

# Monte Carlo simulation of fission fragments and electrons energy spectra formation in $^{235}\text{UF}_6$ gas, irradiated by external neutron flux

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Fissioning components such as  $^3\text{He}$  and  $\text{F}_6$  containing  $^{235}\text{U}$ , when exposed to a thermal neutron flux, exhibit ideal properties as volumetric ionization sources and lead to the formation of so-called primary electrons. The energy generation of these electrons and their temporal evolution are closely related to the degradation of the energy spectra of fission fragments. In turn, the energy spectra of the fission fragments are governed by the primary time-dependent energy distribution. A self-consistent description of these processes, along with a statistical evaluation of the energy spectra based on Monte Carlo simulations, constitutes the main focus of the present study [1]. The approach provides insight into the microscopic mechanisms of ionization in fissioning systems and contributes to the modeling of non-ideal plasma behavior under neutron-induced fission conditions [2].

[1] Rajaraman K and Kushner M J 2004 *Journal of Physics D: Applied Physics* **37**(13) 1780–1791

[2] Da B, Yang L, Liu J, Li Y, Mao S and Ding Z 2020 *Surface and Interface Analysis* **52**(11) 742–754