Plan Overview

A Data Management Plan created using DMPonline

Title: Into the Strong Field Limit: Ultrafast materials science for a multi-petawatt laser-driven ‘Coherent Harmonic Focus’

Creator: Brendan Dromey

Principal Investigator: Brendan Dromey

Data Manager: Brendan Dromey

Project Administrator: Brendan Dromey

Affiliation: Queen's University Belfast

Funder: Engineering and Physical Sciences Research Council (EPSRC)

Template: EPSRC Data Management Plan

ORCID iD: 0000-0001-8421-3801

Project abstract:

Existing high-power laser technology is nearing saturation for sustainably advancing intensity growth (Fig. 1). “Into the Strong Field Limit” (*ISFL*) will pioneer the next transformative leap in intensity by uniting ultrafast material, plasma, and laser sciences to deliver a Coherent Harmonic Focus (CHF, Fig. 2) by building directly on breakthrough results [1,2] for harmonic efficiency on the Gemini laser (Figs. 3,4). In addition, *ISFL* will equip the UK high energy density science (HEDS) community with new knowledge for full spatiotemporal control of relativistic laser plasmas at intensities >10^{23} Wcm^{-2} ahead of Vulcan 20 Petawatt commissioning at the Central Laser Facility (CLF) in 2029. Aligned with UKRI’s vision for “*Transforming Tomorrow Together*” (*TTT*), our strategy, ‘*Relativistic Limit Ready’*, mobilises an international network to deliver novel tools for scientific discovery and innovation at unprecedented intensities.

ID: 187181

Start date: 01-06-2026

End date: 31-05-2030

Last modified: 19-02-2026

the creator(s) as the source of the language used, but using any of the plan's text does not imply that the creator(s) endorse, or have any relationship to, your project or proposal

Into the Strong Field Limit: Ultrafast materials science for a multi-petawatt laser-driven ‘Coherent Harmonic Focus’

Data Collection

What data will you collect or create?

Experimental and numerical/simulation data from Research.

How will the data be collected or created?

All recorded and stored digitally.

Documentation and Metadata

What documentation and metadata will accompany the data?

The each experimental dataset will be accompanied by the following metadata that is required for the physical interpretation of the results:

- CCD settings
- Sample materials used
- Laser parameters
- Filtering used for optical and XUV radiation
- Grating used for data collection.

For simulation data sets all meta data required to reproduce the data will be provided with current and historical versions of codes made available as well.

Ethics and Legal Compliance

How will you manage any ethical issues?

There are no ethical issues related to this work.

How will you manage copyright and Intellectual Property Rights (IPR) issues?

All matters arising regarding intellectual property rights are overseen by Queen's University Belfast. Copyright will be held by Queen's University Belfast. A standardized End-User License Agreement

(EULA) will be required for data access, specifying that the dataset is only for academic and research purposes.

Storage and Backup

How will the data be stored and backed up during the research?

Data will be initially stored in secured, encrypted storage on-site. Regular backups will be made to both a secure cloud storage service and an off-site physical storage facility.

How will you manage access and security?

Access will be restricted to authorized personnel. Multi-factor authentication and encryption will be employed for both on-site and cloud storage.

Selection and Preservation

Which data are of long-term value and should be retained, shared, and/or preserved?

It is difficult to tell in advance exactly what data will be of value, but certainly the data related to the deliverables in Work packages 1-4 of ISFL will be retained, shared, and/or preserved.

What is the long-term preservation plan for the dataset?

The dataset will be uploaded to a public research data repository that complies with FAIR (Findable, Accessible, Interoperable, Reusable) data principles.
Additionally, dataset will be maintained by a team of data administrators who will be responsible for regular updates and addressing any issues with data quality or security. The dataset will be archived after a pre-determined period, but will remain accessible for academic research.

Data Sharing

How will you share the data?

The dataset will be made available through a secure online repository, accessible only to verified users who have agreed to the EULA. Any modifications or redistribution of the dataset are prohibited as per the EULA.

Are any restrictions on data sharing required?

Only researchers and academic institutions will be granted access, and the EULA prohibits any commercial usage.

Responsibilities and Resources

Who will be responsible for data management?

Oversight will rest with Prof Brendan Dromey who will liaise with on-site support staff.

What resources will you require to deliver your plan?

We will need secure storage solutions, administrative support for monitoring data access and usage, and potential cloud-based resources for data sharing.