Radiation Safety Information Computational Center

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"What we observer is not nature itself, but nature exposed to our method
of questioning." – Werner Heisenberg

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CHANGES TO THE RSICC CODE AND DATA COLLECTION

There are two updates to the RSICC catalog for those individuals that may be interested.

PSR-610/GADRAS-DRF-18.8.13

The Sandia National Laboratory has contributed an update of the Gamma Detector Response and Analysis Software–Detector Response Function (GADRAS-DRF-18.8.13) package.

GADRAS-DRF-18.8.13 contains a suite of capabilities related to radiation detection. Its primary function is the simulation of gamma-ray and neutron detector signals to radiation sources. It also contains limited analysis functionality. GADRAS-DRF-18.8.13 is the public version of the full version of GADRAS with capabilities such as radiation transport and advanced analyses removed. Features in a gamma-ray detector spectrum, such as photo-peaks and the Compton continuum are derived from first-principles calculations based on interaction cross sections. Neutron detector response is computed by interpolating on a pre-computed database of thermal (^{3}He) detector responses. For both gamma-ray and neutron detectors, the response to radiation that scatters into the detector from the surrounding environment is determined by a combination of first-principal calculations and empirical modeling. For new detectors, known detector parameters such as size and resolution are all that is necessary to compute an initial response function. This response function may be refined by measuring calibration sources and fitting the detector's parameters to match the data.

The package contains setup executable, user manual, runtime libraries, and data files and is transmitted digitally as download link. Windows (P00610PCX8604).

CCC-767/SWORD 7.0

The U.S. Naval Research Laboratory, Washington, DC, through the Department of Homeland Security, Washington, DC, has released an update to SWORD 7.0.

SoftWare for Optimization of Radiation Detectors (SWORD) is a framework to allow easy simulation and evaluation of radiation detection systems. It is targeted at system designers, who want to evaluate and optimize system parameters without building hardware first, at sponsors who need to evaluate proposed or actual system designs independent of the supplier, without having access to actual hardware, and at operators who want to use simulation to evaluate observed phenomena.

SWORD is vertically integrated and modular. It allows users to define their own radiation detection instruments by building them from basic geometric "objects" and assigning those objects materials, detection, and/or radioactive emission properties. This process is accomplished by a CAD-like graphical user interface, in which objects may be defined, translated, rotated, grouped, arrayed, and/or nested to produce compound objects. In addition to providing the ability to build a detection system model from scratch, SWORD provides a library of "standard" detector design objects that can be used "as is" or modified by the user. SWORD provides the user the option of running a simulation using one of two well-known simulation engines: GEANT 4 from CERN and MCNP® from Los Alamos National Laboratory.

Please note that SWORD is distributed as a VMWare Virtual appliance running Centos 6.7 Linux. The instructions below refer to running SWORD in this virtual environment. For instructions on installation of the virtual machine, please refer to the SWORD Installation and Tutorial Guide. In addition, SWORD is distributed in binary installer versions for native installation on Linux. Binary installers are provided for Red Hat Enterprise Linux (version 6.4 or greater) and Ubuntu (version14.04 or greater). SWORD 7.0 runs on any Intel-based Windows, Linux or Mac OSX platform with at least 4 GB of RAM and 40 GB of free disk space. SWORD 7.0 was tested at RSICC using Windows and Linux platforms. The package is distributed as a Dual Layer DVD. Includes VM appliance and binaries for Linux systems and also includes installation and tutorial guides. C++, Java, Python; Linux (C00767MNYCP07).

SINGLE USER MULTI-ORGANIZATION
LICENSE AGREEMENT

(*Last updated July 1, 2018*)

To support the use of RSICC software by multi-national organizations and international collaborations, RSICC now offers our customers the option to request a Single User Multi-Organization Software License Agreement. The Single User Multi-Organization Software License Agreement addresses issues regarding the "re-export" of software and data packages obtained from RSICC because under Federal export control regulations our customers cannot "re-export" the code to another person in another country.

This agreement is intended to allow our customers to specify additional foreign locations for which they may be approved to utilize RSICC software. In general, the default option will be the standard single user license agreement for the country in which the customer resides and is employed. The following defines the requirements for use of this license agreement.

This SUMO software license agreement is only available for individuals that receive software directly from RSICC. In addition, the point of contact (host or system administrator) at the additional foreign location(s), must be licensed directly from RSICC and must agree to abide by the policies associated with host/server/cluster systems that are summarized following this announcement.

To apply for this license the customer must first register with RSICC and provide full and complete information. When submitting their request, the customer must provide the following information in the COMMENTS section of the request form for each applicable package:

- full name and email address of the point of contact (POC),

- the full name of the organization at which the software will be used, and

- the complete address (no post office boxes) of the organization under which additional access is being requested.

Individuals that would like to utilize this service must have a valid reason for needing this access and provide such justification to RSICC in the END USE statement as well. If this information is not included in the END USE statement, then the customer's request will only be considered for the standard single user license agreement.

When processing the request, RSICC staff will verify that the designated POC(s) has a valid license for the same version of software that is being requested by the applicant and verify that the POC obtained the package directly from RSICC. If the POC, did not obtain the package directly from RSICC, the POC will need to register with RSICC, apply and be approved for the package before the applicant's request can be processed.

The requests will be reviewed for each designated location and a decision will be rendered as to whether a license is granted. If an organization or location is denied, then the customer will be notified and may be limited to the standard single user license agreement for their own organization.

Exceptions:

Persons that have any citizenship of or are in countries that are not listed in Appendix A of 10 CFR 810 are not permitted to utilize the Single User Multi-Organization License Agreement.

Fees:
The customer making the request for the single user multi-organization software license will be required to pay the cost recovery fee for each location at which they are approved. In addition, the POCs at the other foreign locations that have not obtained the software directly from RSICC will have to obtain the software from RSICC and pay the applicable fee.

HOST/SERVER/CLUSTER GUIDANCE

(*Last updated March 1, 2022*)

Software obtained from RSICC is export controlled under the jurisdiction of the U.S. Department of Energy, 10 CFR 810, or the U.S. Department of Commerce, 15 CFR 730-744. Additionally, RSICC distributes this software under guidance issued by the U.S. Department of Energy's Office of Nonproliferation and Arms Control. The distribution and use of RSICC software is restricted and controlled under these regulations and guidelines. Individuals that request the software must be cleared through both an export control and a nonproliferation review process prior to the individual being granted a license to receive software for a specific end use.

The software distributed by RSICC is licensed to individual requestors (Licensee) under a single-user license agreement while employed at the organization listed on the license forms and cannot be transferred to any other individual or entity. The Licensee is responsible for the control, management and protection of the software. The Licensee is responsible for compliance with U.S. export control requirements (laws and regulations) and the terms of the license agreement. This includes preventing access to the software by any individual or entity (including IT staff) as such access may be deemed an export control violation. Individual Licensees should protect the software, documentation, and installation accordingly. Neither the software nor manuals should be posted to the Internet or otherwise be made publicly available. Any and all system administrators that are assisting with the installation and maintenance of a licensed code(s) or that would otherwise have access to a licensed code(s) that is placed on a stand-alone system and/or server/cluster must also be licensed for the exact version of the software that is placed on these systems. Individuals whose duties are only that of a System Administrator are not authorized to be users of the licensed codes(s).

System administrators and/or hosts should implement standard and customary account access and/or file permissions such that only the licensed individuals may access the program. This should include identity and access management, such as multi-factor authentication, to ensure software is kept secure from unauthorized access. Please note that the single-user license agreement is code and version specific. The Licensee must be licensed for the specific version to which they are granted access. For example, an individual with a license only for MCNP5 should not be permitted access to MCNP6.1. Additionally, some individuals are only licensed for the executable versions of the code(s), and the system administrator(s) must ensure that such individuals do not have access to the source code. Therefore, it is recommended that the source code be removed after installation of the program(s) and furthermore procedures must be implemented such that control software is not lost via decommissioned storage media.

Network, server, parallel, cluster, or similar installations outside of the United States may not be within a country NOT listed in Appendix A of 10 CFR 810 nor occur at facility identified as an entity under 15 CFR 744.

RSICC software may be hosted on a server, cluster or high-performance computing system with the following conditions:

1) Each server/cluster operator must designate one individual responsible for oversight of the use of RSICC software on the server/cluster. This individual will be responsible for communicating and reporting to RSICC on an annual basis regarding the users of the cluster/server.

2) Each and every system administrator that would have access to any form (source or executable) must register, request, **and** be approved for the software with RSICC for the version to which they would have access.

3) An authorized and approved system administrator may install and maintain the software and must ensure that the software is not distributed or shared with those who do not have a specific license for the version to which they would have access. System administrators are required to utilize protocols that limit access to the software. Users should only be granted access and use of software to which they have a specific license, e.g. users that have a license for SCALE 6.1 should NOT be granted access to SCALE 6.0 or SCALE 6.2.

4) System administrators are not permitted to provide access to RSICC software to individuals **NOT** located within the same country as the server/cluster unless the Licensee has an approved Single User Multi-Organization License Agreement from RSICC.

5) Individuals with citizenship or multiple citizenships that include a country not listed in Appendix A of 10 CFR 810 **may be granted** access to RSICC software on a server/cluster, if the

individual **has been approved** for access to the software by the U. S. Department of Energy's Office of Nonproliferation and Arms Control.

6) Under no circumstances should an individual with citizenship or multiple citizenships that include a country **NOT** listed in Appendix A of 10 CFR 810 be granted access to RSICC software on the server/cluster, if that individual has **NOT** been approved by the U.S. Department of Energy's Office of Nonproliferation and Arms Control. Additionally, under no circumstances should an individual located at an entity identified under 15 CFR 744 be granted access to RSICC software on the server/cluster.

7) Individuals that have been only granted access to RSICC's secure cloud server **MAY NOT** be granted access to any other server/cluster.

8) When a Licensee requests access to RSICC software on a server/cluster, the system administrator must follow the following process:

(a) The system administrator will require that the Licensee provide proof of a license by requiring that the Licensee provided an electronic copy of either the Single User License Agreement or the Single User Multi-Organization License Agreement. System administrators cannot provide access to anyone located in another country unless that individual has an approved Single User Multi-Organization License Agreement from RSICC and the organization of the system administrator is listed on the SUMO License Agreement.

(b) The system administrator must ensure that the Licensee's current installation/affiliation is the same as that on the license agreements.

(c) If the Licensee's current installation is NOT the same as that on license agreements, then access should be denied until the Licensee has updated license agreements with RSICC. This will require the Licensee to update their registration with RSICC and submit a new request with RSICC. The Licensee should not be granted access to the software until they have been authorized. Please note that some approvals are location and organization specific.

9) The system administrator will maintain records of the Licensees that are utilizing the server/cluster and send a record to RSICC (rsic@ornl.gov) that include the Licensee's full name, RSICC customer identification number, installation, and the codes to which the Licensee has access on the system. This information must be provided when the system administrator makes the first request to RSICC to provide such services and must be updated annually by sending updated information to RSICC no later than November 30 of each calendar year. The record should include the customer's full name, RSICC customer number, customer installation as well as request numbers and software package name and identifier for which they are accessing on the cluster.

Server/cluster operators that agree to comply with these conditions may install RSICC software on the server/cluster that are within their corporate/institutional ownership, physical control, and the individual country identified.

END USE STATEMENT

(*Last updated September 24, 2021*)

Customers are strongly encouraged to provide full and complete information regarding the intended end use of the software being requested. End use statements that specify that the code is for research, training or educational activities are not sufficient. RSICC's regulators need to know explicitly for what purpose you intend to use the codes and detail needs to be provided. Requests that lack sufficient detail will be rejected. Please include the type of calculations that you intend to perform e.g., criticality,

reactor physics, shielding, dose, etc. and for what types of applications e.g., reactor shielding design, fusion shield design, nuclear medicine, reactor design, etc.

Students that submit requests to RSICC are strongly encouraged to consult their professor or academic advisor as to what purpose they intend to use the codes for their classes and/or their research. Professors are also encouraged to provide such guidance to their students since the professor is responsible for identifying the activities of the students under their tutelage. Professors are encouraged to write an end use statement for their students that describe both the intended use of the code and the applications for which the code will be applied. Providing this information will help to expedite the processing of the request and speed up delivery of the software.

REGISTRATION REQUIREMENTS

(*Last updated July 28, 2020*)

During the registration process, individuals are required to provide the name of the institution at which they will use the software, an institutional mailing address and an institutional e-mail address. RSICC's regulators require us to obtain an address associated with the individual's organization. Due to the COVID situation, we know that many of our customers are working remotely. If you are working remotely, you may include an alternate mailing address as a comment during the registration process. Please note that you cannot provide an alternate mailing address that is in a country different than that for the organization with which you are affiliated. RSICC cannot register a customer for access to software in a country different than that of the organization with which the individual is affiliated as the single user license and export control agreements are specific to the country in which the organization is located.

SCIENCE EDUCATION PROGRAMS AT
OAK RIDGE NATIONAL LABORATORY

Looking for an internship or post-graduate opportunity at Oak Ridge National Laboratory? The Science Education Programs at Oak Ridge National Laboratory provide paid opportunities for undergraduates, grad students, recent graduates, and faculty to participate in high-quality research alongside world-class scientists to solve real-world problems. Opportunities are available for internships and co-ops, research appointments, and sabbaticals. You can access all available opportunities through the website at http://www.orau.org/ornl. All levels of participants from undergraduates to faculty are encouraged to publish research papers with their mentors. Please browse through the profiles on the different participants and their research experiences on the web site listed above. Also, there is a video of research participants at ORNL sharing their thoughts on how access to world-class research facilities and staff has catapulted their careers in science and technology. You can find it on YouTube at http://ow.ly/2EQLz.

CONFERENCES, TRAINING COURSES, SYMPOSIA

CONFERENCES

31st International Conference Nuclear Energy for New Europe

The Nuclear Society of Slovenia in association with the Jožef Stefan Institute, cordially invites you to attend the 31st International Conference Nuclear Energy for New Europe. The conference will be held in Portoroz, Slovenia, **September 12 - 15, 2022**.

The conference is an annual meeting of professionals dealing with different aspects of nuclear energy from all around Europe and worldwide. The primary objective of the meeting is to foster international cooperation amongst professionals active in nuclear research and educational institutions, nuclear vendors, utilities, and regulatory bodies.

For more details on this conference, please visit website at https://www.djs.si/nene2022/.

15th Workshop on Shielding Aspects of Accelerators, Targets and Irradiation Facilities (SATIF)

The Fifteenth Workshop on Shielding Aspects of Accelerators, Targets and Irradiation Facilities (SATIF) will be held 20-23 September 2022 at Michigan State University, East Lansing, Michigan, USA. The SATIF-15 workshop will be hosted by the Facility for Rare Isotope Beams and is an experts' meeting addressing important aspects related to modeling and design of accelerator shielding. Those interested can find additional details at: https://indico.frib.msu.edu/event/19/.

International High Level Radioactive Waste Management Conference

The International High Level Radioactive Waste Management Conference will be held 13-17 November 2022 in Phoenix, Arizona, USA in conjunction with the ANS Winter Meeting. As nuclear power is being looked at globally to address climate change, a proactive focus on resolving This conference provides an international forum for the discussion of the scientific, technical, social, and regulatory aspects associated with the storage, extended storage, transportation, recycling, and disposal of used/spent fuel, high-level and other radioactive waste, including decommissioning waste. "back end" of the fuel cycle issues is paramount. Consent-based siting of both centralized interim storage facilities and geologic repositories will be instrumental to fostering this growth. Lessons learned and innovative approaches will be shared amongst participants from industry, government, academia, policymakers, and the interested public. International and student participation are highly encouraged to facilitate knowledge transfer to countries pursuing a nuclear future and to the generation that will be responsible for implementation.

Those interested in this meeting can find more information about the conference on the following website: https://www.ans.org/meetings/view-313/.
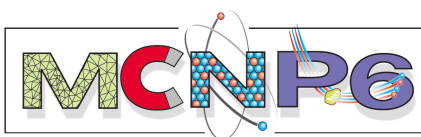
17th International Symposium on Reactor Dosimetry

The Seventeenth International Symposium on Reactor Dosimetry will be held 21-26 May 2023 at École Polytechnique Fédérale de Lausanne (EPFL), Lausanne, Switzerland. The Symposium is being organized by EPFL and is jointly sponsored by the European Working Group on Reactor Dosimetry (EWGRD) and ASTM International Committee E10 on Nuclear Technology and Applications. Those interested can find additional details at: http://isrd17.reactordosimetry.org

International Conference on Mathematics and Computational Methods Applied to Nuclear Science and Engineering (M&C 2023)

The International Conference on Mathematics and Computational Methods Applied to Nuclear Science and Engineering (M&C 2023) will be held 13-17 August 2023 at the Sheraton on the Falls, Niagara Falls, Canada. The Symposium is jointly sponsored by the Canadian Nuclear Society and the American Nuclear Society. Those interested can find additional details at: https://mc2023.com/.

<u>TRAINING COURSES</u>

LANL MCNP6 Class Schedule

Individuals interested in attending or that have registered for these classes are encouraged to contact the organizers regarding any delays or cancellations.

Website: https://laws.lanl.gov/vhosts/mcnp.lanl.gov/classes/classinformation.shtml

Oct 3 - 7, 2022 Online	Intermediate MCNP6 (online) Non-US citizens must register by 2022-07-29 | Mon 9:00 - Fri 12:00	$600
Oct 24 - 28, 2022 Online	Introduction to MCNP6 (online) Non-US citizens must register by 2022-08-19 | Mon 9:00 - Fri 12:00	$600
Dec 5 - 7, 2022 Online	Variance Reduction with MCNP6 (online) Non-US citizens must register by 2022-09-30 | Mon 9:00 - Fri 12:00	$600

See the website for more information.

SCALE Training Courses

Training is provided by developers and expert users from the SCALE team. Courses provide a review of theory, description of capabilities and limitations of the software, and hands-on experience running problems of varying levels of complexity.

All attendees for the SCALE training courses must be licensed users of SCALE 6.2, which is available from ORNL/RSICC, the OECD/NEA Data Bank in France, and the RIST/NUCIS in Japan. Please request a software license at least two months prior to the start of the training course.

All currently scheduled SCALE training courses are described below.

Date	Course Name and Description	Location	Cost
October 3–7, 2022	**SCALE/ORIGEN Standalone Fuel Depletion, Activation, and Source Term Analysis**	ORNL Oak Ridge, TN, USA	$2,500*
October 10–14, 2022	**SCALE Modeling and Simulation for Nuclide Inventory and Decay Heat in LWR Spent Nuclear Fuel**	ORNL Oak Ridge, TN, USA	$2,500*
October 17–21, 2022	**Source Terms for Advanced Reactor Spent Fuel Applications**	ORNL Oak Ridge, TN, USA	$2,500*
October 24–28, 2022	**SCALE Criticality Safety Calculations**	ORNL Oak Ridge, TN, USA	$2,500*

Full-time university students can register at a reduced rate of $1,250. For each course over one, professional registration fees are discounted $250, and student registration fees are discounted $125.

FOREIGN NATIONAL VISITORS TO ORNL - *Payment MUST be received at least one week prior to attending the training course. All foreign national visitors must register 40 days prior to the start date of the training course they plan to attend.*

For more information regarding these courses, visit the SCALE website at https://www.ornl.gov/scale/training.

Multi-Level Training Program

NINE offers attractive **Multi-Level Training Courses** that meet the needs of stakeholders in the nuclear engineering sector, thanks to cooperation with top level international experts who share expertise and competencies gained from their work-life activity in the industry, regulatory bodies and academia. Course programs are oriented towards a wide audience, from PhD students, apprentices, jobseekers to young and senior employees of vendors, utilities, regulatory bodies, national laboratories and consulting companies. For More information visit us at: **https://www.nineeng.com/courses/**

MCNP® 2022 Users Symposium

We are pleased to announce that the MCNP® 2022 Users Symposium will be held virtually from Los Alamos National Laboratory from October 17 – 21, 2022. The symposium will include presentations from developers focusing on recent and planned capabilities. Additionally, users of MCNP® are encouraged to propose presentations that highlight unique and challenging applications of the code. The hosts intend to utilize a flexible format to accommodate presentations of varying duration.

Please see the meeting website at www.lanl.gov/mcnp2022 for more information when it becomes available. Please email mcnp2022@lanl.gov for any related question or suggestion.

SYMPOSIA

2022 CALENDAR