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## The method of soil moisture sensing by detection of cosmic ray neutrons

Large scale quantification of environmental water reservoirs has turned out to be feasible by detecting cosmic albedo neutrons. Such are generated in particle air showers in the upper atmosphere and reflected from the ground in dry conditions or efficiently slowed down in the presence of soil water. As the mean free path of high energetic and fast neutrons can be in the order of 100 meters, the environmental neutron density therefore strongly depends on the water content present in large radius of influence. This method bridges the gap between local and satellite based measurements. Up to now a rapidly growing community relies on stationary cosmic neutron detectors based on helium-3 filled proportional counter tubes. The most promising alternative solution is using boron as a solid converter for neutrons. Therefore we aim to develop a neutron detector based on boron layers in a MWPC geometry optimized for cosmic neutron sensing, which by scaling up the technology will reduce the exposition time to open up the field for mobile applications. This therefore is an interdisciplinary project, which brings together particle, nuclear and environmental physics.

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