Radiation Safety Information Computational Center

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Thinking is the talking of the soul with itself. - Plato

CHANGES TO THE RSICC CODE AND DATA COLLECTION

CCC-767/SWORD 5.0

U.S. Naval Research Laboratory, Washington, DC, through the Department of Homeland Security, Washington, DC, has released an update to SWORD 5.0. 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 actually 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 gives the user the option of running a simulation using one of two well-known simulation engines: GEANT 4 from CERN and MCNPX from Los Alamos National Laboratory. Installation instructions are included in the documentation. Note: GEANT4 V8.1 is included with this distribution. MCNPX is distributed in the C00810MNYCP00 package available from RISCC. Users should be aware that current versions of the MCNPX precompiled executables will not work with this version of SWORD. If the user desires to use MCNPX with SWORD, the user will have to build MCNPX.

SWORD 5.0 runs on any Intel-based Windows, Linux or Mac OSX platform with at least 3 GB of RAM and 30 GB of free disk space. Current distribution is available as a VMware virtual appliance only available at (http://www.vmware.com/). It can run under a free VMware server or player (player recommended) on a Windows or Linux host or under VMware Fusion (purchase only) on an Intel-based Mac OSX host. SWORD 5.0 was tested at RSICC using Windows and Linux platforms. The package is distributed as a zip file (created with WinZip 14) which contains the virtual appliance and installation and tutorial guides. C++, Java, Python; Linux (C00767MNYCP05).

DLC-268/BOREHOLD-EB6.8-MG

The IAEA through the OECD Nuclear Energy Agency Data Bank, Issy-les-Moulineaux, France has released BOREHOLD-EB-6.8-MG, Multi-Group Cross-Section Library for Deterministic and Monte Carlo Codes. BOREHOLE-EB6.8-MG is a multigroup cross section library for deterministic (DOORS, DANTSYS) and Monte Carlo (MCNP) transport codes developed for the oil well logging applications. The library is based on the ENDF/B-VI.8 evaluation and was processed by the NJOY-99 code. The cross sections are given in the 175 neutron and 45 gamma ray group structure. The MATXS format library can be directly used in TRANSX code to prepare the multigroup self-shielded cross sections for deterministic discrete ordinates codes like DOORS and DANTSYS. The data provided in the GROUPR and GAMINR format were converted to the MCNP ACE format by the NSLINK, SCALE and CRSRD codes.

The BOREHOLE-EB6.8-MG package is transmitted on CD. PC and UNIX (D00268MYCP00).

PSR-592/DSNP

ANL through the Energy Science and Technology Software Center (ESTSC) contributed the DSNP package. DSNP (Dynamic Simulator for Nuclear Power-Plants) is a system of programs and data files by which a nuclear power plant, or part thereof, can be simulated. The acronym DSNP is used interchangeably for the DSNP language, the DSNP libraries, the DSNP precompiler, and the DSNP document generator. The DSNP language is a special-purpose, block-oriented, digital-simulation language developed to facilitate the preparation of dynamic simulations of a large variety of nuclear power plants. It is a user-oriented language that permits the user to prepare simulation programs directly from power plant block diagrams and flow charts by recognizing the symbolic DSNP statements for the appropriate physical components and listing these statements in a logical sequence according to the flow of physical properties in the simulated power plant. Physical components of nuclear power plants are represented by functional blocks, or modules. Many of the more complex components are represented by several modules. The nuclear reactor, for example, has a kinetic module, a power distribution module, a feedback module, a thermodynamic module, a hydraulic module, and a radioactive heat decay module. These modules are stored in DSNP libraries in the form of a DSNP subroutine or function, a block of statements, a macro, or a combination of the above. Basic functional blocks such as integrators, pipes,

function generators, connectors, and many auxiliary functions representing properties of materials used in nuclear power plants are also available. The DSNP precompiler analyzes the DSNP simulation program, performs the appropriate translations, inserts the requested modules from the library, links these modules together, searches necessary data files, and produces a simulation program in FORTRAN.

The DSNP package is transmitted on CD and contains source code, sample problems and documentation. IBM 3033 (P00592I303300).

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. The Talent and Opportunity System allows you to create a profile, and then answer only 5 or 6 questions for each program or job posting for which you apply.

All levels of participants from undergraduates to faculty are encouraged to publish research papers with their mentors. Please browse through the Research Profiles on the different participants and their research experiences at the right hand side of the bottom of 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

RSICC attempts to keep its users and contributors advised of conferences, courses, and symposia in the field of radiation protection, transport, and shielding through this section of the newsletter. Should you be involved in the planning/organization of such events, feel free to send your announcements and calls for papers via email to arwoodjw@ornl.gov with "conferences" in the subject line by the 20th of each month. Please include the announcement in its native format as an attachment to the message. Please provide a website address for the event if one is available.

Every attempt is made to ensure that the links provided in the Conference and Calendar sections of this newsletter are correct; however, if the links become unavailable, please call the point of contact for the event.

CONFERENCES

PHYTRA3

3rd International Conference on Physics and Technology of Reactors and Applications

The 3rd edition of the conference PHYTRA will be held May 12-14, 2014 in Tetouan, Morocco. PHYTRA3 is expected to be an outstanding international event in the MENA region which provides an opportunity for researchers, academicians and practitioners in the field of physics and technology of reactors to gather, exchange ideas, and present original research contributions and best practices.

For up-to-date information about this conference, visit their website at http://www.gmtr-association.com/phytra3/ .

10th International Conference of Computational Methods in Sciences and Engineering

The 10th International Conference of Computational Methods in Sciences and Engineering will be held April 4-7, 2014 at the Metropolitan Hotel, Athens, Greece. The conference will feature a mini-symposium on energy, with emphasis on nuclear energy entitled: "Accelerate Discovery and Design of New Materials Applications in Nuclear Power by High Performance Supercomputing."

For up-to-date information about this conference, visit their website at http://www.iccmse.org/ .

41st IEEE International Conference on Plasma Science (ICOPS) and the 20th International Conference on High Power Particle Beams (BEAMS)

The 41st IEEE International Conference on Plasma Science (ICOPS) and the 2th International Conference on High Power Particle Beams (BEAMS) will be held May 25-29, 2014 at the Marriot Wardman Park, Washington, DC. This joint meeting will cover a range of scientific material in the fields of both plasma science and high power particle beams. In addition to the material traditionally covered in these conferences, two mini-courses will also be offered, on the topics of Low Temperature Atmospheric Pressure Plasmas and Atomic and Radiation Physics.

For update-to-date information about his conference, visit their website at http://www.ece.unm.edu/icops-beams2014/ .

2014 IEEE Nuclear and Space Radiation Effects Conference

The 2014 IEEE Nuclear and Space Radiation Effects Conference will be July 14 to 18 at the Marriott Rive Gauche, Paris, France. The conference features a technical program consisting of eight to ten technical sessions of contributed papers describing the latest observations in radiation effects, a Short Course on radiation effects offered on July 14, a Radiation Effects Data Workshop, and an Industrial Exhibit.

For update-to-date information about his conference, visit their website at http://www.nsrec.com/ .

19th Pacific Basin Nuclear Conference

The 19th Pacific Basin Nuclear Conference will be held August 24-28, 2014 at the Hyatt Regency Hotel, Vancouver, British Columbia, Canada. The conference will showcase the advancement of nuclear

technology in power generation, health science, and environmental stewardship. Challenges facing nuclear technology will be discussed as well as future development. The conference features ten Technical Tracks, covering all aspects of nuclear technology.

For up-to-date information about this conference, visit their website at www.pbnc2014.org.

PHYSOR 2014 International Conference

The ANS Reactor Physics Topical Meeting will be held at The Westin Miyako, Kyoto, Japan September 28 – October 3, 2014. The technical program will include timely and relevant special topics. Students will be actively involved in all technical events and activities. Exciting workshops and technical tours will be also offered.

For up-to-date information about this conference, visit their website at http://physor2014.org/# .

TRAINING COURSES

2014 LANL MCNP6 CLASS SCHEDULE

Date	Course Name and Description	Location	Cost
2014	Class schedule for 2014 is being planned now.		

MCNP6 and Visual Editor Training

Classes are taught using the most recent (beta) version of the Visual Editor Code. All class attendees must have a valid MCNP/MCNPX RSICC license. Bring proof of receipt (letter or email) to the class.

Visual Editor Classes 2013-2014		
November 4-8, 2013	**Beginning Visual MCNP**	Barcelona, Spain
November 18-22, 2013	**Intermediate Visual MCNP**	Barcelona, Spain
December 9-13, 2013	**MCNP for Managers and Project Leaders**	Honolulu, Hawaii
January 6-10, 2014	**Beginning Visual MCNP**	Las Vegas, NV
January 20-24, 2024	**Intermediate Visual MCNP**	Las Vegas, NV
February 10-14, 2014	**Beginning Visual MCNP**	Rio de Janeiro, Brazil
February 17-21, 2014	**Intermediate Visual MCNP**	Rio de Janeiro, Brazil
March 17-21, 2014	**Intermediate Visual MCNP**	Barcelona, Spain
March 24-28, 2014	**Beginning Visual MCNP**	Paris, France
April 14-18, 2014	**Beginning Visual MCNP**	Las Vegas, NV
April 21-25, 2014	**Intermediate Visual MCNP**	Las Vegas, NV
May 19-23, 2014	**Beginning Visual MCNP**	Cebu, Philippines
May 26-30, 2014	**Intermediate Visual MCNP**	Cebu, Philippines
June 16-20, 2014	**Beginning Visual MCNP**	Barcelona, Spain
June 30-July 4, 2014	**Intermediate Visual MCNP**	Barcelona, Spain
July 14-18, 2014	**Beginning Visual MCNP**	Anaheim, CA
July 21-25, 2014	**Intermediate Visual MCNP**	Anaheim, CA
August 11-15, 2014	**Beginning Visual MCNP**	Orlando, FL
August 18-22, 2014	**Intermediate Visual MCNP**	Orlando, FL
September 1-5, 2014	**Beginning Visual MCNP**	Montreal, Canada
September 8-12, 2014	**Intermediate Visual MCNP**	Montreal, Canada
September 22-26,2014	**Beginning Visual MCNP**	Myrtle Beach, SC
September 29-October 3, 2014	**Intermediate Visual MCNP**	Myrtle Beach, SC
October 13-17, 2014	**Beginning Visual MCNP**	Barcelona, Spain
October 20-14, 2014	**Intermediate Visual MCNP**	Barcelona, Spain
December 1-5, 2014	**Beginning Visual MCNP**	Vienna, Austria
December 8-12, 2014	**Intermediate Visual MCNP**	Vienna, Austria

The introductory workshops combine teaching on MCNP basics and how to create MCNP input files using the Visual Editor. The intermediate Visual Editor workshops focus on more advanced topics such as tallies and variance reduction using the Visual Editor.

Exercises will focus on creating input files and visualizing output data with the Visual Editor. Attendees are encouraged to bring their own input files for viewing and modifying in the Visual Editor; this is particularly important for the intermediate workshop.

The course description and registration information can be found at http://www.mcnpvised.com/index.html.

MCNP6 Workshops 2013-2014		
November 11-15,2013	**MCNP6 Intermediate Workshop**	Barcelona, Spain
January 13-17, 2014	**MCNP6 Intermediate Workshop**	Las Vegas, NV
March 31- April 4, 2014	**MCNP6 Intermediate Workshop** (The NEA Handles registration for this class.)	Paris, France
May 5-9, 2014	**MCNP6 Intermediate Workshop**	Livermore, CA
June 23-27, 2014	**MCNP6 Intermediate Workshop**	Barcelona, Spain
August 25-29, 2014	**MCNP6 Intermediate Workshop**	Washington, DC
October 27-31, 2014	**MCNP6 Intermediate Workshop**	Barcelona, Spain

MCNP6 experts from Los Alamos will lead in the teaching of these workshops on the capabilities of MCNP6.

Intermediate Workshops cover the entire spectrum of MCNP6 but proceed at a much faster pace and are more in-depth than Introductory Classes. These workshops are open to new users; the first day is a review of basics. However, the intermediate workshops are targeted toward more experienced users and are more problem solving than lecture classes. Intermediate workshops feature flexible course content, skip topics of least interest to the participants, and provide significantly more depth than introductory classes.

Penelope Workshop 2014		
April 28-May 2, 2014	**Penelope**	Las Vegas, NV

The list of workshops is tentative, as workshops may be added, removed, or modified throughout the year, depending on user interests. Workshops with fewer than 12 registrants on the early registration date are subject to cancellation or rescheduling.

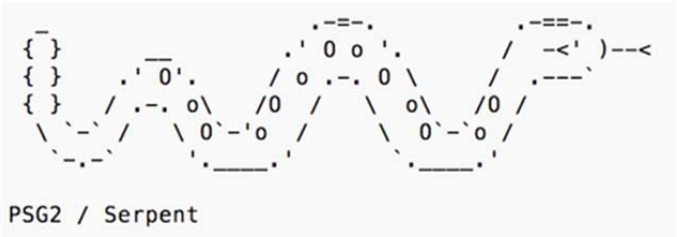
In order to process non-U.S. citizens by the class date, non-U.S. citizens must register at least 6 weeks prior to the start of the training class. All non-U.S. citizens who reside in countries listed in the U.S. Code of Federal Regulations, Title 10, Part 810.8, are required to register at least 8 weeks prior to the start of the training class. These participants must be processed by the DOE and should not make travel arrangements until approval from DOE has been obtained.

Additional information about the courses can be found at the website, http://www.mcnpvised.com/train.html. To register send an email to Randy Schwarz at randyschwarz@mcnpvised.com, indicating the workshop of interest to you.

OECD Nuclear Energy Agency-Data Bank Training Courses

November 4-8, 2013	**TRIPOLI 4**	NEA, Paris, France

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. Note that the number of participants to the courses is limited. Priority is given to nationals from NEA Data Bank member countries. Class sizes are limited and courses may be cancelled if minimum enrollment is not obtained one month prior to course. Course fees are refundable up to one month before each class. After one month, course fees will not be refunded. Note that all attendees must be registered users. Registration information is available at: http://www.oecd-nea.org/dbprog/trainingcourses.htm.



Serpent User's Group Meeting 2013

In collaboration with the UC Berkeley Department of Nuclear Engineering, the Serpent User's Group Meeting 2013 will be held at Berkeley Skydeck, Berkeley, CA November 6-8, 2013. The Serpent Monte Carlo code has been developed for reactor physics, group constant generation, and burn-up calculations since 2004. The introductory tutorial on November 5th will address the fundamental concepts and basic use of the Serpent code. The User's Group Meeting that follows on the 6th through the 8th will cover a general overview of the methods and capabilities of the Serpent code as well as with plans for future development. It will also cover applications, coupling to other codes, and verification and benchmarking of the various features of the code.

For more information regarding this meeting, visit their website at http://serpentugm2013.eventbrite.com/.

SYMPOSIA

The 15th International Symposium on Reactor Dosimetry (ISRD-15)

The 15th International Symposium on Reactor Dosimetry (ISRD-15) will take place from May 18-23, 2014 at the Hotel Aquabella in Aix-en-Provence, France. The aim of the symposium is to bring together the communities involved in research, development and applications related to reactor dosimetry. The symposium is jointly organized by the European Working Group on Reactor Dosimetry (EWGRD) and the Committee E10 on Nuclear Technology and Applications of the American Society for Testing and Materials (ASTM).

For more information regarding this meeting, visit their website at http://reactordosimetry.org/index.html.

2013 CALENDAR

November

Serpent User's Group Meeting 2013, November 6-8, Berkeley, CA. For up-to-date information about this conference, visit their website at http://serpentugm2013.eventbrite.com/.

ANS Winter Meeting, November 10-14, 2013, Washington, D.C. For up-to-date information about this conference, visit their website at http://www.ans.org/meetings/m_81.

2014 CALENDAR

April

International Conference of Computational Methods in Sciences and Engineering, April 4-7, 2014, Athens, Greece. For up-to-date information about this conference, visit their website at http://www.iccmse.org/ .

May

3rd International Conference on Physics and Technology of Reactors and Applications (PHYTRA3), May 12-14, 2014, Tetouan, Morocco. For up-to-date information about this conference, visit their website at http://www.gmtr-association.com/phytra3/.

International Symposium on Reactor Dosimetry (ISRD-15), May 18-23, 2014, Aix-en-Provence, France. For up-to-date information about this conference, visit their website at http://reactordosimetry.org/index.html.

41st IEEE International Conference on Plasma Science (ICOPS) and the 20th International Conference on High Power Particle Beams (BEAMS), May 25-29, 2014, Washington, DC. For up-to-date information about this conference, visit their website at http://www.ece.unm.edu/icops-beams2014/ .

July

2014 IEEE Nuclear and Space Radiation Effects Conference July 14-18, 2014, Paris France. For up-to-date information about this conference, visit their website at http://www.nsrec.com/.

August

19th Pacific Basin Nuclear Conference, August 24-28, 2014, Vancouver, British Columbia, Canada. For up-to-date information about this conference, visit their website at www.pbnc2014.org.

September

Topical Meeting of the ANS Radiation Protection and Shielding Division (RPSD 2014), September 14-18, 2014, Knoxville, TN.

October

PHYSOR 2014, September 28 – October 3, 2014, Kyoto, Japan**.** For up-to-date information about this conference, visit their website at http://physor2014.org/#.