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Accuracy of Determination of the Parameters of Exotic Nuclei Nuclear Density Distributions in the Glauber Model[1] KEITI RUETER, IVAN NOVIKOV, Western Kentucky University — Parameters of a nuclear density distribution for an exotic nuclei with halo or skin structures can be determined from the experimentally measure interaction cross-section. In the presented work, to extract parameters for a halo and core, we compare experimental data on interaction cross section with reaction cross-sections calculated using expressions obtained in the Glauber Model and its optical approximation. These calculations are performed using Markov Chain Monte Carlo algorithm. In addition, we discuss the accuracy of the Monte Carlo approach to calculating the interaction and reaction cross-sections. The dependence of the accuracy of the density parameters of various exotic nuclei on the quality of the random numbers chains (here, quality is defined by lag-1 autocorrelation time of a sequence of random numbers) is obtained for the Gaussian density distribution for a core and the Gaussian density distribution for a halo.

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