Status of the HOLMES detector development

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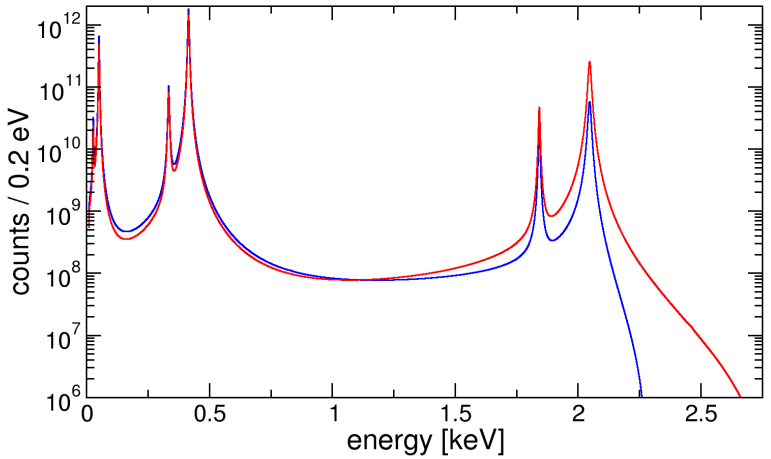
HOLMES is a new experiment to directly measure the neutrino mass with a sensitivity as low as 0.4 eV. **HOLMES** will perform a calorimetric measurement of the energy released in the electron capture decay of ^{163}Ho (A. De Rujula and M. Lusignoli, Phys. Lett. B 118 (1982) 429). The calorimetric measurement eliminates systematic uncertainties arising from the use of external beta sources, as in experiments with beta spectrometers. **HOLMES** will deploy a large array of low temperature microcalorimeters with implanted ^{163}Ho nuclei.

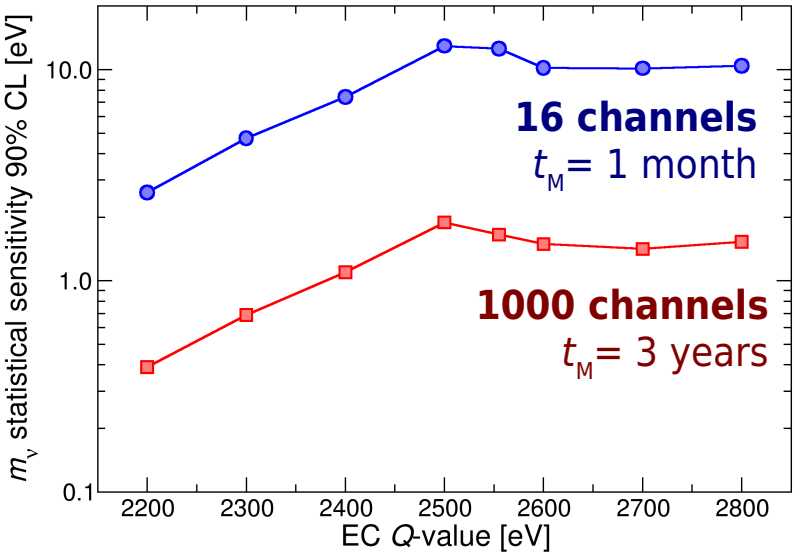
$^{163}Ho + e^- \rightarrow {}^{163}Dy^* + \nu_e$



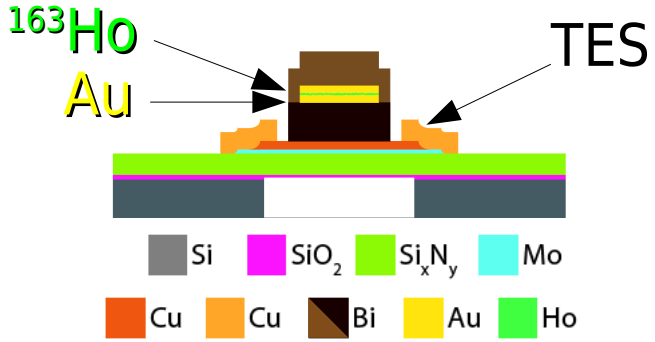
mid-term prototype 2016

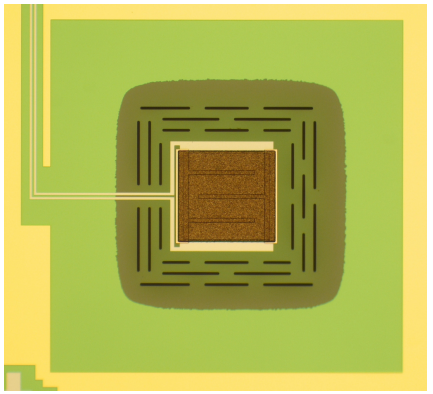
A_{EC}= 300 Bq
f_{pp} = 3x10^{-4}
ΔE = 1 eV
τ = 1 μs

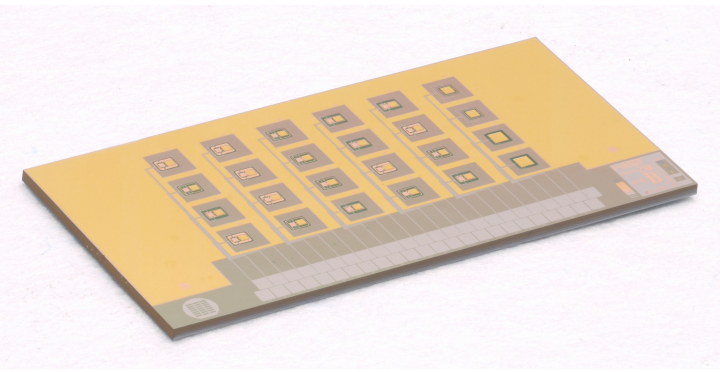
full scale HOLMES 2017



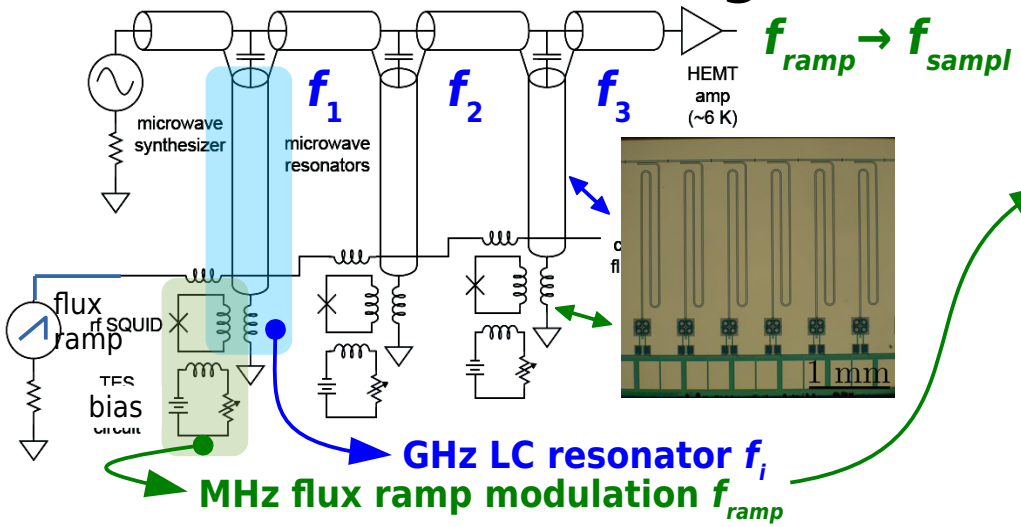
- **TES detectors R&D**

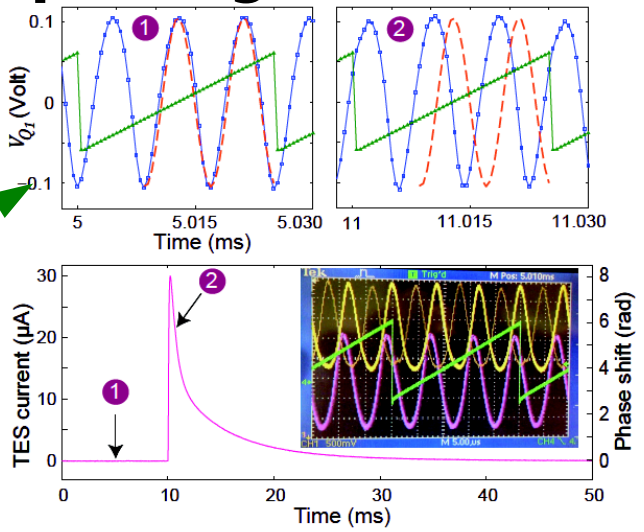






- **microwave readout and signal multiplexing**





- **pile-up discrimination algorithms for optimal time resolution**