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# Mott polarimeter for electrons from neutron decay in BRAND experiment

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## Abstract:

The BRAND experiment aims at the search of Beyond Standard Model (BSM) physics via measurement of exotic components of weak interaction. For this purpose, eleven correlation coefficients of neutron beta decay will be measured simultaneously. Seven of them: H, L, N, R, S, U and V, are sensitive to the transverse polarization of electrons from free neutron decay. The correlation coefficients will be derived using Mott polarimetry and completely determined kinematics of products from the polarized neutron beta decay. For this aim the beam of cold polarized neutrons available in PF1B areal at ILL, Grenoble will be utilized.

The electron detection system features both the tracking and energy measurement capability as well as the Mott polarimetry for determination of the electron spin orientation. The 3D tracking is performed with a low density, helium based drift chamber of a hexagonal cell structure which is optimized for beta particles. The Mott polarimeter is an integral part of the tracker. It consists of a thin Pb foil installed inside, the drift chamber and two plastic scintillators, providing trigger and scattered electron energy measurement.

The results of the first pilot run of the BRAND experiment performed in September '20 will be reported with emphasis on the description and the performance of the electron detection system and the Mott polarimeter.

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