

Challenges and Opportunities in Migdal Effect Searches Using Liquid Xenon

The Migdal effect can greatly enhance the sensitivity of liquid xenon experiments to low-mass dark matter, and thus a direct confirmation of this effect is of paramount importance. However, Migdal searches with any target have proven to be challenging. Drawing on experimental efforts at LLNL, I will discuss the feasibility of directly observing Migdal signals in liquid xenon and analyze the practical challenges that must be addressed to achieve a definitive confirmation or refutation. Additionally, I will present the progress we have made toward conducting such a definitive experiment.

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