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# Decay Analysis of 118Xe* Nucleus Formed in 28Si Induced Reaction

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**Abstract :** Dynamical cluster decay model (DCM) is applied to study the decay mechanism of 118Xe* nucleus in reference to recent data on 28Si + 90Zr → 118Xe* reaction, as an extension of our previous work on the dynamics of 112Xe* nucleus. It is relevant to mention here that DCM is based on collective clusterization approach, where emission probability of different decay paths such as evaporation residue (ER), intermediate mass fragments (IMF) and fission etc. is worked out on parallel scale. Calculations have been done over a wide range of center of mass energies with Ec.m. = 65 - 92 MeV. The evaporation residue (ER) cross-sections of 118Xe* compound nucleus are fitted in reference to available data, using spherical and quadrupole (β2) deformed choice of decaying fragments within the optimum orientations approach. It may be noted that our calculated cross-sections find decent agreement with experimental data and hence provide an opportunity to analyze the exclusive role of deformations in view of fragmentation behavior of 118Xe* nucleus. The possible contribution of IMF fragments is worked out and an extensive effort is being made to analyze the role of excitation energy, angular momentum, diffuseness parameter and level density parameter to have better understanding of the decay patterns governed in the dynamics of 28Si + 90Zr → 118Xe* reaction.

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