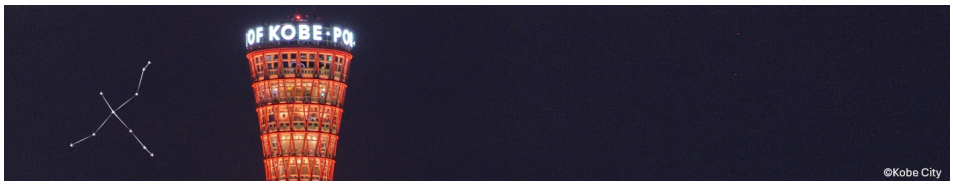

Contribution ID: **14** Type: **not specified**

The MIGDAL experiment

Wednesday, 25 February 2026 13:45 (25 minutes)

The Migdal In Galactic Dark mAtter expLoration (MIGDAL) was established in 2019 to experimentally verify, under optimal conditions, the theoretical prediction of the effect postulated by A. Migdal in 1939 and reformulated for dark matter searches by M. Ibe in 2017. The MIGDAL experiment aims to unambiguously observe and measure the Migdal effect across multiple elements relevant to dark matter searches, using an optical Time Projection Chamber operating with low-pressure gas mixtures based on CF4. The signal, consisting of scintillation light and ionisation charge, provides information for 3D track reconstruction, which, for the Migdal effect, is characterised by a fork-like topology with two tracks, from a nuclear recoil and an electron, sharing the same vertex. This distinctive arrangement of two tracks with particles having opposite energy loss, combined with the low-mass target, creates favourable conditions for rare-event searches. In my presentation, I will give an overview of the MIGDAL experiment, focusing on the detector hardware, principles of operation and its performance, science runs at the ISIS/NILE facility of the Rutherford Appleton Laboratory, and preparations for the next run in early 2026.

Presenter: Dr MAJEWSKI, Pawel (STFC/Rutherford Appleton Laboratory)

Session Classification: Migdal search