



Contribution ID: 33

Type: **Oral**

## Trap with ultracold neutrons as a detector of dark matter particles with long-range forces

*Wednesday, 13 October 2010 10:10 (20 minutes)*

The possibility of using a trap with ultracold neutrons as a detector of dark matter particles with long-range forces is considered. The basic advantage of the proposed method lies in possibility of detecting the recoil energy  $10^{-7}$  eV. The restrictions on parameters of Yukawa type interaction potential between dark matter particles and a neutron are presented for different dark matter densities on the Earth. The assumption concerned with long-range interaction of dark matter particles and ordinary matter leads to a substantial enhancement of cross section at low energy. Consequently, there arises a possibility of capture and accumulation of dark matter in a gravitational field of the Earth. Rough estimation of accumulation of low-energy dark matter on the Earth is discussed. The first experimental restrictions for existence of dark matter with long-range forces on the Earth are presented.

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**Session Classification:** Session We - 1

**Track Classification:** Searches for new forces