



Iranian Journal of Physics Research, Vol. 18, No. 3, 2018

Calculation of the cluster emission half-lives considering the deformations and relative orientations of the nuclei

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(Received 06 November 2016 ; in final form 04 March 2018)

Abstract

In this paper, the cluster emission half-lives have been calculated using the WKB approximation and the proximity potential Prox77 as the nuclear potential part and considering the deformations and different relative orientations of the cluster and daughter nuclei. The calculated results were found to be in a good agreement with the experimental data and the results of the liquid drop model, (LDM). It was seen that with increasing the angle of the relative orientation, the systems under consideration were found to be more stable against this phenomenon.

Keywords: half-life, cluster emission, proximity potential

For full article, refer to the Persian section