« Measurement of the muon induced fast neutrons at shallow depths »

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Abstract:
I will present results from a directional neutron detector located in each of the Double Chooz detector halls (DCTPC).This detector is a low pressure Time Projection Chamber filled with a mix of CF_{4} and He gases (12.5% and 87.5% respectively). Free electrons are liberated along the track of the nuclear recoil and drift towards the anode. A high intensity electric field between the ground mesh and anode plate causes an electron cascade which emits visible light. This light is imaged by a CCD camera which gives an image of the nuclear recoil track. The information from the CCD and the current readout of the mesh and anode allows reconstruction of the energy and the 3D form of the track.
DCTPC can measure neutrons from 0.2 to 30 MeV originating from (\alpha,n) decays from U/Th, from muon spallation or muon capture in the rock surrounding the halls.The objective is to obtain a precise measurement of the fast neutron background for Double Chooz.