



Contribution ID: 2359 Contribution code: TUPA060

Type: **Poster Presentation**

Laser source and Gabor lens for use within LhARA

Tuesday, 9 May 2023 16:30 (2 hours)

The 'Laser-hybrid Accelerator for Radiobiological Applications', LhARA*, facility is conceived to study the biological response to ionising radiation, specifically focussing upon the co-called 'FLASH'(>40 Gy/min) regime. A high repetition laser, directed at a thin target, will generate high intensity, ultra-short, particle bunches, at up to 15 MeV/u (and subsequent acceleration up to 127 MeV/u, as required). These particles will be guided to one of several end-stations, whereby the effects can be studied via in-vitro or in-vivo experiments using newly developed detectors, existing phantoms, and test samples.

The laser driven ion source and capture systems are key technologies for LhARA. We will discuss ongoing R&D into delivery of a laser driven ion source with the required beam parameters, stability and repetition rate. Following the idea originally outlined by Gabor**, the current plan and status of using large volume, high-density, low-temperature, non-neutral plasmas as beam optics within the capture system will also be presented.

Funding Agency

UK Research and Innovation (UKRI) Science and Technology Facilities Council (STFC) Ion Therapy Research Facility (ITRF)

Footnotes

- Aymar et al.. LhARA: The Laser-hybrid Accelerator for Radiobiological Applications. *Front. Phys.* 8 (2020) 567738

** Gabor. A Space-Charge Lens for the Focusing of Ion beams. *Nature* 160 (1947) 89

I have read and accept the Privacy Policy Statement

Yes

Primary author: BAKER, Christopher (Swansea University)

Presenter: WHYTE, Colin (University of Strathclyde)

Session Classification: Tuesday Poster Session

Track Classification: MC3: Novel Particle Sources and Acceleration Techniques: MC3.A15: New Acceleration Techniques