

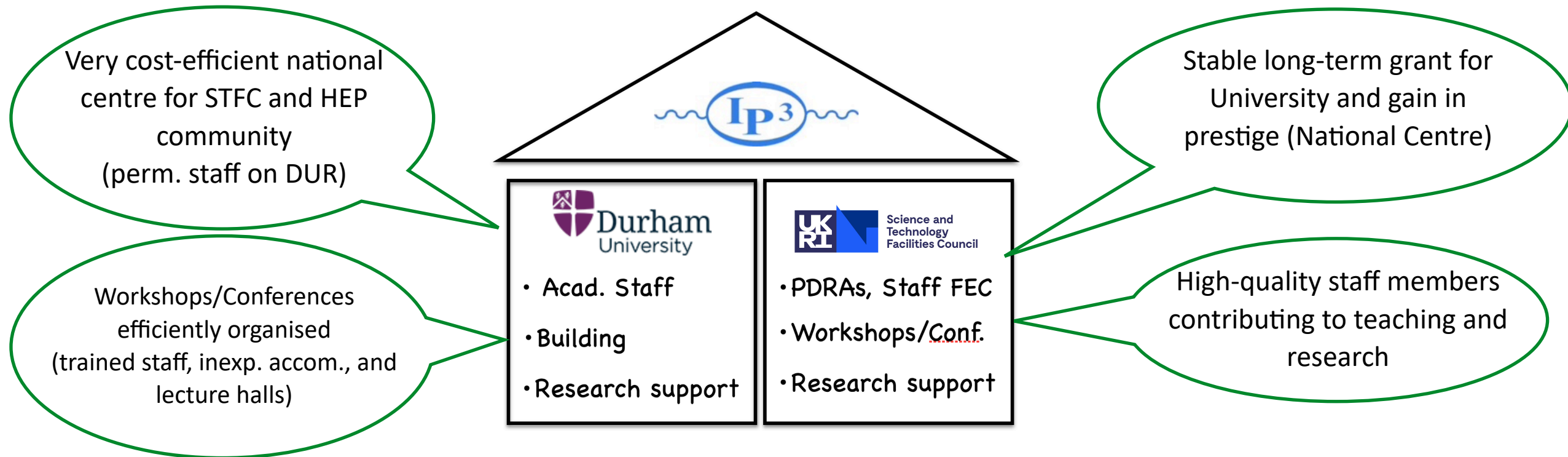
The Institute for Particle Physics Phenomenology (IPPP)

**UK's National Centre
for Particle Phenomenology**



Structural overview of IPPP

- The **Institute for Particle Physics Phenomenology (IPPP)** in Durham is **UK's National Centre for Particle Phenomenology** since **2000**



Objectives of National Centre

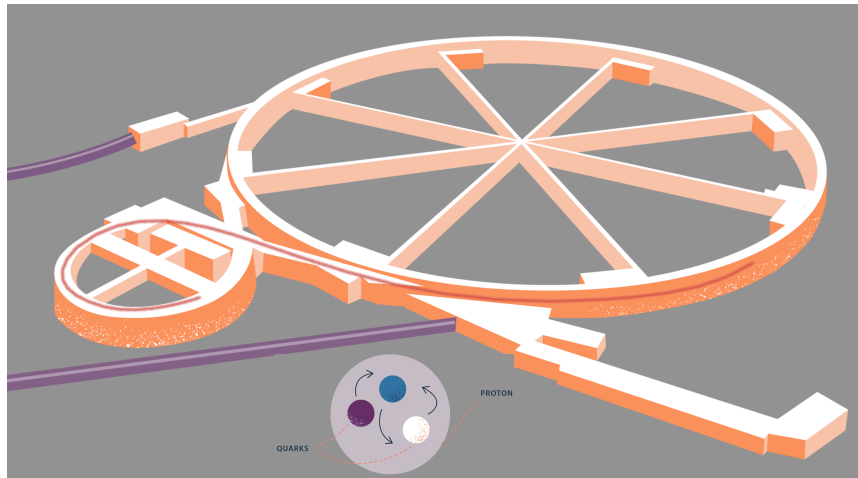
Research support	Science exchange and facilitation	HEPData and Scientific computing	Outreach and Science popularisation
• world-leading research in particle physics • experiment and theory support of all STFC-funded particle physics areas	• workshops and schools (~25 per year) • wide participation (~1000 per year) • associates, DIVA, Sen Exp.	• HEPData - data preservation framework • PhenoGrid • IT security	• Schools engagement • Science fairs • Tutorships

Stakeholders: **DU/UEC** **DU-Students** **HEP-researchers (UK, WW)** **STFC** **public**

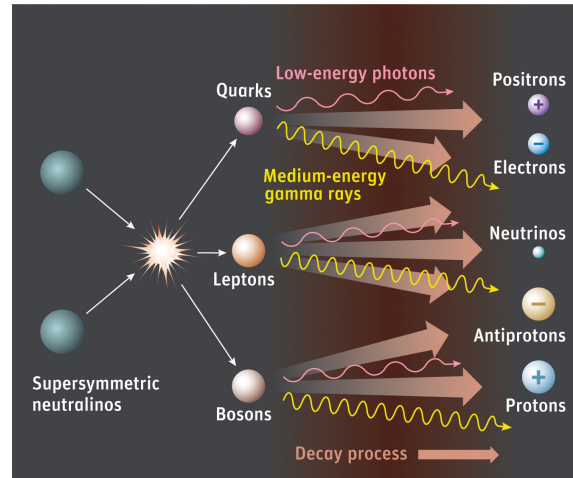
IPPP's research

Addressing some of the most fundamental questions in nature

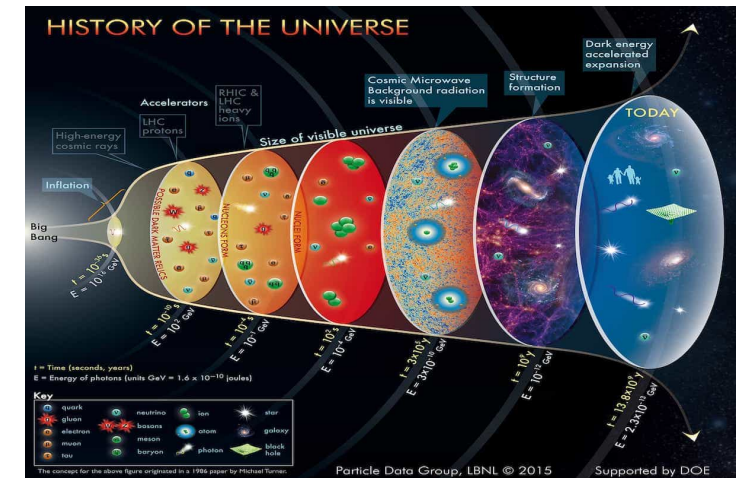
Structure of matter



What is Dark Matter



Evolution of the Universe



Methods

- Quantum Field Theory
- Statistical Methods
- (Quantum) Machine Learning
- Numerical optimisation
- High-Perf Computing
- Quantum Computing

Wide range collaborations

- QLM (Physics)
- Cond. Matter (Physics)
- Quantum Sensing (Chem/Physics)
- Astro/ICC (Physics)
- IDAS (Data Science)
- HPC (Comp. Science)

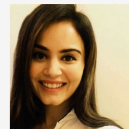
IPPP's contribution to science exchange

Senior Experimental Fellowships 2016–2017



Andy Buckley, Mark Owen – Glasgow

Boosting $H \rightarrow b\bar{b}$ discovery with heavy-flavour QCD measurement and modelling



Sarah Malik, Bjoern Penning – Imperial, Bristol

New directions for collider DM searches



IPPP Associateships 2023–2024

Jenni Smillie – University of Edinburgh



Research:
IPPP Contact: Jeppe Andersen
Year: 2023–2024

Alan Barr – Oxford



Research:
IPPP Contact: Michael Spannowsky
Year: 2023–2024

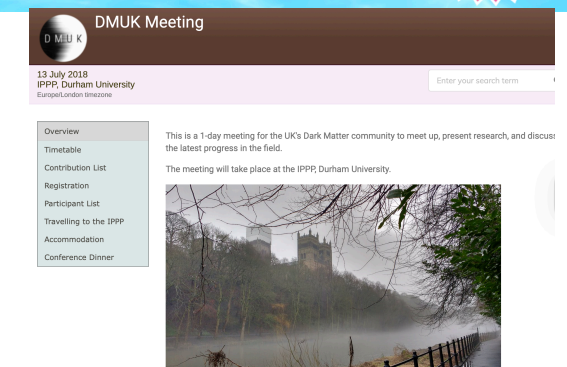
Workshops and Conferences (>350)

Schools (YETI, YTF, STFC, BUSSTEPP) (>50)

Associateships (>75)

Senior Experimental Fellowships (>20)

DIVA Fellowships (>20)



YETI 2019 - To Infinity and Beyond: New Techniques for New Physics



6–9 Jan 2019
Europe/London timezone

Enter your search term

New Physics: From Colliders to Cosmology



9–11 Apr 2025
Dawson Building
Europe/London timezone

Enter your search term

UK HEP Forum

21–22 October 2025
The Cosener's House, Abingdon, Oxfordshire

Wandering in the Dark



Registration: <https://conference.ippp.dur.ac.uk/event/1477/registrations/205/>

Organising Committee:

R. Alonso (C), T. Cornford, D. Croon, S. Dixon, J. Ellis, J. Linacre (C), D. van Dyk, M. Wielers



Science and Technology Facilities Council
Particle Physics



QSFP 2020

First international school on Quantum Sensors for Fundamental Physics

6–10 January 2020, Durham

Angelo Bassi - Tests and limits of the quantum superposition principle
Jonathan Braden - False vacuum decay and non-equilibrium QFTs
Edward Daw - Sikivie-style resonant axion haloscopes
Yuta Mishimura - Laser interferometer search for non-standard physics
Marianna Safronova - EDMs, ions, atoms and molecular probes for new physics
Ralf Schuetzhold - Gravity Simulators
Michal Zawada - Atomic clocks and spectroscopy experiments
Jure Zupan - Beyond the Standard Model theories

Organizing Committee:

Martin Bauer, Diego Blas, Jon Coleman, Ruth Gregory, Denis Martynov, Gavin Morley, Ruben Saakyan, Silke Weinfurter



Science & Technology Facilities Council

Senior Experimental Fellowships 2017–2018



Ken Long, Dan Watts – Imperial, York

Bridging the gap between neutrino-nucleus and electro-nucleus scattering



Tim Gershonp – Warwick
Towards the ultimate precision in flavour physics

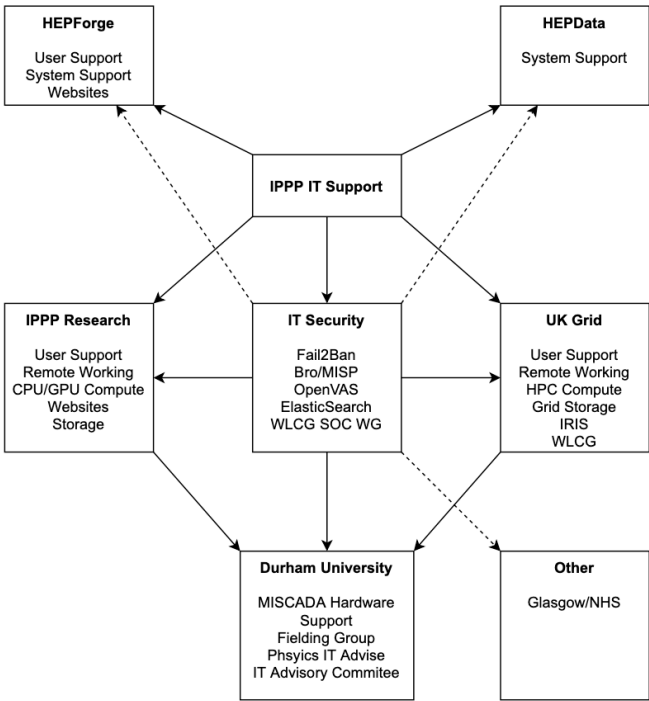
IPPP's scientific computing

HEPForge

HEPForge is a development environment for high energy physics software projects.

Some of the benefits offered by HEPForge are:

- Shell Account
- Web Hosting
- Public Version Control Hosting (SVN, Git or Mercurial)
- Developer Mailing Lists
- Bug Tracker
- Wiki and Documentation system



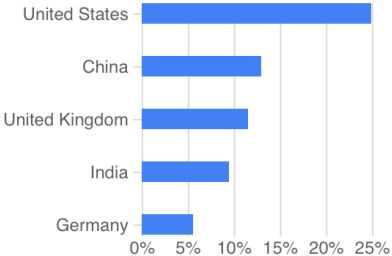
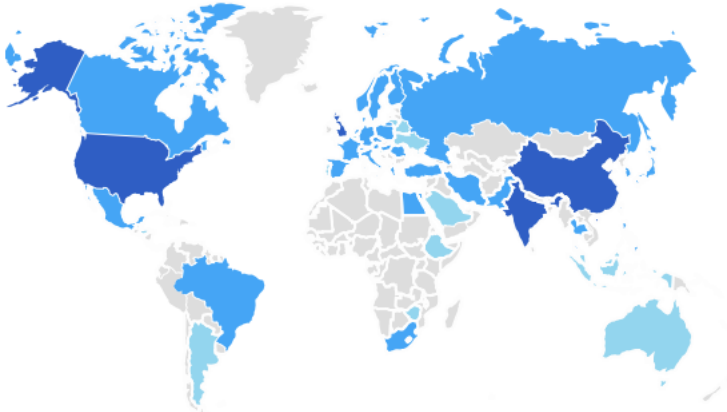
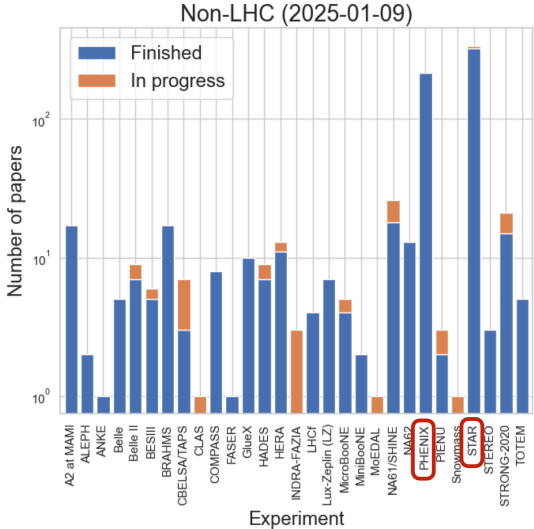
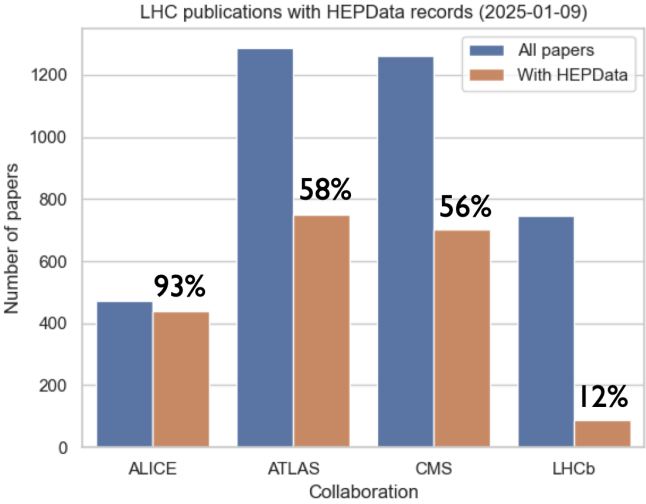
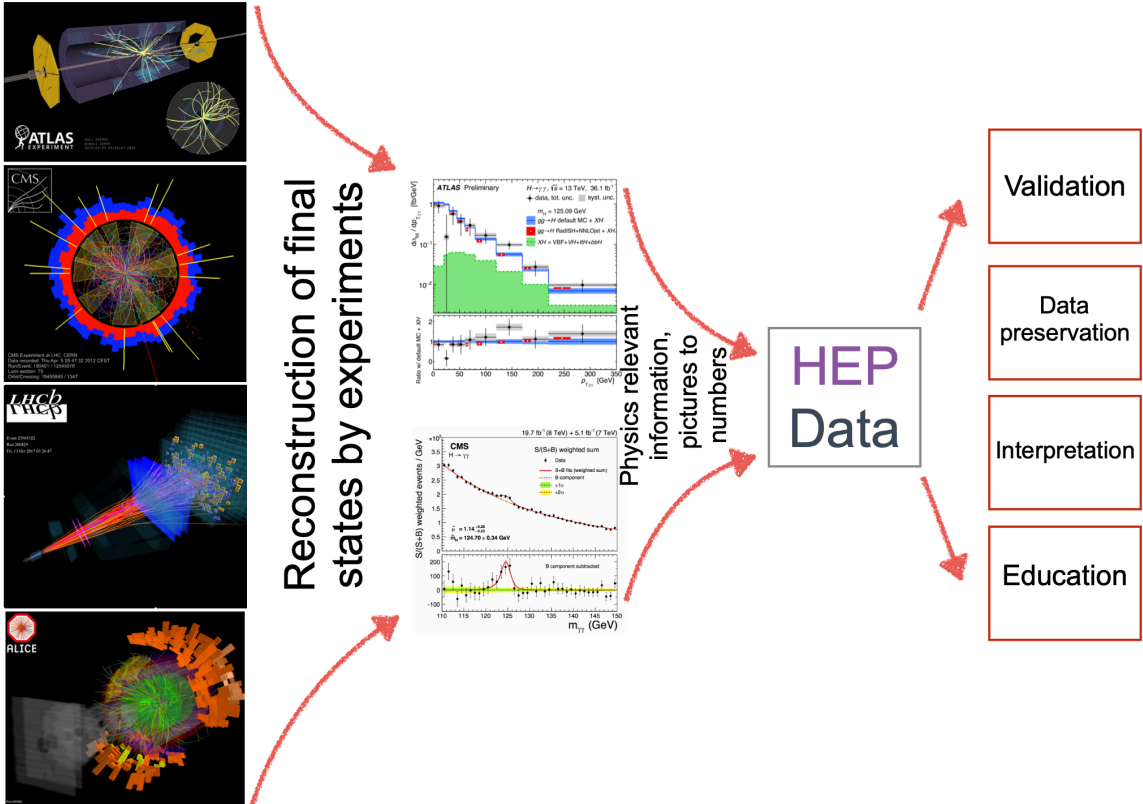
GridPP

Distributed Computing for Data-Intensive Research

Take the tour!

phenogrid

... particle physics phenomenology on the grid



IPPP's outreach programme



An Introduction to the IPPP!

2,327 views • 5 years ago

The Institute for Particle Physics Phenomenology (IPPP) is a leading international centre for research in particle physics phenomenology - the bridge between theory and experiment in the study of the tiny building blocks of all matter in the universe and of the fundamental forces that operate between them.

@IPPP_Durham at the Orkney Science Festival 2018



Science Fairs

School engagement

Master Classes

Youtube/Twitter channels

Pint of Science and Podcasts



IPPP Durham

@ippddurham9492

As particle physicists we try to understand the fundamental building blocks of nature. The...more

ippd.dur.ac.uk and 1 more link

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Institute for Particle Physics Phenomenology

