

Abstract Submitted  
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**UCN scattering on nano-size targets** VLADIMIR GUDKOV, University of South Carolina — The elastic scattering cross section of ultra-cold neutrons (UCN) on a target (sphere or a bubble in liquid helium) of a nanometer size scale is calculated. Depending on neutron energy and on the size of the target, the scattering of this system can be described by three different scattering regimes. As a consequence, UCN scattering can manifest low-energy, intermediate energy and high energy behavior in terms of a conventional description in collision theory. It is shown that UCN scattering on a nano-size target can have a resonance dependence on the size of the target. Also, under special conditions, the scattering process of UCN has a coherent nature which leads to a significant increase in the value of the cross section.

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