



ICRM GSWG

Action report of the ICRM Gamma Spectrometry Working Group

Scope of the GSWG:

Gamma-ray spectrometry is a widely used analysis technique, with applications in a large range of fields and expertise. The ICRM Gamma Spectrometry Working Group is devoted to the development of the metrological aspects of gamma-ray spectrometry and its applications. This includes, but is not restricted to:

- Characterization of measurement techniques and instrumentation,
- Determination of photon emission intensities,
- Determination and assessment of corrective factors and uncertainties,
- Determination of activity of gamma-emitting radionuclides for industrial, or safety applications, etc.

The GSWG promotes collaboration between the WG members to improve the analytical techniques and distributes practical information in order to disseminate the knowledge and know-how to various laboratories

Actions of the GSWG:

During the ICRM2017 conference, two actions were proposed: these were actually carried out during the two years and lead to presentations during the ICRM2019 conference and associated publications:

1. Pr. Octavian Sima: Exercise on self-consistency of the methods applied for the evaluation of coincidence-summing corrections in the case of volume source
2. Marie-Christine Lépy: Action to facilitate the use of Monte Carlo simulation software Benchmark for Monte Carlo simulation in gamma-ray spectrometry – Efficiency computation

An intermediate meeting of the GSWG organized by LNHB was held on June 12-14, 2018, in the headquarters of LNE, Paris (France). The meeting brought together about 40 participants and was divided into two parts:

- June 12-13: Course on "advanced" gamma-ray spectrometry. This training was organized for members of the working group, and in particular for new users, to enable them to master this technique as well as possible. Special thanks are due to Octavian Sima, Michael Hult and Philippe Cassette for the courses they have prepared and given during the school.

- June 14: The meeting of the working group was mainly dedicated to the two on-going actions of the GSWG:

- Exercise on self-consistency of the methods applied for the evaluation of coincidence-summing corrections in the case of volume sources, led by Octavian Sima
- Action to facilitate the use of Monte Carlo simulation software, led by Marie-Christine Lépy.

The agenda allowed the participants to present their software or approaches to these actions and to discuss the results.

June 15: A visit of LNHB laboratories at the CEA Saclay center was proposed and attended by 8 participants.



Picture of the participants to the ICRM GSWG intermediate meeting on June 2018

The meeting material (presentations, report) is made available on the ICRM GSWG web page: http://www.lnhb.fr/icrm_gs_wg/.

This web page is regularly updated and includes information about the GSWG actions and meetings, as well as practical recommendations.

During the ICRM2019 conference, the Gamma Spectrometry session included 5 oral presentations and 11 posters; unfortunately, this was significantly lower than the

expected number of contributions accepted by the Scientific Committee (20) and also there were only eight submitted articles to the reviewing procedure, what is half of what was originally planned (17). In addition to the communications about on-going actions, other new topics of interest were Monte Carlo optimization procedure and spectral unmixing procedures.

During the meeting of the GSWG, Leticia Pibida (NIST) presented the status of standards for gamma-ray spectrometry and encouraged ICRM attendees to participate in the normalization procedures.

Proposal of different actions that were discussed in a dedicated meeting Wednesday afternoon, that gathered about 20 attendees. The topics under discussion were:

- Action to examine the influence of angular correlations on coincidence summing corrections (Pr Octavian Sima proposed a detailed plan);
- Self-absorption corrections in the low-energy range with the specific problem of ^{210}Pb quantification;
- Monte Carlo optimization procedures;
- Continuation of the benchmark for Monte Carlo simulation (Coincidence summing corrections, Marinelli containers and well-type detectors);
- Efficiency calibration (low energy-range, uncertainties) and in the high energy range (3 MeV – 10 MeV).

It is wished to organize an intermediate meeting in conjunction with the ND-RMT meeting planned in 2020 (probably in France)

Further information and proposals will be distributed to the whole list of interested people on the ICRM GSWG actions (about 120 registered + 30 new names in 2019).

The WG coordinator wishes to thanks all the participants for their active contribution what makes the GSWG alive, with special mention to the reviewers of the ICRM 2019 conference: D. Arnold (PTB), P. De Felice (ENEA), M. Hult (JRC), M. Korun (IJS), F.J. Maringer (BEV), V. Peyres (CIEMAT), O. Sima (U. Bucharest), T. Vidmar (JRC) and J. Keightley (NPL) from the RMT WG. It is hoped that the ICRM GSWG has efficiently contributed to distribute the knowledge towards end-users through the different actions and information uploaded in the webpage. This should continue and be improved within the next two years.

On behalf of the ICRM Gamma Spectrometry WG

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