

PHYSICS COLLOQUIUM

Speaker:

Prof. Marialuisa Aliotta

Professor of Experimental Nuclear Astrophysics
Head of Nuclear Physics Group
School of Physics and Astronomy
University of Edinburgh
Edinburgh



Topic:

The Nuclear Origins of the Elements: From Cosmic Mysteries to Underground Experiments

*Time and
place:*

Tuesday, November 17, 2026, **2:50 pm** – hybrid event

The colloquium will be held in REC/C213.

Online participation possible: Zoom-Meeting: Meeting-ID: 631 3817 8900 / passcode: PC-WiSe25
<https://tu-dresden.zoom-x.de/j/63138178900?pwd=TIuGawPz1dtDA6VzO2N1XdqqI7bE6b.1>

Host:

Prof. Daniel Bemmerer

Abstract:

Nuclear reactions are at the heart of some of the most fundamental processes in the Universe, from the synthesis of the first elements shortly after the Big Bang to the production of heavier nuclei in successive generations of stars. Understanding these processes requires accurate knowledge of nuclear reaction rates at the extremely low energies characteristic of astrophysical environments. However, measuring the relevant cross sections in the laboratory remains a formidable experimental challenge.

Underground accelerator facilities, such as LUNA at the Gran Sasso National Laboratory in Italy and Felsenkeller in Dresden, exploit reduced background conditions to investigate nuclear reactions at energies approaching those of astrophysical interest, offering complementary experimental capabilities.

In this colloquium, I will introduce some of the outstanding questions in nuclear astrophysics and discuss how underground experiments are helping us address them. I will then focus on our current research programme, supported by a European Research Council (ERC) grant, highlighting ongoing investigations at LUNA aimed at improving our understanding of nucleosynthesis in the early Universe and the first generations of stars.

Bio:

Marialuisa Aliotta is Professor of Experimental Nuclear Astrophysics at the University of Edinburgh, UK. She obtained her PhD at the University of Catania (Italy) and held an Alexander von Humboldt Fellowship at Ruhr University Bochum (Germany) before joining the University of Edinburgh as a Lecturer. Her research focuses on low-energy nuclear reactions of astrophysical interest, with particular emphasis on experimental investigations at underground accelerator facilities. She currently leads a research programme funded by a European Research Council (ERC) Advanced Grant. She received the Giuseppe Occhialini Prize and Medal in 2021, jointly awarded by the Institute of Physics (UK) and the Italian Physical Society, and was elected a Fellow of the Royal Society of Edinburgh in 2022. She previously chaired the Experiment Evaluation Committee at TRIUMF (Canada) and currently serves as Vice-Chair of the Joint Scientific Council at GSI/FAIR (Germany).

Mitglied von:



DRESDEN
concept
Exzellenz aus
Wissenschaft
und Kultur