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NEXUS - WP1

Low Background Technologies

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Logistics

- WP1 mailing list
- Monthly meeting/touch base
- Report writing

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Objectives

Reinforce and innovate low-background detection capabilities to achieve sensitivities and throughput required for breakthrough discoveries in underground particle physics

Enhance Radio-Assay Capabilities

- Coordinate facilities across European Underground Laboratories (ULs)
- Provide comprehensive assay services for global customers
- Develop partnerships with quantum computing, biophysics, environmental science, and industry

Enable Radiopure Component Production

- Support manufacturing of ultra-low background materials
- Address single-event damage applications in industry
- Meet stringent requirements for dark matter and rare event detectors

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Objectives

Objectives

- O1.1 DUL background reduction and mitigation strategy
- O1.2 Reinforce and innovate the development of assay technique s
- O1.3 Exploiting pulse shape discrimination and to improve gamma spectroscopy sensitivities
- O1.4 Define protocols for building radio pure electronic circuits

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Impact and deliverable

Broader Impact

- Fundamental research: Dark matter detection, neutrinoless double beta decay
- Emerging technologies: Quantum computing development
- Industrial applications: Single-event damage testing, radiation-sensitive components
- Cross-disciplinary: Environmental science, biophysics

Deliverables

- D1.1 Dissemination and publication of test results on radon absorption
- D1.2 Progress report on low background suppression technologies of interest

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Tasks

- **Task 1.1** innovative technology in radio-purity assay
  ➡UKRI, CNRS, INFN, LSC, SNOLAB, UWC, SURF
- **Task 1.2** new technology for radon free environment
  ➡UKRI, CNRS, INFN, LSC, SNOLAB, UWC, SURF
- **Task 1.3** new protocols for production of radio-user materials
  ➡UKRI, CNRS, INFN, LSC, SNOLAB

A responsible for each institution/task is required

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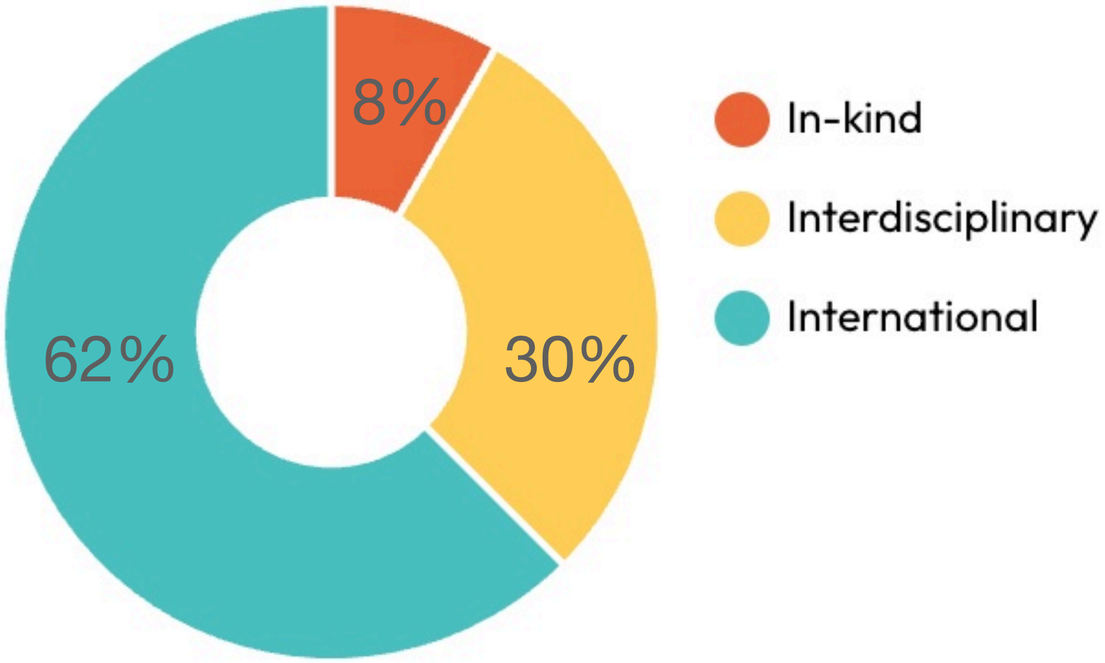
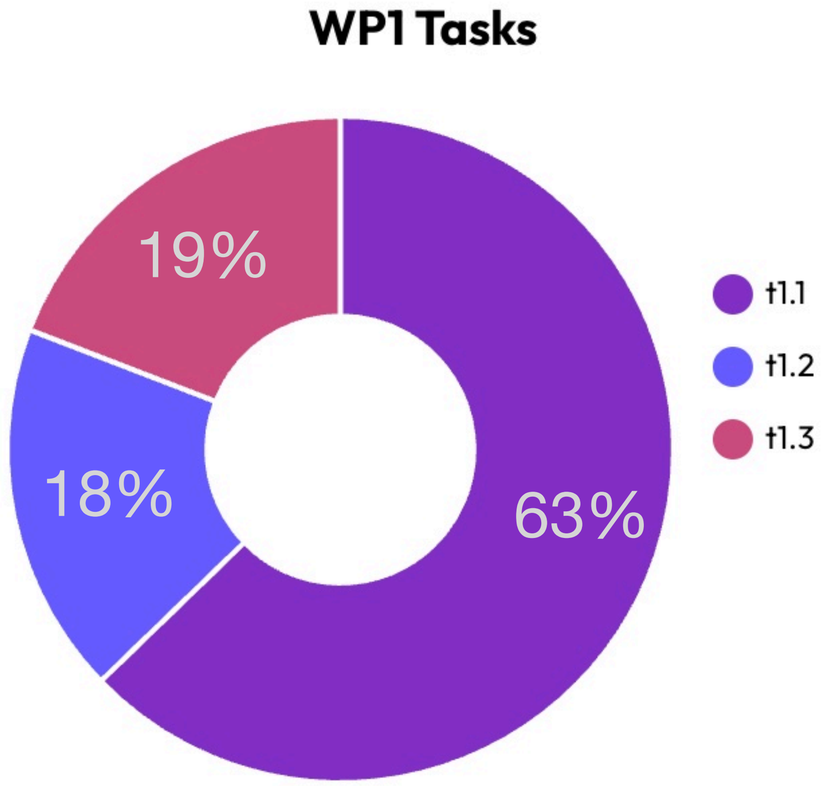
Secondments





Normalised by secondment duration

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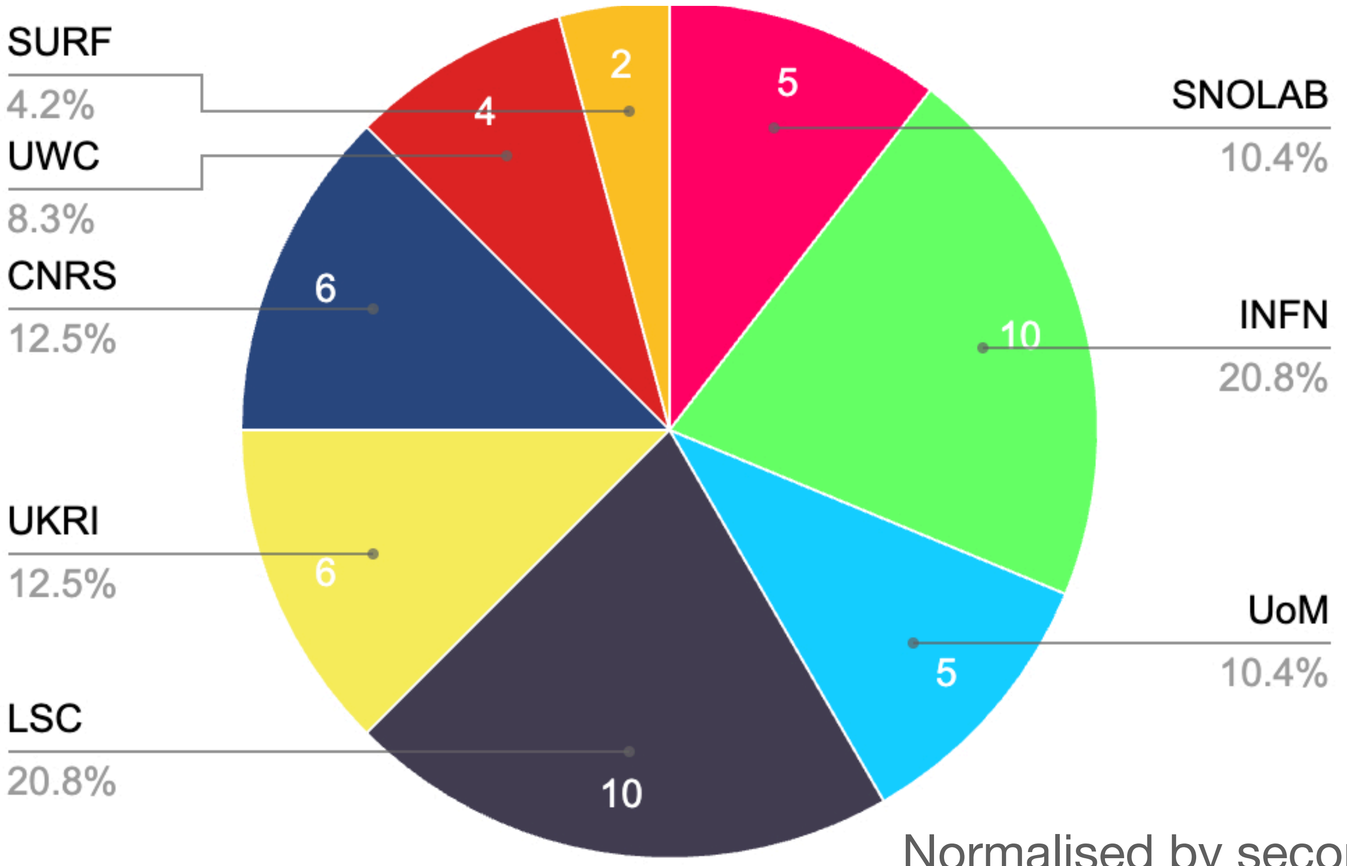
Hosting Institue Visits



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