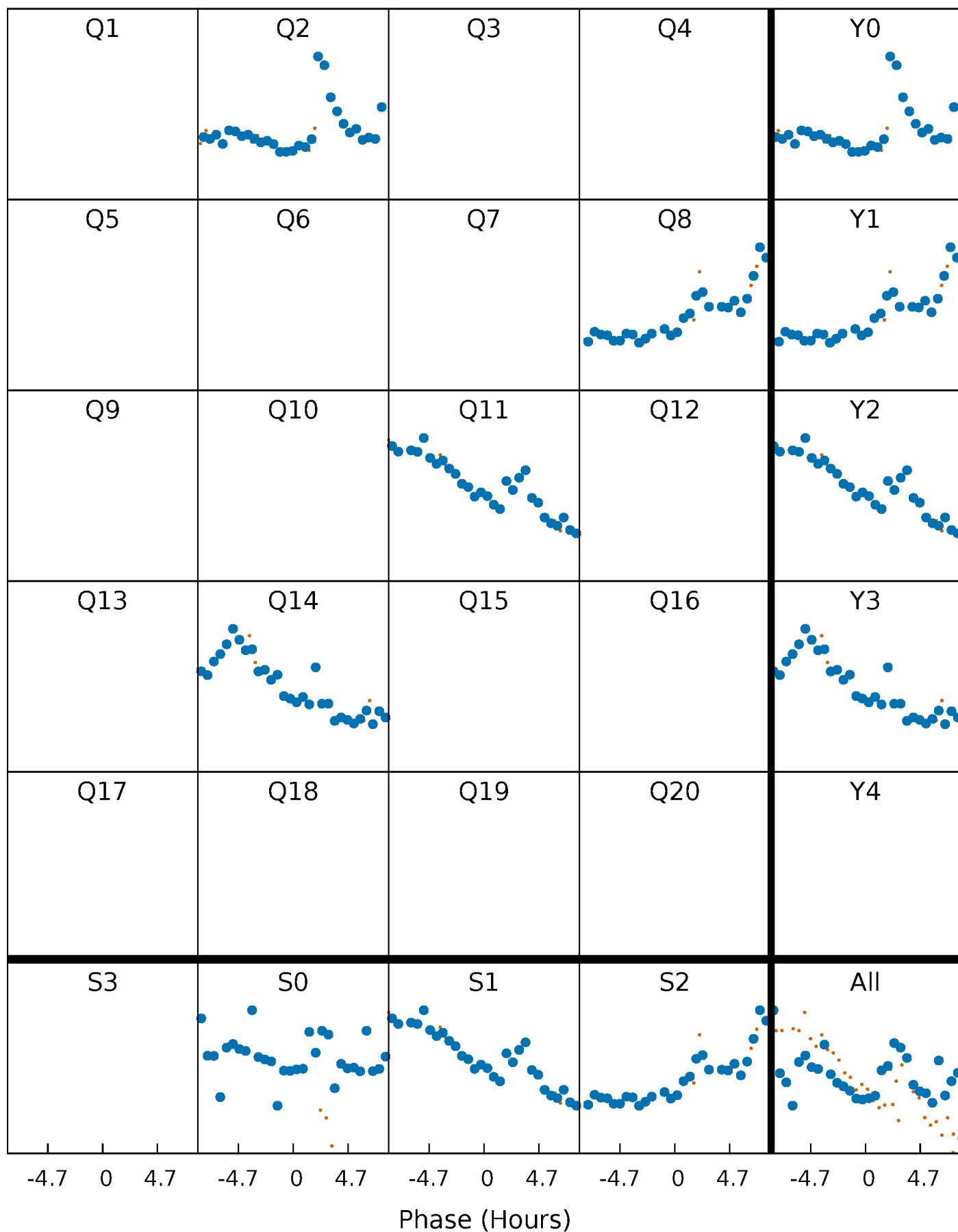


Planet 6 : Phased Whitened Flux Time Series (Fit Epoch/Period)



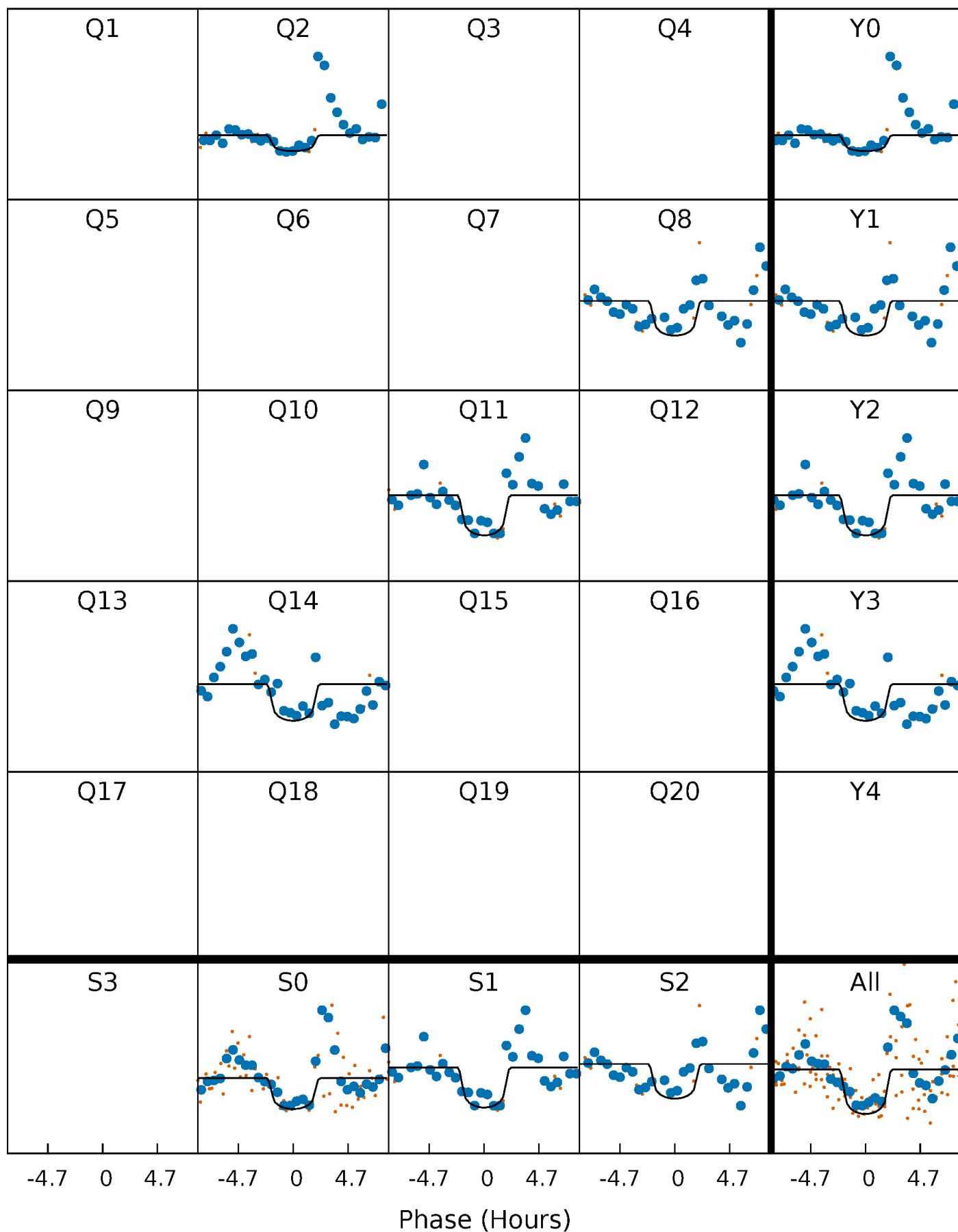
PDC Quarter-Phased Transit Curves

TCE 005428088-06 P=281.270626 Days $T_0=177.801168$ (BKJD)



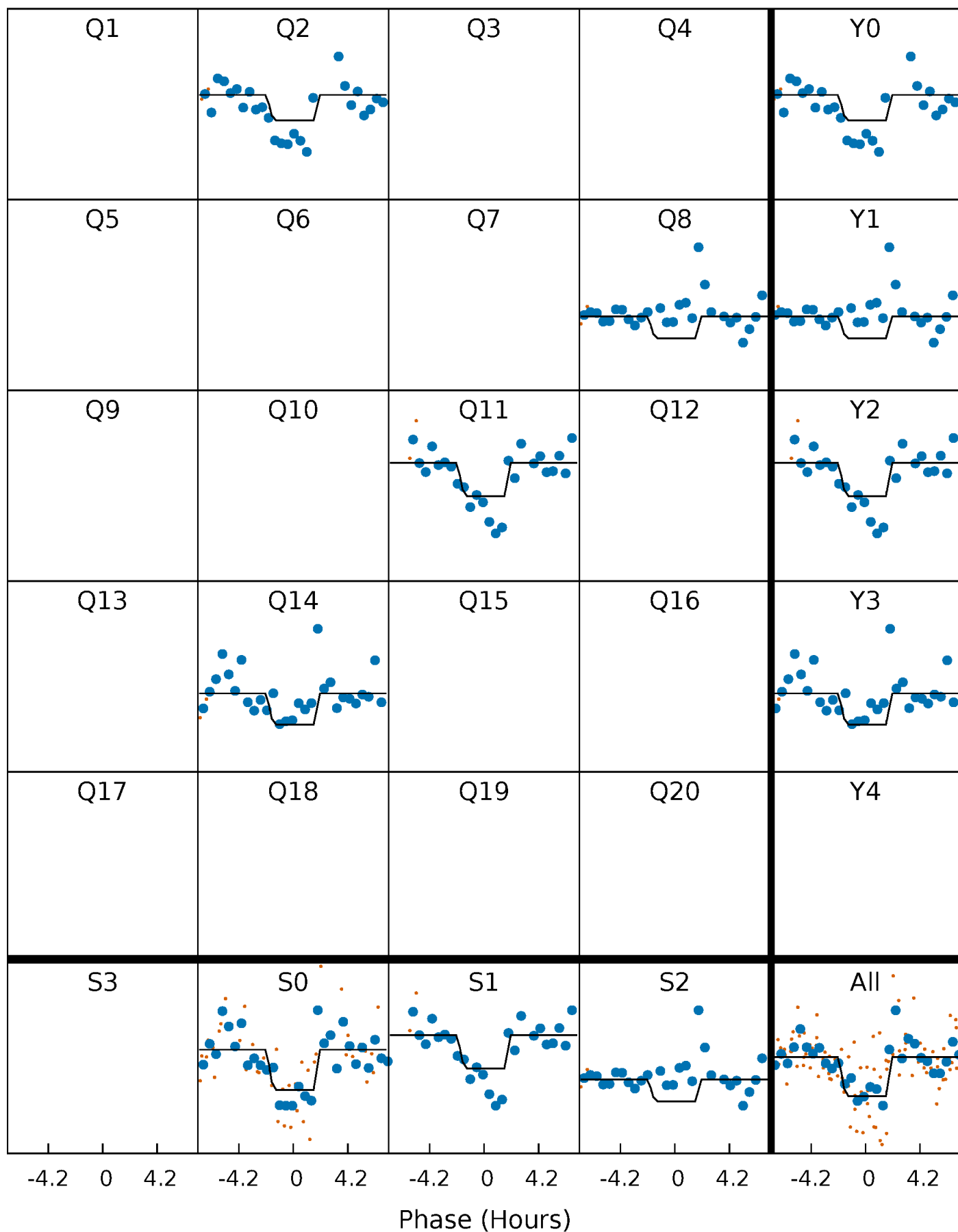
DV Quarter-Phased Transit Curves

TCE 005428088-06 $P=281.270626$ Days $T_0=177.801168$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

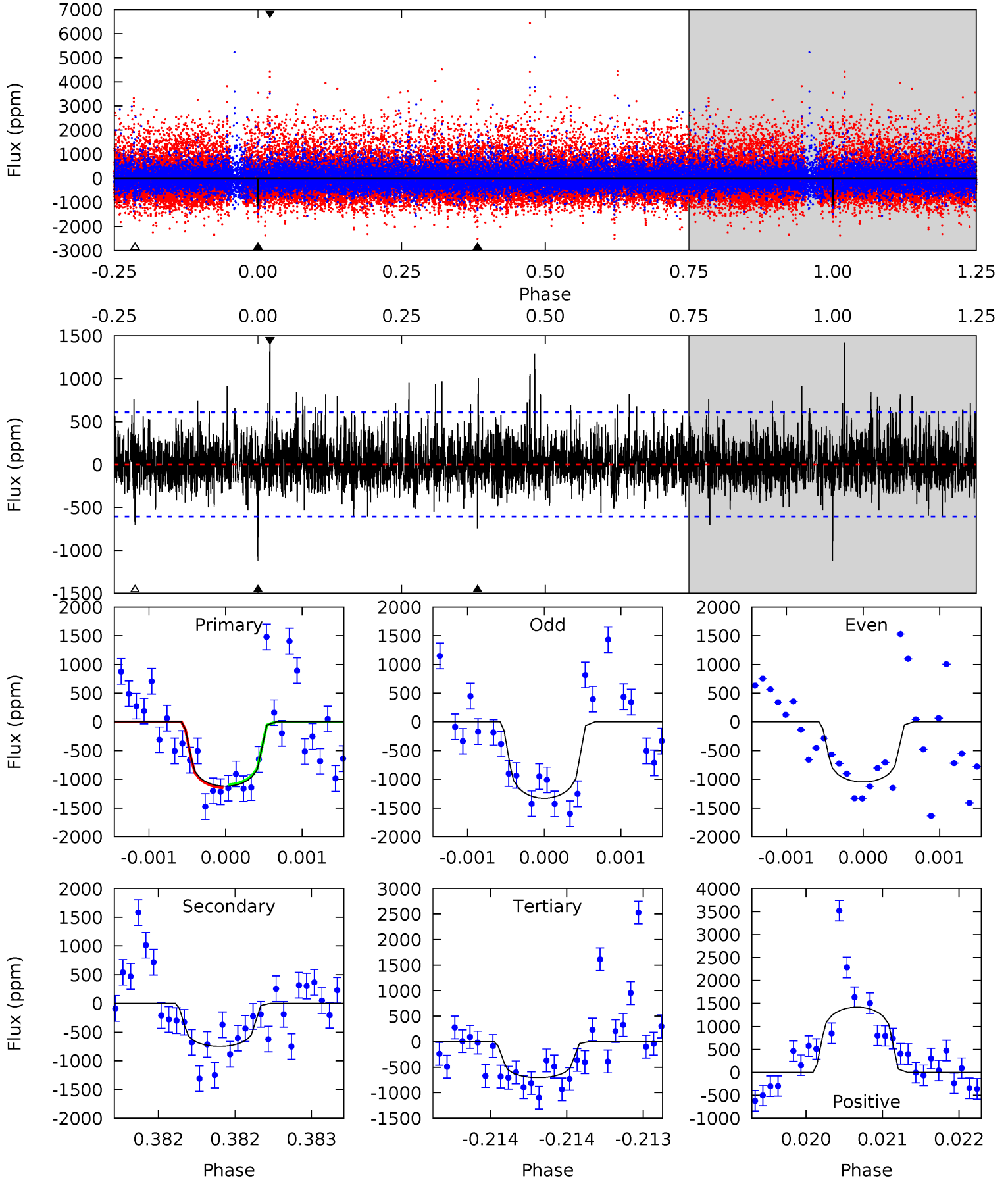
TCE 005428088-06 P=281.269834 Days $T_0=177.804525$ (BKJD)



DV Model-Shift Uniqueness Test

005428088-06, P = 281.270626 Days, E = 177.801168 Days

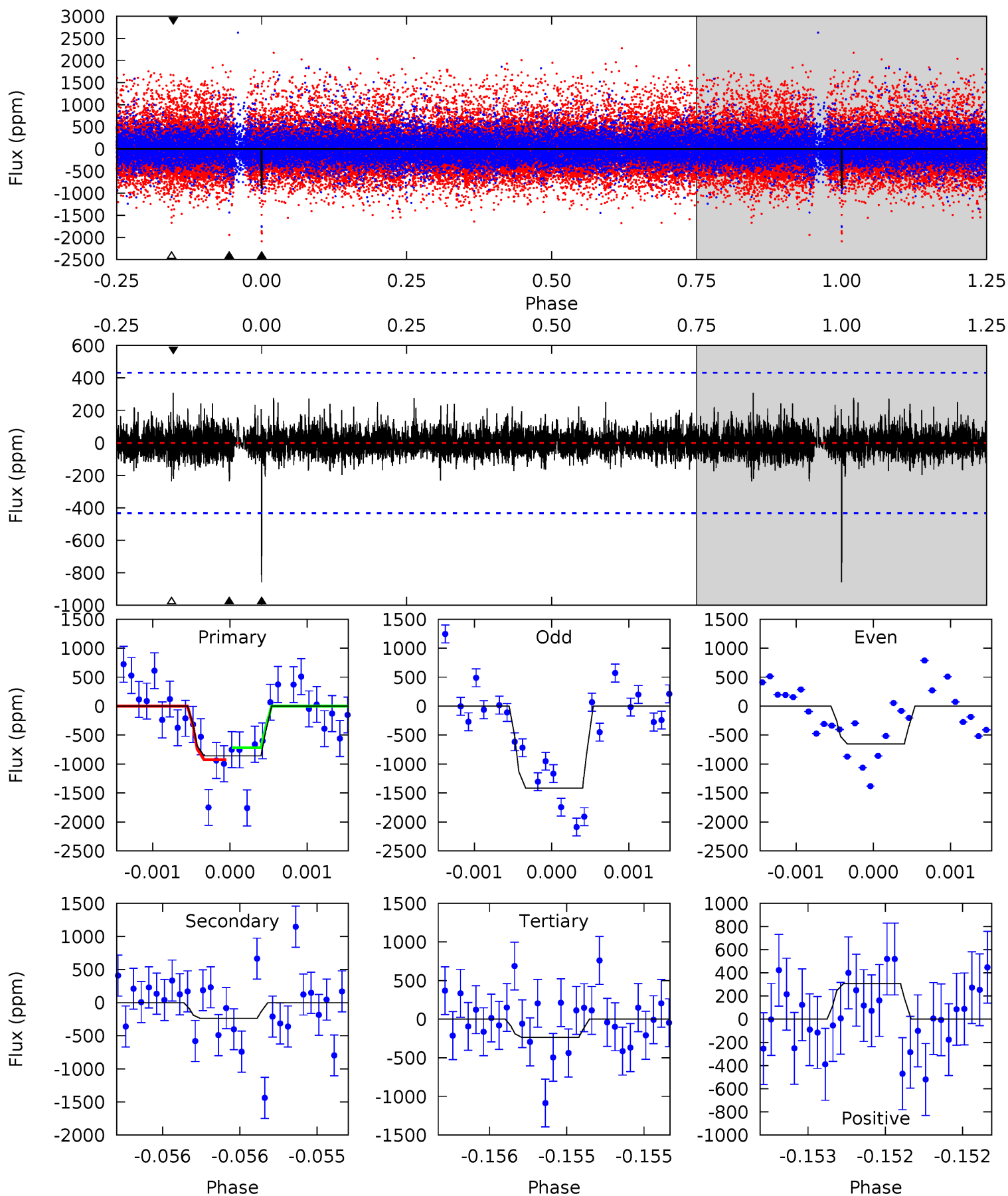
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.2	6.82	6.42	12.9	5.55	3.44	1.86	3.80	-2.73	0.40	-6.13	0.86	0.96	0.56	0.24



Alt Model-Shift Uniqueness Test

005428088-06, P = 281.269834 Days, E = 177.804525 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.0	3.04	3.04	3.94	5.55	3.44	0.74	7.98	7.08	0.00	-0.90	4.40	0.88	0.26	1.30



Stellar Parameters For KIC 005428088

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	3671^{+65}_{-80}	$4.797^{+0.045}_{-0.031}$	$-0.100^{+0.100}_{-0.100}$	$0.454^{+0.032}_{-0.044}$	$0.472^{+0.034}_{-0.046}$	$7.100^{+1.752}_{-0.971}$
	+2%/-2%	+1%/-1%	+100%/-100%	+7%/-10%	+7%/-10%	+25%/-14%
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 005428088-06 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-747 ± 110	$2.17^{+1.58}_{-1.39}$	188^{+5}_{-5}	3156^{+1294}_{-437}	$36694^{+258231}_{-23853}$
Alt.	-237 ± 78	$1.99^{+1.56}_{-1.33}$	188^{+5}_{-5}	2760^{+968}_{-403}	13990^{+91099}_{-10054}

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

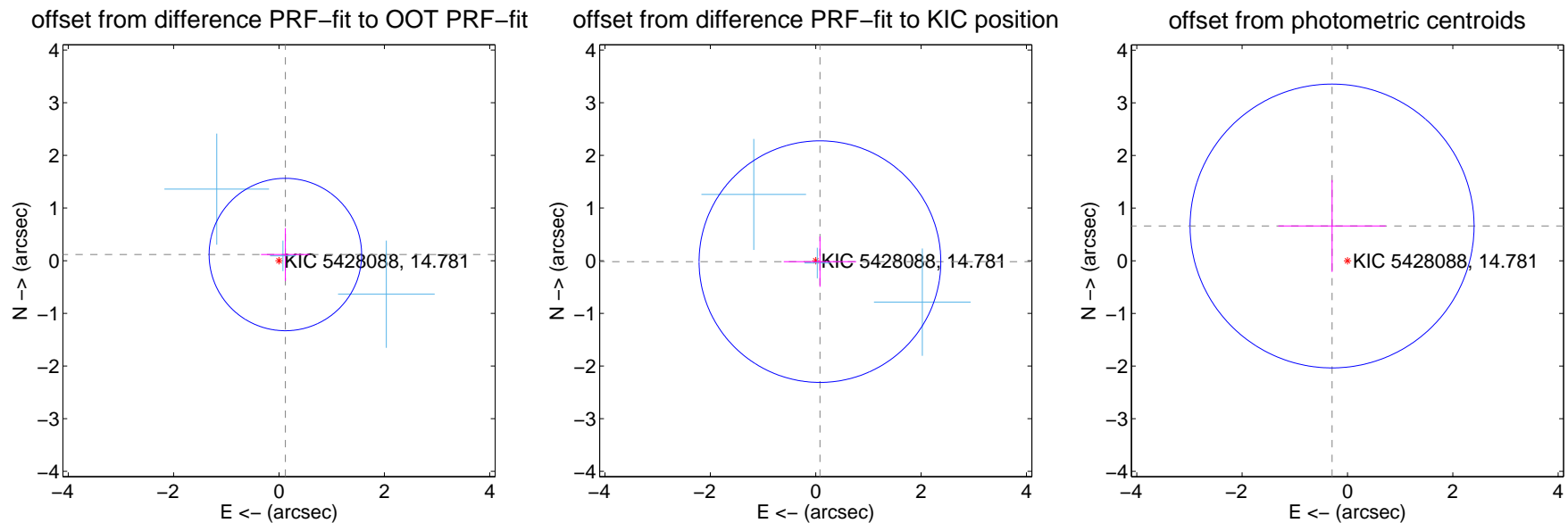
DV Centroid Data

Supplemental centroid analysis for 005428088-06. Kepler magnitude: 14.78. Transit SNR 7.89

There are 3 quarters with good PRF difference image offsets

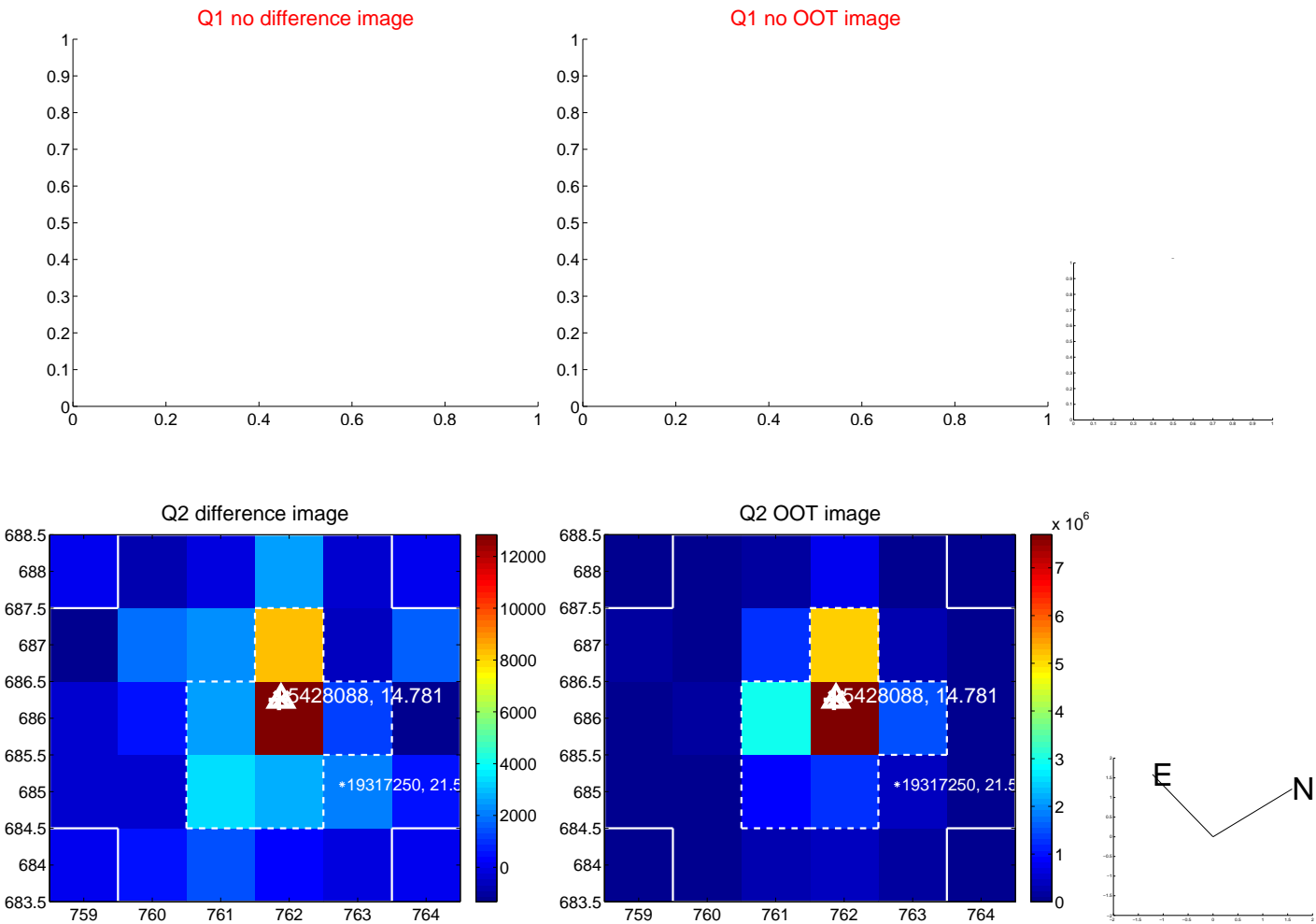
The direct PRF centroid is offset from the target star catalog position by about 0.15 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.169 ± 0.483	0.35	-0.121 ± 0.463	0.117 ± 0.503
PRF-fit source offset from KIC position	0.082 ± 0.765	0.11	-0.080 ± 0.688	-0.018 ± 0.478
photometric centroid source offset	0.72 ± 0.90	0.80	0.29 ± 1.02	0.66 ± 0.87

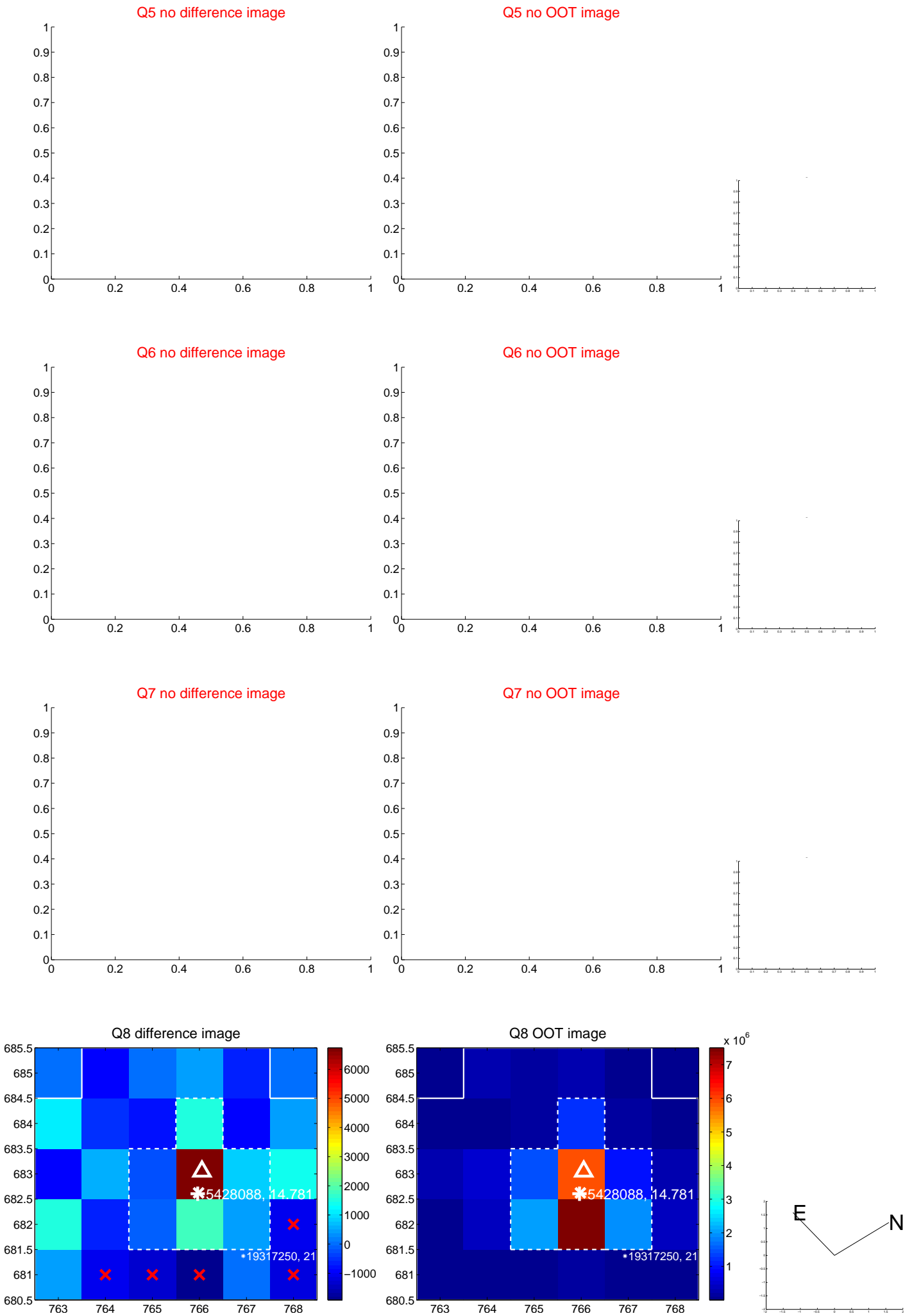


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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



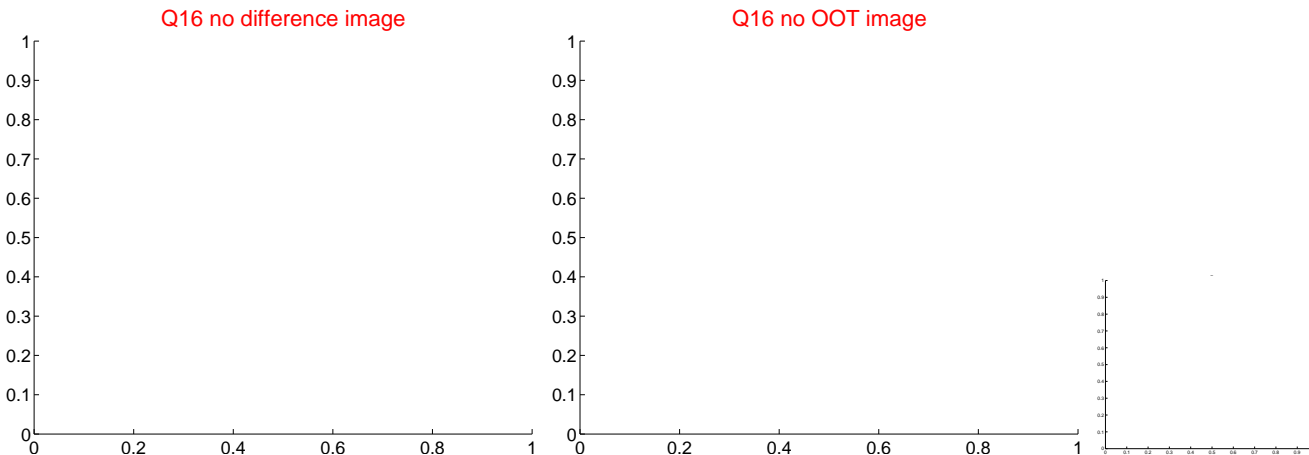
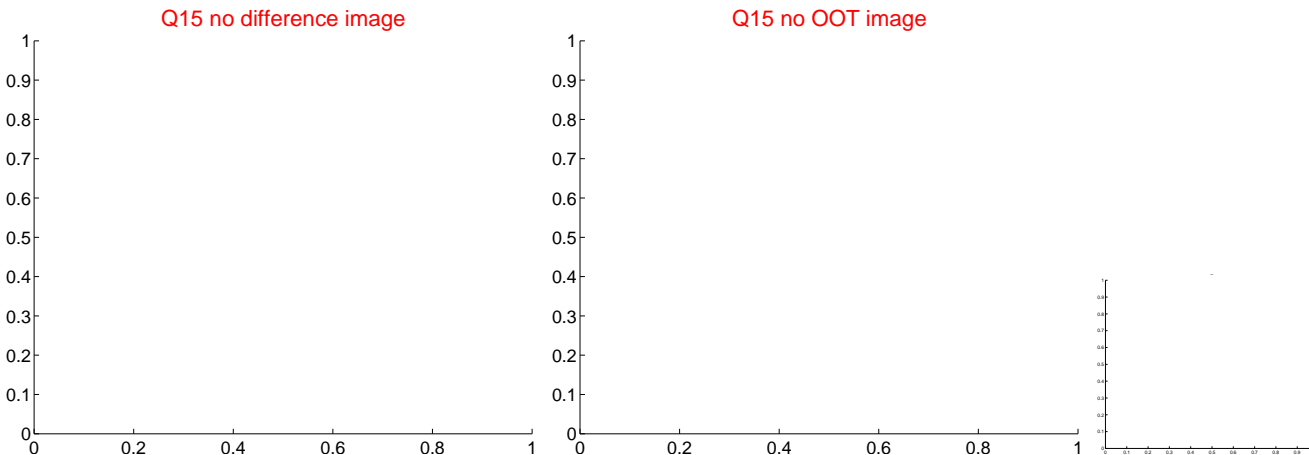
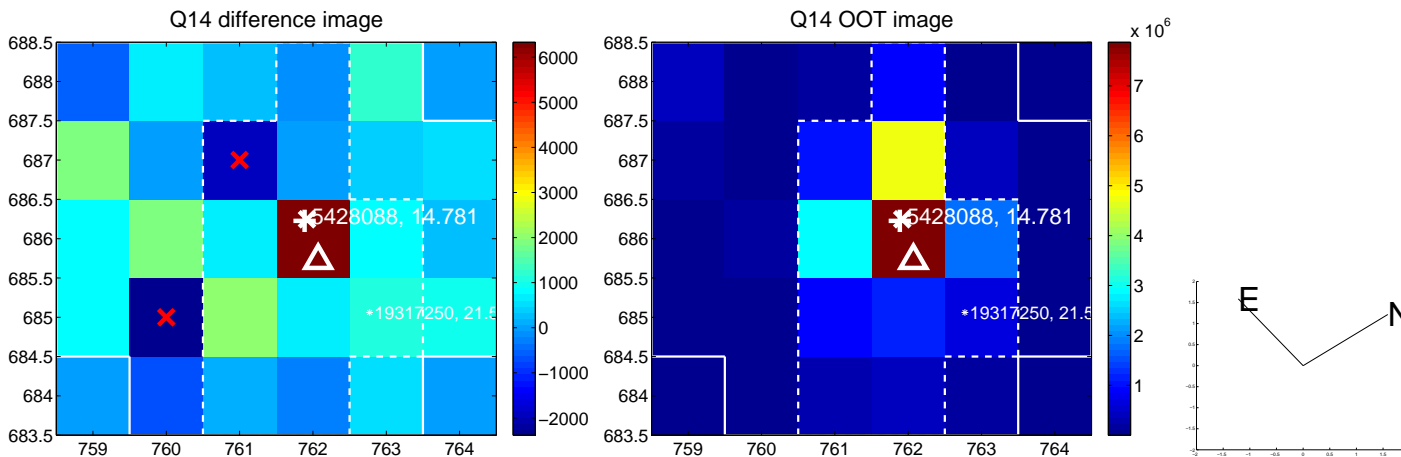
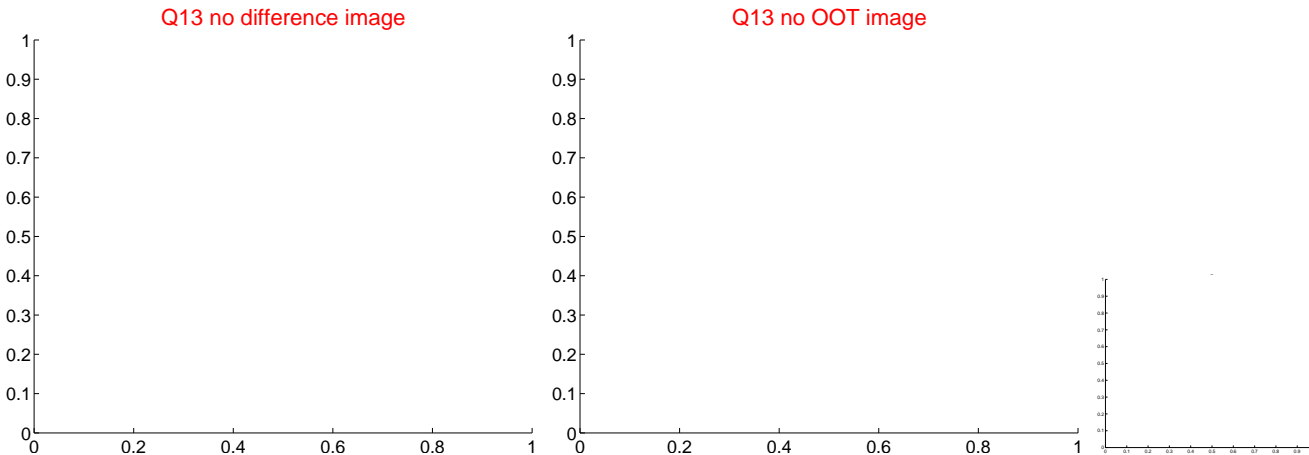
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



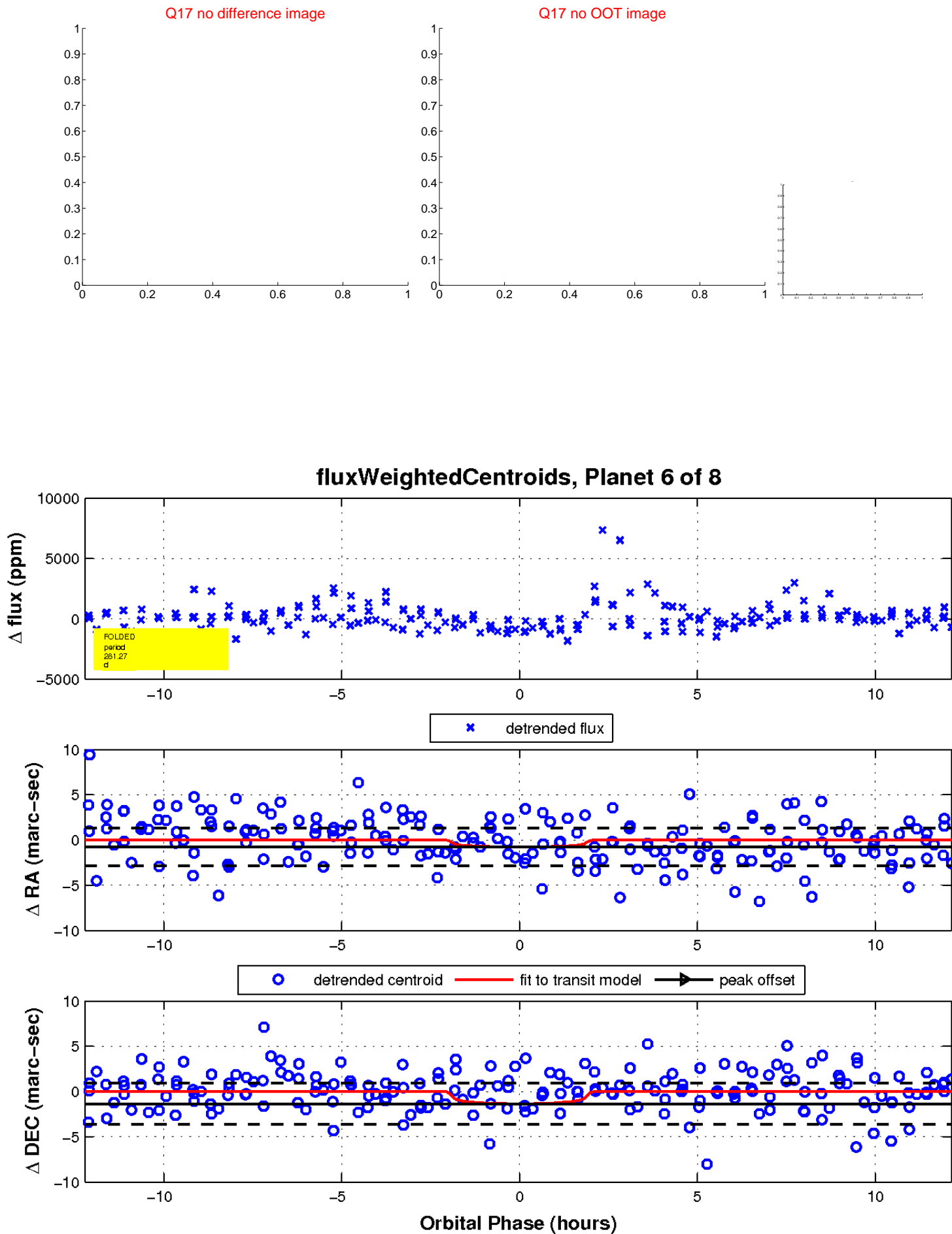
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

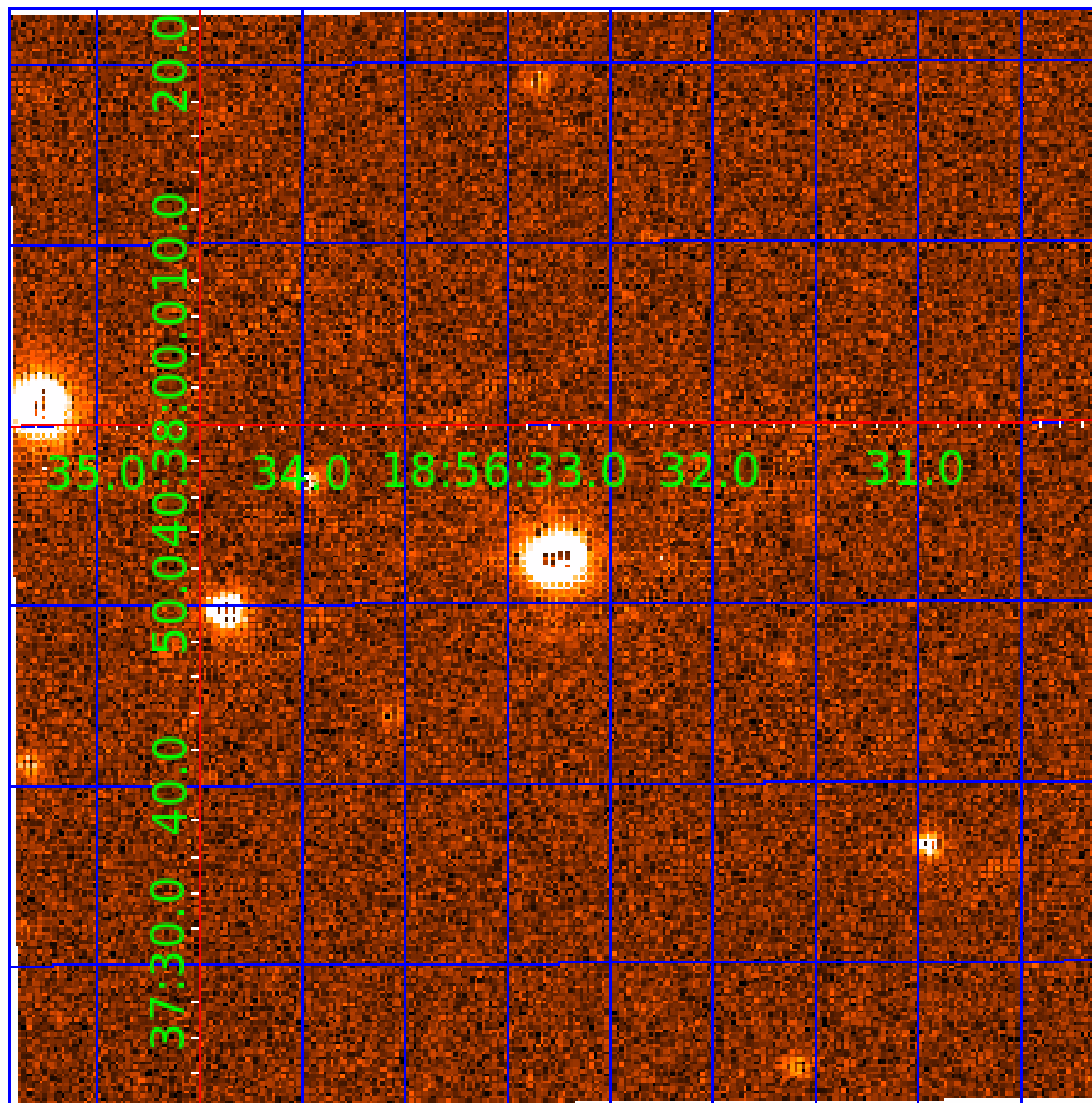


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 005428088

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})
005428088-01	OBS	No	125.402324	164.783818	65.8	1.016	13.7	0.4	0.45	3671	0.37	0.23
005428088-02	OBS	No	381.780949	293.480821	1710.4	11.023	10.4	8.7	0.45	3671	1.94	0.05
005428088-03	OBS	No	370.082677	176.708862	1075.5	3.766	9.5	5.3	0.45	3671	1.53	0.05
005428088-04	OBS	No	604.366682	341.322915	1404.2	11.938	14.3	6.1	0.45	3671	1.70	0.03
005428088-05	OBS	No	298.541217	283.491662	1442.5	5.009	9.9	7.0	0.45	3671	1.80	0.07
005428088-06	OBS	No	281.270626	177.801168	1498.0	4.087	11.7	7.9	0.45	3671	1.82	0.08
005428088-07	OBS	No	566.821192	220.406558	1902.2	8.205	10.1	8.8	0.45	3671	2.05	0.03
005428088-08	OBS	No	165.303847	232.412060	1917.0	2.500	12.0	-1.0	0.45	3671	1.97	0.16

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005428088-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_SKYE_ZUMA_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS
005428088-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_TER_DV—MOD_POS_DV
005428088-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS
005428088-04	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
005428088-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—CENT_FEW_DIFFS
005428088-06	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
005428088-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005428088-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_NOFITS

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

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

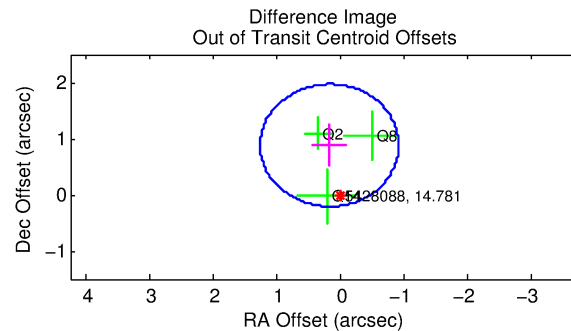
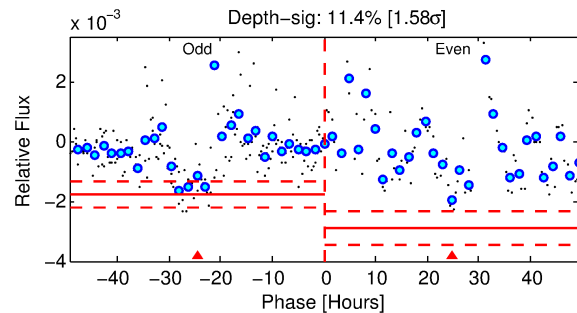
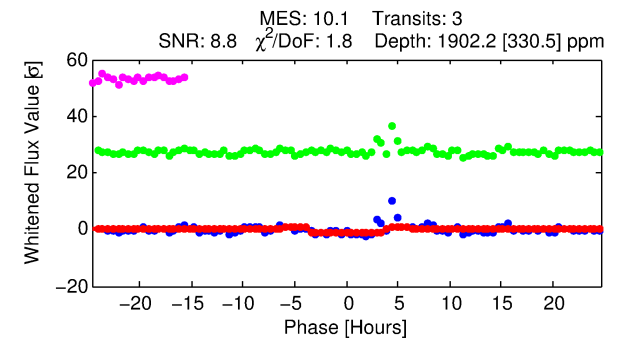
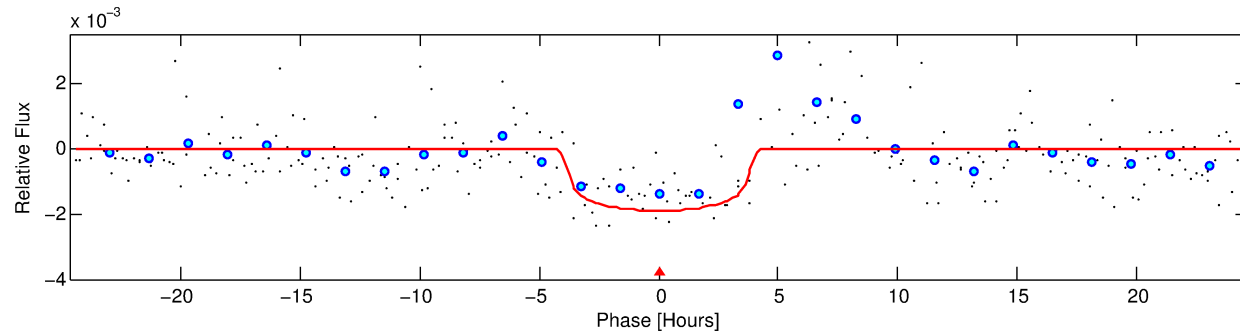
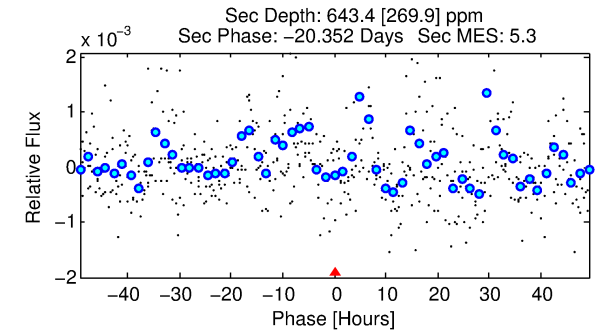
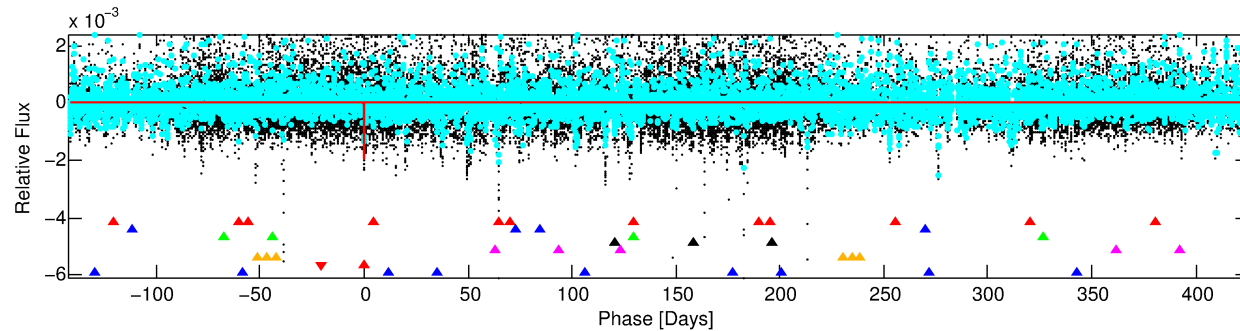
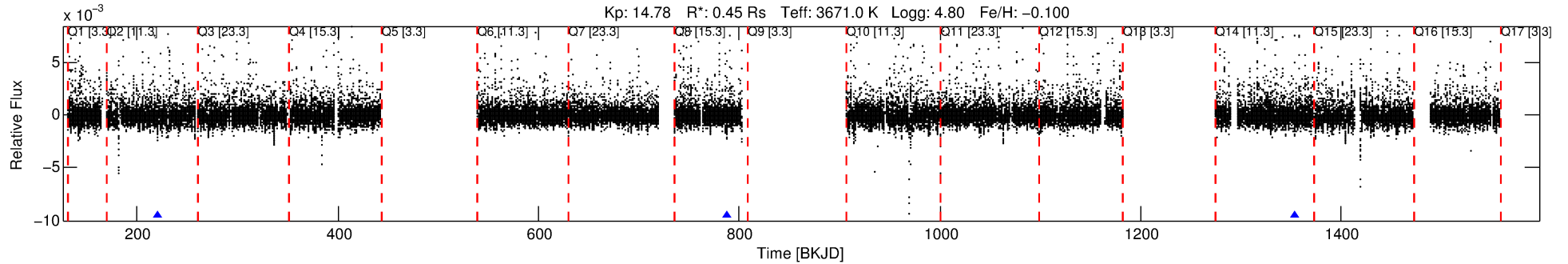
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 005428088-07

No Significant Match Found

DV One-Page Summary

KIC: 5428088 Candidate: 7 of 8 Period: 566.821 d



DV Fit Results:

Period = 566.82119 [0.00879] d
Epoch = 220.4066 [0.0112] BKJD
Rp/R* = 0.0414 [0.0133]
a/R* = 456.27 [595.74]
b = 0.58 [1.49]
Seff = 0.03 [0.00]
Teq = 107 [3] K
Rp = 2.05 [0.69] Re
a = 1.0432 [0.0764] AU
Ag = 91703.15 [70885.27] [1.29 σ]
Teffp = 2875 [555] K [4.99 σ]

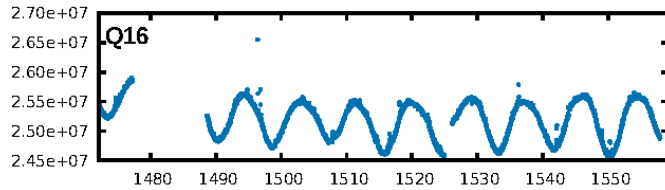
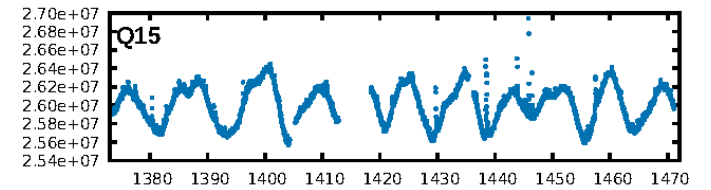
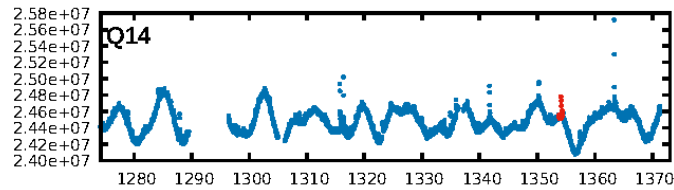
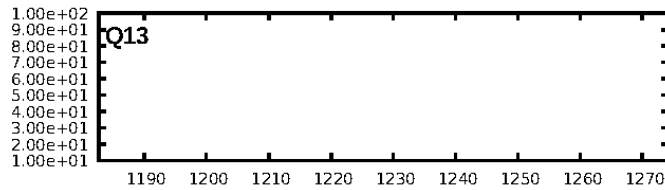
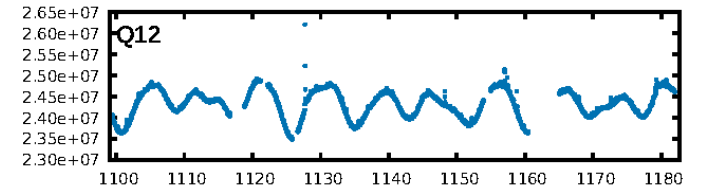
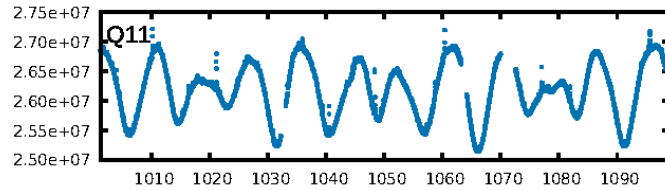
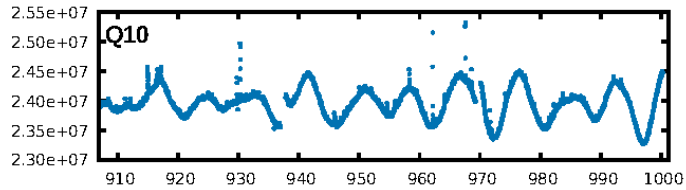
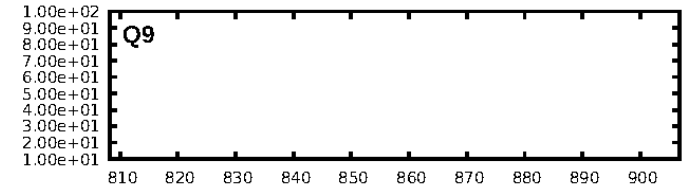
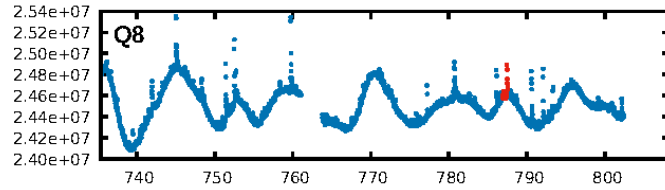
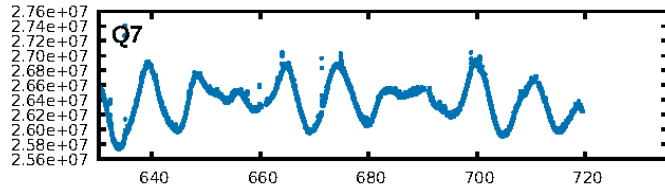
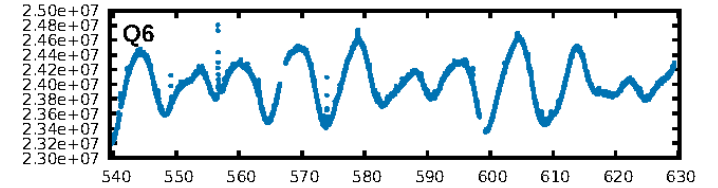
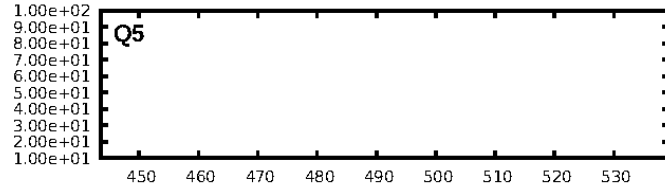
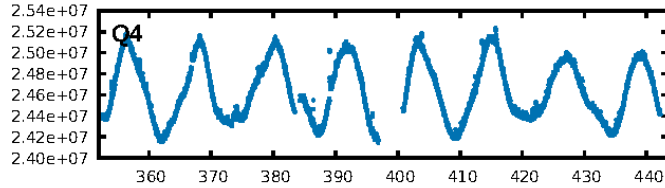
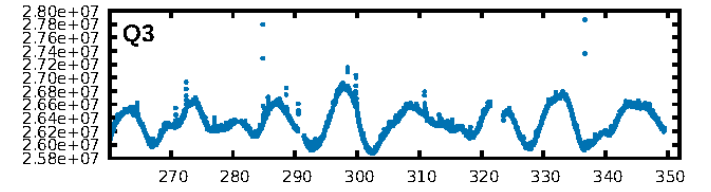
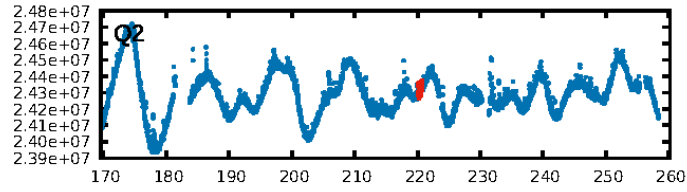
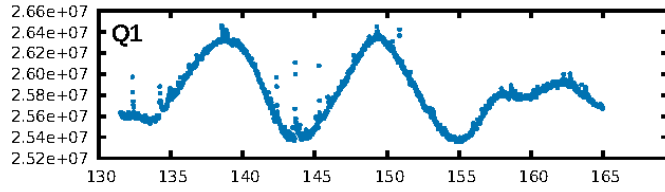
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [323.17 σ]
LongPeriod-sig: 100.0% [62.21 σ]
ModelChiSquare2-sig: 4.5%
ModelChiSquareGof-sig: 51.8%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 1.714
Centroid-sig: 15.2%
Centroid-so: 0.737 arcsec [1.02 σ]
OotOffset-rm: 0.896 arcsec [2.47 σ]
OotOffset-st: 2/0/1/0 [3]
KicOffset-rm: 0.802 arcsec [2.12 σ]
KicOffset-st: 2/0/1/0 [3]
DiffImageQuality-fgm: 0.67 [2/3]
DiffImageOverlap-fno: 1.00 [3/3]

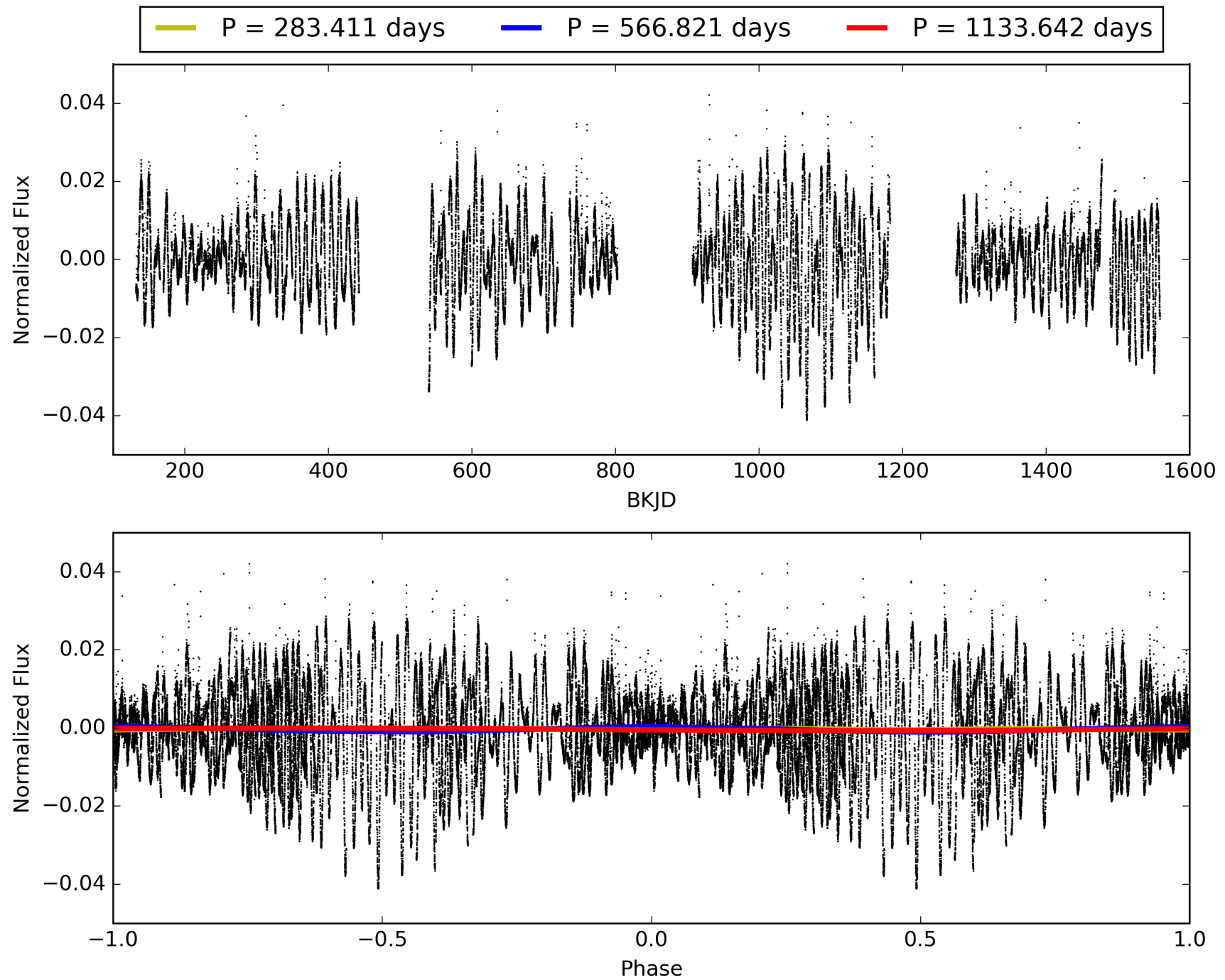
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 07:25:41 Z

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

TCE 005428088-07, PDC Light Curves

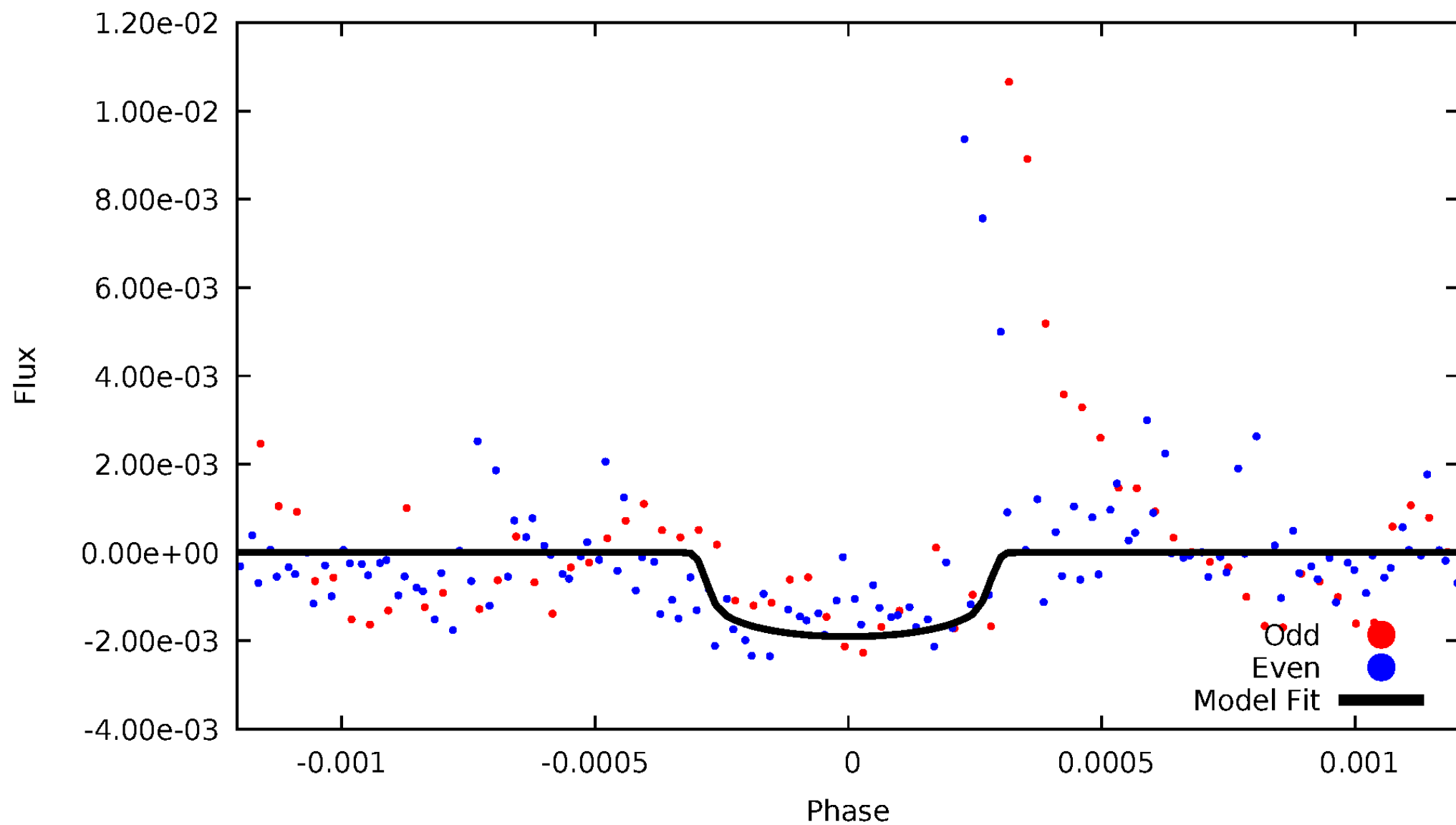


TCE 005428088-07



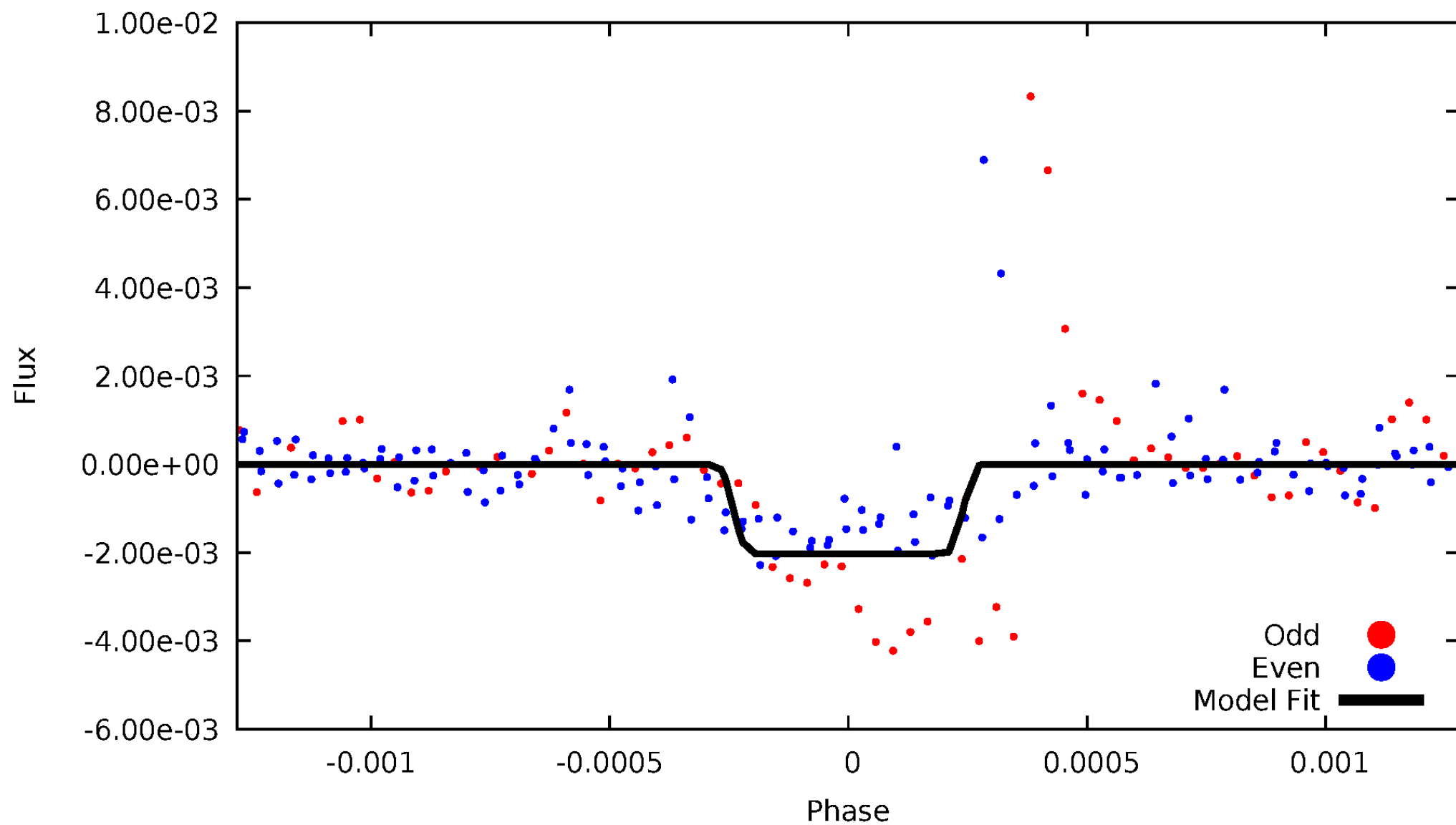
DV Odd/Even

TCE 005428088-07



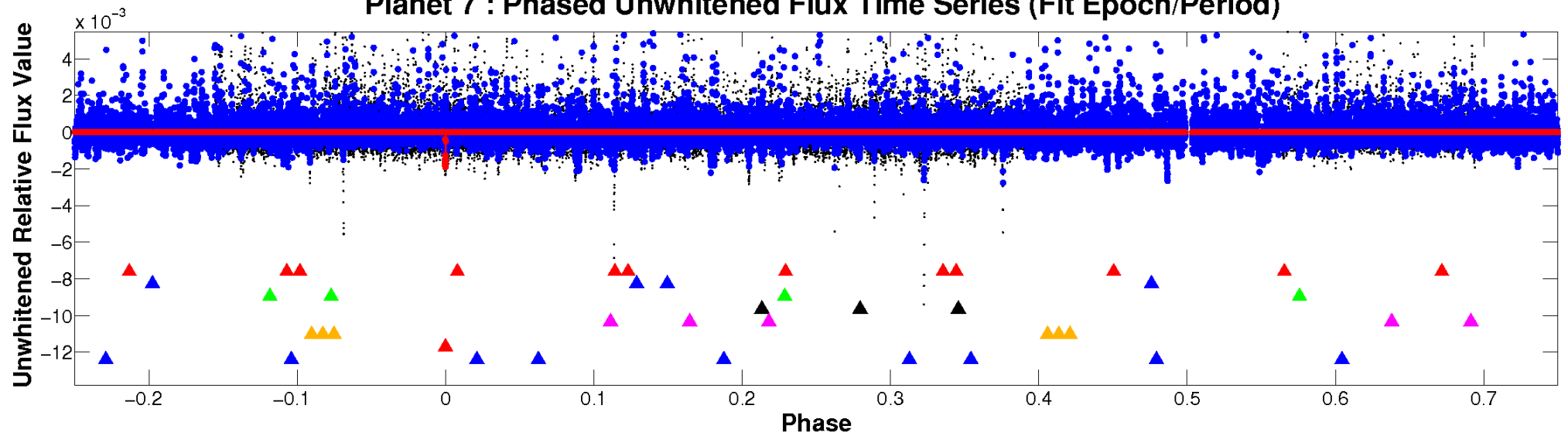
ALT Odd/Even

TCE 005428088-07

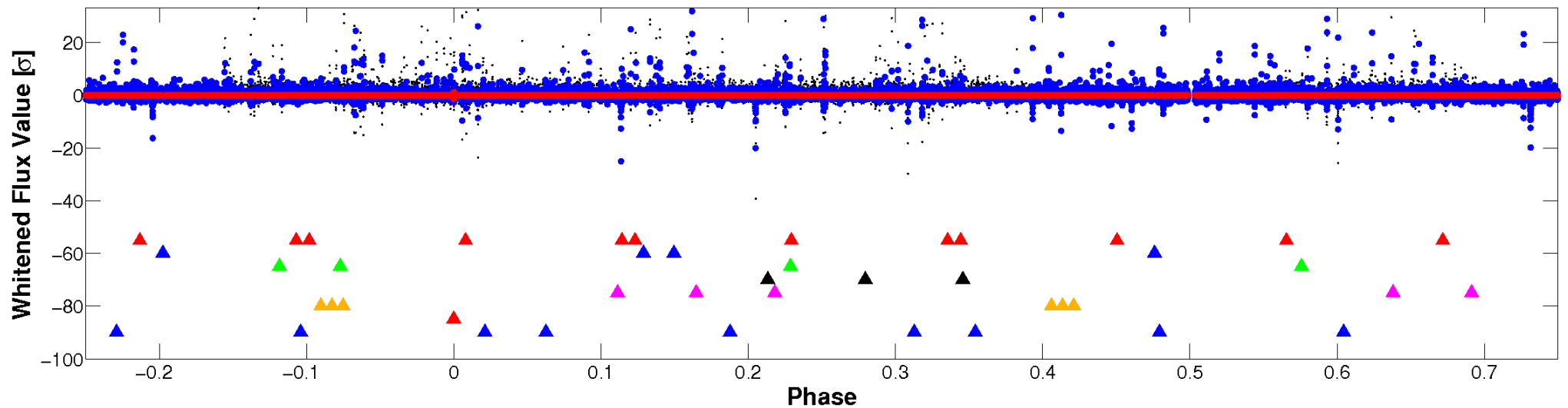


Non-Whitened Vs. Whitened Light Curve

Planet 7 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

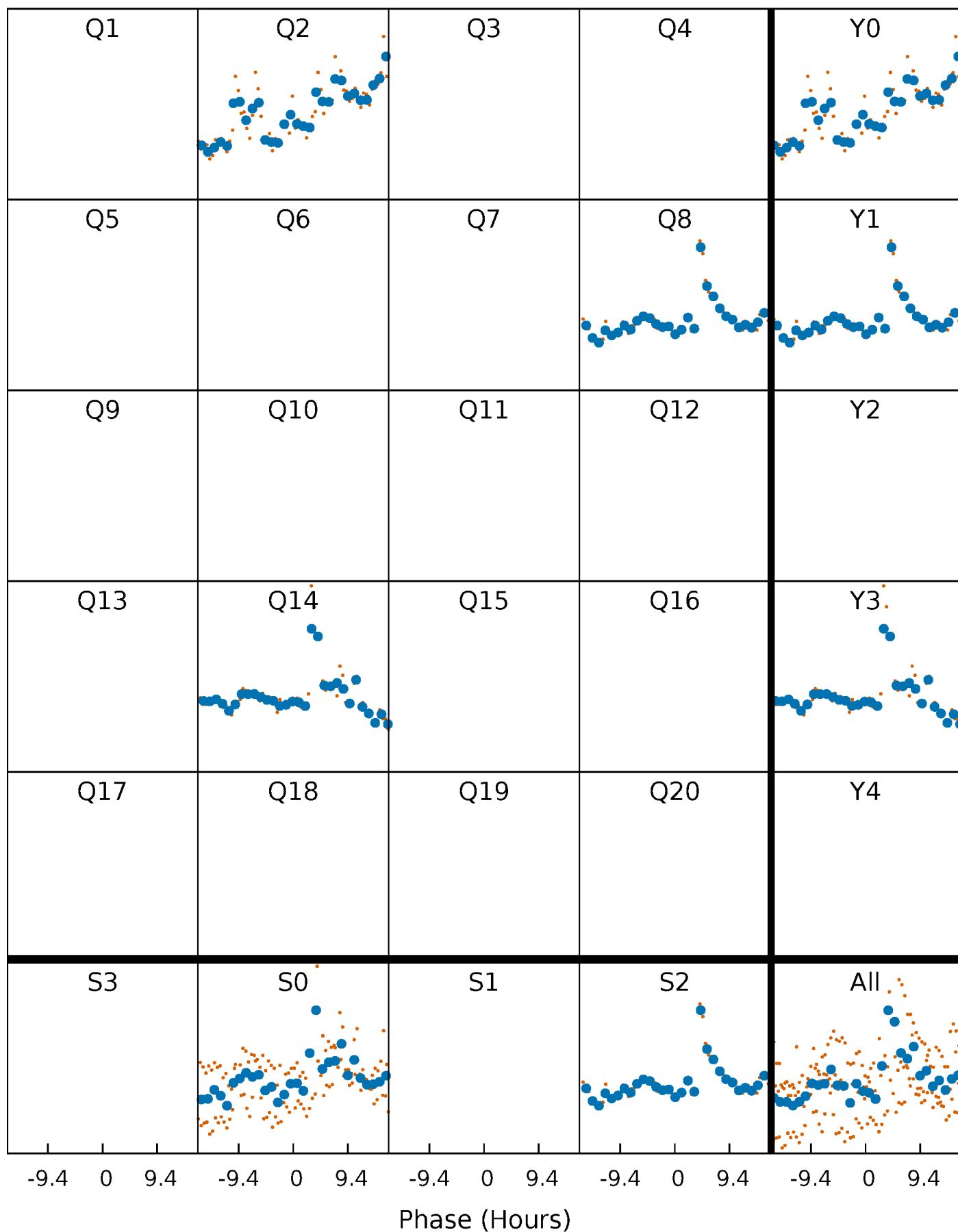


Planet 7 : Phased Whitened Flux Time Series (Fit Epoch/Period)



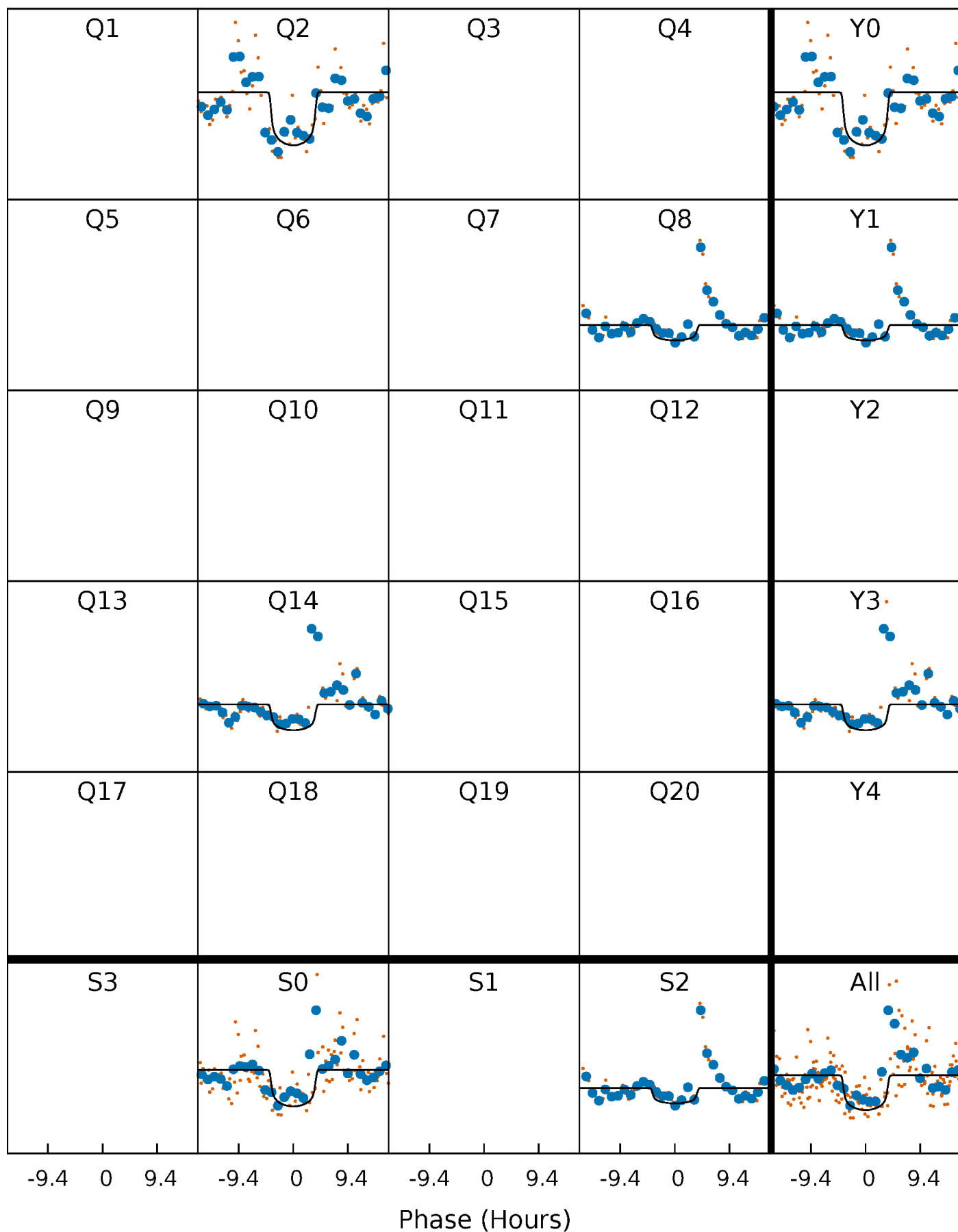
PDC Quarter-Phased Transit Curves

TCE 005428088-07 P=566.821192 Days $T_0=220.406558$ (BKJD)



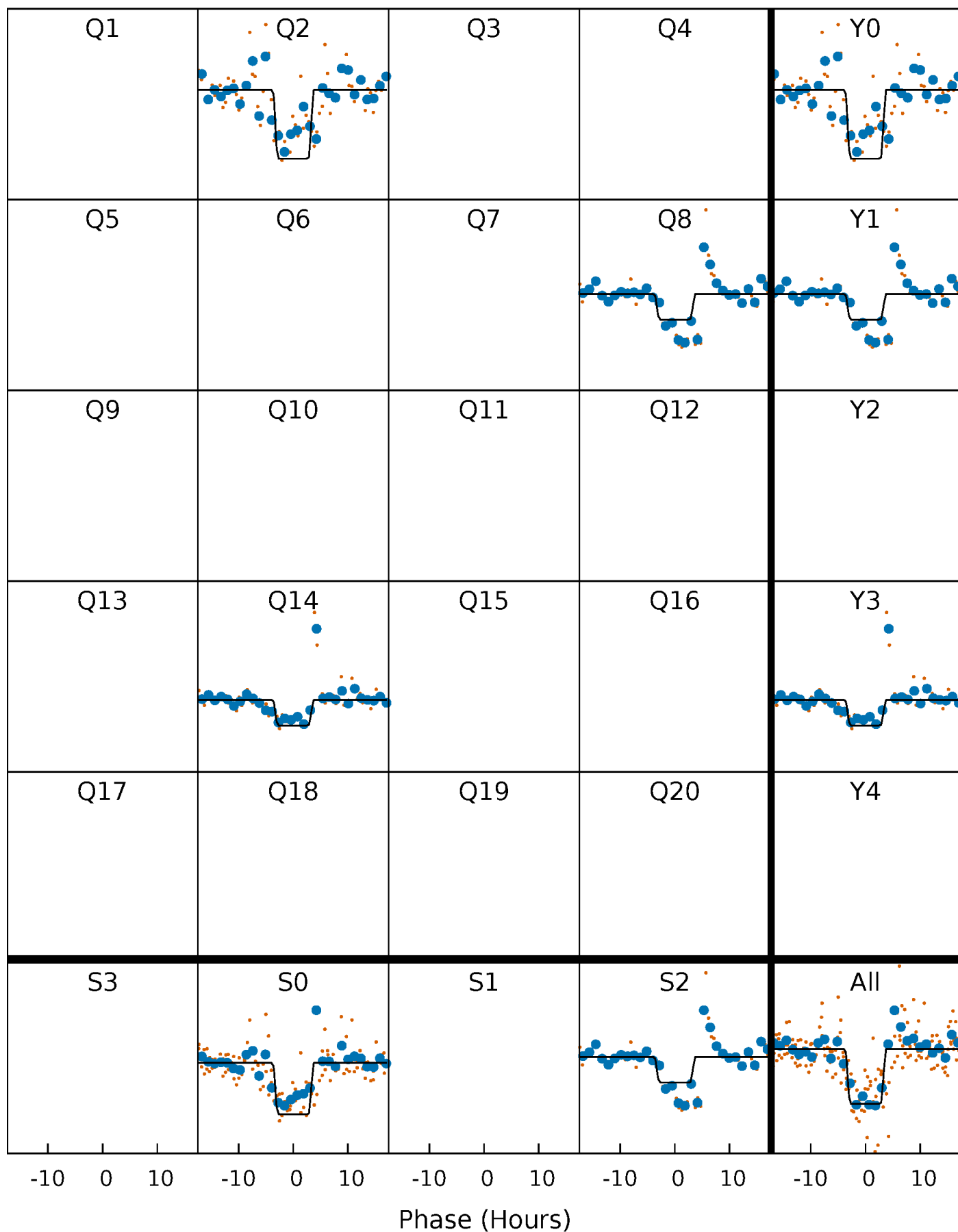
DV Quarter-Phased Transit Curves

TCE 005428088-07 $P=566.821192$ Days $T_0=220.406558$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

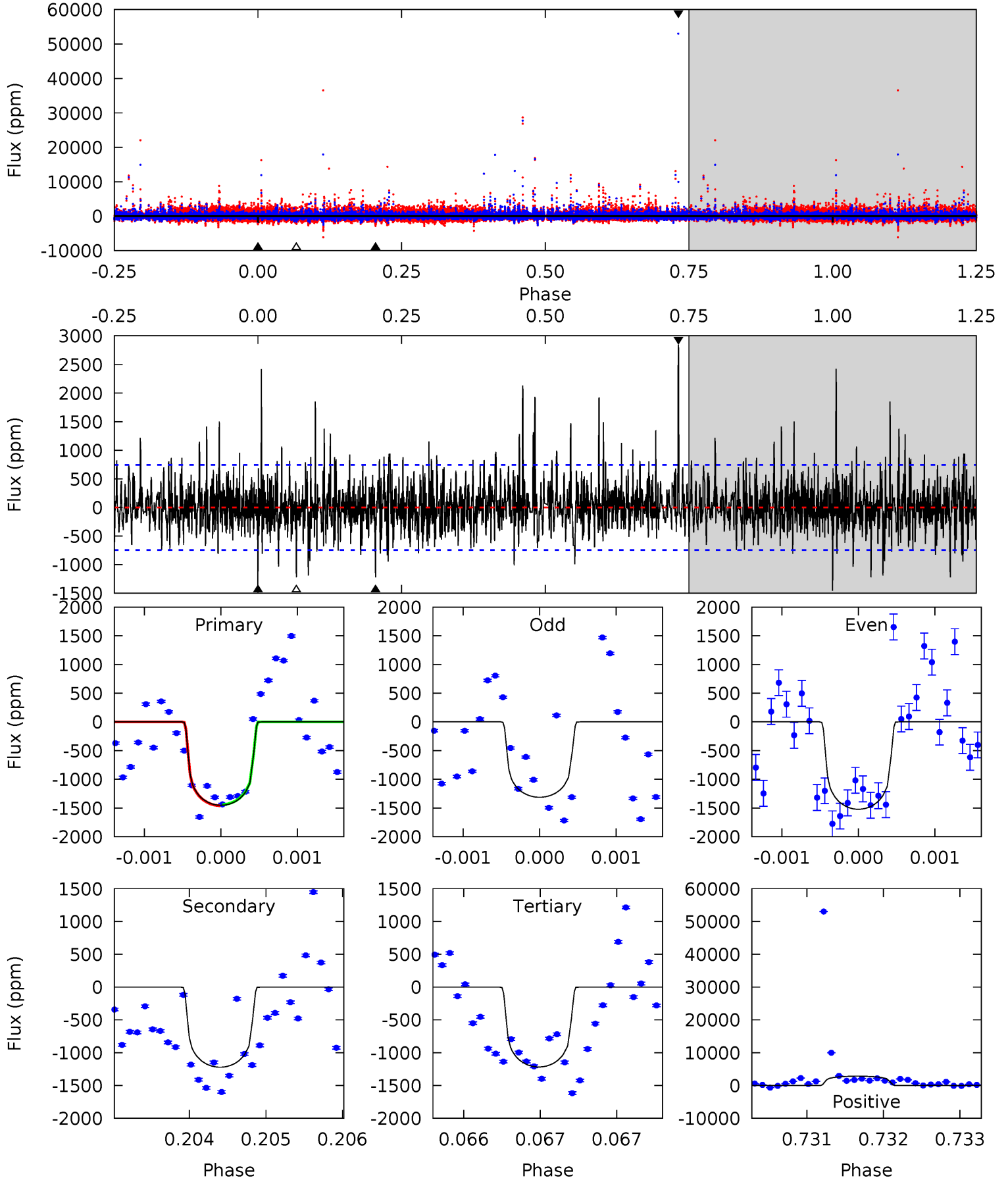
TCE 005428088-07 $P=566.847388$ Days $T_0=220.343562$ (BKJD)



DV Model-Shift Uniqueness Test

005428088-07, P = 566.821192 Days, E = 220.406558 Days

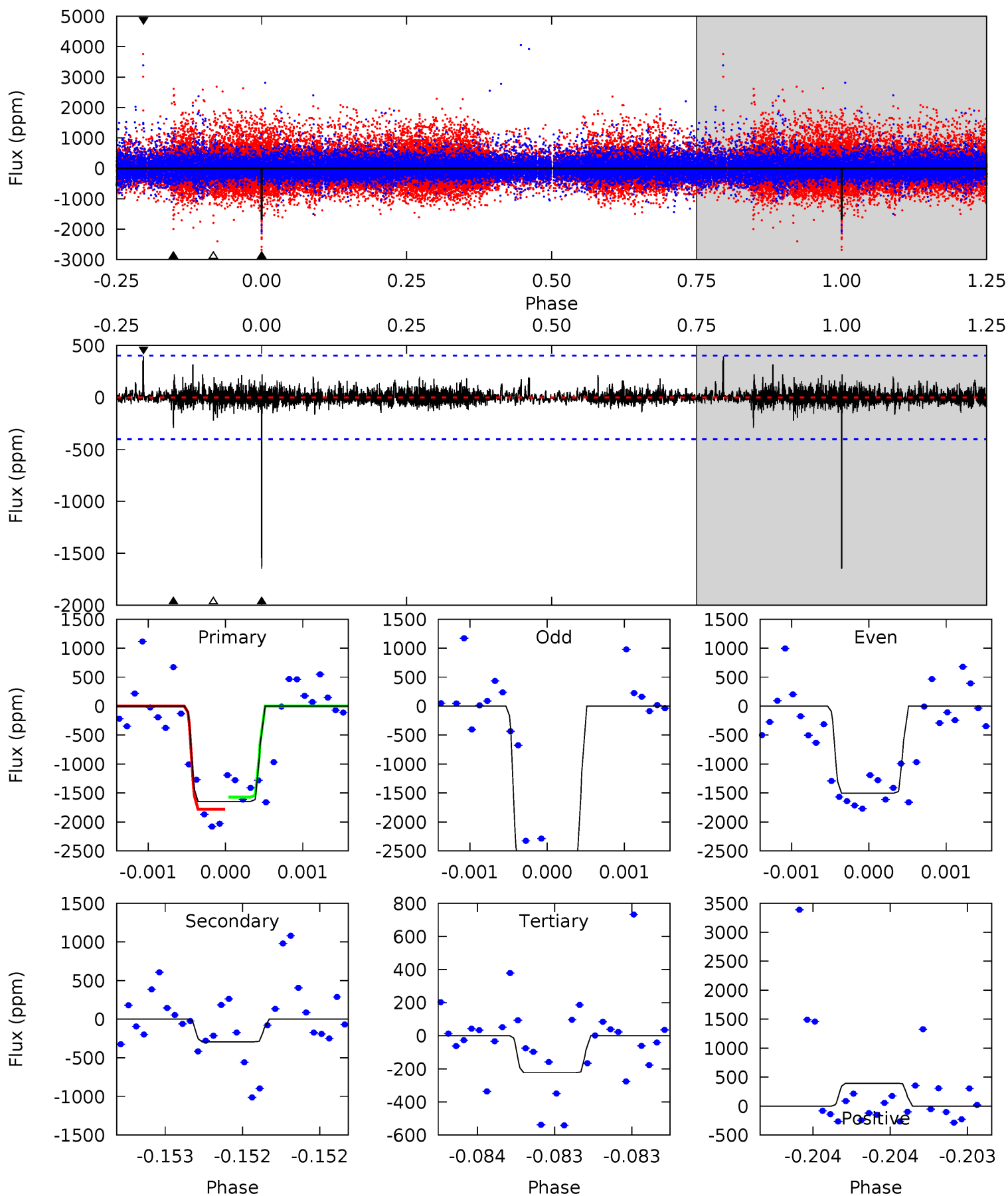
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.8	9.07	9.04	21.1	5.53	3.41	2.54	1.74	-10.3	0.03	-12.0	0.54	0.81	0.66	0.07



Alt Model-Shift Uniqueness Test

005428088-07, P = 566.847388 Days, E = 220.343562 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
22.7	4.04	3.08	5.45	5.56	3.46	0.61	19.7	17.3	0.96	-1.41	8.74	1.17	0.19	1.45



Stellar Parameters For KIC 005428088

	$T_{\text{eff}} (K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	3671^{+65}_{-80}	$4.797^{+0.045}_{-0.031}$	$-0.100^{+0.100}_{-0.100}$	$0.454^{+0.032}_{-0.044}$	$0.472^{+0.034}_{-0.046}$	$7.100^{+1.752}_{-0.971}$
	+2%/-2%	+1%/-1%	+100%/-100%	+7%/-10%	+7%/-10%	+25%/-14%
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 005428088-07 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-1221 ± 135	$2.03^{+0.67}_{-0.67}$	149^{+4}_{-4}	3482^{+503}_{-308}	$178526^{+222009}_{-79093}$
Alt.	-293 ± 72	$2.24^{+0.65}_{-0.72}$	149^{+4}_{-4}	2756^{+311}_{-203}	35780^{+42187}_{-16659}

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

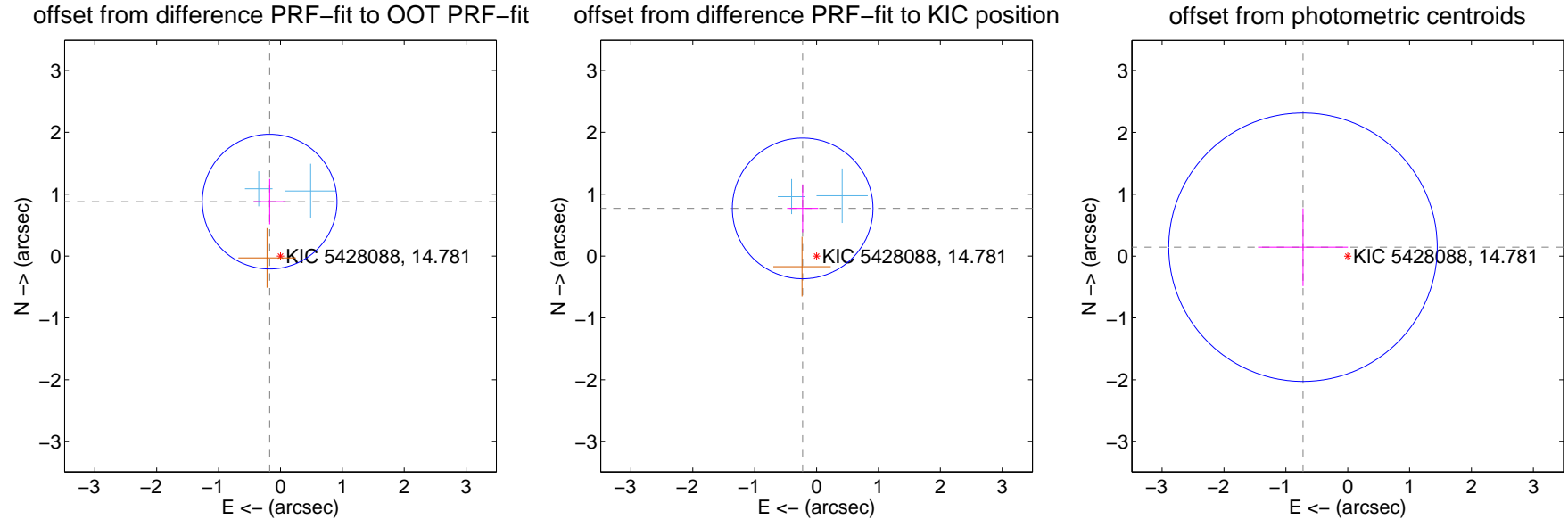
DV Centroid Data

Supplemental centroid analysis for 005428088-07. Kepler magnitude: 14.78. Transit SNR 8.79

There are 2 quarters with good PRF difference image offsets

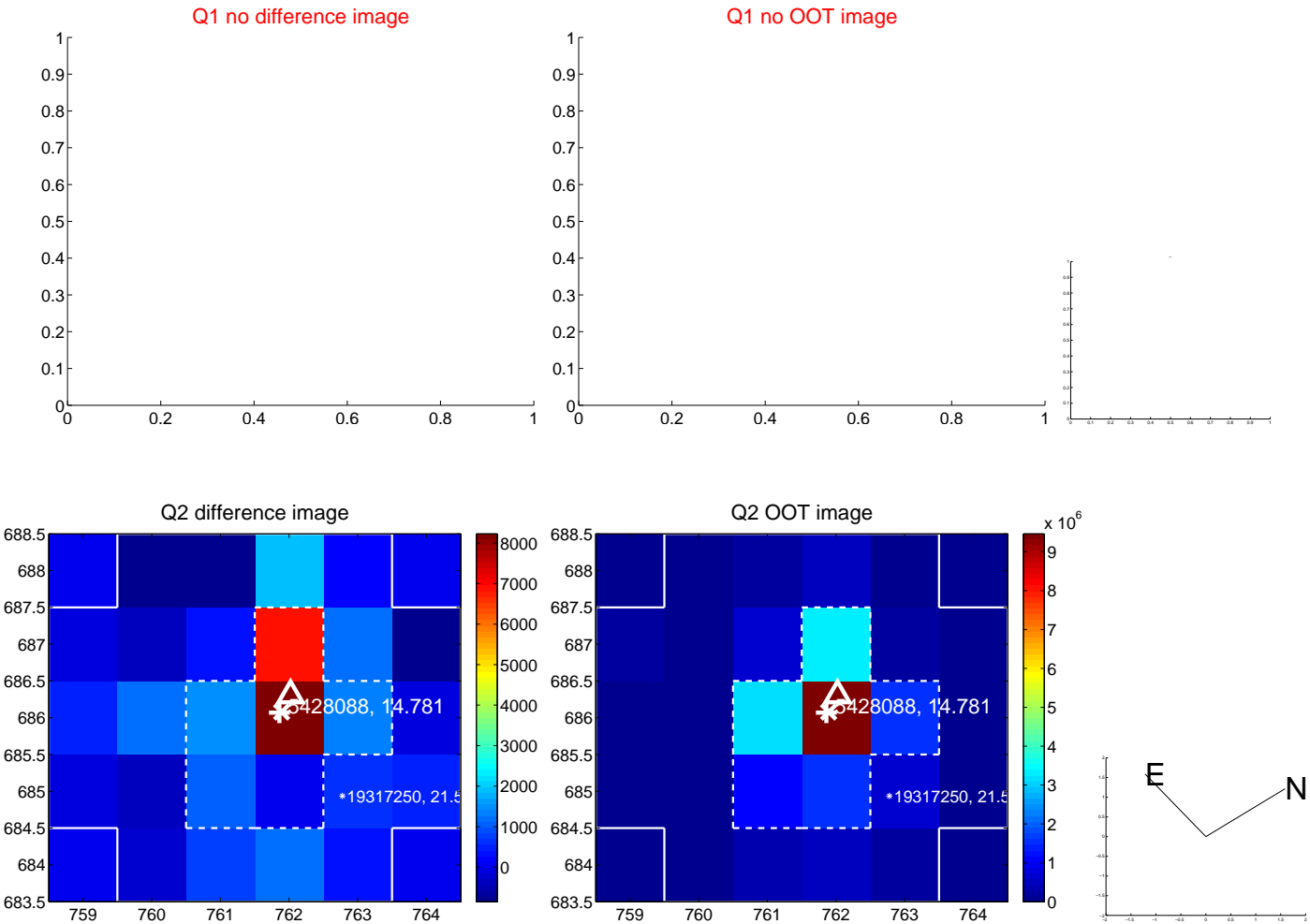
The direct PRF centroid is offset from the target star catalog position by about 0.14 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.896 ± 0.363	2.47	0.175 ± 0.259	0.879 ± 0.366
PRF-fit source offset from KIC position	0.802 ± 0.379	2.12	0.225 ± 0.251	0.770 ± 0.388
photometric centroid source offset	0.74 ± 0.72	1.02	0.72 ± 0.73	0.14 ± 0.63

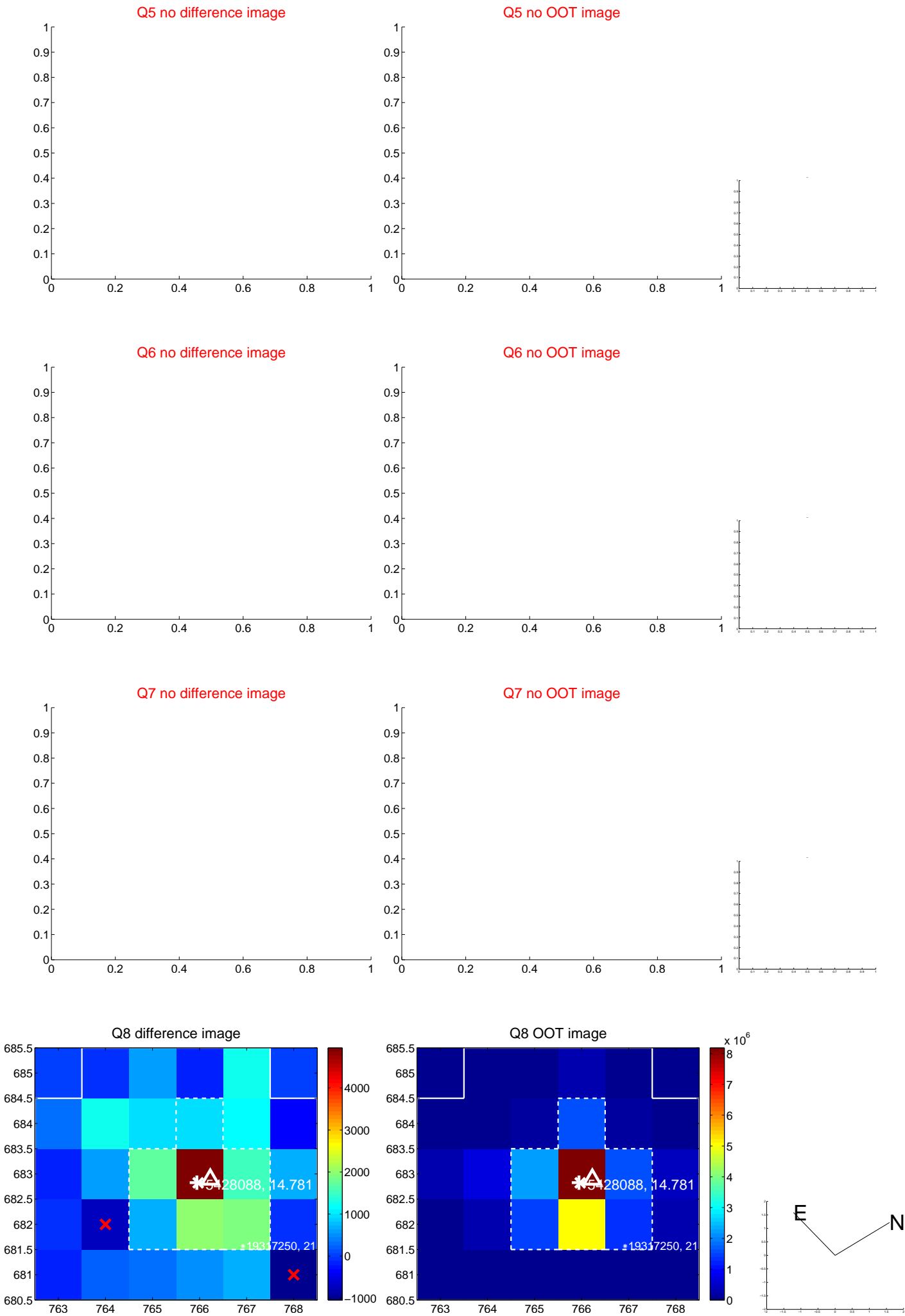


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ . Red *: target star. Blue *: Other stars. Text next to a star gives its KIC ID and kepmag. KIC IDs > 15,000,000 are from the UKIRT catalog.

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



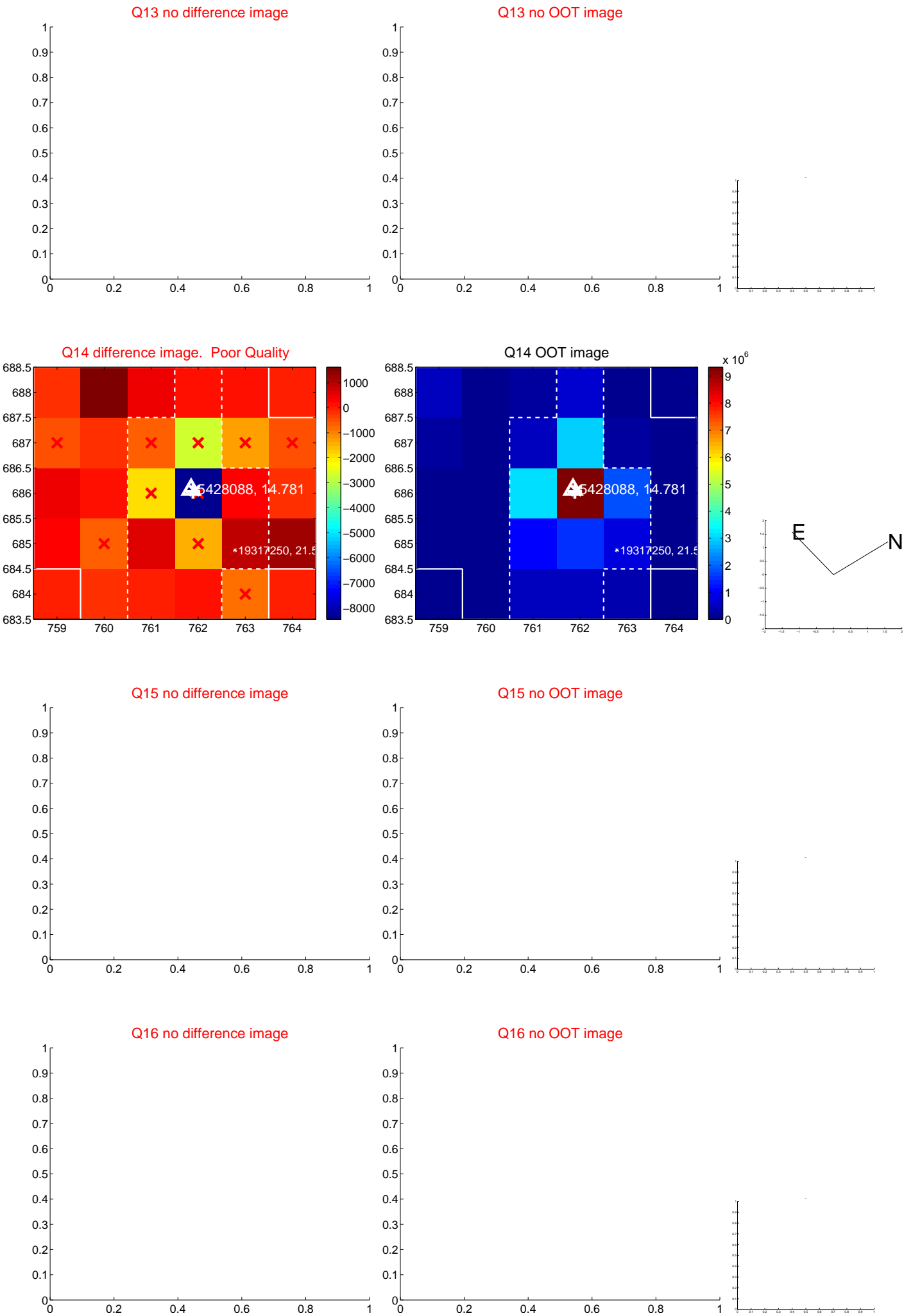
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



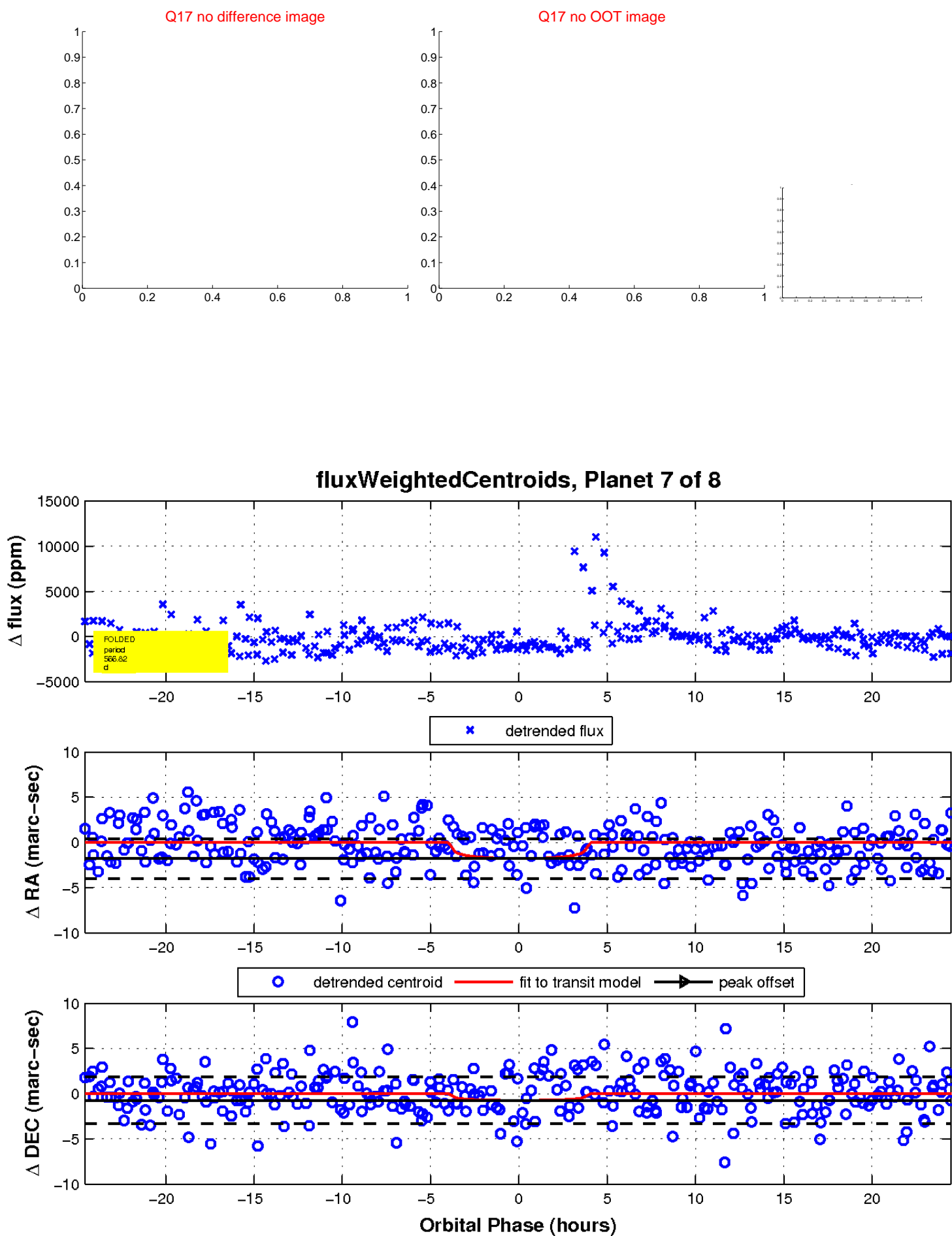
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

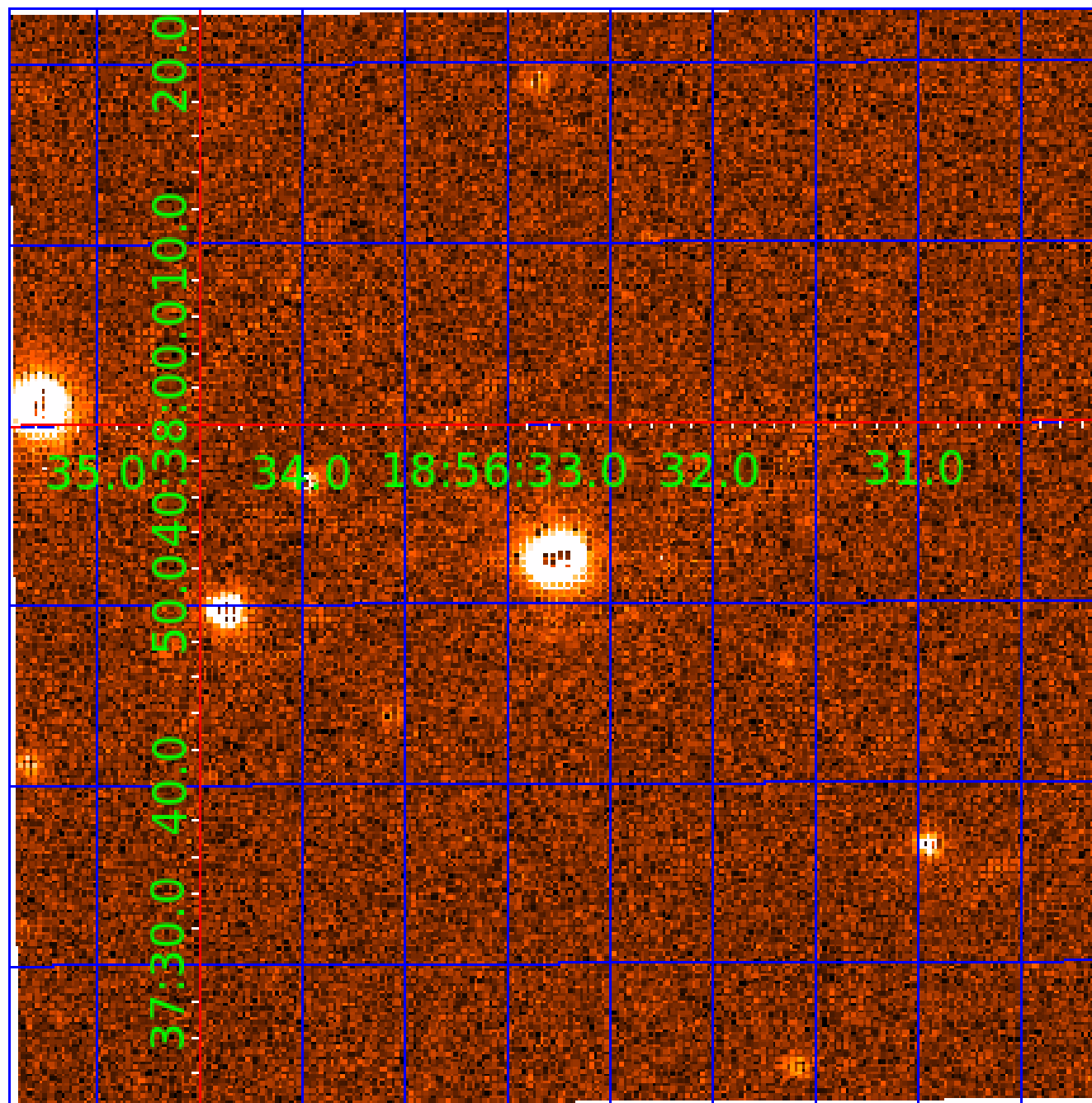


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 005428088

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})
005428088-01	OBS	No	125.402324	164.783818	65.8	1.016	13.7	0.4	0.45	3671	0.37	0.23
005428088-02	OBS	No	381.780949	293.480821	1710.4	11.023	10.4	8.7	0.45	3671	1.94	0.05
005428088-03	OBS	No	370.082677	176.708862	1075.5	3.766	9.5	5.3	0.45	3671	1.53	0.05
005428088-04	OBS	No	604.366682	341.322915	1404.2	11.938	14.3	6.1	0.45	3671	1.70	0.03
005428088-05	OBS	No	298.541217	283.491662	1442.5	5.009	9.9	7.0	0.45	3671	1.80	0.07
005428088-06	OBS	No	281.270626	177.801168	1498.0	4.087	11.7	7.9	0.45	3671	1.82	0.08
005428088-07	OBS	No	566.821192	220.406558	1902.2	8.205	10.1	8.8	0.45	3671	2.05	0.03
005428088-08	OBS	No	165.303847	232.412060	1917.0	2.500	12.0	-1.0	0.45	3671	1.97	0.16

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005428088-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_SKYE_ZUMA_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS
005428088-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_TER_DV—MOD_POS_DV
005428088-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS
005428088-04	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
005428088-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—CENT_FEW_DIFFS
005428088-06	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
005428088-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005428088-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_NOFITS

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

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

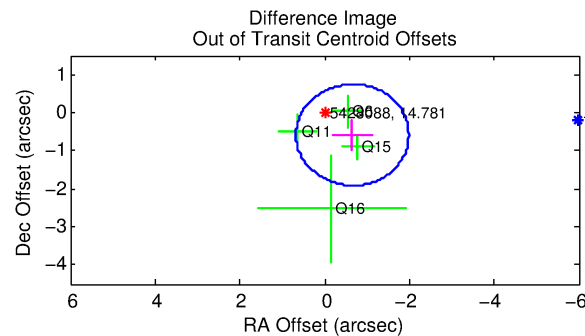
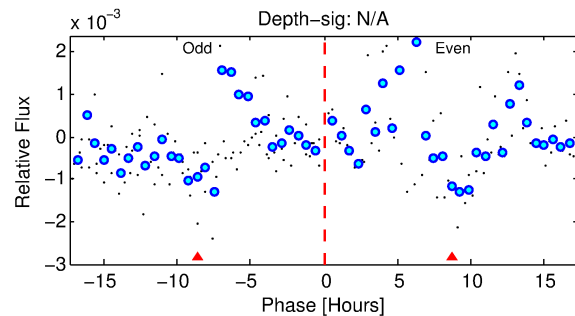
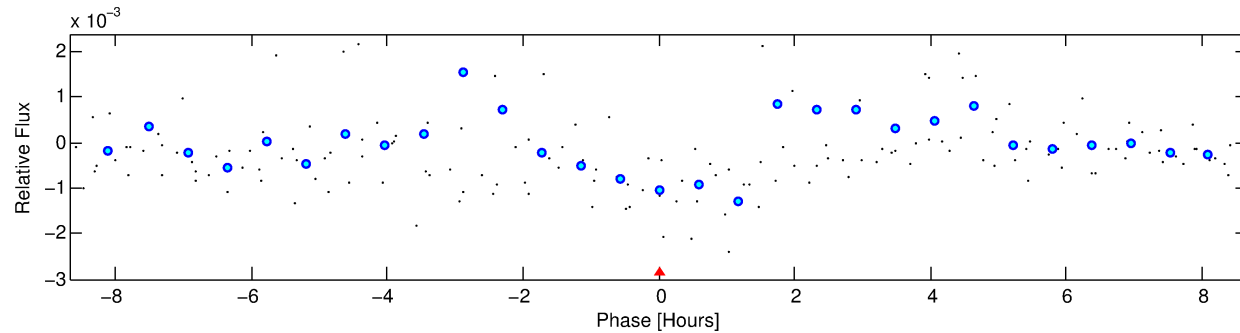
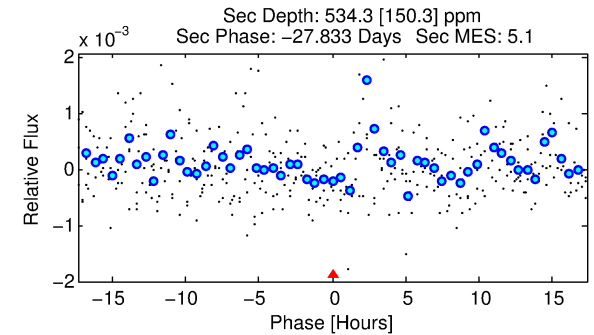
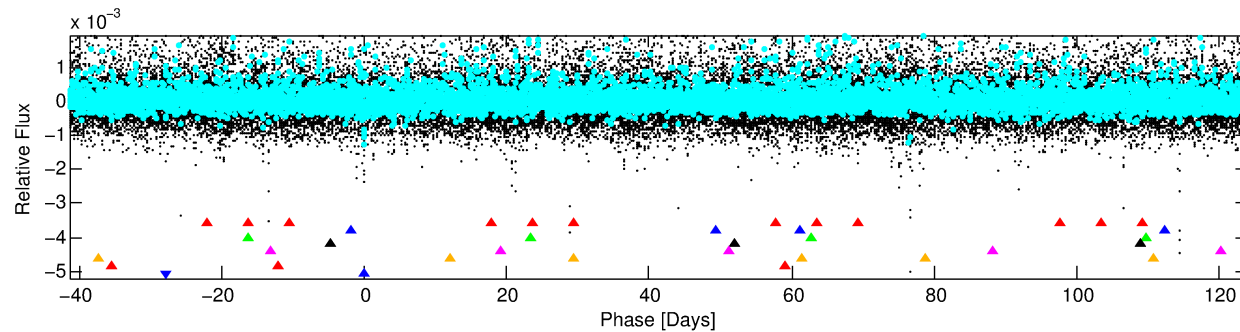
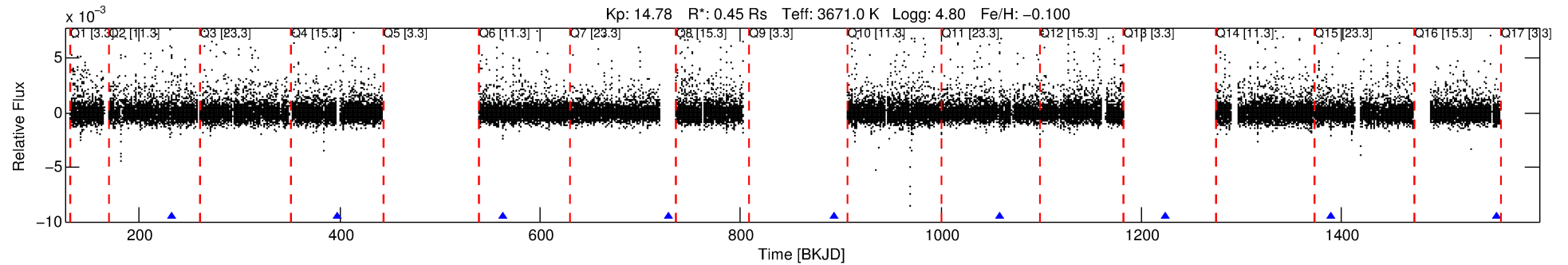
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 005428088-08

No Significant Match Found

DV One-Page Summary

KIC: 5428088 Candidate: 8 of 8 Period: 165.304 d



TPS TCE Results:

Period = 165.30385 d
Epoch = 232.4121 BKJD

DV fit results are unavailable

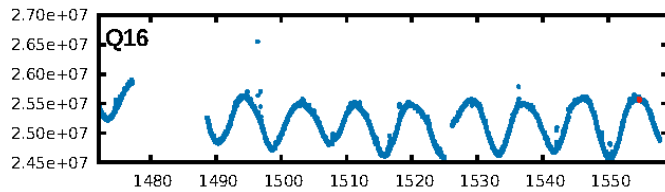
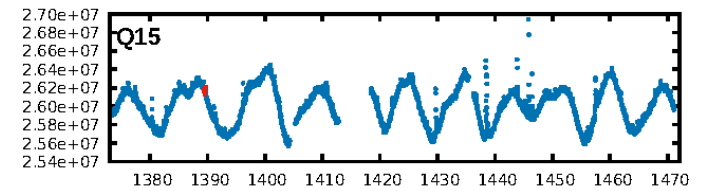
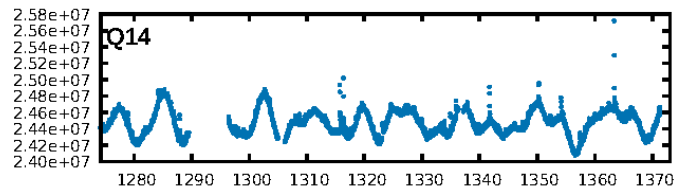
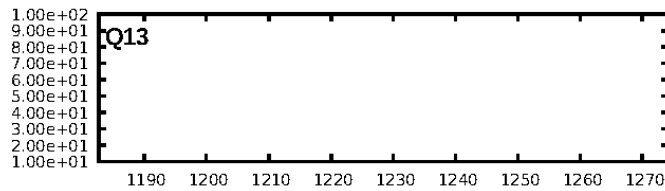
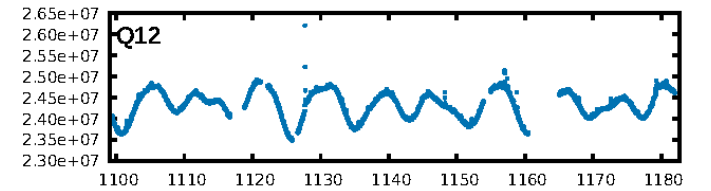
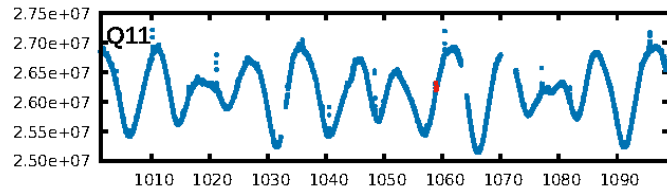
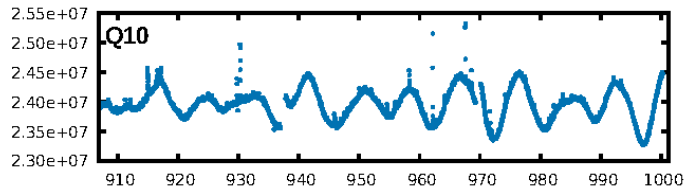
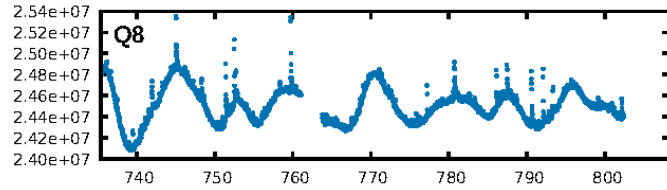
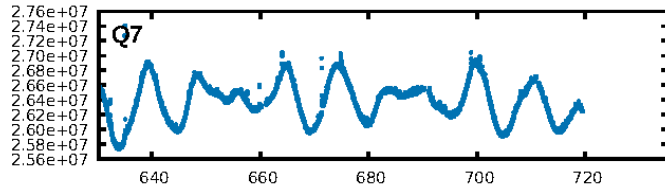
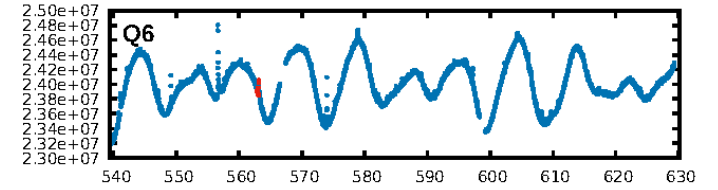
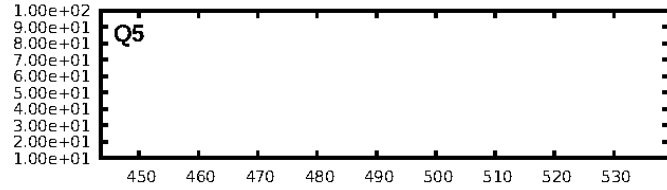
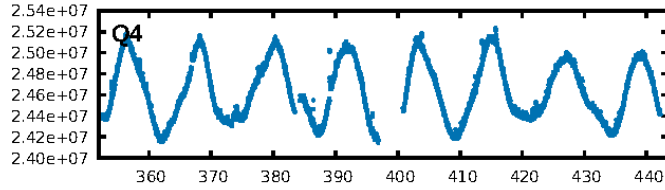
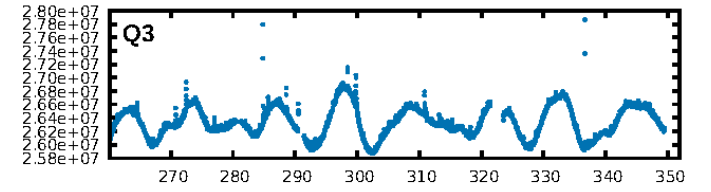
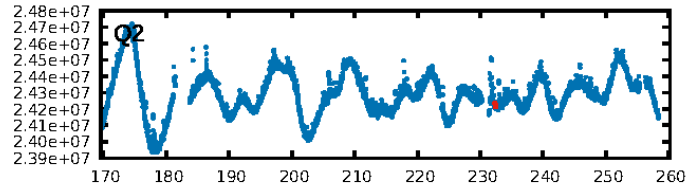
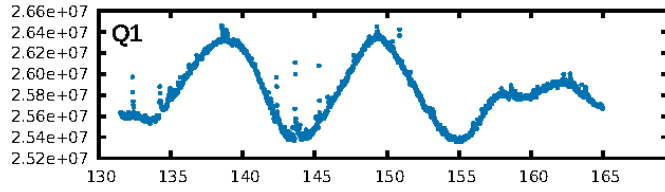
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [354.85σ]
LongPeriod-sig: 100.0% [580.94σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [5/5]
GhostDiagnostic-chr: 0.3997
Centroid-sig: 4.4%
Centroid-so: 1.002 arcsec [1.68σ]
OotOffset-rm: 0.878 arcsec [1.98σ]
KicOffset-rm: 0.920 arcsec [2.09σ]
OotOffset-st: 1/2/1/0 [4]
KicOffset-st: 1/2/1/0 [4]
DiffImageQuality-fgm: 0.75 [3/4]
DiffImageOverlap-fno: 1.00 [4/4]

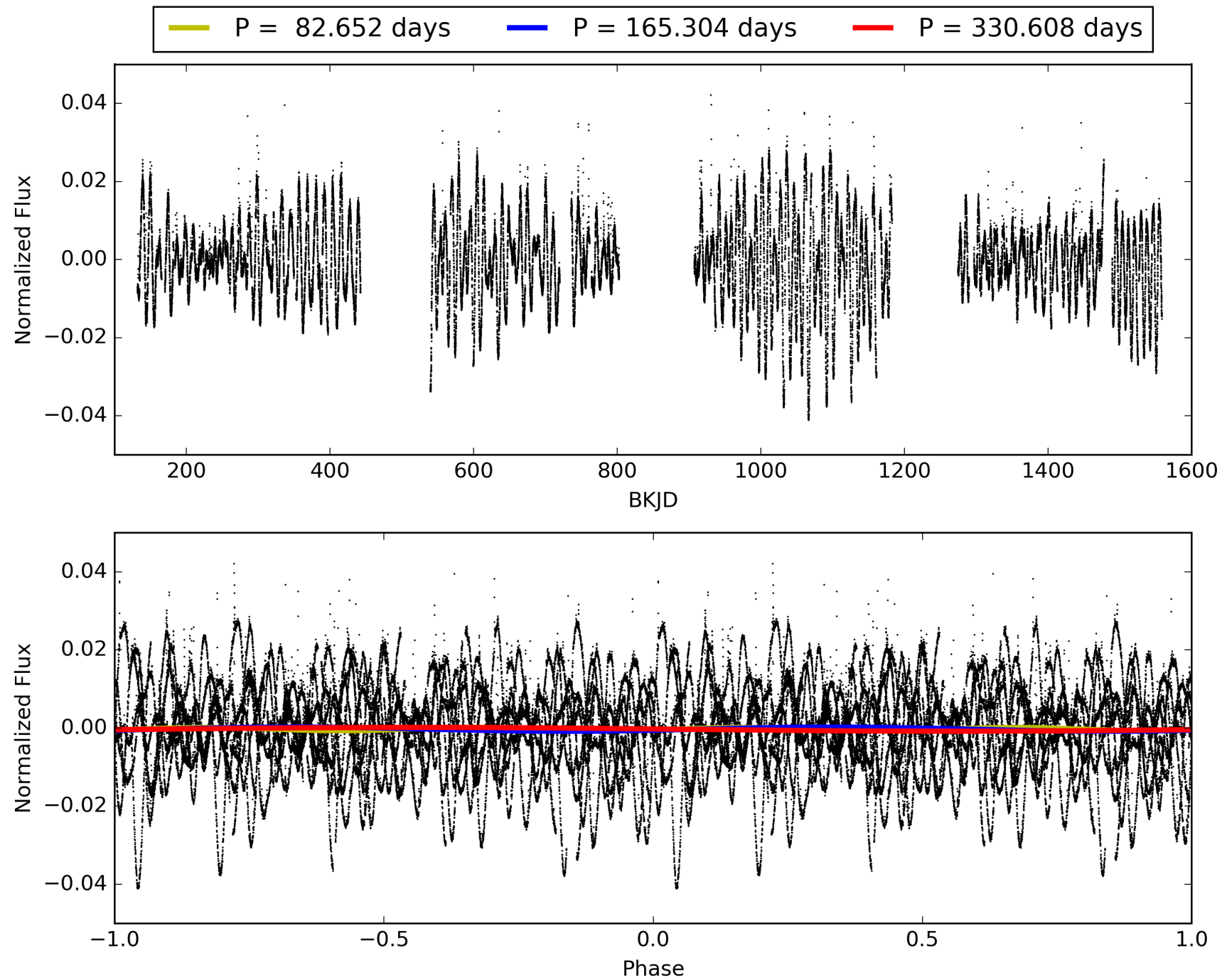
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 07:25:50 Z

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

TCE 005428088-08, PDC Light Curves

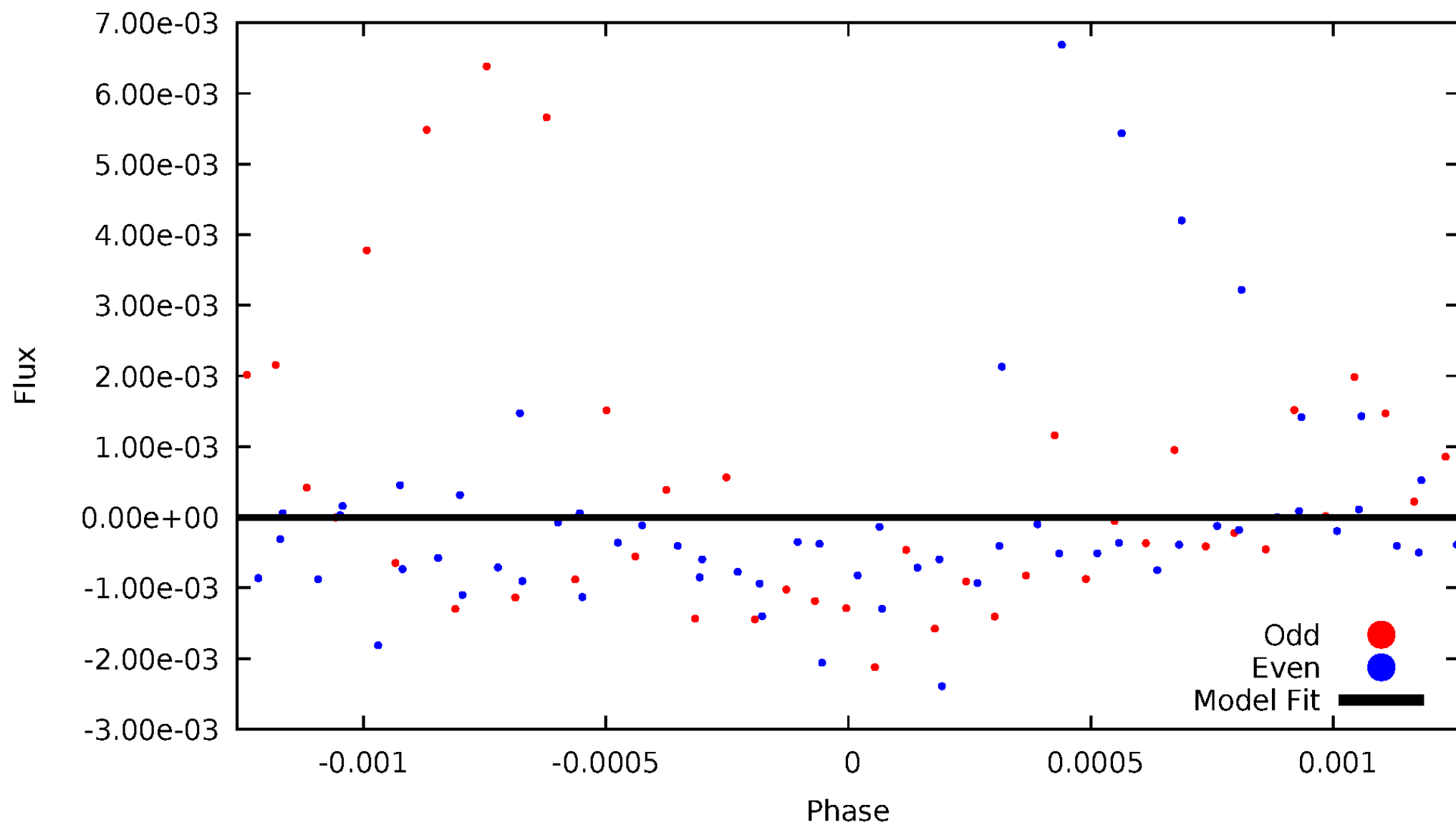


TCE 005428088-08



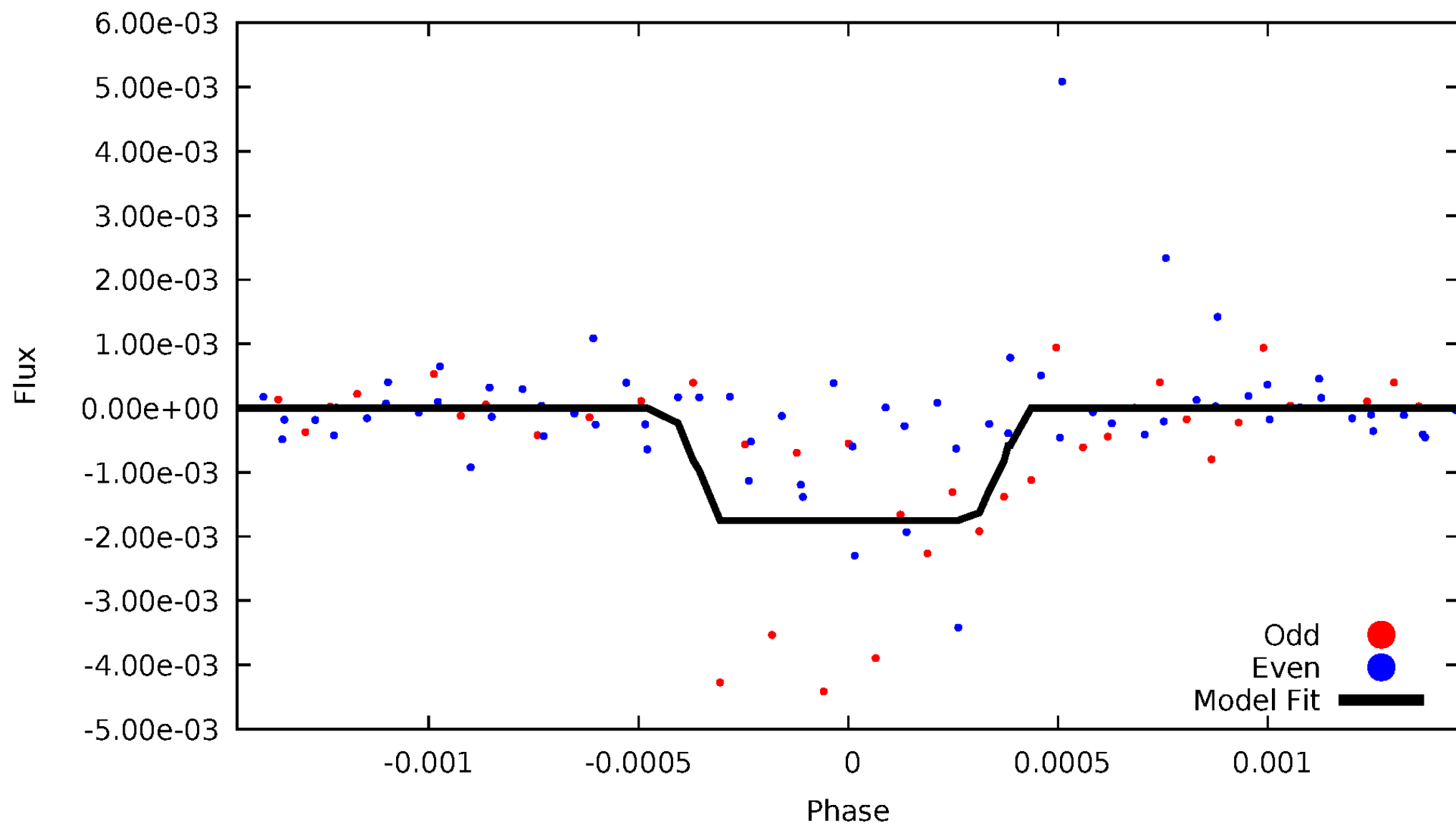
DV Odd/Even

TCE 005428088-08



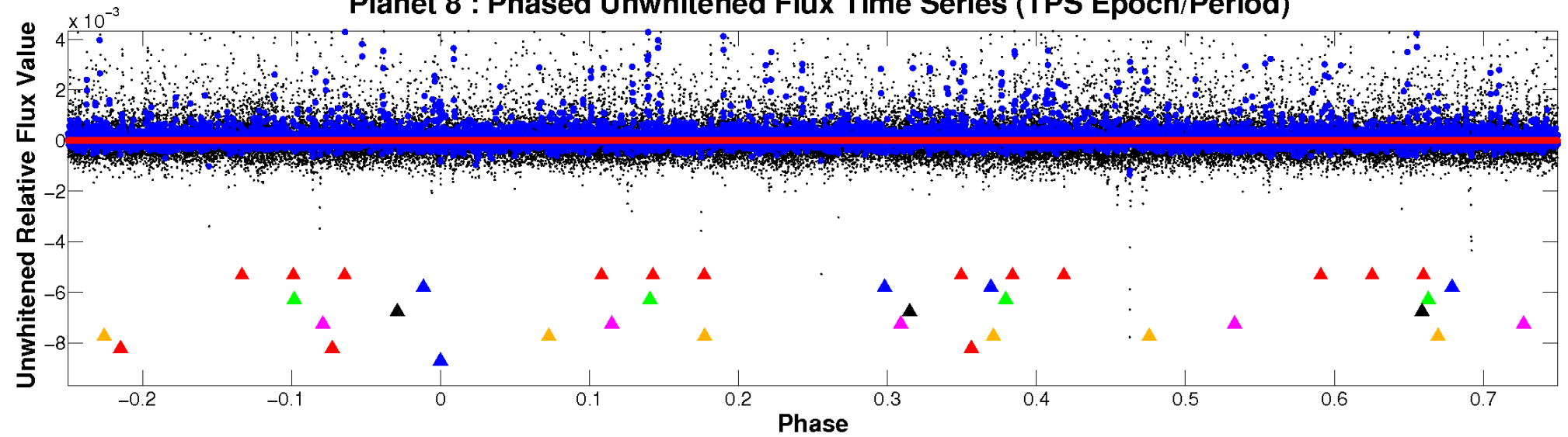
ALT Odd/Even

TCE 005428088-08

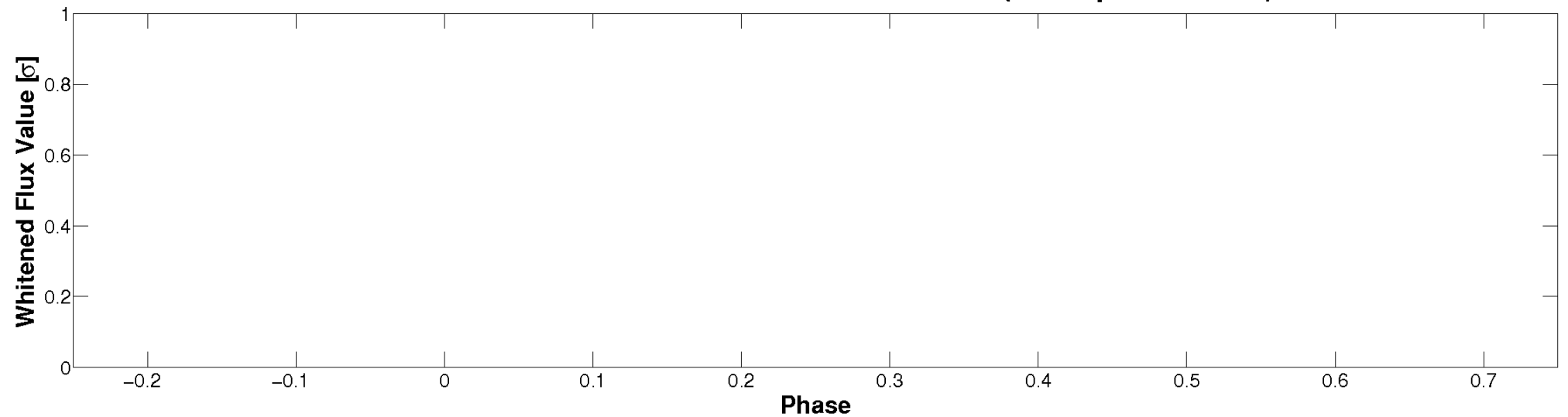


Non-Whitened Vs. Whitened Light Curve

Planet 8 : Phased Unwhitened Flux Time Series (TPS Epoch/Period)

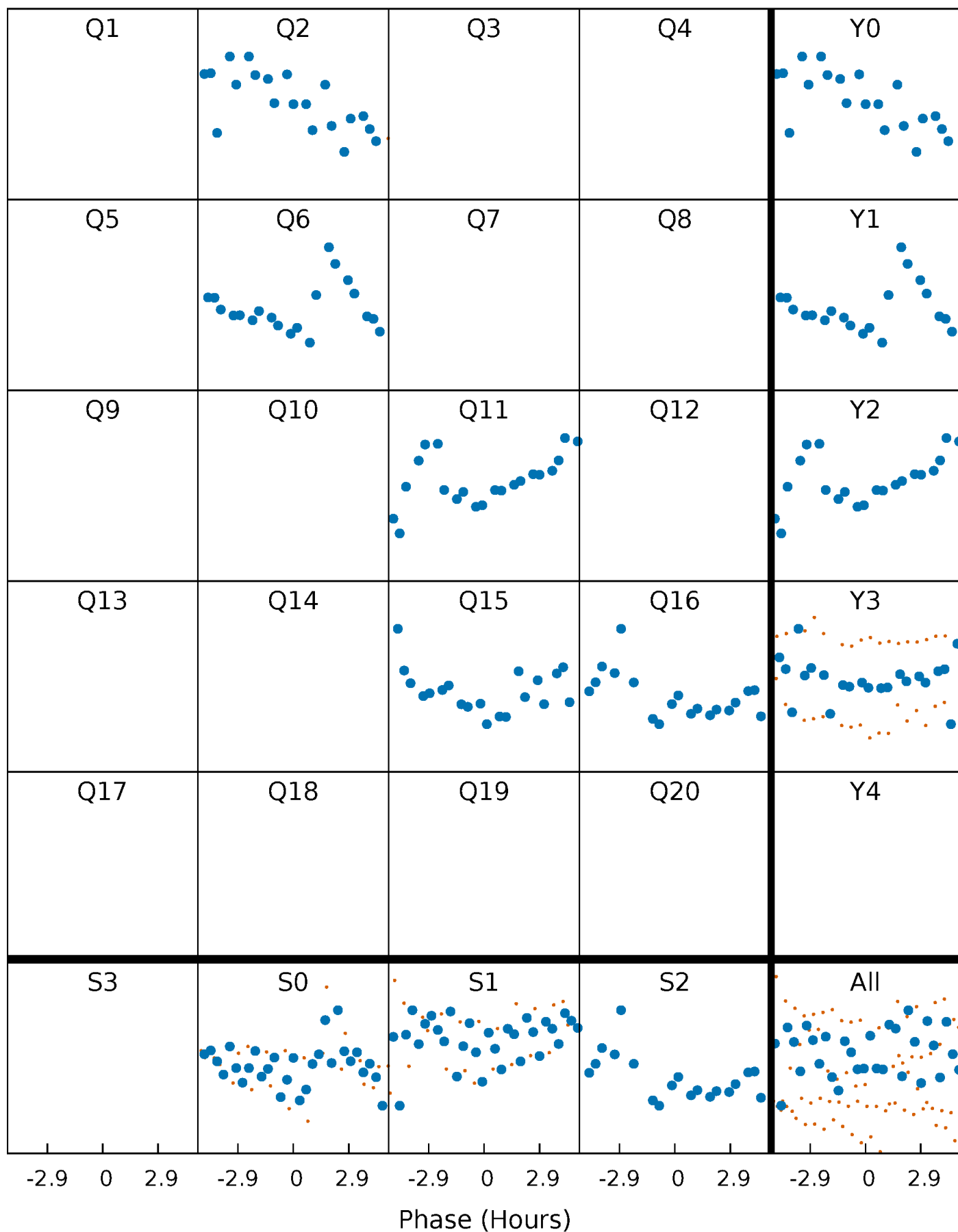


Planet 8 : Phased Whitened Flux Time Series (TPS Epoch/Period)



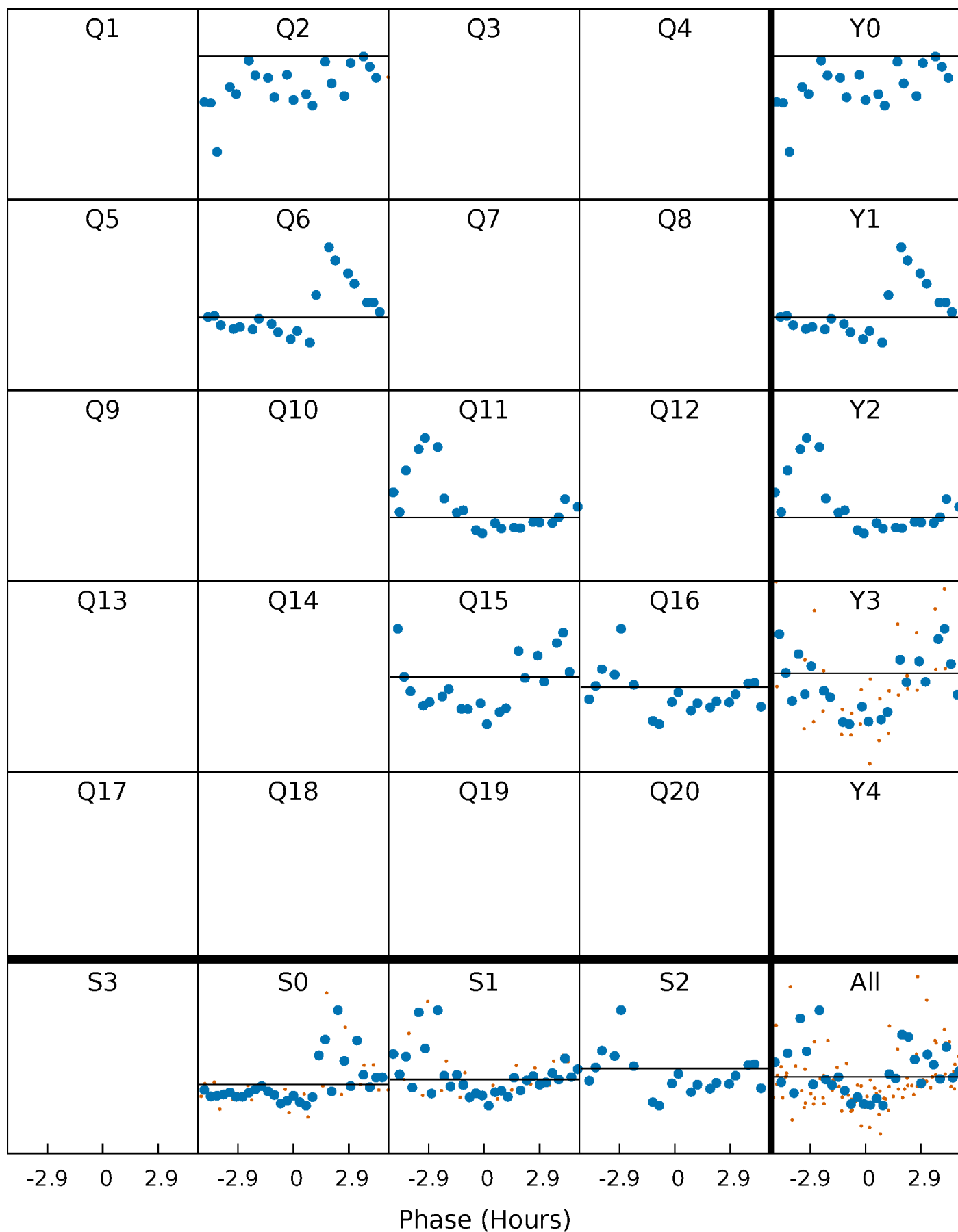
PDC Quarter-Phased Transit Curves

TCE 005428088-08 $P=165.303847$ Days $T_0=232.412059$ (BKJD)



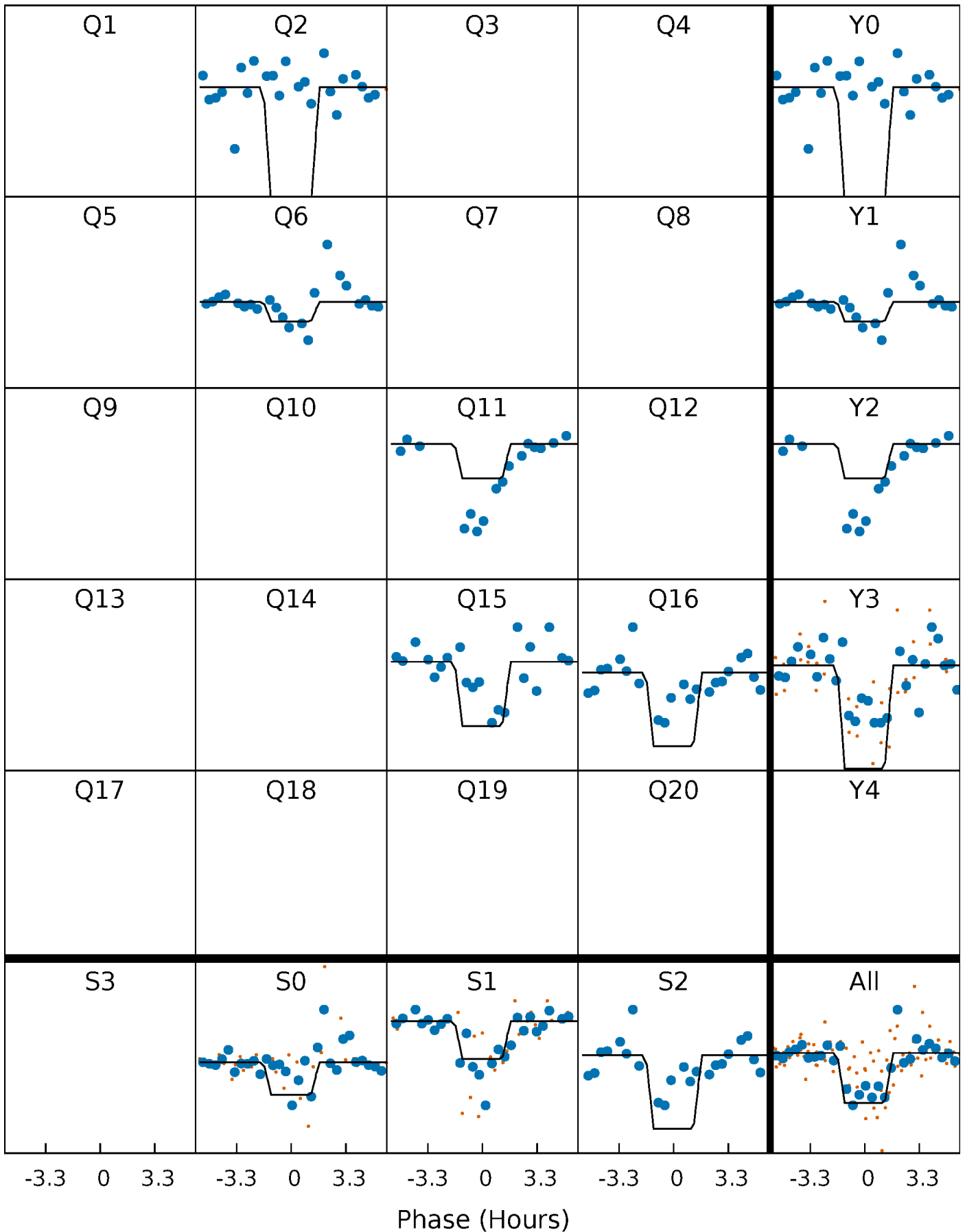
DV Quarter-Phased Transit Curves

TCE 005428088-08 P=165.303847 Days $T_0=232.412059$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

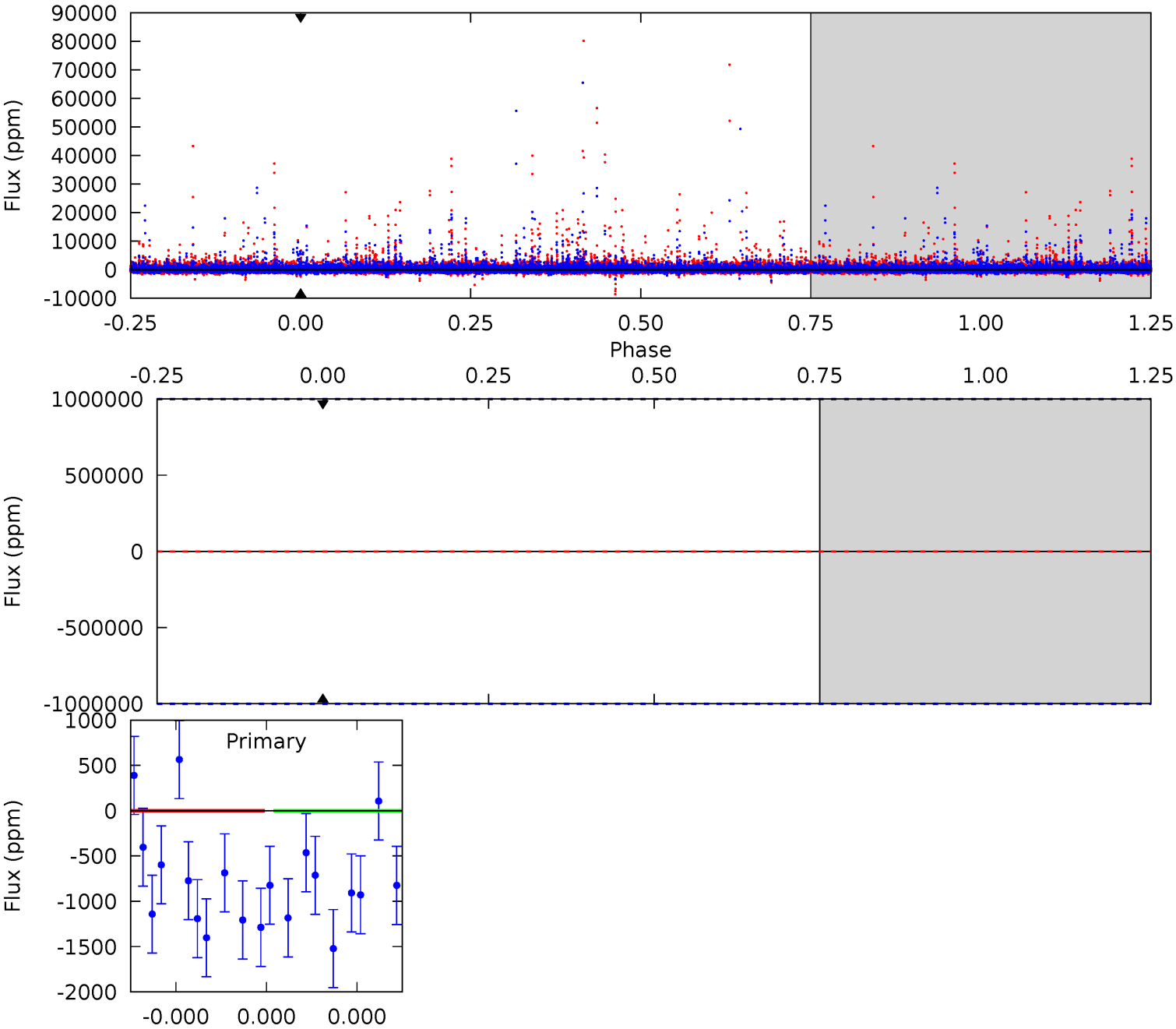
TCE 005428088-08 P=165.303847 Days $T_0=232.400567$ (BKJD)



DV Model-Shift Uniqueness Test

005428088-08, P = 165.303847 Days, E = 67.108212 Days

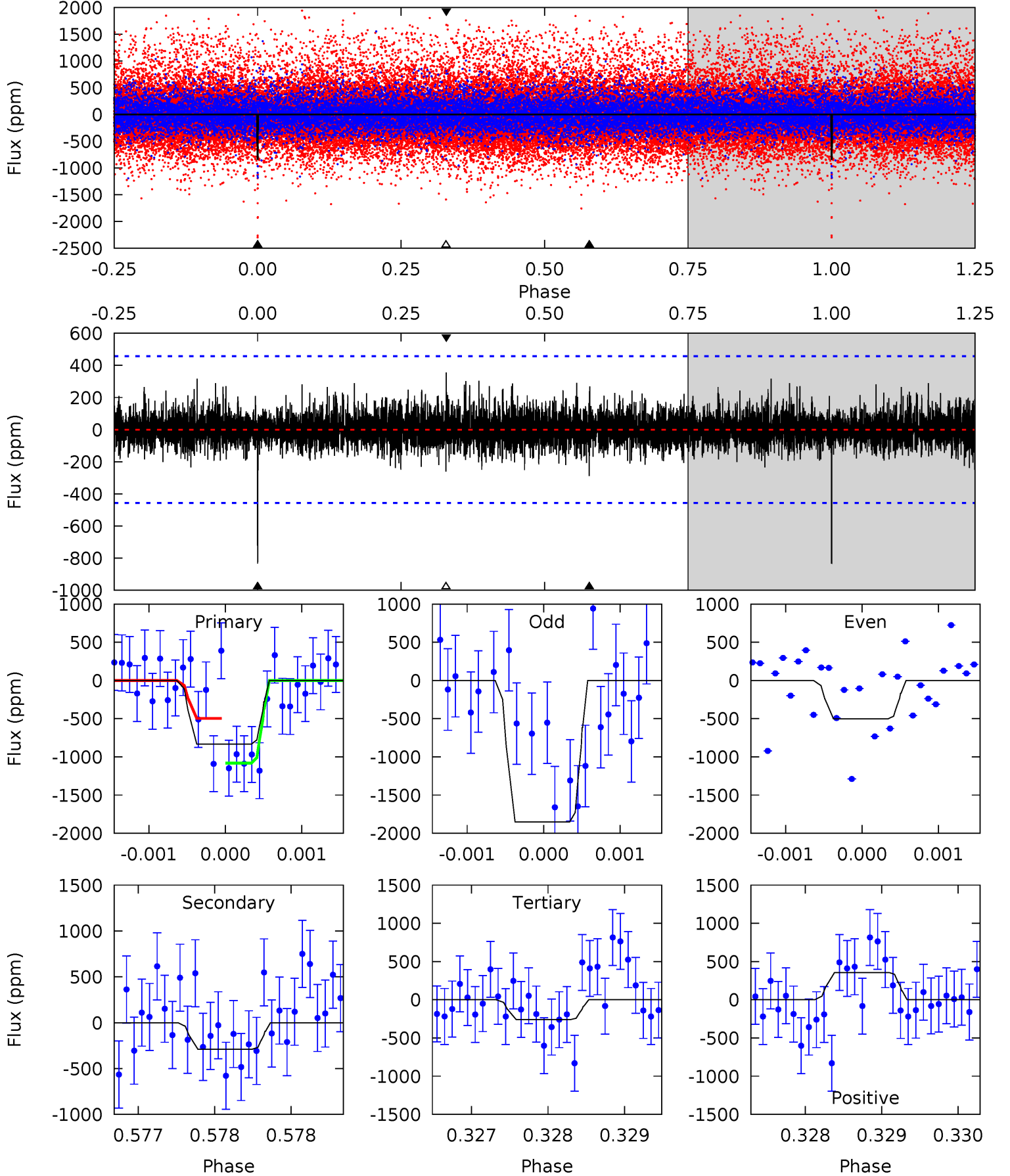
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



Alt Model-Shift Uniqueness Test

005428088-08, $P = 165.303847$ Days, $E = 67.096720$ Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.0	3.48	3.12	4.28	5.50	3.37	0.91	6.90	5.74	0.35	-0.81	8.02	1.41	0.30	3.48



Stellar Parameters For KIC 005428088

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	3671^{+65}_{-80}	$4.797^{+0.045}_{-0.031}$	$-0.100^{+0.100}_{-0.100}$	$0.454^{+0.032}_{-0.044}$	$0.472^{+0.034}_{-0.046}$	$7.100^{+1.752}_{-0.971}$
	+2%/-2%	+1%/-1%	+100%/-100%	+7%/-10%	+7%/-10%	+25%/-14%
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 005428088-08 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	0 ± 1000000	$4.33^{+3.89}_{-2.96}$	224^{+6}_{-6}	3224^{+4160}_{-9753}	$23063^{+1294201}_{-885650}$
Alt.	-289 ± 83	$4.35^{+3.82}_{-3.01}$	224^{+6}_{-6}	2332^{+810}_{-320}	1779^{+15396}_{-1335}

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

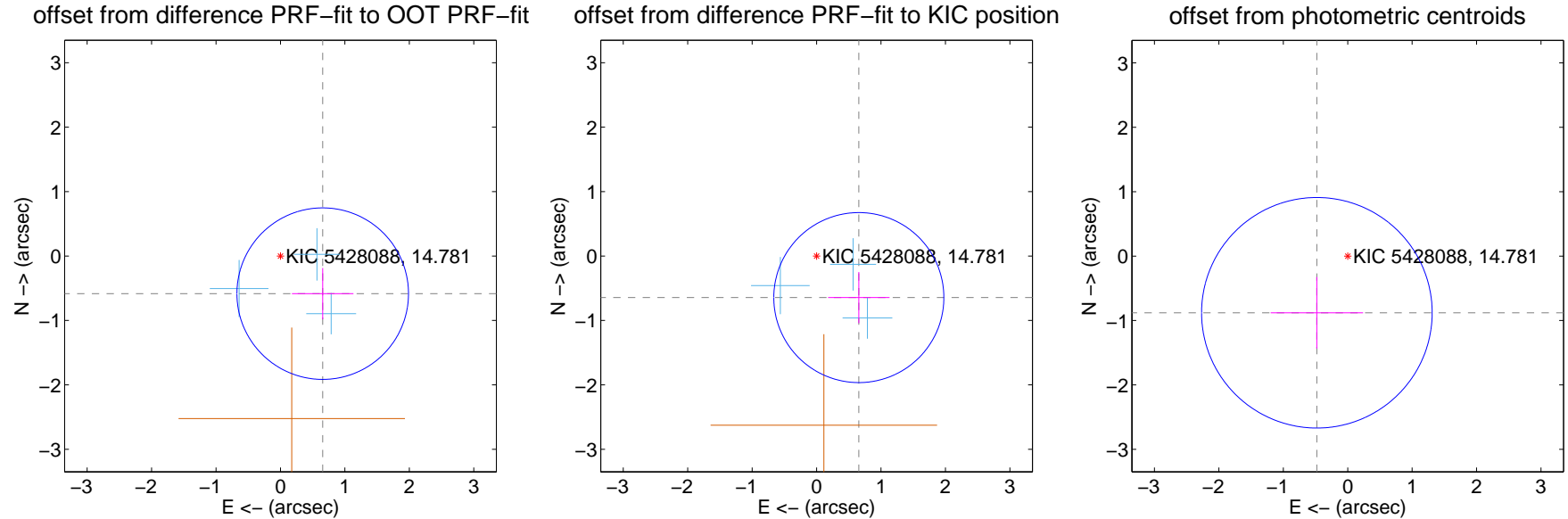
DV Centroid Data

Supplemental centroid analysis for 005428088-08. Kepler magnitude: 14.78. Transit SNR -1.00

There are 3 quarters with good PRF difference image offsets

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

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.878 ± 0.444	1.98	-0.656 ± 0.477	-0.584 ± 0.398
PRF-fit source offset from KIC position	0.920 ± 0.440	2.09	-0.656 ± 0.477	-0.645 ± 0.398
photometric centroid source offset	1.00 ± 0.60	1.68	0.48 ± 0.72	-0.88 ± 0.56

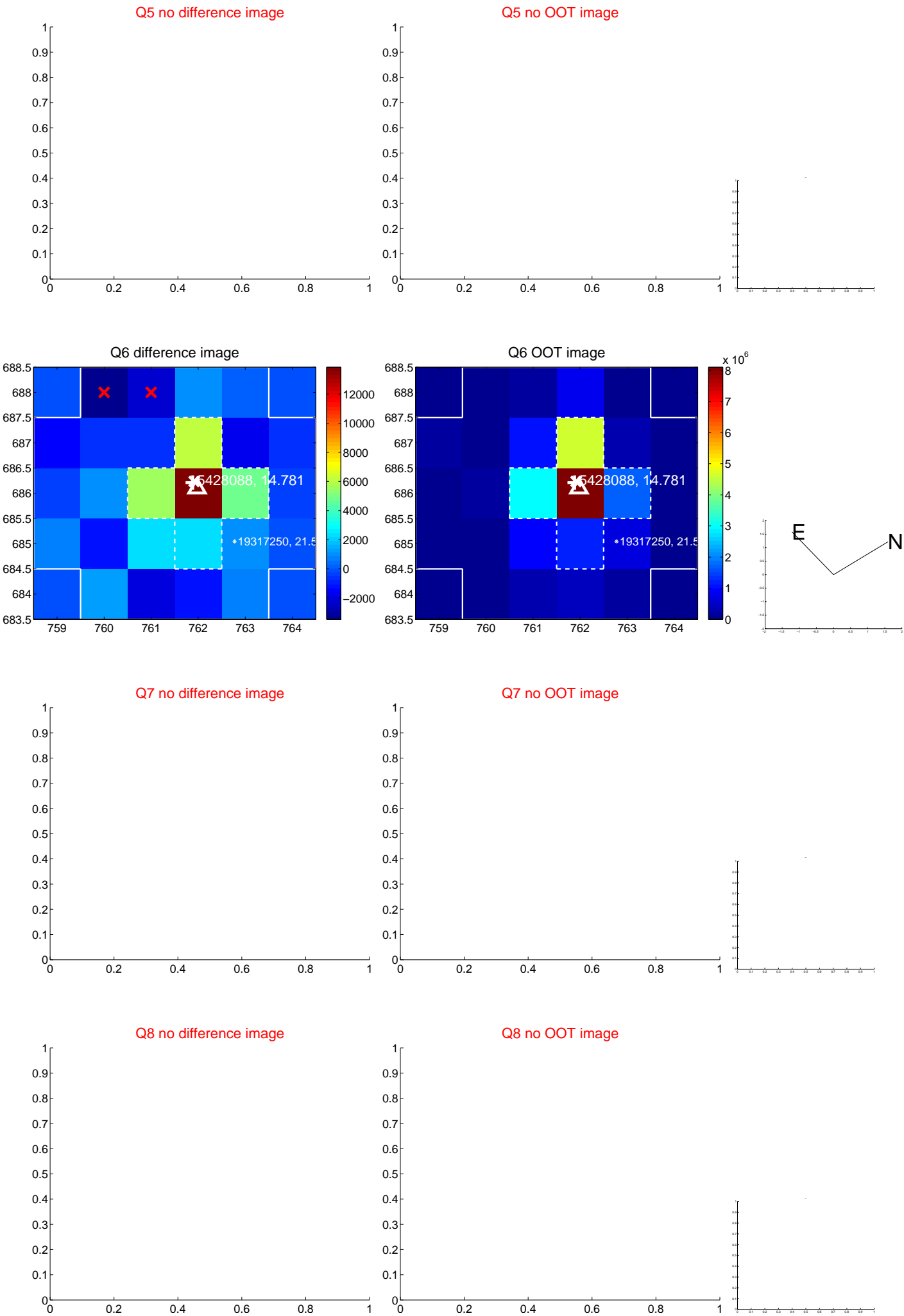


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

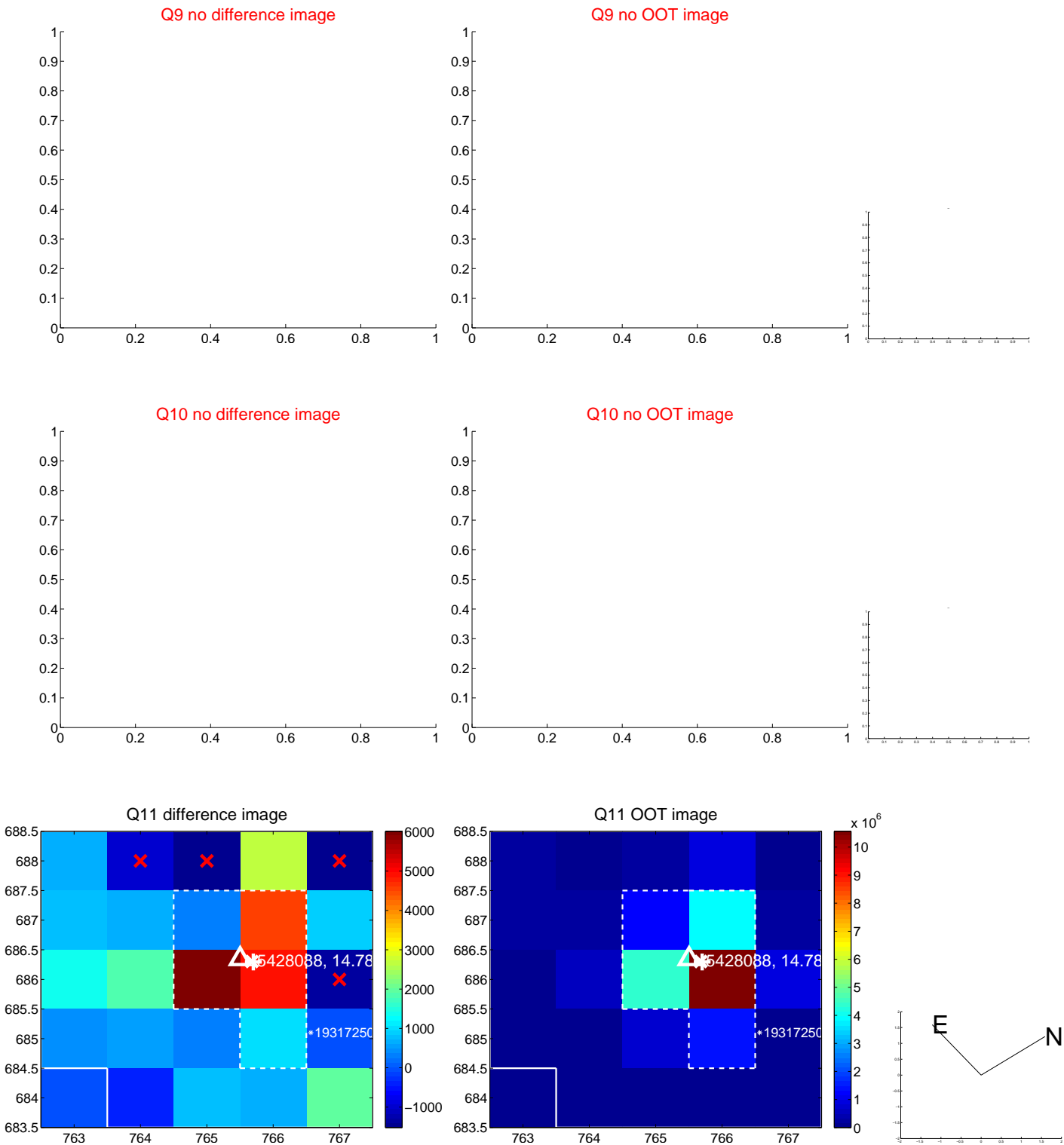
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



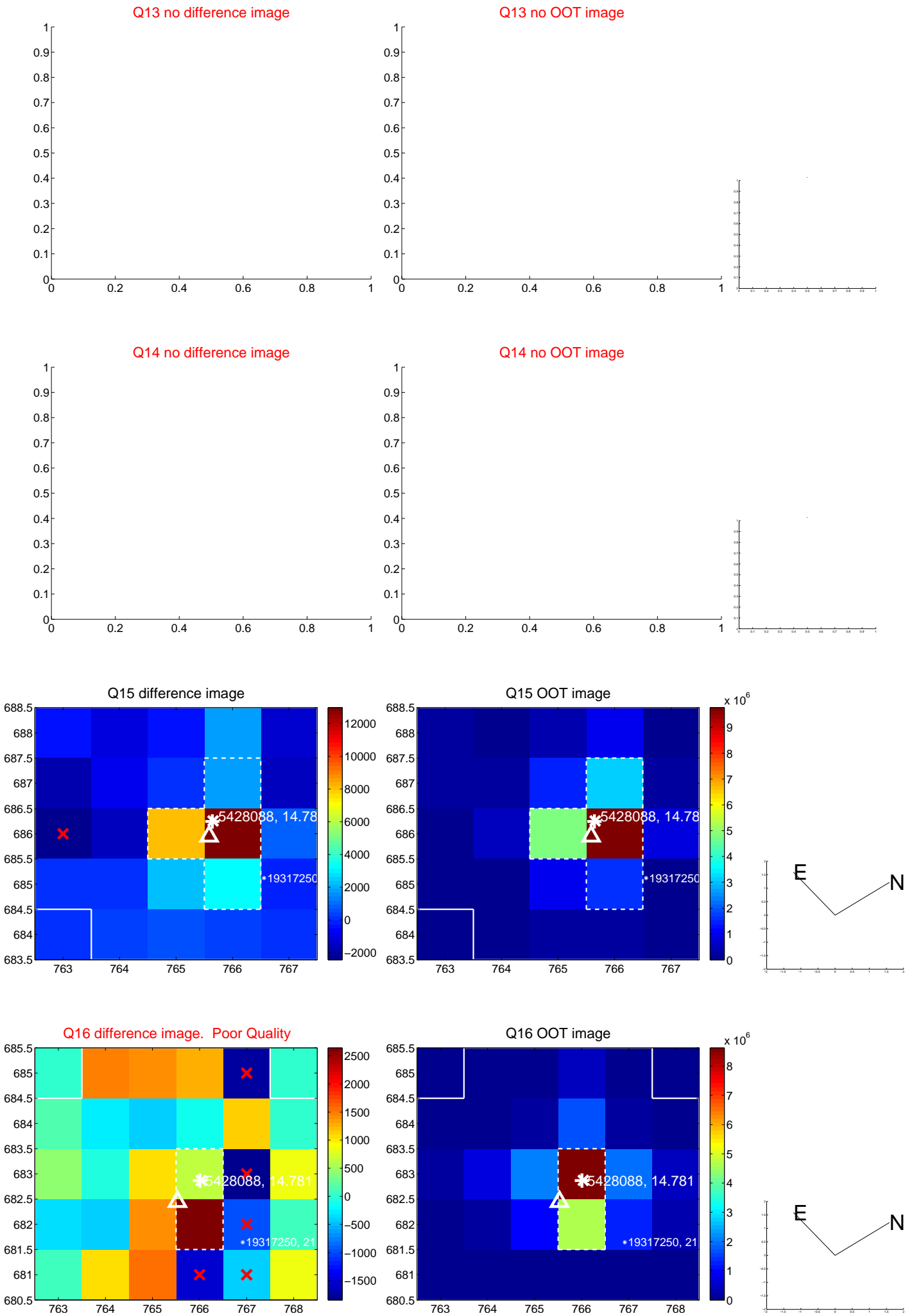
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



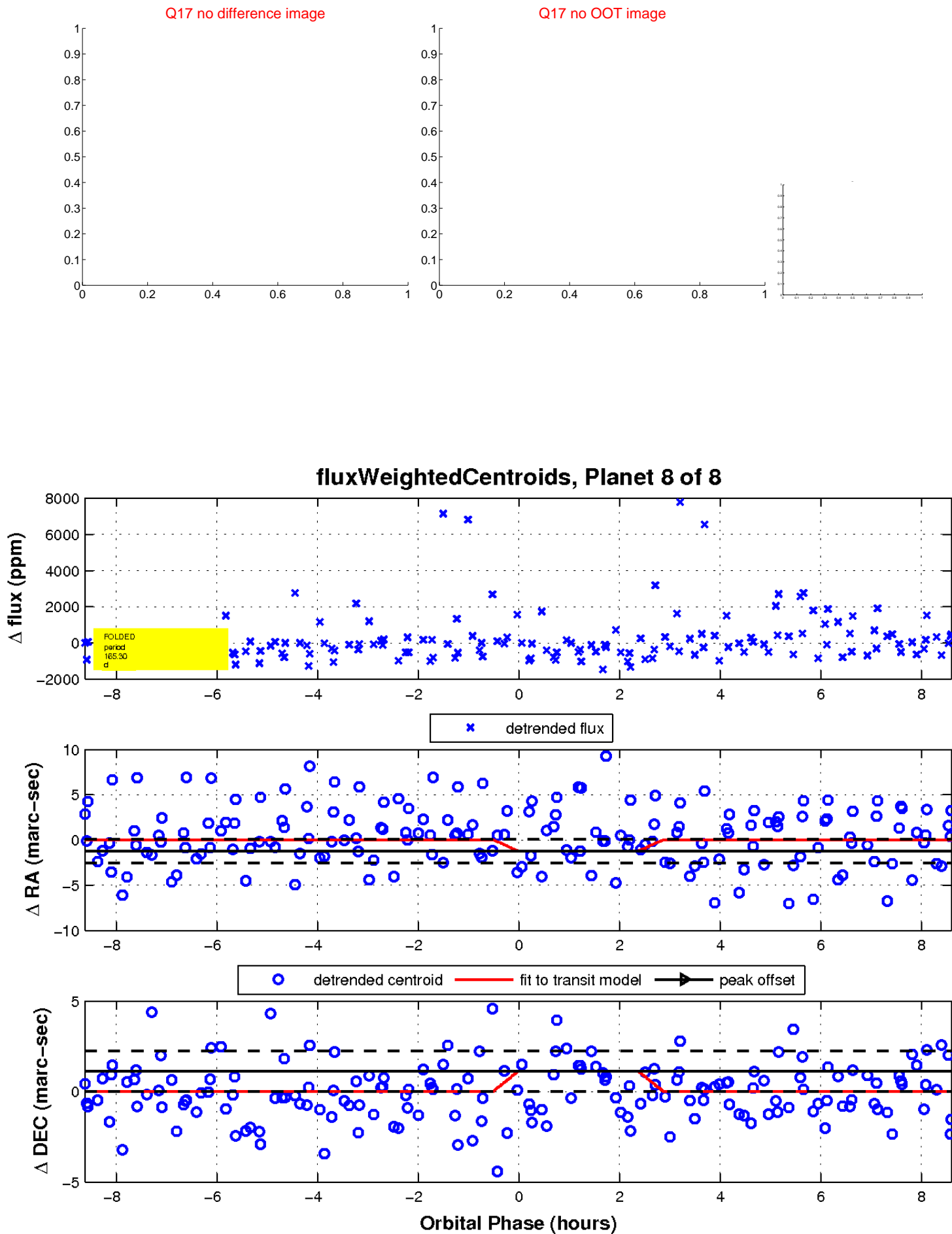
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

