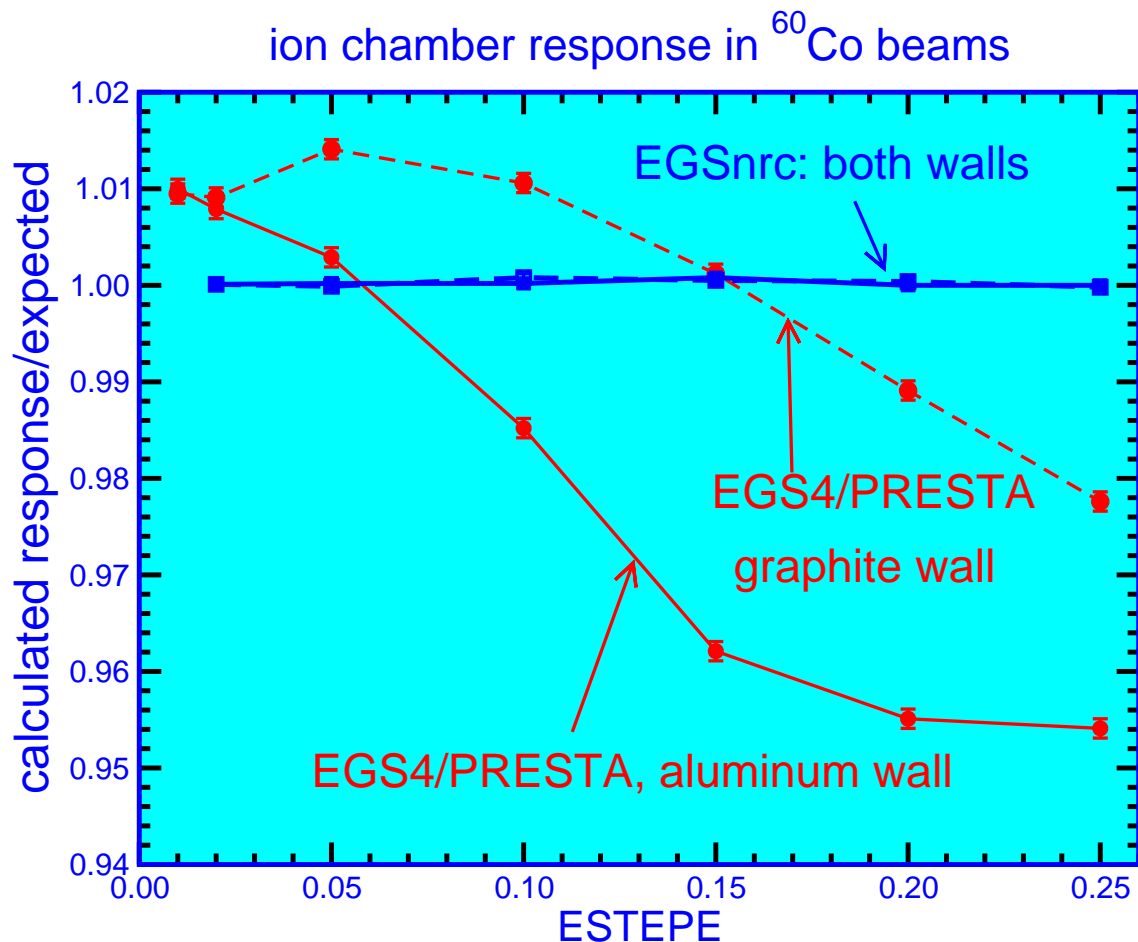


Radiation Transport Calculations using the EGS Monte Carlo System

May 9 – 13, 2005

Jointly sponsored by Carleton University and NRC

Held at NRC, Montreal Rd, Ottawa, Canada



Principal Instructors

Iwan Kawrakow NRCC, David W O Rogers Carleton University
Jan Seuntjens McGill University, Ernesto Mainegra-Hing NRCC,
Blake Walters NRCC

What is EGS?

The course is based on EGSnrc, a Monte Carlo package for the coupled transport of electrons, photons and positrons in the energy range 1 keV ... 100 GeV. EGSnrc is the actively developed branch of the popular EGS (**E**lectron-**G**amma-**S**hower) code system. See <http://www.irs.inms.nrc.ca/inms/irs/papers/egs.biblio/egs.biblio.html> for an incomplete list of papers about or using EGS. Compared to earlier EGS releases such as EGS4 (see the EGS home page) EGSnrc incorporates a variety of improvements in the underlying photon and electron cross sections and in the implementation of the condensed history technique, see the on-line manual for more details. As with EGS4, the package is written in MORTRAN3 and requires a FORTRAN77 compiler but unlike EGS4, EGSnrc-based user-codes can be developed in C and C++ in addition to MORTRAN3 (or FORTRAN77). Although EGSnrc has previously been for only a Unix/Linux operating system, the course will be run using EGSnrcMP which runs on Microsoft Windows and Mac OSX as well. The course includes instruction on use of a flexible new **general purpose geometry package** for use with EGSnrc. Students bringing Windows laptops may have the EGSnrc system installed at the start of the course and do the lab exercises on their laptops, otherwise Linux desktop computers will be available. EGSnrc is available on-line at <http://www.irs.inms.nrc.ca/inms/irs/EGSnrc/EGSnrc.html>. There is no requirement to take the course to obtain the code system.

The course

The 4.5-day course will follow the traditional format of EGS courses with a strong emphasis on hands-on experience. The course is intended primarily for new users of the EGS system although there will be ample opportunity during the laboratory sessions for discussions on more advanced issues. This course is NOT about the BEAM code system. Although jointly sponsored by Carleton University, the course will be held at the Montreal Rd campus of NRC in Ottawa Canada.

The cost

The course tuition is \$Cdn 2,200 per person. Included in the cost of the course are all educational materials, lunches, and one evening meal. The cost does not include any charge for the software. The participant will be responsible for their own hotel reservations etc.

To facilitate instruction, enrollment will be limited to 26 people. A deposit of \$Cdn 150 must accompany the registration. The deposit will not be refunded for cancellations after April 4, 2005. Final payment must be received by Apr 11 2005. **Registration is on a first-come basis.** If we do not have adequate registration by Apr 4, 2005 we will cancel the course and refund the tuition, including deposit so do not book flights until confirmation that the course is on. Please register early so we can confirm the course is on, and send us an indication of serious interest even earlier.

Timetable

TIME	Mon May 9	Tu May 10	Wed May 11	Th. May 12	Fri. May 13
8:30-10:15	Overview and photon physics	Building user-codes	Scoring and geometry	Geometry Package	variance reduction, installing
10:30-12:30	Lab: Write a Mortran3 code	User-codes, e ⁻ physics	Lab tutor 3,4,5	Lab: Geometry	MS Windows Lab: Install
12:30-1:30	Lunch	Lunch	Lunch	Lunch	Lunch
1:30-2:30	Electron physics	electron physics stats	GUIs, RZ user-codes	Benchmarks PEGS4	
3:15-5:30 Hands-on	EXAMIN PEGS4 data	tutor1 & tutor2	tutor6 & tutor7	Geometry graphics	
7:00-11:00			Banquet		

For registration information, contact Dave Rogers e-mail:
drogers(remove_this_part)@physics.carleton.ca Phone: 613 520-2600x4374
Physics Department, Carleton University
or
Blake Walters, Phone: 613 993-2715 e-mail:
bwalters(remove_this_part)@irs.phy.nrc.ca Fax: 613 952-9865
<http://www.physics.carleton.ca/~drogers/EGScourse.html>

Registration

Go to <http://www.physics.carleton.ca/~drogers/EGScourse.html> for the registration form.
Please fill in all the applicable fields then print it out.

A \$Cdn150 deposit must accompany the registration. The entire tuition of \$Cdn2,200 must be paid in full by Apr 11, 2005.

Deposit and tuition are payable by international money order or bank draft, both payable in Canadian funds, made payable to:

Carleton University (EGSnrc Workshop)

Information on accommodation will be mailed with your registration confirmation.

Please mail the form along with money order or bank draft to:

EGSnrc Workshop
c/o Nikki Dignard
Office of the Dean of Science
Carleton University
1125 Colonel By Drive,
Ottawa, Ontario, Canada
K1S 5B6
tel: (613) 520-4388
fax: (613) 520-4389

For further information contact:

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phone: 613-52-2600 x4374

Iwan Kawrakow iwan(not_this_part)@irs.phy.nrc.ca
phone: 613-993-2715 fax: 613-952-9865

or

Blake Walters bwalters(not_this_part)@irs.phy.nrc.ca
phone: 613-993-2715 fax: 613-952-9865

Schedule for the 2005 EGSnrc Course

Subject to change

Day 0: Sunday, May 8 , 2005

18:00 Icebreaker at hotel

Day 1: Monday, May 9, 2005

8:15 **Registration & Coffee**

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|-----|-------|------------------------------------|-------|
| 1) | 8:30 | Introduction to the course and EGS | Dave |
| 2) | 9:10 | Photon Physics | Iwan |
| 3) | 9:45 | Computer environment | Blake |
| | 10:00 | Coffee (15 min) | |
| 4) | 10:15 | Elementary Mortran3 | Dave |
| L1) | 11:00 | Intro to Mortran3/laptop install | All |

12:30 **Lunch (60 min)**

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|-----|-------|---|------|
| 5) | 13:30 | Restricted stopping powers, AE, AP & EXAMIN | Dave |
| L2) | 14:00 | Examining PEGS4 data sets with EXAMIN | All |
| | 15:00 | Coffee (15 min) | |
| D1) | 16:00 | Report back on Lab and Day 1 lectures | All |
| | 17:00 | Finish (free night) | |

Day 2: Tuesday, May 10, 2005

8:15 Coffee and muffins

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|----|-------|---|--------|
| 6) | 8:30 | Mortran3: II - Macros & other tricks | Lesley |
| 7) | 9:00 | How to build and run a user-code: | Iwan |
| 8) | 9:45 | What is in an EGSnrc user-code? | Dave |
| | | tutor1 & tutor2 | |
| | 10:15 | Coffee (15 min) | |
| | 10:30 | What is in an EGSnrc user-code (cont'd) | Dave |
| 9) | 12:00 | Electron Physics: I | Iwan |

12:30 **Lunch (60 min)**

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|-----|-------|---------------------------------------|------|
| 9) | 13:30 | Electron Physics: II | Iwan |
| 10) | 14:00 | Statistics and Efficiency | Jan |
| L3) | 14:30 | tutor1 & tutor2 | All |
| | 15:00 | Coffee (while you work) | |
| D2) | 16:30 | Report back on Lab and Day 2 lectures | All |
| | 17:30 | Finish (free night) | |

Day 3: Wednesday, May 11, 2005

- 8:15 Coffee and muffins
- 11) 8:30 Scoring (AUSGAB & IAUSFL & WATCH) Dave
tutor3 → tutor5
- 12) 9:30 Geometry: standard user-codes(HOWFAR) Blake
10:00 **Coffee (15 min)**
- L4) 10:15 tutor3 → tutor5 All
- 13) 11:45 DOSRZnrc and other NRC user-codes Jan
- 12:30 **Lunch (60 min)**
- 14) 13:30 GUI's for the NRC RZ User-Codes Ernesto
- 15) 13:45 Electron & Photon transport parameters Iwan
and cross section options (tutor6/7)
- L5) 14:45 tutor6 & tutor7 All
15:00 **Coffee (while you work)**
- D3) 16:30 Report back on Lab and Day 3 lectures All
17:30 **End of session**
- 19:00 Course Banquet (Courtyard Restaurant)

Day 4: Thursday, May 12, 2005

- 8:15 Coffee and muffins
- 16) 8:30 The general geometry package Iwan
- 17) 9:30 Examples with general geometry package Dave? or Declan?
10:00 **Coffee (15 min)**
- 18) 10:15 Running EGSnrc in a C-wrapper Iwan
- L7) 11:00 Using the general geometry package All
- 12:30 **Lunch (60 min)**
- 19) 13:30 EGSnrc benchmarks Iwan
- 20) 14:00 Using PEGS4 Dave
- 21) 14:20 Graphics/EGS_Windows Dave
- L8) 14:45 Geometry package(cont) + graphics All
15:00 **Coffee (during lab)**
17:30 **Finish**

Day 5: Friday, May 13, 2005

- 8:15 Coffee and muffins
- 22) 8:30 Variance Reduction Iwan
- 23) 9:15 Installing EGSnrc & course evaluations Dave
- 9:45 **Coffee (15 min)**
- 24) 10:00 EGSnrcMP on Windows Ernesto
- 25) 10:30 BEAM (for those interested) Dave
- L9) 11:00 Install EGSnrc & run DOSRZnrc
- 12:30 **Pizza and Beer**
- 13:30 —End of Course —