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**РОЗРАХУНКИ ПЕРЕРІЗІВ ПІДБАР'ЄРНОГО ЗЛИТТЯ ТА ПРУЖНОГО РОЗСІЯННЯ
ВАЖКИХ ІОНІВ ЗА ДОПОМОГОЮ МОДИФІКОВАНОГО ПІДХОДУ
ТОМАСА - ФЕРМІ ІЗ СИЛАМИ СКІРМА**

Ядерно-ядерні потенціали для реакцій $^{16}\text{O} + ^{56}\text{Fe}$ та $^{40}\text{Ca} + ^{40}\text{Ca}$ розраховано в рамках модифікованого методу Томаса - Фермі з використанням функціоналу густини енергії Скірма. На основі отриманих потенціалів одержано перерізи підбар'єрного злиття та пружного розсіяння, що добре узгоджуються з експериментальними даними.

Ключові слова: ядерно-ядерний потенціал взаємодії, модифікований метод Томаса - Фермі, переріз підбар'єрного злиття, пружне розсіяння.

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**РАСЧЕТЫ ПОПЕРЕЧНЫХ СЕЧЕНИЙ ПОДБАРЬЕРНОГО СЛИЯНИЯ И УПРУГОГО РАССЕЯНИЯ
ТЯЖЕЛЫХ ИОНОВ С ПОМОЩЬЮ МОДИФИЦИРОВАННОГО ПОДХОДА ТОМАСА – ФЕРМИ
С СИЛАМИ СКИРМА**

Ядерно-ядерные потенциалы для реакций $^{16}\text{O} + ^{56}\text{Fe}$ и $^{40}\text{Ca} + ^{40}\text{Ca}$ рассчитаны в рамках модифицированного метода Томаса - Ферми с использованием функционала плотности энергии Скірма. На основе полученных потенциалов найдены сечения подбарьерного слияния и упругого рассеяния, которые хорошо согласуются с экспериментальными данными.

Ключевые слова: ядерно-ядерный потенциал взаимодействия, модифицированный метод Томаса - Ферми, сечение подбарьерного слияния, упругое рассеяние.

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**CALCULATION OF THE CROSS-SECTIONS OF SUB-BARRIER FUSION AND ELASTIC SCATTERING
OF HEAVY IONS USING THE MODIFIED THOMAS - FERMI APPROACH WITH THE SKYRME FORCE**

The nucleus-nucleus potentials for the $^{16}\text{O} + ^{56}\text{Fe}$ and $^{40}\text{Ca} + ^{40}\text{Ca}$ reactions are calculated in the framework of the modified Thomas - Fermi method with the Skyrme energy density functional. Using these potentials, the cross-sections of sub-barrier fusion and elastic scattering are obtained, which are in good agreement with the experimental data.

Keywords: nucleus-nucleus interaction potential, modified Thomas - Fermi method, sub-barrier fusion cross-section, elastic scattering.

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