The low-energy metastable isomeric state in Thorium-229 has fascinated researchers over the past 40 years. It is expected to have excitation energy of ~8eV, making it the only nuclear state accessible to laser manipulation known so far. Optical excitation of the Thorium-229 nucleus would allow the transfer of laser spectroscopy precision to nuclear structure analysis. A vast plethora of applications and investigations have been proposed for the isomer state, ranging from a nuclear gamma, highly accurate and stable ion nuclear clock to compact solid-state nuclear clocks.

I will present a measurement of the low-energy (0--60 keV) γ-ray spectrum produced in the α decay of Uranium-233 using a dedicated cryogenic magnetic micro-calorimeter[1]. The energy resolution of ~10 eV, together with exceptional gain linearity, allowed us to measure the energy of the low-lying isomeric state in Thorium-229 using four complementary evaluation schemes. The most precise scheme determines the Thorium-229 isomer energy to be 8.10±0.17 eV, corresponding to 153.1±3.7 nm, superseding previous values based on γ spectroscopy[2], and agreeing with a recent measurement based on internal conversion electrons[3].

[1] Sikorsky, Tomas, et al. "Measurement of the Th 229 Isomer Energy with a Magnetic Microcalorimeter." *Physical Review Letters* 125.14 (2020): 142503.

[2] Beck, B. R., et al. "Energy splitting of the ground-state doublet in the nucleus Th 229." *Physical review letters* 98.14 (2007): 142501.

[3] Seiferle, Benedict, et al. "Energy of the 229 Th nuclear clock transition." *Nature* 573.7773 (2019): 243-246.