

Radiative capture in the ${}^4\text{He} + {}^2\text{H}$ system in the framework of a microscopic approach

The nuclear ${}^4\text{He} + {}^2\text{H}$ system is of great importance to nuclear astrophysics. Radiative capture proceeding in this system is responsible for production of the ${}^6\text{Li}$ nuclei during the primordial nucleosynthesis. In this work, the ${}^4\text{He} + {}^2\text{H}$ radiative capture is considered from the microscopic viewpoint within a developed approach [1, 2] based on cluster aspects of nuclear structure and dynamics and formalism of expansions over the oscillator basis. Cross section and astrophysical S factor of the reaction are calculated. Low-energy dependence of these quantities serves as a source of information that can be useful for the so-called second "lithium puzzle". A comparison of the calculated results with experimental data is performed.

1. A.S. Solov'yev and S.Yu. Igashov, Phys. Rev. C **96**, 064605 (2017).
2. A.S. Solov'yev and S.Yu. Igashov, Phys. Rev. C **99**, 054618 (2019).

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