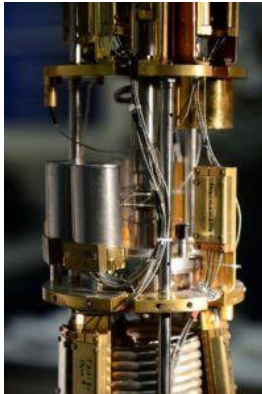


1st MetroMMC stakeholder meeting

Measurement of fundamental nuclear decay data using Metallic Magnetic Calorimeters

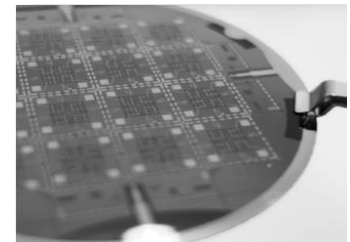
24 October 2019

Laboratoire National Henri Becquerel, CEA, Saclay, France

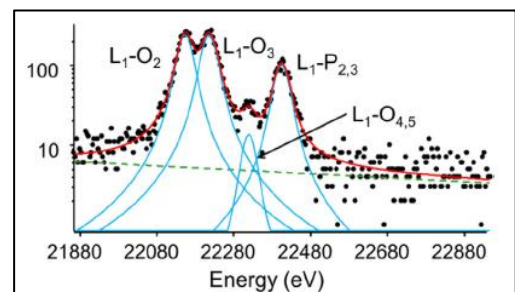


Metallic magnetic calorimeters (MMC) are particle detectors, typically operated at temperatures between 10 and 30 mK, that make use of paramagnetic sensors in conjunction with SQUID (Superconducting Quantum Interference Device) magnetometers to transform the temperature rise upon the absorption of radiation into a precise energy measurement. These devices achieve very high energy resolution and low energy thresholds.

The overall objective of the MetroMMC project is to improve the knowledge of electron capture (EC) decay and subsequent atomic relaxation processes. New theoretical calculation techniques and extensive experiments using specially adapted metallic magnetic calorimeters (MMCs) are being developed to determine important decay data which are relevant when studying the influence of EC decay in cancer therapy on the DNA level or the early history of the solar system as well as for primary activity standardisations in radionuclide metrology. The isotopes ^{54}Mn , ^{65}Zn , ^{59}Ni , ^{109}Cd , ^{125}I are main focuses of the project.



The aim of the stakeholder meeting is to obtain input and feedback from leaders of fields in which nuclear/atomic data are key in order to maximize the impact of the project. Participation to the meeting is free.



For more information see: <http://empir.npl.co.uk/metrommc/>

or contact Dirk Arnold (Dirk.Arnold@ptb.de) or Giuseppe Lorusso (giuseppe.lorusso@npl.co.uk)

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Agenda

13:00	Overview of the project and stakeholder committee Dirk Arnold and Giuseppe Lorusso <i>Physikalisch-Technische Bundesanstalt (Germany), National Physical Laboratory, NPL (UK)</i>
13:15	Novel cryogenic detectors for radionuclide metrology in the energy range of 20 eV - 100 keV Joern Beyer , <i>Physikalisch-Technische Bundesanstalt (Germany)</i>
13:30	Determination of fractional electron capture probabilities by means of MMC using sources embedded in the detector absorber Martin Loidl , Laboratoire National Henri Becquerel, LNHB (France)
13:45	Measurement of absolute X-ray emission intensities of selected radionuclides (⁵⁴ Mn, ⁶⁵ Zn, ⁵⁹ Ni, ¹⁰⁹ Cd, ¹²⁵ I) using external sources Ling Hao , National Physical Laboratory, NPL (UK)
14:00	Improvement of theoretical models of the electron capture process and subsequent atomic relaxation Xavier Mougeot , Laboratoire National Henri Becquerel, LNHB (France)
14:15	Discussion
15:00	Visit to the LNHB/CEA cryogenic laboratory
17:00	Close of the meeting