FISSION OF HYPERNUCLEI AT SUBNUCLEAR DENSITIES*

N. Buyukcizmeci,A, A.Kaya, A.S. Botvina, R. Ogul
nihal@selcuk.edu.tr

In this work, we have investigated where the fission products of hypernuclei produced at subnuclear densities and low temperatures may be displayed on the nuclear chart. The results of this kind of studies are of particular importance for extending the nuclear chart and investigating the structure of exotic nuclei. In our calculations, the statistical multifragmentation model was used and generalized to investigate the disintegration of excited Lambda hypernuclei. We believe that our calculations would be the pioneering for the extraction and analysis of future hyperon experiments such as GSI/FAIR or other similar facilities.

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GAMMA TRANSMISSION METHOD FOR THE USE OF VOLUMETRIC WATER CONCENTRATION IN SOIL

Necati Çelik, Ali Kaya And Selim Kaya
necati.celik@gumushane.edu.tr

In the current study, gamma transmission method with the help of Monte Carlo (MC) simulation was used to determine volumetric water content in soil samples. In traditional methods, volumetric water content in soil samples are determined by measuring the mass attenuation coefficient of soil-water system and completely dry soil separately. However, drying process may take time depending on the laboratory conditions and the amount of soil sample under investigation. In the current study, a new method is proposed which enable one to skip the drying process if MC simulation is accommodated. The proposed method exploits the fact that mass attenuation coefficients of soil samples does not depend on chemical composition of the soil for the energy values higher than 100 keV.

Key Words: Volumetric water content, Gamma ray transmission, Monte Carlo, Soil