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Fragment Angular Anisotropies for Magic and Non-Magic Nuclei[1] A.N. BEHKAMI, S. MAROOFI, A. ESMAILIPOUR, S. RASOOLI, Mahabad Azad University — Fission fragment angular distributions have been studied for $^{239}Pu(n,f)$ reaction at several neutron energies. Theoretical calculations have been utilized to determine the variance K_0^2 at each bombarding energy from the observed angular anisotropies. The values of K_0^2 show sharp rise from a value of 5-6 to about 13 for higher neutron energies. From the position of one of the breaks in the K_0^2 value, the magnitude of the pairing gap 2Δ in the highly deformed transition nucleus ^{240}Pu is estimated to be 2.4 MeV. Fission fragment angular anisotropies from changed particle fission of ^{208}Pb, ^{209}Bi, ^{235}U and ^{238}U at laboratory energy of 43.0 MeV have also been analyzed using the traditional transition state model. In all these calculations, optical model transmission coefficients with spin-orbit interaction have been used. In the case of magic nuclei, ^{208}Pb and ^{209}Bi it is found that the deduced values of K_0^2 are very small as compared to their corresponding values for ^{235}U and ^{238}U nuclei. This interpreted as due to shell structure, since significant shell and pairing effects appear for the magic nuclei ^{208}Pb and ^{209}Bi.

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