SICC SERIES - SUMMER SCHOOL
OPENMC - MONTE CARLO CODE
MONTE CARLO SIMULATION FOR RADIATION DOSIMETRY AND NUCLEAR TECHNOLOGY APPLICATIONS

26 SEPTEMBER 2023
NATIONAL FIRE ACADEMY

30 SEPTEMBER 2023
UNIVERSITY OF ROME TOR VERGATA

ROME - (ITALY)

WITH THE PARTICIPATION

WITH THE PATRONAGE OF

The University of Rome Tor Vergata is the main organizing entity for the third edition of the SICC Series - CBRNe Conference that will be held in Rome next September.

This edition will host the SICC SERIES - SUMMER SCHOOL in OPENMC - Monte Carlo simulation for radiation dosimetry and nuclear technology applications.

This summer school is organised by the CIEMAT and the University of Rome Tor Vergata and it will be possible to attend both by participating to the conference and as a single side event

The lecturer is Dr. **José-María Gómez-Ros** is Research Professor and Head of the Ionizing Radiation Dosimetry Unit in CIEMAT, Spain.

The summer school is organized in 2 days:

DAY 1
26 September 2023
03.00 p.m. - 07.00 p.m.
National Fire Academy in Rome

DAY 2
30 September 2023
09.00 p.m. - 06.00 p.m.
University of Rome Tor Vergata

Ciemat — Centro de Investigaciones Energéticas, Medioambientales y Tecnológicas

Side Event of SICC SERIES CBRNe Conference 2023

Program of the SICC Series - Summer School
OperMC - Monte Carlo simulation for radiation dosimetry and nuclear technology applications

§ Introduction and basic concepts
§ Simulation of radiation transport
§ The OpenMC Monte Carlo simulation code
§ Constructive solid geometry (CSG)
§ Cross sections data libraries
§ Modelling of radiation sources
§ Scoring quantities (tallies)

§ Preliminary examples:
- Attenuation / shielding of neutron radiation
- Response of a 3He neutron detector

§ OpenMC Python API

§ Additional examples:
- Design of a 3He-based neutron monitor
- Fusion neutronics (tritium breeding ratio TBR, energy multiplication factor, neutron wall loading, shielding, He gas production) (simplified geometry)
- Medical linear accelerator (LINAC) (simplified geometry)
- Shielding in a bunker: radiological protection quantities
- Shielding in a nuclear bomb shelter

§ Advanced topics
- Complex geometry (lattices, CAD-base geometries)
- Phase space
- Transport of secondary charged particles
- Variance reduction techniques

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CONTACTS

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