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Effects of angular momentum in fission[1] RAMONA VOGT, Lawrence Livermore Natl Lab, JORGEN RANDRUP, Lawrence Berkeley National Lab — In certain environments, both in nature and in laboratory-created systems, there is a finite probability for neutron-induced fission of an excited state, particularly for target nuclei with low-lying isomeric states. We study whether fission and the subsequent de-excitation of the fission fragments from such long-lived isomers result in observable consequences. We focus on possible effects of fission from the first excited state of ^{235}U, with compound nuclear spin of $J = 0, 1$, relative to fission from the ground state, with spin $J = 3, 4$. We employ the complete event fission model FREYA because we can specify the initial angular momentum of the system. We find that the effects due to the spin of the initial state are less important than the angular momentum imparted to the fragments during scission. The effect of most observables on the magnitude of the initial angular momentum imparted to the system is generally on the few percent level. There is a modest anisotropy in neutron emission that is independent of the value of J. We also propose a new method of studying neutron-photon correlations that shows some sensitivity to the angular momentum.

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