

To the UCN Source at Periodic Pulsed Reactor

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Work continues on the creation of the concept of an intensive source of ultracold neutrons (UCN) on a pulsed reactor of moderate power. The source under consideration is based on F. L. Shapiro's idea of pulsed filling of the UCN trap [1], as well as deceleration by a local device of very cold neutrons (VCN) to energies typical for UCN. An adiabatic spin-flipper designed for high magnetic fields is considered as such a device. At a sufficiently large value of energy taken away from the neutron, the flux of VCN, which after deceleration are converted into UCN capable of being stored in a trap, has a pulsed structure [2]. Using a spin-flipper together with a time lens will allow to obtain a neutron flux density in a bunch significantly exceeding the average value.

The report will be considered in detail the current concept of the source, as well as the status of work on the design of its main elements.

1. F.L. Shapiro, PEPAN 2 (4) (1971) 975–979.
2. A.I. Frank, G. V. Kulin, M. A. Zakharov. Phys. Part. Nuclei Lett. 20 (2023) 664–667.