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On the determination of the D meson width in the nuclear medium with the transparency ratio

We have studied the feasibility of the experimental determination of the width of a D meson in a nuclear medium by using the method of the nuclear transparency. The cross section for inclusive production of a D^+ in different nuclei is evaluated, taking care of the D^+ absorption in the nucleus, or equivalently, the survival probability of the D^+ in its way out of the nucleus from the point of production. We use present values of the in medium width of D mesons and calculate ratios of the cross sections for different nuclei to the ^{12}C nucleus as reference. We find ratios of the order of 0.6 for heavy nuclei, a large deviation from unity, which indicates that the method proposed is adequate to measure this relevant magnitude, so far only known theoretically.

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