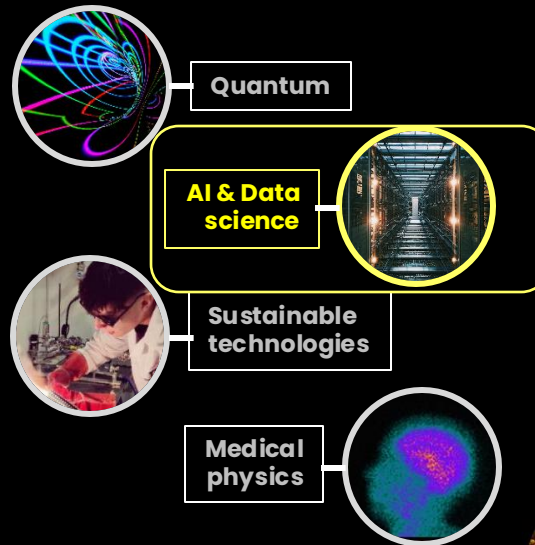


Introduction

Monica D'Onofrio

14/4/2025





Targets/Aims

- **Improve networking:** national and international labs, collaborations with other universities (Hubs) , continue trainings and exploit CDT opportunities further
 - See policy documents, reflections and initiatives discussed at this meeting
- **Identification of opportunities for large bids** and establishment of multidisciplinary cases that can cover a variety of applications for which common methodologies can be deployed:
 - Recent submissions: STFC Small astronomy awards (AI for space) – others?
- **take part to consortia**, i.e. with computer science and with industry partners in the field;
- Access to **computing resources** adequate for future challenges: exascale computing
- **Skills/training** → on **data science and AI**, improve AI provision in education

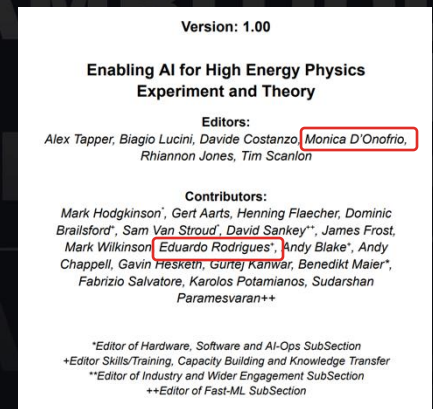
Advancing AI policies and exploitation plans

Advancing AI in High-Energy Physics: A UK Initiative

- Setting a strategic framework for the UK HEP community (and beyond) to fully harness AI's potential. The [document](#) highlights key challenges, opportunities, and a preliminary **action plan**, exploring critical areas such as the need for better AI hardware and software infrastructure, AI-driven operations (AI-ops), specialized training and skills development, and stronger engagement with industry partners.

AI internationally and more generally:

- The growing role of AI in science is also reflected in other recent publications, such as the EUCAIF AI/ML paper (<https://arxiv.org/abs/2503.14192>)
- the [Institute of Physics \(IoP\) report](#) (T. Shears)
- AI in Accelerator Science activities – [ARTIFACT](#) (J. Wolfenden and QUASAR group)



Physics and AI impact project pathfinder

Physics has been an early-adopter, heavy user of and contributor to the field of AI. We are working with the community to identify the unique challenges and opportunities for AI to further benefit physics research and for physics to contribute to the development of AI technologies.

[Download the report \(PDF, 3MB\)](#)



AI/Data Science related highlights

- Talk Rob McNulty (LIV.INNO PhD) at IoP on “Validation and Calibration of Machine Learning Models: Particle Identification and Eye-Disease Prognosis”
 - From ATLAS to healthcare applications
- CNN in CMP, from Jake Diprose and Brianna Heazelwood : “Convolutional neural network approach to ion Coulomb crystal image analysis”

I am sure there are more news to be shared – would be good to get the habit of sharing AI or data-science related highlights that can be widely shared!

Also – from the university: <https://news.liverpool.ac.uk/2025/04/07/how-it-services-is-bringing-ai-to-the-university/>

AI at UoL - news

News article: How IT Services is bringing AI to the University

- <https://news.liverpool.ac.uk/2025/04/07/how-it-services-is-bringing-ai-to-the-university/>

Artificial Intelligence (AI) is a hot topic right now, with everything from the media to medicine exploring how it can change the way we work and learn.

IT Services is meeting the opportunities and challenges that AI brings head on by testing useful applications, developing secure solutions, and creating proof-of-concept (PoC) projects to help our staff and students engage with AI safely and effectively.

One of the most exciting projects IT Services is currently working on is our in-house chatbot, which will help you find information quicker and easier on our websites.

Chatbots simulate human conversation, meaning you can ask questions about everything from places to eat on campus to what's available to study, and receive an instant response. **Read this blog** to find out exactly what goes into making a chatbot and where this project is currently up to.

Other projects to help future proof our campus include Robotic Process Automation (RPA) and Virtual Reality (VR) solutions.

Check out **Behind the Screen** for more information about how technology will shape the University's future. You can find out about opportunities to get involved by following IT Services on **Instagram** and **LinkedIn**, and signing up for their newsletter, **YOUR I.T. Insight**.

AI Day - NVIDIA

- There will be a pilot to a wider event in preparation for Sept-October
- When: **20/5** (hold the date) – 9.30 am – 2 pm
 - Although it is unclear how wide the event will be (and in which parts)
- Tentative themes and items:
 - A short introduction to the Alan Turing Institute and UoL being part of Turing university network from Valentina Tamma, Co-chair of Knowledge Graphs Interest group about Turing Interest Groups
 - Elevator-pitch – Staff to showcase their work in Data Science and AI (2 minutes slot)
 - Paul Graham, Senior Solutions Architect – HER, HPC & AI, NVIDIA UK&I | EMEA, presents “AI for Science” which covers an introduction into how we see AI and HPC being used across scientific domains and applied to research
 - ***[around lunch time] Wider resources - ambassador role and Jianping***
 - Roundtable Discussion around Research, Partnerships and Impact

Opportunities - computing

- AIRR: access to high performance computing – for expression of interest
 - <https://www.ukri.org/opportunity/access-to-high-performance-computing-facilities-spring-2025/>

Access to High Performance Computing Facilities: Spring 2025

UKRI and EPSRC have an open call for access to the Isambard 3, ARCHER2 and Bede HPC systems.

Isambard 3 is a CPU-only HPC system based in Bristol that consists of 384 nodes based on the NVIDIA Grace CPU (These are not GPUs). Each node has two NVIDIA Grace CPU Superchips with 72 high-performance and power-efficient Arm cores. All together users will have access to 55,296 cores for their computational work flows.

ARCHER2 is the UK's national supercomputing service, hosted by EPCC (Edinburgh Parallel Computing Centre) at the University of Edinburgh. It gives users access to 5,860 AMD EPYC compute nodes, each with 128 cores, totaling 750,080 cores.

- NVIDIA grant programme

- <https://www.nvidia.com/en-us/industries/higher-education-research/academic-grant-program/>

Problem: use-cases we usually consider are less demanding but need more dynamism..

This opportunity provides an open and flexible route to computational support for high quality projects across the entire UK Research and Innovation (UKRI) remit.

This call for access encourages applications that:

- Involve early career researchers
- Onboard and train new users
- Significantly push the boundaries in computational research using high performance computing (HPC) in your field

Agenda today

AMBITIOUS
INSPIRING
SPIRITED
CHALLENGING
INSPIRING
US
ED
NG
US
ED

11:55 → 12:05 **Introduction**

🕒 10m 

Speaker: Monica D'Onofrio

12:10 → 12:40 **Recent papers, news and Initiatives**

🕒 30m 

- EU AI/ML paper <https://arxiv.org/abs/2503.14192>
- IoP report
- AI for High Energy Physics
- others

Speakers: Carsten Welsch (University of Liverpool), Eduardo Rodrigues, Joseph Wolfenden (University of Liverpool), Monica D'Onofrio, Tara Shears



12:40 → 13:00 **Machine learning for particle accelerators**

🕒 20m 

Speaker: Andrea Santamaria Garcia (University of Liverpool and Cockcroft Institute)

13:05 → 13:25 **Roundtable on experiences, opportunities and challenges (ALL)**

🕒 20m 

- AI superconductor (James Ingham)
- open Grant opportunities and grants in preparation
- computing infrastructure challenges
- partnerships

Speaker: Dr James Ingham (University of Liverpool)