

On the possibility of the existence of friable nuclear matter in the form of nuclear-molecular crystals of the Wigner type in the helium-hydrogen plasma of solar interiors

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The first version of the theoretical model of friable nuclear matter is developed, which is based on the resonance interaction of protons with α -particles. These interactions, manifested in Laboratory experiments in the form of unstable nuclei such as ${}^5\text{Li}$, ${}^6\text{Be}$ and others, can lead to the formation of quasistationary and, possibly, even stable nuclear-molecular crystal structures connected by correlated pairs of protons in the conditions of solar interiors. In such nuclear-molecular crystals, the catalytic acceleration of the pp -reaction and, as a consequence, the appearance of new branches of the hydrogen chain localized in space are possible. It is expected that the total energy release in these localized branches, although much less than the luminosity of the Sun, can play an important role in the formation of solar activity processes.

This report was dedicated to the 100th anniversary of the birth of Academician G. T. Zatsepin.

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