

Seminar: Joel Ullom, NIST (Chief, Quantum Sensors Division NIST)

Studies of Nuclear Decay

with Transition-Edge Sensor Microcalorimeters

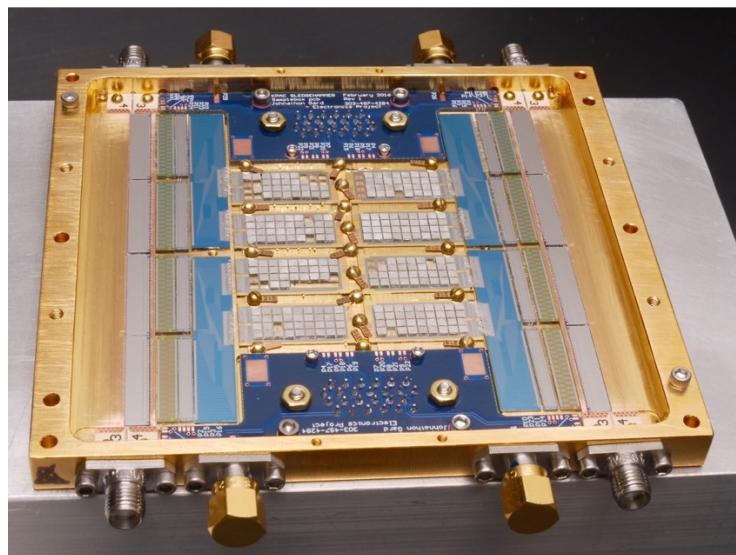
14th of January 2026 – 10 am



APC, 10 rue A. Domon et L. Duquet, 75013 PARIS -> room 454A

Or via zoom : <https://cnrs.zoom.us/j/93469819281?pwd=tX8wildo09uEhLfclX2xLNvNbJ6atS.1>

Low temperature sensors are finding applications in a growing number of fields ranging from cosmology to quantum information science. Many applications require the use of sensor arrays and multiplexed readout schemes to efficiently transmit signals from a millikelvin temperature stage to room temperature. In this talk, I will focus on one type of sensor, the superconducting transition-edge sensor, and one area of application, studies of nuclear decay via gamma-ray and decay energy spectroscopy. Nuclear decay measurements are relevant to the assay of material from the nuclear fuel cycle, the refinement of reference data, the characterization of radiopharmaceuticals, astrophysics, and efforts to determine the neutrino mass. Nuclear decay measurements also motivate the development of larger arrays of more capable sensors. I will discuss the possibility of instruments with a million or more sensors, and the challenge of reducing readout costs in order to realize such instruments.



An array of transition-edge sensor microcalorimeters operated at 0.1 K and used for high-resolution gamma-ray spectroscopy