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Comment to "Observation of the neutron radiative decay" by R.U. Khafizov et al., published in JETP Letters 83, 5 (2006) (Pis'ma v ZhETF 83, 7 (2006))

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Herewith we formally deny any responsibility for the content of the commented paper. The manuscript was submitted for publication without informing at least four of the other authors, viz. N. Severijns, O. Zimmer, H.-F. Wirth, and D. Rich. This violates our rights as collaborators. The analysis presented and the manuscript itself have not been discussed and have also not been approved by the entire collaboration prior to submission. Besides this formal incorrectness, we also criticise the content of the paper (low quality and premature). Not only the interpretation, but already the presentation of data is not comprehensive and does not fulfill minimum scientific standards. These views are shared by J. Byrne who is collaborating on the project as well, but was not mentioned on the paper.

The coincidence spectrum shown in Fig.5 contains a forest of peaks. Only the two major peaks are explained. The highest peak is called "zero or false coincidences" with reference to a publication by another group, where this peak is not discussed at all. To our understanding it might be due to a physics event as for example detection by the proton detector of a electron bremsstrahlung photon created in the electron detector, coincident with detection of an electron by the electron detector (as seems to be suggested in the paper), or cross-talk of electronics of the corresponding detectors, or some other reason. No attempt for explanation is made for the smaller peaks in Fig.5.

Figure 6 seems to show a spectrum of triple coincidences between three different detectors. Without that it is mentioned explicitly in the figure caption, the explanations given seem to indicate that the horizontal axis represents the time between an event in the electron detector and an event in the proton detector. It was said in the text that the feature in "channel 120 in Fig.6" contains coincidences between decay electrons and protons, along with an event in one of the gamma detectors. However, no width of the coincidence window is stated. Further, since exactly this type of events was announced to be used for determination of the branching ratio of radiative neutron decay, the statement that the analysis of the branching ratio was based on the leftmost peak with maximum in channel 102 remains completely incomprehensible. Also, no attempt for explanation is made for the broad bump with maximum at about channel 165 in Fig.6.

Besides these deficiencies of the presented treatment it is obvious that the detector setup allows for many types of events which were not discussed. Without a careful analysis of backgrounds one just cannot extract any quantitative information about neutron decay, and in particular not seriously extract a branching ratio of a hitherto unuobserved effect. We therefore do not endorse the claim of the first author to have observed radiative neutron decay.