

Abstract Submitted
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The power law for mass-dependent nuclear reactions ROY PETERSON, Univ of Colorado - Boulder — Many authors have parameterized the nuclear mass dependence of their intermediate and high energy hadron-nucleus data as a power law proportional to A^α . A derivation of this law will be presented in this talk, with a simple expression for the exponent α in terms of the hadron-nucleon total cross section SGT and a nuclear radius $r_0 A^{1/3}$ fm. These exponents have been compiled for many examples of intermediate and high energy hadron-nucleus total, total reaction, and inclusive quasifree cross sections for masses from $A=12$ through 238. These fitted exponents, plotted against SGT , form smooth trends. The exponents for total and total reaction cross sections are similar to the derived expression for $r_0=1.6$ fm, while those for quasifree cross sections are similar to the expression for $r_0=1.2$ fm. Computations in the Glauber model follow these same trends.

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