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ПОТЕНЦІАЛ МОДИФІКОВАНОГО МЕТОДУ ТОМАСА - ФЕРМІ ТА ЙОГО АНАЛІТИЧНЕ ПРЕДСТАВЛЕННЯ НА ПРИКЛАДІ ВЗАЄМОДІЇ ^{16}O З ІЗОТОПАМИ ОЛОВА ^{112,114,116,118,120,122,124}Sn

Густини розподілу нуклонів та потенціали ядерно-ядерної взаємодії для ядра ^{16}O та ізотопів ^{112,114,116,118,120,122,124}Sn було розраховано в рамках модифікованого методу Томаса - Фермі, з урахуванням усіх доданків до членів другого порядку по ħ у квазікласичному розкладі кінетичної енергії. В якості нуклон-нуклонної взаємодії використовувалися сили Скірма, залежні від густини нуклонів. Для одержаного потенціалу знайдено вдалу параметризацію, що дає змогу представити його в аналітичній формі.

Ключові слова: нуклонна густина, сили Скірма, ядерно-ядерний потенціал, відштовхувальний кор, аналітичне представлення.

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THE POTENTIAL OF THE MODIFIED THOMAS - FERMI METHOD AND ITS ANALYTICAL REPRESENTATION ON THE EXAMPLE OF THE INTERACTION OF ^{16}O WITH TIN ISOTOPES ^{112,114,116,118,120,122,124}Sn

Nucleon distribution densities and nucleus-nucleus interaction potentials for the ^{16}O nucleus and ^{112,114,116,118,120,122,124}Sn isotopes were calculated within the framework of the modified Thomas - Fermi method, taking into account all terms to the second-order of ħ in the quasiclassical expansion of kinetic energy. Skyrme forces dependent on the nucleon density were used as nucleon-nucleon interaction. A successful parameterization was found for the obtained potential, which allows to present it in an analytical form.

Keywords: nucleon density, Skyrme forces, nucleus-nucleus potential, repulsive core, analytical representation.

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