

Coordinator's report of the ICRM Beta-Particle Spectrometry Working Group

Scope

This new ICRM Working Group has been created in 2014. Every potential contributor was contacted to give their needs and expectations. The following non-exhaustive topics were suggested:

- Theory: β^\pm and electron capture transitions; atomic effects; theoretical shape factors and influence of the nuclear current; the most common assumptions and how to go beyond;
- Experiments: instrumentations used for beta spectrometry; techniques that need beta information; confidence on experimental shape factors;
- Simulations: confidence on the simulation of the physical processes (energy range, radioactive decays, atomic rearrangements, etc.); comparison of the results of different codes (Geant4, Penelope, etc.).

20th ICRM conference, Vienna, 2015

This conference was the first occasion for this group to actually meet within the radionuclide metrology community. A large number of interesting topics were evoked covering both theoretical and experimental aspects, about Monte Carlo simulations and about nuclear data. Discussions were mainly focused on the following subjects: reliability of Monte Carlo simulations at low energy for electrons and photons; confidence in old measurements carried out using beta spectrometers; influence of source preparation techniques on beta measurements; extraction of experimental shape factors and associated uncertainties. New measurements have to be carried out for reaching the required metrological level of knowledge of beta spectra. A cooperation between NMIs regarding experimental setups, simulations and data analysis was strongly recommended.

Forthcoming

A website dedicated to this Working Group is still under construction and is expected soon. Any contribution is welcome if someone wishes to share with others a part of their work regarding beta and electron spectroscopy (theory, experiments or simulations). Feel free to contact the coordinator.

A specific session dedicated to this Working Group will be held in the next DDEP meeting at NPL (19th-21st September 2016). Discussions on which techniques NMIs could use to perform new beta measurements, on which source preparation techniques are possible for NMIs in the context of beta spectrometry and on which radionuclides should be measured in priority are expected. An introduction to the BetaShape calculation code (the theory behind; what the code does and provides; how installing and using it) is planned. Feel free to contact the coordinator for adding any other topic of interest.

On behalf of the Beta-Particle Spectrometry Working Group,

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