



CERN day at the National Physical Laboratory (NPL)

21st August 2024

Celebrating Science

To inspire and inform

This year marks 70 years of a strategic relationship between the UK and CERN.

The National Physical Laboratory (NPL) is thrilled to host an 11-member delegation from CERN including Mike Lamont, CERN's Director for Accelerators and Technology.

To mark this visit, we've organised a full day of fascinating science lectures on 21st August that celebrate the joint research between NPL and CERN, showcasing our partnership and impact. These lectures will be broadcast live on Teams.

Join us for a journey through innovation and scientific excellence!

10:45 - 11:30 Production of the next generation of medical radionuclides by mass-separation at CERN-MEDICIS chaired by NPL Fellow Paddy Regan

NPL's Principal Scientist Sean Collins and **CERN's Senior Physicist Thierry Stora**, who leads CERN-MEDICIS. They will talk about an amazing partnership between CERN-MEDICIS and NPL that's set to shake up the world of nuclear medicine. Together, they're using super high-tech methods to create new and improved radionuclides like ^{149}Tb and ^{225}Ac , going beyond what's been possible before. You'll also hear about their key contributions to the Horizon 2020 PRISMAP project, which is driving global breakthroughs in radiopharmaceuticals.

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12:15 - 13:00 Experimental activities and plans at the neutron time-of-flight facility (n_TOF) at CERN chaired by NPL Fellow Paddy Regan

NPL's Principal Scientist Giuseppe Lorusso and **CERN's n_TOF spokesperson Alberto Mengoni** will be sharing the scoop on what's happening at n_TOF, a super cool neutron source that's been running at CERN for over 20 years. You'll get a peek

into the latest experiments they've been working on, what's planned for the future, and how NPL is playing a big part in the action.

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14:15 - 15:05 Comparing matter and antimatter at CERN - spectroscopy of antihydrogen referencing to an NPL Cs fountain chaired by Senior NPL Fellow Helen Margolis

NPL's Principal Scientist Rich Hendricks and **CERN's Deputy Spokesperson of the ALPHA (Antihydrogen Laser Physics Apparatus) Experiment Niels Madsen**. Get ready for a fascinating talk about the mind-bending world of matter and antimatter at CERN! Rich will kick things off by sharing how they developed a super-precise and reliable Cs fountain that's helping the ALPHA team at CERN zero in on some groundbreaking science. Then, Niels will take us deeper into what ALPHA is all about. He'll walk us through their latest discoveries in spectroscopy and gravity experiments, the challenges they've faced, and the incredible progress they've made in trapping antihydrogen. Plus, you'll hear about the thrilling future ahead for ALPHA and other experiments in this exciting field.

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16:15-16:35 Materials Engineering at CERN: a vital tool for big science chaired by NPL Principal Scientist Michael Gower

CERN's Materials, Metrology and Non-Destructive Testing Section Leader Stefano Sgobba will discuss 'Materials Engineering at CERN: a vital tool for big science'. He will delve into the intricate engineering behind the Large Hadron Collider, from developing non-magnetic stainless steel and seamless aluminum-alloy rings to cutting-edge niobium additive manufacturing. He will also talk about the pioneering solutions for particle accelerators and detectors.

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16:40-17:00 The challenges of geodetic measurement and alignment at CERN chaired by NPL Principal Scientist Daniel O'Connor

CERN's Head of the Geodetic Metrology Group H el ene Mainaud-Durand will give a presentation on the wider topic of the challenges of geodetic measurement and alignment at CERN.

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