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**Parameterization of  $\alpha$ -nucleus total reaction cross section at intermediate energies**

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**Abstract**

Applying a Coulomb correction factor to the Glauber model we have derived a closed expression for  $\alpha$ -nucleus total reaction cross section,  $\sigma_R$ . Under the approximation of rigid projectile model, the elastic S-matrix element  $S_{el}(b)$  is evaluated from the phenomenological N- $\alpha$  amplitude and a Gaussian fit to the Helm's model form factor. Excellent agreements with the experimental data have been achieved by performing two-parameter fits to the  $\alpha$ -nucleus  $\sigma_R$  data in the energy range about 75 to 193 MeV. One of the parameters was found to be energy independent while the other, as expected, shows the energy dependence similar to that of N- $\alpha$  total cross section. © 2008 The Royal Swedish Academy of Sciences.