

# Migdal Search in LUX-ZEPLIN Dark Matter Experiment

*Friday 31 March 2023 17:00 (15 minutes)*

When a xenon atom's nucleus recoils from a dark matter particle or any other incident radiation, the atom's electron cloud is expected to fall behind, resulting in possible ionization and excitation. This phenomenon is called the Migdal effect and is attracting attention as it can improve the sensitivity of direct dark matter search in the sub-GeV/c<sup>2</sup> regime. In a liquid xenon detector like LUX-ZEPLIN Experiment, it is expected that the inelastic component from the Migdal effect enhances the nuclear recoil signals. To search for such enhancement, monoenergetic 2.45 MeV neutrons from Adelphi Technologies' DD 109 neutron generator were used to make high-rate nuclear recoil events. In this talk, I will discuss our efforts to confirm and calibrate the Migdal effect using neutron-xenon scattering data from the LUX-ZEPLIN Experiment, focusing on the Migdal effects with electrons emitted from L and M shells.

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