Microcalorimeter readout of NewAthena/X-IFU prototype electronics on a cryogenic test bench

NewAthena is ESA's next large class mission, to be launched in the late 2030s for observing the hot and energetic Universe in the X-ray. The X-ray Integral Field Unit (X-IFU) is one of its two instruments, it will rely on an array of 1504 Transition Edge Sensors micro calorimeters cooled to 55mK to provide high resolution (3eV design goal at 7keV) spatially resolved observations in the X-ray.

A cryogenic test bench has been developed at IRAP, with a TES readout chain that replicates the general working principles of X-IFU. Its goals are testing and validating the first prototypes of the X-IFU readout chain, and allowing the development of calibration sources for X-IFU.

In this presentation, I will introduce the working principles of the readout chain, the main results obtained with electronics from NASA/Goddard and NIST, as well as the first results obtained with prototype readout electronics, and the upcoming measurements.