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The PETALO project

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PETALO (Positron Emission TOF Apparatus with Liquid xenOn) is a project that uses liquid xenon (LXe) as a scintillation medium, silicon photomultipliers as a readout and fast electronics to provide a significant improvement in PET-TOF technology. Liquid xenon allows one to build a continuous detector with a high stopping power for 511-keV gammas. In addition, SiPMs enable a fast and accurate measurement of the time and energy with a small dark count rate at the low temperatures required from LXe. PETit, the first PETALO prototype built at IFIC (Valencia), consists of an aluminum box with one volume of LXe and two planes of VUV SiPMs, which register the scintillation light emitted in xenon by the gammas coming from a Na22 radioactive source placed in the middle. The LXe volume is divided in small, highly reflective cells to enhance light collection.
In this talk I will describe the PETALO concept and present the energy and time measurements performed with PETit.

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