

The Laser Laboratory for Acceleration and Applications (L2A2)

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The Laser Laboratory for Acceleration and Applications is presently under construction at the University of Santiago de Compostela. The core of the project is compact 50 TW ultra-short pulse laser system with two beam lines.

The main line will produce ultra-short pulses (25 – 50 fs) with moderate energy (~ 1.2 J) and high-contrast ($1:10^{-10}$ ASE) with a 10 Hz repetition rate. The initial use of this line will be TNSA proton acceleration for activation purposes. In particular, we are interested in developing multi-shot target technologies and sensors for the characterization of the ion beam. Those developments will be used to investigate the viability of single-dose radioisotope production for preclinical research and clinical applications, mostly short half-life PET isotopes like ¹¹C.

The second beam line will produce also ultra-short pulses but with lower pulse energies (~ 1 mJ) and higher repetition rate (1 kHz). This line will be used for X-ray production and particle acceleration using the λ_3 regime. Other applications of femtosecond laser pulses, such as micro machining, fabrication of photonic devices, microfluidic structures manufacturing, nanoparticles generation or fundamental studies on material structures, will be also developed using this beam line.