Contribution ID: **1142** Contribution code: **TUPM112** Type: **Poster Presentation**

The Australian X-Band electron test accelerator

Tuesday 3 June 2025 16:00 (2 hours)

The University of Melbourne's Xband Laboratory for Accelerators and Beams (XLAB) is collaborating with CERN on the design and testing of high-gradient accelerating structures. Together with the Australian Synchrotron (ANSTO), we are developing the X-Band Electron Test Accelerator (xBeta), a compact high-gradient electron accelerator.
The system will feature a photogun to generate short electron bunches of less than 10ps, producing pulsed electron beams of energy 5–30 MeV at repetition rates of 50–400 Hz. A spectrometer will be available for precise characterization of the energy spectrum and the facility will be used to explore medical and industrial applications of high-gradient accelerator technology.
Applications include electron bombardment to create nitrogen-vacancy centres in diamond, mono-energetic X-rays for medical imaging offering enhanced contrast and reduced radiation doses and novel channels for medical isotope production. These features make the system a versatile platform for innovations in fundamental research, healthcare, and industry.

Footnotes

Paper preparation format

LaTeX

Region represented

Asia

Funding Agency

Author: RASSOOL, Roger (The University of Melbourne)

Co-authors: VALERIAN, Joel (The University of Melbourne); VOLPI, Matteo (The University of Melbourne); PUSHKARNA, Paarangat (The University of Melbourne); GIANSIRACUSA, Paul (The University of Melbourne); DOWD, Rohan (Australian Synchrotron - ANSTO); SHEEHY, Suzanne (Australian Nuclear Science and Technology Organisation); TAN, Yaw-Ren (Australian Synchrotron - ANSTO)

Presenter: RASSOOL, Roger (The University of Melbourne)

Session Classification: Tuesday Poster Session

Track Classification: MC2: Photon Sources and Electron Accelerators: MC2.A08 Linear Accelerators