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Even-odd effects in multifragmentation products

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We discuss about the origin of the even-odd staggering observed in the yields of multifragmentation products. The observed fine structure agrees well with the fluctuations of the lowest particle threshold as a function of neutron and proton number. The structure is not consistent with the fluctuations of the binding energies. We take this experimental observation as an indication that primary fragments produced in multifragmentation are mostly found in excited states from which a sequential decay originates. The production of the finally observed cold intermediate-mass fragments directly in their ground state seems to be weak. Our study confirms the important role of the deexcitation process in almost all nuclear reactions. We focus our attention particularly on multifragmentation reactions, where sequential decay strongly influences the yields of light fragments, which are often used to extract information on the nature of hot nuclear matter.

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