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MULTIFRAGMENTATION FISSION IN NEUTRON-RICH URANIUM AND THORIUM NUCLEI

The structural properties of the recently predicted thermally fissile neutron-rich Uranium and Thorium isotopes are studied using the relativistic mean field formalism. The investigation of the new phenomena of multifragmentation fission is analyzed. In addition to the fission properties, the total nuclear reaction cross section which is a measure of the probability of production of these nuclei is evaluated taking ^{6,11}Li and ^{16,24}O as projectiles. The possible use of nuclear fuel in an accelerator based reactor is discussed which may be the substitution of ^{233,235}U and ^{239}Pu for nuclear fuel in near future.

Keywords: relativistic mean field formalism, matter density distribution, nuclear reaction cross section, multi-fragmentation fission.