# SIRENA software for Athena X-IFU event reconstruction.

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## Abstract

The X-ray Observatory Athena was proposed in April 2014 as the mission to implement the science theme "The Hot and Energetic Universe" selected by ESA for L2 (the second Large-class mission in ESAs Cosmic Vision science programme). One of the two X-ray detectors designed to be onboard Athena is X-IFU, a cryogenic microcalorimeter based on Transition Edge Sensor (TES) technology that will provide spatially resolved high-resolution spectroscopy. X-IFU will be developed by an international consortium led by IRAP (PI), SRON (co-PI) and IAPS/INAF (co-PI) and involving ESA Member States, Japan and the United States. In Spain, IFCA (CSIC-UC) has an anticipated contribution to X-IFU through the Digital Readout Electronics (DRE) unit, in particular in the Event Processor Subsytem. For this purpose and in collaboration with the Athena end-to-end simulations team, we are currently developing the SIRENA package as part of the publicly available SIXTE end-to-end simulator. SIRENA comprises a set of processing algorithms aimed at recognizing, from a noisy signal, the intensity pulses generated by the absorption of the X-ray photons, to lately reconstruct their energy, position and arrival time. This poster describes the structure of the package and the different algorithms currently implemented as well as their comparative performance in the energy resolution achieved in the reconstruction of the instrument events.