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K^+-nucleon amplitudes in the nuclear medium below 800 MeV/c

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Collaboration

Abstract content

Simple in-medium meson-nucleon kinematics has been applied recently in calculations of strong interaction effects in kaonic atoms [1-4], pionic atoms and elastic scattering of low energy pions by nuclei [4]. More sensitive tests of this approach are possible with K^+-nucleus interactions below 800 MeV/c because of the superior penetration of kaons into nuclei. Using this approach, calculated reaction and total cross sections for the very low density nucleus ^{6}Li agree with experiment to $\pm 3\%$ throughout the energy range. Calculations are $3\pm 4\%$ too low for C, Si and Ca, thus quantifying phenomenologically the enhancement in the nuclear medium observed before [6-8]. A brief discussion of this open problem is included [9].

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