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**Minimizing neutron population for one-sec lifetime measurement**

ZHEHUI WANG, Los Alamos Natl Lab, UCN LIFETIME COLLABORATION —  
The number of ultracold neutrons (UCN) within a certain volume can be measured by counting the number of electrons or protons from the neutron beta-decay, or by direct counting of UCN [Salvat et al., Phys. Rev. C. **89** (2014) 052501]. In both cases, the error of measured neutron lifetime increases with the counting error, decreases with the waiting time inbetween counting, and is ultimately limited by the neutron population experimentally. A one-percent neutron lifetime measurement requires at least a few times  $10^4$  neutrons. A one-sec neutron lifetime measurement requires close to  $10^7$  neutrons initially. Both estimates are for a waiting period of about 1000 sec and a total neutron counting efficiency of 50%. We lay out experimental options for error reduction with an emphasis on optimizing UCN detection efficiency, and discuss the minimum number of neutrons required to achieve one-second neutron lifetime measurement.

Zhehui Wang  
Los Alamos Natl Lab

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