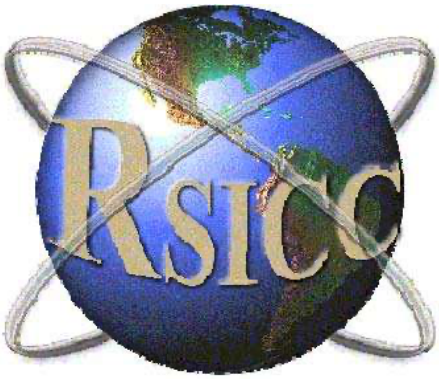
# Radiation Safety Information Computational Center

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No. 675 September 2021

*"Write what should not be forgotten." – Isabel Allende*

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# CHANGES TO THE RSICC CODE AND DATA COLLECTION

There is one update to the RSICC catalog for those individuals that may be interested.

## CCC-836/FISPACT-II 5.0

United Kingdom Atomic Energy Authority, Culham Science Centre, Abingdon, Oxfordshire, United Kingdom, has contributed an updated version of FISPACT -II.

FISPACT-II 5.0 is an inventory code capable of performing modelling of activation, transmutations and depletion induced by neutron, proton, alpha, deuteron or gamma particles incident on matter.

FISPACT-II is an enhanced multi-physics inventory and source-term code system providing a wide variety of advanced, predictive, spectral, and temporal simulation methods. It employs the most up-to-date and complete nuclear data forms for both neutron and charged-particle interactions. FISPACT-II is written in object-style Fortran and has full dynamic memory allocation. It has improved algorithms for the ODE solver, pathways, uncertainty and sensitivity calculations. All these can be used in multi-pulse irradiation calculations, including those where the flux spectrum changes from pulse to pulse.

The present release (Release 5.0) includes TENDL-2019, TENDL-2017 and TENDL-2015, ENDFBVIII.0, ENDFB-VII.1, JENDL-4.0, JEFF-3.3, JEFF-3.2, CENDL-3.1, HEIR-0.1, HEAD-2009, and GEFY-6.1 nuclear data libraries and the capability to read and process them. The current version of FISPACT-II has added a beta release version of the API, which has interfaces for C, C++, Fortran and Python. On Windows only the Python API is available. The FISPACT-II API has mostly been tested in Ubuntu 20.10, this feature is still under development and is not fully supported. Extract xs ENDF is now a keyword in FISPACT-II a matplotLib output and a number of bug fixes. FISPACT-II is a practical activation-transmutation engineering prediction tool, and undertakes four principal tasks like extraction, reduction and storage of nuclear and radiological data from the ENDF library files; construction and solution of the rate equations to determine the time evolution of the inventory in response to different irradiation scenarios; computation and output of derived radiological quantities; and subsidiary calculations to identify the key reactions and decays, and to assess the quality of the predictions.

FISPACT-II is distributed as a digital download and the package includes user_manual.pdf, api_manual.pdf, executable files, source codes, a Windows installer, and test cases. FORTRAN 2003, PYTHON; PC, Linux, MacOS (C00836MNYCP03).
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# COVID RELATED RECOMMENDATIONS

(*Last updated November 11, 2020*)

Due to the continued situation regarding the COVID, we realize that many of our customers, like the RSICC team, are working from home and are not physically at their institution. However, due to U.S. Federal regulations, RSICC is required to validate the information provided by our customers and the organizations with which our customers are affiliated. Hence, to minimize confusion, we recommend that our customers take the following steps when registering with RSICC and requesting software.

- RSICC's customers must provide an email address associated with their organization. University students should provide an email address associated with their university, and others should provide an email address associated with their organization. Use of a private email address is strongly discouraged as this results in additional delays in processing the registration and/or request.

- RSICC's customers must provide the physical address of the organization with which they are affiliated. This address is required to validate the organization and for screening the organization as required by the U.S. Federal government. If you are not physically located at the organization, you can provide a comment in the registration and/or request providing the location at which you like the software to be delivered. US university students can also add a comment clarifying if they are a remote student at this time. Please note that RSICC cannot license you for the use of software in a country that is different than that of the organization for which you are affiliated. Hence, if you are either studying or working remotely in another country, you should contact our team on how to best proceed.

- Please do not submit multiple requests for software as this only delays the processing of requests. Each customer interaction and communication are required to be saved and multiple requests only add to the work and result in further delays.

- Please include a justification as to why you need the source code when requesting software from RSICC. You do not need to submit a request for both the source and executable versions of a software package but need to provide a justification as to why you need the source code.

- Please limit the number of inquiries to RSICC regarding the status of your request. If you received an acknowledgement from RSICC noting that your request has been received, rest assured that the request is in process. RSICC processes requests on a first-come first-served basis. Inquiries regarding the status of a request have to be filed and addressed that further delays the teams work.

RSICC staff are only permitted to be physically in our offices one day per week. Hence, software that must be sent via DVD or RSA tokens for cloud requests will only be mailed out once per week. By following this guidance, you will have your request processed expeditiously.

# SINGLE USER MULTI-ORGANIZATION LICENSE AGREEMENT

(*Last updated July 1, 2018*)

In order 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 or not 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 located 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

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) As of February 1, 2015, RSICC's single user and export control agreements were restricted to the specific end use provided in the request and to the Licensee's installation (employer, organization, or university) when making the request. The system administrator must ensure that the Licensee's current installation 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 July 28, 2020*)

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.

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.

# 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

### 30th 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 30th International Conference Nuclear Energy for New Europe. The conference will be held in Bled, Slovenia, **September 6 - 9, 2021**.

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/nene2021/.

### International Conference on Mathematics and Computational Methods Applied in Nuclear Science and Engineering (M&C 2021)

The International Conference on Mathematics and Computational Methods Applied to Nuclear Science and Engineering (M&C 2021) will be hosted by North Carolina State University and the Oak Ridge/Knoxville Local Section in Raleigh, NC from **October 3-7, 2021**. This year, the meeting will also be a **hybrid** meeting. All sessions will be offered both in-person and virtually via Zoom.

M&C 2021 is a part of a series of topical meetings organized by the Mathematics and Computation Division of the American Nuclear Society. M&C conferences, held every two years, represent a series of international forums organized and sponsored to bring together worldwide expertise related to nuclear science or technology including mathematical and computational methods, numerical analysis, computer codes, computer architectures, and benchmarks for computationally solving problems in all disciplines encompassed by the Society.

For more information and to register to attend, please visit http://mc.ans.org/.

## 17th International Symposium on Reactor Dosimetry 2021

The Seventeenth International Symposium on Reactor Dosimetry will be held 16-20 November 2021 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: www.reactordosimetry.org

## 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 7-9 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/.

# TRAINING COURSES

## 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

| | | |
|---|---|---|
| Aug 16-20, 2021<br>Online | Introduction to MCNP6 (online)<br>Non-US citizens must register by 2021-06-11 \| Mon 9:00 - Fri 12:00 | $600 |
| Aug 30 - Sept 1, 2021<br>Online | Using NJOY to Create MCNP ACE Files & Visualize Nuclear Data (online)<br>Non-US citizens must register by 2021-06-25 \| Mon 10:00 - Wed 5:00 | $600 |
| Oct 4-8, 2021<br>Online | Intermediate MCNP6 (online)<br>Non-US citizens must register by 2021-07-30 \| Mon 9:00 - Fri 12:00 | $600 |

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|---|---|---|
| Nov 15-19, 2021<br>Online | Introduction to MCNP6 (online)<br>Non-US citizens must register by 2021-09-10 \| Mon 9:00 - Fri 12:00 | $600 |
| Nov 29 - Dec 1, 2021<br>Online | Variance Reduction with MCNP6 (online)<br>Non-US citizens must register by 2021-09-24 \| Mon 9:00 - Wed 4:30 | $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.

All currently scheduled SCALE training courses are described below.

| Date | Course Name and Description | Location |
|---|---|---|
| October 11–15, 2021 | **SCALE/TRITON Lattice Physics and Depletion** | TBD |
| October 18–22, 2021 | **SCALE/ORIGEN Standalone Fuel Depletion, Activation, and Source Term Analysis** | TBD |
| October 25–29, 2021 | **SCALE Computational Methods for Burnup Credit** | TBD |
| November 8–12, 2021 | **Nuclear Data Fundamentals and AMPX Libraries Generation Course** | TBD |

**Full-time university students can register at a reduced rate of $1,000. For each course over one, professional registration fees are discounted $100.*

**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 14 days before 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/**

## SYMPOSIA

## 2021 CALENDAR

***September 2021***

**14th International Conference on Radiation Shielding (ICRS14) and 21st Topical Meeting on Radiation Protection and Shielding Division (RPSD21),** Seattle, Washington. Website: https://www.ans.org/meetings/view-icrs14rpsd21/ (postponed)

**European Research Reactor Conference, September 26-30, 2021,** Helsinki, Finland. Website: https://www.euronuclear.org/european-research-reactor-conference-2021/

**Actinides 2021, September 26 – October 1, 2021,** Tallahassee, Florida. Website: https://www.ans.org/meetings/view-356/ (postponed)

***October 2021***

**Mathematics and Computation (M&C) 2021, October 3-7, 2021** Raleigh, North Carolina. Website: https://www.ans.org/meetings/view-365/

**2021 International Congress on Advances in Nuclear Power Plants (ICAPP2021),** Abu Dhabi, United Arab Emirates. Webiste: https://www.icapp2021.org/

**2021 IEEE Nuclear Science Symposium and Medical Imaging Conference, October 16-23, 2021** Yokohama, Japan. Website: https://nssmic.ieee.org/2021/

**TopFuel 2021, October 24-28, 2021,** Santander, Spain. Website: https://ens.eventsair.com/topfuel-2021

***November 2021***

**2021 International Topical Meeting on Probabilistic Safety Assessment and Analysis (PSA 2021), November 7 – 12, 2021,** Columbus, Ohio. Website: https://www.ans.org/meetings/view-327/

**Nuclear Education and Training**, November 14-18, 2021, Brussels, Belgium Website: https://ens.eventsair.com/nuclear-education-and-training/

**2021 ANS Winter Meeting and Technology Expo, November 30 – December 4, 2021,** Washington, D.C. Website: https://www.ans.org/meetings/view-wm2021/

***December 2021***

**23rd IEEE Pulsed Power Conference and 29th IEEE Symposium on Fusion Engineering, December 12-16, 2021,** Denver, Colorado. Website: https://uta.engineering/ppcsofe2021/