

ICRM GSWG

Future of GSWG

On-going actions

Presentations at next ICRM meeting

Other suggestions:

Tests of efficiency fitting functions / associated uncertainties ?

Measurement of attenuation coefficients?

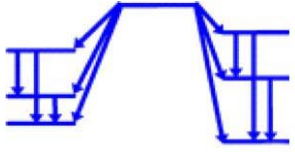
??

Other topics to follow ?

Artificial intelligence (use of neural networks)

Experience on electrically cooled detectors ?

DSP ?



ICRM GSWG

Web page : http://www.lnhb.fr/icrm_gs_wg/

- Which information ?
- Update with
 - Training course presentations
 - WG meeting presentations and actions status



The GSWG is devoted to the development of the metrological aspects of gamma-ray spectrometry and its applications. This includes, but is not restricted to: measurement techniques and equipment, determination of photon emission intensities, detector efficiency calibrations (including Monte Carlo methods), coincidence-summing corrections, uncertainties, correlations, new instrumentation, and X-ray spectrometry.

GAMMA-RAY SPECTROMETRY WORKING GROUP MEETINGS AND WORKSHOPS

Business meetings of the Gamma-Ray Spectrometry Working Group are regularly held during the ICRM conferences. The last one was held in Buenos Aires on May 16th, 2017 during ICRM2017. The meeting report is attached here: [ICRM GSWG Report 2017.pdf](#)

These meetings give the opportunity to take stock of the on-going actions and to initiate new ones. Any member of the GSWG must feel free to propose and coordinate new projects at any time.

Intermediate workshop are organized, according to the needs of discussion about on-going actions. The next workshop will be held on June 14th, 2018, in the headquarters of Laboratoire National de Métrologie et d'Essais in Paris.

MEMBERS

[Diffusion list of GSWG information](#)

About 140 names

WORKING GROUP ACTIONS

Starting with the ICRM 2005 conference, the GSWG members participated in a series of exercises to compare codes as applied to detector calibration. The exercises addressed problems such as direct computation of efficiency, application of Monte Carlo codes to efficiency transfer, computation of coincidence summing corrections in various cases. The results of the most recent exercise (concerning coincidence summing corrections in the presence of high X ray contributions) was presented during the ICRM 2015 conference in Vienna.

ON-GOING ACTIONS

Simple exercise on self-consistency of the methods applied for the evaluation of coincidence summing corrections in the case of volume sources

Coordination: Octavian Sima

An action to test the internal self-consistency of the methods applied to evaluate coincidence-summing corrections for extended sources is proposed. While internal consistency does not guarantee the correctness of the method, if it is not satisfied, it points out that the method has some shortcomings and its validity has specific limitations. The proposed self-consistency test is based on exact relations that should be fulfilled in the case of specific ideal measurement configurations. More precisely, the results obtained using any computation method for one such configuration should be related by exact equations to the results given by the same method for other configurations. Thus, this test does not require experimental data (avoiding the problem of

MISCELLANEOUS INFORMATION

Forthcoming events

- **2018 Symposium on Radiation Measurements and Applications (SORMA XVII)**
June 11-14, 2018
Ann Arbor, Michigan, USA
<http://rma-symposium.engin.umich.edu>
- **European Conference on X-Ray Spectrometry**
June 24-29, 2018
Ljubljana, Slovenia
<https://exrs2018.ijs.si>
- **ICRM 2019 will be held on May 27-31, 2019 in Salamanca, Spain**

Training courses

Past events

- **21st International Conference on Radionuclide Metrology and its Applications (ICRM 2017)**
May 15-19, 2017
Buenos Aires, Argentina
The proceedings of ICRM 2017 are published in Applied Radiation and Isotopes 134 (2018) 1-482.
 - **7th International Conference on Radionuclide Metrology Low-Level- Radioactivity Measurement Techniques (ICRM-LLRMT'16)**
September 17-21, 2016
Seattle, USA
-

Bibliography by topics **Requires update ...**

The attached files include a non-exhaustive list of published articles in relation with the main topics.

Coincidence summing

- The attached file ([Coincidence summing Biblio.pdf](#)) gathers around 50 references sorted in the publication dates. They present either theoretical or practical methods, or experimental validations.
This is only a list without any judgment about the quality of the quoted articles.

Monte Carlo methods applied to efficiency computation

- The attached file ([Monte Carlo Efficiency Biblio.pdf](#)) gathers around 20 references sorted in the publication dates.
This is only a raw list without any judgment about the quality of the quoted articles.

Training material **Will be updated with the presentations of the training workshop**

The hereafter attached PDF files are presentations that have been used for the purpose of training.

[Efficiency](#)

[Self-attenuation](#)

Disclaimer

This site is non-commercial. Materials and manufacturers are cited only for information purposes and citation does not mean that the site host or the

PRACTICAL INFORMATION

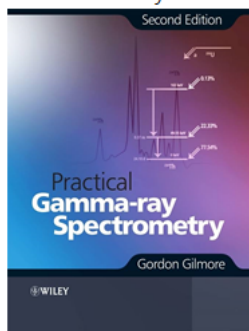
Basic bibliography

- **Practical Gamma-Ray Spectrometry, 2nd Edition**

Author: Gordon Gilmore

April 2008

Publisher: Wiley



- **Radiation Detection and Measurements, 4th edition**

Author: Glenn F. Knoll

January 2000

Publisher: John Wiley & Sons, Inc.

Gamma ray spectra

An on-line library of gamma ray spectra is maintained by Idaho National Laboratory – Gamma Spectrometry Center. « The INL's Gamma-ray Spectrum Catalogue is an attempt to compile spectra from various detector types and present these spectra with decay schemes and data tables based on the latest ENSDF data. It includes recently acquired Ge spectra and decay data as well as available spectra acquired for the original NaI(Tl) and Ge(Li) Catalogues. All information is documented by the spectra acquisition date and the ENSDF download date.

(http://www4vip.inl.gov/gammaray/catalogs/ge/catalog_ge.shtml)

Software

Hereafter is included a list of software that can be useful for gamma-ray spectrometrists. This is given only for information purposes and citation does not mean that the working group recommends or supports these software. Any hyperlinks are only given for convenience and do not imply any support from the working group.

Efficiency transfer and self-attenuation corrections

- **ANGLE**: www.dlabac.com/angle
- **EFFTRAN** is an efficiency transfer code with the following characteristics:
 - Limited to HPGe detectors and cylindrical samples (including point sources)
 - Axial symmetry of the setup assumed, except for a possible shift (misalignment) of the detector crystal
 - Crystal rounding (bulletization) and an absorber can be modelled
 - The standard can be an extended source, not only a point one
 - User interface is an Excel workbook (with some VBA code)
 - Numerical integration is realised with the Monte Carlo method, statistical uncertainty of the results is 1%
 - Execution time is a few seconds

Any other information welcome !
NORMS ?

Forum ?

Forum : http://laraweb.free.fr/GRS_forum/

- Was created



44 registered members



Our members posted 25 mails



- Few users
- Closed

- What do we do now ?
 - Preliminary list of topics ?
 - Engagement to contribute ?
 - How make it fruitful ?



ICRM Gamma-Ray Spectrometry Working Group

The forum of gamma-ray spectrometry users

Recherche... Recherche avancée

[Index du forum](#)

[Panneau de l'utilisateur \(0 nouveau message\)](#) • [Voir mes messages](#) • [Rétablir les permissions](#)

[FAQ](#) [Membres](#) [Déconnexion \[Marie-Christine Lépy \]](#)

Nous sommes le Lun Déc 01, 2008 10:53 am

Dernière visite le Jeu Nov 27, 2008 10:44 pm

[Voir les messages sans réponses](#) • [Voir les nouveaux messages](#) • [Voir les sujets récents](#)

[Marquer tous les forums comme lu](#)

| | SUJETS | MESSAGES | DERNIER MESSAGE |
|----------------------------------------------------------------------------------------------------------------------------------------------|--------|----------|----------------------------------------------------------------------------------|
| BEGINNER'S GUIDE TO ICRM GS WG FORUM NAVIGATION | | | |
| Forum general information How does it work ? What can be done ? etc. All you wanted to know about forum but were afraid to ask. | 4 | 15 | de mikewoods ↗ le Ven Mar 07, 2008 10:35 am |
| MONTE CARLO SIMULATION APPLIED TO GAMMA-RAY SPECTROMETRY | | | |
| Your experience in Monte Carlo simulation If you have any experience, recommendation to new users of Monte Carlo simulation | 5 | 8 | de Thanh_VN ↗ le Ven Jun 20, 2008 3:15 pm |
| Monte Carlo simulation applied to efficiency computation | 0 | 0 | Pas de message |
| EFFICIENCY CALIBRATION | | | |
| Curve fitting Methods in use for fitting mathematical functions to experimental data | 4 | 5 | de Eugeny Terechtchenko ↗ le Mer Mai 28, 2008 10:06 am |
| Low-energy range Difficulties in efficiency calibration in the low-energy range (E < 120 keV) | 2 | 2 | de Eugeny Terechtchenko ↗ le Mer Aoû 20, 2008 12:29 pm |
| COINCIDENCE SUMMING | | | |
| Coincidence summing How to compute the corrections Practical methods Application to well-type detectors | 1 | 1 | de Alex Berland ↗ le Lun Jan 28, 2008 4:50 pm |
| SOURCE PREPARATION | | | |
| Radon container Discussion on available containers. | 0 | 0 | Pas de message |
| Advices for solution preparation | 1 | 6 | de Lidia Silva ↗ le Mer Mai 07, 2008 11:20 am |
| ICRM GSWG WEB SITE | | | |
| General information Your opinion and your ideas about the ICRM GSWG web site would be appreciated | 3 | 3 | de Marie-Christine Lépy ↗ le Mer Nov 26, 2008 10:37 am |
| MISCELLANEOUS QUESTIONS | | | |
| Unidentified lines If you are wondering how to identify a line with a given energy | 1 | 2 | de Matjaz Korun ↗ le Sam Fév 10, 2007 11:09 pm |
| Measurement geometry | 3 | 8 | de Ramses ↗ le Ven Mar 07, 2008 1:31 pm |

Which goal ?

- Initially
 - Development of exchanges between members of the WG
 - Proposal for new actions to improve metrological quality of the results obtained by gamma-ray spectrometry
- Could be extended to the gamma spectrometry community
 - Responses to practical questions
 - Forward the address to collaborators, students ...

<https://www.tals.eu/mcc-mt>



Articles

[Radiation Safety. Application of the Monte Carlo Method for spectrometer calibration to determine the surface activity of radionuclides deposited on the ground](#)

[BSI Mobile Spectrometric System TrioMotion based on LaBr3\(Ce\) detectors](#)

[Products](#) >> [Software](#) >> MCC-MT

MCC-MT

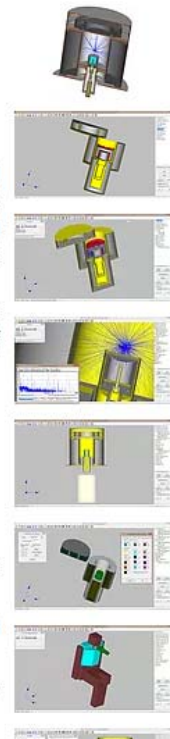
Modelling the interaction of radiation with matter

Software package MCC-MT (Monte Carlo Calculation Multi Thread) is intended for 3D-modelling of physical experiments and calculation of radiation detectors response functions using Monte-Carlo method. Software **MCC-MT** based on multi-threading technology providing significant increasing the rate of calculation and getting fast result as spectrum. The **MCC-MT** does not require a knowledge of programming algorithmic languages, as e.g. GEANT4.

MCC-MT simulates interaction between gamma quanta, electrons, positrons and material in the energy range of 1 keV – 10 MeV. Transport processes for fast heavy charged particles are simulated in the energy range of 10 keV – 1 GeV.

Application

- calibration of instruments used for ionizing radiation detection and measurements
- calculation of detection limits and minimum detectable activity of radionuclides
- determination of a characteristics of a registration system for inaccessible radioactive sources
- reduction of experimental investigations with using the hazardous ionizing radiation for human health
- obtaining clear picture of the internal processes of radiation transfer in order to optimize the design of the measuring devices and their protection
- comparative demonstration of the different systems of protection against ionizing radiation and its detection systems
- training of personnel in working with ionizing radiation detection systems without using of an expensive equipment and radioactive sources
- training of specialists in the field of measurement and protection from ionizing radiation



Training/workshops MCNP and PENELOPE (NEA)

<https://www.oecd-nea.org/dbprog/trainingcourses.htm>

- : Dear Colleagues,
-
- We are pleased to inform you that the NEA Data Bank is co-organising the following workshops / training courses at the NEA headquarters, Paris, France:
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- - 15-19 October 2018: MCNP6.1® Beginning Visual Editor (Registration closing on 7 September)
- http://www.mcnpvised.com/visedtraining/course_outline.html
-
- - 22-26 October 2018: MCNP6.1® Intermediate (Registration closing on 14 September)
- http://www.mcnpvised.com/train_mcnp.html
-
- These workshops combine teaching by the authors on program physics, along with instructions on how to use the software. The courses include a large number of practical exercises.
-
- Should you be interested in attending, information is available at:
- <http://www.oecd-nea.org/dbprog/trainingcourses.htm>
- or contact: programs@oecd-nea.org
-

| | | | | |
|--------------------|------------------------------------------------------------------------|--------------------------------------------------------------------------|-------------|------------------|
| 15-19 October 2018 | MCNP6.1® Beginning Visual Editor Course description | Registration form Payment information | 2200 EUR | Paris, France |
| 22-26 October 2018 | MCNP6.1® Intermediate Course description | Registration form Payment information | 2200 EUR | Paris, France |
| January 2019 | Electron-Photon Transport Modeling with PENELOPE | More information to be provided soon | | Barcelona, Spain |

A photograph of the Eiffel Tower in Paris, France, taken from a low angle. The tower's intricate iron lattice structure is the central focus, extending from the bottom of the frame towards the top. The sky is a clear, vibrant blue with scattered, light-colored clouds. In the foreground, the base of the tower is visible, showing the archway and some greenery. People can be seen walking around the base, and some buildings are visible in the distance through the archway.

**Thank you for your attention
and active participation**

Have a safe trip back !