

# Precise predictions and new insights for the Migdal effect

*Tuesday 6 December 2022 14:20 (20 minutes)*

The scattering of neutral particles by an atomic nucleus can lead to electronic ionisation and excitation through a process known as the Migdal effect. We revisit and improve upon previous calculations of the Migdal effect, providing accurate predictions for large nuclear recoil velocities and demonstrating the importance of multiple ionisation. Our calculations provide the theoretical foundations for future measurements of the Migdal effect using neutron sources, and searches for dark matter in direct detection experiments.

**Authors:** Dr MCCABE, Christopher (King's College London); QUINEY, Harry (The University of Melbourne); Prof. DOLAN, Matthew (University of Melbourne); COX, Peter (The University of Melbourne)

**Presenter:** COX, Peter (The University of Melbourne)

**Session Classification:** Dark matter

**Track Classification:** Dark matter