Comment on "Systematic description of evaporation spectra for light and heavy compound nuclei"

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Contrary to what is claimed in the article by R. J. Charity [Phys. Rev. C **82**, 014610 (2010)], the papers by Gontchar and Aktaev [Phys. Rev. C **80**, 044601 (2009)] and Lestone and McCalla [Phys. Rev. C **79**, 044611 (2009)] do not contradict but rather complement each other with respect to the time delay of the fission process.

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In Ref. [1] the controversy between two theoretical approaches for the description of the nuclear fission process that is accompanied by light particle emission is discussed. The controversy is claimed to consist of the following. On the one hand, in Refs. [2,4], experimental data on the pre-scission particle multiplicity have been reproduced, accounting for the relaxation stage during which the fission rate is significantly lower than its quasistationary value. On the other hand, in Ref. [3], the same type of data has been reproduced without accounting for the fission delay.

We do not see any contradiction between the two approaches. In fact, there is no comparison with experimental data in Ref. [2]. In this work, it has been shown that at very high excitation energies of ∼300 MeV, accounting for the transient stage within the framework of the dissipative statistical approach allows one to reach a better agreement with the combined dynamical statistical approach. The latter approach employs the dynamical Langevin description of the fission process during the transient stage, which makes the description more accurate yet more time consuming. The importance of the relaxation stage has been stressed repeatedly in Refs. [5–8].

In Table II of Ref. [2] we have shown that the influence of the fission delay on the values of the pre-scission light particle multiplicity disappears at excitation energies of ∼100 MeV. This is the upper limit of the excitation energies for which the data have been reproduced in Ref. [3]. Moreover, it has been stated in Ref. [3] that the fission delay has been neglected because of comparatively low energies (i.e., high fission barriers). Thus the studies of Refs. [2] and [3] do not contradict each other. Rather, the results of Ref. [2] support numerically the correctness of the approximations given in Ref. [3] on the basis of rough estimations.

Indeed, there is a point of view in the literature (see Ref. [9]) that states that accounting for the fission delay in calculating the pre-scission light particle multiplicity is intrinsically contradictive. In our opinion this point of view has been disproved by results given in Ref. [2].

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