Training course on Monte Carlo methods for the calibration of body counters

November 25-27, 2013 – KIT Karlsruhe, Germany

http://eurados.ine.kit.edu

Purpose

The Monte Carlo method is a numerical simulation technique that can be used to extend the scope of calibrations performed in *in vivo* monitoring laboratories. These methods allow calibrations to be made for a much wider range of body shapes and sizes (including children) than would be feasible using physical phantoms. Karlsruhe Institute of Technology (KIT) and the European Radiation Dosimetry Group – (Working Groups WG7 „Internal Dosimetry" and WG6 "Computational Doismetry") are organizing a training course focusing on the application of Monte Carlo methods for the calibration of whole and partial body counters.

Topics

It will be hands-on-training, centered on an exercise in KIT's *in vivo* lab which will guide the participants through all steps of a Monte Carlo calibration of an *in vivo* counter using voxel phantoms. Lecturers and tutors will be known experts on Monte Carlo methods and *in vivo* monitoring from European Institutions collaborating in EURADOS working groups on computational (WG6) and internal dosimetry (WG7).

Venue

Karlsruhe Institute of Technology (KIT)
Campus North
Hermann-von-Helmholtz-Platz 1
76344 Eggenstein-Leopoldshafen

For information on travel and accomodation see the webpage of the course **http://eurados.ine.kit.edu**

Prerequisites

The Monte Carlo code used throughout the course will be MCNP(X). Thus all participants are required to have at least a basic knowledge of MCNP(X). The number of participants is limited to 20. Participants should bring their own laptops and if possible a licensed copy of MCNP(X). Participants are invited to bring a poster presenting their own laboratory and work.

Registration

Deadline for registration is **September 15th, 2013**. A Registration Form is provided at the course webpage: **http://eurados.ine.kit.edu**

KIT and EURADOS will confirm your participation after the registration deadline. Upon confirmation you will receive the invoice for the participation fee. Deadline for payment is October 25th 2013.

Registration fees

Regular Fee: 550 €

Reduced Fee: 500 €
Applies for participants from the EURADOS Sponsoring Institutions (see http://www.eurados.org/en/Sponsors)

Students Fee: 350€ Students
Applies for students which are registered at a university. (A proof of matriculation needs to be presented at registration)

All fees are exclusive VAT. 7% VAT will be added for invoices to participants from Germany and from EU member states who cannot provide us with their VAT-ID number.

The fees will cover coffee breaks, a social dinner and all course materials (printed and digital form)

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Training Course Format

Short introdcutory lectures will summarize the basics of in-vivo counting, Monte Carlo Methods and Voxel models. The biggest part of the course will be hands-on-training, centered on an exercise in KIT's in-vivo lab. Based on a „case study" the exercise will guide the participants step by step through a Monte Carlo calibration of an in-vivo counter using voxel phantoms. Lecturers and tutors will be known experts on Monte Carlo methods and in-vivo monitoring from European Institutions collaborating in EURADOS working groups on computational (WG6) and internal dosimetry (WG7). Course material will be provided in printed and digital form at the course. The Monte Carlo code used throughout the course will be MCNP(X). Thus all participants are required to have at least a basic knowledge of MCNP(X). For the exercise part of the course you should bring a laptop with a licensed copy of MCNP(X) to work on this. Alternatively participants may work in groups.

Time	Monday	Tuesday	Wednesday
08:30 – 10:00 h	Monte-Carlo and in-vivo Counting (Introductory Lecture)	Modeling of Detectors	Monte Carlo Calibration
10:00 – 10:30 h	Coffee Break		
10:30 – 12:00 h	Voxel Models (Introductory lecture) + Outline of Exercise	Modeling of Phantoms	Monte Carlo Calibration
12:00 – 13:00 h	Lunch Break		
13:00 – 14:30 h	Modeling of Detectors	Modeling of Phantoms	Application to „Case Study"
14:30 – 16:00 h	Modeling of Detectors	Modeling of Phantoms	Final discussion and Course Wrap-up
16:00 – 16:30 h	Coffee Break		
16:30 – 18:00 h	Poster Session of Participants	Modeling of Phantoms	Adjourn
19:30h -		Social Event	

Outline of the Training Course

Organizers

EURADOS – http://www.eurados.org

We are a network of more than 50 European institutions (Voting Members) and 200 scientists (Associate Members). As a non-profit organization we promote research and development and European cooperation in the field of the dosimetry of ionizing radiation. We maintain a network which includes experts, reference and research laboratories, and dosimetry services. Our activities encompasses the coordination of working groups which promote technical development and its implementation in routine work. WGs also contribute to compatibility within Europe and conformance with international practices. EURADOS organizes scientific meetings, training activities, intercomparisons and bench mark studies.

KIT - http://www.kit.edu

On October 01, 2009, the Karlsruhe Institute of Technology (KIT) was founded by a merger of Forschungszentrum Karlsruhe (FZK) and Universität Karlsruhe. KIT bundles the missions of both precursory institutions: A university of the state of Baden-Wuerttemberg with teaching and research tasks and a large-scale research institution of the Helmholtz Association conducting program-oriented provident research on behalf of the Federal Republic of Germany. Within these missions, KIT is operating along the three strategic fields of action of research, teaching, and innovation.

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