PHITS Tutorial in Argentina

5-11 March 2020

Location:

Centro Atómico Constituyentes
Comisión Nacional de Energía Atómica (CNEA)
Av. Gral. Paz
1499 Villa Maipú
Buenos Aires, Argentina
(https://www.argentina.gob.ar/cnea/cac)

Deadline for registration: 5 February 2020
Registration Fee: 200 EURO (including coffee breaks, lunches & a social dinner)
Language: English

Eligibility for participation: Attendees must obtain the latest PHITS license prior to the course.

PHITS Licence

To attend the course, you have to obtain the license of the latest version of PHITS. It is free of charge, and the instruction to get the license is available at (https://phits.jaea.go.jp/howtoget.html). When you submit the application form via PHITS website, please select “Submission of application form” in the contact page of PHITS website, and write “I would like to attend PHITS course in Argentina, March 2020” in the message body.

Lecturers:

Dr. Tatsuhiko Sato, Leader of PHITS development team, JAEA, Japan
Dr. Koji Niita, Primary programmer of PHITS, RIST, Japan

Local organizers:

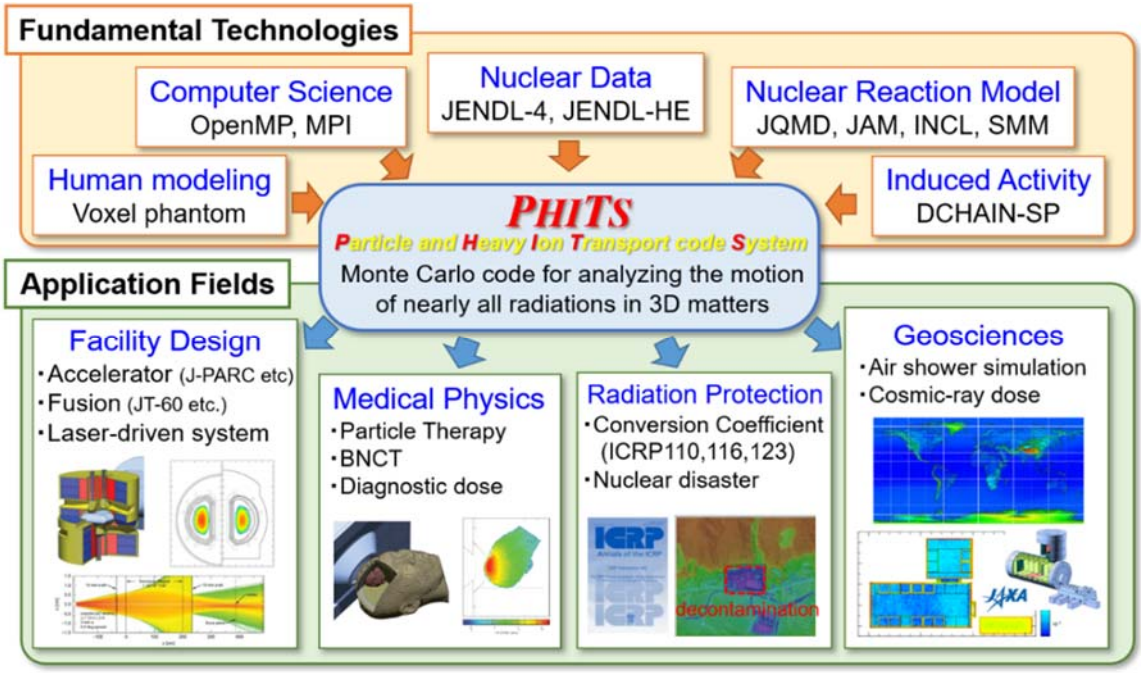
Dr. Sara González (CNEA-CONICET)
Eng. Mario Gadan (CNEA)

PHITS is a general-purpose Monte Carlo particle transport simulation code developed under collaboration between Japan Atomic Energy Agency (JAEA), Research Organization for Information Science and Technology (RIST), and several institutes all over the world. It can deal with the transport of nearly all particles over wide energy ranges, using several nuclear reaction models and nuclear data libraries. PHITS can

support your researches in the fields of accelerator technology, radiotherapy, space radiation, and in many other fields which are related to particle and heavy ion transport phenomena. See PHITS website in more detail. (http://phits.jaea.go.jp)

Attendees must bring a laptop PC with either Windows or Mac OS. The tutorial consists of two courses; one is the basic course for beginners of Monte Carlo simulation (Mar. 5-6) and the other is the advanced course for researchers who are familiar with other Monte Carlo simulation codes such as MCNP (Mar. 9-11). Attendees can join in either or both courses (registration fee is the same for all participants). During the basic course, they will learn the basic usage of PHITS such as the construction of 3D geometry and the definition of source particles and tallies. During the advanced course, they will learn the difference between the input formats of PHITS and other Monte Carlo codes, and some advanced and unique functions of PHITS.

If you have any question about the course, please send a message with your affiliation and nationality to: phits-en-office@jaea.go.jp



Overview of the PHITS code

Tentative Program

Coffee breaks will be around 10:30 and 15:30

Thursday 5 March 2020

9:00-9:30: Registration
9:30-9:45: Open ceremony
9:45-10:30: Installation
11:00-12:00: Introduction of PHITS
(lunch)
13:00-16:00: Basic Lecture (input format & geometry)
16:30-17:30: Basic Lecture (source definition)

Friday 6 March 2020

9:30-12:00: Basic Lecture (tally definition)
(lunch)
13:00-17:30: Basic Lecture (parameter setting)

Monday 9 March 2020

9:30-10:00: Installation
10:00-11:00: Introduction of PHITS
11:00-12:00: Difference between input formats of PHITS and MCNP
(lunch)
13:00-14:00: Difference between input formats of PHITS and MCNP
14:00-16:00: Exercise (stop α,β,γ-ray & neutron)
16:00-17:30: Exercise (melt snowman by proton beam!)
18:00-: Reception

Tuesday 10 March 2020

9:30-12:00: Advanced Lecture (Complicated source definition)
(lunch)
13:00-15:00: Advanced Lecture (Useful functions: counter, transform, magnetic field)
15:00-17:30: Advanced Lecture (Variance reduction)

Wednesday 11 March 2020

9:30-12:00: Advanced Lecture (TBA)
(lunch)
13:00-17:30: Practical simulation for each participant

CV of Lecturers

Name

Tatsuhiko Sato

Position/Organization

Principal Researcher / Japan Atomic Energy Agency

Specially appointed professor / Osaka University

Education and employment history

1996 Mar. B.Sc., Department of Nuclear Engineering, Kyoto University

1998 Mar. M.Sc., Department of Nuclear Engineering, Kyoto University

2001 Mar. Ph.D., Department of Nuclear Engineering, Kyoto University

2001 Apr. Researcher, Japan Atomic Energy Research Institute

2005 Oct. Researcher, Japan Atomic Energy Agency (due to re-organization)

2011 Oct. – Principal Researcher, Japan Atomic Energy Agency

2018 Dec. – Specially appointed professor, Osaka University (Cross appointment contract)

Major professional accomplishments

He is the principal investigator of the current PHITS development team. He also used the code by himself for cosmic-ray research and medical physics. He developed a model for estimating the terrestrial cosmic-ray fluxes for both solar quiet and storm periods based on the airshower simulation performed by PHITS. He also developed a model for estimating the therapeutic effects of charged particle therapy and boron neutron capture therapy based on the microdosimetric simulation performed by PHITS. He is a member of International Commission on Radiological Protection (ICRP) Committee 2 since 2017. He published more than 150 peer-reviewed papers including 45 corresponding-author ones, and they have been cited by more than 4,000 times (according to Google Scholar).

Name

Koji Niita

Position/Organization

Principal Research Scientist / RIST

(Research Organization for Information Science and Technology)

Education and employment history

1979 Mar. B.Sc., Department of Physics, Tohoku University, Japan.

1981 Mar. M.Sc., Nuclear Physics, Tohoku University, Japan.

1984 Mar. Ph.D., Nuclear Physics, Tohoku University, Japan.

1984 Sep. Research Associate, GSI Darmstadt, Germany.

1986 Sep. Research Associate, Giessen University, Germany.

1991 Jan. Postdoctoral Fellow, Japan Atomic Energy Research Institute.

1994 Apr. Principal Research Scientist, RIST

Major professional accomplishments

He is a principal research scientist of RIST and a specialist of the radiation transport phenomena and numerical simulation. He is also an important member of the PHITS development team. He had programed the original PHITS code and developed several nuclear reaction models which have been employed in the PHITS code. He and his colleagues of RIST have designed the shielding structure for many accelerator facilities, particularly for particle therapy facilities by using the PHITS code. Up to now, RIST performed the shielding design for 7 proton therapy facilities, 6 carbon therapy facilities and 3 BNCT therapy facilities in Japan, Hong Kong, Taiwan, Korea and US.