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Searching for New Physics with Nuclear Lineshape Data

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The exceptionally low-lying isomer thorium-229m, which had been observed via radioactive decay, was the subject of intense research for several decades due to its potential as a nuclear clock state. Recently, this state was laser-excited for the first time, bringing us an important step closer to the realisation of nuclear clocks, but also opening up new possibilities to search for new physics that couples to the QCD sector.

In this talk I will describe how new physics might affect the shape of the nuclear resonance, and explain how nuclear lineshape data can already today set competitive bounds on ultralight dark matter coupling to the QCD sector, or more generally, on the time variation of the QCD scale.

Secondary track

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