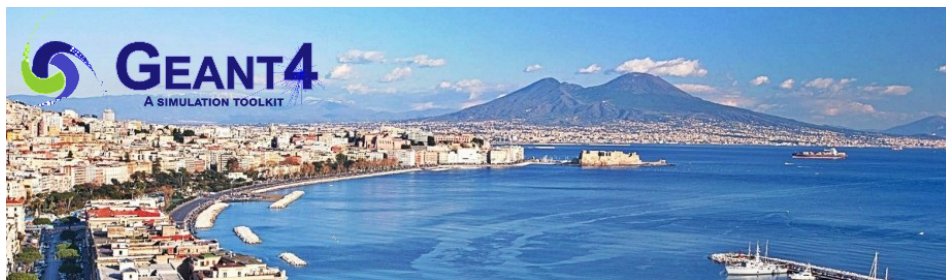


IV Geant4 International User Conference at the physics-medicine-biology frontier



Report of Contributions

Contribution ID: 3

Type: **not specified**

Geant4 Medical Physycs Application in Naples (A. Sarno)

Monday, October 24, 2022 8:45 AM (17 minutes)

Topic

Presenter: Dr SARNO, Antonio (Dipartimento di Fisica E. Pancini UNINA and INFN Napoli)

Session Classification: Opening Session

Contribution ID: 8

Type: **not specified**

Keynote Lecture: Recent Geant4 developments

Monday, October 24, 2022 9:02 AM (23 minutes)

Topic

Presenter: Prof. VEDERI, Marc (CNRS (Laboratoire Leprince-Ringuet: LLR))

Session Classification: Opening Session

Contribution ID: 13

Type: **not specified**

Keynote Lecture: Status and Outlook of the TOPAS Tool for Particle Simulation

Tuesday, October 25, 2022 8:30 AM (23 minutes)

Topic

Presenter: Prof. PERL, Joseph (SLAC National Accelerator Laboratory)

Session Classification: Tools based on Geant4

Contribution ID: 15

Type: **not specified**

Keynote Lecture: GATE Advances

Tuesday, October 25, 2022 9:16 AM (23 minutes)

Topic

Computing

Presenter: Prof. MAIGNE, Lydia (Laboratoire de Physique de Clermont, CNRS/IN2P3, Université Clermont Auvergne, Aubière, France)

Session Classification: Tools based on Geant4

Contribution ID: 17

Type: **not specified**

Keynote Lecture: Geant4 for Hadron therapy: status and challenges

Monday, October 24, 2022 4:43 PM (23 minutes)

Topic

Presenter: PETRINGA, Giada (Istituto Nazionale di Fisica Nucleare)

Session Classification: Geant4 for Protons and Hadrons Radiotherapy 2

Contribution ID: **18**

Type: **not specified**

Keynote Lecture: Geant4 for Flash radiotherapy: status and challenges

Tuesday, October 25, 2022 4:00 PM (23 minutes)

Topic

Presenter: Prof. DESORGHER, Laurent (Lausanne University Hospital, Institute of radiation physics)

Session Classification: Geant4 for Photons and Electrons Radiotherapy

Contribution ID: 20

Type: **not specified**

MINAS TIRITH: a Geant4-DNA-based tool for modeling damage at the cell population scale

Wednesday, October 26, 2022 8:53 AM (12 minutes)

Topic

Radiobiology including Geant4-DNA

Primary author: THIBAUT, Yann (IRSN/PSE-SANTE/SDOS/LDRI)

Co-authors: Prof. VILLAGRASA, Carmen (IRSN/PSE-SANTE/SDOS/LDRI); Prof. INCERTI, Sébastien (Univ. Bordeaux, CNRS, LP2I Bordeaux, UMR 5797, F-33170 Gradignan, France); Dr PERROT, Yann (IRSN/PSE-SANTE/SDOS/LDRI)

Presenter: THIBAUT, Yann (IRSN/PSE-SANTE/SDOS/LDRI)

Session Classification: Geant4 for DNA Damage evaluation

Contribution ID: 21

Type: **not specified**

A review of Monte Carlo calculated fQ factors for ionization chambers in clinical proton beams

Monday, October 24, 2022 5:54 PM (12 minutes)

Topic

Proton Therapy

Primary authors: Dr GOMÀ, Carles (Department of Radiation Oncology, Hospital Clínic de Barcelona, Barcelona, Spain); Dr BAUMANN, Kilian-Simon (Department of Radiotherapy and Radiooncology, University Medical Center, Marburg, Germany); Ms KRETSCHMER, Jana (Medical Campus Pius Hospital, Carl-von-Ossietzky University, Oldenburg, Germany); Dr WULFF, Jörg (West German Proton Therapy Center, Essen, Germany); Prof. ZINK, Klemens (Marburg Ion-Beam Therapy Center, Marburg, Germany)

Presenter: Dr BAUMANN, Kilian-Simon (Department of Radiotherapy and Radiooncology, University Medical Center, Marburg, Germany)

Session Classification: Geant4 for Protons and Hadrons Radiotherapy 2

Contribution ID: 22

Type: **not specified**

Evaluation of the effect of oxygen in Flash irradiation through Geant4-DNA

Tuesday, October 25, 2022 5:22 PM (12 minutes)

Topic

Radiobiology including Geant4-DNA

Primary authors: Dr SHIRANI, Babak (university of Isfahan); FAROKHI, Fateme (Istituto Nazionale di Fisica Nucleare); Dr PETRINGA, Giada (infn-lns); Dr ALI ASGARIAN, Mohammad (University of Isfahan); Dr CIRRONE, Pablo (infn-lns); Dr JIA, Sayyed Bijan (University of Bojnord); Dr FATTORI, Serena (infn-lns)

Presenter: FAROKHI, Fateme (Istituto Nazionale di Fisica Nucleare)

Session Classification: Geant4 for Photons and Electrons Radiotherapy

Contribution ID: 23

Type: **not specified**

Simulation of radio-induced DNA damages and their repair by means of Geant4-DNA Monte Carlo Track Structure code

Wednesday, October 26, 2022 9:05 AM (12 minutes)

Topic

Radiobiology including Geant4-DNA

Primary author: Dr PERROT, Yann (IRSN)

Co-authors: THIBAUT, Yann (IRSN); Dr TRAN, Hoang; SAKATA, Dousatsu (Research Associate at National Institute of Radiological Sciences); INCERTI, Sébastien (Univ. Bordeaux, CNRS, LP2I Bordeaux, UMR 5797, F-33170 Gradignan, France); Dr VILLAGRASA, Carmen (IRSN)

Presenter: Dr PERROT, Yann (IRSN)

Session Classification: Geant4 for DNA Damage evaluation

Contribution ID: 24

Type: **not specified**

Implementation of nitrogen cross-sections in Geant4-DNA

Wednesday, October 26, 2022 11:09 AM (12 minutes)

Topic

Radiobiology including Geant4-DNA

Primary authors: Dr BANCER, Aleksandr (National Centre for Nuclear Research (NCBJ), Otwock-Swierk, Poland); Dr VILLAGRASA, Carmen (Institut de Radioprotection et de Sûreté Nucléaire (IRSN), Fontenay-Aux-Roses, France); Dr NETTELBECK, Heidi (Physikalisch-Technische Bundesanstalt (PTB), Braunschweig and Berlin, Germany); PIETRZAK, Marcin (National Centre for Nuclear Research); Dr BUG, Marion (Physikalisch-Technische Bundesanstalt (PTB), Braunschweig and Berlin, Germany); INCERTI, Sébastien (Univ. Bordeaux, CNRS, LP2I Bordeaux, UMR 5797, F-33170 Gradignan, France); PERROT, Yann (IRSN)

Presenter: Dr VILLAGRASA, Carmen (Institut de Radioprotection et de Sûreté Nucléaire (IRSN), Fontenay-Aux-Roses, France)

Session Classification: Geant4 for microdosimetry

Contribution ID: 25

Type: **not specified**

A Monte Carlo based investigation of the FLASH effect by examining inter-track interactions in radiobiological simulations performed with TOPAS-nBio

Tuesday, October 25, 2022 6:22 PM (12 minutes)

Topic

Radiobiology including Geant4-DNA

Primary author: DERKSEN, Larissa (Institute of Medical Physics and Radiation Protection, University of Applied Sciences, Giessen, Germany)

Co-authors: FLATTEN, Veronika (Department of Radiotherapy and Radiooncology, University Medical Center Giessen-Marburg, Marburg, Germany); ENGENHART-CABILLIC, Rita (Department of Radiotherapy and Radiooncology, University Medical Center Giessen-Marburg, Marburg, Germany); ZINK, Klemens (Marburg Ion-Beam Therapy Center, Marburg, Germany); BAUMANN, Kilian-Simon (Department of Radiotherapy and Radiooncology, University Medical Center Giessen-Marburg, Marburg, Germany)

Presenter: DERKSEN, Larissa (Institute of Medical Physics and Radiation Protection, University of Applied Sciences, Giessen, Germany)

Session Classification: Geant4 for Photons and Electrons Radiotherapy

Contribution ID: 26

Type: **not specified**

Development of Geant4 DICOM based dose calculation for Synchrotron Microbeam Radiation Therapy

Tuesday, October 25, 2022 6:10 PM (12 minutes)

Topic

Radiotherapy Treatments

Primary authors: PAINO, Jason; Dr CAMERON, Matthew (Australian Nuclear Science and Technology Organisation); Mr LARGE, Matthew (Univeristy of Wollongong); Mr CROWTHER, Matthew (Univeristy of Wollongong); Mr BARNES, Micah (University of Wollongong); Dr ENGELS, Elette (Australian Nuclear Science and Technology Organisation); Dr DAVIS, Jeremy (University of Wollongong); Dr TEHEI, Moeava (University of Wollongong); Dr CORDE TEHEI, Stephanie (Prince of Wales Hospital); GUATELLI, Susanna (Centre For Medical Radiation Physics, University of Wollongong); Prof. LERCH, Michael (University of Wollongong)

Presenter: GUATELLI, Susanna (Centre For Medical Radiation Physics, University of Wollongong)

Session Classification: Geant4 for Photons and Electrons Radiotherapy

Contribution ID: 27

Type: **not specified**

Neutron shielding strategies for dose quantification in Neutron Capture Enhanced Particle Therapy

Wednesday, October 26, 2022 12:10 PM (12 minutes)

Topic

Detector Development

Primary author: KIELLY, Marissa (Centre for Medical Radiation Physics, University of Wollongong, Australia)

Co-authors: CHACON, Andrew (ANSTO); RUTHERFORD, Harley (Centre for Medical Radiation Physics, University of Wollongong, Australia); CARACCILOLO, Anita (Department of Electronics and Information Technologies, Politecnico di Milano, Milano, Italy); ROSENFELD, Anatoly (Centre for Medical Radiation Physics, University of Wollongong); GUATELLI, Susanna (Centre For Medical Radiation Physics, University of Wollongong); CARMINATI, Marco (Istituto Nazionale di Fisica Nucleare); FIORINI, Carlo Ettore Nicola (Istituto Nazionale di Fisica Nucleare); SAFAVI-NAEINI, Mitra (Australian Nuclear Science and Technology Organisation, Australia)

Presenter: KIELLY, Marissa (Centre for Medical Radiation Physics, University of Wollongong, Australia)

Session Classification: Geant4 for Neutrons and Space

Contribution ID: 28

Type: **not specified**

Internal dosimetry of salivary glands in PSMA-targeted PET/CT: a Monte Carlo based study

Tuesday, October 25, 2022 2:12 PM (13 minutes)

Topic

Computung

Primary authors: Dr PISTONE, Daniele (Università degli Studi di Messina, Dipartimento BIOMORF; INFN Sezione di Catania); Dr AUDITORE, Lucrezia (Università degli Studi di Messina, Dipartimento BIOMORF; INFN Sezione di Catania); Dr ITALIANO, Antonio Stefano (INFN Sezione di Catania; Università degli Studi di Messina, Dipartimento MIFT); Dr GNESIN, Silvano (IRA - Lausanne University Hospital and University of Lausanne); Dr CICONI, Francesco (Dipartimento di Medicina Sperimentale e Clinica, Università "Magna Graecia" di Catanzaro; Unità di Medicina Nucleare, Ospedale Universitario "Mater Domini" di Catanzaro); Prof. CASCINI, Giuseppe Lucio (Dipartimento di Medicina Sperimentale e Clinica, Università "Magna Graecia" di Catanzaro; Unità di Medicina Nucleare, Ospedale Universitario "Mater Domini" di Catanzaro); Prof. AMATO, Ernesto (Università degli Studi di Messina, Dipartimento BIOMORF; INFN Sezione di Catania)

Presenter: Dr PISTONE, Daniele (Università degli Studi di Messina, Dipartimento BIOMORF; INFN Sezione di Catania)

Session Classification: Geant4 for Nuclear Medicine

Contribution ID: 30

Type: **not specified**

Dose enhancement applied to synchrotron X-ray microbeams: computational modelling and experimental validation.

Tuesday, October 25, 2022 5:58 PM (12 minutes)

Topic

Radiotherapy Treatments

Primary author: SPIGA, Jenny (University of Warwick)

Co-authors: Dr DUFFY , Jon (University of Warwick); BRAVIN, alberto (ESRF)

Presenter: Dr DUFFY , Jon (University of Warwick)

Session Classification: Geant4 for Photons and Electrons Radiotherapy

Contribution ID: 31

Type: **not specified**

Development of a validated Monte Carlo model of the ACNS Dingo Beamline

Wednesday, October 26, 2022 12:34 PM (12 minutes)

Topic

Detector Development

Primary author: JAKUBOWSKI, Klaudiusz (University of Wollongong and Australian Nuclear Science and Technology Organisation, Australia)

Co-authors: Dr CHACON, Andrew (Australian Nuclear Science and Technology Organisation, Australia); Dr TRAN, Thuy Linh (University of Wollongong); Dr GUATELLI, Susanna (University of Wollongong); Prof. ROZENFELD, Anatoly (University of Wollongong); Dr SAFAVI-NAEINI, Mitra (Australian Nuclear Science and Technology Organisation, Australia)

Presenter: JAKUBOWSKI, Klaudiusz (University of Wollongong and Australian Nuclear Science and Technology Organisation, Australia)

Session Classification: Geant4 for Neutrons and Space

Contribution ID: 32

Type: **not specified**

Calculation of organ-specific radiation quality factors for the radioprotection of astronauts on the Moon: a microdosimetric approach

Monday, October 24, 2022 9:49 AM (12 minutes)

Topic

Radiation Protection

Primary authors: LARGE, Matthew (University of Wollongong); Mr ARCHER, Jay (Centre for Medical Radiation Physics, University of Wollongong); Dr BOLST, David (Centre for Medical Radiation Physics, University of Wollongong); Dr PERACCHI, Stefania (Australian Nuclear Science and Technology Organisation); Prof. ROSENFELD, Anatoly (Centre for Medical Radiation Physics, University of Wollongong); GUATELLI, Susanna (Centre For Medical Radiation Physics, University of Wollongong)

Presenter: LARGE, Matthew (University of Wollongong)

Session Classification: Opening Session

Contribution ID: 33

Type: **not specified**

DNA-sequenced geometrical modelling in GEANT4-DNA

Topic

Radiobiology including Geant4-DNA

Primary author: Ms KHANNA, Ruhani (Department of Engineering, School of Science and Technology, Nottingham Trent University, Nottingham, UK)

Co-authors: Dr REINWALD, Yvonne (Department of Engineering, School of Science and Technology, Nottingham Trent University, Nottingham, UK); Dr CIRRONE, G.A.P (Istituto Nazionale di Fisica Nucleare, Laboratori Nazionali del Sud, Catania, Italy); Dr FATTORI, Serena (ENEA - Centro Ricerche Casaccia Via Anguillarese, Rome, Italy); Dr SERJOUEI, Ahmad (Department of Engineering, School of Science and Technology, Nottingham Trent University, Nottingham, UK)

Presenter: Dr CIRRONE, G.A.P (Istituto Nazionale di Fisica Nucleare, Laboratori Nazionali del Sud, Catania, Italy)

Session Classification: Geant4 for DNA Damage evaluation

Contribution ID: 34

Type: **not specified**

Development of a Geant4 simulation platform of the HollandPTC R&D proton beamline for radiobiological studies

Monday, October 24, 2022 5:42 PM (12 minutes)

Topic

Proton Therapy

Primary author: GROENENDIJK, Celebrity (Radiation Science & Technology, Technical University Delft, Delft, the Netherlands)

Co-authors: Dr ROVITUSO, Marta (Research & Development, Holland Proton Therapy Centre Delft, Delft, the Netherlands); Dr LATHOUWERS, Danny (Radiation Science & Technology, Technical University Delft, Delft, the Netherlands); Dr BROWN, Jeremy (The Australian Nuclear Science & Technology Organisation ANSTO, Detection and Imaging, Sydney, Australia)

Presenter: GROENENDIJK, Celebrity (Radiation Science & Technology, Technical University Delft, Delft, the Netherlands)

Session Classification: Geant4 for Protons and Hadrons Radiotherapy 2

Contribution ID: 35

Type: **not specified**

Using an iterative shielding approach for the first carbon ion therapy facility in the US by means of Geant4

Monday, October 24, 2022 6:06 PM (12 minutes)

Topic

Radiation Protection

Primary authors: BOLST, David (University of Wollongong); Dr DOUGHERTY, Jingjing (Division of Medical Physics, Department of Radiation Oncology, Mayo Clinic, Jacksonville, Florida, USA); Dr FURUTANI, Keith (Division of Medical Physics, Department of Radiation Oncology, Mayo Clinic, Jacksonville, Florida, USA); GUATELLI, Susanna (Centre For Medical Radiation Physics, University of Wollongong); Prof. ROSENFELD, Anatoly (Centre for Medical Radiation Physics, University of Wollongong, Wollongong, Australia); Dr BELTRAN, Chris (Division of Medical Physics, Department of Radiation Oncology, Mayo Clinic, Jacksonville, Florida, USA)

Presenter: BOLST, David (University of Wollongong)

Session Classification: Geant4 for Protons and Hadrons Radiotherapy 2

Contribution ID: 36

Type: **not specified**

Validation of Geant4 fragmentation models in 4He ion therapy

Monday, October 24, 2022 6:18 PM (12 minutes)

Topic

Hadron Therapy

Primary authors: BOLST, David (University of Wollongong); GUATELLI, Susanna (Centre For Medical Radiation Physics, University of Wollongong)

Presenter: BOLST, David (University of Wollongong)

Session Classification: Geant4 for Protons and Hadrons Radiotherapy 2

Contribution ID: 37

Type: **not specified**

Calculation of chemical species yields in liquid water after high energy electron irradiation up to 10 MeV using Geant4-DNA

Tuesday, October 25, 2022 4:58 PM (12 minutes)

Topic

Radiobiology including Geant4-DNA

Primary author: Dr ZEIN, Sara (Univ. Bordeaux, CNRS, LP2I Bordeaux)

Co-authors: Ms CHAPPUIS, Flore (Institute of Radiation Physics, Lausanne); Dr TRAN, Hoang Ngoc (Univ. Bordeaux, CNRS, LP2I Bordeaux); Dr KYRIAKOU, Ioanna (Medical Physics Lab,); Dr EMFIETZOGLOU, Dimitris (Medical Physics Lab, Department of Medicine); Dr INCERTI, Sebastien (Univ. Bordeaux, CNRS, LP2I Bordeaux); Dr DESORGHER, Laurent (Institute of Radiation Physics)

Presenter: Dr ZEIN, Sara (Univ. Bordeaux, CNRS, LP2I Bordeaux)

Session Classification: Geant4 for Photons and Electrons Radiotherapy

Contribution ID: **38**

Type: **not specified**

Estimation of energy imparted from ionization-based measurements at the nanometer scale

Wednesday, October 26, 2022 10:45 AM (12 minutes)

Topic

Radiobiology including Geant4-DNA

Primary author: Dr SELVA, Anna (Istituto Nazionale di Fisica Nucleare)

Co-authors: BIANCHI, Anna (Istituto Nazionale di Fisica Nucleare); BOLST, David (University of Wollongong); GUATELLI, Susanna (Centre For Medical Radiation Physics, University of Wollongong); CONTE, Valeria (Istituto Nazionale di Fisica Nucleare)

Presenter: Dr SELVA, Anna (Istituto Nazionale di Fisica Nucleare)

Session Classification: Geant4 for microdosimetry

Contribution ID: 39

Type: **not specified**

Simulation and validation of plasmid DNA irradiation by electrons using Geant4-DNA

Wednesday, October 26, 2022 9:17 AM (12 minutes)

Topic

Radiobiology including Geant4-DNA

Primary author: Dr ZEIN, Sara (Univ. Bordeaux, CNRS, LP2I Bordeaux)

Co-authors: Ms CHAPPUIS, Flore (Institute of Radiation Physics); Dr EMFIETZOGLOU, Dimitris (Medical Physics Lab, Department of Medicine); Dr CHERBUIN, Nicolas (Institute of Radiation Physics); Dr INCERTI, Sebastien (Univ. Bordeaux, CNRS, LP2I Bordeaux); Ms KACEM, Houda (Lausanne University Hospital); Dr KYRIAKOU, Ioanna (Medical Physics Lab, Department of Medicine); Mr OLLIVIER, Jonathan (Lausanne University Hospital); Dr TRAN, Hoang Ngoc (Univ. Bordeaux, CNRS, LP2I Bordeaux); Dr VOZENIN, Marie-Catherine (Lausanne University Hospital); Dr DESORGHER, Laurent (Institute of Radiation Physics)

Presenter: Dr ZEIN, Sara (Univ. Bordeaux, CNRS, LP2I Bordeaux)

Session Classification: Geant4 for DNA Damage evaluation

Contribution ID: 40

Type: **not specified**

Assessment of Geant4 nuclear cross-sections of proton-induced reactions for therapy

Topic

Proton Therapy

Primary author: Dr VANSTALLE, Marie (IPHC-CNRS)

Co-authors: Dr ARBOR, Nicolas (IPHC-CNRS); FINCK, Christian (IPHC)

Presenter: Dr VANSTALLE, Marie (IPHC-CNRS)

Session Classification: Geant4 for Protons and Hadrons Radiotherapy 2

Contribution ID: 41

Type: **not specified**

Development of interaction models in Geant4- DNA to simulate cosmic rays' effects on ionmolecules reaction in the atmosphere

Monday, October 24, 2022 9:25 AM (12 minutes)

Topic

Computing

Primary authors: NICOLANTI, Francesca (Istituto Nazionale di Fisica Nucleare); EMFIETZOGLOU, Dimitris (Medical Physics Lab, Department of Medicine); TRAN, Hoang Ngoc (Univ. Bordeaux, CNRS, LP2I Bordeaux); KYRIAKOU, Ioanna (Medical Physics Laboratory, Department of Medicine, University of Ioannina, Greece); INCERTI, Sébastien (Univ. Bordeaux, CNRS, LP2I Bordeaux, UMR 5797, F-33170 Gradignan, France)

Co-authors: Dr CACCIA, Barbara (ISS (Italian National Institute of Health,) Italy.); Prof. CARTONI, Antonella (Chemistry Dep., Sapienza U. of Rome, Italy); Prof. FACCINI, Riccardo (Physics Dep., Sapienza U. of Rome, Italy. INFN, Sec. of Rome, Italy.); Prof. SATTA, Mauro (ISMN-CNR, Rome, Italy. Chemistry Dep., Sapienza U. of Rome, Italy); Dr MANCINI TERRACCIANO, Carlo (Physics Dep., Sapienza U. of Rome, Italy)

Presenter: NICOLANTI, Francesca (Istituto Nazionale di Fisica Nucleare)

Session Classification: Opening Session

Contribution ID: 42

Type: **not specified**

Extension of the discrete electron transport capabilities of the Geant4-DNA toolkit to the radiotherapeutic regime

Tuesday, October 25, 2022 4:46 PM (12 minutes)

Topic

Primary author: KYRIAKOU, Ioanna (Medical Physics Laboratory, Department of Medicine, University of Ioannina, Greece)

Co-authors: Dr TRAN, Ngoc Hoang (Univ. Bordeaux, CNRS, LP2I Bordeaux, UMR 5797, F-33170 Gradignan, France); Dr INCERTI, Sebastien (Univ. Bordeaux, CNRS, LP2I Bordeaux, UMR 5797, F-33170 Gradignan, France); Dr DESORGHER, Laurent (Institute of Radiation Physics (IRA), Lausanne University Hospital and University of Lausanne, CH-1007 Lausanne, Switzerland); Prof. EMFIETZOGLOU, Dimitris (Medical Physics Laboratory, Department of Medicine, University of Ioannina, Greece)

Presenter: KYRIAKOU, Ioanna (Medical Physics Laboratory, Department of Medicine, University of Ioannina, Greece)

Session Classification: Geant4 for Photons and Electrons Radiotherapy

Contribution ID: 43

Type: **not specified**

In-silico calculations of DNA damage induced by DaRT for a better understanding of the radiobiological effectiveness of this treatment

Wednesday, October 26, 2022 9:41 AM (12 minutes)

Topic

Radiobiology including Geant4-DNA

Primary author: BALLISAT, Laura (School of Physics, University of Bristol, Bristol, UK)

Co-authors: Dr VELTHUIS, Jaap (University of Bristol); Dr BECK, Lana (University of Bristol); GUATELLI, Susanna (Centre For Medical Radiation Physics, University of Wollongong); SAKATA, Dousatsu (Research Associate at National Institute of Radiological Sciences); Prof. ROZENFELD, Anatoli (University of Wollongong); INCERTI, Sébastien (Univ. Bordeaux, CNRS, LP2I Bordeaux, UMR 5797, F-33170 Gradignan, France); TRAN, Hoang Ngoc (Univ. Bordeaux, CNRS, LP2I Bordeaux)

Presenter: BALLISAT, Laura (School of Physics, University of Bristol, Bristol, UK)

Session Classification: Geant4 for DNA Damage evaluation

Contribution ID: 44

Type: **not specified**

Nanodosimetric Study of Radiation in the Brain and Eyes of Astronauts on the Lunar Surface

Monday, October 24, 2022 9:37 AM (12 minutes)

Topic

Radiation Protection

Primary authors: ARCHER, Jay (Centre for Medical Radiation Physics, University of Wollongong); LARGE, Matthew (Centre for Medical Radiation Physics, University of Wollongong); SAKATA, Dousatsu (Research Associate at National Institute of Radiological Sciences); TRAN, Ngoc Hoang (University of Bordeaux, CNRS, LP2I Bordeaux, UMR 5797); INCERTI, Sébastien (Univ. Bordeaux, CNRS, LP2I Bordeaux, UMR 5797, F-33170 Gradignan, France); ROSENFELD, Anatoly (Centre for Medical Radiation Physics, University of Wollongong); BROWN, Jeremy (The Australian Nuclear Science & Technology Organisation ANSTO, Detection and Imaging, Sydney, Australia); GUATELLI, Susanna (Centre For Medical Radiation Physics, University of Wollongong)

Presenter: ARCHER, Jay (Centre for Medical Radiation Physics, University of Wollongong)

Session Classification: Opening Session

Contribution ID: 45

Type: **not specified**

High LET spectral and microdosimetric characterization of secondaries in the treatment of Alzheimer's disease with Neutron Capture Therapy

Wednesday, October 26, 2022 12:22 PM (12 minutes)

Topic

Radiotherapy Treatments

Primary author: HERVE, Marine (1Institut de Radioprotection et de Sûreté Nucléaire (IRSN), Ionizing Radiation Dosimetry Laboratory (LDRI) Fontenay-aux-Roses, France)

Co-authors: PROTTI, Nicoletta (UNIPV, INFN); PERROT, Yann (IRSN); VILLAGRASA, Carmen (IRSN)

Presenter: HERVE, Marine (1Institut de Radioprotection et de Sûreté Nucléaire (IRSN), Ionizing Radiation Dosimetry Laboratory (LDRI) Fontenay-aux-Roses, France)

Session Classification: Geant4 for Neutrons and Space

Contribution ID: 46

Type: **not specified**

Internal bremsstrahlung: the missing process in beta decay Monte Carlo simulation for Dose-Point-Kernel estimation

Tuesday, October 25, 2022 2:37 PM (12 minutes)

Topic

Radiation Protection

Primary authors: Prof. AMATO, Ernesto (BIOMORF Department); Dr PISTONE, Daniele (BIOMORF Department); Dr AUDITORE, Lucrezia (BIOMORF Department); Dr ITALIANO, Antonio (INFN Sezione di Catania)

Presenter: Dr PISTONE, Daniele (BIOMORF Department)

Session Classification: Geant4 for Nuclear Medicine

Contribution ID: 47

Type: **not specified**

Validation of Monte Carlo GATE for IORT

Tuesday, October 25, 2022 5:10 PM (12 minutes)

Topic

Radiotherapy Treatments

Primary authors: Dr TURRA, Alessandro (2Struttura complessa di Fisica Medica, Azienda Ospedaliero-Universitaria, Ferrara, Italy); Dr MASTELLA, Edoardo (2Struttura complessa di Fisica Medica, Azienda Ospedaliero-Universitaria, Ferrara, Italy); DI DOMENICO, Giovanni (University of Ferrara and INFN); Dr SZILAGY, Klarisa Elena (Department of Physics and Earth Science, University of Ferrara, Ferrara, Italy)

Presenter: DI DOMENICO, Giovanni (University of Ferrara and INFN)

Session Classification: Geant4 for Photons and Electrons Radiotherapy

Contribution ID: 48

Type: **not specified**

Monte Carlo simulation for personalized dosimetry in radionuclide therapy

Tuesday, October 25, 2022 2:25 PM (12 minutes)

Topic

Radiotherapy Treatments

Primary authors: Dr TURRA, Alessandro (Medical Physics Unit, Sant'Anna Hospital, Ferrara, Italy); Dr MACIS, Christian (1Department of Physics and Earth Science, University of Ferrara, Ferrara, Italy.); DI DOMENICO, Giovanni (University of Ferrara and INFN); Dr TONINI, Eugenia (Medical Physics Unit, Sant'Anna Hospital, Ferrara, Italy); Dr BARTOLOMEI, Mirco (Medical Physics Unit, Sant'Anna Hospital, Ferrara, Italy)

Presenter: DI DOMENICO, Giovanni (University of Ferrara and INFN)

Session Classification: Geant4 for Nuclear Medicine

Contribution ID: 49

Type: **not specified**

A new genome geometrical model with atomic resolution based on HiC-maps.

Wednesday, October 26, 2022 11:57 AM (12 minutes)

Topic

Radiobiology including Geant4-DNA

Primary authors: BERNAL, Mario A (Universidade Estadual de Campinas); Dr MORADI, Farhad; Dr TELLO, John (University of Pennsylvania); Ms ARNOSTI, Carolina (State University of Campinas, Brazil)

Presenter: BERNAL, Mario A (Universidade Estadual de Campinas)

Session Classification: Geant4 for microdosimetry

Contribution ID: 50

Type: **not specified**

Benchmarking dose-averaged LET calculation of a commercial treatment planning system and GATE/Geant4 for carbon ion beams

Monday, October 24, 2022 5:18 PM (12 minutes)

Topic

Hadron Therapy

Primary authors: SCHAFASAND, Mansure (MedAustron); RESCH, Andreas (Medical University of Vienna); STOCK, Markus (MedAustron); FOSSATI, Piero (MedAustron); GEORG, Dietmar (Medical University of Vienna); GLIMELIUS, Lars (RaySearch Laboratories); TRANEUS, Erik (RaySearch Laboratories); CARLINO, Antonio (MedAustron)

Presenter: RESCH, Andreas (Medical University of Vienna)

Session Classification: Geant4 for Protons and Hadrons Radiotherapy 2

Contribution ID: 51

Type: **not specified**

Toward a generic approach for dose distribution recovery by using Deep Learning and GPU-based Geant4 simulations

Monday, October 24, 2022 2:59 PM (12 minutes)

Topic

Computung

Primary authors: TOUIL, Asma (Laboratory of Medical Information Processing (LaTIM), INSERM-UMR 1101, Brest, (France)); DANG , Hong-Phuong; BENOIT, Didier; VISVIKIS, Dimitris (INSERM); BERT, Julien

Presenter: TOUIL, Asma (Laboratory of Medical Information Processing (LaTIM), INSERM-UMR 1101, Brest, (France))

Session Classification: Geant4 and Artificial Intelligence

Contribution ID: 52

Type: **not specified**

Generation and tracking of inverse Compton scattering photons in Geant4

Monday, October 24, 2022 12:35 PM (12 minutes)

Topic

Imaging

Primary authors: PATERNÒ, Gianfranco (Istituto Nazionale di Fisica Nucleare); Dr CARDARELLI, Paolo (INFN); Dr HAJIMA, Ryoichi (National Institutes for Quantum Science and Technology (QST), Tokai, Ibaraki, Japan); Prof. TAIBI, Angelo (University of Ferrara and INFN)

Presenter: PATERNÒ, Gianfranco (Istituto Nazionale di Fisica Nucleare)

Session Classification: Geant4 for Medical Physics

Contribution ID: 53

Type: **not specified**

A Geant4 tool for the simulation of contrast enhanced dual-energy mammography –Study of polychromatic versus quasi-monochromatic X- ray spectra and different contrast agents

Monday, October 24, 2022 12:47 PM (12 minutes)

Topic

Imaging

Primary authors: Dr PATERNÒ, Gianfranco (Istituto Nazionale di Fisica Nucleare); Dr CARDARELLI, Paolo (INFN); Prof. TAIBI, Angelo (University of Ferrara and INFN)

Presenter: Dr PATERNÒ, Gianfranco (Istituto Nazionale di Fisica Nucleare)

Session Classification: Geant4 for Medical Physics

Contribution ID: 54

Type: **not specified**

IDEAL/GATE-RTion for independent dose calculation in carbon ion beam therapy

Monday, October 24, 2022 5:30 PM (12 minutes)

Topic

Hadron Therapy

Primary authors: Dr RESCH, Andreas (MedAustron Ion Therapy Centre); Dr CLAUSEN, Monika (Department of Radiation Oncology, Medical University of Vienna); Ms FAVARETTO, Martina (MedAustron Ion Therapy Centre); Prof. GEORG, Dietmar (Department of Radiation Oncology, Medical University of Vienna); Dr STOCK, Markus (MedAustron Ion Therapy Centre); Dr GREVILLOT, Loic (MedAustron Ion Therapy Centre)

Presenter: Dr RESCH, Andreas (MedAustron Ion Therapy Centre)

Session Classification: Geant4 for Protons and Hadrons Radiotherapy 2

Contribution ID: 55

Type: **not specified**

Benchmarking GATE/Geant4 and RayStation MC for pencil beam scanning light ion beams in combination with a passive beam collimation for small fields

Monday, October 24, 2022 5:06 PM (12 minutes)

Topic

Proton Therapy

Primary authors: Dr RESCH, Andreas (Medical University of Vienna); Dr STOCK, Markus (MedAustron Ion Therapy Centre); Dr JANSON, Martin (RaySearch Laboratories); Prof. GEORG, Dietmar (Department of Radiation Oncology, Medical University of Vienna); Dr KNÄUSL, Barbara (Department of Radiation Oncology, Medical University of Vienna)

Presenter: Dr RESCH, Andreas (Medical University of Vienna)

Session Classification: Geant4 for Protons and Hadrons Radiotherapy 2

Contribution ID: 81

Type: **not specified**

Cherenkov Luminescence Imaging of ^{90}Y and nanoparticles loaded glass microspheres

Tuesday, October 25, 2022 11:35 AM (12 minutes)

Topic

Imaging

Primary authors: TALEBI, Asra Sadat (Department of medical physics, University of Tarbiat Modares, Tehran, Iran); Mr RAJABI, Hossein (Tarbiat modares university)

Presenter: TALEBI, Asra Sadat (Department of medical physics, University of Tarbiat Modares, Tehran, Iran)

Session Classification: Geant4 for Nuclear Medicine

Contribution ID: 82

Type: **not specified**

Systematic uncertainty budget for a novel diamond microdosimeter

Wednesday, October 26, 2022 11:21 AM (12 minutes)

Topic

Detector Development

Primary authors: ROMANO, Francesco (INFN - Catania Section); Prof. SCHETTINO, Giuseppe (University of Surrey); MAGINI, Jacopo (University of Surrey)

Co-author: GUATELLI, Susanna (Centre For Medical Radiation Physics, University of Wollongong)

Presenter: MAGINI, Jacopo (University of Surrey)

Session Classification: Geant4 for microdosimetry

Contribution ID: 83

Type: **not specified**

Translating N-12 imaging to the clinic using Monte Carlo simulations

Tuesday, October 25, 2022 2:49 PM (12 minutes)

Topic

Proton Therapy

Primary authors: AHMADI GANJEH, Zahra (Particle Therapy Research Center (PARTREC), Department of Radiation Oncology, University Medical Center Groningen, University of Groningen, Groningen, Netherlands); Prof. DENDOOVEN, Peter; Mr ZAPIEN-CAMPOS, Brian

Presenter: AHMADI GANJEH, Zahra (Particle Therapy Research Center (PARTREC), Department of Radiation Oncology, University Medical Center Groningen, University of Groningen, Groningen, Netherlands)

Session Classification: Geant4 for Nuclear Medicine

Contribution ID: 84

Type: **not specified**

Microdosimetry for proton treatment planning

Wednesday, October 26, 2022 11:45 AM (12 minutes)

Topic

Proton Therapy

Primary authors: MAGINI, Jacopo (University of Surrey); Mr PISCIOTTA, Pietro (University Medical Center Groningen); TRANEUS, Erik (RaySearch Laboratories); Dr HUSSEIN, Mohammad (National Physics Laboratory); SCHETTINO, Giuseppe (University of Surrey); ROMANO, Francesco (INFN - Catania Section); Dr ANGERUD, Agnes (RaySearch Laboratories)

Presenter: MAGINI, Jacopo (University of Surrey)

Session Classification: Geant4 for microdosimetry

Contribution ID: 86

Type: **not specified**

Biological dose estimation for proton and carbon ion treatment plans using the GATE platform

Monday, October 24, 2022 6:30 PM (12 minutes)

Topic

Hadron Therapy

Primary authors: Dr PEREDA, Alexis (LPC, UMR6533 CNRS-UCA); SALLES, Eloise; KNÄUSL, Barbara (Department of Radiation Oncology, Medical University of Vienna); GEORG, Dietmar (Medical University of Vienna); Dr TESTA, Etienne (IP2I); FUCHS, Hermann (Medical University of Vienna - Department of Radiation Oncology & Christian Doppler Laboratory for Medical Radiation Research for Radiation Oncology); Dr LÉTANG, Jean Michel (CREATIS); MAIGNE, Lydia (Laboratoire de Physique de Clermont, CNRS/IN2P3, Université Clermont Auvergne, Aubière, France); BEUVE, Michaël (IPNL, LIRIS, IN2P3/CNRS, Université Lyon1, Université de Lyon); JEDIDI, Sarah (IP2I); Dr ALI, Yasmine (IP2I CNRS University of Lyon)

Presenter: MAIGNE, Lydia (Laboratoire de Physique de Clermont, CNRS/IN2P3, Université Clermont Auvergne, Aubière, France)

Session Classification: Geant4 for Protons and Hadrons Radiotherapy 2

Contribution ID: 87

Type: **not specified**

Performance evaluation of Siemens Somatom go.Open Pro CT scanner using GATE: dosimetry and image quality for treatment planning in radiotherapy

Monday, October 24, 2022 11:46 AM (12 minutes)

Topic

Imaging

Primary author: RAYMOND, Gaëtan (in2p3 France)

Co-authors: MAIGNE, Lydia (Laboratoire de Physique de Clermont); Dr DONNARIEIX, Denise (Unicancer)

Presenter: RAYMOND, Gaëtan (in2p3 France)

Session Classification: Geant4 for Medical Physics

Contribution ID: **88**

Type: **not specified**

CNN for multi-proton events at the ASTRA range telescope for pCT

Monday, October 24, 2022 2:23 PM (12 minutes)

Topic

Detector Development

Primary authors: GRANADO-GONZALEZ, Marc (School of physics and astrophysics, University of Birmingham, Birmingham, United Kingdom); JESÚS-VALLS, Cesar (IFAE)

Co-authors: LUX, Thorsten (IFAE-BIST); PRICE, Tony (University of Birmingham); SANCHEZ, Federico (Université de Genève)

Presenter: GRANADO-GONZALEZ, Marc (School of physics and astrophysics, University of Birmingham, Birmingham, United Kingdom)

Session Classification: Geant4 and Artificial Intelligence

Contribution ID: 89

Type: **not specified**

The new “RPWBA” implemented model for proton ionization and excitation of liquid water above 100 MeV

Monday, October 24, 2022 6:42 PM (12 minutes)

Topic

Radiobiology including Geant4-DNA

Primary authors: Mr DOMINGUEZ-MUNOZ, Antonio Damian (Universidad de Sevilla); GALLARDO, M. Isabel (Universidad de Sevilla); Dr BORDAGE, Marie-Claude (CNRS/INSERM); Dr FRANCIS, Ziad (Université Saint Joseph); INCERTI, Sébastien (Univ. Bordeaux, CNRS, LP2I Bordeaux, UMR 5797, F-33170 Gradignan, France); CORTES-GIRALDO, Miguel Antonio (Universidad de Sevilla)

Presenter: CORTES-GIRALDO, Miguel Antonio (Universidad de Sevilla)

Session Classification: Geant4 for Protons and Hadrons Radiotherapy 2

Contribution ID: 90

Type: **not specified**

A GATE in silico evaluation of the γ -eye preclinical system, for imaging alpha and beta radiopharmaceuticals

Tuesday, October 25, 2022 2:00 PM (12 minutes)

Topic

Imaging

Primary author: Dr PAPANIMITROULAS, Panagiotis (BIOEMTECH)

Co-authors: Dr LAMPROU, Efthymios (BIOEMTECH); Dr FYSIKOPOULOS, Eleftherios (BIOEMTECH); Dr LOUDOS, George (BIOEMTECH); Dr SAVVIDIS, Georgios (BIOEMTECH); Dr GEORGIU, Maria (BIOEMTECH)

Presenter: Dr PAPANIMITROULAS, Panagiotis (BIOEMTECH)

Session Classification: Geant4 for Nuclear Medicine

Contribution ID: 91

Type: **not specified**

Geant4 Monte Carlo simulations for size specific organ dose estimates in CT based on patient silhouette and voxelized phantoms.

Monday, October 24, 2022 12:23 PM (12 minutes)

Topic

Imaging

Primary authors: MADDALONI, Francesca Saveria (Department of Physics “Ettore Pancini”Università di Napoli Federico II & INFN Napoli, Napoli (Italy)); Dr SARNO, Antonio (Istituto Nazionale di Fisica Nucleare); METTIVIER, Giovanni (Department of Physics “Ettore Pancini”Università di Napoli Federico II & INFN Napoli, Napoli (Italy)); LAROBINA, Michele (CNR-IBB, Napoli (Italy)); CLEMENTE, Stefania (AOU Policlinico Federico II, Napoli (Italy)); OLIVIERO, Caterina (AOU Policlinico Federico II, Napoli (Italy)); RICCIARDI, Roberta (AOU Policlinico Federico II, Napoli (Italy)); VARALLO, Antonio (AOU Policlinico Federico II, Napoli (Italy)); RUSSO, Paolo (Department of Physics “Ettore Pancini”Università di Napoli Federico II & INFN Napoli, Napoli (Italy))

Presenter: MADDALONI, Francesca Saveria (Department of Physics “Ettore Pancini”Università di Napoli Federico II & INFN Napoli, Napoli (Italy))

Session Classification: Geant4 for Medical Physics

Contribution ID: 92

Type: **not specified**

4He dose- and track-averaged Linear Energy Transfer: Monte Carlo algorithms and experimental verification

Monday, October 24, 2022 3:35 PM (12 minutes)

Topic

Hadron Therapy

Primary authors: PETRINGA, Giada (Istituto Nazionale di Fisica Nucleare); GIULINI CASTIGLIONI AGOSTEO, Stefano (MI); BORTOT, Davide (MI); CONTE, Valeria (Istituto Nazionale di Fisica Nucleare); CUTTONE, Giacomo (Istituto Nazionale di Fisica Nucleare); Mr DI FINI, Andrea (LNS-INFN); FATTORI, Serena (ENEA - Centro Ricerche Casaccia Via Anguillarese, Rome, Italy); MAZZUCCONI, Davide (Istituto Nazionale di Fisica Nucleare); PANDOLA, Luciano (Istituto Nazionale di Fisica Nucleare); PETROVIC, Ivan (Vinca Institute of Nuclear Sciences, University of Belgrade, Belgrade, Serbia); ROSENFELD, Anatoly (Centre for Medical Radiation Physics, University of Wollongong); RISTIC FIRA, Aleksandra (Vinca Institute of Nuclear Sciences, University of Belgrade, Belgrade, Serbia); Dr WEBER, Uli (GSI); CIRRONE, Giuseppe (Istituto Nazionale di Fisica Nucleare)

Presenter: PETRINGA, Giada (Istituto Nazionale di Fisica Nucleare)

Session Classification: Geant4 for Protons and Hadrons Radiotherapy 1

Contribution ID: 93

Type: **not specified**

VALIDATED MONTE CARLO SIMULATION OF TRIODE- ELECTRON GUN EQUIPPED ELECTRONFLASH LINAC

Tuesday, October 25, 2022 5:34 PM (12 minutes)

Topic

Radiotherapy Treatments

Primary author: PENSAVALLE, Jake Harold (Istituto Nazionale di Fisica Nucleare)

Co-authors: DEL SARTO, Damiano (Istituto Nazionale di Fisica Nucleare); DI MARTINO, Fabio (Istituto Nazionale di Fisica Nucleare); Prof. PAIAR, Fabiola (AOUP); Dr GALANTE, Federica (SIT Sordina S.p.A.); ROMANO, Francesco (INFN - Catania Section); Dr MARINI, Giulia (SIT Sordina S.p.A.); Dr FELICI, Giuseppe (SIT Sordina S.p.A.); BISOGNI, Maria Giuseppina (Istituto Nazionale di Fisica Nucleare); PACITTI, Matteo (SIT Sordina S.p.A.); CAPACCIOLI, Simone (Dipartimento di Fisica - Università di Pisa)

Presenter: PENSAVALLE, Jake Harold (Istituto Nazionale di Fisica Nucleare)

Session Classification: Geant4 for Photons and Electrons Radiotherapy

Contribution ID: 94

Type: **not specified**

Monte Carlo simulations of microdosimetry and radiolytic species production for preclinical proton beam using GATE and Geant4-DNA as part of the FLASHMOD project

Wednesday, October 26, 2022 9:53 AM (12 minutes)

Topic

Radiobiology including Geant4-DNA

Primary author: FOIS, Giovanna Rosa (Laboratoire de Physique de Clermont)

Co-authors: KOUMEIR, C; HADDAD, F; POIRIER, F; BLAIN, G; DELPON, G; TRAN, H; VANDENBORRE, J; MAIGNE, Lydia (Laboratoire de Physique de Clermont, CNRS/IN2P3, Université Clermont Auvergne, Aubière, France); EVIN, M; GHALEI, M; SERVAGENT, N; MOUCHARD, Q; CHIAVASSA, S; INCERTI, S; SUPIOT, S; FIEGEL, V; MÉTIVIER, V; POTIRON, V

Presenter: MAIGNE, Lydia (Laboratoire de Physique de Clermont, CNRS/IN2P3, Université Clermont Auvergne, Aubière, France)

Session Classification: Geant4 for DNA Damage evaluation

Contribution ID: 95

Type: **not specified**

Evaluation of dose rates and DNA damage on microorganisms living in naturally radioactive mineral springs using GATE and Geant4-DNA

Wednesday, October 26, 2022 9:29 AM (12 minutes)

Topic

Primary author: KOLOVI, Sofia (Laboratory of Physics of Clermont, University of Clermont-Auvergne, CNRS/IN2P3, Aubiere, France)

Co-authors: FOIS, Giovanna - Rosa (Laboratory of Physics of Clermont, University of Clermont-Auvergne, CNRS/IN2P3, Aubiere, France); LANOUAR, Sarra (Laboratory of Physics of Clermont, University of Clermont-Auvergne, CNRS/IN2P3, Aubiere, France); CHARDON, Patrick (Laboratory of Physics of Clermont, University of Clermont-Auvergne, CNRS/IN2P3, Aubiere, France); BRETON, Vincent (Laboratory of Physics of Clermont, University of Clermont-Auvergne, CNRS/IN2P3, Aubiere, France); MAIGNE, Lydia (Laboratory of Physics of Clermont, University of Clermont-Auvergne, CNRS/IN2P3, Aubiere, France)

Presenter: KOLOVI, Sofia (Laboratory of Physics of Clermont, University of Clermont-Auvergne, CNRS/IN2P3, Aubiere, France)

Session Classification: Geant4 for DNA Damage evaluation

Contribution ID: 96

Type: **not specified**

First microdosimetric characterization of nuclear interaction events, and assessment of their effect on the dose-mean lineal energy uncertainty.

Wednesday, October 26, 2022 11:33 AM (12 minutes)

Topic

Hadron Therapy

Primary authors: PARISI, Gabriele (University of Surrey); SCHETTINO, Giuseppe (University of Surrey); ROMANO, Francesco (INFN - Catania Section)

Presenter: PARISI, Gabriele (University of Surrey)

Session Classification: Geant4 for microdosimetry

Contribution ID: 97

Type: **not specified**

A Geant4-DNA simulation of human cancer cells irradiated with helium ion beams

Wednesday, October 26, 2022 10:05 AM (12 minutes)

Topic

Radiobiology including Geant4-DNA

Primary authors: Dr CHATZIPAPAS, Konstantinos (Université de Bordeaux, CNRS/IN2P3, UMR5797, Centre d'Études Nucléaires de Bordeaux Gradignan, 33175 Gradignan, France); DORDEVIC, Milos (Vinca Institute of Nuclear Sciences, National Institute of the Republic of Serbia, University of Belgrade); Mr ZIVKOVIC, Sara (2Vinca Institute of Nuclear Sciences, National Institute of the Republic of Serbia, University of Belgrade, Mike Petrovica Alasa 12-14, 11351 Vinca, Belgrade, Serbia); TRAN, Ngoc Hoang (University of Bordeaux, CNRS, LP2I Bordeaux, UMR 5797); Dr LAMPE, Nathanael (Independent researcher, Victoria, Australia); SAKATA, Dousatsu (Research Associate at National Institute of Radiological Sciences); PETROVIC, Ivan (Vinca Institute of Nuclear Sciences, University of Belgrade, Belgrade, Serbia); RISTIC FIRA, Aleksandra (Vinca Institute of Nuclear Sciences, University of Belgrade, Belgrade, Serbia); INCERTI, Sébastien (Univ. Bordeaux, CNRS, LP2I Bordeaux, UMR 5797, F-33170 Gradignan, France)

Presenter: DORDEVIC, Milos (Vinca Institute of Nuclear Sciences, National Institute of the Republic of Serbia, University of Belgrade)

Session Classification: Geant4 for DNA Damage evaluation

Contribution ID: 98

Type: **not specified**

Investigating Quasi-Monte Carlo (QMC) methods for Geant4/Gate simulations in medical physics

Tuesday, October 25, 2022 11:23 AM (12 minutes)

Topic

Computing

Primary authors: DOIGNIES, Bastien (Université de Lyon, CNRS, LIRIS, France); KAPRELIAN, Theo (Université de Lyon, CNRS, CREATIS, France); Dr SARRUT, David (Université de Lyon, CNRS, CREATIS, France)

Co-authors: Dr BONNEEL, Nicolas (Université de Lyon, CNRS, LIRIS, France); Dr COEURJOLLY, David (Université de Lyon, CNRS, LIRIS, France); Dr OSTROMOUKHOV, Victor (Université de Lyon, CNRS, LIRIS, France)

Presenter: KAPRELIAN, Theo (Université de Lyon, CNRS, CREATIS, France)

Session Classification: Geant4 for Nuclear Medicine

Contribution ID: 99

Type: **not specified**

Geant4 simulations of two types of CdZnTe-based γ -ray spectrometers for the monitoring of the radioactivity in the marine environment

Monday, October 24, 2022 10:13 AM (12 minutes)

Topic

Detector Development

Primary authors: Mr SILTZOVALIS, Georgios; LAGAKI, VARVARA (National Kapodistrian University of Athens); Mr MADESIS, Ioannis; Dr MAIGNE, Lydia; Mr VASILEIOU, Polytimos; Prof. MERTZIMEKIS, Theodoros

Presenter: LAGAKI, VARVARA (National Kapodistrian University of Athens)

Session Classification: Opening Session

Contribution ID: **100**

Type: **not specified**

Impact of intracellular radionuclide distribution in Targeted Alpha Therapy : a Monte-Carlo biophysical study in 3D multicellular model

Wednesday, October 26, 2022 10:57 AM (12 minutes)

Topic

Radiotherapy Treatments

Primary author: LEVRAGUE, Victor (LPSC)

Co-authors: ALCO CER-ÀVILA, Mario (IP2I); MAIGNE, Lydia (LPC); BEUVE, Michael (IP2I); TESTA, Etienne (IP2I); DELORME, Rachel (LPSC)

Presenter: LEVRAGUE, Victor (LPSC)

Session Classification: Geant4 for microdosimetry

Contribution ID: **101**

Type: **not specified**

Monte Carlo study of Resistive plate chamber technology performance for in vivo beam range verification in hadron therapy

Topic

Detector Development

Primary author: RAMOS LOPEZ, Dayron (Istituto Nazionale di Fisica Nucleare)

Co-authors: PUGLIESE, Gabriella (Istituto Nazionale di Fisica Nucleare); IASELLI, Giuseppe (BA); Dr LEE, Kyong Sei (Korea University); KANG, Minh (Korea University); Mr JO, Youngmin (Korea University)

Presenter: RAMOS LOPEZ, Dayron (Istituto Nazionale di Fisica Nucleare)

Session Classification: Geant4 for Protons and Hadrons Radiotherapy 1

Contribution ID: 102

Type: **not specified**

3D image reconstruction of Boron Dose distribution in BNCT with CZT-based Compton camera

Topic

Imaging

Primary author: RAMOS LOPEZ, Dayron (Istituto Nazionale di Fisica Nucleare)

Co-authors: Ms GONG, Chunhui (Nanjing University of Science and Technologies, China); ALTIERI, Saverio (Istituto Nazionale di Fisica Nucleare); IASELLI, Giuseppe (BA); PROTTI, Nicoletta (Istituto Nazionale di Fisica Nucleare); PUGLIESE, Gabriella (Istituto Nazionale di Fisica Nucleare)

Presenter: RAMOS LOPEZ, Dayron (Istituto Nazionale di Fisica Nucleare)

Session Classification: Geant4 for Neutrons and Space

Contribution ID: 103

Type: **not specified**

Noise in accelerated in-silico x-ray breast images: impact on the breast anatomy and the detector

Monday, October 24, 2022 12:11 PM (12 minutes)

Topic

Imaging

Primary authors: Dr SARNO, Antonio (University of Naples, Dept. of Physics “Ettore Pancini”, & INFN, Naples, Italy); SAVVIDIS, Georgios (Bioemtech, Ag. Paraskevi, Athens, Greece.); METTIVIER, Giovanni (University of Naples, Dept. of Physics “Ettore Pancini”, & INFN, Naples, Italy.); BLIZNAKOVA, Kristina (Medical University of Varna, Varna, Bulgaria); DUKOV, Nicolay (Medical University of Varna, Varna, Bulgaria); PAPADIMITROULAS, Panagiotis (Bioemtech, Ag. Paraskevi, Athens, Greece.); RUSSO, Paolo (University of Naples, Dept. of Physics “Ettore Pancini”, & INFN, Naples, Italy); KARAMPELAS, Theodoros (Bioemtech, Ag. Paraskevi, Athens, Greece.); BLIZNAKOV, Zhivko (Medical University of Varna, Varna, Bulgaria)

Presenter: Dr SARNO, Antonio (University of Naples, Dept. of Physics “Ettore Pancini”, & INFN, Naples, Italy)

Session Classification: Geant4 for Medical Physics

Contribution ID: 104

Type: **not specified**

Monte Carlo optimization of the target configuration for bremsstrahlung x-ray production in flash radiotherapy

Tuesday, October 25, 2022 5:46 PM (12 minutes)

Topic

Radiotherapy Treatments

Primary authors: Dr SARNO, Antonio (Istituto Nazionale di Fisica Nucleare); METTIVIER, Giovanni (Dept. of Physics “Ettore Pancini”, University of Naples Federico II & INFN Naples, Naples (Italy).); MASSA, Rita (Dept. of Physics “Ettore Pancini”, University of Naples Federico II & INFN Naples, Naples (Italy).); SCHETTINO, Fulvio (2Dept. of Electrical and Information Engineering “Marcello Scaranò”, University of Cassino and Southern Lazio, Cassino (Italy).); GIOVE, Dario (INFN LASA, Milan (Italy)); SERAFINI, Luca (INFN LASA, Milan (Italy)); RUSSO, Paolo (Dept. of Physics “Ettore Pancini”, University of Naples Federico II & INFN Naples, Naples (Italy).)

Presenter: RUSSO, Paolo (Dept. of Physics “Ettore Pancini”, University of Naples Federico II & INFN Naples, Naples (Italy).)

Session Classification: Geant4 for Photons and Electrons Radiotherapy

Contribution ID: 105

Type: **not specified**

Optimizing the design of a Timepix4 based compact gamma camera with validated Geant4 Monte Carlo simulations

Tuesday, October 25, 2022 12:35 PM (12 minutes)

Topic

Detector Development

Primary authors: CERBONE, Laura Antonia (Dept. of Physics “Ettore Pancini”, University of Naples Federico II & INFN Naples, Naples (Italy).); METTIVIER, Giovanni (Dept. of Physics “Ettore Pancini”, University of Naples Federico II & INFN Naples, Naples (Italy).); Dr SARNO, Antonio (Istituto Nazionale di Fisica Nucleare); BIESUZ, Nicolo Vladi (Dept. of Physics, University of Ferrara, & INFN Ferrara, Ferrara (Italy).); BOLZONELLA, Riccardo (Dept. of Physics, University of Ferrara, & INFN Ferrara, Ferrara (Italy).); FIORINI, Massimiliano (Dept. of Physics, University of Ferrara, & INFN Ferrara, Ferrara (Italy).); RUSSO, Paolo (Dept. of Physics “Ettore Pancini”, University of Naples Federico II & INFN Naples, Naples (Italy).)

Presenter: CERBONE, Laura Antonia (Dept. of Physics “Ettore Pancini”, University of Naples Federico II & INFN Naples, Naples (Italy).)

Session Classification: Geant4 for Nuclear Medicine

Contribution ID: 106

Type: **not specified**

Calculation of Absorbed Dose Coefficients for Internal Ex Vivo Irradiation of Lymphocytes Using GATE and Geant4-DNA

Tuesday, October 25, 2022 12:23 PM (12 minutes)

Topic

Radiobiology including Geant4-DNA

Primary author: Dr SALAS RAMIREZ, Maikol (Department of Nuclear medicine, University of Wuerzburg)

Co-authors: Dr MAIGNE, Lydia (Laboratoire de Physique Corpusculaire, CNRS/IN2P3, Université Blaise Pascal); Prof. LASSMANN, Michael (1Department of Nuclear Medicine, University of Wuerzburg); Dr EBERLEIN, Uta (1Department of Nuclear Medicine, University of Wuerrzburg)

Presenter: Dr SALAS RAMIREZ, Maikol (Department of Nuclear medicine, University of Wuerzburg)

Session Classification: Geant4 for Nuclear Medicine

Contribution ID: **107**

Type: **not specified**

GEANT4-Gamma Diffraction Code Based on Laue lens Modelling: Design Foundation and Implementation of the First Set of Models in GEANT4

Monday, October 24, 2022 10:01 AM (12 minutes)

Topic

Imaging

Primary author: BARHOUM, Alaa (UNSW)

Co-authors: Dr CAMATTARI, Riccardo (/); Prof. GUATELLI, Susanna (University of Wollongong); Dr TAHTALI, Murat (UNSW)

Presenter: BARHOUM, Alaa (UNSW)

Session Classification: Opening Session

Contribution ID: 108

Type: **not specified**

On the need of using MC Simulations to optimize the design of a clonogenic assay to measure RBE as a function of LET and minimize the measurement uncertainty.

Monday, October 24, 2022 3:59 PM (12 minutes)

Topic

Proton Therapy

Primary authors: CHAMORRO CLAVER, Natalia (CIEMAT); Mr ARCE, Pedro (CIEMAT); Mr LAGARES, Juan Ignacio (CIEMAT); Ms IBÁÑEZ, Marta (Ciemat); Mr AZCONA, Diego (Ciemat); Mr MORCILLO, Miguel Ángel (Ciemat); Ms OTEO, Marta (Ciemat)

Presenter: CHAMORRO CLAVER, Natalia (CIEMAT)

Session Classification: Geant4 for Protrons and Hadrons Radiotherapy 1

Contribution ID: **109**Type: **not specified**

Quantum entanglement effects in Geant4 for PET applications

Tuesday, October 25, 2022 12:11 PM (12 minutes)

Topic

Imaging

Primary authors: Dr CHERLIN, Alex (Kromek Group, Sedgefield, County Durham, UK); Prof. WATTS, Daniel (Department of Physics, University of York, York, UK); Dr BROWN, Jamie (Department of Physics, University of York, York, UK); Dr ALLISON, John (Geant4 Associates International Ltd., Hebden Bridge, UK. Department of Physics and Astronomy, University of Manchester, Manchester, U); Dr BORDES, Julien (Department of Physics, University of York, York, UK); Dr BASHKANOV, Mikhail (Department of Physics, University of York, York, UK); Dr ZACHARIOU, Nick (Department of Physics, University of York, York, UK); Dr NEWTON, Ruth (Department of Physics, University of York, York, UK)

Presenter: Dr BORDES, Julien (Department of Physics, University of York, York, UK)

Session Classification: Geant4 for Nuclear Medicine

Contribution ID: 110

Type: **not specified**

Monte Carlo simulations for the in-beam PETITION PET scanner

Tuesday, October 25, 2022 11:59 AM (12 minutes)

Topic

Detector Development

Primary author: MAKKAR, Shubhangi (1. Center for Proton Therapy, PSI, Switzerland 2. Department of Physics, ETH Zürich, Switzerland)

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Presenter: MAKKAR, Shubhangi (1. Center for Proton Therapy, PSI, Switzerland 2. Department of Physics, ETH Zürich, Switzerland)

Session Classification: Geant4 for Nuclear Medicine

Contribution ID: 111

Type: **not specified**

Towards the emulation of BLOB, a nuclear interaction model, with Deep Learning

Monday, October 24, 2022 2:47 PM (12 minutes)

Topic

Computung

Primary authors: ARSINI, Lorenzo (Sapienza and INFN Sec. of Rome); Dr CACCIA, Barbara (Istituto Superiore di Sanità); Dr CIARDIELLO, Andrea (INFN Sec. of Rome); Dr COLONNA, Maria (INFN LNS); Prof. FACCINI, Riccardo (Sapienza and INFN Sec. of Rome); Prof. GIAGU, Stefano (Sapienza and INFN Sec. of Rome); Dr NAPOLITANI, Paolo (IPN, CNRS/IN2P3); NICOLANTI, Francesca (Sapienza and INFN Sec. of Rome); MANCINI TERRACCIANO, Carlo (Istituto Nazionale di Fisica Nucleare)

Presenter: ARSINI, Lorenzo (Sapienza and INFN Sec. of Rome)

Session Classification: Geant4 and Artificial Intelligence

Contribution ID: 112

Type: **not specified**

FAST EMULATION OF DEPOSITED DOSE DISTRIBUTIONS BY MEANS OF DEEP LEARNING

Monday, October 24, 2022 2:35 PM (12 minutes)

Topic

Computing

Primary authors: ARSINI, Lorenzo (Department of Physics, University of Rome “La Sapienza” and INFN); CACCIA, Barbara (ISS); CIARDIELLO, Andrea (Istituto Nazionale di Fisica Nucleare); DE GREGORIO, Angelica (Istituto Nazionale di Fisica Nucleare); FACCINI, Riccardo (Physics Dep., Sapienza U. of Rome, Italy. INFN, Sec. of Rome, Italy.); FRANCIOSINI, Gaia (Istituto Nazionale di Fisica Nucleare); GIAGU, Stefano (Istituto Nazionale di Fisica Nucleare); MUSCATO, Annalisa; MANCINI TERRACCIANO, Carlo (Physics Dep., Sapienza U. of Rome, Italy)

Presenter: ARSINI, Lorenzo (Department of Physics, University of Rome “La Sapienza” and INFN)

Session Classification: Geant4 and Artificial Intelligence

Contribution ID: 113

Type: **not specified**

The MC simulation of WIDMApp: an innovative approach for individual dose monitoring in Molecular Radiotherapy

Tuesday, October 25, 2022 11:47 AM (12 minutes)

Topic

Computing

Primary authors: MANCINI TERRACCIANO, Carlo (Istituto Nazionale di Fisica Nucleare); CASANO, Bartolomeo (IRCCS Regina Elena National Cancer Institute); COLLAMATI, Francesco (INFN Sec. of Rome); IACCARINO, Giuseppe (IRCCS Regina Elena National Cancer Institute); MIRABELLI, Riccardo (Sapienza and INFN Sec. of Rome); MORGANTI, Silvio (INFN Sec. of Rome); NICOLANTI, Francesca (Sapienza and INFN Sec. of Rome); SOLFAROLI CAMILLOCCI, Elena (IRCCS Bambino Gesù Paediatric Hospital); SORIANI, Antonella (IRCCS Regina Elena National Cancer Institute); Prof. FACCHINI, Riccardo (Sapienza and INFN Sec. of Rome)

Presenter: NICOLANTI, Francesca (Sapienza and INFN Sec. of Rome)

Session Classification: Geant4 for Nuclear Medicine

Contribution ID: 114

Type: **not specified**

Recent developments of Geant4 Advanced Examples for medical applications

Monday, October 24, 2022 11:59 AM (12 minutes)

Topic

Primary authors: ROMANO, Francesco (INFN - Catania Section); GUATELLI, Susanna (Centre For Medical Radiation Physics, University of Wollongong)

Presenter: ROMANO, Francesco (INFN - Catania Section)

Session Classification: Geant4 for Medical Physics

Contribution ID: 115

Type: **not specified**

New Geant4 model of channeling in crystals and its potential applications in medical physics

Tuesday, October 25, 2022 3:13 PM (12 minutes)

Topic

Primary authors: SYTOV, Alexei (Istituto Nazionale di Fisica Nucleare); BANDIERA, LAURA (Istituto Nazionale di Fisica Nucleare); CHO, K; CIRRONE, G.A.P (Istituto Nazionale di Fisica Nucleare, Laboratori Nazionali del Sud, Catania, Italy); GUATELLI, Susanna; HAURYLAVETS, Viktor (INP); HWANG, S; IVANCHENKO, V; PANDOLA, Luciano (Istituto Nazionale di Fisica Nucleare); ROSENFELD, A; TIKHOMIROV, V

Presenter: SYTOV, Alexei (Istituto Nazionale di Fisica Nucleare)

Session Classification: Geant4 for Nuclear Medicine

Contribution ID: 116

Type: **not specified**

Planar Coded Aperture Reconstruction for Gamma-Imaging via Machine Learning and the TOPAS Simulation toolkit

Tuesday, October 25, 2022 3:01 PM (12 minutes)

Topic

Imaging

Primary authors: MEISSNER, T (Mannheim Institute for Intelligent Systems in Medicine (MIISM), Medical Faculty Mannheim, Heidelberg University, Mannheim, Germany); HESSER, J (Mannheim Institute for Intelligent Systems in Medicine (MIISM), Medical Faculty Mannheim, Heidelberg University, Mannheim, Germany); LOEW, N (Mannheim Institute for Intelligent Systems in Medicine (MIISM), Medical Faculty Mannheim, Heidelberg University, Mannheim, Germany); NAHM, W (Institute of Biomedical Engineering (IBT), Karlsruhe Institute of Technology (KIT), Karlsruhe, Germany)

Presenter: MEISSNER, T (Mannheim Institute for Intelligent Systems in Medicine (MIISM), Medical Faculty Mannheim, Heidelberg University, Mannheim, Germany)

Session Classification: Geant4 for Nuclear Medicine

Contribution ID: 117

Type: **not specified**

Design a Total-Body Time-Of-Flight Positron Emission Tomography (TB-TOF-PET) Scanner Using Monte Carlo Method and Using Xenon-doped Liquid Argon detector

Topic

Primary authors: ZABIHI, Azam (Nicolaus Copernicus Astronomical Center of the Polish Academy of Sciences, ASTROCENT, Warsaw, Poland); WADA, M (Nicolaus Copernicus Astronomical Center of the Polish Academy of Sciences, ASTROCENT, Warsaw, Poland); LI, X (Lawrence Berkeley National Laboratory, Berkeley, United States of America); RENSHAW, A (Department of Physics, University of Houston, Houston, United States of America); RAMIREZ, A (Department of Physics, University of Houston, Houston, United States of America); LAI, M (Department of Physics, University of Cagliari, Cagliari, Italy); GABRIELE, F (INFN Cagliari Division, INFN, Cagliari, Ital); GALBIATI, C (Gran Sasso Science Institute,L'Aquila 67100, Italy); FRANCO, D (APC, University of Paris, CNRS, Astroparticle and Cosmology, Paris, France)

Presenter: ZABIHI, Azam (Nicolaus Copernicus Astronomical Center of the Polish Academy of Sciences, ASTROCENT, Warsaw, Poland)

Session Classification: Geant4 for Nuclear Medicine

Contribution ID: **118**

Type: **not specified**

Keynote: Latest developments in GAMOS

Tuesday, October 25, 2022 9:39 AM (23 minutes)

Topic

Primary author: ARCE, Pedro (CIEMAT)

Presenter: ARCE, Pedro (CIEMAT)

Session Classification: Tools based on Geant4

Contribution ID: 119

Type: **not specified**

Keynote: Recent developments in the TOPAS-nBio radiobiology toolkit

Tuesday, October 25, 2022 8:53 AM (23 minutes)

Topic

Primary authors: MCNAMARA, Aimee (Harvard Medical School & Massachusetts General Hospital); RAMOS-MENDEZ, J (Department of Radiation Oncology, University of California San Francisco, San Francisco, USA); PERL, Joseph (SLAC National Accelerator Laboratory); BERTOLET, A (Department of Radiation, Oncology, Massachusetts General Hospital & Harvard Medical School, Boston, USA.); DOMINGUEZ-KONDO, N (Department of Radiation Oncology, University of California San Francisco, San Francisco, USA); YOO, D (Department of Radiation, Oncology, Massachusetts General Hospital & Harvard Medical School, Boston, USA); SHIN, W.G. (Department of Radiation, Oncology, Massachusetts General Hospital & Harvard Medical School, Boston, USA); HENTHORN, N (Division of Cancer Sciences, Faculty of Biology, Medicine and Health, The University of Manchester and The Christie NHS Foundation Trust, Manchester, UK); WARMENHOVEN, J (Division of Cancer Sciences, Faculty of Biology, Medicine and Health, The University of Manchester and The Christie NHS Foundation Trust, Manchester, UK); INGRAM, S (Division of Cancer Sciences, Faculty of Biology, Medicine and Health, The University of Manchester and The Christie NHS Foundation Trust, Manchester, UK); MERCHANT, M (Division of Cancer Sciences, Faculty of Biology, Medicine and Health, The University of Manchester and The Christie NHS Foundation Trust, Manchester, UK); KIRKBY, K (Division of Cancer Sciences, Faculty of Biology, Medicine and Health, The University of Manchester and The Christie NHS Foundation Trust, Manchester, UK); HELD, K (Department of Radiation, Oncology, Massachusetts General Hospital & Harvard Medical School, Boston, USA); LAVERNE, J (The University of Notre Dame, South Bend, USA); FADDEGON, Bruce (UCSF); PAGANETTI, H (Department of Radiation, Oncology, Massachusetts General Hospital & Harvard Medical School, Boston, USA); SCUEMANN, J (Department of Radiation, Oncology, Massachusetts General Hospital & Harvard Medical School, Boston, USA)

Presenter: MCNAMARA, Aimee (Harvard Medical School & Massachusetts General Hospital)

Session Classification: Tools based on Geant4

Contribution ID: 120

Type: **not specified**

Keynote: Overview of the Geant4-DNA project

Tuesday, October 25, 2022 10:02 AM (23 minutes)

Topic

Primary author: INCERTI, SEBASTIEN (CNRS/IN2P3/CENBG)

Presenter: INCERTI, SEBASTIEN (CNRS/IN2P3/CENBG)

Session Classification: Tools based on Geant4

Contribution ID: 121

Type: **not specified**

Keynote: Artificial Intelligence for Monte Carlo Simulation in Medical Physics

Monday, October 24, 2022 2:00 PM (23 minutes)

Topic

Primary authors: SARRUT, David (CNRS and at CREATIS / Léon Bérard cancer center); ETXEBESTE, Ane (University Lyon, INSA-Lyon, Université Claude Bernard Lyon 1, UJM-Saint Etienne, CNRS, Inserm, CREATIS UMR 5220, U1294, Lyon, France); MUNOZ, Enrique (University Lyon, INSA-Lyon, Université Claude Bernard Lyon 1, UJM-Saint Etienne, CNRS, Inserm, CREATIS UMR 5220, U1294, Lyon, France); KRAH, Nils (University Lyon, INSA-Lyon, Université Claude Bernard Lyon 1, UJM-Saint Etienne, CNRS, Inserm, CREATIS UMR 5220, U1294, Lyon, France); SAPORTA, Alberta (University Lyon, INSA-Lyon, Université Claude Bernard Lyon 1, UJM-Saint Etienne, CNRS, Inserm, CREATIS UMR 5220, U1294, Lyon, France); KAPRELIAN, Theo (University Lyon, INSA-Lyon, Université Claude Bernard Lyon 1, UJM-Saint Etienne, CNRS, Inserm, CREATIS UMR 5220, U1294, Lyon, France); LETANG, Jean-Michel (University Lyon, INSA-Lyon, Université Claude Bernard Lyon 1, UJM-Saint Etienne, CNRS, Inserm, CREATIS UMR 5220, U1294, Lyon, France)

Presenter: SARRUT, David (CNRS and at CREATIS / Léon Bérard cancer center)

Session Classification: Geant4 and Artificial Intelligence

Contribution ID: 122

Type: **not specified**

Keynote: Update on the G4-Med project and on the Geant4 Advanced Examples for medical applications

Monday, October 24, 2022 11:00 AM (23 minutes)

Topic

Primary author: GUATELLI, Susanna (Centre For Medical Radiation Physics, University of Wollongong)

Presenter: GUATELLI, Susanna (Centre For Medical Radiation Physics, University of Wollongong)

Session Classification: Geant4 for Medical Physics

Contribution ID: 123

Type: **not specified**

Keynote: Hadronic aspects in Geant4

Monday, October 24, 2022 3:12 PM (23 minutes)

Topic

Primary author: QUESADA, José Manuel (University of Sevilla)

Presenter: QUESADA, José Manuel (University of Sevilla)

Session Classification: Geant4 for Protons and Hadrons Radiotherapy 1

Contribution ID: 124

Type: **not specified**

Keynote: Geant4 applications in MRI-guided x-ray and proton beam therapy

Monday, October 24, 2022 11:23 AM (23 minutes)

Topic

Primary author: OBORN, B. M. (Illawarra Cancer Care Centre, Wollongong Hospital, NSW 2500 Australia)

Presenter: OBORN, B. M. (Illawarra Cancer Care Centre, Wollongong Hospital, NSW 2500 Australia)

Session Classification: Geant4 for Medical Physics

Contribution ID: 125

Type: **not specified**

Keynote: DNA damage simulation and prediction of biological endpoints using Geant4-DNA - Development of molecularDNA

Wednesday, October 26, 2022 8:30 AM (23 minutes)

Topic

Primary authors: SAKATA, Dousatsu (Research Associate at National Institute of Radiological Sciences); LAMPE, Nathanael (Independent researcher, Victoria, Australia); KARAMITROS, Mathieu (None); SHIN, W.G. (Department of Radiation, Oncology, Massachusetts General Hospital & Harvard Medical School, Boston, USA); TRAN, Hoang Ngoc (Univ. Bordeaux, CNRS, LP2I Bordeaux); CHATZI-PAPAS, Konstantinos (Université de Bordeaux, CNRS/IN2P3, UMR5797, Centre d'Études Nucléaires de Bordeaux Gradignan, 33175 Gradignan, France); INCERTI, Sébastien (Univ. Bordeaux, CNRS, LP2I Bordeaux, UMR 5797, F-33170 Gradignan, France)

Presenter: SAKATA, Dousatsu (Research Associate at National Institute of Radiological Sciences)

Session Classification: Geant4 for DNA Damage evaluation

Contribution ID: 126

Type: **not specified**

Monte Carlo for Nuclear Medicine: vision and future requirements

Topic

Primary author: Prof. AMATO, Ernesto (BIOMORF Department, University of Messina, Italy and INFN Section of Catania, Catania, Italy)

Presenter: Prof. AMATO, Ernesto (BIOMORF Department, University of Messina, Italy and INFN Section of Catania, Catania, Italy)

Contribution ID: 127

Type: **not specified**

Keynote: Monte Carlo for Nuclear Medicine: vision and future requirements

Tuesday, October 25, 2022 11:00 AM (23 minutes)

Topic

Primary author: Prof. AMATO, Ernesto (BIOMORF Department, University of Messina, Messina, Italy and INFN Section of Catania, Catania, Italy)

Presenter: Prof. AMATO, Ernesto (BIOMORF Department, University of Messina, Messina, Italy and INFN Section of Catania, Catania, Italy)

Session Classification: Geant4 for Nuclear Medicine

Contribution ID: 128

Type: **not specified**

Keynote: EM aspects in Geant4

Tuesday, October 25, 2022 4:23 PM (23 minutes)

Topic

Primary author: IVANCHENKO, Vladimir (CERN, Geneva, Switzerland and Princeton University, USA)

Presenter: IVANCHENKO, Vladimir (CERN, Geneva, Switzerland and Princeton University, USA)

Session Classification: Geant4 for Photons and Electrons Radiotherapy

Contribution ID: 129

Type: **not specified**

Geant4-DNA for FLASH radiotherapy: status and challenges

Topic

Primary author: DESORGHER, Laurent (Radiophysics Institute, CHUV, Lausanne)

Presenter: DESORGHER, Laurent (Radiophysics Institute, CHUV, Lausanne)

Session Classification: Geant4 for Photons and Electrons Radiotherapy

Contribution ID: 130

Type: **not specified**

Geant4 electromagnetic physics status and prospects

Topic

Primary author: IVANTCHENKO, Vladimir (CERN)

Presenter: IVANTCHENKO, Vladimir (CERN)

Session Classification: Geant4 for Photons and Electrons Radiotherapy

Contribution ID: 131

Type: **not specified**

Monte Carlo-based benchmark of a method for proton energy spectra reconstruction using radiochromic films

Monday, October 24, 2022 3:47 PM (12 minutes)

Topic

Proton Therapy

Primary authors: MILLUZZO, Giuliana Giuseppina (Istituto Nazionale di Fisica Nucleare); MCCALLUM, Sean (Centre for Plasma Physics, Queen's University Belfast, BT7 1NN, United Kingdom); BORGHESI, Marco (Queen's University Belfast); SUBIEL, Anna (Medical Radiation Science, National Physical Laboratory, Teddington, TW11 0LW, United Kingdom); MORTIMER, Linda (Clatterbridge Cancer Centre Wirral, Clatterbridge Road, Bebington,); ROMANO, Francesco (INFN - Catania Section)

Presenter: MILLUZZO, Giuliana Giuseppina (Istituto Nazionale di Fisica Nucleare)

Session Classification: Geant4 for Protons and Hadrons Radiotherapy 1

Contribution ID: 132

Type: **not specified**

Matter RADiation interactions SIMulator for Space Applications (MRADSIM-Space)

Wednesday, October 26, 2022 12:46 PM (12 minutes)

Topic

Primary authors: COBAN, Abdullah (IRADETS Inc., TeknoparkIstanbul, Istanbul, Turkey); ALPAT, Ali Behcet (Istituto Nazionale di Fisica Nucleare); BARTOLINI, Giovanni (BEAMIDE srl, Perugia, Italy)

Presenter: BARTOLINI, Giovanni (BEAMIDE srl, Perugia, Italy)

Session Classification: Geant4 for Neutrons and Space