

Local alpha strength functions in nuclei

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Alpha knock-out reaction is a useful tool to investigate properties of the alpha particle formation in the nuclear surface region. In order to give a qualitative measure for the alpha particle formation probability as a function of the location inside the nucleus, we define the local alpha strength function $S(r,E)$. When an alpha particle is removed from the position r inside the nucleus, $S(r,E)$ provides a transition probability distribution of the daughter nucleus as a function of excitation energy E . The numerical calculations are performed with a mean-field approximation (HF+BCS). The method is particularly useful for heavy nuclei with the pairing correlations. The enhancement due to the pairing correlation is clearly observed. We compare $S(r,E=E(\text{gs}))$ with recent alpha knockout reaction experiment in Sn isotopes.

Experimental study on nuclear physics

No, theoretical one.

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