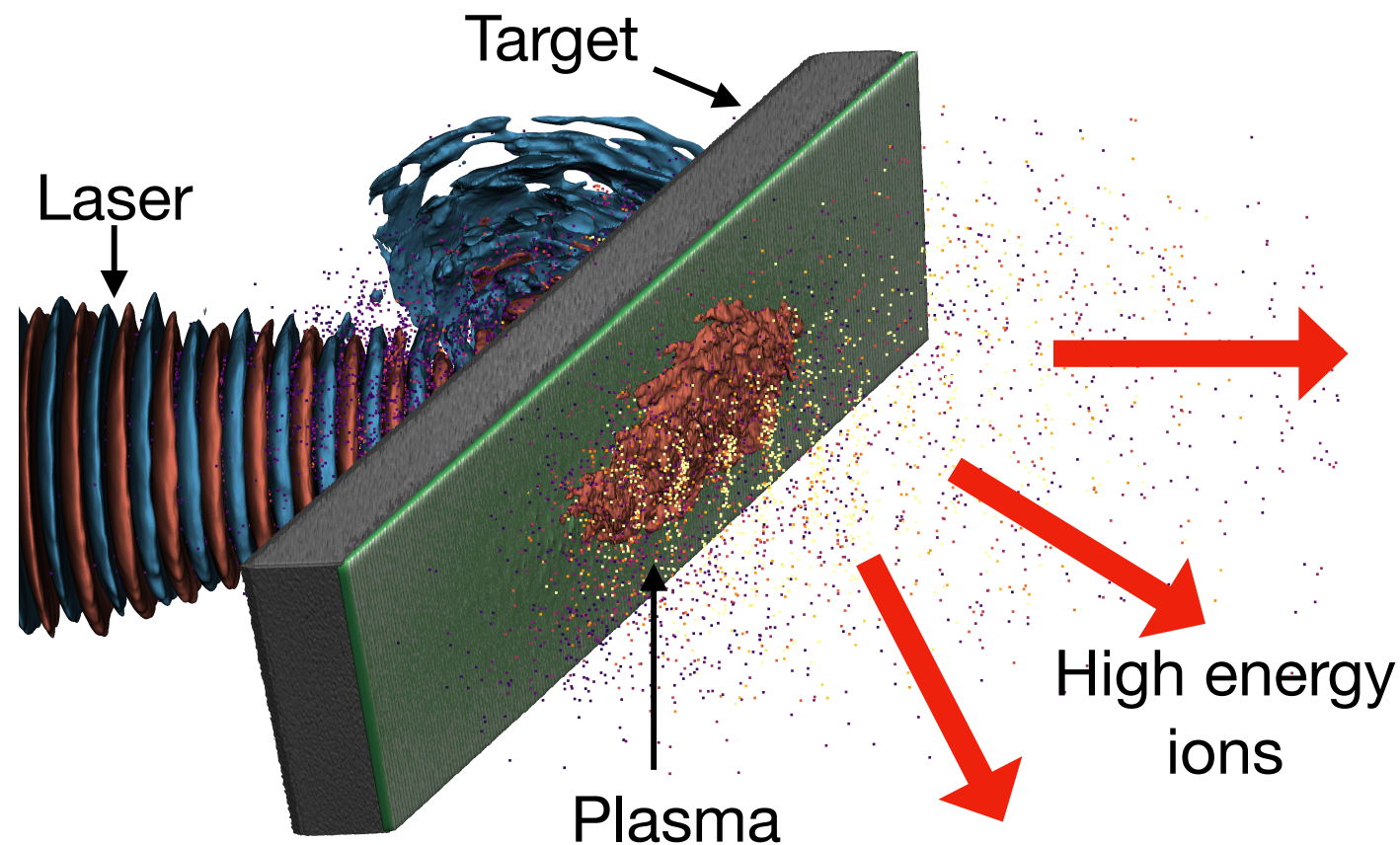


Laser-driven source (WPB): Introduction & Overview

LhARA Collaboration Meeting #8, 18-19th September 2025

Laser driven ion source for LhARA



University of
Strathclyde
Glasgow

IMPERIAL

QUEEN'S
UNIVERSITY
BELFAST

- High energy (e.g. ~ 15 MeV p^+ , 4 MeV/u C^{6+}) from source
- Needs to operate at 10 Hz for long periods
- Deliver 10^9 protons or 10^8 carbon ions per shot in narrow energy band & solid angle



Previous highlights

High Fidelity Simulation Campaign

State-of-the-art modelling to:
Predict laser & target requirements
Optimisation of parameters hard to access experimentally

Source demonstration at SCAPA

Multiple campaigns at SCAPA Bunker B, showing:
Acceleration of protons up to ~12 MeV, enabling PoPLaR
Demonstration of repetitive operation of source

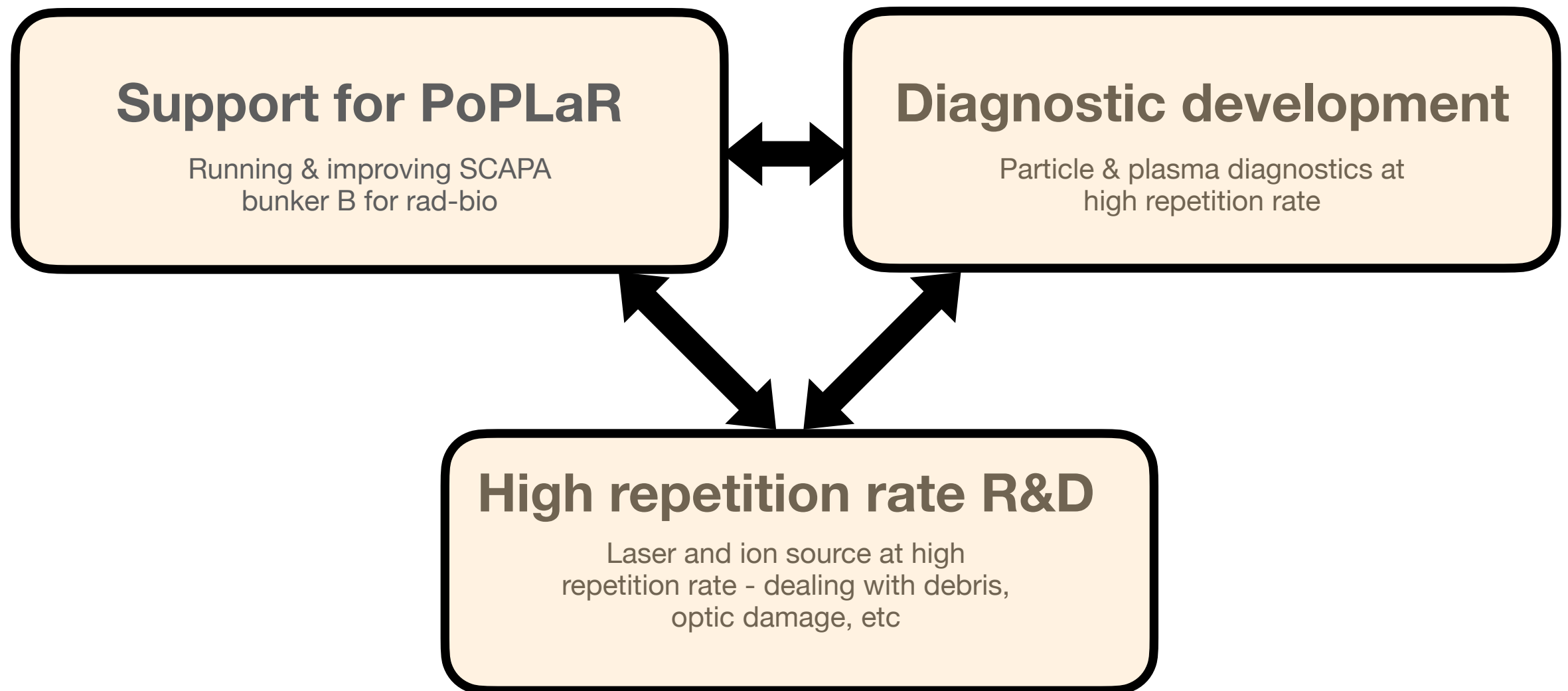
Technical R&D

Derisking key technology :
Integrated data acquisition and experimental control platform at SCAPA
Investigating debris generation and optics degradation
Development of diagnostics capable of measuring LhARA beams



**Specification of
LhARA laser**

Current LhARA-related activities



This session

- ➡ **Developments for SCAPA Bunker B - Ben Torrance (Strathclyde)**
- ➡ **Progress Towards a Calibrated High Repetition-Rate Thomson Parabola Spectrometer at SCAPA - Ben Torrance (Strathclyde)**
- ➡ **Optimisation of high repetition rate diagnostic design using synthetic modelling - me (Imperial)**
- ➡ **Discussion and Q&A**